BIG KAISER

A Member of the
BIG DAISHOWA Group

Volume 4

HIGH PERFORMANCE TOOLING SOLUTIONS







Awaji Factory, Japan



Awaji Factory, Japan



Logistic center, Japan



OUR VISION OF **PRECISION**

We strive for perfection. This is why our products meet the highest requirements in the industry thanks to uncompromising quality control combined with decades of experience.

Our vision is precision
– our goal is perfection.

BIG KAISER is a member of the Japanese BIG DAISHOWA Group. We manufacture our products exclusively in Japan and Switzerland. Together we produce precision tools and systems for the metalworking industry. Especially for biomedical engineering, automotive, aerospace and watchmaking industries, the quality and precision of our products is indispensable. Around 1000 employees worldwide contribute to the uncompromising quality of the more than 20,000 items in our product range.

EXPERTISE – GLOBALLY GUARANTEED

Our dense network of worldwide contacts guarantees you competent advice on site. Our expert teams will be happy to help you find individual product solutions for your needs.



Heinz Kaiser



Rümlang, Switzerland

TWO STORIES, ONE GOAL

BIG DAISHOWA was founded in 1967 in Osaka, Japan, where it first began producing tool holders to meet the most demanding tool applications. The vision has not changed since then: highest precision with the best quality products enables the greatest possible benefit for production facilities.

BIG KAISER: In 1948, 23-year-old Heinz Kaiser decides to set up his own business. His vision: The development of high-quality tools. His goals: The modern tools produced in his workshop should meet high standards. With his Schaublin 102 TO lathe, he moves into his first own workshop in Rümlang, Switzerland. After decades of partnership, KAISER became a member of the BIG DAISHOWA Group in 2015 and has since become BIG KAISER.



Awaji Factory No.3, Japan

PERFORMANCE PROVIDES PROFIT AND PAYS OFF

You benefit from highly precise and reliable tools in several ways. On the one hand, they guarantee maximum process reliability. On the other hand, they make expensive work steps such as honing or grinding partially redundant. This saves time and cost in the production process without having to sacrifice quality to the highest standards.



INVENTING THE FUTURE



Thanks to decades of experience and continuous investment in research and development, BIG KAISER products today stand for uncompromising quality. We see research and development of innovative products as indispensable to achieve the highest standard in quality and precision. Results of this philosophy are products like the market-leading BIG-PLUS® Spindle System or digital wireless communicable boring tools of the EWE series.

BIG DAISHOWA GROUP

Production facilities	**8 in Japan, 1 in Switzerland**
CNC machines	**> 700** (>200 grinding machines)
Employees worldwide	**> 1.000**
Production floorspace worldwide	**> 200.000 m²**
Tech Centers	**3** (Japan, Switzerland, USA)
Logistic Centers	**>15.000 m² in total** (Japan, Switzerland, USA)
Wide product range	CAPTO 3-4-5-6-8 / HSK 15-20-25-32-40-50-63-100-125 Type A-E-F-T / BBT30-40-50, BDV40-50

The BIG KAISER catalogue is constantly being updated with new products. To keep up to date with the latest news, check the online catalogue on our website **www.bigkaiser.eu** or subscribe to **our newsletter** and you will always be kept up to date with new products.



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MEASURING INSTRUMENTS

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MEGA Micro Chuck

Ultra slim design eliminates any interference.



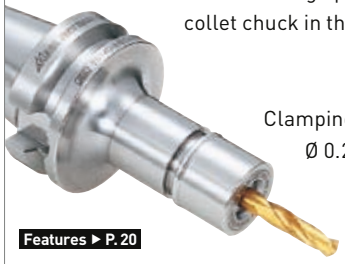
Clamping range:
Ø 0.45 - 8.05

Features ▶ P. 19

BBT Shank	58
BDV Shank	128
HSK Shank	164/216/223
BIG CAPTO Shank	230
Cylindrical Shank	264
For N/C Lathe	314

MEGA New Baby Chuck

Most reliable high precision collet chuck in the world.



Clamping range:
Ø 0.25 - 25.4

Features ▶ P. 20

BBT Shank	60
BDV Shank	129
HSK Shank	166/218/224
BIG CAPTO Shank	232

MEGA E Chuck

Original and exclusive design for small endmilling.



Clamping range:
Ø 3 - 12

Features ▶ P. 21

BBT Shank	64
BDV Shank	131
HSK Shank	170/225
BIG CAPTO Shank	235

MEGA Double Power Chuck

Specialist for heavy-duty cutting.



Clamping range:
Ø 3 - 42

Features ▶ P. 22

BBT Shank	66
BDV Shank	132
HSK Shank	172/226
BIG CAPTO Shank	237

MEGA Perfect Grip

Unique design anti pulling out cutter milling chuck.



Clamping range:
Ø 16 - 32

Features ▶ P. 23

BBT Shank	70
DV Shank	133
HSK Shank	176

New Baby Chuck

High precision collet chuck for various applications.



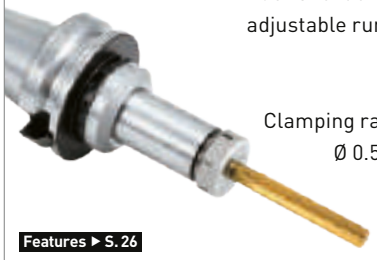
Clamping range:
Ø 0.25 - 20

Features ▶ P. 26

BT Shank	71
DV Shank	134
HSK Shank	177
Cylindrical Shank	265
For N/C Lathe	309

New Baby Chuck NRA

Collet chuck with adjustable runout.



Clamping range:
Ø 0.5 - 20

Features ▶ S. 26

BBT Shank	73
HSK Shank	179

New Hi-Power Milling Chuck

Reliable milling chuck with slim design.



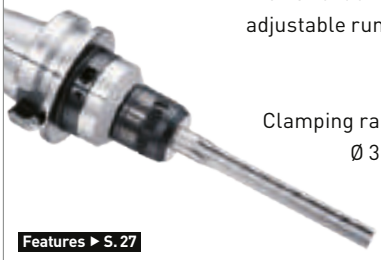
Clamping range:
Ø 3 - 42

Features ▶ P. 27

BBT Shank	74
BDV Shank	136
HSK Shank	180
BIG CAPTO Shank	239
CK Shank	258
Cylindrical Shank	268

New Hi-Power Milling Chuck NRA

Power chuck with adjustable runout.



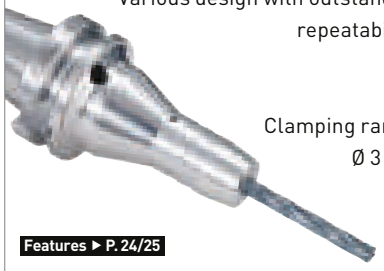
Clamping range:
Ø 3 - 32

Features ▶ S. 27

BBT Schaft	77
HSK Schaft	183

Hydraulic Chuck

Various design with outstanding repeatability.



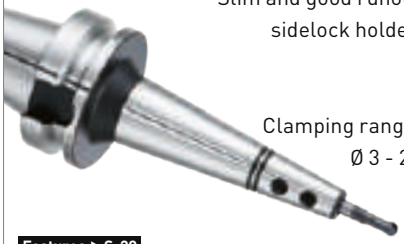
Clamping range:
Ø 3 - 42

Features ▶ P. 24/25

BBT Shank	78
BDV Shank	138
HSK Shank	184/220
BIG CAPTO Shank	240
Cylindrical Shank	267

Mold Chuck

Slim and good runout sidelock holder.



Clamping range:
Ø 3 - 20

Features ▶ S. 39

BBT Shank	87
HSK Shank	188

Shrink Chucks

Shrink fit solution with BIG-PLUS® interface.



Clamping range:
Ø 4 - 20

BBT Shank	88
BDV Shank	141
HSK Shank	189
BIG CAPTO Shank	242
Cylindrical Shank	269

CK Shanks

Various CK shanks for boring systems.



Features ▶ P. 28/29

BT/BBT Shank	91
DV/BDV Shank	142
HSK Shank	191/222
BIG CAPTO Shank	243
Reductions, Extensions	252
Cylindrical Shank	271

Face Mill Arbors

Eliminates chatter for smoother finish.



BBT Shank	96
BDV Shank	146
HSK Shank	194
BIG CAPTO Shank	244
CK Shank	257

Smart Damper for Milling

Unique modular damping face mill arbor.



Features ▶ P. 40/41

BBT Shank	98
BDV Shank	148
HSK Shank	196

Side Lock Holders



Clamping range:
Ø 6 - 50

BBT Shank	101
BDV Shank	150
HSK Shank	198
BIG CAPTO Shank	245
CK Shank	256

Holders for Screw-On Cutters

General metric screw in cutter holder with BIG-PLUS®.



BBT Shank	103
BDV Shank	151

Morse Taper Holders



BBT Shank	104
HSK Shank	200
BIG CAPTO Shank	257

MEGA Synchro Tapping Holder

Improves thread quality and tool life.



Tapping range: M1 - M36

Features ▶ P. 42/43

BBT Shank	106
BDV Shank	152
HSK Shank	201
BIG CAPTO Shank	248
CK Shank	260
Cylindrical Shank	273
For N/C Lathe	315

Angle Heads

Eliminates multiple set up.



Features ▶ P. 44

BBT Shank	108
BDV Shank	153
HSK Shank	203
Stop Block	376

Air Turbine Spindles

Air-driven speed increaser for micro-machining.



Max. 80 000 min^{-1}

Features ▶ P. 45

BBT Shank	123
BDV Shank	159
HSK Shank	213
Stop Block	376

BIG CAPTO Adapter



BBT Shank	105/249
Extension	249
Reduction	249

Millturn Tooling BBT

Modular turning tools with BBT.



Turning Tool overview	280
Turning Holder	287

Millturn Tooling HSK-T

Unique modular turning system.



Modular Tool overview	290
Turning Holder	292

Millturn Tooling BIG CAPTO

Modular turning tools and high precision rotary tool holders.



Turning Tool overview	298
Turning Holder	300

Smart Damper Turning

For boring applications on turning machines.



Features ▶ P. 40/41

HSK-T Shank	297
BIG CAPTO Shank	308
Cylindrical Shank	316

N/C Lathe Tooling

For improved efficiency and reliability of production on NC lathe.



Features ▶ P. 46

Collet Chuck	309
Hydraulic Chuck	318

Tool Assembly Stations



Torque Fit
With integrated torque measuring system.



Kombi Grip
For HSK and BIG CAPTO.

Features ▸ P. 54

Tooling Mate	367
Kombi Grip	368
Torque Fit	369

Cleaners

Maintain accuracy of high precision collet chucks.

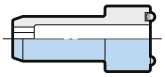


α Taper Cleaners	370
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Flange Face Cleaners	372

Pull Stud Bolts / Coolant Pipes



Pull Stud Bolt



Coolant Pipe
For HSK form A, E and F.

Coolant Pipes	228
Pullstud Bolts	374
Pullstud Wrenches	375

Rough Boring Heads MW

Extremly fast roughing for small holes.



Boring range:
Ø 16 - 21

Features ▸ S. 37

MW, Ø 16 - 21	272/382

Rough Boring Heads SW

Perfect roughing with easy setup cartridges.



Boring range:
Ø 20 - 203

Features ▸ P. 37

SW, Ø 20 - 203	383

Centric Fine Boring Heads

The most precise boring system with centric boring bar, available in analogue and digital with wireless communication to BIG KAISER App.



Features ▸ P. 33/35/36

EWE, Ø 2 - 152	398/418
EWE, Ø 25 - 203	437
EWN, Ø 0.4 - 152	399/419/430
EWB, Ø 2 - 50	399/418

Peripherical Fine Boring Heads

Ultra precise fine boring head, available in analogue and digital with wireless communication to BIG KAISER App.



Features ▸ P. 32/34/36

EWE, Ø 25 - 203	437
EWN, Ø 20 - 203	439
EWB, Ø 32 - 105	446
EWB-AL, Ø 100 - 203	446
EWB-UP, Ø 25 - 100	447

Smart Damper Boring Heads

Anti-vibration boring bars.



Features ▸ P. 40/41

BBT Smart Damper	94
BDV Smart Damper	143
HSK Smart Damper	193
Smart Damper Extensions	253
SW Smart Damper	385
EWN Smart Damper	438

Large Diameter Boring Tools

Lightweight tools Ø 200 - 3 000 mm.



Features ▸ P. 38

Series 318, Ø 200 - 620	455
Series 318, Ø 620 - 3 000	462

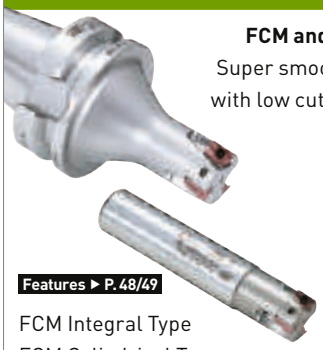
Indexable Inserts



Specially selected inserts for boring operations.

Indexable Inserts	470
CBN/PCD Inserts	487
Inserts for Turning	492
Grooving Cutters	495

Fullcut Mill



FCM and FCR type
Super smooth cutting with low cutting force.

Features ▶ P. 48/49

FCM Integral Type	518
FCM Cylindrical Type	525
FCM Arbor Type	527
FCR Integral Type	531
FCR Cylindrical Type	536

Surface Mill



Unique design face mill cutter.

Surface Mill	541

Indexable Insert Drills



CK Shank	546

C-Cutter



Extensive chamfering range.

Standard Type	551
CKB Type	551
Universal Type	552

C-Cutter Mini



Ultra high feed chamfer mill.

Features ▶ P. 50

Multi Insert Type	555
Single Insert Type	556
Bolt Hole Type	558
Spot Facing Type	559
CKB Type	560
Universal Type	560

R-Cutter



Automated R-chamfering.

Features ▶ P. 51

Front and Back Chamfering	563
Front Chamfering	564
CKB Type	565

C-Centering Cutter



Efficient centering and chamfering with carbide insert.

Features ▶ P. 51

C-Centering Cutter	567

Center Boy



Center and chamfer in one.

Center Boy	568

BF-Cutter

Back spot facing tool for cap screw hole.



BF-Cutter 570

Slot Milling Cutters



Cylindrical Type 572
CK Type 572
Arbor Type 572

Edge Detector

3D and 2D touch sensor detecting work position.



Point Master 576
Accu Center 587

Tool Offset Sensor

Magnetic tool offset sensor.



Base Master 579
Tool Master 581

Alignment Tool for ATC

For re-aligning ATC arm and machine spindle.



BT/DV Shank 582

Dyna Test

Precision measuring tools of the highest quality for machine tool maintenance.



Features ▶ P. 53

BBT Shank 584
BDV Shank 584
HSK Shank 585
BIG CAPTO Shank 585

Machine instruments

For machine maintenance.



Dyna Force 583
Dyna Contact 586

Level Master

2-axis simultaneous detection leveler.



Features ▶ P. 54

Level Master 587

Centering Tool for Lathes

Easy centering for lathes with static dial gauge.



Features ▶ P. 47

Centering Tool for Lathes 588

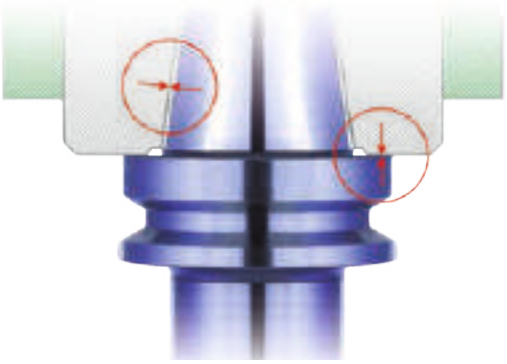
The Original Simultaneous Taper and Flange Fit Spindle System for Steep Taper

BIG-PLUS® SPINDLE SYSTEM DUAL CONTACT

The BIG-PLUS® spindle system exceeds all other interface concepts thanks to simultaneous taper and face contact between machine spindle and tool holder. Furthermore the system offers full interchangeability with existing machines and tool holders.

In a first step a taper contact is resulting during entering the tool into the machine spindle. Due to the pull-in force the tool taper expands the spindle in the elastic range. The tool is pulled further into the spindle until the tool flange reaches the surface of the spindle nose.

Advantages
- Improved surface finish & dimensional accuracy
- Extended tool life
- Prevention of fretting corrosion caused by heavy cutting
- Improvement of ATC repeatability
- Elimination of Z-axial movement at high speeds
- Improved roundness of boring operation



Basic concept

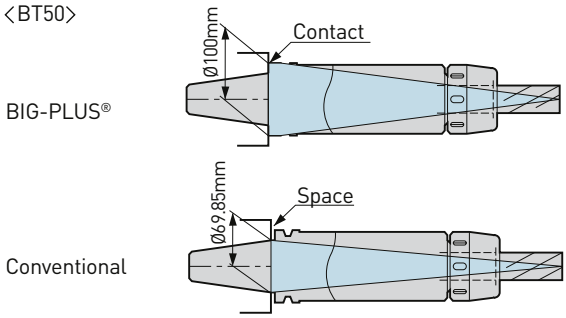
The BIG-PLUS® Spindle System is based on the most current available standards in JIS B6339 and DIN 69871.

A conventional steep taper tool holder is supported on a reference diameter called the gauge face. On the contrary, a BIG-PLUS® tool holder is supported on the flange face, which brings remarkable improvement to rigidity.

	Conventional	BIG-PLUS®
BT50	Ø 69.85	Ø 100
BT40	Ø 44.45	Ø 63
BT30	Ø 31.75	Ø 46

Increased contact diameter (example of BT50)

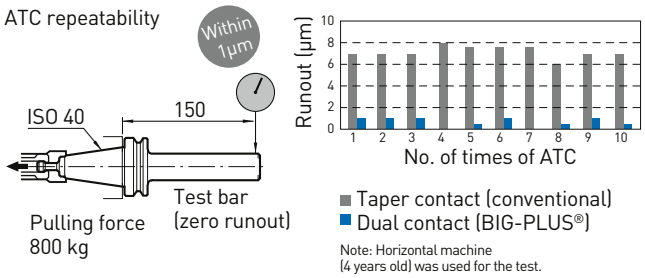
<BT50>



Improvement of ATC repeatability

The BIG-PLUS® spindle System assures the highest precision location of the tool holder in the spindle when using the ATC for loading tools, as a result of the dual contact which precisely positions the tool holder within 1 micron.

ATC repeatability



Note: Horizontal machine (4 years old) was used for the test.

Perfect interchangeability

BIG-PLUS® tool holders can be used on existing standard machine spindles. Existing standard tool holders can also be used on BIG-PLUS® spindles. In this case, simultaneous contact cannot be attained.

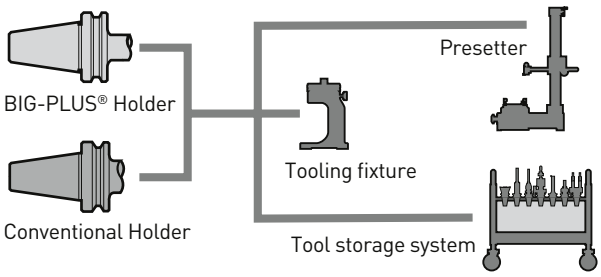
BIG-PLUS® Spindle + BIG-PLUS® Holder

Conventional Spindle + BIG-PLUS® Holder



Although other simultaneous contact systems require exclusive new accessories, the BIG-PLUS® spindle uses existing accessories such as a presetter and tool holder fixture as it is based on a conventional steep taper shank. Further, it is not necessary to modify tool magazines and ATC devices of existing machines.

Existing accessories utilized



Note:

BIG-PLUS® tools are available as BBT or BDV in page 45 - 92 and 93 - 123.

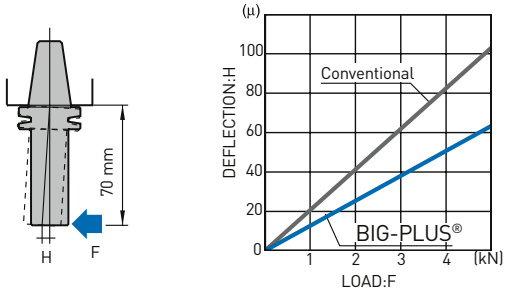


Minimized deflection for maximum machining, accuracy and superior finish

With BIG-PLUS® simultaneous contact, machining rigidity is greatly enhanced due to the larger contact diameter of the tool holder flange face. This larger face contact combined with the taper contact works together to resist deflection. With less deflection, greater machining accuracy and superior finish can be achieved.

Comparison of deflection

BT40



Deflection of machine spindle is included. Vertical machine was used for the test.

Face milling application

BIG-PLUS®



Standard

Machine tool:	#40 (horizontal machining center)
Cutter:	Face milling Ø 125 (6 cutting edges)
Work material:	A2017 Duralumin
Cutting depth:	2.4 mm

Caution: The Original Simultaneous Taper and Flange fit Spindle System for Steep Taper

More than 85% of not original dual contact BIG-PLUS® are not in tollerance

There are many manufacturers who claim to have dual contact tooling system:
But only a few have an official license of BIG-PLUS®. Without a license, these manufacturers haven't the master gauges nor the measuring devices or the tolerances for defining the critical dimension of the distance between the taper gauge line and the tool flange.
However, according to our inspection*, 85% of the tested tool holders are out of the official BIG-PLUS® tolerance. Only original BIG-PLUS® tool holders enable the benefits and strengths of a BIG-PLUS® spindle system. BIG KAISER controls 100% of its BIG-PLUS® tool holders and therefore guarantees that all products are in the tight BIG-PLUS® tolerance.

BIG-PLUS® SPINDLE SYSTEM DUAL CONTACT

BIG-PLUS® is the trademark guarantee to maximize your machine capability.

* Inspection results or samples of non-licensed dual contact tooling measured according to the BIG-PLUS® standard.

HSK Tooling Systems

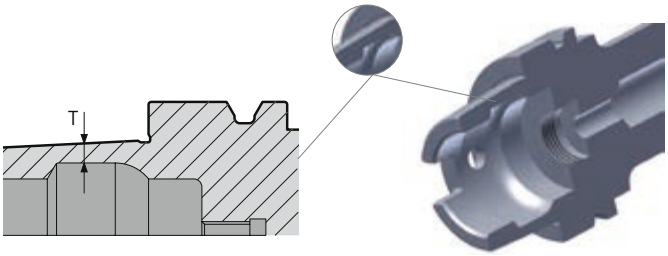
Selected materials and strict control of dimensional accuracy for the optimum quality. Wide range of standard holders to meet all production requirements.





Premium material selection

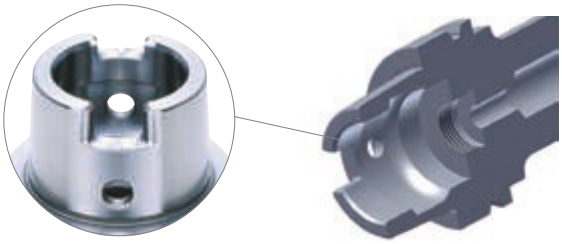
Since HSK is a hollow taper shank, the material has a critical role for optimum performance. BIG KAISER uses carefully selected high grade alloy steels. Particularly, BIG KAISER uses premium materials for HSK 40 and smaller where the cross section of shank taper is very thin.



HSK Size	25	32	40	50	63	100
T	1.09	1.25	1.92	2.60	3.47	5.17

Drive key form

HSK shanks according to form A are designed to carry out torque transmission by the round shaped key-way at the end of the taper. Because of the importance of this round shaped geometry, BIG KAISER provides finishing of this feature after heat treatment.



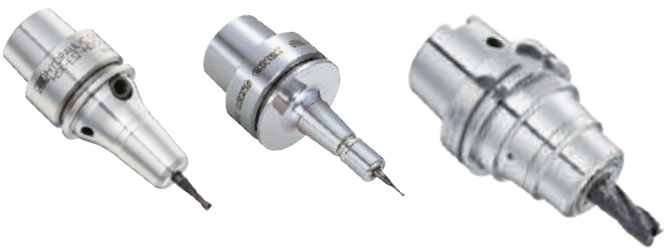
Great variety of HSK

Following HSK types are standardized to offer the best possible solution. Other types are also available upon request.

HSK-A32/A40/A50/A63/A100/A125

HSK-E25/E32/E40/E50

HSK-F63/F80M



HSK turning tools

HSK-T63 / T100 (ISO 12164-3)

Unique modular type of turning system offer various solution for turning applications.



BIG CAPTO

Polygonal tapered dual contact tooling system adopted by ISO standards. CAPTO is a trademark licensed by Sandvik Coromant.









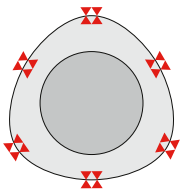
Polygonal tapered dual contact tooling system



Sandvik Coromant AG developed, in 1989, a triangular polygon shaped 1/20 taper dual contact system.
BIG DAISHOWA launched licensed production in 2000.
Polygon taper maintains close contact and eliminates radial clearance, making it an ideal interface for turning.
ISO standardized in November 2008.

Outstanding cutting edge height repeatability

The polygon taper without clearance achieves high repeatability of cutting edge height, as well as secure function as a drive.



Complete Fit

Abundant rotating tool series

Collet Chuck, Milling Chuck, Boring Tool, Tapper, Sensor, Endmill Cutter, Arbor...
A wide range of tool holders are available.



Turning tool series ideal for millturn machines

The abundant cartridge range and revolutionary modular systems improve turning efficiency on millturn machines.

45°

Tilt Type
SType



S Type Cartridge



90°

Right Angle Type
F Type Pat.



F Type Cartridge



BIG CAPTO's C3 and C4 series for Turning is now available

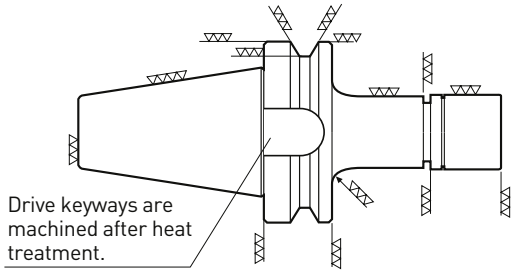
NEW



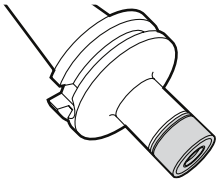
MEGA Chuck Serie



Precision ground and balanced for high speed machining
MEGA Chucks are micro mirror ground finished on all surfaces to assure perfect concentricity for high speed machining. The drive keyway is machined after heat treatment.



Notch-free design MEGA NUT prevents vibration and reduces noise
Vibration at high speeds is eliminated with the use of notch free designed nuts, which offer superior balance and concentricity.



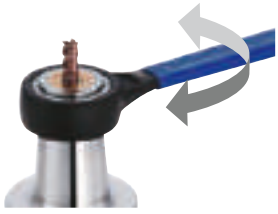
Perfect quality control



All tools are marked with serial no. as a proof of a high quality and good traceability. 100% tools are inspected its quality to guarantee high performance.

Easy and firm clamping by the MEGA Wrench
The unique MEGA Wrench has a one way clutch system with roller bearings and a ratchet function which is capable of safely and evenly applying force to the entire nut periphery.





Tool identification service available



As an experienced partner for tool management solutions, BIG KAISER is ready to provide its tooling with various solutions for tool identification such as data matrix codes or ID sensors.

4 chuck types for different high speed machining requirements

MEGA Micro Chuck
For micro drills and end mills
Clamping range:
Ø 0.45 - 8.05 mm



MEGA New Baby Chuck
For carbide drills,
reamers and end mills
Clamping range:
Ø 0.25 - 25 mm



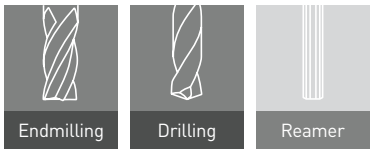
MEGA E Chuck
For end mills and reamers
Clamping range:
Ø 3 - 12 mm



MEGA Double Power Chuck
For end mills
Clamping range:
Ø 3 - 42 mm



MEGA Micro Chuck

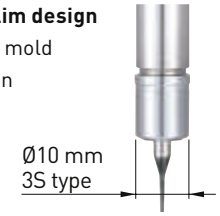


- max. 50 000 min^{-1}
- Clamping range: Ø 0.45 - 8.05
- 0.1 mm increments for higher precision





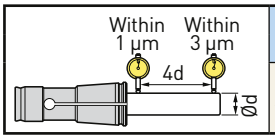
Nut diameter 10, 12, 14 & 18mm, extremely slim design
Slim design avoids interference. Ideal for small mold making combining high speed and high precision capability.



High concentricity
100% concentricity inspection. Within 1 µm at nose is guaranteed.

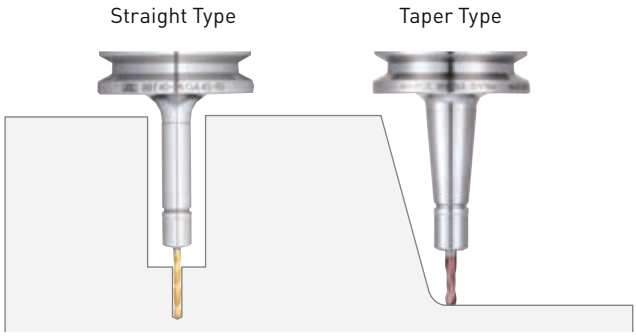

High precision Micro Collet

Collet concentricity



Collet class	Max. runout	
	At nose	4xD
AA	Within 1 µm	Within 3 µm

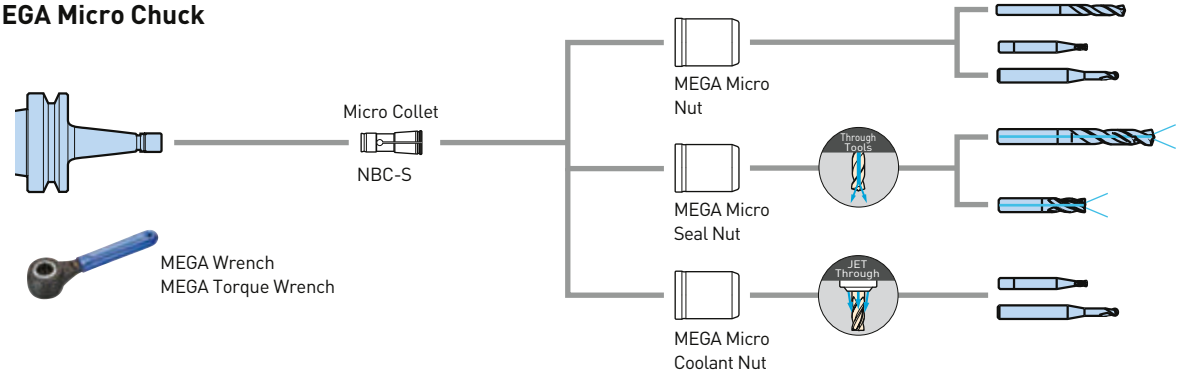
Three versions are available
Straight Type: where access is restricted
Taper Type: for increased rigidity
Cylindrical Shank Type: for increased versatility



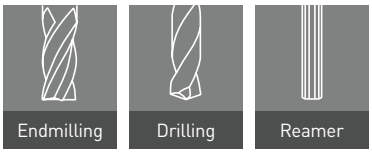
Cylindrical Shank Type
Flexible tool layout, for tighter and deeper area



MEGA Micro Chuck



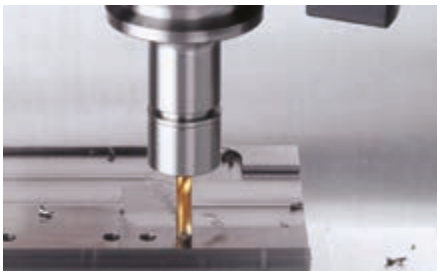
MEGA New Baby Chuck



High speed design, offered in six different size collet series, utilizes ultra precision New Baby Collets which guarantee a runout at the collet nose of less than 1 micron.

- max. 40 000 min^{-1}
- Clamping range: Ø 0.25 - 25.4





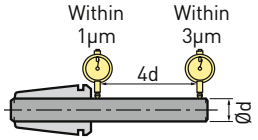
High precision collet, close to submicron

100% inspection to guarantee accuracy. Material, production, heat treatment, everything is selected for precision.



High precision NBC Collet

Collet concentricity



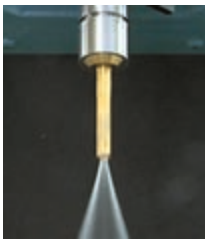
Collet class	Max. runout	
	At nose	4xD
AA	Within 1 µm	Within 3 µm

2 way coolant supply

Sealed collet nut MEGA Perfect Seal

- Standard NBC Collet is used
- High dust resistance
- Max. coolant pressure 7 MPa





Through Tools
Tools with holes



Jet Through
Tools without holes

Various collet and nut selection

Various type of collet and nut can bring the best solution for your demand.

NBC Standard
For general



NBC-E collet
For end mill



FONBC collet
For coolant-through tools



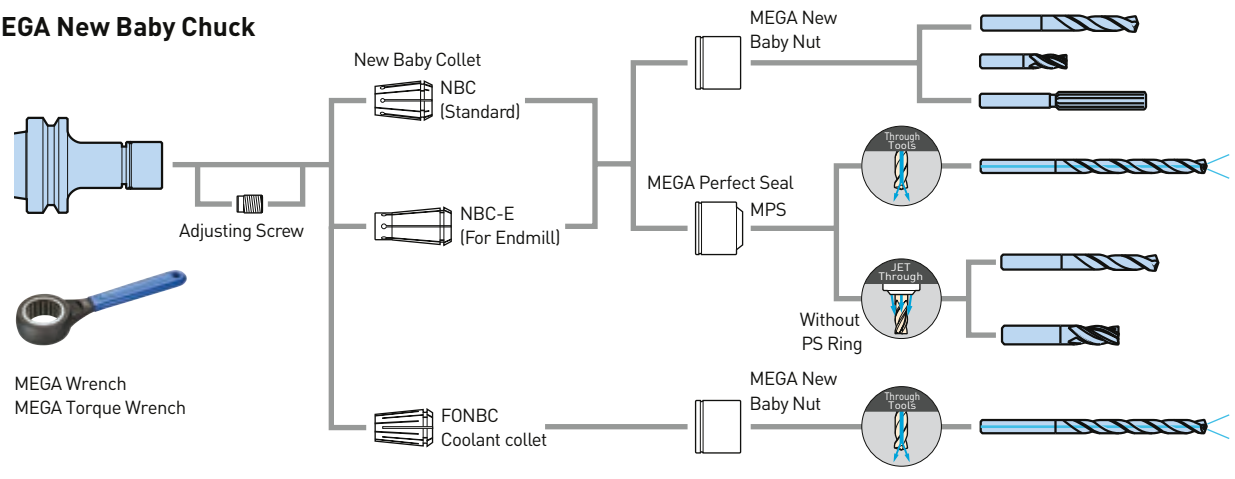
MGN nut
For high speed



MPS nut
For efficient coolant supply

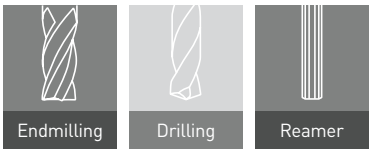


MEGA New Baby Chuck



MEGA E Chuck

Collet chuck designed exclusively for endmilling up to Ø 12 mm with high concentricity and rigidity.



- max. 40 000 min^{-1}
- Clamping range: Ø 3 - 12





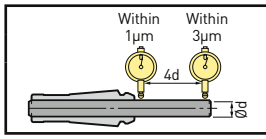
High concentricity

100% inspection to guarantee accuracy within 1µm runout at collet nose.



High precision MEGA E Collet

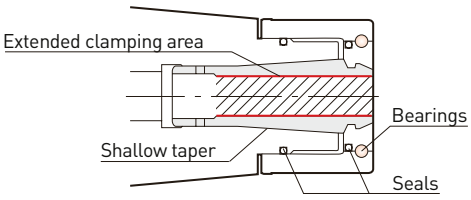
Collet concentricity



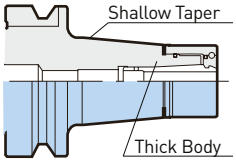
Collet class	Max. runout	
	At nose	4xD
AA	Within 1 µm	Within 3 µm

High grip collet

Gripping force is an important element for endmilling with a collet chuck. The long gripping length of the collet in the MEGA E series provides a powerful gripping force. The shallower taper of the collet improves concentricity in order to achieve better surface finishes and longer cutting tool life.



Substantial and tapered body design



Thick body eliminates chatter and deflection. Tapered extension provides the rigidity to prevent vibration.

Slit-through coolant

Coolant is reliably directed to cutting surface through slits in the collet. Tool life is extended together with improved surface finish as a result of smooth chip evacuation.

- Max. coolant pressure 7 MPa



For coolant-through tools

Sealed collet nut to supply coolant reliably through cutting tool.

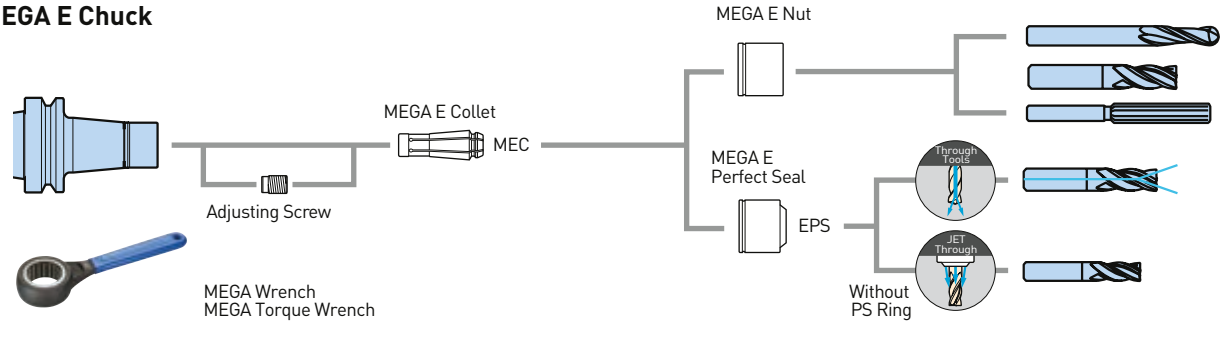


MEGA E Perfect Seal



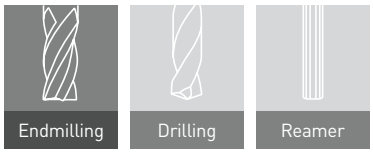
Ideal for burnishing drills and reamers due to extended gripping length.

MEGA E Chuck



MEGA Double Power Chuck

Flange contacting nut and simultaneous taper & flange contact assure highest rigidity.



- max. 30 000 min^{-1}
- Clamping range: Ø 3 - 42
- Ideal for solid machines



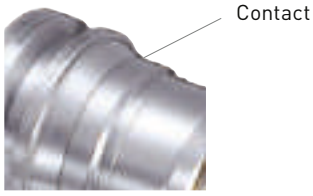


Stabilizing contact between flange and nut provides exceptional rigidity

The expanded contact diameter of the nut of the MEGA Double Power Chuck to the flange provides the highest rigidity as if the chuck and nut were one solid piece. This superior rigidity assures heavier duty machining without chatter.



Released



Tightened

Secure coolant supply

Two types are designed for the most effective coolant supply.

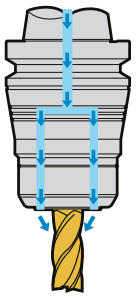
- Improved surface finish
- Extended tool life
- Smoother chip evacuation
- Cooling & lubrication of tools



Type D
through tools



Type DS
jet through



Cutting conditions

Coated carbide endmill **Ø 32, 4-flutes** **Workpiece: SS400 (JIS)** **V282 m/min** **S 2 800 min^{-1}** **F1 120 mm/min**	BBT50-MEGA32D-105 Radial d = 14 mm Power 15.2KW	Other manufacturer (L = 90) Radial d = 9.5 mm Power 9.2 KW
		

Various type of straight collets are available.

For jet through
PJC collet



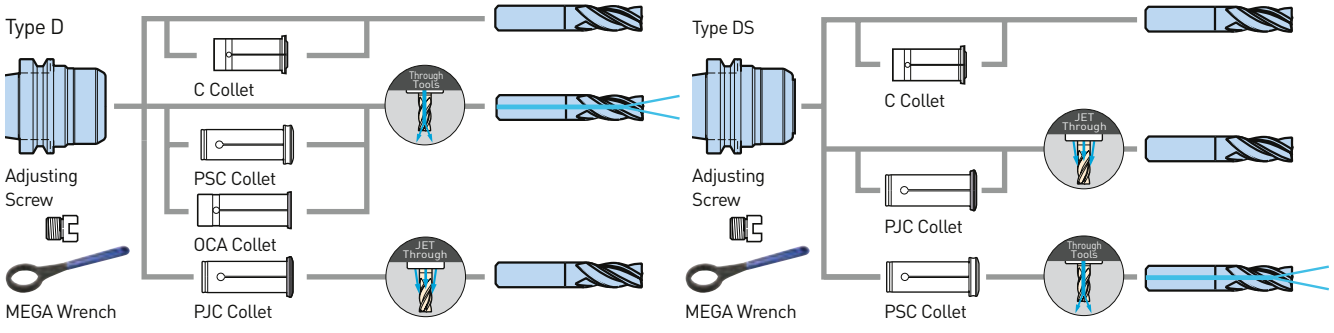
For through tools
PSC collet



For through tools
OCA collet



MEGA Double Power Chuck



MEGA Perfect Grip

Features 100% security against pulling out the cutting tool under any torque load.

- Accepts industry standard Weldon flat milling cutters
- No special grinding of milling cutter required
- Flood jet-through coolant
- Available with BBT40/50/DV50 and HSK-A63/100/125







Simple, easy handling with secure clamping

1. Place the exclusive key grip into the Weldon flat of the end mill shank.
2. Insert the end mill with the key grip in alignment with one of the three key grip grooves inside the milling chuck.
3. Rotate the end mill approximately 20° clockwise until the key grip stops securely against the stopper pin.
4. Finish clamping the tool until the clamping nut contacts the positive stop of the chuck body.

Flood jet-through coolant

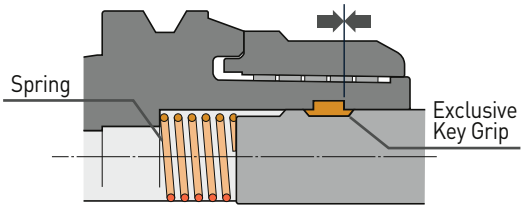
The key grip grooves provide channels for high volume coolant to the cutter. Effective end milling of HRSA's requires a high volume of coolant to the cutting edge to dissipate heat and aid in the removal of chips.





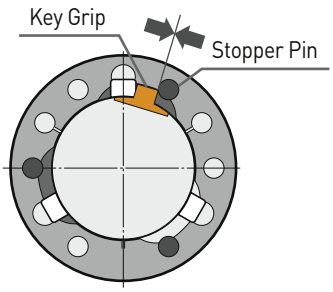
Non-Pullout mechanism

The Key Grip engages in the groove of the chuck body to ensure no tool pullout.



Non-Slip mechanism

The Key Grip maintains contact with the stopper pin to prevent any slip under high torque.



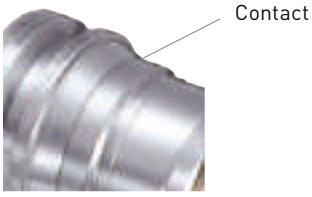


Perfect contact between flange and nut

The expanded contact diameter of the nut of the MEGA Perfect Grip to the flange provides the highest rigidity.



Released

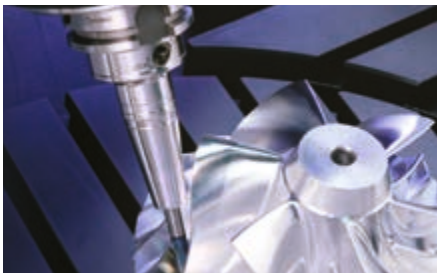


Tightened

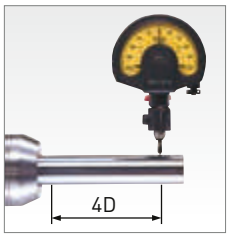
Hydraulic Chuck

Ultra precision hydraulic clamping chuck holder with various additional features.



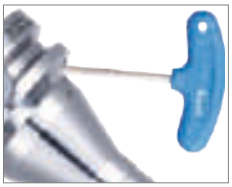


Runout accuracy less than 3 µm



High precision runout accuracy less than 3µm at 4d improves the workpiece surface finish and extends tool life.

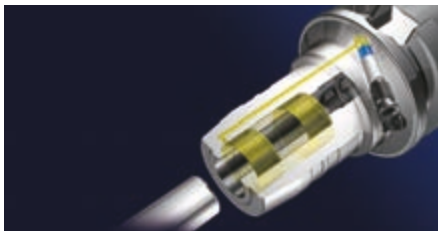
Easy clamping with 1 wrench

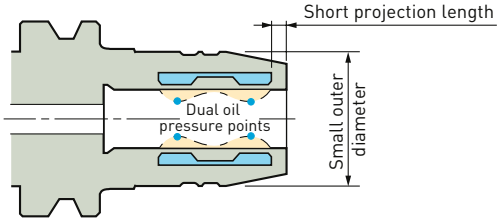


The cutting tool can be clamped or unclamped easily and securely with just 1 wrench. Extremely good repeatability and runout accuracy are guaranteed.

Integral sleeve construction

Compared with the traditional two-part construction sealed with O-rings, BIG KAISER Hydraulic Chucks are long lasting and maintenance free. Also the rigidity is greatly improved by the short projection length and dual pressure points.





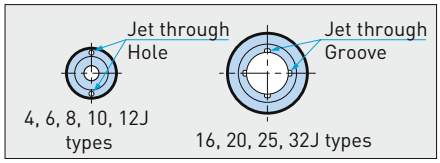
Complete sealing mechanism prevents oil-leaks

Specially selected material and shape of the hydraulic plunger seal prevents leakage of oil and decrease in gripping force. The complete seal design avoids minute cutting particles of graphite or ceramics from entering into the toolholder. This enables usage on tool grinding machines.



Jet through

Coolant hole at nose supplies coolant.









Super Slim Type

Slim design eliminates interference. Ideal for high precision 5 axis machining.



Tip diameter
Min. Ø 14 mm
Max. 60.000min^{-1}
(HSK-E25)





HSK-E25/E32/E40/E50/F63 series

Ultra-compact and high precision.
Hydraulic chuck suitable for small machining centers.



Prebalancing
0.5g·mm or less
(HSK-E25)



Super Slim UP series

NEW

Amazing runout accuracy within 1µm at 4D.
The ultimate precision hydraulic chuck.
HSK-E25/E32/E40 Type



1µm
ULTRA PRECISION

UP

Jet Through Type

Securely supplies coolant or oil mist to the tool periphery.
Delivers outstanding results with high accuracy finishing in 5-axis machines.



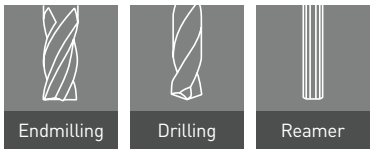
Tip diameter
Min. Ø 20 mm
Max. 35.000min^{-1}



HDC4J to 12J models allow jet through to be switched to center through by assembling the accessory plug.

New Baby Chuck

New Baby Chuck is capable of achieving high spindle speeds as required for drilling and end milling with smaller diameter cutting tools.



- Clamping range: Ø 0.25 - 20





Ideal combination of taper angle and collet projection length



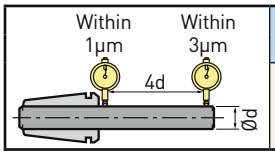
New Baby Chuck satisfies all requirements for accuracy, clamping force and clamping range, by utilizing the ideal 12° taper angle.

High concentricity

Each collet is inspected and double checked to meet maximum runout tolerance permitted.



Collet concentricity



Collet class	Max. runout	
	At nose	4xD
AA	Within 1 µm	Within 3 µm

The nut is a key to achieve the highest precision of a collet



- Since the threads greatly influences accuracy, they are finished after heat treatment. Therefore, bad influence from clamping action is eliminated, which enhance clamping performance.
- A nut incorporates a thrust bearing with steel balls that prevents stress to a collet and allows a smooth clamping force to a collet.

For high pressure coolant supply

- Standard NBC Collet is used.
- High dust resistance
- Max. coolant pressure 70 bar





Through Tools
Tools with holes



Jet Through
Tools without holes

Runout adjustable RA holder

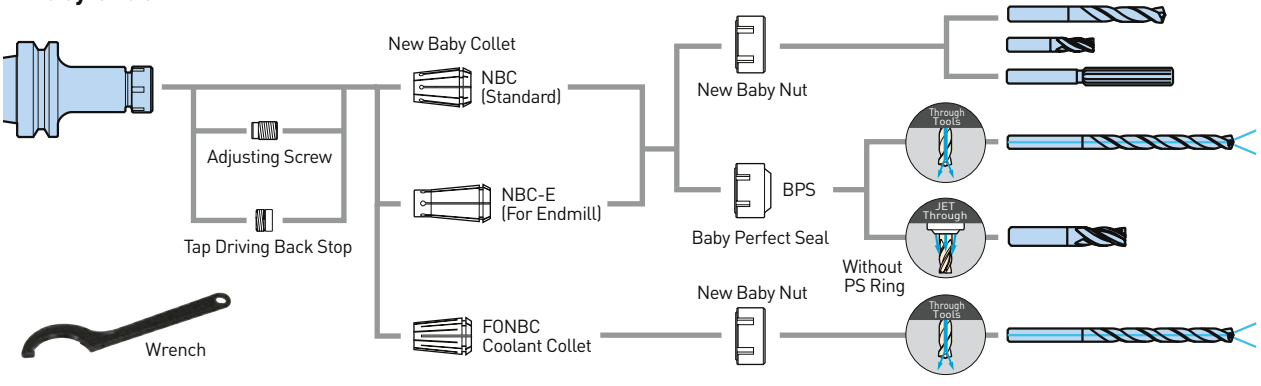


Simple structure allows for easy adjustment of runout accuracy. Compensates for increased runout of machine tool spindles caused by extended use.

Tool edge runout: 2µm or less

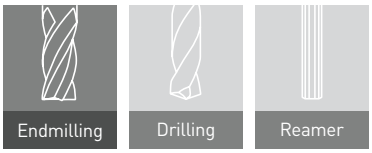
- Uniform hole diameter
- Improved surface roughness
- Increased tool life

New Baby Chuck



New Hi-Power Milling Chuck

New Hi-Power Milling Chuck combines the high accuracy with high torque capability and rigidity.



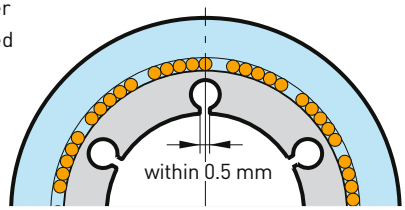
- Clamping range: Ø 3 - 42





Secure and reliable slit design

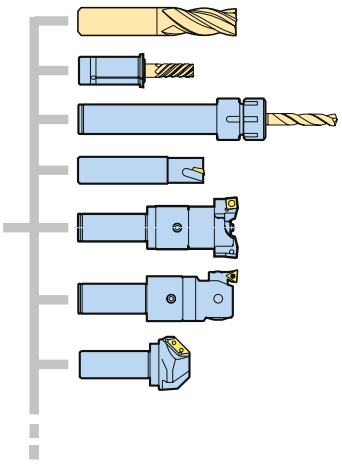
The annular section needs to be substantial in order to provide rigidity but retain the ability to collapse in order to provide sufficient grip. The section of the Hi-Power Milling Chuck has combined holes and slits at regular intervals in order to combine both requirements.



Basic tool for various applications

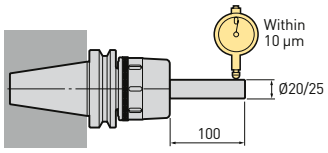
New Hi-Power Milling Chuck is a good basic tool. Not only for milling tool, but also for boring tools, chamfering tools and various applications.

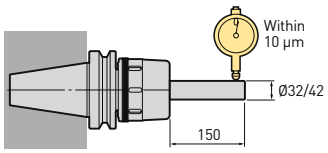




Precise concentricity

Concentricity is assured by the integral design and clamping by mechanical compression of the annular section by the rolling bearing system. All models are inspected and double checked to meet maximum runout tolerance permitted. (within 10µm at 4D).





HMC12J type

Clamping diameter: Ø 12. A nut shape slimmer than collet chucks.



Runout adjustable RA holder

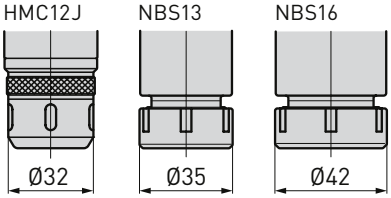


Simple structure allows for easy adjustment of runout accuracy. Compensates for increased runout of machine tool spindles caused by extended use.

- Consistent hole diameter
- Improved surface roughness
- Increased tool life

Tool edge runout: 2µm or less

New Baby Collet Chuck





Peripheral coolant supply to cutting edge

CK Boring Tools

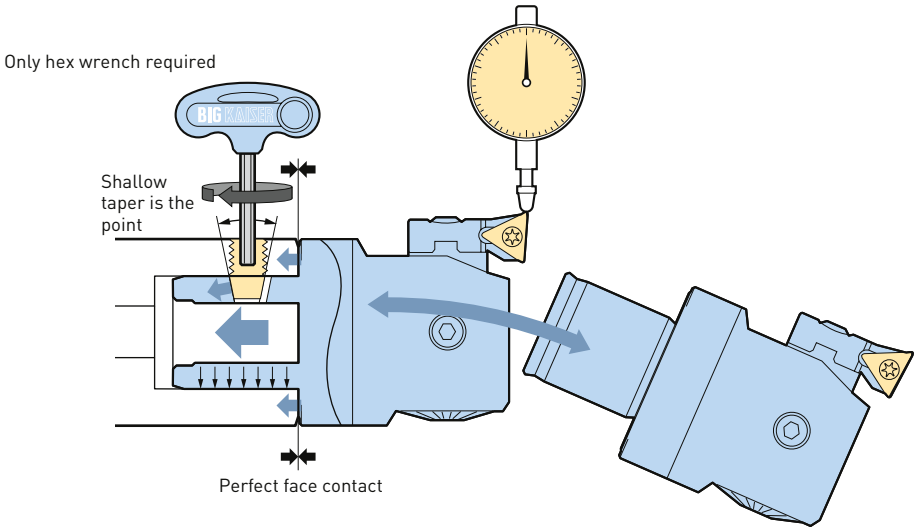
CK Boring is the most reliable and accurate modular boring head in the world. By using the unique modular connection, from Ø 2 mm to over Ø 200 mm can be covered by a combination of 7 main bodies and various Rough and Fine Boring head.





Simple but reliable CK connection

The CK is a simple method for securely and powerfully clamping flange faces with a single wrench.
Moreover, even if the same boring head is repeatedly attached and removed, the cutting edge position does not vary by more than 2 microns.
This accurate clamping allows boring diameter setup to be done with a boring head only, increasing the machine utilization and drastically reducing labor.



The cutting edge position does not vary by more than 2 microns, no matter how often the same head is inserted.

CK, CKB, CKN in one system

To offer the most suitable solution, 3 different types of CK connections are available depending on the application and main body.
"CK" is the original KAISER modular system.
"CKB" has the floating cross bolt, which is automatically centered in the trapezoid-shaped recesses in the mating part and ensures to transfer the torque force.
"CKN" is the 3-screw-connection with 3 partial slits. It is ideal for light weight and high performance tools.

Interchangeability overview

		Male connection (Boring Head, Extention, Reduction)		
		CK	CKB	CKN
Female connection (Shank, Extention, Reduction)	CK	+	-	+
	CKB	+	++	+
	CKN	+	+*	++

++ = Best match + = Match - = Doesn't match

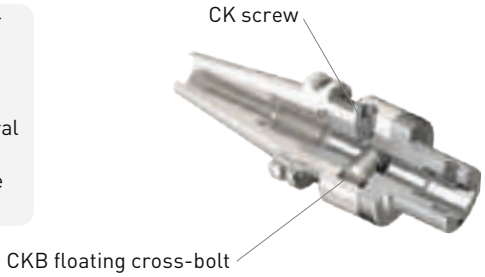
1. CKN female connection products are delivered only with 1pce CK screw and 2pcs blind screws assembled.
2. CKN male connection products are delivered with 2pcs CK screws.
3. * Some CKB male products in the large Boring program do not fit with CKN female connection.

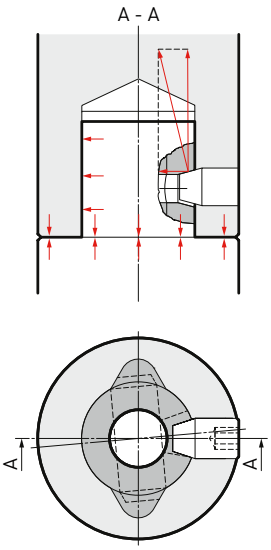
CKB

CKB connection: highly efficient and easy to handle

The modular components are clamped with the lateral locking screw (CK-screw). The floating cross bolt is automatically centred in the trapezoid-shaped recesses in the mating part and ensures an absolutely uniform distribution of the torque forces.

- Simple, efficient operation -no special equipment or tools needed
- Maximum rigidity due to high preloading forces and large contact surfaces
- Precise cutting edge location even when using several adapters
- High interchange accuracy, maximum radial change error is 0.002 mm



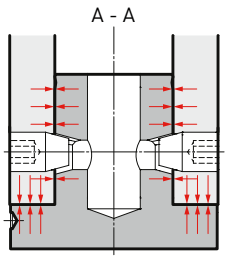


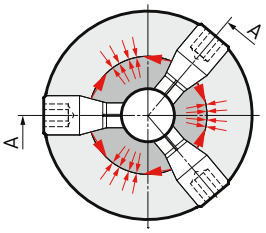
CKN

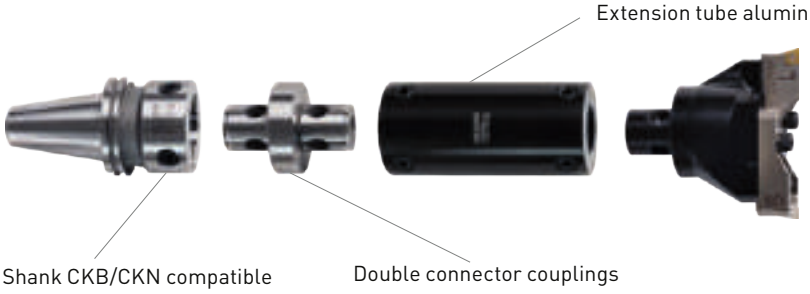
CKN Connection: Lightweight Program

The double connector coupling enables the use of aluminium extension tubes which result in a considerable weight reduction for larger tools. The torque transmission from the aluminium tube to the connector made of steel over three screws guarantees no reduction of cutting performance in comparison to tool combinations made of steel only.

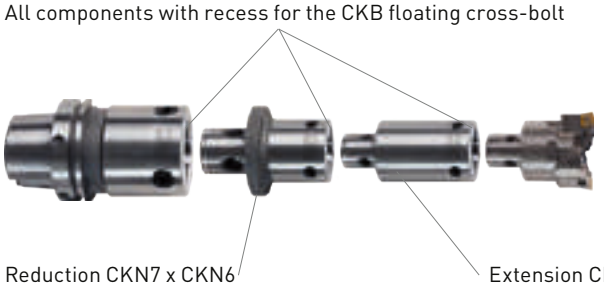








All components with recess for the CKB floating cross-bolt



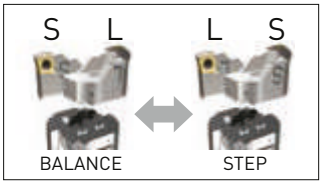


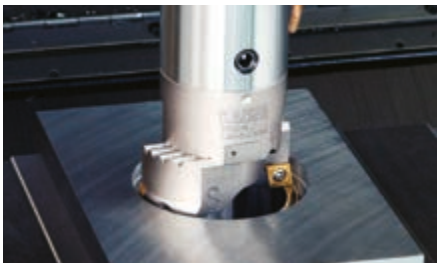
CK Boring Heads Overview

CK Boring is the most reliable and accurate modular boring head in the world. By using the unique modular connection, from Ø 2 mm to over Ø 200 mm can be covered by a combination of 7-main bodies and various Rough and Fine Boring head.

Roughing

Adapted for both balance and step cutting by simply changing positions of standard Cartridges. (for blind holes)



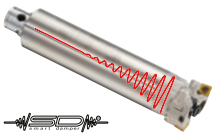




High rigidity SW boring head
- Ø 20 - 203 mm
- Serrated for high connection rigidity

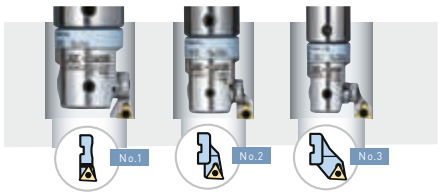


MW boring head
Boring tool for small-diameter 2-flute roughing.
- Ø 16 - 21 mm
- Versatile Ø 20 shank
- Spiral groove for improved chip evacuation



Smart Damper
Roughing Head with Built-In Damper.
SW Boring Head.
- Smart Damper with SW head
- Closely adjacent vibrating point and damper achieve a high damping effect.

Finishing with Insert Holder Type



Emphasis on chip evacuation properties
Replacing the insert holder makes it possible to secure sufficient clearance for chips.



Back boring available as standard.
Supports back boring by simply reversing the insert holder.





EWN boring head
Prebalanced design/Multifunction head
- Ø 20 - 203 mm
- Prebalanced design supports high-speed boring
- Abundance of insert holders





EWB boring head
High speed
- Ø 32 - 105/Ø 100 - 203 mm (Aluminum)
- 0.01mm/Ø scale
- Built-in automatic precision balancing unit
- Vc Max. 2 000m/min.

Lightweight
special aluminum head 600/800g



EWE boring head
Digital boring head with wireless communication
- Ø 41 - 203 mm
- Digital display allows the adjustment amount to be read at a glance
- Fully waterproof and dustproof structure (IP69K equivalent)

Display Resolution 1µm/Ø



EWN Smart Damper
Built-in damper
- Integrated EWN Boring Head and Smart Damper.
- Closely adjacent vibrating point and damper achieve a high damping effect.

Finishing with Cylindrical Bar Type



EWN boring head
High precision
- Ø 1 - 54 mm
- 0.01mm/Ø scale plus 1 micron vernier
- Combine with carbide shank for stable deep-hole boring



EWN 04-7/04-15
World's smallest precision boring head
- Ø 1 - 7/Ø 1 - 15 mm (EWN 04-7)
- O.D. Ø18.5 ultra-compact design
- Max. 30 000min^{-1}



Display Resolution 1µm/Ø

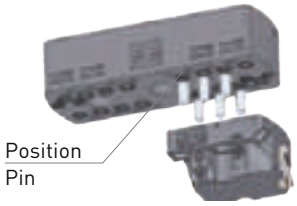
EWE boring head
Digital boring head with wireless communication
- Ø 1 - 54 mm
- Digital display means the adjustment amount can be read at a glance
- Waterproof and dustproof structure (IP69K equivalent)



EWB boring head
High speed
- Ø 1 - 50 mm
- 5µm/Ø precision diameter adjustment
- Built-in manual precision balancing function
- Max. 16 000min^{-1}

For Large Diameter 318 series

New safe mechanism



Using the position pin fastens the head or clamp base to the slide. Prevents the head from flying off due to high-speed rotation caused by programming errors.

Aluminum high speed Type
- Lighter weight for greater speed.
- Uses hardened aluminum components, tough yet lightweight. (Slide/Clamp Base)
- Vc Max. 2 000m/min.

Center through supported
- Reliable coolant supply to finishing and roughing cutting tool peripheries.





Rough boring head
For Roughing
- Ø 200 - 3 000 mm



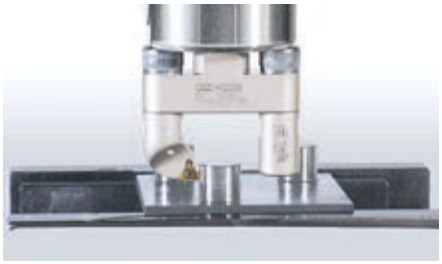
Finish boring head
For Finishing
- Ø 200 - 3 000 mm
- Precision head with outstanding operability.
- Back boring available.
- Available in analogue and digital

Pin Turning





- Ø 0.5 - 2 856 mm
- Realizes finishing accuracy not possible with contouring.



Accessories



Various shanks/accessories.
Combine with a CK Shank for a wide range of applications not limited to boring.



Smart Damper
Built-In Damper
- Unique dynamic damper eliminates chatter.

EWE Digital Fine Boring Heads

The boring heads EWE with digital technology combine all advantages of the analogue boring heads EWN. Thanks to the large display with a resolution of 0.001 mm Ø bores with extremely tight tolerances can be machined.

App Store
Google Play
Windows 10

Periferical Models

EWE peripheric cutting heads have a large work range as different insert holder types and sizes are available, including trough and blind holes and back boring application types.

Fine boring heads EWE and EWN feature equal boring ranges and body dimensions and allow the use of the same accessories.

- Boring range: Ø 25 - 203



EWE 68



EWE 25

Digital display with a resolution of 0,001 mm Ø



Automatic switch off function which always stores the last displayed value and integrated power management for optimized battery life.

Piezo button for maintenance-free use.

Body protection grade: IP 69K

The high quality coating of the tool body ensures a complete protection against corrosion. The built in electronic is safe form dust and high pressure spray water according to the protection category IP69K.

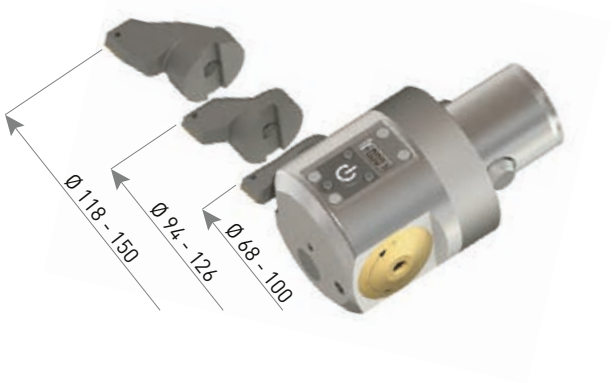
Large boring range

Every EWE has a large work range due to three different insert holders. For example: The EWE 68 can manufacture a diameter range from Ø 68 to 150 mm.

Direct measuring diameter allows corrections in both directions

With a direct electronic measuring system on the tool carrier and a resolution of 0.001 mm Ø, the fine boring heads EWE enable diameter corrections with an unmatched accuracy.





EWE Reader



If no Smart Phone or BIG KAISER App is available, the EWE Reader is the perfect alternative for making settings on the digital fine boring heads. The EWE Reader shows the adjustment on the fine boring head quickly and easily and simplifies machining.

EWE Digital Fine Boring Heads

App Store
Google Play
Windows 10

Centric Models

Fine boring heads EWE with digital display and direct electronic measuring system on the tool carrier, feature absolute setting accuracy. The boring heads are designed for ultra precise boring operations in the range from Ø 2 to Ø 152 mm with highest spindle speeds.

Same accessories for fine boring heads EWE and EWN.

- Boring range: Ø 2 - 152



EWE 2-152



EWE 2-32

Body protection grade: IP 69K

The high quality coating of the tool body ensures a complete protection against corrosion. The built in electronic is safe from dust and high pressure spray water according to the protection category IP69K.

Digital display with a resolution of 0,001 mm Ø and Piezo button



Automatic switch off function which always stores the last displayed value and integrated power management for optimized battery life.

Piezo button for maintenance-free use

Electronic components – made by BIG KAISER

All electronic components are entirely developed and manufactured in the electronic lab of BIG KAISER in Switzerland. Before shipping, every digital boring head is calibrated and tested separately.



Integral execution available

Can be used for cylindrical bar from dia 2-80 and with peripherical insert holders from dia 80-152mm.



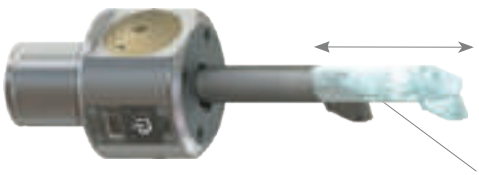
EWE 2-152 HSK-A63

Maximum rotation speed: 14 000 min^{-1}

Tool carrier in center position allows n max. of 14 000 min^{-1} due to minimized imbalance.

Variable length adjustment of the tool holder

Best cutting results are only reachable if the tool holder is as short as possible. The EWE features variable length adjustment of the tool holders which ensures the shortest and therefore the most rigid tool assembly.



Tool holder

EWN Fine Boring Heads

The EWN heads feature highly accurate and smooth micrometre adjustment precision. Vernier precision allows exact corrections of 0,001 mm and a repeatability of 0,0005 mm. Carrier movement is strictly radial, avoiding parallax shift and making corrections even more precise
The locking system prevents any diameter shift ,even under tough cutting conditions assuring best surfaces technically obtainable.

Periferical Models

The fine boring heads EWN series 310 cover a range of Ø 20 - 203 mm with only 7 fine boring heads. Due to the optimized balance over the whole adjustment range, cutting speeds up to 1200 m/min are permitted.

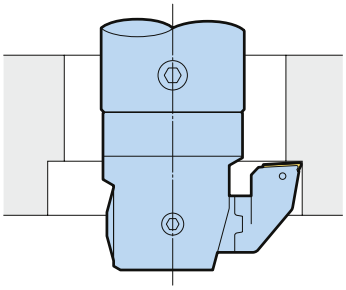
Fine boring heads EWN and EWE feature equal boring ranges and body dimensions and allow the use of the same accessories.

- Boring range: Ø 20 - 203



EWN 53

Back boring
Insert holder can be mounted in opposite direction for an easy changeover to back boring.

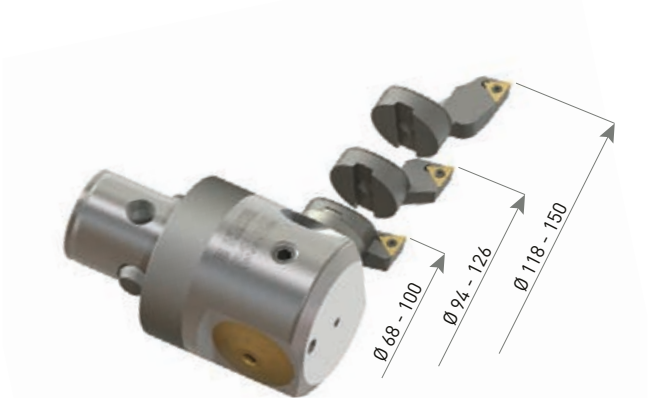




Versatile tool
Insert holders for many types of inserts (TP, TC, CC with different angles) as well as accessories for face grooving are available.



Large boring range
Every EWN fine boring head has a large work range due to three different insert holders. For example: The EWN 68 can manufacture a diameter range from Ø 68 to 150 mm.



Suitable with outer diameter turning system
Fine boring heads EWN/EWE are suitable for OD turning applications in the diameter range Ø 16 - 2856 mm. There are two different OD turning systems available.

Ø 16 - 120 mm



Ø 49 - 2856 mm



EWN Fine Boring Heads

Centric Models

Fine boring heads with centric boring bars in modular and integral execution for accurate, high performance boring operations.

Same accessories for fine boring heads EWN and EWE.

- Boring range: Ø 0.4 - 152



EWN 2-152



EWN 2-32



EWN 04-22



EWN 04-15

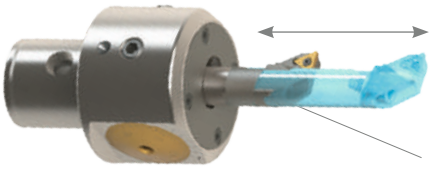


EWN 04-12



EWN 04-7

Variable tool length adjustment of the tool holder
Best cutting results are only reachable if the tool holder is as short as possible. The EWN features variable length adjustment of the tool holders which ensures the shortest and therefore the most rigid tool assembly.

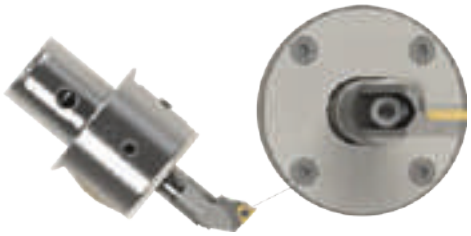


Large dial disc for a parallax-free reading
Thanks to the use of a vernier, diameter adjustments of 0.001 mm can be executed precisely.

Many integral executions available
In addition to the boring heads with CK-connection integral executions of the EWN 2-152 are available for DV, HSK, BT and BIG CAPTO spindles.



Fine balanced when tool carrier is set in center position
Tool holders made of carbide with adjustable insert holders permit diameter setting on the insert holder. The heavy tool holder remains in the center position and does not create any imbalance. The imbalance created by the insert holder is in most cases insignificant.



EWN 2-152: Huge boring range with just one tool
Additional boring range with peripherical insert holders from Ø 80 - 152 mm.

Ø 2 - 54 mm | Ø 54 - 80 mm | Ø 80 - 152 mm



EWB Balanced Fine Boring Head

The precision balancing of the EWB with peripherical insert holder occurs automatically by the adjustment of the diameter. The EWB with centric boring bar is precisely balanceable via a balancing ring. To balance the whole tool combination there are prebalanced shanks and components available. Even at max. speeds, balanced tools guarantee vibration-free boring, resulting in increased productivity and highest precision.

- Max. speed: 2 000 m/min



EWB 41

Ready to work
The EWB fine boring heads will be delivered with assembled insert holder.



EWB 2-50

Variable length adjustment of the tool holder
Best cutting results are only reachable if the tool holder is as short as possible. The EWB features variable length adjustment of the tool holders which ensures the shortest and therefore the most rigid tool assembly.

Boring bars made of carbide
For optimized cutting results dedicated boring bars made of carbide are available.

Aluminium executions available



The fine boring heads EWB-AL are made of high tensile aluminium with hard coating. Together with reductions and extensions made in the same way, the weight for long and large diameter tool combinations is reduced by more than 50%. This means that weight problems during ATC and handling are eliminated.

Self balancing mechanism

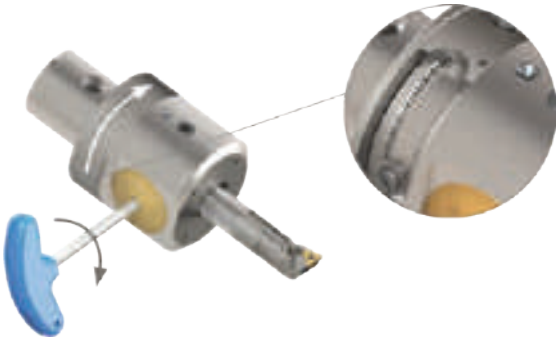


A counterweight built into the boring head compensates for the imbalance caused by the movement of the tool carrier.



EWB 2-32

Precisely balanceable
The EWB fine boring heads have an integrated balancing mechanism. The imbalance of the boring head is compensated by a unique manually adjustable balancing ring.



SW Rough Boring Heads

The short and compact design of the components combined with a positive and friction locked connection between the tool body and insert holders provide maximum rigidity and highest cutting performance.

- Boring range: Ø 20 - 203



SW 68

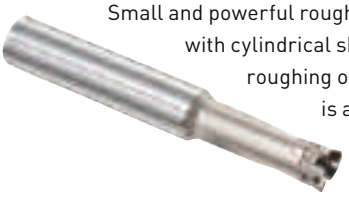
Accessories for different applications
On the same body insert holders for back boring, chamfering or face grooving can be mounted.



Precise presetting
Presetting of the tool diameter and length without presetter thanks to fixed tool length and diameter scale.



MW Rough Boring Head



Small and powerful rough boring head: The MW comes with cylindrical shank and permits extremely fast roughing of small holes. Carbide shank type is also available.

SW AL: Aluminium executions available



The rough boring heads SW AL of BIG KAISER set new standards for high performance roughing. The short and compact design of the components combined with a positive and friction locked connection between the tool body and insert holders provide maximum rigidity and highest cutting performance. Moreover it is more economical than circular interpolation milling when you have to execute deep bores. The rough boring heads are available in the sizes from SW 68 AL up to SW 148 AL.

BALANCE/STEP cut: Simply switch insert holders
A tool body with supports for insert holders of different heights, and insert holders of different lengths, provide an unmatched versatility to the new roughing tool. Without changing any components and without length adjustment, two different roughing methods, the rotationally-symmetrical-roughing (RSS/BALANCE) and the double offset roughing (DVS/STEP), can be executed.

RSS/BALANCE



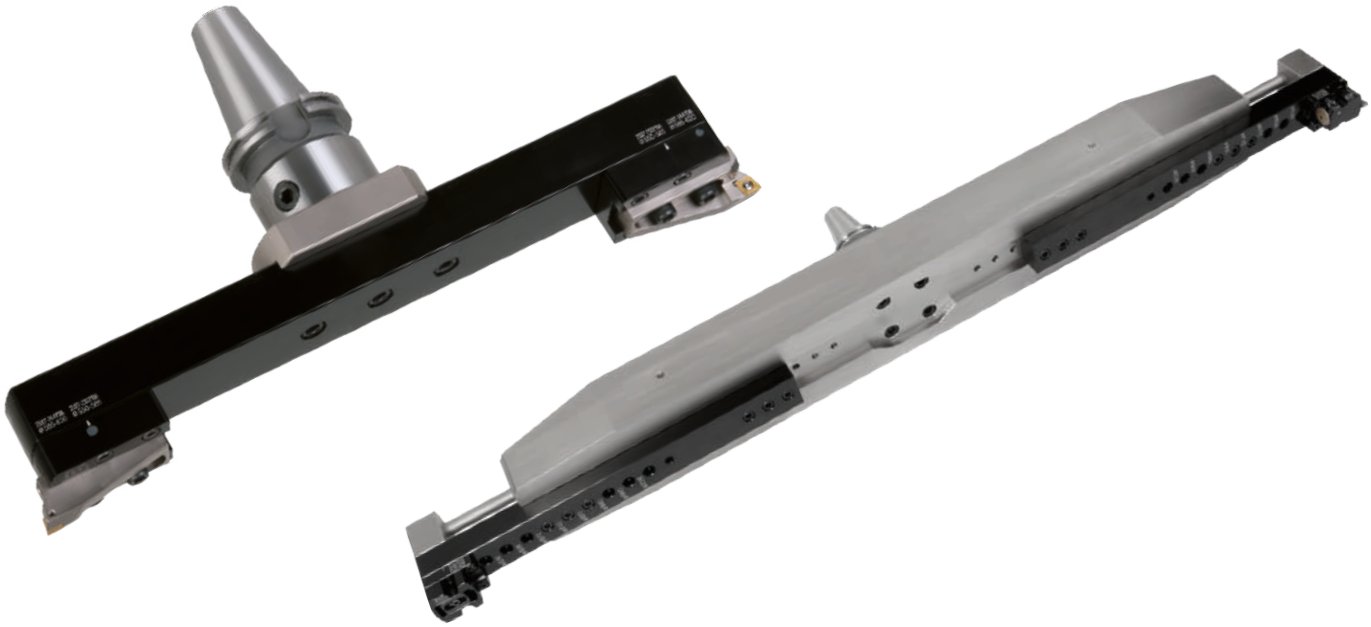
DVS/STEP



Series 318 Large Diameter Boring Tools

The series 318 is based on aluminum extension slides of different lengths, which support a variety of aluminum and steel components for roughing and finishing tool assemblies. The mounting components are pinned to fit onto specific locations on the slides, and secured with steel bolts. The precise positioning of the components on the slide along with incremental adjustment scales for insert holders permit diameter and length setting without a tool presetter.

- Boring range: Ø 200 - 620
- Boring range: Ø 620 - 3 000

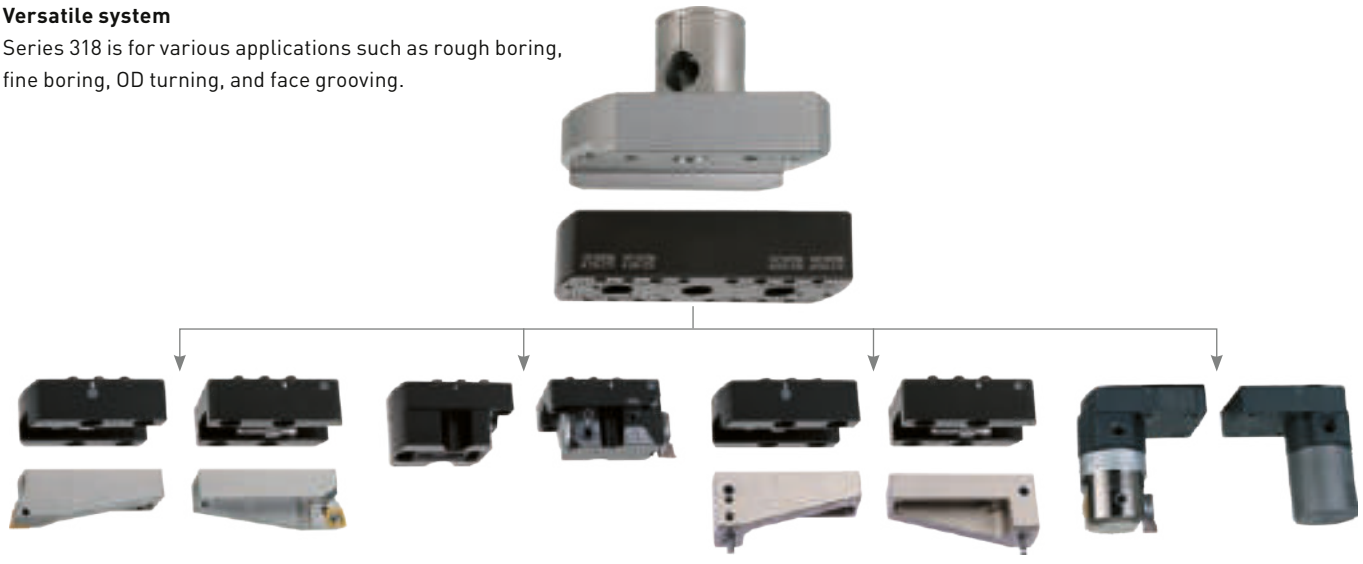


DV40 and HSK-A63 up to 340 mm
Even on machines with smaller spindles the series 318 can be operated.



Innovative construction
Coolant supply through all components directly to the cutting edge. High strength and hard coated aluminium, and nickel coated steel components for scratch resistant and rust protected surfaces.

Versatile system
Series 318 is for various applications such as rough boring, fine boring, OD turning, and face grooving.



Roug Boring | Fine Boring | Face Grooving | OD Turning

MOLD Chuck

Interference-free tool layout is available without special equipment with just one wrench.
A side lock holder in a class above the rest with superior balance and BIG-PLUS® effect.

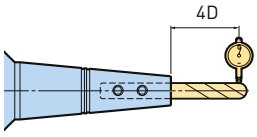
BIG-PLUS Dual-Contact

- Max. 15 000 min^{-1}

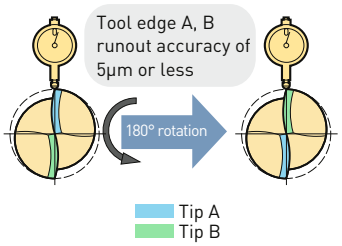




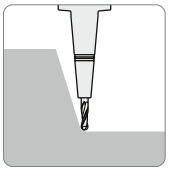
Runout accuracy within 5µm
2-flute ball endmills achieve a runout accuracy within 5µm. Both easy handling of side lock holder and high accuracy are realized.

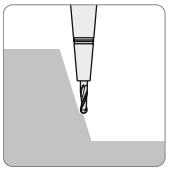


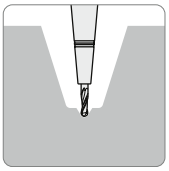
* Ensure the tip of the ball endmill is in 90° phase to the clamping bolt when clamping. (Endmill shank tolerance; h6)



Slim and tapered design minimizes interference
Interference is minimized with mold making. Also useful in machining draft angles of molds.

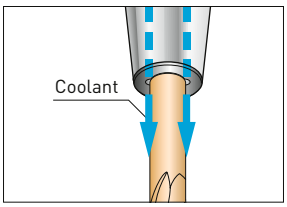

Close to wall


Wall machining


Groove milling

Balanced design realizes high speeds
With the entire outer diameter precision ground, stable machining is realized at high speeds.

Secure coolant supply to tool periphery



Center through coolant or oil mist can be ejected through the two coolant slits, allowing for a secure supply of coolant to the cutting edges. This helps in machining hard materials.

Smart Damper Series

Unique dynamic damping system eliminates vibration for higher productivity.

Anti-Vibration

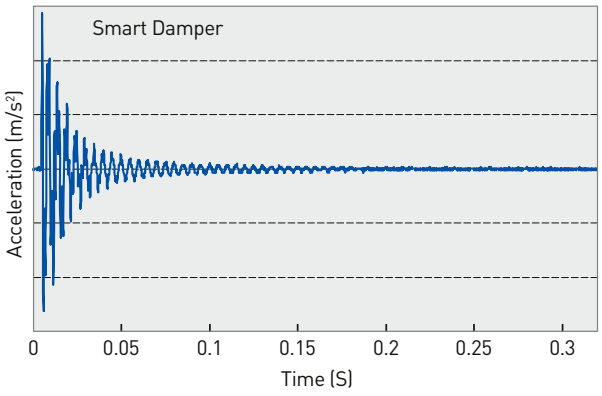
- Unique damping system for milling and boring
- Center through coolant supply

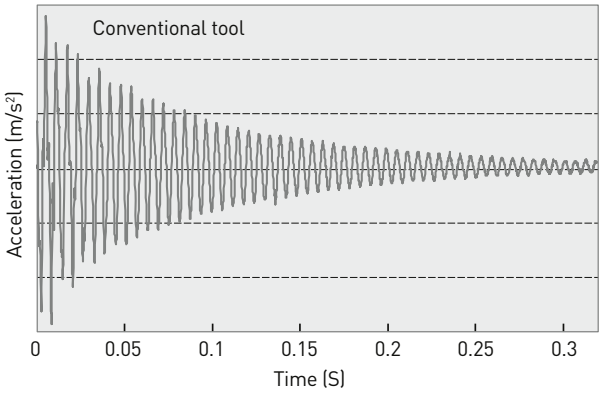


Damping mechanism

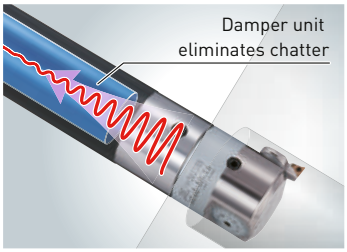
Smart Damper incorporates unique damping mechanism functioning both counter and friction dampers. Patent-pending counter weight maximizes effect of the friction damper. Vibration is absorbed effectively and higher machining accuracy is achieved.

Comparison of oscillatory waveforms





Chatter suppressing mechanism



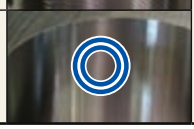
An incorporated unique damper that functions as both a counter damper and friction damper. Patent-pending counter weight maximizes effect of the friction damper. Chatter is absorbed effectively and higher machining accuracy is achieved.

Face milling of C55 with high feed cutter

Holder	Radial depth of cut (mm)				Condition
	5	10	20	30	
Standard Holder	○	X	X		V=90 m/min Fz=1.0/tooth Ap=2.0 mm Overhang= 347 mm
Smart Damper	○	○	○		

Smart Damper achieves 6x deeper depth of cut.

Super finish surface with tough condition
Fine boring of ductile cast iron (FCD500) with horizontal MC
BIG-PLUS® BBT50

Holder	Cutting speed (m/min)				Condition
	25	50	100	150	
Holder without damper	○	X	X		Dia=Ø68 mm Depth=408 mm (L/D=6) Insert radius= R0.4 Feed=0.2 mm/ rev Depth of cut= 0.3 mm/Ø
Built-in Damper Smart Damper BBT50-CK-6DP-451	○	○	○		

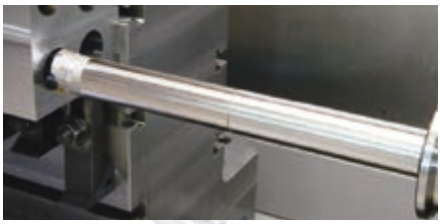
X = Chattering ○ = Good ◎ = Excellent surface finish

6 times greater productivity. Superior surface finish and better tool life due to increased cutting speed.

CK Boring Series with Built-In Damper

Anti-Vibration

High-efficiency deep hole finish boring is available



EWN Fine Boring Type
Boring head with a built-in damper. The EWN Boring Head functions are maintained, featuring integrated damper.

SW Rough Boring Type
Boring head with a built-in damper. Damper located closer to the cutting edge provides greater damping effect.

CK Shank Integral Type
A damper is built into the CK Shank. L/D = 6x

BIG-PLUS SPINDLE SYSTEM DUAL CONTACT

CK Extension Type
Just combine it with your standard CK Boring Head/ CK Shank to achieve damping countermeasures.

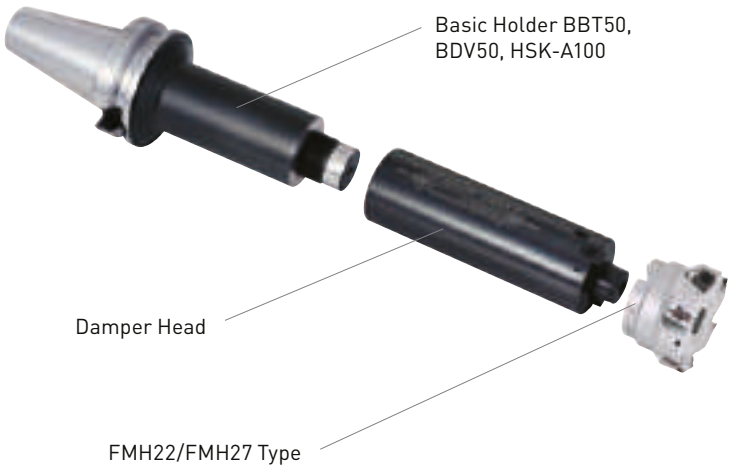


Highly reliable scale plate with vernier scale enabling 1-micron adjustment.

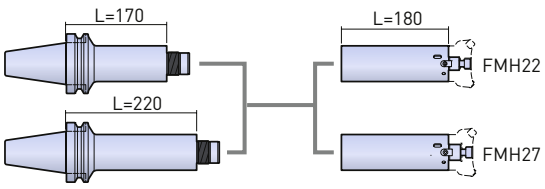
Smart Damper Face Mill Arbor

Replaceable damper head enables use on various basic holders.





Combination examples BBT50



Smart Damper Turning

Newly developed for boring applications on turning machines. It performs perfectly in both roughing and finishing. Several cartridges are available for ISO insert, depending on the application.



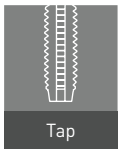


Cartridges can be exchanged according to the application (ISO insert).



MEGA Synchro Tapping Holder

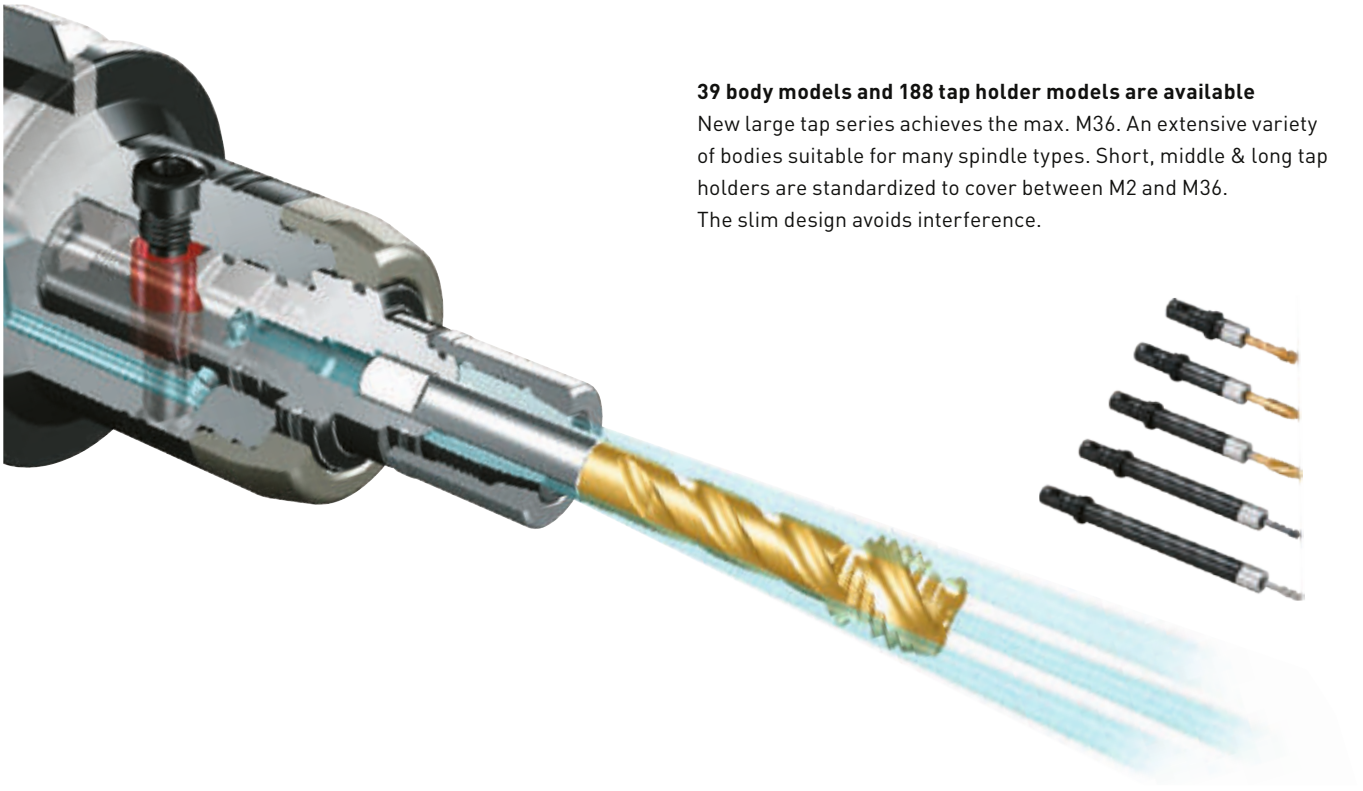
Compensates for synchronization errors during rigid tapping. Improves thread quality and tool life by reducing thrust loads caused by synchronization errors up to 90%.



- Tapping range: M1 - M36







39 body models and 188 tap holder models are available
New large tap series achieves the max. M36. An extensive variety of bodies suitable for many spindle types. Short, middle & long tap holders are standardized to cover between M2 and M36.
The slim design avoids interference.



Tool periphery
Coolant is supplied through slits of the tap holder.



Through tool
Coolant is supplied through both the tool and the slits of tap holder.

Secure drive system
Body and tap holder are fixed with a drive key in the rotation direction as well as the square of the tap.



Coolant through center capability for all models
Coolant is supplied both through the tool and to the tool periphery simultaneously.



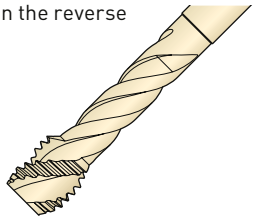
MEGA Synchro Tapping Holder compensates for synchronization errors with any type of tap

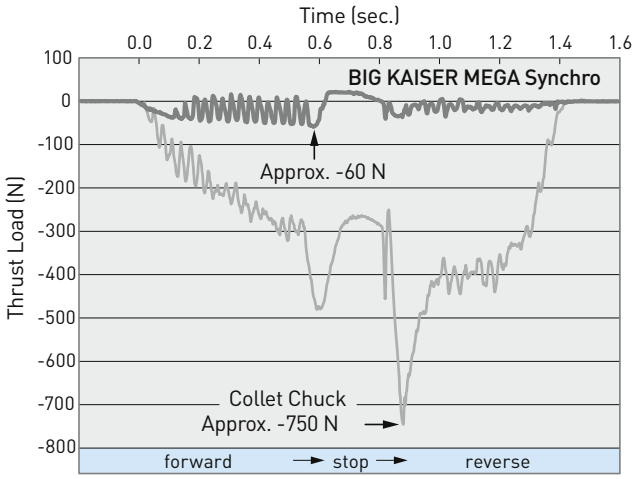
Minimized thrust load to both the tap and workpiece improves thread quality and tap life.

Load to tap – spiral tap

Spiral grooves on spiral tap cause loading in the reverse direction, similar to an end mill.

- M6 P1
- V: 20 m/min (1 060 min^{-1})
- Measured by Kistler dynamometer





Result

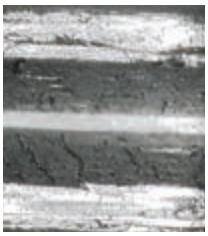
MEGA Synchro reduces load to approx. 60N. This is less than 1/10th of the load compared to a collet chuck. Approx. 750N of reversal load is applied to a tap held with a collet chuck.

Comparison of surface finish

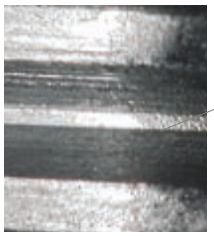
Tapping of exotic materials tends to cause a compressed burr on the thread surface. BIG KAISER MEGA Synchro compensates for synchronization errors and minimizes cutting load.

Spiral tap

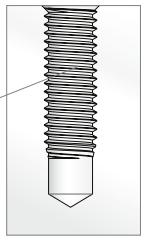
M5 P0.8 Material : SNCM420(41CrNiMo2)



Collet chuck



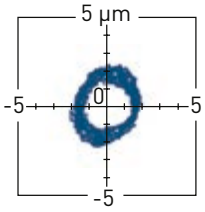
MEGA Synchro



For small tap MGT3 (M1 - M3)

Eliminated synchronization errors and minimized dynamic runout. Plotted position of a test bar (at 16 mm distance on 4 mm diameter).





For large tap MGT36 (M22 - M36)

Smooth tapping for large tapping.



Angle Head

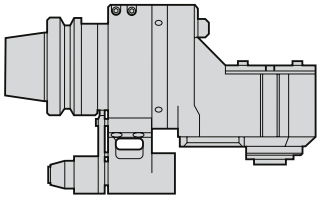
Angle Heads eliminate multiple set-ups, combine vertical, horizontal and angular operations on one machine. One original set-up saves time, speeds production and guarantees accuracy.

- Max. 6 000 min^{-1}
- Coolant-through from the locating pin



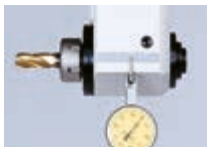
Compact design assures rigidity

Overhang is minimized for added rigidity and strength. As a result, the projection length with cutting tool is shorter, which reduces the overall load on the Angle Head and thus improves the unit's cutting capability. The minimized overhang helps to eliminate interference with the ATC and adjacent storage pockets in the tool magazine. High Rigidity S-type, which has a steel housing and a stronger locating pin assembly, is also available.

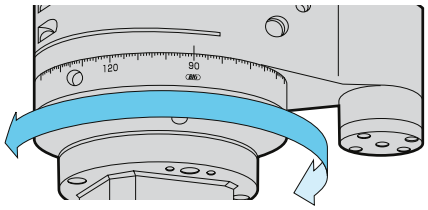


Cutter head adjustable 360°





Reference faces are provided on both sides of all heads for easier setting of a cutter direction.



Unique coolant jacket



Jacket allows coolant coming through the stop block to be efficiently directed to the tool cutting edge while simultaneously cooling the Angle Head.

Innovative sealing method



The advanced non-contact sealing method prevents coolant and particle contamination better than any other sealing method.

Superior quality components



For smooth and powerful operation and to minimize noise and vibration, all Angle Heads are equipped with hardened and ground chrome-nickel steel spiral bevel gears, super precision hardened and ground spindles, and high precision angular contact ball bearing.

Various executions of Angle Head

More types are available to offer the best solution for your demand.

AG90 NBS type



AG90 Build-Up type



AGU type



Small bore type



Air Turbine Spindle

High-speed micro-machining can be done on a normal machining center, eliminating the need of an expensive high-speed machine.

- Max. 80 000 min^{-1}



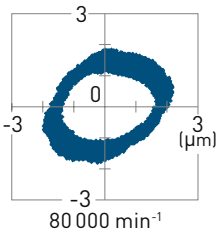


Dynamic runout accuracy

Most problems associated with micro-machining are caused by poor dynamic runout of a machine spindle. We have established a runout measuring system that can detect spindle movement during rotation at high speed and achieved the best dynamic runout accuracy.

- Improved machining accuracy
- Superior surface finish
- Extended tool life

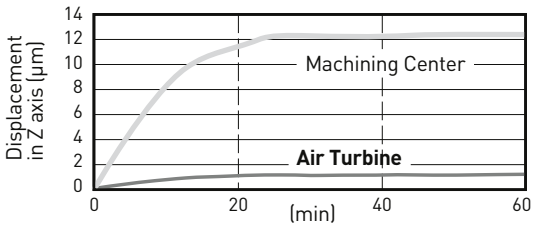
Plotted position of a test bar at the max. spindle speed (see image on the right).



Minimal thermal displacement

Air turbine drive prevents thermal expansion of the spindle, which is essential for high accuracy micro-machining.

Axial displacement compared to operating time

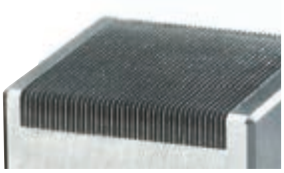


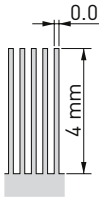
Application examples

RBX7

Aluminum A2017

Outstanding runout accuracy permits perfect thin wall cutting.





Cutter	Ø 0.5 mm rib-endmill
Spindle Speed	70 000 min^{-1}
Cutting Feed	1 500 mm/min
D.O.C	ap = 0.02 mm

Automatic tool change

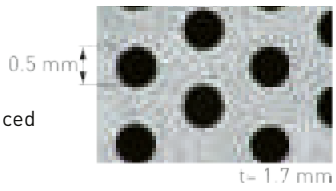


ATC type is available by supplying air via a stop block to enhance productivity with unmanned operation.

RBX5

Stainless steel SUS303

Tool life is doubled with over 1 200 holes and cutting time is reduced to 1/3.



Cutter	Ø 0.5 mm solid drill
Spindle Speed	40 000 min^{-1}
Cutting Feed	20 mm/min
Peck	0.01 mm

2 types of Air Turbine Spindle

RBX5 = 50 000 min^{-1}

RBX7 = 80 000 min^{-1}

Application Range		RBX5	RBX7
Drill	Ø < 0.1 mm	△	△
	Ø 0.1 - 0.3 mm	○	○
	Ø 0.3 - 0.5 mm	○	⊙
	Ø 0.5 - 1.0 mm	⊙	○
	Ø 1.0 - 1.5 mm	△	x
End Mill	Ø < 0.5 mm	○	⊙
	Ø 0.1 - 1.0 mm	⊙	⊙
	Ø 1.0 - 1.5 mm	⊙	△
Jig Grinding		⊙	⊙

⊙ Optimum
△ Dependent upon cutting conditions
○ Acceptable
x Not recommended for use

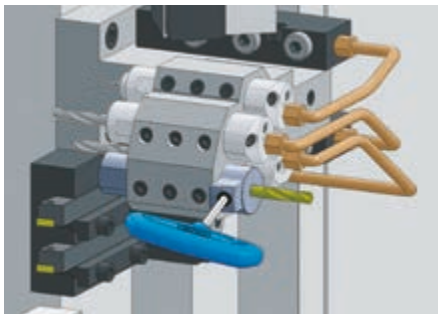
Hydraulic Chucks for Swiss lathe





3 types for all tool posts

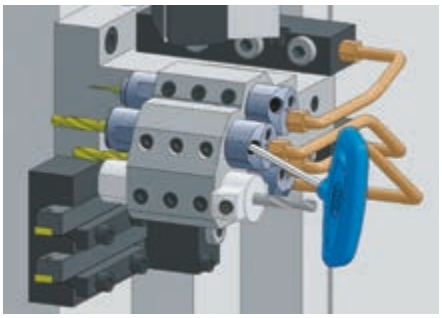
Standard Type



Tightening from the front side of the cutting tool. Adjustable length by cut.



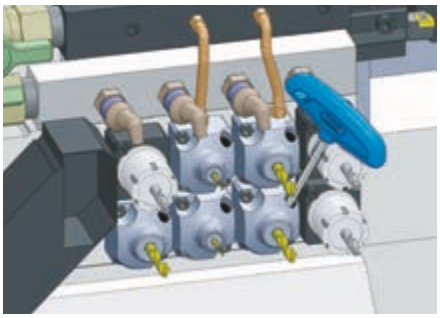
F Type



Tightening from the opposite side of the cutting tool.



R Type

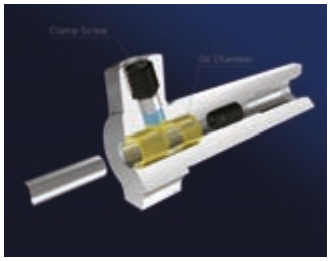


Easy handling of cutting tools by avoiding adjacent tools.



Structure with improved accuracy and rigidity

Based on the hydro chuck technology accumulated through milling machines for decades, the lathe type has been developed and designed from scratch. In addition to high accuracy and rigidity, a slim shape avoids interference with adjacent tools.



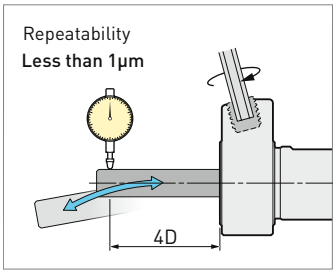
Safe and quick operation

The ability to change cutting tools with a single T-wrench drastically reduces the time required for tool change.
It also reduces the need to work in extremely limited spaces and improves operator safety.



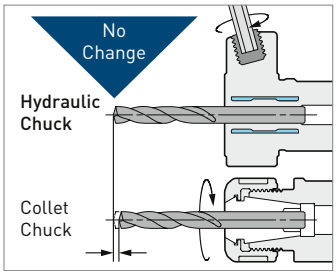
±1µm repeatability

Even changing the tool, the repeatability at 4D is stable at ±1µm or less. In addition, since the tightening is completed when the clamping screw hits the bottom, controlling tightening torque is not needed.



No change in tool length

Since the tool projection length does not change after the clamping, it is easy to control the tool projection length in the machine.



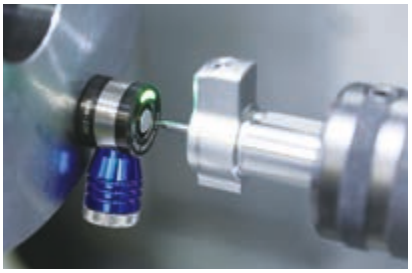
Base Master Mini

Magnetable user-friendly compact height detector for Swill lathe machines improve set up time drastically.

- Small pocket at the bottom to avoid an interference against the boss on the work piece
- Usable for all materials bigger than Ø 12 mm
- Minimum measurable tool Ø 0.1 mm
- It can be used for milling and large lathe machines







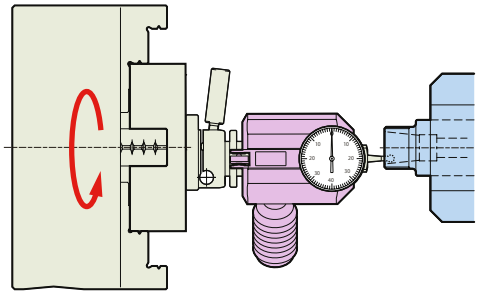
Centering Tool for Lathes

Revolutionary centering tool for lathe machines that allows the operator to fix the center very easily and quickly.

- Centering the tool holder while watching the dial gauge is possible, as the dial position is static at front
- Easy setting with fine adjustment mechanism (adjustment amount: 0.01 mm)
- Magnet base allows for flexible mounting positions







Tools for lathe machines

MEGA Micro Chuck



MEGA Synchro Tapping Holder Chuck



New Baby Chuck



MEGA ER Grip



Centering Holder



Fullcut Mill

Indexable insert endmills with both excellent sharpness and toughness, achieving the performance of solid endmills.

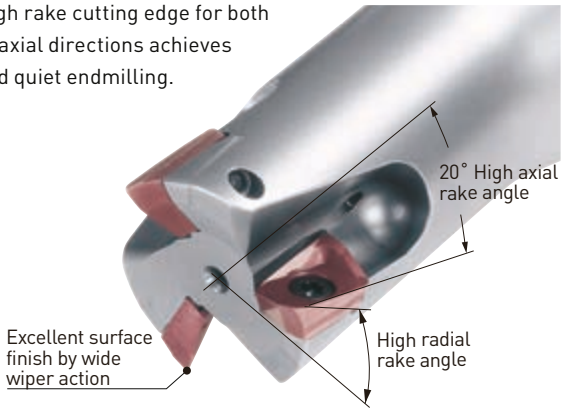




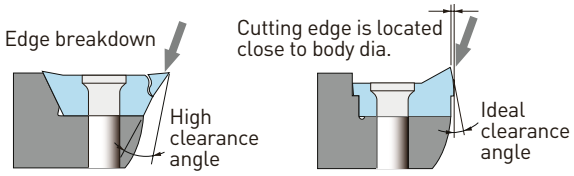


Sharp cutting edge by both high radial and axial rake angles

Positive high rake cutting edge for both radial and axial directions achieves smooth and quiet endmilling.



Strong cutting edge reduces edge chipping



Amazing cutting performance even on #40 taper machine

Comparison of axial DOC between integral type with face contact and straight shank type. 3.6 times higher cutting performance than other manufacturer.

Cutting condition

Machine:	BBT40 (BIG-PLUS®)
Slot milling:	20 mm
Work material:	C50 (S50C)
Spindle speed:	2 400 min^{-1}
Speed:	V = 150 m/min
Feed:	0.12 mm/tooth





Amazing cutting performance, brought by integral deign and face contact body

Integral design style with taper shank and flange contact with the machine spindle provides higher precision and rigidity thus achieving cutting conditions only otherwise available on larger machines.

BBT and BDV type



HSK type





Contact Grip

- Threaded coupling with taper and face contact
- Resistant to chatter due to the dual contact connection
- FCM or FCR heads can be installed on the base holder

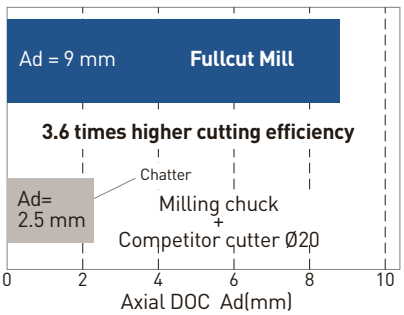
Ø 16 - 32 mm





Excellent surface





Fullcut Mill Type FCR

Unique inserts designed for ramping make multi-functional cutting possible.

- Cutter: Ø 16 - 33

Higher rigidity with integral body with dual contact system.



BBT and BDV Type



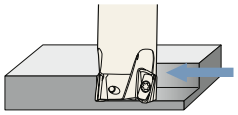
HSK Type



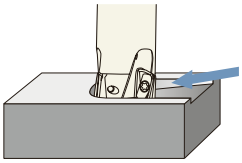
Cylindrical Shank Type



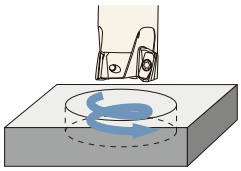
Shoulder Milling



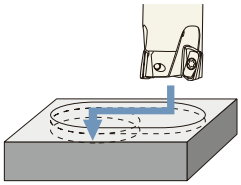
Ramping



Helical Milling

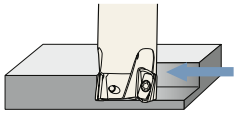


Peck-Drilling



Fullcut Mill Type FCM

Shoulder Milling





- Cutter: Ø 12 - 100

A variety of shanks including simultaneous fit with integral body.

BBT and BDV Type



HSK Type

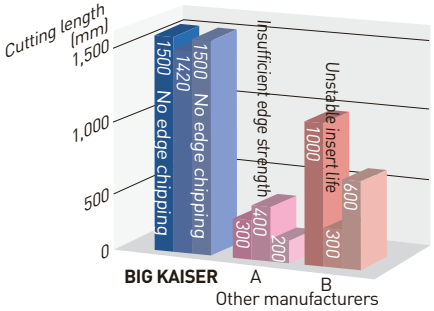


Cylindrical Shank Type

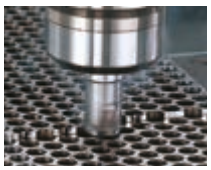


Arbor Type





Tough cutting edge of Fullcut Mill is proven



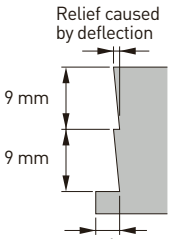
An evaluation of cutting length/life as measured when machining the most arduous workpiece by milling over a continuous series of holes. This is the condition most likely to cause edge chipping.

Finishing with indexable endmill - Why not?

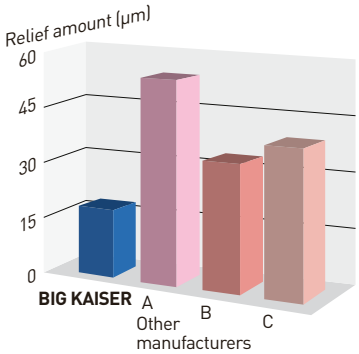


Insert with the minimum nose radius of 0.2 mm and superb squareness to achieve high precision end milling comparable with solid carbide tools.

Work material:	SUS304
Vertical M/C:	No. 40
Cutter dia.:	Ø 25 mm
Feed:	0.12 mm/tooth



Squareness is influenced by the cutting parameters, work materials, rigidity of machine and workpiece, etc.



C-Cutter Mini

Compact design with 4 inserts and small cutting diameter. High performance chamfer cutter to achieve ultra high feed rate by reducing the cutting diameter to the lowest limit.

- For multi-functional cutting: chamfering, back chamfering and face milling



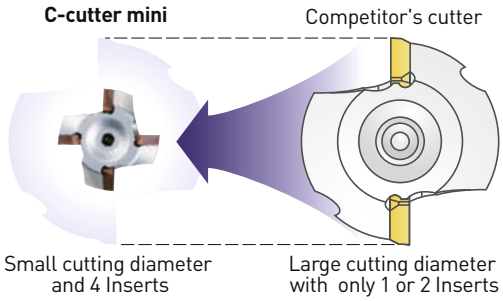


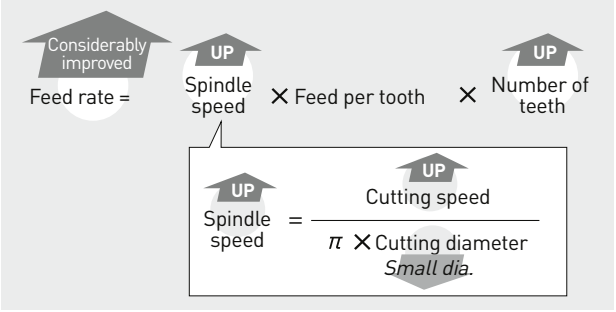
4 Inserts, small diameter and new coating achieve triple effect

1. Superb design. Ultra high feed by 4 Inserts.
Compared with 1 or 2 inserts per cutter, a 4 insert cutter multiplies feed rate.

2. Increased spindle speed by ultra compact diameter
A smaller tool diameter means faster spindle speeds.

3. Latest coating (ACP200) increases the cutting speed.
Wear resistant multi layer PVD coating increases the cutting speed.





World smallest hex insert
Highly-efficient back chamfering from 6 mm starting hole diameter. 3-corner insert saves cost.



Versatility of the insert
Sharp cutting edge of C-Cutter mini insert make superior surface finish. The same insert can be used with BIG KAISER's original design face mill arbor, Surface Mill.



Surface Mill Rz = 1.42
Material = C50
V = 200 m/min
Fz = 0.2 mm/min
Ap = 3
Ad = 75



New series for starting hole for tapping are available from M8 to M20 range





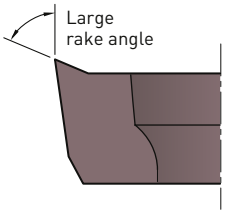
R-Cutter

For multi-functional round chamfering for both front and back chamfering.



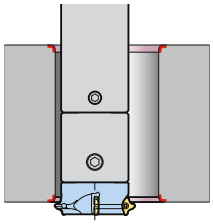


Excellent sharpness with new insert shape!
R-CUTTER is the first in the industry to use an insert with a large rake angle that's capable of producing clean surfaces with no vertical streaking.



Flexible modular solution
CK extensions allow front/back chamfering of deep holes, as well as grooves or steps at the distance.





C-Centering Cutter

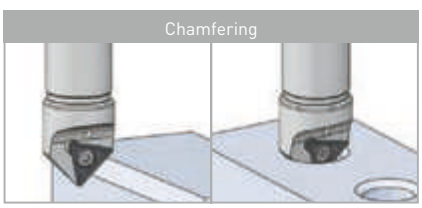
For centering and chamfering with a carbide insert.

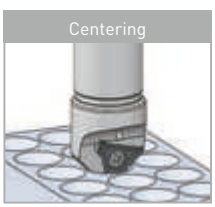




Negative insert tip shape dramatically improves the life

Capable of both spot drilling and chamfering





Spot drilling is not available with the 3-insert type.

Effective for traverse chamfering (3-insert type)
3-insert type with maximum chamfering width of C9. Effectively reduces machining time.

Max. chamfering width C9



Speed Finisher

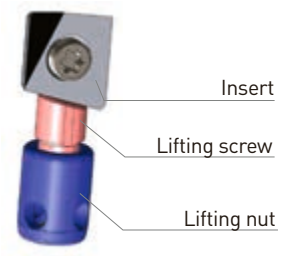
Amazing improvement of surface finish at high speed cutting.
RZ = 0.55 µm with aluminum die casting ADC12
RZ = 0.67 µm with gray cast iron FC250

- Cutter: Ø 50, Ø 63, Ø 80, Ø 100, Ø 125



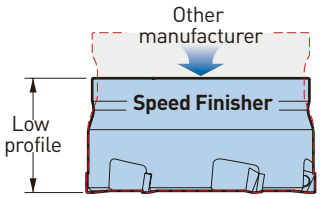


Quick adjustment of cutting edge height
After clamping the insert, lifting screw lifts up the insert directly by revolving the lifting nut from its side. Simple construction aids easy adjusting operation. Fine pitch thread of the lifting screw ensures precise adjustment.





Lightweight & high rigidity
Low-profile cutter body enhances rigidity, minimizes vibration and distortion, leading to the minimized height difference of the machined surface. Lighter weight resulted from reduced mass aids performance on small machine tools such as BT30 spindle.



PL Presetter
Exclusive PL Presetter shortens the setup time further up to 15 sec./insert while avoiding chipping of the cutting edge.

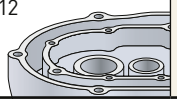
- The cutting edge presetting is required



Secure coolant supply to the cutting edges
Coolant is supplied to the cutting edge directly in combination with the Face Mill Arbor type FMH. Especially effective to avoid built-up edges when cutting aluminum and possible re-cutting of the swarf.



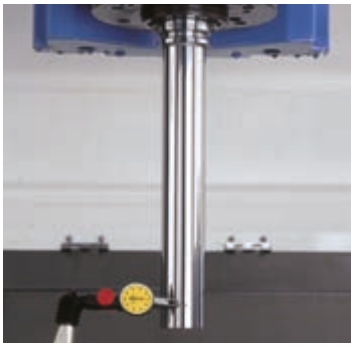
Application example
(Cutter: Ø 80 mm)

Workpiece	Conditions	Surface Roughness	Height Difference	No. of Workpieces	Result
Crankcase ADC12 	Cutting speed: 4 000 m/min Spindle speed: 15 900 min^{-1} Feed rate: 9 550 mm/min Depth of cut: 2.5 mm	Ra=0.08 µm Rz=0.55 µm	Within 1 µm	24 000	Rough and finish processes are combined in a single operation.

Dyna Test

For maintenance and inspection of machine tool spindles.

- A machine maintenance tool of the highest quality for use as a precision measurement instrument.
- Calibration certificate and traceability diagram available upon request. (with charge)





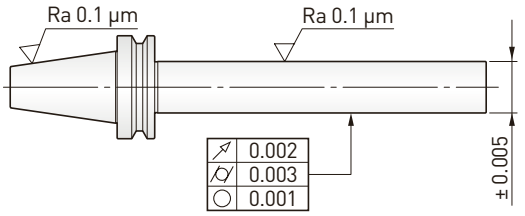
Dyna Test

Test bar with a focus on superb quality and accuracy.
Prevents trouble through the periodic inspection of machine runout accuracy.

- A high-precision test bar developed by BIG's precise machining technology.
- Periodic accuracy evaluation eliminates machining defects.
- Abundant variation to suit the standards of each holder.

Precision standard of BIG Daishowa Test Bars

BIG Daishowa provides high quality test bars, produced under a strict quality control system.



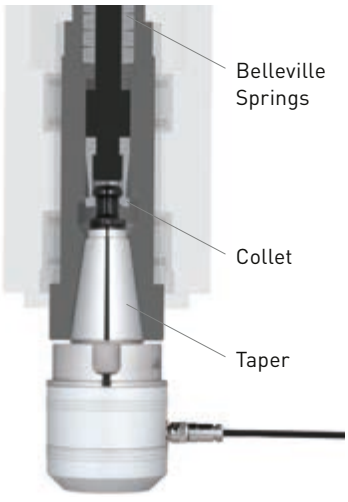
Runout	0.002 mm
Roundness	0.001 mm
Cylindricity	0.003 mm
Roughness	Ra: 0.1 μm
Diameter tol.	± 0.005 mm

Dyna Force

Measures pulling force of machine tool spindle, a vital factor of machine tool performance.
The pulling force produced by the clamping device of machine tools could deteriorate due to degradation of disc springs or wear of the components of the booster. Pulling force is especially vital when it comes to dual face contact spindle interface, thus regular inspection is recommended.

- Periodical measurement avoids reduce rigidity leading to vibrations, loss machining quality, shortened tool life





A calibration certificate and traceability diagram is offered upon request with charge for reliable use of these measuring instruments, or for the customers certified with ISO9000. Please contact us for details.

* Traceability is defined under JIS Z8103 as "the establishment of a pathway related to national and international standards in which standard instruments or measuring instruments are continually calibrated according to higher-level measurement standards."

Level Master

2-axis simultaneous detection leveler. LED displays level conditions for both axis simultaneously. LED and buzzer indication when leveling is complete.

Wireless

- LED lamp + beep sound
- Simultaneous 2-axis detection saves the extra time & cost of using 2 levelers.
- 0.01 mm/m readable value



Standard Type

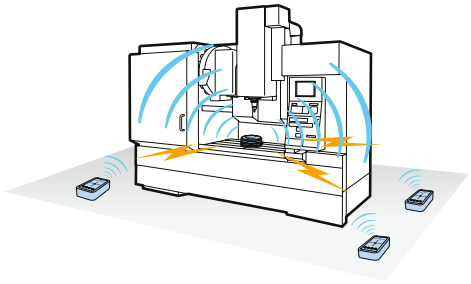


Wireless Type

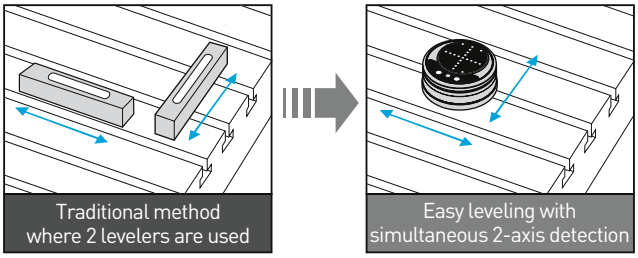


Easy leveling with the remote display

Leveling by the single operator can be achievable by the use of the remote display while 2 operators have been necessary until now to allow them to conduct the level detecting inside the machine housing and the table leveling from outside of the machine separately.



Simultaneous 2-axis detection



Torque Fit

Controlling tightening torque for BIG KAISER Tool assembly station with integrated torque measuring system.

- Digital display helps to reach the proper torque
- Tightening values for BIG KAISER collet chuck series data are preset
- Beeping on & after the proper tightening
- User mode for the customized torque value
- Error LED lightening at the overtightening
- Replaceable adaptors available for different interfaces

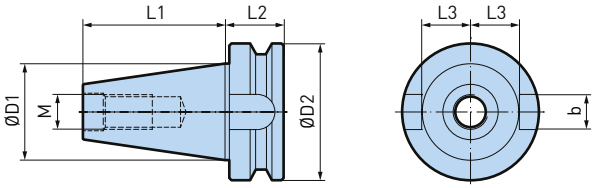


The starting point for the high precision cutting is proper tightening.

Insufficient tightening	Variant cutting edge position	Cutting Error Dimensional Error
Over tightening	Collet deformation Deteriorted runout	Shorter Cutter Life Shorter Tool Holder Life

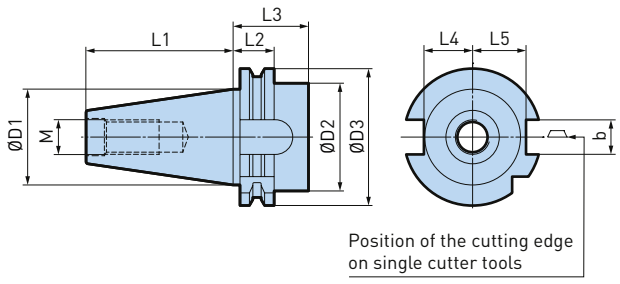
Steep taper shanks JIS B6339 / BT / BBT

Model	ØD1	ØD2	L1	L2	L3	b	M
BT30	31.75	46	48.4	20	16.3	16.1	M12
BT40	44.45	63	65.4	25	22.6	16.1	M16
BT50	69.85	100	101.8	35	35.4	25.7	M24



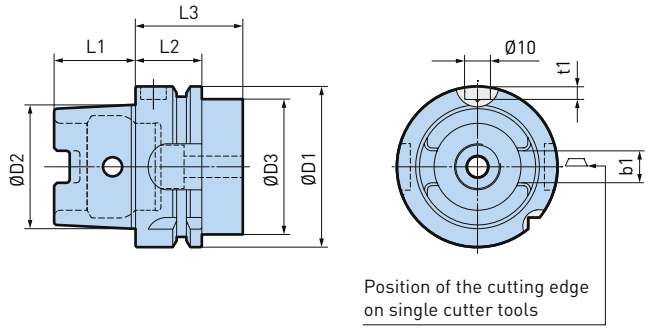
Steep taper shanks DIN 69871 / DV / BDV

Model	ØD1	ØD2 max.	ØD3	L1	L2	L3 min.	L4	L5	b	M
DV30	31.75	45	50	47.8	19.1	35	16.4	19	16.1	M12
DV40	44.45	50	63.55	68.4	19.1	35	22.8	25	16.1	M16
DV50	69.85	80	97.5	101.75	19.1	35	35.5	37.7	25.7	M24



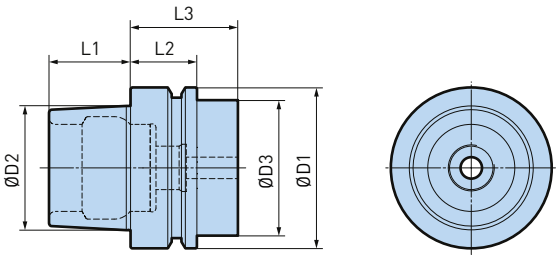
Hollow taper shanks DIN 69893, form A

Model	ØD1	ØD2	ØD3 max.	L1	L2	L3 min.	b1	t1
HSK-A32	32	24.007	26	16	20	35	7.05	5.4
HSK-A40	40	30.007	34	20	20	35	8.05	5.2
HSK-A50	50	38.009	42	25	26	42	10.54	5.1
HSK-A63	63	48.010	53	32	26	42	12.54	5.0
HSK-A80	80	60.012	68	40	26	42	16.04	4.9
HSK-A100	100	75.013	88	50	29	45	20.02	4.9



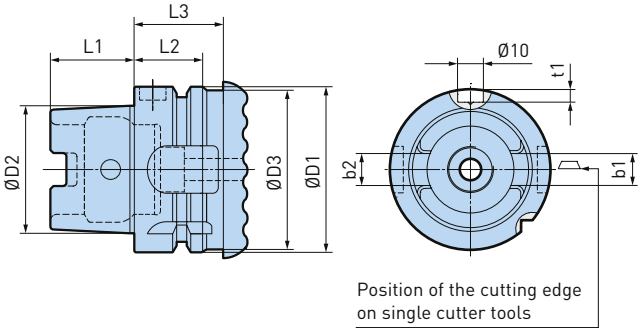
Hollow taper shanks DIN 69893, form E

Model	ØD1	ØD2	ØD3 max.	L1	L2	L3 min.
HSK-E25	25	19.006	20	13	10	20
HSK-E32	32	24.007	26	16	20	35
HSK-E40	40	30.007	34	20	20	35
HSK-E50	50	38.009	42	25	26	42
HSK-E63	63	48.010	53	32	26	42



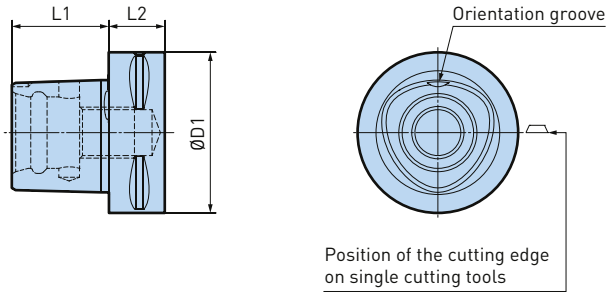
Hollow taper shanks ISO 12164-3, form T

Model	ØD1	ØD2	ØD3 max.	L1	L2	L3 min.	b1	b2	t1
HSK-T50	50	38.009	49	25	26	30	10.54	10.425	5.1
HSK-T63	63	48.010	62	32	26	30	12.54	12.425	5.0
HSK-T80	80	60.012	79	40	26	30	16.04	15.93	4.9
HSK-T100	100	75.013	99	50	29	34	20.02	19.91	4.9



BIG CAPTO (compatible with ISO 26623-1, polygonal hollow shank taper with face contact)

Model	ØD1	L1	L2
C3	32	19	15
C4	40	24	20
C5	50	30	20
C6	63	38	22
C8	80	48	30



BIG KAISER Balancing according to ISO 16084

What does balancing / unbalance / balance quality mean?

BIG KAISER toolholders are designed for high speed machines. If a rotating tool holder (Fig. 1) is not rotationally symmetrical, imbalance occurs (Fig. 2). As a result, when the rotational speed is increased, non-symmetrical centrifugal forces occur at the toolholder and the cutting tool, causing vibration and premature spindle bearing failure. To correct for the imbalance, the tool is balanced by various methods such as drilling (Fig. 3), milling, or grinding a flat, moving the center of mass as close as possible to the center of the axis of rotation.

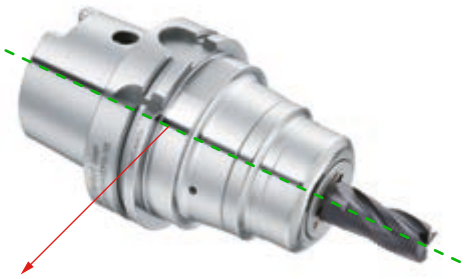


Fig. 1

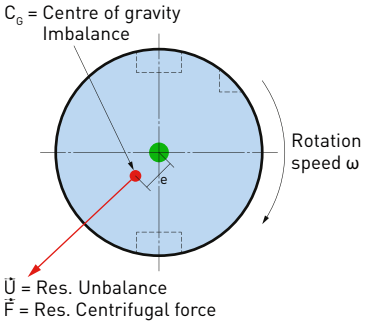


Fig. 2: unbalanced

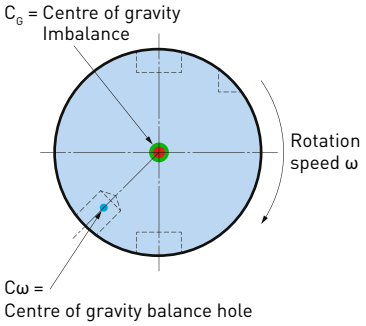


Fig. 3: balanced

Balancing requirements in practice using G2.5

The balancing quality G2.5 is widely used in the industry and is described in the ISO 1940-1 (issued in 2003) standard. However, this quality class is often overspecified and is in many cases not economically or technically feasible, especially when applied to smaller and lighter tools. The standard described above is designed for rigid rotors and is practical in a broader use for balancing. However, it cannot be applied to a complete system of spindles, tool holders and tools adequately and within technical constraints. For example, a tool to be compliant will have to be balanced to less than 1 gmm/kg at a speed of 25,000 rpm, which in turn corresponds to a mass eccentricity of less than 1 µm. This allowable tolerance is less than the interchange accuracy for even HSK, essentially negating all the costs and time for balancing the tool to such a strict tolerance.

BIG KAISER balancing policy

For this reason, all BIG KAISER tool holders are balanced according ISO 16084 (issued in 2017) specifically developed for rotating tool systems. ISO16084 focuses on the interaction between spindle and tool factoring in the allowable load on the spindle bearings generated by the tool's imbalance. This load must not exceed 1% of the dynamic load capacity of the spindle bearings. According to ISO 16084, the allowable unbalance tolerance is specified in [gmm], and is not expressed using a special quality grade [G].

In conclusion, BIG KAISER does not indicate any G-values for balancing quality, **but rather the maximum rotational speeds of the individual tool holder. The values shown for each item number in the catalogue are in compliance with the requirements for standard balance quality according to ISO 16084.**

Tool Holders BBT/BT, JIS B 6339

MEGA Micro Chuck	58
MEGA New Baby Chuck	60
MEGA E Chuck	64
MEGA Double Power Chuck	66
MEGA Perfect Grip	70
New Baby Chuck	71
New Hi-Power Milling Chuck	74
Hydraulic Chucks	78
Mold Chucks	87
Shrink Chucks	88
CK Shanks	91
Face Mill Arbors	96
Smart Damper Face Mill	98
Super Keyless Chucks	100
Side Lock Holders	101
Holders for Screw-On Cutters / Side Cutter Arbors	103
Morse Taper Holders	104
BIG CAPTO Basic Holder	105
MEGA Synchro Tapping Holder	106
Angle Heads	108
Air Turbine Spindle	123

A.1

● Preferred selected items

MEGA Micro Chuck Type T

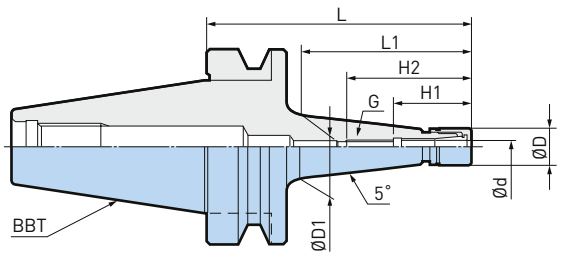
Tapered and slim design, minimal interference combined with maximized rigidity.

Coolant Through Hole

BIG-PLUS Dual-Contact

A.1





ø0.45 - 8.05mm

Model	Order No.	Ød	ØD	ØD1	L	L1	H1	H2	G	max. min-1	Collet Model	Nut Model
BBT30-MEGA3S-45T	**969.209**	0.45 - 3.25	10	11.5	45	20	22	38	M4 P0.7	40000	NBC3S	MGN3S
BBT30-MEGA3S-75T	**969.210**	0.45 - 3.25	10	16	75	48	22	38	M4 P0.7	40000	NBC3S	MGN3S
BBT30-MEGA3S-90T	**969.211**	0.45 - 3.25	10	18.5	90	63	22	38	M4 P0.7	35000	NBC3S	MGN3S
BBT30-MEGA3S-105T	**969.212**	0,45 - 3,25	10	21	105	78	22	38	M4 P0.7	30000	NBC3S	MGN3S
BBT30-MEGA4S-60T	**969.213**	0,45 - 4,05	12	15	60	33	26,5	47	M5 P0.8	40000	NBC4S	MGN4S
BBT30-MEGA4S-75T	**969.214**	0.45 - 4.05	12	17.5	75	48	26.5	47	M5 P0.8	40000	NBC4S	MGN4S
BBT30-MEGA4S-90T	**969.215**	0.45 - 4.05	12	20	90	63	26.5	47	M5 P0.8	35000	NBC4S	MGN4S
BBT30-MEGA4S-105T	**969.316**	0,45 - 4,05	12	20	105	78	26,5	47	M5 P0.8	30000	NBC4S	MGN4S
BBT30-MEGA4S-120T	**969.217**	0,45 - 4,05	12	25.5	120	93	26,5	47	M5 P0.8	25000	NBC4S	MGN4S
BBT30-MEGA6S-60T	**969.218** •	0.45 - 6.05	14	16.5	60	33	28.5	49	M7 P0.75	40000	NBC6S	MGN6S
BBT30-MEGA6S-75T	**969.319**	0.45 - 6.05	14	19	75	48	28.5	49	M7 P0.75	40000	NBC6S	MGN6S
BBT30-MEGA6S-90T	**969.220** •	0.45 - 6.05	14	22	90	63	28.5	49	M7 P0.75	35000	NBC6S	MGN6S
BBT30-MEGA6S-105T	**969.221**	0.45 - 6.05	14	24.5	105	78	28.5	49	M7 P0.75	30000	NBC6S	MGN6S
BBT30-MEGA6S-120T	**969.222**	0.45 - 6.05	14	22	120	93	28.5	49	M7 P0.75	25000	NBC6S	MGN6S
BBT30-MEGA8S-75T	**803.597** •	2.95 - 8.05	18	23	75	48	31	50.5	M9 P0.75	40000	NBC8S	MGN8S
BBT30-MEGA8S-105T	**803.598**	2.95 - 8.05	18	28	105	78	31	50.5	M9 P0.75	30000	NBC8S	MGN8S
BBT40-MEGA3S-60T	**969.321**	0,45 - 3,25	10	12,5	60	28	22	38	M4 P0.7	35000	NBC3S	MGN3S
BBT40-MEGA3S-90T	**969.322**	0.45 - 3.25	10	17.5	90	58	22	38	M4 P0.7	28000	NBC3S	MGN3S
BBT40-MEGA3S-120T	**969.323**	0.45 - 3.25	10	23	120	88	22	38	M4 P0.7	22000	NBC3S	MGN3S
BBT40-MEGA4S-60T	**969.324**	0.45 - 4.05	12	14	60	28	26.5	47	M5 P0.8	35000	NBC4S	MGN4S
BBT40-MEGA4S-75T	**969.325**	0,45 - 4,05	12	16.5	75	43	26,5	47	M5 P0.8	32000	NBC4S	MGN4S
BBT40-MEGA4S-90T	**969.326**	0.45 - 4.05	12	19.5	90	58	26.5	47	M5 P0.8	28000	NBC4S	MGN4S
BBT40-MEGA4S-105T	**969.327**	0,45 - 4,05	12	22	105	73	26,5	47	M5 P0.8	25000	NBC4S	MGN4S
BBT40-MEGA4S-120T	**969.328**	0.45 - 4.05	12	24.5	120	88	26.5	47	M5 P0.8	22000	NBC4S	MGN4S
BBT40-MEGA4S-135T	**969.329**	0,45 - 4,05	12	27	135	103	26,5	47	M5 P0.8	20000	NBC4S	MGN4S
BBT40-MEGA6S-60T	**969.330**	0.45 - 6.05	14	15.5	60	28	28.5	49	M7 P0.75	35000	NBC6S	MGN6S
BBT40-MEGA6S-75T	**969.331**	0.45 - 6.05	14	18	75	43	28.5	49	M7 P0.75	32000	NBC6S	MGN6S
BBT40-MEGA6S-90T	**969.332** •	0.45 - 6.05	14	21	90	58	28.5	49	M7 P0.75	28000	NBC6S	MGN6S
BBT40-MEGA6S-105T	**969.333** •	0.45 - 6.05	14	23.5	105	73	28.5	49	M7 P0.75	25000	NBC6S	MGN6S
BBT40-MEGA6S-120T	**969.334**	0.45 - 6.05	14	26	120	88	28.5	49	M7 P0.75	22000	NBC6S	MGN6S
BBT40-MEGA6S-135T	**969.335** •	0.45 - 6.05	14	29	135	103	28.5	49	M7 P0.75	20000	NBC6S	MGN6S
BBT40-MEGA8S-90T	**801.720**	2.95 - 8.05	18	24.5	90	58	31	50.5	M9 P0.75	30000	NBC8S	MGN8S
BBT40-MEGA8S-120T	**803.601**	2.95 - 8.05	18	30	120	88	31	50.5	M9 P0.75	22000	NBC8S	MGN8S

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. MEGA nut is included in delivery.

Accessories & Spare Parts

MEGA Nuts	Micro Seal Nuts	Micro Collets	MEGA Wrenches	Taper Cleaners	Collet Protective Cases
					
▶ 326	▶ 326	▶ 325	▶ 351	▶ 370	▶ 326

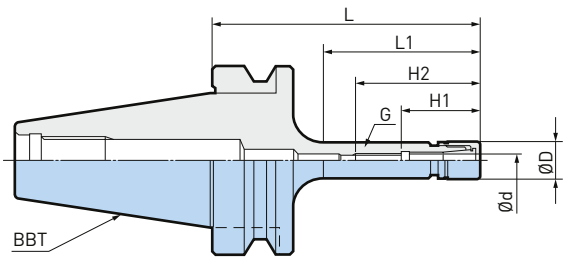
MEGA Micro Chuck Type S

Reduced diameter design is ideal for high speed applications and machining in tight spaces.

Coolant Through Hole

BIG-PLUS Dual-Contact





ø0.45 - 8.05mm

Model	Order No.	Ød	ØD	L	L1	H1	H2	G	max. min-1	Collet Model	Nut Model
BBT30-MEGA4S-90	**969.502**	0,45 - 4,05	12	90	62	26,5	47	M5 P0.8	40000	NBC4S	MGN4S
BBT30-MEGA6S-60	**969.503**	0,45 - 6,05	14	60	32	28,5	49	M7 P0.75	40000	NBC6S	MGN6S
BBT30-MEGA6S-90	**969.504** •	0.45 - 6.05	14	90	62	28.5	49	M7 P0.75	40000	NBC6S	MGN6S
BBT30-MEGA6S-105	**800.058**	0.45 - 6.05	14	105	73	28.5	49	M7 P0.75	40000	NBC6S	MGN6S
BBT30-MEGA8S-90	**803.608**	2.95 - 8.05	18	90	60	31	50.5	M9 P0.75	35000	NBC8S	MGN8S
BBT40-MEGA4S-90	**969.506**	0.45 - 4.05	12	90	53	26.5	47	M5 P0.8	35000	NBC4S	MGN4S
BBT40-MEGA6S-90	**969.508** •	0.45 - 6.05	14	90	53	28.5	49	M7 P0.75	35000	NBC6S	MGN6S
BBT40-MEGA8S-90	**803.599**	2.95 - 8.05	18	90	55	31	50.5	M9 P0.75	30000	NBC8S	MGN8S

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. MEGA nut is included in delivery.

Accessories & Spare Parts

MEGA Nuts	Micro Seal Nuts	Micro Collets	MEGA Wrenches	Taper Cleaners	Collet Protective Cases
					
▶ 326	▶ 326	▶ 325	▶ 351	▶ 370	▶ 326

MEGA New Baby Chuck

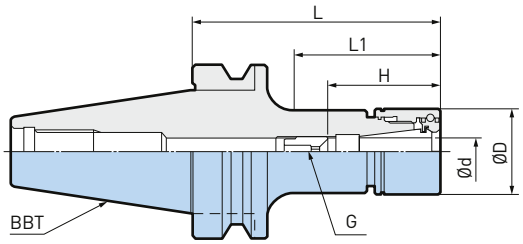
Ideal ultra precision collet holders for high speed machining. A wide range of lengths and a variety of collet series covers all machining applications.

Coolant Through Hole

BIG-PLUS Dual-Contact

A.1



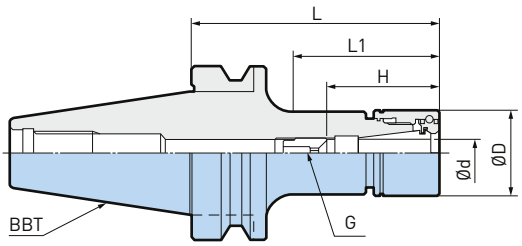


ø0.25 - 25.4mm

Model	Order No.	Ød	ØD	L	L1	H	max. min-1	Collet Model	Nut Model
BBT30-MEGA6N-60	**969.509** •	0.25 - 6	20	60	32	23 - 43	40000	NBC6	MGN6
BBT30-MEGA6N-75	**969.341**	0.25 - 6	20	75	47	23 - 43	35000	NBC6	MGN6
BBT30-MEGA6N-90	**969.510**	0.25 - 6	20	90	62	23 - 43	30000	NBC6	MGN6
BBT30-MEGA6N-105	**969.342**	0.25 - 6	20	105	77	23 - 43	20000	NBC6	MGN6
BBT30-MEGA6N-120	**969.343**	0.25 - 6	20	120	90	23 - 43	18000	NBC6	MGN6
BBT30-MEGA8N-60	**969.511**	0.5 - 8	25	60	34	26 - 45	40000	NBC8	MGN8
BBT30-MEGA8N-75	**969.344**	0.5 - 8	25	75	49	26 - 45	35000	NBC8	MGN8
BBT30-MEGA8N-90	**969.512**	0.5 - 8	25	90	64	26 - 45	30000	NBC8	MGN8
BBT30-MEGA8N-105	**969.345**	0.5 - 8	25	105	79	26 - 45	20000	NBC8	MGN8
BBT30-MEGA8N-120	**969.346**	0.5 - 8	25	120	92	26 - 45	18000	NBC8	MGN8
BBT30-MEGA10N-60	**969.513** •	1.5 - 10	30	60	34	38 - 48	40000	NBC10	MGN10
BBT30-MEGA10N-75	**969.347**	1.5 - 10	30	75	49	38 - 48	30000	NBC10	MGN10
BBT30-MEGA10N-90	**969.534**	1.5 - 10	30	90	64	38 - 48	25000	NBC10	MGN10
BBT30-MEGA10N-105	**969.348**	1.5 - 10	30	105	79	38 - 48	18000	NBC10	MGN10
BBT30-MEGA10N-120	**978.207**	1.5 - 10	30	120	94	38 - 48	15000	NBC10	MGN10
BBT30-MEGA13N-60	**969.516**	2.5 - 13	35	60	34	44 - 63	40000	NBC13	MGN13
BBT30-MEGA13N-75	**969.349** •	2.5 - 13	35	75	49	44 - 63	30000	NBC13	MGN13
BBT30-MEGA13N-90	**969.517**	2.5 - 13	35	90	64	44 - 63	25000	NBC13	MGN13
BBT30-MEGA13N-105	**969.350**	2.5 - 13	35	105	79	44 - 63	18000	NBC13	MGN13
BBT30-MEGA13N-120	**969.518**	2.5 - 13	35	120	94	44 - 63	15000	NBC13	MGN13
BBT30-MEGA16N-60	**969.519**	2.5 - 16	42	60	37	48 - 63	35000	NBC16	MGN16
BBT30-MEGA16N-75	**969.351** •	2.5 - 16	42	75	52	48 - 68	25000	NBC16	MGN16
BBT30-MEGA16N-90	**969.520**	2.5 - 16	42	90	67	48 - 68	20000	NBC16	MGN16
BBT30-MEGA16N-105	**969.352**	2.5 - 16	42	105	82	48 - 68	18000	NBC16	MGN16
BBT30-MEGA20N-60 *	**969.521**	2.5 - 20	46	60	-	70	30000	NBC20	MGN20
BBT30-MEGA20N-75	**969.353**	2.5 - 20	46	75	-	51 - 68	20000	NBC20	MGN20
BBT30-MEGA20N-90	**969.522**	2.5 - 20	46	90	-	51 - 68	15000	NBC20	MGN20
BBT30-MEGA20N-105	**969.354**	2.5 - 20	46	105	-	51 - 68	13000	NBC20	MGN20
BBT30-MEGA25N-85 *	**806.379**	15.5 - 25.4	60	85	-	80	12000	NBC25	MGN25

Model	Order No.	Ød	ØD	L	L1	H	max. min-1	Collet Model	Nut Model
BBT40-MEGA6N-60	**969.523**	0.25 - 6	20	60	27	23 - 43	35000	NBC6	MGN6
BBT40-MEGA6N-75	**969.361**	0.25 - 6	20	75	38	23 - 43	35000	NBC6	MGN6
BBT40-MEGA6N-90	**969.524** •	0.25 - 6	20	90	53	23 - 43	35000	NBC6	MGN6
BBT40-MEGA6N-105	**969.362**	0.25 - 6	20	105	68	23 - 43	20000	NBC6	MGN6
BBT40-MEGA6N-120	**969.363**	0.25 - 6	20	120	83	23 - 43	20000	NBC6	MGN6
BBT40-MEGA6N-135	**969.525**	0.25 - 6	20	135	98	23 - 43	20000	NBC6	MGN6
BBT40-MEGA6N-165	**969.526**	0.25 - 6	20	165	128	23 - 43	14000	NBC6	MGN6
BBT40-MEGA6N-200	**969.527**	0.25 - 6	20	200	163	23 - 43	9000	NBC6	MGN6
BBT40-MEGA8N-60	**969.528**	0.5 - 8	25	60	27	26 - 45	35000	NBC8	MGN8
BBT40-MEGA8N-75	**969.364**	0.5 - 8	25	75	38	26 - 45	35000	NBC8	MGN8
BBT40-MEGA8N-90	**969.529**	0.5 - 8	25	90	53	26 - 45	35000	NBC8	MGN8
BBT40-MEGA8N-105	**969.365**	0.5 - 8	25	105	68	26 - 45	20000	NBC8	MGN8
BBT40-MEGA8N-120	**969.366**	0.5 - 8	25	120	83	26 - 45	20000	NBC8	MGN8
BBT40-MEGA8N-135	**969.530**	0.5 - 8	25	135	98	26 - 45	20000	NBC8	MGN8
BBT40-MEGA8N-165	**969.531**	0.5 - 8	25	165	128	26 - 45	14000	NBC8	MGN8
BBT40-MEGA8N-200	**969.532**	0.5 - 8	25	200	163	26 - 45	9000	NBC8	MGN8
BBT40-MEGA10N-60	**969.533**	1.5 - 10	30	60	27	38 - 48	35000	NBC10	MGN10
BBT40-MEGA10N-75	**969.367**	1.5 - 10	30	75	38	38 - 48	35000	NBC10	MGN10
BBT40-MEGA10N-90	**969.514**	1.5 - 10	30	90	53	38 - 48	35000	NBC10	MGN10
BBT40-MEGA10N-105	**969.368**	1.5 - 10	30	105	68	38 - 48	20000	NBC10	MGN10
BBT40-MEGA10N-120	**969.369**	1.5 - 10	30	120	83	38 - 48	20000	NBC10	MGN10
BBT40-MEGA10N-135	**969.535**	1.5 - 10	30	135	98	38 - 48	20000	NBC10	MGN10
BBT40-MEGA10N-165	**969.536**	1.5 - 10	30	165	128	38 - 48	15000	NBC10	MGN10
BBT40-MEGA10N-200	**969.537**	1.5 - 10	30	200	163	38 - 48	10000	NBC10	MGN10
BBT40-MEGA13N-60	**969.538**	2.5 - 13	35	60	31	44 - 63	35000	NBC13	MGN13
BBT40-MEGA13N-75	**969.370**	2.5 - 13	35	75	40	44 - 63	35000	NBC13	MGN13
BBT40-MEGA13N-90	**969.539** •	2.5 - 13	35	90	55	44 - 63	35000	NBC13	MGN13
BBT40-MEGA13N-105	**969.371**	2.5 - 13	35	105	70	44 - 63	20000	NBC13	MGN13
BBT40-MEGA13N-120	**969.372**	2.5 - 13	35	120	85	44 - 63	20000	NBC13	MGN13
BBT40-MEGA13N-135	**969.540**	2.5 - 13	35	135	100	44 - 63	20000	NBC13	MGN13
BBT40-MEGA13N-165	**969.541**	2.5 - 13	35	165	130	44 - 63	15000	NBC13	MGN13
BBT40-MEGA13N-200	**969.542**	2.5 - 13	35	200	165	44 - 63	10000	NBC13	MGN13

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Model	Order No.	Ød	ØD	L	L1	H	max. min-1	Collet Model	Nut Model
BBT40-MEGA16N-60	**969.543**	2.5 - 16	42	60	31	48 - 68	30000	NBC16	MGN16
BBT40-MEGA16N-75	**969.373**	2.5 - 16	42	75	40	48 - 68	30000	NBC16	MGN16
BBT40-MEGA16N-90	**969.544**	2.5 - 16	42	90	55	48 - 68	30000	NBC16	MGN16
BBT40-MEGA16N-105	**969.374**	2.5 - 16	42	105	70	48 - 68	20000	NBC16	MGN16
BBT40-MEGA16N-120	**969.375**	2.5 - 16	42	120	85	48 - 68	20000	NBC16	MGN16
BBT40-MEGA16N-135	**969.545**	2.5 - 16	42	135	100	48 - 68	20000	NBC16	MGN16
BBT40-MEGA16N-165	**969.546**	2.5 - 16	42	165	130	48 - 68	15000	NBC16	MGN16
BBT40-MEGA16N-200	**969.547**	2.5 - 16	42	200	165	48 - 68	10000	NBC16	MGN16
BBT40-MEGA20N-60	**969.548** •	2.5 - 20	46	60	31	51 - 68	30000	NBC20	MGN20
BBT40-MEGA20N-75	**969.376**	2.5 - 20	46	75	42	51 - 68	30000	NBC20	MGN20
BBT40-MEGA20N-90	**969.549** •	2.5 - 20	46	90	57	51 - 68	30000	NBC20	MGN20
BBT40-MEGA20N-105	**969.377**	2.5 - 20	46	105	72	51 - 68	20000	NBC20	MGN20
BBT40-MEGA20N-120	**969.378**	2.5 - 20	46	120	87	51 - 68	20000	NBC20	MGN20
BBT40-MEGA20N-135	**969.550**	2.5 - 20	46	135	102	51 - 68	20000	NBC20	MGN20
BBT40-MEGA20N-165	**969.551**	2.5 - 20	46	165	132	51 - 68	15000	NBC20	MGN20
BBT40-MEGA20N-200	**969.552**	2.5 - 20	46	200	167	51 - 68	10000	NBC20	MGN20
BBT40-MEGA25N-75	**806.380**	15.5 - 25.4	60	75	47	64 - 74	25000	NBC25	MGN25
BBT40-MEGA25N-90	**806.381**	15.5 - 25.4	60	90	62	64 - 74	20000	NBC25	MGN25
BBT40-MEGA25N-105	**806.382**	15.5 - 25.4	60	105	77	64 - 74	19000	NBC25	MGN25
BBT40-MEGA25N-120	**806.383**	15.5 - 25.4	60	120	92	64 - 74	17000	NBC25	MGN25

Model	Order No.	Ød	ØD	L	L1	H	max. min-1	Collet Model	Nut Model
BBT50-MEGA6N-90	**969.553**	0.25 - 6	20	90	37	23 - 43	20000	NBC6	MGN6
BBT50-MEGA6N-120	**969.554**	0.25 - 6	20	120	67	23 - 43	20000	NBC6	MGN6
BBT50-MEGA6N-165	**969.555**	0.25 - 6	20	165	112	23 - 43	14000	NBC6	MGN6
BBT50-MEGA6N-200	**969.556**	0.25 - 6	20	200	147	23 - 43	9000	NBC6	MGN6
BBT50-MEGA8N-90	**969.557**	0.5 - 8	25	90	42	26 - 45	20000	NBC8	MGN8
BBT50-MEGA8N-120	**969.558**	0.5 - 8	25	120	67	26 - 45	20000	NBC8	MGN8
BBT50-MEGA8N-165	**969.559**	0.5 - 8	25	165	112	26 - 45	16000	NBC8	MGN8
BBT50-MEGA8N-200	**969.560**	0.5 - 8	25	200	147	26 - 45	11000	NBC8	MGN8
BBT50-MEGA10N-90	**969.561**	1.5 - 10	30	90	42	38 - 48	20000	NBC10	MGN10
BBT50-MEGA10N-120	**969.562** •	1.5 - 10	30	120	67	38 - 48	20000	NBC10	MGN10
BBT50-MEGA10N-165	**969.563**	1.5 - 10	30	165	112	38 - 48	16000	NBC10	MGN10
BBT50-MEGA10N-200	**969.564**	1.5 - 10	30	200	147	38 - 48	13000	NBC10	MGN10
BBT50-MEGA10N-250	**969.565**	1.5 - 10	30	250	197	38 - 48	8000	NBC10	MGN10
BBT50-MEGA10N-300	**969.566**	1.5 - 10	30	300	247	38 - 48	5500	NBC10	MGN10
BBT50-MEGA13N-90	**969.567** •	2.5 - 13	35	90	42	44 - 63	18000	NBC13	MGN13
BBT50-MEGA13N-120	**969.568**	2.5 - 13	35	120	67	44 - 63	18000	NBC13	MGN13
BBT50-MEGA13N-165	**969.569**	2.5 - 13	35	165	112	44 - 63	16000	NBC13	MGN13
BBT50-MEGA13N-200	**969.570**	2.5 - 13	35	200	147	44 - 63	12000	NBC13	MGN13
BBT50-MEGA13N-250	**969.571**	2.5 - 13	35	250	197	44 - 63	8000	NBC13	MGN13
BBT50-MEGA13N-300	**969.572**	2.5 - 13	35	300	247	44 - 63	5500	NBC13	MGN13
BBT50-MEGA16N-75	**969.573**	2.5 - 16	42	75	31	48 - 68	17000	NBC16	MGN16
BBT50-MEGA16N-90	**969.574**	2.5 - 16	42	90	42	48 - 68	17000	NBC16	MGN16
BBT50-MEGA16N-120	**969.575** •	2.5 - 16	42	120	72	48 - 68	17000	NBC16	MGN16
BBT50-MEGA16N-165	**969.576**	2.5 - 16	42	165	117	48 - 68	16000	NBC16	MGN16
BBT50-MEGA16N-200	**969.577**	2.5 - 16	42	200	152	48 - 68	13000	NBC16	MGN16
BBT50-MEGA16N-250	**969.578**	2.5 - 16	42	250	202	48 - 68	10000	NBC16	MGN16
BBT50-MEGA20N-75	**969.579**	2.5 - 20	46	75	31	51 - 68	16000	NBC20	MGN20
BBT50-MEGA20N-90	**969.580** •	2.5 - 20	46	90	42	51 - 68	17000	NBC20	MGN20
BBT50-MEGA20N-120	**969.581**	2.5 - 20	46	120	72	51 - 68	16000	NBC20	MGN20
BBT50-MEGA20N-165	**969.582**	2.5 - 20	46	165	117	51 - 68	15000	NBC20	MGN20
BBT50-MEGA20N-200	**969.583**	2.5 - 20	46	200	152	51 - 68	13000	NBC20	MGN20
BBT50-MEGA20N-250	**969.584**	2.5 - 20	46	250	202	51 - 68	10000	NBC20	MGN20
BBT50-MEGA25N-90	**806.384**	15.5 - 25.4	60	90	46	64 - 74	19000	NBC25	MGN25
BBT50-MEGA25N-120	**806.385**	15.5 - 25.4	60	120	72	64 - 74	17000	NBC25	MGN25
BBT50-MEGA25N-165	**806.386**	15.5 - 25.4	60	165	117	64 - 74	15000	NBC25	MGN25
BBT50-MEGA25N-200	**806.387**	15.5 - 25.4	60	200	152	64 - 74	13000	NBC25	MGN25

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. MEGA nut is included in delivery.
3. * Adjusting screw cannot be used.
4. "H" is the max. tool shank length that can be inserted for these models.
5. "G" is the adjusting screw (optional).

Accessories & Spare Parts

Standard Type	MEGA Perfect Seals	New Baby Collets	MEGA Wrenches	Adjusting Screws NBA	Taper Cleaners
					
▶ 334	▶ 336	▶ 329	▶ 351	▶ 335	▶ 370

MEGA E Chuck

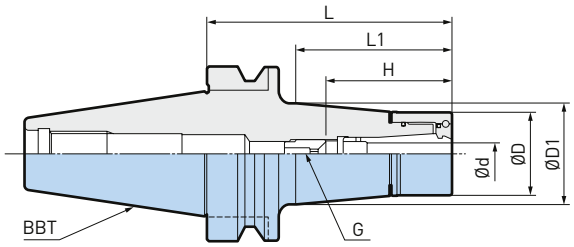
Collet chuck designed for milling with high concentricity and rigidity in hard materials.

Coolant Through Hole

BIG-PLUS Dual-Contact

A.1





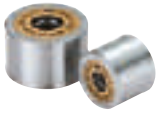
ø3 - 12mm

Model	Order No.	Ød	ØD	ØD1	L	L1	H	max. min-1	Collet Model	Nut Model
BBT30-MEGA6E-50	**968.166**	3 - 6	25	26	50	25	37 - 45	40000	MEC6	MEN 6
BBT30-MEGA6E-75	**968.167**	3 - 6	25	30	75	50	37 - 45	35000	MEC6	MEN 6
BBT30-MEGA6E-90	**968.168**	3 - 6	25	32.5	90	65	37 - 45	25000	MEC6	MEN 6
BBT30-MEGA6E-105	**968.169**	3 - 6	25	35.5	105	80	37 - 45	25000	MEC6	MEN 6
BBT30-MEGA8E-50	**968.170**	3 - 8	30	30.5	50	25	42 - 51	40000	MEC8	MEN 8
BBT30-MEGA8E-75	**968.171**	3 - 8	30	35	75	50	42 - 51	35000	MEC8	MEN 8
BBT30-MEGA8E-90	**968.172**	3 - 8	30	37.5	90	66	42 - 51	30000	MEC8	MEN 8
BBT30-MEGA8E-105	**968.173**	3 - 8	30	40.5	105	81	42 - 51	25000	MEC8	MEN 8
BBT30-MEGA10E-50	**968.174** •	3 - 10	35	35.5	50	25	48 - 58	39000	MEC10	MEN10
BBT30-MEGA10E-75	**968.175**	3 - 10	35	40	75	51	48 - 58	35000	MEC10	MEN10
BBT30-MEGA10E-90	**968.176**	3 - 10	35	41	90	66	48 - 58	25000	MEC10	MEN10
BBT30-MEGA10E-105	**968.177**	3 - 10	35	44	105	82	48 - 58	25000	MEC10	MEN10
BBT30-MEGA13E-50	**968.178**	3 - 12	42	42.5	50	27	50 - 58	38000	MEC13	MEN13
BBT30-MEGA13E-75	**968.179** •	3 - 12	42	42	75	52	50 - 60	34000	MEC13	MEN13
BBT30-MEGA13E-90	**968.180**	3 - 12	42	42	90	67	50 - 60	25000	MEC13	MEN13
BBT30-MEGA13E-105	**968.181**	3 - 12	42	42	105	82	50 - 60	25000	MEC13	MEN13
BBT40-MEGA6E-60	**968.183**	3 - 6	25	26.5	60	28	37 - 45	30000	MEC6	MEN 6
BBT40-MEGA6E-75	**968.184**	3 - 6	25	29	75	43	42 - 51	30000	MEC6	MEN 6
BBT40-MEGA6E-90	**968.185**	3 - 6	25	31.5	90	58	37 - 45	30000	MEC6	MEN 6
BBT40-MEGA6E-105	**968.186**	3 - 6	25	34	105	73	37 - 45	29000	MEC6	MEN 6
BBT40-MEGA6E-120	**968.187**	3 - 6	25	36.5	120	88	37 - 45	29000	MEC6	MEN 6
BBT40-MEGA6E-135	**968.188**	3 - 6	25	39	135	103	37 - 45	27000	MEC6	MEN 6
BBT40-MEGA6E-165	**968.189**	3 - 6	25	44.5	165	133	37 - 45	20000	MEC6	MEN 6
BBT40-MEGA6E-200	**968.190**	3 - 6	25	51	200	169	37 - 45	15000	MEC6	MEN 6
BBT40-MEGA8E-60	**968.191**	3 - 8	30	31	60	28	42 - 48	30000	MEC8	MEN 8
BBT40-MEGA8E-75	**968.192**	3 - 8	30	33.5	75	43	42 - 51	30000	MEC8	MEN 8
BBT40-MEGA8E-90	**968.193**	3 - 8	30	36	90	58	42 - 51	30000	MEC8	MEN 8
BBT40-MEGA8E-105	**968.194**	3 - 8	30	39	105	73	42 - 51	29000	MEC8	MEN 8
BBT40-MEGA8E-120	**968.195**	3 - 8	30	41.5	120	88	42 - 51	29000	MEC8	MEN 8
BBT40-MEGA8E-135	**968.196**	3 - 8	30	44	135	103	42 - 51	27000	MEC8	MEN 8
BBT40-MEGA8E-165	**968.197**	3 - 8	30	49.5	165	133	42 - 51	20000	MEC8	MEN 8
BBT40-MEGA8E-200	**968.198**	3 - 8	30	56	200	171	42 - 51	15000	MEC8	MEN 8
BBT40-MEGA10E-60	**968.199** •	3 - 10	35	36	60	29	48 - 58	30000	MEC10	MEN10
BBT40-MEGA10E-75	**968.200**	3 - 10	35	38.5	75	43	48 - 58	30000	MEC10	MEN10
BBT40-MEGA10E-90	**968.201**	3 - 10	35	41	90	58	48 - 58	30000	MEC10	MEN10
BBT40-MEGA10E-105	**968.202**	3 - 10	35	44	105	73	48 - 58	29000	MEC10	MEN10
BBT40-MEGA10E-120	**968.203**	3 - 10	35	46.5	120	88	48 - 58	29000	MEC10	MEN10
BBT40-MEGA10E-135	**968.204**	3 - 10	35	49	135	103	48 - 58	27000	MEC10	MEN10
BBT40-MEGA10E-165	**968.205**	3 - 10	35	54.5	165	135	48 - 58	22000	MEC10	MEN10
BBT40-MEGA10E-200	**968.206**	3 - 10	35	55.5	200	171	48 - 58	16000	MEC10	MEN10

Model	Order No.	Ød	ØD	ØD1	L	L1	H	max. min-1	Collet Model	Nut Model
BBT40-MEGA13E-60	**968.207** •	3 - 12	42	43	60	29	50 - 60	30000	MEC13	MEN13
BBT40-MEGA13E-75	**968.208**	3 - 12	42	45	75	43	50 - 60	30000	MEC13	MEN13
BBT40-MEGA13E-90	**968.209** •	3 - 12	42	48	90	59	50 - 60	30000	MEC13	MEN13
BBT40-MEGA13E-105	**968.210**	3 - 12	42	51	105	75	50 - 60	29000	MEC13	MEN13
BBT40-MEGA13E-120	**968.211**	3 - 12	42	53.5	120	91	50 - 60	29000	MEC13	MEN13
BBT40-MEGA13E-135	**968.212**	3 - 12	42	56	135	106	50 - 60	26000	MEC13	MEN13
BBT40-MEGA13E-165	**968.213**	3 - 12	42	57.5	165	137	50 - 60	22000	MEC13	MEN13
BBT40-MEGA13E-200	**968.214**	3 - 12	42	62.5	200	173	50 - 60	16000	MEC13	MEN13
BBT50-MEGA6E-90	**968.216**	3 - 6	25	30.5	90	47	37 - 45	20000	MEC6	MEN 6
BBT50-MEGA6E-120	**968.217**	3 - 6	25	36	120	77	37 - 45	20000	MEC6	MEN 6
BBT50-MEGA6E-165	**968.218**	3 - 6	25	43.5	165	122	37 - 45	14000	MEC6	MEN 6
BBT50-MEGA6E-200	**968.219**	3 - 6	25	50	200	157	37 - 45	9000	MEC6	MEN 6
BBT50-MEGA8E-90	**968.220**	3 - 8	30	35.5	90	47	42 - 51	20000	MEC8	MEN 8
BBT50-MEGA8E-120	**968.221**	3 - 8	30	40.5	120	77	42 - 51	20000	MEC8	MEN 8
BBT50-MEGA8E-165	**968.222**	3 - 8	30	48.5	165	122	42 - 51	16000	MEC8	MEN 8
BBT50-MEGA8E-200	**968.223**	3 - 8	30	54.5	200	157	42 - 51	11000	MEC8	MEN 8
BBT50-MEGA10E-90	**968.224**	3 - 10	35	40	90	47	48 - 58	25000	MEC10	MEN10
BBT50-MEGA10E-120	**968.225**	3 - 10	35	45.5	120	77	48 - 58	20000	MEC10	MEN10
BBT50-MEGA10E-165	**968.226**	3 - 10	35	53	165	121	48 - 58	16000	MEC10	MEN10
BBT50-MEGA10E-200	**968.227**	3 - 10	35	59.5	200	156	48 - 58	13000	MEC10	MEN10
BBT50-MEGA13E-90	**968.228**	3 - 12	42	46.5	90	47	50 - 60	18000	MEC13	MEN13
BBT50-MEGA13E-120	**968.229** •	3 - 12	42	52	120	77	50 - 60	18000	MEC13	MEN13
BBT50-MEGA13E-165	**968.230**	3 - 12	42	59	165	121	50 - 60	16000	MEC13	MEN13
BBT50-MEGA13E-200	**968.231**	3 - 12	42	59	200	156	50 - 60	12000	MEC13	MEN13

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. MEGA E nut is included.
3. "H" is the max. tool shank length that can be inserted for these models.
4. "G" is the adjusting screw (optional).

Accessories & Spare Parts

MEGA E Nuts	MEGA E Perfect Seals	MEGA E Collets	MEGA Wrenches	Adjusting Screws NBA	Taper Cleaners
					
▶ 340	▶ 341	▶ 340	▶ 351	▶ 335	▶ 370

MEGA Double Power Chuck Type D

Flange contacting nut assures highest rigidity. Type D for use with/without coolant through.

Coolant Through Hole

BIG-PLUS Dual-Contact

A.1



ø3 - 42mm

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	L2	H	E	E1	max. min-1
BBT30-MEGA16D-60	**978.188**	1	16	45	47	60	25	-	62	48	50	30000
BBT30-MEGA20D-65 *	**978.187**	1	20	50	51	65	30	-	60	50	50	25000
BBT40-MEGA16D-75A	**801.711**	2	16	42	53	75	25	38	71	48	55	30000
BBT40-MEGA16D-105A	**801.730**	2	16	42	53	105	25	38	71	48	55	30000
BBT40-MEGA16D-135A	**803.115**	2	16	42	53	135	25	38	71	48	55	25000
BBT40-MEGA16D-165A	**803.196**	2	16	42	53	165	25	38	71	48	55	22000
BBT40-MEGA16D-200A	**803.157**	2	16	42	53	200	25	38	71	48	55	18000
BBT40-MEGA20D-75A	**803.148**	2	20	50	55	75	34	44	69 - 79	50	56	30000
BBT40-MEGA20D-105A	**803.116**	2	20	50	55	105	34	44	69 - 79	50	56	30000
BBT40-MEGA20D-120A	**803.197**	2	20	50	55	120	34	44	69 - 79	50	56	27000
BBT40-MEGA20D-135A	**803.130**	2	20	50	55	135	34	44	69 - 79	50	56	25000
BBT40-MEGA20D-165A	**803.158**	2	20	50	55	165	34	44	69 - 79	50	56	22000
BBT40-MEGA20D-200A	**803.188**	2	20	50	55	200	34	44	69 - 79	50	56	15000
BBT40-MEGA25D-75A	**801.731** •	1	25	62	63	75	39	-	73 - 83	56	57	27000
BBT40-MEGA25D-105A	**803.198**	1	25	62	63	105	39	-	71 - 81	56	57	26000
BBT40-MEGA25D-135A	**801.732**	1	25	62	63	135	39	-	71 - 81	56	57	24000
BBT40-MEGA25D-165A	**803.134**	1	25	62	63	165	39	-	71 - 81	56	57	21000
BBT40-MEGA25D-200A	**803.138**	1	25	62	63	200	39	-	71 - 81	56	57	12000
BBT40-MEGA32D-90A	**803.199** •	1	32	70	71	90	33	-	71 - 81	60	64	26000
BBT40-MEGA32D-105A	**803.131**	1	32	70	71	105	33	-	79 - 89	60	64	26000
BBT40-MEGA32D-135A	**803.135**	1	32	70	71	135	33	-	79 - 89	60	64	22000
BBT40-MEGA32D-165A	**803.159**	1	32	70	71	165	33	-	79 - 89	60	64	20000
BBT40-MEGA32D-200A	**803.186**	1	32	70	71	200	33	-	79 - 89	60	64	10000

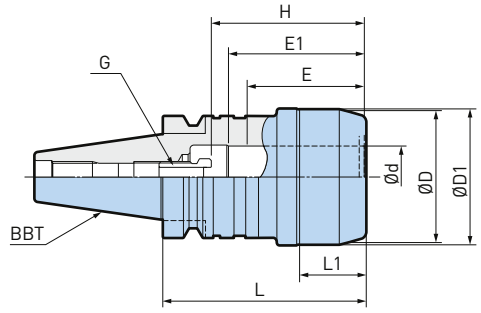


Fig. 1

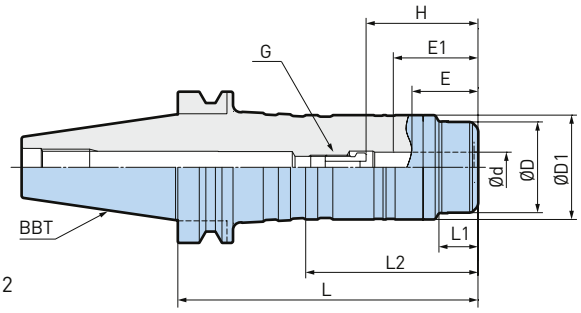


Fig. 2

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	L2	H	E	E1	max. min-1
BBT50-MEGA16D-105	**969.592**	2	16	46	55	105	23	33	71	48	50	21000
BBT50-MEGA16D-135	**968.026**	2	16	46	55	135	23	33	71	48	50	21000
BBT50-MEGA16D-165	**968.027**	2	16	46	55	165	23	33	71	48	50	19000
BBT50-MEGA16D-200	**968.028**	2	16	46	55	200	23	33	71	48	50	15000
BBT50-MEGA20D-105	**969.593**	2	20	60	69	105	25	36	69 - 79	50	56	20000
BBT50-MEGA20D-135	**969.594**	2	20	60	69	135	25	36	69 - 79	50	56	19000
BBT50-MEGA20D-165	**968.030**	2	20	60	69	165	25	36	69 - 79	50	56	17000
BBT50-MEGA20D-200	**968.031**	2	20	60	69	200	25	114	69 - 79	50	56	14000
BBT50-MEGA25D-105	**969.595**	2	25	70	77	105	32	45	76 - 86	56	65	20000
BBT50-MEGA25D-135	**969.596**	2	25	70	77	135	32	45	76 - 86	56	65	19000
BBT50-MEGA25D-165	**968.033**	2	25	70	77	165	32	45	76 - 86	56	65	17000
BBT50-MEGA25D-200	**968.034**	2	25	70	77	200	32	119	76 - 86	56	65	12000
BBT50-MEGA32D-90	**968.036**	2	32	80	86	90	39	54	78 - 95	60	71	25000
BBT50-MEGA32D-105	**969.597** •	2	32	80	86	105	39	54	78 - 95	60	71	20000
BBT50-MEGA32D-135	**969.598**	2	32	80	86	135	39	54	78 - 95	60	71	18000
BBT50-MEGA32D-165	**968.037**	2	32	80	86	165	39	54	78 - 95	60	71	15000
BBT50-MEGA32D-200	**968.038**	2	32	80	86	200	39	129	78 - 95	60	71	12000
BBT50-MEGA32D-250	**968.039**	2	32	80	86	250	39	169	78 - 95	60	71	10000
BBT50-MEGA42D-105	**968.041**	1	42	99	100	105	40	-	88 - 105	70	71	15000
BBT50-MEGA42D-135	**968.042**	1	42	99	100	135	40	-	88 - 105	70	71	15000
BBT50-MEGA42D-165	**968.043**	1	42	99	100	165	40	-	88 - 105	70	71	14000

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Wrench and axial adjusting screw are to be ordered separately.
3. As a back stop for cutting tools for the MEGA16D models, a commercially available hex socket head screw can be used.
4. "H" is the max. tool shank length that can be inserted for these models.
5. "G" is the adjusting screw (optional).
6. "E" is the min. clamping length.
7. "E1" is the min. clamping length for optimum use with center through coolant.
8. * Only OCA collet and C collet can be used.

Accessories & Spare Parts

PJC Collets	OCA Collets	PSC Collets	C Collets	MEGA Wrenches	Adjusting Screws HMA
					
▶ 347	▶ 348	▶ 348	▶ 349	▶ 351	▶ 350

MEGA Double Power Chuck Type DS

Flange contacting nut assures highest rigidity. Unique coolant supply design ensures efficient coolant supply to the cutting tool peripherally.

Coolant Through Hole

BIG-PLUS Dual-Contact





ø3 - 42mm

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	L2	H	E	max. min-1
BBT30-MEGA16DS-60	**978.030**	1	16	46	47	62.5	28	-	64	50	30000
BBT30-MEGA20DS-65 *	**978.184**	1	20	50	51	67.5	33	-	62	52	25000
BBT40-MEGA16DS-75A	**801.712**	2	16	42	53	77	27	40	73	50	30000
BBT40-MEGA16DS-105A	**803.149**	2	16	42	53	107	27	40	73	50	30000
BBT40-MEGA16DS-135A	**803.117**	2	16	42	53	137	27	40	73	50	25000
BBT40-MEGA16DS-165A	**803.200**	2	16	42	53	167	27	40	73	50	22000
BBT40-MEGA16DS-200A	**803.160**	2	16	42	53	202	27	40	73	50	18000
BBT40-MEGA20DS-75A	**803.150** •	2	20	50	55	77	36	46	71 - 81	52	30000
BBT40-MEGA20DS-105A	**803.118**	2	20	50	55	107	36	46	71 - 81	52	30000
BBT40-MEGA20DS-120A	**803.201**	2	20	50	55	122	36	46	71 - 81	52	27000
BBT40-MEGA20DS-135A	**803.132**	2	20	50	55	137	36	46	71 - 81	52	25000
BBT40-MEGA20DS-165A	**803.161**	2	20	50	55	167	36	46	71 - 81	58	22000
BBT40-MEGA20DS-200A	**803.189**	2	20	50	55	202	36	46	71 - 81	52	15000
BBT40-MEGA25DS-75A	**803.119**	1	25	62	63	77	41	-	75 - 85	58	27000
BBT40-MEGA25DS-105A	**801.713**	1	25	62	63	107	41	-	73 - 83	58	26000
BBT40-MEGA25DS-135A	**803.162**	1	25	62	63	137	41	-	73 - 83	58	24000
BBT40-MEGA25DS-165A	**803.136**	1	25	62	63	167	41	-	73 - 83	58	21000
BBT40-MEGA25DS-200A	**803.139**	1	25	62	63	202	41	-	71 - 81	58	12000
BBT40-MEGA32DS-90A	**803.202** •	1	32	70	71	92	35	-	73 - 83	62	26000
BBT40-MEGA32DS-105A	**803.133** •	1	32	70	71	107	35	-	81 - 91	62	26000
BBT40-MEGA32DS-135A	**803.137**	1	32	70	71	137	35	-	81 - 91	62	22000
BBT40-MEGA32DS-165A	**803.163**	1	32	70	71	167	35	-	81 - 91	62	20000
BBT40-MEGA32DS-200A	**803.187**	1	32	70	71	202	35	-	81 - 91	62	10000

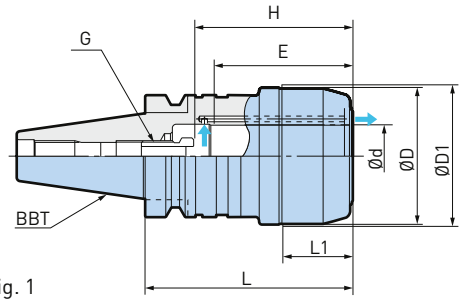


Fig. 1

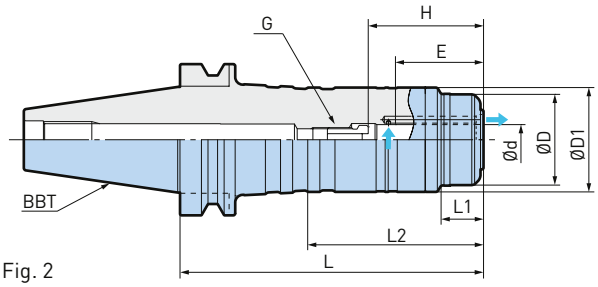


Fig. 2

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	L2	H	E	max. min-1
BBT50-MEGA16DS-105	**968.708**	2	16	46	55	107.5	26	36	73	50	21000
BBT50-MEGA16DS-135	**968.076** •	2	16	46	55	137.5	26	36	73	50	21000
BBT50-MEGA16DS-165	**968.077**	2	16	46	55	167.5	26	36	73	50	19000
BBT50-MEGA16DS-200	**968.078**	2	16	46	55	202,5	26	36	73	50	15000
BBT50-MEGA16DS-250	**968.079**	2	20	46	55	252,5	26	36	73	50	13000
BBT50-MEGA20DS-105	**968.709** •	2	20	60	69	107.5	28	38	71 - 81	52	20000
BBT50-MEGA20DS-135	**968.710**	2	20	60	69	137.5	28	38	71 - 81	52	19000
BBT50-MEGA20DS-165	**968.080**	2	20	60	69	167.5	28	38	71 - 81	52	17000
BBT50-MEGA20DS-200	**968.081**	2	20	60	69	202,5	28	116	71 - 81	52	14000
BBT50-MEGA20DS-250	**968.082**	2	20	60	69	252,5	28	138	71 - 81	52	12000
BBT50-MEGA25DS-105	**968.711**	2	25	70	77	107.5	34	47	78 - 88	58	20000
BBT50-MEGA25DS-135	**968.712**	2	25	70	77	137.5	34	47	78 - 88	58	19000
BBT50-MEGA25DS-165	**968.083**	2	25	70	77	167.5	34	47	78 - 88	58	17000
BBT50-MEGA25DS-200	**968.084**	2	25	70	77	205,5	34	121	78 - 88	58	12000
BBT50-MEGA25DS-250	**968.085**	2	25	70	77	252,5	34	138	78 - 88	58	10000
BBT50-MEGA32DS-90	**968.086**	2	32	80	86	94.5	42	57	80 - 97	62	20000
BBT50-MEGA32DS-105	**968.713**	2	32	80	86	107.5	42	57	80 - 97	62	20000
BBT50-MEGA32DS-135	**968.714**	2	32	80	86	137.5	42	57	80 - 97	62	18000
BBT50-MEGA32DS-165	**968.087**	2	32	80	86	167.5	42	57	80 - 97	62	15000
BBT50-MEGA32DS-200	**968.088**	2	32	80	86	202.5	42	131	80 - 97	62	12000
BBT50-MEGA32DS-250	**968.089**	2	32	80	86	252,5	42	171	80 - 97	62	10000
BBT50-MEGA32DS-300	**968.090**	2	32	80	86	302,5	42	183	80 - 97	62	5000
BBT50-MEGA42DS-105	**968.091**	1	42	99	100	107	42	-	90 - 107	72	15000
BBT50-MEGA42DS-135	**968.092**	1	42	99	100	137	42	-	90 - 107	72	15000
BBT50-MEGA42DS-165	**968.093**	1	42	99	100	167	42	-	90 - 107	72	14000

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Wrench and axial adjusting screw are to be ordered separately.
3. As a back stop for cutting tools for MEGA16DS, a commercially available hex socket head screw (M8) can be used.
4. "E" is the min. clamping length.
5. "H" is the max. tool shank length that can be inserted for these models.
6. "G" is the adjusting screw (optional).
7. * Adjustable straight collet (C20-_+CS) and OCA collet cannot be used.

Accessories & Spare Parts

PJC Collets	PSC Collets	C Collets	MEGA Wrenches	Adjusting Screws HMA
				
▶ 347	▶ 348	▶ 349	▶ 351	▶ 350

MEGA Perfect Grip

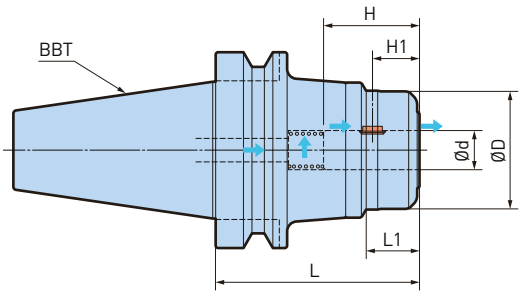
100% security against pulling out of the cutting tool under any torque load.

Coolant Through Hole

Dual-Contact

A.1







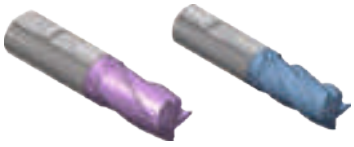
ø16 - 32mm

Model	Order No.	Ød	ØD	L	L1	H	H1
BBT40-MEGA16DPG-75	**806.362**	16	46	75	24	47	23
BBT40-MEGA20DPG-100	**806.363**	20	60	100	27	49	24
BBT50-MEGA16DPG-105	**805.449**	16	46	105	24	47	23
BBT50-MEGA16DPG-165	**805.450**	16	46	165	24	47	23
BBT50-MEGA20DPG-105	**805.451**	20	60	105	27	49	24
BBT50-MEGA20DPG-165	**805.452**	20	60	165	27	49	24
BBT50-MEGA25DPG-105	**805.453**	25	70	105	33	55	23
BBT50-MEGA25DPG-165	**805.454**	25	70	165	33	55	23
BBT50-MEGA32DPG-105	**805.455**	32	80	105	41	59	23
BBT50-MEGA32DPG-165	**805.456**	32	80	165	41	59	23

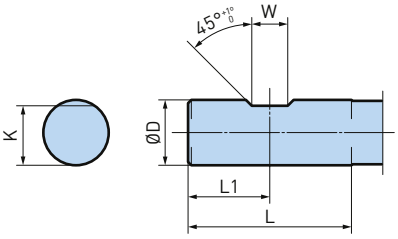
1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Key grip and spring are included with each holder.
3. MEGA wrench is to be ordered separately.
4. „H1" shows distance from center of key grip to front end.

Weldon Shank Standards

(DIN 1835-1)
The following standard shank is required for MEGA Perfect Grip.

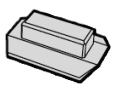


Ø 25/32 mm **Ø 20 mm**



ØD		L	L1	W		K	
Nominal	Tolerance			Nominal	Tolerance	Nominal	Tolerance
16	h6	48	24	10	+ 0.05 0	14.2	h13
20		50	25	11		18.2	
25		56	32	12		23	
32		60	36	14		30	

Accessories & Spare Parts

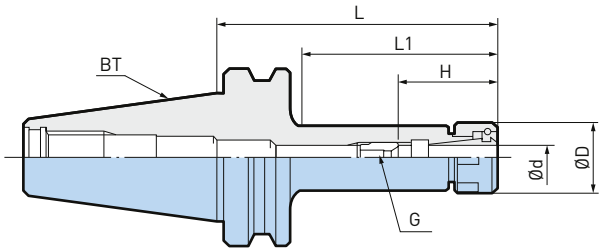
Key Grip MEGA Perfect Grip	Spring MEGA Perfect Grip	MEGA Wrenches
		
▶ 350	▶ 350	▶ 351

New Baby Chuck

The original high precision collet chuck to perform all machining applications.

Coolant Through Hole





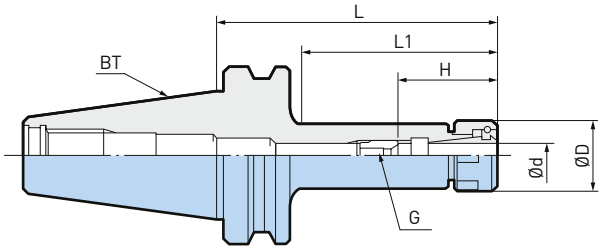
A.1

ø0.25 - 20mm

Model	Order No.	Ød	ØD	L	L1	H	Collet Model	Nut Model
BT30-NBS6-60	**961.917** •	0.25 - 6	20	60	32	20 - 40	NBC6	NBN6
BT30-NBS6-75	**961.902**	0.25 - 6	20	75	47	20 - 40	NBC6	NBN6
BT30-NBS6-90	**961.918** •	0.25 - 6	20	90	62	20 - 40	NBC6	NBN6
BT30-NBS6-105	**961.903**	0,25 - 6	20	105	77	20 - 40	NBC6	NBN6
BT30-NBS6-120	**800.031**	0.25 - 6	20	120	90	20 - 40	NBC6	NBN6
BT30-NBS8-60	**961.919**	0.5 - 8	25	60	33	23 - 42	NBC8	NBN8
BT30-NBS8-90	**961.920**	0.5 - 8	25	90	63	23 - 42	NBC8	NBN8
BT30-NBS10-60	**961.921**	1.5 - 10	30	60	34	35 - 45	NBC10	NBN10
BT30-NBS10-75	**961.908**	1.5 - 10	30	75	49	35 - 45	NBC10	NBN10
BT30-NBS10-90	**961.922**	1.5 - 10	30	90	64	35 - 45	NBC10	NBN10
BT30-NBS10-105	**961.909**	1,5 - 10	30	105	79	35 - 45	NBC10	NBN10
BT30-NBS10-120	**800.597**	1.5 - 10	30	120	94	35 - 45	NBC10	NBN10
BT30-NBS13-60	**961.923**	2.5 - 13	35	60	34	41 - 60	NBC13	NBN13
BT30-NBS13-90	**961.924** •	2.5 - 13	35	90	64	41 - 60	NBC13	NBN13
BT30-NBS16-60	**961.925**	2.5 - 16	42	60	37	45 - 65	NBC16	NBN16
BT30-NBS16-90	**961.926**	2.5 - 16	42	90	67	45 - 65	NBC16	NBN16
BT30-NBS20-60	**961.915**	2.5 - 20	46	60	38	48 - 58	NBC20	NBN20
BT30-NBS20-90	**961.916**	2.5 - 20	46	90	68	48 - 65	NBC20	NBN20
BT30-NBS20-120	**800.029**	2.5 - 20	46	120	98	48 - 65	NBC20	NBN20
BT40-NBS6-90	**961.932** •	0.25 - 6	20	90	53	20 - 40	NBC6	NBN6
BT40-NBS6-135	**961.933**	0.25 - 6	20	135	98	20 - 40	NBC6	NBN6
BT40-NBS8-90	**961.935**	0.5 - 8	25	90	53	23 - 42	NBC8	NBN8
BT40-NBS8-135	**961.936**	0.5 - 8	25	135	98	23 - 42	NBC8	NBN8
BT40-NBS10-90	**961.938**	1.5 - 10	30	90	53	35 - 45	NBC10	NBN10
BT40-NBS10-120	**968.604**	1.5 - 10	30	120	83	35 - 45	NBC10	NBN10
BT40-NBS10-135	**961.939**	1.5 - 10	30	135	98	35 - 45	NBC10	NBN10
BT40-NBS13-90	**961.941** •	2.5 - 13	35	90	55	41 - 60	NBC13	NBN13
BT40-NBS13-135	**961.942**	2.5 - 13	35	135	100	41 - 60	NBC13	NBN13
BT40-NBS16-90	**961.944**	2.5 - 16	42	90	55	45 - 65	NBC16	NBN16
BT40-NBS16-120	**968.610**	2.5 - 16	42	120	85	45 - 65	NBC16	NBN16
BT40-NBS16-135	**961.945**	2.5 - 16	42	135	100	45 - 65	NBC16	NBN16
BT40-NBS20-60	**961.946**	2.5 - 20	46	60	28	48 - 65	NBC20	NBN20
BT40-NBS20-75	**968.611**	2,5 - 20	46	75	42	48 - 65	NBC20	NBN20
BT40-NBS20-90	**961.947** •	2.5 - 20	46	90	57	48 - 65	NBC20	NBN20
BT40-NBS20-120	**968.613**	2.5 - 20	46	120	87	48 - 65	NBC20	NBN20
BT40-NBS20-135	**961.948**	2.5 - 20	46	135	102	48 - 65	NBC20	NBN20
BT40-NBS20-165	**961.959**	2.5 - 20	46	165	132	48 - 65	NBC20	NBN20

continues on the next page

A.1



Model	Order No.	Ød	ØD	L	L1	H	Collet Model	Nut Model
BT50-NBS6-120	**961.962**	0.25 - 6	20	120	67	20 - 40	NBC6	NBN6
BT50-NBS6-165	**961.963**	0.25 - 6	20	165	112	20 - 40	NBC6	NBN6
BT50-NBS6-200	**961.964**	0.25 - 6	20	200	147	20 - 40	NBC6	NBN6
BT50-NBS8-120	**961.966**	0.5 - 8	25	120	67	23 - 42	NBC8	NBN8
BT50-NBS8-165	**961.967**	0.5 - 8	25	165	112	23 - 42	NBC8	NBN8
BT50-NBS10-120	**961.970**	1.5 - 10	30	120	67	35 - 45	NBC10	NBN10
BT50-NBS10-165	**961.971**	1.5 - 10	30	165	112	35 - 45	NBC10	NBN10
BT50-NBS10-200	**961.972**	1.5 - 10	30	200	147	35 - 45	NBC10	NBN10
BT50-NBS13-90	**961.975**	2.5 - 13	35	90	42	41 - 60	NBC13	NBN13
BT50-NBS13-120	**961.976** •	2.5 - 13	35	120	67	41 - 60	NBC13	NBN13
BT50-NBS13-165	**961.977**	2.5 - 13	35	165	112	41 - 60	NBC13	NBN13
BT50-NBS13-200	**961.978**	2.5 - 13	35	200	147	41 - 60	NBC13	NBN13
BT50-NBS16-120	**961.983**	2.5 - 16	42	120	72	45 - 65	NBC16	NBN16
BT50-NBS16-165	**961.984**	2.5 - 16	42	165	117	45 - 65	NBC16	NBN16
BT50-NBS16-200	**961.985**	2.5 - 16	42	200	152	45 - 65	NBC16	NBN16
BT50-NBS20-90	**961.988** •	2.5 - 20	46	90	42	48 - 65	NBC20	NBN20
BT50-NBS20-120	**961.989**	2.5 - 20	46	120	72	48 - 65	NBC20	NBN20
BT50-NBS20-165	**961.990**	2.5 - 20	46	165	117	48 - 65	NBC20	NBN20
BT50-NBS20-200	**961.991**	2.5 - 20	46	200	152	48 - 65	NBC20	NBN20
BT50-NBS20-250 *	**961.992**	2.5 - 20	46	250	202	48 - 65	NBC20	NBN20

1. New Baby Nut is included.
2. Max. 20 000 min-1 is valid for L = 60 and 90 mm.
3. * Center through coolant is not available.
4. "H" is the max. tool shank length that can be inserted for these models.
5. "G" is the adjusting screw (optional).

Accessories & Spare Parts

New Baby Nuts	Baby Perfect Seals	New Baby Collets	New Baby Wrenches	Adjusting Screws NBA	Tap Driving Back Stops	Taper Cleaners
						
▶ 334	▶ 338	▶ 329	▶ 352	▶ 335	▶ 335	▶ 370

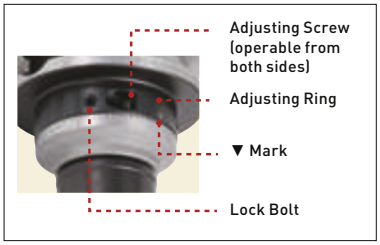
New Baby Chuck Type NRA

New Baby Chuck holder with runout adjustable tool function.

Coolant Through Hole

BIG-PLUS Dual-Contact





Simple structure for easy adjustment

1. Turn the adjusting ring and line up the ▼ mark with peak runout position.
2. Adjust the lock bolts in 3 locations to fix the ring.
3. The runout amount is adjusted by tightening the adjusting screw.

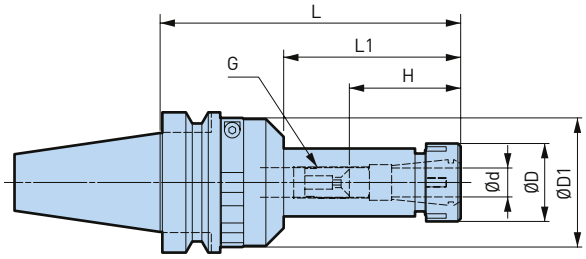


Fig. 1

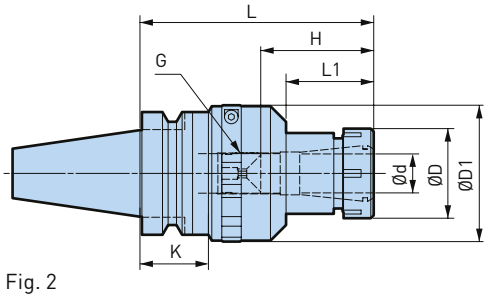


Fig. 2

ø0.5 - 20mm

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	K	H	Collet Model	Nut Model	Adjust-ment l=50	Adjust-ment l=100
BBT30-NBS8-75NRA	**806.259**	1	0.5 - 8	25	45	75	28	-	23 - 42	NBC8	NBN8	20 µm	31 µm
BBT30-NBS13-110NRA	**806.260**	2	2.5 - 13	35	58	110	34	35	41 - 60	NBC13	NBN13	18 µm	27 µm
BBT40-NBS8-90NRA	**806.261**	1	0.5 - 8	25	45	90	37	-	23 - 42	NBC8	NBN8	22 µm	33 µm
BBT40-NBS13-90NRA	**806.262**	1	2.5 -13	35	58	90	34	-	41 - 60	NBC13	NBN13	18 µm	27 µm
BBT40-NBS13-135NRA	**806.263**	1	2.5 -13	35	58	135	79	-	41 - 60	NBC13	NBN13	25 µm	34 µm
BBT40-NBS20-120NRA	**804.693**	2	2.5 - 20	46	70	120	45	35	48 - 65	NBC20	NBN20	17 µm	25 µm
BBT40-NBS20-150NRA	**806.264**	2	2.5 - 20	46	70	150	65	45	48 - 65	NBC20	NBN20	21 µm	29 µm
BBT50-NBS13-105NRA	**804.697**	1	2.5 -13	35	58	105	38	-	41 - 60	NBC13	NBN13	19 µm	28 µm
BBT50-NBS13-135NRA	**804.698**	1	2.5 -13	35	58	135	68	-	41 - 60	NBC13	NBN13	24 µm	33 µm
BBT50-NBS13-165NRA	**806.265**	1	2.5 -13	35	58	165	98	-	41 - 60	NBC13	NBN13	30 µm	39 µm
BBT50-NBS20-120NRA	**804.699**	1	2.5 - 20	46	70	120	48	-	48 - 65	NBC20	NBN20	17 µm	25 µm
BBT50-NBS20-150NRA	**804.700**	1	2.5 - 20	46	70	150	78	-	48 - 65	NBC20	NBN20	22 µm	30 µm

1. Nut is included.
2. Collet, wrench and adjusting screw need to be ordered seperately.
3. "H" is the max. tool shank length that can be inserted for these models.
4. The adjustment amount depends on the length of the holder and the tool projection length. The maximum adjustment amount for tool projection lengths of 50 mm and 100 mm is shown in the table.

Accessories & Spare Parts

New Baby Collets	New Baby Nuts	Baby Perfect Seals	New Baby Wrenches
			
▶ 329	▶ 334	▶ 338	▶ 352

New Hi-Power Milling Chuck Type S

The original design assures heavy machining with high power and precision.

Coolant Through Hole

BIG-PLUS Dual-Contact

A.1



ø3 - 42mm

Model	Order No.	Fig.	Ød	ØD	L	L1	H	E	E1
BBT30-HMC16S-70 *	**964.101S**	1	16	43	70	47	71	48	55
BBT30-HMC20S-75	**964.102S**	2	20	50	75	-	56 - 66	50	56
BBT30-HMC25S-90	**964.103S**	2	25	55	90	-	64 - 74	56	57
BBT30-HMC32S-105	**978.181S**	2	32	62	105	-	70 - 80	60	58
BBT40-HMC16S-75 *	**964.190S**	1	16	43	75	45	71	48	55
BBT40-HMC16S-120 *	**800.144**	1	16	43	120	90	71	48	55
BBT40-HMC20S-75	**964.191S** •	1	20	50	75	46	69 - 79	50	56
BBT40-HMC20S-105	**964.194S**	1	20	50	105	75	69 - 79	50	56
BBT40-HMC20S-120	**964.196S**	1	20	50	120	90	69 - 79	50	56
BBT40-HMC25S-75	**964.192S**	1	25	59	75	47	73 - 83	56	57
BBT40-HMC25S-105	**964.195S**	1	25	59	105	77	73 - 83	56	57
BBT40-HMC25S-135	**800.146**	1	25	59	135	107	73 - 83	56	57
BBT40-HMC32S-90	**978.279S**	2	32	68	90	-	71 - 81	60	64
BBT40-HMC32S-105	**800.147** •	2	32	68	105	-	79 - 89	60	64
BBT40-HMC32S-135	**800.148**	2	32	68	135	-	79 - 89	60	64

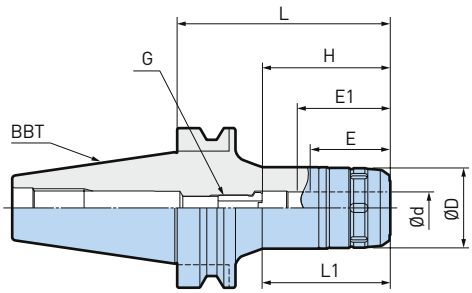


Fig. 1

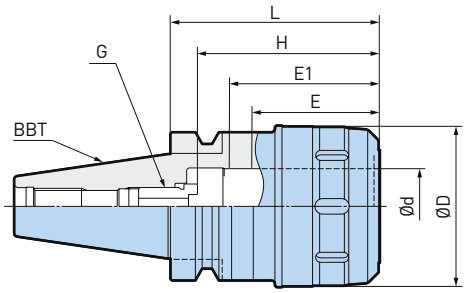


Fig. 2

Model	Order No.	Fig.	Ød	ØD	L	L1	H	E	E1
BBT50-HMC16S-105 *	**800.278**	1	16	43	105	57	71	48	55
BBT50-HMC16S-135 *	**800.279**	1	16	43	135	80	71	48	55
BBT50-HMC16S-165 *	**800.280**	1	16	43	165	100	71	48	55
BBT50-HMC16S-200 *	**800.281**	1	16	43	200	120	71	48	55
BBT50-HMC20S-105	**800.282** •	1	20	50	105	57	69 - 79	50	56
BBT50-HMC20S-135	**800.283**	1	20	50	135	80	69 - 79	50	56
BBT50-HMC20S-165	**800.284**	1	20	50	165	100	69 - 79	50	56
BBT50-HMC20S-200	**800.285**	1	20	50	200	125	69 - 79	50	56
BBT50-HMC20S-300	**800.286**	1	20	50	300	200	69 - 79	50	56
BBT50-HMC25S-105	**800.287**	1	25	59	105	57	76 - 86	56	57
BBT50-HMC25S-135	**800.288**	1	25	59	135	87	76 - 86	56	57
BBT50-HMC25S-165	**800.289**	1	25	59	165	105	76 - 86	56	57
BBT50-HMC25S-200	**800.290**	1	25	59	200	125	76 - 86	56	57
BBT50-HMC32S-105	**800.291** •	1	32	68	105	64	88 - 98	60	72
BBT50-HMC32S-135	**800.292**	1	32	68	135	89	88 - 98	60	72
BBT50-HMC32S-165	**800.293**	1	32	68	165	105	88 - 98	60	72
BBT50-HMC32S-200	**800.294**	1	32	68	200	130	88 - 98	60	72
BBT50-HMC32S-300	**800.295**	1	32	68	300	200	88 - 98	60	72
BBT50-HMC42S-105	**806.709**	1	42	85	105	65	93 - 105	70	73
BBT50-HMC42S-165	**805.773**	1	42	85	165	123	93 - 105	70	73
BBT50-HMC42S-300	**807.003**	1	42	85	300	200	93 - 105	70	73

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Wrench and axial adjusting screw are to be ordered separately.
3. * As a back stop for cutting tools for the HMC16S models, a commercially available hex socket head screw (M8) can be used.
4. "H" is the max. tool shank length that can be inserted for these models.
5. "G" is the adjusting screw (optional).
6. "E" is the min. clamping length.
7. "E1" is the min. clamping length for optimum use with center through coolant.

Accessories & Spare Parts

PJC Collets	OCA Collets	PSC Collets	C Collets	FK Wrenches	Adjusting Screws HMA
					
▶ 347	▶ 348	▶ 348	▶ 349	▶ 352	▶ 350

New Hi-Power Milling Chuck Type HMC12J

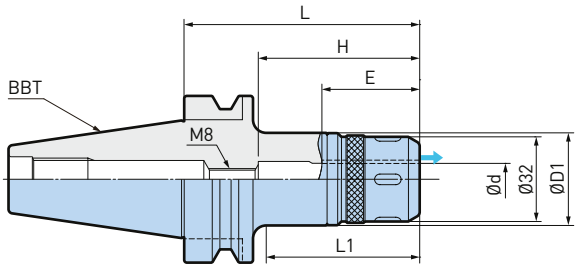
Extremely slim and rigid design with jet through coolant.

Coolant Through Hole

BIG-PLUS Dual-Contact

A.1





ø6 - 12mm

Model	Order No.	Ød	ØD1	L	L1	H	E
BBT30-HMC12J-60	**805.814**	12	35	60	38	65	43
BBT40-HMC12J-90	**805.815**	12	35	90	63	65	43
BBT40-HMC12J-120	**805.816**	12	35	120	70	65	43
BBT50-HMC12J-105	**805.817**	12	35	105	67	65	43
BBT50-HMC12J-135	**805.818**	12	35	135	70	65	43
BBT50-HMC12J-165	**805.819**	12	35	165	90	65	43

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Wrench is to be ordered separately.
3. "H" is the max. tool shank length that can be inserted for these models.
4. "E" is the min. clamping length.



Accessories & Spare Parts

PJC Collets	FK Wrenches	Adjusting Screws HMA
		
▶ 347	▶ 352	▶ 350

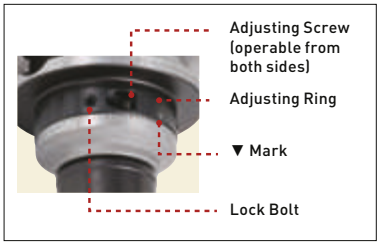
New Hi-Power Milling Chuck Type NRA

New Hi-Power Milling Chuck with runout adjustable function.

Coolant Through Hole

BIG-PLUS Dual-Contact





Simple structure for easy adjustment

1. Turn the adjusting ring and line up the ▼ mark with peak runout position.
2. Adjust the lock bolts in 3 locations to fix the ring.
3. The runout amount is adjusted by tightening the adjusting screw.

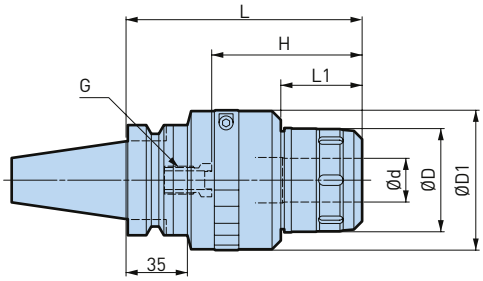


Fig. 1

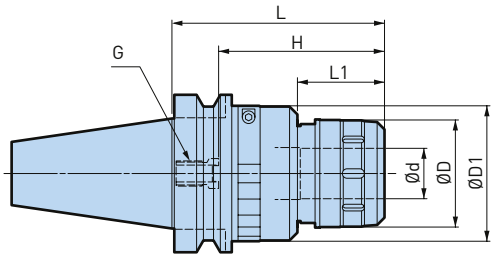


Fig. 2

ø3 - 32mm

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	H	Adjustment l=50	Adjustment l=100
BBT40-HMC20S-130NRA	**806.164**	1	20	50	72	130	46	69 - 79	23 µm	33 µm
BBT40-HMC25S-135NRA	**804.690**	1	25	59	80	135	46	75 - 85	21 µm	30 µm
BBT40-HMC32S-145NRA	**804.691**	1	32	68	86	145	55	85 - 95	20 µm	28 µm
BBT50-HMC20S-125NRA	**806.270**	2	20	50	72	125	46	69 - 79	23 µm	33 µm
BBT50-HMC25S-125NRA	**806.271**	2	25	59	80	125	46	75 - 85	21 µm	30 µm
BBT50-HMC32S-135NRA	**806.272**	2	32	68	86	135	55	85 - 95	20 µm	28 µm

1. Wrench and axial adjusting screw are to be ordered separately.
2. "H" is the max. tool shank length that can be inserted for these models.
3. The adjustment amount depends on the length of the holder and the tool projection length. The maximum adjustment amount for tool projection lengths of 50 mm and 100 mm is shown in the table.

Accessories & Spare Parts

FK Wrenches	Adjusting Screws HMA	PJC Collets	PSC Collets	OCA Collets	C Collets
					
▶ 352	▶ 350	▶ 347	▶ 348	▶ 348	▶ 349

Hydraulic Chuck Super Slim

Ultra precise hydraulic chuck with extremely slim design.

Coolant Through Hole

BIG-PLUS Dual-Contact

A.1



ø3 - 12mm

Model	Order No.	Fig.	Ød	ØD	ØD1	ØD2	L	L1	L2	E
BBT30-HDC3S-60 *	**807.580**	1	3	14	42	18	60	19	-	16
BBT30-HDC3S-90 *	**805.462**	1	3	14	42	25	90	50	-	16
BBT30-HDC4S-60	**803.053**	1	4	14	46	20	60	28	-	19
BBT30-HDC4S-90	**805.820**	1	4	14	42	25	90	50	-	19
BBT30-HDC5S-90	**805.821**	1	5	14	42	25	90	50	-	22
BBT30-HDC6S-60	**807.582**	1	6	14	42	25	90	50	-	25
BBT30-HDC6S-90	**803.054**	1	6	14	42	25	90	50	-	25
BBT30-HDC8S-90	**803.055**	1	8	17	42	28	90	50	-	31
BBT30-HDC10S-90	**803.051**	1	10	19	44	30	90	50	-	33
BBT30-HDC12S-90	**803.052**	1	12	21	46	32	90	50	-	36
BBT40-HDC3S-90 *	**805.463**	1	3	14	38	24	90	44	-	16
BBT40-HDC4S-60 *	**803.060**	1	4	14	38	19	60	22	-	19
BBT40-HDC4S-90	**803.061**	1	4	14	38	24	90	45	-	19
BBT40-HDC4S-135	**805.464**	2	4	14	44	26	135	57	84	19
BBT40-HDC5S-90	**807.583**	1	5	14	38	24	90	46	-	21
BBT40-HDC6S-110	**803.062**	1	6	14	38	27	110	60	-	25
BBT40-HDC6S-150	**803.063**	2	6	14	48	26	150	57	85	25
BBT40-HDC8S-110	**803.064**	1	8	17	40	30	110	60	-	31
BBT40-HDC8S-150	**803.065**	2	8	17	50	28	150	52	85	31
BBT40-HDC10S-110	**803.056**	1	10	19	42	32	110	60	-	33
BBT40-HDC10S-150	**803.057**	2	10	19	50	30	150	52	85	33
BBT40-HDC12S-110	**803.058**	1	12	21	44	34	110	60	-	36
BBT40-HDC12S-150	**803.059**	2	12	21	50	32	150	52	85	36

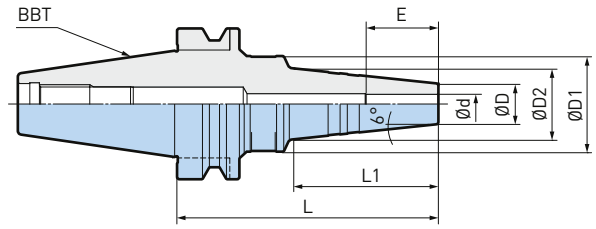


Fig. 1

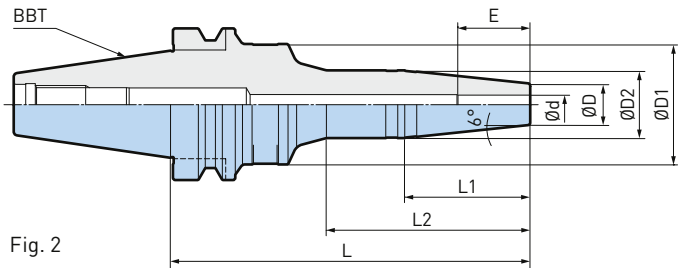


Fig. 2

Model	Order No.	Fig.	Ød	ØD	ØD1	ØD2	L	L1	L2	E
BBT50-HDC4S-150	**807.232**	2	4	14	52	26	150	57	83	19
BBT50-HDC4S-200	**807.584**	1	4	14	56	26	200	57	100	19
BBT50-HDC6S-150	**803.068**	2	6	14	52	26	150	57	83	25
BBT50-HDC6S-200	**805.822**	2	6	14	56	26	200	57	100	25
BBT50-HDC8S-150	**803.069**	2	8	17	54	28	150	52	83	31
BBT50-HDC8S-200	**805.823**	2	8	17	58	28	200	52	100	31
BBT50-HDC10S-150	**803.066**	2	10	19	56	30	150	52	83	33
BBT50-HDC10S-200	**805.824**	2	10	19	60	30	200	52	100	33
BBT50-HDC12S-150	**803.067**	2	12	21	58	32	150	52	83	36
BBT50-HDC12S-200	**805.825**	2	12	21	62	32	200	52	100	36

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Adjusting screw and reduction collet can not be used.
3. "E" is the min. clamping length.
4. * Some coolant may leak from the inner diameter slits when using coolant.

Caution

- Use only cutting tools that have a shank tolerance within h6.
- Roughing endmills are not recommended for use with hydraulic chucks.
- Do not use with cutting tools made with a flat on the shank. (ie: Weldon type shank)
- Do not tighten the clamping screw without first inserting a cutting tool into the hydraulic chuck.
- Always insert the cutting tool into the hydraulic chuck beyond min. clamping length E.

Accessories & Spare Parts

Wiper Cleaners



▶ 370

Hydraulic Chuck Jet Through

Coolant or Minimum Quantity Lubrification is supplied to cutting edge securely. Maximum performance and high-precision with 5-axis machining.

Coolant Through Hole

BIG-PLUS Dual-Contact

A.1



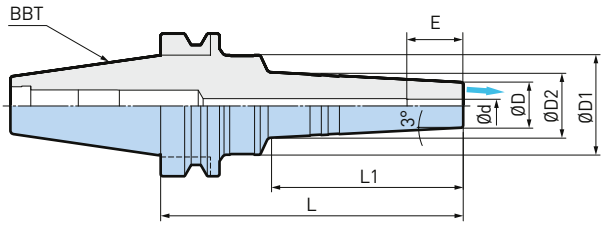


Fig. 1

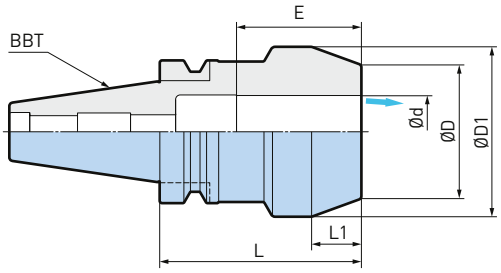
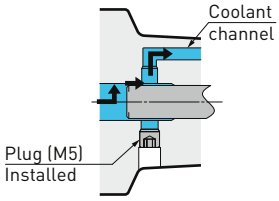


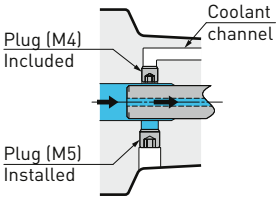
Fig. 2

ø4 - 32mm

Model	Order No.	Fig.	Ød	ØD	ØD1	ØD2	L	L1	E
BBT30-HDC4J-60	**805.077**	1	4	20	46	23	60	28	19
BBT30-HDC4J-90	**807.372**	1	4	20	42	26	90	50	19
BBT30-HDC6J-90	**805.078**	1	6	20	42	26	90	50	25
BBT30-HDC8J-90	**805.079**	1	8	22	42	28	90	50	31
BBT30-HDC10J-90	**805.080**	1	10	24	44	30	90	50	33
BBT30-HDC12J-90	**805.081**	1	12	26	46	32	90	50	36
BBT30-HDC16J-90	**805.480**	1	16	34	46	40	90	49	43
BBT30-HDC20J-90	**805.481**	1	20	38	52	43	90	40	43
BBT40-HDC4J-90	**805.082**	1	4	20	38	25	90	45	19
BBT40-HDC4J-135	**805.549**	1	4	20	44	30	135	85	19
BBT40-HDC6J-90	**805.083**	1	6	20	38	25	90	45	25
BBT40-HDC6J-135	**805.084**	1	6	20	44	29	135	85	25
BBT40-HDC8J-90	**805.085**	1	8	22	40	27	90	45	31
BBT40-HDC8J-135	**805.086**	1	8	22	46	31	135	85	31
BBT40-HDC10J-90	**805.087**	1	10	24	42	29	90	45	33
BBT40-HDC10J-135	**805.088**	1	10	24	48	33	135	85	33
BBT40-HDC12J-90	**805.089**	1	12	26	44	31	90	45	36
BBT40-HDC12J-135	**805.090**	1	12	26	50	35	135	85	36
BBT40-HDC16J-90	**805.482**	1	16	34	46	40	90	46	43
BBT40-HDC16J-135	**805.483**	1	16	34	50	44	135	89	43
BBT40-HDC20J-90	**805.484**	1	20	38	48	44	90	47	43
BBT40-HDC20J-135	**805.485**	1	20	38	53	48	135	90	43
BBT40-HDC25J-90	**805.677**	1	25	51	63	56	90	41	49
BBT40-HDC32J-90	**805.678**	2	32	59	75	-	90	20	56



Peripheric



Center Through



Model	Order No.	Fig.	Ød	ØD	ØD1	ØD2	L	L1	E
BBT50-HDC6J-120	**805.091**	1	6	20	48	26	120	55	25
BBT50-HDC8J-120	**805.092**	1	8	22	50	28	120	55	31
BBT50-HDC10J-120	**805.093**	1	10	24	52	30	120	55	33
BBT50-HDC12J-120	**805.094**	1	12	26	54	32	120	55	36
BBT50-HDC16J-120	**805.486**	1	16	34	58	41	120	56	43
BBT50-HDC20J-120	**805.487**	1	20	38	62	45	120	56	43
BBT50-HDC25J-120	**805.679**	1	25	48	70	58	120	59	49
BBT50-HDC32J-120	**805.680**	1	32	58	78	67	120	60	56
BBT50-HDC32J-120	**805.680**	1	32	58	78	67	120	60	56

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Straight collet can be used for HDC16J & 20J size models.
3. Adjusting screw cannot be used.
4. Larger diameter models, HDC16J or bigger are only available with peripheral coolant supply.
5. "E" is the min. clamping length.

Caution

- Use only cutting tools that have a shank tolerance within h6.
- Roughing endmills are not recommended for use with hydraulic chucks.
- Do not use with cutting tools made with a flat on the shank. (ie: Weldon type shank)
- Do not tighten the clamping screw without first inserting a cutting tool into the hydraulic chuck.
- Always insert the cutting tool into the hydraulic chuck beyond min. clamping length E.

Accessories & Spare Parts

PJC Collets	PSC Collets	Wiper Cleaners
		
▶ 347	▶ 348	▶ 370

Hydraulic Chuck Standard

For high precision machining in automotive, aerospace, medical and die & mold.

Coolant Through Hole

BIG-PLUS Dual-Contact

A.1



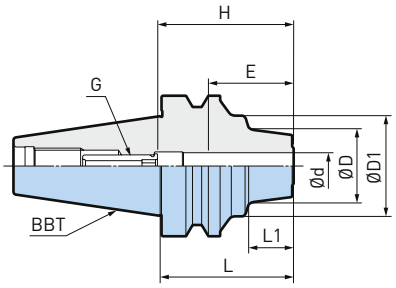


Fig. 1

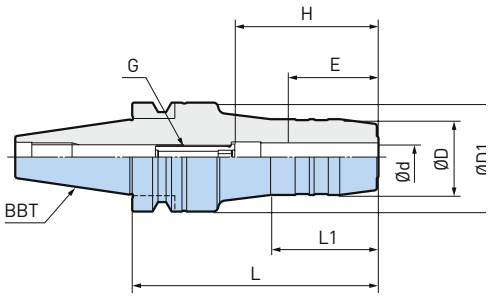


Fig. 2

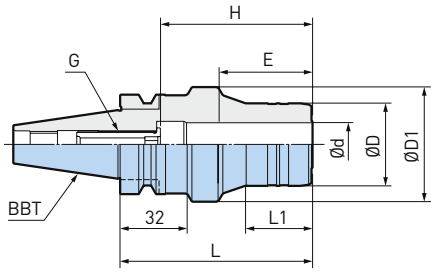


Fig. 3

ø3 - 31mm

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	L2	H	E	G
BBT30-HDC6-45	**978.071**	1	6	30	46	45	7	-	35 - 50	28	HDA6-05020
BBT30-HDC6-75	**978.034**	2	6	26	46	75	40	-	28 - 50	28	HDA6-05032
BBT30-HDC6-90	**978.072**	2	6	26	46	90	42	57	28 - 50	28	HDA6-05032
BBT30-HDC6-105	**978.073**	2	6	26	46	105	43	-	28 - 50	28	HDA6-05032
BBT30-HDC7-75	**978.074**	2	7	27	46	75	41	-	28 - 50	28	HDA6-05032
BBT30-HDC8-45	**978.075** •	2	8	32	46	45	7	-	35 - 50	28	HDA8-06020
BBT30-HDC8-75	**978.076**	2	8	28	46	75	41	-	28 - 50	28	HDA8-06032
BBT30-HDC8-90	**978.077**	2	8	28	46	90	44	57	28 - 50	28	HDA6-05032
BBT30-HDC8-105	**978.078**	2	8	28	46	105	44	-	28 - 50	28	HDA8-06032
BBT30-HDC9-75	**978.079**	2	9	29	46	75	41	-	28 - 50	28	HDA8-06032
BBT30-HDC10-45	**978.080**	1	10	34	46	45	7	-	45 - 55	33	HDA10-08015
BBT30-HDC10-75	**978.081**	2	10	30	46	75	36	-	33 - 55	33	HDA10-08032
BBT30-HDC10-90	**978.082**	2	10	30	46	90	45	51	33 - 55	33	HDA10-08032
BBT30-HDC10-105	**978.083**	2	10	30	46	105	45	-	33 - 55	33	HDA10-08032
BBT30-HDC11-90	**978.084**	2	11	31	46	90	51	45	33 - 55	33	HDA10-08032
BBT30-HDC12-45	**978.085**	1	12	36	46	45	7	-	55 - 60	38	HDA12-10010
BBT30-HDC12-75	**978.086**	2	12	32	46	75	36	-	38 - 60	38	HDA12-10032
BBT30-HDC12-90	**978.087**	2	12	32	46	90	45	51	38 - 60	38	HDA12-10032
BBT30-HDC12-105	**978.088**	2	12	32	46	105	45	-	38 - 60	38	HDA12-10032
BBT30-HDC13-90	**978.089**	2	13	33	46	90	45	51	38 - 60	38	HDA12-10032
BBT30-HDC14-90	**978.090**	2	14	34	46	90	46	52	38 - 60	38	HDA12-10032
BBT30-HDC15-90	**978.091**	2	15	37	46	90	47	-	43 - 70	43	HDA12-10032
BBT30-HDC16-45 *	**978.092**	1	16	42	46	45	7	-	70 - 70	43	-
BBT30-HDC16-75	**978.025**	2	16	38	46	75	35	-	43 - 70	43	HDA16-12030
BBT30-HDC16-90	**978.093**	2	16	38	46	90	47	-	43 - 70	43	HDA16-12037
BBT30-HDC16-105	**805.550**	2	16	38	46	105	47	-	43 - 70	43	HDA16-12037
BBT30-HDC18-90	**978.094**	2	18	36	51	90	31	41	43 - 70	43	HDA16-12037
BBT30-HDC20-60 **	**978.095** •	3	20	38	53	60	-	32	43 - 54	43	HDA16-12030
BBT30-HDC20-75	**978.038** •	3	20	38	53	75	16	32	46 - 70	43	HDA16-12030
BBT30-HDC20-90	**978.096**	2	20	38	38	90	31	41	43 - 70	43	HDA16-12037
BBT30-HDC20-105	**805.551**	2	20	38	46	105	40	-	43 - 70	43	HDA16-12037
BBT30-HDC25-105	**978.097**	3	25	55	63	105	44	32	52 - 80	52	HDA25-16039
BBT30-HDC32-105	**978.098**	2	32	60	75	105	39	-	56 - 80	56	HDA25-16039

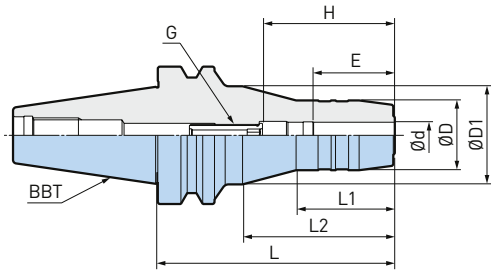


Fig. 4

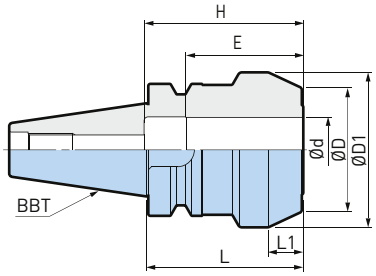


Fig. 5

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	L2	H	E	G
BBT40-HDC6-60	**800.131**	1	6	27	45	60	19	-	28 - 50	28	HDA6-05032
BBT40-HDC6-90	**978.343** •	4	6	26	45	90	44	50	28 - 50	28	HDA6-05032
BBT40-HDC6-110	**800.128**	4	6	26	45	110	44	70	28 - 50	28	HDA6-05032
BBT40-HDC6-135	**800.129**	4	6	26	45	135	44	-	28 - 50	28	HDA6-05032
BBT40-HDC6-165	**800.130**	4	6	26	45	165	44	-	28 - 50	28	HDA6-05032
BBT40-HDC7-90	**800.135**	4	7	27	45	90	44	-	28 - 50	28	HDA6-05032
BBT40-HDC8-60	**800.139**	1	8	29	45	60	19	-	28 - 50	28	HDA8-06032
BBT40-HDC8-90	**978.192**	4	8	28	45	90	44	50	28 - 50	28	HDA8-06032
BBT40-HDC8-110	**800.136**	4	8	28	45	110	44	-	28 - 50	28	HDA8-06032
BBT40-HDC8-135	**800.137**	4	8	28	45	135	44	-	28 - 50	28	HDA8-06032
BBT40-HDC8-165	**800.138**	4	8	28	45	165	44	-	28 - 50	28	HDA8-06032
BBT40-HDC9-90	**800.143**	4	9	29	45	90	45	-	28 - 50	28	HDA8-06032
BBT40-HDC10-60	**800.088**	1	10	31	45	60	20	-	33 - 55	33	HDA10-08032
BBT40-HDC10-90	**978.027**	4	10	30	45	90	45	50	33 - 55	33	HDA10-08032
BBT40-HDC10-110	**800.085**	4	10	30	45	110	45	70	33 - 55	33	HDA10-08032
BBT40-HDC10-135	**800.086**	4	10	30	45	135	45	-	33 - 55	33	HDA10-08032
BBT40-HDC10-165	**800.087**	4	10	30	45	165	45	-	33 - 55	33	HDA10-08032
BBT40-HDC11-90	**800.092**	4	11	31	45	90	45	-	33 - 55	33	HDA10-08032
BBT40-HDC12-60	**978.046** •	1	12	33	45	60	20	-	38 - 60	38	HDA12-10032
BBT40-HDC12-90	**800.096**	4	12	32	45	90	45	49	38 - 60	38	HDA12-10032
BBT40-HDC12-110	**800.093**	4	12	32	45	110	45	69	38 - 60	38	HDA12-10032
BBT40-HDC12-135	**800.094**	4	12	32	45	135	45	-	38 - 60	38	HDA12-10032
BBT40-HDC12-165	**800.095**	4	12	32	45	165	45	-	38 - 60	38	HDA12-10032
BBT40-HDC13-90	**800.099**	4	13	33	45	90	45	-	38 - 60	38	HDA12-10032
BBT40-HDC14-90	**978.028**	4	14	34	45	90	46	49	38 - 60	38	HDA12-10032
BBT40-HDC14-110	**800.100**	4	14	34	45	110	46	-	38 - 60	38	HDA12-10032
BBT40-HDC14-135	**800.101**	4	14	34	45	135	46	-	38 - 60	38	HDA12-10032
BBT40-HDC15-90	**800.104**	4	15	37	45	90	47	-	43 - 70	43	HDA16-12037
BBT40-HDC16-75	**800.108**	4	16	38	45	75	35	-	43 - 70	43	HDA16-12037
BBT40-HDC16-90	**978.193**	4	16	38	45	90	47	49	43 - 70	43	HDA16-12037
BBT40-HDC16-110	**800.105**	4	16	38	45	110	47	-	43 - 70	43	HDA16-12037
BBT40-HDC16-135	**800.106**	4	16	38	45	135	47	-	43 - 70	43	HDA16-12037
BBT40-HDC16-165	**800.107**	4	16	38	50	165	47	-	43 - 70	43	HDA16-12037
BBT40-HDC18-90	**978.194**	4	18	40	45	90	48	49	43 - 70	43	HDA16-12037
BBT40-HDC18-110	**800.109**	4	18	40	45	110	48	-	43 - 70	43	HDA16-12037
BBT40-HDC18-135	**800.110**	4	18	40	45	135	48	-	43 - 70	43	HDA16-12037
BBT40-HDC19-75 *	**800.111**	6	19	49.2	-	75	43	-	111	43	
BBT40-HDC20-90	**800.115** •	4	20	42	45	90	48	50	43 - 70	43	HDA16-12037
BBT40-HDC20-110	**800.112**	4	20	42	50	110	48	70	43 - 70	43	HDA16-12037
BBT40-HDC20-135	**800.113**	4	20	42	50	135	48	-	43 - 70	43	HDA16-12037
BBT40-HDC20-165	**800.114**	4	20	42	50	165	48	-	43 - 70	43	HDA16-12037
BBT40-HDC22-75 *	**806.011**	6	22	52	-	75	44,5	-	110	56	-
BBT40-HDC24-75 *	**800.116**	6	24	63	-	75	47	-	104	45	-
BBT40-HDC28-75 *	**806.012**	5	28	52	56	75	16	-	93	45	-
BBT40-HDC31-75 * *	**805.826**	5	31	74	-	75	30	-	76	56	-

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A.1

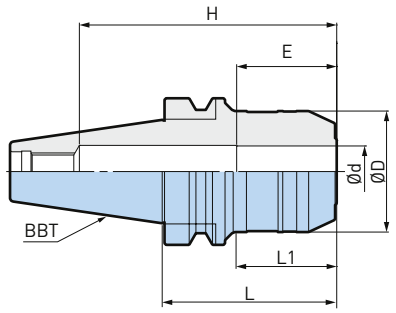


Fig. 6

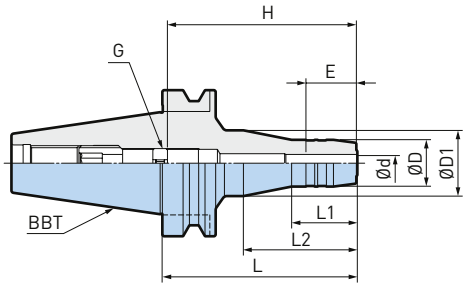


Fig. 7

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	L2	H	E	G
BBT50-HDC6L-105	**800.023**	7	6	26	45	105	44	48	80 - 120	28	HDA6-20010
BBT50-HDC6L-135	**800.024**	7	6	26	45	135	44	78	110 - 150	28	HDA6-20010
BBT50-HDC6L-150	**800.025**	7	6	26	45	150	44	93	125 - 165	28	HDA6-20010
BBT50-HDC6L-165	**800.026**	7	6	26	45	165	44	108	140 - 180	28	HDA6-20010
BBT50-HDC8L-105	**800.027**	7	8	28	45	105	45	48	80 - 120	28	HDA6-20010
BBT50-HDC8L-135	**800.275**	7	8	28	45	135	45	78	110 - 150	28	HDA6-20010
BBT50-HDC8L-150	**800.276**	7	8	28	45	150	45	93	125 - 165	28	HDA6-20010
BBT50-HDC8L-165	**800.277**	7	8	28	45	165	45	108	140 - 180	28	HDA6-20010
BBT50-HDC10L-105	**800.264**	7	10	30	45	105	45	48	80 - 120	33	HDA6-20010
BBT50-HDC10L-135	**800.265**	7	10	30	45	135	45	78	110 - 150	33	HDA6-20010
BBT50-HDC10L-150	**800.266**	7	10	30	45	150	45	93	125 - 165	33	HDA6-20010
BBT50-HDC10L-165	**800.267**	7	10	30	45	165	45	108	140 - 180	33	HDA6-20010
BBT50-HDC12L-105	**800.268**	7	12	32	45	105	45	48	80 - 120	38	HDA6-20010
BBT50-HDC12L-135	**800.269**	7	12	32	45	135	45	78	110 - 150	38	HDA6-20010
BBT50-HDC12L-150	**800.270**	7	12	32	45	150	45	93	125 - 165	38	HDA6-20010
BBT50-HDC12L-165	**800.271**	7	12	32	45	165	45	108	140 - 180	38	HDA6-20010
BBT50-HDC16L-90	**800.000**	8	16	38	47	90	40	43	56 - 96	43	HDA20-12047
BBT50-HDC16L-105	**800.272**	7	16	38	47	105	47	48	80 - 120	43	HDA6-20010
BBT50-HDC16L-135	**800.273**	7	16	38	47	135	48	78	110 - 150	43	HDA6-20010
BBT50-HDC16L-150	**800.274**	7	16	38	47	150	48	93	125 - 165	43	HDA6-20010
BBT50-HDC19L-90 *	**800.001**	6	19	49.2	-	90	45	-	149	43	-
BBT50-HDC20L-90	**800.007**	8	20	42	50	90	45	-	56 - 96	43	HDA20-12047
BBT50-HDC20L-105	**800.002**	8	20	42	50	105	47	48	71 - 111	43	HDA20-12047
BBT50-HDC20L-135	**800.003**	8	20	42	50	135	48	78	101 - 141	43	HDA20-12047
BBT50-HDC20L-150	**800.004**	8	20	42	50	150	48	93	116 - 156	43	HDA20-12047
BBT50-HDC20L-200	**800.005**	9	20	42	50	200	48	102	166 - 206	43	HDA20-12047
BBT50-HDC20L-250	**800.006**	9	20	42	50	250	48	102	216 - 256	43	HDA20-12047
BBT50-HDC22L-90 *	**806.013**	6	22	52	-	90	45	-	149	43	-
BBT50-HDC24L-90 *	**800.008**	6	24	63	-	90	41	-	149	45	-
BBT50-HDC25L-90	**800.014**	8	25	63	-	90	45	-	56 - 96	52	HDA20-12047
BBT50-HDC25L-105	**800.009**	8	25	63	-	105	60	-	71 - 111	52	HDA20-12047
BBT50-HDC25L-135	**800.010**	8	25	63	68	135	60	78	101 - 141	52	HDA20-12047
BBT50-HDC25L-150	**800.011**	8	25	63	70	150	60	92	116 - 156	52	HDA20-12047
BBT50-HDC25L-200	**800.012**	9	25	63	70	200	60	100	166 - 200	52	HDA20-12047
BBT50-HDC25L-250 *	**800.013**	9	25	63	70	250	60	100	200	52	-
BBT50-HDC28L-90 *	**806.014**	6	28	69	-	90	44	-	148	45	-
BBT50-HDC31L-90 *	**800.015**	6	31	72	-	90	45	-	147	56	-

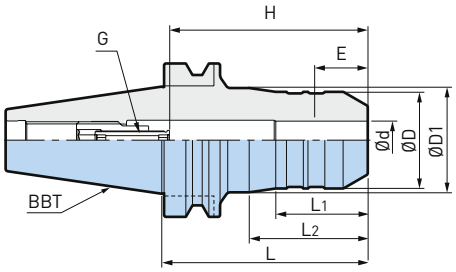


Fig. 8

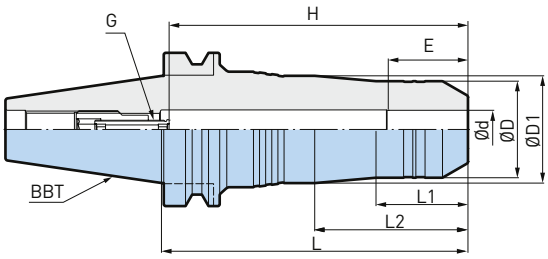


Fig. 9

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	L2	H	E	G
BBT50-HDC32L-90	**800.021**	8	32	72	-	90	47	-	56 - 96	56	HDA20-12047
BBT50-HDC32L-105	**800.016**	8	32	72	-	105	62	-	71 - 111	56	HDA20-12047
BBT50-HDC32L-135	**800.017**	8	32	72	78	135	60	78	101 - 141	56	HDA20-12047
BBT50-HDC32L-165	**800.018**	8	32	72	80	165	60	108	131 - 171	56	HDA20-12047
BBT50-HDC32L-200	**800.019**	9	32	72	80	200	60	100	166 - 200	56	HDA20-12047
BBT50-HDC32L-250 *	**800.020**	9	32	72	80	250	60	100	200	56	-
BBT50-HDC42L-110	**800.022**	8	42	96	-	440	72	-	76 - 116	65	HDA20-12047

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Straight collet (reduction sleeve) is available.
3. "E" is the min. clamping length.
4. "G" is the adjusting screw (optional).
5. "H" is the max. tool shank length that can be inserted for these models.
6. * Adjusting screw cannot be used.
7. ** Straight collet can not be used.

Caution

- Use only cutting tools that have a shank tolerance within h6.
- Roughing endmills are not recommended for use with hydraulic chucks.
- Do not use with cutting tools made with a flat on the shank. (ie: Weldon type shank)
- Do not tighten the clamping screw without first inserting a cutting tool into the hydraulic chuck.
- Always insert the cutting tool into the hydraulic chuck beyond min. clamping length E.

Accessories & Spare Parts

PJC Collets	PSC Collets	Adjusting Screws HDA	Wiper Cleaners
			
▶ 347	▶ 348	▶ 354	▶ 370

Hydraulic Chuck E Type

Substantial body design to allow high-feed endmilling, achieving highly reliable machining.

Coolant Through Hole

Dual-Contact

A.1



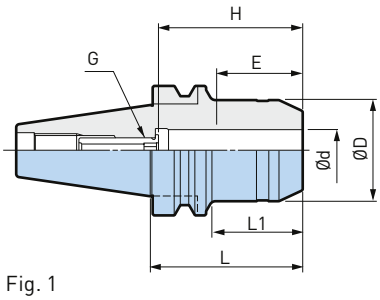


Fig. 1

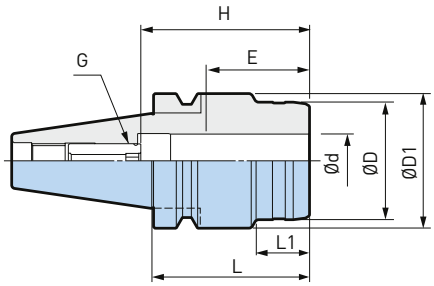


Fig. 2

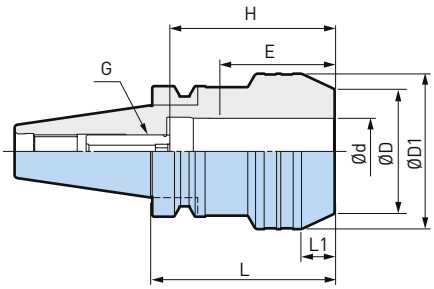


Fig. 3

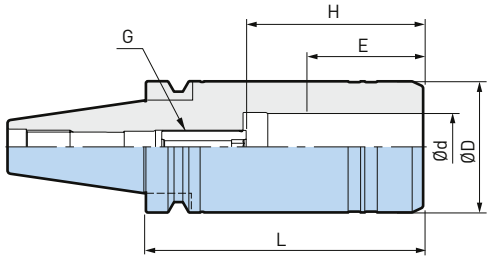


Fig. 4

ø3 - 32mm

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	H	E	G
BBT40-HDC20E-75	**978.173**	1	20	49,2	-	75	45	43 - 70	43	HDA16-12037
BBT40-HDC25E-75	**800.120**	2	25	55	63	75	25	52 - 80	52	HDA25-16033
BBT40-HDC25E-110	**800.117**	2	25	55	63	110	25	52 - 80	52	HDA25-16039
BBT40-HDC25E-135	**800.118**	2	25	55	63	135	25	52 - 80	52	HDA25-16039
BBT40-HDC25E-165	**800.119**	2	25	55	63	165	25	52 - 80	52	HDA25-16039
BBT40-HDC32E-90	**800.124**	3	32	60	75	90	16	56 - 80.5	56	HDA25-16039
BBT40-HDC32E-110	**800.121**	2	32	63	75	110	34	56 - 85	56	HDA25-16039
BBT40-HDC32E-135	**800.122**	4	32	62,9	-	135	-	56 - 85	56	HDA25-16039
BBT40-HDC32E-165	**800.123**	4	32	62,9	-	165	-	56 - 85	56	HDA25-16039

1. "H" is the max. tool shank length that can be inserted for these models.
2. Double sides hexagon screw type can be clamped from chuck and shank side.

Caution

- Use only cutting tools that have a shank tolerance within h6.
- Roughing endmills are not recommended for use with hydraulic chucks.
- Do not use with cutting tools made with a flat on the shank. (ie: Weldon type shank)
- Do not tighten the clamping screw without first inserting a cutting tool into the hydraulic chuck.
- Always insert the cutting tool into the hydraulic chuck beyond min. clamping length E.

Accessories & Spare Parts

PJC Collets	PSC Collets	Adjusting Screws HDA	TK Cleaners
			
▶ 347	▶ 348	▶ 354	▶ 370

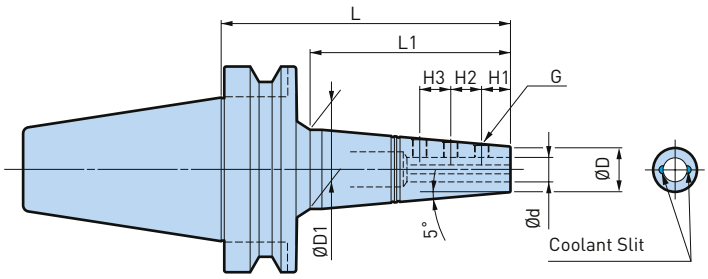
Mold Chuck

Slim and tapered design reduces outer diameter and improves stability.
Ideal for machining moulds with weldon tools.

Coolant Through Hole

BIG-PLUS Dual-Contact





ø3 - 20mm

Model	Order No.	Ød	ØD	L	L1	G	H1	H2	H3
BBT40-SSL3-135	**800.172**	3	27,5	135	100	M3	6	6	-
BBT40-SSL4-135	**800.173**	4	28,5	135	100	M4	6	7	-
BBT40-SSL6-135	**966.353**	6	30	135	100	M6	12	13	-
BBT40-SSL8-135	**966.354**	8	32	135	100	M6	13,5	18	-
BBT40-SSL10-150	**800.170**	10	36,5	150	115	M6	15	20	-
BBT40-SSL12-150	**800.171**	12	41,5	150	115	M8	15	16	16
BBT50-SSL6-150	**978.280**	6	31	150	104	M6	12	13	-
BBT50-SSL6-200	**800.363**	6	39,5	200	154	M6	12	13	-
BBT50-SSL8-150	**800.364**	8	32,5	150	104	M6	13,5	18	-
BBT50-SSL8-200	**800.365**	8	41,5	200	154	M6	13,5	18	-
BBT50-SSL10-150	**800.356**	10	34,5	150	104	M6	15	20	-
BBT50-SSL10-200	**800.357**	10	43,5	200	154	M6	15	20	-
BBT50-SSL12-150	**978.281**	12	39,5	150	104	M8	15	16	16
BBT50-SSL12-200	**800.358**	12	48	200	154	M8	15	16	16
BBT50-SSL16-150	**800.359**	16	43	150	104	M8	15	20	22
BBT50-SSL16-200	**800.360**	16	52	200	154	M8	15	20	22
BBT50-SSL20-150	**800.361**	20	47	150	104	M8	15	20	25
BBT50-SSL20-200	**800.362**	20	56	200	154	M8	15	20	25

1. Only 2 flute ball endmill with weldon shank is to be used
2. 1 set of exclusive clamping screws are included.

Accessories & Spare Parts

Mold Chuck Clamping Screw



▶ 366

Shrink Chuck Slim

Slim design reduces outer diameter for machining in tight spaces.

Coolant Through Hole

BIG-PLUS Dual-Contact

A.1



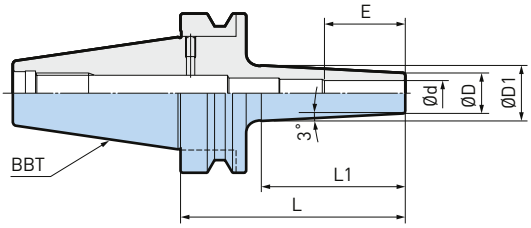


Fig. 1

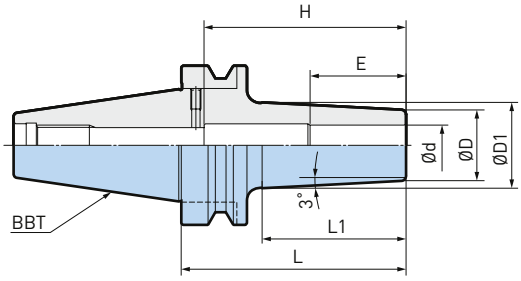


Fig. 2

ø6 - 12mm

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	H	E
BBT30-SRC6S-105	**978.179**	1	6	10	18	105	77	129 *	26
BBT30-SRC8S-105	**978.180**	1	8	13	21	105	77	129 *	26
BBT30-SRC10S-105	**800.063**	2	10	16	24	105	77	62	32
BBT30-SRC12S-105	**978.007**	2	12	19	27	105	77	72	36
BBT40-SRC6S-120	**800.168**	1	6	10	19	120	86	155 *	26
BBT40-SRC6S-165	**978.136**	1	6	10	23.5	165	127	200 *	26
BBT40-SRC8S-120	**978.205**	1	8	13	22	120	86	155 *	26
BBT40-SRC8S-165	**978.137**	1	8	13	26.5	165	129	200 *	26
BBT40-SRC10S-120	**978.367**	1	10	16	25	120	86	155 *	32
BBT40-SRC10S-165	**978.138**	1	10	16	29.5	165	129	200 *	32
BBT40-SRC12S-120	**800.163**	1	12	19	28	120	87	155 *	36
BBT40-SRC12S-165	**978.139**	1	12	19	33	165	131	200 *	36

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Use carbide cutter within a tolerance of h6.
3. Please refer to the operation manual of heating / cooling equipment, as some equipment may not be compatible.
4. "H" is the max. tool shank length that can be inserted for these models.
5. „H" with * indicates the maximum clamping depth to the Pull Stud Bolt.
6. "E" is the min. clamping length.

Accessories & Spare Parts

Wiper Cleaners



► 370

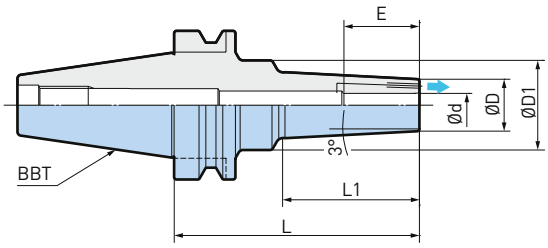
Shrink Chuck Jet Through

Efficient coolant supply to the cutting tool periphery.

Coolant Through Hole

Dual-Contact





ø6 - 12mm

Model	Order No.	Ød	ØD	ØD1	L	L1	E
BBT40-SRC6J-105	**804.751**	6	16	32	105	55	26
BBT40-SRC8J-105	**804.752**	8	19	35	105	55	26
BBT40-SRC10J-105	**804.749**	10	22	38	105	58	32
BBT40-SRC12J-105	**804.750**	12	24	40	105	63	36
BBT50-SRC6J-165	**804.755**	6	16	42	165	93	26
BBT50-SRC8J-165	**804.756**	8	19	45	165	99	26
BBT50-SRC10J-165	**804.753**	10	22	48	165	103	32
BBT50-SRC12J-165	**804.754**	12	24	50	165	108	36

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Use carbide cutter within a tolerance of h6.
3. Please refer to the operation manual of heating / cooling equipment, as some equipment may not be compatible.
4. "E" is the min. clamping length.

Accessories & Spare Parts

Wiper Cleaners



▶ 370

Shrink Chuck Standard

Substantial body provides higher rigidity.

Coolant Through Hole

BIG-PLUS Dual-Contact

A.1



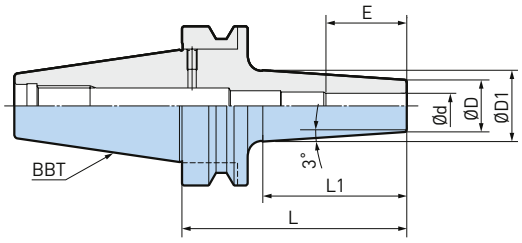


Fig. 1

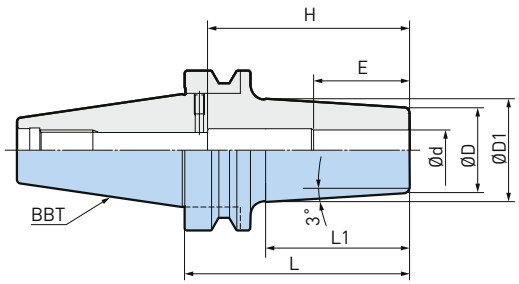


Fig. 2

ø4 - 20mm

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	H	E
BBT30-SRC4-75 *	**978.001**	1	4	10	15	75	44	-	16
BBT30-SRC6-75	**978.002**	1	6	14	19	75	47	-	26
BBT30-SRC8-75	**978.003**	1	8	18	23	75	47	-	26
BBT30-SRC10-75	**978.004**	2	10	22	27	75	47	62	32
BBT30-SRC12-75	**978.005**	2	12	24	29	75	47	72	36
BBT30-SRC16-75	**978.006**	2	16	28	33	75	48	80	38
BBT40-SRC4-90 *	**978.291**	1	4	10	15.5	90	52	-	16
BBT40-SRC6-90	**978.056**	1	6	14	20	90	57	-	26
BBT40-SRC6-150	**800.167**	1	6	14	26	150	114	-	26
BBT40-SRC8-90	**978.057**	1	8	18	24	90	57	-	26
BBT40-SRC8-150	**800.169**	1	8	18	18	150	114	-	26
BBT40-SRC10-90	**978.058**	1	10	22	28	90	57	-	32
BBT40-SRC10-150	**800.161**	1	10	22	34	150	116	-	32
BBT40-SRC12-90	**978.059**	1	12	24	30	90	57	-	36
BBT40-SRC12-150	**800.162**	1	12	24	36	150	116	-	36
BBT40-SRC16-90	**978.060**	2	16	28	34	90	57	80	38
BBT40-SRC16-165	**800.164**	2	16	28	42	165	132	80	38
BBT40-SRC20-90	**978.061**	2	20	34	40	90	57	100	42
BBT40-SRC20-165	**800.165**	2	20	34	48	165	132	100	42
BBT50-SRC6-105	**978.105**	1	6	14	20.5	105	61	-	26
BBT50-SRC6-165	**800.354**	1	6	14	26	165	116	-	26
BBT50-SRC8-105	**978.107**	1	8	18	24.5	105	61	-	26
BBT50-SRC8-165	**800.355**	1	8	18	30	165	116	-	26
BBT50-SRC10-105	**978.109**	1	10	22	28.5	105	61	-	32
BBT50-SRC10-165	**800.350**	1	10	22	34	165	116	-	32
BBT50-SRC12-105	**978.111**	1	12	24	30.5	105	61	-	36
BBT50-SRC12-165	**800.351**	1	12	24	36	165	116	-	36
BBT50-SRC16-105	**978.113**	1	16	28	34.5	105	61	-	38
BBT50-SRC16-165	**978.114**	1	16	28	40	165	116	-	38
BBT50-SRC20-105	**978.115**	1	20	34	40	105	61	-	42
BBT50-SRC20-165	**800.352**	1	20	34	46	165	116	-	42

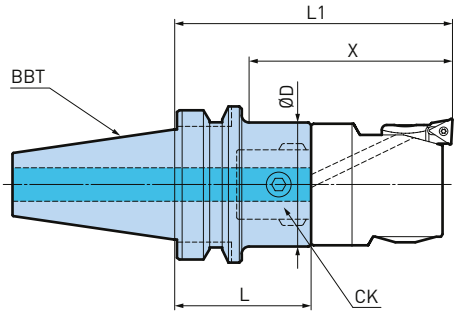
1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Use carbide cutter within a tolerance of h6.
3. * Use carbide cutter within a tolerance of h5.
4. Please refer to the operation manual of heating / cooling equipment, as some equipment may not be compatible.
5. "H" is the max. tool shank length that can be inserted for these models.
6. "E" is the min. clamping length.

CK Shanks with Center Through Coolant

Coolant Through Hole

BIG-PLUS Dual-Contact

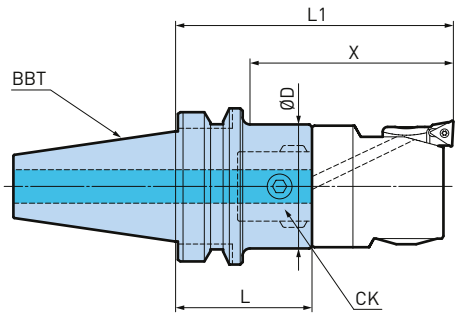




CK1 - CK7

Model	Order No.	CK	ØD	L	L1	X
BBT30-CKB1-72	**328.308**	CKB1	19	72	104	73
BBT30-CKB2-83	**328.260**	CKB2	24	82.5	118	93
BBT30-CKB3-39	**328.272**	CKB3	31	39	79	53
BBT30-CKB4-73	**328.261**	CKB4	39	73	120	93
BBT30-CKB5-63	**328.262**	CKB5	50	63	120	93
BBT30-CKB6-64	**328.289**	CKB6	64	64	64	42
BBT40-CKB1-72	**869.017**	CKB1	19	72	104	73
BBT40-CKB2-43	**807.184**	CKB2	24	42.5	78	48
BBT40-CKB2-83	**806.680**	CKB2	24	82.5	118	88
BBT40-CKB3-44	**807.150**	CKB3	31	44	84	53
BBT40-CKB3-124	**806.681**	CKB3	31	124	164	133
BBT40-CKB4-43	**806.328**	CKB4	39	43	90	58
BBT40-CKB4-118	**806.284**	CKB4	39	118	165	133
BBT40-CKB5-48	**806.902**	CKB5	50	48	105	73
BBT40-CKB5-108	**806.682**	CKB5	50	108	165	133
BBT40-CKN6-46	**323.832N**	CKN6	63.5	46	117	85
BBT40-CKN6-61	**323.831N**	CKN6	63.5	61	132	100
BBT40-CKB6-64	**806.924**	CKB6	64	64	132	32
BBT40-CKB6-94	**869.008**	CKB6	64	94	165	133

continues on the next page



Model	Order No.	CK	ØD	L	L1	X
BBT50-CKB1-102	**869.002**	CKB1	19	102	134	73
BBT50-CKB2-53	**869.003**	CKB2	24	53	88	47
BBT50-CKB2-113	**869.011**	CKB2	24	112.5	148	107
BBT50-CKB3-54	**869.004**	CKB3	31	54	94	52
BBT50-CKB3-124	**806.683**	CKB3	31	124	164	122
BBT50-CKB4-58	**869.005**	CKB3	31	124	164	122
BBT50-CKB4-118	**869.013**	CKB3	31	124	164	122
BBT50-CKB4-178	**869.015**	CKB4	39	178	225	182
BBT50-CKB4-208	**869.012**	CKB4	39	208	255	212
BBT50-CKB5-63	**869.001**	CKB5	50	63	120	77
BBT50-CKB5-108	**869.014**	CKB5	50	108	165	122
BBT50-CKB5-183	**806.684**	CKB5	50	183	240	197
BBT50-CKB5-228	**807.071**	CKB5	50	228	285	242
BBT50-CKB5-263	**806.685**	CKB5	50	263	320	277
BBT50-CKN6-72	**323.874N**	CKN6	63.5	72	143	100
BBT50-CKB6-94	**869.007**	CKB6	64	94	165	122
BBT50-CKB6-169	**807.183**	CKB6	64	169	240	197
BBT50-CKB6-229	**806.686**	CKB6	64	229	300	257
BBT50-CKB6-289	**806.687**	CKB6	64	289	360	317
BBT50-CKN7-86	**323.871N**	CKN7	90	86	203 (173)	160 (130)
BBT50-CKB7-136	**323.875**	CKB7	90	136	253 (223)	210 (180)
BBT50-CKB7-183	**806.688**	CKB7	90	183	300 (270)	257 (227)
BBT50-CKB7-243	**806.689**	CKB7	90	243	360 (330)	317 (287)

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. X and L1 dimensions on the table are reference figures when EWN/EWE head is mounted.
3. Cutting edge and drive key grooves are located in the same orientation.
4. ( ) Indicate the length when short version of EWN (EWN100-203CKB7-87) is mounted.

Accessories & Spare Parts

Fine Boring Heads



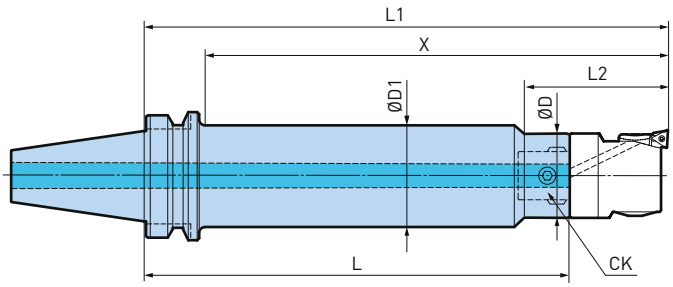
▶ 396-399

Extra Long CK Shanks with Center Through Coolant

Coolant Through Hole

BIG-PLUS Dual-Contact





A.1

CK4 - CK6

Model	Order No.	CK	ØD	ØD1	L	L1	L2	X
BBT50-CKB4-48-193	**806.690**	CKB4	39	48	193	240	65	197
BBT50-CKB4-48-238	**806.692**	CKB4	39	48	238	285	65	242
BBT50-CKB5-62-243	**806.693**	CKB5	50	62	243	300	80	257
BBT50-CKB5-62-303	**806.694**	CKB5	50	62	303	360	80	317
BBT50-CKB6-72-259	**806.695**	CKB6	64	72	259	330	100	287
BBT50-CKB6-72-314	**869.018**	CKB6	64	72	314	385	100	342
BBT50-CKB6-80-289	**806.696**	CKB6	64	80	289	360	100	317
BBT50-CKB6-80-349	**806.697**	CKB6	64	80	349	420	100	377

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. L1, L2 and X dimensions on the table are reference figures when EWN/EWE head is mounted.
3. Cutting edge and drive key grooves are located in the same orientation.

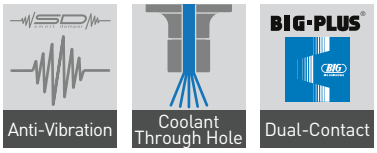
Accessories & Spare Parts

Fine Boring Heads

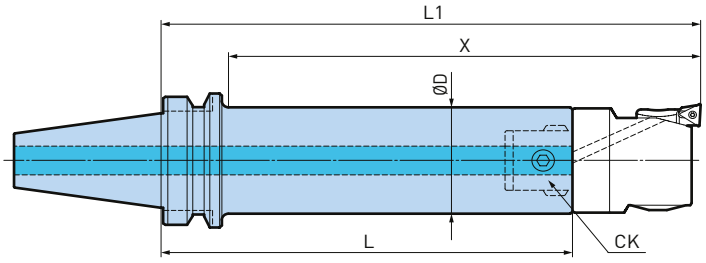


▶ 396-399

Smart Damper CK Shanks







CK4 - CK6

Model	Order No.	CK	ØD	L	L1	X
BBT50-CKB4DP-252	**807.547**	CKB4	39	252	299	246
BBT50-CKB5DP-314	**328.228**	CKB5	50	314	371	318
BBT50-CKB6DP-380	**328.230**	CKB6	64	380	451	408

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. X and L1 dimensions on the table are reference figures when EWN/EWE head is mounted.
3. Cutting edge and drive key grooves are located in the same orientation.

Accessories & Spare Parts

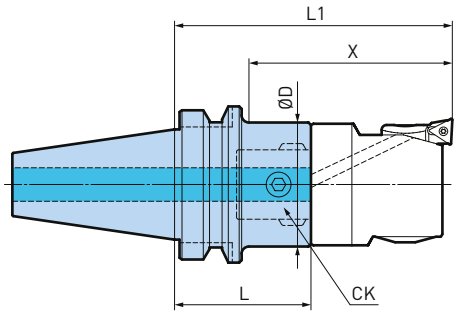
Fine Boring Heads



▶ 396-399

CK Shanks with Center Through Coolant





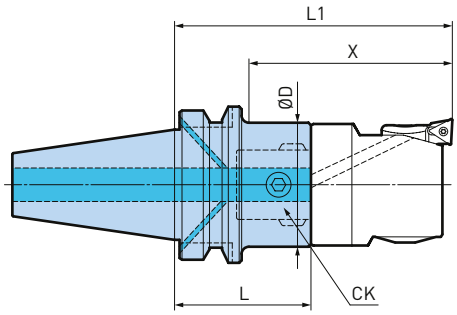
CK1, CK5, CK6, CK7

Model	Order No.	CK	ØD	L	L1	X
BT30-CKB1-35	**323.707**	CKB1	19	34.5	67	40
BT30-CKB5-38	**329.866**	CKB5	50	38	95	68
BT40-CKB6-46	**326.160**	CKB6	63.5	46	117	85
BT40-CKB6-61	**323.731**	CKB6	63.5	61	132	100
BT50-CKB6-72	**323.770**	CKB6	63.5	72	143	100
BT50-CKB7-86	**323.771**	CKB7	90	86	203 (173)	160 (130)

1. X and L1 dimensions on the table are reference figures when EWN/EWE head is mounted.
2. Cutting edge and drive key grooves are located in the same orientation.
3. ( ) Indicate the length when short version of EWN (EWN100-203CKB7-87) is mounted.

CK Shanks with Center and Flange Through Coolant





CK3 - CK7

Model	Order No.	CK	ØD	L	L1	X
BT30-CKB3-34ADF	**323.705**	CKB3	31	34	74	47
BT40-CKB3-42ADF	**323.738**	CKB3	31	42	82	50
BT40-CKB4-65ADF	**326.141**	CKB4	39	65	112	80
BT40-CKB5-55ADF	**323.730**	CKB5	50	55	112	80
BT40-CKB5-105ADF	**326.153**	CKB5	50	105	162	130
BT40-CKN6-46ADF	**323.735N**	CKN6	63.5	46	117	85
BT40-CKN6-61ADF	**323.736N**	CKN6	63.5	61	132	100
BT40-CKB6-91ADF	**326.163**	CKB6	63.5	91	162	130
BT50-CKN6-72ADF	**323.775N**	CKN6	63.5	72	143	100
BT50-CKB6-132ADF	**323.777**	CKB6	63.5	132	203	160
BT50-CKN7-86ADF	**323.776N**	CKN7	90	86	203 (173)	160 (130)

1. X and L1 dimensions on the table are reference figures when EWN/EWE head is mounted.
2. Cutting edge and drive key grooves are located in the same orientation.
3. ADF indicates both flange through and center through coolant available.
4. ( ) Indicate the length when short version of EWN (EWN100-203CKB7-87) is mounted.

Accessories & Spare Parts

Fine Boring Heads



▶ 396-399

Face Mill Arbors Type FMH

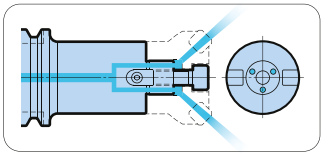
Coolant ports on the face.

Coolant Through Hole

BIG-PLUS Dual-Contact

A.1





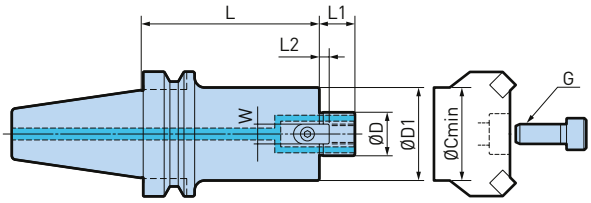


Fig. 1

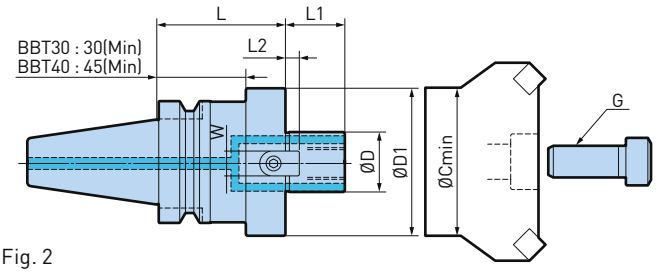


Fig. 2

Model	Order No.	Fig.	ØD	ØD1	L	L1	L2	W	G	ØC min.
BBT30-FMH16-37-35	**978.326**	1	16	37	35	16	5	8	M8	28
BBT30-FMH22-47-45	**978.259**	2	22	47	45	18	5	10	M10	38
BBT30-FMH22-60-45	**805.569**	2	22	60	45	18	5	10	M10	38
BBT30-FMH27-60-45	**978.273**	2	27	60	45	20	6	12	M12	46
BBT40-FMH16-37-40	**800.066**	1	16	37	40	16	5	8	M8	28
BBT40-FMH22-47-45	**978.145**	1	22	47	45	18	5	10	M10	38
BBT40-FMH22-47-60	**978.324**	1	22	47	60	18	5	10	M10	36
BBT40-FMH22-47-90	**800.074**	1	22	47	90	18	5	10	M10	36
BBT40-FMH22-47-150	**978.378**	1	22	47	150	18	5	10	M10	36
BBT40-FMH22-60-45	**978.368**	1	22	60	45	18	5	10	M10	38
BBT40-FMH22-60-60	**800.075**	1	22	60	60	18	5	10	M10	38
BBT40-FMH22-60-90	**978.208**	1	22	60	90	18	5	10	M10	38
BBT40-FMH27-60-45	**978.219**	1	27	60	45	20	6	12	M12	46
BBT40-FMH27-60-60	**800.079**	1	27	60	60	20	6	12	M12	46
BBT40-FMH27-60-90	**978.128**	1	27	60	90	20	6	12	M12	46
BBT40-FMH27-76-60	**800.080**	2	27	76	60	20	6	12	M12	48
BBT40-FMH27-76-90	**800.081**	2	27	76	90	20	6	12	M12	48
BBT40-FMH32-96-60	**978.035**	2	32	96	60	22	7	14	M16	58

Model	Order No.	Fig.	ØD	ØD1	L	L1	L2	W	G	ØC min.
BBT50-FMH16-37-60	**800.207**	1	16	37	60	16	5	8	M8	28
BBT50-FMH16-37-105	**800.204**	1	16	37	105	16	5	8	M8	28
BBT50-FMH16-37-150	**800.205**	1	16	37	150	16	5	8	M8	28
BBT50-FMH16-37-200	**800.206**	1	16	37	200	16	5	8	M8	28
BBT50-FMH22-47-60	**978.129**	1	22	47	60	18	5	10	M10	38
BBT50-FMH22-47-105	**978.130**	1	22	47	105	18	5	10	M10	36
BBT50-FMH22-47-150	**978.131**	1	22	47	150	18	5	10	M10	36
BBT50-FMH22-47-200	**978.148**	1	22	47	200	18	5	10	M10	36
BBT50-FMH22-47-250	**800.221**	1	22	47	250	18	5	10	M10	36
BBT50-FMH22-47-300	**800.222**	1	22	47	300	18	5	10	M10	36
BBT50-FMH22-47-350	**800.223**	1	22	47	350	18	5	10	M10	36
BBT50-FMH22-60-60	**978.403**	1	22	60	60	18	5	10	M10	38
BBT50-FMH22-60-105	**978.167**	1	22	60	105	18	5	10	M10	38
BBT50-FMH22-60-150	**800.224**	1	22	60	150	18	5	10	M10	38
BBT50-FMH22-60-200	**800.225**	1	22	60	200	18	5	10	M10	38
BBT50-FMH22-60-250	**978.141**	1	22	60	250	18	5	10	M10	38
BBT50-FMH22-60-300	**800.226**	1	22	60	250	18	5	10	M10	38
BBT50-FMH22-60-350	**800.227**	1	22	60	350	18	5	10	M10	38
BBT50-FMH27-60-45	**800.237**	1	27	60	45	20	6	12	M12	46
BBT50-FMH27-60-90	**978.174**	1	27	60	90	20	6	12	M12	46
BBT50-FMH27-60-150	**978.175**	1	27	60	150	20	6	12	M12	46
BBT50-FMH27-60-200	**800.235**	1	27	60	200	20	6	12	M12	46
BBT50-FMH27-60-250	**978.029**	1	27	60	250	20	6	12	M12	46
BBT50-FMH27-60-300	**800.236**	1	27	60	300	20	6	12	M12	46
BBT50-FMH27-76-45	**978.341**	1	27	76	45	20	6	12	M12	48
BBT50-FMH27-76-90	**978.168**	1	27	76	90	20	6	12	M12	48
BBT50-FMH27-76-150	**978.142**	1	27	76	150	20	6	12	M12	48
BBT50-FMH27-76-200	**800.238**	1	27	76	200	20	6	12	M12	48
BBT50-FMH27-76-250	**800.239**	1	27	76	250	20	6	12	M12	48
BBT50-FMH27-76-300	**800.240**	1	27	76	240	20	6	12	M12	48
BBT50-FMH32-96-45	**978.132**	1	32	96	45	22	7	14	M16	58
BBT50-FMH32-96-90	**978.133**	1	32	96	90	22	7	14	M16	58
BBT50-FMH32-96-150	**978.143**	1	32	96	150	22	7	14	M16	58
BBT50-FMH32-96-200	**978.183**	1	32	96	200	22	7	14	M16	58
BBT50-FMH32-96-300	**800.256**	1	32	96	300	22	7	14	M16	80
BBT50-FMH40-100-45	**978.149**	1	40	100	45	26	8.5	16	M20 (MBA-M20H)	70
BBT50-FMH40-100-75	**961.371**	1	40	100	75	26	8.5	16	M20(MBA-M20H)	70
BBT50-FMH40-100-105	**961.372**	1	40	100	105	26	8.5	16	M20(MBA-M20H)	70

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Clamp bolt is included.
3. By using a clamping screw with a through bore, coolant is supplied through the screw

Accessories & Spare Parts

Clamp Bolts



► 355

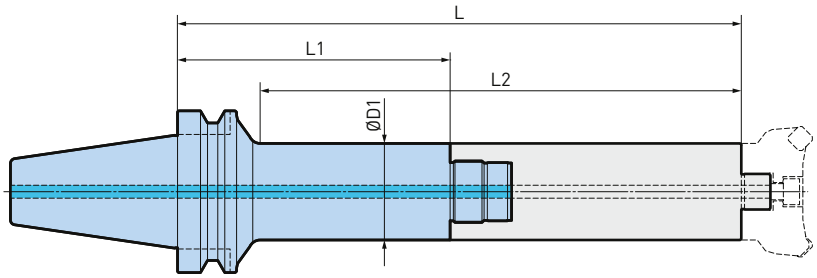
Smart Damper Basic Holders for Milling Heads

Coolant Through Hole

BIG-PLUS Dual-Contact

A.1



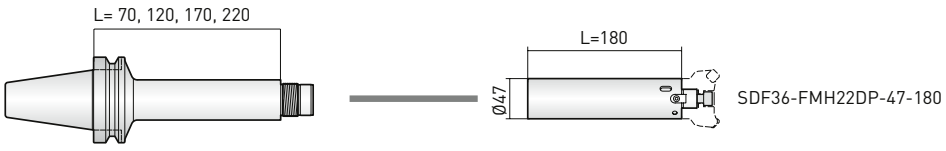


Model	Order No.	ØD1	L	L1	L2	Damper Head Model
BBT50-SDF36-47-70	**806.579**	47	250	70	197	FMH_DP-47
BBT50-SDF36-47-120	**806.580**	47	300	120	247	FMH_DP-47
BBT50-SDF36-47-170	**804.975**	47	350	170	297	FMH_DP-47
BBT50-SDF36-47-220	**804.970**	47	400	220	347	FMH_DP-47
BBT50-SDF36-60-70	**806.581**	60	250	70	197	FMH_DP-60
BBT50-SDF36-60-120	**806.582**	60	300	120	247	FMH_DP-60
BBT50-SDF36-60-170	**804.973**	60	350	170	297	FMH_DP-60
BBT50-SDF36-60-220	**804.974**	60	400	220	347	FMH_DP-60
BBT50-SDF57-76-70	**807.674**	76	250	70	207	FMH_DP-76
BBT50-SDF57-76-120	**807.675**	76	300	120	257	FMH_DP-76
BBT50-SDF57-76-170	**807.676**	76	350	170	307	FMH_DP-76
BBT50-SDF57-76-220	**807.677**	76	400	220	357	FMH_DP-76

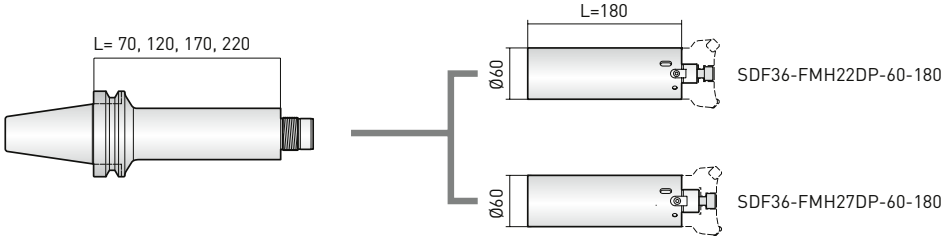
1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.

Combinations Basic Holder Damper Head

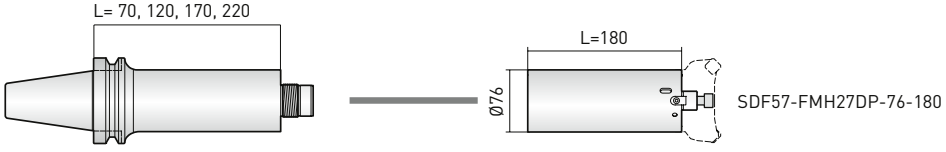
Ø47



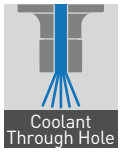
Ø60



Ø76

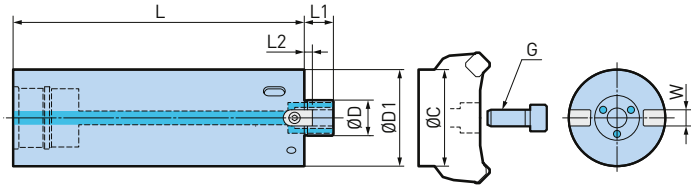


Smart Damper Damper Heads for Mills









Model	Order No.	ØD	ØD1	L	L1	L2	G	W	ØC min.
SDF36-FMH22DP-47-180	**804.969**	22	47	180	18	5	M10	10	36
SDF36-FMH22DP-60-180	**804.971**	22	60	180	18	5	M10	10	38
SDF36-FMH27DP-60-180	**804.972**	27	60	180	20	6	M12	12	46
SDF57-FMH27DP-76-180	**807.673**	27	76	180	20	6	M12	12	48

1. Wrench and cutter clamping bolt are included.
2. By using a clamping screw with a through bore, coolant is supplied through the screw

Accessories & Spare Parts

FK Wrenches	Clamp Bolts
	
▶ 352	▶ 355

Super Keyless Chuck

Securely chucks the drill with simple operation.

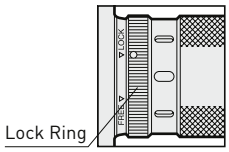
BIG-PLUS Dual-Contact

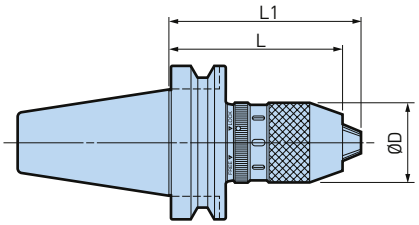
A.1



Reverse lock mechanism (SKL13)

- No loosening even when the main spindle suddenly stops, by the reverse lock mechanism using a lock ring.
- Runout accuracy within 0.05mm





Model	Order No.	Ød	ØD	L	L1	Wrench
BBT30-KLC6.5-70	**805.444**	0,5 - 6,5	34	70	76,5	FS6.5LC
BBT30-SKL13-110	**802.336**	0,5 - 13	51	110	122,5	FS13LC
BBT40-KLC6.5-75	**805.531**	0,5 - 6,5	34	75	81,5	FS6.5LC
BBT40-SKL13-105	**805.168**	0,5 - 13	51	106	118,5	FS13LC
BBT50-SKL13-115	**805.170**	0,5 - 13	51	115	127,5	FS13LC

1. Wrench is included.
2. KLC type does not have the reverse lock mechanism.

Accessories & Spare Parts

Hook wrench for Super Keyless Chuck (FS)



► 355

Side Lock Holders Type TSL



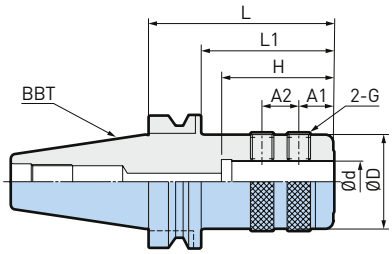


Fig. 1

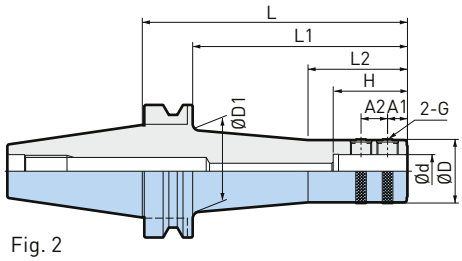


Fig. 2

ø16 - 50mm

Model	Order No.	Fig.	Ød	ØD	L	L1	L2	H	A1	A2	G
BBT30-TSL16-75	**800.064**	1	16	48	75	-	-	48	14	14	M10
BBT30-TSL20-75	**978.314**	1	20	48	75	-	-	50	14	14	M10
BBT30-TSL25-80	**978.315**	1	25	48	80	-	-	56	15	20	M16
BBT30-TSL32-85	**805.243**	1	32	63	85	-	-	60	15	20	M16
BBT40-TSL16-90	**800.175**	1	16	48	90	63	-	48	14	14	M10
BBT40-TSL16-105	**800.174**	1	16	48	105	78	-	48	14	14	M10
BBT40-TSL20-90	**800.177**	1	20	48	90	63	-	50	14	14	M10
BBT40-TSL20-105	**800.176**	1	20	48	105	78	-	50	14	14	M10
BBT40-TSL25-90	**800.179**	1	25	48	90	63	-	56	15	20	M16
BBT40-TSL25-105	**800.178**	1	25	48	105	78	-	56	15	20	M16
BBT40-TSL32-105	**978.318**	1	32	63	105	78	-	60	15	20	M16
BBT40-TSL32-135	**800.180**	1	32	63	135	108	-	60	15	20	M16
BBT40-TSL40-105	**978.317**	1	40	68	105	-	-	70	15	25	M16
BBT50-TSL16-90	**800.369**	1	16	48	90	52	-	48	14	14	M10
BBT50-TSL16-135	**800.366**	1	16	48	135	97	-	48	14	14	M10
BBT50-TSL16-165	**800.367**	1	16	48	165	127	-	48	14	14	M10
BBT50-TSL16-200	**800.368**	2	16	48	200	162	75	48	14	14	M10
BBT50-TSL20-90	**800.374**	1	20	48	90	52	-	50	14	14	M10
BBT50-TSL20-135	**800.370**	1	20	48	135	97	-	50	14	14	M10
BBT50-TSL20-165	**800.371**	1	20	48	165	127	-	50	14	14	M10
BBT50-TSL20-200	**800.372**	2	20	48	200	162	75	50	14	14	M10
BBT50-TSL20-250	**800.373**	2	20	48	250	212	90	50	14	14	M10
BBT50-TSL25-105	**800.375**	1	25	48	105	67	-	56	15	20	M16
BBT50-TSL25-135	**800.376**	1	25	48	135	97	-	56	15	20	M16
BBT50-TSL25-165	**800.377**	1	25	48	165	127	-	56	15	20	M16
BBT50-TSL25-200	**800.378**	2	25	48	200	162	75	56	15	20	M16
BBT50-TSL25-250	**800.379**	2	25	48	250	212	90	56	15	20	M16
BBT50-TSL32-105	**800.380**	1	32	63	105	67	-	60	15	20	M16
BBT50-TSL32-135	**800.381**	1	32	63	135	97	-	60	15	20	M16
BBT50-TSL32-165	**800.382**	1	32	63	165	127	-	60	15	20	M16
BBT50-TSL32-200	**800.383**	1	32	63	200	162	-	60	15	20	M16
BBT50-TSL32-250	**800.384**	1	32	63	250	212	-	60	15	20	M16
BBT50-TSL40-105	**800.385**	1	40	68	105	67	-	70	15	25	M16
BBT50-TSL40-135	**800.386**	1	40	68	135	97	-	70	15	25	M16
BBT50-TSL40-165	**800.387**	1	40	68	165	127	-	70	15	25	M16
BBT50-TSL40-200	**800.388**	1	40	68	200	162	-	70	15	25	M16
BBT50-TSL40-250	**800.389**	1	40	68	250	212	-	70	15	25	M16
BBT50-TSL50-105	**800.390**	1	50	84	105	67	-	70	15	25	M16
BBT50-TSL50-150	**800.391**	1	50	84	150	112	-	70	15	25	M16

Accessories & Spare Parts

Sleeves for TSL & OSL



▶ 355

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. "H" is the max. tool shank length that can be inserted for these models.
3. Not compatible with Weldon DIN 1835 B / DIN 6535 HB.

Side Lock Holders for Weldon

Coolant Through Hole

Dual-Contact

A.1



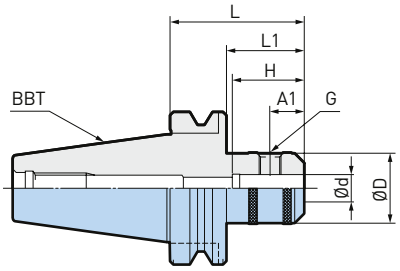


Fig. 1

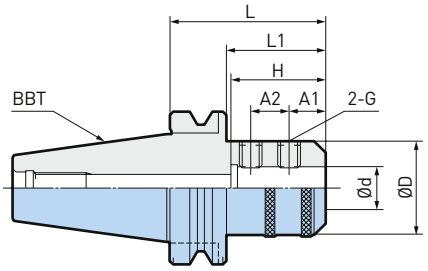


Fig. 2

ø6 - 50mm

Model	Order No.	Fig.	Ød	ØD	L	L1	A1	A2	H	G
BBT30-ISL6-60	**961.394**	1	6	25	60	38	18	-	85 *	M6
BBT30-ISL8-60	**961.395**	1	8	28	60	38	18	-	85 *	M8
BBT30-ISL10-60	**961.396**	1	10	35	60	38	20	-	45	M10
BBT30-ISL12-60	**961.397**	1	12	42	60	38	22.5	-	48	M12
BBT30-ISL16-60	**966.341**	1	16	48	60	38	24	-	53	M14
BBT40-ISL6-75	**807.200**	1	6	25	75	48	18	-	110 *	M6
BBT40-ISL8-75	**807.201**	1	8	28	75	48	18	-	110 *	M8
BBT40-ISL10-75	**807.202**	1	10	35	75	48	20	-	110 *	M10
BBT40-ISL12-75	**961.362**	1	12	42	75	48	22.5	-	110 *	M12
BBT40-ISL16-75	**961.363**	1	16	48	75	48	24	-	53	M14
BBT40-ISL20-75	**961.364**	1	20	52	75	48	25	-	55	M16
BBT40-ISL25-90	**961.365**	2	25	63.5	90	63	24	25	60	M18 P2
BBT40-ISL32-105	**961.366**	2	32	72	105	-	24	28	82	M20 P2
BBT50-ISL16-90	**961.367**	1	16	48	90	52	24	-	145 *	M14
BBT50-ISL16-150	**800.297**	2	16	48	150	60	24	-	205 *	M14
BBT50-ISL20-90	**961.368**	1	20	52	90	52	25	-	145 *	M16
BBT50-ISL20-150	**800.299**	2	20	52	150	60	25	-	60	M16
BBT50-ISL25-105	**961.369**	2	25	65	105	67	24	25	60	M18 P2
BBT50-ISL25-150	**800.301**	2	25	65	150	107	24	25	60	M18 P2
BBT50-ISL32-105	**978.017**	2	32	72	105	67	24	28	90	M20 P2
BBT50-ISL32-150	**800.303**	2	32	72	150	107	24	28	90	M20 P2
BBT50-ISL40-120	**978.018**	2	40	90	120	82	30	32	90	M20 P2
BBT50-ISL40-150	**800.305**	2	40	90	150	109	30	32	90	M20 P2
BBT50-ISL42-120	**800.307**	2	42	90	120	79	30	32	90	M20 P2
BBT50-ISL42-150	**800.308**	2	42	99,5	150	109	30	32	90	M20 P2
BBT50-ISL50-121	**978.294**	2	50	99.5	121	83	35	35	90	M24 P2

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Use a cutting tool in accordance to DIN 1835 B/DIN 6535 HB.
3. "H" is the max. tool shank length that can be inserted for these models.
4. H with * indicates the maximum clamping depth to the Pull Stud Bolt.

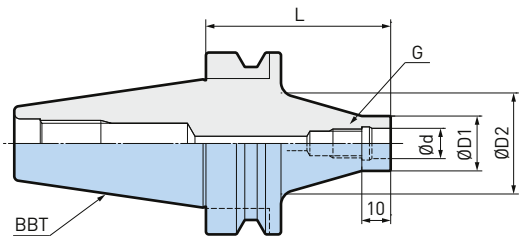
Holders for Screw-On Cutter

General metric screw-on type cutting tools can be used with these models.

Coolant Through Hole

BIG-PLUS Dual-Contact





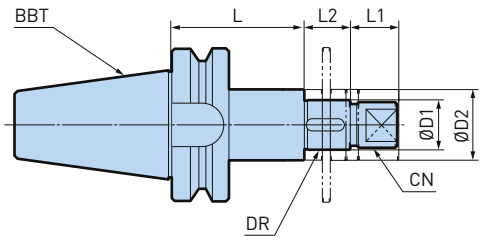
Model	Order No.	Ød	ØD1	ØD2	L	G
BBT30-M10-19-45	**806.601**	10.5	19	35	45	M10
BBT30-M12-24-40	**806.602**	12.5	24	40	40	M12
BBT30-M16-29-35	**806.603**	17	29	40	35	M16
BBT40-M10-19-65	**806.604**	10.5	19	35	65	M10
BBT40-M10-19-110	**807.361**	10.5	19	35	110	M10
BBT40-M12-24-60	**806.605**	12.5	24	40	60	M12
BBT40-M12-24-105	**807.362**	12.5	24	40	105	M12
BBT40-M16-29-55	**806.606**	17	29	45	55	M16
BBT40-M16-29-100	**807.363**	17	29	45	100	M16

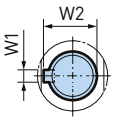
1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.

Side Cutter Arbors

BIG-PLUS Dual-Contact







Model	Order No.	ØD1	ØD2	L	L1	L2	W1	W2
BBT40-SCA25.4-75	**804.760**	25.4	40	75	25	30	6.35	27.78
BBT40-SCA25.4-120	**804.762**	25.4	40	120	25	30	6.35	27.78
BBT40-SCA31.75-75	**804.761**	31.75	46	75	30	30	7.92	34.92
BBT50-SCA25.4-90	**804.757**	25.4	40	90	25	30	6.35	27.78
BBT50-SCA25.4-135	**804.763**	25.4	40	135	25	30	6.35	27.78
BBT50-SCA31.75-90	**804.758**	31.75	46	90	30	30	7.92	34.92
BBT50-SCA31.75-135	**804.764**	31.75	46	135	30	30	7.92	34.92
BBT50-SCA38.1-90	**804.759**	38.1	55	90	36	30	9.52	42.06
BBT50-SCA38.1-135	**804.765**	38.1	55	135	36	30	9.52	42.06

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Nut (CN) is included.
3. Distance collars (DR) of 5 mm, 8 mm, 10 mm and 12 mm are included.

Morse Taper Holders

Precise finish of inner taper guarantees high concentricity.

BIG-PLUS Dual-Contact

A.1



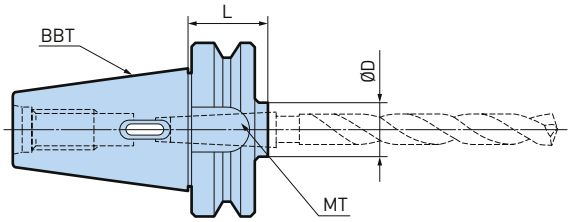


Fig. 1

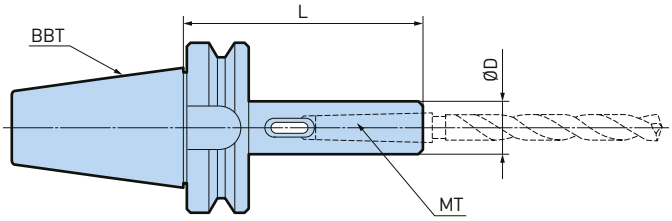


Fig. 2

Model	Order No.	Fig.	MT No.	ØD	L
BBT30-MTA1-60	**978.274**	1	1	25	60
BBT30-MTA2-60	**978.254**	1	2	32	60
BBT30-MTA3-80	**978.255**	1	3	40	80
BBT40-MTA1-45	**978.399**	1	1	25	45
BBT40-MTA1-120	**800.158**	2	1	25	120
BBT40-MTA2-45	**978.164**	1	2	32	45
BBT40-MTA2-120	**800.159**	2	2	32	120
BBT40-MTA3-75	**978.400**	1	3	40	75
BBT40-MTA3-135	**800.160**	2	3	40	135
BBT40-MTA4-90	**978.165**	2	4	50	90
BBT50-MTA1-45	**800.329**	1	1	25	45
BBT50-MTA1-120	**800.325**	2	1	25	120
BBT50-MTA1-210	**800.327**	2	1	25	210
BBT50-MTA2-45	**800.335**	1	2	32	45
BBT50-MTA2-135	**800.330**	2	2	32	135
BBT50-MTA2-210	**800.332**	2	2	32	210
BBT50-MTA3-45	**800.341**	1	3	40	45
BBT50-MTA3-75	**800.342**	2	3	40	75
BBT50-MTA3-150	**800.336**	2	3	40	150
BBT50-MTA3-210	**800.338**	2	3	40	210
BBT50-MTA4-75	**800.347**	1	4	50	75
BBT50-MTA4-180	**800.343**	2	4	50	180
BBT50-MTA4-250	**800.345**	2	4	50	250
BBT50-MTA5-105	**800.348**	2	5	65	105
BBT50-MTA5-210	**800.349**	2	5	65	210

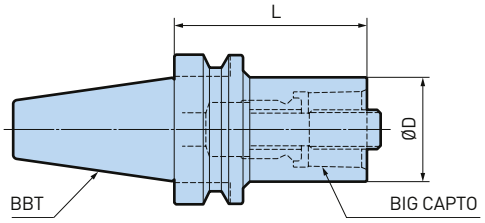
1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.

BIG CAPTO Basic Holders

Coolant Through Hole

BIG-PLUS Dual-Contact





Model	Order No.	BIG CAPTO	ØD	L
BBT40-C3-30	**973.598**	C3	32	30
BBT40-C4-40	**802.350**	C4	40	40
BBT40-C5-50	**973.600**	C5	50	50
BBT40-C6-75	**973.601**	C6	63	75
BBT50-C3-40	**973.602**	C3	32	40
BBT50-C4-40	**973.603**	C4	40	40
BBT50-C5-40	**973.604**	C5	50	40
BBT50-C6-50	**973.605**	C6	63	50
BBT50-C8-70	**803.736**	C8	80	70

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Clamp bolt is included.

A.1

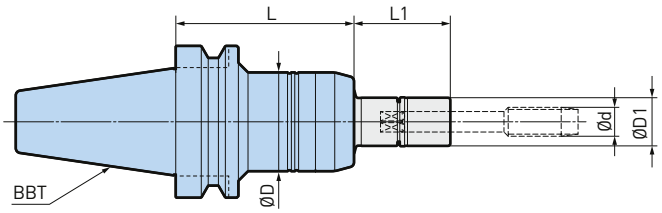
MEGA Synchro Tapping Holder

Compensates for synchronization errors during rigid tapping. Improves thread quality and tool life by reducing thrust loads caused by synchronization errors up to 90%.

Coolant Through Hole

BIG-PLUS Dual-Contact





M3 - M20

Model	Order No.	Tap Holder	Ød	ØD	ØD1	L	L1
BBT30-MGT6-70	**965.401**	MGT6	M3-M8	36	16	70	30 - 200
BBT30-MGT12-70	**965.402**	MGT12	M5-M12 / P1/8	41	20	70	30 - 200
BBT30-MGT20-110	**965.403**	MGT20	M10-M20 / P1/4-P1/2	54	30	110	35 - 150
BBT40-MGT6-75	**965.404**	MGT6	M3-M8	36	16	75	30 - 200
BBT40-MGT12-75	**965.405**	MGT12	M5-M12 / P1/8	41	20	75	30 - 200
BBT40-MGT20-95	**965.406**	MGT20	M10-M20 / P1/4-P1/2	54	30	95	35 - 150
BBT50-MGT6-90	**965.407**	MGT6	M3-M8	36	16	90	30 - 200
BBT50-MGT12-90	**965.408**	MGT12	M5-M12 / P1/8	41	20	90	30 - 200
BBT50-MGT20-105	**965.409**	MGT20	M10-M20 / P1/4-P1/2	54	30	105	35 - 150

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Tap holder is to be ordered separately.
3. Synrchonized tapping function is required on the machine.

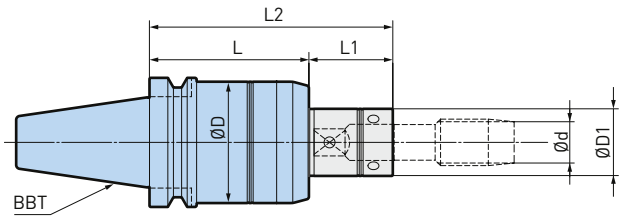
MEGA Synchro Tapping Holder MGT36

For large Tap MGT36

Coolant Through Hole

BIG-PLUS Dual-Contact





M20 - M36

Model	Order No.	Ød	ØD	ØD1	L	L1	L2
BBT50-MGT36-125	**800.323**	M20-36 / P1/4-P1	94	38-52	125	65	190

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Tap holder is to be ordered separately.
3. Synrchonized tapping function is required on the machine.

Accessories & Spare Parts

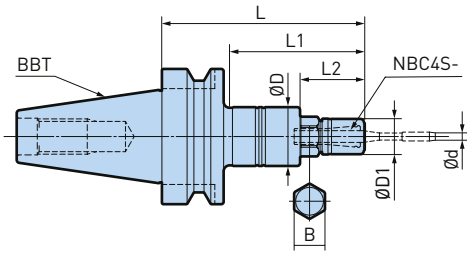
Tap Holder	MEGA Wrenches	Accessories
		
▶ 356-363	▶ 351	▶ 364-365

MEGA Synchro Tapping Holder MGT3

For small tapping tools: Type MGT3

BIG-PLUS Dual-Contact





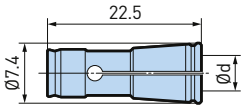
M1 - M3

Model	Order No.	Ød	ØD	ØD1	L	L1	L2	B
BBT30-MGT3-70	**965.400**	M1 - M3	20	12	70	46	22	12
BBT40-MGT3-90	**805.723**	M1 - M3	20	12	90	61	22	12

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Synrchonized tapping function is required on the machine.
3. MEGA nut is included in delivery.
4. MEGA wrench (MGR12) and common spanner (12 mm) are required to clamp/unclamp the tap.

Micro Collet for MGT3





Model	Order No.	Tapping Range			Tap Shank
		DIN 371	ISO 529	JIS	Ød
NBC4S-2.5AA	**961.468**	M1 - M1.8	M2		2.5
-2.8AA	**968.353**	M2 - M2.6	M2.2, M2.5		2.8
-3.0AA	**961.470**	-	-	M1 - M2.6	3.0
-3.1AA	**968.355**	-	M3		3.15
-3.5AA	**961.472**	M3	-		3.5
-4.0AA	**961.474**	-	-	M3	4.0

1. Other sizes available. Please refer to micro collet.

Accessories & Spare Parts

MEGA Wrenches



▶ 351

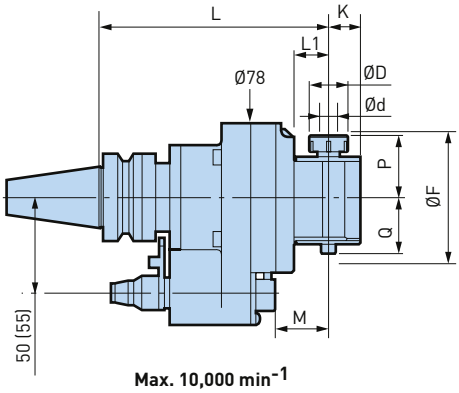
Angle Head New Baby Chuck Compact

Significantly reduces work time through systematized multilateral machining.

BIG-PLUS Dual-Contact

A.1





Max. 10,000 min^{-1}

ø0.25 - 13mm

Model	Order No.	Ød	ØD	G	K	L	L1	M	P	Q	ØF	Collet Model
BBT30-AG90-6-120	**804.661**	0,25 - 6	20	19,5	17	120	18,5	28,5	33	29	65	NBC6
BBT30-AG90-8-125	**804.825**	0,5 - 8	25	21,5	21	125	23,5	33,5	42	41	87	NBC8
BBT30-AG90-10-125	**804.836**	1,5 - 10	30	24,5	25	125	23,5	33,5	45	43	92	NBC10
BBT30-AG90-13-125	**804.838**	2,5 - 13	35	24,5	25	125	23,5	33,5	52	45	102	NBC13

1. Nut is included.
2. Wrench is included.
3. Exclusive Stop Block is required.
4. New baby collet for endmilling (NBC - EAA) can not be used.
5. The cutting tool rotates in reverse to the machine spindel.
6. Collet is not included.
7. The angles of the locating pin to the drive key groove and direction of cutting edge are freely adjustable.
8. When used with stop block peripheral cooling is possible

Accessories & Spare Parts

New Baby Collets



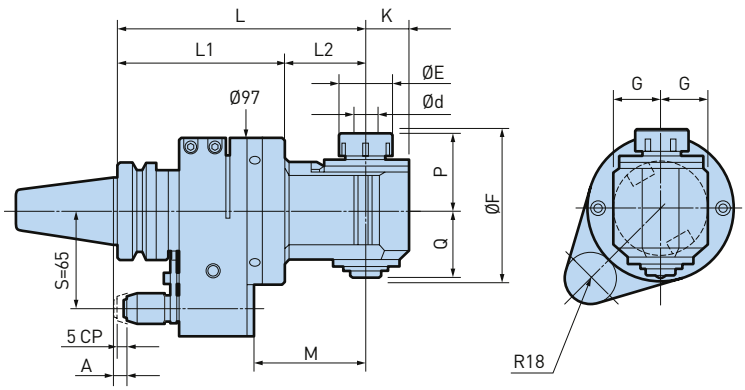
▶ 329

New Baby Chuck Type

The Angle Head has an integrated New Baby Chuck, resulting in high precision. Available in various sizes to meet specific production requirements.

BIG-PLUS Dual-Contact





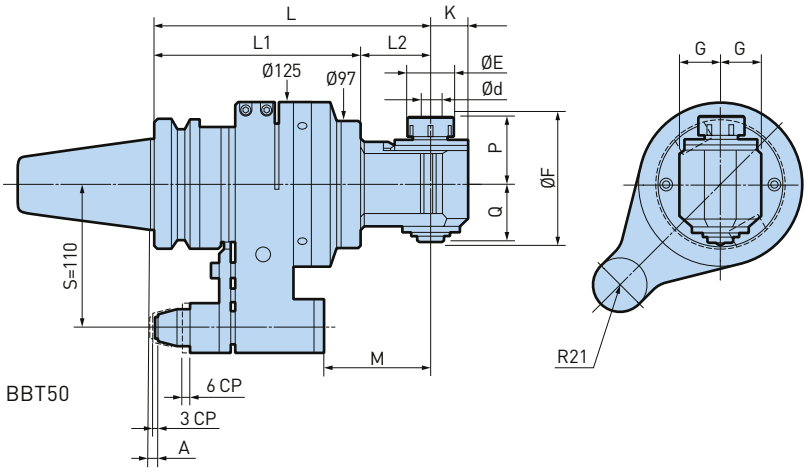
BBT40

ø0.25 - 20mm

Model	Order No.	Ød	ØE	ØF	L	L1	L2	G	K	M	P	Q	max. min-1	Collet Model
BBT40-AG90/NBS6-170	**802.463**	0.25 - 6	20	67	170	115	55	21	17	77	33	29	6000	NBC6
BBT40-AG90/NBS6-200	**802.465**	0.25 - 6	20	67	200	115	85	21	17	107	33	29	6000	NBC6
BBT40-AG90/NBS6-230	**802.467**	0.25 - 6	20	67	230	115	115	21	17	137	33	29	6000	NBC6
BBT40-AG90/NBS6-260	**802.469**	0.25 - 6	20	67	260	115	145	21	17	167	33	29	6000	NBC6
BBT40-AG90/NBS10-170	**802.449**	1.5 - 10	30	91	170	115	55	30	25	77	45	43	6000	NBC10
BBT40-AG90/NBS10-200	**802.451**	1.5 - 10	30	91	200	115	85	30	25	107	45	43	6000	NBC10
BBT40-AG90/NBS10-230	**802.453**	1.5 - 10	30	91	230	115	115	30	25	137	45	43	6000	NBC10
BBT40-AG90/NBS13-170	**802.455**	2.5 - 13	35	101	170	115	55	31	28	77	52	45	6000	NBC13
BBT40-AG90/NBS13-200	**802.457**	2.5 - 13	35	101	200	115	85	31	28	107	52	45	6000	NBC13
BBT40-AG90/NBS13-230	**802.459**	2.5 - 13	35	101	230	115	115	31	28	137	52	45	6000	NBC13
BBT40-AG90/NBS20S-165S	**802.462**	2.5 - 20	46	132	165	112	53	35	33	72	65	62	3000	NBC20

continues on the next page

A.1



Model	Order No.	Ød	ØE	ØF	L	L1	L2	G	K	M	P	Q	max. min-1	Collet Model
BBT50-AG90/NBS6-215	**802.515**	0.25 - 6	20	67	215	160	55	21	17	82	33	29	6000	NBC6
BBT50-AG90/NBS6-245	**802.518**	0.25 - 6	20	67	245	160	85	21	17	112	33	29	6000	NBC6
BBT50-AG90/NBS6-275	**802.521**	0.25 - 6	20	67	275	160	115	21	17	142	33	29	6000	NBC6
BBT50-AG90/NBS6-305	**802.524**	0.25 - 6	20	67	305	160	145	21	17	172	33	29	6000	NBC6
BBT50-AG90/NBS10-215	**802.494**	1.5 - 10	30	91	215	160	55	30	25	82	45	43	6000	NBC10
BBT50-AG90/NBS10-245	**802.497**	1.5 - 10	30	91	245	160	85	30	25	112	45	43	6000	NBC10
BBT50-AG90/NBS10-275	**802.500**	1.5 - 10	30	91	275	160	115	30	25	142	45	43	6000	NBC10
BBT50-AG90/NBS13-215	**802.503**	2.5 - 13	35	101	215	160	55	31	28	82	52	45	6000	NBC13
BBT50-AG90/NBS13-245	**802.506**	2.5 - 13	35	101	245	160	85	31	28	112	52	45	6000	NBC13
BBT50-AG90/NBS13-275	**802.509**	2.5 - 13	35	101	275	160	115	31	28	142	52	45	6000	NBC13
BBT50-AG90/NBS20-230	**802.512**	2.5 - 20	46	132	230	160	70	35	35	97	65	62	3000	NBC20

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Exclusive Stop Block is required.
3. The standard fixed length A is 8 mm for BBT40 and 6 mm for BBT50. Other lengths are available upon request.
4. Order No. for BBT50 is with S = 110. S = 80 type for BBT50 is available upon request.
5. Nut and wrench are included.
6. New Baby Collet is to be ordered separately
7. New baby collet for endmilling (NBC - EAA) can not be used.
8. Coolant can be supplied through the locating pin.
9. „ØF" indicates the minimum dimension for access into the bore
10. „CP" indicates compression

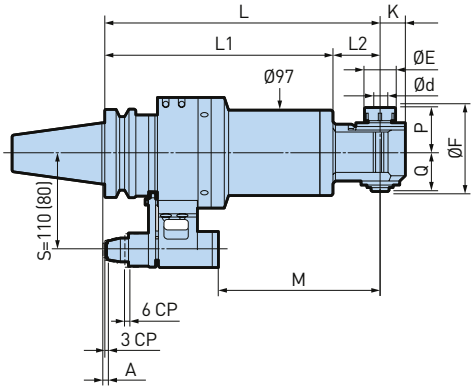
Accessories & Spare Parts

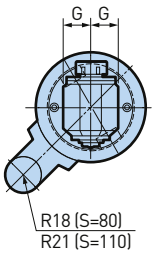
New Baby Collets	Semi-Finished Stop Blocks
	
▶ 329	▶ 377

New Baby Chuck Type Extra Long Type

For drilling and key slotting in deep cavities of large workpieces.







BIG-PLUS Dual-Contact

A.1

ø0.25 - 20mm

Model	Order No.	Ød	ØE	ØF	L	L1	L2	G	K	M	P	Q	max. min-1	Collet Model
BBT50-AG90/NBS6-315LS	**805.035**	0.25 - 6	20	67	315	260	55	21	17	182	33	29	6000	NBC6
BBT50-AG90/NBS6-345LS	**805.036**	0.25 - 6	20	67	345	260	85	21	17	212	33	29	6000	NBC6
BBT50-AG90/NBS6-375LS	**805.037**	0.25 - 6	20	67	375	260	115	21	17	242	33	29	6000	NBC6
BBT50-AG90/NBS6-405LS	**805.038**	0.25 - 6	20	67	405	260	145	21	17	272	33	29	6000	NBC6
BBT50-AG90/NBS6-415LS	**805.039**	0.25 - 6	20	67	415	360	55	21	17	282	33	29	6000	NBC6
BBT50-AG90/NBS6-445LS	**805.040**	0.25 - 6	20	67	445	360	85	21	17	312	33	29	6000	NBC6
BBT50-AG90/NBS6-475LS	**805.041**	0.25 - 6	20	67	475	360	115	21	17	342	33	29	6000	NBC6
BBT50-AG90/NBS6-505LS	**805.042**	0.25 - 6	20	67	505	360	145	21	17	372	33	29	6000	NBC6
BBT50-AG90/NBS6-515LS	**805.043**	0.25 - 6	20	67	515	460	55	21	17	382	33	29	6000	NBC6
BBT50-AG90/NBS6-545LS	**805.044**	0.25 - 6	20	67	545	460	85	21	17	412	33	29	6000	NBC6
BBT50-AG90/NBS6-575LS	**805.045**	0.25 - 6	20	67	575	460	115	21	17	442	33	29	6000	NBC6
BBT50-AG90/NBS6-605LS	**805.046**	0.25 - 6	20	67	605	460	145	21	17	472	33	29	6000	NBC6
BBT50-AG90/NBS10-315LS	**805.047**	1.5 - 10	30	91	315	260	55	30	25	182	45	43	6000	NBC10
BBT50-AG90/NBS10-345LS	**805.048**	1.5 - 10	30	91	345	260	85	30	25	212	45	43	6000	NBC10
BBT50-AG90/NBS10-375LS	**805.049**	1.5 - 10	30	91	375	260	115	30	25	242	45	43	6000	NBC10
BBT50-AG90/NBS10-415LS	**805.050**	1.5 - 10	30	91	415	360	55	30	25	282	45	43	6000	NBC10
BBT50-AG90/NBS10-445LS	**805.051**	1.5 - 10	30	91	445	360	85	30	25	312	45	43	6000	NBC10
BBT50-AG90/NBS10-475LS	**805.052**	1.5 - 10	30	91	475	360	115	30	25	342	45	43	6000	NBC10
BBT50-AG90/NBS10-515LS	**805.053**	1.5 - 10	30	91	515	460	55	30	25	382	45	43	6000	NBC10
BBT50-AG90/NBS10-545LS	**805.054**	1.5 - 10	30	91	545	460	85	30	25	412	45	43	6000	NBC10
BBT50-AG90/NBS10-575LS	**805.055**	1.5 - 10	30	91	575	460	115	30	25	442	45	43	6000	NBC10
BBT50-AG90/NBS13-315LS	**805.057**	2.5 - 13	35	101	315	260	55	31	28	182	52	45	6000	NBC13
BBT50-AG90/NBS13-345LS	**805.058**	2.5 - 13	35	101	345	260	85	31	28	212	52	45	6000	NBC13
BBT50-AG90/NBS13-375LS	**805.060**	2.5 - 13	35	101	375	260	115	31	28	242	52	45	6000	NBC13
BBT50-AG90/NBS13-415LS	**805.061**	2.5 - 13	35	101	415	360	55	31	28	282	52	45	6000	NBC13
BBT50-AG90/NBS13-445LS	**805.062**	2.5 - 13	35	101	445	360	85	31	28	312	52	45	6000	NBC13
BBT50-AG90/NBS13-475LS	**805.063**	2.5 - 13	35	101	475	360	115	31	28	342	52	45	6000	NBC13
BBT50-AG90/NBS13-515LS	**805.064**	2.5 - 13	35	101	515	460	55	31	28	382	52	45	6000	NBC13
BBT50-AG90/NBS13-545LS	**805.065**	2.5 - 13	35	101	545	460	85	31	28	412	52	45	6000	NBC13
BBT50-AG90/NBS13-575LS	**805.066**	2.5 - 13	35	101	575	460	115	31	28	442	52	45	6000	NBC13
BBT50-AG90/NBS20-330LS	**805.067**	2.5 - 20	46	132	330	260	70	35	35	197	65	62	3000	NBC20
BBT50-AG90/NBS20-430LS	**805.069**	2.5 - 20	46	132	430	360	70	35	35	297	65	62	3000	NBC20
BBT50-AG90/NBS20-530LS	**805.070**	2.5 - 20	46	132	530	460	70	35	35	397	65	62	3000	NBC20

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Exclusive Stop Block is required.
3. The standard length A is 6 mm.
4. Order No. for BBT50 is with S = 110. S = 80 type for BBT50 is available upon request.
5. Clamping nut and wrench are included.
6. New Baby Collet is to be ordered separately
7. New baby collet for endmilling (NBC - EAA) can not be used.
8. Coolant can be supplied through the locating pin.
9. „CP" indicates compression
10. „ØF" indicates the minimum dimension for access into the bore

Accessories & Spare Parts

New Baby Collets	Semi-Finished Stop Blocks
	
▶ 329	▶ 377

Angle Head Twin Head Type

BIG-PLUS Dual-Contact

Twin spindle head with a compact design. Symmetrical machining can be performed using one unit, contributing to the reduction of the number of magazines.

A.1



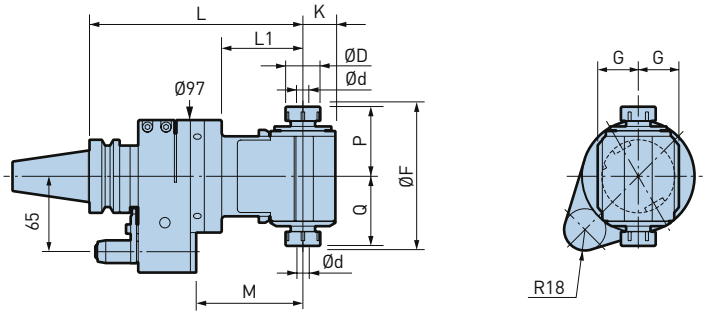


Fig. 1

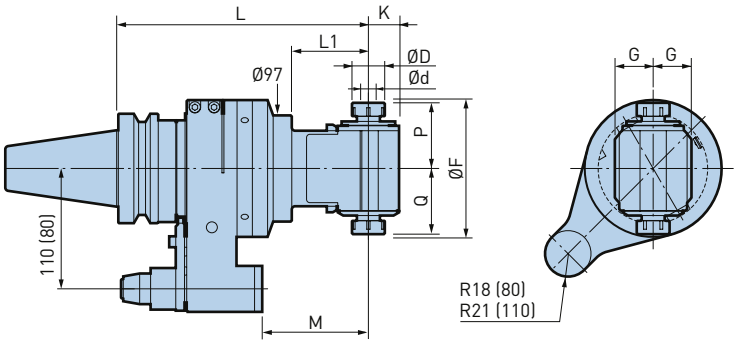


Fig. 2

Model	Order No.	Fig.	Ød	ØD	G	K	L	L1	M	P	Q	ØF	Collet Model
BBT40-AG90/NBS10W-185	**101124.001.0**	1	1,5 - 10	31	31	28	185	70	92	60	60	24	NBC10
BBT50-AG90/NBS10W-230	**101124.002.0**	2	1,5 - 10	30	31	28	230	70	97	60	60	124	NBC10

1. Nut is included.
2. Wrench is included.
3. Exclusive Stop Block is required.
4. New baby collet for endmilling (NBC - EAA) can not be used.
5. The cutting tool rotates in reverse to the machine spindel.
6. Collet is not included.
7. The angles of the locating pin to the drive key groove and direction of cutting edge are freely adjustable.
8. When used with stop block peripheral cooling is possible
9. Automatic tool change may not be available, depending on machine models.
10. Output spindles do not rotate in the same direction simultaneously.
11. The standard fixed length A is 8 mm for BBT40 and 6 mm for BBT50. Other lengths are available upon request.
12. Order No. for BBT50 is with S = 110. S = 80 type for BBT50 is available upon request.

Accessories & Spare Parts

New Baby Collets



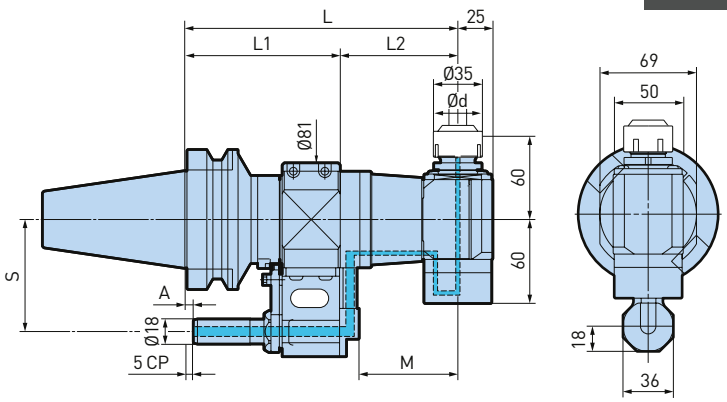
▶ 329

OAG Type

BIG-PLUS Dual-Contact

A.1

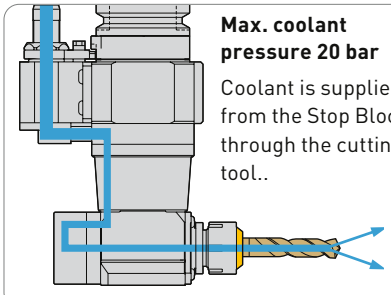




ø3 - 13mm

Model	Order No.	Ød	L	L1	L2	M	max. min-1	Collet Model	Nut Model
BBT40-OAG90-13-170-65	**802.482**	2.5 - 13	170	86	84	70.5	5000	NBC13	BPS13
BBT50-OAG90-13-195-80	**802.545**	2.5 - 13	195	111	84	70.5	5000	NBC13	BPS13

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Exclusive Stop Block is required.
3. The standard length A is 6 mm.
4. Standard "S" is 80 mm for BBT50 and 65 mm for BBT40.
5. Wrench is included.
6. New Baby collet and Baby Perfect Seal (BPS13) are to be ordered seperately.
7. New baby collet for endmilling (NBC - EAA) can not be used.
8. „CP" indicates compression



Max. coolant pressure 20 bar

Coolant is supplied from the Stop Block through the cutting tool..

Accessories & Spare Parts

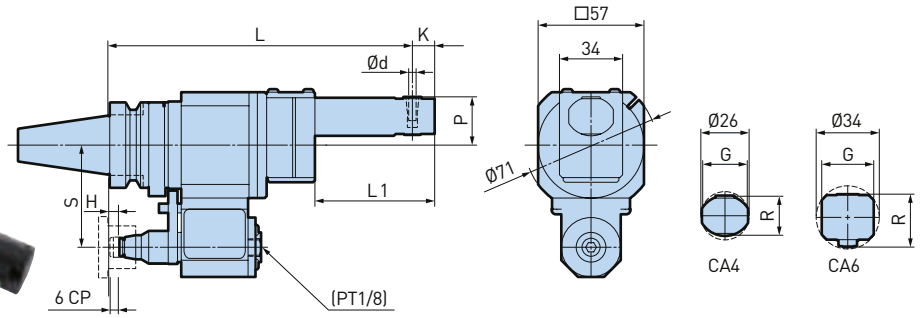
Baby Perfect Seals	New Baby Collets	Semi-Finished Stop Blocks
		
▶ 338	▶ 329	▶ 377

Light Weight Type

BIG-PLUS Dual-Contact

A.1





ø3 - 6mm

Model	Order No.	Ød	L	L1	K	P	G	R	Ratio	max. min-1	Collet Model
BBT30-AG90-CA4SG-164	**805.570**	3 - 4	164	64.5	12	26	24	21	1:1.13	2000	CA4
BBT30-AG90-CA6SG-164	**805.571**	3 - 6	164	67	14.5	28	28	28.5	1:0.91	2000	CA6

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Exclusive Stop Block is required.
3. H and S dimensions must be indicated before ordering.
4. Tolerance of the cutting tool shank must be within h7.
5. Exclusive collet is to be ordered separately.
6. „CP" indicates compression

Accessories & Spare Parts

Collet for Angle Head	Semi-Finished Stop Blocks
	
► 366	► 377

Angle Head Compact Type

Compact and lightweight while fully equipped with the functions and accuracy required in drilling.

BIG-PLUS Dual-Contact

A.1



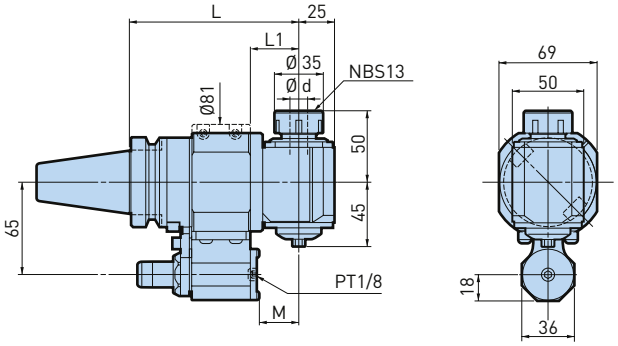


Fig. 1 **Max. 5,000min-1**



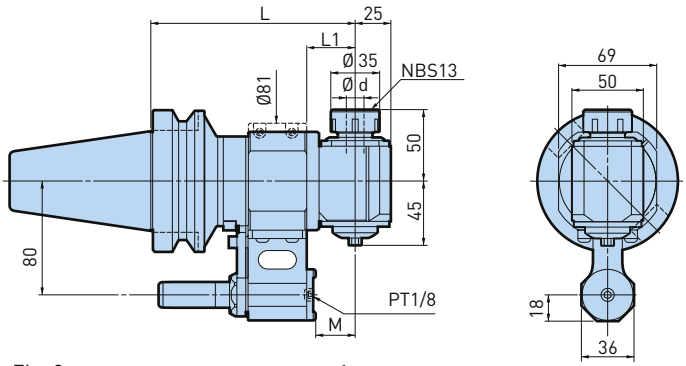


Fig. 2 **Max. 5,000min-1**

Model	Order No.	Fig.	Ød	L	L1	M	Collet Model
BBT40-AG90-13-120	**802.471**	1	2.5 - 13	120	34	27.85	NBC13
BBT40-AG90-13-170	**802.472**	1	2.5 - 13	170	84	77.85	NBC13
BBT50-AG90-13-145	**802.527**	2	2.5 - 13	145	34	27.85	NBC13
BBT50-AG90-13-195	**802.528**	2	2.5 - 13	195	84	77.85	NBC13

1. Nut is included.
2. Wrench is included.
3. Exclusive Stop Block is required.
4. New baby collet for endmilling (NBC - EAA) can not be used.
5. The cutting tool rotates in reverse to the machine spindel.
6. Collet is not included.
7. The angles of the locating pin to the drive key groove and direction of cutting edge are freely adjustable.
8. When used with stop block peripheral cooling is possible
9. Automatic tool change may not be available, depending on machine models.

Accessories & Spare Parts

New Baby Collets



▶ 329

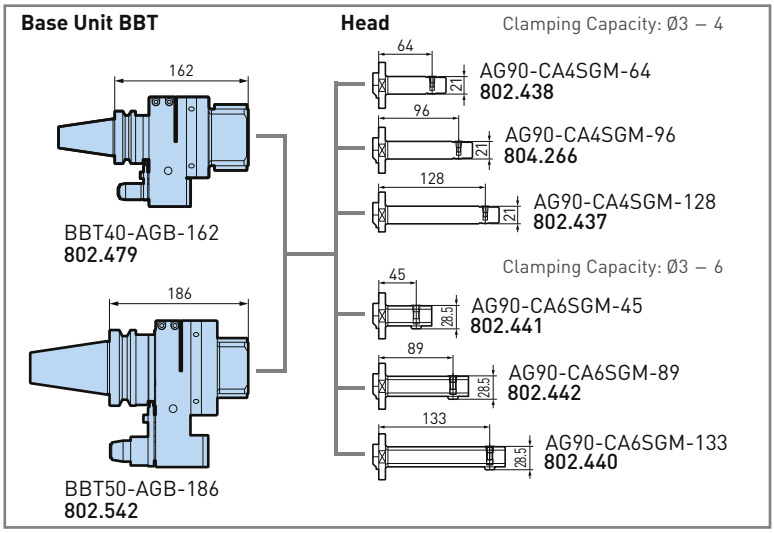
Small Bore Type

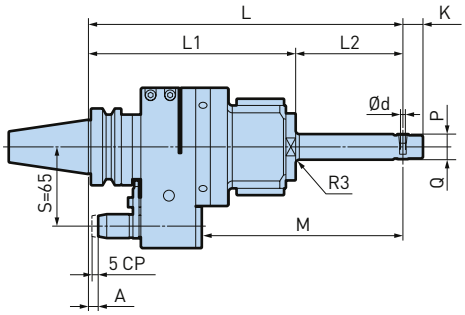
BIG-PLUS Dual-Contact

Angular operation in a Ø 30 mm bore (min.) is possible. Modular heads enhance versatility. Head is aligned with spindle center for easy programing.

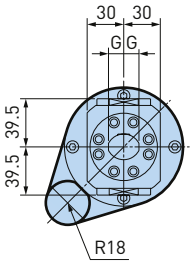
A.1

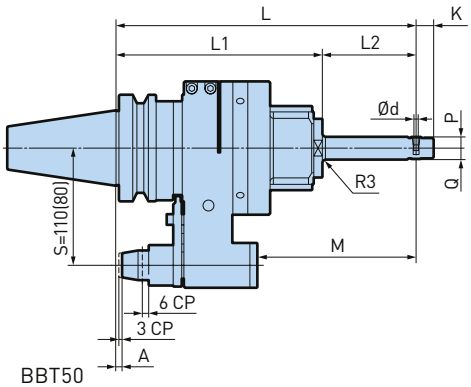




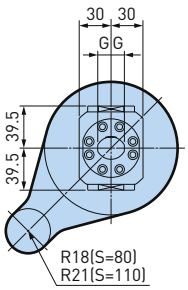


BBT40





BBT50



ø3 - 6mm

Model	Order No.	Base Unit	Head	Ød	L	L1	L2	G	K	M	P	Q	Ratio
BBT40-AG90-CA4SGM-226	**802.473**	BBT40-AGB-162	AG90-CA4SGM-64	3 - 4	226	170	56	12.5	16.5	133	10.5	10.5	1:1.06
BBT40-AG90-CA4SGM-258	**802.474**	BBT40-AGB-162	AG90-CA4SGM-96	3 - 4	258	170	88	12.5	16.5	165	10.5	10.5	1:1.06
BBT40-AG90-CA4SGM-290	**802.475**	BBT40-AGB-162	AG90-CA4SGM-128	3 - 4	290	170	120	12.5	16.5	197	10.5	10.5	1:1.06
BBT40-AG90-CA6SGM-207	**802.476**	BBT40-AGB-162	AG90-CA6SGM-45	3 - 6	207	170	37	15	20	114	12.5	16	1:0.77
BBT40-AG90-CA6SGM-251	**802.477**	BBT40-AGB-162	AG90-CA6SGM-89	3 - 6	251	170	81	15	20	158	12.5	16	1:0.77
BBT40-AG90-CA6SGM-295	**802.478**	BBT40-AGB-162	AG90-CA6SGM-133	3 - 6	295	170	125	15	20	202	12.5	16	1:0.77
BBT50-AG90-CA4SGM-250	**802.529**	BBT50-AGB-186	AG90-CA4SGM-64	3 - 4	250	194	56	12.5	16.5	117	10.5	10.5	1:1.06
BBT50-AG90-CA4SGM-282	**802.531**	BBT50-AGB-186	AG90-CA4SGM-96	3 - 4	282	194	88	12.5	16.5	149	10.5	10.5	1:1.06
BBT50-AG90-CA4SGM-314	**802.533**	BBT50-AGB-186	AG90-CA4SGM-128	3 - 4	314	194	120	12.5	16.5	181	10.5	10.5	1:1.06
BBT50-AG90-CA6SGM-231	**802.535**	BBT50-AGB-186	AG90-CA6SGM-45	3 - 6	231	194	37	15	20	98	12.5	16	1:0.77
BBT50-AG90-CA6SGM-275	**802.537**	BBT50-AGB-186	AG90-CA6SGM-89	3 - 6	275	194	81	15	20	142	12.5	16	1:0.77
BBT50-AG90-CA6SGM-319	**802.539**	BBT50-AGB-186	AG90-CA6SGM-133	3 - 6	319	194	125	15	20	186	12.5	16	1:0.77

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Exclusive Stop Block is required.
3. The standard fixed length A is 8 mm for BBT40 and 6 mm for BBT50. Other lengths are available upon request.
4. Order No. for BBT50 is with S = 110. S = 80 type for BBT50 is available upon request.
5. Coolant-through hole is not available.
6. Exclusive collet is to be ordered separately.
7. „CP" indicates compression
8. max. 2000 min-1

Accessories & Spare Parts

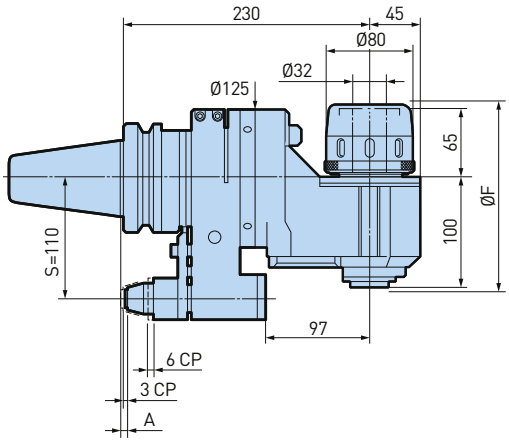
Collet for Angle Head	Semi-Finished Stop Blocks
	
► 366	► 377

HMC Type

Improved versatility is achieved from the 32 mm Milling Chuck by using parallel reduction collets and other accessories.

BIG-PLUS Dual-Contact





ø6 - 32mm

Model	Order No.	ØF	max. min-1
BBT50-AG90/HMC32-230-110	**802.492**	175	3000
BBT50-AG90/HMC32-230S-110	**802.493**	175	3000

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Exclusive Stop Block is required.
3. Models with "S" at the end are high rigidity type.
4. The standard length A is 6 mm.
5. Order No. is with S = 110. S = 80 type is available upon request.
6. Wrench (FK80-90) is included.
7. Coolant can be supplied through the locating pin.
8. „CP" indicates compression
9. „ØF" indicates the minimum dimension for access into the bore

Accessories & Spare Parts

C Collets	Semi-Finished Stop Blocks	FK Wrenches
		
▶ 349	▶ 377	▶ 352

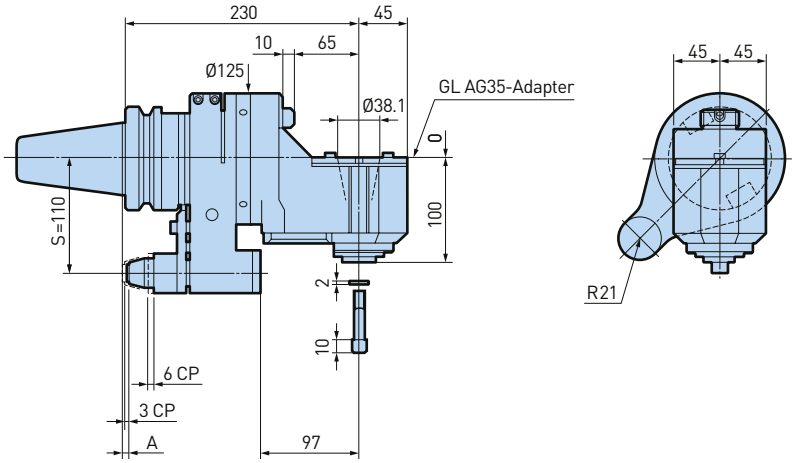
Build-Up Type BBT

Designed for greater rigidity by having the face of the spindle bore in line with the center of the machine spindle. Also helps minimize interference problems with ATC and storage problems within the magazine.

BIG-PLUS Dual-Contact

A.1





Model	Order No.	max. min-1	Connection tool side
BBT50-AG90/AGH35-230-110	**802.489**	3000	AGH35
BBT50-AG90/AGH35-230S-110	**802.490**	3000	AGH35

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Exclusive Stop Block is required.
3. Models with "S" at the end are high rigidity type.
4. The standard length A is 6 mm.
5. Order No. is with S = 110. S = 80 type is available upon request.
6. Coolant can be supplied through the locating pin.
7. „CP" indicates compression

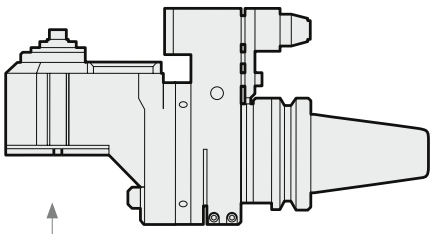
Accessories & Spare Parts

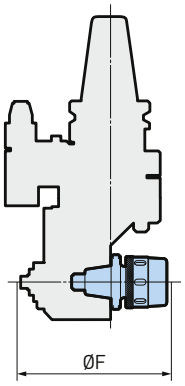
Semi-Finished Stop Blocks

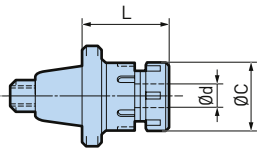


▶ 377

AG35 adapters



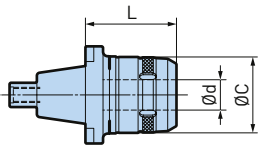




AG35 adapters New Baby Chuck

Model	Order No.	Ød	L	ØC	ØF	Collet Model
AG35-NBS10	**962.793**	1.5 - 10	47	30	162	NBC10
AG35-NBS13	**962.794**	2.5 - 13	54	35	168	NBC13
AG35-NBS16	**962.795**	2.5 - 16	54	42	170	NBC16
AG35-NBS20	**962.796**	2.5 - 20	54	46	170	NBC20

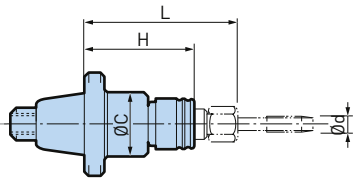
1. New baby collet and wrench are to be ordered separately.



AG35 adapters New Hi-Power Milling Chuck

Model	Order No.	Ød	L	ØC	ØF	Head
AG35-HMC20S	**802.742**	20	60	50	178	AG35

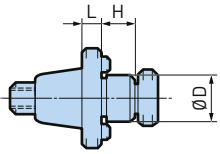
1. Wrench (FK45-50L) is included.



AG35 adapters Auto Tapper Type B (automatic depth control)

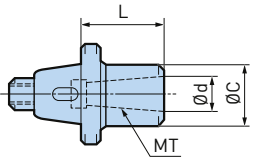
Model	Order No.	Ød	ØC	L	H	Head
AG35-ATB12E	**802.435**	M4 - M12	40.5	80	72	AG35
AG35-ATB20E	**802.436**	M8 - M20	57.5	115	102.5	AG35

1. Please contact BIG KAISER agent for tap collet.



AG35 adapters Face Mill Arbor

Model	Order No.	ØD	L	H	Head
AG35-FMH22-30	**802.740**	22	30	18	AG35
AG35-FMH27-20	**802.741**	27	20	20	AG35



AG35 adapters Morse Taper Adapter

Model	Order No.	Ød	MT No.	L	ØC	ØF	Head
AG35-MT1	**962.785**	12.065	1	50	24	164	AG35
AG35-MT2	**962.786**	17.78	2	60	32	180	AG35

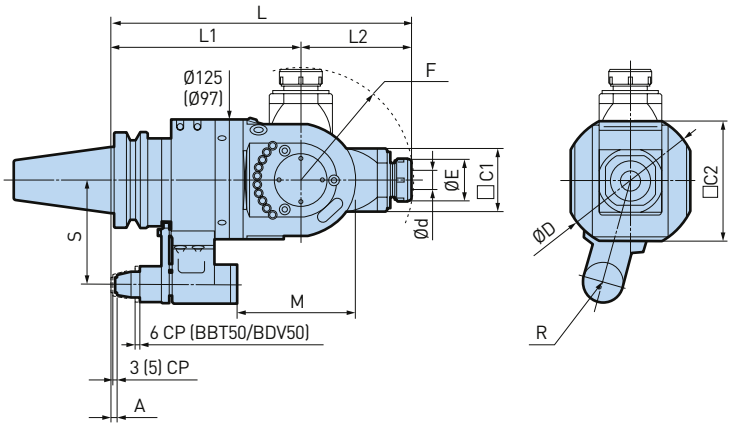
Universal Type

Suitable for cutting angles between 0˚and 90˚. In addition to that the cutter head can be rotated a full 360˚, increasing flexibility!

BIG-PLUS Dual-Contact

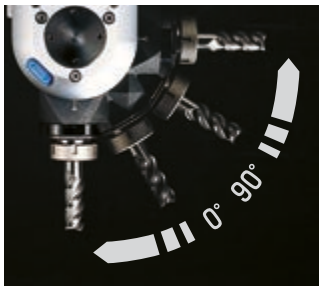
A.1





Model	Order No.	Ød	ØD	ØE	C1	C2	L	L1	L2	M	F	R	S	max. min-1	Collet Model
BBT40-AGU/NBS13-270	**802.480**	2.5 - 13	115	35	51	97	270	170	100	124	102	18	65	6000	NBC13
BBT50-AGU/NBS20-315	**802.318**	2.5 - 20	140	46	65	125	315	200	115	125	118	21	110	4000	NBC20

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Exclusive Stop Block is required.
3. The standard fixed length A is 8 mm for BBT40 and 6 mm for BBT50. Other lengths are available upon request.
4. Order No. for BBT50 is with S = 110. S = 80 type for BBT50 is available upon request.
5. Figures in ( ) in the drawing indicate dimensions for BBT40.
6. Nut and wrench are included.
7. Coolant can be supplied through the locating pin.
8. „CP" indicates compression



Easily adjustable spindle angle from 0˚ to 90˚.



Unique setting mechanism enables the spindle angle to be precisely set at 1˚ increments.



Specially selected materials and special design for clamping the head guarantees rigidity for even end milling applications

Accessories & Spare Parts

New Baby Collets	Semi-Finished Stop Blocks
	
▶ 329	▶ 377

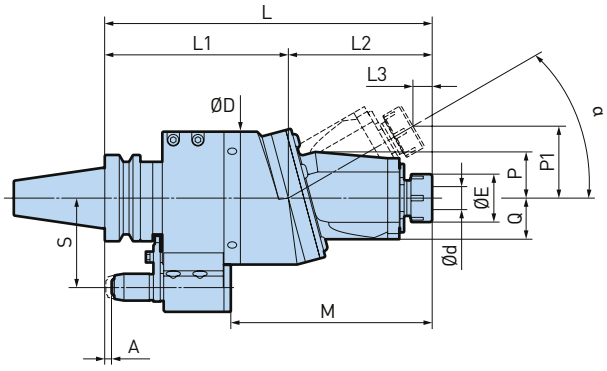
AGU30 Type

Spindle angle is adjustable from 0° to 30°. Large swivel flange assures high rigidity.

BIG-PLUS Dual-Contact

A.1



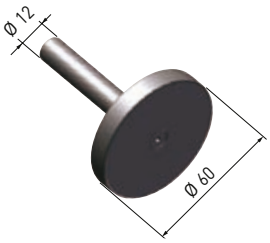


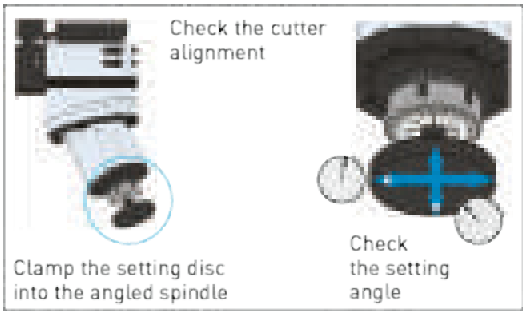
Model	Order No.	Ød	ØD	ØE	L	L1	L2	L3	G	Q	P	P1 max.	R	S	M	max. min-1	Collet Model
BBT40-AGU30/NBS13-240	**802.481**	2.5 - 13	97	35	240	135	105	14	29	30	34	52.5	18	65	147	6000	NBC13
BBT50-AGU30/NBS20-295	**802.544**	2.5 - 20	125	46	295	165	130	17	36.5	39	45	65	21	110	162	4000	NBC20

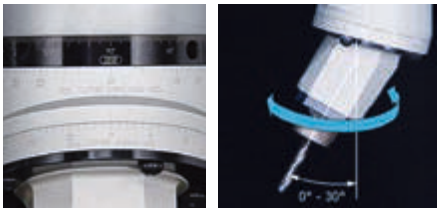
1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Exclusive Stop Block is required.
3. The standard fixed length A is 8 mm for BBT40 and 6 mm for BBT50. Other lengths are available upon request.
4. Order No. for BBT50 is with S = 110. S = 80 type for BBT50 is available upon request.
5. Coolant can be supplied through the locating pin.
6. New baby nut, wrench and setting disc are included.

Setting Disc (Included Accessory)

For precise adjustment of the spindle angle or direction.





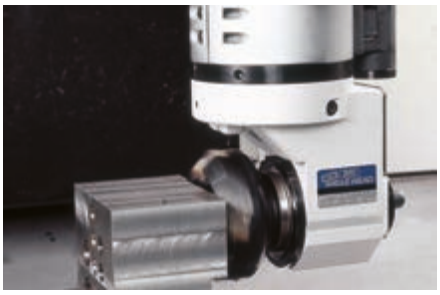


Spindle angle is easily adjustable from 0° to 30° using the scale indication on the body.

Accessories & Spare Parts

New Baby Collets	Semi-Finished Stop Blocks
	
▶ 329	▶ 377

Application Examples



AG90-Series (Build-Up Type)

Standard Type
BBT50-AG90/AGH35-230
(with AG35-FMA25.4-20)
Workpiece: Carbon Steel C55
Cutter: 80 mm Face Mill
Cutting Depth: 2 mm
Spindle Speed: 600 min^{-1}
Cutting Speed: 150 m/min
Cutting Feed: 360 mm/min

S-Type
BBT50-AG90/AGH35-230S
(with AG35-FMA25.4-20)
Workpiece: Carbon Steel C55
Cutter: 80 mm Face Mill
Cutting Depth: 3 mm
Spindle Speed: 600 min^{-1}
Cutting Speed: 150 m/min
Cutting Feed: 360 mm/min



AG90-Series (HMC Type)

Standard Type
BBT50-AG90/HMC32-230
Workpiece: Carbon Steel C55
Cutter: 20 mm Face Mill
Cutting Depth: 3 mm
Spindle Speed: 400 min^{-1}
Cutting Speed: 25 m/min
Cutting Feed: 72 mm/min

S-Type
BBT50-AG90/HMC32-230S
Workpiece: Carbon Steel C55
Cutter: 20 mm Face Mill
Cutting Depth: 4 mm
Spindle Speed: 400 min^{-1}
Cutting Speed: 25 m/min
Cutting Feed: 72 mm/min



AGU-Series (AGU30 Type)

BBT40-AGU30/NBS13-240
Workpiece: Pre-hardened steel (HRC40)
Cutter: R5 2-flute carbide ball end mill
Cutting Depth: Ad = 0.1 mm
Spindle Speed: 6 000 min^{-1}
Peck Feed: Pf = 0.4
Cutting Speed: 90 m/min
Cutting Feed: 900 mm/min

Special Designs

Our long experience and expertise enables us to design and manufacture special custom made Angle Heads for almost any customer application.

Special angle



Special length



Coolant feeder



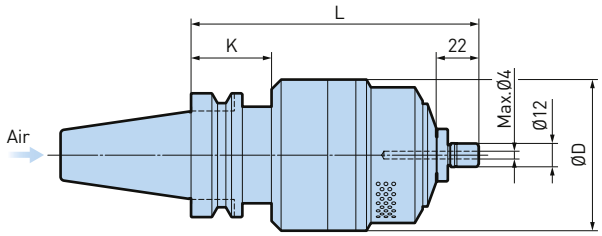
BBT30



Air Turbine Spindle Center Through Type

BIG-PLUS Dual-Contact





ø0.5 - 4mm

Model	Order No.	Operation Speed (min-1)	ØD	L	K	Nut Model
BBT40-RBX5C-4S-150	**802.403**	40000 - 50000	96	150	43	MGN4S
BBT40-RBX7C-4S-150	**802.409**	60000 - 80000	78	150	43	MGN4S
BBT50-RBX5C-4S-160	**802.415**	40000 - 50000	96	160	53	MGN4S
BBT50-RBX7C-4S-160	**802.420**	60000 - 80000	78	160	53	MGN4S

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Nut and wrench are included.
3. Collet (NBC4S-_) and XF1 (air unit) are to be ordered separately.

Caution

Clean air is an essential condition for the use of this product. Therefore, coolant should never be supplied through the spindle of the machine using the Air Turbine Spindle.

Accessories & Spare Parts

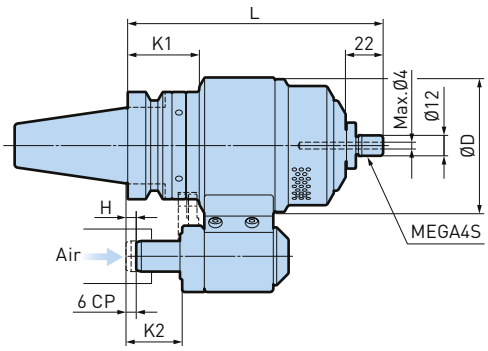
MEGA Nuts	Micro Collets	MEGA Wrenches	Air Filter Regulator for RBX
			
▶ 326	▶ 325	▶ 351	▶ 366

Air Turbine Spindle Side Through Type

BIG-PLUS Dual-Contact

A.1





ø0.5 - 4mm

Model	Order No.	Operation Speed (min-1)	ØD	L	K1	K2	S	H	Nut Model
BBT30-RBX7-4S-152	**802.395**	60000 - 80000	80	152	28	33	55	-10 - 22	MGN4S
BBT40-RBX5-4S-151	**802.398**	40000 - 50000	96	151	43	33	65	-24 - 21	MGN4S
BBT40-RBX7-4S-151	**802.404**	60000 - 80000	80	151	43	33	65	-24 - 21	MGN4S
BBT50-RBX5-4S-166	**802.411**	40000 - 50000	100	166	58	48	80	-9 - 36	MGN4S
BBT50-RBX7-4S-166	**802.416**	60000 - 80000	100	166	58	48	80	-9 - 36	MGN4S

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Exclusive Stop Block is required.
3. Nut and wrench are included.
4. Collet (NBC4S-_) and XF1 (air unit) are to be ordered separately.
5. „CP" indicates compression

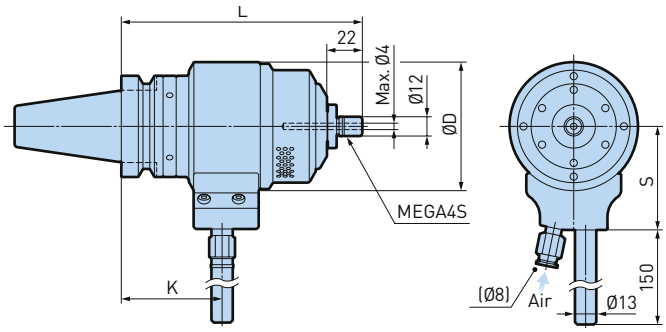
Accessories & Spare Parts

MEGA Nuts	Micro Collets	MEGA Wrenches	Semi-Finished Stop Blocks	Air Filter Regulator for RBX
				
▶ 326	▶ 325	▶ 351	▶ 377	▶ 366

Air Turbine Spindle Manual Type

BIG-PLUS Dual-Contact





ø0.5 - 4mm

Model	Order No.	Operation Speed (min-1)	ØD	L	K	S	Nut Model
BBT30-RBX7-4S-152H	**802.396**	60000 - 80000	80	152	64.5	65	MGN4S
BBT40-RBX5-4S-151H	**802.399**	40000 - 50000	96	151	63	71	MGN4S
BBT40-RBX7-4S-151H	**802.405**	60000 - 80000	80	151	63	65	MGN4S
BBT50-RBX5-4S-166H	**802.412**	40000 - 50000	100	166	78	80	MGN4S
BBT50-RBX7-4S-166H	**802.417**	60000 - 80000	100	166	78	80	MGN4S

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Nut and wrench are included.
3. Collet (NBC4S-_) and XF1 (air unit) are to be ordered separately.

Accessories & Spare Parts

MEGA Nuts	Micro Collets	MEGA Wrenches	Air Filter Regulator for RBX
			
▶ 326	▶ 325	▶ 351	▶ 366

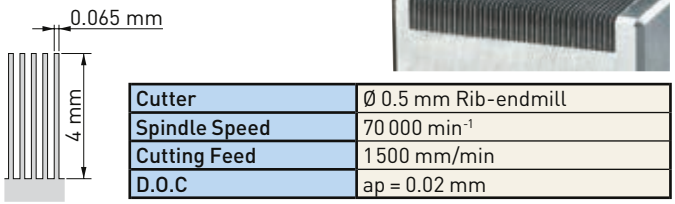
Application Examples

A.1

RBX7

Aluminium A2017

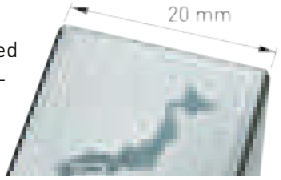
Outstanding runout accuracy permits perfect thin wall cutting.



Cutter	Ø 0.5 mm Rib-endmill
Spindle Speed	70 000 min^{-1}
Cutting Feed	1500 mm/min
D.O.C	ap = 0.02 mm

Prehardened steel HRC40

Drastic time reduction by ultra high speed rotation. Excellent dynamic runout accuracy makes DOC of 5 µm clearly visible.



Cutter	R0.1 mm Ball nose endmill
Spindle Speed	80 000 min^{-1}
Cutting Feed	400 mm/min
D.O.C	ap = 0.01 mm

Prehardened steel HRC40

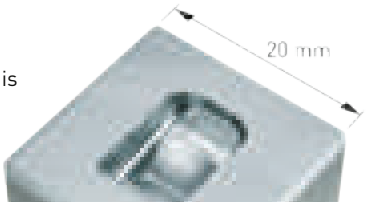
Overall cutting length of 656 m can b achieved with one ball nose endmill. Drastically extended tool life.



Cutter	R0.5 mm Ball nose endmill
Spindle Speed	65 000 min^{-1}
Cutting Feed	4 200 mm/min
D.O.C	ap = 0.02 mm; ae = 0.05 mm

Prehardened steel HRC40

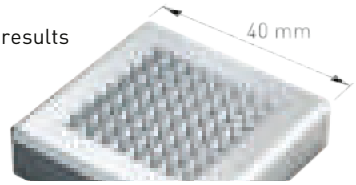
Original 5hour operation in MC is reduced to 2 hours.



Cutter	R0.2 mm Ball nose endmill
Spindle Speed	70 000 min^{-1}
Cutting Feed	1000 mm/min
D.O.C	ap = 0.01 mm

Prehardened steel HRC40

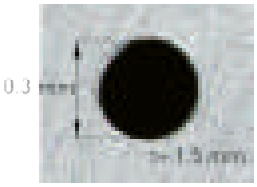
No thermal expansion of spindle results in finely detailed surface finish.



Cutter	R0.5 mm Ball nose endmill
Spindle Speed	75 000 min^{-1}
Cutting Feed	400 mm/min
D.O.C	ap = 0.02 mm

Aluminium A2017

High-precision drilling is possible without center drill operation. Even after 3500 holes, no problems can be found on the cutting edge.

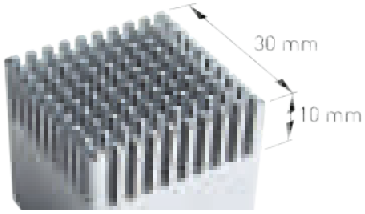


Cutter	Ø 0.3 mm Solid drill
Spindle Speed	75 000 min^{-1}
Cutting Feed	200 mm/min
Peck	ap = 0.03 mm

RBX5

Prehardened steel HRC40

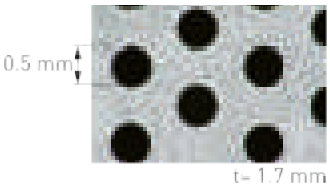
Even a taper endmill that has high cutting forces can achieve stable cutting.



Cutter	Ø 1.5 mm Rib-endmill
Spindle Speed	40 000 min^{-1}
Cutting Feed	1000 mm/min
D.O.C	ap = 0.05 mm

Stainless steel SUS303

Tool life is doubled with over 1200 holes and cutting time is reduced to 1/3.



Cutter	Ø 0.5 mm Solid drill
Spindle Speed	40 000 min^{-1}
Cutting Feed	20 mm/min
Peck	ap = 0.01 mm

Tool Holders DV/BDV, DIN 69871

MEGA Micro Chuck	128
MEGA New Baby Chuck	129
MEGA E Chuck	131
MEGA Double Power Chuck	132
MEGA Perfect Grip	133
New Baby Chuck	134
New Hi-Power Milling Chuck	136
Hydraulic Chucks	138
Shrink Chuck	141
CK Shanks	142
Face Mill Arbors	146
Smart Damper Face Mill	148
Side Lock Holders	150
Holders for Screw-On Cutter	151
MEGA Synchro Tapping Holder	152
Angle Heads	153
Air Turbine Spindle	159

A.2

● Preferred selected items

A.2

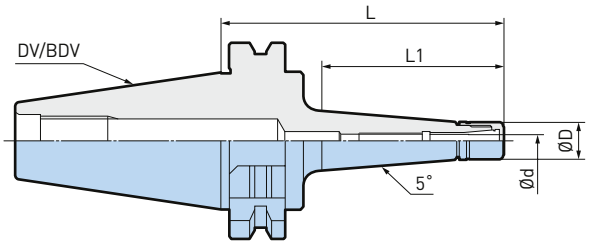
MEGA Micro Chuck Type T

Tapered and slim design, minimal interference combined with maximized rigidity.

Coolant Through Hole

BIG-PLUS Dual-Contact





ø0.45 - 8.05mm

Model	Order No.	Ød	ØD	L	L1	max. min-1	Collet Model	Nut Model
DV30-MEGA6S-60T	**805.016**	0.45 - 6.05	14	60	36	40000	NBC6S	MGN6S
DV30-MEGA8S-75T	**805.246**	2.95 - 8.05	18	75	51	35000	NBC8S	MGN8S
BDV40-MEGA3S-90T	**969.302**	0.45 - 3.25	10	90	60	28000	NBC3S	MGN3S
BDV40-MEGA4S-90T	**969.305**	0.45 - 4.05	12	90	60	28000	NBC4S	MGN4S
BDV40-MEGA6S-60T	**969.307**	0.45 - 6.05	14	60	30	35000	NBC6S	MGN6S
BDV40-MEGA6S-90T	**969.308** •	0.45 - 6.05	14	90	60	28000	NBC6S	MGN6S
BDV40-MEGA6S-120T	**969.309** •	0.45 - 6.05	14	120	90	22000	NBC6S	MGN6S
BDV40-MEGA8S-90T	**806.747**	2.95 - 8.05	18	90	60	28000	NBC8S	MGN8S

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. MEGA nut is included in delivery.

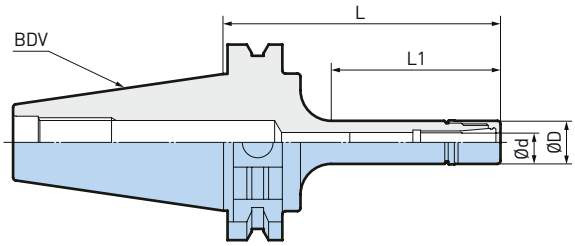
MEGA Micro Chuck Type S

Micro diameter design is ideal for high speed applications in tight areas.

Coolant Through Hole

BIG-PLUS Dual-Contact





ø0.45 - 6.05mm

Model	Order No.	Ød	ØD	L	L1	max. min-1	Collet Model	Nut Model
BDV40-MEGA6S-90	**969.208**	0.45 - 6.05	14	90	55	35000	NBC6S	MGN6S

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. MEGA nut is included in delivery.

Accessories & Spare Parts

MEGA Nuts	Micro Seal Nuts	Micro Collets	MEGA Wrenches	Taper Cleaners	Collet Protective Cases
					
▶ 326	▶ 326	▶ 325	▶ 351	▶ 370	▶ 326

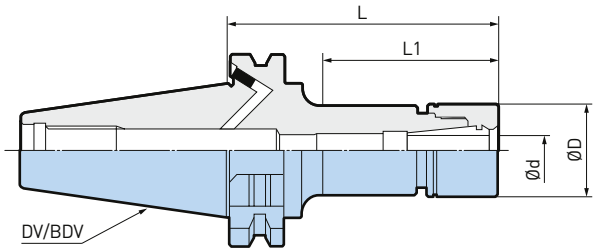
MEGA New Baby Chuck

Ideal ultra precision collet holders for high speed machining. Wide range of lengths and a variety of collet series covers all machining applications.

Coolant Through Hole

BIG-PLUS Dual-Contact



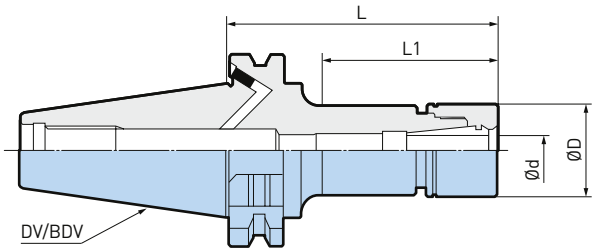


ø0.25 - 25.4mm

Model	Order No.	Ød	ØD	L	L1	max. min-1	Collet Model	Nut Model
DV30-MEGA10N-75	**805.247**	1.5 - 10	30	75	54	27000	NBC10	MGN10
BDV40-MEGA6N-90	**969.224**	0.25 - 6	20	90	55	35000	NBC6	MGN6
BDV40-MEGA6N-135	**969.225**	0.25 - 6	20	135	100	20000	NBC6	MGN6
BDV40-MEGA8N-90	**969.229** •	0.5 - 8	25	90	57	35000	NBC8	MGN8
BDV40-MEGA8N-135	**969.230**	0.5 - 8	25	135	102	20000	NBC8	MGN8
BDV40-MEGA10N-90	**969.234**	1.5 - 10	30	90	59	35000	NBC10	MGN10
BDV40-MEGA10N-135	**969.235**	1.5 - 10	30	135	104	20000	NBC10	MGN10
BDV40-MEGA13N-90	**969.239** •	2.5 - 13	35	90	61	35000	NBC13	MGN13
BDV40-MEGA13N-135	**969.240**	2.5 - 13	35	135	106	20000	NBC13	MGN13
BDV40-MEGA13N-165	**969.241**	2.5 - 13	35	165	136	15000	NBC13	MGN13
BDV40-MEGA16N-90	**969.244**	2.5 - 16	42	90	65	30000	NBC16	MGN16
BDV40-MEGA16N-135	**969.245**	2.5 - 16	42	135	110	20000	NBC16	MGN16
BDV40-MEGA16N-165	**969.246**	2.5 - 16	42	165	140	15000	NBC16	MGN16
BDV40-MEGA20N-60	**969.248**	2.5 - 20	46	60	40	30000	NBC20	MGN20
BDV40-MEGA20N-90	**969.249** •	2.5 - 20	46	90	70	30000	NBC20	MGN20
BDV40-MEGA20N-135	**969.250**	2.5 - 20	46	135	115	20000	NBC20	MGN20
BDV40-MEGA20N-165	**969.251**	2.5 - 20	46	165	145	15000	NBC20	MGN20
BDV40-MEGA20N-200	**969.252**	2.5 - 20	46	200	180	10000	NBC20	MGN20
BDV40-MEGA25N-90	**806.375**	15.5 - 25.4	60	90	70	19000	NBC25	MGN25
BDV40-MEGA25N-120	**806.376**	15.5 - 25.4	60	120	100	16000	NBC25	MGN25

continues on the next page

A.2



ø0.25 - 25.4mm

Model	Order No.	Ød	ØD	L	L1	max. min-1	Collet Model	Nut Model
BDV50-MEGA6N-90	**969.253**	0.25 - 6	20	90	50	20000	NBC6	MGN6
BDV50-MEGA6N-120	**969.254** •	0.25 - 6	20	120	80	20000	NBC6	MGN6
BDV50-MEGA6N-165	**969.255**	0.25 - 6	20	165	125	14000	NBC6	MGN6
BDV50-MEGA10N-90	**969.261**	1.5 - 10	30	90	55	20000	NBC10	MGN10
BDV50-MEGA10N-120	**969.262**	1.5 - 10	30	120	80	20000	NBC10	MGN10
BDV50-MEGA10N-165	**969.263**	1.5 - 10	30	165	125	16000	NBC10	MGN10
BDV50-MEGA13N-90	**969.267**	2.5 - 13	35	90	55	18000	NBC13	MGN13
BDV50-MEGA13N-120	**969.268**	2.5 - 13	35	120	80	18000	NBC13	MGN13
BDV50-MEGA13N-165	**969.269**	2.5 - 13	35	165	125	16000	NBC13	MGN13
BDV50-MEGA16N-90	**969.274**	2.5 - 16	42	90	55	17000	NBC16	MGN16
BDV50-MEGA16N-120	**969.275**	2.5 - 16	42	120	85	17000	NBC16	MGN16
BDV50-MEGA16N-165	**969.276**	2.5 - 16	42	165	130	16000	NBC16	MGN16
BDV50-MEGA16N-200	**969.277**	2.5 - 16	42	200	165	13000	NBC16	MGN16
BDV50-MEGA20N-90	**969.280** •	2.5 - 20	46	90	55	16000	NBC20	MGN20
BDV50-MEGA20N-120	**969.281** •	2.5 - 20	46	120	85	16000	NBC20	MGN20
BDV50-MEGA20N-165	**969.282**	2.5 - 20	46	165	130	15000	NBC20	MGN20
BDV50-MEGA20N-200	**969.283**	2.5 - 20	46	200	165	13000	NBC20	MGN20
BDV50-MEGA25N-105	**806.377**	15.5 - 25.4	60	105	77	16000	NBC25	MGN25
BDV50-MEGA25N-135	**806.378**	15.5 - 25.4	60	135	107	15000	NBC25	MGN25

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. MEGA nut is included in delivery.

Accessories & Spare Parts

Standard Type	MEGA Perfect Seals	New Baby Collets	MEGA Wrenches	Adjusting Screws NBA	Taper Cleaners
					
▶ 334	▶ 336	▶ 329	▶ 351	▶ 335	▶ 370

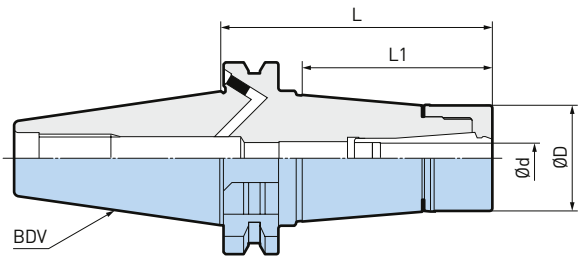
MEGA E Chuck

Collet chuck designed exclusively for endmilling with high concentricity and rigidity.

Coolant Through Hole

BIG-PLUS Dual-Contact





ø3 - 12mm

Model	Order No.	Ød	ØD	L	L1	max. min-1	Collet Model	Nut Model
BDV40-MEGA6E-90	**968.142**	3 - 6	25	90	60	30000	MEC6	MEN6
BDV40-MEGA8E-60	**968.144**	3 - 8	30	60	30	30000	MEC8	MEN8
BDV40-MEGA8E-90	**968.145**	3 - 8	30	90	63	30000	MEC8	MEN8
BDV40-MEGA10E-60	**968.147**	3 - 10	35	60	33	30000	MEC10	MEN10
BDV40-MEGA10E-90	**968.148**	3 - 10	35	90	64	30000	MEC10	MEN10
BDV40-MEGA13E-60	**968.150**	3 - 12	42	60	35	30000	MEC13	MEN13
BDV40-MEGA13E-90	**968.151**	3 - 12	42	90	61	30000	MEC13	MEN13
BDV40-MEGA13E-120	**968.152** •	3 - 12	42	120	95	29000	MEC13	MEN13
BDV50-MEGA6E-120	**968.154**	3 - 6	25	120	90	20000	MEC6	MEN6
BDV50-MEGA8E-120	**968.156**	3 - 8	30	120	90	20000	MEC8	MEN8
BDV50-MEGA10E-120	**968.159**	3 - 10	35	120	90	20000	MEC10	MEN10
BDV50-MEGA13E-90	**968.161**	3 - 12	42	90	60	18000	MEC13	MEN13
BDV50-MEGA13E-120	**968.162**	3 - 12	42	120	90	18000	MEC13	MEN13
BDV50-MEGA13E-165	**968.163** •	3 - 12	42	165	137	16000	MEC13	MEN13

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. MEGA E nut is included.

Accessories & Spare Parts

MEGA E Nuts	MEGA E Perfect Seals	MEGA E Collets	MEGA Wrenches	Adjusting Screws NBA	Taper Cleaners
					
▶ 340	▶ 341	▶ 340	▶ 351	▶ 335	▶ 370

MEGA Double Power Chuck Type DS

Flange contacting nut assures highest rigidity. Unique coolant supply design ensures efficient coolant supply to the cutting tool periphery

Coolant Through Hole

BIG-PLUS Dual-Contact





A.2

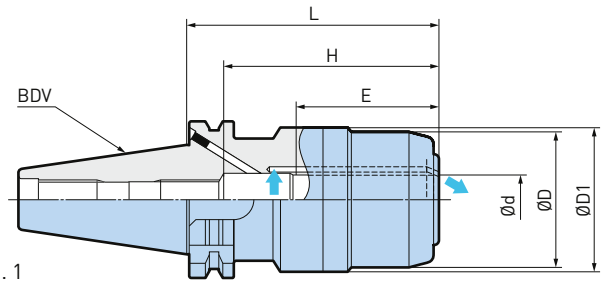


Fig. 1

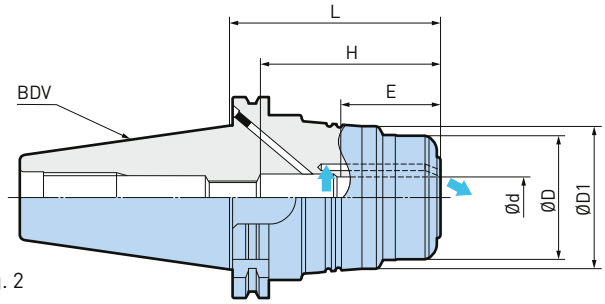


Fig. 2

ø3 - 42mm

Model	Order No.	Fig.	Ød	ØD	ØD1	L	H	E	max. min-1
BDV40-MEGA16DS-90A *	**803.075**	1	16	42	52.6	92	73	50	25000
BDV40-MEGA20DS-100A	**803.076** •	1	20	50	55	102	71 - 81	52	22000
BDV40-MEGA20DS-135A	**805.596**	1	20	50	55	137	71 - 81	52	20000
BDV40-MEGA25DS-100A	**803.077**	1	25	62	62.7	102	73 - 83	58	18000
BDV40-MEGA25DS-135A	**805.597**	1	25	62	62.7	137	73 - 83	58	16000
BDV40-MEGA32DS-100A	**803.078**	1	32	70	70.7	102	78 - 88	62	12000
BDV40-MEGA32DS-135A	**805.598**	1	32	70	70.7	137	78 - 88	62	10000
BDV50-MEGA16DS-70 *	**969.023**	2	16	46	55	72.5	73	50	20000
BDV50-MEGA20DS-100	**969.025**	2	20	60	69	102.5	71 - 81	52	20000
BDV50-MEGA20DS-135	**805.753**	2	20	60	69	137.5	71 - 81	52	19000
BDV50-MEGA25DS-105	**968.059** •	2	25	70	77	107.5	78 - 88	58	18000
BDV50-MEGA25DS-135	**805.600**	2	25	70	77	137.5	78 - 88	58	17000
BDV50-MEGA32DS-105	**968.060** •	2	32	80	86	107.5	80 - 97	62	15000
BDV50-MEGA32DS-135	**805.601**	2	32	80	86	137.5	80 - 97	62	13000
BDV50-MEGA42DS-105	**968.061**	1	42	99	99.7	107	90 - 107	62	12000

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Wrench and axial adjusting screw are to be ordered separately.
3. "H" is the max. tool shank length that can be inserted for these models.
4. "E" is the min. clamping length.
5. * Adjusting screw cannot be used.

Accessories & Spare Parts

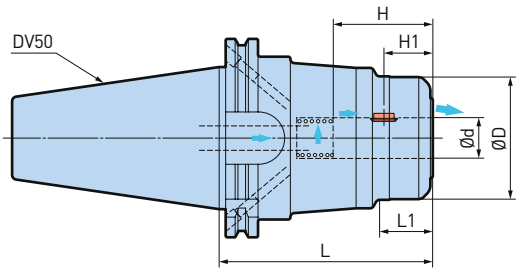
PJC Collets	PSC Collets	C Collets	OCA Collets	MEGA Wrenches	Adjusting Screws HMA
					
▶ 347	▶ 348	▶ 349	▶ 348	▶ 351	▶ 350

MEGA Perfect Grip

100% security against pulling out of the cutting tool under any torque load.

Coolant Through Hole







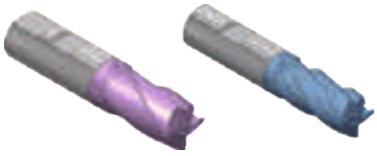
ø20 - 32mm

Model	Order No.	Ød	ØD	L	L1	H	H1
DV50-MEGA20DPG-105ADF	**805.808**	20	60	105	27	49	24
DV50-MEGA25DPG-105ADF	**805.809**	25	70	105	33	55	23
DV50-MEGA32DPG-105ADF	**805.810**	32	80	105	41	59	23

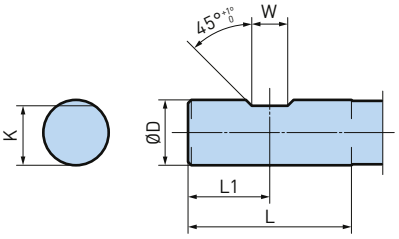
1. Key grip and spring are included with each holder.
2. MEGA wrench is to be ordered separately.
3. „H1" shows distance from center of key grip to front end.

Weldon Shank Standards

(DIN 1835-1)
The following standard shank is required for MEGA Perfect Grip.

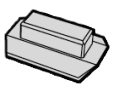


Ø 25/32 mm **Ø 20 mm**



ØD		L	L1	W		K	
Nominal	Tolerance			Nominal	Tolerance	Nominal	Tolerance
20	h6	50	25	11	+ 0.05 0	18.2	h13
25		56	32	12		23	
32		60	36	14		30	

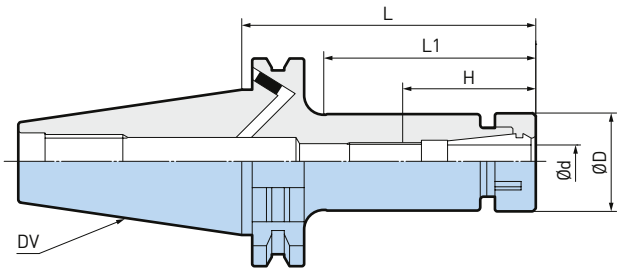
Accessories & Spare Parts

Key Grip MEGA Perfect Grip	Spring MEGA Perfect Grip	MEGA Wrenches
		
▶ 350	▶ 350	▶ 351

New Baby Chuck

The original high precision collet chuck to perform all machining applications.





ø0.25 - 20mm

Model	Order No.	Ød	ØD	L	L1	H	Collet Model	Nut Model
DV40-NBS6-60	**961.831**	0.25 - 6	20	60	34	20 - 40	NBC6	NBN6
DV40-NBS6-90	**969.032** •	0.25 - 6	20	90	60	20 - 40	NBC6	NBN6
DV40-NBS6-135	**961.833**	0.25 - 6	20	135	105	20 - 40	NBC6	NBN6
DV40-NBS8-60	**969.034**	0.5 - 8	25	60	34	23 - 42	NBC8	NBN8
DV40-NBS8-90	**961.835**	0.5 - 8	25	90	62	23 - 42	NBC8	NBN8
DV40-NBS8-135	**969.036**	0.5 - 8	25	135	107	23 - 42	NBC8	NBN8
DV40-NBS10-60	**969.037**	1.5 - 10	30	60	34	35 - 45	NBC10	NBN10
DV40-NBS10-90	**969.038** •	1.5 - 10	30	90	64	35 - 45	NBC10	NBN10
DV40-NBS10-135	**961.839**	1.5 - 10	30	135	104	35 - 45	NBC10	NBN10
DV40-NBS13-60	**969.040**	2.5 - 13	35	60	37	41 - 60	NBC13	NBN13
DV40-NBS13-90	**969.041**	2.5 - 13	35	90	66	41 - 60	NBC13	NBN13
DV40-NBS13-135	**969.042**	2.5 - 13	35	135	106	41 - 60	NBC13	NBN13
DV40-NBS16-60	**969.043**	2.5 - 16	42	60	38	45 - 65	NBC16	NBN16
DV40-NBS16-90	**969.044**	2.5 - 16	42	90	68	45 - 65	NBC16	NBN16
DV40-NBS16-135	**969.045**	2.5 - 16	42	135	113	45 - 65	NBC16	NBN16
DV40-NBS20-60	**969.046**	2.5 - 20	46	60	40	48 - 65	NBC20	NBN20
DV40-NBS20-90	**969.047** •	2.5 - 20	46	90	70	48 - 65	NBC20	NBN20
DV40-NBS20-135	**969.048**	2.5 - 20	46	135	115	48 - 65	NBC20	NBN20
DV40-NBS20-165	**969.059**	2.5 - 20	46	165	145	48 - 65	NBC20	NBN20
DV40-NBS20-200	**969.060**	2.5 - 20	46	200	180	48 - 65	NBC20	NBN20

Model	Order No.	Ød	ØD	L	L1	H	Collet Model	Nut Model
DV50-NBS6-120	**969.062**	0.25 - 6	20	120	85	20 - 40	NBC6	NBN6
DV50-NBS6-165	**969.063**	0.25 - 6	20	165	125	20 - 40	NBC6	NBN6
DV50-NBS8-120	**969.066**	0.5 - 8	25	120	80	23 - 42	NBC8	NBN8
DV50-NBS8-165	**969.067**	0.5 - 8	25	165	130	23 - 42	NBC8	NBN8
DV50-NBS10-90	**969.069** •	1.5 - 10	30	90	60	35 - 45	NBC10	NBN10
DV50-NBS10-120	**969.070**	1.5 - 10	30	120	85	35 - 45	NBC10	NBN10
DV50-NBS10-165	**969.071**	1.5 - 10	30	165	130	35 - 45	NBC10	NBN10
DV50-NBS13-90	**969.075**	2.5 - 13	35	90	60	41 - 60	NBC13	NBN13
DV50-NBS13-120	**961.876**	2.5 - 13	35	120	80	41 - 60	NBC13	NBN13
DV50-NBS13-165	**969.077**	2.5 - 13	35	165	125	41 - 60	NBC13	NBN13
DV50-NBS16-90	**969.082**	2.5 - 16	42	90	60	45 - 65	NBC16	NBN16
DV50-NBS16-120	**969.083**	2.5 - 16	42	120	85	45 - 65	NBC16	NBN16
DV50-NBS16-165	**969.084**	2.5 - 16	42	165	130	45 - 65	NBC16	NBN16
DV50-NBS16-200	**969.085**	2.5 - 16	42	200	165	45 - 65	NBC16	NBN16
DV50-NBS20-75	**969.087** •	2.5 - 20	46	75	45	45	NBC20	NBN20
DV50-NBS20-90	**969.088**	2.5 - 20	46	90	60	45	NBC20	NBN20
DV50-NBS20-120	**961.889**	2.5 - 20	46	120	85	45	NBC20	NBN20
DV50-NBS20-165	**969.090** •	2.5 - 20	46	165	130	45	NBC20	NBN20
DV50-NBS20-200	**969.091**	2.5 - 20	46	200	165	45	NBC20	NBN20

1. New Baby Nut is included.
2. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

New Baby Nuts	Baby Perfect Seals	New Baby Collets	New Baby Wrenches	Adjusting Screws NBA	Tap Driving Back Stops	Taper Cleaners
						
▶ 334	▶ 338	▶ 329	▶ 352	▶ 335	▶ 335	▶ 370

New Hi-Power Milling Chuck Type S

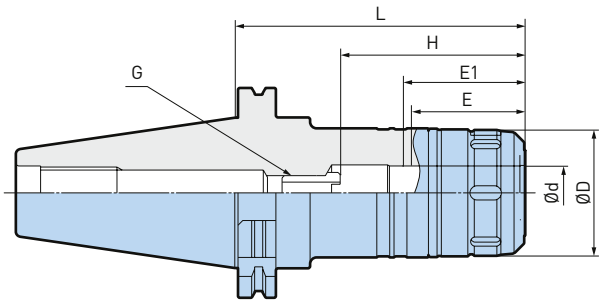
The original design assures heavy machining with high power and precision.

Coolant Through Hole

BIG-PLUS Dual-Contact

A.2





ø3 - 42mm

Model	Order No.	Ød	ØD	L	H	E	E1
BDV40-HMC20S-85	**962.121S** •	20	50	85	69 - 79	50	56
BDV40-HMC20S-105	**800.972**	20	50	105	69 - 79	50	56
BDV40-HMC20S-120	**800.973**	20	50	120	69 - 79	50	56
BDV40-HMC25S-95	**800.975**	25	59	95	71 - 81	56	57
BDV40-HMC25S-105	**800.974**	25	59	105	71 - 81	56	57
BDV40-HMC32S-95	**962.124S** •	32	68	95	79 - 89	60	64
BDV40-HMC32S-105	**800.976**	32	68	105	79 - 89	60	64
BDV40-HMC32S-135	**800.977**	32	68	135	79 - 89	60	64
BDV50-HMC20S-105	**805.430**	20	50	105	69 - 79	50	56
BDV50-HMC20S-135	**805.431**	20	50	135	69 - 79	50	56
BDV50-HMC25S-105	**805.424** •	25	59	105	76 - 86	56	57
BDV50-HMC25S-135	**805.433**	25	59	135	76 - 86	56	57
BDV50-HMC32S-105	**804.995** •	32	68	105	88 - 98	60	72
BDV50-HMC32S-135	**805.435**	32	68	135	88 - 98	60	72
BDV50-HMC32S-165	**805.436**	32	68	165	88 - 98	60	72
BDV50-HMC42S-135	**805.438**	42	85	135	93 - 105	70	73

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Wrench and axial adjusting screw are to be ordered separately.
3. "E" is the min. clamping length.
4. "G" is the adjusting screw (optional).
5. "H" is the max. tool shank length that can be inserted for these models.
6. "E1" is the min. clamping length for optimum use with center through coolant.
7. Standard DV models (without BIG-PLUS) are also available. Please contact BIG KAISER for details.

Accessories & Spare Parts

PJC Collets	OCA Collets	PSC Collets	C Collets	FK Wrenches	Adjusting Screws HMA
					
▶ 347	▶ 348	▶ 348	▶ 349	▶ 352	▶ 350

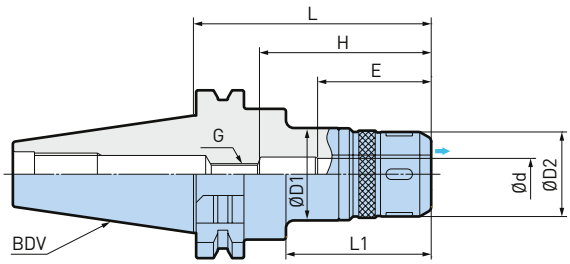
New Hi-Power Milling Chuck Type HMC12J

Extremely slim and rigid design with jet through coolant.

Coolant Through Hole

BIG-PLUS Dual-Contact







ø6 - 12mm

Model	Order No.	Ød	ØD1	ØD2	L	L1	H	E	G
BDV40-HMC12J-90	**806.810**	12	35	32	90	55	65	43	M8
BDV40-HMC12J-120	**806.811**	12	35	32	120	70	65	43	M8
BDV50-HMC12J-105	**806.812**	12	35	32	105	70	65	43	M8
BDV50-HMC12J-135	**806.813**	12	35	32	135	70	65	43	M8

1. "E" is the min. clamping length.
2. Wrench is to be ordered separately.
3. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
4. Standard DV models (without BIG-PLUS) are also available. Please contact BIG KAISER for details.

Accessories & Spare Parts

PJC Collets	FK Wrenches	Adjusting Screws HMA
		
▶ 347	▶ 352	▶ 350

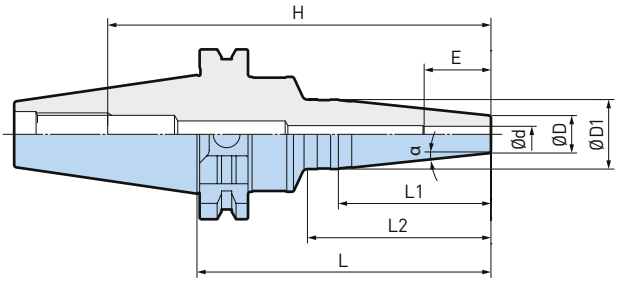
Hydraulic Chuck Super Slim

Ultra precise hydraulic chuck with extremely slim design.

Coolant Through Hole

Dual-Contact





ø4 - 12mm

Model	Order No.	Ød	ØD	ØD1	L	L1	L2	H	E	α
BDV40-HDC4S-110	**806.347**	4	14	26	110	57	68	145	19	6°
BDV40-HDC6S-110	**806.348**	6	14	26	110	57	68	145	25	6°
BDV40-HDC8S-110	**806.349**	8	17	28	110	52	69	145	31	6°
BDV40-HDC10S-110	**806.350**	10	19	30	110	52	69	145	33	6°
BDV40-HDC12S-110	**806.351**	12	21	32	110	52	70	145	36	6°

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. "E" is the min. clamping length.
3. Adjusting Screw and straight collet cannot be used.
4. "H"indicates the maximum cutting tool insertion length.

Accessories & Spare Parts

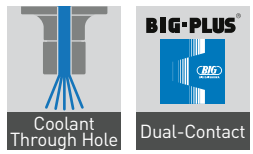
Wiper Cleaners



► 370

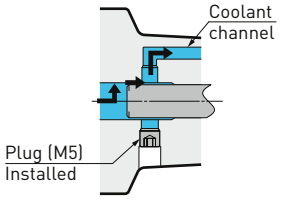
Hydraulic Chuck Jet Through

Coolant or Minimum Quantity Lubrification is supplied to cutting edge securely.
Maximum performance and high-precision with 5-axis machining.

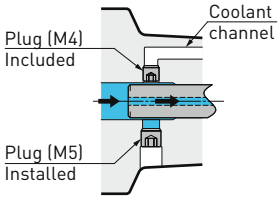




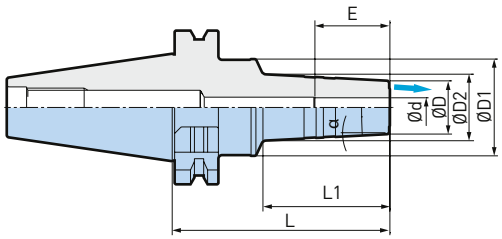
Peripheric



Center Through







A.2

ø4 - 12mm

Model	Order No.	Ød	ØD	ØD1	ØD2	L	L1	E	α
BDV40-HDC4J-90	**807.203**	4	20	46	23	90	50	19	3°
BDV40-HDC6J-90	**807.204**	6	20	42	26	90	50	25	3°
BDV40-HDC8J-90	**807.205**	8	22	42	28	90	50	28	3°
BDV40-HDC10J-90	**807.206**	10	24	44	30	90	50	33	3°
BDV40-HDC12J-90	**807.207**	12	26	46	32	90	50	13	3°

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Adjusting screw cannot be used.
3. Straight collet cannot be used.

Caution

- Use only cutting tools that have a shank tolerance within h6.
- Roughing endmills are not recommended for use with hydraulic chucks.
- Do not use with cutting tools made with a flat on the shank. (ie: Weldon type shank)
- Do not tighten the clamping screw without first inserting a cutting tool into the hydraulic chuck.
- Always insert the cutting tool into the hydraulic chuck beyond min. clamping length E.

Accessories & Spare Parts

Wiper Cleaners



► 370

Hydraulic Chuck Standard

Coolant Through Hole

BIG-PLUS Dual-Contact

For high precision machining in automotive, aerospace, medical and die & mold.

A.2



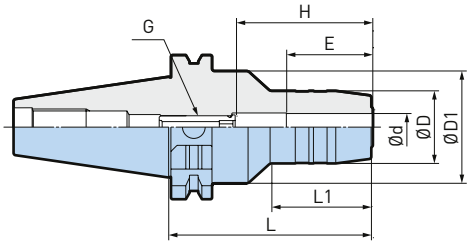


Fig. 1

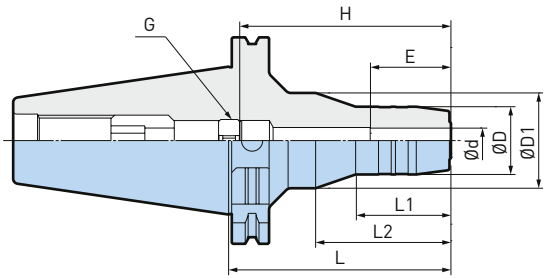


Fig. 2

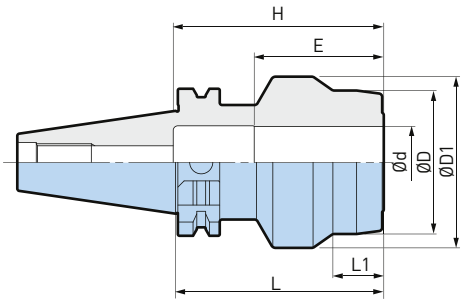


Fig. 3

ø3 - 31mm

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	L2	H	E	G
BDV40-HDC6-90	**806.352**	1	6	26	49.5	90	43	-	28 - 50	28	HDA6-05032
BDV40-HDC8-90	**806.353**	1	8	28	49.5	90	43	-	28 - 50	28	HDA8-06032
BDV40-HDC10-90	**806.354**	1	10	30	49.5	90	44	-	33 - 55	33	HDA10-08032
BDV40-HDC12-90	**806.355**	1	12	32	49.5	90	44	-	38 - 60	38	HDA12-10032
BDV40-HDC14-90	**806.356**	1	14	34	49.5	90	44	-	38 - 60	38	HDA12-10032
BDV40-HDC16-90	**806.357**	1	16	38	49.5	90	47	-	43 - 70	43	HDA16-12037
BDV40-HDC18-90	**806.358**	1	18	40	49.5	90	49	-	43 - 70	43	HDA16-12037
BDV40-HDC20-90	**806.359**	1	20	42	49.5	90	51	-	43 - 70	43	HDA16-12037
BDV40-HDC31-90	**806.441**	3	31	62	74	90	22	-	91	56	-
BDV50-HDC12L-105	**806.360**	2	12	32	45	105	44	63	100 - 120	38	HDA6-20010
BDV50-HDC20L-105	**806.361**	2	20	42	50	105	46	63	71 - 111	43	HDA20-12047

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. "E" is the min. clamping length.
3. "G" is the adjusting screw (optional).
4. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

PJC Collets	PSC Collets	Adjusting Screws HDA	Wiper Cleaners
			
▶ 347	▶ 348	▶ 354	▶ 370

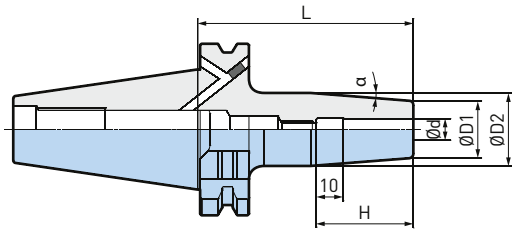
Shrink Chuck Standard

Solid body provides higher rigidity.

Coolant Through Hole

BIG-PLUS Dual-Contact





A.2

ø6 - 25mm

Model	Order No.	Ød	ØD1	ØD2	L	H	α
BDV40-SRC6D-80	**490.506**	6	21	27	80	36	4.5°
BDV40-SRC6D-120	**490.556**	6	21	27	120	36	4.5°
BDV40-SRC8D-80	**490.508**	8	21	27	80	36	4.5°
BDV40-SRC8D-120	**490.558**	8	21	27	120	36	4.5°
BDV40-SRC10D-80	**490.510**	10	24	32	80	42	4.5°
BDV40-SRC10D-120	**490.560**	10	24	32	120	42	4.5°
BDV40-SRC12D-80	**490.512**	12	24	32	80	47	4.5°
BDV40-SRC12D-120	**490.562**	12	24	32	120	47	4.5°
BDV40-SRC14D-80	**490.514**	14	27	34	80	47	4.5°
BDV40-SRC16D-80	**490.516**	16	27	34	80	50	4.5°
BDV40-SRC16D-120	**490.566**	16	27	34	120	50	4.5°
BDV40-SRC18D-80	**490.518**	18	33	42	80	50	4.5°
BDV40-SRC20D-80	**490.520**	20	33	42	80	52	4.5°
BDV40-SRC20D-120	**490.570**	20	33	42	120	52	4.5°
BDV50-SRC6D-80	**490.606**	6	21	27	80	36	4.5°
BDV50-SRC6D-160	**490.656**	6	21	38	160	36	4.5°
BDV50-SRC8D-80	**490.608**	8	21	27	80	36	4.5°
BDV50-SRC8D-160	**490.658**	8	21	38	160	36	4.5°
BDV50-SRC10D-80	**490.610**	10	24	32	80	42	4.5°
BDV50-SRC10D-160	**490.660**	10	24	41	160	42	4.5°
BDV50-SRC12D-80	**490.612**	12	24	32	80	47	4.5°
BDV50-SRC12D-160	**490.662**	12	24	41	160	47	4.5°
BDV50-SRC14D-80	**490.614**	14	27	34	80	47	4.5°
BDV50-SRC14D-160	**490.664**	14	27	44	160	47	4.5°
BDV50-SRC16D-80	**490.616**	16	27	34	80	50	4.5°
BDV50-SRC16D-160	**490.666**	16	27	44	160	50	4.5°
BDV50-SRC18D-80	**490.618**	18	33	42	80	50	4.5°
BDV50-SRC18D-160	**490.668**	18	33	50	160	50	4.5°
BDV50-SRC20D-80	**490.620**	20	33	42	80	52	4.5°
BDV50-SRC20D-160	**490.670**	20	33	50	160	52	4.5°
BDV50-SRC25D-100	**490.625**	25	44	53	100	58	4.5°
BDV50-SRC25D-160	**490.675**	25	44	61	160	58	4.5°

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Use carbide cutter within a tolerance of h6.
3. Please refer to the operation manual of heating / cooling equipment, as some equipment may not be compatible.

Accessories & Spare Parts

Wiper Cleaners



▶ 370

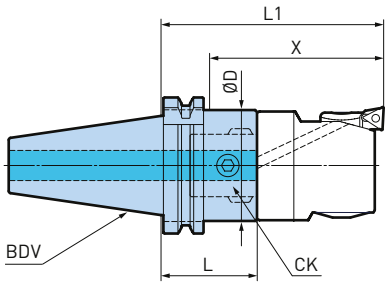
CK Shanks with Center Through Coolant

Coolant Through Hole

BIG-PLUS Dual-Contact

A.2





CK4 - CK7

Model	Order No.	CK	ØD	L	L1	X
BDV40-CKB4-73ADF	**323.826**	CKB4	39	73	120	80
BDV40-CKB5-43ADF	**323.825**	CKB5	50	43	100	60
BDV40-CKN6-59	**323.821N**	CKN6	63.5	59	130	90
BDV50-CKB5-83ADF	**323.868**	CKB5	50	83	140	100
BDV50-CKN6-69	**323.860N**	CKN6	63.5	69	140	100
BDV50-CKN6-129	**323.864N**	CKN6	63.5	129	200	160
BDV50-CKN6-229	**323.865N**	CKN6	63.5	229	300	260
BDV50-CKN7-83	**323.861N**	CKN7	90	83	200 (170)	160 (130)
BDV50-CKB7-133	**323.862**	CKB7	90	133	250 (220)	210 (180)
BDV50-CKN7-243	**323.866N**	CKN7	90	243	360 (330)	320 (290)

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. X and L1 dimensions on the table are reference figures when EWN/EWE head is mounted.
3. Cutting edge and drive key grooves are located in the same orientation.
4. ADF indicates both flange through and center through coolant available.
5. ( ) Indicate the length when short version of EWN (EWN100-203CKB7-87) is mounted.

Accessories & Spare Parts

Fine Boring Heads



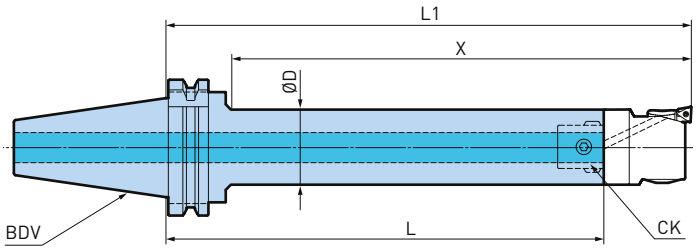
► 396-399

Smart Damper CK Shanks

Tool shanks with integrated damping system for highly efficient deep hole fine boring.

Anti-Vibration | Coolant Through Hole | Dual-Contact





CK5 - CK6

Model	Order No.	CK	ØD	L	L1	X
BDV50-CKB5DP-301	**328.233**	CKB5	50	301	358	318
BDV50-CKB6DP-377	**328.235**	CKB6	60	377	448	408

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. X and L1 dimensions on the table are reference figures when EWN/EWE head is mounted.
3. Cutting edge and drive key grooves are located in the same orientation.

Accessories & Spare Parts

Fine Boring Heads

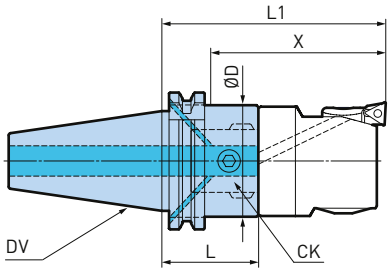


► 396-399

CK Shanks with Center and Flange Through Coolant

Coolant Through Hole





CK1 - CK7

Model	Order No.	CK	ØD	L	L1	X
DV30-CKB3-31ADF	**323.701**	CKB3	31	31	71	47
DV40-CKB1-91ADF	**326.011**	CKB1	19	90.5	123	83
DV40-CKB2-85ADF	**326.021**	CKB2	24	84.5	120	80
DV40-CKB3-35ADF	**323.728**	CKB3	31	35	75	50
DV40-CKB3-80ADF	**326.031**	CKB3	31	80	120	80
DV40-CKB4-73ADF	**326.041**	CKB4	39	73	120	80
DV40-CKB5-43ADF	**326.057**	CKB5	50	43	100	60
DV40-CKB5-143ADF	**326.054**	CKB5	50	143	200	160
DV40-CKN6-59ADF	**323.726N**	CKN6	63.5	59	130	90
DV40-CKB6-99ADF	**323.722**	CKB6	63.5	99	170	130
DV40-CKB6-129ADF	**326.064**	CKB6	63.5	129	200	160
DV50-CKB3-130ADF	**325.933**	CKB3	31	130	170	130
DV50-CKB4-93ADF	**325.942**	CKB4	39	93	140	100
DV50-CKB4-153ADF	**325.944**	CKB4	39	153	200	160
DV50-CKB5-83ADF	**325.952**	CKB5	50	83	140	100
DV50-CKB5-143ADF	**325.954**	CKB5	50	143	200	160
DV50-CKB5-183ADF	**325.955**	CKB5	50	183	240	200
DV50-CKN6-69ADF	**323.765N**	CKN6	63.5	69	140	100
DV50-CKN6-129ADF	**323.767N**	CKN6	63.5	129	200	160
DV50-CKB6-169ADF	**325.965**	CKB6	63.5	169	240	200
DV50-CKN6-229ADF	**323.768N**	CKN6	63.5	229	300	260
DV50-CKN7-83ADF	**323.766N**	CKN7	90	83	200 (170)	160 (130)
DV50-CKN7-273ADF	**323.769N**	CKN7	90	273	390 (360)	350 (320)

1. X and L1 dimensions on the table are reference figures when EWN/EWE head is mounted.
2. Cutting edge and drive key grooves are located in the same orientation.
3. ADF indicates both flange through and center through coolant available.
4. ( ) Indicate the length when short version of EWN (EWN100-203CKB7-87) is mounted.

Accessories & Spare Parts

Fine Boring Heads

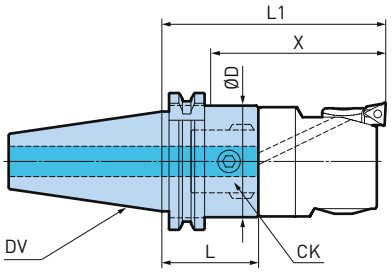


► 396-399

CK Shanks with Center Through Coolant

Coolant Through Hole





CK1, CK5-7

Model	Order No.	CK	ØD	L	L1	X
DV30-CKB1-40	**323.703**	CKB1	19	31.5	64	40
DV30-CKB5-50	**326.005**	CKB5	50	50	107	83
DV40-CKB5-43	**326.050**	CKB5	50	43	100	60
DV40-CKB6-59	**323.721**	CKB6	63.5	59	130	90
DV50-CKB6-69	**323.760**	CKB6	63.5	69	140	100
DV50-CKB6-129	**325.964**	CKB6	63.5	129	200	160
DV50-CKB7-83	**323.761**	CKB7	90	83	200 (170)	160 (130)

1. X and L1 dimensions on the table are reference figures when EWN/EWE head is mounted.
2. Cutting edge and drive key grooves are located in the same orientation.
3. ( ) Indicate the length when short version of EWN (EWN100-203CKB7-87) is mounted.

Accessories & Spare Parts

Fine Boring Heads

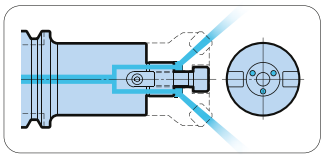


► 396-399

Face Mill Arbors Type FMH

For cutters that have a coolant bore through the face.





Model	Order No.	Fig.	ØD	ØD1	L	L1	L2	W	G	ØC min.
BDV40-FMH16-37-40	**806.896**	1	16	37	40	16	5	8	M8	28
BDV40-FMH22-47-45	**805.584**	1	22	47	45	18	5	10	M10	38
BDV40-FMH22-47-90	**805.585**	1	22	47	90	18	5	10	M10	36
BDV40-FMH22-47-150	**805.604**	1	22	47	150	18	5	10	M10	36
BDV40-FMH22-60-50	**805.605**	2	22	60	50	18	5	10	M10	38
BDV40-FMH22-60-90	**805.606**	2	22	60	90	18	5	10	M10	38
BDV40-FMH27-60-50	**805.586**	2	27	60	50	20	6	12	M12	46
BDV40-FMH27-60-90	**805.608**	2	27	60	90	20	6	12	M12	46
BDV40-FMH27-76-60	**805.609**	2	27	76	60	20	6	12	M12	48
BDV40-FMH27-76-90	**805.610**	2	27	76	90	20	6	12	M12	48
BDV40-FMH32-96-60	**805.611**	2	32	96	60	22	7	14	M16	58

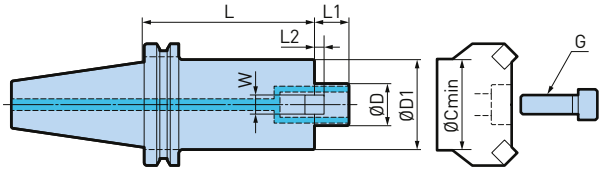


Fig. 1

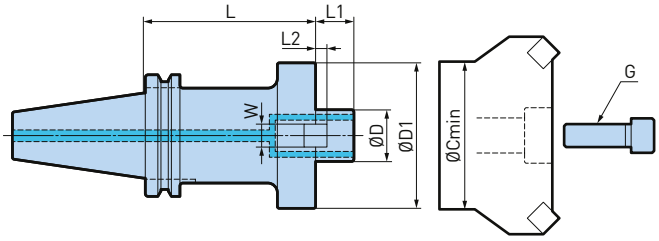


Fig. 2

Model	Order No.	Fig.	ØD	ØD1	L	L1	L2	W	G	ØC min.
BDV50-FMH16-37-105	**807.209**	1	16	37	105	16	5	8	M8	28
BDV50-FMH22-47-60	**805.758**	1	22	47	60	18	5	10	M10	38
BDV50-FMH22-47-105	**805.623**	1	22	47	105	18	5	10	M10	36
BDV50-FMH22-47-150	**805.624**	1	22	47	150	18	5	10	M10	36
BDV50-FMH22-47-200	**978.226**	1	22	47	200	18	5	10	M10	36
BDV50-FMH22-47-250	**807.210**	1	22	47	250	18	5	10	M10	36
BDV50-FMH22-60-60	**805.626**	1	22	60	60	18	5	10	M10	38
BDV50-FMH22-60-105	**805.627**	1	22	60	105	18	5	10	M10	38
BDV50-FMH22-60-150	**805.628**	1	22	60	150	18	5	10	M10	38
BDV50-FMH22-60-200	**805.629**	1	22	60	200	18	5	10	M10	38
BDV50-FMH27-60-45	**805.630**	1	27	60	45	20	6	12	M12	46
BDV50-FMH27-60-90	**805.631**	1	27	60	90	20	6	12	M12	46
BDV50-FMH27-60-150	**805.632**	1	27	60	150	20	6	12	M12	46
BDV50-FMH27-60-200	**805.633**	1	27	60	200	20	6	12	M12	46
BDV50-FMH27-76-45	**805.635**	1	27	76	45	20	6	12	M12	48
BDV50-FMH27-76-90	**805.636**	1	27	76	90	20	6	12	M12	48
BDV50-FMH27-76-150	**805.637**	1	27	76	150	20	6	12	M12	48
BDV50-FMH27-76-200	**805.638**	1	27	76	200	20	6	12	M12	48
BDV50-FMH32-96-50	**805.639**	2	32	96	50	22	7	14	M16	58
BDV50-FMH32-96-90	**805.640**	2	32	96	90	22	7	14	M16	58
BDV50-FMH32-96-150	**805.641**	2	32	96	150	22	7	14	M16	58
BDV50-FMH32-96-200	**805.642**	2	32	96	200	22	7	14	M16	58
BDV50-FMH40-100-50	**805.643**	2	40	100	50	26	8.5	16	M20	70
BDV50-FMH40-100-75	**805.644**	2	40	100	75	26	8.5	16	M20	70
BDV50-FMH40-100-105	**805.645**	2	40	100	105	26	8.5	16	M20	70

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Clamp bolt is included.
3. By using a clamping screw with a through bore, coolant is supplied through the screw

Accessories & Spare Parts

Clamp Bolts



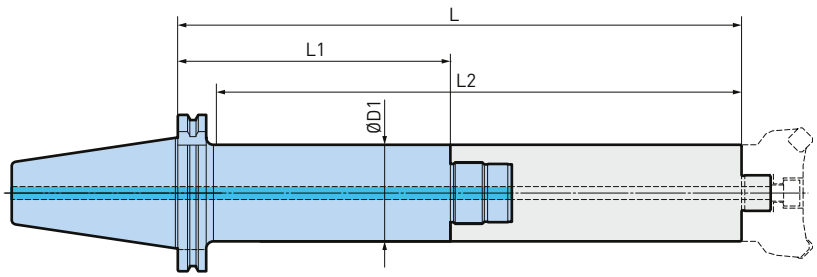
▶ 355

Smart Damper Basic Holders for Milling Heads

Coolant Through Hole

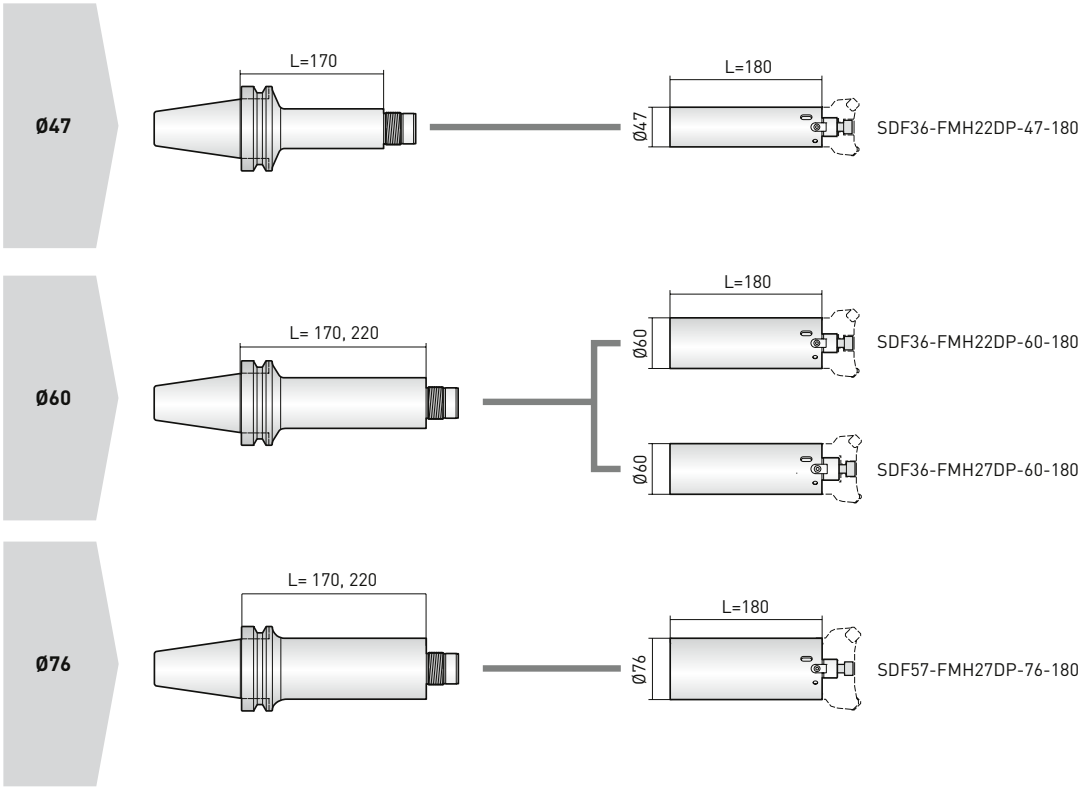
BIG-PLUS Dual-Contact





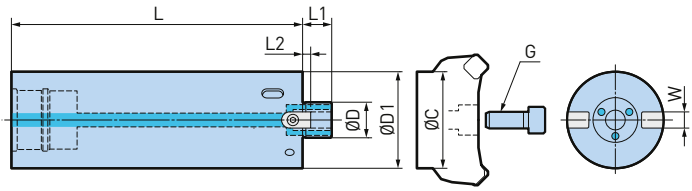
Model	Order No.	ØD1	L	L1	L2	Damper Head Model
BDV50-SDF36-47-170	**805.296**	47	350	170	325	FMH_DP-47
BDV50-SDF36-60-170	**805.298**	60	350	170	325	FMH_DP-60
BDV50-SDF36-60-220	**805.299**	60	400	220	375	FMH_DP-60
BDV50-SDF57-76-170	**807.678**	76	350	170	325	FMH_DP-76
BDV50-SDF57-76-220	**807.679**	76	400	220	375	FMH_DP-76

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.



Smart Damper Damper Heads for Mills





Model	Order No.	ØD	ØD1	L	L1	L2	G	W	ØC min.
SDF36-FMH22DP-47-180	**804.969**	22	47	180	18	5	M10	10	36
SDF36-FMH22DP-60-180	**804.971**	22	60	180	18	5	M10	10	38
SDF36-FMH27DP-60-180	**804.972**	27	60	180	20	6	M12	12	46
SDF57-FMH27DP-76-180	**807.673**	27	76	180	20	6	M12	12	48

1. Wrench and cutter clamping bolt are included.
2. By using a clamping screw with a through bore, coolant is supplied through the screw

Accessories & Spare Parts

FK Wrenches	Clamp Bolts
	
▶ 352	▶ 355

Side Lock Holders for Weldon

Coolant Through Hole

BIG-PLUS Dual-Contact

A.2



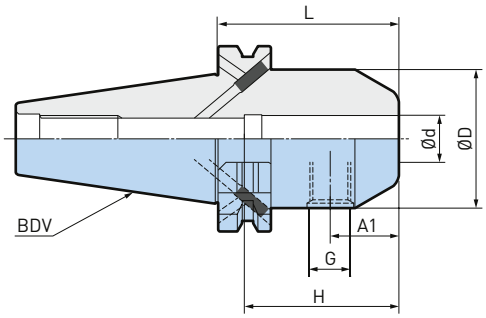


Fig. 1

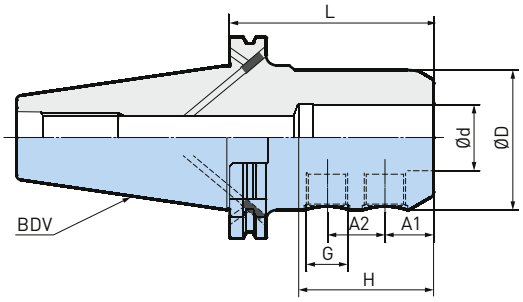


Fig. 2

ø6 - 40mm

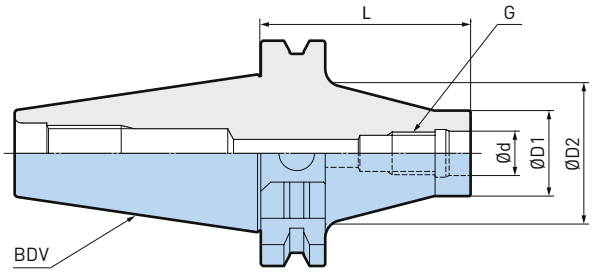
Model	Order No.	Fig.	Ød	ØD	L	A1	A2	H	G
BDV40-ISL6-50	**490.106**	1	6	25	50	17.5	-	85 *	M6
BDV40-ISL8-50	**490.108**	1	8	28	50	17.5	-	85 *	M8
BDV40-ISL10-50	**490.110**	1	10	35	50	19.5	-	85 *	M10
BDV40-ISL12-50	**490.112**	1	12	42	50	22	-	85 *	M12
BDV40-ISL14-50	**490.114**	1	14	44	50	22	-	85 *	M12
BDV40-ISL16-63	**490.116**	1	16	48	63	23.5	-	53	M14
BDV40-ISL18-63	**490.118**	1	18	50	63	23.5	-	53	M14
BDV40-ISL20-63	**490.120**	1	20	52	63	24.5	-	55	M16
BDV40-ISL25-100	**490.125**	2	25	65	100	23.5	25	60	M18 P2
BDV40-ISL32-100	**490.132**	2	32	72	100	23.5	28	66	M20 P2
BDV50-ISL6-63	**490.206**	1	6	25	63	17.5	-	116 *	M6
BDV50-ISL8-63	**490.208**	1	8	28	63	17.5	-	116 *	M8
BDV50-ISL10-63	**490.210**	1	10	35	63	19.5	-	116 *	M10
BDV50-ISL12-63	**490.212**	1	12	42	63	22	-	116 *	M12
BDV50-ISL14-63	**490.214**	1	14	44	63	22	-	116 *	M12
BDV50-ISL16-63	**490.216**	1	16	48	63	23.5	-	116 *	M14
BDV50-ISL18-63	**490.218**	1	18	50	63	23.5	-	116 *	M14
BDV50-ISL20-63	**490.220**	1	20	52	63	24.5	-	116 *	M16
BDV50-ISL25-80	**490.225**	2	25	65	80	23.5	25	60	M18 P2
BDV50-ISL32-100	**490.232**	2	32	70	100	23.5	28	66	M20 P2
BDV50-ISL40-100	**490.240**	2	40	90	100	29.5	32	79	M20 P2

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. "H" is the max. tool shank length that can be inserted for these models.
3. Use a cutting tool in accordance to DIN 1835 B / DIN 6538 HB
4. H with * indicates the maximum clamping depth to the Pull Stud Bolt.

Holders for Screw-On Cutter

General metric screw-on type cutting tools can be used with these models.





Model	Order No.	Ød	ØD1	ØD2	L	G
BDV40-M10-19-65	**806.607**	10.5	19	35	65	M10
BDV40-M10-19-110	**807.364**	10.5	19	35	110	M10
BDV40-M12-24-60	**806.608**	12.5	24	40	60	M12
BDV40-M12-24-105	**807.365**	12.5	24	40	105	M12
BDV40-M16-29-55	**806.609**	17	29	45	55	M16
BDV40-M16-29-100	**807.366**	17	29	45	100	M16

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.

A.2

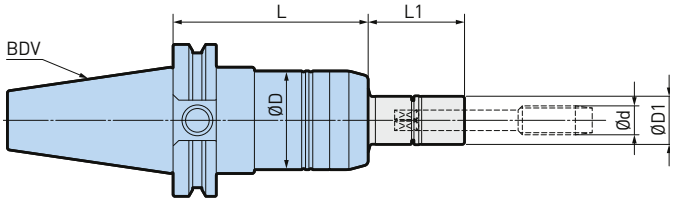
MEGA Synchro Tapping Holder

Compensates for synchronization errors during rigid tapping. Improves thread quality and tool life by reducing thrust loads caused by synchronization errors up to 90%.

Coolant Through Hole

BIG-PLUS Dual-Contact





M3 - M20

Model	Order No.	Tap Holder	Ød	ØD	ØD1	L	L1
BDV40-MGT6-80	**963.401**	MGT6	M3-M8	36	16	80	30 - 200
BDV40-MGT12-80	**963.402**	MGT12	M5-M12 / P1/8	41	20	80	30 - 200
BDV40-MGT20-105	**963.403**	MGT20	M10-M20 / P1/4-P1/2	54	30	105	35 - 150
BDV50-MGT6-85	**963.404**	MGT6	M3-M8	36	16	85	30 - 200
BDV50-MGT12-85	**963.405**	MGT12	M5-M12 / P1/8	41	20	85	30 - 200
BDV50-MGT20-105	**963.406**	MGT20	M10-M20 / P1/4-P1/2	54	30	105	35 - 150

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Tap holder is to be ordered separately.
3. Synrchonized tapping function is required on the machine.
4. Standard DV models (without BIG-PLUS) are also available. Please contact BIG KAISER for details.

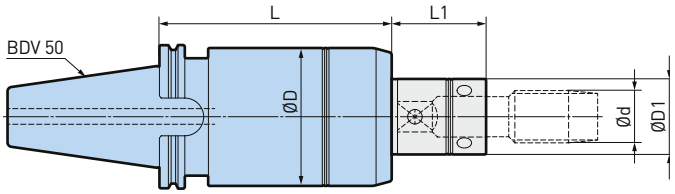
MEGA Synchro Tapping Holder MGT36

For large Tapping Type MGT36

Coolant Through Hole

BIG-PLUS Dual-Contact





M22 - M36

Model	Order No.	Tap Holder	Ød	ØD	ØD1	L	L1
BDV50-MGT36-160	**805.002**	MGT36	M22-M36 / P5/8-P1	94	38-52	160	65

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Tap holder is to be ordered separately.
3. Synrchonized tapping function is required on the machine.
4. Standard DV models (without BIG-PLUS) are also available. Please contact BIG KAISER for details.

Accessories & Spare Parts

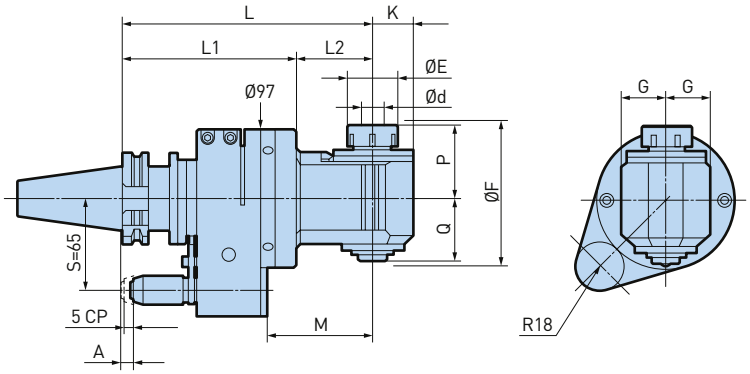
Tap Holder	MEGA Wrenches	Accessories
		
▶ 356-363	▶ 351	▶ 364-365

New Baby Chuck Type

The Angle Head has an integrated New Baby Chuck, resulting in high precision. Available in various sizes to meet specific production requirements.

BIG-PLUS Dual-Contact



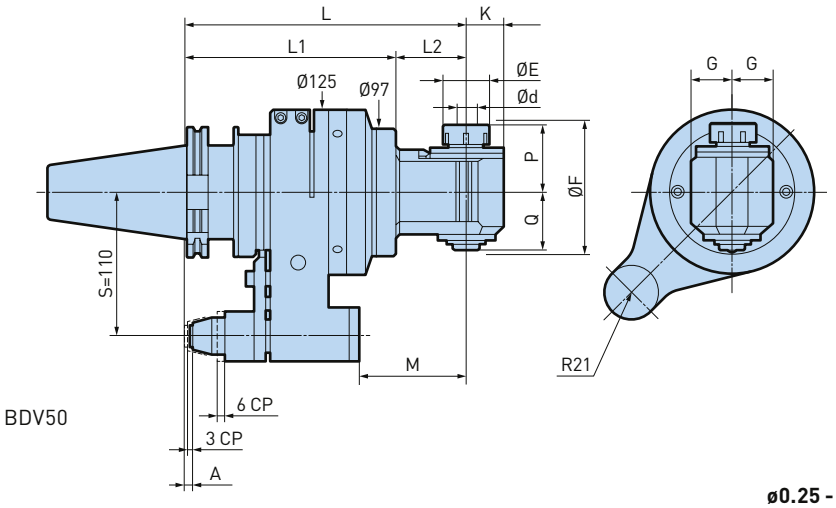


BDV40

ø0.25 - 20mm

Model	Order No.	Ød	ØE	ØF	L	L1	L2	G	K	M	P	Q	max. min-1	Collet Model
BDV40-AG90/NBS6-180	**802.553**	0.25 - 6	20	67	180	125	55	21	17	77	33	29	6000	NBC6
BDV40-AG90/NBS6-210	**802.554**	0.25 - 6	20	67	210	125	85	21	17	107	33	29	6000	NBC6
BDV40-AG90/NBS6-240	**802.555**	0.25 - 6	20	67	240	125	115	21	17	137	33	29	6000	NBC6
BDV40-AG90/NBS6-270	**802.556**	0.25 - 6	20	67	270	125	145	21	17	167	33	29	6000	NBC6
BDV40-AG90/NBS10-180	**802.546**	1.5 - 10	30	91	180	125	55	30	25	77	45	43	6000	NBC10
BDV40-AG90/NBS10-210	**802.547**	1.5 - 10	30	91	210	125	85	30	25	107	45	43	6000	NBC10
BDV40-AG90/NBS10-240	**802.548**	1.5 - 10	30	91	240	125	115	30	25	137	45	43	6000	NBC10
BDV40-AG90/NBS13-180	**802.549**	2.5 - 13	35	101	180	125	55	31	28	77	52	45	6000	NBC13
BDV40-AG90/NBS13-210	**802.550**	2.5 - 13	35	101	210	125	85	31	28	107	52	45	6000	NBC13
BDV40-AG90/NBS13-240	**802.551**	2.5 - 13	35	101	240	125	115	31	28	137	52	45	6000	NBC13
BDV40-AG90/NBS20S-175S	**802.552**	2.5 - 20	46	132	175	122	53	35	33	72	65	62	3000	NBC20

continues on the next page



BDV50

ø0.25 - 20mm

Model	Order No.	Ød	ØE	ØF	L	L1	L2	G	K	M	P	Q	max. min-1	Collet Model
BDV50-AG90/NBS6-215	**802.569**	0.25 - 6	20	67	215	160	55	21	17	82	33	29	6000	NBC6
BDV50-AG90/NBS6-245	**802.570**	0.25 - 6	20	67	245	160	85	21	17	112	33	29	6000	NBC6
BDV50-AG90/NBS6-275	**802.571**	0.25 - 6	20	67	275	160	115	21	17	142	33	29	6000	NBC6
BDV50-AG90/NBS6-305	**802.572**	0.25 - 6	20	67	305	160	145	21	17	172	33	29	6000	NBC6
BDV50-AG90/NBS10-215	**802.562**	1.5 - 10	30	91	215	160	55	30	25	82	45	43	6000	NBC10
BDV50-AG90/NBS10-245	**802.563**	1.5 - 10	30	91	245	160	85	30	25	112	45	43	6000	NBC10
BDV50-AG90/NBS10-275	**802.564**	1.5 - 10	30	91	275	160	115	30	25	142	45	43	6000	NBC10
BDV50-AG90/NBS13-215	**802.565**	2.5 - 13	35	101	215	160	55	31	28	82	52	45	6000	NBC13
BDV50-AG90/NBS13-245	**802.566**	2.5 - 13	35	101	245	160	85	31	28	112	52	45	6000	NBC13
BDV50-AG90/NBS13-275	**802.567**	2.5 - 13	35	101	275	160	115	31	28	142	52	45	6000	NBC13
BDV50-AG90/NBS20-230	**802.568**	2.5 - 20	46	132	230	160	70	35	35	97	65	62	3000	NBC20

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. The standard fixed length A is 8 mm for BDV40 and 6 mm for BDV50. Other lengths are available upon request.
3. Nut and wrench are included.
4. Order No. for BDV50 is with S = 110. S = 80 type for BDV50 is available upon request.
5. New Baby Collet is to be ordered separately
6. New baby collet for endmilling (NBC - EAA) can not be used.
7. Coolant can be supplied through the locating pin.
8. Exclusive Stop Block is required.
9. „CP" indicates compression
10. „ØF" indicates the minimum dimension for access into the bore

Accessories & Spare Parts

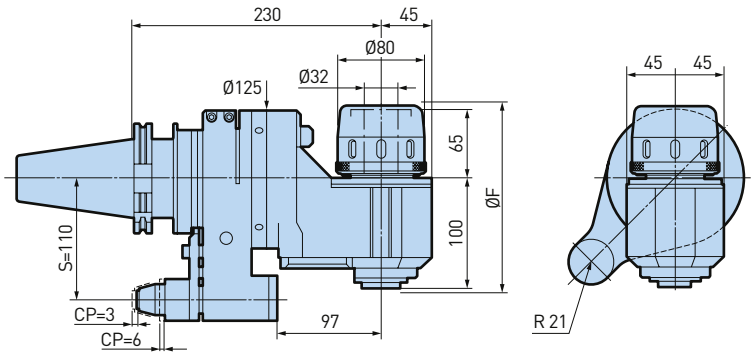
New Baby Collets	Semi-Finished Stop Blocks
	
► 329	► 377

HMC Type

Improved versatility is achieved from the 32 mm Milling Chuck by using parallel reduction collets and other accessories.

BIG-PLUS Dual-Contact





ø6 - 32mm

Model	Order No.	ØF	max. min-1
BDV50-AG90/HMC32-230	**802.560**	175	3000
BDV50-AG90/HMC32-230S	**802.561**	175	3000

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. The standard length A is 6 mm.
3. Models with "S" at the end are high rigidity type.
4. Order No. is with S = 110. S = 80 type is available upon request.
5. Wrench (FK80-90) is included.
6. Coolant can be supplied through the locating pin.
7. Exclusive Stop Block is required.
8. „ØF" indicates the minimum dimension for access into the bore

Accessories & Spare Parts

C Collets	Semi-Finished Stop Blocks	FK Wrenches
		
▶ 349	▶ 377	▶ 352

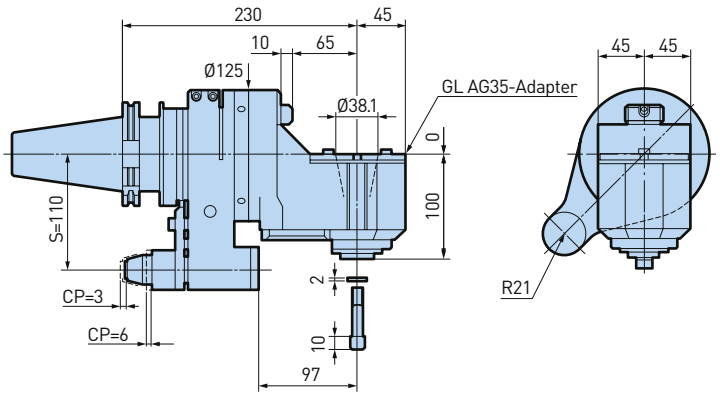
Build-Up Type

Designed for greater rigidity by having the face of the spindle bore in line with the center of the machine spindle. Also helps minimize interference problems with ATC and storage problems within the magazine.

BIG-PLUS Dual-Contact

A.2





Model	Order No.	max. min-1	Connection tool side
BDV50-AG90/AGH35-230	**802.558**	3000	AGH35
BDV50-AG90/AGH35-230S	**802.559**	3000	AGH35

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Models with "S" at the end are high rigidity type.
3. The standard length A is 6 mm.
4. Order No. is with S = 110. S = 80 type is available upon request.
5. Coolant can be supplied through the locating pin.
6. Exclusive Stop Block is required.

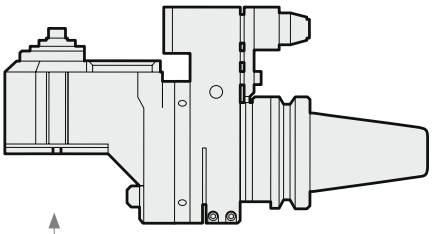
Accessories & Spare Parts

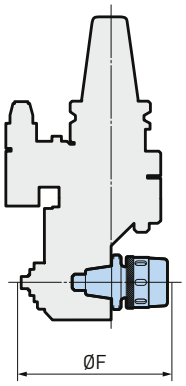
Semi-Finished Stop Blocks

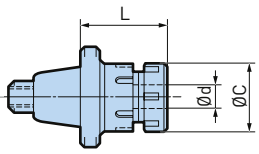


► 377

AG35 adapters



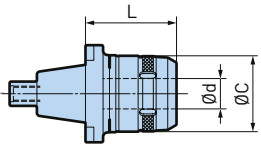




AG35 adapters New Baby Chuck

Model	Order No.	Ød	L	ØC	ØF	Collet Model
AG35-NBS10	**962.793**	1.5 - 10	47	30	162	NBC10
AG35-NBS13	**962.794**	2.5 - 13	54	35	168	NBC13
AG35-NBS16	**962.795**	2.5 - 16	54	42	170	NBC16
AG35-NBS20	**962.796**	2.5 - 20	54	46	170	NBC20

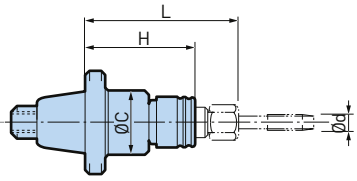
1. New baby collet and wrench are to be ordered separately.



AG35 adapters New Hi-Power Milling Chuck

Model	Order No.	Ød	L	ØC	ØF	Head
AG35-HMC20S	**802.742**	20	60	50	178	AG35

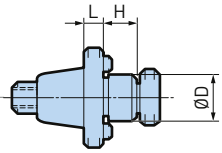
1. Wrench (FK45-50L) is included.



AG35 adapters Auto Tapper Type B (automatic depth control)

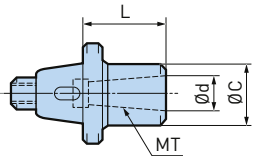
Model	Order No.	Ød	ØC	L	H	Head
AG35-ATB12E	**802.435**	M4 - M12	40.5	80	72	AG35
AG35-ATB20E	**802.436**	M8 - M20	57.5	115	102.5	AG35

1. Please contact BIG KAISER agent for tap collet.



AG35 adapters Face Mill Arbor

Model	Order No.	ØD	L	H	Head
AG35-FMH22-30	**802.740**	22	30	18	AG35
AG35-FMH27-20	**802.741**	27	20	20	AG35



AG35 adapters Morse Taper Adapter

Model	Order No.	Ød	MT No.	L	ØC	ØF	Head
AG35-MT1	**962.785**	12.065	1	50	24	164	AG35
AG35-MT2	**962.786**	17.78	2	60	32	180	AG35

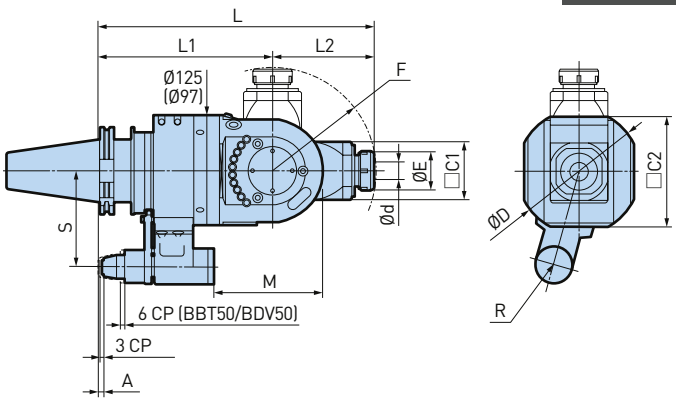
Universal Type

Suitable for cutting angles between 0°and 90°. In addition to that the cutter head can be rotated a full 360°, increasing flexibility!

BIG-PLUS Dual-Contact

A.2

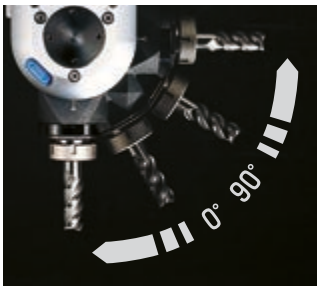




ø2.5 - 20mm

Model	Order No.	Ød	ØD	ØE	C1	C2	L	L1	L2	M	F	R	S	max. min-1	Collet Model
BDV40-AGU/NBS13-280	**802.557**	2.5 - 13	115	35	51	97	280	180	100	124	102	18	65	6000	NBC13
BDV50-AGU/NBS20-315	**802.573**	2.5 - 20	140	46	65	125	315	200	115	125	118	21	110	4000	NBC20

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Exclusive Stop Block is required.
3. Standard fixed length A is 6 mm for BDV50 and 8 mm for BDV40. Other lengths are available upon request.
4. Order No. for BDV50 is with S = 110. S = 80 type for BDV50 is available upon request.
5. Figures in ( ) in the drawing indicate dimensions for BDV40.
6. Nut and wrench are included.
7. Coolant can be supplied through the locating pin.
8. „CP" indicates compression



Easily adjustable spindle angle from 0° to 90°.



Unique setting mechanism enables the spindle angle to be precisely set at 1° increments.



Specially selected materials and special design for clamping the head guarantees rigidity for even end milling applications.

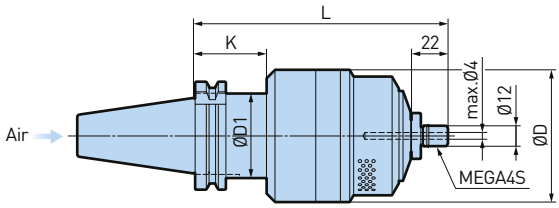
Accessories & Spare Parts

New Baby Collets	Semi-Finished Stop Blocks
	
▶ 329	▶ 377

Air Turbine Spindle Center Through Type

BIG-PLUS Dual-Contact





A.2

ø0.5 - 4mm

Model	Order No.	Operation Speed (min-1)	ØD	ØD1	L	K	Nut Model
BDV40-RBX5C-4S-150	**962.642**	40000 - 50000	96	49.6	150	43	MGN4S
BDV40-RBX7C-4S-150	**801.040**	60000 - 80000	78	49.6	150	43	MGN4S
BDV50-RBX5C-4S-145	**802.422**	40000 - 50000	96	68	145	38	MGN4S
BDV50-RBX7C-4S-145	**802.424**	60000 - 80000	78	68	145	38	MGN4S

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Collet (NBC4S-_) and XF1 (air unit) are to be ordered separately.
3. Nut and wrench are included.

Caution
Clean air is an essential condition for the use of this product. Therefore, coolant should never be supplied through the spindle of the machine using the Air Turbine Spindle.

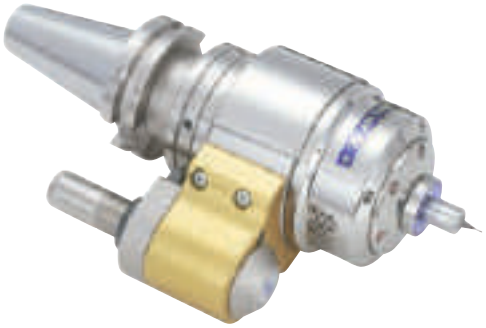
Accessories & Spare Parts

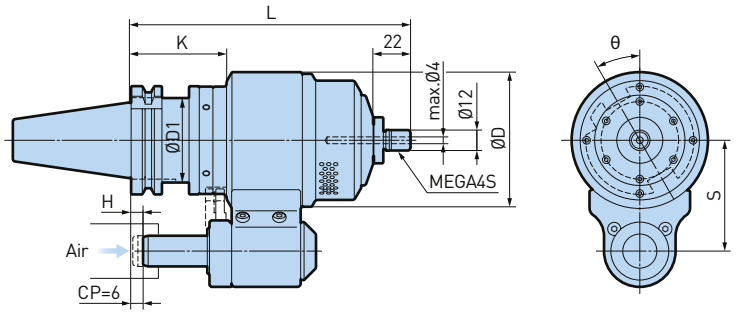
MEGA Nuts	Micro Collets	MEGA Wrenches	Air Filter Regulator for RBX
			
▶ 326	▶ 325	▶ 351	▶ 366

Air Turbine Spindle Side Through Type

BIG-PLUS Dual-Contact

A.2





ø0.5 - 4mm

Model	Order No.	Operation Speed (min-1)	ØD	L	K	S	H	Nut Model
BDV40-RBX5-4S-165	**962.668**	40000 - 50000	96	165	57	65	-10 - -35	MGN4S
BDV40-RBX7-4S-165	**962.667**	60000 - 80000	80	165	57	65	-10 - -35	MGN4S
BDV50-RBX5-4S-170	**962.670**	40000 - 50000	100	170	62	80	-5 - -40	MGN4S
BDV50-RBX7-4S-170	**962.669**	60000 - 80000	100	170	62	80	-5 - -40	MGN4S

1. Exclusive Stop Block is required.
2. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
3. Nut, wrench (RBX5, 7 : XW27) and MEGA wrench (MGR12) are included.
4. Collet (NBC4S-_) and XF1 (air unit) are to be ordered separately.
5. „CP" indicates compression
6. θ: Drive grooves adjustable 0 - 360°.

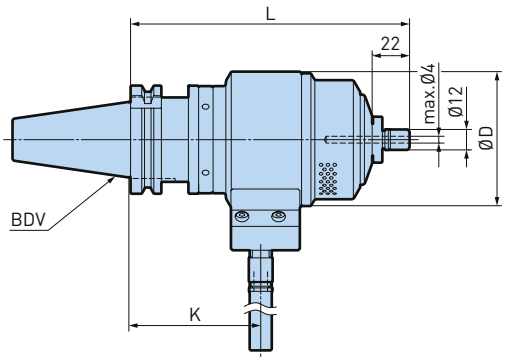
Accessories & Spare Parts

MEGA Nuts	Micro Collets	MEGA Wrenches	Semi-Finished Stop Blocks	Air Filter Regulator for RBX
				
▶ 326	▶ 325	▶ 351	▶ 377	▶ 366

Air Turbine Spindle Manual Type

BIG-PLUS Dual-Contact





Model	Order No.	Operation Speed (min-1)	ØD	L	K	S	Nut Model
BDV40-RBX5-4S-165H	**962.649**	40000 - 50000	96	151	63	71	MGN4S
BDV40-RBX7-4S-165H	**801.681**	60000 - 80000	80	151	63	65	MGN4S
BDV50-RBX5-4S-170H	**802.421**	40000 - 50000	100	166	78	80	MGN4S
BDV50-RBX7-4S-170H	**802.423**	60000 - 80000	100	166	78	80	MGN4S

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Collet (NBC4S-_) and XF1 (air unit) are to be ordered separately.
3. Nut and wrench are included.

Accessories & Spare Parts

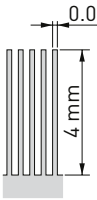
MEGA Nuts	Micro Collets	MEGA Wrenches	Air Filter Regulator for RBX
			
▶ 326	▶ 325	▶ 351	▶ 366

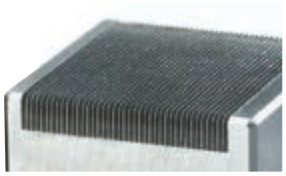
Application Examples

RBX7

Aluminium A2017

Outstanding runout accuracy permits perfect thin wall cutting.

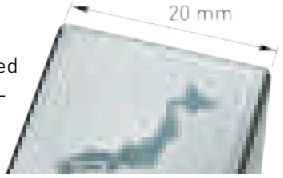




Cutter	Ø 0.5 mm Rib-endmill
Spindle Speed	70 000 min^{-1}
Cutting Feed	1500 mm/min
D.O.C	ap = 0.02 mm

Prehardened steel HRC40

Drastic time reduction by ultra high speed rotation. Excellent dynamic runout accuracy makes DOC of 5 µm clearly visible.



Cutter	R0.1 mm Ball nose endmill
Spindle Speed	80 000 min^{-1}
Cutting Feed	400 mm/min
D.O.C	ap = 0.01 mm

Prehardened steel HRC40

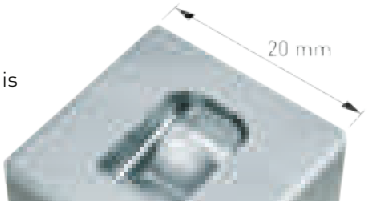
Overall cutting length of 656 m can b achieved with one ball nose endmill. Drastically extended tool life.



Cutter	R0.5 mm Ball nose endmill
Spindle Speed	65 000 min^{-1}
Cutting Feed	4 200 mm/min
D.O.C	ap = 0.02 mm; ae = 0.05 mm

Prehardened steel HRC40

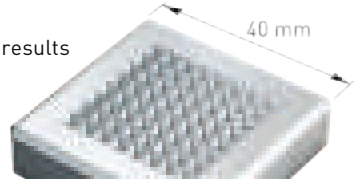
Original 5hour operation in MC is reduced to 2 hours.



Cutter	R0.2 mm Ball nose endmill
Spindle Speed	70 000 min^{-1}
Cutting Feed	1000 mm/min
D.O.C	ap = 0.01 mm

Prehardened steel HRC40

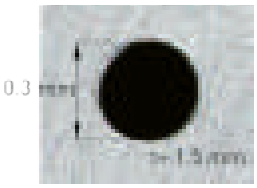
No thermal expansion of spindle results in finely detailed surface finish.



Cutter	R0.5 mm Ball nose endmill
Spindle Speed	75 000 min^{-1}
Cutting Feed	400 mm/min
D.O.C	ap = 0.02 mm

Aluminium A2017

High-precision drilling is possible without center drill operation. Even after 3500 holes, no problems can be found on the cutting edge.

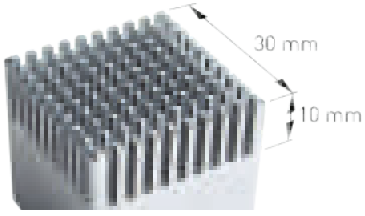


Cutter	Ø 0.3 mm Solid drill
Spindle Speed	75 000 min^{-1}
Cutting Feed	200 mm/min
Peck	ap = 0.03 mm

RBX5

Prehardened steel HRC40

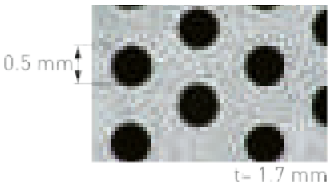
Even a taper endmill that has high cutting forces can achieve stable cutting.



Cutter	Ø 1.5 mm Rib-endmill
Spindle Speed	40 000 min^{-1}
Cutting Feed	1000 mm/min
D.O.C	ap = 0.05 mm

Stainless steel SUS303

Tool life is doubled with over 1200 holes and cutting time is reduced to 1/3.



Cutter	Ø 0.5 mm Solid drill
Spindle Speed	40 000 min^{-1}
Cutting Feed	20 mm/min
Peck	ap = 0.01 mm

Tool Holders HSK, DIN 69893, ISO 12164

	HSK-A	HSK-E	HSK-F
MEGA Micro Chuck	164	216	223
MEGA New Baby Chuck	166	218	224
MEGA E Chuck	170		225
MEGA Double Power Chuck	172		226
MEGA Perfect Grip	176		
New Baby Chuck	177		
New Hi-Power Milling Chuck	180		
Hydraulic Chucks	184	220	
Mold Chuck	188		
Shrink Chuck	189		
CK Shanks	191	222	
Face Mill Arbors	194		
Smart Damper Face Mill	196		
Super Keyless Chuck	198		
Side Lock Holders	199		
Morse Taper Holder	200		
MEGA Synchro Tapping Holder	201		
Angle Heads	203		
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HSK Accessories	228	228	228

A.3

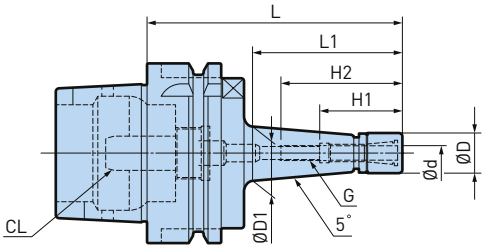
● Preferred selected items

MEGA Micro Chuck Type T

Tapered and slim design, minimal interference combined with maximized rigidity.

Coolant Through Hole





A.3

ø0.45 - 8.05mm

Model	Order No.	Ød	ØD	ØD1	L	L1	H1	H2	G	max. min-1	Collet Model
HSK-A32-MEGA6S-50T *	**806.804A**	0.45 - 6.05	14	14.8	50	22	28.5	33	-	42000	NBC6S
HSK-A32-MEGA6S-60T *	**978.370**	0.45 - 6.05	14	16	60	30	28.5	43	-	40000	NBC6S
HSK-A32-MEGA6S-105T	**978.372**	0.45 - 6.05	14	22.1	105	76	28.5	63	M7 P0.75	35000	NBC6S
HSK-A40-MEGA3S-75T	**968.936** •	0.45 - 3.25	10	16	75	44	22	38	M4 P0.7	32000	NBC3S
HSK-A40-MEGA3S-90T	**968.937**	0.45 - 3.25	10	18	90	60	22	38	M4 P0.7	28000	NBC3S
HSK-A40-MEGA4S-60T	**968.934**	0.45 - 4.05	12	14	60	27	26.5	44	M5 P0.8	35000	NBC4S
HSK-A40-MEGA4S-90T	**802.355**	0.45 - 4.05	12	20	90	60	26.5	47	M5 P0.8	28000	NBC4S
HSK-A40-MEGA4S-105T	**802.356**	0.45 - 4.05	12	23	105	76	26.5	47	M5 P0.8	25000	NBC4S
HSK-A40-MEGA6S-60T *	**968.925** •	0.45 - 6.05	14	16	60	29	-	40	-	35000	NBC6S
HSK-A40-MEGA6S-75T	**968.926** •	0.45 - 6.05	14	19	75	45	28.5	49	M7 P0.75	32000	NBC6S
HSK-A40-MEGA6S-90T	**968.927**	0.45 - 6.05	14	21.5	90	60	28.5	49	M7 P0.75	28000	NBC6S
HSK-A40-MEGA6S-105T	**802.357**	0.45 - 6.05	14	25	105	76	28.5	49	M7 P0.75	25000	NBC6S
HSK-A50-MEGA6S-75T	**805.828**	0.45 - 6.05	14	17	75	36	28.5	49	M7 P0.75	30000	NBC6S
HSK-A50-MEGA6S-105T	**805.251**	0.45 - 6.05	14	22.5	105	66	28.5	49	M7 P0.75	25000	NBC6S
HSK-A63-MEGA3S-75T	**968.961**	0.45 - 3.25	10	14	75	36	22	38	M4 P0.7	32000	NBC3S
HSK-A63-MEGA3S-120T	**968.963**	0.45 - 3.25	10	21.5	120	81	22	38	M4 P0.7	25000	NBC3S
HSK-A63-MEGA4S-75T	**805.259**	0.45 - 4.05	12	15.5	75	36	26.5	47	M5 P0.8	32000	NBC4S
HSK-A63-MEGA4S-90T	**968.966**	0.45 - 4.05	12	18	90	51	26.5	47	M5 P0.8	28000	NBC4S
HSK-A63-MEGA4S-120T	**968.968**	0,45 - 4,05	12		120	81	26,5	47	M5 P0.8	22000	NBC4S
HSK-A63-MEGA6S-60T	**968.970**	0.45 - 6.05	14	15.5	60	23	28.5	37	M7 P0.75	35000	NBC6S
HSK-A63-MEGA6S-75T	**968.971** •	0.45 - 6.05	14	17	75	36	28.5	48	M7 P0.75	32000	NBC6S
HSK-A63-MEGA6S-90T	**805.260** •	0.45 - 6.05	14	20	90	51	28.5	49	M7 P0.75	28000	NBC6S
HSK-A63-MEGA6S-105T	**968.973**	0.45 - 6.05	14	22.5	105	66	28.5	49	M7 P0.75	25000	NBC6S
HSK-A63-MEGA6S-120T	**805.261**	0.45 - 6.05	14	25	120	81	28.5	49	M7 P0.75	22000	NBC6S
HSK-A63-MEGA6S-135T	**968.975**	0.45 - 6.05	14	27.5	135	96	28.5	49	M7 P0.75	20000	NBC6S
HSK-A63-MEGA8S-90T	**801.724** •	2.95 - 8.05	18	23.5	90	51	31	50.5	M9 P0.75	30000	NBC8S
HSK-A63-MEGA8S-120T	**803.603**	2.95 - 8.05	18	28.5	120	81	31	50.5	M9 P0.75	22000	NBC8S

1. MEGA nut is included in delivery.
2. Coolant pipe (CL) is to be ordered separately.
3. * Internal thread (G) is not available.

Accessories & Spare Parts

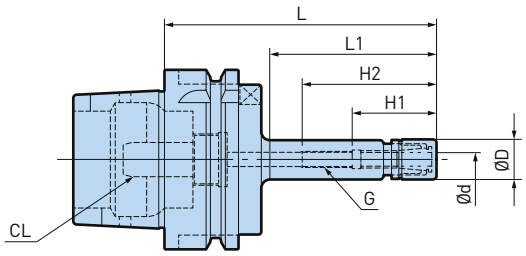
MEGA Nuts	Micro Seal Nuts	Micro Collets	MEGA Wrenches	Taper Cleaners	Collet Protective Cases	Coolant Pipes
						
▶ 326	▶ 326	▶ 325	▶ 351	▶ 370	▶ 326	▶ 228

MEGA Micro Chuck Type S

Micro diameter design is ideal for high speed applications in tight spaces.

Coolant Through Hole





ø0.45 - 8.05mm

Model	Order No.	Ød	ØD	L	L1	H1	H2	G	max. min-1	Collet Model
HSK-A32-MEGA6S-60 *	**805.174**	0.45 - 6.05	14	60	30	23.5	43	-	38000	NBC6S
HSK-A32-MEGA6S-105	**978.104**	0.45 - 6.05	14	105	76	23.5	49	M7 P0.75	30000	NBC6S
HSK-A40-MEGA3S-60	**968.933**	0.45 - 3.25	10	60	26	22	39	M4 P0.7	30000	NBC3S
HSK-A40-MEGA4S-60	**968.931**	0.45 - 4.05	12	60	27	26.5	44	M5 P0.8	30000	NBC4S
HSK-A40-MEGA4S-90	**968.932**	0.45 - 4.05	12	90	57	26.5	47	M5 P0.8	25000	NBC4S
HSK-A40-MEGA6S-60 *	**968.929** •	0.45 - 6.05	14	60	28	-	40	-	30000	NBC6S
HSK-A40-MEGA6S-90	**968.930**	0.45 - 6.05	14	90	58	28.5	49	M7 P0.75	25000	NBC6S
HSK-A50-MEGA4S-75	**978.310**	0,45 - 4,05	12	75	36	26,5	47	M5 P0.8	30000	NBC4S
HSK-A50-MEGA6S-75	**805.250**	0.45 - 6.05	14	75	36	28.5	49	M7 P0.75	30000	NBC6S
HSK-A63-MEGA4S-75	**968.965**	0.45 - 4.05	12	75	36	26.5	48	M5 P0.8	30000	NBC4S
HSK-A63-MEGA4S-105	**805.257** •	0.45 - 4.05	12	105	61	26.5	47	M5 P0.8	25000	NBC4S
HSK-A63-MEGA6S-75	**968.803**	0.45 - 6.05	14	75	36	-	48	M7 P0.75	30000	NBC6S
HSK-A63-MEGA6S-105	**805.258** •	0.45 - 6.05	14	105	61	28.5	49	M7 P0.75	25000	NBC6S
HSK-A63-MEGA8S-90	**803.600**	2.95 - 8.05	18	90	48	31	50.5	M9 P0.75	30000	NBC8S

1. MEGA nut is included in delivery.
2. Coolant pipe (CL) is to be ordered separately.
3. * Internal thread (G) is not available.

Accessories & Spare Parts

MEGA Nuts	Micro Seal Nuts	Micro Collets	MEGA Wrenches	Taper Cleaners	Collet Protective Cases	Coolant Pipes
						
▶ 326	▶ 326	▶ 325	▶ 351	▶ 370	▶ 326	▶ 228

MEGA New Baby Chuck

Ideal ultra precision collet holders for high speed machining. Wide range of lengths and a variety of collet series covers all machining applications.

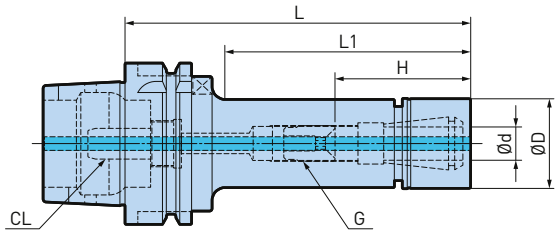
Coolant Through Hole



A.3

Ø0.25 - 25.4mm

Model	Order No.	Ød	ØD	L	L1	H	max. min-1	Collet Model
HSK-A32-MEGA6N-75	**979.010**	0.25 - 6	20	75	37	23 - 43	30000	NBC6
HSK-A32-MEGA8N-50 *	**806.800**	0.5 - 8	25	50	26	32	30000	NBC8
HSK-A40-MEGA6N-60 *	**968.940** •	0.25 - 6	20	60	30	33	35000	NBC6
HSK-A40-MEGA6N-75	**968.941**	0.25 - 6	20	75	45	23 - 38	30000	NBC6
HSK-A40-MEGA6N-90	**968.942**	0.25 - 6	20	90	60	23 - 43	30000	NBC6
HSK-A40-MEGA8N-60 *	**968.943** •	0.5 - 8	25	60	30	41	35000	NBC8
HSK-A40-MEGA8N-90	**968.945**	0.5 - 8	25	90	60	26 - 44	30000	NBC8
HSK-A40-MEGA10N-60 *	**968.946** •	1.5 - 10	30	60	26	40	32000	NBC10
HSK-A40-MEGA10N-90	**968.948**	1.5 - 10	30	90	54	38 - 48	28000	NBC10
HSK-A40-MEGA13N-75 *	**968.949**	2.5 - 13	35	75	55	55	25000	NBC13
HSK-A40-MEGA13N-90 *	**968.950**	2.5 - 13	35	90	70	64	25000	NBC13
HSK-A40-MEGA16N-75 *	**968.951**	2.5 - 16	42	75	55	53	20000	NBC16
HSK-A40-MEGA16N-90 *	**968.952**	2.5 - 16	42	90	70	63	15000	NBC16
HSK-A40-MEGA20N-90 *	**968.953** •	2.5 - 20	46	90	70	66	15000	NBC20

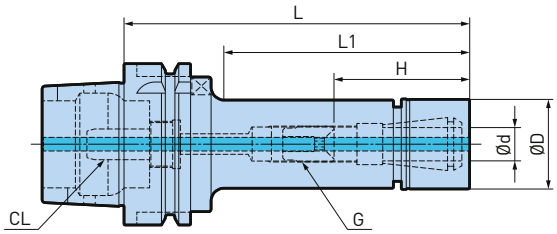


Model	Order No.	Ød	ØD	L	L1	H	max. min-1	Collet Model
HSK-A50-MEGA6N-75	**805.252**	0.25 - 6	20	75	37	23 - 43	30000	NBC6
HSK-A50-MEGA6N-100	**978.031** •	0.25 - 6	20	100	60	23 - 43	25000	NBC6
HSK-A50-MEGA6N-135	**968.745**	0.25 - 6	20	135	93	23 - 43	20000	NBC6
HSK-A50-MEGA6N-165	**803.625**	0.25 - 6	20	165	123	23 - 43	15000	NBC6
HSK-A50-MEGA8N-75	**968.738**	0.5 - 8	25	75	37	26 - 37	30000	NBC8
HSK-A50-MEGA8N-100	**978.239**	0.5 - 8	25	100	62	26 - 45	28000	NBC8
HSK-A50-MEGA8N-135	**803.629**	0.5 - 8	25	135	96	26 - 45	20000	NBC8
HSK-A50-MEGA8N-165	**803.616**	0.5 - 8	25	165	125	26 - 45	14000	NBC8
HSK-A50-MEGA10N-75 *	**805.253** •	1.5 - 10	30	75	38	46	33000	NBC10
HSK-A50-MEGA10N-100	**978.261**	1.5 - 10	30	100	63	38 - 48	25000	NBC10
HSK-A50-MEGA10N-135	**803.622**	1.5 - 10	30	135	98	38 - 48	20000	NBC10
HSK-A50-MEGA10N-165	**803.627**	1.5 - 10	30	165	128	38 - 48	14000	NBC10
HSK-A50-MEGA13N-75 *	**805.254**	2.5 - 13	35	75	40	46	28000	NBC13
HSK-A50-MEGA13N-100	**801.179**	2.5 - 13	35	100	65	44 - 56	25000	NBC13
HSK-A50-MEGA13N-135	**803.620**	2.5 - 13	35	135	100	44 - 63	18000	NBC13
HSK-A50-MEGA13N-165	**978.262**	2.5 - 13	35	165	130	44 - 63	12000	NBC13
HSK-A50-MEGA16N-75 *	**805.255**	2.5 - 16	42	75	49	48	28000	NBC16
HSK-A50-MEGA16N-100	**803.623**	2.5 - 16	42	100	74	48 - 55	20000	NBC16
HSK-A50-MEGA16N-135	**803.619**	2.5 - 16	42	135	109	48 - 68	15000	NBC16
HSK-A50-MEGA16N-165	**803.626**	2.5 - 16	42	165	139	48 - 68	10000	NBC16
HSK-A50-MEGA20N-75 **	**805.256** •	2.5 - 20	46	75	49	47	20000	NBC20
HSK-A50-MEGA20N-100	**968.742**	2.5 - 20	46	100	74	51 - 54	15000	NBC20
HSK-A50-MEGA20N-135	**803.624**	2.5 - 20	46	135	109	51 - 68	10000	NBC20
HSK-A50-MEGA20N-165	**803.621**	2.5 - 20	46	165	139	51 - 68	8000	NBC20
HSK-A50-MEGA25N-95 *	**806.370**	15.5 - 25.4	60	95	69	65	12000	NBC25

continues on the next page

A.3

Model	Order No.	Ød	ØD	L	L1	H	max. min-1	Collet Model
HSK-A63-MEGA6N-75	**968.811**	0.25 - 6	20	75	35	23 - 38	35000	NBC6
HSK-A63-MEGA6N-90	**805.262** •	0.25 - 6	20	90	48	23 - 43	30000	NBC6
HSK-A63-MEGA6N-105	**968.812**	0.25 - 6	20	105	63	23 - 43	30000	NBC6
HSK-A63-MEGA6N-120	**968.981**	0.25 - 6	20	120	76	23 - 43	25000	NBC6
HSK-A63-MEGA6N-135	**968.813**	0.25 - 6	20	135	91	23 - 43	20000	NBC6
HSK-A63-MEGA6N-165	**968.814** •	0.25 - 6	20	165	121	23 - 43	15000	NBC6
HSK-A63-MEGA8N-75	**968.815**	0.5 - 8	25	75	35	26 - 38	35000	NBC8
HSK-A63-MEGA8N-90	**805.263**	0.5 - 8	25	90	50	26 - 45	30000	NBC8
HSK-A63-MEGA8N-105	**968.816**	0.5 - 8	25	105	63	26 - 45	30000	NBC8
HSK-A63-MEGA8N-120	**968.982**	0.5 - 8	25	120	76	26 - 45	25000	NBC8
HSK-A63-MEGA8N-135	**805.264**	0.5 - 8	25	135	91	26 - 45	20000	NBC8
HSK-A63-MEGA8N-165	**968.818**	0.5 - 8	25	165	121	26 - 45	15000	NBC8
HSK-A63-MEGA10N-75 *	**968.819**	1.5 - 10	30	75	36	50	33000	NBC10
HSK-A63-MEGA10N-90	**805.265**	1.5 - 10	30	90	50	38 - 45	33000	NBC10
HSK-A63-MEGA10N-105	**968.820**	1.5 - 10	30	105	65	38 - 48	25000	NBC10
HSK-A63-MEGA10N-120	**968.983**	1.5 - 10	30	120	80	38 - 48	25000	NBC10
HSK-A63-MEGA10N-135	**805.266**	1.5 - 10	30	135	93	38 - 48	20000	NBC10
HSK-A63-MEGA10N-165	**968.822**	1.5 - 10	30	165	123	38 - 48	15000	NBC10
HSK-A63-MEGA13N-75 *	**968.823**	2.5 - 13	35	75	37	49	30000	NBC13
HSK-A63-MEGA13N-90 *	**805.267** •	2.5 - 13	35	90	51	64	30000	NBC13
HSK-A63-MEGA13N-105	**968.824**	2.5 - 13	35	105	66	44 - 56	25000	NBC13
HSK-A63-MEGA13N-120	**968.984**	2.5 - 13	35	120	81	44 - 63	20000	NBC13
HSK-A63-MEGA13N-135	**805.268** •	2.5 - 13	35	135	96	44 - 63	20000	NBC13
HSK-A63-MEGA13N-165	**968.826**	2.5 - 13	35	165	125	44 - 63	15000	NBC13
HSK-A63-MEGA16N-75 *	**968.827**	2.5 - 16	42	75	39	48	30000	NBC16
HSK-A63-MEGA16N-90 *	**805.269**	2.5 - 16	42	90	54	63	25000	NBC16
HSK-A63-MEGA16N-105	**968.828**	2.5 - 16	42	105	69	48 - 54	20000	NBC16
HSK-A63-MEGA16N-120	**968.985**	2.5 - 16	42	120	84	48 - 68	15000	NBC16
HSK-A63-MEGA16N-135	**968.829**	2.5 - 16	42	135	99	48 - 68	15000	NBC16
HSK-A63-MEGA16N-165	**968.830**	2.5 - 16	42	165	129	48 - 68	10000	NBC16
HSK-A63-MEGA16N-200	**968.831**	2.5 - 16	42	200	164	48 - 68	8000	NBC16
HSK-A63-MEGA20N-75 *	**968.832**	2.5 - 20	46	75	39	51	30000	NBC20
HSK-A63-MEGA20N-90 *	**805.270** •	2.5 - 20	46	90	54	61	25000	NBC20
HSK-A63-MEGA20N-105	**968.833**	2.5 - 20	46	105	69	51 - 54	20000	NBC20
HSK-A63-MEGA20N-120	**968.986** •	2.5 - 20	46	120	84	51 - 68	15000	NBC20
HSK-A63-MEGA20N-135	**805.271**	2.5 - 20	46	135	99	51 - 68	15000	NBC20
HSK-A63-MEGA20N-165	**968.835**	2.5 - 20	46	165	129	51 - 68	10000	NBC20
HSK-A63-MEGA20N-200	**968.836**	2.5 - 20	46	200	164	51 - 68	8000	NBC20
HSK-A63-MEGA25N-90 *	**806.371**	15.5 - 25.4	60	90	-	63	20000	NBC25
HSK-A63-MEGA25N-120 *	**806.372**	15.5 - 25.4	60	120	-	90	12000	NBC25



Model	Order No.	Ød	ØD	L	L1	H	max. min-1	Collet Model
HSK-A100-MEGA6N-90	**968.841**	0.25 - 6	20	90	43	23 - 43	20000	NBC6
HSK-A100-MEGA6N-105	**801.146**	0.25 - 6	20	105	58	23 - 43	18000	NBC6
HSK-A100-MEGA6N-120	**968.842**	0.25 - 6	20	120	73	23 - 43	18000	NBC6
HSK-A100-MEGA6N-135	**801.147**	0.25 - 6	20	135	88	23 - 43	14000	NBC6
HSK-A100-MEGA6N-165	**968.843** •	0.25 - 6	20	165	113	23 - 43	12000	NBC6
HSK-A100-MEGA8N-90	**968.844**	0.5 - 8	25	90	43	26 - 45	20000	NBC8
HSK-A100-MEGA8N-105	**968.989**	0.5 - 8	25	105	58	26 - 45	18000	NBC8
HSK-A100-MEGA8N-120	**968.845**	0.5 - 8	25	120	73	26 - 45	18000	NBC8
HSK-A100-MEGA8N-135	**968.990**	0.5 - 8	25	135	88	26 - 45	14000	NBC8
HSK-A100-MEGA8N-165	**968.846**	0.5 - 8	25	165	113	26 - 45	14000	NBC8
HSK-A100-MEGA10N-90	**968.847**	1.5 - 10	30	90	43	38 - 45	20000	NBC10
HSK-A100-MEGA10N-105	**968.991** •	1.5 - 10	30	105	58	38 - 48	18000	NBC10
HSK-A100-MEGA10N-120	**968.848**	1.5 - 10	30	120	73	38 - 48	18000	NBC10
HSK-A100-MEGA10N-135	**968.992**	1.5 - 10	30	135	88	38 - 48	14000	NBC10
HSK-A100-MEGA10N-165	**968.849**	1.5 - 10	30	165	113	38 - 48	14000	NBC10
HSK-A100-MEGA13N-90 *	**968.850**	2.5 - 13	35	90	43	55	18000	NBC13
HSK-A100-MEGA13N-105 *	**968.993**	2.5 - 13	35	105	58	70	16000	NBC13
HSK-A100-MEGA13N-120	**968.851**	2.5 - 13	35	120	73	44 - 63	16000	NBC13
HSK-A100-MEGA13N-135	**968.994**	2.5 - 13	35	135	88	44 - 63	14000	NBC13
HSK-A100-MEGA13N-165	**968.852**	2.5 - 13	35	165	118	44 - 63	14000	NBC13
HSK-A100-MEGA13N-200	**968.853**	2.5 - 13	35	200	148	44 - 63	10000	NBC13
HSK-A100-MEGA16N-90 *	**968.854**	2.5 - 16	42	90	47	55	15000	NBC16
HSK-A100-MEGA16N-105 *	**968.995**	2.5 - 16	42	105	58	70	14000	NBC16
HSK-A100-MEGA16N-120	**968.855**	2.5 - 16	42	120	73	48 - 68	14000	NBC16
HSK-A100-MEGA16N-135	**968.996**	2.5 - 16	42	135	88	48 - 68	13000	NBC16
HSK-A100-MEGA16N-165	**968.856**	2.5 - 16	42	165	118	48 - 68	13000	NBC16
HSK-A100-MEGA16N-200	**968.857**	2.5 - 16	42	200	151	48 - 68	10000	NBC16
HSK-A100-MEGA20N-90 *	**968.858**	2.5 - 20	46	90	47	55	15000	NBC20
HSK-A100-MEGA20N-105 *	**968.997**	2.5 - 20	46	105	58	70	14000	NBC20
HSK-A100-MEGA20N-120	**968.859** •	2.5 - 20	46	120	73	51 - 68	14000	NBC20
HSK-A100-MEGA20N-135	**968.998** •	2.5 - 20	46	135	88	51 - 68	13000	NBC20
HSK-A100-MEGA20N-165	**968.860**	2.5 - 20	46	165	118	51 - 68	13000	NBC20
HSK-A100-MEGA20N-200	**968.861**	2.5 - 20	46	200	153	51 - 68	10000	NBC20
HSK-A100-MEGA25N-120 *	**806.373**	15.5 - 25.4	60	120	78	85	12000	NBC25
HSK-A100-MEGA25N-165	**806.374**	15.5 - 25.4	60	165	123	64 - 74	10000	NBC25
HSK-A125-MEGA20N-120	**805.290**	2.5 - 20	46	120	72	51 - 68	12000	NBC20
HSK-A125-MEGA20N-165	**806.575**	2.5 - 20	46	165	117	51 - 68	10000	NBC20

1. MEGA nut is included in delivery.
2. Coolant pipe (CL) is to be ordered separately.
3. "G" is the adjusting screw (optional).
4. "H" is the max. tool shank length that can be inserted for these models.
5. * Adjusting screws can not be used. "H" is the max. tool shank length that can be inserted for these models.
6. ** Adjusting screw and New Baby Endmill collet (NBC-E) cannot be used.

Accessories & Spare Parts

Standard Type	MEGA Perfect Seals	New Baby Collets	MEGA Wrenches	Adjusting Screws NBA	Taper Cleaners	Coolant Pipes
						
▶ 334	▶ 336	▶ 329	▶ 351	▶ 335	▶ 370	▶ 228

MEGA E Chuck

Collet chuck designed exclusively for milling with high precision in hard materials.

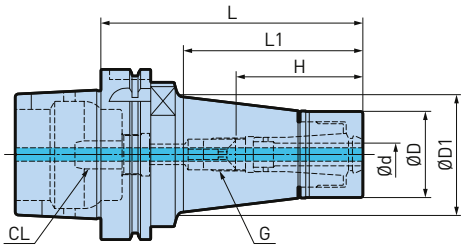
Coolant Through Hole



A.3

ø3 - 12mm

Model	Order No.	Ød	ØD	ØD1	L	L1	H	max. min-1	Collet Model
HSK-A40-MEGA6E-60 *	968.235 •	3 - 6	25	26	60	24	41	35000	MEC6
HSK-A40-MEGA6E-75 *	968.236	3 - 6	25	28.5	75	39	55	35000	MEC6
HSK-A40-MEGA8E-65 *	968.238	3 - 8	30	34	65	30	44	35000	MEC8
HSK-A40-MEGA8E-75 *	968.239	3 - 8	30	34	75	40	54	30000	MEC8
HSK-A40-MEGA10E-70 *	968.241	3 - 10	35	35	70	35	48	30000	MEC10
HSK-A40-MEGA10E-90	968.242	3 - 10	35	35	90	55	48 - 52	25000	MEC10
HSK-A40-MEGA13E-70 *	968.243	3 - 12	42	42	70	35	50	30000	MEC13
HSK-A40-MEGA13E-90 *	968.244	3 - 12	42	42	90	55	67	25000	MEC13
HSK-A50-MEGA6E-75	803.221	3 - 6	25	28.5	75	37	37 - 43	30000	MEC6
HSK-A50-MEGA8E-75 *	803.222	3 - 8	30	33	75	40	42	30000	MEC8
HSK-A50-MEGA10E-75 *	978.170	3 - 10	35	38	75	40	48	30000	MEC10
HSK-A50-MEGA13E-75 *	978.010	3 - 12	42	-	75	49	50	30000	MEC13
HSK-A50-MEGA13E-100	803.220	3 - 12	42	-	100	74	50 - 55	25000	MEC13
HSK-A63-MEGA6E-65 *	968.247	3 - 6	25	26.5	65	28	43	30000	MEC6
HSK-A63-MEGA6E-90	968.248	3 - 6	25	30	90	51	37 - 45	30000	MEC6
HSK-A63-MEGA6E-105	968.249	3 - 6	25	33	105	66	37 - 45	29000	MEC6
HSK-A63-MEGA6E-120	968.250	3 - 6	25	36	120	82	37 - 45	29000	MEC6
HSK-A63-MEGA6E-135	968.251	3 - 6	25	39	135	99	37 - 45	27000	MEC6
HSK-A63-MEGA8E-67 *	968.252	3 - 8	30	31.5	67	30	45	30000	MEC8
HSK-A63-MEGA8E-90	968.253	3 - 8	30	35	90	52	37 - 45	30000	MEC8
HSK-A63-MEGA8E-105	968.254	3 - 8	30	38	105	68	42 - 51	29000	MEC8
HSK-A63-MEGA8E-120	968.255	3 - 8	30	40.5	120	83	42 - 51	28000	MEC8
HSK-A63-MEGA8E-135	968.256	3 - 8	30	44	135	100	42 - 51	27000	MEC8
HSK-A63-MEGA10E-75 *	968.257	3 - 10	35	37.5	75	37	48	30000	MEC10
HSK-A63-MEGA10E-90 *	968.258 •	3 - 10	35	40	90	53	64	30000	MEC10
HSK-A63-MEGA10E-105	968.259	3 - 10	35	43	105	69	48 - 58	29000	MEC10
HSK-A63-MEGA10E-120	968.260	3 - 10	35	46	120	85	48 - 58	28000	MEC10
HSK-A63-MEGA10E-135	968.261	3 - 10	35	43	135	99	48 - 58	27000	MEC10
HSK-A63-MEGA13E-75 *	968.262	3 - 12	42	44	75	31	49	30000	MEC13
HSK-A63-MEGA13E-90 *	968.263	3 - 12	42	45	90	46	64	30000	MEC13
HSK-A63-MEGA13E-105	968.264	3 - 12	42	46	105	61	50 - 57	29000	MEC13
HSK-A63-MEGA13E-120	968.265 •	3 - 12	42	47.5	120	77	50 - 57	28000	MEC13
HSK-A63-MEGA13E-135	968.266	3 - 12	42	47	135	92	50 - 57	26000	MEC13



Model	Order No.	Ød	ØD	ØD1	L	L1	H	max. min-1	Collet Model
HSK-A100-MEGA6E-75 *	**968.268**	3 - 6	25	28	75	33	46	20000	MEC6
HSK-A100-MEGA6E-90	**968.269**	3 - 6	25	29.5	90	48	37 - 45	20000	MEC6
HSK-A100-MEGA6E-105	**968.270**	3 - 6	25	32.5	105	63	37 - 45	20000	MEC6
HSK-A100-MEGA6E-120	**968.271**	3 - 6	25	35	120	78	37 - 45	18000	MEC6
HSK-A100-MEGA6E-135	**968.272**	3 - 6	25	37.5	135	93	37 - 45	14000	MEC6
HSK-A100-MEGA6E-165	**968.273**	3 - 6	25	43	165	123	37 - 45	12000	MEC6
HSK-A100-MEGA8E-75 *	**968.274**	3 - 8	30	33	75	33	46	20000	MEC8
HSK-A100-MEGA8E-90	**968.275**	3 - 8	30	34.5	90	48	42 - 51	20000	MEC8
HSK-A100-MEGA8E-105	**968.276**	3 - 8	30	37	105	63	42 - 51	20000	MEC6
HSK-A100-MEGA8E-120	**968.277**	3 - 8	30	39.5	120	78	42 - 51	18000	MEC8
HSK-A100-MEGA8E-135	**968.278**	3 - 8	30	42.5	135	93	42 - 51	16000	MEC8
HSK-A100-MEGA8E-165	**968.279**	3 - 8	30	47.5	165	123	42 - 51	14000	MEC8
HSK-A100-MEGA10E-80 *	**968.280**	3 - 10	35	37.5	80	38	51	20000	MEC10
HSK-A100-MEGA10E-90 *	**968.281**	3 - 10	35	39.5	90	48	61	20000	MEC10
HSK-A100-MEGA10E-105	**968.282**	3 - 10	35	42	105	63	48 - 58	20000	MEC10
HSK-A100-MEGA10E-120	**968.283**	3 - 10	35	44.5	120	78	48 - 58	18000	MEC10
HSK-A100-MEGA10E-135	**968.284**	3 - 10	35	47	135	93	48 - 58	16000	MEC10
HSK-A100-MEGA10E-165	**968.285**	3 - 10	35	52.5	165	123	48 - 58	14000	MEC10
HSK-A100-MEGA13E-90 *	**968.287** •	3 - 12	42	46	90	48	50	18000	MEC13
HSK-A100-MEGA13E-105	**968.288**	3 - 12	42	48.5	105	63	50 - 61	18000	MEC13
HSK-A100-MEGA13E-120	**968.289**	3 - 12	42	51.5	120	78	50 - 61	16000	MEC13
HSK-A100-MEGA13E-135	**968.290**	3 - 12	42	54	135	93	50 - 61	14000	MEC13
HSK-A100-MEGA13E-165	**968.291** •	3 - 12	42	59	165	123	50 - 61	14000	MEC13

1. MEGA E nut is included.
2. Coolant pipe (CL) is to be ordered separately.
3. * Adjusting screws can not be used. "H" is the max. tool shank length that can be inserted for these models.
4. "G" is the adjusting screw (optional).
5. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

MEGA E Nuts	MEGA E Perfect Seals	MEGA E Collets	MEGA Wrenches	Adjusting Screws NBA	Taper Cleaners	Coolant Pipes
						
▶ 340	▶ 341	▶ 340	▶ 351	▶ 335	▶ 370	▶ 228

MEGA Double Power Chuck Type D

Flange contacting nut assures highest rigidity. Type D for use with/without coolant-through the tool.

Coolant Through Hole



ø3 - 42mm

Model	Order No.	Fig.	Ød	ØD	ØD1	ØD2	L	L1	H	E	E1	max. min-1
HSK-A40-MEGA16D-80	**803.105**	1	16	46	-	-	80	25	62	48	50	12000
HSK-A50-MEGA16D-85	**803.085**	1	16	46	-	-	85	25	62	48	50	25000
HSK-A50-MEGA20D-85 *	**978.011**	1	20	50	-	-	86	30	63	50	51	20000
HSK-A63-MEGA16D-80A	**803.086**	2	16	42	53	-	80	25	55	48	50	25000
HSK-A63-MEGA16D-90A	**801.734**	2	16	42	53	-	90	25	65	48	55	28000
HSK-A63-MEGA16D-105A	**803.087**	2	16	42	53	-	105	25	71	48	55	28000
HSK-A63-MEGA16D-135A	**801.736**	2	16	42	53	-	135	25	71	48	55	24000
HSK-A63-MEGA16D-165A	**803.100**	2	16	42	53	-	165	25	71	48	55	25000
HSK-A63-MEGA20D-90A	**801.737**	2	20	50	55	-	90	34	65	50	56	25000
HSK-A63-MEGA20D-105A	**803.084**	2	20	50	55	-	165	34	80	50	56	23000
HSK-A63-MEGA20D-120A	**801.739**	2	20	50	55	-	120	34	85	50	56	23000
HSK-A63-MEGA20D-135A	**803.079**	2	20	50	55	-	105	34	85	50	56	23000
HSK-A63-MEGA20D-165A ****	**803.098**	2	20	50	55	-	135	34	69 - 79	50	56	23000
HSK-A63-MEGA25D-100A	**803.101**	1	25	62	63	-	100	39	75	56	57	22000
HSK-A63-MEGA25D-135A ****	**803.099**	2	25	62	63	-	135	39	66 - 76	56	57	22000
HSK-A63-MEGA32D-105A	**803.080** •	1	32	70	71	-	105	33	80	60	64	22000
HSK-A63-MEGA32D-135A	**803.097**	2	32	70	71	-	135	33	90	60	64	22000

Fig. 1

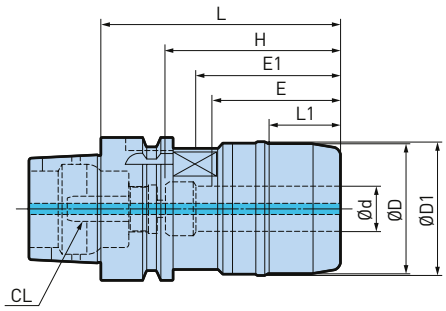
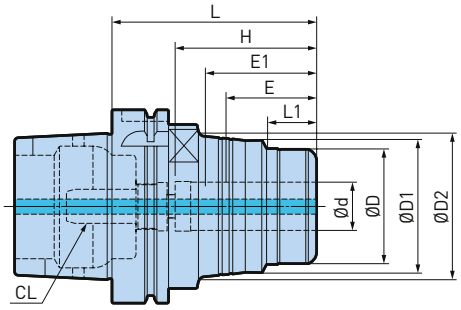


Fig. 2



Model	Order No.	Fig.	Ød	ØD	ØD1	ØD2	L	L1	H	E	E1	max. min-1
HSK-A100-MEGA16D-105	**968.132**	2	16	46	55	63	105	23	71	48	50	18000
HSK-A100-MEGA16D-135 **	**968.055**	2	16	46	55	63	135	23	71	48	50	16000
HSK-A100-MEGA16D-165 **	**968.056**	2	16	46	55	63	165	23	71	48	50	16000
HSK-A100-MEGA20D-105	**968.105**	2	20	60	69	74	105	25	73	50	56	18000
HSK-A100-MEGA20D-135 ***	**968.106**	2	20	60	69	74	135	25	85	50	56	16000
HSK-A100-MEGA20D-165 ****	**968.107**	2	20	60	69	74	165	25	69 - 79	50	56	16000
HSK-A100-MEGA25D-105 *	**968.108**	2	25	70	77	85	105	32	73	56	65	18000
HSK-A100-MEGA25D-135 ***	**968.109**	2	25	70	77	85	135	32	90	56	65	16000
HSK-A100-MEGA25D-165 ****	**968.110**	2	25	70	77	85	165	32	76 - 86	56	65	16000
HSK-A100-MEGA32D-115	**968.111** •	2	32	80	86	-	115	39	83	60	71	18000
HSK-A100-MEGA32D-135	**968.112**	2	32	80	86	-	135	39	103	60	71	16000
HSK-A100-MEGA32D-165 ***	**968.113**	2	32	80	86	-	165	39	105	60	71	14000
HSK-A100-MEGA42D-115 *	**968.114**	2	42	99	100	-	115	40	83	70	71	14000
HSK-A100-MEGA42D-135	**968.057**	2	42	99	100	-	135	40	97	70	71	12000

1. Wrench and coolant pipe (CL) is to be ordered separately.
2. "E" is the min. clamping length.
3. "E1" is the min. clamping length for optimum use with center through coolant.
4. "H" is the max. tool shank length that can be inserted for these models.
5. * Adjustable straight collet (AC20-) can not be used.
6. **/ *** Commercially available hex socket head screws can be used as a back stop (**=M8 /***=M12). Coolant is blocked by utilizing these commercial screws.
7. **** Optional axial adjusting screw (HMA-M_) can be used.

Accessories & Spare Parts

PJC Collets	OCA Collets	PSC Collets	C Collets	MEGA Wrenches	Coolant Pipes
					
▶ 347	▶ 348	▶ 348	▶ 349	▶ 351	▶ 228

MEGA Double Power Chuck Type DS

Flange contacting nut assures highest rigidity. Unique coolant supply design ensures efficient coolant supply to the cutting tool periphery.







ø3 - 42mm

Model	Order No.	Fig.	Ød	ØD	ØD1	ØD2	L	L1	H	E	max. min-1
HSK-A40-MEGA16DS-80	**803.106**	1	16	46	-	-	82.5	28	64	50	12000
HSK-A50-MEGA16DS-85	**801.688**	1	16	46	-	-	87.5	28	64	50	25000
HSK-A50-MEGA20DS-85	**803.088**	1	20	50	-	-	88.5	33	65	52	20000
HSK-A63-MEGA16DS-80A	**803.089** •	2	16	42	53	-	82	27	57	50	25000
HSK-A63-MEGA20DS-90A	**803.090** •	2	20	50	55	-	92	36	67	52	25000
HSK-A63-MEGA20DS-120A **	**801.740**	2	20	50	55	-	122	36	87	52	23000
HSK-A63-MEGA25DS-100A	**803.102**	1	25	62	-	-	102	41	77	58	22000
HSK-A63-MEGA32DS-105A	**803.081**	1	32	70	-	-	107.5	35	82	62	22000
HSK-A100-MEGA16DS-105	**968.131**	2	16	46	55	63	107.5	26	73	50	18000
HSK-A100-MEGA16DS-135 **	**968.095**	2	16	46	55	63	137,5	26	73	50	16000
HSK-A100-MEGA20DS-105	**968.121** •	2	20	60	69	74	107.5	28	75	52	18000
HSK-A100-MEGA20DS-135 ***	**968.122**	2	20	60	69	74	137.5	28	87	52	16000
HSK-A100-MEGA20DS-165 ****	**968.123**	2	20	60	69	74	167.5	28	71 - 81	52	15000
HSK-A100-MEGA25DS-105	**968.124**	2	25	70	77	85	107.5	34	75	58	18000
HSK-A100-MEGA25DS-135 ***	**968.125**	2	25	70	77	85	137.5	34	92	58	15000
HSK-A100-MEGA25DS-165 ****	**968.126**	2	25	70	77	85	167.5	34	78 - 88	58	16000
HSK-A100-MEGA32DS-115	**968.127** •	2	32	80	86	-	117.5	42	85	62	18000
HSK-A100-MEGA32DS-135	**968.128**	2	32	80	86	-	137.5	42	105	62	16000
HSK-A100-MEGA32DS-165 ***	**968.129**	2	32	80	86	-	167.5	42	107	62	14000
HSK-A100-MEGA42DS-115 *	**968.130**	1	42	99	-	-	117	42	85	72	14000

Fig. 1

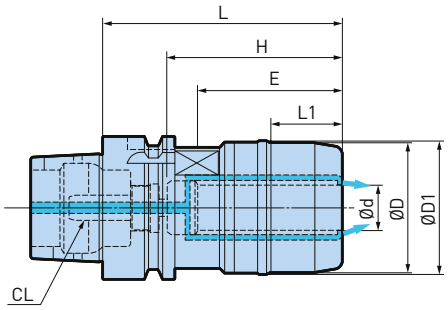
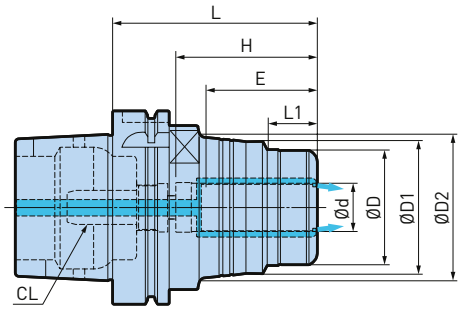


Fig. 2



Model	Order No.	Fig.	Ød	ØD	ØD1	ØD2	L	L1	H	E	max. min-1
HSK-A125-MEGA20DS-135	**805.658**	2	20	60	69	80	137.5	64.4	87	52	8000
HSK-A125-MEGA20DS-165 ****	**805.659**	2	20	60	69	79	167.5	124.4	87	52	7000
HSK-A125-MEGA25DS-135	**805.660**	2	25	70	77	83	137.5	94.4	92	58	8000
HSK-A125-MEGA32DS-135	**805.750**	2	32	80	86	93	137.5	87.4	92	62	8000
HSK-A125-MEGA32DS-165	**805.661**	2	32	80	86	93	167.5	117.4	107	62	6000
HSK-A125-MEGA42DS-120	**805.662**	1	42	99	100	-	122.5	77.7	85	62	7000

1. Wrench and coolant pipe (CL) is to be ordered separately.
2. "E" is the min. clamping length.
3. "H" is the max. tool shank length that can be inserted for these models.
4. * Adjustable straight collet (C42-_+CS) and OCA collet cannot be used.
5. **/ *** Commercially available hex socket head screws can be used as a back stop (**=M8 /***=M12). Coolant is blocked by utilizing these commercial screws.
6. **** Optional axial adjusting screw (HMA-M_) can be used.

Accessories & Spare Parts

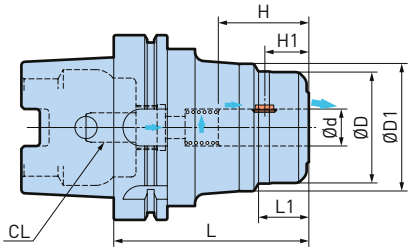
PJC Collets	PSC Collets	C Collets	MEGA Wrenches	Adjusting Screws HMA	Coolant Pipes
					
▶ 347	▶ 348	▶ 349	▶ 351	▶ 350	▶ 228

MEGA Perfect Grip

100% security against pulling out of the cutting tool under any torque load.

Coolant Through Hole







A.3

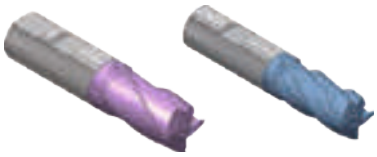
ø16 - 32mm

Model	Order No.	Ød	ØD	ØD1	L	L1	H	H1
HSK-A63-MEGA16DPG-90	**806.364**	16	46	55	90	24	47	23
HSK-A63-MEGA20DPG-100	**806.365**	20	60	69	100	27	49	24
HSK-A100-MEGA20DPG-105	**805.457**	20	60	69	105	27	49	24
HSK-A100-MEGA25DPG-105	**805.458**	25	70	77	105	33	55	23
HSK-A100-MEGA32DPG-115	**805.459**	32	80	86	115	41	59	23
HSK-A125-MEGA16DPG-135	**807.092**	16	46	55	135	24	47	23
HSK-A125-MEGA20DPG-135	**806.627**	20	60	69	135	27	49	24
HSK-A125-MEGA25DPG-135	**806.628**	25	70	77	135	33	55	23
HSK-A125-MEGA32DPG-135	**806.629**	32	80	86	135	41	59	23

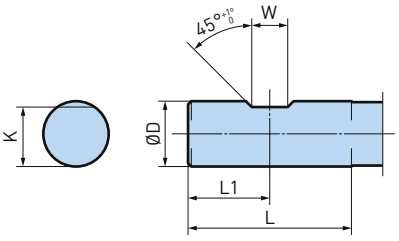
1. Key grip and spring are included with each holder.
2. MEGA wrench is to be ordered separately.
3. „H1" shows distance from center of key grip to front end.
4. Coolant pipe (CL) is to be ordered separately.

Weldon Shank Standards

(DIN 1835-1)
The following standard shank is required for MEGA Perfect Grip.

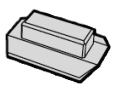


Ø 25/32 mm **Ø 20 mm**



ØD		L	L1	W		K	
Nominal	Tolerance			Nominal	Tolerance	Nominal	Tolerance
16	h6	48	24	10	+ 0.05 0	14.2	h13
20		50	25	11		18.2	
25		56	32	12		23	
32		60	36	14		30	

Accessories & Spare Parts

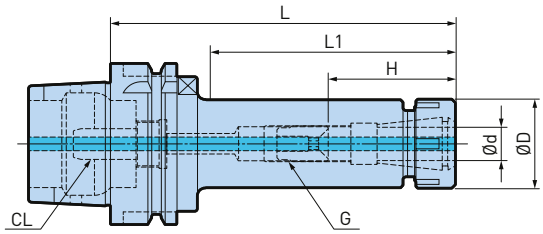
Key Grip MEGA Perfect Grip	Spring MEGA Perfect Grip	MEGA Wrenches	Coolant Pipes
			
▶ 350	▶ 350	▶ 351	▶ 228

New Baby Chuck

The original high precision collet chuck to perform all machining applications.

Coolant Through Hole



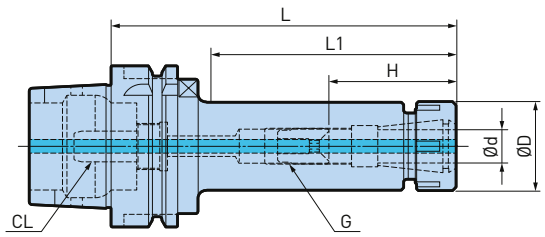


ø0.25 - 20mm

Model	Order No.	Ød	ØD	L	L1	H	Collet Model	Nut Model
HSK-A63-NBS6-75	**968.771**	0.25 - 6	20	75	35	20 - 35	NBC6	NBN6
HSK-A63-NBS6-105	**968.772** •	0.25 - 6	20	105	63	20 - 40	NBC6	NBN6
HSK-A63-NBS6-135	**968.773**	0.25 - 6	20	135	91	20 - 40	NBC6	NBN6
HSK-A63-NBS8-75	**968.775**	0.5 - 8	25	75	35	23 - 37	NBC8	NBN8
HSK-A63-NBS8-105	**968.776**	0.5 - 8	25	105	61	23 - 42	NBC8	NBN8
HSK-A63-NBS8-135	**968.777**	0.5 - 8	25	135	91	23 - 42	NBC8	NBN8
HSK-A63-NBS10-75 *	**968.779**	1.5 - 10	30	75	35	48	NBC10	NBN10
HSK-A63-NBS10-105	**968.780** •	1.5 - 10	30	105	63	35 - 45	NBC10	NBN10
HSK-A63-NBS10-135	**968.781**	1.5 - 10	30	135	93	35 - 45	NBC10	NBN10
HSK-A63-NBS13-75 *	**968.783**	2.5 - 13	35	75	37	48	NBC13	NBN13
HSK-A63-NBS13-105	**968.784**	2.5 - 13	35	105	67	41 - 55	NBC13	NBN13
HSK-A63-NBS13-135	**968.785**	2.5 - 13	35	135	97	41 - 60	NBC13	NBN13
HSK-A63-NBS16-75 *	**968.787**	2.5 - 16	42	75	37	45	NBC16	NBN16
HSK-A63-NBS16-105	**968.788**	2.5 - 16	42	105	67	45 - 55	NBC16	NBN16
HSK-A63-NBS16-135	**968.789**	2.5 - 16	42	135	97	45 - 65	NBC16	NBN16
HSK-A63-NBS16-165	**968.790**	2.5 - 16	42	165	127	45 - 65	NBC16	NBN16
HSK-A63-NBS16-200	**968.791**	2.5 - 16	42	200	162	45 - 65	NBC16	NBN16
HSK-A63-NBS20-75 *	**968.792**	2.5 - 20	46	75	39	48	NBC20	NBN20
HSK-A63-NBS20-105	**968.793**	2.5 - 20	46	105	69	48 - 53	NBC20	NBN20
HSK-A63-NBS20-135	**968.794**	2.5 - 20	46	135	99	48 - 65	NBC20	NBN20
HSK-A63-NBS20-165	**968.795**	2.5 - 20	46	165	129	48 - 65	NBC20	NBN20
HSK-A63-NBS20-200	**968.796**	2.5 - 20	46	200	164	48 - 65	NBC20	NBN20

continues on the next page

A.3



Model	Order No.	Ød	ØD	L	L1	H	Collet Model	Nut Model
HSK-A100-NBS6-120	**968.572**	0.25 - 6	20	120	68	20 - 40	NBC6	NBN6
HSK-A100-NBS6-165	**968.573**	0.25 - 6	20	165	113	20 - 40	NBC6	NBN6
HSK-A100-NBS8-120	**968.575**	0.5 - 8	25	120	73	23 - 42	NBC8	NBN8
HSK-A100-NBS8-165	**968.578**	0.5 - 8	25	165	113	23 - 42	NBC8	NBN8
HSK-A100-NBS10-120	**968.580**	1.5 - 10	30	120	73	35 - 45	NBC10	NBN10
HSK-A100-NBS10-165	**968.581**	1.5 - 10	30	165	113	35 - 45	NBC10	NBN10
HSK-A100-NBS13-120	**968.583**	2.5 - 13	35	120	73	41 - 60	NBC13	NBN13
HSK-A100-NBS13-165	**968.584**	2.5 - 13	35	165	113	41 - 60	NBC13	NBN13
HSK-A100-NBS16-120	**968.587** •	2.5 - 16	42	120	73	45 - 65	NBC16	NBN16
HSK-A100-NBS16-165	**968.588**	2.5 - 16	42	165	118	45 - 65	NBC16	NBN16
HSK-A100-NBS20-90 *	**968.592**	2,5 - 20	46	90	47	56	NBC20	NBN20
HSK-A100-NBS20-120	**968.593** •	2.5 - 20	46	120	73	48 - 65	NBC20	NBN20
HSK-A100-NBS20-165	**968.594**	2.5 - 20	46	165	118	48 - 65	NBC20	NBN20

1. New Baby Nut is included.
2. Coolant pipe (CL) is to be ordered separately.
3. "G" is the adjusting screw (optional).
4. "H" is the max. tool shank length that can be inserted for these models.
5. * Adjusting screws can not be used. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

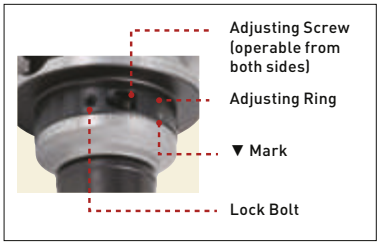
New Baby Nuts	Baby Perfect Seals	New Baby Collets	New Baby Wrenches	Adjusting Screws NBA	Taper Cleaners	Coolant Pipes
						
▶ 334	▶ 338	▶ 329	▶ 352	▶ 335	▶ 370	▶ 228

New Baby Chuck Type NRA

New Baby Chuck with runout adjustable tool function.

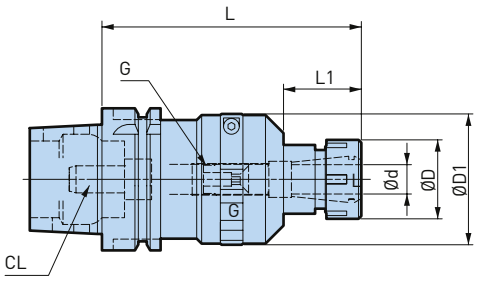
Coolant Through Hole





Simple structure for easy adjustment

1. Turn the adjusting ring and line up the ▼ mark with peak runout position.
2. Adjust the lock bolts in 3 locations to fix the ring.
3. The runout amount is adjusted by tightening the adjusting screw.



Model	Order No.	Ød	ØD	ØD1	L	L1	H	Collet Model	Nut Model	Adjustment l=50	Adjustment l=100
HSK-A63-NBS8-105NRA	**806.266**	0.5 - 8	25	45	105	43	23 - 42	NBC8	NBN8	23 µm	34 µm
HSK-A63-NBS13-115NRA	**806.267**	2.5 - 13	35	58	115	34.5	41 - 60	NBC13	NBN13	18 µm	27 µm
HSK-A63-NBS20-135NRA	**806.268**	2.5 - 20	46	70	135	45	48 - 65	NBC20	NBN20	17 µm	25 µm

1. Coolant pipe (CL) is to be ordered separately.
2. Nut is included.
3. Collet, wrench and adjusting screw need to be ordered seperately.
4. "H" is the max. tool shank length that can be inserted for these models.
5. The adjustment amount depends on the length of the holder and the tool projection length. The maximum adjustment amount for tool projection lengths of 50 mm and 100 mm is shown in the table.

Accessories & Spare Parts

New Baby Nuts	New Baby Collets	Coolant Pipes	New Baby Wrenches	Baby Perfect Seals	Adjusting Screws NBA
					
▶ 334	▶ 329	▶ 228	▶ 352	▶ 338	▶ 335

New Hi-Power Milling Chuck Type S

The original design assures heavy milling with high power and precision.

Coolant Through Hole



A.3

ø3 - 42mm

Model	Order No.	Fig.	Ød	ØD	L	L1	L2	H	E	E1
HSK-A40-HMC20S-85	**805.100**	1	20	50	85	65	-	66	50	56
HSK-A50-HMC20S-90	**805.101**	1	20	50	90	64	-	66	50	56
HSK-A50-HMC32S-115 ****	**806.595**	1	32	62	115	89	-	69	56	58
HSK-A63-HMC20S-90	**965.511S** •	1	20	50	90	64	-	65	50	56
HSK-A63-HMC20S-120 **	**805.102**	1	20	50	120	94	-	85	50	56
HSK-A63-HMC25S-100	**968.136S**	1	25	59	100	74	-	75	56	57
HSK-A63-HMC25S-135 *	**805.103**	1	25	59	135	109	-	66 - 76	56	57
HSK-A63-HMC32S-110	**968.137S**	1	32	68	110	84	-	85	60	64
HSK-A63-HMC32S-135 **	**805.104**	1	32	68	135	109	-	90	60	64
HSK-A63-HMC32S-165 *	**805.105**	1	32	68	165	139	-	79 - 89	60	64

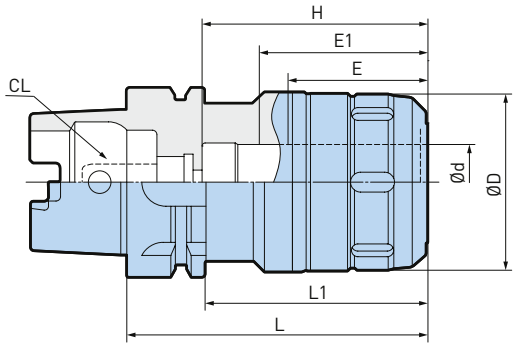


Fig. 1

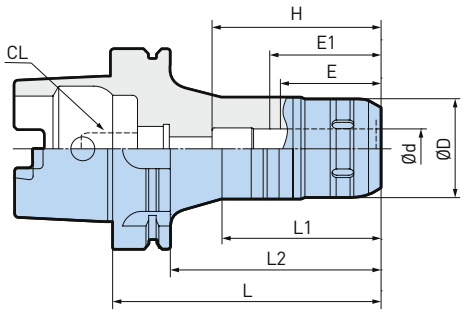


Fig. 2

Model	Order No.	Fig.	Ød	ØD	L	L1	L2	H	E	E1
HSK-A100-HMC20S-105	**805.106** •	1	20	50	105	76	-	73	50	56
HSK-A100-HMC20S-135 ***	**805.107**	2	20	50	135	80	106	85	50	56
HSK-A100-HMC20S-165 *	**805.108**	2	20	50	165	100	136	69 - 79	50	56
HSK-A100-HMC25S-105 *****	**805.110** •	1	25	59	105	76	-	73	56	57
HSK-A100-HMC25S-135 ***	**804.917**	1	25	59	135	106	-	90	56	57
HSK-A100-HMC25S-165 *	**805.111**	2	25	59	165	105	136	76 - 86	56	57
HSK-A100-HMC32S-115	**805.112** •	1	32	68	115	86	-	83	60	72
HSK-A100-HMC32S-135	**805.113**	1	32	68	135	106	-	103	60	72
HSK-A100-HMC32S-165 ***	**805.114**	2	32	68	165	105	136	105	60	72
HSK-A100-HMC32S-200 *	**805.115**	2	32	68	200	130	171	90 - 100	60	72
HSK-A100-HMC32S-300	**805.116**	1	32	68	300	200	271	90 - 100	60	72
HSK-A100-HMC42S-115 ******	**805.117**	1	42	85	115	86	-	83	70	73
HSK-A100-HMC42S-135	**805.118**	1	42	85	135	106	-	103	70	73
HSK-A100-HMC42S-165 ***	**805.119**	1	42	85	165	136	-	107	70	73

1. Wrench and coolant pipe (CL) is to be ordered separately.
2. "E1" is the min. clamping length for optimum use with center through coolant.
3. "E" is the min. clamping length.
4. "H" is the max. tool shank length that can be inserted for these models.
5. * Axial length adjusting screw can be used.
   / * Commercially available hex socket head screws can be used as a back stop (**=M8 /***=M12). Coolant is blocked by utilizing these commercial screws.
6. **** Only the straight collet (C32-) can be used.
7. ***** Adjustable straight collet (C25-_+CS) cannot be used.
8. ****** Only OCA collet and C collet can be used.

Accessories & Spare Parts

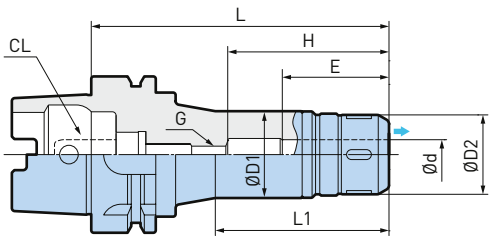
PJC Collets	OCA Collets	PSC Collets	C Collets	FK Wrenches	Adjusting Screws HMA	Coolant Pipes
						
▶ 347	▶ 348	▶ 348	▶ 349	▶ 352	▶ 350	▶ 228

New Hi-Power Milling Chuck HMC12J

Extremely slim and rigid design with jet through coolant.

Coolant Through Hole







A.3

ø6 - 12mm

Model	Order No.	Ød	ØD1	ØD2	L	L1	H	E	G
HSK-A63-HMC12J-90	**805.829**	12	35	32	90	52	65	43	M8
HSK-A63-HMC12J-120 *	**805.830**	12	35	32	120	70	65	43	M8

1. Wrench and coolant pipe (CL) is to be ordered separately.
2. "E" is the min. clamping length.
3. * Hex socked head screw (M8) can be used as a adjusting screw.

Accessories & Spare Parts

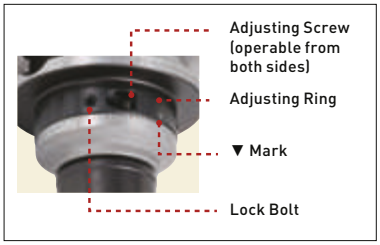
PJC Collets	FK Wrenches	Coolant Pipes
		
▶ 347	▶ 352	▶ 228

New Hi-Power Milling Chuck Typ NRA

The runout adjustment design assures precision even with heavy milling.

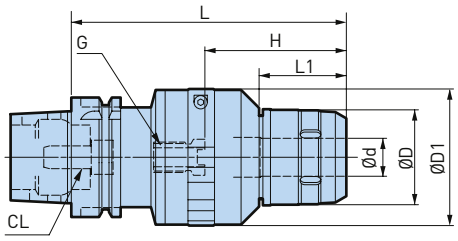
Coolant Through Hole





Simple structure for easy adjustment

1. Turn the adjusting ring and line up the ▼ mark with peak runout position.
2. Adjust the lock bolts in 3 locations to fix the ring.
3. The runout amount is adjusted by tightening the adjusting screw.



ø20 - 32mm

Model	Order No.	Ød	ØD	ØD1	L	L1	H	Adjustment l=50	Adjustment l=100
HSK-A63-HMC20S-145NRA	**806.273**	20	50	72	145	46	69 - 79	23 µm	33 µm
HSK-A63-HMC32S-155NRA *	**806.274**	32	68	86	155	55	-	20 µm	28 µm

1. Coolant pipe (CL) is to be ordered separately.
2. "H" is the max. tool shank length that can be inserted for these models.
3. Wrench and axial adjusting screw are to be ordered separately.
4. * Adjusting screw cannot be used.

Accessories & Spare Parts

FK Wrenches	C Collets	OCA Collets	PSC Collets	PJC Collets	Adjusting Screws HMA	Coolant Pipes
						
▶ 352	▶ 349	▶ 348	▶ 348	▶ 347	▶ 350	▶ 228

Hydraulic Chuck Super Slim

Ultra precise hydraulic chuck with extremely slim design.

Coolant Through Hole

A.3



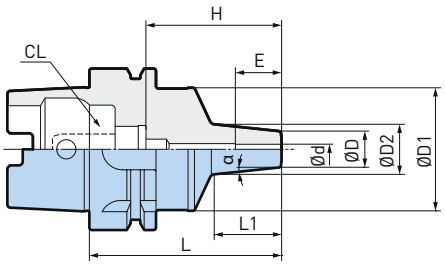


Fig. 1

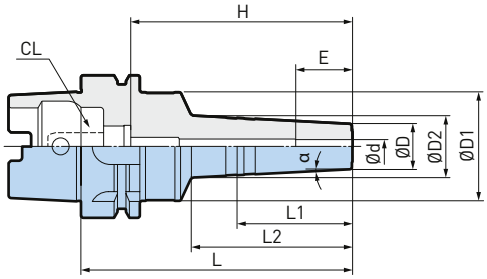


Fig. 2

ø4 - 12mm

Model	Order No.	Fig.	Ød	ØD	ØD1	ØD2	L	L1	L2	H	E	α
HSK-A40-HDC4S-65	**805.527**	1	4	14	33	21	65	28	-	49	19	6°
HSK-A50-HDC4S-75	**805.548**	1	4	14	40	21	75	31	-	55	19	6°
HSK-A63-HDC3S-90 *	**805.465**	1	3	14	48	24	90	43	-	68	16	6°
HSK-A63-HDC3S-120 *	**807.788**	2	3	14	48	26	120	57	72	98	16	6°
HSK-A63-HDC4S-75	**803.072** •	1	4	14	48	20	75	26	-	53	19	6°
HSK-A63-HDC4S-90	**807.373**	1	4	14	48	23	90	43	-	68	19	6°
HSK-A63-HDC4S-120	**805.466**	2	4	14	48	26	120	57	72	98	19	6°
HSK-A63-HDC5S-120	**807.374**	2	5	14	48	26	120	57	72	98	22	6°
HSK-A63-HDC6S-120	**803.073**	2	6	14	48	26	120	57	70	98	25	6°
HSK-A63-HDC6S-150	**805.467**	2	6	14	48	26	150	57	85	128	25	6°
HSK-A63-HDC8S-120	**803.074**	2	8	17	48	28	120	52	70	95	31	6°
HSK-A63-HDC8S-150	**805.468**	2	8	17	48	28	150	52	85	125	31	6°
HSK-A63-HDC10S-120	**803.070**	2	10	19	48	30	120	52	70	94	33	6°
HSK-A63-HDC10S-150	**805.469**	2	10	19	48	30	150	52	87	124	33	6°
HSK-A63-HDC12S-120	**803.071**	2	12	21	48	32	120	52	70	93	36	6°
HSK-A63-HDC12S-150	**805.470**	2	12	21	48	32	150	52	87	123	36	6°

1. Adjusting screw and reduction collet can not be used.
2. Coolant pipe (CL) is to be ordered separately.
3. "E" is the min. clamping length.
4. "H" is the max. tool shank length that can be inserted for these models.
5. * Some coolant may leak from the inner diameter slits when using coolant.

Caution

- Use only cutting tools that have a shank tolerance within h6.
- Roughing endmills are not recommended for use with hydraulic chucks.
- Do not use with cutting tools made with a flat on the shank. (ie: Weldon type shank)
- Do not tighten the clamping screw without first inserting a cutting tool into the hydraulic chuck.
- Always insert the cutting tool into the hydraulic chuck beyond min. clamping length E.

Accessories & Spare Parts

Wiper Cleaners	Coolant Pipes
	
▶ 370	▶ 228

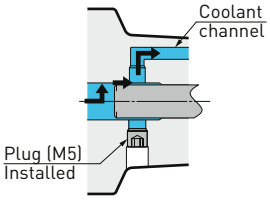
Hydraulic Chuck Jet Through

Coolant or MQL is supplied to cutting edge securely. Maximum performance in high-precision operations with 5-axis machining.

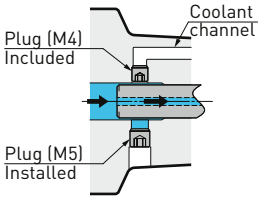
Coolant Through Hole



Peripheric



Center Through





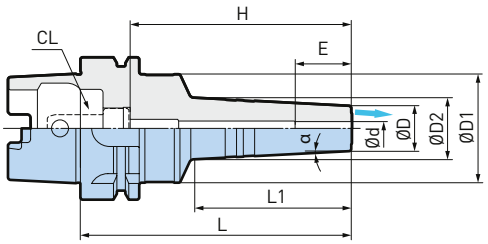


Fig. 1

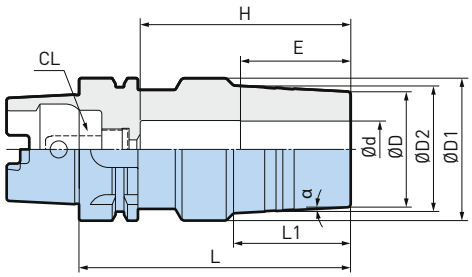


Fig. 2

ø4 - 32mm

Model	Order No.	Fig.	Ød	ØD	ØD1	ØD2	L	L1	H	E	α
HSK-A63-HDC4J-75	**805.477**	1	4	20	48	23	75	29	53	19	3°
HSK-A63-HDC6J-120	**805.096**	1	6	20	48	28	120	70	98	25	3°
HSK-A63-HDC8J-120	**805.097**	1	8	22	48	30	120	70	95	31	3°
HSK-A63-HDC10J-120	**805.098**	1	10	24	48	32	120	70	94	33	3°
HSK-A63-HDC12J-120	**805.099**	1	12	26	48	34	120	70	93	36	3°
HSK-A63-HDC16J-120	**805.478**	1	16	34	48	43	120	76	92	43	3°
HSK-A63-HDC20J-120	**805.479**	1	20	38	48	43	120	76	91	43	3°
HSK-A63-HDC25J-120	**805.831**	2	25	51	63	57	120	50	93	49	3°
HSK-A63-HDC32J-120	**805.832**	2	32	60	69	-	120	53	93	56	3°

1. Adjusting screw cannot be used.
2. Straight collet can be used for HDC16J & 20J size models.
3. Coolant pipe (CL) is to be ordered separately.
4. Larger diameter models, HDC16J, 20J, 25J, 32J are available with only peripherical coolant supply.
5. "E" is the min. clamping length.
6. "H" is the max. tool shank length that can be inserted for these models.

Caution

- Use only cutting tools that have a shank tolerance within h6.
- Roughing endmills are not recommended for use with hydraulic chucks.
- Do not use with cutting tools made with a flat on the shank. (ie: Weldon type shank)
- Do not tighten the clamping screw without first inserting a cutting tool into the hydraulic chuck.
- Always insert the cutting tool into the hydraulic chuck beyond min. clamping length E.

Accessories & Spare Parts

PJC Collets	PSC Collets	Wiper Cleaners	Coolant Pipes
			
▶ 347	▶ 348	▶ 370	▶ 228

Hydraulic Chuck Standard

For high precision machining in automotive, aerospace, medical and die & mold.

Coolant Through Hole



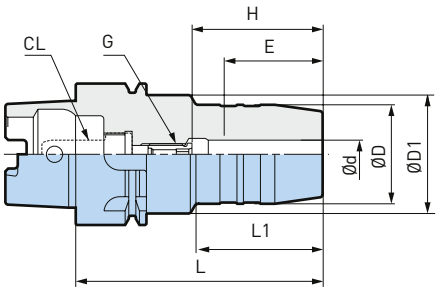


Fig. 1

ø3 - 32mm

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	H	E	G
HSK-A40-HDC6-70	**803.044**	1	6	26	34	70	36	28 - 36	28	HDA 6-05013
HSK-A40-HDC8-70	**803.046**	1	8	28	34	70	36	28 - 36	28	HDA 8-06013
HSK-A40-HDC10-75	**803.048**	1	10	30	34	75	41	33 - 41	33	HDA 8-06013
HSK-A40-HDC12-80	**803.050**	1	12	32	34	80	46	38 - 45	38	HDA 8-06013
HSK-A50-HDC6-75	**801.177**	1	6	26	42	75	32	28 - 37	28	HDA 6-05013
HSK-A50-HDC8-75	**801.178**	1	8	28	42	75	32	28 - 37	28	HDA 8-06013
HSK-A50-HDC10-80	**801.172**	1	10	30	42	80	37	33 - 41	33	HDA 10-08015
HSK-A50-HDC12-85	**801.173**	1	12	32	42	85	42	38 - 46	38	HDA 10-08015
HSK-A50-HDC16-90 **	**801.174**	1	16	38	42	90	48	43 - 51	43	HDA 10-08015
HSK-A50-HDC20-90 **	**801.175**	1	20	42	-	90	64	43 - 51	43	HDA 10-08015
HSK-A50-HDC25-90 *	**801.176**	1	25	55	63	90	23	62	52	-
HSK-A63-HDC6-70 *	**801.222**	2	6	26	50	70	24	46	28	-
HSK-A63-HDC6-120	**978.402**	2	6	26	50	120	44	28 - 48	28	HDA 6-05032
HSK-A63-HDC6-150	**801.221**	2	6	26	50	150	44	28 - 48	28	HDA 6-05033
HSK-A63-HDC7-120	**801.223**	2	7	27	50	120	44	28 - 48	28	HDA 6-05032
HSK-A63-HDC8-70 *	**801.227**	2	8	28	50	70	24	46	28	-
HSK-A63-HDC8-120	**979.202**	2	8	28	50	120	44	28 - 48	28	HDA 8-06032
HSK-A63-HDC8-150	**801.226**	2	8	28	50	150	44	28 - 48	28	HDA 8-06032
HSK-A63-HDC9-120	**801.228**	2	9	29	50	120	44	28 - 48	28	HDA 8-06032
HSK-A63-HDC10-80 *	**801.196**	2	10	30	50	80	35	55	33	-
HSK-A63-HDC10-120	**979.203**	2	10	30	50	120	45	33 - 53	33	HDA 10-08032
HSK-A63-HDC10-150	**801.195**	2	10	30	50	150	45	33 - 53	33	HDA 10-08032
HSK-A63-HDC11-120	**801.197**	2	11	31	50	120	45	33 - 53	38	HDA 10-08032
HSK-A63-HDC12-85 *	**801.201**	2	12	32	50	85	40	60	33	-
HSK-A63-HDC12-120	**979.204**	2	12	32	50	120	45	38 - 58	38	HDA 12-10025
HSK-A63-HDC12-150	**801.200**	2	12	32	50	150	45	38 - 58	38	HDA 12-10025
HSK-A63-HDC13-120	**801.202**	2	13	33	50	120	45	38 - 58	38	HDA 12-10025
HSK-A63-HDC14-85 *	**801.207**	2	14	34	50	85	40	60	38	-
HSK-A63-HDC14-120	**801.205**	2	14	34	50	120	45	38 - 58	38	HDA 12-10026
HSK-A63-HDC14-150	**801.206**	2	14	34	50	150	45	38 - 58	38	HDA 12-10025
HSK-A63-HDC15-120	**801.208**	2	15	37	50	120	45	58 - 68	43	HDA 16-12015
HSK-A63-HDC16-90 *	**801.212**	2	16	38	50	90	46	65	43	-
HSK-A63-HDC16-120	**978.404**	2	16	38	50	120	46	58 - 68	43	HDA 16-12016
HSK-A63-HDC16-150	**801.211**	2	16	38	50	150	46	43 - 68	43	HDA 16-12037
HSK-A63-HDC18-90 *	**801.215**	2	18	40	50	90	46	65	43	-
HSK-A63-HDC18-120	**801.213**	2	18	40	50	120	46	58 - 68	43	HDA 20-16015
HSK-A63-HDC18-150	**801.214**	2	18	40	50	150	46	43 - 68	43	HDA 25-16039
HSK-A63-HDC20-90 *	**801.217** •	2	20	42	50	90	48	65	43	-
HSK-A63-HDC20-120	**979.206**	2	20	42	50	120	48	58 - 68	43	HDA 20-16015
HSK-A63-HDC20-150	**801.216**	2	20	42	50	150	48	43 - 68	43	HDA 25-16039
HSK-A63-HDC25-120 *	**801.218**	3	25	55	50	120	51	95	52	-
HSK-A63-HDC31-95	**806.444**	3	31	63	74	95	27	70	56	-
HSK-A63-HDC32-125 *	**801.219**	3	32	60	69	125	59	100	56	-

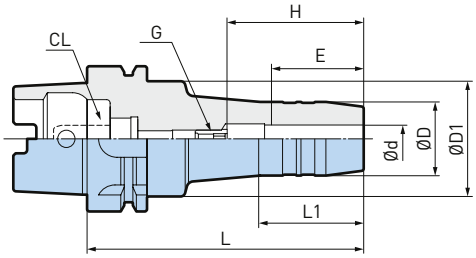


Fig. 2

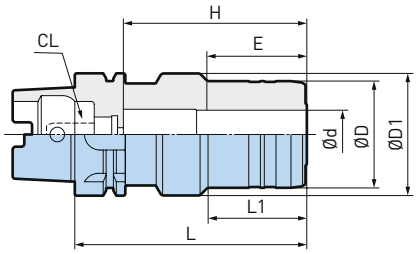


Fig. 3

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	H	E	G
HSK-A100-HDC6-75 *	**801.142**	1	6	26	50	75	26	46	28	-
HSK-A100-HDC6-120	**801.140**	1	6	26	50	120	44	28 - 48	28	HDA 6-05032
HSK-A100-HDC6-165	**801.141**	1	6	26	50	165	44	28 - 48	28	HDA 6-05032
HSK-A100-HDC8-75 *	**801.145**	1	8	28	50	75	26	46	28	-
HSK-A100-HDC8-120	**801.143**	1	8	28	50	120	44	28 - 48	28	HDA 8-06032
HSK-A100-HDC8-165	**801.144**	1	8	28	50	165	44	28 - 48	28	HDA 8-06032
HSK-A100-HDC10-90 *	**801.128**	1	10	30	50	90	42	61	33	-
HSK-A100-HDC10-120	**801.126**	1	10	30	50	120	45	33 - 53	33	HDA 10-08032
HSK-A100-HDC10-165	**801.127**	1	10	30	50	165	45	33 - 53	33	HDA 10-08032
HSK-A100-HDC12-95 *	**801.131**	1	12	32	50	95	47	63	38	-
HSK-A100-HDC12-120	**801.129** •	1	12	32	50	120	47	38 - 58	38	HDA 12-10025
HSK-A100-HDC12-165	**801.130**	1	12	32	50	165	47	38 - 58	38	HDA 12-10032
HSK-A100-HDC16-100 *	**801.132**	1	16	38	50	100	53	68	43	-
HSK-A100-HDC16-135	**801.133**	1	16	38	50	135	53	43 - 68	43	HDA 16-12030
HSK-A100-HDC16-165	**801.134**	1	16	38	50	165	53	43 - 68	43	HDA 16-12037
HSK-A100-HDC20-105 *	**801.135**	1	20	42	50	105	59	73	43	-
HSK-A100-HDC20-135	**801.136**	1	20	42	50	135	59	58 - 68	43	HDA 20-16015
HSK-A100-HDC20-165	**801.137**	1	20	42	50	165	59	43 - 68	43	HDA 25-16039
HSK-A100-HDC25-110 *	**801.138**	1	25	55	63	110	62	78	52	-
HSK-A100-HDC32-110 *	**801.139**	1	32	64	75	110	62	78	56	-

1. Coolant pipe (CL) is to be ordered separately.
2. * Adjusting screw cannot be used.
3. ** Straight collet can not be used.
4. "E" is the min. clamping length.
5. "G" is the adjusting screw (optional).
6. "H" is the max. tool shank length that can be inserted for these models.

Caution

- Use only cutting tools that have a shank tolerance within h6.
- Roughing endmills are not recommended for use with hydraulic chucks.
- Do not use with cutting tools made with a flat on the shank. (ie: Weldon type shank)
- Do not tighten the clamping screw without first inserting a cutting tool into the hydraulic chuck.
- Always insert the cutting tool into the hydraulic chuck beyond min. clamping length E.

Accessories & Spare Parts

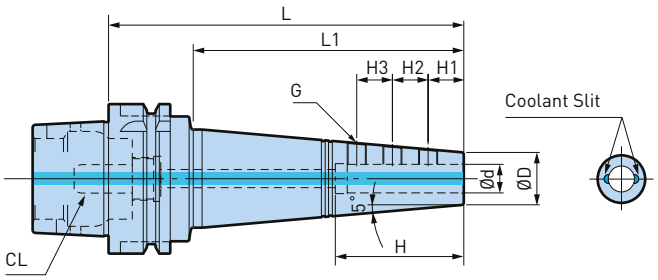
PJC Collets	PSC Collets	Adjusting Screws HDA	Wiper Cleaners	Coolant Pipes
				
▶ 347	▶ 348	▶ 354	▶ 370	▶ 228

Mold Chuck

Slim and tapered design reduces outer diameter and improves stability.
Ideal for machining moulds with weldon tools.

Coolant Through Hole





A.3

ø3 - 20mm

Model	Order No.	Ød	ØD	L	L1	H	H1	H2	H3	G
HSK-A63-SSL3-135	**801.269**	3	10	135	99	113	6	6	-	M3
HSK-A63-SSL4-135	**801.270**	4	11	135	99	113	6	7	-	M4
HSK-A63-SSL6-135	**978.020**	6	13	135	99	113	12	13	-	M6
HSK-A63-SSL8-135	**978.021**	8	15	135	99	40	13,5	18	-	M6
HSK-A63-SSL10-150	**978.022**	10	17	150	114	48	15	20	-	M6
HSK-A63-SSL12-150	**978.023**	12	22	150	115	60	15	16	16	M8
HSK-A63-SSL16-150	**978.024**	16	26	150	115	70	15	20	22	M8
HSK-A100-SSL8-150	**806.830**	8	15	150	111	121	13,5	18	-	M6
HSK-A100-SSL10-150	**806.831**	10	17	150	111	121	15	20	-	M6
HSK-A100-SSL12-150	**806.832**	12	22	150	111	60	15	16	16	M8
HSK-A100-SSL12-200	**806.833**	12	22	200	161	60	15	16	16	M8
HSK-A100-SSL16-150	**806.834**	16	26	150	110	65	15	20	22	M8
HSK-A100-SSL16-200	**806.835**	16	26	200	160	65	15	20	22	M8
HSK-A100-SSL20-150	**806.836**	20	30	150	110	80	15	25	25	M8
HSK-A100-SSL20-200	**806.837**	20	30	200	160	80	15	25	25	M8

1. Coolant pipe (CL) is to be ordered separately.
2. Only 2 flute ball endmill with weldon shank is to be used

Accessories & Spare Parts

Mold Chuck Clamping Screw	Coolant Pipes
	
▶ 366	▶ 228

Shrink Chuck Slim

Slim design reduces interference contours.

Coolant Through Hole

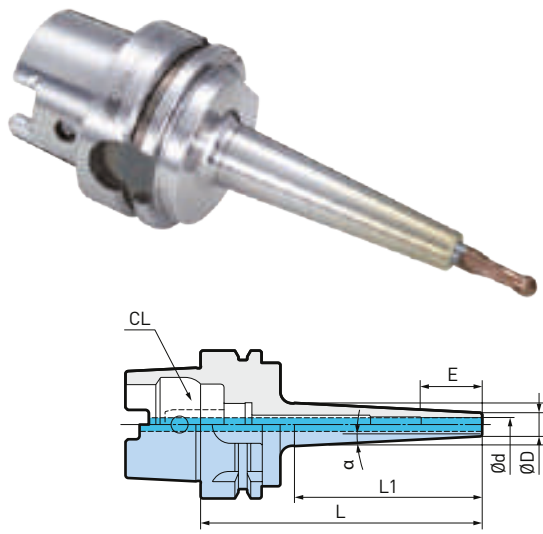


Fig. 1

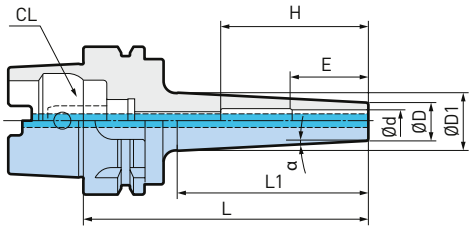


Fig. 2

ø6 - 12mm

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	H	E	α
HSK-A63-SRC6S-120	**801.264**	1	6	10	19	120	81	(98)	26	3°
HSK-A63-SRC6S-165	**801.265**	1	6	10	23	165	121	(143)	26	3°
HSK-A63-SRC8S-120	**801.267**	2	8	13	22	120	81	(98)	26	3°
HSK-A63-SRC8S-165	**801.268**	2	8	13	26	165	123	(143)	26	3°
HSK-A63-SRC10S-120	**801.253**	2	10	16	25	120	81	62	32	3°
HSK-A63-SRC10S-165	**801.254**	2	10	16	29	165	123	62	32	3°
HSK-A63-SRC12S-120	**801.256**	2	12	19	28	120	81	72	36	3°
HSK-A63-SRC12S-165	**801.257**	2	12	19	32	165	125	72	36	3°

1. Use carbide cutter within a tolerance of h6.
2. Coolant pipe (CL) is to be ordered separately.
3. "E" is the min. clamping length.
4. "H" dimensions in ( ) are reference length up to the coolant pipe.
5. Please refer to the operation manual of heating / cooling equipment, as some equipment may not be compatible.

Accessories & Spare Parts

Wiper Cleaners	Coolant Pipes
	
▶ 370	▶ 228

Shrink Chuck Standard

Stable body provides high rigidity.

Coolant Through Hole

A.3



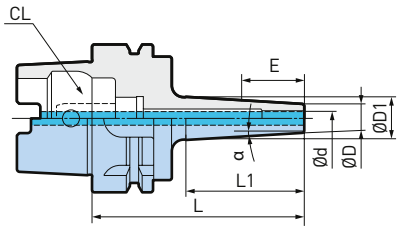


Fig. 1

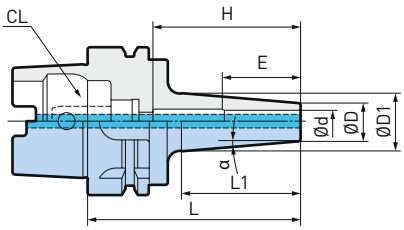


Fig. 2

ø4 - 20mm

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	H	E	α
HSK-A63-SRC4-90 *	**801.262**	1	4	10	15	90	46	(68)	16	3°
HSK-A63-SRC6-90	**978.295**	1	6	14	20	90	51	(68)	26	3°
HSK-A63-SRC6-150	**801.263**	1	6	14	26	150	108	(128)	26	3°
HSK-A63-SRC8-90	**978.296**	2	8	18	24	90	51	(68)	26	3°
HSK-A63-SRC8-150	**801.266**	2	8	18	30	150	110	(128)	26	3°
HSK-A63-SRC10-90	**978.297**	2	10	22	28	90	51	62	32	3°
HSK-A63-SRC10-150	**801.252**	2	10	22	34	150	111	62	32	3°
HSK-A63-SRC12-90	**978.298**	2	12	24	30	90	51	65	36	3°
HSK-A63-SRC12-150	**801.255**	2	12	24	36	150	112	72	36	3°
HSK-A63-SRC16-90	**978.299**	2	16	28	34	90	51	65	38	3°
HSK-A63-SRC16-165	**801.258**	2	16	28	41	165	119	80	38	3°
HSK-A63-SRC20-90	**801.260**	2	20	34	40	90	53	65	42	3°
HSK-A63-SRC20-165	**801.259**	2	20	34	47	165	122	100	42	3°

1. * Use carbide cutter within a tolerance of h5.
2. Use carbide cutter within a tolerance of h6.
3. "H" dimensions in ( ) are reference length up to the coolant pipe.
4. "E" is the min. clamping length.
5. Coolant pipe (CL) is to be ordered separately.
6. Please refer to the operation manual of heating / cooling equipment, as some equipment may not be compatible.

Accessories & Spare Parts

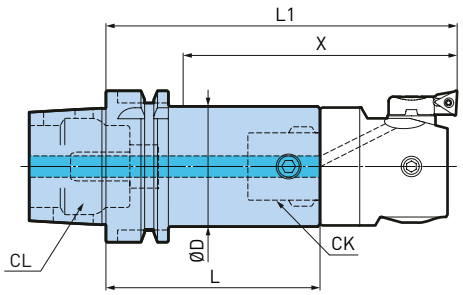
Wiper Cleaners	Coolant Pipes
	
▶ 370	▶ 228

CK Shanks with Center Through Coolant

With drive key grooves and orientation notch.

Coolant Through Hole



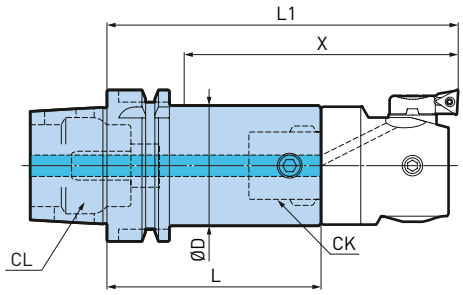


CK1-CK7

Model	Order No.	CK	ØD	L	L1	X
HSK-A25-CKB2-30 *	**328.279F**	CKB2	24	30	66	50
HSK-A32-CKB2-33	**328.278F**	CKB2	24	33	69	43
HSK-A40-CKB1-32	**324.112F**	CKB1	19	31.5	64	40
HSK-A40-CKB2-35	**328.277F**	CKB2	24	35	71	45
HSK-A40-CKB3-40	**324.132F**	CKB3	31	40	80	55
HSK-A40-CKB4-50	**324.142F**	CKB4	39	50	97	72
HSK-A50-CKB3-44	**324.232F**	CKB3	31	44	84	53
HSK-A50-CKB4-48	**324.242F**	CKB4	39	48	95	64
HSK-A50-CKB5-61	**324.252F**	CKB5	50	61	118	87
HSK-A63-CKB1-79	**324.312F**	CKB1	19	78.5	111	80
HSK-A63-CKB2-96	**324.322F**	CKB2	24	95.5	131	100
HSK-A63-CKB3-71	**324.331**	CKB3	31	71	111	80
HSK-A63-CKB3-71FB	**324.331F**	CKB3	31	71	111	80
HSK-A63-CKB3-121	**324.332**	CKB3	31	121	161	130
HSK-A63-CKB4-94	**324.341**	CKB4	39	94	141	110
HSK-A63-CKB4-94FB	**324.341F**	CKB4	39	94	141	110
HSK-A63-CKB4-114	**324.342**	CKB4	39	114	161	130
HSK-A63-CKB5-59	**324.352**	CKB5	50	59	116	85
HSK-A63-CKB5-59FB	**324.352F**	CKB5	50	59	116	85
HSK-A63-CKB5-89	**324.353**	CKB5	50	89	146	115
HSK-A63-CKB5-134	**324.354**	CKB5	50	134	191	160
HSK-A63-CKN6-70	**324.361N**	CKN6	63.5	70	141	110
HSK-A63-CKB6-70	**324.361**	CKB6	63.5	70	141	110
HSK-A63-CKB6-70FB	**324.361F**	CKB6	63.5	70	141	110
HSK-A63-CKB6-100	**324.362**	CKB6	63.5	100	171	140
HSK-A63-CKN6-160	**324.367N**	CKN6	63.5	160	231	200
HSK-A80-CKB6-75	**324.461**	CKB6	63.5	75	146	115

continues on the next page

A.3



Model	Order No.	CK	ØD	L	L1	X
HSK-A100-CKB3-124	**324.531**	CKB3	31	124	164	130
HSK-A100-CKB4-147	**324.541**	CKB4	39	147	194	160
HSK-A100-CKB5-107	**324.551**	CKB5	50	107	164	130
HSK-A100-CKB5-177	**324.552**	CKB5	50	177	234	200
HSK-A100-CKB6-78	**324.561**	CKB6	63.5	78	149	115
HSK-A100-CKN6-78	**324.561N**	CKN6	63.5	78	149	115
HSK-A100-CKB6-108	**324.563**	CKB6	63.5	108	179	145
HSK-A100-CKN6-108	**324.563N**	CKN6	63.5	108	179	145
HSK-A100-CKN6-223	**324.566N**	CKN6	63.5	223	294	260
HSK-A100-CKB7-87	**324.571**	CKB7	90	87	204 (174)	170 (140)
HSK-A100-CKN7-87	**324.571N**	CKN7	90	87	204 (174)	170 (140)
HSK-A100-CKB7-127	**324.572**	CKB7	90	127	244 (214)	210 (180)
HSK-A100-CKN7-127	**324.572N**	CKN7	90	127	244 (214)	210 (180)
HSK-A100-CKN7-267	**324.575N**	CKN7	90	267	384 (354)	350 (320)
HSK-A125-CKB6-94	**869.024**	CKB6	63.5	94	165	125
HSK-A125-CKB7-123	**869.025**	CKB7	90	123	240 (210)	195 (165)

1. X and L1 dimensions on the table are reference figures when EWN/EWE head is mounted.
2. HSK shanks with index "FB" are precision balanced.
3. Coolant pipe (CL) is to be ordered separately.
4. ( ) Indicate the length when short version of EWN (EWN100-203CKB7-87) is mounted.
5. * Without ID bore

Accessories & Spare Parts

Coolant Pipes	Fine Boring Heads
	
▶ 228	▶ 396-399

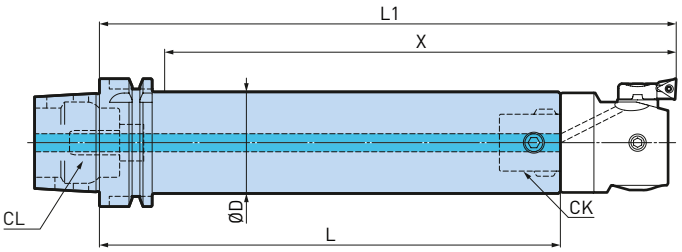
Smart Damper CK Shanks

Tool shanks with integrated damping system for highly efficient deep hole fine boring.

Anti-Vibration

Coolant Through Hole





Model	Order No.	CK	ØD	L	L1	X
HSK-A100-CKB4DP-241	**807.546**	CKB4	39	241	288	246
HSK-A100-CKB5DP-303	**328.238**	CKB5	50	303	360	318
HSK-A100-CKB6DP-379	**328.240**	CKB6	64	379	450	408

1. X and L1 dimensions on the table are reference figures when EWN/EWE head is mounted.
2. Coolant pipe (CL) is to be ordered separately.

Accessories & Spare Parts

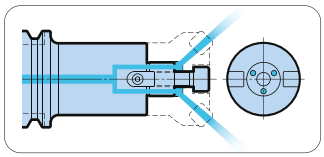
Coolant Pipes	Fine Boring Heads
	
▶ 228	▶ 396-399

Face Mill Arbors Type FMH

For milling heads that require a coolant bore in the face .







A.3

Model	Order No.	Fig.	ØD	ØD1	L	L1	L2	W	G	ØC min.
HSK-A50-FMH22-47-60	**805.833**	2	22	47	60	18	5	10	M10	36
HSK-A50-FMH27-60-60	**805.834**	2	27	60	60	20	6	12	M12	46
HSK-A63-FMH16-37-45	**979.194**	1	16	37	45	16	5	8	M8	28
HSK-A63-FMH22-47-60	**801.189**	1	22	47	60	18	5	10	M10	36
HSK-A63-FMH22-47-90	**978.186**	1	22	47	90	18	5	10	M10	36
HSK-A63-FMH22-47-150	**801.188**	1	22	47	150	18	5	10	M10	36
HSK-A63-FMH22-60-60	**805.573**	2	22	60	60	18	5	10	M10	38
HSK-A63-FMH22-60-90	**805.574**	2	22	60	90	18	5	10	M10	38
HSK-A63-FMH27-60-60	**978.185**	2	27	60	60	20	6	12	M12	46
HSK-A63-FMH27-60-90	**979.196**	2	27	60	90	20	6	12	M12	46
HSK-A63-FMH32-96-60	**805.646**	2	32	96	60	22	7	14	M16	58
HSK-A100-FMH22-47-105	**965.523**	1	22	47	105	18	5	10	M10	36
HSK-A100-FMH22-47-150	**978.120**	1	22	47	150	18	5	10	M10	36
HSK-A100-FMH22-47-200	**978.121**	1	22	47	200	18	5	10	M10	36
HSK-A100-FMH22-47-250	**801.091**	1	22	47	250	18	5	10	M10	36
HSK-A100-FMH22-60-60	**801.096**	1	22	60	60	18	5	10	M10	38
HSK-A100-FMH22-60-105	**801.092**	1	22	60	105	18	5	10	M10	38
HSK-A100-FMH22-60-150	**801.093**	1	22	60	150	18	5	10	M10	38
HSK-A100-FMH22-60-200	**801.094**	1	22	60	200	18	5	10	M10	38
HSK-A100-FMH22-60-250	**801.095**	1	22	60	250	18	5	10	M10	38
HSK-A100-FMH27-60-60	**801.102**	1	27	60	60	20	6	12	M12	46
HSK-A100-FMH27-60-90	**801.103**	1	27	60	90	20	6	12	M12	46
HSK-A100-FMH27-60-150	**801.101**	1	27	60	150	20	6	12	M12	46
HSK-A100-FMH27-60-200	**807.130**	1	27	60	200	20	6	12	M12	46
HSK-A100-FMH27-60-250	**807.114**	1	27	60	250	20	6	12	M12	46
HSK-A100-FMH27-76-60	**801.105**	1	27	76	60	20	6	12	M12	62
HSK-A100-FMH27-76-90	**801.106**	1	27	76	90	20	6	12	M12	62
HSK-A100-FMH27-76-150	**801.104**	1	27	76	150	20	6	12	M12	62
HSK-A100-FMH32-96-60	**801.118**	2	32	96	60	22	7	14	M16	80
HSK-A100-FMH32-96-90	**801.119**	2	32	96	90	22	7	14	M16	80
HSK-A100-FMH32-96-150	**801.117**	2	32	96	150	22	7	14	M16	80
HSK-A100-FMH40-100-75	**801.125**	2	40	100	75	26	8.5	16	M20 (MBA-M20H)	80
HSK-A100-FMH40-100-105	**801.124**	2	40	100	105	26	8.5	16	M20 (MBA-M20H)	80

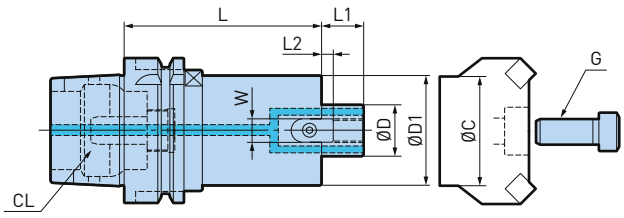


Fig. 1

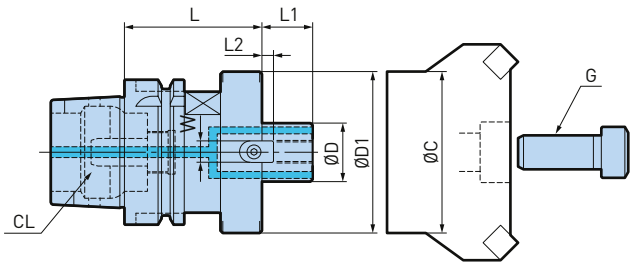


Fig. 2

Model	Order No.	Fig.	ØD	ØD1	L	L1	L2	W	G	ØC min.
HSK-A125-FMH22A-49-50	**806.585**	1	22	49	50	18	5	10	M10	40
HSK-A125-FMH22A-49-100	**806.586**	1	22	49	100	18	5	10	M10	40
HSK-A125-FMH22A-49-150	**806.587**	1	22	49	150	18	5	10	M10	40
HSK-A125-FMH22A-49-200	**806.588**	1	22	49	200	18	5	10	M10	36
HSK-A125-FMH27A-60-90	**806.589**	1	27	60	90	20	6	12	M12	46
HSK-A125-FMH27A-60-150	**806.590**	1	27	60	150	20	6	12	M12	46
HSK-A125-FMH32A-78-60	**806.591**	1	32	76	60	22	7	14	M16	58
HSK-A125-FMH32A-96-105	**806.592**	1	32	98	105	22	7	14	M16	58
HSK-A125-FMH40A-80-90	**806.593**	1	40	80	90	28	8.5	16	M20	70

1. Clamp bolt is included.
2. By using a clamping screw with a through bore, coolant is supplied through the screw
3. Coolant pipe (CL) is to be ordered separately.

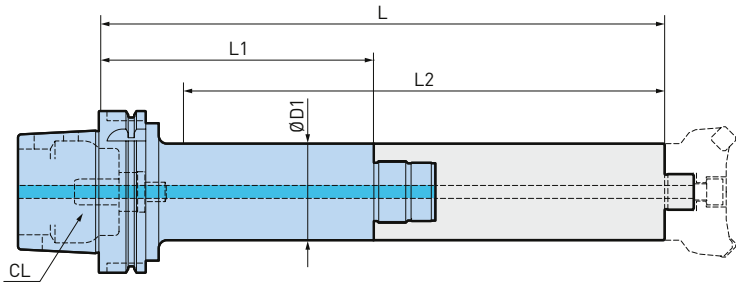
Accessories & Spare Parts

Clamp Bolts	Coolant Pipes
	
▶ 355	▶ 228

Smart Damper Basic Holders for Mills

Coolant Through Hole





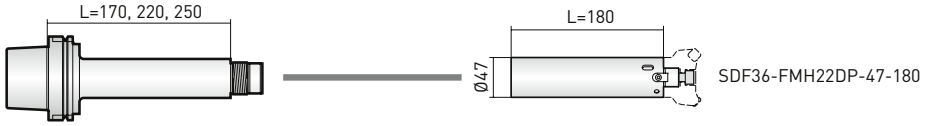
A.3

Model	Order No.	ØD1	L	L1	L2	Damper Head Model
HSK-A100-SDF36-47-170	**804.976**	47	350	170	310	FMH_DP-47
HSK-A100-SDF36-47-220	**804.978**	47	400	220	360	FMH_DP-47
HSK-A100-SDF36-60-170	**804.977**	60	350	170	310	FMH_DP-60
HSK-A100-SDF36-60-220	**804.979**	60	400	220	360	FMH_DP-60
HSK-A100-SDF57-76-170	**807.680**	76	350	170	310	FMH_DP-76
HSK-A100-SDF57-76-220	**807.681**	76	400	220	360	FMH_DP-76
HSK-A125-SDF36-47-250	**806.630**	47	430	250	380	FMH_DP-47
HSK-A125-SDF36-60-250	**806.631**	60	430	250	380	FMH_DP-60

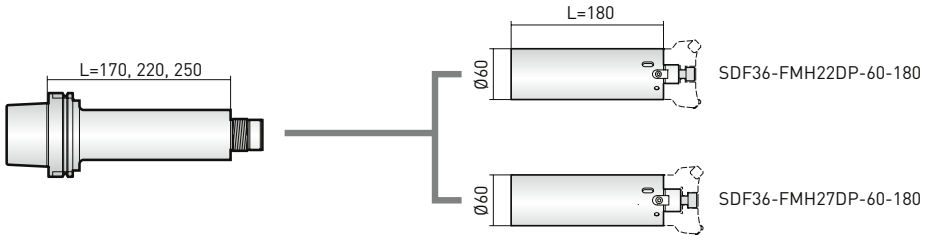
1. Coolant pipe (CL) is to be ordered separately.

Combinations Basic Holder Damper Head

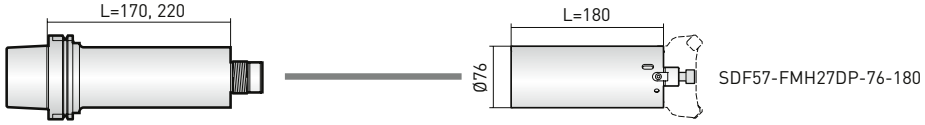
Ø47



Ø60



Ø76



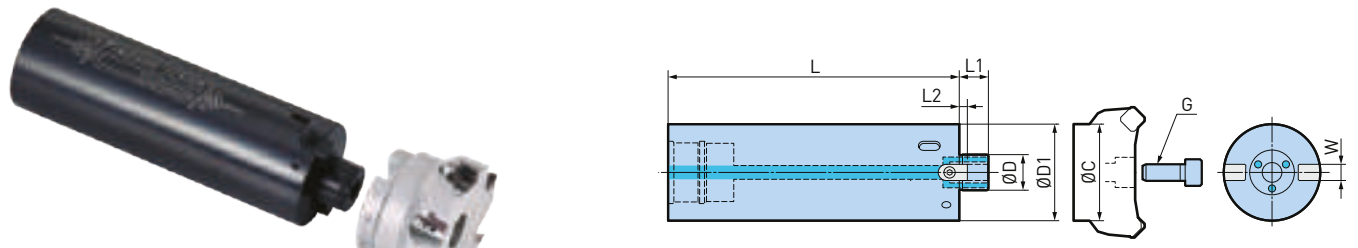
Accessories & Spare Parts

Coolant Pipes



▶ 228

Smart Damper Damper Heads for Mills



Model	Order No.	ØD	ØD1	L	L1	L2	G	W	ØC min.	Wrench
SDF36-FMH22DP-47-180	**804.969**	22	47	180	18	5	M10	10	36	FK45-50L
SDF36-FMH22DP-60-180	**804.971**	22	60	180	18	5	M10	10	38	FK58-62L
SDF36-FMH27DP-60-180	**804.972**	27	60	180	20	6	M12	12	46	FK58-62L
SDF57-FMH27DP-76-180	**807.673**	27	76	180	20	6	M12	12	48	FK68-75L

1. Wrench and cutter clamping bolt are included.
2. By using a clamping screw with a through bore, coolant is supplied through the screw

Accessories & Spare Parts

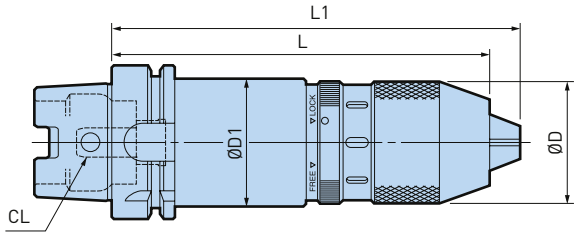
FK Wrenches	Clamp Bolts
	
▶ 352	▶ 355

A.3

Super Keyless Chuck

The known design assures prismatic clamping between 0.5 and 13 mm.





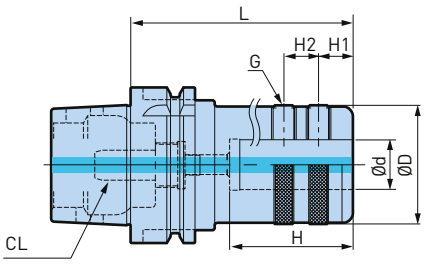
ø3 - 42mm

Model	Order No.	Ød	ØD	ØD1	L	L1	Wrench
HSK-A63-SKL13-155	**805.282**	0.5 - 13	51	53	155	167.5	FS13LC

1. Coolant-through hole is not available.
2. Wrench is included.

Side Lock Drill Holder





ø16 - 50mm

Model	Order No.	Ød	ØD	L	H	H1	H2	G
HSK-A63-TSL16-90	**805.234**	16	48	90	48	14	14	M10
HSK-A63-TSL20-90	**805.235**	20	48	90	50	14	14	M10
HSK-A63-TSL25-90	**805.236**	25	48	90	56	15	20	M16
HSK-A63-TSL32-105	**805.237**	32	63	105	60	15	20	M16
HSK-A63-TSL40-120	**805.232**	40	68	120	70	15	25	M16
HSK-A100-TSL16-90	**806.044**	16	48	90	48	14	14	M10
HSK-A100-TSL20-90	**806.045**	20	48	90	50	14	14	M10
HSK-A100-TSL25-90	**806.046**	25	48	90	56	15	20	M16
HSK-A100-TSL32-105	**806.047**	32	63	105	60	15	20	M16
HSK-A100-TSL40-105	**806.048**	40	68	105	70	15	25	M16
HSK-A100-TSL50-105	**806.049**	50	84	105	70	15	25	M16

1. Coolant pipe (CL) is to be ordered separately.

Accessories & Spare Parts

Sleeves for TSL & OSL

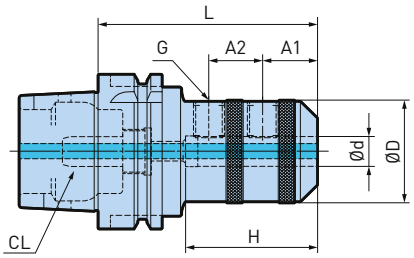


► 355

Side Lock Holders for Weldon

Coolant Through Hole





A.3

ø6 - 50mm

Model	Order No.	Ød	ØD	L	A1	A2	H	G
HSK-A63-ISL6-80	**807.321**	6	25	80	18	-	58	M6
HSK-A63-ISL8-80	**807.322**	8	28	80	18	-	58	M8
HSK-A63-ISL10-80	**807.323**	10	35	80	20	-	44	M10
HSK-A63-ISL12-80	**805.732**	12	42	80	22.5	-	50	M12
HSK-A63-ISL16-80	**807.319**	16	48	80	24	-	52	M14
HSK-A63-ISL20-80	**806.050**	20	52	80	25	-	54	M16
HSK-A63-ISL25-105	**805.019**	25	65	105	24	25	60	M18 P2
HSK-A63-ISL32-115	**805.018**	32	72	115	24	28	64	M20 P2
HSK-A100-ISL20-90	**805.152**	20	52	90	25	-	54	M16
HSK-A100-ISL20-135	**807.227**	20	52	135	25	-	55	M16
HSK-A100-ISL25-105	**806.051**	25	65	105	24	25	60	M18 P2
HSK-A100-ISL25-135	**807.228**	25	65	135	24	25	60	M18 P2
HSK-A100-ISL32-125	**805.151**	32	72	125	24	28	90	M20 P2
HSK-A100-ISL32-165	**807.229**	32	72	165	24	28	90	M20 P2
HSK-A100-ISL40-125	**805.201**	40	90	125	30	32	90	M20 P2
HSK-A100-ISL40-165	**807.230**	40	90	165	30	32	90	M20 P2
HSK-A100-ISL50-135	**806.052**	50	99.5	135	35	35	90	M24 P2
HSK-A100-ISL50-165	**807.231**	50	99.5	165	35	35	90	M24 P2

1. "H" is the max. tool shank length that can be inserted for these models.
2. Use a cutting tool in accordance to DIN 1835 B/DIN 6535 HB.
3. Coolant pipe (CL) is to be ordered separately.

Accessories & Spare Parts

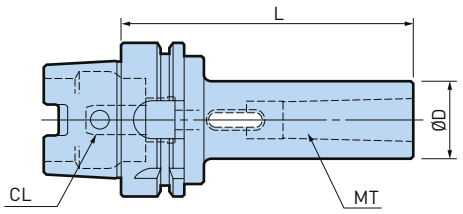
Coolant Pipes



► 228

Morse Taper Holder





Model	Order No.	ØD	MT No.	L
HSK-A63-MTA1-100	**801.248**	25	1	100
HSK-A63-MTA2-120	**801.249**	32	2	120
HSK-A63-MTA3-135	**801.250**	40	3	135
HSK-A63-MTA4-165	**801.251**	50	4	165
HSK-A100-MTA1-105	**801.165**	25	1	105
HSK-A100-MTA2-125	**801.166**	32	2	125
HSK-A100-MTA3-140	**801.167**	40	3	140
HSK-A100-MTA4-165	**801.168**	50	4	165

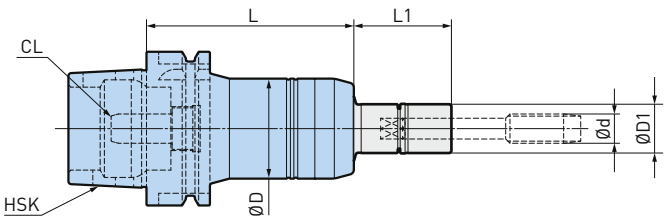
1. Coolant pipe (CL) is to be ordered separately.

MEGA Synchro Tapping Holder

Compensates for synchronization errors during synchronised tapping. Improves thread quality and tool life by reducing thrust loads caused by synchronization errors up to 90%.

Coolant Through Hole





A.3

M3 - M20

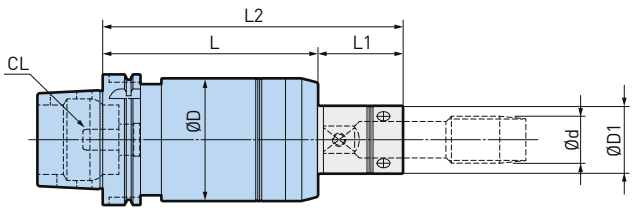
Model	Order No.	Tap Holder	Ød	ØD	ØD1	L	L1
HSK-A40-MGT6-80	**965.601**	MGT6	M3-M8	36	16	80	30 - 200
HSK-A40-MGT12-85	**965.602**	MGT12	M5-M12 / P1/8	41	20	85	30 - 200
HSK-A50-MGT6-85	**965.603**	MGT6	M3-M8	36	16	85	30 - 200
HSK-A50-MGT12-85	**965.604**	MGT12	M5-M12 / P1/8	41	20	85	30 - 200
HSK-A50-MGT20-125	**978.325**	MGT20	M10-M20 / P1/4-P1/2	54	30	125	35 - 150
HSK-A63-MGT6-85	**965.606**	MGT6	M3-M8	36	16	85	30 - 200
HSK-A63-MGT12-85	**965.607**	MGT12	M5-M12 / P1/8	41	20	85	30 - 200
HSK-A63-MGT20-110	**965.608**	MGT20	M10-M20 / P1/4-P1/2	54	30	110	35 - 150
HSK-A100-MGT6-95	**965.609**	MGT6	M3-M8	36	16	95	30 - 200
HSK-A100-MGT12-95	**965.610**	MGT12	M5-M12 / P1/8	41	20	95	30 - 200
HSK-A100-MGT20-115	**965.611**	MGT20	M10-M20 / P1/4-P1/2	54	30	115	35 - 150
HSK-A125-MGT12-105	**805.655**	MGT12	M5-M12 / P1/8	41	20	105	30 - 200
HSK-A125-MGT20-120	**805.656**	MGT20	M10-M20 / P1/4-P1/2	54	30	120	35 - 150

1. Tap holder is to be ordered separately.
2. Coolant pipe (CL) is to be ordered separately.
3. Synrchonized tapping function is required on the machine.

MEGA Synchro Tapping Holder MGT36

For large Tapping: Type MGT36





M20 - M36

Model	Order No.	Ød	ØD1	L	L1	L2
HSK-A100-MGT36-165	**801.164**	M22-M36 / P5/8-P1	32-52	165	65	230
HSK-A125-MGT36-170	**805.657**	M22-M36 / P1/2-P1	32-52	170	65	235

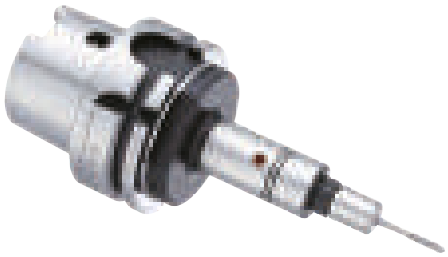
1. Tap holder is to be ordered separately.
2. Coolant pipe (CL) is to be ordered separately.
3. Synrchonized tapping function is required on the machine.

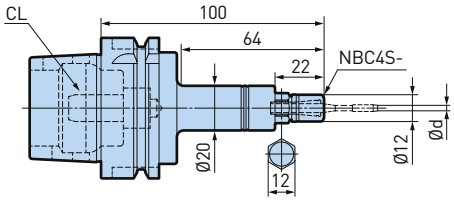
Accessories & Spare Parts

Tap Holder	MEGA Wrenches	Accessories	Coolant Pipes
			
▶ 356-363	▶ 351	▶ 364-365	▶ 228

MEGA Synchro Tapping Holder

For small Tapping: Type MGT3





A.3

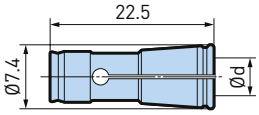
M1 - M3

Model	Order No.	Ød
HSK-A63-MGT3-100	**805.542**	M1 - M3

1. MEGA nut is included in delivery.
2. MEGA wrench (MGR12) and common spanner (12 mm) are required to clamp/unclamp the tap.
3. Synrchonized tapping function is required on the machine.
4. Coolant pipe (CL) is to be ordered separately.
5. Coolant-through hole is not available.
6. Micro Collet is to be ordered separately.

Micro Collet for MGT3





Model	Order No.	Tapping Range			Tap Shank
		DIN 371	ISO 529	JIS	Ød
NBC4S-2.5AA	**961.468**	M1 - M1.8	M2	-	2.5
-2.8AA	**968.353**	M2 - M2.6	M2.2, M2.5	-	2.8
-3.0AA	**961.470**	-	-	M1 - M2.6	3.0
-3.1AA	**968.355**	-	M3	-	3.15
-3.5AA	**961.472**	M3	-	-	3.5
-4.0AA	**961.474**	-	-	M3	4.0

1. Other sizes available. Please refer to micro collet.

Accessories & Spare Parts

MEGA Wrenches

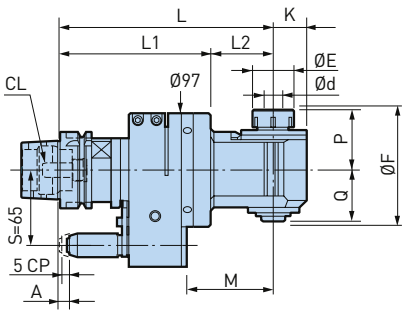


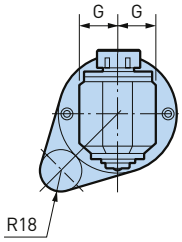
▶ 351

New Baby Chuck Type

The Angle Head has an integrated New Baby Chuck, resulting in high precision.
Available in various sizes to meet specific production requirements.



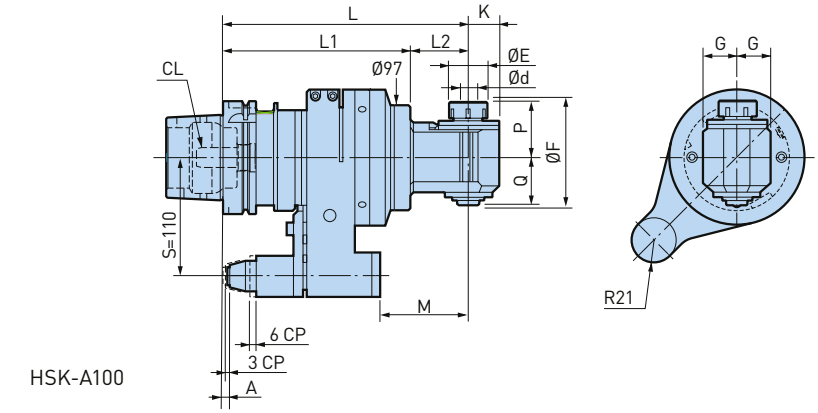




HSK-A63

Model	Order No.	Ød	ØE	ØF	L	L1	L2	G	K	M	P	Q	Collet Model
HSK-A63-AG90/NBS6-185	**802.717**	0.25 - 6	20	67	185	130	55	21	17	77	33	29	NBC6
HSK-A63-AG90/NBS6-215	**802.719**	0.25 - 6	20	67	215	130	85	21	17	107	33	29	NBC6
HSK-A63-AG90/NBS6-245	**802.721**	0.25 - 6	20	67	245	130	115	21	17	137	33	29	NBC6
HSK-A63-AG90/NBS6-275	**802.723**	0.25 - 6	20	67	275	130	145	21	17	167	33	29	NBC6
HSK-A63-AG90/NBS10-185	**802.702**	1.5 - 10	30	91	185	130	55	30	25	77	45	43	NBC10
HSK-A63-AG90/NBS10-215	**802.704**	1.5 - 10	30	91	215	130	85	30	25	107	45	43	NBC10
HSK-A63-AG90/NBS10-245	**802.706**	1.5 - 10	30	91	245	130	115	30	25	137	45	43	NBC10
HSK-A63-AG90/NBS13-185	**802.708**	2.5 - 13	35	101	185	130	55	31	28	77	52	45	NBC13
HSK-A63-AG90/NBS13-215	**802.710**	2.5 - 13	35	101	215	130	85	31	28	107	52	45	NBC13
HSK-A63-AG90/NBS13-245	**802.712**	2.5 - 13	35	101	245	130	115	31	28	137	52	45	NBC13
HSK-A63-AG90/NBS20S-180S	**802.716**	2.5 - 20	46	132	180	127	53	35	33	72	65	62	NBC20

continues on the next page



HSK-A100

Model	Order No.	Ød	ØE	ØF	L	L1	L2	G	K	M	P	Q	Collet Model
HSK-A100-AG90/NBS6-225	**802.666**	0.25 - 6	20	67	225	170	55	21	17	82	33	29	NBC6
HSK-A100-AG90/NBS6-255	**802.669**	0.25 - 6	20	67	255	170	85	21	17	112	33	29	NBC6
HSK-A100-AG90/NBS6-285	**802.672**	0.25 - 6	20	67	285	170	115	21	17	142	33	29	NBC6
HSK-A100-AG90/NBS6-315	**802.675**	0.25 - 6	20	67	315	170	145	21	17	172	33	29	NBC6
HSK-A100-AG90/NBS10-225	**802.645**	1.5 - 10	30	91	225	170	55	30	25	82	45	43	NBC10
HSK-A100-AG90/NBS10-255	**802.648**	1.5 - 10	30	91	255	170	85	30	25	112	45	43	NBC10
HSK-A100-AG90/NBS10-285	**802.651**	1.5 - 10	30	91	285	170	115	30	25	142	45	43	NBC10
HSK-A100-AG90/NBS13-225	**802.654**	2.5 - 13	35	101	225	170	55	31	28	82	52	45	NBC13
HSK-A100-AG90/NBS13-255	**802.657**	2.5 - 13	35	101	255	170	85	31	28	112	52	45	NBC13
HSK-A100-AG90/NBS13-285	**802.660**	2.5 - 13	35	101	285	170	115	31	28	142	52	45	NBC13
HSK-A100-AG90/NBS20-240	**802.663**	2.5 - 20	46	132	240	170	70	35	35	97	65	62	NBC20
HSK-A100-AG90/NBS20-240S	**802.664**	2,5 - 20	46	132	240	170	70	35	35	97	65	62	NBC20

1. The standard fixed length A is 8 mm for HSK-A63 and 6 mm for HSK-A100. Other lengths are available upon request.
2. Nut and wrench are included.
3. New Baby Collet is to be ordered separately
4. New baby collet for endmilling (NBC - EAA) can not be used.
5. Coolant can be supplied through the locating pin.
6. Coolant pipe (CL) is to be ordered separately.
7. Exclusive Stop Block is required.
8. „CP" indicates compression
9. „ØF" indicates the minimum dimension for access into the bore

Accessories & Spare Parts

New Baby Collets	Semi-Finished Stop Blocks	Coolant Pipes
		
▶ 329	▶ 377	▶ 228

Angle Head Twin Head Type

Twin spindle head with a compact design. Symmetrical machining can be performed using one unit, contributing to the reduction of the number of magazines.



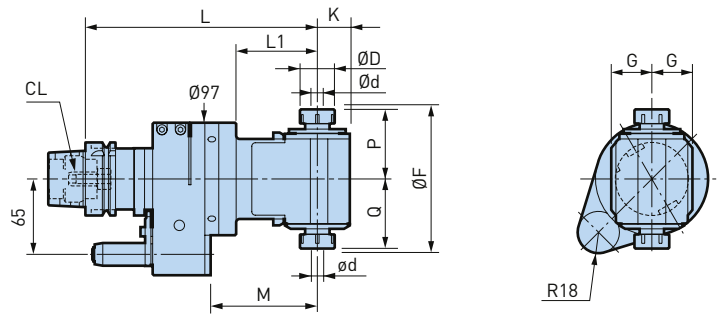


Fig. 1

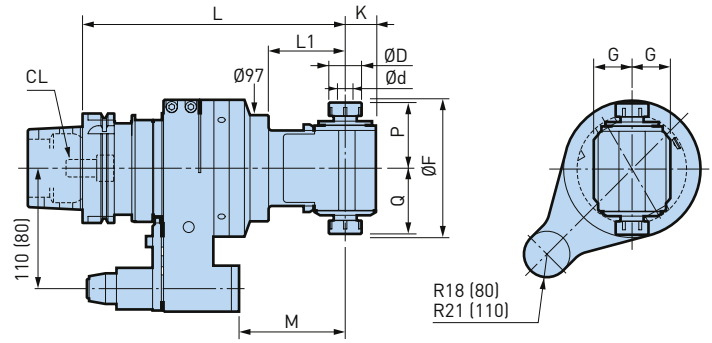


Fig. 2

Model	Order No.	Fig.	Ød	ØD	G	K	L	L1	M	P	Q	ØF	Collet Model
HSK-A63-AG90/NBS10W-200	**101123.001.0**	1	1.5 - 10	30	31	28	200	70	97	60	60	124	NBC10
HSK-A100-AG90/NBS10W-240	**101123.002.0**	2	1.5 - 10	30	31	28	240	70	92	60	60	124	NBC10

1. Coolant pipe (CL) is to be ordered separately.
2. Exclusive Stop Block is required.
3. Nut is included.
4. Wrench is included.
5. New baby collet for endmilling (NBC - EAA) can not be used.
6. The cutting tool rotates in reverse to the machine spindel.
7. Collet is not included.
8. The angles of the locating pin to the drive key groove and direction of cutting edge are freely adjustable.
9. When used with stop block peripheral cooling is possible
10. Automatic tool change may not be available, depending on machine models.
11. Output spindles do not rotate in the same direction simultaneously.
12. The standard fixed length A is 8 mm for HSK-A63 and 6 mm for HSK-A100. Other lengths are available upon request.
13. Order No. for HSK-A100 is with S = 110. S = 80 type for HSK-A100 is available upon request.

Accessories & Spare Parts

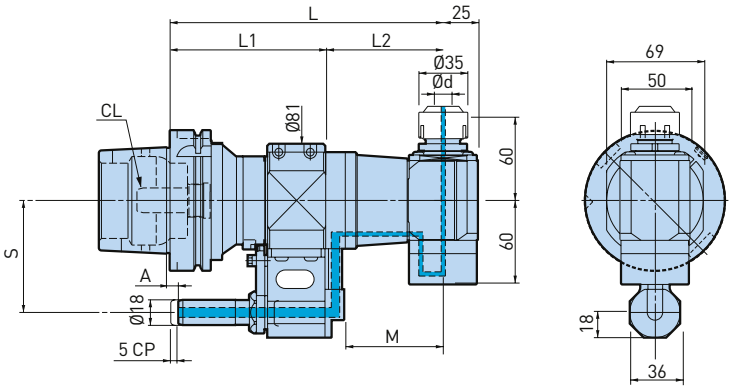
New Baby Collets



▶ 329

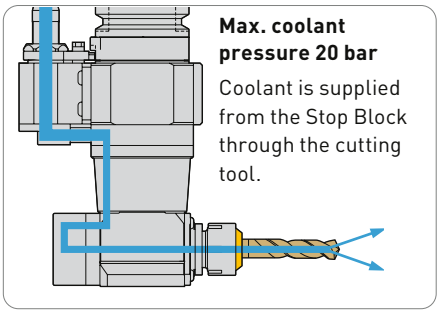
OAG Type





Model	Order No.	Ød	L	L1	L2	M	Collet Model	Nut Model	max. min-1
HSK-A63-OAG90-13-185	**802.736**	2.5 - 13	185	101	84	70.5	NBC13	BPS13	5000
HSK-A100-OAG90-13-195	**802.697**	2.5 - 13	195	111	84	70.5	NBC13	BPS13	5000

1. The standard length A is 6 mm.
2. Standard "S" is 80 mm for HSK-A63 and 65 mm for HSK-A100.
3. Nut and wrench are included.
4. New Baby Collet is to be ordered separately
5. New baby collet for endmilling (NBC - EAA) can not be used.
6. Coolant pipe (CL) is to be ordered separately.
7. Exclusive Stop Block is required.
8. „CP" indicates compression



Max. coolant pressure 20 bar

Coolant is supplied from the Stop Block through the cutting tool.

Accessories & Spare Parts

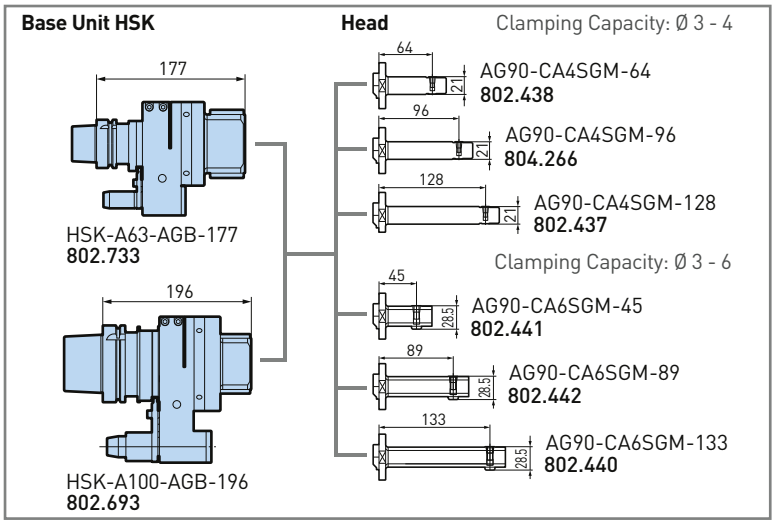
Baby Perfect Seals	New Baby Collets	Semi-Finished Stop Blocks
		
▶ 338	▶ 329	▶ 377

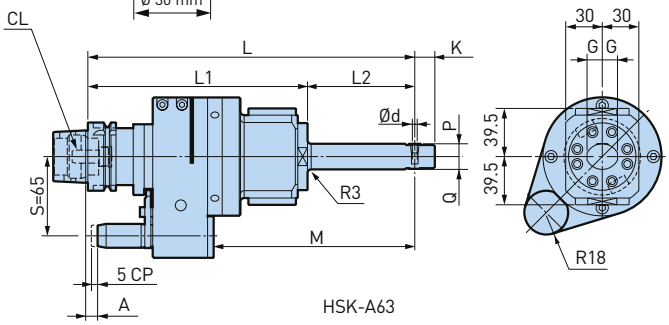
Small Bore Type

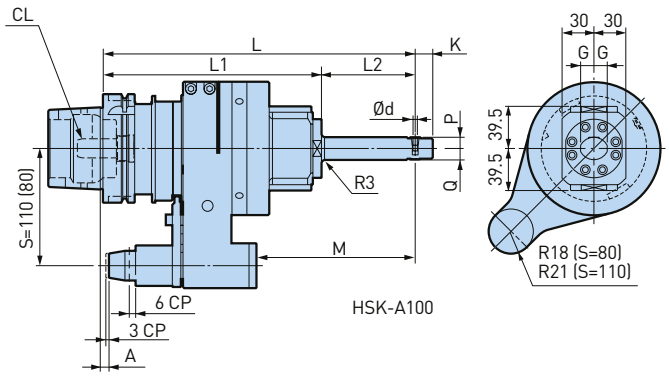
Angular operation from a Ø 30 mm bore is possible. Modular heads enhance versatility. Head is aligned with spindle center for easy programming.











Model	Order No.	Base Unit	Head	Ød	L	L1	L2	G	K	M	P	Q	Ratio
HSK-A63-AG90-CA4SGM-241	**802.727**	HSK-A63-AGB-177	AG90-CA4SGM-64	3 - 4	241	185	56	12.5	16.5	133	10.5	10.5	1:1.06
HSK-A63-AG90-CA4SGM-273	**802.728**	HSK-A63-AGB-177	AG90-CA4SGM-96	3 - 4	273	185	88	12.5	16.5	165	10.5	10.5	1:1.06
HSK-A63-AG90-CA4SGM-305	**802.729**	HSK-A63-AGB-177	AG90-CA4SGM-128	3 - 4	305	185	120	12.5	16.5	197	10.5	10.5	1:1.06
HSK-A63-AG90-CA6SGM-222	**802.730**	HSK-A63-AGB-177	AG90-CA6SGM-45	3 - 6	222	185	37	15	20	114	12.5	16	1:0.77
HSK-A63-AG90-CA6SGM-266	**802.731**	HSK-A63-AGB-177	AG90-CA6SGM-89	3 - 6	266	185	81	15	20	158	12.5	16	1:0.77
HSK-A63-AG90-CA6SGM-310	**802.732**	HSK-A63-AGB-177	AG90-CA6SGM-133	3 - 6	310	185	125	15	20	202	12.5	16	1:0.77
HSK-A100-AG90-CA4SGM-260	**802.680**	HSK-A100-AGB-196	AG90-CA4SGM-64	3 - 4	260	204	56	12.5	16.5	117	10.5	10.5	1:1.06
HSK-A100-AG90-CA4SGM-292	**802.682**	HSK-A100-AGB-196	AG90-CA4SGM-96	3 - 4	292	204	88	12.5	16.5	149	10.5	10.5	1:1.06
HSK-A100-AG90-CA4SGM-324	**802.684**	HSK-A100-AGB-196	AG90-CA4SGM-128	3 - 4	324	204	120	12.5	16.5	181	10.5	10.5	1:1.06
HSK-A100-AG90-CA6SGM-241	**802.686**	HSK-A100-AGB-196	AG90-CA6SGM-45	3 - 6	241	204	37	15	20	98	12.5	16	1:0.77
HSK-A100-AG90-CA6SGM-285	**802.688**	HSK-A100-AGB-196	AG90-CA6SGM-89	3 - 6	285	204	81	15	20	145	12.5	16	1:0.77
HSK-A100-AG90-CA6SGM-329	**802.690**	HSK-A100-AGB-196	AG90-CA6SGM-133	3 - 6	329	204	125	15	20	186	12.5	16	1:0.77

1. Standard fixed length A is 6 mm for HSK-A100 and 8 mm for HSK-A63. Other lengths are available upon request.
2. Order No. for HSK-A100 is with S = 110. S = 80 type for HSK-A100 is available upon request.
3. Coolant-through hole is not available.
4. Exclusive collet is to be ordered separately.
5. Coolant pipe (CL) is to be ordered separately.
6. Exclusive Stop Block is required.
7. „CP" indicates compression
8. max. 2000 min-1

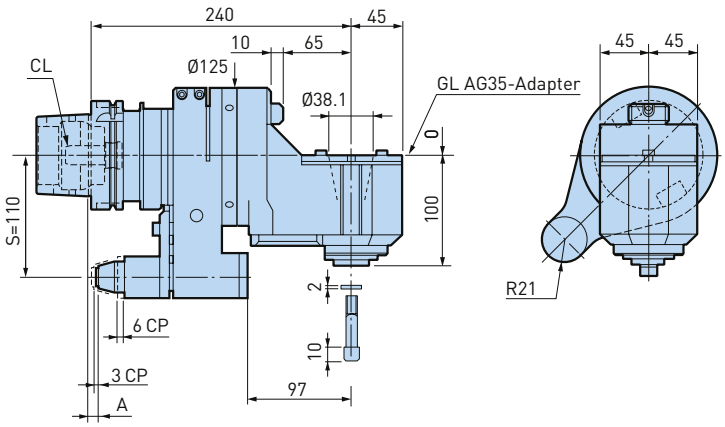
Accessories & Spare Parts

Semi-Finished Stop Blocks	Collet for Angle Head
	
▶ 377	▶ 366

Build-Up Type

Designed for greater rigidity by having the face of the spindle bore in line with the center of the machine spindle. Also helps minimize interference problems with the ATC and storage problems within the magazine.





Model	Order No.	max. min-1	Connection tool side
HSK-A100-AG90/AGH35-240	**802.639**	3000	AGH35
HSK-A100-AG90/AGH35-240S	**802.640**	3000	AGH35

1. Models with "S" at the end are high rigidity type.
2. The standard length A is 6 mm.
3. Order No. is with S = 110. S = 80 type is available upon request.
4. Coolant can be supplied through the locating pin.
5. Coolant pipe (CL) is to be ordered separately.
6. Exclusive Stop Block is required.
7. „CP" indicates compression

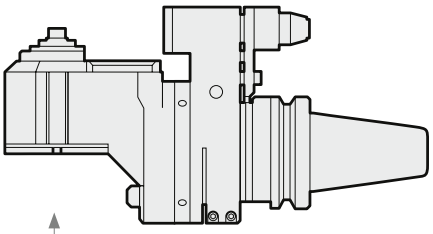
Accessories & Spare Parts

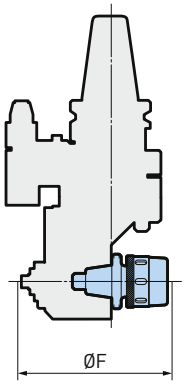
Semi-Finished Stop Blocks

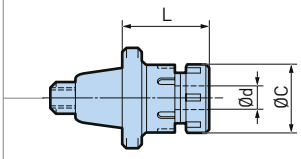


► 377

AG35 adapters



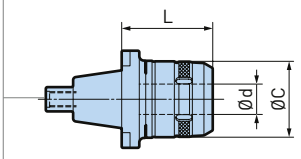




AG35 adapters New Baby Chuck

Model	Order No.	Ød	L	ØC	ØF	Collet Model
AG35-NBS10	**962.793**	1.5 - 10	47	30	162	NBC10
AG35-NBS13	**962.794**	2.5 - 13	54	35	168	NBC13
AG35-NBS16	**962.795**	2.5 - 16	54	42	170	NBC16
AG35-NBS20	**962.796**	2.5 - 20	54	46	170	NBC20

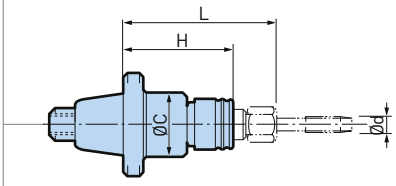
1. New baby collet and wrench are to be ordered separately.



AG35 adapters New Hi-Power Milling Chuck

Model	Order No.	Ød	L	ØC	ØF	Head
AG35-HMC20S	**802.742**	20	60	50	178	AG35

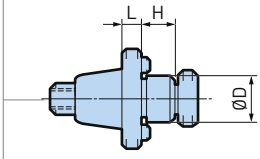
1. Wrench (FK45-50L) is included.



AG35 adapters Auto Tapper Type B (automatic depth control)

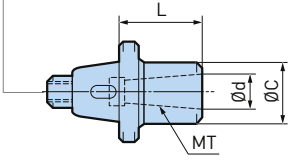
Model	Order No.	Ød	ØC	L	H	Head
AG35-ATB12E	**802.435**	M4 - M12	40.5	80	72	AG35
AG35-ATB20E	**802.436**	M8 - M20	57.5	115	102.5	AG35

1. Please contact BIG KAISER agent for tap collet.



AG35 adapters Face Mill Arbor

Model	Order No.	ØD	L	H	Head
AG35-FMH22-30	**802.740**	22	30	18	AG35
AG35-FMH27-20	**802.741**	27	20	20	AG35



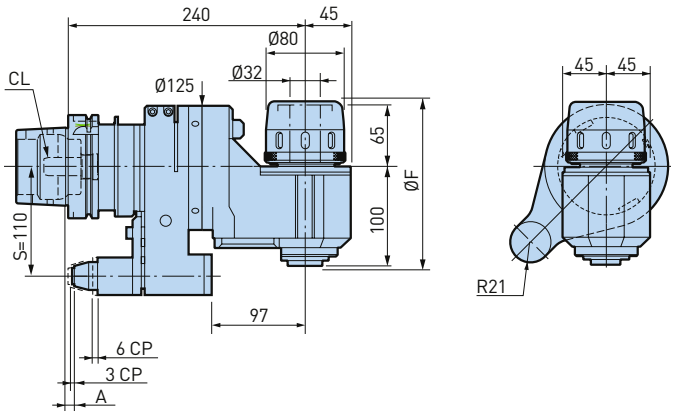
AG35 adapters Morse Taper Adapter

Model	Order No.	Ød	MT No.	L	ØC	ØF	Head
AG35-MT1	**962.785**	12.065	1	50	24	164	AG35
AG35-MT2	**962.786**	17.78	2	60	32	180	AG35

HMC Type

Improved versatility is achieved from the 32 mm capacity Milling Chuck by using parallel reduction collets and other accessories.





Model	Order No.	max. min-1
HSK-A100-AG90/HMC32-240	**802.642**	3000
HSK-A100-AG90/HMC32-240S	**802.643**	3000

1. Exclusive Stop Block is required.
2. The standard length A is 6 mm.
3. Order No. is with S = 110. S = 80 type is available upon request.
4. Wrench (FK80-90) is included.
5. Coolant can be supplied through the locating pin.
6. Coolant pipe (CL) is to be ordered separately.
7. „CP" indicates compression
8. „ØF" indicates the minimum dimension for access into the bore

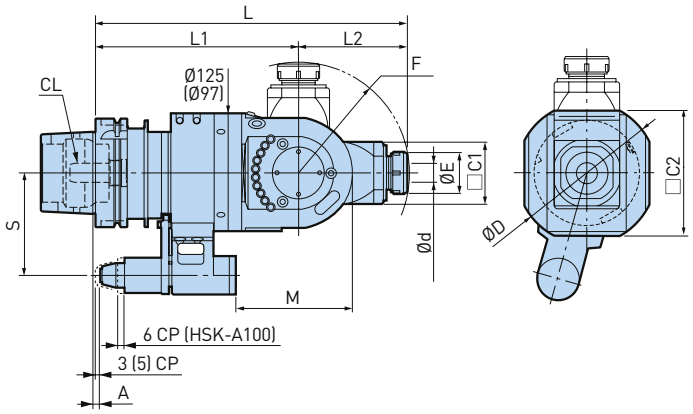
Accessories & Spare Parts

C Collets	Semi-Finished Stop Blocks
	
► 349	► 377

Universal Type

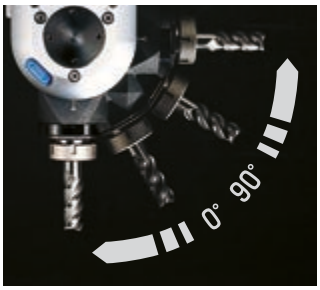
Suitable for cutting angles between 0°and 90°. In addition to that the cutter head can be rotated a full 360°, increasing flexibility!





Model	Order No.	Ød	ØD	ØE	L	L1	L2	C1	C2	M	F	S	max. min-1	Collet Model
HSK-A63-AGU/NBS13-285	**802.734**	2.5 - 13	115	35	285	185	100	51	97	124	102	65	6000	NBC13
HSK-A100-AGU/NBS20-325	**802.695**	2.5 - 20	140	46	325	210	115	65	125	125	118	110	4000	NBC20

1. Exclusive Stop Block is required.
2. Order No. for HSK-A100 is with S = 110. S = 80 type for HSK-A100 is available upon request.
3. Standard fixed length A is 6 mm for HSK-A100 and 8 mm for HSK-A63. Other lengths are available upon request.
4. Figures in ( ) in the drawing indicate dimensions for HSK-A63.
5. Nut and wrench are included.
6. Coolant can be supplied through the locating pin.
7. Coolant pipe (CL) is to be ordered separately.
8. „CP" indicates compression



Easily adjustable spindle angle from 0° to 90°.



Unique setting mechanism enables the spindle angle to be precisely set at 1° increments.



Specially selected materials and special design for clamping the head guarantees rigidity for even end milling applications.

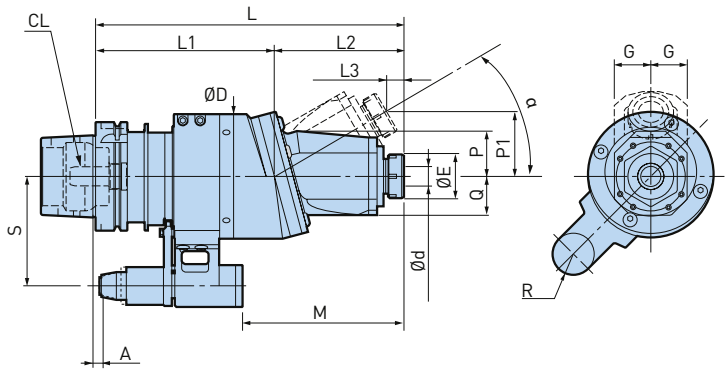
Accessories & Spare Parts

New Baby Collets	Semi-Finished Stop Blocks
	
► 329	► 377

AGU30 Type

Spindle angle is adjustable from 0° to 30°. Large swivel flange assures high rigidity.



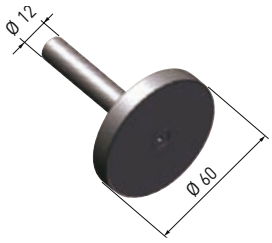


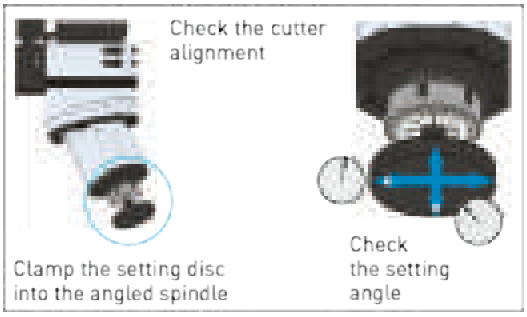
Model	Order No.	Ød	ØD	ØE	L	L1	L2	L3	G	Q	P	P1 max.	R	S	max. min-1	Collet Model
HSK-A63-AGU30/NBS13-255	**802.735**	2.5 - 13	97	35	255	150	105	14	29	30	34	52.5	18	65	6000	NBC13
HSK-A100-AGU30/NBS20-305	**802.696**	2.5 - 20	125	46	305	175	130	17	36.5	39	45	65	21	110	4000	NBC20

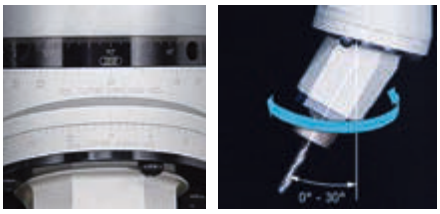
1. Exclusive Stop Block is required.
2. Order No. for HSK-A100 is with S = 110. S = 80 type for HSK-A100 is available upon request.
3. Standard fixed length A is 6 mm for HSK-A100 and 8 mm for HSK-A63. Other lengths are available upon request.
4. New baby nut, wrench and setting disc are included.
5. Coolant can be supplied through the locating pin.
6. Coolant pipe (CL) is to be ordered separately.

Setting Disc (included accessory)

For precise adjustment of the spindle angle or direction.







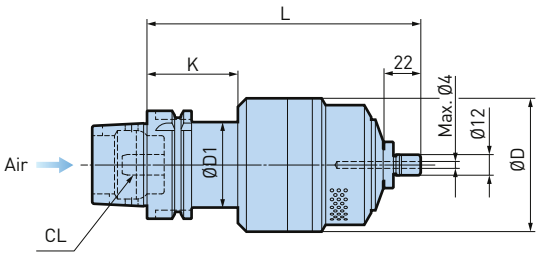
Spindle angle is easily adjustable from 0° to 30° using the scale indication on the body.

Accessories & Spare Parts

New Baby Collets	Semi-Finished Stop Blocks
	
▶ 329	▶ 377

Air Turbine Spindle Center Through Type





Model	Order No.	Operation Speed (min-1)	ØD	ØD1	L	K	Nut Model
HSK-A63-RBX5C-4S-160	**965.506**	40000 - 50000	96	50	160	53	MGN4S
HSK-A63-RBX7C-4S-160	**965.505**	60000 - 80000	78	50	160	53	MGN4S
HSK-A100-RBX5C-4S-165	**802.427**	40000 - 50000	96	68	165	58	MGN4S
HSK-A100-RBX7C-4S-165	**802.430**	60000 - 80000	78	68	165	58	MGN4S

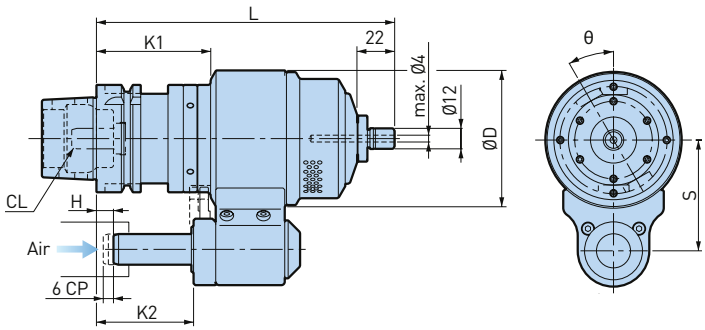
1. Nut and wrench are included.
2. Collet (NBC4S-_) and XF1 (air unit) are to be ordered separately.
3. Coolant pipe (CL) is to be ordered separately.
4. Dry and clean air is an essential condition for the use of this product. Therefore, coolant should never be supplied through the spindle of the machine using the Air Turbine Spindle.

Accessories & Spare Parts

MEGA Nuts	Micro Collets	MEGA Wrenches	Air Filter Regulator for RBX
			
▶ 326	▶ 325	▶ 351	▶ 366

Air Turbine Spindle





Model	Order No.	Operation Speed (min-1)	ØD	L	K1	K2	S	H	Nut Model
HSK-A63-RBX5-4S-175-65	**802.431**	40000 - 50000	96	175	67	57	65	0 - 45	MGN4S
HSK-A63-RBX7-4S-175-65	**802.433**	60000 - 80000	80	175	67	57	65	0 - 45	MGN4S
HSK-A100-RBX5-4S-180-80	**802.425**	40000 - 50000	100	180	72	62	80	5 - 50	MGN4S
HSK-A100-RBX7-4S-180-80	**802.428**	60000 - 80000	100	180	72	62	80	5 - 50	MGN4S

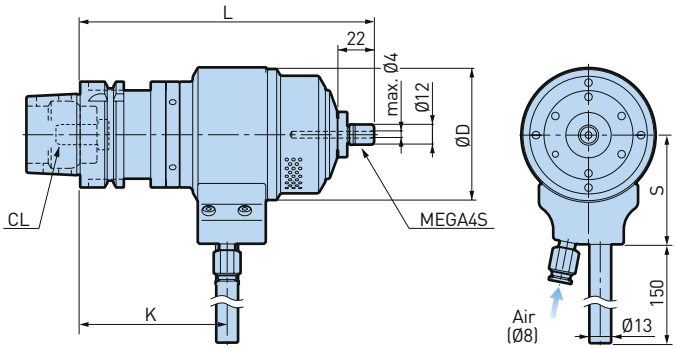
1. Exclusive Stop Block is required.
2. Nut and wrench are included.
3. Collet (NBC4S-_) and XF1 (air unit) are to be ordered separately.
4. Coolant pipe (CL) is to be ordered separately.
5. Dry and clean air is an essential condition for the use of this product. Therefore, coolant should never be supplied through the spindle of the machine using the Air Turbine Spindle.
6. „CP“ indicates compression
7. θ: Drive grooves adjustable 0 - 360°.

Accessories & Spare Parts

MEGA Nuts	Micro Collets	MEGA Wrenches	Semi-Finished Stop Blocks	Air Filter Regulator for RBX
				
▶ 326	▶ 325	▶ 351	▶ 377	▶ 366

Air Turbine Spindle Manual Type





Model	Order No.	Operation Speed (min-1)	ØD	L	K	S	Nut Model
HSK-A63-RBX5-4S-175H	**802.432**	40000 - 50000	96	175	87	65	MGN4S
HSK-A63-RBX7-4S-175H	**802.434**	60000 - 80000	80	175	87	65	MGN4S
HSK-A100-RBX5-4S-180H	**802.426**	40000 - 50000	100	180	92	80	MGN4S
HSK-A100-RBX7-4S-180H	**802.429**	60000 - 80000	100	180	92	80	MGN4S

1. Nut and wrench are included.
2. Collet (NBC4S-_) and XF1 (air unit) are to be ordered separately.
3. Dry and clean air is an essential condition for the use of this product. Therefore, coolant should never be supplied through the spindle of the machine using the Air Turbine Spindle.
4. Coolant pipe (CL) is to be ordered separately.

Accessories & Spare Parts

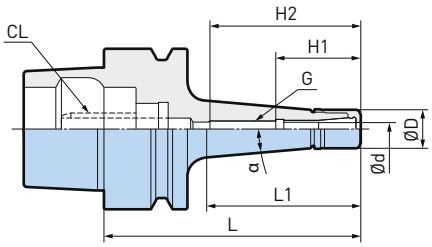
MEGA Nuts	Micro Collets	MEGA Wrenches	Air Filter Regulator for RBX
			
▶ 326	▶ 325	▶ 351	▶ 366

MEGA Micro Chuck Type T

Tapered and slim design, minimal interference combined with maximized rigidity.

Coolant Through Hole





A.3

ø0.45 - 8.05mm

Model	Order No.	Ød	ØD	L	L1	H1	H2	G	α	max. min-1	Collet Model
HSK-E25-MEGA3S-45T *	**968.870**	0.45 - 3.25	10	45	32	22	32	-	5°	50000	NBC3S
HSK-E25-MEGA3S-60T	**968.871**	0.45 - 3.25	10	60	48	22	38	M4 P0.7	5°	40000	NBC3S
HSK-E25-MEGA4S-45T *	**968.872**	0,45 - 4,05	12	45	33	26.5	32	-	5°	50000	NBC4S
HSK-E25-MEGA4S-60T	**968.873**	0,45 - 4,05	12	60	49	26.5	41	M5 P0.8	5°	40000	NBC4S
HSK-E25-MEGA6S-45T *	**968.874** •	0.45 - 6.05	14	45	33	28.5	31	-	5°	50000	NBC6S
HSK-E25-MEGA6S-60T	**968.875**	0.45 - 6.05	14	60	49	28.5	40	M7 P0.75	5°	40000	NBC6S
HSK-E32-MEGA3S-60T	**968.917**	0.45 - 3.25	10	60	35	22	38	M4 P0.7	5°	40000	NBC3S
HSK-E32-MEGA3S-75T	**968.918**	0,45 - 3,25	10	75	50	22	38	M4 P0.7	5°	40000	NBC3S
HSK-E32-MEGA4S-45T *	**968.880**	0.45 - 4.05	12	45	23	26.5	26	-	5°	50000	NBC4S
HSK-E32-MEGA4S-60T	**968.881**	0.45 - 4.05	12	60	35	26.5	46	M5 P0.8	5°	40000	NBC4S
HSK-E32-MEGA6S-45T *	**968.882** •	0.45 - 6.05	14	45	23	28.5	28	-	5°	50000	NBC6S
HSK-E32-MEGA6S-60T	**968.883** •	0.45 - 6.05	14	60	36	28.5	38	M7 P0.75	5°	30000	NBC6S
HSK-E32-MEGA8S-60T *	**803.604**	2.95 - 8.05	18	60	38	31	43	-	5°	40000	NBC8S
HSK-E40-MEGA3S-60T	**968.919**	0.45 - 3.25	10	60	35	22	39	M4 P0.7	5°	40000	NBC3S
HSK-E40-MEGA3S-75T	**968.920**	0.45 - 3.25	10	75	50	22	38	M4 P0.7	5°	40000	NBC3S
HSK-E40-MEGA4S-60T	**968.890**	0.45 - 4.05	12	60	35	26.5	44	M5 P0.8	5°	40000	NBC4S
HSK-E40-MEGA4S-75T	**968.891**	0.45 - 4.05	12	75	50	26.5	47	M5 P0.8	5°	40000	NBC4S
HSK-E40-MEGA6S-60T *	**968.892** •	0.45 - 6.05	14	60	35	28.5	42	-	5°	40000	NBC6S
HSK-E40-MEGA6S-75T	**968.893** •	0.45 - 6.05	14	75	50	28.5	49	M7 P0.75	5°	40000	NBC6S
HSK-E40-MEGA6S-90T	**968.894**	0.45 - 6.05	14	90	65	28.5	49	M7 P0.75	5°	40000	NBC6S
HSK-E50-MEGA3S-80T	**968.921**	0,45 - 3,25	10	80	49	22	38	M4 P0.7	5°	40000	NBC3S
HSK-E50-MEGA4S-80T	**968.906**	0,45 - 4,05	12	80	48	26,5	47	M5 P0.8	5°	40000	NBC4S
HSK-E50-MEGA6S-80T	**968.907**	0.45 - 6.05	14	80	49	28.5	49	M7 P0.75	5°	40000	NBC6S
HSK-E50-MEGA6S-120T	**806.636**	0.45 - 6.05	14	120	89	28.5	49	M7 P0.75	5°	35000	NBC6S

1. MEGA nut is included in delivery.
2. * Internal thread (G) is not available.
3. Coolant pipe (CL) is to be ordered separately.

Accessories & Spare Parts

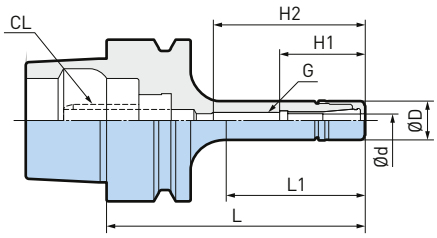
MEGA Nuts	Micro Seal Nuts	Micro Collets	MEGA Wrenches	Taper Cleaners	Collet Protective Cases	Coolant Pipes
						
▶ 326	▶ 326	▶ 325	▶ 351	▶ 370	▶ 326	▶ 228

MEGA Micro Chuck Type S

Micro diameter design is ideal for high speed applications in tight areas.

Coolant Through Hole





ø0.45 - 6.05mm

Model	Order No.	Ød	ØD	L	L1	H1	H2	G	max. min-1	Collet Model
HSK-E25-MEGA4S-45 *	**968.866**	0,45 - 4,05	12	45	31	26,5	32	-	50000	NBC4S
HSK-E25-MEGA4S-60	**968.867**	0,45 - 4,05	12	60	46	26,5	42	M5 P0.8	40000	NBC4S
HSK-E25-MEGA6S-45 *	**968.868**	0.45 - 6.05	14	45	32	28	31	-	50000	NBC6S
HSK-E25-MEGA6S-60	**968.869**	0.45 - 6.05	14	60	47	28.5	41	M7 P0.75	40000	NBC6S
HSK-E32-MEGA3S-45 *	**968.914**	0.45 - 3.25	10	45	23	22	31	-	50000	NBC3S
HSK-E32-MEGA4S-45	**968.876**	0.45 - 4.05	12	45	22	26.5	31	M5 P0.8	50000	NBC4S
HSK-E32-MEGA4S-60	**968.877**	0.45 - 4.05	12	60	34	26.5	46	M5 P0.8	40000	NBC4S
HSK-E32-MEGA6S-45 *	**968.878**	0.45 - 6.05	14	45	22	28.5	28	-	50000	NBC6S
HSK-E32-MEGA6S-60	**968.879** •	0.45 - 6.05	14	60	35	28.5	38	M7 P0.75	40000	NBC6S
HSK-E40-MEGA3S-40 *	**968.915**	0.45 - 3.25	10	40	19	22	24	-	50000	NBC3S
HSK-E40-MEGA4S-60	**968.756**	0,45 - 4,05	12	60	34	26,5	44	M5 P0.8	40000	NBC4S
HSK-E40-MEGA6S-45 *	**968.716** •	0.45 - 6.05	14	45	23	27.5	27	-	50000	NBC6S
HSK-E40-MEGA6S-60 *	**968.757**	0.45 - 6.05	14	60	35	28.5	42	-	40000	NBC6S
HSK-E50-MEGA3S-50	**968.916**	0,45 - 3,25	10	50	20	22	30	-	45000	NBC3S
HSK-E50-MEGA4S-50	**968.725**	0,45 - 4,05	12	50	21	26,5	30	-	45000	NBC4S
HSK-E50-MEGA4S-80	**968.759**	0,45 - 4,05	12	80	44	26,5	47	M5 P0.8	40000	NBC4S
HSK-E50-MEGA6S-55 *	**978.100**	0.45 - 6.05	14	55	26	28.5	35	-	45000	NBC6S
HSK-E50-MEGA6S-80	**968.760**	0.45 - 6.05	14	80	44	28.5	49	M7 P0.75	40000	NBC6S

1. MEGA nut is included in delivery.
2. * Internal thread (G) is not available.
3. Coolant pipe (CL) is to be ordered separately.

Accessories & Spare Parts

MEGA Nuts	Micro Seal Nuts	Micro Collets	MEGA Wrenches	Taper Cleaners	Collet Protective Cases	Coolant Pipes
						
▶ 326	▶ 326	▶ 325	▶ 351	▶ 370	▶ 326	▶ 228

MEGA New Baby Chuck

Ideal ultra precision collet holders for high speed machining. Wide range of lengths and a variety of collet series covers all machining applications.

Coolant Through Hole



A.3

ø0.25 - 20mm

Model	Order No.	Fig.	Ød	ØD	L	L1	H	max. min-1	Collet Model
HSK-E25-MEGA6N-40 *	**968.752**	1	0.25 - 6	20	40	29	25	30000	NBC6
HSK-E25-MEGA8N-45 *	**968.753** •	2	0.5 - 8	25	45	-	30	25000	NBC8
HSK-E25-MEGA10N-60 **	**968.754**	2	1.5 - 10	30	60	-	45	20000	NBC10
HSK-E32-MEGA6N-45 *	**968.884**	1	0.25 - 6	20	45	24	28	40000	NBC6
HSK-E32-MEGA6N-60	**968.885**	1	0.25 - 6	20	60	37	23 - 27	35000	NBC6
HSK-E32-MEGA8N-50 *	**968.886**	1	0.5 - 8	25	50	29	33	40000	NBC8
HSK-E32-MEGA8N-65	**968.887**	1	0,5 - 8	25	65	44	26 - 32	35000	NBC8
HSK-E32-MEGA10N-65 *	**968.888**	2	1.5 - 10	30	65	-	47	30000	NBC10
HSK-E32-MEGA13N-70 *	**968.889**	2	2.5 - 13	35	70	-	44	25000	NBC13
HSK-E40-MEGA6N-50 *	**968.717**	1	0.25 - 6	20	50	26	31	40000	NBC6
HSK-E40-MEGA6N-60	**968.895**	1	0.25 - 6	20	60	34	23 - 26	35000	NBC6
HSK-E40-MEGA6N-75	**968.718**	1	0.25 - 6	20	75	49	23 - 41	30000	NBC6
HSK-E40-MEGA6N-90	**968.896**	1	0.25 - 6	20	90	64	23 - 43	28000	NBC6
HSK-E40-MEGA6N-120	**968.897** •	1	0.25 - 6	20	120	94	23 - 43	25000	NBC6
HSK-E40-MEGA8N-55 *	**968.719**	1	0.5 - 8	25	55	31	36	40000	NBC8
HSK-E40-MEGA8N-75	**968.720**	1	0.5 - 8	25	75	51	26 - 41	30000	NBC8
HSK-E40-MEGA8N-90	**968.898**	1	0,5 - 8	25	90	66	26 - 45	28000	NBC 8
HSK-E40-MEGA10N-60 *	**968.721** •	1	1.5 - 10	30	60	37	40	35000	NBC10
HSK-E40-MEGA10N-75 *	**968.899**	1	1.5 - 10	30	75	52	55	30000	NBC10
HSK-E40-MEGA10N-90	**968.722**	1	1.5 - 10	30	90	67	38 - 48	28000	NBC10
HSK-E40-MEGA13N-65 *	**968.900**	1	2.5 - 13	35	65	44	44	30000	NBC13
HSK-E40-MEGA13N-75	**968.723**	1	2.5 - 13	35	75	54	55	25000	NBC13
HSK-E40-MEGA13N-90	**968.901**	1	2.5 - 13	35	90	69	44 - 48	25000	NBC13
HSK-E40-MEGA13N-120	**968.902**	1	2,5 - 13	35	120	99	44 - 63	20000	NBC13
HSK-E40-MEGA13N-150	**968.903**	1	2,5 - 13	35	150	129	44 - 63	15000	NBC13
HSK-E40-MEGA16N-65	**968.904**	1	2,5 - 16	42	65	-	46	25000	NBC16
HSK-E40-MEGA16N-75 *	**968.905**	2	2.5 - 16	42	75	-	48	20000	NBC16

Fig. 1

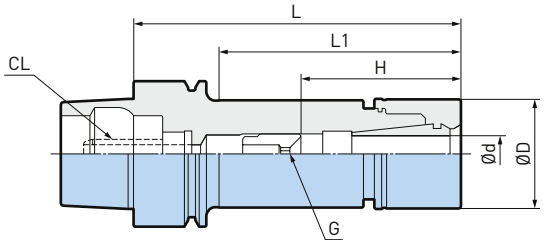
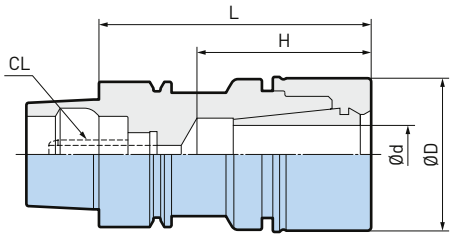


Fig. 2



Model	Order No.	Fig.	Ød	ØD	L	L1	H	max. min-1	Collet Model
HSK-E50-MEGA6N-55 *	**968.727**	1	0,25 - 6	20	55	27	35	40000	NBC6
HSK-E50-MEGA6N-70	**968.728**	1	0.25 - 6	20	70	38	23 - 39	30000	NBC6
HSK-E50-MEGA6N-100	**968.761**	1	0,25 - 6	20	100	64	23 - 43	25000	NBC6
HSK-E50-MEGA8N-60 *	**968.729**	1	0.5 - 8	25	60	30	37	40000	NBC8
HSK-E50-MEGA8N-90	**968.730** •	1	0.5 - 8	25	90	56	26 - 45	30000	NBC8
HSK-E50-MEGA10N-60 **	**968.731**	1	1.5 - 10	30	60	30	35	35000	NBC10
HSK-E50-MEGA10N-90	**968.732**	1	1,5 - 10	30	90	58	38 - 48	30000	NBC10
HSK-E50-MEGA13N-70 *	**968.733** •	1	2.5 - 13	35	70	40	45	28000	NBC13
HSK-E50-MEGA13N-90	**968.734**	1	2.5 - 13	35	90	60	44 - 47	25000	NBC13
HSK-E50-MEGA13N-120	**968.763**	1	2,5 - 13	35	120	90	44 - 63	20000	NBC13
HSK-E50-MEGA13N-150	**968.910**	1	2.5 - 13	35	150	120	44 - 63	15000	NBC13
HSK-E50-MEGA16N-75 *	**968.735**	1	2,5 - 16	42	75	48	52	28000	NBC16
HSK-E50-MEGA16N-90 *	**968.736**	1	2.5 - 16	42	90	63	65	25000	NBC16
HSK-E50-MEGA20N-75 **	**968.764**	1	2.5 - 20	46	75	-	49	25000	NBC20
HSK-E50-MEGA20N-100	**968.911**	1	2.5 - 20	46	100	-	51 - 54	20000	NBC20
HSK-E50-MEGA20N-130	**968.912**	1	2,5 - 20	46	130	-	51 - 68	18000	NBC20

1. MEGA nut is included in delivery.
2. Coolant pipe (CL) is to be ordered separately.
3. * Adjusting screw cannot be used.
4. ** NBC-E collet and adjusting screw can not be used.
5. "G" is the adjusting screw (optional).
6. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

Standard Type	MEGA Perfect Seals	New Baby Collets	MEGA Wrenches	Adjusting Screws NBA	Taper Cleaners	Coolant Pipes
						
▶ 334	▶ 336	▶ 329	▶ 351	▶ 335	▶ 370	▶ 228

Hydraulic Chuck Super Slim

Ultra precise hydraulic chuck with extremely slim design.



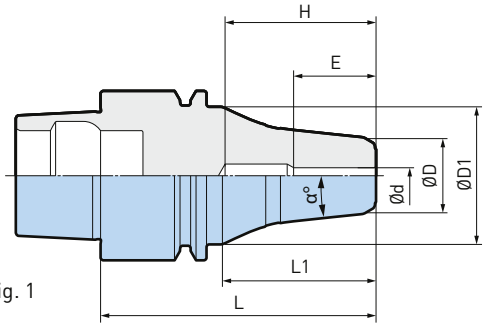


Fig. 1

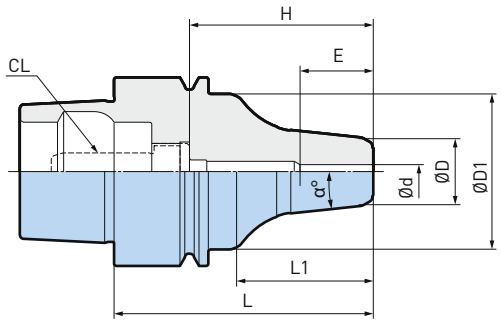


Fig. 2

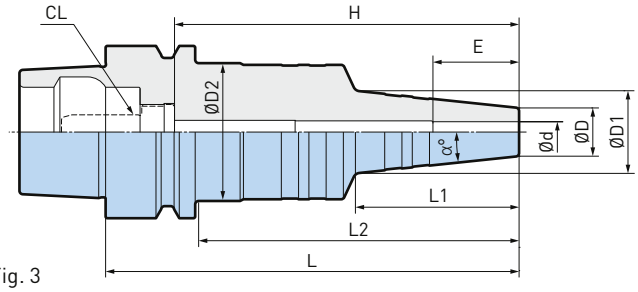


Fig. 3

ø3 - 12mm

Model	Order No.	Fig.	Ød	ØD	ØD1	ØD2	L	L1	L2	E	α	max. min-1
HSK-E25-HDC3S-40	**806.430**	1	3	14	20	-	40	27	-	16	6°	60000
HSK-E25-HDC4S-40	**806.431**	1	4	14	20	-	40	27	-	16	6°	60000
HSK-E25-HDC6S-45	**806.734**	1	6	14	23	-	45	31	-	16	8°	60000
HSK-E32-HDC3S-52	**805.471**	1	3	14	26	-	52	29	-	16	6°	45000
HSK-E32-HDC4S-52	**805.472**	1	4	14	26	-	52	29	-	19	6°	45000
HSK-E32-HDC6S-57	**805.473**	1	6	14	26	-	57	34	-	25	6°	45000
HSK-E40-HDC3S-55	**805.474**	2	3	14	33	-	55	29	-	16	6°	40000
HSK-E40-HDC4S-55	**805.475**	2	4	14	33	-	55	29	-	19	6°	40000
HSK-E40-HDC6S-60	**805.476**	2	6	14	33	-	60	34	-	25	6°	40000
HSK-E40-HDC8S-65	**807.252**	2	8	17	33	-	65	39	-	31	6°	35000
HSK-E40-HDC10S-70	**807.168**	2	10	19	33	-	70	40	-	33	6°	35000
HSK-E40-HDC12S-70	**807.253**	2	12	21	33	-	70	40	-	36	6°	35000
HSK-E50-HDC4S-120	**807.115**	3	4	14	24	40	120	47	93	19	6°	30000
HSK-E50-HDC6S-120	**807.088**	3	6	14	24	40	120	47	93	25	6°	30000
HSK-E50-HDC8S-120	**807.089**	3	8	17	28	40	120	48	93	31	6°	30000
HSK-E50-HDC10S-120	**807.090**	3	10	19	30	40	120	48	93	33	6°	30000
HSK-E50-HDC12S-120	**807.091**	3	12	21	32	40	120	49	93	36	6°	30000

1. Adjusting screw cannot be used.
2. "E" is the min. clamping length.
3. "H" is the max. tool shank length that can be inserted for these models.
4. Center through coolant is available for HSK-E40 and HSK-E50.

Caution

- Use only cutting tools that have a shank tolerance within h6.
- Roughing endmills are not recommended for use with hydraulic chucks.
- Do not use with cutting tools made with a flat on the shank. (ie: Weldon type shank)
- Do not tighten the clamping screw without first inserting a cutting tool into the hydraulic chuck.
- Always insert the cutting tool into the hydraulic chuck beyond min. clamping length E.

Accessories & Spare Parts

Wiper Cleaners	Coolant Pipes
	
▶ 370	▶ 228

Hydraulic Chuck Ultra Precision Type

The most accurate hydraulic chuck made is based on decades of experience and know-how.
Guaranteed runout of less than 1µm in 4D.

1µm ULTRA PRECISION



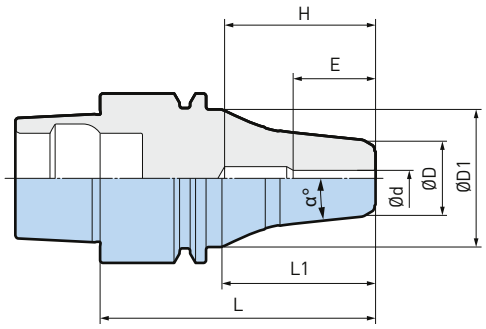


Fig. 1

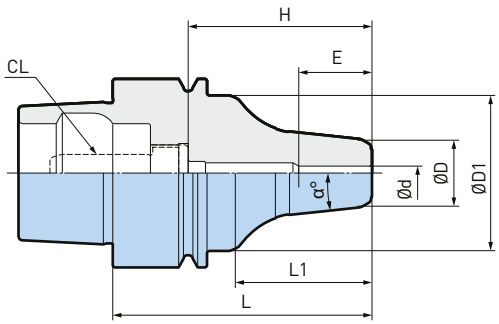


Fig. 2

ø3 - 6mm

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	α	E	H	max. min-1
HSK-E25-HDC3S-40UP	**806.907**	1	3	14	20	40	27	6°	16	22	60000
HSK-E25-HDC4S-40UP	**806.908**	1	4	14	20	40	27	6°	16	21	60000
HSK-E25-HDC6S-45UP	**807.120**	1	6	14	23	45	31	8°	21	26	60000
HSK-E32-HDC3S-52UP	**806.909**	1	3	14	26	52	29	6°	16	28	45000
HSK-E32-HDC4S-52UP	**806.910**	1	4	14	26	52	29	6°	19	28	45000
HSK-E32-HDC6S-57UP	**806.911**	1	6	14	26	57	34	6°	25	33	45000
HSK-E40-HDC3S-55UP	**807.123**	2	3	14	33	55	29	6°	16	39	40000
HSK-E40-HDC4S-55UP	**807.125**	2	4	14	33	55	29	6°	19	39	40000
HSK-E40-HDC6S-60UP	**807.126**	2	6	14	33	60	34	6°	25	40	40000

1. Coolant pipe (CL) is to be ordered separately.
2. Adjusting screw cannot be used.
3. "E" is the min. clamping length.
4. "H" is the max. tool shank length that can be inserted for these models.
5. Center through coolant is available for HSK-E40 and HSK-E50.

Caution

- Use only cutting tools that have a shank tolerance within h6.
- Roughing endmills are not recommended for use with hydraulic chucks.
- Do not use with cutting tools made with a flat on the shank. (ie: Weldon type shank)
- Do not tighten the clamping screw without first inserting a cutting tool into the hydraulic chuck.
- Always insert the cutting tool into the hydraulic chuck beyond min. clamping length E.

Accessories & Spare Parts

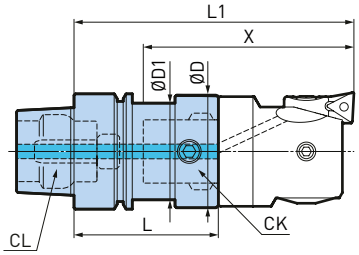
Wiper Cleaners	Coolant Pipes
	
▶ 370	▶ 228

CK Shanks with Center Through Hole

Symmetrical version for high speed machine spindles.

Coolant Through Hole





A.3

CK1 - CK5

Model	Order No.	CK	ØD	ØD1	L	L1	X
HSK-E25-CKB1-22 **	**328.249F**	CKB1	19	19	22	55	40
HSK-E25-CKB2-30 *	**328.281F**	CKB2	24	24	30	66	50
HSK-E32-CKB1-40	**328.257F**	CKB1	19	19	40	73	50
HSK-E32-CKB2-33	**328.280F**	CKB2	24	24	33	69	43
HSK-E32-CKB3-48	**328.151F**	CKB3	31	25.8	48	88	68
HSK-E32-CKB4-68	**328.218F**	CKB4	39	26	68	115	90
HSK-E40-CKB1-32	**324.111F**	CKB1	19	19	31.5	64	40
HSK-E40-CKB2-35	**324.121F**	CKB2	24	24	35	71	45
HSK-E40-CKB3-40	**324.131F**	CKB3	31	31	40	80	55
HSK-E40-CKB4-50	**324.141F**	CKB4	39	33	50	97	72
HSK-E50-CKB3-44	**324.231F**	CKB3	31	31	44	84	53
HSK-E50-CKB4-48	**324.241F**	CKB4	39	39	48	95	64
HSK-E50-CKB5-61	**324.251F**	CKB5	50	41	61	118	87

1. X and L1 dimensions on the table are reference figures when EWN/EWE head is mounted.
2. * ØD1 does not comply with the HSK standard.
3. ** Center through coolant is not available.
4. All shanks are precision balanced (± 2 gmm).
5. Coolant pipe (CL) is to be ordered separately.

Accessories & Spare Parts

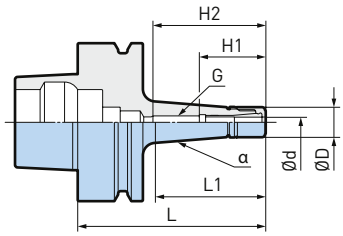
Coolant Pipes	Fine Boring Heads
	
► 228	► 396-399

MEGA Micro Chuck Type T

Tapered and slim design, minimal interference combined with maximized rigidity.

Coolant Through Hole





ø0.45 - 8.05mm

Model	Order No.	Ød	ØD	L	L1	H1	H2	G	α	max. min-1	Collet Model
HSK-F63-MEGA4S-75T	**803.588**	0,45 - 4,05	12	75	44	26,5	41	M5 P0.8	5°	32000	NBC4S
HSK-F63-MEGA6S-75T	**803.589**	0.45 - 6.05	14	75	44	28.5	41	M7 P0.75	5°	32000	NBC6S
HSK-F63-MEGA8S-75T	**805.576**	2.95 - 8.05	18	75	44	31	58	M9 P0.75	5°	32000	NBC8S

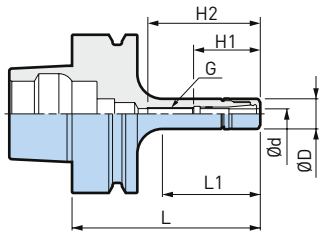
1. MEGA nut is included in delivery.
2. Coolant pipe (CL) is to be ordered separately.

MEGA Micro Chuck Type S

Slim design for tight spaces.

Coolant Through Hole





ø0.45 - 6.05mm

Model	Order No.	Ød	ØD	L	L1	H1	H2	G	max. min-1	Collet Model
HSK-F63-MEGA4S-75	**803.586**	0,45 - 4,05	12	75	39	26,5	41	M5 P0.8	30000	NBC4S
HSK-F63-MEGA4S-105	**803.590**	0,45 - 4,05	12	105	76	26,5	47	M5 P0.8	25000	NBC4S
HSK-F63-MEGA6S-75	**803.587**	0,45 - 6,05	14	75	46	28,5	41	M7 P0.75	30000	NBC6S
HSK-F63-MEGA6S-90	**803.592**	0.45 - 6.05	14	90	61	28.5	49	M7 P0.75	27000	NBC6S
HSK-F63-MEGA6S-105	**803.591**	0.45 - 6.05	14	105	76	28.5	49	M7 P0.75	25000	NBC6S

1. MEGA nut is included in delivery.
2. Coolant pipe (CL) is to be ordered separately.

Accessories & Spare Parts

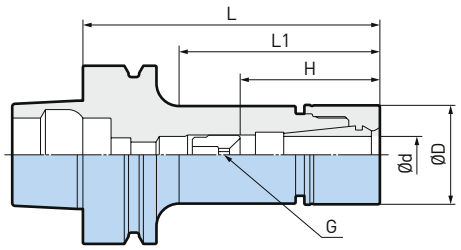
MEGA Nuts	Micro Seal Nuts	Micro Collets	MEGA Wrenches	Taper Cleaners	Collet Protective Cases	Coolant Pipes
						
▶ 326	▶ 326	▶ 325	▶ 351	▶ 370	▶ 326	▶ 228

MEGA New Baby Chuck

Ideal ultra precision collet holders for high speed machining. Wide range of lengths and a variety of collet series covers all machining applications.

Coolant Through Hole





A.3

ø0.25 - 20mm

Model	Order No.	Ød	ØD	L	L1	H	max. min-1	Collet Model
HSK-F63-MEGA6N-75	**978.195**	0,25 - 6	20	75	42	23 - 31	35000	NBC6
HSK-F63-MEGA6N-90	**801.287**	0.25 - 6	20	90	53	23 - 43	30000	NBC6
HSK-F63-MEGA6N-105	**801.286**	0,25 - 6	20	105	69	23 - 43	25000	NBC6
HSK-F63-MEGA6N-135	**801.677**	0.25 - 6	20	135	99	23 - 43	20000	NBC6
HSK-F63-MEGA8N-75	**801.668**	0,5 - 8	25	75	43	26 - 38	32000	NBC8
HSK-F63-MEGA8N-90	**978.199**	0.5 - 8	25	90	54	26 - 45	30000	NBC8
HSK-F63-MEGA8N-105	**801.288**	0,5 - 8	25	105	69	26 - 45	28000	NBC8
HSK-F63-MEGA8N-120	**804.962**	0.5 - 8	25	120	84	26 - 45	25000	NBC8
HSK-F63-MEGA8N-165	**803.631**	0,5 - 8	25	165	129	26 - 45	15000	NBC8
HSK-F63-MEGA10N-75 *	**978.189**	1,5 - 10	30	75	43	48	32000	NBC10
HSK-F63-MEGA10N-90	**978.146**	1.5 - 10	30	90	54	38 - 48	30000	NBC10
HSK-F63-MEGA10N-105	**801.282**	1,5 - 10	30	105	69	38 - 48	25000	NBC10
HSK-F63-MEGA10N-120	**978.152**	1.5 - 10	30	120	84	38 - 48	25000	NBC10
HSK-F63-MEGA13N-75 *	**978.190**	2.5 - 13	35	75	43	47	30000	NBC13
HSK-F63-MEGA13N-90 *	**978.215**	2.5 - 13	35	90	56	61	30000	NBC13
HSK-F63-MEGA13N-105	**801.283**	2.5 - 13	35	105	71	44 - 53	25000	NBC13
HSK-F63-MEGA13N-120	**801.284**	2,5 - 13	35	120	86	44 - 63	20000	NBC13
HSK-F63-MEGA13N-165	**801.285**	2,5 - 13	35	165	131	44 - 63	15000	NBC13
HSK-F63-MEGA16N-75 *	**978.102**	2.5 - 16	42	75	43	48	30000	NBC16
HSK-F63-MEGA16N-90 *	**978.151**	2.5 - 16	42	90	58	61	25000	NBC16
HSK-F63-MEGA16N-105	**978.123**	2,5 - 16	42	105	73	48 - 56	20000	NBC16
HSK-F63-MEGA20N-75 *	**978.047**	2.5 - 20	46	75	45	51	30000	NBC20
HSK-F63-MEGA20N-90 *	**978.147**	2.5 - 20	46	90	60	61	25000	NBC20
HSK-F63-MEGA20N-105	**978.124**	2.5 - 20	46	105	75	51 - 58	20000	NBC20

1. MEGA nut is included in delivery.
2. * Adjusting screws can not be used. "H" is the max. tool shank length that can be inserted for these models.
3. Coolant pipe (CL) is to be ordered separately.
4. "G" is the adjusting screw (optional).
5. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

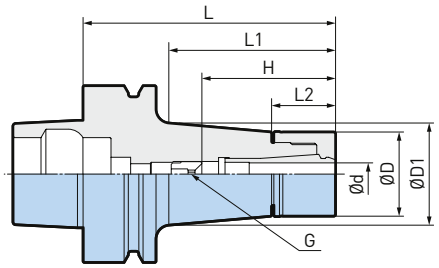
Standard Type	MEGA Perfect Seals	New Baby Collets	MEGA Wrenches	Adjusting Screws NBA	Taper Cleaners	Coolant Pipes
						
▶ 334	▶ 336	▶ 329	▶ 351	▶ 335	▶ 370	▶ 228

MEGA E Chuck

Collet chuck designed exclusively for endmilling with high concentricity and rigidity.

Coolant Through Hole





ø3 - 12mm

Model	Order No.	Ød	ØD	ØD1	L	L1	L2	H	max. min-1	Collet Model
HSK-F63-MEGA6E-65 *	**803.214**	3 - 6	25	28.5	65	34	21	39	30000	MEC6
HSK-F63-MEGA6E-90	**803.215**	3 - 6	25	31.5	90	58	21	37 - 45	30000	MEC6
HSK-F63-MEGA8E-65 *	**803.218**	3 - 8	30	33	65	34	22.5	41	30000	MEC8
HSK-F63-MEGA8E-90	**802.338**	3 - 8	30	36.5	90	59	22,5	42 - 47	30000	MEC8
HSK-F63-MEGA10E-75 *	**803.207**	3 - 10	35	38.5	75	44	23	48	30000	MEC10
HSK-F63-MEGA10E-90 *	**803.208**	3 - 10	35	41.5	90	59	23	67	30000	MEC10
HSK-F63-MEGA10E-105	**803.209**	3 - 10	35	44	105	75	23	48 - 58	29000	MEC10
HSK-F63-MEGA10E-120	**803.213**	3 - 10	35	47	120	91	23	48 - 58	29000	MEC10
HSK-F63-MEGA10E-135	**803.217**	3 - 10	35	49	135	107	23	48 - 58	27000	MEC10
HSK-F63-MEGA13E-75 *	**803.210**	3 - 12	42	46	75	47	25	50	30000	MEC13
HSK-F63-MEGA13E-90 *	**803.211**	3 - 12	42	48.5	90	62	25	64	30000	MEC13
HSK-F63-MEGA13E-105	**803.212**	3 - 12	42	51	105	78	25	50 - 58	29000	MEC13
HSK-F63-MEGA13E-135	**803.216**	3 - 12	42	52	135	108	25	50 - 60	26000	MEC13

1. MEGA E nut is included.
2. * Adjusting screws can not be used. "H" is the max. tool shank length that can be inserted for these models.
3. Coolant pipe (CL) is to be ordered separately.
4. "G" is the adjusting screw (optional).
5. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

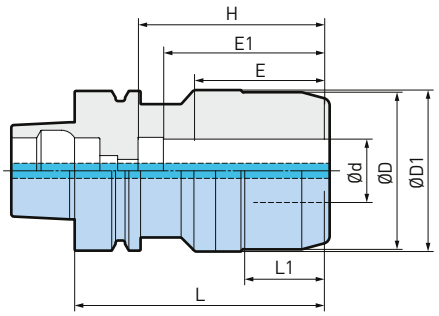
MEGA E Nuts	MEGA E Perfect Seals	MEGA E Collets	MEGA Wrenches	Adjusting Screws NBA	Taper Cleaners	Coolant Pipes
						
▶ 340	▶ 341	▶ 340	▶ 351	▶ 335	▶ 370	▶ 228

MEGA Double Power Chuck Type D

Close to integral rigidity and precision of a solid tool holder. Flange contacting nut assures highest rigidity.
Type D for use with/without coolant-through the tool.

Coolant Through Hole





ø3 - 32mm

Model	Order No.	Ød	ØD	ØD1	L	L1	H	E	E1	max. min-1
HSK-F63-MEGA16D-80A	**803.092**	16	42	52.6	80	25	55	48	50	28000
HSK-F63-MEGA20D-90A	**803.093**	20	50	55	90	34	65	50	56	28000
HSK-F63-MEGA25D-100A	**803.103**	25	62	62.7	100	39	75	56	57	25000
HSK-F63-MEGA32D-105A	**803.082**	32	70	70.7	105	33.5	80	60	64	24000

1. Wrench and coolant pipe (CL) is to be ordered separately.
2. "E" is the min. clamping length.
3. "E1" is the min. clamping length for optimum use with center through coolant.
4. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

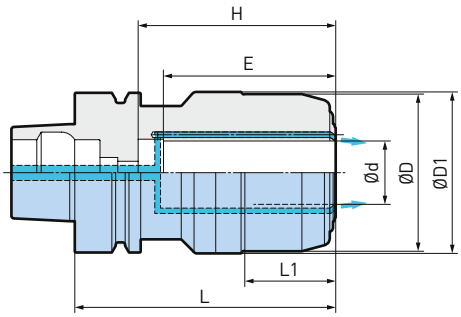
PJC Collets	OCA Collets	PSC Collets	C Collets	MEGA Wrenches	Coolant Pipes
					
▶ 347	▶ 348	▶ 348	▶ 349	▶ 351	▶ 228

MEGA Double Power Chuck Type DS

Close to integral rigidity and precision of a solid tool holder. Flange contacting nut assures highest rigidity. Unique coolant supply design ensures efficient coolant supply to the cutting tool periphery.

Coolant Through Hole







ø3 - 32mm

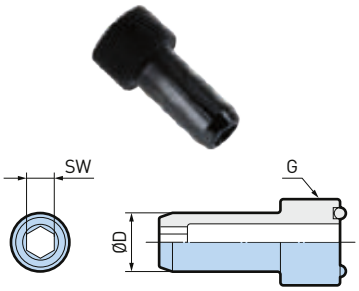
Model	Order No.	Ød	ØD	ØD1	L	L1	H	E	max. min-1
HSK-F63-MEGA16DS-80A	**803.095**	16	42	52.6	82	27	57	50	28000
HSK-F63-MEGA20DS-90A	**803.096**	20	50	55	92	36	67	56	28000
HSK-F63-MEGA25DS-100A	**803.104**	25	62	62.7	102	41	77	57	25000
HSK-F63-MEGA32DS-105A	**803.083**	32	70	70.7	107	35.5	82	64	24000

1. Wrench and coolant pipe (CL) is to be ordered separately.
2. "H" is the max. tool shank length that can be inserted for these models.
3. "E" is the min. clamping length.

Accessories & Spare Parts

PJC Collets	PSC Collets	OCA Collets	C Collets	MEGA Wrenches	Coolant Pipes
					
▶ 347	▶ 348	▶ 348	▶ 349	▶ 351	▶ 228

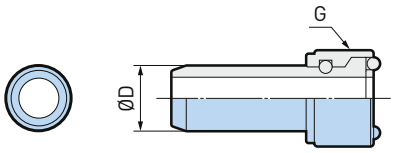
Coolant Pipes



Model	Order No.	ØD	G	SW
HSK25-CP	**978.921**	5	M8 P1	2.5
HSK32-CP	**978.909**	6	M10 P1	3
HSK40-CP	**978.913**	8	M12 P1	4
HSK50-CP	**801.071**	10	M16 P1	5
HSK63-CP	**969.475**	12	M18 P1	6
HSK80-CP	**802.828**	14	M20 P1.5	8
HSK100-CP	**802.351**	16	M24 P1.5	8
HSK125-CP	**805.684**	18	M30 P1.5	10

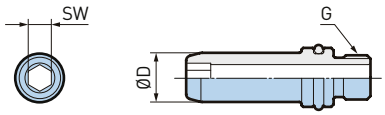
A.3

Coolant Pipes 1° swing type (DIN) for Form A/E



Model	Order No.	ØD	G	Wrench
HSK40-CPM	**978.907**	8	M12 P1	CPW-40
HSK50-CPM	**801.690**	10	M16 P1	CPW-50
HSK63-CPM	**978.910**	12	M18 P1	CPW-63
HSK80-CPM	**802.827**	14	M20 P1.5	CPW-80
HSK100-CPM	**802.314**	16	M24 P1.5	CPW-100
HSK125-CPM	**806.594**	18	M30 P1.5	CPW-125

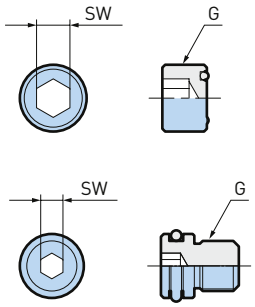
Coolant Pipes Coolant Pipe Form F



Model	Order No.	ØD	G	SW
HSKF63-CP	**801.280**	10	M9 P0.75	5

1. This model can be used for BIG KAISER Original Tool Holder only.

HSK Plug Screw



Model	Order No.	G	SW
HSK25-PG	**807.215**	M8 P1	4
HSK32-PG	**807.216**	M10 P1	5
HSK40-PG	**807.189**	M12 P1	6

1. In case our HSK tool holders are used in the machine which do not recommend the center through coolant, the plug screw should be mounted to our tools.

Model	Order No.	G	SW
HSK-F63-PG	**807.190**	M9 P0.75	4

1. In case our HSK tool holders are used in the machine which do not recommend the center through coolant, the plug screw should be mounted to our tools.
2. HSK-F63-PG can only be used in original BIG KAISER HSK-F63 tool holders, not compatible with other manufacturers.

Clamping Wrench



Model	Order No.
CPW-40	**802.825**
CPW-50	**802.315**
CPW-63	**978.911**
CPW-80	**802.824**
CPW-100	**802.316**

Caution
For machines capable of supplying coolant through spindle, the coolant pipe should be fitted to all HSK holders to protect against accidental selection of coolant.

Tool Holders BIG CAPTO, ISO 26623

MEGA Micro Chuck	230
MEGA New Baby Chuck	232
MEGA E Chuck	235
MEGA Double Power Chuck	237
New Hi-Power Milling Chuck	239
Hydraulic Chucks	240
Shrink Chucks	242
CK Shanks	243
Face Mill Arbors FMH	244
Side Lock Holders	245
Side Cutter Arbors / Morse Taper Holders	247
MEGA Synchro Tapping Holder	248
Extensions / Reductions	249
BBT / BIG CAPTO Basic Holders	249

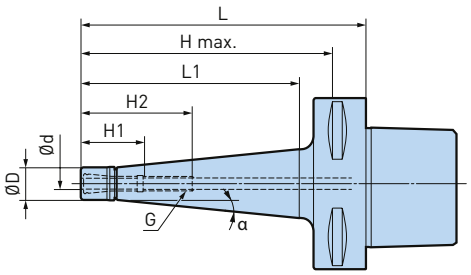
● Preferred selected items

MEGA Micro Chuck Type T

Tapered and slim design, minimal interference combined with maximized rigidity.

Coolant Through Hole





A.4

ø0.45 - 6.05mm

Model	Order No.	Ød	ØD	L	L1	H1	H2	H max.	G	α	Collet Model
C3-MEGA6S-45T	**807.667**	0.45 - 6.05	14	45	27	28		39	-	5°	NBC6S
C4-MEGA3S-60T	**973.954**	0.45 - 3.25	10	60	35	22	38	54	M4 P0.7	5°	NBC3S
C4-MEGA6S-60T	**973.955**	0.45 - 6.05	14	60	35	28	47	54	M7 P0.75	5°	NBC6S
C4-MEGA6S-90T	**805.194**	0.45 - 6.05	14	90	65	28	49	84	M7 P0.75	5°	NBC6S
C5-MEGA3S-105T	**973.201**	0,45 - 3,25	10	105	79	22,5	38.5	98	M4 P0.7	5°	NBC3S
C5-MEGA4S-105T	**973.202**	0,45 - 4,05	12	105	79	26,5	47	98	M5 P0.8	5°	NBC4S
C5-MEGA4S-120T	**800.743**	0,45 - 4,05	12	120	94	26,5	47	113	M5 P0.8	5°	NBC4S
C5-MEGA6S-105T	**973.203**	0.45 - 6.05	14	105	79	28.5	49	98	M7 P0.75	5°	NBC6S
C5-MEGA6S-120T	**800.746**	0.45 - 6.05	14	120	94	28.5	49	113	M7 P0.75	5°	NBC6S
C6-MEGA3S-120T	**973.204**	0.45 - 3.25	10	120	92	22.5	38.5	111	M4 P0.7	5°	NBC3S
C6-MEGA4S-120T	**973.205**	0.45 - 4.05	12	120	92	26.5	47	111	M5 P0.8	5°	NBC4S
C6-MEGA4S-135T	**800.557**	0.45 - 4.05	12	135	107	26.5	47	126	M5 P0.9	5°	NBC4S
C6-MEGA6S-120T	**973.206** •	0.45 - 6.05	14	120	92	28.5	49	111	M7 P0.75	5°	NBC6S
C6-MEGA6S-135T	**978.134** •	0.45 - 6.05	14	135	107	28.5	49	126	M7 P0.75	5°	NBC6S

1. MEGA nut is included in delivery.

Accessories & Spare Parts

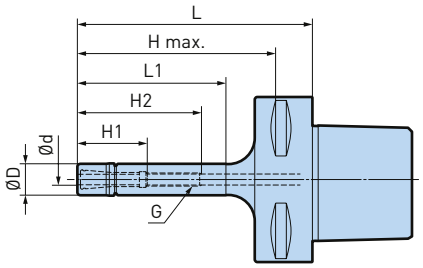
MEGA Nuts	Micro Seal Nuts	Micro Collets	MEGA Wrenches	Taper Cleaners	Collet Protective Cases
					
▶ 326	▶ 326	▶ 325	▶ 351	▶ 370	▶ 326

MEGA Micro Chuck Type S

Micro diameter design is ideal for high speed applications in tight areas.

Coolant Through Hole





A.4

ø0.45 - 6.05mm

Model	Order No.	Ød	ØD	L	L1	H1	H2	H max.	G	Collet Model
C5-MEGA3S-75	**973.207**	0,45 - 3,25	10	75	49	22,5	38	68	M4 P0.7	NBC3S
C5-MEGA4S-75	**973.208**	0.45 - 4.05	12	75	50	26.5	47	68	M5 P0.8	NBC4S
C5-MEGA6S-75	**973.209**	0.45 - 6.05	14	75	50	28.5	49	68	M7 P0.75	NBC6S
C6-MEGA3S-90	**973.210**	0.45 - 3.25	10	90	50	22.5	38	81	M4 P0.7	NBC3S
C6-MEGA4S-90	**973.211**	0.45 - 4.05	12	90	58	26.5	47	81	M5 P0.8	NBC4S
C6-MEGA6S-90	**973.212**	0.45 - 6.05	14	90	58	28.5	49	81	M7 P0.75	NBC6S

1. MEGA nut is included in delivery.

Accessories & Spare Parts

MEGA Nuts	Micro Seal Nuts	Micro Collets	MEGA Wrenches	Taper Cleaners	Collet Protective Cases
					
▶ 326	▶ 326	▶ 325	▶ 351	▶ 370	▶ 326

MEGA New Baby Chuck

Ideal ultra precision collet holders for high speed machining. Wide range of lengths and a variety of collet series covers all machining applications.

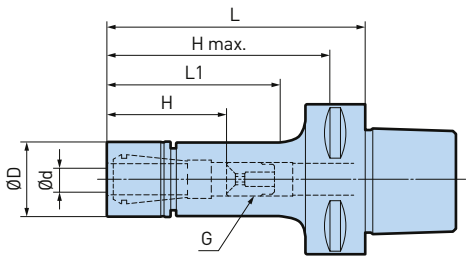
Coolant Through Hole



A.4

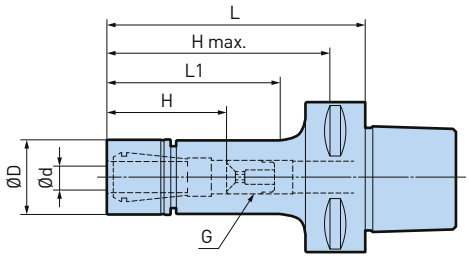
ø0.25 - 20mm

Model	Order No.	Ød	ØD	L	L1	H	H max.	Collet Model
C3-MEGA6N-45 *	**806.312**	0.25 - 6	20	45	28	23	23	NBC6
C3-MEGA8N-45 *	**807.669**	0.5 - 8	25	45	28	26	26	NBC8
C3-MEGA10N-50 *	**806.313**	1.5 - 10	30	50	34	38	38	NBC10
C3-MEGA13N-50 *	**807.671**	2.5 - 13	35	50	35	44	44	NBC13
C3-MEGA16N-55 *	**806.463**	2.5 - 16	42	55	-	49	49	NBC16
C4-MEGA6N-75	**978.196**	0.25 - 6	20	75	48	23 - 43	69	NBC6
C4-MEGA8N-75	**978.201**	0.5 - 8	25	75	49	26 - 45	69	NBC8
C4-MEGA10N-50 *	**978.334**	1,5 - 10	30	50	28	44	44	NBC10
C4-MEGA10N-75	**978.202**	1.5 - 10	30	75	52	38 - 48	69	NBC10
C4-MEGA13N-50 *	**978.335**	2,5 - 13	35	50	29	44	44	NBC13
C4-MEGA13N-75 *	**978.197**	2.5 - 13	35	75	54	64	64	NBC13
C4-MEGA16N-55 *	**978.203**	2.5 - 16	42	55	-	48	48	NBC16
C4-MEGA20N-60 *	**978.204**	2.5 - 20	46	60	-	53	53	NBC20
C5-MEGA6N-60	**973.213**	0.25 - 6	20	60	34	23 - 36	53	NBC6-
C5-MEGA6N-75	**973.214**	0.25 - 6	20	75	49	23 - 43	68	NBC6-
C5-MEGA6N-90	**973.215**	0.25 - 6	20	90	62	23 - 43	83	NBC6-
C5-MEGA6N-105	**973.216**	0,25 - 6	20	105	77	23 - 43	98	NBC6
C5-MEGA6N-120	**973.217**	0,25 - 6	20	120	90	23 - 43	113	NBC6
C5-MEGA8N-60	**973.218**	0.5 - 8	25	60	33	26 - 36	53	NBC8
C5-MEGA8N-75	**973.219**	0.5 - 8	25	75	49	26 - 45	68	NBC8
C5-MEGA8N-90	**973.220** •	0.5 - 8	25	90	64	26 - 45	83	NBC8
C5-MEGA8N-105	**973.221**	0,5 - 8	25	105	77	26 - 45	98	NBC8
C5-MEGA8N-120	**973.222**	0,5 - 8	25	120	92	26 - 45	113	NBC8
C5-MEGA10N-55 *	**973.223**	1.5 - 10	30	55	31	48	48	NBC10
C5-MEGA10N-75	**973.224**	1.5 - 10	30	75	49	38 - 48	68	NBC10
C5-MEGA10N-90	**973.225** •	1.5 - 10	30	90	64	38 - 48	83	NBC10
C5-MEGA10N-105	**973.226**	1,5 - 10	30	105	79	38 - 48	98	NBC10
C5-MEGA10N-120	**973.227**	1,5 - 10	30	120	92	38 - 48	113	NBC10
C5-MEGA13N-55 *	**973.229**	2.5 - 13	35	55	31	48	48	NBC13
C5-MEGA13N-75	**973.230**	2.5 - 13	35	75	49	44 - 48	68	NBC13
C5-MEGA13N-90	**973.231**	2.5 - 13	35	90	64	44 - 63	83	NBC13
C5-MEGA13N-105	**973.232**	2,5 - 13	35	105	79	44 - 63	98	NBC13
C5-MEGA13N-120	**973.233**	2,5 - 13	35	120	94	44 - 63	113	NBC13
C5-MEGA16N-60 *	**973.235**	2.5 - 16	42	60	38	53	53	NBC16
C5-MEGA16N-75 *	**973.236**	2.5 - 16	42	75	53	68 - 68	68	NBC16
C5-MEGA16N-90	**973.237**	2.5 - 16	42	90	69	48 - 63	83	NBC16
C5-MEGA16N-105	**973.238**	2,5 - 16	42	105	84	48 - 68	98	NBC16
C5-MEGA16N-120	**973.239**	2,5 - 16	42	120	99	48 - 68	111	NBC16
C5-MEGA20N-60 *	**973.241**	2.5 - 20	46	60	39	51	51	NBC20
C5-MEGA20N-75 *	**973.242**	2.5 - 20	46	75	54	66	66	NBC20
C5-MEGA20N-90	**973.243**	2.5 - 20	46	90	69	51 - 60	83	NBC20
C5-MEGA20N-105	**973.244**	2,5 - 20	46	105	84	51 - 68	98	NBC20
C5-MEGA20N-120	**973.245**	2,5 - 20	46	120	99	51 - 68	111	NBC20



Model	Order No.	Ød	ØD	L	L1	H	H max.	Collet Model
C6-MEGA6N-60	**973.247**	0.25 - 6	20	60	30	23 - 33	51	NBC6
C6-MEGA6N-75	**973.248**	0.25 - 6	20	75	43	23 - 43	66	NBC6
C6-MEGA6N-90	**973.249** •	0.25 - 6	20	90	58	23 - 43	81	NBC6
C6-MEGA6N-105	**973.250**	0.25 - 6	20	105	73	23 - 43	96	NBC6
C6-MEGA6N-120	**973.251**	0.25 - 6	20	120	88	23 - 43	111	NBC6
C6-MEGA6N-135	**973.252**	0.25 - 6	20	135	103	23 - 43	126	NBC6
C6-MEGA6N-165	**973.253**	0.25 - 6	20	165	128	23 - 43	156	NBC6
C6-MEGA6N-200	**800.858**	0,25 - 6	20	200	163	23 - 43	191	NBC6
C6-MEGA8N-60	**973.254**	0.5 - 8	25	60	29	26 - 31	51	NBC8
C6-MEGA8N-75	**973.255**	0.5 - 8	25	75	43	26 - 45	66	NBC8
C6-MEGA8N-90	**973.256**	0.5 - 8	25	90	58	26 - 45	81	NBC8
C6-MEGA8N-105	**973.257**	0.5 - 8	25	105	73	26 - 45	96	NBC8
C6-MEGA8N-120	**973.258**	0.5 - 8	25	120	88	26 - 45	111	NBC8
C6-MEGA8N-135	**973.259**	0.5 - 8	25	135	103	26 - 45	126	NBC8
C6-MEGA8N-165	**973.260**	0.5 - 8	25	165	133	26 - 45	156	NBC8
C6-MEGA8N-200	**800.860**	0,5 - 8	25	200	163	26 - 45	191	NBC8
C6-MEGA10N-60 *	**973.261**	1.5 - 10	30	60	32	51 - 51	51	NBC10
C6-MEGA10N-75	**973.262**	1.5 - 10	30	75	43	38 - 45	66	NBC10
C6-MEGA10N-90	**973.263** •	1.5 - 10	30	90	58	38 - 48	81	NBC10
C6-MEGA10N-105	**973.264**	1.5 - 10	30	105	73	38 - 48	96	NBC10
C6-MEGA10N-120	**973.265**	1.5 - 10	30	120	88	38 - 48	111	NBC10
C6-MEGA10N-135	**973.266**	1.5 - 10	30	135	103	38 - 48	126	NBC10
C6-MEGA10N-165	**973.267**	1.5 - 10	30	165	133	38 - 48	156	NBC10
C6-MEGA10N-200	**973.268**	1,5 - 10	30	200	168	38 - 48	191	NBC10
C6-MEGA13N-60 *	**973.269**	2.5 - 13	35	60	32	51 - 51	51	NBC13
C6-MEGA13N-75 *	**973.270**	2.5 - 13	35	75	45	66 - 66	66	NBC13
C6-MEGA13N-90	**973.271** •	2.5 - 13	35	90	60	44 - 55	81	NBC13
C6-MEGA13N-105	**973.272**	2.5 - 13	35	105	73	44 - 63	96	NBC13
C6-MEGA13N-120	**973.273**	2.5 - 13	35	120	90	44 - 63	111	NBC13
C6-MEGA13N-135	**973.274**	2.5 - 13	35	135	103	44 - 63	126	NBC13
C6-MEGA13N-165	**973.275**	2.5 - 13	35	165	133	44 - 63	156	NBC13
C6-MEGA13N-200	**973.276**	2,5 - 13	35	200	168	44 - 63	191	NBC13
C6-MEGA16N-65 *	**973.277**	2.5 - 16	42	65	37	56 - 56	56	NBC16
C6-MEGA16N-75 *	**973.278**	2.5 - 16	42	75	47	66 - 66	66	NBC16
C6-MEGA16N-90	**973.279**	2.5 - 16	42	90	60	48 - 57	81	NBC16
C6-MEGA16N-105	**973.280**	2.5 - 16	42	105	75	48 - 68	96	NBC16
C6-MEGA16N-120	**973.281**	2.5 - 16	42	120	90	48 - 68	111	NBC16
C6-MEGA16N-135	**973.282**	2.5 - 16	42	135	105	48 - 68	126	NBC16
C6-MEGA16N-165	**973.283**	2.5 - 16	42	165	135	48 - 68	156	NBC16
C6-MEGA16N-200	**973.284**	2,5 - 16	42	200	170	48 - 68	191	NBC16
C6-MEGA20N-65 *	**973.285**	2.5 - 20	46	65	37	51 - 51	51	NBC20
C6-MEGA20N-75 *	**973.286**	2.5 - 20	46	75	47	65 - 65	65	NBC20
C6-MEGA20N-90	**973.287** •	2.5 - 20	46	90	62	51 - 56	76	NBC20
C6-MEGA20N-105	**973.288** •	2.5 - 20	46	105	77	51 - 68	91	NBC20
C6-MEGA20N-120	**973.289**	2.5 - 20	46	120	92	51 - 68	104	NBC20
C6-MEGA20N-135	**973.290**	2.5 - 20	46	135	107	51 - 68	111	NBC20
C6-MEGA20N-165	**973.291**	2.5 - 20	46	165	137	51 - 68	111	NBC20
C6-MEGA20N-200	**973.292**	2.5 - 20	46	200	172	51 - 68	111	NBC20

continues on the next page



A.4

Model	Order No.	Ød	ØD	L	L1	H	H max.	Collet Model
C8-MEGA6N-90	**973.293**	0.25 - 6	20	90	45	23 - 43	90	NBC6
C8-MEGA6N-120	**973.295**	0.25 - 6	20	120	75	23 - 43	120	NBC6
C8-MEGA6N-165	**973.297**	0.25 - 6	20	165	120	23 - 43	165	NBC6
C8-MEGA8N-90	**973.298**	0.5 - 8	25	90	46	26 - 45	90	NBC8
C8-MEGA8N-120	**973.300**	0.5 - 8	25	120	75	26 - 45	120	NBC8
C8-MEGA8N-165	**973.302**	0.5 - 8	25	165	120	26 - 45	165	NBC8
C8-MEGA10N-90	**973.304** •	1.5 - 10	30	90	45	38 - 48	90	NBC10
C8-MEGA10N-120	**973.306**	1.5 - 10	30	120	75	38 - 48	120	NBC10
C8-MEGA10N-165	**973.308**	1.5 - 10	30	165	120	38 - 48	165	NBC10
C8-MEGA13N-90	**973.311** •	2.5 - 13	35	90	50	44 - 63	90	NBC13
C8-MEGA13N-120	**973.313**	2.5 - 13	35	120	80	44 - 63	120	NBC13
C8-MEGA13N-165	**973.315**	2.5 - 13	35	165	120	44 - 63	165	NBC13
C8-MEGA13N-200	**973.316**	2.5 - 13	35	200	155	44 - 63	200	NBC13
C8-MEGA16N-90	**973.318**	2.5 - 16	42	90	50	48 - 66	90	NBC16
C8-MEGA16N-120	**973.320**	2.5 - 16	42	120	80	48 - 68	120	NBC16
C8-MEGA16N-165	**973.322**	2.5 - 16	42	165	125	48 - 68	165	NBC16
C8-MEGA20N-90	**973.325** •	2.5 - 20	46	90	50	51 - 68	83	NBC20
C8-MEGA20N-120	**973.327** •	2.5 - 20	46	120	80	51 - 68	113	NBC20
C8-MEGA20N-165	**973.329**	2.5 - 20	46	165	125	51 - 68	113	NBC20
C8-MEGA20N-200	**973.330**	2.5 - 20	46	200	160	51 - 68	113	NBC20

1. MEGA nut is included in delivery.
2. * Adjusting screw cannot be used.
3. "G" is the adjusting screw (optional).
4. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

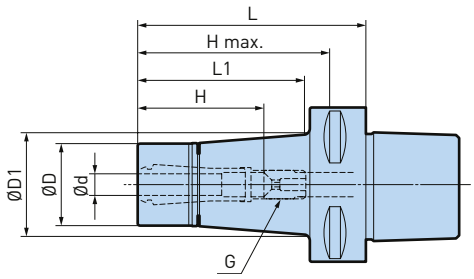
Standard Type	MEGA Perfect Seals	New Baby Collets	MEGA Wrenches	Adjusting Screws NBA	Taper Cleaners
					
▶ 334	▶ 336	▶ 329	▶ 351	▶ 335	▶ 370

MEGA E Chuck

Collet chuck designed exclusively for endmilling with high concentricity and rigidity.

Coolant Through Hole



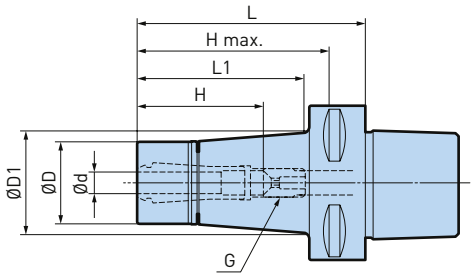


A.4

ø3 - 12mm

Model	Order No.	Ød	ØD	ØD1	L	L1	H	H max.	Collet Model
C4-MEGA6E-50 *	800.683	3 - 6	25	26	50	25	44	44	MEC6
C4-MEGA8E-50 *	800.685	3 - 8	30	31	50	28	44	44	MEC8
C4-MEGA10E-55 *	800.676	3 - 10	35	37	55	34	49	49	MEC10
C4-MEGA13E-60 *	800.678	3 - 12	42	-	60	-	50	50	MEC13
C5-MEGA6E-55 *	973.331	3 - 6	25	26.5	55	29	48	48	MEC6
C5-MEGA6E-90	973.333	3 - 6	25	32.5	90	64	37 - 45	83	MEC6
C5-MEGA6E-105	973.334	3 - 6	25	35.5	105	81	37 - 45	98	MEC6
C5-MEGA6E-120	973.335	3 - 6	25	38	120	97	37 - 45	113	MEC6
C5-MEGA8E-55 *	973.336	3 - 8	30	31.5	55	31	48	48	MEC8
C5-MEGA8E-90	973.338	3 - 8	30	37.5	90	67	42 - 51	83	MEC8
C5-MEGA8E-105	973.339	3 - 8	30	40.5	105	82	42 - 51	98	MEC8
C5-MEGA8E-120	973.340	3 - 8	30	43	120	98	42 - 51	113	MEC8
C5-MEGA10E-60 *	973.341	3 - 10	35	37.5	60	37	53	53	MEC10
C5-MEGA10E-90	973.343	3 - 10	35	43	90	69	48 - 50	83	MEC10
C5-MEGA10E-105	973.344	3 - 10	35	45.5	105	84	48 - 58	98	MEC10
C5-MEGA10E-120	973.345	3 - 10	35	45.5	120	99	48 - 58	113	MEC10
C5-MEGA13E-60 *	973.347	3 - 12	42	44.4	60	39	50	50	MEC13
C5-MEGA13E-75 *	973.348	3 - 12	42	44.8	75	54	68	68	MEC13
C5-MEGA13E-90	973.349	3 - 12	42	44.8	90	69	50 - 60	83	MEC13
C5-MEGA13E-105	973.350	3 - 12	42	46	105	84	50 - 60	98	MEC13
C5-MEGA13E-120	973.351	3 - 12	42	46	120	99	50 - 60	113	MEC13
C6-MEGA6E-60 *	973.353	3 - 6	25	28	60	33	51	51	MEC6
C6-MEGA6E-75	973.354	3 - 6	25	29.5	75	48	37 - 45	66	MEC6
C6-MEGA6E-90	973.355	3 - 6	25	32.1	90	63	37 - 45	81	MEC6
C6-MEGA6E-105	973.356	3 - 6	25	34.7	105	78	37 - 45	96	MEC6
C6-MEGA6E-120	973.357 •	3 - 6	25	37.3	120	93	37 - 45	111	MEC6
C6-MEGA6E-135	973.358	3 - 6	25	40	135	108	37 - 45	126	MEC6
C6-MEGA6E-165	973.359	3 - 6	25	45,5	165	138	37 - 45	156	MEC6
C6-MEGA8E-60 *	973.360	3 - 8	30	33	60	33	51	51	MEC8
C6-MEGA8E-75	973.361	3 - 8	30	34.2	75	48	42 - 46	66	MEC8
C6-MEGA8E-90	973.362	3 - 8	30	36.7	90	63	42 - 51	81	MEC8
C6-MEGA8E-105	973.363	3 - 8	30	39.5	105	78	42 - 51	96	MEC8
C6-MEGA8E-120	973.364	3 - 8	30	42.1	120	93	42 - 51	111	MEC8
C6-MEGA8E-135	973.365	3 - 8	30	45	135	108	42 - 51	126	MEC8
C6-MEGA8E-165	973.366	3 - 8	30	50.5	165	140	42 - 51	156	MEC8
C6-MEGA10E-65 *	973.367	3 - 10	35	38.5	65	38	56	56	MEC10
C6-MEGA10E-75 *	973.368	3 - 10	35	39.1	75	48	66	66	MEC10
C6-MEGA10E-90	973.369	3 - 10	35	41.6	90	63	48 - 58	81	MEC10
C6-MEGA10E-105	973.370	3 - 10	35	44.4	105	78	48 - 58	96	MEC10
C6-MEGA10E-120	973.371	3 - 10	35	47	120	93	48 - 58	111	MEC10
C6-MEGA10E-135	973.372	3 - 10	35	50	135	110	48 - 58	126	MEC10
C6-MEGA10E-165	973.373	3 - 10	35	55.5	165	141	48 - 58	156	MEC10

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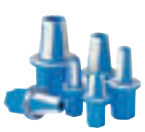


A.4

Model	Order No.	Ød	ØD	ØD1	L	L1	H	H max.	Collet Model
C6-MEGA13E-65 *	**973.374**	3 - 12	42	45.1	65	39	56	56	MEC13
C6-MEGA13E-75 *	**973.375**	3 - 12	42	46	75	49	66	66	MEC13
C6-MEGA13E-90	**973.376**	3 - 12	42	49	90	66	50 - 55	81	MEC13
C6-MEGA13E-105	**973.377**	3 - 12	42	51.4	105	80	50 - 55	96	MEC13
C6-MEGA13E-120	**973.378** •	3 - 12	42	54.2	120	96	50 - 60	111	MEC13
C6-MEGA13E-135	**973.379**	3 - 12	42	56.8	135	112	50 - 60	126	MEC13
C6-MEGA13E-165	**973.380**	3 - 12	42	62.3	165	141	50 - 60	156	MEC13
C8-MEGA6E-90	**973.382**	3 - 6	25	30.7	90	55	37 - 45	90	MEC6
C8-MEGA6E-135	**973.385**	3 - 6	25	38.5	135	100	37 - 45	135	MEC6
C8-MEGA8E-90	**973.388**	3 - 8	30	35.4	90	55	42 - 51	90	MEC8
C8-MEGA8E-135	**973.391**	3 - 8	30	43.3	135	100	42 - 51	135	MEC8
C8-MEGA10E-90	**973.394**	3 - 10	35	40.3	90	55	48 - 58	90	MEC10
C8-MEGA10E-120	**973.396**	3 - 10	35	45.6	120	85	48 - 58	120	MEC10
C8-MEGA10E-135	**973.397** •	3 - 10	35	48.2	135	100	48 - 58	135	MEC10
C8-MEGA13E-90	**973.400**	3 - 12	42	47	90	55	50 - 60	90	MEC13
C8-MEGA13E-120	**973.402**	3 - 12	42	52.3	120	85	50 - 60	120	MEC13
C8-MEGA13E-135	**973.403**	3 - 12	42	54.9	135	100	50 - 60	135	MEC13
C8-MEGA13E-165	**973.404**	3 - 12	42	60.1	165	130	50 - 60	165	MEC13

1. MEGA E nut is included.
2. * Adjusting screw cannot be used.
3. "G" is the adjusting screw (optional).
4. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

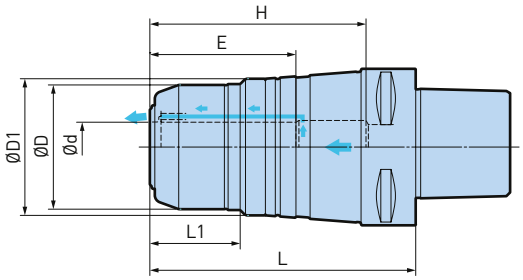
MEGA E Nuts	MEGA E Perfect Seals	MEGA E Collets	MEGA Wrenches	Adjusting Screws NBA	Taper Cleaners
					
▶ 340	▶ 341	▶ 340	▶ 351	▶ 335	▶ 370

MEGA Double Power Chuck Type DS

Close to integral rigidity and precision of a solid tool holder. Flange contacting nut assures highest rigidity. Unique coolant supply design ensures efficient coolant supply to the cutting tool periphery.

Coolant Through Hole





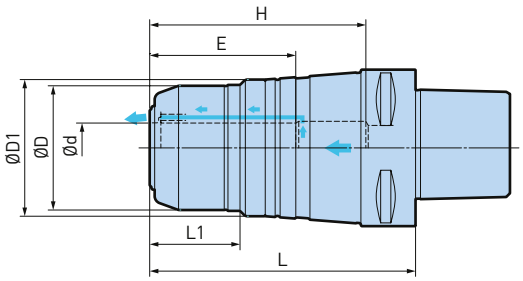


A.4

ø3 - 32mm

Model	Order No.	Ød	ØD	ØD1	L	L1	H	E
C4-MEGA16DS-70	**800.680**	16	46	47	71	27	65	51
C4-MEGA20DS-65	**800.682**	20	50	51	66	32	60	52
C5-MEGA16DS-65A	**803.141**	16	42	52.6	67	27	60	50
C5-MEGA16DS-90A	**803.144**	16	42	52.6	92	27	73	50
C5-MEGA20DS-75A	**803.108**	20	50	55	77	36	70	52
C5-MEGA20DS-90A	**803.183**	20	50	55	92	36	85	52
C5-MEGA25DS-75A ****	**803.147**	25	62	62.7	77	41	70	58
C5-MEGA25DS-90A	**803.179**	25	62	62.7	92	41	85	58
C6-MEGA16DS-70A	**803.145** •	16	42	52.6	72	27	63	50
C6-MEGA16DS-90A	**803.206**	16	42	52.6	92	27	83	50
C6-MEGA16DS-105A ***	**803.184**	16	42	52.6	107	27	73	50
C6-MEGA16DS-135A ***	**803.112**	16	42	52.6	137	27	73	50
C6-MEGA20DS-75A	**803.185** •	20	50	55	77	36	68	52
C6-MEGA20DS-90A	**803.125**	20	50	55	92	36	83	52
C6-MEGA20DS-105A	**803.113**	20	50	55	107	36	87	52
C6-MEGA20DS-135A *	**803.166**	20	50	55	137	36	71 - 81	52
C6-MEGA25DS-75A **	**803.114**	25	62	62.7	77	41	68	58
C6-MEGA25DS-90A	**803.177**	25	62	62.7	92	41	83	58
C6-MEGA25DS-105A	**803.128**	25	62	62.7	107	41	87	58
C6-MEGA25DS-135A *	**803.195**	25	62	62.7	137	41	73 - 83	58
C6-MEGA32DS-90A	**803.129**	32	70	70.7	92	35	83	62
C6-MEGA32DS-105A	**803.167**	32	70	70.7	107	35	92	62
C6-MEGA32DS-135A *	**803.121**	32	70	70.7	137	35	81 - 91	62

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A.4

Model	Order No.	Ød	ØD	ØD1	L	L1	H	E
C8-MEGA16DS-70	**973.465**	16	46	55	72.5	26	73	52
C8-MEGA16DS-105 ***	**973.466**	16	46	55	107.5	26	73	52
C8-MEGA16DS-135 ***	**973.467**	16	46	55	137,5	26	73	48
C8-MEGA20DS-75	**973.469**	20	60	69	77.5	28	77	58
C8-MEGA20DS-135 *	**973.471**	20	60	69	137.5	28	71 - 81	58
C8-MEGA20DS-165 *	**973.472**	20	60	69	167,5	28	71 - 81	50
C8-MEGA25DS-75	**973.473**	25	70	77	77.5	34	77	67
C8-MEGA25DS-135 *	**973.475**	25	70	77	137.5	34	78 - 88	67
C8-MEGA25DS-165 *	**973.476**	25	70	77	167.5	34	78 - 89	67
C8-MEGA32DS-90	**973.477**	32	80	86	92.5	42	92	73
C8-MEGA32DS-105	**973.478** •	32	80	86	107.5	42	102	73
C8-MEGA32DS-135	**973.479**	32	80	86	137,5	42	107	60
C8-MEGA32DS-165 *	**973.480**	32	80	86	167.5	42	80 - 97	73

1. * Adjusting screw can be used
2. ** Only C collet (C25-) and OCA are compatible.
3. *** Hex socked head screw (M8) can be used as an adjusting screw.
4. **** Adjustable straight collet (C25-_+CS) and OCA collet cannot be used.
5. MEGA wrench is to be ordered separately.
6. "E" is the min. clamping length.
7. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

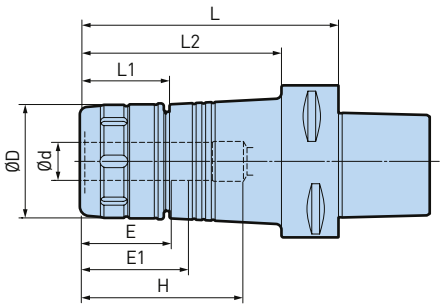
PJC Collets	PSC Collets	C Collets	MEGA Wrenches
			
▶ 347	▶ 348	▶ 349	▶ 351

New Hi-Power Milling Chuck

The original design of slit structure assures heavy and finish end milling with high power and precision.

Coolant Through Hole





A.4

ø3 - 32mm

Model	Order No.	Ød	ØD	L	L1	L2	H	E	E1
C5-HMC16S-65	**800.734**	16	43	65	44	45	58	48	55
C5-HMC20S-75	**800.736**	20	50	75	44	-	68	50	56
C5-HMC20S-105	**800.735**	20	50	105	44	-	85	50	56
C5-HMC25S-75 **	**803.042**	25	55	75	47	-	68	56	57
C5-HMC25S-105	**803.041**	25	55	105	47	-	87	56	57
C5-HMC32S-85 ***	**803.043**	32	62	85	56	-	78	60	58
C6-HMC16S-70	**800.842**	16	43	70	44	48	61	48	55
C6-HMC20S-75	**800.845** •	20	50	75	44	53	66	50	56
C6-HMC20S-105	**800.843**	20	50	105	44	83	85	50	56
C6-HMC20S-120 *	**800.844**	20	50	120	44	98	69 - 79	50	56
C6-HMC25S-75 ****	**800.848**	25	59	75	45	53	66	56	57
C6-HMC25S-105	**800.846**	25	59	105	45	81	87	56	57
C6-HMC25S-135 *	**800.847**	25	59	135	45	133	73 - 83	56	57
C6-HMC32S-90	**800.851** •	32	68	90	54	-	81	60	64
C6-HMC32S-105	**800.849**	32	68	105	54	-	90	60	64
C6-HMC32S-135 *	**800.850**	32	68	135	54	-	79 - 89	60	64
C8-HMC20-80	**973.680**	20	60	80	46	50	80	50	56
C8-HMC20-135 *	**973.682**	20	60	135	46	105	69 - 79	50	56
C8-HMC25-85	**973.684**	25	62	85	55	-	85	56	65
C8-HMC25-135 *	**973.686**	25	62	135	55	105	76 - 86	56	65
C8-HMC32-95	**973.688**	32	80	95	63	-	95	60	71
C8-HMC32-135	**973.690**	32	80	135	63	-	105	60	71

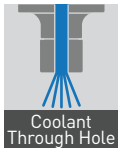
1. * Adjusting screw can be used
2. ** Only C collet (C25-) and OCA are compatible.
3. *** Adjustable straight collet (C25-_+CS) cannot be used.
4. **** Only C collet (C25-) can be used.
5. Wrench is to be ordered separately.
6. "E" is the min. clamping length.
7. "E1" is the min. clamping length for optimum use with center through coolant.
8. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

PJC Collets	OCA Collets	PSC Collets	C Collets	FK Wrenches	Adjusting Screws HMA
					
▶ 347	▶ 348	▶ 348	▶ 349	▶ 352	▶ 350

Hydraulic Chuck Jet Through

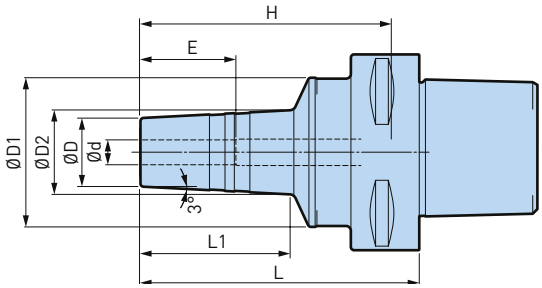
Hydraulic chuck provides efficient coolant supply through the cutting tool or periphery of the cutting tool.



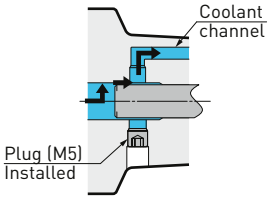




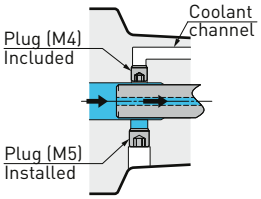
A.4



Peripheric



Center Through



ø4 - 12mm

Model	Order No.	Ød	ØD	ØD1	ØD2	L	L1	H	E
C5-HDC4J-90	**807.434**	4	20	42	26	90	51	83	19
C5-HDC6J-90	**807.435**	6	20	42	26	90	51	83	25
C5-HDC8J-90	**807.436**	8	22	42	28	90	52	83	31
C5-HDC10J-90	**807.437**	10	24	44	30	90	52	83	33
C5-HDC12J-90	**807.438**	12	26	46	32	90	52	83	36
C6-HDC4J-90	**807.439**	4	20	48	26	90	47	81	19
C6-HDC6J-90	**807.440**	6	20	48	26	90	47	81	25
C6-HDC6J-120	**807.441**	6	20	48	28	120	74	111	25
C6-HDC8J-90	**807.442**	8	22	48	28	90	48	81	31
C6-HDC8J-120	**807.443**	8	22	48	30	120	75	111	31
C6-HDC10J-90	**807.444**	10	24	48	30	90	48	81	33
C6-HDC10J-120	**807.445**	10	24	48	32	120	75	111	33
C6-HDC12J-90	**807.446**	12	26	48	32	90	49	81	36
C6-HDC12J-120	**807.447**	12	26	48	34	120	76	111	36

1. "E" is the min. clamping length.
2. "H" is the max. tool shank length that can be inserted for these models.

Caution

- Use only cutting tools that have a shank tolerance within h6.
- Roughing endmills are not recommended for use with hydraulic chucks.
- Do not use with cutting tools made with a flat on the shank. (ie: Weldon type shank)
- Do not tighten the clamping screw without first inserting a cutting tool into the hydraulic chuck.
- Always insert the cutting tool into the hydraulic chuck beyond min. clamping length E.

Accessories & Spare Parts

Wiper Cleaners



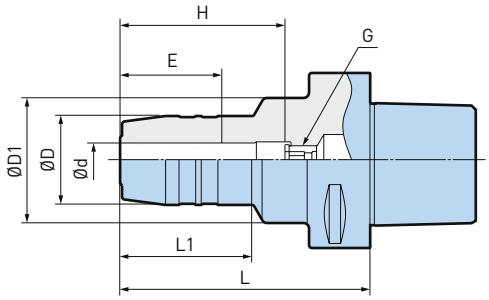
► 370

Hydraulic Chuck Standard

For high precision machining in automotive, aerospace, medical and die & mold.

Coolant Through Hole





A.4

ø3 - 32mm

Model	Order No.	Ød	ØD	ØD1	L	L1	H	E	G
C5-HDC14-90	**800.712**	14	34	45	90	48	53 - 60	38	HDA12-10010
C5-HDC16-75 *	**800.716**	16	38	50	75	35	68	43	-
C5-HDC16-90 *	**800.717**	16	38	48	90	48	83	43	-
C5-HDC18-90 *	**800.719**	18	40	48	90	48	83	43	-
C5-HDC20-75 *	**800.721**	20	42	52	75	35	68	43	-
C5-HDC20-90 *	**800.722**	20	42	50	90	48	83	43	-
C5-HDC25-90 *	**800.723**	25	55	63	90	48	83	52	-
C6-HDC14-90	**800.808**	14	34	45	90	48	48 - 60	38	HDA10-08015
C6-HDC14-120	**800.806**	14	34	45	120	48	38 - 60	38	HDA10-08032
C6-HDC16-75 *	**800.814**	16	38	50	75	35	66	43	-
C6-HDC16-90 *	**800.815**	16	38	47	90	48	81	43	-
C6-HDC16-120	**800.812**	16	38	48	120	48	43 - 70	43	HDA16-12037
C6-HDC18-90 *	**800.818**	18	40	48	90	48	66	43	-
C6-HDC18-120	**800.816**	18	40	49	120	48	43 - 70	43	HDA16-12037
C6-HDC20-75 *	**800.821**	20	42	53	75	33	66	43	-
C6-HDC20-90 *	**800.822** •	20	42	50	90	48	72	43	-
C6-HDC20-120	**800.819**	20	42	50	120	48	43 - 70	43	HDA16-12037
C6-HDC25-90 *	**800.825**	25	55	63	90	46	80	52	-
C6-HDC25-120	**800.823**	25	55	63	120	51	67 - 79	52	HDA20-16015
C6-HDC32-90 *	**800.827**	32	75	63	90	43	81	56	-
C6-HDC32-120	**800.826**	32	63	-	120	-	66 - 78	56	HDA20-16015

1. * Adjusting screw cannot be used.
2. "E" is the min. clamping length.
3. "G" is the adjusting screw (optional).
4. "H" is the max. tool shank length that can be inserted for these models.

Caution

- Use only cutting tools that have a shank tolerance within h6.
- Roughing endmills are not recommended for use with hydraulic chucks.
- Do not use with cutting tools made with a flat on the shank. (ie: Weldon type shank)
- Do not tighten the clamping screw without first inserting a cutting tool into the hydraulic chuck.
- Always insert the cutting tool into the hydraulic chuck beyond min. clamping length E.

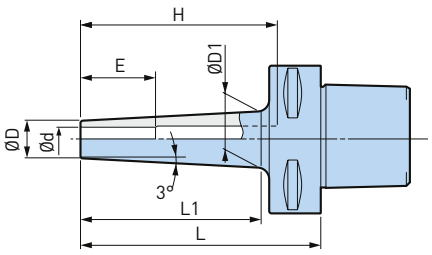
Accessories & Spare Parts

PJC Collets	PSC Collets	Adjusting Screws HDA	Wiper Cleaners
			
▶ 347	▶ 348	▶ 354	▶ 370

Shrink Chuck Slim

Slim design reduces outer diameter for machining in tight spaces.





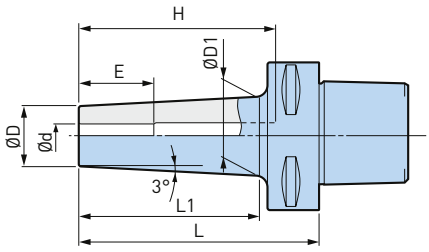
Model	Order No.	Ød	ØD	ØD1	L	L1	E	H
C6-SRC6S-165	**973.710**	6	10	24	165	133	26	(143)
C6-SRC8S-120	**973.711**	8	13	22.5	120	92	26	(98)
C6-SRC8S-165	**973.712**	8	13	27	165	133	26	(143)
C6-SRC10S-120	**973.713**	10	16	25.5	120	92	32	62
C6-SRC10S-165	**973.714**	10	16	30.5	165	135	32	62
C6-SRC12S-120	**973.715**	12	19	28.5	120	92	36	72
C6-SRC12S-165	**973.716**	12	19	33	165	135	36	72

1. Use a carbide shank cutter with tolerance h6.
2. Please refer to the operation manual of heating / cooling equipment, as some equipment may not be compatible.

Shrink Chuck Standard

Substantial body provides higher rigidity.





Model	Order No.	Ød	ØD	ØD1	L	L1	E	H
C6-SRC6-90	**973.553**	6	14	20,5	90	63	26	81
C6-SRC8-90	**973.554**	8	18	24,5	90	63	26	81
C6-SRC10-90	**973.555**	10	22	28,5	90	63	32	81
C6-SRC12-90	**973.556**	12	24	30,5	90	63	36	81
C6-SRC16-90	**973.557**	16	28	34,5	90	63	38	81
C6-SRC16-165	**973.558**	16	28	42,5	165	138	38	80
C6-SRC20-90	**973.559**	20	34	40,5	90	63	42	80
C6-SRC20-165	**973.560**	20	34	48,5	165	138	42	100

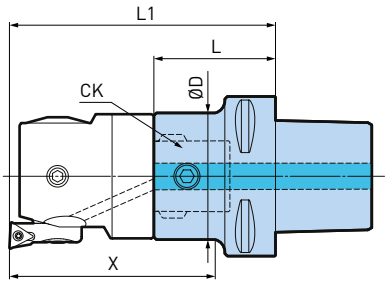
1. Use a carbide shank cutter with tolerance h6.
2. Please refer to the operation manual of heating / cooling equipment, as some equipment may not be compatible.

CKB/CKN Shanks with Center Through Coolant

Basic Holder for rough and finish boring heads of the proven BIG KAISER Boring System.

Coolant Through Hole





CK1 - CK7

Model	Order No.	CK	ØD	L	L1	X
C4-CKB1-48	**806.698**	CKB1	19	47.5	80	55
C4-CKB2-45	**806.699**	CKB2	24	44.5	80	55
C4-CKB3-40	**806.700**	CKB3	31	40	80	57
C4-CKB4-33	**806.701**	CKB4	39	33	80	62
C5-CKB1-73	**806.702**	CKB1	19	72.5	105	80
C5-CKB2-85	**328.273**	CKB2	24	84,5	120	96
C5-CKB3-55	**328.223**	CKB3	31	55	95	70
C5-CKB4-48	**328.224**	CKB4	39	48	95	70
C5-CKB5-50	**328.226**	CKB5	50	50	107	-
C5-CKB6-50	**328.037**	CKB6	64	64	120	-
C5-CKN6-50	**328.037N**	CKN6	63.5	50	121	-
C6-CKB1-78	**328.321**	CKB1	19	77,5	110	83
C6-CKB2-90	**328.322**	CKB2	24	89,5	125	98
C6-CKB3-65	**328.036**	CKB3	31	65	105	78
C6-CKB4-58	**328.035**	CKB4	39	58	105	78
C6-CKB4-93	**869.019**	CKB4	39	93	140	103
C6-CKB5-48	**328.034**	CKB5	50	48	105	79
C6-CKN6-59	**328.033N**	CKN6	63.5	59	130	-
C8-CKB4-118	**806.703**	CKB4	39	118	165	130
C8-CKB4-178	**806.704**	CKB4	39	178	225	190
C8-CKB5-108	**806.705**	CKB5	50	108	165	130
C8-CKB5-183	**806.706**	CKB5	50	183	240	205
C8-CKN6-74	**328.053N**	CKN6	63.5	74	145	110
C8-CKB6-169	**806.707**	CKB6	63.5	169	240	206
C8-CKN7-73	**328.032N**	CKN7	90	73	190 (160)	-
C8-CKB7-123	**806.708**	CKB7	90	123	240 (210)	-
C8-CKB7-123	**806.708**	CKB7	90	123	240 (210)	-

1. X and L1 dimensions on the table are reference figures when EWN/EWE head is mounted.
2. ( ) Indicate the length when short version of EWN (EWN100-203CKB7-87) is mounted.

Accessories & Spare Parts

Fine Boring Heads



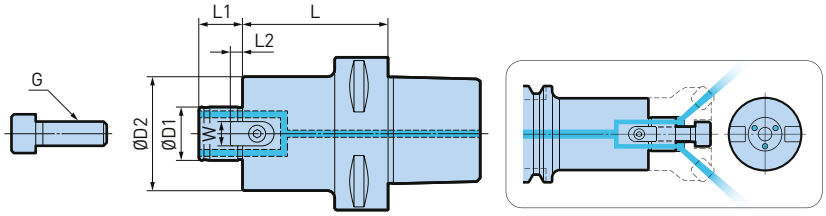
▶ 396-399

Face Mill Arbors Type FMH

For cutters that require a coolant hole through the pilot.

Coolant Through Hole





A.4

Model	Order No.	ØD1	ØD2	L	L1	L2	W	G	ØC min.
C5-FMH22-47-60	**973.718**	22	47	60	18	5	10	M10	36
C5-FMH22-47-90	**800.695**	22	47	90	18	5	10	M10	36
C5-FMH22-60-60	**973.720**	22	60	60	18	5	10	M10	38
C5-FMH27-60-60	**800.698**	27	60	60	20	6	12	M12	46
C6-FMH22-47-45	**973.721**	22	47	45	18	5	10	M10	38
C6-FMH22-47-60	**973.722**	22	47	60	18	5	10	M10	36
C6-FMH22-47-90	**973.723**	22	47	90	18	5	10	M10	36
C6-FMH22-47-150	**800.783**	22	47	150	18	5	10	M10	36
C6-FMH22-60-45	**973.724**	22	60	45	18	5	10	M10	38
C6-FMH22-60-60	**973.725**	22	60	60	18	5	10	M10	38
C6-FMH22-60-90	**973.726**	22	60	90	18	5	10	M10	38
C6-FMH27-60-45	**800.788**	27	60	45	20	6	12	M12	46
C6-FMH27-60-60	**800.789**	27	60	60	20	6	12	M12	46
C6-FMH27-60-90	**800.790**	27	60	90	20	6	12	M12	46
C6-FMH27-60-150	**800.787**	27	60	150	20	6	12	M12	46
C8-FMH22-47-60	**973.727**	22	47	60	18	5	10	M10	36
C8-FMH22-47-105	**973.728**	22	47	105	18	5	10	M10	36
C8-FMH22-47-150	**973.729**	22	47	150	18	5	10	M10	36
C8-FMH22-47-200	**800.899**	22	47	200	18	5	10	M10	36
C8-FMH22-60-60	**973.730**	22	60	60	18	5	10	M10	38
C8-FMH22-60-105	**973.731**	22	60	105	18	5	10	M10	38
C8-FMH22-60-150	**973.732**	22	60	150	18	5	10	M10	38
C8-FMH27-60-60	**800.906**	27	60	60	20	6	12	M12	46
C8-FMH27-60-105	**800.903**	27	60	105	20	6	12	M12	46
C8-FMH27-60-150	**800.904**	27	60	150	20	6	12	M12	46
C8-FMH27-60-200	**800.905**	27	60	200	20	6	12	M12	46
C8-FMH32-96-75	**800.912**	32	96	75	22	7	14	M16	58
C8-FMH32-96-105	**800.910**	32	96	105	22	7	14	M16	58
C8-FMH32-96-150	**800.911**	32	96	150	22	7	14	M16	58

1. By using a clamping screw with a through bore, coolant is supplied through the screw
2. Clamp bolt is included.

Accessories & Spare Parts

Clamp Bolts

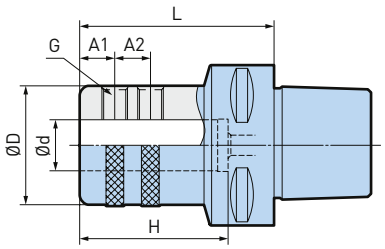


▶ 355

Side Lock Holders for Drills

Coolant Through Hole





A.4

ø16 - 40mm

Model	Order No.	Ød	ØD	L	A1	A2	H	G
C4-TSL16-56	**800.687**	16	48	56	14	14	48	M10 P1.25
C4-TSL20-60	**800.688**	20	48	60	14	14	50	M10 P1.25
C4-TSL25-77	**800.689**	25	48	77	15	20	56	M16 P1.5
C5-TSL16-60	**973.115**	16	48	60	14	14	48	M10 P1.25
C5-TSL20-60	**973.116**	20	48	60	14	14	50	M10 P1.25
C5-TSL25-75	**973.117**	25	48	75	15	20	56	M16 P1.5
C5-TSL32-85	**800.775**	32	63	85	15	20	60	M16 P1.5
C6-TSL16-70	**973.119**	16	48	70	14	14	48	M10 P1.25
C6-TSL20-70	**973.120**	20	48	70	14	14	50	M10 P1.25
C6-TSL25-70	**973.121**	25	48	70	15	20	56	M16 P1.5
C6-TSL32-75	**973.122**	32	63	75	15	20	60	M16 P1.5
C6-TSL40-85	**973.123**	40	68	85	15	25	70	M16 P1.5
C8-TSL16-80	**973.124**	16	48	80	14	14	48	M10 P1.25
C8-TSL20-80	**973.125**	20	48	80	14	14	50	M10 P1.25
C8-TSL25-85	**973.126**	25	48	85	15	20	56	M16 P1.5
C8-TSL32-90	**973.127**	32	63	90	15	20	60	M16 P1.5
C8-TSL40-95	**973.128**	40	68	95	15	25	70	M16 P1.5

1. "H" is the max. tool shank length that can be inserted for these models.
2. Not compatible with Weldon DIN 1835 B / DIN 6535 HB.

Accessories & Spare Parts

Sleeves for TSL & OSL



► 355

Side Lock Holders for Weldon

Coolant Through Hole



A.4

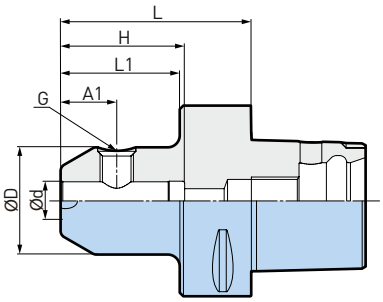


Fig. 1

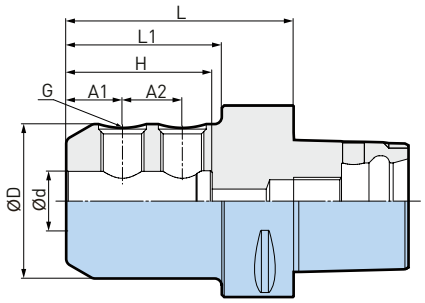


Fig. 2

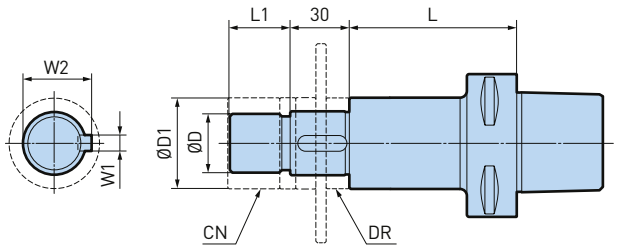
ø6 - 40mm

Model	Order No.	Fig.	Ød	ØD	L	L1	A1	A2	H	G
C6-ISL16-80	**973.562**	1	16	48	80	52	24	-	52	M14
C6-ISL20-80	**973.563**	1	20	52	80	55	25	-	55	M16
C6-ISL25-105	**973.564**	1	25	65	105	60	24	25	60	M18 P2.0
C6-ISL32-115	**973.565**	1	32	72	115	90	24	28	90	M20 P2.0
C8-ISL6-80	**328.370**	1	6	24	80	50	17.5	-	40	M6
C8-ISL8-80	**328.371**	1	8	26	80	50	17.5	-	40	M8
C8-ISL10-80	**328.372**	1	10	32	80	50	19.5	-	44	M10
C8-ISL12-80	**328.373**	1	12	38	80	50	22	-	49	M12
C8-ISL14-80	**328.374**	1	14	40	80	50	22	-	49	M12
C8-ISL16-80	**328.375**	1	16	45	80	50	23.5	-	52	M14
C8-ISL18-80	**328.376**	1	18	47	80	50	23.5	-	52	M14
C8-ISL20-85	**328.419**	1	20	52	85	55	24.5	-	54	M16
C8-ISL25-95 *	**328.420**	2	25	64.4	95	65	23.5	25	61	M18 P2
C8-ISL32-95 *	**328.421**	2	32	71.5	95	65	23.5	28	65	M20 P2
C8-ISL40-105 *	**328.422**	2	40	80	105	-	29.5	32	75	M20 P2

1. "H" is the max. tool shank length that can be inserted for these models.
2. Use a cutting tool in accordance to DIN 1835 B/DIN 6535 HB.
3. * Peripherical coolant supply is not available.

Side Cutter Arbors



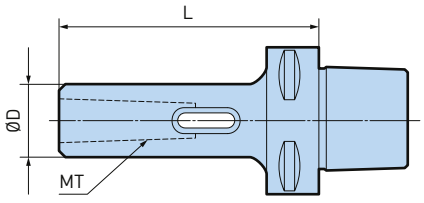


Model	Order No.	ØD	ØD1	L	L1	W1	W2
C6-SCA25.4-75	**800.887**	25.4	40	75	25	6.35	27.78
C6-SCA31.75-75	**800.888**	31.75	46	75	30	7.92	34.92
C8-SCA25.4-90	**800.940**	25.4	40	90	25	6.35	27.78
C8-SCA31.75-90	**800.942**	31.75	46	90	30	7.92	34.92

1. Nut (CN) is included.
2. Distance collars (DR) of 5 mm, 8 mm, 10 mm and 12 mm are included.

Morse Taper Holders





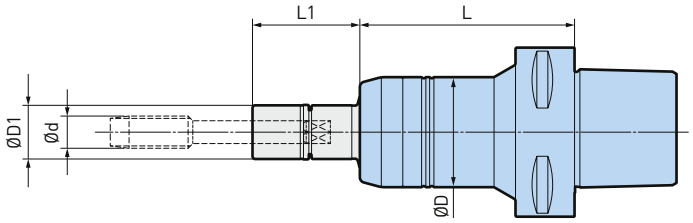
Model	Order No.	MT No.	ØD	L
C5-MTA1-95	**973.572**	1	25	95
C5-MTA2-110	**973.573**	2	32	110
C5-MTA3-130	**973.574**	3	40	130
C6-MTA1-95	**973.575**	1	25	95
C6-MTA2-110	**973.576**	2	32	110
C6-MTA3-130	**973.577**	3	40	130
C8-MTA1-105	**973.578**	1	25	105
C8-MTA2-120	**973.579**	2	32	120
C8-MTA3-140	**973.580**	3	40	140

MEGA Synchro Tapping Holder

Compensates for synchronization errors during rigid tapping. Improves thread quality and tool life by reducing thrust loads caused by synchronization errors up to 90%.

Coolant Through Hole





A.4

M3 - M20

Model	Order No.	Tap Holder	Ød	ØD	ØD1	L	L1
C5-MGT6-75	**800.767**	MGT6	M3-M8	36	16	75	30 - 200
C5-MGT12-75	**800.765**	MGT12	M5-M12 / P1/8	41	20	75	30 - 200
C5-MGT20-100	**800.766**	MGT20	M10-M20 / P1/4-P1/2	54	30	100	35 - 150
C6-MGT6-80	**973.754**	MGT6	M3-M8	36	16	80	30 - 200
C6-MGT12-80	**973.755**	MGT12	M5-M12 / P1/8	41	20	80	30 - 200
C6-MGT20-100	**973.756**	MGT20	M10-M20 / P1/4-P1/2	54	30	100	35 - 150
C8-MGT6-80	**800.935**	MGT6	M3-M8	36	16	80	30 - 200
C8-MGT12-80	**800.933**	MGT12	M5-M12 / P1/8	41	20	80	30 - 200
C8-MGT20-95	**800.934**	MGT20	M10-M20 / P1/4-P1/2	54	30	95	35 - 150

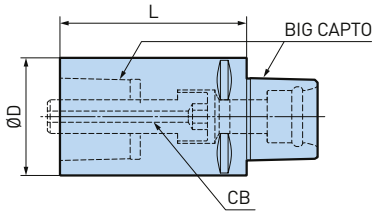
1. Tap holder and wrench are to be ordered separately.
2. Synrchonized tapping function is required on the machine.

Accessories & Spare Parts

Tap Holder	MEGA Wrenches	Accessories
		
▶ 356-363	▶ 351	▶ 364-365

Extensions



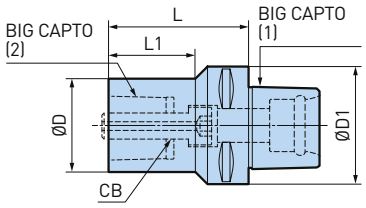


Model	Order No.	BIG CAPTO	ØD	L
C6-C6-100	**803.738**	C6	63	100
C8-C8-100	**803.740**	C8	80	100

1. Hexagon socket head cap screw (CB) is included. M20xP2 / Tightening Torque 170 Nm

Reductions



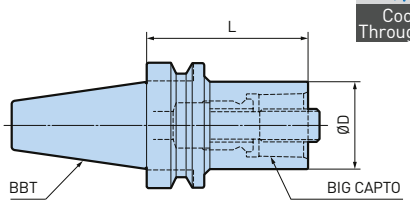


Model	Order No.	BIG CAPTO	ØD	ØD1	L	L1
C6-C5-75	**803.737**	C6 (1) - C5 (2)	50	63	75	46
C8-C6-85	**803.739**	C8 (1) - C6 (2)	63	80	85	50

1. Hexagon socket head cap screw (CB) is included.
   C6-C5: M16xP1.5 / Tightening Torque 95 Nm
   C8-C6: M20xP2 / Tightening Torque 170 Nm

BIG CAPTO Basic Holders





Model	Order No.	BIG CAPTO	ØD	L
BBT40-C3-30	**973.598**	C3	32	30
BBT40-C4-40	**802.350**	C4	40	40
BBT40-C5-50	**973.600**	C5	50	50
BBT40-C6-75	**973.601**	C6	63	75
BBT50-C3-40	**973.602**	C3	32	40
BBT50-C4-40	**973.603**	C4	40	40
BBT50-C5-40	**973.604**	C5	50	40
BBT50-C6-50	**973.605**	C6	63	50
BBT50-C8-70	**803.736**	C8	80	70

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Clamp bolt is included.

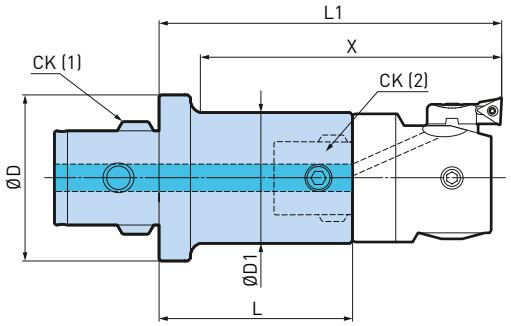
Tool Holders and Components CK

CKB/CKN Reductions	252
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A.5

CKB/CKN Reductions





Coolant Through Hole

Model	Order No.	CK (1)	CK (2)	ØD	ØD1	L	L1	X
CKB2-CKB1-36	**332.210**	CKB2	CKB1	24	19	36	68.5	55
CKB3-CKB1-41	**332.310**	CKB3	CKB1	31	19	40.5	73	60
CKB3-CKB2-35	**332.320**	CKB3	CKB2	31	24	34.5	70	60
CK4-CKB1-58	**332.410**	CK4	CKB1	39	19	57.5	90	75
CKB4-CKB2-52	**332.420**	CKB4	CKB2	39	24	51.5	87	75
CKB4-CKB3-47	**332.430**	CKB4	CKB3	39	31	47	87	75
CK5-CKB1-58	**332.511**	CK5	CKB1	50	19	57.5	90	70
CK5-CKB1-88	**332.510**	CK5	CKB1	50	19	87.5	120	100
CK5-CKB2-52	**332.521**	CK5	CKB2	50	24	51.5	87	70
CK5-CKB2-82	**332.520**	CK5	CKB2	50	24	81.5	117	100
CKB5-CKB3-47	**332.531**	CKB5	CKB3	50	31	47	87	70
CKB5-CKB3-77	**332.530**	CKB5	CKB3	50	31	77	117	100
CKB5-CKB4-40	**332.541**	CKB5	CKB4	50	39	40	87	70
CKB5-CKB4-70	**332.545**	CKB5	CKB4	50	39	70	117	100
CK6-CKB1-67	**332.611**	CK6	CKB1	63.5	19	66.5	99	65
CK6-CKB1-102	**332.610**	CK6	CKB1	63.5	19	101.5	134	100
CK6-CKB2-61	**332.621**	CK6	CKB2	63.5	24	60.5	96	80
CK6-CKB2-96	**332.620**	CK6	CKB2	63.5	24	95.5	131	115
CK6-CKB3-56	**332.631**	CK6	CKB3	63.5	31	56	96	80
CK6-CKB3-91	**332.630**	CK6	CKB3	63.5	31	91	131	115
CK6-CKB3-136	**332.632**	CK6	CKB3	63.5	31	136	176	160
CKB6-CKB4-49	**332.641**	CKB6	CKB4	63.5	39	49	96	80
CKB6-CKB4-84	**332.645**	CKB6	CKB4	63.5	39	84	131	115
CKB6-CKB4-129	**332.642**	CKB6	CKB4	63.5	39	129	176	160
CKB6-CKB5-39	**332.651**	CKB6	CKB5	63.5	50	39	96	80
CKB6-CKB5-74	**332.655**	CKB6	CKB5	63.5	50	74	131	115
CKB6-CKB5-119	**332.652**	CKB6	CKB5	63.5	50	119	176	160
CKB7-CKB4-70	**332.741**	CKB7	CKB4	90	39	70	117	100
CKB7-CKB4-100	**332.745**	CKB7	CKB4	90	39	100	147	130
CKB7-CKB5-60	**332.751**	CKB7	CKB5	90	50	60	117	100
CKB7-CKB5-90	**332.755**	CKB7	CKB5	90	50	90	147	130
CKB7-CKB5-120	**332.750**	CKB7	CKB5	90	50	120	177	160
CKB7-CKB6-76	**332.765**	CKB7	CKB6	90	63.5	76	147	130
CKN7-CKN6-76	**332.765N**	CKN7	CKN6	90	63.5	76	147	160
CKB7-CKB6-106	**332.766**	CKB7	CKB6	90	63.5	106	177	160

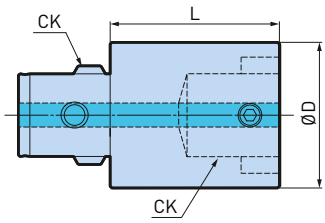
1. X and L1 dimensions on the table are reference figures when EWN/EWE head is mounted.

Accessories & Spare Parts

Fine Boring Heads	Clamping Screws CK	Cross bolts
		
▶ 396-399	▶ 498	▶ 498

CKB/CKN Extensions





Coolant Through Hole

Model	Order No.	CK	ØD	L
CKB1-CKB1-20	**331.110**	CKB1	19	20
CKB1-CKB1-30	**331.111**	CKB1	19	30
CKB2-CKB2-30	**331.220**	CKB2	24	30
CKB2-CKB2-45	**331.221**	CKB2	24	45
CKB3-CKB3-30	**331.330**	CKB3	31	30
CKB3-CKB3-45	**331.331**	CKB3	31	45
CKB4-CKB4-40	**331.440**	CKB4	39	40
CKB4-CKB4-60	**331.445**	CKB4	39	60
CKB5-CKB5-60	**331.550**	CKB5	50	60
CKB5-CKB5-90	**331.555**	CKB5	50	90
CKB6-CKB6-60	**331.660**	CKB6	63.5	60
CKN6-CKN6-60 *	**331.660N**	CKN6	63.5	60
CKB6-CKB6-100	**331.665**	CKB6	63.5	100
CKN6-CKN6-100 *	**331.665N**	CKN6	63.5	100
CKB7-CKB7-100	**331.775**	CKB7	90	100
CKN7-CKN7-100 *	**331.775N**	CKN7	90	100
CKB7-CKB7-160	**331.776**	CKB7	90	160
CKN7-CKN7-160 *	**331.776N**	CKN7	90	160

1. * Two pieces of CK-screws are included.

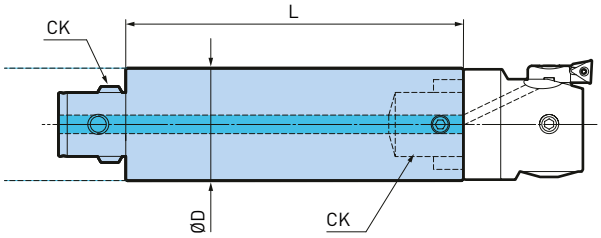
Smart Damper Extensions

Extension with integrated damping system for highly efficient deep hole finish boring.

Anti-Vibration

Coolant Through Hole





Model	Order No.	CK	ØD	L
CKB44DP-120	**389.365**	CKB4	39	120
CKB55DP-150	**389.366**	CKB5	50	150
CKB66DP-180	**389.367**	CKB6	64	180

1. Please do not use other extentions as they may cause chattering.

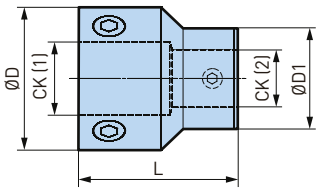
Accessories & Spare Parts

Fine Boring Heads	Clamping Screws CK	Cross bolts
		
▶ 396-399	▶ 498	▶ 498

CKN Reductions and Extensions System

CKN7 - CKB6 Reductions Aluminium

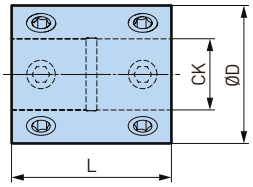




Model	Order No.	CK (1)	CK (2)	ØD	ØD1	L
CKN7-CKB6-100	**332.870N**	CKN7	CKB6	90	63.5	100

CKN Extensions Aluminium

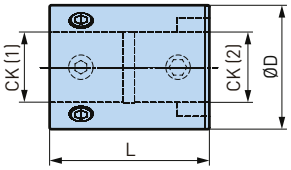




Model	Order No.	CK	ØD	L
T-CKN6-CKN6-80	**331.867N**	CKN6	63.5	80
T-CKN6-CKN6-120	**331.868N**	CKN6	63.5	120
T-CKN7-CKN7-100	**331.877N**	CKN7	90	100
T-CKN7-CKN7-150	**331.879N**	CKN7	90	150
T-CKN7-CKN7-200	**331.878N**	CKN7	90	200

CKN - CKB Extensions Aluminium

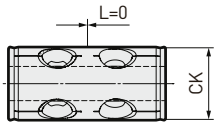




Model	Order No.	CK (1)	CK (2)	ØD	L
T-CKN6-CKB6-80	**331.860N**	CKN6	CKB6	63.5	80
T-CKN6-CKB6-120	**331.861N**	CKN6	CKB6	63.5	120
T-CKN7-CKB7-100	**331.870N**	CKN7	CKB7	90	100
T-CKN7-CKB7-150	**331.871N**	CKN7	CKB7	90	150

CKN Double Connector Couplings

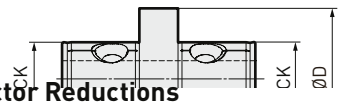




Model	Order No.	CK	ØD
DC-CKN6-CKN6-0	**331.864N**	CKN6	63.5
DC-CKN7-CKN7-0	**331.874N**	CKN7	90

CKN Double Connector Couplings

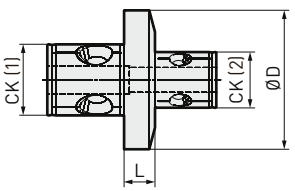




Model	Order No.	CK	ØD	L
DC-CKN6-CKN6-20	**331.865N**	CKN6	63.5	20
DC-CKN7-CKN7-25	**331.875N**	CKN7	90	25
DC-CKN7-CKN7-50	**331.876N**	CKN7	90	50

CKN7 - CKN6 Double Connector Reductions

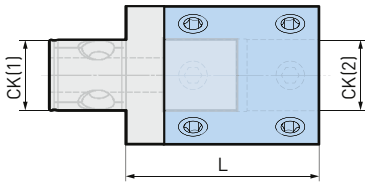




Model	Order No.	CK (1)	CK (2)	ØD	L
DC-CKN7-CKN6-20	**332.875N**	CKN7	CKN6	90	20

Combination Example of Extensions and Reduction

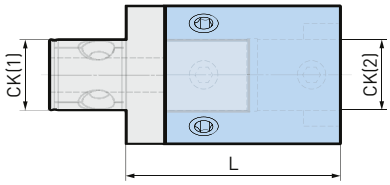
CKN-CKN Extensions



CK(1)	CK(2)	L	Double Connector	Extension	Weight (kg)
CKN6	CKN6	80	331.864N	331.867N	0.97
		100	331.865N		1.5
		120	331.864N	331.868N	1.3
		140	331.865N		1.8
CKN7	CKN7	100	331.874N	331.877N	2.5
		125	331.875N		3.1
		150	331.874N	331.879N	3.2
		150	331.876N	331.877N	4.2
		175	331.875N	331.879N	3.8
		200	331.874N	331.878N	4.0
		200	331.876N	331.879N	5.0
		225	331.875N	331.878N	4.5
		250	331.876N		5.7

1. L and weight shown are as a combination of the double connector and extension.

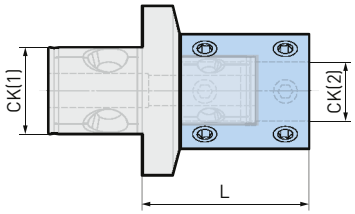
CKN-CKB Extension



CK(1)	CK(2)	L	Double Connector	Extension	Weight (kg)
CKN6	CKB6	80	331.864N	331.860N	1.0
		100	331.865N		1.5
		120	331.864N	331.861N	1.3
		140	331.865N		1.8
CKN7	CKB7	100	331.874N	331.870N	2.4
		125	331.875N		4.0
		150	331.874N	331.871N	3.2
		150	331.876N	331.870N	4.1
		175	331.875N	331.871N	3.7
		200	331.876N		4.9

1. L and weight shown are as a combination of the double connector and extension.

CKN-CKN Reductions



CK(1)	CK(2)	L	Double Connector	Extension	Weight (kg)
CKN7	CKN6	100	332.875N	331.867N	2.2
		140		331.868N	2.5

1. L and weight shown are as a combination of the double connector and extension.

CKN-CKB Reductions

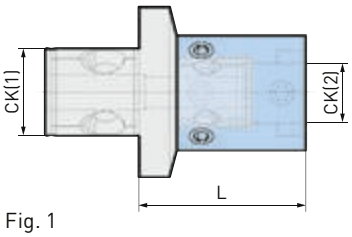


Fig. 1

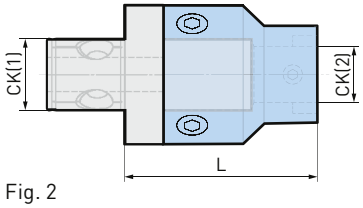


Fig. 2

CK(1)	CK(2)	Fig.	L	Double Connector	Extension/Reduction	Weight (kg)
CKN7	CKB6	1	100	332.875N	331.860N	2.1
			140	332.875N	331.861N	2.2
		2	100	331.874N	332.870N	3.3
			125	331.875N	332.870N	2.5
			150	331.875N	332.870N	3.8

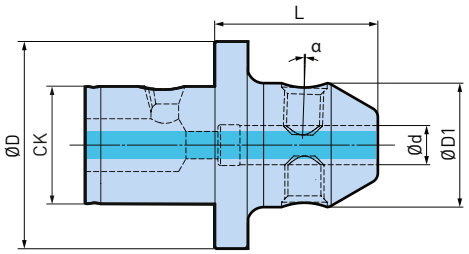
1. L and weight shown are as a combination of the double connector and extension/reduction.

End Mill Holders

For end mills with cylindrical shank and clamping surface according to DIN 1835B (Weldon system) and to DIN 1835E (Whistle notch system).

Coolant Through Hole





A.5

Model	Order No.	CK	Ød	ØD	ØD1	L	α
CKB4-MC6	**335.230**	CKB4	6	39	24	50	2°
CKB4-MC8	**335.231**	CKB4	8	39	26	50	2°
CKB4-MC10	**335.232**	CKB4	10	39	32	55	2°
CKB4-MC12	**335.233**	CKB4	12	39	39	60	2°
CKB5-MC6	**335.234**	CKB5	6	50	24	50	2°
CKB5-MC8	**335.235**	CKB5	8	50	26	50	2°
CKB5-MC10	**335.236**	CKB5	10	50	32	55	2°
CKB5-MC12	**335.237**	CKB5	12	50	38	60	2°
CKB5-MC14	**335.238**	CKB5	14	50	40	60	2°
CKB5-MC16	**335.239**	CKB5	16	50	45	62	2°
CKB5-MC20	**335.249**	CKB5	20	50	48	60	2°
CKB6-MC6	**335.240**	CKB6	6	63.5	24	45	2°
CKB6-MC8	**335.241**	CKB6	8	63.5	26	45	2°
CKB6-MC10	**335.242**	CKB6	10	63.5	32	45	2°
CKB6-MC12	**335.243**	CKB6	12	63.5	38	50	2°
CKB6-MC14	**335.244**	CKB6	14	63.5	40	50	2°
CKB6-MC16	**335.245**	CKB6	16	63.5	45	50	2°
CKB6-MC18	**335.246**	CKB6	18	63.5	47	50	2°
CKB6-MC20	**335.247**	CKB6	20	63.5	48	55	2°
CKB6-MC25	**335.248**	CKB6	25	63.5	63.5	65	2°
CKB7-MC32 *	**335.250**	CKB7	32	90	72	80	2°
CKB7-MC40 *	**335.251**	CKB7	40	90	80	90	2°

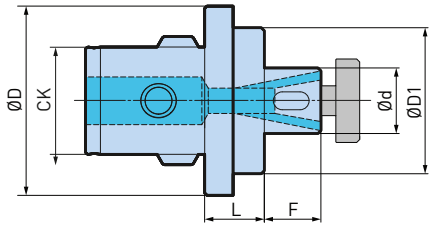
1. * Only for DIN 1835B tools (Weldon system).

Milling Cutter Arbors

For milling cutters with longitudinal or transverse key ways according to DIN 841, 842, 1880 and cutter heads according to DIN 1830.

Coolant Through Hole





Model	Order No.	CK	Ød	ØD	ØD1	L	F
CKB4-CMA16	**335.420**	CKB4	16	39	37	18	17
CKB4-CMA22	**335.421**	CKB4	22	39	42	18	19
CKB5-CMA16	**335.423**	CKB5	16	50	40	20	17
CKB5-CMA22	**335.424**	CKB5	22	50	47	20	19
CKB5-CMA27	**335.425**	CKB5	27	50	53	20	21
CKB6-CMA16	**335.430**	CKB6	16	63.5	40	20	17
CKN6-CMA16 *	**335.430N**	CKN6	16	63.5	40	20	17
CKB6-CMA22	**335.431**	CKB6	22	63.5	50	20	19
CKN6-CMA22 *	**335.431N**	CKN6	22	63.5	50	20	19
CKB6-CMA27	**335.432**	CKB6	27	63.5	58	20	21
CKB6-CMA32	**335.433**	CKB6	32	63.5	70	28	24
CKB6-CMA40	**335.434**	CKB6	40	63.5	80	28	27
CKB7-CMA32	**335.435**	CKB7	32	90	83	28	24
CKB7-CMA40	**335.436**	CKB7	40	90	93	28	27

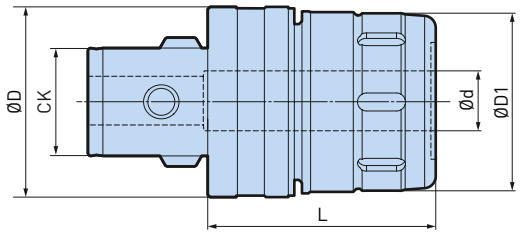
1. * As long as stock lasts.

Milling Chucks

With needle-bearing chucking nut for maximum clamping force and high concentricity.

Coolant Through Hole





Model	Order No.	CK	Ød	ØD	ØD1	L
CKB5-HMC20S *	807.572	CKB5	20	63,5	50	57
CKB6-HMC20 *	335.066	CKB6	20	63,5	60	56
CKB7-HMC32	335.077	CKB7	32	90	80	102

A.5

1. Wrench (FK) is included.
2. Straight collets C and OCA are applicable.
3. * OCA collet can not be used.

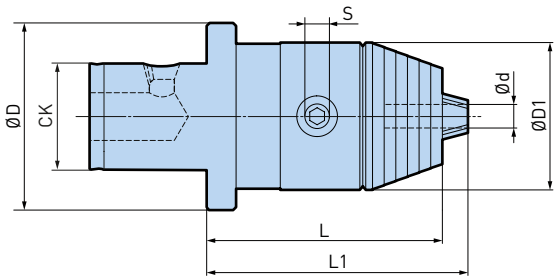
Accessories & Spare Parts

OCA Collets	C Collets	FK Wrenches
		
▶ 348	▶ 349	▶ 352

Universal Drill Chucks

With strong clamping force and high runout accuracy. Quick and simple clamping over a bevel gear.





Model	Order No.	CK	Ød	ØD	ØD1	L	L1	S
CK6-DC13	335.042	CK6	1 - 13	63.5	50	81	90	6
CK6-DC16	335.044	CK6	3 - 16	63.5	57	86	92	6

1. Wrench is included.

Accessories & Spare Parts

Wrenches

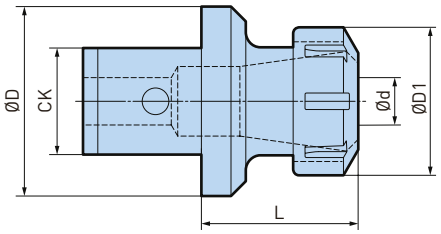
▶ 500

ER Collet Chucks

For slotted double-taper collets with extraction groove, according to DIN 6499.

Coolant Through Hole





Model	Order No.	CK	Ød	ØD	ØD1	L	Collet Model
CKB4-ER25	**335.140**	CKB4	2.75 - 16	39	42	47	ER25
CKB5-ER25	**335.142**	CKB5	2.75 - 20	50	42	47	ER25
CKB6-ER32	**335.164**	CKB6	2.75 - 25	64	50	53	ER32
CKB6-ER40	**335.165**	CKB6	2 - 25	64	63	65	ER40

1. Nut is included.
2. ER collets are to be ordered separately.

Accessories & Spare Parts

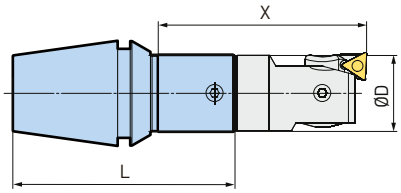
MEGA ER Collets	ER Nuts
	
▶ 342	▶ 344

ER Collet Adapters

Enables the use of all BIG KAISER fine and rough boring heads of corresponding sizes - CKB1 / CKB2 (ER 25 / 32) on ER collet holders.

Coolant Through Hole





Model	Order No.	CK	ØD	L	X
ER25-CKB1-50	**335.130**	CKB1	19	55	50
ER32-CKB1-50	**335.131**	CKB1	19	61	50
ER32-CKB2-50	**335.132**	CKB2	24	58	50

Accessories & Spare Parts

ER Nuts

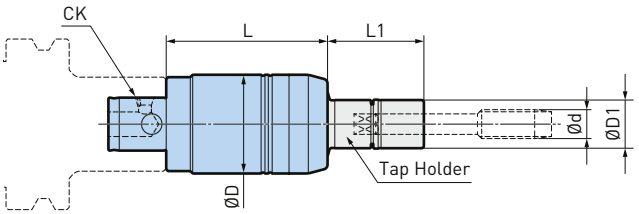
▶ 344

MEGA Synchro Tapping Holder

Compensates for synchronization errors during rigid tapping. Improves thread quality and tool life by reducing thrust loads caused by synchronization errors up to 90%.

Coolant Through Hole





A.5

Model	Order No.	CK	Tap Holder	Ød	ØD	L	L1
CKB4-MGT6-62	**335.764**	CKB4	MGT6	M2 - M6	36	62	30 - 200
CKB4-MGT12-67	**335.768**	CKB4	MGT12	M6 - M12	41	67	30 - 200
CKB5-MGT20-87	**335.769**	CKB5	MGT20	M12 - M20	54	87	35 - 150

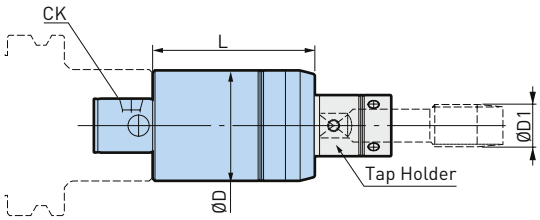
1. Tap holder is to be ordered separately.
2. Synrchonized tapping function is required on the machine.

MEGA Synchro Tapping Holder MGT36

For large Tapping: Type MGT36

Coolant Through Hole





Model	Order No.	CK	Tap Holder	ØD	ØD1	L
CKB7-MGT36-137	**800.949**	CKB7	MGT36	94	38-52	137

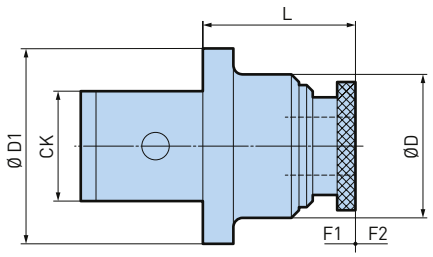
1. Tap holder is to be ordered separately.
2. Synrchonized tapping function is required on the machine.

Accessories & Spare Parts

Tap Holder	MEGA Wrenches	Accessories
		
▶ 356-363	▶ 351	▶ 364-365

Tapping Holders





Model	Order No.	CK	ØD	ØD1	L	F1	F2
CK6-ATE12E	**335.762**	CK6	47	63.5	50	5	10
CK6-ATE24E	**335.763**	CK6	64	63.5	80	7	14

1. F1 = length compensation compression.
2. F2 = length compensation extension.
3. Please contact BIG KAISER agent for tap collet.

Blanks

The CK connector is hardened and ground. The blank is unhardened and unground.



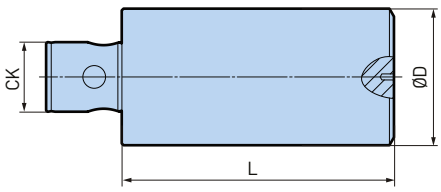


Fig. 1

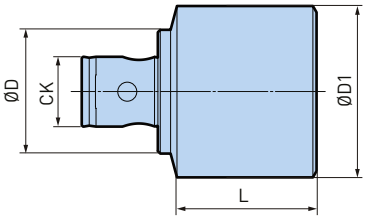
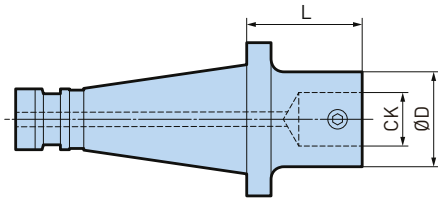


Fig. 2

Model	Order No.	Fig.	CK	ØD	ØD1	L
CKB3-31-65	**335.531**	1	CKB3	31	31	65
CKB3-42-50	**335.532**	2	CKB3	31	42	50
CKB4-39-80	**335.541**	1	CKB4	39	39	80
CKB4-54-50	**335.542**	2	CKB4	39	54	50
CKB5-50-100	**335.551**	1	CKB5	50	50	100
CKB5-70-60	**335.552**	2	CKB5	50	70	60
CKB6-64-120	**335.561**	1	CKB6	64	64	120
CKB6-64-220	**335.563**	1	CKB6	64	64	220
CKB6-97-70	**335.562**	2	CKB6	64	97	70
CKB7-90-180	**335.571**	1	CKB7	90	90	180

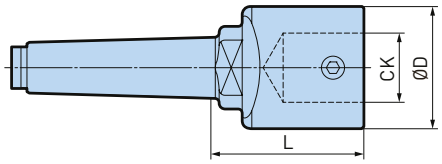
DIN 2080 Tool Holders



Model	Order No.	CK	ØD	L
DV40-DIN2080-CKB5-39	**321.451**	CKB5	50	39
DV40-DIN2080-CKB6-45	**321.462**	CKB6	63.5	45
DV50-DIN2080-CKB6-49 *	**323.780**	CKB6	63.5	49
DV50-DIN2080-CKB7-63 *	**323.781**	CKB7	90	63

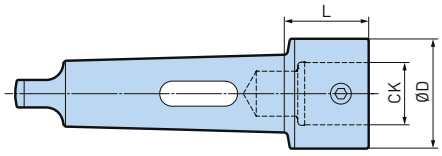
A.5

Morse Taper shanks with thread (SIP/Hauser)



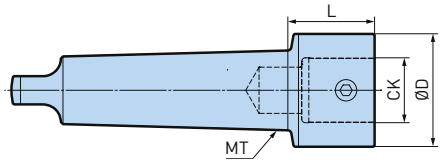
Model	Order No.	CK	ØD	L
MK4-CKB6-81	**322.563**	CKB6	63.5	81

Morse Taper shanks with tang



Model	Order No.	CK	ØD	L
MK5-CKB6-55	**323.563**	CKB6	63.5	55

Morse Taper shanks with tang



Model	Order No.	CK	ØD	L
MT3-CKB1-47	**806.671**	CKB1	19	47
MT3-CKB2-68	**806.712**	CKB2	24	67.5
MT3-CKB3-64	**806.713**	CKB3	31	64
MT3-CKB5-48	**806.714**	CKB5	50	48
MT4-CKB1-52	**806.715**	CKB1	19	51.5
MT4-CKB2-74	**806.716**	CKB2	24	74
MT4-CKB3-66	**806.717**	CKB3	31	65.5
MT4-CKB4-60	**806.718**	CKB4	39	59.5
MT4-CKB5-50	**806.719**	CKB5	50	49.5
MT4-CKB6-61	**806.720**	CKB6	64	60.5
MT5-CKB4-86	**806.721**	CKB4	39	85.5
MT5-CKB5-75	**806.722**	CKB5	50	74.5
MT5-CKB6-61	**806.723**	CKB6	64	60.5
MT6-CKB6-61	**806.724**	CKB6	64	60.5

Tool Holders Cylindrical Shank

MEGA Micro Chuck	264
New Baby Chuck	265
Hydraulic Chucks	267
New Hi-Power Milling Chuck	268
Shrink Chuck	269
CK Shanks	271
MW Rough Boring Heads	272
MEGA Synchro Tapping Holder	273
Other Products	275

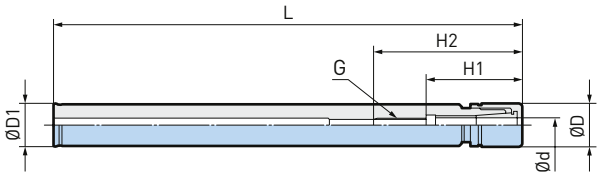
A.6

MEGA Micro Chuck

Ultra small diameter (Ø 10 - Ø 18) to minimize interference. High precision is guaranteed in combination with MEGA New Baby Chuck.

Coolant Through Hole





ø0.45 - 8.05mm

Model	Order No.	Ød	ØD	ØD1	L	H1	H2	G	Collet Model	Nut Model
ST10-MEGA3S-120	**961.777**	0.45 - 3.25	10	10	120	22	38	M4 P0.7	NBC3S	MGN3S
ST12-MEGA4S-130	**961.773**	0.45 - 4.05	12	12	130	26.5	47	M5 P0.8	NBC4S	MGN4S
ST12-MEGA4S-160	**961.778**	0.45 - 4.05	12	12	160	26.5	47	M5 P0.8	NBC4S	MGN4S
ST14-MEGA6S-160	**961.774**	0.45 - 6.05	14	14	160	28.5	49	M7 P0.75	NBC6S	MGN6S
ST14-MEGA6S-200	**961.779**	0.45 - 6.05	14	14	200	28.5	49	M7 P0.75	NBC6S	MGN6S
ST16-MEGA8S-160	**803.596**	2.95 - 8.05	18	16	160	31	50.5	M9 P0.75	NBC8S	MGN8S
ST16-MEGA8S-200	**805.575**	2.95 - 8.05	18	16	200	31	50.5	M9 P0.75	NBC8S	MGN8S

A.6

1. MEGA nut is included in delivery.

MEGA Micro Chuck Set

Including convenient storage case.



Set Model	Order No.
SST12-MEGA4S-130	**961.775**

Contents

- Body / ST12 - MEGA4S - 130 (with MGN4S nut)
- Collet / NBC4S - 3.0 & 4.0 (2 pcs.)
- Wrench / MGR12

Set Model	Order No.
SST14-MEGA6S-160	**961.776**

Contents

- Body / ST14 - MEGA6S - 160 (with MGN6S nut)
- Collet / NBC6S - 3.0,4.0,5.0 & 6.0 (4 pcs.)
- Wrench / MGR14

Set Model	Order No.
SST16-MEGA8S-160	**805.412**

Contents

- Body / ST16 - MEGA8S - 160 (with MGN8S nut)
- Collet / NBC8S - 3.0,4.0,6.0 & 8.0 (4 pcs.)
- Wrench / MGR18

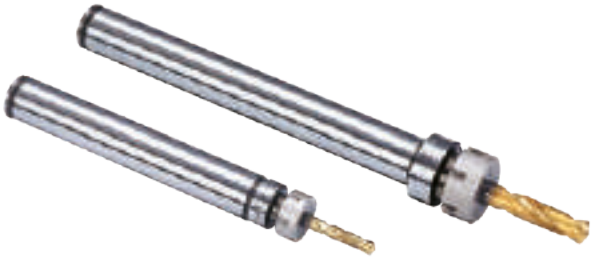
Accessories & Spare Parts

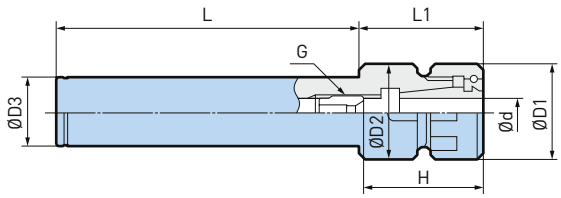
MEGA Nuts	Micro Seal Nuts	Micro Collets	MEGA Wrenches	Collet Protective Cases	Taper Cleaners
					
▶ 326	▶ 326	▶ 325	▶ 351	▶ 326	▶ 370

New Baby Chuck

Avoids interference when used in combination with BIG KAISER New Hi-Power Milling Chuck.

Coolant Through Hole



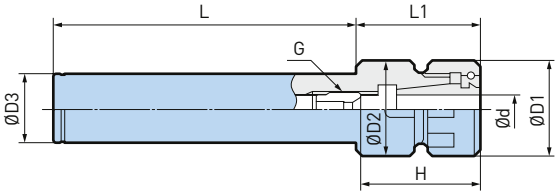


ø0.25 - 20mm

Model	Order No.	Ød	ØD1	ØD2	ØD3	L	L1	H	Collet Model
ST20-NBS6-100	**961.701**	0.25 - 6	20	19.5	20	100	24	20 - 40	NBC6
ST20-NBS6-150	**961.702**	0.25 - 6	20	19.5	20	150	24	20 - 40	NBC6
ST20-NBS6-250	**961.703**	0.25 - 6	20	19.5	20	250	24	20 - 40	NBC6
ST20-NBS8-100	**961.706**	0.5 - 8	25	24.5	20	100	26	23 - 43	NBC8
ST20-NBS8-150	**961.707**	0.5 - 8	25	24.5	20	150	26	23 - 43	NBC8
ST20-NBS8-250	**961.708**	0.5 - 8	25	24.5	20	250	26	23 - 43	NBC8
ST20-NBS10-100	**961.711**	1.5 - 10	30	29.5	20	100	28	35 - 45	NBC10
ST20-NBS10-150	**961.712**	1.5 - 10	30	29.5	20	150	28	35 - 45	NBC10
ST20-NBS10-250	**961.713**	1.5 - 10	30	29.5	20	250	28	35 - 45	NBC10
ST20-NBS10-350	**961.714**	1.5 - 10	30	29.5	20	350	28	35 - 45	NBC10
ST25-NBS6-150	**961.716**	0.25 - 6	20	19.5	25	150	24	20 - 40	NBC6
ST25-NBS6-200	**961.717**	0.25 - 6	20	19.5	25	200	24	20 - 40	NBC6
ST25-NBS6-250	**961.718**	0.25 - 6	20	19.5	25	250	24	20 - 40	NBC6
ST25-NBS8-150	**961.721**	0.5 - 8	25	24.5	25	150	26	23 - 42	NBC8
ST25-NBS8-200	**961.722**	0.5 - 8	25	24.5	25	200	26	23 - 42	NBC8
ST25-NBS8-250	**961.723**	0.5 - 8	25	24.5	25	250	26	23 - 42	NBC8
ST25-NBS10-150	**961.726**	1.5 - 10	30	29.5	25	150	28	35 - 45	NBC10
ST25-NBS10-200	**961.727**	1.5 - 10	30	29.5	25	200	28	35 - 45	NBC10
ST25-NBS10-250	**961.728**	1.5 - 10	30	29.5	25	250	28	35 - 45	NBC10
ST25-NBS13-150	**961.731**	2.5 - 13	35	34.5	25	150	34	41 - 60	NBC13
ST25-NBS13-200	**961.732**	2.5 - 13	35	34.5	25	200	34	41 - 60	NBC13
ST25-NBS13-250	**961.733**	2.5 - 13	35	34.5	25	250	34	41 - 60	NBC13

A.6

continues on the next page



Model	Order No.	Ød	ØD1	ØD2	ØD3	L	L1	H	Collet Model
ST32-NBS6-150	**961.736**	0.25 - 6	20	19.5	32	150	24	20 - 40	NBC6
ST32-NBS6-200	**961.737**	0.25 - 6	20	19.5	32	200	24	20 - 40	NBC6
ST32-NBS8-150	**961.741**	0.5 - 8	25	24.5	32	150	26	23 - 42	NBC8
ST32-NBS8-200	**961.742**	0.5 - 8	20	24.5	32	200	26	23 - 42	NBC8
ST32-NBS10-150	**961.746**	1.5 - 10	30	29.5	32	150	28	35 - 45	NBC10
ST32-NBS10-200	**961.747**	1.5 - 10	30	29.5	32	200	28	35 - 45	NBC10
ST32-NBS10-250	**961.748**	1.5 - 10	30	29.5	32	250	28	35 - 45	NBC10
ST32-NBS10-350	**961.749**	1.5 - 10	30	29.5	32	350	28	35 - 45	NBC10
ST32-NBS13-150	**961.751**	2.5 - 13	35	34.5	32	150	34	41 - 60	NBC13
ST32-NBS13-200	**961.752**	2.5 - 13	35	34.5	32	200	34	41 - 60	NBC13
ST32-NBS13-250	**961.753**	2.5 - 13	35	34.5	32	250	34	41 - 60	NBC13
ST32-NBS13-300	**961.754**	2.5 - 13	35	34.5	32	300	34	41 - 60	NBC13
ST32-NBS16-150	**961.756**	2.5 - 16	42	41.5	32	150	34	45 - 65	NBC16
ST32-NBS16-200	**961.757**	2.5 - 16	42	41.5	32	200	34	45 - 65	NBC16
ST32-NBS16-300	**961.758**	2.5 - 16	42	41.5	32	300	34	45 - 65	NBC16
ST32-NBS20-150	**961.761**	2.5 - 20	46	45.5	32	150	34	48 - 65	NBC20
ST32-NBS20-200	**961.762**	2.5 - 20	46	45.5	32	200	34	48 - 65	NBC20
ST32-NBS20-300	**961.763**	2.5 - 20	46	45.5	32	300	34	48 - 65	NBC20

1. New Baby Nut is included.
2. "G" is the adjusting screw (optional).
3. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

New Baby Nuts	Baby Perfect Seals	New Baby Collets	New Baby Wrenches	Adjusting Screws NBA	Taper Cleaners
					
▶ 334	▶ 338	▶ 329	▶ 352	▶ 335	▶ 370

Hydraulic Chuck Super Slim

Ultra precise hydraulic chuck with extremely slim design.

Coolant Through Hole



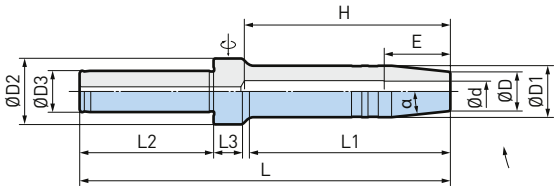


Fig. 1

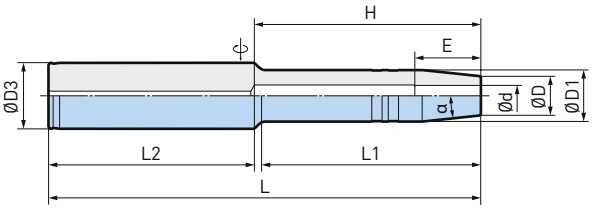


Fig. 2

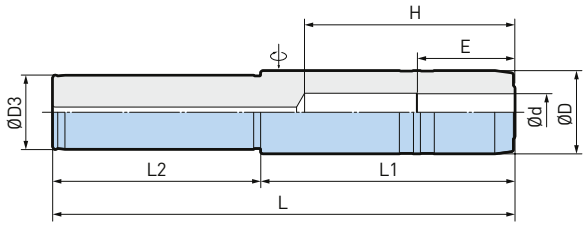


Fig. 3

A.6

ø4 - 20mm

Model	Order No.	Fig.	Ød	ØD	ØD1	ØD2	ØD3	L	L1	L2	H	E	α
ST20-HDC4S-180	**805.835**	1	4	14	18	32	20	180	94	65	-	19	6°
ST20-HDC6S-180	**805.836**	1	6	14	20	32	20	180	95	65	101	25	6°
ST20-HDC8S-180	**805.837**	1	8	17	23	32	20	180	96	65	101	31	6°
ST20-HDC10S-180	**805.838**	1	10	19	25	32	20	180	97	65	100	33	6°
ST20-HDC12S-180	**805.839**	1	12	21	28	32	20	180	99	65	100	36	6°
ST32-HDC10S-210	**805.595**	2	10	19	25	-	32	210	106	100	110	33	6°
ST32-HDC12S-210	**805.560**	2	12	21	28	-	32	210	108	100	109	36	6°
ST32-HDC16-200	**805.840**	3	16	36	-	-	32	200	110	90	91	43	-
ST32-HDC20-200	**805.841**	3	20	38	-	-	32	200	110	90	90	43	-

1. Adjusting screw cannot be used.
2. Use carbide cutter within a tolerance of h6.
3. "E" is the min. clamping length.
4. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

PJC Collets	PSC Collets	Wiper Cleaners
		
▶ 347	▶ 348	▶ 370

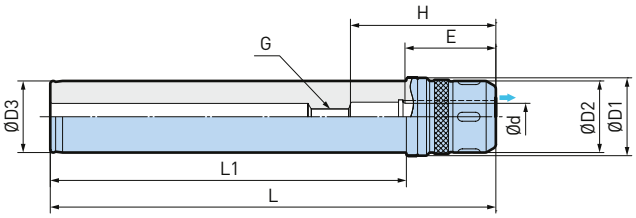
New Hi-Power Milling Chuck HMC12J

Extremely slim and rigid design with jet through coolant.

Coolant Through Hole







ø6 - 12mm

Model	Order No.	Ød	ØD1	ØD2	ØD3	L	L1	H	E	G
ST32-HMC12J-120	**805.842**	12	35	32	32	120	80	65	43	M8
ST32-HMC12J-160	**805.843**	12	35	32	32	160	120	65	43	M8
ST32-HMC12J-200	**805.844**	12	35	32	32	200	160	65	43	M8

1. Wrench is to be ordered separately.
2. "E" is the min. clamping length.
3. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

PJC Collets	FK Wrenches
	
▶ 347	▶ 352

Shrink Chuck Super Slim

Slim design reduces interference contours of the holder

Coolant Through Hole



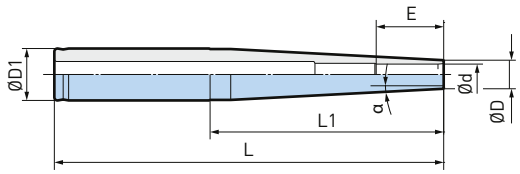


Fig. 1

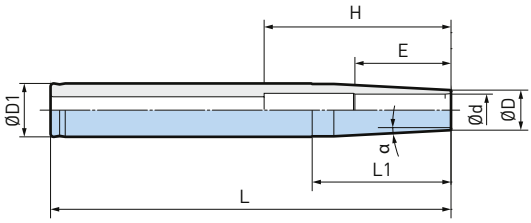


Fig. 2

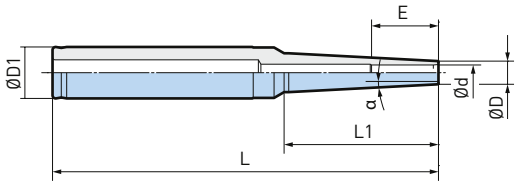


Fig. 3

A.6

ø4 - 12mm

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	H	E	α
ST12-SRC4SS-120	**802.189**	1	4	7	12	120	51	-	16	3°
ST12-SRC6SS-120	**802.190**	2	6	9	12	120	32	52	26	3°
ST20-SRC6SS-200	**802.210**	1	6	9	20	200	110	-	26	3°
ST20-SRC6SS-250	**802.212**	1	6	9	20	250	110	-	26	3°
ST20-SRC8SS-150	**802.217**	1	8	11	20	150	90	-	26	3°
ST20-SRC8SS-200	**802.218**	1	8	11	20	200	90	-	26	3°
ST20-SRC8SS-250	**802.219**	1	8	11	20	250	90	-	26	3°
ST20-SRC10SS-150	**802.197**	2	10	13	20	150	71	60	32	3°
ST20-SRC10SS-200	**802.198**	2	10	13	20	200	71	60	32	3°
ST20-SRC10SS-250	**802.199**	2	10	13	20	250	71	60	32	3°
ST20-SRC12SS-150	**802.200**	2	12	15	20	150	52	70	36	3°
ST20-SRC12SS-200	**802.201**	2	12	15	20	200	52	70	36	3°
ST20-SRC12SS-250	**802.202**	2	12	15	20	250	52	70	36	3°
ST20-SRC4SS-150-K40	**802.205**	3	4	7	20	150	40	-	16	3°
ST20-SRC6SS-150-K60	**802.209**	3	6	9	20	150	60	-	26	3°

1. Use carbide cutter within a tolerance of h6.
2. "E" is the min. clamping length.
3. "H" is the max. tool shank length that can be inserted for these models.
4. Please refer to the operation manual of heating / cooling equipment, as some equipment may not be compatible.

Accessories & Spare Parts

Wiper Cleaners

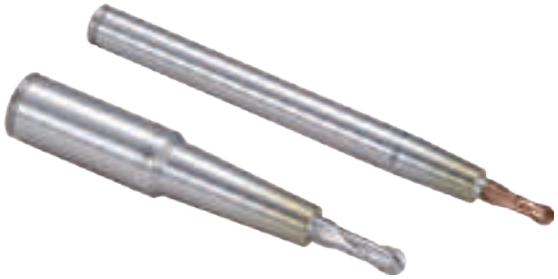


▶ 370

Shrink Chuck Slim

Slim design reduces interference contours of the holder.

Coolant Through Hole



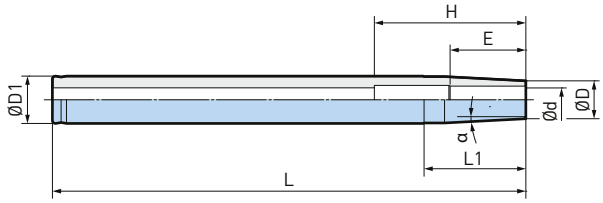


Fig. 1

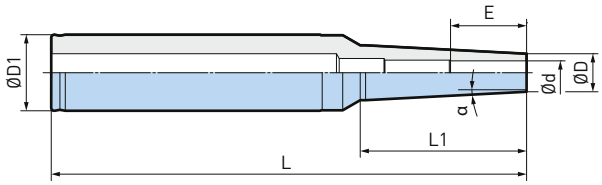


Fig. 2

ø12 - 20mm

Model	Order No.	Fig.	Ød	ØD	ØD1	L	L1	H	E	α
ST32-SRC16S-150	**802.245**	1	16	24	32	150	83	70	38	3°
ST32-SRC16S-200	**802.246**	1	16	24	32	200	83	80	38	3°
ST32-SRC16S-300	**802.247**	1	16	24	32	300	83	80	38	3°
ST32-SRC20S-150	**802.248**	1	20	28	32	150	50	80	38	3°
ST32-SRC20S-200	**802.249**	1	20	28	32	200	50	80	38	3°
ST32-SRC20S-300	**802.250**	1	20	28	32	300	50	80	38	3°
ST32-SRC12S-150-K70	**802.238**	2	12	19	32	150	70	-	36	3°
ST32-SRC12S-200-K70	**802.239**	2	12	19	32	200	70	-	36	3°
ST32-SRC12S-300-K70	**802.241**	2	12	19	32	300	70	-	36	3°

1. Use carbide cutter within a tolerance of h6.
2. "E" is the min. clamping length.
3. "H" is the max. tool shank length that can be inserted for these models.
4. Please refer to the operation manual of heating / cooling equipment, as some equipment may not be compatible.

Accessories & Spare Parts

Wiper Cleaners



► 370

CK Shanks

Coolant Through Hole



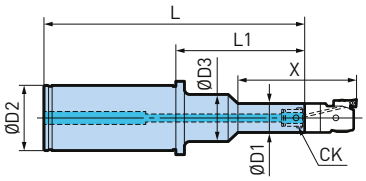


Fig. 1

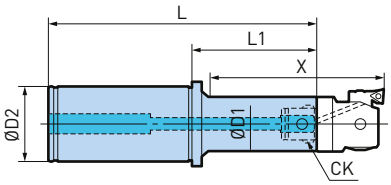


Fig. 2

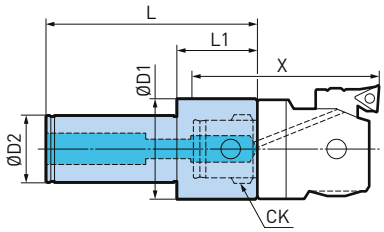


Fig. 3

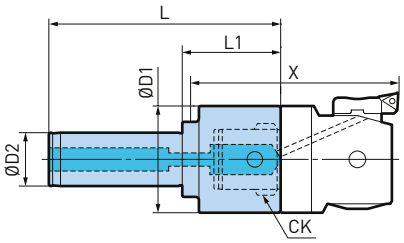


Fig. 4

CK1 - CK6

Model	Order No.	Fig.	CK	ØD1	ØD2	L	L1	X
ST32-CKB1-77	**806.725**	1	CKB1	19	32	157	77	73
ST32-CKB2-73	**978.413**	2	CKB2	24	32	152.5	72.5	100
ST32-CKB3-69	**806.726**	2	CKB3	31	32	149	69	100
ST32-CKB4-58	**978.406**	3	CKB4	39	32	138	58	100
ST32-CKB5-48	**806.727**	4	CKB5	50	32	128	48	100
ST32-CKB6-59	**978.357**	4	CKB6	64	32	139	59	125
ST42-CKB1-77	**806.728**	1	CKB1	19	42	157	77	73
ST42-CKB2-73	**806.729**	2	CKB2	24	42	152.5	72.5	100
ST42-CKB3-69	**806.730**	2	CKB3	31	42	149	69	100
ST42-CKB4-63	**806.731**	2	CKB4	39	42	143	63	100
ST42-CKB5-48	**806.732**	3	CKB5	50	42	128	48	100
ST42-CKB6-59	**806.733**	4	CKB6	64	42	139	59	125

1. X and L1 dimensions on the table are reference figures when EWN/EWE head is mounted.

Accessories & Spare Parts

Fine Boring Heads



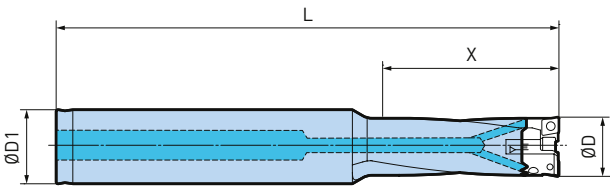
▶ 396-399

MW Rough Boring Heads, Ø 16 - 21

The MW rough boring heads permit extremely fast roughing of small holes (Ø 16-21 mm).

Coolant Through Hole





A.6

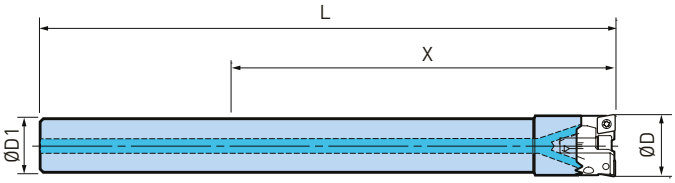
Model	Order No.	ØD	ØD1	L	X
ST20-MW1619-45	**807.540**	16 - 19	20	136	45
ST20-MW1619-60	**472.051**	16 - 19	20	150	60
ST20-MW1821-50	**807.541**	18 - 21	20	141	50
ST20-MW1821-65	**472.061**	18 - 21	20	155	65

1. Insert holder is to be ordered separately.

MW Rough Boring Heads, Ø 16 - 21 Carbide

Coolant Through Hole





Model	Order No.	ØD	ØD1	L	X
ST14W-MW16-110	**807.552**	16 - 19	14	151	110
ST16W-MW18-115	**807.553**	18 - 21	16	172	115

1. Insert holder is to be ordered separately.
2. Exclusive use for through holes. Do not use with blind holes.

Accessories & Spare Parts

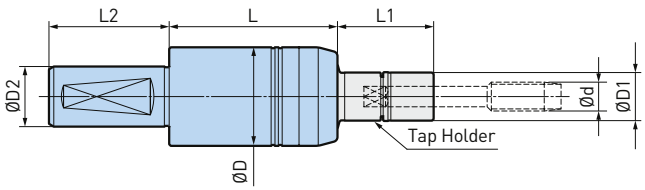
Insert Holders MW	Inserts MW
	
▶ 382	▶ 475

MEGA Synchro Tapping Holder

Compensates for synchronization errors during rigid tapping. Improves thread quality and tool life by reducing thrust loads caused by synchronization errors up to 90%.

Coolant Through Hole





M3 - M20

Model	Order No.	Tap Holder	Ød	ØD	ØD1	ØD2	L	L1	L2
ST20-MGT6-65	**963.601**	MGT6	M3-M8	36	16	20	65	30 - 200	40
ST25-MGT12-70	**963.602**	MGT12	M5-M12 / P1/8	41	20	25	70	30 - 200	50
ST32-MGT20-90	**963.603**	MGT20	M10-M20 / P1/4-P1/2	54	30	32	90	35 - 150	55

1. Tap holder and wrench are to be ordered separately.
2. Synrchonized tapping function is required on the machine.
3. Side lock holder model TSL is recommended as a basic holder.

Accessories & Spare Parts

Tap Holder	MEGA Wrenches	Accessories
		
▶ 356-363	▶ 351	▶ 364-365

MEGA Synchro Tapping Holder

For small Tap MGT3



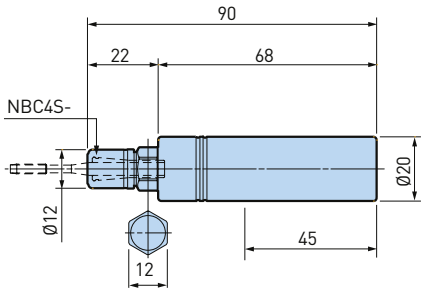


Fig. 1

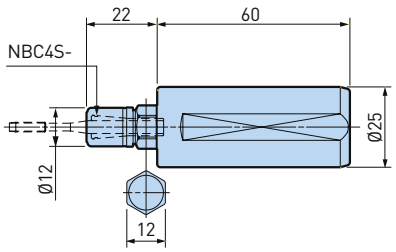


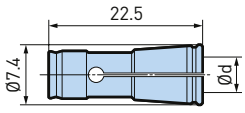
Fig. 2

Model	Order No.	Fig.
ST20-MGT3-90	**978.356**	1
SLS25-MGT3-22	**804.115**	2

1. MEGA nut is included in delivery.
2. MEGA wrench (MGR12) and common spanner (12 mm) are required to clamp/unclamp the tap.
3. 12 mm wrench is additionally required to clamp/release the tool.
4. Synrchonized tapping function is required on the machine.
5. Coolant-through hole is not available.
6. ST20 has no flat on the shank.

Micro Collet for MGT3





Model	Order No.	Tapping Range			Tap Shank
		DIN 371	ISO 529	JIS	Ød
NBC4S-2.5AA	**961.468**	M1 - M1.8	M2		2.5
-2.8AA	**968.353**	M2 - M2.6	M2.2, M2.5		2.8
-3.0AA	**961.470**	-	-	M1 - M2.6	3.0
-3.1AA	**968.355**	-	M3		3.15
-3.5AA	**961.472**	M3	-		3.5
-4.0AA	**961.474**	-	-	M3	4.0

1. Other sizes available. Please refer to micro collet.

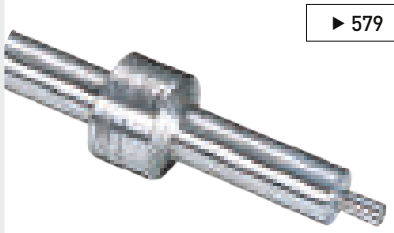
Accessories & Spare Parts

Micro Collets	MEGA Wrenches
	
▶ 325	▶ 351

Other products with cylindrical shank


▶ 574

Point Master
- Touch probe and edge finder
- High precision stroke and interchangeable stylus for measuring different applications


▶ 579

Accu Center
- Edge finder
- Simple and precise edge finder offering repeatability within 3 µm


▶ 525

Fullcut Mill
- Indexable insert endmill
- Shoulder and slot milling cutter with both high radial and axial rake angle


▶ 549

C-Cutter
- Wide range chamfer mill
- Reduced number of tools and tool change time


▶ 553

C-Cutter Mini
- Ultra high feed chamfer mill
- 4 inserts and small tool diameter minimize cutting speed


▶ 561

R-Cutter
- Corner rounding mill
- Front & back chamfering
- 4 inserts multiply feed rate

A.6


▶ 565

C-Centering Cutter
- Centering and chamfer with insert
- Stable and long life time operation with insert


▶ 566

Center Boy
- Center and chamfer in one
- Accurate centering and chamfering can be obtained in a single operation


▶ 568

BF-Cutter
- Back spot facing tool for cap screw hole Selected spot facing diameters suitable for cap screws


▶ 430

EWN Fine Boring
- EWN 04-7 is the world smallest boring head available from Ø0.4 bore


▶ 449

Carbide Bar Boring Tools
- Carbide long Boring Bars for Roughing and Finishing
- Various size of Boring Heads and shank size offer the most suitable solution


▶ 309

Turning Tool Series
- Various turning tool tools for NC lathe and Swiss Lathe machines.

Modular Turning / Lathe Tools

Modular Turning Overview	**278**
BBT SERIES	
Selection Guide	**282**
Modular Turning Tools	**284**
HSK-T SERIES	
Selection Guide	**290**
Modular Turning Tools	**292**
Turning Adapter	**297**
BIG CAPTO SERIES	
Selection Guide	**298**
Modular and Monoblock Turning Tools	**300**
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N/C LATHE TOOLING	
Collet Chucks	**309**
Tapping Holder	**315**
Smart Damper Turning and Turning Cartridge	**316**
Hydraulic Chucks	**318**

A.7

Revolutionary modular system for turning

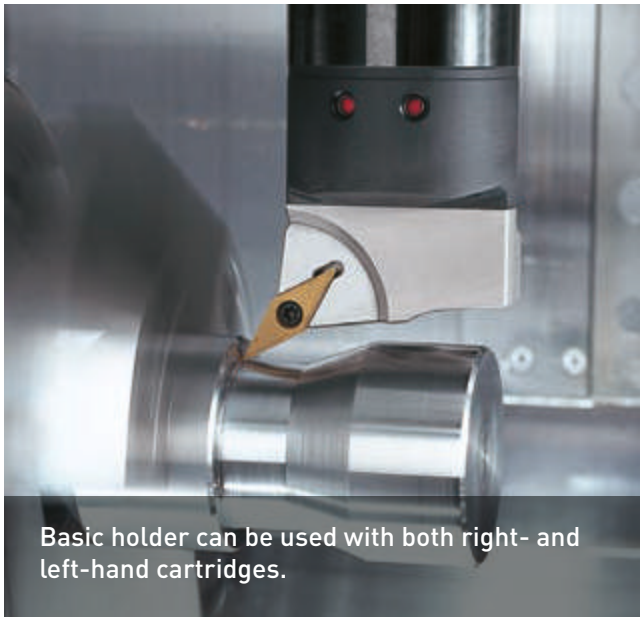
45° (Tilt Type) **S Type**



Tilting the "B" axis 45° minimizes the cutting forces transmitted to the machine spindle.

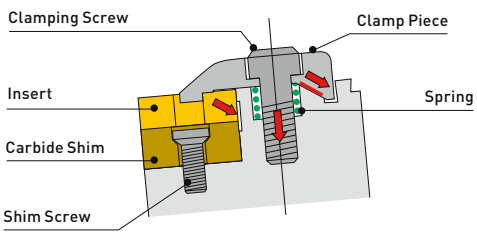


90° (Right Angle Type) **F Type** PAT.



Basic holder can be used with both right- and left-hand cartridges.





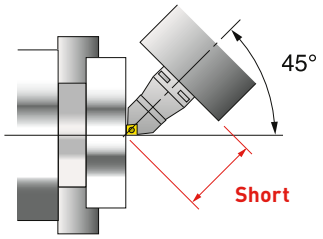
A double-clamping system that utilizes a "Push and Draw" mechanism to fix inserts securely

Secure insert clamping has been realized through the double-clamping system, which pushes the insert downwards while at the same time generating drawing force on the insert contact surface.

The issue of a valuable holder breakage caused by problems such as chipping has been eliminated through the use of a "modular system", resulting in enhanced efficiency and economy.

45° incline avoids interference with the chuck

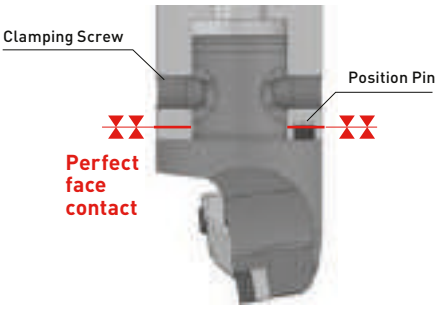
Tool length can be minimized.

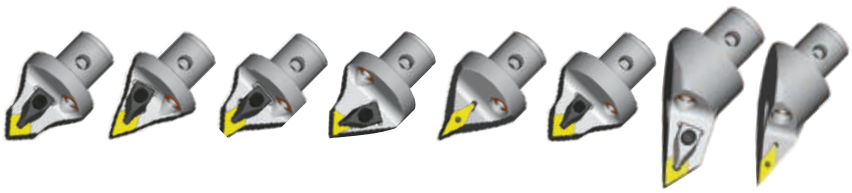


A total of 15 types of cartridges are available to support various applications

Strong clamping system

The two shallow-tapered clamping screws securely maintain contact between the cartridge and the basic holder flange face.

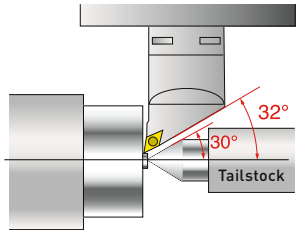




A.7

Comprehensive interference countermeasures

A series of "near-center" type cartridges are available, eliminating interference with the tailstock.

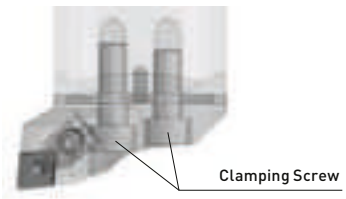


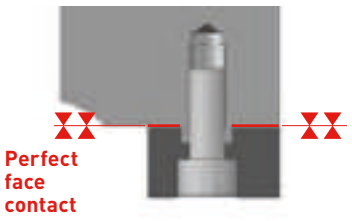
13 types of cartridges are available to support various applications

Both right hand and left hand are available.

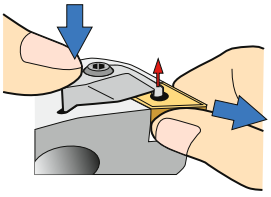
Strong clamping system

In the F Type clamping system, cartridges are fixed using the two front clamping screws. The interlocking drive slot receives the cutting torque firmly.









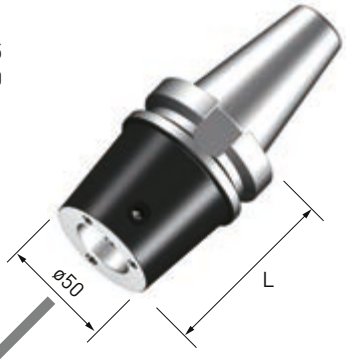
Easy attachment and removal of inserts

Insert attachment and removal can be performed easily by the built-in spring.
Loosen the clamping screw one full rotation, lightly press the clamp piece with a finger, and its tip will pop up.

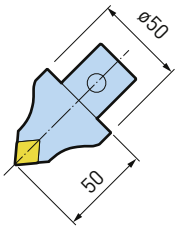
45°

S Type Basic Holder

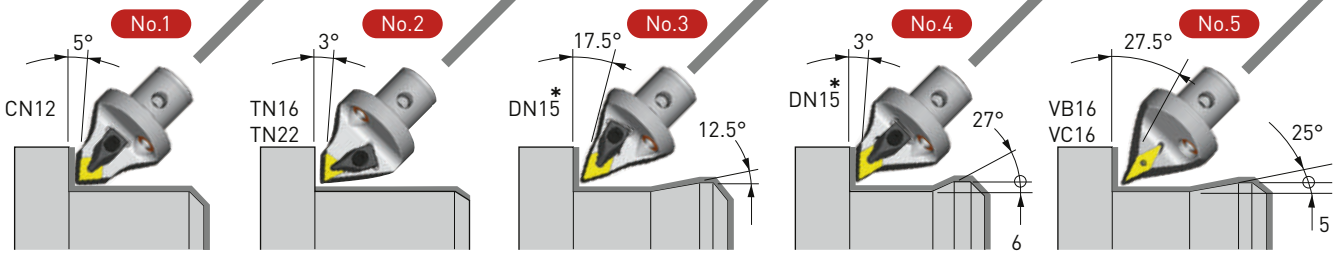
BBT40M- S50- 75
BBT50M- S50- 120



S Type (Tilt Type) Cartridge



A.7



S50-DCLNN-00050-12

S50-DTJNR-00050-16(22)
-DTJNL-00050-16(22)

S50-DDHNN-00050-15

S50-DDJNR-00050-15
-DDJNL-00050-15

S50-SVQBN-00050-16

* When using a DN1506 insert (thickness: 6.35mm), replace the standard carbide shim with the DNS1506 (optional).

90°

F Type Basic Holder

BBT40M- F50- 75
- 105
BBT50M- F63- 70
- 130



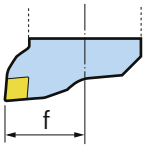
S Type Basic Holder



S Type Cartrige

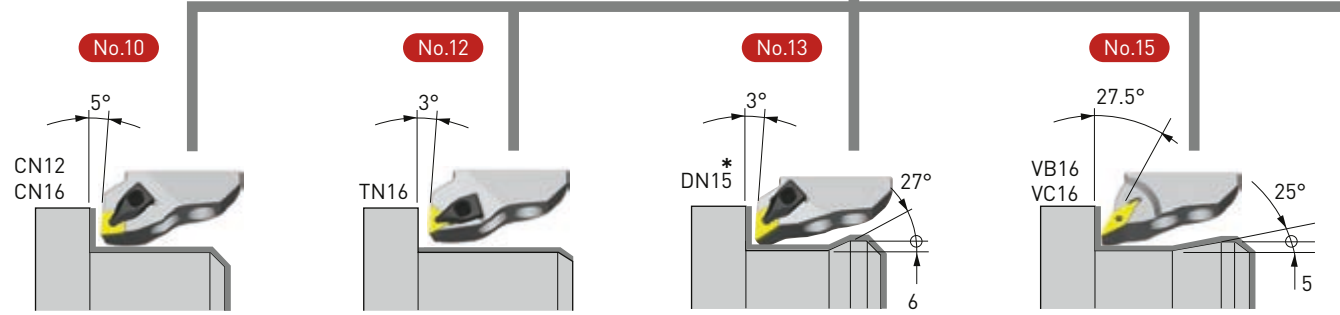


No.1
No.3
No.5
No.8



	f
F50	35
F63	45

F Type (Right Angle Type) **Cartridge**



F50-DCLNR-35035-12(16)
-DCLNL-35035-12(16)

F63-DCLNR-45035-12(16)
-DCLNL-45035-12(16)

F50-DTJNR-35035-16
-DTJNL-35035-16

F63-DTJNR-45035-16
-DTJNL-45035-16

F50-DDJNR-35035-15
-DDJNL-35035-15

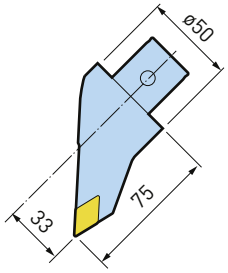
F63-DDJNR-45035-15
-DDJNL-45035-15

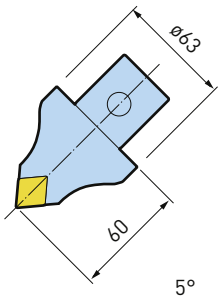
F63-SVQBR-45035-16
-SVQBL-45035-16

* When using a DN1506 insert (thickness: 6.35mm), replace the standard carbide shim with the DNS1506 (optional).

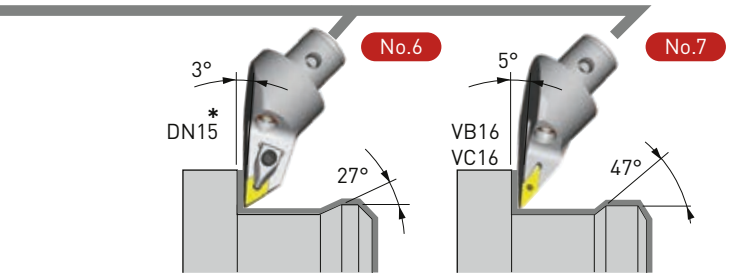
S Type
Basic Holder

BBT40M- S63- 65
BBT50M- S63- 110



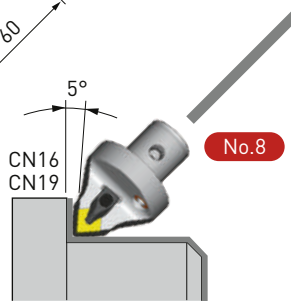






S50-DDJNR-33075-15
-DDJNL-33075-15

S50-SVLBR-33075-16
-SVLBL-33075-16



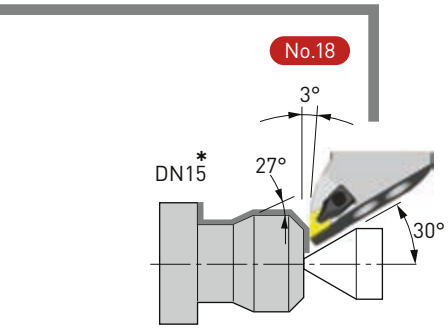
S63-DCLNN-00060-16
-DCLNN-00060-19



Side Lock Holder
for Boring Bar



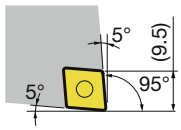
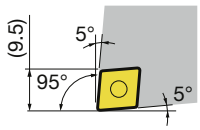
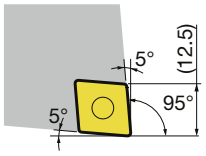
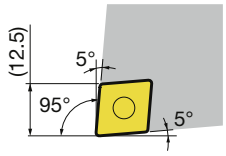
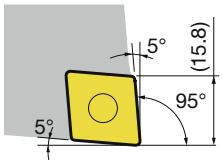
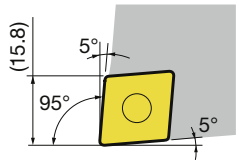
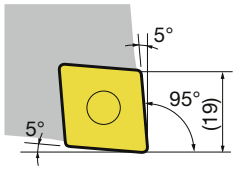
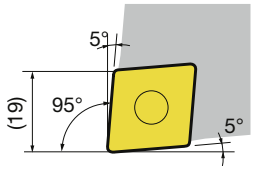
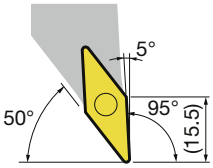
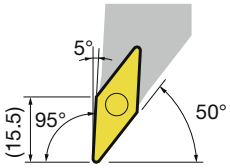
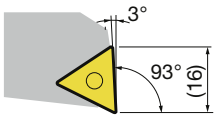
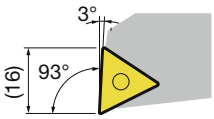
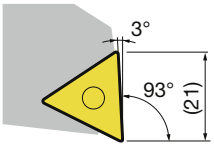
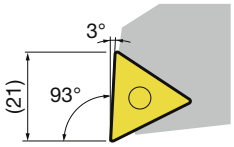
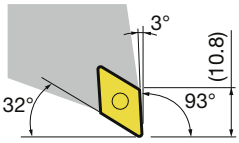
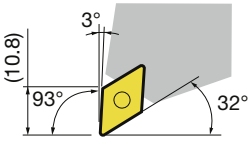
Square Tool Holder



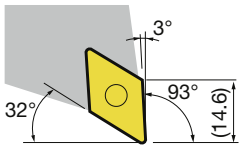
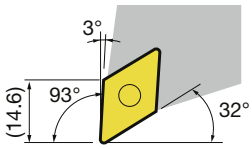
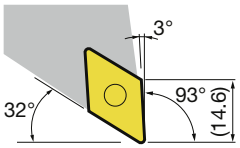
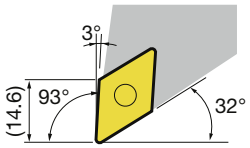
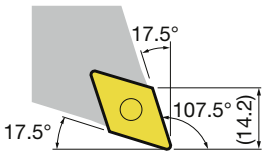
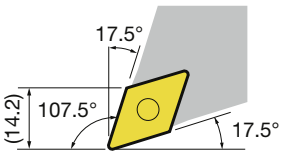
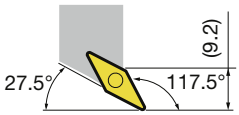
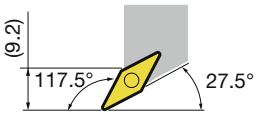
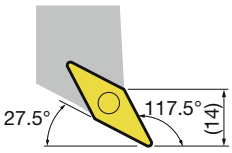
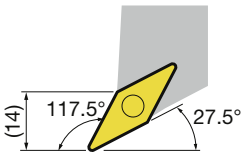
F50-DDJNR-35050-15
-DDJNL-35050-15

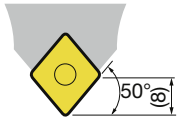
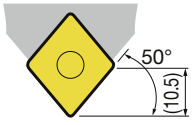
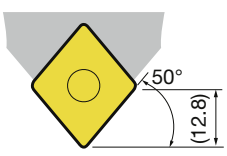
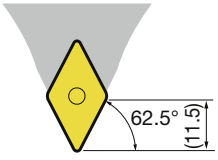
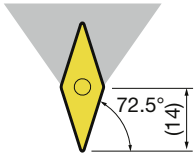
F63-DDJNR-45055-15
-DDJNL-45055-15

Selection Guide Table

Entering angle	Insert	Cartridge or Mono-block		Right hand	Left hand
		S Type	F Type		
95°	CN0903 (CN0904)		No.19		
	CN1204	No.1	No.10-1		
	CN1606	No.8-1	No.10-2		
	CN1906	No.8-2			
	VB1604 VC1604	No.7			
93°	TN1604	No.2-1	No.12		
	TN2204	No.2-2			
	DN1104		No.20		

A.7

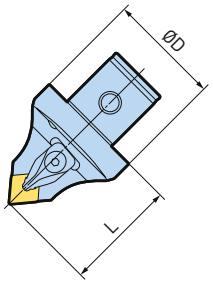
Entering angle	Insert	Cartridge or Mono-block		Right hand	Left hand
		S Type	F Type		
93°	DN1504 (DN1506)	No.4	No.13		
	DN1504 (DN1506)	No.6	No.18		
107.5°	DN1504 (DN1506)	No.3			
117.5°	VB1103 VC1103		No.21		
	VB1604 VC1604	No.5	No.15		

Neutral				
Insert				
CN12	CN16	CN19	DN1504 (DN1506)	VB1604 / VC1604
No.1 	No.8-1 	No.8-2 	No.3 	No.5 

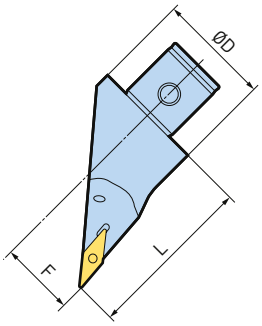
45° Cartridges Type S



N



L



Model	Order No.	Type	Hand	ØD	L	F	Entering Angle	Clamp Piece	Insert	No.
S50-DCLNN-00050-12	**973.014**	S50	N	50	50	0	95°	CP2	CN1204	1
S50-DTJNR-00050-16	**973.015**	S50	R	50	50	0	93°	CP1	TN1604	2 - 1
S50-DTJNL-00050-16	**973.016**	S50	L	50	50	0	93°	CP1	TN1604	2 - 1
S50-DTJNR-00050-22	**802.130**	S50	R	50	50	0	93°	CP2	TN2204	2 - 2
S50-DTJNL-00050-22	**802.129**	S50	L	50	50	0	93°	CP2	TN2204	2 - 2
S50-DDHNN-00050-15	**973.021**	S50	N	50	50	0	107.5°	CP2	DN1504* (DN1506)	3
S50-DDJNR-00050-15	**973.017**	S50	R	50	50	0	93°	CP2	DN1504* (DN1506)	4
S50-DDJNL-00050-15	**973.018**	S50	L	50	50	0	93°	CP2	DN1504* (DN1506)	4
S50-DDJNR-33075-15	**973.019**	S50	R	50	75	33	93°	CP2	DN1504* (DN1506)	6
S50-DDJNL-33075-15	**973.020**	S50	L	50	75	33	93°	CP2	DN1504* (DN1506)	6
S50-SVQBN-00050-16	**973.024**	S50	N	50	50	0	117.5°	M3.5	VB1604** / VC1604	5
S50-SVLBR-33075-16	**973.022**	S50	R	50	75	33	95°	M3.5	VB1604** / VC1604	7
S50-SVLBL-33075-16	**973.023**	S50	L	50	75	33	95°	M3.5	VB1604** / VC1604	7
S63-DCLNN-00060-16	**973.025**	S50	N	63	60	0	95°	CP3	CN1606	8 - 1
S63-DCLNN-00060-19	**805.724**	S50	N	63	60	0	95°	CP5	CN1906	8 - 1

1. Inserts are not included.
2. Wrench is to be ordered separately.
3. * Carbide shim for 4.76 mm thick DN1504 insert is included as standard. In case of DN1506 insert (thickness of 6.35 mm), please replace the standard carbide shim with DNS1506 (option).
4. ** VB1604 and VC1604 Inserts are suitable.

Coding system for cartridge

S50 - D C L N N - 00 050 - 12

- S50: Cartridge Type and Size
- D: Clamping Method
- C: Insert Shape
- L: Entering Angle
- N: Relief Angle
- N: Hand
- 00: Offset Value
- 050: Length
- 12: Insert Size

Clamping Method	
D	Double-Clamp
S	Screw-On

Insert Shape	
C	Rhombic 80°
T	Triangle 60°
D	Rhombic 55°
V	Rhombic 35°

Entering Angle	
J	93°
L	95°
H	107.5°
Q	117.5°

Relief Angle	
N	0° Negative
B	5° Positive

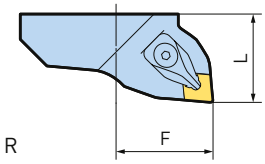
Hand	
R	Right Hand
L	Left Hand
N	Neutral

Accessories & Spare Parts

Spare parts for turning holders	Inserts CN	Inserts TN	Inserts DN	Inserts VB	Inserts VC
					
▶ 286	▶ 492	▶ 494	▶ 493	▶ 494	▶ 494

90° Cartridges Type F





Model	Order No.	Type	Hand	Entering Angle	Insert	L	F	No.
F50-DCLNR-35035-12	**973.064**	F50	R	95°	CN1204	35	45	10 - 1
F50-DCLNL-35035-12	**973.065**	F50	L	95°	CN1204	35	45	10 - 1
F50-DCLNR-35035-16	**973.066**	F50	R	95°	CN1606	35	45	10 - 2
F50-DCLNL-35035-16	**973.067**	F50	L	95°	CN1606	35	45	10 - 2
F50-DTJNR-35035-16	**973.068**	F50	R	93°	TN1604	35	45	12
F50-DTJNL-35035-16	**973.069**	F50	L	93°	TN1604	35	45	12
F50-DDJNR-35035-15	**973.070**	F50	R	95°	DN1504 * (DN1506)	35	45	13
F50-DDJNL-35035-15	**973.071**	F50	L	95°	DN1504 * (DN1506)	35	45	13
F50-DDJNR-35050-15	**973.072**	F50	R	95°	DN1504 * (DN1506)	50	45	18
F50-DDJNL-35050-15	**973.073**	F50	L	95°	DN1504 * (DN1506)	50	45	18
F63-DCLNR-45035-12	**973.076**	F63	R	95°	CN1204	35	45	10 - 1
F63-DCLNL-45035-12	**973.077**	F63	L	95°	CN1204	35	45	10 - 1
F63-DCLNR-45035-16	**973.078**	F63	R	95°	CN1606	35	45	10 - 2
F63-DCLNL-45035-16	**973.079**	F63	L	95°	CN1606	35	45	10 - 2
F63-DTJNR-45035-16	**973.080**	F63	R	93°	TN1604	35	45	12
F63-DTJNL-45035-16	**973.081**	F63	L	93°	TN1604	35	45	12
F63-DDJNR-45035-15	**973.082**	F63	R	93°	DN1504 * (DN1506)	35	45	13
F63-DDJNL-45035-15	**973.083**	F63	L	93°	DN1504 * (DN1506)	35	45	13
F63-SVQBR-45035-16	**973.086**	F63	R	117.5°	VB1604 / VC1604 **	35	45	15
F63-SVQBL-45035-16	**973.087**	F63	L	117.5°	VB1604 / VC1604 **	35	45	15
F63-DDJNR-45055-15	**973.084**	F63	R	93°	DN1504 * (DN1506)	55	45	18
F63-DDJNL-45055-15	**973.085**	F63	L	93°	DN1504 * (DN1506)	55	45	18

1. Inserts are not included.
2. Wrench is to be ordered separately.
3. * Carbide shim for 4.76 mm thick DN1504 insert is included as standard. In case of DN1506 insert (thickness of 6.35 mm), please replace the standard carbide shim with DNS1506 (option).
4. ** VB1604 and VC1604 Inserts are suitable.

Coding system for cartridge

F63 - D C L N R - 45 035 - 12

- F63: Cartridge Type and Size
- D: Clamping Method
- C: Insert Shape
- L: Entering Angle
- N: Relief Angle
- R: Hand
- 45: Offset Value
- 035: Length
- 12: Insert Size

Clamping Method	
D	Double-Clamp
S	Screw-On

Insert Shape	
C	Rhombic 80°
T	Triangle 60°
D	Rhombic 55°
V	Rhombic 35°

Entering Angle	
J	93°
L	95°
H	107.5°
Q	117.5°
U	93°

Relief Angle	
N	0° Negative
B	5° Positive

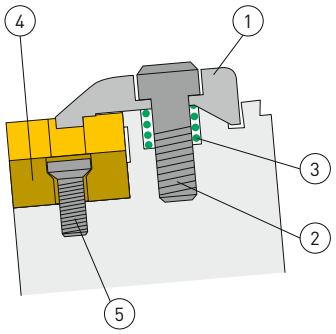
Hand	
R	Right Hand
L	Left Hand
N	Neutral

Accessories & Spare Parts

Spare parts for turning holders	Inserts CN	Inserts TN	Inserts DN	Inserts VB	Inserts VC
					
▶ 286	▶ 492	▶ 494	▶ 493	▶ 494	▶ 494

Spare parts for turning holders





Clamp Piece Set

Model	Order No.	Clamp Piece	Clamping Screw	Spring	Insert
SCP1	**973.181**	CP1	M5 x 20	Ø8 x 10	TN1604
SCP2	**973.182**	CP2	M5 x 20	Ø8 x 10	CN1204, TN2204, DN15
SCP3	**973.183**	CP3	M5 x 20	Ø8 x 10	CN1606
SCP5	**802.133**	CP5	M5 x 20	Ø8 x 10	CN1906
SCP7	**807.554**	CP7	M5 x 20	Ø8 x 10	CN0903, CN0904, DN11

1. 1 pce. each of the clamp piece, clamp screw and spring are included in the set.
2. The tightening wrench is a 4mm hex wrench. T-type hex wrench is sold as Model T-4.
3. (1) Clamp Piece (2) Clamp Screw (3) Spring

A.7

Carbide Shim Set

Model	Order No.	Insert	Carbide Shim	Clamping Screw	Torx size
SCNS0903C	**807.650**	CN0903	CNS0903C	M3 x 7	10IP
SCNS0904C	**807.651**	CN0904	CNS0904C	M3 x 7	10IP
SDNS1104C	**807.556**	DN1104	DNS1104C	M3 x 7	10IP
SCNS1204	**973.185**	CN1204	CNS1204	M4 x 8	T15
SDNS1504	**973.186**	DN1504	DNS1504	M4 x 8	T15
SDNS1506	**973.187**	DN1506	DNS1506	M4 x 8	T15
SCNS1606	**973.188**	CN1606	CNS1606	M5 x 12	T20
SCNS1906	**802.131**	CN1906	CNS1906	M5 x 12	T20
STNS1604	**973.184**	TN1604	TNS1604	M3 x 7	T10
STNS2204	**804.821**	TN2204	TNS2204	M4 x 8	T15

1. 1 pce. each of the carbide shim and shim clamp screw are included in the set.
2. The tightening wrench is a torx wrench. Driver-type torx wrench is sold as models DA-T10, DA-T15, and DA-T20.
3. (4) Carbide Shim (5) Shim Clamp Screw

Insert Clamping Screw Set

For VB11, VC11, VB16 and VC16 insert.



Model	Order No.	Insert	Screw	Wrench
S3508DS	**966.273**	VB1604 / VC1604	M3.5 x 8	DA-T15
S2.5S-7IP	**100763.001.0**	VB1103 / VC1103	M2.5 x 6.5	FS-7IP

1. 10 screws and 1 wrench are included.

Clamping screw Set

Clamping screw Set- Type S

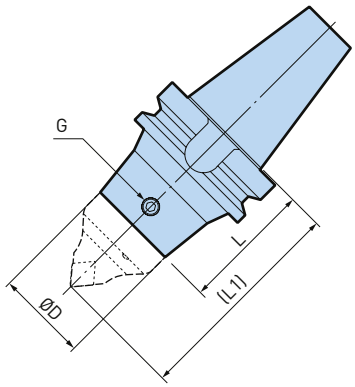


Model	Order No.	Type
CK5S	**805.891**	S50
CK6S	**805.892**	S63

1. 2 screws and 1 wrench are included

BBT(M) Basic Holder Type S (45°)



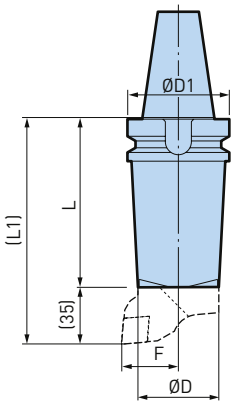


Model	Order No.	ØD	L	L1	Clamp Screw
BBT40M-S50-75	**978.160**	50	75	125	CK5S
BBT50M-S50-120	**804.877**	50	120	170	CK5S
BBT50M-S63-110	**804.878**	63	110	170	CK6S

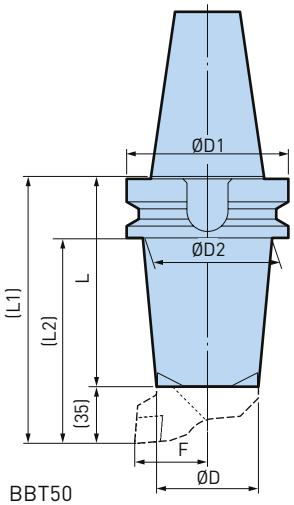
1. Clamping screw is included.

BBT(M) Basic Holder Type F (90°)





BBT40



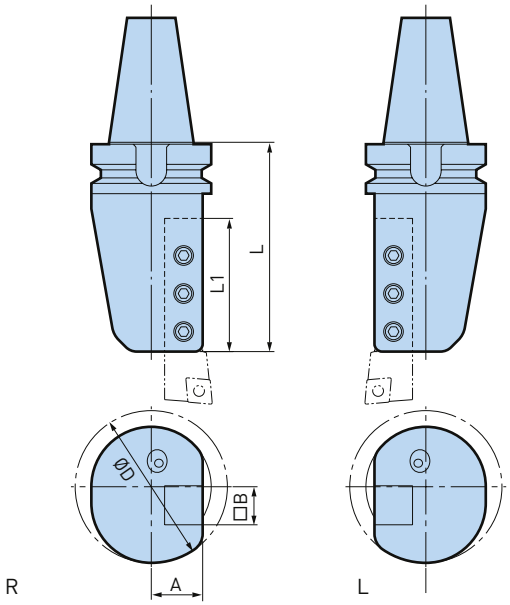
BBT50

Model	Order No.	ØD	ØD1	ØD2	L	L1	L2	F
BBT40M-F50-75	**800.157**	50	63	-	75	110	-	35
BBT40M-F50-105	**978.162**	50	63	-	105	140	-	35
BBT50M-F63-70	**800.322**	63	100	80	70	105	67	45
BBT50M-F63-130	**800.321**	63	100	80	130	165	127	45

1. Cartridge clamping screw is included.
2. Hexagon wrench is required to clamp cartridge (not included).

BBT(M) Square Tool Holder (180°)



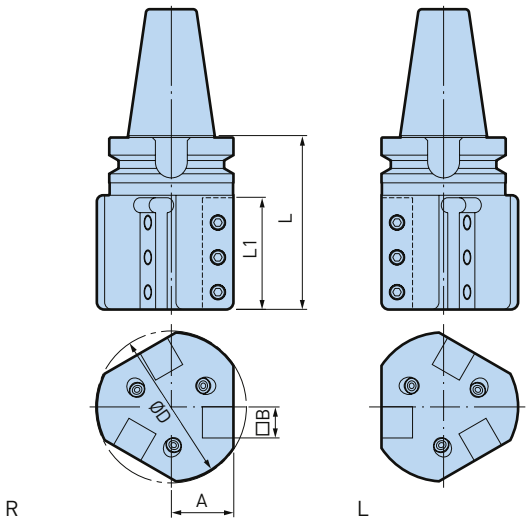


Model	Order No.	Hand	ØD	L	L1	A	B
BBT40M-180-BH20L-110	**978.161**	L	80	110	70	27	20
BBT40M-180-BH20R-110	**800.153**	R	80	110	70	27	20
BBT40M-180-BH25L-130	**978.248**	L	90	130	90	31,5	25
BBT40M-180-BH25R-130	**978.285**	R	90	130	90	31,5	25
BBT50M-180-BH25L-140	**800.314**	L	120	140	90	50	25
BBT50M-180-BH25R-140	**978.407**	R	120	140	90	50	25

A.7

BBT(M) Square Tool Holder Multi Type (180°)

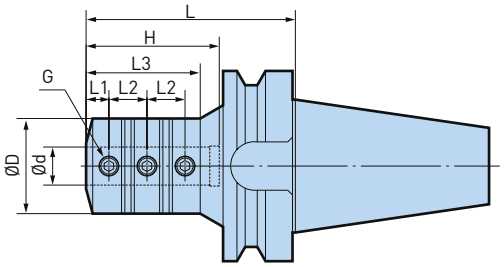




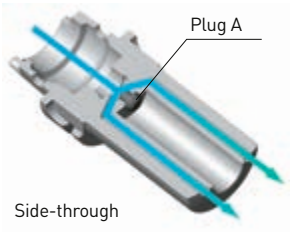
Model	Order No.	Hand	ØD	L	L1	A	B
BBT40M-180-3BH20L-110	**800.151**	L	90	110	70	35	20
BBT40M-180-3BH20R-110	**800.152**	R	90	110	70	38	20
BBT50M-180-3BH25L-140	**800.312**	L	120	140	90	50	25
BBT50M-180-3BH25R-140	**800.313**	R	120	140	90	50	25

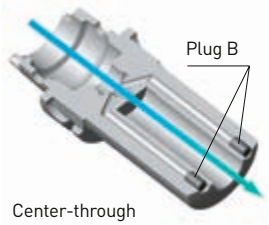
BBT(M) Boring Bar Holder





Model	Order No.	Ød	ØD	L	L1	L2	L3	H	G
BBT40M-BSL8-75	**800.154**	8	25	75	6	10	40	40	M6 P1.0
BBT40M-BSL10-80	**978.292**	10	29	80	8	12	45	50	M8 P1.0
BBT40M-BSL12-90	**978.323**	12	34	90	8	16	53	55	M8 P1.0
BBT40M-BSL16-100	**978.293**	16	40	100	10	21	65	68	M10 P1.24
BBT40M-BSL20-100	**978.252**	20	50	100	12	20	67	70	M10 P1.24
BBT40M-BSL25-110	**978.319**	25	55	110	14	23	83	74	M12 P1.5
BBT40M-BSL32-125	**978.320**	32	64	125	16	26	-	83	M12 P1.5
BBT40M-BSL40-150	**978.321**	40	80	150	18	32	-	98	M16 P1.5
BBT50M-BSL16-105	**800.315**	16	40	105	10	21	61	68	M10 P1.25
BBT50M-BSL20-110	**800.316**	20	50	110	12	20	60	70	M10 P1.25
BBT50M-BSL25-120	**800.317**	25	55	120	14	23	70	74	M12 P1.5
BBT50M-BSL32-125	**800.318**	32	64	125	16	26	80	83	M12 P1.5
BBT50M-BSL40-135	**800.319**	40	80	135	18	32	91	98	M16 P1.5
BBT50M-BSL50-145	**800.320**	50	90	145	18	36	102	115	M16 P1.5





Interchangeable between center-through and side-through coolant supply by using plugs.
Adjustment for either right hand or left hand is also possible.

Chuck Model	Plug A	Plug B
BSL 6	M5 P0.8	M4 P0.7
BSL 8	M6 P1.0	
BSL 10		M5 P0.8
BSL 12		M6 P1.0
BSL 16	M6 P1.0	
BSL 20		
BSL 25	T63: M6 P1.0 T100: M8 P1.25	
BSL 32	M8 P1.25	
BSL 40		

1. Both plugs are included as standard.

Accessories & Spare Parts

Sleeve for Boring Bar Holders for BSL

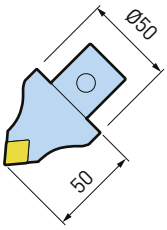


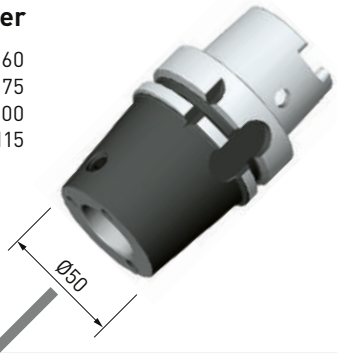
▶ 355

45°

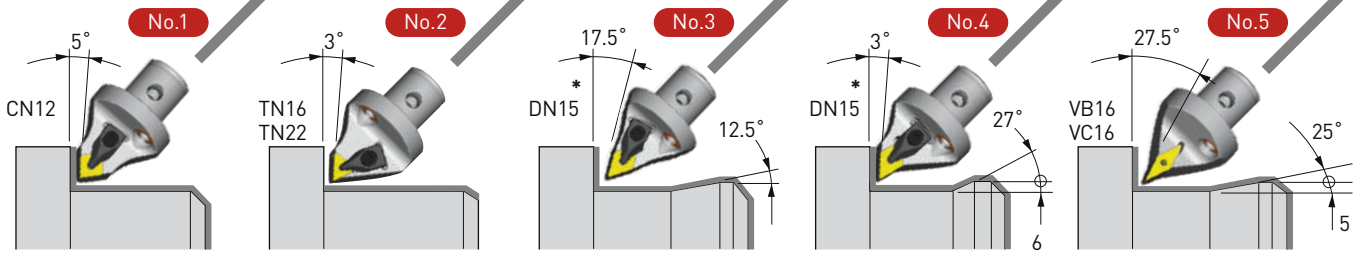
S50
Type S basic holder

HSK-T 63- S50 - 60
- 75
- 100
HSK-T100-S50 - 115





Type S cartridge



S50-DCLNN-00050-12

S50-DTJNR-00050-16(22)
-DTJNL-00050-16(22)

S50-DDHNN-00050-15

S50-DDJNR-00050-15
-DDJNL-00050-15

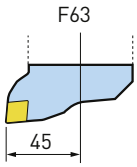
S50-SVQBN-00050-16

* In case of DN1506 insert (thickness of 6.35mm), please replace the standard Carbide Shim by DNS1506 (option).

90°

F63
Type F
basic holder

HSK-T 63-F63
HSK-T100-F63





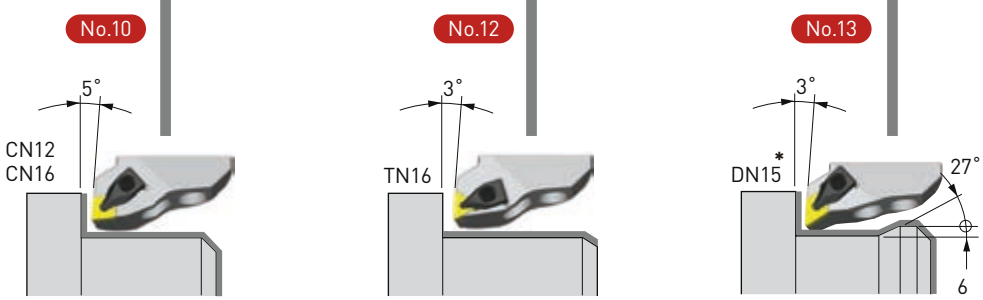
S63
Type S
basic holder



Type S cartridge

No.1
No.3
No.5
No.8

Type F cartridge



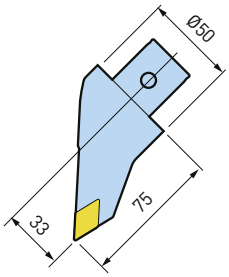
F63-DCLNR-45035-12(16)
-DCLNL-45035-12(16)

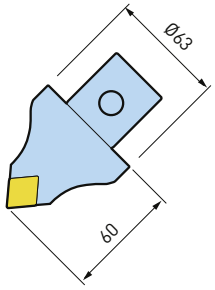
F63-DTJNR-45035-16
-DTJNL-45035-16

F63-DDJNR-45035-15
-DDJNL-45035-15

* In case of DN1506 insert (thickness of 6.35mm), please replace the standard Carbide Shim by DNS1506 (option).

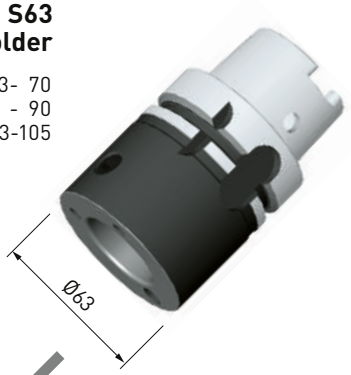
A.7

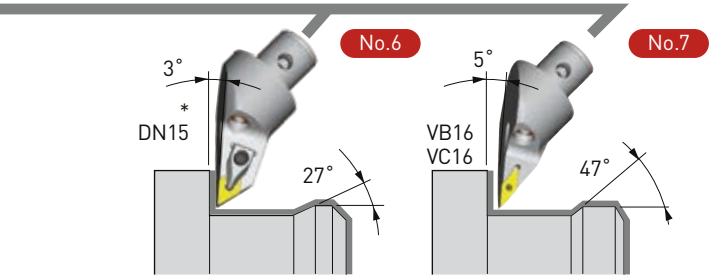




S63
Type S basic holder

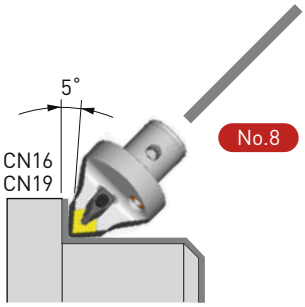
HSK-T 63-S63- 70
- 90
HSK-T100-S63-105





S50-DDJNR-33075-15
-DDJNL-33075-15

S50-SVLBR-33075-16
-SVLBL-33075-16



S63-DCLNN-00060-16
-DCLNN-00060-19

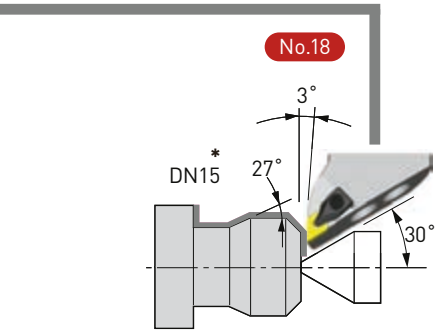
A.7

Boring bar holder



Square tool holder 180°



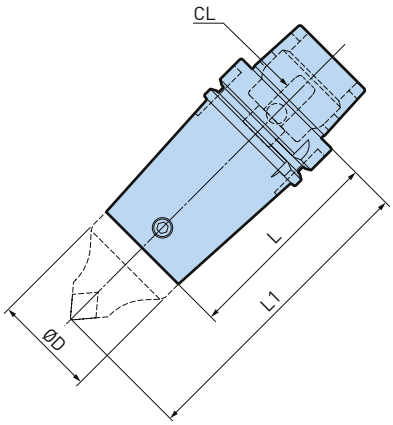


F63-DDJNR-45055-15
-DDJNL-45055-15

45° Basic Holders Type S

Coolant Through Hole





Model	Order No.	Type	ØD	L	L1	Clamp Screw
HSK-T50-S50-60	**806.020**	S50	50	60	110	CK5S
HSK-T63-S50-60	**801.303**	S50	50	60	110	CK5S
HSK-T63-S50-75	**974.006**	S50	50	75	125	CK5S
HSK-T63-S50-100	**801.302**	S50	50	100	150	CK5S
HSK-T63-S63-70	**805.874**	S63	63	70	130	CK6S
HSK-T63-S63-90	**805.875**	S63	63	90	150	CK6S
HSK-T100-S50-115	**805.876**	S50	50	115	165	CK5S
HSK-T100-S63-105	**805.877**	S63	63	105	165	CK6S

1. Basic holders include a clamp screw.
2. Coolant pipe (CL) is to be ordered separately.

Accessories & Spare Parts

45° Cartridges Type S	Coolant Pipes	Clamping screw Set
		
▶ 284	▶ 228	▶ 300

90° Basic Holders Type F

Coolant Through Hole



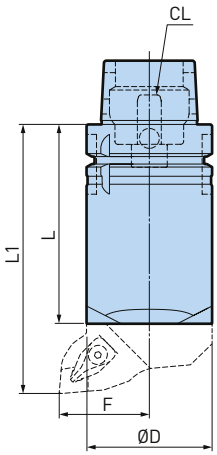


Fig. 1

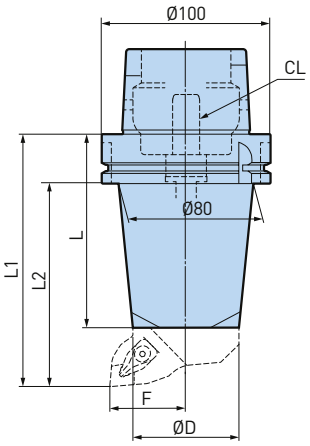


Fig. 2

Model	Order No.	Fig.	Type	ØD	L	L1	L2	F
HSK-T63-F63-50	**801.301**	1	F63	63	50	85	-	45
HSK-T63-F63-75	**974.056**	1	F63	63	75	110	-	45
HSK-T63-F63-100	**974.057**	1	F63	63	100	135	-	45
HSK-T63-F63-130	**801.299**	1	F63	63	130	165	-	45
HSK-T63-F63-170	**801.300**	1	F63	63	170	205	-	45
HSK-T100-F63-100	**805.878**	2	F63	63	100	135	105	45
HSK-T100-F63-150	**805.879**	2	F63	63	150	185	155	45

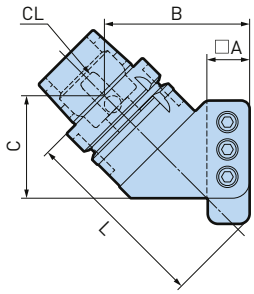
1. Basic holders include M10x22L and M10x25L screws for clamping cartridges.
2. Hexagon wrench is required to clamp cartridge (not included).
3. Coolant pipe (CL) is to be ordered separately.

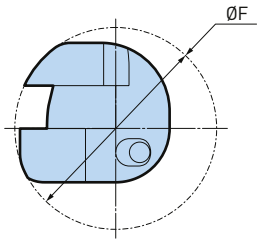
Accessories & Spare Parts

90° Cartridges Type F	Coolant Pipes
	
► 285	► 228

Square Tool Holders - 45° Type

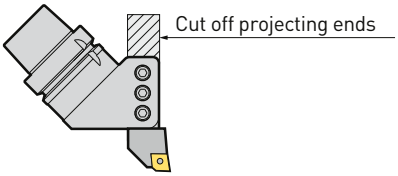






Model	Order No.	Hand	□A	B	C	L	ØF
HSK-T63-45-BH25R-110	**974.028**	R	25	85	60	110	118
HSK-T63-45-BH25L-110	**801.294**	L	25	85	60	110	118

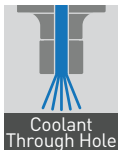
A.7



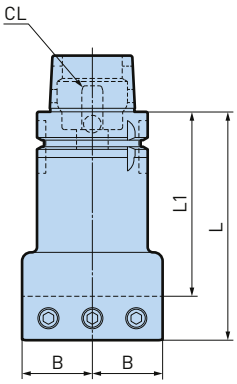
Caution

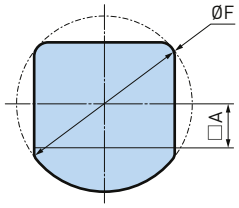
The projecting end of a turning tool must be cut off to avoid interference with an ATC arm.

Square Tool Holders - 90° Type









Model	Order No.	Hand	□A	B	L	L1	ØF
HSK-T63-90-BH20N-85	**806.246**	N	20	32	85	65	80
HSK-T63-90-BH25N-100	**801.296**	N	25	40	100	75	100
HSK-T63-90-BH25N-130	**801.297**	N	25	40	130	105	100
HSK-T100-90-BH25N-150	**805.537**	N	25	55	150	125	128

1. Coolant pipe (CL) is to be ordered separately.

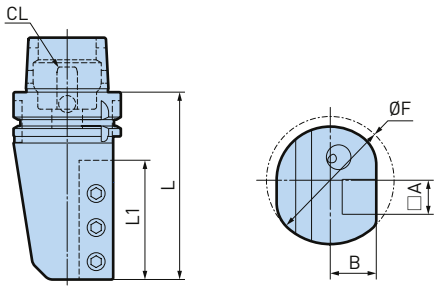
Accessories & Spare Parts

Coolant Pipes



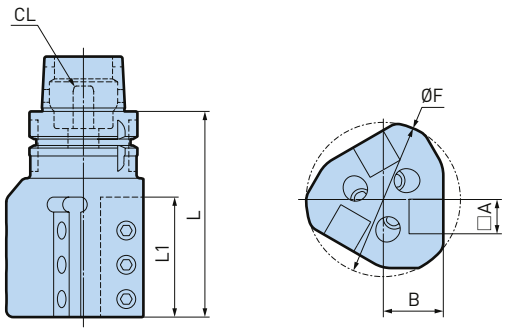
► 228





	Bestell-Nr.	Hand	□A	B	L	L1	ØF
HSK-T63-180-BH20R-120	**806.248**	R	20	27	120	70	75
HSK-T63-180-BH20L-120	**806.247**	L	20	27	120	70	75
HSK-T63-180-BH25R-125	**806.250**	R	25	29.5	127	80	90
HSK-T63-180-BH25L-125	**806.249**	L	25	29.5	127	80	90
HSK-T100-180-BH25R-140	**805.306**	R	25	50	140	90	120
HSK-T100-180-BH25L-140	**805.305**	L	25	50	140	90	120
HSK-T100-180-BH25R-180	**805.536**	R	25	50	180	90	120
HSK-T100-180-BH25L-180	**805.535**	L	25	50	180	90	120





	Bestell-Nr.	Hand	□A	B	L	L1	ØF
HSK-T63-180-3BH20R-120	**801.290**	R	20	35	120	70	90
HSK-T63-180-3BH20L-120	**801.289**	L	20	35	120	70	90
HSK-T63-180-3BH25R-125	**806.252**	R	25	45	127	80	110
HSK-T63-180-3BH25L-125	**806.255**	L	25	45	127	80	110

Accessories & Spare Parts



▶ 228



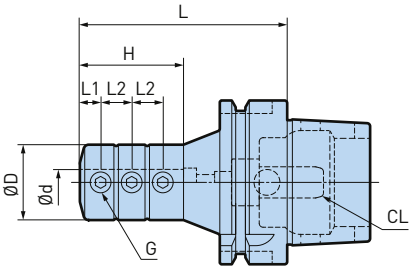


Fig. 1

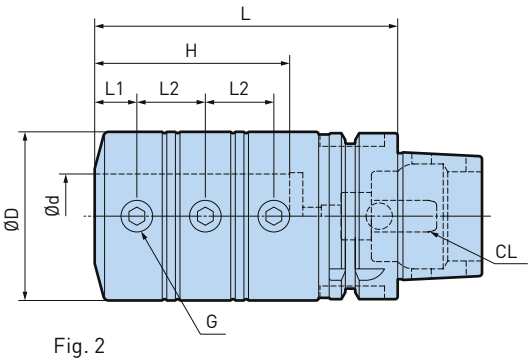
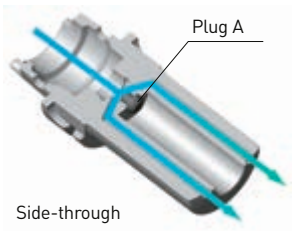
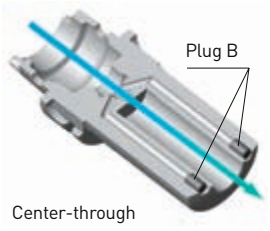


Fig. 2

	Bestell-Nr.	Abb.	Ød	ØD	L	L1	L2	H	G
HSK-T63-BSL6-70	**979.198**	1	6	23	70	5	8	24	M5 P0.8
HSK-T63-BSL8-75	**801.298**	1	8	25	75	6	10	32	M6 P1.0
HSK-T63-BSL10-80	**979.199**	1	10	29	80	8	12	40	M8 P1.0
HSK-T63-BSL12-85	**974.100**	1	12	34	85	8	16	45	M8 P1.0
HSK-T63-BSL16-80	**806.021**	1	16	40	80	10	21	41	M10 P1.25
HSK-T63-BSL16-100	**978.135**	1	16	40	100	10	21	60	M10 P1.25
HSK-T63-BSL20-80 *	**806.022**	1	20	50	80	12	20	41	M10 P1.25
HSK-T63-BSL20-100	**974.102**	2	20	50	100	12	20	60	M10 P1.25
HSK-T63-BSL25-85	**806.023**	1	25	55	85	14	23	47	M12 P1.5
HSK-T63-BSL25-110	**806.243**	2	25	55	110	14	23	67	M12 P1.5
HSK-T63-BSL32-90 *	**806.024**	1	32	64	90	16	26	49	M12 P1.5
HSK-T63-BSL32-125	**806.244**	2	32	64	125	16	26	74	M12 P1.5
HSK-T63-BSL40-105	**806.025**	1	40	80	105	18	32	61	M16 P1.5
HSK-T63-BSL40-145	**806.245**	2	40	80	145	18	32	91	M16 P1.5
HSK-T63-BSL50-145	**807.576**	2	50	90	145	18	30	88	M16 P1.5
HSK-T100-BSL16-105	**805.880**	1	16	40	105	10	21	60	M10 P1.25
HSK-T100-BSL20-110	**805.881**	1	20	50	110	12	20	60	M10 P1.25
HSK-T100-BSL25-120	**805.538**	1	25	55	120	14	23	67	M12 P1.5
HSK-T100-BSL32-125	**805.539**	1	32	64	125	16	26	74	M12 P1.5
HSK-T100-BSL40-135	**805.540**	1	40	80	135	18	32	90	M16 P1.5
HSK-T100-BSL50-145	**807.577**	2	50	90	145	18	34	96	M16 P1.5





Interchangeable between center-through and side-through coolant supply by using plugs.
Adjustment for either right hand or left hand is also possible.

Chuck Model	Plug A	Plug B
BSL 6	M5 P0.8	M4 P0.7
BSL 8	M6 P1.0	
BSL 10		M5 P0.8
BSL 12		M6 P1.0
BSL 16	M6 P1.0	
BSL 20		
BSL 25	T63: M6 P1.0 T100: M8 P1.25	
BSL 32	M8 P1.25	
BSL 40		

1. Both plugs are included as standard.

Accessories & Spare Parts



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▶ 228





	Bestell-Nr.	Drehhalter	ØD	L	L1	Klemmschraube	O-Ring
HSK-T63-SDB40DP-172	**101127.001.0**	B32	32	172	145	C0510(M5x10L)	SDB20 OR-2P
HSK-T63-SDB40DP-250	**101127.002.0**	B32	32	250	219	C0510(M5x10L)	SDB20 OR-2P
HSK-T63-SDB50DP-235	**101127.003.0**	B40	40	235	204	C0610(M6x10L)	SDB20 OR-2P
HSK-T63-SDB50DP-315	**101127.004.0**	B40	40	315	284	C0610(M6x10L)	SDB20 OR-2P



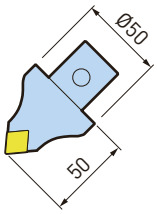
	Bestell-Nr.	Drehhalter	ØD	L	L1	Klemmschraube	O-Ring
HSK-T63-TAD40-125	**101128.001.0**	B32	32	125	94	C0510(M5x10L)	SDB20 OR-2P
HSK-T63-TAD50-155	**101128.002.0**	B40	40	155	124	C0610(M6x10L)	SDB20 OR-2P

Accessories & Spare Parts

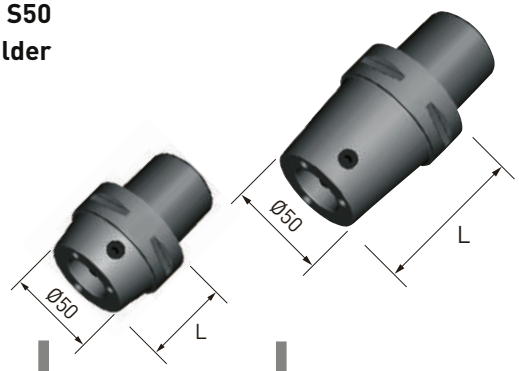


▶ 316

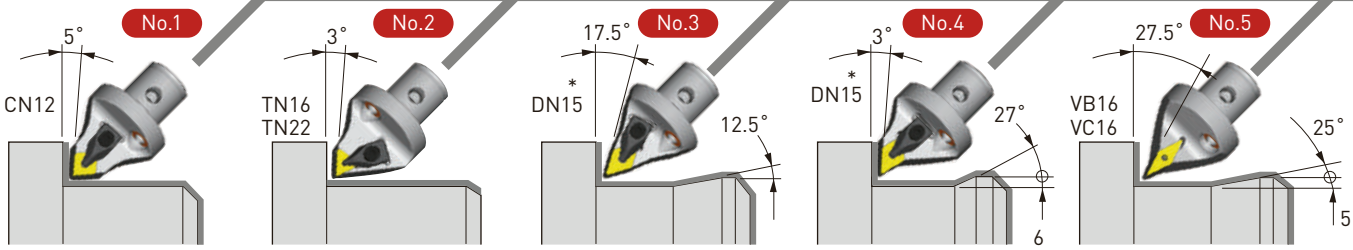
S50
Type S basic holder



C5-S50- 40
- 55
- 75
C6-S50- 75
-100
C8-S50-135



Type S cartridge



S50-DCLNN-00050-12

S50-DTJNR-00050-16
-DTJNL-00050-16
S50-DTJNR-00050-22
-DTJNL-00050-22

S50-DDHNN-00050-15

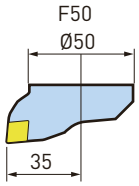
S50-DDJNR-00050-15
-DDJNL-00050-15

S50-SVQBN-00050-16

* In case of DN1506 insert (thickness of 6.35 mm), please replace the standard Carbide Shim by DNS1506 (option).

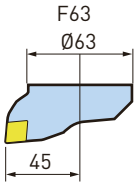
F50
Type F
basic holder

C5-F50- 25
- 50
- 85
-125



F63
Type F
basic holder

C6-F63- 30
- 75
-100
-130
-170
C8-F63- 45
-100
-130
-170





S50/S63
Type S
basic holder

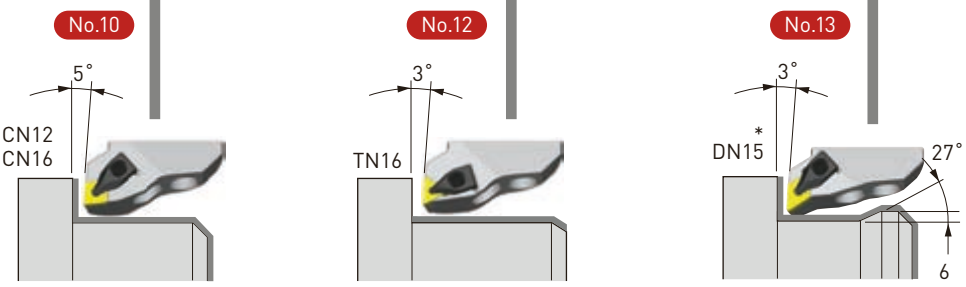




Type S cartridge

No.1
No.3
No.5
No.8

Type F cartridge



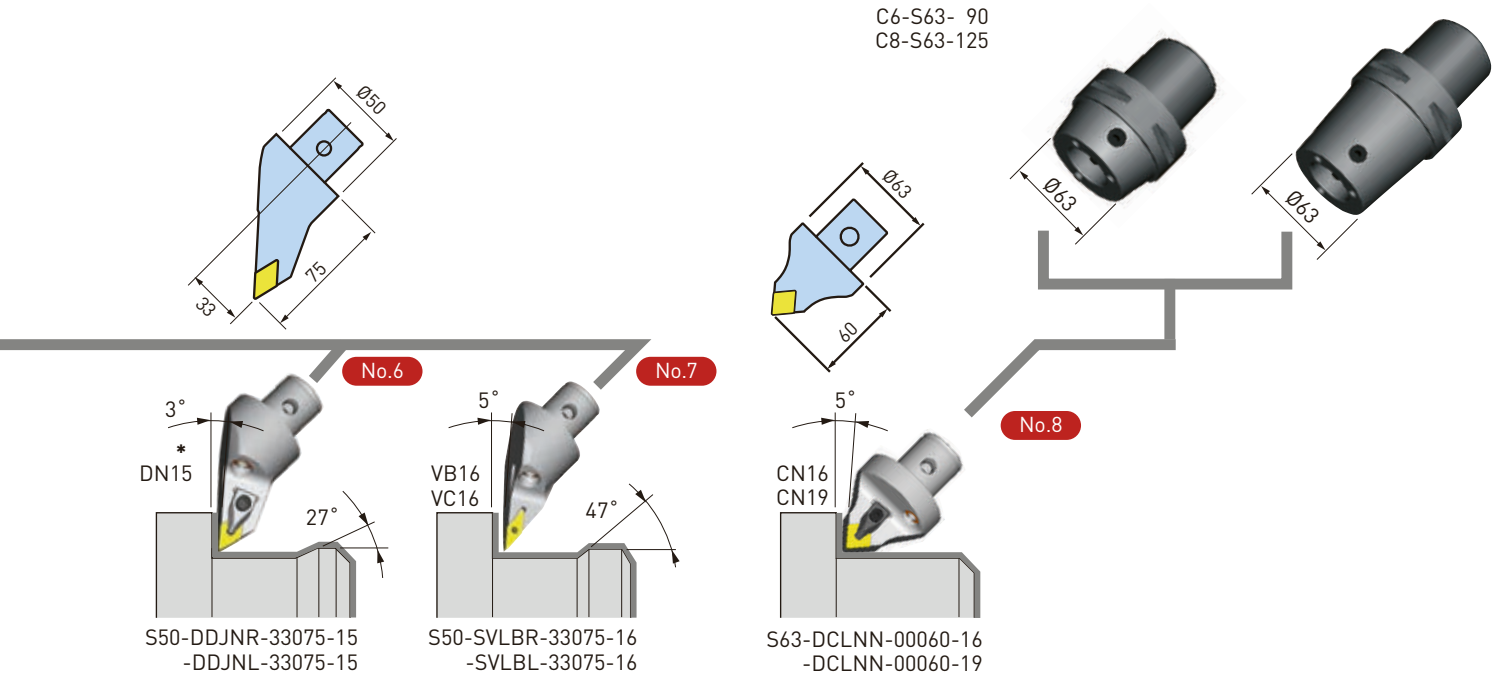
F50-DCLNR-35035-12(16)
-DCLNL-35035-12(16)
F63-DCLNR-45035-12(16)
-DCLNL-45035-12(16)

F50-DTJNR-35035-16
-DTJNL-35035-16
F63-DTJNR-45035-16
-DTJNL-45035-16

F50-DDJNR-35035-15
-DDJNL-35035-15
F63-DDJNR-45035-15
-DDJNL-45035-15

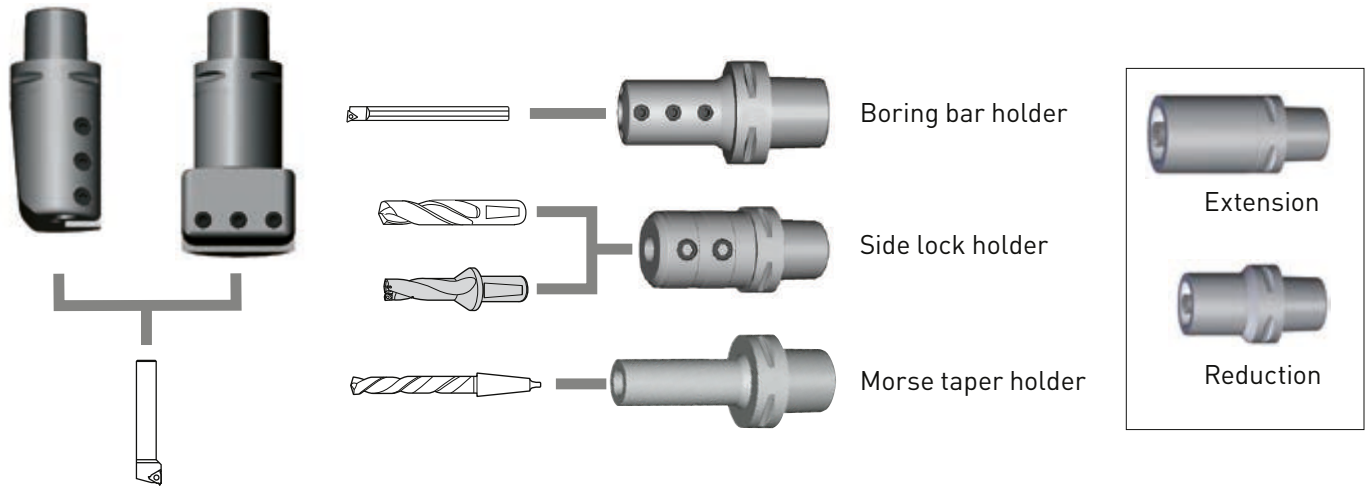
* In case of DN1506 insert (thickness of 6.35 mm), please replace the standard Carbide Shim by DNS1506 (option).

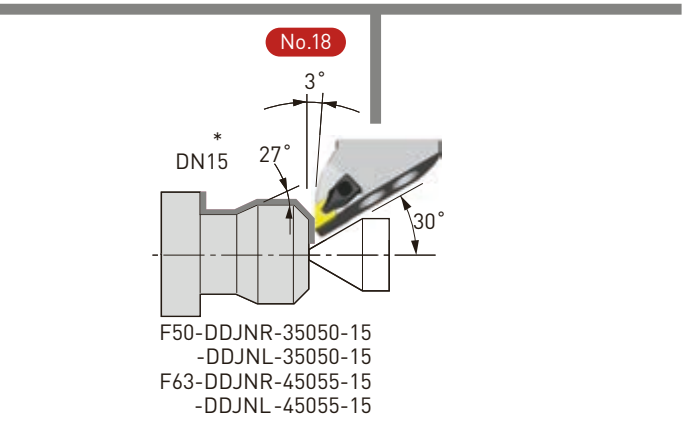
S63
Type S basic holder



A.7

Square tool holder

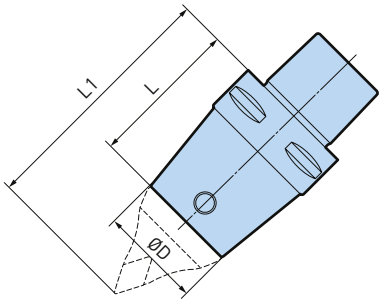




90° Integral Tool Holder Type F







	Bestell-Nr.	Typ	ØD	L	L1	Klemmschraube
C5-S50-40	**973.001**	S50	50	40	90	CK5S
C5-S50-55	**973.002**	S50	50	55	105	CK5S
C5-S50-75	**973.003**	S50	50	75	125	CK5S
C6-S50-45	**973.005**	S50	50	45	95	CK5S
C6-S50-75	**973.006**	S50	50	75	125	CK5S
C6-S50-100	**973.007**	S50	50	100	150	CK5S
C6-S63-90	**805.530**	S63	63	90	150	CK6S
C8-S50-135	**973.011**	S50	50	135	185	CK5S
C8-S63-125	**973.013**	S63	63	125	185	CK6S



	Bestell-Nr.	Typ
CK5S	**805.891**	S50
CK6S	**805.892**	S63

Accessories & Spare Parts



► 284



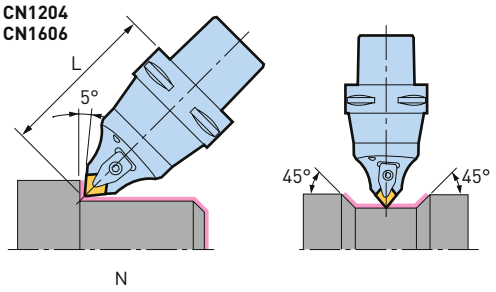


Fig. 1

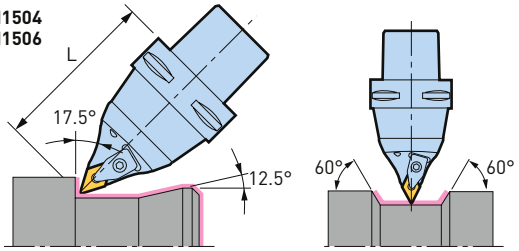


Fig. 2

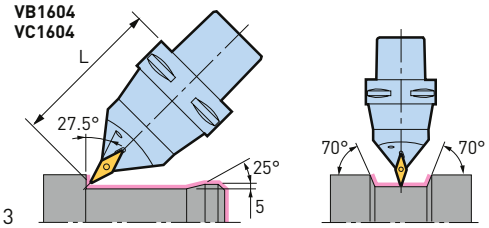


Fig. 3

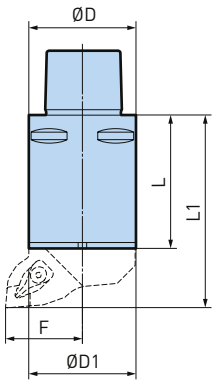
A.7

	Bestell-Nr.	Abb.	Hand	L	Eintrittswinkel	Wendeplatte	Spannstück	Nr.
C5-DCLNN-00105-12	**800.691**	1	N	105	95°	CN1204	CP2	1
C5-DDHNN-00105-15	**800.693**	2	N	105	107.5°	DN1504/DN1506*	CP2	3
C5-SVQBN-00105-16	**800.774**	3	N	105	117.5°	VB1604/VC1604**	M3.5	5
C5-DCLNN-00105-16	**800.692**	1	N	105	95°	CN1606	CP3	8 - 1
C6-DCLNN-00115-12	**973.752**	1	N	115	95°	CN1204	CP2	1
C6-DDHNN-00115-15	**800.781**	2	N	115	107.5°	DN1504/DN1506*	CP2	3
C6-SVQBN-00115-16	**973.751**	3	N	115	117.5°	VB1604/VC1604**	M3.5	5
C6-DCLNN-00115-16	**800.780**	1	N	115	95°	CN1606	CP3	8 - 1
C8-DCLNN-00150-12	**800.890**	1	N	150	95°	CN1204	CP2	1
C8-DCLNN-00150-16	**800.891**	1	N	150	95°	CN1606	CP3	8 - 1

Accessories & Spare Parts

				
▶ 286	▶ 492	▶ 493	▶ 494	▶ 494





	Bestell-Nr.	Typ	ØD	ØD1	L	L1	F
C5-F50-25	**801.657**	F50	50	50	25	60	35
C5-F50-50	**973.052**	F50	50	50	50	85	35
C5-F50-85	**973.053**	F50	50	50	85	120	35
C5-F50-125	**973.054**	F50	50	50	125	160	35
C6-F63-30	**973.055**	F63	63	63	30	65	45
C6-F63-75	**973.056**	F63	63	63	75	110	45
C6-F63-100	**973.057**	F63	63	63	100	135	45
C6-F63-130	**973.058**	F63	63	63	130	165	45
C6-F63-170	**973.059**	F63	63	63	170	205	45
C8-F63-45	**973.060**	F63	80	63	45	80	45
C8-F63-100	**973.061**	F63	80	63	100	135	45
C8-F63-130	**973.062**	F63	80	63	130	165	45
C8-F63-170	**973.063**	F63	80	63	170	205	45

Accessories & Spare Parts



▶ 285



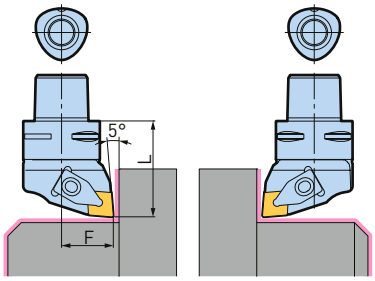


Fig. 1

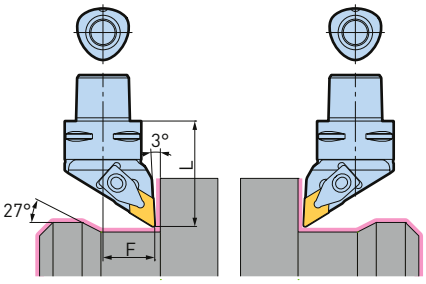


Fig. 2

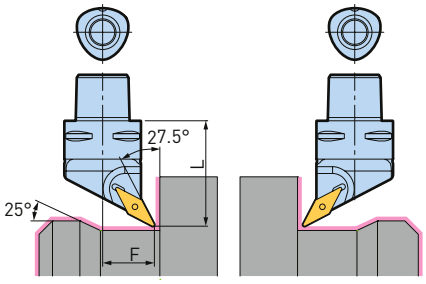
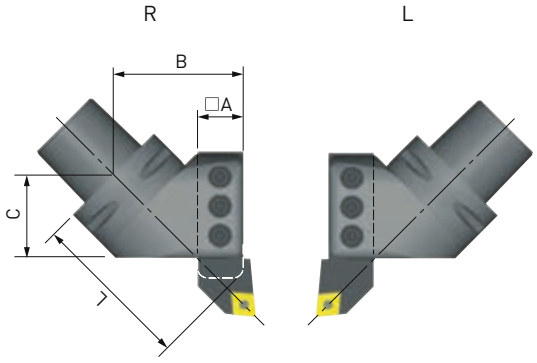


Fig. 3

	Bestell-Nr.	Abb.	Hand	L	F	Eintrittswinkel	Wendeplatte	Spannstück	Nr.
C3-DCLNL-22038-09	**807.640**	1	L	38	22	95°	CN0903 (CN0904)**	CP7	19
C3-DCLNR-22038-09	**807.641**	1	R	38	22	95°	CN0903 (CN0904)**	CP7	19
C3-DDJNL-22045-11	**807.642**	2	L	45	22	93°	DN1104	CP7	20
C3-DDJNR-22045-11	**807.643**	2	R	45	22	93°	DN1104	CP7	20
C3-SVQBL-22038-11	**807.645**	3	L	38	22	117.5°	VB1103 (VC1103)****	M2,5	21
C3-SVQBR-22038-11	**807.644**	3	R	38	22	117.5°	VB1103 (VC1103)****	M2,5	21
C4-DCLNL-27050-12	**806.951**	1	L	50	27	95°	CN1204	CP2	10 - 1
C4-DCLNR-27050-12	**806.950**	1	R	50	27	95°	CN1204	CP2	10 - 1
C4-DDJNL-27055-15	**806.953**	2	L	55	27	93°	DN1504 * (DN1506)	CP2	18
C4-DDJNR-27055-15	**806.952**	2	R	55	27	93°	DN1504 * (DN1506)	CP2	18
C4-SVQBL-27055-16	**806.955**	3	L	55	27	117.5°	VB1604 / VC1604 ***	M3.5	15
C4-SVQBR-27055-16	**806.954**	3	R	55	27	117.5°	VB1604 / VC1604 ***	M3.5	15

Accessories & Spare Parts

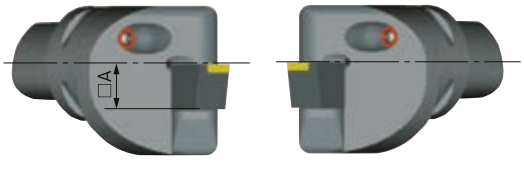
				
▶ 286	▶ 492	▶ 493	▶ 494	▶ 494

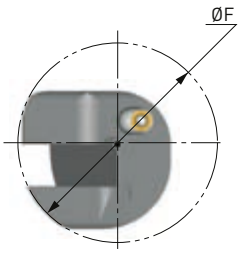


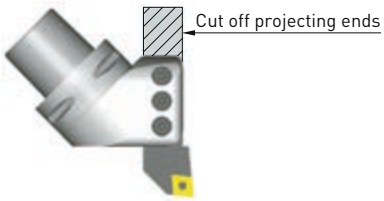
Model	Order No.	Hand	□A	B	C	L	ØF
C5-45-BH20R-5838	**973.026**	R	20	58	38	73	94
C5-45-BH20L-5838	**973.027**	L	20	58	38	73	94
C6-45-BH25R-7752	**973.028**	R	25	77	52	100	118
C6-45-BH25L-7752	**800.776**	L	25	77	52	100	118
C8-45-BH32R-85109	**973.030**	R	32	85	109	145	135
C8-45-BH32L-85109	**973.031**	L	32	85	109	145	135

Caution

The projecting end of a turning tool must be cut off to avoid interference with an ATC arm.





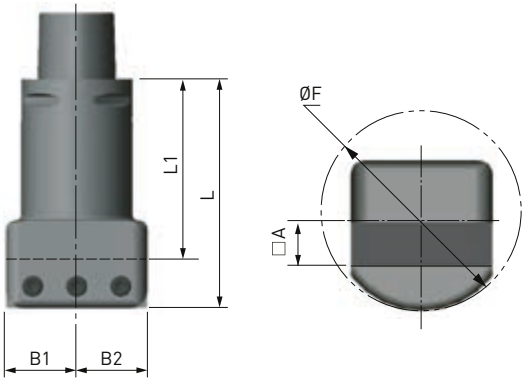


A.7

Square Tool Holders - 90° Type

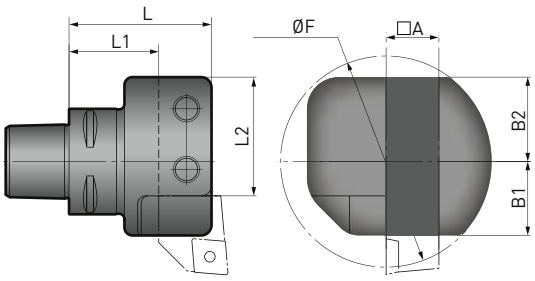
Coolant Through Hole

N

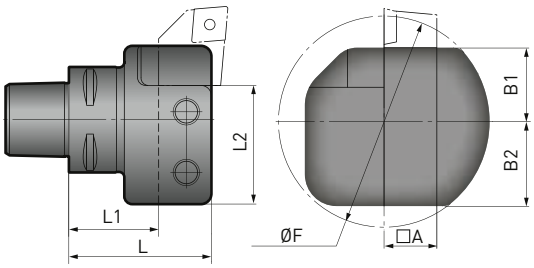


Model	Order No.	Hand	□A	B1	B2	L	L1	L2	ØF
C3-90-BH16R-2547	**807.647**	R	16	25	27	47	30	40	70
C3-90-BH16L-2547	**807.646**	L	16	25	27	47	30	40	70
C4-90-BH20R-2854	**806.956**	R	20	28	32	54	34	45	80
C4-90-BH20L-2854	**806.957**	L	20	28	32	54	34	45	80
C5-90-BH20N-32058	**978.476**	N	20	32	32	58	38	-	80
C5-90-BH20N-32105	**801.653**	N	20	32	32	105	85	-	80
C6-90-BH20N-32060	**800.777**	N	20	32	32	60	40	-	80
C6-90-BH20N-32115	**800.778**	N	20	32	32	115	95	-	80
C6-90-BH25N-40071	**800.779**	N	25	40	40	71	46	-	100
C6-90-BH25N-40130	**801.664**	N	25	40	40	130	105	-	100
C8-90-BH25N-40071	**328.380**	N	25	40	40	71	45	-	100
C8-90-BH32N-51085	**800.889**	N	32	51	51	85	53	-	128
C8-90-BH32N-51165	**801.665**	N	32	51	51	165	133	-	128

R



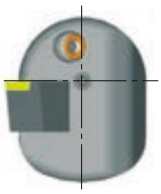
L



Square Tool Holders - 180° Type

R L





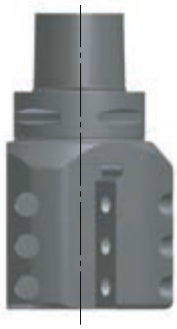
Coolant Through Hole

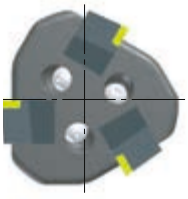
Model	Order No.	Hand	□A	B	L	L1	E	ØF
C3-180-BH16R-2058	**807.649**	R	16	20	58	37	2	65
C3-180-BH16L-2058	**807.648**	L	16	20	58	37	2	65
C4-180-BH20R-2265	**806.958**	R	20	22	65	40	2	70
C4-180-BH20L-2265	**806.959**	L	20	22	65	40	2	70
C5-180-BH20R-2590	**973.032**	R	20	25	90	65	5	80
C5-180-BH20L-2590	**973.033**	L	20	25	90	65	5	80
C6-180-BH20R-32100	**973.753**	R	20	31.5	100	65	11.5	80
C6-180-BH20L-32100	**801.663**	L	20	31.5	100	65	11.5	80
C6-180-BH25R-32120S	**973.034**	R	25	29.5	120	80	4.5	90
C6-180-BH25L-32120S	**973.035**	L	25	29.5	120	80	4.5	90
C8-180-BH25R-32120	**328.378**	R	25	38	120	82	13	100
C8-180-BH25L-32120	**328.379**	L	25	38	120	82	13	100
C8-180-BH32R-40125	**973.038**	R	32	40	125	85	8	128
C8-180-BH32L-40125	**973.039**	L	32	40	125	85	8	128

A.7

Square Tool Holders - 180° Multi Type

R L





Coolant Through Hole

Model	Order No.	Hand	□A	B	L	L1	E	ØF
C5-180-3BH20R-100	**973.040**	R	20	35	100	70	15	90
C5-180-3BH20L-100	**973.041**	L	20	35	100	70	15	90
C6-180-3BH20R-110	**806.254**	R	20	35	110	70	15	90
C6-180-3BH20L-110	**806.253**	L	20	35	110	70	15	90
C6-180-3BH25R-125	**806.256**	R	25	45	125	70	20	110
C6-180-3BH25L-125	**973.045**	L	25	45	125	80	20	110
C8-180-3BH25R-130	**973.046**	R	25	45	130	90	20	110
C8-180-3BH25L-130	**973.047**	L	25	45	130	70	20	110

1. 60° indexing is required to the machine tool spindle.

Boring Bar Holders

Application: boring and thread cutting



ø6 - 40mm

Model	Order No.	Fig.	Ød	ØD	L	A1	A2	H	G
C3-BSL6-35	**807.663**	1	6	23	35	5	9	22	M5 P0.8
C3-BSL8-35	**807.664**	1	8	25	35	6	10	22	M6 P1.0
C3-BSL10-35	**807.665**	1	10	29	35	6	10	22	M5 P0.8
C3-BSL12-40	**807.666**	1	12	34	40	8	12	27	M6 P1.0
C4-BSL6-40	**806.960**	1	6	23	40	5	9	23	M5 P0.8
C4-BSL8-40	**806.961**	1	8	25	40	6	10	23	M6 P1.0
C4-BSL10-40	**806.962**	1	10	29	40	6	10	23	M6 P1.0
C4-BSL12-45	**806.963**	1	12	34	45	8	12	28	M8 P1.0
C4-BSL16-50	**806.964**	1	16	40	50	10	14	33	M10 P1.25
C4-BSL20-60	**806.965**	1	20	50	60	12	15	43	M10 P1.25
C5-BSL6-70	**973.088**	2	6	23	70	5	8	41	M5 P0.8
C5-BSL8-70	**973.089**	2	8	25	70	6	10	41	M6 P1.0
C5-BSL10-70	**973.090**	2	10	29	70	8	12	42	M8 P1.0
C5-BSL12-80	**973.091**	2	12	34	80	8	16	53	M8 P1.0
C5-BSL16-90	**973.092**	2	16	40	90	10	21	65	M10 P1.25
C5-BSL20-90	**973.093**	2	20	50	90	12	20	60	M10 P1.25
C5-BSL25-100	**973.094**	2	25	55	100	14	23	70	M12 P1.5
C5-BSL32-110	**973.095**	2	32	64	110	16	26	78	M12 P1.5
C5-BSL40-130	**973.096**	2	40	80	130	18	32	93	M16 P1.5
C6-BSL6-70	**973.097**	2	6	23	70	5	8	41	M5 P0.8
C6-BSL8-70	**973.098**	2	8	25	70	6	10	41	M6 P1.0
C6-BSL10-70	**973.099**	2	10	29	70	8	12	42	M8 P1.0
C6-BSL12-80	**973.100**	2	12	34	80	8	16	53	M8 P1.0
C6-BSL16-90	**973.101**	2	16	40	90	10	21	65	M10 P1.25
C6-BSL20-90	**973.102**	2	20	50	90	12	22	60	M10 P1.25
C6-BSL25-100	**973.103**	2	25	55	100	14	26	70	M12 P1.5
C6-BSL32-110	**973.104**	2	32	64	110	16	30	78	M12 P1.5
C6-BSL40-130	**973.105**	2	40	80	130	18	32	93	M16 P1.5

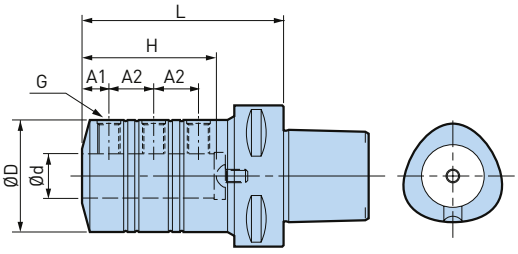
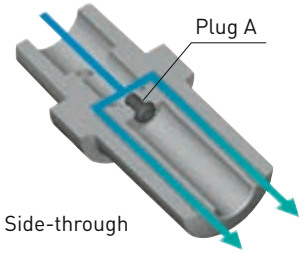


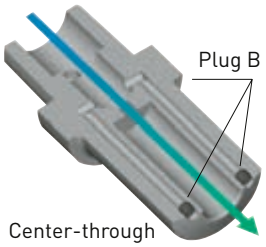
Fig. 1

Fig. 2

Model	Order No.	Fig.	Ød	ØD	L	A1	A2	H	G
C8-BSL16-90	**973.110**	2	16	40	90	10	21	65	M10 P1.25
C8-BSL20-100	**973.111**	2	20	50	100	12	22	70	M10 P1.25
C8-BSL25-110	**973.112**	2	25	55	110	14	26	80	M12 P1.5
C8-BSL32-120	**973.113**	2	32	64	120	16	30	88	M12 P1.5
C8-BSL40-130	**973.114**	2	40	80	130	18	32	93	M16 P1.5

1. For sealing purpose, please use plugs according to drawing below. Both, plug A and B are included as standard.
2. Sleeve for BSL cannot be used for C3 and C4 models.





For C3

Chuck Model	Plug A	Plug B
BSL 6	M5 P0.8	M4 P0.7
BSL 8		
BSL 10		
BSL 12		

1. Both plugs are included as standard.

For C4

Chuck Model	Plug A	Plug B
BSL 6	M5 P0.8	M4 P0.7
BSL 8		
BSL 10		M5 P0.8
BSL 12		M6 P1.0
BSL 16		
BSL 20		

1. Both plugs are included as standard.

For C5, C6 and C8

Chuck Model	Plug A	Plug B
BSL 6	M8P1.25	M4 P0.7
BSL 8	M10P1.0	
BSL 10	M12P1.5	M5 P0.8
BSL 12	M14P1.5	M6 P1.0
BSL 16	M18P1.5 (C5:M6P1.0)	
BSL 20	M6P1.0	
BSL 25		
BSL 32	M8P1.25	
BSL 40		

1. Both plugs are included as standard.

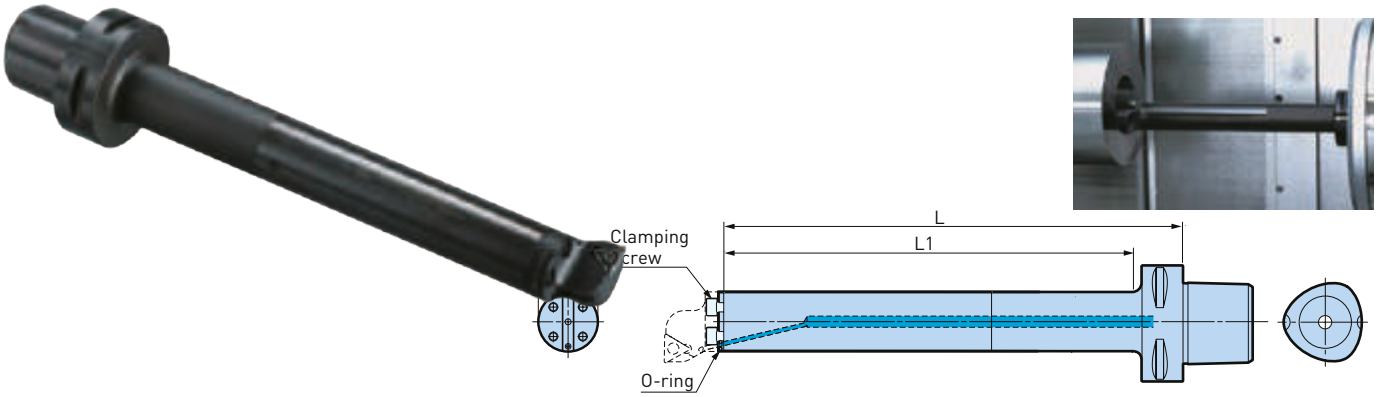
Accessories & Spare Parts

Reduzierhülsen für BS



▶ 355

Smart Damper Turning Adapter BIG CAPTO



Model	Order No.	Cartridge	ØD	L	L1	Clamp Screw	O-Ring
C6-SDB40DP-168	**101126.001.0**	B32	32	168	145	C0510(M5x10L)	SDB20 OR-2P
C6-SDB40DP-245	**101126.002.0**	B32	32	245	218	C0510(M5x10L)	SDB20 OR-2P
C6-SDB50DP-230	**101126.003.0**	B40	40	230	203	C0610(M6x10L)	SDB20 OR-2P
C6-SDB50DP-310	**101126.004.0**	B40	40	310	283	C0610(M6x10L)	SDB20 OR-2P

1. Clamp bolts (3 pcs.) and o-rings (2 pcs.) are included.
2. Cartridge is to be ordered separately.
3. Inserts are not included.

Turning Adapter BIG CAPTO



Model	Order No.	Cartridge	ØD	L	L1	Clamp Screw	O-Ring
C6-TAD40-120	**101129.001.0**	B32	40	120	93	C0510(M5x10L)	SDB20 OR-2P
C6-TAD50-150	**101129.002.0**	B40	50	150	123	C0610(M6x10L)	SDB20 OR-2P

1. Clamp bolts (3 pcs.) and o-rings (2 pcs.) are included.
2. Cartridge is to be ordered separately.
3. Inserts are not included.

Accessories & Spare Parts

Cartridges



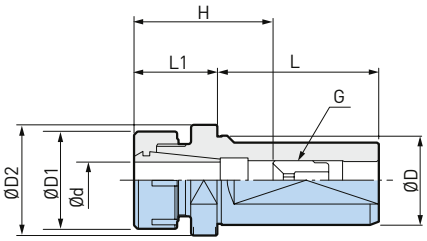
▶ 316

New Baby Chuck Stopper

Flange as a stopper enables external presetting of the tool and minimizes downtime. Shank is designed to be directly mounted into the drill holder of turret.

Coolant Through Hole





ø2.5 - 20mm

Model	Order No.	Ød	ØD	ØD1	ØD2	L	L1	H	Collet Model
SLS25-NBS13-30	**804.285**	2.5 - 13	25	35	32	54	30	41 - 60	NBC13
SLS25-NBS13-60	**804.286**	2.5 - 13	25	35	32	54	60	41 - 60	NBC13
SLS32-NBS13-30	**804.288**	2.5 - 13	32	35	39.5	58	30	41 - 60	NBC13
SLS32-NBS13-60	**804.289**	2.5 - 13	32	35	39.5	58	60	41 - 60	NBC13
SLS32-NBS13-100	**804.287**	2.5 - 13	32	35	39.5	58	100	41 - 60	NBC13
SLS32-NBS20-30	**804.291**	2.5 - 20	32	46	45.5	58	30	48 - 65	NBC20
SLS32-NBS20-60	**804.292**	2.5 - 20	32	46	45.5	58	60	48 - 65	NBC20
SLS32-NBS20-100	**804.290**	2.5 - 20	32	46	45.5	58	100	48 - 65	NBC20
SLS40-NBS13-30	**804.294**	2.5 - 13	40	35	49.5	68	30	41 - 60	NBC13
SLS40-NBS13-60	**804.295**	2.5 - 13	40	35	49.5	68	60	41 - 60	NBC13
SLS40-NBS13-100	**804.293**	2.5 - 13	40	35	49.5	68	100	41 - 60	NBC13
SLS40-NBS20-30	**804.297**	2.5 - 20	40	46	49.5	68	30	48 - 65	NBC20
SLS40-NBS20-60	**804.298**	2.5 - 20	40	46	49.5	68	60	48 - 65	NBC20
SLS40-NBS20-100	**804.296**	2.5 - 20	40	46	49.5	68	100	48 - 65	NBC20

1. New Baby Nut is included.
2. "G" is the adjusting screw (optional).
3. "H" is the max. tool shank length that can be inserted for these models.

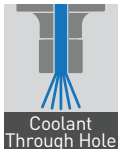
Accessories & Spare Parts

New Baby Nuts	Baby Perfect Seals	New Baby Collets	New Baby Wrenches	Adjusting Screws NBA
				
▶ 334	▶ 338	▶ 329	▶ 352	▶ 335

New Baby Chuck Standard

Versatile basic holder for drills, taps and reamers.





ø0.25 - 20mm

Model	Order No.	Fig.	Ød	ØD1	ØD2	ØD3	L	L1	H	Collet Model
SL16-NBS6-40	**802.154**	1	0.25 - 6	16	20	-	40	15	20 - 40	NBC6
SL16-NBS6-80	**802.155**	1	0.25 - 6	16	20	-	80	15	20 - 40	NBC6
SL16-NBS8-40	**802.156**	1	0.5 - 8	16	25	-	40	16.5	23 - 42	NBC8
SL16-NBS8-80	**802.157**	1	0.5 - 8	16	25	-	80	16.5	23 - 42	NBC8
SL16-NBS10-40	**802.152**	2	1.5 - 10	16	30	21	40	37	35 - 45	NBC10
SL16-NBS10-80	**802.153**	2	1.5 - 10	16	30	21	80	37	35 - 45	NBC10
SL20-NBS6-40	**802.162**	1	0.25 - 6	20	20	-	40	15	20 - 40	NBC6
SL20-NBS6-80	**802.163**	1	0.25 - 6	20	20	-	80	15	20 - 40	NBC6
SL20-NBS8-40	**802.164**	1	0.5 - 8	20	25	-	40	16.5	23 - 42	NBC8
SL20-NBS8-80	**802.165**	1	0.5 - 8	20	25	-	80	16.5	23 - 42	NBC8
SL20-NBS10-40	**802.158**	2	1.5 - 10	20	30	21	40	18	35 - 45	NBC10
SL20-NBS10-80	**802.159**	2	1.5 - 10	20	30	21	80	18	35 - 45	NBC10
SL20-NBS13-40	**802.160**	2	2.5 - 13	20	35	26	40	43	41 - 60	NBC13
SL20-NBS13-80	**802.161**	2	2.5 - 13	20	35	26	80	43	41 - 60	NBC13
SL22-NBS6-40	**804.271**	1	0.25 - 6	22	20	-	40	15	20 - 40	NBC6
SL22-NBS6-80	**804.272**	1	0.25 - 6	22	20	-	80	15	20 - 40	NBC6
SL22-NBS8-40	**804.273**	1	0.5 - 8	22	25	-	40	16.5	23 - 42	NBC8
SL22-NBS8-80	**804.274**	1	0.5 - 8	22	25	-	80	16.5	23 - 42	NBC8
SL22-NBS10-40	**804.267**	1	1.5 - 10	22	30	-	40	18	35 - 45	NBC10
SL22-NBS10-80	**804.268**	1	1.5 - 10	22	30	-	80	18	35 - 45	NBC10
SL22-NBS13-40	**804.269**	2	2.5 - 13	22	35	26	40	21.5	41 - 47	NBC13
SL22-NBS13-80	**804.270**	2	2.5 - 13	22	35	26	80	21.5	41 - 60	NBC13

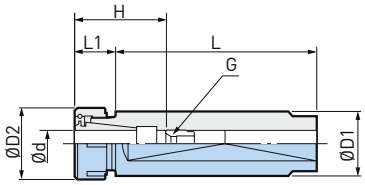


Fig. 1

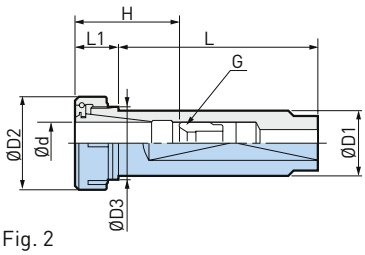


Fig. 2

Model	Order No.	Fig.	Ød	ØD1	ØD2	ØD3	L	L1	H	Collet Model
SL25-NBS6-80	**802.173**	1	0.25 - 6	25	20	-	80	15	20 - 40	NBC6
SL25-NBS6-120	**802.172**	1	0.25 - 6	25	20	-	120	15	20 - 40	NBC6
SL25-NBS8-80	**802.175**	1	0.5 - 8	25	25	-	80	16.5	23 - 42	NBC8
SL25-NBS8-120	**802.174**	1	0.5 - 8	25	25	-	120	16.5	23 - 42	NBC8
SL25-NBS10-80	**802.167**	1	1.5 - 10	25	30	-	80	18	35 - 45	NBC10
SL25-NBS10-120	**802.166**	1	1.5 - 10	25	30	-	120	18	35 - 45	NBC10
SL25-NBS13-80	**802.169**	2	2.5 - 13	25	35	26	80	21.5	41 - 60	NBC13
SL25-NBS13-120	**802.168**	2	2.5 - 13	25	35	26	120	21.5	41 - 60	NBC13
SL25-NBS16-80	**802.171**	2	2.5 - 16	25	42	32	80	48	45 - 65	NBC16
SL25-NBS16-120	**802.170**	2	2.5 - 16	25	42	32	120	48	45 - 65	NBC16
SL25.4-NBS6-80	**804.282**	1	0.25 - 6	25.4	20	-	80	15	20 - 40	NBC6
SL25.4-NBS6-120	**804.281**	1	0.25 - 6	25.4	20	-	120	15	20 - 40	NBC6
SL25.4-NBS8-80	**804.284**	1	0.5 - 8	25.4	25	-	80	16.5	23 - 42	NBC8
SL25.4-NBS8-120	**804.283**	1	0.5 - 8	25.4	25	-	120	16.5	23 - 42	NBC8
SL25.4-NBS10-80	**804.276**	1	1.5 - 10	25.4	30	-	80	18	35 - 45	NBC10
SL25.4-NBS10-120	**804.275**	1	1.5 - 10	25.4	30	-	120	18	35 - 45	NBC10
SL25.4-NBS13-80	**804.278**	2	2.5 - 13	25.4	35	26	80	21.5	41 - 50	NBC13
SL25.4-NBS13-120	**804.277**	2	2.5 - 13	25.4	35	26	120	21.5	41 - 50	NBC13
SL25.4-NBS16-80	**804.280**	2	2.5 - 16	25.4	42	32	80	48	45 - 65	NBC16
SL25.4-NBS16-120	**804.279**	2	2.5 - 16	25.4	42	32	120	48	45 - 65	NBC16
SL32-NBS13-100	**802.176**	1	2.5 - 13	32	35	-	100	21.5	41 - 60	NBC13
SL32-NBS13-150	**802.177**	1	2.5 - 13	32	35	-	150	21.5	41 - 60	NBC13
SL32-NBS16-100	**802.178**	1	2.5 - 16	32	42	-	100	21.5	45 - 65	NBC16
SL32-NBS16-150	**802.179**	1	2.5 - 16	32	42	-	150	21.5	45 - 65	NBC16
SL32-NBS20-100	**802.180**	2	2.5 - 20	32	46	36	100	21.5	48 - 65	NBC20
SL32-NBS20-150	**802.181**	2	2.5 - 20	32	46	36	150	21.5	48 - 65	NBC20

1. New Baby Nut is included.
2. "G" is the adjusting screw (optional).
3. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

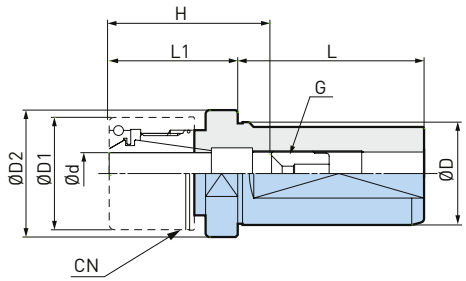
New Baby Nuts	Baby Perfect Seals	New Baby Collets	New Baby Wrenches	Adjusting Screws NBA
				
▶ 334	▶ 338	▶ 329	▶ 352	▶ 335

MEGA ER Grip Stopper

High precision components outperform standard ER collet system.

Coolant Through Hole





ø2.75 - 20mm

Model	Order No.	Ød	ØD	ØD1	ØD2	L	L1	H	Collet Model
SLS25-MEGAER20-45NL	**803.571**	2.75 - 13	25	35	32	54	45	42 - 62	ERC20
SLS25-MEGAER20-75NL	**803.572**	2.75 - 13	25	35	32	54	75	42 - 62	ERC20
SLS32-MEGAER20-45NL	**803.573**	2.75 - 13	32	35	39.5	58	45	42 - 62	ERC20
SLS32-MEGAER20-75NL	**803.574**	2.75 - 13	32	35	39.5	58	75	42 - 62	ERC20
SLS32-MEGAER32-45NL	**803.575**	2.75 - 20	32	50	50	58	45	47 - 68	ERC32
SLS32-MEGAER32-75NL	**803.576**	2.75 - 20	32	50	50	58	75	50 - 68	ERC32
SLS40-MEGAER20-45NL	**803.577**	2.75 - 13	40	35	49.5	68	45	42 - 62	ERC20
SLS40-MEGAER20-75NL	**803.578**	2.75 - 13	40	35	49.5	68	75	42 - 62	ERC20
SLS40-MEGAER32-45NL	**803.579**	2.75 - 20	40	50	50	68	45	50 - 68	ERC32
SLS40-MEGAER32-75NL	**803.580**	2.75 - 20	40	50	50	68	75	50 - 68	ERC32

1. Nut (CN) is not included.
2. "G" is the adjusting screw (optional).
3. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

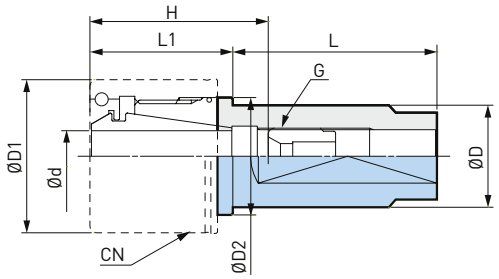
MEGA ER Nut	ER Nuts	MEGA ER Perfect Seal	MEGA ER Collets	MEGA Wrenches	New Baby Wrenches	Adjusting Screws NBA
						
▶ 344	▶ 344	▶ 345	▶ 342	▶ 351	▶ 352	▶ 335

MEGA ER Grip Standard

Flat is provided on the shank to be mounted in the tool post of the NC lathe directly.

Coolant Through Hole





ø1.9 - 16mm

Model	Order No.	Ød	ØD	ØD1	ØD2	L	L1	H	Collet Model
SL16-MEGAER11-40NL	**803.554**	2.75 - 6	16	19	-	40	19	23 - 40	ERC11
SL16-MEGAER11-80NL	**803.555**	2.75 - 6	16	19	-	80	19	23 - 40	ERC11
SL19.05-MEGAER11-40NL	**803.556**	2.75 - 6	19.05	19	-	40	19	23 - 40	ERC11
SL19.05-MEGAER11-80NL	**803.557**	2.75 - 6	19.05	19	-	80	19	23 - 40	ERC11
SL19.05-MEGAER16-40NL	**803.558**	1.9 - 10	19.05	30	23	40	28	35 - 47	ERC16
SL19.05-MEGAER16-80NL	**803.559**	1.9 - 10	19.05	30	23	80	28	35 - 47	ERC16
SL20-MEGAER11-40NL	**803.560**	2.75 - 6	20	19	-	40	19	23 - 40	ERC11
SL20-MEGAER11-80NL	**803.561**	2.75 - 6	20	20	-	80	19	23 - 40	ERC11
SL20-MEGAER16-40NL	**801.714**	1.9 - 10	20	30	23	40	28	35 - 47	ERC16
SL20-MEGAER16-80NL	**803.562**	1.9 - 10	20	30	23	80	28	35 - 47	ERC16
SL25-MEGAER11-60NL	**803.564**	2.75 - 6	25	19	-	60	19	23 - 40	ERC11
SL25-MEGAER11-100NL	**803.563**	2.75 - 6	25	19	-	100	19	23 - 40	ERC11
SL25-MEGAER16-60NL	**803.566**	1.9 - 10	25	30	-	60	28	35 - 47	ERC16
SL25-MEGAER16-100NL	**803.565**	1.9 - 10	25	30	-	100	28	35 - 47	ERC16
SL25-MEGAER20-60NL	**803.568**	2.75 - 13	25	35	27	60	30	42 - 62	ERC20
SL25-MEGAER20-100NL	**803.567**	2.75 - 13	25	35	27	100	30	42 - 62	ERC20
SL25-MEGAER25-60NL	**803.570**	2.75 - 16	25	42	33.5	60	48	44 - 67	ERC25
SL25-MEGAER25-100NL	**803.569**	2.75 - 16	25	42	33.5	100	48	44 - 67	ERC25

1. Nut (CN) is not included.
2. "G" is the adjusting screw (optional).
3. "H" is the max. tool shank length that can be inserted for these models.

Accessories & Spare Parts

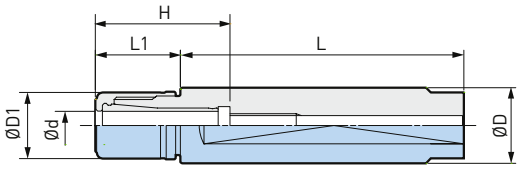
MEGA ER Nut	ER Nuts	MEGA ER Perfect Seal	MEGA ER Collets	MEGA Wrenches	New Baby Wrenches	Adjusting Screws NBA
						
▶ 344	▶ 344	▶ 345	▶ 342	▶ 351	▶ 352	▶ 335

MEGA Micro Chuck

Smaller nut diameter than body allows installation into toolholder of small lathes from the back side.

Coolant Through Hole





ø0.45 - 8.05mm

Model	Order No.	Ød	ØD	ØD1	L	L1	H	Collet Model
SL15.875-MEGA6S-60	**803.593**	0.45 - 6.05	15.875	14	60	18	28.5	NBC6S
SL16-MEGA6S-60	**803.594**	0.45 - 6.05	16	14	60	18	28.5	NBC6S
SL19.05-MEGA6S-40	**100570.001.0**	0.45 - 6.05	19.05	14	40	18	28.5	NBC6S
SL19.05-MEGA6S-80	**807.710**	0.45 - 6.05	19.05	14	80	18	28.5	NBC6S
SL19.05-MEGA8S-40	**807.410**	2.95 - 8.05	19.05	18	40	19	31	NBC8S
SL19.05-MEGA8S-80	**807.411**	2.95 - 8.05	19.05	18	80	19	31	NBC8S
SL20-MEGA6S-40	**803.595**	0.45 - 6.05	20	14	40	18	28.5	NBC6S
SL20-MEGA6S-80	**803.602**	0.45 - 6.05	20	14	80	18	28.5	NBC6S
SL20-MEGA8S-40	**807.412**	2.95 - 8.05	20	18	40	19	31	NBC8S
SL20-MEGA8S-80	**807.413**	2.95 - 8.05	20	18	80	19	31	NBC8S

1. MEGA nut is included in delivery.
2. MEGA wrench is to be ordered separately.

A.7

Accessories & Spare Parts

MEGA Nuts	Micro Seal Nuts	Micro Collets	MEGA Wrenches
			
▶ 326	▶ 326	▶ 325	▶ 351

MEGA Synchro Tapping Holder

For small Tap MGT3



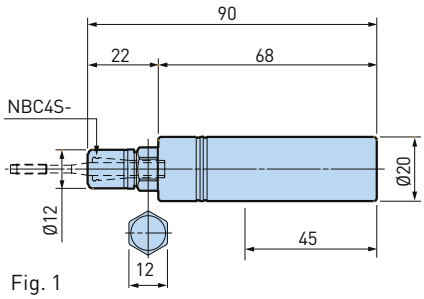


Fig. 1

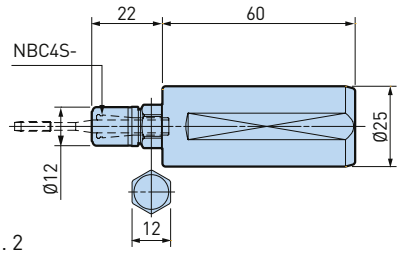


Fig. 2

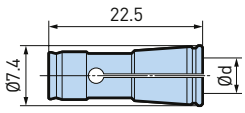
Model	Order No.	Fig.
ST20-MGT3-90	**978.356**	1
SLS25-MGT3-22	**804.115**	2

1. MEGA nut is included in delivery.
2. MEGA wrench (MGR12) and common spanner (12 mm) are required to clamp/unclamp the tap.
3. 12 mm wrench is additionally required to clamp/release the tool.
4. Synrchonized tapping function is required on the machine.
5. Coolant-through hole is not available.
6. ST20 has no flat on the shank.

A.7

Micro Collet for MGT3





Model	Order No.	Tapping Range			Tap Shank
		DIN 371	ISO 529	JIS	Ød
NBC4S-2.5AA	**961.468**	M1 - M1.8	M2	-	2.5
-2.8AA	**968.353**	M2 - M2.6	M2.2, M2.5	-	2.8
-3.0AA	**961.470**	-	-	M1 - M2.6	3.0
-3.1AA	**968.355**	-	M3	-	3.15
-3.5AA	**961.472**	M3	-	-	3.5
-4.0AA	**961.474**	-	-	M3	4.0

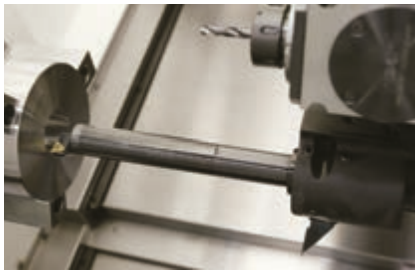
1. Other sizes available. Please refer to micro collet.

Accessories & Spare Parts

Micro Collets	MEGA Wrenches
	
▶ 325	▶ 351

Smart Damper Turning





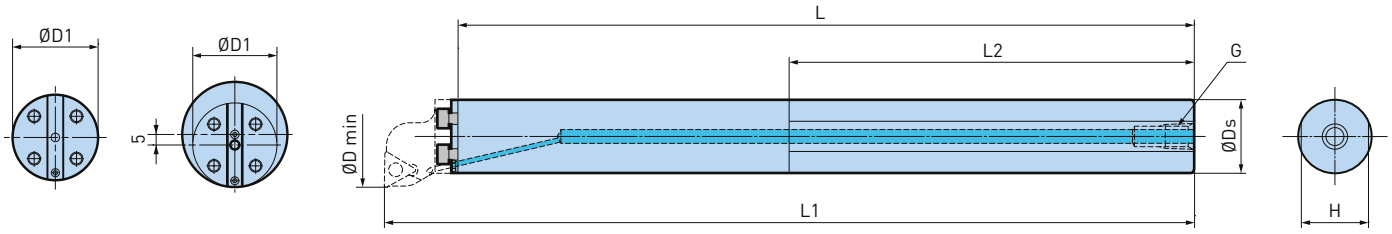


Fig. 1 Fig. 2

A.7

Model	Order No.	Fig.	Cartridge	ØD	ØDs	ØD1	L	L1	L2	H	G
ST32-SDB40DP-320	**806.422**	1	B32	40	32	32	320	352	176	30	PT1/4
ST40-SDB50DP-410	**806.423**	1	B40	50	40	40	410	442	240	37	PT3/8
ST50-SDB60DP-520	**807.403**	2	B40	60	50	40	520	552	330	47	PT3/8

1. Clamp bolts (3 pcs.) and o-rings (2 pcs.) are included.
2. Cartridge is to be ordered separately.

Cartridges

Positive



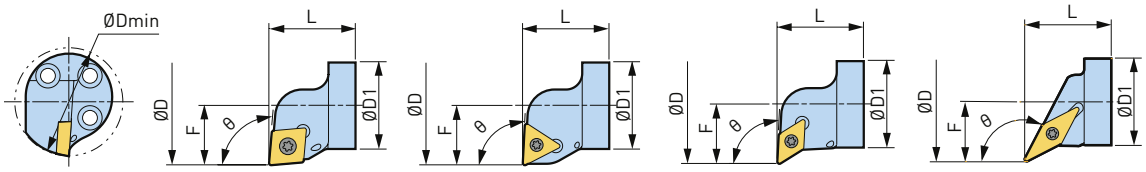
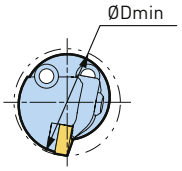


Fig. 1 Fig. 2 Fig. 3 Fig. 4

Model	Order No.	Fig.	Type	Insert	Hand	ØD	ØD1	L	F	Entering Angle	Screw Set
B32-STUCR-22032-11	**806.802**	2	B32	TC1102	R	40	32	32	22	93°	S2.5S- 7IP
B32-SDUCR-22032-11	**806.426**	3	B32	DC11T3	R	40	32	32	22	93°	S4 S-15IP
B32-SCLCR-22032-12	**806.424**	1	B32	CC1204	R	40	32	32	22	95°	S5 S-20IP
B32-STUPR-22032-16	**806.425**	2	B32	TP1604	R	40	32	32	22	93°	S4 S-15IP
B32-SVPBR-22032-16	**807.406**	4	B32	VB1604	R	40	32	32	22	117.5°	S3.5S-15IP
B40-STUCR-27032-11	**806.803**	2	B40	TC1102	R	50	40	32	27	93°	S2.5S- 7IP
B40-SDUCR-27032-11	**806.429**	3	B40	DC11T3	R	50	40	32	27	93°	S4 S-15IP
B40-SCLCR-27032-12	**806.427**	1	B40	CC1204	R	50	40	32	27	95°	S5 S-20IP
B40-STUPR-27032-16	**806.428**	2	B40	TP1604	R	50	40	32	27	93°	S4 S-15IP
B40-SVPBR-27032-16	**807.409**	4	B40	VB1604	R	50	40	32	27	117.5°	S3.5S-15IP

Negative





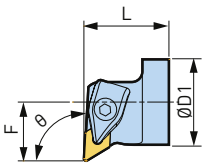


Fig. 1

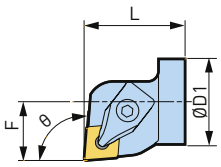


Fig. 2

Model	Order No.	Fig.	Type	Insert	Hand	ØD	ØD1	L	F	Entering Angle
B32-DDUNR-22032-11	**807.404**	5	B32	DN1104	R	40	32	32	22	93°
B32-DCLNR-22038-12	**807.405**	6	B32	CN1204	R	40	32	38	22	95°
B40-DDUNR-27032-15	**807.407**	5	B40	DN1506*/ DN1504	R	50	40	32	27	93°
B40-DCLNR-27038-12	**807.408**	6	B40	CN1204	R	50	40	38	27	95°

1. Wrench is included.
2. Inserts are to be ordered separately.
3. * Carbide shim for 6.35 mm thick DN1506 insert is included as standard. In case of DN1504 insert (thickness of 4.76 mm), please replace the standard carbide shim with DNS1506 (option).

Spare Parts for Turning Cartriges

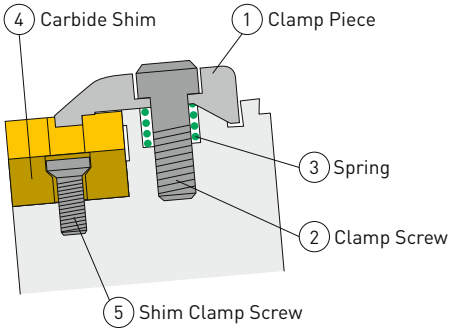
Insert Clamping Screw Set (for Positive)

Set Model	Order No.	Screw	Wrench Model
S2.5S- 7IP	**100763.001.0**	M2.5× 6.5	FS- 7IP
S3.5S-15IP	**807.697**	M3.5× 8	FS-15IP
S4 S-15IP	**806.624**	M4 × 8	FS-15IP
S5 S-20IP	**100763.002.0**	M5 ×12	FS-20IP

1. The insert clamping screw set contains 10 screws and 1 wrench.

Carbide Shim Set (for Positive)

Compatible Insert	Set Model	Order No.	Carbide Shim	Carbide Shim Pin	Clamping Screw
VB1604	SVBS1604	**807.555**	VBS1604	VBP1604	VB-M3.5-4



Clamp Piece Set (for Negative)

Set Model	Order No.	(1) Clamp Piece	(2) Clamp Screw	(3) Spring	Compatible Insert
					
SCP2	**973.182**	CP2	M5 x 20	Ø8 x 10	DN1504,DN1506, CN1204
SCP7	**807.554**	CP7			DN1104

1. 1 pc. each of the clamp piece, clamp screw and spring are included in the set.
2. The tightening wrench is a 4 mm hex wrench.

Carbide Shim Set (for Negative)

Compatible Insert	Set Model	Order No.	(4) Carbide Shim	(5) Shim Clamp Screw	Torx size
DN1104	SDNS1104C	**807.556**	DNS1104C	M3×7	10IP
DN1504	SDNS1504C	**807.557**	DNS1504C	M4×8	15IP
DN1506	SDNS1506C	**807.558**	DNS1506C	M4×8	15IP
CN1204	SCNS1204C	**807.559**	CNS1204C	M4×8	15IP

1. 1 pc. each of the carbide shim and shim clamp screw are included in the set.
2. The tightening wrench is a torx wrench.

Accessories & Spare Parts

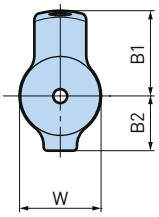
Inserts CC	Inserts CN	Inserts DC	Inserts DN	Inserts TC	Inserts VB
					
▶ 475	▶ 492	▶ 493	▶ 493	▶ 472	▶ 494

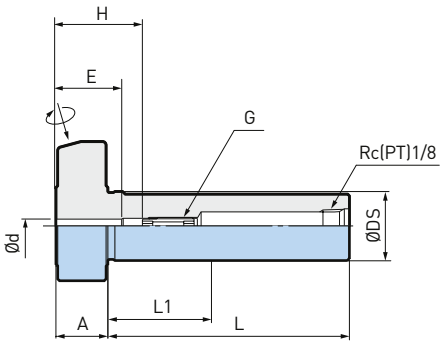
Hydraulic Chuck Lathe Type - Standard

Simple slim design allows to mount various tool post positions. Coolant trough drills can be used for coolant delivery with Rc (PT) 1/8.

Coolant Through Hole







ø3 - 12mm

Model	Order No.	Ød	ØDs	L	L1	A	B1	B2	W	H	E	G
SL19.05-HDC3-60 *	**807.220**	3	19.05	60	40	15	24.5	15.8	22	20 - 32	16	HDA4-05015W
SL19.05-HDC4-60	**806.991**	4	19.05	60	40	15	24.5	15.8	22	23 - 32	19	HDA4-05015W
SL19.05-HDC6-60	**806.992**	6	19.05	60	40	15	24.5	15.8	22	31 - 48	25	NBA6B
SL19.05-HDC8-60 **	**806.993**	8	19.05	60	40	15	25.5	15.8	22	65	31	-
SL20-HDC3-70 *	**807.221**	3	20	70	40	15	24.5	15.8	23	20 - 32	16	HDA4-05015W
SL20-HDC4-70	**807.222**	4	20	70	40	15	24.5	15.8	23	23 - 32	19	HDA4-05015W
SL20-HDC6-70	**807.223**	6	20	70	40	15	24.5	15.8	23	31 - 48	25	NBA6B
SL20-HDC8-70 **	**807.224**	8	20	70	40	15	25.5	15.8	23	75	31	-
SL22-HDC3-70 *	**807.225**	3	22	70	40	15	24.5	15.8	25	20 - 32	16	HDA4-05015W
SL22-HDC4-70	**806.994**	4	22	70	40	15	24.5	15.8	25	23 - 32	19	HDA4-05015W
SL22-HDC6-70 **	**806.995**	6	22	70	40	15	24.5	15.8	25	31 - 48	25	NBA6B
SL22-HDC8-70 **	**806.996**	8	22	70	40	15	25.5	15.8	25	75	31	-
SL22-HDC10-70 **	**807.488**	10	22	70	40	15	27	16.8	25	70	33	-
SL25-HDC3-65 *	**807.489**	3	25	65	40	15	23	14	28	20 - 32	16	HDA4-05015W
SL25-HDC4-65	**807.490**	4	25	65	40	15	23	14	28	23 - 32	19	HDA4-05015W
SL25-HDC6-65	**807.491**	6	25	65	40	15	24.5	15	28	31 - 48	25	NBA6B
SL25-HDC8-65 **	**807.492**	8	25	65	40	15	25.5	16	28	70	31	-
SL25-HDC10-65 **	**807.493**	10	25	65	40	15	27	17	28	65	33	-
SL25-HDC12-65 **	**807.497**	12	25	65	40	15	28	18	28	65	36	-
SL25.4-HDC3-80 *	**807.498**	3	25.4	80	40	15	23	14	28	20 - 32	16	HDA4-05015W
SL25.4-HDC4-80	**807.499**	4	25.4	80	40	15	23	14	28	23 - 32	19	HDA4-05015W
SL25.4-HDC6-80	**807.500**	6	25.4	80	40	15	24.5	15	28	31 - 48	25	NBA6B
SL25.4-HDC8-80 **	**807.501**	8	25.4	80	40	15	25.5	16	28	85	31	-
SL25.4-HDC10-80 **	**807.502**	10	25.4	80	40	15	27	17	28	80	33	-
SL25.4-HDC12-80 **	**807.503**	12	25.4	80	40	15	28	18	28	80	36	-

1. * Some coolant comes out from the inner slots in the case of the coolant-through application.
2. ** Adjusting screw cannot be used.
3. "E" is the min. clamping length.
4. "G" is the adjusting screw.
5. "H" is the max. tool shank length that can be inserted for these models.
6. „H" for HDC8 is the maximum clamping depth of the cutting tool in the holder.
7. „L1" is the minimum length, in case of shortening the shank.

Caution:

- Use only cutting tools that have a shank tolerance within h6.
- Do not use with cutting tools made with a flat on the shank. (ie: Weldon Type shank)
- Do not tighten the clamping screw without first inserting a cutting tool into the hydraulic chuck.
- Always insert the cutting tool into the hydraulic chuck beyond min. clamping length E.

Machine

- Citizen
- Star
- Tsugami
- Tornos

Accessories & Spare Parts

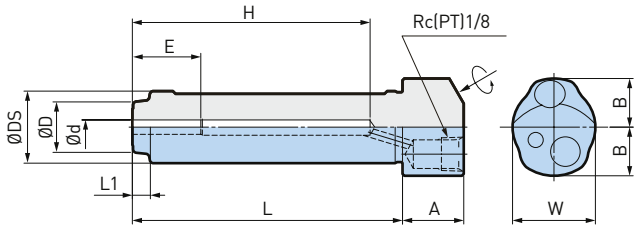
Adjusting Screws HDA	Adjusting Screws NBA
	
▶ 354	▶ 335

Hydraulic Chuck Lathe Type - Type F

Single wrench enables the easy cutting tool change on the tool post. User-friendly rear clamping design is ideal for main tool blocks

Coolant Through Hole



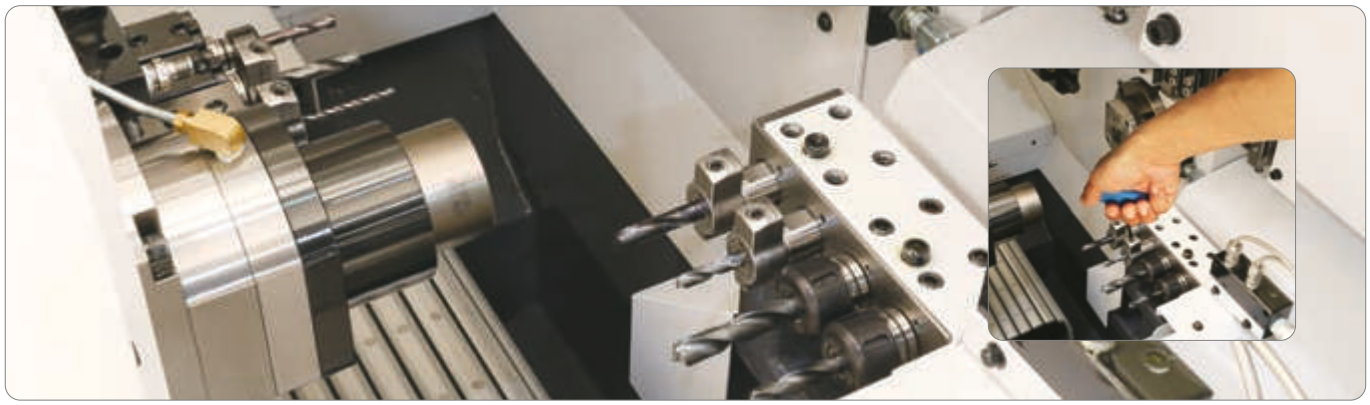


Model	Order No.	Ød	ØD	ØDs	L	L1	A	B	W	H	E
SL19.05F-HDC3-85 *	**807.504**	3	14	19.05	85	5	17	13.5	22	76	16
SL19.05F-HDC4-85	**807.505**	4	14	19.05	85	5	17	13.5	22	76	19
SL19.05F-HDC6-80	**807.506**	6	-	19.05	80	-	17	13.5	22	71	25
SL19.05F-HDC8-80	**807.507**	8	-	19.05	80	-	17	13.5	22	71	31
SL20F-HDC3-75 *	**807.512**	3	14	20	75	5	17	13.5	23	66	16
SL20F-HDC4-75	**807.513**	4	14	20	75	5	17	13.5	23	66	19
SL20F-HDC6-70	**807.514**	6	-	20	70	-	17	13.5	23	61	25
SL20F-HDC8-70	**807.515**	8	-	20	70	-	17	13.5	23	61	31
SL22F-HDC3-75 *	**807.516**	3	14	22	75	5	17	13.5	25	66	16
SL22F-HDC4-75	**807.517**	4	14	22	75	5	17	13.5	25	66	19
SL22F-HDC6-70	**807.518**	6	-	22	70	-	17	13.5	25	61	25
SL22F-HDC8-70	**807.519**	8	-	22	70	-	17	13.5	25	61	31
SL22F-HDC10-70	**807.520**	10	-	22	70	-	17	13.5	25	61	33

1. * Some coolant comes out from the inner slots in the case of the coolant-through application.
2. Adjusting screw cannot be used.
3. "E" is the min. clamping length.
4. "H" is the max. tool shank length that can be inserted for these models.

Caution:
- Use only cutting tools that have a shank tolerance within h6.
- Do not use with cutting tools made with a flat on the shank. (ie: Weldon Type shank)
- Do not tighten the clamping screw without first inserting a cutting tool into the hydraulic chuck.
- Always insert the cutting tool into the hydraulic chuck beyond min. clamping length E.

Machine
- Citizen
- Star
- Tsugami
- Tornos

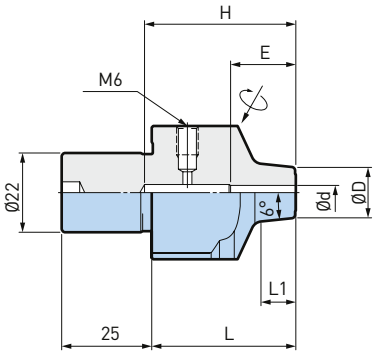


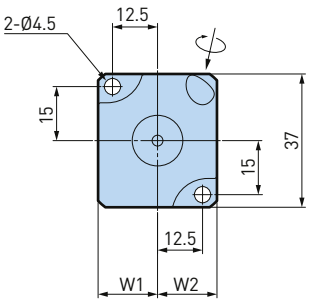
Hydraulic Chuck Lathe Type - Type R

Unique block design enables easy handling for both upper or lower tool block positions. Coolant through drills can be used for coolant delivery with M6.

Coolant Through Hole







Model	Order No.	Ød	ØD	L	L1	W1	W2	H	E
SL22R-HDC3-40 *	807.521	3	14	40	7	16.5	16.5	35	16
SL22R-HDC4-40	807.522	4	14	40	9	16.5	16.5	42	19
SL22R-HDC6-40	807.523	6	18	40	5	16.5	16.5	55	25
SL22R-HDC8-40	807.524	8	20	40	6	16.5	17.5	54	31
SL22R-HDC10-40	807.525	10	22	40	6	16.5	17.5	54	33

A.7

1. * Some coolant comes out from the inner slots in the case of the coolant-through application.
2. Adjusting screw cannot be used.
3. "E" is the min. clamping length.

Caution:
- Use only cutting tools that have a shank tolerance within h6.
- Do not use with cutting tools made with a flat on the shank. (ie: Weldon Type shank)
- Do not tighten the clamping screw without first inserting a cutting tool into the hydraulic chuck.
- Always insert the cutting tool into the hydraulic chuck beyond min. clamping length E.

Machine
- Citizen
- Star
- Tsugami
- Tornos

Measurement Tools for Lathe



Base Master Mini BMM-20H
Magnetable user-friendly compact height detector

▶ 580





Centering tool for lathe CTL-90
Magnetable centering tool that the dial faces to the front while rotating the spindle detector

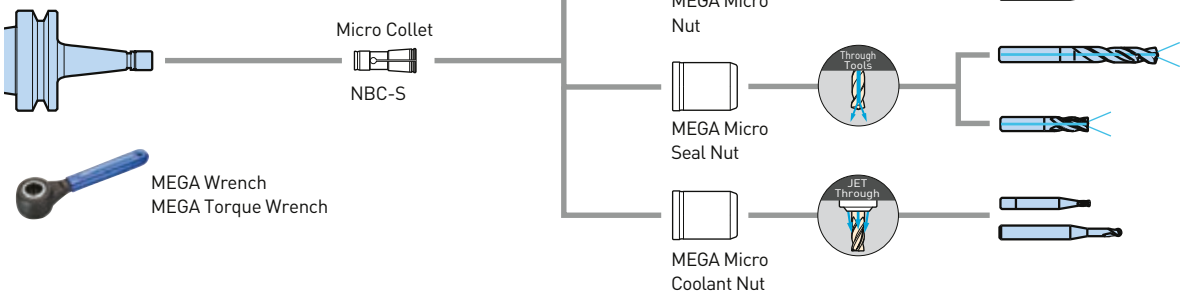
▶ 588



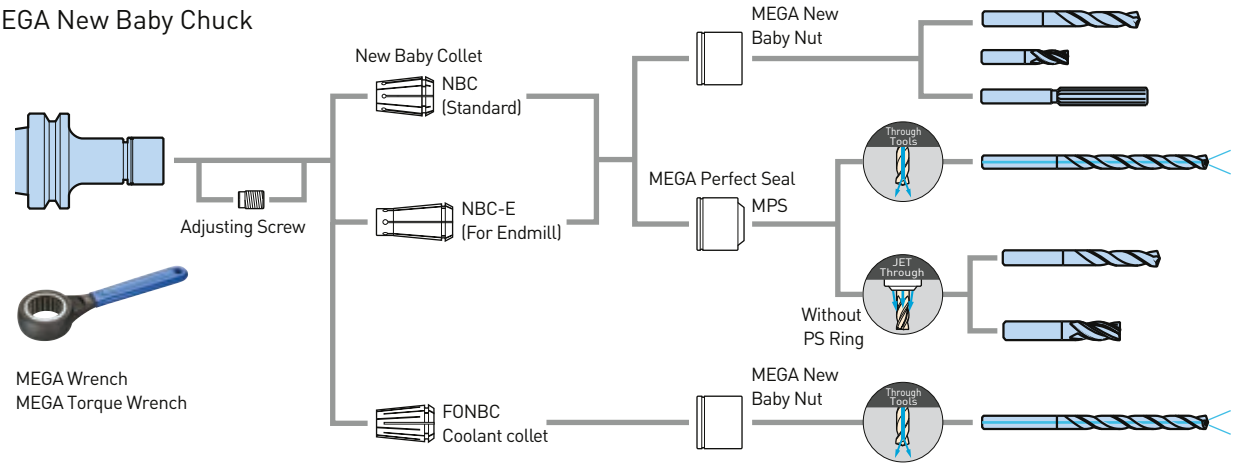
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MEGA Micro Chuck

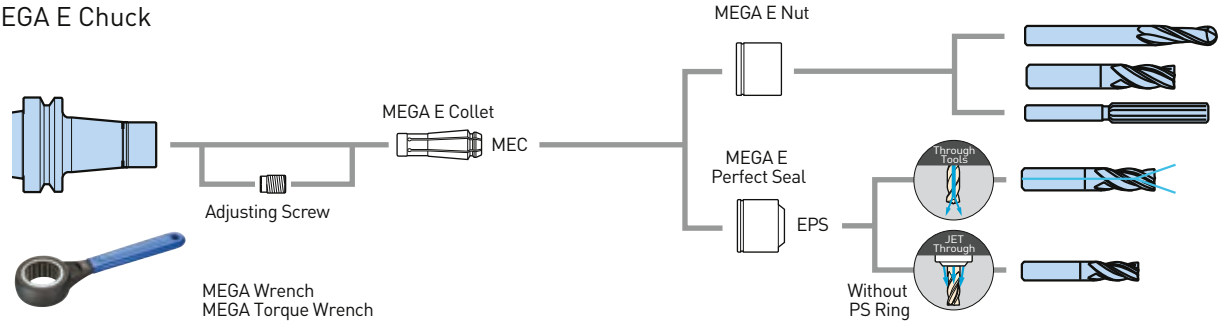


MEGA New Baby Chuck

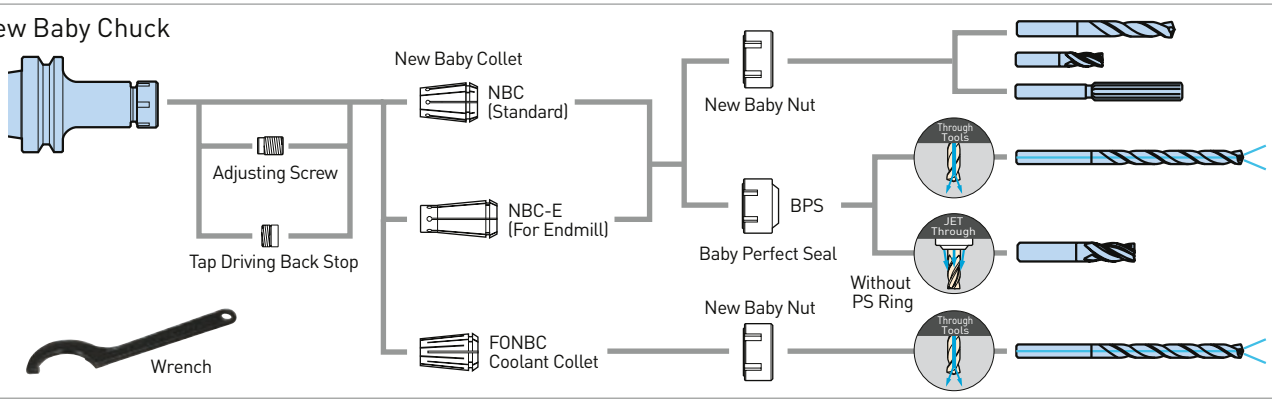


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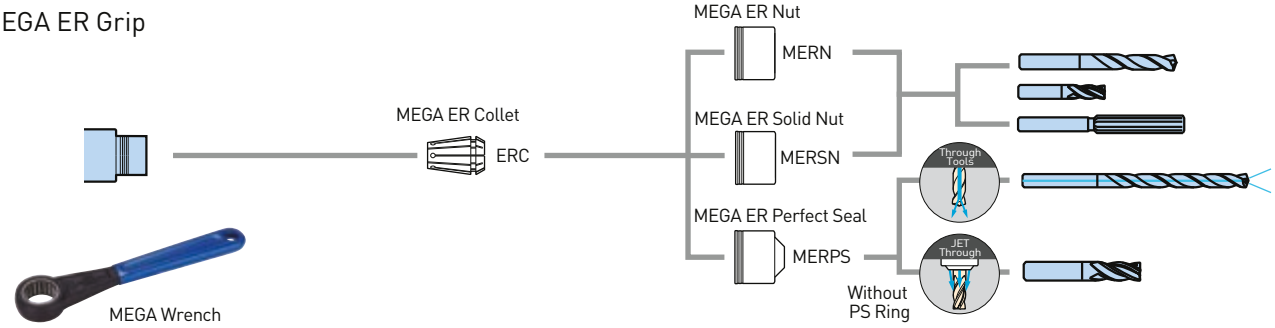
MEGA E Chuck



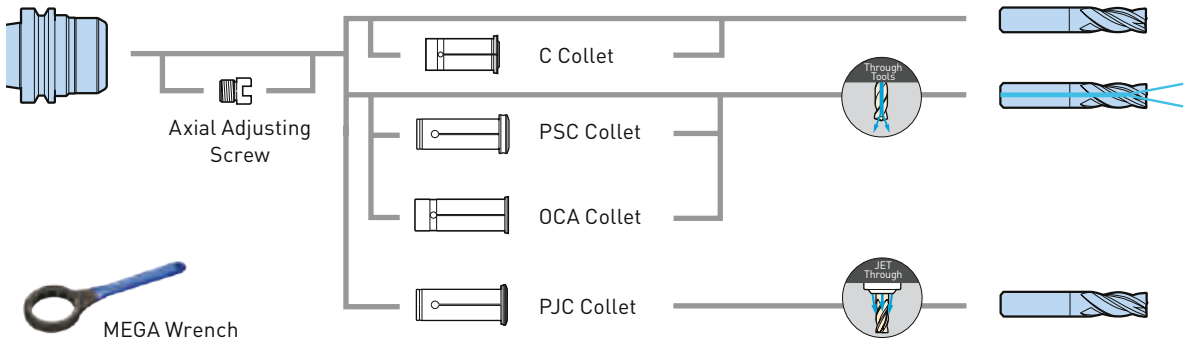
New Baby Chuck



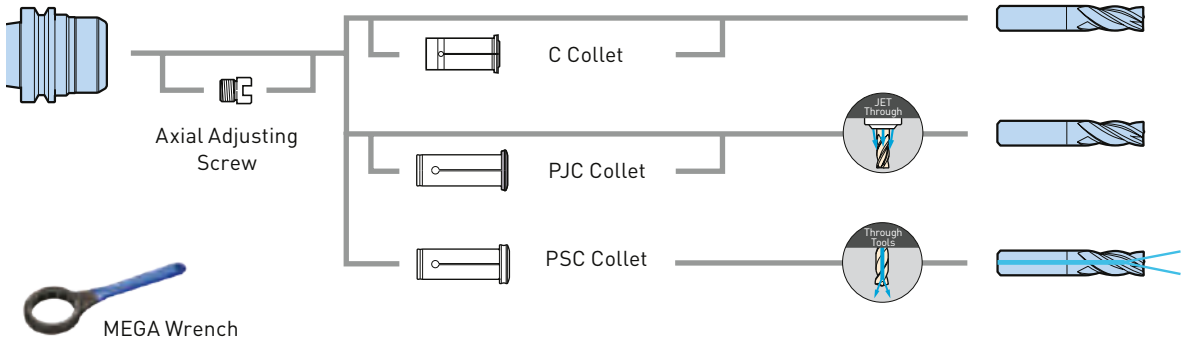
MEGA ER Grip



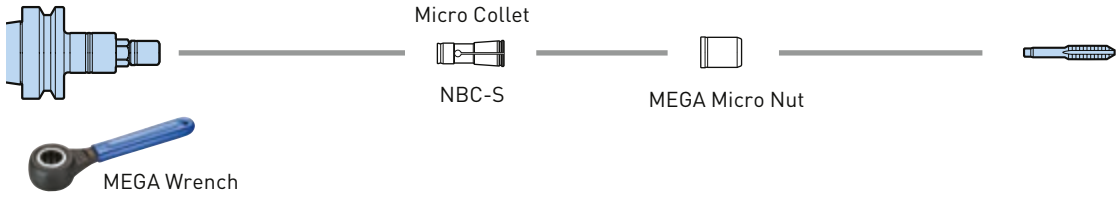
MEGA Double Power Chuck D type



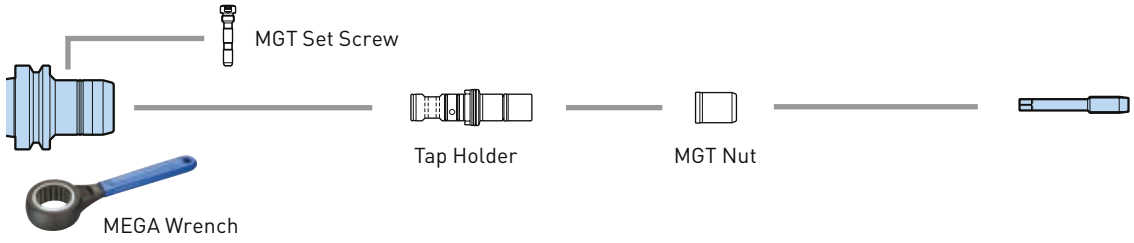
MEGA Double Power Chuck DS type



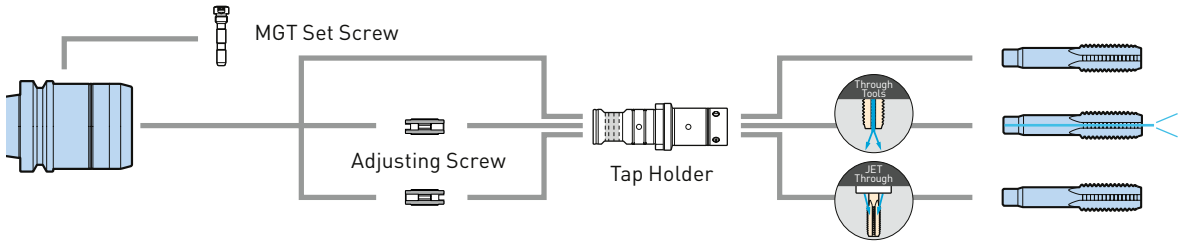
MEGA Synchro Tapping Holder MGT3



MEGA Synchro Tapping Holder MGT6, 12 and 20



MEGA Synchro Tapping Holder MGT36

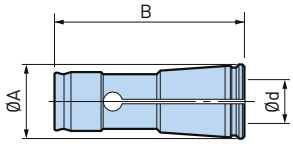


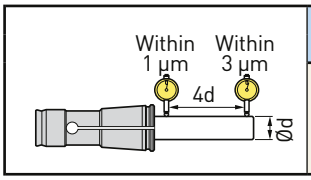
A.8

Micro Collets

For MEGA Micro Chuck
Available in 0.1 mm diameter increments to suit all the cutting tool shank sizes with maximum accuracy. Despite their compact size, high clamping force and accuracy are achieved.







Collet class	Max. runout	
	At nose	4xD
AA	Within 1 µm	Within 3 µm

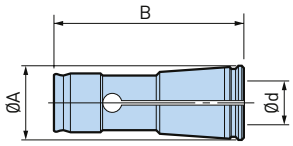
MEGA3S

Model	Order No.	Ød	ØA	B
NBC3S-0.5AA	**968.301**	0.45 - 0.55	6.06	18.8
NBC3S-0.6AA	**968.302**	0.55 - 0.65	6.06	18.8
NBC3S-0.7AA	**968.303**	0.65 - 0.75	6.06	18.8
NBC3S-0.8AA	**968.304**	0.75 - 0.85	6.06	18.8
NBC3S-0.9AA	**968.305**	0.85 - 0.95	6.06	18.8
NBC3S-1.0AA	**968.306**	0.95 - 1.05	6.06	18.8
NBC3S-1.1AA	**968.307**	1.05 - 1.15	6.06	18.8
NBC3S-1.2AA	**968.308**	1.15 - 1.25	6.06	18.8
NBC3S-1.3AA	**968.309**	1.25 - 1.35	6.06	18.8
NBC3S-1.4AA	**968.310**	1.35 - 1.45	6.06	18.8
NBC3S-1.5AA	**968.311**	1.45 - 1.55	6.06	18.8
NBC3S-1.6AA	**968.312**	1.55 - 1.65	6.06	18.8
NBC3S-1.7AA	**968.313**	1.65 - 1.75	6.06	18.8
NBC3S-1.8AA	**968.314**	1.75 - 1.85	6.06	18.8
NBC3S-1.9AA	**968.315**	1.85 - 1.95	6.06	18.8
NBC3S-2.0AA	**968.316**	1.95 - 2.05	6.06	18.8
NBC3S-2.1AA	**968.317**	2.05 - 2.15	6.06	18.8
NBC3S-2.2AA	**968.318**	2.15 - 2.25	6.06	18.8
NBC3S-2.3AA	**968.319**	2.25 - 2.35	6.06	18.8
NBC3S-2.4AA	**968.320**	2.35 - 2.45	6.06	18.8
NBC3S-2.5AA	**968.321**	2.45 - 2.55	6.06	18.8
NBC3S-2.6AA	**968.322**	2.55 - 2.65	6.06	18.8
NBC3S-2.7AA	**968.323**	2.65 - 2.75	6.06	18.8
NBC3S-2.8AA	**968.324**	2.75 - 2.85	6.06	18.8
NBC3S-2.9AA	**968.325**	2.85 - 2.95	6.06	18.8
NBC3S-3.0AA	**968.326**	2.95 - 3.05	6.06	18.8
NBC3S-3.1AA	**968.327**	3.05 - 3.15	6.06	18.8
NBC3S-3.175AA	**968.328**	3.125 - 3.225	6.06	18.8
NBC3S-3.2AA	**968.329**	3.15 - 3.25	6.06	18.8

MEGA4S

Model	Order No.	Ød	ØA	B
NBC4S-0.5AA	**968.334**	0.45 - 0.55	7.4	22.5
NBC4S-0.6AA	**968.335**	0.55 - 0.65	7.4	22.5
NBC4S-0.7AA	**968.336**	0.65 - 0.75	7.4	22.5
NBC4S-0.8AA	**968.337**	0.75 - 0.85	7.4	22.5
NBC4S-0.9AA	**968.338**	0.85 - 0.95	7.4	22.5
NBC4S-1.0AA	**961.462**	0.95 - 1.05	7.4	22.5
NBC4S-1.1AA	**968.339**	1.05 - 1.15	7.4	22.5
NBC4S-1.2AA	**968.340**	1.15 - 1.25	7.4	22.5
NBC4S-1.3AA	**968.341**	1.25 - 1.35	7.4	22.5
NBC4S-1.4AA	**968.342**	1.35 - 1.45	7.4	22.5
NBC4S-1.5AA	**961.464**	1.45 - 1.55	7.4	22.5
NBC4S-1.6AA	**968.343**	1.55 - 1.65	7.4	22.5
NBC4S-1.7AA	**968.344**	1.65 - 1.75	7.4	22.5
NBC4S-1.8AA	**968.345**	1.75 - 1.85	7.4	22.5
NBC4S-1.9AA	**968.346**	1.85 - 1.95	7.4	22.5
NBC4S-2.0AA	**961.466**	1.95 - 2.05	7.4	22.5
NBC4S-2.1AA	**968.347**	2.05 - 2.15	7.4	22.5
NBC4S-2.2AA	**968.348**	2.15 - 2.25	7.4	22.5
NBC4S-2.3AA	**968.349**	2.25 - 2.35	7.4	22.5
NBC4S-2.4AA	**968.350**	2.35 - 2.45	7.4	22.5
NBC4S-2.5AA	**961.468**	2.45 - 2.55	7.4	22.5
NBC4S-2.6AA	**968.351**	2.55 - 2.65	7.4	22.5
NBC4S-2.7AA	**968.352**	2.65 - 2.75	7.4	22.5
NBC4S-2.8AA	**968.353**	2.75 - 2.85	7.4	22.5
NBC4S-2.9AA	**968.354**	2.85 - 2.95	7.4	22.5
NBC4S-3.0AA	**961.470**	2.95 - 3.05	7.4	22.5
NBC4S-3.1AA	**968.355**	3.05 - 3.15	7.4	22.5
NBC4S-3.175AA	**968.356**	3.125 - 3.225	7.4	22.5
NBC4S-3.2AA	**968.357**	3.15 - 3.25	7.4	22.5
NBC4S-3.3AA	**968.358**	3.25 - 3.35	7.4	22.5
NBC4S-3.4AA	**968.359**	3.35 - 3.45	7.4	22.5
NBC4S-3.5AA	**961.472**	3.45 - 3.55	7.4	22.5
NBC4S-3.6AA	**968.360**	3.55 - 3.65	7.4	22.5
NBC4S-3.7AA	**968.361**	3.65 - 3.75	7.4	22.5
NBC4S-3.8AA	**968.362**	3.75 - 3.85	7.4	22.5
NBC4S-3.9AA	**968.363**	3.85 - 3.95	7.4	22.5
NBC4S-4.0AA	**961.474**	3.95 - 4.05	7.4	22.5

Micro Collets



MEGA6S

Model	Order No.	Ød	ØA	B
NBC6S-0.5AA	**968.369**	0.45 - 0.55	9.4	24.5
NBC6S-0.6AA	**968.370**	0.55 - 0.65	9.4	24.5
NBC6S-0.7AA	**968.371**	0.65 - 0.75	9.4	24.5
NBC6S-0.8AA	**968.372**	0.75 - 0.85	9.4	24.5
NBC6S-0.9AA	**968.373**	0.85 - 0.95	9.4	24.5
NBC6S-1.0AA	**961.477**	0.95 - 1.05	9.4	24.5
NBC6S-1.1AA	**968.374**	1.05 - 1.15	9.4	24.5
NBC6S-1.2AA	**968.375**	1.15 - 1.25	9.4	24.5
NBC6S-1.3AA	**968.376**	1.25 - 1.35	9.4	24.5
NBC6S-1.4AA	**968.377**	1.35 - 1.45	9.4	24.5
NBC6S-1.5AA	**961.479**	1.45 - 1.55	9.4	24.5
NBC6S-1.6AA	**968.378**	1.55 - 1.65	9.4	24.5
NBC6S-1.7AA	**968.379**	1.65 - 1.75	9.4	24.5
NBC6S-1.8AA	**968.380**	1.75 - 1.85	9.4	24.5
NBC6S-1.9AA	**968.381**	1.85 - 1.95	9.4	24.5
NBC6S-2.0AA	**961.481**	1.95 - 2.05	9.4	24.5
NBC6S-2.1AA	**968.382**	2.05 - 2.15	9.4	24.5
NBC6S-2.2AA	**968.383**	2.15 - 2.25	9.4	24.5
NBC6S-2.3AA	**968.384**	2.25 - 2.35	9.4	24.5
NBC6S-2.4AA	**968.385**	2.35 - 2.45	9.4	24.5
NBC6S-2.5AA	**961.483**	2.45 - 2.55	9.4	24.5
NBC6S-2.6AA	**968.386**	2.55 - 2.65	9.4	24.5
NBC6S-2.7AA	**968.387**	2.65 - 2.75	9.4	24.5
NBC6S-2.8AA	**968.388**	2.75 - 2.85	9.4	24.5
NBC6S-2.9AA	**968.389**	2.85 - 2.95	9.4	24.5
NBC6S-3.0AA	**961.485**	2.95 - 3.05	9.4	24.5
NBC6S-3.1AA	**968.390**	3.05 - 3.15	9.4	24.5
NBC6S-3.175AA	**968.391**	3.125 - 3.225	9.4	24.5
NBC6S-3.2AA	**968.392**	3.15 - 3.25	9.4	24.5
NBC6S-3.3AA	**968.393**	3.25 - 3.35	9.4	24.5
NBC6S-3.4AA	**968.394**	3.35 - 3.45	9.4	24.5
NBC6S-3.5AA	**961.487**	3.45 - 3.55	9.4	24.5
NBC6S-3.6AA	**968.395**	3.55 - 3.65	9.4	24.5
NBC6S-3.7AA	**968.396**	3.65 - 3.75	9.4	24.5
NBC6S-3.8AA	**968.397**	3.75 - 3.85	9.4	24.5
NBC6S-3.9AA	**968.398**	3.85 - 3.95	9.4	24.5
NBC6S-4.0AA	**961.489**	3.95 - 4.05	9.4	24.5
NBC6S-4.1AA	**968.399**	4.05 - 4.15	9.4	24.5
NBC6S-4.2AA	**968.400**	4.15 - 4.25	9.4	24.5
NBC6S-4.3AA	**968.401**	4.25 - 4.35	9.4	24.5
NBC6S-4.4AA	**968.402**	4.35 - 4.45	9.4	24.5
NBC6S-4.5AA	**961.491**	4.45 - 4.55	9.4	24.5
NBC6S-4.6AA	**968.403**	4.55 - 4.65	9.4	24.5
NBC6S-4.7AA	**968.404**	4.65 - 4.75	9.4	24.5
NBC6S-4.7625AA	**801.743**	4.7125 - 4.8125	9.4	24.5
NBC6S-4.8AA	**968.405**	4.75 - 4.85	9.4	24.5
NBC6S-4.9AA	**968.406**	4.85 - 4.95	9.4	24.5
NBC6S-5.0AA	**961.493**	4.95 - 5.05	9.4	24.5
NBC6S-5.1AA	**968.408**	5.05 - 5.15	9.4	24.5
NBC6S-5.2AA	**968.409**	5.15 - 5.25	9.4	24.5
NBC6S-5.3AA	**968.410**	5.25 - 5.35	9.4	24.5
NBC6S-5.4AA	**968.411**	5.35 - 5.45	9.4	24.5
NBC6S-5.5AA	**961.495**	5.45 - 5.55	9.4	24.5
NBC6S-5.6AA	**968.412**	5.55 - 5.65	9.4	24.5
NBC6S-5.7AA	**968.413**	5.65 - 5.75	9.4	24.5
NBC6S-5.8AA	**968.414**	5.75 - 5.85	9.4	24.5
NBC6S-5.9AA	**968.415**	5.85 - 5.95	9.4	24.5
NBC6S-6.0AA	**961.497**	5.95 - 6.05	9.4	24.5

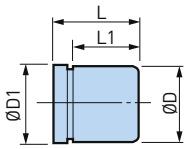
MEGA8S

Model	Order No.	Ød	ØA	B
NBC8S-3.0AA	**801.709**	2.95 - 3.05	12	27
NBC8S-3.1AA	**804.132**	3.05 - 3.15	12	27
NBC8S-3.175AA	**804.133**	3.170 - 3.180	12	27
NBC8S-3.2AA	**804.134**	3.15 - 3.25	12	27
NBC8S-3.3AA	**804.135**	3.25 - 3.35	12	27
NBC8S-3.4AA	**804.136**	3.35 - 3.45	12	27
NBC8S-3.5AA	**804.137**	3.45 - 3.55	12	27
NBC8S-3.6AA	**804.138**	3.55 - 3.65	12	27
NBC8S-3.7AA	**804.139**	3.65 - 3.75	12	27
NBC8S-3.8AA	**804.140**	3.75 - 3.85	12	27
NBC8S-3.9AA	**804.141**	3.85 - 3.95	12	27
NBC8S-4.0AA	**801.742**	3.95 - 4.05	12	27
NBC8S-4.1AA	**804.142**	4.05 - 4.15	12	27
NBC8S-4.2AA	**804.143**	4.15 - 4.25	12	27
NBC8S-4.3AA	**804.144**	4.25 - 4.35	12	27
NBC8S-4.4AA	**804.145**	4.35 - 4.45	12	27
NBC8S-4.5AA	**804.146**	4.45 - 4.55	12	27
NBC8S-4.6AA	**804.147**	4.55 - 4.65	12	27
NBC8S-4.7AA	**804.148**	4.65 - 4.75	12	27
NBC8S-4.8AA	**804.149**	4.75 - 4.85	12	27
NBC8S-4.9AA	**804.150**	4.85 - 4.95	12	27
NBC8S-5.0AA	**801.702**	4.95 - 5.05	12	27
NBC8S-5.1AA	**804.151**	5.05 - 5.15	12	27
NBC8S-5.2AA	**804.152**	5.15 - 5.25	12	27
NBC8S-5.3AA	**804.153**	5.25 - 5.35	12	27
NBC8S-5.4AA	**804.154**	5.35 - 5.45	12	27
NBC8S-5.5AA	**804.155**	5.45 - 5.55	12	27
NBC8S-5.6AA	**804.156**	5.55 - 5.65	12	27
NBC8S-5.7AA	**804.157**	5.65 - 5.75	12	27
NBC8S-5.8AA	**804.158**	5.75 - 5.85	12	27
NBC8S-5.9AA	**801.746**	5.85 - 5.95	12	27
NBC8S-6.0AA	**801.703**	5.95 - 6.05	12	27
NBC8S-6.1AA	**804.159**	6.05 - 6.15	12	27
NBC8S-6.2AA	**804.160**	6.15 - 6.25	12	27
NBC8S-6.3AA	**804.161**	6.25 - 6.35	12	27
NBC8S-6.4AA	**804.162**	6.35 - 6.45	12	27
NBC8S-6.5AA	**804.163**	6.45 - 6.55	12	27
NBC8S-6.6AA	**804.164**	6.55 - 6.65	12	27
NBC8S-6.7AA	**804.165**	6.65 - 6.75	12	27
NBC8S-6.8AA	**804.166**	6.75 - 6.85	12	27
NBC8S-6.9AA	**804.167**	6.85 - 6.95	12	27
NBC8S-7.0AA	**804.168**	6.95 - 7.05	12	27
NBC8S-7.1AA	**804.169**	7.05 - 7.15	12	27
NBC8S-7.2AA	**804.170**	7.15 - 7.25	12	27
NBC8S-7.3AA	**804.171**	7.25 - 7.35	12	27
NBC8S-7.4AA	**804.172**	7.35 - 7.45	12	27
NBC8S-7.5AA	**804.173**	7.45 - 7.55	12	27
NBC8S-7.6AA	**804.174**	7.55 - 7.65	12	27
NBC8S-7.7AA	**804.175**	7.65 - 7.75	12	27
NBC8S-7.8AA	**804.176**	7.75 - 7.85	12	27
NBC8S-7.9AA	**804.177**	7.85 - 7.95	12	27
NBC8S-8.0AA	**801.704**	7.95 - 8.05	12	27

MEGA Nuts

For MEGA Micro Chuck



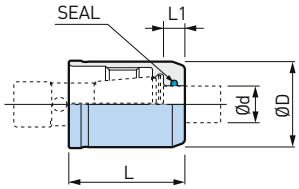


Model	Order No.	ØD	ØD1	L	L1	Body
MGN3S	**969.480**	10	10.3	13	11	MEGA3S
MGN4S	**969.481**	12	12.2	14.5	12	MEGA4S
MGN6S	**969.482**	14	14.2	17	14.5	MEGA6S
MGN8S	**804.108**	18	18.3	18.5	15.5	MEGA8S

Micro Seal Nuts

For MEGA Micro Chuck
Sealed nut for coolant-through tools.





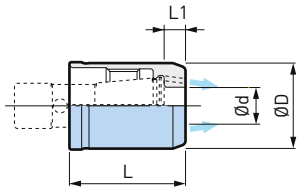
Model	Order No.	Ød	ØD	L	L1	Body
MGN6S-PS3	**978.516**	3	14	19	3.5	MEGA6S
MGN6S-PS4	**978.513**	4	14	19	3.5	MEGA6S
MGN6S-PS5	**978.517**	5	14	19	3.5	MEGA6S
MGN6S-PS6	**978.511**	6	14	19	3.5	MEGA6S
MGN8S-PS3	**804.109**	3	18	20.2	3.5	MEGA8S
MGN8S-PS4	**804.110**	4	18	20.2	3.5	MEGA8S
MGN8S-PS5	**804.111**	5	18	20.2	3.5	MEGA8S
MGN8S-PS6	**804.112**	6	18	20.2	3.5	MEGA8S
MGN8S-PS7	**804.113**	7	18	20.2	3.5	MEGA8S
MGN8S-PS8	**804.114**	8	18	20.2	3.5	MEGA8S

A.8

MEGA Micro Coolant Nut

For MEGA Micro Chuck
MEGA Micro Coolant Nut, only for MEGA Micro Chuck 6S for more efficient coolant supply for micro cutting tool.





Model	Order No.	Ød	ØD	L	L1	Body
MGN6S-2J	**806.862**	2	14	19	3.5	MEGA6S
MGN6S-3J	**806.863**	3	14	19	3.5	MEGA6S
MGN6S-4J	**806.864**	4	14	19	3.5	MEGA6S
MGN6S-5J	**806.865**	5	14	17	1.5	MEGA6S
MGN6S-6J	**806.866**	6	14	17	1.5	MEGA6S

Collet Protective Cases

Exclusive case for MEGA Micro Collet.



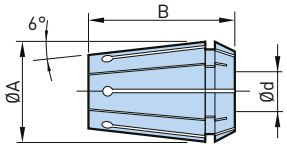
Model	Order No.	Number of Holes	Size	Collet Model
NBB3S	**968.330**	50	200 x 170 x 50	NBC3S
NBB4S	**968.364**	50	200 x 170 x 50	NBC4S
NBB6S	**961.498**	60	200 x 170 x 50	NBC6S
NBB8S	**805.802**	60	200 x 170 x 50	NBC8S

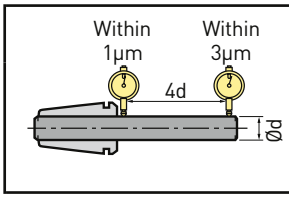
1. Micro collet is not included.

New Baby Collets

For MEGA New Baby Chuck and New Baby Chuck







Collet class	Max. runout	
	At nose	4xD
AA	Within 1 µm	Within 3 µm

MEGA6N / NBS6

Model	Order No.	Ød	ØA	B
NBC6-0.5AA	961.500 ▫	0.25 - 0.5	9.5	14
NBC6-0.75AA	961.501	0.5 - 0.75	9.5	14
NBC6-1AA	961.502 ▫	0.75 - 1	9.5	14
NBC6-1.25AA	961.503 ▫	1 - 1.25	9.5	14
NBC6-1.5AA	961.504 ▫	1.25 - 1.5	9.5	14
NBC6-1.75AA	961.505 ▫	1.5 - 1.75	9.5	14
NBC6-2AA	961.506 ▫	1.75 - 2	9.5	14
NBC6-2.25AA	961.507 ▫	2 - 2.25	9.5	14
NBC6-2.5AA	961.508 ▫	2.25 - 2.5	9.5	14
NBC6-2.75AA	961.509 ▫	2.5 - 2.75	9.5	14
NBC6-3AA	961.510 ▫	2.75 - 3	9.5	14
NBC6-3.175AA	801.738	2.925 - 3.175	9.5	14
NBC6-3.25AA	961.511 ▫	3 - 3.25	9.5	14
NBC6-3.5AA	961.512 ▫	3.25 - 3.5	9.5	14
NBC6-3.75AA	961.513 ▫	3.5 - 3.75	9.5	14
NBC6-4AA	961.514 ▫	3.75 - 4	9.5	14
NBC6-4.25AA	961.515 ▫	4 - 4.25	9.5	14
NBC6-4.5AA	961.516 ▫	4.25 - 4.5	9.5	14
NBC6-4.75AA	961.517 ▫	4.5 - 4.75	9.5	14
NBC6-5AA	961.518 ▫	4.75 - 5	9.5	14
NBC6-5.25AA	961.519 ▫	5 - 5.25	9.5	14
NBC6-5.5AA	961.520 ▫	5.25 - 5.5	9.5	14
NBC6-5.75AA	961.521 ▫	5.5 - 5.75	9.5	14
NBC6-6AA	961.522 ▫	5.75 - 6	9.5	14

MEGA8N / NBS8

Model	Order No.	Ød	ØA	B
NBC8-0.75AA	978.507 ▫	0.5 - 0.75	12.5	18
NBC8-1AA	961.531 ▫	0.75 - 1	12.5	18
NBC8-1.25AA	978.500 ▫	1 - 1.25	12.5	18
NBC8-1.5AA	961.532 ▫	1.25 - 1.5	12.5	18
NBC8-1.75AA	801.744 ▫	1.5 - 1.75	12.5	18
NBC8-2AA	961.533 ▫	1.75 - 2	12.5	18
NBC8-2.25AA	978.505 ▫	2 - 2.25	12.5	18
NBC8-2.5AA	961.534 ▫	2.25 - 2.5	12.5	18
NBC8-2.75AA	978.506 ▫	2.5 - 2.75	12.5	18
NBC8-3AA	961.535 ▫	2.75 - 3	12.5	18
NBC8-3.175AA	978.499	2.675 - 3.175	12.5	18
NBC8-3.5AA	961.536 ▫	3 - 3.5	12.5	18
NBC8-4AA	961.537 ▫	3.5 - 4	12.5	18
NBC8-4.5AA	961.538 ▫	4 - 4.5	12.5	18
NBC8-5AA	961.539 ▫	4.5 - 5	12.5	18
NBC8-5.25AA	801.750	4.75 - 5.25	12.5	18
NBC8-5.5AA	961.540 ▫	5 - 5.5	12.5	18
NBC8-5.75AA	801.751	5.25 - 5.75	12.5	18
NBC8-6AA	961.541 ▫	5.5 - 6	12.5	18
NBC8-6.5AA	961.542 ▫	6 - 6.5	12.5	18
NBC8-7AA	961.543 ▫	6.5 - 7	12.5	18
NBC8-7.5AA	961.544 ▫	7 - 7.5	12.5	18
NBC8-8AA	961.545 ▫	7.5 - 8	12.5	18

MEGA10N / NBS10

Model	Order No.	Ød	ØA	B
NBC10-1.75AA	961.599 ▫	1.5 - 1.75	16.5	27
NBC10-2AA	961.551 ▫	1.75 - 2	16.5	27
NBC10-2.25AA	978.508 ▫	2 - 2.25	16.5	27
NBC10-2.5AA	961.552 ▫	2.25 - 2.5	16.5	27
NBC10-2.75AA	978.509 ▫	2.5 - 2.75	16.5	27
NBC10-3AA	961.553 ▫	2.75 - 3	16.5	27
NBC10-3.175AA	961.120	2.675 - 3.175	16.5	27
NBC10-3.25AA	801.651	2.75 - 3.25	16.5	27
NBC10-3.5AA	961.554 ▫	3 - 3.5	16.5	27
NBC10-3.75AA	801.652	3.25 - 3.75	16.5	27
NBC10-4AA	961.555 ▫	3.5 - 4	16.5	27
NBC10-4.25AA	801.655	3.75 - 4.25	16.5	27
NBC10-4.5AA	961.556 ▫	4 - 4.5	16.5	27
NBC10-4.75AA	801.656	4.25 - 4.75	16.5	27

Model	Order No.	Ød	ØA	B
NBC10-5AA	961.557 ▫	4.5 - 5	16.5	27
NBC10-5.25AA	801.659	4.75 - 5.25	16.5	27
NBC10-5.5AA	961.558 ▫	5 - 5.5	16.5	27
NBC10-5.75AA	801.660	5.25 - 5.75	16.5	27
NBC10-6AA	961.559 ▫	5.5 - 6	16.5	27
NBC10-6.5AA	961.560 ▫	6 - 6.5	16.5	27
NBC10-7AA	961.561 ▫	6.5 - 7	16.5	27
NBC10-7.5AA	961.562 ▫	7 - 7.5	16.5	27
NBC10-8AA	961.563 ▫	7.5 - 8	16.5	27
NBC10-8.5AA	961.564 ▫	8 - 8.5	16.5	27
NBC10-9AA	961.565 ▫	8.5 - 9	16.5	27
NBC10-9.5AA	961.566 ▫	9 - 9.5	16.5	27
NBC10-10AA	961.567 ▫	9.5 - 10	16.5	27

▫ Models are included in new baby collet set.

MEGA13N / NBS13

Model	Order No.	Ød	ØA	B
NBC13-3AA	**961.573** ▫	2.5 - 3	20.5	31
NBC13-3.175AA	**961.127**	2.675 - 3.175	20.5	31
NBC13-3.25AA	**801.671**	2.75 - 3.25	20.5	31
NBC13-3.5AA	**961.574** ▫	3 - 3.5	20.5	31
NBC13-3.75AA	**801.672**	3.25 - 3.75	20.5	31
NBC13-4AA	**961.575** ▫	3.5 - 4	20.5	31
NBC13-4.25AA	**801.675**	3.75 - 4.25	20.5	31
NBC13-4.5AA	**961.576** ▫	4 - 4.5	20.5	31
NBC13-4.75AA	**801.676**	4.25 - 4.75	20.5	31
NBC13-5AA	**961.577** ▫	4.5 - 5	20.5	31
NBC13-5.25AA	**801.679**	4.75 - 5.25	20.5	31
NBC13-5.5AA	**961.578** ▫	5 - 5.5	20.5	31
NBC13-5.75AA	**801.680**	5.25 - 5.75	20.5	31
NBC13-6AA	**961.579** ▫	5.5 - 6	20.5	31
NBC13-6.5AA	**961.580** ▫	6 - 6.5	20.5	31
NBC13-7AA	**961.581** ▫	6.5 - 7	20.5	31
NBC13-7.5AA	**961.582** ▫	7 - 7.5	20.5	31
NBC13-8AA	**961.583** ▫	7.5 - 8	20.5	31
NBC13-8.5AA	**961.584** ▫	8 - 8.5	20.5	31
NBC13-9AA	**961.585** ▫	8.5 - 9	20.5	31
NBC13-9.5AA	**961.586** ▫	9 - 9.5	20.5	31
NBC13-10AA	**961.587** ▫	9.5 - 10	20.5	31
NBC13-10.5AA	**961.588** ▫	10 - 10.5	20.5	31
NBC13-11AA	**961.589** ▫	10.5 - 11	20.5	31
NBC13-11.5AA	**961.590** ▫	11 - 11.5	20.5	31
NBC13-12AA	**961.591** ▫	11.5 - 12	20.5	31
NBC13-12.5AA	**961.592** ▫	12 - 12.5	20.5	31
NBC13-13AA	**961.593** ▫	12.5 - 13	20.5	31

MEGA16N / NBS16

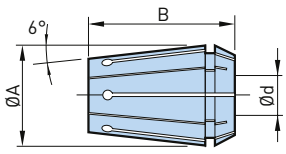
Model	Order No.	Ød	ØA	B
NBC16-3AA	**961.601** ▫	2.5 - 3	25.5	35
NBC16-3.25AA	**801.694**	2.75 - 3.25	25.5	35
NBC16-3.5AA	**961.602** ▫	3 - 3.5	25.5	35
NBC16-3.75AA	**801.695**	3.25 - 3.75	25.5	35
NBC16-4AA	**961.603** ▫	3.5 - 4	25.5	35
NBC16-4.25AA	**801.697**	3.75 - 4.25	25.5	35
NBC16-4.5AA	**961.604** ▫	4 - 4.5	25.5	35
NBC16-4.75AA	**801.698**	4.25 - 4.75	25.5	35
NBC16-5AA	**961.605** ▫	4.5 - 5	25.5	35
NBC16-5.25AA	**801.700**	4.75 - 5.25	25.5	35
NBC16-5.5AA	**961.606** ▫	5 - 5.5	25.5	35
NBC16-5.75AA	**801.701**	5.25 - 5.75	25.5	35
NBC16-6AA	**961.607** ▫	5.5 - 6	25.5	35
NBC16-6.5AA	**961.608** ▫	6 - 6.5	25.5	35
NBC16-7AA	**961.609** ▫	6.5 - 7	25.5	35
NBC16-7.5AA	**961.610** ▫	7 - 7.5	25.5	35
NBC16-8AA	**961.611** ▫	7.5 - 8	25.5	35
NBC16-8.5AA	**961.612** ▫	8 - 8.5	25.5	35
NBC16-9AA	**961.613** ▫	8.5 - 9	25.5	35
NBC16-9.5AA	**961.614** ▫	9 - 9.5	25.5	35
NBC16-10AA	**961.615** ▫	9.5 - 10	25.5	35
NBC16-10.5AA	**961.616** ▫	10 - 10.5	25.5	35
NBC16-11AA	**961.617** ▫	10.5 - 11	25.5	35
NBC16-11.5AA	**961.618** ▫	11 - 11.5	25.5	35
NBC16-12AA	**961.619** ▫	11.5 - 12	25.5	35
NBC16-12.5AA	**961.620** ▫	12 - 12.5	25.5	35
NBC16-13AA	**961.621** ▫	12.5 - 13	25.5	35
NBC16-13.5AA	**961.622** ▫	13 - 13.5	25.5	35
NBC16-14AA	**961.623** ▫	13.5 - 14	25.5	35
NBC16-14.5AA	**961.624** ▫	14 - 14.5	25.5	35
NBC16-15AA	**961.625** ▫	14.5 - 15	25.5	35
NBC16-15.5AA	**961.626** ▫	15 - 15.5	25.5	35
NBC16-16AA	**961.627** ▫	15.5 - 16	25.5	35

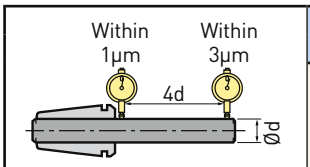
▫ Models are included in new baby collet set.

New Baby Collets

For MEGA New Baby Chuck and New Baby Chuck







Collet class	Max. runout	
	At nose	4xD
AA	Within 1 µm	Within 3 µm

MEGA20N / NBS20

Model	Order No.	Ød	ØA	B
NBC20-3AA	**961.641** ▫	2.5 - 3	28.5	38
NBC20-3.25AA	**801.718**	2.75 - 3.25	28.5	38
NBC20-3.5AA	**961.642** ▫	3 - 3.5	28.5	38
NBC20-3.75AA	**801.719**	3.25 - 3.75	28.5	38
NBC20-4AA	**961.643** ▫	3.5 - 4	28.5	38
NBC20-4.25AA	**801.722**	3.75 - 4.25	28.5	38
NBC20-4.5AA	**961.644** ▫	4 - 4.5	28.5	38
NBC20-4.75AA	**801.723**	4.25 - 4.75	28.5	38
NBC20-5AA	**961.645** ▫	4.5 - 5	28.5	38
NBC20-5.25AA	**801.726**	4.75 - 5.25	28.5	38
NBC20-5.5AA	**961.646** ▫	5 - 5.5	28.5	38
NBC20-5.75AA	**801.727**	5.25 - 5.75	28.5	38
NBC20-6AA	**961.647** ▫	5.5 - 6	28.5	38
NBC20-6.5AA	**961.648** ▫	6 - 6.5	28.5	38
NBC20-7AA	**961.649** ▫	6.5 - 7	28.5	38
NBC20-7.5AA	**961.650** ▫	7 - 7.5	28.5	38
NBC20-8AA	**961.651** ▫	7.5 - 8	28.5	38
NBC20-8.5AA	**961.652** ▫	8 - 8.5	28.5	38
NBC20-9AA	**961.653** ▫	8.5 - 9	28.5	38
NBC20-9.5AA	**961.654** ▫	9 - 9.5	28.5	38
NBC20-10AA	**961.655** ▫	9.5 - 10	28.5	38
NBC20-10.5AA	**961.656** ▫	10 - 10.5	28.5	38
NBC20-11AA	**961.657** ▫	10.5 - 11	28.5	38
NBC20-11.5AA	**961.658** ▫	11 - 11.5	28.5	38
NBC20-12AA	**961.659** ▫	11.5 - 12	28.5	38
NBC20-12.5AA	**961.660** ▫	12 - 12.5	28.5	38
NBC20-13AA	**961.661** ▫	12.5 - 13	28.5	38
NBC20-13.5AA	**961.662** ▫	13 - 13.5	28.5	38
NBC20-14AA	**961.663** ▫	13.5 - 14	28.5	38
NBC20-14.5AA	**961.664** ▫	14 - 14.5	28.5	38
NBC20-15AA	**961.665** ▫	14.5 - 15	28.5	38
NBC20-15.5AA	**961.666** ▫	15 - 15.5	28.5	38
NBC20-16AA	**961.667** ▫	15.5 - 16	28.5	38
NBC20-16.5AA	**961.668** ▫	16 - 16.5	28.5	38
NBC20-17AA	**961.669** ▫	16.5 - 17	28.5	38
NBC20-17.5AA	**961.670** ▫	17 - 17.5	28.5	38
NBC20-18AA	**961.671** ▫	17.5 - 18	28.5	38
NBC20-18.5AA	**961.672** ▫	18 - 18.5	28.5	38
NBC20-19AA	**961.673** ▫	18.5 - 19	28.5	38
NBC20-19.5AA	**961.674** ▫	19 - 19.5	28.5	38
NBC20-20AA	**961.675** ▫	19.5 - 20	28.5	38

MEGA25N

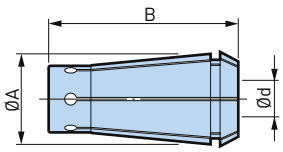
Model	Order No.	Ød	ØA	B
NBC25-16AA	**806.390** ▫	15.5 - 16	35.5	52
NBC25-16.5AA	**806.391** ▫	16 - 16.5	35.5	52
NBC25-17AA	**806.392** ▫	16.5 - 17	35.5	52
NBC25-17.5AA	**806.393** ▫	17 - 17.5	35.5	52
NBC25-18AA	**806.394** ▫	17.5 - 18	35.5	52
NBC25-18.5AA	**806.395** ▫	18 - 18.5	35.5	52
NBC25-19AA	**806.396** ▫	18.5 - 19	35.5	52
NBC25-19.5AA	**806.397** ▫	19 - 19.5	35.5	52
NBC25-20AA	**806.398** ▫	19.5 - 20	35.5	52
NBC25-20.5AA	**806.399** ▫	20 - 20.5	35.5	52
NBC25-21AA	**806.400** ▫	20.5 - 21	35.5	52
NBC25-21.5AA	**806.401** ▫	21 - 21.5	35.5	52
NBC25-22AA	**806.402** ▫	21.5 - 22	35.5	52
NBC25-22.5AA	**806.403** ▫	22 - 22.5	35.5	52
NBC25-23AA	**806.404** ▫	22.5 - 23	35.5	52
NBC25-23.5AA	**806.405** ▫	23 - 23.5	35.5	52
NBC25-24AA	**806.406** ▫	23.5 - 24	35.5	52
NBC25-24.5A	**806.407** ▫	24 - 24.5	35.5	52
NBC25-25A	**806.408** ▫	24.5 - 25	35.5	52
NBC25-25.4A	**806.409**	24.9 - 25.4	35.5	52

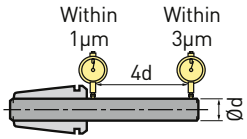
▫ Models are included in new baby collet set.

New Baby Collets for Endmills

For MEGA New Baby Chuck and New Baby Chuck







Collet class	Max. runout	
	At nose	4xD
AA	Within 1 µm	Within 3 µm

MEGA6N / NBS6

Model	Order No.	Ød	ØA	B
NBC6-3EAA	**961.148**	3	9.2	17
NBC6-4EAA	**961.149**	4	9.2	17
NBC6-5EAA	**961.150**	5	9.2	17
NBC6-6EAA	**961.151**	6	9.2	17

MEGA8N / NBS8

Model	Order No.	Ød	ØA	B
NBC8-3EAA	**961.152**	3	12	20
NBC8-4EAA	**961.153**	4	12	20
NBC8-5EAA	**961.154**	5	12	20
NBC8-6EAA	**961.155**	6	12	20
NBC8-8EAA	**961.156**	8	12	20

A.8

MEGA10N / NBS10

Model	Order No.	Ød	ØA	B
NBC10-3EAA	**801.654**	3	16	32
NBC10-4EAA	**801.658**	4	16	32
NBC10-5EAA	**801.662**	5	16	32
NBC10-6EAA	**961.160**	6	16	32
NBC10-8EAA	**961.161**	8	16	32
NBC10-10EAA	**961.146**	10	16	32

MEGA13N / NBS13

Model	Order No.	Ød	ØA	B
NBC13-3EAA	**801.674**	3	20	38
NBC13-4EAA	**801.678**	4	20	38
NBC13-5EAA	**801.682**	5	20	38
NBC13-6EAA	**961.165**	6	20	38
NBC13-8EAA	**961.166**	8	20	38
NBC13-10EAA	**961.147**	10	20	38
NBC13-12EAA	**961.167**	12	20	38

MEGA16N / NBS16

Model	Order No.	Ød	ØA	B
NBC16-3EAA	**961.168**	3	25	42
NBC16-4EAA	**961.169**	4	25	42
NBC16-5EAA	**961.170**	5	25	42
NBC16-6EAA	**961.171**	6	25	42
NBC16-8EAA	**961.172**	8	25	42
NBC16-10EAA	**961.173**	10	25	42
NBC16-12EAA	**961.174**	12	25	42
NBC16-14EAA	**961.175**	14	25	42
NBC16-16EAA	**961.176**	16	25	42

MEGA20N / NBS20

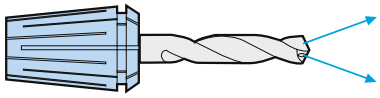
Model	Order No.	Ød	ØA	B
NBC20-3EAA	**801.721**	3	28	45
NBC20-4EAA	**801.725**	4	28	45
NBC20-5EAA	**801.729**	5	28	45
NBC20-6EAA	**961.180**	6	28	45
NBC20-8EAA	**801.733**	8	28	45
NBC20-10EAA	**961.182**	10	28	45
NBC20-12EAA	**961.183**	12	28	45
NBC20-14EAA	**961.184**	14	28	45
NBC20-16EAA	**961.185**	16	28	45
NBC20-20EAA	**961.186**	20	28	45

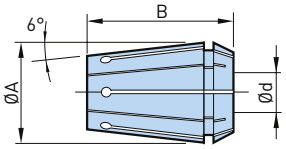
1. Use only a cutting tool shank with exactly the same diameter as the collet bore diameter.
2. Tolerance of the cutting tool shank must be within h7.

FONBC Coolant Collets

For MEGA New Baby Chuck and New Baby Chuck
Optimum collet for center-through coolant applications with coolant-through cutting tools.







MEGA6N / NBS6

Model	Order No.	Ød	ØA	B
FONBC6-3AA	**969.601**	3.00 *	9.5	14
FONBC6-3.25AA	**969.602**	3.15 - 3.25	9.5	14
FONBC6-3.5AA	**969.603**	3.4 - 3.5	9.5	14
FONBC6-3.75AA	**969.604**	3.65 - 3.75	9.5	14
FONBC6-4AA	**969.605**	3.9 - 4	9.5	14
FONBC6-4.25AA	**969.606**	4.15 - 4.25	9.5	14
FONBC6-4.5AA	**969.607**	4.4 - 4.5	9.5	14
FONBC6-4.75AA	**969.608**	4.65 - 4.75	9.5	14
FONBC6-5AA	**969.609**	4.9 - 5	9.5	14
FONBC6-5.25AA	**969.610**	5.15 - 5.25	9.5	14
FONBC6-5.5AA	**969.611**	5.4 - 5.5	9.5	14
FONBC6-5.75AA	**969.612**	5.65 - 5.75	9.5	14
FONBC6-6AA	**969.613**	5.9 - 6	9.5	14

1. * No collapsibility

MEGA8N / NBS8

Model	Order No.	Ød	ØA	B
FONBC8-3AA	**969.615**	2.9 - 3	12.5	18
FONBC8-3.5AA	**969.616**	3.4 - 3.5	12.5	18
FONBC8-4AA	**969.617**	3.9 - 4	12.5	18
FONBC8-4.5AA	**969.618**	4.4 - 4.5	12.5	18
FONBC8-5AA	**969.619**	4.9 - 5	12.5	18
FONBC8-5.5AA	**969.620**	5.4 - 5.5	12.5	18
FONBC8-6AA	**969.621**	5.9 - 6	12.5	18
FONBC8-6.5AA	**969.622**	6.4 - 6.5	12.5	18
FONBC8-7AA	**969.623**	6.9 - 7	12.5	18
FONBC8-7.5AA	**969.624**	7.4 - 7.5	12.5	18
FONBC8-8AA	**969.625**	7.9 - 8	12.5	18

MEGA10N / NBS10

Model	Order No.	Ød	ØA	B
FONBC10-3AA	**969.627**	2.9 - 3	16.5	27
FONBC10-3.5AA	**969.628**	3.4 - 3.5	16.5	27
FONBC10-4AA	**969.629**	3.9 - 4	16.5	27
FONBC10-4.5AA	**969.630**	4.4 - 4.5	16.5	27
FONBC10-5AA	**969.631**	4.9 - 5	16.5	27
FONBC10-5.5AA	**969.632**	5.4 - 5.5	16.5	27
FONBC10-6AA	**969.633**	5.9 - 6	16.5	27
FONBC10-6.5AA	**969.634**	6.4 - 6.5	16.5	27
FONBC10-7AA	**969.635**	6.9 - 7	16.5	27
FONBC10-7.5AA	**969.636**	7.4 - 7.5	16.5	27
FONBC10-8AA	**969.637**	7.9 - 8	16.5	27
FONBC10-8.5AA	**969.638**	8.4 - 8.5	16.5	27
FONBC10-9AA	**969.639**	8.9 - 9	16.5	27
FONBC10-9.5AA	**969.640**	9.4 - 9.5	16.5	27
FONBC10-10AA	**969.641**	9.9 - 10	16.5	27

MEGA13N / NBS13

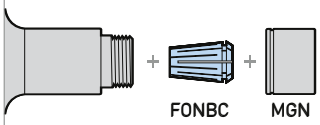
Model	Order No.	Ød	ØA	B
FONBC13-3AA	**969.643**	3.00 *	20.5	31
FONBC13-3.5AA	**969.644**	3.4 - 3.5	20.5	31
FONBC13-4AA	**969.645**	3.9 - 4	20.5	31
FONBC13-4.5AA	**969.646**	4.4 - 4.5	20.5	31
FONBC13-5AA	**969.647**	4.9 - 5	20.5	31
FONBC13-5.5AA	**969.648**	5.4 - 5.5	20.5	31
FONBC13-6AA	**969.649**	5.9 - 6	20.5	31
FONBC13-6.5AA	**969.650**	6.4 - 6.5	20.5	31
FONBC13-7AA	**969.651**	6.9 - 7	20.5	31
FONBC13-7.5AA	**969.652**	7.4 - 7.5	20.5	31
FONBC13-8AA	**969.653**	7.9 - 8	20.5	31
FONBC13-8.5AA	**969.654**	8.4 - 8.5	20.5	31
FONBC13-9AA	**969.655**	8.9 - 9	20.5	31
FONBC13-9.5AA	**969.656**	9.4 - 9.5	20.5	31
FONBC13-10AA	**969.657**	9.9 - 10	20.5	31
FONBC13-10.5AA	**969.658**	10.4 - 10.5	20.5	31
FONBC13-11AA	**969.659**	10.9 - 11	20.5	31
FONBC13-11.5AA	**969.660**	11.4 - 11.5	20.5	31
FONBC13-12AA	**969.661**	11.9 - 12	20.5	31
FONBC13-12.5AA	**969.662**	12.4 - 12.5	20.5	31
FONBC13-13AA	**969.663**	12.9 - 13	20.5	31

1. * No collapsibility

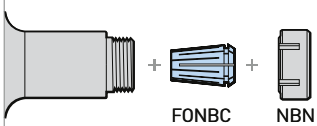
MEGA16N / NBS16

Model	Order No.	Ød	ØA	B
FONBC16-5AA	**969.669**	4.9 - 5	25.5	35
FONBC16-5.5AA	**969.670**	5.4 - 5.5	25.5	35
FONBC16-6AA	**969.671**	5.9 - 6	25.5	35
FONBC16-6.5AA	**969.672**	6.4 - 6.5	25.5	35
FONBC16-7AA	**969.673**	6.9 - 7	25.5	35
FONBC16-7.5AA	**969.674**	7.4 - 7.5	25.5	35
FONBC16-8AA	**969.675**	7.9 - 8	25.5	35
FONBC16-8.5AA	**969.676**	8.4 - 8.5	25.5	35
FONBC16-9AA	**969.677**	8.9 - 9	25.5	35
FONBC16-9.5AA	**969.678**	9.4 - 9.5	25.5	35
FONBC16-10AA	**969.679**	9.9 - 10	25.5	35
FONBC16-10.5AA	**969.680**	10.4 - 10.5	25.5	35
FONBC16-11AA	**969.681**	10.9 - 11	25.5	35
FONBC16-11.5AA	**969.682**	11.4 - 11.5	25.5	35
FONBC16-12AA	**969.683**	11.9 - 12	25.5	35
FONBC16-12.5AA	**969.684**	12.4 - 12.5	25.5	35
FONBC16-13AA	**969.685**	12.9 - 13	25.5	35
FONBC16-13.5AA	**969.686**	13.4 - 13.5	25.5	35
FONBC16-14AA	**969.687**	13.9 - 14	25.5	35
FONBC16-14.5AA	**969.688**	14.4 - 14.5	25.5	35
FONBC16-15AA	**969.689**	14.9 - 15	25.5	35
FONBC16-15.5AA	**969.690**	15.4 - 15.5	25.5	35
FONBC16-16AA	**969.691**	15.9 - 16	25.5	35

For New Baby Chuck use the standard NBN nut.



For MEGA New Baby Chuck use the standard MGN nut.



Note
Collapsibility is different from standard NBC collet.

MEGA20N / NBS20

Model	Order No.	Ød	ØA	B
FONBC20-5AA	**969.697**	4.9 - 5	28.5	38
FONBC20-5.5AA	**969.698**	5.4 - 5.5	28.5	38
FONBC20-6AA	**969.699**	5.9 - 6	28.5	38
FONBC20-6.5AA	**969.700**	6.4 - 6.5	28.5	38
FONBC20-7AA	**969.701**	6.9 - 7	28.5	38
FONBC20-7.5AA	**969.702**	7.4 - 7.5	28.5	38
FONBC20-8AA	**969.703**	7.9 - 8	28.5	38
FONBC20-8.5AA	**969.704**	8.4 - 8.5	28.5	38
FONBC20-9AA	**969.705**	8.9 - 9	28.5	38
FONBC20-9.5AA	**969.706**	9.4 - 9.5	28.5	38
FONBC20-10AA	**969.707**	9.9 - 10	28.5	38
FONBC20-10.5AA	**969.708**	10.4 - 10.5	28.5	38
FONBC20-11AA	**969.709**	10.9 - 11	28.5	38
FONBC20-11.5AA	**969.710**	11.4 - 11.5	28.5	38
FONBC20-12AA	**969.711**	11.9 - 12	28.5	38
FONBC20-12.5AA	**969.712**	12.4 - 12.5	28.5	38
FONBC20-13AA	**969.713**	12.9 - 13	28.5	38
FONBC20-13.5AA	**969.714**	13.4 - 13.5	28.5	38
FONBC20-14AA	**969.715**	13.9 - 14	28.5	38
FONBC20-14.5AA	**969.716**	14.4 - 14.5	28.5	38
FONBC20-15AA	**969.717**	14.9 - 15	28.5	38
FONBC20-15.5AA	**969.718**	15.4 - 15.5	28.5	38
FONBC20-16AA	**969.719**	15.9 - 16	28.5	38
FONBC20-16.5AA	**969.720**	16.4 - 16.5	28.5	38
FONBC20-17AA	**969.721**	16.9 - 17	28.5	38
FONBC20-17.5AA	**969.722**	17.4 - 17.5	28.5	38
FONBC20-18AA	**969.723**	17.9 - 18	28.5	38
FONBC20-18.5AA	**969.724**	18.4 - 18.5	28.5	38
FONBC20-19AA	**969.725**	18.9 - 19	28.5	38
FONBC20-19.5AA	**969.726**	19.4 - 19.5	28.5	38
FONBC20-20AA	**969.727**	19.9 - 20	28.5	38

MEGA25N

Model	Order No.	Ød	ØA	B
FONBC25-16AA	**806.412**	15.9 - 16	35.5	52
FONBC25-17AA	**806.413**	16.9 - 17	35.5	52
FONBC25-18AA	**806.414**	17.9 - 18	35.5	52
FONBC25-19AA	**806.415**	18.9 - 19	35.5	52
FONBC25-20AA	**806.416**	19.9 - 20	35.5	52
FONBC25-21AA	**806.417**	20.9 - 21	35.5	52
FONBC25-22AA	**806.418**	21.9 - 22	35.5	52
FONBC25-23AA	**806.419**	22.9 - 23	35.5	52
FONBC25-24AA	**806.420**	23.9 - 24	35.5	52
FONBC25-25AA	**806.421**	24.9 - 25	35.5	52
FONBC25-25.4AA	**806.739**	25.3 - 25.4	35.5	52

New Baby Collet Sets

For MEGA New Baby Chuck and New Baby Chuck.
Contains all the major collet models to cover entire clamping range.



Model	Order No.	Ød	Number of Collet	Size	Collet Model
SNBC6AA-22	**802.187**	0.5 - 6	22	200 x 170 x 50	MEGA6N / NBS6
SNBC8AA-20	**802.188**	0.5 - 8	20	200 x 170 x 50	MEGA8N / NBS8
SNBC10AA-20	**802.183**	1.5 - 10	20	200 x 170 x 50	MEG106N / NBS10
SNBC13AA-21	**802.184**	2.5 - 13	21	245 x 210 x 60	MEGA13N / NBS13
SNBC16AA-27	**802.185**	2.5 - 16	27	275 x 230 x 65	MEGA16N / NBS16
SNBC20AA-35	**961.676**	2.5 - 20	35	310 x 260 x 75	MEGA20N / NBS20
SNBC25AA-19	**806.656**	15.5 - 25	19	310 x 260 x 75	MEGA25N

1. Collets included in a set are shown in page 327 - 329.

Cases for New Baby Collets

Exclusive case to protect and maintain the high precision collets.



Model	Order No.	Number of Holes	Size	Collet Model
NBB6	**961.524**	60	200 x 170 x 50	NBC6 / FONBC6
NBB8	**961.547**	50	200 x 170 x 50	NBC8 / FONBC8
NBB10	**961.569**	40	200 x 170 x 50	NBC10 / FONBC10
NBB13	**961.595**	35	245 x 210 x 60	NBC13 / FONBC13
NBB16	**961.629**	35	275 x 230 x 65	NBC16 / FONBC16
NBB20	**961.677**	45	310 x 260 x 75	NBC20 / FONBC20
NBB25	**806.657**	28	310 x 260 x 75	NBC25 / FONBC25

1. All cases can not be used with new baby collet for endmill (NBC-E).

A.8

Collet Ejectors

Easily and quickly remove New Baby Collet from MEGA nuts and New Baby Nut.



Model	Order No.	Nut Model	Collet Model
NBC6-CE	**969.492**	MGN6 / NBN6	NBC6 / FONBC6
NBC6E-CE	**969.496**	MGN6 / NBN6	NBC6E
NBC8-CE	**969.493**	MGN8 / NBN8	NBC8 / FONBC8
NBC8E-CE	**969.497**	MGN8 / NBN8	NBC8E
NBC10-CE	**969.494**	MGN10 / NBN10	NBC10 / FONBC10
NBC10E-CE	**969.498**	MGN10 / NBN10	NBC10E
NBC13-CE	**969.495**	MGN13 / NBN13	NBC13 / FONBC13
NBC13E-CE	**969.499**	MGN13 / NBN13	NBC13E



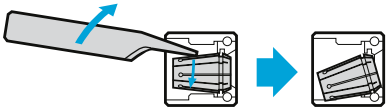


Collet Removers

For MEGA New Baby Chuck, New Baby Chuck and MEGA ER Chuck.



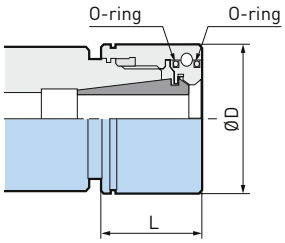
Model	Order No.
NBJ	**969.491**



MEGA Nuts

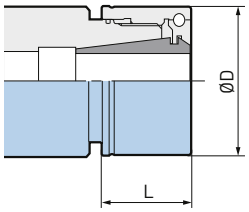
For MEGA New Baby Chuck





Standard Type

Model	Order No.	ØD	L	Body
MGN6	**969.483**	20	20.5	MEGA6N
MGN8	**969.484**	25	23	MEGA8N
MGN10	**969.485**	30	24	MEGA10N
MGN13	**969.486**	35	27	MEGA13N
MGN16	**969.487**	42	27	MEGA16N
MGN20	**969.488**	46	27	MEGA20N
MGN25	**806.388**	60	31	MEGA25N



Flat Type

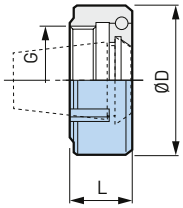
Model	Order No.	ØD	L	Body
MGN 6F	**805.668**	20	18	MEGA6N
MGN 8F	**805.669**	25	20	MEGA8N
MGN 10F	**805.670**	30	21	MEGA10N
MGN 13F	**805.671**	35	24	MEGA13N
MGN 16F	**805.672**	42	24.5	MEGA16N
MGN 20F	**805.673**	46	24.5	MEGA20N

A.8

New Baby Nuts

For New Baby Chuck



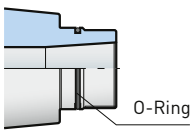


Model	Order No.	ØD	L	G	Body
NBN6	**961.526**	20	9.5	M12 P1	NBS6
NBN8	**961.549**	25	11	M16 P1	NBS8
NBN10	**961.571**	30	12.5	M21 P1	NBS10
NBN13	**961.597**	35	16	M26 P1	NBS13
NBN16	**961.631**	42	16	M32 P1	NBS16
NBN20	**961.679**	46	16	M36 P1	NBS20

O-Ring Set

For MEGA New Baby Chuck
Set includes 2 pieces.





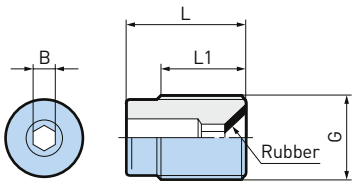
Model	Order No.
MG6NOR-2P	**978.917**
MG8NOR-2P	**801.398**
MG10NOR-2P	**978.319**
MG13NOR-2P	**978.915**

Model	Order No.
MG16NOR-2P	**801.395**
MG20NOR-2P	**978.916**
MG25NOR-2P	**806.840**

Adjusting Screws NBA

For MEGA New Baby Chuck, MEGA E Chuck, New Baby Chuck and MEGA ER Grip





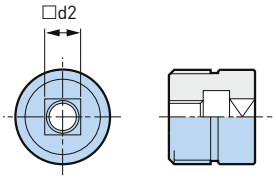
Model	Order No.	G	L	L1	SW	Body
NBA6B	**961.527**	M7	12	10	2	MEGA6N / MEGA6E / NBS6 / MEGA ER11
NBA8B	**961.550**	M9	13	10	2.5	MEGA8N / MEGA8E / NBS8
NBA10B	**961.572**	M11	16	12	3	MEGA10N / MEGA10E / NBS10 / MEGA ER16
NBA13B	**961.598**	M14	20	15	4	MEGA13N / MEGA13E / NBS13 / MEGA ER20
NBA16B	**961.632**	M18	20	15	4	MEGA16N / NBS16 / MEGA ER25
NBA20B	**961.680**	M21	20	15	4	MEGA20N / NBS20 / MEGA ER32
NBA25B	**806.389**	M27	20	15	4	MEGA25N

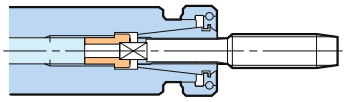
Tap Driving Back Stops

For New Baby Chuck
To suit synchronized tapping.

The square of the tap is positively located by fitting the tap driving back stop.







The square of the tap is positively located by fitting the tap driving back stop.

Model	Order No.	Tap Size l	□d2	standard	Body
NBA10-M8	**961.681**	M8	5.0	JIS	NBS10
NBA10-M10	**804.844**	M10	5.5	JIS	NBS10

Model	Order No.	Tap Size l	□d2	standard	Body
NBA13-M8DD	**804.847**	M8	6.2	DIN 371	NBS13
NBA13-M8	**961.683**	M8	5.0	JIS	NBS13
NBA13-M10	**961.684**	M10	5.5	JIS	NBS13
NBA13-M12D	**961.685**	M12	7.0	DIN 376	NBS13
NBA13-M12	**804.845**	M12	6.5	JIS	NBS13
NBA13-M14M10DD	**804.846**	M10 / M14	8.0	JIS / DIN 371	NBS13

Model	Order No.	Tap Size l	□d2	standard	Body
NBA16-M10	**804.848**	M12	5.5	JIS	NBS16
NBA16-M12D	**804.850**	M12	7.0	DIN 376	NBS16
NBA16-M12	**804.849**	M12	6.5	JIS	NBS16
NBA16-M16	**804.853**	M16	10.0	JIS	NBS16
NBA16-M14M10DD	**804.852**	M10 / M14	8.0	JIS / DIN 371	NBS16
NBA16-M14DM16D	**804.851**	M14 / M16	9.0	DIN 376	NBS16

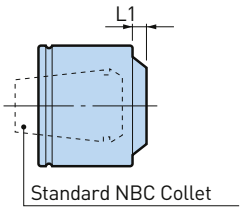
Model	Order No.	Tap Size l	□d2	standard	Body
NBA20-M12D	**804.855**	M12	7.0	DIN 376	NBS20
NBA20-M12	**804.854**	M12	6.5	JIS	NBS20
NBA20-M14	**804.856**	M14	8.0	JIS	NBS20
NBA20-M16	**804.858**	M16	10.0	JIS	NBS20
NBA20-M14DM16D	**804.857**	M14 / M16	9.0	DIN 376	NBS20
NBA20-M20M20D	**804.860**	M20	12.0	JIS / DIN 376	NBS20

1. Synrchonized tapping function is required on the machine.

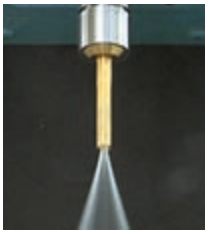
MEGA Perfect Seals

For MEGA New Baby Chuck.
Unique design increases sealing performance with higher coolant pressure to create a "perfect seal". Remove the PS Ring, to supply coolant to the cutting tool periphery.





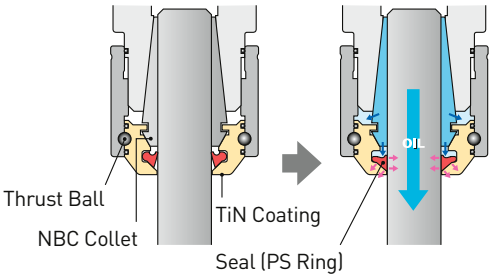
2way coolant



Through tools with PS ring



Jet through without PS ring



Model	Order No.	Cutting shaft ø	L1	Collet Model
MPS6-03035	**961.401**	3 - 3.5	2.3	NBC6 -3 -3.75
MPS6-0304	**969.861**	3 - 4	2.3	NBC6 -3 -4.25
MPS6-04045	**961.402**	4 - 4.5	2.3	NBC6 -4 -4.75
MPS6-0405	**969.862**	4 - 5	2.3	NBC6 -4 -5.25
MPS6-05055	**961.403**	5 - 5.5	2.3	NBC6 -5 -5.75
MPS6-0506	**969.863**	5 - 6	2.3	NBC6 -5 -6
MPS8-03035	**961.404**	3 - 3.5	3.9	NBC8 -3 -4
MPS8-0304	**969.864**	3 - 4	3.9	NBC8 -3 -4.5
MPS8-04045	**961.405**	4 - 4.5	3.9	NBC8 -4 -5
MPS8-0405	**969.865**	4 - 5	3.9	NBC8 -4 -5.5
MPS8-05055	**961.406**	5 - 5.5	3.9	NBC8 -5 -6
MPS8-0506	**969.866**	5 - 6	3.9	NBC8 -5 -6.5
MPS8-06065	**961.407**	6 - 6.5	3.4	NBC8 -6 -7
MPS8-0607	**969.867**	6 - 7	3.4	NBC8 -6 -7.5
MPS8-07075	**961.408**	7 - 7.5	3.4	NBC8 -7 -8
MPS8-0708	**969.868**	7 - 8	3.4	NBC8 -7 -8
MPS10-03035	**801.524**	3 - 3.5	3.9	NBC10 -3 -4
MPS10-0304	**969.869**	3 - 4	3.9	NBC10 -3 -4.5
MPS10-04045	**801.525**	4 - 4.5	3.9	NBC10 -4 -5
MPS10-0405	**969.870**	4 - 5	3.9	NBC10 -4 -5.5
MPS10-05055	**801.526**	5 - 5.5	3.9	NBC10 -5 -6
MPS10-0506	**969.871**	5 - 6	3.9	NBC10 -5 -6.5
MPS10-06065	**979.986**	6 - 6.5	4.3	NBC10 -6 -7
MPS10-0607	**969.872**	6 - 7	4.3	NBC10 -6 -7.5
MPS10-07075	**801.527**	7 - 7.5	4.3	NBC10 -7 -8
MPS10-0708	**969.873**	7 - 8	4.3	NBC10 -7 -8.5
MPS10-08085	**979.987**	8 - 8.5	3.5	NBC10 -8 -9
MPS10-0809	**969.874**	8 - 9	3.5	NBC10 -8 -9.5
MPS10-09095	**801.528**	9 - 9.5	3.5	NBC10 -9 -10
MPS10-0910	**969.875**	9 - 10	3.5	NBC10 -9 -10

Model	Order No.	Cutting shaft ø	L1	Collet Model
MPS13-03035	**801.529**	3 - 3.5	4.3	NBC13 -3 -4
MPS13-0304	**969.876**	3 - 4	4.3	NBC13 -3 -4.5
MPS13-04045	**801.530**	4 - 4.5	4.3	NBC13 -4 -5
MPS13-0405	**969.877**	4 - 5	4.3	NBC13 -4 -5.5
MPS13-05055	**801.531**	5 - 5.5	4.3	NBC13 -5 -6
MPS13-0506	**969.878**	5 - 6	4.3	NBC13 -5 -6.5
MPS13-06065	**961.417**	6 - 6.5	4.6	NBC13 -6 -7
MPS13-0607	**969.879**	6 - 7	4.6	NBC13 -6 -7.5
MPS13-07075	**801.532**	7 - 7.5	4.6	NBC13 -7 -8
MPS13-0708	**969.880**	7 - 8	4.6	NBC13 -7 -8.5
MPS13-08085	**961.418**	8 - 8.5	4.9	NBC13 -8 -9
MPS13-0809	**969.881**	8 - 9	4.9	NBC13 -8 -9.5
MPS13-09095	**801.533**	9 - 9.5	4.9	NBC13 -9 -10
MPS13-0910	**969.882**	9 - 10	4.9	NBC13 -9 -10.5
MPS13-10105	**978.518**	10 - 10.5	4.2	NBC13 -10 -11
MPS13-1011	**969.883**	10 - 11	4.2	NBC13 -10 -11.5
MPS13-11115	**801.534**	11 - 11.5	4.2	NBC13 -11 -12
MPS13-1112	**969.884**	11 - 12	4.2	NBC13 -11 -12.5
MPS13-12125	**961.420**	12 - 12.5	4.2	NBC13 -12 -13
MPS13-1213	**969.885**	12 - 13	4.2	NBC13 -12 -13

Model	Order No.	Cutting shaft ø	L1	Collet Model
MPS16-03035	**801.535**	3 - 3.5	4	NBC16 -3 -4
MPS16-0304	**969.886**	3 - 4	4	NBC16 -3 -4.5
MPS16-04045	**801.536**	4 - 4.5	4	NBC16 -4 -5
MPS16-0405	**969.887**	4 - 5	4	NBC16 -4 -5.5
MPS16-05055	**801.537**	5 - 5.5	4	NBC16 -5 -6
MPS16-0506	**969.888**	5 - 6	4	NBC16 -5 -6.5
MPS16-06065	**801.538**	6 - 6.5	4.3	NBC16 -6 -7
MPS16-0607	**969.889**	6 - 7	4.3	NBC16 -6 -7.5
MPS16-07075	**801.539**	7 - 7.5	4.3	NBC16 -7 -8
MPS16-0708	**969.890**	7 - 8	4.3	NBC16 -7 -8.5
MPS16-08085	**801.540**	8 - 8.5	4.6	NBC16 -8 -9
MPS16-0809	**969.891**	8 - 9	4.6	NBC16 -8 -9.5
MPS16-09095	**801.541**	9 - 9.5	4.6	NBC16 -9 -10
MPS16-0910	**969.892**	9 - 10	4.6	NBC16 -9 -10.5
MPS16-10105	**801.542**	10 - 10.5	5.1	NBC16 -10 -11
MPS16-1011	**969.893**	10 - 11	5.1	NBC16 -10 -11.5
MPS16-11115	**801.543**	11 - 11.5	5.1	NBC16 -11 -12
MPS16-1112	**969.894**	11 - 12	5.1	NBC16 -11 -12.5
MPS16-12125	**801.544**	12 - 12.5	4.1	NBC16 -12 -13
MPS16-1213	**969.895**	12 - 13	4.1	NBC16 -12 -13.5
MPS16-1314	**969.896**	13 - 14	4.1	NBC16 -13 -14.5
MPS16-1415	**969.897**	14 - 15	4.1	NBC16 -14 -15.5
MPS16-1516	**969.898**	15 - 16	4.1	NBC16 -15 -16

Model	Order No.	Cutting shaft ø	L1	Collet Model
MPS20-03035	**978.504**	3 - 3.5	4	NBC20 -3 -4
MPS20-0304	**969.899**	3 - 4	4	NBC20 -3 -4.5
MPS20-04045	**801.545**	4 - 4.5	4	NBC20 -4 -5
MPS20-0405	**969.900**	4 - 5	4	NBC20 -4 -5.5
MPS20-05055	**801.546**	5 - 5.5	4	NBC20 -5 -6
MPS20-0506	**969.901**	5 - 6	4	NBC20 -5 -6.5
MPS20-06065	**801.547**	6 - 6.5	4.3	NBC20 -6 -7
MPS20-0607	**969.902**	6 - 7	4.3	NBC20 -6 -7.5
MPS20-07075	**801.548**	7 - 7.5	4.3	NBC20 -7 -8
MPS20-0708	**969.903**	7 - 8	4.3	NBC20 -7 -8.5
MPS20-08085	**801.549**	8 - 8.5	4.6	NBC20 -8 -9
MPS20-0809	**969.904**	8 - 9	4.6	NBC20 -8 -9.5
MPS20-09095	**801.550**	9 - 9.5	4.6	NBC20 -9 -10
MPS20-0910	**969.905**	9 - 10	4.6	NBC20 -9 -10.5
MPS20-10105	**801.551**	10 - 10.5	5.1	NBC20 -10 -11
MPS20-1011	**969.906**	10 - 11	5.1	NBC20 -10 -11.5
MPS20-11115	**801.552**	11 - 11.5	5.1	NBC20 -11 -12
MPS20-1112	**969.907**	11 - 12	5.1	NBC20 -11 -12.5
MPS20-12125	**978.512**	12 - 12.5	5.1	NBC20 -12 -13
MPS20-1213	**969.908**	12 - 13	5.1	NBC20 -12 -13.5
MPS20-1314	**969.909**	13 - 14	5.2	NBC20 -13 -14.5
MPS20-1415	**969.910**	14 - 15	5.2	NBC20 -14 -15.5
MPS20-1516	**969.911**	15 - 16	5.2	NBC20 -15 -16.5
MPS20-1617	**969.912**	16 - 17	4.6	NBC20 -16 -17.5
MPS20-1718	**969.913**	17 - 18	4.6	NBC20 -17 -18.5
MPS20-1819	**969.914**	18 - 19	4.6	NBC20 -18 -19.5
MPS20-1920	**969.915**	19 - 20	4.6	NBC20 -19 -20

1. 1 pce. of ps ring is included.
2. To supply coolant to the periphery of the cutting tool, adjusting screw should not be mounted.

PS Rings

Replaceable seal is installed in the MEGA perfect seal.
One replacement seal is included in delivery.



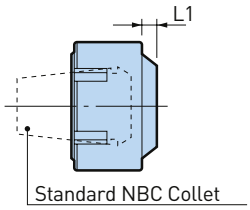
Model	Order No.	Suitable for model
PS-0304	**969.981**	MPS / BPS -03035, 0304 / EPS -03, 04 / MERPS -030035, 035040
PS-0405	**969.982**	MPS / BPS -04045, 0405 / EPS -05 / MERPS -040045, 045050
PS-0506	**969.983**	MPS / BPS -05055, 0506 / EPS -06 / MERPS -050055, 055060
PS-0607	**969.984**	MPS / BPS -06065, 0607 / EPS -07 / MERPS -060065, 065070
PS-0708	**969.985**	MPS / BPS -07075, 0708 / EPS -08 / MERPS -070075, 075080
PS-0809	**969.986**	MPS / BPS -08085, 0809 / EPS -09 / MERPS -080085, 085090
PS-0910	**969.987**	MPS / BPS -09095, 0910 / EPS -10 / MERPS -090095, 095100
PS-1011	**969.988**	MPS / BPS -10105, 1011 / EPS -11 / MERPS -10105, 105110
PS-1112	**969.989**	MPS / BPS -11115, 1112 / EPS -12 / MERPS -110115, 115120
PS-1213	**969.990**	MPS / BPS -12125, 1213 / MERPS -120125, 125130
PS-1314	**969.991**	MPS / BPS -1314 / MERPS -130140
PS-1415	**969.992**	MPS / BPS -1415 / MERPS -140150
PS-1516	**969.993**	MPS / BPS -1516 / MERPS -150160
PS-1617	**969.994**	MPS / BPS -1617 / MERPS -160170
PS-1718	**969.995**	MPS / BPS -1718 / MERPS -170180
PS-1819	**969.996**	MPS / BPS -1819 / MERPS -180190
PS-1920	**969.997**	MPS / BPS -1920 / MERPS -190200

1. 1 package contains 5 pcs. (1 size).

Baby Perfect Seals

For New Baby Chuck.
Unique design increases sealing performance with higher coolant pressure to create a "perfect seal". Remove the PS Ring, to supply coolant to the cutting tool periphery.

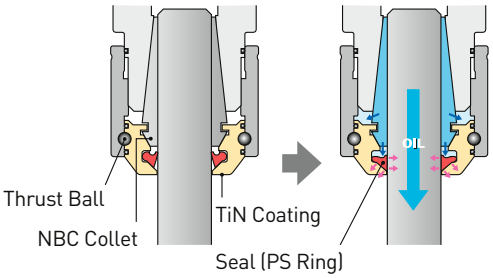




2way coolant


Through tools with PS ring


Jet through without PS ring



A.8

Model	Order No.	Cutting shaft ø	L1	Collet Model
BPS6-03035	**961.409**	3 - 3.5	2.3	NBC6 -3 -3.75
BPS6-0304	**969.921**	3 - 4	2.3	NBC6 -3 -4.25
BPS6-04045	**961.410**	4 - 4.5	2.3	NBC6 -4 -4.75
BPS6-0405	**969.922**	4 - 5	2.3	NBC6 -4 -5.25
BPS6-05055	**961.411**	5 - 5.5	2.3	NBC6 -5 -5.75
BPS6-0506	**969.923**	5 - 6	2.3	NBC6 -5 -6
BPS8-03035	**961.412**	3 - 3.5	3.9	NBC8 -3 -4
BPS8-0304	**969.924**	3 - 4	3.9	NBC8 -3 -4.5
BPS8-04045	**961.413**	4 - 4.5	3.9	NBC8 -4 -5
BPS8-0405	**969.925**	4 - 5	3.9	NBC8 -4 -5.5
BPS8-05055	**961.414**	5 - 5.5	3.9	NBC8 -5 -6
BPS8-0506	**969.926**	5 - 6	3.9	NBC8 -5 -6.5
BPS8-06065	**961.415**	6 - 6.5	3.4	NBC8 -6 -7
BPS8-0607	**969.927**	6 - 7	3.4	NBC8 -6 -7.5
BPS8-07075	**961.416**	7 - 7.5	3.4	NBC8 -7 -8
BPS8-0708	**969.928**	7 - 8	3.4	NBC8 -7 -8
BPS10-03035	**800.403**	3 - 3.5	3.9	NBC10 -3 -4
BPS10-0304	**969.929**	3 - 4	3.9	NBC10 -3 -4.5
BPS10-04045	**800.404**	4 - 4.5	3.9	NBC10 -4 -5
BPS10-0405	**969.930**	4 - 5	3.9	NBC10 -4 -5.5
BPS10-05055	**800.405**	5 - 5.5	3.9	NBC10 -5 -6
BPS10-0506	**969.931**	5 - 6	3.9	NBC10 -5 -6.5
BPS10-06065	**800.406**	6 - 6.5	4.3	NBC10 -6 -7
BPS10-0607	**969.932**	6 - 7	4.3	NBC10 -6 -7.5
BPS10-07075	**800.407**	7 - 7.5	4.3	NBC10 -7 -8
BPS10-0708	**969.933**	7 - 8	4.3	NBC10 -7 -8.5
BPS10-08085	**800.408**	8 - 8.5	3.5	NBC10 -8 -9
BPS10-0809	**969.934**	8 - 9	3.5	NBC10 -8 -9.5
BPS10-09095	**800.409**	9 - 9.5	3.5	NBC10 -9 -10
BPS10-0910	**969.935**	9 - 10	3.5	NBC10 -9 -10

Model	Order No.	Cutting shaft ø	L1	Collet Model
BPS13-03035	**800.410**	3 - 3.5	4.3	NBC13 -3 -4
BPS13-0304	**969.936**	3 - 4	4.3	NBC13 -3 -4.5
BPS13-04045	**800.411**	4 - 4.5	4.3	NBC13 -4 -5
BPS13-0405	**969.937**	4 - 5	4.3	NBC13 -4 -5.5
BPS13-05055	**800.412**	5 - 5.5	4.3	NBC13 -5 -6
BPS13-0506	**969.938**	5 - 6	4.3	NBC13 -5 -6.5
BPS13-06065	**800.413**	6 - 6.5	4.6	NBC13 -6 -7
BPS13-0607	**969.939**	6 - 7	4.6	NBC13 -6 -7.5
BPS13-07075	**800.414**	7 - 7.5	4.6	NBC13 -7 -8
BPS13-0708	**969.940**	7 - 8	4.6	NBC13 -7 -8.5
BPS13-08085	**800.415**	8 - 8.5	4.9	NBC13 -8 -9
BPS13-0809	**969.941**	8 - 9	4.9	NBC13 -8 -9.5
BPS13-09095	**800.416**	9 - 9.5	4.9	NBC13 -9 -10
BPS13-0910	**969.942**	9 - 10	4.9	NBC13 -9 -10.5
BPS13-10105	**800.417**	10 - 10.5	4.2	NBC13 -10 -11
BPS13-1011	**969.943**	10 - 11	4.2	NBC13 -10 -11.5
BPS13-11115	**800.418**	11 - 11.5	4.2	NBC13 -11 -12
BPS13-1112	**969.944**	11 - 12	4.2	NBC13 -11 -12.5
BPS13-12125	**800.419**	12 - 12.5	4.2	NBC13 -12 -13
BPS13-1213	**969.945**	12 - 13	4.2	NBC13 -12 -13

Model	Order No.	Cutting shaft ø	L1	Collet Model
BPS16-03035	**800.420**	3 - 3.5	4	NBC16 -3 -4
BPS16-0304	**969.946**	3 - 4	4	NBC16 -3 -4.5
BPS16-04045	**800.421**	4 - 4.5	4	NBC16 -4 -5
BPS16-0405	**969.947**	4 - 5	4	NBC16 -4 -5.5
BPS16-05055	**800.422**	5 - 5.5	4	NBC16 -5 -6
BPS16-0506	**969.948**	5 - 6	4	NBC16 -5 -6.5
BPS16-06065	**800.423**	6 - 6.5	4.3	NBC16 -6 -7
BPS16-0607	**969.949**	6 - 7	4.3	NBC16 -6 -7.5
BPS16-07075	**800.424**	7 - 7.5	4.3	NBC16 -7 -8
BPS16-0708	**969.950**	7 - 8	4.3	NBC16 -7 -8.5
BPS16-08085	**800.425**	8 - 8.5	4.6	NBC16 -8 -9
BPS16-0809	**969.951**	8 - 9	4.6	NBC16 -8 -9.5
BPS16-09095	**800.426**	9 - 9.5	4.6	NBC16 -9 -10
BPS16-0910	**969.952**	9 - 10	4.6	NBC16 -9 -10.5
BPS16-10105	**800.427**	10 - 10.5	5.1	NBC16 -10 -11
BPS16-1011	**969.953**	10 - 11	5.1	NBC16 -10 -11.5
BPS16-11115	**800.428**	11 - 11.5	5.1	NBC16 -11 -12
BPS16-1112	**969.954**	11 - 12	5.1	NBC16 -11 -12.5
BPS16-12125	**800.429**	12 - 12.5	4.1	NBC16 -12 -13
BPS16-1213	**969.955**	12 - 13	4.1	NBC16 -12 -13.5
BPS16-1314	**969.956**	13 - 14	4.1	NBC16 -13 -14.5
BPS16-1415	**969.957**	14 - 15	4.1	NBC16 -14 -15.5
BPS16-1516	**969.958**	15 - 16	4.1	NBC16 -15 -16

Model	Order No.	Cutting shaft ø	L1	Collet Model
BPS20-03035	**800.430**	3 - 3.5	4	NBC20 -3 -4
BPS20-0304	**969.959**	3 - 4	4	NBC20 -3 -4.5
BPS20-04045	**800.431**	4 - 4.5	4	NBC20 -4 -5
BPS20-0405	**969.960**	4 - 5	4	NBC20 -4 -5.5
BPS20-05055	**800.432**	5 - 5.5	4	NBC20 -5 -6
BPS20-0506	**969.961**	5 - 6	4	NBC20 -5 -6.5
BPS20-06065	**800.433**	6 - 6.5	4.3	NBC20 -6 -7
BPS20-0607	**969.962**	6 - 7	4.3	NBC20 -6 -7.5
BPS20-07075	**800.434**	7 - 7.5	4.3	NBC20 -7 -8
BPS20-0708	**969.963**	7 - 8	4.3	NBC20 -7 -8.5
BPS20-08085	**800.435**	8 - 8.5	4.6	NBC20 -8 -9
BPS20-0809	**969.964**	8 - 9	4.6	NBC20 -8 -9.5
BPS20-09095	**800.436**	9 - 9.5	4.6	NBC20 -9 -10
BPS20-0910	**969.965**	9 - 10	4.6	NBC20 -9 -10.5
BPS20-10105	**800.437**	10 - 10.5	5.1	NBC20 -10 -11
BPS20-1011	**969.966**	10 - 11	5.1	NBC20 -10 -11.5
BPS20-11115	**800.438**	11 - 11.5	5.1	NBC20 -11 -12
BPS20-1112	**969.967**	11 - 12	5.1	NBC20 -11 -12.5
BPS20-12125	**800.439**	12 - 12.5	5.1	NBC20 -12 -13
BPS20-1213	**969.968**	12 - 13	5.1	NBC20 -12 -13.5
BPS20-1314	**969.969**	13 - 14	5.2	NBC20 -13 -14.5
BPS20-1415	**969.970**	14 - 15	5.2	NBC20 -14 -15.5
BPS20-1516	**969.971**	15 - 16	5.2	NBC20 -15 -16.5
BPS20-1617	**969.972**	16 - 17	4.6	NBC20 -16 -17.5
BPS20-1718	**969.973**	17 - 18	4.6	NBC20 -17 -18.5
BPS20-1819	**969.974**	18 - 19	4.6	NBC20 -18 -19.5
BPS20-1920	**969.975**	19 - 20	4.6	NBC20 -19 -20

1. 1 pce. of ps ring is included.
2. To supply coolant to the periphery of the cutting tool, adjusting screw should not be mounted.

Accessories & Spare Parts

PS Rings

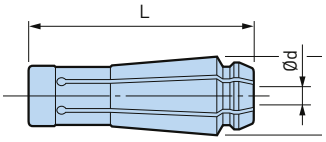


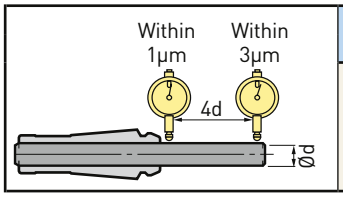
► 337

MEGA E Collets

For MEGA E Chuck







Collet class	Max. runout	
	At nose	4xD
AA	Within 1 µm	Within 3 µm

MEGA6E

Model	Order No.	Ød	ØD	L	E
MEC6-3AA	**968.421**	3	11.3	34.9	19
MEC6-4AA	**968.423**	4	11.3	34.9	22
MEC6-5AA	**968.424**	5	11.3	34.9	25
MEC6-6AA	**968.425**	6	11.3	34.9	27

MEGA8E

Model	Order No.	Ød	ØD	L	E
MEC8-3AA	**968.427**	3	14.1	39.4	19
MEC8-4AA	**968.429**	4	14.1	39.4	22
MEC8-5AA	**968.430**	5	14.1	39.4	25
MEC8-6AA	**968.431**	6	14.1	39.4	28
MEC8-7AA	**801.317**	7	14.1	39.4	29
MEC8-8AA	**968.433**	8	14.1	39.4	31

A.8

MEGA10E

Model	Order No.	Ød	ØD	L	E
MEC10-3AA	**968.434**	3	17.1	45.7	19
MEC10-4AA	**968.436**	4	17.1	45.7	22
MEC10-5AA	**968.437**	5	17.1	45.7	25
MEC10-6AA	**968.438**	6	17.1	45.7	28
MEC10-7AA	**801.313**	7	17.1	45.7	29.5
MEC10-8AA	**968.440**	8	17.1	45.7	31
MEC10-9AA	**801.314**	9	17.1	45.7	33
MEC10-10AA	**968.442**	10	17.1	45.7	37

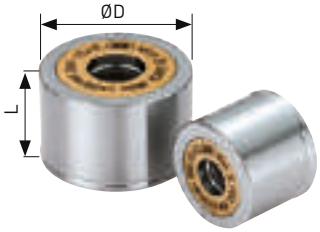
MEGA13E

Model	Order No.	Ød	ØD	L	E
MEC13-3AA	**968.443**	3	20.6	47.9	19
MEC13-4AA	**968.445**	4	20.6	47.9	22
MEC13-5AA	**968.446**	5	20.6	47.9	25
MEC13-6AA	**968.447**	6	20.6	47.9	28
MEC13-7AA	**968.448**	7	20.6	47.9	29.5
MEC13-8AA	**968.449**	8	20.6	47.9	31
MEC13-9AA	**801.316**	9	20.6	47.9	33
MEC13-10AA	**968.451**	10	20.6	47.9	35
MEC13-11AA	**801.315**	11	20.6	47.9	37
MEC13-12AA	**968.453**	12	20.6	47.9	39

1. "E" is the min. clamping length.

MEGA E Nuts

For MEGA E Chuck

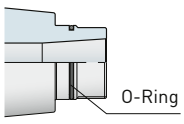


Model	Order No.	ØD	L	Body
MEN6	**968.461**	25	20.5	MEGA6E
MEN8	**968.462**	30	22	MEGA8E
MEN10	**968.463**	35	22.5	MEGA10E
MEN13	**968.464**	42	24.5	MEGA13E

O-Ring Set

For MEGA E Chuck
Set includes 2 pieces.



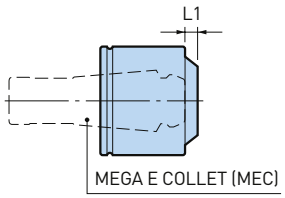


Model	Order No.
MG6EOR-2P	**801.396**
MG8EOR-2P	**801.397**
MG10EOR-2P	**801.393**
MG13EOR-2P	**801.394**

MEGA E Perfect Seals

For MEGA E Chuck

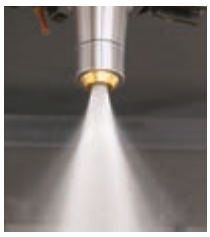




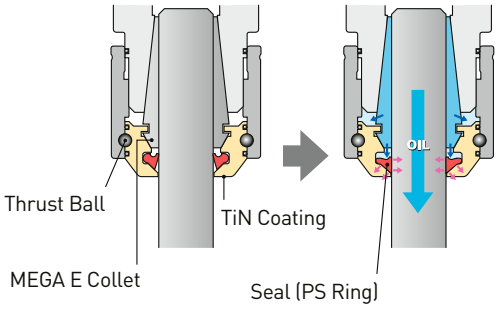
2way coolant



Through tools with PS ring



Jet through without PS ring



A.8

Model	Order No.	Cutting shaft ø	L1	Collet Model
EPS6-03	**968.468**	3	5.6	MEC6 -3
EPS6-04	**968.469**	4	5.2	MEC6 -4
EPS6-05	**968.470**	5	5.2	MEC6 -5
EPS6-06	**968.471**	6	5.2	MEC6 -6
EPS8-03	**968.472**	3	6.4	MEC8 -3
EPS8-04	**968.473**	4	6	MEC8 -4
EPS8-05	**968.474**	5	6	MEC8 -5
EPS8-06	**968.475**	6	6	MEC8 -6
EPS8-07	**968.476**	7	5.6	MEC8 -7
EPS8-08	**968.477**	8	5.6	MEC8 -8
EPS10-03	**968.478**	3	6.4	MEC10 -3
EPS10-04	**968.479**	4	6	MEC10 -4
EPS10-05	**968.480**	5	6	MEC10 -5
EPS10-06	**968.481**	6	6	MEC10 -6
EPS10-07	**968.482**	7	6.3	MEC10 -7
EPS10-08	**968.483**	8	6.3	MEC10 -8
EPS10-09	**968.484**	9	5.7	MEC10 -9
EPS10-10	**968.485**	10	5.7	MEC10 -10

Model	Order No.	Cutting shaft ø	L1	Collet Model
EPS13-03	**968.486**	3	6.4	MEC13 -3
EPS13-04	**968.487**	4	6	MEC13 -4
EPS13-05	**968.488**	5	6	MEC13 -5
EPS13-06	**968.489**	6	6	MEC13 -6
EPS13-07	**968.490**	7	6.3	MEC13 -7
EPS13-08	**968.491**	8	6.5	MEC13 -8
EPS13-09	**968.492**	9	6.5	MEC13 -9
EPS13-10	**968.493**	10	6.5	MEC13 -10
EPS13-11	**968.494**	11	6.2	MEC13 -11
EPS13-12	**968.495**	12	6.2	MEC13 -12

1. 1 pce. of ps ring is included.
2. To supply coolant to the periphery of the cutting tool, adjusting screw should not be mounted.

Accessories & Spare Parts

PS Rings

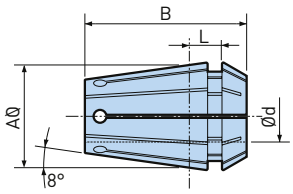


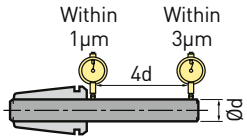
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MEGA ER Collets

For MEGA ER Grip.
All ERC collets are inspected twice to guarantee high runout accuracy.







Collet class	Max. runout	
	At nose	4xD
AA	Within 1 µm	Within 3 µm

MEGA ER 11

Model	Order No.	Ød	ØA	L	B
ERC11-3AA	**802.836**	2.75 - 3	11	3.8	18
ERC11-3.25AA	**802.837**	3 - 3.25	11	3.8	18
ERC11-3.5AA	**802.838**	3.25 - 3.5	11	3.8	18
ERC11-3.75AA	**802.839**	3.5 - 3.75	11	3.8	18
ERC11-4AA	**802.840**	3.75 - 4	11	3.8	18
ERC11-4.25AA	**802.841**	4 - 4.25	11	3.8	18
ERC11-4.5AA	**802.842**	4.25 - 4.5	11	3.8	18
ERC11-4.75AA	**802.843**	4.5 - 4.75	11	3.8	18
ERC11-5AA	**802.844**	4.75 - 5	11	3.8	18
ERC11-5.25AA	**802.845**	5 - 5.25	11	3.8	18
ERC11-5.5AA	**802.846**	5.25 - 5.5	11	3.8	18
ERC11-5.75AA	**802.847**	5.5 - 5.75	11	3.8	18
ERC11-6AA	**802.848**	5.5 - 6	11	3.8	18

MEGA ER 20

Model	Order No.	Ød	ØA	L	B
ERC20-3AA	**967.532**	2.75 - 3	20	6.36	31.5
ERC20-3.25AA	**967.533**	3 - 3.25	20	6.36	31.5
ERC20-3.5AA	**967.534**	3.25 - 3.5	20	6.36	31.5
ERC20-3.75AA	**967.535**	3.5 - 3.75	20	6.36	31.5
ERC20-4AA	**967.536**	3.75 - 4	20	6.36	31.5
ERC20-4.25AA	**967.537**	4 - 4.25	20	6.36	31.5
ERC20-4.5AA	**967.538**	4.25 - 4.5	20	6.36	31.5
ERC20-4.75AA	**967.539**	4.5 - 4.75	20	6.36	31.5
ERC20-5AA	**967.540**	4.75 - 5	20	6.36	31.5
ERC20-5.25AA	**967.541**	5 - 5.25	20	6.36	31.5
ERC20-5.5AA	**967.542**	5.25 - 5.5	20	6.36	31.5
ERC20-5.75AA	**967.543**	5.5 - 5.75	20	6.36	31.5
ERC20-6AA	**967.544**	5.5 - 6	20	6.36	31.5
ERC20-6.5AA	**967.545**	6 - 6.5	20	6.36	31.5
ERC20-7AA	**967.546**	6.5 - 7	20	6.36	31.5
ERC20-7.5AA	**967.547**	7 - 7.5	20	6.36	31.5
ERC20-8AA	**967.548**	7.5 - 8	20	6.36	31.5
ERC20-8.5AA	**967.549**	8 - 8.5	20	6.36	31.5
ERC20-9AA	**967.550**	8.5 - 9	20	6.36	31.5
ERC20-9.5AA	**967.551**	9 - 9.5	20	6.36	31.5
ERC20-10AA	**967.552**	9.5 - 10	20	6.36	31.5
ERC20-10.5AA	**967.553**	10 - 10.5	20	6.36	31.5
ERC20-11AA	**967.554**	10.5 - 11	20	6.36	31.5
ERC20-11.5AA	**967.555**	11 - 11.5	20	6.36	31.5
ERC20-12AA	**967.556**	11.5 - 12	20	6.36	31.5
ERC20-12.5AA	**967.557**	12 - 12.5	20	6.36	31.5
ERC20-13AA	**967.558**	12.5 - 13	20	6.36	31.5

MEGA ER 16

Model	Order No.	Ød	ØA	L	B
ERC16-2AA	**967.501**	1.9 - 2	16	6.26	27.5
ERC16-2.1AA	**967.502**	2 - 2.1	16	6.26	27.5
ERC16-2.2AA	**967.503**	2.1 - 2.2	16	6.26	27.5
ERC16-2.3AA	**967.504**	2.2 - 2.3	16	6.26	27.5
ERC16-2.4AA	**967.505**	2.3 - 2.4	16	6.26	27.5
ERC16-2.5AA	**967.506**	2.4 - 2.5	16	6.26	27.5
ERC16-2.6AA	**967.507**	2.5 - 2.6	16	6.26	27.5
ERC16-2.7AA	**967.508**	2.6 - 2.7	16	6.26	27.5
ERC16-2.8AA	**967.509**	2.7 - 2.8	16	6.26	27.5
ERC16-2.9AA	**967.510**	2.8 - 2.9	16	6.26	27.5
ERC16-3AA	**967.511**	2.75 - 3	16	6.26	27.5
ERC16-3.25AA	**967.512**	3 - 3.25	16	6.26	27.5
ERC16-3.5AA	**967.513**	3.25 - 3.5	16	6.26	27.5
ERC16-3.75AA	**967.514**	3.5 - 3.75	16	6.26	27.5
ERC16-4AA	**967.515**	3.75 - 4	16	6.26	27.5
ERC16-4.25AA	**967.516**	4 - 4.25	16	6.26	27.5
ERC16-4.5AA	**967.517**	4.25 - 4.5	16	6.26	27.5
ERC16-4.75AA	**967.518**	4.5 - 4.75	16	6.26	27.5
ERC16-5AA	**967.519**	4.75 - 5	16	6.26	27.5
ERC16-5.25AA	**967.520**	5 - 5.25	16	6.26	27.5
ERC16-5.5AA	**967.521**	5.25 - 5.5	16	6.26	27.5
ERC16-5.75AA	**967.522**	5.5 - 5.75	16	6.26	27.5
ERC16-6AA	**967.523**	5.5 - 6	16	6.26	27.5
ERC16-6.5AA	**967.524**	6 - 6.5	16	6.26	27.5
ERC16-7AA	**967.525**	6.5 - 7	16	6.26	27.5
ERC16-7.5AA	**967.526**	7 - 7.5	16	6.26	27.5
ERC16-8AA	**967.527**	7.5 - 8	16	6.26	27.5
ERC16-8.5AA	**967.528**	8 - 8.5	16	6.26	27.5
ERC16-9AA	**967.529**	8.5 - 9	16	6.26	27.5
ERC16-9.5AA	**967.530**	9 - 9.5	16	6.26	27.5
ERC16-10AA	**967.531**	9.5 - 10	16	6.26	27.5

MEGA ER 25

Model	Order No.	Ød	ØA	L	B
ERC25-3AA	**967.559**	2.75 - 3	25	6.66	34
ERC25-3.25AA	**967.560**	3 - 3.25	25	6.66	34
ERC25-3.5AA	**967.561**	3.25 - 3.5	25	6.66	34
ERC25-3.75AA	**967.562**	3.5 - 3.75	25	6.66	34
ERC25-4AA	**967.563**	3.75 - 4	25	6.66	34
ERC25-4.25AA	**967.564**	4 - 4.25	25	6.66	34
ERC25-4.5AA	**967.565**	4.25 - 4.5	25	6.66	34
ERC25-4.75AA	**967.566**	4.5 - 4.75	25	6.66	34
ERC25-5AA	**967.567**	4.75 - 5	25	6.66	34
ERC25-5.25AA	**967.568**	5 - 5.25	25	6.66	34
ERC25-5.5AA	**967.569**	5.25 - 5.5	25	6.66	34
ERC25-5.75AA	**967.570**	5.5 - 5.75	25	6.66	34
ERC25-6AA	**967.571**	5.5 - 6	25	6.66	34
ERC25-6.5AA	**967.572**	6 - 6.5	25	6.66	34
ERC25-7AA	**967.573**	6.5 - 7	25	6.66	34
ERC25-7.5AA	**967.574**	7 - 7.5	25	6.66	34
ERC25-8AA	**967.575**	7.5 - 8	25	6.66	34
ERC25-8.5AA	**967.576**	8 - 8.5	25	6.66	34
ERC25-9AA	**967.577**	8.5 - 9	25	6.66	34
ERC25-9.5AA	**967.578**	9 - 9.5	25	6.66	34
ERC25-10AA	**967.579**	9.5 - 10	25	6.66	34
ERC25-10.5AA	**967.580**	10 - 10.5	25	6.66	34
ERC25-11AA	**967.581**	10.5 - 11	25	6.66	34
ERC25-11.5AA	**967.582**	11 - 11.5	25	6.66	34
ERC25-12AA	**967.583**	11.5 - 12	25	6.66	34
ERC25-12.5AA	**967.584**	12 - 12.5	25	6.66	34
ERC25-13AA	**967.585**	12.5 - 13	25	6.66	34
ERC25-13.5AA	**967.586**	13 - 13.5	25	6.66	34
ERC25-14AA	**967.587**	13.5 - 14	25	6.66	34
ERC25-14.5AA	**967.588**	14 - 14.5	25	6.66	34
ERC25-15AA	**967.589**	14.5 - 15	25	6.66	34
ERC25-15.5AA	**967.590**	15 - 15.5	25	6.66	34
ERC25-16AA	**967.591**	15.5 - 16	25	6.66	34

MEGA ER 32

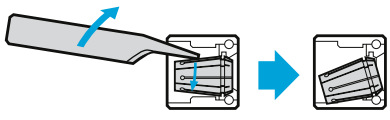
Model	Order No.	Ød	ØA	L	B
ERC32-3AA	**967.592**	2.75 - 3	32	7.16	40
ERC32-3.25AA	**967.593**	3 - 3.25	32	7.16	40
ERC32-3.5AA	**967.594**	3.25 - 3.5	32	7.16	40
ERC32-3.75AA	**967.595**	3.5 - 3.75	32	7.16	40
ERC32-4AA	**967.596**	3.75 - 4	32	7.16	40
ERC32-4.25AA	**967.597**	4 - 4.25	32	7.16	40
ERC32-4.5AA	**967.598**	4.25 - 4.5	32	7.16	40
ERC32-4.75AA	**967.599**	4.5 - 4.75	32	7.16	40
ERC32-5AA	**967.600**	4.75 - 5	32	7.16	40
ERC32-5.25AA	**967.601**	5 - 5.25	32	7.16	40
ERC32-5.5AA	**967.602**	5.25 - 5.5	32	7.16	40
ERC32-5.75AA	**967.603**	5.5 - 5.75	32	7.16	40
ERC32-6AA	**967.604**	5.5 - 6	32	7.16	40
ERC32-6.5AA	**967.605**	6 - 6.5	32	7.16	40
ERC32-7AA	**967.606**	6.5 - 7	32	7.16	40
ERC32-7.5AA	**967.607**	7 - 7.5	32	7.16	40
ERC32-8AA	**967.608**	7.5 - 8	32	7.16	40
ERC32-8.5AA	**967.609**	8 - 8.5	32	7.16	40
ERC32-9AA	**967.610**	8.5 - 9	32	7.16	40
ERC32-9.5AA	**967.611**	9 - 9.5	32	7.16	40
ERC32-10AA	**967.612**	9.5 - 10	32	7.16	40
ERC32-10.5AA	**967.613**	10 - 10.5	32	7.16	40
ERC32-11AA	**967.614**	10.5 - 11	32	7.16	40
ERC32-11.5AA	**967.615**	11 - 11.5	32	7.16	40
ERC32-12AA	**967.616**	11.5 - 12	32	7.16	40
ERC32-12.5AA	**967.617**	12 - 12.5	32	7.16	40
ERC32-13AA	**967.618**	12.5 - 13	32	7.16	40
ERC32-13.5AA	**967.619**	13 - 13.5	32	7.16	40
ERC32-14AA	**967.620**	13.5 - 14	32	7.16	40
ERC32-14.5AA	**967.621**	14 - 14.5	32	7.16	40
ERC32-15AA	**967.622**	14.5 - 15	32	7.16	40
ERC32-15.5AA	**967.623**	15 - 15.5	32	7.16	40
ERC32-16AA	**967.624**	15.5 - 16	32	7.16	40
ERC32-16.5AA	**967.625**	16 - 16.5	32	7.16	40
ERC32-17AA	**801.013**	16.5 - 17	32	7.16	40
ERC32-17.5AA	**967.627**	17 - 17.5	32	7.16	40
ERC32-18AA	**967.628**	17.5 - 18	32	7.16	40
ERC32-18.5AA	**967.629**	18 - 18.5	32	7.16	40
ERC32-19AA	**967.630**	18.5 - 19	32	7.16	40
ERC32-19.5AA	**967.631**	19 - 19.5	32	7.16	40
ERC32-20AA	**967.632**	19.5 - 20	32	7.16	40

Collet Removers

For MEGA New Baby Chuck, New Baby Chuck and MEGA ER Chuck.



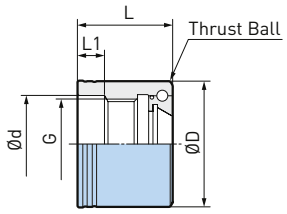
Model	Order No.
NBJ	**969.491**



MEGA ER Nut

For MEGA ER Grip.
High precision nut with ball bearing ensure outstanding runout repeatability.





Model	Order No.	Ød	ØD	L	L1	G	Body	Wrench
MERN16	**967.801**	23	30	25	7.5	M22 P1.5	MEGA ER 16	MGR30L
MERN20	**967.802**	27	35	26.5	7.5	M25 P1.5	MEGA ER 20	MGR35L
MERN25	**967.803**	33.5	42	27.5	7.5	M32 P1.5	MEGA ER 25	MGR42L
MERN32	**967.804**	41	50	30.2	7.7	M40 P1.5	MEGA ER 32	MGR50L

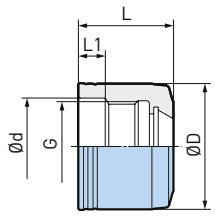
1. MEGA ER nut can not be used with some of conventional ER chuck. Please check dimensions carefully in that case.
2. To maximize the cutting performance, using with MEGA ER grip is recommended.

MEGA ER Solid Nut

A.8

For MEGA ER Grip.
Free-notch design nut for high speed machining.





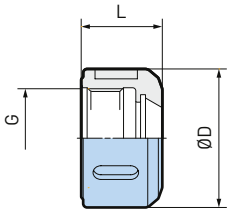
Model	Order No.	Ød	ØD	L	L1	G	Body	Wrench
MER16SN	**805.663**	23	30	25	7.5	M22 P1.5	MEGA ER 16	MGR30L
MER20SN	**805.664**	27	35	26.5	7.5	M25 P1.5	MEGA ER 20	MGR35L
MER25SN	**805.665**	33.5	42	27.5	7.5	M32 P1.5	MEGA ER 25	MGR42L
MER32SN	**805.666**	41	50	30.2	7.7	M40 P1.5	MEGA ER 32	MGR50L

1. MEGA ER nut can not be used with some of conventional ER chuck. Please check dimensions carefully in that case.
2. To maximize the cutting performance, using with MEGA ER grip is recommended.

ER Nuts

For MEGA ER Grip.
Conventional ER Nut.



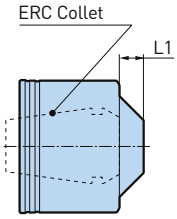


Model	Order No.	ØD	L	G	Body	Wrench
ERN11	**803.581**	19	12.3	M14 0.75	MEGA ER 11	NBK6
ERN16	**803.582**	30	19	M22 P1.5	MEGA ER 16	NBK10
ERN20	**803.583**	35	20.5	M25 P1.5	MEGA ER 20	NBK13
ERN25	**803.584**	42	21.5	M32 P1.5	MEGA ER 25	NBK16
ERN32	**803.585**	50	24	M40 P1.5	MEGA ER 32	FK45-50L

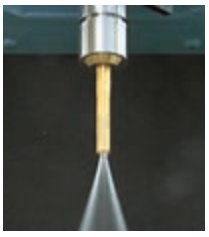
MEGA ER Perfect Seal

For MEGA ER Grip





2way coolant



Through tools with PS ring



Jet through without PS ring

Model	Order No.	Cutting shaft ø	L1	Collet Model	Body
MERPS16-030035	**967.850**	3 - 3.5	6.4	ERC16 -3 -3.75	MEGA ER 16
MERPS16-035040	**967.851**	3.5 - 4	6.4	ERC16 -3.5-4.75	MEGA ER 16
MERPS16-040045	**967.852**	4 - 4.5	6.4	ERC16 -4 -4.75	MEGA ER 16
MERPS16-045050	**967.853**	4.5 - 5	6.4	ERC16 -4.5 -5.25	MEGA ER 16
MERPS16-050055	**967.854**	5 - 5.5	6.4	ERC16 -5 -6	MEGA ER 16
MERPS16-055060	**967.855**	5.5 - 6	6.4	ERC16 -5.5-6.5	MEGA ER 16
MERPS16-060065	**967.856**	6 - 6.5	6.8	ERC16 -6 -7	MEGA ER 16
MERPS16-065070	**967.857**	6.5 - 7	6.8	ERC16 -6.5 -7.5	MEGA ER 16
MERPS16-070075	**967.858**	7 - 7.5	6.8	ERC16 -7 -8	MEGA ER 16
MERPS16-075080	**967.859**	7.5 - 8	6.8	ERC16 -7.5 -8.5	MEGA ER 16
MERPS16-080085	**967.861**	8 - 8.5	6.1	ERC16 -8 -9	MEGA ER 16
MERPS16-085090	**967.862**	8.5 - 9	6.1	ERC16 -8.5 -9.5	MEGA ER 16
MERPS16-090095	**967.863**	9 - 9.5	6.1	ERC16 -9 -10	MEGA ER 16
MERPS16-095100	**967.864**	9.5 - 10	6.1	ERC16 -9.5 -10	MEGA ER 16
MERPS20-030035	**967.865**	3 - 3.5	6.4	ERC20 -3 -3.75	MEGA ER 20
MERPS20-035040	**967.866**	3.5 - 4	6.4	ERC20 -3.5-4.75	MEGA ER 20
MERPS20-040045	**967.867**	4 - 4.5	6.4	ERC20 -4 -4.75	MEGA ER 20
MERPS20-045050	**967.868**	4.5 - 5	6.4	ERC20 -4.5 -5.25	MEGA ER 20
MERPS20-050055	**967.869**	5 - 5.5	6.4	ERC20 -5 -6	MEGA ER 20
MERPS20-055060	**967.870**	5.5 - 6	6.4	ERC20 -5.5-6.5	MEGA ER 20
MERPS20-060065	**967.871**	6 - 6.5	6.8	ERC20 -6 -7	MEGA ER 20
MERPS20-065070	**967.872**	6.5 - 7	6.8	ERC20 -6.5 -7.5	MEGA ER 20
MERPS20-070075	**967.873**	7 - 7.5	6.8	ERC20 -7 -8	MEGA ER 20
MERPS20-075080	**967.874**	7.5 - 8	6.8	ERC20 -7.5 -8.5	MEGA ER 20
MERPS20-080085	**967.875**	8 - 8.5	6.9	ERC20 -8 -9	MEGA ER 20
MERPS20-085090	**967.876**	8.5 - 9	6.9	ERC20 -8.5 -9.5	MEGA ER 20
MERPS20-090095	**967.877**	9 - 9.5	6.9	ERC20 -9 -10	MEGA ER 20
MERPS20-095100	**967.878**	9.5 - 10	6.9	ERC20 -9.5 -10.5	MEGA ER 20
MERPS20-100105	**967.879**	10 - 10.5	6.6	ERC20 -10 -11	MEGA ER 20
MERPS20-105110	**967.880**	10.5 - 11	6.6	ERC20 -10.5 -11.5	MEGA ER 20
MERPS20-110115	**967.881**	11 - 11.5	6.6	ERC20 -11 -12	MEGA ER 20
MERPS20-115120	**967.882**	11.5 - 12	6.6	ERC20 -11.5 -12.5	MEGA ER 20
MERPS20-120125	**967.883**	12 - 12.5	6.6	ERC20 -12. -13	MEGA ER 20
MERPS20-125130	**967.884**	12.5 - 13	6.6	ERC20 -12.5 -13	MEGA ER 20

A.8

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Model	Order No.	Cutting shaft ø	L1	Collet Model	Body
MERPS25-030035	**967.885**	3 - 3.5	6.3	ERC25 -3 -3.75	MEGA ER 25
MERPS25-035040	**967.886**	3.5 - 4	6.3	ERC25 -3.5-4.75	MEGA ER 25
MERPS25-040045	**967.887**	4 - 4.5	6.3	ERC25 -4.5 -5.25	MEGA ER 25
MERPS25-045050	**967.888**	4.5 - 5	6.3	ERC25 -5 -6	MEGA ER 25
MERPS25-050055	**967.889**	5 - 5.5	6.3	ERC25 -5.5-6.5	MEGA ER 25
MERPS25-055060	**967.890**	5.5 - 6	6.3	ERC25 -6 -7	MEGA ER 25
MERPS25-060065	**967.891**	6 - 6.5	6.7	ERC25 -6.5 -7.5	MEGA ER 25
MERPS25-065070	**967.892**	6.5 - 7	6.7	ERC25 -7 -8	MEGA ER 25
MERPS25-070075	**967.893**	7 - 7.5	6.7	ERC25 -7.5 -8.5	MEGA ER 25
MERPS25-075080	**967.894**	7.5 - 8	6.7	ERC25 -8 -9	MEGA ER 25
MERPS25-080085	**967.895**	8 - 8.5	6.8	ERC32 -19 -20	MEGA ER 25
MERPS25-085090	**967.896**	8.5 - 9	6.8	ERC25 -9 -10	MEGA ER 25
MERPS25-090095	**967.897**	9 - 9.5	6.8	ERC25 -9.5 -10.5	MEGA ER 25
MERPS25-095100	**967.898**	9.5 - 10	6.8	ERC25 -10 -11	MEGA ER 25
MERPS25-100105	**967.899**	10 - 10.5	7.3	ERC25 -10.5 -11.5	MEGA ER 25
MERPS25-105110	**967.900**	10.5 - 11	7.3	ERC25 -11 -12	MEGA ER 25
MERPS25-110115	**967.901**	11 - 11.5	7.3	ERC25 -11.5 -12.5	MEGA ER 25
MERPS25-115120	**967.902**	11.5 - 12	7.3	ERC25 -12 -13	MEGA ER 25
MERPS25-120125	**967.903**	12 - 12.5	7.3	ERC25 -12 -13	MEGA ER 25
MERPS25-125130	**967.904**	12.5 - 13	7.3	ERC25 -12.5 -13	MEGA ER 25
MERPS25-130140	**967.905**	13 - 14	6.6	ERC25 -13 -14.5	MEGA ER 25
MERPS25-140150	**967.906**	14 - 15	6.6	ERC25 -14 -15.5	MEGA ER 25
MERPS25-150160	**801.318**	15 - 16	6.6	ERC25 -15 -16	MEGA ER 25
MERPS32-030035	**967.908**	3 - 3.5	6.2	ERC32 -3 -3.75	MEGA ER 32
MERPS32-035040	**967.909**	3.5 - 4	6.2	ERC32 -3.5-4.25	MEGA ER 32
MERPS32-040045	**967.910**	4 - 4.5	6.2	ERC32 -4 -4.75	MEGA ER 32
MERPS32-045050	**967.911**	4.5 - 5	6.2	ERC32 -4.5 -5.25	MEGA ER 32
MERPS32-050055	**967.912**	5 - 5.5	6.2	ERC32 -5 -6	MEGA ER 32
MERPS32-055060	**967.913**	5.5 - 6	6.2	ERC32 -5.5 -6.5	MEGA ER 32
MERPS32-060065	**967.914**	6 - 6.5	6.6	ERC32 -6 -7	MEGA ER 32
MERPS32-065070	**967.915**	6.5 - 7	6.6	ERC32 -6.5 -7.5	MEGA ER 32
MERPS32-070075	**967.916**	7 - 7.5	6.6	ERC32 -7 -8	MEGA ER 32
MERPS32-075080	**967.917**	7.5 - 8	6.6	ERC32 -7.5 -8.5	MEGA ER 32
MERPS32-080085	**967.918**	8 - 8.5	6.7	ERC32 -8 -9	MEGA ER 32
MERPS32-085090	**967.919**	8.5 - 9	6.7	ERC32 -8.5 9.5	MEGA ER 32
MERPS32-090095	**967.920**	9 - 9.5	6.7	ERC32 -9 -10	MEGA ER 32
MERPS32-095100	**967.921**	9.5 - 10	6.7	ERC32 -9.5 -10.5	MEGA ER 32
MERPS32-100105	**967.922**	10 - 10.5	7.2	ERC32 -10 -11	MEGA ER 32
MERPS32-105110	**967.923**	10.5 - 11	7.2	ERC32 -10.5 -11.5	MEGA ER 32
MERPS32-110115	**967.924**	11 - 11.5	7.2	ERC32 -11 -12	MEGA ER 32
MERPS32-115120	**967.925**	11.5 - 12	7.2	ERC32 -11.5 -12.5	MEGA ER 32
MERPS32-120125	**967.926**	12 - 12.5	7.2	ERC32 -12 -13	MEGA ER 32
MERPS32-125130	**967.927**	12.5 - 13	7.2	ERC32 -12.5 -13.5	MEGA ER 32
MERPS32-130140	**967.928**	13 - 14	7.3	ERC32 -13 -14.5	MEGA ER 32
MERPS32-140150	**967.929**	14 - 15	7.3	ERC32 -14 -15.5	MEGA ER 32
MERPS32-150160	**967.930**	15 - 16	7.3	ERC32 -15 -16.5	MEGA ER 32
MERPS32-160170	**967.931**	16 - 17	7.8	ERC32 -16 -17.5	MEGA ER 32
MERPS32-170180	**967.932**	17 - 18	7.8	ERC32 -17 -18.5	MEGA ER 32
MERPS32-180190	**967.933**	18 - 19	7.8	ERC32 -18 -19.5	MEGA ER 32
MERPS32-190200	**967.934**	19 - 20	7.8	ERC32 -3 -3.75	MEGA ER 32

1. 1 pce. of ps ring is included.

Accessories & Spare Parts

PS Rings

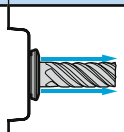
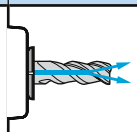
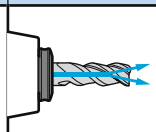
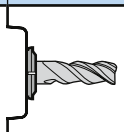


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Straight Collets

For MEGA Double Power Chuck, New Hi-Power Milling Chuck and Hydraulic Chuck

Straight Collet Selection Guide

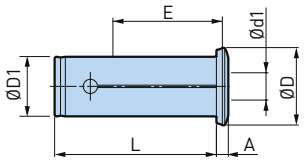
	PJC Collet	OCA Collet	PSC Collet	C Collet
				
	Periferical Coolant Supply	Through Tool Coolant Supply	Through Tool Coolant Supply	W/O Center Coolant
MEGA-D MEGA Double Power Chuck	○	○	○	○
MEGA-DS MEGA Double Power Chuck	○		○	○
HMC New Hi-Power Milling Chuck	○	○	○	○
HDC Hydraulic Chuck	○		○	

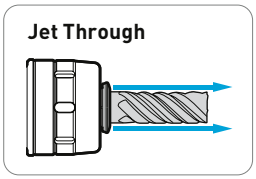
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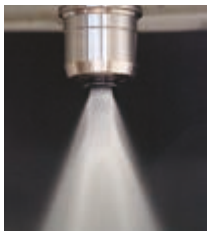
PJC Collets

For MEGA-D/DS, HMC and HDC.
For coolant to cutting tool periphery.









Model	Order No.	Ød1	ØD	ØD1	L	A	E
PJC12-6	**805.882**	6	20.4	12	40	5.4	35
PJC12-8	**805.883**	8	20.4	12	40	5.4	37
PJC12-10	**805.884**	10	20.4	12	40	5.6	39
PJC16-6	**962.468**	6	23	16	54	6	39
PJC16-8	**962.469**	8	23	16	54	6.3	40
PJC16-10	**962.470**	10	23	16	54	6.3	45
PJC16-12	**962.471**	12	23	16	54	6.3	48
PJC20-3	**962.472**	3	27	20	61	5.2	31
PJC20-4	**962.473**	4	27	20	61	5.2	31
PJC20-5	**962.474**	5	27	20	61	5.2	31
PJC20-6	**962.475**	6	27	20	61	5.2	39
PJC20-7	**962.476**	7	27	20	61	5.7	40
PJC20-8	**962.477**	8	27	20	61	5.7	40
PJC20-9	**962.478**	9	27	20	61	5.7	40
PJC20-10	**962.479**	10	27	20	61	5.7	45
PJC20-11	**962.480**	11	27	20	61	6.4	45
PJC20-12	**962.481**	12	27	20	61	6.4	50
PJC20-13	**804.834**	13	27	20	61	6.8	50
PJC20-14	**962.488**	14	27	20	61	7.3	50
PJC20-15	**804.835**	15	27	20	61	7.3	50
PJC20-16	**962.483**	16	27	20	61	7.3	50

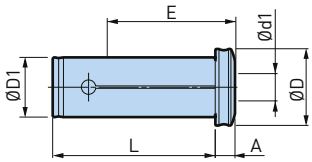
Model	Order No.	Ød1	ØD	ØD1	L	A	E
PJC25-6	**962.484**	6	32.5	25	68	5	39
PJC25-8	**962.485**	8	32.5	25	68	5	40
PJC25-10	**962.486**	10	32.5	25	68	5	45
PJC25-12	**962.487**	12	32.5	25	68	5	50
PJC25-16	**962.489**	16	32.5	25	68	5.4	53
PJC25-18	**801.685**	18	32.5	25	68	5.8	55
PJC25-20	**962.491**	20	32.5	25	68	6.5	56
PJC32-6	**962.492**	6	39	32	74	5	39
PJC32-8	**962.493**	8	39	32	74	5	40
PJC32-10	**962.494**	10	39	32	74	5	45
PJC32-12	**962.495**	12	39	32	74	5	50
PJC32-14	**962.496**	14	39	32	74	5	50
PJC32-16	**962.497**	16	39	32	74	5	53
PJC32-20	**962.499**	20	39	32	74	5	56
PJC32-25	**962.500**	25	39	32	74	5.4	61
PJC42-16	**801.982**	16	50.5	42	83	5	53
PJC42-20	**801.983**	20	50.5	42	83	5	56
PJC42-25	**801.984**	25	50.5	42	83	5	61
PJC42-32	**801.985**	32	50.5	42	83	5	66

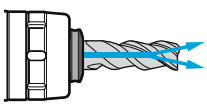
1. "E" is the min. clamping length.
2. Replacement O-ring for PJC and PSC collet are available (PJC_OR). Please contact BIG KAISER agent.
3. PJC 12 can not be used for Hydraulic Chuck (HDC12).

PSC Collets

For MEGA-D/DS, HMC and HDC.
For coolant-through tools.









Model	Order No.	Ød1	ØD	ØD1	L	A	E
PSC20-3	**962.437**	3	27	20	61	7.7	31
PSC20-4	**962.438**	4	27	20	61	7.5	31
PSC20-5	**962.439**	5	27	20	61	7.5	31
PSC20-6	**962.440**	6	27	20	61	7.5	39
PSC20-7	**962.441**	7	27	20	61	8.2	40
PSC20-8	**962.442**	8	27	20	61	8.2	40
PSC20-9	**962.443**	9	27	20	61	8.2	40
PSC20-10	**962.444**	10	27	20	61	8.2	45
PSC20-11	**962.445**	11	27	20	61	8.7	45
PSC20-12	**962.446**	12	27	20	61	8.7	50
PSC20-13	**804.827**	13	27	20	61	8.7	50
PSC20-14	**962.447**	14	28	20	61	8.7	50
PSC20-15	**804.828**	15	28	20	61	8.7	50
PSC20-16	**962.448**	16	28	20	61	8.7	50

Model	Order No.	Ød1	ØD	ØD1	L	A	E
PSC32-6	**962.457**	6	38	32	74	7.5	39
PSC32-7	**804.829**	7	38	32	74	8.2	40
PSC32-8	**962.458**	8	38	32	74	8.2	40
PSC32-9	**804.830**	9	38	32	74	8.2	40
PSC32-10	**962.459**	10	38	32	74	8.2	45
PSC32-11	**804.831**	11	38	32	74	8.7	45
PSC32-12	**962.460**	12	38	32	74	8.7	50
PSC32-13	**804.832**	13	38	32	74	8.7	50
PSC32-14	**962.461**	14	38	32	74	8.7	50
PSC32-15	**804.833**	15	38	32	74	8.7	51
PSC32-16	**962.462**	16	38	32	74	8.7	53
PSC32-18	**962.463**	18	38	32	74	9.2	56
PSC32-19	**802.063**	19	38	32	74	9.2	56
PSC32-20	**962.464**	20	38	32	74	9.2	56
PSC32-21	**802.064**	21	38	32	74	9.2	56
PSC32-22	**802.065**	22	38	32	74	9.5	59
PSC32-23	**802.066**	23	38	32	74	9.5	59
PSC32-24	**802.067**	24	38	32	74	9.5	60
PSC32-25	**962.465**	25	38	32	74	9.5	61

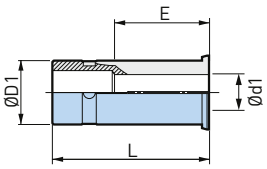
1. "E" is the min. clamping length.
2. Replacement O-ring for PJC and PSC collet are available (PJC_ OR). Please contact BIG KAISER agent.

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OCA Collets

For MEGA-D and HMC







Model	Order No.	Ød1	ØD1	L	E
OCA16-6	**805.156**	6	16	58	36
OCA16-8	**805.157**	8	16	58	37
OCA16-10	**805.158**	10	16	58	38
OCA16-12	**805.159**	12	16	58	42
OCA20-6	**962.401**	6	20	62	36
OCA20-8	**962.402**	8	20	62	37
OCA20-10	**962.403**	10	20	62	38
OCA20-12	**962.404**	12	20	61	42
OCA20-14	**978.501**	14	20	61	42
OCA20-16	**962.405**	16	20	61	52
OCA25-6	**801.747**	6	25	72.5	36
OCA25-8	**801.748**	8	25	72.5	37
OCA25-10	**805.413**	10	25	72.5	38
OCA25-12	**801.752**	12	25	72.5	44
OCA25-14	**805.244**	14	25	71.5	44
OCA25-16	**962.406**	16	25	71.5	52
OCA25-18	**805.245**	18	25	71.5	52
OCA25-20	**962.407**	20	25	71.5	52

Model	Order No.	Ød1	ØD1	L	E
OCA32-6	**962.408**	6	32	79.5	36
OCA32-8	**962.409**	8	32	79.5	37
OCA32-10	**962.410**	10	32	79.5	38
OCA32-12	**962.411**	12	32	79.5	44
OCA32-13	**962.412**	13	32	79.5	46
OCA32-14	**962.413**	14	32	79.5	48
OCA32-15	**962.414**	15	32	79.5	50
OCA32-16	**962.415**	16	32	79.5	52
OCA32-17	**962.416**	17	32	78.5	52
OCA32-18	**962.417**	18	32	78.5	52
OCA32-19	**962.418**	19	32	78.5	52
OCA32-20	**962.419**	20	32	78.5	52
OCA32-21	**962.420**	21	32	78.5	52
OCA32-22	**962.421**	22	32	78.5	52
OCA32-23	**962.422**	23	32	78.5	52
OCA32-24	**962.423**	24	32	78.5	52
OCA32-25	**962.424**	25	32	78.5	52
OCA32-27	**806.442**	27	32	78.5	52
OCA32-28	**805.356**	28	32	78.5	52
OCA32-29	**806.443**	29	32	78.5	52

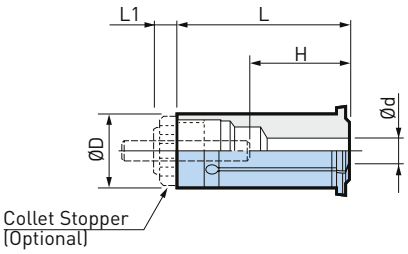
Model	Order No.	Ød1	ØD1	L	E
OCA42-6	**801.774**	6	42	79.5	36
OCA42-8	**801.775**	8	42	79.5	37
OCA42-10	**801.764**	10	42	79.5	38
OCA42-12	**801.765**	12	42	79.5	44
OCA42-16	**801.767**	16	42	79.5	52
OCA42-19	**801.768**	19	42	79.5	52
OCA42-20	**801.769**	20	42	79.5	52
OCA42-24	**801.770**	24	42	78.5	55
OCA42-25	**801.771**	25	42	78.5	55
OCA42-31	**801.772**	31	42	78.5	58
OCA42-32	**801.773**	32	42	78.5	58

1. "E" is the min. clamping length.

C Collets

For MEGA-D/DS and HMC.
Tool projection adjustable straight collet.



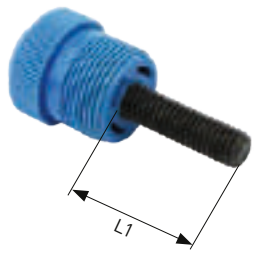


Model	Order No.	Ød	ØD	L	L1	H	E	Adjusting screw
C16-6	**806.465**	6	16	52	6	30 - 47	30	AC16CS
C16-8	**806.466**	8	16	52	6	32 - 47	32	AC16CS
C16-10	**806.467**	10	16	52	6	37 - 47	37	AC16CS
C16-12	**806.468**	12	16	52	6	37 - 47	37	AC16CS
C20-6	**962.260**	6	20	60	8	30 - 48	30	AC20CS
C20-8	**962.262**	8	20	60	8	32 - 48	32	AC20CS
C20-10	**962.263**	10	20	60	8	37 - 48	37	AC20CS
C20-12	**962.264**	12	20	60	8	37 - 48	37	AC20CS
C20-14	**962.265**	14	20	60	8	40 - 48	40	AC20CS
AC20-16	**962.205**	16	20	60	8	46 - 48	46	AC20CS
C20-16 *	**962.266**	16	20	60	10	46 - -	46	AC20CS
C20-18 *	**800.664**	18	20	60	10	50 - -	50	AC20CS
C25-6	**962.271**	6	25	68.5	8	30 - 58	30	AC25CS
C25-8	**962.272**	8	25	68.5	8	32 - 58	32	AC25CS
C25-10	**962.273**	10	25	68.5	8	37 - 58	37	AC25CS
C25-12	**962.274**	12	25	68.5	8	37 - 58	37	AC25CS
C25-14	**806.478**	14	25	68.5	8	45 - 58	45	AC25CS
C25-16	**962.276**	16	25	68.5	8	46 - 58	46	AC25CS
C25-18	**806.477**	18	25	68.5	8	48 - 58	48	AC25CS
C25-20	**962.278**	20	25	68.5	8	52 - 58	52	AC25CS

1. "E" is the min. clamping length.
2. * Collet Stopper cannot be used.
3. AC20-16 includes Collet Stopper.

Model	Order No.	Ød	ØD	L	L1	H	E	Adjusting screw
C32-6	**962.281**	6	32	74	10	30 - 62	30	AC32CS
C32-8	**962.282**	8	32	74	10	32 - 62	32	AC32CS
C32-10	**962.283**	10	32	74	10	37 - 62	37	AC32CS
C32-12	**962.284**	12	32	74	10	37 - 62	37	AC32CS
C32-14	**962.285**	14	32	74	10	40 - 62	40	AC32CS
C32-16	**962.286**	16	32	74	10	46 - 62	46	AC32CS
C32-17	**807.578**	17	32	74	10	50 - 62	52	AC32CS
C32-18	**962.287**	18	32	74	10	50 - 62	50	AC32CS
C32-19	**962.248**	19	32	74	10	50 - 62	50	AC32CS
C32-20	**962.288**	20	32	74	10	52 - 62	52	AC32CS
C32-22	**962.249**	22	32	74	10	52 - 62	52	AC32CS
C32-23	**807.579**	23	32	74	10	52 - 62	52	AC32CS
C32-24	**962.250**	24	32	74	10	55 - 62	55	AC32CS
C32-25	**962.289**	25	32	74	10	55 - 62	55	AC32CS
C32-30 *	**806.476**	30	32	74	10	55 - 62	65	AC32CS
C42-6	**800.674**	6	42	89	10	30 - 77	30	AC42CS
C42-8	**800.675**	8	42	89	10	34 - 77	34	AC42CS
C42-10	**800.665**	10	42	89	10	40 - 77	40	AC42CS
C42-12	**800.666**	12	42	89	10	40 - 77	40	AC42CS
C42-16	**800.668**	16	42	89	10	46 - 77	46	AC42CS
C42-20	**800.670**	20	42	89	10	52 - 77	52	AC42CS
C42-25	**800.671**	25	42	89	10	57 - 77	57	AC42CS
C42-31	**800.672**	31	42	89	10	62 - 77	62	AC42CS
C42-32	**800.673**	32	42	89	10	62 - 77	62	AC42CS
C42-40 *	**806.198**	40	42	89	10	62 - 77	79	AC42CS

Collet Stoppers for C Collet

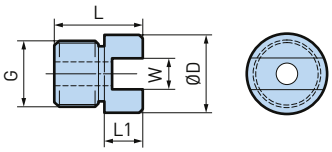


Model	Order No.	Body	L1
AC16CS	**806.197**	C16	6
AC20CS	**972.321**	C20	8
AC25CS	**804.772**	C25	8
AC32CS	**972.322**	C32	10
AC42CS	**804.773**	C42	10

Adjusting Screws HMA

For MEGA Double Power Chuck and New Hi-Power Milling Chuck



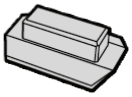


Model	Order No.	ØD	L	L1	G	W	Body	
							MEGA Double Power Chuck	New Hi-Power Milling Chuck
HMA-M16S	**962.312**	19	27	6	M16P1.5	10	MEGA20D/DS MEGA25D/DS MEGA32D/DS (BBT30/40, BDV40)	HMC20S/HMC20 HMC25S/HMC25 HMC32S
HMA-M24	**962.313**	30	36	9.5	M24P1.5	10	MEGA32D/DS (BBT50, BDV50) MEGA42D/DS (BBT50, BDV50) MEGA50D/DS (BBT50)	HMC32 HMC42S HMC42

1. For MEGA16D/DS and HMC16S a commercially available hex socket head screw with M8 can be used.

A.8

Key Grip MEGA Perfect Grip



Model	Order No.	MEGA Perfect Grip
PKG16-2P	**805.492**	MEGA16DPG
PKG20-2P	**805.493**	MEGA20DPG
PKG25-2P	**805.494**	MEGA25DPG
PKG32-2P	**805.495**	MEGA32DPG

1. Key grip is available in a package of 2 pcs.
2. It is recommended to replace the Key Grip regularly.

Spring MEGA Perfect Grip



Model	Order No.	MEGA Perfect Grip
PSP1519	**805.496**	MEGA16DPG
PSP1823	**805.497**	MEGA20DPG
PSP2420	**805.498**	MEGA25DPG
PSP3128	**805.499**	MEGA32DPG

MEGA Wrenches

For MEGA Micro Chuck, MEGA New Baby Chuck, MEGA E Chuck, MEGA ER Grip, MEGA Double Power Chuck and MEGA Perfect Grip



Model	Order No.	Ød	MEGA Micro Chuck	MEGA New Baby Chuck	MEGA E Chuck	MEGA ER Grip	MEGA Synchro Tapping Holder
MGR10	**969.449**	10	MEGA3S				
MGR12	**969.450**	12	MEGA4S				MGT3
MGR14	**969.452**	14	MEGA6S				
MGR16	**969.446**	16					MGT6
MGR18	**801.705**	18	MEGA8S				
MGR20L	**969.447**	20					MGT12
MGR20	**969.454**	20		MEGA6N			
MGR25	**969.456**	25		MEGA8N	MEGA6E		
MGR30L	**969.448**	30				MEGA ER16	MGT20
MGR30	**969.458**	30		MEGA10N	MEGA8E		
MGR35	**969.460**	35		MEGA13N	MEGA10E		
MGR35L	**969.460L**	35				MEGA ER20	
MGR42	**969.462**	42		MEGA16N	MEGA13E		
MGR42L	**969.462L**	42				MEGA ER25	
MGR46	**969.465**	46		MEGA20N			
MGR50L	**969.464L**	50				MEGA ER32	
MGR60L	**969.468L**	60		MEGA25N			

Model	Order No.	Ød	MEGA Double Power Chuck	New Hi-Power Milling Chuck	MEGA Perfect Grip
MGR42L	**969.462L**	42	MEGA16D/DS (BBT40/BDV40, HSK-A63/F63)		
MGR43L	**100237.001.0**	43		HMC16S	
MGR46L	**969.465L**	46	MEGA16D/DS (BBT30/50/BDV50, HSK-A40/A50/A100/A125)		MEGA16DPG
MGR50L	**969.464L**	50	MEGA20D/DS (BBT30/40,BDV40 HSK-A50/A63/F63)	HMC20S	
MGR55L	**969.467L**	55		HMC25S (BBT30)	
MGR59L	**807.771**	59		HMC25S	
MGR60L	**969.468L**	60	MEGA20D/DS (BBT50, BDV50, HSK-A100/A125)	HMC20	MEGA20DPG
MGR62L	**969.469L**	62	MEGA25D/DS (BBT40, BDV40, HSK-A63/F63)	HMC25 HMC32S (BBT30)	
MGR68L	**807.255**	68		HMC32S	
MGR70L	**969.470L**	70	MEGA25D/DS (BBT50 / BDV50, HSK-A100/A125)		MEGA25DPG
MGR80L	**969.471L**	80	MEGA32D/DS (BBT50 / BDV50, HSK-A100/A125)	HMC32	MEGA32DPG
MGR85L	**100237.002.0**	85		HMC42S	
MGR99L	**969.472L**	99	MEGA42D/DS	HMC42	
MGR105L	**969.473L**	105	MEGA42D/DS		

1. FK wrench can also be used for New Hi-Power Milling Chuck.

MEGA Torque Wrench

For MEGA Micro Chuck, MEGA New Baby Chuck and MEGA E Chuck.
With torque limiter.



Model	Order No.	Ød	MEGA Micro Chuck	MEGA New Baby Chuck	MEGA E Chuck
MGR10TL	**805.460**	10	MEGA3S	-	-
MGR12TL	**969.451**	12	MEGA4S	-	-
MGR12TLS	**804.117**	12	MEGA4S	-	-
MGR14TL	**969.453**	14	MEGA6S	-	-
MGR14TLS	**978.379**	14	MEGA6S	-	-
MGR18TL	**805.553**	18	MEGA8S	-	-
MGR20TL	**969.455**	20	-	MEGA6N	-
MGR20TLS	**804.119**	20	-	MEGA6N	-
MGR25TL	**969.457**	25	-	MEGA8N	MEGA6E
MGR25TLS	**804.121**	25	-	MEGA8N	-
MGR30TL	**969.459**	30	-	MEGA10N	MEGA8E
MGR30TLS	**807.585**	30	-	MEGA10N	-
MGR35TL	**969.461**	35	-	MEGA13N	MEGA10E
MGR42TL	**969.463**	42	-	MEGA16N	MEGA13E
MGR46TL	**969.466**	46	-	MEGA20N	-

1. TLS models are recommended to tighten 3 mm or smaller inner diameter collets.

A.8

New Baby Wrenches

For New Baby Chuck and MEGA ER Grip

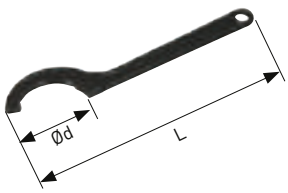


Model	Order No.	Nut Model
NBK6	**961.525**	NBN6/BPS6/ERN11
NBK6TL	**979.980**	NBN6/BPS6
NBK6TLS	**805.970**	NBN6/BPS6
NBK8	**961.548**	NBN8/BPS8
NBK8TL	**801.758**	NBN8/BPS8
NBK8TLS	**805.971**	NBN8/BPS8
NBK10	**961.570**	NBN10/BPS10/ERN16
NBK10TL	**801.756**	NBN10/BPS10
NBK10TLS	**807.586**	NBN10/BPS10
NBK13	**961.596**	NBN13/BPS13/ERN20
NBK13TL	**801.757**	NBN13/BPS13
NBK16	**961.630**	NBN16/BPS16/ERN25
NBK16TL	**805.969**	NBN16/BPS16
NBK20	**961.678**	NBN20/BPS20
NBK20TL	**805.909**	NBN20/BPS20

1. TL and TLS models are Torque Wrench.
2. TLS models are recommneded to tighten 3mm or smaller inner diamter collets.

FK Wrenches

For New Hi-Power Milling Chuck and MEGA ER Grip

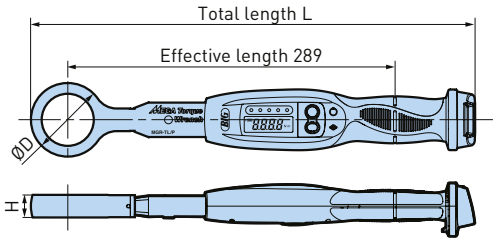


Model	Order No.	Ød	L	Body
FK31-33	**806.462**	31 - 33	153	HMC12J
FK45-50L	**801.037**	43 - 50	242	HMC16S / HMC20S / ERN32
FK52-55	**962.294**	52 - 55	220	HMC25S (BBT30)
FK58-62	**962.291**	58 - 62	240	HMC20 / HMC25 (BBT50 / BDV50)
FK58-62L	**801.038**	58 - 62	293	HMC25S (BBT40/50 / BDV40/50) / HMC32S (BBT30)
FK68-75L	**801.039**	68 - 75	319	HMC32S (BBT40/50 / BDV40/50)
FK80-90	**962.292**	80 - 90	280	HMC32 (BBT50 /BDV50)
FK80-90L	**804.771**	80 - 90	390	HMC42S
FK92-100	**962.293**	92 - 100	280	HMC42

Digital MEGA Torque Wrench

Digital torque wrench with interchangeable head specialized for MEGA chuck to manage the tightening torque of collet chucks.





Body

Model	Order No.
MGR-TL/P.	807.594

1. Weight does not include adapter and battery.

Adapter

Model	Order No.	Applicable Collet Chuck		L	ØD	H
MGR20A-N	804.118	MEGA6N	-	377	36	16
MGR25A-N	804.120	MEGA8N	MEGA6E	381	44	20
MGR30A-N	804.122	MEGA10N	MEGA8E	384	50	
MGR35A-N	804.123	MEGA13N	MEGA10E	386.5	55	
MGR42A-N	804.124	MEGA16N	MEGA13E	390	62	
MGR46A-N	804.125	MEGA20N	-	392	66	

1. Can only be used for above applicable models (e.g. MEGAER Chuck).

Set

Model	Order No.	Content
SMGR-TL/P.	807.595	1 Body 6 Adapters (each 1 of MGR20-46A-N)

Dedicated storage case
The body (MGR-TL/P.) and the set (SMGR-TL/P.) are delivered in an exclusive case for convenient carrying. Body and 6 adapters can be stored.



Recommended torque

The recommended torque for each collet chuck is set on the main unit for easy operation.



Select the tool name before clamping. (e.g. MEGA6N)

LED torque indicator

When tightening torque is applied, the torque value is displayed on the display panel and the LED indicators light up in real time.



The indicator informs every 20% of the target torque. (e.g. 60% of target torque)

Vibrations and buzzers

Vibration of the handle and buzzer will notify when tightened to the target torque.

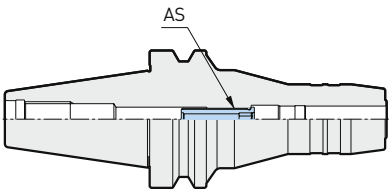
Model	MGR-TL/P
Torque setting range	5-50Nm
Minimum read	0.01Nm
Display	7 LCD segments -> 4 digits, numerical display High precision LED indicator five-level display
Basic functions	Battery level display (three levels) Peak hold function Auto Power OFF (1 hour) Tightening completion alarm -> sound emission and vibrations
Power supply *	2 x LR6 batteries (recommended alkaline batteries/NiMH rechargeable batteries)
Continuous use time	Approx. 70 hours (NiMH rechargeable batteries/tightening condition: 100 times/h)
Operating temperature (recommended range)	0°C - 40°C (15°C - 30°C) Condensation has to be avoided

1. * Batteries are not included.

Adjusting Screws HDA

For Hydraulic Chuck





One side socket type

Model	Order No.
HDA6-05013	803.741
HDA6-05020	803.742
HDA6-05032	803.743
HDA8-06013	803.744
HDA8-06020	803.745
HDA8-06032	803.746
HDA10-08015	803.747
HDA10-08032	803.748
HDA12-10010	803.749
HDA12-10025	803.750
HDA12-10032	803.751
HDA16-12015	803.752
HDA16-12030	802.337
HDA16-12037	803.754
HDA20-16015	803.755
HDA25-16033	803.756
HDA25-16039	803.757

Both side socket type

Model	Order No.
HDA6-05013W	802.392
HDA6-05020W	802.393
HDA6-05032W	802.394
HDA8-06013W	803.758
HDA8-06020W	803.759
HDA8-06032W	803.760
HDA10-08015W	803.761
HDA10-08032W	803.762
HDA12-10025W	803.763
HDA12-10032W	802.383
HDA16-12015W	802.384
HDA16-12030W	802.385
HDA16-12037W	802.386
HDA20-16015W	802.387
HDA25-16033W	802.388
HDA25-16039W	802.389
HDA6-20010 *	802.390
HDA20-12047 *	802.391

1. Both side hexagon socket type can be adjusted from interface and tool clamping side.
2. * Adjusting Screw and Guide Screw are contained as a set
3. Adjusting screw HDA4-05015W is available with 807.254.

A.8

Grip Bars Type TSB

For confirming the gripping force for Hydraulic Chuck.



Model	Order No.	ØD
TSB3	807.102	3
TSB4	807.103	4
TSB5	807.104	5
TSB6	804.873	6
TSB7	804.874	7
TSB8	804.875	8
TSB9	804.876	9
TSB10	804.861	10
TSB11	804.862	11
TSB12	804.863	12
TSB13	804.864	13
TSB14	804.865	14
TSB15	804.866	15
TSB16	804.867	16
TSB18	804.868	18
TSB19	807.105	19
TSB20	804.869	20
TSB22	807.106	22
TSB24	807.107	24
TSB25	804.870	25
TSB28	807.108	28
TSB31	807.109	31
TSB32	804.871	32
TSB42	804.872	42

Clamp Bolts

For Face Mill Arbor FMH and Smart Damper FMH type



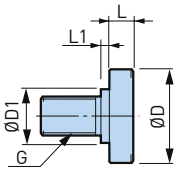


Fig. 1

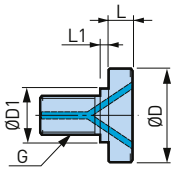


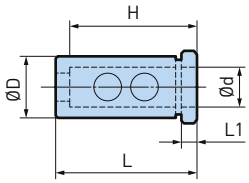
Fig. 2

Model	Order No.	Fig.	ØD	ØD1	L	L1	G
MBA-M12	**802.757**	1	33	23	10	2	M12
MBA-M12H	**802.758**	1	33		10	-	M12
TMBA-M12 *	**802.767**	2	33	23	10	2	M12
MBA-M16	**802.759**	1	40	23	10	6	M16
MBA-M16H	**802.760**	1	40		10	-	M16
TMBA-M16 *	**802.768**	2	40	23	10	6	M16
MBA-M20	**802.761**	1	50	27	14	6	M20
MBA-M20H	**802.762**	1	50		14	-	M20
TMBA-M20 *	**802.769**	2	50	27	14	6	M20

Sleeves for Side Lock Holder

For TSL & OSL





Model	Order No.	Ød	ØD	L	L1	H
OSL25-16	**962.596**	16	25	62	5.5	48
OSL25-20	**962.597**	20	25	62	5.5	50
OSL32-16	**962.586**	16	32	66	5.5	48
OSL32-20	**962.598**	20	32	66	5.5	50
OSL32-25	**962.599**	25	32	66	5.5	56
OSL40-16	**804.678**	16	40	76	5.5	48
OSL40-20	**804.679**	20	40	76	5.5	50
OSL40-25	**962.581**	25	40	76	5.5	56
OSL40-32	**962.582**	32	40	76	5.5	60

A.8

Sleeve for Boring Bar Holders

For BSL

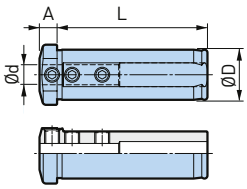


Fig. 1

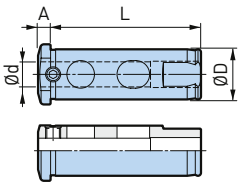


Fig. 2

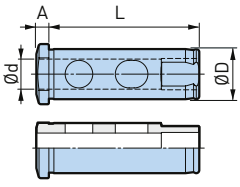


Fig. 3

Model	Order No.	Fig.	Ød	ØD	L	A
BSLA20-6	**805.728**	1	6	20	60	5
BSLA20-8	**805.733**	1	8	20	60	7
BSLA20-10	**805.734**	2	10	20	60	5
BSLA20-12	**805.735**	3	12	20	60	5
BSLA20-16	**805.736**	3	16	20	60	5
BSLA32-10	**805.737**	1	10	32	75	9
BSLA32-12	**805.738**	1	12	32	75	9
BSLA32-16	**805.739**	2	16	32	75	6
BSLA32-20	**805.740**	3	20	32	75	6

Hook wrench for Super Keyless Chuck (FS)



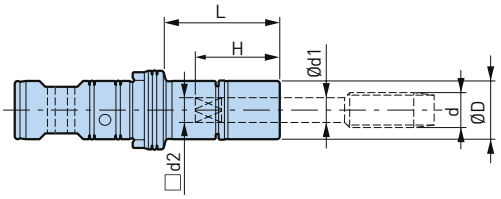
Model	Order No.
FS6.5LC	**805.532**
FS13LC	**805.446**

Tap Holders for MEGA Synchro Tapping Holder DIN

Tap Holders MGT6

Available in short, long and extra long length (150 mm, 200 mm) to meet all production requirements.





MGT6 (Tap size DIN: M3 - M8; ISO: M3 - M5)

Model	Order No.	Tap Size d DIN 371	Tap Size d DIN 376	Tap Size d ISO 529	Ød1	□d2	ØD	L	H
MGT6-031025-30	**963.611**	-	-	M3	3.15	2.5	16	30	20
MGT6-031025-70	**963.612**	-	-	M3	3.15	2.5	16	70	20
MGT6-031025-100	**963.613**	-	-	M3	3.15	2.5	16	100	20
MGT6-031025-150	**963.614**	-	-	M3	3.15	2.5	16	150	20
MGT6-035027-30	**963.615**	M3	M5	-	3.5	2.7	16	30	21
MGT6-035027-70	**963.616**	M3	M5	-	3.5	2.7	16	70	21
MGT6-035027-100	**963.617**	M3	M5	-	3.5	2.7	16	100	21
MGT6-035027-150	**963.618**	M3	M5	-	3.5	2.7	16	150	21
MGT6-040032-30	**963.619**	-	-	M4	4	3.15	16	30	21
MGT6-040032-70	**963.620**	-	-	M4	4	3.15	16	70	21
MGT6-040032-100	**963.621**	-	-	M4	4	3.15	16	100	21
MGT6-040032-150	**963.622**	-	-	M4	4	3.15	16	150	21
MGT6-045034-30	**963.623**	M4	M6	-	4.5	3.4	16	30	21
MGT6-045034-70	**963.624**	M4	M6	-	4.5	3.4	16	70	21
MGT6-045034-100	**963.625**	M4	M6	-	4.5	3.4	16	100	21
MGT6-045034-150	**963.626**	M4	M6	-	4.5	3.4	16	150	21
MGT6-050040-30	**963.627**	-	-	M5	5	4.0	16	30	25
MGT6-050040-70	**963.628**	-	-	M5	5	4.0	16	70	25
MGT6-050040-100	**963.629**	-	-	M5	5	4.0	16	100	25
MGT6-050040-150	**963.630**	-	-	M5	5	4.0	16	150	25
MGT6-050040-200	**963.631**	-	-	M5	5	4.0	16	200	25
MGT6-060049-30	**963.632**	M5, M6	M8	-	6	4.9	16	30	26
MGT6-060049-70	**963.633**	M5, M6	M8	-	6	4.9	16	70	26
MGT6-060049-100	**963.634**	M5, M6	M8	-	6	4.9	16	100	26
MGT6-060049-150	**963.635**	M5, M6	M8	-	6	4.9	16	150	26
MGT6-060049-200	**963.636**	M5, M6	M8	-	6	4.9	16	200	26

1. Nut is included.
2. MEGA wrench is to be ordered separately.

Accessories & Spare Parts

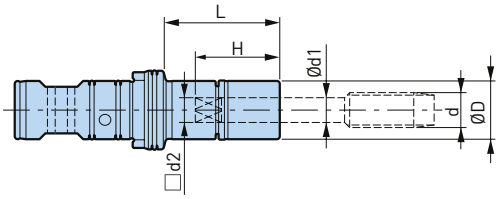
MGT Nuts	MEGA Wrenches
	
▶ 364	▶ 351

Tap Holders for MEGA Synchro Tapping Holder JIS

Tap Holders MGT6

Available in short, long and extra long length (150 mm, 200 mm) to meet all production requirements.





MGT6 (Tap size JIS: M2 - M6)

Model	Order No.	Tap Size d Metric	Tap Size d Unify	Ød1	□d2	ØD	L	H	H
MGT6-M2-30	**963.400**	M2	Nr. 3;Nr. 4	3	2.5	16	30	19	19
MGT6-M2-70	**801.481**	M2	Nr. 3;Nr. 4	3	2.5	16	70	19	19
MGT6-M2-100	**801.479**	M2	Nr. 3;Nr. 4	3	2.5	16	100	19	19
MGT6-M2-150	**801.480**	M2	Nr. 3;Nr. 4	3	2.5	16	150	19	19
MGT6-M3-30	**801.484**	M3	Nr. 5;Nr. 6	4	3.2	16	30	21	21
MGT6-M3-70	**801.485**	M3	Nr. 5;Nr. 6	4	3.2	16	70	21	21
MGT6-M3-100	**801.482**	M3	Nr. 5;Nr. 6	4	3.2	16	100	21	21
MGT6-M3-150	**801.483**	M3	Nr. 5;Nr. 6	4	3.2	16	150	21	21
MGT6-M4-30	**801.489**	M4	Nr. 8	5	4.0	16	30	25	25
MGT6-M4-70	**801.490**	M4	Nr. 8	5	4.0	16	70	25	25
MGT6-M4-100	**801.486**	M4	Nr. 8	5	4.0	16	100	25	25
MGT6-M4-150	**801.487**	M4	Nr. 8	5	4.0	16	150	25	25
MGT6-M4-200	**801.488**	M4	Nr. 8	5	4.0	16	200	25	25
MGT6-M5-30	**801.494**	M5	Nr. 10;Nr. 12	5.5	4.5	16	30	25	25
MGT6-M5-70	**801.495**	M5	Nr. 10;Nr. 12	5.5	4.5	16	70	25	25
MGT6-M5-100	**801.491**	M5	Nr. 10;Nr. 12	5.5	4.5	16	100	25	25
MGT6-M5-150	**801.492**	M5	Nr. 10;Nr. 12	5.5	4.5	16	150	25	25
MGT6-M5-200	**801.493**	M5	Nr. 10;Nr. 12	5.5	4.5	16	200	25	25
MGT6-M6U1/4-30	**801.499**	M6	U1/4	6	4.5	16	30	25	25
MGT6-M6U1/4-70	**801.500**	M6	U1/4	6	4.5	16	70	25	25
MGT6-M6U1/4-100	**801.496**	M6	U1/4	6	4.5	16	100	25	25
MGT6-M6U1/4-150	**801.497**	M6	U1/4	6	4.5	16	150	25	25
MGT6-M6U1/4-200	**801.498**	M6	U1/4	6	4.5	16	200	25	25

1. Nut is included.
2. MEGA wrench is to be ordered separately.

A.8

Accessories & Spare Parts

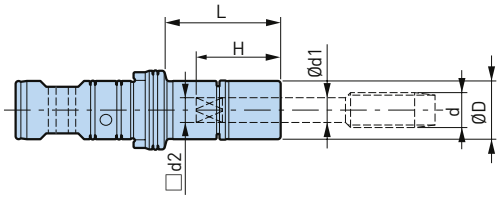
MGT Nuts	MEGA Wrenches
	
▶ 364	▶ 351

Tap Holders for MEGA Synchro Tapping Holder DIN

Tap Holders MGT12

Available in short, long and extra long length (150 mm, 200 mm) to meet all production requirements.





MGT12 (Tap size DIN: M5 - M12; ISO: M6 - M12)

Model	Order No.	Tap Size d DIN 371	Tap Size d DIN 376	Tap Size d ISO 529	Ød1	□d2	ØD	L	H
MGT12-060049-30	**963.637**	M5, M6	M8	-	6	4.9	20	30	28
MGT12-060049-70	**963.638**	M5, M6	M8	-	6	4.9	20	70	28
MGT12-060049-100	**963.639**	M5, M6	M8	-	6	4.9	20	100	28
MGT12-060049-150	**963.640**	M5, M6	M8	-	6	4.9	20	150	28
MGT12-060049-200	**963.641**	M5, M6	M8	-	6	4.9	20	200	28
MGT12-063050-30	**963.642**	-	-	M6	6.3	5.0	20	30	28
MGT12-063050-70	**963.643**	-	-	M6	6.3	5.0	20	70	28
MGT12-063050-100	**963.644**	-	-	M6	6.3	5.0	20	100	28
MGT12-063050-150	**963.645**	-	-	M6	6.3	5.0	20	150	28
MGT12-063050-200	**963.646**	-	-	M6	6.3	5.0	20	200	28
MGT12-070055-30	**963.647**	-	M10	-	7	5.5	20	30	28
MGT12-070055-70	**963.648**	-	M10	-	7	5.5	20	70	28
MGT12-070055-100	**963.649**	-	M10	-	7	5.5	20	100	28
MGT12-070055-150	**963.650**	-	M10	-	7	5.5	20	150	28
MGT12-070055-200	**963.651**	-	M10	-	7	5.5	20	200	28
MGT12-080063-30	**963.652**	M8	-	M8	8	6.3	20	30	29
MGT12-080063-70	**963.653**	M8	-	M8	8	6.3	20	70	29
MGT12-080063-100	**963.654**	M8	-	M8	8	6.3	20	100	29
MGT12-080063-150	**963.655**	M8	-	M8	8	6.3	20	150	29
MGT12-080063-200	**963.656**	M8	-	M8	8	6.3	20	200	29
MGT12-090071-30	**963.657**	-	M12	M12	9	7.1	20	30	30
MGT12-090071-70	**963.658**	-	M12	M12	9	7.1	20	70	30
MGT12-090071-100	**963.659**	-	M12	M12	9	7.1	20	100	30
MGT12-090071-150	**963.660**	-	M12	M12	9	7.1	20	150	30
MGT12-090071-200	**963.661**	-	M12	M12	9	7.1	20	200	30
MGT12-100080-35	**807.211**	M10	-	M10	10	8.0	30	35	33
MGT12-100080-85	**807.212**	M10	-	M10	10	8.0	30	85	33
MGT12-100080-115	**807.213**	M10	-	M10	10	8.0	30	115	33
MGT12-100080-150	**807.214**	M10	-	M10	10	8.0	30	150	33

1. Nut is included.
2. MEGA wrench is to be ordered separately.

Accessories & Spare Parts

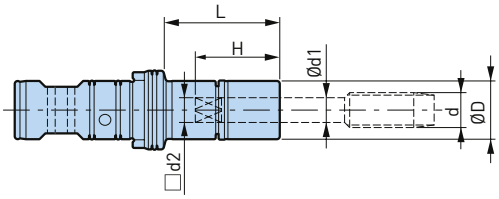
MGT Nuts	MEGA Wrenches
	
▶ 364	▶ 351

Tap Holders for MEGA Synchro Tapping Holder JIS

Tap Holders MGT12

Available in short, long and extra long length (150 mm, 200 mm) to meet all production requirements.





MGT12 (Tap size JIS: M6 - M12)

Model	Order No.	Tap Size d Metric	Tap Size d Pipe	Tap Size d Unify	Ød1	□d2	ØD	L	H
MGT12-M6U1/4-30	**978.286**	M6	-	U1/4	6	4.5	20	30	27
MGT12-M6U1/4-70	**801.415**	M6	-	U1/4	6	4.5	20	70	27
MGT12-M6U1/4-100	**801.412**	M6	-	U1/4	6	4.5	20	100	27
MGT12-M6U1/4-150	**801.413**	M6	-	U1/4	6	4.5	20	150	27
MGT12-M6U1/4-200	**801.414**	M6	-	U1/4	6	4.5	20	200	27
MGT12-U5/16-30	**801.424**	-	-	U5/16	6.1	5.0	20	30	28
MGT12-U5/16-70	**801.425**	-	-	U5/16	6.1	5.0	20	70	28
MGT12-U5/16-100	**801.421**	-	-	U5/16	6.1	5.0	20	100	28
MGT12-U5/16-150	**801.422**	-	-	U5/16	6.1	5.0	20	150	28
MGT12-U5/16-200	**801.423**	-	-	U5/16	6.1	5.0	20	200	28
MGT12-M8-30	**978.287**	M8	-	-	6.2	5.0	20	30	28
MGT12-M8-70	**801.419**	M8	-	-	6.2	5.0	20	70	28
MGT12-M8-100	**801.416**	M8	-	-	6.2	5.0	20	100	28
MGT12-M8-150	**801.417**	M8	-	-	6.2	5.0	20	150	28
MGT12-M8-200	**801.418**	M8	-	-	6.2	5.0	20	200	28
MGT12-M10U3/8-30	**978.288**	M10	-	U3/8	7	5.5	20	30	28
MGT12-M10U3/8-70	**801.408**	M10	-	U3/8	7	5.5	20	70	28
MGT12-M10U3/8-100	**801.405**	M10	-	U3/8	7	5.5	20	100	28
MGT12-M10U3/8-150	**801.406**	M10	-	U3/8	7	5.5	20	150	28
MGT12-M10U3/8-200	**801.407**	M10	-	U3/8	7	5.5	20	200	28
MGT12-U7/16P1/8-30	**801.429**	-	P1/8	U7/16	8	6.0	20	30	29
MGT12-U7/16P1/8-70	**801.430**	-	P1/8	U7/16	8	6.0	20	70	29
MGT12-U7/16P1/8-100	**801.426**	-	P1/8	U7/16	8	6.0	20	100	29
MGT12-U7/16P1/8-150	**801.427**	-	P1/8	U7/16	8	6.0	20	150	29
MGT12-U7/16P1/8-200	**801.428**	-	P1/8	U7/16	8	6.0	20	200	29
MGT12-M12-30	**978.289**	M12	-	-	8.5	6.5	20	30	29
MGT12-M12-70	**801.411**	M12	-	-	8.5	6.5	20	70	29
MGT12-M12-100	**801.409**	M12	-	-	8.5	6.5	20	100	29
MGT12-M12-150	**963.399**	M12	-	-	8.5	6.5	20	150	29
MGT12-M12-200	**801.410**	M12	-	-	8.5	6.5	20	200	29

1. Nut is included.
2. MEGA wrench is to be ordered separately.

Accessories & Spare Parts

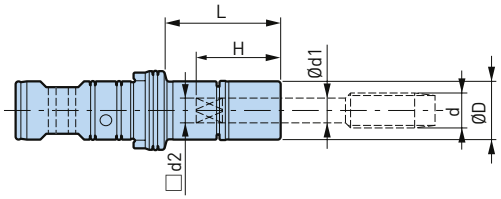
MGT Nuts	MEGA Wrenches
	
▶ 364	▶ 351

Tap Holders for MEGA Synchro Tapping Holder DIN

Tap Holders MGT20

Available in short, long and extra long length (150 mm, 200 mm) to meet all production requirements.





MGT20 (Tap size DIN: M10 - M20; ISO: M10 - M20)

Model	Order No.	Tap Size d DIN 371	Tap Size d DIN 376	Tap Size d ISO 529	Ød1	□d2	ØD	L	H
MGT20-090071-35	**963.662**	-	M12	M12	9	7.1	30	35	30
MGT20-090071-85	**963.663**	-	M12	M12	9	7.1	30	85	30
MGT20-090071-115	**963.664**	-	M12	M12	9	7.1	30	115	30
MGT20-090071-150	**963.665**	-	M12	M12	9	7.1	30	150	30
MGT20-100080-35	**963.666**	M10	-	M10	10	8.0	30	35	33
MGT20-100080-85	**963.667**	M10	-	M10	10	8.0	30	85	33
MGT20-100080-115	**963.668**	M10	-	M10	10	8.0	30	115	33
MGT20-100080-150	**963.669**	M10	-	M10	10	8.0	30	150	33
MGT20-110090-35	**963.670**	-	M14	-	11	9.0	30	35	34
MGT20-110090-85	**963.671**	-	M14	-	11	9.0	30	85	34
MGT20-110090-115	**963.672**	-	M14	-	11	9.0	30	115	34
MGT20-110090-150	**963.673**	-	M14	-	11	9.0	30	150	34
MGT20-112090-35	**963.674**	-	-	M14	11.2	9.0	30	35	34
MGT20-112090-85	**963.675**	-	-	M14	11.2	9.0	30	85	34
MGT20-112090-115	**963.676**	-	-	M14	11.2	9.0	30	115	34
MGT20-112090-150	**963.677**	-	-	M14	11.2	9.0	30	150	34
MGT20-120090-35	**963.678**	-	M16	-	12	9.0	30	35	34
MGT20-120090-85	**963.679**	-	M16	-	12	9.0	30	85	34
MGT20-120090-115	**963.680**	-	M16	-	12	9.0	30	115	34
MGT20-120090-150	**963.681**	-	M16	-	12	9.0	30	150	34
MGT20-125100-35	**963.682**	-	-	M16	12.5	10.0	30	35	35
MGT20-125100-85	**963.683**	-	-	M16	12.5	10.0	30	85	35
MGT20-125100-115	**963.684**	-	-	M16	12.5	10.0	30	115	35
MGT20-125100-150	**963.685**	-	-	M16	12.5	10.0	30	150	35
MGT20-140110-35	**963.686**	-	M18	-	14	11.0	30	35	36
MGT20-140110-85	**963.687**	-	M18	-	14	11.0	30	85	36
MGT20-140110-115	**963.688**	-	M18	-	14	11.0	30	115	36
MGT20-140110-150	**963.689**	-	M18	-	14	11.0	30	150	36
MGT20-140112-35	**963.690**	-	-	M18, M20	14	11.2	30	35	36
MGT20-140112-85	**963.691**	-	-	M18, M20	14	11.2	30	85	36
MGT20-140112-115	**963.692**	-	-	M18, M20	14	11.2	30	115	36
MGT20-140112-150	**963.693**	-	-	M18, M20	14	11.2	30	150	36
MGT20-160120-35	**805.173**	-	M20	-	16	12.0	30	35	37
MGT20-160120-150	**805.172**	-	M20	-	16	12.0	30	150	37

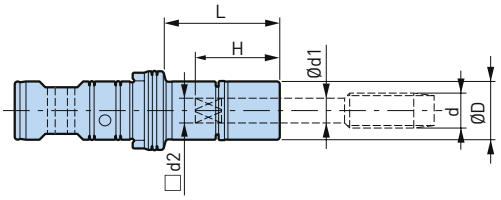
1. Nut is included.
2. MEGA wrench is to be ordered separately.

Tap Holders for MEGA Synchro Tapping Holder JIS

Tap Holders MGT20

Available in short, long and extra long length (150 mm, 200 mm) to meet all production requirements.





MGT20 (Tap size JIS: M12 - M20)

Model	Order No.	Tap Size d Metric	Tap Size d Pipe	Tap Size d Unify	Ød1	□d2	ØD	L	H
MGT20-M12-35	**801.433**	M12	-	-	8.5	6.5	30	35	29
MGT20-M12-85	**801.434**	M12	-	-	8.5	6.5	30	85	29
MGT20-M12-115	**801.431**	M12	-	-	8.5	6.5	30	115	29
MGT20-M12-150	**801.432**	M12	-	-	8.5	6.5	30	150	29
MGT20-U1/2-35	**801.460**	-	-	U1/2	9	7.0	30	35	30
MGT20-U1/2-85	**801.461**	-	-	U1/2	9	7.0	30	85	30
MGT20-U1/2-115	**804.130**	-	-	U1/2	9	7.0	30	115	30
MGT20-U1/2-150	**804.128**	-	-	U1/2	9	7.0	30	150	30
MGT20-M14U9/16-35	**801.437**	M14	-	U9/16	10.5	8.0	30	35	33
MGT20-M14U9/16-85	**801.438**	M14	-	U9/16	10.5	8.0	30	85	33
MGT20-M14U9/16-115	**801.435**	M14	-	U9/16	10.5	8.0	30	115	33
MGT20-M14U9/16-150	**801.436**	M14	-	U9/16	10.5	8.0	30	150	33
MGT20-P1/4-35	**801.454**	-	P1/4	-	11	9.0	30	35	31
MGT20-P1/4-85	**801.455**	-	P1/4	-	11	9.0	30	85	31
MGT20-P1/4-115	**801.452**	-	P1/4	-	11	9.0	30	115	31
MGT20-P1/4-150	**801.453**	-	P1/4	-	11	9.0	30	150	31
MGT20-U5/8-35	**801.462**	-	-	U5/8	12	9.0	30	35	34
MGT20-U5/8-85	**801.463**	-	-	U5/8	12	9.0	30	85	34
MGT20-U5/8-115	**804.131**	-	-	U5/8	12	9.0	30	115	34
MGT20-U5/8-150	**804.129**	-	-	U5/8	12	9.0	30	150	34
MGT20-M16-35	**801.441**	M16	-	-	12.5	10.0	30	35	35
MGT20-M16-85	**801.442**	M16	-	-	12.5	10.0	30	85	35
MGT20-M16-115	**801.439**	M16	-	-	12.5	10.0	30	115	35
MGT20-M16-150	**801.440**	M16	-	-	12.5	10.0	30	150	35
MGT20-M18U3/4-35	**801.445**	M18	-	U3/4	14	11.0	30	35	36
MGT20-M18U3/4-85	**801.446**	M18	-	U3/4	14	11.0	30	85	36
MGT20-M18U3/4-115	**801.443**	M18	-	U3/4	14	11.0	30	115	36
MGT20-M18U3/4-150	**801.444**	M18	-	U3/4	14	11.0	30	150	36
MGT20-P3/8-35	**801.458**	-	P3/8	-	14	11.0	30	35	33
MGT20-P3/8-85	**801.459**	-	P3/8	-	14	11.0	30	85	33
MGT20-P3/8-115	**801.456**	-	P3/8	-	14	11.0	30	115	33
MGT20-P3/8-150	**801.457**	-	P3/8	-	14	11.0	30	150	33
MGT20-M20-35	**801.449**	M20	-	-	15	12.0	30	35	37
MGT20-M20-85	**801.450**	M20	-	-	15	12.0	30	85	37
MGT20-M20-115	**801.447**	M20	-	-	15	12.0	30	115	37
MGT20-M20-150	**801.448**	M20	-	-	15	12.0	30	150	37

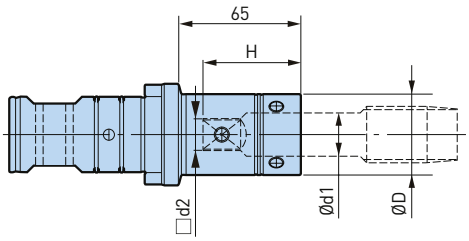
1. Nut is included.
2. MEGA wrench is to be ordered separately.

Tap Holders for MEGA Synchro Tapping Holder DIN

Tap Holders MGT36

A specially developed system to compensate for synchronisation errors and greatly reduce load during tapping.





MGT36 (Tap size DIN: M22 - M36)

Model	Order No.	Tap Size d DIN 376	Tap Size d DIN 353	Ød1	□d2	ØD	H
MGT36-180145-65	**805.240**	M22, 24	P5/8	18	14.5	38	45
MGT36-200160-65	**805.241**	M27	P3/4	20	16.0	40	51
MGT36-220180-65	**805.238**	M30	P7/8	22	18.0	42	53
MGT36-250200-65	**805.242**	M33	P1	25	20.0	49	58
MGT36-280220-65	**805.239**	M36	-	28	22.0	52	62

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1. Wrench is not required.

Accessories & Spare Parts

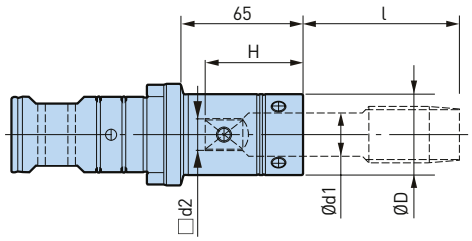
Adjusting Screw for MGT36	Side Lock Bolt Set for MGT36	MGT Set Screw	Synchro Adjuster	O-Ring Set
				
▶ 365	▶ 365	▶ 364	▶ 364	▶ 364

Tap Holders for MEGA Synchro Tapping Holder JIS

Tap Holders MGT36

A specially developed system to compensate for synchronisation errors and greatly reduce load during tapping.





MGT36 (Tap size JIS: M20 - M36; P1/4, P3/4, P1)

Model	Order No.	Tap Size	Tap Length l	Ød1	□d2	ØD	H
MGT36-M20-65	**801.465**	M20	65 - 68	15	12.0	32	40
MGT36-M22-65	**801.466**	M22	65 - 68	17	13.0	34	44
MGT36-P1/2-65	**801.471**	P1/2	38 - 41	18	14.0	35	42
MGT36-M24-65	**978.330**	M24	65 - 68	19	15.0	39	46
MGT36-M27-65	**801.467**	M27	80 - 83	20	15.0	40	50
MGT36-M30-65	**801.468**	M30	83 - 86	23	17.0	43	52
MGT36-P3/4-65	**801.473**	P3/4	38 - 41	23	17.0	43	47
MGT36-M33-65	**801.469**	M33	88 - 91	25	19.0	49	57
MGT36-P1-65	**801.472**	P1	49 - 52	26	21.0	50	46
MGT36-M36-65	**978.331**	M36	94 - 97	28	21.0	52	61

1. Wrench is not required.

Accessories & Spare Parts

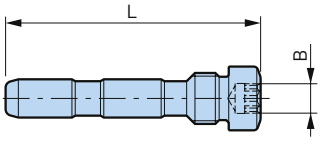
Adjusting Screw for MGT36	Side Lock Bolt Set for MGT36	MGT Set Screw	Synchro Adjuster	O-Ring Set
				
▶ 365	▶ 365	▶ 364	▶ 364	▶ 364

Accessories for MEGA Synchro Tapping Holder

MGT Set Screw

For MGT6, MGT12, MGT20, MGT36
Hi- tensile material. Secures the tap holder into body.





Model	Order No.	B	L	Body
MGT6SS	**963.711**	4	35	MGT6
MGT12SS	**963.432**	4	40	MGT12
MGT20SS	**963.713**	5	53	MGT20
MGT36SS	**801.478**	8	92	MGT36

Synchro Adjuster

For MGT6, MGT12, MGT20, MGT36
Replaceable bushing in tap holder.

A.8



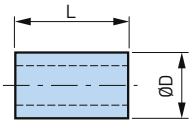


Fig. 1

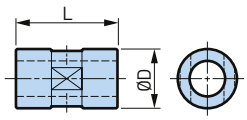


Fig. 2

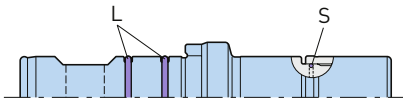
Model	Order No.	Fig.	ØD	L	Tap Holder
MGT6SA-5P	**963.721**	1	9	11	MGT 6-d-
MGT12SA-5P	**963.722**	1	10	15	MGT 12-d-
MGT20SA-5P	**963.723**	1	14	24	MGT 20-d-
MGT36SA-5P	**801.474**	1	20	32	MGT 36-d-
MGT6SAH *	**807.197**	2	9	11	MGT 6-d-
MGT12SAH *	**807.198**	2	10	15	MGT 12-d-
MGT20SAH *	**807.199**	2	14	24	MGT 20-d-

1. Set content 5 pieces.
2. Soft type is included in our standard MEGA Synchro tapping holders.
3. * Hard Type, single piece
4. Hard Type is recommendet for eccentric thread relief tap.

O-Ring Set

For MGT6, MGT12, MGT20
Set includes 1 small, 2 large size.



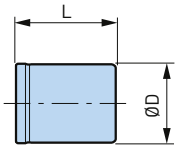


Model	Order No.	Nut. Dia	Tap Holder
MGT6OR	**801.501**	Ø 16	MGT 6-d-
MGT12OR	**801.420**	Ø 20	MGT 12-d-
MGT20OR	**801.451**	Ø 30	MGT 20-d-
MGT36OR	**801.470**	-	MGT 36-d-

MGT Nuts

For MGT6, MGT12, MGT20
Exclusive nut for MEGA synchro tapping holder.



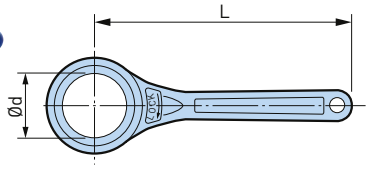


Model	Order No.	ØD	L	Tap Holder
MGN6T	**963.700**	16	19	MGT 6-d-
MGN12T	**963.702**	20	21	MGT 12-d-
MGN20T	**963.703**	30	24	MGT 20-d-

MEGA Wrench

For MGT3, MGT6, MGT12, MGT20



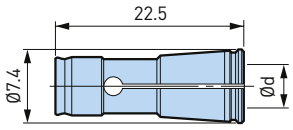


Model	Order No.	Ød	L	Tap Holder
MGR12	**969.450**	12	90	MGT 3
MGR16	**969.446**	16	90	MGT 6-d-
MGR20L	**969.447**	20	160	MGT12-06,-07,-08,-09
MGR30L	**969.448**	30	220	MGT12-10 / MGT20-d

Micro Collet

For MGT3





Model	Order No.	Tapping Range			Tap Shank
		DIN 371	ISO 529	JIS	Ød
NBC4S-2.5AA	**961.468**	M1 - M1.8	M2	-	2.5
-2.8AA	**968.353**	M2 - M2.6	M2.2, M2.5	-	2.8
-3.0AA	**961.470**	-	-	M1 - M2.6	3.0
-3.1AA	**968.355**	-	M3	-	3.15
-3.5AA	**961.472**	M3	-	-	3.5
-4.0AA	**961.474**	-	-	M3	4.0

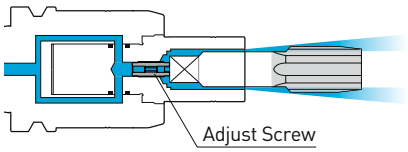
1. Other sizes available. Please refer to micro collet.

A.8

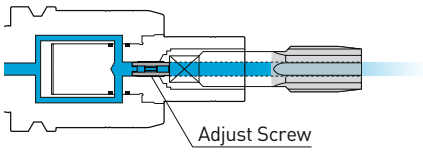
Adjusting Screw for MGT36

Adjustment of tap projection length (Adjustable amount: 3 mm). Coolant supply can be switched by reversing the adjust screw.

Tap without hole



Tap with hole





Model	Order No.	Body
MGT36AJ	**801.464**	MGT36

Side Lock Bolt Set for MGT36

Spare locking screw to clamp a tap.

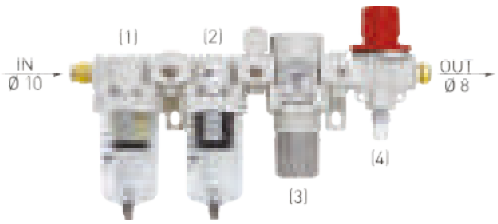


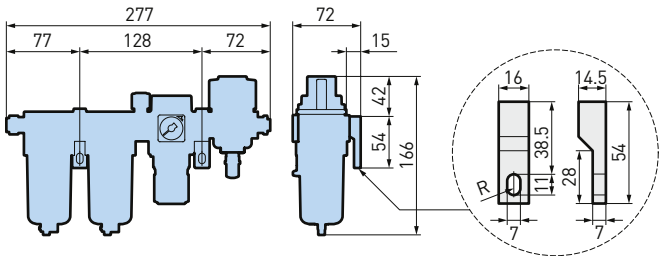
		Tap Holder Model		
Set Model	Order No.	DIN	JIS	Bolt size
MGT36SL6	**801.476**	-	MGT36 -M20 -65	M6 x 8L (x4) + M6 x 10L (x2)
		-	-M22 -65	
		-	-P1/2 -65	
MGT36SL8	**801.477**	MGT36 -180145-65	-M24 -65	M8 x 10L (x4) + M8 x 12L (x2)
		-200160-65	-M27 -65	
		-220180-65	-M30 -65	
			-P3/4 -65	
MGT36SL10	**801.475**	MGT36 -250200-65	MGT36 -M33 -65	M10 x 12L (x4) + M10 x 14L (x2)
		-280220-65	-M36 -65	
			-P1 -65	

Air Filter Regulator for RBX

Model XF1

1. Mist separator (filtration: 0,3 µm).
2. Micro mist separator (filtration: 0,01 µm).
3. Precision regulator.
4. Three ports valves for extracting pressurization (non-grease type).

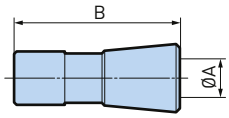




Model	Order No.
XF1	962.661

A.8 Collet for Angle Head Small Bore Type





Model	Order No.	ØA	B
CA4-3	**804.666**	3	16.5
CA4-3.5	**804.667**	3.5	16.5
CA4-4	**804.668**	4	16.5
CA6-3	**804.669**	3	22
CA6-4	**804.670**	4	22
CA6-5	**804.671**	5	22
CA6-6	**804.672**	6	22

Mold Chuck Clamping Screw

For SSL

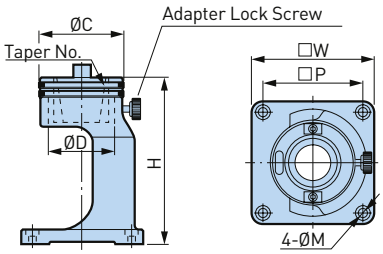


Model	Order No.	Clamping Screw	Contents of Set	Body
H06FSA	**978.912**	M6 P0.75	4.5mm x 1P, 5mm x 1P	SSL6
H06FSB	**802.330**	M6 P0.75	4.5mm x 1P, 6mm x 1P	SSL8, 10
H08FSA	**979.976**	M8 P0.75	6mm x 2P, 8mm x 1P	SSL12
H08FSB	**804.783**	M8 P0.75	6mm x 1P, 8mm x 1P, 10mm x 1P	SSL16, 20
H0304FS-2P	**978.914**	M3 P0.5	4mm x 2P	SSL3
H0404FS-2P	**801.045**	M4 P0.5	4mm x 2P	SSL4

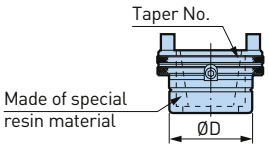
Tooling Mate

For BBT (BT) and BDV (DV)





Replaceable Adapter



Model	Order No.	Taper	ØD	ØC	ØM	H	W	P	Adapter
TMS40-20	**805.489**	ISO20	60	76	7	150	110	90	TMA40-20
TMS40-30	**961.270**	BT30 / DV30	60	76	7	150	110	90	TMA40-30
TMS40-40	**961.271**	BT40 / DV40	60	76	7	150	110	90	TMA40-40
TMS50-40	**961.272**	BT40 / DV40	88	105	9	190	160	130	TMA50-40
TMS50-50	**961.273**	BT50 / DV50	88	105	9	190	160	130	TMA50-50

1. 1 pce. of adapter is included.
2. Adapter can be ordered individually.

A.8

Tooling Mate

For HSK and BIG CAPTO
Innovative "Two-way clutch needle roller clamping system" assures secure clamping.



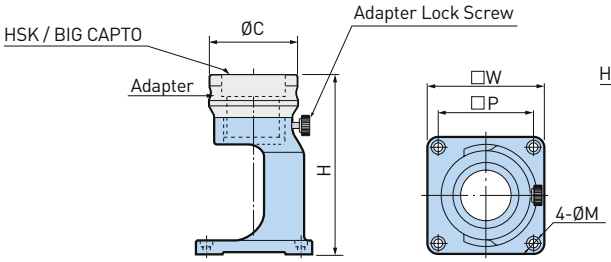


Fig. 1

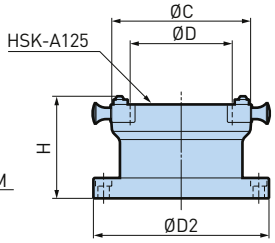
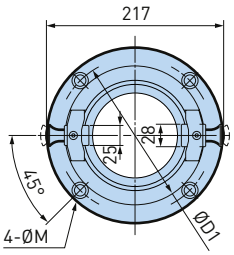


Fig. 2



Model	Order No.	Fig.	HSK No.	BIG CAPTO	ØD	ØD1	ØD2	ØC	ØM	H	W	P	Adapter
TMS40-32R	**961.339**	1	32	C3	-	-	-	76	7	165	110	90	TMA40-32R
TMS40-40R	**961.342**	1	40	C4	-	-	-	76	7	165	110	90	TMA40-40R
TMS40-50R	**961.346**	1	50	C5	-	-	-	76	7	165	110	90	TMA40-50R
TMS40-63R	**961.338**	1	63	C6	-	-	-	87	7	172	110	90	TMA40-63R
TMS50-80R	**802.308**	1	80	C8	-	-	-	114	9	215	160	130	TMA50-80R
TMS50-100R	**802.307**	1	100	-	-	-	-	124	9	219	160	130	TMA50-100R
TMS-HSK-A125	**806.795**	2	125	-	125	190	215	170	13	125	-	-	-

1. 1 pce. of adapter is included.
2. Adapter can be ordered individually.

Accessories & Spare Parts

Tooling Mate / Torque Fit Adapter

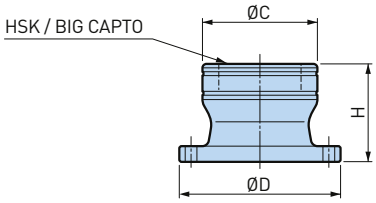


▶ 369

Kombi Grip

For HSK and BIG CAPTO







Model	Order No.	HSK No.	BIG CAPTO	ØD	ØP	ØC	ØM	H
KG25R	**961.291**	25	-	79	62	48	7	65
KG32R	**961.292**	32	C3	85	69	55	7	65
KG40R	**961.293**	40	C4	93	77	63	7	70
KG50R	**961.294**	50	C5	105	89	75	7	70
KG63R	**961.295**	63	C6	123.5	105,5	88	9	75
KG80R	**961.296**	80	C8	142	124	107	9	90
KG100R	**961.297**	100	-	162	124	127	9	100

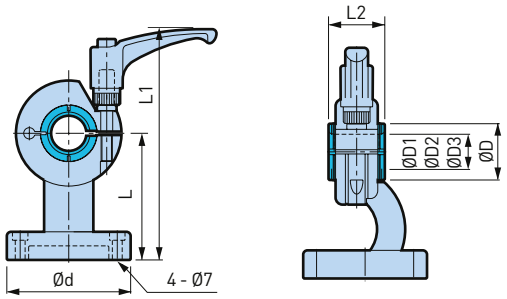
A.8

1. Mounting screws are not included.

ST Lock

Fixes cylindrical shank tools, ideal for tightening nuts.





Model	Order No.	Ød	ØD	ØD1	ØD2	ØD3	L	L1	L2
STL40	**978.037**	88	40	20	25	32	90	164	40

1. 20 / 25 / 32mm sleeves are included to clamp cylindrical shank diameters, HSK-E20, HSK-E25 and HSK-E32.

Torque Fit

Tooling fixture with integrated tightening torque measurement.



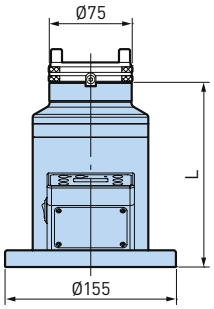


Fig. 1

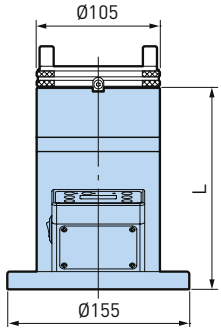
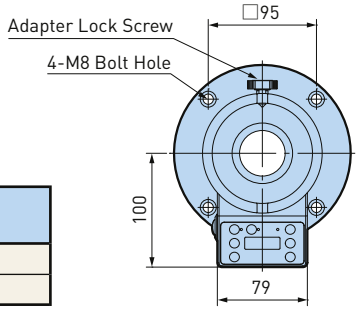


Fig. 2

- Torque values of all BIG collet chucks are presetted.
- Notification by buzzer near the correct torque.
- USER-Mode allows setting of desired torque value.

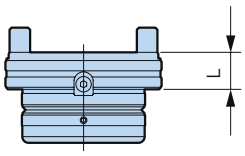


Model	Order No.	Fig.	L	Adapter	Nm range	Input Voltage
TF-40	**806.737**	1	167	TMA40	4 - 80 Nm	100 - 240V
TF-50	**806.738**	2	172	TMA50	4 - 80 Nm	100 - 240V

1. Adapter is to be ordered seperately.

Tooling Mate / Torque Fit Adapter

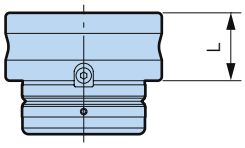
For BT/DV



Model	Order No.	Taper	L
TMA40-20	**805.894**	ISO20	18
TMA40-30	**802.944**	BT30 / DV30	18
TMA40-40	**802.945**	BT40 / DV40	18
TMA50-40	**802.942**	BT40 / DV40	18
TMA50-50	**802.943**	BT50 / DV50	18

Tooling Mate / Torque Fit Adapter

For HSK/BIG CAPTO

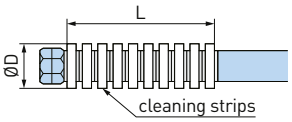


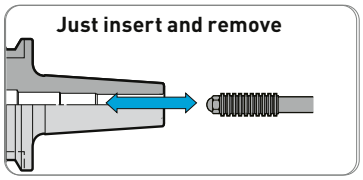
Model	Order No.	HSK No.	BIG CAPTO	L
TMA40-32R	**802.948**	32	C3	33
TMA40-40R	**802.949**	40	C4	33
TMA40-50R	**802.950**	50	C5	33
TMA40-63R	**972.331**	63	C6	40
TMA50-80R	**802.946**	80	C8	43
TMA50-100R	**802.947**	100	-	47

Wiper Cleaners

Perfect for Hydraulic Chuck and Shrink Fit Holder
Easy cleaning by simply inserting and removing.







Model	Order No.	ØD	L
AWC3	978.898	3	7
AWC4	978.899	4	7
AWC5	978.900	5	20
AWC6	978.901	6	20
AWC7	802.781	7	20
AWC8	978.902	8	20
AWC9	802.782	9	26
AWC10	978.903	10	26
AWC11	802.783	11	31
AWC12	978.904	12	31

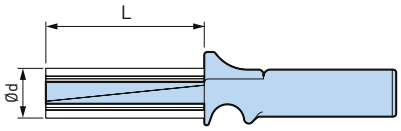
1. ØD is the inner bore of correspondent tool holders.

TK Cleaners

Perfect for Hydraulic Chuck and Milling Chuck Holder
Absolute cleaning of clamping bore by unique "slide" feature.

A.8





Model	Order No.	Ød	L	Leather Strips Qty.
TKC14	802.805	14	60	2
TKC16	802.807	16	70	2
TKC18	802.808	18	70	2
TKC20	802.809	20	70	2
TKC25	802.810	25	80	3
TKC32	802.811	32	100	4
TKC40	802.812	40	105	4
TKC42	978.905	42	105	4

Taper Cleaners



For MEGA Micro Chuck

Model	Order No.	Suitable for model
SC-NBC3S	961.278	MEGA3S
SC-NBC4S	961.279	MEGA4S
SC-NBC6S	961.280	MEGA6S
SC-NBC8S	805.827	MEGA8S

For MEGA E Chuck

Model	Order No.	Suitable for model
SC-MEC6	961.287	MEGA6E
SC-MEC8	961.288	MEGA8E
SC-MEC10	961.289	MEGA10E
SC-MEC13	961.290	MEGA13E

For MEGA New Baby Chuck and New Baby Chuck

Model	Order No.	Suitable for model
SC-NBC6	961.281	MEGA6N / NBS6
SC-NBC8	961.282	MEGA8N / NBS8
SC-NBC10	961.283	MEGA10N / NBS10
SC-NBC13	961.284	MEGA13N / NBS13
SC-NBC16	961.285	MEGA16N / NBS16
SC-NBC20	961.286	MEGA20N / NBS20

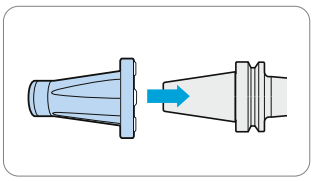
For ER Collet Chuck

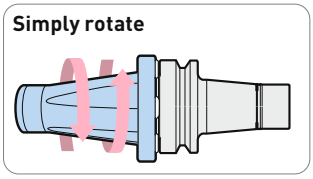
Model	Order No.	Suitable for model
SC-MER11	967.810	MEGA ER 11
SC-MER16	967.811	MEGA ER 16
SC-MER20	967.812	MEGA ER 20
SC-MER25	967.813	MEGA ER 25
SC-MER32	967.814	MEGA ER 32

α Tooling Cleaners

For tool shank taper and flange
Particles and oil on both taper and flange of 7/24 taper holder are easily removed.







Model	Order No.	Taper
SCE-30	961.276	ISO 30
SCE-40	961.277	ISO 40

Spindle Cleaners

For machine spindle
Easy cleaning of oil or particles from the machine spindle.



A.8







For ISO taper spindle

Model	Order No.	Taper
SC20	804.945	ISO 20
SC30	802.791	ISO 30
SC40	802.793	ISO 40
SC45	802.794	ISO 45
SC50	802.796	ISO 50

For Morse taper spindle

Model	Order No.	Taper
SC1	802.788	MT1
SC2	802.789	MT2
SC3	802.790	MT3
SC4	802.792	MT4
SC5	802.795	MT5
SC6	802.797	MT6

For HSK-A spindle

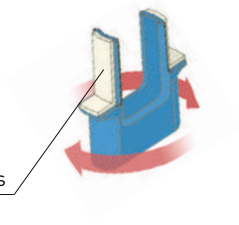
Model	Order No.	Taper
SC-HSK32	802.799	HSK-A32
SC-HSK40	979.997	HSK-A40
SC-HSK50	802.800	HSK-A50
SC-HSK63	802.802	HSK-A63
SC-HSK80	802.803	HSK-A80
SC-HSK100	802.798	HSK-A100

For HSK-E spindle

Model	Order No.	Taper
SC-HSK25E	979.995	HSK-E25
SC-HSK32E	979.996	HSK-E32
SC-HSK40E	979.998	HSK-E40
SC-HSK50E	802.801	HSK-E50

Spindle Cleaners





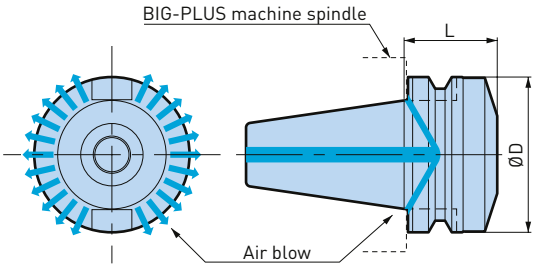
For BIG CAPTO

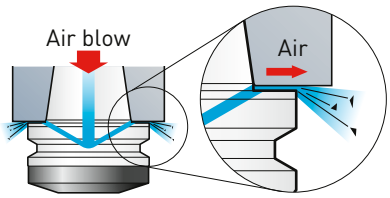
Model	Order No.	BIG CAPTO
SC-C3	973.194	C3
SC-C4	973.195	C4
SC-C5	973.196	C5
SC-C6	973.197	C6
SC-C8	973.198	C8

Flange Face Cleaner (BBT)

Cleans the spindle flange face.





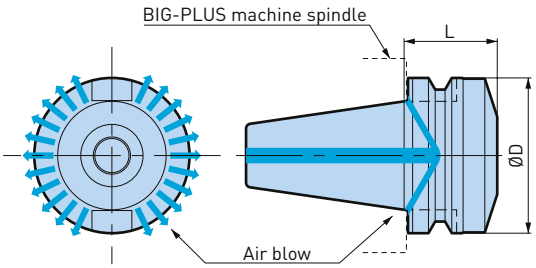


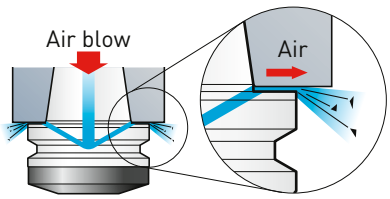
A.8

Model	Order No.	ØD	L
SBT30-ASC-30T	**802.777**	46	30
SBT40-ASC-40T	**802.778**	63	40
SBT50-ASC-60T	**978.150**	100	60

Flange Face Cleaner (BDV)







Model	Order No.	ØD	L
SDV40-ASC-40T	**805.647**	45	40
SDV50-ASC-60T	**801.670**	70	60

T-Slot Clean

Improve efficiency of table cleaning. No T-slots packed with swarf anymore!

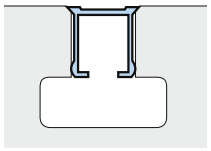




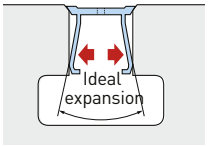
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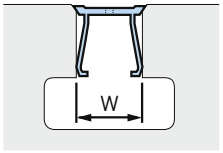
After

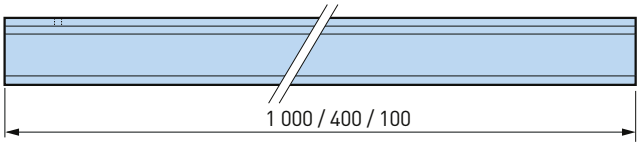


Other manufacturer



BIG KAISER





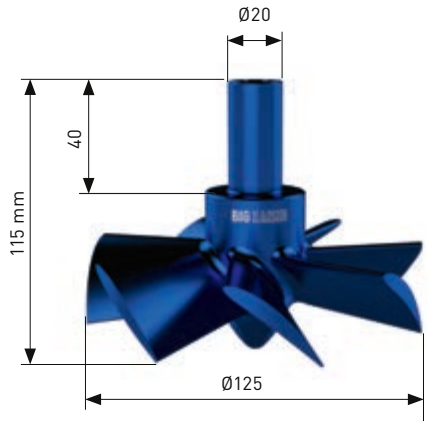
Due to the uniquely angled shape of the table T-shot contact part, slipout is prevented and chips are completely shut out.

A.8

Model	Order No.	W	Contents of Set
TS14-S	**961.252**	14	400 mm x 4 pieces, 100 mm x 4 pieces, Removal pin x 1 piece
TS18-S	**961.253**	18	400 mm x 4 pieces, 100 mm x 4 pieces, Removal pin x 1 piece
TS22-S	**961.254**	22	400 mm x 4 pieces, 100 mm x 4 pieces, Removal pin x 1 piece
TS14-400L-100P	**961.255**	14	400 mm x 100 pieces, Removal pin x 10 pieces
TS18-400L-100P	**961.256**	18	400 mm x 100 pieces, Removal pin x 10 pieces
TS22-400L-100P	**961.257**	22	400 mm x 100 pieces, Removal pin x 10 pieces
TS18-1000L-10P	**802.785**	18	1000 mm x 10 pieces, Removal pin x 1 piece
TS22-1000L-10P	**802.787**	22	1000 mm x 10 pieces, Removal pin x 1 piece

Chip Fan

Remove chips and coolant from tools without interrupting production.



Model	Order No.	Number of Wings
ST20-CF125	**335.625**	7

Pullstud Bolts

Before ordering
Ensure to check the dimensions of the required pullstud bolt by referring to the specification sheet of the machine tool. In the case of machines with coolant-through-spindle capability especially, provide a copy of the pullstud bolt drawing.



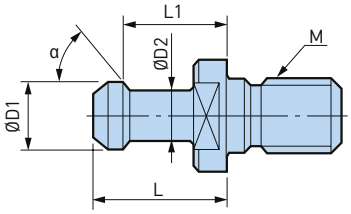


Fig. 1

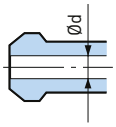


Fig. 2

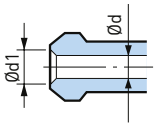


Fig. 3

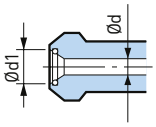


Fig. 4

Model	Order No.	Taper	Fig.	Ød	Ød1	ØD1	ØD2	L	L1	α	standard	Techn. data / special features
30P-1MGH	**978.951**	ISO 30	2	4	-	11	8	23	18	45	Original	FANUC
30PMG	**978.956**	ISO 30	1	-	-	12	8	23.4	18.4	75	JIS	JIS BT30
30PMGH	**978.972**	ISO 30	2	4	-	12	8	23.4	18.4	75	JIS	JIS 30 with bore
30PMGH2	**800.450**	ISO 30	4	2.5	5.5	12	8	23.4	18.4	75	JIS	YASDA
P30T-1MG	**978.978**	ISO 30	1	-	-	11	7	23	18	45	MAS-I	MAS-1 BT30
P30T-1MGH	**978.953**	ISO 30	2	2.5	-	11	7	23	18	45	MAS-I	MAS-1 BT30 with bore
P30T-2MG	**978.979**	ISO 30	1	-	-	11	7	23	18	60	MAS-II	MAS-2 BT30
P30T-2MGH	**801.785**	ISO 30	2	2.5	-	11	7	23	18	60	MAS-II	MAS-2 BT30 with bore
P30T-2MGH3	**801.787**	ISO 30	2	2.5	-	11	7.5	23	18	60	Original	BROTHER
PMO30MG	**802.001**	ISO 30	4	2.5	6.5	11	7	23	18	45	Original	DMG MORI

Model	Order No.	Taper	Fig.	Ød	Ød1	ØD1	ØD2	L	L1	α	standard	Techn. data / special features
40PMG	**800.463**	ISO 40	1	-	-	19	14	29	23	75	JIS	JIS BT40
40PMGH	**978.954**	ISO 40	2	7	-	19	14	29	23	75	JIS	JIS BT40 with hole
40PMGH2	**800.464**	ISO 40	2	7	-	19	14	29	23	75	JIS	Makino (Face side G) *
40PMGH4A	**978.955**	ISO 40	2	7	-	19	14	29	23	75	JIS	YASDA Ø3 Side bore
40PMGH7	**978.958**	ISO 40	3	4	5	19	14	29	23	75	JIS	OKUMA (Face side G) *
40PMGH11	**978.977**	ISO 40	4	7	10	19	14	29	23	75	JIS	YASDA
40PMGH12	**805.885**	ISO 40	2	5	-	19	14	29	23	75	JIS	MITSUI
MP40MG	**801.507**	ISO 40	1	-	-	15	10	25	18	90	Original	MITSUI
P40T-1MG	**801.807**	ISO 40	1	-	-	15	10	35	28	45	MAS-I	MAS-1 BT40
P40T-1MGH1	**801.808**	ISO 40	3	3.5	5.5	15	10	35	28	45	MAS-I	MAS-2 BT40
P40T-1MGH4	**801.810**	ISO 40	4	3	7	15	10	35	28	45	MAS-I	OKUMA
P40T-1MGH7	**801.812**	ISO 40	2	4	-	15	10	35	28	45	MAS-I	MAKINO (Stirnseite G) *
P40T-1MGH8A	**801.813**	ISO 40	4	3	7	15	10	35	28	45	MAS-I	JTEKT
P40T-1MGHA	**801.814**	ISO 40	2	3	-	15	10	35	28	45	MAS-I	MAS-1 BT40 with bore
P40T-2MG	**801.831**	ISO 40	1	-	-	15	10	35	28	60	MAS-II	MAS-2 BT40
P40T-2MGH1	**801.832**	ISO 40	4	3	7	15	10	35	28	60	MAS-II	OKUMA
P40T-2MGH8	**801.833**	ISO 40	3	3.5	5.5	15	10	35	28	60	MAS-II	MAS-2 BT40 with bore
P40T-2MGHA	**801.834**	ISO 40	2	3	-	15	10	35	28	60	MAS-II	MAS-2 BT40 with bore
PMO40MG	**978.971**	ISO 40	4	7	10	19	14	29	23	75	Original	DMG MORI with bore
POM40MG	**802.023**	ISO 40	1	-	-	15	10	35	28	90	Original	DMG MORI without bore
PVD40MG	**978.975**	ISO 40	2	7	-	19	14	26	20	75	DIN	DIN 69872 von A
PYN40MG	**802.112**	ISO 40	2	7	-	18.8	12.45	19.11	14.03	45	Original	MAZAK

MEGA Pullstud Bolt

MG in the model numbers stand for MEGA Pullstud Bolt. Tensile strength is improved by utilizing tool steel. Especially recommended for the BIG-PLUS dual contact applications. (Material: X40CrMOV51)

Please scan QR Code for details

For BBT30, BT30

For BBT40, BT40

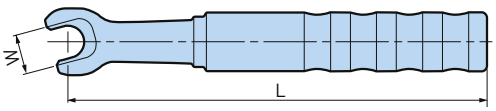
For BBT50, BT50

Model	Order No.	Taper	Fig.	Ød	Ød1	ØD1	ØD2	L	L1	α	standard	Techn. data / special features
50PH	**978.965**	ISO 50	2	10	-	28	21	34	25	75	JIS	JIS 50 with bore
50PH2	**800.468**	ISO 50	2	10	-	28	21	34	25	75	JIS	Makino (Face side G) *
50PMGH	**800.472**	ISO 50	2	10	-	28	21	34	25	75	JIS	JIS 50 with bore
MP50	**801.509**	ISO 50	1	-	-	24	18	31	23	90	Original	MITSUI
MP50H1	**801.517**	ISO 50	2	8	-	24	18	31	23	90	Original	MITSUI with bore
P50T-1	**961.331**	ISO 50	1	-	-	23	17	45	35	45	MAS-I	MAS-1 BT50
P50T-1H	**801.860**	ISO 50	2	8	-	23	17	45	35	45	MAS-I	MAS-1 BT50 with bore
P50T-1H1	**801.861**	ISO 50	2	6	-	23	17	45	35	45	MAS-I	MAKINO (Stirnseite G) *
P50T-1H4	**801.873**	ISO 50	4	6	10.4	23	17	45	35	45	MAS-I	JTEKT
P50T-1H5	**961.332**	ISO 50	4	5.5	11.2	23	17	45	35	45	MAS-I	YASDA
P50T-1H8	**801.876**	ISO 50	4	8	11	23	17	45	35	45	MAS-I	DMG MORI (Face G) *
P50T-1H19	**801.868**	ISO 50	2	4.5	-	23	17	45	35	45	MAS-I	TOSHIBA
P50T-1MG	**801.883**	ISO 50	1	-	-	23	17	45	35	45	MAS-I	MAS-1 BT50
P50T-1MGH	**801.885**	ISO 50	2	6	-	23	17	45	35	45	MAS-I	MAS-1 BT50 with bore
P50T-1MGH25	**801.889**	ISO 50	2	6	7	23	17	45	35	45	MAS-I	OKUMA (Stirnseite G) *
P50T-2	**801.898**	ISO 50	1	-	-	23	17	45	35	60	MAS-II	MAS-2 BT50
P50T-2H	**801.925**	ISO 50	2	8	-	23	17	45	35	60	MAS-II	MAS-2 BT50 with bore
P50T-2H4	**801.938**	ISO 50	4	8	11	23	17	45	35	60	MAS-II	DMG MORI (Face G) *
P50T-2H11	**801.927**	ISO 50	4	6	9.5	23	17	45	35	60	MAS-II	OKUMA
P50T-2H14	**801.929**	ISO 50	3	6	7	23	17	45	35	60	MAS-II	OKUMA (Stirnseite G) *
P50T-2H15	**801.930**	ISO 50	4	6	10.4	23	17	45	35	60	MAS-II	JTEKT
P50T-2H16	**801.931**	ISO 50	4	5.5	11.2	23	17	45	35	60	MAS-II	YASDA
P50T-2MG	**801.942**	ISO 50	1	-	-	23	17	45	35	60	MAS-II	MAS-2 BT50
P50T-2MGH14	**801.944**	ISO 50	3	6	7	23	17	45	35	60	MAS-II	OKUMA (Stirnseite G) *
P50T-2MGH25	**801.948**	ISO 50	2	6	-	23	17	45	35	60	MAS-II	MAS-2 BT50
POM50	**978.967**	ISO 50	1	-	-	23	17	45	35	90	Original	DMG MORI
POM50H	**961.336**	ISO 50	4	8	-	23	17	45	35	90	Original	DMG MORI with bore
POM50H1	**961.333**	ISO 50	2	8	12.4	23	17	45	35	90	Original	DMG MORI with bore
POM50H8	**802.046**	ISO 50	2	6	-	23	17	45	35	90	Original	OKK (Face side O) **
PVD50	**978.966**	ISO 50	2	11.5	-	28	21	34	25	75	DIN	DIN 69872 von A
PYN50-5	**802.120**	ISO 50	2	10	-	28.83	20.83	25.2	17.58	45	Original	MAZAK (Face side G) *

1. Machine tool builders have used many various shapes and sizes of pull stud bolts.
2. The use of the incorrect bolts may result in injury or property damage for your machining center.
3. Other sizes are also available. Contact BIG KAISER agent for pullstud bolts.
4. * End face was ground for sealing.
5. **End face has O-ring for sealing.

Pullstud Wrenches





Model	Order No.	L	W	Taper Size	Suitable for model
PLW30	**805.544**	140	13	BBT30 / BT30	30P-, P30T-1, P30T-2, POM30
PLW-40P	**805.886**	200	19	BBT40 / BT40	40P-
PLW-P40T	**805.887**	200	19	BBT40 / BT40	P40T-1, P40T-2, POM40-
PLW-PMO40	**805.888**	200	19	BBT40 / BT40	PMO40-
PLW-PYN40	**805.889**	200	19	BBT40 / BT40	PYN40-
PLW-P50T	**807.473**	350	30	BBT50 / BT50	P50T-1, P50T-2, POM50-
PLW-PYN50	**807.474**	350	30	BBT50 / BT50	PYN50-

Set Up Information



Preparing the Stop Block
The Angle Head utilizes a Locating Pin that engages with the Stop Block, which is mounted to the machine spindle to prevent radial movement of the Angle Head during operation. Therefore, it is necessary to use a Stop Block with the proper dimensions to match the Locating Pin of the Angle Head.

1. Standard Setup of the Locating Pin

"S" Dimension
The distance from the centerline of the Angle Head spindle to the centerline of the Locating Pin.

Fixed Length "A" and "H"
The axial distance from the gauge line to the top of the Locating Pin, when the Locating Pin is properly engaged in the Stop Block.

Fixed Length "A" for Angle Head (Fig.1)
This is not adjustable by the customer. If the standard dimensional values shown below are not suitable for your machine,please contact us.

Fixed Length "H" for Air Turbine spindle and High Spindle (Fig.2)
We will deliver a set at the standard 6 mm. Otherwise, This dimension is adjustable by the customer. Four (4) Locating Pin models are available, please contact us.

A.8

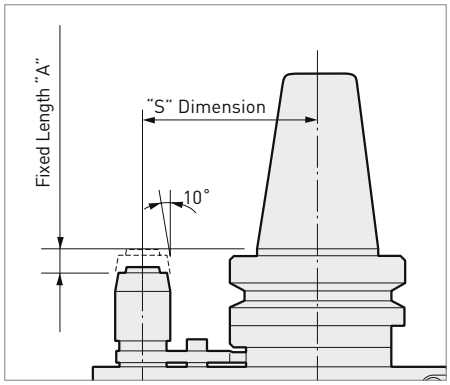


Fig. 1

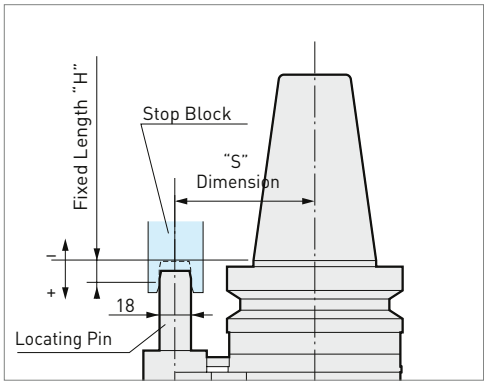


Fig. 2

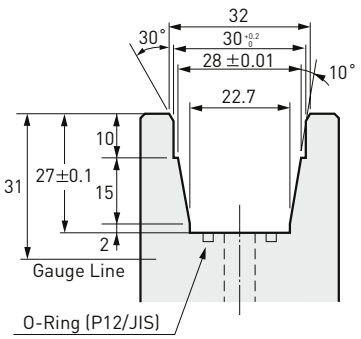
Standard Dimension	Angle Head Fig. 1		Air Turbine and High Spindle Fig. 2	
	"S"	"A"	"S"	"H"
BDV40 / BBT40 / HSK-A63	65	8	65	6
BDV50 / BBT50 / HSK-A100	80	8	80	6
	110	6		

2. Stop Block Dimensions

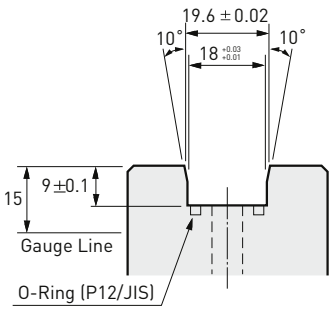
Please order a Stop Block from the machine tool builder. Refer to the following diagrams for the proper Stop Block groove dimensions.



For "S" = 110 Angle Head



Others



Semi-Finished Stop Blocks

A semi-finished Stop Block has the proper groove form for use with the Angle Head, as well as additional material to allow the user to machine the block to the correct height.
If a pre-made Stop Block is unobtainable from the machine tool builder, a semi-finished Stop Block can be used. Please consult with the machine tool builder for selection, machining, and mounting of a semi-finished Stop Block.



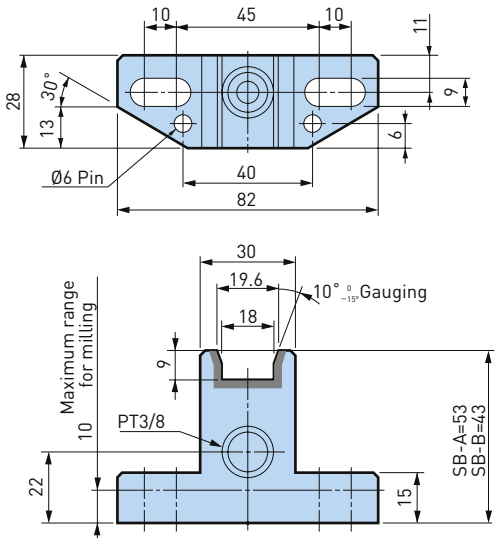


Fig. 1

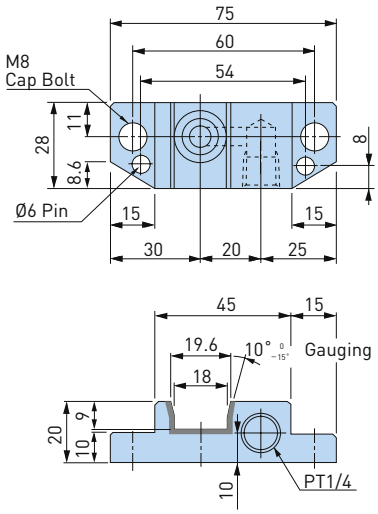


Fig. 2

Model	Order No.	Fig.
SB-A	962.571	1
SB-B	962.572	1
SB-F	962.574	2
SB-G/E	802.329	3

1. "S" is corresponding to previous page.
2. SB-F is not adjustable in height.

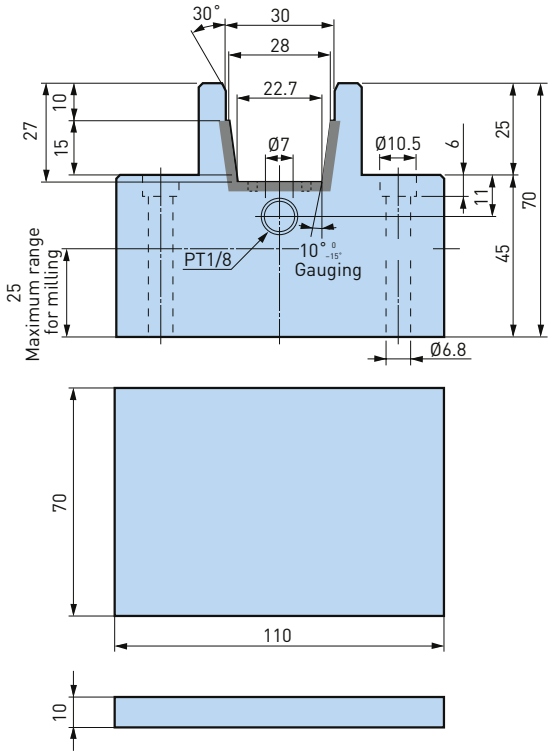


Fig. 3

Rough Boring Heads

Overview	380
Application Examples for SW	381
MW Rough Boring Heads	382
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SW Smart Damper Rough Boring Heads	385
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B.1



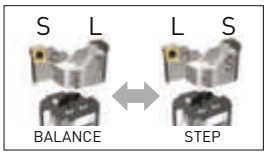
MW Rough Boring Head

Small and powerful rough boring head: The MW comes with cylindrical shank and permits extremely fast roughing of small holes.
Ø 16 - 21 mm



SW Rough Boring Head

Super-versatile rough boring head for highest cutting performance: Thanks to its clever design, the SW can be used for stepped and balances roughing by simply switching the insert holders. Various accessories are available for chamfering, back boring and face grooving.
Ø 20 - 203 mm, CKB1-CKB7 and CKN6-CKN7

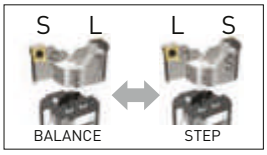


B.1



SW-AL Rough Boring Head

The fastest solution for deep roughing: SW-AL, built of high quality aluminum, fits perfectly on CKN components. Long tool combinations are therefore up to 50% lighter than similar tools built of steel which enhances the productivity drastically.
Ø 68 - 203 mm, CKN6-CKN7





SW Smart Damper Rough Boring Head

The solution for vibration-free rough boring. Its built-in patented Smart Damper technology is located close to the cutting edge and lifts the performance of rough boring on a new level.
Ø 41 - 100 mm, CKB4-CKB6

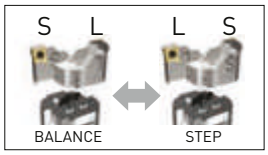


The Rough Boring Head TWN series will be removed from the BIG KAISER product range as of December 31, 2022.

The current articles will continue to be available until the end of the year.



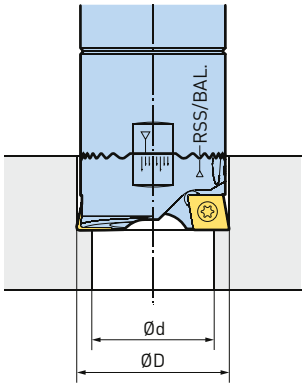
Application Examples for SW



Rough Boring Balance

Insert Holders: Type CC/SP/SC
Ø 20 - 203 mm
High feed rates



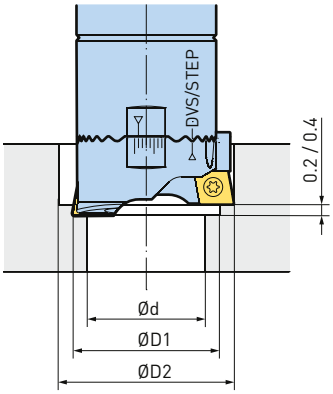


Application Examples for SW

Rough Boring Step

Insert Holders: Type CC
Ø 20 - 203 mm
Double stock removal, half the feed rate





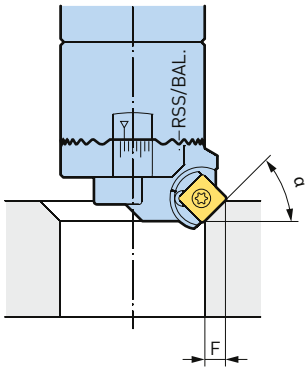
Application Examples for SW

B.1

Chamfering

Ø 30 - 210 mm
Adjustable chamfer angle 15° - 75°

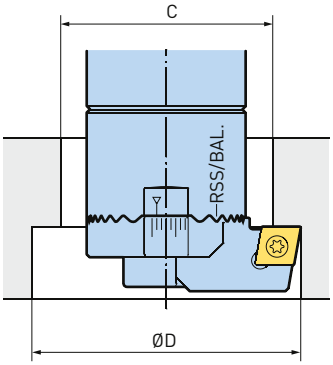




Back Boring

Ø 44 - 211 mm
Lead angle 90°



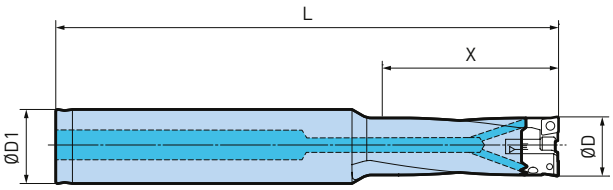


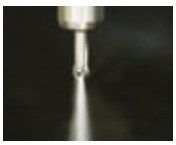
MW Rough Boring Heads, Ø 16 - 21

The MW rough boring heads permit extremely fast roughing of small holes (Ø 16-21 mm).

Coolant Through Hole







Rough Boring
Blind holes



Rough Boring
Through holes

Model	Order No.	ØD	ØD1	L	X
ST20-MW1619-45	**807.540**	16 - 19	20	136	45
ST20-MW1619-60	**472.051**	16 - 19	20	150	60
ST20-MW1821-50	**807.541**	18 - 21	20	141	50
ST20-MW1821-65	**472.061**	18 - 21	20	155	65

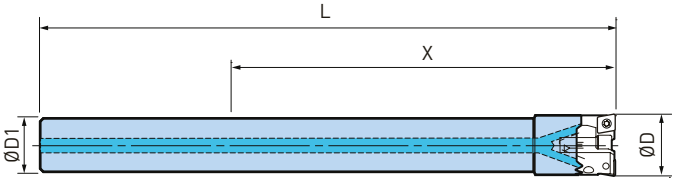
1. Insert holder is to be ordered separately.

MW Rough Boring Heads, Ø 16 - 21 Carbide

Coolant Through Hole

B.1



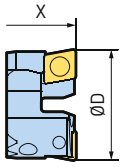


Model	Order No.	ØD	ØD1	L	X
ST14W-MW16-110	**807.552**	16 - 19	14	151	110
ST16W-MW18-115	**807.553**	18 - 21	16	172	115

1. Insert holder is to be ordered separately.
2. Exclusive use for through holes. Do not use with blind holes.

Insert Holders MW





Accessories & Spare Parts

Insert Holders MW	Inserts MW
	
▶ 382	▶ 475

Model	Order No.	ØD	X	Insert
MW1619E	**472.052**	68 - 90	64	MW 04
MW1821E	**472.062**	88 - 110	72	MW 04

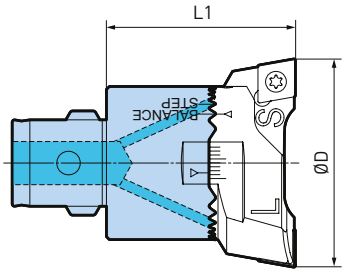
1. Consisting of two insert holders, clamping screws and wrench.
2. Inserts are to be ordered separately.

SW Rough Boring Heads, Ø 20 - 203

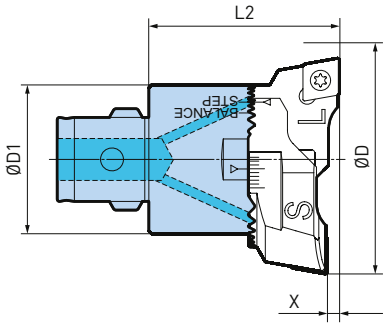
The short and compact design of the components combined with a positive and friction locked connection between the tool body and insert holders provide maximum rigidity and highest cutting performance.

Coolant Through Hole





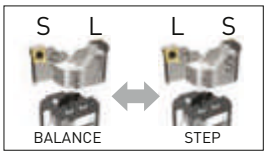
RSS: Balance Cut



DVS: Step Cut

Model	Order No.	CK	ØD	ØD1	L1	L2	X
SW20-31CKB1	**319.101**	CKB1	20 - 31	19	32.5	32.6	0.2
SW25-40CKB2	**319.201**	CKB2	25 - 40	24	35.5	35.6	0.2
SW32-51CKB3	**319.301**	CKB3	32 - 51	31	40	40.1	0.2
SW41-66CKB4	**319.401**	CKB4	41 - 66	39	47	47.2	0.4
SW53-86CKB5	**319.501**	CKB5	53 - 86	50	57	57.2	0.4
SW68-110CKB6	**319.601**	CKB6	68 - 110	63.5	71	71.2	0.4
SW68-110CKN6	**319.601N**	CKN6	68 - 110	63.5	71	71.2	0.4
SW98-153CKN6	**319.602N**	CKN6	98 - 153	90	71	71.2	0.4
SW98-153CKB6	**319.602**	CKB6	98 - 153	90	71	71.2	0.4
SW148-203CKB6	**319.603**	CKB6	148 - 203	140	71	71.2	0.4
SW148-203CKN6	**319.603N**	CKN6	148 - 203	140	71	71.2	0.4
SW148-203CKB7	**319.703**	CKB7	148 - 203	140	117	117.2	0.4
SW148-203CKN7	**319.703N**	CKN7	148 - 203	140	117	117.2	0.4
SW98-153CKB7-87	**319.701**	CKB7	98 - 153	90	87	87.2	0.4
SW98-153CKN7-87	**319.701N**	CKN7	98 - 153	90	87	87.2	0.4
SW98-153CKB7-117	**319.702**	CKB7	98 - 153	90	117	117.2	0.4
SW98-153CKN7-117	**319.702N**	CKN7	98 - 153	90	117	117.2	0.4

1. X = difference length of insert holders for DVS step rough boring
2. For information on CKN and CKB connections, kindly see next page



Accessories & Spare Parts

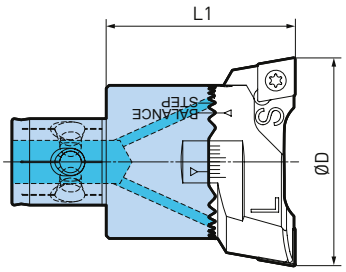
Insert Holders Type CC	Insert Holders Type SC/SP	Insert Holders Type WC	Insert Holders Chamfering for SW	Insert Holders Back Boring for SW
				
▶ 387	▶ 388	▶ 389	▶ 390	▶ 391

SW-AL Rough Boring Heads, Ø 68 - 203

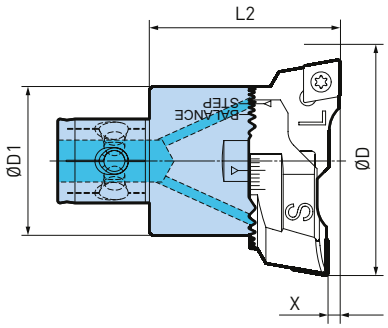
Tool body made of high strength aluminium with CKN connection.

Coolant Through Hole





RSS: Balance Cut

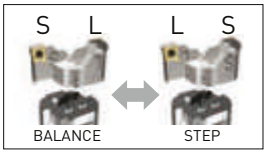


DVS: Step Cut

Model	Order No.	CK	ØD	ØD1	L1	L2	X
SW68-110CKN6AL	**319.604N**	CKN6	68 - 110	63.5	71	71.2	0.4
SW98-153CKN6AL	**319.605N**	CKN6	98 - 153	90	71	71.2	0.4
SW148-203CKN6AL	**319.607N**	CKN6	148 - 203	140	71	71.2	0.4
SW148-203CKN7-AL	**319.707N**	CKN7	148 - 203	140	117	117.2	0.4
SW98-153CKN7-87AL	**319.705N**	CKN7	98 - 153	90	87	87.2	0.4
SW98-153CKN7-117AL	**319.706N**	CKN7	98 - 153	90	117	117.2	0.4

1. X = difference length of insert holders for DVS step rough boring

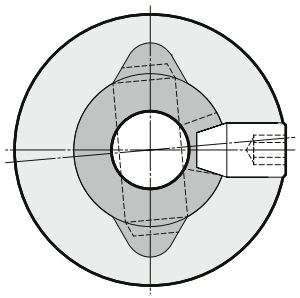
Exclusively made to fit on CKN components



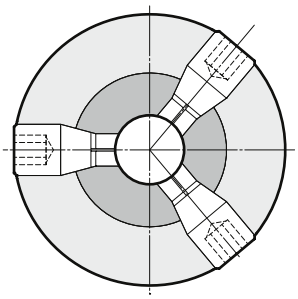


Difference CKB and CKN Connection

CKB: The most common CK connection with single clamping CK srew. Ideal for simple, efficient operations.



CKN: The most powerful CK connection with triple clamping CK screw. Ideal for long tool combinations and challenging operations. High interchange accuracy, less than 0.002 mm radial change error, is guaranteed.



Accessories & Spare Parts

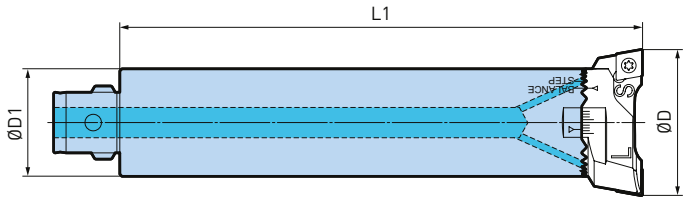
Insert Holders Type CC	Insert Holders Type SC/SP	Insert Holders Type WC	Insert Holders Chamfering for SW	Insert Holders Back Boring for SW
				
▶ 387	▶ 388	▶ 389	▶ 390	▶ 391

SW Smart Damper Rough Boring Heads, Ø 41 - 100

The boring head with dynamic damping unit reduces chatter.

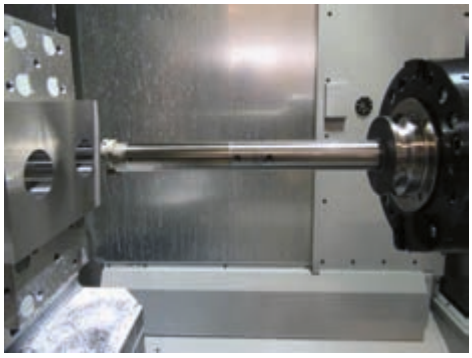
Coolant Through Hole





Model	Order No.	CK	ØD	ØD1	L1
CKB4-SW41DP-190	**806.921**	CKB4	41 - 66	39	190
CKB5-SW53DP-220	**806.922**	CKB5	53 - 86	50	220
CKB6-SW68DP-245	**806.923**	CKB6	68 - 110	64	245

Application Exemple



Horizontal Machine	
Smart Damper	SW41-66CKB4-200DP
Holder	BBT50-CKB4-178
Cutting Speed	200 m/min
D.O.C	Ø 4 mm
Feed	0.35 mm/rev
Coolant	Emulsion
Material	C55

B.1

Accessories & Spare Parts

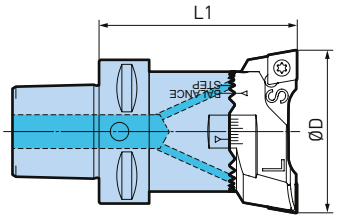
Insert Holders Type CC	Insert Holders Type SC/SP
	
▶ 387	▶ 388

SW BIG CAPTO Rough Boring Heads, Ø 25 - 203

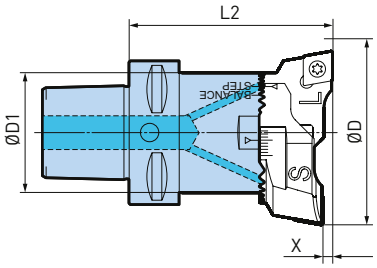
BIG CAPTO monobloc execution provide highest rigidity.

Coolant Through Hole





RSS: Balance Cut



DVS: Step Cut

Model	Order No.	BIG CAPTO	ØD	ØD1	L1	L2	X
SW25-40C3	**472.201**	C3	25 - 40	24	80	80.1	0.2
SW32-51C3	**472.301**	C3	32 - 51	31	55	55.1	0.2
SW41-66C4	**472.401**	C4	41 - 66	39	67	67.2	0.4
SW53-86C5	**472.501**	C5	53 - 86	50	77	77.2	0.4
SW68-110C6	**472.601**	C6	68 - 110	63.5	92	92.2	0.4
SW98-153C6 *	**472.602**	C6	98 - 153	90	92.4	92.6	0.4
SW98-153C8	**472.701**	C8	98 - 153	90	117	117.2	0.4
SW148-203C8	**472.703**	C8	148 - 203	140	117	117.2	0.4

1. X = difference length of insert holders for DVS step rough boring
2. * Only on request, not available from stock.

B.1

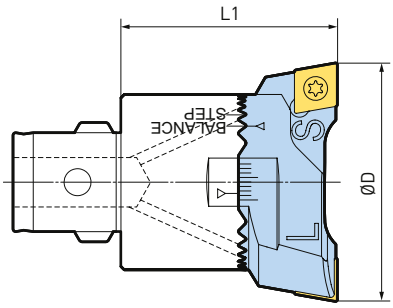
Accessories & Spare Parts

Insert Holders Type CC	Insert Holders Type SC/SP	Insert Holders Type WC	Insert Holders Chamfering for SW	Insert Holders Back Boring for SW
				
▶ 387	▶ 388	▶ 389	▶ 390	▶ 391

Insert Holders Type CC

Standard insert holders for CC- type inserts with 90° lead angle.
Suitable for balanced cut amd Stepped Cut for through and blind holes.





Model	Order No.	Head	ØD	L1	Insert Holder S	Insert Holder L	Insert
IH1SW20C	**639.413**	SW20	20 - 26	32.5	639.411	639.412	CC 06
IH2SW20C	**639.417**	SW20	25 - 31	32.5	639.415	639.416	CC 06
IH1SW25C	**639.423**	SW25	25 - 33	35.5	639.421	639.422	CC 06
IH2SW25C	**639.427**	SW25	32 - 40	35.5	639.425	639.426	CC 06
IH1SW32C	**639.433**	SW32	32 - 42	40	639.431	639.432	CC 09
IH2SW32C	**639.437**	SW32	41 - 51	40	639.435	639.436	CC 09
IH1SW41C	**639.443**	SW41	41 - 54	47	639.441	639.442	CC 09
IH2SW41C	**639.447**	SW41	53 - 66	47	639.445	639.446	CC 09
IH1SW53C	**639.453**	SW53	53 - 70	57	639.451	639.452	CC 12
IH2SW53C	**639.457**	SW53	69 - 86	57	639.455	639.456	CC 12
IH1SW68C	**639.463**	SW68	68 - 90	71	639.461	639.462	CC 12
IH1SW68C16	**639.563**	SW68	68 - 90	71	639.561	639.562	CC 16
IH2SW68C	**639.467**	SW68	88 - 110	71	639.465	639.466	CC 12
IH2SW68C16	**639.567**	SW68	88 - 110	71	639.565	639.566	CC 16
IH1SW98C	**639.473**	SW98	98 - 126	71 / 87 / 117 *	639.471	639.472	CC 12
IH1SW98C16	**639.573**	SW98	98 - 126	71 / 87 / 117 *	639.571	639.572	CC 16
IH2SW98C	**639.477**	SW98	125 - 153	71 / 87 / 117 *	639.475	639.476	CC 12
IH2SW98C16	**639.577**	SW98	125 - 153	71 / 87 / 117 *	639.575	639.576	CC 16
IH1SW148C	**639.483**	SW148	148 - 176	71 / 117 *	639.481	639.482	CC 12
IH1SW148C16	**639.583**	SW148	148 - 176	71 / 117 *	639.581	639.582	CC 16
IH2SW148C	**639.487**	SW148	175 - 203	71 / 117 *	639.485	639.486	CC 12
IH2SW148C16	**639.587**	SW148	175 - 203	71 / 117 *	639.585	639.586	CC 16

1. Consisting of two insert holders with different lengths, type S (short) and L (long).
2. The insert holders are also available by the piece as spare parts.
3. * L1 depends on the length of the boring head.

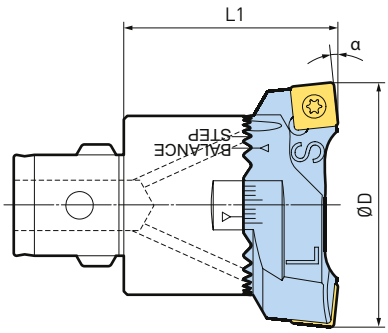
Accessories & Spare Parts

Insert Holders Short CC	Insert Holders Long CC	Inserts CC
		
▶ 501	▶ 501	▶ 475

Insert Holders Type SC/SP

Inserts inclined 6° Balance cut for trough hole. Only for rotationally-symmetrical application (Balance cut).





Model	Order No.	Head	ØD	L1	α	Insert Holder S	Insert Holder L	Insert
IH1SW20S	**639.113**	SW20	20 - 26	32.5	6°	639.111	639.112	SP 06
IH1SW25S	**639.123**	SW25	25 - 33	35.5	6°	639.121	639.122	SP 06
IH1SW32S	**639.133**	SW32	32 - 42	40	6°	639.131	639.132	SC 09
IH2SW32S	**639.137**	SW32	41 - 51	40	6°	639.135	639.136	SC 09
IH1SW41S	**639.143**	SW41	41 - 54	47	6°	639.141	639.142	SC 09
IH2W41S	**639.147**	SW41	53 - 66	47	6°	639.145	639.146	SC 09
IH1SW53S	**639.153**	SW53	53 - 70	57	6°	639.151	639.152	SC 12
IH2SW53S	**639.157**	SW53	69 - 86	57	6°	639.155	639.156	SC 12
IH1SW68S	**639.163**	SW68	68 - 90	71	6°	639.161	639.162	SC 12
IH2SW68S	**639.167**	SW68	88 - 110	71	6°	639.165	639.166	SC 12
IH1SW98S	**639.173**	SW98	98 - 126	71 / 87 / 117 *	6°	639.171	639.172	SC 12
IH2SW98S	**639.177**	SW98	125 - 153	71 / 87 / 117 *	6°	639.175	639.176	SC 12
IH1SW148S	**639.183**	SW148	148 - 176	71 / 117 *	6°	639.181	639.182	SC 12
IH2SW148S	**639.187**	SW148	175 - 203	71 / 117 *	6°	639.185	639.186	SC 12

1. Consisting of two insert holders with different lengths, type S (short) and L (long).
2. The insert holders are also available by the piece as spare parts.
3. * L1 depends on the length of the boring head.

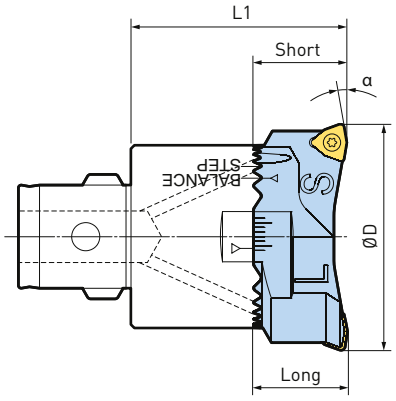
Accessories & Spare Parts

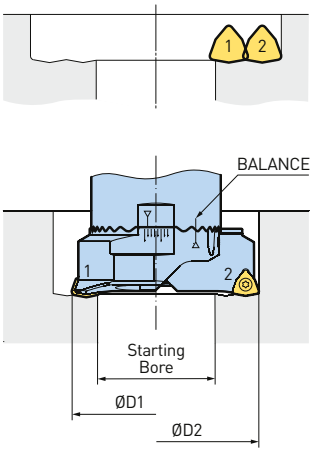
Insert Holders Short SC-SP	Insert Holders Long SC-SP	Inserts SC	Inserts SP
			
▶ 501	▶ 501	▶ 480	▶ 479

Insert Holders Type WC

Full profile roughing permits boring with balance cut for large stroke with allowances (30 mm and more in Ø) in a single operation with relatively low drive power.







Model	Order No.	Head	ØD	L1	α	Insert Holder S	Insert Holder L	Insert
IH1SW41W	**639.243**	SW41	49 - 62	47	10°	639.241	639.242	WC 04
IH1SW53W	**639.253**	SW53	59 - 76	57	10°	639.251	639.252	WC 05
IH2SW53W	**639.257**	SW53	69 - 86	57	10°	639.255	639.252	WC 05
IH1SW68W	**639.263**	SW68	73 - 95	71	10°	639.261	639.262	WC 06
IH2SW68W	**639.267**	SW68	90 - 112	71	10°	639.265	639.266	WC 06
IH1SW98W	**639.273**	SW98	106 - 134	71 / 87 / 117 *	10°	639.271	639.272	WC 06
IH2SW98W	**639.277**	SW98	131 - 159	71 / 87 / 117 *	10°	639.275	639.276	WC 06
IH1SW148W	**639.283**	SW148	156 - 184	71 / 117 *	10°	639.281	639.282	WC 06
IH2SW148W	**639.287**	SW148	191 - 209	71 / 117 *	10°	639.285	639.286	WC 06

1. Consisting of two insert holders with different lengths, type S (short) and L (long).
2. The insert holders are also available by the piece as spare parts.
3. * L1 depends on the length of the boring head.

B.1

For Boring Head	Insert Holder Order No.	Starting Bore Ø	ØD1	ØD2
SW41	**639.243**	35 - 37.9	49	51 - 62
		38 - 41	52	54 - 62
SW53	**639.253**	41 - 44.9	59	61 - 76
		45 - 50	63	65 - 76
	639.257	51 - 54.9	69	76 - 86
		55 - 60	73	81 - 86
SW68	**639.263**	50 - 55.9	73	75 - 93
		56 - 61.9	79	81 - 93
		62 - 67	85	87 - 93
	639.267	67 - 72.9	90	92 - 110
		73 - 78.9	96	98 - 110
		79 - 85	102	104 - 110

For Boring Head	Insert Holder Order No.	Starting Bore Ø	ØD1	ØD2
SW98	**639.273**	84 - 89.9	107	109 - 129
		90 - 95.9	113	115 - 133
		96 - 102.9	119	121 - 133
		103 - 109	126	128 - 133
	639.277	108 - 114.9	131	133 - 154
		115 - 121.9	138	140 - 159
		122 - 128.9	145	147 - 159
		129 - 135	152	154 - 159
SW148	**639.283**	134 - 139.9	157	159 - 179
		140 - 145.9	163	165 - 183
		146 - 152.9	169	171 - 183
		153 - 159	176	178 - 183
	639.287	158 - 164.9	181	183 - 204
		165 - 171.9	188	190 - 209
		172 - 178.9	195	197 - 209
		179 - 185	202	204 - 209

Accessories & Spare Parts

Insert Holders Short WC	Insert Holders Long WC	Inserts WC
		
▶ 501	▶ 501	▶ 470

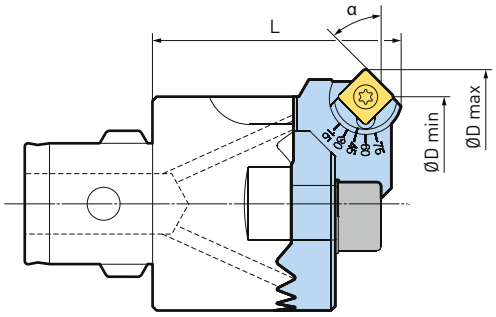
Adjustment Instructions

- Mount the insert holders on mark «RSS/BALANCE»
- Set cutting edge 2 to the final bore diameter (ØD2)
- Set cutting edge 1 corresponding to the starting bore diameter, according to the table (column ØD1).

Insert Holders Chamfering for SW

These insert holders with step-less adjustable chamfer angle from 15° to 75° are made for front chamfering and, with limitations also for back chamfering, on the rough heads for roughing SW 41 to SW 148.





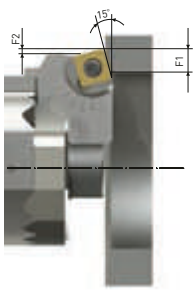
For Boring Head	Model	Order No.	Insert	Diameter Range ØD 15° min - max	30° min - max	45° min - max	60° min - max	75° min - max	L
SW41	IH1SW41CF	**639.104**	SC 09	33 - 60	36 - 62	39 - 63	43 - 63	45 - 62	51
SW53	IH1SW53CF	**639.105**		45 - 76	48 - 78	51 - 79	55 - 79	57 - 78	58
SW68	IH1SW68CF	**639.106**		61 - 97	64 - 99	67 - 100	71 - 100	73 - 99	68
SW98	IH1SW98CF	**639.107**	SC 12	77 - 126	81 - 128	86 - 129	90 - 128	94 - 127	73
	IH2SW98CF	**639.108**		104 - 153	108 - 155	113 - 156	117 - 155	121 - 154	
SW148	IH1SW148CF	**639.109**		131 - 180	135 - 182	140 - 183	144 - 182	148 - 181	73
	IH2SW148CF	**639.110**		158 - 207	162 - 209	167 - 210	171 - 209	175 - 208	
SW98	IH1SW98CF	**639.107**	SC 12	77 - 126	81 - 128	86 - 129	90 - 128	94 - 127	89 / 119
	IH2SW98CF	**639.108**		104 - 153	108 - 155	113 - 156	117 - 155	121 - 154	
SW148	IH1SW148CF	**639.109**		131 - 180	135 - 182	140 - 183	144 - 182	148 - 181	119
	IH2SW148CF	**639.110**		158 - 207	162 - 209	167 - 210	171 - 209	175 - 208	

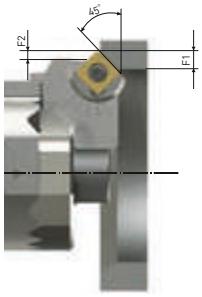
1. Consisting of two insert holders, clamping screws and wrench.
2. The insert holders are also available by the piece as spare parts.
3. Insert holders must be set for balance cut.
4. L in chart indicates max. tool length with 45° chamfer angle.

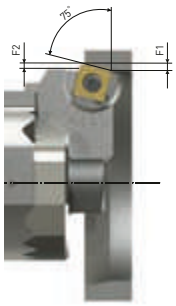
Max. radial chamfer length for front and back chamfering

Applicable for inserts with nose radius 0.4 mm

For Boring Head		Chamfer Angle 15° F1	15° F2	30° F1	30° F2	45° F1	45° F2	60° F1	60° F2	75° F1	75° F2
SW41	SC 09	7.7	0.7	6.9	1.4	5.7	1.8	4.0	1.7	2.1	1.2
SW53											
SW68											
SW98	SC 12	10.6	1.2	9.5	2.2	7.8	2.6	5.5	2.5	2.8	1.8
SW148											







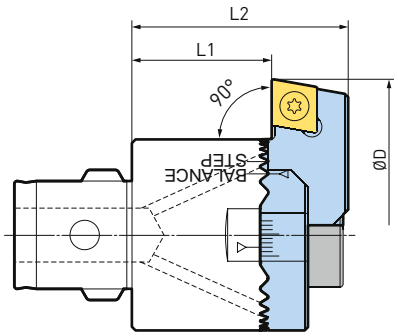
Accessories & Spare Parts

Insert holders for chamfering	Blind Piece SW
	
▶ 502	▶ 502

Insert Holders Back Boring for SW

These insert holders are made for back boring with the boring heads SW 32 to SW 148 and cover the diameter range from Ø 44 - 211 mm.
Insert holder with protection plate are available as set or as individual components.





Model	Order No.	Head	ØD	ØD1	L1	L2	B	Insert
IH1SW32CBB	**639.403**	SW32	44 - 54	31	24	38	ØD-17 / min. 31	CC 09
IH1SW41CBB	**639.404**	SW41	53 - 66	39	29	44	ØD-21 / min. 39	CC 09
IH1SW53CBB	**639.405**	SW53	65 - 82	50	34	55	ØD-28 / min. 50	CC 12
IH1SW68CBB	**639.406**	SW68	81 - 103	63.5	41	66	ØD-27 / min. 63.5	CC 12
IH1SW98CBB	**639.407**	SW98	102 - 130	90	38 / 47 / 77	69 / 78 / 108	90	CC 12
IH2SW98CBB	**639.408**	SW98	129 - 157	90	38 / 47 / 77	69 / 78 / 108	90	CC 12
IH1SW148CBB	**639.409**	SW148	156 - 184	140	38 / 77	69 / 108	140	CC 12
IH2SW148CBB	**639.410**	SW148	183 - 211	140	38 / 77	69 / 108	140	CC 12

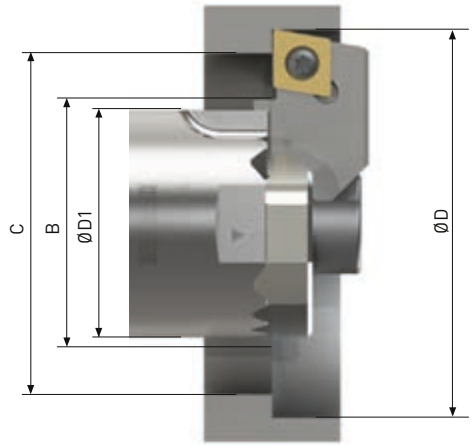
1. Consisting of two insert holders with back boring and protection piece.
2. The insert holders are also available by the piece as spare parts.
3. Insert holders must be set for balance cut.

B.1

Back boring

The back bore diameter «ØD» the diameter of the entry bore «C», the diameter of the interfering edge «B», respectively of the tool body «ØD1» are related to each other. In order to check the feasibility of the back boring operation and to select the best possible tool combination, these values can be calculated as follows:

Minimum entry bore diameter «C»:	$C = \frac{ØD + B}{2} + 0.5$
Max. diameter of the interfering edge «B»:	B = 2 (C - 0.5) -ØD
Clearance:	0.5 mm

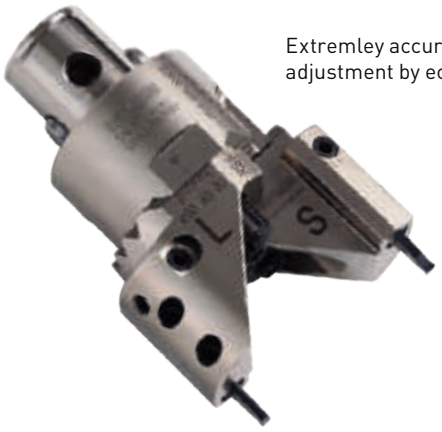


Accessories & Spare Parts

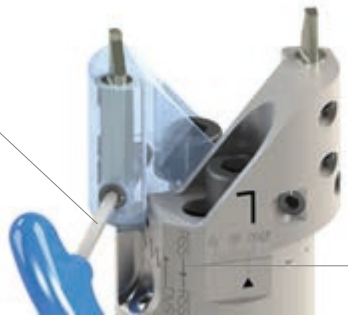
Insert Holders Back Boring for SW	Blind Piece SW	Inserts CC
		
▶ 502	▶ 502	▶ 475

Face Grooving Holders for SW Twin Cutter Set

Upgrade your existing rough boring heads SW: the face grooving holder provide the possiblity to manufacture grooves in the diameter range from Ø 53 to 203 mm.

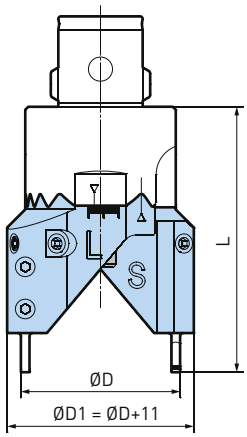


Extremley accurate tool length adjustment by eccentric bolt

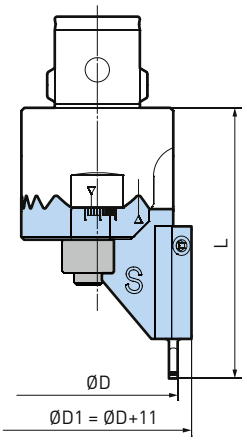


Attention: Mount the face grooving holder on mark "RSS/ BALANCE"









B.1

Twin Head Type

Model	Order No.	Head	ØD	L
IH1SW53FG	**639.653**	SW53	53 - 70	88
IH1SW68FG	**639.663**	SW68	68 - 90	95
IH1SW98FG	**639.673**	SW98	98 - 126	113
IH2SW68FG	**639.667**	SW68	88 - 110	95
IH2SW98FG	**639.677**	SW98	125 - 153	113
IH1SW148FG	**639.683**	SW148	148 - 176	143
IH2SW148FG	**639.687**	SW148	175 - 203	143

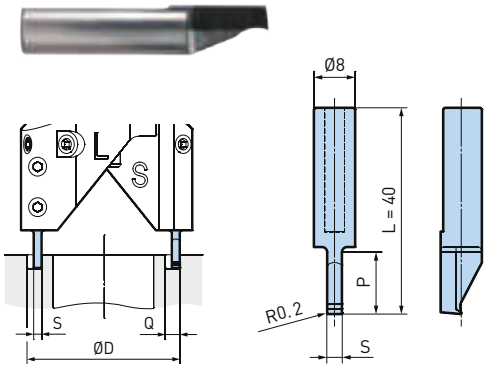
Single Head Type

Model	Order No.	Head	ØD	L
IH1SW53FGS	**639.654**	SW53	53 - 70	88
IH1SW68FGS	**639.664**	SW68	68 - 90	95
IH1SW98FGS	**639.674**	SW98	98 - 126	113
IH2SW68FGS	**639.668**	SW68	88 - 110	95
IH2SW98FGS	**639.678**	SW98	125 - 153	113
IH1SW148FGS	**639.684**	SW148	148 - 176	143
IH2SW148FGS	**639.688**	SW148	175 - 203	143

1. Inserts are to be ordered separately.
2. Consisting of two insert holders with different lengths, type S (short) and L (long).

Inserts for face grooves

For boring head SW 53 - 148, Series 318



Model	Order No.	P	S	Q	Cutting material / coating
SS2-ST8-40K40	**958.601**	12	2	3.5	K40
SS2-ST8-40K40C	**958.611**	12	2	3.5	K40C
SS3-ST8-40K40	**958.602**	12	3	5.5	K40
SS3-ST8-40K40C	**958.612**	12	3	5.5	K40C
SS4-ST8-40K40	**958.603**	12	4	7.5	K40
SS4-ST8-40K40C	**958.613**	12	4	7.5	K40C
SS5-ST8-40K40	**958.604**	12	5	9.5	K40
SS5-ST8-40K40C	**958.614**	12	5	9.5	K40C

1. Insert consisting of one piece.

Guidelines

Insert Selection & Stock Allowance
BIG KAISER indexable inserts outlined in the Insert selection & cutting data tables have been selected to give optimum results. Grades and geometry do not have to be specified at time of order.
Insert radius is based upon 2 major factors:
1. Length/diameter ratio of tool
2. Depth of cut or material allowance

- Select the largest nose radius available for cutting edge strength & higher feeds
- Use small nose radius for light depth of cut & extreme L/D ratio

Insert Radius	Minimum D.O.C.	Maximum D.O.C.	L/D Ratio
0.2	0.25	1.5	>6:1
0.4	0.50	3.0	≤5:1
0.8	1.00	5.0	≤4:1
1.2	1.50	8.0	≤4:1

- D.O.C. is stock allowance/side (radius)

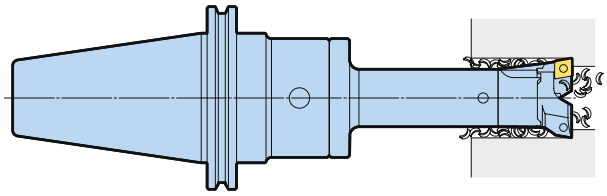
Feed
1. Feed: based on effective number of inserts, depending on roughing method

- Balanced cutting: 2 effective inserts
- Stepped cutting: 1 effective insert
- Full profile cutting: 1 effective insert

2. Under normal rough boring operations, the effective feed rate is about 50% of nose radius

Insert Radius	Feed (mm/rev)	
	Balanced Cutting	Stepped Cutting
0.2	0.2 - 0.3	0.1 - 0.15
0.4	0.3 - 0.4	0.15 - 0.2
0.8	0.4 - 0.5	0.3 - 0.4

General Rule:
Boring bar should always be smaller than original hole size.



Caution
- It is very important to allow for clearance (F) between boring bar and rough bore diameter.

Troubleshooting

Under certain conditions, it may be necessary to modify or adapt recommended cutting data and/or tooling configurations of the application. Below are general solutions to common problems.

Problem	Possible Cause	Remedy
Poor Chip Control	Feed rate too low	Increase feed rate
	Width of chip excessive (D.O.C.)	Preset tool for stepped cutting method
	Excessive stock allowance	Consult cutting data tables
Chatter & Vibration	Excessive speed	Reduce Vc, check cutting data tables
	Extreme length/diameter ratio	Shorten tool to increase stiffness
		Increase boring bar diameter to larger size
		Change boring bar to carbide or heavy metal
	Insert radius too large	Reduce nose radius of insert
	Unstable workpiece	Improve fixture and clamping support
	Lead angle on insert holders	Change to 90 degree insert holders (type CC)
Inserts Chipping or Breaking	Wrong insert	Change to tougher grade of carbide insert
		Use larger radius if available
	Severe interruption	Increase speed, decrease feed
	Chips packing and re-cutting	Check for boring bar/bore diameter clearance
		Improve chip control,increase feed
Poor Tool Life	Wrong insert	Change to higher wear resistant grade
	Excessive cutting speed	Reduce speed
	Inserts chipping	Check stock allowance and feed rate
	Coolant pressure too low	Increase through tool coolant pressure
		Adjust coolant ports of head if available
Chips Not Evacuating	Boring bar diameter too large	Reduce to smaller head and extended range holder
	Excessive stock allowance	Re-set tool for stepped cutting
	Inadequate space below bore	Elevate workpiece from table more
	Poor chip control	See above problem
Insufficient Machine Power	Excessive feed rate	Reduce feed; minimum 25% of insert radius
	Stock allowance excessive	Reset tool for stepped cutting method
	Low machine torque	RPM in area of low spindle torque; increase speed
		RPM in area of gear change; adjust RPM
		Change insert to higher rake angle
		Reduce depth of cut
Excessive Exit Burr	Excessive feed rate	Reduce feed rate
	CC type insert holders	Use square insert holders with 6 degree lead
	Cutting forces too high	Reduce depth of cut
		Reduce insert radius

Fine Boring Heads with Centric Cutting Edge

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EWE 2-152 Digital Fine Boring Head	398
EWN 2-152 Fine Boring Head	399
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B.2



EWE 2-152 Digital Fine Boring Head

Wireless communication for easy readout with the BIG KAISER app:
The EWE fine boring head revolutionates fine boring process.
Less operator mistakes, easier setup and a huge diameter range of Ø 2 - 152 mm. Also available as integral solution with HSK-A63.
Accessories of EWN are fully compatible.
Ø 2 - 152 mm, CK6/HSK-A63

Wireless



EWN 2-152 Fine Boring Head

Fine boring head with centric boring bars in modular and integral execution for accurate, high performance operations. The head comes with variable length adjustment of the boring bar and large dial disc for parallax-free readout.
Ø 2 - 152 mm, CK6/DV40/HSK-A63/BIG CAPTO C6



EWE 2-32 Digital Fine Boring Head

Smallest digital fine boring head with wireless communication to the BIG KAISER app and centric boring bar. Especially manufactured for the use on small machine tools. Accessories of EWN are fully compatible.
Ø 2 - 32 mm, CK5

Wireless

B.2



EWN 2-32 Fine Boring Head

Fine boring head with centric boring bar in integral, modular and screw-on execution for precise machining. Developped for the use on machine tools with spindles 30 taper, HSK-A50 and bigger, as well as on lathe machines with driven tools.
Ø 2 - 32 mm, CK5/DV30/ES32



EWN 04-15 Fine Boring Head

Machining of small bores with high speeds on machine tools with spindles DV20, HSK-E32 and bigger.
Ø 0.4 - 15 mm, CK3/ST16



EWN 04-7 Fine Boring Head

World's smallest fine boring head: Thanks to its body diameter of only Ø 18.5 mm, the EWN 04-7 is the perfect solution for micro machining applications.
Ø 0.4 - 7 mm, CK1/ST6/ST10



BIG KAISER App

The new app simplifies the assembly and operation of rough and fine boring heads and provides extremely accurate cutting data. The various parameters can be saved in the app for later use, an important building block for workshops that want to get into smart manufacturing. The app currently supports 61 BIG KAISER fine and reaming heads with diameters from 0.4 mm - 620 mm.

App Store
Google Play
Windows 10



Cutting data



Send your data to...



History (made automatically)

This is how the app is going to support your daily challenges

1. Choose your tool
2. Type in your application values
3. Calculate cutting data
4. Adjust machine and make a measuring bore
5. Infeed tool with the diameter of the measuring bore
6. Make the bore middle tolerance

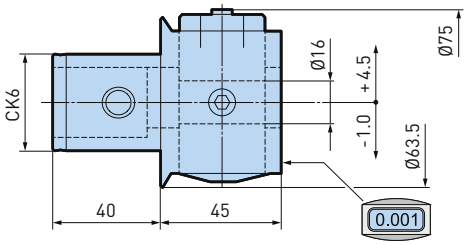
EWE 2-152 Digital Fine Boring Head, Ø 2 - 152

Wireless

Digital fine boring head in modular and integral execution for accurate, high performance boring operations. With wireless communication to the BIG KAISER app.

CK6 Type

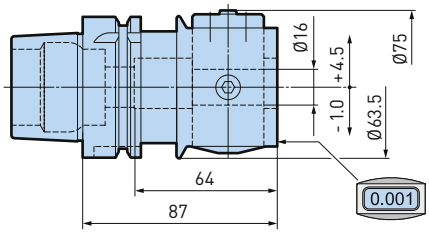




Model	Order No.
EWE2-152CK6	112.110

HSK-A63 Type





Model	Order No.
EWE2-152HSK-A63-87	112.126A

Quick Guide

B.2

EWE Reader

If no Smart Phone or BIG KAISER App is available, the digital Reader is the perfect alternative for making settings on the digital fine boring heads.



Model	Order No.	L	W	H
EWE Reader	719.000	90	44	15

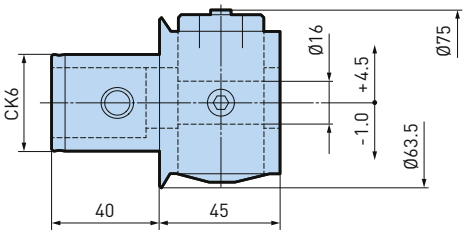
1. Charger (micro USB cable) is not included.

EWN 2-152 Fine Boring Head, Ø 2 - 152

Fine boring heads in modular and integral execution for accurate, high performance boring operations on machine tools with spindles DV40, HSK-A63, BIG CAPTO C6 and bigger.

CK6 Type

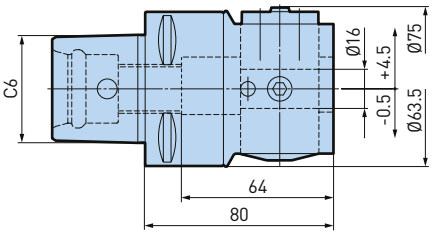




Modell	Bestell-Nr.
EWN2-152CK6	112.108

BIG CAPTO Type

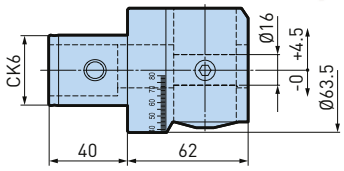




Modell	Bestell-Nr.
EWN2-152C6	470.108

EWB Type *

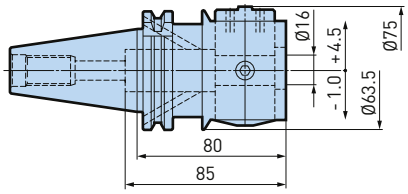




Modell	Bestell-Nr.
EWB2-50CK6	112.107

DV40 Type

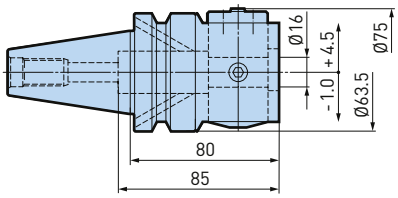




Modell	Bestell-Nr.
EWN2-152DV40	112.121

BR40 Type

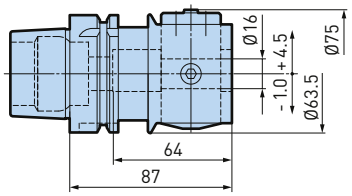




Modell	Bestell-Nr.
EWN2-152BT40	112.122

HSK-A63 Type



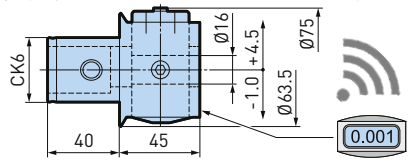


Modell	Bestell-Nr.
EWN2-152HSK-A63	112.123

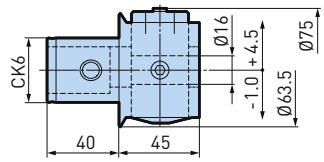
1. * EWB Type has an integrated balancing mechanism. Ideal for high-speed machining.

Boring Head **Order No.**

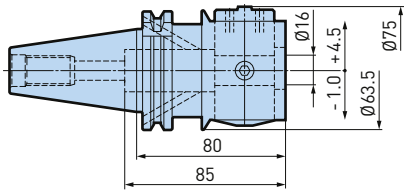
EWE2-152CK6 **112.110**



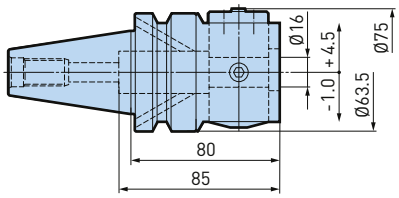
EWN2-152CK6 **112.108**



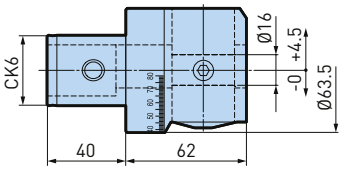
EWN2-152DV40 **112.121**



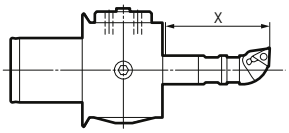
EWN2-152BT40 **112.122**



EWB2-50CK6 **112.107**



X = Boring depth

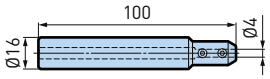


ØD

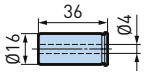
Boring range for the fine boring head EWN 2-152.
Under full use of the adjustment range, the max. boring range will be,

- for EWN, EWE, EWB: Lower range + 9 mm Ø

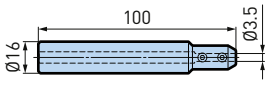
RB16-4-100 **613.424** ♦



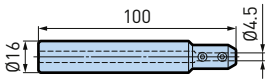
RB16-4 **613.404**



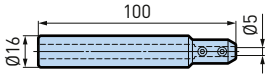
RB16-3.5-100 **613.422** ♦



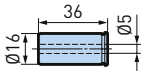
RB16-4.5-100 **613.423** ♦



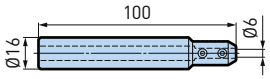
RB16-5-100 **613.425** ♦



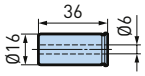
RB16-5 **613.405**



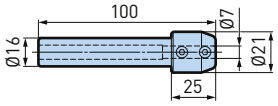
RB16-6-100 **613.426** ♦



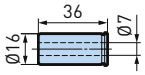
RB16-6 **613.406**



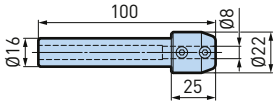
RB16-7-100 **613.427** ♦



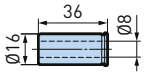
RB16-7 **613.407**



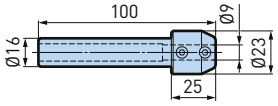
RB16-8-100 **613.428** ♦



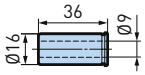
RB16-8 **613.408**



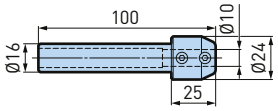
RB16-9-100 **613.429** ♦



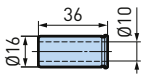
RB16-9 **613.409**



RB16-10-100 **613.430** ♦



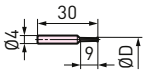
RB16-10 **613.410**



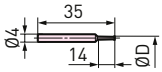
Carbide tool holders

♦ Recommended for EWB 2-50

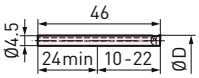
Fixed Tool Holder



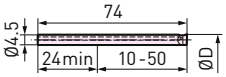
E2-4K10 **611.155** ♦
ØD 2.0 - 3.0



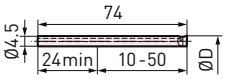
E3-4K10 **611.156** ♦
ØD 3.0 - 4.0



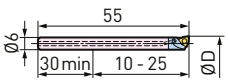
E5-ST4.5-46K10 **615.081**
ØD 4.9 - 5.9



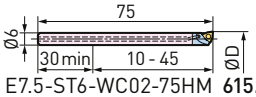
E5-ST4.5-74K10 **615.204** ♦
ØD 4.9 - 5.9



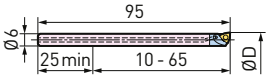
E5-ST4.5-74K10C **615.204A** ♦
ØD 4.9 - 5.9



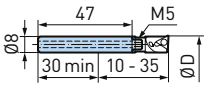
E7.5-ST6-WC02-55HM **615.084**
ØD 7.3 - 8.8



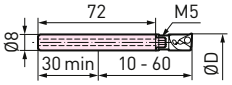
E7.5-ST6-WC02-75HM **615.085**
ØD 7.3 - 8.8



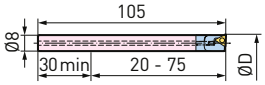
E7.5-ST6-WC02-95HM **615.202** ♦
ØD 7.3 - 8.8



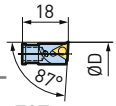
ST8-47 **615.211**
ØD 8.8 - 11.8



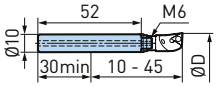
ST8-72HM **615.212** ♦
ØD 8.8 - 11.8



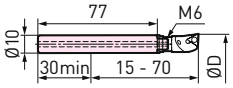
E9-ST8-TP07-105HM **615.213** ♦
ØD 8.8 - 11.8



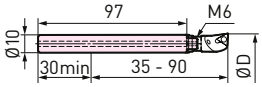
E9T
615.271 ♦
ØD 8.8 - 11.8



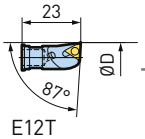
ST10-52 **615.214**
ØD 11.8 - 13.8



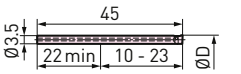
ST10-77HM **615.215** ♦
ØD 11.8 - 13.8



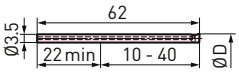
ST10-97HM **615.223** ♦
ØD 11.8 - 13.8



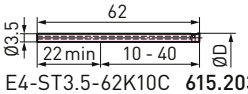
E12T
615.272 ♦
ØD 11.8 - 13.8



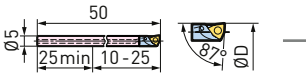
E4-ST3.5-45K10 **615.080**
ØD 3.9 - 4.9



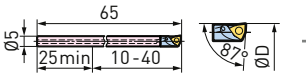
E4-ST3.5-62K10 **615.203** ♦
ØD 3.9 - 4.9



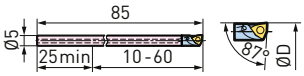
E4-ST3.5-62K10C **615.203A** ♦
ØD 3.9 - 4.9



E6-ST5-WC02-50HM **615.082**
ØD 5.8 - 7.3



E6-ST5-WC02-65HM **615.083**
ØD 5.8 - 7.3



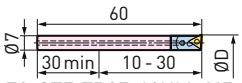
E6-ST5-WC02-85HM **615.201** ♦
ØD 5.8 - 7.3

WC 02

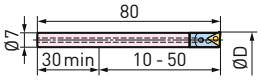


WC 02

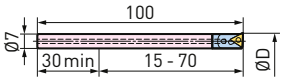




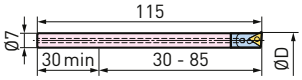
E8-ST7-TP07-60HM **615.086**
ØD 7.8 - 9.8



E8-ST7-TP07-80HM **615.207** ♦
ØD 7.8 - 9.8



E8-ST7-TP07-100HM **615.087** ♦
ØD 7.8 - 9.8



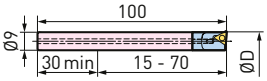
E8-ST7-TP07-115HM **615.205**
ØD 7.8 - 9.8

TP 07

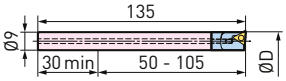


TP 07





E10-ST9-TP07-100HM **615.208** ♦
ØD 9.8 - 11.8



E10-ST9-TP07-135HM **615.206** ♦
ØD 9.8 - 11.8

TP 07



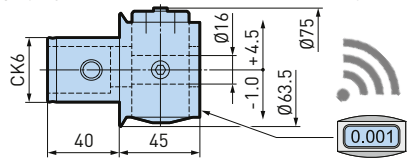
TP 07



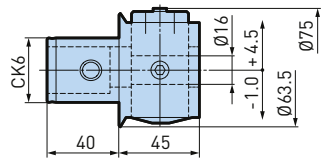
B.2

Boring Head **Order No.**

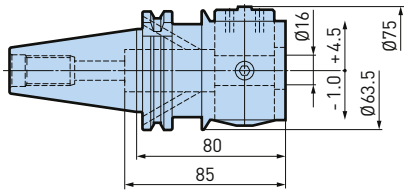
EWE2-152CK6 **112.110**



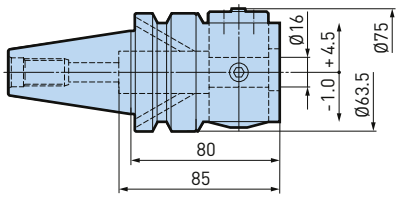
EWN2-152CK6 **112.108**



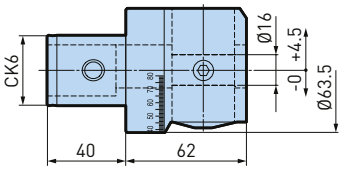
EWN2-152DV40 **112.121**



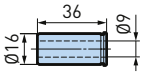
EWN2-152BT40 **112.122**



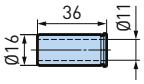
EWB2-50CK6 **112.107**



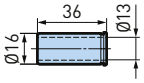
RB16-9
613.409



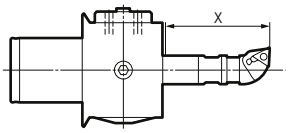
RB16-11
613.411



RB16-13
613.413



X = Boring depth



ØD

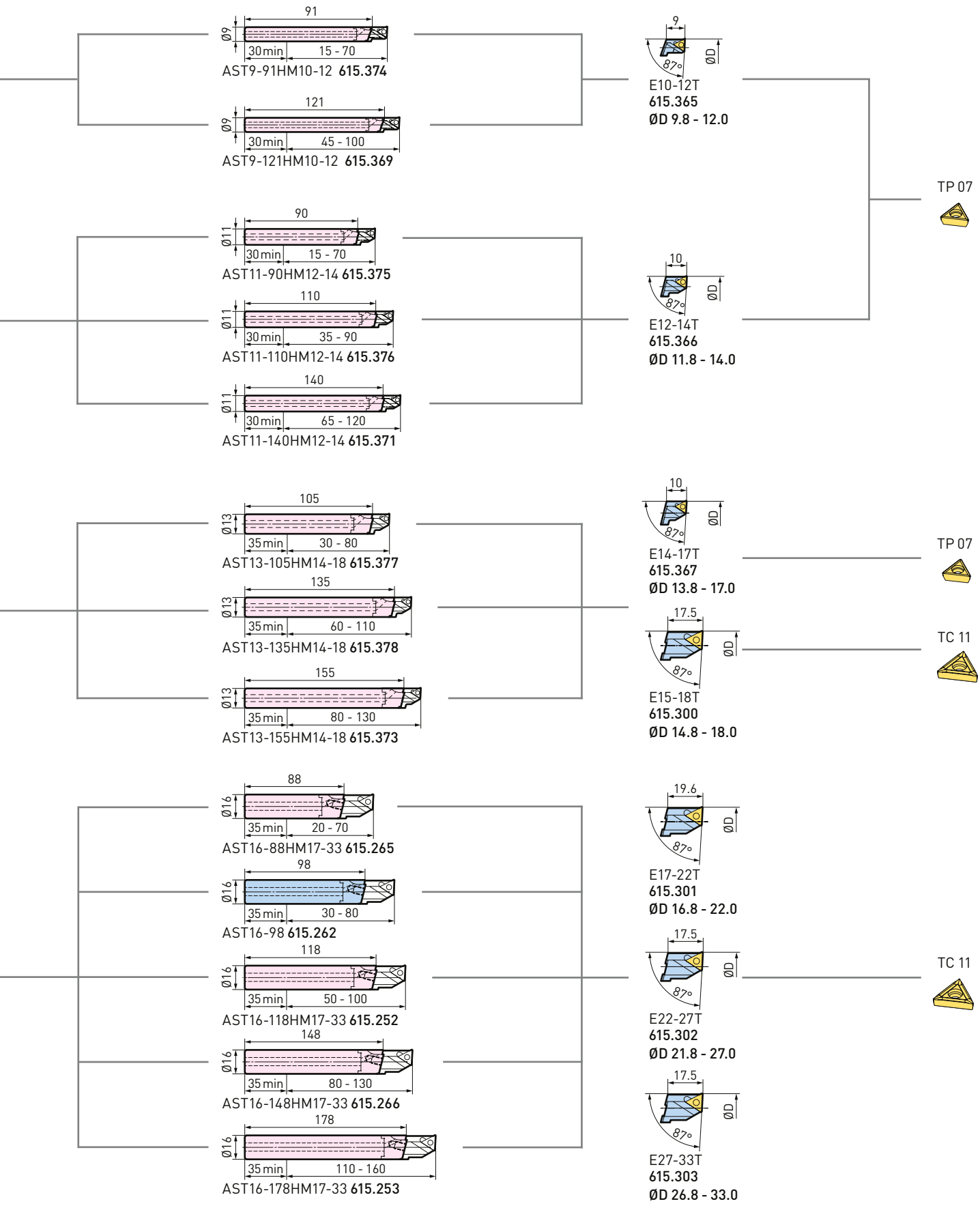
Boring range for the fine boring head EWN 2-152.
Under full use of the adjustment range, the max. boring range will be,

- for EWN, EWE, EWB: Lower range + 9 mm Ø

Carbide tool holders

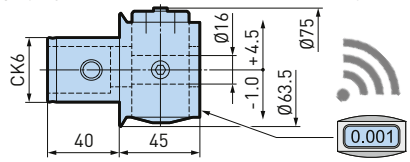
Adjustable Tool Holder

The adjustable tool holder allows the coarse diameter setting on the insert holder. This leads to the possibility to machine bores from Ø 9.8 - 54 mm with the tool holder in the centre position and as a result, with the best possible balancing of the tool combination.

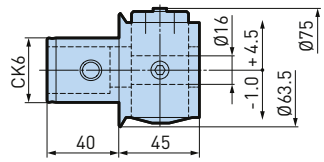


Boring Head **Order No.**

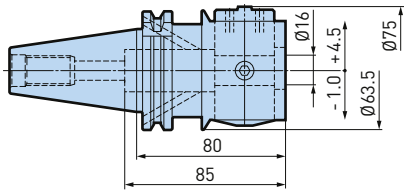
EWE2-152CK6 **112.110**



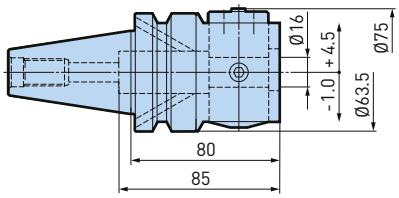
EWN2-152CK6 **112.108**



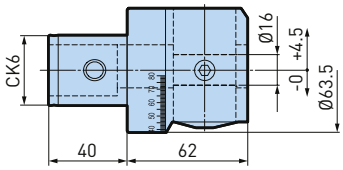
EWN2-152DV40 **112.121**



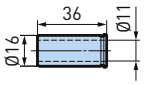
EWN2-152BT40 **112.122**



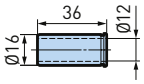
EWB2-50CK6 **112.107**



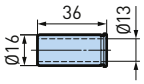
RB16-11 **613.411** ♦



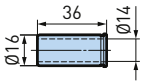
RB16-12 **613.412** ♦



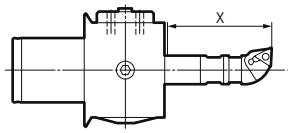
RB16-13 **613.413** ♦



RB16-14 **613.414** ♦



X = Boring depth



ØD

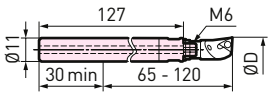
Boring range for the fine boring head EWN 2-152.
Under full use of the adjustment range, the max. boring range will be,

- for EWN, EWE, EWB: Lower range + 9 mm Ø

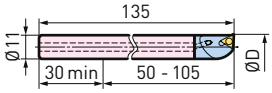
Carbide tool holders

♦ Recommended for EWB 2-50

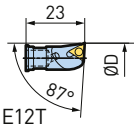
Fixed Tool Holder



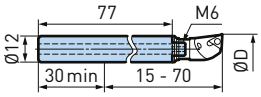
ST11-127HM **615.250** ♦
ØD 11.8 - 13.8



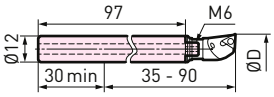
E12-ST11-TP07-135HM **615.209** ♦
ØD 11.8 - 13.8



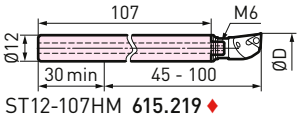
E12T
615.272 ♦
ØD 11.8 - 13.8



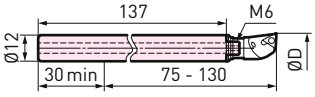
ST12-77 **615.218**
ØD 13.8 - 15.8



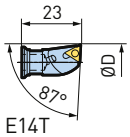
ST12-97HM **615.225**
ØD 13.8 - 15.8



ST12-107HM **615.219** ♦
ØD 13.8 - 15.8

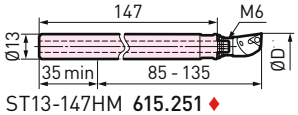


ST12-137HM **615.224** ♦
ØD 13.8 - 15.8

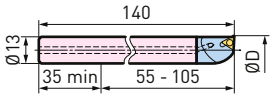


E14T
615.273 ♦
ØD 13.8 - 15.8

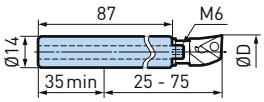
TP 07



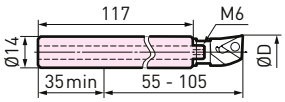
ST13-147HM **615.251** ♦
ØD 13.8 - 15.8



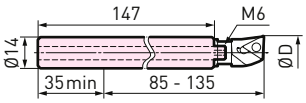
E14-ST13-TP07-140HM **615.210** ♦
ØD 13.8 - 15.8



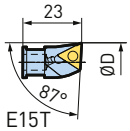
ST14-87 **615.232**
ØD 14.8 - 17.8



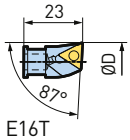
ST14-117HM **615.233** ♦
ØD 14.8 - 17.8



ST14-147HM **615.221** ♦
ØD 14.8 - 17.8

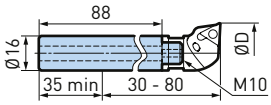


E15T
615.280 ♦
ØD 14.8 - 16.8

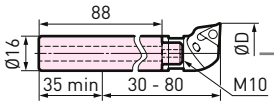


E16T
615.281 ♦
ØD 15.8 - 17.8

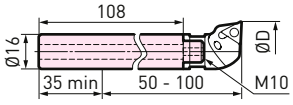
TC 11



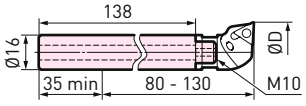
ST16-88 **615.226**
ØD 17.8 - 50.0



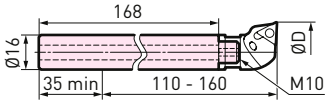
ST16-88HM **615.268**
ØD 17.8 - 50.0



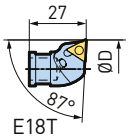
ST16-108HM **615.227** ♦
ØD 17.8 - 50.0



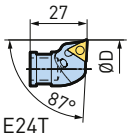
ST16-138HM **615.269**
ØD 17.8 - 50.0



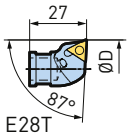
ST16-168HM **615.229** ♦
ØD 17.8 - 50.0



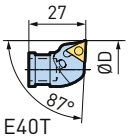
E18T
615.282 ♦
ØD 17.8 - 19.8



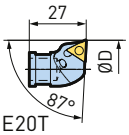
E24T
615.290 ♦
ØD 23.8 - 24.8



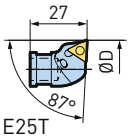
E28T
615.284 ♦
ØD 27.8 - 31.8



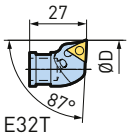
E40T
615.287 ♦
ØD 39.8 - 44.8



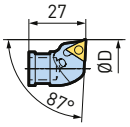
E20T
615.289 ♦
ØD 19.8 - 21.8



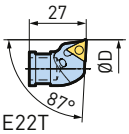
E25T
615.288 ♦
ØD 24.8 - 25.8



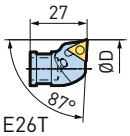
E32T
615.285 ♦
ØD 31.8 - 35.8



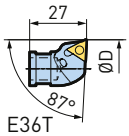
E45T
615.292 ♦
ØD 44.8 - 50.0



E22T
615.283 ♦
ØD 21.8 - 23.8



E26T
615.291 ♦
ØD 25.8 - 27.8

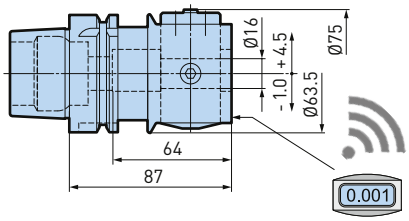


E36T
615.286 ♦
ØD 35.8 - 39.8

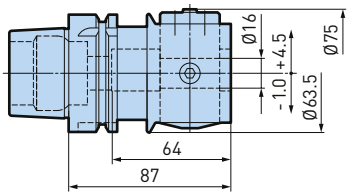
B.2

Boring Head **Order No.**

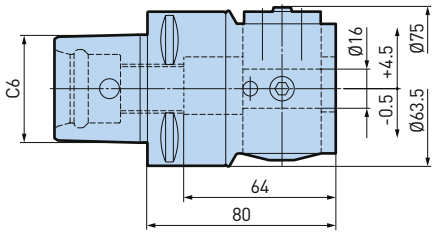
EWE2-152HSK-A63 **112.126A**



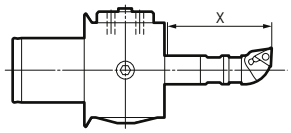
EWN2-152HSK-A63 **112.123**



EWN2-152C6 **470.108**



X = Boring depth

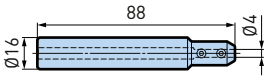


ØD

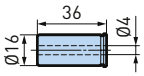
Boring range for the fine boring head EWN 2-152.
Under full use of the adjustment range, the max. boring range will be,

- for EWN, EWE, EWB: Lower range + 9 mm Ø

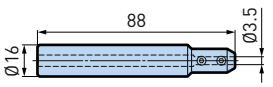
RB16-4-88 **613.434**



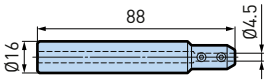
RB16-4 **613.404**



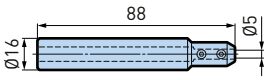
RB16-3.5-88 **613.432**



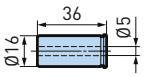
RB16-4.5-88 **613.433**



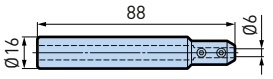
RB16-5-88 **613.435**



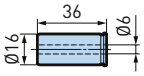
RB16-5 **613.405**



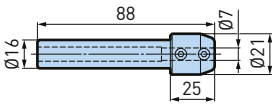
RB16-6-88 **613.436**



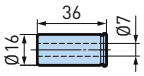
RB16-6 **613.406**



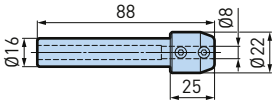
RB16-7-88 **613.437**



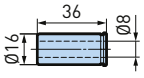
RB16-7 **613.407**



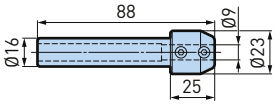
RB16-8-88 **613.438**



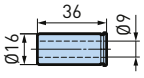
RB16-8 **613.408**



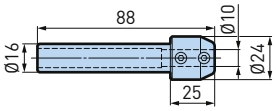
RB16-9-88 **613.439**



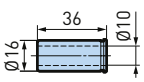
RB16-9 **613.409**



RB16-10-88 **613.440**

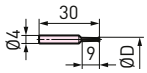


RB16-10 **613.410**

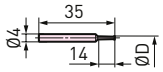


Carbide tool holders

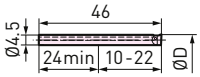
Fixed Tool Holder



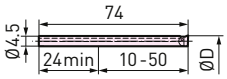
E2-4K10 **611.155**
ØD 2.0 - 3.0



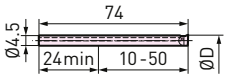
E3-4K10 **611.156**
ØD 3.0 - 4.0



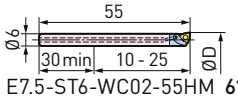
E5-ST4.5-46K10 **615.081**
ØD 4.9 - 5.9



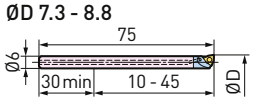
E5-ST4.5-74K10 **615.204**
ØD 4.9 - 5.9



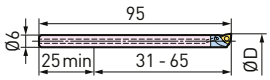
E5-ST4.5-74K10C **615.204A**
ØD 4.9 - 5.9



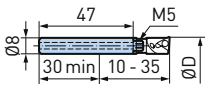
E7.5-ST6-WC02-55HM **615.084**
ØD 7.3 - 8.8



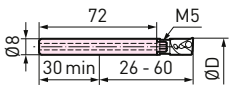
E7.5-ST6-WC02-75HM **615.085**
ØD 7.3 - 8.8



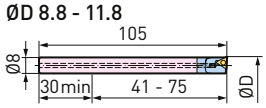
E7.5-ST6-WC02-95HM **615.202**
ØD 7.3 - 8.8



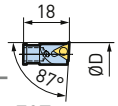
ST8-47 **615.211**
ØD 8.8 - 11.8



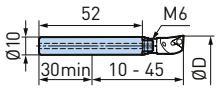
ST8-72HM **615.212**
ØD 8.8 - 11.8



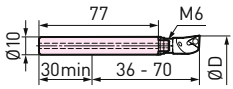
E9-ST8-TP07-105HM **615.213**
ØD 8.8 - 11.8



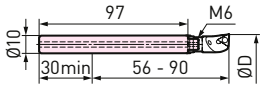
E9T
615.271
ØD 8.8 - 11.8



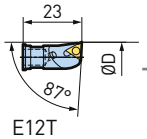
ST10-52 **615.214**
ØD 11.8 - 13.8



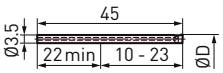
ST10-77HM **615.215**
ØD 11.8 - 13.8



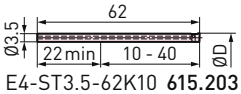
ST10-97HM **615.223**
ØD 11.8 - 13.8



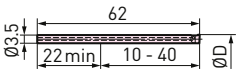
E12T
615.272
ØD 11.8 - 13.8



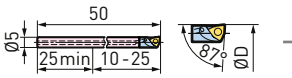
E4-ST3.5-45K10 **615.080**
ØD 3.9 - 4.9



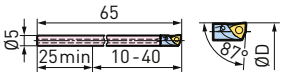
E4-ST3.5-62K10 **615.203**
ØD 3.9 - 4.9



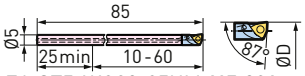
E4-ST3.5-62K10C **615.203A**
ØD 3.9 - 4.9



E6-ST5-WC02-50HM **615.082**
ØD 5.8 - 7.3



E6-ST5-WC02-65HM **615.083**
ØD 5.8 - 7.3



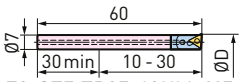
E6-ST5-WC02-85HM **615.201**
ØD 5.8 - 7.3

WC 02

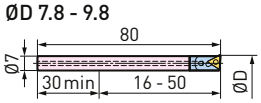


WC 02

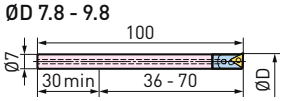




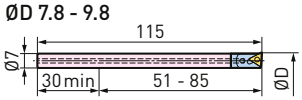
E8-ST7-TP07-60HM **615.086**
ØD 7.8 - 9.8



E8-ST7-TP07-80HM **615.207**
ØD 7.8 - 9.8



E8-ST7-TP07-100HM **615.087**
ØD 7.8 - 9.8



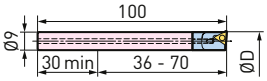
E8-ST7-TP07-115HM **615.205**
ØD 7.8 - 9.8

TP 07

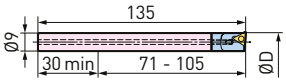


TP 07





E10-ST9-TP07-100HM **615.208**
ØD 9.8 - 11.8



E10-ST9-TP07-135HM **615.206**
ØD 9.8 - 11.8

TP 07



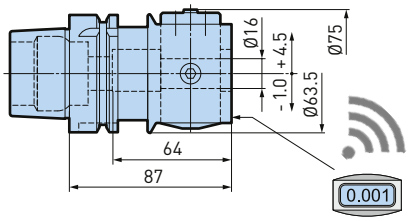
TP 07



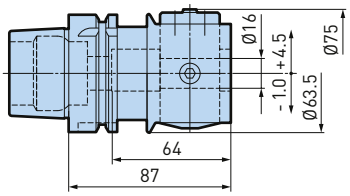
B.2

Boring Head **Order No.**

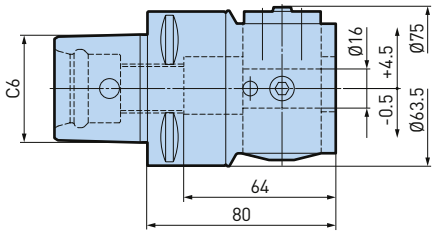
EWE2-152HSK-A63 **112.126A**



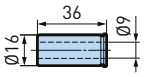
EWN2-152HSK-A63 **112.123**



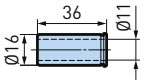
EWN2-152C6 **470.108**



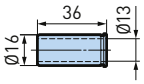
RB16-9 **613.409**



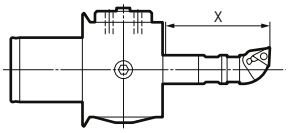
RB16-11 **613.411**



RB16-13 **613.413**



X = Boring depth



ØD

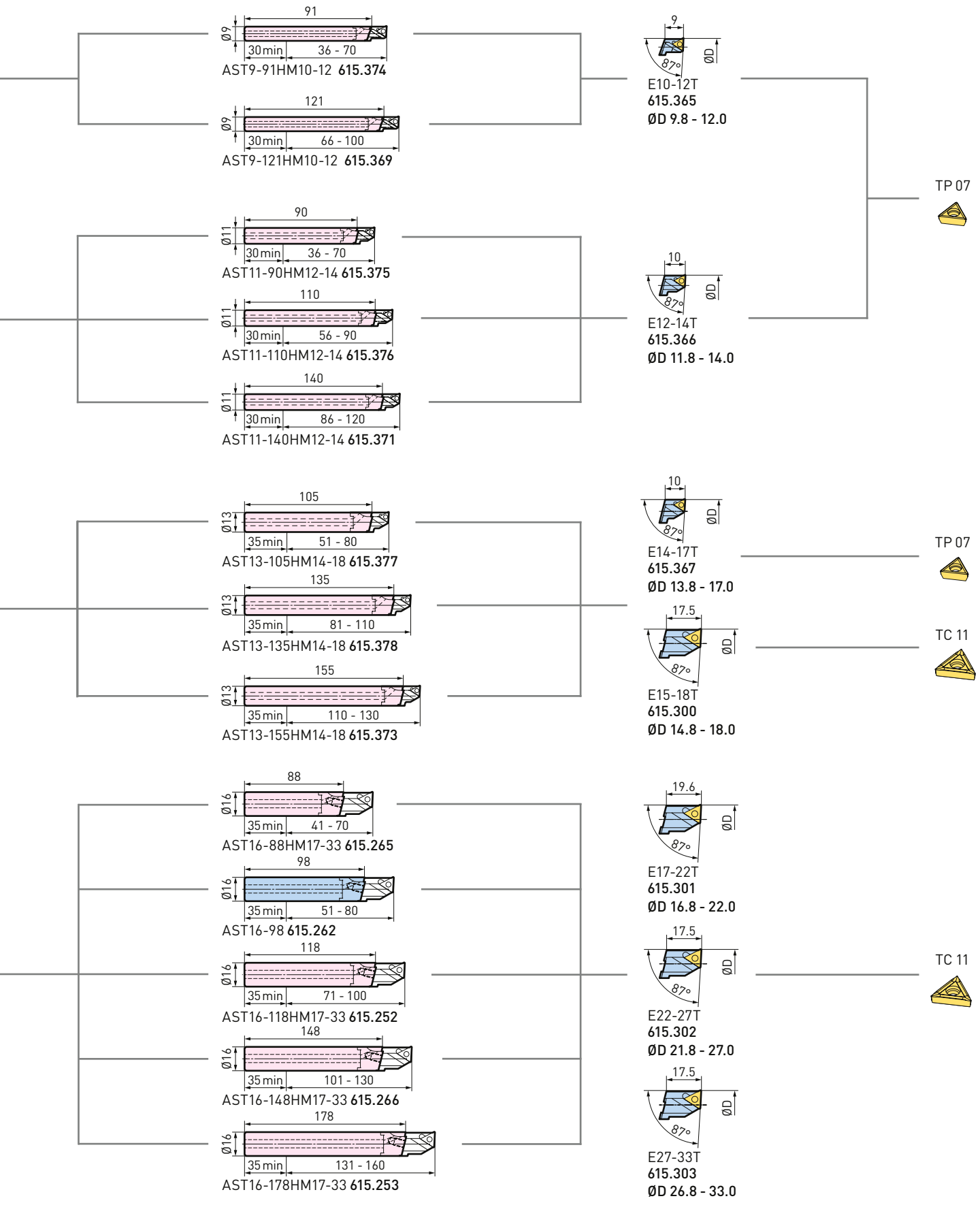
Boring range for the fine boring head EWN 2-152.
Under full use of the adjustment range, the max. boring range will be,

- for EWN, EWE, EWB: Lower range + 9 mm Ø

Carbide tool holders

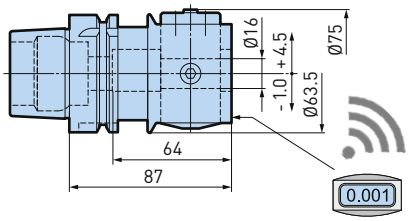
Adjustable Tool Holder

The adjustable tool holder allows the coarse diameter setting on the insert holder. This leads to the possibility to machine bores from Ø 9.8 - 54 mm with the tool holder in the centre position and as a result, with the best possible balancing of the tool combination.

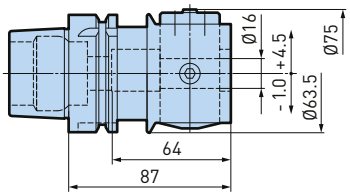


Boring Head **Order No.**

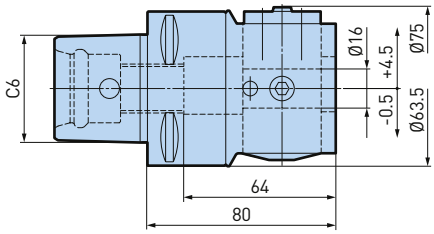
EWE2-152HSK-A63 **112.126A**



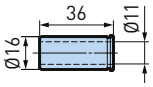
EWN2-152HSK-A63 **112.123**



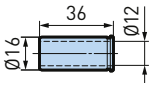
EWN2-152C6 **470.108**



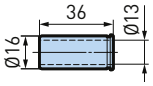
RB16-11 **613.411**



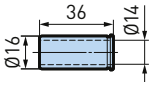
RB16-12 **613.412**



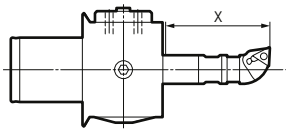
RB16-13 **613.413**



RB16-14 **613.414**



X = Boring depth



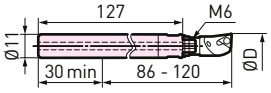
ØD

Boring range for the fine boring head EWN 2-152.
Under full use of the adjustment range, the max. boring range will be,

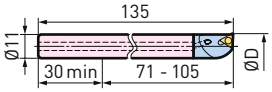
- for EWN, EWE, EWB: Lower range + 9 mm Ø

Carbide tool holders

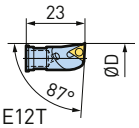
Fixed Tool Holder



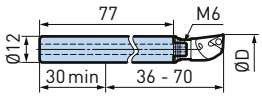
ST11-127HM **615.250**
ØD 11.8 - 13.8



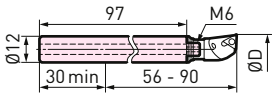
E12-ST11-TP07-135HM **615.209**
ØD 11.8 - 13.8



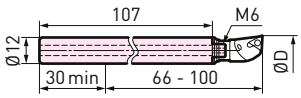
E12T
615.272
ØD 11.8 - 13.8



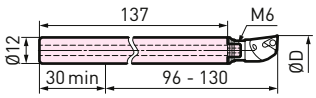
ST12-77 **615.218**
ØD 13.8 - 15.8



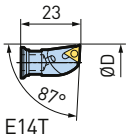
ST12-97HM **615.225**
ØD 13.8 - 15.8



ST12-107HM **615.219**
ØD 13.8 - 15.8

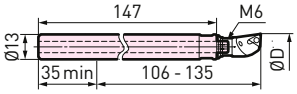


ST12-137HM **615.224**
ØD 13.8 - 15.8

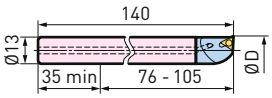


E14T
615.273
ØD 13.8 - 15.8

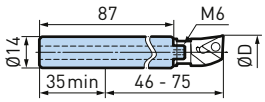
TP 07



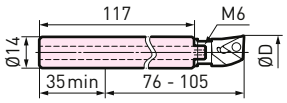
ST13-147HM **615.251**
ØD 13.8 - 15.8



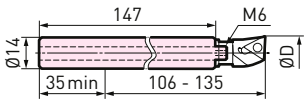
E14-ST13-TP07-140HM **615.210**
ØD 13.8 - 15.8



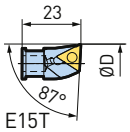
ST14-87 **615.232**
ØD 14.8 - 17.8



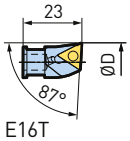
ST14-117HM **615.233**
ØD 14.8 - 17.8



ST14-147HM **615.221**
ØD 14.8 - 17.8

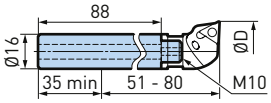


E15T
615.280
ØD 14.8 - 16.8

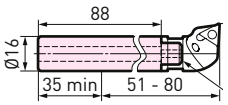


E16T
615.281
ØD 15.8 - 17.8

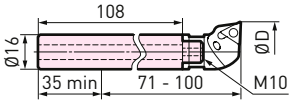
TC 11



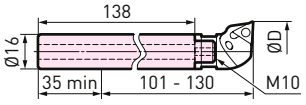
ST16-88 **615.226**
ØD 17.8 - 50.0



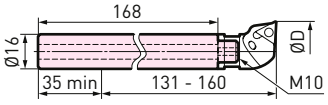
ST16-88HM **615.268**
ØD 17.8 - 50.0



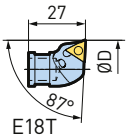
ST16-108HM **615.227**
ØD 17.8 - 50.0



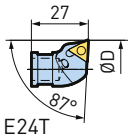
ST16-138HM **615.269**
ØD 17.8 - 50.0



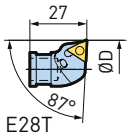
ST16-168HM **615.229**
ØD 17.8 - 50.0



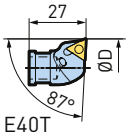
E18T
615.282
ØD 17.8 - 19.8



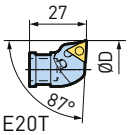
E24T
615.290
ØD 23.8 - 24.8



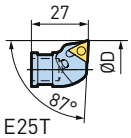
E28T
615.284
ØD 27.8 - 31.8



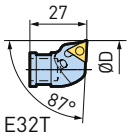
E40T
615.287
ØD 39.8 - 44.8



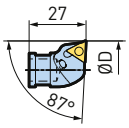
E20T
615.289
ØD 19.8 - 21.8



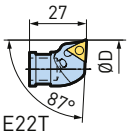
E25T
615.288
ØD 24.8 - 25.8



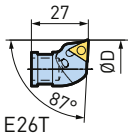
E32T
615.285
ØD 31.8 - 35.8



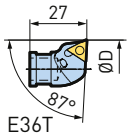
E45T
615.292
ØD 44.8 - 50.0



E22T
615.283
ØD 21.8 - 23.8



E26T
615.291
ØD 25.8 - 27.8

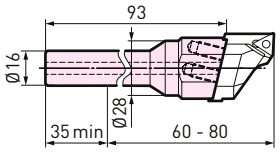


E36T
615.286
ØD 35.8 - 39.8

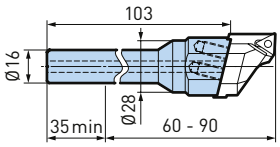
B.2

Adjustable Tool Holders

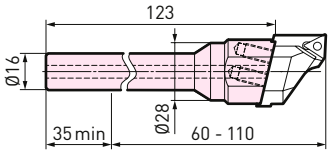
AST16-93HM32-54 **615.267**
ØD 31.8 - 54.0



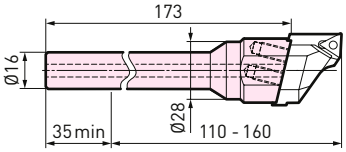
AST16-103 **615.264**
ØD 31.8 - 54.0



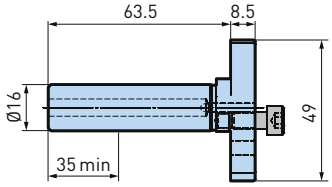
AST16-123HM32-54 **615.257**
ØD 31.8 - 54.0

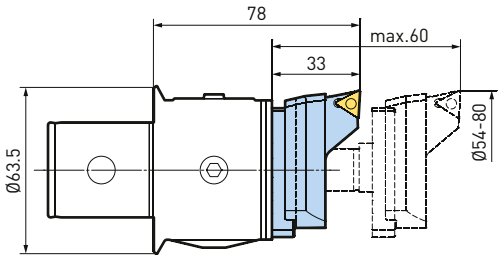


AST16-173HM32-54 **615.258**
ØD 31.8 - 54.0

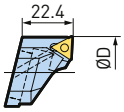


AST16-72 **615.387B**
ØD 54.0 - 80.0

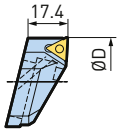




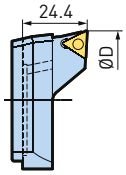
Adjustable insert holder



E32-40T
615.304
ØD 31.8 - 40.0



E40-54T
615.305
ØD 39.8 - 54.0



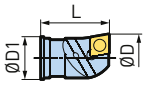
E54-80T
615.306
ØD 54.0 - 80.0

TC 11



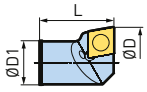
B.2

Screw On Insert Holder CC06



Model	Order No.	ØD	ØD1	L	Insert
E12C	**615.420**	11.8 - 14.5	10	23	CC 06
E14C	**615.421**	13.8 - 16.5	12	23	CC 06
E16C	**615.422**	15.8 - 18.5	14	23	CC 06

Screw On Insert Holder CC09

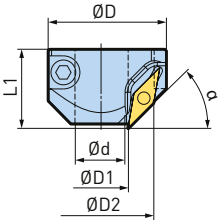


Model	Order No.	ØD	ØD1	L	Insert
E18C	**615.423**	17.8 - 20.5	16	27	CC 09
E20C	**615.424**	19.8 - 22.5	16	27	CC 09
E22C	**615.425**	21.8 - 24.5	16	27	CC 09
E24C	**615.426**	23.8 - 25.5	16	27	CC 09
E26C	**615.427**	25.8 - 28.5	16	27	CC 09
E28C	**615.428**	27.8 - 32.5	16	27	CC 09
E30C	**615.429**	29.8 - 34.5	16	27	CC 09

Chamfering Rings

Chamfering rings for tool holders made of steel and carbide Ø 12 and Ø 16 mm, for 45° chamfering right after boring, without tool change.



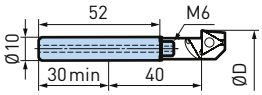


Model	Order No.	Ød	ØD	ØD1	ØD2	L1	α	Insert
CR13-27ST12V	**615.394**	12	35	12.6	27.7	24	45°	VC 11
CR17-31ST16V	**615.395**	16	39.5	16.6	31.7	24	45°	VC 11

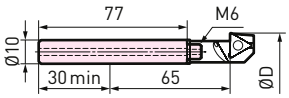
Back Boring Holders

Insert holder for back boring

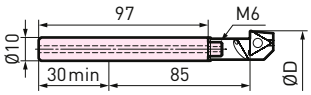
ST10-52 **615.214**
ØD 15.8 - 20.5

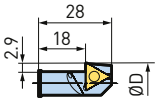


ST10-77HM **615.215**
ØD 15.8 - 20.5

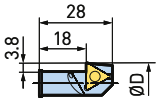


ST10-97HM **615.223**
ØD 15.8 - 20.5



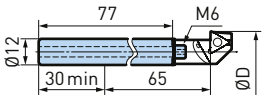


E16T-BB
615.401
ØD 15.8 -18.5
Eintritts- Ø 13.0

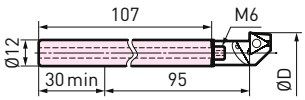


E18T-BB
615.402
ØD 17.8 - 20.5
Eintritts- Ø 13.9

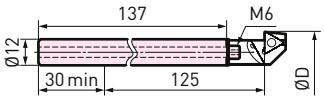
ST12-77 **615.218**
ØD 19.8 - 25.8

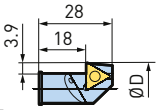


ST12-107HM **615.219**
ØD 19.8 - 25.8

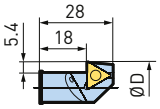


ST12-137HM **615.224**
ØD 19.8 - 25.8





E20T-BB
615.403
ØD 19.8 - 22.8
Eintritts- Ø 15.9

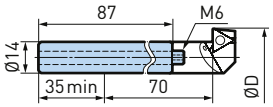


E23T-BB
615.404
ØD 22.8 - 25.8
Eintritts- Ø 17.4

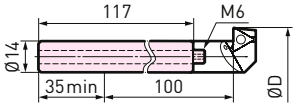
TC 11



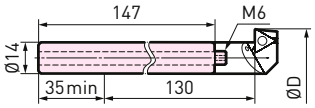
ST14-87 **615.232**
ØD 25.8 - 28.8

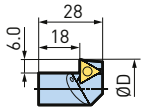


ST14-117HM **615.233**
ØD 25.8 - 28.8



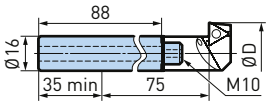
ST14-147HM **615.221**
ØD 25.8 - 28.8



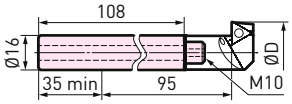


E26T-BB
615.405
ØD 25.8 - 28.8
Eintritts- Ø 19.9

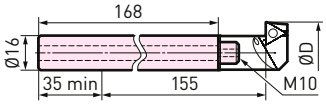
ST16-88 **615.226**
ØD 28.8 - 44.5

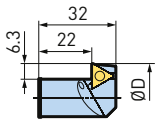


ST16-108HM **615.227**
ØD 28.8 - 44.5

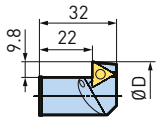


ST16-168HM **615.229**
ØD 28.8 - 44.5

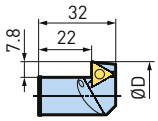




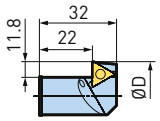
E29T-BB **615.406**
ØD 28.8 - 33.5
Eintritts- Ø 22.4



E36T-BB
615.408
ØD 35.8 - 40.5
Eintritts- Ø 25.9

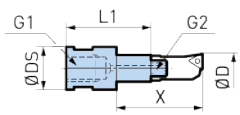


E32T-BB
615.407
ØD 31.5 - 36.5
Eintritts- Ø 23.9



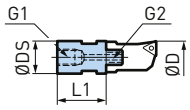
E40T-BB
615.409
ØD 39.8 - 44.5
Eintritts- Ø 27.9

Reduction for Boring Bars



Model	Order No.	ØD	ØDs	L1	X	G1	G2
ST16-10-32	615.230	11.8 - 14.5	16	32	36	M10	M6
ST16-12-32	615.231	13.8 - 18.5	16	32	36	M10	M6

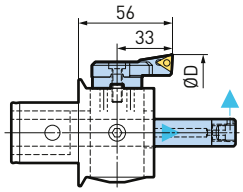
Extensions for Boring Bars



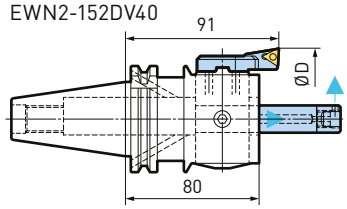
Model	Order No.	ØD	ØDs	L1	G1	G2
ST12-18	615.220	13.8 - 16.5	12	18	M6	M6
ST16-25	615.228	17.8 - 50	16	25	M10	M10

Periferical Insert Holders for EWN/EWE, Ø 80 - 152

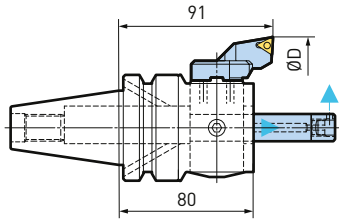
EWN2-152CK6



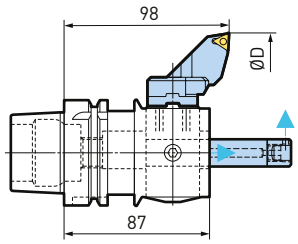
EWN2-152DV40

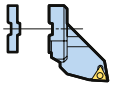
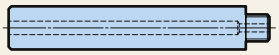


EWN2-152BT40



EWN2-152HSK-A63

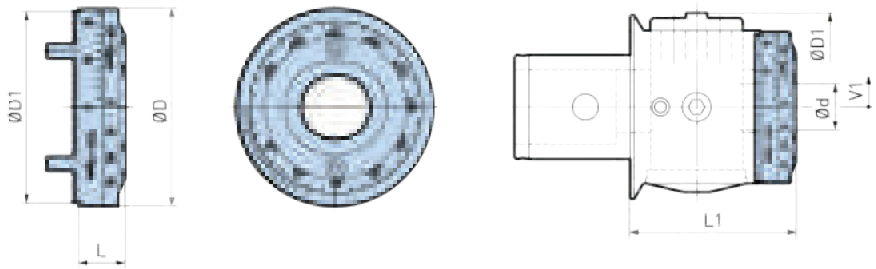


	Parts	Model	Order No.	Insert	Front Bore ØD	Back Bore ØD
	Insert Holder	EK80-104T	**626.908**	TC 11	80 - 92	-
	Spacer	DD30-6	**626.907**		92 - 104	92 - 104
	Insert Holder	EK80-104T	**626.908**			
	Insert Holder	EK104-128T	**626.909**		104 - 116	104 - 116
	Spacer	DD30-6	**626.907**		116 - 128	116 - 128
	Insert Holder	EK104-128T	**626.909**			
	Insert Holder	EK128-152T	**626.910**		128 - 140	128 - 140
	Spacer	DD30-6	**626.907**		140 - 152	140 - 152
	Insert Holder	EK128-152T	**626.910**			
	Tool Holder	ST16-88	**615.226**			
	Coolant Nozzle	CN2-50	**615.392**			

1. Tool holder must be used when using periferical insert holder.
2. Coolant Nozzle is always recommended to use with Tool Holder.

Balancing Rings

The balancing rings are mounted on the boring heads. The imbalance has to be measured on a balancing machine. The correction of the imbalance is done by moving the scale rings.



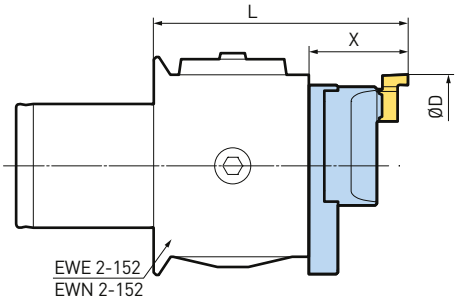
Model	Order No.	Ød	ØD	ØD1	L	L1	V1
BR2-152	**112.806**	16	53	51	13	58	1

1. The Front plate of EWE and EWN must be removed.

Insert Holder Face Grooving, Ø 14 - 54

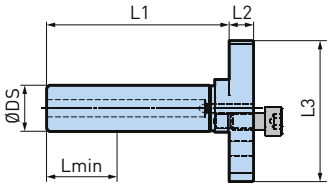
Tool holder, insert holder, and grooving insert are made for face grooving with the fine boring head EWN/EWE 2-152.





Adjustable Tool Holder Face Grooving, Ø 14 - 54



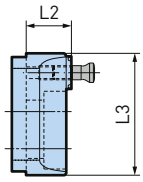


Model	Order No.	ØD	ØDs	L	L1	L2	L3	L min	X
AST16-72	**615.387B**	14 - 53	16	77 - 104	63.5	8.5	49	35	32

B.2

Insert Holder Face Grooving, Ø 14 - 54

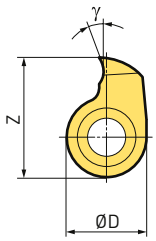


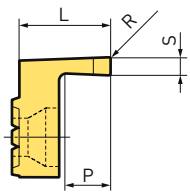


Model	Order No.	L2	L3
FGH14-54	**615.388**	13	34.5

Inserts for face grooves, Ø 14 - 54







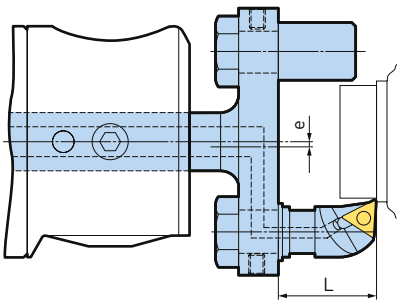
Model	Order No.	ØD	L	P	S	Z	R	Rake Angle γ
RD1420P30C	**958.501**	9	10.3	5	2	13.5	0.2	20°
RD1425P30C	**958.502**	9	10.3	5	2.5	13.5	0.2	20°
RD1430P30C	**958.503**	9	10.3	5	3	13.5	0.2	20°

1. Insert consisting of one piece.

OD Turning Holders for EWN/EWE, Ø 1 - 32

By using an eccentric bar on the fine boring heads EWN/EWE 2-152, it is possible to turn outside diameters up to 32 mm with lengths up to 50 mm. The counterweight is moveable on the eccentric bar. By moving the counterweight, the imbalance can be compensated to a minimum.





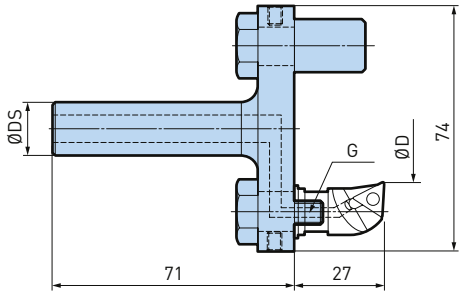
Max. Spindle Speeds		
e [mm]	L = 27 [min $^{-1}$]	L = 52 [min $^{-1}$]
0	7 000	5 500
0.5	5 000	4 500
2.5	4 000	3 500
4.5	3 000	2 500

Attention: Counter-clockwise rotation of spindle!

Remark:
Adjustment of the scale in clockwise direction and eccentric bar with cutting edge positioned as shown on the drawing, results in a smaller pin diameter.

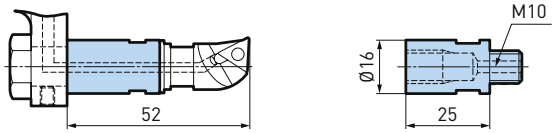
B.2

OD Turning Holders, Ø 1 - 32



Model	Order No.	ØD	ØDs	G
ST16-OD-32	**615.390**	1 - 32	16	M10

Extension



Model	Order No.
ST16-25	615.228

Insert Holders



Model	Order No.	ØD	Insert
E18T	**615.282**	28 - 32	TC 11
E22T	**615.283**	24 - 28	
E26T	**615.291**	20 - 24	
E32T	**615.285**	15 - 20	
E36T	**615.286**	11 - 15	
E40T	**615.287**	6 - 11	
E45T	**615.292**	1 - 6	

Tool Kit EWN/EWE 2-152, Ø 17.8 - 152

The tool kit EWN 2-152 and EWE 2-152, Ø 17.8 – 152 mm, is available in different versions.
The versions differ in the length and the material of the boring bars and in the number of the inserts.

Model	Order No.
EWN2-152-18-152SET-A	**112.837A**

Model	Order No.	Qty.
EWN2-152CK6	**112.108**	1
ST16-88	**615.226**	1
AST16-72	**615.387B**	1
E18T	**615.282**	1
E25T	**615.288**	1
E32T	**615.285**	1
E40T	**615.287**	1
E45T	**615.292**	1
E54-80T	**615.306**	1

Model	Order No.	Qty.
DD30-6	**626.907**	1
EK80-104T	**626.908**	1
EK104-128T	**626.909**	1
EK128-152T	**626.910**	1
TCGT-110204FL-FM10C	**655.389**	2
ETL-M6x20A-DIN6912	**690.156**	2
ETL-GRS-TORX-PLUS-T7-IP	**694.807**	1
CN2-50	**615.392**	1

Model	Order No.
EWN2-152-18-152SET-B	**112.837B**

Model	Order No.	Qty.
EWN2-152CK6	**112.108**	1
ST16-108HM	**615.227**	1
AST16-72	**615.387B**	1
E18T	**615.282**	1
E25T	**615.288**	1
E32T	**615.285**	1
E40T	**615.287**	1
E45T	**615.292**	1
E54-80T	**615.306**	1

Model	Order No.	Qty.
DD30-6	**626.907**	1
EK80-104T	**626.908**	1
EK104-128T	**626.909**	1
EK128-152T	**626.910**	1
TCGT-110204FL-FM10C	**655.389**	10
ETL-M6x20A-DIN6912	**690.156**	2
ETL-GRS-TORX-PLUS-T7-IP	**694.807**	1
CN2-50	**615.392**	1

Model	Order No.
EWN2-152-18-152SET-C	**112.837C**

Model	Order No.	Qty.
EWN2-152CK6	**112.108**	1
ST16-108HM	**615.227**	1
AST16-72	**615.387B**	1
E18T	**615.282**	1
E25T	**615.288**	1
E32T	**615.285**	1
E40T	**615.287**	1
E45T	**615.292**	1
E54-80T	**615.306**	1

Model	Order No.	Qty.
DD30-6	**626.907**	1
EK80-104T	**626.908**	1
EK104-128T	**626.909**	1
EK128-152T	**626.910**	1
TCGT-110204FL-FM10C	**655.389**	2
ETL-M6x20A-DIN6912	**690.156**	2
ETL-GRS-TORX-PLUS-T7-IP	**694.807**	1
CN2-50	**615.392**	1

Model	Order No.
EWE2-152-18-152SET-E	**112.837E**



Model	Order No.	Qty.
EWE2-152CK6	**112.11**	1
ST16-108HM	**615.227**	1
AST16-72	**615.387B**	1
E18T	**615.282**	1
E25T	**615.288**	1
E32T	**615.285**	1
E40T	**615.287**	1
E45T	**615.292**	1
E54-80T	**615.306**	1

Model	Order No.	Qty.
DD30-6	**626.907**	1
EK80-104T	**626.908**	1
EK104-128T	**626.909**	1
EK128-152T	**626.910**	1
TCGT-110204FL-FM20C	**655.318**	2
ETL-M6x20A-DIN6912	**690.156**	2
ETL-GRS-TORX-PLUS-T7-IP	**694.807**	1
CN2-50	**615.392**	1

Tool Kit EWN/EWE 2-152, Ø 16.8 - 33

Model	Order No.
EWN2-152-17-33SET-A	**112.097A**

Model	Order No.	Qty.
EWN2-152CK6	**112.108**	1
AST16-118HM17-33	**615.252**	1
E17-22T	**615.301**	1
E22-27T	**615.302**	1

Model	Order No.	Qty.
E27-33T	**615.303**	1
ETL-STS-SW6	**690.806**	1
TCGT-110204FL-FK10C	**655.383**	10

Model	Order No.
EWE2-152-17-33SET-C	**112.097C**



Model	Order No.	Qty.
EWE2-152CK6	**112.110**	1
AST16-118HM17-33	**615.252**	1
E17-22T	**615.301**	1
E22-27T	**615.302**	1

Model	Order No.	Qty.
E27-33T	**615.303**	1
ETL-STS-SW6	**690.806**	1
TCGT-110204FL-FK10C	**655.383**	10

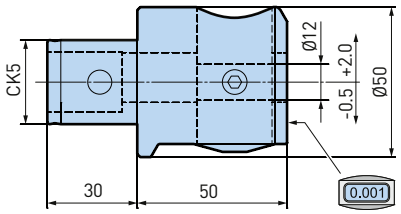
1. All tool kit EWN2-152/EWE2-152 are delivered in an exclusive case.
2. EWE2-152 are digital version of EWN2-152.

EWE 2-32 Digital Fine Boring Head, Ø 2 - 32

The EWE 2-32 is the smallest digital fine boring head with centre insert holder. It is especially suitable for use on small machines.

CK5 Type





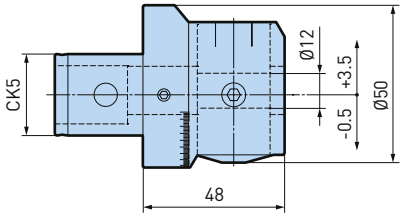
Model	Order No.
EWE2-32CK5	112.310

EWB 2-32 Fine Boring Head, Ø 2 - 32

The EWB2-32CK5 has an integrated balance mechanism. Ideal for high-speed machining.

CK5 Type





Model	Order No.
EWB2-32CK5	112.306

Wireless

B.2

BIG KAISER App

The new app simplifies the assembly and operation of rough and fine boring heads and provides extremely accurate cutting data. The various parameters can be saved in the app for later use, an important building block for workshops that want to get into smart manufacturing. The app currently supports 61 BIG KAISER fine and reaming heads with diameters from 0.4 mm - 620 mm.

App Store
Google Play
Windows 10



Cutting data



Send your data to...



History (made automatically)

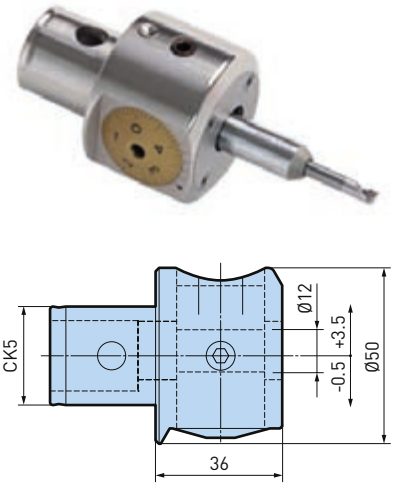
This is how the app is going to support your daily challenges

1. Choose your tool
2. Type in your application values
3. Calculate cutting data
4. Adjust machine and make a measuring bore
5. Infeed tool with the diameter of the measuring bore
6. Make the bore middle tolerance

EWN 2-32 Fine Boring Head, Ø 2 - 32

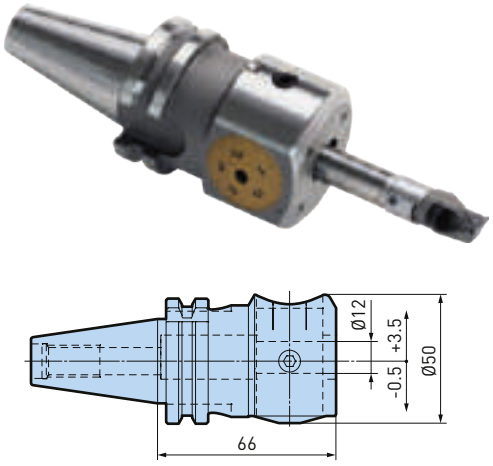
Fine boring head in integral, modular, and screw-on execution for the precise machining of bores.

CK5 Type



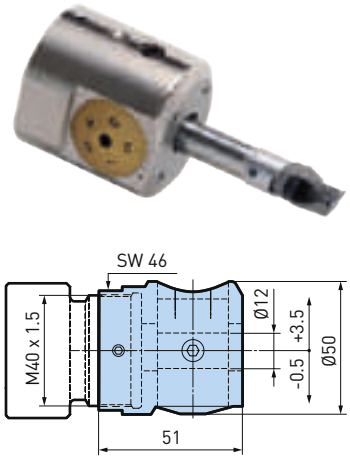
Model	Order No.
EWN2-32CK5	112.301A

DV30 Type



Model	Order No.
EWN2-32DV30	112.303A

ER32 Type

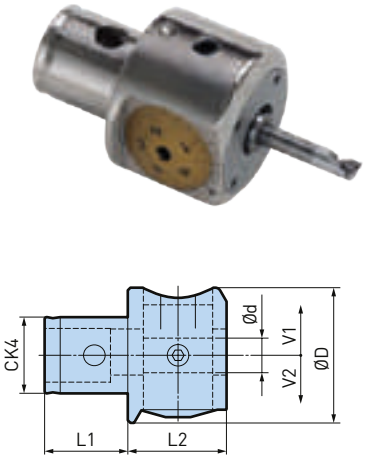


Model	Order No.
EWN2-32ES32	112.304A

B.2

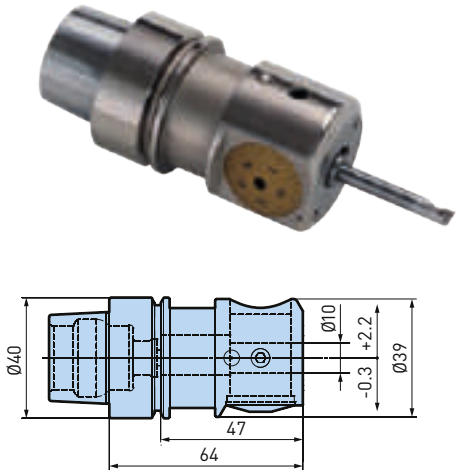
EWN 04-22 Fine Boring Head, Ø 0.4 - 22

CK4 Type



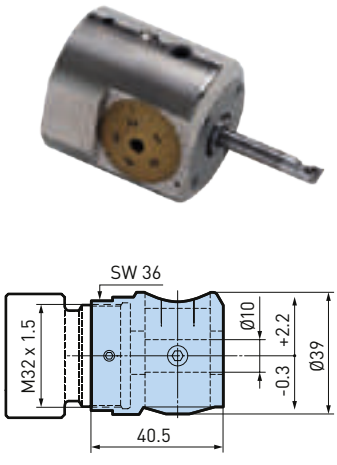
Model	Order No.
EWN04-22CK4	112.206

HSK-E40 Type



Model	Order No.
EWN04-22HSK-E40-64	112.207

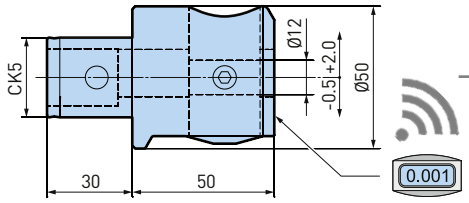
ER25 Type



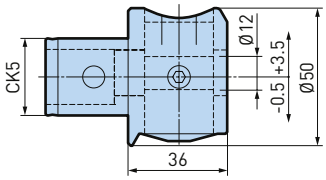
Model	Order No.
EWN04-22ES25	112.205

Boring Head **Order No.**

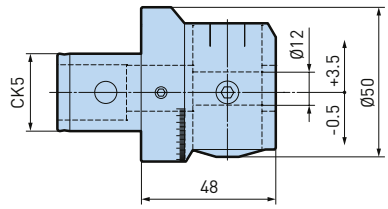
EWE2-32CK5 **112.310**



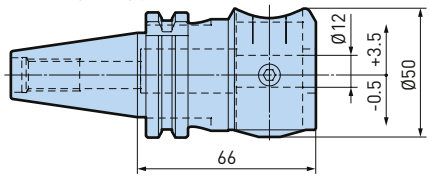
EWN2-32CK5 **112.301A**



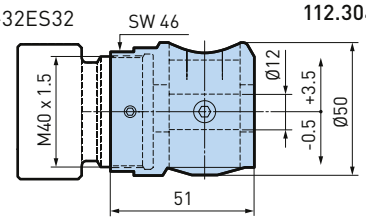
EWB2-32CK5 **112.306**



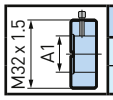
EWN2-32DV30 **112.303A**



EWN2-32ES32 **112.304A**



Reduction Sleeve for ER



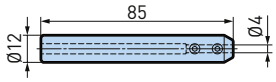
Model	Order No.	A1
TB-ES32-ES25	**112.353**	M32 x 1.5
TB-ES32-ES16	**112.385**	M22 x 1.5

ØD

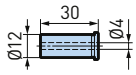
Boring range for the fine boring head EWN 2-32.
Under full use of the adjustment range, the max boring range will be,

- for EWN/EWB 2-32: Lower range + 7 mm Ø
- for EWE 2-32: Lower range + 4 mm Ø

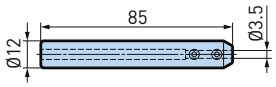
RB12-4-85 **613.324** ♦



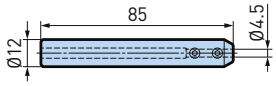
RB12-4 **613.304** ♦



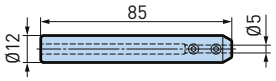
RB12-3.5-85 **613.323** ♦



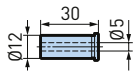
RB12-4.5-85 **613.326** ♦



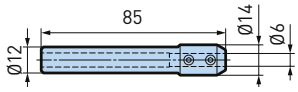
RB12-5-85 **613.325** ♦



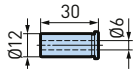
RB12-5 **613.305** ♦



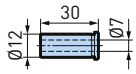
RB12-6-85 **613.327** ♦



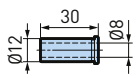
RB12-6 **613.306** ♦



RB12-7 **613.307** ♦



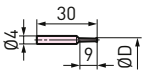
RB12-8 **613.308** ♦



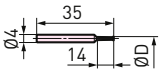
Carbide tool holders

♦ Recommended for EWB 2-32

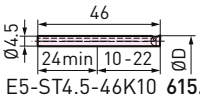
Fixed Tool Holder



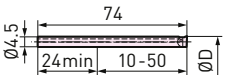
E2-4K10 **611.155** ♦
ØD 2.0 - 3.0



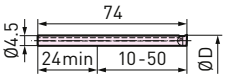
E3-4K10 **611.156** ♦
ØD 3.0 - 4.0



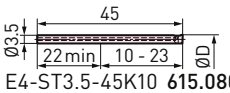
E5-ST4.5-46K10 **615.081**
ØD 4.9 - 5.9



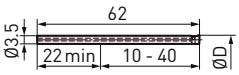
E5-ST4.5-74K10 **615.204** ♦
ØD 4.9 - 5.9



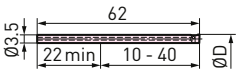
E5-ST4.5-74K10C **615.204A** ♦
ØD 4.9 - 5.9



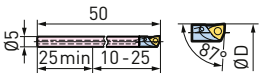
E4-ST3.5-45K10 **615.080**
ØD 3.9 - 4.9



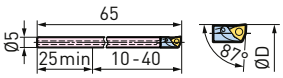
E4-ST3.5-62K10 **615.203** ♦
ØD 3.9 - 4.9



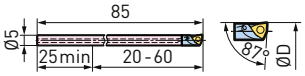
E4-ST3.5-62K10C **615.203A** ♦
ØD 3.9 - 4.9



E6-ST5-WC02-50HM **615.082**
ØD 5.8 - 7.3



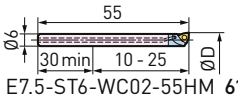
E6-ST5-WC02-65HM **615.083**
ØD 5.8 - 7.3



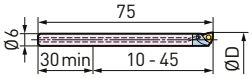
E6-ST5-WC02-85HM **615.201** ♦
ØD 5.8 - 7.3

WC 02

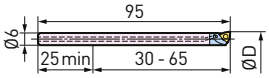




E7.5-ST6-WC02-55HM **615.084**
ØD 7.3 - 8.8



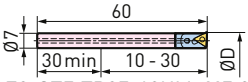
E7.5-ST6-WC02-75HM **615.085**
ØD 7.3 - 8.8



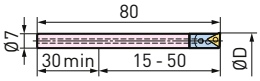
E7.5-ST6-WC02-95HM **615.202** ♦
ØD 7.3 - 8.8

WC 02

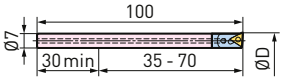




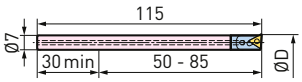
E8-ST7-TP07-60HM **615.086**
ØD 7.8 - 9.8



E8-ST7-TP07-80HM **615.207** ♦
ØD 7.8 - 9.8



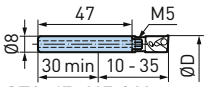
E8-ST7-TP07-100HM **615.087**
ØD 7.8 - 9.8



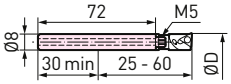
E8-ST7-TP07-115HM **615.205** ♦
ØD 7.8 - 9.8

TP 07

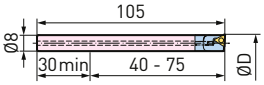




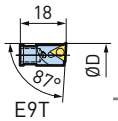
ST8-47 **615.211**
ØD 8.8 - 11.8



ST8-72HM **615.212** ♦
ØD 8.8 - 11.8



E9-ST8-TP07-105HM **615.213** ♦
ØD 8.8 - 11.8



E9T
615.271 ♦
ØD 8.8 - 11.8

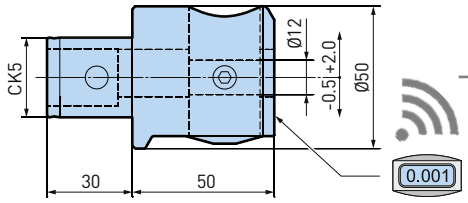
TP 07



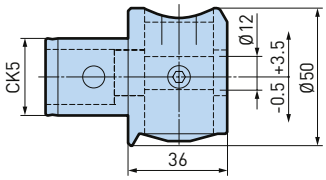
B.2

Boring Head **Order No.**

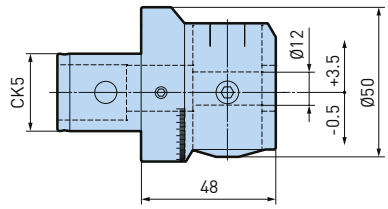
EWE2-32CK5 **112.310**



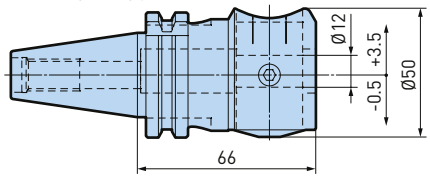
EWN2-32CK5 **112.301A**



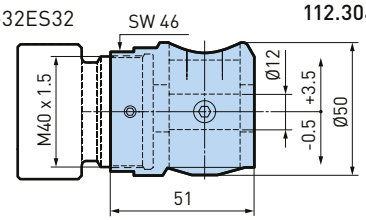
EWB2-32CK5 **112.306**



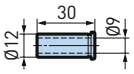
EWN2-32DV30 **112.303A**



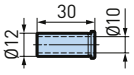
EWN2-32ES32 **112.304A**



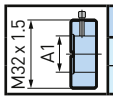
RB12-9
613.309



RB12-10
613.310



Reduction Sleeve for ER



Model	Order No.	A1
TB-ES32-ES25	**112.353**	M32 x 1.5
TB-ES32-ES16	**112.385**	M22 x 1.5

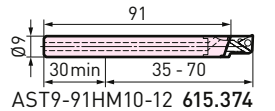
ØD

Boring range for the fine boring head EWN 2-32.
Under full use of the adjustment range, the max boring range will be,

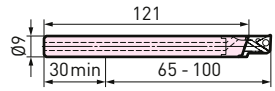
- for EWN/EWB 2-32: Lower range + 7 mm Ø
- for EWE 2-32: Lower range + 4 mm Ø

Carbide tool holders

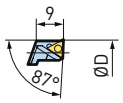
Adjustable Tool Holder



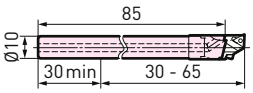
AST9-91HM10-12 **615.374**
ØD 9.8 - 12.0



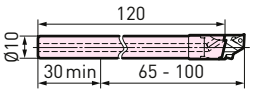
AST9-121HM10-12 **615.369**
ØD 9.8 - 12.0



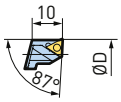
E10-12T
615.365
ØD 9.8 - 12.0



AST10-85HM12-14 **615.354**
ØD 11.8 - 14.0



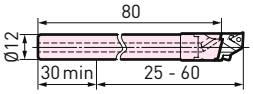
AST10-120HM12-14 **615.370**
ØD 11.8 - 14.0



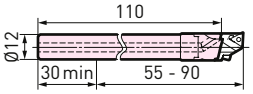
E12-14T
615.366
ØD 11.8 - 14.0

TP 07

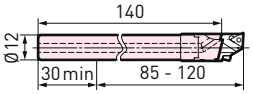




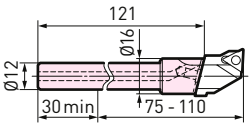
AST12-80HM14-18 **615.355**
ØD 13.8 - 18.0



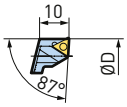
AST12-110HM14-18 **615.356**
ØD 13.8 - 18.0



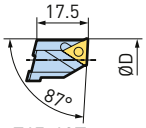
AST12-140HM14-18 **615.372**
ØD 13.8 - 18.0



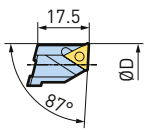
AST12-121HM17-33 **615.256**
ØD 16.8 - 33.0



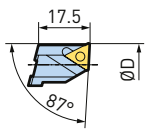
E14-17T
615.367
ØD 13.8 - 17.0



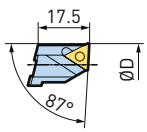
E15-18T
615.300
ØD 14.8 - 18.0



E17-22T
615.301
ØD 16.8 - 22.0



E22-27T
615.302
ØD 21.8 - 27.0



E27-33T
615.303
ØD 26.8 - 33.0

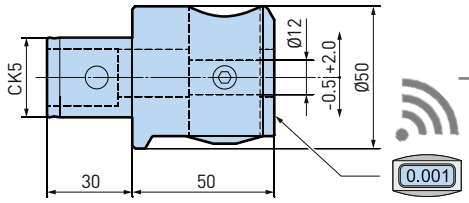
TC 11



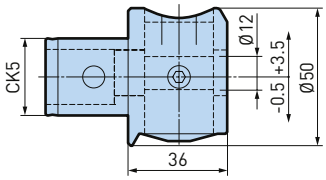
B.2

Boring Head **Order No.**

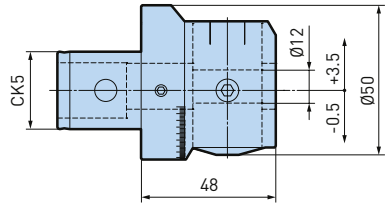
EWE2-32CK5 **112.310**



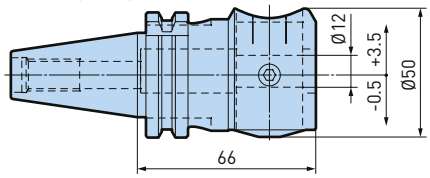
EWN2-32CK5 **112.301A**



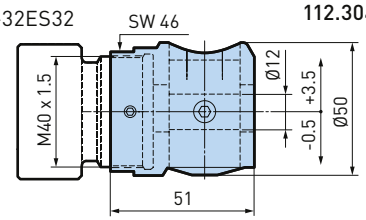
EWB2-32CK5 **112.306**



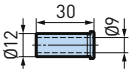
EWN2-32DV30 **112.303A**



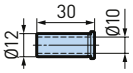
EWN2-32ES32 **112.304A**



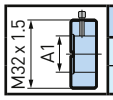
RB12-9 **613.309**



RB12-10 **613.310**



Reduction Sleeve for ER



Model	Order No.	A1
TB-ES32-ES25	**112.353**	M32 x 1.5
TB-ES32-ES16	**112.385**	M22 x 1.5

ØD

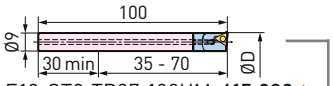
Boring range for the fine boring head EWN 2-32.
Under full use of the adjustment range, the max boring range will be,

- for EWN/EWB 2-32: Lower range + 7 mm Ø
- for EWE 2-32: Lower range + 4 mm Ø

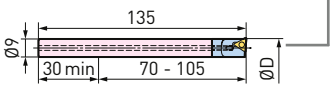
Carbide tool holders

♦ Recommended for EWB 2-32

Fixed Tool Holder



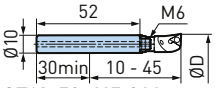
E10-ST9-TP07-100HM **615.208** ♦
ØD 10.0 - 11.8



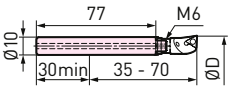
E10-ST9-TP07-135HM **615.206** ♦
ØD 10.0 - 11.8

TP 07

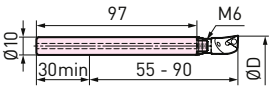




ST10-52 **615.214**
ØD 11.8 - 13.8



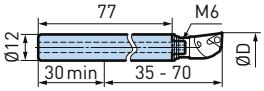
ST10-77HM **615.215** ♦
ØD 11.8 - 13.8



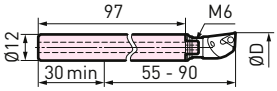
ST10-97HM **615.223** ♦
ØD 11.8 - 13.8



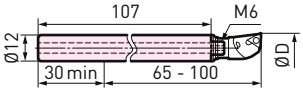
E12TP
615.272 ♦
ØD 11.8 - 13.8



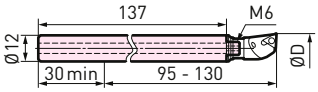
ST12-77 **615.218**
ØD 13.8 - 17.8



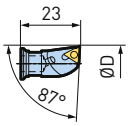
ST12-97HM **615.225** ♦
ØD 13.8 - 17.8



ST12-107HM **615.219**
ØD 13.8 - 17.8



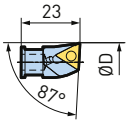
ST12-137HM **615.224** ♦
ØD 13.8 - 17.8



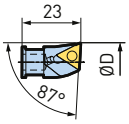
E14T
615.273 ♦
ØD 13.8 - 15.8

TP 07

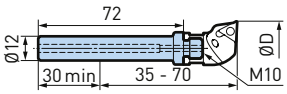




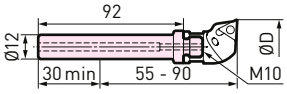
E15T
615.280 ♦
ØD 14.8 - 16.8



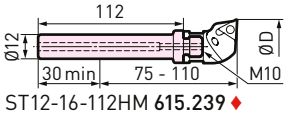
E16T
615.281 ♦
ØD 15.8 - 17.8



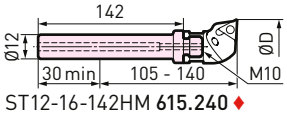
ST12-16-72 **615.234**
ØD 17.8 - 31.8



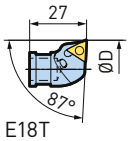
ST12-16-92HM **615.243** ♦
ØD 17.8 - 31.8



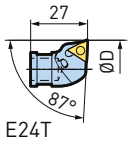
ST12-16-112HM **615.239** ♦
ØD 17.8 - 31.8



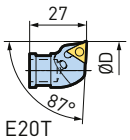
ST12-16-142HM **615.240** ♦
ØD 17.8 - 31.8



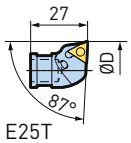
E18T
615.282
ØD 17.8 - 19.8



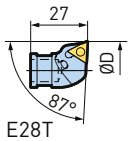
E24T
615.290
ØD 23.8 - 24.8



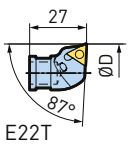
E20T
615.289
ØD 19.8 - 21.8



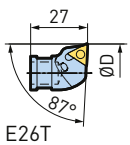
E25T
615.288
ØD 24.8 - 25.8



E28T
615.284
ØD 27.8 - 31.8



E22T
615.283
ØD 21.8 - 23.8



E26T
615.291
ØD 25.8 - 27.8

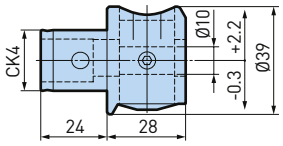
TC 11



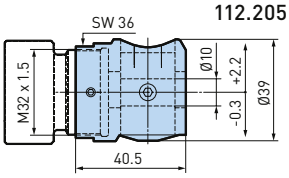
B.2

Boring Head **Order No.**

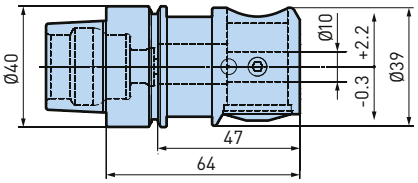
EWN04-22CK4 **112.206**



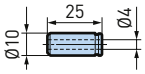
EWN04-22ES25 **112.205**



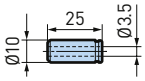
EWN04-22HSK-E40 **112.207**



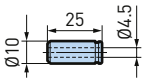
RB10-4 **613.204**



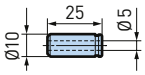
RB10-3.5 **613.202**



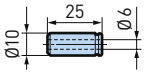
RB10-4.5 **613.203**



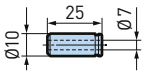
RB10-5 **613.205**



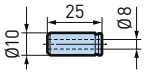
RB10-6 **613.206**



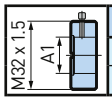
RB10-7 **613.207**



RB10-8 **613.208**



Reduction Sleeve for ER

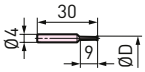


Model	Order No.	A1
TB-ES25-ES20	**112.271**	M25 x 1.5
TB-ES25-ES16	**112.272**	M22 x 1.5

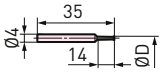
B.2

Carbide tool holders

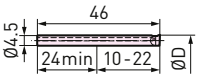
Fixed Tool Holder



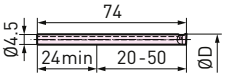
E2-4K10 **611.155**
ØD 2.0 - 3.0



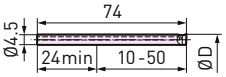
E3-4K10 **611.156**
ØD 3.0 - 4.0



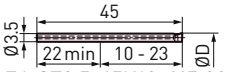
E5-ST4.5-46K10 **615.081**
ØD 4.9 - 5.9



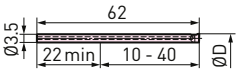
E5-ST4.5-74K10 **615.204**
ØD 4.9 - 5.9



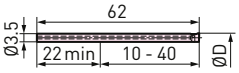
E5-ST4.5-74K10C **615.204A**
ØD 4.9 - 5.9



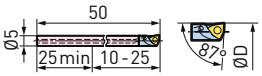
E4-ST3.5-45K10 **615.080**
ØD 3.9 - 4.9



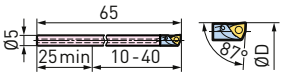
E4-ST3.5-62K10 **615.203**
ØD 3.9 - 4.9



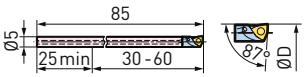
E4-ST3.5-62K10C **615.203A**
ØD 3.9 - 4.9



E6-ST5-WC02-50HM **615.082**
ØD 5.8 - 7.3



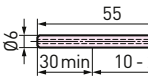
E6-ST5-WC02-65HM **615.083**
ØD 5.8 - 7.3



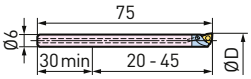
E6-ST5-WC02-85HM **615.201**
ØD 5.8 - 7.3

WC 02

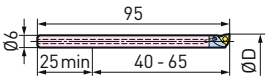




E7.5-ST6-WC02-55HM **615.084**
ØD 7.3 - 8.8



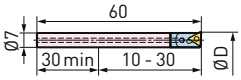
E7.5-ST6-WC02-75HM **615.085**
ØD 7.3 - 8.8



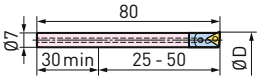
E7.5-ST6-WC02-95HM **615.202**
ØD 7.3 - 8.8

WC 02

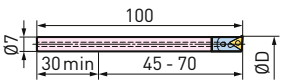




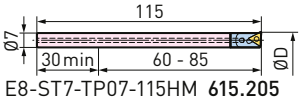
E8-ST7-TP07-60HM **615.086**
ØD 7.8 - 9.5



E8-ST7-TP07-80HM **615.207**
ØD 7.8 - 9.5



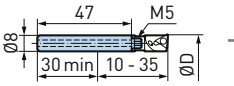
E8-ST7-TP07-100HM **615.087**
ØD 7.8 - 9.5



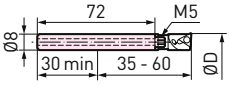
E8-ST7-TP07-115HM **615.205**
ØD 7.8 - 9.5

TP 07

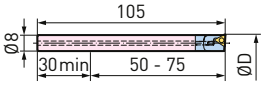




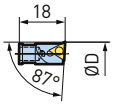
ST8-47 **615.211**
ØD 8.8 - 11.8



ST8-72HM **615.212**
ØD 8.8 - 11.8



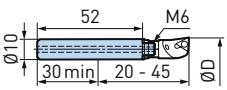
E9-ST8-TP07-105HM **615.213**
ØD 8.8 - 11.8



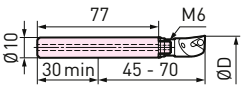
E9T
615.271
ØD 8.8 - 11.8

TP 07

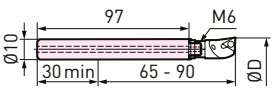




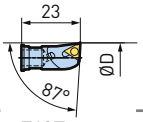
ST10-52 **615.214**
ØD 11.8 - 13.8



ST10-77HM **615.215**
ØD 11.8 - 13.8



ST10-11.8-13.8-M6-97 **615.223**
ØD 11.8 - 13.8



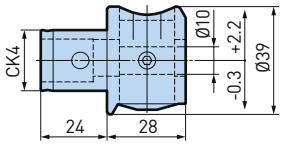
E12T
615.272
ØD 11.8 - 13.8

TP 07

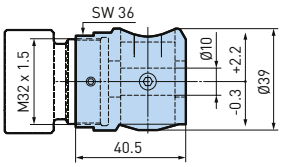


Boring Head **Order No.**

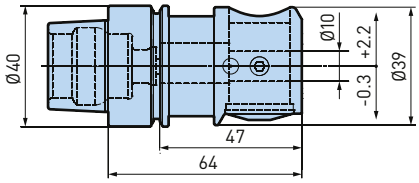
EWN04-22CK4 **112.206**



EWN04-22ES25 **112.205**

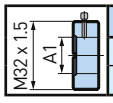


EWN04-22HSK-E40 **112.207**



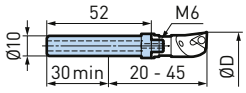
B.2

Reduction Sleeve for ER

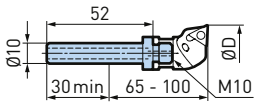


Model	Order No.	A1
TB-ES25-ES20	112.271	M25 x 1.5
TB-ES25-ES16	112.272	M22 x 1.5

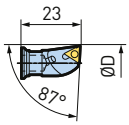
Fixed Tool Holder



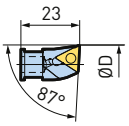
ST10-12-52 **615.216**
ØD 13.8 - 17.8



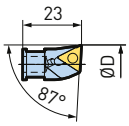
ST10-16-52 **615.217**
ØD 17.8 - 21.8



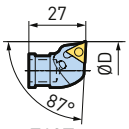
E14T
615.273
ØD 13.8 - 15.8



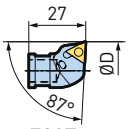
E15T
615.280
ØD 14.8 - 16.8



E16T
615.281
ØD 15.8 - 17.8



E18T
615.282
ØD 17.8 - 19.8



E20T
615.289
ØD 19.8 - 21.8

TP 07



TC 11



B.2

EWN 04-15 Fine Boring Head, Ø 0.4 - 15

Fine boring heads for the machining of smallest bores with highest spindle speeds on small machine tools.
The boring heads are available with both modular CK3 connection and cylindrical shanks Ø 16 mm.



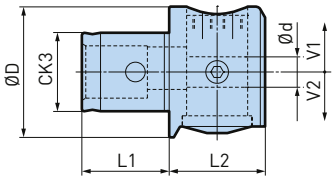


Fig. 1

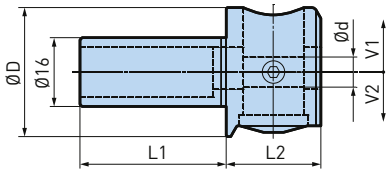
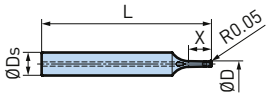


Fig. 2

Model	Order No.	Fig.	Ød	ØD	L1	L2	V1	V2
EWN04-15CK3	**112.505**	1	7	30	20	22	2	-0.2
EWN04-15ST16	**112.506**	2	7	30	34	22	2	-0.2

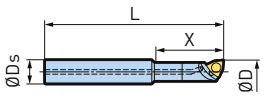
Boring Cutters

Fixed insert type

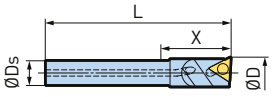


Model	Order No.	ØD	ØDs	L	X	Cutting material / coating
E0.4-ST7-52K10C	**615.522**	0.4 - 1	7	52	1.5	K10C
E0.9-ST7-52K10C	**615.524**	0.9 - 1.5	7	52	3	K10C
E1.4-ST7-52K10C	**615.525**	1.4 - 2	7	52	5	K10C
E2-ST7-52K10C	**615.501**	1.9 - 3	7	52	6	K10C
E3-ST7-52K10C	**615.502**	2.9 - 4	7	52	10	K10C
E4-ST7-52K10C	**615.503**	3.9 - 5	7	52	13	K10C
E5-ST7-52K10C	**615.504**	4.9 - 6	7	52	16	K10C

Indexable insert type



Model	Order No.	ØD	ØDs	L	X	Insert
E6-ST7-WC02-52HM	**615.505**	5.8 - 7	7	52	20	WC 02
E7-ST7-WC02-52HM	**615.506**	6.8 - 8	7	52	20	WC 02



Model	Order No.	ØD	ØDs	L	X	Insert
E8-ST7-TP07-52HM	**615.507**	7.8 - 9	7	52	30	TP 07
E9-ST7-TP07-52HM	**615.508**	8.8 - 10	7	52	30	TP 07
E10-ST7-TP07-52HM	**615.509**	9.8 - 11	7	52	30	TP 07
E12-ST7-TP07-52HM	**615.511**	11.8 - 15.5	7	52	30	TP 07

OD Turning Cutters

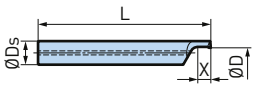


Fig. 1

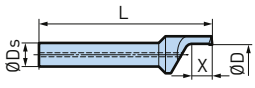


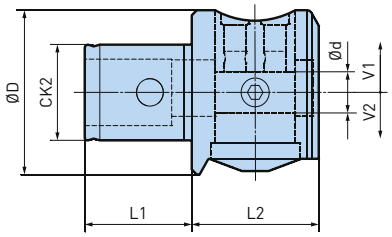
Fig. 2

Model	Order No.	Fig.	ØD	ØDs	L	X	Cutting material / coating
OD-0-3-ST7-52K10C	**615.530**	1	0.2 - 3	7	52	4	K10C
OD-2-6-ST7-52K10C	**615.531**	2	2 - 6	7	52	6	K10C

EWN 04-12 Fine Boring Head, Ø 0.4 - 12

Fine boring heads for the machining of smallest bores with highest spindle speeds on machine tools with spindles ISO 20, HSK-E25 and bigger. The boring heads are available with the modular CK2 connection.

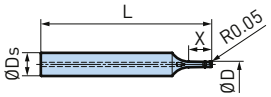




Model	Order No.	Ød	ØD	L1	L2	V1	V2
EWN04-12CK2	**112.507**	6	24	16	19	1.6	-0.2

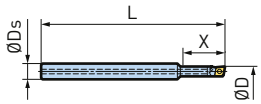
Boring Cutters

Fixed insert type

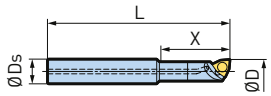


Model	Order No.	ØD	ØDs	L	X	Cutting material / coating
E0.4-ST6-52K10C	**615.580**	0.4 - 1	6	52	1.5	K10C
E0.9-ST6-52K10C	**615.581**	0.9 - 1.5	6	52	3	K10C
E1.4-ST6-52K10C	**615.582**	1.4 - 2	6	52	5	K10C
E2-ST6-52K10C	**615.583**	1.9 - 3	6	52	6	K10C
E3-ST6-52K10C	**615.584**	2.9 - 4	6	52	10	K10C

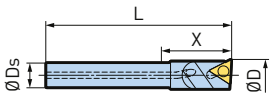
Indexable insert type



Model	Order No.	ØD	ØDs	L	X	Insert
ST06W-EB4-16	**807.019**	3.9 - 5	6	70	16	EC03
ST06W-EB5-20	**807.020**	4.9 - 6	6	75	20	EC03



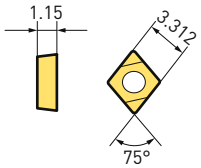
Model	Order No.	ØD	ØDs	L	X	Insert
E6-ST6-WC02-52HM	**615.585**	5.8 - 7	6	52	20	WC02
E7-ST6-WC02-52HM	**615.586**	6.8 - 8	6	52	20	WC02



Model	Order No.	ØD	ØDs	L	X	Insert
E8-ST6-TP07-52HM	**615.587**	7.8 - 9	6	52	30	TP07
E9-ST6-TP07-52HM	**615.588**	8.8 - 10	6	52	30	TP07
E10-ST6-TP07-52HM	**615.589**	9.8 - 12	6	52	30	TP07

Inserts ECGM





Model	Order No.	Radius [mm]	Cutting material / coating	Aluminium	Construction Steels	Stainless Steels
ECGM03X102ELA(T1500A)	**807.017**	0.2	Cermet		++	++
ECGM03X102ELA(H1)	**807.018**	0.2	K10	++		

1. Inserts are available in a packet of 10 pcs.

Clamping Screw

Model	Order No.	Insert
S1.6S-T3-S	**807.040**	ECGM03X102ELA(T1500A) / ECGM03X102ELA(H1)

1. Clamping Screws are available in a packet of 10 pcs.

EWN 04-24/12-36 Fine Boring Head, Ø 0.4 - 36

Special fine boring heads with wide diameter range for the micro industry.
Dedicated cutters for OD turning and face grooving available.



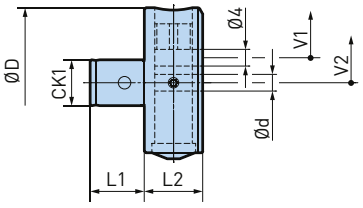


Fig. 1

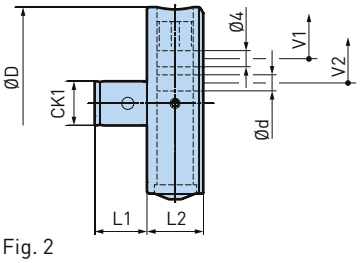


Fig. 2

Model	Order No.	Fig.	Ød	ØD	L1	L2	V1	V2
EWN04-24CK1	**188.133**	1	4	36	13	14	6	6
EWN12-36CK1	**188.134**	2	4	48	13	14	6	6

OD Turning



Fine Boring



Face Grooving



B.2

EWN 04-7 Fine Boring Head, Ø 0.4 - 7

The world's smallest fine boring head: Thanks to its body diameter of only Ø 18.5 mm, the EWN 04-7 is the perfect solution for micro machining applications.



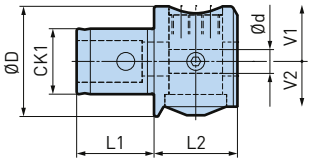


Fig. 1

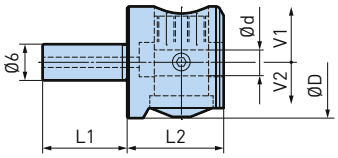


Fig. 2

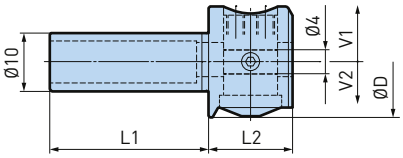


Fig. 3

Model	Order No.	Fig.	Ød	ØD	L1	L2	V1	V2
EWN04-7CK1	**112.503**	1	4	18.5	13	14	1.05	-0.1
EWN04-7ST6	**112.508**	2	4	18.5	14	16	1.05	-0.1
EWN04-7ST10	**112.504**	3	4	18.5	25	14	1.05	-0.1

Boring Cutters

Fixed insert type

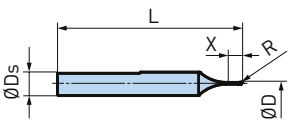


Fig. 1

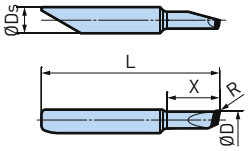
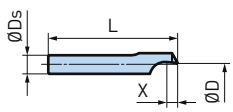


Fig. 2

Model	Order No.	Fig.	ØD	ØDs	L	X	R	Cutting material / coating
E0.4-ST4-25K10C	**615.561**	1	0.4 - 0.6	4	25	1.1	0.1	K10C
E0.4-ST4-25K10	**615.551**	1	0.4 - 0.6	4	25	1.1	0.1	K10
E0.4-ST4-30K10C	**615.541**	1	0.4 - 0.9	4	30	1.5	0.05	K10C
E0.6-ST4-25K10C	**615.562**	1	0.6 - 0.8	4	25	1.5	0.1	K10C
E0.6-ST4-25K10	**615.552**	1	0.6 - 0.8	4	25	1.5	0.1	K10
E0.8-ST4-25K10C	**615.563**	1	0.8 - 1.2	4	25	2	0.1	K10C
E0.8-ST4-25K10	**615.553**	1	0.8 - 1.2	4	25	2	0.1	K10
E0.9-ST4-30K10C	**615.542**	1	0.9 - 1.4	4	30	3	0.05	K10C
E1.2-ST4-25K10C	**615.564**	1	1.2 - 1.5	4	25	2.5	0.1	K10C
E1.2-ST4-25K10	**615.554**	1	1.2 - 1.5	4	25	2.5	0.1	K10
E1.4-ST4-30K10C	**615.543**	1	1.4 - 2	4	30	5	0.05	K10C
E1.5-ST4-25K10C	**615.565**	1	1.5 - 1.9	4	25	3.5	0.2	K10C
E1.5-ST4-25K10	**615.555**	1	1.5 - 1.9	4	25	3.5	0.2	K10
E1.9-ST4-25K10C	**615.566**	1	1.9 - 3	4	25	4.5	0.2	K10C
E2-ST4-30K10C	**615.544**	1	1.9 - 3	4	30	6	0.05	K10C
E3-ST4-30K10C	**615.545**	1	2.9 - 4	4	30	10	0.05	K10C
E4-ST4-30K10C	**615.546**	1	3.9 - 5	4	30	13	0.05	K10C
E5-ST4-30K10C	**615.547**	1	4.9 - 7	4	30	16	0.05	K10C
E1.4-ST4-24CBN20	**615.571**	2	1.4 - 2	4	25	3.5	0.1	CBN-20
E1.9-ST4-24CBN20	**615.572**	2	1.9 - 3	4	25	4.5	0.1	CBN-20
E2.9-ST4-27CBN20	**615.573**	2	2.9 - 4	4	25	8	0.1	CBN-20
E3.9-ST4-30CBN20	**615.574**	2	3.9 - 5	4	25	11	0.1	CBN-20
E4.9-ST4-30CBN20	**615.575**	2	4.9 - 6	4	25	16	0.1	CBN-20

OD Turning Cutter

The boring cutters are made with flat for cutting edge orientation.



Model	Order No.	ØD	ØDs	L	X	Cutting material / coating
OD-0.2-2.3-ST4-25K10C	**615.590**	0.2 - 2.3	4	25	2.2	K10C

Fine Boring Heads with Peripherical Cutting Edge

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B.3



EWE Digital Fine Boring Heads

Wireless communication for easy readout with the BIG KAISER app:
The brandnew EWE fine boring heads revolutionate fine boring.
Ø 25 - 203 mm, CKB1-CKB7

Wireless



EWN Smart Damper fine boring head

The combination of the most advanced technologies to a powerful and highly productive tool: an integral fine boring head with an innovative and patented damping technology.
Ø 20 - 150 mm, CKB1-CKB2/CKB3-CKB7

Anti-Vibration



EWN Fine Boring Heads

The EWN single cutter boring tool program for fine boring covers a range of Ø 20 - 203 mm with only 7 precision boring heads. Due to the optimized balance over the whole adjustment range, cutting speeds up to 1200 m/min are permitted.
Ø 20 - 203 mm, CKB1-CKB7/BIG CAPTO C3-C8



EWB Balanced Fine Boring Heads

Even at max. speeds the balanced EWB fine boring heads guarantee vibration-free boring, resulting in increased productivity and highest precision.
Ø 32 - 105 mm, CK3-CK6

B.3



EWB-AL Balanced Fine Boring Head

The fine boring heads EWB AL are made of high strength aluminium with hard coating. Together with reductions and extensions made in the same way, the weight for long and large diameter tool combinations is reduced by more than 50%.
Ø 100 - 203 mm, CK6-CK7



EWB-UP Balanceable Fine Boring Heads

The ultra-precision EWB-UP series sets higher standards for boring heads concerning adjustment accuracy and balance quality.
Ø 25 - 100 mm, CK2-CK6



EW Fine Boring Heads

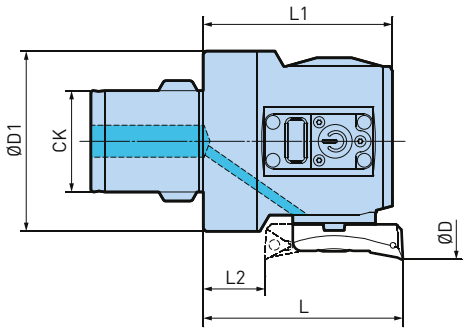
These heads are designed to be used in combination with the steel or carbide-boring bars Ø 14 and Ø 16 mm out of the accessory program. In conjunction with the long carbide bar, the tool is well suited for vibration-free finishing operations in bores with unfavorable Ø/L-ratios.
Ø 15 - 22 mm, ES15/ES18

EWE Digital Fine Boring Heads, Ø 25 - 203

Thanks to wireless communication with the BIG KAISER app, manufacturing precise bores has become very easy.

Wireless





Model	Order No.	CK	ØD	Back Boring ØD	ØD1	L	L1	L2
EWE25-47CKB2	**310.820**	CKB2	25 - 47	-	23.4	35.5	32.5	-
EWE41-74CKB4	**310.840**	CKB4	41 - 74	53 - 74	38	47	43	14
EWE53-95CKB5	**310.850**	CKB5	53 - 95	62 - 95	49	57	53	19
EWE68-150CKB6	**310.860**	CKB6	68 - 150	80 - 150	64	71	67.2	22
EWE100-203CKB6	**310.865**	CKB6	100 - 203	112 - 203	64 / 90 *	71	67.2	22
EWE100-203CKB7	**310.870**	CKB7	100 - 203	112 - 203	90	87	83.2	38

1. * Max. body diameter: 90 mm
2. Insert holder is to be ordered separately.
3. EWE25-47CKB2 does not have a display on the body. An external device containing the BIG KAISER APP, or using the EWE Reader, is required.

Accessories & Spare Parts

Insert Holders Type E	Insert Holder Type C	Accessories	EWE Reader
			
▶ 441	▶ 442	▶ 507-508	▶ 398

B.3

BIG KAISER App

The new app simplifies the assembly and operation of rough and fine boring heads and provides extremely accurate cutting data. The various parameters can be saved in the app for later use, an important building block for workshops that want to get into smart manufacturing. The app currently supports 61 BIG KAISER fine and reaming heads with diameters from 0.4 mm - 620 mm.

App Store
Google Play
Windows 10



Cutting data



Send your data to...



History (made automatically)

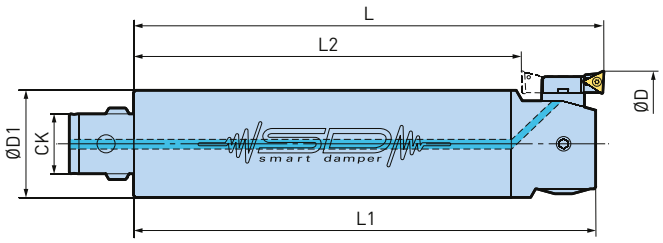
This is how the app is going to support your daily challenges

1. Choose your tool
2. Type in your application values
3. Calculate cutting data
4. Adjust machine and make a measuring bore
5. Infeed tool with the diameter of the measuring bore
6. Make the bore middle tolerance

EWN Smart Damper Fine Boring Head, Ø 20 - 203

Anti-Vibration





Model	Order No.	CK	ØD	Back Boring ØD	ØD1	L	L1	L2
CK1-EWN20DP-100	**807.400**	CK1	20 - 36	28 - 36	19	100	97	78
CK2-EWN25DP-125	**807.401**	CK2	25 - 47	42 - 47	24	125	122	101
CKB3-EWN32DP-160	**807.016**	CKB3	32 - 60	57 - 60 **	31	160	155	130
CKB4-EWN41DP-185	**806.742**	CKB4	41 - 74	61 - 74 *	39	185	181	152
CKB5-EWN53DP-210	**806.743**	CKB5	53 - 95	74 - 95 *	50	210	206	172
CKB6-EWN68DP-240	**806.744**	CKB6	68 - 150	90 - 150	64	240	236.2	191
CKB6-EWN100DP-240	**807.185**	CKB6	100 - 203	107 - 203	64	240	236.2	191
CKB7-EWN100DP-240	**807.186**	CKB7	100 - 203	116 - 203	90	240	236.2	191

1. Insert holder (type 1) included. Other sizes are available.
2. * Use insert holders type 2 or 3 for back boring.
3. ** Use insert holders Type 3 for back boring.

B.3

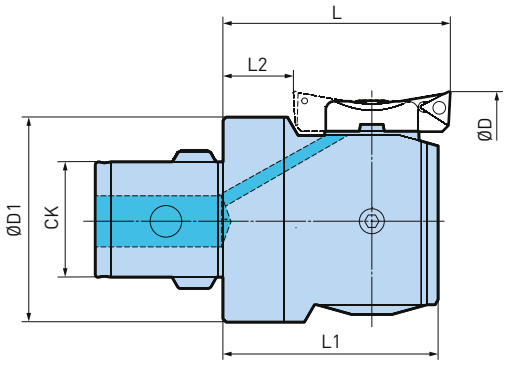
Accessories & Spare Parts

Insert Holders Type E	Insert Holder Type C	Accessories
		
▶ 441	▶ 442	▶ 507-508

EWN Fine Boring Heads, Ø 20 - 203

The EWN single cutter boring tool program for fine boring covers a range of Ø 20 - 203 mm with only 7 fine boring heads.
Due to the optimized balance over the whole adjustment range, cutting speeds up to 1200 m/min are permitted.





Model	Order No.	CK	ØD	Back Boring ØD	ØD1	L	L1	L2
EWN20-36CKB1	**310.101**	CKB1	20 - 36	28 - 36	18.5	32.5	29.5	10.5
EWN25-47CKB2	**310.201**	CKB2	25 - 47	36 - 47	23.4	35.5	32.5	11.5
EWN32-60CKB3	**310.301**	CKB3	32 - 60	46 - 60	30	40	35	10
EWN41-74CKB4	**310.401**	CKB4	41 - 74	53 - 74	38	47	43	14
EWN53-95CKB5	**310.501**	CKB5	53 - 95	62 - 95	49	57	53	19
EWN68-150CKB6	**310.601**	CKB6	68 - 150	80 - 150	64	71	67.2	22
EWN100-203CKB6	**310.602**	CKB6	100 - 203	112 - 203	90	71	67.2	22
EWN100-203CKB7-87	**310.701**	CKB7	100 - 203	112 - 203	90	87	83.2	38
EWN100-203CKB7-117	**310.708**	CKB7	100 - 203	112 - 203	90	117	113.2	68

1. Insert holder is to be ordered separately.

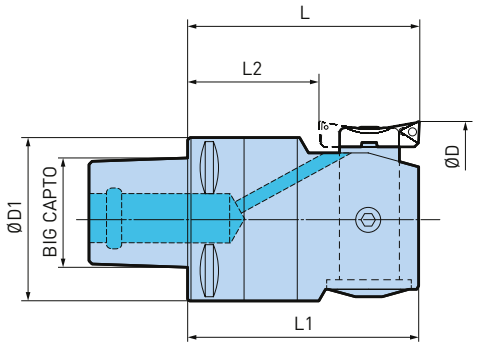
Accessories & Spare Parts

Insert Holders Type E	Insert Holder Type C	Accessories
		
▶ 441	▶ 442	▶ 507-508

EWN BIG CAPTO Fine Boring Heads, Ø 32 - 203

With only 5 fine boring heads, the diameter range from Ø 32-203 mm is completely covered. The boring heads can be clamped in BIG CAPTO shanks and other polygonal basic holders, or directly in CAPTO machine spindles.





Model	Order No.	BIG CAPTO	ØD	Back Boring ØD	ØD1	L	L1	L2
EWN32-60C3	**470.301**	C3	33 - 60	46 - 60	32	55	50	25
EWN41-74C4	**470.401**	C4	41 - 74	53 - 74	40	67	63	34
EWN53-95C5	**470.501**	C5	53 - 95	62 - 95	50	77	73	39
EWN68-150C6	**470.601**	C6	68 - 150	80 - 150	64	92	88	43
EWN100-203C6	**470.602**	C6	100 - 203	112 - 203	90	92	88	43
EWN100-203C8	**470.801**	C8	100 - 203	112 - 203	90	117	113	68

1. Insert holder is to be ordered separately.

B.3

Accessories & Spare Parts

Insert Holders Type E	Insert Holder Type C	Accessories
		
▶ 441	▶ 442	▶ 507-508

Insert Holders Type E

Standard holder with 87° entering angle, suitable for fine boring in through and blind holes. Three different insert holders for the extension of the diameter range and for back boring applications.



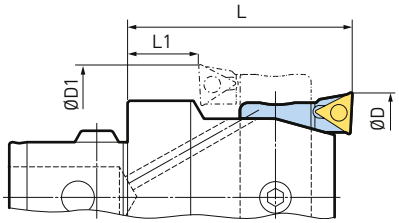


Fig. 1

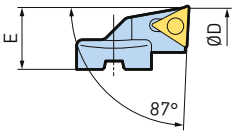


Fig. 2

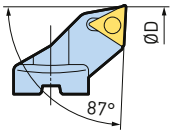


Fig. 3

Model	Order No.	Head	Type	ØD	Back Boring ØD	L	L1	E	Insert
ENH1-1T	**626.111**	EWN20	1	20 - 26	-	32.5	10.5	4.65	TP 07
ENH1-2T	**626.112**	EWN20	2	25 - 31	28 - 31	32.5	10.5	7.15	TP 07
ENH1-3T	**626.113**	EWN20	3	30 - 36	30 - 36	32.5	10.5	9.65	TP 07
ENH2-1T	**626.121**	EWN25	1	25 - 33	-	35.5	11.5	5.45	TP 07
ENH2-2T	**626.122**	EWN25	2	32 - 40	36 - 40	35.5	11.5	8.95	TP 07
ENH2-3T	**626.123**	EWN25	3	39 - 47	39 - 47	35.5	11.5	12.45	TP 07
ENH3-1T	**626.131**	EWN32	1	32 - 42	-	40	10	7.4	TC 11
ENH3-2T	**626.132**	EWN32	2	41 - 51	46 - 51	40	10	11.9	TC 11
ENH3-3T	**626.133**	EWN32	3	50 - 60	50 - 60	40	10	16.4	TC 11
ENH4-1T	**626.141**	EWE/EWN41	1	41 - 54	-	47	14	8.1	TC 11
ENH4-2T	**626.142**	EWE/EWN41	2	50 - 63	53 - 63	47	14	12.6	TC 11
ENH4-3T	**626.143**	EWE/EWN41	3	61 - 74	61 - 74	47	14	18.1	TC 11
ENH5-1T	**626.151**	EWE/EWN53	1	53 - 70	62 - 70	57	19	10	TC 11
ENH5-2T	**626.152**	EWE/EWN53	2	65 - 82	69 - 82	57	19	16	TC 11
ENH5-3T	**626.153**	EWE/EWN53	3	78 - 95	78 - 95	57	19	22.5	TC 11
ENH6-1T	**626.161**	EWE/EWN68	1	68 - 100	80 - 100	71	22	12.5	TC 11
ENH6-2T	**626.162**	EWE/EWN68	2	94 - 126	94 - 126	71	22	25.5	TC 11
ENH6-3T	**626.163**	EWE/EWN68	3	118 - 150	118 - 150	71	22	37.5	TC 11
ENH6-1T	**626.161**	EWE/EWN100	1	100 - 153	112-153	71/87/117	22/38/68	12.5	TC 11
ENH6-2T	**626.162**	EWE/EWN100	2	126 - 179	126-179	71/87/117	22/38/68	25.5	TC 11
ENH6-3T	**626.163**	EWE/EWN100	3	150 - 203	150-203	71/87/117	22/38/68	37.5	TC 11

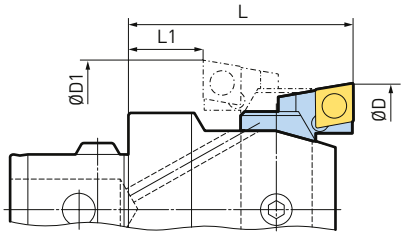
Accessories & Spare Parts

Inserts TC	Inserts TP
	
▶ 472	▶ 471

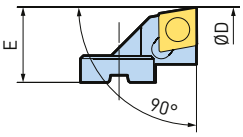
Insert Holder Type C

With 90° approach angle, suitable for semi-finish and finish boring and for stepped bores. For each boring head, insert holders with different projections are available for extension of the boring range and back boring.

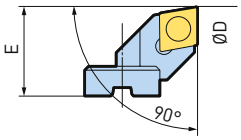




Type 1



Type 2



Type 3

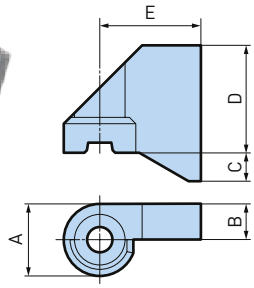
Model	Order No.	Head	Type	ØD	ØD1	L	L1	E	Insert
ENH2-2C	**626.322**	EWN25	2	33 - 41	37-41	35.5	11.5	9.5	CC 06
ENH2-3C	**626.323**	EWN25	3	39 - 47	39-47	35.5	11.5	12.5	CC 06
ENH3-1C	**626.331**	EWN32	1	32 - 42	-	40	10	7.4	CC 06
ENH3-2C	**626.332**	EWN32	2	41 - 51	47-51	40	10	11.9	CC 06
ENH3-3C	**626.333**	EWN32	3	50 - 60	50-60	40	10	16.4	CC 06
ENH4-1C	**626.341**	EWE/EWN41	1	41 - 54	-	47	14	8.1	CC 06
ENH4-2C	**626.342**	EWE/EWN41	2	50 - 63	54-63	47	14	12.6	CC 06
ENH4-3C	**626.343**	EWE/EWN41	3	61 - 74	61-74	47	14	18.1	CC 06
ENH5-1C	**626.351**	EWE/EWN53	1	53 - 70	62-70	57	19	10	CC 06
ENH5-2C	**626.352**	EWE/EWN53	2	62 - 79	67-79	57	19	14.5	CC 09
ENH5-3C	**626.353**	EWE/EWN53	3	78 - 95	78-95	57	19	22.5	CC 09
ENH6-1C	**626.361**	EWE/EWN68	1	68 - 100	80-100	71	22	12.5	CC 09
ENH6-2C	**626.362**	EWE/EWN68	2	94 - 126	82-110	71	22	17.5	CC 09
ENH6-3C	**626.363**	EWE/EWN68	3	118 - 150	108-140	71	22	32.5	CC 09
ENH6-1C	**626.361**	EWE/EWN100	1	100 - 153	112-153	71/87/117	22/38/68	12.5	CC 09
ENH6-2C	**626.362**	EWE/EWN100	2	110 - 163	110-163	71/87/117	22/38/68	17.5	CC 09
ENH6-3C	**626.363**	EWE/EWN100	3	140 - 193	140-193	71/87/117	22/38/68	32.5	CC 09

B.3

Blank Insert Holder Type ENH

If required, the blanks can be hardened. (Mat. 1.2343)





Model	Order No.	Head	A	B	C	D	E
ENH1-B	**626.901**	EWN20	8.4	4.2	2.61	11	11.8
ENH2-B	**626.902**	EWN25	10.4	5.2	3.16	10	17.2
ENH3-B	**626.903**	EWN32	11.4	5.7	4.5	17	16
ENH4-B	**626.904**	EWN41	15.4	7.7	5	20	20
ENH5-B	**626.905**	EWN53	19	9.5	-	25	20
ENH6-B	**626.906**	EWN68;EWN100	29	14.5	-	40	26
ENH6-BLANK L	**626.916**	EWN68;EWN100	29	14.5	-	40	50

Accessories & Spare Parts

Inserts CC



▶ 475

Insert Holders 30°/45° TP07

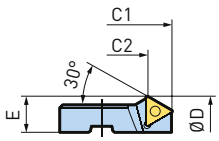


Fig. 1

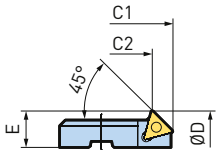


Fig. 2

Model	Order No.	Fig.	Head	ØD	E	C1	C2	Insert
ENH2-1T30	**626.422**	1	EWN25	28 - 36	6.95	35.5	29.8	TP 07
ENH2-1T45	**626.423**	2	EWN25	28 - 36	6.95	35.5	30.8	TP 07

Insert Holders 30°/45°/25° TC11

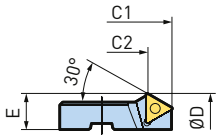


Fig. 1

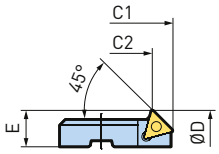


Fig. 2

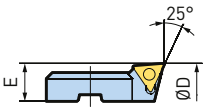


Fig. 3

Model	Order No.	Fig.	Head	ØD	E	C1	C2	Insert
ENH3-1T25	**689.197**	3	EWN32	32 - 42	7.4	-	-	TC 11
ENH3-1T30	**626.432**	1	EWN32	36 - 46	9.4	42	33.3	TC 11
ENH3-1T45	**626.433**	2	EWN32	36 - 46	9.4	42	34.8	TC 11
ENH4-1T25	**689.198**	3	EWN41	41 - 54	8.1	-	-	TC 11
ENH4-1T30	**626.442**	1	EWN41	45 - 58	10.1	49	40.3	TC 11
ENH4-1T45	**626.443**	2	EWN41	45 - 58	10.1	49	41.8	TC 11
ENH5-1T25	**689.001**	3	EWE/EWN53	53 - 70	10	-	-	TC 11
ENH5-1T30	**626.452**	1	EWE/EWN53	56 - 73	11.5	57	48.4	TC 11
ENH5-1T45	**626.453**	2	EWE/EWN53	56 - 73	11.5	57	49.8	TC 11
ENH6-1T25	**689.007**	3	EWE/EWN68	68 - 100	12.5	-	-	TC 11
ENH6-1T30	**626.462**	1	EWE/EWN68	68 - 100	12.5	87	78.3	TC 11
ENH6-1T45	**626.463**	2	EWE/EWN68	68 - 100	12.5	87	79.8	TC 11
ENH6-1T25	**689.007**	3	EWE/EWN100	100 - 153	12.5	-	-	TC 11
ENH6-1T30	**626.462**	1	EWE/EWN100	100 - 153	12.5	87	78.3	TC 11
ENH6-1T45	**626.463**	2	EWE/EWN100	100 - 153	12.5	87	79.8	TC 11

Back Boring Instructions

For back boring, it is required to enter into the bore off centre, with a tool adjusted to the back bore diameter. In this respect, the back bore diameter «ØD» as well as the diameters of the entry bore «C» and the tool body «ØD1», are related to each other. In order to check the feasibility of the back boring operation and to select the best possible tool combination, these values can be calculated as follows:

Example:

Calculation of the minimum entry bore diameter «C».

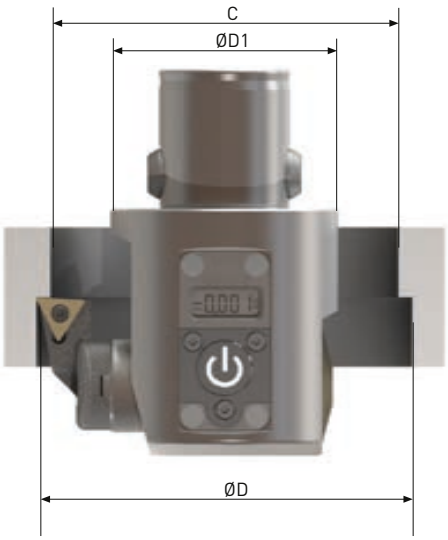
Given:

- Back bore diameter ØD = 93 mm
- Tool combination EWN53, with
  Insert holder no. 3, ØD1 = 50 mm

$$C = \frac{ØD + ØD1}{2} = \frac{93 + 50}{2} = 71.5 \text{ mm}$$

Caution:

- Counter clockwise spindle rotation is required for back boring operations.
- The cutting edge is at a shorter length than the boring head. Consider total length of tool. Check the space at the back side of the work piece.



Min. entry bore diameter «C»

$$C = \frac{ØD + ØD1}{2}$$

Max. back bore diameter «ØD»

$$ØD = 2C - ØD1$$

Max. tool body diameter «ØD1»

$$ØD1 = 2C - ØD$$

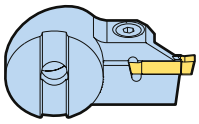
Face Grooving with EWN/EWE, Ø 53 - 3 040

The insert holders and inserts are made for face grooving with the fine boring heads EWN and EWE Series 310 and with the large diameter boring tools Series 317 und 318.

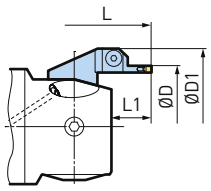


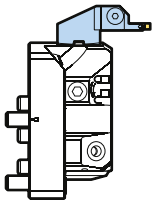
Insert Holders

Type 1

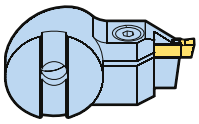


Type 1

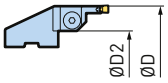




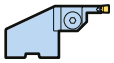
Type 2



Type 2



EWN/EWE 310

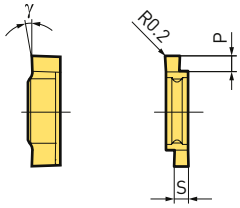


EWN/EWE 200

For Boring Head	Insert holder								L *	L1
	Type 1				Type 2					
	ØD	ØD1	Model	Order No.	ØD	ØD2	Model	Order No.		
EWN/EWE53 (310.501)/(310.850)	53 - 70	ØD + 22	ENH5-1FG4	**626.935**	73 - 90	ØD - 30	ENH5-1FG4R	**626.945**	73	20
EWN/EWE68 (310.601)/(310.860)	68 - 100	ØD + 24	ENH6-1FG4	**626.936**	88 - 120	ØD - 28	ENH6-2FG4R	**626.946**	88	21
	94 - 126		ENH6-2FG4	**626.937**	114 - 146		ENH6-3FG4R	**626.947**		
EWN/EWE100 (310.602)/(310.865)	100 - 153	ØD + 24	ENH6-1FG4	**626.936**	120 - 173	ØD - 28	ENH6-2FG4R	**626.946**	88	21
	126 - 179		ENH6-2FG4	**626.937**	146 - 199		ENH6-3FG4R	**626.947**		
EWN/EWE100 (310.701)/(310.870)	100 - 153	ØD + 24	ENH6-1FG4	**626.936**	120 - 173	ØD - 28	ENH6-2FG4R	**626.946**	104	21
	126 - 179		ENH6-2FG4	**626.937**	146 - 199		ENH6-3FG4R	**626.947**		
EWN100L (310.708)	100 - 153	ØD + 24	ENH6-1FG4	**626.936**	120 - 173	ØD - 28	ENH6-2FG4R	**626.946**	134	21
	126 - 179		ENH6-2FG4	**626.937**	146 - 199		ENH6-3FG4R	**626.947**		
EWN/EWE200 (318.101)/(318.104)	200 - 3 000	ØD + 21	ENH7-1FG4	**626.938**	220 - 3 040	ØD - 28	ENH7-2FG4R	**626.948**	134	21

1. * Tool length to the CK connection.

Inserts

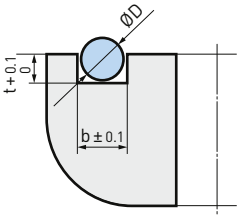


Inserts for Steel and Cast Iron			
S	P	γ	Order No.
2.5	2.7	5°	**958.425**
3.0	3.3	5°	**958.430**
3.3	3.6	5°	**958.433**
3.5	3.8	5°	**958.435**
4.0	4.3	5°	**958.440**

Inserts for Aluminium			
S	P	γ	Order No.
2.5	2.7	15°	**958.475**
3.0	3.3	15°	**958.480**
3.3	3.6	15°	**958.483**
3.5	3.8	15°	**958.485**
4.0	4.3	15°	**958.490**

Groove Dimensions

Recommended groove dimensions for given cross section diameters of O-rings, for static sealing.

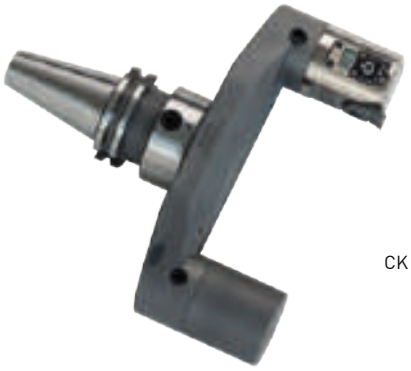


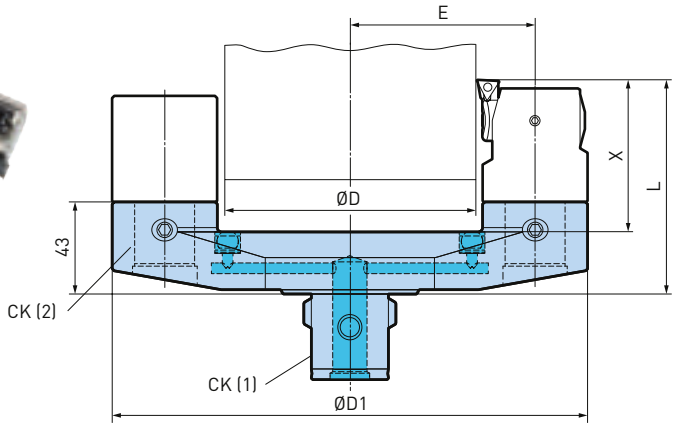
ØD	Groove Width b	Groove Depth t
1.78	2.5	1.3
2.0	2.5	1.6
2.5	3.3	1.9
2.62	3.5	2.05
3.0	4.0	2.4

Work Piece Material	Vc m/min	fn mm/rev
Construction-heat treatable steels	120 - 200	0.01 - 0.03
Stainless steels	60 - 120	0.01 - 0.02
Cast iron	80 - 160	0.02 - 0.04
Aluminium	200 - 400	0.02 - 0.04
Non-ferrous metals		

OD Turning with EWN/EWE/SW, Ø 16 - 120

Our standard fine and rough boring tools (EWN, EWE and SW) can be used for outer diameter turning with the OD turning bridge. Wide range is covered by 5 bridges.





Accessories & Spare Parts

CKB/CKN Extensions



▶ 253

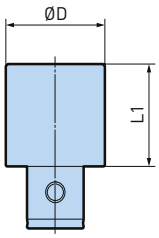
Model	Order No.	ØD	ØD1	E	L	X	CK (1)	CK (2)
OD16-44CKB5-CKB3	**335.906**	16 - 44	107	38	83 (113) (128)	51 (81) (96)	CKB5	CKB3
OD16-44CKB6-CKB3	**335.905**	16 - 44	107	38	83 (113) (128)	51 (81) (96)	CKB6	CKB3
OD34-67CKB6-CKB4	**335.904**	34 - 67	147	54	90 (130) (150)	58 (98) (118)	CKB6	CKB4
OD57-90CKB6-CKB4	**335.903**	57 - 90	170	65.5	90 (130) (150)	58 (98) (118)	CKB6	CKB4
OD78-120CKB6-CKB5	**335.902**	78 - 120	222	86.5	100 (160) (190)	68 (128) (158)	CKB6	CKB5

1. The numbers in brackets indicate the tool length (L) and the max. pin length (X) with the use of the corresponding extensions.
2. Attention: Counter-clockwise rotation of spindle! Vc max. 450m/min

B.3

Counter Weight for OD Turning





Model	Order No.	CK	ØD	L1
CW-CK3	**335.915**	CK3	31.3	35
CW-CK4	**335.913**	CK4	39	36.4
CW-CK5	**335.912**	CK5	49	49.5

1. For use of SW / EWN / EWE boring head

Selection of the Insert Holder

Fine Boring

ØD	Tool Holder	For Boring Head	Range ØD Insert Holder Order No.		
16 - 44	**335.905**	EWN32	16 - 26	25 - 35	34 - 44
16 - 44	**335.906**	EWN32	16 - 26	25 - 35	34 - 44
		310.301	**626.133**	**626.132**	**626.131**
34 - 67	**335.904**	EWE/EWN41	34 - 47	45 - 58	54 - 67
57 - 90	**335.903**	EWE/EWN41	57 - 70	68 - 81	77 - 90
		310.840/310.401	**626.143**	**626.142**	**626.141**
78 - 120	**335.902**	EWE/EWN53	78 - 95	91 - 108	103 - 120
		310.850/310.501	**626.153**	**626.152**	**626.151**

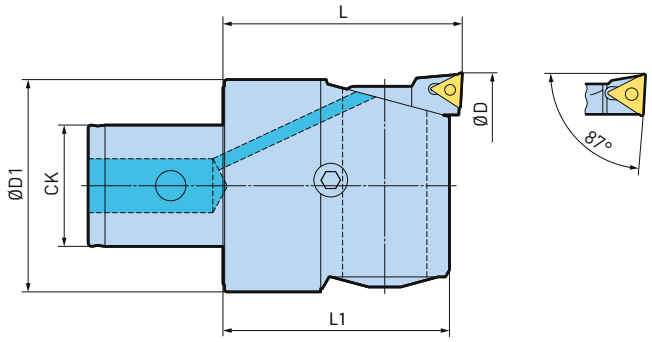
Rough Boring

ØD	Tool Holder	For Boring Head	Range ØD Insert Holder Order No.	
25 - 44	**335.905**	SW32	25 - 35	34 - 44
25 - 44	**335.906**	SW32	25 - 35	34 - 44
		319.301	**639.437**	**639.433**
42 - 67	**335.904**	SW41	42 - 55	54 - 67
65 - 90	**335.903**	SW41	65 - 78	77 - 90
		319.401	**639.447**	**639.443**
87 - 120	**335.902**	SW53	87 - 104	103 - 120
		319.501	**639.457**	**639.453**

EWB Balanced Fine Boring Head, Ø 32 - 105

Even at max. speeds balanced tools guarantee vibration-free boring, resulting in increased productivity and highest precision.





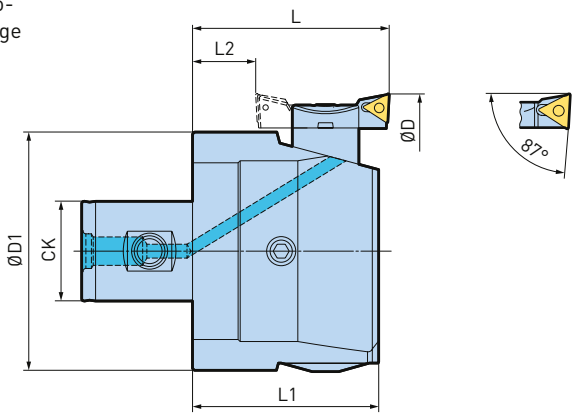
Model	Order No.	CK	ØD	ØD1	L	L1	Insert
EWB32-42CK3	**310.305A**	CK3	32 - 42	30	40	37	TP 07
EWB41-54CK4	**310.405A**	CK4	41 - 54	38	47	43	TC 11
EWB53-70CK5	**310.505A**	CK5	53 - 70	49	57	53	TC 11
EWB68-88CK6	**310.605A**	CK6	68 - 88	63	71	67.2	TC 11
EWB85-105CK6	**310.606A**	CK6	85 - 105	63	71	67.2	TC 11

1. EWB boring heads will be delivered with assembled insert holder.
2. Inserts are not included.

EWB-AL Balanced Fine Boring Head, Ø 100 - 203

The fine boring heads EWB-AL are made of high strength aluminium with hard co-ating. Together with fitting reductions and extensions, the weight for long and large diameter tool combinations is reduced by more than 50%.





Model	Order No.	CK	ØD	Back Boring ØD	ØD1	L	L1	L2	Insert
EWB100-153CK6AL	**310.607A**	CK6	100 - 153	112 - 153	90	71	67	25	TC 11
EWB100-153CK7AL	**310.705A**	CK7	100 - 153	112 - 153	90	87	83	41	TC 11
EWB150-203CK6AL	**310.608A**	CK6	150 - 203	150 - 203	126	71	67	25	TC 11
EWB150-203CK7AL	**310.706A**	CK7	150 - 203	150 - 203	126	87	83	41	TC 11

1. EWB-AL boring heads will be delivered with assembled insert holder.
2. Inserts are not included.

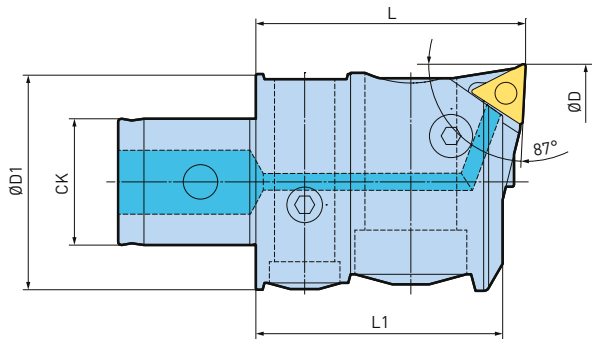
Accessories & Spare Parts

Insert Holder for EWB	Inserts TC	Accessories
		
▶ 507	▶ 472	▶ 507-508

EWB-UP Balanceable Fine Boring Head, Ø 25 - 100

The ulta-precise EWB-UP series sets higher standards for boring heads concerning adjustment accuracy and balance quality. Cutting speed up to Vc max. = 2 000 m/min.





Model	Order No.	CK	ØD	ØD1	L	L1	Max. unbalance (gmm)	Insert
EWB25-33UP-CK2	**309.201**	CK2	25 - 33	23.4	35.5	32.5	3	TP 07
EWB32-42UP-CK3	**309.301**	CK3	32 - 42	30	40	37	5	TC 11
EWB41-54UP-CK4	**309.401**	CK4	41 - 54	38	47	43	5	TC 11
EWB53-70UP-CK5	**309.501**	CK5	53 - 70	49	57	53	10	TC 11
EWB68-100UP-CK6	**309.601**	CK6	68 - 100	64	71	67.2	30	TC 11

1. EWB-UP boring heads will be delivered with assembled insert holder.
2. Inserts are not included.

B.3

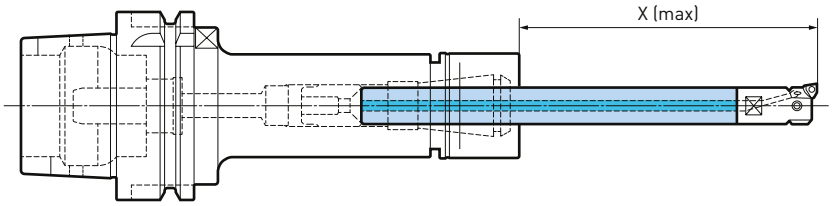
Accessories & Spare Parts

Inserts TP	Inserts TC	Accessories
		
▶ 471	▶ 472	▶ 507-508

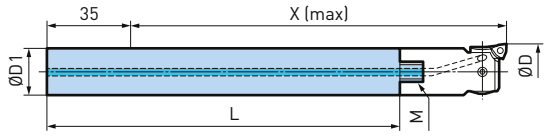
EW Fine Boring Heads, Ø 15 - 22

These heads are designed to be used in combination with the steel or carbide-boring bars Ø 14 and Ø 16 mm from the accessory program. In conjunction with the long carbide bar, the tool is well suited for vibration-free finishing operations in bores with unfavorable Ø/L-ratios.





Boring Bars

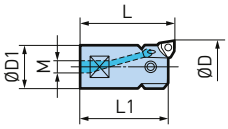




Model	Order No.	Type	ØD	ØD1	M	L	X (max)
ST14-87	**615.232**	EW15	15 - 18.5	14	M6	87	82
ST14-117HM	**615.233**	EW15	15 - 18.5	14	M6	117	112
ST14-147HM	**615.221**	EW15	15 - 18.5	14	M6	147	142
ST16-88	**615.226**	EW18	18 - 22	16	M10	88	89
ST16-108HM	**615.227**	EW18	18 - 22	16	M10	108	109
ST16-168HM	**615.229**	EW18	18 - 22	16	M10	168	169

B.3

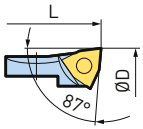
EW Fine Boring Heads, Ø 15 - 22



Model	Order No.	ØD	ØD1	L	L1	M
EW15M6	**310.020**	15 - 18.5	14	30	27.5	M6
EW18M10	**310.030**	18 - 22	16	36	33	M10

1. Insert holder is to be ordered separately.
2. Inserts are to be ordered separately.

Insert Holders for EW WC02



Model	Order No.	Head	ØD	L	Insert
15EKWC02	**625.020**	EW15 / EW18	15 - 18.5 / 18 - 22	30 / 36	WC 02

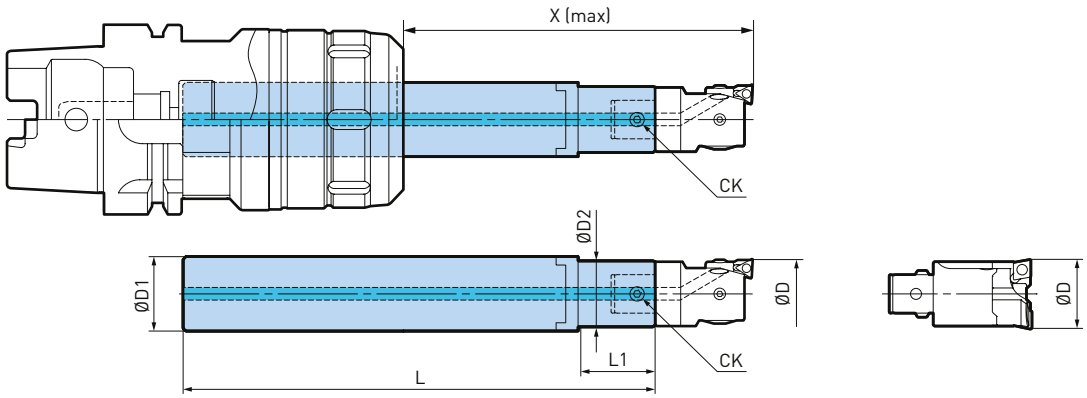
1. Inserts are to be ordered separately.

Accessories & Spare Parts

Accessories	Inserts WC
	
▶ 507-508	▶ 470

Carbide Bars ST Ø 20 - 74

Due to maximum rigidity, a carbide bar, optimized in length and with the biggest possible diameter, guarantees the best result when machining deep bores.
For the work range from Ø 20 - 33 [47] mm, the fine graduated carbide bar program contains bars with 6 different diameters and 3 different lengths per diameter. Therefore, for every deep bore machining in this range, the optimal carbide bar is always available. The program is completed with carbide bars Ø 31 and ø 40 mm in 3 different lengths each, for the boring range from Ø 32 - 54 [74] mm.



CKB1, CKB2, CKB3, CKB4

Model	Order No.	Head	CK	ØD	ØD1	ØD2	L	L1	HMC X max	MEG-A25N X max	HDC X max
ST19-CKB1-140HM	**335.320**	SW20,EWN20	CKB1	20 - 36	19	19	140	-	98	120	130
ST19-CKB1-190HM	**335.321**	SW20,EWN20	CKB1	20 - 36	19	19	190	-	148	170	180
ST19-CKB1-240HM	**335.322**	SW20,EWN20	CKB1	20 - 36	19	19	240	-	198	220	230
ST21-CKB1-140HM	**335.380**	SW20,EWN20	CKB1	20 - 36	21	19	140	26	98	120	-
ST21-CKB1-190HM	**335.381**	SW20,EWN20	CKB1	20 - 36	21	19	190	26	148	170	-
ST21-CKB1-240HM	**335.382**	SW20,EWN20	CKB1	20 - 36	21	19	240	26	198	220	-
ST23-CKB1-140HM	**335.383**	SW20,EWN20	CKB1	20 - 36	23	19	140	26	98	120	-
ST23-CKB1-190HM	**335.384**	SW20,EWN20	CKB1	20 - 36	23	19	190	26	148	170	-
ST23-CKB1-240HM	**335.385**	SW20,EWN20	CKB1	20 - 36	23	19	240	26	198	220	-
ST24-CKB2-160HM	**335.323**	SW25,EWN25	CKB2	25 - 47	24	24	160	-	121	140	150
ST24-CKB2-220HM	**335.324**	SW25,EWN25	CKB2	25 - 47	24	24	220	-	181	200	210
ST24-CKB2-290HM	**335.325**	SW25,EWN25	CKB2	25 - 47	24	24	290	-	251	270	280
ST27-CKB2-160HM	**335.386**	SW25,EWN25	CKB2	25 - 47	27	24	160	28	121	-	-
ST27-CKB2-220HM	**335.387**	SW25,EWN25	CKB2	25 - 47	27	24	220	28	181	-	-
ST27-CKB2-290HM	**335.388**	SW25,EWN25	CKB2	25 - 47	27	24	290	28	251	-	-
ST29-CKB2-160HM	**335.389**	SW25,EWN25	CKB2	25 - 47	29	24	160	28	121	-	-
ST29-CKB2-220HM	**335.390**	SW25,EWN25	CKB2	25 - 47	29	24	220	28	181	-	-
ST29-CKB2-290HM	**335.391**	SW25,EWN25	CKB2	25 - 47	29	24	290	28	251	-	-
ST31-CKB3-200HM	**335.326**	SW32,EWN32	CKB3	32 - 60	31	31	200	-	168	-	184
ST31-CKB3-260HM	**335.331**	SW32,EWN32	CKB3	32 - 60	31	31	260	-	228	-	244
ST31-CKB3-350HM	**335.327**	SW32,EWN32	CKB3	32 - 60	31	31	350	-	318	-	334
ST40-CKB4-235HM	**335.328**	SW41,EWN41,EWE41	CKB4	41 - 74	40	40	235	-	207	-	-
ST40-CKB4-335HM	**335.329**	SW41,EWN41,EWE41	CKB4	41 - 74	40	40	335	-	307	-	-
ST40-CKB4-435HM	**335.330**	SW41,EWN41,EWE41	CKB4	41 - 74	40	40	435	-	407	-	-

Recommended combination for Carbide Bars ST

To clamp BIG KAISER carbide bars with shank diameter Ø 19, 21, 23, 24, 27, 29, 31 and 40 milling chuck are highly recommended, Additional clamping possibilities are MEGA NEW Baby Chucks or Hydraulic Chucks.

Hydraulic Chuck



Hi-Power Milling Chuck



MEGA New Baby Chuck



Clamping options for carbide bares ≥ Ø 19mm

Schank	Holder	Carbide bare size	Collet
HSK-A50	MEGA25N	Ø19 / Ø21 / Ø23 / Ø24	NBC25
HSK-A63	HMC32S	Ø19 / Ø21 / Ø23 / Ø24 / Ø27 / Ø29	OCA32
HSK-A63	HDC31	Ø31 direct clamping	
HSK-A100	HMC32	Ø19 / Ø24 / Ø31	OCA32
HSK-A100	HMC42	Ø19 / Ø24 / Ø31	OCA42
		Ø31 / Ø40	C42
BBT30	MEGA25N	Ø19 / Ø21 / Ø23 / Ø24	NBC25
BBT30	HMC32S	Ø19 / Ø21 / Ø23 / Ø24 / Ø27 / Ø29	OCA32
BBT40	MEGA25N	Ø19 / Ø21 / Ø23 / Ø24	NBC25
BBT40	HMC32S	Ø19 / Ø21 / Ø23 / Ø24 / Ø27 / Ø29	OCA32
BBT40	HDC31	Ø31 direct clamping	
BBT50	MEGA25N	Ø19 / Ø21 / Ø23 / Ø24	NBC25
BBT50	HMC32S	Ø19 / Ø21 / Ø23 / Ø24 / Ø27 / Ø29	OCA32
BBT50	HDC19	Ø19 direct clamping	
BBT50	HDC24	Ø24 direct clamping	
BBT50	HDC31	Ø31 direct clamping	
BBT50	HMC42	Ø19 / Ø24 / Ø31	OCA42
		Ø31 / Ø40	C42
BVD40	MEGA25N	Ø19 / Ø21 / Ø23 / Ø24	NBC25
BVD40	HMC32S	Ø19 / Ø21 / Ø23 / Ø24 / Ø27 / Ø29	OCA32
BVD40	HDC31	Ø31 direct clamping	
BVD50	MEGA25N	Ø19 / Ø21 / Ø23 / Ø24	NBC25
BVD50	HMC32S	Ø19 / Ø21 / Ø23 / Ø24 / Ø27 / Ø29	OCA32
BVD50	HMC42	Ø19 / Ø24 / Ø31	OCA42
		Ø31 / Ø40	C42
C6	HMC32S	Ø19 / Ø21 / Ø23 / Ø24 / Ø27 / Ø29	OCA32
C8	HMC32S	Ø19 / Ø21 / Ø23 / Ø24 / Ø27 / Ø29	OCA32

Guidelines

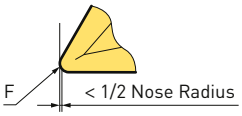
Major Influences of Fine Boring

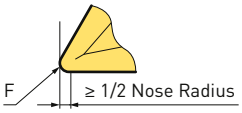
- The amount of stock to be removed (D.O.C.)
- Feed rate

- Cutting speed

For all of these influences, a balance must be obtained for optimal machining. Too much stock or too heavy of a feed rate will generate excessive cutting forces that can result in inconsistent bore size. When stock or feed rates are too light, the possibility of chatter increases due to deflection.

D.O.C



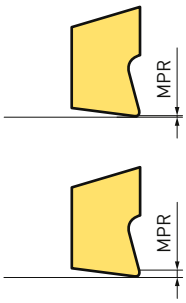


High Possibility for Deflection & Chatter:
When D.O.C. is less than half the insert nose radius, the resulting forces (F) are almost 100% radial.

Good Stable Cut:

When D.O.C. is greater than or equal to half the insert nose radius, the resulting forces (F) are almost 100% axial.

Feed Rate



High Possibility for Deflection & Chatter:

When the feed rate is less than the hone on the insert tip, the risk of vibration increases.

Good Stable Cut:

When the feed rate is larger than the hone on the insert tip, full use of the chip breaker is allowed. This results in lower cutting forces.

B.3

Cutting Speed

Higher Speeds:
- Better surface finish
- Shorter machining times

- Better chip evacuation

As a general rule, the tool's length/diameter ratio and insert radius will determine optimum cutting speed.
*For smaller diameter bores, carbide or heavy metal bars may be required to eliminate vibration & chatter

Lower Speeds:
- Poorer surface finish
- Low chance for chatter
- Longer machining times
- High chance for built-up edge, results in shorter insert life

L/D Ratio	Max. Insert Radius	Speed Reduction
≤ 4:1	0.8	100% of optimum
≤ 5:1	0.4	75% of optimum
≤ 6:1	0.2	60% of optimum
≥ 7:1	0.2	50% of optimum

Troubleshooting

Under certain conditions, it may be necessary to modify or adapt recommended cutting data and/or tooling configurations of the application. Below are general solutions to common problems.

Problem	Possible Cause	Remedy
Poor Tool Life	Wrong insert grade	Change to higher wear resistant grade
	Excessive speed	Reduce Vc
	Poor cooling of insert	Apply through-tool coolant
	Excessive stock allowance	Decrease depth of cut
Chatter & Vibration	Excessive speed	Reduce Vc, check cutting data tables
	Extreme length/diameter ratio	Shorten tool to increase stiffness
		Increase boring bar diameter to larger size
		Change boring bar to carbide or heavy metal
	Wrong insert	Reduce nose radius of insert
		Use ground geometry inserts
	Incorrect stock allowance	Check cutting data tables
Poor Size Repeatability	Inaccurate tool changes	Worn and/or damaged tool shank; replace
		Clean spindle and tool shank
	Variation of stock allowance	Semi-finish with rough insert boring head
	Excessive spindle looseness	Use ground geometry inserts
Unacceptable Roundness	Excessive boring tool imbalance	Change to auto-balance or balanceable head
		Balance tool assembly
		Reduce speed
	Excessive cutting forces	Check stock allowance and feed rate
	Insufficient workpiece clamping	Check for uniform workpiece clamping
	Workpiece non-symmetrical	Reduce cutting forces; change to ground insert
		Increase cutting speed, reduce feed
Unacceptable Position	Original bore off position	Semi-finish with rough insert boring head
	Excessive stock allowance	Decrease depth of cut
		Decrease insert radius
		Reduce cutting forces; change to ground insert
Poor Surface Finish	Wrong insert radius	Use larger insert radius
	Excessive feed rate	Reduce feed; maximum 25% of insert radius
	Poor chip evacuation	Increase bore to boring bar clearances
		Apply through-tool coolant; adjust nozzles
		Change insert to higher rake angle
		Check depth of cut
Taper	Premature insert wear	Change to higher wear resistance insert grade
		Increase insert radius
		Change from ground to pressed geometry insert
		Increase coolant flow

Large Diameter Boring Tools

SERIES 318

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Fine Boring Component Selection	459
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Components Ø 620 - 3000	462
Rough and Fine Boring Component Selection Guide	463
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B.4

Large Diameter Boring Tools Series 318

The system is based on aluminum extension slides of different lengths, which support a variety of aluminum and steel components for roughing and finishing tool assemblies. The mounting components are pinned to fit onto specific locations on the slides, and secured with steel bolts. The precise positioning of the components on the slide along with incremental adjustment scales for insert holders permit diameter and length setting without a tool presetter.



Series 318 with Flange Only

Execution with flange only. Especially built to fit on machine tools with 40 taper spindle. For rough and fine boring, OD turning, chamfering and face grooving.
Ø 200 - 340 mm, CKB6/CKN6



Series 318 with Flange and Extension Slide

Edition with flange and extension slides. For rough and fire boring, OD turning, chamfering and face grooving.
Ø 200 - 620 mm, CKB7/CKN7

B.4



Series 318 with Bridge and Extension Slides

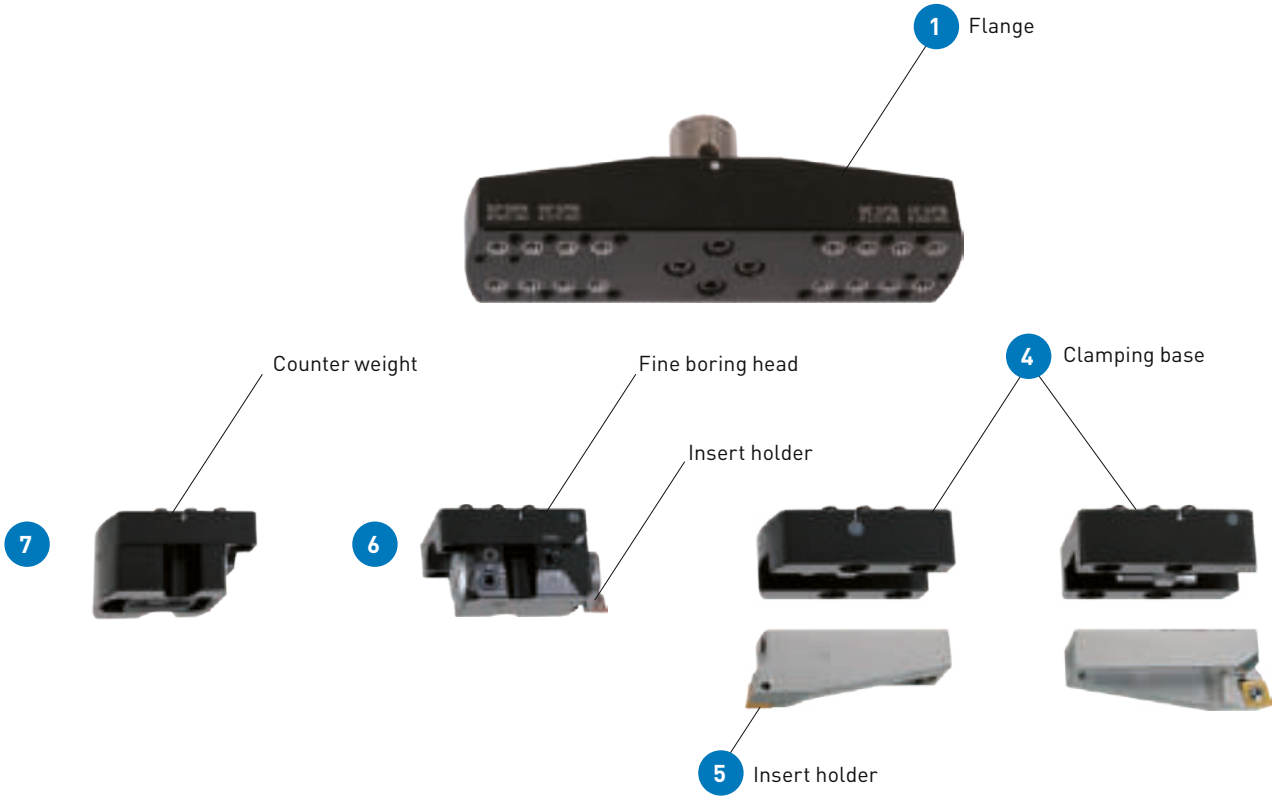
Edition with shanks, large bridges and extension slides. For rough and fine boring, OD turning and face grooving.
Ø 620 - 3000 mm, DV50/BT50/HSK-A100



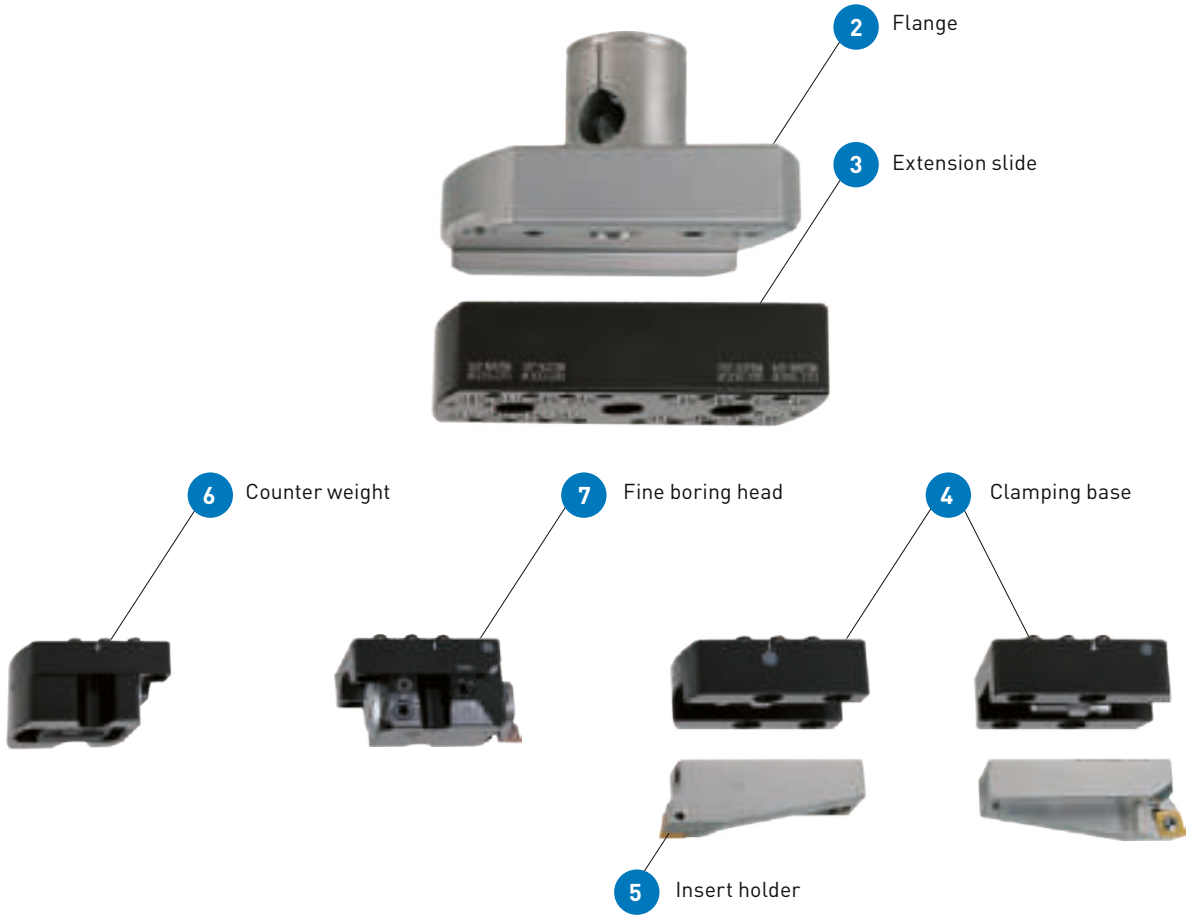
The bridge tools of the 317 series will be removed from the BIG KAISER product range as of December 31, 2022.

The currently articles will continue to be available until the end of the year.

Series 318 with Flange Only, Ø 200 - 340



Series 318 with Flange and Extension Slide, Ø 200 - 620



Flanges

CKB / CKN Type

1

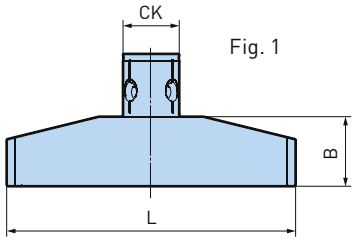


Fig. 1

2

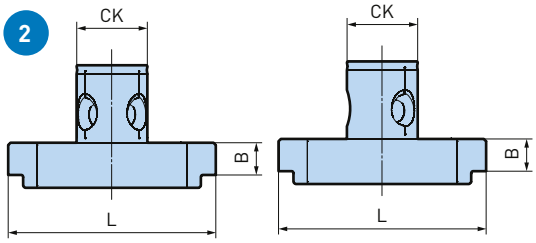
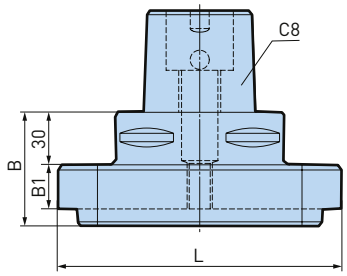


Fig. 2 Fig. 3

Model	Order No.	Fig.	CK	ØD	L	B
CKB6-FL200-270	**318.205**	1	CKB6	200 - 270	185	45
CKB6-FL270-340	**318.206**	1	CKB6	270 - 340	255	45
CKN6-FL200-270	**318.205N**	1	CKN6	200 - 270	185	45
CKN6-FL270-340	**318.206N**	1	CKN6	270 - 340	255	45
CKB7-FL135	**318.201**	2	CKB7	200 - 620	135	22
CKN7-FL135	**318.201N**	2	CKN7	620	135	22
CKB7-FL135-90	**318.202**	3	CKB7	200 - 620	135	22
CKN7-FL135-90	**318.202N**	3	CKN7	200 - 620	135	22

1. Fig 2. Standard execution
2. Fig 3. Flange with cutter position rotated 90°

BIG CAPTO Type

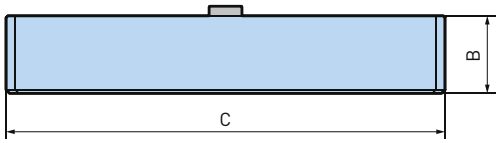


Model	Order No.	Boring Tool Series	ØD	L	B	B1
C8-FL135-317	**328.086**	317	200 - 620	Ø135	55	22
C8-FL135-318	**328.210**	318	200 - 620	Ø135	55	55
C8-FL135-317-90	**328.162**	317	200 - 620	Ø135	55	22
C8-FL135-318-90	**328.211**	318	200 - 620	Ø135	55	55

1. 317 and 318 models are exclusevly designed for its series. (No compatibility between 317 and 318)
2. Large boring 317 series are discontinued.

Extension Slides

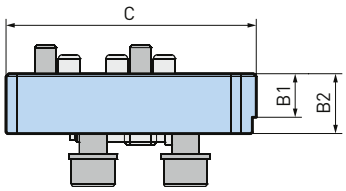
3



Model	Order No.	ØD	B	C	max. min-1
SLN200-270AL	**318.222**	200 - 270	45	185	3200
SLN270-340AL	**318.223**	270 - 340	45	255	2400
SLN340-410AL	**318.224**	340 - 410	45	325	1900
SLN410-480AL	**318.225**	410 - 480	45	395	1600
SLN480-550AL	**318.226**	480 - 550	45	465	1300
SLN550-620AL	**318.227**	550 - 620	45	535	1200

Clamp Bases

4



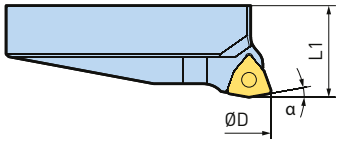
Model	Order No.	B1	B2	C
CB200	**318.240**	16	22	92

1. Clamp bases are sold in pairs.

Insert Holders Standard Set

For ø200 - 620

5



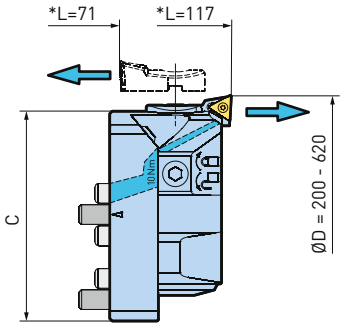
Model	Order No.	ØD	L1	α	Insert
IHTW200C	**637.940**	200 - 620	34	0°	CC 12
IHTW200S	**637.942**	200 - 620	34	6°	SC 12
IHTW200W	**637.943**	200 - 620	34	10°	WC 08
IHTW200C-DVS *	**637.951**	200 - 620	34.4	0°	CC 12
IHTW200C16	**637.941**	200 - 620	34	0°	CC 16
IHTW200C16-DVS *	**637.953**	200 - 620	34.4	0°	CC 16

1. Insert holders is composed of 2 pcs. of holders.
   * Step cut Insert holder are delivered individually.

EWE Fine Boring Heads, Ø 200 - 3000

6





Model	Order No.	ØD	C
EWN200AL	**318.101**	200 - 620	86
EWE200AL	**318.104**	200 - 620	86

Insert Holder Bridge Tool TC11

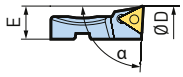


Fig. 1

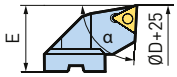


Fig. 2

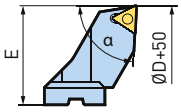


Fig. 3

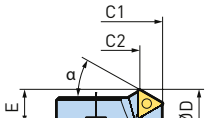


Fig. 4

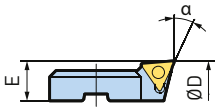


Fig. 5

Model	Order No.	Fig.	ØD	α	C1	C2	E	Insert
ENH7-1T	**626.271**	1	200 - 3000	87°	-	-	12.5	TC 11
ENH7-2T	**626.272**	2	200 - 3000	87°	-	-	25	TC 11
ENH7-3T	**626.273**	3	200 - 3000	87°	-	-	37.5	TC 11
ENH7-1T25	**689.189**	4	200 - 3000	25°	-	-	12.5	TC 11
ENH7-1T30	**626.472**	5	200 - 3000	30°	117	108.3	12.5	TC 11
ENH7-1T45	**626.473**	5	200 - 3000	45°	117	109.8	12.5	TC 11

Insert Holder Bridge Tool CC09

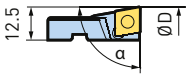


Fig. 1

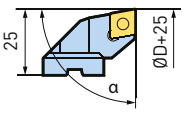


Fig. 2

Model	Order No.	Fig.	ØD	α	Insert
ENH7-1C	**626.371**	1	200 - 3000	90°	CC 09
ENH7-2C	**626.372**	2	200 - 3000	90°	CC 09

Insert Holder Blank Bridge Tool

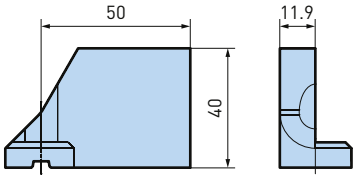


Fig. 1

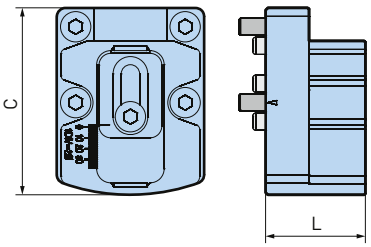
Model	Order No.
ENH7-BLANK L	**626.917**

Counter Weight Bridge Tool

There are two different counter weights available. Type 1 is made of steel and is used for coarse balancing. Type 2 is made of aluminum and contains a slide with a graduated scale for fine balancing of the tool assembly.

7



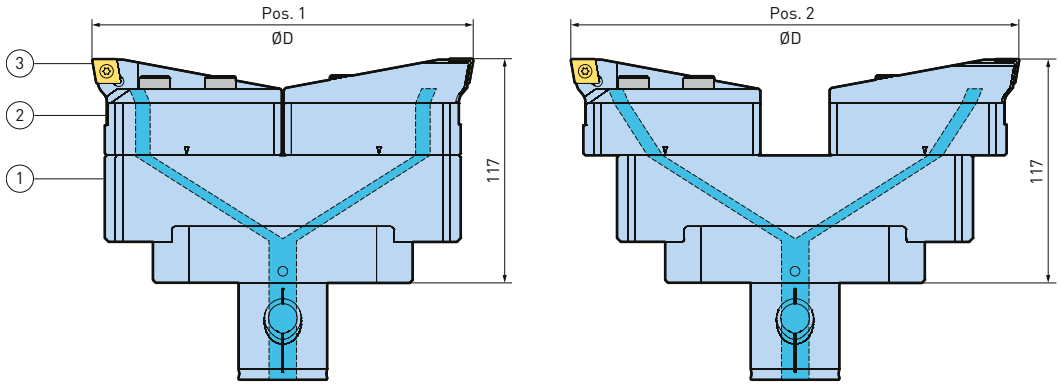


Model	Order No.	L	C	Material
CW200AL	**318.105**	46	86	Aluminium
CW200	**318.107**	22.5	86	Steel

B.4

Rough Boring Component Selection

The table below determines the components such as extension slide (1), clamp bases (2) and insert holders (3) for each diameter range (ØD) and shows in which position (1 or 2) the clamp bases (2) have to be mounted on the extension slide (1). Further, this table also serves for the coarse diameter setting of the cutting edges by means of the scale on the clamp base (2) and the marking on the insert holder (3). The required scale value is calculated by the difference between bore diameter and correction value (α). The insert holder has to be adjusted to the scale value. See example below.



Range ØD	Extension Slide	Fixed Position/Range		Clamp Bases	Insert Holders	Correction α		Max. Speed
	①	Pos. 1/ØD	Pos. 2/ØD	②	③	Pos. 1	Pos. 2	
200 - 270	318.205N	199 - 236		318.240	See page 456	200	-	3 200
	318.222		234 - 271			-	235	
270 - 340	318.206N	269 - 306				270	-	2 400
	318.223		304 - 341			-	305	
340 - 410	318.224	339 - 376				340	-	1 900
			374 - 411			-	375	
410 - 480	318.225	409 - 446				410	-	1 600
			444 - 481			-	445	
480 - 550	318.226	479 - 516				480		1 300
			514 - 551			-	515	
550 - 620	318.227	549 - 586				550	-	1 200
			584 - 621			-	585	

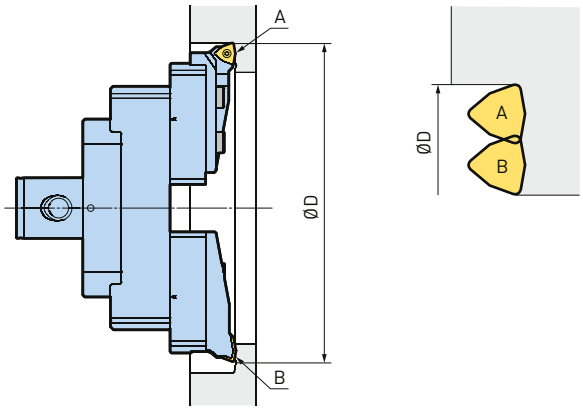
B.4

Example: Diameter setting according to scale

ØD: 430 Position: 1 Scale value: ØD - α = 430 - 410 = 20
Extension slide: **318.225** Correction value α: 410

Full Profile Roughing

Full profile roughing permits boring with large stock allowance (up to 60 mm in diameter) in a single operation with relatively low drive power. Set cutting edge A to the final bore diameter, and cutting edge B according to the machining allowance, as listed in the table above.



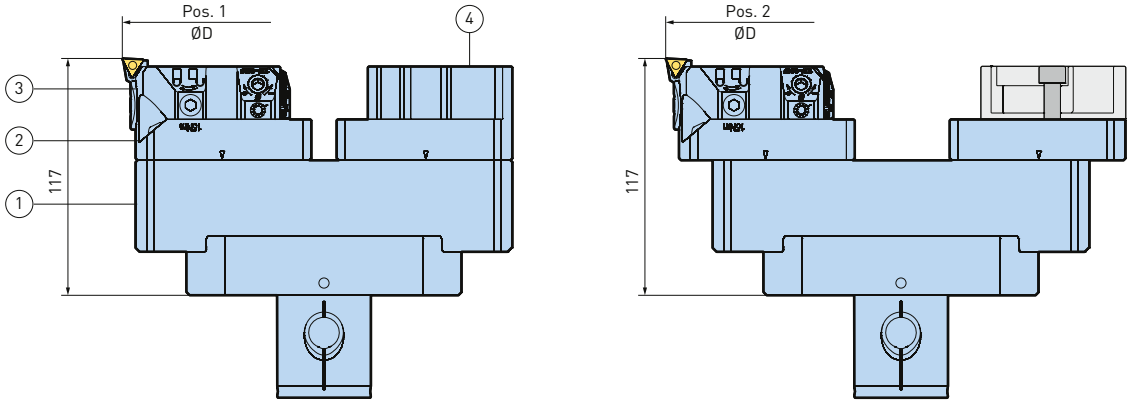
Stock Allowance [mm Ø]	Cutting Edge A [mm Ø]	Cutting Edge B [mm Ø]
22 - 29.9	ØD	D - 2
30 - 35.9		D - 6
36 - 41.9		D - 12
42 - 47.9		D - 18
48 - 53.9		D - 24
54 - 60		D - 30

Cutting Data Vc [m/min]	fn [mm/rev]
100 - 180	0.1 - 0.2

Fine Boring Component Selection

The table below determines the components such as extension slide (1), boring head (2), insert holder (3) and counter weight (4) for each diameter range and shows in which position the boring head and the counter weight have to be mounted on the extension slide.

Balancing of the tool combination takes place by adjusting the slide on the counter weight according to the scale. The correction value (α) is shown on the table. See example below.



Range ØD	Extension Slide	Fixed Position/Range		Boring Head	Insert Holder	Counter Weight	Correction α		Max. Speed
	①	Pos. 1/ØD	Pos. 2/ØD	②	③	④	Pos. 1	Pos. 2	
200 - 270	**318.205N**	199 - 236		**318.101**	**626.271**	**318.105** (for fine balancing) **318.107**	200		3 200
	318.222		234 - 271					235	
270 - 340	**318.206N**	269 - 306					270		2 400
	318.223		304 - 341					305	
340 - 410	**318.224**	339 - 376					340		1 900
			374 - 411					375	
410 - 480	**318.225**	409 - 446					410		1 600
			444 - 481					445	
480 - 550	**318.226**	479 - 516					480		1 300
			514 - 551					515	
550 - 620	**318.227**	549 - 586					550		1 200
			584 - 621					585	

Example: Diameter setting according to scale

ØD:	335 H7	Counter weight:	**318.105**
Extension slide:	**318.223**	Correction value:	305
Position:	2	Scale:	D - α = 335 - 305 = 30

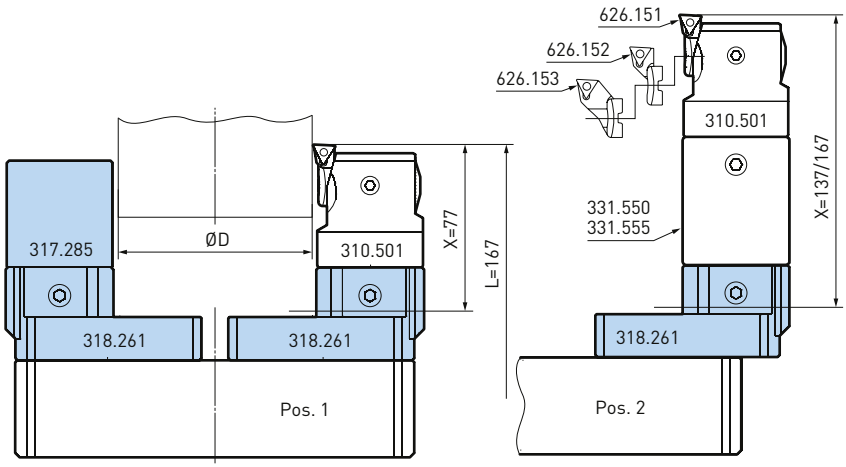
OD Turning Holders, Ø 49 - 476

The tool holder with CKB5 connection can be mounted on any extension slide. For OD turning it is required to connect the fine boring head EWN53-95CKB5 either directly or by means of an extension to the holder. To compensate the imbalance, a second tool holder and a special counter weight have to be mounted on the opposite side of the extension slide.

Attention: Counter-clockwise rotation of spindle!

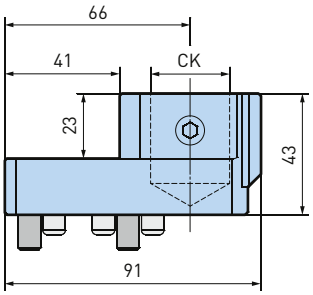


L = Distance to the CK connection.



Tool Holder



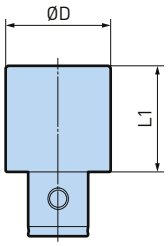


Model	Order No.	CK
CB200CKB5	**318.261**	CKB5

B.4

Counter Weight for OD Turning





Model	Order No.	CK	ØD	L1
CW-CK5-DM49-50	**317.285**	CK5	49	49.5

Adjusting Table

		Pos. 1			Pos. 2		
Range	Extension Slide	Range with Insert Holder No.:			Range with Insert Holder No.:		
		626.153	626.152	626.151	626.153	626.152	626.151
ØD		ØD	ØD	ØD	ØD	ØD	ØD
49 - 126	**318.222**	49 - 66	62 - 79	74 - 91	84 - 101	97 - 114	109 - 126
119 - 196	**318.223**	119 - 136	132 - 149	144 - 161	154 - 171	167 - 184	179 - 196
189 - 266	**318.224**	189 - 206	202 - 219	214 - 231	224 - 241	237 - 254	249 - 266
259 - 336	**318.225**	259 - 276	272 - 289	284 - 301	294 - 311	307 - 324	319 - 336
329 - 406	**318.226**	329 - 346	342 - 359	354 - 371	364 - 381	377 - 394	389 - 406
399 - 476	**318.227**	399 - 416	412 - 429	424 - 441	434 - 451	447 - 464	459 - 476

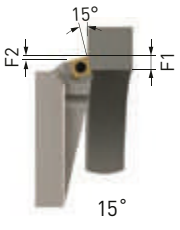
Insert Holders for Chamfering SC12

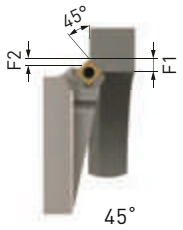
The insert holder with step-less adjustable chamfer angle from 15-75° is made for front chamfering and with limitations also for back chamfering.

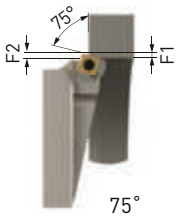
Model	Order No.
CFTW200S	637.959

ØD	Chamfer Angle α									
	15°		30°		45°		60°		75°	
	min Ø	max Ø	min Ø	max Ø	min Ø	max Ø	min Ø	max Ø	min Ø	max Ø
200 - 270	182	276	186	278	190	279	195	278	199	277
270 - 340	252	346	256	348	260	349	265	348	269	347
340 - 410	322	416	326	418	330	419	335	418	339	417
410 - 480	392	486	396	488	400	489	405	488	409	487
480 - 550	462	556	466	558	470	559	475	558	479	557
550 - 620	532	626	536	628	540	629	545	628	549	627







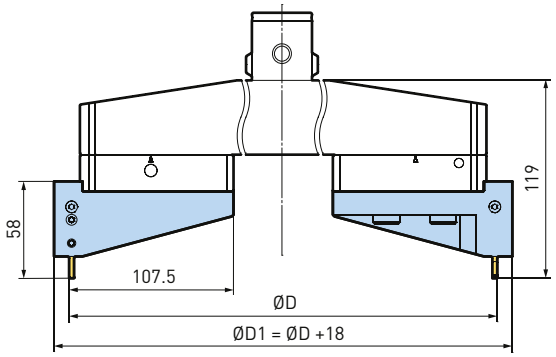


Max. Radial Chamfer Length for Front and Back Chamfering										
Insert Holder	15°		30°		45°		60°		75°	
	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2
SC12	11.4	3	10.3	4	8.4	4.2	5.9	3.9	3	3

Face Grooving Holders





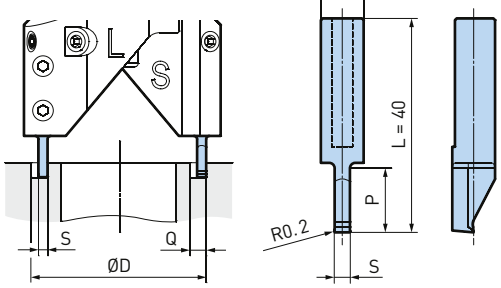


Model	Order No.	ØD
FGHTW200	637.961	198 - 3002

1. Inserts are not included.

Inserts for face grooves

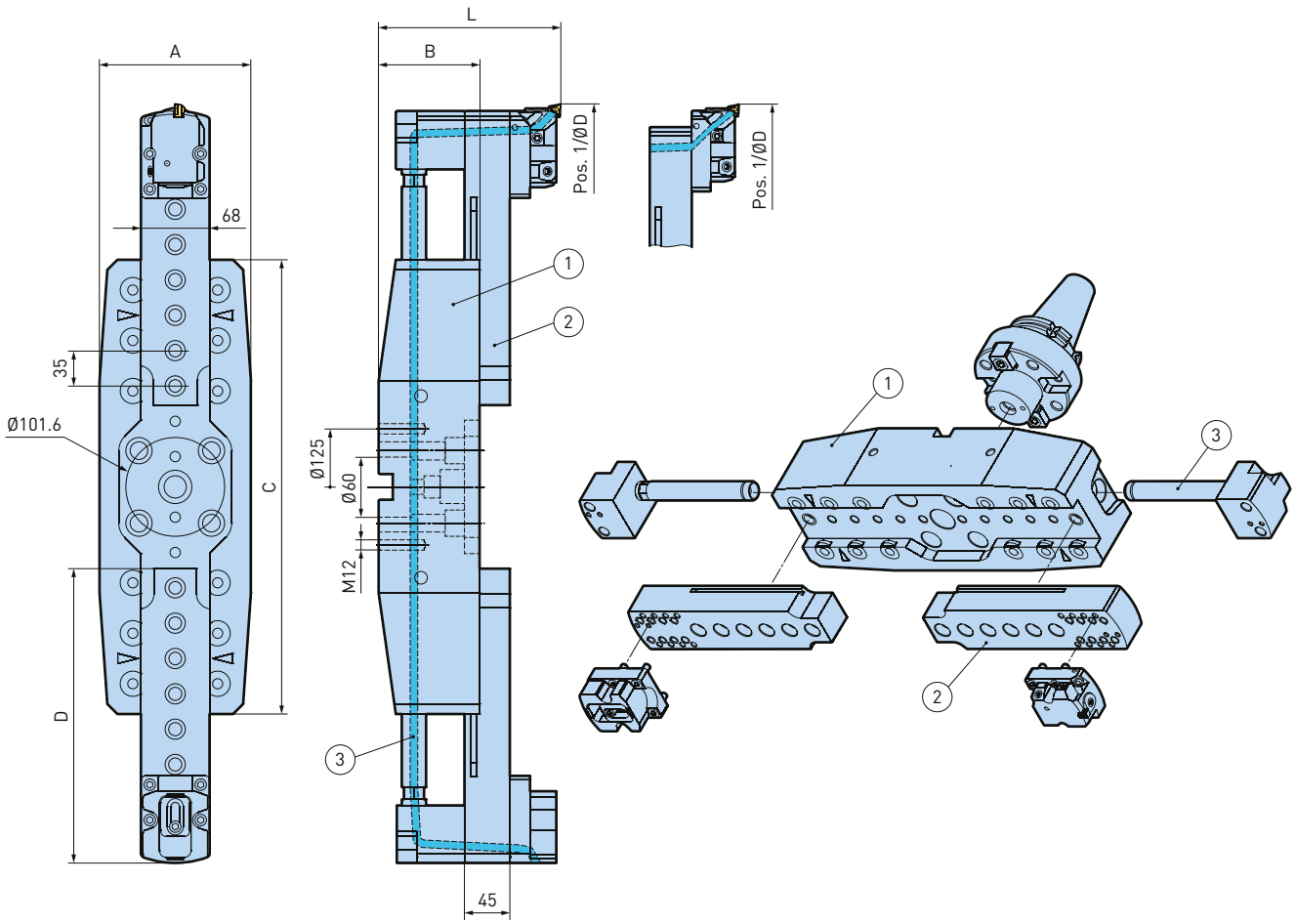




Model	Order No.	P	S	Q	Cutting material / coating
SS2-ST8-40K40	958.601	12	2	3.5	K40
SS2-ST8-40K40C	958.611	12	2	3.5	K40C
SS3-ST8-40K40	958.602	12	3	5.5	K40
SS3-ST8-40K40C	958.612	12	3	5.5	K40C
SS4-ST8-40K40	958.603	12	4	7.5	K40
SS4-ST8-40K40C	958.613	12	4	7.5	K40C
SS5-ST8-40K40	958.604	12	5	9.5	K40
SS5-ST8-40K40C	958.614	12	5	9.5	K40C

Series 318 with Bridge and Extension Slides, Ø 620 - 3000

The boring range from Ø 620 – 3 000 mm is covered with only five aluminium bridges and five pairs of extension slides. All other components such as boring head, clamp bases and insert holders are the same as for the existing light weight boring tool system Ø 200 – 620 mm.



ØD	L	A	B	C	D
620 - 830	180	150	100	450	292.5
830 - 1110	180	150	100	660	397.5
1110 - 1530	180	150	100	940	537.5
1530 - 2020	200	170	120	1360	642.5
2020 - 2510	210	190	130	1850	642.5
2510 - 3000	210	190	130	1850	1167.5

Rough and Fine Boring Component Selection

The table below refers to the drawings on page 380. It determines the components such as bridge (1), extension slide (2) and coolant supply (3) for each diameter range (ØD) and shows in which position (1 or 2) the roughing or finishing tools have to be mounted.

In addition, this table also serves to determine the scale values for the coarse diameter setting of the cutting edges for finishing, and to adjust the slide on the counter weight for precise balancing of finish tools. The required scale values are calculated by the difference between bore diameter and correction value (α). See example below.

	① Bridge		②* Extension Slide		Position		α		③* Coolant Supply	
ØD	**Model**	**Order No.**	**Model**	**Order No.**	**Pos. 1/ØD**	**Pos. 2/ØD**	**Pos. 1**	**Pos. 2**	**Model**	**Order No.**
620 - 690	BR620-830AL	**318.421**	SL620-830AL	**318.431**	619 - 656	654 - 691	620	655	CS620-1110	**318.441**
690 - 760					689 - 726	724 - 761	690	725		
760 - 830					759 - 796	794 - 831	760	795		
830 - 900	BR830-1110	**318.422**	SL830-1110	**318.432**	829 - 866	864 - 901	830	865	CS620-1110	**318.441**
900 - 970					899 - 936	934 - 971	900	935		
900 - 1040					969 - 1006	1004 - 1041	970	1005		
1040 - 1110					1039 - 1076	1074 - 1111	1040	1075		
1110 - 1180	BR1110-1530	**318.423**	SL1110-1530	**318.433**	1109 - 1146	1144 - 1181	1110	1145	CS1110-1530	**318.442**
1180 - 1250					1179 - 1216	1214 - 1251	1180	1215		
1250 - 1320					1249 - 1286	1284 - 1321	1250	1285		
1320 - 1390					1319 - 1356	1354 - 1391	1320	1355		
1390 - 1460					1389 - 1426	1424 - 1461	1390	1425		
1460 - 1530					1459 - 1496	1494 - 1531	1460	1495		
1530 - 1600	BR1530-2020	**318.424**	SL1530-2510	**318.434**	1529 - 1566	1564 - 1601	1530	1565	CS1530-2510	**318.443**
1600 - 1670					1599 - 1636	1634 - 1671	1600	1635		
1670 - 1740					1669 - 1706	1704 - 1741	1670	1705		
1740 - 1810					1739 - 1776	1774 - 1811	1740	1775		
1810 - 1880					1809 - 1846	1844 - 1881	1810	1845		
1880 - 1950					1879 - 1916	1914 - 1951	1880	1915		
1950 - 2020					1949 - 1986	1984 - 2021	1950	1985		
2020 - 2090	BR2020-2510	**318.425**	SL1530-2510	**318.434**	2019 - 2056	2054 - 2091	2020	2055	CS1530-2510	**318.443**
2090 - 2160					2089 - 2126	2124 - 2161	2090	2125		
2160 - 2230					2159 - 2196	2194 - 2231	2160	2195		
2230 - 2300					2229 - 2266	2264 - 2301	2230	2265		
2300 - 2370					2299 - 2336	2334 - 2371	2300	2335		
2370 - 2440					2369 - 2406	2404 - 2441	2370	2405		
2440 - 2510					2439 - 2476	2474 - 2511	2440	2475		
2510 - 2580	BR2020-2510	**318.425**	SL2510-3000	**318.435**	2509 - 2546	2544 - 2581	2510	2545	CS2510-3000	**318.444**
2580 - 2650					2579 - 2616	2614 - 2651	2580	2615		
2650 - 2720					2649 - 2686	2684 - 2721	2650	2685		
2720 - 2790					2719 - 2756	2754 - 2791	2720	2755		
2790 - 2860					2789 - 2826	2824 - 2861	2790	2825		
2860 - 2930					2859 - 2896	2894 - 2931	2860	2895		
2930 - 3000					2929 - 2966	2964 - 3001	2930	2965		

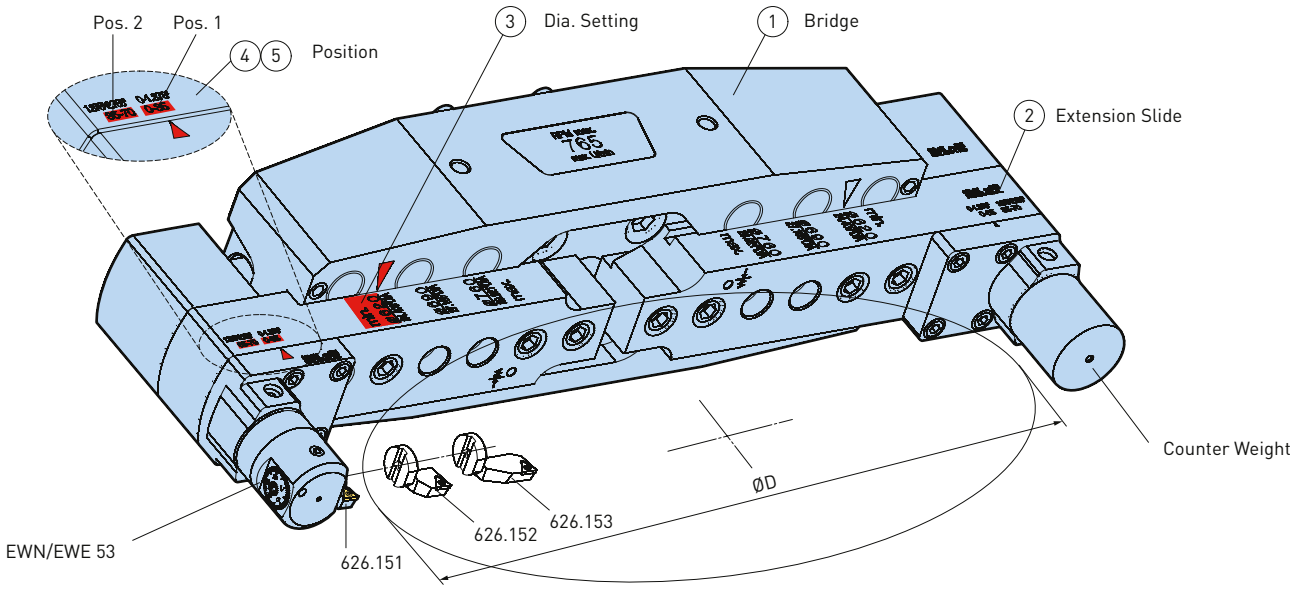
1. * Single pieces. 2 pieces are needed for tool combination.

Example: Diameter setting according to scale

ØD:	1170 H7
Bridge:	**318.423**
Extension slide:	**318.433**
Position:	2
Counter weight:	**318.105**
Coolant supply:	**318.442**
Correction value α:	1145
Scale:	ØD - α = 1170 - 1145 = 25

OD Turning Holders, Ø 469 - 2856

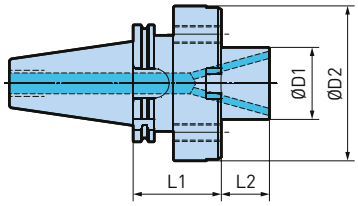
Attention: Counter-clockwise rotation of spindle!



①	②		③	④ Pos. 1			⑤ Pos. 2		
Bridge	Extension Slide		Dia. Setting	Range with Insert Holder Order No.:			Range with Insert Holder Order No.:		
				626.153	626.152	626.151	626.153	626.152	626.151
Order No.	Order No.	ØD		ØD	ØD	ØD	ØD	ØD	ØD
318.421	318.431	469 - 546	620	469 - 486	482 - 499	494 - 511	504 - 521	517 - 534	529 - 546
		539 - 616	690	539 - 556	552 - 569	564 - 581	574 - 591	587 - 604	599 - 616
		609 - 686	760	609 - 626	622 - 639	634 - 651	644 - 661	657 - 674	669 - 686
318.422	318.432	679 - 756	830	679 - 696	692 - 709	704 - 721	714 - 731	727 - 744	739 - 756
		749 - 826	900	749 - 766	762 - 779	774 - 791	784 - 801	797 - 814	809 - 826
		819 - 896	970	819 - 836	832 - 849	844 - 861	854 - 871	867 - 884	879 - 896
		889 - 966	1040	889 - 906	902 - 919	914 - 931	924 - 941	937 - 954	949 - 966
318.423	318.433	959 - 1036	1110	959 - 976	972 - 989	984 - 1001	994 - 1011	1007 - 1024	1019 - 1036
		1029 - 1106	1180	1029 - 1046	1042 - 1059	1054 - 1071	1064 - 1081	1077 - 1094	1089 - 1106
		1099 - 1176	1250	1099 - 1116	1112 - 1129	1124 - 1141	1134 - 1151	1147 - 1164	1159 - 1176
		1169 - 1246	1320	1169 - 1186	1182 - 1199	1194 - 1211	1204 - 1221	1217 - 1234	1229 - 1246
		1239 - 1316	1390	1239 - 1256	1252 - 1269	1264 - 1281	1274 - 1291	1287 - 1304	1299 - 1316
		1309 - 1386	1460	1309 - 1326	1322 - 1339	1334 - 1351	1344 - 1361	1357 - 1374	1369 - 1386
318.424	318.434	1379 - 1456	1530	1379 - 1396	1392 - 1409	1404 - 1421	1414 - 1431	1427 - 1444	1439 - 1456
		1449 - 1526	1600	1449 - 1466	1462 - 1479	1474 - 1491	1484 - 1501	1497 - 1514	1509 - 1526
		1519 - 1596	1670	1519 - 1536	1532 - 1549	1544 - 1561	1554 - 1571	1567 - 1584	1579 - 1596
		1589 - 1666	1740	1589 - 1606	1602 - 1619	1614 - 1631	1624 - 1641	1637 - 1654	1649 - 1666
		1659 - 1736	1810	1659 - 1676	1672 - 1689	1684 - 1701	1694 - 1711	1707 - 1724	1719 - 1736
		1729 - 1806	1880	1729 - 1746	1742 - 1759	1754 - 1771	1764 - 1781	1777 - 1794	1789 - 1806
		1799 - 1876	1950	1799 - 1816	1812 - 1829	1824 - 1841	1834 - 1851	1847 - 1864	1859 - 1876
318.425		1869 - 1946	2020	1869 - 1886	1882 - 1899	1894 - 1911	1904 - 1921	1917 - 1934	1929 - 1946
		1939 - 2016	2090	1939 - 1956	1952 - 1969	1964 - 1981	1974 - 1991	1987 - 2004	1999 - 2016
		2009 - 2086	2160	2009 - 2026	2022 - 2039	2034 - 2051	2044 - 2061	2057 - 2074	2069 - 2086
		2079 - 2156	2230	2079 - 2096	2092 - 2109	2104 - 2121	2114 - 2131	2127 - 2144	2139 - 2156
		2149 - 2226	2300	2149 - 2166	2162 - 2179	2174 - 2191	2184 - 2201	2197 - 2214	2209 - 2226
		2219 - 2296	2370	2219 - 2236	2232 - 2249	2244 - 2261	2254 - 2271	2267 - 2284	2279 - 2296
		2289 - 2366	2440	2289 - 2306	2302 - 2319	2314 - 2331	2324 - 2341	2337 - 2354	2349 - 2366
318.425	318.435	2359 - 2436	2510	2359 - 2376	2372 - 2389	2384 - 2401	2394 - 2411	2407 - 2424	2419 - 2436
		2429 - 2506	2580	2429 - 2446	2442 - 2459	2454 - 2471	2464 - 2481	2477 - 2494	2489 - 2506
		2499 - 2576	2650	2499 - 2516	2512 - 2529	2524 - 2541	2534 - 2551	2547 - 2564	2559 - 2576
		2569 - 2646	2720	2569 - 2586	2582 - 2599	2594 - 2611	2604 - 2621	2617 - 2634	2629 - 2646
		2639 - 2716	2790	2639 - 2656	2652 - 2669	2664 - 2681	2674 - 2691	2687 - 2704	2699 - 2716
		2709 - 2786	2860	2709 - 2726	2722 - 2739	2734 - 2751	2744 - 2761	2757 - 2774	2769 - 2786
		2779 - 2856	2930	2779 - 2796	2792 - 2809	2804 - 2821	2814 - 2831	2827 - 2844	2836 - 2856

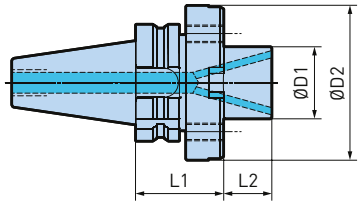
Shanks and Tool Holders for Bridge Tool Series 318, Ø 620 - 3000

BDV, DIN 69871 AD



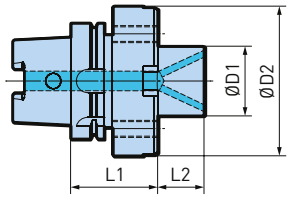
Model	Order No.	Taper Size	ØD1	ØD2	L1	L2
HSK-A100-F60-75	**328.214**	HSK-A100	60	129	75	40

BBT50, MAS 403/BT



Model	Order No.	Taper Size	ØD1	ØD2	L1	L2
BDV50-F60-75	**328.215**	DV50	60	129	75	40

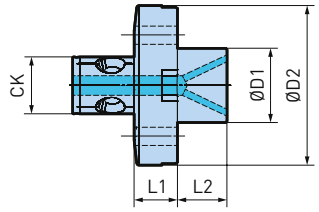
HSK-A100, DIN 69893A



Model	Order No.	Taper Size	ØD1	ØD2	L1	L2
BBT50-F60-85	**328.213**	BT50	60	129	85	40

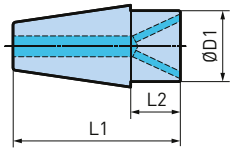
B.4

BIG KAISER CKN



Model	Order No.	Taper Size	ØD1	ØD2	L1	L2
CKN7-F60	**328.217N**	CKN7	60	129	35	40

Centering Shank ISO 50

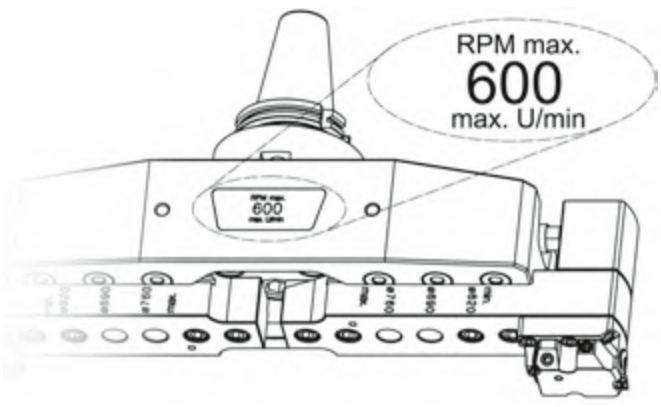


Model	Order No.	Taper Size	ØD1	ØD2	L1	L2
DV50-F60	**328.216**	ISO50, M24	60	129	140	40

Adapter rings and spacers available on request.

Safety Instructions

The max. speed allowed for series 318 boring tools is in relation to the boring diameter and the extension slide used. All extension slides are marked with max. speed allowed [n max.].



ØD	Max. Speed [min -1]	Bridge Aluminium
619 - 831	600	318.421
829 - 1111	450	318.422
1109 - 1531	350	318.423
1529 - 2021	250	318.424
2019 - 2511	190	318.425
2509 - 3001	150	318.425

Application Notes

1. Roughing
Ø 620 – 1110 mm
Up to Ø 830 mm the bridge tool can be connected to the machine spindle over a tool shank, but only on a machine with good spindle taper, good spindle bearings and with the nominal retraction force available. For the range between Ø 830 – 1110 mm, roughing is possible with the bridge bolted on to the machine spindle. If vibration occurs use just one cutting edge.

Ø > 1110 mm
Roughing is not recommended

2. Finishing
Ø 620 – 1110 mm
Finishing is possible with the bridge tool connected to the machine spindle over a tool shank, providing that the machine spindle is in good condition.

Ø > 1110 mm
The bridge tool must be bolted on to the machine spindle, either directly or if required over a special flange.

Connecting the Bridge to the Machine Spindle

The bridge tool can be connected to the machine spindle over a tool shank (Fig. 1) or it can be bolted on to the spindle face (Fig. 2). A combination of both variants is also possible. A bolted connection is recommended for bore sizes Ø 1110 mm and bigger.

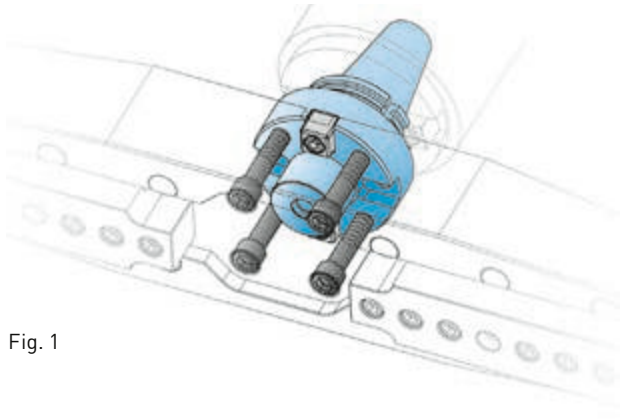


Fig. 1

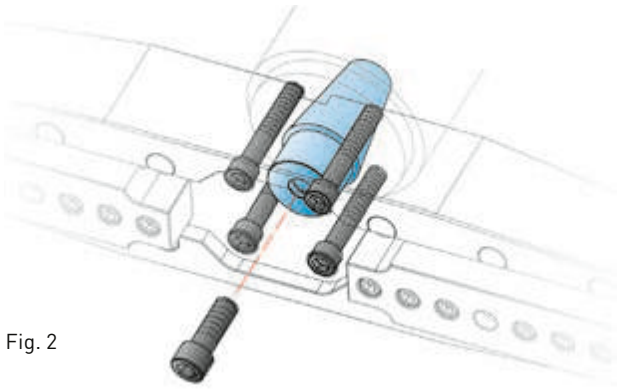


Fig. 2

Indexable Inserts and Cutters

Application Advice	468
WC-Inserts for Fine Boring Heads	470
TP-Inserts for Fine Boring Heads	471
TC-Inserts for Fine Boring Heads	472
MW/CC-Inserts for Fine and Rough Boring Heads	475
SP-Inserts for Rough Boring Heads	479
SC-Inserts for Rough Boring Heads	480
WP 337-Inserts for Indexable Insert Drills	482
WC-Inserts for Rough Boring Heads	484
TP/TC CBN/PCD-Inserts for Fine Boring Heads	488
CC CBN/PCD-Inserts for Fine and Rough Boring Heads	490
Inserts for Various Applications	492

B.5

ISO Code for inserts for boring and turning

V	B	M	T	-	16	04	04	F	N	-	M	P 10	H
1	2	3	4		5	6	7	8	9		10	11	12

1 Insert Shape

C 80° · D 55° · S 90° · T 60° · V 35° · W 80°

2 Clearance angle

B 5° · C 7° · D 15° · N · P 11°

3 Tolerance class

Class	IC	m	s
C	± 0.025	± 0.013	± 0.025
G	± 0.025	± 0.025	± 0.13
M	± 0.05 - 0.1 1)	± 0.08 - 0.20 1)	± 0.13

1) Dependent upon insert size

4 Chip breaker/ Mounting criteria

A · G · T · β = 40°-60° · W · β = 40°-60°

X = Special execution

5 Insert size

Size		02	03	04	05	06	07	08	09	10	11	12	15	16	19	22
	L											12.9		16.1	19.3	
	IC											12.7		15.88	19.05	
	L												15.5		19.4	
	IC												12.7		15.875	
	L					6.35		8	9.52			12.7				
	IC					6.35		8.0	9.52			12.7				
	L										11			16.5		22
	IC										6.35			9.525		12.7
	L										11.1			16.6		22.1
	IC										6.35			9.525		12.7
	L	2	3	4	5	6		8		10						
	IC	3.97	5.56	6.35	7.94	9.52		12.7		15.88						

6 Insert thickness

01	s = 1.59	
02	s = 2.38 (2.5*)	
03	s = 3.18 (3.0*)	
T3	s = 3.97	
04	s = 4.76	
05	s = 5.56	
*) Special size	**06**	s = 6.35

7 Corner radius

01	R = 0.1
02	R = 0.2
03	R = 0.3
04	R = 0.4
06	R = 0.6
08	R = 0.8
10	R = 1.0
12	R = 1.2

8 Cutting edge

F · E · T · S

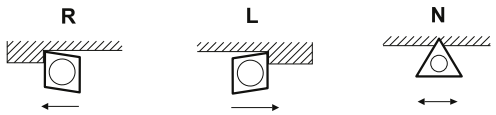
W Wiper geometry

= less suitable
\+ = suitable
++ = first choice

ISO Code for inserts for boring and turning

V	B	M	T	-	16	04	04	F	N	-	M	P 10	H
1	2	3	4		5	6	7	8	9		10	11	12

9 Cutting direction



10 Processing

F = Finishing
M = Medium
R = Roughing

11 Cutting Materials

ISO main groups	Work piece materials	ISO application groups				
P	Carbon steels Cast steel	P10	P20	P30	P40	P50
M	Stainless steels	M10	M20	M30	M40	
K	Cast iron	K10	K20	K30		
N	Aluminium Non-ferrous metals Synthetic materials	N10				
H	Hardened materials	H10	H20			
S	Titanium NiCo Alloys High temperature alloys	S10	S20			

Increasing fracture strength/Toughness

Increasing abrasion resistance

12 Features

H = uncoated carbide
C = coated carbide
CT = cermet
CTC = silicon nitride
SN = polycrystalline cubic boron nitride
CBN
PKD = polycrystalline diamond

Features

Uncoated carbide H
Uncoated hard metal cutting materials are based on tungsten carbide with the addition of titanium carbide, tantalum carbide and cobalt as binding agents. Depending on the allotted ISO group, they are suitable for rough machining and finishing of metallic and non-metallic materials.

Coated carbide C
Coated hard metal is characterised by its high resistance to wear, its low friction coefficient and minimal built-up edge formation. The multiple coating is a good precondition for cost-effective production machining of all commonly available materials.

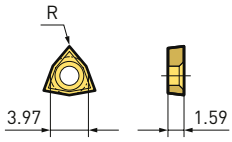
Cermet CT
Cermet cutting materials consist of titanium carbide and titanium nitride. They are characterised by high thermal and abrasion resistance and are suitable for finish machining and light rough-machining of steel, cast iron and light metal at high cutting speeds.

Silicon nitride SN
Ceramic cutting edges are extremely temperature-stable, highly impact-resistant and accommodate the highest cutting speeds when machining cast iron in continuous as well as in interrupted cutting.

Polycrystalline cubic boron nitride CBN
CBN cutting materials feature an extremely high wear and heat resistance. Depending on the design, CBN cutting edges are suitable for boring hardened steel, up to 70 HRC, hard cast steel, cast iron and hard nickel alloys.

Polycrystalline diamond PCD
PCD cutting edges are extremely hard and abrasion-resistant. They permit high speed finish machining of non-ferrous materials and composites.

Inserts WC



WC..0201 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	WCGT-020102FN-MP10CT	**655.600**	0.2	15°		+	+			+				+				

WC..0201 chip-breakers ground or pressed & polished

	WCGT-020101FL-FK10C	**655.605**	0.1	23°	TiAlN	+	+	+	++	++	+	+	+		++			
	WCGT-020102FL-FK10C	**655.603**	0.2	23°	TiAlN	+	+	+	++	++	+	+	+	++	+	+		
	WCGT-020101FL-FK10CT	**655.604**	0.1	23°							++				++	+		
	WCGT-020102FL-FK10CT	**655.601**	0.2	23°							++			++		+		
	WCGT-020101FL-FM10C	**655.606**	0.1	23°	AlCrN	++	++	++	+	+	+	+	+	+	++			
	WCGT-020102FL-FM10C	**655.602**	0.2	23°	AlCrN	++	++	++	+	+	+	++	++	++	+	+		

B.5

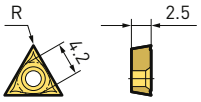
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. Inserts are sold in packages of 10 pieces.
3. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.

= less suitable
\+ = suitable
++ = first choice

Inserts TP



TP..0702 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	TPGT-070202FN-MP10CT	**651.802**	0.2	15°		++	++			+				++				
	TPMT-070202FN-MP10CT	**651.713**	0.2	15°	AlCrN	++	++	+	+	+	+			++		+		
	TPMT-070202FN-MP10CT	**651.813**	0.4	15°	AlCrN	++	++	+	+	+	+			++		+		
	TPGT-070204FN-MP10CT	**651.702**	0.4	15°		++	++			+				++				

TP..0702 chip-breakers ground or pressed & polished

	TPGT-070201FL-FK10C	**651.824**	0.1	25°	TiAlN	+	+	+	+	+	+		+		++			
	TPGT-070203FL-FK10C	**651.735**	0.3	25°	TiAlN	++	++	+	++	++	+	++	+	++		+		
	TPGT-070201FL-FK10H	**651.823**	0.1	25°							++				++			
	TPGT-070202FL-FK10H	**651.825**	0.2	25°							++			++	++			++
	TPGT-070203FL-FK10H	**651.723**	0.3	25°							++			++		++	+	
	TPGT-070204FL-FK10H	**651.725**	0.4	25°							++			++				++
	TPGT-070202FL-FM10C	**651.837**	0.2	25°	AlCrN	++	++	++	+	+	+	++	++	+	++			
	TPGT-070203FL-FM10C	**651.737**	0.3	25°	AlCrN	++	++	++	+	+	+	++	++	++		+		
	TPGT-070201FL-FM20C	**651.840**	0.1	23°	AlCrN	+	++	++	++	++	+	++	++	++	+	+	+	
	TPGT-070202FL-FM20C	**651.841**	0.2	23°	AlCrN	+	++	++	++	++	+	++	++	++	+	+	+	
	TPGT-070203FL-FM20C	**651.842**	0.3	23°	AlCrN	+	++	++	++	++	+	++	++	++	+	+	+	
	TPGT-070204FL-FM20C	**651.843**	0.4	23°	AlCrN	+	++	++	++	++	+	++	++	++	+	+	+	
	TPGT-070202FL-FP10C	**651.833**	0.2	15°	TiAlN	+	+	+	+	+		+	+	+	++	+		
	TPGT-070202FL-FP10CT	**651.835**	0.2	18°		++	++			+	+				++			
	TPGT-070202FL-FP10CTC	**651.838**	0.2	18°	TiAlN	++	++	+	+	+	+	+		+	++			
	TPGT-070203FL-FP10CTC	**651.738**	0.3	18°	TiAlN	++	++	+	+	+	+	+		++		+		
	TPGT-070202FL-FS10C	**651.839**	0.2	15°	TiAlN			+					++	++	+	++	+	
	TPGT-070202FL-MP10C	**651.834**	0.2	20°	TiAlN	+	+	+	+	+		++	+	+	++	+		
	TPGT-070204FL-MP10C	**651.734**	0.4	20°	TiAlN	++	++	+	++	++		++	+	++		+		
	TPGT-070203FL-MP10CT	**651.736**	0.3	18°		++	++			+	+			++				

TP..0702 without chip-breakers

	TPGW-070203FN-MK10C	**651.632**	0.3	5°	TiAlN	+	+	+	++	+		++		++			+	
	TPGW-070203FN-MK10H	**651.623**	0.3	5°					+			+					+	

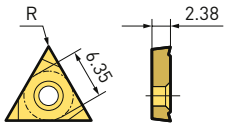
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. Inserts are sold in packages of 10 pieces.
3. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.

\- = less suitable
\+ = suitable
++ = first choice

Inserts TC



TC..1102 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	TCMT-110204FN-FP10CT	**655.322A**	0.4	15°		++	++			+				++		+		
	TCGT-110202FL-FS20C	**689.517**	0.2	30°	TIN ALOX SN2			++					++					
	TCGT-110204FL-FS20C	**689.516**	0.4	30°	TIN ALOX SN2			++					++					
	TCGT-110204FN-MK10C	**655.301B**	0.2	12°	TiCN-Al2O3	++	++	++	+	+		++		+	+	+		
	TCGT-110204FN-MK10C	**655.302B**	0.4	12°	TiCN-Al2O3	++	++	++	+	+		++		+		+	+	
	TCGT-110208FN-MK10C	**655.303B**	0.8	12°	TiCN-Al2O3	++	++	++	+	+		++		+		+	++	
	TCMT-110204FN-MM30C	**655.354**	0.4	20°	TiAlN+ Al2O3	++	++	++	+	+			++	++	++	++	++	
	TCGT-110208FN-MM30C	**655.314**	0.8	15°	TiCN- Al2O3TiN	+	+	++	+	+		+		++		++	++	
	TCMT-110208FN-MM30C	**655.364**	0.8	20°	TiAlN+ Al2O3	++	++	++	+	+			++	++	+	++	++	
	TCGT-110202FN-MP10CT	**655.313**	0.2	15°		++	++								++			
	TCMT-110204FN-MP10CT	**655.322**	0.4	15°		++	++			+				++		+		
	TCMT-110204FN-MP10CTC	**655.324**	0.4	15°	TiAlN	++	++	+	+	+	+			++		+		
	TCMT-110208FN-MP10CTC	**655.334**	0.8	15°	TiAlN	++	++	+	+	+	+			++		+		
	TCMT-110202FN-MP20C	**655.311A**	0.2	15°	Al2O3-TiCN	+	+							+	+	+		
	TCMT-110204FN-MP20C	**655.321A**	0.4	15°	Al2O3-TiCN	+	+							+		++	+	
	TCMT-110208FN-MP20C	**655.331A**	0.8	15°	Al2O3-TiCN	+	+							++		++	+	
	TCMT-110202FN-MS10C	**655.316**	0.2	15°	TiAlN			+	+				++	++	+	++	+	
	TCMT-110204FN-MS10C	**655.326**	0.4	15°	TiAlN			+	+				++	++	+	++	+	
	TCGT-110208-S20C	**689.518**	0.8	30°	TIN ALOX SN2			++					++					

B.5

TC..1102 without chip-breakers

	TCGX-110204WL-FK10C	**655.306**	0.8	0°					+							++		
	TCGW-110204-K10C	**655.302A**	0.4	0°	TiCN-Al2O3-TiN				++	++				++				
	TCGW-110202FN-MK10C	**655.301A**	0.2	0°	TiCN-Al2O3-TiN				++	++				++				
	TCGW-110208FN-MK10C	**655.303A**	0.8	0°	TiCN-Al2O3-TiN				++	++				++				
	TCGW-110204FN-MK10H	**655.305**	0.4	0°					+							++		

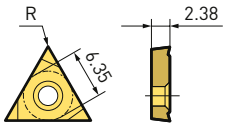
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. Inserts are sold in packages of 10 pieces.
3. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.

= less suitable
\+ = suitable
++ = first choice

Inserts TC



TC..1102 chip-breakers ground or pressed & polished

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	TCGT-110201FL-FK10C	655.363	0.1	23°	TiAlN	+	+	+	+	+	+				++			
	TCGT-110202FL-FK10C	655.373	0.2	23°	TiAlN	+	+	+	+	+	+				+			
	TCGT-110204FL-FK10C	655.383	0.4	23°	TiAlN	++	++	+	++	++	+	++	+	++		+		
	TCGT-110208FL-FK10C	655.393	0.8	23°	TiAlN	++	++	+	++	++	+	++	+	++		+		
	TCGT-110202FL-FK10H	655.378	0.2	23°							++			+	++			
	TCGT-110204FL-FK10H	655.388	0.4	23°							++			++	+	+		
	TCGT-110208FL-FK10H	655.398	0.8	23°							++			++		+		
	TCGT-110202FL-FK20C	655.370	0.2	10°	TiAlN	++	++	+	++	++	+	++		+	++	++	+	
	TCGT-110204FL-FK20C	655.380	0.4	10°	TiAlN	++	++	+	++	++	+	++		++		++	++	
	TCGT-110208FL-FK20C	655.390	0.8	10°	TiAlN	++	++	+	++	++	+	++		++		++	++	
	TCGT-110204FL-FK20H	655.387	0.4	20°							++			++	+			++
	TCGT-110208FL-FK20H	655.397	0.8	20°							++			++				++
	TCGT-110201FL-FM10C	655.369	0.1	23°	AlCrN	++	+	++	+	+	+	++	+	+	++			
	TCGT-110202FL-FM10C	655.379	0.2	23°	AlCrN	++	+	++	+	+	+	++	+	+	++			
	TCGT-110204FL-FM10C	655.389	0.4	23°	AlCrN	++	+	++	+	+	+	++	+	++	+	+		
	TCGT-110208FL-FM10C	655.399	0.8	23°	AlCrN	++	+	++	+	+	+	++	+	++		++	+	
	TCGT-110202FL-FM20C	655.319	0.2	23°	AlCrN	+	++	++	++	++	+	++	++	++	+	++	+	
	TCGT-110203FL-FM20C	655.327	0.3	23°	AlCrN	+	++	++	++	++	+	++	++	++	+	++	+	
	TCGT-110204FL-FM20C	655.318	0.4	23°	AlCrN	+	++	++	++	++	+	++	++	++	+	++	+	
	TCGT-110206FL-FM20C	655.328	0.6	23°	AlCrN	+	++	++	++	++	+	++	++	++	+	++	+	
	TCGT-110208FL-FM20C	655.320	0.8	23°	AlCrN	+	++	++	++	++	+	++	++	++	+	++	+	
	TCGT-110202FL-FP10C	655.371	0.2	15°	TiAlN	+	+		+	+		+			++			
	TCGT-110204FL-FP10C	655.381	0.4	18°	TiAlN	+	+	+	+	+	+	+	+			+		
	TCGT-110202FN-FP10CT	655.372	0.2	20°		+	+								++			
	TCGT-110204FL-FP10CT	655.386	0.4	18°		++	++			+	+			++				
	TCGT-110202FL-FP10CTC	655.375	0.2	15°	TiAlN	++	++	+	+	+	+	+		+	++			
	TCGT-110204FL-FP10CTC	655.385	0.4	18°	TiAlN	++	++	+	+	+	+	+		++	+			
	TCGT-110208FL-FP10CTC	655.395	0.8	18°	TiAlN	++	++	+	+	+	+	+		++				

Accessories & Spare Parts

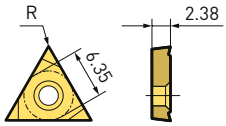
Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. Inserts are sold in packages of 10 pieces.
3. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.

= less suitable
\+ = suitable
++ = first choice

B.5

Inserts TC

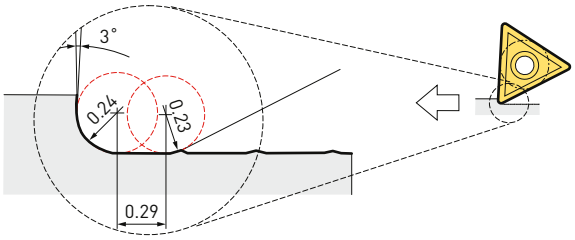


TC..1102 chip-breakers Wiper

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	TCGX-110204WL-FK10C	**655.310**	0.4	20°	AlCrN	++	++	++	++	+	+	+	+	++		+	+	++
	TCGX-110204WL-FK10H	**655.317**	0.4	20°							++		++	++		+	+	++
	TCGX-110204WL-FK20C	**655.374**	0.4	15°	PVD Oxid	++	++	+	+	+				++			++	
	TCGX-110204WL-FP10CT	**655.315**	0.4	20°		++	++			+	+	+		++		+	+	++
	TCGX-110204WL-FP10CT	**655.384**	0.4	15°		++	++			+	+			++				

Wiper geometry
Comparison with standard nose radius 0.4 mm

Wiper: Two times the feed rate → Same surface finish
Same feed rate → Two times better surface finish



B.5

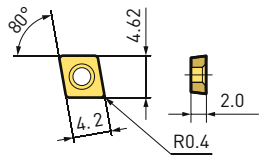
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. Inserts are sold in packages of 10 pieces.
3. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.

= less suitable
\+ = suitable
++ = first choice

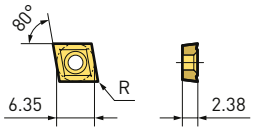
Inserts MW



MW..0404 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	MW0404-D15N	655.940	0.4		DLC						++			++	+	+		
	MW0404-Z30K	655.941	0.4		TiAlN-AlCrN				++	++				++	+	+		
	MW0404-Z30P	655.942	0.4		TiAlN-AlCrN	+	++	++						++	+	+		

Inserts CC



CC..0602 chip-breakers pressed

	CCMT-060204FN-RK20C	654.852	0.4	15°	Al2O3-TiN	+	+	+	++	++		+	+	++		+		
	CCMT-060204FN-RK20H	654.858	0.4	15°					+	+							+	
	CCMT-060204FN-RP20C	654.850A	0.4	15°	Al2O3-TiN	++	++	+	+	+		+	+	++				
	CCMT-060202FN-RP30C	654.840A	0.2	15°	Al2O3-TiN	+	+	+	+	+			+		+			
	CCMT-060204FN-RP30C	654.851A	0.4	15°	TiAlN	++	++	+	+	+		+	+	++		+		
	CCMT-060208FN-RP30C	654.853	0.8	15°	TiAlN	++	++	+	++	++		+	+	++	+	+	+	
	CCMT-060202FN-RP35C	654.846	0.2	15°	Al2O3-TiN	++	++	++	+	+		+	+	++		++	++	
	CCMT-060204FN-RP35C	654.856	0.4	15°	Al2O3-TiN	++	++	+	+	+		+	+	++		++	++	
	CCGT-060202FN-RS10C	654.837	0.2	8°	TiAlN			++					++	++	++	+		
	CCGT-060204FN-RS10C	654.847	0.4	8°	TiAlN			++					++	++	+	+		

CC..0602 chip-breakers ground

	CCMT-060202FL-RK10H	654.877	0.2	23°							++			++	+	+		
	CCMT-060204FL-RK10H	654.888	0.4	23°							++		+	++		+		
	CCMT-060202FL-RN10C	654.879	0.2	23°	AlCrN						++		+	++	+	+		
	CCMT-060204FL-RN10C	654.889	0.4	23°	AlCrN						++		+	++		+		

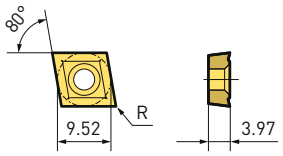
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. Inserts are sold in packages of 10 pieces.
3. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.

= less suitable
\+ = suitable
++ = first choice

Inserts CC



CC..09T3 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	CCMT-09T304FN-RK20C	**654.942**	0.4	15°	Al2O3-TiN				++	++			+	++		+		
	CCMT-09T308FN-RK20C	**654.952**	0.8	15°	Al2O3-TiN				++	++			+	++		+		
	CCMT-09T304FN-RP20C	**654.940A**	0.4	15°	Al2O3-TiN	++	++	+	+	+		+	+	++		+		
	CCMT-09T302FN-RP30C	**654.930A**	0.2	15°	Al2O3-TiN	+	+	+	+	+					+			
	CCMT-09T308FN-RP30C	**654.950**	0.8	15°	Al2O3-TiN	++	++	+	+	+		+	+	++		++	+	
	CCMT-09T302FN-RP35C	**654.935**	0.2	15°	Al2O3-TiN	++	++	++	+	+		+	+	+	++	++	+	
	CCMT-09T304FN-RP35C	**654.945**	0.4	15°	Al2O3-TiN	++	++	++	+	+		+	+	++		++	++	
	CCMT-09T308FN-RP35C	**654.955**	0.8	15°	Al2O3-TiN	++	++	++	+	+		+	+	++		++	++	
	CCGT-09T302FN-RS10C	**654.937**	0.2	8°	TiAlN			++					++	++	++	+		
	CCGT-09T304FN-RS10C	**654.947**	0.4	8°	TiAlN			++					++	++	+	+		
	CCGT-09T308FN-RS10C	**654.957**	0.8	8°	TiAlN			++					++	++		+		

CC..09T3 chip-breakers ground

	CCMT-09T304FL-MK10H	**654.977**	0.4	23°							++			++	+	+		
	CCMT-09T308FL-MK10H	**654.987**	0.8	23°							++			++		+		
	CCMT-09T304FL-MN10C	**654.949**	0.4	23°	AlCrN						++		+	++	+	+		
	CCMT-09T308FL-MN10C	**654.959**	0.8	23°	AlCrN						++		+	++		+		

B.5

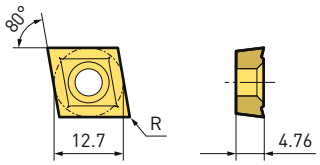
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. Inserts are sold in packages of 10 pieces.
3. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.

= less suitable
\+ = suitable
++ = first choice

Inserts CC



CC..1204 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	Titanium	High temperature steels
	CCMT-120404FN-RK20C	**654.989**	0.4				++	++				
	CCMT-120408FN-RK20C	**654.991**	0.8				++	++				
	CCMT-120408FN-RP20C	**654.990A**	0.8	++	++	+	+	+		+		
	CCMT-120404FN-RP30C	**654.993A**	0.4	+	+	+	+	+				
	CCMT-120408FN-RP30C	**654.988**	0.8	++	++	+	+	+		+		
	CCMT-120404FN-RP35C	**654.964**	0.4	++	++	++	+	+		+		
	CCMT-120408FN-RP35C	**654.965**	0.8	++	++	++	+	+		+		
	CCMT-120404FN-RS10C	**654.968**	0.4			++						
	CCMT-120408FN-RS10C	**654.969**	0.8			++						

CC..1204 chip-breakers ground

	CCMT-120404FL-MK10H	**654.995**	0.4	23°							++			++	+	+		
	CCMT-120408FL-MK10H	**654.992**	0.8	23°							++			++		+		
	CCMT-120404FL-MN10C	**654.978**	0.4	23°	AlCrN						++		++	++	+	+	+	
	CCMT-120408FL-MN10C	**654.979**	0.8	23°	AlCrN						++		++	++		+	+	

B.5

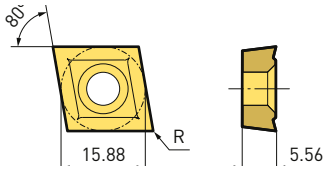
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. Inserts are sold in packages of 10 pieces.
2. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.

= less suitable
\+ = suitable
++ = first choice

Inserts CC



CC..1605 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	CCMT-160508FN-RK10H	**654.997**	0.8	15°					+	+			+			+		
	CCMT-160508FN-RK20C	**654.983**	0.8	15°	Al2O3-TiN				++	++			+	++			+	
	CCMT-160508FN-RP30C	**654.996**	0.8	15°	Al2O3-TiN	++	++	+	+	+		+	+	++		++	+	
	CCMT-160508FN-RP35C	**654.986**	0.8	15°	Al2O3-TiN	++	++	+	+	+		+	+	++		++	++	

CC..1605 chip-breakers ground

	CCMT-160508FL-MK10H	**654.998**	0.8	23°							++		+	++			+	

B.5

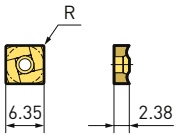
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. Inserts are sold in packages of 10 pieces.
3. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.

\- = less suitable
\+ = suitable
++ = first choice

Inserts SP



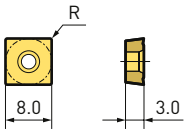
SP..0602 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	SPMT-060204FN-RK20C	**654.152**	0.4	15°	Al2O3-TiN				++	++		+	+	+			+	
	SPMT-060204FN-RK20H *	**654.158**	0.4	15°					+								++	
	SPMT-060204FN-RP20C	**654.150**	0.4	15°	Al2O3-TiN	++	++	++	+	+		+	+	+			+	

SP..0602 chip-breakers ground

	SPMT-060204FL-MK10H *	**654.168**	0.4	23°							++		+	+			+	

Inserts SP



SP..0803 chip-breakers ground

	SPGT-080305FL-MP20H	**654.183**	5	5°		++	++	++		+	++	+					+	

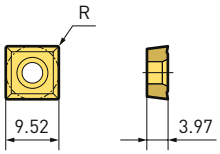
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. Inserts are sold in packages of 10 pieces.
3. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.
4. * As long as stock lasts.

= less suitable
\+ = suitable
++ = first choice

Inserts SC



SC..09T3 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	SCMT-09T308FN-RK30H *	**654.259**	0.8	15°					+	+							+	
	SCMT-09T304FN-RP20C	**654.240**	0.4	15°	Al2O3-TiN	++	++	++	++	++		+		+	+	+		
	SCMT-09T308FN-RP20C	**654.250**	0.8	15°	Al2O3-TiN	++	++	++	++	++		+		+		+		
	SCMT-09T308FN-RP30C	**654.251**	0.8	15°	Al2O3-TiN	++	++	+	+	+		+		++		++	++	

SC..09T3 chip-breakers ground

	SCMT-09T304FL-MK10C	**654.277**	0.4	23°							++			+	+	+		
	SCMT-09T308FL-MK10C	**654.287**	0.8	23°							++			+			+	

B.5

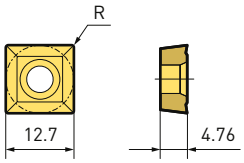
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. * As long as stock lasts.
2. γ Rake angle with insert on tool.
3. Inserts are sold in packages of 10 pieces.
4. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.

= less suitable
\+ = suitable
++ = first choice

Inserts SC



SC..1204 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	SCMT-120404FN-RP20C	**654.340**	0.4	15°	Al2O3-TiN	+	+	+	+	+		+			+	+		
	SCMT-120408FN-RP20C	**654.350**	0.8	15°	Al2O3-TiN	++	++	++	++	+		+		+			+	
	SCMT-120408FN-RP30C	**654.351**	0.8	15°	Al2O3-TiN	++	++	+	+	+		+	+	+		++	++	
	SCMT-120408FN-RP30H *	**654.354**	0.8	15°		+	+	+		+						++	++	

SC..1204 chip-breakers ground

	SCMT-120408FL-MK10H	**654.387**	0.8	23°							++			+			+	

B.5

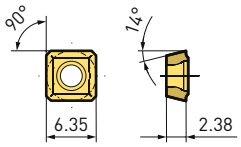
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. * As long as stock lasts.
2. γ Rake angle with insert on tool.
3. Inserts are sold in packages of 10 pieces.
4. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.

= less suitable
\+ = suitable
++ = first choice

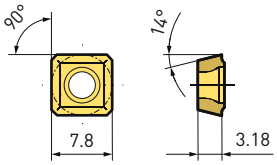
Inserts WP 337



WP 337-1 ø16-20mm chip-breakers pressed

Insert Shape	Model	Order No.	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	Long chipping materials	Tough materials	Inner Insert	Outer Insert
	WP337-1-16/20-RK40H	655.913	15°							++					+	+
	WP337-1-16/20-RM35C	655.912	15°	TiCN	+	+	+	+	+	+			++		+	++
	WP337-1-16/20-RP35C	655.910	15°	TiCN-Al2O3-TiN	++	++	+	++	+						+	+
	WP337-1-16/20-RP40C	655.911	15°	TiCN	+	+	+	+	+		+	+		++	++	+

Inserts WP 337



WP 337-2 ø21-25mm chip-breakers pressed

Insert Shape	Model	Order No.	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	Long chipping materials	Tough materials	Inner Insert	Outer Insert
	WP337-2-21/25-RK40H	655.923	15°							++					+	+
	WP337-2-21/25-RM35C	655.922	15°	TiCN	+	+	+	+	+	+			++		+	++
	WP337-2-21/25-RP35C	655.920	15°	TiCN-Al2O3-TiN	++	++	+	++	+						+	+
	WP337-2-21/25-RP40C	655.921	15°	TiCN	+	+	+	+	+		+	+		++	++	+

B.5

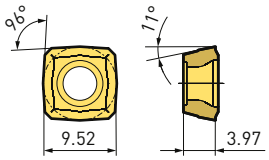
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. Inserts are sold in packages of 10 pieces.
3. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.

= less suitable
\+ = suitable
++ = first choice

Inserts WP 337



WP 337-3 ø26-30mm chip-breakers pressed

Insert Shape	Model	Order No.	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	Long chipping materials	Tough materials	Inner Insert	Outer Insert
	WP337-3-26/30-RK40H	**655.933**	15°							++					+	+
	WP337-3-26/30-RP35C	**655.930**	15°	TiCN-Al2O3-TiN	++	++	+	++	+						+	+
	WP337-3-26/30-RP35C	**655.932**	15°	TiCN	+	+	+	+	+	+			++		+	++
	WP337-3-26/30-RP40C	**655.931**	15°	TiCN	+	+	+	+	+		+	+		++	++	+

B.5

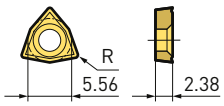
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. Inserts are sold in packages of 10 pieces.
3. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.

= less suitable
\+ = suitable
++ = first choice

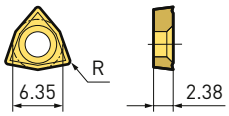
Inserts WC



WC..0302 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	WCMT-030208FN-RK20C	**655.621**	0.8	15°	Al2O3-TiN				++	++	+							
	WCMT-030208FN-RM40C *	**655.622**	0.8	15°	TiCN	+	+	++										
	WCMT-030208FN-RP45C	**655.620**	0.8	15°	TiCN-TiN	++	++		+	+								

Inserts WC



WC..0402 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	WCMT-040208FN-RK20C	**655.631**	0.8	15°	Al2O3-TiN				++	++	+							
	WCMT-040208FN-RM40C *	**655.632**	0.8	15°	TiCN	+	+	++										
	WCMT-040208FN-RP45C	**655.630**	0.8	15°	TiCN-TiN	++	++		+	+								

B.5

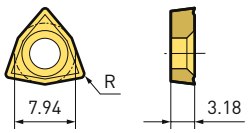
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. Inserts are sold in packages of 10 pieces.
3. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.
4. * As long as stock lasts.

= less suitable
\+ = suitable
++ = first choice

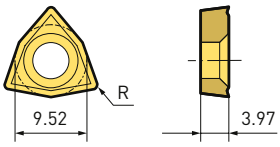
Inserts WC



WC..0503 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	WCMT-050308FN-MP45C	**655.640**	0.8	15°	TiN	++	++	++	+	+								
	WCMT-050308FN-RK20C	**655.641**	0.8	15°	TiCN-Al2O3				++	++	+							
	WCMT-050308FN-RP40C	**655.644**	0.8	15°	TiN	++	++	++	+	+								
	WCMT-050308FN-RP45C	**655.642**	0.8	15°	TiN	++		+										

Inserts WC



WC..06T3 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	WCMT-06T308FN-MP45C	**655.650**	0.8	15°	TiN	++	++	++	+	+								
	WCMT-06T308FN-RK20C	**655.651**	0.8	15°	TiCN-Al2O3				++	++	+							
	WCMT-06T308FN-RP40C	**655.654**	0.8	15°	TiN	++	++	++	+	+								
	WCMT-06T308FN-RP45C	**655.652**	0.8	15°	TiN	++		+										

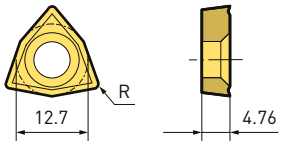
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. Inserts are sold in packages of 10 pieces.
3. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.

\- = less suitable
\+ = suitable
++ = first choice

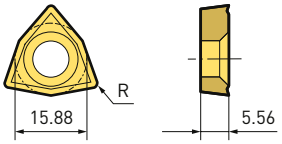
Inserts WC



WC..0804 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	WCMT-080412FN-MP45C	**655.660**	1.2	15°	TiN	++	++	++	+	+								
	WCMT-080412FN-RK20C	**655.661**	1.2	15°	TiCN-Al2O3				++	++	+							
	WCMT-080412FN-RP40C	**655.664**	1.2	15°	TiN	++	++	++	+	+								
	WCMT-080412FN-RP45C	**655.662**	1.2	15°	TiN	+		+										

Inserts WC



WC..1005 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	WCMT-100512FN-RK20H	**655.671**	1.2	15°					+	+	+							
	WCMT-100512FN-RP45C	**655.670**	1.2	15°	TiCN	++	++	++	++	++								

B.5

Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. Inserts are sold in packages of 10 pieces.
3. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.

= less suitable
\+ = suitable
++ = first choice

Inserts WC

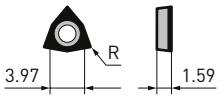


Fig. 1



Fig. 2

WC..0201 PKD/CBN cutting edge

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC	Fig.
	WCGW-020102TN-FH10CBN	**948.101**	0.2	0°	CBN-30				++		++		++	++		2
	WCGW-020102FN-FH10CBN-X3	**938.885**	0.2	0°	CBN-25				++	+	++					1
	WCGW-020102FN-FK10CBN-X3	**938.884**	0.2	0°	CBN-10		++				++	+	+			1
	WCGW-020102FN-FN10PKD-X3	**938.883**	0.2	0°	PCD			++			++		+		+	1

B.5

Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.
3. CBN/PCD inserts are sold individually.

= less suitable
\+ = suitable
++ = first choice

Inserts TP

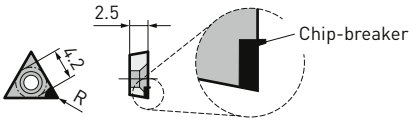


Fig. 1

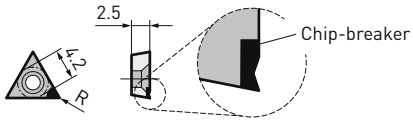


Fig. 2

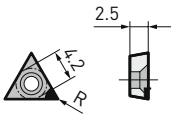


Fig. 3

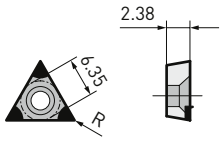


Fig. 4

Figure 1 and 2 are with chipbreaker.

TP..0702 PKD/CBN cutting edge

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC	Fig.
	TPGW-070201TN-FH10CBN	**948.270**	0.1	5°	CBN-30				++		++	+	+			3
	TPGW-070203TN-FH10CBN	**948.271**	0.3	5°	CBN-30				++		++		++	+		3
	TPGW-070202FN-FK10CBN	**948.210**	0.2	5°	CBN-15	++	++			+	+	+				3
	TPGW-070202TN-FK10CBN	**948.230**	0.2	5°	CBN-15	++	++				++	+	++			3
	TPGW-070203FN-FK10CBN	**938.837**	0.3	5°	CBN-10	++	+			+	+					3
	TPGW-070203TN-FK10CBN	**938.879**	0.3	5°	CBN-10	++	+				++		++			3
	TPGW-070204FN-FK10CBN	**948.211**	0.4	5°	CBN-15	++	++			+	+		+			3
	TPGW-070204TN-FK10CBN	**948.231**	0.4	5°	CBN-15	++	++				++		++	+		3
	TPGT-070202FL-FN10PKD	**948.202**	0.2	8°	PCD			++								2
	TPGW-070203FN-FN10PKD	**938.840**	0.3	5°	PCD			++			++		+		+	3
	TPGT-070204FL-FN10PKD	**948.203**	0.4	8°	PCD			++								2
	TPGW-070204FL-MN10PKD	**948.201**	0.4	5°	PCD			+			++		+		++	1
	TPGW-070202FN-FH10CBN-X3	**948.252**	0.2	0°	CBN-30				++	++	+	+				4
	TPGW-070203FN-FH10CBN-X3	**948.251A**	0.3	0°	CBN-30				++	++	+					4
	TPGW-070204FN-FH10CBN-X3	**948.253**	0.4	0°	CBN-30				++	++	+					4

Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.
3. CBN/PCD inserts are sold individually.

= less suitable
\+ = suitable
++ = first choice

Inserts TC

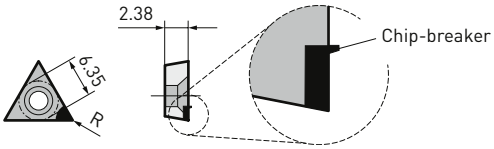


Fig. 1

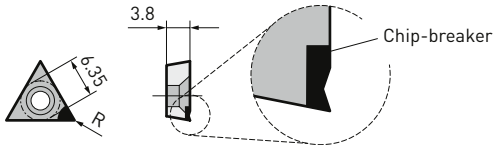


Fig. 2

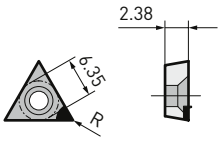


Fig. 3

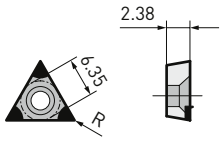


Fig. 4

Figure 1 and 2 are with chipbreaker.

TC..1102 PKD/CBN cutting edge

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC	Fig.
	TCMW-110202TN-FH10CBN	**948.370**	0.2	0°	CBN-30				++		++	+	+			3
	TCMW-110204TN-FH10CBN	**948.371**	0.4	0°	CBN-30				++		++		++			3
	TCMW-110208TN-FH10CBN	**948.372**	0.8	0°	CBN-30				++		++		++	+		3
	TCMW-110202FN-FK10CBN	**948.310**	0.2	0°	CBN-15	++	++			+	++	++				3
	TCMW-110204FN-FK10CBN	**948.311**	0.4	0°	CBN-15	++	++			+	++	+	+			3
	TCMW-110208FN-FK10CBN	**948.312**	0.8	0°	CBN-15	++	++			+	++		+			3
	TCMW-110202TN-FK10CNB	**948.330**	0.2	0°	CBN-15	++	++				++		+			3
	TCMW-110204TN-FK10CNB	**948.331**	0.4	0°	CBN-15	++	++				++		+			3
	TCMW-110208TN-FK10CNB	**948.332**	0.8	0°	CBN-15	++	++				++		++	+		3
	TCGT-110202FL-FN10PKD	**948.373**	0.2	8°	PCD			++			++		+		++	2
	TCGT-110204FL-FN10PKD	**948.374**	0.4	8°	PCD			++			++		+		++	2
	TCMW-110204FN-FN10PKD	**938.841**	0.4	5°	PCD			++			++		+		+	3
	TCGT-110208FL-FN10PKD	**948.375**	0.8	8°	PCD			++			++		+		++	2
	TCMW-110204FL-MN10PKD	**948.301**	0.4	0°	PCD			+			++		+		++	1
	TCMW-110208FL-MN10PKD	**948.302**	0.8	0°	PCD			+			++		+		++	1
	TCMW-110204FN-NK10CBN	**938.834**	0.4	0°	CBN-10	++	+			+	++	+	+			3
	TCMW-110208TN-NK10CBN	**938.876**	0.8	0°	CBN-10	++	+				++		+			3
	TCMW-110202FN-FH10CBN-X3	**948.350A**	0.2	0°	CBN-30				++	++	+	+				4
	TCMW-110204FN-FH10CBN-X3	**948.351A**	0.4	0°	CBN-30				++	++	+					4
	TCMW-110208FN-FH10CBN-X3	**948.352A**	0.8	0°	CBN-30				++	++	++		+			4

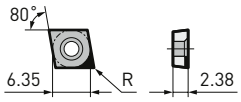
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.
3. CBN/PCD inserts are sold individually.
4. Figure 1 and 2 are with chipbreaker.

= less suitable
\+ = suitable
++ = first choice

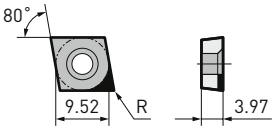
Inserts CC



CC..0602 PKD/CBN cutting edge

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	CCGW-060204FN-FK10CBN	**938.867**	0.4	0°	CBN-10	++	+				++				
	CCGT-060204FL-FN10PKD	**938.866**	0.4	5°	PCD			++			++		+		

Inserts CC



CC..09T3 PKD/CBN cutting edge

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	CCGW-09T304FN-FK10CBN	**938.869**	0.4	0°	CBN-10	++	+				++				
	CCGW-09T308FN-FK10CBN	**938.835**	0.8	0°	CBN-10	++	+				++		+		
	CCGT-09T304FL-FN10PKD	**938.868**	0.4	5°	PCD			++			++		+		

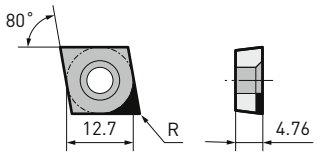
Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. Inserts are sold in packages of 10 pieces.
3. CBN/PCD inserts are sold individually.

\- = less suitable
\+ = suitable
++ = first choice

Inserts CC



CC..1204 PKD/CBN cutting edge

Insert Shape	Model	Order No.	Radius [mm]	Rake Angle γ	Cutting material / coating	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	NiCo Legierungen Titan	High Volume Machining	Unfavorable Conditions	Slightly Interrupted Cut	Heavily Interrupted Cut	HSC
	CCGW-120408FN-FK10CBN	**938.862**	0.8	0°	CBN-10	++	+				++		+		
	CCGT-120404FL-FN10PKD	**938.870**	0.4	5°	PCD			++			++	+	+		
	CCGT-120408FL-FN10PKD	**938.871**	0.8	5°	PCD			++			++		+		

B.5

Accessories & Spare Parts

Torx SET	Insert Clamping Screw
	
▶ 515	▶ 514

1. γ Rake angle with insert on tool.
2. Inserts are sold in packages of 10 pieces.
3. CBN/PCD inserts are sold individually.

= less suitable
\+ = suitable
++ = first choice

Inserts CN

CN..1204 / 1606 /1906 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	Titanium	High temperature steels	Availability
	CNGA-120404TN-MH20CBN	**656.050**	0.04	CBN							++			○
	CNGA-120408TN-MH20CBN	**656.051**	0.08	CBN							++			○
	CNMG-120404FN-MK10C	**656.020**	0.04			+		++	++					○
	CNMG-120408FN-MK10C	**656.021**	0.08			+		++	++					○
	CNMG-160608FN-MK10C	**656.022**	0.08			+		++	++					○
	CNMG-120404FN-MM20C	**656.011**	0.04				++						+	○
	CNMG-120408FN-MM20C	**656.012**	0.08				++						+	○
	CNMG-160608FN-MM20C	**656.016**	0.08				++						+	○
	CNMG-190608FN-MM20C	**656.015**	0.08				++						+	○
	CNMG-120404FN-MP10C	**656.000**	0.04		++	++		+	+					▲
	CNMG-120408FN-MP10C	**656.001**	0.08		++	++		+	+					▲
	CNMG-160608FN-MP10C	**656.004**	0.08		++	++		+	+					○
	CNMG-190608FN-MP10C	**656.005**	0.08		++	++		+	+					○
	CNMG-120404FN-MS20C	**656.042**	0.04				+						++	▲
	CNMG-120408FN-MS20C	**656.043**	0.08				+						++	▲
	CNMG-120404FN-MS20H	**656.040**	0.04									++		○
	CNMG-120408FN-MS20H	**656.041**	0.08									++		○

1. Inserts are sold in packages of 10 pieces.
2. CBN Inserts are available in pieces.

○ delivery time 1 week
▲ from stock

= less suitable
\+ = suitable
++ = first choice

Inserts DN

DN..1506 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	Titanium	High temperature steels	Availability
	DNGA-150604TN-MH20CBN	**656.152**	0.04	CBN							++			○
	DNGA-150608TN-MH20CBN	**656.153**	0.08	CBN							++			○
	DNMG-150604FN-MK10C	**656.122**	0.04			+		++	++					○
	DNMG-150608FN-MK10C	**656.123**	0.08			+		++	++					○
	DNMG-150604FN-MM20C	**656.112**	0.04				++						+	○
	DNMG-150608FN-MM20C	**656.113**	0.08				++						+	○
	DNMG-150604FN-MP10C	**656.102**	0.04		++	++		+	+					▲
	DNMG-150608FN-MP10C	**656.103**	0.08		++	++		+	+					▲
	DNMG-150604FN-MS20C	**656.146**	0.04				+						++	▲
	DNMG-150608FN-MS20C	**656.147**	0.08				+						++	▲
	DNMG-150604FN-MS20H	**656.142**	0.04									++		○
	DNMG-150608FN-MS20H	**656.143**	0.08									++		○

Inserts DC

DC..11T3 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	Titanium	High temperature steels	Availability
	DCGT-11T304FN-FN10H	**656.130**	0.04			+	+	+		++				▲
	DCGT-11T308FN-FN10H	**656.131**	0.08			+	+	+		++				▲
	DCGW-11T304TN-MH20CBN	**656.150**	0.04	CBN							++			○
	DCGW-11T308TN-MH20CBN	**656.151**	0.08	CBN							++			○
	DCMT-11T304FN-MK10C	**656.120**	0.04			+		++	++					○
	DCMT-11T308FN-MK10C	**656.121**	0.08			+		++	++					○
	DCMT-11T304FN-MM20C	**656.110**	0.04				++						+	○
	DCMT-11T308FN-MM20C	**656.111**	0.08				++						+	○
	DCMT-11T304FN-MP10C	**656.100**	0.04		++	++		+	+					▲
	DCMT-11T308FN-MP10C	**656.101**	0.08		++	++		+	+					▲
	DCMT-11T304FN-MS10H	**656.140**	0.04									++		○
	DCMT-11T308FN-MS10H	**656.141**	0.08									++		○
	DCMT-11T304FN-MS20C	**656.144**	0.04				+						++	▲
	DCMT-11T308FN-MS20C	**656.145**	0.08				+						++	▲

1. Inserts are sold in packages of 10 pieces.
2. CBN Inserts are available in pieces.

○ delivery time 1 week
▲ from stock

= less suitable
\+ = suitable
++ = first choice

Inserts VN

VN..1604 chip-breakers pressed

Insert Shape	Model	Order No.	Radius [mm]	Cutting material / coating	Construction Steels	Heat Treatable Steels	Stainless Steels	Cast Iron GG	Cast Iron GGG	AL / Non-Ferrous Metals	Hardened Steel ≤56 HRC	Titanium	High temperature steels	Availability
	VNMG-160404FN-MM20C	656.310	0.04				++						+	○
	VNMG-160408FN-MM20C	656.311	0.08				++						+	○
	VNMG-160404FN-MP10C	656.300	0.04		++	++		+	+					○
	VNMG-160408FN-MP10C	656.301	0.08		++	++		+	+					○

Inserts VB

VB..1604 chip-breakers pressed

	VBMT-160404FN-MK10C	656.320	0.04			+		++	++					○
	VBMT-160408FN-MK10C	656.321	0.08			+		++	++					○
	VBMT-160404FN-MM20C	656.312	0.04				++						+	○
	VBMT-160408FN-MM20C	656.313	0.08				++						+	○
	VBGW-160404TN-MN20CBN	656.351	0.04	CBN							++			○
	VBGW-160408TN-MN20CBN	656.352	0.08	CBN							++			○
	VBMT-160404FN-MP10C	656.302	0.04		++	++		+	+					▲
	VBMT-160408FN-MP10C	656.303	0.08		++	++		+	+					▲
	VBMT-160404FN-MS10H	656.340	0.04									++		○
	VBMT-160408FN-MS10H	656.341	0.08									++		○
	VBMT-160404FN-MS20C	656.342	0.04				+						++	○
	VBMT-160408FN-MS20C	656.343	0.08				+						++	○

Inserts VC

B.5

VC..1604 chip-breakers pressed

	VCGT-160404FN-FN10H	656.330	0.04			+	+	+		++				▲
	VCGT-160408FN-FN10H	656.331	0.08			+	+	+		++				▲
	VCGT-110302-K20	655.822		K20										
	VCMT-110302-P20C	655.821		P20C										

Inserts TN

TN..1604 / 2204 chip-breakers pressed

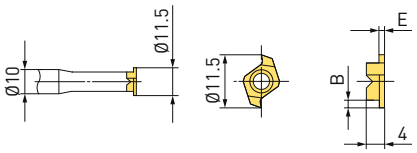
	TNMG-160404FN-MM20C	656.210	0.04				++						+	○
	TNMG-160408FN-MM20C	656.211	0.08				++						+	○
	TNMG-220408FN-MM20C	656.212	0.08				++						+	○
	TNMG-160404FN-MP10C	656.201	0.04		++	++		+	+					○
	TNMG-160408FN-MP10C	656.202	0.08		++	++		+	+					○
	TNMG-220404FN-MP10C	656.203	0.04		++	++		+	+					○
	TNMG-220408FN-MP10C	656.204	0.08		++	++		+	+					○

1. Inserts are sold in packages of 10 pieces.
2. CBN Inserts are available in pieces.

○ delivery time 1 week
▲ from stock

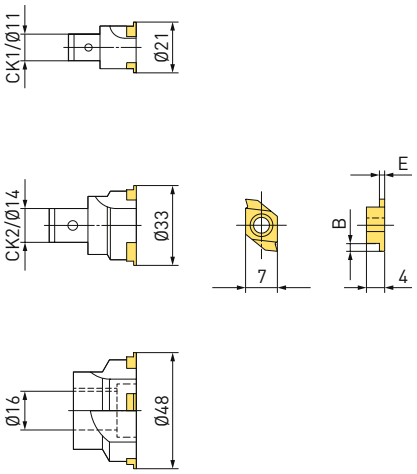
= less suitable
\+ = suitable
++ = first choice

Carbide inserts for circlip grooves as per DIN 472



DN0

Insert			Dimensions			Work Piece Material		
Insert Shape	Order No.	Grade	Capacity ØD	Width of Groove E	Depth of Groove B	Cast Iron	Steel	Aluminium
Type 0	958.052	K20	12 - 24	1.15	0.9	++		
	958.051	P20					++	
	958.053	K20						++
	958.056	K20	12 - 24	1.35	1.3	++		
	958.055	P20					++	
	958.057	K20						++
Blank	958.313	K20						
	958.314	P20						



DN1

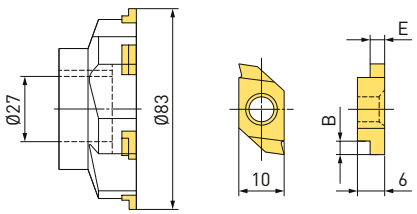
Typ 1	958.062	K20	22 - 34	1.15	1.1	++		
	958.061	P20					++	
	958.063	K20						++
	958.066	K20	22 - 34	1.35	1.5	++		
	958.065	P20					++	
	958.067	K20						++
	958.072	K20	34 - 50	1.65	1.6	++		
	958.071	P20					++	
	958.073	K20						++
	958.076	K20	34 - 50	1.90	2.0	++		
	958.075	P20					++	
	958.077	K20						++
	958.082	K20	50 - 85	2.20	2.2	++		
	958.081	P20					++	
	958.083	K20						++
	958.086	K20	50 - 85	2.70	2.6	++		
	958.085	P20					++	
	958.087	K20						++
Blank	958.157	K20						
	958.158	P20						

Model	Order No.
Torx T8 M3x9.0	958.048

Model	Order No.
Torx T8	694.183

DN2

Typ 2	958.092	K20	> 85	3.20	3.0	++		
	958.091	P20					++	
	958.093	K20						++
	958.096	K20	> 85	4.20	3.5	++		
	958.095	P20					++	
	958.097	K20						++
Blank	958.155	K20						
	958.156	P20						



Model	Order No.
Torx T20 M5x16.5	958.049

Model	Order No.
Torx T20	694.187

Clamping screw (10 screws and 1 wrench)
Inserts are available in pieces.

= less suitable
\+ = suitable
++ = first choice

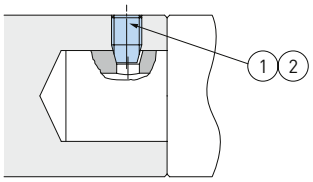
Spare Parts

Modular Components Shanks	496
Indexable Insert Drills / Rough Boring Heads / Insert Holders	499
Fine Boring Heads / Centric Insert Holders	502
Fine Boring Heads / Peripherical Insert Holders	505
Series 318 Large Diameter Boring Tools	507
Face Grooving / OD Turning / Chamfering / Milling	509
Tool Holders / Tapping Attachments	511
Screws and Wrenches	512

B.6

CKB connection

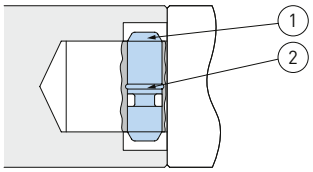
CK- screws and allen wrenches



Clamping Screw					Allen Wrench		
CK	A	B	①	M [Nm] *	CK	SW	②
CK1	M4 x 0.5	5	**690.431**	1.5	CK1	2	**690.801**
CK2	M5 x 0.5	6.5	**690.432**	3.0	CK2	2.5	**690.802**
CK3	M6 x 0.75	8.5	**690.433**	4.5	CK3	3	**690.803**
CK4	M8 x 0.75	11	**690.434**	7.0	CK4	4	**690.804**
CK5	M10 x 1	14	**690.435**	14.0	CK5	5	**690.805**
CK5	M10 x 1	12	**690.594** *	14.0	CK5	5	**690.805**
CK6	M12 x 1	18	**690.436**	24.0	CK6	6	**690.806**
CK7	M20 x 1.5	29	**690.437**	45.0	CK7	10	**690.808**

1. * Shanks **326.005 / 329.866**

Cross bolts and locking rings



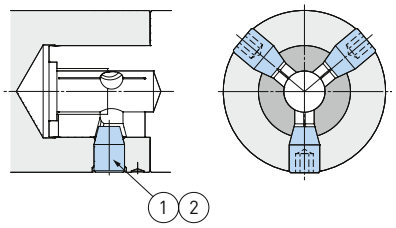
Cross Bolts				O-Ring	Snap Ring
CK	A	B	①	②	②
CKB1	4	13.5	**691.501**	**692.270**	
CKB2	5	17	**691.502**	**692.271**	
CKB3	7	22	**691.503**	**692.272**	
CKB4	8.5	26.5	**691.504**	**692.286**	
CKB5	11	33	**691.505**		**693.304**
CKB6	14	43	**691.506**		**693.305**
CKB7	18	56	**691.507**		**693.306**

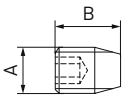
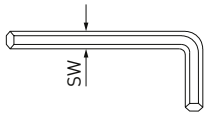
B.6

* M = Recommended torque for tightening the screws

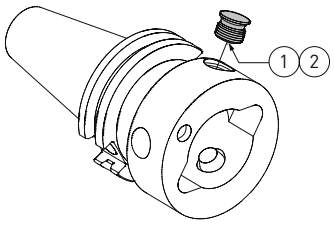
CKN connection

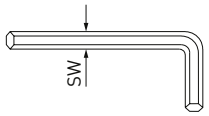
CK- screws and allen wrenches



	Clamping Screws				Allen Wrenches	
						
CKN	A	B	①	M [Nm] *	SW	②
CKN6	M12 x 1	18	690.436	24	6	690.806
CKN7	M20 x 1.5	29	690.437	45	10	690.808

Blind screws

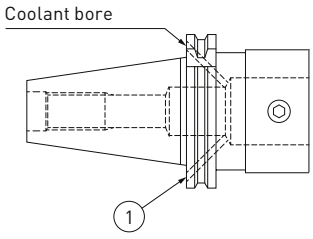


Blind Screws		Allen Wrenches	
			
Type	①	SW	②
CKN6	690.666	6	690.806
CKN7	690.667	10	690.810

* M = Recommended torque for tightening the screws

Shanks

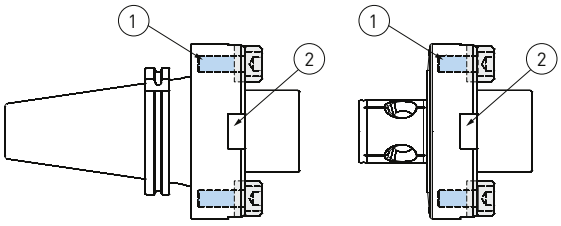
Set screws for coolant bores



		
ISO	①	Remarks
30	690.451	
40	690.451	
	690.576	Only for shanks 323.826, 326.041
	690.419	Only for shank 326.163
50	690.576	

B.6

Shanks and tool holders for bridge tools Series 318, Ø 620 - 3 000 mm

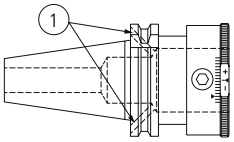


		
Type	①	②
328.215	690.131	691.637
328.213	690.131	
328.214	690.131	
328.217N	690.172	

* M = Recommended torque for tightening the screws

Adjustable drill holder

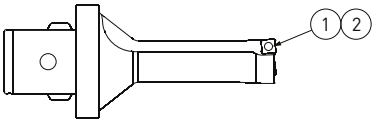
Set screws for coolant bores



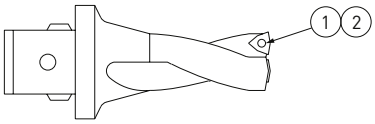
	
Type	①
336.301	690.451
336.302	690.419
336.303	690.419
336.304	690.573

Indexable insert drills, Series 336/337

Clamp screws for inserts

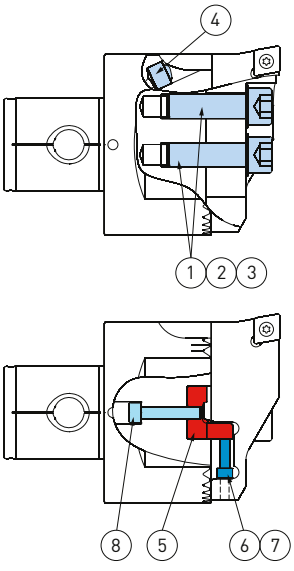


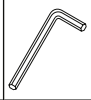
			
Type	① **	M [Nm] *	②
WP 337-1	694.123	0.7	694.807
WP 337-2	694.130	0.7	694.807
WP 337-3	694.136	1.8	694.810



			
Type	① **	M [Nm] *	②
WC 03	694.110	0.7	694.807
WC 04	694.124	0.7	694.807
WC 05	694.131	0.5	694.809
WC 06	694.137	1.8	694.810
WC 08	694.143	3.0	694.815
WC 10	694.150	6.0	694.820

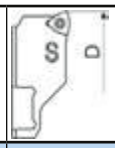
Boring heads for roughing SW, Series 319



									
Type	①	②	M [Nm] *	③	④	⑤	⑥	⑦	⑧
SW20	690.188	693.175	4.0	690.803		319.150	690.191	690.819	690.184
SW25	690.157	693.176	7.0	690.804		319.250	690.192	690.819	690.186
SW32	690.108	693.177	12.0	690.805		319.350	690.193	690.811	690.189
SW41	690.163	693.178	20.0	690.806		319.450	690.194	690.812	690.189
SW53	690.105	693.179	35.0	690.807	692.409	319.550	690.195	690.812	690.189
SW68	690.106	693.179	35.0	690.807	692.406	319.650	690.196	690.813	690.101
SW98 x CKB6	690.970	693.187	40.0	690.810	692.406	319.750	690.197	690.814	690.108
SW98 x CKB7	690.970	693.187	40.0	690.810	692.406	319.750	690.197	690.814	690.173
SW148 x CKB6	690.970	693.187	40.0	690.810	692.406	319.750	690.197	690.814	690.108
SW148 x CK7	690.970	693.187	40.0	690.810	692.406	319.750	690.197	690.814	690.173

* M = Recommended torque for tightening the screws
** Per package: 10 screws and 1 wrench

Insert holders

	Type CC			Type SC/SP			Type WC		
Type	D			D			D		

Preferential line

SW20	20 - 26	639.411	639.412	20 - 26	639.111	639.112			
	25 - 31	639.415	639.416						
SW25	25 - 33	639.421	639.422	25 - 33	639.121	639.122			
	32 - 40	639.425	639.426						
SW32	32 - 42	639.431	639.432	32 - 42	639.131	639.132			
	41 - 51	639.435	639.436	41 - 51	639.135	639.136			
SW41	41 - 54	639.441	639.442	41 - 54	639.141	639.142	49 - 62	639.241	639.242
	53 - 66	639.445	639.446	53 - 66	639.145	639.146			
SW53	53 - 70	639.451	639.452	53 - 70	639.151	639.152	59 - 76	639.251	639.252
	69 - 86	639.455	639.456	69 - 86	639.155	639.156	69 - 86	639.255	639.252
SW68	68 - 90	639.461	639.462	68 - 90	639.161	639.162	73 - 95	639.261	639.262
	88 - 110	639.465	639.466	88 - 110	639.165	639.166	90 - 112	639.265	639.266
SW98	98 - 126	639.471	639.472	98 - 126	639.171	639.172	106 - 134	639.271	639.272
	125 - 153	639.475	639.476	125 - 153	639.175	639.176	131 - 159	639.275	639.276
SW148	148 - 176	639.481	639.482	148 - 176	639.181	639.182	156 - 184	639.281	639.282
	175 - 203	639.485	639.486	175 - 203	639.185	639.186	181 - 209	639.285	639.286

Additional line

SW68	68 - 90	639.561	639.562
	88 - 110	639.565	639.566
SW98	98 - 126	639.571	639.572
	125 - 153	639.575	639.576
SW148	148 - 176	639.581	639.582
	175 - 203	639.585	639.586

Clamp screws for inserts

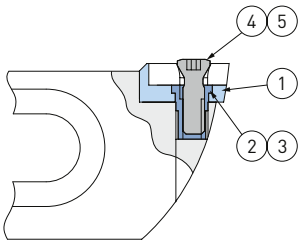
			
Type	**	M [Nm] *	
CC 06	694.122	0.7	694.807
CC 09	694.141	3.0	694.815
CC 12	694.150	6.0	694.820
CC 16	694.150	6.0	694.820

			
Type	**	M [Nm] *	
SP 06	694.122	0.7	694.807
SC 09	694.141	3.0	694.815
SC 12	694.150	6.0	694.820

			
Type	**	M [Nm] *	
WC 04	694.124	0.7	694.807
WC 05	694.131	1.5	694.809
WC 06	694.137	1.8	694.810

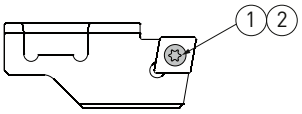
* M = Recommended torque for tightening the screws
** Per package: 10 screws and 1 wrench

Insert holders SW, for chamfering



Type	①	②	③		④ **	M [Nm] *	⑤
639.191	695.101	691.756	690.899	SC 09	694.138	3.0	694.815
639.192	695.101	691.756	690.899		694.138		694.815
639.193	695.101	691.755	690.899		694.138		694.815
639.194	695.102	691.757	690.804	SC 12	694.145	3.0	694.815
639.195	695.102	691.757	690.804		694.145		694.815
639.196	695.102	691.757	690.804		694.145		694.815
639.197	695.102	691.757	690.804		694.145		694.815

Insert holders SW, back boring



Type	① **	M [Nm] *	②
639.490	694.141	3.0	694.815
639.491	694.141		694.815
639.492	694.150	3.0	694.820
639.493	694.150		694.820

Type	① **	M [Nm] *	②
639.494	694.150	3.0	694.820
639.495	694.150		694.820
639.496	694.150		694.820
639.497	694.150		694.820

* M = Recommended torque for tightening the screws
** Per package: 10 screws and 1 wrench

Insert holders for chamfering



CHF

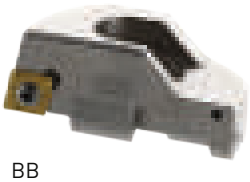


DP

Model	Order No.	Model	Order No.		Diameter Range 15° min - max	30° min - max	45° min - max	60° min - max	75° min - max	L ***
CHF-SW41SC09	639.191	DP-SW41	639.914	SC09	33 - 60	36 - 62	39 - 63	43 - 63	45 - 62	51
CHF-SW53SC09	639.192	DP-SW53	639.915		45 - 76	48 - 78	51 - 79	55 - 79	57 - 78	58
CHF-SW68SC09	639.193	DP-SW68	639.916		61 - 97	64 - 99	67 - 100	71 - 100	73 - 99	68
CHF1-SW98SC12	639.194	DP-SW98	639.917	SC12	77 - 126	81 - 128	86 - 129	90 - 128	94 - 127	73 / 89 / 119
CHF2-SW98SC12	639.195				104 - 153	108 - 155	113 - 156	117 - 155	121 - 154	
CHF1-SW148SC12	639.196	DP-SW148	639.918		131 - 180	135 - 182	140 - 183	144 - 182	148 - 181	73 / 119
CHF2-SW148SC12	639.197				158 - 207	162 - 209	167 - 210	171 - 209	175 - 208	

1. 1. *** Adjustment RSS

Insert holders SW for back boring



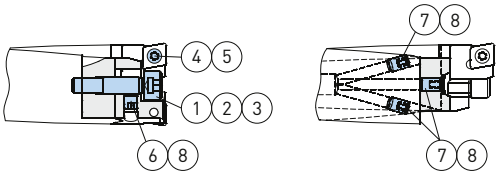
BB



DP

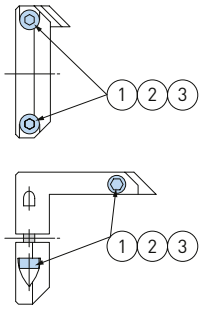
Model	Order No.	Model	Order No.		ØD	A	B	L1	L2
BB44-54SW32CC09	639.490	DP-SW32	639.913	CC09	44 - 54	31	D-17 / min. 31	24	38
BB53-66SW41CC09	639.491	DP-SW41	639.914		53 - 66	39	D-21 / min. 39	29	44
BB65-82SW53CC12	639.492	DP-SW53	639.915	CC12	65 - 82	50	D-28 / min. 50	34	55
BB81-103SW68CC12	639.493	DP-SW68	639.916		81 - 103	63.5	D-27 / min. 63.5	41	66
BB102-130SW98CC12	639.494	DP-SW98	639.917		102 - 130	90	90	38	69 / 78 / 108
BB129-157SW98CC12	639.495				129 - 157				
BB156-184SW148CC12	639.496	DP-SW148	639.918		156 - 184	140	140	38	69 / 108
BB183-211SW148CC12	639.497				183 - 211				

Rough boring heads MW



										
Typ	①	②	M [Nm] *	③	④ **	M [Nm] *	⑤	⑥ **	⑦ **	⑧
MW1619	690.159	693.186	1	690.802	694.105	0.3	694.806	690.413	690.668	690.833
MW1821	690.159	693.186	1	680.802	694.105	0.3	694.806	690.668	690.668	690.833

Clamp screws for chamfering rings

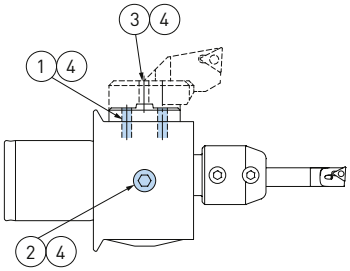


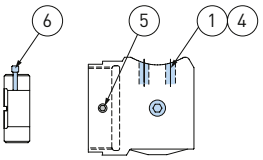
				
Typ	①	②	M [Nm] *	③
20	690.101	693.175	4.0	690.803
25	690.102	693.176	7.0	690.804
32	690.103	693.176	7.0	690.804
41	690.104	693.176	7.0	690.804
53	690.105	693.131	25.0	690.807
68	690.106	693.131	25.0	690.807
90	690.106	693.131	25.0	690.807

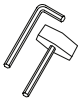
B.6

* M = Recommended torque for tightening the screws
** Per package: 10 screws and 1 wrench

Fine boring heads EWN, Series 112

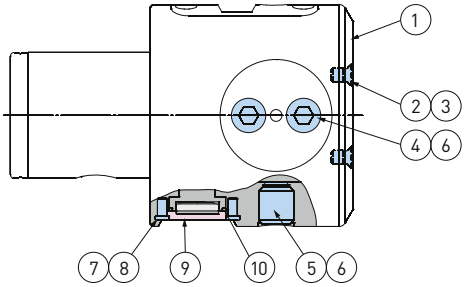


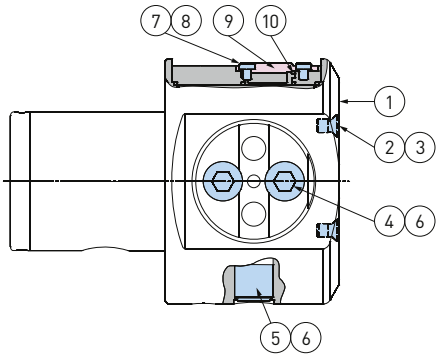


							
Type	①	M [Nm] *	②	M [Nm] *	③	M [Nm] *	④
EWN 04-7	690.538	0.8	690.978	0.8			690.800
EWN 04-12	690.417	1.2	690.417	1.2			690.811
EWN 04-15	690.440	1.5	690.418	1.5			690.812
EWN 04-22	690.421	2.5	690.489	2.5			690.813
EWN 2-32	690.460	5.0	690.449	5.0			690.814
EWN 2-152	690.595	10.0	690.452	10.0	690.156	12.0	690.816

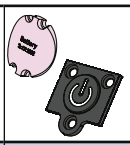
			
Type	⑤	Type	⑥
EWN 04-22 x ES	690.417	112.271	195.003
		112.272	195.001
EWN 2-32 x ES	690.582	112.353	195.001
		112.385	195.007

Fine boring heads EWE, Series 112

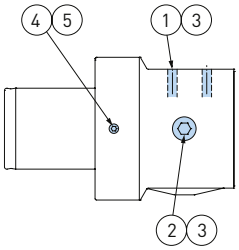




							
Type	①	②	③	④	M [Nm]	⑤	M [Nm]
EWE 2-152	112.804	690.614	690.843	690.457	10.0	690.995	10.0
EWE 2-32	112.371	690.611	690.836	690.460	5.0	690.996	5.0

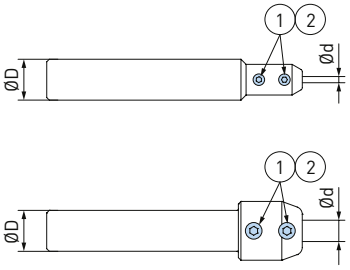
						
Type	⑥	⑦	M [Nm]	⑨	⑩	⑧
EWE 2-152	690.816	690.326	1.0	395.170	395.161	694.808
EWE 2-32	690.814	690.326	1.0	395.170	395.161	694.808

Fine boring heads EWB, Series 112



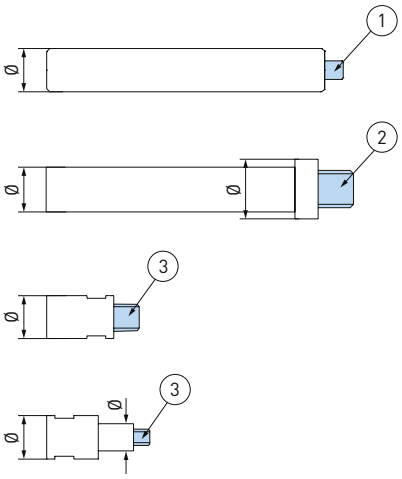
								
Type	①	M [Nm] *	②	M [Nm] *	③	④	M [Nm] *	⑤
EWB 2-32	690.460	4.0	690.449	4.0	690.814	112.381	0.5	690.811
EWB 2-50	690.457	8.0	690.452	8.0	690.816	690.208	1.5	690.812

Reducers



Type	Type	①	M [Nm] *	②
Ø D - d	Ø D - d			
12 - 3.5	16 - 3.5	690.459	0.5	690.801
12 - 4.0	16 - 4.0			
12 - 4.5	16 - 4.5			
12 - 5.0	16 - 5.0			
12 - 6.0	16 - 6.0			
	16 - 7.0	690.489	2.5	690.803
	16 - 8.0			
	16 - 9.0			
	16 - 10.0			

Tool holders



Ø	Type	G	①
8	615.088	M5	690.486
	615.211		690.486
	615.212		690.486
10	615.089	M6	690.487A
	615.214		690.487A
	615.215		690.487A
	615.223		690.487A
11	615.250	M6	690.487A

Ø	Type	G	①
12	615.218	M6	690.487A
	615.219		690.487A
	615.224		690.487A
	615.225		690.487A
13	615.251	M6	690.487A
14	615.232	M6	690.487A
16	615.226	M10	690.488

Type	Ø	G	②
615.216	10 / 12	M6	690.487A
615.239	12 / 16	M10	690.488
615.240	12 / 16	M10	690.488
615.243	12 / 16	M10	690.488

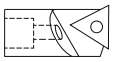
Type	Ø	G	③
615.220	12	M6	690.487A
615.230	16 / 10	M6	690.487A
615.231	16 / 12	M6	690.487A

Screws glued in with Locite 270 or Ergo 4101.

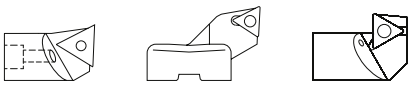
Clamp screws for inserts



Type	**	M [Nm] *	
WC 02	694.101	0.5	694.806



Type	**	M [Nm] *	
TP 07	694.102 [1]	0.5	694.806
TP 07	694.103	0.5	694.806



Type	**	M [Nm] *	
TC 11	694.122	0.7	694.807



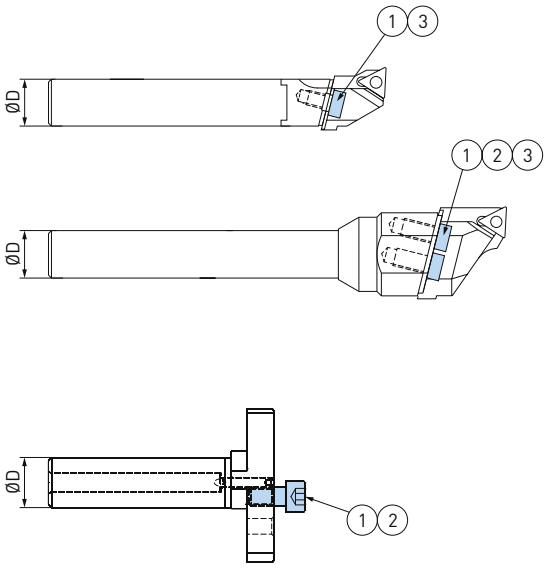
Type	**	M [Nm] *	
CC 06	694.122	0.7	694.807
CC 09	694.141	3.0	694.815

[1] For Insert holder 615.086/615.207/615.087/615.205/615.271/615.507/615.508

* M = Recommended torque for tightening the screws

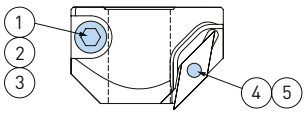
** Per package: 10 screws and 1 wrench

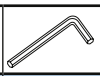
Adjustable tool holder



					
ØD	Type	①	②	M [Nm] *	③
9	615.369	690.323		1.0	690.837
	615.374	690.323		1.0	690.837
11	615.371	690.324		2.0	690.838
	615.375	690.324		2.0	690.838
	615.376	690.324		2.0	690.838
13	615.373	690.183		4.0	690.803
	615.377	690.183		4.0	690.803
	615.378	690.183		4.0	690.803
16	615.252	690.113		10.0	690.804
	615.253	690.113		10.0	690.804
	615.262	690.113		10.0	690.804
	615.265	690.113		10.0	690.804
	615.266	690.113		10.0	690.804
16	615.257	690.150	615.904	17.0	690.805
	615.258	690.150	615.904	17.0	690.805
	615.264	690.150	615.904	17.0	690.805
	615.267	690.150	615.904	17.0	690.805
16	615.387B	690.107	693.182	12.0	690.805

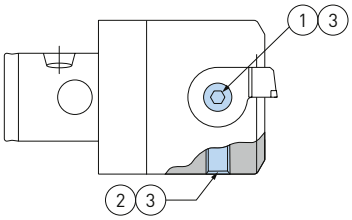
Chamfering rings



								
Type	①	②	M [Nm] *	③		④	M [Nm] *	⑤
615.394 615.395	690.157	693.181	10.0	690.814	VC 11	694.125	0.8	694.808

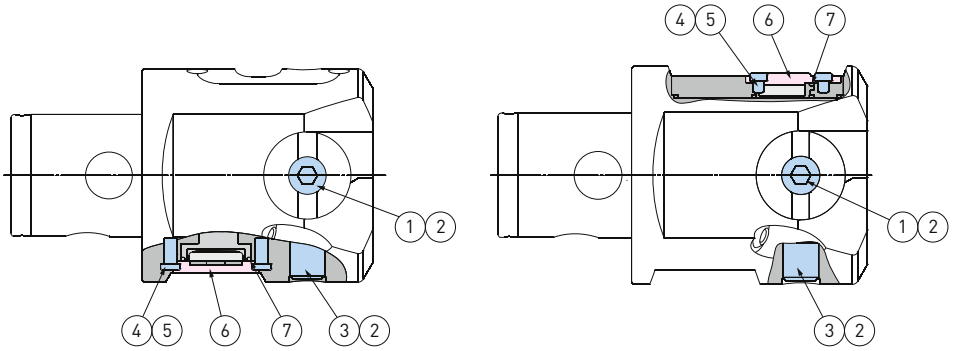
* M = Recommended torque for tightening the screws
** Per package: 10 screws and 1 wrench

Fine boring heads EWN, Series 310



Type	①	M [Nm] *	②	M [Nm] *	③
EWN 20	690.135	1.0	690.410	0.5	690.811
EWN 25	690.136	1.0	690.549	0.5	690.811
EWN 32	690.137	2.5	690.550	1.5	690.812
EWN 41	690.138	3.0	690.551	2.5	690.813
EWN 53	690.139	6.0	690.552	6.0	690.814
EWN 68	690.141	12.0	690.553	10.0	690.816
EWN 100	690.141	12.0	690.553	10.0	690.816

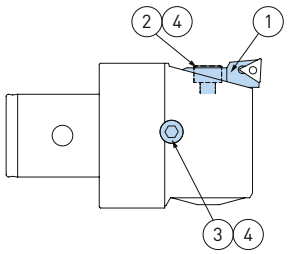
Fine boring heads EWE, Series 310/318/BIG CAPTO



Type	①	M [Nm] *	③	M [Nm] *	②	④	M [Nm] *	⑤	⑥	⑦
EWE 41	690.138	3.0	690.997	2.5	690.813	690.326	1.0	694.808	395.170	395.161
EWE 53	690.139	6.0	690.996	6.0	690.814					
EWE 68	690.141	12.0	690.469	10.0	690.816					
EWE 100	690.141		690.553		690.816					
EWE 200	690.140		690.469		690.816					

B.6

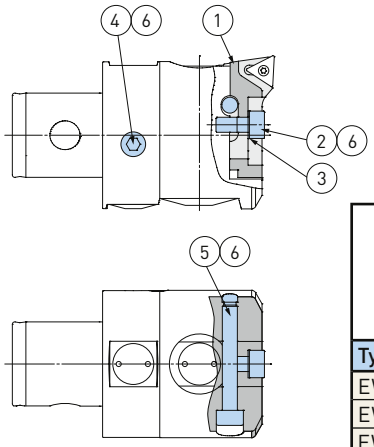
Fine boring heads EWB, Series 310



Type	①	②	M [Nm] *	③	M [Nm] *	④
EWB 32	626.231	690.137	2.5	690.577	2.5	690.812
EWB 41	626.241	690.138	3.0	690.578	3.0	690.813
EWB 53	626.251	690.139	6.0	690.579	6.0	690.814
EWB 68	626.261	690.140	12.0	690.580	12.0	690.816
EWB 85	626.261	690.140	12.0	690.580	12.0	690.816
EWB 100 AL	626.261	690.140	12.0	690.580	12.0	690.816
EWB 150 AL	626.261	690.140	12.0	690.580	12.0	690.816

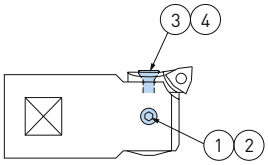
* M = Recommended torque for tightening the screws

Fine boring heads EWB-UP, Series 309



									
Type	①	②	③	M [Nm] *	④	M [Nm] *	⑤	M [Nm] *	⑥
EWB 25 UP	627.121	690.182	693.289	1.0		1.0	690.940	1.0	690.811
EWB 32 UP	627.131	690.179	693.186	1.5	690.550	1.5	690.180	1.5	690.812
EWB 41 UP	627.141	690.176	693.175	2.5	690.943	2.5	690.115	2.5	690.813
EWB 53 UP	627.151	690.177	693.176	4.0	690.658	4.0	690.178	4.0	690.814
EWB 68 UP	627.161	690.953	693.177	5.0	690.591	5.0	690.954	6.5	690.816

Boring heads with thread connection EW 15/EW 18, Series 310



						
Type	①	M [Nm] *	②	③ **	M [Nm] *	④
EW 15	690.414	0.5	690.819	694.120	1.2	694.807
EW 18	690.416	0.5	690.819	694.120	1.2	694.807

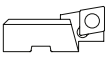
Clamp screws for inserts



			
Type	**	M [Nm] *	
WC 02	694.101	0.5	694.806



			
Type	**	M [Nm] *	
TP 07	694.103	0.5	694.806
TC 11	694.122	0.7	694.807

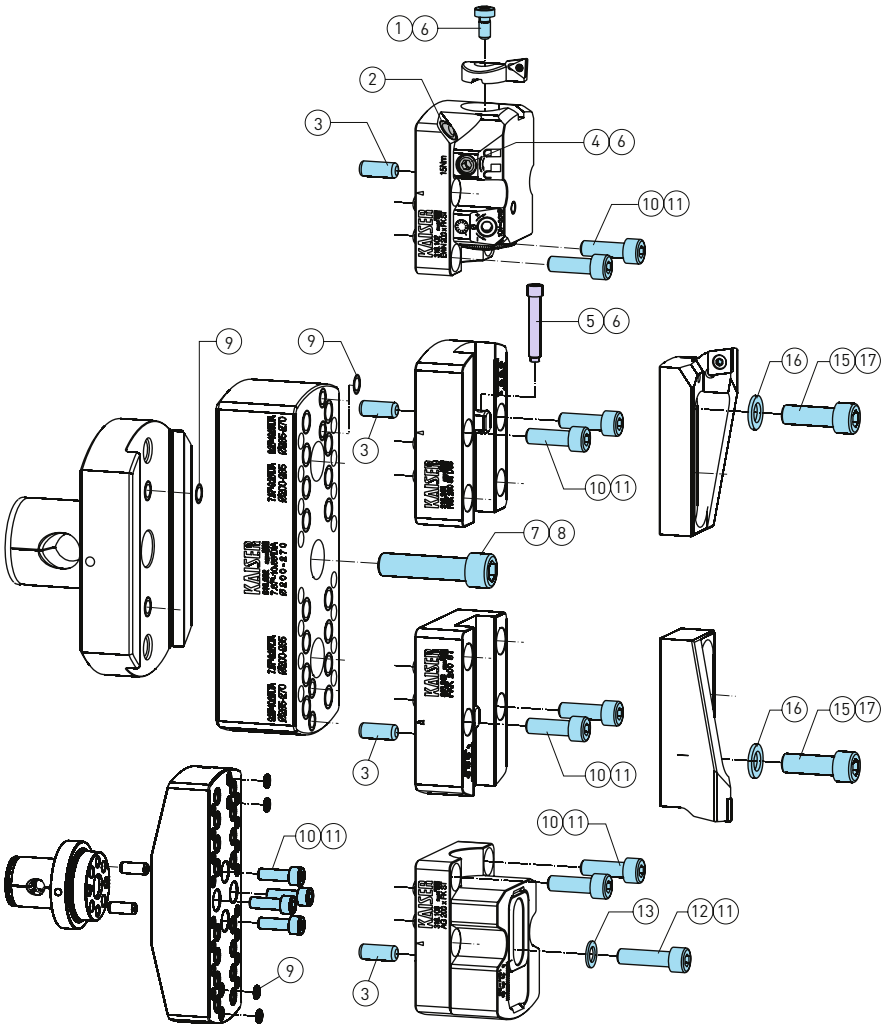


			
Type	**	M [Nm] *	
CC 06	694.122	0.7	694.807
CC 09	694.141	3.0	694.815

B.6

* M = Recommended torque for tightening the screws
** Per package: 10 screws and 1 wrench

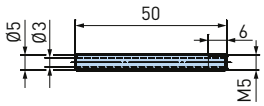
Lightweight boring tools, Ø 200 - 620 mm, Series 318



			
①	M [Nm] *	②	③
690.140	12.0	692.406	691.390
			
④	M [Nm] *	⑤	⑥
690.553	10.0	317.193	690.816
			
⑦	M [Nm] *	⑧	⑨
690.121	45.0	690.808	692.295
			
⑩	M [Nm] *	⑪	
690.163	20.0	690.806	
			
⑫	⑬	M [Nm] *	⑪
690.124	693.183	15.0	690.806
			
⑮	⑯	M [Nm] *	⑰
690.105	693.184	30.0	690.807

Coolant pipe, series 318

Model	Order No.
CP-DM5-50-M5	692.415



Clamp screws for inserts

			
Type	**	M [Nm] *	
CC 12	694.150	5.0	694.820
CC 16	694.150	5.0	694.820

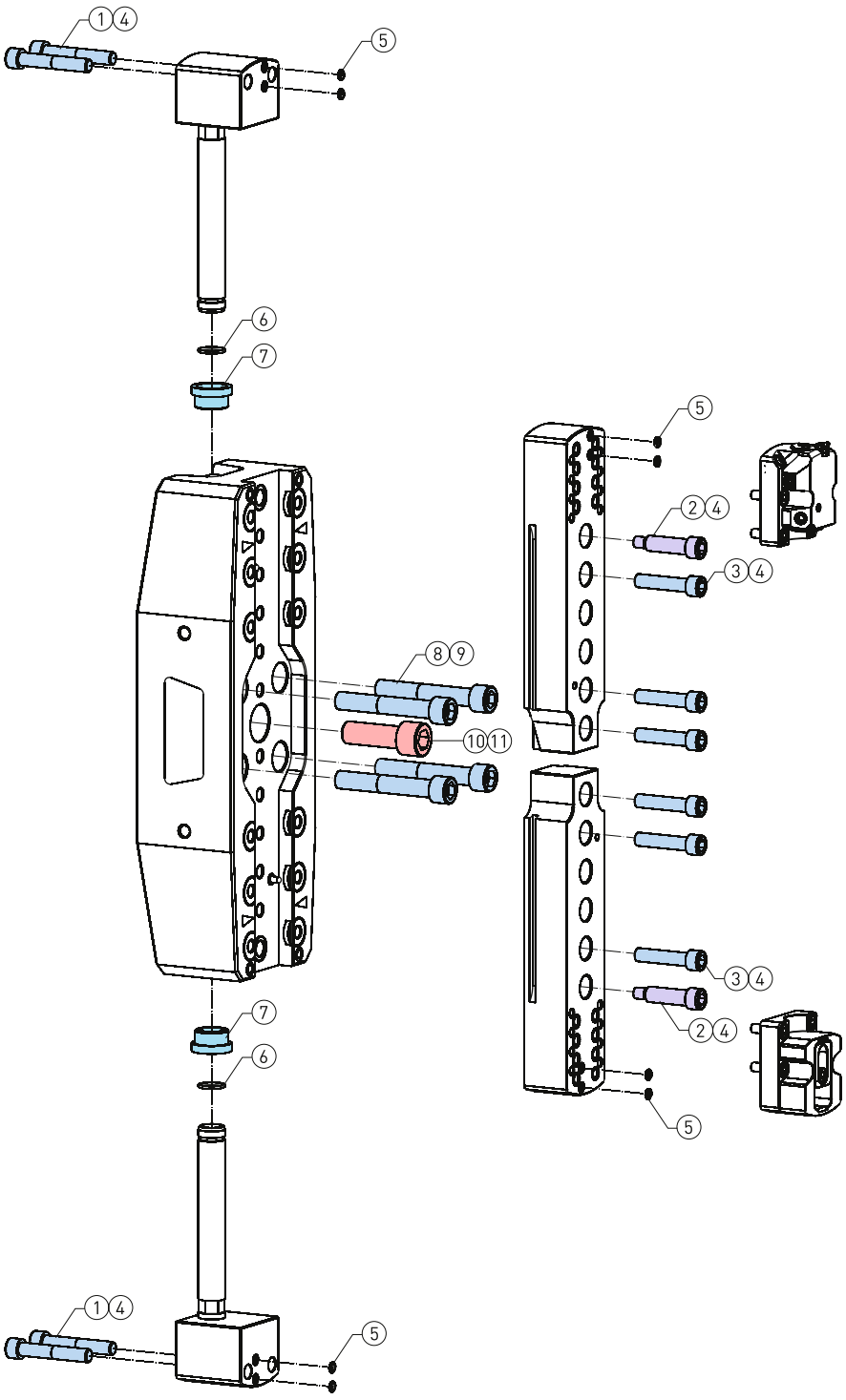
			
Type	**	M [Nm] *	
SC 12	694.144	5.0	694.820

			
Type	**	M [Nm] *	
WC 08	694.143	3.0	694.815

			
Type	**	M [Nm] *	
TC 11	694.122	0.7	694.807

* M = Recommended torque for tightening the screws
** Per package: 10 screws and 1 wrench

Lightweight boring tools, Ø 620 - 3 000 mm, Series 318



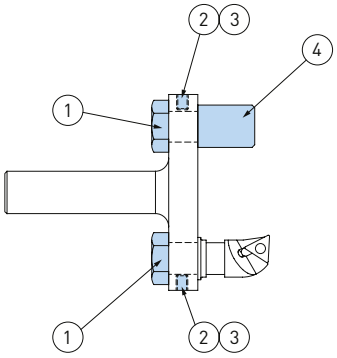
		
①	M [Nm] *	
690.991	50	
		
②	M [Nm] *	
690.989	30	
		
③	M [Nm] *	④
690.132	50	690.810
		
⑤	⑥	⑦
692.295	692.298	690.990
		
⑧	M [Nm] *	⑨
690.984 [1]	125	690.832
690.985 [2]		
690.986 [3]		
		
⑩	M [Nm] *	⑪
690.987	250	690.861

[1] For bridges 318.421/318.422/318.424
[2] For bridge 318.423
[3] For bridge 318.425

B.6

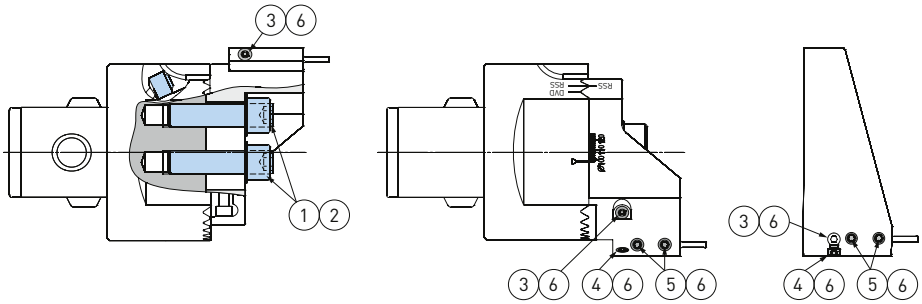
* M = Recommended torque for tightening the screws

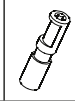
OD turning / Eccentric bar



				
Type	①	②	③	④
615.390	690.716	690.573	690.813	615.903

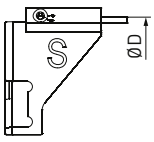
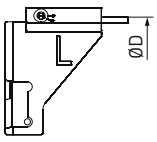
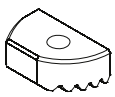
Face grooving holder SW, Series 318



								
Type	①	M [Nm] *	②	③	④	⑤	M [Nm] *	⑥
SW53	639.691	16	690.805	639.690	690.400	690.511	2.5	690.813
SW68	639.691	16	690.805	639.690	690.400	690.622	2.5	690.813
SW98xCKN6	639.693	20	690.806	639.690	690.400	690.912	2.5	690.813
SW98xCKN7	639.693	20	690.806	639.690	690.400	690.912	2.5	690.813
SW148xCKN6	639.693	20	690.806	639.690	690.400	690.913	2.5	690.813
SW148xCKN7	639.693	20	690.806	639.690	690.400	690.913	2.5	690.813
FKW200 (Serie 318)	-	-	-	637.962	690.400	690.511	2.5	690.813

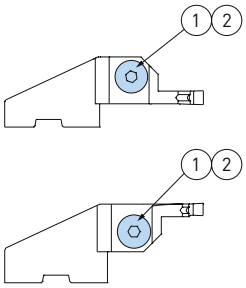
B.6

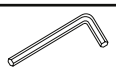
Face grooving holder / Blind Piece

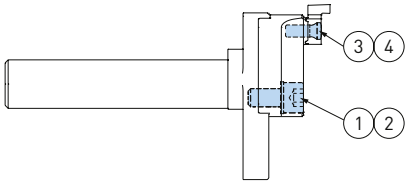
					
Type	ØD				
SW53	53 - 70	639.651	639.652	639.915	
SW68	68 - 90	639.661	639.662	639.916	
	88 - 110	639.665	639.666		
SW98	98 - 126	639.671	639.672	639.917	
	125 - 153	639.675	639.676		
SW148	148 - 176	639.681	639.682	639.918	
	175 - 203	639.685	639.686		

* M = Recommended torque for tightening the screws

Insert holders for face grooving



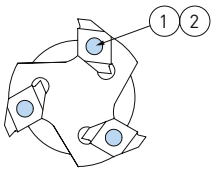
				
Type	Type	①	M [Nm] *	②
626.935	626.945	690.183	4.0	690.813
626.936	626.946			
626.937	626.947			
626.938	626.948			



						
Type	①	②	M [Nm] *	③ **	M [Nm] *	④
615.387	690.107	693.182	12.0	694.143	3.0	694.815
615.388						

Slot milling cutters

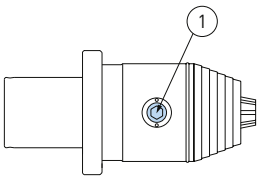
Clamp screws for inserts

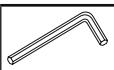


			
Type	① **	M [Nm] *	②
0	958.048	0.8	690.836
1	958.048	0.8	690.836
2	958.049	6.0	690.838

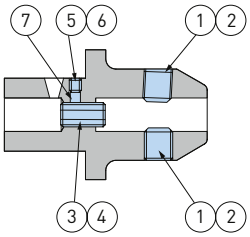
* M = Recommended torque for tightening the screws
** Per package: 10 screws and 1 wrench

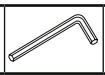
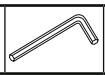
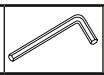
Drill chuck



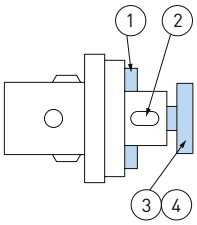
		
Type	①	M [Nm] *
335.042	690.817	20
335.044	690.817	20

End mill holders



								
Type	①	M [Nm] *	②	③	④	⑤	⑥	⑦
6	690.477	5	690.803	690.512	690.802	690.419	690.802	691.318
8	690.478	10	690.804	690.513	690.803	690.489	690.803	691.316
10	690.479	16	690.805	690.514	690.804	690.489	690.803	691.316
12	690.480	28	690.806	690.515	690.805	690.489	690.803	691.315
14	690.480	28	690.806	690.515	690.805	690.489	690.803	691.315
16	690.481	28	690.806	690.510	690.806	690.489	690.803	691.315
18	690.481	28	690.806	690.510	690.806	690.489	690.803	691.315
20	690.482	42	690.807	690.510	690.806	690.489	690.803	691.315
25	690.483	50	690.810	690.510	690.806	690.489	690.803	691.315
32	690.484	72	690.810					
40	690.484	72	690.810					

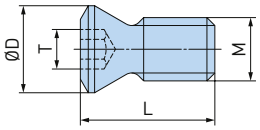
Universal milling cutter holders



					
Type	①	②	③	M [Nm] *	④
16	691.605	691.600	690.703	18	690.805
22	691.606	691.601	690.704	35	690.806
27	691.607	691.602	690.705	70	690.807
32	691.608	691.604	690.706	80	690.810
40	691.609	691.603	690.707	80	690.809

* M = Recommended torque for tightening the screws

Clamp screws and wrenches for inserts

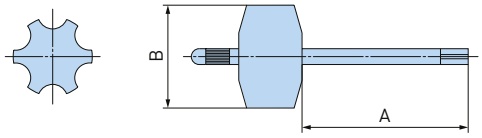


Screws

	Dimensions					Torx	Torx Plus	Note
Insert type	Torx/Torx Plus	Thread M	ØD	L	Nm [1]	Order No.	Order No.	
WC02	T6 IP	M2	2.7	3.6	0.5		694.101	
TP07	T6 IP	M2	2.7	4.1			694.102	Only for use with insert holders: 615.205/615.207/615.508/615.271
TP07	T6 IP	M2	2.7	4.8			694.103	
WC03	T7 IP	M2.2	3.5	6.0	0.7		694.110	
TC11	T7 IP	M2.5	3.5	6.5			694.122	
WP337-1	T7 IP	M2.5	3.5	5.8			694.123	
WC04	T7 IP	M2.5	3.5	6.3			694.124	
SP08	T7 IP	M2.5	4.3	5.5			694.121	
WP337-2	T7 IP	M3	4.6	6.0			694.130	
DN0 / DN01	T8	M3	4.4	9.0	0.8	958.048		Grooving Insert BIG KAISER Original
VC11	T8 IP	M2.5	3.5	8.7			694.125	
WC05	T9 IP	M3	4.4	8.2	1.5		694.131	
WC06	T10 IP	M3.5	4.8	9.2	1.8		694.137	
WP337-3	T10 IP	M3.5	5.5	8.2			694.136	
WC08	T15	M4	5.7	8.2	3.0	336.905		
CC09	T15 IP	M4	5.1	9.2			694.141	
RD14	T15 IP	M4	5.5	11.8			694.143	Grooving Insert BIG KAISER Original
DN2	T20	M5	6.6	16.5	6.0	958.049		Grooving Insert BIG KAISER Original
SC12	T20 IP	M4	6.5	11.6			694.142	
CC12	T20 IP	M5	7.0	13.3			694.150	

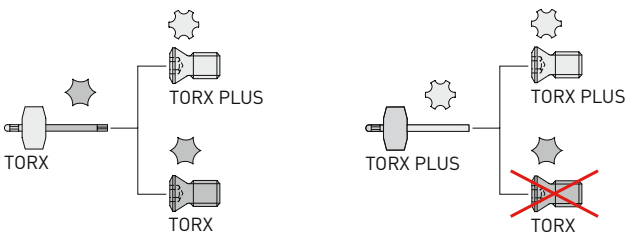
1. The clamping screws for the inserts are supplied in packages of 10 pieces with a corresponding wrench.

Wrench

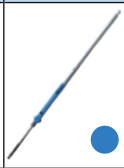


Dimensions			Torx	Torx Plus
Torx/Torx Plus	A	B	Order No.	Order No.
T6	42	26	690.834	
T6 IP				694.806
T7 IP				694.807
T8			690.836	
T8 IP				694.808
T9 IP				694.809
T10	50	34	690.837	
T10 IP				694.810
T15			690.843	
T15 IP				694.815
T20			690.838	
T20 IP				694.820

Compatibility TORX - TORX PLUS



Torque Wrench

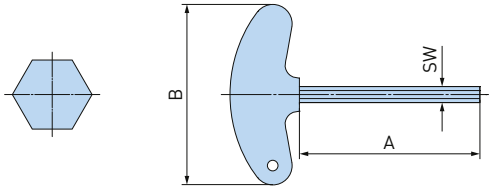
Size	Torque	Torque Wrench	Torx Blade	Set
				
Torx 6	0.5 Nm	694.160	694.167	694.181
Torx 7	0.7 Nm	694.161	694.168	694.182
Torx 8	0.8 Nm	694.162	694.169	694.183
Torx 9	1.5 Nm	694.163	694.170	694.184
Torx 10	1.8 Nm	694.164	694.171	694.185
Torx 15	3.0 Nm	694.165	694.172	694.186
Torx 20	5.0 Nm	694.166	694.173	694.187

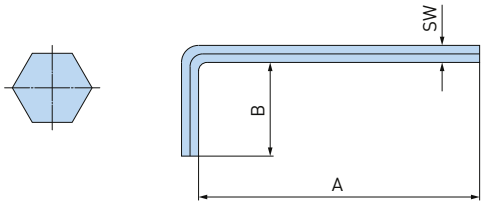
1. Maximum tightening torque

Torx Plus Wrench

Size	Torque	Torque Wrench	Torx Plus Blade	Set
				
Torx 6	0.5 Nm	694.160	694.174	694.188
Torx 7	0.7 Nm	694.161	694.175	694.189
Torx 8	0.8 Nm	694.162	694.176	694.190
Torx 9	1.5 Nm	694.163	694.177	694.191
Torx 10	1.8 Nm	694.164	694.178	694.192
Torx 15	3.0 Nm	694.165	694.179	694.193
Torx 20	5.0 Nm	694.166	694.180	694.194

Wrenches





A	B	SW	Order No.
50	45	1.5	690.819
		2	690.811
		2.5	690.812
		3	690.813
		4	690.814
70	65	5	690.816
		6	690.817

A	B	SW	Order No.
42	14	1.3	690.833
50		1.5	690.800
50	16	2	690.801
56	18	2.5	690.802
63	20	3	690.803
67	24	3.5	690.899
71	25	4	690.804
80	28	5	690.805
90	32	6	690.806
100	36	8	690.807
112	40	10	690.810
200			690.808
125	45	12	690.809
140	56	14	690.832
140	63	17	690.861

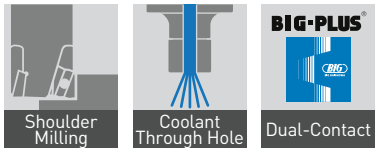
Indexable End Mills

Fullcut Mill FCM	518
Fullcut Mill FCM Arbor Type	527
Fullcut Mill FCM Inserts	528
Fullcut Mill FCR	531
Fullcut Mill FCR Inserts	537
Spare Parts	540
Surface Mill	541
Speed Finisher	542

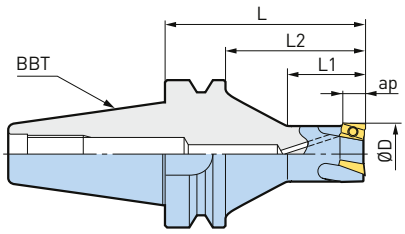
C.1

Fullcut Mill FCM - For Standard Type with BBT

The indexable endmill that combines sharpness and rigidity for best results.







Model	Order No.	ØD	L	L1	L2	ap	Number of Inserts	Insert size
BBT30-FCM16092-65	**966.216**	16	65	23	43	9	2	ARG16
BBT30-FCM20093-65	**966.217**	20	65	28	43	9	3	ARG20
BBT30-FCM25093-65	**966.218**	25	65	33	43	9	3	ARG25
BBT30-FCM32113-65	**966.219**	32	65	38	43	11	3	ARG32
BBT30-FCM40114-50	**966.220**	40	50	25	28	11	4	ARG40
BBT30-FCM50115-50	**966.120**	50	50	28	28	11	5	ARG40
BBT40-FCM16092-85	**966.221**	16	85	23	58	9	2	ARG16
BBT40-FCM16092-105	**966.121**	16	105	30	78	9	2	ARG16
BBT40-FCM16092-120	**966.122**	16	120	25	93	9	2	ARG16
BBT40-FCM16092-150	**966.123**	16	150	25	123	9	2	ARG16
BBT40-FCM20093-85	**966.222**	20	85	28	58	9	3	ARG20
BBT40-FCM20093-105	**966.124**	20	105	35	78	9	3	ARG20
BBT40-FCM20093-120	**966.125**	20	120	30	93	9	3	ARG20
BBT40-FCM20093-150	**966.126**	20	150	30	123	9	3	ARG20
BBT40-FCM25093-85	**966.223**	25	85	33	58	9	3	ARG25
BBT40-FCM25093-120	**966.127**	25	120	45	93	9	3	ARG25
BBT40-FCM25093-135	**966.128**	25	135	40	108	9	3	ARG25
BBT40-FCM25093-165	**966.129**	25	165	40	138	9	3	ARG25
BBT40-FCM32113-85	**966.224**	32	85	38	58	11	3	ARG32
BBT40-FCM32113-120	**966.130**	32	120	60	93	11	3	ARG32
BBT40-FCM32113-135	**966.131**	32	135	50	108	11	3	ARG32
BBT40-FCM32113-165	**966.132**	32	165	40	138	11	3	ARG32
BBT40-FCM40114-85	**966.225**	40	85	43	58	11	4	ARG40
BBT40-FCM40114-120	**966.133**	40	120	65	93	11	4	ARG40
BBT40-FCM40114-135	**966.134**	40	135	60	108	11	4	ARG40
BBT40-FCM40114-165	**966.135**	40	165	50	138	11	4	ARG40
BBT40-FCM50115-70	**966.226**	50	70	38	43	11	5	ARG40
BBT40-FCM50115-120	**966.136**	50	120	65	93	11	5	ARG40
BBT40-FCM50115-135	**966.137**	50	135	60	108	11	5	ARG40
BBT40-FCM50115-165	**966.138**	50	165	50	138	11	5	ARG40

C.1

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Wrench is included.
3. Inserts are to be ordered separately.

Accessories & Spare Parts

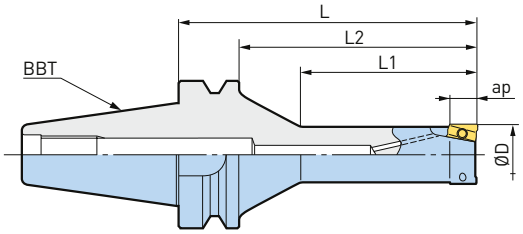
Adapter for BBT50 taper shank	Indexable Inserts for Fullcut Mill FCM	Wrench	Insert Clamping Screw Set
			
▶ 519	▶ 528	▶ 540	▶ 540

Fullcut Mill FCM - For Long Nose Type with BBT

The indexable endmill that combines sharpness and rigidity.

Shoulder Milling | Coolant Through Hole | BIG-PLUS Dual-Contact

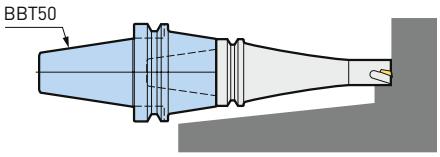


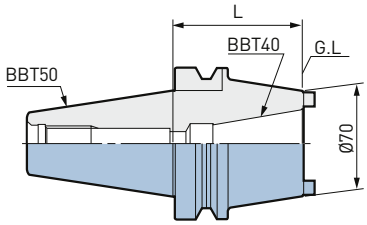


Model	Order No.	ØD	L	L1	L2	ap	Number of Inserts	Insert size
BBT30-FCM16092L-85	**966.081**	16	85	45	63	9	2	ARG16
BBT30-FCM20092L-85	**966.082**	20	85	50	63	9	2	ARG20
BBT30-FCM25092L-85	**966.083**	25	85	50	63	9	2	ARG25
BBT30-FCM32112L-85	**966.084**	32	85	60	63	11	2	ARG32
BBT40-FCM16092L-105	**966.085**	16	105	45	78	9	2	ARG16
BBT40-FCM16092L-120	**966.086**	16	120	45	93	9	2	ARG16
BBT40-FCM20092L-120	**966.087**	20	120	60	93	9	2	ARG20
BBT40-FCM20092L-135	**966.088**	20	135	60	108	9	2	ARG20
BBT40-FCM25092L-135	**966.089**	25	135	75	108	9	2	ARG25
BBT40-FCM25092L-150	**966.090**	25	150	75	123	9	2	ARG25
BBT40-FCM32112L-135	**966.091**	32	135	80	108	11	2	ARG32
BBT40-FCM32112L-150	**966.092**	32	150	90	123	11	2	ARG32

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Wrench is included.
3. Inserts are to be ordered separately.

Adapter for BBT50 taper shank





Model	Order No.	L
BBT50-BBT40-50	**803.730**	50
BBT50-BBT40-90	**803.731**	90

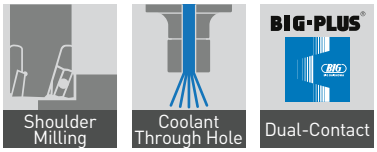
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Accessories & Spare Parts

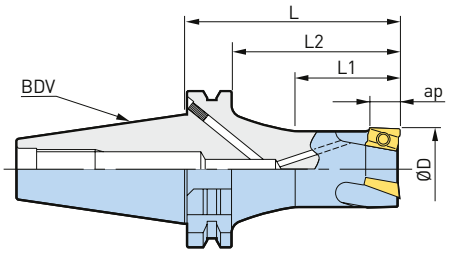
Adapter for BBT50 taper shank	Indexable Inserts for Fullcut Mill FCM	Wrench	Insert Clamping Screw Set
			
▶ 519	▶ 528	▶ 540	▶ 540

Fullcut Mill FCM - For Standard Type with BDV

The indexable endmill that combines sharpness and rigidity.



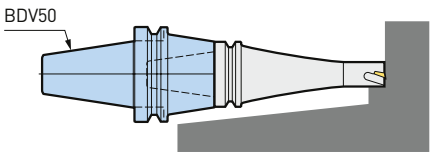


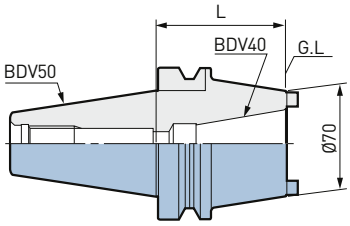


Model	Order No.	ØD	L	L1	L2	ap	Number of Inserts	Insert size
BDV40-FCM16092-85	**966.206**	16	85	23	65	9	2	ARG16
BDV40-FCM16092-105	**966.161**	16	105	35	85	9	2	ARG16
BDV40-FCM16092-120	**966.162**	16	120	34	100	9	2	ARG16
BDV40-FCM20093-85	**966.207**	20	85	35	65	9	3	ARG20
BDV40-FCM20093-105	**966.163**	20	105	40	85	9	3	ARG20
BDV40-FCM20093-120	**966.164**	20	120	39	100	9	3	ARG20
BDV40-FCM25093-85	**966.208**	25	85	33	65	9	3	ARG25
BDV40-FCM25093-120	**966.165**	25	120	45	100	9	3	ARG25
BDV40-FCM25093-135	**966.166**	25	135	40	115	9	3	ARG25
BDV40-FCM32113-85	**966.209**	32	85	38	65	11	3	ARG32
BDV40-FCM32113-120	**966.167**	32	120	60	100	11	3	ARG32
BDV40-FCM32113-135	**966.168**	32	135	50	115	11	3	ARG32
BDV40-FCM40114-85	**966.210**	40	85	45	65	11	4	ARG40
BDV40-FCM40114-120	**966.169**	40	120	65	100	11	4	ARG40
BDV40-FCM40114-135	**966.170**	40	135	60	115	11	4	ARG40
BDV40-FCM50115-70	**966.211**	50	70	50	50	11	5	ARG40
BDV40-FCM50115-120	**966.171**	50	120	100	100	11	5	ARG40
BDV40-FCM50115-135	**966.172**	50	135	115	115	11	5	ARG40

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Wrench is included.
3. Inserts are to be ordered separately.

Adapter for BDV50 taper shank





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Model	Order No.	L
BDV50-BDV40-50	**805.856**	50

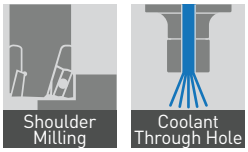
1. Combination with the ‚long type' provides further reduction of interference contour.

Accessories & Spare Parts

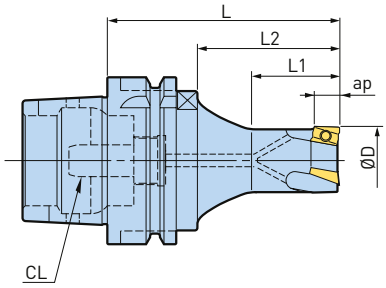
Indexable Inserts for Fullcut Mill FCM	Wrench	Insert Clamping Screw Set
		
▶ 528	▶ 540	▶ 540

Fullcut Mill FCM - For Standard Type with HSK-A

The indexable endmill that combines sharpness and rigidity.







Model	Order No.	ØD	L	L1	L2	ap	Number of Inserts	Insert size
HSK-A40-FCM16092-65	**966.101**	16	65	23	37	9	2	ARG16
HSK-A40-FCM20093-65	**966.102**	20	65	28	37	9	3	ARG20
HSK-A40-FCM25093-65	**966.103**	25	65	35	37	9	3	ARG25
HSK-A40-FCM32113-65	**966.104**	32	65	35	37	11	3	ARG32
HSK-A40-FCM40114-65	**966.105**	40	65	45	-	11	4	ARG40
HSK-A40-FCM50115-65	**966.106**	50	65	45	-	11	5	ARG40
HSK-A50-FCM16092-75	**966.107**	16	75	23	41	9	2	ARG16
HSK-A50-FCM20093-75	**966.108**	20	75	28	41	9	3	ARG20
HSK-A50-FCM25093-75	**966.109**	25	75	33	41	9	3	ARG25
HSK-A50-FCM32113-75	**966.110**	32	75	39	41	11	3	ARG32
HSK-A50-FCM40114-75	**966.111**	40	75	48	-	11	4	ARG40
HSK-A50-FCM50115-75	**966.112**	50	75	48	-	11	5	ARG40
HSK-A63-FCM16092-85	**966.231**	16	85	23	51	9	2	ARG16
HSK-A63-FCM16092-105	**966.141**	16	105	30	71	9	2	ARG16
HSK-A63-FCM16092-120	**966.142**	16	120	25	86	9	2	ARG16
HSK-A63-FCM16092-150	**966.143**	16	150	25	116	9	2	ARG16
HSK-A63-FCM20093-85	**966.232**	20	85	28	51	9	3	ARG20
HSK-A63-FCM20093-105	**966.144**	20	105	35	71	9	3	ARG20
HSK-A63-FCM20093-120	**966.145**	20	120	30	86	9	3	ARG20
HSK-A63-FCM20093-150	**966.146**	20	150	30	116	9	3	ARG20
HSK-A63-FCM25093-85	**966.233**	25	85	33	51	9	3	ARG25
HSK-A63-FCM25093-120	**966.147**	25	120	45	86	9	3	ARG25
HSK-A63-FCM25093-135	**966.148**	25	135	40	101	9	3	ARG25
HSK-A63-FCM25093-165	**966.149**	25	165	40	131	9	3	ARG25
HSK-A63-FCM32113-85	**966.234**	32	85	38	51	11	3	ARG32
HSK-A63-FCM32113-120	**966.150**	32	120	60	86	11	3	ARG32
HSK-A63-FCM32113-135	**966.151**	32	135	50	101	11	3	ARG32
HSK-A63-FCM32113-165	**966.152**	32	165	40	131	11	3	ARG32
HSK-A63-FCM40114-85	**966.235**	40	85	43	51	11	4	ARG40
HSK-A63-FCM40114-120	**966.153**	40	120	65	86	11	4	ARG40
HSK-A63-FCM40114-135	**966.154**	40	135	60	101	11	4	ARG40
HSK-A63-FCM40114-165	**966.155**	40	165	50	131	11	4	ARG40
HSK-A63-FCM50115-70	**966.236**	50	70	28	28	11	5	ARG40
HSK-A63-FCM50115-120	**966.156**	50	120	78	78	11	5	ARG40
HSK-A63-FCM50115-135	**966.157**	50	135	93	93	11	5	ARG40
HSK-A63-FCM50115-165	**966.158**	50	165	123	123	11	5	ARG40

1. Coolant pipe (CL) and inserts are to be ordered separately.
2. Wrench is included.

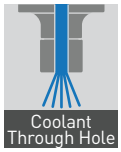
Accessories & Spare Parts

Indexable Inserts for Fullcut Mill FCM	Coolant Pipes	Wrench	Insert Clamping Screw Set
			
▶ 528	▶ 228	▶ 540	▶ 540

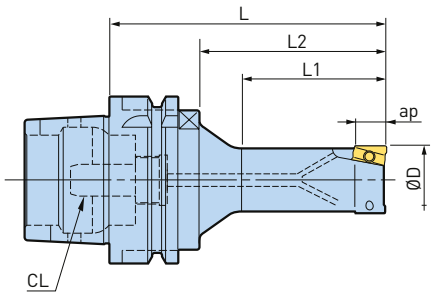
Fullcut Mill FCM - For Long Nose Type with HSK-A

The indexable endmill that combines sharpness and rigidity.









Model	Order No.	ØD	L	L1	L2	ap	Number of Inserts	Insert size
HSK-A63-FCM16092L-85	**966.093**	16	85	40	51	9	2	ARG16
HSK-A63-FCM16092L-120	**966.094**	16	120	45	86	9	2	ARG16
HSK-A63-FCM20092L-105	**966.095**	20	105	50	71	9	2	ARG20
HSK-A63-FCM20092L-120	**966.096**	20	120	60	86	9	2	ARG20
HSK-A63-FCM25092L-105	**966.097**	25	105	55	71	9	2	ARG25
HSK-A63-FCM25092L-120	**966.098**	25	120	65	86	9	2	ARG25
HSK-A63-FCM32112L-120	**966.099**	32	120	70	86	11	2	ARG32
HSK-A63-FCM32112L-135	**966.100**	32	135	80	101	11	2	ARG32

1. Coolant pipe (CL) and inserts are to be ordered separately.
2. Wrench is included.

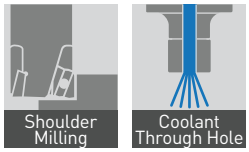
C.1

Accessories & Spare Parts

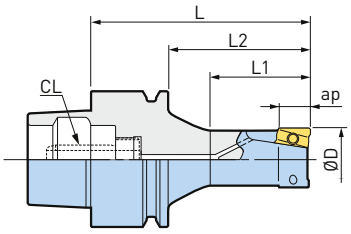
Indexable Inserts for Fullcut Mill FCM	Coolant Pipes	Wrench	Insert Clamping Screw Set
			
▶ 528	▶ 228	▶ 540	▶ 540

Fullcut Mill FCM - For Standard Type with HSK-E

The indexable endmill that combines sharpness and rigidity.







Model	Order No.	ØD	L	L1	L2	ap	Number of Inserts	Insert size
HSK-E25-FCM16092-45	**966.173**	16	45	23	35	9	2	ARG16
HSK-E32-FCM16092-55	**966.174**	16	55	23	35	9	2	ARG16
HSK-E40-FCM16092-65	**966.115**	16	65	28	45	9	2	ARG16

1. Coolant pipe (CL) and inserts are to be ordered separately.
2. Wrench is included.

C.1

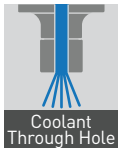
Accessories & Spare Parts

Indexable Inserts for Fullcut Mill FCM	Coolant Pipes	Wrench	Insert Clamping Screw Set
			
▶ 528	▶ 228	▶ 540	▶ 540

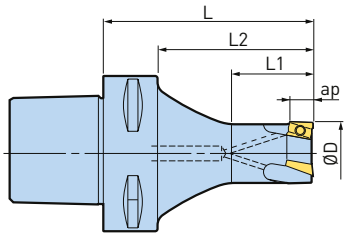
Fullcut Mill FCM - For Standard Type with BIG CAPTO

The indexable endmill that combines sharpness and rigidity.









Model	Order No.	ØD	L	L1	L2	ap	Number of Inserts	Insert size
C5-FCM16092-65	**805.858**	16	65	23	45	9	2	ARG16
C5-FCM16092-90	**805.859**	16	90	30	70	9	2	ARG16
C5-FCM20093-65	**973.609**	20	65	28	45	9	3	ARG20
C5-FCM20093-90	**805.860**	20	90	35	70	9	3	ARG20
C5-FCM25093-65	**805.861**	25	65	33	45	9	3	ARG25
C5-FCM25093-90	**805.862**	25	90	40	70	9	3	ARG25
C5-FCM32113-65	**805.863**	32	65	38	45	11	3	ARG32
C5-FCM32113-90	**805.864**	32	90	45	70	11	3	ARG32
C5-FCM40114-50	**805.865**	40	50	25	30	11	4	ARG40
C5-FCM40114-90	**805.866**	40	90	60	70	11	4	ARG40
C5-FCM50115-50	**805.867**	50	50	25	30	11	5	ARG40
C5-FCM50115-90	**805.868**	50	90	65	70	11	5	ARG40

1. Wrench is included.
2. Inserts are to be ordered separately.

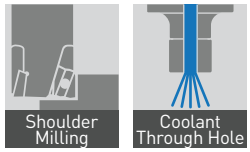
C.1

Accessories & Spare Parts

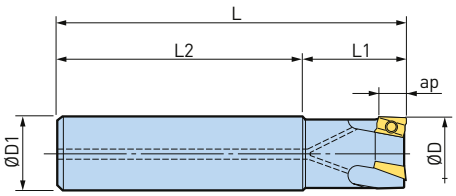
Indexable Inserts for Fullcut Mill FCM	Wrench	Insert Clamping Screw Set
		
▶ 528	▶ 540	▶ 540

Fullcut Mill FCM - For Long Nose Type

The indexable endmill that combines sharpness and rigidity.







Model	Order No.	ØD	ØD1	L	L1	L2	ap	Number of Inserts	Insert size
ST16-FCM12091-90	**966.237**	12	16	90	15	70	9	1	ARG16
ST16-FCM14091-90	**966.238**	14	16	90	17	70	9	1	ARG16
ST16-FCM16092-90	**966.239**	16	16	90	25	65	9	2	ARG16
ST20-FCM20093-110	**966.240**	20	20	110	30	80	9	3	ARG20
ST25-FCM25093-120	**966.241**	25	25	120	35	85	9	3	ARG25
ST32-FCM32113-130	**966.242**	32	32	130	35	95	11	3	ARG32
ST32-FCM40114-130	**966.243**	40	32	130	40	90	11	4	ARG40
ST32-FCM40114-180	**802.963**	40	32	180	40	140	11	4	ARG40
ST32-FCM50115-130	**966.244**	50	32	130	40	90	11	5	ARG40

1. Wrench is included.
2. Inserts are to be ordered separately.

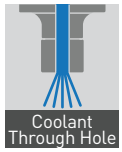
Accessories & Spare Parts

Indexable Inserts for Fullcut Mill FCM	Wrench	Insert Clamping Screw Set
		
▶ 528	▶ 540	▶ 540

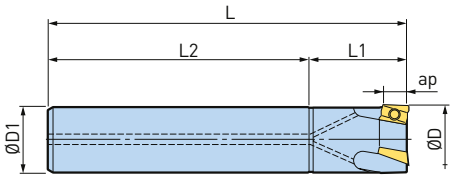
Fullcut Mill FCM - For Oversize Type

"Thin wall" at deep pocket & deep shoulder endmilling.









Model	Order No.	ØD	ØD1	L	L1	L2	ap	Number of Inserts	Insert size
ST15-FCM16092-120	**807.455**	16	15	120	25	95	9	2	ARG16
ST16-FCM17092-120	**966.181**	17	16	120	25	95	9	2	ARG16
ST19-FCM20092-165	**807.456**	20	19	165	30	135	9	2	ARG20
ST19-FCM20093-135	**807.457**	20	19	135	30	105	9	3	ARG20
ST20-FCM21092-165	**966.182**	21	20	165	30	135	9	2	ARG20
ST20-FCM21093-135	**966.183**	21	20	135	30	105	9	3	ARG20
ST24-FCM25092-180	**807.458**	25	24	180	35	145	9	2	ARG25
ST24-FCM25093-150	**807.459**	25	24	150	35	115	9	3	ARG25
ST25-FCM26092-165	**966.184**	26	25	165	38	127	9	2	ARG25
ST25-FCM26093-150	**966.185**	26	25	150	38	112	9	3	ARG25
ST28-FCM32112-180	**807.460**	32	28	180	48	132	11	2	ARG32
ST28-FCM32113-180	**807.461**	32	28	180	48	132	11	3	ARG32
ST32-FCM33112-180	**966.186**	33	32	180	48	132	11	2	ARG32
ST32-FCM33113-180	**966.187**	33	32	180	48	132	11	3	ARG32

1. Wrench is included.
2. Inserts are to be ordered separately.
3. For medium-heavy or heavy slot milling with projection longer than 2.5 times of diameter, 2-flutes models are recommended.

Application Example

Model	ST32-FCM33112-180
Material	C55 (S55C)
Cutting Speed Vc (m/min.)	120
Feed Rate fz (mm/tooth)	0.1
Axial DOC ap (mm)	10 mm x 10 steps
Radial DOC ae (mm)	Max. 33 mm

Result

Deep shoulder endmilling is achieved with 110 mm projection length and 10 mm axial depth.



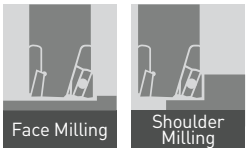
C.1

Accessories & Spare Parts

Indexable Inserts for Fullcut Mill FCM	Wrench	Insert Clamping Screw Set
		
▶ 528	▶ 540	▶ 540

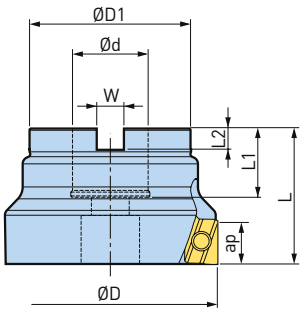
Fullcut Mill FCM, Arbor Type

Corresponding to Form FMH of new standard face milling adapter.









Model	Order No.	ØD	Ød	ØD1	L	L1	L2	ap	W	Number of Inserts	Insert size
FMH22-FCM50115-40	**966.212**	50	22	47	40	20	6	11	10.4	5	ARG40
FMH22-FCM63116-40	**966.213**	63	22	47	40	20	6	11	10.4	6	ARG63
FMH27-FCM80116-50	**966.214**	80	27	60	50	22	7	11	12.4	6	ARG80
FMH27-FCM100116-50	**805.461**	100	27	76	50	22	7	11	12.4	6	ARG80

1. Wrench is included.
2. Inserts are to be ordered separately.

Application Example

Indexable Insert Endmill, achieving the excellent squareness and fine surface finish

Machined by Fullcut Mill model: FMH22-FCM63116-40

Arbor model: BBT40-FMH22-47-45



Squareness

Cutting Speed Vc (m/min.)	150
Feed Rate fz (mm/tooth)	0.1
Axial DOC ap (mm)	5
Radial DOC ae (mm)	0.1

BIG KAISER	10 µm
Other manufacturer	40 µm

Wiper cutting edge

Cutting Speed Vc (m/min.)	250
Feed Rate fz (mm/tooth)	0.2
Axial DOC ap (mm)	0.1
Radial DOC ae (mm)	50

BIG KAISER	Ra=0.51 µm
Other manufacturer	Ra=1.56 µm

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Accessories & Spare Parts

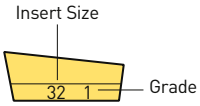
Face Mill Arbors Type FMH BBT	Face Mill Arbors Type FMH BDV	Face Mill Arbors Type FMH HSK-A	Indexable Inserts for Fullcut Mill FCM	Wrench	Insert Clamping Screw Set
					
▶ 96	▶ 146	▶ 194	▶ 528	▶ 540	▶ 540

Fullcut Mill FCM

Indexable Inserts



Marking Description



1: ACZ310
2: DS20
P2: ACP200
3F: ACM300F
P3: ACP300

Model	Cutter Dia. ØD	ap	Nose R	P		M	K	N
				ACP200	ACP300	ACM300F	ACZ310	DS20
ARG160902	12 - 17	9	0.2	-	978.812	807.728	800.488	978.801
ARG160904			0.4	978.827	966.245	807.729	966.248	966.249
ARG200902	20, 21	9	0.2	-	978.813	807.730	800.046	978.807
ARG200904			0.4	978.804	966.250	807.731	966.253	966.254
ARG250902	25, 26	9	0.2	-	978.814	807.732	800.047	978.803
ARG250904			0.4	800.048	966.255	807.733	966.258	966.259
ARG321102	32, 33	11	0.2	-	978.828	807.735	800.049	966.270
ARG321104			0.4	800.051	966.260	807.736	966.263	966.264
ARG401102	40, 50	11	0.2	-	800.052	807.737	800.053	978.821
ARG401104			0.4	978.809	966.265	807.738	966.268	966.269
ARG631104	63	11	0.4		978.829	807.739		978.830
ARG631108			0.8	978.810	966.280	807.740	966.283	966.284
ARG801104	80, 100	11	0.4		978.831	807.741		978.832
ARG801108			0.8	978.811	966.285	807.742	966.288	966.289

1. ACP300 is first recommendation for steel and ACM300S is first recommendation for stainless steel.
2. Inserts are available in a packet of 10pcs.

Caution

- It is important to use the correct insert for the diameter of Fullcut Mill. Failure to use the correct insert will result in incorrect cutting conditions and poor results.
- Nose radius 0.2 inserts are suitable for light cutting.
- There is no compatibility with those of FCR type.

Insert classifications

ISO	Grade	Material	Coating
P20	ACP200	Prehardened steel	TiAlN / AlCrN
P30	ACP300	General steel	
M30	ACM300F	Stainless steel	TiAlN / TiCN
K10	ACZ310	Cast iron	
N20	DS20	Aluminium	DLC

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Note

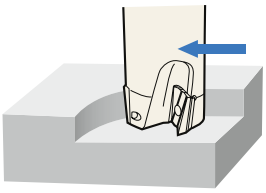
It is recommended to regularly replace clamping screws and wrench to ensure the correct clamping force is maintained.

Accessories & Spare Parts

Wrench	Insert Clamping Screw Set
	
▶ 540	▶ 540

Fullcut Mill FCM

Recommended Cutting Condition



Shoulder milling and slot milling

Finish-light cutting

Cutter Dia.	Work Material	Carbon Steel Alloy Steel	Unalloyed Steel	Prehardened Steel < HRC40	Stainless Steel	Cast Iron	Aluminium
	Insert Grade	ACP300		ACP200	ACM300F	ACZ310	DS20
	Cutting Fluid	Dry					Dry/Wet
Ø12 - Ø14	Speed (m/min)	150 - 250	180 - 250	80 - 140	140 - 180	100 - 200	200 - 750
	Feed (mm/tooth)	0.1 - 0.2	0.1 - 0.2	0.08 - 0.12	0.12 - 0.18	0.1 - 0.2	0.1 - 0.3
Ø16 - Ø21	Speed (m/min)	150 - 250	180 - 250	80 - 140	140 - 180	100 - 200	200 - 1000
	Feed (mm/tooth)	0.1 - 0.2	0.1 - 0.2	0.08 - 0.12	0.12 - 0.18	0.1 - 0.2	0.1 - 0.3
Ø25 - Ø33	Speed (m/min)	180 - 280	200 - 280	80 - 140	140 - 200	100 - 200	200 - 1500
	Feed (mm/tooth)	0.1 - 0.24	0.1 - 0.22	0.08 - 0.14	0.12 - 0.2	0.1 - 0.2	0.1 - 0.35
Ø40 - Ø50	Speed (m/min)	180 - 280	200 - 280	80 - 140	140 - 200	80 - 200	200 - 1500
	Feed (mm/tooth)	0.1 - 0.24	0.1 - 0.22	0.08 - 0.14	0.12 - 0.2	0.1 - 0.2	0.1 - 0.35
Ø63 - Ø100	Speed (m/min)	100 - 220	150 - 240	80 - 120	120 - 180	100 - 200	200 - 1500
	Feed (mm/tooth)	0.1 - 0.24	0.1 - 0.22	0.08 - 0.14	0.12 - 0.2	0.1 - 0.25	0.1 - 0.35

Caution

Fullcut Mill, FCM type, cannot be used for feeding in Z-axis such as ramping, plunging and boring.

Medium-heavy cutting

Cutter Dia.	Work Material	Carbon Steel Alloy Steel	Unalloyed Steel	Stainless Steel	Cast Iron	Aluminium
	Insert Grade	ACP300		ACM300F	ACZ310	DS20
	Cutting Fluid	Dry				Dry/Wet
Ø12 - Ø14	Speed (m/min)	100 - 200	150 - 200	120 - 180	100 - 180	200 - 750
	Feed (mm/tooth)	0.08 - 0.14	0.1 - 0.15	0.12 - 0.15	0.08 - 0.18	0.1 - 0.2
Ø16 - Ø21	Speed (m/min)	100 - 200	150 - 200	120 - 180	100 - 180	200 - 1000
	Feed (mm/tooth)	0.08 - 0.14	0.1 - 0.15	0.12 - 0.15	0.08 - 0.18	0.1 - 0.2
Ø25 - Ø50	Speed (m/min)	100 - 200	160 - 220	120 - 180	100 - 200	200 - 1500
	Feed (mm/tooth)	0.1 - 0.16	0.1 - 0.15	0.12 - 0.15	0.08 - 0.2	0.1 - 0.3
Ø63 - Ø100	Speed (m/min)	100 - 200	150 - 200	120 - 180	100 - 180	200 - 750
	Feed (mm/tooth)	0.08 - 0.18	0.1 - 0.16	0.12 - 0.15	0.1 - 0.2	0.1 - 0.3

Caution

- Nose radius 0.2 inserts are suitable for light cutting.
- Care should be taken in the selection of both axial & radial depth of cut as well as the feed rate.
- This table is a general guideline for cutting data. Please adjust according to machine and workpiece conditions, as well as width of cutting.
- Dry cutting (including air blow) is recommended when cutting of steel, except for finishing.
- Dry cutting is recommended for stainless steel. However use soluble oil in a case where severe built-up edge occurs.

Fullcut Mill FCM

Application Examples

Slot milling



Fullcut Mill	BBT40-FCM32113-85
Insert	ARG321104 (ACP300)
Work Material	C50 (S50C)
Cutting Speed Vc (m/min.)	150
Feed Rate fz (mm/tooth)	0.12
Axial DOC ap (mm)	9

Only Fullcut Mill was capable of achieving this data in a No.40 spindle taper machine.

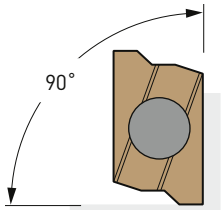


Shoulder milling



Fullcut Mill	BBT40-FCM32113-85
Insert	ARG321104 (ACP300)
Work Material	C50 (S50C)
Cutting Speed Vc (m/min.)	200
Feed Rate fz (mm/tooth)	0.15
Axial DOC ap (mm)	11
Radial DOC ae (mm)	5

Excellent perpendicularity is achieved.



Face milling

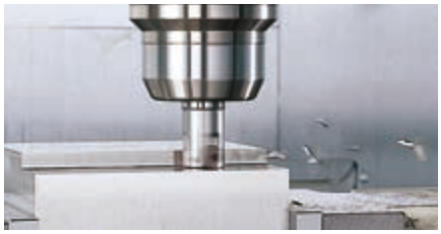


Fullcut Mill	BBT40-FCM50115-70
Insert	ARG401104 (ACP300)
Work Material	C50 (S50C)
Cutting Speed Vc (m/min.)	200
Feed Rate fz (mm/tooth)	0.15
Axial DOC ap (mm)	1
Radial DOC ae (mm)	30

Finishing surface roughness was Rz = 2.53 at Vc = 200 m/min, fz = 0.15 mm/tooth cutting data.

	Surface Roughness Rz
BIG KAISER	2.53
Manufacturer A	3.75
Manufacturer B	4.32

Material of low machinability



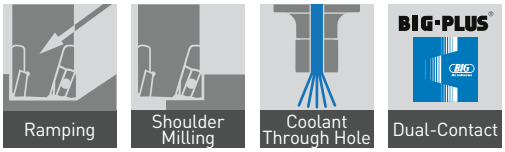
Fullcut Mill	ST25-FCM25093-120
Holder	BBT50-MEGA25D-105
Insert	ARG250904 (ACM300F)
Work Material	SUS304 Stainless steel
Cutting Speed Vc (m/min.)	150
Feed Rate fz (mm/tooth)	0.2
Axial DOC ap (mm)	9
Radial DOC ae (mm)	3

High efficiency and stable milling (Vf = 1140 mm/min.) is achieved.

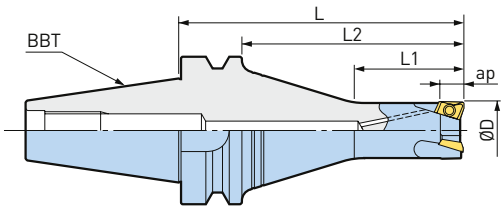


Fullcut Mill FCR - For Standard Type with BBT

Designed for multi-functional cutting.







Model	Order No.	ØD	L	L1	L2	ap	Number of Inserts	Insert size
BBT30-FCR16082-65	**966.683**	16	65	28	43	8	2	BRG16
BBT30-FCR20083-65	**966.685**	20	65	28	43	8	3	BRG20
BBT30-FCR25083-65	**966.687**	25	65	33	43	8	3	BRG25
BBT30-FCR32103-65	**966.689**	32	65	40	43	10	3	BRG32
BBT40-FCR16082-85	**966.616**	16	85	25	58	8	2	BRG16
BBT40-FCR16082-120	**966.617**	16	120	30	93	8	2	BRG16
BBT40-FCR16082-135	**966.618**	16	135	25	108	8	2	BRG16
BBT40-FCR20083-85	**966.619**	20	85	35	58	8	3	BRG20
BBT40-FCR20083-120	**966.620**	20	120	30	93	8	3	BRG20
BBT40-FCR20083-135	**966.621**	20	135	30	108	8	3	BRG20
BBT40-FCR25083-85	**966.622**	25	85	40	58	8	3	BRG25
BBT40-FCR25083-120	**966.623**	25	120	45	93	8	3	BRG25
BBT40-FCR25083-135	**966.624**	25	135	35	108	8	3	BRG25
BBT40-FCR32103-85	**966.625**	32	85	45	58	10	3	BRG32
BBT40-FCR32103-120	**966.626**	32	120	50	93	10	3	BRG32
BBT40-FCR32103-135	**966.627**	32	135	40	108	10	3	BRG32

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Wrench is included.
3. Inserts are to be ordered separately.

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Accessories & Spare Parts

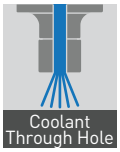
Indexable Inserts for Fullcut Mill FCR	Adapter for BBT50 taper shank	Wrench	Insert Clamping Screw Set
			
▶ 537	▶ 519	▶ 540	▶ 540

Fullcut Mill FCR - For Long Nose Type with BBT

Unique inserts designed for ramping make multi-functional cutting possible.





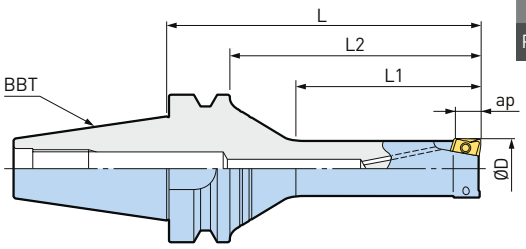












Model	Order No.	ØD	L	L1	L2	ap	Number of Inserts	Insert size
BBT30-FCR16082L-85	**966.684**	16	85	45	63	8	2	BRG16
BBT30-FCR20082L-85	**966.686**	20	85	50	63	8	2	BRG20
BBT30-FCR25082L-85	**966.688**	25	85	50	63	8	2	BRG25
BBT30-FCR32102L-85	**966.690**	32	85	60	63	10	2	BRG32
BBT40-FCR16082L-105	**966.691**	16	105	45	78	8	2	BRG16
BBT40-FCR16082L-120	**966.692**	16	120	45	93	8	2	BRG16
BBT40-FCR20082L-120	**966.693**	20	120	60	93	8	2	BRG20
BBT40-FCR20082L-135	**966.694**	20	135	60	108	8	2	BRG20
BBT40-FCR25082L-135	**966.695**	25	135	75	108	8	2	BRG25
BBT40-FCR25082L-150	**966.696**	25	150	75	123	8	2	BRG25
BBT40-FCR32102L-135	**966.697**	32	135	80	108	10	2	BRG32
BBT40-FCR32102L-150	**966.698**	32	150	90	123	10	2	BRG32

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Wrench is included.
3. Inserts are to be ordered separately.

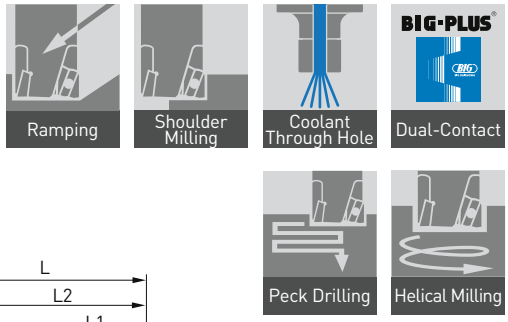
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Accessories & Spare Parts

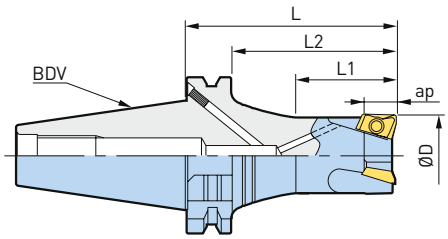
Indexable Inserts for Fullcut Mill FCR	Adapter for BBT50 taper shank	Wrench	Insert Clamping Screw Set
			
▶ 537	▶ 519	▶ 540	▶ 540

Fullcut Mill FCR - For Standard Type with BDV

Unique inserts designed for ramping make multi-functional cutting possible.







Model	Order No.	ØD	L	L1	L2	ap	Number of Inserts	Insert size
BDV40-FCR16082-85	**966.601**	16	85	25	65	8	2	BRG16
BDV40-FCR16082-120	**966.602**	16	120	30	100	8	2	BRG16
BDV40-FCR16082-135	**966.603**	16	135	25	115	8	2	BRG16
BDV40-FCR20083-85	**966.604**	20	85	35	65	8	3	BRG20
BDV40-FCR20083-120	**966.605**	20	120	30	100	8	3	BRG20
BDV40-FCR20083-135	**966.606**	20	135	30	115	8	3	BRG20
BDV40-FCR25083-85	**966.607**	25	85	40	65	8	3	BRG25
BDV40-FCR25083-120	**966.608**	25	120	45	100	8	3	BRG25
BDV40-FCR25083-135	**966.609**	25	135	35	115	8	3	BRG25
BDV40-FCR32103-85	**966.610**	32	85	45	65	10	3	BRG32
BDV40-FCR32103-120	**966.611**	32	120	50	100	10	3	BRG32
BDV40-FCR32103-135	**966.612**	32	135	40	115	10	3	BRG32

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Wrench is included.
3. Inserts are to be ordered separately.

Accessories & Spare Parts

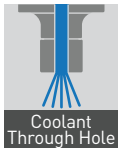
Indexable Inserts for Fullcut Mill FCR	Adapter for BDV50 taper shank	Wrench	Insert Clamping Screw Set
			
▶ 537	▶ 520	▶ 540	▶ 540

Fullcut Mill FCR - For Standard Type with HSK-A





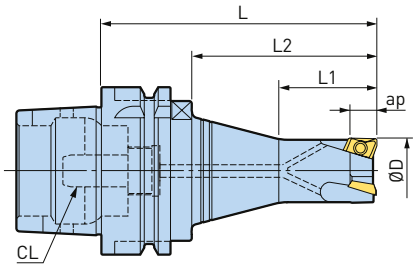






Unique inserts designed for ramping make multi-functional cutting possible.





Model	Order No.	ØD	L	L1	L2	ap	Number of Inserts	Insert size
HSK-A50-FCR16082-75	**966.671**	16	75	27	41	8	2	BRG16
HSK-A50-FCR20083-75	**966.672**	20	75	28	41	8	3	BRG20
HSK-A50-FCR25083-75	**966.673**	25	75	33	41	8	3	BRG25
HSK-A50-FCR32103-75	**966.674**	32	75	39	41	10	3	BRG32
HSK-A63-FCR16082-85	**966.631**	16	85	25	51	8	2	BRG16
HSK-A63-FCR16082-120	**966.632**	16	120	30	86	8	2	BRG16
HSK-A63-FCR16082-135	**966.633**	16	135	25	101	8	2	BRG16
HSK-A63-FCR20083-85	**966.634**	20	85	32	51	8	3	BRG20
HSK-A63-FCR20083-120	**966.635**	20	120	30	86	8	3	BRG20
HSK-A63-FCR20083-135	**966.636**	20	135	30	101	8	3	BRG20
HSK-A63-FCR25083-85	**966.637**	25	85	35	51	8	3	BRG25
HSK-A63-FCR25083-120	**966.638**	25	120	45	86	8	3	BRG25
HSK-A63-FCR25083-135	**966.639**	25	135	35	101	8	3	BRG25
HSK-A63-FCR32103-85	**966.640**	32	85	40	51	10	3	BRG32
HSK-A63-FCR32103-120	**966.641**	32	120	50	86	10	3	BRG32
HSK-A63-FCR32103-135	**966.642**	32	135	40	101	10	3	BRG32

1. Wrench is included.
2. Coolant pipe (CL) and inserts are to be ordered separately.

C.1

Accessories & Spare Parts

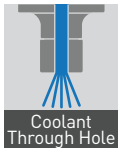
Indexable Inserts for Fullcut Mill FCR	Coolant Pipes	Wrench	Insert Clamping Screw Set
			
▶ 537	▶ 228	▶ 540	▶ 540

Fullcut Mill FCR - For Long Nose Type with HSK-A





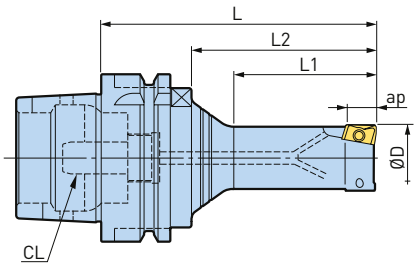






Unique inserts designed for ramping make multi-functional cutting possible.





Model	Order No.	ØD	L	L1	L2	ap	Number of Inserts	Insert size
HSK-A63-FCR16082L-85	**966.675**	16	85	40	51	8	2	BRG16
HSK-A63-FCR16082L-120	**966.676**	16	120	45	86	8	2	BRG16
HSK-A63-FCR20082L-105	**966.677**	20	105	50	71	8	2	BRG20
HSK-A63-FCR20082L-120	**966.678**	20	120	60	86	8	2	BRG20
HSK-A63-FCR25082L-105	**966.679**	25	105	55	71	8	2	BRG25
HSK-A63-FCR25082L-120	**966.680**	25	120	65	86	8	2	BRG25
HSK-A63-FCR32102L-120	**966.681**	32	120	70	86	10	2	BRG32
HSK-A63-FCR32102L-135	**966.682**	32	135	80	101	10	2	BRG32

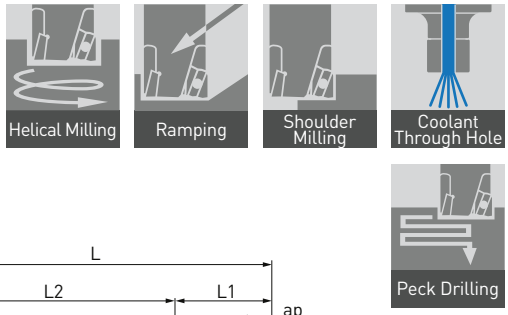
1. Wrench is included.
2. Coolant pipe (CL) and inserts are to be ordered separately.

Accessories & Spare Parts

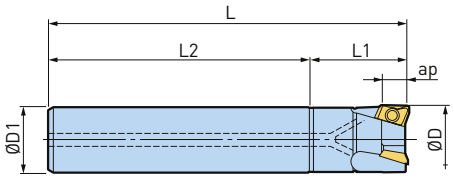
Indexable Inserts for Fullcut Mill FCR	Coolant Pipes	Wrench	Insert Clamping Screw Set
			
▶ 537	▶ 228	▶ 540	▶ 540

Fullcut Mill FCR - For Oversize Type

Unique inserts designed for ramping make multi-functional cutting possible.







Model	Order No.	ØD	ØD1	L	L1	L2	ap	Number of Inserts	Insert size
ST15-FCR16082-120	**805.849**	16	15	120	25	95	8	2	BRG16
ST16-FCR17082-120	**802.191**	17	16	120	25	95	8	2	BRG16
ST19-FCR20082-165	**805.850**	20	19	165	30	135	8	2	BRG20
ST19-FCR20083-135	**805.851**	20	19	135	30	105	8	3	BRG20
ST20-FCR21082-165	**802.192**	21	20	165	30	135	8	2	BRG20
ST20-FCR21083-135	**802.193**	21	20	135	30	105	8	3	BRG20
ST24-FCR25082-180	**805.852**	25	24	180	35	145	8	2	BRG25
ST24-FCR25083-150	**805.853**	25	24	150	35	115	8	3	BRG25
ST25-FCR26082-165	**802.220**	26	25	165	38	127	8	2	BRG25
ST25-FCR26083-150	**802.221**	26	25	150	38	112	8	3	BRG25
ST28-FCR32102-180	**805.854**	32	28	180	48	132	10	2	BRG32
ST28-FCR32103-180	**805.855**	32	28	180	48	132	10	3	BRG32
ST32-FCR33102-180	**802.225**	33	32	180	48	132	10	2	BRG32
ST32-FCR33103-180	**802.226**	33	32	180	48	132	10	3	BRG32

1. Wrench is included.
2. Inserts are to be ordered separately.
3. Lower cutting parameters appropriately for applications with either long projection or 3-flutes models.
4. For medium-heavy or heavy slot milling or ramping with projection longer than 2.5 times of diameter, 2-flutes models are recommended.

C.1

Accessories & Spare Parts

Indexable Inserts for Fullcut Mill FCR	Wrench	Insert Clamping Screw Set
		
▶ 537	▶ 540	▶ 540

Fullcut Mill FCR

Indexable Inserts



Model	Cutter Dia. ØD	ap	Nose R	P	M	K	N
				ACP300	ACM300F	ACZ310	DS20
BRG160808	16, 17	8	0.8	807.131	807.135	966.652	966.653
BRG200808	20, 21	8	0.8	807.132	807.136	800.587	966.658
BRG250808	25, 26	8	0.8	807.133	807.137	966.662	966.663
BRG321008	32, 33	10	0.8	807.134	807.138	966.667	966.668
BRG321032		10	3.2	-		-	966.669

1. Inserts are available in packets of 10 pcs.

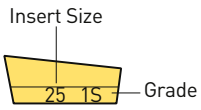
Caution

- It is important to use the correct insert for the diameter of Fullcut Mill. Failure to use the correct insert will result in incorrect cutting conditions and poor results.
- There is no compatibility with those of FCM type.

Insert classifications

ISO	Grade	Material	Coating
P30	ACP300	General steel	TiAlN / TiCN
M30	ACM300F	Stainless steel	
K10	ACZ310	Cast iron	
N20	DS20	Aluminium	DLC

Marking Description



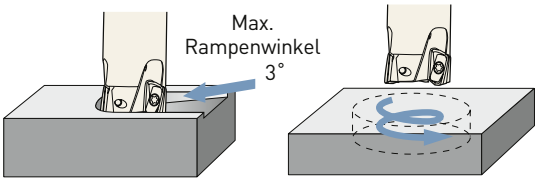
1: ACZ310
2: DS20
P3: ACP300
3F: ACM300F

Accessories & Spare Parts

Wrench	Insert Clamping Screw Set
	
▶ 540	▶ 540

Fullcut Mill FCR

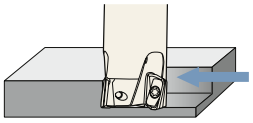
Recommended Cutting Condition



Cutter Dia.	Flat Bottom		Through Hole
	Max. Hole Dia.	Min. Hole Dia.	Min. Hole Dia.
Ø16	Ø30	Ø27	Ø22
Ø20	Ø38	Ø36	Ø29
Ø25	Ø48	Ø45	Ø39
Ø32	Ø62	Ø59	Ø48

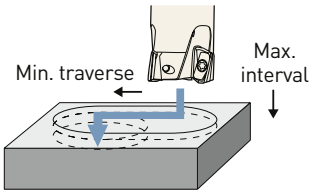
Ramping and helical interpolation

Cutter Dia.	Work Material	Carbon Steel Alloy Steel	Unalloyed Steel	Prehardened Steel < HRC40	Stainless Steel	Die Steel	Cast Iron	Aluminium
	Insert Grade	ACP300		ACM300F			ACZ310	DS20
	Cutting Fluid	Dry		Dry	Dry	Dry		Dry/Wet
Ø16, Ø17	Speed (m/min)	100 - 200	150 - 220	60 - 80	100 - 150	60 - 80	100 - 180	200 - 1000
	Feed (mm/tooth)	0.06 - 0.12	0.06 - 0.12	0.05 - 0.08	0.08 - 0.16	0.06 - 0.1	0.08 - 0.18	0.06 - 0.24
Ø20, Ø25, Ø26	Speed (m/min)	100 - 200	150 - 200	60 - 100	120 - 150	60 - 100	100 - 180	200 - 1000
	Feed (mm/tooth)	0.08 - 0.2	0.08 - 0.2	0.05 - 0.1	0.12 - 0.2	0.06 - 0.1	0.02 - 0.18	0.1 - 0.35
Ø32, Ø33	Speed (m/min)	100 - 200	150 - 200	60 - 100	120 - 150	60 - 120	100 - 180	200 - 1000
	Feed (mm/tooth)	0.08 - 0.2	0.08 - 0.2	0.05 - 0.1	0.12 - 0.2	0.08 - 0.12	0.06 - 0.2	0.1 - 0.35



Shoulder milling and slot milling

Cutter Dia.	Work Material	Carbon Steel Alloy Steel	Unalloyed Steel	Prehardened Steel < HRC40	Stainless Steel	Die Steel	Cast Iron	Aluminium
	Insert Grade	ACP300		ACM300F			ACZ310	DS20
	Cutting Fluid	Dry		Dry	Dry	Dry		Dry/Wet
Ø16, Ø20, Ø21	Speed (m/min)	100 - 200	100 - 200	60 - 80	120 - 180	80 - 120	100 - 180	200 - 1000
	Feed (mm/tooth)	0.08 - 0.18	0.08 - 0.18	0.05 - 0.1	0.12 - 0.18	0.08 - 0.12	0.08 - 0.18	0.1 - 0.3
Ø25, Ø32, Ø33	Speed (m/min)	100 - 200	100 - 200	60 - 100	120 - 180	80 - 120	100 - 180	200 - 1500
	Feed (mm/tooth)	0.08 - 0.2	0.08 - 0.2	0.05 - 0.1	0.12 - 0.2	0.08 - 0.12	0.08 - 0.2	0.1 - 0.35



Cutter Dia.	Max. Interval	Min. Traverse
Ø16	0.5	14
Ø20	1	18
Ø25	1	23
Ø32	2	30

Plunge milling

Cutter Dia.	Work Material	Carbon Steel Alloy Steel	Unalloyed Steel	Prehardened Steel < HRC40	Stainless Steel	Die Steel	Cast Iron	Aluminium
	Insert Grade	ACP300		ACM300F			ACZ310	DS20
	Cutting Fluid	Dry		Dry	Dry	Dry		Dry/Wet
Ø16, Ø17	Speed (m/min)	80 - 120	80 - 120	60	80 - 120	60 - 80	80 - 160	200 - 350
	Feed (mm/tooth)	0.06 - 0.1	0.06 - 0.1	0.04 - 0.06	0.05 - 0.08	0.05 - 0.08	0.06 - 0.1	0.06 - 0.1
Ø20, Ø25, Ø26	Speed (m/min)	100 - 160	100 - 160	60 - 100	100 - 160	60 - 100	80 - 180	200 - 500
	Feed (mm/tooth)	0.1 - 0.25	0.1 - 0.25	0.1 - 0.25	0.12 - 0.25	0.1 - 0.2	0.08 - 0.3	0.1 - 0.3
Ø32, Ø33	Speed (m/min)	100 - 160	100 - 160	60 - 100	100 - 160	60 - 100	80 - 180	200 - 600
	Feed (mm/tooth)	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3	0.12 - 0.3	0.1 - 0.2	0.08 - 0.4	0.1 - 0.3

Caution

- The table is just a reference to determine cutting conditions. It should be adjusted according to a condition of a machine tool or workpiece.
- Since chips may scatter, utilize safety enclosures.

Fullcut Mill FCR

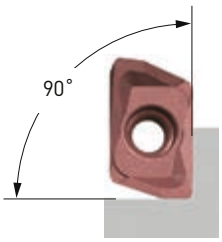
Application Examples

Bore

Dia. 38 with Helical milling



Fullcut Mill	BBT40-FCR20083-120
Insert	BRG200808 (ACP300)
Work Material	C50 (S50C) / Air blow
Cutting Speed Vc (m/min.)	150
Feed Rate Vf (mm/min.)	1 100
Axial DOC ap (mm)	2 mm x 3 times
Hole dia.	Ø 38



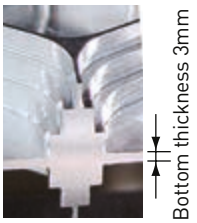
For carbon steel of C50, very smooth cutting with feed rate of Vf=1100 mm/min and excellent squareness are achieved.

Honeycombed

Pocket with Ramping

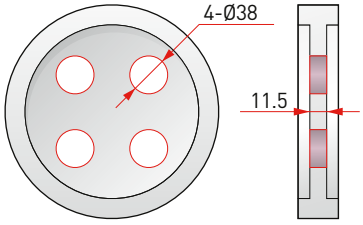


Fullcut Mill	BBT40-FCR20083-85
Insert	BRG200808 (DS20)
Work Material	A2017 Duralumin / Air blow
Cutting Speed Vc (m/min.)	750
Feed Rate Vf (mm/min.)	4 300
Axial DOC ap (mm)	6 mm x 3 times
Radial DOC ae (mm)	max. 20



For less rigid workpiece with 3 mm thickness clamped by a vise, feed rate of Vf=4300 mm/min on both sides of the workpiece is achieved.

Helical milling



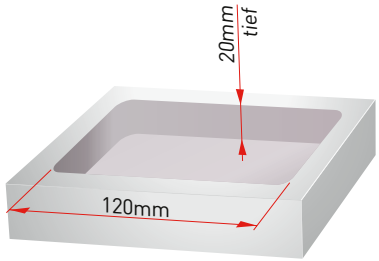
Fullcut Mill	BBT40-FCR20083-120
Insert	BRG200808 (ACP300)
Work Material	15CrMo5 (SCM415)
Cutting Speed Vc (m/min.)	150
Feed Rate Vf (mm/min.)	480
Axial DOC ap (mm)	4 mm x 3 times
Hole dia.	Ø 38

Compared to another manufacturer

Axial DOC	**1.3 times**
Insert life	**2 times**

Stable helical milling with 4 mm axial DOC on less rigid workpiece.

Ramping



Fullcut Mill	BBT50-BBT40-50 BBT40-FCR16082-120
Insert	BRG160808 (ACP300)
Work Material	C50 (S50C)
Cutting Speed Vc (m/min.)	120
Feed Rate Vf (mm/min.)	480
Axial DOC ap (mm)	4 mm x 5 times

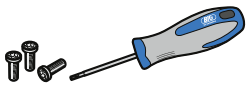
Compared to another manufacturer

No chatter even at higher resistance corner.

Smooth chip evacuation eliminates re-cutting of the swarf and edge chipping of the inserts.

Example of use of BBT50-BBT40 adapter. An improved result is obtained compared to the product from another manufacturer.

Spare Parts for Fullcut Mill, FCM and FCR

				Insert Clamping Screw Set 		Wrench 		
FCM		FCR		Model	Order No.	Model	Order No.	Torx
Cutter Dia. Ø	Insert	Cutter Dia. Ø	Insert					Size
12	ARG1609	-	-	S2505DS	966.271	DA-T8	966.274	T-8
14, 16, 17		16, 17	BRG1608	S2506DS	966.272			
20, 21	ARG2009	20, 21	BRG2008					
25, 26	ARG2509	25, 26	BRG2508					
32, 33	ARG3211	32, 33	BRG3210	S3508DS	966.273	DA-T15	966.275	T-15
40, 50	ARG4011							
63	ARG6311							
80, 100	ARG8011							

1. Insert clamping set contains 10 pcs screw and 1 pcs wrench.

Torque Wrench for Fullcut Mill

Torque wrench with fix Nm more precision. Ergonomic multi-component handle, particulary light and compact.

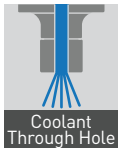
		Torque Wrench Set 	Torque Wrench Body 	Torque Wrench Bit 
Torx Size	Fixed Torque	Order No.	Order No.	Order No.
T8	0.8 Nm	694.183	694.162	694.169
T15	3.0 Nm	694.186	694.165	694.172

1. Torque wrench set contains 1 pcs wrench body and 1 pcs wrench bit.

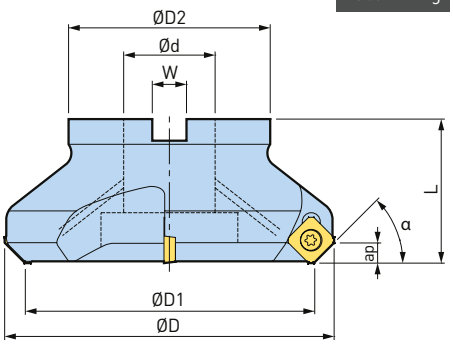
Surface Mill

For superior surface finishing.





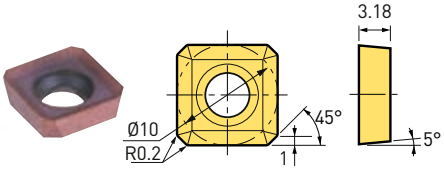




Model	Order No.	ØD	ØD1	ØD2	Ød	L	W	ap	α	Number of Inserts
FM27-SFM804-40	**805.890**	91.6	80	60	27	40	12.4	5	45°	4

1. Wrench and screws are included.
2. Inserts are to be ordered separately.
3. MBA - M12H is required to be mounted on FMH27.

Indexable Inserts



Model	Order No.	Coating
CM10C1 ACP200	**966.445**	Multi-layer TiAlN & AlCrN for general steel
CM10C1 DS20	**966.446**	DLC coating for aluminum & non-ferrous
CM10C1 ACM250F	**807.188**	Ultra-multilayered thin film structure made of AlTiN and TiAlCrN
CM10C1 NF15KA	**807.684**	Non-coating

Recommended Cutting Condition

Work Material	Insert Grade	Cutting Speed Vc (m/min)	Feed Rate fz (mm/t)	Axial DOC ap max (mm)
General Steel	ACP200	150-200-250	0.10-0.20-0.30	3
Prehardened Steel		180-240-300	0.10-0.25-0.40	4
Stainless Steel	ACM250F	160-205-250	0.15-0.23-0.30	3
Cast Iron	NF15KA	100-175-250	0.15-0.23-0.30	4
Aluminium, Non-ferrous	DS20	500-750-1000	0.15-0.23-0.30	5

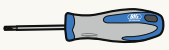
Insert Clamp Screw Set

Insert clamping screw set (10) screws & (1) wrench



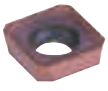
Model	Order No.
S4S-T15DS	**805.897**

Driver-Type Wrench



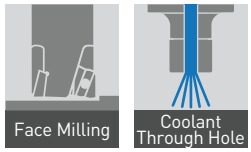
Model	Order No.
DA-T15	**966.275**

Accessories & Spare Parts

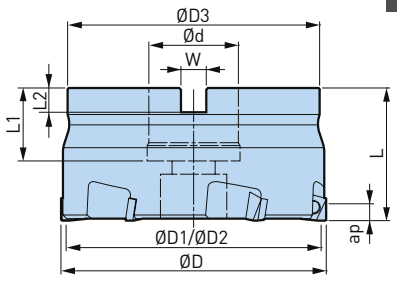
Face Mill Arbors Type FMH BBT	Face Mill Arbors Type FMH BDV	Face Mill Arbors Type FMH HSK-A	Indexable Inserts for Surface Mill	Insert Clamping Screw Set
				
▶ 96	▶ 146	▶ 194	▶ 541	▶ 541

Speed Finisher

Amazing improvement of surface finish at high speed cutting.







Model	Order No.	Ød	ØD	ØD1	ØD2	ØD3	L	L1	L2	W	Number of Inserts	max. min-1
FM22-PLS505-35	**978.276**	22	50	46.9	44.9	47	35	19	6	10.4	5	20000
FM22-PLS636-35	**978.313**	27	63	59.9	57.9	60	35	19	6	10.4	6	20000
FM27-PLS806-40	**978.277**	27	80	76.9	74.9	76	40	22	7	12.4	6	16000
FM27-PLS1006-35 *	**805.847**	27	100	69.9	94.9	60	35	24	7	12.4	6	12800
FM27-PLS1256-35 *	**805.848**	27	125	121.9	119.9	60	35	24	7	12.4	6	10200
FM32-PLS1006-42	**801.684**	32	100	96.9	94.9	96	42	24	8	14.4	6	12800
FM40-PLS1258-50	**805.284**	40	125	121.9	119.9	100	50	28	9	16.4	8	10200
FM40-PLS16010-50	**805.283**	40	160	156.9	154.9	100	50	28	9	16.4	10	8000

1. *Light weight design exclusive for BT30.
2. Wrench and screws are included.
3. Inserts are to be ordered separately.
4. When using at 12 000 min- or higher speed, contact agent for balancing of the cutter and arbor assembly.
5. Effective cutting edge length ap varies depending on insert models. ØD1/ØD2
6. Adjusting amount of cutting edge is 0.1 mm. Note this when using reground insert.

Indexable Inserts for Speed Finisher



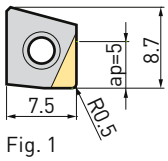


Fig. 1

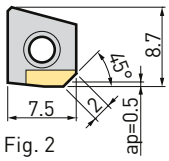


Fig. 2

Model	Order No.	Fig.	Workpiece	Insert Grade	ap
PL0705(DA2200)	**978.278**	1	Aluminium & nonferrous	PCD	5
PL0705(CBN)	**978.820**	2	Cast iron	CBN	0.5

Insert Grade

DA2200	CBN
High density sintered material made of ultra-micro diamond particles. Superior hardness comparable to carbide alloy and wear resistance.	Newly designed CBN sintered body with high content rate of CBN improves toughness and thermal conductivity.

Recommended Cutting Condition

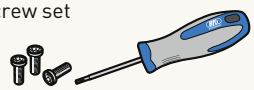
Workpiece Material		Insert Material	Cutting Speed (m/min)	Feed Rate (mm/tooth)	Coolant
Aluminium Alloy	Si Content ≤ 13%	DA2200	2 000 - 4 000	0.05 - 0.2	Wet
	Si Content > 13%		400 - 800		
Copper Alloy		DA2200	500 - 2 500	0.05 - 0.2	Wet
Gray Cast Iron		CBN	800 - 2 000	0.1 - 0.3	Dry

The table is a reference to determine cutting conditions. It should be adjusted according to cutting width, conditions of the machine tool and workpiece.

Accessories & Spare Parts

Face Mill Arbors Type FMH BBT	Face Mill Arbors Type FMH BDV	Face Mill Arbors Type FMH HSK-A	Spare Parts - For Speed Finisher	Wrench	Insert Clamping Screw Set
					
▶ 96	▶ 146	▶ 194	▶ 543	▶ 543	▶ 543

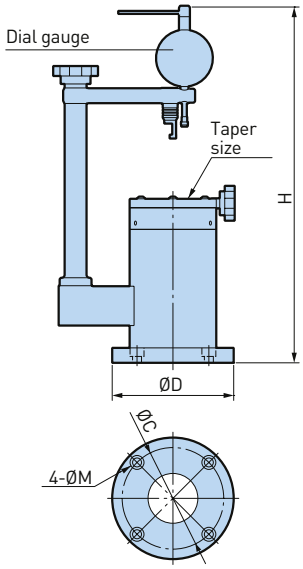
Accessories for Speed Finisher

Spare Parts					
Lifting screw set (1) lifting screw & (1) lifting nut 		Insert clamping screw set (10) screws & (1) wrench 		Wrench 	
Model	**Order No.**	**Model**	**Order No.**	**Model**	**Order No.**
LSN35	**804.796**	S2506DS	**966.272**	DA-T8	**966.274**

Insert clamping screws and wrenches are consumables. Regular replacement and storage are recommended.

Presetter for Speed Finisher



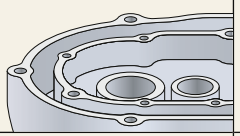
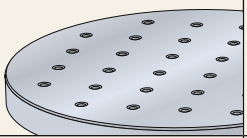
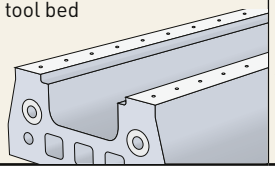


Model	Order No.	ØD	ØC	ØM	H
PLP-BBT30	**804.644**	122	102	9 (M8)	417
PLP-BBT40	**804.645**	122	102	9 (M8)	417
PLP-BBT50	**804.646**	172	149	11 (M10)	502
PLP-HSK63	**978.275**	122	102	9 (M8)	417

1. Dial gauge and indicator stabilizer (2 pcs. AAA batteries included) are standard accessories.
2. Min. reading of the accessory dial gauge is 0.001mm.
3. Max. tool length indicated in the table is the dimension from the gauge line of the arbor to the cutting edge.
4. Max. cutter diameter is Ø160mm.

Application Examples

(Cutter diameter: Ø 80)

Workpiece	Conditions	Surface Roughness	Height Difference	No. of Workpieces	Result
Crankcase ADC12 	Cutting speed: 4 000 m/min Spindle speed: 15 900 min^{-1} Feed rate: 9 550 mm/min Depth of cut: 2.5 mm	Ra = 0.08 µm Rz = 0.55 µm	Within 1 µm	24 000	Rough and finish processes are combined in a single operation.
Parts of semiconductor manufacturing equipment A5052 	Cutting speed: 4 000 m/min Spindle speed: 15 900 min^{-1} Feed rate: 9 550 mm/min Depth of cut: 2.0 mm	Ra = 0.07 µm Rz = 0.32 µm	Within 1 µm	320	Mirror finish is achieved.
Machine tool bed FC250 	Cutting speed: 1 500 m/min Spindle speed: 6 000 min^{-1} Feed rate: 3 600 mm/min Depth of cut: 0.5 mm	Ra = 0.12 µm Rz = 0.67 µm	Within 2 µm	20	1 to 2 µm flatness is obtained.

Indexable Insert Drills and Chamfer Mills

Indexable Insert Drills	546
C-Cutter Standard / CKB Type	551
C-Cutter Mini	555
R-Cutter	563
C-Centering Cutter	567
Center Boy	568
C-Cutter Boy	569
BF-Cutter	570
Chamfer Rings for Boring Heads	571
Slot Milling Cutters	572

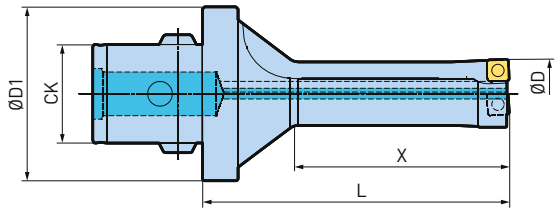
C.2

Indexable Insert Drills, Ø 16 - 30

The BIG KAISER indexable insert drills series 337 are made with straight flutes. This design guarantees good for chip evacuation and high radial and torsional rigidity.

Coolant Through Hole





Model	Order No.	CK	ØD	ØD1	L	X	Insert Type
ID16-48CKB6	**337.316**	CKB6	16	63,5	85	48	WP 337-1
ID16-64CKB6	**337.416**	CKB6	16	63,5	101	64	WP 337-1
ID17-51CKB6	**337.317**	CKB6	17	63,5	88	51	WP 337-1
ID17-68CKB6	**337.417**	CKB6	17	63,5	105	68	WP 337-1
ID18-54CKB6	**337.318**	CKB6	18	63,5	91	54	WP 337-1
ID18-72CKB6	**337.418**	CKB6	18	63,5	109	72	WP 337-1
ID19-57CKB6	**337.319**	CKB6	19	63,5	94	57	WP 337-1
ID19-76CKB6	**337.419**	CKB6	19	63,5	113	76	WP 337-1
ID20-60CKB6	**337.320**	CKB6	20	63,5	97	60	WP 337-1
ID20-80CKB6	**337.420**	CKB6	20	63,5	117	80	WP 337-1
ID21-63CKB6	**337.321**	CKB6	21	63,5	100	63	WP 337-2
ID21-84CKB6	**337.421**	CKB6	21	63,5	121	84	WP 337-2
ID22-66CKB6	**337.322**	CKB6	22	63,5	103	66	WP 337-2
ID22-88CKB6	**337.422**	CKB6	22	63,5	125	88	WP 337-2
ID23-69CKB6	**337.323**	CKB6	23	63,5	106	69	WP 337-2
ID23-92CKB6	**337.423**	CKB6	23	63,5	129	92	WP 337-2
ID24-72CKB6	**337.324**	CKB6	24	63,5	109	72	WP 337-2
ID24-96CKB6	**337.424**	CKB6	24	63,5	133	96	WP 337-2
ID25-75CKB6	**337.325**	CKB6	25	63,5	112	75	WP 337-2
ID25-100CKB6	**337.425**	CKB6	25	63,5	137	100	WP 337-2
ID26-78CKB6	**337.326**	CKB6	26	63,5	118	78	WP 337-3
ID26-104CKB6	**337.426**	CKB6	26	63,5	146	104	WP 337-3
ID27-81CKB6	**337.327**	CKB6	27	63,5	121	81	WP 337-3
ID27-108CKB6	**337.427**	CKB6	27	63,5	150	108	WP 337-3
ID28-84CKB6	**337.328**	CKB6	28	63,5	124	84	WP 337-3
ID28-112CKB6	**337.428**	CKB6	28	63,5	154	112	WP 337-3
ID29-87CKB6	**337.329**	CKB6	29	63,5	127	87	WP 337-3
ID29-116CKB6	**337.429**	CKB6	29	63,5	158	116	WP 337-3
ID30-90CKB6	**337.330**	CKB6	30	63,5	130	90	WP 337-3
ID30-120CKB6	**337.430**	CKB6	30	63,5	162	120	WP 337-3

1. Inserts are to be ordered separately.
2. Adjustable drill holder is recommended for clamping.

C.2

Accessories & Spare Parts

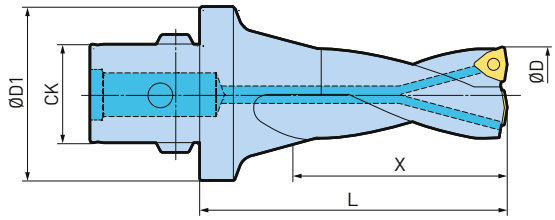
Wrench	Insert Clamping Screw	Inserts WP 337	Adjustable Drill Holders for Indexable Drill
			
▶ 514	▶ 514	▶ 482	▶ 549

Indexable Insert Drills, Ø 19.5 - 74

Indexable insert drills in two lengths(2xD and 3xD) with CKB tool interface.

Coolant Through Hole





Model	Order No.	CK	ØD	ØD1	X	L	Insert Type
ID31-62CKB6	**336.631**	CKB6	31	63.5	62	100	WC 06
ID31-93CKB6	**336.731**	CKB6	31	63.5	93	130	WC 06
ID32-64CKB6	**336.632**	CKB6	32	63.5	64	100	WC 06
ID32-96CKB6	**336.732**	CKB6	32	63.5	96	130	WC 06
ID33-66CKB6	**336.633**	CKB6	33	63.5	66	110	WC 06
ID33-99CKB6	**336.733**	CKB6	33	63.5	99	140	WC 06
ID34-68CKB6	**336.634**	CKB6	34	63.5	68	110	WC 06
ID34-102CKB6	**336.734**	CKB6	34	63.5	102	140	WC 06
ID35-70CKB6	**336.635**	CKB6	35	63.5	70	110	WC 06
ID35-105CKB6	**336.735**	CKB6	35	63.5	105	150	WC 06
ID36-72CKB6	**336.636**	CKB6	36	63.5	72	110	WC 06
ID36-108CKB6	**336.736**	CKB6	36	63.5	108	150	WC 06
ID37-74CKB6	**336.637**	CKB6	37	63.5	74	110	WC 06
ID37-111CKB6	**336.737**	CKB6	37	63.5	111	150	WC 06
ID38-76CKB6	**336.638**	CKB6	38	63.5	76	125	WC 06
ID38-114CKB6	**336.738**	CKB6	38	63.5	114	160	WC 06
ID39-78CKB6	**336.639**	CKB6	39	63.5	78	125	WC 06
ID39-117CKB6	**336.739**	CKB6	39	63.5	117	160	WC 06
ID40-80CKB6	**336.640**	CKB6	40	63.5	80	125	WC 06
ID40-120CKB6	**336.740**	CKB6	40	63.5	120	165	WC 06
ID41-82CKB6	**336.641**	CKB6	41	63.5	82	125	WC 06
ID41-123CKB6	**336.741**	CKB6	41	63.5	123	165	WC 06
ID42-84CKB6	**336.642**	CKB6	42	63.5	84	125	WC 06
ID42-126CKB6	**336.742**	CKB6	42	63.5	126	165	WC 06
ID43-86CKB6	**336.643**	CKB6	43	63.5	86	140	WC 06
ID43-129CKB6	**336.743**	CKB6	43	63.5	129	180	WC 06
ID44-88CKB6	**336.644**	CKB6	44	63.5	88	140	WC 06
ID44-132CKB6	**336.744**	CKB6	44	63.5	132	180	WC 06
ID45-90CKB6	**336.645**	CKB6	45	63.5	90	140	WC 08
ID45-135CKB6	**336.745**	CKB6	45	63.5	135	180	WC 08
ID47-94CKB6	**336.647**	CKB6	47	63.5	94	140	WC 08
ID47-141CKB6	**336.747**	CKB6	47	63.5	141	190	WC 08
ID49-98CKB6	**336.649**	CKB6	49	63.5	98	150	WC 08
ID49-147CKB6	**336.749**	CKB6	49	63.5	147	200	WC 08
ID51-102CKB6	**336.651**	CKB6	51	63.5	102	150	WC 08
ID51-153CKB6	**336.751**	CKB6	51	63.5	153	200	WC 08
ID53-106CKB6	**336.653**	CKB6	53	63.5	106	160	WC 08
ID53-159CKB6	**336.753**	CKB6	53	63.5	159	215	WC 08
ID55-110CKB6	**336.655**	CKB6	55	63.5	110	160	WC 08
ID55-165CK6	**336.755**	CK6	55	63.5	165	215	WC 08
ID57-114CKB6	**336.657**	CKB6	57	63.5	114	165	WC 08
ID57-171CKB6	**336.757**	CKB6	57	63.5	171	220	WC 08
ID59-118CKB6	**336.659**	CKB6	59	63.5	118	165	WC 08
ID59-177CKB6	**336.759**	CKB6	59	63.5	177	220	WC 08
ID61-122CKB6	**336.661**	CKB6	61	63.5	122	165	WC 10
ID61-183CKB6	**336.761**	CKB6	61	63.5	183	220	WC 10
ID69-153CKB6	**336.569**	CKB6	69	63.5	153	200	WC 10

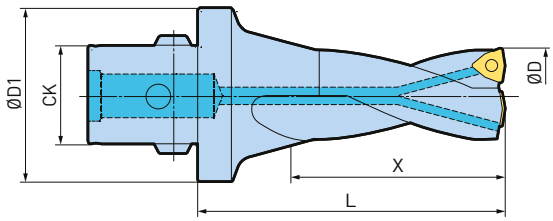
1. Inserts are to be ordered separately.
2. Adjustable drill holder is recommended for clamping.

Indexable Insert Drills, Ø 19.5 - 74

Indexable insert drills for 2xD with CKB tool interface.

Coolant Through Hole





Model	Order No.	CK	ØD	ØD1	X	L	Inner Insert	Outer Insert
ID19.5-39CKB5	**336.171**	CKB5	19.5	50	39	75	WC 04	WC 03
ID25.5-56CKB5	**336.172**	CKB5	25.5	50	56	90	WC 05	WC 04
ID29.5-65CKB5	**336.173**	CKB5	29.5	50	65	100	WC 05	WC 05
ID34.5-76CKB5	**336.174**	CKB5	34.5	50	76	110	WC 06	WC 06
ID39.5-87CKB5	**336.175**	CKB5	39.5	50	87	125	WC 06	WC 06

1. Inserts are to be ordered separately.

C.2

Accessories & Spare Parts

Wrench	Insert Clamping Screw	Inserts WC	CK Shank BBT	CK Shank BDV	CK Shank HSK
					
▶ 514	▶ 514	▶ 470	▶ 91	▶ 142	▶ 191

Adjustable Drill Holders for Indexable Drill

Drill holders with for stepless diameter adjustment of BIG KAISER insert drills with CKB6 tool interface.

Coolant Through Hole



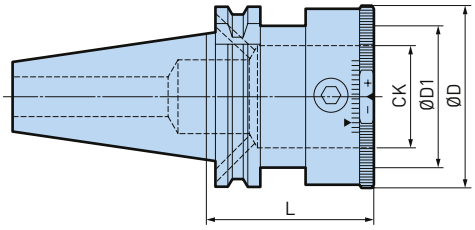


Fig. 1

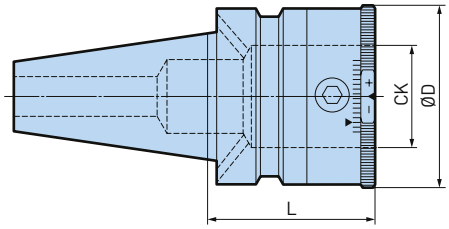


Fig. 2

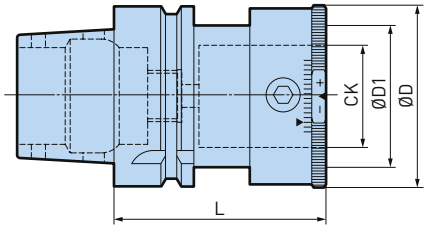


Fig. 3

Model	Order No.	Fig.	ØD	ØD1	L	Connection
BT40-ADH-CKB6ADF	**336.302**	2	65	-	51	CKB6
BT50-ADH-CKB6ADF	**336.304**	2	65	-	72	CKB6
DV40-ADH-CKB6ADF	**336.301**	1	65	50	59	CKB6
DV50-ADH-CKB6ADF	**336.303**	1	65	-	69	CKB6
HSK-A63-ADH-CKB6	**336.309**	3	65	52.5	70	CKB6
HSK-A100-ADH-CKB6	**336.310**	3	65	-	83	CKB6

1. Coolant pipe (CL) is to be ordered separately.
2. Adjustable range: nominal dia. Ø + 1.0/-0.2 mm

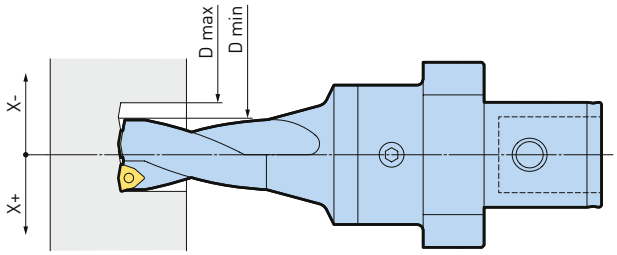
Accessories & Spare Parts

Grub screw



▶ 500

Off-Axis Use Instructions



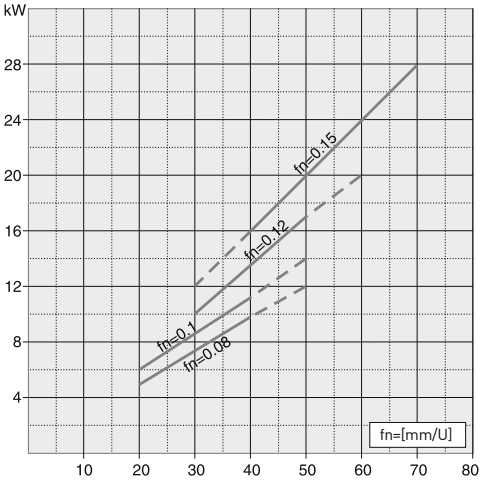
Drill Ø	Difficult work			Favourable work		
	+X	D min.	D max.	+X	D min.	D max.
16	1.0	16.0	18.0	1.7	16.0	19.4
17	0.8	17.0	18.6	1.5	17.0	20.0
18	0.7	18.0	19.4	1.3	18.0	20.6
19	0.5	19.0	20.0	1.0	19.0	20.6
20	0.3	20.0	20.6	0.8	20.0	21.6
21	1.1	21.0	23.2	2.0	21.0	25.0
22	0.9	22.0	23.8	1.7	22.0	25.4
23	0.8	23.0	24.6	1.5	23.0	26.0
24	0.6	24.0	25.2	1.2	24.0	26.4
25	0.4	25.0	25.8	1.0	25.0	27.0
26	1.0	26.0	28.0	1.7	26.0	29.4
27	0.8	27.0	28.6	1.4	27.0	29.8
28	0.6	28.0	29.2	1.2	28.0	30.4
29	0.4	29.0	29.8	0.9	29.0	30.8
30	0.3	30.0	30.6	0.7	30.0	31.4

Drill Ø	Adjustable Range		Boring Dia	
	-X	+X	D min.	D max.
31	0.25	3.5	30.5	38.0
32		3.25	31.5	38.5
33		3.0	32.5	39.0
34		2.75	33.5	39.5
35		2.5	34.5	40.0
36		2.25	35.5	40.5
37		2.0	36.5	41.0
38		1.75	37.5	41.5
39		1.5	38.5	42.0
40		1.25	39.5	42.5
41		1.0	40.5	43.0
42		0.75	41.5	43.5
43		0.5	42.5	44.0
44		0.25	43.5	44.5
45	0.5	4.0	44.0	53.0
47		3.5	46.0	54.0
49		3.0	48.0	55.0
51		2.5	50.0	56.0
53		2.0	52.0	57.0
55		1.5	54.0	58.0
57		1.0	56.0	59.0
59		0.5	58.0	60.0
61		3.5	60.0	68.0
65		3.0	64.0	71.0
69		2.0	68.0	73.0
74		1.0	73.0	76.0

1. * Adjustment range with adjustable drill holder or with stationary off axis use.

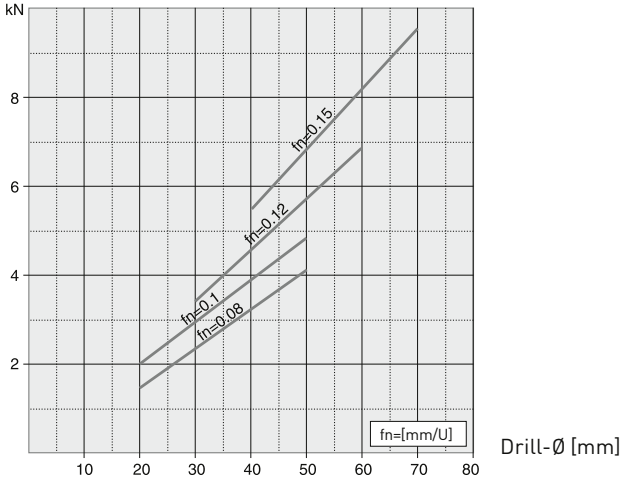
Driving power

Vc=220 m/min; Material St 60
kc 1 = 2 110 N/mm²

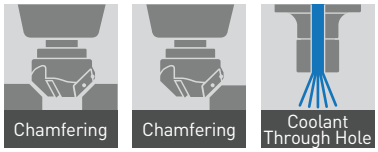


Feed force

Material St 60
kc 1 = 2 110 N/mm²

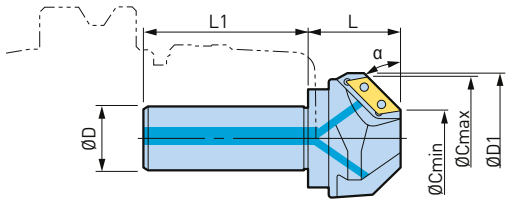


C-Cutter Standard Type



One C-Cutter to cover a wide chamfering range 45°: Ø 5 - Ø 25, Ø 10 - Ø 40, Ø 30 - Ø 60, Ø 50 - Ø 100

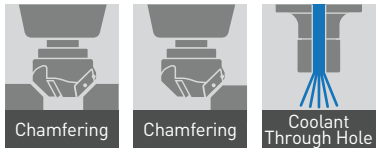




Model	Order No.	ØD	ØD1	L	L1	α	ØC min.	ØC max.	Number of Inserts	Insert Type
ST20-C0525C	**966.401**	20	33	25	60	45°	5	25	1	CW12
ST25-C1040C	**966.406**	25	45	35	70	45°	10	40	2	CW19
ST32-C3060C	**802.224**	32	65	45	80	45°	30	60	3	CW19
ST42-C50100C	**966.404**	42	106	70	80	45°	50	100	3	CW31
ST25-C1434C-60	**966.405**	25	38	37	70	60°	14	34	2	CW19
ST32-C1652C-30	**978.336**	32	68	48	80	30°	16	52	2	CW19
ST32-C3050C-60	**978.338**	32	54	45	80	60°	30	50	3	CW19
ST32-C4565C-60	**978.339**	32	69	50	80	60°	45	65	3	CW19
ST42-C5085C-30	**802.251**	42	96	52	80	30°	50	85	3	CW19

1. Wrench and screws are included.
2. Inserts are to be ordered separately.

C-Cutter CKB type



Chamfering mill with indexable inserts for efficient and vibration-free 45° chamfering. The long cutting edge provides a wide chamfering range which reduces the number of tools, tool changes and magazine space.

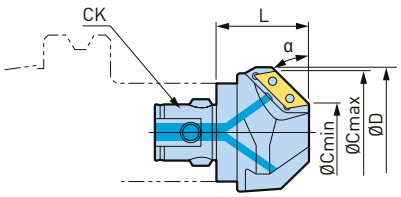
Accessories & Spare Parts

Inserts for C-Cutter



▶ 553

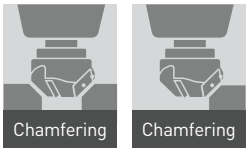




Model	Order No.	CK	ØD	L	α	ØC min.	ØC max.	Number of Inserts	Insert Type
CKB2-C0525C	**335.021**	CKB2	28.5	25	45°	5	25	1	CW12
CKB4-C1040C	**335.022**	CKB4	45	35	45°	10	40	2	CW19
CKB5-C3060C	**335.023**	CKB5	65	40	45°	30	60	3	CW19
CKB6-C50100C	**335.024**	CKB6	106	65	45°	50	100	3	CW31

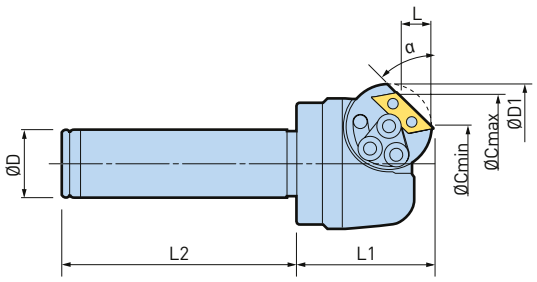
1. Wrench and screws are included.
2. Inserts are to be ordered separately.

C-Cutter Universal Type



Chamfering angle adjustment from 5° to 85° with a hex key.





Model	Order No.	ØD	ØD1	L	L1	L2	α	ØC min.	ØC max.	Insert Type
ST20-C5/85A-40	**966.407**	20	49	1.2 - 12.7	40	70	5° - 85°	5.5	42.4	CW1206A

1. Wrench and screws are included.
2. Inserts are to be ordered separately.

Easy angle adjustment with a hex key.



Chamfering range

Angle θ	Chamfer		L
	ØC min	ØC max	
5°	5.5	33.5	1.2
10°	7.3	34.7	2.4
15°	9.0	36.2	3.6
20°	11.2	37.4	4.7
25°	13.0	38.6	5.9
30°	15.2	39.6	7.0
35°	17.4	40.5	8.0
40°	19.6	41.2	9.0
45°	21.8	41.8	10.0

Angle θ	Chamfer		L
	ØC min	ØC max	
50°	24.0	42.2	10.8
55°	26.4	42.4	11.4
60°	28.5	42.5	12.1
65°	30.7	42.4	12.5
70°	32.9	42.1	12.6
75°	34.9	41.7	12.7
80°	36.9	41.1	11.9
85°	38.8	40.3	8.6

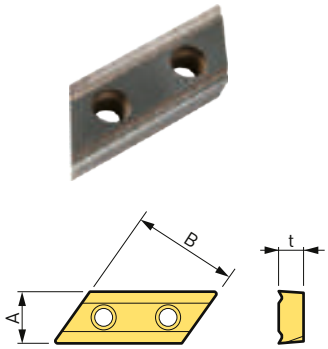
1. Values in the table are reference only. Measure accurate values with a presetter.

C.2

Accessories & Spare Parts

Inserts for C-Cutter	Insert Clamping Screw Set
	
▶ 553	▶ 553

Inserts for C-Cutter



ZX = TiCN+TiAlN multilayer coating

Model	A	B	t	P30	P20	N20
				Non-Coat	ZX	DLC
CW1206A	6.35	12.7	2.7	978.283	800.951	801.753
CW1206A-10P				802.134	978.918	-
CW1909A	9.525	19.05	4.5	978.817	800.952	801.754
CW1909A-10P				802.135	802.136	-
CW3115A	15.875	31.75	7.0	978.826	800.953	801.755
CW3115A-10P				802.137	802.138	-

1. 10P: Set contains 10 inserts.
2. DLC coated insert is only available with 1 pce.

Non-coating	Adopts P30-equivalent carbide material with emphasis on toughness for versatile use with materials from steel to aluminum.
ZX Coating	TiN and AlN multilayer coating increases speeds and extends insert life in chamfering of steel or cast iron.
DLC Coating	The exclusive substrate is treated with a thin DLC coating to prevent welding during aluminum machining. It retains sharpness and achieves a clean surface finish.

Insert Clamping Screw Set



Insert	Set Model	Order No.
CW1206A	S2S-B	978.284
CW1909A	S3S	801.696
CW3115A	S5S	801.699

1. The set contains 10 screws and 1 wrench.
2. Wrenches are also available separately.

C-Cutter

Recommended Cutting Condition

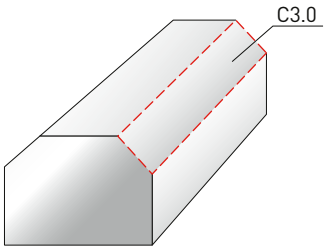
Cutter Type	Max. Chamfer	Chamfering	General Steel Alloy Steel		Stainless Steel		Cast Iron		Aluminium	
			Vc (m/min)	f (mm/rev)	Vc (m/min)	f (mm/rev)	Vc (m/min)	f (mm/rev)	Vc (m/min)	f (mm/rev)
ST20-C5/85A-40	2 mm *	Plunge Cutting	50	0.1	30	0.08	40	0.1	80	0.1
		Side Cutting	80	0.15	60	0.1	50	0.15	100	0.2
C0525C	C2	Plunge Cutting	50	0.1	30	0.08	40	0.1	80	0.1
		Side Cutting	80	0.15	60	0.1	50	0.15	100	0.15
C1040C	C3	Plunge Cutting	90	0.15	40	0.12	60	0.15	100	0.2
C1434C-60 C1652C-30	3 mm *	Side Cutting	120	0.3	60	0.2	90	0.3	150	0.3
C3060C / C3060	C4	Plunge Cutting	120	0.3	60	0.18	90	0.25	150	0.3
C3050C-60 C4565C-60 C5085C-30	4 mm *	Side Cutting	150	0.45	60	0.3	120	0.6	200	0.6
C50100C	C4	Plunge Cutting	150	0.4	80	0.25	120	0.35	180	0.4
		Side Cutting	150	0.45	60	0.36	120	0.6	240	0.6

Vc: Cutting speed (m/min.) f: Feed per revolution (mm/rev.)

1. Cutting condition is the same for both non-coated and coated inserts. Coated inserts will achieve better surface finish and extended insert life.
2. Peck feed is necessary in case cutting chips are too long.
3. Reduce cutting speed if a larger chamfer than the max. amount shown in the table is required.
4. A high rigidity toolholder is recommended, such as BIG KAISER HMC or MEGA D Chuck.
5. Max. chamfering amount with * in 30, 60 degree type and Universal type indicates the chamfering length of the longer side.

Application Example

C3 traverse chamfering. Workmaterial: C55 (S55C)



High cutting parameter was achieved without chattering

C-Cutter	ST25-C1040
Insert Model	CW1909A
Spindle speed	3 000 min^{-1}
Feed	1 800 mm/min

C.2

Accessories & Spare Parts

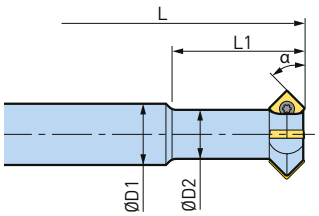
Indexable Inserts for C-Cutter Mini	Insert Clamping Screw Set
	
▶ 561	▶ 561

C-Cutter Mini, Multi Insert Type



Front & Back Chamfering





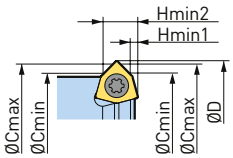


Fig. 1

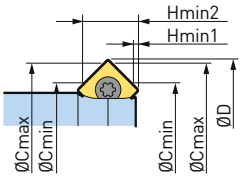


Fig. 2

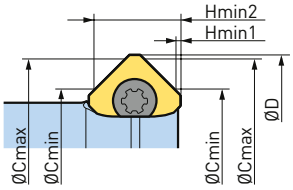


Fig. 3

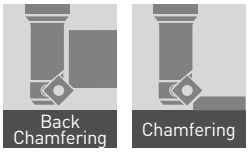
Model	Order No.	Fig.	ØD	ØD1	ØD2	L	L1	α	ØC min.	ØC max.	H min1	H min2	Insert Type
ST10-C0810-45B-15	**807.192**	1	10.5	10	7.4	78	15	45°	8	10	0.7	3.2	CM03
ST10-C0810-45B-27	**807.193**	1	10.5	10	7.4	90	27	45°	8	10	0.7	3.2	CM03
ST12-C1012-45B-20	**966.461**	1	12.7	12	9	93	20	45°	10	12	1	3.7	CM04
ST12-C1012-45B-35	**966.462**	1	12.7	12	9	108	35	45°	10	12	1	3.7	CM04
ST12-C1116-45B-25	**966.433**	2	17.1	12	9.6	98	25	45°	11	16	0.4	6.2	CM05
ST12-C1116-45B-40	**966.463**	2	17.1	12	9.6	113	40	45°	11	16	0.4	6.2	CM05
ST16-C1520-45B-50	**966.464**	2	20.7	16	13.2	123	50	45°	15	20	0.6	6.3	CM05
ST20-C1924-45B-60	**966.465**	2	24.7	20	17.2	143	60	45°	19	24	0.6	6.3	CM05
ST20-C2232-45B-50	**966.434**	3	32.7	20	19.2	130	50	45°	22	32	0.4	12.4	CM10
ST20-C2232-45B-80	**966.466**	3	32.7	20	19.2	160	80	45°	22	32	0.4	12.4	CM10
ST32-C3242-45B-65	**966.435**	3	42.7	32	30.6	175	65	45°	32	42	0.4	12.4	CM10
ST32-C3242-45B-100	**966.467**	3	42.7	32	30.6	211	100	45°	32	42	0.4	12.4	CM10

1. Wrench and screws are included.
2. Inserts are to be ordered separately.
3. In case of chamfering with 4 insert type, chatter may occur due to increased cutting resistance when plunge cutting. Please try the different types with less inserts, 1 or 2.

Accessories & Spare Parts

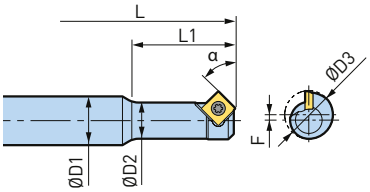
Indexable Inserts for C-Cutter Mini	Insert Clamping Screw Set
	
▶ 561	▶ 561

C-Cutter Mini, Single Insert Type



Front & Back Chamfering





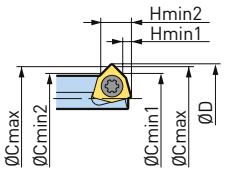


Fig. 1

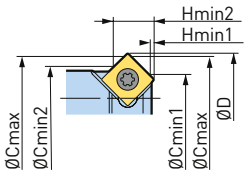


Fig. 2

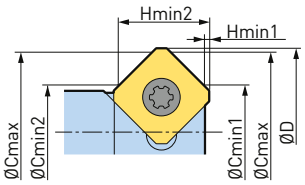


Fig. 3

Model	Order No.	Fig.	ØD	ØD1	ØD2	ØD3	L	L1	ØC min1	ØC min2	ØC max.	H min1	H min2	F	α	Insert Type
ST10-C0409-45B-20	**966.469**	2	9.8	10	5.4	7.7	86	20	4	6	9	0.5	5.4	1.1	45°	CM05
ST10-C0608-45B-16	**966.468**	1	8.8	10	5.7	5.7	78	16	6	6	8	1	3.8	1.55	45°	CM04
ST10-C0611-45B-20	**966.432**	2	12	10	7.4	9.8	81	20	6	8	11	0.4	5.5	1.1	45°	CM05
ST10-C0611-45B-35	**966.470**	2	12	10	7.4	9.8	96	35	6	8	11	0.4	5.5	1.1	45°	CM05
ST16-C1222-45B-40	**966.471**	3	22.6	16	11	16.9	117	40	12	12	22	0.3	12.4	2.9	45°	CM10

1. Wrench and screws are included.
2. Inserts are to be ordered separately.

C.2

Accessories & Spare Parts

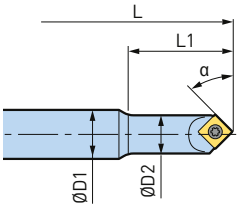
Indexable Inserts for C-Cutter Mini	Insert Clamping Screw Set
	
▶ 561	▶ 561

C-Cutter Mini, Single Insert Type



Front Chamfering





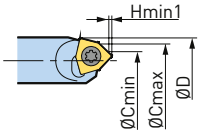


Fig. 1

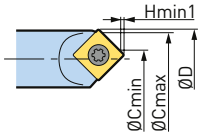


Fig. 2

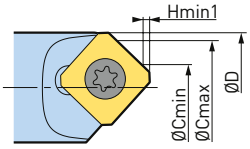


Fig. 3

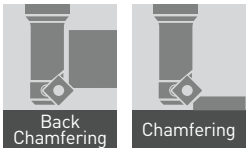
Model	Order No.	Fig.	ØD	ØD1	ØD2	L	L1	α	ØC min.	ØC max.	H min1	Insert Type
ST8-C0103-45-16	**807.196**	1	4.9	8	4.7	68	16	45°	1	3	0.3	CM03
ST10-C0204-45-15	**966.486**	1	6.3	10	6	78	15	45°	2	4	0.4	CM04
ST10-C0204-45-25	**966.487**	1	6.3	10	6	88	25	45°	2	4	0.4	CM04
ST10-C0207-45-20	**966.431**	2	8.1	10	7.8	81	20	45°	2	7	0.4	CM05
ST10-C0207-45-35	**966.488**	2	8.1	10	7.8	96	35	45°	2	7	0.4	CM05
ST16-C0214-30-40	**966.436**	3	15.9	16	15.4	105	40	30°	2	14	0.2	CM10
ST16-C0515-45-50	**966.489**	3	15.8	16	15.2	122	50	45°	5	15	0.4	CM10
ST16-C0916-60-40	**966.437**	3	16.5	16	15.6	105	40	60°	9	16	0.8	CM10

1. Wrench and screws are included.
2. Inserts are to be ordered separately.

Accessories & Spare Parts

Indexable Inserts for C-Cutter Mini	Insert Clamping Screw Set
	
▶ 561	▶ 561

C-Cutter Mini, Single Insert Type



Bolt Hole & Tap Starting Hole -Front & Back Chamfer



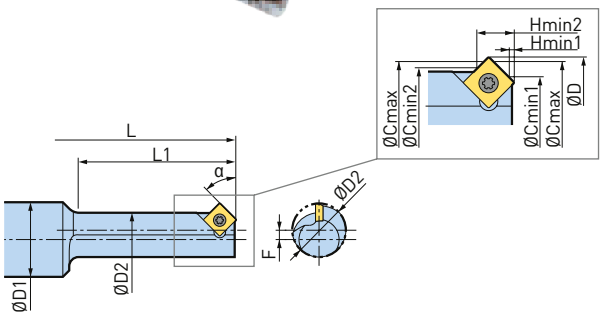


Fig. 1

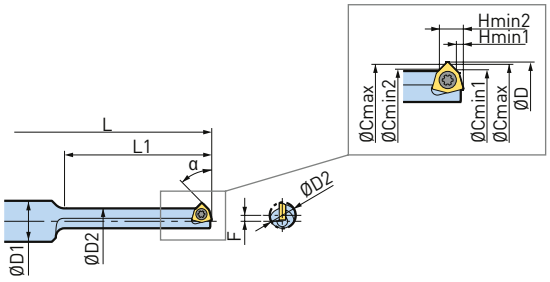


Fig. 2

Model	Order No.	Fig.	ØD	ØD1	ØD2	L	L1	ØC min1	ØC min2	ØC max.	H min1	H min2	F	Insert Type
ST8-CM06-45B-14	**807.194**	1	7	8	4.6	66	14	4.9	4.9	6.3	0.9	3.1	1.2	CM03
ST8-CM06-45B-26	**807.195**	1	7	8	4.6	78	26	4.9	4.9	6.3	0.9	3.1	1.2	CM03
ST10-CM08-45B-19	**966.472**	1	9.2	10	6.3	81	19	6.4	6.6	8.4	1	3.7	1.45	CM04
ST10-CM08-45B-35	**966.473**	1	9.2	10	6.3	97	35	6.4	6.6	8.4	1	3.7	1.45	CM04
ST12-CM10-45B-25	**966.474**	2	11.3	12	8	99	25	5.5	8.3	10.5	0.5	5	1.65	CM05
ST12-CM10-45B-45	**966.475**	2	11.3	12	8	119	45	5.5	8.3	10.5	0.5	5	1.65	CM05
ST12-CM12-45B-29	**966.476**	2	13.4	12	9.7	102	29	7.6	10.0	12.6	0.5	5.2	1.85	CM05
ST12-CM12-45B-53	**966.477**	2	13.4	12	9.7	126	53	7.6	10	12.6	0.5	5.2	1.85	CM05
ST16-CM14-45B-33	**966.478**	2	15.5	16	11.5	107	33	9.7	11.8	14.7	0.5	5.3	2	CM05
ST16-CM14-45B-61	**966.479**	2	15.5	16	11.5	135	61	9.7	11.8	14.7	0.5	5.3	2	CM05
ST16-CM16-45B-37	**966.480**	2	17.6	16	13.5	110	37	11.8	13.8	16.8	0.5	5.4	2.05	CM05
ST16-CM16-45B-69	**966.481**	2	17.6	16	13.5	142	69	11.8	13.8	16.8	0.5	5.4	2.05	CM05
ST20-CM18-45B-42	**966.482**	2	19.7	20	14.9	126	42	13.9	15.2	18.9	0.5	5.7	2.4	CM05
ST20-CM18-45B-78	**966.483**	2	19.7	20	14.9	162	78	13.9	15.2	18.9	0.5	5.7	2.4	CM05
ST20-CM20-45B-46	**966.484**	2	21.8	20	16.9	129	46	16	17.2	21	0.5	5.8	2.45	CM05
ST20-CM20-45B-86	**966.485**	2	21.8	20	16.9	169	86	16	17.2	21	0.5	5.8	2.45	CM05

1. Wrench and screws are included.
2. Inserts are to be ordered separately.

C.2

Accessories & Spare Parts

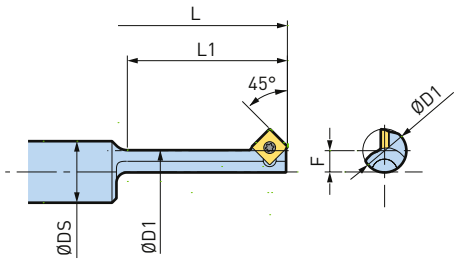
Indexable Inserts for C-Cutter Mini	Insert Clamping Screw Set
	
▶ 561	▶ 561

C-Cutter Mini, Single Insert Type

Tap hole Chamfering

Back Chamfering





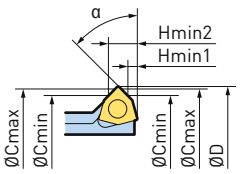


Fig. 1

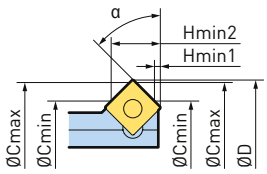


Fig. 2

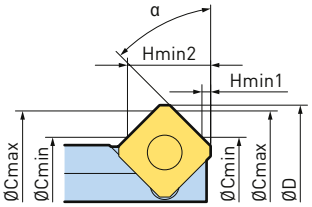


Fig. 3

Model	Order No.	Fig.	ØD	ØD1	ØD2	L	L1	α	ØC min.	ØC max.	H min1	H min2	F	Insert Type
ST10-CZ06-45B-23	**806.966**	1	12.8	10	6.1	85	23	45°	10	12	1	3.8	3.35	CM04
ST12-CZ08-45B-31	**806.967**	2	26.8	12	8.5	104	31	45°	11	16	0.5	6.3	4.15	CM05
ST16-CZ10-45B-37	**806.968**	2	20.3	16	10.5	111	37	45°	14.5	19.5	0.5	6.3	4.9	CM05
ST16-CZ12-45B-50	**806.969**	3	24.8	16	13.5	124	50	45°	14	24	0.3	12	5.65	CM10
ST20-CZ14-45B-56	**806.970**	3	27.8	20	15.5	139	56	45°	17	27	0.3	12	6.15	CM10

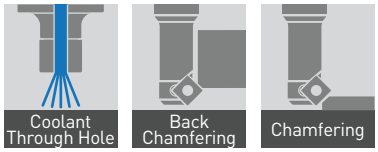
1. Wrench and screws are included.
2. Inserts are to be ordered separately.

C.2

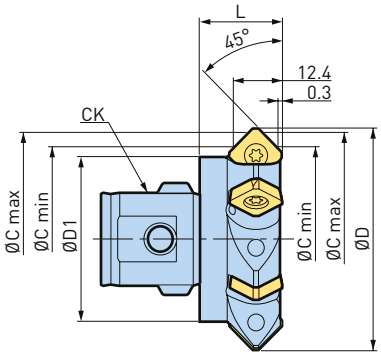
Accessories & Spare Parts

Indexable Inserts for C-Cutter Mini	Insert Clamping Screw Set
	
▶ 561	▶ 561

C-Cutter Mini CKB Type







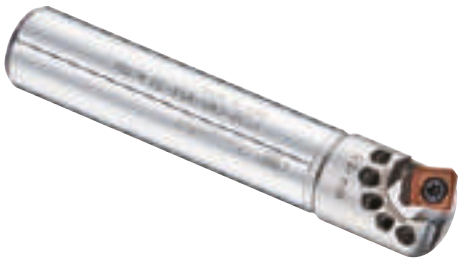
Model	Order No.	CK	ØD	ØD1	L	ØC min.	ØC max.	Number of Inserts	Insert Type
CKB1-C2232-45B-20	**335.070**	CKB1	32.7	19	20	22	32	4	CM10
CKB3-C3242-45B-20	**335.071**	CKB3	42.7	31	20	32	42	4	CM10
CKB3-C5262-45B-20	**335.072**	CKB3	62.7	31	20	52	62	6	CM10
CKB4-C4252-45B-20	**335.073**	CKB4	52.7	39	20	42	52	6	CM10
CKB5-C5262-45B-20	**335.074**	CKB5	62.7	51	20	52	62	6	CM10

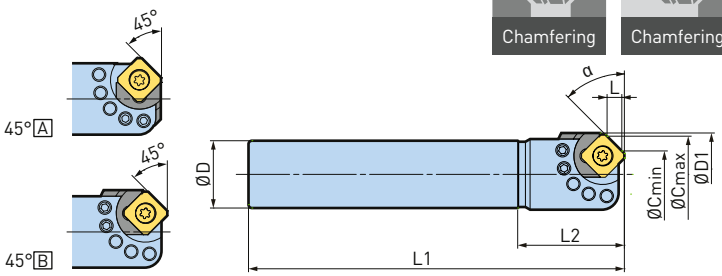
1. Wrench and screws are included.
2. Inserts are to be ordered separately.

C-Cutter Mini Universal

Slim body C-Cutter with chamfering angle adjustment from 5° to 85°.







Model	Order No.	ØD	ØD1	L	L1	L2	α	ØC min.	ØC max.	Insert Type
ST20-CM5/85A-30	**806.541**	20	25	0.6 - 6.8	112	32	5° - 85°	5.7	23.3	CM10C1

1. Wrench and screws are included.
2. Inserts are to be ordered separately.

Application examples

47.5° chamfer
Plunging



5° chamfer
Traverse



Chamfering Range

Chamfering angle θ	Min. hole ØC min	Max. chamfer diameter ØC max	L
5°	5.7	18.8	0.6
10°	6.7	19.7	1.2
15°	7.6	20.5	1.7
20°	8.5	21.2	2.3
25°	9.6	21.8	2.9
30°	10.6	22.3	3.4
35°	11.6	22.7	3.9
40°	12.7	23.0	4.4
45° A	13.7	23.3	4.8
45° B	13.4	23.0	4.8

Chamfering angle θ	Min. hole ØC min	Max. chamfer diameter ØC max	L
50°	14.4	23.2	5.2
55°	15.5	23.3	5.6
60°	16.4	23.3	5.9
65°	17.4	23.2	6.2
70°	18.3	23.0	6.4
75°	19.1	22.7	6.6
80°	19.9	22.3	6.7
85°	20.7	21.9	6.8

Values in the table are reference only. Measure accurate values with a presetter.

Indexable Inserts for C-Cutter Mini

Indexable Inserts



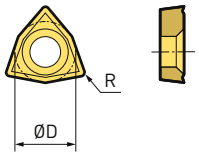


Fig. 1

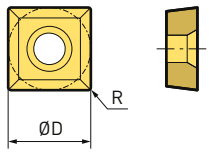


Fig. 2

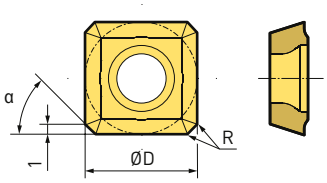


Fig. 3

The suffix SE designates a sharp cutting edge version.

Model	Fig.	ØD	Nose R	P		M	K	N	Clamping Screw Set	
				ACP200	ACP300	ACM250F	NF15KA	DS20	Model	Order No.
CM0302	1	3.31	0.2	-	**807.226**	**807.448**	-	**807.449**	S1.6S-T3	**807.041**
CM0402		3.97	0.2	-	**966.440**	**807.450**	-	**807.451**	S2SS-T6	**966.448**
CM0502	2	5	0.2	**966.441**	-	**807.187**	**807.683**	**966.442**	S2TS-T6	**966.449**
CM0502SE				**966.443**	**800.950**	-	-	-		
CM10C1	3	10	0.2	**966.445**	-	**807.188**	**807.684**	**966.446**	S4S-T15	**966.450**
CM10C1SE				**966.447**	-	-	-	-		

1. Inserts are available in packets of 10 pcs.
2. It is recommended to regularly replace clamping screws and wrench to ensure the correct clamping force is maintained.

Sharp cutting edge insert for „SE" type

Sharp cutting edge minimises the generation of burrs. This is especially beneficial when cutting stainless and mild steel materials.



Recommended Cutting Condition

A (Standard conditions)

Work Material	Insert Grade	Cutting Speed Vc (m/min)	Feed Rate fz (mm/tooth)		Coolant
			Chamfering	Face Milling (CM10 insert only)	
General Steel, Alloy Steel, High-Alloy Steel	ACP200 ACP300	100 - 350	0.05 - 0.4	0.05 - 0.2	Dry
Prehardened Steel (Less than HRC40)		60 - 100	0.05 - 0.1	0.05 - 0.1	Wet
Cast Iron	NF15KA	100 - 350	0.1 - 0.5	0.05 - 0.25	Dry
Stainless Steel	ACM250F	100 - 250	0.08 - 0.3	0.08 - 0.2	Dry / Wet
Aluminium, Non-Ferrous	DS20, ACP300	100 - 800	0.1 - 0.5	0.05 - 0.3	Dry / Wet

1. The table is just a reference to determine cutting conditions. It should be adjusted according to the condition of the machine tool and workpiece.
2. Wet cutting is recommended to obtain the good surface quality.
3. In case built-up edge occurs when cutting aluminum and stainless steel, use soluble oil.

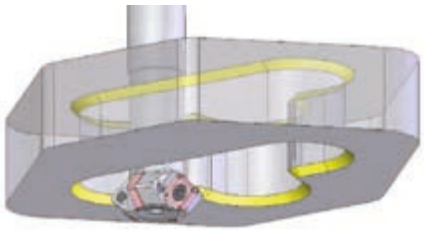
B (For long models of „bolt hole and starting hole for tapping type")

Work Material	Insert Grade	Cutting Speed Vc (m/min)	Feed Rate fz (mm/tooth)	Coolant
General Steel, Alloy Steel, High-Alloy Steel	ACP200 ACP300	20 - 100	0.03 - 0.12	Wet
Cast Iron	NF15KA	50 - 160	0.05 - 0.20	Dry
Aluminium, Non-Ferrous	DS20, ACP300	30 - 100	0.03 - 0.12	Wet

1. The table is just a reference to determine cutting conditions. It should be adjusted according to the condition of the machine tool and workpiece.
2. For stainless steel and hardened steel, shorter models are recommended.

Application Examples C-Cutter Mini

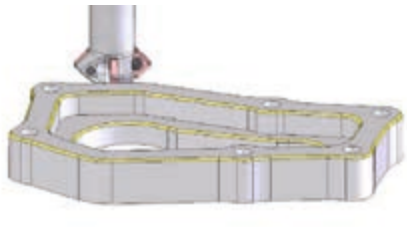
Front & Back chamfering for stainless steel



	Competitor's Tool (with TiAlN Coated Carbide Insert)	C-Cutter Mini (ST20-C2232-45B-50)
Chamfering Dia.	Ø 30	Ø 28
Number of Teeth	1	4
Cutting Speed (m/min)	140	180
Spindle Speed (min^{-1})	1 490	2 050
Feed (mm/min)	149	819
Result	5 times better cutting efficiency	

Material: X5CrNi18-9
Chamfer: 3 mm x 45°
Feed: 0.1 mm/tooth

Chamfering for aluminium



	Competitor's Tool	C-Cutter Mini (ST12-C1116-45B-25)
Chamfering Dia.	Ø 40	Ø 12
Number of Teeth	3	4
Cutting Speed (m/min)	200	600
Spindle Speed (min^{-1})	1 590	15 920
Feed (mm/min)	477	6 370
Result	13 times better cutting efficiency	

Material: Al-Si7Mg(Fe)
Chamfer: 0.5 mm x 45°
Feed: 0.1 mm/tooth

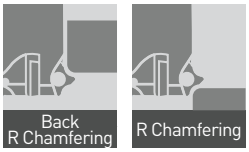
Front & Back chamfering of starting holes for M8 tapping



	Competitor's Tool (with Non-Coated Carbide Insert)	C-Cutter Mini (ST10-CM08-45B-19)
Cutting Speed (m/min)	30	150
Spindle Speed (min^{-1})	1 140	5 680
Feed per Tooth (mm/rev)	0.05	0.1
Feed (mm/min)	57	568

Material: FC250
Tapped hole: Ø 6.6
Chamfering dia.: Ø 8.4

R-Cutter - Front & Back R Chamfering



Front & back R-chamfering are available. 4 inserts multiply feed rate.

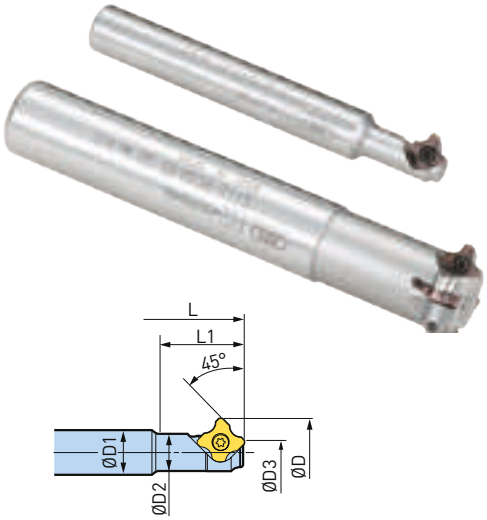


Fig. 1

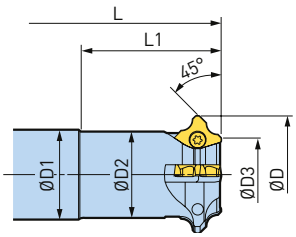
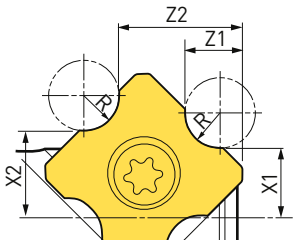


Fig. 2



Model	Order No.	Fig.	ØD	ØD1	ØD2	ØD3	L	L1	Number of Insert	R	X1	Z1	X2	Z2	Insert Model
ST10-RC061B-15	**966.501**	1	12.3	10	6.6	4.4	78	15	1	0.5	3.61	1.93	4.30	5.78	RC06
										1	3.35	2.18	4.04	5.53	
										1.5	3.09	2.43	3.78	5.28	
										2	2.83	2.68	3.52	5.03	
ST16-RC121B-30	**966.502**	1	24.4	16	13.3	8.6	103	30	1	1	7.17	3.79	8.56	11.63	RC12
										2	6.65	4.29	8.03	11.13	
										3	6.13	4.79	7.51	10.63	
										4	5.60	5.29	6.99	10.13	
ST16-RC064B-30	**966.503**	2	21	16	15.2	13.2	101	30	4	0.5	7.89	1.93	8.59	5.78	RC06
										1	7.64	2.18	8.34	5.53	
										1.5	7.39	2.43	8.09	5.28	
										2	7.13	2.68	7.84	5.03	
ST32-RC124B-50	**966.504**	2	42	32	30.8	26.3	141	50	4	1	15.85	3.79	17.26	11.63	RC12
										2	15.33	4.29	16.75	11.13	
										3	14.83	4.79	16.24	10.63	
										4	14.31	5.29	15.73	10.13	

1. Wrench and screws are included.
2. Inserts are to be ordered separately.

C.2

Accessories & Spare Parts

Indexable Inserts for R-Cutter	Insert Clamping Screw Set
	
▶ 566	▶ 566

R-Cutter - Front Chamfering



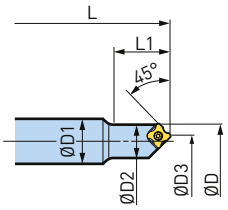


Fig. 1

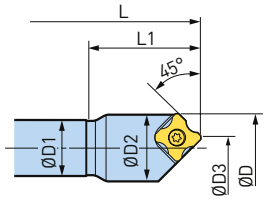
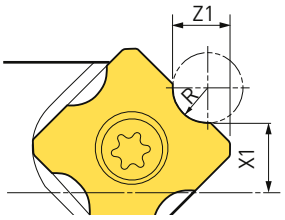


Fig. 2



Model	Order No.	Fig.	ØD	ØD1	ØD2	ØD3	L	L1	Number of Insert	R	X1	Z1	Insert Model
ST16-RC061-20	**966.505**	1	12.3	16	11.9	4.5	94	20	1	0.5	3.61	1.93	RC06
										1	3.35	2.18	
										1.5	3.09	2.43	
										2	2.83	2.68	
ST20-RC121-40	**966.506**	2	24.4	20	23.8	8.9	121	40	1	1	7.17	3.79	RC12
										2	6.65	4.29	
										3	6.13	4.79	
										4	5.60	5.29	

1. Wrench and screws are included.
2. Inserts are to be ordered separately.

C.2

Accessories & Spare Parts

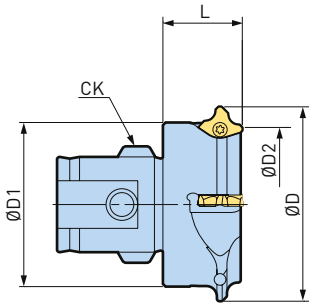
Indexable Inserts for R-Cutter	Insert Clamping Screw Set
	
▶ 566	▶ 566

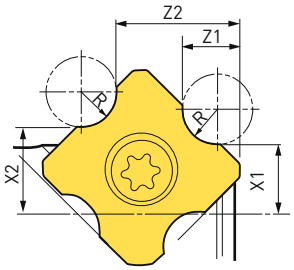
R-Cutter CKB Type



The R-Cutter is a high performance tool for chamfering, back chamfering and face milling.
Due to the small tool diameter it permits extremely high feed rates.







Model	Order No.	CK	ØD	ØD1	ØD2	L	R	X1	Z1	X2	Z2	Number of Inserts	Insert Model
CKB3-RC064B-15	**806.439**	CKB3	37	31	29.2	15	0.5	15.9	1.9	16.6	5.8	4	RC06
							1.0	15.6	2.2	16.3	5.5		
							1.5	154	2.4	16.1	5.3		
							2.0	15.1	2.7	15.8	5		
CKB5-RC124B-25	**806.440**	CKB5	62	50	46.3	25	1	25.8	3.8	27.2	11.6	4	RC12
							2	25.3	4.3	26.7	11.1		
							3	24.8	4.8	26.2	10.6		
							4	24.3	5.3	25.7	10.1		

1. Wrench and screws are included.
2. Inserts are to be ordered separately.

C.2

Accessories & Spare Parts

Indexable Inserts for R-Cutter	Insert Clamping Screw Set
	
▶ 566	▶ 566

Indexable Inserts for R-Cutter



Model	Order No.	Insert Grade	Insert Radius R	Insert Type
RC06050(ACP300)	**966.530**	ACP300	0.5	RC06
RC06100(ACP300)	**966.531**	ACP300	1	RC06
RC06150(ACP300)	**966.532**	ACP300	1.5	RC06
RC06200(ACP300)	**966.533**	ACP300	2	RC06
RC12100(ACP300)	**966.534**	ACP300	1	RC12
RC12200(ACP300)	**966.535**	ACP300	2	RC12
RC12300(ACP300)	**966.536**	ACP300	3	RC12
RC12400(ACP300)	**966.537**	ACP300	4	RC12

1. Inserts are available in a packet of 10 pcs.
2. Material is coated carbide.

Screw Set

Inserts	Model	Order No.
RC06	S2TS-T6	**966.449**
RC12	S4S-T15	**966.450**

1. Insert clamping set contains 10 pcs screw and 1 pcs wrench.

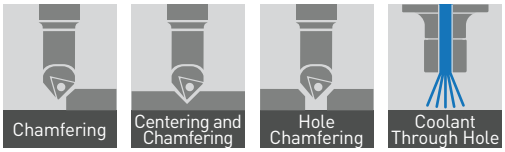
Recommended Cutting Condition

Workpiece Material	Cutting Speed (m/min)	Feed Rate (mm/tooth)	Coolant
Structural, Carbon or Alloy Steel	100 - 350	0.05 - 0.2	Dry
Prehardened Steel (less than HRC40)	60 - 80	0.05 - 0.1	Wet
Stainless Steel	100 - 250	0.08 - 0.2	Dry / Wet
Cast Iron	100 - 350	0.05 - 0.25	Dry
Aluminium	100 - 800	0.05 - 0.25	Dry / Wet

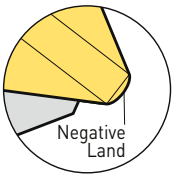
1. The table is a reference to determine cutting conditions. It should be adjusted according to the condition of the machine tool and workpiece.
2. Wet cutting is generally recommended to obtain good surface quality.
3. In case of built-up edge occurs when cutting aluminum and stainless steel, use soluble oil.

C-Centering Cutter

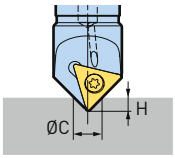
A multifunction cutter capable of both spot drilling and chamfering.







As the nose radius on the insert forms negative land, it has high chipping resistance, and the tool life is significantly extended.



Spot Drilling Depth Calculation Method

《θ_1=90°》
H=(øC-øCmin)÷2+Hmin

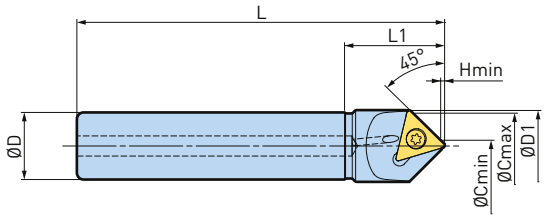


Fig. 1

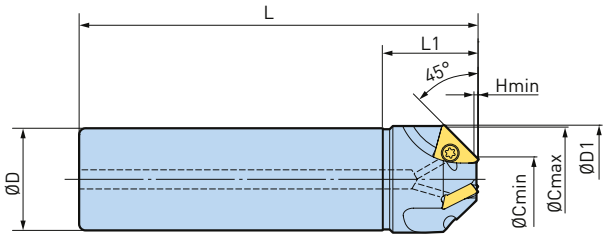


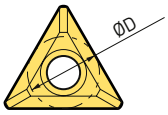
Fig. 2

Model	Order No.	Fig.	ØD	ØD1	L	L1	ØC min.	ØC max.	H min	Insert Type
ST8-CN0209-45-65	**807.685**	1	8	10	65	15	2	9	0.6	CN0406
ST12-CN0213-45-90	**807.686**	1	12	14	90	20	2	13	0.6	CN0606
ST20-CN0220-45-110	**806.622**	1	20	22	110	30	2	20	0.6	CN0906
ST32-CN1433-45-125	**807.015**	2	32	34	125	30	14	33	0.6	CN0906

1. Wrench and screws are included.
2. Inserts are to be ordered separately.

Inserts for C-Centering Cutter





Model	Inscribed Circle øD	Insert Grade			Insert Clamp Screw Set Model	Wrench Model
		Durability-focused	Burr prevention	For non-ferrous metals		
		ACM250F (for steel, stainless steel, cast iron)	ACZ150 (for steel, structural steel, cast iron)	DS20 (for aluminum)		
CN0406	4.76	**807.687**	**807.689**	**807.688**	S2TS-6IP	FS-6IP
CN0606	6.35	**807.690**	**807.692**	**807.691**	S2.5S-8IP	FS-8IP
CN0906	9.525	**807.139**	**807.693**	**807.158**	S4S-15IP	FS-15IP

Clamping Screw Set	Order No.
S2TS-6IP	**807.694**
S2.5S-8IP	**807.695**
S4S-15IP	**806.624**

1. Insert clamping set contains 10 pcs screw and 1 pcs wrench.

Recommended Cutting Condition

Workpiece Material	Cutting Speed Vc (m/min)	Feed (mmv/rev)	
		Spot Drilling	Traverse Chamfering
Carbon Steel, Alloy Steel	50 - 150	0.02 - 0.08	0.05 - 0.2
Stainless Steel	50 - 120	0.02 - 0.05	
Cast Iron	70 - 200	0.02 - 0.08	
Aluminum	100 - 300		

1. The table is just a reference to determine cutting conditions.
2. It should be adjusted according to the condition of the machine tool and workpiece.

Center Boy

Centering and Chamfering

Accurate centering and chamfering in one single operation.



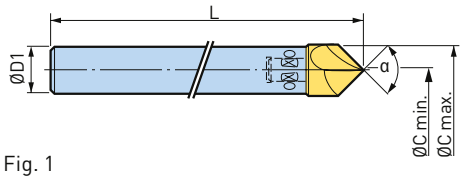


Fig. 1

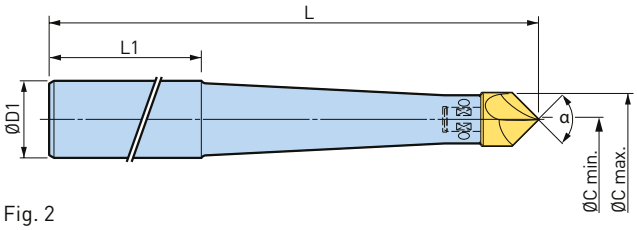


Fig. 2

Model	Order No.	Fig.	ØD1	L	L1	α	ØC min.	ØC max.	Indexable Bit	Locking Screw
ST10-CBY09010	**966.415**	1	10	150	-	90°	0.9	10	CBY09010	H0403-5P
ST12-CBY09013	**966.416**	1	12	150	-	90°	0.9	13	CBY09013	H0403-5P
ST16-CBY09016	**966.417**	1	16	180	-	90°	1	16	CBY09016	H0504-5P
ST20-CBY09022	**966.418**	1	20	180	-	90°	1.5	22	CBY09022	H0505-5P
ST12-CBY12013	**802.756**	1	12	150	-	120°	0.9	13	CBY12013	H0403-5P
ST20-CBY09013-220	**966.411**	2	20	220	120	90°	0.9	13	CBY09013	H0403-5P
ST20-CBY09013-260	**966.412**	2	20	260	120	90°	0.9	13	CBY09013	H0403-5P
ST32-CBY09022-260	**966.413**	2	32	260	120	90°	1.5	22	CBY09022	H0505-5P
ST32-CBY09022-300	**966.414**	2	32	300	120	90°	1.5	22	CBY09022	H0505-5P

1. 2 pcs of indexable Bits and 2 pcs of locking screws are included as standard accessories.
2. Spare locking screws are available in a packet of 5 pcs.

Indexable Bit for Center Boy



Bit

Model	Order No.	α
CBY09010-5P	**966.422**	90°
CBY09013-5P	**966.423**	90°
CBY09016-5P	**966.424**	90°
CBY09022-5P	**966.425**	90°
CBY12013-5P	**800.945**	120°

Screw

Locking Screw	Order No.
H0403-5P	**978.256**
H0504-5P	**801.046**
H0505-5P	**801.047**

1. Bits are available as 5 piece sets.
2. Bit grade is HSS with TiN coating.

Recommended Cutting Condition

C.2

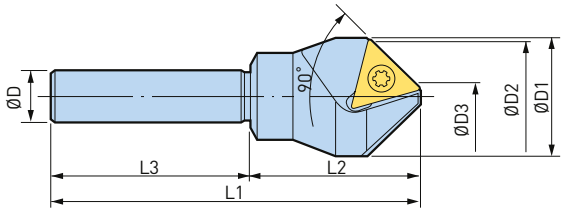
Workpiece Material	Cutter Type	Chamfering		Centering	
		Vc (m/min)	f (mm/rev)	Vc (m/min)	f (mm/rev)
General Steel Alloy Steel	Standard	20 - 35	0.10	25 - 50	0.08
	long	20 - 35	0.08	20 - 50	0.08
Stainless Steel	Standard	15 - 30	0.08	20 - 40	0.08
	long	15 - 30	0.06	15 - 30	0.06
Cast Iron	Standard	20 - 40	0.12	30 - 45	0.10
	long	20 - 40	0.10	30 - 45	0.10
Aluminium	Standard	45 - 60	0.15	50 - 65	0.15
	long	40 - 60	0.12	40 - 60	0.12

1. The table is just a reference to determine cutting conditions. It should be adjusted according to the condition of the machine tool and workpiece.
2. In case vibration occurs, reduce cutting speed V.
3. Projection length should be as short as possible. Vc: Cutting speed (m/min.) f: Feed per revolution (mm/rev.)

C-Cutter Boy

For bench drill machine only. Smooth guide with carbide support pad. Never get irregular chamfering. Long tool life with carbide insert. Economical with its 3 cutting edges.



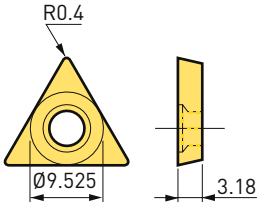


Model	Order No.	ØD	ØD1	ØD2	ØD3	L1	L2	L3	Insert Type
ST12B-C0525	**966.408**	12	27	25	5	83	38	45	C1603B

1. Including 1 pce. of insert.
2. ØD2 and ØD3 indicate the min. and max. bore diameter.

Indexable Insert for C-Cutter Boy

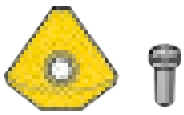




Model	Order No.
C1603B	**966.409**

1. Inserts are available in a packet of 10 pcs.

C-Cutter Boy - Guide Pad Set



Model	Order No.	Thread size	Carbide guide
CG0525S	**978.908**	M4×7	CG0525

1. The set contains 1pce of Carbide Guide and 1pce screw.

Insert Clamping Screw Set



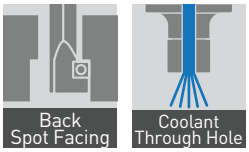
Set Model	Order No.	Thread Size
S4S	**806.148**	M4 x 8

1. 10 pce. of clamping screw and 1 pce. of wrench are included.

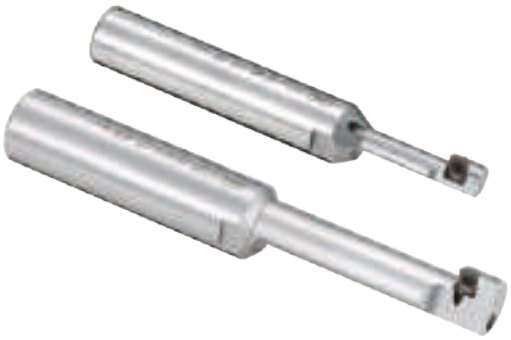
Recommended Cutting Condition

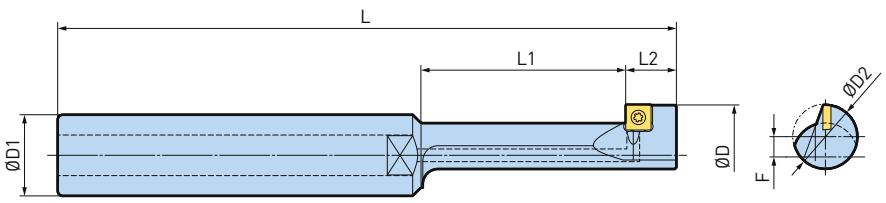
Hole Dia. Ø	Spindle Speed (min^{-1})		
	Steel	Cast Iron	Aluminium
5	600	800	1 000
10	500	600	800
15	400	500	600
20	300	400	500

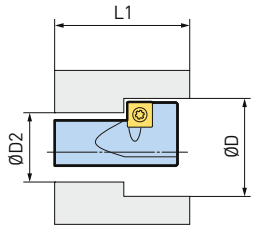
BF-Cutter



Selected spot facing diameters suitable for cap screws.





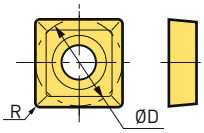


Model	Order No.	ØD	ØD1	ØD2	L	L1	L2	F	Insert Type
ST16-BFM6/11-12	**802.752**	11	16	6.5	102	12	9	2.4	CM0502
ST16-BFM8/14-20	**802.753**	14	16	8.5	108	20	9	2.9	CM0502
ST16-BFM10/17.5-25	**802.750**	17.5	16	10.5	112	25	10	3.65	CM0502
ST16-BFM12/20-36	**802.751**	20	16	13	122	36	10	3.65	CM0502
ST20-BFM14/23-49	**802.754**	23	20	15	136	49	10	4.15	CM0502
ST20-BFM16/26-56	**802.755**	26	20	17	142	56	10	4.65	CM0502

1. Wrench and screws are included.
2. Inserts are to be ordered separately.
3. Insert clamping set contains 10 pcs screw and 1 pcs wrench.

Indexable Inserts for BF-Cutter





Model	ØD	Nose R	P	M	N
			ACP200	ACM250F	DS20
CM0502	Ø5	0.2	**966.441**	**807.187**	**966.442**

1. Insert clamping set contains 10 pcs screw and 1 pcs wrench.

Spare Parts

Cutting Type	Insert Clamping Screw Set	Order No.
BFM6/11	S2SS-T6	**966.448**
BFM8/14		
BFM10/17.5	S2TS-T6	**966.449**
BFM12/20		
BFM14/23		
BFM16/26		

Recommended Cutting Condition

Workpiece Material	Insert Grade	Cutting Speed (m/min)	Feed Rate (mm/rev)
General Steel, High-Alloy Steel	ACP200	30	0.03
Cast Iron		30	0.03
Aluminium, Non-Ferrous	DS20	30 - 50	0.03

Insert grade

ACP200	ACM250F	DS20
General steel	Stainless Steel	Aluminium & non-ferrous
High wear-resistant PVD coating on carbide substrate with ultra multilayer TiAlN and AlCrN in micron order.	PDV-coated carbide with excellent smoothness and resistance to welding and chapping, due to the AlTin and TiAiCrN.	Ultra smooth and low friction DLC coating on carbide substrate having excellent anti-adhesive property.

Chamfer Rings for Boring Heads

Chamfering rings for single- and rough-cutter boring bars for 30° or 45° chamfering immediately after boring without tool change.



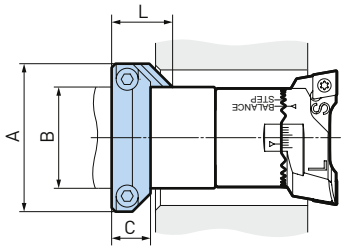


Fig. 1

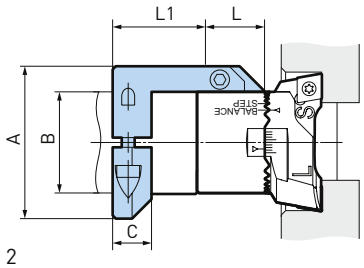


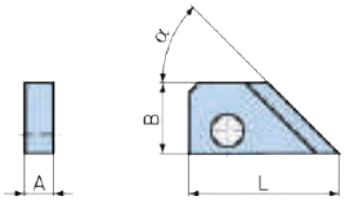
Fig. 2

Model	Order No.	Body	Fig.	ØD	L1	A	B	C	Insert Type
CR20	**663.110**	CK1	1	20 - 35	-	35	19	13	CRP 20-45, CRP 20-30
CR25	**663.120**	CK2	1	25 - 40	-	42	24	15	CRP 20-45, CRP 20-30
CR25S	**663.121**	CK2	2	25 - 40	27	42	24	15	CRP 20-45, CRP 20-30
CR32	**663.130**	CK3	1	32 - 47	-	49	31	15	CRP 20-45, CRP 20-30
CR32S	**663.131**	CK3	2	32 - 47	31.5	51	31	15	CRP 20-45, CRP 20-30
CR41	**663.140**	CK4	1	41 - 55	-	57	39	15	CRP 20-45, CRP 20-30
CR41S	**663.141**	CK4	2	41 - 55	38.5	57	39	15	CRP 20-45, CRP 20-30
CR53	**663.150**	CK5	1	53 - 90	-	85	50	25	CRP 53-45, CRP 53-30
CR53S	**663.151**	CK5	2	53 - 90	39	90	50	25	CRP 53-45, CRP 53-30
CR68	**663.160**	CK6	1	68 - 104	-	100	64	25	CRP 53-45, CRP 53-30
CR68S	**663.161**	CK6	2	68 - 104	53	104	64	25	CRP 53-45, CRP 53-30
CR93-125	**663.170**	CK6	1	90 - 130	-	130	64	25	CRP 53-45, CRP 53-30

1. Dimension "L" is defined according to the Insert.

Inserts 45°and 30°

Carbide inserts with ground chip breaker for machining of cast iron and steel.



Model	Order No.	ØD	L	A	α	B
CRP20-30	**663.181**	20 - 55	27.5	4	30°	9
CRP20-45	**663.191**	20 - 55	23.5	4	45°	9
CRP53-30	**663.185**	53 - 100	52	8	30°	20
CRP53-45	**663.195**	53 - 130	43	8	45°	20

C.2

Insert Holder for Indexable Type

For different work piece materials and a quick change of the insert.



Fig. 1



Fig. 2

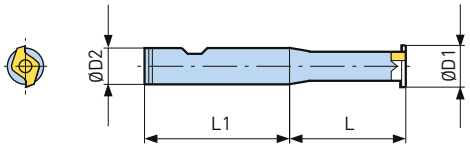
α	Model	Order No.	Fig.	Ring Type	Range Ø	Insert Model
45°	CB2-45CW12A	**805.811**	1	CR53	55 - 75	CW12
				CR68	69 - 89	
				CR93-125	95 - 115	
	CB2-45CW12B	**805.812**	2	CR53	70 - 90	
				CR68	84 - 105	
				CR93-125	110 - 130	

1. A wrench and screw are included. Inserts to be ordered separately.
2. For Inserts (CW12) refer to page 551.

Slot Milling Cutter - Cylindrical Shank Type

Slot milling cutter with indexable inserts for circlip grooves as per DIN472.





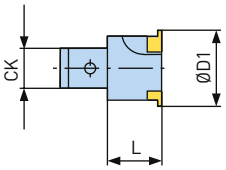
Model	Order No.	ØD	ØD1	ØD2	L	L1	Insert Type
DNF12-22XW10	**958.008**	12 - 24	11.5	10	32	40	Type 0

Slot Milling Cutter - CK Shank Type

Slot milling cutter with indexable inserts for circlip grooves as per DIN472.





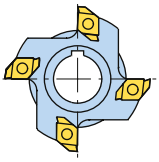


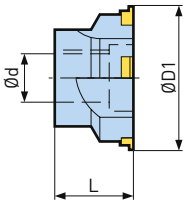
Model	Order No.	ØD	ØD1	L	Connection	Number of Inserts	Insert Type
DNF22-34XCK1	**958.010**	22 - 34	21	15	CK1	2	Type 1
DNF34-50XCK2	**958.021**	34 - 50	33	20	CK2	3	Type 1

Slot Milling Cutter - Arbor Type

Slot milling cutter with indexable inserts for circlip grooves as per DIN472.



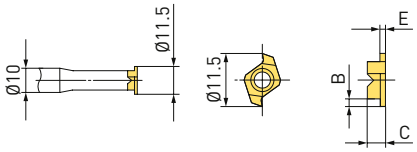




Model	Order No.	ØD	Ød	ØD1	L	Number of Inserts	Insert Type
DNF50-85XF16	**958.031**	50 - 85	16	48	26	4	Type 1
DNF85-210XF27	**958.041**	85 - 210	27	83	32	6	Type 2

Carbide inserts for slot milling as per DIN 472

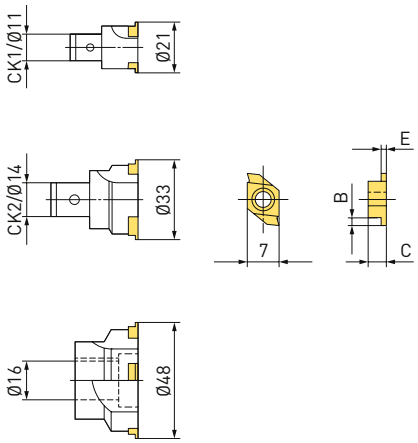




Model	Order No.	E	B	C	Cast Iron	Steel	Alumi-nium	Insert Type
DN110GGK20	**958.052**	1.15	0.9	4	++			Type 0
DN110STP20	**958.051**	1.15	0.9	4				Type 0
DN110ALK20	**958.053**	1.15	0.9	4			++	Type 0
DN130GGK20	**958.056**	1.35	1.3	4	++			Type 0
DN130STP20	**958.055**	1.35	1.3	4				Type 0
DN130ALK20	**958.057**	1.35	1.3	4			++	Type 0
DN315GGK20	**958.092**	3.2	3	6	++			Type 2
DN315STP20	**958.091**	3.2	3	6				Type 2
DN315ALK20	**958.093**	3.2	3	6			++	Type 2
DN415GGK20	**958.096**	4.2	3.5	6	++			Type 2
DN415STP20	**958.095**	4.2	3.5	6				Type 2
DN415ALK20	**958.097**	4.2	3.5	6			++	Type 2

1. Inserts are available in pieces.

Carbide inserts for slot milling as per DIN 472



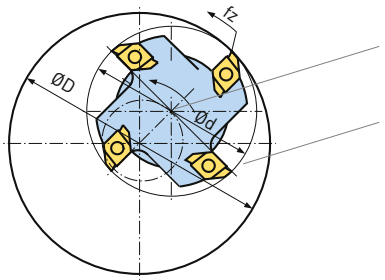
Model	Order No.	E	B	C	Cast Iron	Steel	Alumi-nium	Insert Type
DN110GGK20	**958.062**	1.15	1.1	4	++			Type 1
DN110STP20	**958.061**	1.15	1.1	4				Type 1
DN110ALK20	**958.063**	1.15	1.1	4			++	Type 1
DN130GGK20	**958.066**	1.35	1.5	4	++			Type 1
DN130STP20	**958.065**	1.35	1.5	4				Type 1
DN130ALK20	**958.067**	1.35	1.5	4			++	Type 1
DN160ALK20	**958.073**	1.65	1.6	4			++	Type 1
DN160STP20	**958.071**	1.65	1.6	4				Type 1
DN160GGK20	**958.072**	1.65	1.6	4	++			Type 1
DN185GGK20	**958.076**	1.9	2	4	++			Type 1
DN185STP20	**958.075**	1.9	2	4				Type 1
DN185ALK20	**958.077**	1.9	2	4			++	Type 1
DN215GGK20	**958.082**	2.2	2.2	4	++			Type 1
DN215STP20	**958.081**	2.2	2.2	4				Type 1
DN215ALK20	**958.083**	2.2	2.2	4			++	Type 1
DN265GGK20	**958.086**	2.7	2.6	4	++			Type 1
DN265STP20	**958.085**	2.7	2.6	4				Type 1
DN265ALK20	**958.087**	2.7	2.6	4			++	Type 1

1. Inserts are available in pieces.

Recommended Cutting Condition

These values relate to the milling cutter circumference and apply under normal working conditions. Climb-cut milling is recommended with helical or tangential plunging to groove depth assuming a continuous program cycle without feed interruption.

Work Piece Material	Cutting Speed Vc [m/min]	Feed per Tooth fz [mm]
Cast Iron	80 - 130	0.12 - 0.25
Steel	120 - 200	0.10 - 0.20
Aluminium	200 - 400	0.15 - 0.30



ØD Circular slot diameter
Ød Slot cutter circumference
Vf Feed rate at the circumference of the milling cutter
Vf1 Feed rate at the center of the milling cutter

In all circular milling operations the programmed feed rate [Vf1] applies to the centre of the milling cutter. This may be computed as follows:

$$Vf1 = Vf - \frac{ØD - Ød}{ØD}$$

Measuring Instruments

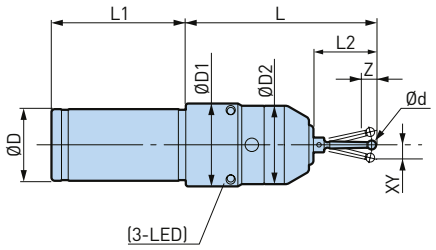
Point Master Series	576
Base Master Series	579
Tool Master / Accu Center	581
Alignment Tool for ATC Arm	582
Dyna Force	583
Dyna Test	584
Dyna Contact	586
Level Master	587
Centering Tool for Lathe	588

D1

Point Master Pro Series - Cylindrical Type

Point Master Pro Series is a precision 3-D touch sensor operating in non-conductive as well as conductive applications, resin, ceramic or coated workpieces, machines with ceramic spindle taper or bearings can all be accommodated.





Model	Order No.	Ød	ØD	ØD1	ØD2	L	L1	L2	Over-Travel XY	Over-Travel Z	Measuring Pressure (N) XY	Measuring Pressure (N) Z	Battery	Stylus (included)
PMP-10.	**978.976**	4	10	35	35	75	49	28	± 12	5	0.4	1.5	BR425	ST28-4R
PMP-20.	**961.237**	4	20	37	35	90	50	28	± 12	5	0.4	1.5	LR1 x 2	ST28-4R

1. PMP-10 has one LED only.
2. Above table indicates the specification when using stylus ST28-4R.
3. There is approx 5 µm lag in X and Y directions and approx. 2 µm lag in Z direction to illuminate LED lamp when stylus touches workpiece surface.
4. Battery is not included.

Point Master Pro Series - BBT Type

JIS B 6339 (BIG-PLUS®)

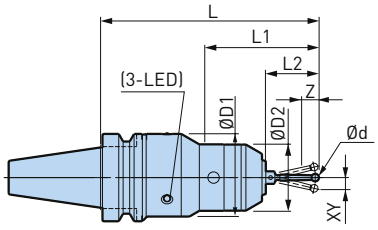


Fig. 1



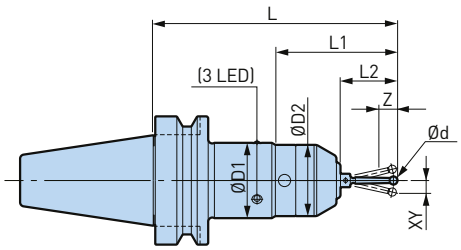


Fig. 2

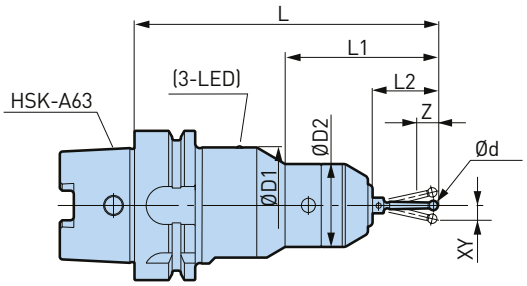
Model	Order No.	Fig.	Ød	ØD1	ØD2	L	L1	L2	Over-Travel XY	Over-Travel Z	Measuring Pressure (N) XY	Measuring Pressure (N) Z	Battery	Stylus (included)
BBT30-PMP-115.	**802.313**	1	4	46	35	115	63	28	± 12	5	0.4	1.5	CR2 x 1	ST28-4R
BBT40-PMP-120.	**804.649**	2	4	37	35	120	60	28	± 12	5	0.4	1.5	LR1 x 2	ST28-4R

1. Above table indicates the specification when using stylus ST28-4R.
2. There is approx 5 µm lag in X and Y directions and approx. 2 µm lag in Z direction to illuminate LED lamp when stylus touches workpiece surface.
3. Battery is not included.

Point Master Pro Series - HSK Type

Point Master Pro Series is a precision 3-D touch sensor operating in non-conductive as well as conductive applications, resin, ceramic or coated workpieces, machines with ceramic spindle taper or bearings can all be accommodated.



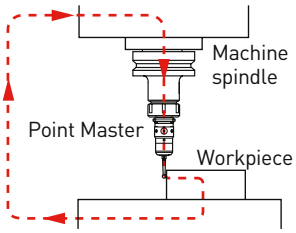


Model	Order No.	Ød	ØD1	ØD2	L	L1	L2	Over-Travel XY	Over-Travel Z	Measuring Pressure (N) XY	Measuring Pressure (N) Z	Battery	Stylus (included)
HSK-A63-PMP-130.	**804.656**	4	49	35	130	65	28	±12	5	0.4	1.5	CR2 x 1	ST28-4R

1. Above table indicates the specification when using stylus ST28-4R.
2. There is approx 5 µm lag in X and Y directions and approx. 2 µm lag in Z direction to illuminate LED lamp when stylus touches workpiece surface.
3. Battery is not included.

Point Master PMC Series

Point Master PMC series is ideal touch sensor for electric conductive materials. LED lamp illuminates when the stylus touches the workpiece. Stroke of stylus provides sufficient over-travel for safety.





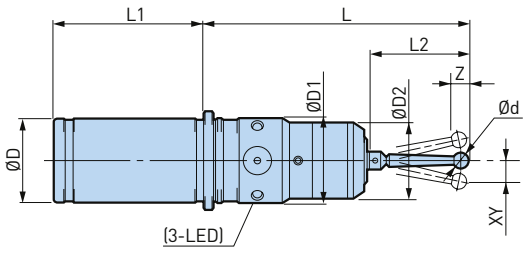


Fig. 1

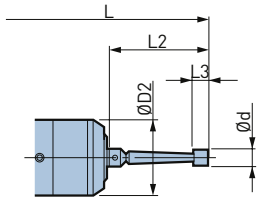


Fig. 2

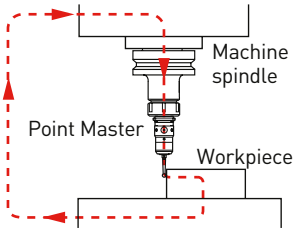
Model	Order No.	Fig.	Ød	ØD	ØD1	ØD2	L	L1	L2	Over-Travel XY	Over-Travel Z	Measuring Pressure (N) XY	Measuring Pressure (N) Z	Battery	Stylus (included)
PMC-20.	**961.238**	1	6	20	32	29	110	50	38	± 12	5	0.6	2.7	LR1 x 2	ST38-6P
PMC-20S	**804.658**	2	6	20	32	29	110	50	38	± 12	5	0.6	2.7	LR1 x 2	ST 38-6x6

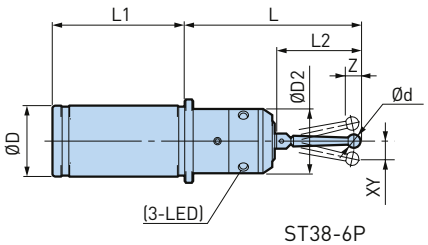
1. Measurement is not possible with non-conductive machine or workpiece.
2. Battery is not included.

Point Master PMG Series

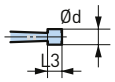
LED lamp illuminates when the stylus touches the workpiece.







ST38-6P



ST38-6x6

Model	Order No.	Ød	ØD	ØD2	L	L1	L2	L3	Over-Travel XY	Over-Travel Z	Measuring Pressure (N) XY	Measuring Pressure (N) Z	Battery	Stylus (included)
PMG-10.	**961.200**	6	10	29	75	50	38	6	± 12	5	0.6	2.7	BR435 x 1	ST38-6P
PMG-10S.	**804.662**	6	10	29	75	50	38	6	± 12	5	0.6	2.7	BR435 x 1	ST38-6x6
PMG-20.	**961.205**	6	20	29	90	50	38	6	± 12	5	0.6	2.7	LR1 x 2	ST38-6P
PMG-20S.	**961.206**	6	20	29	90	50	38	6	± 12	5	0.6	2.7	LR1 x 2	ST38-6x6

1. Measurement is not possible with non-conductive machine or workpiece.
2. Battery is not included.

Alternative Stylus

The stylus (M3 thread) is replaceable. Please replace when different model of stylus required or if damaged.



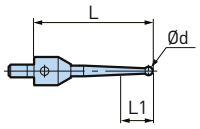


Fig. 1

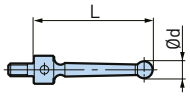


Fig. 2

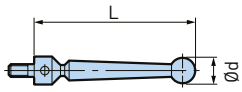


Fig. 3

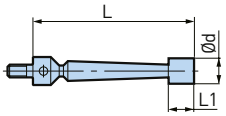


Fig. 4

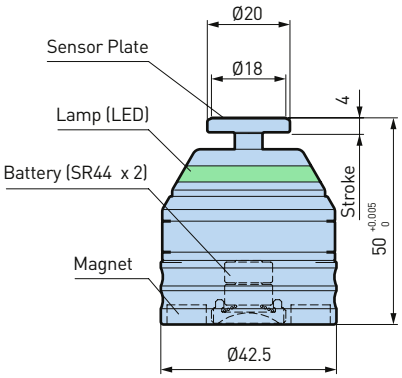
Model	Order No.	Fig.	Ød	L	L1	Material	Point Master Serie
ST28-1P	**802.222**	1	1	28	2	Carbide	PMC·PMP·PMG
ST28-2P	**802.223**	1	2	28	8	Carbide	PMC·PMP·PMG
ST28-3P	**972.309**	2	3	28	-	Carbide	PMC·PMP·PMG
ST28-4P	**972.311**	2	4	28	-	Carbide	PMC·PMP·PMG
ST28-4R	**972.310**	2	4	28	-	Ruby	PMP
ST38-6P	**972.304**	3	6	38	-	Steel (SUS)	PMC·PMG
ST38-6X6	**972.306**	4	6	38	6	Steel (SUS)	PMC·PMG

1. Stylus model ST38-6x6 is exclusive for PMC-20S and PMG-20S. Runout accuracy may worsen when used on other models.

Base Master- BM-50H

Base Master Series is a precision touch sensor to determine workpiece offsets and tool length. Mounted on workpiece surface or machine table, LED lamp illuminates immediately when the cutting edge touches the sensor plate and the position is detected.
The most popular Base Master model with 1µm accuracy. Operates when a conductive circuit is completed.





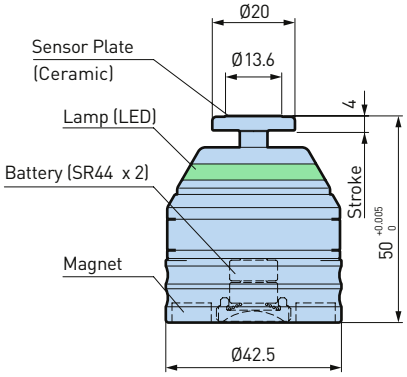
Model	Order No.
BM-50H.	807.713

1. Battery is not included.
2. Min. Measurable Cutting Tool Diameter is Ø 1 mm

Base Master- BM-50GH

Suitable for various tools and workpieces, including non-conductive materials such as ceramics.





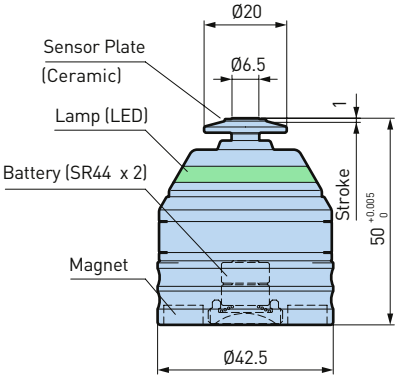
Model	Order No.
BM-50GH.	807.714

1. Battery is not included.
2. Min. Measurable Cutting Tool Diameter is Ø 1 mm

Base Master- BM-50MH

Specifically designed for micro cutting tools. Low measuring pressure protects the cutting edge.



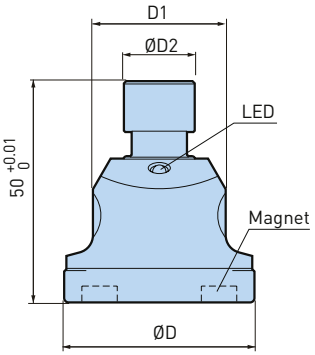


Model	Order No.
BM-50MH.	807.715

1. Battery is not included.
2. Min. Measurable Cutting Tool Diameter is Ø 0.05 mm

Base Master Series - Base Master Red

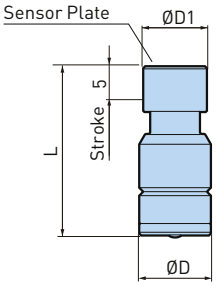




Model	Order No.	Ød1	ØD	ØD2	Sensor Stroke	Battery
BM-50R.	**805.675**	30	43	16	5	SR44 x 2

1. BM-MEG is included.
2. Battery is not included.



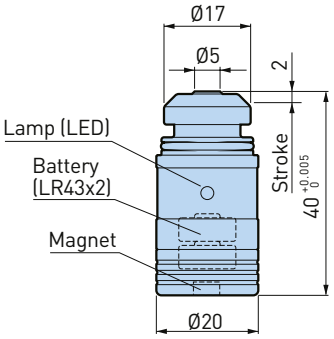


Base Master Red Sensor

Model	Order No.	Ød1	ØD	L	Sensor Stroke	Battery
BM-MEG	**805.674**	16	18	42.5	5	SR44 x 2

Base Master Series - Base Master Mini



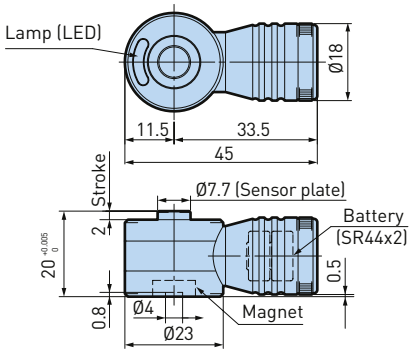


Model	Order No.	Battery
BMM-20D.	**807.718**	LR43 x 2

1. Battery is not included.

Base Master Mini for Swiss Lathe Machines





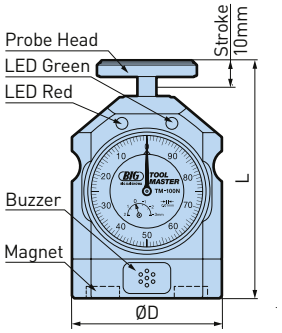
Model	Order No.	Battery
BMM-20H.	**807.711**	SR44 x 2

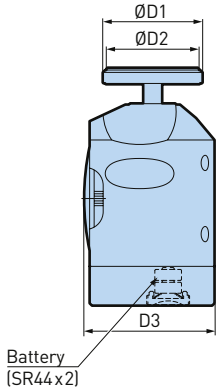
1. Battery is not included.

Tool Master

Tool Master is a precision touch sensor with a large dial gauge.





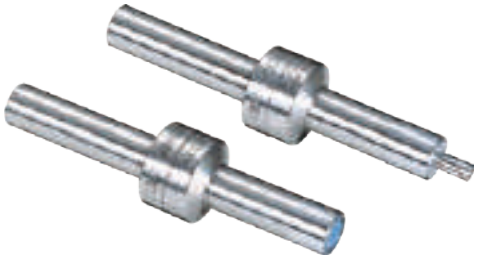


Model	Order No.	ØD	ØD1	ØD2	ØD3	L	Battery
TM-100N.	**961.347N**	63	42	39	54.8	92 - 102	SR44 x 2

1. Battery is not included.

Accu Center

Accu Center is a simple and precise edge finder offering repeatability within 3 µm.
Hard chrome plated stylus offers extended life.





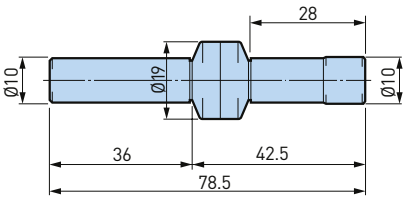


Fig. 1

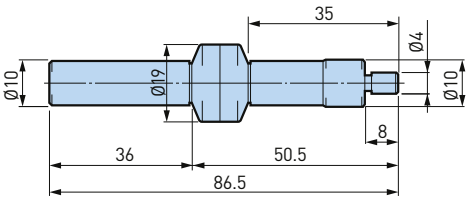


Fig. 2

Model	Order No.	Fig.
ACCU-C10	**800.483**	1
ACCU-C104	**800.484**	2

Batteries

Model	Order No.	Accessories for
ETLBAT-LR1	**961.207**	Point Master Series
ETLBAT-CR2	**805.543**	Point Master Series
ETLBAT-LR43	**961.214**	Base Master Series
ETLBAT-435	**961.210**	Point Master Series
ETLBAT-SR44-1.55V	**961.202**	Point Master Series, Base Master Series
ETLBAT-BR425-3V	**807.165**	Lathe Master Series

Alignment Tool for ATC arm

Maintenance of machine tool spindle. Measuring equipment for re-aligning ATC arm and machine tool spindle or tool magazine.



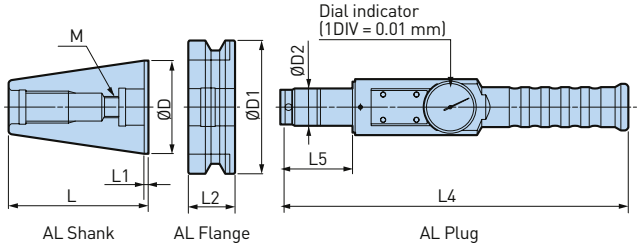


Fig. 1

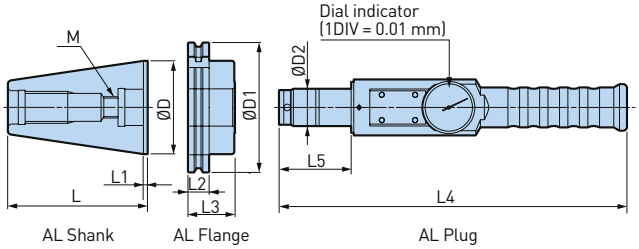


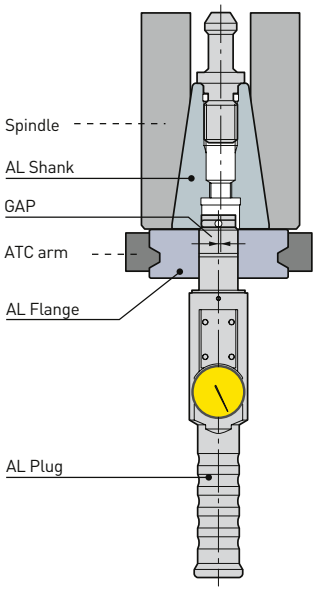
Fig. 2

Model	Order No.	Fig.	ØD	ØD1	ØD2	L	L1	L2	L3	L4	L5	M
BT30-ATC18	**978.238**	1	31.75	46	18	50.4	2	20	-	251	44	12
BT40-ATC20	**978.237**	1	44.45	63	20	67.4	2	25	-	251	44	12
BT50-ATC28	**978.236**	1	69.85	100	28	104.8	3	35	-	261	54	16
DV40-ATC20	**801.042**	2	44.45	63.55	20	71.6	3.2	15.9	24.3	251	44	12
DV50-ATC28	**801.043**	2	69.85	97.5	28	104.95	3.2	15.9	35.3	261	54	16

1. For HSK is also available upon request. Please contact BIG KAISER agent.



Exclusive storage case



Dyna Force

Measuring device for pulling force of machine tool spindle.



Measuring device

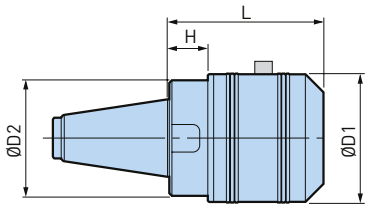


Fig. 1

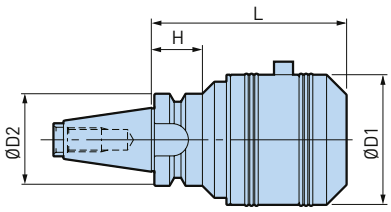
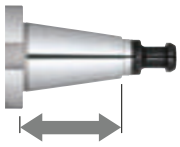
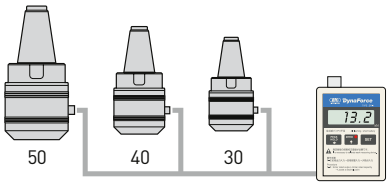


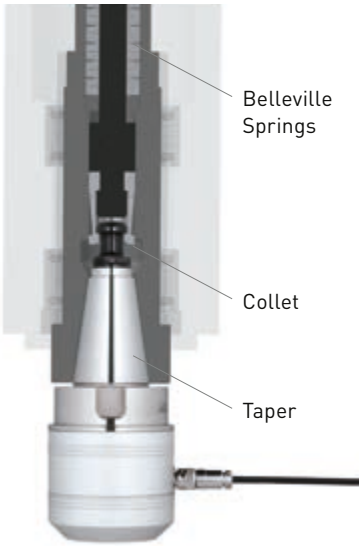
Fig. 2

Longer taper shank to enhance reliability
Long taper supports itself in long span and stabilizes the value of measurement.



Only one display for all taper sizes
One common display can be used for all taper sizes.





Model	Order No.	Fig.	ØD1	ØD2	L	H	Taper Size
SNT30-DF10	**805.845**	1	65	58	80	20	ISO 30
SBT30-DF10	**805.442**	2	65	46	98	26	ISO 30
SNT40-DF30	**804.949**	1	73	66	90	24	ISO 40
SNT50-DF30	**805.846**	1	73	70	86	20	ISO 50
SNT50-DF50	**805.423**	1	96	90	110	33	ISO 50

1. Each component is also available separately. Please contact BIG KAISER agent if individual component is required.
2. Pull stud bolt is to be ordered separately. For DIN, ISO, ANSI & CAT standard machines, exclusive pull stud bolt for dyna force is required.

Display



Cable



Case



Exclusive Pullstud Bolts for Dyna Force

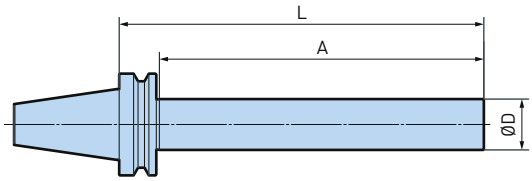
An exclusive pullstud bolt is needed for a machine spindle in DIN, ANSI or CAT standard. Pullstud bolts in MAS and JIS standards can be used. These pullstud bolts are not suitable for the SBT30-DF10.

Model	Order No.	Connection	Taper Size
DF-PDV30	**804.683**	DIN 69872	ISO 30
DF-PAV30	**804.680**	ANSI B5.50	ISO 30
DF-PCV30	**804.684**	ASME B5.50	ISO 30
DF-PDV40A	**804.685**	DIN 69872;ISO 7388 Typ A	ISO 40
DF-PAV40	**804.681**	ISO 7388 Typ B;ANSI B5.50	ISO 40
DF-PCV40	**804.687**	ASME B5.50	ISO 40
DF-PDV50A	**804.686**	DIN 69872;ISO 7388 Typ A	ISO 50
DF-PAV50	**804.682**	ISO 7388 Typ B;ANSI B5.50	ISO 50
DF-PCV50	**804.688**	ASME B5.50	ISO 50

Dyna Test BIG-PLUS BT Type

Periodic inspection of the machine spindle to control production stability. Shorter models are ideal for measuring ATC repeatability.



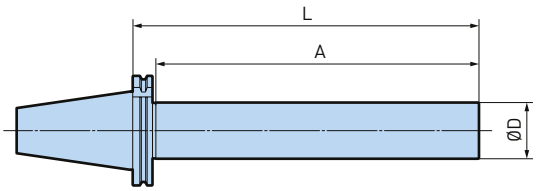


Model	Order No.	ØD	L	A
BBT30-32-L150	**800.054**	32	150	125
BBT30-32-L235	**961.264**	32	235	210
BBT40-50-L200	**800.065**	50	200	170
BBT40-50-L350	**978.119**	50	350	320
BBT50-50-L200	**800.184**	50	200	159
BBT50-50-L360	**978.290**	50	360	319

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. Taper length is in accordance with JIS BT standard.

Dyna Test BIG-PLUS DV Type



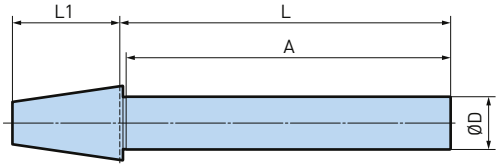


Model	Order No.	ØD	L	A
BDV40-50-L200SD	**802.835**	50	200	170
BDV40-50-L340SD	**802.834**	50	340	310
BDV50-50-L200SD	**802.833**	50	200	178
BDV50-50-L340SD	**961.269**	50	340	318

1. BIG-PLUS® tools can be used in machining centers with non BIG-PLUS® spindles.
2. The drive key slot are symmetrical to allow BDV dyna test bar to be indexed 180 degrees.

Dyna Test Basic Type



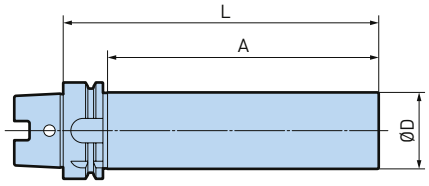


Model	Order No.	ØD	L	L1	A
NT30-32-L150	**801.759**	32	150	48.4	142
NT30-32-L225	**978.253**	32	225	48.4	217
NT40-50-L200	**801.760**	50	200	65.4	184
NT40-50-L335	**801.761**	50	335	65.4	319
NT50-50-L200	**801.762**	50	200	101.8	191
NT50-50-L335	**801.763**	50	335	101.8	326

1. For use on DV spindle, please use DF-PDV Pull Stud Bolt on the previous page.

Dyna Test HSK

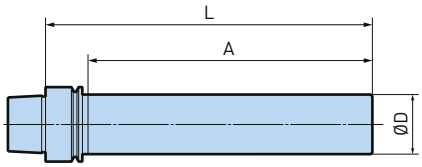




Dyna Test HSK-A Type

Model	Order No.	ØD	L	A
HSK-A40-32-L180SD	**801.169**	32	180	157
HSK-A50-32-L240SD	**978.198**	32	240	211
HSK-A63-50-L200SD	**801.180**	50	200	171
HSK-A63-50-L350SD	**978.222**	50	350	321
HSK-A100-50-L200SD	**801.072**	50	200	168
HSK-A100-50-L350SD	**801.073**	50	350	318

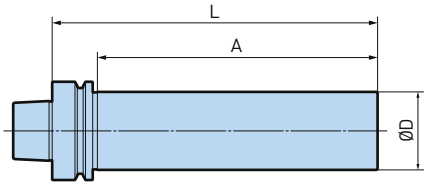
1. The drive key slots are symmetrical to allow the HSK form A dyna test bar to be indexed 180 degrees.
2. DIN 69893-1 & ISO 12164-1



Dyna Test HSK-E Type

Model	Order No.	ØD	L	A
HSK-E25-20-L175	**978.307**	20	175	163
HSK-E32-20-L180	**802.831**	20	180	158
HSK-E40-32-L180	**978.178**	32	180	157
HSK-E50-32-L240	**979.140**	32	240	211

1. DIN 69893-5

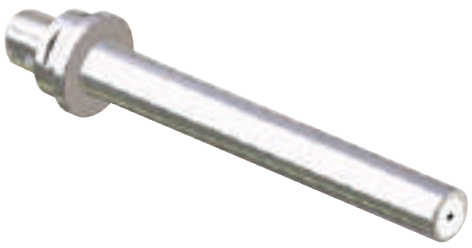


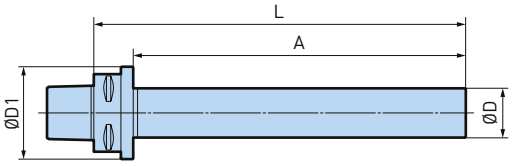
Dyna Test HSK-F Type

Model	Order No.	ØD	L	A
HSK-F63-50-L200	**802.830**	50	200	171
HSK-F63-50-L350	**802.832**	50	350	321

1. DIN V 69893-6

Dyna Test BIG CAPTO Type



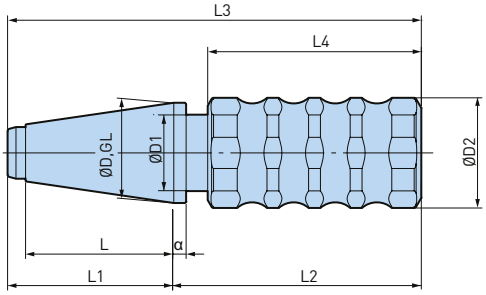


Model	Order No.	ØD	ØD1	L	A
C5-40-L250	**800.045**	40	63	280	250
C6-40-L200	**973.737**	40	75	232	200
C6-40-L320	**973.738**	40	75	352	320
C8-40-L200	**973.739**	40	75	240	197
C8-40-L320	**973.740**	40	85	360	320

Dyna Contact

A ceramic taper gauge allowing inspection of machine spindle tapers at a glance.







Supplied in Aluminium Case

Model	Order No.	ØD	ØD1	ØD2	L	L1	L2	L3	L4	α	Taper Size
DC-30P	**806.806**	31.75	23	36	48.4	56.4	106.6	163	93.6	6	30
DC-40P	**806.807**	44.45	34	36	65.4	73.4	110.6	184	95	6	40
DC-50P	**806.808**	69.85	49	49	101.8	111.8	113.2	225	95	8	50

1. It can be used for BBT (BT=JISB 6339), BDV (DV=DIN 69871) and BCV (CV = ANSI)

Level Master

2-axis simultaneous detection leveler. LED displays level conditions for both axis simultaneously.
LED and buzzer indication when leveling is completed.

Wireless

Standard Type



Model	Order No.
LVM-01	801.673

Wireless Type



Body



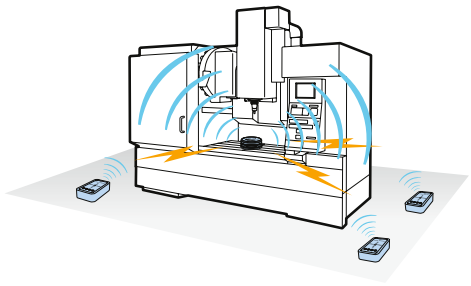
Receiver

Model	Order No.
LVM-WL.	806.805



1. Body and receiver are available only as a set.
2. Battery (LR03) is not included.
3. In the case of high precision leveling, we recommend to check the Level Master in advance on a reference level, such as a level block.

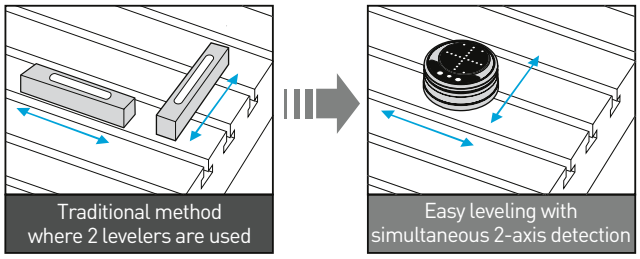
Remote Work solution Wireless Type
Easy and quick leveling with a single operator.



Supplied in Aluminium Case



Simultaneous 2-axis detection



LED & buzzer indicate leveling completion

High Mode

when the required level condition is within 0.01 mm / 1 m

Low Mode

when the required level condition is within 0.1 mm / 1 m

LED (blue) & buzzer are simultaneously activated

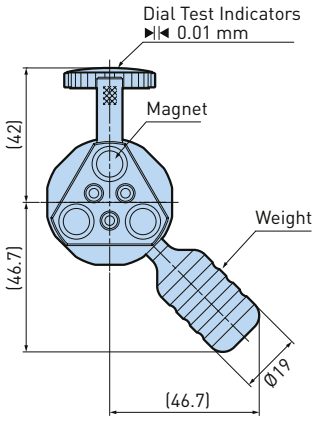
D.1

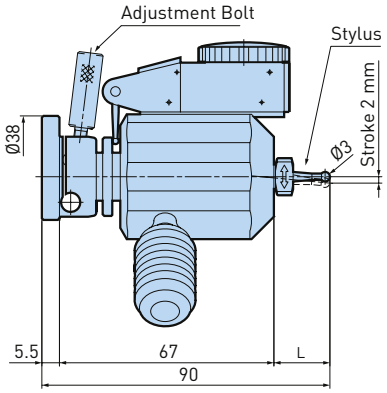
Centering Tool for Lathes

Easy Centering with Static Dial Gauge







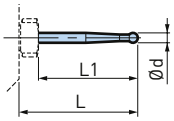


Model	Order No.	Min. Scale	max. min-1	Stylus (included)
CTL-90	**806.436**	0.01 mm	50	ST3-CT90

1. Stylus ST3-CT90 is included.

Stylus for CTL-90



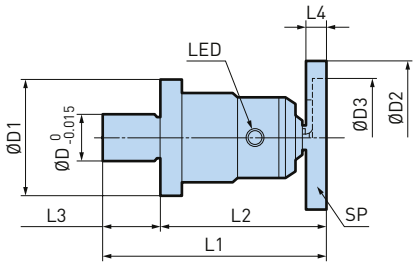


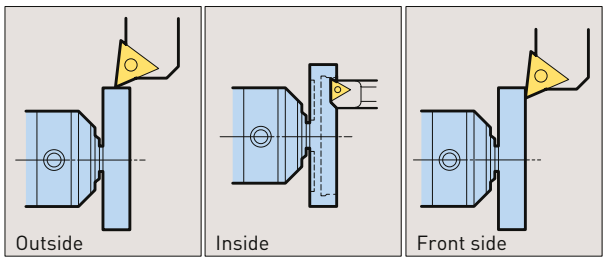
Model	Order No.	Ød	L	L1	Material
ST3-CT90	**806.437**	3	17.5	11.5	Ruby
ST3-CT90L	**806.912**	3	37.5	31.5	Ruby

Lathe Master

Tool setting without measuring cut.







Model	Order No.	ØD	ØD1	ØD2	ØD3	L1	L2	L3	L4	Repeatable Accuracy	Battery
LM-15	**806.997**	15	40	50	40	75	55	20 ±0.02	8	±2μ	BR425 x 1
LM-30	**805.397**	30	40	50	40	65	45	20 ±0.02	8	±2μ	SR44 x 2

1. Machines and tools must be electrically conductive.
2. Clamp the shank (ØD) of the Lathe Master in the collet chuck of the lathe. The LED lights up as soon as the tip of the tool touches the sensor plate.
3. Battery is not included.



Special pen type BR-425 for LM-15



2 x SR-44 Battery for LM-30

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
100237.001.0	0.570	351	309.301	0.220	447	318.435	4.000	463	323.776N	4.950	95	324.572N	5.750	192
100237.002.0	0.570	351	309.401	0.400	447	318.441	1.280	463	323.777	5.400	95	324.575N	11.930	192
100570.001.0	0.100	314	309.501	0.850	447	318.442	1.500	463	323.780	3.000	262	325.933	3.750	144
100763.001.0	0.006	503	309.601	1.850	447	318.443	1.500	463	323.781	3.850	262	325.942	3.650	144
101123.001.0	6.800	205	310.020	0.030	448	318.444	1.500	463	323.821N	1.100	142	325.944	4.250	144
101123.002.0	6.800	205	310.030	0.050	448	319.101	0.050	383	323.825	0.920	142	325.952	3.800	144
101124.001.0	6.300	112	310.101	0.080	439	319.150	0.001	500	323.826	1.150	142	325.954	4.700	144
101124.002.0	13.800	112	310.201	0.130	439	319.201	0.110	383	323.831N	1.300	91	325.955	4.550	144
101126.001.0	2.000	308	310.301	0.210	439	319.250	0.005	500	323.832N	0.990	91	325.964	4.700	145
101126.002.0	2.400	308	310.305A	0.220	446	319.301	0.190	383	323.860N	3.350	142	325.965	5.500	144
101126.003.0	3.400	308	310.401	0.400	439	319.350	0.001	500	323.861N	4.450	142	326.005	0.600	145
101126.004.0	4.100	308	310.405A	0.410	446	319.401	0.360	383	323.862	7.000	142	326.011	1.200	144
101127.001.0	1.900	297	310.501	0.820	439	319.450	0.001	500	323.864N	4.920	142	326.021	1.200	144
101127.002.0	2.300	297	310.505A	0.810	446	319.501	0.660	383	323.865N	7.000	142	326.031	1.300	144
101127.003.0	3.300	297	310.601	1.650	439	319.550	0.002	500	323.866N	13.200	142	326.041	1.300	144
101127.004.0	4.000	297	310.602	2.400	439	319.601	1.180	383	323.868	3.250	142	326.050	0.920	145
101128.001.0	1.200	297	310.605A	1.700	446	319.601N	1.180	383	323.871N	4.900	92	326.054	2.550	144
101128.002.0	1.800	297	310.606A	1.730	446	319.602	1.900	383	323.874N	3.950	92	326.057	1.100	144
101129.001.0	1.300	308	310.607A	1.250	446	319.602N	1.900	383	323.875	7.370	92	326.064	2.750	144
101129.002.0	1.900	308	310.608A	1.750	446	319.603	2.520	383	324.111F	0.220	222	326.141	1.180	95
112.097A	2.150	417	310.701	3.850	439	319.603N	2.520	383	324.112F	0.220	191	326.153	1.850	95
112.097C	2.150	417	310.705A	1.700	446	319.604N	0.550	384	324.121F	0.200	222	326.160	0.990	95
112.107	1.370	399	310.706A	1.830	446	319.605N	0.850	384	324.131F	0.260	222	326.163	2.200	95
112.108	1.100	399	310.708	5.360	439	319.607N	1.300	384	324.132F	0.260	191	328.032N	3.100	243
112.110	1.300	398	310.820	0.110	437	319.650	0.005	500	324.141F	0.360	222	328.033N	1.350	243
112.121	1.770	399	310.840	0.330	437	319.701	3.100	383	324.142F	0.340	191	328.034	0.970	243
112.122	1.890	399	310.850	0.780	437	319.701N	3.100	383	324.231F	0.460	222	328.035	0.940	243
112.123	1.710	399	310.860	1.650	437	319.702	4.500	383	324.232F	0.440	191	328.036	0.880	243
112.126A	1.700	398	310.865	2.430	437	319.702N	4.500	383	324.241F	0.520	222	328.037	0.780	243
112.205	0.260	419	310.870	3.950	437	319.703	5.600	383	324.242F	0.500	191	328.037N	0.850	243
112.206	0.260	419	315.751	0.024	500	319.703N	5.600	383	324.251F	0.710	222	328.053N	2.420	243
112.207	0.310	419	317.193	0.001	509	319.705N	1.600	384	324.252F	0.660	191	328.086	3.700	456
112.271	0.025	504	317.285	0.850	460	319.706N	1.920	384	324.312F	0.730	191	328.151F	0.220	222
112.272	0.035	504	318.101	0.820	444	319.707N	2.300	384	324.322F	0.830	191	328.162	3.800	456
112.301A	0.540	419	318.104	0.800	457	319.750	0.005	500	324.331	0.850	191	328.210	3.800	456
112.303A	0.880	419	318.105	0.840	457	321.451	1.000	262	324.331F	0.850	191	328.211	3.740	456
112.304A	0.540	419	318.107	0.830	457	321.462	1.090	262	324.332	1.120	191	328.213	7.500	465
112.306	0.670	418	318.201	2.750	456	322.563	1.800	262	324.341	1.150	191	328.214	7.500	465
112.310	0.400	418	318.201N	2.800	456	323.563	2.060	262	324.341F	1.150	191	328.215	7.500	465
112.353	0.048	504	318.202	2.730	456	323.701	0.380	144	324.342	1.300	191	328.216	2.600	465
112.371	0.010	504	318.202N	2.730	456	323.703	0.350	145	324.352	0.960	191	328.217N	4.740	465
112.381	0.001	500	318.205	1.830	456	323.705	0.390	95	324.352F	0.960	191	328.218F	0.400	222
112.385	0.096	504	318.205N	1.830	456	323.707	0.350	95	324.353	1.320	191	328.223	0.590	243
112.503	0.030	433	318.206	2.320	456	323.721	1.130	145	324.354	1.940	191	328.224	0.600	243
112.504	0.030	433	318.206N	2.320	456	323.722	2.060	144	324.361	1.250	191	328.226	0.600	243
112.505	0.130	430	318.222	1.500	456	323.726N	1.120	144	324.361F	1.250	191	328.228	7.500	94
112.506	0.150	430	318.223	2.040	456	323.728	0.820	144	324.361N	1.250	191	328.230	12.100	94
112.507	0.050	431	318.224	2.620	456	323.730	1.200	95	324.362	1.820	191	328.233	7.500	143
112.508	0.030	433	318.225	3.210	456	323.731	1.320	95	324.367N	3.230	191	328.235	12.100	143
112.804	0.016	504	318.226	3.900	456	323.735N	1.300	95	324.461	1.950	191	328.238	6.500	193
112.806	0.160	414	318.227	4.400	456	323.736N	1.300	95	324.531	2.450	192	328.240	11.200	193
112.837	2.570	417	318.240	1.100	456	323.738	0.960	95	324.541	2.870	192	328.249F	0.050	222
112.837A	2.570	417	318.261	1.210	460	323.760	3.400	145	324.551	2.900	192	328.257F	0.160	222
112.837B	2.570	417	318.421	14.660	463	323.761	4.600	145	324.552	3.770	192	328.260	0.550	91
112.837C	2.570	417	318.422	21.450	463	323.765N	3.450	144	324.561	2.900	192	328.261	0.750	91
112.837E	2.570	417	318.423	33.000	463	323.766N	4.750	144	324.561N	2.800	192	328.262	0.700	91
188.133	0.190	432	318.424	55.000	463	323.767N	4.850	144	324.563	3.450	192	328.272	0.640	91
188.134	0.190	432	318.425	90.000	463	323.768N	7.200	144	324.563N	3.350	192	328.273	0.600	243
195.001	0.001	500	318.431	2.110	463	323.769N	13.700	144	324.566N	6.000	192	328.277F	0.220	191
195.003	0.001	500	318.432	2.900	463	323.770	4.000	95	324.571	4.050	192	328.278F	0.200	191
195.007	0.001	500	318.433	3.000	463	323.771	5.000	95	324.571N	4.100	192	328.279F	0.180	191
309.201	0.120	447	318.434	3.400	463	323.775N	3.900	95	324.572	5.800	192	328.280F	0.140	222

Both 6-digit and 10-digit are official order No.

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
328.281F	0.080	**222**	**332.530**	0.670	**252**	**335.245**	0.900	**256**	**335.903**	2.100	**445**	**336.757**	2.600	**547**
328.289	0.900	**91**	**332.531**	0.440	**252**	**335.246**	0.920	**256**	**335.904**	1.750	**445**	**336.759**	2.950	**547**
328.308	0.480	**91**	**332.541**	0.540	**252**	**335.247**	1.050	**256**	**335.905**	1.450	**445**	**336.761**	2.840	**547**
328.321	0.850	**243**	**332.545**	0.700	**252**	**335.248**	1.660	**256**	**335.906**	2.700	**445**	**336.905**	0.020	**514**
328.322	0.940	**243**	**332.610**	0.910	**252**	**335.249**	0.800	**256**	**335.912**	0.850	**445**	**337.316**	0.740	**546**
328.370	1.900	**246**	**332.611**	0.790	**252**	**335.250**	2.900	**256**	**335.913**	0.400	**445**	**337.317**	0.750	**546**
328.371	1.900	**246**	**332.620**	0.800	**252**	**335.251**	3.400	**256**	**335.915**	0.200	**445**	**337.318**	0.760	**546**
328.372	2.000	**246**	**332.621**	0.700	**252**	**335.320**	0.470	**449**	**336.171**	0.410	**548**	**337.319**	0.760	**546**
328.373	2.100	**246**	**332.630**	0.960	**252**	**335.321**	0.740	**449**	**336.172**	0.480	**548**	**337.320**	0.780	**546**
328.374	2.100	**246**	**332.631**	0.750	**252**	**335.322**	0.950	**449**	**336.173**	0.580	**548**	**337.321**	0.780	**546**
328.375	2.200	**246**	**332.632**	1.200	**252**	**335.323**	0.860	**449**	**336.174**	0.690	**548**	**337.322**	0.800	**546**
328.376	2.200	**246**	**332.641**	0.820	**252**	**335.324**	1.100	**449**	**336.175**	0.840	**548**	**337.323**	0.820	**546**
328.378	5.100	**305**	**332.642**	1.450	**252**	**335.325**	1.750	**449**	**336.301**	1.160	**549**	**337.324**	0.840	**546**
328.379	5.100	**305**	**332.645**	1.050	**252**	**335.326**	1.810	**449**	**336.302**	1.070	**549**	**337.325**	0.860	**546**
328.380	3.300	**304**	**332.651**	0.840	**252**	**335.327**	3.650	**449**	**336.303**	3.330	**549**	**337.326**	0.880	**546**
328.419	2.400	**246**	**332.652**	1.950	**252**	**335.328**	3.690	**449**	**336.304**	3.850	**549**	**337.327**	0.920	**546**
328.420	3.100	**246**	**332.655**	1.230	**252**	**335.329**	5.400	**449**	**336.309**	1.200	**549**	**337.328**	0.940	**546**
328.421	3.300	**246**	**332.741**	1.500	**252**	**335.330**	7.150	**449**	**336.310**	2.900	**549**	**337.329**	0.960	**546**
328.422	3.900	**246**	**332.745**	1.730	**252**	**335.331**	2.500	**449**	**336.569**	3.300	**547**	**337.330**	0.990	**546**
329.866	0.480	**95**	**332.750**	2.460	**252**	**335.380**	0.570	**449**	**336.631**	0.930	**547**	**337.416**	0.750	**546**
331.110	0.050	**253**	**332.751**	1.650	**252**	**335.381**	0.810	**449**	**336.632**	0.920	**547**	**337.417**	0.750	**546**
331.111	0.070	**253**	**332.755**	2.010	**252**	**335.382**	1.000	**449**	**336.633**	1.000	**547**	**337.418**	0.780	**546**
331.220	0.100	**253**	**332.765**	2.250	**252**	**335.383**	0.700	**449**	**336.634**	0.980	**547**	**337.419**	0.790	**546**
331.221	0.150	**253**	**332.765N**	2.250	**252**	**335.384**	0.970	**449**	**336.635**	0.960	**547**	**337.420**	0.800	**546**
331.330	0.160	**253**	**332.766**	2.900	**252**	**335.385**	1.300	**449**	**336.636**	1.030	**547**	**337.421**	0.800	**546**
331.331	0.250	**253**	**332.870N**	1.110	**254**	**335.386**	1.050	**449**	**336.637**	1.150	**547**	**337.422**	0.830	**546**
331.440	0.350	**253**	**332.875N**	1.660	**254**	**335.387**	1.530	**449**	**336.638**	1.140	**547**	**337.423**	0.860	**546**
331.445	0.470	**253**	**335.021**	0.080	**551**	**335.388**	2.050	**449**	**336.639**	1.160	**547**	**337.424**	0.880	**546**
331.550	0.850	**253**	**335.022**	0.260	**551**	**335.389**	1.230	**449**	**336.640**	1.160	**547**	**337.425**	0.900	**546**
331.555	1.210	**253**	**335.023**	0.710	**551**	**335.390**	1.770	**449**	**336.641**	1.190	**547**	**337.426**	0.960	**546**
331.660	1.360	**253**	**335.024**	2.680	**551**	**335.391**	2.400	**449**	**336.642**	1.220	**547**	**337.427**	1.000	**546**
331.660N	1.360	**253**	**335.042**	1.350	**258**	**335.420**	0.260	**257**	**336.643**	1.330	**547**	**337.428**	1.020	**546**
331.665	2.200	**253**	**335.044**	1.520	**258**	**335.421**	0.350	**257**	**336.644**	1.350	**547**	**337.429**	1.060	**546**
331.665N	2.200	**253**	**335.066**	1.240	**258**	**335.423**	0.420	**257**	**336.645**	1.400	**547**	**337.430**	1.100	**546**
331.775	4.400	**253**	**335.070**	0.080	**560**	**335.424**	0.510	**257**	**336.647**	1.460	**547**	**389.365**	1.250	**253**
331.775N	4.400	**253**	**335.071**	0.180	**560**	**335.425**	0.640	**257**	**336.649**	1.590	**547**	**389.366**	2.550	**253**
331.776	7.250	**253**	**335.072**	0.310	**560**	**335.430**	0.700	**257**	**336.651**	1.750	**547**	**389.367**	5.180	**253**
331.776N	7.250	**253**	**335.073**	0.280	**560**	**335.430N**	0.700	**257**	**336.653**	1.770	**547**	**395.161**	0.010	**504**
331.860N	0.550	**254**	**335.074**	0.450	**560**	**335.431**	0.770	**257**	**336.655**	2.150	**547**	**395.170**	0.020	**504**
331.861N	0.800	**254**	**335.077**	3.860	**258**	**335.431N**	0.770	**257**	**336.657**	2.000	**547**	**470.108**	1.800	**399**
331.864N	0.450	**254**	**335.130**	0.130	**259**	**335.432**	0.930	**257**	**336.659**	2.090	**547**	**470.301**	0.300	**440**
331.865N	0.950	**254**	**335.131**	0.230	**259**	**335.433**	1.300	**257**	**336.661**	2.270	**547**	**470.401**	0.580	**440**
331.867N	0.520	**254**	**335.132**	0.240	**259**	**335.434**	1.750	**257**	**336.731**	0.990	**547**	**470.501**	1.120	**440**
331.868N	0.820	**254**	**335.140**	0.590	**259**	**335.435**	2.100	**257**	**336.732**	1.010	**547**	**470.601**	2.190	**440**
331.870N	1.410	**254**	**335.142**	0.740	**259**	**335.436**	2.500	**257**	**336.733**	1.040	**547**	**470.602**	2.890	**440**
331.871N	2.190	**254**	**335.164**	1.150	**259**	**335.531**	0.440	**261**	**336.734**	1.100	**547**	**470.801**	5.200	**440**
331.874N	0.950	**254**	**335.165**	1.700	**259**	**335.532**	0.560	**261**	**336.735**	1.190	**547**	**472.051**	0.260	**382**
331.875N	2.000	**254**	**335.230**	0.280	**256**	**335.541**	0.820	**261**	**336.736**	1.240	**547**	**472.052**	0.005	**382**
331.876N	3.100	**254**	**335.231**	0.300	**256**	**335.542**	0.940	**261**	**336.737**	1.250	**547**	**472.061**	0.280	**382**
331.877N	1.530	**254**	**335.232**	0.390	**256**	**335.551**	1.700	**261**	**336.738**	1.270	**547**	**472.062**	0.007	**382**
331.878N	3.000	**254**	**335.233**	0.550	**256**	**335.552**	1.850	**261**	**336.739**	1.400	**547**	**472.201**	0.300	**386**
331.879N	2.250	**254**	**335.234**	0.410	**256**	**335.561**	3.300	**261**	**336.740**	1.370	**547**	**472.301**	0.300	**386**
332.210	0.090	**252**	**335.235**	0.420	**256**	**335.562**	4.050	**261**	**336.741**	1.380	**547**	**472.401**	0.550	**386**
332.310	0.150	**252**	**335.236**	0.540	**256**	**335.563**	5.800	**261**	**336.742**	1.600	**547**	**472.501**	1.100	**386**
332.320	0.160	**252**	**335.237**	0.670	**256**	**335.571**	9.500	**261**	**336.743**	1.520	**547**	**472.601**	2.100	**386**
332.410	0.230	**252**	**335.238**	0.690	**256**	**335.625**	0.350	**373**	**336.744**	1.560	**547**	**472.602**	2.170	**386**
332.420	0.250	**252**	**335.239**	0.790	**256**	**335.762**	0.870	**261**	**336.745**	1.600	**547**	**472.701**	4.900	**386**
332.430	0.300	**252**	**335.240**	0.610	**256**	**335.763**	1.550	**261**	**336.747**	1.750	**547**	**472.703**	5.900	**386**
332.510	0.440	**252**	**335.241**	0.630	**256**	**335.764**	0.500	**260**	**336.749**	1.920	**547**	**490.106**	0.880	**150**
332.511	0.440	**252**	**335.242**	0.690	**256**	**335.768**	0.780	**260**	**336.751**	2.000	**547**	**490.108**	0.900	**150**
332.520	0.550	**252**	**335.243**	0.820	**256**	**335.769**	1.000	**260**	**336.753**	2.400	**547**	**490.110**	0.980	**150**
332.521	0.420	**252**	**335.244**	0.840	**256**	**335.902**	2.750	**445**	**336.755**	2.430	**547**	**490.112**	1.070	**150**

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
490.114	1.080	**150**	**613.310**	0.008	**406**	**615.218**	0.060	**407**	**615.369**	0.105	**423**	**615.561**	0.003	**433**
490.116	1.270	**150**	**613.323**	0.020	**400**	**615.219**	0.140	**407**	**615.370**	0.120	**423**	**615.562**	0.003	**433**
490.118	1.280	**150**	**613.324**	0.065	**400**	**615.220**	0.020	**413**	**615.371**	0.170	**423**	**615.563**	0.003	**433**
490.120	1.320	**150**	**613.325**	0.060	**400**	**615.221**	0.300	**407**	**615.372**	0.200	**423**	**615.564**	0.003	**433**
490.125	2.410	**150**	**613.326**	0.060	**400**	**615.223**	0.100	**407**	**615.373**	0.260	**423**	**615.565**	0.003	**433**
490.132	2.600	**150**	**613.327**	0.060	**400**	**615.224**	0.200	**407**	**615.374**	0.070	**423**	**615.566**	0.003	**433**
490.206	2.670	**150**	**613.404**	0.050	**406**	**615.225**	0.140	**407**	**615.375**	0.100	**423**	**615.571**	0.003	**433**
490.208	2.710	**150**	**613.405**	0.050	**406**	**615.226**	0.125	**407**	**615.376**	0.130	**423**	**615.572**	0.003	**433**
490.210	2.810	**150**	**613.406**	0.045	**406**	**615.227**	0.260	**407**	**615.377**	0.170	**423**	**615.573**	0.003	**433**
490.212	2.940	**150**	**613.407**	0.045	**406**	**615.228**	0.040	**413**	**615.378**	0.220	**423**	**615.574**	0.004	**433**
490.214	2.980	**150**	**613.408**	0.040	**406**	**615.229**	0.400	**407**	**615.387B**	0.140	**415**	**615.575**	0.004	**433**
490.216	3.040	**150**	**613.409**	0.040	**406**	**615.230**	0.030	**413**	**615.388**	0.040	**415**	**615.580**	0.020	**431**
490.218	3.050	**150**	**613.410**	0.035	**406**	**615.231**	0.040	**413**	**615.390**	0.340	**416**	**615.581**	0.020	**431**
490.220	3.110	**150**	**613.411**	0.029	**406**	**615.232**	0.093	**407**	**615.392**	0.012	**414**	**615.582**	0.020	**431**
490.225	3.850	**150**	**613.412**	0.025	**406**	**615.233**	0.250	**407**	**615.394**	0.050	**412**	**615.583**	0.020	**431**
490.232	4.500	**150**	**613.413**	0.018	**406**	**615.234**	0.065	**407**	**615.395**	0.050	**412**	**615.584**	0.020	**431**
490.240	5.500	**150**	**613.414**	0.015	**406**	**615.239**	0.170	**407**	**615.401**	0.015	**413**	**615.585**	0.023	**431**
490.506	0.990	**141**	**613.422**	0.125	**400**	**615.240**	0.215	**407**	**615.402**	0.015	**413**	**615.586**	0.023	**431**
490.508	0.980	**141**	**613.423**	0.120	**400**	**615.243**	0.155	**407**	**615.403**	0.015	**413**	**615.587**	0.024	**431**
490.510	1.050	**141**	**613.424**	0.130	**400**	**615.250**	0.140	**407**	**615.404**	0.015	**413**	**615.588**	0.024	**431**
490.512	1.030	**141**	**613.425**	0.130	**400**	**615.251**	0.250	**407**	**615.405**	0.015	**413**	**615.589**	0.025	**431**
490.514	1.080	**141**	**613.426**	0.120	**400**	**615.252**	0.300	**423**	**615.406**	0.015	**413**	**615.590**	0.003	**433**
490.516	1.060	**141**	**613.427**	0.120	**400**	**615.253**	0.450	**423**	**615.407**	0.015	**413**	**615.903**	0.025	**511**
490.518	1.250	**141**	**613.428**	0.150	**400**	**615.256**	0.180	**423**	**615.408**	0.015	**413**	**615.904**	0.005	**506**
490.520	1.180	**141**	**613.429**	0.120	**400**	**615.257**	0.370	**423**	**615.409**	0.015	**413**	**625.020**	0.010	**448**
490.556	1.150	**141**	**613.430**	0.130	**400**	**615.258**	0.520	**423**	**615.420**	0.020	**412**	**626.111**	0.010	**441**
490.558	1.140	**141**	**613.432**	0.110	**400**	**615.262**	0.140	**423**	**615.421**	0.020	**412**	**626.112**	0.010	**441**
490.560	1.290	**141**	**613.433**	0.110	**400**	**615.264**	0.240	**412**	**615.422**	0.020	**412**	**626.113**	0.010	**441**
490.562	1.250	**141**	**613.434**	0.110	**400**	**615.265**	0.210	**423**	**615.423**	0.020	**412**	**626.121**	0.010	**441**
490.566	1.310	**141**	**613.435**	0.110	**400**	**615.266**	0.370	**423**	**615.424**	0.020	**412**	**626.122**	0.010	**441**
490.570	1.560	**141**	**613.436**	0.110	**400**	**615.267**	0.290	**423**	**615.425**	0.020	**412**	**626.123**	0.010	**441**
490.606	2.720	**141**	**613.437**	0.130	**400**	**615.268**	0.220	**407**	**615.426**	0.020	**412**	**626.131**	0.009	**441**
490.608	2.720	**141**	**613.438**	0.130	**400**	**615.269**	0.350	**407**	**615.427**	0.020	**412**	**626.132**	0.010	**441**
490.610	2.780	**141**	**613.439**	0.130	**400**	**615.271**	0.010	**427**	**615.428**	0.020	**412**	**626.133**	0.010	**441**
490.612	2.770	**141**	**613.440**	0.120	**400**	**615.272**	0.012	**427**	**615.429**	0.020	**412**	**626.141**	0.013	**441**
490.614	2.820	**141**	**615.080**	0.010	**401**	**615.273**	0.015	**427**	**615.501**	0.020	**430**	**626.142**	0.015	**441**
490.616	2.800	**141**	**615.081**	0.010	**401**	**615.280**	0.015	**429**	**615.502**	0.020	**430**	**626.143**	0.018	**441**
490.618	2.940	**141**	**615.082**	0.020	**407**	**615.281**	0.019	**429**	**615.503**	0.020	**430**	**626.151**	0.020	**441**
490.620	2.920	**141**	**615.083**	0.020	**407**	**615.282**	0.025	**429**	**615.504**	0.020	**430**	**626.152**	0.025	**441**
490.625	3.500	**141**	**615.084**	0.030	**407**	**615.283**	0.030	**405**	**615.505**	0.020	**407**	**626.153**	0.030	**441**
490.656	3.500	**141**	**615.085**	0.030	**407**	**615.284**	0.035	**429**	**615.506**	0.022	**407**	**626.161**	0.045	**441**
490.658	3.500	**141**	**615.086**	0.030	**401**	**615.285**	0.040	**429**	**615.507**	0.023	**430**	**626.162**	0.070	**441**
490.660	3.500	**141**	**615.087**	0.050	**401**	**615.286**	0.040	**429**	**615.508**	0.023	**430**	**626.163**	0.080	**441**
490.662	3.500	**141**	**615.201**	0.020	**407**	**615.287**	0.050	**429**	**615.509**	0.024	**430**	**626.231**	0.008	**507**
490.664	3.600	**141**	**615.202**	0.040	**407**	**615.288**	0.030	**429**	**615.511**	0.030	**430**	**626.241**	0.014	**465**
490.666	3.600	**141**	**615.203**	0.008	**401**	**615.289**	0.030	**429**	**615.522**	0.020	**430**	**626.251**	0.022	**465**
490.668	3.900	**141**	**615.203A**	0.008	**401**	**615.290**	0.030	**429**	**615.524**	0.020	**430**	**626.261**	0.035	**465**
490.670	3.900	**141**	**615.204**	0.015	**401**	**615.291**	0.030	**429**	**615.525**	0.020	**430**	**626.271**	0.040	**457**
490.675	4.710	**141**	**615.204A**	0.016	**401**	**615.292**	0.035	**405**	**615.530**	0.020	**430**	**626.272**	0.050	**457**
613.202	0.012	**406**	**615.205**	0.020	**401**	**615.300**	0.016	**423**	**615.531**	0.030	**430**	**626.273**	0.060	**457**
613.203	0.011	**406**	**615.206**	0.115	**401**	**615.301**	0.015	**423**	**615.541**	0.003	**433**	**626.322**	0.010	**442**
613.204	0.012	**406**	**615.207**	0.045	**401**	**615.302**	0.018	**423**	**615.542**	0.003	**433**	**626.323**	0.010	**442**
613.205	0.010	**406**	**615.208**	0.085	**401**	**615.303**	0.020	**423**	**615.543**	0.003	**433**	**626.331**	0.010	**442**
613.206	0.009	**406**	**615.209**	0.160	**405**	**615.304**	0.055	**412**	**615.544**	0.003	**433**	**626.332**	0.010	**442**
613.207	0.007	**406**	**615.210**	0.235	**405**	**615.305**	0.060	**412**	**615.545**	0.003	**433**	**626.333**	0.010	**442**
613.208	0.005	**406**	**615.211**	0.016	**407**	**615.306**	0.080	**412**	**615.546**	0.004	**433**	**626.341**	0.010	**442**
613.304	0.012	**406**	**615.212**	0.045	**407**	**615.354**	0.080	**423**	**615.547**	0.004	**433**	**626.342**	0.020	**442**
613.305	0.020	**406**	**615.213**	0.035	**401**	**615.355**	0.105	**423**	**615.551**	0.003	**433**	**626.343**	0.020	**442**
613.306	0.019	**406**	**615.214**	0.025	**407**	**615.356**	0.150	**423**	**615.552**	0.003	**433**	**626.351**	0.020	**442**
613.307	0.019	**406**	**615.215**	0.070	**407**	**615.365**	0.005	**423**	**615.553**	0.003	**433**	**626.352**	0.030	**442**
613.308	0.015	**406**	**615.216**	0.025	**407**	**615.366**	0.010	**423**	**615.554**	0.003	**433**	**626.353**	0.035	**442**
613.309	0.019	**406**	**615.217**	0.040	**407**	**615.367**	0.015	**423**	**615.555**	0.003	**433**	**626.361**	0.030	**442**

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
626.362	0.060	442	639.123	0.020	388	639.276	0.540	501	639.486	0.650	501	651.835	0.001	471
626.363	0.090	442	639.131	0.030	501	639.277	1.080	389	639.487	1.300	387	651.837	0.001	471
626.371	0.040	457	639.132	0.030	501	639.281	0.580	501	639.490	0.200	502	651.838	0.002	471
626.372	0.060	457	639.133	0.060	388	639.282	0.580	501	639.491	0.300	502	651.839	0.002	471
626.422	0.005	443	639.135	0.040	501	639.283	1.160	389	639.492	0.400	502	651.840	0.001	471
626.423	0.010	443	639.136	0.040	501	639.285	0.650	501	639.493	0.500	502	651.841	0.001	471
626.432	0.010	443	639.137	0.080	388	639.286	0.650	501	639.494	0.600	502	651.842	0.001	471
626.433	0.010	443	639.141	0.045	501	639.287	1.300	389	639.495	0.600	502	651.843	0.001	471
626.442	0.010	443	639.142	0.045	501	639.403	0.120	391	639.496	0.800	502	654.150	0.001	479
626.443	0.020	443	639.143	0.090	388	639.404	0.840	391	639.497	0.800	502	654.152	0.001	479
626.452	0.020	443	639.145	0.060	501	639.405	0.170	391	639.561	0.200	501	654.158	0.002	479
626.453	0.020	443	639.146	0.060	501	639.406	0.380	391	639.562	0.200	501	654.168	0.001	479
626.462	0.050	443	639.147	0.120	388	639.407	0.660	391	639.563	0.400	387	654.183	0.002	479
626.463	0.040	443	639.151	0.100	501	639.408	0.770	391	639.565	0.250	501	654.240	0.004	480
626.472	0.040	457	639.152	0.100	501	639.409	1.040	391	639.566	0.250	501	654.250	0.004	480
626.473	0.060	457	639.153	0.200	388	639.410	1.160	391	639.567	0.500	387	654.251	0.003	480
626.901	0.005	442	639.155	0.130	501	639.411	0.010	501	639.571	0.385	501	654.259	0.004	480
626.902	0.010	442	639.156	0.130	501	639.412	0.010	501	639.572	0.385	501	654.277	0.004	480
626.903	0.010	442	639.157	0.260	388	639.413	0.020	387	639.573	0.770	387	654.287	0.004	480
626.904	0.030	442	639.161	0.215	501	639.415	0.020	501	639.575	0.460	501	654.340	0.010	481
626.905	0.040	442	639.162	0.215	501	639.416	0.020	501	639.576	0.460	501	654.350	0.010	481
626.906	0.130	442	639.163	0.430	388	639.417	0.040	387	639.577	0.930	387	654.351	0.010	481
626.907	0.025	414	639.165	0.225	501	639.421	0.020	501	639.581	0.550	501	654.354	0.010	481
626.908	0.055	414	639.166	0.225	501	639.422	0.020	501	639.582	0.550	501	654.387	0.008	481
626.909	0.090	414	639.167	0.550	388	639.423	0.040	387	639.583	1.090	387	654.837	0.001	475
626.910	0.110	414	639.171	0.405	501	639.425	0.020	501	639.585	0.650	501	654.840A	0.001	475
626.916	0.240	442	639.172	0.405	501	639.426	0.020	501	639.586	0.650	501	654.846	0.001	475
626.917	0.190	457	639.173	0.810	388	639.427	0.040	387	639.587	1.290	387	654.847	0.001	475
626.935	0.060	444	639.175	0.550	501	639.431	0.020	501	639.653	0.330	392	654.850A	0.001	475
626.936	0.110	444	639.176	0.550	501	639.432	0.020	501	639.663	0.610	392	654.851A	0.001	475
626.937	0.130	444	639.177	1.100	388	639.433	0.060	387	639.667	0.550	392	654.852	0.001	475
626.938	0.090	444	639.181	0.550	501	639.435	0.040	501	639.673	0.800	392	654.853	0.001	475
626.945	0.060	444	639.182	0.550	501	639.436	0.040	501	639.677	1.360	392	654.856	0.001	475
626.946	0.110	444	639.183	1.100	388	639.437	0.060	387	639.683	1.460	392	654.858	0.001	475
626.947	0.130	444	639.185	0.660	501	639.441	0.030	501	639.687	1.740	392	654.877	0.001	475
626.948	0.150	444	639.186	0.660	501	639.442	0.030	501	639.690	0.010	511	654.879	0.001	475
627.121	0.020	508	639.187	1.320	388	639.443	0.060	387	639.691	0.004	511	654.888	0.001	475
627.131	0.050	508	639.191	0.100	502	639.445	0.060	501	639.693	0.004	511	654.889	0.001	475
627.141	0.050	508	639.192	0.150	502	639.446	0.060	501	639.913	0.050	502	654.930A	0.004	476
627.151	0.050	508	639.193	0.200	502	639.447	0.060	387	639.914	0.080	502	654.935	0.004	476
627.161	0.050	508	639.194	0.300	502	639.451	0.095	501	639.915	0.100	502	654.937	0.004	476
637.940	0.710	456	639.195	0.350	502	639.452	0.095	501	639.916	0.150	502	654.940A	0.004	476
637.941	0.710	456	639.196	0.400	502	639.453	0.190	387	639.917	0.260	502	654.942	0.004	476
637.942	0.750	456	639.197	0.450	502	639.455	0.095	501	639.918	0.400	502	654.945	0.004	476
637.943	0.700	456	639.241	0.550	501	639.456	0.095	501	651.623	0.001	471	654.947	0.004	476
637.951	0.750	456	639.242	0.550	501	639.457	0.190	387	651.632	0.001	471	654.949	0.004	476
637.953	0.750	456	639.243	0.110	389	639.461	0.200	501	651.702	0.001	471	654.950	0.003	476
637.959	0.380	461	639.251	0.120	501	639.462	0.200	501	651.713	0.001	471	654.952	0.004	476
637.961	0.590	461	639.252	0.120	501	639.463	0.400	387	651.723	0.001	471	654.955	0.003	476
637.962	0.010	511	639.253	0.240	389	639.465	0.200	501	651.725	0.001	471	654.957	0.003	476
639.104	0.100	390	639.255	0.120	501	639.466	0.200	501	651.734	0.001	471	654.959	0.003	476
639.105	0.180	390	639.257	0.240	389	639.467	0.400	387	651.735	0.001	471	654.964	0.004	477
639.106	0.380	390	639.261	0.225	501	639.471	0.410	501	651.736	0.001	471	654.965	0.004	477
639.107	0.110	390	639.262	0.225	501	639.472	0.410	501	651.737	0.001	471	654.968	0.004	477
639.108	0.780	390	639.263	0.450	389	639.473	0.820	387	651.738	0.001	471	654.969	0.004	477
639.109	1.050	390	639.265	0.275	501	639.475	0.410	501	651.802	0.001	471	654.977	0.004	476
639.110	1.150	390	639.266	0.275	501	639.476	0.410	501	651.813	0.001	471	654.978	0.003	477
639.111	0.010	501	639.267	0.550	389	639.477	0.820	387	651.823	0.001	471	654.979	0.003	477
639.112	0.010	501	639.271	0.425	501	639.481	0.550	501	651.824	0.001	471	654.983	0.020	478
639.113	0.020	388	639.272	0.425	501	639.482	0.550	501	651.825	0.001	471	654.986	0.020	478
639.121	0.010	501	639.273	0.850	389	639.483	1.100	387	651.833	0.001	471	654.987	0.004	476
639.122	0.010	501	639.275	0.540	501	639.485	0.650	501	651.834	0.001	471	654.988	0.010	477

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
654.989	0.010	477	655.399	0.001	471	656.100	0.005	493	663.170	0.600	571	690.324	0.070	506
654.990A	0.010	477	655.600	0.001	470	656.101	0.001	493	663.181	0.010	571	690.326	0.040	514
654.991	0.010	477	655.601	0.001	470	656.102	0.001	493	663.185	0.040	571	690.400	0.001	511
654.992	0.009	477	655.602	0.001	470	656.103	0.001	493	663.191	0.005	571	690.410	0.001	500
654.993A	0.010	477	655.603	0.001	470	656.110	0.005	493	663.195	0.030	571	690.413	0.020	500
654.995	0.003	477	655.604	0.001	470	656.111	0.001	493	689.001	0.020	443	690.414	0.001	500
654.996	0.020	478	655.605	0.001	470	656.112	0.001	493	689.007	0.050	443	690.416	0.001	500
654.997	0.020	478	655.606	0.001	470	656.113	0.001	493	689.189	0.030	457	690.417	0.001	500
654.998	0.016	478	655.620	0.001	484	656.120	0.001	493	689.197	0.020	443	690.418	0.001	500
655.301A	0.001	472	655.621	0.001	484	656.121	0.001	493	689.198	0.020	443	690.419	0.001	500
655.301B	0.001	472	655.622	0.001	484	656.122	0.001	493	689.516	0.001	472	690.421	0.001	500
655.302A	0.001	472	655.630	0.001	484	656.123	0.001	493	689.517	0.001	472	690.425	0.001	500
655.302B	0.001	472	655.631	0.001	484	656.130	0.001	493	689.518	0.001	472	690.431	0.001	498
655.303A	0.002	472	655.632	0.001	484	656.131	0.001	493	690.101	0.002	500	690.432	0.001	498
655.303B	0.002	472	655.640	0.002	485	656.140	0.001	493	690.102	0.004	503	690.433	0.002	498
655.305	0.001	472	655.641	0.002	485	656.141	0.001	493	690.103	0.004	503	690.434	0.003	498
655.306	0.001	472	655.642	0.002	485	656.142	0.001	493	690.104	0.005	503	690.435	0.003	498
655.310	0.002	471	655.644	0.002	485	656.143	0.001	493	690.105	0.025	500	690.436	0.010	498
655.311A	0.001	472	655.650	0.004	485	656.144	0.001	493	690.106	0.030	500	690.437	0.050	498
655.313	0.001	472	655.651	0.004	485	656.145	0.001	493	690.107	0.005	500	690.440	0.001	500
655.314	0.001	472	655.652	0.004	485	656.146	0.001	493	690.108	0.005	500	690.449	0.002	500
655.315	0.001	471	655.654	0.004	485	656.147	0.001	493	690.113	0.004	506	690.451	0.001	500
655.316	0.001	472	655.660	0.010	486	656.150	0.001	493	690.115	0.003	508	690.452	0.005	500
655.317	0.001	471	655.661	0.010	486	656.151	0.001	493	690.121	0.053	509	690.457	0.003	500
655.318	0.001	471	655.662	0.010	486	656.152	0.001	493	690.124	0.005	509	690.459	0.001	500
655.319	0.001	471	655.664	0.010	486	656.153	0.001	493	690.131	0.010	499	690.460	0.002	500
655.320	0.001	471	655.670	0.020	486	656.201	0.001	494	690.132	0.010	510	690.462	0.001	500
655.321A	0.001	472	655.671	0.020	486	656.202	0.001	494	690.135	0.001	507	690.464	0.002	500
655.322	0.001	472	655.821	0.001	494	656.203	0.001	494	690.136	0.001	507	690.465	0.002	500
655.322A	0.001	472	655.822	0.001	494	656.204	0.001	494	690.137	0.003	507	690.466	0.001	500
655.324	0.001	472	655.910	0.002	482	656.210	0.001	494	690.138	0.004	507	690.467	0.001	500
655.326	0.003	472	655.911	0.002	482	656.211	0.001	494	690.139	0.002	507	690.469	0.005	500
655.327	0.001	471	655.912	0.002	482	656.212	0.001	494	690.140	0.004	507	690.477	0.002	500
655.328	0.001	471	655.913	0.002	482	656.300	0.001	494	690.141	0.007	507	690.478	0.003	500
655.331A	0.001	472	655.920	0.002	482	656.301	0.001	494	690.150	0.005	506	690.479	0.006	500
655.334	0.001	472	655.921	0.002	482	656.302	0.001	494	690.156	0.005	504	690.480	0.010	500
655.354	0.001	472	655.922	0.002	482	656.303	0.001	494	690.157	0.005	500	690.481	0.017	500
655.363	0.001	471	655.923	0.002	482	656.310	0.001	494	690.159	0.100	503	690.482	0.020	500
655.364	0.001	472	655.930	0.003	483	656.311	0.001	494	690.163	0.020	500	690.483	0.035	500
655.369	0.001	471	655.931	0.003	483	656.312	0.001	494	690.172	0.019	499	690.484	0.045	500
655.370	0.001	471	655.932	0.003	483	656.313	0.001	494	690.173	0.007	500	690.487A	0.008	500
655.371	0.001	471	655.933	0.003	483	656.320	0.001	494	690.176	0.005	508	690.488	0.007	500
655.372	0.001	471	655.940	0.001	475	656.321	0.001	494	690.177	0.005	508	690.489	0.001	500
655.373	0.001	471	655.941	0.001	475	656.330	0.001	494	690.178	0.005	508	690.510	0.010	500
655.374	0.002	471	655.942	0.001	475	656.331	0.001	494	690.179	0.001	508	690.511	0.001	500
655.375	0.001	471	656.000	0.001	492	656.340	0.001	494	690.180	0.003	508	690.512	0.002	500
655.378	0.001	471	656.001	0.001	492	656.341	0.001	494	690.182	0.003	508	690.513	0.003	500
655.379	0.002	471	656.004	0.001	492	656.342	0.001	494	690.183	0.020	506	690.514	0.004	500
655.380	0.001	471	656.005	0.001	492	656.343	0.001	494	690.184	0.007	500	690.515	0.008	500
655.381	0.001	471	656.011	0.001	492	656.351	0.001	494	690.186	0.008	500	690.529	0.001	500
655.383	0.001	471	656.012	0.001	492	656.352	0.001	494	690.188	0.014	500	690.538	0.001	500
655.384	0.002	471	656.015	0.001	492	663.110	0.040	571	690.189	0.010	500	690.541	0.010	500
655.385	0.001	471	656.016	0.001	492	663.120	0.070	571	690.191	0.005	500	690.549	0.001	500
655.386	0.001	471	656.020	0.001	492	663.121	0.140	571	690.192	0.007	500	690.550	0.001	500
655.387	0.001	471	656.021	0.001	492	663.130	0.090	571	690.193	0.009	500	690.551	0.001	500
655.388	0.001	471	656.022	0.001	492	663.131	0.180	571	690.194	0.010	500	690.552	0.004	500
655.389	0.001	471	656.040	0.001	492	663.140	0.100	571	690.195	0.014	500	690.553	0.005	500
655.390	0.001	471	656.041	0.001	492	663.141	0.210	571	690.196	0.017	500	690.573	0.001	500
655.393	0.001	471	656.042	0.001	492	663.150	0.500	571	690.197	0.020	500	690.576	0.008	500
655.395	0.001	471	656.043	0.001	492	663.151	0.950	571	690.208	0.001	500	690.577	0.010	500
655.397	0.002	471	656.050	0.001	492	663.160	0.640	571	690.320	0.009	514	690.578	0.010	500
655.398	0.001	471	656.051	0.001	492	663.161	1.250	571	690.323	0.070	506	690.579	0.014	500

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
690.580	0.020	**500**	**690.984**	0.050	**510**	**694.144**	0.005	**514**	**800.014**	4.700	**84**	**800.119**	3.600	**86**
690.582	0.007	**500**	**690.985**	0.050	**510**	**694.145**	0.005	**514**	**800.015**	4.260	**84**	**800.120**	1.800	**86**
690.583	0.002	**500**	**690.986**	0.050	**510**	**694.150**	0.005	**514**	**800.016**	5.100	**85**	**800.121**	2.600	**86**
690.585	0.004	**500**	**690.987**	0.030	**510**	**694.160**	0.090	**515**	**800.017**	6.000	**85**	**800.122**	2.800	**86**
690.586	0.003	**500**	**690.990**	0.010	**510**	**694.161**	0.090	**515**	**800.018**	6.900	**85**	**800.123**	3.400	**86**
690.591	0.005	**500**	**690.991**	0.010	**510**	**694.162**	0.090	**515**	**800.019**	8.400	**85**	**800.124**	2.200	**86**
690.594	0.004	**498**	**690.994**	0.040	**514**	**694.163**	0.090	**515**	**800.020**	9.100	**85**	**800.128**	1.480	**83**
690.595	0.003	**500**	**690.995**	0.003	**500**	**694.164**	0.090	**515**	**800.021**	4.700	**85**	**800.129**	1.700	**83**
690.611	0.001	**514**	**690.996**	0.010	**500**	**694.165**	0.090	**515**	**800.022**	6.100	**85**	**800.130**	1.900	**83**
690.614	0.001	**514**	**690.997**	0.010	**500**	**694.166**	0.090	**515**	**800.023**	3.860	**84**	**800.131**	1.180	**83**
690.622	0.001	**500**	**691.501**	0.001	**498**	**694.167**	0.017	**515**	**800.024**	4.300	**84**	**800.135**	1.300	**83**
690.658	0.005	**500**	**691.502**	0.002	**498**	**694.168**	0.017	**515**	**800.025**	4.400	**84**	**800.136**	1.500	**83**
690.666	0.005	**499**	**691.503**	0.006	**498**	**694.169**	0.017	**515**	**800.026**	4.500	**84**	**800.137**	1.700	**83**
690.667	0.030	**499**	**691.504**	0.011	**498**	**694.170**	0.017	**515**	**800.027**	3.920	**84**	**800.138**	2.000	**83**
690.668	0.040	**500**	**691.505**	0.021	**498**	**694.171**	0.017	**515**	**800.029**	1.250	**71**	**800.139**	1.200	**83**
690.716	0.019	**511**	**691.506**	0.050	**498**	**694.172**	0.017	**515**	**800.031**	0.560	**71**	**800.143**	1.400	**83**
690.800	0.001	**515**	**691.507**	0.110	**498**	**694.173**	0.017	**515**	**800.045**	2.310	**585**	**800.144**	1.820	**74**
690.801	0.001	**515**	**691.605**	0.015	**513**	**694.174**	0.017	**515**	**800.046**	0.010	**528**	**800.146**	2.780	**74**
690.802	0.001	**515**	**691.606**	0.022	**513**	**694.175**	0.017	**515**	**800.047**	0.010	**528**	**800.147**	2.260	**74**
690.803	0.005	**515**	**691.607**	0.045	**513**	**694.176**	0.017	**515**	**800.048**	0.002	**528**	**800.148**	3.200	**74**
690.804	0.010	**515**	**691.608**	0.075	**513**	**694.177**	0.017	**515**	**800.049**	0.010	**528**	**800.151**	3.250	**288**
690.805	0.018	**515**	**691.609**	0.075	**513**	**694.178**	0.017	**515**	**800.051**	0.005	**528**	**800.152**	3.250	**288**
690.806	0.030	**515**	**691.637**	0.088	**499**	**694.179**	0.017	**515**	**800.052**	0.005	**528**	**800.153**	2.740	**288**
690.807	0.060	**515**	**691.755**	0.015	**502**	**694.180**	0.017	**515**	**800.053**	0.010	**528**	**800.154**	1.110	**289**
690.808	0.160	**515**	**691.756**	0.015	**502**	**694.181**	0.105	**515**	**800.054**	1.040	**584**	**800.157**	1.760	**287**
690.809	0.170	**515**	**691.757**	0.015	**502**	**694.182**	0.105	**515**	**800.058**	0.600	**59**	**800.158**	1.280	**104**
690.810	0.100	**515**	**692.406**	0.003	**500**	**694.183**	0.105	**515**	**800.063**	0.530	**88**	**800.159**	1.420	**104**
690.811	0.014	**500**	**692.409**	0.002	**500**	**694.184**	0.105	**515**	**800.064**	1.000	**101**	**800.160**	1.660	**104**
690.812	0.015	**500**	**693.131**	0.001	**503**	**694.185**	0.105	**515**	**800.065**	2.800	**584**	**800.161**	1.500	**90**
690.813	0.016	**500**	**693.175**	0.001	**500**	**694.186**	0.105	**515**	**800.066**	1.110	**96**	**800.162**	1.600	**90**
690.814	0.020	**500**	**693.176**	0.001	**500**	**694.187**	0.105	**515**	**800.074**	1.820	**96**	**800.163**	1.160	**88**
690.816	0.050	**500**	**693.177**	0.001	**500**	**694.188**	0.105	**515**	**800.075**	1.720	**96**	**800.164**	1.780	**90**
690.817	0.045	**500**	**693.178**	0.001	**500**	**694.189**	0.105	**515**	**800.079**	1.750	**96**	**800.165**	2.060	**90**
690.819	0.050	**500**	**693.179**	0.001	**500**	**694.190**	0.105	**515**	**800.080**	2.000	**96**	**800.167**	1.300	**90**
690.832	0.001	**515**	**693.181**	0.003	**506**	**694.191**	0.105	**515**	**800.081**	2.780	**96**	**800.168**	1.030	**88**
690.833	0.001	**515**	**693.182**	0.004	**512**	**694.192**	0.105	**515**	**800.085**	1.500	**83**	**800.169**	1.400	**90**
690.834	0.002	**514**	**693.183**	0.017	**509**	**694.193**	0.105	**515**	**800.086**	1.700	**83**	**800.170**	1.500	**87**
690.836	0.004	**514**	**693.184**	0.024	**509**	**694.194**	0.105	**515**	**800.087**	2.000	**83**	**800.171**	1.700	**87**
690.837	0.010	**514**	**693.186**	0.001	**503**	**694.806**	0.002	**514**	**800.088**	1.180	**83**	**800.172**	1.200	**87**
690.838	0.010	**514**	**693.187**	0.001	**500**	**694.807**	0.004	**514**	**800.092**	1.400	**83**	**800.173**	1.200	**87**
690.843	0.010	**514**	**693.289**	0.001	**508**	**694.808**	0.004	**514**	**800.093**	1.520	**83**	**800.174**	1.900	**101**
690.861	0.800	**515**	**693.304**	0.325	**498**	**694.809**	0.004	**514**	**800.094**	1.700	**83**	**800.175**	1.700	**101**
690.899	0.005	**515**	**693.305**	0.325	**498**	**694.810**	0.009	**514**	**800.095**	2.000	**83**	**800.176**	1.850	**101**
690.900	0.001	**500**	**693.306**	0.325	**498**	**694.815**	0.009	**514**	**800.096**	1.340	**83**	**800.177**	1.640	**101**
690.901	0.001	**500**	**694.101**	0.005	**514**	**694.820**	0.010	**514**	**800.099**	1.400	**83**	**800.178**	1.750	**101**
690.902	0.002	**500**	**694.102**	0.005	**514**	**695.101**	0.020	**502**	**800.100**	1.600	**83**	**800.179**	1.550	**101**
690.903	0.002	**500**	**694.103**	0.005	**514**	**695.102**	0.020	**502**	**800.101**	1.800	**83**	**800.180**	3.050	**101**
690.904	0.003	**500**	**694.105**	0.005	**514**	**719.000**	0.050	**398**	**800.104**	1.800	**83**	**800.184**	5.200	**584**
690.905	0.003	**500**	**694.110**	0.005	**514**	**800.000**	4.100	**84**	**800.105**	1.600	**83**	**800.204**	4.080	**97**
690.906	0.003	**500**	**694.120**	0.005	**514**	**800.001**	4.060	**84**	**800.106**	1.900	**83**	**800.205**	4.420	**97**
690.907	0.003	**500**	**694.121**	0.005	**514**	**800.002**	4.040	**84**	**800.107**	2.300	**83**	**800.206**	4.800	**97**
690.908	0.004	**500**	**694.122**	0.005	**514**	**800.003**	4.700	**84**	**800.108**	1.300	**83**	**800.207**	3.740	**97**
690.912	0.001	**500**	**694.123**	0.005	**514**	**800.004**	4.800	**84**	**800.109**	1.600	**83**	**800.221**	6.320	**97**
690.913	0.001	**500**	**694.124**	0.005	**514**	**800.005**	5.500	**84**	**800.110**	1.900	**83**	**800.222**	6.980	**97**
690.940	0.001	**508**	**694.130**	0.005	**514**	**800.006**	6.060	**84**	**800.111**	1.380	**83**	**800.223**	7.620	**97**
690.943	0.005	**500**	**694.131**	0.005	**514**	**800.007**	4.400	**84**	**800.112**	1.680	**83**	**800.224**	6.020	**97**
690.953	0.005	**508**	**694.136**	0.005	**514**	**800.008**	4.340	**84**	**800.113**	2.000	**83**	**800.225**	7.060	**97**
690.954	0.005	**508**	**694.137**	0.005	**514**	**800.009**	4.600	**84**	**800.114**	2.400	**83**	**800.226**	9.250	**97**
690.964	0.003	**500**	**694.138**	0.005	**514**	**800.010**	4.700	**84**	**800.115**	1.420	**83**	**800.227**	10.300	**97**
690.970	0.003	**500**	**694.141**	0.005	**514**	**800.011**	4.800	**84**	**800.116**	1.600	**83**	**800.235**	7.100	**97**
690.978	0.001	**500**	**694.142**	0.005	**514**	**800.012**	7.500	**84**	**800.117**	2.400	**86**	**800.236**	9.240	**97**
690.981	0.003	**514**	**694.143**	0.005	**514**	**800.013**	9.100	**84**	**800.118**	3.000	**86**	**800.237**	3.840	**97**

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
800.238	9.700	**97**	**800.338**	5.020	**104**	**800.416**	0.080	**338**	**800.719**	1.200	**241**	**800.911**	6.800	**244**
800.239	11.400	**97**	**800.341**	3.460	**104**	**800.417**	0.080	**338**	**800.721**	1.200	**241**	**800.912**	4.900	**244**
800.240	13.200	**97**	**800.342**	3.690	**104**	**800.418**	0.080	**338**	**800.722**	1.020	**241**	**800.933**	2.080	**248**
800.256	19.000	**97**	**800.343**	5.140	**104**	**800.419**	0.080	**338**	**800.723**	1.700	**241**	**800.934**	2.480	**248**
800.264	3.880	**84**	**800.345**	6.220	**104**	**800.420**	0.120	**339**	**800.734**	0.770	**239**	**800.935**	2.020	**248**
800.265	4.400	**84**	**800.347**	3.580	**104**	**800.421**	0.120	**339**	**800.735**	1.400	**239**	**800.940**	2.840	**247**
800.266	4.500	**84**	**800.348**	3.840	**104**	**800.422**	0.120	**339**	**800.736**	1.000	**239**	**800.942**	3.280	**247**
800.267	4.700	**84**	**800.349**	6.420	**104**	**800.423**	0.120	**339**	**800.743**	0.620	**230**	**800.945**	0.060	**568**
800.268	3.900	**84**	**800.350**	4.020	**90**	**800.424**	0.120	**339**	**800.746**	0.640	**230**	**800.949**	6.800	**260**
800.269	4.400	**84**	**800.351**	4.060	**90**	**800.425**	0.120	**339**	**800.765**	0.830	**248**	**800.950**	0.003	**561**
800.270	4.600	**84**	**800.352**	4.400	**90**	**800.426**	0.120	**339**	**800.766**	1.380	**248**	**800.951**	0.002	**553**
800.271	4.700	**84**	**800.354**	3.780	**90**	**800.427**	0.120	**339**	**800.767**	0.750	**248**	**800.952**	0.010	**553**
800.272	4.000	**84**	**800.355**	3.900	**90**	**800.428**	0.120	**339**	**800.774**	1.050	**301**	**800.953**	0.040	**553**
800.273	4.600	**84**	**800.356**	4.000	**87**	**800.429**	0.120	**339**	**800.775**	1.500	**245**	**800.972**	1.960	**136**
800.274	4.700	**84**	**800.357**	4.400	**87**	**800.430**	0.130	**339**	**800.776**	2.470	**304**	**800.973**	2.000	**136**
800.275	4.400	**84**	**800.358**	4.900	**87**	**800.431**	0.130	**339**	**800.777**	2.400	**304**	**800.974**	2.010	**136**
800.276	4.500	**84**	**800.359**	4.500	**87**	**800.432**	0.130	**339**	**800.778**	3.400	**304**	**800.975**	1.820	**136**
800.277	4.500	**84**	**800.360**	5.000	**87**	**800.433**	0.130	**339**	**800.779**	2.600	**304**	**800.976**	2.100	**136**
800.278	4.160	**75**	**800.361**	4.600	**87**	**800.434**	0.130	**339**	**800.780**	1.900	**301**	**800.977**	2.780	**136**
800.279	4.500	**75**	**800.362**	5.200	**87**	**800.435**	0.140	**339**	**800.781**	1.860	**301**	**801.013**	0.130	**343**
800.280	4.930	**75**	**800.363**	4.400	**87**	**800.436**	0.140	**339**	**800.783**	2.460	**244**	**801.037**	0.190	**352**
800.281	5.600	**75**	**800.364**	3.900	**87**	**800.437**	0.140	**339**	**800.787**	2.800	**244**	**801.038**	0.290	**352**
800.282	4.320	**75**	**800.365**	3.900	**87**	**800.438**	0.140	**339**	**800.788**	1.800	**244**	**801.039**	0.360	**352**
800.283	4.800	**75**	**800.366**	4.750	**101**	**800.439**	0.140	**339**	**800.789**	2.100	**244**	**801.040**	3.100	**159**
800.284	5.300	**75**	**800.367**	5.120	**101**	**800.450**	0.030	**374**	**800.790**	2.300	**244**	**801.042**	1.600	**582**
800.285	5.940	**75**	**800.368**	5.950	**101**	**800.463**	0.090	**374**	**800.806**	1.900	**241**	**801.043**	4.220	**582**
800.286	7.960	**75**	**800.369**	4.140	**101**	**800.464**	0.070	**374**	**800.808**	1.600	**241**	**801.045**	0.001	**366**
800.287	4.600	**75**	**800.370**	4.670	**101**	**800.468**	0.230	**375**	**800.812**	2.000	**241**	**801.046**	0.002	**568**
800.288	5.160	**75**	**800.371**	5.030	**101**	**800.472**	0.200	**375**	**800.814**	2.000	**241**	**801.047**	0.003	**568**
800.289	5.840	**75**	**800.372**	5.900	**101**	**800.483**	0.053	**581**	**800.815**	2.000	**241**	**801.071**	0.020	**228**
800.290	6.800	**75**	**800.373**	6.700	**101**	**800.484**	0.056	**581**	**800.816**	2.000	**241**	**801.072**	3.840	**585**
800.291	4.640	**75**	**800.374**	4.100	**101**	**800.488**	0.002	**528**	**800.818**	1.700	**241**	**801.073**	5.430	**585**
800.292	5.440	**75**	**800.375**	4.180	**101**	**800.557**	1.400	**230**	**800.819**	2.100	**241**	**801.091**	5.400	**194**
800.293	6.380	**75**	**800.376**	4.600	**101**	**800.587**	0.002	**537**	**800.821**	1.700	**241**	**801.092**	3.880	**194**
800.294	7.440	**75**	**800.377**	4.950	**101**	**800.597**	0.790	**71**	**800.822**	1.320	**241**	**801.093**	4.840	**194**
800.295	10.450	**75**	**800.378**	5.800	**101**	**800.664**	0.030	**349**	**800.823**	2.380	**241**	**801.094**	5.920	**194**
800.297	4.920	**102**	**800.379**	6.650	**101**	**800.665**	0.620	**349**	**800.825**	1.740	**241**	**801.095**	7.200	**194**
800.299	5.200	**102**	**800.380**	4.720	**101**	**800.666**	0.600	**349**	**800.826**	2.440	**241**	**801.096**	2.900	**194**
800.301	5.960	**102**	**800.381**	6.020	**101**	**800.668**	0.600	**349**	**800.827**	2.800	**241**	**801.101**	4.860	**194**
800.303	6.300	**102**	**800.382**	5.450	**101**	**800.670**	0.570	**349**	**800.842**	1.140	**239**	**801.102**	2.920	**194**
800.305	7.950	**102**	**800.383**	6.820	**101**	**800.671**	0.500	**349**	**800.843**	1.720	**239**	**801.103**	3.590	**194**
800.307	6.440	**102**	**800.384**	7.960	**101**	**800.672**	0.550	**349**	**800.844**	2.500	**239**	**801.104**	6.800	**194**
800.308	7.900	**102**	**800.385**	4.680	**101**	**800.673**	0.380	**349**	**800.845**	1.380	**239**	**801.105**	3.300	**194**
800.312	9.400	**288**	**800.386**	5.480	**101**	**800.674**	0.570	**349**	**800.846**	2.060	**239**	**801.106**	4.360	**194**
800.313	9.200	**288**	**800.387**	6.230	**101**	**800.675**	0.590	**349**	**800.847**	3.100	**239**	**801.117**	8.500	**194**
800.314	7.660	**288**	**800.388**	7.160	**101**	**800.676**	0.500	**235**	**800.848**	1.520	**239**	**801.118**	3.700	**194**
800.315	4.050	**289**	**800.389**	8.500	**101**	**800.678**	0.600	**235**	**800.849**	2.200	**239**	**801.119**	5.280	**194**
800.316	4.460	**289**	**800.390**	5.280	**101**	**800.680**	0.800	**237**	**800.850**	2.870	**239**	**801.124**	6.670	**194**
800.317	4.750	**289**	**800.391**	7.150	**101**	**800.682**	0.800	**237**	**800.851**	1.920	**239**	**801.125**	4.900	**194**
800.318	5.300	**289**	**800.403**	0.050	**338**	**800.683**	0.400	**235**	**800.858**	1.500	**233**	**801.126**	2.550	**187**
800.319	6.460	**289**	**800.404**	0.050	**338**	**800.685**	0.500	**235**	**800.860**	1.700	**233**	**801.127**	3.100	**187**
800.320	7.000	**289**	**800.405**	0.050	**338**	**800.687**	0.650	**245**	**800.887**	1.780	**247**	**801.128**	2.500	**187**
800.321	6.360	**287**	**800.406**	0.050	**338**	**800.688**	0.650	**245**	**800.888**	2.200	**247**	**801.129**	2.580	**187**
800.322	4.000	**287**	**800.407**	0.050	**338**	**800.689**	0.800	**245**	**800.889**	6.000	**304**	**801.130**	3.100	**187**
800.323	7.080	**106**	**800.408**	0.050	**338**	**800.691**	1.280	**301**	**800.890**	3.900	**301**	**801.131**	2.500	**187**
800.325	3.870	**104**	**800.409**	0.050	**338**	**800.692**	1.250	**301**	**800.891**	3.900	**301**	**801.132**	2.600	**187**
800.327	4.480	**104**	**800.410**	0.080	**338**	**800.693**	1.240	**301**	**800.899**	4.800	**244**	**801.133**	2.840	**187**
800.329	3.900	**104**	**800.411**	0.080	**338**	**800.695**	1.200	**244**	**800.903**	3.450	**244**	**801.134**	3.300	**187**
800.330	4.020	**104**	**800.412**	0.080	**338**	**800.698**	1.600	**244**	**800.904**	4.400	**244**	**801.135**	2.700	**187**
800.332	4.800	**104**	**800.413**	0.080	**338**	**800.712**	1.100	**241**	**800.905**	6.400	**244**	**801.136**	2.940	**187**
800.335	3.490	**104**	**800.414**	0.080	**338**	**800.716**	1.200	**241**	**800.906**	3.300	**244**	**801.137**	3.600	**187**
800.336	4.410	**104**	**800.415**	0.080	**338**	**800.717**	1.200	**241**	**800.910**	5.100	**244**	**801.138**	3.300	**187**

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
801.139	3.520	187	801.259	1.900	190	801.425	0.270	359	801.487	0.300	357	801.670	3.574	372
801.140	2.600	187	801.260	1.040	190	801.426	0.340	359	801.488	0.360	357	801.671	0.005	328
801.141	3.000	187	801.262	0.900	190	801.427	0.460	359	801.489	0.110	357	801.672	0.040	328
801.142	2.400	187	801.263	1.100	190	801.428	0.570	359	801.490	0.170	357	801.673	1.044	587
801.143	2.550	187	801.264	0.900	189	801.429	0.180	359	801.491	0.210	357	801.674	0.050	330
801.144	3.000	187	801.265	0.950	189	801.430	0.270	359	801.492	0.280	357	801.675	0.005	328
801.145	2.400	187	801.266	1.120	190	801.431	0.960	361	801.493	0.360	357	801.676	0.040	328
801.146	2.380	169	801.267	0.870	189	801.432	1.140	361	801.494	0.110	357	801.677	0.860	224
801.147	2.460	169	801.268	1.020	189	801.433	0.530	361	801.495	0.170	357	801.678	0.050	330
801.164	7.950	201	801.269	1.000	188	801.434	0.820	361	801.496	0.210	357	801.679	0.040	328
801.165	2.600	200	801.270	1.000	188	801.435	0.940	361	801.497	0.280	357	801.680	0.040	328
801.166	2.800	200	801.280	0.020	228	801.436	1.120	361	801.498	0.360	357	801.681	4.000	161
801.167	3.200	200	801.282	1.000	224	801.437	0.520	361	801.499	0.110	357	801.682	0.050	330
801.168	3.900	200	801.283	1.080	224	801.438	0.790	361	801.500	0.170	357	801.684	2.100	542
801.169	1.010	585	801.284	1.180	224	801.439	0.910	361	801.501	0.001	504	801.685	0.120	347
801.172	0.700	186	801.285	1.480	224	801.440	1.100	361	801.507	0.060	374	801.688	1.000	174
801.173	0.800	186	801.286	0.801	224	801.441	0.500	361	801.509	0.220	375	801.690	0.020	228
801.174	0.900	186	801.287	0.770	224	801.442	0.760	361	801.517	0.200	375	801.694	0.080	328
801.175	0.900	186	801.288	0.887	224	801.443	0.920	361	801.524	0.070	336	801.695	0.070	328
801.176	1.500	186	801.289	3.180	295	801.444	1.080	361	801.525	0.070	336	801.696	0.005	503
801.177	0.700	186	801.290	3.180	295	801.445	0.490	361	801.526	0.070	336	801.697	0.070	328
801.178	0.700	186	801.294	2.700	294	801.446	0.750	361	801.527	0.070	336	801.698	0.070	328
801.179	0.800	167	801.296	3.160	294	801.447	0.880	361	801.528	0.070	336	801.699	0.030	503
801.180	2.490	585	801.297	3.860	294	801.448	1.040	361	801.529	0.100	336	801.700	0.070	328
801.188	2.380	194	801.298	0.840	296	801.449	0.480	361	801.530	0.100	336	801.701	0.070	328
801.189	1.190	194	801.299	3.120	293	801.450	0.730	361	801.531	0.100	336	801.702	0.010	325
801.195	1.600	186	801.300	4.080	293	801.451	0.001	504	801.532	0.100	336	801.703	0.010	325
801.196	1.020	186	801.301	1.200	293	801.452	0.930	361	801.533	0.100	336	801.704	0.010	325
801.197	1.400	186	801.302	1.760	292	801.453	1.120	361	801.534	0.100	336	801.705	0.100	351
801.200	1.600	186	801.303	1.100	292	801.454	0.510	361	801.535	0.140	337	801.709	0.004	325
801.201	1.060	186	801.313	0.040	340	801.455	0.780	361	801.536	0.160	337	801.711	1.480	66
801.202	1.400	186	801.314	0.030	340	801.456	0.920	361	801.537	0.160	337	801.712	1.480	68
801.205	1.320	186	801.315	0.050	340	801.457	1.080	361	801.538	0.150	337	801.713	2.320	68
801.206	1.700	186	801.316	0.060	340	801.458	0.500	361	801.539	0.150	337	801.714	0.100	313
801.207	1.200	186	801.317	0.020	340	801.459	0.750	361	801.540	0.150	337	801.718	0.100	329
801.208	1.500	186	801.318	0.150	346	801.460	0.530	361	801.541	0.150	337	801.719	0.100	329
801.211	1.600	186	801.393	0.001	340	801.461	0.820	361	801.542	0.150	337	801.720	1.080	58
801.212	1.300	186	801.394	0.001	340	801.462	0.510	361	801.543	0.150	337	801.721	0.120	330
801.213	1.600	186	801.395	0.001	334	801.463	0.780	361	801.544	0.150	337	801.722	0.100	329
801.214	2.000	186	801.396	0.010	340	801.464	0.020	365	801.545	0.170	337	801.723	0.100	329
801.215	1.160	186	801.397	0.010	340	801.465	1.180	363	801.546	0.170	337	801.724	0.860	164
801.216	2.000	186	801.398	0.001	334	801.466	1.220	363	801.547	0.170	337	801.725	0.120	330
801.217	1.180	186	801.405	0.340	359	801.467	1.340	363	801.548	0.170	337	801.726	0.100	329
801.218	2.100	186	801.406	0.460	359	801.468	1.400	363	801.549	0.010	337	801.727	0.100	329
801.219	2.140	186	801.407	0.590	359	801.469	1.560	363	801.550	0.170	337	801.729	0.120	330
801.221	1.380	186	801.408	0.270	359	801.470	0.003	504	801.551	0.170	337	801.730	2.100	66
801.222	0.970	186	801.409	0.330	359	801.471	1.300	363	801.552	0.170	337	801.731	1.640	66
801.223	1.300	186	801.410	0.570	359	801.472	1.700	363	801.651	0.020	329	801.732	3.000	66
801.226	1.500	186	801.411	0.260	359	801.473	1.500	363	801.652	0.020	329	801.733	0.120	330
801.227	1.000	186	801.412	0.360	359	801.474	0.050	364	801.653	2.200	304	801.734	1.400	172
801.228	1.300	186	801.413	0.460	359	801.475	0.020	365	801.654	0.020	330	801.736	2.300	172
801.248	1.000	200	801.414	0.580	359	801.476	0.020	365	801.655	0.020	329	801.737	1.420	172
801.249	1.200	200	801.415	0.280	359	801.477	0.020	365	801.656	0.020	329	801.738	0.004	329
801.250	1.600	200	801.416	0.340	359	801.478	0.050	364	801.657	0.490	302	801.739	2.100	172
801.251	2.400	200	801.417	0.460	359	801.479	0.220	357	801.658	0.030	330	801.740	1.940	174
801.252	1.200	190	801.418	0.600	359	801.480	0.310	357	801.659	0.020	329	801.742	0.010	325
801.253	0.920	189	801.419	0.270	359	801.481	0.170	357	801.660	0.020	329	801.743	0.004	325
801.254	1.200	189	801.420	0.001	504	801.482	0.220	357	801.662	0.030	330	801.744	0.010	329
801.255	1.300	190	801.421	0.360	359	801.483	0.290	357	801.663	2.600	305	801.746	0.010	325
801.256	1.000	189	801.422	0.480	359	801.484	0.110	357	801.664	4.100	304	801.747	0.220	348
801.257	1.200	189	801.423	0.600	359	801.485	0.170	357	801.665	8.700	304	801.748	0.210	348
801.258	1.220	190	801.424	0.180	359	801.486	0.210	357	801.668	0.781	224	801.750	0.010	329

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
801.751	0.090	**329**	**802.064**	0.250	**348**	**802.209**	0.200	**269**	**802.415**	7.300	**123**	**802.527**	7.600	**115**
801.752	0.190	**348**	**802.065**	0.240	**348**	**802.210**	0.280	**269**	**802.416**	8.700	**124**	**802.528**	8.600	**115**
801.753	0.003	**553**	**802.066**	0.230	**348**	**802.212**	0.370	**269**	**802.417**	8.700	**125**	**802.529**	12.500	**116**
801.754	0.010	**553**	**802.067**	0.220	**348**	**802.217**	0.250	**269**	**802.420**	3.100	**123**	**802.531**	12.600	**116**
801.755	0.050	**553**	**802.112**	0.050	**374**	**802.218**	0.300	**269**	**802.421**	9.700	**161**	**802.533**	12.700	**116**
801.756	0.261	**352**	**802.120**	0.190	**375**	**802.219**	0.400	**269**	**802.422**	6.800	**159**	**802.535**	12.600	**116**
801.757	0.398	**352**	**802.129**	0.500	**284**	**802.220**	0.580	**536**	**802.423**	8.700	**161**	**802.537**	12.800	**116**
801.758	0.193	**352**	**802.130**	0.500	**284**	**802.221**	0.520	**536**	**802.424**	5.800	**159**	**802.539**	13.000	**116**
801.759	1.000	**584**	**802.131**	0.030	**286**	**802.222**	0.003	**578**	**802.425**	9.400	**214**	**802.544**	16.100	**121**
801.760	2.500	**584**	**802.133**	0.020	**286**	**802.223**	0.003	**578**	**802.426**	9.400	**215**	**802.545**	9.200	**113**
801.761	3.900	**584**	**802.134**	0.010	**553**	**802.224**	1.040	**551**	**802.427**	5.900	**213**	**802.546**	5.500	**153**
801.762	3.780	**584**	**802.135**	0.080	**553**	**802.225**	1.110	**536**	**802.428**	8.400	**214**	**802.547**	5.900	**153**
801.763	5.520	**584**	**802.136**	0.100	**553**	**802.226**	1.040	**536**	**802.429**	8.400	**215**	**802.548**	6.200	**153**
801.764	0.660	**348**	**802.137**	0.430	**553**	**802.238**	0.550	**270**	**802.430**	4.900	**213**	**802.549**	5.800	**153**
801.765	0.660	**348**	**802.138**	0.430	**553**	**802.239**	0.760	**270**	**802.431**	4.800	**214**	**802.550**	6.000	**153**
801.767	0.640	**348**	**802.152**	0.120	**310**	**802.241**	1.240	**270**	**802.432**	4.800	**215**	**802.551**	6.300	**153**
801.768	0.620	**348**	**802.153**	0.060	**310**	**802.245**	0.580	**270**	**802.433**	3.800	**214**	**802.552**	8.000	**153**
801.769	0.600	**348**	**802.154**	0.070	**310**	**802.246**	0.850	**270**	**802.434**	3.800	**215**	**802.553**	5.100	**153**
801.770	0.480	**348**	**802.155**	0.110	**310**	**802.247**	1.270	**270**	**802.435**	0.880	**209**	**802.554**	5.300	**153**
801.771	0.460	**348**	**802.156**	0.070	**310**	**802.248**	0.590	**270**	**802.436**	1.000	**209**	**802.555**	5.500	**153**
801.772	0.360	**348**	**802.157**	0.130	**310**	**802.249**	0.850	**270**	**802.437**	0.000	**207**	**802.556**	5.700	**153**
801.773	0.340	**348**	**802.158**	0.110	**310**	**802.250**	1.300	**270**	**802.438**	0.000	**207**	**802.557**	9.700	**158**
801.774	0.660	**348**	**802.159**	0.180	**310**	**802.251**	2.680	**551**	**802.440**	0.000	**207**	**802.558**	15.000	**156**
801.775	0.660	**348**	**802.160**	0.190	**310**	**802.307**	6.670	**367**	**802.441**	0.000	**207**	**802.559**	16.300	**156**
801.785	0.030	**374**	**802.161**	0.250	**310**	**802.308**	7.100	**367**	**802.442**	0.700	**207**	**802.560**	16.800	**155**
801.787	0.030	**374**	**802.162**	0.100	**310**	**802.313**	0.800	**576**	**802.449**	5.500	**109**	**802.561**	18.100	**155**
801.807	0.070	**374**	**802.163**	0.170	**310**	**802.314**	0.050	**228**	**802.451**	5.900	**109**	**802.562**	13.000	**154**
801.808	0.070	**374**	**802.164**	0.100	**310**	**802.315**	0.100	**228**	**802.453**	6.200	**109**	**802.563**	13.400	**154**
801.810	0.070	**374**	**802.165**	0.180	**310**	**802.316**	0.190	**228**	**802.455**	5.500	**109**	**802.564**	13.570	**154**
801.812	0.070	**374**	**802.166**	0.380	**311**	**802.318**	22.800	**120**	**802.457**	5.900	**109**	**802.565**	13.100	**154**
801.813	0.070	**374**	**802.167**	0.270	**311**	**802.329**	1.590	**377**	**802.459**	6.300	**109**	**802.566**	13.500	**154**
801.814	0.070	**374**	**802.168**	0.390	**311**	**802.330**	0.010	**366**	**802.462**	8.000	**109**	**802.567**	13.800	**154**
801.831	0.070	**374**	**802.169**	0.280	**311**	**802.336**	1.430	**100**	**802.463**	5.100	**109**	**802.568**	14.200	**154**
801.832	0.070	**374**	**802.170**	0.500	**311**	**802.337**	0.020	**354**	**802.465**	5.300	**109**	**802.569**	12.600	**154**
801.833	0.070	**374**	**802.171**	0.400	**311**	**802.338**	1.000	**225**	**802.467**	5.500	**109**	**802.570**	12.800	**154**
801.834	0.070	**374**	**802.172**	0.350	**311**	**802.350**	1.000	**249**	**802.469**	5.700	**109**	**802.571**	13.000	**154**
801.860	0.250	**375**	**802.173**	0.300	**311**	**802.351**	0.060	**228**	**802.471**	4.500	**115**	**802.572**	13.200	**154**
801.861	0.260	**375**	**802.174**	0.400	**311**	**802.355**	0.330	**164**	**802.472**	5.500	**115**	**802.573**	20.800	**158**
801.868	0.260	**375**	**802.175**	0.270	**311**	**802.356**	0.350	**164**	**802.473**	5.600	**116**	**802.639**	14.200	**208**
801.873	0.260	**375**	**802.176**	0.560	**311**	**802.357**	0.360	**164**	**802.474**	5.700	**116**	**802.640**	15.500	**208**
801.876	0.240	**375**	**802.177**	0.820	**311**	**802.383**	0.020	**354**	**802.475**	5.800	**116**	**802.642**	16.000	**210**
801.883	0.270	**375**	**802.178**	0.540	**311**	**802.384**	0.020	**354**	**802.476**	5.700	**116**	**802.643**	16.600	**210**
801.885	0.260	**375**	**802.179**	0.790	**311**	**802.385**	0.020	**354**	**802.477**	5.900	**116**	**802.645**	12.200	**204**
801.889	0.260	**375**	**802.180**	0.500	**311**	**802.386**	0.020	**354**	**802.478**	6.100	**116**	**802.648**	12.600	**204**
801.898	0.280	**375**	**802.181**	0.760	**311**	**802.387**	0.020	**354**	**802.480**	9.700	**120**	**802.651**	12.900	**204**
801.925	0.250	**375**	**802.183**	0.640	**333**	**802.388**	0.020	**354**	**802.481**	6.900	**121**	**802.654**	12.300	**204**
801.927	0.260	**375**	**802.184**	1.145	**333**	**802.389**	0.020	**354**	**802.482**	6.000	**113**	**802.657**	12.700	**204**
801.929	0.260	**375**	**802.185**	2.250	**333**	**802.390**	0.020	**354**	**802.489**	17.400	**118**	**802.660**	13.000	**204**
801.930	0.250	**375**	**802.187**	0.310	**333**	**802.391**	0.020	**354**	**802.490**	17.100	**118**	**802.663**	13.400	**204**
801.931	0.250	**375**	**802.188**	0.003	**333**	**802.392**	0.020	**354**	**802.492**	17.800	**117**	**802.664**	14.700	**204**
801.938	0.240	**375**	**802.189**	0.070	**269**	**802.393**	0.020	**354**	**802.493**	19.000	**117**	**802.666**	11.800	**204**
801.942	0.280	**375**	**802.190**	0.070	**269**	**802.394**	0.020	**354**	**802.494**	13.000	**110**	**802.669**	12.000	**204**
801.944	0.260	**375**	**802.191**	0.160	**536**	**802.395**	3.350	**124**	**802.497**	13.400	**110**	**802.672**	12.200	**204**
801.948	0.260	**375**	**802.192**	0.400	**536**	**802.396**	2.700	**125**	**802.500**	13.700	**110**	**802.675**	12.400	**204**
801.982	0.590	**347**	**802.193**	0.290	**536**	**802.398**	5.000	**124**	**802.503**	13.100	**110**	**802.680**	11.700	**207**
801.983	0.560	**347**	**802.197**	0.200	**269**	**802.399**	5.500	**125**	**802.506**	13.500	**110**	**802.682**	11.800	**207**
801.984	0.480	**347**	**802.198**	0.350	**269**	**802.403**	4.100	**123**	**802.509**	13.800	**110**	**802.684**	11.900	**207**
801.985	0.350	**347**	**802.199**	0.400	**269**	**802.404**	4.370	**124**	**802.512**	14.660	**110**	**802.686**	11.800	**207**
802.001	0.030	**374**	**802.200**	0.230	**269**	**802.405**	4.000	**125**	**802.515**	12.600	**110**	**802.688**	12.000	**207**
802.023	0.070	**374**	**802.201**	0.320	**269**	**802.409**	3.100	**123**	**802.518**	12.800	**110**	**802.690**	12.200	**207**
802.046	0.260	**375**	**802.202**	0.410	**269**	**802.411**	9.700	**124**	**802.521**	13.000	**110**	**802.693**	0.000	**207**
802.063	0.280	**348**	**802.205**	0.240	**269**	**802.412**	5.000	**125**	**802.524**	13.200	**110**	**802.695**	20.000	**211**

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
802.696	15.300	212	802.801	0.070	371	803.063	1.540	78	803.137	3.060	68	803.564	0.220	313
802.697	5.900	206	802.802	0.070	371	803.064	1.280	78	803.138	4.500	66	803.565	0.300	313
802.702	5.400	203	802.803	0.070	371	803.065	1.600	78	803.139	4.500	68	803.566	0.200	313
802.704	5.800	203	802.805	0.070	370	803.066	4.160	79	803.141	0.800	237	803.567	0.300	313
802.706	6.100	203	802.807	0.070	370	803.067	4.220	79	803.144	1.300	237	803.568	0.200	313
802.708	5.500	203	802.808	0.070	370	803.068	4.020	79	803.145	1.280	237	803.569	0.400	313
802.710	5.900	203	802.809	0.070	370	803.069	4.100	79	803.147	1.320	237	803.570	0.270	313
802.712	6.200	203	802.810	0.070	370	803.070	1.170	184	803.148	1.450	66	803.571	0.250	312
802.716	7.900	203	802.811	0.070	370	803.071	1.160	184	803.149	2.060	68	803.572	0.450	312
802.717	5.000	203	802.812	0.070	370	803.072	0.910	184	803.150	1.480	68	803.573	0.900	312
802.719	5.200	203	802.824	0.150	228	803.073	1.060	184	803.157	4.100	66	803.574	1.100	312
802.721	5.400	203	802.825	0.090	228	803.074	1.100	184	803.158	3.200	66	803.575	0.450	312
802.723	5.600	203	802.827	0.030	228	803.075	1.640	132	803.159	3.700	66	803.576	0.850	312
802.727	5.500	207	802.828	0.040	228	803.076	2.100	132	803.160	3.850	68	803.577	0.800	312
802.728	5.600	207	802.830	2.500	585	803.077	2.080	132	803.161	3.220	68	803.578	0.950	312
802.729	5.700	207	802.831	0.491	585	803.078	2.120	132	803.162	2.600	68	803.579	0.680	312
802.730	5.600	207	802.832	4.100	585	803.079	2.600	172	803.163	3.740	68	803.580	1.100	312
802.731	5.800	207	802.833	5.180	584	803.080	2.020	172	803.166	3.000	237	803.581	0.010	344
802.732	6.000	207	802.834	4.150	584	803.081	2.040	174	803.167	2.900	237	803.582	0.050	344
802.733	0.000	207	802.835	2.670	584	803.082	2.040	226	803.177	1.940	237	803.583	0.080	344
802.734	9.600	211	802.836	0.010	342	803.083	1.960	227	803.179	1.700	237	803.584	0.110	344
802.735	6.800	212	802.837	0.010	342	803.084	1.500	172	803.183	1.340	237	803.585	0.150	344
802.736	5.900	206	802.838	0.010	342	803.085	1.000	172	803.184	1.990	237	803.586	0.676	223
802.740	0.780	209	802.839	0.010	342	803.086	1.300	172	803.185	1.420	237	803.587	0.680	223
802.741	0.780	209	802.840	0.010	342	803.087	1.800	172	803.186	4.500	66	803.588	2.000	223
802.742	1.200	209	802.841	0.010	342	803.088	0.970	174	803.187	4.500	68	803.589	0.680	223
802.750	0.100	570	802.842	0.010	342	803.089	1.240	174	803.188	4.100	66	803.590	0.696	223
802.751	0.110	570	802.843	0.010	342	803.090	1.440	174	803.189	3.920	68	803.591	0.710	223
802.752	0.090	570	802.844	0.010	342	803.092	1.200	226	803.195	2.400	237	803.592	0.800	223
802.753	0.100	570	802.845	0.010	342	803.093	1.400	226	803.196	3.300	66	803.593	0.090	314
802.754	0.200	570	802.846	0.010	342	803.095	1.240	227	803.197	2.300	66	803.594	0.110	314
802.755	0.220	570	802.847	0.010	342	803.096	1.800	227	803.198	2.320	66	803.595	0.100	314
802.756	0.130	568	802.848	0.010	342	803.097	2.800	172	803.199	2.060	66	803.596	0.190	264
802.757	0.020	355	802.942	2.270	369	803.098	3.000	172	803.200	3.180	68	803.597	0.472	58
802.758	0.020	355	802.943	1.330	369	803.099	2.800	172	803.201	2.340	68	803.598	0.580	58
802.759	0.030	355	802.944	0.800	369	803.100	2.800	172	803.202	2.060	68	803.599	1.000	59
802.760	0.030	355	802.945	0.600	369	803.101	1.840	172	803.206	1.680	237	803.600	0.900	165
802.761	0.050	355	802.946	2.500	369	803.102	1.840	174	803.207	0.962	225	803.601	1.200	58
802.762	0.050	355	802.947	1.800	369	803.103	1.840	226	803.208	1.100	225	803.602	0.170	314
802.767	0.020	355	802.948	1.400	369	803.104	2.000	227	803.209	1.260	225	803.603	0.980	164
802.768	0.030	355	802.949	1.200	369	803.105	0.690	172	803.210	1.080	225	803.604	0.200	216
802.769	0.050	355	802.950	0.900	369	803.106	0.750	174	803.211	1.250	225	803.608	0.500	59
802.777	0.441	372	802.963	1.080	525	803.108	1.100	237	803.212	1.500	225	803.616	0.900	167
802.778	1.170	372	803.041	1.700	239	803.112	2.520	237	803.213	1.600	225	803.619	1.260	167
802.781	0.020	370	803.042	1.020	239	803.113	2.000	237	803.214	0.770	225	803.620	1.040	167
802.782	0.030	370	803.043	1.200	239	803.114	1.640	237	803.215	0.906	225	803.621	2.300	167
802.783	0.040	370	803.044	0.500	186	803.115	2.700	66	803.216	1.900	225	803.622	0.860	167
802.785	1.910	373	803.046	0.500	186	803.116	2.060	66	803.217	1.650	225	803.623	0.940	167
802.787	0.070	373	803.048	0.500	186	803.117	2.620	68	803.218	0.800	225	803.624	1.360	167
802.788	0.070	371	803.050	0.600	186	803.118	2.060	68	803.220	1.100	170	803.625	0.800	167
802.789	0.070	371	803.051	0.670	78	803.119	1.640	68	803.221	0.595	170	803.626	1.700	167
802.790	0.070	371	803.052	0.680	78	803.121	3.400	237	803.222	0.650	170	803.627	1.200	167
802.791	0.070	371	803.053	0.480	78	803.125	1.700	237	803.554	0.080	313	803.629	0.770	167
802.792	0.070	371	803.054	0.620	78	803.128	2.240	237	803.555	0.080	313	803.631	1.080	224
802.793	0.070	371	803.055	0.640	78	803.129	2.020	237	803.556	0.100	313	803.730	3.550	519
802.794	0.070	371	803.056	1.320	78	803.130	2.600	66	803.557	0.170	313	803.731	5.070	519
802.795	0.070	371	803.057	1.640	78	803.131	2.360	66	803.558	0.130	313	803.736	4.000	249
802.796	0.070	371	803.058	1.360	78	803.132	2.630	68	803.559	0.200	313	803.737	0.500	249
802.797	0.070	371	803.059	1.700	78	803.133	2.360	68	803.560	0.110	313	803.738	2.050	249
802.798	0.070	371	803.060	1.050	78	803.134	3.700	66	803.561	0.180	313	803.739	0.800	249
802.799	0.070	371	803.061	1.140	78	803.135	3.050	66	803.562	0.180	313	803.740	3.600	249
802.800	0.070	371	803.062	1.240	78	803.136	3.700	68	803.563	0.330	313	803.741	0.020	354

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
803.742	0.020	**354**	**804.158**	0.010	**325**	**804.667**	0.003	**366**	**804.847**	0.020	**335**	**805.046**	28.300	**111**
803.743	0.020	**354**	**804.159**	0.010	**325**	**804.668**	0.003	**366**	**804.848**	0.040	**335**	**805.047**	19.300	**111**
803.744	0.020	**354**	**804.160**	0.010	**325**	**804.669**	0.010	**366**	**804.849**	0.040	**335**	**805.048**	19.700	**111**
803.745	0.020	**354**	**804.161**	0.010	**325**	**804.670**	0.010	**366**	**804.850**	0.030	**335**	**805.049**	20.000	**111**
803.746	0.020	**354**	**804.162**	0.010	**325**	**804.671**	0.010	**366**	**804.851**	0.020	**335**	**805.050**	23.700	**111**
803.747	0.020	**354**	**804.163**	0.010	**325**	**804.672**	0.005	**366**	**804.852**	0.300	**335**	**805.051**	24.100	**111**
803.748	0.020	**354**	**804.164**	0.010	**325**	**804.678**	0.660	**355**	**804.853**	0.020	**335**	**805.052**	24.400	**111**
803.749	0.020	**354**	**804.165**	0.010	**325**	**804.679**	0.600	**355**	**804.854**	0.050	**335**	**805.053**	28.100	**111**
803.750	0.020	**354**	**804.166**	0.010	**325**	**804.680**	0.030	**583**	**804.855**	0.050	**335**	**805.054**	28.500	**111**
803.751	0.020	**354**	**804.167**	0.010	**325**	**804.681**	0.030	**583**	**804.856**	0.040	**335**	**805.055**	28.800	**111**
803.752	0.020	**354**	**804.168**	0.010	**325**	**804.682**	0.250	**583**	**804.857**	0.040	**335**	**805.057**	19.400	**111**
803.754	0.020	**354**	**804.169**	0.010	**325**	**804.683**	0.030	**583**	**804.858**	0.040	**335**	**805.058**	19.800	**111**
803.755	0.020	**354**	**804.170**	0.010	**325**	**804.684**	0.030	**583**	**804.860**	0.030	**335**	**805.060**	20.100	**111**
803.756	0.040	**354**	**804.171**	0.010	**325**	**804.685**	0.030	**583**	**804.861**	0.036	**354**	**805.061**	23.800	**111**
803.757	0.020	**354**	**804.172**	0.010	**325**	**804.686**	0.220	**583**	**804.862**	0.061	**354**	**805.062**	24.200	**111**
803.758	0.020	**354**	**804.173**	0.010	**325**	**804.687**	0.030	**583**	**804.863**	0.052	**354**	**805.063**	24.500	**111**
803.759	0.020	**354**	**804.174**	0.010	**325**	**804.688**	0.250	**583**	**804.864**	0.078	**354**	**805.064**	28.200	**111**
803.760	0.020	**354**	**804.175**	0.010	**325**	**804.690**	3.500	**77**	**804.865**	0.071	**354**	**805.065**	28.600	**111**
803.761	0.020	**354**	**804.176**	0.010	**325**	**804.691**	3.800	**77**	**804.866**	0.112	**354**	**805.066**	28.900	**111**
803.762	0.020	**354**	**804.177**	0.010	**325**	**804.693**	2.500	**73**	**804.867**	0.108	**354**	**805.067**	20.500	**111**
803.763	0.020	**354**	**804.266**	0.000	**207**	**804.697**	4.200	**73**	**804.868**	0.160	**354**	**805.069**	24.900	**111**
804.108	0.010	**326**	**804.267**	0.130	**310**	**804.698**	4.400	**73**	**804.869**	0.169	**354**	**805.070**	29.300	**111**
804.109	0.020	**326**	**804.268**	0.230	**310**	**804.699**	4.700	**73**	**804.870**	0.320	**354**	**805.077**	0.500	**80**
804.110	0.020	**326**	**804.269**	0.140	**310**	**804.700**	5.000	**73**	**804.871**	0.525	**354**	**805.078**	0.660	**80**
804.111	0.020	**326**	**804.270**	0.220	**310**	**804.749**	1.260	**89**	**804.872**	1.000	**354**	**805.079**	0.670	**80**
804.112	0.020	**326**	**804.271**	0.120	**310**	**804.750**	1.400	**89**	**804.873**	0.010	**354**	**805.080**	0.700	**80**
804.113	0.020	**326**	**804.272**	0.220	**310**	**804.751**	1.300	**89**	**804.874**	0.022	**354**	**805.081**	0.720	**80**
804.114	0.010	**326**	**804.273**	0.120	**310**	**804.752**	1.300	**89**	**804.875**	0.020	**354**	**805.082**	1.180	**80**
804.115	0.260	**315**	**804.274**	0.220	**310**	**804.753**	4.140	**89**	**804.876**	0.032	**354**	**805.083**	1.150	**80**
804.117	0.160	**353**	**804.275**	0.420	**311**	**804.754**	4.300	**89**	**804.877**	5.400	**287**	**805.084**	1.450	**80**
804.119	0.200	**353**	**804.276**	0.280	**311**	**804.755**	4.100	**89**	**804.878**	5.140	**287**	**805.085**	1.200	**80**
804.121	0.300	**353**	**804.277**	0.420	**311**	**804.756**	4.200	**89**	**804.917**	3.820	**181**	**805.086**	1.500	**80**
804.128	1.100	**361**	**804.278**	0.290	**311**	**804.757**	4.700	**103**	**804.945**	0.070	**371**	**805.087**	1.200	**80**
804.129	1.100	**361**	**804.279**	0.560	**311**	**804.758**	5.100	**103**	**804.949**	2.500	**583**	**805.088**	1.540	**80**
804.130	1.000	**361**	**804.280**	0.400	**311**	**804.759**	5.740	**103**	**804.962**	0.940	**224**	**805.089**	1.240	**80**
804.131	1.000	**361**	**804.281**	0.380	**311**	**804.760**	1.960	**103**	**804.969**	3.000	**197**	**805.090**	1.600	**80**
804.132	0.010	**325**	**804.282**	0.250	**311**	**804.761**	2.360	**103**	**804.970**	6.300	**98**	**805.091**	3.940	**81**
804.133	0.012	**325**	**804.283**	0.430	**311**	**804.762**	2.300	**103**	**804.971**	4.500	**197**	**805.092**	3.960	**81**
804.134	0.010	**325**	**804.284**	0.290	**311**	**804.763**	5.100	**103**	**804.972**	4.500	**197**	**805.093**	4.000	**81**
804.135	0.010	**325**	**804.285**	0.260	**309**	**804.764**	5.700	**103**	**804.973**	6.700	**98**	**805.094**	4.100	**81**
804.136	0.010	**325**	**804.286**	0.450	**309**	**804.765**	6.580	**103**	**804.974**	7.800	**98**	**805.096**	1.120	**185**
804.137	0.010	**325**	**804.287**	0.750	**309**	**804.771**	0.515	**352**	**804.975**	4.100	**98**	**805.097**	1.140	**185**
804.138	0.010	**325**	**804.288**	0.440	**309**	**804.772**	0.020	**349**	**804.976**	4.400	**196**	**805.098**	1.180	**185**
804.139	0.010	**325**	**804.289**	0.600	**309**	**804.773**	0.040	**349**	**804.977**	5.500	**196**	**805.099**	1.300	**185**
804.140	0.010	**325**	**804.290**	1.230	**309**	**804.783**	0.007	**366**	**804.978**	5.000	**196**	**805.100**	0.768	**180**
804.141	0.010	**325**	**804.291**	0.410	**309**	**804.796**	0.002	**543**	**804.979**	6.500	**196**	**805.101**	1.020	**180**
804.142	0.010	**325**	**804.292**	0.750	**309**	**804.821**	0.010	**286**	**804.995**	4.130	**136**	**805.102**	1.780	**180**
804.143	0.010	**325**	**804.293**	1.200	**309**	**804.825**	2.500	**108**	**805.002**	8.500	**152**	**805.103**	2.420	**180**
804.144	0.010	**325**	**804.294**	0.760	**309**	**804.827**	0.090	**348**	**805.016**	0.400	**128**	**805.104**	2.560	**180**
804.145	0.010	**325**	**804.295**	0.900	**309**	**804.828**	0.080	**348**	**805.018**	2.700	**199**	**805.105**	3.240	**180**
804.146	0.010	**325**	**804.296**	1.400	**309**	**804.829**	0.350	**348**	**805.019**	2.300	**199**	**805.106**	2.890	**181**
804.147	0.010	**325**	**804.297**	0.690	**309**	**804.830**	0.340	**348**	**805.035**	18.900	**111**	**805.107**	3.460	**181**
804.148	0.010	**325**	**804.298**	0.980	**309**	**804.831**	0.340	**348**	**805.036**	19.100	**111**	**805.108**	4.020	**181**
804.149	0.010	**325**	**804.644**	7.500	**543**	**804.832**	0.320	**348**	**805.037**	19.300	**111**	**805.110**	3.240	**181**
804.150	0.010	**325**	**804.645**	7.600	**543**	**804.833**	0.310	**348**	**805.038**	19.500	**111**	**805.111**	4.660	**181**
804.151	0.010	**325**	**804.646**	17.500	**543**	**804.834**	0.090	**347**	**805.039**	23.300	**111**	**805.112**	3.700	**181**
804.152	0.010	**325**	**804.649**	1.330	**576**	**804.835**	0.070	**347**	**805.040**	23.500	**111**	**805.113**	4.160	**181**
804.153	0.010	**325**	**804.656**	1.180	**577**	**804.836**	2.600	**108**	**805.041**	23.700	**111**	**805.114**	5.140	**181**
804.154	0.010	**325**	**804.658**	0.400	**577**	**804.838**	2.700	**108**	**805.042**	23.900	**111**	**805.115**	6.160	**181**
804.155	0.010	**325**	**804.661**	2.300	**108**	**804.844**	0.010	**335**	**805.043**	27.700	**111**	**805.116**	9.100	**181**
804.156	0.010	**325**	**804.662**	0.200	**578**	**804.845**	0.010	**335**	**805.044**	27.900	**111**	**805.117**	1.400	**181**
804.157	0.010	**325**	**804.666**	0.003	**366**	**804.846**	0.020	**335**	**805.045**	28.100	**111**	**805.118**	4.650	**181**

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
805.119	5.080	**181**	**805.412**	0.430	**264**	**805.527**	0.320	**184**	**805.645**	7.150	**147**	**805.826**	1.760	**83**
805.151	4.900	**199**	**805.413**	0.200	**348**	**805.530**	2.100	**300**	**805.646**	1.950	**194**	**805.827**	0.005	**370**
805.152	3.400	**199**	**805.423**	6.000	**583**	**805.531**	1.200	**100**	**805.647**	1.170	**372**	**805.828**	0.520	**164**
805.156	0.070	**348**	**805.424**	4.040	**136**	**805.532**	0.190	**355**	**805.655**	4.100	**201**	**805.829**	1.060	**182**
805.157	0.060	**348**	**805.430**	3.790	**136**	**805.535**	9.300	**295**	**805.656**	4.700	**201**	**805.830**	1.400	**182**
805.158	0.050	**348**	**805.431**	4.200	**136**	**805.536**	9.950	**295**	**805.657**	10.100	**201**	**805.831**	2.100	**185**
805.159	0.040	**348**	**805.433**	4.720	**136**	**805.537**	6.560	**294**	**805.658**	6.400	**175**	**805.832**	2.300	**185**
805.168	1.900	**100**	**805.435**	4.950	**136**	**805.538**	3.450	**296**	**805.659**	7.600	**175**	**805.833**	0.800	**194**
805.170	4.400	**100**	**805.436**	5.980	**136**	**805.539**	3.900	**296**	**805.660**	6.840	**175**	**805.834**	1.000	**194**
805.172	1.040	**360**	**805.438**	6.020	**136**	**805.540**	5.070	**296**	**805.661**	8.820	**175**	**805.835**	0.410	**267**
805.173	0.480	**360**	**805.442**	1.500	**583**	**805.542**	1.000	**202**	**805.662**	7.600	**175**	**805.836**	0.430	**267**
805.174	0.180	**165**	**805.444**	0.650	**100**	**805.543**	0.010	**581**	**805.663**	0.067	**344**	**805.837**	0.480	**267**
805.194	0.400	**230**	**805.446**	0.190	**355**	**805.544**	0.310	**375**	**805.664**	0.009	**344**	**805.838**	0.520	**267**
805.201	5.800	**199**	**805.449**	4.600	**70**	**805.548**	0.800	**184**	**805.665**	0.135	**344**	**805.839**	0.570	**267**
805.232	2.400	**198**	**805.450**	5.720	**70**	**805.549**	1.440	**80**	**805.666**	0.180	**344**	**805.840**	1.320	**267**
805.234	1.500	**198**	**805.451**	5.100	**70**	**805.550**	1.020	**82**	**805.668**	0.090	**334**	**805.841**	1.280	**267**
805.235	1.400	**198**	**805.452**	6.900	**70**	**805.551**	0.980	**82**	**805.669**	0.090	**334**	**805.842**	0.640	**268**
805.236	1.400	**198**	**805.453**	5.400	**70**	**805.553**	0.240	**353**	**805.670**	0.090	**334**	**805.843**	0.850	**268**
805.237	2.000	**198**	**805.454**	7.640	**70**	**805.560**	0.980	**267**	**805.671**	0.090	**334**	**805.844**	1.080	**268**
805.238	1.360	**362**	**805.455**	5.600	**70**	**805.569**	0.860	**96**	**805.672**	0.090	**334**	**805.845**	1.500	**583**
805.239	1.594	**362**	**805.456**	8.420	**70**	**805.570**	1.900	**114**	**805.673**	0.090	**334**	**805.846**	3.900	**583**
805.240	0.110	**362**	**805.457**	3.980	**176**	**805.571**	1.980	**114**	**805.674**	0.052	**580**	**805.847**	1.300	**542**
805.241	1.350	**362**	**805.458**	4.220	**176**	**805.573**	1.340	**194**	**805.675**	0.200	**580**	**805.848**	1.900	**542**
805.242	1.540	**362**	**805.459**	4.760	**176**	**805.574**	1.590	**194**	**805.677**	1.720	**80**	**805.849**	0.200	**536**
805.243	1.340	**101**	**805.460**	0.160	**353**	**805.575**	0.240	**264**	**805.678**	2.100	**80**	**805.850**	0.320	**536**
805.244	0.160	**348**	**805.461**	1.820	**527**	**805.576**	0.700	**223**	**805.679**	4.900	**81**	**805.851**	0.260	**536**
805.245	0.130	**348**	**805.462**	0.620	**78**	**805.584**	1.200	**146**	**805.680**	5.000	**81**	**805.852**	0.700	**536**
805.246	0.480	**128**	**805.463**	1.180	**78**	**805.585**	1.780	**146**	**805.684**	0.100	**228**	**805.853**	0.600	**536**
805.247	0.580	**129**	**805.464**	1.400	**78**	**805.586**	1.500	**146**	**805.723**	1.080	**107**	**805.854**	1.100	**536**
805.250	0.490	**165**	**805.465**	0.940	**184**	**805.595**	0.920	**267**	**805.724**	0.919	**284**	**805.855**	1.000	**536**
805.251	0.580	**164**	**805.466**	1.060	**184**	**805.596**	2.100	**132**	**805.728**	0.130	**355**	**805.856**	3.300	**520**
805.252	0.530	**167**	**805.467**	1.300	**184**	**805.597**	2.100	**132**	**805.732**	1.200	**199**	**805.858**	0.500	**524**
805.253	0.610	**167**	**805.468**	1.300	**184**	**805.598**	2.100	**132**	**805.733**	0.020	**355**	**805.859**	0.600	**524**
805.254	0.660	**167**	**805.469**	1.400	**184**	**805.600**	6.120	**132**	**805.734**	0.110	**355**	**805.860**	0.500	**524**
805.255	0.720	**167**	**805.470**	1.400	**184**	**805.601**	6.300	**132**	**805.735**	0.100	**355**	**805.861**	0.600	**524**
805.256	0.650	**167**	**805.471**	0.180	**220**	**805.604**	2.550	**146**	**805.736**	0.060	**355**	**805.862**	0.600	**524**
805.257	0.800	**165**	**805.472**	0.180	**220**	**805.605**	1.240	**146**	**805.737**	0.020	**355**	**805.863**	0.700	**524**
805.258	0.820	**165**	**805.473**	0.190	**220**	**805.606**	1.980	**146**	**805.738**	0.020	**355**	**805.864**	0.790	**524**
805.259	0.790	**164**	**805.474**	0.290	**220**	**805.608**	2.000	**146**	**805.739**	0.360	**355**	**805.865**	0.600	**524**
805.260	0.830	**164**	**805.475**	0.290	**220**	**805.609**	1.240	**146**	**805.740**	0.290	**355**	**805.866**	1.000	**524**
805.261	0.920	**164**	**805.476**	0.290	**220**	**805.610**	1.240	**146**	**805.750**	7.440	**175**	**805.867**	0.700	**524**
805.262	0.860	**168**	**805.477**	0.900	**185**	**805.611**	2.220	**146**	**805.753**	5.600	**132**	**805.868**	1.000	**524**
805.263	0.920	**168**	**805.478**	1.360	**185**	**805.623**	3.720	**147**	**805.758**	3.150	**147**	**805.869**	0.001	**528**
805.264	1.090	**168**	**805.479**	1.400	**185**	**805.624**	4.320	**147**	**805.773**	7.650	**75**	**805.870**	0.001	**528**
805.265	0.980	**168**	**805.480**	0.820	**80**	**805.626**	1.240	**147**	**805.802**	0.230	**326**	**805.871**	0.001	**528**
805.266	1.200	**168**	**805.481**	0.920	**80**	**805.627**	4.450	**147**	**805.808**	5.100	**133**	**805.872**	0.001	**528**
805.267	1.040	**168**	**805.482**	1.340	**80**	**805.628**	5.440	**147**	**805.809**	5.400	**133**	**805.873**	0.001	**528**
805.268	1.320	**168**	**805.483**	1.760	**80**	**805.629**	6.500	**147**	**805.810**	5.180	**133**	**805.874**	1.400	**292**
805.269	1.140	**168**	**805.484**	1.340	**80**	**805.630**	3.300	**147**	**805.811**	0.210	**571**	**805.875**	1.840	**292**
805.270	1.220	**168**	**805.485**	1.840	**80**	**805.631**	4.150	**147**	**805.812**	0.210	**571**	**805.876**	3.700	**292**
805.271	1.710	**168**	**805.486**	4.240	**81**	**805.632**	5.450	**147**	**805.814**	0.560	**76**	**805.877**	4.000	**292**
805.282	2.400	**198**	**805.487**	4.320	**81**	**805.633**	6.500	**147**	**805.815**	1.320	**76**	**805.878**	4.200	**293**
805.283	5.120	**542**	**805.489**	2.900	**367**	**805.635**	3.600	**147**	**805.816**	1.560	**76**	**805.879**	6.100	**293**
805.284	3.240	**542**	**805.492**	0.020	**350**	**805.636**	5.100	**147**	**805.817**	3.950	**76**	**805.880**	2.700	**296**
805.290	4.700	**169**	**805.493**	0.020	**350**	**805.637**	7.200	**147**	**805.818**	4.280	**76**	**805.881**	3.200	**296**
805.296	4.900	**148**	**805.494**	0.020	**350**	**805.638**	8.920	**147**	**805.819**	4.600	**76**	**805.882**	0.030	**347**
805.298	6.200	**148**	**805.495**	0.020	**350**	**805.639**	4.180	**147**	**805.820**	0.510	**78**	**805.883**	0.020	**347**
805.299	7.300	**148**	**805.496**	0.020	**350**	**805.640**	6.250	**147**	**805.821**	0.620	**78**	**805.884**	0.020	**347**
805.305	7.500	**295**	**805.497**	0.020	**350**	**805.641**	8.450	**147**	**805.822**	4.520	**79**	**805.885**	0.070	**374**
805.306	7.400	**295**	**805.498**	0.020	**350**	**805.642**	12.400	**147**	**805.823**	4.640	**79**	**805.886**	0.560	**375**
805.356	0.280	**348**	**805.499**	0.020	**350**	**805.643**	4.540	**147**	**805.824**	4.760	**79**	**805.887**	0.590	**375**
805.397	0.050	**588**				**805.644**	5.860	**147**	**805.825**	4.860	**79**	**805.888**	0.570	**375**

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
805.889	0.520	**375**	**806.274**	3.900	**183**	**806.408**	0.120	**329**	**806.607**	1.000	**151**	**806.731**	1.200	**271**
805.890	0.900	**541**	**806.284**	1.600	**91**	**806.409**	0.120	**329**	**806.608**	1.000	**151**	**806.732**	1.300	**271**
805.891	0.046	**300**	**806.312**	0.170	**232**	**806.412**	0.220	**332**	**806.609**	1.100	**151**	**806.733**	1.800	**271**
805.892	0.066	**300**	**806.313**	0.240	**232**	**806.413**	0.220	**332**	**806.622**	0.220	**567**	**806.734**	0.110	**220**
805.894	0.800	**369**	**806.328**	1.020	**91**	**806.414**	0.210	**332**	**806.624**	0.047	**503**	**806.737**	8.000	**369**
805.897	0.028	**503**	**806.347**	1.160	**138**	**806.415**	0.200	**332**	**806.627**	6.800	**176**	**806.738**	8.000	**369**
805.909	0.640	**352**	**806.348**	1.160	**138**	**806.416**	0.190	**332**	**806.628**	7.200	**176**	**806.739**	0.120	**332**
805.969	0.620	**352**	**806.349**	1.200	**138**	**806.417**	0.180	**332**	**806.629**	7.900	**176**	**806.742**	2.300	**438**
805.970	0.135	**352**	**806.350**	1.220	**138**	**806.418**	0.170	**332**	**806.630**	6.900	**196**	**806.743**	4.400	**438**
805.971	0.189	**352**	**806.351**	1.240	**138**	**806.419**	0.150	**332**	**806.631**	8.000	**196**	**806.744**	8.300	**438**
806.011	1.200	**83**	**806.352**	1.300	**140**	**806.420**	0.140	**332**	**806.636**	0.550	**216**	**806.747**	1.000	**128**
806.012	1.800	**83**	**806.353**	1.300	**140**	**806.421**	0.130	**332**	**806.656**	3.700	**333**	**806.795**	10.500	**367**
806.013	4.200	**84**	**806.354**	1.300	**140**	**806.422**	2.300	**316**	**806.657**	0.555	**333**	**806.800**	0.230	**166**
806.014	4.500	**84**	**806.355**	1.300	**140**	**806.423**	4.500	**316**	**806.671**	0.340	**262**	**806.802**	0.100	**316**
806.020	0.704	**292**	**806.356**	1.300	**140**	**806.424**	0.100	**316**	**806.680**	1.200	**91**	**806.803**	0.100	**316**
806.021	1.200	**296**	**806.357**	1.300	**140**	**806.425**	0.100	**316**	**806.681**	1.500	**91**	**806.804A**	0.170	**164**
806.022	1.500	**296**	**806.358**	1.380	**140**	**806.426**	0.100	**316**	**806.682**	2.100	**91**	**806.805**	1.270	**587**
806.023	1.600	**296**	**806.359**	1.380	**140**	**806.427**	0.170	**316**	**806.683**	4.300	**92**	**806.806**	0.600	**586**
806.024	2.000	**296**	**806.360**	3.140	**140**	**806.428**	0.170	**316**	**806.684**	5.900	**92**	**806.807**	1.300	**586**
806.025	4.900	**296**	**806.361**	3.300	**140**	**806.429**	0.160	**316**	**806.685**	7.000	**92**	**806.808**	2.700	**586**
806.044	3.000	**198**	**806.362**	1.700	**70**	**806.430**	0.090	**220**	**806.686**	8.200	**92**	**806.810**	1.400	**137**
806.045	2.900	**198**	**806.363**	2.100	**70**	**806.431**	0.090	**220**	**806.687**	9.700	**92**	**806.811**	1.600	**137**
806.046	2.900	**198**	**806.364**	1.600	**176**	**806.436**	0.400	**588**	**806.688**	9.900	**92**	**806.812**	3.500	**137**
806.047	3.600	**198**	**806.365**	2.100	**176**	**806.437**	0.010	**588**	**806.689**	12.700	**92**	**806.813**	3.800	**137**
806.048	3.600	**198**	**806.370**	1.300	**167**	**806.439**	0.100	**565**	**806.690**	5.500	**93**	**806.830**	2.800	**188**
806.049	4.200	**198**	**806.371**	1.800	**168**	**806.440**	0.460	**565**	**806.692**	6.100	**93**	**806.831**	2.900	**188**
806.050	1.500	**199**	**806.372**	2.200	**168**	**806.441**	1.900	**140**	**806.693**	8.100	**93**	**806.832**	3.000	**188**
806.051	3.650	**199**	**806.373**	4.300	**169**	**806.442**	0.140	**348**	**806.694**	9.500	**93**	**806.833**	3.020	**188**
806.052	6.700	**199**	**806.374**	1.300	**169**	**806.443**	0.090	**348**	**806.695**	10.300	**93**	**806.834**	3.300	**188**
806.148	0.020	**503**	**806.375**	1.800	**129**	**806.444**	1.700	**186**	**806.696**	12.900	**93**	**806.835**	4.000	**188**
806.164	2.900	**77**	**806.376**	2.300	**129**	**806.462**	0.190	**352**	**806.697**	15.200	**93**	**806.836**	3.400	**188**
806.197	0.020	**349**	**806.377**	4.000	**130**	**806.463**	0.340	**232**	**806.698**	0.400	**243**	**806.837**	4.200	**188**
806.198	0.090	**349**	**806.378**	4.600	**130**	**806.465**	0.140	**349**	**806.699**	0.400	**243**	**806.840**	0.001	**334**
806.243	1.760	**296**	**806.379**	0.950	**60**	**806.466**	0.050	**349**	**806.700**	0.500	**243**	**806.862**	0.020	**326**
806.244	2.280	**296**	**806.380**	1.600	**62**	**806.467**	0.040	**349**	**806.701**	0.500	**243**	**806.863**	0.020	**326**
806.245	3.950	**296**	**806.381**	1.900	**62**	**806.468**	0.040	**349**	**806.702**	0.500	**243**	**806.864**	0.020	**326**
806.246	2.200	**294**	**806.382**	2.200	**62**	**806.476**	0.090	**349**	**806.703**	2.400	**243**	**806.865**	0.020	**326**
806.247	2.640	**295**	**806.383**	2.500	**62**	**806.477**	0.110	**349**	**806.704**	3.000	**243**	**806.866**	0.020	**326**
806.248	2.640	**295**	**806.384**	4.300	**63**	**806.478**	0.140	**349**	**806.705**	2.700	**243**	**806.896**	1.100	**146**
806.249	3.100	**295**	**806.385**	4.900	**63**	**806.541**	0.260	**560**	**806.706**	3.800	**243**	**806.902**	1.200	**91**
806.250	3.100	**295**	**806.386**	5.800	**63**	**806.575**	5.200	**169**	**806.707**	4.800	**243**	**806.907**	0.090	**221**
806.252	5.000	**295**	**806.387**	6.240	**63**	**806.579**	4.300	**98**	**806.708**	5.600	**243**	**806.908**	0.090	**221**
806.253	3.300	**305**	**806.388**	0.290	**334**	**806.580**	5.000	**98**	**806.709**	5.200	**75**	**806.909**	0.190	**221**
806.254	3.300	**305**	**806.389**	0.060	**335**	**806.581**	4.600	**98**	**806.712**	0.460	**262**	**806.910**	0.190	**221**
806.255	4.950	**295**	**806.390**	0.200	**329**	**806.582**	5.700	**98**	**806.713**	0.560	**262**	**806.911**	0.200	**221**
806.256	3.010	**305**	**806.391**	0.200	**329**	**806.585**	4.000	**195**	**806.714**	0.740	**262**	**806.912**	0.050	**588**
806.257	0.001	**528**	**806.392**	0.190	**329**	**806.586**	4.800	**195**	**806.715**	0.650	**262**	**806.921**	2.400	**329**
806.258	0.001	**528**	**806.393**	0.190	**329**	**806.587**	5.400	**195**	**806.716**	0.780	**262**	**806.922**	4.500	**385**
806.259	0.700	**73**	**806.394**	0.190	**329**	**806.588**	6.700	**195**	**806.717**	0.860	**262**	**806.923**	8.300	**385**
806.260	1.400	**73**	**806.395**	0.180	**329**	**806.589**	5.100	**195**	**806.718**	0.970	**262**	**806.924**	1.600	**91**
806.261	1.300	**73**	**806.396**	0.180	**329**	**806.590**	6.300	**195**	**806.719**	1.100	**262**	**806.950**	0.450	**303**
806.262	1.600	**73**	**806.397**	0.180	**329**	**806.591**	4.800	**195**	**806.720**	1.600	**262**	**806.951**	0.450	**303**
806.263	1.900	**73**	**806.398**	0.170	**329**	**806.592**	7.800	**195**	**806.721**	2.200	**262**	**806.952**	0.420	**303**
806.264	2.700	**73**	**806.399**	0.170	**329**	**806.593**	6.000	**195**	**806.722**	2.400	**262**	**806.953**	0.420	**303**
806.265	4.500	**73**	**806.400**	0.160	**329**	**806.594**	0.086	**228**	**806.723**	2.500	**262**	**806.954**	0.400	**303**
806.266	1.200	**179**	**806.401**	0.160	**329**	**806.595**	1.500	**180**	**806.724**	5.100	**262**	**806.955**	0.400	**303**
806.267	1.800	**179**	**806.402**	0.150	**329**	**806.601**	0.440	**103**	**806.725**	0.700	**271**	**806.956**	0.960	**304**
806.268	2.400	**179**	**806.403**	0.150	**329**	**806.602**	0.440	**103**	**806.726**	0.800	**271**	**806.957**	0.960	**304**
806.270	5.200	**77**	**806.404**	0.140	**329**	**806.603**	0.410	**103**	**806.727**	0.900	**271**	**806.958**	0.840	**305**
806.271	5.600	**77**	**806.405**	0.140	**329**	**806.604**	1.080	**103**	**806.728**	1.000	**271**	**806.959**	0.840	**305**
806.272	6.000	**77**	**806.406**	0.130	**329**	**806.605**	1.100	**103**	**806.729**	1.000	**271**	**806.960**	0.320	**306**
806.273	2.900	**183**	**806.407**	0.130	**329**	**806.606**	1.120	**103**	**806.730**	1.100	**271**	**806.961**	0.330	**306**

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
806.962	0.340	306	807.187	0.001	561	807.406	0.100	316	807.540	0.240	382	869.005	4.300	92
806.963	0.400	306	807.188	0.003	561	807.407	0.160	317	807.541	0.260	382	869.007	4.800	92
806.964	0.480	306	807.189	0.010	228	807.408	0.160	317	807.546	4.300	193	869.008	2.300	91
806.965	0.710	306	807.190	0.010	228	807.409	0.160	316	807.547	5.700	94	869.011	4.000	92
806.966	0.070	559	807.192	0.030	555	807.410	0.100	314	807.552	0.360	382	869.012	5.100	92
806.967	0.070	559	807.193	0.030	555	807.411	0.100	314	807.553	0.540	382	869.013	4.500	92
806.968	0.150	559	807.194	0.030	558	807.412	0.110	314	807.554	0.025	286	869.014	4.700	92
806.969	0.200	559	807.195	0.030	558	807.413	0.180	314	807.556	0.010	286	869.015	4.900	92
806.970	0.260	559	807.196	0.030	557	807.434	0.720	240	807.572	0.760	258	869.017	1.100	91
806.991	0.180	318	807.197	0.020	364	807.435	0.710	240	807.576	4.600	296	869.018	12.000	93
806.992	0.180	318	807.198	0.030	364	807.436	0.720	240	807.577	4.600	296	869.019	0.000	243
806.993	0.170	318	807.199	0.060	364	807.437	0.750	240	807.578	0.240	349	869.024	4.900	192
806.994	0.260	318	807.200	1.200	102	807.438	0.780	240	807.579	0.210	349	869.025	7.500	192
806.995	0.250	318	807.201	1.300	102	807.439	1.100	240	807.580	0.500	78	938.834	0.001	471
806.996	0.240	318	807.202	1.400	102	807.440	1.100	240	807.582	0.600	78	938.835	0.004	490
806.997	0.050	588	807.203	1.100	139	807.441	1.300	240	807.583	1.200	78	938.837	0.001	488
807.003	14.100	75	807.204	1.100	139	807.442	1.100	240	807.584	4.500	79	938.840	0.001	488
807.015	0.690	567	807.205	1.200	139	807.443	1.300	240	807.585	0.700	353	938.841	0.001	471
807.016	1.200	438	807.206	1.200	139	807.444	1.100	240	807.586	0.700	352	938.862	0.010	491
807.017	0.001	431	807.207	1.200	139	807.445	1.300	240	807.640	0.200	303	938.866	0.001	490
807.018	0.001	431	807.209	3.400	147	807.446	1.200	240	807.641	0.200	303	938.867	0.001	490
807.019	0.020	431	807.210	5.600	147	807.447	1.300	240	807.642	0.200	303	938.868	0.004	490
807.020	0.020	431	807.211	0.280	358	807.455	0.200	526	807.643	0.200	303	938.869	0.004	490
807.041	0.010	503	807.212	0.490	358	807.456	0.400	526	807.644	0.160	303	938.870	0.010	491
807.071	6.500	92	807.213	0.610	358	807.457	0.300	526	807.645	0.160	303	938.871	0.010	491
807.088	0.900	220	807.214	0.760	358	807.458	0.600	526	807.646	0.610	304	938.876	0.002	471
807.089	0.920	220	807.215	0.010	228	807.459	0.600	526	807.647	0.610	304	938.879	0.001	488
807.090	0.920	220	807.216	0.010	228	807.460	1.220	526	807.648	0.600	305	938.883	0.001	487
807.091	0.930	220	807.220	0.180	318	807.461	1.220	526	807.649	0.600	305	938.884	0.001	487
807.092	5.900	176	807.221	0.220	318	807.473	1.560	375	807.650	0.006	286	938.885	0.001	487
807.102	0.012	354	807.222	0.220	318	807.474	0.550	375	807.651	0.005	286	948.101	0.001	487
807.103	0.013	354	807.223	0.220	318	807.488	0.310	318	807.663	0.170	306	948.201	0.001	488
807.104	0.015	354	807.224	0.210	318	807.489	0.310	318	807.664	0.170	306	948.202	0.002	488
807.105	0.163	354	807.225	0.260	318	807.490	0.310	318	807.665	0.200	306	948.203	0.002	488
807.106	0.250	354	807.226	0.001	561	807.491	0.310	318	807.666	0.250	306	948.210	0.010	488
807.107	0.300	354	807.227	4.100	199	807.492	0.310	318	807.667	0.150	230	948.211	0.010	488
807.108	0.450	354	807.228	4.400	199	807.493	0.290	318	807.669	0.210	232	948.230	0.010	488
807.109	0.510	354	807.229	5.660	199	807.497	0.280	318	807.671	0.270	232	948.231	0.010	488
807.114	6.900	194	807.230	8.100	199	807.498	0.370	318	807.673	8.100	197	948.251A	0.001	488
807.115	0.900	220	807.231	8.500	199	807.499	0.370	318	807.674	5.300	98	948.252	0.001	488
807.120	0.110	221	807.232	4.200	79	807.500	0.370	318	807.675	7.000	98	948.253	0.001	488
807.123	0.310	221	807.252	0.330	220	807.501	0.370	318	807.676	8.800	98	948.270	0.001	488
807.125	0.310	221	807.253	0.380	220	807.502	0.350	318	807.677	10.500	98	948.271	0.001	488
807.126	0.320	221	807.255	0.900	351	807.503	0.330	318	807.678	8.500	148	948.301	0.010	471
807.130	6.200	194	807.319	1.400	199	807.504	0.240	319	807.679	10.200	148	948.302	0.001	471
807.131	0.003	537	807.321	0.900	199	807.505	0.240	319	807.680	7.700	196	948.310	0.001	471
807.132	0.003	537	807.322	1.000	199	807.506	0.220	319	807.681	9.500	196	948.311	0.001	471
807.133	0.003	537	807.323	1.100	199	807.507	0.210	319	807.685	0.050	567	948.312	0.001	471
807.134	0.006	537	807.361	1.300	103	807.512	0.240	319	807.686	0.100	567	948.330	0.001	471
807.135	0.003	537	807.362	1.400	103	807.513	0.240	319	807.697	0.020	503	948.331	0.001	471
807.136	0.003	537	807.363	1.500	103	807.514	0.220	319	807.710	0.160	314	948.332	0.001	471
807.137	0.003	537	807.364	1.200	151	807.515	0.210	319	807.711	0.500	580	948.350A	0.001	471
807.138	0.006	537	807.365	1.300	151	807.516	0.280	319	807.713	0.200	579	948.351A	0.001	471
807.139	0.006	567	807.366	1.400	151	807.517	0.280	319	807.714	0.200	579	948.352A	0.001	471
807.150	1.100	91	807.372	0.600	80	807.518	0.260	319	807.715	0.200	579	948.370	0.001	471
807.158	0.006	567	807.373	1.000	184	807.519	0.250	319	807.718	0.055	580	948.371	0.001	471
807.165	0.002	581	807.374	1.100	184	807.520	0.220	319	807.771	0.960	351	948.372	0.001	471
807.168	0.370	220	807.400	0.300	438	807.521	0.340	320	807.788	1.100	184	948.373	0.002	471
807.183	6.700	92	807.401	0.600	438	807.522	0.330	320	869.001	4.000	92	948.374	0.002	471
807.184	1.000	91	807.403	8.900	316	807.523	0.360	320	869.002	4.000	92	948.375	0.001	471
807.185	8.800	438	807.404	0.100	317	807.524	0.360	320	869.003	3.800	92	958.008	0.040	572
807.186	16.400	438	807.405	0.100	317	807.525	0.350	320	869.004	3.900	92	958.010	0.040	572

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
958.021	0.080	**572**	**961.120**	0.020	**329**	**961.284**	0.009	**370**	**961.474**	0.002	**325**	**961.554**	0.020	**329**
958.031	0.110	**572**	**961.127**	0.040	**328**	**961.285**	0.005	**370**	**961.477**	0.005	**325**	**961.555**	0.020	**329**
958.041	0.500	**572**	**961.146**	0.002	**330**	**961.286**	0.005	**370**	**961.479**	0.005	**325**	**961.556**	0.020	**329**
958.048	0.010	**514**	**961.147**	0.040	**330**	**961.287**	0.005	**370**	**961.481**	0.005	**325**	**961.557**	0.020	**329**
958.049	0.060	**514**	**961.148**	0.004	**330**	**961.288**	0.010	**370**	**961.483**	0.005	**325**	**961.558**	0.020	**329**
958.051	0.002	**573**	**961.149**	0.004	**330**	**961.289**	0.010	**370**	**961.485**	0.005	**325**	**961.559**	0.020	**329**
958.052	0.002	**573**	**961.150**	0.004	**330**	**961.290**	0.005	**370**	**961.487**	0.005	**325**	**961.560**	0.020	**329**
958.053	0.002	**573**	**961.151**	0.002	**330**	**961.291**	0.720	**368**	**961.489**	0.005	**325**	**961.561**	0.020	**329**
958.055	0.002	**573**	**961.152**	0.010	**330**	**961.292**	0.880	**368**	**961.491**	0.005	**325**	**961.562**	0.020	**329**
958.056	0.002	**573**	**961.153**	0.010	**330**	**961.293**	1.100	**368**	**961.493**	0.004	**325**	**961.563**	0.020	**329**
958.057	0.002	**573**	**961.154**	0.010	**330**	**961.294**	1.500	**368**	**961.495**	0.004	**325**	**961.564**	0.020	**329**
958.061	0.002	**573**	**961.155**	0.010	**330**	**961.295**	2.040	**368**	**961.497**	0.003	**325**	**961.565**	0.020	**329**
958.062	0.002	**573**	**961.156**	0.004	**330**	**961.296**	3.380	**368**	**961.498**	0.300	**326**	**961.566**	0.020	**329**
958.063	0.002	**573**	**961.160**	0.020	**330**	**961.297**	4.500	**368**	**961.500**	0.005	**329**	**961.567**	0.010	**329**
958.065	0.002	**573**	**961.161**	0.020	**330**	**961.331**	0.270	**375**	**961.501**	0.004	**329**	**961.569**	0.360	**333**
958.066	0.002	**573**	**961.165**	0.050	**330**	**961.332**	0.260	**375**	**961.502**	0.005	**329**	**961.570**	0.040	**352**
958.067	0.002	**573**	**961.166**	0.040	**330**	**961.333**	0.240	**375**	**961.503**	0.005	**329**	**961.571**	0.040	**334**
958.071	0.002	**573**	**961.167**	0.030	**330**	**961.336**	0.240	**375**	**961.504**	0.004	**329**	**961.572**	0.010	**335**
958.072	0.002	**573**	**961.168**	0.090	**330**	**961.338**	2.600	**367**	**961.505**	0.005	**329**	**961.573**	0.040	**328**
958.073	0.002	**573**	**961.169**	0.080	**330**	**961.339**	2.900	**367**	**961.506**	0.005	**329**	**961.574**	0.040	**328**
958.075	0.002	**573**	**961.170**	0.080	**330**	**961.342**	2.950	**367**	**961.507**	0.004	**329**	**961.575**	0.040	**328**
958.076	0.002	**573**	**961.171**	0.080	**330**	**961.346**	2.600	**367**	**961.508**	0.005	**329**	**961.576**	0.040	**328**
958.077	0.002	**573**	**961.172**	0.080	**330**	**961.347N**	1.200	**581**	**961.509**	0.003	**329**	**961.577**	0.040	**328**
958.081	0.002	**573**	**961.173**	0.080	**330**	**961.362**	1.360	**102**	**961.510**	0.004	**329**	**961.578**	0.040	**328**
958.082	0.002	**573**	**961.174**	0.070	**330**	**961.363**	1.480	**102**	**961.511**	0.003	**329**	**961.579**	0.040	**328**
958.083	0.002	**573**	**961.175**	0.060	**330**	**961.364**	1.550	**102**	**961.512**	0.004	**329**	**961.580**	0.040	**328**
958.085	0.002	**573**	**961.176**	0.050	**330**	**961.365**	2.160	**102**	**961.513**	0.003	**329**	**961.581**	0.040	**328**
958.086	0.002	**573**	**961.180**	0.120	**330**	**961.366**	2.740	**102**	**961.514**	0.004	**329**	**961.582**	0.040	**328**
958.087	0.002	**573**	**961.182**	0.110	**330**	**961.367**	4.080	**102**	**961.515**	0.003	**329**	**961.583**	0.040	**328**
958.091	0.010	**573**	**961.183**	0.100	**330**	**961.368**	4.160	**102**	**961.516**	0.003	**329**	**961.584**	0.040	**328**
958.092	0.010	**573**	**961.184**	0.090	**330**	**961.369**	4.860	**102**	**961.517**	0.003	**329**	**961.585**	0.040	**328**
958.093	0.010	**573**	**961.185**	0.090	**330**	**961.371**	6.180	**97**	**961.518**	0.003	**329**	**961.586**	0.030	**328**
958.095	0.010	**495**	**961.186**	0.050	**330**	**961.372**	8.040	**97**	**961.519**	0.003	**329**	**961.587**	0.040	**328**
958.096	0.010	**573**	**961.200**	0.002	**578**	**961.394**	0.490	**102**	**961.520**	0.003	**329**	**961.588**	0.040	**328**
958.097	0.010	**573**	**961.202**	0.002	**581**	**961.395**	0.520	**102**	**961.521**	0.003	**329**	**961.589**	0.030	**328**
958.155	0.012	**495**	**961.205**	0.265	**578**	**961.396**	0.610	**102**	**961.522**	0.003	**329**	**961.590**	0.030	**328**
958.156	0.013	**495**	**961.206**	0.265	**578**	**961.397**	0.700	**102**	**961.524**	0.310	**333**	**961.591**	0.030	**328**
958.157	0.002	**495**	**961.207**	0.010	**581**	**961.401**	0.030	**336**	**961.525**	0.020	**352**	**961.592**	0.030	**328**
958.158	0.003	**495**	**961.210**	0.002	**581**	**961.402**	0.030	**336**	**961.526**	0.010	**334**	**961.593**	0.030	**328**
958.313	0.002	**495**	**961.214**	0.030	**581**	**961.403**	0.030	**336**	**961.527**	0.003	**335**	**961.595**	0.350	**333**
958.314	0.002	**495**	**961.237**	0.440	**576**	**961.404**	0.050	**336**	**961.531**	0.010	**329**	**961.596**	0.080	**352**
958.425	0.004	**444**	**961.238**	0.400	**577**	**961.405**	0.040	**336**	**961.532**	0.010	**329**	**961.597**	0.060	**334**
958.430	0.004	**444**	**961.252**	0.290	**373**	**961.406**	0.050	**336**	**961.533**	0.010	**329**	**961.598**	0.020	**335**
958.433	0.004	**444**	**961.253**	0.380	**373**	**961.407**	0.040	**336**	**961.534**	0.010	**329**	**961.599**	0.020	**329**
958.435	0.004	**444**	**961.254**	0.005	**373**	**961.408**	0.050	**336**	**961.535**	0.010	**329**	**961.601**	0.070	**328**
958.440	0.004	**444**	**961.255**	5.200	**373**	**961.409**	0.020	**338**	**961.536**	0.010	**329**	**961.602**	0.080	**328**
958.475	0.004	**444**	**961.256**	7.000	**373**	**961.410**	0.020	**338**	**961.537**	0.010	**329**	**961.603**	0.070	**328**
958.480	0.004	**444**	**961.257**	9.500	**373**	**961.411**	0.020	**338**	**961.538**	0.010	**329**	**961.604**	0.070	**328**
958.483	0.004	**444**	**961.264**	1.500	**584**	**961.412**	0.040	**338**	**961.539**	0.010	**329**	**961.605**	0.070	**328**
958.485	0.004	**444**	**961.269**	5.890	**584**	**961.413**	0.040	**338**	**961.540**	0.010	**329**	**961.606**	0.070	**328**
958.490	0.004	**444**	**961.270**	2.900	**367**	**961.414**	0.040	**338**	**961.541**	0.010	**329**	**961.607**	0.070	**328**
958.501	0.001	**415**	**961.271**	2.370	**367**	**961.415**	0.040	**338**	**961.542**	0.010	**329**	**961.608**	0.080	**328**
958.502	0.001	**415**	**961.272**	6.860	**367**	**961.416**	0.040	**338**	**961.543**	0.004	**329**	**961.609**	0.070	**328**
958.503	0.001	**415**	**961.273**	5.960	**367**	**961.417**	0.100	**336**	**961.544**	0.010	**329**	**961.610**	0.070	**328**
958.601	0.020	**461**	**961.276**	0.020	**371**	**961.418**	0.100	**336**	**961.545**	0.005	**329**	**961.611**	0.070	**328**
958.602	0.020	**461**	**961.277**	0.020	**371**	**961.420**	0.100	**336**	**961.547**	0.230	**333**	**961.612**	0.070	**328**
958.603	0.020	**461**	**961.278**	0.003	**370**	**961.462**	0.003	**325**	**961.548**	0.040	**352**	**961.613**	0.070	**328**
958.604	0.020	**461**	**961.279**	0.005	**370**	**961.464**	0.003	**325**	**961.549**	0.020	**334**	**961.614**	0.070	**328**
958.611	0.020	**461**	**961.280**	0.005	**370**	**961.466**	0.003	**325**	**961.550**	0.001	**335**	**961.615**	0.070	**328**
958.612	0.020	**461**	**961.281**	0.005	**370**	**961.468**	0.003	**325**	**961.551**	0.020	**329**	**961.616**	0.060	**328**
958.613	0.020	**461**	**961.282**	0.005	**370**	**961.470**	0.002	**325**	**961.552**	0.020	**329**	**961.617**	0.070	**328**
958.614	0.020	**461**	**961.283**	0.009	**370**	**961.472**	0.003	**325**	**961.553**	0.020	**329**	**961.618**	0.070	**328**

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
961.619	0.060	328	961.708	0.540	265	961.925	0.540	71	962.289	0.180	349	962.478	0.100	347
961.620	0.060	328	961.711	0.270	265	961.926	0.830	71	962.291	0.210	352	962.479	0.100	347
961.621	0.060	328	961.712	0.360	265	961.932	1.060	71	962.292	0.380	352	962.480	0.090	347
961.622	0.060	328	961.713	0.550	265	961.933	1.130	71	962.293	0.400	352	962.481	0.090	347
961.623	0.060	328	961.714	0.920	265	961.935	1.150	71	962.294	0.170	352	962.483	0.060	347
961.624	0.060	328	961.716	0.300	265	961.936	1.270	71	962.312	0.020	350	962.484	0.180	347
961.625	0.060	328	961.717	0.300	265	961.938	1.200	71	962.313	0.080	350	962.485	0.180	347
961.626	0.050	328	961.718	0.300	265	961.939	1.390	71	962.401	0.120	348	962.486	0.170	347
961.627	0.050	328	961.721	0.520	265	961.941	1.270	71	962.402	0.110	348	962.487	0.170	347
961.629	0.730	333	961.722	0.670	265	961.942	1.550	71	962.403	0.100	348	962.488	0.080	347
961.630	0.080	352	961.723	0.530	265	961.944	1.360	71	962.404	0.090	348	962.489	0.140	347
961.631	0.080	334	961.726	0.540	265	961.945	1.810	71	962.405	0.050	348	962.491	0.100	347
961.632	0.005	335	961.727	0.690	265	961.946	1.100	71	962.406	0.150	348	962.492	0.330	347
961.641	0.100	329	961.728	0.840	265	961.947	1.440	71	962.407	0.100	348	962.493	0.320	347
961.642	0.100	329	961.731	0.580	265	961.948	1.980	71	962.408	0.370	348	962.494	0.320	347
961.643	0.100	329	961.732	0.730	265	961.959	2.310	71	962.409	0.370	348	962.495	0.310	347
961.644	0.100	329	961.733	0.880	265	961.962	3.680	72	962.410	0.370	348	962.496	0.290	347
961.645	0.100	329	961.736	0.769	266	961.963	3.740	72	962.411	0.360	348	962.497	0.290	347
961.646	0.100	329	961.737	0.300	266	961.964	3.820	72	962.412	0.360	348	962.499	0.250	347
961.647	0.100	329	961.741	0.800	266	961.966	3.740	72	962.413	0.350	348	962.500	0.190	347
961.648	0.100	329	961.742	1.055	266	961.967	3.880	72	962.414	0.340	348	962.571	0.370	377
961.649	0.100	329	961.746	0.820	266	961.970	3.840	72	962.415	0.330	348	962.572	0.310	377
961.650	0.100	329	961.747	1.080	266	961.971	4.060	72	962.416	0.290	348	962.574	0.170	377
961.651	0.100	329	961.748	1.550	266	961.972	4.220	72	962.417	0.280	348	962.581	0.520	355
961.652	0.100	329	961.749	2.200	266	961.975	3.800	72	962.418	0.270	348	962.582	0.340	355
961.653	0.100	329	961.751	0.850	266	961.976	3.960	72	962.419	0.260	348	962.586	0.320	355
961.654	0.100	329	961.752	1.120	266	961.977	4.240	72	962.420	0.350	348	962.596	0.160	355
961.655	0.100	329	961.753	1.360	266	961.978	4.450	72	962.421	0.240	348	962.597	0.120	355
961.656	0.100	329	961.754	1.620	266	961.983	4.120	72	962.422	0.230	348	962.598	0.290	355
961.657	0.100	329	961.756	0.900	266	961.984	4.500	72	962.423	0.200	348	962.599	0.200	355
961.658	0.100	329	961.757	1.140	266	961.985	5.200	72	962.424	0.190	348	962.642	4.100	159
961.659	0.090	329	961.758	1.630	266	961.988	3.920	72	962.437	0.120	348	962.649	5.000	161
961.660	0.090	329	961.761	0.900	266	961.989	4.200	72	962.438	0.120	348	962.661	1.920	366
961.661	0.090	329	961.762	1.120	266	961.990	4.660	72	962.439	0.120	348	962.667	4.000	160
961.662	0.090	329	961.763	1.620	266	961.991	5.030	72	962.440	0.120	348	962.668	4.850	160
961.663	0.090	329	961.773	0.100	264	961.992	5.980	72	962.441	0.120	348	962.669	8.700	160
961.664	0.080	329	961.774	0.140	264	962.121S	1.480	136	962.442	0.120	348	962.670	9.700	160
961.665	0.080	329	961.775	0.390	264	962.124S	1.900	136	962.443	0.110	348	962.785	0.600	209
961.666	0.080	329	961.776	0.430	264	962.205	0.060	349	962.444	0.110	348	962.786	0.700	209
961.667	0.080	329	961.777	0.060	264	962.248	0.250	349	962.445	0.100	348	962.793	0.530	209
961.668	0.080	329	961.778	0.120	264	962.249	0.220	349	962.446	0.100	348	962.794	0.700	209
961.669	0.070	329	961.779	0.180	264	962.250	0.190	349	962.447	0.080	348	962.795	0.750	209
961.670	0.070	329	961.831	0.840	134	962.260	0.090	349	962.448	0.070	348	962.796	0.750	209
961.671	0.070	329	961.833	1.000	134	962.262	0.090	349	962.457	0.350	348	963.399	0.450	359
961.672	0.060	329	961.835	1.120	134	962.263	0.090	349	962.458	0.340	348	963.400	0.110	357
961.673	0.060	329	961.839	1.370	134	962.264	0.080	349	962.459	0.340	348	963.401	1.280	152
961.674	0.060	329	961.876	3.200	135	962.265	0.070	349	962.460	0.330	348	963.402	1.320	152
961.675	0.050	329	961.889	3.450	135	962.266	0.050	349	962.461	0.310	348	963.403	1.820	152
961.676	3.960	333	961.902	0.470	71	962.271	0.160	349	962.462	0.310	348	963.404	3.420	152
961.677	0.550	333	961.903	0.530	71	962.272	0.160	349	962.463	0.290	348	963.405	3.480	152
961.678	0.100	352	961.908	0.560	71	962.273	0.160	349	962.464	0.270	348	963.406	4.060	152
961.679	0.080	334	961.909	0.720	71	962.274	0.150	349	962.465	0.190	348	963.432	0.010	364
961.680	0.010	335	961.915	0.560	71	962.276	0.130	349	962.468	0.070	347	963.601	0.510	273
961.681	0.010	335	961.916	0.920	71	962.278	0.090	349	962.469	0.060	347	963.602	0.750	273
961.683	0.020	335	961.917	0.440	71	962.281	0.290	349	962.470	0.050	347	963.603	1.480	273
961.684	0.020	335	961.918	0.480	71	962.282	0.290	349	962.471	0.040	347	963.611	0.110	356
961.685	0.020	335	961.919	0.470	71	962.283	0.300	349	962.472	0.100	347	963.612	0.180	356
961.701	0.230	265	961.920	0.570	71	962.284	0.290	349	962.473	0.110	347	963.613	0.220	356
961.702	0.330	265	961.921	0.510	71	962.285	0.270	349	962.474	0.110	347	963.614	0.300	356
961.703	0.520	265	961.922	0.650	71	962.286	0.270	349	962.475	0.110	347	963.615	0.110	356
961.706	0.250	265	961.923	0.520	71	962.287	0.260	349	962.476	0.110	347	963.616	0.180	356
961.707	0.350	265	961.924	0.720	71	962.288	0.240	349	962.477	0.110	347	963.617	0.220	356

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
963.618	0.300	**356**	**963.680**	0.930	**360**	**966.088**	1.500	**519**	**966.158**	2.800	**521**	**966.255**	0.001	**528**
963.619	0.110	**356**	**963.681**	1.100	**360**	**966.089**	1.440	**519**	**966.161**	1.300	**520**	**966.258**	0.002	**528**
963.620	0.170	**356**	**963.682**	0.500	**360**	**966.090**	1.580	**519**	**966.162**	1.400	**520**	**966.259**	0.003	**528**
963.621	0.220	**356**	**963.683**	0.760	**360**	**966.091**	1.700	**519**	**966.163**	1.100	**520**	**966.260**	0.001	**528**
963.622	0.300	**356**	**963.684**	0.910	**360**	**966.092**	1.740	**519**	**966.164**	1.300	**520**	**966.263**	0.005	**528**
963.623	0.110	**356**	**963.685**	1.090	**360**	**966.093**	0.900	**522**	**966.165**	1.200	**520**	**966.264**	0.005	**528**
963.624	0.170	**356**	**963.686**	0.490	**360**	**966.094**	1.000	**522**	**966.166**	1.600	**520**	**966.265**	0.005	**528**
963.625	0.220	**356**	**963.687**	0.750	**360**	**966.095**	1.000	**522**	**966.167**	1.500	**520**	**966.268**	0.005	**528**
963.626	0.300	**356**	**963.688**	0.900	**360**	**966.096**	1.200	**522**	**966.168**	1.700	**520**	**966.269**	0.005	**528**
963.627	0.110	**356**	**963.689**	1.090	**360**	**966.097**	1.100	**522**	**966.169**	1.700	**520**	**966.270**	0.005	**528**
963.628	0.170	**356**	**963.690**	0.500	**360**	**966.098**	1.130	**522**	**966.170**	2.000	**520**	**966.271**	0.040	**503**
963.629	0.220	**356**	**963.691**	0.750	**360**	**966.099**	1.300	**522**	**966.171**	2.200	**520**	**966.272**	0.040	**503**
963.630	0.280	**356**	**963.692**	0.900	**360**	**966.100**	1.500	**522**	**966.172**	2.400	**520**	**966.273**	0.050	**503**
963.631	0.360	**356**	**963.693**	1.080	**360**	**966.101**	0.320	**521**	**966.173**	0.074	**523**	**966.274**	0.040	**540**
963.632	0.100	**356**	**963.700**	0.020	**364**	**966.102**	0.340	**521**	**966.174**	0.160	**523**	**966.275**	0.040	**540**
963.633	0.160	**356**	**963.702**	0.020	**364**	**966.103**	0.400	**521**	**966.181**	0.160	**526**	**966.280**	0.005	**528**
963.634	0.210	**356**	**963.703**	0.140	**364**	**966.104**	0.380	**521**	**966.182**	0.250	**526**	**966.283**	0.005	**528**
963.635	0.280	**356**	**963.711**	0.010	**364**	**966.105**	0.600	**521**	**966.183**	0.290	**526**	**966.284**	0.005	**528**
963.636	0.360	**356**	**963.713**	0.020	**364**	**966.106**	0.580	**521**	**966.184**	0.600	**526**	**966.285**	0.005	**528**
963.637	0.180	**358**	**963.721**	0.005	**364**	**966.107**	0.600	**521**	**966.185**	0.520	**526**	**966.288**	0.002	**528**
963.638	0.280	**358**	**963.722**	0.010	**364**	**966.108**	0.600	**521**	**966.186**	1.220	**526**	**966.289**	0.002	**528**
963.639	0.340	**358**	**963.723**	0.020	**364**	**966.109**	0.600	**521**	**966.187**	1.000	**526**	**966.341**	0.980	**102**
963.640	0.460	**358**	**964.101S**	0.730	**74**	**966.110**	0.700	**521**	**966.206**	1.200	**520**	**966.353**	1.300	**87**
963.641	0.850	**358**	**964.102S**	0.880	**74**	**966.111**	0.720	**521**	**966.207**	1.250	**520**	**966.354**	1.300	**87**
963.642	0.180	**358**	**964.103S**	1.040	**74**	**966.112**	1.000	**521**	**966.208**	1.330	**520**	**966.401**	0.210	**551**
963.643	0.280	**358**	**964.190S**	1.320	**74**	**966.115**	0.270	**523**	**966.209**	1.300	**520**	**966.404**	3.200	**551**
963.644	0.340	**358**	**964.191S**	1.400	**74**	**966.120**	0.640	**518**	**966.210**	1.360	**520**	**966.405**	0.400	**551**
963.645	0.460	**358**	**964.192S**	1.540	**74**	**966.121**	1.260	**518**	**966.211**	1.400	**520**	**966.406**	0.430	**551**
963.646	0.580	**358**	**964.194S**	1.840	**74**	**966.122**	1.360	**518**	**966.212**	0.320	**527**	**966.407**	0.390	**552**
963.647	0.180	**358**	**964.195S**	2.140	**74**	**966.123**	1.700	**518**	**966.213**	0.500	**527**	**966.408**	0.130	**569**
963.648	0.270	**358**	**964.196S**	2.070	**74**	**966.124**	1.280	**518**	**966.214**	1.120	**527**	**966.409**	0.004	**569**
963.649	0.340	**358**	**965.400**	0.460	**107**	**966.125**	1.400	**518**	**966.216**	0.550	**518**	**966.411**	0.420	**568**
963.650	0.460	**358**	**965.401**	0.660	**106**	**966.126**	1.750	**518**	**966.217**	0.480	**518**	**966.412**	0.480	**568**
963.651	0.580	**358**	**965.402**	0.710	**106**	**966.127**	1.420	**518**	**966.218**	0.520	**518**	**966.413**	1.120	**568**
963.652	0.170	**358**	**965.403**	1.430	**106**	**966.128**	1.540	**518**	**966.219**	0.560	**518**	**966.414**	1.280	**568**
963.653	0.260	**358**	**965.404**	1.230	**106**	**966.129**	1.900	**518**	**966.220**	0.540	**518**	**966.415**	0.090	**568**
963.654	0.340	**358**	**965.405**	1.300	**106**	**966.130**	1.520	**518**	**966.221**	1.220	**518**	**966.416**	0.130	**568**
963.655	0.460	**358**	**965.406**	1.740	**106**	**966.131**	1.680	**518**	**966.222**	1.160	**518**	**966.417**	0.270	**568**
963.656	0.570	**358**	**965.407**	3.820	**106**	**966.132**	2.100	**518**	**966.223**	1.200	**518**	**966.418**	0.420	**568**
963.657	0.170	**358**	**965.408**	3.920	**106**	**966.133**	1.790	**518**	**966.224**	1.260	**518**	**966.422**	0.030	**568**
963.658	0.260	**358**	**965.409**	4.300	**106**	**966.134**	2.000	**518**	**966.225**	1.460	**518**	**966.423**	0.050	**568**
963.659	0.340	**358**	**965.505**	3.500	**213**	**966.135**	2.400	**518**	**966.226**	1.400	**518**	**966.424**	0.090	**568**
963.660	0.450	**358**	**965.506**	3.900	**213**	**966.136**	2.140	**518**	**966.231**	0.900	**521**	**966.425**	0.250	**568**
963.661	0.570	**358**	**965.511S**	1.400	**180**	**966.137**	2.400	**518**	**966.232**	0.890	**521**	**966.431**	0.040	**557**
963.662	0.520	**360**	**965.523**	3.190	**194**	**966.138**	2.940	**518**	**966.233**	0.930	**521**	**966.432**	0.040	**556**
963.663	0.800	**360**	**965.601**	0.530	**201**	**966.141**	0.800	**521**	**966.234**	1.000	**521**	**966.433**	0.080	**555**
963.664	0.950	**360**	**965.602**	0.700	**201**	**966.142**	1.100	**521**	**966.235**	1.100	**521**	**966.434**	0.300	**555**
963.665	1.150	**360**	**965.603**	0.800	**201**	**966.143**	1.300	**521**	**966.236**	1.160	**521**	**966.435**	1.040	**555**
963.666	0.520	**360**	**965.604**	0.820	**201**	**966.144**	1.000	**521**	**966.237**	0.110	**525**	**966.436**	0.150	**557**
963.667	0.780	**360**	**965.606**	1.000	**201**	**966.145**	1.200	**521**	**966.238**	0.120	**525**	**966.437**	0.150	**557**
963.668	0.940	**360**	**965.607**	1.080	**201**	**966.146**	1.400	**521**	**966.239**	0.120	**525**	**966.440**	0.001	**561**
963.669	1.120	**360**	**965.608**	1.660	**201**	**966.147**	1.100	**521**	**966.240**	0.230	**525**	**966.441**	0.001	**561**
963.670	0.510	**360**	**965.609**	2.410	**201**	**966.148**	1.230	**521**	**966.241**	0.400	**525**	**966.442**	0.001	**561**
963.671	0.780	**360**	**965.610**	2.510	**201**	**966.149**	1.500	**521**	**966.242**	0.700	**525**	**966.443**	0.001	**561**
963.672	0.930	**360**	**965.611**	3.100	**201**	**966.150**	1.220	**521**	**966.243**	0.800	**525**	**966.445**	0.001	**541**
963.673	1.110	**360**	**966.081**	0.520	**519**	**966.151**	1.220	**521**	**966.244**	0.960	**525**	**966.446**	0.001	**541**
963.674	0.510	**360**	**966.082**	0.620	**519**	**966.152**	1.700	**521**	**966.245**	0.001	**528**	**966.447**	0.002	**561**
963.675	0.800	**360**	**966.083**	0.620	**519**	**966.153**	1.300	**521**	**966.248**	0.002	**528**	**966.448**	0.020	**503**
963.676	0.950	**360**	**966.084**	0.710	**519**	**966.154**	1.650	**521**	**966.249**	0.002	**528**	**966.449**	0.010	**503**
963.677	1.150	**360**	**966.085**	1.300	**519**	**966.155**	1.860	**521**	**966.250**	0.001	**528**	**966.450**	0.010	**503**
963.678	0.510	**360**	**966.086**	1.320	**519**	**966.156**	1.840	**521**	**966.253**	0.002	**528**	**966.461**	0.070	**555**
963.679	0.800	**360**	**966.087**	1.400	**519**	**966.157**	2.040	**521**	**966.254**	0.003	**528**	**966.462**	0.080	**555**

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
966.463	0.090	**555**	**966.625**	1.260	**531**	**967.512**	0.020	**342**	**967.574**	0.070	**343**	**967.810**	0.005	**370**
966.464	0.160	**555**	**966.626**	1.500	**531**	**967.513**	0.020	**342**	**967.575**	0.070	**343**	**967.811**	0.011	**370**
966.465	0.310	**555**	**966.627**	1.900	**531**	**967.514**	0.020	**342**	**967.576**	0.070	**343**	**967.812**	0.014	**370**
966.466	0.370	**555**	**966.631**	0.870	**534**	**967.515**	0.020	**342**	**967.577**	0.070	**343**	**967.813**	0.020	**370**
966.467	1.240	**555**	**966.632**	1.080	**534**	**967.516**	0.020	**342**	**967.578**	0.070	**343**	**967.814**	0.029	**370**
966.468	0.040	**556**	**966.633**	1.200	**534**	**967.517**	0.020	**342**	**967.579**	0.070	**343**	**967.850**	0.080	**345**
966.469	0.040	**556**	**966.634**	0.900	**534**	**967.518**	0.020	**342**	**967.580**	0.070	**343**	**967.851**	0.080	**345**
966.470	0.050	**556**	**966.635**	1.200	**534**	**967.519**	0.020	**342**	**967.581**	0.070	**343**	**967.852**	0.080	**345**
966.471	0.140	**556**	**966.636**	1.200	**534**	**967.520**	0.020	**342**	**967.582**	0.070	**343**	**967.853**	0.080	**345**
966.472	0.040	**558**	**966.637**	0.920	**534**	**967.521**	0.020	**342**	**967.583**	0.060	**343**	**967.854**	0.080	**345**
966.473	0.040	**558**	**966.638**	1.120	**534**	**967.522**	0.020	**342**	**967.584**	0.060	**343**	**967.855**	0.080	**345**
966.474	0.070	**558**	**966.639**	1.400	**534**	**967.523**	0.020	**342**	**967.585**	0.060	**343**	**967.856**	0.080	**345**
966.475	0.070	**558**	**966.640**	1.100	**534**	**967.524**	0.020	**342**	**967.586**	0.060	**343**	**967.857**	0.080	**345**
966.476	0.070	**558**	**966.641**	1.280	**534**	**967.525**	0.020	**342**	**967.587**	0.060	**343**	**967.858**	0.080	**345**
966.477	0.080	**558**	**966.642**	1.500	**534**	**967.526**	0.020	**342**	**967.588**	0.060	**343**	**967.859**	0.080	**345**
966.478	0.130	**558**	**966.652**	0.001	**537**	**967.527**	0.020	**342**	**967.589**	0.050	**343**	**967.861**	0.080	**345**
966.479	0.150	**558**	**966.653**	0.003	**537**	**967.528**	0.020	**342**	**967.590**	0.050	**343**	**967.862**	0.080	**345**
966.480	0.140	**558**	**966.658**	0.001	**537**	**967.529**	0.020	**342**	**967.591**	0.050	**343**	**967.863**	0.080	**345**
966.481	0.170	**558**	**966.662**	0.001	**537**	**967.530**	0.020	**342**	**967.592**	0.140	**343**	**967.864**	0.080	**345**
966.482	0.260	**558**	**966.663**	0.001	**537**	**967.531**	0.020	**342**	**967.593**	0.140	**343**	**967.865**	0.110	**345**
966.483	0.280	**558**	**966.667**	0.001	**537**	**967.532**	0.040	**342**	**967.594**	0.140	**343**	**967.866**	0.110	**345**
966.484	0.260	**558**	**966.668**	0.001	**537**	**967.533**	0.040	**342**	**967.595**	0.140	**343**	**967.867**	0.110	**345**
966.485	0.320	**558**	**966.669**	0.005	**537**	**967.534**	0.040	**342**	**967.596**	0.140	**343**	**967.868**	0.110	**345**
966.486	0.040	**557**	**966.671**	0.500	**534**	**967.535**	0.040	**342**	**967.597**	0.140	**343**	**967.869**	0.110	**345**
966.487	0.040	**557**	**966.672**	0.600	**534**	**967.536**	0.040	**342**	**967.598**	0.140	**343**	**967.870**	0.110	**345**
966.488	0.050	**557**	**966.673**	0.600	**534**	**967.537**	0.040	**342**	**967.599**	0.140	**343**	**967.871**	0.110	**345**
966.489	0.180	**557**	**966.674**	0.700	**534**	**967.538**	0.040	**342**	**967.600**	0.140	**343**	**967.872**	0.110	**345**
966.501	0.040	**563**	**966.675**	0.820	**535**	**967.539**	0.040	**342**	**967.601**	0.140	**343**	**967.873**	0.110	**345**
966.502	0.140	**563**	**966.676**	1.000	**535**	**967.540**	0.040	**342**	**967.602**	0.140	**343**	**967.874**	0.110	**345**
966.503	0.160	**563**	**966.677**	1.100	**535**	**967.541**	0.040	**342**	**967.603**	0.140	**343**	**967.875**	0.010	**345**
966.504	0.810	**563**	**966.678**	0.990	**535**	**967.542**	0.040	**342**	**967.604**	0.140	**343**	**967.876**	0.010	**345**
966.505	0.120	**564**	**966.679**	1.100	**535**	**967.543**	0.040	**342**	**967.605**	0.140	**343**	**967.877**	0.110	**345**
966.506	0.290	**564**	**966.680**	1.060	**535**	**967.544**	0.040	**342**	**967.606**	0.140	**343**	**967.878**	0.110	**345**
966.530	0.001	**566**	**966.681**	1.260	**535**	**967.545**	0.040	**342**	**967.607**	0.140	**343**	**967.879**	0.110	**345**
966.531	0.001	**566**	**966.682**	1.320	**535**	**967.546**	0.040	**342**	**967.608**	0.140	**343**	**967.880**	0.110	**345**
966.532	0.001	**566**	**966.683**	0.510	**531**	**967.547**	0.040	**342**	**967.609**	0.140	**343**	**967.881**	0.110	**345**
966.533	0.001	**566**	**966.684**	0.500	**532**	**967.548**	0.040	**342**	**967.610**	0.140	**343**	**967.882**	0.110	**345**
966.534	0.001	**566**	**966.685**	0.520	**531**	**967.549**	0.040	**342**	**967.611**	0.140	**343**	**967.883**	0.110	**345**
966.535	0.001	**566**	**966.686**	0.580	**532**	**967.550**	0.040	**342**	**967.612**	0.140	**343**	**967.884**	0.120	**345**
966.536	0.001	**566**	**966.687**	0.520	**531**	**967.551**	0.040	**342**	**967.613**	0.140	**343**	**967.885**	0.160	**346**
966.537	0.001	**566**	**966.688**	0.640	**532**	**967.552**	0.040	**342**	**967.614**	0.140	**343**	**967.886**	0.160	**346**
966.601	1.100	**533**	**966.689**	0.550	**531**	**967.553**	0.040	**342**	**967.615**	0.140	**343**	**967.887**	0.160	**346**
966.602	1.500	**533**	**966.690**	0.700	**532**	**967.554**	0.040	**342**	**967.616**	0.140	**343**	**967.888**	0.160	**346**
966.603	1.600	**533**	**966.691**	1.200	**532**	**967.555**	0.040	**342**	**967.617**	0.140	**343**	**967.889**	0.160	**346**
966.604	0.950	**533**	**966.692**	1.320	**532**	**967.556**	0.030	**342**	**967.618**	0.140	**343**	**967.890**	0.160	**346**
966.605	1.300	**533**	**966.693**	1.300	**532**	**967.557**	0.030	**342**	**967.619**	0.140	**343**	**967.891**	0.150	**346**
966.606	1.700	**533**	**966.694**	1.480	**532**	**967.558**	0.030	**342**	**967.620**	0.130	**343**	**967.892**	0.150	**346**
966.607	1.100	**533**	**966.695**	1.440	**532**	**967.559**	0.080	**343**	**967.621**	0.130	**343**	**967.893**	0.150	**346**
966.608	1.320	**533**	**966.696**	1.580	**532**	**967.560**	0.080	**343**	**967.622**	0.130	**343**	**967.894**	0.150	**346**
966.609	1.800	**533**	**966.697**	1.670	**532**	**967.561**	0.080	**343**	**967.623**	0.130	**343**	**967.895**	0.150	**346**
966.610	1.220	**533**	**966.698**	1.780	**532**	**967.562**	0.070	**343**	**967.624**	0.130	**343**	**967.896**	0.150	**346**
966.611	1.450	**533**	**967.501**	0.030	**342**	**967.563**	0.070	**343**	**967.625**	0.130	**343**	**967.897**	0.150	**346**
966.612	1.610	**533**	**967.502**	0.030	**342**	**967.564**	0.070	**343**	**967.627**	0.120	**343**	**967.898**	0.150	**346**
966.616	1.220	**531**	**967.503**	0.030	**342**	**967.565**	0.070	**343**	**967.628**	0.110	**343**	**967.899**	0.150	**346**
966.617	1.420	**531**	**967.504**	0.030	**342**	**967.566**	0.070	**343**	**967.629**	0.110	**343**	**967.900**	0.150	**346**
966.618	1.600	**531**	**967.505**	0.030	**342**	**967.567**	0.080	**343**	**967.630**	0.110	**343**	**967.901**	0.150	**346**
966.619	1.160	**531**	**967.506**	0.030	**342**	**967.568**	0.080	**343**	**967.631**	0.110	**343**	**967.902**	0.160	**346**
966.620	1.530	**531**	**967.507**	0.030	**342**	**967.569**	0.080	**343**	**967.632**	0.100	**343**	**967.903**	0.160	**346**
966.621	1.600	**531**	**967.508**	0.030	**342**	**967.570**	0.080	**343**	**967.801**	0.070	**344**	**967.904**	0.150	**346**
966.622	1.200	**531**	**967.509**	0.030	**342**	**967.571**	0.070	**343**	**967.802**	0.100	**344**	**967.905**	0.150	**346**
966.623	1.480	**531**	**967.510**	0.030	**342**	**967.572**	0.070	**343**	**967.803**	0.140	**344**	**967.906**	0.150	**346**
966.624	1.800	**531**	**967.511**	0.020	**342**	**967.573**	0.070	**343**	**967.804**	0.140	**344**	**967.908**	0.220	**346**

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
967.909	0.220	**346**	**968.092**	7.800	**69**	**968.188**	1.560	**64**	**968.258**	1.140	**170**	**968.334**	0.003	**325**
967.910	0.220	**346**	**968.093**	9.600	**69**	**968.189**	1.900	**64**	**968.259**	1.290	**170**	**968.335**	0.003	**325**
967.911	0.220	**346**	**968.095**	3.950	**174**	**968.190**	2.400	**64**	**968.260**	1.480	**170**	**968.336**	0.003	**325**
967.912	0.220	**346**	**968.105**	3.970	**173**	**968.191**	1.120	**64**	**968.261**	1.550	**170**	**968.337**	0.003	**325**
967.913	0.220	**346**	**968.106**	5.000	**173**	**968.192**	1.300	**64**	**968.262**	1.150	**170**	**968.338**	0.003	**325**
967.914	0.220	**346**	**968.107**	5.900	**173**	**968.193**	1.300	**64**	**968.263**	1.320	**170**	**968.339**	0.003	**325**
967.915	0.220	**346**	**968.108**	3.900	**173**	**968.194**	1.500	**64**	**968.264**	1.480	**170**	**968.340**	0.002	**325**
967.916	0.220	**346**	**968.109**	5.600	**173**	**968.195**	1.700	**64**	**968.265**	1.670	**170**	**968.341**	0.003	**325**
967.917	0.220	**346**	**968.110**	6.800	**173**	**968.196**	1.730	**64**	**968.266**	1.830	**170**	**968.342**	0.003	**325**
967.918	0.220	**346**	**968.111**	4.760	**173**	**968.197**	2.100	**64**	**968.268**	2.350	**171**	**968.343**	0.003	**325**
967.919	0.220	**346**	**968.112**	5.800	**173**	**968.198**	2.600	**64**	**968.269**	2.450	**171**	**968.344**	0.003	**325**
967.920	0.220	**346**	**968.113**	7.100	**173**	**968.199**	1.140	**64**	**968.270**	2.550	**171**	**968.345**	0.003	**325**
967.921	0.220	**346**	**968.114**	5.500	**173**	**968.200**	1.400	**64**	**968.271**	2.640	**171**	**968.346**	0.003	**325**
967.922	0.220	**346**	**968.121**	3.980	**174**	**968.201**	1.400	**64**	**968.272**	2.760	**171**	**968.347**	0.003	**325**
967.923	0.220	**346**	**968.122**	4.880	**174**	**968.202**	1.700	**64**	**968.273**	3.020	**171**	**968.348**	0.003	**325**
967.924	0.220	**346**	**968.123**	5.780	**174**	**968.203**	1.800	**64**	**968.274**	2.500	**171**	**968.349**	0.003	**325**
967.925	0.220	**346**	**968.124**	4.240	**174**	**968.204**	1.940	**64**	**968.275**	2.500	**171**	**968.350**	0.003	**325**
967.926	0.220	**346**	**968.125**	5.360	**174**	**968.205**	2.500	**64**	**968.276**	2.650	**171**	**968.351**	0.003	**325**
967.927	0.220	**346**	**968.126**	6.800	**174**	**968.206**	3.100	**64**	**968.277**	2.760	**171**	**968.352**	0.002	**325**
967.928	0.220	**346**	**968.127**	4.780	**174**	**968.207**	1.200	**65**	**968.278**	2.920	**171**	**968.353**	0.003	**325**
967.929	0.220	**346**	**968.128**	5.540	**174**	**968.208**	1.380	**65**	**968.279**	3.300	**171**	**968.354**	0.003	**325**
967.930	0.220	**346**	**968.129**	6.840	**174**	**968.209**	1.570	**65**	**968.280**	2.600	**171**	**968.355**	0.002	**325**
967.931	0.220	**346**	**968.130**	5.500	**174**	**968.210**	1.780	**65**	**968.281**	2.600	**171**	**968.356**	0.003	**325**
967.932	0.220	**346**	**968.131**	3.280	**174**	**968.211**	2.020	**65**	**968.282**	2.740	**171**	**968.357**	0.002	**325**
967.933	0.220	**346**	**968.132**	3.500	**173**	**968.212**	2.280	**65**	**968.283**	2.920	**171**	**968.358**	0.002	**325**
967.934	0.220	**346**	**968.136S**	1.720	**180**	**968.213**	2.740	**65**	**968.284**	3.100	**171**	**968.359**	0.002	**325**
968.026	5.200	**67**	**968.137S**	2.000	**180**	**968.214**	3.700	**65**	**968.285**	3.560	**171**	**968.360**	0.002	**325**
968.027	5.700	**67**	**968.142**	1.110	**131**	**968.216**	3.800	**65**	**968.287**	2.760	**171**	**968.361**	0.003	**325**
968.028	6.600	**67**	**968.144**	1.200	**131**	**968.217**	3.920	**65**	**968.288**	3.000	**171**	**968.362**	0.002	**325**
968.030	6.800	**67**	**968.145**	1.300	**131**	**968.218**	4.400	**65**	**968.289**	3.360	**171**	**968.363**	0.003	**325**
968.031	7.700	**67**	**968.147**	1.300	**131**	**968.219**	4.900	**65**	**968.290**	3.420	**171**	**968.364**	0.120	**326**
968.033	7.460	**67**	**968.148**	1.400	**131**	**968.220**	3.900	**65**	**968.291**	4.000	**171**	**968.369**	0.004	**325**
968.034	8.900	**67**	**968.150**	1.100	**131**	**968.221**	4.040	**65**	**968.301**	0.002	**325**	**968.370**	0.004	**325**
968.036	4.800	**67**	**968.151**	1.700	**131**	**968.222**	4.600	**65**	**968.302**	0.002	**325**	**968.371**	0.004	**325**
968.037	8.300	**67**	**968.152**	1.910	**131**	**968.223**	5.200	**65**	**968.303**	0.002	**325**	**968.372**	0.005	**325**
968.038	9.560	**67**	**968.154**	3.300	**131**	**968.224**	4.000	**65**	**968.304**	0.002	**325**	**968.373**	0.005	**325**
968.039	12.100	**67**	**968.156**	3.340	**131**	**968.225**	4.160	**65**	**968.305**	0.002	**325**	**968.374**	0.004	**325**
968.041	6.000	**67**	**968.159**	3.600	**131**	**968.226**	4.900	**65**	**968.306**	0.002	**325**	**968.375**	0.004	**325**
968.042	7.800	**67**	**968.161**	3.600	**131**	**968.227**	5.500	**65**	**968.307**	0.002	**325**	**968.376**	0.004	**325**
968.043	9.600	**67**	**968.162**	3.800	**131**	**968.228**	4.020	**65**	**968.308**	0.002	**325**	**968.377**	0.004	**325**
968.055	4.100	**173**	**968.163**	4.400	**131**	**968.229**	4.410	**65**	**968.309**	0.002	**325**	**968.378**	0.004	**325**
968.056	4.700	**173**	**968.166**	0.500	**64**	**968.230**	5.230	**65**	**968.310**	0.002	**325**	**968.379**	0.005	**325**
968.057	6.900	**173**	**968.167**	0.580	**64**	**968.231**	6.000	**65**	**968.311**	0.002	**325**	**968.380**	0.005	**325**
968.059	5.020	**132**	**968.168**	0.700	**64**	**968.235**	0.350	**170**	**968.312**	0.002	**325**	**968.381**	0.005	**325**
968.060	5.120	**132**	**968.169**	1.000	**64**	**968.236**	0.416	**170**	**968.313**	0.002	**325**	**968.382**	0.005	**325**
968.061	5.800	**132**	**968.170**	0.500	**64**	**968.238**	0.410	**170**	**968.314**	0.002	**325**	**968.383**	0.005	**325**
968.076	5.160	**69**	**968.171**	0.620	**64**	**968.239**	0.465	**170**	**968.315**	0.002	**325**	**968.384**	0.005	**325**
968.077	5.700	**69**	**968.172**	0.800	**64**	**968.241**	0.470	**170**	**968.316**	0.002	**325**	**968.385**	0.005	**325**
968.078	6.600	**69**	**968.173**	0.800	**64**	**968.242**	0.670	**170**	**968.317**	0.002	**325**	**968.386**	0.005	**325**
968.079	7.000	**69**	**968.174**	0.520	**64**	**968.243**	0.540	**170**	**968.318**	0.002	**325**	**968.387**	0.005	**325**
968.080	6.770	**69**	**968.175**	0.800	**64**	**968.244**	0.688	**170**	**968.319**	0.002	**325**	**968.388**	0.005	**325**
968.081	7.700	**69**	**968.176**	1.000	**64**	**968.247**	0.800	**170**	**968.320**	0.002	**325**	**968.389**	0.005	**325**
968.082	9.100	**69**	**968.177**	1.000	**64**	**968.248**	0.980	**170**	**968.321**	0.002	**325**	**968.390**	0.005	**325**
968.083	7.480	**69**	**968.178**	0.560	**64**	**968.249**	1.100	**170**	**968.322**	0.002	**325**	**968.391**	0.005	**325**
968.084	8.900	**69**	**968.179**	0.590	**64**	**968.250**	1.180	**170**	**968.323**	0.002	**325**	**968.392**	0.005	**325**
968.085	10.800	**69**	**968.180**	0.960	**64**	**968.251**	1.300	**170**	**968.324**	0.001	**325**	**968.393**	0.005	**325**
968.086	4.800	**69**	**968.181**	1.120	**64**	**968.252**	0.900	**170**	**968.325**	0.001	**325**	**968.394**	0.005	**325**
968.087	8.320	**69**	**968.183**	1.080	**64**	**968.253**	1.050	**170**	**968.326**	0.002	**325**	**968.395**	0.005	**325**
968.088	9.580	**69**	**968.184**	1.400	**64**	**968.254**	1.180	**170**	**968.327**	0.001	**325**	**968.396**	0.004	**325**
968.089	12.100	**69**	**968.185**	1.200	**64**	**968.255**	1.300	**170**	**968.328**	0.002	**325**	**968.397**	0.004	**325**
968.090	14.300	**69**	**968.186**	1.300	**64**	**968.256**	1.450	**170**	**968.329**	0.005	**325**	**968.398**	0.004	**325**
968.091	6.000	**69**	**968.187**	1.500	**64**	**968.257**	1.000	**170**	**968.330**	0.110	**326**	**968.399**	0.005	**325**

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
968.400	0.005	**325**	**968.488**	0.150	**341**	**968.763**	1.000	**219**	**968.856**	3.320	**169**	**968.929**	0.250	**165**
968.401	0.004	**325**	**968.489**	0.150	**341**	**968.764**	0.770	**219**	**968.857**	3.680	**169**	**968.930**	0.280	**165**
968.402	0.004	**325**	**968.490**	0.150	**341**	**968.771**	0.900	**177**	**968.858**	2.700	**169**	**968.931**	0.250	**165**
968.403	0.004	**325**	**968.491**	0.150	**341**	**968.772**	0.900	**177**	**968.859**	3.000	**169**	**968.932**	0.260	**165**
968.404	0.004	**325**	**968.492**	0.150	**341**	**968.773**	0.960	**177**	**968.860**	3.500	**169**	**968.933**	0.240	**165**
968.405	0.004	**325**	**968.493**	0.150	**341**	**968.775**	0.860	**177**	**968.861**	3.920	**169**	**968.934**	0.260	**164**
968.406	0.004	**325**	**968.494**	0.150	**341**	**968.776**	0.980	**177**	**968.866**	0.060	**217**	**968.936**	0.260	**164**
968.408	0.004	**325**	**968.495**	0.150	**341**	**968.777**	1.080	**177**	**968.867**	0.072	**217**	**968.937**	0.290	**164**
968.409	0.004	**325**	**968.572**	2.500	**178**	**968.779**	0.900	**177**	**968.868**	0.060	**217**	**968.940**	0.280	**166**
968.410	0.004	**325**	**968.573**	2.600	**178**	**968.780**	1.050	**177**	**968.869**	0.080	**217**	**968.941**	0.340	**166**
968.411	0.004	**325**	**968.575**	2.600	**178**	**968.781**	1.200	**177**	**968.870**	0.160	**216**	**968.942**	0.350	**166**
968.412	0.004	**325**	**968.578**	2.660	**178**	**968.783**	0.940	**177**	**968.871**	0.080	**216**	**968.943**	0.310	**166**
968.413	0.004	**325**	**968.580**	2.610	**178**	**968.784**	1.130	**177**	**968.872**	0.070	**216**	**968.945**	0.410	**166**
968.414	0.003	**325**	**968.581**	2.840	**178**	**968.785**	1.310	**177**	**968.873**	0.100	**216**	**968.946**	0.350	**166**
968.415	0.004	**325**	**968.583**	2.720	**178**	**968.787**	1.100	**177**	**968.874**	0.070	**216**	**968.948**	0.490	**166**
968.421	0.010	**340**	**968.584**	3.020	**178**	**968.788**	1.290	**177**	**968.875**	0.090	**216**	**968.949**	0.460	**166**
968.423	0.010	**340**	**968.587**	2.890	**178**	**968.789**	1.580	**177**	**968.876**	0.140	**217**	**968.950**	0.460	**166**
968.424	0.010	**340**	**968.588**	3.320	**178**	**968.790**	1.850	**177**	**968.877**	0.150	**217**	**968.951**	0.520	**166**
968.425	0.010	**340**	**968.592**	2.680	**178**	**968.791**	2.200	**177**	**968.878**	0.140	**217**	**968.952**	0.780	**166**
968.427	0.020	**340**	**968.593**	3.000	**178**	**968.792**	1.070	**177**	**968.879**	0.150	**217**	**968.953**	0.700	**166**
968.429	0.020	**340**	**968.594**	3.800	**178**	**968.793**	1.380	**177**	**968.880**	0.140	**216**	**968.961**	0.770	**164**
968.430	0.020	**340**	**968.604**	1.340	**71**	**968.794**	1.650	**177**	**968.881**	0.160	**216**	**968.963**	0.860	**164**
968.431	0.020	**340**	**968.610**	1.660	**71**	**968.795**	2.300	**177**	**968.882**	0.140	**216**	**968.965**	0.780	**165**
968.433	0.020	**340**	**968.611**	1.250	**71**	**968.796**	2.470	**177**	**968.883**	0.160	**216**	**968.966**	0.820	**164**
968.434	0.040	**340**	**968.613**	1.770	**71**	**968.803**	0.790	**165**	**968.884**	0.160	**218**	**968.968**	0.902	**164**
968.436	0.040	**340**	**968.708**	4.600	**69**	**968.811**	0.870	**168**	**968.885**	0.190	**218**	**968.970**	0.774	**164**
968.437	0.040	**340**	**968.709**	5.030	**69**	**968.812**	0.900	**168**	**968.886**	0.200	**218**	**968.971**	0.800	**164**
968.438	0.040	**340**	**968.710**	5.920	**69**	**968.813**	0.940	**168**	**968.887**	0.270	**218**	**968.973**	0.860	**164**
968.440	0.040	**340**	**968.711**	5.360	**69**	**968.814**	0.880	**168**	**968.888**	0.280	**218**	**968.975**	0.980	**164**
968.442	0.030	**340**	**968.712**	6.500	**69**	**968.815**	0.870	**168**	**968.889**	0.310	**218**	**968.981**	0.900	**168**
968.443	0.070	**340**	**968.713**	5.460	**69**	**968.816**	0.940	**168**	**968.890**	0.230	**216**	**968.982**	1.000	**168**
968.445	0.070	**340**	**968.714**	6.890	**69**	**968.818**	1.150	**168**	**968.891**	0.260	**216**	**968.983**	1.120	**168**
968.446	0.070	**340**	**968.716**	0.220	**217**	**968.819**	0.910	**168**	**968.892**	0.240	**216**	**968.984**	1.240	**168**
968.447	0.070	**340**	**968.717**	0.250	**218**	**968.820**	1.050	**168**	**968.893**	0.270	**216**	**968.985**	1.040	**168**
968.448	0.060	**340**	**968.718**	0.300	**218**	**968.822**	1.350	**168**	**968.894**	0.310	**216**	**968.986**	1.500	**168**
968.449	0.060	**340**	**968.719**	0.290	**218**	**968.823**	0.960	**168**	**968.895**	0.270	**218**	**968.989**	2.460	**169**
968.451	0.060	**340**	**968.720**	0.360	**218**	**968.824**	1.120	**168**	**968.896**	0.340	**218**	**968.990**	2.700	**169**
968.453	0.050	**340**	**968.721**	0.350	**218**	**968.826**	1.540	**168**	**968.897**	0.400	**218**	**968.991**	2.520	**169**
968.461	0.040	**340**	**968.722**	0.490	**218**	**968.827**	1.020	**168**	**968.898**	0.430	**218**	**968.992**	2.700	**169**
968.462	0.070	**340**	**968.723**	0.470	**218**	**968.828**	1.280	**168**	**968.899**	0.420	**218**	**968.993**	2.620	**169**
968.463	0.083	**340**	**968.725**	0.419	**217**	**968.829**	1.580	**168**	**968.900**	0.420	**218**	**968.994**	2.820	**169**
968.464	0.150	**340**	**968.727**	0.500	**219**	**968.830**	1.860	**168**	**968.901**	0.570	**218**	**968.995**	2.760	**169**
968.468	0.050	**341**	**968.728**	0.490	**219**	**968.831**	2.400	**168**	**968.902**	0.794	**218**	**968.996**	3.040	**169**
968.469	0.050	**341**	**968.729**	0.500	**219**	**968.832**	1.060	**168**	**968.903**	1.000	**218**	**968.997**	2.860	**169**
968.470	0.050	**341**	**968.730**	0.600	**219**	**968.833**	1.380	**168**	**968.904**	0.430	**218**	**968.998**	3.300	**169**
968.471	0.050	**341**	**968.731**	0.540	**219**	**968.835**	2.040	**168**	**968.905**	0.540	**218**	**969.023**	3.340	**132**
968.472	0.070	**341**	**968.732**	0.700	**219**	**968.836**	2.500	**168**	**968.906**	0.500	**216**	**969.025**	4.580	**132**
968.473	0.070	**341**	**968.733**	0.620	**219**	**968.841**	2.440	**169**	**968.907**	0.460	**216**	**969.032**	1.070	**134**
968.474	0.070	**341**	**968.734**	0.750	**219**	**968.842**	2.400	**169**	**968.910**	1.150	**219**	**969.034**	1.030	**134**
968.475	0.070	**341**	**968.735**	0.900	**219**	**968.843**	2.520	**169**	**968.911**	1.020	**219**	**969.036**	1.260	**134**
968.476	0.070	**341**	**968.736**	0.880	**219**	**968.844**	2.400	**169**	**968.912**	1.500	**219**	**969.037**	1.040	**134**
968.477	0.070	**341**	**968.738**	0.570	**167**	**968.845**	2.500	**169**	**968.914**	0.130	**217**	**969.038**	1.170	**134**
968.478	0.100	**341**	**968.742**	1.010	**167**	**968.846**	2.700	**169**	**968.915**	0.220	**217**	**969.040**	0.900	**134**
968.479	0.100	**341**	**968.745**	0.660	**167**	**968.847**	2.590	**169**	**968.916**	0.408	**217**	**969.041**	1.230	**134**
968.480	0.100	**341**	**968.752**	0.090	**218**	**968.848**	2.600	**169**	**968.917**	0.150	**216**	**969.042**	1.500	**134**
968.481	0.100	**341**	**968.753**	0.120	**218**	**968.849**	2.840	**169**	**968.918**	0.170	**216**	**969.043**	0.918	**134**
968.482	0.100	**341**	**968.754**	0.180	**218**	**968.850**	2.540	**169**	**968.919**	0.320	**216**	**969.044**	1.360	**134**
968.483	0.100	**341**	**968.756**	0.230	**217**	**968.851**	2.720	**169**	**968.920**	0.250	**216**	**969.045**	1.670	**134**
968.484	0.100	**341**	**968.757**	0.230	**217**	**968.852**	2.990	**169**	**968.921**	0.443	**216**	**969.046**	1.010	**134**
968.485	0.100	**341**	**968.759**	0.500	**217**	**968.853**	3.280	**169**	**968.925**	0.260	**164**	**969.047**	1.340	**134**
968.486	0.150	**341**	**968.760**	0.460	**217**	**968.854**	2.620	**169**	**968.926**	0.280	**164**	**969.048**	1.870	**134**
968.487	0.150	**341**	**968.761**	0.600	**219**	**968.855**	2.900	**169**	**968.927**	0.310	**164**	**969.059**	2.300	**134**

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
969.060	2.400	**134**	**969.281**	3.580	**130**	**969.451**	0.180	**353**	**969.522**	0.900	**60**	**969.584**	5.560	**63**
969.062	2.720	**135**	**969.282**	4.040	**130**	**969.452**	0.090	**351**	**969.523**	1.030	**61**	**969.592**	4.600	**67**
969.063	3.100	**135**	**969.283**	4.600	**130**	**969.453**	0.180	**353**	**969.524**	1.070	**61**	**969.593**	5.060	**67**
969.066	3.200	**135**	**969.302**	1.000	**128**	**969.454**	0.120	**351**	**969.525**	1.150	**61**	**969.594**	6.000	**67**
969.067	3.000	**135**	**969.305**	0.930	**128**	**969.455**	0.200	**353**	**969.526**	1.230	**61**	**969.595**	5.360	**67**
969.069	2.800	**135**	**969.307**	0.900	**128**	**969.456**	0.180	**351**	**969.527**	1.320	**61**	**969.596**	6.490	**67**
969.070	3.100	**135**	**969.308**	0.970	**128**	**969.457**	0.300	**353**	**969.528**	1.060	**61**	**969.597**	5.460	**67**
969.071	3.300	**135**	**969.309**	1.070	**128**	**969.458**	0.250	**351**	**969.529**	1.140	**61**	**969.598**	7.000	**67**
969.075	2.840	**135**	**969.316**	0.600	**58**	**969.459**	0.400	**353**	**969.530**	1.260	**61**	**969.601**	0.004	**331**
969.077	3.500	**135**	**969.319**	0.440	**58**	**969.460**	0.310	**351**	**969.531**	1.380	**61**	**969.602**	0.003	**331**
969.082	3.000	**135**	**969.321**	1.000	**58**	**969.460L**	0.200	**351**	**969.532**	1.500	**61**	**969.603**	0.003	**331**
969.083	3.420	**135**	**969.322**	0.980	**58**	**969.461**	0.560	**353**	**969.533**	1.080	**61**	**969.604**	0.003	**331**
969.084	3.600	**135**	**969.323**	1.080	**58**	**969.462**	0.360	**351**	**969.534**	0.660	**60**	**969.605**	0.004	**331**
969.085	4.000	**135**	**969.324**	0.980	**58**	**969.462L**	0.570	**351**	**969.535**	1.420	**61**	**969.606**	0.003	**331**
969.087	2.980	**135**	**969.325**	1.100	**58**	**969.463**	0.520	**353**	**969.536**	1.560	**61**	**969.607**	0.003	**331**
969.088	3.200	**135**	**969.326**	1.000	**58**	**969.464L**	0.780	**351**	**969.537**	1.720	**61**	**969.608**	0.003	**331**
969.090	4.000	**135**	**969.327**	1.100	**58**	**969.465**	0.370	**351**	**969.538**	1.100	**61**	**969.609**	0.003	**331**
969.091	4.340	**135**	**969.328**	1.120	**58**	**969.465L**	0.640	**351**	**969.539**	1.280	**61**	**969.610**	0.003	**331**
969.208	1.100	**128**	**969.329**	1.200	**58**	**969.466**	0.790	**353**	**969.540**	1.560	**61**	**969.611**	0.003	**331**
969.209	0.380	**58**	**969.330**	0.990	**58**	**969.467L**	0.850	**351**	**969.541**	1.760	**61**	**969.612**	0.003	**331**
969.210	0.400	**58**	**969.331**	1.000	**58**	**969.468L**	0.960	**351**	**969.542**	1.960	**61**	**969.613**	0.003	**331**
969.211	0.480	**58**	**969.332**	1.030	**58**	**969.469L**	0.980	**351**	**969.543**	1.100	**62**	**969.615**	0.010	**331**
969.212	0.500	**58**	**969.333**	1.060	**58**	**969.470L**	1.040	**351**	**969.544**	1.400	**62**	**969.616**	0.010	**331**
969.213	0.500	**58**	**969.334**	1.120	**58**	**969.471L**	1.300	**351**	**969.545**	1.810	**62**	**969.617**	0.010	**331**
969.214	0.440	**58**	**969.335**	1.200	**58**	**969.472L**	1.700	**351**	**969.546**	2.100	**62**	**969.618**	0.010	**331**
969.215	0.470	**58**	**969.341**	0.480	**60**	**969.473L**	1.370	**351**	**969.547**	2.430	**62**	**969.619**	0.010	**331**
969.217	0.600	**58**	**969.342**	0.540	**60**	**969.475**	0.030	**228**	**969.548**	1.100	**62**	**969.620**	0.010	**331**
969.218	0.400	**58**	**969.343**	0.550	**60**	**969.480**	0.004	**326**	**969.549**	1.460	**62**	**969.621**	0.010	**331**
969.220	0.470	**58**	**969.344**	0.530	**60**	**969.481**	0.010	**326**	**969.550**	1.940	**62**	**969.622**	0.010	**331**
969.221	0.500	**58**	**969.345**	0.620	**60**	**969.482**	0.080	**326**	**969.551**	2.290	**62**	**969.623**	0.010	**331**
969.222	0.580	**58**	**969.346**	0.670	**60**	**969.483**	0.020	**334**	**969.552**	2.690	**62**	**969.624**	0.010	**331**
969.224	0.990	**129**	**969.347**	0.570	**60**	**969.484**	0.040	**334**	**969.553**	3.640	**63**	**969.625**	0.010	**331**
969.225	1.080	**129**	**969.348**	0.720	**60**	**969.485**	0.060	**334**	**969.554**	3.700	**63**	**969.627**	0.030	**331**
969.229	1.060	**129**	**969.349**	0.630	**60**	**969.486**	0.090	**334**	**969.555**	3.800	**63**	**969.628**	0.030	**331**
969.230	1.330	**129**	**969.350**	0.820	**60**	**969.487**	0.120	**334**	**969.556**	3.870	**63**	**969.629**	0.030	**331**
969.234	1.250	**129**	**969.351**	0.700	**60**	**969.488**	0.140	**334**	**969.557**	3.680	**63**	**969.630**	0.020	**331**
969.235	1.340	**129**	**969.352**	1.000	**60**	**969.491**	0.020	**343**	**969.558**	3.790	**63**	**969.631**	0.020	**331**
969.239	1.200	**129**	**969.353**	0.720	**60**	**969.492**	0.050	**333**	**969.559**	3.940	**63**	**969.632**	0.020	**331**
969.240	1.480	**129**	**969.354**	1.080	**60**	**969.493**	0.030	**333**	**969.560**	4.040	**63**	**969.633**	0.020	**331**
969.241	1.660	**129**	**969.361**	1.050	**61**	**969.494**	0.040	**333**	**969.561**	3.750	**63**	**969.634**	0.020	**331**
969.244	1.320	**129**	**969.362**	1.100	**61**	**969.495**	0.100	**333**	**969.562**	3.880	**63**	**969.635**	0.020	**331**
969.245	1.800	**129**	**969.363**	1.140	**61**	**969.496**	0.030	**333**	**969.563**	4.100	**63**	**969.636**	0.020	**331**
969.246	2.010	**129**	**969.364**	1.080	**61**	**969.497**	0.030	**333**	**969.564**	4.260	**63**	**969.637**	0.020	**331**
969.248	1.100	**129**	**969.365**	1.180	**61**	**969.498**	0.040	**333**	**969.565**	4.500	**63**	**969.638**	0.020	**331**
969.249	1.360	**129**	**969.366**	1.210	**61**	**969.499**	0.040	**333**	**969.566**	4.720	**63**	**969.639**	0.020	**331**
969.250	1.900	**129**	**969.367**	1.160	**61**	**969.502**	0.500	**59**	**969.567**	3.840	**63**	**969.640**	0.020	**331**
969.251	2.400	**129**	**969.368**	1.280	**61**	**969.503**	0.500	**59**	**969.568**	4.000	**63**	**969.641**	0.020	**331**
969.252	2.550	**129**	**969.369**	1.350	**61**	**969.504**	0.500	**59**	**969.569**	4.270	**63**	**969.643**	0.040	**331**
969.253	3.000	**130**	**969.370**	1.200	**61**	**969.506**	1.000	**59**	**969.570**	4.480	**63**	**969.644**	0.050	**331**
969.254	3.800	**130**	**969.371**	1.380	**61**	**969.508**	1.000	**59**	**969.571**	4.780	**63**	**969.645**	0.050	**331**
969.255	3.030	**130**	**969.372**	1.460	**61**	**969.509**	0.450	**60**	**969.572**	5.080	**63**	**969.646**	0.040	**331**
969.261	3.200	**130**	**969.373**	1.250	**62**	**969.510**	0.510	**60**	**969.573**	3.770	**63**	**969.647**	0.040	**331**
969.262	3.160	**130**	**969.374**	1.520	**62**	**969.511**	0.460	**60**	**969.574**	3.920	**63**	**969.648**	0.040	**331**
969.263	3.360	**130**	**969.375**	1.680	**62**	**969.512**	0.530	**60**	**969.575**	4.160	**63**	**969.649**	0.040	**331**
969.267	3.200	**130**	**969.376**	1.270	**62**	**969.513**	0.520	**60**	**969.576**	4.520	**63**	**969.650**	0.040	**331**
969.268	3.400	**130**	**969.377**	1.600	**62**	**969.514**	1.220	**61**	**969.577**	4.850	**63**	**969.651**	0.040	**331**
969.269	3.700	**130**	**969.378**	1.780	**62**	**969.516**	0.520	**60**	**969.578**	5.240	**63**	**969.652**	0.010	**331**
969.274	3.230	**130**	**969.446**	0.090	**351**	**969.517**	0.740	**60**	**969.579**	3.800	**63**	**969.653**	0.040	**331**
969.275	3.460	**130**	**969.447**	0.240	**351**	**969.518**	0.930	**60**	**969.580**	3.950	**63**	**969.654**	0.040	**331**
969.276	3.840	**130**	**969.448**	0.530	**351**	**969.519**	0.560	**60**	**969.581**	4.260	**63**	**969.655**	0.040	**331**
969.277	4.400	**130**	**969.449**	0.070	**351**	**969.520**	0.850	**60**	**969.582**	4.680	**63**	**969.656**	0.040	**331**
969.280	3.280	**130**	**969.450**	0.086	**351**	**969.521**	0.600	**60**	**969.583**	5.060	**63**	**969.657**	0.040	**331**

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
969.658	0.030	**331**	**969.863**	0.030	**336**	**969.930**	0.054	**338**	**969.997**	0.010	**337**	**973.069**	0.300	**285**
969.659	0.030	**331**	**969.864**	0.050	**336**	**969.931**	0.054	**338**	**972.304**	0.005	**578**	**973.070**	0.210	**285**
969.660	0.030	**331**	**969.865**	0.050	**336**	**969.932**	0.054	**338**	**972.306**	0.005	**578**	**973.071**	0.210	**285**
969.661	0.030	**331**	**969.866**	0.050	**336**	**969.933**	0.054	**338**	**972.309**	0.003	**578**	**973.072**	0.245	**285**
969.662	0.030	**331**	**969.867**	0.040	**336**	**969.934**	0.052	**338**	**972.310**	0.003	**578**	**973.073**	0.245	**285**
969.663	0.030	**331**	**969.868**	0.040	**336**	**969.935**	0.052	**338**	**972.311**	0.003	**578**	**973.076**	0.338	**285**
969.669	0.080	**332**	**969.869**	0.070	**336**	**969.936**	0.080	**338**	**972.321**	0.012	**349**	**973.077**	0.700	**285**
969.670	0.080	**332**	**969.870**	0.070	**336**	**969.937**	0.080	**338**	**972.322**	0.029	**349**	**973.078**	0.400	**285**
969.671	0.080	**332**	**969.871**	0.070	**336**	**969.938**	0.083	**338**	**972.331**	0.950	**369**	**973.079**	0.400	**285**
969.672	0.080	**332**	**969.872**	0.070	**336**	**969.939**	0.083	**338**	**973.001**	0.550	**300**	**973.080**	0.330	**285**
969.673	0.080	**332**	**969.873**	0.070	**336**	**969.940**	0.083	**338**	**973.002**	0.761	**300**	**973.081**	0.700	**285**
969.674	0.080	**332**	**969.874**	0.070	**336**	**969.941**	0.083	**338**	**973.003**	1.060	**300**	**973.082**	0.380	**285**
969.675	0.080	**332**	**969.875**	0.070	**336**	**969.942**	0.083	**338**	**973.005**	0.980	**300**	**973.083**	0.700	**285**
969.676	0.080	**332**	**969.876**	0.100	**336**	**969.943**	0.080	**338**	**973.006**	1.480	**300**	**973.084**	0.406	**285**
969.677	0.080	**332**	**969.877**	0.100	**336**	**969.944**	0.080	**338**	**973.007**	1.920	**300**	**973.085**	0.700	**285**
969.678	0.080	**332**	**969.878**	0.100	**336**	**969.945**	0.080	**338**	**973.011**	4.000	**300**	**973.086**	0.258	**285**
969.679	0.080	**332**	**969.879**	0.100	**336**	**969.946**	0.115	**339**	**973.013**	4.200	**300**	**973.087**	0.276	**285**
969.680	0.070	**332**	**969.880**	0.100	**336**	**969.947**	0.115	**339**	**973.014**	0.470	**284**	**973.088**	0.700	**306**
969.681	0.070	**332**	**969.881**	0.100	**336**	**969.948**	0.116	**339**	**973.015**	0.491	**284**	**973.089**	0.700	**306**
969.682	0.070	**332**	**969.882**	0.100	**336**	**969.949**	0.116	**339**	**973.016**	0.492	**284**	**973.090**	0.700	**306**
969.683	0.070	**332**	**969.883**	0.100	**336**	**969.950**	0.116	**339**	**973.017**	0.465	**284**	**973.091**	0.800	**306**
969.684	0.070	**332**	**969.884**	0.100	**336**	**969.951**	0.117	**339**	**973.018**	0.464	**284**	**973.092**	0.970	**306**
969.685	0.060	**332**	**969.885**	0.100	**336**	**969.952**	0.117	**339**	**973.019**	0.740	**284**	**973.093**	1.300	**306**
969.686	0.060	**332**	**969.886**	0.140	**337**	**969.953**	0.320	**339**	**973.020**	0.740	**284**	**973.094**	1.500	**306**
969.687	0.060	**332**	**969.887**	0.140	**337**	**969.954**	0.117	**339**	**973.021**	0.433	**284**	**973.095**	2.000	**306**
969.688	0.060	**332**	**969.888**	0.140	**337**	**969.955**	0.116	**339**	**973.022**	0.684	**284**	**973.096**	3.700	**306**
969.689	0.060	**332**	**969.889**	0.150	**337**	**969.956**	0.111	**339**	**973.023**	0.683	**284**	**973.097**	1.000	**306**
969.690	0.060	**332**	**969.890**	0.150	**337**	**969.957**	0.112	**339**	**973.024**	0.440	**284**	**973.098**	1.000	**306**
969.691	0.050	**332**	**969.891**	0.150	**337**	**969.958**	0.112	**339**	**973.025**	0.943	**284**	**973.099**	1.000	**306**
969.697	0.120	**332**	**969.892**	0.150	**337**	**969.959**	0.132	**339**	**973.026**	1.140	**304**	**973.100**	1.100	**306**
969.698	0.120	**332**	**969.893**	0.150	**337**	**969.960**	0.133	**339**	**973.027**	1.140	**304**	**973.101**	1.280	**306**
969.699	0.120	**332**	**969.894**	0.150	**337**	**969.961**	0.133	**339**	**973.028**	1.270	**304**	**973.102**	1.580	**306**
969.700	0.120	**332**	**969.895**	0.150	**337**	**969.962**	0.133	**339**	**973.030**	6.600	**304**	**973.103**	1.840	**306**
969.701	0.110	**332**	**969.896**	0.140	**337**	**969.963**	0.133	**339**	**973.031**	6.620	**304**	**973.104**	2.350	**306**
969.702	0.110	**332**	**969.897**	0.140	**337**	**969.964**	0.135	**339**	**973.032**	1.600	**305**	**973.105**	3.720	**306**
969.703	0.110	**332**	**969.898**	0.140	**337**	**969.965**	0.135	**339**	**973.033**	1.600	**305**	**973.110**	2.000	**307**
969.704	0.110	**332**	**969.899**	0.170	**337**	**969.966**	0.135	**339**	**973.034**	3.100	**305**	**973.111**	3.300	**307**
969.705	0.110	**332**	**969.900**	0.170	**337**	**969.967**	0.134	**339**	**973.035**	3.100	**305**	**973.112**	2.820	**307**
969.706	0.110	**332**	**969.901**	0.170	**337**	**969.968**	0.136	**339**	**973.038**	6.000	**305**	**973.113**	3.320	**307**
969.707	0.110	**332**	**969.902**	0.170	**337**	**969.969**	0.135	**339**	**973.039**	6.000	**305**	**973.114**	4.400	**307**
969.708	0.100	**332**	**969.903**	0.168	**337**	**969.970**	0.133	**339**	**973.040**	2.560	**305**	**973.115**	0.880	**245**
969.709	0.100	**332**	**969.904**	0.170	**337**	**969.971**	0.133	**339**	**973.041**	2.560	**305**	**973.116**	0.840	**245**
969.710	0.100	**332**	**969.905**	0.170	**337**	**969.972**	0.129	**339**	**973.045**	5.000	**305**	**973.117**	0.940	**245**
969.711	0.100	**332**	**969.906**	0.170	**337**	**969.973**	0.128	**339**	**973.046**	6.100	**305**	**973.119**	1.700	**245**
969.712	0.100	**332**	**969.907**	0.170	**337**	**969.974**	0.128	**339**	**973.047**	6.100	**305**	**973.120**	1.260	**245**
969.713	0.090	**332**	**969.908**	0.170	**337**	**969.975**	0.129	**339**	**973.052**	0.850	**302**	**973.121**	1.180	**245**
969.714	0.090	**332**	**969.909**	0.168	**337**	**969.981**	0.002	**337**	**973.053**	1.380	**302**	**973.122**	1.580	**245**
969.715	0.090	**332**	**969.910**	0.169	**337**	**969.982**	0.002	**337**	**973.054**	2.000	**302**	**973.123**	1.780	**245**
969.716	0.090	**332**	**969.911**	0.169	**337**	**969.983**	0.002	**337**	**973.055**	0.950	**302**	**973.124**	2.200	**245**
969.717	0.080	**332**	**969.912**	0.163	**337**	**969.984**	0.005	**337**	**973.056**	1.998	**302**	**973.125**	2.200	**245**
969.718	0.080	**332**	**969.913**	0.164	**337**	**969.985**	0.004	**337**	**973.057**	2.600	**302**	**973.126**	2.100	**245**
969.719	0.080	**332**	**969.914**	0.164	**337**	**969.986**	0.005	**337**	**973.058**	3.320	**302**	**973.127**	2.580	**245**
969.720	0.080	**332**	**969.915**	0.163	**337**	**969.987**	0.004	**337**	**973.059**	4.280	**302**	**973.128**	2.660	**245**
969.721	0.070	**332**	**969.921**	0.020	**338**	**969.988**	0.010	**337**	**973.060**	2.100	**302**	**973.181**	0.012	**286**
969.722	0.070	**332**	**969.922**	0.020	**338**	**969.989**	0.006	**337**	**973.061**	3.720	**302**	**973.182**	0.012	**286**
969.723	0.068	**332**	**969.923**	0.020	**338**	**969.990**	0.005	**337**	**973.062**	4.750	**302**	**973.183**	0.012	**286**
969.724	0.060	**332**	**969.924**	0.036	**338**	**969.991**	0.001	**337**	**973.063**	5.700	**302**	**973.184**	0.008	**286**
969.725	0.060	**332**	**969.925**	0.036	**338**	**969.992**	0.010	**337**	**973.064**	0.240	**285**	**973.185**	0.011	**286**
969.726	0.060	**332**	**969.926**	0.037	**338**	**969.993**	0.010	**337**	**973.065**	0.700	**285**	**973.186**	0.017	**286**
969.727	0.050	**332**	**969.927**	0.035	**338**	**969.994**	0.002	**337**	**973.066**	0.240	**285**	**973.187**	0.013	**286**
969.861	0.030	**336**	**969.928**	0.035	**338**	**969.995**	0.002	**337**	**973.067**	0.240	**285**	**973.188**	0.017	**286**
969.862	0.030	**336**	**969.929**	0.054	**338**	**969.996**	0.002	**337**	**973.068**	0.300	**285**	**973.194**	0.007	**371**

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
973.195	0.015	**371**	**973.263**	1.040	**233**	**973.347**	0.760	**235**	**973.558**	2.100	**242**	**973.955**	0.290	**230**
973.196	0.011	**371**	**973.264**	1.110	**233**	**973.348**	0.900	**235**	**973.559**	1.500	**242**	**974.006**	1.300	**292**
973.197	0.015	**371**	**973.265**	1.180	**233**	**973.349**	1.080	**235**	**973.560**	2.500	**242**	**974.028**	2.700	**294**
973.198	0.020	**371**	**973.266**	1.250	**233**	**973.350**	1.300	**235**	**973.562**	1.800	**246**	**974.056**	1.800	**293**
973.201	0.530	**230**	**973.267**	1.380	**233**	**973.351**	1.400	**235**	**973.563**	1.900	**246**	**974.057**	2.400	**293**
973.202	1.040	**230**	**973.268**	2.000	**233**	**973.353**	1.200	**235**	**973.564**	2.900	**246**	**974.100**	1.050	**296**
973.203	0.580	**230**	**973.269**	0.930	**233**	**973.354**	0.950	**235**	**973.565**	3.500	**246**	**974.102**	1.540	**296**
973.204	0.890	**230**	**973.270**	1.050	**233**	**973.355**	1.040	**235**	**973.572**	0.660	**247**	**978.001**	0.418	**90**
973.205	0.940	**230**	**973.271**	1.120	**233**	**973.356**	1.140	**235**	**973.573**	0.900	**247**	**978.002**	0.445	**90**
973.206	0.960	**230**	**973.272**	0.900	**233**	**973.357**	1.280	**235**	**973.574**	1.200	**247**	**978.003**	0.479	**90**
973.207	0.000	**231**	**973.273**	1.300	**233**	**973.358**	1.800	**235**	**973.575**	0.990	**247**	**978.004**	0.530	**90**
973.208	0.450	**231**	**973.274**	1.400	**233**	**973.359**	2.100	**235**	**973.576**	1.150	**247**	**978.005**	0.520	**90**
973.209	0.468	**231**	**973.275**	1.580	**233**	**973.360**	1.300	**235**	**973.577**	0.990	**247**	**978.006**	0.555	**90**
973.210	0.782	**231**	**973.276**	2.200	**233**	**973.361**	1.020	**235**	**973.578**	2.600	**247**	**978.007**	0.550	**88**
973.211	0.801	**231**	**973.277**	1.040	**233**	**973.362**	1.140	**235**	**973.579**	2.800	**247**	**978.010**	0.790	**170**
973.212	0.800	**231**	**973.278**	1.120	**233**	**973.363**	1.280	**235**	**973.580**	2.420	**247**	**978.011**	0.962	**172**
973.213	0.500	**232**	**973.279**	1.260	**233**	**973.364**	1.800	**235**	**973.598**	1.000	**249**	**978.017**	5.020	**102**
973.214	0.400	**232**	**973.280**	1.400	**233**	**973.365**	1.900	**235**	**973.600**	1.200	**249**	**978.018**	6.450	**102**
973.215	0.560	**232**	**973.281**	1.520	**233**	**973.366**	2.400	**235**	**973.601**	1.700	**249**	**978.020**	1.100	**188**
973.216	0.600	**232**	**973.282**	1.650	**233**	**973.367**	1.400	**235**	**973.602**	3.600	**249**	**978.021**	1.100	**188**
973.217	0.600	**232**	**973.283**	2.400	**233**	**973.368**	1.500	**235**	**973.603**	3.600	**249**	**978.022**	1.300	**188**
973.218	0.530	**232**	**973.284**	2.700	**233**	**973.369**	1.250	**235**	**973.604**	3.500	**249**	**978.023**	1.500	**188**
973.219	0.500	**232**	**973.285**	1.140	**233**	**973.370**	1.800	**235**	**973.605**	3.620	**249**	**978.024**	1.600	**188**
973.220	0.630	**232**	**973.286**	1.180	**233**	**973.371**	2.000	**235**	**973.609**	1.017	**524**	**978.025**	0.735	**82**
973.221	0.600	**232**	**973.287**	1.340	**233**	**973.372**	2.200	**235**	**973.680**	2.500	**239**	**978.027**	1.340	**83**
973.222	0.700	**232**	**973.288**	1.500	**233**	**973.373**	2.700	**235**	**973.682**	4.700	**239**	**978.028**	1.360	**83**
973.223	0.550	**232**	**973.289**	1.640	**233**	**973.374**	1.120	**236**	**973.684**	3.500	**239**	**978.029**	8.180	**97**
973.224	0.650	**232**	**973.290**	2.300	**233**	**973.375**	1.600	**236**	**973.686**	3.650	**239**	**978.030**	0.723	**68**
973.225	0.720	**232**	**973.291**	2.600	**233**	**973.376**	1.440	**236**	**973.688**	3.550	**239**	**978.031**	0.586	**167**
973.226	0.500	**232**	**973.292**	2.900	**233**	**973.377**	1.660	**236**	**973.690**	4.780	**239**	**978.034**	0.645	**82**
973.227	0.500	**232**	**973.293**	1.860	**234**	**973.378**	1.900	**236**	**973.710**	1.500	**242**	**978.035**	2.380	**96**
973.229	0.580	**232**	**973.295**	1.900	**234**	**973.379**	2.600	**236**	**973.711**	1.400	**242**	**978.037**	1.675	**368**
973.230	0.710	**232**	**973.297**	2.020	**234**	**973.380**	2.800	**236**	**973.712**	1.200	**242**	**978.038**	0.805	**82**
973.231	0.800	**232**	**973.298**	2.600	**234**	**973.382**	2.600	**236**	**973.713**	1.600	**242**	**978.046**	1.160	**83**
973.232	0.500	**232**	**973.300**	2.700	**234**	**973.385**	2.300	**236**	**973.714**	1.400	**242**	**978.047**	1.040	**224**
973.233	0.600	**232**	**973.302**	2.200	**234**	**973.388**	2.700	**236**	**973.715**	1.300	**242**	**978.056**	1.020	**90**
973.235	0.700	**232**	**973.304**	2.010	**234**	**973.391**	3.200	**236**	**973.716**	1.500	**242**	**978.057**	1.060	**90**
973.236	0.800	**232**	**973.306**	2.140	**234**	**973.394**	2.150	**236**	**973.718**	1.000	**244**	**978.058**	1.132	**90**
973.237	0.930	**232**	**973.308**	2.380	**234**	**973.396**	3.200	**236**	**973.720**	1.180	**244**	**978.059**	1.150	**90**
973.238	0.600	**232**	**973.311**	2.040	**234**	**973.397**	2.680	**236**	**973.721**	1.110	**244**	**978.060**	1.170	**90**
973.239	0.600	**232**	**973.313**	2.220	**234**	**973.400**	2.300	**236**	**973.722**	1.800	**244**	**978.061**	1.252	**90**
973.241	0.710	**232**	**973.315**	3.200	**234**	**973.402**	2.750	**236**	**973.723**	2.200	**244**	**978.071**	0.580	**82**
973.242	0.800	**232**	**973.316**	2.700	**234**	**973.403**	3.400	**236**	**973.724**	1.800	**244**	**978.072**	0.700	**82**
973.243	1.000	**232**	**973.318**	2.160	**234**	**973.404**	4.300	**236**	**973.725**	2.100	**244**	**978.073**	0.781	**82**
973.244	0.600	**232**	**973.320**	2.420	**234**	**973.465**	2.180	**238**	**973.726**	2.300	**244**	**978.074**	0.700	**82**
973.245	0.600	**232**	**973.322**	2.800	**234**	**973.466**	2.920	**238**	**973.727**	2.900	**244**	**978.075**	0.578	**82**
973.247	0.820	**233**	**973.325**	2.220	**234**	**973.467**	3.550	**238**	**973.728**	3.500	**244**	**978.076**	0.652	**82**
973.248	0.860	**233**	**973.327**	2.520	**234**	**973.469**	2.570	**238**	**973.729**	4.100	**244**	**978.077**	0.800	**82**
973.249	0.890	**233**	**973.329**	3.040	**234**	**973.471**	3.000	**238**	**973.730**	3.200	**244**	**978.078**	0.810	**82**
973.250	1.300	**233**	**973.330**	3.410	**234**	**973.472**	5.200	**238**	**973.731**	3.450	**244**	**978.079**	0.700	**82**
973.251	0.950	**233**	**973.331**	0.500	**235**	**973.473**	2.700	**238**	**973.732**	5.200	**244**	**978.080**	0.566	**82**
973.252	1.200	**233**	**973.333**	0.700	**235**	**973.475**	4.740	**238**	**973.737**	2.800	**585**	**978.081**	0.764	**82**
973.253	1.070	**233**	**973.334**	0.800	**235**	**973.476**	5.780	**238**	**973.738**	3.770	**585**	**978.082**	0.800	**82**
973.254	0.850	**233**	**973.335**	0.900	**235**	**973.477**	3.350	**238**	**973.739**	3.820	**585**	**978.083**	0.876	**82**
973.255	1.300	**233**	**973.336**	0.600	**235**	**973.478**	3.940	**238**	**973.740**	4.840	**585**	**978.084**	0.800	**82**
973.256	0.970	**233**	**973.338**	0.800	**235**	**973.479**	5.240	**238**	**973.751**	1.635	**301**	**978.085**	0.620	**82**
973.257	1.000	**233**	**973.339**	1.000	**235**	**973.480**	6.500	**238**	**973.752**	1.352	**301**	**978.086**	0.710	**82**
973.258	1.060	**233**	**973.340**	1.100	**235**	**973.553**	1.200	**242**	**973.753**	2.600	**305**	**978.087**	0.800	**82**
973.259	1.100	**233**	**973.341**	0.600	**235**	**973.554**	1.300	**242**	**973.754**	1.110	**248**	**978.088**	0.940	**82**
973.260	1.200	**233**	**973.343**	0.900	**235**	**973.555**	1.300	**242**	**973.755**	1.180	**248**	**978.089**	0.800	**82**
973.261	0.890	**233**	**973.344**	1.100	**235**	**973.556**	1.400	**242**	**973.756**	1.722	**248**	**978.090**	0.900	**82**
973.262	1.400	**233**	**973.345**	1.300	**235**	**973.557**	1.400	**242**	**973.954**	0.270	**230**	**978.091**	0.900	**82**

Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page	Order No.	Weight (kg)	Page
978.092	0.512	**82**	**978.185**	1.380	**194**	**978.298**	0.933	**190**	**978.810**	0.002	**528**	**979.196**	1.880	**194**
978.093	0.900	**82**	**978.186**	1.600	**194**	**978.299**	0.966	**190**	**978.811**	0.002	**528**	**979.198**	0.900	**296**
978.094	0.900	**82**	**978.187**	0.800	**66**	**978.307**	0.450	**585**	**978.812**	0.002	**528**	**979.199**	0.890	**296**
978.095	0.736	**82**	**978.188**	0.800	**66**	**978.310**	0.483	**165**	**978.813**	0.003	**528**	**979.202**	1.200	**186**
978.096	1.000	**82**	**978.189**	0.840	**224**	**978.313**	0.616	**542**	**978.814**	0.003	**528**	**979.203**	1.260	**186**
978.097	1.520	**82**	**978.190**	0.890	**224**	**978.314**	0.950	**101**	**978.817**	0.009	**553**	**979.204**	1.280	**186**
978.098	1.800	**82**	**978.192**	1.340	**83**	**978.315**	0.930	**101**	**978.820**	0.001	**542**	**979.206**	1.480	**186**
978.100	0.440	**217**	**978.193**	1.400	**83**	**978.317**	2.320	**101**	**978.821**	0.005	**528**	**979.976**	0.006	**366**
978.102	0.980	**224**	**978.194**	1.420	**83**	**978.318**	2.380	**101**	**978.826**	0.042	**553**	**979.980**	0.136	**352**
978.104	0.226	**165**	**978.195**	1.040	**224**	**978.319**	2.120	**289**	**978.827**	0.002	**528**	**979.986**	0.070	**336**
978.105	3.580	**90**	**978.196**	0.350	**232**	**978.320**	2.760	**289**	**978.828**	0.004	**528**	**979.987**	0.068	**336**
978.107	3.630	**90**	**978.197**	0.700	**232**	**978.321**	4.360	**289**	**978.829**	0.004	**528**	**979.995**	0.070	**371**
978.109	3.680	**90**	**978.198**	1.900	**585**	**978.323**	1.347	**289**	**978.830**	0.004	**528**	**979.996**	0.070	**371**
978.111	3.700	**90**	**978.199**	1.040	**224**	**978.324**	1.440	**96**	**978.831**	0.004	**528**	**979.997**	0.070	**371**
978.113	3.740	**90**	**978.201**	0.410	**232**	**978.325**	1.540	**201**	**978.832**	0.004	**528**	**979.998**	0.070	**371**
978.114	4.180	**90**	**978.202**	0.470	**232**	**978.326**	0.513	**96**	**978.833**	0.004	**528**			
978.115	3.840	**90**	**978.203**	0.700	**232**	**978.330**	1.320	**363**	**978.834**	0.004	**528**			
978.119	4.340	**584**	**978.204**	0.800	**232**	**978.331**	1.600	**363**	**978.835**	0.004	**528**			
978.120	3.780	**194**	**978.205**	1.060	**88**	**978.334**	0.400	**232**	**978.836**	0.004	**528**			
978.121	4.410	**194**	**978.207**	0.780	**60**	**978.335**	0.500	**232**	**978.837**	0.004	**528**			
978.123	1.260	**224**	**978.208**	2.355	**96**	**978.336**	1.240	**551**	**978.838**	0.004	**528**			
978.124	1.340	**224**	**978.215**	1.000	**224**	**978.338**	0.930	**551**	**978.839**	0.004	**528**			
978.128	2.390	**96**	**978.219**	1.420	**96**	**978.339**	1.300	**551**	**978.898**	0.004	**370**			
978.129	3.840	**97**	**978.222**	3.900	**585**	**978.341**	4.000	**97**	**978.899**	0.004	**370**			
978.130	4.480	**97**	**978.226**	4.940	**147**	**978.343**	1.300	**83**	**978.900**	0.005	**370**			
978.131	5.060	**97**	**978.236**	4.220	**582**	**978.356**	0.172	**315**	**978.901**	0.015	**370**			
978.132	4.160	**97**	**978.237**	1.600	**582**	**978.357**	1.500	**271**	**978.902**	0.012	**370**			
978.133	6.610	**97**	**978.238**	2.600	**582**	**978.367**	1.120	**88**	**978.903**	0.027	**370**			
978.134	1.040	**230**	**978.239**	0.650	**167**	**978.368**	1.400	**96**	**978.904**	0.043	**370**			
978.135	1.270	**296**	**978.248**	3.200	**288**	**978.370**	0.171	**164**	**978.905**	0.070	**370**			
978.136	1.160	**88**	**978.252**	1.840	**289**	**978.372**	0.180	**164**	**978.907**	0.009	**228**			
978.137	1.220	**88**	**978.253**	1.350	**584**	**978.378**	2.600	**96**	**978.908**	0.013	**569**			
978.138	1.240	**88**	**978.254**	0.499	**104**	**978.379**	0.181	**353**	**978.909**	0.006	**228**			
978.139	1.380	**88**	**978.255**	0.680	**104**	**978.399**	1.005	**104**	**978.910**	0.026	**228**			
978.141	8.150	**97**	**978.256**	0.002	**568**	**978.400**	1.170	**104**	**978.911**	0.130	**228**			
978.142	7.800	**97**	**978.259**	0.725	**96**	**978.402**	1.180	**186**	**978.912**	0.002	**366**			
978.143	9.920	**97**	**978.261**	0.705	**167**	**978.403**	4.060	**97**	**978.913**	0.010	**228**			
978.145	1.240	**96**	**978.262**	1.300	**167**	**978.404**	1.500	**186**	**978.914**	0.024	**366**			
978.146	0.920	**224**	**978.273**	0.902	**96**	**978.406**	0.900	**271**	**978.915**	0.024	**334**			
978.147	1.200	**224**	**978.274**	0.474	**104**	**978.407**	7.660	**288**	**978.916**	0.024	**334**			
978.148	5.700	**97**	**978.275**	7.700	**543**	**978.413**	0.700	**271**	**978.917**	0.024	**334**			
978.149	4.430	**97**	**978.276**	0.378	**542**	**978.476**	1.360	**304**	**978.918**	0.010	**553**			
978.150	4.450	**372**	**978.277**	1.200	**542**	**978.499**	0.008	**329**	**978.921**	0.005	**228**			
978.151	1.120	**224**	**978.278**	0.001	**542**	**978.500**	0.009	**329**	**978.951**	0.027	**374**			
978.152	1.060	**224**	**978.279S**	1.960	**74**	**978.501**	0.074	**348**	**978.953**	0.029	**374**			
978.160	1.540	**287**	**978.280**	2.820	**87**	**978.504**	0.167	**337**	**978.954**	0.071	**374**			
978.161	2.740	**288**	**978.281**	4.200	**87**	**978.505**	0.009	**329**	**978.955**	0.070	**374**			
978.162	2.300	**287**	**978.283**	0.002	**553**	**978.506**	0.010	**329**	**978.956**	0.028	**374**			
978.164	0.980	**104**	**978.284**	0.006	**503**	**978.507**	0.008	**329**	**978.958**	0.082	**374**			
978.165	1.360	**104**	**978.285**	3.360	**288**	**978.508**	0.075	**329**	**978.965**	0.275	**375**			
978.167	5.040	**97**	**978.286**	0.180	**359**	**978.509**	0.022	**329**	**978.966**	0.214	**375**			
978.168	5.600	**97**	**978.287**	0.179	**359**	**978.511**	0.008	**326**	**978.967**	0.277	**375**			
978.170	0.670	**170**	**978.288**	0.177	**359**	**978.512**	0.170	**337**	**978.971**	0.068	**374**			
978.173	1.400	**86**	**978.289**	0.172	**359**	**978.513**	0.008	**326**	**978.972**	0.025	**374**			
978.174	4.730	**97**	**978.290**	7.150	**584**	**978.516**	0.010	**326**	**978.975**	0.070	**374**			
978.175	6.040	**97**	**978.291**	0.990	**90**	**978.517**	0.009	**326**	**978.976**	0.263	**576**			
978.178	1.100	**585**	**978.292**	1.188	**289**	**978.518**	0.099	**336**	**978.977**	0.070	**374**			
978.179	0.449	**88**	**978.293**	1.546	**289**	**978.801**	0.002	**528**	**978.978**	0.030	**374**			
978.180	0.480	**88**	**978.294**	6.450	**102**	**978.803**	0.003	**528**	**978.979**	0.030	**374**			
978.181S	1.340	**74**	**978.295**	0.900	**190**	**978.804**	0.001	**528**	**979.010**	0.235	**166**			
978.183	12.760	**97**	**978.296**	0.800	**190**	**978.807**	0.002	**528**	**979.140**	1.600	**585**			
978.184	0.779	**68**	**978.297**	0.918	**190**	**978.809**	0.002	**528**	**979.194**	0.873	**194**			

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