SPT SUNCOAST INC.
PRECISION TOOLS
ESTABLISHED 1963

PARLEC
Measurably Better

MASTER TOOLHOLDING CATALOG

Toolholding, Tapping, and Boring solutions

Toolholding

Tapping

Boring

PARLEC

HISTORY

1948 Parlec is established in Rochester N.Y., as a job shop specializing in the manufacturing of Sulky Hubs.

1973 Parlec begins producing and distributing the Numertap and Autofacer product lines.

1977 Parlec expands its product line with the introduction of Toolholders, which are sold as Numertap and Autofacer accessories.

1980 The first Parsetter TMM® is produced.

1985 Parlec builds a new 42,000 square-foot, state-of-the-art manufacturing facility just outside of Rochester in Fairport, N.Y.

1992 Parlec begins to manufacture and distribute its own line of Boring Tools.

1997 Parlec becomes ISO 9001 certified. Parlec's sales triple from 1992-1997.

1998 Parlec further enhances its product line to include Workholding. Construction of a 58,000 square-foot plant addition begins.

2003 Parlec enters the Asian market with the opening of a sales and service office in Nanjing China.

2004 Parlec acquires Bristol Tool. Driven and static tools are added to Parlec's extensive product line. A new sales, engineering and distribution facility opens in Bristol, England.

2006 Parlec continues to expand its world wide footprint by opening a Wholly Owned Foreign Enterprise in Nanjing. This gives the company full sales, engineering, customer support and distribution capabilities on 3 continents.

2009 Sales offices are opened in Tianjin, Xian, Wuxi, and Chengdu to expand the China presence.

2010 Parlec partners with Gerardi for distribution of Driven & Static Tooling in Europe. Parlec begins distribution of Right angle heads in China.

2012 Parlec successfully completes a $5 million dollar capital investment campaign to automate and expand its manufacturing capabilities in the United States.

2014 Parlec partners with TDM Systems.

Tool Machining Solutions

- Tool Presetting, Measuring and Inspection Systems
- Widest Range of Rigid, Tension and Compression Tapping
- Precision Modular Boring Systems
- Toolholding Production and High Performance Solutions

PARLEC

TOOLHOLDING

HIGH PRECISION TOOLHOLDING SOLUTIONS

TABLE OF CONTENTS

TAPPING

TABLE OF CONTENTS

BORING

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Engineered Solutions to Help you Profit

ORIGIN®
POWERED BY PARLEVISION

Evolution

Tool Measuring & Inspection

- Smartphone Simplicity
- American Made
- Micron Precision
- Under $10,000

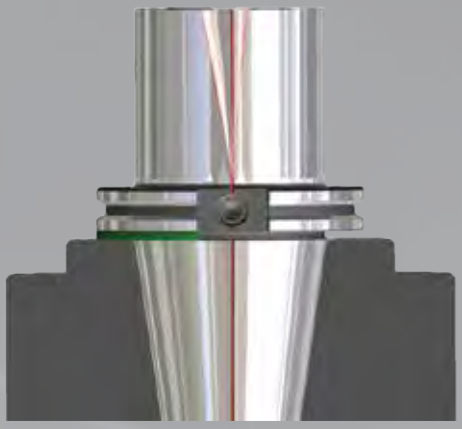
Angle Head Solutions by Gerardi

- Modular Components
- High Grade Gears, Bearings and seals
- Up to 10,000 RPM
- USA Testing, Repair, and Refurb Facility

Parlec offers a complete line of performance Toolholding, Presetting & Measuring, Boring, Tapping and Angle Head product solutions.

**BIG-PLUS® is a registered trademark of Daishowa Seiki Kabushiki Kaisha and that Daishowa Seiki Kabushiki Kaisha does not endorse or sponsor the products of Parlec.*

ER OS®



SimulFit®

Extreme Performance Toolholding System

- Unmatched Concentricty and Precision
- High Speed Operation
- Superior Grip Force
- USA Testing, Repair, and Refurb Facility

Dual Contact Taper Connection

- Compatible with BIG-PLUS® Spindle
- Stocked Inventory
- Increased Rigidity up to 28%
- American Made

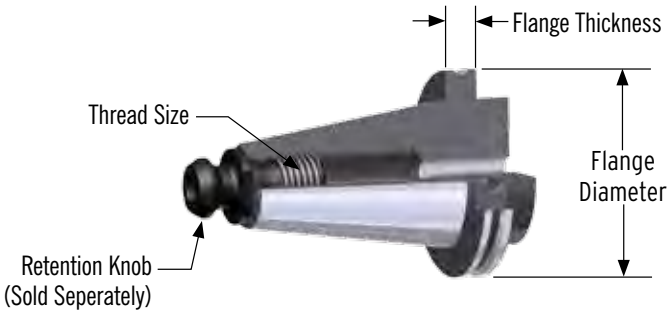
Quality, Precision, Innovation

CONNECTION IS EVERYTHING

No matter what the spindle application, Parlec offers simple, highly repeatable and versatile tooling solution.

CAT V Flange Taper Specifications

- Meets or exceeds ASME B5.50-2009 specifications and all current specification updates except where improvements are made for high speed operation.
- All Parlec CAT tooling incorporates ParSymmetry for balance and chip hole for identification.

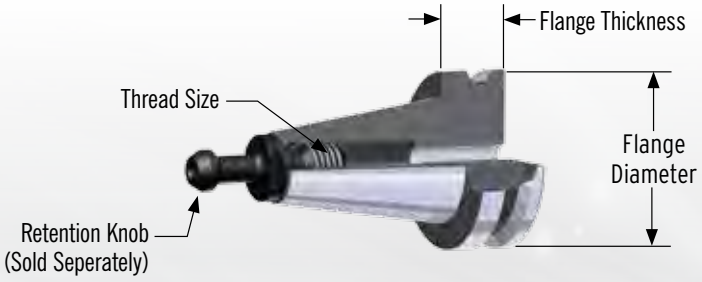


CAT TAPER SPECIFICATIONS

Taper Type	Gage Diameter	Flange Diameter	Flange Thickness	Thread Size
C40	1.750	2.50	.625	5/8" - 11"
C50	2.750	3.87	.625	1" - 8"
C60	4.250	5.50	.625	1 1/4" - 7"
C40F	1.750	2.50	.711	5/8" - 11"
C50F	2.750	3.87	.691	1" - 8"

BT Taper Specifications

- Meets or exceeds JIS B6339-1986 specifications.
- Taper is toleranced so that any error increases rate of taper only. Refer to Manufacturing Specifications for tolerance specifications.

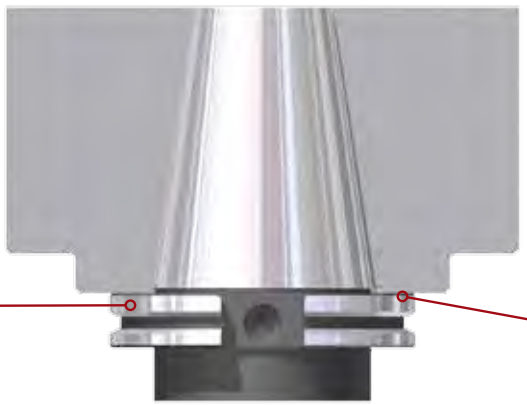


BT TAPER SPECIFICATIONS

Taper Type	Gage Diameter	Flange Diameter	Flange Thickness	Thread Size
B30	1.25	1.81	0.787	M12 - 1.75
B40	1.75	2.48	0.984	M16 -2.0
B50	2.75	3.94	1.378	M24 - 3.0
B30F	1.25	1.81	0.865	M12 - 1.75
B40F	1.75	2.48	1.062	M16 - 2.0

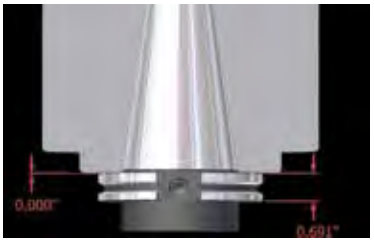
CONNECTION IS EVERYTHING
SIMULFIT® SYSTEM—DUAL CONTACT TAPER

- Traditional steep taper connection is taper only.
- Simultaneous contact of taper and face will improve rigidity of the connection up to 28%.
- Simultaneous fit is not exclusive to HSK, but is suitable for steep taper.



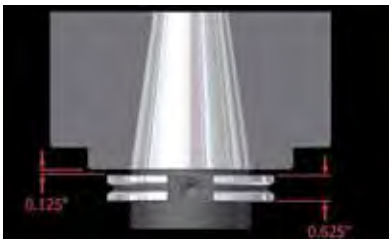
+ 28%
Larger contact diameter increases resistance to bending by up to 28%

Face contact gives positive Z position and prevents shift during operation



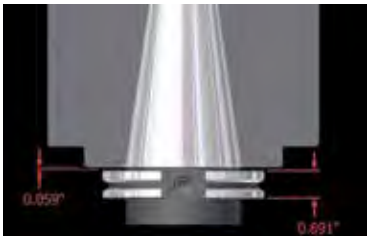
Spindle Compatible to BIG-PLUS®

- Steep taper holder designed to fit a BIG-PLUS® compatible spindle
- Result is taper and face simultaneous contact only



Standard Spindle

- Standard Cat (ANSI B5.50) holder
- Result is traditional taper only contact

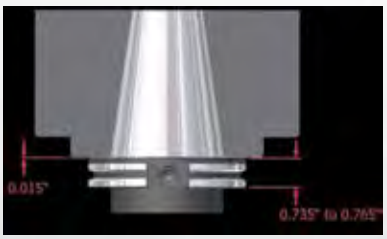


BIG-PLUS® Spindle with Standard Tooling

- Steep taper holder designed to fit a BIG-PLUS® compatible spindle
- Result is traditional taper only contact

Spindle Compatible to BIG-PLUS®

- Standard Cat (ANSI B5.50) holder
- Result is traditional taper only contact



Standard Spindle

- Modified Cat (ANSI B5.50) holder fitted with a custom spacer for use in non-qualified spindle
- Result is taper and face simultaneous contact only

**BIG-PLUS® is a registered trademark of Daishowa Seiki Kabushiki Kaisha and that Daishowa Seiki Kabushiki Kaisha does not endorse or sponsor the products of Parlec.*

COOLANT SUPPLY OPTIONS

Available coolant supply from the spindle

- Through the spindle
- Flange Entry (Form B)

Standard Through Coolant

Coolant delivered from the spindle through the knob and exits through the cutting tool. Coolant through knobs sold separately. See page 127-130.

AD/B Convertible Coolant

With Screws: Coolant delivered from the spindle through the knob and exits through the cutting tool. Coolant through knobs sold separately. See page 127-130.

Without Screws: Coolant delivered from the spindle through the flange and exits through the cutting tool. Solid knob required. Solid knobs sold separately. See page 127-130.

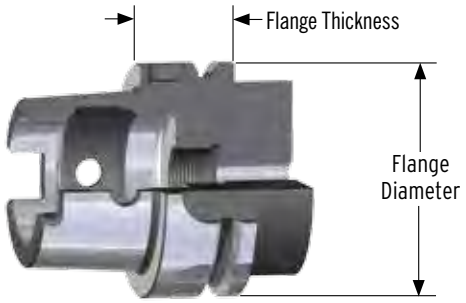
Through Spindle

- Through holes are standard in all Parlec holders where applicable. Solid and through hole retention knobs are available to accommodate coolant and non-coolant applications.

Through-Flange

- Combined with solid retention knobs Form B holes through flange, accept the coolant from the spindle.
- Available standard for many tools and available as a standard modification for most tools.
- Form B convertible or AD/B (BC) is available in many sizes.
- The AD/B (BC) style can be used as either through the spindle , as supplied, or converted to Form B, through the flange.
- Flange entry is enabled by removing two screws.

CONNECTION IS EVERYTHING



HSK Form A Taper Specifications

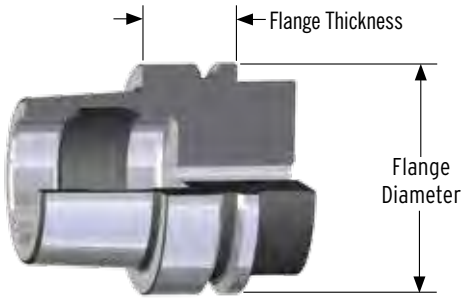
- Meets DIN 69893-1 Form A specifications.
- Drive slots for moderate to heavy cutting forces.


Tube Wrench

HSK COOLANT TUBES

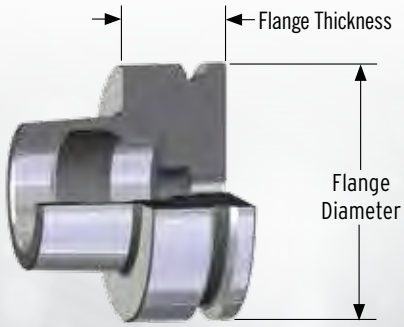
Taper Type	Part No.	Tube Wrench No.
HSK40A	H40TUBE	H40W
HSK63A	H63TUBE	H63W
HSK100A	H100TUBE	H100W


Coolant Tube



HSK Form E Taper Specifications

- Meets DIN 69893-1 Form A specifications.
- No drive slots or orientation slots for high speed operation.



HSK Form F Taper Specifications

- Meets DIN 69893-1 Form A specifications.
- Larger face contact area for higher torsional load at higher speeds.

HSK TAPERS

Taper Type	Flange Diameter	Flange Thickness
HSK40A	40	35
HSK63A	63	42
HSK100A	100	45
HSK32E	32	35
HSK40E	40	35
HSK63F	63	42

Parlec provides tooling in a variety of taper styles. HSK is available in other forms and sizes upon request.

ROTATIONAL SPEED AND BALANCE

A toolholder is the interface between a precision machine spindle and a precision cutting tool. The toolholder has three base elements; the taper connection, the retaining device and the cutting tool connection.

TAPER DESIGN PRINCIPLES

Common toolholders for machine tool spindles today are typically one of two classes of taper; steep taper (Cat, BT, DIN) and hollow taper (HSK).

Steep Taper

Steep Taper is the most commonly used taper principal. It is offered in different configurations, CAT, DIN, BT or others such as SK, NMTB, etc. The steep taper is held into the spindle through the use of a retention knob or pull stud that is affixed to the nose of the taper or by a draw bar internal to the machine spindle. The steep taper designs are available with taper only contact or SimulFit®, simultaneous taper and face contact. SimulFit® is available in two standard forms and can be retrofitted to any spindle even if the face is not qualified.

The steep taper is also available with through the spindle coolant, or flange entry coolant. Flange entry coolant also known as Form B or convertible Form AD/B (BC), is offered standard on many tools and available through modification on most tools.

Steep Taper provides very good durability and excellent dampening characteristics for speeds ranging from very low to moderately high. The typical maximum is 30,000 rpm for 30 taper, 20,000 rpm for 40 taper and 15,000 rpm for 50 taper. At higher speeds the spindle may expand due to centrifugal forces allowing the taper to draw into the spindle. This restricts the practical speeds that steep taper can be used. The length of the steep taper allows for a straight line bending mode based on applied side forces.

Hollow Taper

HSK tools have a much shallower taper and an internal drawbar. HSK is translated from the German name Kegel-Holhschafte or hohl shaft kegel. HSK tools are available in many sizes and forms. Due to the face contact (no movement allowed) and the hollow thin wall (expands to fill the spindle) of the HSK design, the spindle speed is not restricted by draw-in of the holder due to centrifugal forces. HSK spindles can exceed speeds of 40,000 rpm. HSK Form E and F spindles do not utilize drive keys and therefore are not practical at lower speed, higher force applications. The short thin wall taper and face contact provide a stiffer bending mode at lower forces and very rapid bending at higher forces. This results in a less dynamic stiffness mode.

BALANCE DESIGN PRINCIPLES

Toolholders are a very important element in the overall performance of cutting tools at high speeds. The forces generated against a machine tool spindle can come from many places. One of them is unbalance. When the cutting forces are low and the spindle speeds are high then the forces from unbalance can cause damage to the machine tool spindle bearings. High uneven cutting forces generated by an endmill in an traditional endmill holder can greatly overshadow forces generated by unbalance. However if a precision collet, shrink or other symmetrically designed systems are used at high speed, the unbalance can be a large contributor to the spindle bearing wear. Balance should be properly applied to the holder, and often the holder assembly, when the forces from unbalance will affect the performance above that of the normal cutting forces.

Balanced Toolholders

Tools that are designed for high speed operation are balanced to G2.5 at speeds up to 30,000 rpm. This will include such tools as ER Collet Chucks, Shrink Fit, ERos®, etc. Parlec will balance most tools with a standard taper connection to G2.5 and up to 40,000 rpm. The maximum capable balance is 1 g/mm . Any time you have a tool that will mount with a device that can change the balance, such as a side lock end mill, hydraulic chuck, milling chuck, collet chuck with standard threads, tightening and loosening of the device will change the effective balance. Unbalanced assembly results anytime a cutting tool has uneven flutes, uneven grinds, or is chucked in a way that has runout. Under extremely high speed and low force applications, it is best to balance as an assembly.

Balanceable Toolholders

The use of balanceable Toolholders provide the benefit of balance correction, at each assembly, when a precision level of balance is preferred. This solution requires that the user have a balancing machine. Parlec's radial offset technology provides a non-intrusive, low cost precision method of balancing toolholder assemblies.

Parlec ParSymmetry Toolholders

All Parlec toolholders are designed with ParSymmetry. This ensures that the unbalanced design of the flange is eliminated.

SELECTING THE PROPER TOOLHOLDER TYPE

Friction Drive vs. Positive Drive

The most common positive drive toolholder is the weldon end mill holder. This type of system requires flats or some other feature on the cutting tool shank raising the cost of the cutting tool. The positive drive nature virtually eliminates pull out or spinning potential during a cut.

Friction drive such as Collet Chucks and Shrink Holders are more likely to result in concentric and higher speed operations. Clamping relies on either compression, as in power milling and hydraulic chucks, or wedging, as in collets, to do the clamping on the round shank. In the case of friction drive, the question is how much torque, vibration , force or combination of these will it take to allow slipping.

Types of friction drive holders include ERos®, heat shrink, ER collet chucks, power milling chucks,

hydraulic chucks, single and double angle collet chucks.

Variables:

- Reduction bushing systems consume some of the clamping force to absorb the clearance between the holder and the reduction bushing as well as the reduction bushing and the tool shank. This results in much less performance when not used on size.
- Collets use linear travel to create a wedge to generate the clamping force. Most collet systems are designed to collapse a considerable distance. When the collet collapses below its nominal size the od and id of the collet are no longer matched to the holder seat and the cutter shank diameter lessoning the contact area. This results in reduced concentricity and grip force.
- Heat shrink utilizes thermal expansion to give a clearance to insert the tool. The cooling of the holder shrinks the body back to the original size. The cutting tool interference with this movement creates the clamping force. There is no action in this process to make up for variables in bore or cutting tool shank diameters.

Collet style vs. Bore Style

Collet style tools are made to be more flexible than a tool with a sized bore such as heat shrink or weldon style. This can be more cost effective but adds complexity to the assembly process and requires better and more defined cleaning and storage techniques. Collets or reduction bushings allow a common holder to be used on many size applications. This is especially valuable to a job shop environment where the jobs may change many times.

SELECTING THE BEST COLLET TYPE TOOLHOLDING SYSTEM

HIGH PRESICION

PRODUCTION

Eros® System is designed to provide the ultimate in EXTREME performance. ERos® offers all of the benefits of a collet system but is designed to eliminate all of the errors that come from the typical collet flexible collapse system. ERos® is **ER ON SIZE**. Machined for the best fit and precision without the forced collapse provides the best combination for precision, rigidity, grip force and speed.

ER Collet System is the best of the production and higher quality systems for flexible machining operations. It is available in different configurations to address the precision, quality and ruggedness to fit a wide spectrum of drilling and lighter milling applications. Great balance of precision, rigidity, grip, speed and durability and affordability.

Power Milling Chucks are a good product to use when heavy rough milling with either cobalt or carbide solid tools. Typically they would be used when the speed is lower and the feed per tooth is higher. The system has very good concentricity and very good grip force.

Single Angle Collet Chucks System has been a good general purpose product for many years.

The longer collet with a lower angle provides good grip force. The design uses an acme thread to give strength to the clamping nut thread. The result is good durability but will not center the nut providing a large mass variable for balance. Suitable for larger drills at lower RPM's.

Double Angle Collet Chucks System is old and out of date technology. The two separate clamping angles allow significant error between the collet and the collet seat. This results in poor concentricity and poor grip force. The nose diameter of the Extension style gives the best radial clearance of any system. The price is extremely low, but the value in not good based on minimum control of tolerance and lack of performance.

TOOLHOLDING SELECTION GUIDE

Parlec features a diverse product range of traditional toolholding solutions, including: ER Collet Chucks, Shrink Fit Holders, Power Milling Chucks, Shell Mill Holders Single-Angle Collet Systems, Double-Angle Collet Systems, and Weldon End Mill Holders. Our products are manufactured to maintain precision, functionality and durability for traditional and high-speed operation.

ERos® Collet Chuck

EXTREME PERFORMANCE | RPM | 3 MICRON | AD/B | COOLANT

For extreme performance and any high speed, high concentricity tool requirement. The .00012" gage runout tolerance at 3X the tool diameter with the balanced and aerodynamic design, provides the highest performance available equal to shrink fit or proprietary designs without high start-up costs. The collet based design provides the simplest solution to extreme performance requirements.

ER Collet Chuck

SIMULFIT® | RPM | 5 MICRON | 12 MICRON | AD/B | COOLANT

For most drilling and lighter higher speed milling applications. Very good concentricity and very good balance. Safe operational speed as high as 30,000 rpm. Larger sizes have a limit based on centrifugal forces.

Shrink Fit Holders

EXTREME PERFORMANCE | RPM | 3 MICRON | AD/B | COOLANT

For nominal size drilling with higher speed and higher feed milling applications. Excellent concentricity and excellent balance. No moving features, and thin nose diameters, make it exceptional for high speed machining. Safe operating speeds are extremely high due to little impact from centrifugal forces.

Power Milling Chucks

RPM | SIMULFIT® | 5 MICRON | TRADITIONAL | COOLANT

For precision in moderate and lower speed milling and nominal drilling applications. Very good concentricity and good side load capability. Movable large clamping nut restricts the balance and centrifugal force capability, limiting the speed to 8,000 to 12,000 rpm.

Shell Mill Holders
SIMULFIT® | AD/B | COOLANT

For use with indexable shell mill cutters. For both heavy duty and high speed applications. Available with coolant through options.

Single-Angle Collet System
12 MICRON | TRADITIONAL | AD/B | COOLANT

For heavy drilling and some milling applications. The system provides good concentricity and good grip force. The nut system does not lend itself for good balance considerations at higher speeds.

Double-Angle Collet System
TRADITIONAL | AD/B | COOLANT

For smaller drilling application where clearance is necessary. The system is the simplest to use but lacks the characteristics for concentricity and grip force. Not suitable for precision high speed applications.

Weldon End Mill Holders
SIMULFIT® | TRADITIONAL | AD/B | COOLANT

For heavy machining using tools with Weldon flats. The side lock design compromises concentricity and is not useable in higher speed applications. The positive drive of the screw is unmatched for force to prevent slippage and pull out in heavy roughing applications.

OTHER PRODUCTION SYSTEMS


Stub Arbors


Morse Taper Holders


Jacobs Taper Holders


Boring Heads


Probe Holders

PARLEC DELIVERS SO YOU CAN DELIVER.

HSK Program—HSK 63 Form A and HSK 100 Form A Blanks

- Custom second ends for shrink fit, end mill and shell mill holders, collet chucks, aerospace configurations, etc.
- Projections ranging from 2-300 mm and wide variety of coolant delivery features.
- Pre-balanced and balanceable designs available.

CAT Program—CAT 40 and CAT 50 Blanks

- Custom second ends for shrink fit, shell mill holders, end mill holders, ER, single angle and double angle collet chucks, stub arbors, and aerospace applications.
- Projections ranging from 2-300 mm and wide variety of coolant delivery features.
- Pre-balanced and balanceable designs available.

Custom Programs

If your outgoing tool requirements are outside those listed above please consult with the Parlec Technical Sales Manager in your area or a Parlec Product Specialist who will assist you in qualifying for a custom program.

Customer Contact Information: _____

Name: _____

Company: _____

Phone: _____

E-Mail: _____

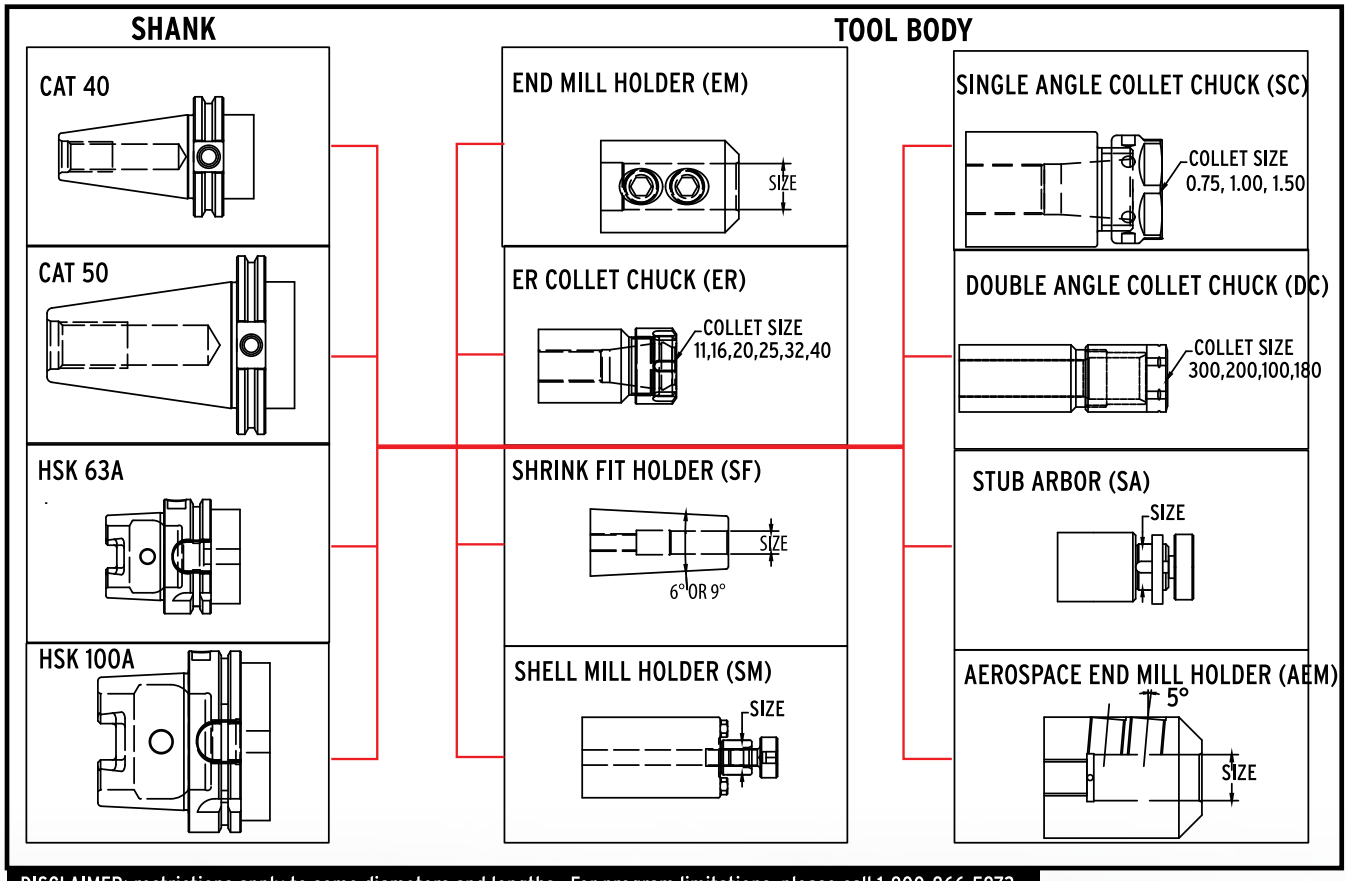
Distributor Contact Information: _____

Name: _____

Company: _____

Phone: _____

E-Mail: _____



DISCLAIMER: restrictions apply to some diameters and lengths. For program limitations, please call 1-800-866-5872

1. Select a shank from the Shank options listed above, record your selection in Box 1.
2. Record your desired diameter/size in Box 2.
3. Select a tool body for the options listed above, record your selection in Box 3.
4. Record your desired projection length in Box 4.
5. Select any additional options.
6. Record any additional notes.
7. Fax (1-800-866-5917) or E-Mail (esales@parlec.com)completed RFQ.
8. Other special configurations available upon request. Please attach drawing for further review.

BOX 1—Shank ☐ BOX 2—Diameter/Size ☐ BOX 3—Tool Body ☐ BOX 4—Projection ☐

OPTIONS, PLEASE SELECT:

AD/B COOLANT: _____ BALANCEABLE: _____

COOLANT PORTS: _____ PREBALANCED: _____

NOTES: _____

Toolholding

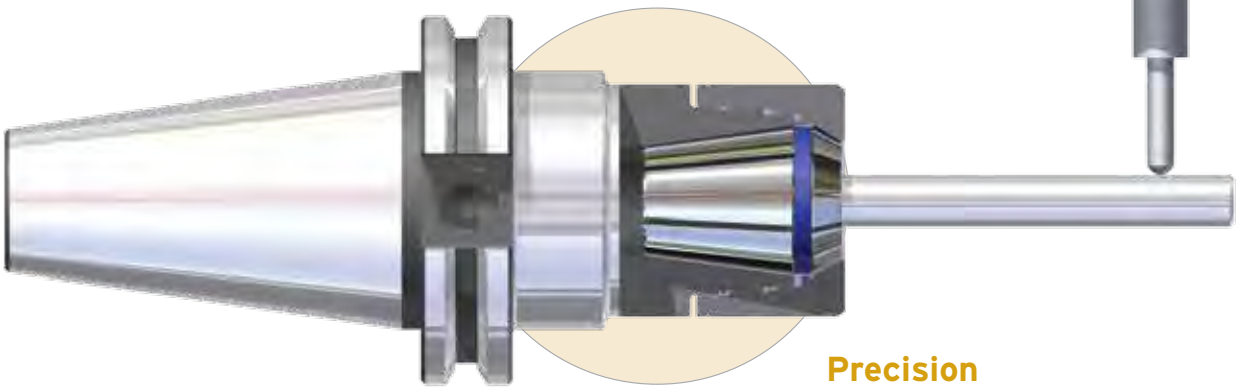
HIGH PRECISION TOOLHOLDING SOLUTIONS

Parlec offers a complete range of Precision Toolholding Systems, engineered for high speed operation, superior grip force and longer tool life.

ERos® is an extremely high precision, high grip force solution that doesn't require an expensive heat shrink or clamping machine.

Concentricity

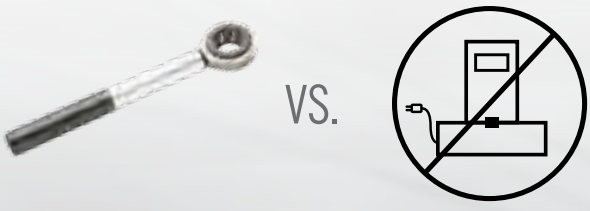
The ERos® collet system is one of the best collet chucks that money can buy. The 2 Micron collet combined with the precision chuck, achieves a system accuracy of ≤= .00012" or 3 Microns. This level of accuracy is the best available in the world.



Precision

The extreme performance of the ERos® system is a result of extremely tight manufacturing tolerances. The extreme precision is achieved by exceeding the already tight specifications of the ISO 15488.

LOW START UP COST



Simplicity

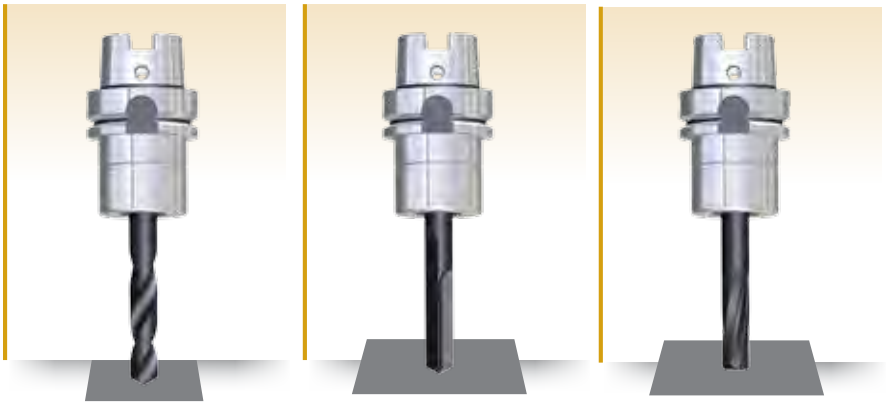
The price to performance ratio in the ERos® system is the best available. Based on precision, holding force and flexibility, it performs at levels equal to or higher than systems with expensive start up costs such as heat shrink or clamping machines. And individually equal to or less expensive. The relatively low cost of the 2 Micron collets allow inexpensive retooling compared to hydraulics, shrink or proprietary systems. ERos® is a combination of quality, precision and technology yielding an EXTREME performance chuck at an attainable price point without need for significant investment for assembly/disassembly equipment.

It's simplicity that results in extreme performance.

Versatility

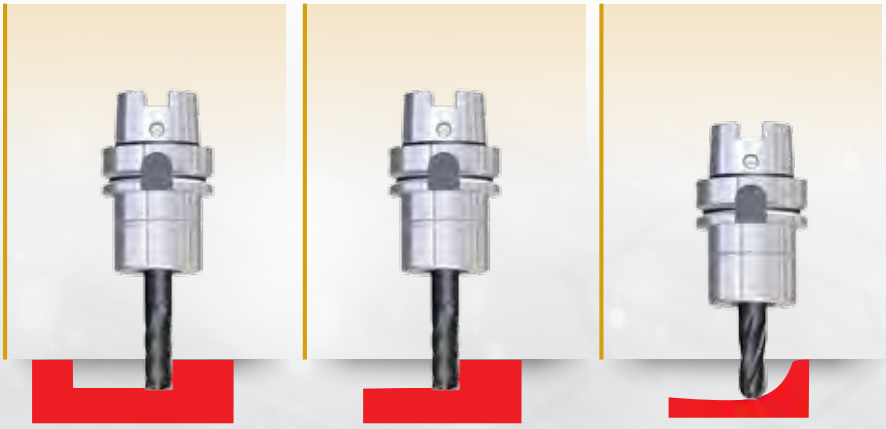
The ERos® system is versatile in performance and application. The collet design offers the flexibility for use in multiple applications.

Drilling and Reaming



Form Grinding

Milling



Extended

PARLEC EROS® SYSTEM FEATURES

CERTIFIED G2.5 HIGH SPEED PERFORMANCE

All surfaces are ground whether they are critical or not

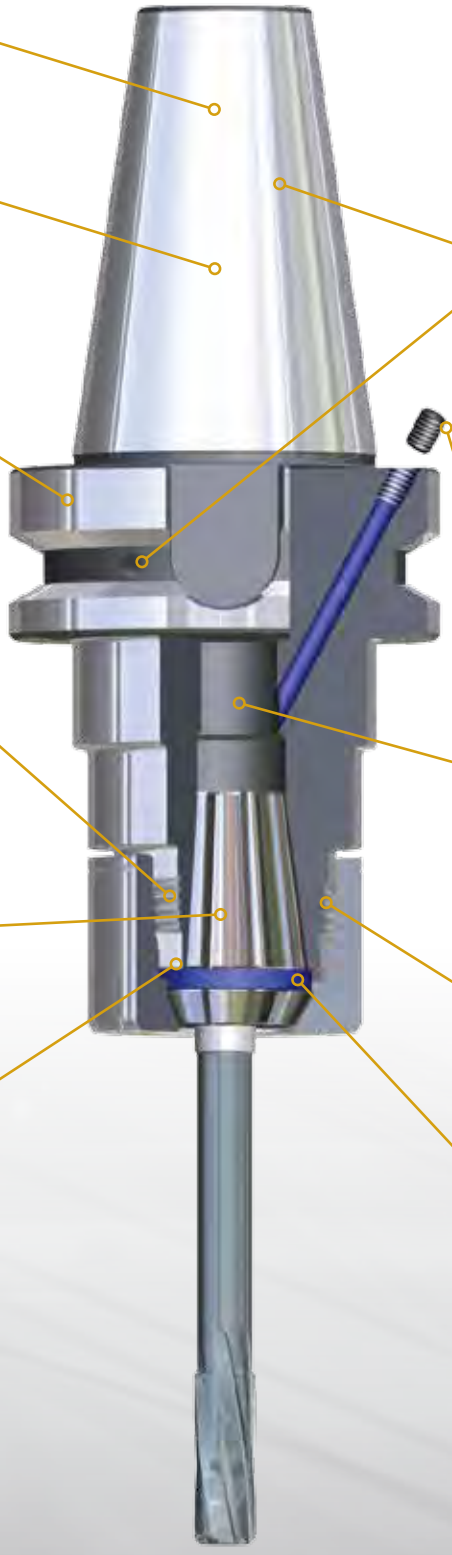
Heat treated, high strength alloy steel for the best balance of toughness and wear strength

Ground v-groove and flange OD for reliable tool changes

Special designed trapezoidal threads for extra strength

Polished 2 Micron collets with .00008" or 2 micron gage tolerance for the ultimate concentricity and grip force in ER Collet Systems

Custom length collet seat for maximum contact which provides rigidity and grip force



Certified Balance to G2.5 and AT3 Taper Specification for consistent reliable performance tool change to tool change

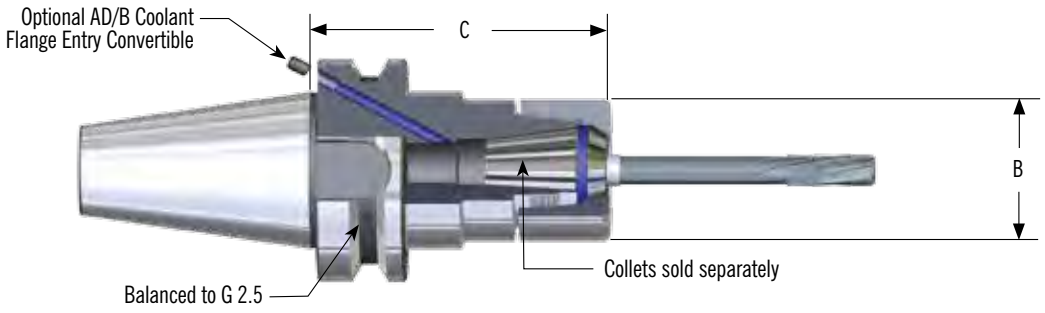
Available AD/B Coolant converts from through spindle to flange entry coolant supply

Back-Up screws available upon request on tools with sufficient length

Precision ground OD, threads and two pilot bores provide the most advanced and precise clamping nut available

2 Micron Collet Identification Ring

EROS® BT COLLET CHUCKS



BT 30 BALANCED UP TO 25,000 RPM

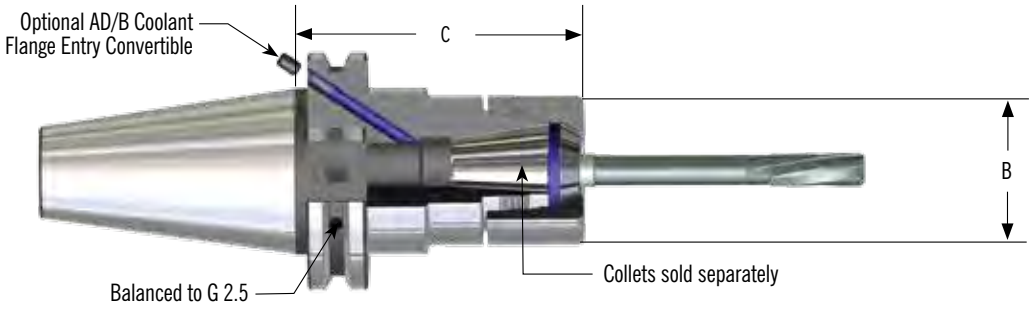
Size	Part Number	Coolant	B (Dia.)	C	Collet Nut (Incl.)	Maximum Nut Torque	Wrench
ER11	BT30-11EROSM196	Through	0.63	1.96	EROS11MN	88 in/lbs.	EROS11MNW
	BT30-11EROSM394			3.94			
ER16	BT30-16EROS196	Through	1.18	1.96	EROS16N	41 ft/lbs.	EROS16NW
	BT30-16EROS354			3.54			
	BT30-16EROS472			4.72			
ER20	BT30-20EROS295	Through	1.26	2.95	EROS20N	58 ft/lbs.	EROS20NW
ER32	BT30-32EROS236	Through	1.97	2.36	EROS32N	105 ft/lbs.	EROS32NW
	BT30-32EROS354			3.54			

BT 40 BALANCED UP TO 25,000 RPM

Size	Part Number	Coolant	B (Dia.)	C	Collet Nut (Incl.)	Maximum Nut Torque	Wrench
ER11	BT40BC-11EROSM295	AD/B	0.63	2.95	EROS11MN	88 in/lbs.	EROS11MNW
	BT40BC-11EROSM394			3.94			
	BT40BC-11EROSM630			6.30			
ER16	BT40BC-16EROSM472	AD/B	0.94	4.72	EROS16MN	29 ft/lbs.	EROS16MNW
	BT40BC-16EROS275		1.18	2.75	EROS16N	41 ft/lbs.	EROS16NW
	BT40BC-16EROS394			3.94			
	BT40BC-16EROS630			6.30			
ER20	BT40BC-20EROS295	AD/B	1.26	2.95	EROS20N	58 ft/lbs.	EROS20NW
	BT40BC-20EROS472			4.72			
ER32	BT40BC-32EROS275	AD/B	1.97	2.75	EROS32N	105 ft/lbs.	EROS32NW
	BT40BC-32EROS472			4.72			
ER40	BT40-40EROS394	Through	2.48	3.94	EROS40N	150 ft/lbs.	EROS40NW

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Collets and Collet Nut Wrench separately, see pages 33-37.

EROS® CAT COLLET CHUCKS



CAT 40 BALANCED UP TO 25,000 RPM

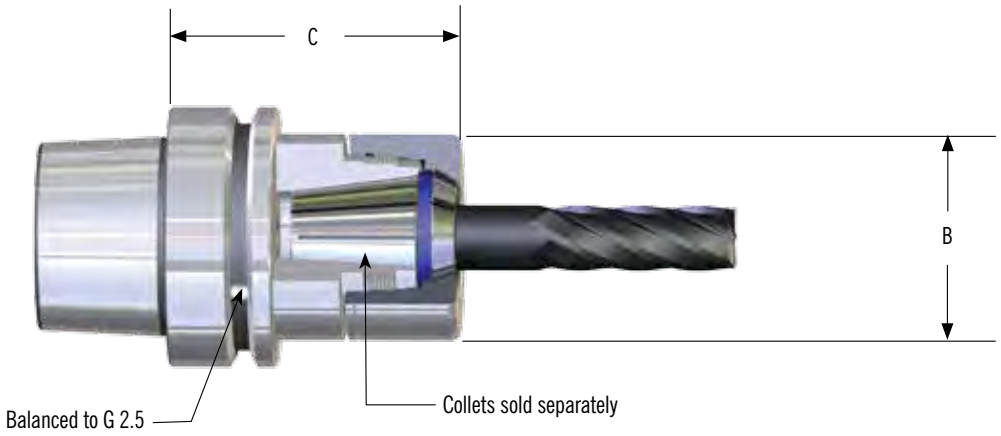
Size	Part Number	Coolant	B (Dia.)	C	Collet Nut (Incl.)	Maximum Nut Torque	Wrench
ER11	C40BC-11EROSM400	AD/B	0.63	4.00	EROS11MN	88 in/lbs.	EROS11MNW
ER16	C40BC-16EROS250	AD/B	1.18	2.50	EROS16N	41 ft/lbs.	EROS16NW
	C40BC-16EROS400	AD/B		4.00			
	C40BC-16EROS500	AD/B		5.00			
ER20	C40BC-20EROS300	AD/B	1.26	3.00	EROS20N	58 ft/lbs.	EROS20NW
	C40BC-20EROS400	AD/B		4.00			
ER32	C40BC-32EROS300	AD/B	1.97	3.00	EROS32N	105 ft/lbs.	EROS32NW
	C40BC-32EROS400	AD/B		4.00			
	C40BC-32EROS500	AD/B		5.00			
	C40BC-32EROS600	AD/B		6.00			
ER40	C40BC-40EROS400	AD/B	2.48	4.00	EROS40N	150 ft/lbs.	EROS40NW

CAT 50 BALANCED UP TO 20,000 RPM

Size	Part Number	Coolant	B (Dia.)	C	Collet Nut (Incl.)	Maximum Nut Torque	Wrench
ER16	C50BC-16EROS400	AD/B	1.18	4.00	EROS16N	41 ft/lbs.	EROS16NW
	C50BC-16EROS600	AD/B		6.00			
ER20	C50BC-20EROS400	AD/B	1.26	4.00	EROS20N	58 ft/lbs.	EROS20NW
	C50BC-20EROS600	AD/B		6.00			
ER32	C50BC-32EROS350	AD/B	1.97	3.50	EROS32N	105 ft/lbs.	EROS32NW
	C50BC-32EROS400	AD/B		4.00			
	C50BC-32EROS600	AD/B		6.00			
ER40	C50BC-40EROS400	AD/B	2.48	4.00	EROS40N	150 ft/lbs.	EROS40NW

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Collets and Collet Nut Wrench separately, see pages 33-37.

EROS® HSK COLLET CHUCKS



HSK 32 FORM E BALANCED UP TO 30,000 RPM

Size	Part Number	Coolant	B (Dia.)	C	Collet Nut (Incl.)	Maximum Nut Torque	Wrench
ER20	H32E-20EROS196	Through	1.26	1.96	EROS20N	58 ft/lbs.	EROS20NW

HSK 40 FORM E BALANCED UP TO 30,000 RPM

Size	Part Number	Coolant	B (Dia.)	C	Collet Nut (Incl.)	Maximum Nut Torque	Wrench
ER11	H40E-11EROSM196	Through	0.63	1.96	EROS11MN	88 in/lbs.	EROS11MNW
ER16	H40E-16EROSM394	Through	1.18	3.94	EROS16MN	41 ft/lbs.	EROS16MNW

HSK 63 FORM F BALANCED UP TO 30,000 RPM

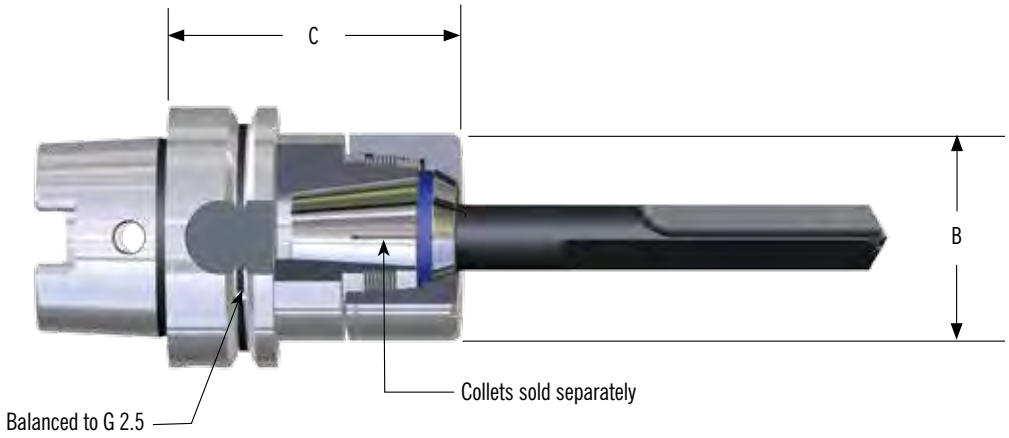
Size	Part Number	Coolant	B (Dia.)	C	Collet Nut (Incl.)	Maximum Nut Torque	Wrench
ER32	H63F-32EROS255	Through	1.97	2.55	EROS32N	105 ft/lbs.	EROS32NW

HSK 40 FORM A BALANCED UP TO 25,000 RPM

Size	Part Number	Coolant	B (Dia.)	C	Collet Nut (Incl.)	Maximum Nut Torque	Wrench
ER11	H40A-11EROSM236	Through	0.63	2.36	EROS11MN	88 in/lbs.	EROS11MNW
ER16	H40A-16EROS236	Through	1.18	2.36	EROS16N	41 ft/lbs.	EROS16NW

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-130. Order Collets and Collet Nut Wrench separately, see pages 33-37.

EROS® HSK COLLET CHUCKS



HSK 63 FORM A BALANCED UP TO 25,000 RPM

Size	Part Number	Coolant	B (Dia.)	C	Collet Nut (Incl.)	Maximum Nut Torque	Wrench
ER11	H63A-11EROSM275	Through	0.63	2.75	EROS11MN	88 in/lbs.	EROS11MNW
	H63A-11EROSM511	Through		5.11			
ER16	H63A-16EROS216	Through	1.18	2.16	EROS16N	41 ft/lbs.	EROS16NW
	H63A-16EROS394	Through		3.94			
	H63A-16EROS630	Through		6.30			
	H63A-16EROSM511	Through		5.11	EROS16MN	22 ft/lbs.	EROS16MNW
ER20	H63A-20EROS236	Through	1.26	2.36	EROS20N	58 ft/lbs.	EROS20NW
	H63A-20EROS394	Through		3.94			
ER32	H63A-32EROS275	Through	1.97	2.75	EROS32N	105 ft/lbs.	EROS32NW
	H63A-32EROS394	Through		3.94			
	H63A-32EROS630	Through		6.30			
ER40	H63A-40EROS314	Through	2.48	3.14	EROS40N	150 ft/lbs.	EROS40NW

HSK 100 FORM A BALANCED UP TO 20,000 RPM

Size	Part Number	Coolant	B (Dia.)	C	Collet Nut (Incl.)	Maximum Nut Torque	Wrench
ER16	H100A-16EROS394	Through	1.18	3.94	EROS16N	41 ft/lbs.	EROS16NW
	H100A-16EROS630	Through		6.30			
ER32	H100A-32EROS394	Through	1.97	3.94	EROS32N	105 ft/lbs.	EROS32NW
	H100A-32EROS630	Through		6.30			
	H100A-32EROS787	Through		7.87			
ER40	H100A-40EROS394	Through	2.48	3.94	EROS40N	150 ft/lbs.	EROS40NW

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Collets and Collet Nut Wrench separately, see pages 33-37.

EROS® SYSTEM ACCESSORIES

REPLACEMENT NUTS

Part Number	B (Dia.)
EROS11MN	0.63
EROS16MN	0.94
EROS16N	1.18
EROS20N	1.26
EROS32N	1.97
EROS40N	2.48

ERos® Mini Nut

ERos® Nut

ROLLER WRENCH

Part Number	B (Dia.)
EROS11MNW	0.63
EROS16MNW	0.94
EROS16NW	1.18
EROS20NW	1.26
EROS32NW	1.97
EROS40NW	2.48

ERos® Roller Wrench

TORQUE WRENCH

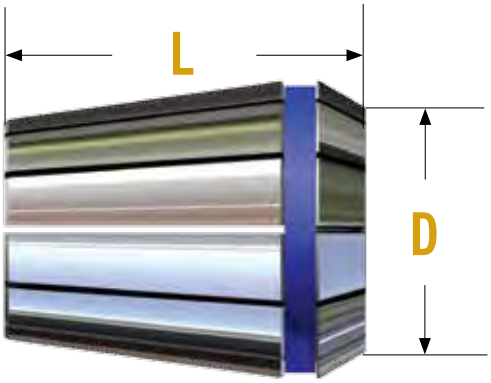
Size	Wrench	Nose Piece
EROS 11M	EROSTW100	EROS11MTWN
EROS 16M		EROS16MTWN
EROS 16		EROS16TWN
EROS 20		EROS20TWN
EROS 32	EROSTW200	EROS32TWN
EROS 40	EROSTW300	EROS40TWN

Torque Wrench

COLLET DIMENSIONS

COLLET SIZE	ER11	ER16	ER20	ER32	ER40
LENGTH (L)	0.708	1.082	1.240	1.574	1.811
DIAMETER (D)	0.452	0.669	0.827	1.300	1.614

EROS® 2 MICRON COLLETS



ERos® 2 Micron Collet

* For collet dimensions see page 33

2 MICRON ERos® COLLETS

ERos® 11 COLLETS

PART NUMBER	SIZE	*RANGE
EROS11-1MM	1 mm	h8
EROS11-1.5MM	1.5 mm	h8
EROS11-2MM	2 mm	h8
EROS11-2.5MM	2.5 mm	h8
EROS11-3MM	3 mm	h8
EROS11-3.5MM	3.5 mm	h8
EROS11-4MM	4 mm	h8
EROS11-4.5MM	4.5 mm	h8
EROS11-5MM	5 mm	h8
EROS11-5.5MM	5.5 mm	h8
EROS11-6MM	6 mm	h8
EROS11-6.5MM	6.5 mm	h8
EROS11-7MM	7 mm	h8

*Per ISO 286-2

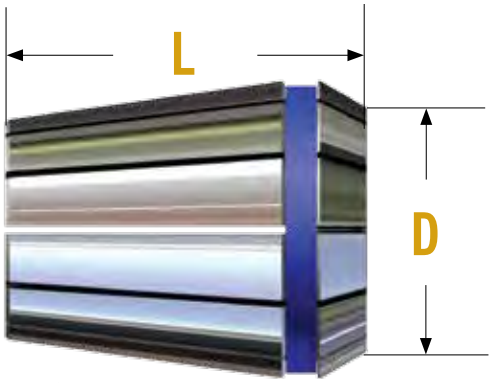
ERos® 11 COLLETS

PART NUMBER	SIZE	*RANGE
EROS11-1/16	1/16”	h8
EROS11-1/8	1/8”	h8
EROS11-3/16	3/16”	h8
EROS11-1/4	1/4”	h8

*Per ISO 286-2

SETS	ERos® 11 METRIC SET	ERos® 11 INCH SET
PART NUMBER	EROS11-S013	EROS11-SI004
NUMBER OF PIECES	13 Pieces	4 Pieces
RANGE	1-7 mm	1/16” - 1/4”

EROS® 2 MICRON COLLETS



ERos® 2 Micron Collet

* For collet dimensions see page 33

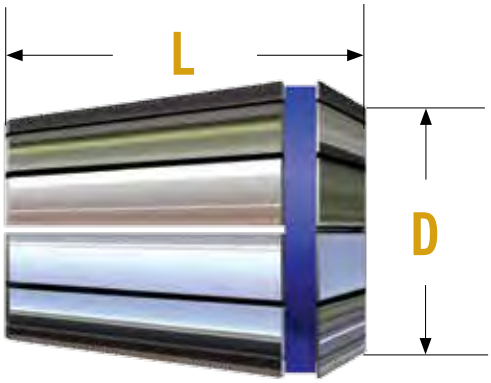
2 MICRON ERos® COLLETS ERos® 16 - ERos® 40 METRIC

PART NUMBER					
ERos® 16 Metric	ERos® 20 Metric	ERos® 32 Metric	ERos® 40 Metric	SIZE	*RANGE
EROS16-3MM	EROS20-3MM	EROS32-3MM	-	3 mm	h8
EROS16-4MM	EROS20-4MM	EROS32-4MM	-	4 mm	h8
EROS16-5MM	EROS20-5MM	EROS32-5MM	-	5 mm	h8
EROS16-6MM	EROS20-6MM	EROS32-6MM	-	6 mm	h8
EROS16-7MM	EROS20-7MM	EROS32-7MM	-	7 mm	h8
EROS16-8MM	EROS20-8MM	EROS32-8MM	-	8 mm	h8
EROS16-9MM	EROS20-9MM	EROS32-9MM	-	9 mm	h8
EROS16-10MM	EROS20-10MM	EROS32-10MM	EROS40-10MM	10 mm	h8
-	EROS20-11MM	EROS32-11MM	EROS40-11MM	11 mm	h8
-	EROS20-12MM	EROS32-12MM	EROS40-12MM	12 mm	h8
-	EROS20-13MM	EROS32-13MM	EROS40-13MM	13 mm	h8
-	-	EROS32-14MM	EROS40-14MM	14 mm	h8
-	-	EROS32-15MM	EROS40-15MM	15 mm	h8
-	-	EROS32-16MM	EROS40-16MM	16 mm	h8
-	-	EROS32-17MM	EROS40-17MM	17 mm	h8
-	-	EROS32-18MM	EROS40-18MM	18 mm	h8
-	-	EROS32-19MM	EROS40-19MM	19 mm	h8
-	-	EROS32-20MM	EROS40-20MM	20 mm	h8
-	-	-	EROS40-21MM	21 mm	h8
-	-	-	EROS40-22MM	22 mm	h8
-	-	-	EROS40-23MM	23 mm	h8
-	-	-	EROS40-24MM	24 mm	h8
-	-	-	EROS40-25MM	25 mm	h8
-	-	-	EROS40-26MM	26 mm	h8

*Per ISO 286-2

ERos® 16 Metric Set	ERos® 20 Metric Set	ERos® 32 Metric Set	ERos® 40 Metric Set	SETS
EROS16-S008	EROS20-S011	EROS32-S018	EROS40-S017	PART NUMBER
8 Pieces	11 Pieces	18 Pieces	17 Pieces	NUMBER OF PIECES
3-10 mm	3-13 mm	3-20 mm	10-26 mm	RANGE

EROS® 2 MICRON COLLETS



ERos® 2 Micron Collet

* For collet dimensions see page 33

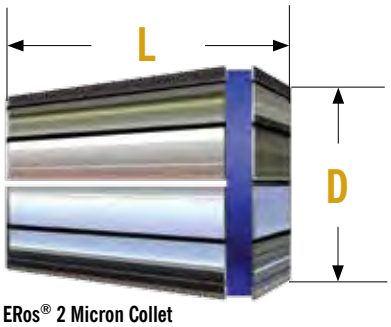
2 MICRON ERos® COLLETS ERos® 16 - ERos® 40 INCH

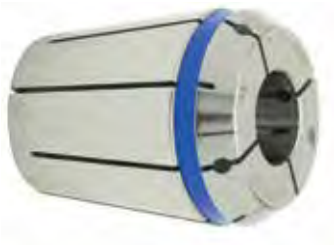
PART NUMBER					
ERos® 16 Inch	ERos® 20 Inch	ERos® 32 Inch	ERos® 40 Inch	SIZE	*RANGE
EROS16-1/8	EROS20-1/8	EROS32-1/8	-	1/8”	h8
EROS16-5/32	-	-	-	5/32”	h8
EROS16-3/16	EROS20-3/16	EROS32-3/16	-	3/16”	h8
EROS16-7/32	-	-	-	7/32”	h8
EROS16-1/4	EROS20-1/4	EROS32-1/4	-	1/4”	h8
EROS16-9/32	-	-	-	9/32”	h8
EROS16-5/16	EROS20-5/16	EROS32-5/16	-	5/16”	h8
EROS16-3/8	EROS20-3/8	EROS32-3/8	EROS40-3/8	3/8”	h8
-	EROS20-7/16	EROS32-7/16	-	7/16”	h8
-	EROS20-1/2	EROS32-1/2	EROS40-1/2	1/2”	h8
-	-	EROS32-9/16	-	9/16”	h8
-	-	EROS32-5/8	EROS40-5/8	5/8”	h8
-	-	EROS32-3/4	EROS40-3/4	3/4”	h8
-	-	-	EROS40-7/8	7/8”	h8
-	-	-	EROS40-1	1”	h8

ERos® 16 Inch Set	ERos® 20 Inch Set	ERos® 32 Inch Set	ERos® 40 Inch Set	SETS
EROS16-SI008	EROS20-SI007	EROS32-SI010	EROS40-SI006	PART NUMBER
8 Pieces	7 Pieces	10 Pieces	6 Pieces	NUMBER OF PIECES
1/8” - 3/8”	1/8” - 1/2”	1/8” - 3/4”	3/8” - 1”	RANGE

*Per ISO 286-2

EROS® 2 MICRON COOLANT SEALED COLLETS





ERos® 2 Micron Collet

* For collet dimensions see page 33

2 MICRON ERos® COOLANT SEALED COLLETS ERos® 16 - ERos® 40 METRIC

PART NUMBER				
ERos® 16 Metric	**ERos® 20 Metric**	**ERos® 32 Metric**	**SIZE**	***RANGE**
EROSC16-3MM	EROSC20-3MM	-	3 mm	h8
EROSC16-4MM	EROSC20-4MM	EROSC32-4MM	4 mm	h8
EROSC16-6MM	EROSC20-6MM	EROSC32-6MM	6 mm	h8
EROSC16-8MM	EROSC20-8MM	EROSC32-8MM	8 mm	h8
EROSC16-10MM	EROSC20-10MM	EROSC32-10MM	10 mm	h8
-	EROSC20-12MM	EROSC32-12MM	12 mm	h8
-	-	EROSC32-14MM	14 mm	h8
-	-	EROSC32-16MM	16 mm	h8
-	-	EROSC32-18MM	18 mm	h8
-	-	EROSC32-20MM	20 mm	h8

ERos® 16 Metric Set	**ERos® 20 Metric Set**	**ERos® 32 Metric Set**	**SETS**
EROSC16-S005	EROSC20-S006	EROSC32-S009	PART NUMBER
5 Pieces	6 Pieces	9 Pieces	NUMBER OF PIECES
3, 4, 6, 8, 10 mm	3, 4, 6, 8, 10, 12 mm	4-20 mm (Even)	RANGE

2 MICRON ERos® COOLANT SEALED COLLETS ERos® 16 - ERos® 40 INCH

PART NUMBER				
ERos® 16 Inch	**ERos® 20 Inch**	**ERos® 32 Inch**	**SIZE**	***RANGE**
EROSC16-1/8	-	-	1/8”	h8
EROSC16-3/16	-	-	3/16”	h8
EROSC16-1/4	EROSC20-1/4	EROSC32-1/4	1/4”	h8
EROSC16-5/16	EROSC20-5/16	EROSC32-5/16	5/16”	h8
EROSC16-3/8	EROSC20-3/8	EROSC32-3/8	3/8”	h8
-	EROSC20-1/2	EROSC32-1/2	1/2”	h8
-	-	EROSC32-5/8	5/8”	h8
-	-	EROSC32-3/4	3/4”	h8

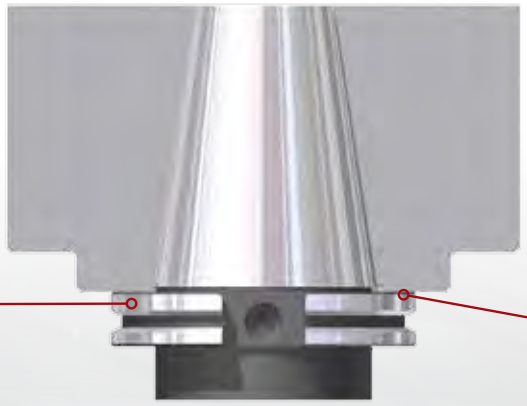
ERos® 16 Inch Set	**ERos® 20 Inch Set**	**ERos® 32 Inch Set**	**SETS**
EROSC16-SI005	EROSC20-SI004	EROSC32-SI006	PART NUMBER
5 Pieces	4 Pieces	6 Pieces	NUMBER OF PIECES
1/8”, 3/16”, 1/4”, 5/16”, 3/8”	1/4”, 5/16”, 3/8”, 1/2”	1/4”, 5/16”, 3/8”, 1/2”, 5/8”, 3/4”	RANGE

*Per ISO 286-2

SIMULFIT® SYSTEM—DUAL CONTACT TAPER

Connection is Everything!

- Constructed of alloy steel for long, durable service life.
- Shiny taper with black oxide finish for the best combination of accuracy and durability.
- Hardened to Rc: 52-56 to avoid damaging collet chuck threads.
- Available as Shell Mill Holders, End Mill Holders, ER Collet Chucks, and Milling Chucks.
- Designed to reduce tool deflection, vibration and cycle times.
- Compatible with BIG-PLUS® spindle.



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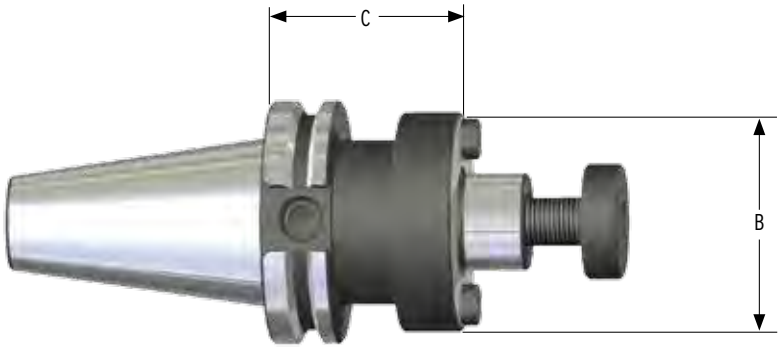
Additional details available, see page 13.

SIMULFIT® SHELL MILL HOLDERS



BT 30 SIMULFIT®

Size	Part Number with SimulFit®	B (Dia.)	C
3/4"	B30F-75SM118	1.75	1.18
1"	B30F-10SM177	2.38	1.77

BT 40 SIMULFIT®

Size	Part Number with SimulFit®	B (Dia.)	C
3/4"	B40F-75SM2	1.75	2.00
1"	B40F-10SM2	2.25	2.00
1 1/4"	B40F-12SM2	2.75	2.25
1 1/2"	B40F-15SM2	3.75	2.25

CAT 40 SIMULFIT®

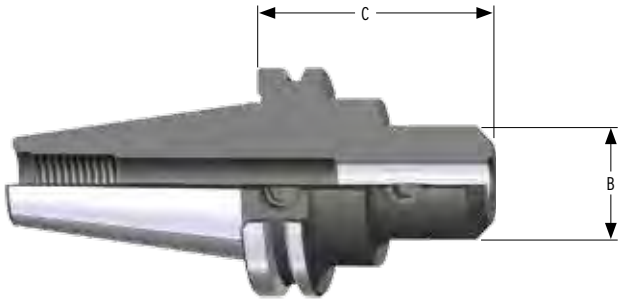
Size	Part Number with SimulFit®	B (Dia.)	C
3/4"	C40F-75SM1	1.75	1.38
	C40F-75SM200		2.00
	C40F-75SM4		4.00
1"	C40F-10SM1	2.25*	1.00
	C40F-10SM2	2.25	2.00
	C40F-10SM4		4.00
1 1/4"	C40F-12SM1	2.75*	1.62
	C40F-12SM2	2.75	2.25
1 1/2"	C40F-15SM2	3.75	2.40
	C40F-15SM4		4.00

CAT 50 SIMULFIT®

Size	Part Number with SimulFit®	B (Dia.)	C
3/4"	C50F-75SM1	1.75	1.50
	C50F-75SM3		3.50
	C50F-75SM5		5.50
1"	C50F-10SM2	2.25	2.00
	C50F-10SM4		4.00
	C50F-10SM6		6.00
	C50F-10SM8		8.00
1 1/4"	C50F-12SM3	2.75	3.50
	C50F-12SM5		5.50
1 1/2"	C50F-15SM2	3.75	2.40
	C50F-15SM4		4.00
	C50F-15SM6		6.00
2"	C50F-20SM2	4.88	2.40
	C50F-20SM4		4.00
2 1/2"	C50F-25SM2		2.40

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. *Does not have tool changer safe zone, may not fit some machines, and deviate from ANSI B5.50/2009.

SIMULFIT® END MILL HOLDERS



BT 30 SIMULFIT® TAPER

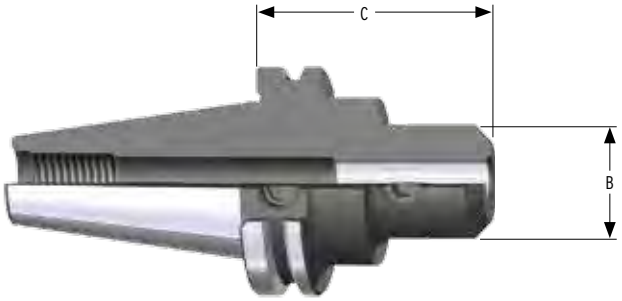
Size	Part Number with SimulFit®	Style	B (Dia.)	C	Socket Depth
1/4"	B30F-25EM238	2	0.81	2.38	3.31
3/8"	B30F-37EM238	2	1.38	2.38	3.31
1/2"	B30F-50EM238	2	1.38	2.38	2.00
5/8"	B30F-62EM250	2	1.44	2.50	2.24
3/4"	B30F-75EM250	2	2.00	2.50	2.25
1"	B30F-10EM275	2	2.38	2.75	2.50

BT 40 SIMULFIT® TAPER

Size	Part Number with SimulFit®	Style	B (Dia.)	C	Socket Depth
1/2"	B40F-50EM2	2	1.25	2.25	3.00
5/8"	B40F-62EM2	2	1.50	2.25	3.07
3/4"	B40F-75EM3	2	1.75	3.38	3.94
1"	B40F-10EM4	2	2.00	4.00	4.50
1 1/4"	B40F-12EM4	2	2.50	4.00	3.35

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Style descriptions, see page 107. Order Retention Knobs separately, see pages 130-132.

SIMULFIT® END MILL HOLDERS



CAT 40 SIMULFIT® TAPER

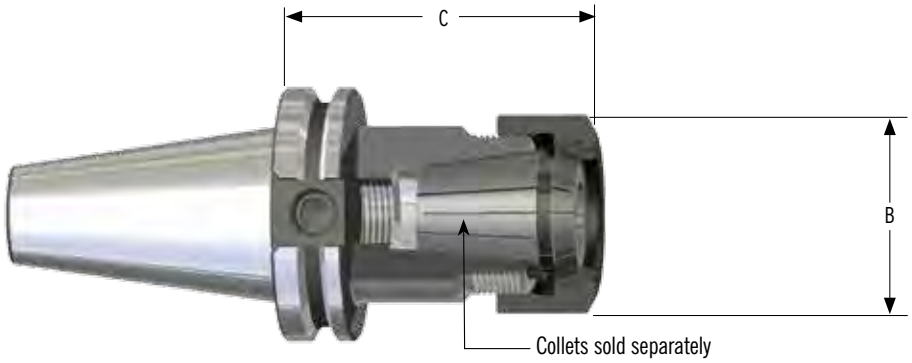
Size	Part Number with SimulFit®	Style	B (Dia.)	C	Socket Depth
1/2"	C40F-50EM1	1	1.75	1.75	3.00
	C40F-50EM2	2	1.25	2.62	3.80
	C40F-50EM4	2		4.62	
5/8"	C40F-62EM2	2	1.50	2.75	3.62
	C40F-62EM3	2		3.00	3.21
3/4"	C40F-75EM1	1	1.75	1.75	2.37
	C40F-75EM300	2		3.00	3.94
	C40F-75EM6	2		6.00	
1"	C40F-10EM1	1	2.00*	1.75	2.38
	C40F-10EM3	2	2.00	3.00	3.00
	C40F-10EM4	2		4.00	4.50
1 1/4"	C40F-12EM2	1	2.25*	2.00	2.38
	C40F-12EM4	2	2.50	4.00	3.35
	C40F-12EM6	2	2.50	6.00	
1 1/2"	C40F-15EM462	2	2.62	4.62	2.38

CAT 50 SIMULFIT® TAPER

Size	Part Number w/ SimulFit®	Style	B (Dia.)	C	Socket Depth
1/2"	C50F-50EM4	2	1.25	4.62	5.00
	C50F-50EM6	3		6.62	
5/8"	C50F-62EM5	2	1.50	5.75	3.62
	C50F-62EM7	3		7.75	
3/4"	C50F-75EM3	2	1.75	3.75	4.00
	C50F-75EM5	2		5.75	
1"	C50F-10EM4	2	2.00	4.00	4.50
	C50F-10EM6	2		6.00	
	C50F-10EM8	3		8.00	
1 1/4"	C50F-12EM2	2	2.75	2.62	3.50
	C50F-12EM4	2	2.50	4.00	3.50
	C50F-12EM6	2		6.00	
	C50F-12EM8	2		8.00	
1 1/2"	C50F-15EM4	2	2.75	4.00	4.50
	C50F-15EM6	2		6.00	
	C50F-15EM8	2		8.00	
2"	C50F-20EM5	2	3.75	5.62	3.63

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Style descriptions, see page 107. Order Retention Knobs separately, see pages 130-132. *Does not have tool changer safe zone, may not fit some machines, and deviate from ANSI B5.50/2009.

SIMULFIT® ER COLLET CHUCKS WITH POWER NUT



BT 30 SIMULFIT® BALANCED UP TO 25,000 RPM

Size	Part Number with SimulFit®	B (Dia.)	C	Socket Depth
ER16	B30F-16ERP248	1.11	2.48	1.83
ER20	B30F-20ERP248	1.34	2.48	2.48
ER32	B30F-32ERP248	1.97	2.48	3.88

BT 40 SIMULFIT® BALANCED UP TO 25,000 RPM

Size	Part Number with SimulFit®	B (Dia.)	C	Socket Depth
ER16	B40F-16ERP312	1.11	3.12	2.00
	B40F-16ERP512		5.12	
ER32	B40F-32ERP412	1.97	4.12	3.88
	B40F-32ERP612		6.12	

CAT 40 SIMULFIT® BALANCED UP TO 25,000 RPM

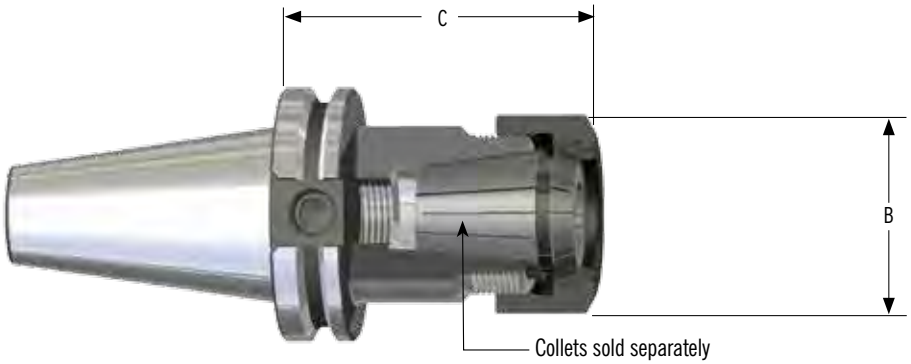
Size	Part Number with SimulFit®	B (Dia.)	C	Socket Depth
ER16	C40F-16ERP262	1.11	2.62	2.43
	C40F-16ERP412		4.12	
	C40F-16ERP512		5.12	
	C40F-16ERP812		8.12	
ER20	C40F-20ERP612	1.34	6.12	4.00
ER25	C40F-25ERP612	1.62	6.12	4.00
ER32	C40F-32ERP312	1.97	3.12	3.88
	C40F-32ERP412		4.12	
	C40F-32ERP612		6.12	

CAT 50 SIMULFIT® BALANCED UP TO 20,000 RPM

Size	Part Number with SimulFit®	B (Dia.)	C	Socket Depth
ER16	C50F-16ERP412	1.11	4.12	2.50
	C50F-16ERP612		6.12	
	C50F-16ERP812		8.12	
ER32	C50F-32ERP412	1.97	4.12	3.88
	C50F-32ERP612		6.12	
	C50F-32ERP812		8.12	
ER40	C50F-40ERP412	2.47	4.12	4.10

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Collets and Collet Nut Wrench separately, see pages 74-86.

SIMULFIT® ER COLLET CHUCKS WITH COOLANT NUT



BT 40 SIMULFIT® BALANCED UP TO 25,000 RPM

Size	Part Number with SimulFit®	B (Dia.)	C	Socket Depth
ER16	B40F-16ERC322	1.11	3.22	2.00
	B40F-16ERC522		5.22	2.00
ER32	B40F-32ERC422	1.97	4.22	3.88
	B40F-32ERC622		6.22	

CAT 40 SIMULFIT® BALANCED UP TO 25,000 RPM

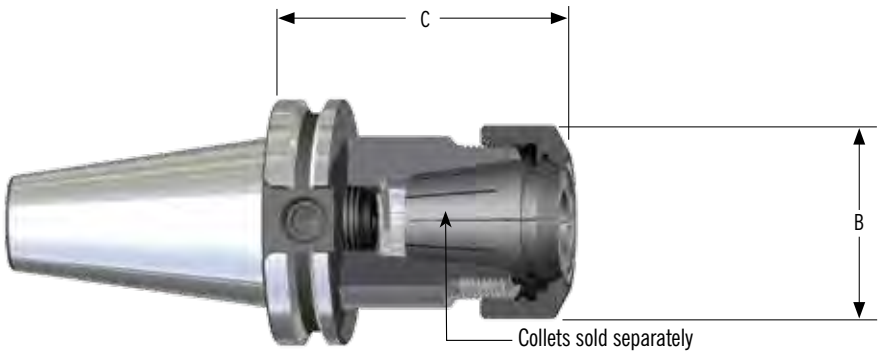
Size	Part Number with SimulFit®	B (Dia.)	C	Socket Depth
ER16	C40F-16ERC272	1.11	2.72	2.43
	C40F-16ERC422		4.22	
	C40F-16ERC522		5.22	
	C40F-16ERC822		8.22	
ER20	C40F-20ERC622	1.34	6.22	4.00
ER25	C40F-25ERC622	1.67	6.22	4.00
ER32	C40F-32ERC322	1.97	3.22	3.88
	C40F-32ERC422		4.22	
	C40F-32ERC622		6.22	

CAT 50 SIMULFIT® BALANCED UP TO 20,000 RPM

Size	Part Number with SimulFit®	B (Dia.)	C	Socket Depth
ER16	C50F-16ERC422	1.11	4.22	2.50
	C50F-16ERC622		6.22	
	C50F-16ERC822		8.22	
ER32	C50F-32ERC422	1.97	4.22	3.88
	C50F-32ERC622		6.22	
	C50F-32ERC822		8.22	
ER40	C50F-40ERC422	2.47	4.22	4.10

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Collets and Collet Nut Wrench separately, see pages 74-86.

SIMULFIT® ER COLLET CHUCKS WITH FLUSH NUT



BT 30 SIMULFIT® BALANCED UP TO 25,000 RPM

Size	Part Number with SimulFit®	B (Dia.)	C	Socket Depth
ER16	B30F-16ERF236	1.11	2.36	1.83
ER20	B30F-20ERF236	1.34	2.36	2.48
ER32	B30F-32ERF236	1.97	2.36	3.88

BT 40 SIMULFIT® BALANCED UP TO 25,000 RPM

Size	Part Number with SimulFit®	B (Dia.)	C	Socket Depth
ER16	B40F-16ERF300	1.11	3.00	2.00
	B40F-16ERF500		5.00	3.50
ER32	B40F-32ERF400	1.97	4.00	3.88
	B40F-32ERF600		6.00	

CAT 40 SIMULFIT® BALANCED UP TO 25,000 RPM

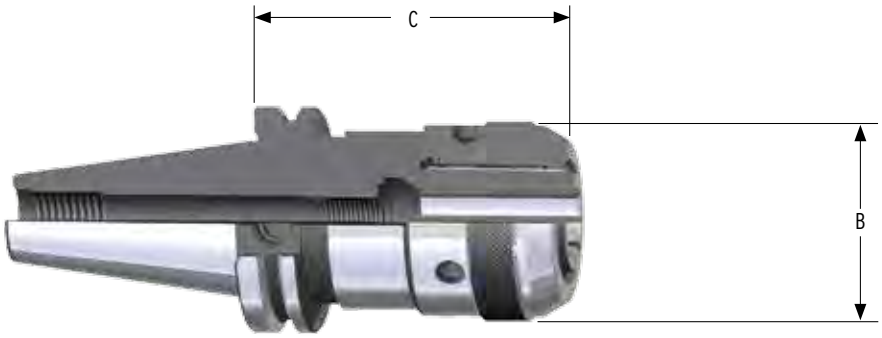
Size	Part Number with SimulFit®	B (Dia.)	C	Socket Depth
ER16	C40F-16ERF250	1.11	2.50	2.43
	C40F-16ERF400		4.00	
	C40F-16ERF800		8.00	
ER20	C40F-20ERF600	1.34	6.00	3.88
ER25	C40F-25ERF600			3.50
ER32	C40F-32ERF300	1.97	3.00	3.88
	C40F-32ERF400		4.00	
	C40F-32ERF600		6.00	

CAT 50 SIMULFIT® BALANCED UP TO 20,000 RPM

Size	Part Number with SimulFit®	B (Dia.)	C	Socket Depth
ER16	C50F-16ERF400	1.11	4.00	2.50
	C50F-16ERF600		6.00	
	C50F-16ERF800		8.00	
ER32	C50F-32ERF400	1.97	4.00	3.88
	C50F-32ERF600		6.00	
	C50F-32ERF800		8.00	
ER40	C50F-40ERF400	2.47	4.00	4.10

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Collets and Collet Nut Wrench separately, see pages 74-86.

SIMULFIT® MILLING CHUCKS



CAT 40 SIMULFIT®

Size	Part Number with SimulFit®	Coolant Type*	B (Dia.)	C	Socket Depth	Optional Coolant B/U Screw
3/4"	C40F-75MC3	Through	2.19	3.71	2.24	9/16 - 18LH
1 1/4"	C40F-12MC4	Through	2.75	4.13	2.69	5/8 - 18LH

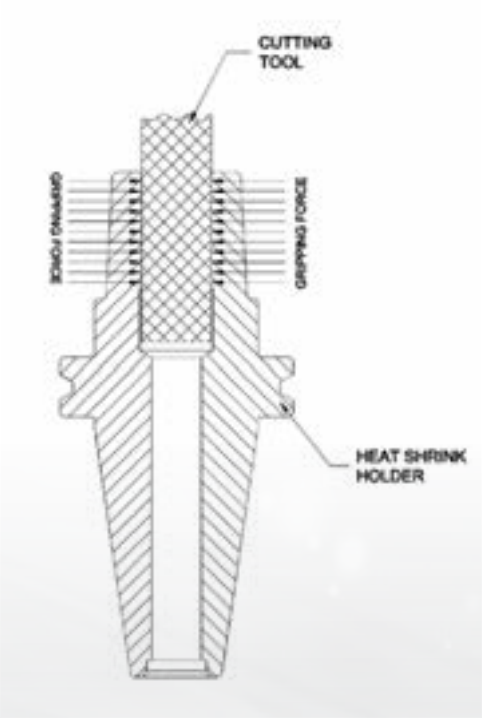
CAT 50 SIMULFIT®

Size	Part Number with SimulFit®	Coolant Type*	B (Dia.)	C	Socket Depth	Optional Coolant Back-Up Screw
3/4"	C50F-75MC3	Through	2.19	3.96	2.24	9/16 - 18LH
1 1/4"	C50F-12MC4	Through	2.75	4.13	2.69	15/16 - 16LH

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Reduction Bushings, see page 54 and Wrench (100CNW) separately.

HEAT SHRINK HOLDERS

Heat Shrink C50-50SF630-9 shown here.



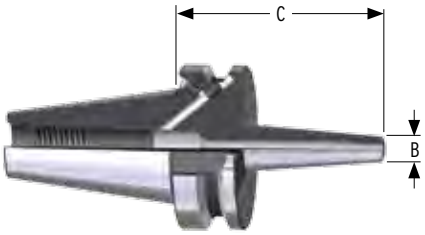
For Maximum Gripping Power with Exceptional Concentricity

- The use of Heat Shrink Tooling allows for greater speeds and feeds, better finishes, increased tool life, and increased productivity due to its High Speed Machining capability and simplicity of use.
- Simple and fast to use. The total time elapsed to remove one cutting tool and insert another is less than 10 seconds.
- Constructed with double tempered Tool Steel for exceptional durability and cycle life. No mechanical clamping devices are used. With proper use, toolholder life should exceed that of standard End Mill holders.
- Chip load distributed evenly along cutting edge of tool which results in longer tool life. Tool is gripped 360°, along the entire length of the bore resulting in an evenly distributed clamping force and increased concentricity.
- Improved balance design with no moving pieces. Low centrifugal Forces due to low holder mass.
- Coolant through holders require no special backup screws or seals. The interference fit between the ID of the toolholder and cutting tool shank forms the seal, preventing the coolant from flowing anywhere else except through the cutting tool. Coolant grooves and coolant porting also available.

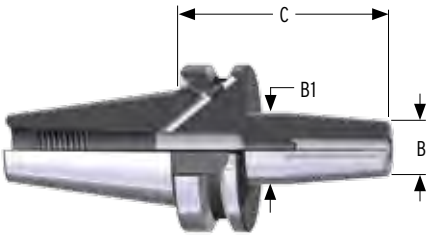
Technical Specifications

- Standard holders have 4.5° angle nose for compatibility with most heat shrink machines.
- Balanced to G 2.5 at up to 25,000 rpm, refer to charts for each taper size.
- Available from stock in BT, Cat and HSK Tapers. Also available from stock in short and extended lengths. Other lengths, medium and extra-long, available upon request.
- Standard with AD/B coolant entry. Coolant ports available as an option in sizes from 1/4" and up. Concentricity of ≤ .0001" with tool shrunk in holder.

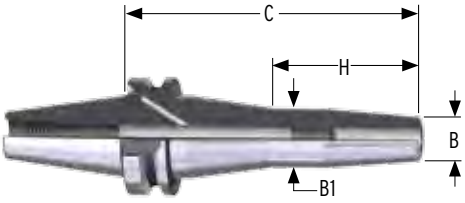
HEAT SHRINK BT HOLDERS



STYLE 1



STYLE 2



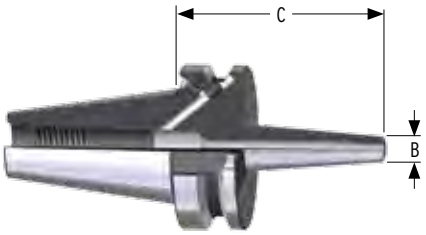
STYLE 3

BT 40 BALANCED UP TO 25,000 RPM WITH AD/B COOLANT

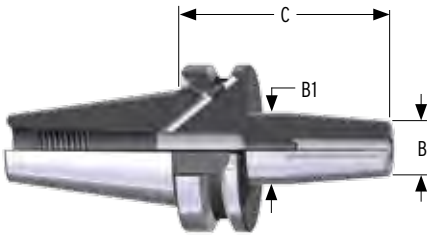
Size	Part Number	Style	(B Dia.)	B1 (Dia.)	C	Socket Depth	H	Optional Stop Screw
3/16"	BT40-18SF354-9	1	0.39	0.72	3.54	-	-	-
1/4"	BT40-25SF354-9	2	0.83	1.06	3.54	1.33	-	BS-SFM058-16
	BT40-25SF630-9	3			6.30		3.15	
5/16"	BT40-31SF354-9	2	0.83	1.06	3.54	1.45	-	BS-SFM061-16
	BT40-31SF630-9	3			6.30		3.15	
3/8"	BT40-38SF354-9	2	0.94	1.26	3.54	1.65	-	BS-SFM081-16
	BT40-38SF630-9	3			6.30		3.15	
7/16"	BT40-43SF354-9	2	0.94	1.26	3.54	1.65	-	BS-SFM081-16
1/2"	BT40-50SF354-9	2	0.94	1.26	3.54	1.85	-	BS-SFM101-20
	BT40-50SF630-9	3			6.30		3.15	
5/8"	BT40-62SF354-9	2	1.06	1.34	3.54	1.97	-	BS-SFM121-20
	BT40-62SF630-9	2			6.30		-	
3/4"	BT40-75SF354-9	2	1.30	1.65	3.54	2.05	-	BS-SFM161-20
	BT40-75SF630-9	2			6.30		-	
7/8"	BT40-88SF354-9	2	1.30	1.65	3.54	2.04	-	BS-SFM161-20
	BT40-88SF630-9	2			6.30		-	
1"	BT40-10SF394-9	2	1.73	2.05	3.94	2.28	-	BS-SFM161-20
	BT40-10SF630-9	2			6.30		-	
1 1/4"	BT40-12SF394-9	2	1.73	2.05	3.94	2.44	-	BS-SFM161-20
	BT40-12SF630-9	2			6.30		-	

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.

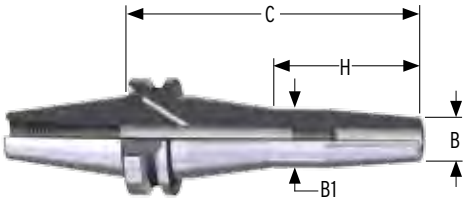
HEAT SHRINK CAT HOLDERS



STYLE 1



STYLE 2



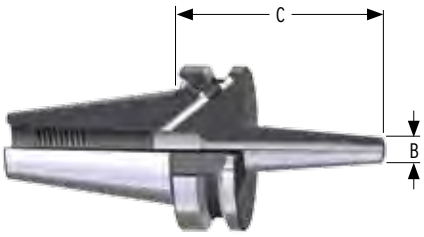
STYLE 3

CAT 40 BALANCED UP TO 25,000 RPM WITH AD/B COOLANT

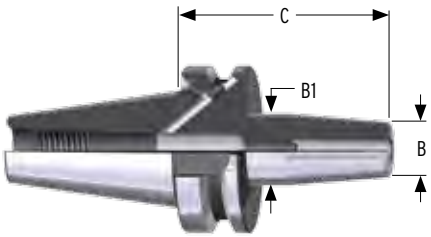
Size	Part Number	Style	(B Dia.)	B1 (Dia.)	C	Socket Depth	H	Optional Stop Screw
3/16"	C40-18SF315-9	1	0.39	0.72	3.15	-	-	-
1/4"	C40-25SF315-9	2	0.83	1.06	3.15	1.33	-	BS-SFM058-16
	C40-25SF630-9	3			6.30		3.15	
5/16"	C40-31SF315-9	2	0.83	1.06	3.15	1.45	-	BS-SFM061-16
	C40-31SF630-9	3			6.30		3.15	
3/8"	C40-38SF315-9	2	0.94	1.26	3.15	1.69	-	BS-SFM081-16
	C40-38SF630-9	3			6.30		3.15	
1/2"	C40-50SF315-9	2	0.94	1.26	3.15	1.85	-	BS-SFM101-20
	C40-50SF630-9	3			6.30		3.15	
5/8"	C40-62SF315-9	2	1.06	1.34	3.15	1.97	-	BS-SFM121-20
	C40-62SF630-9	3			6.30		3.15	
3/4"	C40-75SF315-9	2	1.30	1.65	3.15	2.05	-	BS-SFM161-20
	C40-75SF630-9	2			6.30		-	
1"	C40-10SF394-9	2	1.73	2.09	3.94	2.28	-	BS-SFM161-20
	C40-10SF630-9	2			6.30		-	
1 1/4"	C40-12SF394-9	2	1.73	2.09	3.94	2.44	-	BS-SFM161-20
	C40-12SF630-9	2			6.30		-	
6mm	C40-M06SF80-9	2	21	27	80	34	-	BS-SFM058-16
8mm	C40-M08SF80-9	2	21	27	80	37	-	BS-SFM061-16
10mm	C40-M10SF80-9	2	24	32	80	42	-	BS-SFM081-16
12mm	C40-M12SF80-9	2	24	32	80	47	-	BS-SFM101-20
16mm	C40-M16SF80-9	2	27	34	80	50	-	BS-SFM121-20
20mm	C40-M20SF80-9	2	33	42	80	52	-	BS-SFM161-20
25mm	C40-M25SF100-9	2	44	53	100	58	-	BS-SFM161-20
32mm	C40-M32SF100-9	2	44	53	100	62	-	BS-SFM161-20

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.

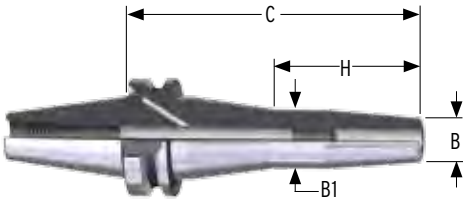
HEAT SHRINK CAT HOLDERS



STYLE 1



STYLE 2



STYLE 3

CAT 50 BALANCED UP TO 20,000 RPM WITH AD/B COOLANT

Size	Part Number	Style	B (Dia.)	B1 (Dia.)	C	Socket Depth	H	Optional Stop Screw
1/4"	C50-25SF315-9	2	0.83	1.06	3.15	1.33	-	BS-SFM058-16
	C50-25SF630-9	3			6.30		3.15	
5/16"	C50-31SF315-9	2	0.83	1.06	3.15	1.45	-	BS-SFM061-16
	C50-31SF630-9	3			6.3		3.15	
3/8"	C50-38SF315-9	2	0.94	1.26	3.15	1.69	-	BS-SFM081-16
	C50-38SF630-9	3			6.30		3.15	
1/2"	C50-50SF315-9	2	0.94	1.26	3.15	1.85	-	BS-SFM101-20
	C50-50SF630-9	3			6.30		3.15	
5/8"	C50-62SF315-9	2	1.06	1.34	3.15	1.97	-	BS-SFM121-20
	C50-62SF630-9	3			6.3		3.15	
3/4"	C50-75SF315-9	2	1.3	1.65	3.15	2.05	-	BS-SFM161-20
	C50-75SF630-9	3			6.30		3.15	
1"	C50-10SF394-9	2	1.73	2.09	3.94	2.28	-	BS-SFM161-20
	C50-10SF630-9	2			6.30		-	
1 1/4"	C50-12SF394-9	2	1.73	2.09	3.94	2.44	-	BS-SFM161-20
	C50-12SF630-9	2			6.30		-	
6mm	C50-M06SF80-9	2	21	27	80	34	-	BS-SFM058-16
	C50-M06SF160-9	3			160		80	
8mm	C50-M08SF80-9	2	21	27	80	37	-	BS-SFM061-16
	C50-M08SF160-9	3			160		80	
10mm	C50-M10SF80-9	2	24	32	80	42	-	BS-SFM081-16
	C50-M10SF160-9	2			160		80	
12mm	C50-M12SF80-9	2	24	32	80	47	-	BS-SFM101-20
	C50-M12SF160-9	2			160		-	
16mm	C50-M16SF80-9	2	27	34	80	50	-	BS-SFM121-20
	C50-M16SF160-9	3			160		80	
20mm	C50-M20SF80-9	2	33	42	80	52	-	BS-SFM161-20
	C50-M20SF160-9	3			160		80	
25mm	C50-M25SF100-9	2	44	53	100	58	-	BS-SFM161-20
	C50-M25SF160-9	2			160		-	
32mm	C50-M32SF100-9	2	44	53	100	62	-	BS-SFM161-20
	C50-M32SF160-9	2			160		-	

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.

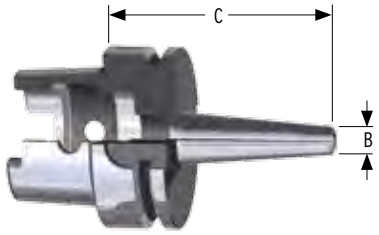
Heat Shrink HSK Holders

HSK 63 FORM A BALANCED UP TO 25,000 RPM

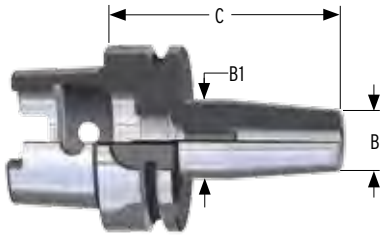
Size	Part Number	Style	(B Dia.)	B1	C	Socket Depth	H	Optional Stop Screw
1/8"	H63A-01SF315-9	1	0.39	0.62	3.15	-	-	-
3/16"	H63A-18SF315-9	1	0.39	-	3.15	-	-	-
1/4"	H63A-25SF315-9	2	0.83	1.06	3.15	1.33	-	BS-SFM058-16
	H63A-25SF630-9	2			6.30		-	
5/16"	H63A-31SF315-9	2	0.83	1.06	3.15	1.45	-	BS-SFM061-16
	H63A-31SF630-9	3			6.30		3.15	
3/8"	H63A-38SF335-9	2	0.94	1.26	3.35	1.69	-	BS-SFM081-16
	H63A-38SF630-9	3			6.30		3.15	
1/2"	H63A-50SF354-9	2	0.94	1.26	3.54	1.85	-	BS-SFM101-20
	H63A-50SF630-9	3			6.30		3.15	
5/8"	H63A-62SF374-9	2	1.06	1.34	3.74	1.97	-	BS-SFM121-20
	H63A-62SF630-9	3			6.3		3.15	
3/4"	H63A-75SF394-9	2	1.30	1.65	3.94	2.05	-	BS-SFM161-20
	H63A-75SF630-9	2			6.30		-	
1"	H63A-10SF453-9	2	1.73	2.09	4.53	2.28	-	BS-SFM161-20
	H63A-10SF630-9	2			6.30		-	
1 1/4"	H63A-12SF472-9	2	1.73	2.09	4.72	2.44	-	BS-SFM161-20
	H63A-12SF630-9	2			6.30		-	
4mm	H63A-M04SF80-9	1	10	-	80	-	-	-
6mm	H63A-M06SF80-9	2	21	27	80	34	-	BS-SFM058-16
	H63A-M06SF130-9	2			130		80	
	H63A-M06SF160-9	3			160		80	
8mm	H63A-M08SF80-9	2	21	27	80	37	-	BS-SFM061-16
	H63A-M08SF130-9	3			130		-	
	H63A-M08SF160-9	3			160		80	
10mm	H63A-M10SF85-9	2	24	32	85	42	-	BS-SFM081-16
	H63A-M10SF130-9	2			130		80	
	H63A-M10SF160-9	2			160		80	
12mm	H63A-M12SF90-9	2	24	32	90	47	-	BS-SFM101-20
	H63A-M12SF130-9	2			130		-	
	H63A-M12SF160-9	2			160		-	
16mm	H63A-M16SF95-9	2	27	34	95	50	-	BS-SFM121-20
	H63A-M16SF130-9	3			130		80	
	H63A-M16SF160-9	3			160		80	
20mm	H63A-M20SF100-9	2	33	42	100	52	-	BS-SFM161-20
	H63A-M20SF160-9	2			160		-	
25mm	H63A-M25SF115-9	2	44	53	115	58	-	BS-SFM161-20
	H63A-M25SF160-9	2			160		-	
32mm	H63A-M32SF120-9	2	44	53	120	62	-	BS-SFM161-20
	H63A-M32SF160-9	2			160		-	

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.

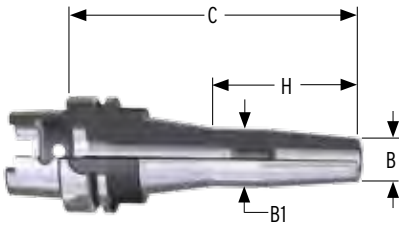
HEAT SHRINK HSK HOLDERS



STYLE 1



STYLE 2



STYLE 3

HSK 100 FORM A BALANCED UP TO 20,000 RPM

Size	Part Number	Style	(B Dia.)	B1	C	Socket Depth	H	Optional Stop Screw
1/4"	H100A-25SF335-9	2	0.83	1.06	3.35	1.33	-	BS-SFM058-16
	H100A-25SF630-9	3			6.30		3.15	
5/16"	H100A-31SF335-9	2	0.83	1.06	3.35	1.45	-	BS-SFM061-16
	H100A-31SF630-9	3			6.30		3.15	
3/8"	H100A-38SF354-9	2	0.94	1.26	3.54	1.69	-	BS-SFM081-16
	H100A-38SF630-9	3			6.30		3.15	
1/2"	H100A-50SF374-9	2	0.94	1.26	3.74	1.85	-	BS-SFM101-20
	H100A-50SF630-9	3			6.30		3.15	
5/8"	H100A-62SF394-9	2	1.06	1.34	3.94	1.97	-	BS-SFM121-20
	H100A-62SF630-9	3			6.30		3.15	
3/4"	H100A-75SF413-9	2	1.30	1.65	4.13	2.05	-	BS-SFM161-20
	H100A-75SF630-9	3			6.30		3.15	
1"	H100A-10SF453-9	2	1.73	2.09	4.53	2.28	-	BS-SFM161-20
	H100A-10SF630-9	3			6.30		3.15	
1 1/4"	H100A-12SF472-9	2	1.73	2.09	4.72	2.44	-	BS-SFM161-20
	H100A-12SF630-9	3			6.30		3.15	

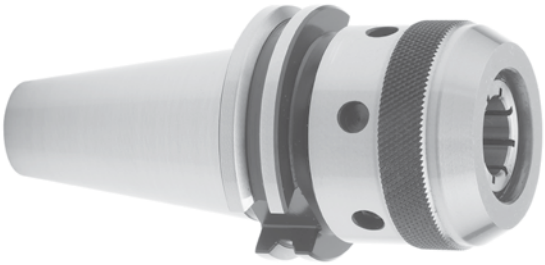
Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 127-129.

STOP SCREWS

Part Number	Thread	Hex	Length
BS-SFM058-16	M5X.8	2.5 mm	.630 (16 mm)
BS-SFM061-16	M6X1	3 mm	.630 (16 mm)
BS-SFM081-16	M8X1	4 mm	.630 (16 mm)
BS-SFM101-20	M10X1	5 mm	.787 (20 mm)
BS-SFM121-20	M12X1	6 mm	.787 (20 mm)
BS-SFM161-20	M16X1	8 mm	.787 (20 mm)

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

Power Milling Chucks

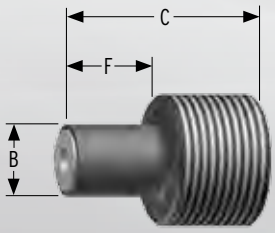


Power Milling Chuck C40-75MC shown here.

For precision in moderate and lower speed milling and nominal drilling applicaitons.

- Constructed of alloy steel for long, durable service life.
- Hardened to Rc: 56-60 for long service life.
- Shiny taper with black oxide finish for the best combination of accuracy and durability.
- End mill socket T.I.R. ≤ .0002".
- Through-spindle coolant capability.
- ParSymmetry™ design for high-speed operation.
- Flange-entry coolant is available on request.
  See Manufacturing Specifications section in the back of the catalog for details.

COOLANT BACK-UP SCREWS:



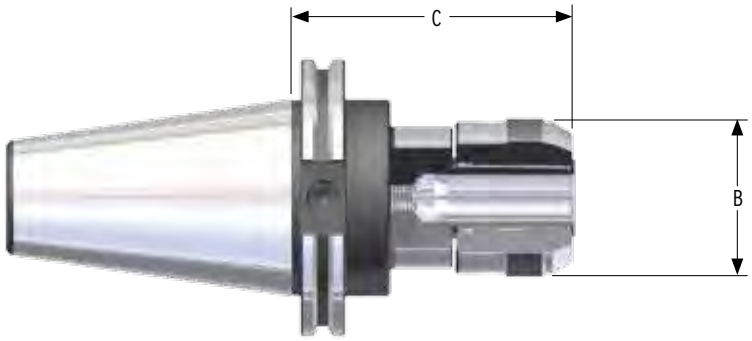
Size quote available upon request.

STANDARD

Part Number	L. H. Thread Size	Hole	B	C	Hex	F
CBS12MC-515	15/16" - 16"	.187	.515	1.38	3/16"	.68
CBS12-4MC-515	5/8" - 18"	.187	.515	1.38	3/16"	.68
CBS75MC-470	9/16" - 18"	.187	.470	1.00	5/32"	.50

Other sizes available on request. Please call Parlec or your local Parlec representative for more information.

Power Milling Chucks



BT 40 TAPER

Size	Part Number	Part Number with SimulFit®	B (Dia.)	C	Socket Depth	B/U Screw Thread
3/4	B40-75MC3	-	2.19	3.64	2.24	9/16 - 18LH
1 1/4	B40-12MC4	-	2.75	4.44	2.69	15/16 - 16LH

CAT 40 TAPER

Size	Part Number	Part Number with SimulFit®	B (Dia.)	C	Socket Depth	B/U Screw Thread
3/4	C40-75MC2	-	2.19	2.48	2.24	9/16 - 18LH
	C40-75MC3	C40F-75MC3		3.71		
1 1/4	C40-12MC4	C40F-12MC4	2.75	4.13	2.69	5/8 - 18LH

CAT 50 TAPER

Size	Part Number	Part Number with SimulFit®	B (Dia.)	C	Socket Depth	B/U Screw Thread
3/4	C50-75MC3	C50F-75MC3	2.19	3.96	2.24	9/16 - 18LH
1 1/4	C50-12MC4	C50F-12MC4	2.75	4.13	2.69	15/16 - 16LH
	C50-12MC6	-		6.00		
	C50-12MC8	-		8.00		

HSK 63 FORM A TAPER

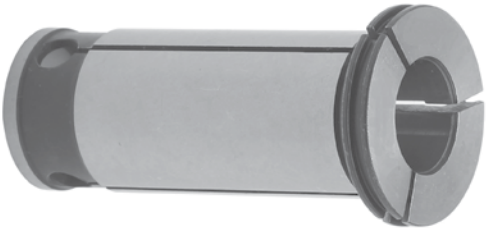
Size	Part Number	Part Number with SimulFit®	B (Dia.)	C	Socket Depth	B/U Screw Thread
3/4	H63-75MC350	-	2.19	3.50	2.24	-
1 1/4	H63-12MC4	-	2.75	4.00	2.69	-

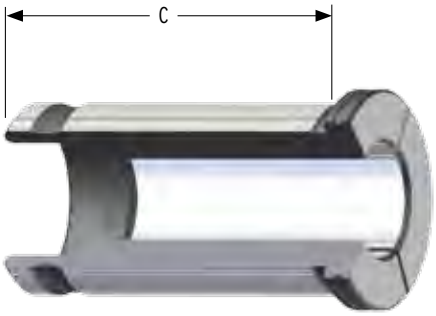
HSK 100 FORM A TAPER

Size	Part Number	Part Number with SimulFit®	B (Dia.)	C	Socket Depth	B/U Screw Thread
1 1/4	H100-12MC425	-	2.75	4.25	2.69	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Reduction Bushings, see page 54 and Wrench (100CNW) separately.

BUSHINGS AND BACK-UP SCREWS





12MC BUSHINGS (INCH)

Part Number	I.D.	O.D.	C
12MCRB-188	.1875	1.25	2.75
12MCRB-250	.2500	1.25	2.75
12MCRB-313	.3125	1.25	2.75
12MCRB-375	.3750	1.25	2.75
12MCRB-500	.5000	1.25	2.75
12MCRB-563	.5625	1.25	2.75
12MCRB-625	.6250	1.25	2.75
12MCRB-750	.7500	1.25	2.75
12MCRB-875	.8750	1.25	2.75
12MCRB-100	1.0000	1.25	2.75

12MC BUSHINGS (METRIC)

Part Number	I.D.	O.D.	C
12MCRB-08MM	8	1.25	2.75
12MCRB-10MM	10	1.25	2.75
12MCRB-12MM	12	1.25	2.75
12MCRB-14MM	14	1.25	2.75
12MCRB-16MM	16	1.25	2.75
12MCRB-20MM	20	1.25	2.75
12MCRB-25MM	25	1.25	2.75

75MC BUSHINGS (INCH)

Part Number	I.D.	O.D.	C
75MCRB-188	.1875	.75	2.00
75MCRB-250	.2500	.75	2.00
75MCRB-313	.3125	.75	2.00
75MCRB-375	.3750	.75	2.00
75MCRB-437	.4375	.75	2.00
75MCRB-500	.5000	.75	2.00
75MCRB-563	.5625	.75	2.00
75MCRB-625	.6250	.75	2.00

75MC BUSHINGS (METRIC)

Part Number	I.D.	O.D.	C
75MCRB-06MM	6	.75	2.00
75MCRB-08MM	8	.75	2.00
75MCRB-10MM	10	.75	2.00
75MCRB-12MM	12	.75	2.00
75MCRB-14MM	14	.75	2.00
75MCRB-16MM	16	.75	2.00

COLLET CHUCK PERFORMANCE CHOICES

Performance Selection

Production ER System	High Performance ER System	High Performance Plus ER System
		
Performance Chuck with Standard Flush Nut, Balanced to G2.5 **PART NUMBER:** C40-16ERF300, pages 69-73 **AD/B PART NUMBER:** C40BC-16ERF300	Performance Chuck with Power Nut, Balanced to G2.5 **PART NUMBER:** C40-16ERP312, pages 59-63 **AD/B PART NUMBER:** C40BC-16ERP312	Performance Chuck with Power Nut, Balanced to G2.5 **PART NUMBER:** C40-16ERP312, pages 59-63 **AD/B PART NUMBER:** C40BC-16ERP312
Standard Grade Collet **PART NUMBER:** ER16-0250, pages 75-77	**Standard Grade Collet** **PART NUMBER:** ER16-0250, pages 75-77	**Grade AA, 5 Micron Collet** **PART NUMBER:** 5UMER16-0250, pages 79-81

Performance Selection with Coolant Delivery Options

Production ER System	Performance ER System	Performance Plus ER System
		
Performance Chuck with Standard Flush Nut, Balanced to G2.5 **PART NUMBER:** C40-16ERF300, pages 69-73 **AD/B PART NUMBER:** C40BC-16ERF300	Performance Chuck with Coolant Seal Nut, Balanced to G2.5 **PART NUMBER:** C40-16ERC322, pages 64-68 **AD/B PART NUMBER:** C40BC-16ERC322	Performance Chuck with Coolant Seal Nut, Balanced to G2.5 **PART NUMBER:** C40-16ERC322, pages 64-68 **AD/B PART NUMBER:** C40BC-16ERC322
Standard Grade Collet **PART NUMBER:** ERS16-0250, pages 75-77	**Standard Grade Collet and Nut Seal** **PART NUMBER:** ER16-0250, pages 75-77 **PART NUMBER:** CS16-0255, page 84	**Grade AA, 5 Micron Collet and Collet Nut Seal** **PART NUMBER:** 5UMER16-0250, pages 79-81 **PART NUMBER:** CS16-0255, page 84

Concentricity = Tool Life

Improve your systems performance and tool life by combining high performance collet chucks and high performance collets. Upgrade today for higher performance and operational cost savings!

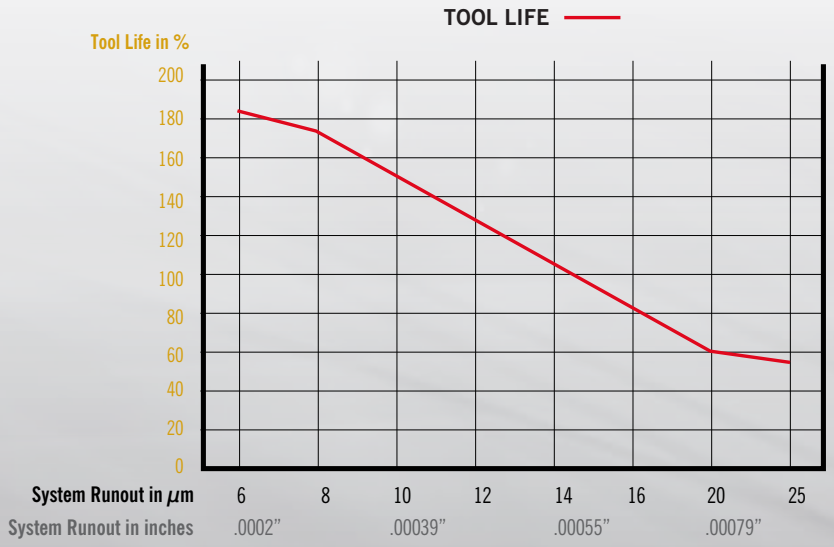
Technical Features

- Gage tolerance of a Class AA 5 micron collet is .0002" (.005mm) runout at distance to the ISO 15488, measured as TIR
- Measured in gage with AT2 taper and maximum 1 micron runout of taper

Collet Diameter	Length at measurement	Class 1	Class 2	Parlec Class AA (5 Micron)
.039 - .063(1-1.6)	.098 (2.5)	.0006 (.015)	.0004 (.010)	.0002 (.005)
.063 - .118(1.6 - 3)	.393 (10)			
.118 –.280 (3 – 7)	.630 (20)			
.280 - .394 (7-10)	.984 (25)			
.394 - .708 (10-18)	1.57 (40)	.0008 (.020)	.0006 (.015)	
.708 - 1.08 (18-26)	1.97 (50)			
1.08 – 1.18 (26-30)	2.36 (60)	.0010 (.025)	.0008 (.020)	

*Reference ISO 15488

Tool Life Prediction of Carbide Tools



Total Cost of Poor Runout

TOOLING COST

Utilizing Standard Production System

	Per Cutting Tool	TOTAL
Pieces	250	3000
Cost of Drill	**$100**	**$1200**
Standard Collet Cost	**$32**	**$32**
Total Cost		**$1232**

Utilizing Grade AA Performance System

	Per Cutting Tool	TOTAL
Pieces	681	3000
Cost of Drill	**$100**	**$500**
Grade AA Collet Cost	**$60**	**$60**
Total Cost		**$560**

Effects of Runout on the Cutting Edges

Flute 1

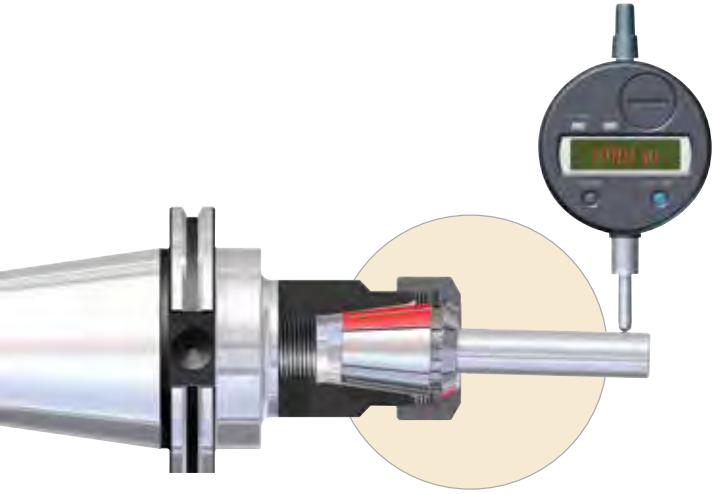
High runout flute takes a heavier than planned cut requiring slowing of planned feed.

Flute 2

Middle runout flute performs as planned.

Flute 3

Low runout flute does not take enough chip to dissipate heat and wears prematurely.



Technical Features

Standard DIN style nuts can restrict the uniform contact of the top angle of the collet creating uneven clamping. This will create runout in addition to the normal result of the collet seat and collet. Nuts with friction races are designed to increase grip force and decrease angular deflection. Use Collet Chucks with the Parlec Power Nut for best results.

Other AA Collet Design Features and Benefits

- 12 slots instead of 16 allows for more than enough collapse and increase in the area of contact with less tendency to distort.
- All edges are deburred and rounded to promote good interface with the taper of the chuck without the tendency to damage it. This results in more consistent repeatability of the system.
- Collets are polished to eliminate minor blemishes that tend to promote corrosion. Better corrosion resistance will result in longer product life of both the collet and the holder.
- Highly polished OD surfaces reduce the amount of force absorbed by friction between the collet and the collet chuck seat, increasing the grip force on the cutting tool. The inside bore of the collet is intentionally left unpolished to increase the friction between the collet and the cutting tool shank.

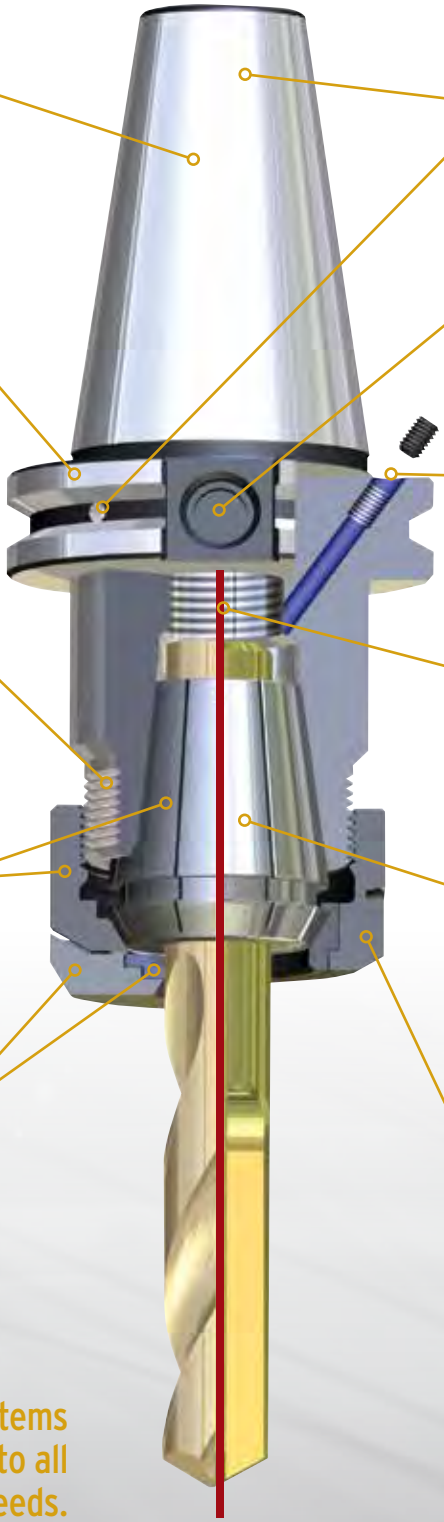
The result of an improved AA collet in a quality chuck is increased gripping force, improved rigidity, decreased runout and an overall satisfaction in your collet chuck system.

PARLEC ER SYSTEM FEATURES

Heat treated Nickel Chrome Molybdenum Alloy steel for the best balance of toughness and wear strength

Ground v-groove and flange OD for reliable tool changes

Threads and body machined concentric to ground taper for the best possible concentricity



Certified Balance to G2.5 and AT3 Taper Specification for consistent reliable performance tool change to tool change

ID Pocket designed to hold 10 mm Data Carrier Chip, standard on CAT Tools allows for the best tool management

Available AD/B Coolant Converts from through spindle to flange entry coolant supply

Through hole with thread for optional (standard on production collet chucks) back-up screw providing access for coolant and tool support

PRODUCTION ER COLLET SYSTEM WITH DIN FLUSH NUT

Production grade collet and nut for quality reliable machining.

PERFORMANCE ER COLLET SYSTEM WITH COOLANT NUT

Coolant output options including coolant nut seals and steel sealed collets for reliable effective chip evacuation and tool life improvement

HIGH PERFORMANCE ER COLLET SYSTEM WITH POWER NUT

Polished Grade AA collets with .0002" or 5 micron gage tolerance for the ultimate concentricity and grip force in ER Collet Systems

High performance POWER NUT provides the highest gripping force and concentricity to improve the life and performance of the cutting tools

Parlec offers a choice of ER Systems to provide the right solution to all your cutting tool needs.

CERTIFIED G2.5 HIGH SPEED PERFORMANCE

HIGH PERFORMANCE ER COLLET SYSTEM WITH POWER NUT

High Performance
ER Collet Chuck with Power Nut

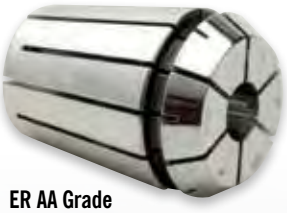
- Constructed of alloy steel for long, durable service life.
- Hardened to Rc: 52-56 to avoid damaging collet chuck threads.
- Collet seat taper T.I.R. ≤ .0002".
- Accepts DIN 6499 collets.

Collet Chuck Taper	Balance Up To
BT 30	25,000 RPM
BT 40	25,000 RPM
CAT 40	25,000 RPM
CAT 50	20,000 RPM
HSK 63A	25,000 RPM
HSK 100A	20,000 RPM

Collet Choices

ER Standard
Collet

ER Tap
Collet



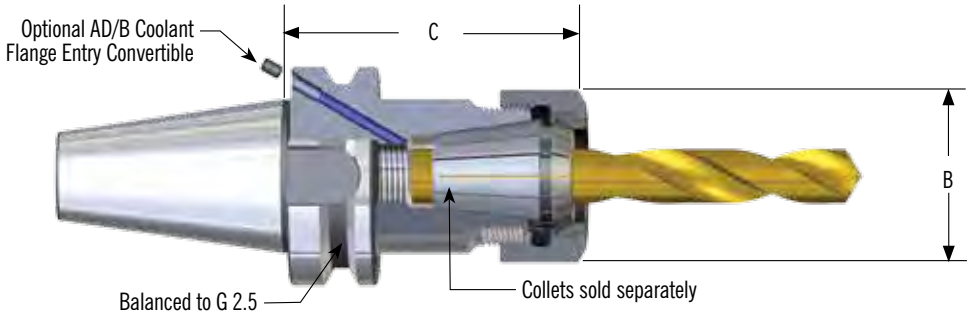
ER AA Grade
5 Micron Collet

ERS Steel
Sealed Collet

COLLET RANGE SPECIFICATIONS

Collet Size	Range Inch	Range Metric	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER16	.020" to .393"	.5 mm to 10 mm	16ERHPN	42 ft. lbs.	BS-20
ER20	.039" to .511"	1 mm to 13 mm	20ERHPN	60 ft. lbs.	BS-09
ER25	.039" to .630"	1 mm to 16 mm	25ERPN	86 ft. lbs.	BS-11
ER32	.078" to .787"	2 mm to 20 mm	32ERPN	100 ft. lbs.	BS-18
ER40	.118" to 1.181"	3 mm to 30 mm	40ERPN	146 ft. lbs.	BS-10

HIGH PERFORMANCE ER COLLET CHUCKS WITH POWER NUT



BT 30 BALANCED UP TO 25,000 RPM

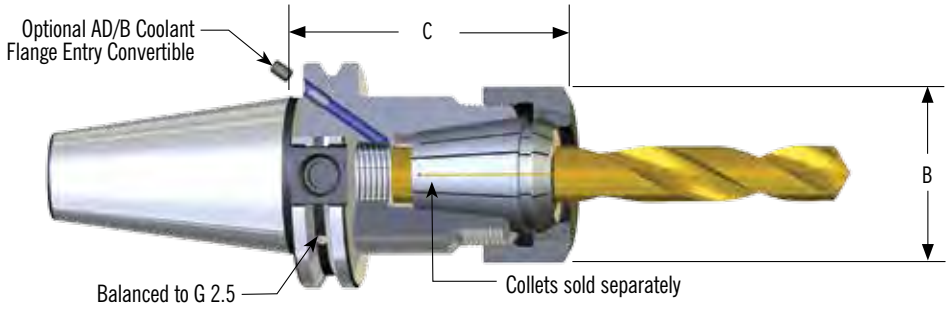
Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER16	B30-16ERP248	-	B30F-16ERP248	1.10	2.48	1.83	16ERHPN	42 ft. lbs.	BS-20
ER20	B30-20ERP248	-	B30F-20ERP248	1.34	2.48	2.48	20ERHPN	60 ft. lbs.	BS-09
ER32	B30-32ERP248	-	B30F-32ERP248	1.97	2.48	3.88	32ERPN	100 ft. lbs.	BS-18

BT 40 BALANCED UP TO 25,000 RPM

Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER16	B40-16ERP262	-	-	1.10	2.62	1.50	16ERHPN	42 ft. lbs.	BS-20
	B40-16ERP312	B40BC-16ERP312	B40F-16ERP312		3.12	2.00			
	B40-16ERP412	B40BC-16ERP412	-		4.00	3.50			
	B40-16ERP512	B40BC-16ERP512	B40F-16ERP512		5.00	2.00			
ER20	B40-20ERP412	-	-	1.34	4.12	1.50	20ERHPN	60 ft. lbs.	BS-09
	B40-20ERP612	-	-		6.12	2.00			
ER25	B40-25ERP412	-	-	1.64	4.12	1.50	25ERPN	86 ft. lbs.	BS-11
	B40-25ERP612	-	-		6.12	2.00			
ER32	B40-32ERP412	B40BC-32ERP412	B40F-32ERP412	1.97	4.12	3.88	32ERPN	100 ft. lbs.	BS-18
	B40-32ERP612	-	B40F-32ERP612		6.12				
ER40	B40-40ERP412	B40BC-40ERP412	-	2.47	4.12	4.10	40ERPN	146 ft. lbs.	BS-10
	B40-40ERP612	-	-		6.12				

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Collets and Collet Nut Wrench separately, see pages 74-86.

HIGH PERFORMANCE ER COLLET CHUCKS WITH POWER NUT

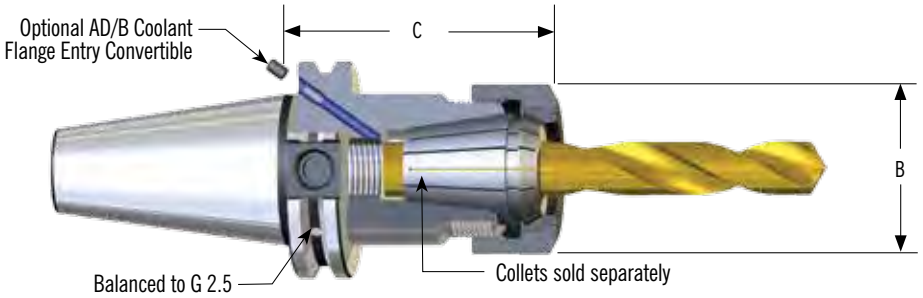


CAT 40 BALANCED UP TO 25,000 RPM

Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER16	C40-16ERP262	C40BC-16ERP262	C40F-16ERP262	1.10	2.62	2.43	16ERHPN	42 ft. lbs.	BS-20
	C40-16ERP312	-	-		3.12				
	C40-16ERP412	C40BC-16ERP412	C40F-16ERP412		4.12				
	C40-16ERP512	C40BC-16ERP512	-		5.12				
	C40-16ERP812	-	C40F-16ERP812	1.10	8.12				
ER20	C40-20ERP312	C40BC-20ERP312	-	1.34	3.12	2.43	20ERHPN	60 ft. lbs.	BS-09
	C40-20ERP412	C40BC-20ERP412	-		4.12	3.88			
	C40-20ERP612	C40BC-20ERP612	C40F-20ERP612		6.12				
	C40-20ERP812	-	-		8.12				
ER25	C40-25ERP262	C40BC-25ERP262	-	1.64	2.62	2.50	25ERPN	86 ft. lbs.	BS-11
	C40-25ERP412	C40BC-25ERP412	-		4.12	3.50			
	C40-25ERP612	C40BC-25ERP612	C40F-20ERP612		6.12				
ER32	C40-32ERP248	-	-	1.97	2.48	3.88	32ERPN	100 ft. lbs.	BS-18
	C40-32ERP312	C40BC-32ERP312	C40F-32ERP312		3.12				
	C40-32ERP412	C40BC-32ERP412	C40F-32ERP412		4.12				
	C40-32ERP612	C40BC-32ERP612	C40F-32ERP612		5.12				
	C40-32ERP812	-	-		8.12				
ER40	C40-40ERP412	C40BC-40ERP412	-	2.47	4.12	4.1	40ERPN	146 ft. lbs.	BS-10
	C40-40ERP612	-	-		6.12				

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Collets and Collet Nut Wrench separately, see pages 74-86.

HIGH PERFORMANCE ER COLLET CHUCKS WITH POWER NUT

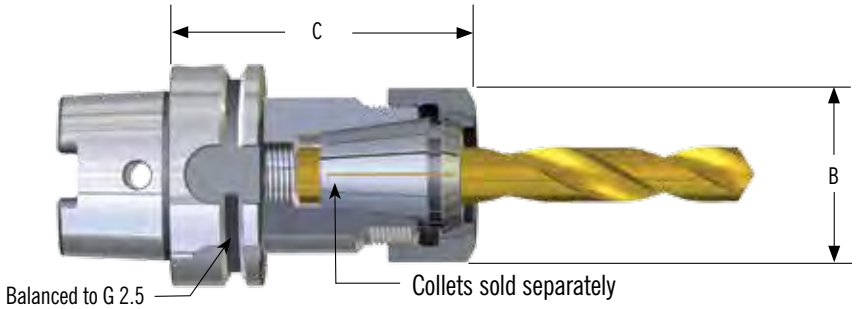


CAT 50 BALANCED UP TO 20,000 RPM

Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER16	C50-16ERP412	C50BC-16ERP412	C50F-16ERP412	1.10	4.12	2.50	16ERHPN	42 ft. lbs.	BS-20
	C50-16ERP612	C50BC-16ERP612	C50F-16ERP612		6.12				
	C50-16ERP812	-	C50F-16ERP812		8.12				
	C50-16ERP1012	-	-		10.12				
ER20	C50-20ERP412	C50BC-20ERP412	-	1.34	4.12	3.88	20ERHPN	60 ft. lbs.	BS-09
	C50-20ERP612	C50BC-20ERP612	-		6.12				
	C50-20ERP812	-	-		8.12				
ER25	C50-25ERP412	C50BC-25ERP412	-	1.64	4.12	4.00	25ERPN	86 ft. lbs.	BS-11
	C50-25ERP612	C50BC-25ERP612	-		6.12				
	C50-25ERP812	-	-		8.12				
	C50-25ERP1012	-	-		10.12				
ER32	C50-32ERP412	C50BC-32ERP412	C50F-32ERP412	1.97	4.12	3.88	32ERPN	100 ft. lbs.	BS-18
	C50-32ERP612	C50BC-32ERP612	C50F-32ERP612		6.12				
	C50-32ERP812	-	C50F-32ERP812		8.12				
	C50-32ERP1012	-	-		10.12				
ER40	C50-40ERP412	C50BC-40ERP412	C50F-40ERP412	2.47	4.12	4.10	40ERPN	146 ft. lbs.	BS-10
	C50-40ERP612	C50BC-40ERP612	-		6.12				
	C50-40ERP812	-	-		8.12				
	C50-40ERP1012	-	-		10.12				

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Collets and Collet Nut Wrench separately, see pages 74-86.

HIGH PERFORMANCE ER COLLET CHUCKS WITH POWER NUT



HSK 63 FORM A BALANCED UP TO 25,000 RPM

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER16	H63-16ERP406	1.10	4.06	2.10	16ERHPN	42 ft. lbs.	BS-20
	H63-16ERP642		6.42	3.00			
ER20	H63-20ERP406	1.34	4.06	1.88	20ERHPN	60 ft. lbs.	BS-09
ER25	H63-25ERP327	1.64	3.27	2.30	25ERPN	86 ft. lbs.	BS-11
ER32	H63-32ERP327	1.97	3.27	1.80	32ERPN	100 ft. lbs.	BS-18
	H63-32ERP406		4.06	2.50		100 ft. lbs.	BS-18
	H63-32ERP484		4.84				
ER40	H63-40ERP406	2.47	4.06	2.50	40ERPN	146 ft. lbs.	BS-10

HSK 100 FORM A BALANCED UP TO 20,000 RPM

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER16	H100-16ERP406	1.10	4.06	2.10	16ERHPN	42 ft. lbs.	BS-20
	H100-16ERP642		6.42	3.00			
ER20	H100-20ERP406	1.34	4.06	2.08	20ERHPN	60 ft. lbs.	BS-09
	H100-20ERP642		6.42	3.38			
ER25	H100-25ERP406	1.64	4.06	2.30	25ERPN	86 ft. lbs.	BS-11
ER32	H100-32ERP406	1.97	4.06	2.30	32ERPN	100 ft. lbs.	BS-18
	H100-32ERP642		6.42	3.00			
ER40	H100-40ERP406	2.47	4.06	2.30	40ERPN	146 ft. lbs.	BS-10
	H100-40ERP484		4.84	3.00			

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Collets and Collet Nut Wrenches separately, see pages 74-86.

PERFORMANCE ER COLLET SYSTEM WITH COOLANT NUT

Performance ER Collet System with Coolant Nut

CERTIFIED G2.5 HIGH SPEED PERFORMANCE

- Constructed of alloy steel for long, durable service life.
- Hardened to Rc: 52-56 to avoid damaging collet chuck threads.
- Collet seat taper T.I.R. ≤ .0002".
- Accepts DIN 6499 collets.

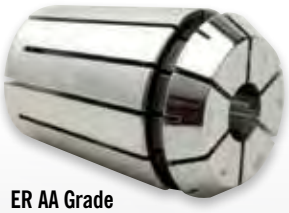
Collet Chuck Taper	Balance Up To
BT 30	25,000 RPM
BT 40	25,000 RPM
CAT 40	25,000 RPM
CAT 50	20,000 RPM
HSK 63A	25,000 RPM
HSK 100A	20,000 RPM

Collet Choices

Coolant Nut Seals see page 82

ER Standard Collet

ER Tap Collet



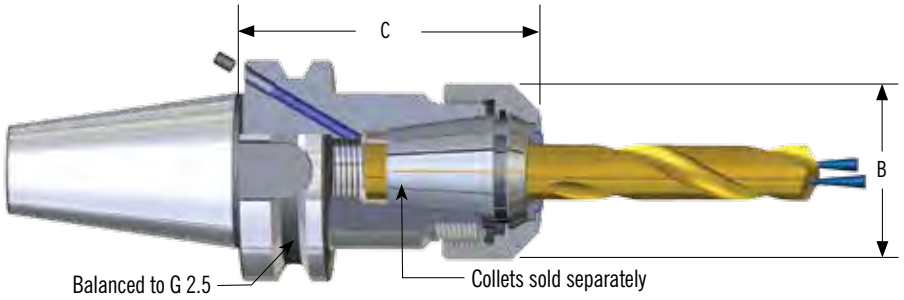
ER AA Grade 5 Micron Collet

ERS Steel Sealed Collet

COLLET RANGE SPECIFICATIONS

Part Number	Range Inch	Range Metric	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER11	.020" to .275"	.5 mm to 7 mm	11ERHN	22 ft. lbs.	029-909
ER16	.020" to .393"	1 mm to 10 mm	16ERHCN	52 ft. lbs.	BS-20
ER20	.039" to .511"	1 mm to 13 mm	20ERHN	74 ft. lbs.	BS-09
ER25	.039" to .630"	1 mm to 16 mm	25ERN	95 ft. lbs.	BS-11
ER32	.078" to .787"	2 mm to 20 mm	32ERN	125 ft. lbs.	BS-18
ER40	.118" to 1.181"	3 mm to 30 mm	40ERN	162 ft. lbs.	BS-10

PERFORMANCE ER COLLET CHUCKS WITH COOLANT NUT

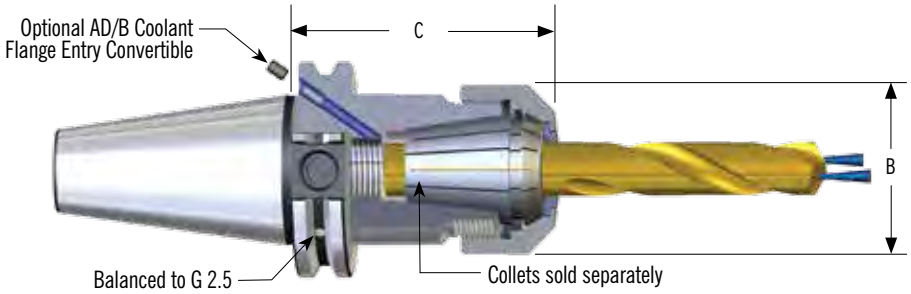


BT 40 BALANCED UP TO 25,000 RPM

Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	C	B (Dia.)	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER16	B40-16ERC272	-	-	2.72	1.10	1.50	16ERHCN	52 ft. lbs.	BS-20
	B40-16ERC322	B40BC-16ERC322	B40F-16ERC322	3.22		2.00			
	B40-16ERC422	B40BC-16ERC422	-	4.22		3.50			
	B40-16ERC522	B40BC-16ERC522	B40F-16ERC522	5.22		2.00			
ER20	B40-20ERC422	-	-	4.22	1.34	1.50	20ERHCN	74 ft. lbs.	BS-09
	B40-20ERC622	-	-	6.22		2.00			
ER25	B40-25ERC422	-	-	4.22	1.64	1.50	25ERCN	95 ft. lbs.	BS-11
	B40-25ERC622	-	-	6.22		2.00			
ER32	B40-32ERC422	B40BC-32ERC422	B40F-32ERC422	4.22	1.97	3.88	32ERCN	125 ft. lbs.	BS-18
	B40-32ERC622	-	B40F-32ERC622	6.22					
ER40	B40-40ERC422	B40BC-40ERC422	-	4.22	2.47	4.10	40ERCN	162 ft. lbs.	BS-10
	B40-40ERC622	-	-	6.22					

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Collets and Collet Nut Wrench separately, see pages 74-86.

PERFORMANCE ER COLLET CHUCKS WITH COOLANT NUT

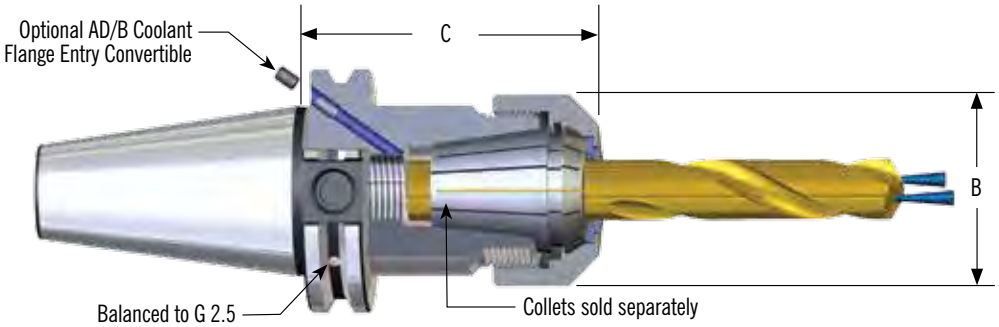


CAT 40 BALANCED UP TO 25,000 RPM

Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	C	B (Dia.)	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER16	C40-16ERC272	C40BC-16ERC272	C40F-16ERC272	2.72	1.10	2.43	16ERHCN	52 ft. lbs.	BS-20
	C40-16ERC322	C40BC-16ERC322	-	3.22					
	C40-16ERC422	C40BC-16ERC422	C40F-16ERC422	4.22					
	C40-16ERC522	C40BC-16ERC522	C40F-16ERC522	5.22					
	C40-16ERC822	-	C40F-16ERC822	6.22					
ER20	C40-20ERC322	C40BC-20ERC322	-	3.22	1.34	2.43	20ERHCN	74 ft. lbs.	BS-09
	C40-20ERC422	C40BC-20ERC422	-	4.22		3.88			
	C40-20ERC622	C40BC-20ERC622	C40F-20ERC622	6.22					
	C40-20ERC822	-	-	8.22					
ER25	C40-25ERC272	C40BC-25ERC272	-	2.72	1.64	2.50	25ERCN	95 ft. lbs.	BS-11
	C40-25ERC422	C40BC-25ERC422	-	4.22		3.50			
	C40-25ERC622	C40BC-25ERC622	C40F-25ERC622	6.22					
ER32	C40-32ERC258	-	-	2.58	1.97	3.88	32ERCN	125 ft. lbs.	BS-18
	C40-32ERC322	C40BC-32ERC322	C40F-32ERC322	3.22					
	C40-32ERC422	C40BC-32ERC422	C40F-32ERC422	4.22					
	C40-32ERC622	C40BC-32ERC622	C40F-32ERC622	6.22					
	C40-32ERC822	-	-	8.22					
ER40	C40-40ERC422	C40BC-40ERC422	-	4.22	2.47	4.10	40ERCN	162 ft. lbs.	BS-10
	C40-40ERC622	-	-	6.22					

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Collets and Collet Nut Wrench separately, see pages 74-86.

PERFORMANCE ER COLLET CHUCKS WITH COOLANT NUT

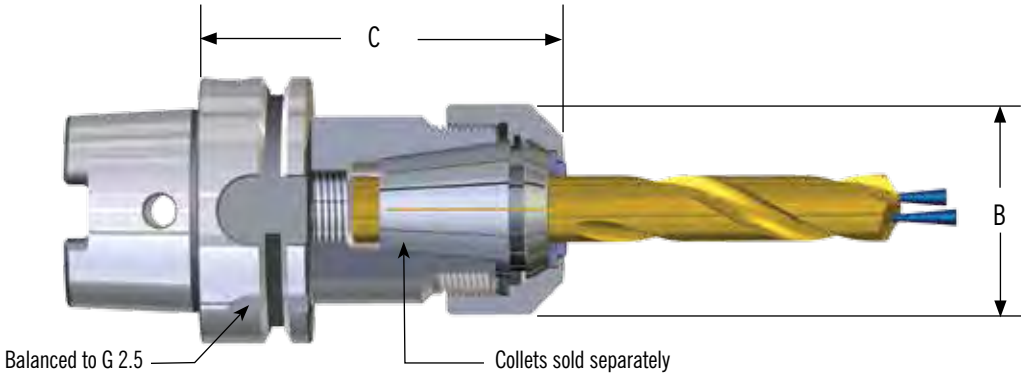


CAT 50 BALANCED UP TO 20,000 RPM

Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	C	B (Dia.)	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER16	C50-16ERC422	C50BC-16ERC422	C50F-16ERC422	4.22	1.10	2.50	16ERHCN	52 ft. lbs.	BS-20
	C50-16ERC622	C50BC-16ERC622	C50F-16ERC622	6.22					
	C50-16ERC822	-	C50F-16ERC822	8.22					
	C50-16ERC1022	-	-	10.22					
ER20	C50-20ERC422	C50BC-20ERC422	-	4.22	1.34	3.88	20ERHCN	74 ft. lbs.	BS-09
	C50-20ERC622	C50BC-20ERC622	-	6.22					
	C50-20ERC822	-	-	8.22					
ER25	C50-25ERC422	C50BC-25ERC422	-	4.22	1.64	4.00	25ERCN	95 ft. lbs.	BS-11
	C50-25ERC622	C50BC-25ERC622	-	6.22					
	C50-25ERC822	-	-	8.22					
	C50-25ERC1022	-	-	10.22					
ER32	C50-32ERC422	C50BC-32ERC422	C50F-32ERC422	4.22	1.97	3.88	32ERCN	125 ft. lbs.	BS-18
	C50-32ERC622	C50BC-32ERC622	C50F-32ERC622	6.22					
	C50-32ERC822	-	C50F-32ERC822	8.22					
	C50-32ERC1022	-	-	10.22					
ER40	C50-40ERC422	C50BC-40ERC422	C50F-40ERC422	4.22	2.47	4.10	40ERCN	162 ft. lbs.	BS-10
	C50-40ERC622	C50BC-40ERC622	-	6.22					
	C50-40ERC822	-	-	8.22					
	C50-40ERC1022	-	-	10.22					

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Collets and Collet Nut Wrench separately, see pages 74-86.

PERFORMANCE ER COLLET CHUCKS WITH COOLANT NUT



HSK 63 FORM A BALANCED UP TO 25,000 RPM

Size	Part Number	C	B (Dia.)	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER16	H63-16ERC416	4.16	1.10	2.10	16ERHCN	52 ft. lbs.	BS-20
	H63-16ERC652	6.52		3.00			
ER20	H63-20ERC416	4.16	1.34	1.88	20ERHCN	74 ft. lbs.	BS-09
ER25	H63-25ERC337	3.37	1.64	2.30	25ERCN	95 ft. lbs.	BS-11
ER32	H63-32ERC337	3.37	1.97	1.80	32ERCN	125 ft. lbs.	BS-18
	H63-32ERC416	4.16		2.50			
	H63-32ERC494	4.94					
ER40	H63-40ERC416	4.16	2.47	2.50	40ERCN	162 ft. lbs.	BS-10

HSK 100 FORM A BALANCED UP TO 20,000 RPM

Size	Part Number	C	B (Dia.)	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER16	H100-16ERC416	4.16	1.10	2.10	16ERHCN	52 ft. lbs.	BS-20
	H100-16ERC652	6.52		3.00			
ER20	H100-20ERC416	4.16	1.34	2.08	20ERHCN	74 ft. lbs.	BS-09
	H100-20ERC652	6.52		3.38			
ER25	H100-25ERC416	4.16	1.64	2.30	25ERCN	95 ft. lbs.	BS-11
ER32	H100-32ERC416	4.16	1.97	2.30	32ERCN	125 ft. lbs.	BS-18
	H100-32ERC652	6.52		3.00			
ER40	H100-40ERC416	4.16	2.47	2.30	40ERCN	162 ft. lbs.	BS-10
	H100-40ERC494	4.94		3.00			

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Collets and Collet Nut Wrench separately, see pages 74-86.

PRODUCTION ER COLLET SYSTEM WITH DIN FLUSH NUT

Production ER Collet Chuck with Flush Nut

CERTIFIED G2.5 HIGH SPEED PERFORMANCE

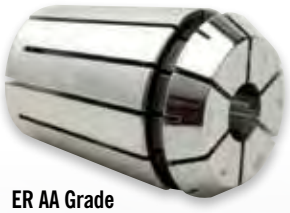
- Constructed of alloy steel for long, durable service life.
- Hardened to Rc: 52-56 to avoid damaging collet chuck threads.
- Collet seat taper T.I.R. ≤ .0002".
- Accepts DIN 6499 collets.

Collet Chuck Taper	Balance Up To
BT 30	25,000 RPM
BT 40	25,000 RPM
CAT 40	25,000 RPM
CAT 50	20,000 RPM
HSK 63A	25,000 RPM
HSK 100A	20,000 RPM

Collet Choices

ER Standard Collet

ER Tap Collet



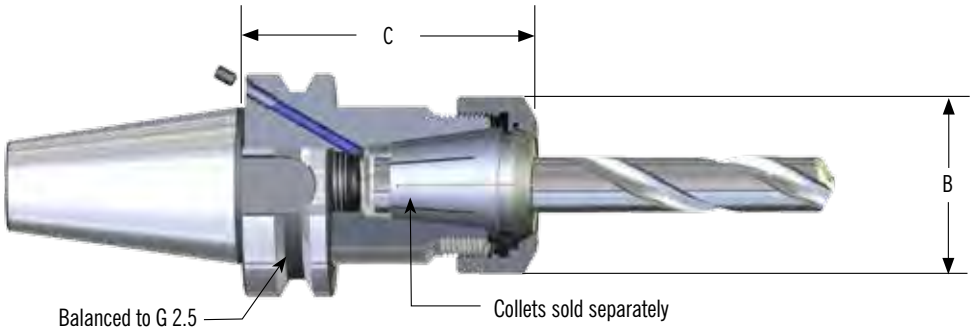
ER AA Grade 5 Micron Collet

ERS Steel Sealed Collet

COLLET RANGE SPECIFICATIONS

Collet Size	Range Inch	Range Metric	Collet Nut (Incl.)	Nut Torque	B/U Screw Not (Incl.)
ER11	.020" to .275"	.5 mm to 7 mm	11ERHN	22 ft. lbs.	029-909
ER16	.020" to .393"	1 mm to 13 mm	16ERHCN	52 ft. lbs.	BS-20
ER20	.039" to .511"	1 mm to 13 mm	20ERHN	74 ft. lbs.	BS-09
ER25	.039" to .630"	1 mm to 16 mm	25ERN	95 ft. lbs.	BS-11
ER32	.078" to .787"	2 mm to 20 mm	32ERN	125 ft. lbs.	BS-18
ER40	.118" to 1.181"	3 mm to 30 mm	40ERN	162 ft. lbs.	BS-10

PERFORMANCE ER COLLET CHUCKS WITH DIN FLUSH NUT



BT 30 BALANCED UP TO 25,000 RPM

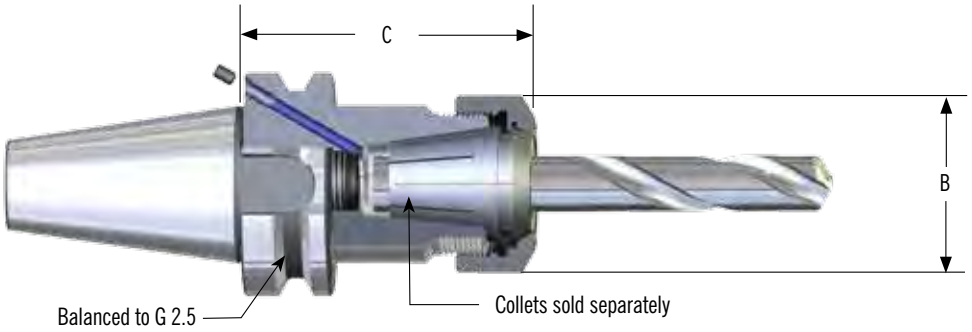
Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER16	B30-16ERF236	-	B30F-16ERF236	1.10	2.36	1.83	16ERHN	52 ft. lbs.	BS-20
ER20	B30-20ERF236	-	B30F-20ERF236	1.34	2.36	2.48	20ERHN	74 ft. lbs.	BS-09
ER32	B30-32ERF236	-	B30F-32ERF236	1.97	2.36	3.88	32ERN	125 ft. lbs.	BS-18

BT 40 BALANCED UP TO 25,000 RPM

Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER11	B40-11ERF400	B40BC-11ERF400	-	0.75	4.00	2.25	11ERHN	22 ft. lbs.	029-909
ER16	B40-16ERF250	-	-	1.10	2.50	1.50	16ERHN	52 ft. lbs.	BS-20
	B40-16ERF300	B40BC-16ERF300	B40F-16ERF300		3.00	2.00			
	B40-16ERF400	B40BC-16ERF400	B40F-16ERF500		4.00	3.50			
	B40-16ERF500	B40BC-16ERF500	-		5.00	2.00			
ER20	B40-20ERF400	-	-	1.34	4.00	1.50	20ERHN	74 ft. lbs.	BS-09
	B40-20ERF600	-	-		6.00	2.00			
ER25	B40-25ERF400	-	-	1.64	4.00	1.50	25ERN	95 ft. lbs.	BS-11
	B40-25ERF600	-	-		6.00	2.00			
ER32	B40-32ERF400	B40BC-32ERF400	B40F-32ERF400	1.97	4.00	3.88	32ERN	125 ft. lbs.	BS-18
	B40-32ERF600	-	B40F-32ERF600		6.00				
ER40	B40-40ERF400	B40BC-40ERF400	-	2.47	4.00	4.10	40ERN	162 ft. lbs.	BS-10
	B40-40ERF600	-	-		6.00				

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Collets and Collet Nut Wrench separately, see pages 74-86.

PERFORMANCE ER COLLET CHUCKS WITH DIN FLUSH NUT

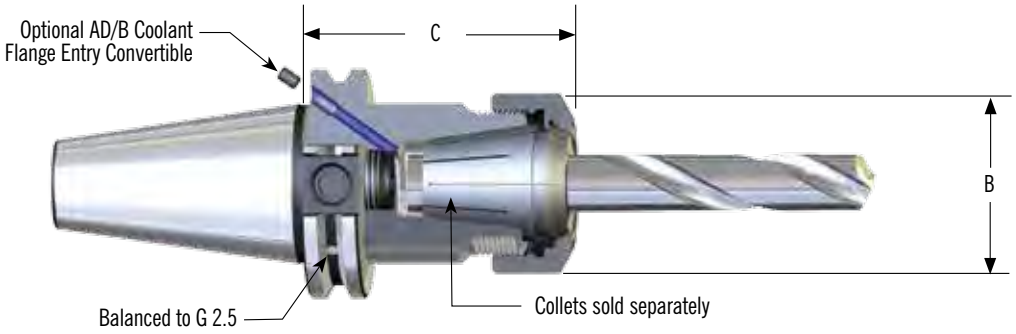


CAT 40 BALANCED UP TO 25,000 RPM

Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER11	C40-11ERF250	-	-	0.75	2.50	2.25	11ERHN	22 ft. lbs.	029-909
	C40-11ERF400	-	-		4.00				
	C40-11ERF600	-	-		6.00				
ER16	C40-16ERF250	C40BC-16ERF250	C40F-16ERF250	1.10	2.50	2.43	16ERHN	52 ft. lbs.	BS-20
	C40-16ERF300	C40BC-16ERF300	-		3.00				
	C40-16ERF400	C40BC-16ERF400	C40F-16ERF400		4.00				
	C40-16ERF500	C40BC-16ERF500	-		5.00				
	C40-16ERF800	-	C40F-16ERF800		8.00				
ER20	C40-20ERF300	C40BC-20ERF300	-	1.34	3.00	2.43	20ERHN	74 ft. lbs.	BS-09
	C40-20ERF400	C40BC-20ERF400	-		4.00	3.88			
	C40-20ERF600	C40BC-20ERF600	C40F-20ERF600		6.00				
	C40-20ERF800	-	-		8.00				
ER25	C40-25ERF250	C40BC-25ERF250	-	1.64	2.50	2.50	25ERN	95 ft. lbs.	BS-11
	C40-25ERF400	C40BC-25ERF400	-		4.00	3.50			
	C40-25ERF600	C40BC-25ERF600	C40BC-25ERF600		6.00				
ER32	C40-32ERF236	-	-	1.97	2.36	3.88	32ERN	125 ft. lbs.	BS-18
	C40-32ERF300	C40BC-32ERF300	C40F-32ERF300		3.00				
	C40-32ERF400	C40BC-32ERF400	C40F-32ERF400		4.00				
	C40-32ERF600	C40BC-32ERF600	C40F-32ERF600		6.00				
	C40-32ERF800	-	-		8.00				
ER40	C40-40ERF400	C40BC-40ERF400	-	2.47	4.00	4.10	40ERN	162 ft. lbs.	BS-10
	C40-40ERF600	-	-		6.00				

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Collets and Collet Nut Wrench separately, see pages 74-86.

PERFORMANCE ER COLLET CHUCKS WITH DIN FLUSH NUT

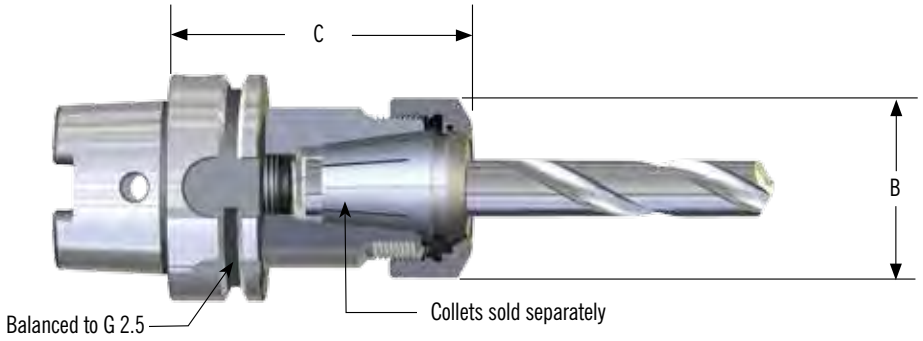


CAT 50 BALANCED UP TO 20,000 RPM

Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER16	C50-16ERF400	C50BC-16ERF400	C50F-16ERF400	1.10	4.00	2.50	16ERHN	52 ft. lbs.	BS-20
	C50-16ERF600	C50BC-16ERF600	C50F-16ERF600		6.00				
	C50-16ERF800	-	C50F-16ERF800		8.00				
	C50-16ERF1000	-	-		10.00				
ER20	C50-20ERF400	C50BC-20ERF400	-	1.34	4.00	3.88	20ERHN	74 ft. lbs.	BS-09
	C50-20ERF600	C50BC-20ERF600	-		6.00				
	C50-20ERF800	-	-		8.00				
ER25	C50-25ERF400	C50BC-25ERF400	-	1.64	4.00	4.00	25ERN	95 ft. lbs.	BS-11
	C50-25ERF600	C50BC-25ERF600	-		6.00				
	C50-25ERF800	-	-		8.00				
	C50-25ERF1000	-	-		10.00				
ER32	C50-32ERF400	C50BC-32ERF400	C50F-32ERF400	1.97	4.00	3.88	32ERN	125 ft. lbs.	BS-18
	C50-32ERF600	C50BC-32ERF600	C50F-32ERF600		6.00				
	C50-32ERF800	-	C50F-32ERF800		8.00				
	C50-32ERF1000	-			10.00				
ER40	C50-40ERF400	C50BC-40ERF400	C50F-40ERF400	2.47	4.00	4.10	40ERN	162 ft. lbs.	BS-10
	C50-40ERF600	C50BC-40ERF600	-		6.00				
	C50-40ERF800	-	-		8.00				
	C50-40ERF1000	-	-		10.00				

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Collets and Collet Nut Wrench separately, see pages 74-86.

PERFORMANCE ER COLLET CHUCKS WITH DIN FLUSH NUT



HSK 63 FORM A BALANCED UP TO 25,000 RPM

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER16	H63-16ERF394	1.10	3.94	2.10	16ERHN	52 ft. lbs.	BS-20
	H63-16ERF630		6.30	3.00			
ER20	H63-20ERF394	1.34	3.94	1.88	20ERHN	74 ft. lbs.	BS-09
ER25	H63-25ERF315	1.64	3.15	2.30	25ERN	95 ft. lbs.	BS-11
ER32	H63-32ERF315	1.97	3.15	1.80	32ERN	125 ft. lbs.	BS-18
	H63-32ERF394		3.94	2.50			
	H63-32ERF472		4.72				
ER40	H63-40ERF394	2.47	3.94	2.50	40ERN	162 ft. lbs.	BS-10

HSK 100 FORM A BALANCED UP TO 20,000 RPM

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Not Incl.)
ER16	H100-16ERF394	1.10	3.94	2.10	16ERHN	52 ft. lbs.	BS-20
	H100-16ERF630		6.30	3.00			
ER20	H100-20ERF394	1.34	3.94	2.08	20ERHN	74 ft. lbs.	BS-09
	H100-20ERF630		6.30	3.38			
ER25	H100-25ERF394	1.64	3.94	2.30	25ERN	95 ft. lbs.	BS-11
ER32	H100-32ERF394	1.97	3.94	2.30	32ERN	125 ft. lbs.	BS-18
	H100-32ERF630		6.30	3.00			
ER40	H100-40ERF394	2.47	3.94	2.30	40ERN	162 ft. lbs.	BS-10
	H100-40ERF472		4.72	3.00			

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Collets and Collet Nut Wrench separately, see pages 74-86.

COLLET PERFORMANCE CHOICES

ER Standard Collet

ER Tap Collet

ER AA Grade 5 Micron Collet

ERS Steel Sealed Collet

Coolant Nut

Coolant Seal

COLLET SELECTION

ER STANDARD COLLET (ER Standard Collets see page 75–77)	▪ For use in ER collet chucks for drilling, reaming, boring, tapping, and milling. ▪ Meets DIN 6499-B industry standard. ▪ Collapse range .0393"(1 mm) maximum. ▪ Size 11 collapse range .020"(1/2 mm) maximum. ▪ For higher runout tolerance use HIGH CONCENTRICITY GRADE AA, 5 Micron COLLETS
ER TAP COLLETS (ER Tap Collets see page 78)	▪ Designed for use with production ER Tapping tools. ▪ Provide maximum concentricity with positive driving force.
ER AA GRADE 5 MICRON COLLET (ER AA Grade 5 Micron Collets see page 79-81) HIGH CONCENTRICITY	▪ Evenly distributed cutting edges for high performance machining. ▪ .0002" (5 micron) gage tolerance. ▪ Exceeds DIN requirements. ▪ Recommended use on size. ▪ 12 slots, deburred and polished. ▪ Increased grip force with reduced friction to collet seat. ▪ Improve system performance and lower cost per piece when used with a quality chuck.

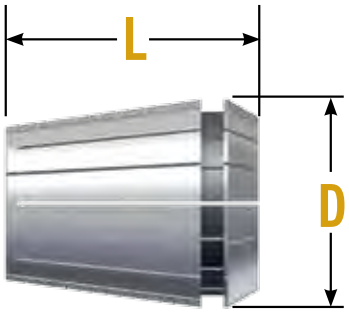
COLLET SELECTION WITH COOLANT OPTIONS

ERS STEEL SEALED COLLET (ER Steel Sealed Collets see page 82-83)	▪ For use with regular straight shank tools. ▪ Withstands coolant pressure up to 1,800 psi. ▪ Collet collapse is .005."
COOLANT NUT SEAL SYSTEM (Coolant Seals see page 84 & Coolant Nuts see page 86)	▪ Allows full range of collet when used with standard collets. ▪ Allows coolant seal with grade AA, 5 Micron collets. ▪ Prevents abrasive machining dust of chips from contaminating collet system. ▪ Seals up to 1,200 psi.

COLLET SIZE	ER11	ER16	ER20	ER25	ER32	ER40
LENGTH (L)	0.708	1.082	1.240	1.338	1.574	1.811
DIAMETER (D)	0.452	0.669	0.827	1.023	**1.300**	**1.614**

ER STANDARD COLLETS

ER Standard Collet



* For specifications see page 74

ER11 STANDARD COLLETS METRIC

Part Number	Metric Range
ER11-0039	.5-1 mm
ER11-0059	1-1.5 mm
ER11-0078	1-2 mm
ER11-0098	1.5-2.5 mm
ER11-0118	2-3 mm
ER11-0137	2.5-3.5 mm
ER11-0157	3-4 mm
ER11-0177	4-4.5 mm
ER11-0196	4-5 mm
ER11-0216	4.5-5.5 mm
ER11-0236	5-6 mm
ER11-0255	5.5-6.5 mm
ER11-0275	6-7 mm

ER11 Metric Set	SETS
ER11-S013	PART NUMBER
13 Pieces	NUMBER OF PIECES
.5-7 mm	RANGE

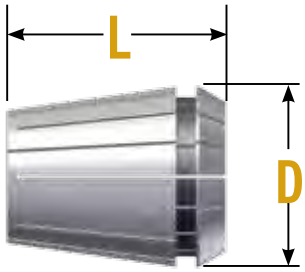
ER11 STANDARD COLLETS INCH

Part Number	Inch Range
ER11-0062	.0428-.0625
ER11-0093	.0740-.0938
ER11-0125	.1053-.1250
ER11-0157	.1378-.1575
ER11-0187	.1678-.1875
ER11-0218	.1990-.2187
ER11-0250	.2303-.2500

ER11 Inch Set	SETS
ER11-S007	PART NUMBER
7 Pieces	NUMBER OF PIECES
1/16" - 1/4"	RANGE

ER STANDARD COLLETS

ER Standard Collet



* For specifications see page 74

ER16-ER40 ER STANDARD COLLETS INCH

PART NUMBER					
ER16 Inch	ER20 Inch	ER25 Inch	ER32 Inch	ER40 Inch	Inch Range
ER16-0062	ER20-0062	ER25-0062	-	-	.0400-.0620
ER16-0093	ER20-0093	ER25-0093	ER32-0093	-	.0540-.0930
ER16-0125	ER20-0125	ER25-0125	ER32-0125	ER40-0125	.0860-.1250
ER16-0156	ER20-0156	ER25-0156	ER32-0156	-	.1170-.1560
ER16-0187	ER20-0187	ER25-0187	ER32-0187	ER40-0187	.1480-.1870
ER16-0218	ER20-0218	ER25-0218	ER32-0218	ER40-0218	.1790-.2180
ER16-0250	ER20-0250	ER25-0250	ER32-0250	ER40-0250	.2110-.2500
ER16-0281	ER20-0281	ER25-0281	ER32-0281	ER40-0281	.2420-.2810
ER16-0312	ER20-0312	ER25-0312	ER32-0312	ER40-0312	.2730-.3120
ER16-0343	ER20-0343	ER25-0343	ER32-0343	ER40-0343	.3040-.3430
ER16-0375	ER20-0375	ER25-0375	ER32-0375	ER40-0375	.3360-.3750
ER16-0406	ER20-0406	ER25-0406	ER32-0406	ER40-0406	.3666-.4060
-	ER20-0437	ER25-0437	ER32-0437	ER40-0437	.3980-.4370
-	ER20-0468	ER25-0468	ER32-0468	ER40-0468	.4290-.4680
-	ER20-0500	ER25-0500	ER32-0500	ER40-0500	.4610-.5000
-	-	ER25-0531	ER32-0531	ER40-0531	.4920-.5310
-	-	ER25-0562	ER32-0562	ER40-0562	.5230-.5620
-	-	ER25-0593	ER32-0593	ER40-0593	.5544-.5937
-	-	ER25-0625	ER32-0625	ER40-0625	.5860-.6250
-	-	-	ER32-0656	ER40-0656	.6170-.6560
-	-	-	ER32-0687	ER40-0687	.6480-.6870
-	-	-	ER32-0718	ER40-0718	.6794-.7187
-	-	-	ER32-0750	ER40-0750	.7110-.7500
-	-	-	ER32--0781	ER40-0781	.7419-.7812
-	-	-	-	ER40-0812	.7732-.8125
-	-	-	-	ER40-0843	.8044-.8437
-	-	-	-	ER40-0875	.8360-.8750
-	-	-	-	ER40-0906	.8669-.9062
-	-	-	-	ER40-0937	.8982-.9375
-	-	-	-	ER40-0984	.9449-.9843
-	-	-	-	ER40-1000	.9610-1.0000

ER16 Inch Set	ER20 Inch Set	ER25 Inch Set	ER32 Inch Set	ER40 Inch Set	SETS
ER16-S012	ER20-S014	ER25-S016	ER32-S022	ER40-S024	PART NUMBER
12 Pieces	14 Pieces	15 Pieces	22 Pieces	24 Pieces	NUMBER OF PIECES
1/16”-13/32”	3/32”-1/2”	3/16”-5/8”	3/32”-3/4”	9/32”-1”	RANGE

ER STANDARD COLLETS

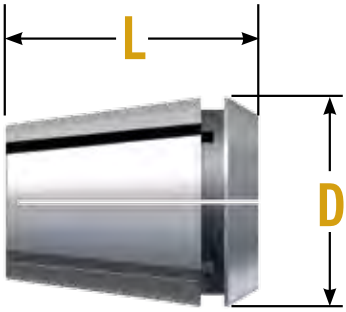
ER16-ER40 ER STANDARD COLLETS METRIC

PART NUMBER					
ER16 Metric	ER20 Metric	ER25 Metric	ER32 Metric	ER40 Metric	Metric Range
ER16-0039	-	-	-	-	.5-1 mm
ER16-0078	ER20-0078	ER25-0078	-	-	1-2 mm
ER16-0098	-	-	-	-	2-2.5 mm
ER16-0118	ER20-0118	ER25-0118	ER32-0118	ER40-0118	2-3 mm
ER16-0137	-	-	-	-	2.5-3.5 mm
ER16-0157	ER20-0157	ER25-0157	ER32-0157	ER40-0157	3-4 mm
ER16-0177	-	-	-	-	3.5-4.5 mm
ER16-0196	ER20-0196	ER25-0196	ER32-0196	ER40-0196	4-5 mm
ER16-0216	-	-	-	-	4.5-5.5 mm
ER16-0236	ER20-0236	ER25-0236	ER32-0236	ER40-0236	5-6 mm
ER16-0255	-	-	-	-	5.5-6.5 mm
ER16-0275	ER20-0275	ER25-0275	ER32-0275	ER40-0275	6-7 mm
ER16-0295	-	-	-	-	6.5-7.5 mm
ER16-0315	ER20-0315	ER25-0315	ER32-0315	ER40-0315	7-8 mm
ER16-0334	-	-	-	-	7.5-8.5 mm
ER16-0354	ER20-0354	ER25-0354	ER32-0354	ER40-0354	8-9 mm
ER16-0393	ER20-0393	ER25-0393	ER32-0393	ER40-0393	9-10 mm
-	ER20-0433	ER25-0433	ER32-0433	ER40-0433	10-11 mm
-	ER20-0472	ER25-0472	ER32-0472	ER40-0472	11-12 mm
-	ER20-0511	ER25-0511	ER32-0511	ER40-0511	12-13 mm
-	-	ER25-0551	ER32-0551	ER40-0551	13-14 mm
-	-	ER25-0590	ER32-0590	ER40-0590	14-15 mm
-	-	ER25-0630	ER32-0630	ER40-0630	15-16 mm
-	-	-	ER32-0669	ER40-0669	16-17 mm
-	-	-	ER32-0708	ER40-0708	17-18 mm
-	-	-	ER32-0748	ER40-0748	18-19 mm
-	-	-	ER32-0787	ER40-0787	19-20 mm
-	-	-	-	ER40-0826	20-21 mm
-	-	-	-	ER40-0866	21-22 mm
-	-	-	-	ER40-0905	22-23 mm
-	-	-	-	ER40-0944	23-24 mm
-	-	-	-	ER40-0984	24-25 mm
-	-	-	-	ER40-1023	25-26 mm
-	-	-	-	ER40-1063	26-27 mm
-	-	-	-	ER40-1102	27-28 mm
-	-	-	-	ER40-1141	28-29 mm
-	-	-	-	ER40-1181	29-30 mm

ER16 Metric Set	ER20 Metric Set	ER25 Metric Set	ER32 Metric Set	ER40 Metric Set	SETS
ER16-S010	ER20-S012	ER25-S015	ER32-S018	ER40-S023	PART NUMBER
10 Pieces	12 Pieces	15 Pieces	18 Pieces	23 Pieces	NUMBER OF PIECES
1-10 mm x 1 mm	2-13 mm	2-16 mm	3-20 mm	4-26 mm	RANGE

ER TAP COLLETS

ER Tap Collet



* For specifications see page 74

ER16-ER40 ER TAP COLLETS INCH METRIC

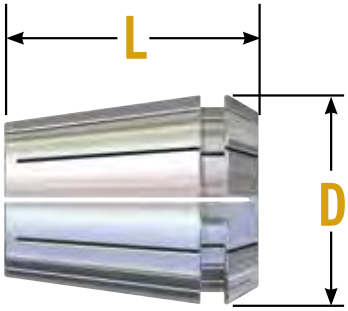
PART NUMBER						
ER16	ER20	ER25	ER32	ER40	Inch Range	ANSI Metric
ERT16-#0-6	-	-	ERT32-#0-6	-	#0-#6	
ERT16-#8	ERT20-#8	ERT25-#8	ERT32-#8	-	#8	M4
ERT16-#10	ERT20-#10	ERT25-#10	ERT32-#10	-	#10	M4.5, M5
ERT16-#12	ERT20-#12	ERT25-#12	ERT32-#12	-	#12	
-	-	ERT25-012N	ERT32-012N	ERT40-012N	1/8" NPT	
ERT16-025	ERT20-025	ERT25-025	ERT32-025	ERT40-025	1/4"	M6,M6.5
-	-	-	ERT32-025N	ERT40-025N	1/4" NPT	
ERT16-031	ERT20-031	ERT25-031	ERT32-031	ERT40-031	5/16"	M7, M8
ERT16-037	ERT20-037	ERT25-037	ERT32-037	ERT40-037	3/8"	M10
-	-	-	-	ERT40-037N	3/8" NPT	
ERT16-043	ERT20-043	ERT25-043	ERT32-043	ERT40-043	7/16"	
ERT16-050	ERT20-050	ERT25-050	ERT32-050	ERT40-050	1/2"	M12,M12.5
-	-	-	-	ERT40-050N	1/2" NPT	
-	-	ERT25-056	ERT32-056	ERT40-056	9/16"	M14
-	-	ERT25-062	ERT32-062	ERT40-062	5/8"	M16
-	-	-	ERT32-068	ERT40-068	11/16"	M18
-	-	-	ERT32-075	ERT40-075	3/4"	
-	-	-	ERT32-081	ERT40-081	13/16"	M20
-	-	-	-	ERT40-087	7/8"	M22
-	-	-	-	ERT40-093	15/16"	M24
-	-	-	-	ERT40-100	1"	M25

ER16 Inch Set	ER20 Inch Set	ER25 Inch Set	ER32 Inch Set	ER40 Inch Set
ERT16-S009	ERT20-S008	ERT25-S011	ERT32-S016	ERT40-S017
9 Pieces	8 Pieces	11 Pieces	16 Pieces	17 Pieces

SETS	
PART NUMBER	
NUMBER OF PIECES	

AA GRADE 5 MICRON ER PRECISION COLLETS

ER Grade AA
5 Micron Collet



* For specifications see page 74

AA GRADE 5 MICRON ER PRECISION COLLETS ER 11

PART NUMBER		
ER11 Metric	Recommended Usage =/-.004" (.1 mm)	Max. Collapse Range
5UMER11-0039	1 mm	0.5 mm
5UMER11-0059	1.5 mm	0.5 mm
5UMER11-0078	2 mm	0.5 mm
5UMER11-0098	2.5mm	0.5 mm
5UMER11-0118	3 mm	0.5 mm
5UMER11-0137	3.5 mm	0.5 mm
5UMER11-0157	4 mm	0.5 mm
5UMER11-0177	4.5 mm	0.5 mm
5UMER11-0196	5 mm	0.5 mm
5UMER11-0216	5.5 mm	0.5 mm
5UMER11-0236	6 mm	0.5 mm
5UMER11-0255	6.5 mm	0.5 mm
5UMER11-0275	7 mm	0.5 mm

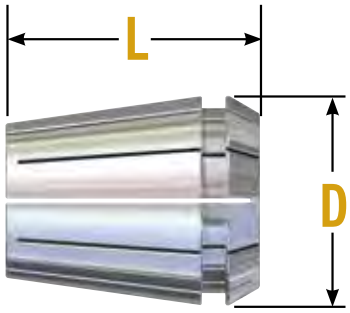
PART NUMBER		
ER11 Inch	Recommended Usage =/-.004" (.1 mm)	Max. Collapse Range
5UMER11-0062	1/16"	0.5 mm
5UMER11-0093	3/32"	0.5 mm
5UMER11-0125	1/8"	0.5 mm
5UMER11-0156	5/32"	0.5 mm
5UMER11-0187	3/16"	0.5 mm
5UMER11-0218	7/32"	0.5 mm
5UMER11-0250	1/4"	0.5 mm

SETS

	ER11 Metric Set	ER11 Inch Set
PART NUMBER	5UMER11-SM013	5UMER11-SI007
NUMBER OF PIECES	13 Pieces	13 Pieces
RANGE	1-7 mm	1/16"-1/4"

AA GRADE 5 MICRON ER PRECISION COLLETS

ER Grade AA
5 Micron Collet



* For specifications see page 74

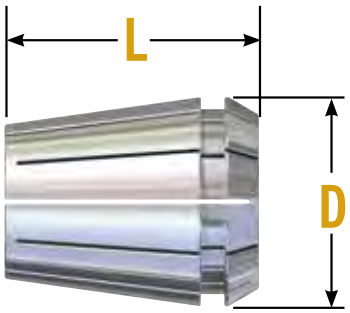
AA GRADE 5 MICRON ER PRECISION COLLETS INCH

PART NUMBER						
ER16 Inch	ER20 Inch	ER25 Inch	ER32 Inch	ER40 Inch	Recommended Usage =/- .004" (.1 mm)	Maximum Collapse Range
5UMER16-0062	-	-	-	-	1/16"	0.5 mm
5UMER16-0093	-	-	-	-	3/32"	0.5 mm
5UMER16-0125	5UMER20-0125	5UMER25-0125	5UMER32-0125	5UMER40-0125	1/8"	1 mm
5UMER16-0156	5UMER20-0157	5UMER25-0157	5UMER32-0157	5UMER40-0157	5/32"	1 mm
5UMER16-0187	5UMER20-0187	5UMER25-0187	5UMER32-0187	5UMER40-0187	3/16"	1 mm
5UMER16-0218	-	-	-	-	7/32"	1 mm
5UMER16-0250	5UMER20-0250	5UMER25-0250	5UMER32-0250	5UMER40-0250	1/4"	1 mm
5UMER16-0281	-	-	-	-	9/32"	1 mm
5UMER16-0312	5UMER20-0312	5UMER25-0312	5UMER32-0312	5UMER40-0312	5/16"	1 mm
5UMER16-0343	-	-	-	-	11/32"	1 mm
5UMER16-0375	5UMER20-0375	5UMER25-0375	5UMER32-0375	5UMER40-0375	3/8"	1 mm
5UMER16-0406	-	-	-	-	13/32"	1 mm
-	5UMER20-0437	5UMER25-0437	5UMER32-0437	5UMER40-0437	7/16"	1 mm
-	5UMER20-0472	5UMER25-0472	5UMER32-0472	5UMER40-0472	15/32"	1 mm
-	5UMER20-0500	5UMER25-0500	5UMER32-0500	5UMER40-0500	1/2"	1 mm
-	-	5UMER25-0562	5UMER32-0562	5UMER40-0562	9/16"	1 mm
-	-	5UMER25-0625	5UMER32-0625	5UMER40-0625	5/8"	1 mm
-	-	-	5UMER32-0687	5UMER40-0687	11/16"	1 mm
-	-	-	5UMER32-0750	5UMER40-0750	3/4"	1 mm
-	-	-	5UMER32-0812	5UMER40-0812	13/16"	1 mm
-	-	-	-	5UMER40-0875	7/8"	1 mm
-	-	-	-	5UMER40-1000	1"	1 mm

ER16 Inch Set	ER20 Inch Set	ER25 Inch Set	ER32 Inch Set	ER40 Inch Set	SETS
5UMER16-SI010	5UMER20-SI009	5UMER25-SI011	5UMER32-SI014	5UMER40-SI016	PART NUMBER
10 Pieces	9 Pieces	11 Pieces	14 Pieces	16 Pieces	NUMBER OF PIECES
3/32"-3/8" 1/16" and 13/32" (Not Incl.) in set	1/8"-1/2"	1/8"-5/8"	1/8"-13/16"	1/8"-1"	RANGE

AA GRADE 5 MICRON ER PRECISION COLLETS

ER Grade AA
5 Micron Collet



* For specifications see page 74

AA GRADE 5 MICRON ER PRECISION COLLETS METRIC

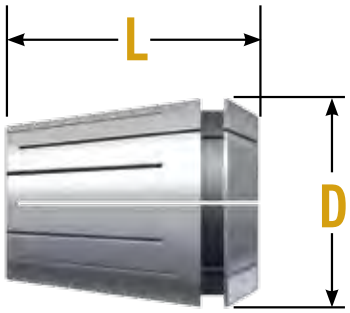
PART NUMBER						
ER16 Metric	ER20 Metric	ER25 Metric	ER32 Metric	ER40 Metric	Recommended Usage =/- .004" (.1 mm)	Max. Collapse Range
5UMER16-0039	-	-	-	-	1 mm	0.5 mm
5UMER16-0078	5UMER20-0078	5UMER25-0078	-	-	2 mm	0.5 mm
5UMER16-0118	5UMER20-0118	5UMER25-0118	5UMER32-0118	-	3 mm	1 mm
5UMER16-0157	5UMER20-0157	5UMER25-0157	5UMER32-0157	5UMER40-0157	4 mm	1 mm
5UMER16-0196	5UMER20-0196	5UMER25-0196	5UMER32-0196	5UMER40-0196	5 mm	1 mm
5UMER16-0236	5UMER20-0236	5UMER25-0236	5UMER32-0236	5UMER40-0236	6 mm	1 mm
5UMER16-0275	5UMER20-0275	5UMER25-0275	5UMER32-0275	5UMER40-0275	7 mm	1 mm
5UMER16-0315	5UMER20-0315	5UMER25-0315	5UMER32-0315	5UMER40-0315	8 mm	1 mm
5UMER16-0354	5UMER20-0354	5UMER25-0354	5UMER32-0354	5UMER40-0354	9 mm	1 mm
5UMER16-0393	5UMER20-0393	5UMER25-0393	5UMER32-0393	5UMER40-0393	10 mm	1 mm
-	5UMER20-0433	5UMER25-0433	5UMER32-0433	5UMER40-0433	11 mm	1 mm
-	5UMER20-0472	5UMER25-0472	5UMER32-0472	5UMER40-0472	12 mm	1 mm
-	5UMER20-0511	5UMER25-0511	5UMER32-0511	5UMER40-0511	13 mm	1 mm
-	-	5UMER25-0551	5UMER32-0551	5UMER40-0551	14 mm	1 mm
-	-	5UMER25-0590	5UMER32-0590	5UMER40-0590	15 mm	1 mm
-	-	5UMER25-0630	5UMER32-0630	5UMER40-0630	16 mm	1 mm
-	-	-	5UMER32-0669	5UMER40-0669	17 mm	1 mm
-	-	-	5UMER32-0708	5UMER40-0708	18 mm	1 mm
-	-	-	5UMER32-0748	5UMER40-0748	19 mm	1 mm
-	-	-	5UMER32-0787	5UMER40-0787	20 mm	1 mm
-	-	-	-	5UMER40-0826	21 mm	1 mm
-	-	-	-	5UMER40-0866	22 mm	1 mm
-	-	-	-	5UMER40-0905	23 mm	1 mm
-	-	-	-	5UMER40-0944	24 mm	1 mm
-	-	-	-	5UMER40-0984	25 mm	1 mm
-	-	-	-	5UMER40-1023	26 mm	1 mm

SETS

ER16 Metric Set	ER20 Metric Set	ER25 Metric Set	ER32 Metric Set	ER40 Metric Set
5UMER16-SM010	5UMER20-SM012	5UMER25-SM015	5UMER32-SM018	5UMER40-SM023
10 Pieces	12 Pieces	15 Pieces	18 Pieces	23 Pieces
1-10 mm	2-13 mm	2-16 mm	3-20 mm	4-26 mm

PART NUMBER
NUMBER OF PIECES
RANGE

ERS STEEL SEALED COLLETS



* For specifications see page 74

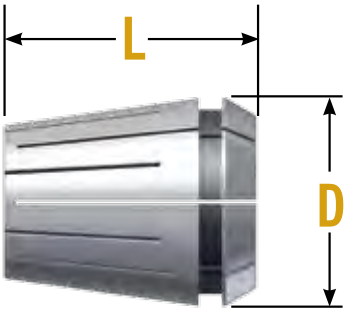
ERS Steel
Sealed Collet

ER16-ER40 STEEL SEALED COLLETS INCH

PART NUMBER					
ER16 Inch	ER20 Inch	ER25 Inch	ER32 Inch	ER40 Inch	Inch Range
ERS16-0125	-	-	-	-	0.1250
ERS16-0157	ERS20-0157	ERS25-0157	ERS32-0157	-	0.1562
ERS16-0187	ERS20-0187	ERS25-0187	ERS32-0187	-	0.1875
ERS16-0218	ERS20-0218	ERS25-0218	ERS32-0218	-	0.2188
ERS16-0250	ERS20-0250	ERS25-0250	ERS32-0250	ERS40-0250	0.2500
ERS16-0281	ERS20-0281	ERS25-0281	ERS32-0281	ERS40-0281	0.2813
ERS16-0312	ERS20-0312	ERS25-0312	ERS32-0312	ERS40-0312	0.3125
ERS16-0343	ERS20-0343	ERS25-0343	ERS32-0343	ERS40-0343	0.3438
ERS16-0375	ERS20-0375	ERS25-0375	ERS32-0375	ERS40-0375	0.3750
ERS16-0406	ERS20-0406	ERS25-0406	ERS32-0406	ERS40-0406	0.4063
-	ERS20-0437	ERS25-0437	ERS32-0437	ERS40-0437	0.4375
-		ERS25-0468	ERS32-0468	ERS40-0468	0.4688
-	ERS20-0500	ERS25-0500	ERS32-0500	ERS40-0500	0.5000
-	-	ERS25-0531	ERS32-0531	ERS40-0531	0.5313
-	-	ERS25-0562	ERS32-0562	ERS40-0562	0.5625
-	-	ERS25-0593	ERS32-0593	ERS40-0593	0.5938
-	-	ERS25-0625	ERS32-0625	ERS40-0625	0.6250
-	-	-	ERS32-0656	ERS40-0656	0.6563
-	-	-	ERS32-0687	ERS40-0687	0.6875
-	-	-	ERS32-0718	ERS40-0718	0.7188
-	-	-	ERS32-0750	ERS40-0750	0.7500
-	-	-	ERS32-0781	ERS40-0781	0.7183
-	-	-	-	ERS40-0875	0.8750
-	-	-	-	ERS40-1000	1.0000

ER16 Inch Set	ER20 Inch Set	ER25 Inch Set	ER32 Inch Set	ER40 Inch Set	SETS
ERS16-S010	ERS20-S011	ERS25-S016	ERS32-S021	ERS40-S020	PART NUMBER
10 Pieces	11 Pieces	16 Pieces	21 Pieces	20 Pieces	NUMBER OF PIECES
1/8-13/32	5/32”-1/2”	5/32”-5/8”	5/32”-25/32”	1/4”-1”	RANGE

ERS STEEL SEALED COLLETS



* For specifications see page 74

ERS Steel Sealed Collet

ER16-ER40 STEEL SEALED COLLETS METRIC

PART NUMBER					
ER16 Metric	ER20 Metric	ER25 Metric	ER32 Metric	ER40 Metric	Metric Range
ERS16-0157	ERS20-0157	ERS25-0157	ERS32-0157	-	4 mm
ERS16-0196	ERS20-0196	ERS25-0196	ERS32-0196	-	5 mm
ERS16-0236	ERS20-0236	ERS25-0236	ERS32-0236	ERS40-0236	6 mm
ERS16-0275	ERS20-0275	ERS25-0275	ERS32-0275	ERS40-0275	7 mm
ERS16-0315	ERS20-0315	ERS25-0315	ERS32-0315	ERS40-0315	8 mm
ERS16-0354	ERS20-0354	ERS25-0354	ERS32-0354	ERS40-0354	9 mm
ERS16-0393	ERS20-0393	ERS25-0393	ERS32-0393	ERS40-0393	10 mm
-	ERS20-0433	ERS25-0433	ERS32-0433	ERS40-0433	11 mm
-	ERS20-0472	ERS25-0472	ERS32-0472	ERS40-0472	12 mm
-	ERS20-0511	ERS25-0511	ERS32-0511	ERS40-0511	13 mm
-	-	ERS25-0551	ERS32-0551	ERS40-0551	14mm
-	-	ERS25-0590	ERS32-0590	ERS40-0590	15mm
-	-	ERS25-0630	ERS32-0630	ERS40-0630	16 mm
-	-	-	ERS32-0669	ERS40-0669	17 mm
-	-	-	ERS32-0708	ERS40-0708	18 mm
-	-	-	ERS32-0748	ERS40-0748	19 mm
-	-	-	ERS32-0787	ERS40-0787	20 mm
-	-	-	-	ERS40-0826	21 mm
-	-	-	-	ERS40-0866	22 mm
-	-	-	-	ERS40-0905	23 mm
-	-	-	-	ERS40-0944	24 mm
-	-	-	-	ERS40-0984	25 mm
-	-	-	-	ERS40-1023	26 mm

ER16 Metric Set	ER20 Metric Set	ER25 Metric Set	ER32 Metric Set	ER40 Metric Set	SETS
ERS16-S007	ERS20-S010	ERS25-S013	ERS32-S017	ERS40-S021	PART NUMBER
7 Pieces	10 Pieces	13 Pieces	17 Pieces	21 Pieces	NUMBER OF PIECES
4-10 mm	4-13 mm	4-16 mm	4-20 mm	6-26 mm	RANGE

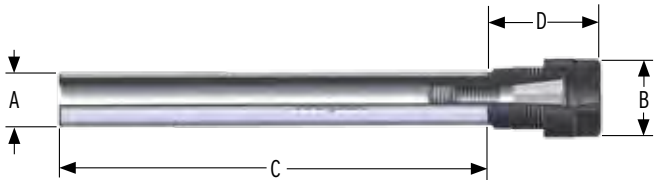
ER COOLANT NUT SEALS

ER16-ER40 COOLANT NUT SEALS

PART NUMBER						
ER16 Metric/Inch	ER20 Metric/Inch	ER25 Metric/Inch	ER32 Metric/Inch	ER40 Metric/Inch	Metric Range	Inch Range
CS16-0138	CS20-0138	CS25-0138	CS32-0138	CS40-0138	3-3.5 mm	.1181 – .1378
CS16-0157	CS20-0157	CS25-0157	CS32-0157	CS40-0157	3.5-4 mm	.1378 – .1575
CS16-0177	CS20-0177	CS25-0177	CS32-0177	CS40-0177	4-4.5 mm	.1575 – .1772
CS16-0197	CS20-0197	CS25-0197	CS32-0197	CS40-0197	4.5-5 mm	.1772 – .1969
CS16-0217	CS20-0217	CS25-0217	CS32-0217	CS40-0217	5-5.5 mm	.1969 – .2165
CS16-0236	CS20-0236	CS25-0236	CS32-0236	CS40-0236	5.5-6 mm	.2165 – .2362
CS16-0256	CS20-0256	CS25-0256	CS32-0256	CS40-0256	6-6.5 mm	.2362 – .2559
CS16-0276	CS20-0276	CS25-0276	CS32-0276	CS40-0276	6.5-7 mm	.2559 – .2756
CS16-0295	CS20-0295	CS25-0295	CS32-0295	CS40-0295	7-7.5 mm	.2756 – .2953
CS16-0315	CS20-0315	CS25-0315	CS32-0315	CS40-0315	7.5-8 mm	.2953 – .3150
CS16-0335	CS20-0335	CS25-0335	CS32-0335	CS40-0335	8-8.5 mm	.3150 – .3346
CS16-0354	CS20-0354	CS25-0354	CS32-0354	CS40-0354	8.5-9 mm	.3346 – .3543
CS16-0374	CS20-0374	CS25-0374	CS32-0374	CS40-0374	9-9.5 mm	.3543 – .3740
CS16-0394	CS20-0394	CS25-0394	CS32-0394	CS40-0394	9.5-10 mm	.3740 – .3937
-	CS20-0413	CS25-0413	CS32-0413	CS40-0413	10-10-5 mm	.3937 – .4134
-	CS20-0433	CS25-0433	CS32-0433	CS40-0433	10-5-11 mm	.4134 – .4331
-	CS20-0453	CS25-0453	CS32-0453	CS40-0453	11-11.5 mm	.4331 – .4528
-	CS20-0472	CS25-0472	CS32-0472	CS40-0472	11-5-12 mm	.4528 – .4724
-	CS20-0492	CS25-0492	CS32-0492	CS40-0492	12-12.5 mm	.4724 – .4921
-	CS20-0512	CS25-0512	CS32-0512	CS40-0512	12.5-13 mm	.4921 – .5118
-	-	CS25-0531	CS32-0531	CS40-0531	13-13.5 mm	.5118 – .5315
-	-	CS25-0551	CS32-0551	CS40-0551	13.5-14 mm	.5315 – .5512
-	-	CS25-0571	CS32-0571	CS40-0571	14-14.5 mm	.5512 – .5709
-	-	CS25-0591	CS32-0591	CS40-0591	14.5-15 mm	.5709 – .5906
-	-	CS25-0610	CS32-0610	CS40-0610	15-15.5 mm	.5906 – .6102
-	-	CS25-0630	CS32-0630	CS40-0630	15.5-16 mm	.6102 – .6299
-	-	-	CS32-0650	CS40-0650	16-16.5 mm	.6299 – .6496
-	-	-	CS32-0669	CS40-0669	16.5-17 mm	.6496 – .6693
-	-	-	CS32-0689	CS40-0689	17-17.5 mm	.6693 – .6890
-	-	-	CS32-0709	CS40-0709	17.5-18 mm	.6890 – .7087
-	-	-	CS32-0728	CS40-0728	18-18.5 mm	.7087 – .7283
-	-	-	CS32-0748	CS40-0748	18.5-19 mm	.7283 – .7480
-	-	-	CS32-0768	CS40-0768	19-19.5 mm	.7480 – .7677
-	-	-	CS32-0787	CS40-0787	19.5-20 mm	.7677 – .7874
-	-	-	-	CS40-0807	20-20.5 mm	.7874 – .8071
-	-	-	-	CS40-0826	20.5-21 mm	.8071 – .8268
-	-	-	-	CS40-0846	21-21.5 mm	.8268 – .8465
-	-	-	-	CS40-0866	21.5-22 mm	.8465 – .8661
-	-	-	-	CS40-0885	22-22.5 mm	.8661 – .8858
-	-	-	-	CS40-0905	22.5-23 mm	.8858 – .9055
-	-	-	-	CS40-0925	23-23.5 mm	.9055 – .9252
-	-	-	-	CS40-0944	23.5-24 mm	.9252 – .9449
-	-	-	-	CS40-0964	24-24.5 mm	.9449 – .9646
-	-	-	-	CS40-0984	24.5-25 mm	.9646 – .9843
-	-	-	-	CS40-1003	25-25.5 mm	.9843 – 1.0039
-	-	-	-	CS40-1023	25.5-26 mm	1.0039 – 1.0236

STRAIGHT SHANK COLLET CHUCKS

ER Extension ER16-750-750



ER11 COLLET SERIES .020" TO .275" (.5MM TO 7MM)

Part Number	A (Dia.)	B (Dia.)	C	D	OAL	Comp Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque	Wrench
ER11-500-6H	.500	.615	5.50	2.90	6.75	LN-ER11	029-909	22 ft. lbs.	ECN56W
ER11-625-6H	.625	.615	5.51	1.65	6.75	LN-ER11	029-909	22 ft. lbs.	ECN56W
ER11-750-6H	.750	.750	6.00	2.00	6.75	11ERHN	029-088	22 ft. lbs.	300CNW

ER16 COLLET SERIES .020" TO .393" (.5MM TO 10MM)

Part Number	A (Dia.)	B (Dia.)	C	D	OAL	Comp Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque	Wrench
ER16-750-550	.750	1.100	4.00	2.00	5.50	16ERHPN	BS-20	42 ft. lbs.	ECN20W
ER16-750-750	.750	1.100	6.00	2.00	7.50	16ERHPN	BS-20	42 ft. lbs.	ECN20W
ER16-750-7H	.750	0.850	6.30	3.90	7.00	LN-ER16	BS-20	42 ft. lbs.	ECN78W

ER20 COLLET SERIES .039" TO .511" (1MM TO 13MM)

Part Number	A (Dia.)	B (Dia.)	C	D	OAL	Collet Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque	Wrench
ER20-100-7H	1.000	1.209	6.40	6.50	7.20	LN-ER20	BS-SF5818LH-.75	60 ft. lbs.	ENC20W
ER20-625-560H	.625	1.344	3.94	1.66	-	20ERN	029-E08	60 ft. lbs.	20ERENW
ER20-750-6H	.750	1.344	6.00	1.81	7.70	20ERHPN	029-E12	60 ft. lbs.	20ERHNW

ER25 COLLET SERIES .039" TO .630" (1MM TO 16MM)

Part Number	A (Dia.)	B (Dia.)	C	D	OAL	Comp Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque	Wrench
ER25-100-531	1.000	1.375	3.94	3.90	5.31	25EREN	029-E12	86 ft. lbs.	25ERENW
ER25-750-4	.750	1.660	4.00	1.81	6.10	25ERN	029-E12	86 ft. lbs.	25ERNW
ER25-750-531	.750	1.660	3.94	1.31	5.31	25ERPN	029-E12	86 ft. lbs.	25ERNW

ER32 COLLET SERIES .078" TO .787" (2MM TO 20MM)

Part Number	A (Dia.)	B (Dia.)	C	D	OAL	Comp Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque	Wrench
ER32-100-425	1.000	1.970	2.00	3.63	4.25	32ERPN	BS-11	100 ft. lbs.	32ERNW
ER32-125-6	1.250	1.970	5.75	3.00	8.00	32ERPN	BS-11	100 ft. lbs.	32ERNW
ER32-750-425	.750	1.970	2.00	3.85	4.25	32ERPN	BS-20	100 ft. lbs.	32ERNW

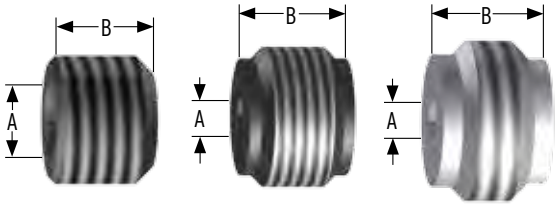
ER40 COLLET SERIES .118" TO 1.181" (3MM TO 30MM)

Part Number	A (Dia.)	B (Dia.)	C	D	OAL	Comp Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque	Wrench
ER40-125-2	1.250	2.359	2.37	3.75	4.75	40ERN	029-E18	146 ft. lbs.	40ERNW
ER40-125-413	1.250	2.359	1.70	1.77	4.13	40ERPN	029-E18	146 ft. lbs.	40ERNW

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

ER TYPE 1 & 2 BACKUP SCREWS

Type 1 Part Number	Type 2 Part Number	A	B	Thread Left Hand
029-909	-	5/32"	1/4"	5/16"-24
-	BS-09	3/16"	9/16"	9/16"-18
-	BS-10	3/16"	9/16"	1 1/8"-16
-	BS-11	5/16"	9/16"	11/16"-16
-	BS-18	3/16"	9/16"	13/16"-16
BS-20	-	7/32"	3/8"	7/16"-20



Type I Standard with Coolant Hole

Type II Standard with Coolant Hole

Type III Coolant with Nylon Seal

STANDARD WRENCHES

Part Number	Collet Series	Style
300CNW	ER11	Hex
ECN20W	ER16	Hex
20ERHNW	ER20	Hex
25ERNW	ER25	Spanner
32ERNW	ER32	Spanner
40ERNW	ER40	Spanner

Open End Wrench ECN20W shown here.

Fixed Spanner Wrench 32ERNW shown here.

TORQUE WRENCHES

Part Number	Range	Length
TW-45	5 - 45 ft. lbs.	12
TW-150	30 - 150 ft. lbs.	16.6
TW-220	45 - 220 ft. lbs.	22.2

Torque Wrench TW-150 shown here. Nose sold separately.

Torque Wrench Nose TWN-32ERNW shown here.

POWER NUTS FOR MAXIMUM GRIP FORCE AND CONCENTRICITY

Part Number	ER Size	B	Size and Style	Standard Wrench	Torque Wrench Nose
16ERHPN	ER16	1.11	1" Hex	ECN20W	TWN-16ERHNW
20ERHPN	ER20	1.34	1 3/16" Hex	20ERHNW	TWN-20ERHNW
25ERPN	ER25	1.67	Spanner	25ERNW	TWN-25ERNW
32ERPN	ER32	1.97	Spanner	32ERNW	TWN-32ERNW
40ERPN	ER40	2.47	Spanner	40ERNW	TWN-40ERNW

Power Nut

FLUSH NUTS FOR MINIMUM OVERHANG

Part Number	ER Size	B	Size and Style	Standard Wrench	Torque Wrench Nose
11ERHN	ER11	0.75	11/16" Hex	300CNW	-
16ERHN	ER16	1.11	1" Hex	ECN20W	TWN-16ERHNW
20ERHN	ER20	1.34	1 3/16" Hex	20ERHNW	TWN-20ERHNW
25ERN	ER25	1.67	Spanner	25ERNW	TWN-25ERNW
32ERN	ER32	1.97	Spanner	32ERNW	TWN-32ERNW
40ERN	ER40	2.47	Spanner	40ERNW	TWN-40ERNW

Flush Nut

COOLANT NUTS FOR USE WITH COOLANT NUT SEALS

Part Number	ER Size	B	Size and Style	Standard Wrench	Torque Wrench Nose
16ERHCN	ER16	1.11	1" Hex	ECN20W	TWN-16ERHNW
20ERHCN	ER20	1.34	1 3/16" Hex	20ERHNW	TWN-20ERHNW
25ERCN	ER25	1.67	Spanner	25ERNW	TWN-25ERNW
32ERCN	ER32	1.97	Spanner	32ERNW	TWN-32ERNW
40ERCN	ER40	2.47	Spanner	40ERNW	TWN-40ERNW

Coolant Nut

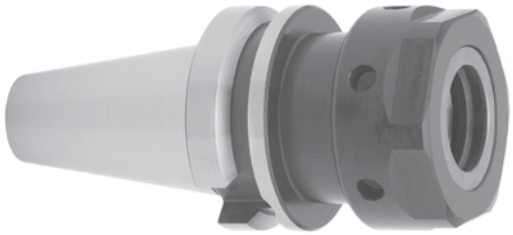
Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

Toolholding

PRODUCTION TOOLHOLDING SOLUTIONS

From production to performance toolholders, Parlec offers the most complete line of toolholding solutions. Unmatched in quality, reliability and value.

SINGLE-ANGLE COLLET CHUCKS

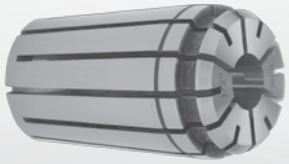


Single-Angle Collet Chuck C50-10SA500 shown here.

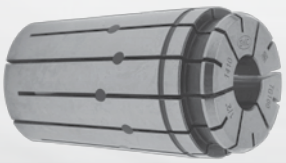
*See Manufacturing Specifications section in the back of the catalog for details.

- Constructed of alloy steel for long, durable service life.
- Hardened to Rc: 52-56 to avoid damaging collet chuck threads.
- Shiny taper with black oxide finish for the best combination of accuracy and durability.
- Collet seat taper T.I.R. ≤ .0002".
- Collet face within .06" of nut face for maximum rigidity.
- Collet can be removed with single hand. No tooling required and improved collet life.
- Precision ball bearing type collet races provide higher clamping forces.
- Through-spindle coolant capability.
- ParSymmetry design for high-speed operation.
- Flange-entry coolant is the same as DIN Form B. Other sizes available on request.

System Accessories



Single-Angle Collet



Single-Angle Sealed Collet

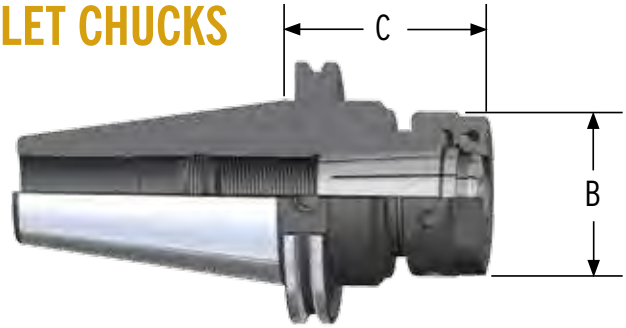
Single-Angle Coolant Back up Screw

Single-Angle Golden Seal

COLLET RANGE SPECIFICATIONS

Collet Size	Range Inch	Range Metric	Collet Nut (Incl.)	Nut Torque
75PG	.031" to .750"	.8 mm to 19 mm	75HCN	60 ft. lbs.
100 PG	.031" to 1.000"	.8 mm to 25.4 mm	100HCN	60 ft. lbs.
150 PG	.0484" to 1.500"	12.3 mm to 38.1 mm	15CN	70 ft. lbs.

SINGLE-ANGLE COLLET CHUCKS



BT 40 TAPER

Size	Part Number	Part Number with AD/B Coolant	B (Dia.)	C	Socket Depth	Stop Screw (Incl.)	Collet Nut (Incl.)	Nut Torque
75PG	B40-75SC3	-	2.10	2.75	3.00	BS-18	75HCN	60 ft. lbs.
100PG	B40-10SC3	-	2.44	3.00	3.40	BS-08	100HCN	60 ft. lbs.
150PG	B40-10SC5	-	2.44	5.00	5.00	BS-10	15CN	70 ft. lbs.

CAT 40 TAPER

Size	Part Number	Part Number with AD/B Coolant	B (Dia.)	C	Socket Depth	Stop Screw (Incl.)	Collet Nut (Incl.)	Nut Torque
75PG	C40-75SC3	C40BC-75SC300	2.10	3.00	3.00	BS-18	75HCN	60 ft. lbs.
	-	C40BC-75SC600		6.00	3.00			
100PG	C40-10SC3	C40BC-10SC300	2.44	3.00	3.35	BS-08	100HCN	60 ft. lbs.
	C40-10SC5	-		5.00	4.54			
	C40-10SC6	C40BC-10SC650		6.50	6.00			
150PG	C40-15SC4	-	3.43	4.88	4.21	BS-10	15CN	70 ft. lbs.

CAT 50 TAPER

Size	Part Number	Part Number with AD/B Coolant	B (Dia.)	C	Socket Depth	Stop Screw (Incl.)	Collet Nut (Incl.)	Nut Torque
75PG	-	C50BC-75SC300	2.10	3.00	3.00	BS-18	75HCN	60 ft. lbs.
	-	C50BC-75SC600		6.00				
100PG	C50-10SC3	C50BC-10SC300	2.44	3.00	4.00	BS-10	100HCN	60 ft. lbs.
	C50-10SC4	-		3.50	4.25			
	C50-10SC5	-		5.50	5.89			
	C50-10SC7	C50BC-10SC750		7.50	5.50			
150PG	C50-15SC3	-	3.43	3.00	3.50	BS-15	15CN	70 ft. lbs.
	C50-15SC4	-		3.50	4.00			
	C50-15SC5	-		5.50	-			
	C50-15SC7	-		7.50	5.89			

NMTB 40 TAPER

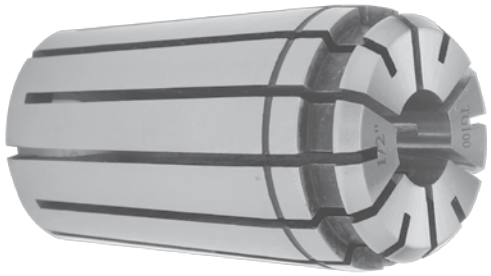
Size	Part Number	Part Number with AD/B Coolant	B (Dia.)	C	Socket Depth	Stop Screw (Incl.)	Collet Nut (Incl.)	Nut Torque
100PG	N40-10SC3	-	2.44	3.00	3.50	BS-08	100HCN	60 ft. lbs.

NMTB 50 TAPER

Size	Part Number	Part Number with AD/B Coolant	B (Dia.)	C	Socket Depth	Stop Screw (Incl.)	Collet Nut (Incl.)	Nut Torque
100PG	N50-10SC3	-	2.44	3.00	4.50	BS-10	100HCN	60 ft. lbs.
150PG	N50-15SC3	-	3.43	3.00	4.50	BS-15	15CN	70 ft. lbs.

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.

SINGLE-ANGLE COLLETS



Single-Angle Collet 100PG-0500 shown here.

- Collapse range .016" maximum.
- .0005" T.I.R. measured at a length 4X the pin diameter or a maximum of 2".

COLLET

Type	L	D
75PG	1.844	1.062
100PG	2.375	1.379
150PG	3.000	2.001

75PG COLLET SETS

Part Number	Quantity	Range	Increments
75PG-S016	46	3/64 - 3/4	1/64
75PG-S031	23	1/16 - 3/4	1/32
75PG-S062	12	1/16 - 3/4	1/16

100PG COLLET SETS

Part Number	Quantity	Range	Increments
100PG-S016	59	3/32 - 1	1/64
100PG-S021	21	3/8 - 1	1/32
100PG-S031	30	3/32 - 1	1/32
100PG-S041	41	3/8 - 1	1/64
100PG-S062	15	1/8 - 1	1/16
100PG-S125	8	1/8 - 1	1/8

150PG COLLET SETS

Part Number	Quantity	Range	Increments
150PG-S016	65	1/2 - 1 1/2	1/64
150PG-S031	33	1/2 - 1 1/2	1/32

Other sizes available on request. Please call Parlec or your local Parlec representative for more information.

STANDARD COLLET SERIES

75PG Part No.	100PG Part No.	150PG Part No.	Inch Range	Metric Range
-	100PG-10MM	-	-	9.5-10
-	100PG-12MM	-	-	11.5-12
-	100PG-14MM	-	-	13.5-14
-	100PG-16MM	-	-	15.5-16
-	100PG-18MM	-	-	17.5-18
-	100PG-20MM	-	-	19.5-20
75PG-0046	100PG-0046	-	.0312 - .0469	1
75PG-0062	100PG-0062	-	.0469 - .0625	1.5
75PG-0078	100PG-0078	-	.0625 - .0781	2
75PG-0093	100PG-0093	-	.0781 - .0938	-
75PG-0109	100PG-0109	-	.0938 - .1094	2.5
75PG-0125	100PG-0125	-	.1094 - .1250	3
75PG-0140	100PG-0140	-	.1250 - .1406	3.5
75PG-0156	100PG-0156	-	.1406 - .1562	-
75PG-0171	100PG-0171	-	.1562 - .1719	4
75PG-0187	100PG-0187	-	.1719 - .1875	4.5
75PG-0203	100PG-0203	-	.1875 - .2031	5
75PG-0218	100PG-0218	-	.2031 - .2188	5.5
75PG-0234	100PG-0234	-	.2188 - .2344	-
75PG-0250	100PG-0250	-	.2344 - .2500	6
75PG-0265	100PG-0265	-	.2500 - .2656	6.5
75PG-0281	100PG-0281	-	.2656 - .2812	7
75PG-0296	100PG-0296	-	.2812 - .2969	7.5
75PG-0312	100PG-0312	-	.2969 - .3125	-
75PG-0328	100PG-0328	-	.3125 - .3281	8
75PG-0343	100PG-0343	-	.3281 - .3438	8.5
75PG-0359	100PG-0359	-	.3438 - .3594	9
75PG-0375	100PG-0375	-	.3594 - .3750	9.5
75PG-0390	100PG-0390	-	.3750 - .3906	-
75PG-0406	100PG-0406	-	.3906 - .4062	10
75PG-0421	100PG-0421	-	.4062 - .4219	10.5
75PG-0437	100PG-0437	-	.4219 - .4375	11
75PG-0453	100PG-0453	-	.4375 - .4531	11.5
75PG-0468	100PG-0468	-	.4531 - .4688	-
75PG-0484	100PG-0484	-	.4688 - .4844	12
75PG-0500	100PG-0500	150PG-0500	.4844 - .5000	12.7
75PG-0515	100PG-0515	150PG-0515	.5000 - .5156	13
75PG-0531	100PG-0531	150PG-0531	.5156 - .5312	13.5
75PG-0546	100PG-0546	150PG-0546	.5312 - .5469	-
75PG-0562	100PG-0562	150PG-0562	.5469 - .5625	14
75PG-0578	100PG-0578	150PG-0578	.5625 - .5781	14.5
75PG-0593	100PG-0593	150PG-0593	.5781 - .5938	15
75PG-0609	100PG-0609	150PG-0609	.5938 - .6094	-
75PG-0625	100PG-0625	150PG-0625	.6094 - .6250	15.5
75PG-0640	100PG-0640	150PG-0640	.6250 - .6406	16
75PG-0656	100PG-0656	150PG-0656	.6406 - .6562	16.5
75PG-0671	100PG-0671	150PG-0671	.6562 - .6719	17
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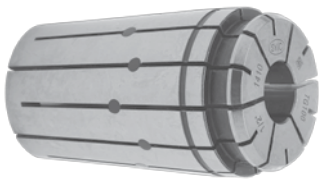
75PG-0703	100PG-0703	150PG-0703	.6875 - .7031	17.5
75PG-0718	100PG-0718	150PG-0718	.7031 - .7188	18
75PG-0734	100PG-0734	150PG-0734	.7188 - .7344	18.5
75PG-0750	100PG-0750	150PG-0750	.7344 - .7500	19
-	100PG-0765	150PG-0765	.7500 - .7656	-
-	100PG-0781	150PG-0781	.7656 - .7812	19.5
-	100PG-0796	150PG-0796	.7812 - .7969	20
-	100PG-0812	150PG-0812	.7969 - .8125	20.5
-	100PG-0828	150PG-0828	.8125 - .8281	21
-	100PG-0843	150PG-0843	.8281 - .8438	-
-	100PG-0859	150PG-0859	.8438 - .8594	21.5
-	100PG-0875	150PG-0875	.8594 - .8750	22
-	100PG-0890	150PG-0890	.8750 - .8906	22.5
-	100PG-0906	150PG-0906	.8906 - .9062	23
-	100PG-0921	150PG-0921	.9062 - .9219	-
-	100PG-0937	150PG-0937	.9219 - .9375	23.5
-	100PG-0953	150PG-0953	.9375 - .9531	24
-	100PG-0968	150PG-0968	.9531 - .9688	24.5
-	100PG-0984	150PG-0984	.9688 - .9844	25
-	100PG-1000	150PG-1000	.9844 - 1.0000	-
-	-	150PG-1015	1.0000 - 1.0156	25.5
-	-	150PG-1031	1.0156 - 1.0312	26
-	-	150PG-1046	1.0312 - 1.0469	26.5
-	-	150PG-1062	1.0469 - 1.0625	27
-	-	150PG-1078	1.0625 - 1.0781	-
-	-	150PG-1093	1.0781 - 1.0938	27.5
-	-	150PG-1109	1.0938 - 1.1094	28
-	-	150PG-1125	1.1094 - 1.1250	28.5
-	-	150PG-1140	1.1250 - 1.1406	29
-	-	150PG-1156	1.1406 - 1.1562	-
-	-	150PG-1171	1.1562 - 1.1719	29.5
-	-	150PG-1187	1.1719 - 1.1875	30
-	-	150PG-1203	1.1875 - 1.2031	30.5
-	-	150PG-1218	1.2031 - 1.2188	31
-	-	150PG-1234	1.2188 - 1.2344	-
-	-	150PG-1250	1.2344 - 1.2500	31.5
-	-	150PG-1265	1.2500 - 1.2656	32
-	-	150PG-1281	1.2656 - 1.2812	32.5
-	-	150PG-1296	1.2812 - 1.2969	33
-	-	150PG-1312	1.2969 - 1.3125	-
-	-	150PG-1328	1.3125 - 1.3281	33.5
-	-	150PG-1343	1.3281 - 1.3438	34
-	-	150PG-1359	1.3438 - 1.3594	34.5
-	-	150PG-1375	1.3594 - 1.3750	35
-	-	150PG-1390	1.3750 - 1.3906	-
-	-	150PG-1406	1.3906 - 1.4062	35.5
-	-	150PG-1421	1.4062 - 1.4219	36
-	-	150PG-1437	1.4219 - 1.4375	36.5
-	-	150PG-1453	1.4375 - 1.4531	37
-	-	150PG-1468	1.4531 - 1.4688	-
-	-	150PG-1484	1.4688- 1.4844	37.5
-	-	150PG-1500	1.4844 - 1.5000	38

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

HIGH PRESSURE COOLANT OPTIONS



Single-Angle Sealed Collets (RPG)

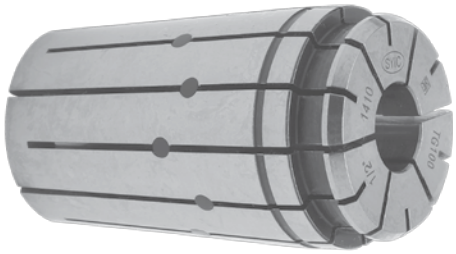
- Collet slots are sealed to prevent coolant escape.
- Collapse range .005".
- Seals up to 600 psi.

Single-Angle Coolant Back-Up Screws with Nylon Face

- Tool shank must protrude through the collet.
- Seals up to 600 psi.

Single-Angle GOLDEN SEAL™ Coolant Seals

- For use with straight-shank cutting tools with internal coolant-fed oil hole.
- Use on existing collets, no special collet nut, tools or hardware required.
- Golden Seal is simply inserted into the collet nut and the tool assembled as normal.
- Golden Seal is an excellent means to stop collet contamination at any psi from chips or grinding dust.
- Seals 800 psi.

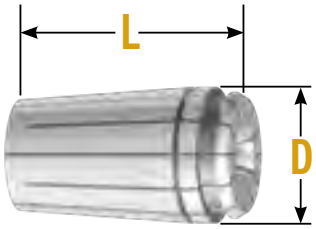


Single-Angle Sealed Collets

- Collapse range .005" maximum.
- Withstands coolant pressure up to 600 psi.

COLLET

Type	L	D
75PG	1.844	1.062
100PG	2.375	1.379
150PG	3.000	2.001



SEALED COLLETS

100RPG Part No.	150RPG Part No.	Size (inches)
100RPG-0187		.1 87
100RPG-0218		.218
100RPG-0234		.234
100RPG-0250		.250
100RPG-0265		.265
100RPG-0281		.281
100RPG-0296		.296
100RPG-0312		.312
100RPG-0328		.328
100RPG-0343		.343
100RPG-0359		.359
100RPG-0375		.375
100RPG-0390		.390
100RPG-0406		.406
100RPG-0421		.421
100RPG-0437		.437
100RPG-0453		.453
100RPG-0468		.468
100RPG-0484		.484
100RPG-0500		.500
100RPG-0515		.515
100RPG-0531		.531
100RPG-0546		.546
100RPG-0562		.562
100RPG-0578		.578
100RPG-0593		.593
100RPG-0609		.609
100RPG-0625		.625
100RPG-0640		.640
100RPG-0656		.656
100RPG-0671		.671
100RPG-0687		.687
100RPG-0703		.703
100RPG-0718		.718
100RPG-0734	-	.734
100RPG-0750	-	.750
100RPG-0765	-	.765
100RPG-0781	-	.781
100RPG-0796	-	.796
100RPG-0812	-	.812
100RPG-0828	-	.828
100RPG-0843	-	.843
100RPG-0859	-	.859
100RPG-0875	-	.875
100RPG-0890	-	.890
100RPG-0906	-	.906
100RPG-0921	-	.921
100RPG-0937	-	.937
100RPG-0953	-	.953
100RPG-0968	-	.968
100RPG-0984	-	.984
100RPG-1000	150RPG-1000	1.000
-	150RPG-1250	1.250
-	150RPG-1500	1.500

Other sizes available on request. Please call Parlec or your local Parlec representative for more information.

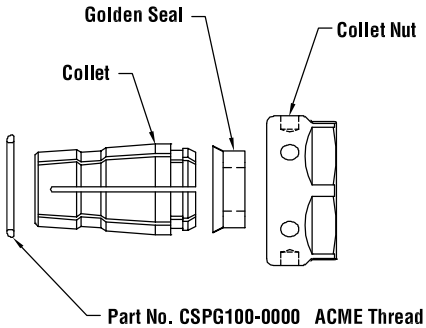
PG 100 COOLANT SEALS

Part Number	Range (Inch)	Range (mm)
CSPG100-0141	.122 - .141	3.1 - 3.6
CSPG100-0160	.142 - .160	3.6 - 4.1
CSPG100-0180	.161 - .180	4.1 - 4.6
CSPG100-0200	.181 - .200	4.6 - 5.1
CSPG100-0220	.201 - .220	5.1 - 5.6
CSPG100-0240	.221 - .240	5.6 - 6.1
CSPG100-0260	.241 - .260	6.1 - 6.6
CSPG100-0280	.261 - .280	6.6 - 7.1
CSPG100-0300	.281 - .300	7.1 - 7.6
CSPG100-0319	.301 - .319	7.6 - 8.1
CSPG100-0339	.320 - .339	8.1 - 8.6
CSPG100-0359	.340 - .359	8.6 - 9.1
CSPG100-0379	.360 - .379	9.1 - 9.6
CSPG100-0398	.380 - .398	9.6 - 10.1
CSPG100-0417	.399 - .417	10.1 - 10.6
CSPG100-0437	.418 - .437	10.6 - 11.1
CSPG100-0457	.438 - .457	11.1 - 11.6
CSPG100-0477	.458 - .477	11.6 - 12.1
CSPG100-0497	.478 - .497	12.1 - 12.6
CSPG100-0516	.498 - .516	12.6 - 13.1
CSPG100-0536	.517 - .536	13.1 - 13.6
CSPG100-0556	.547 - .556	13.6 - 14.1
CSPG100-0575	.557 - .575	14.1 - 14.6
CSPG100-0595	.576 - .595	14.6 - 15.1
CSPG100-0614	.596 - .614	15.1 - 15.6
CSPG100-0634	.615 - .634	15.6 - 16.1
CSPG100-0654	.635 - .654	16.1 - 16.6
CSPG100-0673	.655 - .673	16.6 - 17.1
CSPG100-0693	.674 - .693	17.1 - 17.6
CSPG100-0713	.694 - .713	17.6 - 18.1
CSPG100-0732	.714 - .732	18.1 - 18.6
CSPG100-0752	.733 - .752	18.6 - 19.1
CSPG100-0772	.753 - .772	19.1 - 19.6
CSPG100-0792	.773 - .792	19.6 - 20.1
CSPG100-0811	.793 - .811	20.1 - 20.6
CSPG100-0831	.812 - .831	20.6 - 21.1
CSPG100-0851	.832 - .851	21.1 - 21.6
CSPG100-0870	.852 - .870	21.6 - 22.1
CSPG100-0890	.871 - .890	22.1 - 22.6
CSPG100-0910	.891 - .910	22.6 - 23.1
CSPG100-0929	.911 - .929	23.1 - 23.6
CSPG100-0949	.930 - .949	23.6 - 24.1
CSPG100-0969	.950 - .969	24.1 - 24.6
CSPG100-0988	.970 - .988	24.6 - 25.1
CSPG100-1008	.989 - 1.008	25.1 - 25.6
CSPG100-S046	.122 - 1.008	3.1 - 25.6

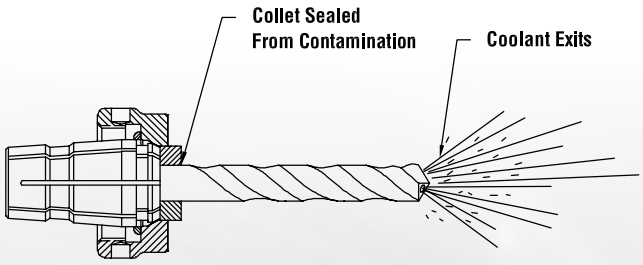
Other sizes available on request. Please call Parlec or your local Parlec representative for more information.

Single-Angle Coolant Seals

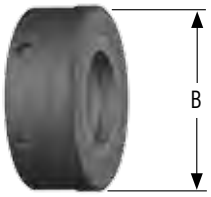
Single-Angle Golden Seal shown here.



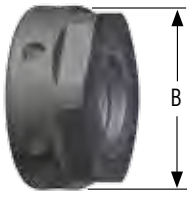
PART#	CSPG100-0000



SINGLE-ANGLE COLLET NUTS:



Style 1 Spanner



Style 2 Hex/Spanner

75PG COLLET SERIES

Part Number	Style	Type	B
75HCN	2	Hex/Spanner	2.10

Order Collet Nut Wrench **75HCNW** separately.

100PG COLLET SERIES

Part Number	Style	Type	B
100HCN	2	Hex/Spanner	2.44

Order Collet Nut Wrench **100HCNW** (Hex) or 100CNW (Spanner) separately.

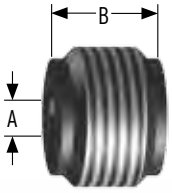
150PG COLLET SERIES

Part Number	Style	Type	B
15CN	1	Spanner	3.43

Order Collet Nut Wrench **100CNW** separately.

BACK-UP SCREWS:

Type BS-15 shown here.



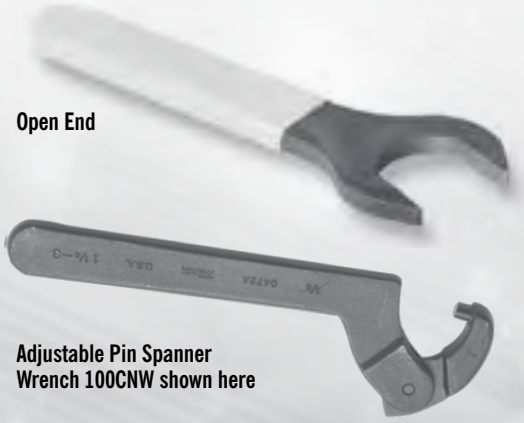
Standard with Coolant Hole

BACK UP SCREWS

Part No.	A	B	Thread (Left-Hand)
BS-08	3/16	.56	15/16-16
BS-10	3/16	.56	1 1/8-16
BS-15	3/16	.75	1 5/8-12
BS-18	3/16	.56	13/16-16

Seals up to 750 psi.

SINGLE-ANGLE COLLET WRENCHES:



Open End

Adjustable Pin Spanner Wrench 100CNW shown here

WRENCHES

Nut Collet Size	Part Number	Type	Size (Inches)
75PG	**75HCNW**	Open End	1 7/8
100PG/150PG	**100CNW**	Pin Spanner	-
100PG	**100HCNW**	Open End	2 1/4

Other sizes available on request. Please call Parlec or your local Parlec representative for more information.

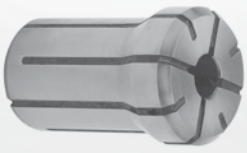
DOUBLE-ANGLE COLLET CHUCKS

- Constructed of alloy steel for long, durable service life.
- Hardened to Rc: 52-56 to avoid damaging collet chuck threads.
- Shiny taper with black oxide finish for the best combination of accuracy and durability.
- Collet seat taper T.I.R. ≤.0004".
- Through-spindle coolant capability.
- ParSymmetry design for high-speed operation.
- Flange-entry coolant is the same as DIN Form B. Other sizes available on request.

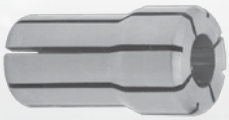
Double-Angle Collet Chuck C40-20DC3 shown here.

*See Manufacturing Specifications section in the back of the catalog for details.

System Accessories



Double-Angle Sealed Collet



Double-Angle Collet

Double-Angle Golden Seal

Back-up Screw

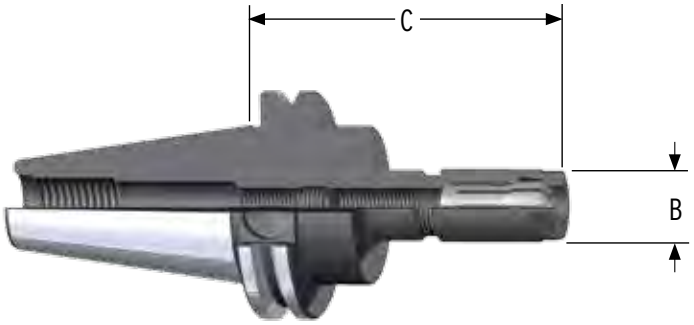
Double-Angle Collet Nut

COLLET RANGE SPECIFICATIONS

Collet Size	Range Inch	Range Metric	Collet Nut (Incl.)	Nut Torque	B/U Screw (Incl.)
DA300	.031" to .250"	.8 mm to 6.4 mm	CN30	25 ft.lbs.	029-909
DA200	.031" to .375"	.8 mm to 9.5 mm	CN20	30 ft. lbs.	BS-20
DA180	.031" to .750"	.8 mm to 19 mm	ECN75	40 ft. lbs.	BS-18

*N30-20DC2 uses 029-028 back up screw
*B30-18DC300 uses 180CN collet nut

DOUBLE-ANGLE COLLET CHUCKS



BT 40 TAPER

Size	Part Number	B	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Incl.)
DA300	B40-30DC3	0.62	3.00	2.75	CN30	25 ft. lbs.	029-909
DA200	B40-20DC2	1.10	2.75	2.25	CN20	30 ft. lbs.	BS-20
DA180	B40-18DC3	1.44	3.00	3.25	ECN75	40 ft. lbs.	BS-18

CAT 40 TAPER

Size	Part Number	B	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Incl.)
DA300	C40-30DC3	0.62	3.38	3.00	CN30	25 ft. lbs.	029-909
	C40-30DC5	0.62	5.15	3.00			
DA200	C40-20DC2	1.10	2.73	2.50	CN20	30 ft. lbs.	BS-20
	C40-20DC3	0.81	3.00	3.00			
	C40-20DC5	0.81	5.00	5.00			
DA180	C40-18DC2	1.44	2.95	3.00	ECN75	40 ft. lbs.	BS-18
	C40-18DC3	1.44	3.38	3.56			
	C40-18DC5	1.44	5.15	4.88			

CAT 50 TAPER

Size	Part Number	B	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Incl.)
DA180	C50-18DC3	1.44	3.38	3.30	ECN75	40 ft. lbs.	BS-18
	C50-18DC6	1.44	6.15	6.00			
	C50-18DC8	1.44	8.15	5.86			

NMTB 30 TAPER

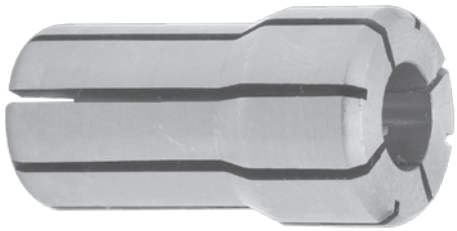
Size	Part Number	B	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Incl.)
DA200	N30-20DC2	0.81	2.25	3.00	CN20	30 ft. lbs.	BS-20
DA180	N30-18DC2	1.44	2.25	3.00	ECN75	40 ft. lbs.	BS-18

NMTB 40 TAPER

Size	Part Number	B	C	Socket Depth	Collet Nut (Incl.)	Nut Torque	B/U Screw (Incl.)
DA200	N40-20DC2	0.81	2.15	3.00	CN20	30 ft. lbs.	BS-20
DA180	N40-18DC2	1.44	2.15	3.00	ECN75	40 ft. lbs.	BS-18

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.

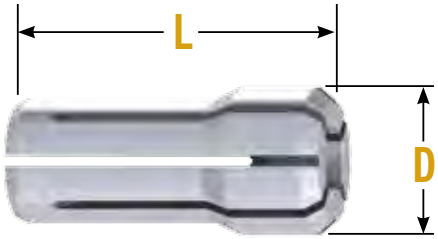
DOUBLE-ANGLE COLLETS



Double-Angle Collet
DA100-0375 shown here

Double Angle Collet

- Collapse range .016" maximum.



COLLET

Type	L	D
DA300	1.000	.375
DA200	1.187	.539
DA100	1.437	.769
DA180	1.639	1.025

Order Collets separately.

DA300 COLLET SETS

Part Number	Quantity	Range	Increments
DA300-S016	14	3/64 - 1/4	1/64
DA300-S031	7	1/16 - 1/4	1/32

DA200 COLLET SETS

Part Number	Quantity	Range	Increments
DA200-S016	21	3/64 - 3/8	1/64
DA200-S031	11	1/16 - 3/8	1/32

DA180 COLLET SETS

Part Number	Quantity	Range	Increments
DA180-S016	33	1/4 - 3/4	1/64
DA180-S021	21	1/8 - 3/4	1/32
DA180-S031	17	1/4 - 3/4	1/32
DA180-S045	45	1/16 - 3/4	1/64
DA180-S062	12	1/16 - 3/4	1/16

DA100 COLLET SETS

Part Number	Quantity	Range	Increments
DA100-S016	29	1/8 - 9/16	1/64
DA100-S031	15	1/8 - 9/16	1/32
DA100-S033	33	1/16 - 9/16	1/64

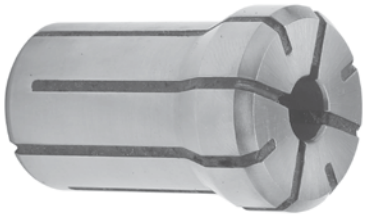
Other sizes available on request. Please call Parlec or your local Parlec representative for more information.

STANDARD COLLET SERIES

DA300 Part No.	DA200 Part No.	DA100 Part No.	DA180 Part No.	Range Inch	Range Metric
DA300-0046	DA200-0046	DA100-0046	DA180-0046	.0312 – .0469	1
DA300-0062	DA200-0062	DA100-0062	DA180-0062	.0469 – .0625	1.5
DA300-0078	DA200-0078	DA100-0078	DA180-0078	.0625 – .0781	2
DA300-0093	DA200-0093	DA100-0093	DA180-0093	.0781 – .0938	–
DA300-0109	DA200-0109	DA100-0109	DA180-0109	.0938 – .1094	2.5
DA300-0125	DA200-0125	DA100-0125	DA180-0125	.1094 – .1250	3
DA300-0140	DA200-0140	DA100-0140	DA180-0140	.1250 – .1406	3.5
DA300-0156	DA200-0156	DA100-0156	DA180-0156	.1406 – .1562	–
DA300-0171	DA200-0171	DA100-0171	DA180-0171	.1562 – .1719	4
DA300-0187	DA200-0187	DA100-0187	DA180-0187	.1719 – .1875	4.5
DA300-0203	DA200-0203	DA100-0203	DA180-0203	.1875 – .2031	5
DA300-0218	DA200-0218	DA100-0218	DA180-0218	.2031 – .2188	5.5
DA300-0234	DA200-0234	DA100-0234	DA180-0234	.2188 – .2344	–
DA300-0250	DA200-0250	DA100-0250	DA180-0250	.2344 – .2500	6
–	DA200-0265	DA100-0265	DA180-0265	.2500 – .2656	6.5
–	DA200-0281	DA100-0281	DA180-0281	.2656 – .2812	7
–	DA200-0296	DA100-0296	DA180-0296	.2812 – .2969	7.5
–	DA200-0312	DA100-0312	DA180-0312	.2969 – .3125	–
–	DA200-0328	DA100-0328	DA180-0328	.3125 – .3281	8
–	DA200-0343	DA100-0343	DA180-0343	.3281 – .3438	8.5
–	DA200-0359	DA100-0359	DA180-0359	.3438 – .3594	9
–	DA200-0375	DA100-0375	DA180-0375	.3594 – .3750	9.5
–	DA200-0390	DA100-0390	DA180-0390	.3750 – .3906	–
–	–	DA100-0406	DA100-0406	.3906 – .4062	10
–	–	DA100-0421	DA180-0421	.4062 – .4219	10.5
–	–	DA100-0437	DA180-0437	.4219 – .4375	11
–	–	DA100-0453	DA180-0453	.4375 – .4531	11.5
–	–	DA100-0468	DA180-0468	.4531 – .4688	–
–	–	DA100-0484	DA180-0484	.4688 – .4844	12
–	–	DA100-0500	DA180-0500	.4844 – .5000	12.5
–	–	DA100-0515	DA180-0515	.5000 – .5156	13
–	–	DA100-0531	DA180-0531	.5156 – .5312	13.5
–	–	DA100-0546	DA180-0546	.5312 – .5469	–
–	–	DA100-0562	DA180-0562	.5469 – .5625	14
–	–	–	DA180-0578	.5625 – .5781	14.5
–	–	–	DA180-0593	.5781 – .5938	15
–	–	–	DA180-0609	.5938 – .6094	–
–	–	–	DA180-0625	.6094 – .6250	15.5
–	–	–	DA180-0640	.6250 – .6406	16
–	–	–	DA180-0656	.6406 – .6562	16.5
–	–	–	DA180-0671	.6562 – .6719	17
–	–	–	DA180-0687	.6719 – .6875	–
–	–	–	DA180-0703	.6875 – .7031	17.5
–	–	–	DA180-0718	.7031 – .7188	18
–	–	–	DA180-0734	.7188 – .7344	18.5
–	–	–	DA180-0750	.7344 – .7500	19

Other sizes available on request. Please call Parlec or your local Parlec representative for more information.

HIGH PRESSURE COOLANT OPTIONS



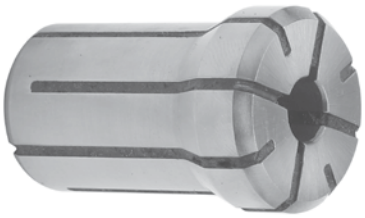
Double-Angle Sealed Collets (RDA)

- Collet slots are sealed to prevent coolant escape.
- Collapse range .005".
- Seals up to 600 psi.

Double-Angle GOLDEN SEAL™ Coolant Seals

- Designed for use with through-coolant tools.
- No special collet nut is required.
- Golden Seal is simply inserted into the collet nut and the tool assembled as normal.
- Golden Seal is an excellent means to stop collet contamination at any psi from chips or grinding dust. Seals 800 psi.

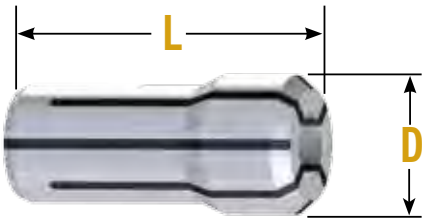
DOUBLE-ANGLE SEALED COLLETS (RPG)



COLLET

Type	L	D
DA300	1.000	.375
DA200	1.187	.539
DA100	1.437	.769
DA180	1.639	1.025

Order Collets separately.



SEALED COLLET SERIES

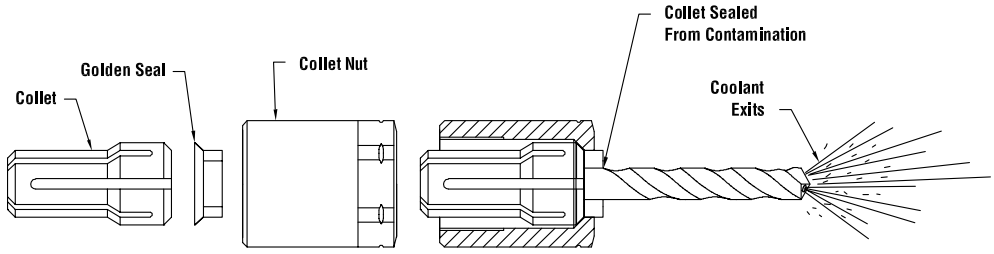
RDA300 Part No.	RDA200 Part No.	RDA100 Part No.	RDA180 Part No.	Size (inches)
RDA300-0125	RDA200-0125	RDA100-0125	-	.1250
RDA300-0140	RDA200-0141	RDA100-0141	-	.1406
RDA300-0156	RDA200-0156	RDA100-0156	-	.1562
RDA300-0172	RDA200-0172	RDA100-0171	-	.1719
RDA300-0188	RDA200-0188	RDA100-0188	-	.1875
RDA300-0203	RDA200-0203	RDA100-0203	-	.2031
RDA300-0219	RDA200-0219	RDA100-0219	-	.2188
RDA300-0234	RDA200-0234	RDA100-0234	-	.2344
RDA300-0250	RDA200-0250	RDA100-0250	RDA180-0250	.2500
-	RDA200-0266	RDA100-0266	RDA180-0266	.2656
-	RDA200-0281	RDA100-0281	RDA180-0281	.2812
-	RDA200-0297	RDA100-0297	RDA180-0297	.2969
-	RDA200-0312	RDA100-0312	RDA180-0312	.3125
-	RDA200-0328	RDA100-0328	RDA180-0328	.3281
-	RDA200-0344	RDA100-0344	RDA180-0344	.3438
-	RDA200-0359	RDA100-0359	RDA180-0359	.3594
-	RDA200-0375	RDA100-0375	RDA180-0375	.3750
-	RDA200-0391	RDA100-0391	RDA180-0391	.3906
-	-	RDA100-0406	RDA180-0406	.4062
-	-	RDA100-0422	RDA180-0422	.4219
-	-	RDA100-0438	RDA180-0438	.4375
-	-	RDA100-0453	RDA180-0453	.4531
-	-	RDA100-0469	RDA180-0469	.4688
-	-	RDA100-0484	RDA180-0484	.4844
-	-	RDA100-0500	RDA180-0500	.5000
-	-	RDA100-0516	RDA180-0516	.5156
-	-	RDA100-0531	RDA180-0531	.5312
-	-	RDA100-0547	RDA180-0547	.5469
-	-	RDA100-0562	RDA180-0562	.5625
-	-	-	RDA180-0578	.5781
-	-	-	RDA180-0594	.5938
-	-	-	RDA180-0609	.6094
-	-	-	RDA180-0625	.6250
-	-	-	RDA180-0641	.6406
-	-	-	RDA180-0656	6562
-	-	-	RDA180-0672	6719
-	-	-	RDA180-0688	.6875
-	-	-	RDA180-0703	.7031
-	-	-	RDA180-0719	.7188
-	-	-	RDA180-0734	.7344
-	-	-	RDA180-0750	.7500

Other sizes available on request. Please call Parlec or your local Parlec representative for more information.

DOUBLE-ANGLE COOLANT SEALS

Double-Angle Golden Seal shown here.

- For use with straight-shank cutting tools with internal coolant-fed oil hole.
- Use on existing collets, no special collet nut, tools or hardware required.
- Golden Seal is simply inserted into the collet nut and the tool assembled as normal.
- Golden Seal is an excellent means to stop collet contamination at any psi from chips or grinding dust.
- Seals 800 psi.



DA COOLANT SEALS

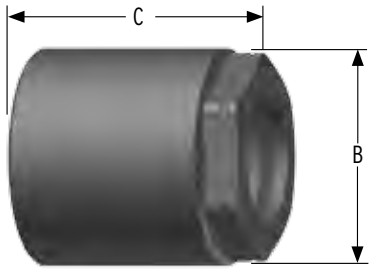
DA200 Part No.	DA100 Part No.	DA180 Part No.	Range Inch	Range Metric
CSDA20-0141	CSDA10-0141	-	.122 - .141	3.1-3.6
CSDA20-0160	CSDA10-0160	-	.142 - .160	3.6-4.1
CSDA20-0180	CSDA10-0180	-	.161 - .180	4.1-4.6
CSDA20-0200	CSDA10-0200	-	.181 - .200	4.6-5.1
CSDA20-0220	CSDA10-0220	-	.201 - .220	5.1-5.6
CSDA20-0240	CSDA10-0240	-	.221 - .240	5.6-6.1
CSDA20-0260	CSDA10-0260	CSDA18-0260	.241 - .260	6.1-6.6
CSDA20-0280	CSDA10-0280	CSDA18-0280	.261 - .280	6.6-7.1
-	CSDA10-0300	CSDA18-0300	.281 - .300	7.1-7.6
-	CSDA10-0319	CSDA18-0319	.301 - .319	7.6-8.1
-	CSDA10-0339	CSDA18-0339	.320 - .339	8.1-8.6
-	CSDA10-0359	CSDA18-0359	.340 - .359	8.6-9.1
-	CSDA10-0379	CSDA18-0379	.360 - .379	9.1-9.6
-	CSDA10-0398	CSDA18-0398	.380 - .398	9.6-10.1
-	CSDA10-0417	CSDA18-0417	.399 -.417	10.1-10.6
-	CSDA10-0437	CSDA18-0437	.418 - .437	10.6-11.1
-	CSDA10-0457	CSDA18-0457	.438 - .457	11.1-11.6
-	CSDA10-0477	CSDA18-0477	.458 - .477	11.6-12.1
-	CSDA10-0497	CSDA18-0497	.478 - .497	12.1-12.6
-	CSDA10-0500	-	0.500	12.7
-	-	CSDA18-0516	.498 - .516	12.6-13.1
-	-	CSDA18-0536	.517 - .536	13.1-13.6

DA COOLANT SEALS

DA200 Part No.	DA100 Part No.	DA180 Part No.	Range Inch	Range Metric
-	-	CSDA18-0556	.537 - .556	13.6-14.1
-	-	CSDA18-0575	.557 - .575	14.1-14.6
-	-	CSDA18-0595	.576 - .595	14.6-15.1
-	-	CSDA18-0614	.596 - .614	15.1-15.6
-	-	CSDA18-0634	.615 - .634	15.6-16.1
-	-	CSDA18-0654	.635 - .654	16.1-16.6
-	-	CSDA18-0673	.655 - .673	16.6-17.1
-	-	CSDA18-0693	.674 - .693	17.1-17.6
CSDA20-S008	CSDA10-S019	CSDA18-S023	.537 - 1.008	13.6-25.6

Other sizes available on request. Please call Parlec or your local Parlec representative for more information.

Double-Angle Compression Nuts:



DA300 COLLET SERIES

Part Number	B	C	Hex	Thread Size	Wrench
CN30	.62	1.10	1/2	1/2 - 28	300CNW
ECN50	.56	1.10	1/2	7/16 - 32	ECN50W

Order Collet Nut Wrench separately.

DA200 COLLET SERIES

Part Number	B	C	Hex	Thread Size	Wrench
CN20	1.10	.88	1	3/4 - 16	ECN20W
ECN75	.81	1.38	3/4	11/16 - 20	ECN75W

Order Collet Nut Wrenches separately.

DA100 COLLET SERIES

Part Number	B	C	Hex	Thread Size	Wrench
ECN10	1.06	1.50	15/16	15/16 - 20	ECN10W

Order Collet Nut Wrench separately.

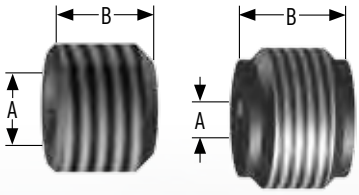
DA180 COLLET SERIES

Part Number	B	C	Hex	Thread Size	Wrench
ECN12	1.44	1.60	1 1/4	1 1/4 - 16	ECN12W

Order Collet Nut Wrenches separately.

Double-Angle Type I and II Back-Up Screws:

Type II BS-18 shown here.



Type I Standard with Coolant Hole

Type II Standard with Coolant Hole

STANDARD

Type I Part No.	Type II Part No.	A	B	Thread (Left Hand)
029-028	–	1/4	1/2	1/2 - 13
029-904	–	1/4	3/8	1/2 - 13-RH**
029-909	–	5/32	1/4	5/16 - 24
029-910	–	7/32	3/8	7/16 - 20
029-911	–	5/16	1/2	5/8 - 18
–	**BS-18**	3/16	9/16	13/16 - 16
–	**BS-20**	7/32	3/8	7/16 - 20

** Right-hand thread only.

Other sizes available on request. Please call Parlec or your local Parlec representative for more information.

DOUBLE-ANGLE EXTENSIONS:

Extension EXT 750 shown here with tool.

Note: Overall length 6"

DA300 COLLET SERIES

Part Number	Range	A (Dia.)	B (Dia.)	C	Comp Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque
EXT 500	.031-.250 (.8-6.4)	.500	.56	1.322	ECN50C	029-909	20 ft. lbs.

Order Collet Nut Wrench **ECN50W** separately.

DA200 COLLET SERIES

Part Number	Range	A (Dia.)	B (Dia.)	C	Comp Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque
EXT 750	.031-.391 (.75-9.9)	.750	.81	1.686	ECN75C	BS-20	30 ft. lbs.

Order Collet Nut Wrench **ECN75W** separately.

DA100 COLLET SERIES

Part Number	Range	A (Dia.)	B (Dia.)	C	Comp Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque
EXT 100	.031-.562 (.8-14.3)	1.000	1.06	1.829	ECN10C	029-911	35 ft. lbs.

Order Collet Nut Wrench **ECN10W** separately.

DA180 COLLET SERIES

Part Number	Range	A (Dia.)	B (Dia.)	C	Comp Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque
EXT 125	.031-.750 (.8-19)	1.250	1.44	1.813	ECN12C	BS-18	40 ft. lbs.

Order Collet Nut Wrench **ECN12W** separately.

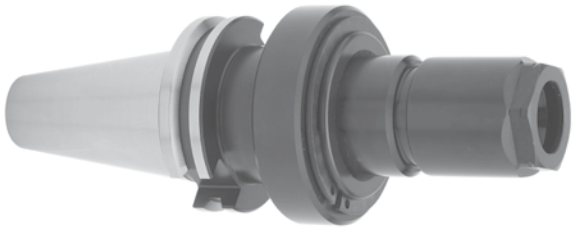
Open End Wrench ECN20W shown here

WRENCHES

Part Number	Type	Size (Inches)
ECN56W	Open End	9/16
ECN50W	Open End	1/2
ECN75W	Open End	3/4
ECN78W	Open End	7/8
ECN10W	Open End	15/16
ECN20W	Open End	1
ECN12W	Open End	1 1/4
180CNW	Open End	1 1/2

Other sizes available on request. Please call Parlec or your local Parlec representative for more information.

NUMERFLOAT FLOATING REAMER HOLDERS



Numerfloat C40-75FH5C shown here.

- For use with reamers or porting tools.
- Recommended for use with spiral flute reamers. Large diameter straight flute reamers with an even number of teeth may chatter.
- Floating tool holders feature .015" of radial float and 1° angular float. This allows reamers and other tools to follow the existing drilled hole.

BT 40 TAPER

Size	Part Number	Range Inch	Range Metric	Coolant Type	B	C	Collet Nut (Incl.)	Nut Torque	B/U Screw (Incl.)
100 PG	B40-10FH5C	.031" to 1.000"	.8 mm to 25.4 mm	Through	2.44	5.25	100HCN	60 ft. lbs.	BS-18

CAT 40 TAPER

Size	Part Number	Range Inch	Range Metric	Coolant Type	B	C	Collet Nut (Incl.)	Nut Torque	B/U Screw (Incl.)
DA180	C40-75FH5C	.031" to .750"	.8 mm to 19 mm	Through	1.44	5.06	ECN75	40 ft. lbs.	BS-18
100 PG	C40-10FH5C	0.46" to 1.000"	1.0 mm to 25.4 mm	Through	2.44	5.25	100HCN	60 ft. lbs.	BS-18

CAT 50 TAPER

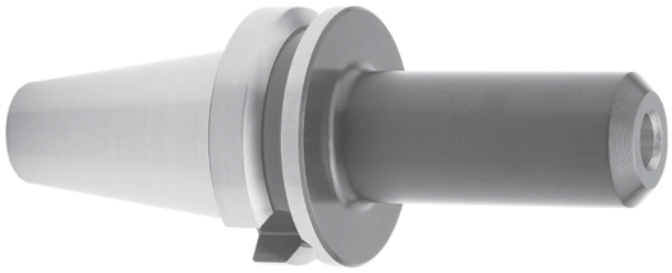
Size	Part Number	Range Inch	Range Metric	Coolant Type	B	C	Collet Nut (Incl.)	Nut Torque	B/U Screw (Incl.)
DA180	C50-75FH5C	.031" to .750"	.8 mm to 19 mm	Through	1.44	5.06	ECN75	40 ft. lbs.	BS-18
100 PG	C50-10FH5C	.031" to 1.000"	.8 mm to 25.4 mm	Through	2.44	5.25	100HCN	60 ft. lbs.	BS-18
150 PG	C50-15FH6C	1.500" to 1.500"	2.7 mm to 38 mm	Through	3.43	6.50	3.43	6.50	3.43

STRAIGHT SHANK

Size	Part Number	Range Inch	Range Metric	Coolant Type	B	C	Collet Nut (Incl.)	Nut Torque	B/U Screw (Incl.)
DA180	S10-75FH5C	.031" to .750"	.8 mm to 19 mm	Through	1.44	5.06	ECN75	40 ft. lbs.	BS-18
100 PG	S10-10FH5C	.031" to 1.000"	.8 mm to 25.4 mm	Through	2.44	5.25	100HCN	60 ft. lbs.	BS-18
	S20-10FH5C	.031" to 1.000"	.8 mm to 25.4 mm	Through	2.44	5.25	100HCN	60 ft. lbs.	BS-18

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. Order Collets and Collet Nut Wrench separately, see pages 74-86.

END MILL HOLDERS



End Mill Holder B40-50EM4 shown here.

*See Manufacturing Specifications section in the back of the catalog for details.

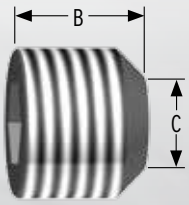
- Constructed of alloy steel for long, durable service life.
- Shiny taper with black oxide finish for the best combination of accuracy and durability.
- End Mill Socket T.I.R. ≤.0002".
- Through-spindle coolant capability.
- ParSymmetry design for high-speed operation.
- Flange-entry coolant is the same as DIN Form B. Other sizes available on request.

SET SCREWS

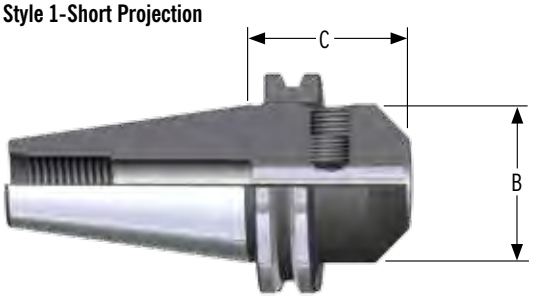
Part Number	Type	Thread	B	C	Hex
029-014	SHSS**	10 - 32	.25	-	3/32
029-018	SHSS**	1/4 - 28	.25	-	1/8
029-902	Weldon	3/8 - 24	.31	.282	3/16
029-917	Weldon	7/16 - 20	.38	.332	7/32
029-918	Weldon	9/16 - 18	.43	.402	1/4
029-920	Weldon	5/8 - 18	.62	.454	7/16
029-922	Weldon	3/4 - 16	.62	.517	3/8
029-924	Weldon	3/8 - 24	.38	.282	3/16
029-925	Weldon	5/8 - 18	.50	.454	5/16
029-926	Weldon	3/4 - 16	.50	.517	3/8
029-928	Weldon	1" - 14	.88	.702	9/16
029-929	Weldon	7/16 - 20	.31	.332	7/32

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. ** SHSS = Socket Head Set Screw.

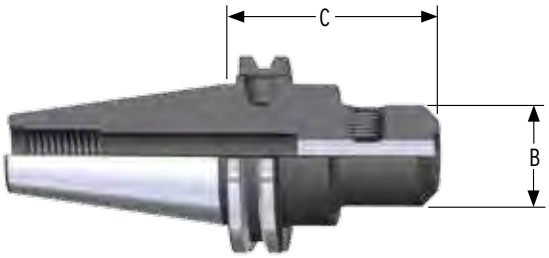
End Mill Set Screw 029-924 shown here.



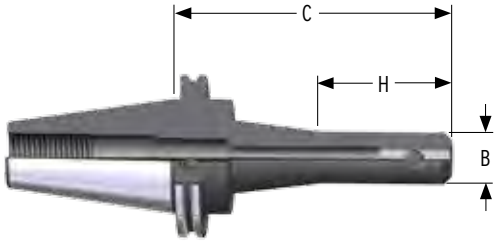
Style 1-Short Projection



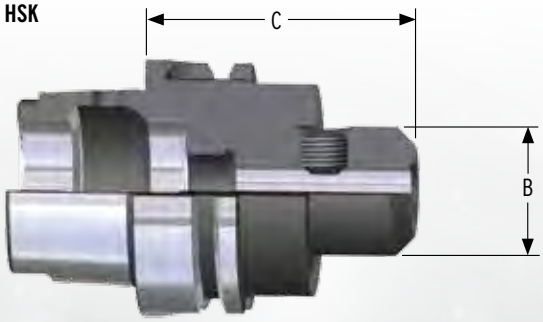
Style 2-Extended Projection



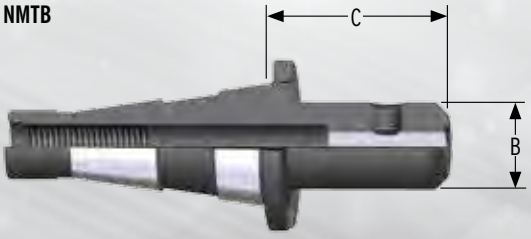
Style 3-Long Projection



HSK

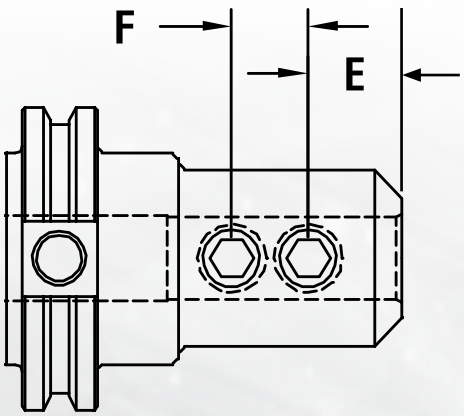


NMTB

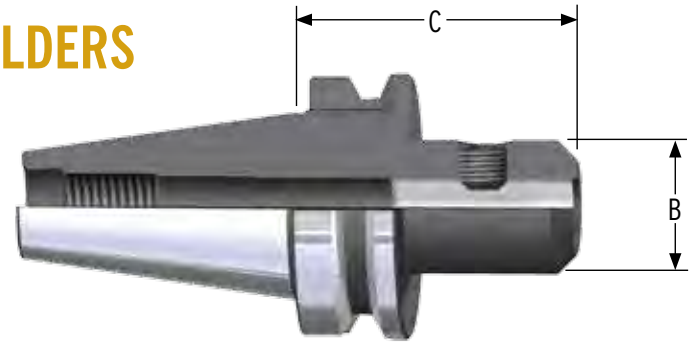


TECHNICAL SPECIFICATIONS

Bore Size	E	F	Set Screw	Tightening Torque
1/8"	0.38	-	029-014	3 ft.
3/16"	0.50	-	029-018	4 ft.
1/4"	0.38	-	029-018	7 ft.
5/16"	0.60	-	029-023	9 ft.
3/8"	0.75	-	029-023	12 ft.
7/16"	0.75	-	029-902	14 ft.
1/2"	0.88	-	029-917	17 ft.
9/16"	0.88	-	029-917	19 ft.
5/8"	0.94	-	029-918	31 ft.
3/4"	1.00	-	029-925	45 ft.
7/8"	1.00	0.81	029-925	48 ft.
1"	1.12	1.00	029-926	69 ft.
1 1/4"	1.12	1.00	029-922	69 ft.
1 1/2"	1.12	1.00	029-922	69 ft.
6 mm	0.38	-	029-018	7 ft.
8 mm	0.44	-	029-018	9 ft.
10 mm	0.75	-	029-902	12 ft.
12 mm	0.88	-	029-917	17 ft.
14 mm	0.88	-	029-917	17 ft.
16 mm	0.94	-	029-918	31 ft.
18 mm	1.00	-	029-925	43 ft.
20 mm	1.00	-	029-925	43 ft.
25 mm	1.12	1.00	029-926	69 ft.
32 mm	1.12	1.00	029-922	69 ft.
40 mm	1.12	1.00	029-922	69 ft.



BT END MILL HOLDERS



BT 30 TAPER

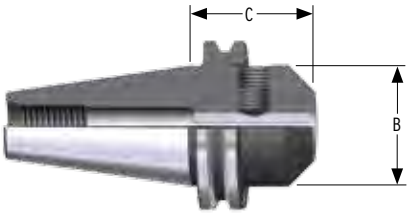
Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	Style	B (Dia.)	C	Socket Depth	H
1/8"	B30-01EM238	-	-	2	0.75	2.38	3.31	-
3/16"	B30-18EM238	-	-	2	0.75	2.38	3.31	-
1/4"	B30-25EM238	-	B30F-25EM238	2	0.81	2.38	3.31	-
5/16"	B30-31EM238	-	-	2	1.00	2.38	3.31	-
3/8"	B30-37EM238	-	B30F-37EM238	2	1.38	2.38	3.31	-
1/2"	B30-50EM238	-	B30F-50EM238	2	1.38	2.38	2.00	-
5/8"	B30-62EM250	-	B30F-62EM250	2	1.44	2.50	2.24	-
3/4"	B30-75EM250	-	B30F-75EM250	2	2.00	2.50	2.25	-
1"	B30-10EM275	-	B30F-10EM275	2	2.38	2.75	2.50	-

BT 40 TAPER

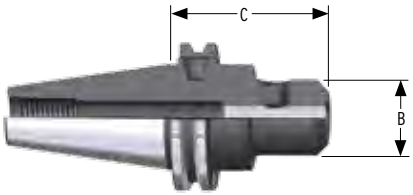
Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	Style	B (Dia.)	C	Socket Depth	H
1/8"	B40-01EM2	-	-	2	0.69	2.25	3.00	-
3/16"	B40-18EM2	-	-	2	0.69	2.25	3.00	-
1/4"	B40-25EM2	-	-	2	0.88	2.25	3.00	-
5/16"	B40-31EM2	-	-	2	1.00	2.25	3.00	-
3/8"	B40-37EM2	B40BC-37EM2	-	2	1.00	2.25	3.00	-
	B40-37EM4	-	-	2		4.00	4.00	-
7/16"	B40-43EM2	-	-	2	1.25	2.25	3.00	-
1/2"	B40-50EM1	-	-	2	1.75	1.75	2.75	-
	B40-50EM2	B40BC-50EM2	B40F-50EM2	2	1.25	2.25	3.00	-
	B40-50EM4	-	-	2		4.00	4.50	-
9/16"	B40-56EM2	-	-	2	1.25	2.25	3.50	-
5/8"	B40-62EM1	-	-	2	1.50	1.75	2.75	-
	B40-62EM2	B40BC-62EM2	B40F-62EM2	2		2.25	3.50	-
	B40-62EM6	-	-	2		6.00		-
3/4"	B40-75EM1	-	-	2	1.75	1.75	2.75	-
	B40-75EM3	B40BC-75EM2	B40F-75EM3	2		3.38	2.38	-
	B40-75EM6	-	-	2		6.00	3.88	-
7/8"	B40-87EM3	-	-	2	1.88	3.75	4.18	-
1"	B40-10EM1	-	-	2	2.00	1.75	2.38	-
	B40-10EM4	B40BC-10EM4	B40F-10EM4	2		4.00	4.44	-
	B40-10EM6	-	-	2	2.50	6.00	4.50	-
1 1/4"	B40-12EM2	-	-	2	2.50	2.00	2.38	-
	B40-12EM4	B40BC-12EM4	B40F-12EM4	2		4.00		-
1 1/2"	B40-15EM4	-	-	2	2.62	4.00	2.38	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.

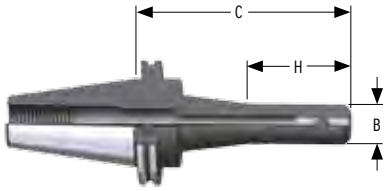
CAT END MILL HOLDERS



STYLE 1



STYLE 2



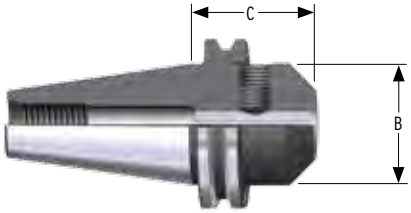
STYLE 3

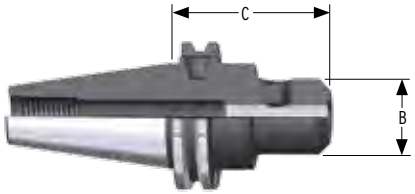
CAT 40 TAPER

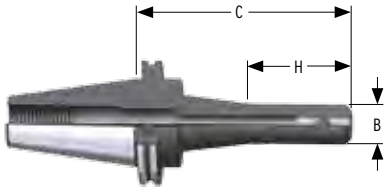
Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	Style	B (Dia.)	C	Socket Depth	H
1/8"	C40-01EM1	-	-	1	0.69	1.75	3.00	-
	C40-01EM2	-	-	2		2.50	3.80	-
	C40-01EM3	-	-	2	1.00	3.00	3.00	-
	C40-01EM6	-	-	3		6.00		2.12
3/16"	C40-18EM1	-	-	1	0.69	1.75	3.00	-
	C40-18EM2	C40BC-18EM2	-	2		2.50	3.80	-
	C40-18EM3	-	-	2	1.00	3.00	3.00	-
	C40-18EM6	-	-	3		6.00	3.80	2.50
1/4"	C40-25EM1	-	-	1	0.88	1.75	3.00	-
	C40-25EM2	C40BC-25EM2	-	2		2.50	3.80	-
	C40-25EM3	-	-	2	1.00	3.00	3.00	-
	C40-25EM6	-	-	3		6.00	3.80	2.50
5/16"	C40-31EM1	-	-	1	1.00	1.75	3.00	-
	C40-31EM2	C40BC-31EM2	-	2		2.50	3.80	-
	C40-31EM6	-	-	3		6.00		3.00
3/8"	C40-37EM1	C40BC-37EM1	-	1	1.00	1.75	3.00	-
	C40-37EM2	C40BC-37EM2	-	2		2.50	3.80	-
	C40-37EM4	-	-	3		4.50		1.00
	C40-37EM6	-	-	3		6.00		2.50
7/16"	C40-43EM1	-	-	1	1.25	1.75	3.00	-
	C40-43EM2	-	-	2		2.62	3.80	-
1/2"	C40-50EM1	C40BC-50EM1	C40F-50EM1	1	1.75	1.75	3.00	-
	C40-50EM2	C40BC-50EM2	C40F-50EM2	2	1.25	2.62	3.80	-
	C40-50EM4	-	C40F-50EM4	2		4.62		-
	C40-50EM6	-	-	3		6.00	3.12	3.00
9/16"	C40-56EM1	-	-	1	1.75	1.75	2.18	-
	C40-56EM2	-	-	2	1.25	2.62	2.05	-
5/8"	C40-62EM1	C40BC-62EM1	-	1	1.75	1.75	2.24	-
	C40-62EM2	C40BC-62EM2	C40F-62EM2	2	1.50	2.75	3.62	-
	C40-62EM3	-	C40F-62EM3	2		3.00	3.21	-
	C40-62EM6	-	-	2		6.00	3.31	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.
*Does not have tool changer safe zone, may not fit some machines, and deviate from ANSI B5.50/2009.

CAT END MILL HOLDERS





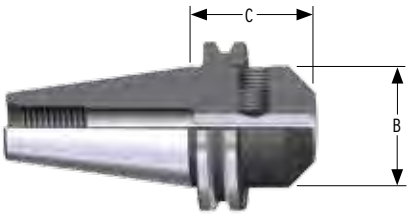


CAT 40 TAPER

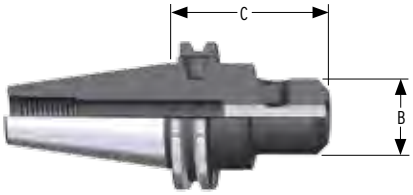
Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	Style	B (Dia.)	C	Socket Depth	H
3/4"	C40-75EM1	C40BC-75EM1	C40F-75EM1	1	1.75	1.75	2.37	-
	C40-75EM300	-	C40F-75EM300	2		3.00	3.94	-
	C40-75EM3	C40BC-75EM3	-	2		3.50		-
	C40-75EM6	-	C40F-75EM6	2		6.00		-
7/8"	C40-87EM1	-	-	1	2.00*	1.75	2.38	-
	C40-87EM3	-	-	2	1.75	3.75	4.25	-
	C40-87EM350	-	-	2	1.88	3.50		-
	C40-87EM6	-	-	2		6.00		-
1"	C40-10EM1	C40BC-10EM1	C40F-10EM1	1	2.00*	1.75	2.38	-
	C40-10EM3	-	C40F-10EM3	2		3.00	3.00	-
	C40-10EM4	C40BC-10EM4	C40F-10EM4	2	2.00	4.00	4.50	-
	C40-10EM6	-	-	2		6.00		-
1 1/4"	C40-12EM2	-	C40F-12EM2	1	2.25*	2.00	2.38	-
	C40-12EM4	C40BC-12EM4	C40F-12EM4	2	2.50	4.00	3.75	-
	C40-12EM425	-	-	2		4.25		-
	C40-12EM6	-	C40F-12EM6	2		6.00		-
1 1/2"	C40-15EM4	C40BC-15EM4	-	2	2.62	4.00	2.38	-
	C40-15EM462	-	C40F-15EM462	2		4.62		-
	C40-15EM6	-	-	2		6.00		-
6 mm	C40-M06EM2	-	-	2	0.88	2.50	3.50	-
8 mm	C40-M08EM2	-	-	2	1.00	2.50	3.50	-
10 mm	C40-M10EM2	-	-	2	1.00	2.50	3.50	-
12 mm	C40-M12EM2	-	-	2	1.25	2.62	3.50	-
14 mm	C40-M14EM2	-	-	2	1.25	2.25	2.00	-
16 mm	C40-M16EM2	-	-	2	1.50	2.75	2.13	-
18 mm	C40-M18EM2	-	-	2	1.75	2.75	2.25	-
20 mm	C40-M20EM3	-	-	2	1.75	3.50	2.25	-
25 mm	C40-M25EM4	-	-	2	2.00	4.00	3.00	-
32 mm	C40-M32EM4	-	-	2	2.50	4.00	2.60	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.
*Does not have tool changer safe zone, may not fit some machines, and deviate from ANSI B5.50/2009.

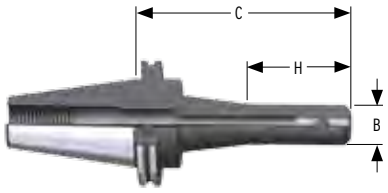
CAT END MILL HOLDERS



STYLE 1



STYLE 2



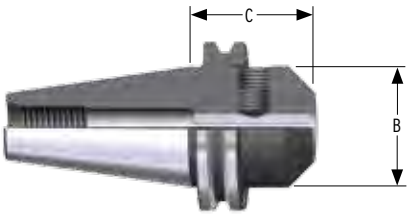
STYLE 3

CAT 50 TAPER

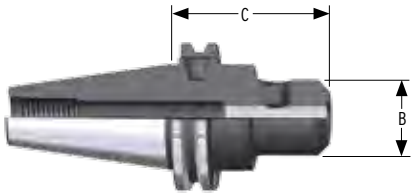
Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	Style	B (Dia.)	C	Socket Depth	H
1/8"	C50-01EM2	-	-	2	0.69	2.50	3.00	-
3/16"	C50-18EM2	-	-	2	0.69	2.50	3.80	-
1/4"	C50-02EM2	-	-	2	0.88	2.50	3.00	-
	C50-02EM450	-	-	2		4.50		
5/16"	C50-31EM2	-	-	2	1.00	2.50	3.00	-
	C50-31EM450	-	-	2		4.50		
3/8"	C50-37EM2	C50BC-37EM2	-	2	1.00	2.50	3.00	-
	C50-37EM4	-	-	2		4.50		-
	C50-37EM6	C50BC-37EM6	-	3		6.50		3.00
	C50-37EM8	-	-	3		8.00		
7/16"	C50-43EM2	-	-	2	1.25	2.62	3.00	-
1/2"	C50-50EM2	C50BC-50EM2	-	2	1.25	2.62	3.00	-
	C50-50EM4	-	C50F-50EM4	2		4.62	5.00	-
	C50-50EM6	C50BC-50EM6	C50F-50EM6	3		6.62		3.13
	C50-50EM8	-	-	3		8.00		
9/16"	C50-56EM2	-	-	2	1.50	2.62	3.00	-
5/8"	C50-62EM3	C50BC-62EM3	-	2	1.50	3.75	3.50	-
	C50-62EM5	-	C50F-62EM5	2		5.75		-
	C50-62EM7	-	C50F-62EM7	3		7.75		4.25
3/4"	C50-75EM1	-	-	1	2.75	1.62	4.00	-
	C50-75EM3	C50BC-75EM3	C50F-75EM3	2	1.75	3.75		-
	C50-75EM5	-	C50F-75EM5	2		5.75		-
	C50-75EM7	C50BC-75EM7	-	3		7.75		4.25
7/8"	C50-87EM3	C50BC-87EM3	-	2	1.88	3.75	4.19	-
	C50-87EM5	-	-	2		5.75		-
	C50-87EM7	C50BC-87EM7	-	3		7.75		4.25

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.

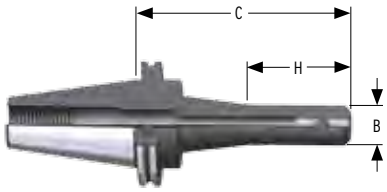
CAT END MILL HOLDERS



STYLE 1



STYLE 2



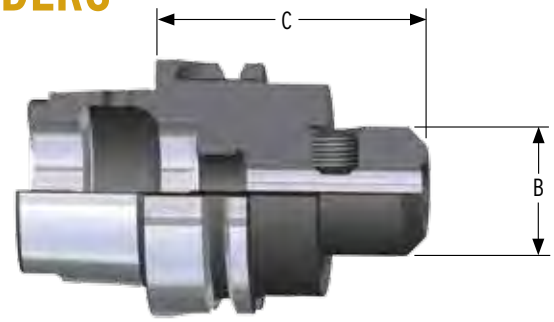
STYLE 3

CAT 50 TAPER

Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	Style	B (Dia.)	C	Socket Depth	H
1"	C50-10EM1	-	-	1	2.75	1.62	2.50	-
	C50-10EM4	C50BC-10EM4	C50F-10EM4	2	2.00	4.00	4.44	-
	C50-10EM6	-	C50F-10EM6	2		6.00		-
	C50-10EM8	C50BC-10EM8	C50F-10EM8	3		8.00		4.50
1 1/4"	C50-12EM2	-	C50F-12EM2	2	2.75	2.62	3.50	-
	C50-12EM4	C50BC-12EM4	C50F-12EM4	2	2.50	4.00	3.35	-
	C50-12EM6	-	C50F-12EM6	2		6.00		-
	C50-12EM8	C50BC-12EM8	C50F-12EM8	2		8.00		-
1 1/2"	C50-15EM2	-	-	2	2.75	2.62	2.25	-
	C50-15EM4	C50BC-15EM4	C50F-15EM4	2		4.00	4.50	-
	C50-15EM6	-	C50F-15EM6	2		6.00		-
	C50-15EM8	C50BC-15EM8	C50F-15EM8	2		8.00		-
2"	C50-20EM5	C50BC-20EM5	C50F-20EM5	2	3.75	5.62	3.50	-
	C50-20EM7	-	-	2		7.62		-
	C50-20EM9	C50BC-20EM9	-	2		9.62		-
2 1/2"	C50-25EM6	-	-	2	4.00	6.50	4.00	-
10 mm	C50-M10EM2	-	-	2	1.00	2.50	4.25	-
12 mm	C50-M12EM2	-	-	2	1.25	2.62	4.25	-
14 mm	C50-M14EM2	-	-	2	1.50	2.62	4.38	-
16 mm	C50-M16EM3	-	-	2	1.50	3.75	2.13	-
20 mm	C50-M20EM3	-	-	2	1.75	3.75	2.25	-
25 mm	C50-M25EM4	-	-	2	2.00	4.00	3.00	-
32 mm	C50-M32EM4	-	-	2	2.50	4.00	2.60	-
40 mm	C50-M40EM4	-	-	2	2.75	4.00	3.25	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.

HSK END MILL HOLDERS



HSK 63 FORM A TAPER

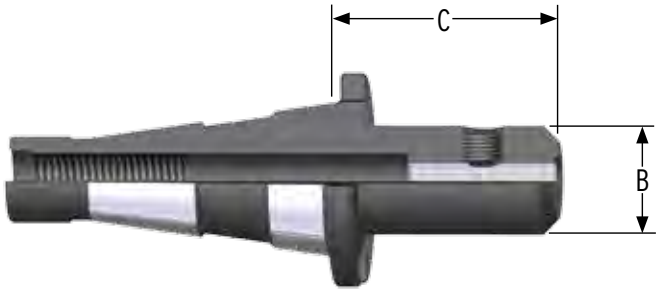
Size	Part Number	Style	B (Dia.)	C	Socket Depth	H
3/16"	H63-18EM2	2	1.00	2.56	1.53	-
1/4"	H63-25EM2	2	1.10	2.56	1.53	-
3/8"	H63-37EM2	2	1.38	2.56	1.54	-
1/2"	H63-50EM3	2	1.63	3.13	2.10	-
5/8"	H63-62EM3	2	1.88	3.13	2.10	-
3/4"	H63-75EM3	2	1.94	3.13	2.12	-
1"	H63-10EM4	2	2.56	4.25	2.75	-
1 1/4"	H63-12EM4	2	2.81	4.25	3.23	-

HSK 100 FORM A TAPER

Size	Part Number	Style	B (Dia.)	C	Socket Depth	H
1/4"	H100-25EM3	2	1.10	3.12	1.98	-
3/8"	H100-37EM3	2	1.38	3.13	1.98	-
1/2"	H100-50EM3	2	1.63	3.13	2.98	-
5/8"	H100-62EM4	2	1.88	4.00	2.86	-
	H100-62EM600	2		6.00	2.75	-
3/4"	H100-75EM4	2	1.94	4.00	2.86	-
	H100-75EM600	2	1.75	6.00	3.12	-
1"	H100-10EM4	2	2.56	4.00	2.85	-
	H100-10EM600	2	2.00	6.00	4.50	-
1 1/4"	H100-12EM4	2	2.81	4.00	2.85	-
	H100-12EM600	2	2.75	6.00	3.35	-
1 1/2"	H100-15EM4	2	3.00	4.00	3.63	-
	H100-15EM600	2	2.75	6.00	4.00	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

NMTB END MILL HOLDERS



NMTB 40 TAPER

Size	Part Number	Style	B (Dia.)	C	Socket Depth	H
3/16"	N40-18EM2	2	0.69	2.31	4.50	-
1/4"	N40-25EM2	2	0.88	2.31	4.50	-
3/8"	N40-37EM2	2	1.00	2.31	4.50	-
1/2"	N40-50EM2	2	1.25	2.31	4.50	-
5/8"	N40-62EM2	2	1.50	2.31	3.50	-
3/4"	N40-75EM2	2	1.75	2.31	3.38	-
7/8"	N40-87EM2	2	1.88	2.94	4.18	-
1"	N40-10EM3	2	2.00	3.38	4.44	-
1 1/4"	N40-12EM3	2	2.50	3.68	3.38	-
1 1/2"	N40-15EM4	2	2.62	4.00	2.55	-

NMTB 50 TAPER

Size	Part Number	Style	B (Dia.)	C	Socket Depth	H
3/8"	N50-37EM2	2	1.00	2.50	2.56	-
1/2"	N50-50EM2	2	1.25	2.62	3.06	-
5/8"	N50-62EM3	2	1.50	3.75	3.50	-
3/4"	N50-75EM3	2	1.75	3.75	3.38	-
7/8"	N50-87EM3	2	1.88	3.75	4.18	-
1"	N50-10EM4	2	2.00	4.00	4.44	-
1 1/4"	N50-12EM4	2	2.50	4.00	3.50	-
1 1/2"	N50-15EM4	2	2.62	4.00	2.62	-
2"	N50-20EM5	2	3.75	5.62	3.38	-
2 1/2"	N50-25EM6	2	4.00	6.50	3.38	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

SHELL MILL HOLDERS

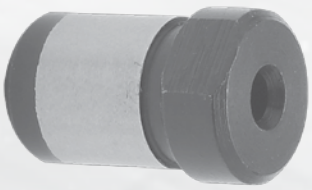
HSK Shell Mill H100-12SM2 shown here.

*See Manufacturing Specifications section in the back of the catalog for details.

- Constructed of alloy steel for long, durable service life.
- Hardened to Rc: 56-60 for long service life.
- Shiny taper with black oxide finish for the best combination of accuracy and durability.
- Shell mill pilot T.I.R. ≤.0002".
- ParSymmetry design for high-speed operation.

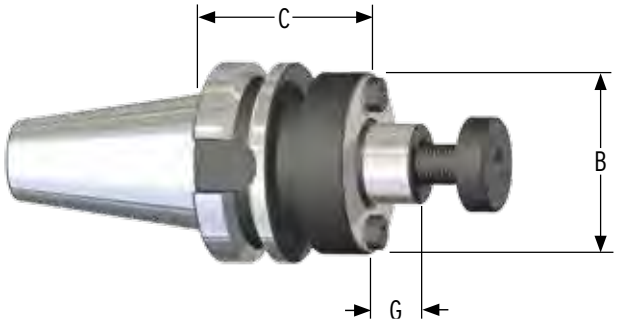
System Accessories

Shell Mill Screw



Drive Key

BT SHELL MILL HOLDERS



BT 30 TAPER

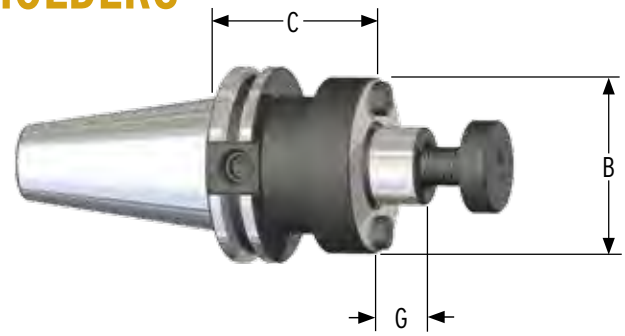
Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	B	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	B30-75SM118	-	B30F-75SM118	1.75	1.18	0.68	75KY	-	028-192
1"	B30-10SM177	-	B30F-10SM177	2.38	1.77	0.68	10KY	10LS	028-188

BT 40 TAPER

Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	B	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	B40-75SM2	B40BC-75SM2	B40F-75SM2	1.75	2.00	0.68	75KY	-	028-192
	B40-75SM4	-			4.00				
1"	B40-10SM2	B40BC-10SM2	B40F-10SM2	2.25	2.00	0.68	10KY	10LS	028-188
	B40-10SM4	-			4.00				
1 1/4"	B40-12SM2	B40BC-12SM2	B40F-12SM2	2.75	2.25	0.68	12KY	12LS	028-193
1 1/2"	B40-15SM2	B40BC-15SM2	B40F-15SM2	3.75	2.25	0.94	15KY	15LS	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.

CAT SHELL MILL HOLDERS



CAT 40 TAPER

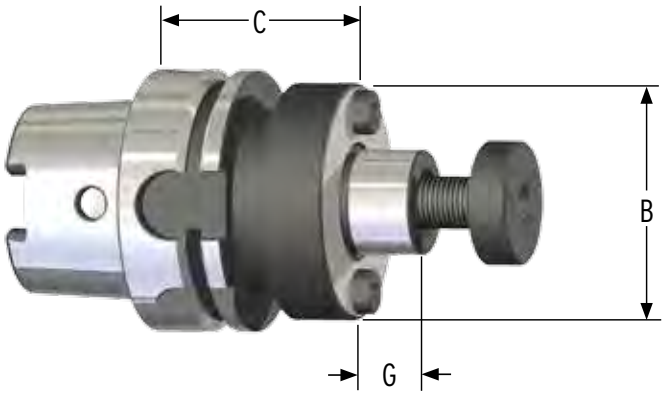
Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	B	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	C40-75SM1	-	C40F-75SM1	1.75	1.38	0.68	75KY	-	028-192
	C40-75SM2	C40BC-75SM2	-		1.50				
	C40-75SM200	-	C40F-75SM200		2.00				
	C40-75SM4	-	C40F-75SM4		4.00				
1"	C40-10SM1	-	C40F-10SM1	2.25*	1.00	0.68	10KY	10LS	028-188
	C40-10SM2	C40BC-10SM2	C40F-10SM2	2.25	2.00				
	C40-10SM4	-	C40F-10SM4		4.00				
1 1/4"	C40-12SM1	-	C40F-12SM1	2.75*	1.62	0.68	12KY	12LS	028-193
	C40-12SM2	C40BC-12SM2	C40F-12SM2	2.75	2.25				
	C40-12SM4	-	-		4.00				
1 1/2"	C40-15SM2	C40BC-15SM2	C40F-15SM2	3.75	2.40	0.94	15KY	15LS	-
	C40-15SM4	-	C40F-15SM4		4.00				

CAT 50 TAPER

Size	Part Number	Part Number with AD/B Coolant	Part Number with SimulFit®	B	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	C50-75SM1	C50BC-75SM1	C50F-75SM1	1.75	1.50	0.68	75KY	-	028-192
	C50-75SM3	C50BC-75SM3	C50F-75SM3		3.50				
	C50-75SM5	-	C50F-75SM5		5.50				
1"	C50-10SM2	C50BC-10SM2	C50F-10SM2	2.25	2.00	0.68	10KY	10LS	028-188
	C50-10SM4	C50BC-10SM4	C50F-10SM4		4.00				
	C50-10SM6	-	C50F-10SM6		6.00				
	C50-10SM8	-	C50F-10SM8		8.00				
1 1/4"	C50-12SM1	C50BC-12SM1	-	2.75	1.50	0.68	12KY	12LS	028-193
	C50-12SM3	C50BC-12SM3	C50F-12SM3		3.50				
	C50-12SM5	-	C50F-12SM5		5.50				
1 1/2"	C50-15SM2	C50BC-15SM2	C50F-15SM2	3.75	2.40	0.94	15KY	15LS	-
	C50-15SM4	C50BC-15SM4	C50F-15SM4		4.00				
	C50-15SM6	-	C50F-15SM6		6.00				
2"	C50-20SM2	C50BC-20SM2	C50F-20SM2	4.88	2.40	0.94	20KY	20LS	-
	C50-20SM4	-	C50F-20SM4		4.00				
	C50-20SM6	-	-		6.00				
2 1/2"	C50-25SM2	C50BC-25SM2	C50F-25SM2	4.88	2.40	1.12	25KY	25LS	-
	C50-25SM4	-	-		4.00				
	C50-25SM6	-	-		6.00				
	C50-25FM1	-	-	5.061	2.50				

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132. *Does not have tool changer safe zone, may not fit some machines, and deviate from ANSI B5.50/2009.

HSK SHELL MILL HOLDERS



HSK 63 FORM A TAPER

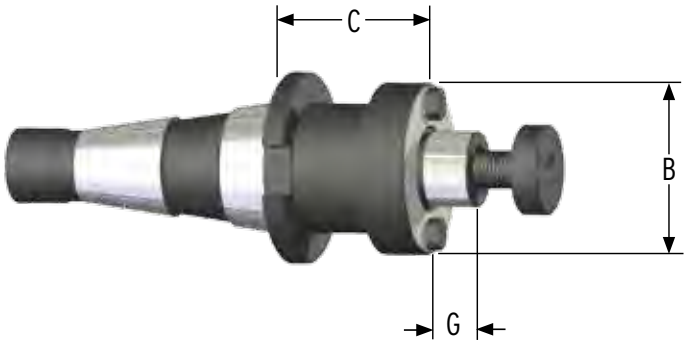
Size	Part Number	B	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	H63-75SM2	1.75	2.37	0.68	75KY	-	028-192
1"	H63-10SM2	2.25	2.63	0.68	10KY	10LS	028-188
1 1/4"	H63-12SM2	2.75	2.37	0.68	12KY	12LS	028-193
1 1/2"	H63-15SM2	3.75	2.62	0.94	15KY	15LS	-

HSK 100 FORM A TAPER

Size	Part Number	B	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	H100-75SM3	1.75	3.00	0.68	75KY	-	028-192
1"	H100-10SM2	2.25	2.37	0.68	10KY	10LS	028-188
1 1/4"	H100-12SM1	2.75	1.87	0.68	12KY	12LS	028-193
1 1/2"	H100-15SM2	3.75	2.88	0.94	15KY	15LS	-
2"	H100-20SM2	4.88	2.37	0.94	20KY	20LS	-
2 1/2"	H100-25SM2	4.88	2.87	1.12	25KY	25LS	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

NMTB SHELL MILL HOLDERS



NMTB 40 TAPER

Size	Part Number	B	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	N40-75SM1	1.75	0.88	0.68	75KY	-	028-192
1"	N40-10SM1	2.25	1.31	0.68	10KY	10LS	028-188
1 1/4"	N40-15SM1	3.75	1.62	0.68	12KY	12LS	028-193

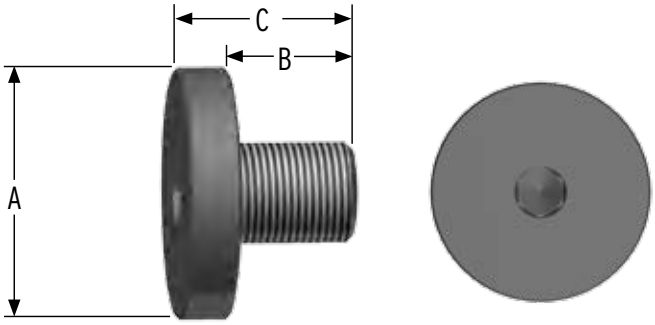
NMTB 50 TAPER

Size	Part Number	B	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	**N50-75SM1**	1.75	1.50	0.68	75KY	-	028-192
1"	**N50-10SM2**	2.25	2.00	0.68	10KY	10LS	028-188
1 1/4"	**N50-12SM2**	2.75	1.50	0.68	12KY	12LS	028-193
1 1/2"	**N50-15SM2**	3.75	2.40	0.94	15KY	15LS	-
2"	**N50-20SM2**	4.88	2.40	0.94	20KY	20LS	-
2 1/2"	**N50-25FM2**	5.061	2.50	1.12	25KY	25LS	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

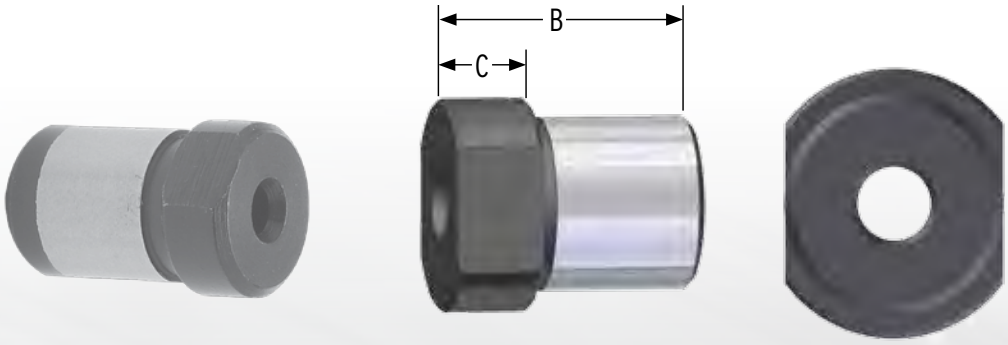
SCREW AND DRIVE KEYS

Shell Mill Screw 10LS shown here.



LOCK SCREWS/SOCKETHEAD CAP SCREWS

Part Number	A	B	C	Thread	Hex	Style	Torque ft. lbs.
75LS	.88	.38	.97	3/8 - 24	.250	Lock Screw	45
10LS	1.19	.28	1.20	1/2 -20	.312	Lock Screw	60
12LS	1.50	.50	1.38	5/8 - 18	.312	Lock Screw	70
15LS	1.88	.50	1.75	3/4 - 16	.375	Lock Screw	75
20LS	2.50	.50	1.94	1 - 14	.500	Lock Screw	100
25LS	3.12	.50	1.95	1 - 14	.500	Lock Screw	
028-188	.75	.50	1.75	1/2 -20	.375	Sockethead Cap Screw	60
028-192	.56	.37	1.37	3/8 - 24	.312	Sockethead Cap Screw	45
028-193	.94	.62	1.87	5/8 - 18	.500	Sockethead Cap Screw	70

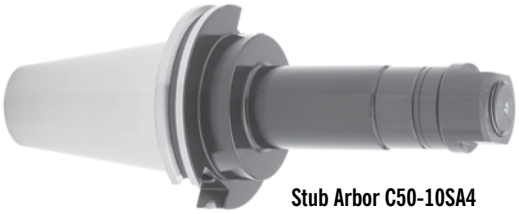


DRIVE KEYS

Part Number	Key	B	C
75KY	.31	.52	.16
10KY	.38	.67	.19
12KY	.50	.86	.25
15KY	.62	1.04	.31
20KY	.75	1.10	.38
25KY	1.00	1.23	.50

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

STUB ARBOR HOLDERS



Stub Arbor C50-10SA4 shown here.

- Constructed of alloy steel for long, durable service life.
- Hardened to Rc: 56-60 for long, durable service life.
- Shiny taper with black oxide finish for the best combination of accuracy and durability.
- Arbor Shaft T.I.R. ≤.0002".
- ParSymmetry design for high-speed operation.

See Manufacturing Specifications section in the back of the catalog for details.

Style 1

Style 2

System Accessories

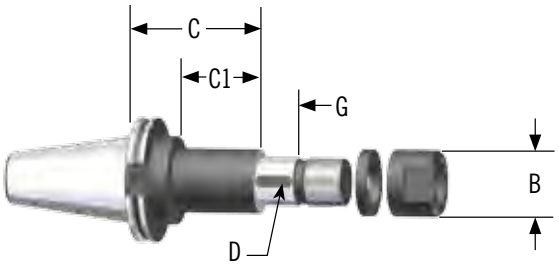
Stub Arbor Lock Screw

Stub Arbor Spacer

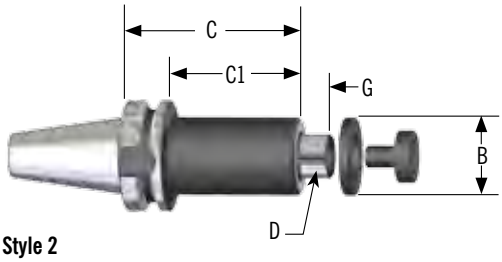
COLLET RANGE SPECIFICATIONS SPACERS (INCL.) - NUMBER THICKNESS

Pilot Size		0.125	0.25	0.375	0.5	0.75	Drive Key (Incl.)	Lock Screw (Incl.)
1"	1	014-906	-	014-907	-	014-908	SAK-10	013-502
1"	2	014-906	014-921	014-907	-	-	SAK-V10	10LS
1 1/4"	1	014-903	-	014-904	-	014-905	SAK-12	013-503
1 1/4"	2	-	014-915	014-904	-	-	SAK-V12	12LS
1 1/2"	1	014-909	-	014-910	-	014-911	SAK-15	013-501
1 1/2"	2	014-909	014-902	-	014-901	-	SAK-V15	15LS
2"		014-912	-	014-913	-	014-914	SAK-20	013-500

BT & CAT STUB ARBOR HOLDERS



Style 1



Style 2

BT 40 TAPER

Size	Part Number	Style	C	C1	G	D	Pilot Size	B	Drive Key (Incl.)	Lock Screw (Incl.)
1"	B40-10SA400	2	4	2.97	0.72	0.25	1	1.75	SAK-V10	10LS
1 1/4"	B40-12SA400	2	4	2.94	0.72	0.31	1.25	1.75	SAK-12	013-503

CAT 40 TAPER

Size	Part Number	Style	C	C1	G	D	Pilot Size	B	Drive Key (Incl.)	Lock Screw ((Incl.)
1"	C40-10SA4	1	4	2.62	1.25	0.25	1	1.56	SAK-10	013-502
	C40-10SA400	2	4	3.25	0.72	0.25	1	1.75	SAK-V10	10LS
1 1/4"	C40-12SA4	1	4	2.45	1.25	0.31	1.25	1.88	SAK-12	013-503
	C40-12SA400	2	4	3.25	0.72	0.31	1.25	1.75	SAK-V12	12LS
1 1/2"	C40-15SA400	2	4	1.5	0.98	0.37	1.5	2.12	SAK-V15	15LS

CAT 50 TAPER

Size	Part Number	Style	C	C1	G	D	Pilot Size	B	Drive Key (Incl.)	Lock Screw (Incl.)
1"	C50-10SA4	1	4	2.62	1.25	0.25	1	1.56	SAK-10	013-502
	C50-10SA500	2	5	1.7	0.72	0.25	1	1.5	SAK-V10	10LS
	C50-10SA6	1	6	4.62	1.25	0.25	1	1.56	SAK-10	013-502
1 1/4"	C50-12SA4	1	4	2.62	1.25	0.31	1.25	1.88	SAK-12	013-503
	C50-12SA6	1	6	4.62	1.25	0.31	1.25	1.88	SAK-12	013-503
	C50-12SA600	2	6	1.5	0.72	0.31	1.25	1.75	SAK-V12	12LS
1 1/2"	C50-15SA4	1	4	2.62	1.25	0.37	1.5	2	SAK-15	013-501
	C50-15SA6	1	6	2.62	1.25	0.37	1.5	2	SAK-15	013-501
	C50-15SA600	2	6	1.62	0.98	0.37	1.5	2.12	SAK-V15	15LS
2"	C50-20SA6	1	6	5.25	1.25	0.5	2	2.75	SAK-20	013-500

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.

SPACERS & NUTS

Stub Arbor Spacer 014-921 and Stub Arbor Nut 013-502 shown here.

SPACERS

Part Number	Arbor Size	Thickness
014-901	1.50	.500
014-902	1.50	.250
014-903	1.25	.125
014-904	1.25	.375
014-905	1.25	.750
014-906	1.00	.125
014-907	1.00	.375
014-908	1.00	.750
014-909	1.50	.125
014-910	1.50	.375
014-911	1.50	.750
014-912	2.00	.125
014-913	2.00	.375
014-914	2.00	.750
014-915	1.25	.250
014-921	1.00	.250

NUTS

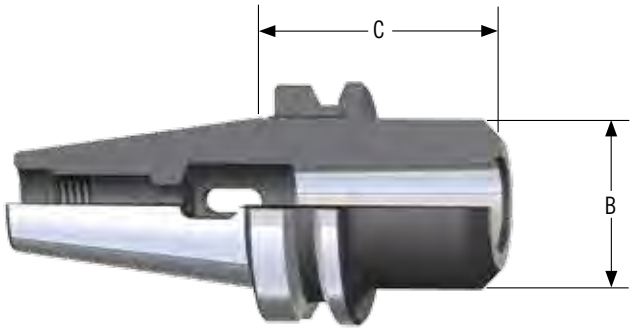
Part Number	Arbor Size	Thread Size	Length
013-502	1.00	1.00 -14	1.00
013-503	1.25	1.25 - 12	1.25
013-501	1.50	1.50 - 12	1.50
013-500	2.00	2.00 - 12	1.75

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

MORSE TAPER HOLDERS

Morse Taper Holder
C40-03MT2 shown here.

- Constructed of alloy steel for long, durable service life.
- Hardened to Rc: 56-60 for long service life.
- Shiny taper with black oxide finish for the best combination of accuracy and durability.
- Taper T.I.R. ≤.0002".
- ParSymmetry design for high-speed operation.
  See Manufacturing Specifications section in the back of the catalog for details.



BT 40 TAPER

Part Number	Taper Size	A (Dia.)	B (Dia.)	C
B40-02MT1	2	0.7	1.75	1.75
B40-03MT2	3	0.938	1.75	2.5

NMTB 40 TAPER

Part Number	Taper Size	A (Dia.)	B (Dia.)	C
N40-03MT2	3	0.938	1.75	2.5
N40-04MT3	4	1.231	2	3.5

CAT 40 TAPER

Part Number	Taper Size	A (Dia.)	B (Dia.)	C
C40-01MT1	1	0.475	1.75	1.75
C40-02MT1	2	0.7	1.75	1.75
C40-03MT2	3	0.938	1.75	2.5
C40-04MT3	4	1.231	2	3.5

NMTB 50 TAPER

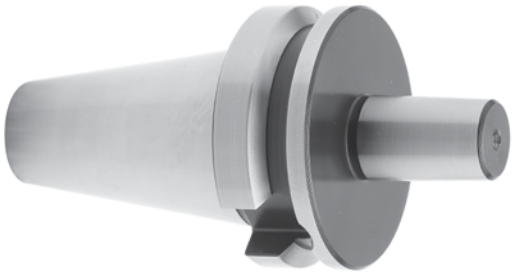
Part Number	Taper Size	A (Dia.)	B (Dia.)	C
N50-02MT1	2	0.7	2.75	1.5
N50-03MT2	3	0.938	2.25	2.31
N50-04MT3	4	1.231	2.25	3.18
N50-05MT4	5	1.748	2.75	4.75

CAT 50 TAPER

Part Number	Taper Size	A (Dia.)	B (Dia.)	C
C50-01MT1	1	0.475	2.75	1.5
C50-02MT1	2	0.7	2.75	1.5
C50-03MT2	3	0.938	2.25	2.31
C50-04MT3	4	1.231	2.25	3.18
C50-05MT4	5	1.748	2.75	4.75

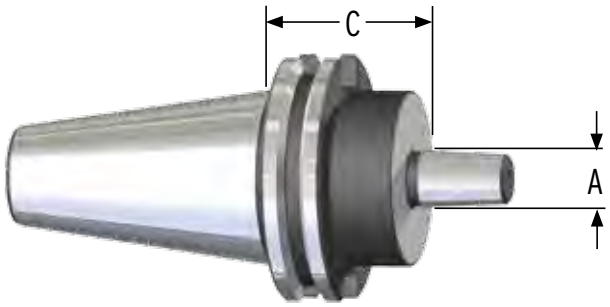
Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.

JACOBS TAPER HOLDERS



Jacobs Taper Arbor
B40-3JT1 shown here.

- Constructed of alloy steel for long, durable service life.
- Hardened to Rc: 56-60 for long service life.
- Shiny taper with black oxide finish for the best combination of accuracy and durability.
- Taper T.I.R. ≤.0002".
- ParSymmetry design for high-speed operation.
  See Manufacturing Specifications section in the back of the catalog for details.



BT 40 TAPER

Part Number	Arbor Size	A (Dia.)	C
B40-02JT1	02	0.559	1.18
B40-03JT1	03	0.811	1.18
B40-06JT1	06	0.676	1.18
B40-33JT1	33	0.624	1.18

NMTB 30 TAPER

Part Number	Arbor Size	A (Dia.)	C
N30-02JT1	02	0.559	1
N30-03JT1	03	0.811	1
N30-06JT1	06	0.676	1
N30-33JT1	33	0.624	1

CAT 40 TAPER

Part Number	Arbor Size	A (Dia.)	C
C40-02JT1	02	0.559	1.5
C40-03JT1	03	0.811	1.5
C40-04JT1	04	1.124	1.5
C40-06JT1	06	0.676	1.5
C40-33JT1	33	0.624	1.5

NMTB 40 TAPER

Part Number	Arbor Size	A (Dia.)	C
N40-02JT1	02	0.559	1
N40-03JT1	03	0.811	1
N40-04JT1	04	1.124	1
N40-06JT1	06	0.676	1
N40-33JT1	33	0.624	1

CAT 50 TAPER

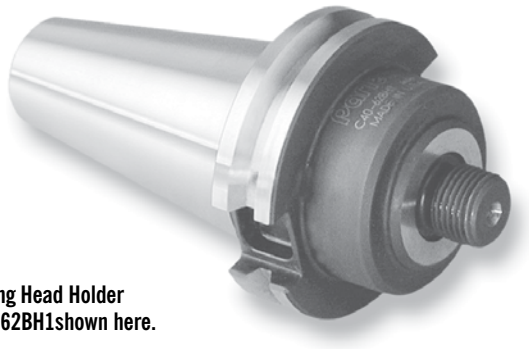
Part Number	Arbor Size	A (Dia.)	C
C50-02JT1	02	0.559	1.5
C50-03JT1	03	0.811	1.5
C50-04JT1	04	1.124	1.5
C50-06JT1	06	0.676	1.5
C50-33JT1	33	0.624	1.5

NMTB 50 TAPER

Part Number	Arbor Size	A (Dia.)	C
N50-03JT1	03	0.811	1.5
N50-04JT1	04	1.124	1.5
N50-33JT1	33	0.624	1.5

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.

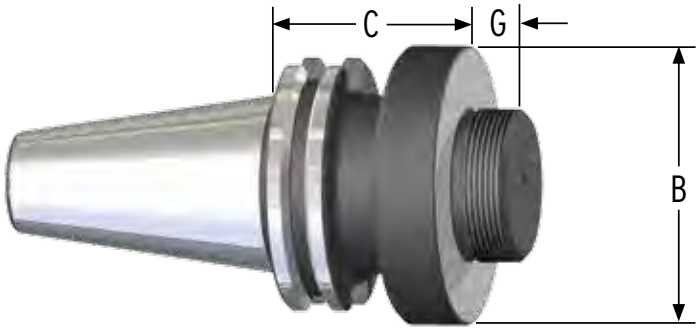
BORING HEAD HOLDERS



Boring Head Holder C40-62BH1shown here.

- Constructed of alloy steel for long, durable service life.
- Hardened to Rc: 56-60 for long service life.
- Shiny taper with black oxide finish for the best combination of accuracy and durability.
- ParSymmetry design for high-speed operation.

*See Manufacturing Specifications section in the back of the catalog for details.



CAT 40 TAPER

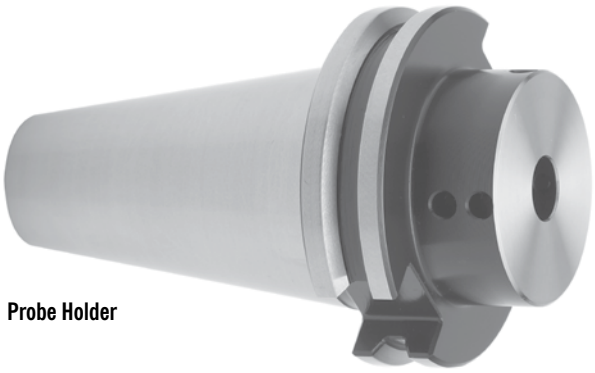
Part Number	Thread Size	B	C	G	Thread
C40-87BH1	7/8"-20	1.75	1.5	0.44	7/8" -20
C40-15BH188	1 1/2"-18	2.73	1.88	0.56	1 1/2" - 18

CAT 50 TAPER

Part Number	Thread Size	B	C	G	Thread
C50-15BH1	1 1/2"-18	2.75	1.5	0.5	1 1/2" - 18

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.

PROBE HOLDERS

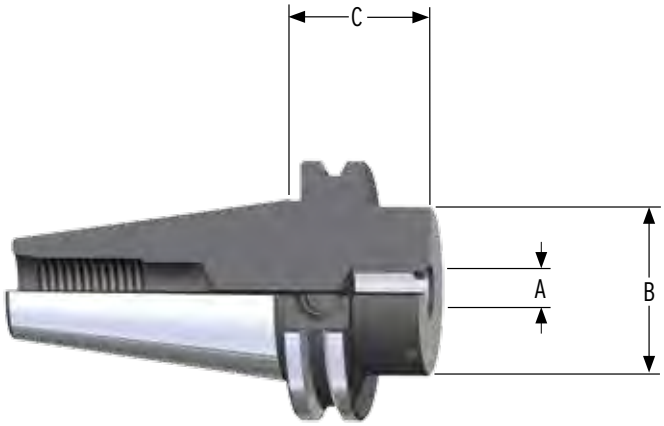


Probe Holder

For manual setting & inspection

- Constructed of alloy steel for long, durable service life.
- Shiny taper with black oxide finish for the best combination of accuracy and durability.

See Manufacturing Specifications section in the back of the catalog for details.



BT 30 TAPER

Part Number	Taper Type	A (Dia.)	B (Dia.)	C	Set Screw (Incl.)
B30H-M11PH1	BT30Haas	.440"	1.625	1.702	029-092
B30-M11PH1	BT30				

BT 40 TAPER

Part Number	Taper Type	A (Dia.)	B (Dia.)	C	Set Screw (Incl.)
B40-M11PH1	BT40	.440"	1.625	1.702	029-092
B50-M11PH1	BT50			2.136	

CAT 40 TAPER

Part Number	Taper Type	A (Dia.)	B (Dia.)	C	Set Screw (Incl.)
C40-M11PH1	CAT40	.440"	1.625	1.39	029-092

CAT 50 TAPER

Part Number	Taper Type	A (Dia.)	B (Dia.)	C	Set Screw (Incl.)
C50-M11PH1	CAT50	.440"	1.625	1.39	029-092

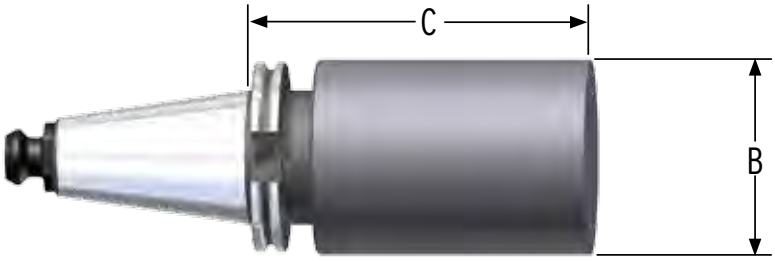
Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.

BLANK BARS

Blank Bar C50-40BB12 shown here.

- Constructed of ANSI 8620 for long, durable service life.
- Taper hardened to Rc: 56-60 for long service life.
- Body hardened to Rc: 15-30 to allow for machining.
- Shiny taper with black oxide finish for the best combination of accuracy and durability.
- ParSymmetry design for high-speed operation.

*See Manufacturing Specifications section in the back of the catalog for details.



BLANK BARS

Part Number	Taper Type	B	C
B30-23BB500	BT30	2.38	5
B40-30BB700	BT40	3	7
C40-25BB8	CAT40	2.5	8
C50-27BB8	CAT50	2.75	8
C50-40BB1	CAT50	4	11
C50-40BB7	CAT50	4	7
C50-61BB7	CAT50	6.12	7
N40-25BB512	NMTB40	2.5	5.12

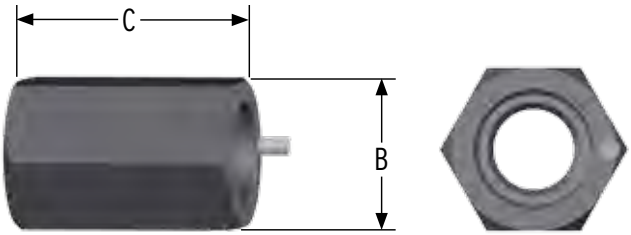
Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Order Retention Knobs separately, see pages 130-132.

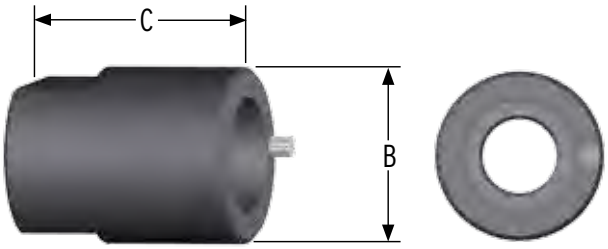
TIGHTENING FIXTURES

Taper Type Fixture
TF40 shown here.

BENCH OR VISE MOUNT TYPE

Part Number	Taper Size	B	C	Thread	Style
TF30	30	2.50	3.50	3/8 - 16	Hex
TF40	40	2.50	4.00	3/8 - 16	Hex
TF50	50	4.25	5.50	3/8 - 16	Flats - 3.50





BENCH MOUNT SWIVEL:

- For Tool locking and retention knob mounting.
- Mounts directly to workbench.

BENCH MOUNT SWIVEL

Part Number	Taper Size
TFBS30	BT30
TFBS40	CAT40/BT40
TFBS50	CAT50/BT50
TFBSH63	HSK63A
TFBSH100	HSK100A

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

RETENTION KNOBS

NEW! As part of Parlec's ongoing initiative to improve our product's performance, all retention knobs now have a piloted design.

ANSI Type
40TRK shown here.

Parlec offers retention knobs for over 100 styles of machine tools

- Material, heat treat, and dimensions are to ANSI specifications.
- Manufactured using alloy steel.
- Case hardened to ensure long service life.
- Core is tempered for tough shock resistance.

WARNING: Machine tool manufacturers have used many various styles and sizes of retention knobs. They often look very similar and appear to be interchangeable. The use of the incorrect knob, or the incorrect use of a knob, may result in injury or property damage. It is the responsibility of the end user to check that the supplied knobs are correct for the machine tool and taper type.

MAS BT Type
4001TRK shown here.

It is very important not to intermix metric retention knobs with inch toolholders. Be sure to fully tighten the retention knob. Failure to do so may result in the toolholder coming loose during operation.

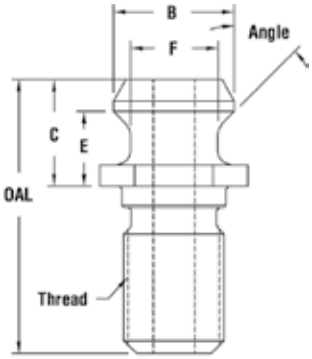
The use of a sealing and or thread lock is recommended. Overtightening may cause a toolholder taper deformation.

Ordering Instructions:

Please provide a drawing of your knob or supply the information on the retention knob quotation request sheet on page 130.

DIN Type
DIN50ATRK shown here

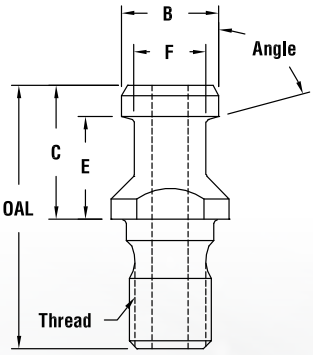
40TRK shown here.



ANSI/ISO RETENTION KNOBS

Part Number	Thread	Angle	OAL	B	C	E	F	Coolant Hole	Specification/Feature
40NTRK	5/8 - 11	45	1.68	.740	.640	.440	.490	-	ANSI STD Solid
40TRK	5/8 - 11	45	1.68	.740	.640	.440	.490	.281	ANSI STD
50NTRK	1 - 8	45	2.54	1.140	1.000	.700	.820	-	ANSI STD Solid
50TRK	1 - 8	45	2.54	1.140	1.000	.700	.820	.468	ANSI STD
A40TRK	M16 - 2	45	1.65	.740	.640	.440	.490	.281	ANSI For Metric Shank
A50TRK	M24 - 3	45	2.58	1.140	1.000	.700	.820	.468	ANSI For Metric Shank
M50TRK	1 - 8	45	2.30	1.140	1.000	.700	.820	.468	MAZAK O-Ring Seal Groove

DIN50ATRK shown here.

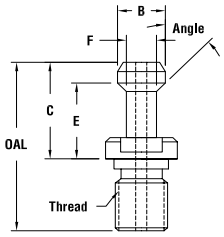


DIN RETENTION KNOBS

Part Number	Thread	Angle	OAL	B	C	E	F	Coolant Hole	Specification/Feature
4030TRK	5/8 - 11	75	2.06	.747	1.020	.788	.550	.281	DIN For Inch Shank
5030TRK	1" - 8	75	2.88	1.100	1.345	.990	.827	.468	DIN For Inch Shank
DIN40ATRK	M16 - 2	75	2.12	.747	1.024	.788	.549	.276	DIN STD Coolant

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

4009TRKC shown here.



MAS BT RETENTION KNOBS

Part Number	Thread	Angle	OAL	B	C	E	F	Coolant Hole	Specification/Feature
3001TRK	1/2-13	45	1.42	.393	.787	.630	.236	-	CHIRON INCH SHANK
3002TRK	M12-1.75	45	1.42	.393	.787	.630	.236	-	CHIRON METRIC SHANK
3003TRK	M12-1.75	45	1.70	.430	.908	.710	.273	-	MAS BT 45 DEG
3003TRKC	M12-1.75	45	1.70	.430	.908	.710	.273	.125	MAS BT 45 DEG
3004TRK	M12-1.75	60	1.70	.430	.908	.710	.273	-	MAS BT 60 DEG
4001TRK	5/8-11	90	2.32	.588	1.275	.988	.393	-	-
4001TRKC	5/8-11	90	2.32	.588	1.275	.988	.393	.197	-
4002TRK	M16-2	90	2.36	.588	1.376	1.102	.393	-	MAS BT 90 DEG
4003TRK	M16-2	45	2.36	.588	1.376	1.102	.393	-	MAS BT 45 DEG
4003TRKC	M16-2	45	2.36	.588	1.376	1.102	.393	.197	-
4004TRK	M16-2	60	2.36	.588	1.376	1.102	.393	-	MAS BT 60 DEG
4005TRK	5/8-11	45	2.31	.588	1.268	.988	.393	-	-
4005TRKC	5/8-11	45	2.31	.588	1.268	.988	.393	.157	-
4008TRK	5/8-11	75	2.06	.744	1.024	.787	.549	-	-
4008TRKC	5/8-11	75	2.06	.744	1.024	.787	.549	.276	-
4009TRK	5/8-11	45	2.30	.588	1.264	.990	.393	-	-
4009TRKC	5/8-11	45	2.30	.588	1.264	.990	.393	.197	-
4010TRK	5/8-11	75	2.13	.748	1.142	.906	.551	.276	-
4014TRK	5/8-11	60	2.31	.588	1.268	.990	.393	-	-
4014TRKC	5/8-11	60	2.31	.588	1.268	.990	.393	.197	-
4020TRK	M16-2	15	2.26	.748	1.142	.905	.550	.276	-
5001TRK	1-8	90	3.31	.904	1.770	1.378	.667	-	-
5001TRKC	1-8	90	3.31	.904	1.770	1.378	.667	.250	-
5002TRK	M24-3	90	3.34	.904	1.770	1.378	.667	-	MAS BT 90 DEG
5003TRK	M24-3	45	3.34	.904	1.770	1.378	.667	-	MAS BT 45 DEG
5003TRKC	M24-3	45	3.34	.904	1.770	1.378	.667	.250	-
5004TRK	M24-3	60	3.34	.904	1.770	1.378	.667	-	MAS BT 60 DEG
5005TRK	1-8	45	3.33	.904	1.791	1.378	.667	-	-
5005TRKC	1-8	45	3.33	.904	1.791	1.378	.667	.250	-
5014TRK	1-8	60	3.31	.904	1.770	1.378	.667	-	-
5014TRKC	1-8	60	3.31	.904	1.770	1.378	.667	.250	-
5021TRK	1-8	90	2.77	.940	1.234	.907	.708	-	-
C400TRK	5/8-11	45	2.48	.588	1.436	1.137	.406	-	-
C400TRKC	5/8-11	45	2.48	.588	1.436	1.137	.404	.157	-
F40TRK	M16-2	45	1.85	.740	.752	.552	.490	-	FADAL BT40
M400TRK	5/8-11	90	1.91	.588	1.053	.777	.393	-	-
MAK050TRK	1-8	45	3.14	.904	1.780	1.386	.667	.236	MAKINO
MH500TRK	1-8	90	2.32	.904	1.780	1.386	.667	-	-
MS5034TRK	1-8	90	2.76	.940	1.218	.903	.706	.315	-
MZ40TRK	M16-2	45	1.85	.740	.752	.552	.490	.281	FADAL BT40

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

QUOTATION REQUEST SHEET

CONTACT INFORMATION

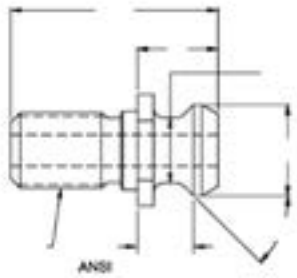
For quick response, just photocopy this page, complete all information (please include Part Print where appropriate) and simply FAX back to Parlec at 1-800-866-5917

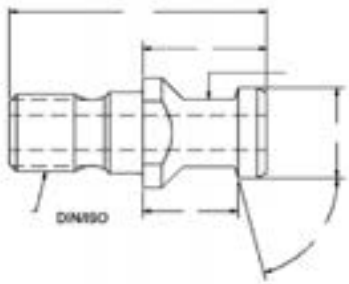
Company

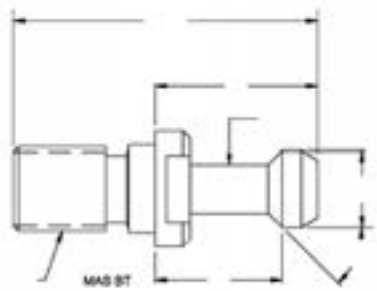
Contact Name | Title

Business Address | City | State | Zip

Phone | Fax | Email







If required knob is not shown, please select the most similar design and specify dimensions.

MACHINE CENTER INFORMATION

Machine Make _____

Machine Model _____

Taper Size _____

Coolant Hole Diameter _____

☐ Hole Through ☐ Partial Hole ☐ No Hole

Special Features _____

_____

_____

_____

_____

_____

_____

Toolholding

ANGLE HEADS BY GERARDI

Increase your system performance and profitability with an Evolution Angle Head.

Upgrade today to add vertical, horizontal and angular operations without the expense of adding a new machine.

EVOLUTION LINE

The Evolution line of Parlec by Gerardi angle head has been designed from a technical base derived from 40 years experience of solving thousands of production problems, finding optimum solutions and always guaranteeing the highest product quality. Over 30 standard angle head types are now offered, designed, built and distributed in more than 50 countries the worldwide by Gerardi S.p.A., and available with a range of options to complete their application and performance potentials.

Technical features

1. Minimum thermal expansion and high corrosion resistant treated steel body
2. Modularity: main shaft with interchangeable Drive Taper (Double contact) allows an EVOLUTION angle head to be used on other machining centers with different spindle types and sizes. It is also possible to exchange the anti-rotation (arrester) sub-assembly and the input drive taper with no effect on rigidity or accuracy.
3. All spindles are supported by pairs of preloaded angular contact ball bearings with ABEC 7/9 precision and long life lubrication.
4. Made with Gleason ground spiral bevel gears for optimization in torque availability.
5. More than 42 angle head types available.
6. Among the new range of angle head types the Slim series has reduced weights and overall dimensions with a minimum diameter of 35 mm.
7. Up to 150 psi (10 bar) coolant through the pin (Incl.) in the standard heads. Options include feeding coolantat 150 psi (10 bar) though the cutter spindle or at up to 1000 psi (70 bar) through the machine.
8. Designed for superior heat dissipation and for sustained periods of high speed operations.
9. 100% compatibility with heads installed during the last 40 years (same anti-rotation/arrester pin and stop block dimensions).
10. Parlec by Gerardi Evolution angle heads have been designed and are manufactured in Italy. They are covered by 1 year warranty.

ATC SERIES

from page 142 to 171

ATC angle heads are ideal for CNC machines with automatic tool change and can be automatically transferred from the tool store to the machine spindle and vice-versa.

The orientation ring and arrester arm support ring are both 360° adjustable to allow the best angular orientation. On FMU heads, the cutter spindle housing can be adjusted at ±90°.

If an ATC angle head is not placed into the machine spindle, a locking system prevents shank rotation relative to the head body.

MTC SERIES

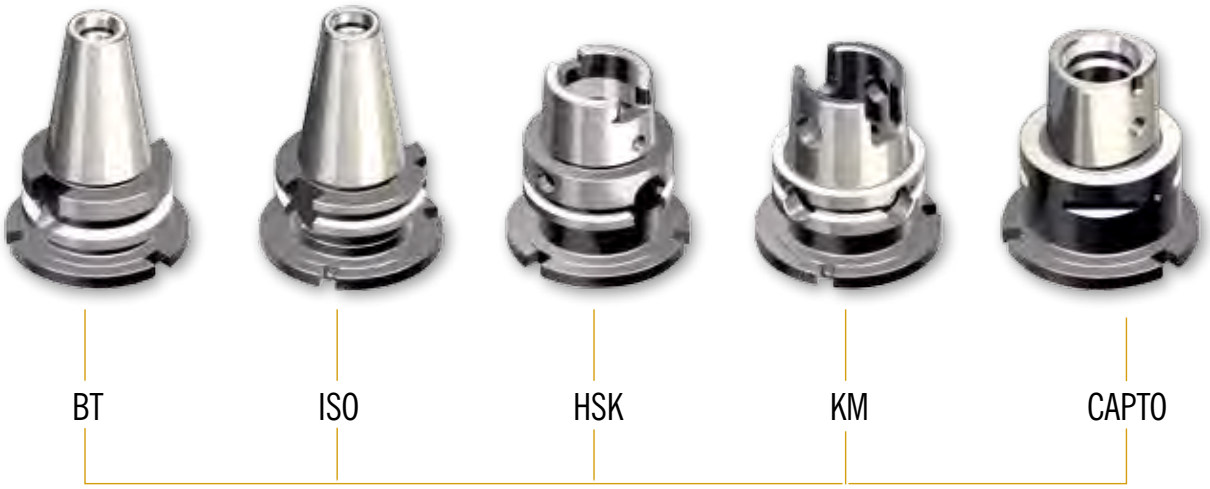
from page 172 to 178

This range of angle heads is for conventional machines without automatic tool change. MTC angle heads (Manual Tool Change) are manually mounted on the machine headstock through a flange.

On FMU heads, the cutter spindle housing can be adjusted at ±90°.

ONE HEAD FOR MANY MACHINES

Interchangeable drive tapers to suit any machine spindle!



BT | ISO | HSK | KM | CAPTO

A CHOICE OF MODULAR INTERCHANGEABLE ARRESTER PINS

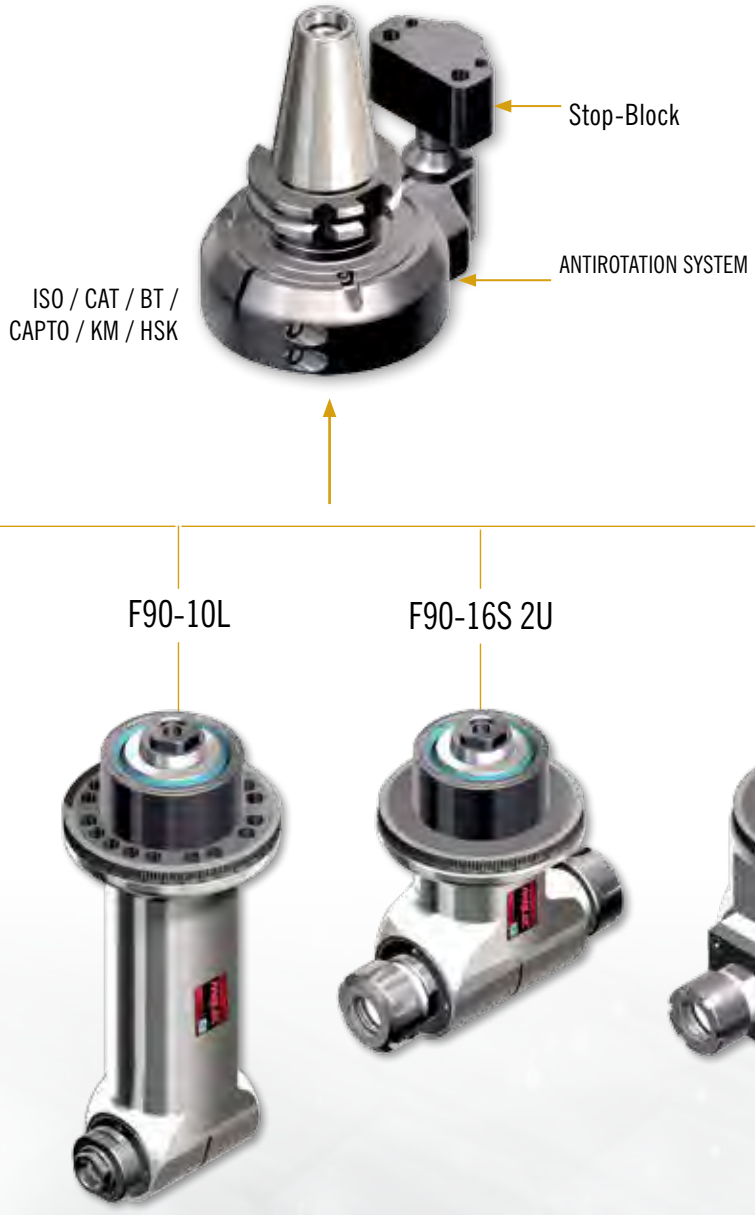
The unique Gerardi taper and face location ensures rigidity and accuracy!

QUICKEST RETURN ON YOUR INVESTMENT!

www.parlec.com | 1-800-866-5872 | PARLEC

THE SAME MACHINE WITH MANY HEADS

A system that reduces inventory costs!



BE READY FOR TOMORROW WITH THE HEAD YOU BUY TODAY!

ATC SERIES *EVOLUTION LINE*

AUTOMATIC TOOL CHANGE

DESIGN
The Compact design, along with mentioned specifications, allows for high performance speeds, and long tool life.

Case hardened and ground shank and shaft

Positioning pin with automatic release

Modular antirotation group

Graduated retaining ring

Standard 150Psi (10 bar) coolant through the pin

OUTPUT
- ER collet (standard)
- Weldon
- Shell mill holder
- Special

Treated steel head body with 360° position and internal air pressure, maximum rigidity and corrosion resistant. Minimum thermal expansion

Precision/lapped surface for accurate alignment

BEARINGS
Angular contact preloaded ball bearings of precision class ABEC 7/9

STOP BLOCK
with case hardened bushing and gasket

GEARS
Gleason ground spiral bevel gears maximum performances and minimum vibration

MTC SERIES *EVOLUTION LINE*

MANUAL TOOL CHANGE

This range of angle heads is for conventional machines without automatic tool change. MTC angle heads (Manual Tool Change) are manually mounted on the machine headstock through a flange.

DESIGN
The Compact design, along with mentioned specifications, allows: highest performances, high speeds, long tool life

Case hardened and ground shank and shaft

Universal flange

Graduated retaining ring

Output:
- ER collet (standard)
- Weldon
- Shell mill holder
- Special

Treated steel body with 360° position and internal air pressure, maximum rigidity and corrosion resistant. Minimum thermal expansion

BEARINGS
Angular contact preloaded ball bearings of precision class ABEC7/9

GEARS
Gleason ground spiral bevel gears maximum performances and minimum vibration

ATC SERIES *EVOLUTION LINE*

AUTOMATIC TOOL CHANGE

SLIM Series
Ideal for micromachining in narrow spaces.

	35 @ 3 MM tool shank - 39 @ 4 MM tool shank	
Application	1:1	8,000 RPM
Projection	225-260 MM	
Coolant	External piping through the pin	

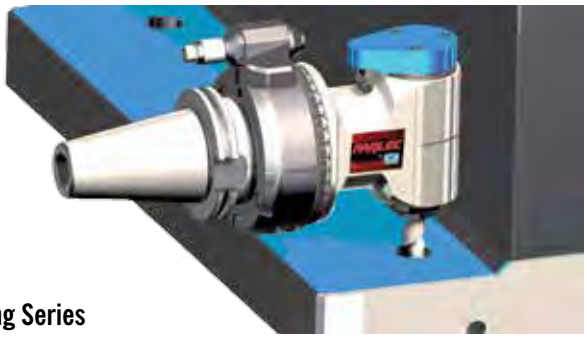
Long Series
Ideal for machining at extreme positions.

	68 @ 7 MM tool shank - 94 @ 10 MM tool shank		
Application	1:1	10,000 RPM	Opt. dual output spindles available
Projection	150-250 MM		
Coolant	External piping through the pin Optional through tool piped through the pin		

Offset Series
Ideal for machining in narrow spaces
with coolant input directly from machine spindle and output through the tool at 1,000 psi.

	73 @ 10 MM tool diameter	
Application	1:1	3,500 - 6,000 RPM
Projection	185-230 MM	
Coolant	1,000 psi through spindle coolant	

Milling Series
Ideal for milling, drilling, tapping at 90.



Milling Series
with Coolant Option
With coolant input from positioning pin and output through the tool.

	94 @ 10 MM tool shank - 187 @ 40 taper output		
Application	1:1	2,500-10,000 RPM	Optional dual output spindles available
Projection	150-275 MM		
Coolant	External piping through the pin Optional through tool piped through the pin		

Angular Series
Adjustable output at ±90°
for angular drilling, milling and tapping.

	35 @ 3 MM tool shank - 39 @ 4 MM tool shank	
Application	1:1	8,000 RPM
Projection	225-260 MM	
Coolant	External piping through the pin	

INTERNAL COOLANT OPTION ATC SERIES

F90-16
(Example shown here)

Standard 150 psi (10 bar) coolant through the positioning pin. Coolant piping can be added to direct the coolant towards the cutting edge. In addition piping can be added for adding low air pressure to keep residual coolant from entering gear box.

F90-16C 150 psi (10bar)
(Example shown here)

Coolant through the positioning pin and the tool, by rotating coolant seal distributor. All plumbing is supplied for customer application assembly.

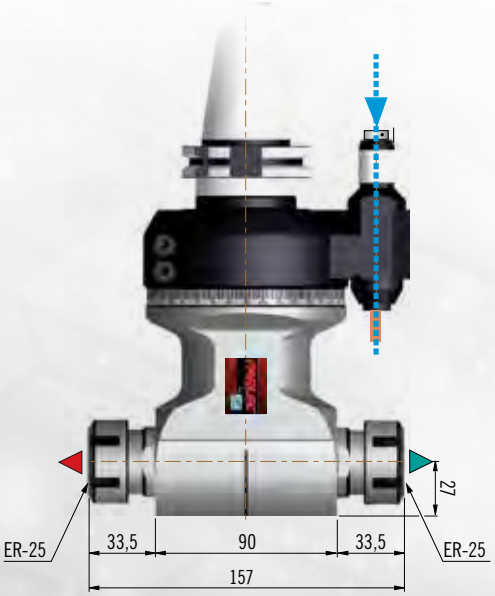
FR90-16S 1000 psi (70bar)
(Example shown here)

COOLANT SYSTEM FROM MACHINE
The offset design of the FR90 angle head series utilizes high pressure seals which allows through the spindle coolant up to 1000 psi (70bar).

DOUBLE OUTPUT OPTION ATC SERIES

F90-16SD
(Example shown here)

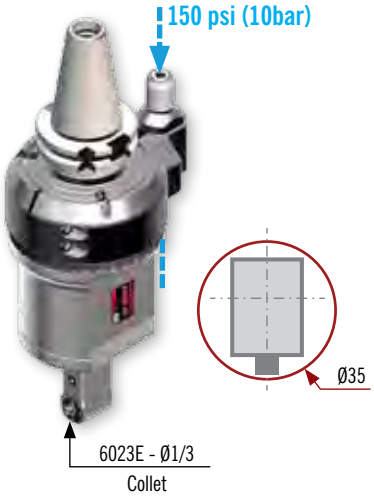
All double output heads one collet chuck with turn with the machine spindle and one will turn opposite.

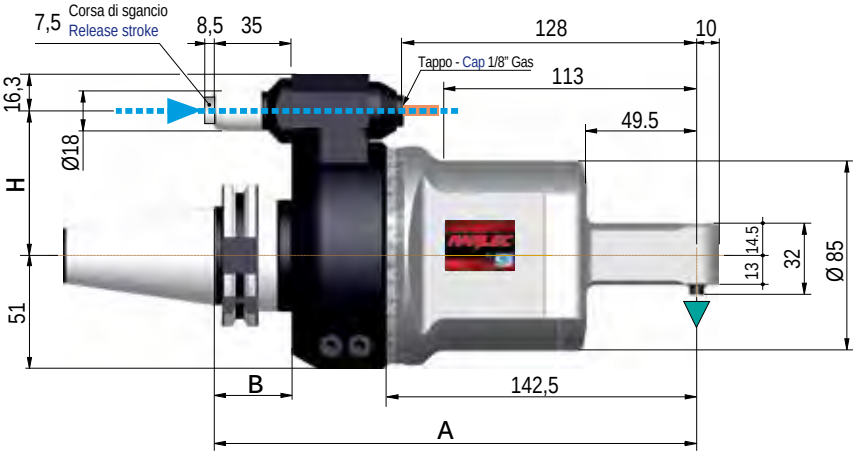


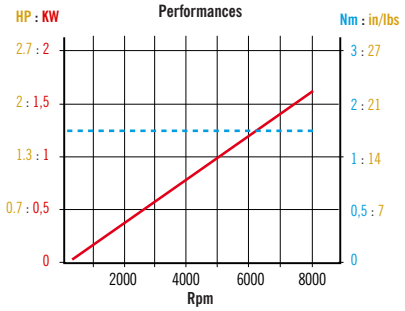
FS90-3

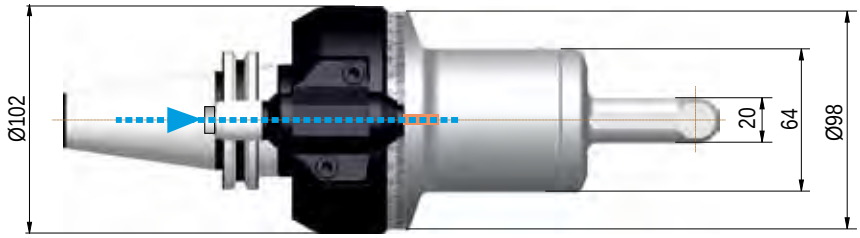
Anti-Rotation Interchangeability: TYPE 1 (See page 182)

(Option type 2 and 3 anti-rotation available see page 182.)









APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
6023E	1- 3 mm	1:1	8,000	16 lbs. (70 N)	17.7 in/ lbs. (2 Nm)	Positioning Pin	Same Spindle
					Configured for optional internal air pressure		

PRODUCT

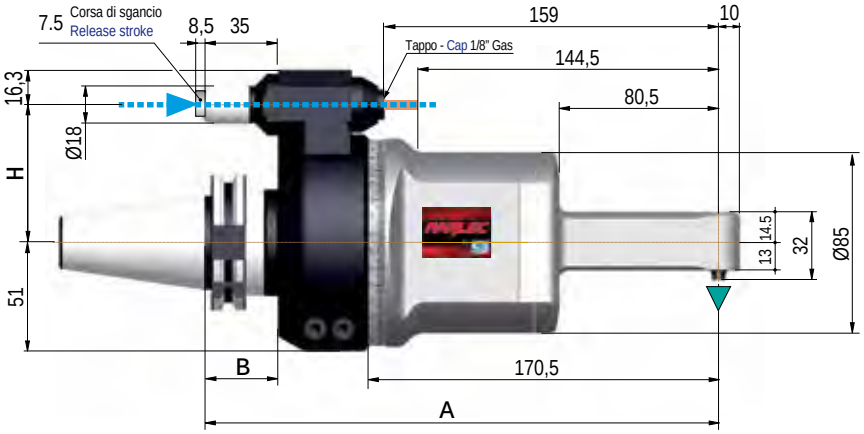
Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FS90-3-C40	CAT 40	8.52 (216.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	12.1 lbs. (5.5 kg)	Stop Block Wrenches Grease Instructions
FS90-3-B40	BT 40	8.52 (216.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	12.1 lbs. (5.5 kg)	
FS90-3-C50	CAT 50	8.52 (216.5)	1.38 (35)	3.149 (80)	-	16.5 lbs. (7.5 kg)	
FS90-3-H63	HSK63A	8.87 (225.5)	1.73 (44)	2.559 (65)	H=3.149 (80)	12.1 lbs. (5.5 kg)	
FS90-3-H100	HSK100A	8.87 (225.5)	1.81 (46)	3.149 (80)	-	16.5 lbs. (7.5 kg)	
	Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63						

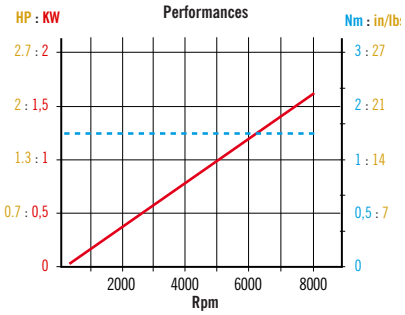
Order 6023E Collets seperately. See page 180.

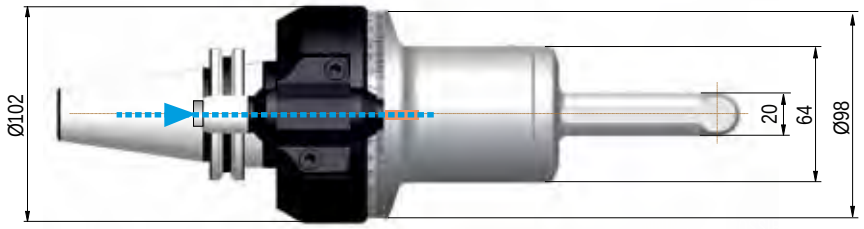
FS90-3L

Anti-Rotation Interchangeability: TYPE 1 (See page 182)

(Option type 2 and 3 anti-rotation available see page 182.)







APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
6023E	1- 3 mm	1:1	8,000	16 lbs. (70 N)	17.7 in/ lbs. (2 Nm)	Positioning Pin	Same Spindle
					Configured for optional internal air pressure		

PRODUCT

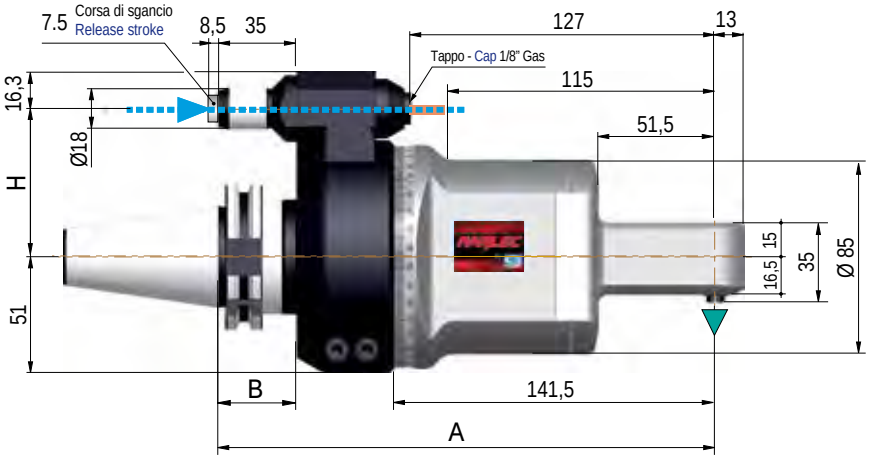
Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FS90-3L-C40	CAT 40	9.75 (247.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	14.1 lbs. (6.4 kg)	Stop Block Wrenches Grease Instructions
FS90-3L-B40	BT 40	9.75 (247.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	14.1 lbs. (6.4 kg)	
FS90-3L-C50	CAT 50	9.75 (247.5)	1.38 (35)	3.149 (80)	-	19 lbs. (8.6 kg)	
FS90-3L-H63	HSK63A	10.10 (255.5)	1.73 (44)	2.559 (65)	H=3.149 (80)	14.1 lbs. (6.4 kg)	
FS90-3L-H100	HSK100A	10.10 (255.5)	1.81 (46)	3.149 (80)	-	19 lbs. (8.6 kg)	
	Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63						

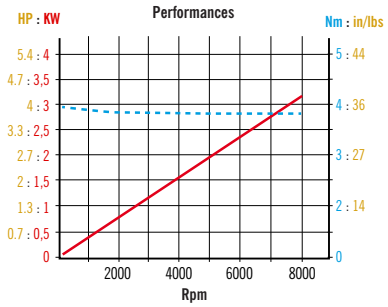
Order 6023E Collets seperately. See page 180.

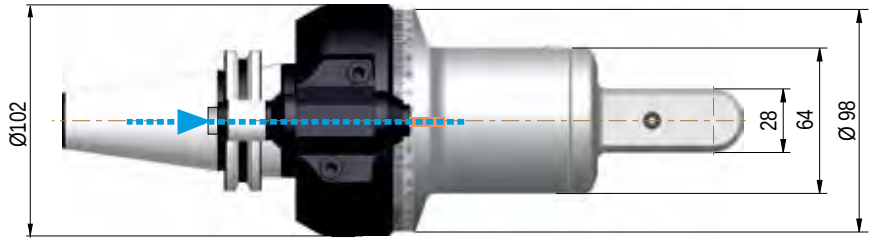
146 8,000 RPM Automatic Tool Change Slim Series

FS90-4

Anti-Rotation Interchangeability: TYPE 1 (See page 182)
(Option type 2 and 3 anti-rotation available see page 182.)







APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
600E	1- 4 mm	1:1	8,000	27 lbs. (120 N)	31 in/ lbs. (3.5 Nm)	Positioning Pin	Same Spindle
					Configured for optional internal air pressure		

PRODUCT

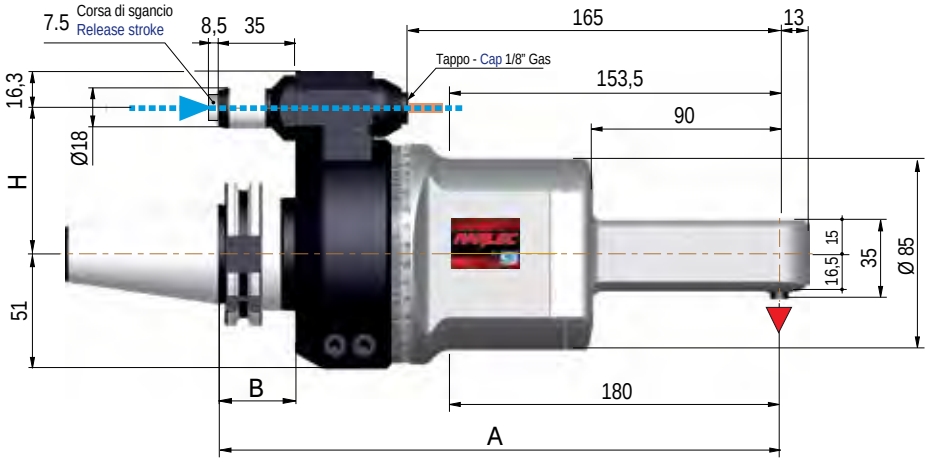
Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FS90-4-C40	CAT 40	8.60 (218.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	12.1 lbs. (5.5 kg)	Stop Block Wrenches Grease Instructions
FS90-4-B40	BT 40	8.60 (218.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	12.1 lbs. (5.5 kg)	
FS90-4-C50	CAT 50	8.60 (218.5)	1.38 (35)	3.149 (80)	-	16.5 lbs. (7.5 kg)	
FS90-4-H63	HSK63A	8.76 (222.5)	1.73 (44)	2.559 (65)	H=3.149 (80)	12.1 lbs. (5.5 kg)	
FS90-4-H100	HSK100A	8.76 (222.5)	1.81 (46)	3.149 (80)	-	16.5 lbs. (7.5 kg)	
	Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63						

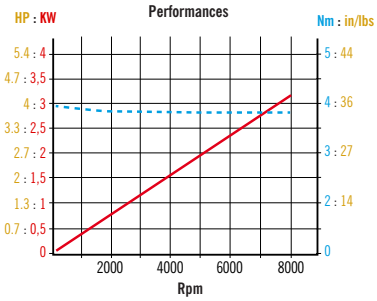
Order 600E Collets seperately. See page 180.

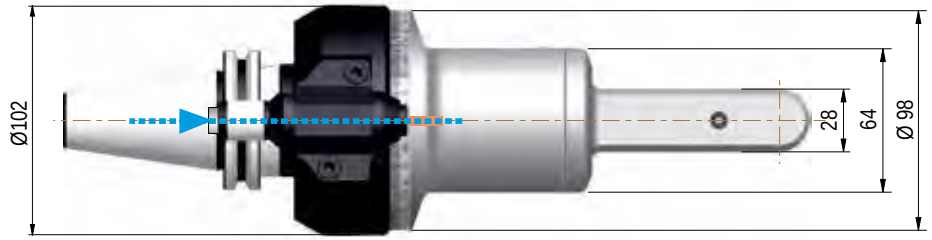
FS90-4L

Anti-Rotation Interchangeability: TYPE 1 (See page 182)

(Option type 2 and 3 anti-rotation available see page 182.)







DRY RUNNING NOT POSSIBLE

APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
600E	1- 4 mm	1:1	8,000	27 lbs. (120 N)	31 in/ lbs. (3.5 Nm)	Positioning Pin	Same Spindle
					Configured for optional internal air pressure		

PRODUCT

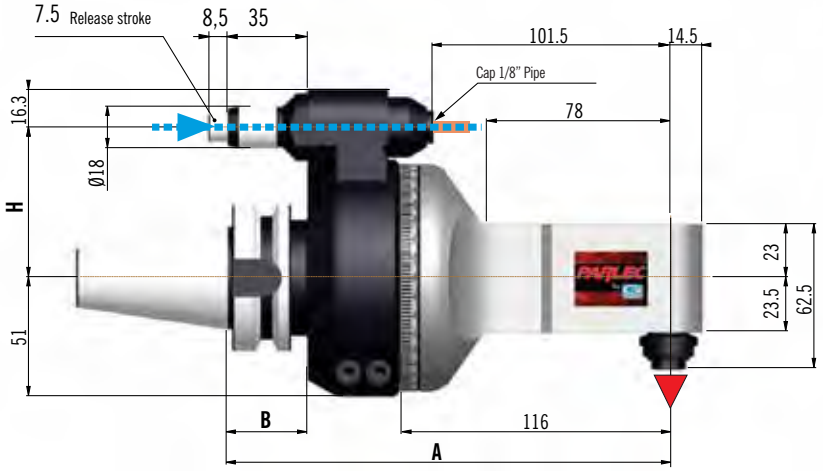
Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FS90-4L-C40	CAT 40	10.12 (257)	1.38 (35)	2.559 (65)	H=3.149 (80)	15 lbs. (6.8 kg)	Stop Block Wrenches Grease Instructions
FS90-4L-B40	BT 40	10.12 (257)	1.38 (35)	2.559 (65)	H=3.149 (80)	15 lbs. (6.8 kg)	
FS90-4L-C50	CAT 50	10.12 (257)	1.38 (35)	3.149 (80)	-	19.8 lbs. (9 kg)	
FS90-4L-H63	HSK63A	10.27 (261)	1.73 (44)	2.559 (65)	H=3.149 (80)	15 lbs. (6.8 kg)	
FS90-4L-H100	HSK100A	10.27 (261)	1.81 (46)	3.149 (80)	-	19.8 lbs. (9 kg)	
	Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63						

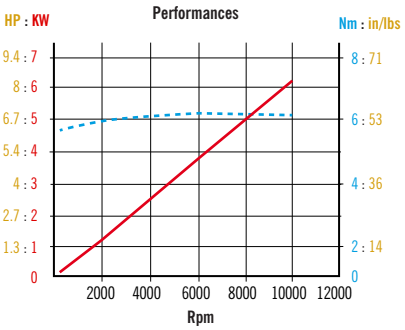
Order 600E Collets seperately. See page 180.

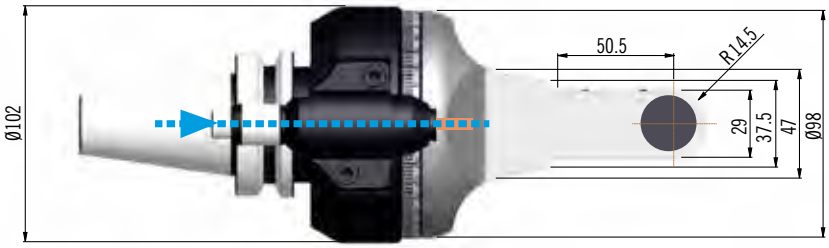
F90-7

Anti-Rotation Interchangeability: TYPE 1 (See page 182)

(Option type 2 and 3 anti-rotation available see page 182.)







APPLICATION SPECIFICATION

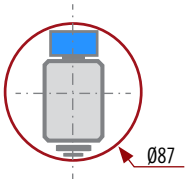
Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 11	.5- 7 mm	1:1	10,000	28 lbs. (127 N)	53 in/ lbs. (6 Nm)	Positioning Pin	Opposite Spindle
Optional Output Shaft: Double ER, Page 149 *Additional Output Shafts available: Weldon*					*Optional coolant: Through Spindle from Pin, Page 149* *Configured for optional internal air pressure*		

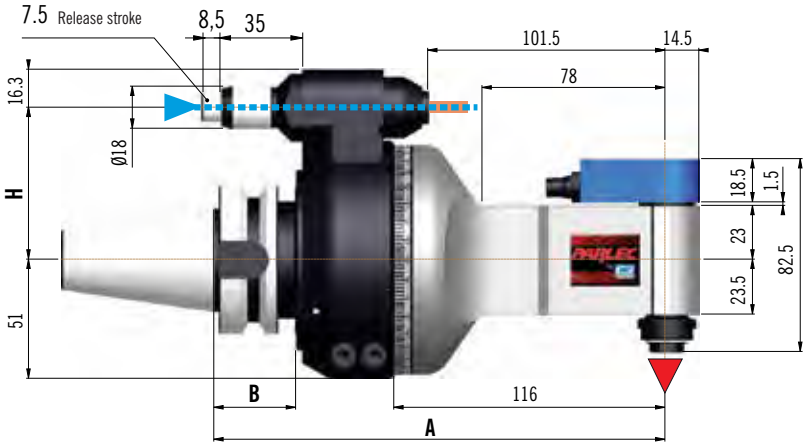
PRODUCT

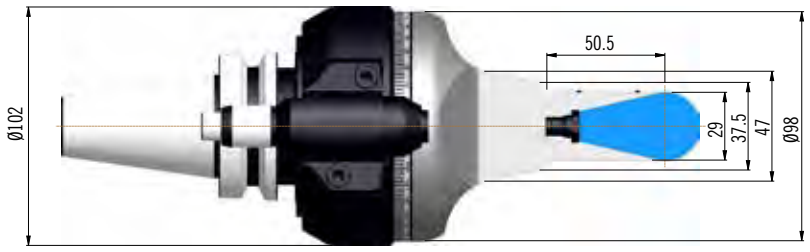
Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-7-C40	CAT 40	7.48 (190)	1.38 (35)	2.559 (65)	H=3.149 (80)	11 lbs. (5 kg)	Stop Block Wrenches Grease Instructions
F90-7-B40	BT 40	7.48 (190)	1.38 (35)	2.559 (65)	H=3.149 (80)	11 lbs. (5 kg)	
F90-7-C50	CAT 50	7.48 (190)	1.38 (35)	3.149 (80)	-	15.4 lbs. (7 kg)	
F90-7-H63	HSK63A	7.83 (199)	1.73 (44)	2.559 (65)	H=3.149 (80)	11 lbs. (5 kg)	
F90-7-H100	HSK100A	7.83 (199)	1.81 (46)	3.149 (80)	-	15.4 lbs. (7 kg)	
	Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63						

Order ER11 Collets seperately. See page 74–86.

F90-7C With optional 150 psi coolant piped though output shaft

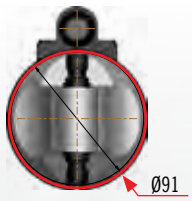


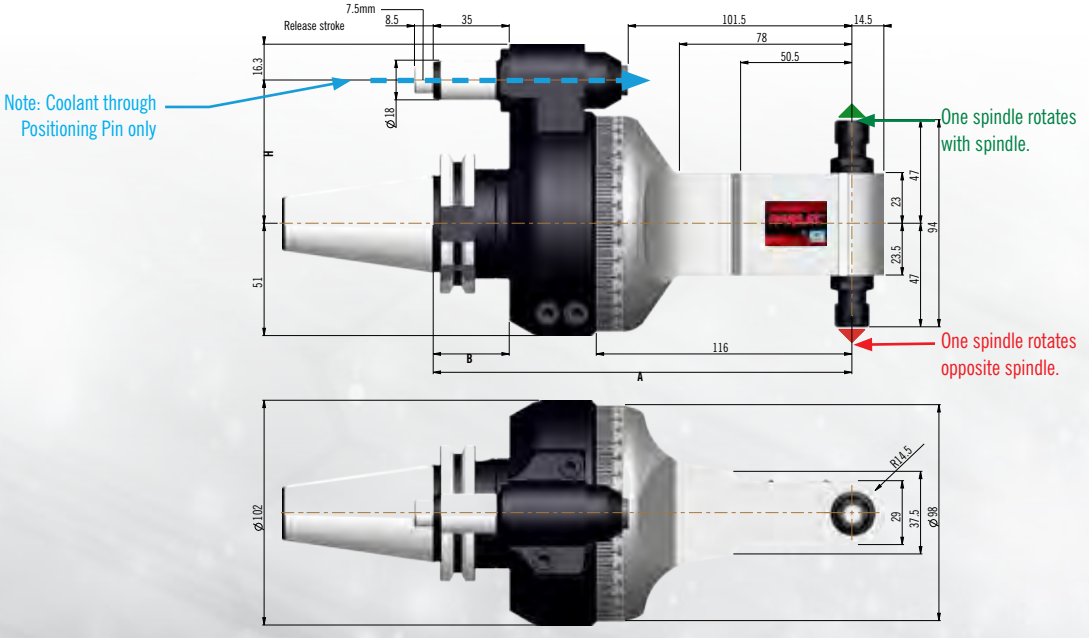




DRY RUNNING NOT POSSIBLE

F90-7D With optional double output

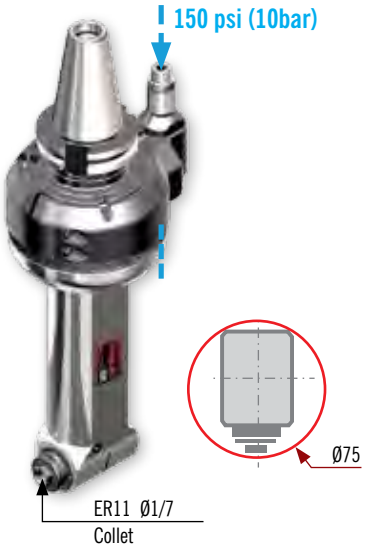


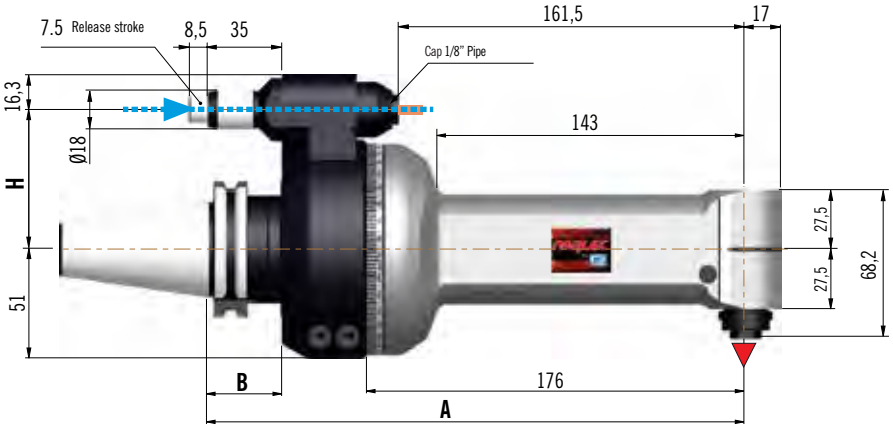


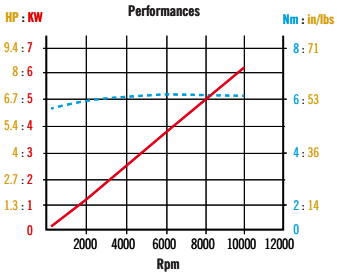
150 10,000 RPM Automatic Tool Change Long Milling Series

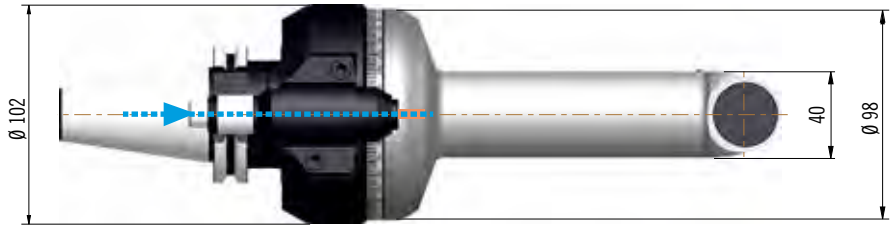
F90-7L

Anti-Rotation Interchangeability: TYPE 1 (See page 182)
(Option type 2 and 3 anti-rotation available see page 182.)









APPLICATION SPECIFICATION

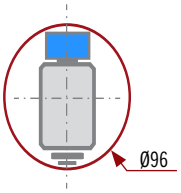
Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 11	.5- 7 mm	1:1	10,000	28 lbs. (127 N)	53 in/ lbs. (6 Nm)	Positioning Pin	Opposite Spindle
Optional Output Shaft: Double ER, Page 151 *Additional Output Shafts available: Weldon*					*Optional coolant: Through Spindle from Pin, Page 151* *Configured for optional internal air pressure*		

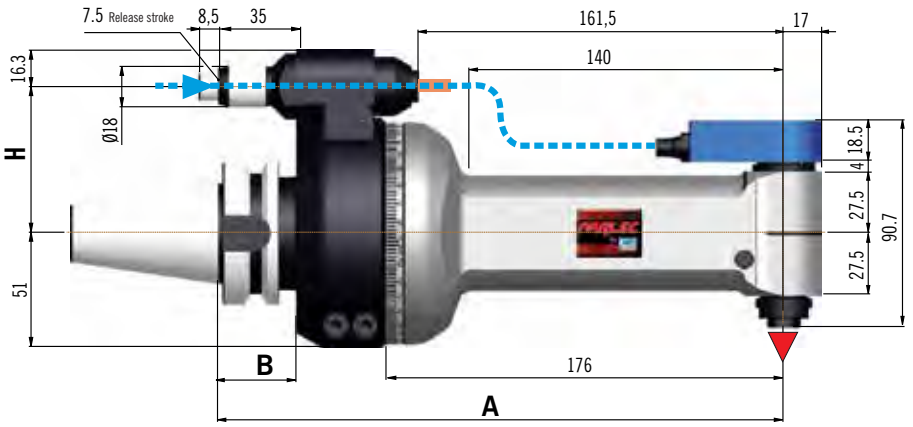
PRODUCT

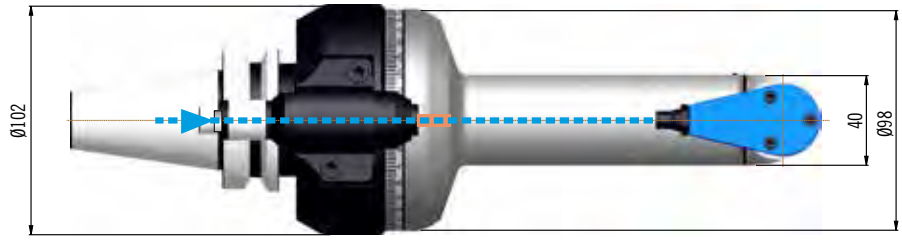
Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-7L-C40	CAT 40	9.84 (250)	1.38 (35)	2.559 (65)	H=3.149 (80)	13.8 lbs. (6.3 kg)	Stop Block Wrenches Grease Instructions
F90-7L-B40	BT 40	9.84 (250)	1.38 (35)	2.559 (65)	H=3.149 (80)	13.8 lbs. (6.3 kg)	
F90-7L-C50	CAT 50	9.84 (250)	1.38 (35)	3.149 (80)	-	18.7 lbs. (8.5 kg)	
F90-7L-H63	HSK63A	10.20 (259)	1.73 (44)	2.559 (65)	H=3.149 (80)	13.8 lbs. (6.3 kg)	
F90-7L-H100	HSK100A	10.20 (259)	1.81 (46)	3.149 (80)	-	18.7 lbs. (8.5 kg)	
	Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63						

Order ER11 Collets seperately. See page 74–86.

F90-7LC With optional 150 psi coolant piped though output shaft



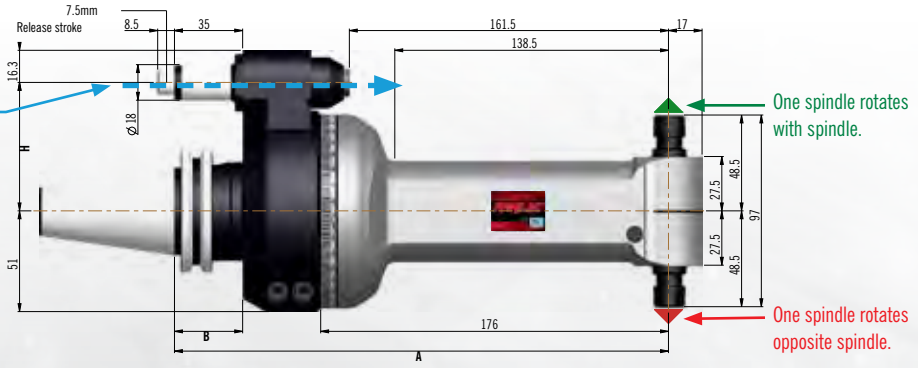


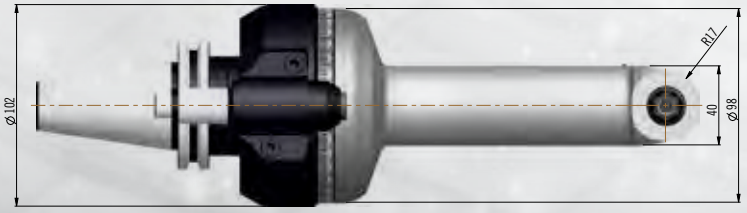


DRY RUNNING NOT POSSIBLE

F90-7LD With optional double output

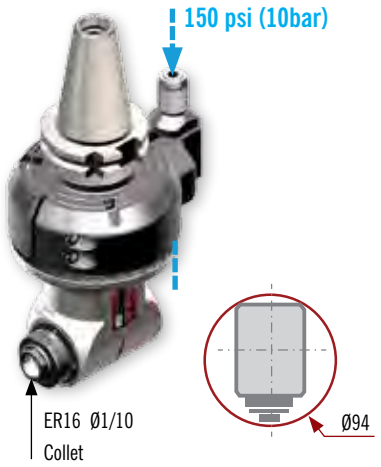
Note: Coolant through Positioning Pin only

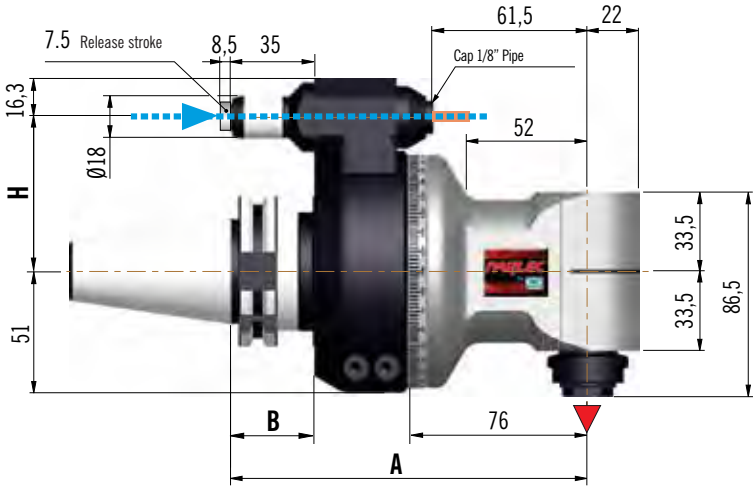


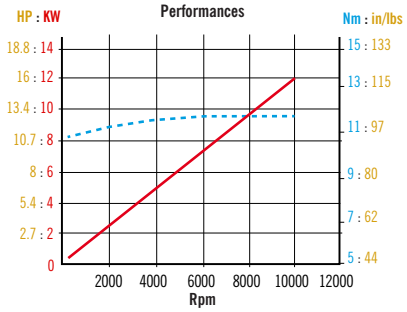


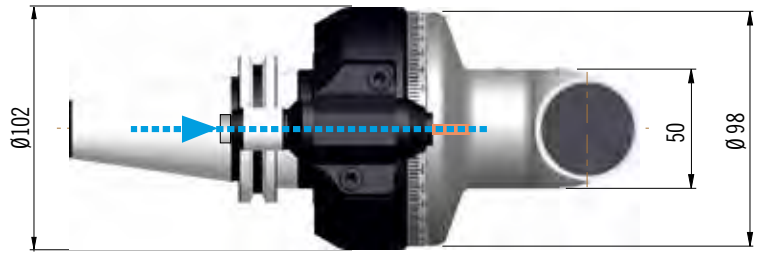
F90-10

Anti-Rotation Interchangeability: TYPE 1 (See page 182)
(Option type 2 and 3 anti-rotation available see page 182.)









APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 16	1-10 mm	1:1	10,000	90 lbs. (400 N)	97 in/ lbs. (11 Nm)	Positioning Pin	Opposite Spindle

Optional Output Shaft: Weldon and Double ER, Page 153
Additional Output Shafts available: Weldon, Shell Mill

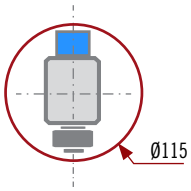
Optional coolant: Through Spindle from Pin, Page 153
Configured for optional internal air pressure

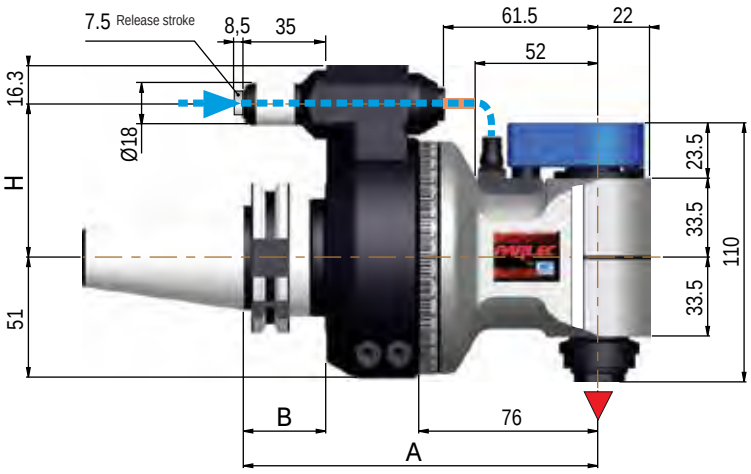
PRODUCT

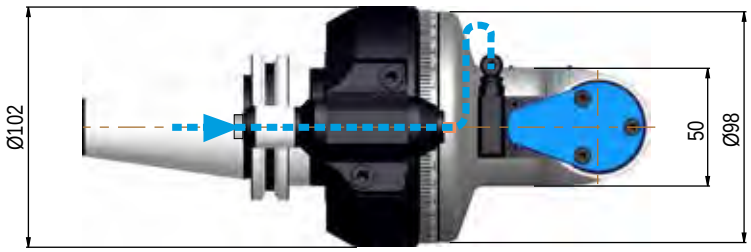
Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-10-C40	CAT 40	5.90 (150)	1.38 (35)	2.559 (65)	H=3.149 (80)	12.32 lbs. (5.6 kg)	Stop Block Wrenches Grease Instructions
F90-10-B40	BT 40	5.90 (150)	1.38 (35)	2.559 (65)	H=3.149 (80)	12.32 lbs. (5.6 kg)	
F90-10-C50	CAT 50	5.90 (150)	1.38 (35)	3.149 (80)	-	16.5 lbs. (7.5 kg)	
F90-10-H63	HSK63A	6.26 (159)	1.73 (44)	2.559 (65)	H=3.149 (80)	11.7 lbs. (5.3 kg)	
F90-10-H100	HSK100A	6.26 (159)	1.81 (46)	3.149 (80)	-	16.5 lbs. (7.5 kg)	
	Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63						

Order ER16 Collets seperately. See page 74–86.

F90-10C With optional 150 psi coolant piped though output shaft

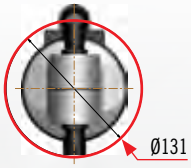


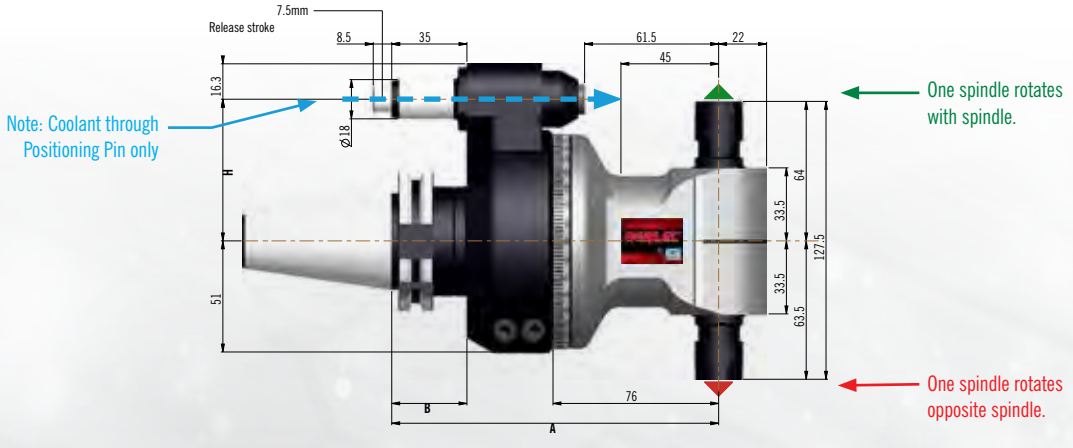


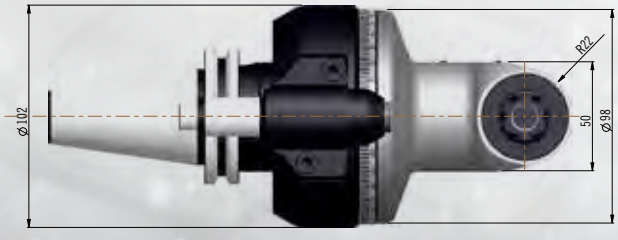


DRY RUNNING NOT POSSIBLE

F90-10D With optional double output



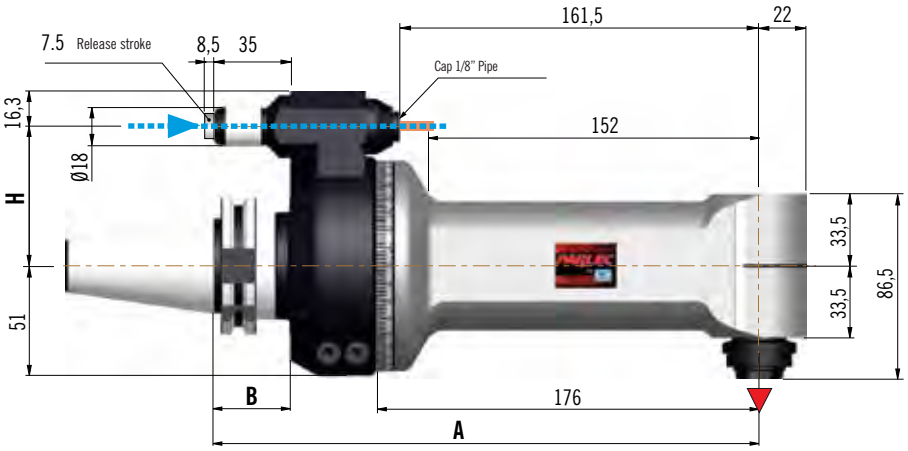


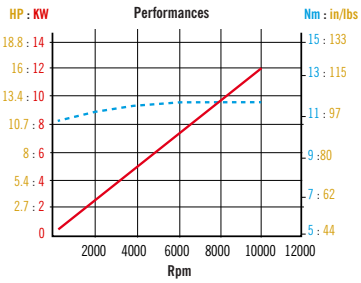


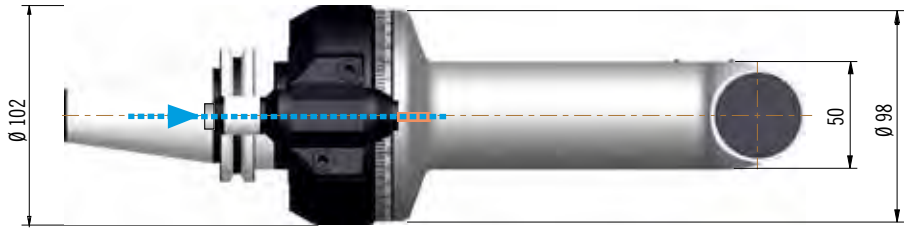
F90-10L

Anti-Rotation Interchangeability: **TYPE 1** (See page 182)

(Option type 2 and 3 anti-rotation available see page 182.)







APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 16	1-10 mm	1:1	10,000	90 lbs. (400 N)	97 in/ lbs. (11 Nm)	Positioning Pin	Opposite Spindle

Optional Output Shaft: Double ER, Page 155
Additional Output Shafts available: Weldon, Shell Mill

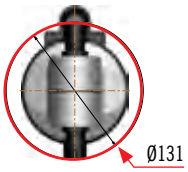
Optional coolant: Through Spindle from Pin, Page 155
Configured for optional internal air pressure

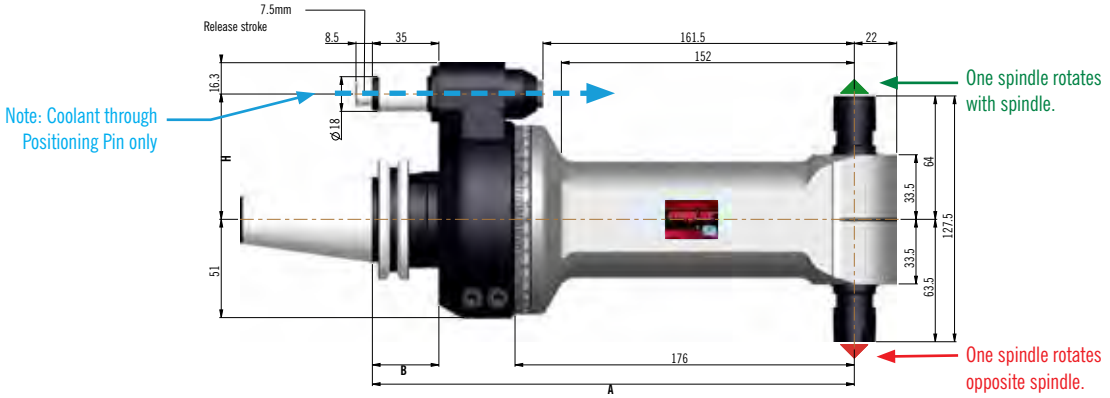
PRODUCT

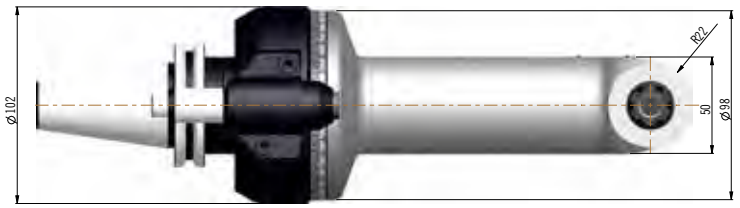
Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-10L-C40	CAT 40	9.84 (250)	1.38 (35)	2.559 (65)	H=3.149 (80)	15.2 lbs. (6.9 kg)	Stop Block Wrenches Grease Instructions
F90-10L-B40	BT 40	9.84 (250)	1.38 (35)	2.559 (65)	H=3.149 (80)	15.2 lbs. (6.9 kg)	
F90-10L-C50	CAT 50	9.84 (250)	1.38 (35)	3.149 (80)	-	20.2 lbs. (9.2 kg)	
F90-10L-H63	HSK63A	10.20 (259)	1.73 (44)	2.559 (65)	H=3.149 (80)	15.2 lbs. (6.9 kg)	
F90-10L-H100	HSK100A	10.20 (259)	1.81 (46)	3.149 (80)	-	20.2 lbs. (9.2 kg)	
	Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63						

Order ER16 Collets seperately. See page 74–86.

F90-10LD With optional double output



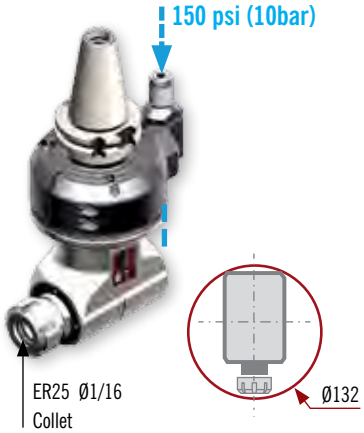


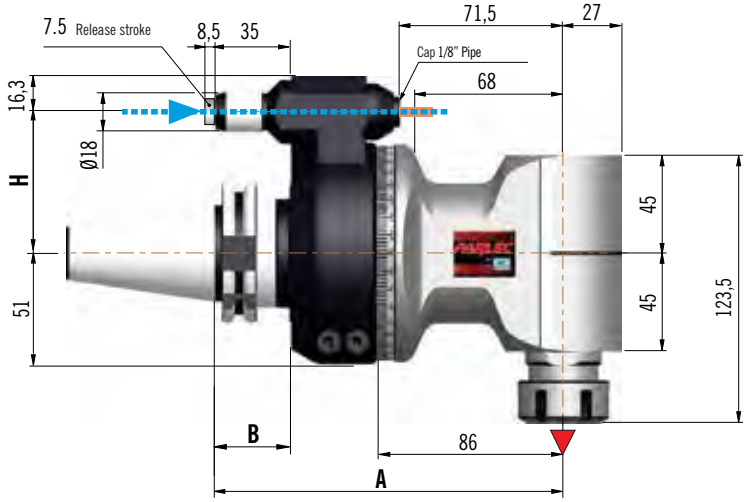


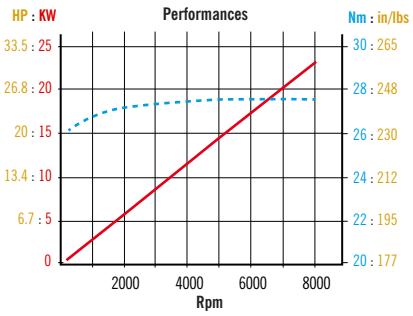
F90-16S

Anti-Rotation Interchangeability: **TYPE 1** (See page 182)

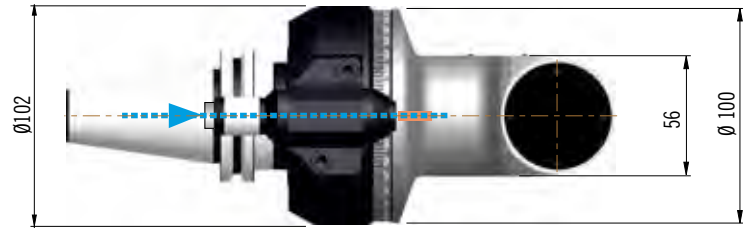
(Option type 2 and 3 anti-rotation available see page 182.)







Reduced performances with shank size C5



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 25	1-16 mm	1:1	8,000	182 lbs. (810 N)	239 in/ lbs. (27 Nm)	Positioning Pin	Opposite Spindle

Optional Output Shaft: Double ER, Page 157
Additional Output Shafts available: Weldon, and Shell Mill

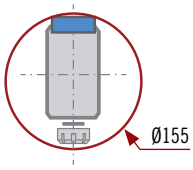
Optional coolant: Through Spindle from Pin, Page 157
Configured for optional internal air pressure

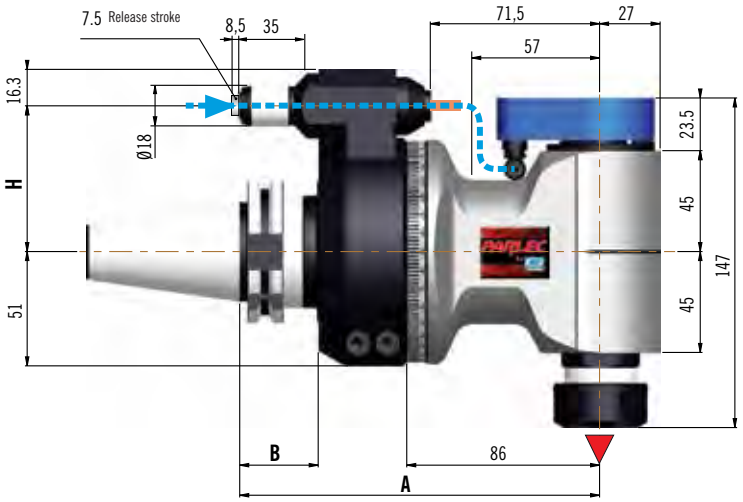
PRODUCT

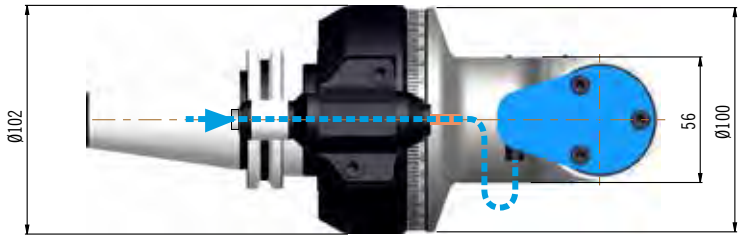
Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-16S-C40	CAT 40	6.30 (160)	1.38 (35)	2.559 (65)	H=3.149 (80)	14 lbs. (6.4 kg)	Stop Block Wrenches Grease Instructions
F90-16S-B40	BT 40	6.30 (160)	1.38 (35)	2.559 (65)	H=3.149 (80)	14 lbs. (6.4 kg)	
F90-16S-C50	CAT 50	6.30 (160)	1.38 (35)	3.149 (80)	-	19.1 lbs. (8.7 kg)	
F90-16S-H63	HSK63A	6.65 (169)	1.73 (44)	2.559 (65)	H=3.149 (80)	14 lbs. (6.4 kg)	
F90-16S-H100	HSK100A	6.65 (169)	1.81 (46)	3.149 (80)	-	19.1 lbs. (8.7 kg)	
	Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63						

Order ER25 Collets seperately. See page 74–86.

F90-16SC With optional 150 psi coolant piped though output shaft

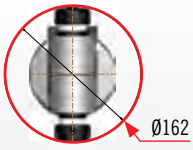


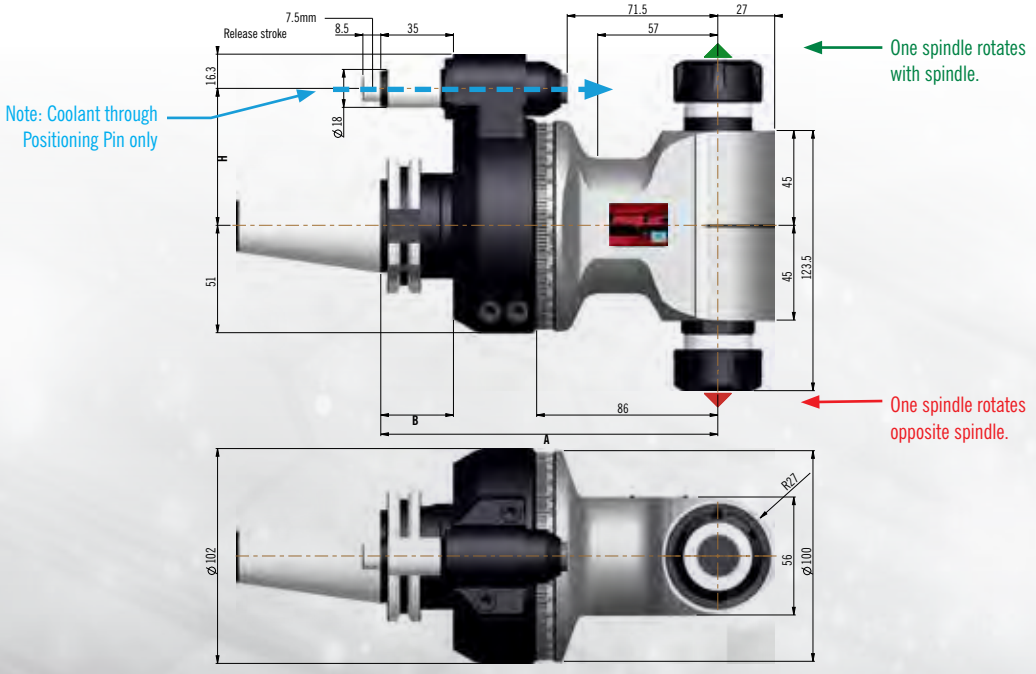




DRY RUNNING NOT POSSIBLE

F90-16SD With optional double output

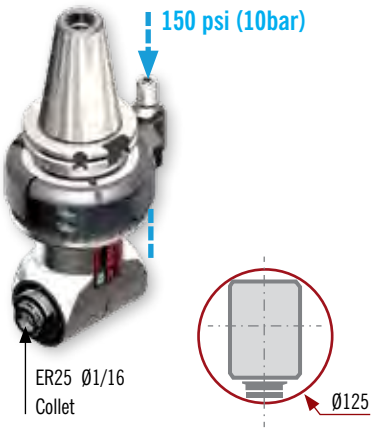


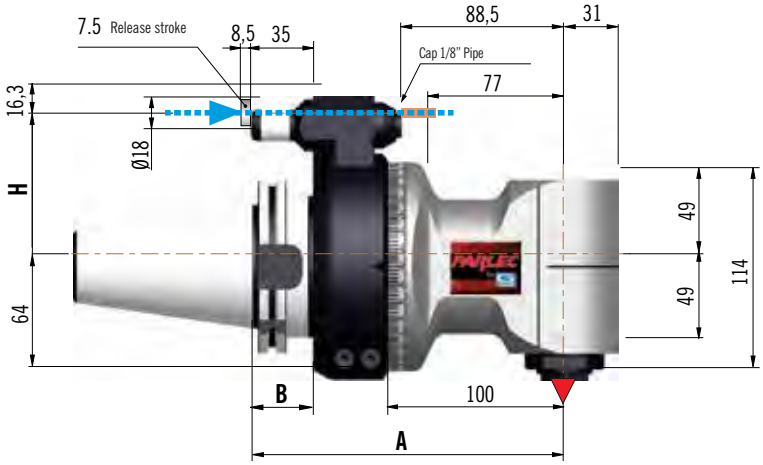


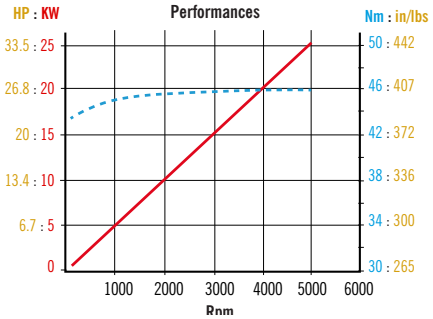
158 5,000 RPM Automatic Tool Change High Tourque Milling Series

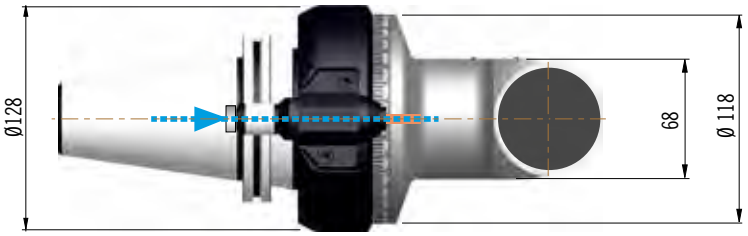
F90-16

Anti-Rotation Interchangeability: **TYPE 2** (See page 182)









APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 25	1-16mm	1:1	5,000	182 lbs. (810 N)	407 in/ lbs. (46 Nm)	Positioning Pin	Opposite Spindle

Optional Output Shaft: Double ER, Page 159
Additional Output Shafts available: Weldon, Shell Mill, HSK32A

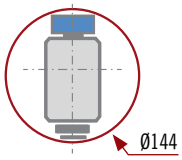
Optional coolant: Through Spindle from Pin, Page 159
Configured for optional internal air pressure

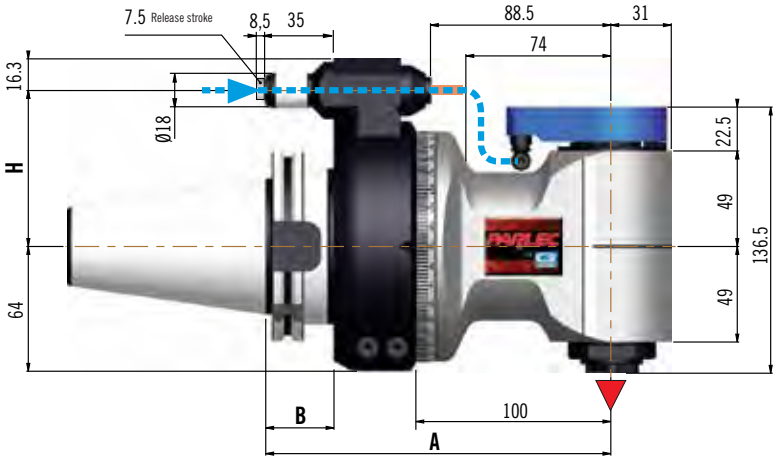
PRODUCT

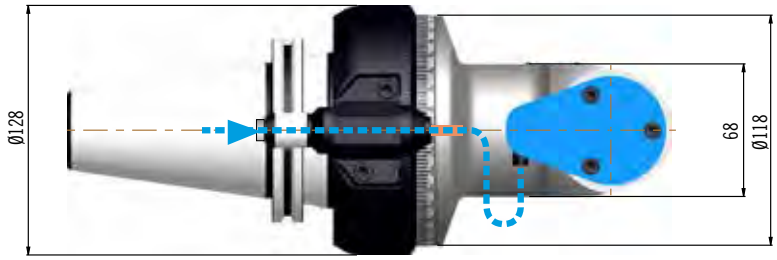
Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-16-C50	CAT 50	6.97 (177)	1.38 (35)	3.149 (80)	4.33 (110)	24 lbs. (11 kg)	Stop Block Wrenches Grease Instructions
F90-16-H100	HSK100A	7.32 (186)	1.81 (46)	3.149 (80)	4.33 (110)	24 lbs. (11 kg)	
F90-16-CTP8	C8 (ISO 26623)	7.13 (181)	-	3.149 (80)	4.33 (110)	24 lbs. (11 kg)	
	Other Shank Options available: BT 50 , HSK 80, KM 80, and 100						

Order ER25 Collets seperately. See page 74–86.

F90-16C With optional 150 psi coolant piped though output shaft

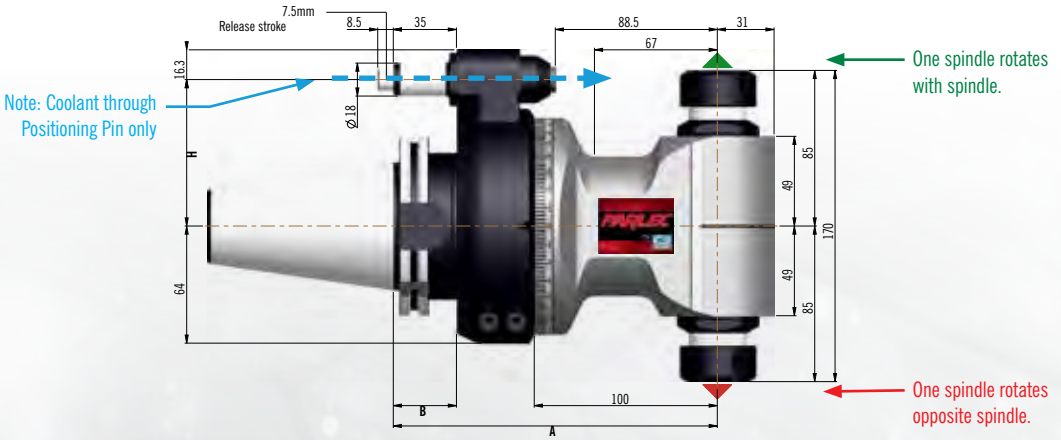


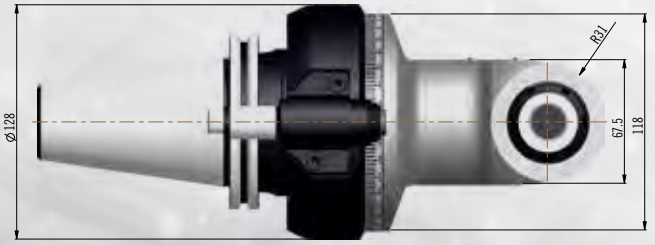




DRY RUNNING NOT POSSIBLE

F90-16D With optional double output



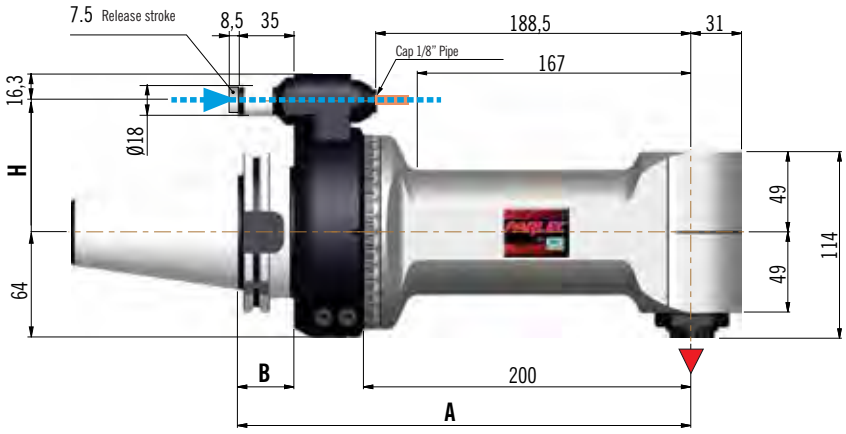


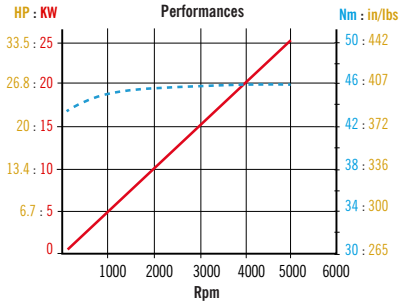
160 5,000 RPM Automatic Tool Change High Tourque Milling Series

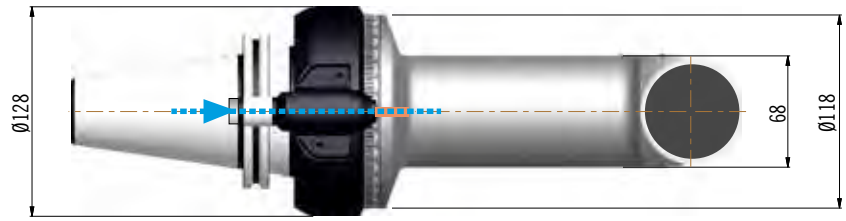
F90-16L

Anti-Rotation Interchangeability: **TYPE 2** (See page 182)

(Option type 3 anti-rotation available see page 182.)







APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER25	1-16mm	1:1	8,000	182 lbs. (810 N)	407 in/ lbs. (46 Nm)	Positioning Pin	Opposite Spindle

Optional Output Shaft: Double ER, Page 161
Additional Output Shafts available: Weldon, Shell Mill, HSK32A

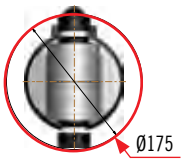
Optional coolant: Through Spindle from Pin, Page 161
Configured for optional internal air pressure.

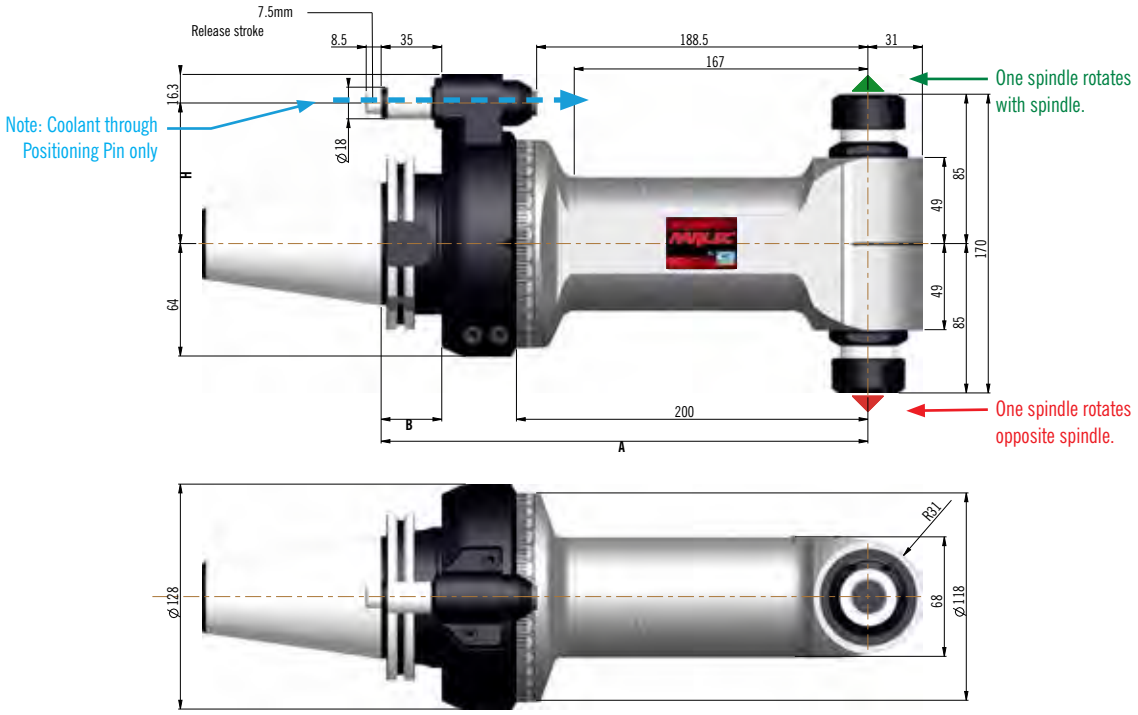
PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-16L-C50	CAT 50	10.90 (277)	1.38 (35)	3.149 (80)	4.33 (110)	28 lbs. (12.7 kg)	Stop Block Wrenches Grease Instructions
F90-16L-H100	HSK100A	11.26 (286)	1.81 (46)	3.149 (80)	4.33 (110)	28 lbs. (12.7 kg)	
F90-16L-CTP8	C8 (ISO 26623)	11.07 (281)	-	3.149 (80)	4.33 (110)	28 lbs. (12.7 kg)	
	Other Shank Options available: BT 50, HSK 80, KM 80 and 100						

Order ER25 Collets seperately. See page 74–86.

F90-16LD With optional double output



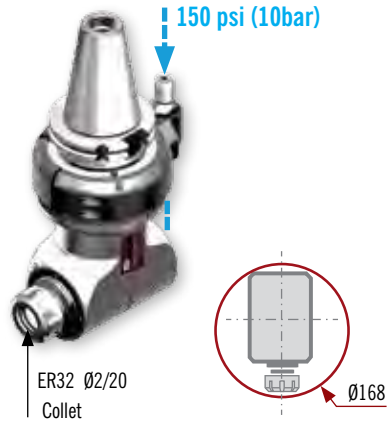


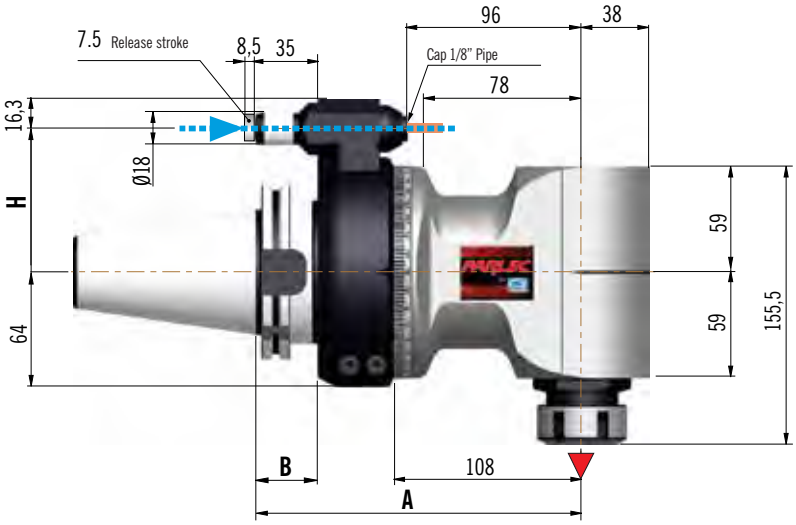
162 3,500 RPM Automatic Tool Change High Tourque Milling Series

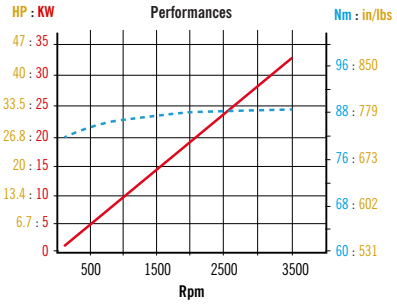
F90-20

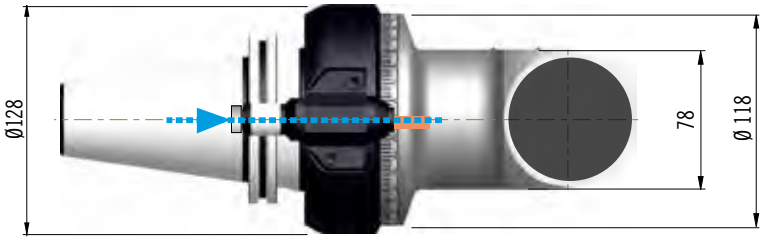
Anti-Rotation Interchangeability: **TYPE 2** (See page 182)

(Option type 3 anti-rotation available see page 182.)









APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 32	1-20 mm	1:1	3,500	328 lbs. (1460 N)	752 in/ lbs. (85 Nm)	Positioning Pin	Opposite Spindle

Optional Output Shaft: Double ER, Page 163
Additional Output Shafts available: Weldon, HSK40A, Cpt4

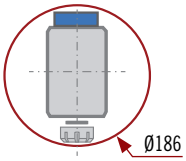
Optional coolant: Through Spindle from Pin, Page 163
Configured for optional internal air pressure

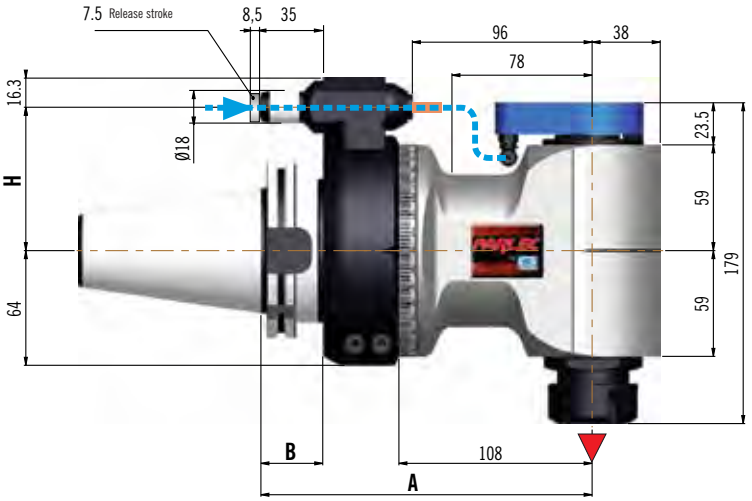
PRODUCT

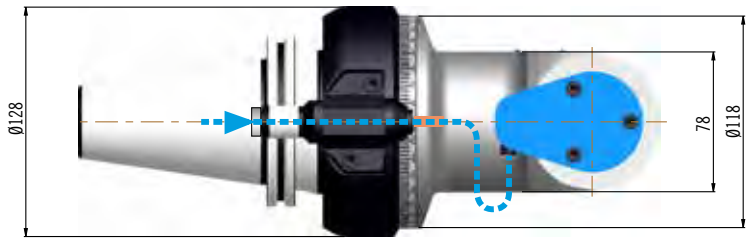
Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-16L-C50	CAT 50	10.90 (277)	1.38 (35)	3.149 (80)	4.33 (110)	28 lbs. (12.7 kg)	Stop Block Wrenches Grease Instructions
F90-16L-H100	HSK100A	11.26 (286)	1.81 (46)	3.149 (80)	4.33 (110)	28 lbs. (12.7 kg)	
F90-16L-CTP8	C8 (ISO 26623)	11.07 (281)	-	3.149 (80)	4.33 (110)	28 lbs. (12.7 kg)	
	Other Shank Options available: BT 50 , HSK 80, KM 80 and 100						

Order ER32 Collets seperately. See page 74–86.

F90-20C With optional 150 psi coolant piped though output shaft

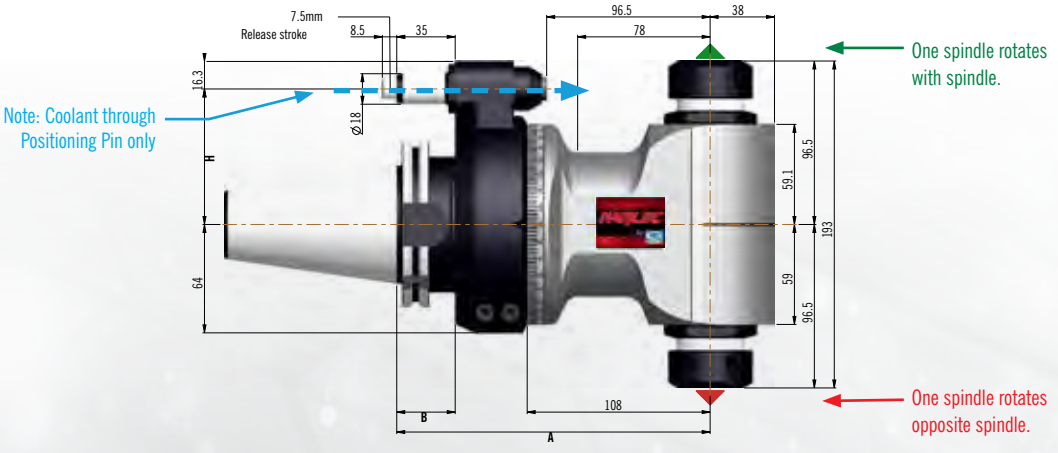


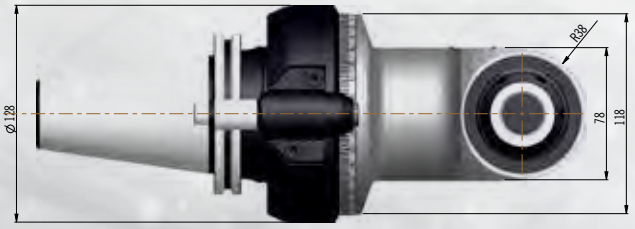




DRY RUNNING NOT POSSIBLE

F90-20D With optional double output

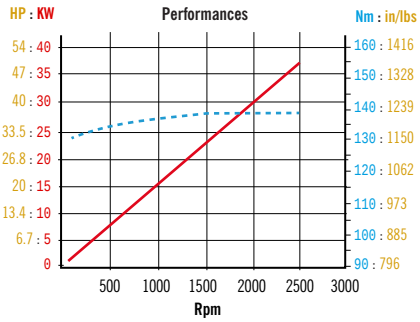


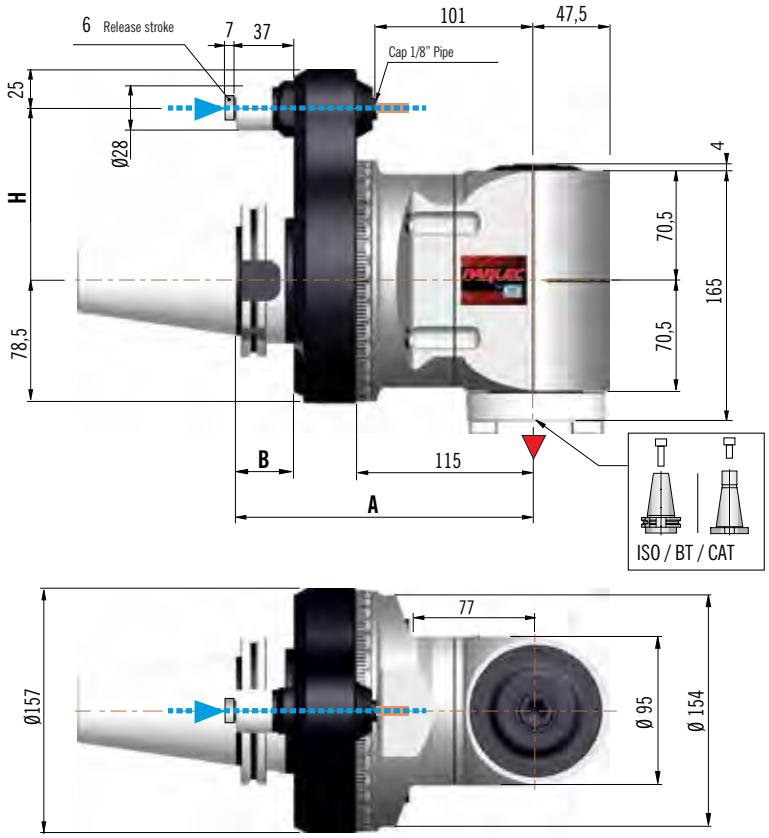


164 2,500 RPM Automatic Tool Change High Tourque Milling Series

F90-S40

Anti-Rotation Interchangeability: **TYPE 3** (See page 182)





APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ISO 40		1:1	2,500	680 lbs. (3020 N)	1196 in/ lbs. (135 Nm)	Positioning Pin	Opposite Spindle

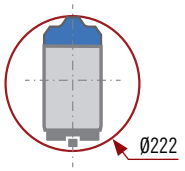
Optional Output Shaft: Double ER, Page 165
Additional Output Shafts available: Weldon, HSK40A, Cpt4

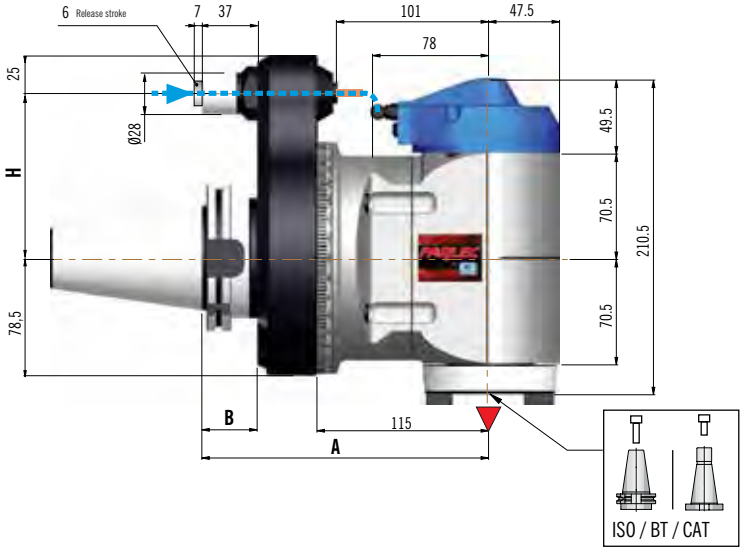
Optional coolant: Through Spindle from Pin, Page 165
Configured for optional internal air pressure

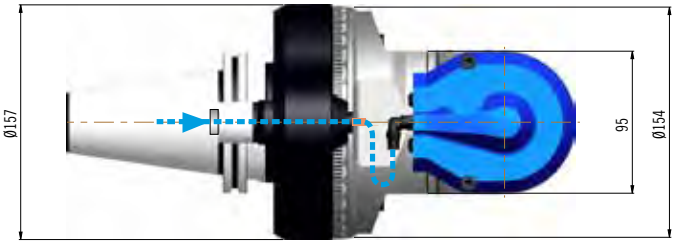
PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-S40-C50	CAT 50	7.56 (192)	1.46 (37)	4.33 (110)	-	48 lbs. (21.7 kg)	Stop Block Wrenches Grease Instructions
F90-S40-H100	HSK100A	7.91 (201)	1.89 (48)	4.33 (110)	-	48 lbs. (21.7 kg)	
F90-S40-CTP8	C8 (ISO 26623)	7.72 (196)	-	4.33 (110)	-	48 lbs. (21.7 kg)	
	Other Shank Options available: BT 50 , HSK 80, KM 80 and 100						

F90-S40C With optional 1,000 psi coolant piped though output shaft

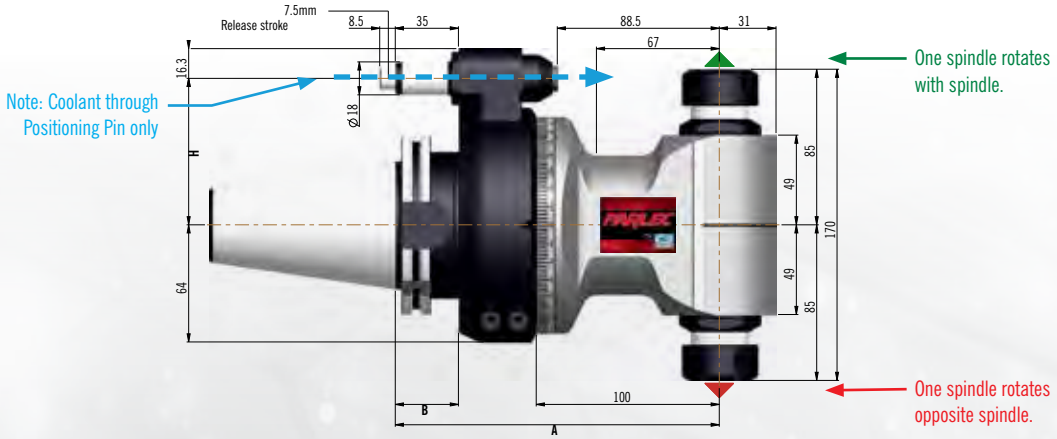






DRY RUNNING NOT POSSIBLE

F90-30D With optional double output

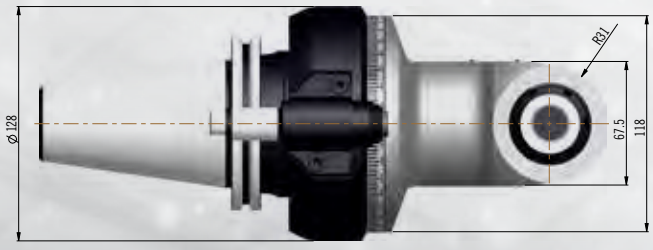


Output Shafts:

ER40 : ER40

Anti-Rotation Interchangeability:

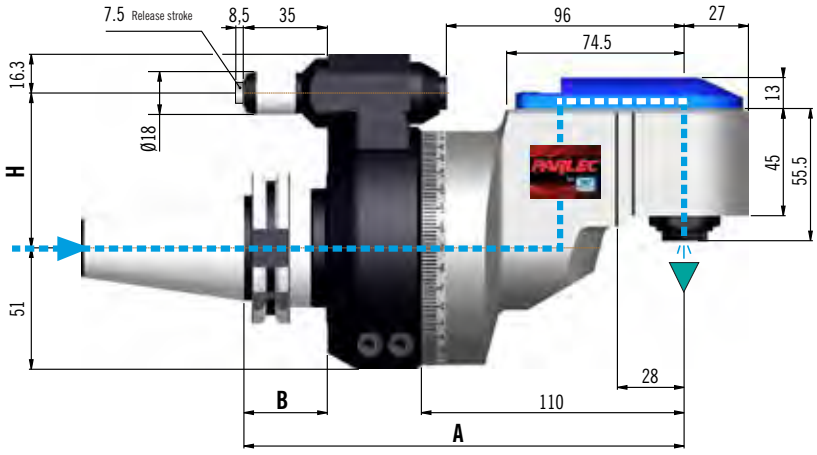
TYPE 2 (Available upon request)

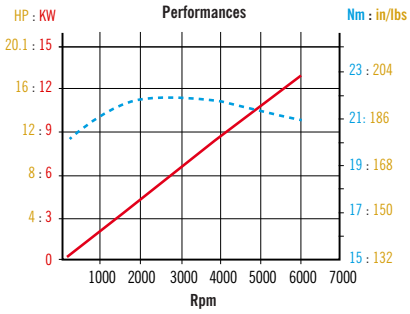


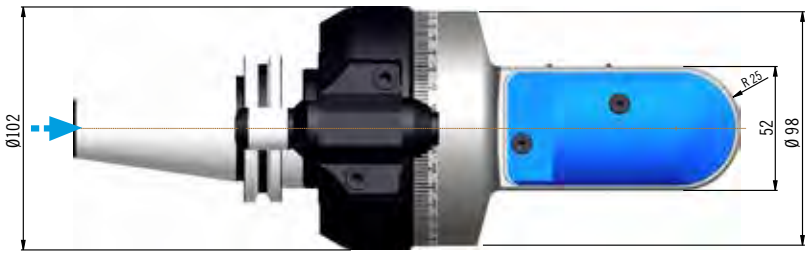
FR90-10

Anti-Rotation Interchangeability: **TYPE 1** (See page 182)

(Option type 2 and 3 anti-rotation available see page 182.)







DRY RUNNING NOT POSSIBLE

APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 16	1 - 10 mm	1:1	6,000	112 lbs. (500 N)	194 in/ lbs. (22 Nm)	1000 psi (70 Bar)	Same As Spindle
Optional Output Shaft: Weldon						*Through the Spindle*	

PRODUCT

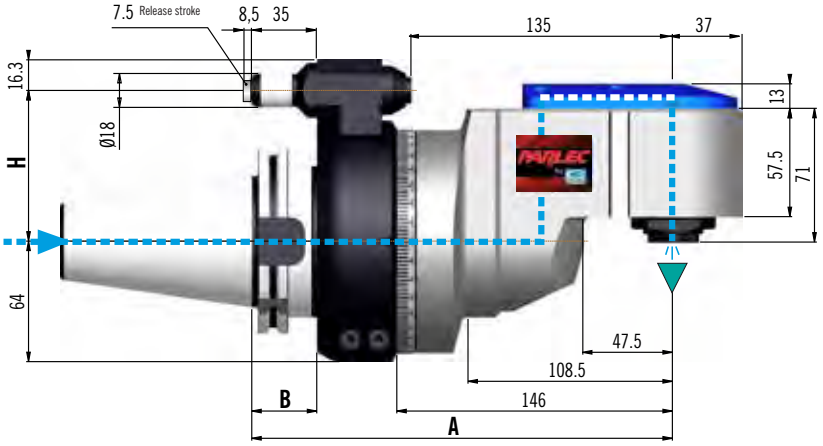
Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FR90-10-C40	CAT 40	7.26 (184.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	13.6 lbs. (6.2 kg)	Stop Block Wrenches Grease Instructions
FR90-10-B40	BT 40	7.26 (184.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	13.6 lbs. (6.2 kg)	
FR90-10-C50	CAT 50	7.26 (184.5)	1.38 (35)	3.149 (80)	-	19.1 lbs. (8.7 kg)	
FR90-10-H63	HSK63A	7.62 (193.5)	1.73 (44)	2.559 (65)	H=3.149 (80)	13.6 lbs. (6.2 kg)	
FR90-10-H100	HSK100A	7.62 (193.5)	1.81 (46)	3.149 (80)	-	19.1 lbs. (8.7 kg)	
	Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63						

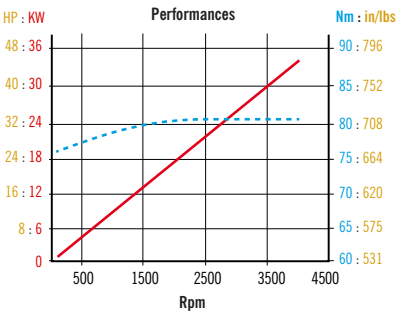
Order ER16 Collets seperately. See page 74–86.

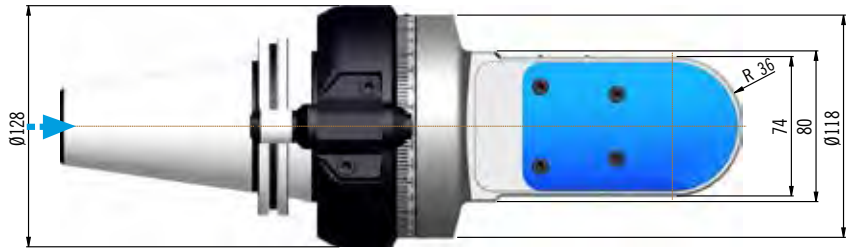
FR90-16

Anti-Rotation Interchangeability: **TYPE 2** (See page 182)

(Option type 3 anti-rotation available see page 182.)







DRY RUNNING NOT POSSIBLE

APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 25	1 - 16 mm	1:1	4,000	182 lbs. (810 N)	708 in/ lbs. (80 Nm)	1000 psi (70 Bar)	Same As Spindle
Optional Output Shaft: Weldon						*Through the Spindle*	

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FR90-16-C50	CAT 50	8.80 (223.5)	1.38 (35)	3.149 (80)	4.33 (110)	25.8 lbs. (11.7 kg)	Stop Block Wrenches Grease Instructions
FR90-16-H100	HSK100A	9.15 (232.5)	1.81 (46)	3.149 (80)	4.33 (110)	25.8 lbs. (11.7 kg)	
FR90-16-CTP8	C8 (ISO 26623)	8.97 (227.8)	-	3.149 (80)	4.33 (110)	25.8 lbs. (11.7 kg)	
	Other Shank Options available: BT 50 , HSK 80, KM 80 and 100						

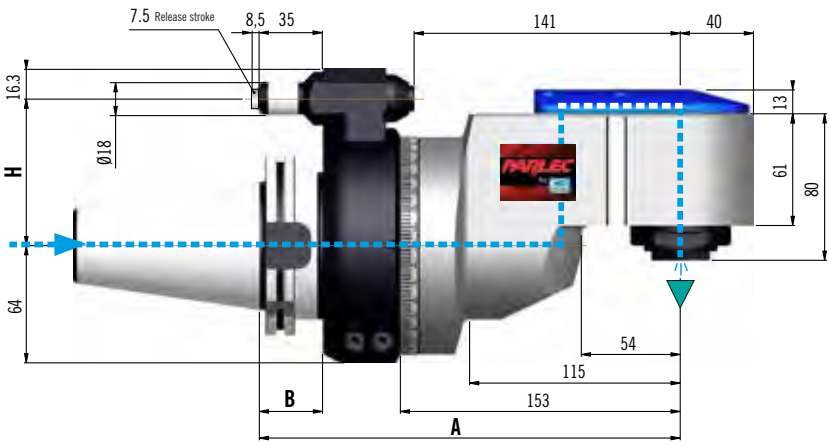
Order ER25 Collets seperately. See page 74–86.

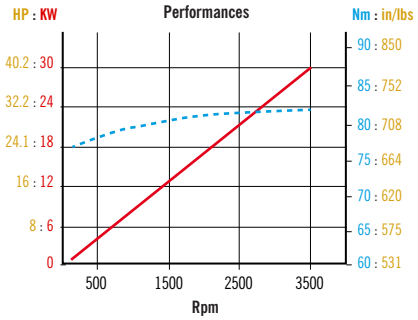
168 3,500 RPM Automatic Tool Change High Tourque Milling Series

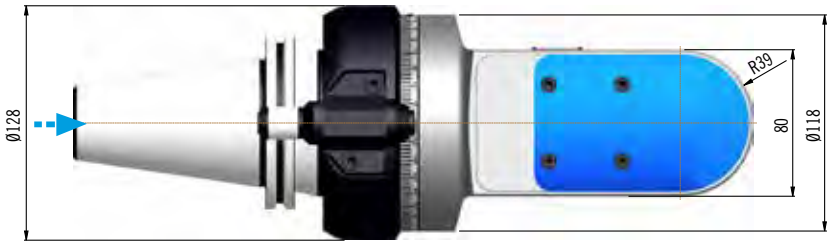
FR90-20

Anti-Rotation Interchangeability: **TYPE 2** (See page 182)

(Option type 3 anti-rotation available see page 182.)







DRY RUNNING NOT POSSIBLE

APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 32	1 - 20 mm	1:1	3,500	258 lbs. (1150 N)	726 in/ lbs. (82 Nm)	1000 psi (70 Bar)	Same as Spindle
Optional Output Shaft: HSK 50A, Weldon						*Through the Spindle*	

PRODUCT

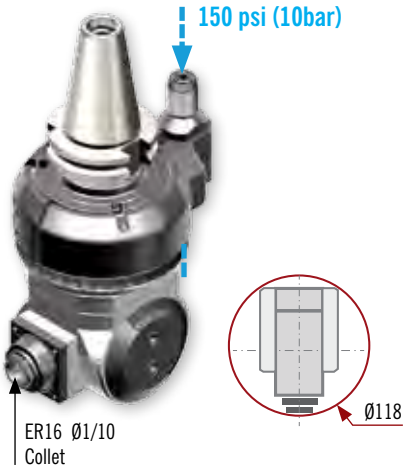
Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FR90-20-C50	CAT 50	9.06 (230)	1.38 (35)	3.149 (80)	4.33 (110)	32 lbs. (14.5 kg)	Stop Block Wrenches Grease Instructions
FR90-20-H100	HSK100A	9.41 (239)	1.81 (46)	3.149 (80)	4.33 (110)	32 lbs. (14.5 kg)	
FR90-20-CTP8	C8 (ISO 26623)	9.21 (234)	-	3.149 (80)	4.33 (110)	32 lbs. (14.5 kg)	
	Other Shank Options available: C5, C6, and KM 63						

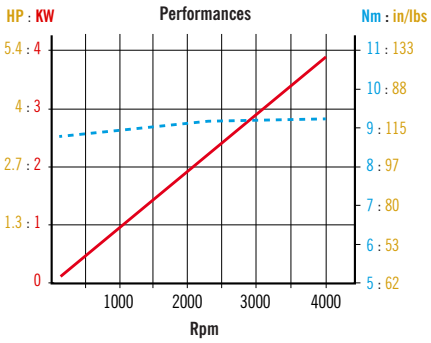
Order ER32 Collets seperately. See page 74–86.

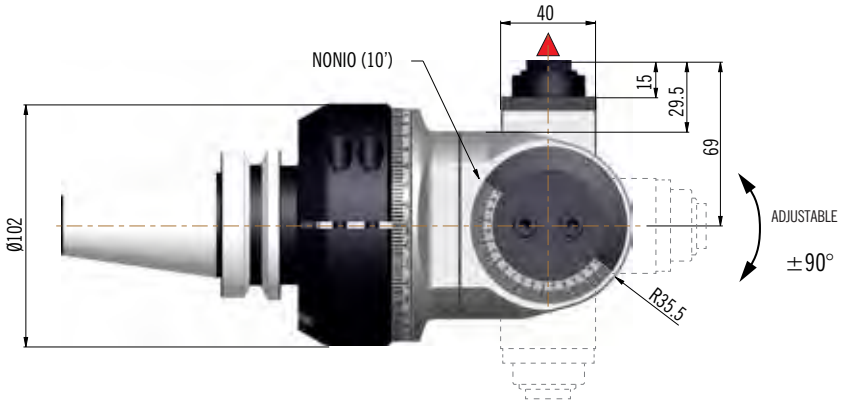
FMU-10

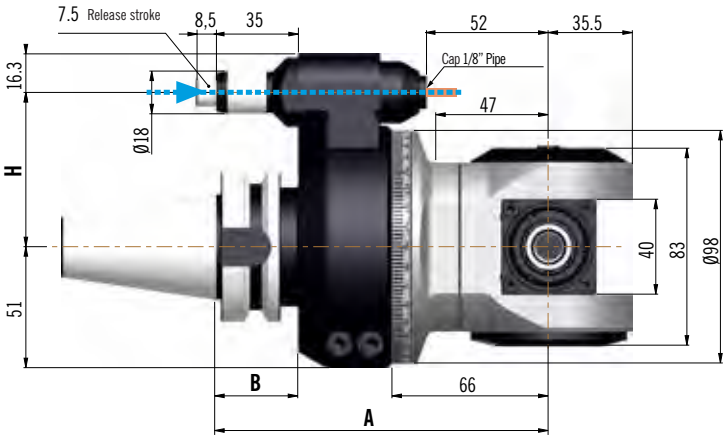
Anti-Rotation Interchangeability: **TYPE 1** (See page 182)

(Option type 2 and 3 anti-rotation available see page 182.)









APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 16	1 - 10 mm	1:1	4,000	124 lbs. (550 N)	80 in/ lbs. (9 Nm)	Positioning Pin	Opposite Spindle
Optional Output Shaft: Weldon					*Configured for optional internal air pressure*		

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FMU-10-C40	CAT 40	5.51 (140)	1.38 (35)	2.559 (65)	H=3.149 (80)	13.9 lbs. (5.3 kg)	Stop Block Wrenches Grease Instructions
FMU-10-B40	BT 40	5.51 (140)	1.38 (35)	2.559 (65)	H=3.149 (80)	13.9 lbs. (5.3 kg)	
FMU-10-C50	CAT 50	5.51 (140)	1.38 (35)	3.149 (80)	-	19.4 lbs. (8.8 kg)	
FMU-10-H63	HSK63A	5.87 (149)	1.73 (44)	2.559 (65)	H=3.149 (80)	13.9 lbs. (5.3 kg)	
FMU-10-H100	HSK100A	5.87 (149)	1.81 (46)	3.149 (80)	-	19.4 lbs. (8.8 kg)	
	Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63						

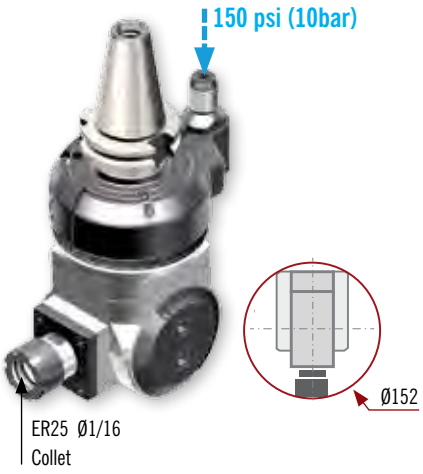
Order ER16 Collets seperately. See page 74–86.

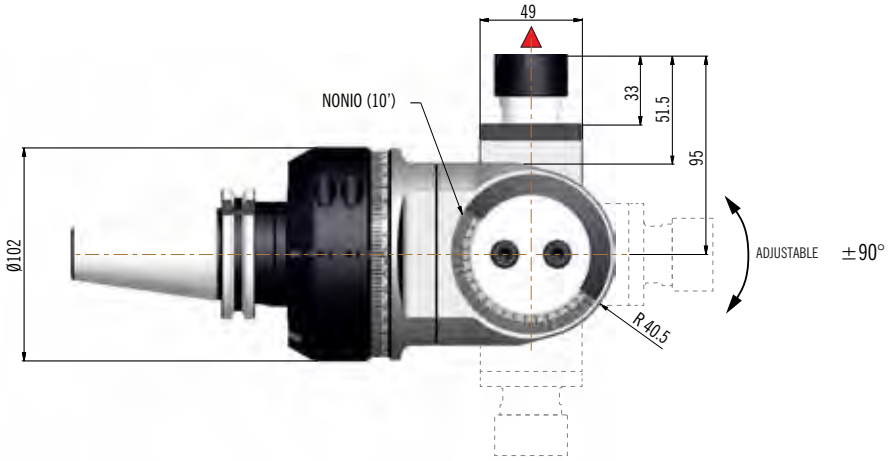
170 3,000 RPM Automatic Tool Change High Tourque Milling Series

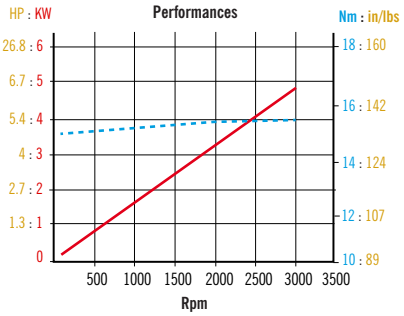
FMU-16

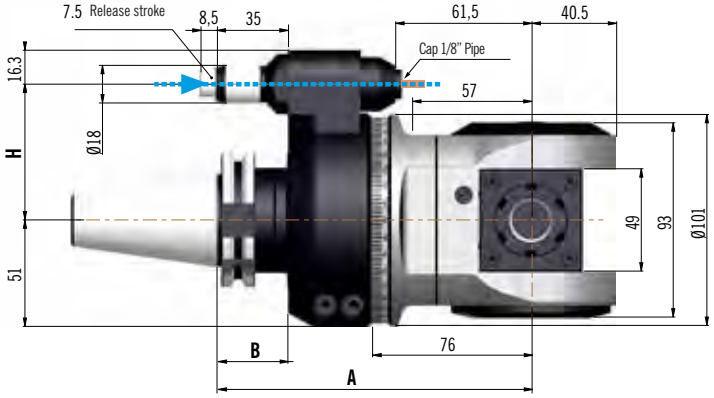
Anti-Rotation Interchangeability: **TYPE 1** (See page 182)

Option type 2 and 3 anti-rotation available see page 182.









APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 25	1 - 16 mm	1:1	3,000	142 lbs. (630 N)	133 in/ lbs. (15 Nm)	Positioning Pin	Opposite Spindle
Optional Output Shaft: Weldon					*Configured for optional internal air pressure*		

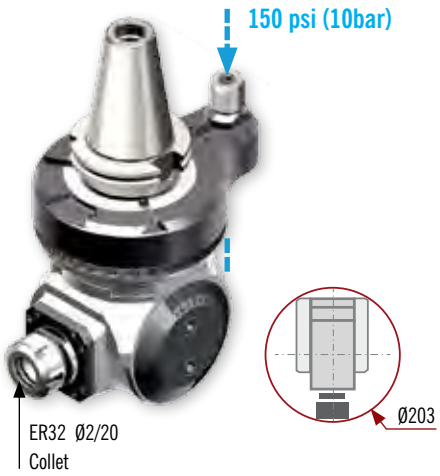
PRODUCT

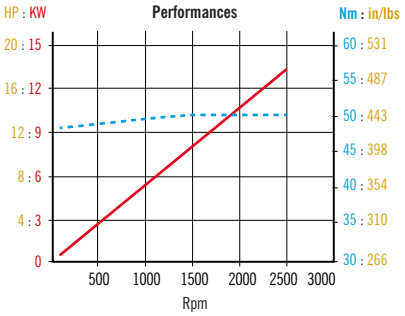
Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FMU-16-C40	CAT 40	5.90 (150)	1.38 (35)	2.559 (65)	H=3.149 (80)	18 lbs. (8.2 kg)	Stop Block Wrenches Grease Instructions
FMU-16-B40	BT 40	5.90 (150)	1.38 (35)	2.559 (65)	H=3.149 (80)	18 lbs. (8.2 kg)	
FMU-16-C50	CAT 50	5.90 (150)	1.38 (35)	3.149 (80)	-	23.1 lbs. (10.5 kg)	
FMU-16-H63	HSK63A	6.26 (159)	1.65 (42)	2.559 (65)	H=3.149 (80)	18 lbs. (8.2 kg)	
FMU-16-H100	HSK100A	6.26 (159)	1.81 (46)	3.149 (80)	-	23.1 lbs. (10.5 kg)	
	Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63						

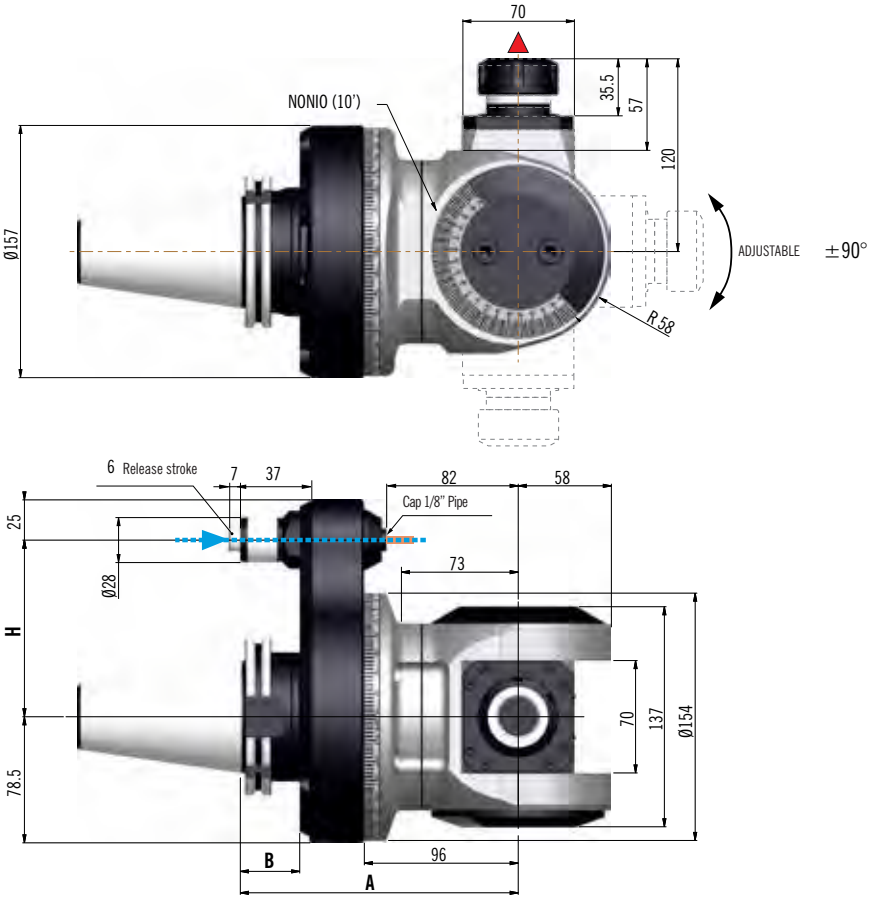
Order ER25 Collets seperately. See page 74–86.

FMU-20

Anti-Rotation Interchangeability: **TYPE 3** (See page182)







APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 32	1 - 20 mm	1:1	2,500	391 lbs. (1740 N)	425 in/ lbs. (48 Nm)	Positioning Pin	Opposite Spindle
Optional Output Shaft: HSK 50A					*Configured for optional internal air pressure*		

PRODUCT

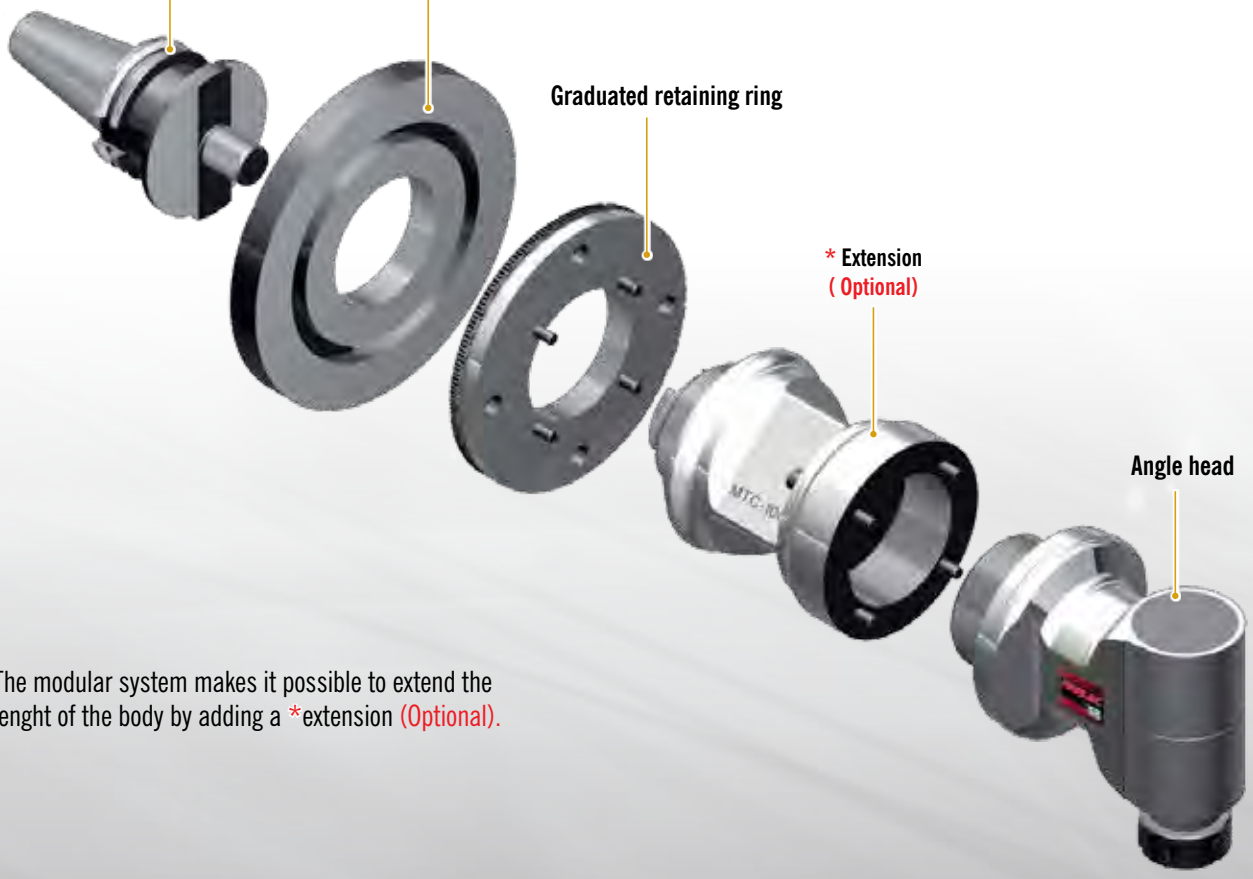
Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FMU-20-C50	CAT 50	6.81 (173)	1.46 (37)	4.33 (110)	-	48 lbs. (22 kg)	Stop Block Wrenches Grease Instructions
FMU-20-H100	HSK100A	7.16 (182)	1.89 (48)	4.33 (110)	-	48 lbs. (22 kg)	
FMU-20-CTP8	C8 (ISO 26623)	6.97 (177)	-	4.33 (110)	-	48 lbs. (22 kg)	
	Other Shank Options available: BT 50 , HSK 80, KM 80, and 100						

Order ER32 Collets seperately. See page 74–86.

MTC SERIES *EVOLUTION LINE* MANUAL TOOL CHANGE

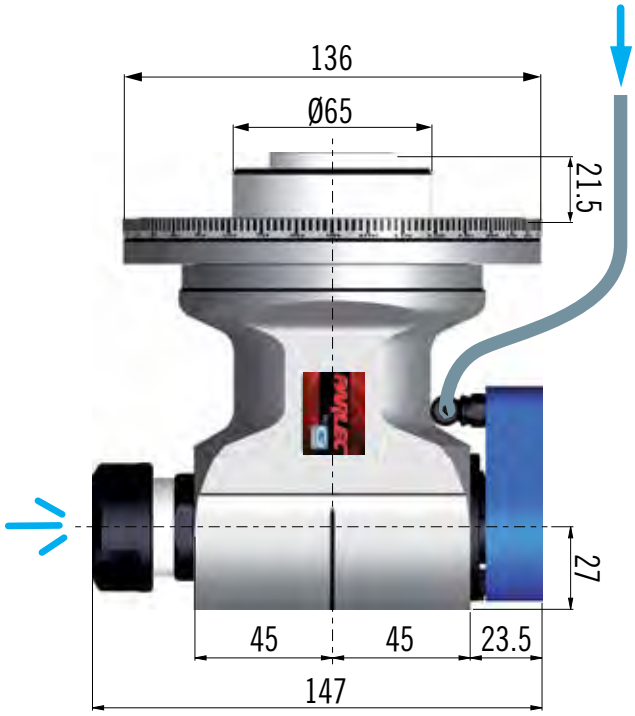
F90 series
Ideal for milling,
drilling, tapping at ±90°

F90L series
Long series for machining at deep positions



The modular system makes it possible to extend the lenght of the body by adding a *extension (Optional).

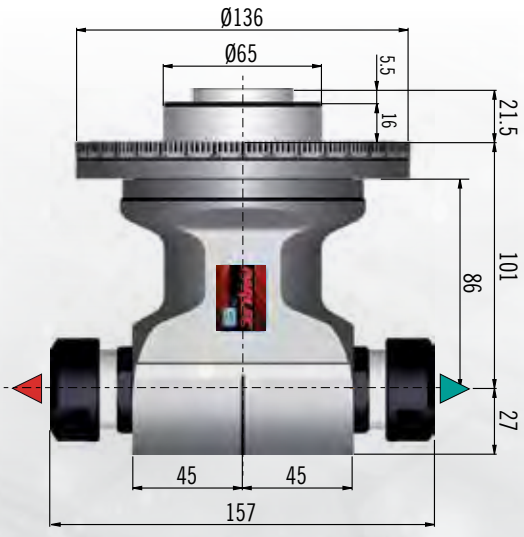
INTERNAL COOLANT OPTION MTC SERIES



F90MTC-16S 150 psi (10bar)

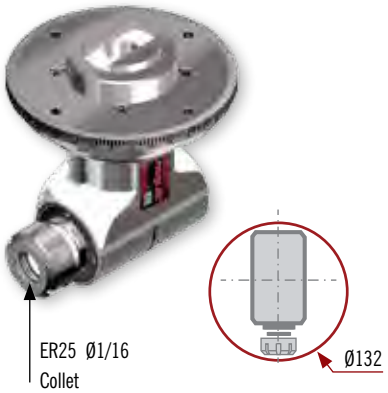
Coolant through the positioning
pin and the tool, by rotating distributor

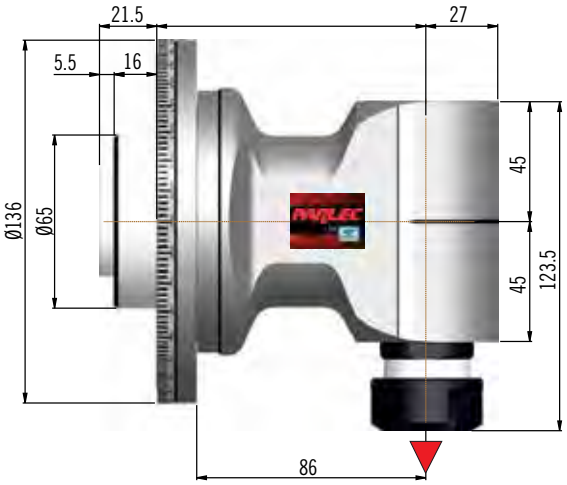
DOUBLE OUTPUT OPTION MTC SERIES

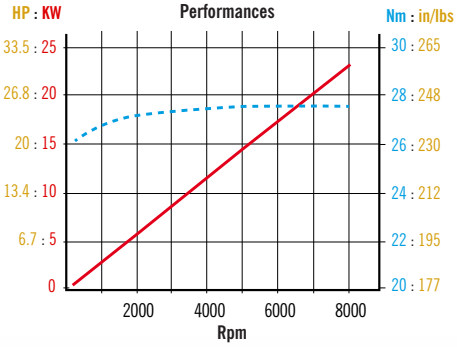


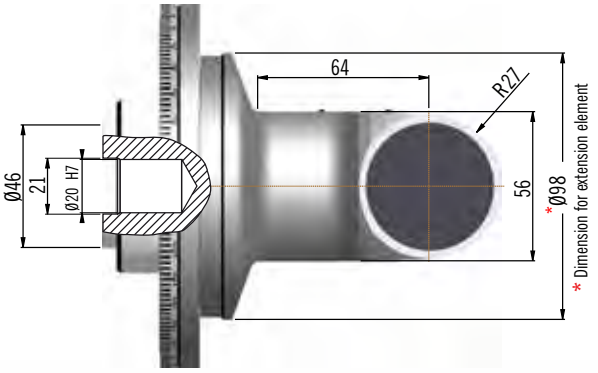
F90MTC-16S

F90MTC-16









APPLICATION SPECIFICATION

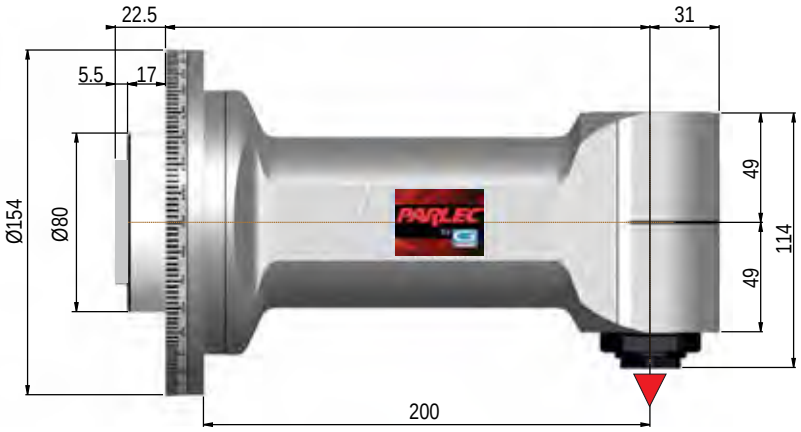
Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 25	1 - 16 mm	1:1	8,000	182 lbs. (810 N)	239 in/ lbs. (27 Nm)	None	Opposite Spindle
Optional Output Shaft: Double ER, Page 173 *Additional Output Shafts available: Weldon, Shell Mill*					*Configured for optional internal air pressure*		

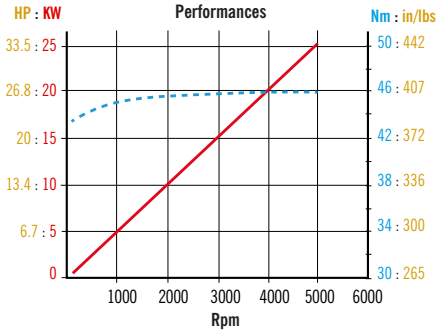
PRODUCT

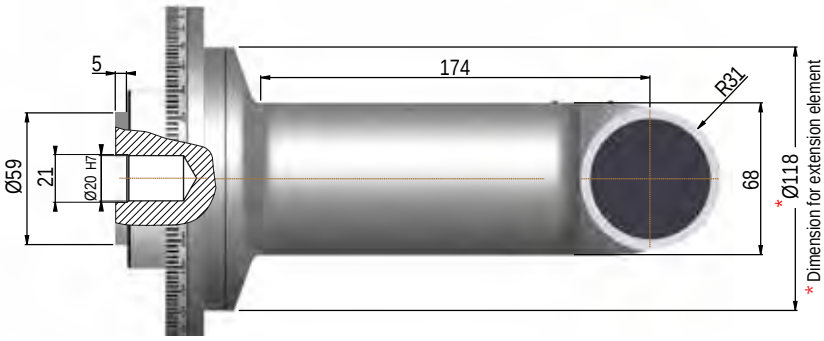
Description	Shank	A	Projection length of Drive Shank	Weight (Excluding Flange)	Spares (Incl.)
F90MTC-16S-C40	CAT 40	3.98 (101)*	1.38 (35)	14 lbs. (6.4 kg)	Stop Block Wrenches Grease Instructions Drive Shank Universal Flange
F90MTC-16S-B40	BT 40	3.98 (101)*	1.38 (35)	14 lbs. (6.4 kg)	
F90MTC-16S-C50	CAT 50	3.98 (101)*	1.38 (35)	19.1 lbs. (8.7 kg)	
F90MTC-16S-H63	HSK63A	3.98 (101)*	1.73 (44)	14 lbs. (6.4 kg)	
F90MTC-16S-H100	HSK100A	3.98 (101)* **Extension: 100 mm and 200 mm available see page 182*	1.81 (46)	19.1 lbs. (8.7 kg)	
	Other Shank Options available: C5, and C6 (ISO 26623)				

Order ER25 Collets seperately. See page 74–86.

F90MTC-16L







APPLICATION SPECIFICATION

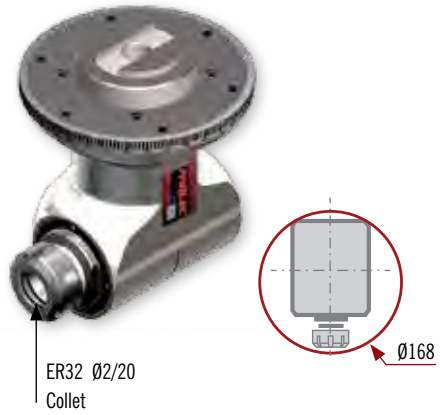
Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 25	1 - 16 mm	1:1	5,000	182 lbs. (810 N)	407 in/ lbs. (46 Nm)	None	Opposite Spindle
Optional Output Shaft: Double ER, Page 173 *Additional Output Shafts available: Weldon, Shell Mill, HSK32A*					*Configured for optional internal air pressure*		

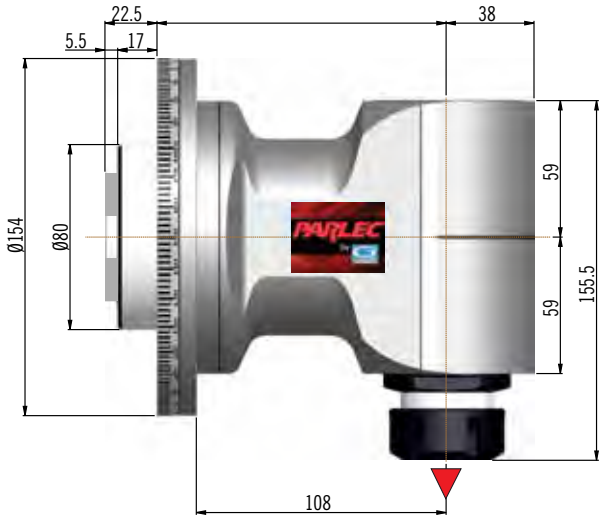
PRODUCT

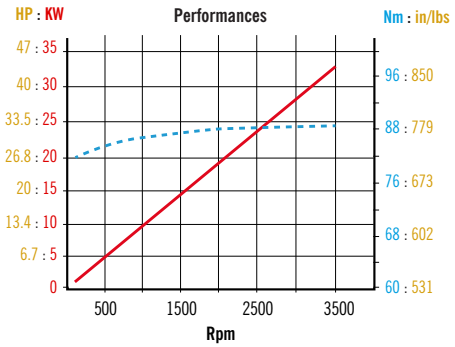
Description	Shank	A	Projection length of Drive Shank	Weight	Spares (Incl.)
F90MTC-16L-C50	CAT 50	8.54 (217)*	1.38 (35)	-	Stop Block Wrenches Grease Instructions Drive Shank Universal Flange
F90MTC-16L-H100	HSK100A	8.54 (217)*	1.81 (46)	-	
F90MTC-16L-CTP8	C8 (ISO 26623)	8.54 (217) * * *Extension: 100 mm and 200 mm available see page 182*	-	-	
	Other Shank Options available: C5, and C6 (ISO 26623)				

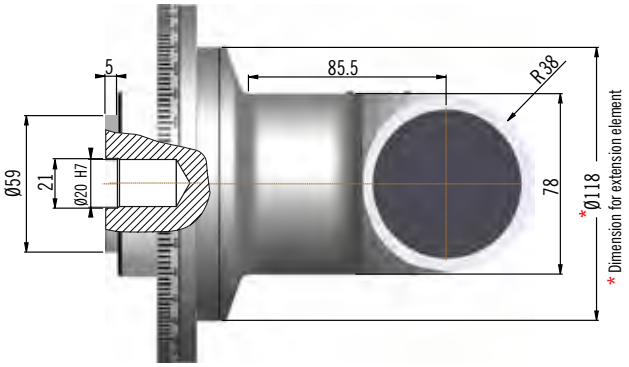
Order ER25 Collets seperately. See page 74–86.

F90MTC-20









APPLICATION SPECIFICATION

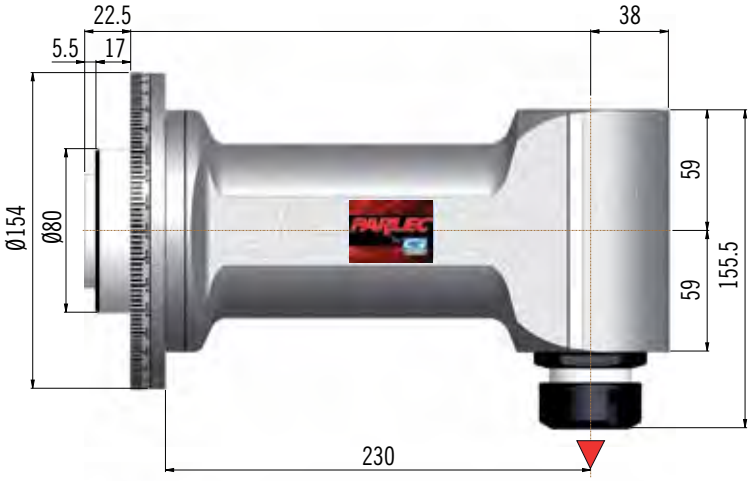
Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 32	1 - 20 mm	1:1	3,500	328 lbs. (1460 N)	752 in/ lbs. (85 Nm)	None	Opposite Spindle
Optional Output Shaft: Double ER, Page 173 *Additional Output Shafts available: Weldon, HSK40A, Cpt4, Shell Mill*					*Configured for optional internal air pressure*		

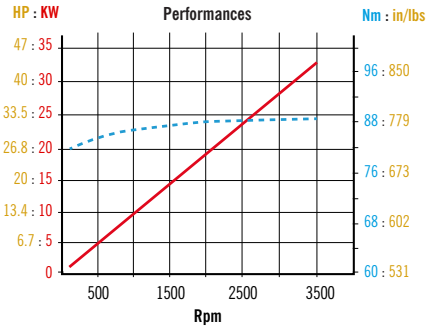
PRODUCT

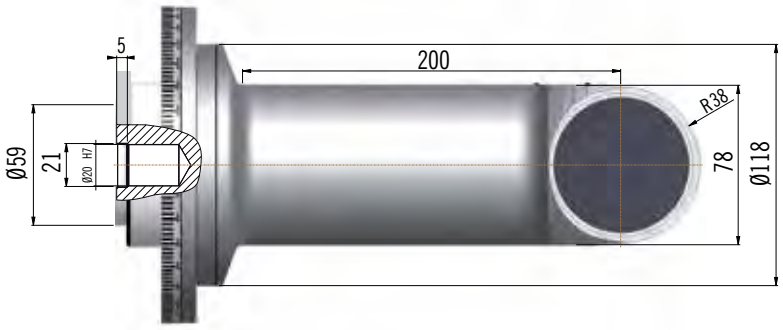
Description	Shank	A	Projection length of Drive Shank	Spares (Incl.)
F90MTC-20-C50	CAT 50	4.92 (125)*	1.38 (35)	Stop Block Wrenches Grease Instructions Drive Shank Universal Flange
F90MTC-20-H100	HSK100A	4.92 (125)*	1.81 (46)	
F90MTC-20-CTP8	C8 (ISO 26623)	4.92 (125)* * *Extension: 100 mm and 200 mm available see page 182*	-	
	Other Shank Options available: C5, and C6 (ISO 26623)			

Order ER32 Collets seperately. See page 74–86.

F90MTC-20L







APPLICATION SPECIFICATION

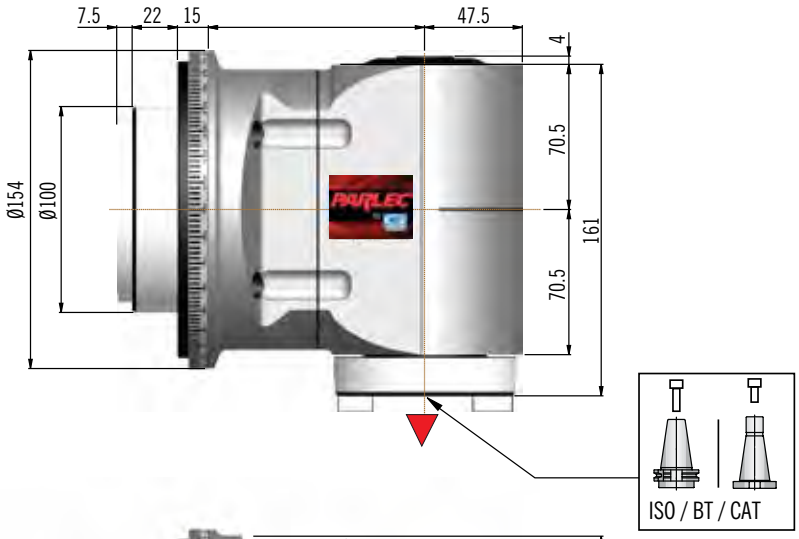
Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 32	1 - 20 mm	1:1	3,500	328 lbs. (1460 N)	752 in/ lbs. (85 Nm)	None	Opposite Spindle
Optional Output Shaft: Double ER, Page 173 *AAdditional Output Shafts available: Weldon, HSK40A, Cpt4, Shell Mill*					*Configured for optional internal air pressure*		

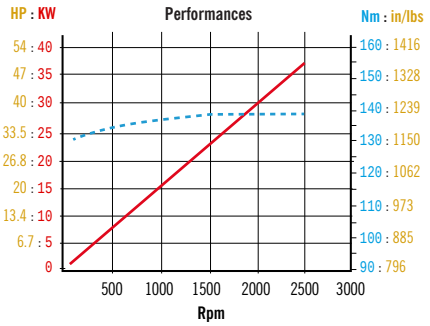
PRODUCT

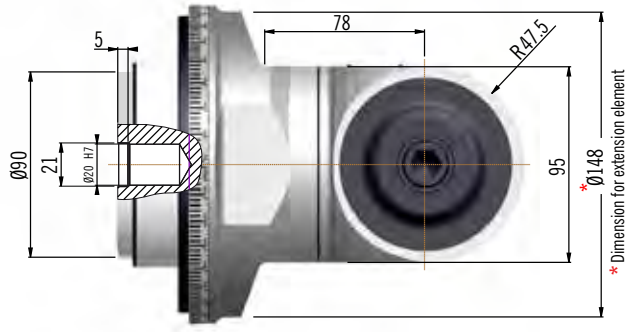
Description	Shank	A	Projection length of Drive Shank	Spares (Incl.)
F90MTC-20L-C50	CAT 50	9.72 (247)*	1.38 (35)	Stop Block Wrenches Grease Instructions Drive Shank Universal Flange
F90MTC-20L-H100	HSK100A	9.72 (247 *	1.81 (46)	
F90MTC-20L-CTP8	C8 (ISO 26623)	*9.72 (247)** * Extension: 100 mm and 200 mm available see page 182*	-	
	Other Shank Options available: C5, and C6 (ISO 26623)			

Order ER32 Collets seperately. See page 74–86.

F90MTC-40







APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ISO 40	-	1:1	2,500	680 lbs. (3020 N)	1196 in/ lbs. (135 Nm)	None	Opposite Spindle
Optional Output Shaft: Double ER, Page 173 *Additional Output Shafts available: HSK63A, CPT5, ER40*					*Configured for optional internal air pressure*		

PRODUCT

Description	Shank	A	Projection length of Drive Shank	Spares (Incl.)
F90MTC-S40-C50	CAT 50	4.13 (105)*	1.38 (35)	Stop Block Wrenches Grease Instructions
F90MTC-S40-H100	HSK100A	4.13 (105)*	1.81 (46)	
F90MTC-S40-CTP8	C8 (ISO 26623)	4.13 (105)* **Extension: 100 mm and 200 mm available see page 182*	-	
	Other Shank Options available: C5 and C6 (ISO 26623)			

ATC & MTC SERIES *Evolution Line* ACCESSORIES

STOP-BLOCK TYPE 3

ER-DIN 6499 COLLET

STOP-BLOCK
TYPE 1-2

PIN GROUP

RING

SHANK GROUP

6023 COLLET

600E COLLET

ATC

FLANGE

MTC

SHANK

EXTENSION

Mini

ES

STD

Mini

ES

STD

SPARE NUTS AND WRENCHES

Angle Head	Nut Style	Part Number	Nut Wrench	Output Shaft Wrench
FS90-3			5.5 mm Hex	
FS90-3L				
FS90-4			7 mm Hex	
FS90-4L				
F90-07	ER11-ES	9.ER.110ES	13 mm Hex	22 mm Hex
F90-07L				
F90-10	ER16-ES	9.ER.160ES	19 mm Hex	30 mm Hex
F90-10L				
FMU-10				
FR90-10				27 mm Hex
F90-16S	ER25-STD	25ERN	25ERNW	32 mm Hex
F90-16	ER25-ES	9.ER.250ES	27 mm Hex	38 mm Hex
F90-16L				
FR90-16				36 mm Hex
FMU-16	ER25 Mini	9.ER.2500M	9.CH.2500M	27 mm Hex
F90-20	ER32-STD	32ERN	32ERNW	47 mm Hex
FMU-20	ER32-STD	32ERN	32ERNW	40 mm Hex
FR90-20	ER32-ES	9.ER.320ES	32 mm Hex	47 mm Hex
F90-30D	ER40-STD	40ERN	40ERNW	

COLLETS 6023E AND 600E

Part Number	Type	Size
9.60.23E0010	6023E	1 mm
9.60.23E0015		1.5 mm
9.60.23E0020		2 mm
9.60.23E0025		2.5 mm
9.60.23E0030		3 mm
9-60.0E0010	600E	1 mm
9-60.0E0015		1.5 mm
9-60.0E0020		2 mm
9-60.0E0025		2.5 mm
9-60.0E0030		3 mm
9-60.0E0035		3.5 mm
9-60.0E0040		4 mm

COLLET PERFORMANCE CHOICES

ER Standard Collet

ER Tap Collet

ER AA Grade 5 Micron Collet

ERS Steel Sealed Collet

Coolant Nut

Coolant Seal

COLLET SELECTION

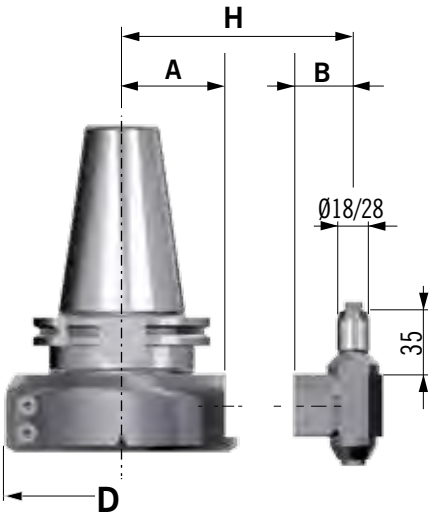
ER STANDARD COLLET (ER Standard Collets see page 75–77)	▪ For use in ER collet chucks for drilling, reaming, boring, tapping, and milling. ▪ Meets DIN 6499-B industry standard. ▪ Collapse range .0393"(1 mm) maximum. ▪ Size 11 collapse range .020"(1/2 mm) maximum. ▪ For higher runout tolerance use HIGH CONCENTRICITY GRADE AA, 5 MICRON COLLETS
ER TAP COLLETS (ER Tap Collets see page 78)	▪ Designed for use with production ER Tapping tools. ▪ Provide maximum concentricity with positive driving force.
ER AA GRADE 5 MICRON COLLET (ER AA Grade 5 Micron Collets see page 79–81) HIGH CONCENTRICITY	▪ Evenly distributed cutting edges for high performance machining. ▪ .0002" (5 micron) gage tolerance. ▪ Exceeds DIN requirements. ▪ Recommended use on size. ▪ 12 slots, deburred and polished. ▪ Increased grip force with reduced friction to collet seat. ▪ Improve system performance and lower cost per piece when used with a quality chuck.

COLLET SELECTION WITH COOLANT OPTIONS

ERS STEEL SEALED COLLET (ER Steel Sealed Collets see page 82–83)	▪ For use with regular straight shank tools. ▪ Withstands coolant pressure up to 1,800 psi. ▪ Collet collapse is .005."
COOLANT NUT SEAL SYSTEM (Coolant Seals see page 84 & Coolant Nuts see page 86)	▪ Allows full range of collet when used with standard collets. ▪ Allows coolant seal with grade AA, 5 Micron collets. ▪ Prevents abrasive machining dust of chips from contaminating collet system. ▪ Seals up to 1,200 psi.

COLLET SIZE	ER11	ER16	ER20	ER25	ER32	ER40
LENGTH (L)	0.708	1.082	1.240	1.338	1.574	1.811
DIAMETER (D)	0.452	0.669	0.827	1.023	1.300	1.614

Other sizes available upon request. For more information, see pages 72-84.



Anti-rotation group type 1-2
(Ring + Pin group)

(B= H-A)

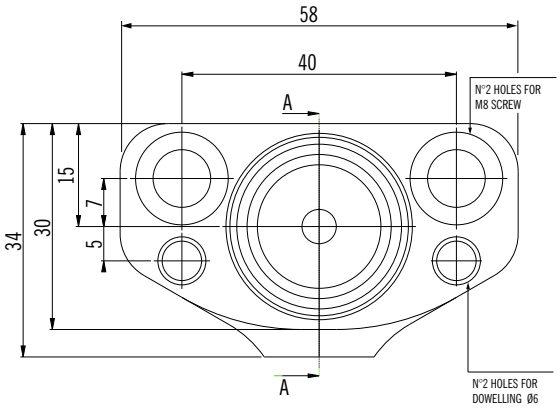
ANTI-ROTATION GROUP

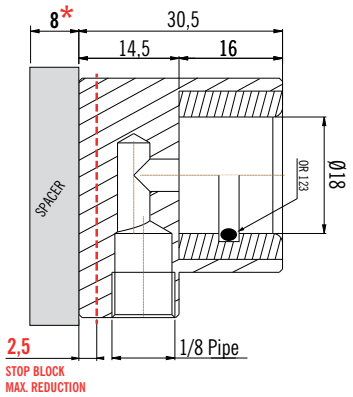
Model	Standard Group	Available Shanks	A	D	H	Option H	Pin Size	Optional Pin Size
FS90-3	TYPE 1		1.65 (41.75)	4.02 (102)	2.559 (65)	3.149 (80) 4.330 (110)	18 mm	28 mm with 110 mm H only
FS90-3L								
FS90-4		Cat 40, 50						
FS90-4L		DIN (SK) 40, 50						
F90-07		BT 40, 50						
F90-07L		HSK A 63, 80, 100						
F90-10		KM 63, 80, 100						
F90-10L		ISO 26623 C5, C6, C8						
FMU-10								
FR90-10								
F90-16S								
FMU-16		KM 80,100						
F90-16	Type 2	Cat 50	2.23 (56.75)	5.04 (128)	3.149 (80)	4.330 (110)	18 mm	28 mm with 110 mm H only
F90-16L		BT 50						
FR90-16		HSK A 80, 100						
F90-20		ISO 26623 C6, C8						
FMU-20	Type 3	Cat 50	-	6.18 (157)	4.330 (110)	-	28 mm	-
-		BT 50						
FR90-20		HSK A 80, 100						
-		KM 80,100						
F90-30D*		ISO 26623 C6, C8						

* Type 2 available on request

STOP-BLOCK type 1-2

Standard stop block provided with each head.



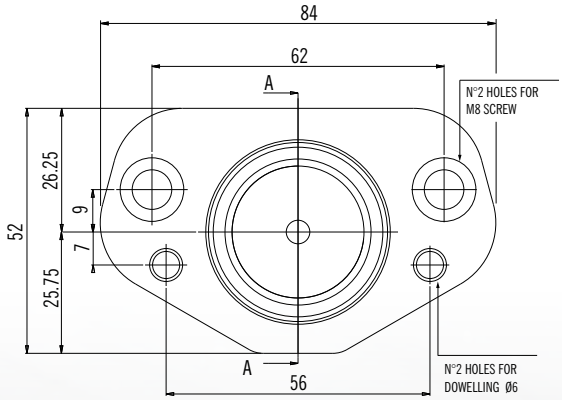


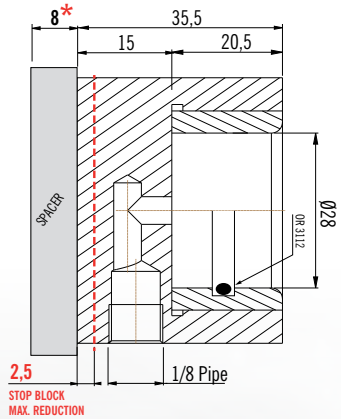
NOTE 1: * 8 mm spacer thickness is reference only. Please refer to following pages for application calculations.

STOP-BLOCK type 3

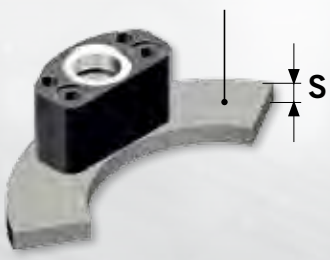
For Angle Heads type F90-S40 / F90-S40-70BAR 7 FMU 20

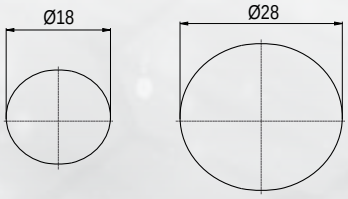
Standard stop block provided with each head.





Spacer





Elliptical Positioning Pin allows for single or multiple head applications

Note 2: Optional spacer is not provided. "S" thickness is for reference only. Actual thickness, and/or the need for a spacer can be calculated on the following pages.

CHECK SUITABILITY OF THE MACHINE TOOL SPINDLE TO MOUNT A STOP BLOCK.

If stop block is already mounted on the machine tool.

1. Check the bushing diameter in the stop block (18mm or 28mm)
2. Calculate the "A" dimension based on the shank choices in the chart.
   Note "B" is calculated from Spindle Gage Line

If no stop block is mounted on the machine spindle.

1. The standard positioning pin is OK and it will be necessary to make a spacer if dimension X is larger than the values indicated in table 1.
2. The positioning pin must be shortened if dimension X is (Incl.) between values indicated in table 1 (Max shortening 8mm with angle heads type 1 & 2, Max 6,5mm with angle heads type 3).
3. It will be necessary for a special positioning pin if dimension X is less than the values indicated in table 1.

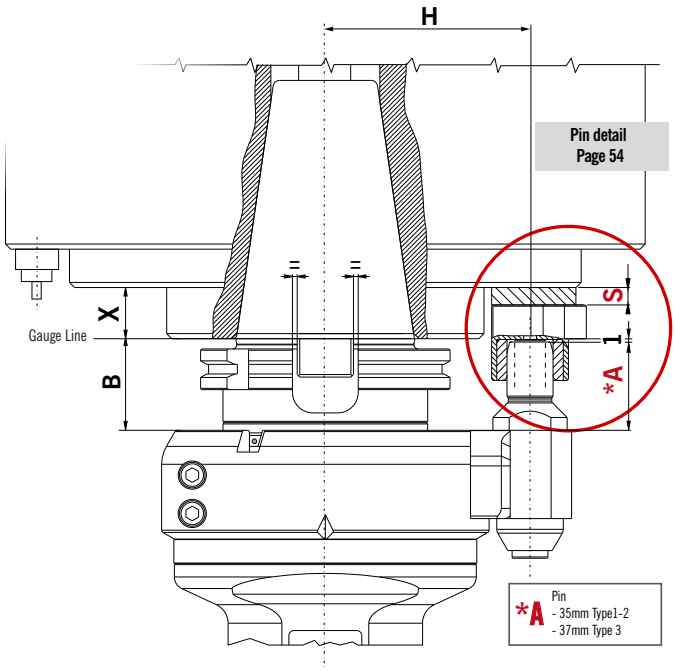


TABLE 1 - STANDARD 35 MM (TYPE 3 = 37 MM) SHORTENED S = 8 MM SPECIAL

SHANKS	B	X	"S" CALCULATION FOR SPACER THICKNESS	X	"A" HEIGHT PIN CALCULATION	X
SK-CAT-BT30 SK-CAT-BT40 SK-CAT50	35	X ≥ 23,5 mm	H = 65/80/110 - Ø18	24 > X > 16,5 mm	A= (X+B) -23,5	X < 16,
			S= X-15,5 mm			
	37	X ≥ 24 mm	H = 110 - Ø28		A= (X+B) -24	
			S= X-16 mm			
BT50	43	X ≥ 15,5 mm	H = 65/80/110 - Ø18	16 > X > 8,5 mm	A= (X+B) -23,5	16 > X > 8,5 mm
			S= X-7,5 mm			
	45	X ≥ 16 mm	H = 110 - Ø28		A= (X+B) -24	
			S= X-8 mm			
HSK-63	44	X ≥ 14,5 mm	H = 65/80/110 - Ø18	15 > X > 7,5 mm	A= (X+B) -23,5	15 > X > 7,5 mm
			S= X-6,5 mm			
		X ≥ 15 mm	H = 110 - Ø28		A= (X+B) -24	
			S= X-7 mm			
HSK-80 HSK-100	46	X ≥ 12,5 mm	H = 80/110 - Ø18	13 > X > 5,5 mm	A= (X+B) -23,5	13 > X > 5,5 mm
			S= X-4,5 mm			
		X ≥ 13 mm	H = 110 - Ø28		A= (X+B) -24	
			S= X-5 mm			

See spacer calculation example **Page 180**

CHECK SUITABILITY OF THE MACHINE TOOL SPINDLE TO MOUNT A STOP BLOCK.

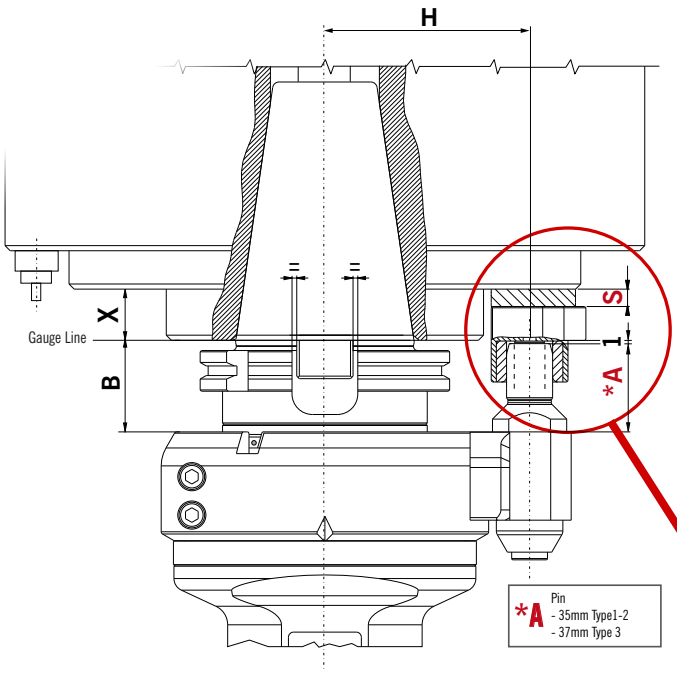
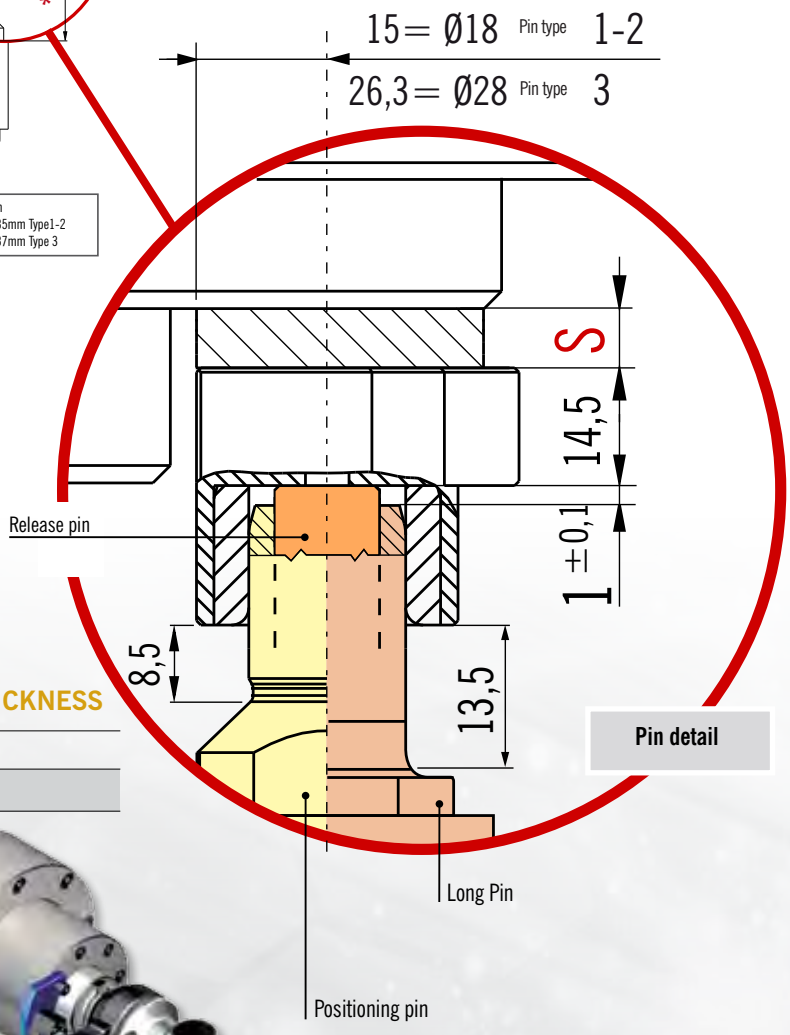


TABLE 2 Check pitch "H" through table 2

MAX MACHINE SPINDLE DIAMETER FOR STANDARD PITCH

Pin	"H" Pitch	Ø Max
Ø18	65	Ø99
	80	Ø129
Ø28	80	Ø106
	110	Ø166



ATTENTION!

The calculation for the location of the stop block must be done to allow 1 mm of free play remaining in the release pin travel. This will insure that the anti-rotation system is free to rotate without deflection caused by fixed length anti-rotation pin contact of the bottom of the stop block.

EXAMPLE OF CALCULATION FOR SPACER THICKNESS

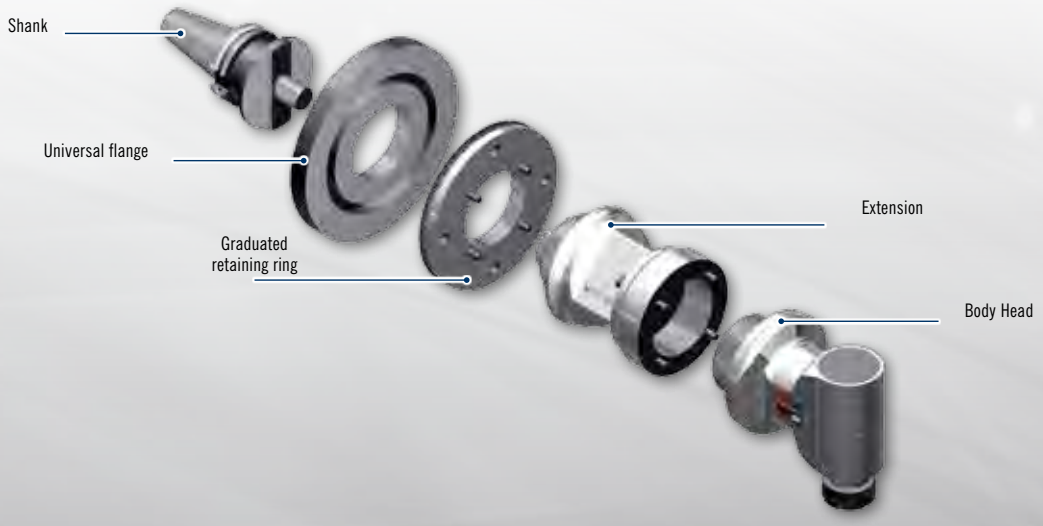
X= 23,5 mm	**B**= 35 mm (SK40)
S= **X** (23,5) - 15,5 = **8**	

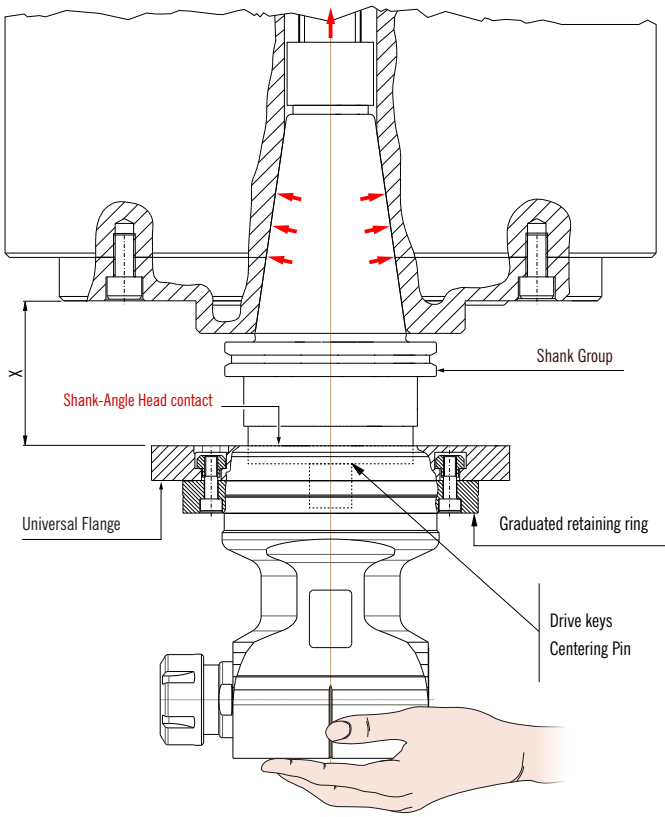
N.B:

23,5 is also the minimum X to use the standard pin

8 is the spacer thickness

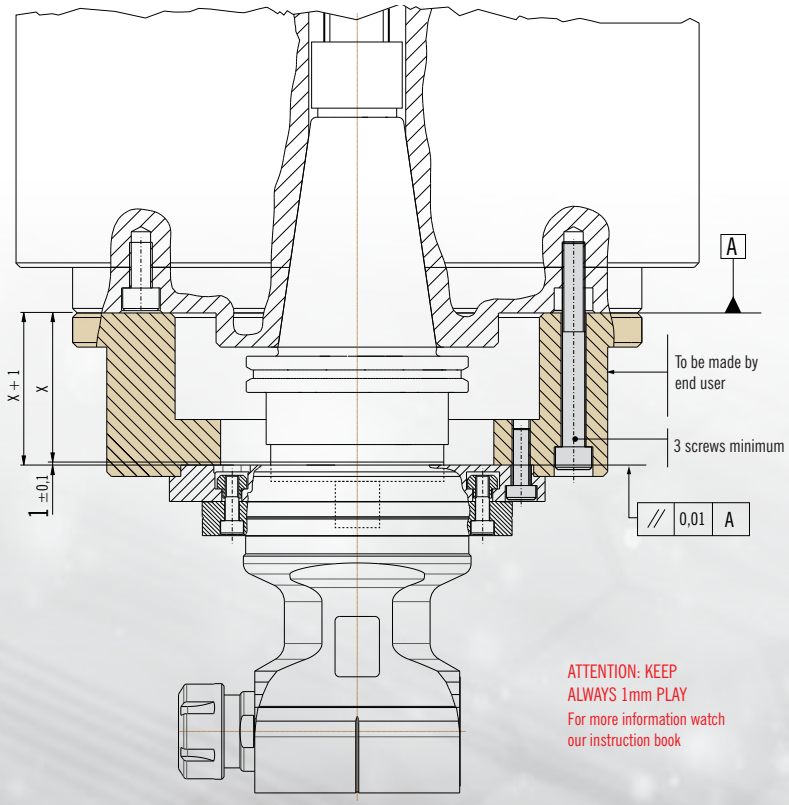
ANGLE HEADS MODEL	TYPE	SHANK GROUP Cod.	DRAWINGS	FLANGE Cod.	EXTENSION H	Cod.
F90-16S	1	9.SK30.MTC	SK DIN 69871 / CAPTO ISO 26623	9.FL.F90T1	100	9.FEX.10100
		9.SK40.MTC			200	9.FEX.10200
		9.SK50.MTC				
		9.CT40.MTC				
		9.CT50.MTC				
F90-16L F90-20	2	9.BT40.MTC	CAT ANSI B5.50 / KM	9.FL.F90T2	100	9.FEX.20100
		9.BT50.MTC			200	9.FEX.20200
		9.HSK63.MTC				
		9.HSK80.MTC				
		9.HSK100.MTC				
F90-S40	3	9.C5.MTC	BT / ISO DIN 2080	9.FL.F90T3	100	9.FEX.30100
		9.C6.MTC			200	9.FEX.30200
		9.C8.MTC				
		9.KM63.MTC				
		9.KM80.MTC				
F90-S50	4	9.KM100.MTC	HSK DIN 69893	9.FL.F90T4	300	9.FEX.40300
		9.208040.MTC		-		-
		9.208050.MTC				





STEP 1

- Assemble the shank on the machine through the machine spindle
- Assemble the universal flange on the head
- Position the head ensuring the contact shank-angle head body
- Check dimension "X"



STEP 2

- Make a spacer with X + 1mm thickness to be mounted between universal flange and machine spindle
- Use 3 screws minimum

QUOTATION REQUEST SHEET

CONTACT INFORMATION

For quick response, just photocopy this page, complete all information (please include Part Print where appropriate) and simply FAX back to Parlec at 1-800-866-5917

Date _____

***Email** _____

***Name** _____

***Company** _____

Address _____

City _____

Province _____

Zip Code _____

***Country** _____

Phone _____

***Activity:**

- ☐ End User
- ☐ Distributor
- ☐ Machine Builder
- ☐ Machine Tool Dealer

MACHINE INFORMATION

Machine Make _____

Machine Model _____

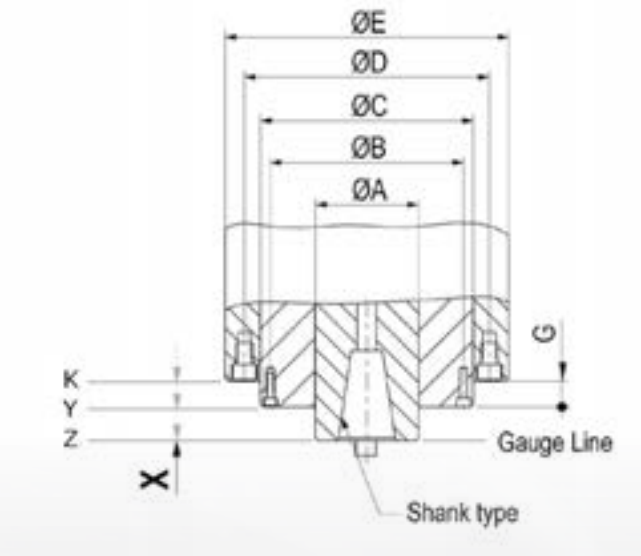
***Tool Changer:** ☐ Automatic ☐ Flange Mount

***Tool Changer Weight Capacity:** kg _____

Choose a surface for stop block: ☐ **K** ☐ **Y** ☐ **Z**

X= _____

Distance between gauge line and surface for stop-block



ØA: _____ ØB: _____ ØC: _____ ØD: _____ ØE: _____ G: _____

APPLICATION INFORMATION

Application: ☐ Milling End Mill Diameter and Flute: _____ ☐ Drilling & Tapping

Material: _____ Hardness: _____

RPM: _____ Feed Rate: _____ Depth of Cut: _____ Width of Cut: _____

Notes: (For a thorough study of the application send: drawing of the part to work, drawing tool, etc...)

QUOTATION REQUEST SHEET

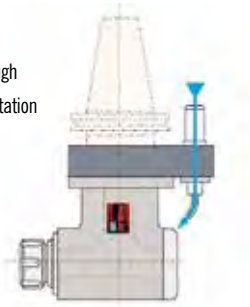
ANGLE HEAD INFORMATION

***Head Style:** ☐ Fixed 90° ☐ 0°-90° Adjustable ☐ Special Fixed Angle ☐ Dual Output ☐ Automatic Tool Change ☐ Flange Mount

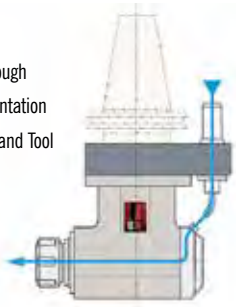
***Output Toolholder:** _____ ***Dimension:** _____

☐ Internal Coolant Required Pressure: _____

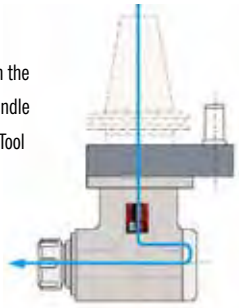
☐ Through Orientation Pin



☐ Through Orientation Pin and Tool



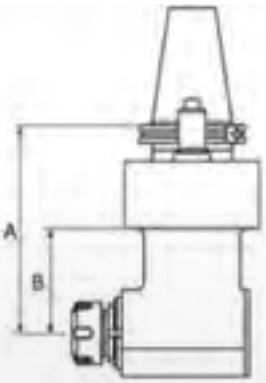
☐ Directly from the Machine Spindle through the Tool

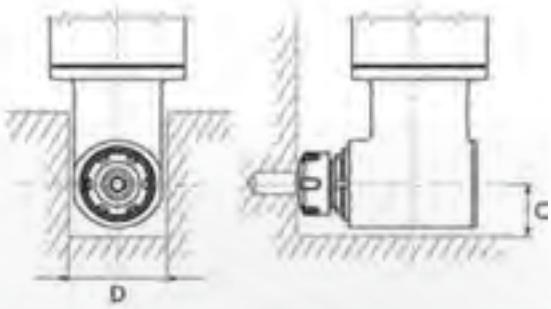


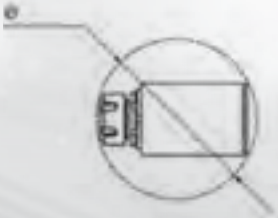
ANGLE HEAD DIMENSIONS

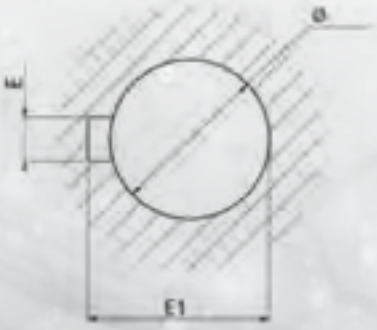
A: _____ B: _____ C: _____ D: _____

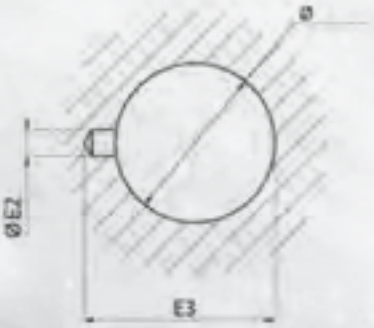
E: _____ E1: _____ E2: _____ E3: _____











Tapping

TAPPING

Parlec offers the largest range of tapping capabilities available.

Rigid, Tension Only, and Tension and Compression Systesm are standard, along with Coolant or Coolant Groove Adapters

Synchronous

With the advent of 32 bit microprocessors, modern machine tools have the capability of synchronizing the spindle rotation and spindle feed. This has made it possible to eliminate the spring compression and tension stroke utilized in traditional tapping heads. The advantage that this brings to threading is the speed the cycle can operate. The cost of building tapping heads has also been reduced by the elimination of the axial float mechanism.

Radial float is still a very important component of your threading operation. The absence of radial float will restrict the tap's ability to follow the drilled hole. The lack of radial float will force the tap to flex to meet the hole, or to cut like a mill, causing premature tap wear.

Parlec offers many solutions for synchronous tapping cycles. We recommend the use of our tension only tapping heads. This system will allow the tap to hard start, has radial float, a tension stroke to compensate for any spindle over rotation, and quick change of tap adapters. Any Parlec TA style tapping head can be adjusted or purchased as a tension only (TT). Parlec offers TR (tapping rigid) or FS (fixed shank) tapping heads in all of our non-torque controlled systems. These units have no tension or compression stroke but do offer radial float and quick change tap adapters. In addition, Parlec offers ER style tap collets with no float, and with tension and float. These are available to use with standard ER collet chucks and with ER tap collet adapters. (Use with a NUMERTAP® collet adapter provides radial float).

Tension & Compression

Tension and compression tapping heads have been the main stay of machine tool tapping for many years. Parlec offers a wide range and style of these heads. We offer the widely used BILZ-style as well as the rugged NUMERTAP® systems. Identified as (TA) in the part number.

Torque Control

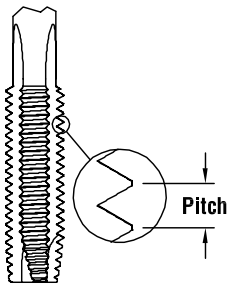
Torque control tapping is still the best solution for protecting your taps and work pieces from tap breakage. Bottom tapping or close blind hole tapping where chip evacuation is a concern, are prime operations for torque control tapping. Parlec offers torque control tapping from #4 through 1". Refer to the following pages for more detailed information: NUMERTAP® 80, 700 and BILZ-style 1,2, and 3 with torque-controlled adapters.

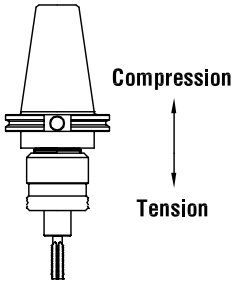
Rigid

ER tap collets are available for use with NUMERTAP® adapters as well as with standard collet chucks. Loss of radial float will result with use in standard collet chucks. Poor tap life and thread quality may result. Parlec tapping units are also available as rigid or fixed shank units (TR, FS). These units provide radial float and quick-change adapters but are rigid in the axial stroke. Unlike standard collet chuck systems, they will still yield the benefits of quick change and radial float.

Axial Feed

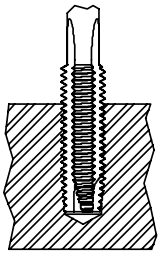
A thread is an inclined plane that is rolled into a cylinder. The distance between a point on the plane and the point directly above is the pitch of the thread. To cut a good thread the tap must be fed into the workpiece precisely on pitch. This makes a tap the only tool in metalworking in which the feed rate and the speed must be perfectly synchronized. For each revolution the tap makes it must advance the pitch. Retarding the tap's advance or pushing the tap will result in an incorrect thread form.





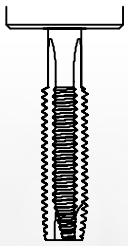
Tension Stroke

The tap is a precision ground cutting tool. To allow the tap to cut on pitch, NUMERTAP® tapping attachments feature a free floating tension stroke. When properly applied, the feed rate of the machine is slightly less than the pitch. The tension stroke in the NUMERTAP® will allow the tap to pull itself into the workpiece exactly on the pitch of the tap. This insures that the threads will gage properly.



Torque Control

A tap in one revolution must advance the pitch. If the tap is at the bottom of the hole or chip build-up blocks the hole and an effort is made to rotate the tool, catastrophic failure will result. The tool will break because there is no room to advance. To prevent this problem when tapping blind holes, select NUMERTAP® units 80 and 700, featuring torque control. Torque control tapping heads feature tension and compression strokes and perform best when programmed to underfeed. Refer to programming information in the back of this section.



Radial Float

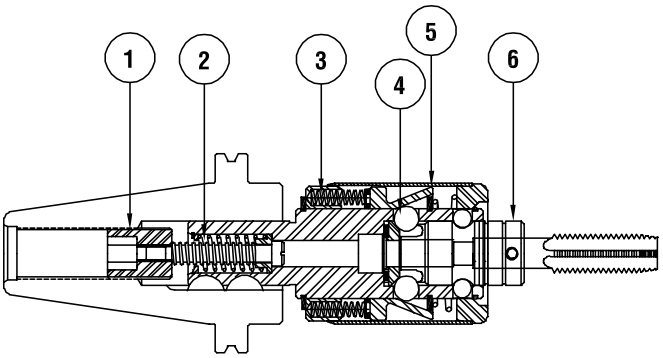
Radial Float allows for misalignment between the machine spindle and the hole to be tapped. It also allows the tap to follow a drilled hole, reducing tap flank rub. This is (Incl.) with all Parlec tapping heads.

Tension Only (Synchronous & Depth Control)

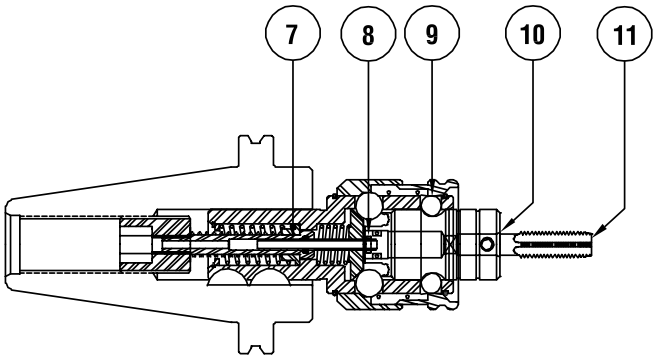
The NUMERTAP®, 100, 200, 300, and 770 units can be purchased as tension only units. (TT). Tension only is the best solution for synchronous tapping. The tension stroke will not affect the cycle during its normal operation but will add a safety margin for tap elongation or spindle over-rotation. In a normal tapping cycle, tension only will improve thread depth control by creating a positive start system.

Axial Compression

The compression stroke cushions the tap as it enters the workpiece. This feature also allows holes to be retapped. This is particularly helpful when setting up a job. The compression stroke is adjustable from .000" to .250" to maximize depth control. Refer to next page.



Numertap C50-70TA5, Torque controlled, non-coolant



Numertap C50-77TA4C, Positive Drive, Coolant-Fed

1 Adjustable Length Compensation

Available on all 700/770 and Bilz-style tapping attachments with machine tapers.

2 Tension & Compression

Tap position returns +/- .001 after each cycle. Standard with all tapping attachments. Also available as tension only or rigid for synchronous tapping.

3 Torque Spring

Torque is controlled by spring pressure. This is standard on 80 and 700 units.

4 Torque Drive Ball

Standard on 80 and 700 torque controlled systems. Scallop size on the adapter pre-calibrates torque setting.

5 Torque Sleeve

Automatically controls the amount of torque transmitted to the adapter. Makes torque adjustments unnecessary.

6 Tap Adapter, Non-Coolant

Available for all standard tap sizes. Square drive ensures positive tap drive.

7 Seals in Coolant Fed Adapters

Keeps coolant from back feeding into attachments.

8 Coolant Feed Tube

Feeds coolant directly to the tap. Keeps coolant from contaminating the attachment's internal components. Restrictor allows for up to 800 PSI.

9 Retention Ball

Retains adapter in the attachment while maintaining quick release during changeover. Acts as drive ball for positive drive adapters.

10 Coolant-Feed

Feeds coolant along the tap shank. Reduces the need for expensive coolant through taps.

11 Coolant-Through Feed

Feed from coolant through taps.

QUOTATION REQUEST SHEET

CONTACT INFORMATION

For quick response, just photocopy this page, complete all information (please include Part Print where appropriate) and simply FAX back to Parlec at 1-800-866-5917

Company

Contact Name Title

Business Address City State Zip

Phone Fax Email

MATERIAL TO BE TAPPED

Tap Size_____ Number of Tapped Holes_____

Tap Coating_____ Tap Class_____

Through - Hole_____ Blind Hole_____

Tapping Depth_____ Tap Drill Sizer_____

% of Thread Tap_____ Drill Depth_____

Tap Style:

☐ Hole Through ☐ Partial Hole
☐ No Hole ☐No Hole
☐ No Hole

Tap Material

☐ Hole Through ☐ Partial Hole
☐ No Hole ☐ No Hole

Tap Manufacturers Recommended SFM

Tap Manufacturer

☐ Torque Control Tapping ☐ Extended Reach Length

MACHINE CENTER INFORMATION

Machine Center Make_____

Model Number_____

☐ Synchronous (Rigid Tapping
☐ Tension/Compression Tapping

Machining Center Configuration

☐ Horizontal
☐ Vertical

Cooling (Cutting Fluid) Type_____

Coolant Pressure_____

Retention Knob_____

Manufacturer_____

Shank Style

☐ Hole Through ☐ Partial Hole
☐ No Hole ☐ No Hole

Other_____

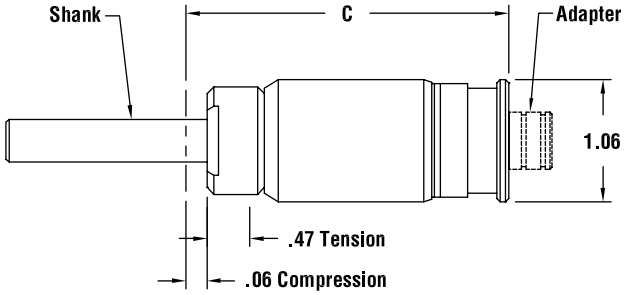
196 Tap Size Chart

		ANSI Size							
Shank	Square	Inch	Npt	Sti	Metric	Metric	ERT Tap Collets	Collets	ER11 Collets
.098	.083	–	–	–	–	DIN	–	ERXX-0118	ER11-0118
.110	.083	–	–	–	–	DIN	–	ERXX-0118	ER11-0118
.110	.088	–	–	–	–	ISO	–	ERXX-0118	ER11-0118
.124	.098	–	–	–	–	ISO	–	ERXX-0157	ER11-0137
.138	.106	–	–	–	–	DIN	–	ERXX-0157	ER11-0157
.141	.110	#0, #1, #2,#3, #4, #5, #6		#4	–	M1.6, M1.8, M2, M2.2, M2.5, M3, M3.15, M3.5	–	ERXX-0157	ER11-0157
.158	.118	–	–	–	–	DIN	–	ERXX-0196	ER11-0177
.157	.126	–	–	–	–	WES-1	–	ERXX-0196	ER11-0177
.168	.131	#8	–	–	M4	–	ERTXX-#8	ERXX-0196	ER11-0177
.177	.134	–	–	–	–	DIN	–	ERXX-0196	ER11-0196
.185	.139	–	–	–	–	NUT	–	ERXX-0196	ER11-0196
.194	.152	#10	–	#6	M4.5, M5	–	ERTXX-#10	ERXX-0196	ER11-0196
.197	.157	–	–	–	–	ISO, WES-1	–	ERXX-0236	ER11-0216
.216	.169	–	–	–	–	DIN	–	ERXX-0236	ER11-0216
.217	.177	–	–	–	–	WES-1	–	ERXX-0236	ER11-0236
.220	.165	#12	–	#8	–	–	ERTXX-#12	ERXX-0236	ER11-0236
.236	.177	–	–	–	–	WES-1	–	ERXX-0236	ER11-0255
.236	.193	–	–	–	–	DIN	–	ERXX-0236	ER11-0255
.240	.180	–	–	–	–	NUT	–	ERXX-0275	ER11-0255
.244	.197	–	–	–	–	WES-1	–	ERXX-0275	ER11-0255
.248	.197	–	–	–	–	ISO	–	ERXX-0275	ER11-0255
.255	.191	#14, 1/4	–	#10	M6, M6.3	–	ERTXX-025	ERXX-0275	ER11-0275
.276	.216	–	–	–	–	DIN	–	ERXX-0315	ER11-0275
.276	.217	–	–	–	–	ISO, DIN, WES-1	–	ERXX-0315	ER11-0275
.286	.214	–	–	–	–	–	–	ERXX-0315	–
.294	.220	–	–	–	–	NUT	–	ERXX-0315	–
.312	.234	–	1/16-27 1/8-27-Small	–	–	–	–	ERXX-0315	–
.315	.236	–	–	–	–	WES-1	–	ERXX-0315	–
.315	.244	–	–	–	–	DIN	–	ERXX-0315	–
.315	.248	–	–	–	–	ISO	–	ERXX-0315	–
.318	.238	5/16	–	1/4	M7, M8	–	ERTXX-031	ERXX-0354	–
.323	.242	7/16	–	–	–	–	ERTXX-043	ERXX-0354	–
.335	.256	–	–	–	–	WES-1	–	ERXX-0354	–
.354	.276	–	–	–	–	DIN, WES-1	–	ERXX-0354	–
.354	.280	–	–	–	–	ISO	–	ERXX-0354	–
.367	.275	1/2	–	3/8, 7/16-20	M12, M12.5	–	ERTXX-050	ERXX-0393	–
.381	.286	3/8	–	5/16	M10	–	ERTXX-037	ERXX-0393	–
.393	.315	–	–	–	–	DIN	–	ERXX-0393	–
.400	.300	–	–	–	–	NUT	–	ERXX-0433	–
.413	.315	–	–	–	–	WES-1	–	ERXX-0433	–
.429	.322	9/16	–	3/8, 7/16-20	M14	–	ERTXX-056	ERXX-0433	–
.433	.354	–	–	–	–	DIN, WES-1	–	ERXX-0433	–
.437	.328	–	1/8-27–Large	–	–	–	ERTXX-012N	ERXX-0472	–
.441	.354	–	–	–	–	ISO	–	ERXX-0472	–
.444	.333	–	–	–	–	PULLEY	–	ERXX-0472	–
.472	.354	–	–	–	–	DIN	–	ERXX-0472	–
.480	.360	5/8	–	1/2-13	M16	–	ERTXX-062	ERXX-0511	–
.492	.394	–	–	–	–	ISO, WES-1	–	ERXX-0511	–
.507	.380	–	–	–	–	–	–	ERXX-0511	–

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Collet Part Number example: ERT16-#10 Tap Collet or ER20-0275 Regular Collet Refer to pages 74–86.

		ANSI Size					
Shank	Square	Inch	Npt	Metric	Metric	ERT Collets	ER 16-40 Collets
.512	.394	-	-	-	WES-1	-	**ERXX-0551**
.542	.406	11/16	-	M18	-	**ERTXX-068**	**ERXX-0551**
.551	.433	-	-	-	DIN, WES-1	-	**ERXX-0551**
.551	.441	-	-	-	ISO	-	**ERXX-0551**
.562	.421	-	1/4 – 18	-	-	**ERTXX-025N**	**ERXX-0590**
.590	.442	3/4	-	-	-	**ERTXX-075**	**ERXX-0590**
.591	.472	-	-	-	WES-1	-	**ERXX-0630**
.630	.472	-	-	-	DIN	-	**ERXX-0630**
.630	.492	-	-	-	ISO	-	**ERXX-0630**
.633	.475	-	-	-	-	-	**ERXX-0669**
.652	.489	13/16	-	M20	-	**ERTXX-081**	**ERXX-0669**
.669	.512	-	-	-	WES-1	-	**ERXX-0669**
.687	.515	-	1/2 – 14	-	-	**ERTXX-050N**	**ERXX-0708**
.697	.523	7/8	-	M22	-	**ERTXX-087**	**ERXX-0708**
.700	.531	-	3/8 – 18	-	-	**ERTXX-037N**	**ERXX-0708**
.708	.551	-	-	-	WES-1	-	**ERXX-0708**
.708	.571	-	-	-	DIN	-	**ERXX-0708**
.748	.591	-	-	-	-	-	**ERXX-0748**
.759	.569	-	-	-	-	-	**ERXX-0787**
.760	.570	15/16	-	M24	-	**ERTXX-093**	**ERXX-0787**
.787	.591	-	-	-	WES-1	-	**ERXX-0787**
.787	.630	-	-	-	DIN	-	**ERXX-0787**
.800	.600	1”	-	M25	-	**ERTXX-100**	**ERXX-0826**
.866	.709	-	-	-	DIN	-	**ERXX-0866**
.882	.709	-	-	-	DIN	-	**ERXX-0905**
.896	.672	1 1/16, 1 1/8	-	M27	-	-	**ERXX-0905**
.906	.669	-	-	-	WES-1	-	**ERXX-0944**
.906	.679	-	3/4 – 14	-	-	-	**ERXX-0944**
.984	.748	-	-	-	-	-	**ERXX-0984**
.984	.787	-	-	-	DIN	-	**ERXX-0984**
1.021	.766	1 3/16, 1 1/4	-	M30	-	-	**ERXX-1023**
1.102	.827	-	-	-	-	-	**ERXX 1063**
1.102	.866	-	-	-	DIN	-	**ERXX-1063**
1.108	.831	1 5/16, 1 3/8	-	M33	-	-	**ERXX-1102**
1.125	.843	-	1”- 11 1/2	-	-	-	**ERXX-1141**
1.233	.925	1 7/16, 1 1/2	-	M36	-	-	-
1.260	.945	-	-	-	DIN	-	-
1.305	.979	1 5/8	-	M39	-	-	-
1.312	.984	-	1 1/4 – 11 1/2	-	-	-	-
1.417	1.142	-	-	-	DIN	-	-
1.430	1.072	1 3/4	-	M42	-	-	-
1.500	1.125	-	1 1/2 -11 1/2	-	-	-	-
1.519	1.139	1 7/8	-	-	-	-	-
1.575	1.260	-	-	-	DIN	-	-
1.644	1.233	2”	-	M48	-	-	-
1.772	1.378	-	-	-	DIN	-	-
1.875	1.406	-	2” – 11 1/2	-	-	-	-
1.894	1.420	2 1/4	-	M56	-	-	-
1.968	1.535	-	-	-	DIN	-	-
2.250	1.687	-	2 1/2 – 8	-	-	-	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Collet Part Number example: ERT16-#10 Tap Collet or ER20-0275 Regular Collet Refer to pages 74–86.



NUMERTAP® 80 S37-80TA3 shown here.

Torque-controlled for bottom tapping on manual machines, tension and compression.

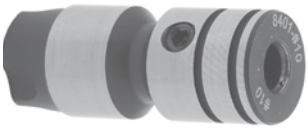
From #4-1/4" (0-80 IN/lbs.)

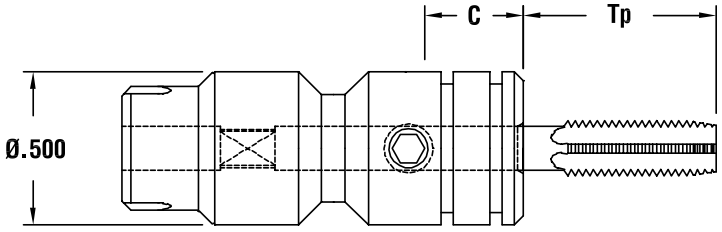
- Very sensitive, calibrated torque control prevents tap breakage when bottom tapping.
- Short compression stroke allows holes to be retapped and ensures depth control.
- Rugged alloy steel construction for long trouble-free service life.
- Free-floating ball bearing tension stroke ensures thread size and quality.
- Small outside diameter allows tapping near shoulders without tap extensions.
- Short gage length provides more clearance on vertical machines.
- Quick-change system allows dull taps to be replaced without removing unit from the spindle.
- Radial float improves thread quality and tap life.

TORQUE-CONTROLLED TAPPING

Part Number	Shank	C	Approx. Weight
S37-80TA3	3/8 Straight	3.00	9 oz.

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Special Adapters available to #00. Order Adapters Separately.





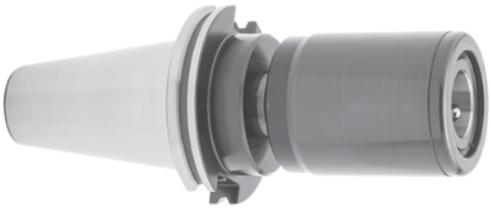
NUMERTAP® 80 Tap Adapter 8401-#10 shown here.

- For use in NUMERTAP® 80 Attachments.

TAP ADAPTERS

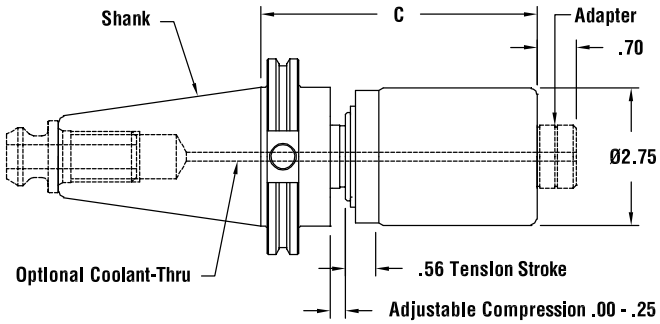
Part Number	Tap Size	C	Tp	Metric Tap Size (ANSI)
8401-#4	#4	.38	0.87	M2.5
8401-#6	#6	.38	1.00	M3.5
8401-#8	#8	.38	1.00	M4
8401-#10	#10	.38	1.18	M5
8401-#12	#12	.38	1.16	-
8401-025	1/4	.38	1.25	M6

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.



NUMERTAP® 700 C50-70TA5 shown here.

Torque-controlled for bottom tapping, tension and compression on CNC machines. Pre-calibrated torque for #6 to 1" taps in non-ferrous materials and#6 to 3/4" taps in ferrous materials.



Order Torque Calibrated Adapters separately (see next page).
Order Retention Knob Separately (see pages 130–132).

Up to 800 psi

- Large work range eliminates the need to purchase several units.
- Radial float improves thread quality and tap life.
- Precalibrated torque control prevents tap breakage when bottom tapping.
- Free-floating tension stroke ensures thread size and quality.
- Adjustable compression stroke ensures depth control.
- Rugged alloy steel construction for long trouble-free service life.
- Through-spindle coolant option available gets coolant into the hole and flushes chips.
- Quick-change system allows taps to be quickly exchanged.

TORQUE-CONTROLLED TAPPING

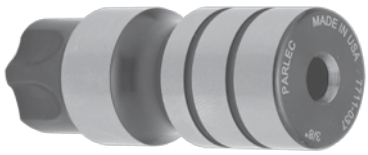
Part Number	Part Number with Coolant Fed	Shank	C	Approx. Weight
B40-70TA5	-	BT40	5.90	7 lbs.

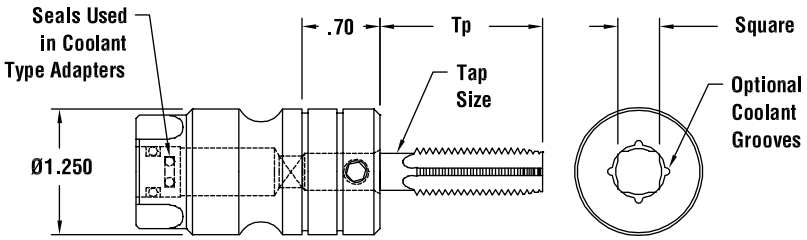
Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. PC6 and PC7 modular attachments available upon request.

*For positive drive adapters, see pages 198.

CAPACITY

Ferrous	Non-Ferrous	Positive Drive Capacity
#10 – 3/4	#10 – 1	#6 – 1 5/8
1/1 – 1/2 NPT	1/16 – 1/2 NPT	1/16 – 1 1/4 NPT
M5 – M20	M5 – M25	M3.5 – M33





NUMERTAP® 700 Tap Adapter 7711-025 shown here.

For use in NUMERTAP® 700 Attachments.

Coolant or Coolant Groove Adapters must be used when coolant is fed through Numertap® Attachments.

TAP ADAPTERS

Part Number	Coolant*	Coolant Groove*	Tap Size	Metric Tap Size (ANSI)	Tp	Shank	Square
7711-#6	**7711C-#6**	**7711CG-#6**	#6	M3.5	.94	.141	.110
7711-#8	**7711C-#8**	**7711CG-#8**	#8	M4	1.00	.168	.131
7711-#10	**7711C-#10**	**7711CG-#10**	#10	M5	1.37	.194	.152
7711-#12	**7711C-#12**	**7711CG-#12**	#12	-	1.34	.218	.155
7711-025	**7711C-025**	**7711CG-025**	1/4	M6	1.44	.255	.191
7711-031	**7711C-031**	**7711CG-031**	5/16	M7,M8	1.59	.318	.238
7711-037	**7711C-037**	**7711CG-037**	3/8	M10	1.75	.381	.286
7711-043	**7711C-043**	**7711CG-043**	7/16	-	2.00	.323	.242
7711-050	**7711C-050**	**7711CG-050**	1/2	M12	2.19	.367	.275
7711-056	**7711C-056**	**7711CG-056**	9/16	M14	2.34	.429	.322
7711-062	**7711C-062**	**7711CG-062**	5/8	M16	2.50	.480	.360
7711-068	**7711C-068**	**7711CG-068**	11/16	M18	2.41	.542	.406
7711-075	**7711C-075**	**7711CG-075**	3/4	2.56	.590	.442	-
7711-081	**7711C-081**	**7711CG-081**	13/16	M20	2.53	.652	.489
7711-087	**7711C-087**	**7711CG-087**	7/8	M22	2.79	.697	.523
7711-093	**7711C-093**	**7711CG-093**	15/16	M24	3.01	.760	.570
7711-100	**7711C-100**	**7711CG-100**	1	M25	3.15	.800	.600
7714-006	**7714C-006**	**7714CG-006**	1/16 NPT (1/8 NPT)	-	1.00	.312	.234
7714-012	**7714C-012**	**7714CG-012**	1/8 NPT	-	1.00	.437	.328
7714-025	**7714C-025**	**7714CG-025**	1/4 NPT	-	1.25	.562	.421
7714-037	**7714C-037**	**7714CG-037**	3/8 NPT	-	1.31	.700	.531
7714-050	**7714C-050**	**7714CG-050**	1/2 NPT	-	1.50	.687	.515

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. *For DIN, ISO, or Imperial Metric Shanks, please call Parlec or your local Parlec representative. *Coolant requires oil hole tap. Coolant groove uses standard taps. Both require coolant-fed unit NUMERTAP torque controlled adapters require no adjustment. Each adapter is calibrated for approximately 80% of the tap breakage torque for most standard hand, plug, or bottom taps.

NUMERTAP® 770 C50-77TA4 shown here.

Tension & Compression, Positive Drive, type for through-hole tapping on CNC machines, with traditional tapping cycles.

Order Retention Knob Separately (see pages 130–132).
Order Adapters Separately (see pages 204-206).

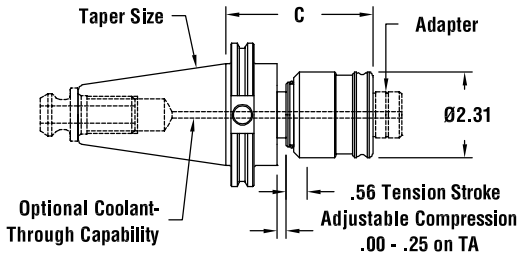
CAPACITY

#6 – 1 5/8 Hand
M3.5 – M36
1/16 – 11/4 NPT

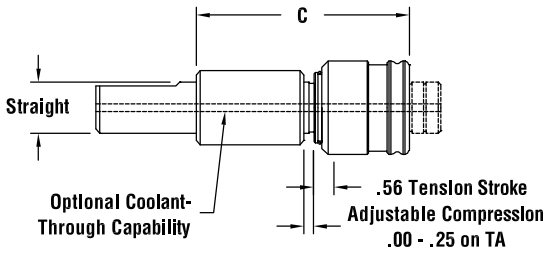
TEN/COMP TAPPING

Part Number	Coolant Through	C	Shank Type	Style	Approx. Weight
B40-77TA4	**B40-77TA4C**	4.99	BT40	1	5 lbs.
C40-77TA4	**C40-77TA4C**	4.85	CV40	1	5 lbs.
C50-77TA4	**C50-77TA4C**	4.04	CV50	1	9 lbs.
N50-77TA4	**-**	4.04	NMTB50	1	9 lbs.
PC6-77TA5	**PC6-77TA5C**	5.16	PC6	-	5 lbs.
S10-77TA5	**S10-77TA5C**	5.25	1 Straight	2	4 lbs.
S12-77TA5	**S12-77TA5C**	5.25	1 1/4 Straight	2	4 lbs.
S15-77TA5	**S15-77TA5C**	5.25	1 1/2 Straight	2	4 lbs.
S20-77TA2	**S20-77TA2C**	2.75	2 Straight	3	4 lbs.

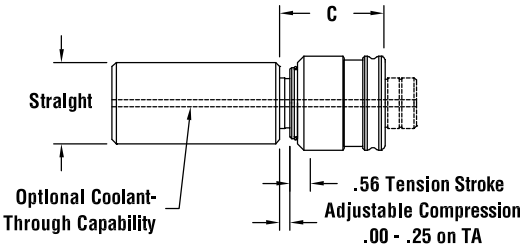
Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. Form B (Flange Entry) coolant available upon request.



Style 1



Style 2



Style 3

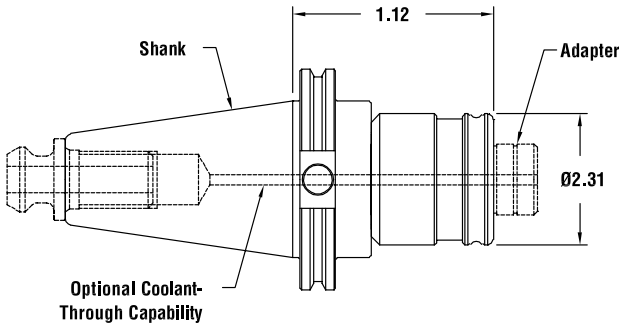
From #6 – 1 5/8" Hand and 1/16 – 1 1/4" Pipe

- Large work range eliminates the need to purchase multiple units.
- Short projection maximizes workpiece size.
- Adjustable compression stroke ensures accurate depth control.
- Free-floating tension stroke ensures thread size and quality.
- Through-spindle coolant option gets coolant into the hole and flushes chips.
- Rugged alloy steel construction for long trouble-free service life.
- Radial float improves thread quality and tap life.

NUMERTAP® 770 C40-77TR4 shown here.

Tension-Only for Synchronous and Blind Hole tapping on CNC machines. Synchronous (Rigid) tapping on machines with 32 bit microprocessors. Quick-change tap adapters and radial float ensure good tapping quality.

For best performance in synchronous tapping cycles, use tension only attachments. These attachments will help eliminate tap elongation, common in synchronous tapping.



Order Adapters Separately (see pages 204-206).
Order Retention Knob Separately (see pages 130–132).

From #6 – 1 5/8" Hand and 1/16 – 1 1/4" Pipe

- Tension only (TT) allows synchronous tapping on machines so equipped.
- Solid design with no tension or compression (TR, FS).
- Quick-change tap adapters ensures quick, easy tap changeover.
- Radial float allows tap to follow the hole.
- Large work range maximizes workpiece size and eliminates need to purchase multiple units.
- Short projection.
- Through-spindle coolant option gets coolant into the hole and flushes chips.
- Rugged alloy steel construction for long trouble-free service life.

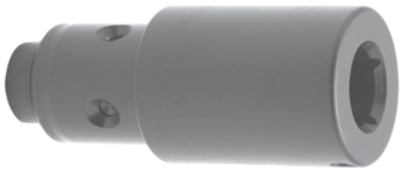
TENSION-ONLY TAPPING

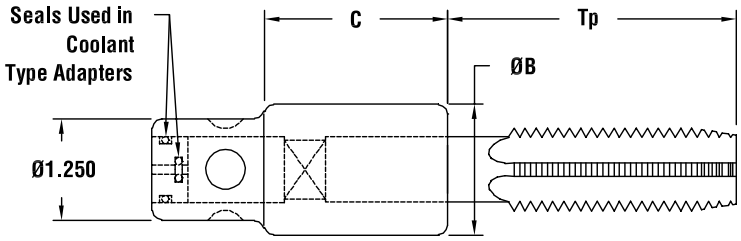
Part Number	Coolant Through	C	Shank Type	Approx. Weight
B40-77TT4	**B40-77TT4C**	4.99	BT40	5 lbs.
C40-77TT4	**C40-77TT4C**	4.85	CV40	5 lbs.
C50-77TT4	**C50-77TT4C**	4.04	CV50	9 lbs.
PC6-77TT5	**PC6-77TT5C**	5.16	PC6	5 lbs.
S10-77TT5	**S10-77TT5C**	5.25	1 Straight	4 lbs.
S20-77TT2	**S20-77TT2C**	2.75	2 Straight	4 lbs.

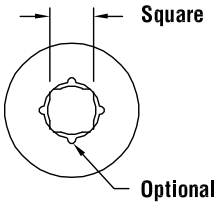
RIGID TAPPING

Part Number	Coolant Through	C	Shank Type	Approx. Weight
B40-77TR4	**B40-77TR4C**	3.75	BT40	5 lbs.
C40-77TR4	**C40-77TR4C**	3.75	CV40	5 lbs.
C50-77TR4	**C50-77TR4C**	3.75	CV50	9 lbs.
N40-77FS4	-	4.85	NMTB40	5 lbs.
PC6-77FS5	**PC6-77FS5C**	5.16	PC6	5 lbs.
S10-77FS5	**S10-77FS5C**	5.25	1 Straight	4 lbs.
S20-77FS2	-	2.75	2 Straight	4 lbs.

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.







NUMERTAP® 770 Tap Adapter 7716CG-100 shown here.
Can be used to extend the range of N/C 700s. Will result in loss of torque control.

Positive-drive, standard length for use in NUMERTAP® 770 Attachments.

770 TAP ADAPTERS

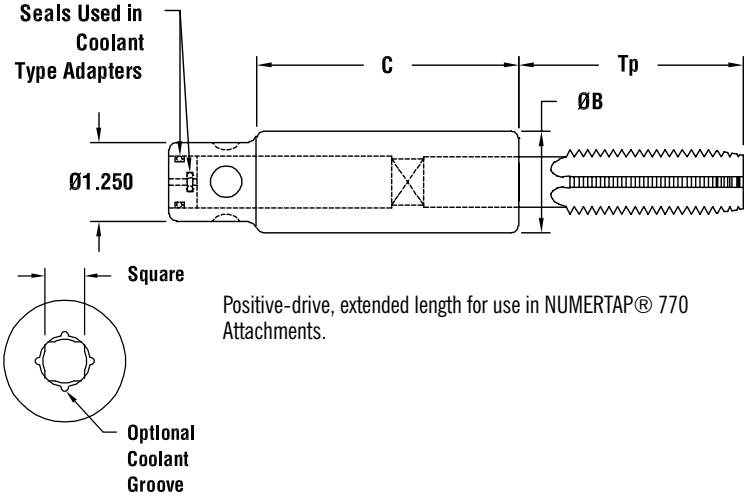
Part Number	Coolant**	Coolant Groove**	Tap Size	Metric Tap Size (ANSI*)	B	C	Tp	Shank	Square
7716-#6	7716C-#6	7716CG-#6	#6	M3.5	1.25	.70	1.19	.141	.110
7716-#8	7716C-#8	7716CG-#8	#8	M4	1.25	.70	1.27	.168	.131
7716-#10	7716C-#10	7716CG-#10	#10	M5	1.25	.70	1.51	.194	.152
7716-#12	7716C-#12	7716CG-#12	#12	-	1.25	.70	1.51	.220	.165
7716-025	7716C-025	7716CG-025	1/4	M6	1.25	.70	1.63	.225	.191
7716-031	7716C-031	7716CG-031	5/6	M7,M8	1.25	.70	1.79	.318	.238
7716-037	7716C-037	7716CG-037	3/8	M10	1.25	.70	2.00	.381	.286
7716-043	7716C-043	7716CG-043	7/16	-	1.25	.70	2.06	.323	.242
7716-050	7716C-050	7716CG-050	1/2	M12	1.25	.70	2.23	.367	.275
7716-056	7716C-056	7716CG-056	9/16	M14	1.25	.70	2.40	.429	.322
7716-062	7716C-062	7716CG-062	5/8	M16	1.25	.70	2.03	.480	.360
7716-068	7716C-068	7716CG-068	11/16	M18	1.61	2.25	2.17	.542	.406
7716-075	7716C-075	7716CG-075	3/4	-	1.61	2.25	2.32	.590	.442
7716-081	7716C-081	7716CG-081	13/16	M20	1.61	2.25	2.52	.652	.489
7716-087	7716C-087	7716CG-087	7/8	M22	1.61	2.25	2.71	.697	.523
7716-093	7716C-093	7716CG-093	15/16	M24	1.61	2.25	2.60	.760	.570
7716-100	7716C-100	7716CG-100	1	M25	1.61	2.25	3.05	.800	.600
7716-106	7716C-106	7716CG-106	1 1/16 & 11/8	M27	1.61	2.25	2.99/3.30	.896	.672
7716-118	7716C-118	7716CG-118	1 3/16 & 1 1/4	M30	1.61	2.25	2.56/2.88	1.021	.766
7716-131	7716C-131	7716CG-131	1 5/16 & 1 3/8	M33	1.98	2.25	2.84/3.16	1.108	.831
7716-144	7716C-144	7716CG-144	1 7/16 & 1 1/2	-	1.98	2.25	4.06/4.37	1.233	.925
7716-162	7716C-162	7716CG-162	1 5/8	-	1.98	2.25	4.67	1.305	.979
7717-006	7717C-006	7717CG-006	1/16 NTP - 1/8 NTP	-	1.25	.70	1.06	.312	.234
7717-012	7717C-012	7717CG-012	1/8 NTP	-	1.25	.70	1.06	.437	.328
7717-025	7717C-025	7717CG-025	1/4 NTP	-	1.25	.70	1.18	.562	.421
7717-037	7717C-037	7717CG-037	3/8 NTP	-	1.25	.70	1.06	.700	.531
7717-050	7717C-050	7717CG-050	1/2 NTP	-	1.61	2.25	1.53	.687	.515
7717-075	7717C-075	7717CG-075	3/4 NTP	-	1.61	2.25	1.64	.906	.679
7717-100	7717C-100	7717CG-100	1 NTP	-	1.61	2.25	1.93	1.125	.843
7717-125	7717C-125	7717CG-125	1 1/4 NTP	-	1.98	2.25	2.00	1.312	.984

*For DIN, ISO, or Imperial Metric Shanks, please call Parlec or your local Parlec representative.
**Coolant requires oil hole taps. Coolant groove uses standard taps. Both require coolant-fed units.

NUMERTAP® 770 3" Tap Adapter 7716-3-025 shown here.

Can be used to extend the range of N/C 700s. Will result in loss of Torque Control.

Coolant or Coolant Adapters must be used when coolant is fed through Numertap Attachments.



Positive-drive, extended length for use in NUMERTAP® 770 Attachments.

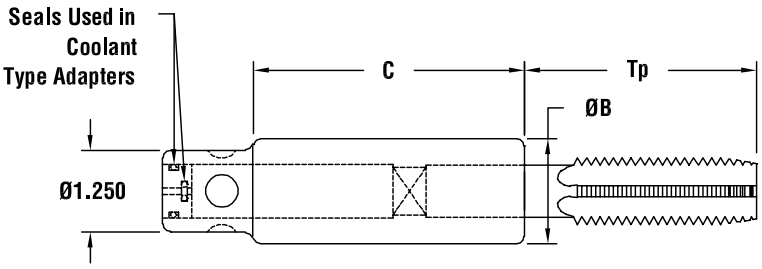
770 3" TAP ADAPTERS

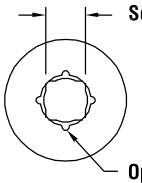
Part Number	Coolant**	Coolant Groove**	Tap Size	(ANSI*)	B (QR)	B	C	Tp	Shank	Square
7716-3-#6	7716C-3-#6	7716CG-3-#6	#6	M3.5	.75	.75	3.70	1.06	.141	.110
7716-3-#8	7716C-3-#8	7716CG-3-#8	#8	M4	.75	.75	3.70	1.13	.168	.131
7716-3-#10	7716C-3-#10	7716CG-3-#10	#10	M5	.75	.75	3.70	1.38	.194	.152
7716-3-#12	7716C-3-#12	7716CG-3-#12	#12	-	.75	.75	3.70	1.34	.220	.165
7716-3-025	7716C-3-025	7716CG-3-025	1/4	M6	.75	.75	3.70	1.44	.225	.191
7716-3-031	7716C-3-031	7716CG-3-031	5/16	M7,M8	.88	.75	3.70	1.59	.318	.238
7716-3-037	7716C-3-037	7716CG-3-037	3/8	M10	.88	.88	3.70	1.75	.381	.286
7716-3-043	7716C-3-043	7716CG-3-043	7/16	-	.88	.88	3.70	2.00	.323	.242
7716-3-050	7716C-3-050	7716CG-3-050	1/2	M12	.88	.88	3.70	2.19	.367	.275
7716-3-056	7716C-3-056	7716CG-3-056	9/16	M14	1.25	1.00	3.70	2.35	.429	.322
7716-3-062	7716C-3-062	7716CG-3-062	5/8	M16	1.25	1.00	3.70	2.50	.480	.360
7716-3-068	7716C-3-068	7716CG-3-068	11/16	M18	1.25	1.25	3.70	2.40	.542	.406
7716-3-075	7716C-3-075	7716CG-3-075	3/4	-	1.25	1.25	3.70	2.56	.590	.442
7716-3-081	7716C-3-081	7716CG-3-081	13/16	M20	1.25	1.25	3.70	2.53	.652	.489
7716-3-087	7716C-3-087	7716CG-3-087	7/8	M22	1.25	1.25	3.70	2.68	.697	.523
7716-3-093	7716C-3-093	7716CG-3-093	15/16	M24	1.61	1.50	3.70	2.90	.760	.570
7716-3-100	7716C-3-100	7716CG-3-100	1	M25	1.61	1.50	3.70	2.81	.800	.600
7716-3-106	7716C-3-106	7716CG-3-106	1 1/16 & 1 1/8	M27	-	1.61	3.70	2.75/3.06	.896	.672
7716-3-118	7716C-3-118	7716CG-3-118	1 3/16 & 1 1/4	M30	-	1.61	3.70	2.94/3.25	1.021	.766
7716-3-131	7716C-3-131	7716CG-3-131	1 5/16 & 1 3/8	M33	1.98	1.61	3.70	3.19/3.50	1.108	.831
7716-3-144	7716C-3-144	7716CG-3-144	1 7/16 & 1 1/2	-	1.98	1.98	3.70	3.44/3.75	1.233	.925
7716-3-162	7716C-3-162	7716CG-3-162	1 5/8	-	1.98	1.98	3.70	4.06	1.305	.979
7717-3-006	7717C-3-006	7717CG-3-006	1/16 NPT & 1/8 NPT	-	1.00	1.00	3.70	1.00	.312	.234
7717-3-012	7717C-3-012	7717CG-3-012	1/8 NPT	-	1.00	1.00	3.70	1.00	.437	.328
7717-3-025	7717C-3-025	7717CG-3-025	1/4 NPT	-	1.00	1.00	3.70	1.25	.562	.421
7717-3-037	7717C-3-037	7717CG-3-037	3/8 NPT	-	1.25	1.25	3.70	1.31	.700	.531
7717-3-050	7717C-3-050	7717CG-3-050	1/2 NPT	-	1.25	1.25	3.70	1.50	.687	.515
7717-3-075	7717C-3-075	7717CG-3-075	3/4 NPT	-	1.61	1.61	3.70	1.44	.906	.679
7717-3-100	7717C-3-100	7717CG-3-100	1 NPT	-	1.98	1.61	3.70	1.88	1.125	.843
7717-3-125	7717C-3-125	7717CG-3-125	1 1/4 NPT	-	-	1.98	3.70	1.81	1.312	.984

*For DIN, ISO, or Imperial Metric Shanks, please call Parlec or your local Parlec representative.
**Coolant requires oil hole taps. Coolant groove uses standard taps. Both require coolant-fed units.

206 Tap Adapters – 6" Extended

NUMERTAP® 770 6" Tap Adapter 7716-6-025 shown here.





- Positive-drive, extended length for use in NUMERTAP® 770 Attachments.

Can be used to extend the range of N/C 700s. Will result in loss of Torque Control.

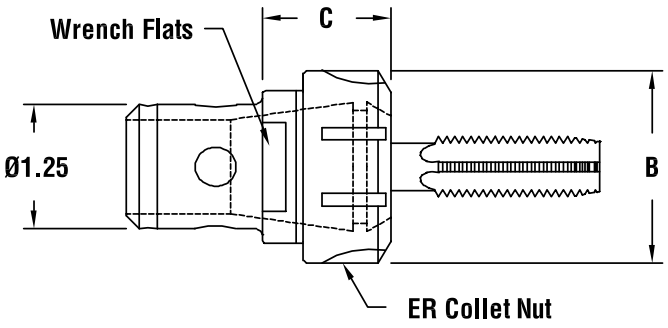
Coolant or Coolant Adapters must be used when coolant is fed through NUMERTAP® Attachments.

770 6" TAP ADAPTERS

Part Number	Coolant**	Coolant Groove**	Tap Size	Metric Tap Size (ANSI*)	B	C	Tp	Shank	Square
7716-6-#6	7716C-6-#6	7716CG-6-#6	#6	M3.5	.75	6.70	1.06	.141	.110
7716-6-#8	7716C-6-#8	7716CG-6-#8	#8	M4	.75	6.70	1.13	.168	.131
7716-6-#10	7716C-6-#10	7716CG-6-#10	#10	M5	.75	6.70	1.38	.194	.152
7716-6-#12	7716C-6-#12	7716CG-6-#12	#12	-	.75	6.70	1.34	.220	.165
7716-6-025	7716C-6-025	7716CG-6-025	1/4	M6	.75	6.70	1.44	.255	.191
7716-6-031	7716C-6-031	7716CG-6-031	5/16	M7,M8	.75	6.70	1.59	.318	.238
7716-6-037	7716C-6-037	7716CG-6-037	3/8	M10	.88	6.70	1.75	.381	.286
7716-6-043	7716C-6-043	7716CG-6-043	7/16	-	.88	6.70	2.00	.323	.242
7716-6-050	7716C-6-050	7716CG-6-050	1/2	M12	.88	6.70	2.19	.367	.275
7716-6-056	7716C-6-056	7716CG-6-056	9/16	M14	1.00	6.70	2.35	.429	.322
7716-6-062	7716C-6-062	7716CG-6-062	5/8	M16	1.00	6.70	2.50	.480	.360
7716-6-068	7716C-6-068	7716CG-6-068	11/16	M18	1.25	6.70	2.40	.542	.406
7716-6-075	7716C-6-075	7716CG-6-075	3/4	-	1.25	6.70	2.56	.590	.442
7716-6-081	7716C-6-081	7716CG-6-081	13/16	M20	1.25	6.70	2.53	.652	.489
7716-6-087	7716C-6-087	7716CG-6-087	7/8	M22	1.25	6.70	2.68	.697	.523
7716-6-093	7716C-6-093	7716CG-6-093	15/16	M24	1.50	6.70	2.90	.760	.570
7716-6-100	7716C-6-100	7716CG-6-100	1	M25	1.50	6.70	2.81	.800	.600
7716-6-106	7716C-6-106	7716CG-6-106	1 1/16 &1 1/8	M27	1.61	6.70	2.75/3.06	.896	.672
7716-6-118	7716C-6-118	7716CG-6-118	1 3/16 & 1 1/4	M30	1.61	6.70	2.94/3.25	1.021	.766
7716-6-131	7716C-6-131	7716CG-6-131	1 5/16 & 1 3/8	M33	1.61	6.70	3.19/3.50	1.108	.831
7716-6-144	7716C-6-144	7716CG-6-144	1 7/16 & 1 1/2	-	1.98	6.70	3.44/3.75	1.223	.925
7716-6-162	7716C-6-162	7716CG-6-162	1 5/8	-	1.98	6.70	4.06	1.305	.979
7717-6-006	7717C-6-006	7717CG-6-006	1/16 NPT & 1/8 NPT	-	1.00	6.70	1.00	.312	.234
7717-6-012	7717C-6-012	7717CG-6-012	1/8 NPT	-	1.00	6.70	1.00	.437	.328
7717-6-025	7717C-6-025	7717CG-6-025	1/4 NPT	-	1.00	6.70	1.25	.562	.421
7717-6-037	7717C-6-037	7717CG-6-037	3/8 NPT	-	1.25	6.70	1.31	.700	.531
7717-6-050	7717C-6-050	7717CG-6-050	1/2 NPT	-	1.25	6.70	1.50	.687	.515
7717-6-075	7717C-6-075	7717CG-6-075	3/4 NPT	-	1.61	6.70	1.44	.906	.679
7717-6-100	7717C-6-100	7717CG-6-100	1 NPT	-	1.61	6.70	1.88	1.125	.843
7717-6-125	7717C-6-125	7717CG-6-125	1 1/4 NPT	-	1.98	6.70	1.81	1.312	.984

*For DIN, ISO, or Imperial Metric Shanks, please call Parlec or your local Parlec representative.
**Coolant requires oil hole taps. Coolant groove uses standard taps. Both require coolant-fed units.

ADAPTERS FOR USE WITH SQUARE DRIVE COLLETS & ANSI (INCH & METRIC) TAP SHANKS



ER COLLET TAP ADAPTERS

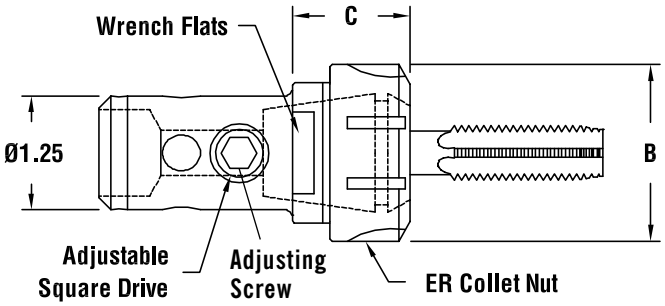
Part Number	Part Number with Coolant	Collet Size	Tap Size Range	B	C	Collet Nut	Collet Nut Wrench
7716-ER16	**7716C-ER16**	16	#8 - 1/4	1.26	1.54	16ERHPN	ECN20W
7716-ER20	**7716C-ER20**	20	#8 - 3/8	1.38	1.58	20ERHPN	20ERHNW
7716-ER25	**7716C-ER25**	25	#8 - 5/8	1.65	1.50	25ERPN	25ERNW
7716-ER32	**7716C-ER32**	32	#8 - 13/16	1.97	2.34	32ERPN	32ERNW
7716-ER40	**7716C-ER40**	40	1/4 - 1	2.48	2.34	40ERPN	40ERNW

Order Wrenches separately (see page 86).

ADAPTERS FOR USE WITH DIN, ISO, JAPANESE & ANSI (INCH & METRIC) TAP SHANKS

NUMERTAP® 770 ER Tap Adapter 7716-ER32U shown here.

Adjustable drive plug for any square size in the tap range. Use standard ER Collets, refer to tap size chart., pages 74–86.



- For use in all tapping cycles on DIN, ISO, Japanese or ANSI (inch and metric) tap shanks.
- Provides flexibility for any tap shank size.

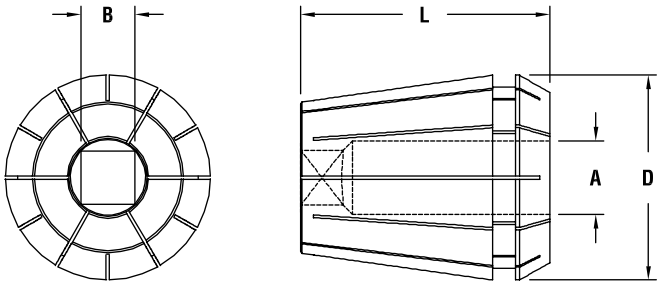
UNIVERSAL ER COLLET TAP ADAPTERS

Part Number	Coolant	Collet Size Range	Tap Size	B	C	Collet Nut Wrench	Collet Nut Wrench*	Open End	Adjusting Screw
7716-ER16U	**7716-ER16UC**	16	#6-3/8	1.26	1.71	16ERHPN	ECN20W	ECN20W	7716-FD01
7716-ER20U	**7716-ER20UC**	20	#10-5/8	1.38	1.93	20ERHPN	20ERHNW	ECN20W	7716-FD01
7716-ER32U	**7716-ER32UC**	32	9/16-15/16	1.97	2.43	32ERPN	32ERNW	180CNW	7716-FD01
7716-ER40U	**7716-ER40UC**	40	*1.0-1.375	2.48	3.54	40ERPN	40ERNW	180CNW	7716-FD04

*Fine Pitch taps only
**Use on wrench flats to assist in tightening collet nut.

NUMERTAP® 770 ER Tapping Collet
ERT32-056 shown here.

- For use in NUMERTAP® 770 Attachments when synchronous tapping.
- Provide maximum concentricity with positive driving force.



ER16-ER40 ER TAP COLLETS INCH METRIC

PART NUMBER						
ER16	ER20	ER25	ER32	ER40	Inch Range	ANSI Metric
ERT16-#0-6	-	-	ERT32-#0-6	-	#0-#6	-
ERT16-#8	ERT20-#8	ERT25-#8	ERT32-#8	-	#8	M4
ERT16-#10	ERT20-#10	ERT25-#10	ERT32-#10	-	#10	M4.5, M5
ERT16-#12	ERT20-#12	ERT25-#12	ERT32-#12	-	#12	-
-	-	ERT25-012N	ERT32-012N	ERT40-012N	1/8" NPT	-
ERT16-025	ERT20-025	ERT25-025	ERT32-025	ERT40-025	1/4"	M6,M6.5
-	-	-	ERT32-025N	ERT40-025N	1/4" NPT	-
ERT16-031	ERT20-031	ERT25-031	ERT32-031	ERT40-031	5/16"	M7, M8
ERT16-037	ERT20-037	ERT25-037	ERT32-037	ERT40-037	3/8"	M10
-	-	-	-	ERT40-037N	3/8" NPT	-
ERT16-043	ERT20-043	ERT25-043	ERT32-043	ERT40-043	7/16"	-
ERT16-050	ERT20-050	ERT25-050	ERT32-050	ERT40-050	1/2"	M12,M12.5
-	-	-	-	ERT40-050N	1/2" NPT	-
-	-	ERT25-056	ERT32-056	ERT40-056	9/16"	M14
-	-	ERT25-062	ERT32-062	ERT40-062	5/8"	M16
-	-	-	ERT32-068	ERT40-068	11/16"	M18
-	-	-	ERT32-075	ERT40-075	3/4"	-
-	-	-	ERT32-081	ERT40-081	13/16"	M20
-	-	-	-	ERT40-087	7/8"	M22
-	-	-	-	ERT40-093	15/16"	M24
-	-	-	-	ERT40-100	1"	M25

ER16 Inch Set	ER20 Inch Set	ER25 Inch Set	ER32 Inch Set	ER40 Inch Set	SETS
ERT16-S009	ERT20-S008	ERT25-S011	ERT32-S016	ERT40-S017	PART NUMBER
9 Pieces	8 Pieces	11 Pieces	16 Pieces	17 Pieces	NUMBER OF PIECES

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. For ER11 collets, see page 74–86 For #2 - #6 taps, use ERXX-0157, square drive not required.

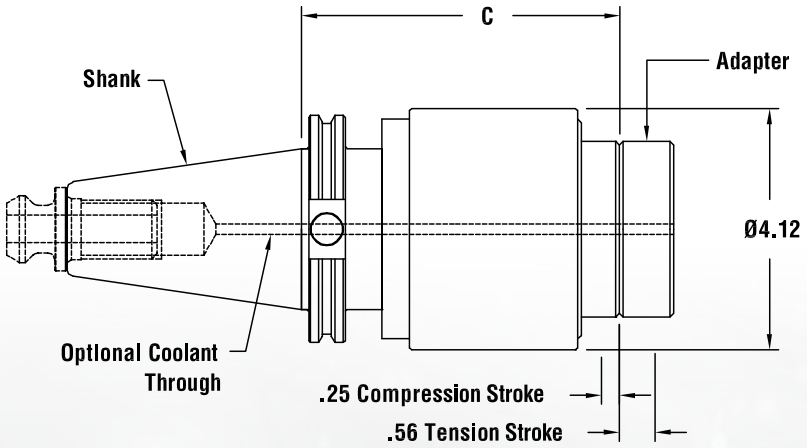
NUMERTAP® 6000 C50-60TA5 shown here.

Tension & Compression, Positive Drive, type for through-hole tapping on CNC machines.

FROM 3/4" – 2 1/2" 4-PITCH AND 3/4" – 3 1/2" 6 OR 8-PITCH TAPS

- Large work range eliminates the need to purchase multiple units.
- Compact, lightweight design can be changed by most tool changers.
- Rugged alloy steel construction for long trouble-free service life.
- Short compression stroke allows holes to be retapped and facilitates depth control.
- Free-floating tension stroke ensures thread size and quality.
- Through-spindle coolant option gets coolant into the hole and flushes chips.

Order Retention Knob separately (see pages 130–132).
Order Adapters separately (see pages 210).



CAPACITY**

Synchr/Tens & Comp
3/4 – 2 1/2" Hand
1/2 – 2" PIPE
M19 – MS6

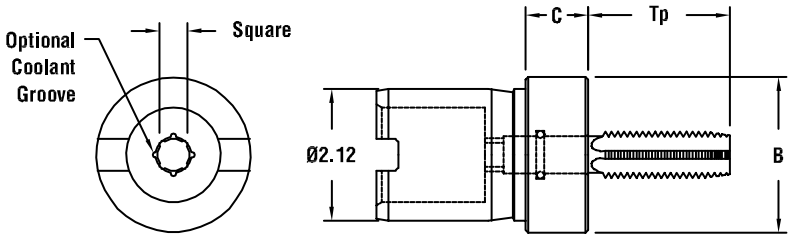
SYNCHRONOUS/TENSION & COMPRESSION TAPPING

Part Number	Coolant Fed	C	Shank Type	Approx. Weight
-	**C50-60TA5C**	5.62	CV50	21 lbs.
N50-60TA5	-	5.62	NMTB 50	21 lbs
-	**S20-60TA5C**	6.00	2" Straight	17 lbs.

PC6 and PC7 modular attachments available upon request.
*For Synchronous Tapping cycles, use (TT) for Tension-Only or (FS) for Fixed Shank, Part Number example: C50-60 (TT)5.
**Larger capacity available for 8-pitch taps. Please contact Parlec or your local Parlec representative.

NUMERTAP® 6000 Tap Adapter 6-150N shown here.

- For use in NUMERTAP® 6000 Attachments.

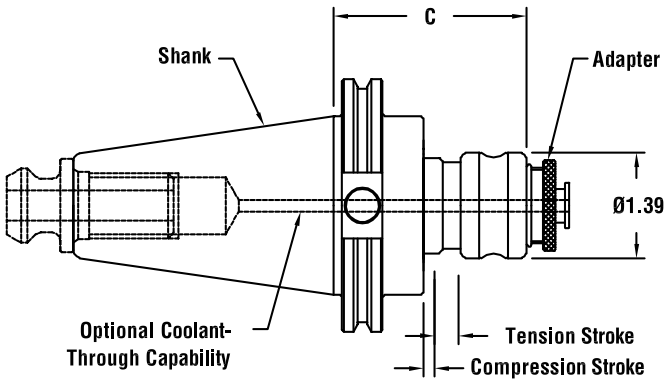


6000 TAP ADAPTERS

Part Number	Coolant**	Coolant Groove**	Tap Size	Metric Tap Size (ANSI*)	B	C	Tp	Shank	Square
6-075	6-075C	6-075CG	3/4	M19	2.50	1.00	2.21	.590	.442
6-081	6-081C	-	13/16	M20	2.50	1.00	2.43	.652	.489
6-087	6-087C	-	7/8	M22	2.50	1.00	2.59	.697	.523
6-093	6-093C	-	15/16	M24	2.50	1.00	2.61	.760	.570
6-100	6-100C	6-100CG	1	M25	2.50	1.00	2.76	.800	.600
6-106	6-106C	6-106CG	1 1/16 & 1 1/8	M27	2.50	1.00	2.70/3.01	.896	.672
6-118	6-118C	6-118CG	1 3/16 & 1 1/4	M30	2.50	1.00	2.84/3.15	1.021	.766
6-131	6-131C	6-131CG	1 5/16 & 1 3/8	M33	2.50	1.00	3.09/3.40	1.108	.831
6-144	6-144C	6-144CG	1 7/16 & 1 1/2	M36	2.50	1.00	3.34/3.65	1.233	.925
6-162	6-162C	6-162CG	1 5/8	M39	2.50	1.00	3.96	1.305	.979
6-175	6-175C	6-175CG	1 3/4	M42	3.20	1.00	4.15	1.430	1.072
6-187	6-187C	6-187CG	1 7/8	M45	3.20	1.00	4.46	1.519	1.139
6-200	6-200C	6-200CG	2	M48	3.20	1.00	5.13	1.644	1.233
6-212	6-212C	6-212CG	2 1/8	-	3.20	3.10	5.50	1.769	1.327
6-225	6-225C	6-225CG	2 1/4	M56	3.20	3.10	5.71	1.894	1.420
6-237	6-237C	6-237CG	2 3/8	-	3.20	3.10	5.96	2.018	1.524
6-250	6-250C	6-250CG	2 1/2	-	3.40	3.10	6.15	2.100	1.585
-	-	-	3/8 NPT	-	2.50	1.00	1.06	.700	.531
-	-	-	1/2 NPT	-	2.50	1.00	1.50	.687	.515
6-075N	6-075NC	-	3/4 NPT	-	2.50	1.00	1.56	.906	.679
6-100N	6-100NC	-	1 NPT	-	2.50	1.00	1.89	1.125	.843
6-125N	6-125NC	6-125NCG	1 1/4 NPT	-	2.50	1.00	1.96	1.312	.984
6-150N	6-150NC	6-150NCG	1 1/2 NPT	-	2.50	1.00	2.05	1.500	1.125
6-200N	-	6-200NCG	2 NPT	-	3.20	3.10	2.20	1.875	1.406

*For DIN, ISO, or Imperial Metric Shanks, please call Parlec or your local Parlec representative.
**Coolant requires oil hole taps. Coolant groove uses standard taps. Both require coolant-fed unit.

NUMERTAP® C40-10TA3 shown here.



FROM 0 – 9/16" HAND AND 1/16 – 1/8" NPT

- For use with popular Bilz style size and adapters.
- Utilizes existing adapter inventory.
- Rigid and tension-only shank available for use with synchronous tapping cycles.
- Radial float improves thread quality and tap life.
- Short projection maximizes workpiece size.
- Adjustable short compression stroke ensures accurate depth control.
- Free-floating tension stroke ensures thread size and quality.
- Rugged alloy steel construction long trouble-free service life.

Order Retention Knob separately (see pages 130–132).
Order Adapters separately (see pages 214).

CAPACITY

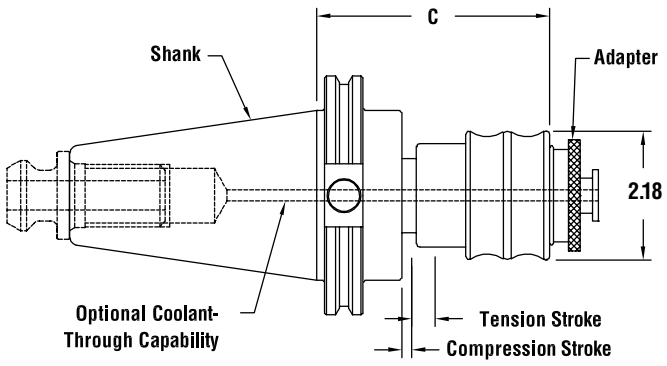
Synchr/Tens & Comp
#0 – 9/16 Hand
1/16 – 1/8 NPT

100 SYNCHRONOUS/TENSION & COMPRESSION TAPPING

Part Number	Coolant	Taper	Compression	Tension	C
B40-10TA3	**B40-10TA3C**	BT40	0 - .250	.56	4.08
B40-10TR3	**B40-10TR3C**	BT40	Rigid	Rigid	3.83
C40-10TA3	**C40-10TA3C**	CV40	0 - .250	.56	3.96
C40-10TR3	**C40-10TR3C**	CV40	Rigid	Rigid	3.96
C50-10TA3	**C50-10TA3C**	CV50	0 - .250	.56	3.15
C50-10TR3	**C50-10TR3C**	CV50	Rigid	Rigid	3.15
-	**-**	NMTB 40	0 - .250	.56	3.96
N50-10TA3	**-**	NMTB 50	0 - .250	.56	3.96
S10-10FS4	**S10-10FS4C**	1 Straight	Rigid	Rigid	4.43
S10-10TA4	**S10-10TA4C**	1 Straight	.250	.56	4.43

PC6 and PC7 modular attachments available upon request.
*For Synchronous tapping cycles, use (TT) for Tension-Only, or (TR) or (FS) for Fixed Shank, I.E. C50-10(TT)3. Coolant-through for up to 250 lbs. of pressure.

NUMERTAP® 200 C50-20TA4 shown here.



FROM 5/16 – 7/8" HAND AND 1/4 – 1/2" NPT

- For use with popular Bilz style size and adapters.
- Utilizes existing adapter inventory.
- Rigid and tension-only shank available for use with synchronous tapping cycles.
- Radial float improves thread quality and tap life.
- Short projection maximizes workpiece size.
- Adjustable short compression stroke ensures accurate depth control.
- Free-floating tension stroke ensures thread size and quality.
- Rugged alloy steel construction long trouble-free service life.

Order Retention Knob Separately (see pages 130–132).
Order Adapters separately (see page 214).

CAPACITY

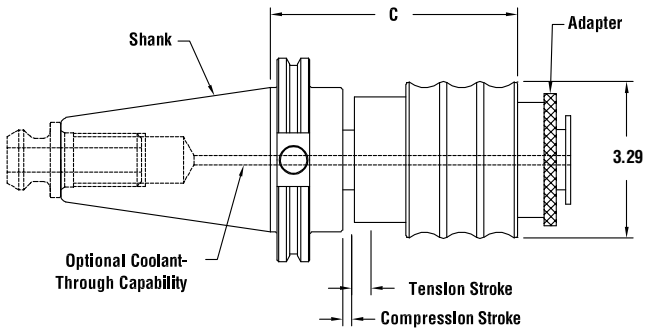
Synchr/Tens & Comp
5/16 – 7/8 Hand
1/4 & 1/2 NPT

200 SYNCHRONOUS/TENSION & COMPRESSION TAPPING

Part Number	Coolant	Taper	Compression	Tension	C
B40-20TA4	**B40-20TA4C**	BT40	0 - .250	.56	5.19
-	-	BT40	Rigid	Rigid	3.05
C40-20TA4	**C40-20TA4C**	CV40	0 - .250	.56	5.06
C40-20TR4	**C40-20TR4C**	CV40	Rigid	Rigid	3.86
C50-20TA4	**C50-20TA4C**	CV50	0 - .250	.56	4.25
C50-20TR4	**C50-20TR4C**	CV50	Rigid	Rigid	4.25
-	-	NMTB40	0 - .250	.56	5.06
N50-20TA4	-	NMTB50	0 - .250	.56	4.25
S10-20TA5	**S10-20TA5C**	1 Straight	.250	.56	5.46
S10-20FS5	**S10-20FS5C**	1 Straight	Rigid	Rigid	5.46
S12-20TA5	**S12-20TA5C**	1 1/4 Straight	0 - .250	.56	5.46
S20-20FS3	**S20-20FS3C**	2 Straight	.250	.56	5.93
S20-20TA3	**S20-20TA3C**	2 Straight	Rigid	Rigid	5.93

PC6 and PC7 modular attachments available upon request. Coolant-through for up to 250 lbs. of pressure.

NUMERTAP® 300 C50-30TA5 shown here.



FROM 13/16 – 1 3/8" HAND AND 3/4 – 1" NPT

- For use with popular Bilz style size and adapters.
- Utilizes existing adapter inventory.
- Rigid and tension-only shank available for use with synchronous tapping cycles.
- Radial float improves thread quality and tap life.
- Short projection maximizes workpiece size.
- Adjustable short compression stroke ensures accurate depth control.
- Free-floating tension stroke ensures thread size and quality.
- Rugged alloy steel construction long trouble-free service life.

Order Retention Knob Separately (see pages 130–132).
Order Adapters separately (see pages 214).

300 SYNCHRONOUS/TENSION & COMPRESSION TAPPING

Part Number	Coolant	Taper	Compression	Tension	C
C40-30TA5	-	CV40	0 -.250	.56	6.46
C40-30FS5	**C40-30FS5C**	CV40	Rigid	Rigid	6.46
C50-30TA5	**C50-30TA5C**	CV50	0 -.250	.56	5.65
C50-30FS5	**C50-30FS5C**	CV50	Rigid	Rigid	5.65
N50-30TA5	-	NMTB50	0 -.250	.56	5.65

PC6 and PC7 modular attachments available upon request.
*For Synchronous tapping cycles, use (TT) for Tension Only, or (FS) for Fixed Shank.

Tap Adapter
10-025

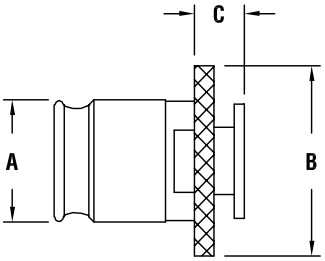
Tap Adapter
20-075

Tap Adapter
30-100

- For use in NUMERTAP® 100, 200 & 300 Attachments.

TAPPING ADAPTERS

Model	A	B	C
100	.75	1.18	.280
200	1.22	1.89	.430
300	1.89	2.75	.550
100T	.75	1.26	.98
200T	1.22	1.97	1.34
300T	1.89	2.83	1.77



100, 200 & 300 TAP ADAPTERS

	Size 1: Numertap 100 Attachment			Size 2: Numertap 200 Attachment			Size 3: Numertap 300 Attachment		
	Positive Drive			Positive Drive			Positive Drive		
Tap Size	Part No.	Coolant Groove	Torque Controlled	Part No.	Coolant Groove	Torque Controlled	Part No.	Coolant Groove	Torque Controlled
#0 - 6	10-#0-6	10CG-#0-6	10T-#0-6	–	–	–	–	–	–
#8	10-#8	10CG-#8	10T-#8	–	–	–	–	–	–
#10	10-#10	10CG-#10	10T-#10	–	–	–	–	–	–
#12	10-#12	10CG-#12	10T-#12	–	–	–	–	–	–
1/4	10-025	10CG-025	10T-025	–	–	–	–	–	–
5/16	10-031	10CG-031	10T-031	20-031	20CG-031	20T-031	–	–	–
3/8	10-037	10CG-037	10T-037	20-037	20CG-037	20T-037	–	–	–
7/16	10-043	10CG-043	10T-043	20-043	20CG-043	20T-043	–	–	–
1/2	10-050	10CG-050	10T-050	20-050	20CG-050	20T-050	–	–	–
9/16	10-056	10CG-056	10T-056	20-056	20CG-056	20T-056	–	–	–
5/8	–	–	–	20-062	20CG-062	20T-062	–	–	–
11/16	–	–	–	20-068	20CG-068	20T-068	–	–	–
3/4	–	–	–	20-075	20CG-075	20T-075	–	–	–
13/16	–	–	–	20-081	20CG-081	20T-081	30-081	30CG-081	30T-081
7/8	–	–	–	20-087	20CG-087	20T-087	30-087	30CG-087	30T-087
15/16	–	–	–	–	–	–	30-093	30CG-093	30T-093
1	–	–	–	–	–	–	30-100	30CG-100	30T-100
1 1/8	–	–	–	–	–	–	30-106	30CG-106	30T-106
1 1/4	–	–	–	–	–	–	30-118	30CG-118	30T-118
1 3/8	–	–	–	–	–	–	30-131	30CG-131	30T-131
1/16 NPT	10-006N	10CG-006N	10T-006N	–	–	–	–	–	–
1/8 NPT	10-012N	10CG-012N	10T-012N	–	–	–	–	–	–
1/4 NPT	–	–	–	20-025N	20CG-025N	20T-025N	–	–	–
3/8 NPT	–	–	–	20-037N	20CG-037N	20T-037N	–	–	–
1/2 NPT	–	–	–	20-050N	20CG-050N	20T-050N	–	–	–
3/4 NPT	–	–	–	–	–	–	30-075N	30CG-075N	30T-075N
1 NPT	–	–	–	–	–	–	30-100N	30CG-100N	30T-100N
SET (1 EA.)	10-S012	10CG-S012	10T-S012	20-S013	20CG-S013	20T-S013	30-S009	30CG-S009	30T-S009

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

TAP DOES NOT START

Check the following:

Program depth:	Compression stroke may use up the entire program depth.
Tap drill size:	Check for tap drill size.
Tap sharpness:	Check for dull tap.

PREMATURE TORQUING OF UNIT

Check the following:

Tap sharpness:	Dull taps require more driving torque than sharp taps. NUMERTAP® systems sense dull taps. Replace to prevent possible breakage.
Tap drill size and adequate drill depth:	Check for correct size and depth.
Tap sharpness:	Check for dull tap.

OVERSIZED THREADS

Check the following:

Feeds and speeds:	Oversized threads mean that the space between adjacent teeth is too large. This is caused either by forcing or retarding the feed rate with respect to the speed. Check program feed versus tap pitch.
Tension stroke of tapping head:	Check to ensure that the tension stroke does not stick.

POOR THREAD QUALITY

Check the following:

Feeds and speeds:	Oversized threads mean that the space between adjacent teeth is too large. This is caused either by forcing or retarding the feed rate with respect to the speed. Check program feed versus tap pitch.
Tap sharpness and condition:	Check for dull tap or broken teeth. Replace as required.

Consult NUMERTAP® Tap Guide for proper tapping speeds, lubricants, geometry, and tap drill sizes for specific H limits and specific materials. If you are not using NUMERTAP® taps, consult the tap manufacturer.

TAPPING SPEEDS

Material	Tapping Speed (SFM)
Aluminum	90 - 110
Brass	80 - 100
Bronze	40 - 60
Copper	70 - 90
Copper-Beryllium	40 - 50
Inconel, Hastalloy, Waspalloy	5 - 15
Iron-Cast	65 - 75
Iron-Malleable	30 - 60
Magnesium	90 - 110
Plastics	60 - 90
Steel-Cast	30 - 40
Steel-Free Machining	50 - 80
Steel-Chromium	25 - 40
Steel-Alloy	20 - 35
Steel-Stainless	15 - 30
Titanium	10 - 25
Zinc-Die Cast	80 - 120

$$RPM = \frac{3.82 \times SFM}{\text{Tap Diameter}}$$

$$FEED\ (IPR) = \frac{1}{\text{Pitch}}$$

$$FEED\ (IPM) = Feed\ (IPR) \times Speed\ (RPM)$$

Tapping speeds are for general purpose taps. Consult tap manufacturer for high geometry taps.

TORQUE REQUIREMENTS

Tap Size	Brass	Aluminum and Leaded Brass	200 BHN Steel	300 BHN Steel	400 BHN Steel	Approximate Breaking Torque
#6	4	2	7	9	10	8
#8	4.5	2.25	8	10	11	30
#10	8.5	4.25	15	19	21	42
1/4	16	8	28	36	40	106
5/16	24	12	42	54	60	180
3/8	37	18.50	65	83	93	240
7/16	54	27	94.5	122	135	500
1/2	68	34	119	153	170	700
9/16	88	44	154	198	220	850
5/8	119	59.50	208	268	298	1000
3/4	170	85	298	383	425	1500
7/8	238	119	416	536	595	2100
1	337	168.50	590	758	842	2700
1 1/4	544	277	970	1246	1385	3000+
1 1/2	850	425	1488	1912	2125	3000+
1 3/4	1411	706	2471	3177	3530	3000+
2	1904	952	3332	4284	4760	3000+
2 1/4	2159	1080	3780	4860	5400	3000+
2 1/2	2975	1488	5208	6996	7440	3000+
2 - 8	533	267	933	1199	1333	3000+
2 1/2 - 8	663	332	1160	1492	1658	3000+
3 - 8	1139	570	1995	2565	2850	3000+
4 - 8	1411	706	2471	3177	3530	3000+
5 - 8	1768	884	3094	3978	4420	3000+
6 - 8	2125	1063	3720	4784	5315	3000+

All values in table above are in inch/lbs. Approximate values based on sharp, 4 Flute coarse pitch hand taps at 65% thread height. Dull taps require approximately 50% more torque. For 55% and 75% thread heights, multiply above values by .75 and 1.25 respectively. Torque values for helical flute taps are approximately 70% of those shown. Torque values for chip drive taps are approximately 60% of those shown. Torque values for fine pitch threads are approximately 50% of those shown.

Experience has shown that a tap will cut the best quality threads when allowed to act as its own lead screw, feeding precisely on pitch to exactly the required depth of thread. The machine must be prevented from forcing the tap to do anything else or the thread quality will suffer or the tap may break. The tension stroke in the NUMERTAP® provides the freedom required to cut the best quality threads with the least risk of breakage.

NUMERTAP® Systems can be used on any suitable machine tool which has a reversing spindle. Effective choices of spindle speeds and feeds for particular tapping requirements can be made by the following the sample calculations: Tapping a 3/4 –10 thread, 1" deep in mild steel:

TAPPING A 3/4 THREAD 1" DEEP IN MILD STEEL:

RPM = (12 x SFM)/(3.82 X SFM)/D where D is the tap diameter.
Use the chart on the previous page to find the tapping speed in SFM.
RPM = (3.82 x .50)/.75 – 255 RPM
Tap Feed Rate = Pitch x RPM = .100 x 255 = 255 = 25.5 inches/minute.
Feed in and out at the same feed rate.

When using a conventional tapping cycle, optimum performance is insured by slightly underfeeding the tap, normally by 2% - 10%. This forces the tension stroke of the tapping head to be used and eliminates any effect of the machine tool. The Z axis feed distance must be reduced by this same percentage. The axial float in the NUMERTAP takes up the difference between the required thread depth and the programmed depth. If a 10% underfeed was selected, the calculations would be as follows:

Program Feed Rate = .90 x on pitch feed rate = .90 x 25.5 = 22.95"/minute.
Spindle Z-Axis Travel = .90 x required depth = .90 x 1.000 = .900".
Axial Float used = 1.000 - .900 = .100"
Do not allow the Axial Float used to equal the tension stroke length (.56).

If the tapping cycle is controlled by a "canned" program which calculates its own feed rates from an input of pitch and speed. The desired underfeed can be obtained by deliberately entering a reduced value of pitch or an increased value of threads per inch as follows:

Actual TPI = 10 (pitch = 1/10 = .100")
Input TPI = 11 (pitch = 1/11 = .091")
Program Feed Rate = .091 x 255 = 23.2"/minute
Program Feed Depth = .91 x 1.000 = .910"

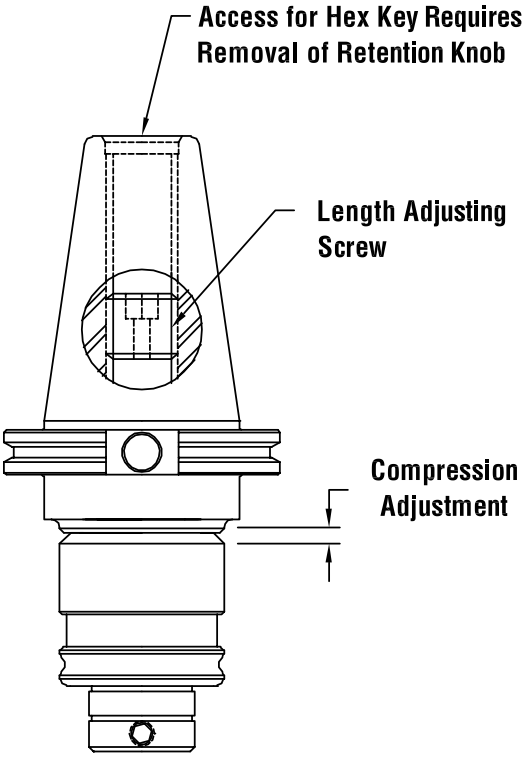
If the CNC machine has a slow spindle reversal, the program must compensate for any drive system inertia by including a dwell not long enough for the spindle to come to a full stop when the tap has reached full thread depth. If the spindle has not stopped when the program calls for it to feed out, the tap could break or be pulled out of the adapter, or the threads could be ruined. These problems can be rectified using a program similar to the following:

Spindle clockwise
Feed to depth (incorporating underfeed)
Spindle stop

When using a synchronous tapping cycle, the drive system inertia may create the undesirable effect of tap elongation, or thread distortion. The best answer to this problem is the use of tension only tapping heads. Refer to the selection guide (pages 92-94).

NUMERTAP® 100, 200, 300, 700 & 770 UNITS

The NUMERTAP® 100, 200, 300, 700 and 770 series tapping attachments with machine tapers, feature a length adjustment screw. This allows the compression stroke to be reduced or eliminated, if desired, to provide more accurate depth control. Adjusting the compression stroke to zero will result in a tension only set-up, the best solution for synchronous tapping. Turning the length adjustment screw counterclockwise reduces the compression stroke but does not affect the tension stroke.



The projections of the unit can be adjusted by turning the screw in either direction until the desired length is reached. Changing the length in this manner does not affect the tension stroke. This is an important feature if redundant tools are being set or if reground taps are being used in existing programs.

Adjust the compression stroke counterclockwise until the tapping attachment body contacts the shank. This will set for tension only. This is recommended to eliminate or avoid tap elongation in synchronous tapping cycles.

TENSION-ONLY, THE BEST SOLUTION FOR SYNCHRONOUS TAPPING

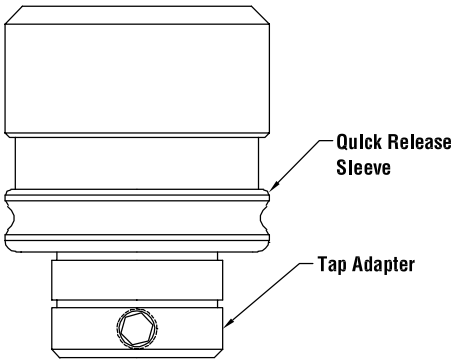
The NUMERTAP® 100, 200, 300, 700 and 770 units can be purchased as tension only units (TT) or can be adjusted to tension only units by following the instructions above. Tension only is the best solution for synchronous tapping. If the unit is purchased as a TT, the tension spring is eliminated during assembly.

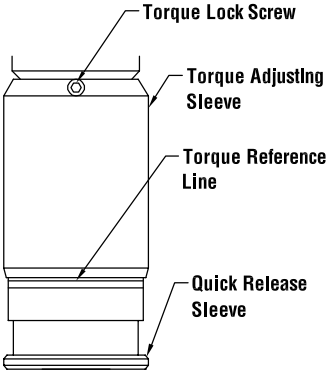
The unit will be the same length as a TA unit. If a TA unit is adjusted to eliminate the compression stroke, the unit will be 1/4" shorter than its original projection length. NUMERTAP® 700 units can be adjusted for tension only, but cannot be used in synchronous tapping cycles.

NUMERTAP® 80, 700 & 770 ADAPTERS

To install a tap adapter into a NUMERTAP® 80, 700 or 770:

1. Pull back the quick-release sleeve.
2. Insert the tap adapter into the unit and push back until it seats. A slight twisting motion while pushing will ensure proper seating.
3. Release the quick release sleeve. It should return to its normal position. If it does not return, the adapter is not seated. Twist and push back until it seats.

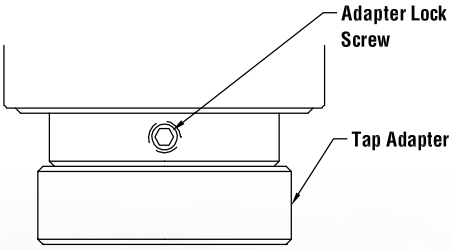




NUMERTAP® 6000

To install a tap adapter into a NUMERTAP® 6000:

1. Loosen the adapter lock set screw.
2. Insert the tap adapter into the unit and push back until it seats. A slight twisting motion while pushing will ensure proper seating.
3. Tighten the adapter lock screw.



NUMERTAP® 80

The factory setting for the torque adjusting sleeve is at maximum torque. In this state, the first (closest to the tap) torque reference line will be barely visible. This setting provides a large safety factor against tap breakage and should not need to be changed unless low tensile materials are being tapped.

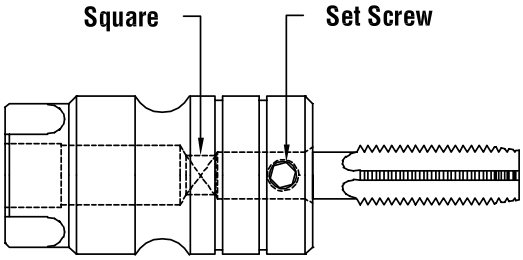
When tapping soft materials, particularly with small taps, it is advisable to use less torque to prevent thread distortion when the tap bottoms.

To adjust the torque, loosen the torque lock screw and rotate the torque adjusting sleeve to its upper limit. All three torque reference lines will be visible. Take a test cut. If the tap does not cut, increase the torque by turning the adjusting sleeve. When the proper setting is reached and there is enough torque pressure, turn the torque adjusting ring another 1/8 turn and secure the lock screw. Always adjust the torque to coarse pitch when using more than one tap in the same tapping head.

NUMERTAP® 80, 88, 700, 6000 & 6500 ADAPTERS

1. Loosen the set screw in the tap adapter.
2. Insert the tap into the adapter and twist until the square on the tap is aligned with the square in the adapter. Push back until the adapter is fully seated against the shoulder of the square.
3. Do not grind grooves or flats on the tap shank

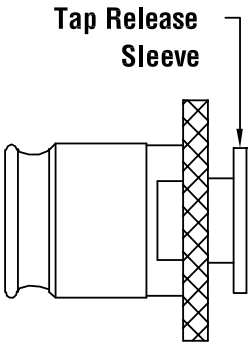
If, for some reason a tap sticks in a hole, the set screw will allow the tap to pull out of the adapter without damaging the part, tapping head or tap. Grinding flats on the tap shank overrides this safety feature.



NUMERTAP® 100, 200, 300 & 7716QR ADAPTERS

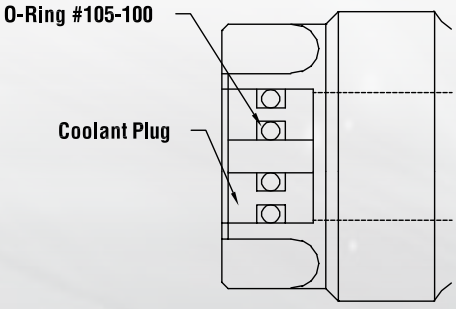
1. Push back the tap release sleeve.
2. Insert the tap into the adapter and twist until the square on the tap is aligned with the square in the adapter. Push back until the adapter is fully seated against the shoulder of the square.

Both fine and course pitch taps are used in the same adapters. Left or right hand taps can be used in any NUMERTAP® system without alteration.



COOLANT FED 700 & 770 ADAPTERS

When used in through-spindle-coolant applications, coolant fed NUMERTAP® units must be used with coolant fed tap adapters. Coolant fed tap adapters feature a sealing plug at the back. The "O" ring in the ID of the plug should be periodically checked for cuts or tears. If damage is noted, the "O" ring should be replaced.



Tap into Savings!

Parlec's Tapping systems provide superior application with the Numertap® system 770 providing the largest range of tapping capabilities available. Rigid, Tension Only and Tension and Compression systems are standard, along with Coolant or Coolant Groove Adapters with up to 6" extension length–just what you would expect from the worldwide leader in tooling and presetting solutions.

- **Full Line**
  Three systems for synchronous tapping cycles.
- **Range and Versatility**
  Largest range in a single tapping head (#6 – 1 5/8").
- **Popular Bilz Style**
  Offered in addition to the rugged Numertap systems.
- **Standard Options**
  Coolant-groove or coolant-through.
- **Adapters**
  Extended-length adapters for special applications.
- **Flexibility**
  Tap collets available for use in tapping heads and collet chucks.

Boring

PRECISION MODULAR BORING

When it has to be right the first time, you can't afford to compromise.

Precise | Repeatable | Flexible | Value

NEW boring features bring NEW benefits!

Parlec is creating new standards for the precision boring industry!

In addition a full-range of boring capabilities, modular designs, and unmatched repeatable precision, Parlec is now providing new and enhanced features that will change the way you machine for good!

SMALL DIAMETER BORING SYSTEM

- Boring bar receiver telescopes to minimize overhang.
- Balanced Modular Boring Bars and Noses available as standard combined with the balanceable head for extreme high velocity boring.

NEW

.001"

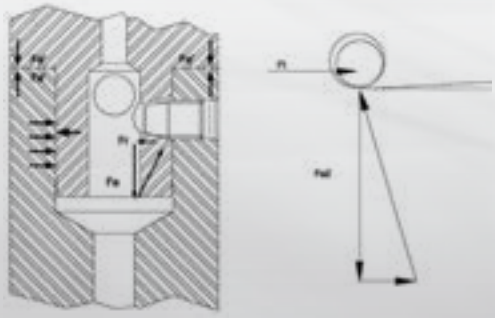
.02MM

A .0001" (.002mm) Vernier is standard on all finish heads eliminating the need to purchase expensive heads

PRECISION FINISH BORING SYSTEM

Extended length insert holders alow expansion of the boring range

THE PC CONNECTION



Rigidity

- Created by Force - The face to face clamping forces are equal to the axial force Fa. Precision .0002" on Diameter.
- Orientation - The cross pin orientates the PC screw and transmits extreme forces.

Self Tightening

- The torsional cutting forces are primarily transmitted by the friction between the mating faces.
- Any remaining torque will result in an additional wedge action between the locking screw and inner member.
- Due to the very small resulting wedge angle, any increased torsional force (Ft) will be transformed into a very strong axial clamping force (Fa2).

NEW UNIQUE COOLANT DELIVERY → DIRECTED TO THE CUTTING EDGE!

Tool life and chip form are maximized by directed high pressure coolant

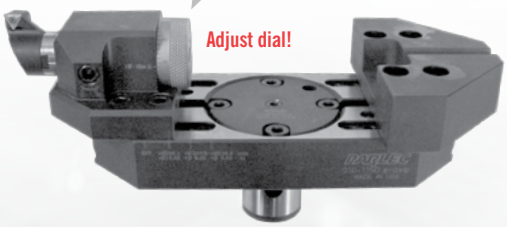
TWIN BORE FOR HEAVY METAL REMOVAL RATES

NEW Individually and easily adjusted cutting tips allow for balanced or step cutting from .95" (24mm) to over 23" (600 mm) resulting in maximum metal removal rates.

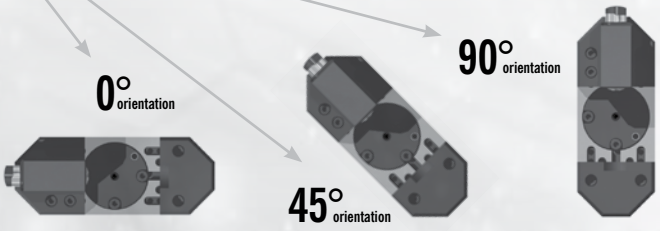
LARGE DIAMETER BORING SYSTEM

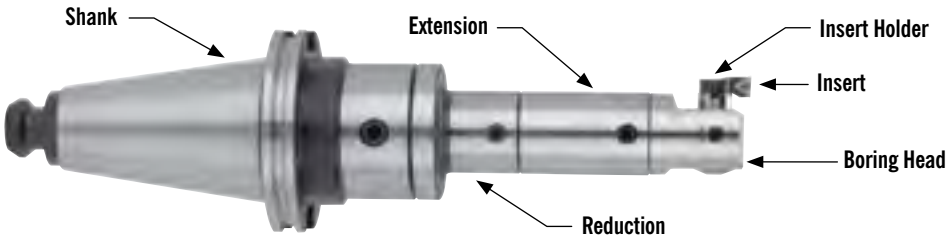
NEW Inverted assembly allows system to be used to bore OD's utilizing twin bore or precision finish.

NEW Precision counter balanced finish boring system for large diameters. Large .0005" (.02mm) dial makes easy and accurate diameter adjustments.



NEW PC Extension Base Couplers connect the slide directly to the shank eliminating an extra connection. The system allow the tool tip setup to 0, 45 or 90 degrees to allow for tool carousel clearance.





The force Fr is created by tightening the PC screw. This results in line contact seating with high repeatable precision (.0002" on diameter). The geometry of the screw and mating hole in the male pilot creates the resultant force Fa.

Fa = 3.7 x Fr

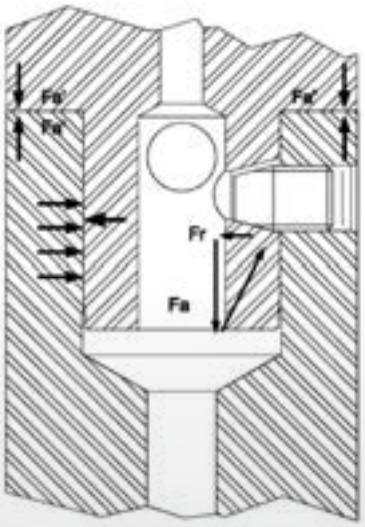
The face to face clamping forces Fa' are equal to the axial force Fa.

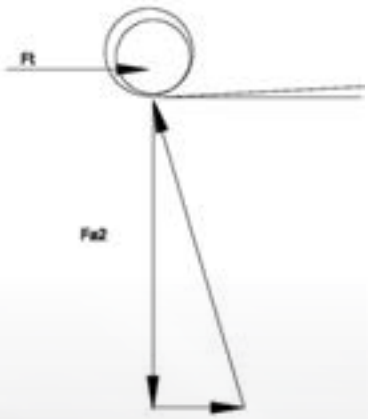
The torsional cutting forces are primarily transmitted by the friction between the mating faces. Any remaining torque will result in an additional wedge action between the locking screw and the inner member. Due to the very small resulting wedge angle any increased torsional force Ft will be transformed into a very strong axial clamping force Fa2.

The cross pin (not shown) helps in alignment of the PC screw and prevents over tightening under heavy torsional loads.

CONNECTION DIAMETER

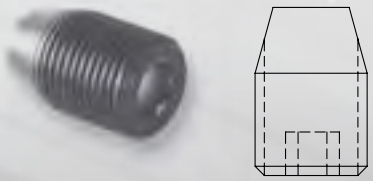
PC Size	Diameter "	MM
PC2	.94	24
PC3	1.22	31
PC4	1.54	39
PC5	1.97	50
PC6	2.52	64
PC7	3.54	90





PC SCREWS

Part Number	Connection Size	Wrench	Tightening Torque
880-002	PC2	018-102	25 in. lbs.
880-003	PC3	018-103	42 in. lbs.
880-004	PC4	018-104	84 in. lbs.
880-005	PC5	018-105	168 in. lbs.
880-006	PC6	018-106	336 in. lbs.
880-007	PC7	018-107	840 in. lbs.



PC Screw 880-006 shown here.

CONTACT INFORMATION

For quick response, just photocopy this page, complete all information (please include Part Print where appropriate) and simply FAX back to Parlec at 1-800-866-5917

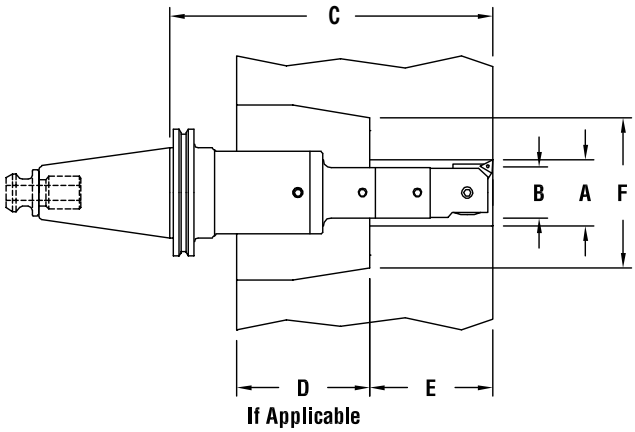
Company

Contact Name Title

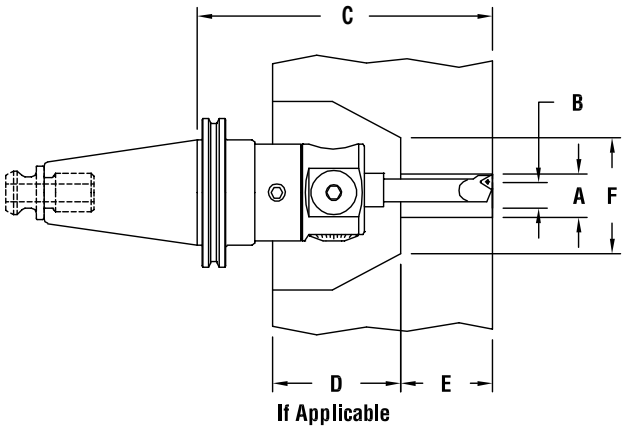
Business Address City State Zip

Phone Fax Email

BORING RANGE: .078”-23.80” (2-605MM)



If Applicable



If Applicable

A Finish Bore Diameter	A Finish Bore Tolerance	B Starting Diameter	C Gage Length	D Access Length	E Bore Depth	F Access Diameter

Workpiece Material _____ Shank Size & Type _____

Hardness _____ Machine Tool Make _____

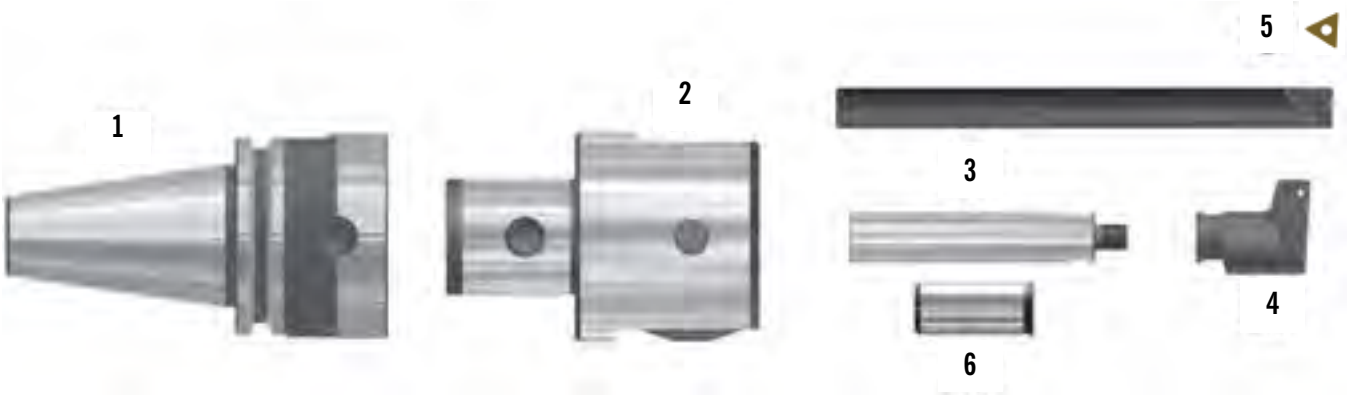
Machine Tool Model _____

RMS

♍ Interrupted Cut ♍ Through-Holes ♍ Bottom-Holes

COOLANT

♍ Through-Spindle ♍ Flange Entry ♍ Flood



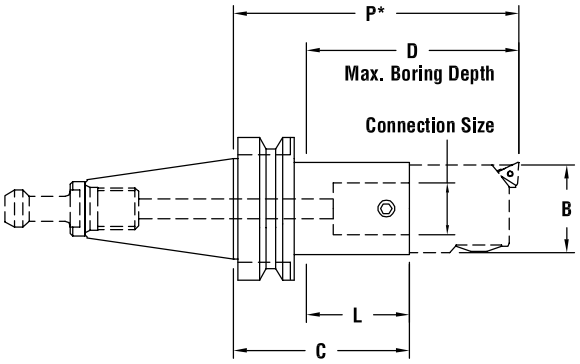
.078" - 1.89" (2-48MM) SMALL DIAMETER BORING RANGE TREE

	Component	Selection Criteria	Catalog Page
1	Modular Shank	Machine tool taper and projection requirement	Page 230–233
2	Small Diameter Finish Head	Telescoping bar and balance capability make is the right choice for boring small diameters	Page 242
3	Boring Bar	Available as modular or solid for smaller diameters. Steel and Carbide with coolant through standard on all modular style.	Page 243
3	Boring Bar	Solid design for smaller diameters	Page 244
4	Modular Boring Noses	Allows the diameter to be extended with less expense in boring bars. All noses are balanced and coolant through	Page 243
5	Inserts	Select based on geometry of insert holder, material of bore and radius	Page 260–266
6	Reduction Bushing	Select to reduce the bore through receiver to the appropriate size boring bar	Page 242, 244

.98" - 6.00" (25-152.4MM) ROUGH AND FINISH BORING RANGE TREE

	Component	Selection Criteria	Catalog Page
1	Modular Shank	Machine tool taper and projection requirement	Page 230–233
1A	Retention Knob	Machine tool specific	Page 130–132
2A	Extension	Used to extend the reach of a boring assembly	Page 234
2B	Reduction	Used to extend the length to diameter ratio when reach and not clearance is the issue	Page 234
3	Twin Rough Boring Head	Select when metal removal is the goal and bore tolerance is larger. Setting on a presetter will provide accurate bore but adjustment for insert wear is not easily done at the machine.	Page 238
3	Precision Finish Head	Select when much less material removal is required, such as after roughing, and precision and ease of adjustment are the main critical requirement.	Page 248–249
4	Twin Bore Insert Holder (pair)	Select by bore configuration and size.	Page 237
5	Precision Finish Insert Holder	Select by bore size, use size 1 for maximum bar rigidity	Page 249
6	Inserts	Select based on geometry of insert holder, material of bore and radius	Page 260–266

B40-PC6-4 shown here.
Also available with AD/B coolant.



Order Retention Knob separately
(see pages 130–132).

30 TAPER

Part Number	Connection Size	B" (mm)	C"(mm)	D" (mm)	L" (mm)	P*" (mm)	Weight lbs. (kg)
B30-PC4-2	PC4	1.54 (39)	1.75 (44.5)	2.24 (57)	0.76 (19.3)	3.60 (91.5)	1. (2.2)

40 TAPER

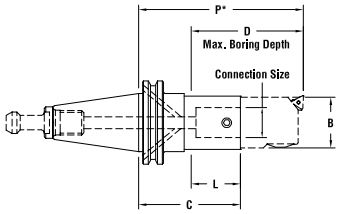
Part Number	Connection Size	B" (mm)	C"(mm)	D" (mm)	L" (mm)	P*" (mm)	Weight lbs. (kg)
B40-PC2-4	PC2	.94 (24)	3.80 (96.5)	4.12 (104.6)	2.64 (67)	5.28 (134.1)	2.5 (1.1)
B40-PC3-4	PC3	1.22 (31)	3.70 (94)	4.15 (105.4)	2.54 (64.5)	5.31 (135)	2.6 (1.2)
B40-PC3-5	PC3	1.22 (31)	4.80 (122)	5.25 (133.3)	3.64 (92.5)	6.41 (163)	3.2 (1.5)
B40-PC4-3	PC4	1.54 (39)	2.56 (65)	3.25 (82.5)	1.40 (35.5)	4.41 (112)	2.8 (1.3)
B40-PC4-5	PC4	1.54 (39)	4.53 (115)	5.21 (132.3)	3.36 (85.4)	6.38 (162)	3.6 (1.6)
B40-PC5-3	PC5	1.97 (50)	2.16 (55)	3.24 (82.3)	1.00 (25.4)	4.40 (112)	2.8 (1.3)
B40-PC5-6	PC5	1.97 (50)	5.31 (135)	6.37 (162)	4.13 (105)	7.55 (192)	5.8 (2.7)
B40-PC6-4	PC6	2.52 (64)	2.40 (61)	3.91 (99.3)	1.12 (28.5)	5.19 (132)	3.1 (1.4)
B40-PC6-6	PC6	2.52 (64)	4.76 (121)	6.43 (163)	3.64 (92.5)	7.55 (192)	6.5 (3)

50 TAPER

Part Number	Connection Size	B" (mm)	C"(mm)	D" (mm)	L" (mm)	P*" (mm)	Weight lbs. (kg)
B50-PC2-4	PC2	.94 (24)	4.15 (105.4)	4.03 (102.4)	2.54 (64.5)	5.63 (143)	7.7 (3.5)
B50-PC2-5	PC2	0.94 (24)	4.98 (126.5)	4.84 (123)	3.36 (85.3)	6.46 (164)	9.1 (4.2)
B50-PC3-4	PC3	1.22 (31)	4.00 (101.6)	4.03 (102.4)	2.40 (61)	5.63 (143)	7.7 (3.5)
B50-PC3-6	PC3	1.22 (31)	5.98 (152)	5.97 (151.6)	4.36 (110.8)	7.49 (190)	9.8 (4.5)
B50-PC4-4	PC4	1.54 (39)	3.78 (96)	4.03 (102.4)	2.18 (55.4)	5.63 (143)	8.1 (3.7)
B50-PC4-6	PC4	1.54 (39)	6.14 (156)	6.37 (161.8)	4.52 (114.8)	7.99 (203)	10.5 (4.8)
B50-PC4-8	PC4	1.54 (39)	7.28 (185)	7.51 (190.7)	5.66 (143.8)	9.13 (232)	11 (5)
B50-PC5-4	PC5	1.97 (50)	3.38 (86)	4.03 (102.4)	1.79 (45.5)	5.63 (143)	8.1 (3.7)
B50-PC5-8	PC5	1.97 (50)	6.89 (175)	7.51 (190.7)	5.27 (134)	9.13 (232)	12.2 (5.6)
B50-PC5-10	PC5	1.97 (50)	9.25 (235)	9.87 (250)	7.63 (194)	11.49 (292)	14.2 (6.5)
B50-PC6-4	PC6	2.52 (64)	2.84 (72)	4.03 (102.4)	1.24 (31.5)	5.63 (143)	8.8 (4)
B50-PC6-6	PC6	2.52 (64)	5.19 (132)	6.36 (161.5)	3.47 (88)	7.98 (202.7)	12.2 (5.6)
B50-PC6-8	PC6	2.52 (64)	6.34 (161)	7.51 (190.7)	4.72 (120)	9.13 (232)	13.7 (6.2)
B50-PC6-10	PC6	2.52 (64)	9.00 (228.6)	10.19 (259)	7.40 (188)	11.79 (300)	15.8 (7.2)
B50-PC6-12	PC6	2.52 (64)	11.06 (281)	12.23 (310.6)	9.44 (240)	13.85 (352)	21.2 (9.7)

*Compute "P" dimensions by adding "C" dimensions of all components used. Maximum bore depth "D" may be increased by using extension adapters.

C50-PC6-6 shown here.



Order Retention Knob separately
(See pages 130–132).

40 TAPER

Part Number	Part Number with Flange Coolant***	Connection Size	B" (mm)	C" (mm)	D" (mm)	L" (mm)	P*" (mm)	Weight lbs. (kg)
C40-PC2-2	-	PC2	.944 (24)	2.07 (52.6)	2.00 (50.8)	.56 (14.2)	3.54 (90)	2.4 (1.1)
C40-PC2-3	-	PC2	.944 (24)	3.33 (84.6)	3.15 (80)	1.95 (49.5)	4.80 (122)	2.5 (1.1)
C40-PC2-4	-	PC2	.944 (24)	4.11 (104.5)	3.94 (100)	2.74 (69)	5.59 (142)	2.6 (1.2)
C40-PC3-3	-	PC3	1.22 (31)	3.15 (80)	3.20 (81.3)	1.78 (45.2)	4.76 (121)	2.6 (1.2)
C40-PC3-5	-	PC3	1.22 (31)	5.12 (130)	5.57 (141.5)	3.74 (95)	6.73 (171)	3.3 (1.5)
C40-PC4-1	-	PC4	1.75 (44.5)	1.38 (35)	1.75 (44.5)	-	3.23 (82)	2.2 (1)
C40-PC4-3	C40B-PC4-3	PC4	1.54 (39)	2.87 (73)	3.15 (80)	1.50 (38.1)	4.72 (120)	2.7 (1.2)
C40-PC4-6	-	PC4	1.54 (39)	6.02 (153)	6.30 (160)	4.26 (108.2)	7.87 (200)	4.3 (2.0)
C40-PC5-3	-	PC5	1.97 (50)	2.48 (63)	3.15 (80)	1.11 (28.2)	4.72 (120)	2.8 (1.3)
C40-PC5-6	-	PC5	1.97 (50)	5.63 (143)	6.30 (160)	4.26 (108.2)	7.87 (200)	5.5 (2.5)
C40-PC6-3**	C40B-PC6-3	PC6	2.52 (64)	2.00 (50.8)	3.42 (87)	.63 (16)	4.80 (122)	3.1 (1.4)
C40-PC6-4	C40B-PC6-4	PC6	2.52 (64)	2.72 (69)	3.94 (100)	1.34 (8.6)	5.51 (140)	3.3 (1.5)
C40-PC6-6	-	PC6	2.52 (64)	5.08 (129)	6.30 (160)	3.70 (94)	7.87 (200)	6.3 (2.9)

50 TAPER

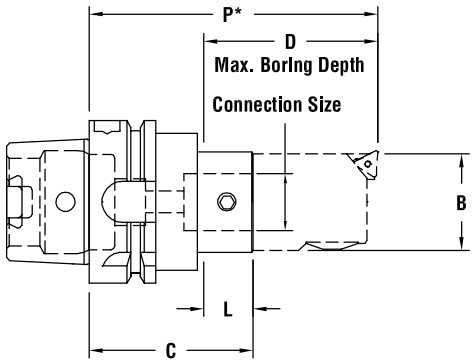
Part Number	Part Number with Flange Coolant***	Connection Size	B" (mm)	C" (mm)	D" (mm)	L" (mm)	P*" (mm)	Weight lbs. (kg)
C50-PC2-2	-	PC2	.94 (24)	2.07 (52.6)	2.00 (50.8)	.56 (14.2)	3.54 (90)	7.0 (3.2)
C50-PC2-4	-	PC2	.94 (24)	4.11 (104.5)	3.94 (100)	2.74 (69)	5.59 (142)	7.0 (3.2)
C50-PC2-5	-	PC2	.94 (24)	5.29 (134.4)	5.12 (130)	3.92 (99.5)	6.77 (122)	7.3 (3.3)
C50-PC3-4	-	PC3	1.22 (31)	3.94 (100)	4.39 (111.5)	2.56 (65)	5.55 (141)	7.7 (3.5)
C50-PC3-5	-	PC3	1.22 (31)	5.12 (130)	5.57 (141.5)	3.74 (95)	6.73 (171)	7.7 (3.5)
C50-PC3-6	-	PC3	1.22 (31)	6.30 (160)	6.13 (155.7)	4.30 (109)	7.91 (201)	8.1 (3.7)
C50-PC4-4	C50B-PC4-4	PC4	1.54 (39)	3.61 (91.7)	3.94 (100)	2.24 (57)	5.46 (139)	7.6 (3.5)
C50-PC4-6	-	PC4	1.54 (39)	6.02 (153)	6.30 (160)	4.65 (118)	7.87 (200)	8.7 (4)
C50-PC4-8	-	PC4	1.54 (39)	7.60 (193)	7.88 (200)	6.22 (158)	9.45 (240)	9.5 (4.3)
C50-PC5-4	-	PC5	1.97 (50)	3.27 (83)	3.94 (100)	1.89 (48)	5.51 (140)	7.8 (3.5)
C50-PC5-6	-	PC5	1.97 (50)	5.63 (143)	6.30 (160)	4.26 (108.2)	7.87 (200)	9.7 (4.3)
C50-PC5-8	-	PC5	1.97 (50)	7.20 (183)	7.88 (200)	5.83 (148)	9.45 (240)	10.9 (5)
C50-PC5-10	-	PC5	1.97 (50)	9.57 (243)	10.24 (260)	8.19 (208)	11.81 (300)	12.8 (5.8)
C50-PC6-4	C50B-PC6-4	PC6	2.52 (64)	2.72 (69)	3.94 (100)	1.34 (34)	5.51 (140)	7.7 (3.5)
C50-PC6-6	-	PC6	2.52 (64)	5.08 (129)	6.30 (160)	3.70 (94)	7.87 (200)	10.8 (4.9)
C50-PC6-8	-	PC6	2.52 (64)	6.65 (169)	7.88 (200)	5.28 (134)	9.45 (240)	12.8 (5.8)
C50-PC6-10	-	PC6	2.52 (64)	9.02 (229)	10.24 (260)	7.64 (194)	11.81 (300)	15.9 (7.2)
C50-PC6-12	-	PC6	2.52 (64)	11.38 (289)	12.60 (320)	10.00 (254)	14.17 (360)	19.1 (8.7)
C50-PC7-6	-	PC7	3.54 (90)	3.27 (83)	6.30 (160)	1.89 (48)	7.87 (200)	10.0 (4.6)
C50-PC7-8	-	PC7	3.54 (90)	5.27 (134)	8.30 (210)	3.89 (99)	9.87 (251)	15.3 (7)
C50-PC7-10	-	PC7	3.54 (90)	7.20 (183)	10.24 (260)	5.83 (148)	11.81 (300)	20.3 (9.2)

60 TAPER

Part Number	Connection Size	B"(mm)	C"(mm)	D"(mm)	L"(mm)	P*"(mm)	Weight lbs. (kg)
C60-PC6-4	PC6	2.52 (64)	3.10 (78.8)	4.20 (106.7)	1.60 (40.6)	5.90 (150)	22.6 (10.3)
C60-PC6-12	PC6	2.52 (64)	11.10 (282)	12.20 (310)	9.60 (244)	13.90 (353)	34.0 (15.5)
C60-PC7-10	PC7	3.54 (90)	7.30 (185.4)	10.22 (260)	5.80 (147.3)	11.91 (303)	35.2 (16)

* Compute "P" dimensions by adding "C" dimensions of all components used. Maximum bore depth "D" may be increased by using extension adapters. ** Deviates from ANSI B5.50 1994 - No clearance for some tool changers. *** Other sizes available on request.

H100A-PC6-4 shown here.



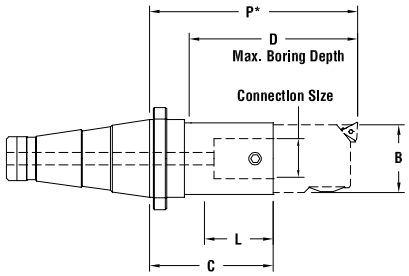
HSK 63A

Part Number	Connection Size	B" (mm)	C " (mm)	D " (mm)	L " (mm)	P*" (mm)	Weight lbs. (kg)
H63A-PC2-73	PC2	.94 (24)	3.52 (89.5)	3.74 (95)	2.26 (57.5)	5.00 (127)	2.0 (.9)
H63A-PC3-103	PC3	1.22 (31)	3.94 (100)	4.29 (109)	2.68 (68)	5.55 (141)	2.2 (1)
H63A-PC4-65	PC4	1.54 (39)	2.50 (63.5)	3.09 (78.5)	1.24 (31.5)	4.35 (110.5)	2.3 (1)
H63A-PC4-178	PC4	1.54 (39)	6.00 (152.4)	6.59 (167.4)	4.74 (120.4)	7.85 (199.4)	4.0 (1.9)
H63A-PC5-105	PC5	1.97 (50)	3.26 (83)	4.25 (108)	2.01 (51)	5.50 (140)	3.1 (1.4)
H63A-PC6-100	PC6	2.52 (64)	3.25 (82.3)	4.78 (121.5)	1.99 (50.5)	6.04 (153.5)	3.4 (1.5)
H63A-PC6-147	PC6	2.52 (64)	5.13 (130)	6.65 (169)	3.86 (98)	7.92 (201)	6.0 (2.8)

HSK 100A

Part Number	Connection Size	B" (mm)	C" (mm)	D" (mm)	L" (mm)	P*" (mm)	Weight lbs. (kg)
H100A-PC2-107	PC2	.94 (24)	4.51 (114.5)	4.61 (117)	3.13 (74.5)	5.98 (152)	2.0 (.9)
H100A-PC3-122	PC3	1.22 (31)	4.92 (125)	5.16 (131)	3.54 (90)	6.53 (166)	6.4 (2.9)
H100A-PC4-65	PC4	1.54 (39)	2.50 (63.5)	2.97 (75.5)	1.12 (28.5)	4.35 (110.5)	6.2 (2.8)
H100A-PC4-182	PC4	1.54 (39)	7.00 (178)	7.48 (190)	5.63 (143)	8.85 (225)	8.4 (3.8)
H100A-PC5-122	PC5	1.97 (50)	4.25 (108)	5.12 (130)	2.87 (73)	6.49 (165)	7.7 (3.5)
H100A-PC6-100	PC6	2.52 (64)	3.25 (82.5)	4.67 (118.5)	1.87 (47.5)	6.04 (153.5)	7.2 (3.3)
H100A-PC6-190	PC6	2.52 (64)	6.69 (170)	8.11 (206)	5.31 (135)	9.48 (241)	11.9 (5.4)

N40-PC4-3 shown here.
Other NMTB sizes available on request.



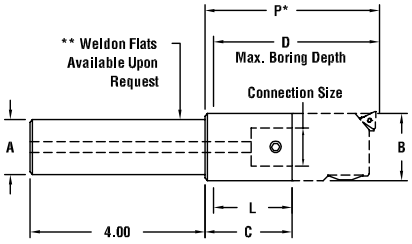
40 TAPER

Part Number	Connection Size	B	C	D	L	P*	Weight lbs. (kg)
N40-PC4-3	PC4	1.54	1.93	3.20	1.35	3.78	2.1 (.95)
N40-PC6-4	PC6	2.52	2.17	4.14	1.34	4.97	6.4 (2.9)

50 TAPER

Part Number	Connection Size	B	C	D	L	P*	Weight lbs. (kg)
N50-PC4-6	PC4	1.54	5.24	6.30	4.45	7.09	7.6 (3.5)
N50-PC6-4	PC6	2.52	1.93	3.94	1.15	4.72	6.4 (2.9)
N50-PC6-12	PC6	2.52	10.59	12.60	9.81	13.38	17.8 (8.1)
N50-PC7-6	PC7	3.54	2.48	5.87	1.26	7.09	8.1 (3.7)

S20-PC6-4 shown here.

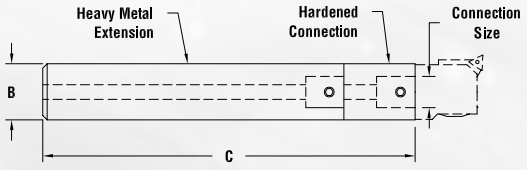


STRAIGHT SHANKS

Part Number	Connection Size	A	B	C	D	L	P*	Weight lbs. (kg)
S12-PC4-3	PC4	1.25	1.54	2.00	3.75	1.90	3.85	2.0 (.9)
S20-PC4-3	PC4	2.00	1.54	2.00	3.75	1.90	3.85	4.2 (1.9)
S12-PC6-4	PC6	1.25	2.52	2.00	4.70	1.90	4.80	3.1 (1.4)
S20-PC6-4	PC6	2.00	2.52	2.00	4.70	1.90	4.80	5.2 (2.4)

Maximum bore depth "D" may be increased by using extension adapters.
*Compute "P" dimensions by adding "C" dimensions of all components used.
**For Weldon flats, add "W" after SXX, i.e., S12W-PC4-3. Other shank configurations available on request.

PC4-150HM15 shown here.



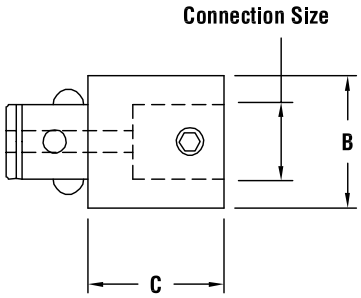
HEAVY METAL EXTENSIONS

Part Number	Connection Size	B	C	Weight lbs. (kg)
PC2-094HM11	PC2	.937	11.42	3.9 (1.8)
PC3-125HM14	PC3	1.250	13.78	9.0 (4.0)
PC4-150HM15	PC4	1.500	14.75	13.0 (5.9)

*Not recommended for use on lathes with twin bore units. Consult Parlec's Applications department.

EXTENSIONS

PC4-PC4E1
shown here.

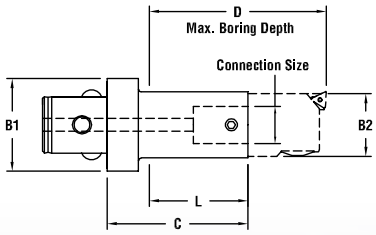


EXTENSIONS

Part Number	Connection Size	B" (mm)	C" (mm)	Weight lbs. (kg)
PC2-PC2E1	PC2	.94 (24)	1.18 (30)	.3 (.2)
PC2-PC2E2	PC2	.94 (24)	1.77 (45)	.4 (.2)
PC3-PC3E1	PC3	1.22 (31)	1.18 (30)	.4 (.2)
PC3-PC3E2	PC3	1.22 (31)	1.77 (45)	.5 (.3)
PC4-PC4E1	PC4	1.54 (39)	1.57 (40)	.8 (.4)
PC4-PC4E2	PC4	1.54 (39)	2.36 (60)	1.1 (.5)
PC5-PC5E2	PC5	1.97 (50)	2.36 (60)	1.9 (.9)
PC5-PC5E3	PC5	1.97 (50)	3.54 (90)	2.8 (1.3)
PC6-PC6E2	PC6	2.52 (64)	2.36 (60)	3.0 (1.4)
PC6-PC6E4	PC6	2.52 (64)	3.94 (100)	5.0 (2.3)
PC7-PC7E4	PC7	3.54 (90)	3.94 (100)	9.9 (4.5)
PC7-PC7E6	PC7	3.54 (90)	6.30 (160)	17.0 (7.73)

REDUCTIONS

PC4-PC2R2
shown here.

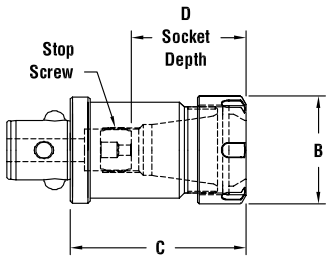


REDUCTIONS

Part Number	A (Connection)	E (Connection)	B1	B2	C" (mm)	D" (mm)	L (Max.)	Weight lbs. (kg)
PC3-PC2R1	PC3	PC2	1.22	.945	1.36 (34.5)	2.36 (60)	.965	.4 (.2)
PC4-PC2R2	PC4	PC2	1.54	.945	2.03 (51.5)	2.95 (75)	1.56	.6 (.3)
PC4-PC3R2	PC4	PC3	1.54	1.220	1.85 (47)	2.95 (75)	1.38	1.0 (.5)
PC5-PC2R3	PC5	PC2	1.97	.945	3.21 (81.5)	3.94 (100)	2.54	1.1 (.5)
PC5-PC3R3	PC5	PC3	1.97	1.220	3.03 (77)	3.94 (100)	2.36	1.3 (.6)
PC5-PC4R2	PC5	PC4	1.97	1.535	2.76 (70)	3.94 (100)	2.09	1.6 (.8)
PC6-PC2R3	PC6	PC2	2.52	.945	3.76 (95.5)	4.53 (115)	3.13	1.8 (.9)
PC6-PC3R3	PC6	PC3	2.52	1.220	3.58 (91)	4.53 (115)	2.95	2.1 (1)
PC6-PC3R5	PC6	PC3	2.52	1.220	5.35 (136)	6.30 (160)	4.72	2.6 (1.2)
PC6-PC4R1	PC6	PC4	2.52	1.535	1.93 (49)	3.15 (80)	1.30	1.7 (.8)
PC6-PC4R3	PC6	PC4	2.52	1.535	3.31 (84)	4.53 (115)	2.68	1.3 (.6)
PC6-PC4R5	PC6	PC4	2.52	1.535	5.08 (129)	6.30 (160)	4.45	3.0 (1.4)
PC6-PC5R3	PC6	PC5	2.52	1.969	2.91 (74)	4.53 (115)	2.28	2.8 (1.3)
PC7-PC6R4	PC7	PC6	3.54	2.52	4.18 (106)	6.30 (160)	3.50	7.0 (3.2)

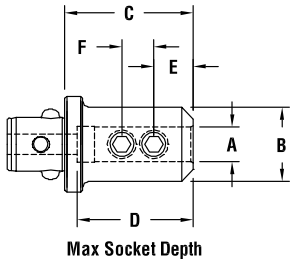
MODULAR COLLET CHUCK

Part Number	Connection Size	Nut style	B	C	D	Screw Stop
PC4-16ER3	PC4	ER FLUSH	1.11	3.13	3.13	BS-20
PC4-16ER325	PC4	ER POWER	1.11	3.25	3.25	BS-20
PC4-18DC2	PC4	DA 180	1.44	2.28	2.28	-
PC4-20ER325	PC4	ER POWER	1.34	3.25	3.25	BS-09
PC4-25ER325	PC4	ER POWER	1.67	3.25	3.25	BS-11
PC4-32ER325	PC4	ER POWER	1.97	3.25	3.25	BS-18
PC6-10SC3	PC6	PG 100	2.44	3.25	3.25	BS-18
PC6-18DC2	PC6	DA 180	1.44	3.43	3.43	BS-18
PC6-20ER340	PC6	ER FLUSH	1.34	3.40	3.40	BS-09
PC6-32ER340	PC6	ER FLUSH	1.97	3.40	3.40	BS-18



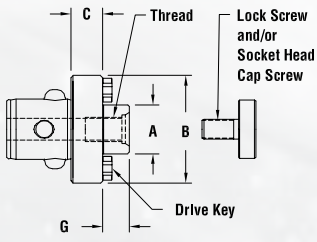
MODULAR END MILL HOLDERS

Part Number	Connection Size	A SIZE	B	C	D	E	F
PC4-75EM3	PC4	.750	1.75	3.13	2.75	1.00	-
PC6-75EM3	PC6	.750	1.75	3.03	2.75	1.00	-
PC6-10EM3	PC6	1.000	2.00	3.28	2.75	1.00	1.12
PC6-12EM3	PC6	1.250	2.50	3.28	2.75	1.00	1.12



MODULAR SHELL MILL HOLDERS

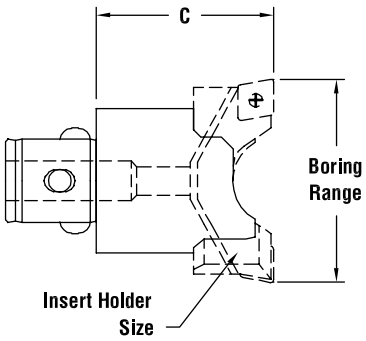
Part Number	Connection Size	A SIZE	B	C	G	Drive Key	Thread
PC4-75SM1	PC4	.750	1.75	0.78	0.69	0.31	3/8 - 24
PC6-75SM1	PC6	.750	2.52	0.78	0.69	0.31	3/8 - 24
PC6-10SM1	PC6	1.000	2.52	0.78	0.69	0.38	1/2 - 20
PC6-12SM1	PC6	1.250	2.75	1.03	0.69	0.50	5/8 - 18
PC6-15SM2	PC6	1.500	3.75	1.53	0.94	0.62	3/4 - 16



Twin Bore Roughing System

236 Twin Bore Roughing from .95" to 6.00" (25mm to 152.4mm)

PC4-4405 shown here with insert holders and inserts.



- Independent height and diameter setting permits balanced cutting with production of almost perfectly round holes from the beginning, irrespective of core shifts.
- Two height balanceable cutting edges results in metal removal at rates almost 4 times that of a single cutter.
- Height adjustments are made with a cam that supports the insert holder where needed, at the furthest radial point.
- Each insert holder can be adjusted individually in diameter with a dial screw for fast, easy set-up operations.
- Balanced or stepped cutting can be done with the same set of insert holders permitting heavy stock removal and eliminating the need to purchase two sets of insert holders.
- Standard through-spindle coolant capability cools the insert and flushes chips.
- ISO standard inserts – requires no special expensive inserts.
- Square SCMT insert holders with 6° lead for through hole boring or extreme core shifts.
- Diamond CCMT insert holders for boring to a square holder, or deep bore lengths.
- Trigon WCMT insert holders for applications requiring heavy stock removal.

TWIN BORE ROUGHING

Part Number	Bore Range Min.	Bore Range Max.	Connection Size	Insert Holder Size	Body Diameter	C	Weight lbs. (kg)
PC2-4205	.95 (24.1)	1.31 (33.3)	PC2	21	.91 (23)	1.39 (33.5)	.2 (.1)
PC2-4205	1.13 (28.7)	1.48 (37.6)	PC2	22	.91 (23)	1.39 (33.5)	.2 (.1)
PC3-4305	1.27 (32.3)	1.70 (43.2)	PC3	31	1.18 (30)	1.57 (40)	.4 (.18)
PC3-4305	1.50 (38.1)	1.95 (49.5)	PC3	32	1.18 (30)	1.57 (40)	.4 (.18)
PC4-4405	1.58 (40)	2.17 (55.1)	PC4	41	1.50 (38)	1.85 (47)	.7 (.32)
PC4-4405	2.09 (53)	2.53 (64.3)	PC4	42	1.50 (38)	1.85 (47)	.7 (.32)
PC5-4505	2.06 (52.4)	2.73 (69.3)	PC5	51	1.93 (49)	2.24 (57)	1.4 (.64)
PC5-4505	2.58 (65.5)	3.30 (83.8)	PC5	52	1.93 (49)	2.24 (57)	1.4 (.64)
PC6-4605	2.61 (66.3)	3.48 (88.4)	PC6	61	2.48 (63)	2.79 (71)	2.8 (1.27)
PC6-4605	3.36 (85.3)	4.20 (106.7)	PC6	62	2.48 (63)	2.79 (71)	2.8 (1.27)
PC6-4605	4.10 (104.1)	4.86 (123.4)	PC6	63	2.48 (63)	2.79 (71)	2.8 (1.27)
PC6-4606	3.92 (99.6)	4.84 (123)	PC6	61	3.54 (90)	2.79 (71)	3.9 (1.78)
PC6-4606	4.68 (119)	5.54 (140.7)	PC6	62	3.54 (90)	2.79 (71)	3.9 (1.78)
PC6-4606	5.44 (138)	6.20 (157.4)	PC6	63	3.54 (90)	2.79 (71)	3.9 (1.78)
PC7-4705	3.92 (99.6)	4.84 (122.9)	PC7	61	3.54 (90)	4.60 (117)	10.6 (4.8)
PC7-4705	4.68 (119)	5.54 (140.7)	PC7	62	3.54 (90)	4.60 (117)	10.6 (4.8)
PC7-4705	5.44 (138)	6.20 (157.4)	PC7	63	3.54 (90)	4.60 (117)	10.6 (4.8)

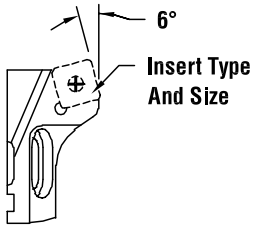
For use when reduced boring shaft diameter is required for clearance. PC Connection OD should not be larger than the starting diameter of the hole.

4405-41C09 Style 2 shown here. Sold in Pairs.

STYLE 1: FOR USE WITH SCMT INSERTS.

Part Number	Insert Holder Size	Insert Type and Size	Insert Screw	Insert Screw Wrench	Weight lbs. (kg)
4305-31S09	31	SCMT 09	028-906	018-008	.1 (.05)
4405-41S09	41	SCMT 09	028-906	018-008	.2 (.1)
4505-51S12	51	SCMT 12	028-907	018-009	.3 (.15)
4605-61S12	61	SCMT 12	028-907	018-009	.6 (.27)
4605-62S12	62	SCMT 12	028-907	018-009	.8 (.36)
4606-63S12	63	SCMT 12	028-907	018-009	1.0 (.45)

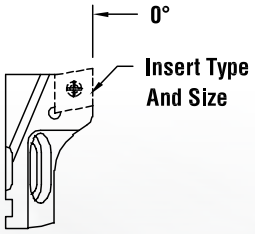
- Designed for boring through holes, particularly in castings where core shift is a problem.



STYLE 2: FOR USE WITH CCMT INSERTS.

Part Number	Insert Holder Size	Insert Type and Size	Insert Screw	Insert Screw Wrench	Weight lbs. (kg)
4205-21C06	21	CCMT 06	028-925	018-007	.1 (.05)
4205-22C06	22	CCMT 06	028-905	018-007	.1 (.05)
4305-31C06	31	CCMT 06	028-905	018-007	.1 (.05)
4305-32C06	32	CCMT 06	028-905	018-007	.1 (.05)
4405-41C09	41	CCMT 09	028-906	018-008	.2 (.1)
4405-42C09	42	CCMT 09	028-906	018-008	.2 (.1)
4505-51C12	51	CCMT 12	028-907	018-009	.3 (.15)
4505-52C12	52	CCMT 12	028-907	018-009	.4 (.18)
4605-61C12	61	CCMT 12	028-907	018-009	.6 (.27)
4605-62C12	62	CCMT 12	028-907	018-009	.8 (.36)
4606-63C12	63	CCMT 12	028-907	018-009	1.0 (.45)

- Designed for boring to square shoulders and deep bores. Also used when step cutting.

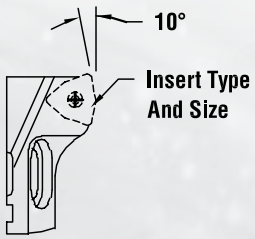


STYLE 3: FOR USE WITH WCMX INSERTS.

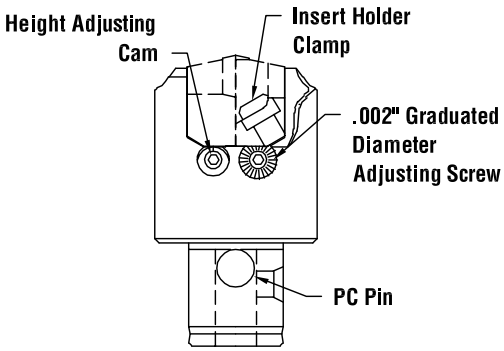
Part Number	Insert Holder Size	Insert Type and Size	Insert Screw	Insert Screw Wrench	Weight lbs. (kg)
4205-21W03	21	WCMX 03	028-905	018-007	.1 (.05)
4305-31W03	31	WCMX 03	028-905	018-007	.1 (.05)
4405-41W04	41	WCMX 04	028-905	018-007	.2 (.1)
4505-51W05	51	WCMX 05	028-908	018-003	.3 (.15)
4605-61W08	61	WCMX 08	028-906	018-008	.6 (.27)
4605-62W08	62	WCMX 08	028-906	018-008	.8 (.36)
4606-63W08	63	WCMX 08	028-906	018-008	1.0 (.45)

Rough insert holders sold in pairs. Order inserts separately (see pages 260—266).

- Designed for heavy stock removal at moderate horsepower.



PC4-4405 shown here.

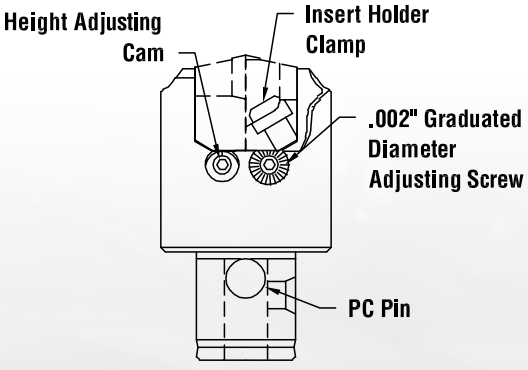


ROUGH BORING COMPONENTS

Part Number	*Diameter Adjust. Screw	*Insert Holder Clamp (Pair)	*Height Adjust. Cam (Pair)	*Wrench Kit	Spare Kit	PC Pin
PC2-4205	4205-11	4205-12	4205-13	4205-14	4205-10	PCP-002
PC3-4305	4305-11	4305-12	4305-13	4305-14	4305-10	PCP-003
PC4-4405	4405-11	4405-12	4405-13	4405-14	4405-10	PCP-004
PC5-4505	4505-11	4505-12	4505-13	4505-14	4505-10	PCP-005
PC6-4605	4605-11	4605-12	4605-13	4605-14	4605-10	PCP-006
PC6-4606	4605-11	4605-12	4605-13	4605-14	4605-10	PCP-006
PC7-4705	4605-11	4605-12	4605-13	4605-14	4605-10	PCP-007
7100-B460	4605-11	4605-12	4605-13	4605-14	4605-10	-

*(Incl.) in spare kit.

INSTALLING INSERT HOLDERS:



1. Remove the two insert holder clamps and set aside.
2. Place the insert holders in the head, making sure the slot in the bottom of the insert holder engages the head of the diameter adjusting screw.
3. Install the insert holder clamps (cap screw on size two). Make sure that the nut is flush with the end of the screw.
4. Snug up the insert holder clamps.

It is recommended that the Parlec twin boring heads be adjusted on a tool presetter. Refer to Parlec Parsetter catalogs for more information.

RECOMMENDED ROUGHING SPEEDS

STEELS

Material	BHN	TT / SN	VN	CT
CARBON STEEL C = 0.15%	125	300-450	600-800	650-1000
CARBON STEEL C = 0.35%	150	300-500	600-800	625-950
CARBON STEEL C = 0.70%	180-250	250-450	550-750	500-750
ALLOY STEEL 4000	125-200	300-500	550-750	500-750
ALLOY STEEL 5000	225	200-400	350-525	300-600
ALLOY STEEL 8000	300	200-400	300-525	350-475
STAINLESS STEEL, ANNEALED 400 SERIES	150-270	250-400	400-600	475-750
STAINLESS STEEL, ANNEALED 300 SERIES	150-220	300-425	350-500	550-650
CAST STEEL, LOW CARBON	150	200-325	450-650	400-550
CAST STEEL, LOW ALLOY	150-250	200-300	250-400	300-425

330BHN = Rc: 35
250BHN = Rc: 24-25
220BHN = Rc: 20

All values are in SFM.

OTHER MATERIALS

Material	BHN	TT / SN	AL / VN	AS	C2
MALLEABLE CAST IRON, FERRITIC	110-150	525-700	600-1000	400-900	150-350
MALLEABLE CAST IRON, PEARLITIC	150-270	250-400	400-800	300-800	100-250
GREY CAST IRON, LOW TENSILE	150-220	525-800	400-900	300-1000	200-400
GREY CAST IRON, HIGH TENSILE	200-330	350-600	400-700	300-600	150-300
NODULAR IRON, FERRITIC	125-230	300-500	400-900	450-900	150-375
NODULAR IRON, PEARLITIC	200-300	250-400	400-900	350-650	100-250
ALUMINUM ALLOYS	30-120	-	-	-	600-1200
ALUMINUM ALLOYS, CAST	100-130	-	-	-	600-1200

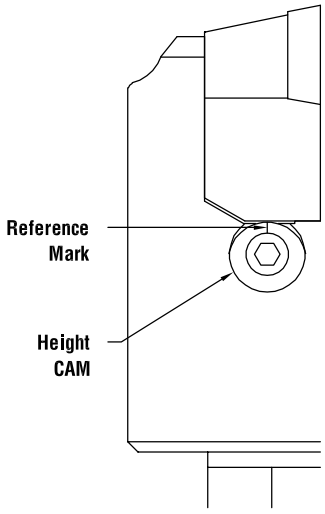
All values are in SFM.

ALLOWANCE & FEED RATES

		Machining Allowance on diameter (Inches) DOC				Feed Rates (IPR)*	
Twin Boring Head	Material	Optimum	Min.	Max.	For Best Finish	Min.	Max.
PC2-4205 (.94 – 1.34)	Steels	.10	.02	.14	.010	.008	.014
	Cast Iron	.16	.02	.24	.010	.006	.012
	Aluminum	.12	.02	.24	.010	.006	.012
PC3-4305 (1.26 – 1.70)	Steels	.12 - .14	.04	.16 - .18	.014	.012	.018
	Cast Iron	.20	.04	.28	.012	.008	.016
	Aluminum	.20	.04	.28	.014	.012	.018
PC4-4405 (1.58 – 2.17)	Steels	.14 - .16	.04	.18 -.20	.014	.012	.020
	Cast Iron	.24	.04	.31	.012	.012	.016
	Aluminum	.24	.04	.31	.014	.008	.018
PC5-4505 (2.06 – 3.30)	Steels	.24	.06	.35 - .47	.018	.012	.024
	Cast Iron	.39	.04	.55	.016	.012	.018
	Aluminum	.39	.06	.55	.018	.008	.024
PC6-4605 (2.61 – 6.00) PC6-4606 & PC7-4705	Steels	.28 - .39	.06	.35 - .47	.018	.012	.024
	Cast Iron	.47	.04	.55	.016	.008	.018
	Aluminum	.47	.04	.55	.018	.016	.024
ALL BIG BORE ABOVE 6.00	Steels	.28 - .39	.06	.35 - .47	.018	.012	.024
	Cast Iron	.47	.04	.55	.016	.008	.018
	Aluminum	.47	.04	.55	.018	.016	.024

*Feed rate is based on two cutting edges. When step cutting, multiply by .5.

240 Adjusting for Balanced Cutting

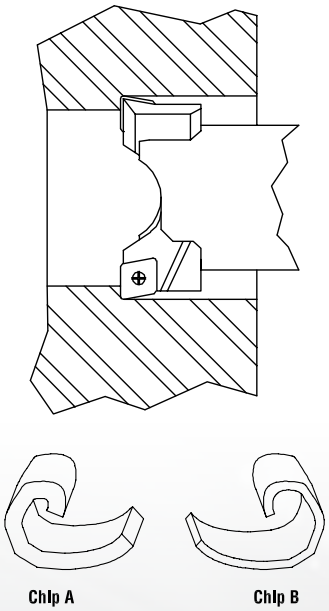


ADJUSTING FOR BALANCED CUTTING:

Balanced cutting allows both cutting edges to work simultaneously. A properly balanced twin cutter may be fed at almost four times the rate of a single cutter. Make sure the height cam is located with the reference mark (lowest point) in the vertical position as shown.

1. Loosen the insert holder clamps. Re-tighten enough to put drag on the insert holder.
2. Adjust the diameter by turning the adjusting screw. Always adjust in the clockwise direction.
3. Tighten the insert holder clamps.
4. Repeat for the second insert holder, adjusting both to ± .001" (.025) on the diameter.

Balanced cutting occurs when both inserts are set to exactly the same height. This height balancing is much more important than diametric balancing. A slight difference in height, even that caused by the insert tolerance, can have a dramatic effect upon the tool's performance. This is particularly true in the case of long chipping materials.



EXAMPLE OF UNBALANCED CUT:

- Feed rate .016 IPR (.4mm per rev).
- Insert "A" is .003" (.08) higher than insert "B."(The tolerance on an M style insert is .002"-.004".) (.05-.1)
- The material removed by insert "A" is .008" (.2) + .003" (.08) = .011" (2.8)
- The material removed by insert "B" is .008" (.2) + .003" (.08) = .005" (.12)
- The chip taken by insert "A" is over twice as thick as that taken by insert "B".

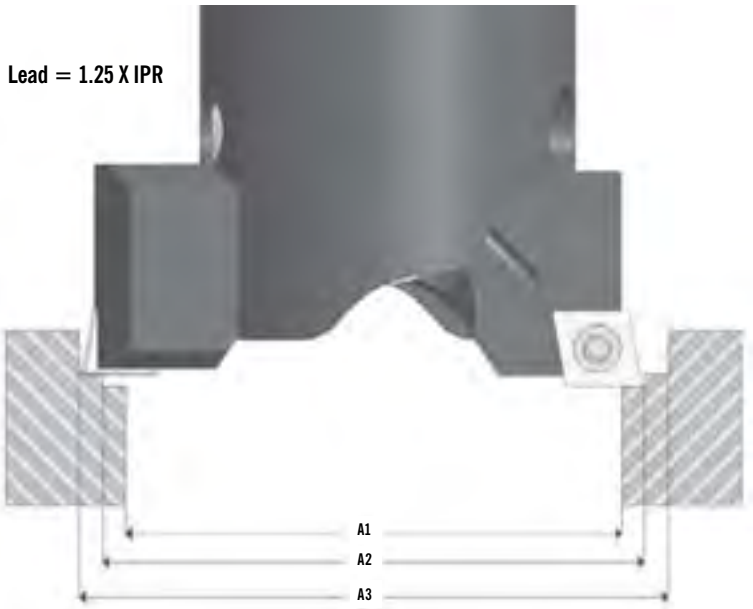
The difference in cutting forces caused by the differences in insert height illustrated above can have the following effects on the bar's performance:

1. Possible wobble or chatter; extra load on the machine tool;
2. Generally, the bore diameter becomes larger than the set diameter;
3. Uniform chip formation is not possible, making it difficult to break and clear chips.

MAXIMUM ALLOWABLE SETTING DIFFERENCE BETWEEN INSERTS FOR BEST PERFORMANCE:

MAXIMUM SETTING DIFFERENCE

Bore Diameter Range" (mm)	Insert Height" (mm)	Cutting Diameter" (mm)
.95 – 1.31" (24.1 - 33.3)	.001 (.025)	.008 (.2)
1.26 – 1.74" (32.3 - 43.2)	.001 (.025)	.012 (.3)
1.58 – 2.17" (40 - 55.1)	.001 (.025)	.012 (.3)
2.06 – 2.83" (52.4 - 69.3)	.002 (.05)	.016 (.4)
2.61 – 6.00" (66.3- 150)	.002 (.05)	.016 (.4)
6.00"+ (150+)	.002 (.05)	.020 (.5)



Stepped cutting is utilized when heavy depth of cut is required. The inserts are set at different diameters. The insert cutting the smaller diameter is given axial lead 1.25 times greater than the feed per revolution over the other insert. Use only insert holders with 0° lead. Stepped cutting allows 1.75 x the depth of cut per tables on page 40. Feed rates must be reduced to .5 x appropriate value.

RULES OF STEPPED CUTTING:

1. Use insert holders with 0° lead.
2. Set height in inner cutting edge to provide lead 1.25 times greater than the feed per revolution.
3. Feed rate as roughing with a single cutter.
4. Remove half of the material to be removed with each insert. This should be sufficient for most applications.

TO BALANCE CUTTING FORCES, USE THE FORMULA BELOW:

$$A_2 = .7071 \sqrt{A_3^2 + A_1^2}$$

A_1 – Hole starting diameter

A_2 – Inside cutter set diameter

A_3 – Outside cutter set diameter

ADJUSTING FOR STEPPED CUTTING:

RECOMMENDED TIGHTENING TORQUE IN/ LBS.

Rough Head	Insert Holder	PC Screw
PC2-4205	12 (1.3 Nm)	36 (4.1 Nm)
PC3-4305	36 (4.1 Nm)	48 (5.5 Nm)
PC4-4405	48 (5.5 Nm)	72 (8.3 Nm)
PC5-4505	72 (8.3 Nm)	96 (11.1 Nm)
PC6-4605	72 (8.3 Nm)	120 (13.9 Nm)

Stepped cutting allows removal of more metal since each insert is set at a different diameter.

1. Make sure the height cam is located with the reference mark in the vertical position as shown.
2. Loosen the insert holder clamps. Re-tighten enough to put drag on the insert holder.
3. Adjust the diameter by turning the adjusting screw. Always adjust in the clockwise direction. Set the diameter of each insert to remove approximately one half the material.
4. Using the cam screw, adjust the inner cutting edge so that it has a lead over the outer cutting edge. This lead should be a minimum of 11/2 times the feed per revolution.
5. Tighten the insert holder clamps.

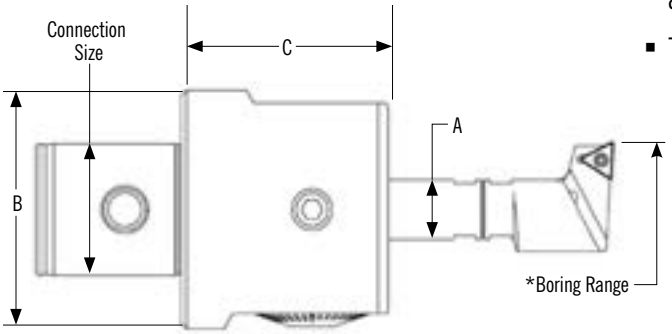
NOTE: When using stepped cutting, the feed rate must be that of a single cutter.

Small Diameter Boring System

242 Small Diameter Balanced Boring Tools

***PATENT PENDING**

- Wide work range from .078" to 1.89" (2-48mm) Diameter.
- Precise and repeatable diameter adjustment to .0001" (.002).
- No movement between lock and unlock eliminates setting errors common to other systems.
- High rigidity under all cutting conditions.
- Bored through tool receiver allows the boring tool to be telescoped for optimum rigidity.
- All system components with through hole permits through-spindle coolant.
- Easy to use balancing system permitting vibration free high-speed hole making.
- Available system of completely balanced boring bars and insert holders.
- Tested to over 20,000 RPM.



*Calculate maximum boring range by adding adjustment diameter to boring bar minimum diameter.

SMALL DIAMETER BALANCEABLE BORING TOOLS

INCH GRADATION UNITS

Part Number	Bore Range Min	Bore Range Max	Connection Size	Adjustment Diameter	A	B	C	Weight lbs. (kg)
PC6-20SDE62B	0.078" (2 mm)	1.89" (48 mm)	PC6	.315"	5/8"	2.52" (64 mm)	2.24" (57 mm)	3.15 lbs. (1.43 kg)
PC4-2015	0.078" (2 mm)	.790" (20 mm)	PC4	.200"	1/2"	2.00" (50.8 mm)	1.5" (38.1 mm)	1.00 lbs. (0.45 kg)

METRIC GRADATION UNITS

Part Number	Bore Range Min	Bore Range Max	Connection Size	Adjustment Diameter	A	B	C	Weight lbs. (kg)
PC6-20SDM62B	2 mm (.078")	48 (1.89")	PC6	8 mm	5/8"	64 mm (2.52")	57 mm (2.24")	1.43 kg (3.15 lbs.)
PC6-20SDM16B	2 mm (.078")	48 (1.89")	PC6	8mm	16 mm	64 mm (2.52")	57 mm (2.24")	1.43 kg (3.15 lbs.)

REDUCTION BUSHINGS FOR MODULAR BARS

Part Number	Description
62RB-08MM	5/8" to 8 mm
62RB-10MM	5/8" to 10 mm
62RB-12MM	5/8" to 12 mm
62RB-14MM	5/8" to 14 mm
16RB-08MM	16 mm to 8 mm
16RB-10MM	16 mm to 10 mm
16RB-12MM	16 mm to 12 mm
16RB-14MM	16 mm to 14 mm

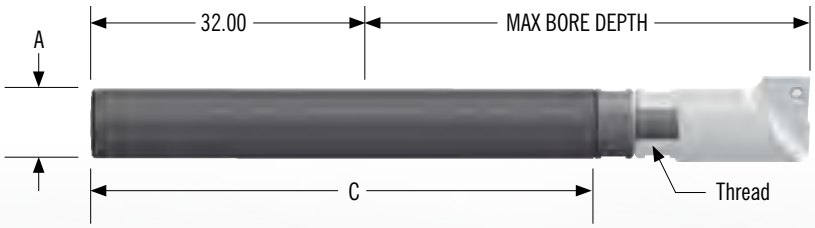
BORING NOSE WRENCHES

Part Number	Size (mm)
894 14	14
894 12	12
894 10	10
894 8	8
894 6	6

- Modular design allows for reduced inventory.
- Boring bars and noses are coolant-through.
- Boring nose is pre balanced by design to run at high RPM.
- Reduced weight for better performance.

MODULAR BORING NOSES .354” - 1.890” (9 - 48 MM)

Part Number	Min Dia	Recommended Max Dia	Extended Max Dia	Insert Size	Insert Screw	Insert Screw Wrench Sold Separately	Use w/ Bar Size	Wrench Size
BN8X9	.354"(9 mm)	.512"(13 mm)	.669"(17 mm)	TCMT06	028-910	018-002	8 mm	6 mm
BN10X13	.512"(13 mm)	.699"(17 mm)	.827"(21 mm)	TCMT06	028-910	018-002	10 mm	6 mm
BN12X17	.669"(17 mm)	.827"(21 mm)	.984"(25 mm)	TCMT11	812-458	018-007	12 mm	8 mm
BN14X21	.827"(21 mm)	.984"(25 mm)	1.142"(29 mm)	TCMT11	812-458	018-007	14 mm	8 mm
BN16X25	.984"(25 mm)	1.142"(29 mm)	1.299"(33 mm)	TCMT11	028-905	018-007	16 mm or 5/8"	10 mm
BN16X29	1.142"(29 mm)	1.299"(33 mm)	1.457"(37 mm)	TCMT11	028-905	018-007	16 mm or 5/8"	10 mm
BN16X33	1.299"(33 mm)	1.457"(37 mm)	1.614"(41 mm)	TCMT11	028-905	018-007	16 mm or 5/8"	12 mm
BN16X37	1.457"(37 mm)	1.614"(41 mm)	1.772"(45 mm)	TCMT11	028-905	018-007	16 mm or 5/8"	12 mm
BN16X41	1.614"(41 mm)	1.772"(45 mm)	1.890"(48 mm)	TCMT11	028-905	018-007	16 mm or 5/8"	14 mm



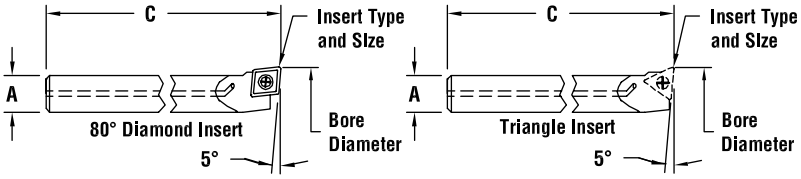
MODULAR BORING BARS BORING RANGE

Part Number	Material	A (Bar Size)	Reduction Bushing Size	C	Min Clamping Length	Max Bore Depth	Thread
BSS8	Steel	8 mm	XXRB-08MM	2.83" (72 mm)	32	1.57" (40 mm)	M5
BSC8	Carbide	8 mm	XXRB-08MM	3.78" (96 mm)	32	2.52" (64 mm)	M5
BSS10	Steel	10 mm	XXRB-10MM	3.78" (96 mm)	32	2.52" (64 mm)	M6
BSC10	Carbide	10 mm	XXRB-10MM	4.41" (112 mm)	32	3.15" (80 mm)	M6
BSS12	Steel	12 mm	XXRB-12MM	3.82" (97 mm)	32	2.56" (65 mm)	M6
BSC12	Carbide	12 mm	XXRB-12MM	5.04" (128 mm)	32	3.78" (96 mm)	M6
BSS14	Steel	14 mm	XXRB-14MM	4.02" (102 mm)	32	2.76" (70 mm)	M6
BSC14	Carbide	14 mm	XXRB-14MM	5.67" (144 mm)	32	4.02" (102 mm)	M6
BSS16	Steel	16 mm	-	4.41" (112 mm)	32	2.78" (70 mm)	M10
BSC16	Carbide	16 mm	-	6.46" (164 mm)	32	4.41" (112 mm)	M10
BSS625	Steel	5/8"	-	4.41" (112 mm)	32	3.15" (80 mm)	M10
BSC625	Carbide	5/8"	-	6.46" (164 mm)	32	5.20" (132 mm)	M10

244 Small Diameter Boring Bars & Bushings, .078" (2mm to 11mm)

BORING BARS

Boring Bar SB37-43T105 shown here.

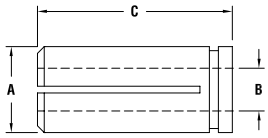


BORING BARS .187" - .433" (4.7 - 11MM) DIAMETER

Part Number	Coolant Part Number	Bore Dia. Min.	Bore Dia. Max. *	Reduction Bushing	Max. Bore Depth	A Dia.	C	Bar Material	Insert Type/ Size	Insert Screw	Insert Screw Wrench
CB15-18C056	–	.188"	.218"	XXRB-156	1.50"	.156"	6.00"	Carbide	CDCD 05	028-919	018-002
SB18-23C052	–	.232"	.300"	XXRB-187	1.00"	.187"	2.52"	Steele	CDCD 05	028-919	018-002
CB18-23C054	–	.232"	.300"	XXRB-187	2.00"	.187"	4.00"	Carbide	CDCD 05	028-919	018-002
CB25-30C054	–	.300"	.362"	XXRB-250	2.50"	.250"	4.00"	Carbide	CDCD 05	028-919	018-002
CB25-31T054	–	.310"	.372"	XXRB-250	2.50"	.250"	4.00"	Carbide	TDAB 05	028-920	018-007
SB31-36T054	–	.362"	.430"	XXRB-312	1.75"	.312"	4.00"	Steele	TDAB 05	028-920	018-007
CB31-37T056	–	.372"	.440"	XXRB-312	3.25"	.312"	6.00"	Carbide	TDAB 05	028-920	018-007

*Recommended for Production. For maximum range, see page 20. Minimum bore diameter above is based on a gage insert with .016" nose radius.

REDUCTION BUSHINGS

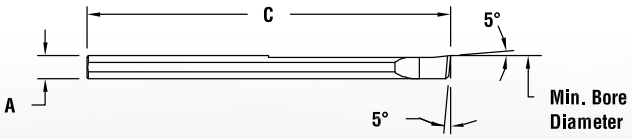


REDUCTION BUSHINGS FOR SOLID INCH SHANKS

Part Number	A	B	C	Weight lbs.
62RB-156	.625	.156	1.42	.1
62RB-187	.625	.187	1.42	.1
62RB-250	.625	.250	1.42	.1
62RB-312	.625	.312	1.42	.1

BORING BARS

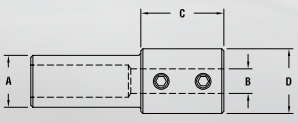
Boring Bar
CB2-0778-393-KW10
shown here.



BORING BARS .078" - .197" (2 -5MM) DIAMETER

Part Number	Bore Dia. Min.	Bore Dia. Max.	Boring Bar Holder	Max. Bore Depth	A Dia.	C Length	Grade
CB2-078-393-KW10	.078 (2)	.118 (3)	12RBX-02MM	.393 (10)	.078 (2)	1.97 (50)	Carbide
CB3-118-590-KW10	.118 (3)	.197 (5)	12RBX-03MM	.590 (15)	.118 (3)	1.97 (50)	Carbide

METRIC BORING BAR HOLDER



Use with 62RB-12MM or 16RB-12MM

BORING BAR HOLDER

Part Number	A	B	C	D
12RBX-02MM	.472 (12)	2 mm	.62 (15.7)	.62 (15.7)
12RBX-03MM	.472 (12)	3 mm	.62 (15.7)	.62 (15.7)

COMPLETE BORING TOOL KIT

Boring Range .354" – 1,890" (9-48 mm)

PART NUMBER: **BTK-PC6S948B**

Metric Kits available, please visit **www.parlec.com**

KIT CONTAINS:

The Balanceable Modular Boring Kit comes equipped with Parlec's small diameter boring head and a wide range of noses, bars, reduction bushings, and wrenches, all of which are packaged in a sleek and durable carrying case. The kit also includes a complete balancing guide to ensure the highest-level of precision possible.

BORING NOSES

Part Number	Qty	Description
BN8X9	1	Boring Nose
BN10X13	1	Boring Nose
BN12X17	1	Boring Nose
BN14X21	1	Boring Nose
BN16X25	1	Boring Nose
BN16X29	1	Boring Nose
BN16X33	1	Boring Nose
BN16X37	1	Boring Nose
BN16X41	1	Boring Nose

BORING BARS

Part Number	Qty	Description
BSS8	1	Steel 8 mm Boring Bar
BSS10	1	Steel 10 mm Boring Bar
BSS12	1	Steel 12 mm Boring Bar
BSS14	1	Steel 14 mm Boring Bar
BSS625	1	Steel 5/8" Boring Bar

INSERTS

Part Number	Qty	Description
T111615TTP	4	TCMT11
T111620C2G	4	TCMT11
T061615TTP	4	TCMT06
T060820C2G	4	TCMT06

BORING HEAD

Part Number	Qty	Description
PC6-20SDE62B	1	Balanceable Boring head

BORING KIT CASE

Part Number	Qty	Description
902.152	1	Boring Tool Kit Case

REDUCTION BUSHINGS

Part Number	Qty	Description
62RB-08MM	1	5/8" to 8 mm Reduction Bushing
62RB-10MM	1	5/8" to 10 mm Reduction Bushing
62RB-12MM	1	5/8" to 12 mm Reduction Bushing
62RB-14MM	1	5/8" to 14 mm Reduction Bushing

WRENCHES

Part Number	Qty	Description
018-105	1	5 mm Hex T-Handle
018-206	1	6 mm Hex Short Arm
018-002	1	T6 Torx
018-007	1	T7 Torx
894 6	1	Wrench 6 mm
894 8	1	Wrench 8 mm
894 10	1	Wrench 10 mm
894 12	1	Wrench 12 mm
894 14	1	Wrench 14 mm

SHANKS

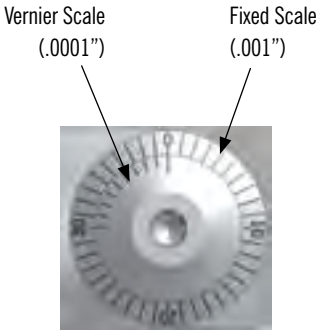
Part Number	Qty	Description
-	-	**ORDER SHANKS SEPARATELY** See Pages 8-11

USING THE VERNIER SCALE

Find the line in the vernier scale that exactly lines up with a reverence line.

Diametral increases in .001" are made by adjusting the dial clockwise one full reference line.

Diametral increases in .0001" are made by adjusting the dial clockwise until the appropriate line on the vernier scale lines up with the next fixed scale reference line.

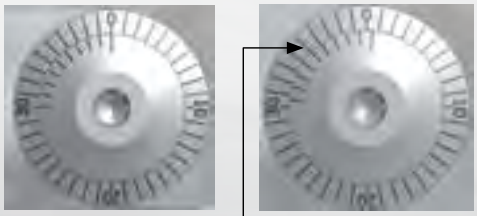


Adjustment Dial

This Example Shows .001" Adjustment

Before adjustment | After adjustment

This Example Shows .0005" Adjustment

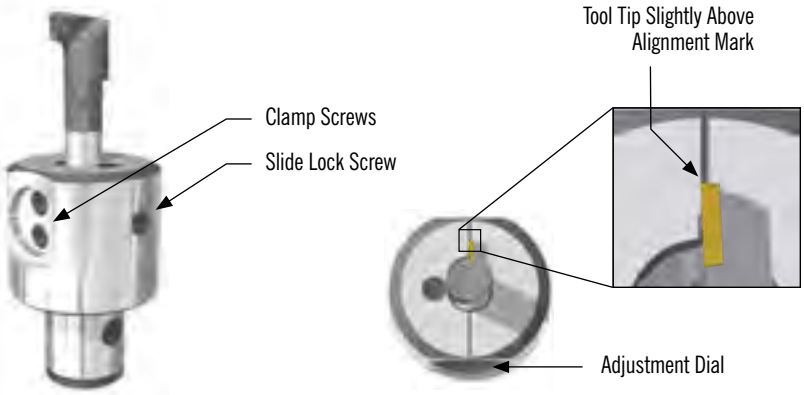


Before adjustment | After adjustment

Metric Vernier also available. See page 250.

ASSEMBLY

1. Screw boring nose onto boring bar shank.
2. Loosen the clamp screws.
3. Insert boring bar shank and reduction bushings (if applicable) with the slots 90° to clamp screws. Note: Do not use boring bars with flats.
4. Rotate the boring bar shank to align the insert tip to the alignment mark atop the boring head body. The bar should be slightly above the alignment mark for best timing. Note: Adjusting the position of the insert tip adjusts the "timing" of the bar which optimizes the surface finish and performance.
5. Adjust the boring bar to the minimum desired length.
6. Tighten the clamp screws, Max 20 ft/lbs. (1.13 Nm)



ADJUSTMENT

1. Loosen the slide lock screw.
2. Adjust tool position by turning and reading the dial. The dial is graduated in increments of .001" per graduation on the diameter. Fine adjustments of .0001" can be made utilizing the vernier scale.
3. Tighten the slide lock screw, Max 10 ft/ lbs. (1.13 Nm)

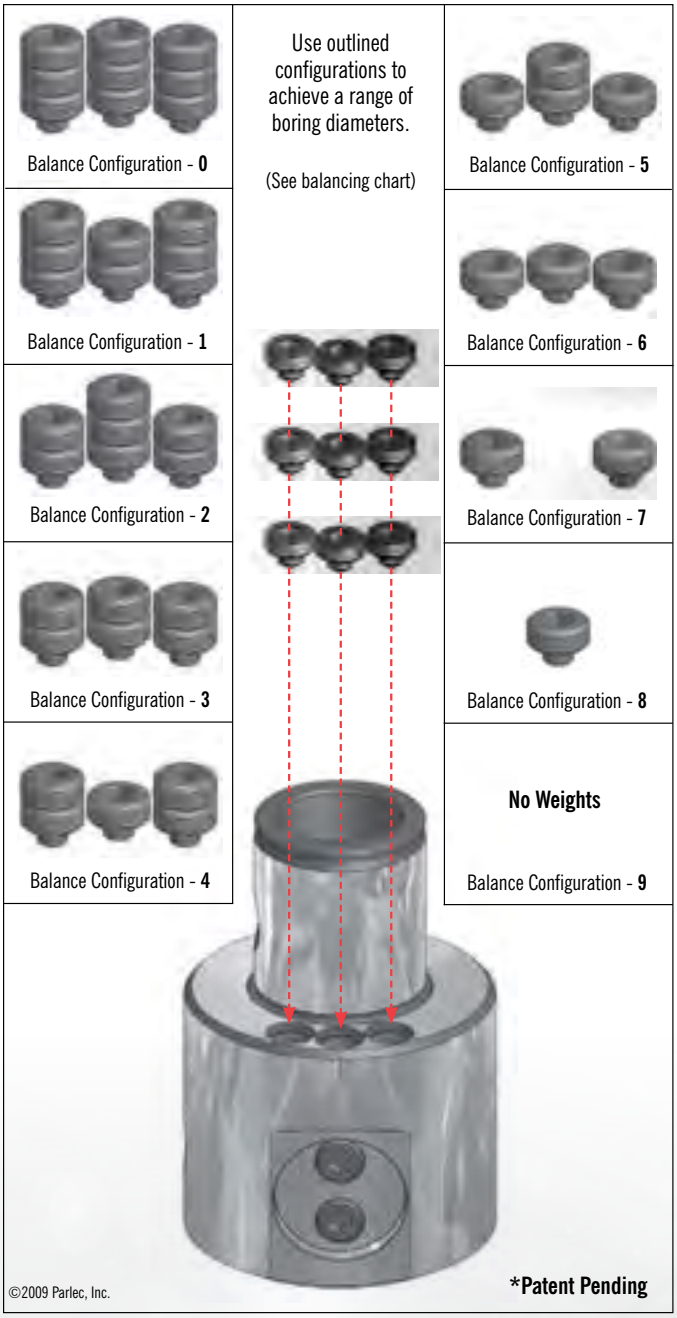
MAINTENANCE

The Parlec precision boring head is constructed of alloy steel, stainless steel and a precision composite material. The internal components are self lubricating. To insure long service life, light spindle or machine oil may be applied to external moving parts. No further maintenance is required.

TORQUE SPECIFICATIONS

SLIDE LOCK SCREW	10 ft/ lbs. (1.13 Nm)
CLAMP SCREW	20 ft/ lbs. (2.23 Nm)

BALANCE CONFIGURATION CHART



BALANCING CHART

Diameter Range		Preferred Range		Extended Range		Preferred Range		Extended Range	
		Boring Bar Shank / Nose	Balance Configuration	Boring Bar Shank / Nose	Balance Configuration	Boring Bar Shank / Nose	Balance Configuration	Boring Bar Shank / Nose	Balance Configuration
mm	in	Steel Bars		Steel Bars		Carbide Bars**		Carbide Bars**	
9	0.35	BSS8 / BN8X9	0			BSC8 / BN8X9	0		
9.5	0.37		0				1		
10	0.39		1				1		
10.5	0.41		1				2		
11	0.43		2				2		
11.5	0.45		2				3		
12	0.47		3				3		
12.5	0.49		3				4		
13	0.51	BSS10 / BN10X13	0	BSS8 / BN8X9	4	BSC10 / BN10X13	0	BSC8 / BN8X9	5
13.5	0.53		1		5		1		5
14	0.55		2		5		1		6
14.5	0.57		2		6		2		6
15	0.59		3		6		3		7
15.5	0.61		3		6		3		8
16	0.63		4		7		4		8
16.5	0.65		4		8		5		9
17	0.67	BSS12 / BN12X17	0	BSS10 / BN10X13	5	BSC12 / BN12X17	0	BSC10 / BN10X13	5
17.5	0.69		1		5		1		6
18	0.71		1		6		1		7
18.5	0.73		2		6		2		7
19	0.75		2		7		3		8
19.5	0.77		3		8		4		8
20	0.79		3		8		4		9
20.5	0.81		4		9		5		9
21	0.83	BSS14 / BN14X21	0	BSS12 / BN12X17	5	BSC14 / BN14X21	0	BSC12 / BN12X17	6
21.5	0.85		1		5		1		7
22	0.87		1		6		2		7
22.5	0.89		2		6		3		8
23	0.91		3		7		4		9
23.5	0.93		3		7		4		9
24	0.94		4		8		5		9
24.5	0.96		4		9		6		9
25	0.98	BSS16 / BN16X25	0	BSS14 / BN14X21	5	BSC16 / BN16X25	0	BSC14 / BN14X21	7
25.5	1.00		1		6		1		8
26	1.02		1		6		2		9
26.5	1.04		2		7		3		9
27	1.06		3		8		4		9
27.5	1.08		3		8		6		9
28	1.10		4		9		7		9
28.5	1.12		5		9		8		9
29	1.14	BSS16 / BN16X29	0	BSS16 / BN16X25	5	BSC16 / BN16X29	0	BSC16 / BN16X25	9
29.5	1.16		1		6		1		9
30	1.18		2		7		2		9
30.5	1.20		2		7		3		9
31	1.22		3		8		4		9
31.5	1.24		3		8		6		9
32	1.26		4		9		7		9
32.5	1.28		5		9		8		9
33	1.30	BSS16 / BN16X33	0	BSS16 / BN16X29	6	BSC16 / BN16X33	0	BSC16 / BN16X29	9
33.5	1.32		1		6		1		9
34	1.34		1		7		2		9
34.5	1.36		2		8		3		9
35	1.38		3		8		5		9
35.5	1.40		3		9		6		9
36	1.42		4		9		7		9
36.5	1.44		5		9		8		9
37	1.46	BSS16 / BN16X37	0	BSS16 / BN16X33	5	BSC16 / BN16X37	0	BSC16 / BN16X33	9
37.5	1.48		1		6		1		9
38	1.50		2		7		2		9
38.5	1.52		2		8		3		9
39	1.54		3		8		5		9
39.5	1.56		4		9		6		9
40	1.57		4		9		7		9
40.5	1.59		5		9		8		9
41	1.61	BSS16 / BN16X41	0	BSS16 / BN16X37	6	BSC16 / BN16X41	0	BSC16 / BN16X37	9
41.5	1.63		1		6		1		9
42	1.65		2		7		2		9
42.5	1.67		2		8		3		9
43	1.69		3		9		5		9
43.5	1.71		4		9		6		9
44	1.73		4		9		8		9
44.5	1.75		5		9		9		9
45	1.77			BSS16 / BN16X41	6			BSC16 / BN16X41	9
45.5	1.79				6				9
46	1.81				7				9
46.5	1.83				8				9
47	1.85				9				9
47.5	1.87				9				9
48	1.89				9				9
48.5	1.91				9				9
49	1.93				9				9

**CARBIDE BORING BARS FOR BEST BALANCE RESULTS, SHORTEN BARS OVERALL LENGTH

Part Number	OAL" (mm)
BSC8	2.60 (66)
BSC10	3.18 (81)
BSC12	3.50 (89)

Part Number	OAL" (mm)
BSC14	3.94 (100)
BSC16	4.68 (119)
BSC62	4.68 (119)

If requested Parlec will shorten OAL at the time of order.

248 Series 3 Precision Inch Finish Heads

Insert and Insert Holder Sold Separately (see pages 130–132).

Back Bore Setup

INCH GRADUATION

PART NUMBERS			APPLICATION RANGE		DIMENSION AND INFORMATION					
Boring Head	**Insert Holder** *Sold Separately*		**Bore Range Min."**	**Bore Range Max."**	**B Dia.**	**C**	**C1**	**Insert Holder Clamp**	**Insert Type and Size**	**Weight lbs.(kg)**
PC2-3215	321-T06-3	*	0.984	1.300	0.925	1.48	0.61	3215-01	TCMT 06**	0.3 (.14)
	322-T06-3		1.254	1.570						
	323-T06-3		1.534	1.850						
PC3-3315	331-T06-3	*	1.240	1.654	1.201	1.61	0.54	3315-01	TCMT 06**	0.5 (.23)
	332-T06-3		1.586	2.000						
	333-T06-3		1.946	2.360						
PC4-3415	341-T11-3	*	1.614	2.126	1.496	1.85	0.51	3415-01	TCMT 11	0.8 (.36)
	342-T11-3		1.968	2.480						
	343-T11-3		2.398	2.910						
PC5-3515	351-T11-3	*	2.087	2.756	1.929	2.24	0.62	3515-01	TCMT 11	1.6 (.73)
	352-T11-3		2.551	3.220						
	353-T11-3		3.071	3.740						
PC6-3615	361-T11-3	*	2.677	4.000	2.48	2.79	0.90	3615-01	TCMT 11	4.1 (1.86)
	362-T11-3		3.637	4.960						
	363-T11-3		4.577	5.900						
PC6-3715	361-T11-3	*	3.937	6.000	3.74	3.35	1.45	3615-01	TCMT 11	7 (3.2)
	362-T11-3		4.970	7.040						
	363-T11-3		6.157	8.220						

* Recommended for dedicated production jobs.

** Note: Additional clearance required for nose radius above .016"

METRIC GRADUATION

PART NUMBERS			APPLICATION RANGE		DIMENSION AND INFORMATION				
Boring Head			Bore Range Min. mm	Bore Range Max. mm	B Dia.	C	Insert Holder Clamp	Insert Type and Size	Weight lbs.(kg)
PC2-3205	321-T06-3	*	25	33	23.5	37.5	3215-01	TCMT 06**	0.3 (.14)
	322-T06-3		32	39.5					
	323-T06-3		39	46.5					
PC3-3305	331-T06-3	*	32	42	30.5	41	3315-01	TCMT 06**	0.5 (.23)
	332-T06-3		41	50.8					
	333-T06-3		50	59.5					
PC4-3405	341-T11-3	*	41	54	38	47	3415-01	TCMT 11	0.8 (.36)
	342-T11-3		50	62.5					
	343-T11-3		61	73.5					
PC5-3505	351-T11-3	*	53	70	49	57	3515-01	TCMT 11	1.6 (.73)
	352-T11-3		65	81.5					
	353-T11-3		78	94.5					
PC6-3605	361-T11-3	*	68	101.5	63	71	3615-01	TCMT 11	4.1 (1.86)
	362-T11-3		93	125.5					
	363-T11-3		117	149.5					
PC6-3705	361-T11-3	*	100	152	95	85	3615-01	TCMT 11	7 (3.2)
	362-T11-3		93	178.5					
	363-T11-3		117	208.5					

Size 1

Size 2

Size 3

Inserts sold separately. See pages 260-266.

INSERT HOLDER, -3 DEGREE LEAD FOR THROUGH BORE AND BORING TO A SHOULDER. 0 DEGREE ALSO AVALIABLE

3° Part Number	0° Part Number		Insert Holder Size	Extended Size	Insert Type and Size	Insert Screw	Insert Screw Wrench
321-T06-3	321-T06-0	*	2	1	TCMT 06**	028-910	018-002
322-T06-3				2			
323-T06-3				3			
331-T06-3	331-T06-0	*	3	1	TCMT 06**	028-910	018-002
332-T06-3				2			
333-T06-3				3			
341-T11-3	341-T11-0	*	4	1	TCMT 11	028-905	018-007
342-T11-3				2			
343-T11-3				3			
351-T11-3	351-T11-0	*	5	1	TCMT 11	028-905	018-007
352-T11-3				2			
353-T11-3				3			
361-T11-3	361-T11-0	*	6	1	TCMT 11	028-905	018-007
362-T11-3				2			
363-T11-3				3			

* Recommended for dedicated production jobs.

** Note: Additional clearance required for nose radius above .016"

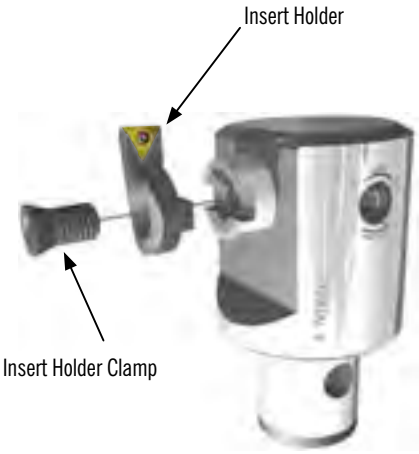
CONFIGURATION

Insert Holder mounted in the standard boring position.

Insert holder mounted in the back boring position.
(See next page for application.)

ASSEMBLY

Install the Insert Holder to the Spindle using the Insert Holder Screw.



ADJUSTMENT

1. Loosen the Spindle Lock Screw.
2. Adjust tool by turning and reading the dial. The dial is graduated in increments of .001" or .02mm per graduation on the diameter. Fine adjustment of .0001" or .002mm can be made utilizing the Vernier Scale.
3. Tighten the Spindle Lock Screw.

TIGHTENING TORQUES (MAXIMUM)

Head	Insert Holder Clamp	Slide Lock
2	11 in. lbs.(1 Nm)	5 in. lbs. (0.5 Nm)
3	20 in. lbs. (2.2 Nm)	13 in. lbs. (1.5 Nm)
4	25 in. lbs. (2.8 Nm)	22 in. lbs. (2.5 Nm)
5	50 in. lbs. (5.6 Nm)	50 in. lbs. (5.6 Nm)
6	130 in. lbs. (14.7 Nm)	85 in. lbs. (10 Nm)
7	130 in. lbs. (14.7 Nm)	85 in. lbs. (10 Nm)

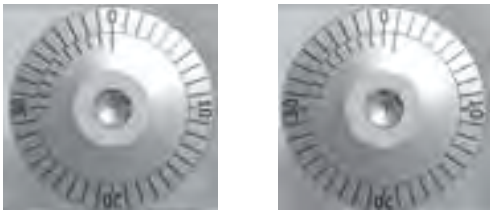
USING THE INCH VERNIER SCALE

Find the line in the vernier scale that exactly lines up with a reference line.

Diametral increases in .001" are made by adjusting the Dial clockwise one full line on the fixed scale.

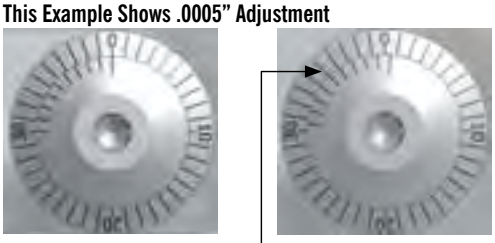
Diametral increases in .0001" are made by adjusting the Dial clockwise until the appropriate line on the vernier scale lines up with the next fixed scale reference line.

This Example Shows .001" Adjustment



Before adjustment | After adjustment

This Example Shows .0005" Adjustment



Before adjustment | After adjustment

USING THE METRIC VERNIER SCALE

Find the line in the vernier scale that exactly lines up with a reference line.

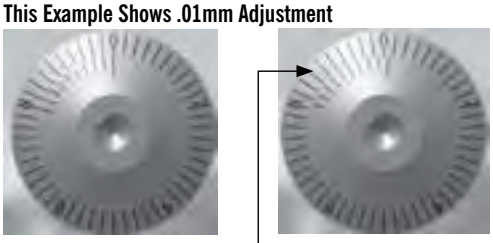
Diametral increases in .02mm are made by adjusting the Dial clockwise one full line on the fixed scale.

Diametral increases in .002mm are made by adjusting the Dial clockwise until the appropriate line on the vernier scale lines up with the next fixed scale reference line.

This Example Shows .02mm Adjustment

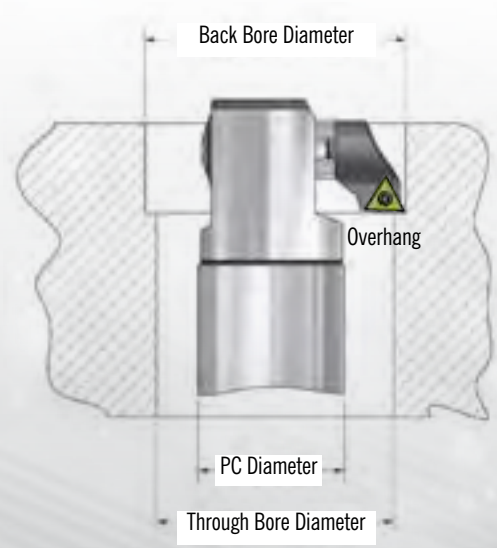
Before adjustment | After adjustment

This Example Shows .01mm Adjustment



Before adjustment | After adjustment

CALCULATING BACK BORE RANGE



Back Bore Diameter is the same as range in the charts page 26 and 27.

Minimum Through Bore Diameter is calculated: (PC Diameter/2) + (Back Bore Diameter/2) + minimal clearance (.010)

Overhang of insert from boring bar connection should be measured to make sure there is enough clearance. Calculate (Back Bore Diameter - Through Bore Diameter)/2

EFFECTS OF CUTTING SPEED

The effects of cutting speed are illustrated in this chart:

CUTTING SPEED EFFECTS

Variable	Low Speed	High Speed
MACHINING TIME	Longer	Shorter
SURFACE FINISH	Coarser	Finer
PROBABILITY OF VIBRATION	Lower	Higher

RECOMMENDED FINISHING SPEED FOR STEEL

Steels	BHN	TR / TT / SN	C1 / C2	AL	AS	TE
CARBON STEEL C = 0.15%	125	550-750	600-800	150-350	650-1000	950-1300
CARBON STEEL C = 0.35%	150	525-800	600-800	150-350	625-950	850-1200
CARBON STEEL C = 0.70%	180-250	425-625	550-750	150-250	500-750	750-950
ALLOY STEEL 4000	125-200	425-625	550-750	150-250	500-750	750-950
ALLOY STEEL 5000	225	250-500	350-525	150-250	300-600	400-650
ALLOY STEEL 8000	300	200-400	300-525	100-200	350-475	400-500
STAINLESS STEEL, ANNEALED 400 SERIES	150-270	400-625	400-600	150-250	475-750	425-650
STAINLESS STEEL, ANNEALED 300 SERIES	150-220	450-550	350-500	150-300	550-650	425-650
CAST STEEL, LOW CARBON	150	325-450	450-650	100-250	400-550	475-600
CAST STEEL, LOW ALLOY	150-250	250-350	250-400	100-250	300-425	400-575
CAST STEEL, HIGH ALLOY	160-250	–	250-400	75-250	–	400-500

All values are in SFM.

OTHER MATERIALS

Material	BHN	TR / TT / SN	C1 / C2	AL	AS	TE
MALLEABLE CAST IRON, FERRITIC	110-150	525-700	300-450	600-1100	700-1000	–
MALLEABLE CAST IRON, PEARLITIC	150-270	250-400	200-250	600-1000	300-750	–
GREY CAST IRON, LOW TENSILE	150-220	525-800	325-525	400-1200	600-1600	–
GREY CAST IRON, HIGH TENSILE	200-330	350-600	225-400	400-900	350-900	–
NODULAR IRON, FERRITIC	125-230	300-500	300-400	400-950	450-900	–
NODULAR IRON, PEARLITIC	200-300	250-400	200-350	400-700	350-700	–
ALUMINUM ALLOYS	30-120	–	600-3000	–	–	–
ALUMINUM ALLOYS, CAST	100-130	–	600-3000	–	–	–
EXTRA HARD STEEL	50-65RC	–	60-120	–	–	–
WASPALLOY, DISCALLOY, INCOLOY	180-250	–	50-200	–	–	150-350
MONEL, INCONEL	125-250	–	45-90	–	–	90-300
TITANIUM	100-200	–	120-250	–	–	325-500
COPPER, BRASS, ZINC	50-150	–	500-1000	–	–	50-1500

All values are in SFM
Feed rates .002 - .008 IPR. For best finish, feed rate should be approximately 25% of insert nose radius. Refer to next page.

330 BHN = Rc: 35
250 BHN = Rc: 24-25
220 BHN = Rc: 20

EFFECTS OF FINISH FEED RATES

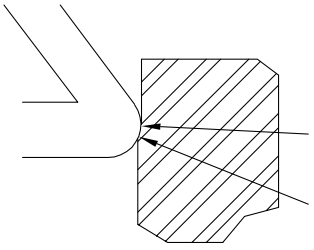
The best surface finish is produced when the tool is fed at approximately 25% of the tool nose radius. The effect on chip formation of the feed rate and depth of cut is illustrated below:

FINISH FEED RATE EFFECTS

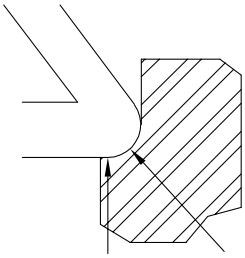
Feed Rates/Depth of Cut	Result	Chip Form	Solutions
Low	Chips Bird Nest: Difficult to Remove		1. Increase Depth of Cut 2. Increase Feed Rate
Moderately Low	Long Stringy Chips: Difficult to Remove		1. Increase Depth of Cut 2. Increase Feed Rate
Ideal	Chips Coil Like a Spring: Easy to Remove		Keep Running Make Money!
Slightly Heavy	Slight Deformation of Chip		If Finish is Bad, Decrease Speed
Heavy	Deformation of Chip Increased Cutting Forces		If Finish is Bad, Decrease Speed
Very Heavy	Severe Deformation of Chip Increased Cutting Forces Heat Build Up		If Finish is Bad, Decrease Speed Good Chip for Roughing

DEPTH OF CUT

The depth of cut must be sufficient to allow the tool to cut and not rub. Too small a cut will cause the tool to be pushed away from the work piece by the cutting pressure. The depth of cut must be large enough to let the insert bite as it cuts. Depth of cut is a function of material and insert nose radius. **Generally, the ideal minimum diametral depth of cut is equal to the insert nose radius.**



Small Depth of Cut Allows Cutting Forces to Push Insert Out of Cut



Depth of Cut is Large Enough to Prevent Cutting Forces From Pushing Insert Out of Cut

EFFECT OF NOSE RADIUS ON SURFACE FINISH

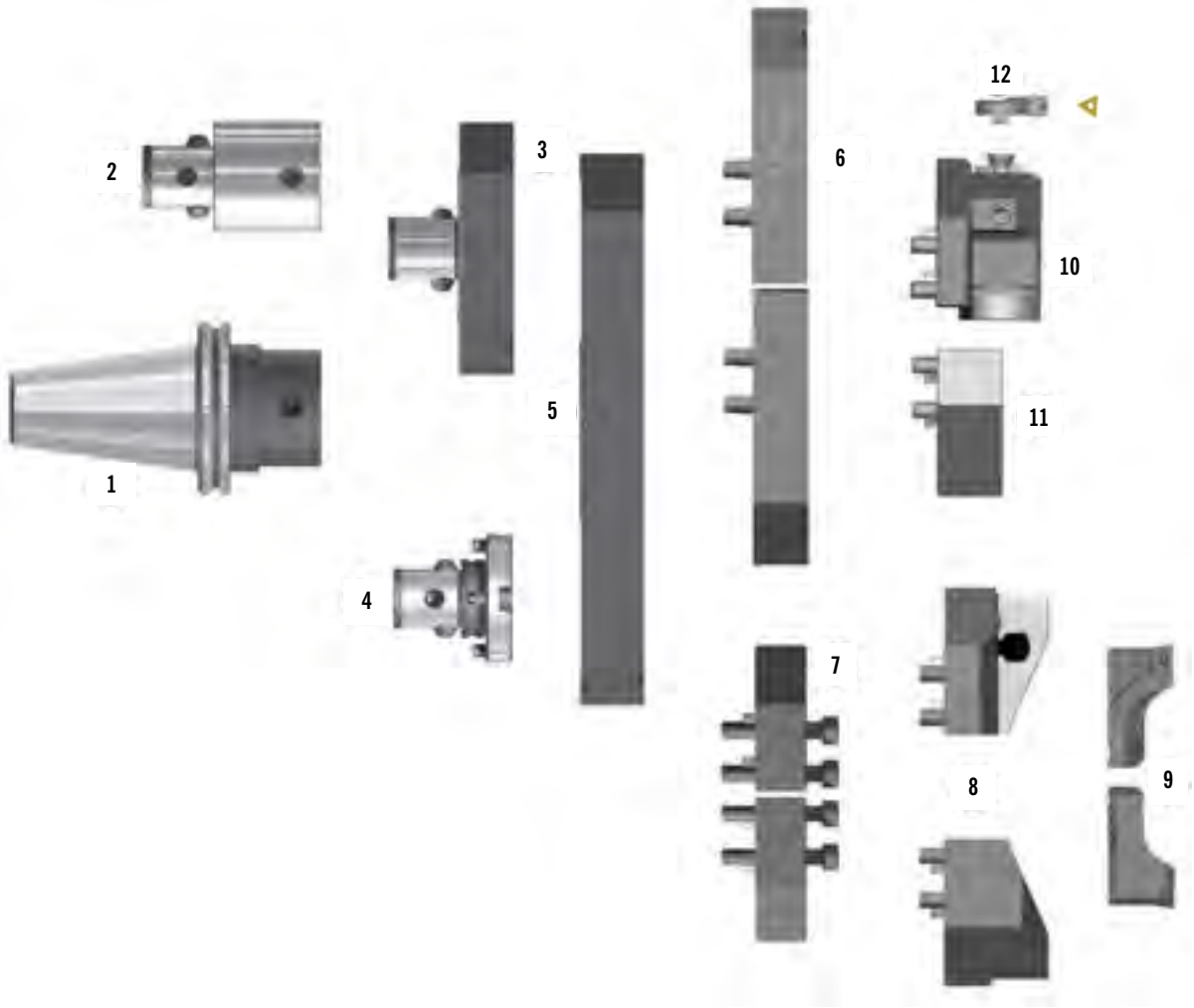
A larger nose radius produces a better surface finish. Care must be taken not to over feed the nose radius.

- A .016 nose radius insert fed at .004 IPR produces a finish as shown at the right:

- A .016 nose radius insert fed at .008 IPR produces a finish as shown at the right:

- A .016 nose radius insert fed at .016 IPR produces a finish as shown at the right:

*For best finish, generally feed at 25% of nose radius.



5.95” - 23.8” (152-605MM) LARGE DIAMETER TREE

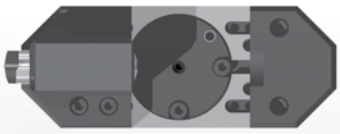
	Component	Selection Criteria	Catalog page
1	Modular Shank	Machine tool taper and projection requirement	Page 230-233
2	PC Extensions	Extended reach requirements	Page 244
3	PC6 Extension Base	One piece design for 5.95"-8.50" (151.2 - 216mm)	Page 256
4	Extension Base Coupler	Modular connection between shank and ext. base	Page 255
5	Extension Base	Bore range 8.50" (216mm) and up	Page 255
6	Extension Slide	Extends range of base to eliminate next size	Page 257
7	Riser	Extends reach when used for OD boss	Page 257
8	Insert Holder Base	Mounts rough insert holders to base	Page 258
9	Twin Bore Insert Holders	Mounts and adjusts insert to diameter	Page 255
10	Finish Boring Unit	For precision adjustment of finish bore diameter	Page 259
11	Counter Weight	Offset the mass of Finish Boring Unit for high rpm	Page 259
12	Finish Insert Holder	Mounts finish Insert to Finish Boring Unit	Page 259

EXTENSION BASE COUPLER

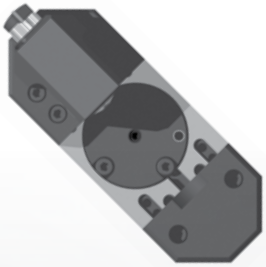
- Available in PC6 and PC7 connections
- Modular Extension Base Couplers connects the Extension Slide directly to the face of the PC connection eliminating an additional connection and loss of rigidity
- Coolant through for direct supply of coolant to cutting edge
- 0, 45 or 90 Degree orientation setting allows for tool extension timing for carousel clearance with out the need for special shanks

EXTENSION BASE COUPLER

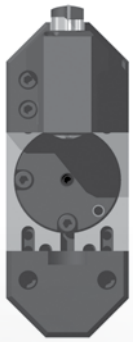
Connection Size	Part Number	Mass lbs. (kg)
PC6	**PC6-EBC**	2.3 (1.1)
PC7	**PC7-EBC**	2.75 (1.3)



0 Degree orientation



45 Degree orientation



90 Degree orientation

EXTENSION BASES

- Extension bases have 3 or 4 positions to maximize bore range
- Coolant supply to Insert Holder pair or Finish Boring Unit to supply coolant directly to the cutting edge
- Used with Extension Base Couplers allows timing of cutting tip eliminating tool interference in carousel

INTEGRAL PC CONNECTION BORING RANGE

	Min.	Max.	Extension Base	Mass lbs.	kg
Inch	5.95	8.50	**PC6-910-850**	6	2.72
Metric	151.2	216			

BORING RANGE

	Min.	Max.	Extension Base	Mass lbs.	kg
Inch	8.50	11.05	**910-1150**	6.6	3
Metric	216	281			
Inch	11.05	13.60	**910-1360**	9.4	4.3
Metric	280	346			
Inch	13.60	16.15	**910-1615**	12.4	5.6
Metric	346	410			
Inch	16.15	18.70	**910-1870**	15.4	7
Metric	410	475			
Inch	18.70	21.25	**910-2125**	18.4	8.4
Metric	475	540			
Inch	21.25	23.80	**910-2380**	21.3	9.7
Metric	539	605			
Inch	23.80	26.35	**910-2635**	24.2	11
Metric	605	672			

EXTENSION SLIDE

- Extends the range of extension base 2.55" or 65mm
- Eliminates the requirement of next slide diameter for low volume or non-production applications

BORING RANGE

	Bore Range	Range Extension Slide (pair)	Mass lbs.	kg
Inch	+2.55	**910-RES**	7.9	3.6
Metric	+65			

Adds 1" (25.4) to projection length.

MOUNTING CAP SCREWS (8 INCL.)

SHCSM8X30 (each)

RISER

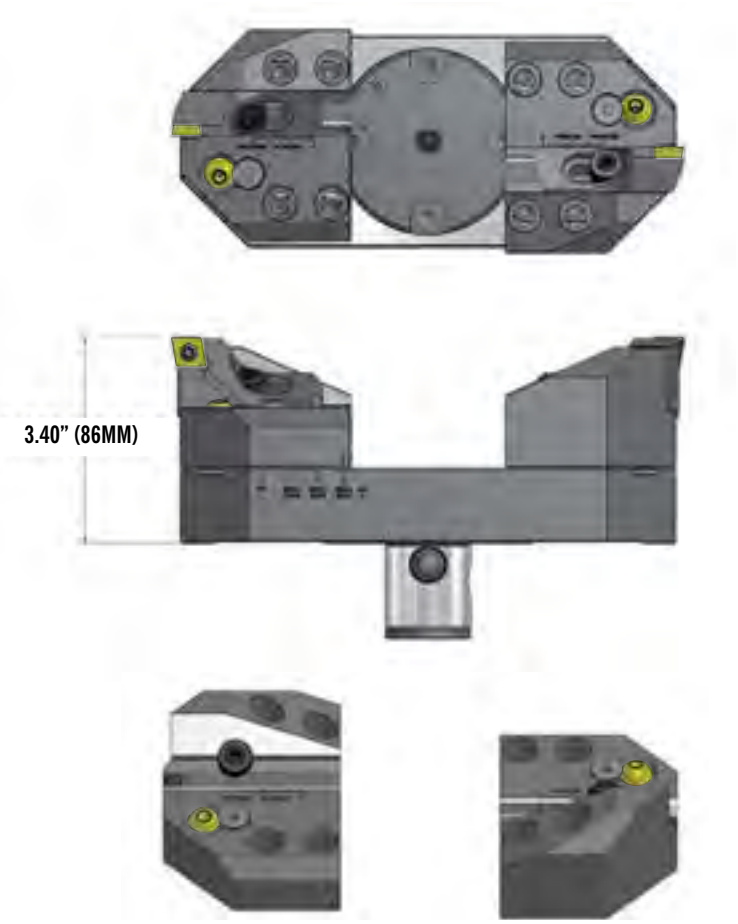
- Extends the reach of insert for OD boring

	Bore Reach	Z Length Riser (pair)	Mass lbs.	kg
Inch	+1.00	**910-ZRIS**	4.4	2
Metric	+25.4			

MOUNTING CAP SCREWS (8 INCL.)

SHCSM8X50 (each)

258 Rough Boring Holder Base



ROUGH BORING HOLDER BASE

- 3 positions allows a single insert holder to bore the complete range
- Coolant directed onto the cutting edge for maximum cooling, chip forming and tool life
- Independent height and diameter setting permits balanced cutting with production of almost perfectly round holes from the beginning, irrespective of core shifts.
- Two height balanceable cutting edges results in metal removal at rates almost 4 times that of a single cutter.
- Height adjustments are made with a cam that supports the insert holder where needed, at the furthest radial point.
- Each insert holder can be adjusted individually in diameter with a dial screw for fast, easy set-up operations.
- Balanced or stepped cutting can be done with the same set of insert holders permitting heavy stock removal and eliminating the need to purchase two sets of insert holders.
- Standard through-spindle coolant capability cools the insert and flushes chips.
- ISO standard inserts – requires no special expensive inserts.
- Square SCMT insert holders with 6° lead for through hole boring or extreme core shifts.
- Diamond CCMT insert holders for boring to a square holder, or deep bore lengths.
- Trigon WCMT insert holders for applications requiring heavy stock removal.

HOLDER BASE

	Bore Range	Holder Base (pair)	Mass lbs.	kg
Inch	2.55	**910-HBP**	4.7	2.1
Metric	65			

SPARE COMPONENTS

Mounting Cap Screw *	Insert Holder Clamps	Diameter Adjust Screw	Height Adjusting Cam
SHCSM8X20 (each)	4605-12 (pair)	4605-11 (pair)	4605-13 (pair)

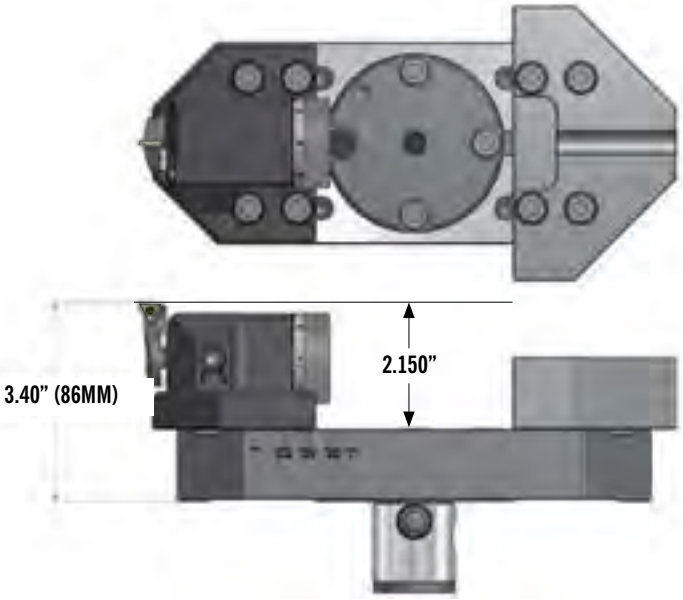
* 8 (Incl.)

INSERT HOLDERS

Part Number	Size	Insert Type and Size	Lead angle	Insert screw	Insert Screw Wrench	Mass lbs.	kg
4605-61S12	61	SCMT 12	6 degrees	028-907	018-009	0.6	.3
4605-61C12	61	CCMT12	0 degrees	028-907	018-009	0.6	.3
4605-61W08	61	WCMX08	10 degrees	028-906	018-008	0.6	.3

Other styles and a complete listing of Twin Bore Insert Holders on page 237.

For speeds, feeds and material removal recommendations and Boring Bar set up see pages 238–241.



BORING RANGE

	Bore Range	Finish Boring Unit	Mass lbs.	kg
Inch	2.55	**910-FBU**	3.2	1.44
Metric	65	**910-FBUM**		

Insert holder

INSERT HOLDERS

Part Number	Size	Insert Type and Size	Lead angle	Insert screw	Insert Screw Wrench
361-T11-3	6	TCMT 11	-3 degrees	028-905	018-007

Complete listing of Finish Insert Holders on page 249.

COUNTER WEIGHT

Part Number	Mass lbs.	kg
910-FCW	3.2	1.44

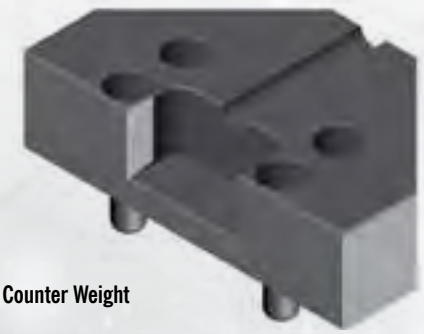
SPARE PARTS

Insert Holder Clamp Screw	Mounting Screws (4 Incl.)
3615-01	SHCSM8X20 (each)

For speeds, feeds and material recommendations, refer to pages 252–253.

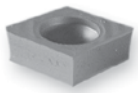
FINISH BORING UNIT

- .0005" (.02) adjustment graduation
- Coolant directed onto the cutting edge for maximum cooling, chip forming and tool life
- No movement between lock and unlock eliminates setting errors common to other systems
- Large easy to adjust dial



Counter Weight

SHAPE:



SQUARE

- For rough boring through holes and castings to avoid exit hole breakout.
- Four usable edges for maximum insert life.

80° DIAMOND

- For rough boring to a shoulder or deep bore depths where maximum rigidity of the bar is required.
- For finishing small diameters where maximum edge strength is required.

TRIANGLE

- For finishing with three corners for maximum insert life.

TRIGON

- For rough boring when large depth of cut is required or when extreme core shift is experienced.

CARBIDE GRADE:

Select the proper insert grade from pages 258-259. Material type, machine capabilities and type of hole, i.e., Interrupted Cut, can affect the grade of carbide used.

Coated

- Longer service life at higher speeds.

Uncoated

- Less expensive and effective in materials for which coatings do not add any benefit.

Cermet

- Yields the highest speed and durability for selected materials.

RADIUS:

Finish, bar rigidity, insert life, and engineering features of the workpiece all contribute to choosing the proper insert radius.

Larger

- Better surface finish and longer insert life.

Smaller

- Less cutting pressures, in extreme conditions, reduced bar flex and chatter.

PERIPHERY:

Pressed

- Utility grade for general purpose. Longer tool life.

Ground

- Better for finishing where tight bore tolerances are required.

WARNING

The use of carbide in cutting is generally a safe and reasonable practice. When used properly, these products are designed to be safe and without risk to health and property. Please review the recommended use and pay particular attention to insure the tooling is used within its designed speed ranged and operating forces. Misuse may represent a hazard to people and property.

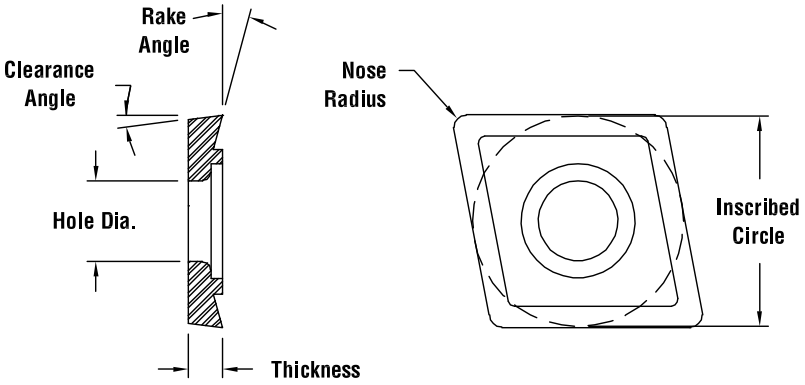
These products use materials which are classified as hazardous by OSHA. This may include one or more of the following carbide, titanium carbide, chromium carbide, chromium cadmium, cobalt, and nickel.

Carbide is a material which is brittle in nature. It will fracture from shock or impact which may cause pieces to detach at high velocities. Carbides should not be hammered or fitted with undo force. Suitable eye protection should be worn during all processes.

Carbide grinding may release dangerous levels of cobalt. Conventional precautions related to the operations of safe grinding should always be observed.

Additional information and material safety data sheets are available on request.

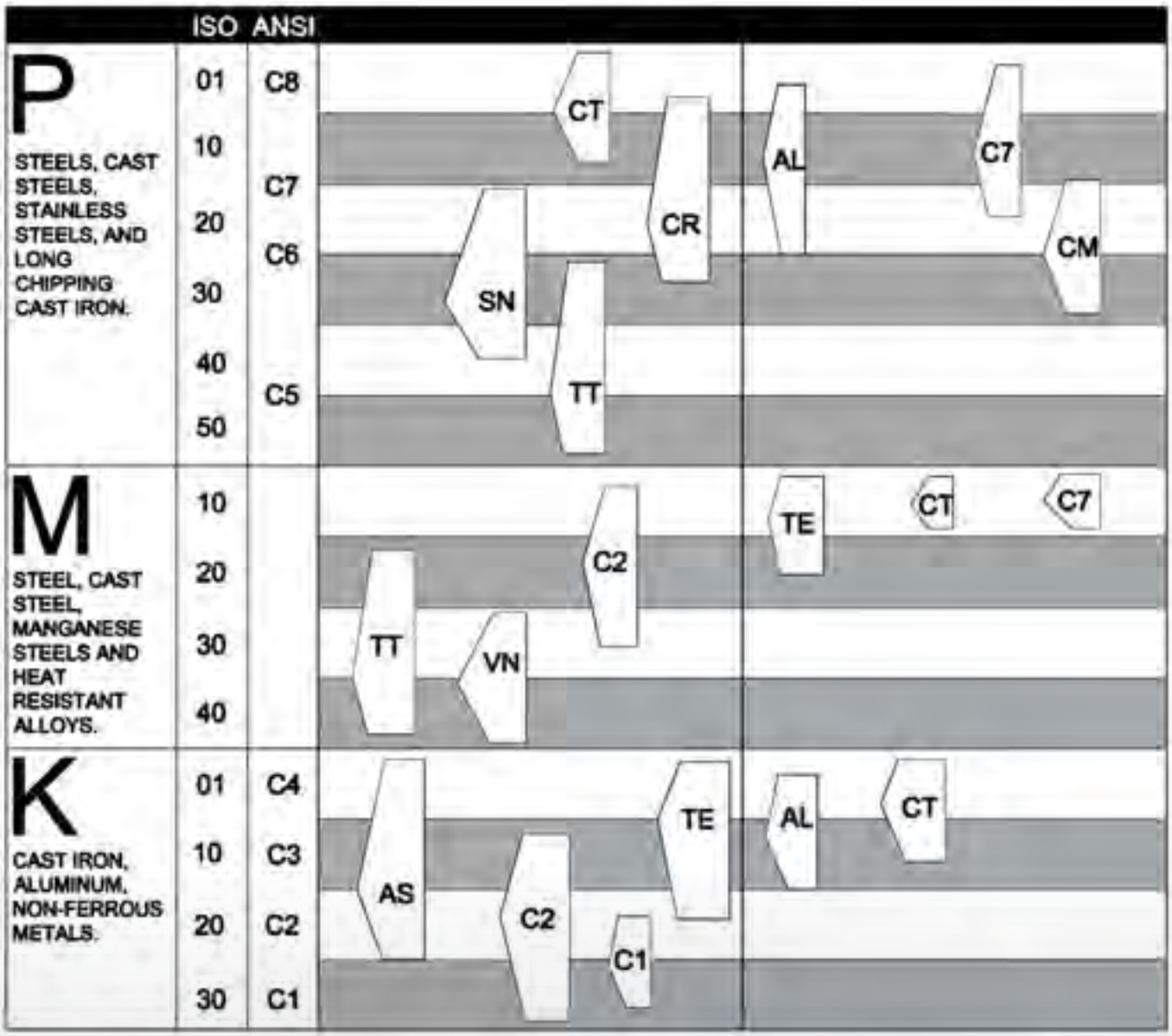
DIAGRAM DESCRIPTION



PART NUMBER EXPLANATION

EXAMPLE: T111615TTP

T	11	16	15	TT	P
(T)	Size (11)	Radius (16)	Rake Angle (15)	Grade (TT)	Periphery (P)
T=TRIANGULAR	05,06,09,11	08=.008	00=0°	See Carbide	-
S=SQUARE	09,12	12=.016	06=6°	Grade	P=Pressed
C=80° DIAMOND	05,06,09,12	16= .016	15=15°	Section	G=Ground
W=TRIGON	03,04,05,08	31=.031	20=20°	Pages	-
-	-	47=.047	23=23°	114-115	-


ISO
ANSI
P
STEELS, CAST STEELS, STAINLESS STEELS, AND LONG CHIPPING CAST IRON.
01
10
20
30
40
50
C8
C7
C6
C5
CT
CR
SN
TT
AL
C7
CM
M
STEEL, CAST STEEL, MANGANESE STEELS AND HEAT RESISTANT ALLOYS.
10
20
30
40
C2
TT
VN
TE
CT
C7
K
CAST IRON, ALUMINUM, NON-FERROUS METALS.
01
10
20
30
C4
C3
C2
C1
AS
C2
C1
TE
AL
CT

UNCOATED GRADES

C1
- Is a strong micro grain carbide which resists chipping, breaking, and edge build-up. Great for roughing at high feed rates on interrupted cuts. Use for titanium, high temperature alloys, inconel, and hastalloy.

C2
- Is a relatively fine grain grade on a WC-CO base. It has very good toughness and good rake angle resistance to abrasive wear. Applications include stainless steels, cast irons, non-ferrous metals, and most high temperature alloys.

C7
- Finish and light roughing non-coated grade for steel and steel castings. Performs best in favorable conditions. High speeds and moderate feeds.

TITANIUM COATED GRADES

TT
- Is a very tough grade with a triple coating of Tin, TiC, and TiN. It is a good grade for roughing and finishing in less than ideal conditions. Used in machining steels and stainless steels at low speeds.

TE
- Is a carbide grade with a PVD coating. It is used for machining aerospace materials, high temperature alloys, and stainless steels.

TR
- Is a PVD coated micro grain carbide. Performs well in alloy steels, nickel-based materials, and heat-treated materials up to Rc: 40.

SN
- Delivers outstanding performance in moderate-roughing to semi-finishing operations, especially in interrupted cuts. An advanced multi-layer coating (TiCN/AI2 03 /TiN), applied over a cobalt enriched substrate, gives SN a near optimum balance of toughness, surface lubricity, and resistance to metal build-up to yield excellent wear resistance throughout its application range.

VN
- Is a micro-grained grade with an excellent balance of toughness and wear resistance. Coated with PVD TiN for improved lubricity and wear resistance with up-sharp cutting edges, VN excels in light roughing to high-speed finishing of high-temperature alloys, stainless steels, cast iron, aluminum, and non-ferrous materials.

CERMET GRADES

CT
- Is a cermet grade of TiC and TiN particles in a nickel cobalt binder. It is used in finishing steels at high cutting speeds.

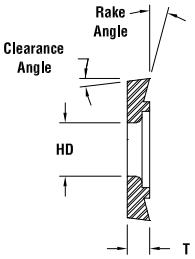
CM
CR
- Is a cermet grade. It is slightly less hard than CT and can be used in less favorable conditions.

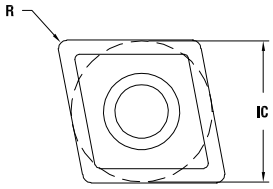
CC
- Is a titanium nitride cermet which combines toughness and edge wear. Use on steels up to Rc: 35.
- A titanium coated cermet for better wear resistance.

ALUMINUM OXIDE COATED GRADES

AL
- Is an AL2 03 coated insert. Its application is machining cast iron and steels at moderately high speeds.

80° Diamond Insert shown here.





Triangle Insert T061206C7G shown here.

SIZE CDCD 05

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
C050700C2G	.156	15°	.007	.040	0°	.084	C2	Uncoated	Ground
C051600C2G	.156	15°	.016	.040	0°	.084	C2	Uncoated	Ground
C050700TRG	.156	15°	.007	.040	0°	.084	TR	Coated	Ground
C051600TRG	.156	15°	.016	.040	0°	.084	TR	Coated	Ground
C050700PCD	.156	15°	.007	.040	0°	.084	PCD	Diamond	Ground
C051600PCD	.156	15°	.016	.040	0°	.084	PCD	Diamond	Ground

SIZE CCMT 06

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
C061615C2P	.250	7°	.016	.094	15°	.110	C2	Uncoated	Pressed
C063115C2P	.250	7°	.031	.094	15°	.110	C2	Uncoated	Pressed
C061620C2G	.250	7°	.016	.094	20°	.110	C2	Uncoated	Ground
C061615TTP	.250	7°	.016	.094	15°	.110	TT	Coated	Pressed
C063115TTP	.250	7°	.031	.094	15°	.110	TT	Coated	Pressed

SIZE CCMT 09

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
C091615C2P	.375	7°	.016	.156	15°	.173	C2	Uncoated	Pressed
C093115C2P	.375	7°	.031	.156	15°	.173	C2	Uncoated	Pressed
C091620C2G	.375	7°	.016	.156	20°	.173	C2	Uncoated	Ground
C091615TTP	.375	7°	.016	.156	15°	.173	TT	Coated	Pressed
C093115TTP	.375	7°	.031	.156	15°	.173	TT	Coated	Pressed

SIZE CCMT 12

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
C121615C2P	.500	7°	.016	.188	15°	.216	C2	Uncoated	Pressed
C123115C2P	.500	7°	.031	.188	15°	.216	C2	Uncoated	Pressed
C124715C2P	.500	7°	.047	.188	15°	.216	C2	Uncoated	Pressed
C121620C2G	.500	7°	.016	.188	20°	.216	C2	Uncoated	Ground
C123120C2G	.500	7°	.031	.188	20°	.216	C2	Uncoated	Ground
C121615TTP	.500	7°	.016	.188	15°	.216	TT	Coated	Pressed
C123115TTP	.500	7°	.031	.188	15°	.216	TT	Coated	Pressed
C124715TTP	.500	7°	.047	.188	15°	.216	TT	Coated	Pressed

SIZE TDAB 05

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
T050700C2G	.160	15°	.007	.047	0°	.094	C2	Uncoated	Ground
T051600C2G	.160	15°	.016	.047	0°	.094	C2	Uncoated	Ground
T050700TRG	.160	15°	.007	.047	0°	.094	TR	Coated	Ground
T051600TRG	.160	15°	.016	.047	0°	.094	TR	Coated	Ground
T050700PCD	.160	15°	.007	.047	0°	.094	PCD	Diamond	Ground

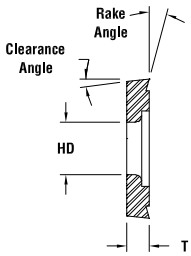
SIZE TCMT 06

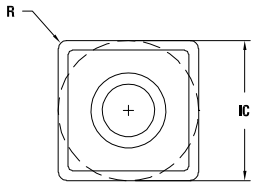
Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
T061206C7G	.156	7°	.008	.078	6°	.087	C7	Uncoated	Ground
T061220C2G	.156	7°	.008	.078	20°	.087	C2	Uncoated	Ground
T060815C2P	.156	7°	.008	.078	15°	.087	C2	Uncoated	Pressed
T061615C2P	.156	7°	.016	.078	15°	.087	C2	Uncoated	Pressed
T060815TTP	.156	7°	.008	.078	15°	.087	TT	Coated	Pressed
T061615TTP	.156	7°	.016	.078	15°	.087	TT	Coated	Pressed
T060820CTG	.156	7°	.008	.078	20°	.087	CT	Cermet	Ground
T061620CTG	.156	7°	.016	.078	20°	.087	CT	Cermet	Ground
T060815CTP	.156	7°	.008	.078	15°	.087	CT	Cermet	Pressed
T061615CTP	.156	7°	.016	.078	15°	.087	CT	Cermet	Pressed
T061600PCD	.156	7°	.016	.078	0°	.087	PCD	Diamond	Ground

SIZE TCMT 11

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
T111615C7P	.250	7°	.016	.094	15°	.108	C7	Uncoated	Pressed
T111600C2P	.250	7°	.016	.094	0°	.108	C2	Uncoated	Pressed
T111615C2P	.250	7°	.016	.094	15°	.108	C2	Uncoated	Pressed
T113115C2P	.250	7°	.031	.094	15°	.108	C2	Uncoated	Pressed
T111620C2G	.250	7°	.016	.094	20°	.108	C2	Uncoated	Ground
T111600C2G	.250	7°	.016	.094	0°	.108	C2	Uncoated	Ground
T113120C2G	.250	7°	.031	.094	20°	.108	C2	Uncoated	Ground
T110815TTP	.250	7°	.008	.094	15°	.108	TT	Coated	Pressed
T111615TTP	.250	7°	.016	.094	15°	.108	TT	Coated	Pressed
T113115TTP	.250	7°	.031	.094	15°	.108	TT	Coated	Pressed
T110823TEG	.250	7°	.008	.094	15°	.108	TE	Coated	Ground
T111623TEG	.250	7°	.016	.094	23°	.108	TE	Coated	Ground
T111615CTP	.250	7°	.016	.094	15°	.108	CT	Cermet	Pressed
T111615CMP	.250	7°	.016	.094	15°	.108	CM	Cermet	Pressed
T111600ASP	.250	7°	.016	.094	0°	.108	AS	Coated	Pressed
T111600PCD	.250	7°	.016	.094	0°	.108	PCD	Diamond	Ground
T111615SNG	.250	7°	.016	.094	15°	.108	SN	Coated	Ground
T113115SNG	.250	7°	.031	.094	15°	.108	SN	Coated	Ground
T111615VNG	.250	7°	.016	.094	15°	.108	VN	Coated	Ground

Square Insert S091615C2P shown here.





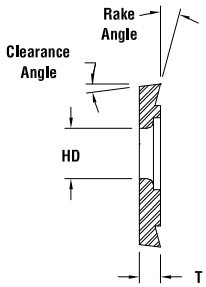
SIZE SCMT 09

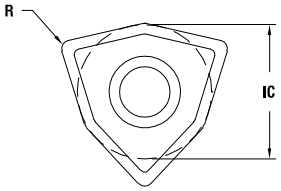
Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
S091615C2P	.375	7°	.016	.156	15°	.173	C2	Uncoated	Pressed
S093115C2P	.375	7°	.031	.156	15°	.173	C2	Uncoated	Pressed
S091615TTP	.375	7°	.016	.156	15°	.173	TT	Coated	Pressed
S093115TTP	.375	7°	.031	.156	15°	.173	TT	Coated	Pressed

SIZE SCMT 12

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
S123115C2P	.500	7°	.031	.188	15°	.216	C2	Uncoated	Pressed
S121615TTP	.500	7°	.016	.188	15°	.216	TT	Coated	Pressed
S123115TTP	.500	7°	.031	.188	15°	.216	TT	Coated	Pressed
S124715TTP	.500	7°	.047	.188	15°	.216	TT	Coated	Pressed

Trigon Insert W033115STTP shown here.





SIZE WCMX 03

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
W033115TTP	.218	7°	.031	.093	15°	.110	TT	Coated	Pressed

SIZE WCMX 04

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
W043115TTP	.250	7°	.031	.093	15°	.122	TT	Coated	Pressed

SIZE WCMX 05

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
W053115TTP	.312	7°	.031	.125	15°	.126	TT	Cermet	Pressed

SIZE WCMX 08

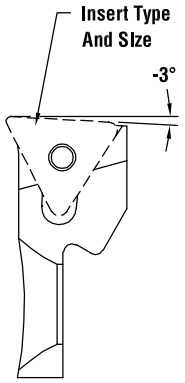
Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
W084715TTP	.500	7°	.047	.187	15°	.169	TT	Coated	Pressed

- Used for all boring heads with 2 designation ie. PC4 - 2415, or PC2 - 2205.

STYLE 1

Part Number	Insert Holder Size	Insert Type and Size	Insert Screw	Insert Screw Wrench
2215-T06	2	TCMT 06	028-910	018-002
2315-T06	3	TCMT 06	028-910	018-002
2315-T11	3	TCMT 11	812-458	018-007
2415-T11	4	TCMT 11	812-458	018-007
2515-T11	5	TCMT 11	028-905	018-007
2615-T11	6	TCMT 11	028-905	018-007
2715-T11	7	TCMT 11	028-905	018-007
2815-T11	8	TCMT 11	028-905	018-007

STYLE 1: 3° INSERT HOLDERS

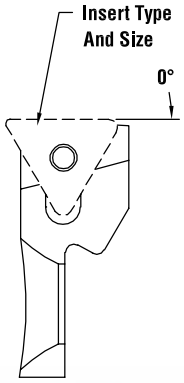


- Designed to allow boring into a corner. The -3° leads the insert into the workpiece with less tendency to deflect. Square shoulders, if required, are generally best produced utilizing the twin cutter with 0° lead insert holders during the roughing operation.

STYLE 2

Part Number	Insert Holder Size	Insert Type and Size	Insert Screw	Insert Screw Wrench
2210-T06	2	TCMT 06	028-910	018-002
2310-T06	3	TCMT 06	028-910	018-002
2410-T11	4	TCMT 11	812-458	018-007
2510-T11	5	TCMT 11	028-905	018-007
2610-T11	6	TCMT 11	028-905	018-007
2710-T11	7	TCMT 11	028-905	018-007
2810-T11	8	TCMT 11	028-905	018-007

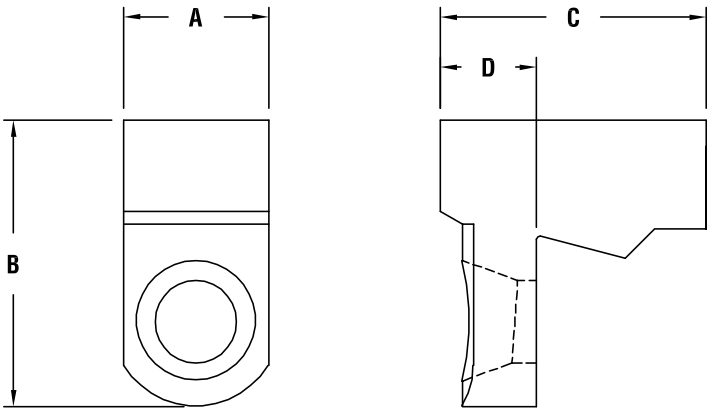
STYLE 2: 0° LEAD INSERT HOLDERS



OPTIONAL EXTENDED REACH INSERT HOLDERS (STYLE 1)

Part Number	Boring Range (in) Min	Boring Range (in) Max	Boring Range (mm) Min	Boring Range (mm) Max	Fits Boring Head	Insert Type and Size	Insert Holder Size
2215-T06-157	1.254	1.570	32	40	PC2-2215 / PC2-2205	TCMT 06**	2
2215-T06-185	1.534	1.850	39	47	PC2-2215 / PC2-2205	TCMT 06**	2
2315-T06-200	1.586	2.000	40.5	50.5	PC3-2315 / PC3-2305	TCMT 06**	3
2315-T06-236	1.946	2.360	50	60	PC3-2315 / PC3-2305	TCMT 06**	3
2415-T11-248	1.968	2.480	50	63	PC4-2415 / PC4-2405	TCMT 11	4
2415-T11-291	2.398	2.910	60.5	74	PC4-2415 / PC4-2405	TCMT 11	4
2515-T11-322	2.551	3.220	65	81.5	PC5-2515 / PC5-2505	TCMT 11	5
2515-T11-374	3.071	3.740	78	95	PC5-2515 / PC5-2505	TCMT 11	5
2615-T11-496	3.637	4.960	92.5	126	PC6-2615 / PC6-2605	TCMT 11	6
2615-T11-590	4.577	5.900	116.5	150	PC6-2615 / PC6-2605	TCMT 11	6
2715-T11-704	4.977	7.040	126.5	178.5	PC6-2616 / PC7-2716 PC6-2606 / PC7-2706	TCMT 11	7
2715-T11-822	6.157	8.220	156.5	208.5	PC6-2616 / PC7-2716 PC6-2606 / PC7-2706	TCMT 11	7

268 Insert Holder Blanks Series 2, Finish Head Components



Order Inserts, Insert Screws, and Wrenches Separately.

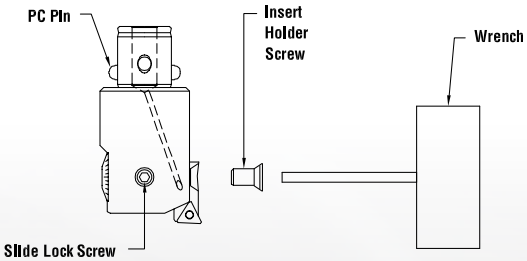
- After machining insert pocket, heat treat is recommended but not necessary. Heat treat per specifications below.
- Dimension "A" must be ground. Grind equally from both sides.
- Do not machine any of the seating surfaces.
- Insert pocket should be machined so that insert tip is .003 - .005 above center line of blank, after finish ground to "A" dimension.

INSERT HOLDER BLANKS

Part Number	Quantity	Size/Type	A	B	C	D	Material	Case Hardened Recommendation
2215-BLANK	Single	2 Finish	.300	.71	.35	.14	1018	Rc: 50-54/.010 - .015 Deep
2315-BLANK	Single	3 Finish	.345	.78	.44	.18	1018	Rc: 50-54/.010 - .015 Deep
2415-BLANK	Single	4 Finish	.440	1.01	.57	.20	1018	Rc: 50-54/.010 - .015 Deep
2515-BLANK	Single	5 Finish	.550	1.21	.71	.30	1018	Rc: 50-54/.010 - .015 Deep
2615-BLANK	Single	6 Finish	.710	1.35	1.00	.45	1018	Rc: 50-54/.010 - .015 Deep
2715-BLANK	Single	7 Finish	.710	1.35	1.30	.47	1018	Rc: 50-54/.010 - .015 Deep
2815-BLANK	Single	8 Finish	.710	1.35	1.47	.47	1018	Rc: 50-54/.010 - .015 Deep

FINISH BORING HEAD

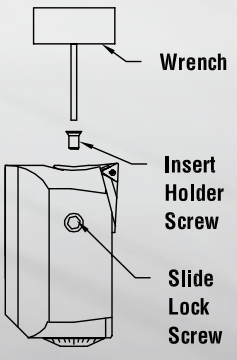
Part Number	Insert Holder Screw	Slide Lock Screw	Wrench	PC Pin
PC2-22(X)5	2215-01	029-082	018-102	PCP-002
PC3-23(X)5	2315-01	029-074	018-103	PCP-003
PC4-24(X)5	2415-01	029-091	018-104	PCP-004
PC5-25(X)5	2515-01	029-088	018-105	PCP-005
PC6-26(X)5	2615-01	029-094	018-106	PCP-006
PC6-26(X)6	2615-01	029-094	018-106	PCP-006



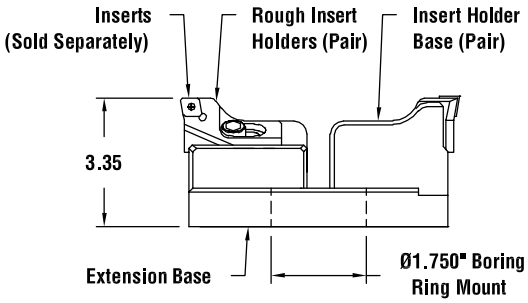
LARGE DIAMETER FINISHING

Part Number	Insert Holder Screw	Slide Lock Screw	Wrench
7100-28(X)6	2615-01	029-904	018-106

(X) refers to 1 or 0 (inch or metric).



Extension base 17BR-7112
shown here with and without Insert Holders.



WEIGHTS

Part Number	Weight (lbs.)
SIZE 61	.6
SIZE 62	.8
SIZE 63	1.0

INSERT HOLDER STYLES

Style	Insert Type and Size	Insert Screw	Insert Screw Wrench
C	CCMT 12	028-907	018-009
S	SCMT 12	028-907	018-009
W	WCMX 08	028-906	018-008

See Page 237 for Insert Holders

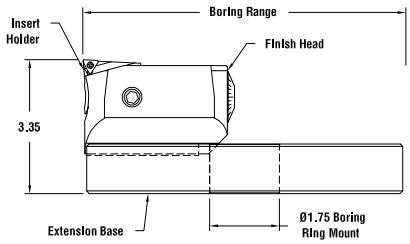
EXTENSION BASE RANGES

	BORING RANGE MIN AND MAX							
Extension Base	Finish Head		Size 61 Insert Holder		Size 62 Insert Holder		Size 63 Insert Holder	
PC6-7108	5.95 (151)	8.27 (210)	5.95 (151)	6.80 (172)	6.68 (170)	7.52 (191)	7.42 (189)	8.27 (210)
17BR-7108	5.95 (151)	8.27 (210)	5.95 (151)	6.80 (172)	6.68 (170)	7.52 (191)	7.42 (189)	8.27 (210)
17BR-7110	8.22 (209)	10.54 (267)	8.22 (209)	9.07 (230)	8.95 (228)	9.79 (249)	9.69 (246)	10.54 (267)
17BR-7112	10.49 (267)	12.81 (325)	10.49 (267)	11.34 (288)	11.22 (285)	12.07 (306)	11.96 (304)	12.81 (325)
17BR-7115	12.76 (324)	15.08 (383)	12.76 (324)	13.61 (345)	13.49 (343)	14.34 (364)	14.23 (362)	15.08 (383)
17BR-7117	15.03 (382)	17.35 (441)	15.03 (382)	15.89 (403)	15.75 (400)	16.61 (422)	16.50 (419)	17.35 (441)
17BR-7119	17.30 (439)	19.62 (498)	17.30 (439)	18.15 (461)	18.03 (458)	18.88 (479)	18.77 (477)	19.62 (498)

LARGE DIAMETER

Extension Base with Finish Head shown here.

- Finish bore full range of extension base.
- Uses modular extension base to minimize tooling inventory.
- Diameter adjustment of .0001 with Vernier scale.
- .040 per revolution, .001 (.02 mm) on diameter dial.



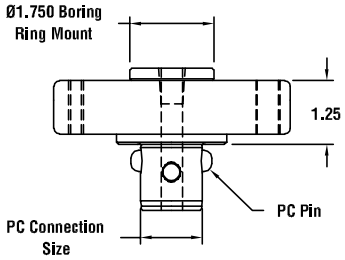
BORING HEAD INSERT SIZE & WEIGHT

Part Number	Insert	Insert Holder Size	Weight lbs.	Description
7100-2806	TCMT 11	8	4.3	Finish Head Metric
7100-2816	TCMT 11	8	4.3	Finish Head Inch
7100-B460	TCMT 11	61, 62, 63	2.8	Rough Insert Holder Base
816-009	TCMT 11	-	.7	Counter Weight

See page 237 for Twin Bore Insert Holders.

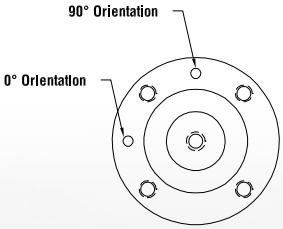
MODULAR BORING RING HOLDERS

Boring Ring Holder PC7-17BR2 shown here.



MODULAR BORING RING HOLDERS

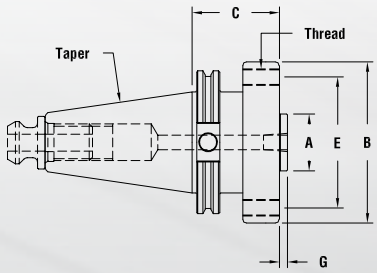
Part Number	PC Connection	Weight lbs.
PC6-17BR2	PC6	6.5
PC7-17BR2	PC7	7.1



BORING RING ADAPTERS

- Integral shank for non-modular applications.

Boring Ring Holder PC7-17BR2 shown here.



Order Retention Knob Separately
(See pages 130–132)

BORING RING ADAPTERS

Part Number	A Dia.	B Dia.	C	E	G	Thread	No. of Threads	Weight lbs.
C50-17BR2*	1.750	4.94	2.50	4.00	.250	1/2-13	4	13.7
C50-17BR5*	1.750	4.94	5.00	4.00	.250	1/2-13	4	21.9

*Includes 90° tool tip orientation for clearance of oversize boring tools in carousels.

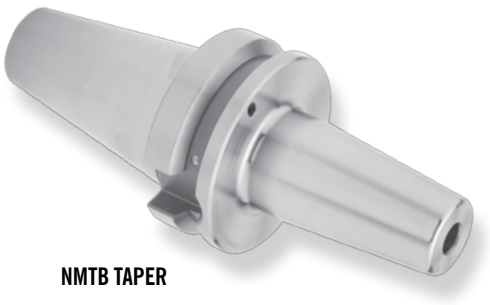

Bt

Product Warranty

Parlec Inc. warrants all tools and tooling systems to be free of defects in manufacturing and materials for a period of one year from the date of shipment. In the case of engineered or special products, the warranty will be interpreted to include such engineering or design recommendations, provided all information pertinent to these factors is submitted to Parlec. Product malfunction due to these factors will be rectified immediately at no charge to the customer. This applies to the product supplied only and does not include any other considerations.

All other warranties, expressed or implied, are excluded from all sales by Parlec.

Parlec Inc. has no control over the use of our products by our customers. All recommendations in this catalog or other information is given in good faith. It is the responsibility of the party using the product to do individual testing to insure the products suitability for any application.



NMTB TAPER

BALANCEABLE HEAT SHRINK

GENERAL SAFETY WARNINGS:

The use of cutting tools, if proper protection is observed, is generally safe. However, fragments of a cutting tool, cutting material, or holding device may be thrown at a very high speed. These fragments can cause severe bodily harm. It is of utmost importance that the proper precautions, including personal protective apparel, machine guarding, and other general safety practices, be taken.

Parlec products are engineered with safety in mind. The materials used and the heat treat specifications meet all standards where applicable. If caution, commonsense, and proper safety practices and protections are used, Parlec products perform without undue safety problems. However, improper use, use of incorrect product, or applying extreme stresses to the product may result in property damage or personal injury.

ER – COLLET CHUCK

RETENTION KNOB WARNINGS:

Machine tool manufacturers have used many various styles and sizes of retention knobs. They often look very similar and appear to be interchangeable. The use of the incorrect knob, or the incorrect use of a knob, may result in injury or property damage. We at Parlec try to insure we specify the correct knob, but due to the variety, it is the responsibility of the end user to check that the supplied knobs are correct for the machine tool and taper type.

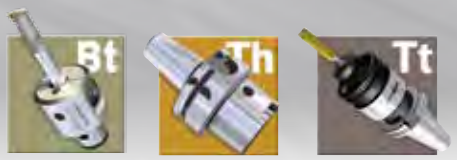
It is very important not to intermix metric retention knobs with inch toolholders. The retention knob will screw in and appear to seat correctly. This is not the case, and damage may occur if used.

Be sure to fully tighten the retention knob. Failure to do so may result in the toolholder coming loose during operation. Over tightening may result in swelling of the taper nose. The use of serviceable thread lock is recommended.

Parlec retention knobs are manufactured using alloy steel. They are case hardened to insure long service life and the core is tempered for tough shock resistance. Material heat treat and dimensions are to ANSI specifications.

END MILL HOLDER

Additional information and material safety data sheets are available.



MATERIAL AND HEAT TREAT:

All tapered products are manufactured from 8620 alloy steel. 8620 steel is the ANSI standard for retention knobs because of its good core strength and its long wear life. Tapered shanks are case hardened to Rc: 56-60 or Rc: 52-56 and have a core of Rc: 35-40. The case hardness is designed to give maximum wear life without compromising the Rc: 60-62 spindle. Retention knobs are case hardened to Rc: 56-60 with a core of Rc: 35-40. All tapered products are manufactured from 8620 alloy steel. 8620 steel is the ANSI standard for retention knobs because of its good core strength and its long wear life. Tapered shanks are case hardened to Rc: 56-60 or Rc: 52-56 and have a core of Rc: 35-40. The case hardness is designed to give maximum wear life without compromising the Rc: 60-62 spindle. Retention knobs are case hardened to Rc: 56-60 with a core of Rc: 35-40. HSK products are made of a superior high strength alloy that prevents fractures on the taper caused by the compression and expansion of the hollow taper. Shrink Fit Toolholders are manufactured from H13 or equivalent material. This ensures long continuous service, heating cycle after heating cycle. Shrink Fit Toolholders are manufactured from H13 or equivalent material. This ensures long continuous service, heating cycle after heating cycle.

FEATURE END:

Taper to feature end runout is critical to any precision machining operation. The lower the feed rate the more runout will effect performance. Toolholders intended for the highest speeds need to have the taper to second end feature ground to the closest obtainable concentricity. The ERos® system has less than .00004" or 1 micron of runout gaged from taper to collet seat. A Shrink Fit tool has a gage tolerance of .0001" or 2.5 microns. Production gage toolholders such as an end mill holder or shell mill holder have a gage tolerance of .0002" or 5 microns of runout between taper and second end ID or OD.

ID bore tolerance is nominal +.0002" /- .0001" and OD feature tolerance is nominal +.0000"/-.0002".

Diameters are held to a nominal +.0002"/- .0001" on the inner diameters and +.0000/-.0002" on all OD features. All features are ground in a taper pot chuck to insure close runout specifications between taper and the feature. All end mill holder ID's are air gauged and all diameters under 3/8" are diamond honed to avoid barreling at the cross hole.

MANUFACTURING SPECIFICATIONS

Features	Size Tolerance	TIR
Taper Type	≤ AT3	NA
Taper Roundness	≤ .00008	NA
End Mill/Collet Seat	+ .0001/- .0001	≤ .0002
Shell Mill Pilot	+ .0000/- .0002	≤ .0002
PC Connection Small	+ .0002/- .0000	≤ .0002
PC Connection Large	+ .0003/- .0000	≤ .0002
PC Face	NA	.0001
Power Milling Chuck	+ .0002/- .0000	≤ .0002
Heat Shrink	+ .0002	≤ .0001

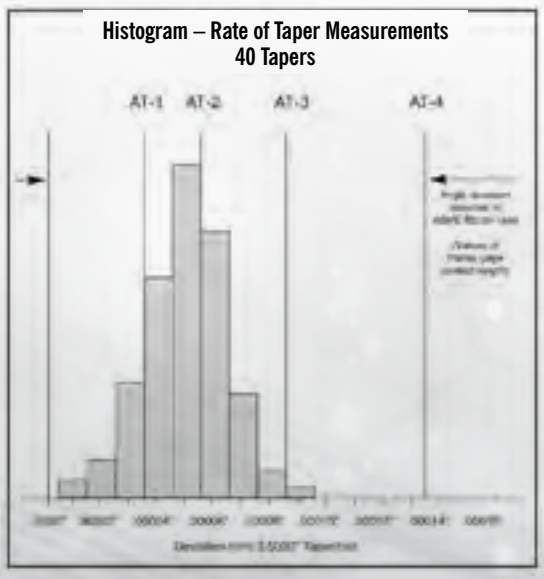
TAPERS:

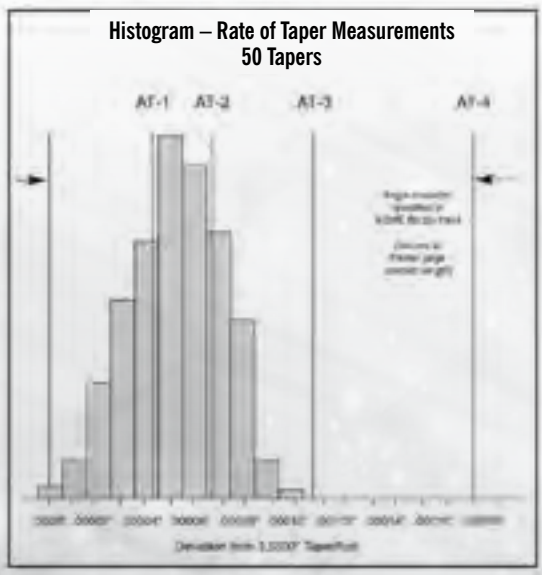
Parlec tapered toolholder shanks are manufactured in accordance with ASME B5.50 - 2009 (Per ISO-1947).

- Angle deviations are allowed only in the direction that increases the rate of taper.
- The attached histograms illustrate the results of measurements taken on Parlec manufactured tapered toolholder shanks. These represent typical manufacturing process output results.
- The horizontal axis of each histogram represents cone angle deviations from 3.500" nominal.
- Additionally, the placement of the grade level lines represent the allowable angle tolerance deviation at Parlec's taper gage contact lengths.
- Based upon the observed manufacturing process variation and the location of the process averages, as illustrated in the histograms, the following process performance can be summarized:

PROCESS PERFORMANCE

Type	% of Toolholders Meeting (Cumulative %)	Actual Deviation from 3.5" Per Foot
#40	AT-1 = 10	≤ .000034
	AT-2 = 62	≤ .000053
	AT-3 = 99.9	≤ .000085
#50	AT-1 = 31	≤ .000051
	AT-2 = 83	≤ .000069
	AT-3 = 99.9	≤ .000109





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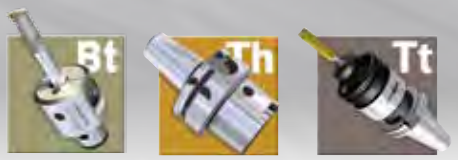

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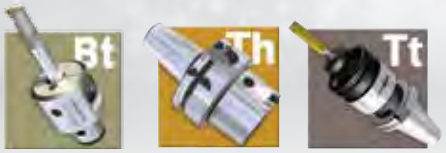

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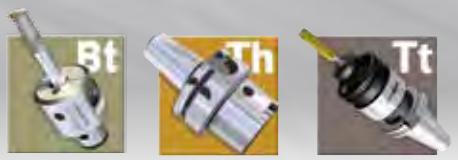

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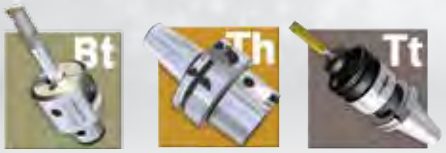

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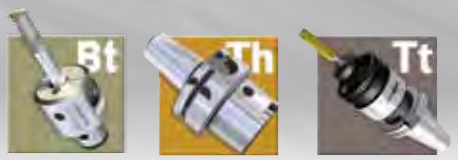

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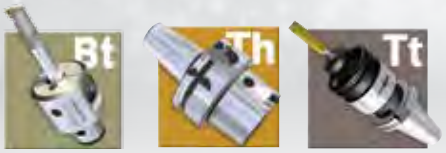

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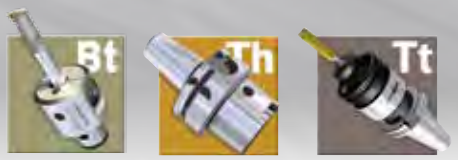

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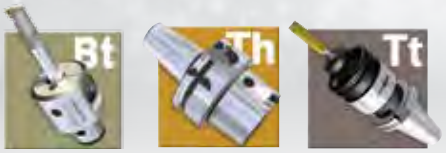

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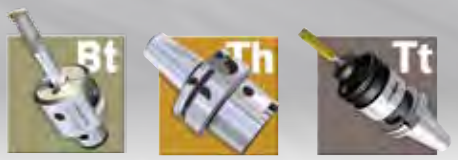

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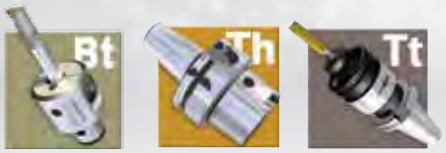

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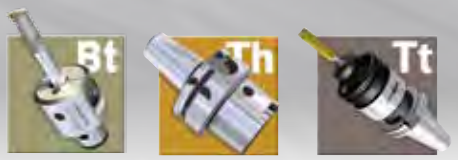

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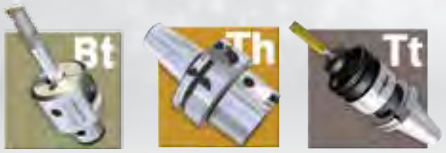

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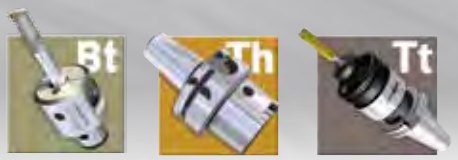

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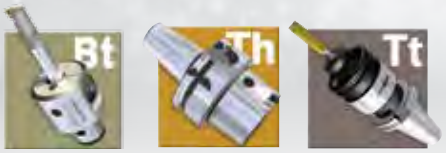

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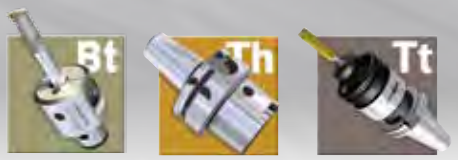

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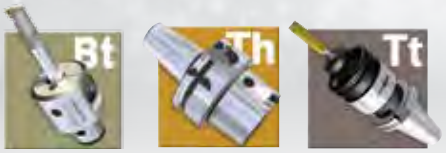

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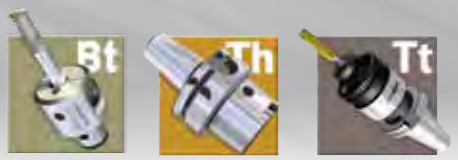

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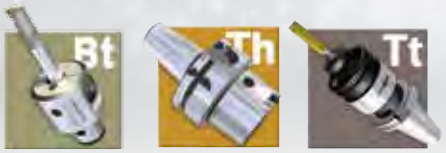

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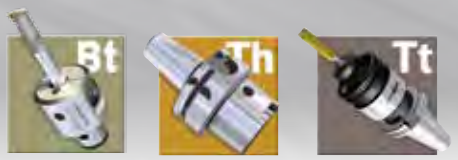

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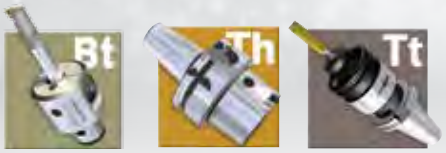

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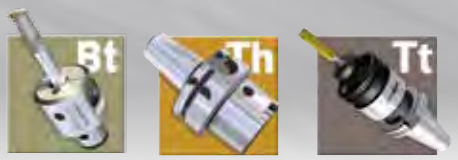

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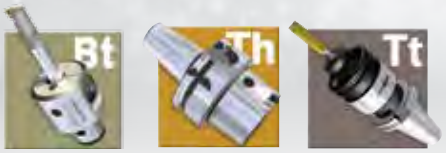

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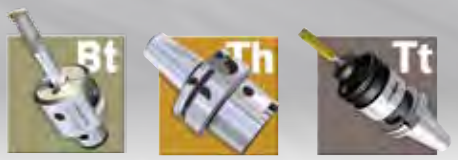

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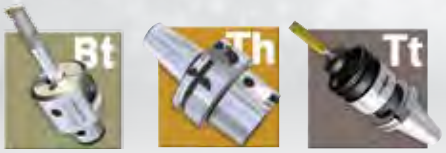

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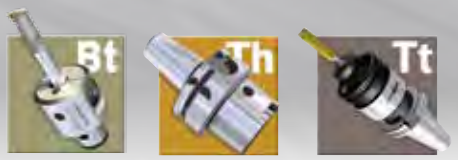

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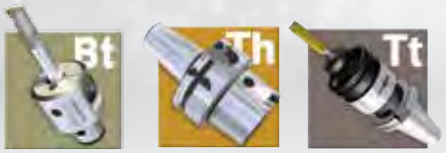

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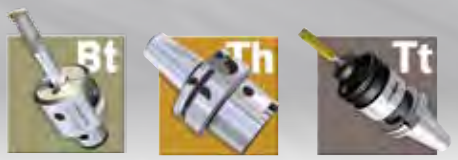

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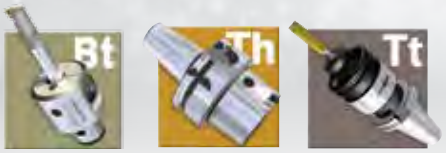

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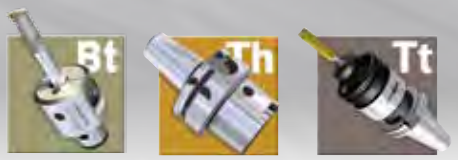

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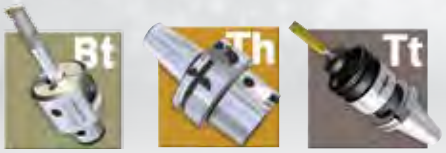

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