

# CNC TOOL HOLDERS GAUGING PRODUCTS



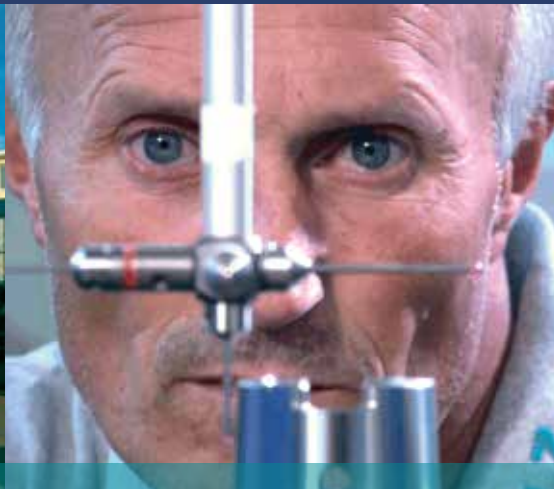
INNOVATION | PERFORMANCE | QUALITY



# BILZ

**we hold our promise**

The Foundation. For over 90 years, Bilz has been a leading supplier of tool holders, tapping technology and shrink fit systems. The main reason for this success is our people. Bilz has over 350 experienced and motivated individuals working every day to improve and enhance the products we offer. Our goal is to improve your manufacturing processes with a complete set of solutions that are efficient and dependable. As a result, we have become an innovative and trusted partner to companies around the world in industries including aerospace, automotive, die mold & machining, medical equipment and power generation.





reddot design award  
winner 2012



Dear Reader,

As everyone knows, money is made at the “cutting edge”. The productivity of this cutting edge influences the total costs of cutting processes, while its share of total manufacturing costs amounts to only 4–6%.

Most production and cutting experts will agree with these statements.

What is required to fully profit from the performance of the cutting edge and increase tool life? This catalog will support you in selecting the optimal clamping tools for your “cutting edges”.

Our long experience as a traditional family-run company helps us to develop products you can rely on . Bilz has compiled a comprehensive product range in this catalog. Many improvements have been included.

“Always better” is not just a slogan for us. It is a promise, our commitment to quality. We and our products keep our promises. In addition to this product range we can offer you various custom-designed solutions.

Please talk to us about new solutions for your applications.

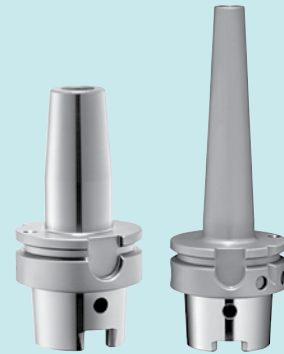
Many people react, we act.

On behalf of the whole Bilz Team,

A handwritten signature in blue ink, appearing to be 'H. Bilz'.



# BILZ—FIT FOR THE FUTURE



## TAPPING

For decades, Bilz has been the global leader in tapping technology. Quality engineered and well designed, Bilz tap holders are the industry standard.

Special features like length compensation (tension/compression), quick change, parallel float, internal coolant or external coolant are incorporated in many different combinations in our chucks.

### ADVANTAGES

- Faster Tool Set-ups
- Increased Tap Life
- Improved Thread Quality
- Faster Tool Changes

### APPLICATIONS

- Tapping and thread forming on all possible applications with many different machine spindle connections.



## (MQL) MINIMUM QUANTITY LUBRICANT

Minimum Quantity Lubricant (MQL) technology provides unmatched efficiency in coolant delivery. The system delivers coolant immediately upon start-up with consistent pressure, and the optimized sealed design provides a leak-free coolant stream.

Reduced coolant usage and coolant handling leads to a safer workplace, lower maintenance costs, and a smaller impact on the environment. MQL is available in Shrink Fit holders and Synchro Chuck holders.

### ADVANTAGES

- More efficient coolant consumption
- Environmentally friendly
- Up to 100% increase in tool life
- Reduce coolant costs up to 19%

### APPLICATIONS

- Perfect for any application where safer and more-efficient coolant usage is desired. Specific industries include Aerospace, Automotive, Die & Mold, Medical Equipment and more.



## INDUCTION SHRINK-FIT SYSTEM

The finest shrink fit holders available. Precise manufacturing and our exclusive “counter bore” technology optimize the advantages of using shrink fit tooling. Combine the Bilz ThermoGrip holders with the Bilz ThermoGrip machines and you have the ultimate shrink fit system.

Bilz holders offer the best part finish quality, longer tool life, and higher feed rates and speeds. All of this is accomplished due to micrometer accuracy in runout, high cutting tool rigidity and extremely high clamping forces.

### TOOL OPTIONS

- Standard chucks
- Slimline chucks
- Heavy duty (thick walled) chucks
- JetSleeve
- TER shrink-fit collets

### APPLICATIONS

- Milling, drilling and reaming
- Milling and reaming on driven tooling
- Micro milling applications





## CNC HOLDERS

Our CNC Holder line provides options for all industry-standard sizes and configurations for collet chucks, end mill holders, shell mill holders, hi-power milling chucks, and face mill holders.

Each product represents the latest technology, and reflects our commitment to quality and innovation. We also support our products with unmatched application expertise and customer service.

### ADVANTAGES

- Latest tool holding technology
- Extensive product line
- Strong, high-quality products
- Very accurate and durable

### APPLICATIONS

- CNC holders are used in a variety of industries including Aerospace, Automotive, Die & Mold, Medical Equipment and more.



## FLOATING HOLDERS

Bilz Floating Holders enable the serial production of perfectly aligned reamed bores with the automatic centering of the reamer after every cycle, protecting the reamer from any side forces.

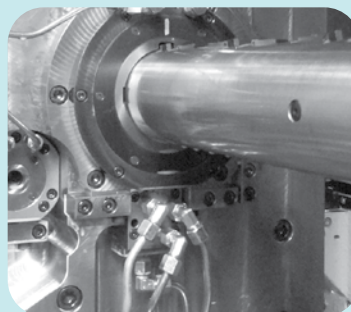
Our Floating Holders can be used horizontally or vertically and can be delivered with internal coolant supply and integrated length adjustment.

### ADVANTAGES

- Axial float without play
- Maintenance free
- Adjustable centering
- High coolant pressure

### APPLICATIONS

- Using reamer tools where the machining spindle and the bore in the workpiece are not 100% aligned.
- Used in transfer lines, lathes and custom machinery



## SPECIAL TOOL HOLDERS

Our Specialty Holders represent a unique set of products that offer cost-effective capabilities you won't find from any other manufacturer. In fact, nearly all Special Holders can demonstrate a substantial cost savings when compared to other methods.

### ADVANTAGES

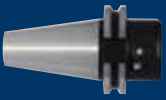
- Expand your capabilities
- Make your spindle more productive
- Meet unique customer requirements
- Open a new range of potential


### APPLICATIONS

- Specialty tool holders can be used to help machine unique profiles, provide critical part ID and marking, and even set and drive studs.




# CONTENTS

	<b>CNC Holders</b>	<b>8</b>
CAT40   End Mill Holders		9
CAT50   End Mill Holders		10
HSK   End Mill Holders		11
BT30   BT40   End Mill Holders		12
CAT40   CAT50   ER Collet Chuck Holders		13
HSK-A63   ER Collet Chuck Holders		14
BT30   BT40   ER Collet Chucks		15
Collet Extension   ER Collet Chucks		15
Collets   ER-System		16
CAT40   CAT50   Shell Mill Holders		19
HSK-A63   HSK-100A   Shell Mill Holders		20
BT30   BT40   Shell Mill Holders		21


	<b>Hi-Power Milling Chucks (HPMC)</b>	<b>22</b>
CAT40   CAT50   Hi-Power Milling Chucks		23
HSK-A63   HSK-A100   Hi-Power Milling Chucks		24
BT30   BT40   Hi-Power Milling Chucks		25
Collets   Hi-Power Milling Chucks		26
Super Collet Chucks		27
Collets   Super Collet Chuck Collets		30
Blank Bars		32

	<b>NC Drill Chucks</b>	<b>33</b>
--	------------------------	-----------

	<b>Hydraulic Chucks</b>	<b>34</b>
Hydraulic Chucks		35

<b>Hardware</b>	<b>38</b>
ER Collet Nuts	39
Sealings Discs	40
Shell Mill Holder Hardware	44
End Mill Holder Hardware	46
Wrenches	47

<b>Accessories</b>	<b>48</b>
Height Setters	49
Tool Clamper	49
Tightening Fixture and Spindle Wipe	50
Spindle Taper Cleaners	51
CAT Claw, Retention Knobs, and Wrenches	52
Tool Storage	53
<b>Diebold Tool Clamping Units</b>	<b>56</b>
Power Block for Steep Taper Tooling	56
Power Block for for HSK Taper Tooling Form A + C	56
Power Block for Tools with Cylindrical Shank	57

 <b>Diebold Gauging</b>	<b>58</b>
Diebold Inspection Gauge Calibration	59
Diebold Test Arbors	60
Diebold Test Arbors	61
Diebold Tool Taper Inspection Gauges	62
Diebold Pull Force Gauges	63
ClampForce Gage Kit	64
<b>Royal Tool Presetter</b>	<b>66</b>
<b>Technical Information</b>	<b>58</b>
BAR/PSI Pressure Conversion	69
ER & Milling Chuck Collet Nut Torque Specifications	69
HSK DIN Standard Forms	70
Hi-Power Milling Chuck User Manual	72
Hi-Power Milling Chuck User Manual	73
Toolholder Excellence & Collet Care	74
BILZ Toolholder Benefits	74
Why Check Drawbar Force	75
Bilz Tool Holder Selection Guide	76
Tool Clamping Options and Values	78

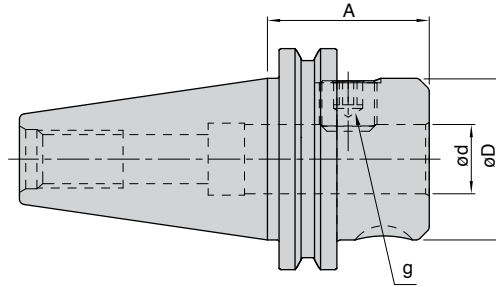
# CNC HOLDERS

- Comprehensive range of Milling Chucks, ER Collet Chucks, End Mill Holders and Shell Mill Holders
- Close dimension control of products
- TIR of front end in relationship to taper, controlled within 3 microns for collet chucks and end mill holders
- BT (MAS 403), HSK (DIN69893), CAT (ANSI B50.50-1994) taper specifications
- All holders are dynamically balanced to G6.3 tolerances
- All tool holders have taper angle accuracy as per AT3 class / HSK holders meet AT2 class
- Form AD/B standard for all holders (DIN69871 B)
- Data chip hole as standard for all HSK taper holders
- Bore tolerance H4 as standard for all end mill holders
- Black oxide surface treatment on all non-contact surfaces for corrosion protection



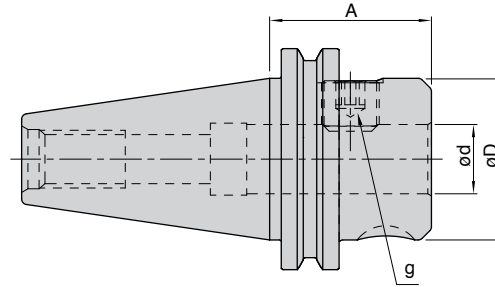
VIEW  
THE  
WEBSITE



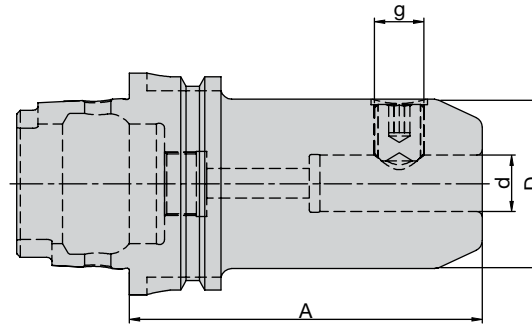


CAT40		Balanced to G6.3 @ 8,000 RPM				
SAP No.	Designation	Dimensions				Coolant Supply
		d (inch)	D (mm)	A (inch)	g	
66651201M	WSLH/0.125"-1.38"/CAT40	0.125	17.5	1.38	6-32 UNC	Form "AD/B"
66651202M	WSLH/0.125"-4.50"/CAT40	0.125	17.5	4.50	6-32 UNC	Form "AD/B"
66651203M	WSLH/0.187"-1.38"/CAT40	0.187	17.5	1.38	8-32 UNC	Form "AD/B"
66651204M	WSLH/0.187"-2.50"/CAT40	0.187	17.5	2.50	8-32 UNC	Form "AD/B"
66651205M	WSLH/0.187"-4.50"/CAT40	0.187	17.5	4.50	8-32 UNC	Form "AD/B"
66651206M	WSLH/0.250"-1.38"/CAT40	0.250	19.8	1.38	1/4-28 UNF	Form "AD/B"
66651207M	WSLH/0.250"-2.50"/CAT40	0.250	19.8	2.50	1/4-28 UNF	Form "AD/B"
66651208M	WSLH/0.250"-4.50"/CAT40	0.250	19.8	4.50	1/4-28 UNF	Form "AD/B"
66651209M	WSLH/0.312"-1.38"/CAT40	0.312	25.4	1.38	5/16-24 UNF	Form "AD/B"
66651210M	WSLH/0.312"-2.50"/CAT40	0.312	25.4	2.50	5/16-24 UNF	Form "AD/B"
66651211M	WSLH/0.312"-4.50"/CAT40	0.312	25.4	4.50	5/16-24 UNF	Form "AD/B"
66651212M	WSLH/0.375"-1.38"/CAT40	0.375	25.4	1.38	3/8-24 UNF	Form "AD/B"
66651213M	WSLH/0.375"-2.50"/CAT40	0.375	25.4	2.50	3/8-24 UNF	Form "AD/B"
66651214M	WSLH/0.375"-4.50"/CAT40	0.375	25.4	4.50	3/8-24 UNF	Form "AD/B"
66651215M	WSLH/0.375"-6.50"/CAT40	0.375	25.4	6.50	3/8-24 UNF	Form "AD/B"
66651216M	WSLH/0.437"-1.75"/CAT40	0.437	35.1	1.75	7/16-20 UNF	Form "AD/B"
66651217M	WSLH/0.437"-4.50"/CAT40	0.437	35.1	4.50	7/16-20 UNF	Form "AD/B"
66651218M	WSLH/0.500"-1.75"/CAT40	0.500	35.1	1.75	7/16-20 UNF	Form "AD/B"
66651219M	WSLH/0.500"-2.62"/CAT40	0.500	35.1	2.62	7/16-20 UNF	Form "AD/B"
66651220M	WSLH/0.500"-4.62"/CAT40	0.500	35.1	4.62	7/16-20 UNF	Form "AD/B"
66651221M	WSLH/0.500"-6.62"/CAT40	0.500	35.1	6.62	7/16-20 UNF	Form "AD/B"
66651222M	WSLH/0.625"-1.75"/CAT40	0.625	38.1	1.75	1/2-20 UNF	Form "AD/B"
66651223M	WSLH/0.625"-3.75"/CAT40	0.625	38.1	3.75	1/2-20 UNF	Form "AD/B"
66651224M	WSLH/0.625"-5.75"/CAT40	0.625	38.1	5.75	1/2-20 UNF	Form "AD/B"
66651225M	WSLH/0.750"-1.75"/CAT40	0.750	44.5	1.75	5/8-18 UNF	Form "AD/B"
66651226M	WSLH/0.750"-3.75"/CAT40	0.750	44.5	3.75	5/8-18 UNF	Form "AD/B"
66651227M	WSLH/0.750"-5.75"/CAT40	0.750	44.5	5.75	5/8-18 UNF	Form "AD/B"
66651228M	WSLH/0.875"-1.75"/CAT40	0.875	50.8	1.75	5/8-18 UNF	Form "AD/B"
66651229M	WSLH/0.875"-4.00"/CAT40	0.875	50.8	4.00	5/8-18 UNF	Form "AD/B"
66651230M	WSLH/0.875"-6.00"/CAT40	0.875	50.8	6.00	5/8-18 UNF	Form "AD/B"
66651231M	WSLH/1.000"-1.75"/CAT40	1.000	50.8	1.75	3/4-16 UNF	Form "AD/B"
66651232M	WSLH/1.000"-4.00"/CAT40	1.000	50.8	4.00	3/4-16 UNF	Form "AD/B"
66651233M	WSLH/1.000"-6.00"/CAT40	1.000	50.8	6.00	3/4-16 UNF	Form "AD/B"
66651234M	WSLH/1.250"-2.00"/CAT40	1.250	63.5	2.00	3/4-16 UNF	Form "AD/B"
66651235M	WSLH/1.250"-4.25"/CAT40	1.250	63.5	4.25	3/4-16 UNF	Form "AD/B"
66651236M	WSLH/1.250"-6.25"/CAT40	1.250	63.5	6.25	3/4-16 UNF	Form "AD/B"
66651237M	WSLH/1.500"-4.62"/CAT40	1.500	69.9	4.62	3/4-16 UNF	Form "AD/B"
66651238M	WSLH/1.500"-6.62"/CAT40	1.500	69.9	6.62	3/4-16 UNF	Form "AD/B"

## CAT50 | End Mill Holders



CAT50		Balanced to G6.3 @ 8,000 RPM				
SAP No.	Designation	Dimensions				Coolant Supply
		d (inch)	D (mm)	A (inch)	g	
66651251M	WSLH/0.187"-2.50"/CAT50	0.187	17.5	2.50	8-32 UNC	Form "AD/B"
66651252M	WSLH/0.187"-4.50"/CAT50	0.187	17.5	4.50	8-32 UNC	Form "AD/B"
66651253M	WSLH/0.187"-6.50"/CAT50	0.187	17.5	6.50	8-32 UNC	Form "AD/B"
66651254M	WSLH/0.250"-2.50"/CAT50	0.250	19.8	2.50	1/4-28 UNF	Form "AD/B"
66651255M	WSLH/0.250"-4.50"/CAT50	0.250	19.8	4.50	1/4-28 UNF	Form "AD/B"
66651256M	WSLH/0.250"-6.50"/CAT50	0.250	19.8	6.50	1/4-28 UNF	Form "AD/B"
66651257M	WSLH/0.312"-2.50"/CAT50	0.312	25.4	2.50	5/16-24 UNF	Form "AD/B"
66651258M	WSLH/0.312"-4.50"/CAT50	0.312	25.4	4.50	5/16-24 UNF	Form "AD/B"
66651259M	WSLH/0.312"-6.50"/CAT50	0.312	25.4	6.50	5/16-24 UNF	Form "AD/B"
66651260M	WSLH/0.375"-2.50"/CAT50	0.375	25.4	2.50	3/8-24 UNF	Form "AD/B"
66651261M	WSLH/0.375"-4.50"/CAT50	0.375	25.4	4.50	3/8-24 UNF	Form "AD/B"
66651262M	WSLH/0.375"-6.50"/CAT50	0.375	25.4	6.50	3/8-24 UNF	Form "AD/B"
66651263M	WSLH/0.375"-8.50"/CAT50	0.375	25.4	8.50	3/8-24 UNF	Form "AD/B"
66651264M	WSLH/0.437"-2.50"/CAT50	0.437	35.1	2.50	7/16-20 UNF	Form "AD/B"
66651265M	WSLH/0.500"-2.62"/CAT50	0.500	35.1	2.62	7/16-20 UNF	Form "AD/B"
66651266M	WSLH/0.500"-4.62"/CAT50	0.500	35.1	4.62	7/16-20 UNF	Form "AD/B"
66651267M	WSLH/0.500"-6.62"/CAT50	0.500	35.1	6.62	7/16-20 UNF	Form "AD/B"
66651268M	WSLH/0.500"-8.50"/CAT50	0.500	35.1	8.50	7/16-20 UNF	Form "AD/B"
66651269M	WSLH/0.625"-3.75"/CAT50	0.625	38.1	3.75	1/2-20 UNF	Form "AD/B"
66651270M	WSLH/0.625"-5.75"/CAT50	0.625	38.1	5.75	1/2-20 UNF	Form "AD/B"
66651271M	WSLH/0.625"-7.75"/CAT50	0.625	38.1	7.75	1/2-20 UNF	Form "AD/B"
66651272M	WSLH/0.750"-3.75"/CAT50	0.750	44.5	3.75	5/8-18 UNF	Form "AD/B"
66651273M	WSLH/0.750"-5.75"/CAT50	0.750	44.5	5.75	5/8-18 UNF	Form "AD/B"
66651274M	WSLH/0.750"-7.75"/CAT50	0.750	44.5	7.75	5/8-18 UNF	Form "AD/B"
66651275M	WSLH/0.750"-10.00"/CAT50	0.750	44.5	10.00	5/8-18 UNF	Form "AD/B"
66651276M	WSLH/0.875"-3.75"/CAT50	0.875	50.8	3.75	5/8-18 UNF	Form "AD/B"
66651277M	WSLH/0.875"-5.75"/CAT50	0.875	50.8	5.75	5/8-18 UNF	Form "AD/B"
66651278M	WSLH/0.875"-7.75"/CAT50	0.875	50.8	7.75	5/8-18 UNF	Form "AD/B"
66651279M	WSLH/1.000"-4.00"/CAT50	1.000	50.8	4.00	3/4-16 UNF	Form "AD/B"
66651280M	WSLH/1.000"-6.00"/CAT50	1.000	50.8	6.00	3/4-16 UNF	Form "AD/B"
66651281M	WSLH/1.000"-8.00"/CAT50	1.000	50.8	8.00	3/4-16 UNF	Form "AD/B"
66651282M	WSLH/1.000"-10.00"/CAT50	1.000	50.8	10.00	3/4-16 UNF	Form "AD/B"
66651283M	WSLH/1.250"-4.00"/CAT50	1.250	63.5	4.00	3/4-16 UNF	Form "AD/B"
66651284M	WSLH/1.250"-6.00"/CAT50	1.250	63.5	6.00	3/4-16 UNF	Form "AD/B"
66651285M	WSLH/1.250"-8.00"/CAT50	1.250	63.5	8.00	3/4-16 UNF	Form "AD/B"
66651286M	WSLH/1.250"-10.00"/CAT50	1.250	63.5	10.00	3/4-16 UNF	Form "AD/B"
66651287M	WSLH/1.500"-4.00"/CAT50	1.500	69.9	4.00	3/4-16 UNF	Form "AD/B"
66651288M	WSLH/1.500"-6.00"/CAT50	1.500	69.9	6.00	3/4-16 UNF	Form "AD/B"
66651289M	WSLH/1.500"-8.00"/CAT50	1.500	69.9	8.00	3/4-16 UNF	Form "AD/B"
66651290M	WSLH/2.000"-5.62"/CAT50	2.000	95.3	5.62	1-14 UNS	Form "AD/B"
66651291M	WSLH/2.000"-9.62"/CAT50	2.000	95.3	9.62	1-14 UNS	Form "AD/B"



**HSK-A63 End Mill Holders with Weldon Notch DIN1835-B** **Balanced to G6.3 @ 20,000 RPM**

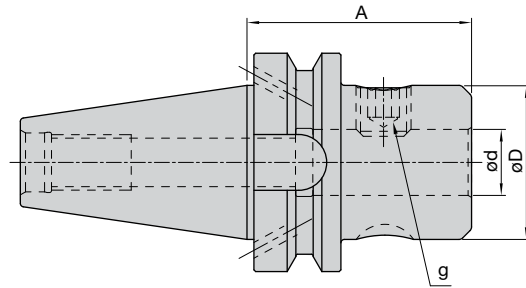
SAP No.	Designation	Dimensions				Coolant Supply
		d (inch)	D (inch)	A (inch)	g	
66652161M	WSLH/0.250"-3.94"/HSK-A63	0.250	1.00	3.94	1/4-28UNF	Form "AD"
66652162M	WSLH/0.375"-3.94"/HSK-A63	0.375	1.10	3.94	3/8-24UNF	Form "AD"
66652163M	WSLH/0.500"-3.94"/HSK-A63	0.500	1.65	3.94	7/16-20UNF	Form "AD"
66652164M	WSLH/0.625"-3.94"/HSK-A63	0.625	1.89	3.94	1/2-20UNF	Form "AD"
66652165M	WSLH/0.750"-3.94"/HSK-A63	0.750	2.05	3.94	5/8-18UNF	Form "AD"
66652166M	WSLH/1.00"-4.33"/HSK-A63	1.000	2.60	4.33	3/4-16UNF	Form "AD"
66652167M	WSLH/1.250"-4.33"/HSK-A63	1.250	2.83	4.33	3/4-16UNF	Form "AD"

For HSK coolant tubes, see page 46.  
 For coolant tube wrenches see page 47.

**HSK-A100 End Mill Holders with Weldon Notch DIN1835-B** **Balanced to G6.3 @ 20,000 RPM**

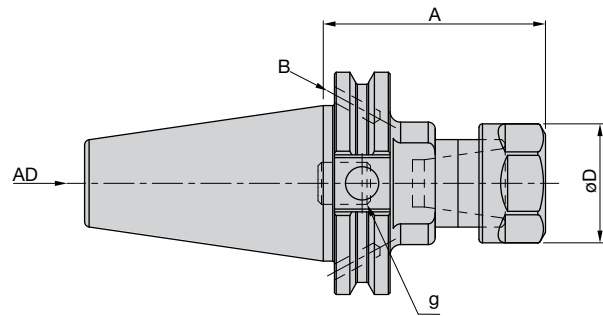
SAP No.	Designation	Dimensions				Coolant Supply
		d (inch)	D (inch)	A (inch)	g	
66652171M	WSLH/0.250"-3.15"/HSK-A100	0.250	0.78	3.15"	1/4-28UNF-8	Form "AD"
66652181M	WSLH/0.312"-3.15"/HSK-A100	0.312	1.00	3.15"	5/16-24UNF-10	Form "AD"
66652172M	WSLH/0.375"-3.15"/HSK-A100	0.375	1.00	3.15"	3/8-24UNF-9	Form "AD"
66652173M	WSLH/0.500"-3.15"/HSK-A100	0.500	1.38	3.15"	7/16-20UNF-12	Form "AD"
66652174M	WSLH/0.625"-3.94"/HSK-A100	0.625	1.50	3.94"	1/2-20UNF-14	Form "AD"
66652175M	WSLH/0.750"-3.94"/HSK-A100	0.750	1.75	3.94"	5/8-18UNF-14	Form "AD"
66652176M	WSLH/1.000"-3.94"/HSK-A100	1.000	2.00	3.94"	3/4-16UNF-14	Form "AD"
66652177M	WSLH/1.125"-3.94"/HSK-A100	1.250	2.50	3.94"	3/4-16UNF-14	Form "AD"
66652184M	WSLH/0.250"-6.30"/HSK-A100	0.250	0.78	6.30"	1/4-28UNF-8	Form "AD"
66652185M	WSLH/0.312"-6.30"/HSK-A100	0.312	1.00	6.30"	5/16-24UNF-10	Form "AD"
66652186M	WSLH/0.375"-6.30"/HSK-A100	0.375	1.00	6.30"	3/8-24UNF-9	Form "AD"
66652187M	WSLH/0.500"-6.30"/HSK-A100	0.500	1.38	6.30"	7/16-20UNF-12	Form "AD"
66652188M	WSLH/0.625"-6.30"/HSK-A100	0.625	1.50	6.30"	1/2-20UNF-14	Form "AD"
66652189M	WSLH/0.750"-6.30"/HSK-A100	0.750	1.75	6.30"	5/8-18UNF-14	Form "AD"
66652190M	WSLH/1.000"-6.30"/HSK-A100	1.000	2.00	6.30"	3/4-16UNF-14	Form "AD"
66652191M	WSLH/1.125"-6.30"/HSK-A100	1.250	2.50	6.30"	3/4-16UNF-14	Form "AD"

For HSK coolant tubes, see page 46.  
 For coolant tube wrenches see page 47.



BT30		Balanced to G6.3 @ 8,000 RPM				
SAP No.	Designation	Dimensions				Coolant Supply
		d (inch)	D (mm)	A (inch)	g	
66651311M	WSLH/0.125"-2.36"/BT30	0.125	17.5	2.36	6-32 UNC	Form "AD"
66651312M	WSLH/0.188"-2.36"/BT30	0.187	17.5	2.36	8-32 UNC	Form "AD"
66651313M	WSLH/0.250"-2.36"/BT30	0.250	19.8	2.36	1/4-28 UNF	Form "AD"
66651314M	WSLH/0.312"-2.36"/BT30	0.312	25.4	2.36	5/16-24 UNF	Form "AD"
66651315M	WSLH/0.375"-2.36"/BT30	0.375	25.4	2.36	3/8-24 UNF	Form "AD"
66651316M	WSLH/0.500"-2.36"/BT30	0.500	35.1	2.36	7/16-20 UNF	Form "AD"
66651317M	WSLH/0.625"-2.36"/BT30	0.625	38.1	2.36	1/2-20 UNF	Form "AD"
66651318M	WSLH/0.750"-2.36"/BT30	0.750	44.5	2.36	5/8-18 UNF	Form "AD"

BT40		Balanced to G6.3 @ 8,000 RPM				
SAP No.	Designation	Dimensions				Coolant Supply
		d (inch)	D (mm)	A (inch)	g	
66651331M	WSLH/0.250"-2.55"/BT40	0.250	19.8	2.55	1/4-28 UNF	Form "AD/B"
66651332M	WSLH/0.312"-2.55"/BT40	0.312	25.4	2.55	5/16-24 UNF	Form "AD/B"
66651333M	WSLH/0.375"-2.55"/BT40	0.375	25.4	2.55	3/8-24 UNF	Form "AD/B"
66651334M	WSLH/0.500"-2.55"/BT40	0.500	35.1	2.55	7/16-20 UNF	Form "AD/B"
66651335M	WSLH/0.500"-4.00"/BT40	0.500	35.1	4.00	7/16-20 UNF	Form "AD/B"
66651336M	WSLH/0.625"-2.55"/BT40	0.625	38.1	2.55	1/2-20 UNF	Form "AD/B"
66651337M	WSLH/0.750"-2.55"/BT40	0.750	44.5	2.55	5/8-18 UNF	Form "AD/B"
66651338M	WSLH/0.875"-3.35"/BT40	0.875	50.8	3.35	5/8-18 UNF	Form "AD/B"
66651339M	WSLH/1.000"-3.74"/BT40	1.000	50.8	3.74	3/4-16 UNF	Form "AD/B"
66651340M	WSLH/1.000"-5.00"/BT40	1.000	50.8	5.00	3/4-16 UNF	Form "AD/B"
66651341M	WSLH/1.250"-3.35"/BT40	1.250	63.5	3.35	3/4-16 UNF	Form "AD/B"



**CAT40** Balanced to G6.3 @ 20,000 RPM

SAP No.	Designation	Collet Type	Range (mm)	Dimensions				Coolant Supply
				D (mm)	A (mm)	A (inch)	g	
66651351M	WCCH/ER16-2.50"/CAT40	ER16	1-10	28	63.5	2.50	M10	Form "AD/B"
66651352M	WCCH/ER16-5.00"/CAT40	ER16	1-10	28	127.0	5.00	M10	Form "AD/B"
66651353M	WCCH/ER20-2.50"/CAT40	ER20	1-13	34	63.5	2.50	M12	Form "AD/B"
66651354M	WCCH/ER20-6.00"/CAT40	ER20	1-13	34	152.4	6.00	M12	Form "AD/B"
66651355M	WCCH/ER25-2.50"/CAT40	ER25	2-16	42	63.5	2.50	M16	Form "AD/B"
66651356M	WCCH/ER25-6.00"/CAT40	ER25	2-16	42	152.4	6.00	M16	Form "AD/B"
66651357M	WCCH/ER32-2.75"/CAT40	ER32	2-20	50	69.9	2.75	M22x1.5	Form "AD/B"
66651358M	WCCH/ER32-6.00"/CAT40	ER32	2-20	50	152.4	6.00	M22x1.5	Form "AD/B"
66651359M	WCCH/ER40-3.00"/CAT40	ER40	3-26	63	76.2	3.00	M22x1.5	Form "AD/B"
66651360M	WCCH/ER40-6.00"/CAT40	ER40	3-26	63	152.4	6.00	M22x1.5	Form "AD/B"

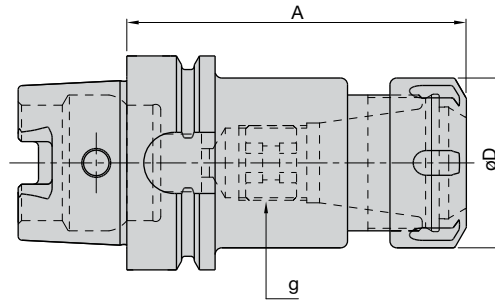
For collets, see pages 16-18.  
 For ER collet nuts and seal discs, see pages 39-43.  
 For wrenches, see page 47.

**CAT50** Balanced to G6.3 @ 20,000 RPM

SAP No.	Designation	Collet Type	Range (mm)	Dimensions				Coolant Supply
				D (mm)	A (mm)	A (inch)	g	
66651366M	WCCH/ER16-2.50"/CAT50	ER16	1-10	28	63.5	2.50	M10	Form "AD/B"
66651367M	WCCH/ER16-4.00"/CAT50	ER16	1-10	28	101.6	4.00	M10	Form "AD/B"
66651368M	WCCH/ER16-6.00"/CAT40	ER16	1-10	28	152.4	6.00	M10	Form "AD/B"
66651369M	WCCH/ER20-2.50"/CAT50	ER20	1-13	34	63.5	2.50	M12	Form "AD/B"
66651370M	WCCH/ER20-4.00"/CAT50	ER20	1-13	34	101.6	4.00	M12	Form "AD/B"
66651371M	WCCH/ER20-6.00"/CAT50	ER20	1-13	34	152.4	6.00	M12	Form "AD/B"
66651372M	WCCH/ER25-2.50"/CAT50	ER25	2-16	42	63.5	2.50	M16	Form "AD/B"
66651373M	WCCH/ER25-4.00"/CAT50	ER25	2-16	42	101.6	4.00	M16	Form "AD/B"
66651374M	WCCH/ER25-6.00"/CAT50	ER25	2-16	42	152.4	6.00	M16	Form "AD/B"
66651375M	WCCH/ER32-2.75"/CAT50	ER32	2-20	50	69.9	2.75	M22x1.5	Form "AD/B"
66651376M	WCCH/ER32-4.00"/CAT50	ER32	2-20	50	101.6	4.00	M22x1.5	Form "AD/B"
66651377M	WCCH/ER32-6.00"/CAT50	ER32	2-20	50	152.4	6.00	M22x1.5	Form "AD/B"
66651378M	WCCH/ER40-3.00"/CAT50	ER40	3-26	63	76.2	3.00	M22x1.5	Form "AD/B"
66651379M	WCCH/ER40-4.00"/CAT50	ER40	3-26	63	101.6	4.00	M22x1.5	Form "AD/B"
66651380M	WCCH/ER40-6.00"/CAT50	ER40	3-26	63	152.4	6.00	M22x1.5	Form "AD/B"

For collets, see pages 16-18.  
 For ER collet nuts and seal discs, see pages 39-43.  
 For wrenches, see page 47.

# HSK ER Collet Chucks | ER Collet Chuck Holders



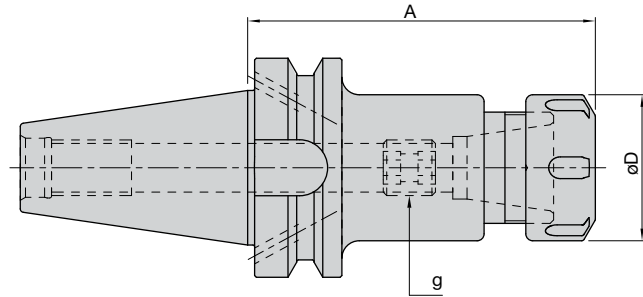
HSK ER Collet Chuck Holders				Balanced to G6.3 @ 20,000 RPM					
SAP No.	Designation	Collet Type	Range (mm)	Dimensions				Coolant Supply	
				D (mm)	A (mm)	A (inch)	g		
<b>HSK-A32</b>									
66611260M	WCCH/ER16M-65/HSK-A32	ER16M	1-10	22	65	2.56	M10	Form "AD"	
66611516M	WCCH/ER20M-70/HSK-A32	ER20M	1-13	28	70	2.76	M12	Form "AD"	
66611261M	WCCH/ER25M-70/HSK-A32	ER25M	2-16	35	70	2.76	M10	Form "AD"	
<b>HSK-A40</b>									
66611262M	WCCH/ER16M-70-HSK-A40	ER16M	1-10	22	70	2.76	M10	Form "AD"	
66611517M	WCCH/ER20-80/HSK-A40	ER20	1-13	34	80	3.15	M12	Form "AD"	
66611263M	WCCH/ER25-80/HSK-A40	ER25	2-16	42	80	3.15	M16	Form "AD"	
66611264M	WCCH/ER32-100/HSK-A40	ER32	2-20	50	100	3.94	M22X1.5	Form "AD"	
<b>HSK-A50</b>									
66611265M	WCCH-ER16M-80/HSK-A50	ER16M	1-10	22	80	3.15	M10	Form "AD"	
66611519M	WCCH/ER20-95/HSK-A50	ER20	1-13	34	95	3.74	M12	Form "AD"	
66611266M	WCCH/ER25-95/HSK-A50	ER25	2-16	42	95	3.74	M16	Form "AD"	
66611267M	WCCH/ER32-100/HSK-A50	ER32	2-20	50	100	3.94	M22X1.5	Form "AD"	
<b>HSK-A63</b>									
66661459M	WCCH/ER16M-100/HSK-A63	ER16	1-10	28	100	3.94	M10	Form "AD"	
66611268M	WCCH/ER16M-160/HSK-A63	ER16	1-10	28	160	6.3	M10	Form "AD"	
66611520M	WCCH/ER20-100/HSK-A63	ER20	1-13	34	100	3.94	M12	Form "AD"	
66611521M	WCCH/ER20M-160/HSK-A63	ER20	1-13	34	160	6.3	M12	Form "AD"	
66661118M	WCCH/ER25-100/HSK-A63	ER25	2-16	42	100	3.94	M16	Form "AD"	
66661460M	WCCH/ER25M-160/HSK-A63	ER25	2-16	42	160	6.3	M16	Form "AD"	
66661120M	WCCH/ER32-100/HSK-A63	ER32	2-20	50	100	3.94	M22x1.5	Form "AD"	
66661121M	WCCH/ER32-160/HSK-A63	ER32	2-20	50	160	6.3	M22x1.5	Form "AD"	
66661122M	WCCH/ER40-120/HSK-A63	ER40	3-26	63	120	4.72	M22x1.5	Form "AD"	
66661123M	WCCH/ER40-160/HSK-A63	ER40	3-26	63	160	6.3	M22x1.5	Form "AD"	
<b>HSK-A100</b>									
33383701M	WCCH/ER16M-100/HSK-A100	ER16M	1-10	22	100	3.94	M10	Form "AD"	
66611522M	WCCH/ER20-100/HSK-A100	ER20	1-13	34	100	3.94	M12	Form "AD"	
66661126M	WCCH/ER25-100/HSK-A100	ER25	2-16	42	100	3.94	M16	Form "AD"	
66661127M	WCCH/ER32-100/HSK-A100	ER32	2-20	50	100	3.94	M22X1.5	Form "AD"	
66661128M	WCCH/ER40-120/HSK-A100	ER40	3-26	63	120	4.72	M22x1.5	Form "AD"	
33383667M	WCCH/ER16M-160/HSK-A100	ER16M	1-10	22	160	6.3	M10	Form "AD"	
66611523M	WCCH/ER20-160/HSK-A100	ER20	1-13	34	160	6.3	M12	Form "AD"	
66611257M	WCCH/ER25-160/HSK-A100	ER25	2-16	42	160	6.3	M16	Form "AD"	
66611258M	WCCH/ER32-160/HSK-A100	ER32	2-20	50	160	6.3	M22X1.5	Form "AD"	
66611259M	WCCH/ER40-160/HSK-A100	ER40	3-26	63	160	6.3	M22x1.5	Form "AD"	

For collets, see pages 16-18.

For ER collet nuts and seal discs, see pages 39-43.

For coolant tubes, see page 46.

For coolant tube wrenches, see page 47.

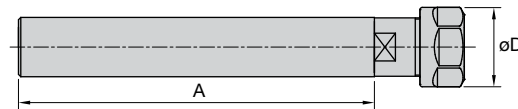


**ER Collet Chucks** Balanced to G6.3 @ 20,000 RPM

SAP No.	Designation	Collet Type	Range (mm)	Dimensions				Coolant Supply
				D (mm)	A (mm)	A (inch)	g	
<b>BT30</b>								
66611163M	WCCH/ER16-100/BT30	ER16	1-10	28	100	3.94	M10	Form "AD"
66651392M	WCCH/ER16-150/BT30	ER16	1-10	28	150	5.90	M10	Form "AD"
66611162M	WCCH/ER16-70/BT30	ER16	1-10	28	70	2.76	M10	Form "AD"
66611508M	WCCH/ER20-100/BT30	ER20	1-13	34	100	3.94	M12	Form "AD"
66611507M	WCCH/ER20-70/BT30	ER20	1-13	34	70	2.76	M12	Form "AD"
66611180M	WCCH/ER25-100/BT30	ER25	2-16	42	100	3.94	M12	Form "AD"
66611164M	WCCH/ER25-70/BT30	ER25	2-16	42	70	2.76	M12	Form "AD"
66651395M	WCCH/ER32-100/BT30	ER32	2-20	50	100	3.94	M22x1.5	Form "AD"
66611165M	WCCH/ER32-70/BT30	ER32	2-20	50	70	2.76	M12	Form "AD"
66651396M	WCCH/ER40-100/BT30	ER40	3-26	63	100	3.89	M22x1.5	Form "AD"
<b>BT40</b>								
66611168M	WCCH/ER16-100/BT40	ER16	1-10	28	100	3.94	M10	Form "AD/B"
66611169M	WCCH/ER16-160/BT40	ER16	1-10	28	160	6.30	M10	Form "AD/B"
66611253M	WCCH/ER16-70/BT40	ER16	1-10	28	70	2.76	M10	Form "AD/B"
66611510M	WCCH/ER20-100/BT40	ER20	1-13	34	100	3.94	M12	Form "AD/B"
66611511M	WCCH/ER20-160/BT40	ER20	1-13	34	160	6.30	M12	Form "AD/B"
66611509M	WCCH/ER20-70/BT40	ER20	1-13	34	70	2.76	M12	Form "AD/B"
66611182M	WCCH/ER25-100/BT40	ER25	2-16	42	100	3.94	M16	Form "AD/B"
66611270M	WCCH/ER25-160/BT40	ER25	2-16	42	160	6.30	M16	Form "AD/B"
66611199M	WCCH/ER25-70/BT40	ER25	2-16	42	70	2.76	M16	Form "AD/B"
66611172M	WCCH/ER32-100/BT40	ER32	2-20	50	100	3.94	M22x1.5	Form "AD/B"
66611271M	WCCH/ER32-160/BT40	ER32	2-20	50	160	6.30	M22x1.5	Form "AD/B"
66611171M	WCCH/ER32-70/BT40	ER32	2-20	50	70	2.76	M22x1.5	Form "AD/B"
66611269M	WCCH/ER40-100/BT40	ER40	3-26	63	100	3.94	M22x1.5	Form "AD/B"
66611272M	WCCH/ER40-160/BT40	ER40	3-26	63	160	6.30	M22x1.5	Form "AD/B"
66611173M	WCCH/ER40-80/BT40	ER40	3-26	63	80	3.15	M22x1.5	Form "AD/B"

For wrenches, see page 47.

**Collet Extension | ER Collet Chucks**

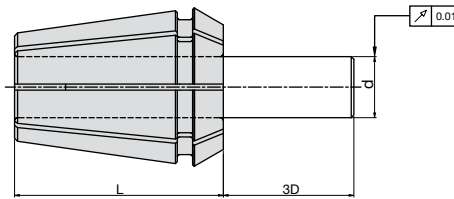


**Collet Extension**

SAP No.	Designation	Collet Type	Range (mm)	Dimensions		Length Adjustment Screw	Coolant Supply
				D (mm)	A (inch)		
66652151M	WCCH/ER16-6.00"/CYL0.50	ER16	1-10	28	1/2 x 6.00	M10	COOL-THRU
66652152M	WCCH/ER16-6.00"/CYL0.75	ER16	1-10	28	3/4 x 6.00	M10	COOL-THRU
66652153M	WCCH/ER20-6.00"/CYL0.75	ER20	1-13	34	3/4 x 6.00	M12	COOL-THRU
66652154M	WCCH/ER20-6.00"/CYL1.00	ER20	1-13	34	1 x 6.00	M12	COOL-THRU
66652155M	WCCH/ER25-6.00"/CYL0.75	ER25	2-16	42	3/4 x 6.00	M16	COOL-THRU
66652156M	WCCH/ER25-6.00"/CYL1.00	ER25	2-16	42	1 X 6.00	M16	COOL-THRU
66652157M	WCCH/ER32-6.00"/CYL1.00	ER32	2-20	50	1 x 6.00	M22x1.5	COOL-THRU
66652158M	WCCH/ER32-6.00"/CYL1.25	ER32	2-20	50	1-1/4 x 6.00	M22x1.5	COOL-THRU
66652159M	WCCH/ER40-6.00"/CYL1.25	ER40	3-26	63	1-1/4 x 6.00	M22x1.5	COOL-THRU

For wrenches, see page 47.

For length adjustment screws, see page 46.



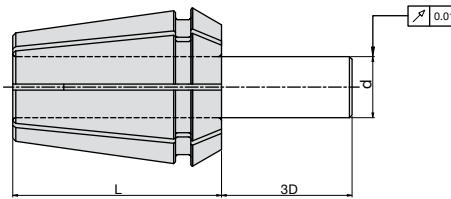
Spring Collets ER16 (Metric)					
Premium SAP No.	Standard SAP No.	Designation	Dimensions (mm)		
			D	L	d
1116.01000	66691171M	ER16-1.0	17	27	1.0-0.5
1116.01500	66691172M	ER16-1.5	17	27	1.5-1.0
1116.02000	66691172M	ER16-2.0	17	27	2.0-1.5
1116.02500	66691173M	ER16-2.5	17	27	2.5-2.0
1116.03000	66691173M	ER16-3.0	17	27	3.0-2.5
1116.03500	66691174M	ER16-3.5	17	27	3.5-3.0
1116.04000	66691174M	ER16-4.0	17	27	4.0-3.5
1116.04500	66691175M	ER16-4.5	17	27	4.5-4.0
1116.05000	66691175M	ER16-5.0	17	27	5.0-4.5
1116.05500	66691176M	ER16-5.5	17	27	5.5-5.0
1116.06000	66691176M	ER16-6.0	17	27	6.0-5.5
1116.06500	66691177M	ER16-6.5	17	27	6.5-6.0
1116.07000	66691177M	ER16-7.0	17	27	7.0-6.5
1116.07500	66691178M	ER16-7.5	17	27	7.5-7.0
1116.08000	66691178M	ER16-8.0	17	27	8.0-7.5
1116.08500	66691179M	ER16-8.5	17	27	8.5-8.0
1116.09000	66691179M	ER16-9.0	17	27	9.0-8.5
1116.09500	66691180M	ER16-9.5	17	27	9.5-9.0
1116.10000	66691180M	ER16-10.0	17	27	10.0-9.5
1116-00000	-	ER16 10pc. Collet Set	-	-	-

Spring Collets ER20 (Metric)					
Premium SAP No.	Standard SAP No.	Designation	Dimensions (mm)		
			D	L	d
1120.01000	66692101M	ER20-1.0	21	31	1.0-0.5
1120.02000	66692102M	ER20-2.0	21	31	2.0-1.5
1120.03000	66692103M	ER20-3.0	21	31	3.0-2.5
1120.04000	66692104M	ER20-4.0	21	31	4.0-3.5
1120.05000	66692105M	ER20-5.0	21	31	5.0-4.5
1120.06000	66692106M	ER20-6.0	21	31	6.0-5.5
1120.07000	66692107M	ER20-7.0	21	31	7.0-6.5
1120.08000	66692108M	ER20-8.0	21	31	8.0-7.5
1120.09000	66692109M	ER20-9.0	21	31	9.0-8.5
1120.10000	66692110M	ER20-10.0	21	31	10.0-9.5
1120.11000	66692111M	ER20-11.0	21	31	11.0-10.5
1120.12000	66692112M	ER20-12.0	21	31	12.0-11.5
1120.13000	66692113M	ER20-13.0	21	31	13.0-12.5
1120.00000	-	ER20 12pc. Collet Set	-	-	-

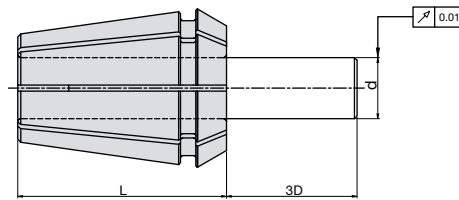
Spring Collets ER25 (Metric)					
Premium SAP No.	Standard SAP No.	Designation	Dimensions (mm)		
			D	L	d
1125.02000	66691181M	ER25-2.0	26	35	2.0-1.5
1125.03000	66691182M	ER25-3.0	26	35	3.0-2.5
1125.04000	66691183M	ER25-4.0	26	35	4.0-3.5
1125.05000	66691184M	ER25-5.0	26	35	5.0-4.5
1125.06000	66691285M	ER25-6.0	26	35	6.0-5.5
1125.07000	66691286M	ER25-7.0	26	35	7.0-6.5
1125.08000	66691287M	ER25-8.0	26	35	8.0-7.5
1125.09000	66691288M	ER25-9.0	26	35	9.0-8.5
1125.10000	66691289M	ER25-10.0	26	35	10.0-9.5
1125.11000	66691290M	ER25-11.0	26	35	11.0-10.5
1125.12000	66691291M	ER25-12.0	26	35	12.0-11.5
1125.13000	66691292M	ER25-13.0	26	35	13.0-12.5
1125.14000	66691293M	ER25-14.0	26	35	14.0-13.5
1125.15000	66691294M	ER25-15.0	26	35	15.0-14.5
1125.16000	66691295M	ER25-16.0	26	35	16.0-15.5
1125.00000	-	ER25 15pc. Collet Set	-	-	-

Spring Collets ER32 (Metric)					
Premium SAP No.	Standard SAP No.	Designation	Dimensions (mm)		
			D	L	d
1132.02000	66691196M	ER32-2.0	33	40	2.0-1.5
1132.03000	66691197M	ER32-3.0	33	40	3.0-2.5
1132.04000	66691198M	ER32-4.0	33	40	4.0-3.5
1132.05000	66691199M	ER32-5.0	33	40	5.0-4.5
1132.06000	66691200M	ER32-6.0	33	40	6.0-5.5
1132.07000	66691201M	ER32-7.0	33	40	7.0-6.5
1132.08000	66691202M	ER32-8.0	33	40	8.0-7.5
1132.09000	66691203M	ER32-9.0	33	40	9.0-8.5
1132.10000	66691204M	ER32-10.0	33	40	10.0-9.5
1132.11000	66691205M	ER32-11.0	33	40	11.0-10.5
1132.12000	66691206M	ER32-12.0	33	40	12.0-11.5
1132.13000	66691207M	ER32-13.0	33	40	13.0-12.5
1132.14000	66691208M	ER32-14.0	33	40	14.0-13.5
1132.15000	66691209M	ER32-15.0	33	40	15.0-14.5
1132.16000	66691210M	ER32-16.0	33	40	16.0-15.5
1132.17000	66691211M	ER32-17.0	33	40	17.0-16.5
1132.18000	66691212M	ER32-18.0	33	40	18.0-17.5
1132.19000	66691213M	ER32-19.0	33	40	19.0-18.5
1132.20000	66691214M	ER32-20.0	33	40	20.0-19.5
1132.00000	-	ER32 18pc. Collet Set	-	-	-





Spring Collets ER40 (Metric)					
Premium SAP No.	Standard SAP No.	Designation	Dimensions (mm)		
			D	L	d
1140.03000	66691215M	ER40-3.0	41	46	3.0-2.5
1140.04000	66691216M	ER40-4.0	41	46	4.0-3.5
1140.05000	66691217M	ER40-5.0	41	46	5.0-4.5
1140.06000	66691218M	ER40-6.0	41	46	6.0-5.5
1140.07000	66691219M	ER40-7.0	41	46	7.0-6.5
1140.80000	66691220M	ER40-8.0	41	46	8.0-7.5
1140.09000	66691221M	ER40-9.0	41	46	9.0-8.5
1140.10000	66691222M	ER40-10.0	41	46	10.0-9.5
1140.11000	66691223M	ER40-11.0	41	46	11.0-10.5
1140.12000	66691224M	ER40-12.0	41	46	12.0-11.5
1140.13000	66691225M	ER40-13.0	41	46	13.0-12.5
1140.14000	66691226M	ER40-14.0	41	46	14.0-13.5
1140.15000	66691227M	ER40-15.0	41	46	15.0-14.5
1140.16000	66691228M	ER40-16.0	41	46	16.0-15.5
1140.17000	66691229M	ER40-17.0	41	46	17.0-16.5
1140.18000	66691230M	ER40-18.0	41	46	18.0-17.5
1140.19000	66691231M	ER40-19.0	41	46	19.0-18.5
1140.20000	66691232M	ER40-20.0	41	46	20.0-19.5
1140.21000	66691233M	ER40-21.0	41	46	21.0-20.5
1140.22000	66691234M	ER40-22.0	41	46	22.0-21.5
1140.23000	66691235M	ER40-23.0	41	46	23.0-22.5
1140.24000	66691236M	ER40-24.0	41	46	24.0-23.5
1140.25000	66691237M	ER40-25.0	41	46	25.0-24.5
1140.26000	66691238M	ER40-26.0	41	46	26.0-25.5
1140.00000	-	ER40 23pc. Collet Set	-	-	-



## Spring Collets ER16 (Inch)

Premium SAP No.	Standard SAP No.	Designation	Dimensions (inch)		
			D	L	d
1116.01592	66692200M	ER16-1/16"	0.669	1.063	0.043-0.062
1116.02382	66692201M	ER16-3/32"	0.669	1.063	0.054-0.093
1116.03182	66692202M	ER16-1/8"	0.669	1.063	0.086-0.125
1116.03972	66692203M	ER16-5/32"	0.669	1.063	0.117-0.156
1116.04762	66692204M	ER16-3/16"	0.669	1.063	0.148-0.187
1116.05562	66692205M	ER16-7/32"	0.669	1.063	0.179-0.218
1116.06352	66692206M	ER16-1/4"	0.669	1.063	0.211-0.250
1116.07142	66692207M	ER16-9/32"	0.669	1.063	0.242-0.281
1116.07942	66692208M	ER16-5/16"	0.669	1.063	0.273-0.312
1116.08732	66692209M	ER16-11/32"	0.669	1.063	0.304-0.343
1116.09532	66692210M	ER16-3/8"	0.669	1.063	0.336-0.375
1116.10322	66692211M	ER16-13/32"	0.669	1.063	0.367-0.406
1116.00002	-	ER16 12pc. Collet Set	-	-	-

## Spring Collets ER32 (Inch)

Premium SAP No.	Standard SAP No.	Designation	Dimensions (inch)		
			D	L	d
1132.03182	66692246M	ER32-1/8"	1.299	1.575	0.086-0.125
1132.04762	66692248M	ER32-3/16"	1.299	1.575	0.148-0.187
1132.06352	66692250M	ER32-1/4"	1.299	1.575	0.211-0.250
1132.07942	66692252M	ER32-5/16"	1.299	1.575	0.273-0.312
1132.09532	66692254M	ER32-3/8"	1.299	1.575	0.336-0.375
1132.11112	66692256M	ER32-7/16"	1.299	1.575	0.398-0.437
1132.12702	66692258M	ER32-1/2"	1.299	1.575	0.461-0.500
1132.14292	66692260M	ER32-9/16"	1.299	1.575	0.523-0.562
1132.15882	66692262M	ER32-5/8"	1.299	1.575	0.586-0.625
1132.17462	66692264M	ER32-11/16"	1.299	1.575	0.648-0.687
1132.19052	66692266M	ER32-3/4"	1.299	1.575	0.711-0.750
1132.00002	-	ER32 12pc Collet Set	-	-	-

## Spring Collets ER20 (Inch)

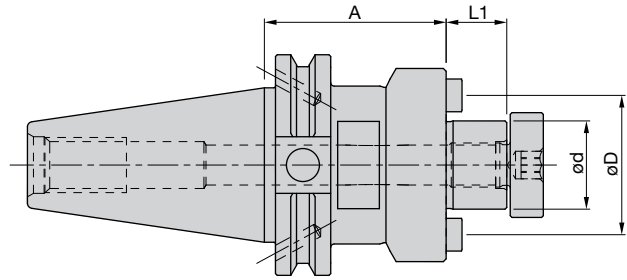
Premium SAP No.	Standard SAP No.	Designation	Dimensions (inch)		
			D	L	d
1120.03182	66692214M	ER20-1/8"	0.827	1.22	0.086-0.125
1120.04762	66692216M	ER20-3/16"	0.827	1.22	0.148-0.187
1120.06352	66692218M	ER20-1/4"	0.827	1.22	0.211-0.250
1120.07942	66692220M	ER20-5/16"	0.827	1.22	0.273-0.312
1120.09532	66692222M	ER20-3/8"	0.827	1.22	0.336-0.375
1120.11112	66692224M	ER20-7/16"	0.827	1.22	0.398-0.437
1120.12702	66692226M	ER20-1/2"	0.827	1.22	0.461-0.500
1120.00002	-	ER20 7pc. Collet Set	-	-	-

## Spring Collets ER40 (Inch)

Premium SAP No.	Standard SAP No.	Designation	Dimensions (inch)		
			D	L	d
1140.03182	66692267M	ER40-1/8"	1.614	1.811	0.086-0.125
1140.04762	66692269M	ER40-3/16"	1.614	1.811	0.148-0.187
1140.06352	66692271M	ER40-1/4"	1.614	1.811	0.211-0.250
1140.07942	66692273M	ER40-5/16"	1.614	1.811	0.273-0.312
1140.09532	66692275M	ER40-3/8"	1.614	1.811	0.336-0.375
1140.11112	66692277M	ER40-7/16"	1.614	1.811	0.398-0.437
1140.12702	66692279M	ER40-1/2"	1.614	1.811	0.461-0.500
1140.14292	66692281M	ER40-9/16"	1.614	1.811	0.523-0.562
1140.15882	66692283M	ER40-5/8"	1.614	1.811	0.586-0.625
1140.17462	66692285M	ER40-11/16"	1.614	1.811	0.648-0.687
1140.19052	66692287M	ER40-3/4"	1.614	1.811	0.711-0.750
1140.22232	66692288M	ER40-7/8"	1.614	1.811	0.836-0.875
1140.25402	66692289M	ER40-1.0"	1.614	1.811	0.961-1.000
1140.00002	-	ER40 14pc. Collet Set	-	-	-

## Spring Collets ER25 (Inch)

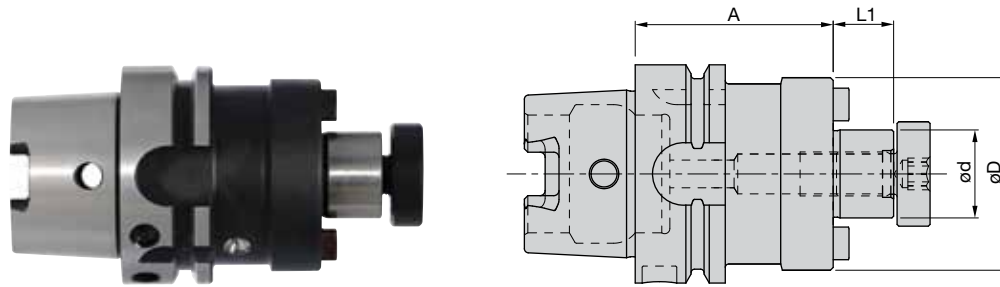
Premium SAP No.	Standard SAP No.	Designation	Dimensions (inch)		
			D	L	d
1125.03182	66692228M	ER25-1/8"	1.024	1.378	0.086-0.125
1125.04762	66692230M	ER25-3/16"	1.024	1.378	0.148-0.187
1125.06352	66692232M	ER25-1/4"	1.024	1.378	0.211-0.250
1125.07942	66692234M	ER25-5/16"	1.024	1.378	0.273-0.312
1125.09532	66692236M	ER25-3/8"	1.024	1.378	0.336-0.375
1125.11112	66692238M	ER25-7/16"	1.024	1.378	0.398-0.437
1125.12702	66692240M	ER25-1/2"	1.024	1.378	0.461-0.500
1125.14292	66692242M	ER25-9/16"	1.024	1.378	0.523-0.562
1125.15882	66692244M	ER25-5/8"	1.024	1.378	0.586-0.625
1125.00002	-	ER25 9pc. Collet Set	-	-	-



**Shell Mill Holders** Balanced to G6.3 @ 8,000 RPM

SAP No.	Designation	Dimensions							Coolant Supply
		d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	L <sub>1</sub> (mm)	D <sub>1</sub> (mm)	
<b>CAT40</b>									
66651416M	WSMH/0.500"-1.38"/CAT40	12.7	0.50	36.6	35.1	1.38	14.2	25.4	Form "AD/B"
66651417M	WSMH/0.500"-3.50"/CAT40	12.7	0.50	36.6	88.9	3.50	14.2	25.4	Form "AD/B"
66651418M	WSMH/0.750"-1.38"/CAT40	19.1	0.75	44.4	35.1	1.38	17.5	28.7	Form "AD/B"
66651419M	WSMH/0.750"-3.50"/CAT40	19.1	0.75	44.4	88.9	3.50	17.5	28.7	Form "AD/B"
66651420M	WSMH/0.750"-6.00"/CAT40	19.1	0.75	44.4	152.4	6.00	17.5	28.7	Form "AD/B"
66651421M	WSMH/1.000"-1.75"/CAT40	25.4	1.00	55.6	44.5	1.75	17.5	40.1	Form "AD/B"
66651422M	WSMH/1.000"-2.06"/CAT40	25.4	1.00	55.6	52.3	2.06	17.5	40.1	Form "AD/B"
66651423M	WSMH/1.000"-4.00"/CAT40	25.4	1.00	55.6	101.6	4.00	17.5	40.1	Form "AD/B"
66651424M	WSMH/1.000"-6.00"/CAT40	25.4	1.00	55.6	152.4	6.00	17.5	40.1	Form "AD/B"
66651425M	WSMH/1.250"-2.12"/CAT40	31.8	1.25	69.9	53.8	2.12	17.5	50.3	Form "AD/B"
66651426M	WSMH/1.250"-4.00"/CAT40	31.8	1.25	69.9	101.6	4.00	17.5	50.3	Form "AD/B"
66651427M	WSMH/1.500"-2.41"/CAT40	38.1	1.50	85.9	61.2	2.41	23.9	60.7	Form "AD/B"
66651428M	WSMH/1.500"-4.00"/CAT40	38.1	1.50	85.9	101.6	4.00	23.9	60.7	Form "AD/B"
<b>CAT50</b>									
66651436M	WSMH/0.500"-1.50"/CAT50	12.7	0.50	36.6	38.1	1.50	14.2	25.4	Form "AD/B"
66651437M	WSMH/0.500"-3.50"/CAT50	12.7	0.50	36.6	88.9	3.50	14.2	25.4	Form "AD/B"
66651438M	WSMH/0.500"-5.50"/CAT50	12.7	0.50	36.6	139.7	5.50	14.2	25.4	Form "AD/B"
66651439M	WSMH/0.750"-1.50"/CAT50	19.1	0.75	44.5	38.1	1.50	17.5	28.7	Form "AD/B"
66651440M	WSMH/0.750"-3.50"/CAT50	19.1	0.75	44.5	88.9	3.50	17.5	28.7	Form "AD/B"
66651441M	WSMH/0.750"-5.50"/CAT50	19.1	0.75	44.5	139.7	5.50	17.5	28.7	Form "AD/B"
66651442M	WSMH/0.750"-7.00"/CAT50	19.1	0.75	44.5	177.8	7.00	17.5	28.7	Form "AD/B"
66651443M	WSMH/0.750"-9.00"/CAT50	19.1	0.75	44.5	228.6	9.00	17.5	28.7	Form "AD/B"
66651448M	WSMH/1.000"-10.00"/CAT50	25.4	1.00	55.6	254.0	10.00	17.5	40.1	Form "AD/B"
66651444M	WSMH/1.000"-2.00"/CAT50	25.4	1.00	55.6	50.8	2.00	17.5	40.1	Form "AD/B"
66651445M	WSMH/1.000"-4.00"/CAT50	25.4	1.00	55.6	101.6	4.00	17.5	40.1	Form "AD/B"
66651446M	WSMH/1.000"-6.00"/CAT50	25.4	1.00	55.6	152.4	6.00	17.5	40.1	Form "AD/B"
66651447M	WSMH/1.000"-8.00"/CAT50	25.4	1.00	55.6	203.2	8.00	17.5	40.1	Form "AD/B"
66651449M	WSMH/1.250"-1.50"/CAT50	31.8	1.25	69.9	38.1	1.50	17.5	50.3	Form "AD/B"
66651450M	WSMH/1.250"-3.50"/CAT50	31.8	1.25	69.9	88.9	3.50	17.5	50.3	Form "AD/B"
66651451M	WSMH/1.250"-5.50"/CAT50	31.8	1.25	69.9	139.7	5.50	17.5	50.3	Form "AD/B"
66651452M	WSMH/1.250"-7.00"/CAT50	31.8	1.25	69.9	177.8	7.00	17.5	50.3	Form "AD/B"
66651453M	WSMH/1.250"-9.00"/CAT50	31.8	1.25	69.9	228.6	9.00	17.5	50.3	Form "AD/B"
66651454M	WSMH/1.500"-2.40"/CAT50	38.1	1.50	85.9	61.0	2.40	23.9	60.7	Form "AD/B"
66651455M	WSMH/1.500"-4.00"/CAT50	38.1	1.50	85.9	101.6	4.00	23.9	60.7	Form "AD/B"
66651456M	WSMH/1.500"-6.00"/CAT50	38.1	1.50	85.9	152.4	6.00	23.9	60.7	Form "AD/B"
66651457M	WSMH/1.500"-8.00"/CAT50	38.1	1.50	85.9	203.2	8.00	23.9	60.7	Form "AD/B"
66651458M	WSMH/2.000"-2.40"/CAT50	50.8	2.00	123.9	61.0	2.40	23.9	77.2	Form "AD/B"
66651459M	WSMH/2.000"-4.00"/CAT50	50.8	2.00	123.9	101.6	4.00	23.9	77.2	Form "AD/B"
66651460M	WSMH/2.000"-6.00"/CAT50	50.8	2.00	123.9	152.4	6.00	23.9	77.2	Form "AD/B"
66651461M	WSMH/2.000"-8.00"/CAT50	50.8	2.00	123.9	203.2	8.00	23.9	77.2	Form "AD/B"
66651462M	WSMH/2.500"-2.40"/CAT50	63.5	2.50	123.9	61.0	2.40	28.5	92.2	Form "AD/B"
66651463M	WSMH/2.500"-4.00"/CAT50	63.5	2.50	123.9	101.6	4.00	28.5	92.2	Form "AD/B"

For wrenches, see page 47.



HSK-A63		Balanced to G2.5 @ 15,000 RPM						
SAP No.	Designation	Dimensions						Coolant Supply
		d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	L <sub>1</sub> (mm)	
66651561M	WSMH/0.500"-2.00"/HSK-A63	12.7	0.50	36.6	50.8	2.00	14.2	Form "AD"
66651562M	WSMH/0.750"-2.00"/HSK-A63	19.1	0.75	44.5	50.8	2.00	17.5	Form "AD"
66651563M	WSMH/1.000"-2.25"/HSK-A63	25.4	1.00	55.6	57.2	2.25	17.5	Form "AD"
66651564M	WSMH/1.250"-2.25"/HSK-A63	31.8	1.25	69.9	57.2	2.25	17.5	Form "AD"
66651565M	WSMH/1.500"-2.25"/HSK-A63	38.1	1.50	58.9	57.2	2.25	23.9	Form "AD"
66661322M	WSMH/16-100/HSK-A63	16	-	38	100	3.94	17	Form "AD"
66661321M	WSMH/16-50/HSK-A63	16	-	38	50	1.97	17	Form "AD"
66661324M	WSMH/22-100/HSK-A63	22	-	48	100	3.94	19	Form "AD"
66661323M	WSMH/22-50/HSK-A63	22	-	48	50	1.97	19	Form "AD"
66661326M	WSMH/27-100/HSK-A63	27	-	58	100	3.94	21	Form "AD"
66661325M	WSMH/27-60/HSK-A63	27	-	58	60	2.36	21	Form "AD"
66661328M	WSMH/32-100/HSK-A63	32	-	78	100	3.94	24	Form "AD"
66661327M	WSMH/32-60/HSK-A63	32	-	78	60	2.36	24	Form "AD"
66661330M	WSMH/40-100/HSK-A63	40	-	88	100	3.94	27	Form "AD"
66661329M	WSMH/40-60/HSK-A63	40	-	88	60	2.36	27	Form "AD"

For coolant tube wrenches, see page 47.

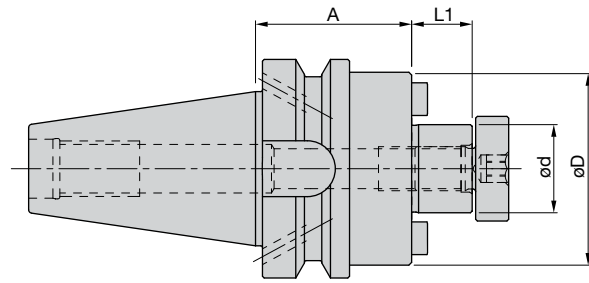
For HSK coolant tubes, see page 46.

HSK-100A		Dimensions						Coolant Supply
SAP No.	Designation	d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	L <sub>1</sub> (mm)	
66651571M	WSMH/0.750-225/HSK-A100	0.750	19.1	44.500	57.2	2.25	0.69	Form "AD"
66651572M	WSMH/1.000-225/HSK-A100	1.000	25.4	55.600	57.2	2.25	0.69	Form "AD"
66651573M	WSMH/1.250-225/HSK-A100	1.250	31.8	58.900	63.5	2.50	0.69	Form "AD"
66651574M	WSMH/1.500-250/HSK-A100	1.500	38.1	69.900	63.5	2.50	0.94	Form "AD"
66651575M	WSMH/2.000-250/HSK-A100	2.000	50.8	-	63.5	2.50	0.94	Form "AD"
66651576M	WSMH2.500-250/HSK-A100	2.500	63.5	-	63.5	2.50	1.12	Form "AD"

For coolant tube wrenches, see page 47.

For HSK coolant tubes, see page 46.





**BT30** **Balanced to G6.3 @ 8,000 RPM**

SAP No.	Designation	Dimensions							Coolant Supply
		d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	L <sub>1</sub> (mm)	D <sub>1</sub> (mm)	
66651501M	WSMH/0.500"-1.18"/BT30	12.7	0.50	36.6	30.0	1.18	14.2	25.4	Form "AD"
66651502M	WSMH/0.750"-1.18"/BT30	19.1	0.75	44.5	30.0	1.18	17.5	28.7	Form "AD"
66651503M	WSMH/1.000"-1.77"/BT30	25.4	1.00	55.6	45.0	1.77	17.5	40.1	Form "AD"
66631181M	WSMH/16-40/BT30	16	-	38	40	-	17	-	Form "AD"
66631182M	WSMH/22-40/BT30	22	-	48	40	-	19	-	Form "AD"
66631183M	WSMH/27-40/BT30	27	-	58	40	-	21	-	Form "AD"

For wrenches, see page 47.

**BT40** **Balanced to G6.3 @ 8,000 RPM**

SAP No.	Designation	Dimensions							Coolant Supply
		d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	L <sub>1</sub> (mm)	D <sub>1</sub> (mm)	
66651516M	WSMH/0.500"-4.00"/BT40	12.7	0.50	36.6	101.6	4.00	14.2	25.4	Form "AD/B"
66651517M	WSMH/0.750"-1.77"/BT40	19.1	0.75	44.5	45.0	1.77	17.5	28.7	Form "AD/B"
66651518M	WSMH/0.750"-4.00"/BT40	19.1	0.75	44.5	101.6	4.00	17.5	28.7	Form "AD/B"
66651519M	WSMH/0.750"-6.00"/BT40	19.1	0.75	44.5	152.4	6.00	17.5	28.7	Form "AD/B"
66651520M	WSMH/1.000"-1.77"/BT40	25.4	1.00	55.6	45.0	1.77	17.5	40.1	Form "AD/B"
66651521M	WSMH/1.000"-4.00"/BT40	25.4	1.00	55.6	101.6	4.00	17.5	40.1	Form "AD/B"
66651522M	WSMH/1.000"-6.00"/BT40	25.4	1.00	55.6	152.4	6.00	17.5	40.1	Form "AD/B"
66651523M	WSMH/1.250"-2.36"/BT40	31.8	1.25	69.9	59.9	2.36	17.5	50.3	Form "AD/B"
66651524M	WSMH/1.250"-5.00"/BT40	31.8	1.25	69.9	127.0	5.00	17.5	50.3	Form "AD/B"
66651525M	WSMH/1.500"-2.36"/BT40	38.1	1.50	85.9	59.9	2.36	23.9	60.7	Form "AD/B"
66651526M	WSMH/1.500"-5.00"/BT40	38.1	1.50	85.9	127.0	5.00	23.9	60.7	Form "AD/B"
66631195M	WSMH/16-100/BT40	16	-	38	100	-	17	-	Form "AD/B"
66631185M	WSMH/16-40/BT40	16	-	38	40	-	17	-	Form "AD/B"
66631197M	WSMH/22-100/BT40	22	-	48	100	-	19	-	Form "AD/B"
66631198M	WSMH/22-160/BT40	22	-	48	160	-	19	-	Form "AD/B"
66631186M	WSMH/22-40/BT40	22	-	48	40	-	19	-	Form "AD/B"
66631199M	WSMH/27-100/BT40	27	-	58	100	-	21	-	Form "AD/B"
66631200M	WSMH/27-160/BT40	27	-	58	160	-	21	-	Form "AD/B"
66631187M	WSMH/27-40/BT40	27	-	58	40	-	21	-	Form "AD/B"
66631201M	WSMH/32-100/BT40	32	-	78	100	-	24	-	Form "AD/B"
66631188M	WSMH/32-50/BT40	32	-	78	50	-	24	-	Form "AD/B"
66631203M	WSMH/40-100/BT40	40	-	88	100	-	27	-	Form "AD/B"
66631189M	WSMH/40-50/BT40	40	-	88	50	-	27	-	Form "AD/B"

For wrenches, see page 47.

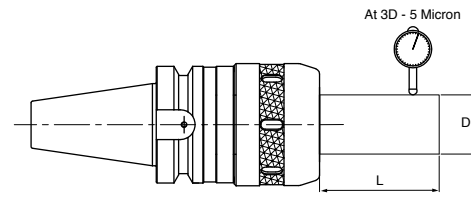
## Hi-Power Milling Chucks (HPMC)

- Very high clamping forces leads to increased productivity and tool life
- Roller bearing design provides high friction resistance and greater gripping torque
- Low run out accuracy - 5 micron @ 3 x tool diameter. Less wear on cutting tool edge leads to significant increase in tool life and tool performance
- Excellent finish on piece part machined surfaces due to less vibration
- Protective anti-corrosive coating on entire tool holder
- Sealed bearing mechanism of clamping nut, prevents dust and coolant entry and contamination of bearing clamping, extending the life of the tool holder

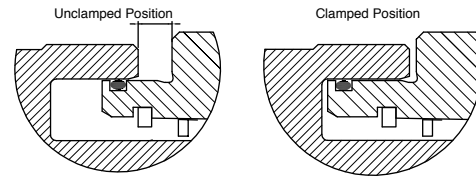
### Hi-Power Milling Chuck



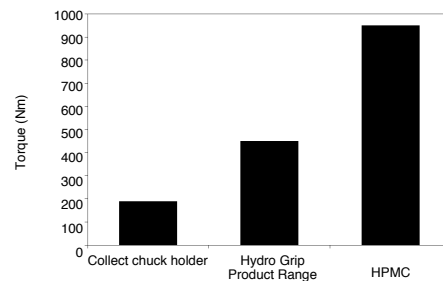
#### Run out accuracy



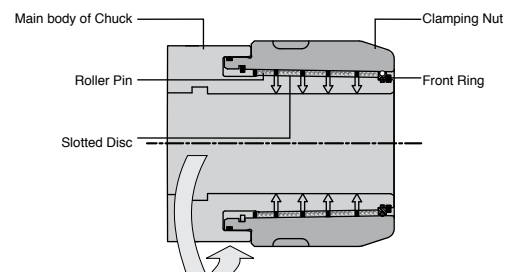
#### Dustproof & Waterproof

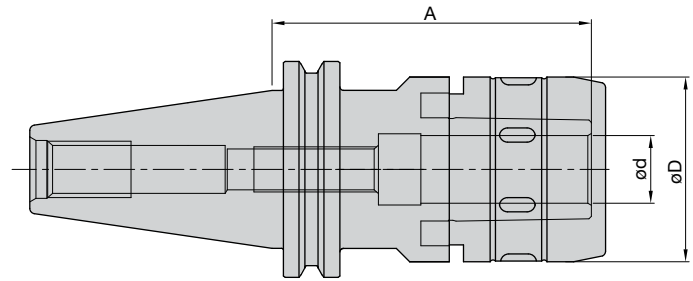


#### Clamping Torque comparison



#### Structure of Milling Chuck





**CAT40** Balanced to G6.3 @ 8,000 RPM

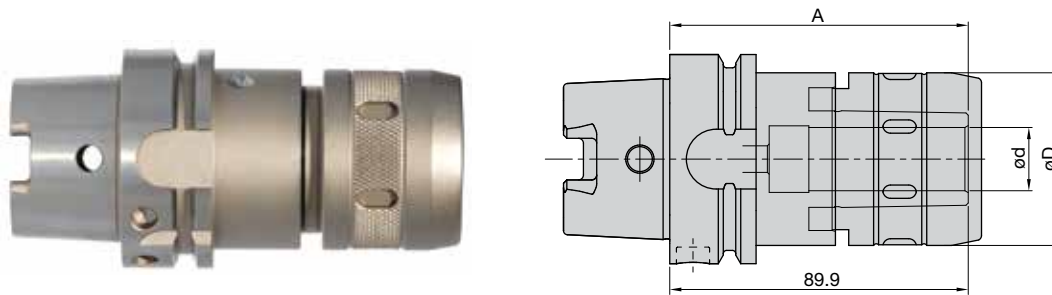
SAP No.	Designation	Dimensions					Coolant Supply
		d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	
66611335M	WHPMC/0.750"-3.54"/CAT40	19.05	0.75	52	89.9	3.54	Form "AD"
66611336M	WHPMC/1.000"-3.54"/CAT40	25.4	1.00	58	89.9	3.54	Form "AD"
66611337M	WHPMC/1.250"-4.25"/CAT40	31.75	1.25	66	108.0	4.25	Form "AD"
66611316M	WHPMC/25-90/CAT40	25	-	58	90	-	Form "AD"
66611317M	WHPMC/32-105/CAT40	32	-	66	105	-	Form "AD"

For wrenches, see page 47.

**CAT50** Balanced to G6.3 @ 8,000 RPM

SAP No.	Designation	Dimensions					Coolant Supply
		d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	
66611345M	WHPMC/0.750"-3.54"/CAT50	19.05	0.75	52	89.9	3.54	Form "AD"
66611346M	WHPMC/0.750"-6.50"/CAT50	19.05	0.75	52	165.1	6.50	Form "AD"
66611338M	WHPMC/1.000"-3.54"/CAT50	25.4	1.00	58	89.9	3.54	Form "AD"
66611347M	WHPMC/1.000"-5.31"/CAT50	25.4	1.00	58	134.9	5.31	Form "AD"
66611348M	WHPMC/1.250"-4.13"/CAT50	31.75	1.25	66	104.9	4.13	Form "AD"
66611349M	WHPMC/1.250"-5.31"/CAT50	31.75	1.25	66	134.9	5.31	Form "AD"
66611350M	WHPMC/2.000"-4.72"/CAT50	50.8	2.00	103	119.9	4.72	Form "AD"
66611351M	WHPMC/2.000"-5.90"/CAT50	50.8	2.00	103	149.9	5.90	Form "AD"
66611318M	WHPMC/32-105/CAT50	32	-	58	105	-	Form "AD"
66611341M	WHPMC/50-135/CAT50	50	-	103	135	-	Form "AD"

For wrenches, see page 47.



HSK-A63		Balanced to G6.3 @ 8,000 RPM					
SAP No.	Designation	Dimensions					Coolant Supply
		d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	
66611330M	WHPMC/0.750"-3.54"/HSK-A63	19.05	0.75	52	89.9	3.54	Form "AD"
66611331M	WHPMC/1.000"-4.13"/HSK-A63	25.4	1.00	58	104.9	4.13	Form "AD"
66611333M	WHPMC/1.250"-4.72"/HSK-A63	31.75	1.25	66	119.9	4.72	Form "AD"
66611311M	WHPMC/20-90/HSK-A63	20	-	52	90	-	Form "AD"
66611312M	WHPMC/25-105/HSK-A63	25	-	58	105	-	Form "AD"
66611313M	WHPMC/32-135/HSK-A63	32	-	66	135	-	Form "AD"

For coolant tubes, see page 46.

For coolant tube wrenches, see page 47.

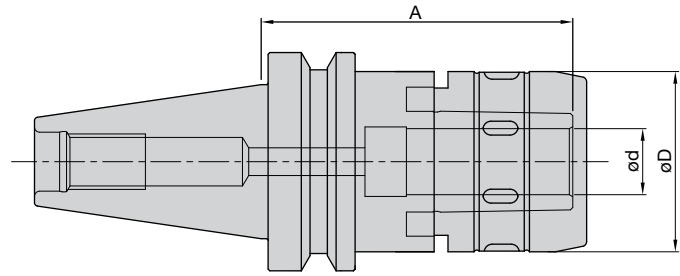
HSK-A100		Balanced to G6.3 @ 15,000 RPM					
SAP No.	Designation	Dimensions					Coolant Supply
		d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	
66611374M	WHPMC/0.750"-3.94"/HSK-A100	-	0.750	52	-	3.94"	Form "AD"
66611375M	WHPMC/1.000"-4.53"/HSK-A100	-	1.000	58	-	4.53"	Form "AD"
66611376M	WHPMC/1.250"-5.31"/HSK-A100	-	1.250	66	-	5.31"	Form "AD"
66611327M	WHPMC/20-100/HSK-A100	20	-	52	100mm	-	Form "AD"
66611314M	WHPMC/25-115/HSK-A100	25	-	58	115mm	-	Form "AD"
66611313M	WHPMC/32-135/HSK-A100	32	-	66	135mm	-	Form "AD"

For coolant tubes, see page 46.

For coolant tube wrenches, see page 47.







**BT30** Balanced to G6.3 @ 8,000 RPM

SAP No.	Designation	Dimensions					Coolant Supply
		d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	
66611352M	WHPMC/0.750"-3.54"/BT30	19.05	0.75	52	89.9	3.54	Form "AD"
66611301M	WHPMC/20-90/BT30	20	-	52	90	-	Form "AD"
66611302M	WHPMC/25-90/BT30	25	-	58	90	-	Form "AD"
66611303M	WHPMC/32-105/BT30	32	-	66	105	-	Form "AD"

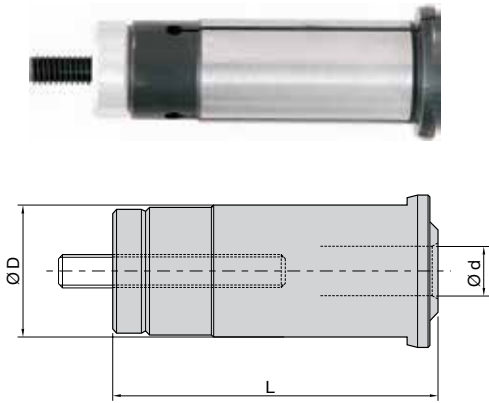
For wrenches, see page 47.

**BT40** Balanced to G6.3 @ 8,000 RPM

SAP No.	Designation	Dimensions					Coolant Supply
		d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	
66611353M	WHPMC/0.750"-3.54"/BT40	19.05	0.75	52	89.9	3.54	Form "AD"
66611354M	WHPMC/1.000"-3.54"/BT40	25.4	1.00	58	89.9	3.54	Form "AD"
66611355M	WHPMC/1.250"-4.25"/BT40	31.75	1.25	66	108.0	4.25	Form "AD"
66611304M	WHPMC/20-90/BT40	20	-	52	90	-	Form "AD"
66611305M	WHPMC/25-90/BT40	25	-	58	90	-	Form "AD"
66611306M	WHPMC/32-105/BT40	32	-	66	105	-	Form "AD"

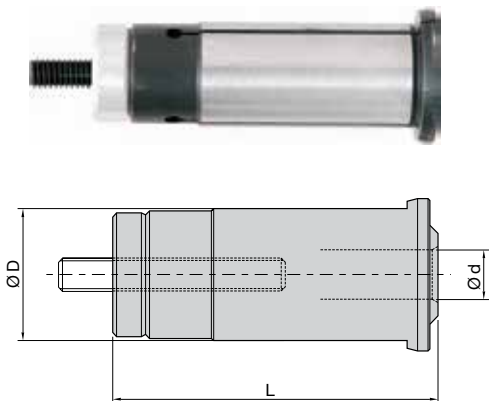
For wrenches, see page 47.

Adjustable Straight Collets for Milling Chucks (Metric)



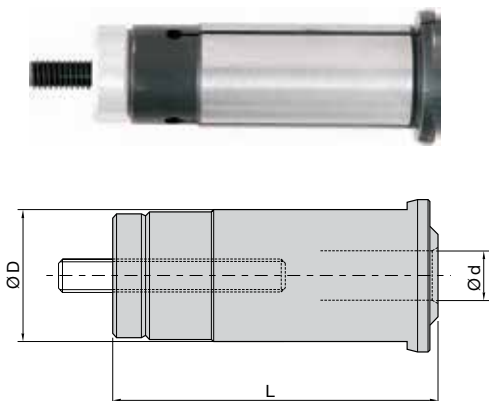
SAP No.	Designation	Dimensions (mm)		
		D	d	L
66611401M	WSC20-6	20	6	63
66611402M	WSC20-8	20	8	63
66611403M	WSC20-10	20	10	63
66611404M	WSC20-12	20	12	63
66611405M	WSC20-16	20	16	63
66611406M	WSC25-6	25	6	73
66611407M	WSC25-8	25	8	73
66611408M	WSC25-10	25	10	73
66611409M	WSC25-12	25	12	73
66611410M	WSC25-16	25	16	73
66611411M	WSC25-18	25	18	73
66611412M	WSC25-20	25	20	73
66611413M	WSC32-6	32	6	79
66611414M	WSC32-8	32	8	79
66611415M	WSC32-10	32	10	79
66611416M	WSC32-12	32	12	79
66611417M	WSC32-16	32	16	79
66611418M	WSC32-18	32	18	79
66611419M	WSC32-20	32	20	79
66611420M	WSC32-25	32	25	79

Adjustable Straight Collets for Milling Chucks (Inch)

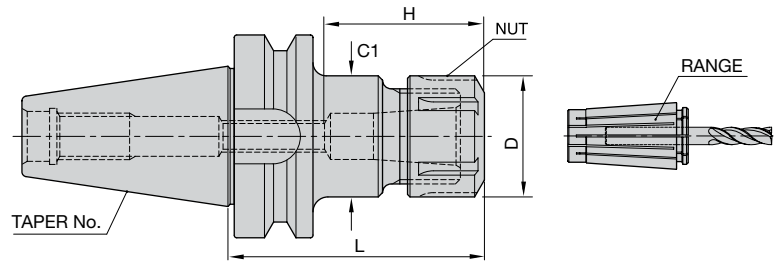


SAP No.	Designation	Dimensions (inch)		
		D	d	L
66611460M	WSC 0.750"-0.250"	0.750	0.250	2.48
66611461M	WSC 0.750"-0.312"	0.750	0.312	2.48
66611462M	WSC 0.750"-0.375"	0.750	0.375	2.48
66611463M	WSC 0.750"-0.437"	0.750	0.437	2.48
66611464M	WSC 0.750"-0.500"	0.750	0.500	2.48
66611465M	WSC 0.750"-0.562"	0.750	0.562	2.48
66611466M	WSC 0.750"-0.625"	0.750	0.625	2.48
66611467M	WSC 1.000"-0.250"	1.000	0.250	2.87
66611468M	WSC 1.000"-0.312"	1.000	0.312	2.87
66611469M	WSC 1.000"-0.375"	1.000	0.375	2.87
66611470M	WSC 1.000"-0.437"	1.000	0.437	2.87
66611471M	WSC 1.000"-0.500"	1.000	0.500	2.87
66611472M	WSC 1.000"-0.562"	1.000	0.562	2.87
66611473M	WSC 1.000"-0.625"	1.000	0.625	2.87
66611474M	WSC 1.000"-0.750"	1.000	0.750	2.87
66611475M	WSC 1.250"-0.250"	1.250	0.250	3.11
66611476M	WSC 1.250"-0.312"	1.250	0.312	3.11
66611477M	WSC 1.250"-0.375"	1.250	0.375	3.11
66611478M	WSC 1.250"-0.437"	1.250	0.437	3.11
66611479M	WSC 1.250"-0.500"	1.250	0.500	3.11
66611480M	WSC 1.250"-0.562"	1.250	0.562	3.11
66611481M	WSC 1.250"-0.625"	1.250	0.625	3.11
66611482M	WSC 1.250"-0.750"	1.250	0.750	3.11
66611483M	WSC 1.250"-0.875"	1.250	0.875	3.11
66611484M	WSC 1.250"-1.000"	1.250	1.000	3.11

Adjustable Straight Collets for Milling Chucks (Metric to Inch)



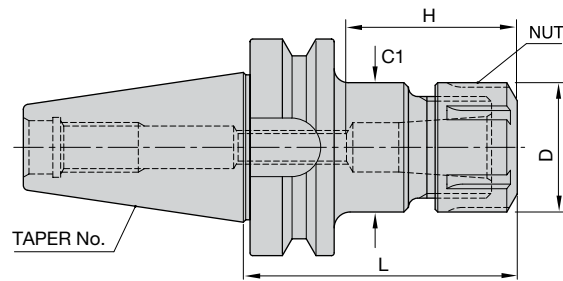
SAP No.	Designation	Dimensions		
		D	d	L
66611485M	WSC32-0.375"	32	0.375	3.11
66611486M	WSC32-0.500"	32	0.500	3.11
66611487M	WSC32-0.625"	32	0.625	3.11
66611488M	WSC32-0.750"	32	0.750	3.11
66611489M	WSC32-1.000"	32	1.000	3.11



Super Collet Chuck					
SAP No.	Designation	Collet	Dimensions (inch)		
			L	H	D
<b>CAT40</b>					
66653501M	WSCH/SC06-90/CAT40	SC06	3.54	1.97	0.77
66653502M	WSCH/SC06-120/CAT40	SC06	4.72	2.36	0.77
66653503M	WSCH/SC06-150/CAT40	SC06	5.91	2.36	0.77
66653504M	WSCH/SC10-90/CAT40	SC10	3.54	1.97	1.08
66653505M	WSCH/SC10-120/CAT40	SC10	4.72	2.76	1.08
66653506M	WSCH/SC10-150/CAT40	SC10	5.91	2.76	1.08
66653507M	WSCH/SC10-180/CAT40	SC10	7.09	2.87	1.08
66653508M	WSCH/SC16-90/CAT40	SC16	3.54	2.12	1.58
66653509M	WSCH/SC16-120/CAT40	SC16	4.72	3.30	1.58
66653510M	WSCH/SC16-150/CAT40	SC16	5.91	4.48	1.58
66653511M	WSCH/SC16-180/CAT40	SC16	7.09	2.87	1.58
66653512M	WSCH/SC25-90/CAT40	SC25	3.54	2.79	2.17
66653513M	WSCH/SC25-120/CAT40	SC25	4.72	3.97	2.17
<b>CAT50</b>					
66653514M	WSCH/SC06-105/CAT50	SC06	4.13	2.36	0.77
66653515M	WSCH/SC06-135/CAT50	SC06	5.31	2.36	0.77
66653516M	WSCH/SC06-165/CAT50	SC06	6.50	2.36	0.77
66653517M	WSCH/SC06-195/CAT50	SC06	7.68	2.36	0.77
66653518M	WSCH/SC10-105/CAT50	SC10	4.13	2.36	1.08
66653519M	WSCH/SC10-135/CAT50	SC10	5.31	2.95	1.08
66653520M	WSCH/SC10-165/CAT50	SC10	6.50	2.95	1.08
66653521M	WSCH/SC10-195/CAT50	SC10	7.68	2.95	1.08
66653522M	WSCH/SC10-225/CAT50	SC10	8.86	2.95	1.08
66653523M	WSCH/SC16-105/CAT50	SC16	4.13	2.55	1.58
66653524M	WSCH/SC16-135/CAT50	SC16	5.31	3.54	1.58
66653525M	WSCH/SC16-165/CAT50	SC16	6.50	3.54	1.58
66653526M	WSCH/SC16-195/CAT50	SC16	7.68	3.54	1.58
66653527M	WSCH/SC25-105/CAT50	SC25	4.13	2.55	2.17
66653528M	WSCH/SC25-135/CAT50	SC25	5.31	3.74	2.17
66653529M	WSCH/SC25-165/CAT50	SC25	6.50	4.92	2.17
66653530M	WSCH/SC25-195/CAT50	SC25	7.68	6.10	2.17

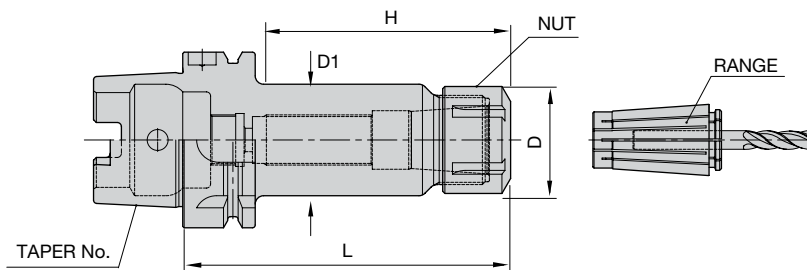
For wrenches, see page 47.

## Super Collet Chucks



Super Collet Chuck					
SAP No.	Designation	Range	Dimensions (inch)		
			L	H	D
<b>BT30</b>					
66653531M	WSCH/SC06-60/BT30	SC06	2.36	1.30	0.77
66653532M	WSCH/SC06-90/BT30	SC06	3.54	2.20	0.77
66653533M	WSCH/SC10-45/BT30	SC10	1.77	0.87	1.08
66653534M	WSCH/SC10-60/BT30	SC10	2.36	1.38	1.08
66653535M	WSCH/SC10-90/BT30	SC10	3.54	2.56	1.08
66653536M	WSCH/SC16-60/BT30	SC16	2.36	1.46	1.58
66653537M	WSCH/SC16-90/BT30	SC16	3.54	2.64	1.58
66653538M	WSCH/SC25-90/BT30	SC25	3.54	2.68	2.17
<b>BT40</b>					
66653539M	WSCH/SC06-90/BT40	SC06	3.54	2.36	0.77
66653540M	WSCH/SC06-120/BT40	SC06	4.72	2.36	0.77
66653541M	WSCH/SC06-150/BT40	SC06	5.91	2.36	0.77
66653542M	WSCH/SC10-90/BT40	SC10	3.54	2.36	1.08
66653543M	WSCH/SC10-120/BT40	SC10	4.72	2.76	1.08
66653544M	WSCH/SC10-150/BT40	SC10	5.91	2.87	1.08
66653545M	WSCH/SC10-180/BT40	SC10	7.09	-	1.08
66653546M	WSCH/SC16-90/BT40	SC16	3.54	2.28	1.58
66653547M	WSCH/SC16-120/BT40	SC16	4.72	3.46	1.58
66653548M	WSCH/SC16-150/BT40	SC16	5.91	4.65	1.58
66653549M	WSCH/SC16-180/BT40	SC16	7.09	6.02	1.58
66653550M	WSCH/SC25-75/BT40	SC25	2.95	1.85	2.17
66653551M	WSCH/SC25-90/BT40	SC25	3.54	2.40	2.17
66653552M	WSCH/SC25-120/BT40	SC25	4.72	3.58	2.17

For wrenches, see page 47.



Super Collet Chuck					
SAP No.	Designation	Range	Dimensions (inch)		
			L	H	D
<b>HSK63A</b>					
66653553M	WSCH/SC06-100/HSK-A63	SC06	3.94	2.64	0.77
66653554M	WSCH/SC06-120/HSK-A63	SC06	4.72	2.64	0.77
66653555M	WSCH/SC06-150/HSK-A63	SC06	5.91	4.21	0.77
66653556M	WSCH/SC10-105/HSK-A63	SC10	4.13	2.83	1.08
66653557M	WSCH/SC10-120/HSK-A63	SC10	4.72	2.91	1.08
66653558M	WSCH/SC10-150/HSK-A63	SC10	5.91	4.50	1.08
66653559M	WSCH/SC16-120/HSK-A63	SC16	4.72	3.54	1.58
66653560M	WSCH/SC16-150/HSK-A63	SC16	5.91	4.68	1.58
66653561M	WSCH/SC25-135/HSK-A63	SC25	5.31	4.29	2.17
<b>HSK100A</b>					
66653562M	WSCH/SC06-105/HSK-A100	SC06	4.13	2.44	0.77
66653563M	WSCH/SC10-105/HSK-A100	SC10	4.13	2.24	1.08
66653564M	WSCH/SC10-120/HSK-A100	SC10	4.72	2.91	1.08
66653565M	WSCH/SC10-150/HSK-A100	SC10	5.91	3.15	1.08
66653566M	WSCH/SC10-200/HSK-A100	SC10	7.87	2.95	1.08
66653567M	WSCH/SC16-120/HSK-A100	SC16	4.72	3.39	1.58
66653568M	WSCH/SC16-150/HSK-A100	SC16	5.91	3.54	1.58
66653569M	WSCH/SC16-200/HSK-A100	SC16	7.87	3.54	1.58
66653570M	WSCH/SC25-145/HSK-A100	SC25	5.71	4.37	2.17

For coolant tubes, see page 46.

For coolant tube wrenches, see page 47.



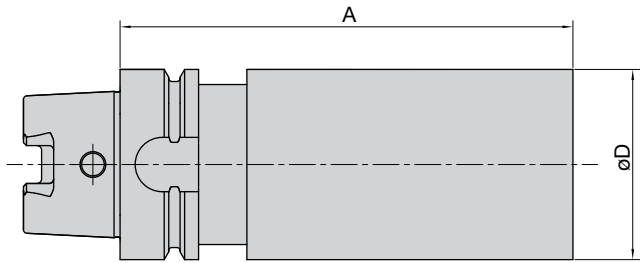
Super Collet Chuck							
SAP Number	Designation	Collet Series	Collet Range (mm)	SAP Number	Designation	Collet Series	Collet Range (mm)
66653701M	SC06-1.0	SC06	0.9 - 1.0	66653729M	SC16-3.0	SC16	2.8 - 3.0
66653702M	SC06-1.5	SC06	1.3 - 1.5	66653730M	SC16-3.5	SC16	3.0 - 3.5 (1/8")
66653703M	SC06-2.0	SC06	1.8 - 2.0	66653731M	SC16-4.0	SC16	3.5 - 4.0 (5/32")
66653704M	SC06-2.5	SC06	2.3 - 2.5 (3/32")	66653732M	SC16-4.5	SC16	4.0 - 4.5
66653705M	SC06-3.0	SC06	2.8 - 3.0	66653733M	SC16-5.0	SC16	4.5 - 5.0 (3/16")
66653706M	SC06-3.5	SC06	3.0 - 3.5 (1/8")	66653734M	SC16-5.5	SC16	5.0 - 5.5
66653707M	SC06-4.0	SC06	3.5 - 4.0	66653735M	SC16-6.0	SC16	5.5 - 6.0
66653708M	SC06-4.5	SC06	4.0 - 4.5	66653736M	SC16-6.5	SC16	6.0 - 6.5 (1/4")
66653709M	SC06-5.0	SC06	4.5 - 5.0	66653737M	SC16-7.0	SC16	6.5 - 7.0
66653710M	SC06-5.5	SC06	5.0 - 5.5	66653738M	SC16-7.5	SC16	7.0 - 7.5 (9/32")
66653711M	SC06-6.0	SC06	5.5 - 6.0 (7/32")	66653739M	SC16-8.0	SC16	7.5 - 8.0 (5/16")
66653712M	SC10-2.0	SC10	1.8 - 2.0	66653740M	SC16-8.5	SC16	8.0 - 8.5
66653713M	SC10-2.5	SC10	2.3 - 2.5 (3/32")	66653741M	SC16-9.0	SC16	8.5 - 9.0 (11/32")
66653714M	SC10-3.0	SC10	2.8 - 3.0	66653742M	SC16-9.5	SC16	9.0 - 9.5
66653715M	SC10-3.5	SC10	3.0 - 3.5 (1/8")	66653743M	SC16-10.0	SC16	9.5 - 10.0 (3/8")
66653716M	SC10-4.0	SC10	3.5 - 4.0 (5/32")	66653744M	SC16-10.5	SC16	10.0 - 10.5 (13/32")
66653717M	SC10-4.5	SC10	4.0 - 4.5	66653745M	SC16-11.0	SC16	10.5 - 11.0
66653718M	SC10-5.0	SC10	4.5 - 5.0 (3/16")	66653746M	SC16-11.5	SC16	11.0 - 11.5 (7/16")
66653719M	SC10-5.5	SC10	5.0 - 5.5	66653747M	SC16-12.0	SC16	11.5 - 12.0
66653720M	SC10-6.0	SC10	5.5 - 6.0	66653748M	SC16-12.5	SC16	12.0 - 12.5
66653721M	SC10-6.5	SC10	6.0 - 6.5 (1/4")	66653749M	SC16-13.0	SC16	12.5 - 13.0 (1/2")
66653722M	SC10-7.0	SC10	6.5 - 7.0	66653750M	SC16-13.5	SC16	13.0 - 13.5
66653723M	SC10-7.5	SC10	7.0 - 7.5 (9/32")	66653751M	SC16-14.0	SC16	13.5 - 14.0
66653724M	SC10-8.0	SC10	7.5 - 8.0 (5/16")	66653752M	SC16-14.5	SC16	14.0 - 14.5 (9/16")
66653725M	SC10-8.5	SC10	8.0 - 8.5	66653753M	SC16-15.0	SC16	14.5 - 15.0
66653726M	SC10-9.0	SC10	8.5 - 9.0 (11/32")	66653754M	SC16-15.5	SC16	15.0 - 15.5
66653727M	SC10-9.5	SC10	9.0 - 9.5	66653755M	SC16-16.0	SC16	15.5 - 16.0 (5/8")
66653728M	SC10-10.0	SC10	9.5 - 10.0 (3/8")				



Super Collet Chuck							
SAP Number	Designation	Collet Series	Collet Range (mm)	SAP Number	Designation	Collet Series	Collet Range (mm)
66653760M	SC25-6.0	SC25	5.5 - 6.0	66653785M	SC25-18.5	SC25	18.0 - 18.5
66653761M	SC25-6.5	SC25	6.0 - 6.5 (1/4")	66653786M	SC25-19.0	SC25	18.5 - 19.0
66653762M	SC25-7.0	SC25	6.5 - 7.0	66653787M	SC25-19.5	SC25	19.0 - 19.5 (3/4")
66653763M	SC25-7.5	SC25	7.0 - 7.5 (9/32")	66653788M	SC25-20.0	SC25	19.5 - 20.0
66653764M	SC25-8.0	SC25	7.5 - 8.0 (5/16")	66653789M	SC25-20.5	SC25	20.0 - 20.5
66653765M	SC25-8.5	SC25	8.0 - 8.5	66653790M	SC25-21.0	SC25	20.5 - 21.0 (13/16")
66653766M	SC25-9.0	SC25	8.5 - 9.0 (11/32")	66653791M	SC25-21.5	SC25	21.0 - 21.5
66653767M	SC25-9.5	SC25	9.0 - 9.5	66653792M	SC25-22.0	SC25	21.5 - 22.0
66653768M	SC25-10.0	SC25	9.5 - 10.0 (3/8")	66653793M	SC25-22.5	SC25	22.0 - 22.5 (7/8")
66653769M	SC25-10.5	SC25	10.0 - 10.5 (13/32")	66653794M	SC25-23.0	SC25	22.5 - 23.0
66653770M	SC25-11.0	SC25	10.5 - 11.0	66653795M	SC25-23.5	SC25	23.0 - 23.5
66653771M	SC25-11.5	SC25	11.0 - 11.5 (7/16")	66653796M	SC25-24.0	SC25	23.5 - 24.0
66653772M	SC25-12.0	SC25	11.5 - 12.0	66653797M	SC25-24.5	SC25	24.0 - 24.5
66653773M	SC25-12.5	SC25	12.0 - 12.5	66653798M	SC25-25.0	SC25	24.5 - 25.0
66653774M	SC25-13.0	SC25	12.5 - 13.0 (1/2")	66653799M	SC25-25.4	SC25	25.0 - 25.4 (1.0")
66653775M	SC25-13.5	SC25	13.0 - 13.5				
66653776M	SC25-14.0	SC25	13.5 - 14.0				
66653777M	SC25-14.5	SC25	14.0 - 14.5 (9/16")				
66653778M	SC25-15.0	SC25	14.5 - 15.0				
66653779M	SC25-15.5	SC25	15.0 - 15.5				
66653780M	SC25-16.0	SC25	15.5 - 16.0 (5/8")				
66653781M	SC25-16.5	SC25	16.0 - 16.5				
66653782M	SC25-17.0	SC25	16.5 - 17.0				
66653783M	SC25-17.5	SC25	17.0 - 17.5 (11/16")				
66653784M	SC25-18.0	SC25	17.5 - 18.0				

## Blank Bars

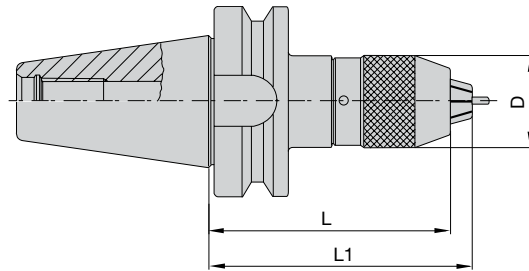
BILZ



CAT, HSK, and BT Blank Bars

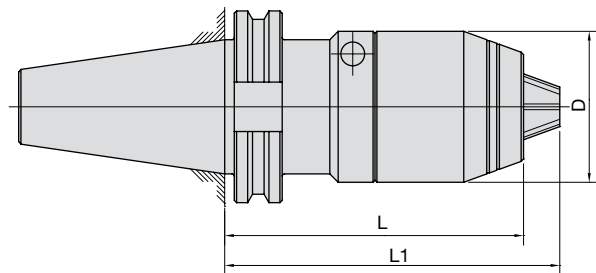
SAP No.	Designation	Taper	Dimensions (inches/mm)	
			D	A
66671224M	WBBB/63-250/CAT40	CAT40	2.48"/63mm	9.84"/250mm
66671225M	WBBB/63.5-300/CAT50	CAT50	2.50"/63.4mm	11.81"/300mm
66661448M	WBBB/35-150/HSK-A32	HSK32A	1.38"/35mm	5.91"/150mm
66671226M	WBBB/40-120/HSK-A32	HSK32A	1.57"/40mm	4.72"/120mm
66671227M	WBBB/40-120/HSK-A40	HSK40A	1.57"/40mm	4.72"/120mm
66661449M	WBBB/40-150/HSK-A40	HSK40A	1.57"/40mm	5.91"/150mm
66661450M	WBBB/52-200/HSK-A40	HSK40A	2.05"/52MM	7.87"/200mm
66671228M	WBBB/50-150/HSK-A50	HSK50A	1.97"/50mm	5.91"/150mm
66661451M	WBBB/52-200/HSK-A50	HSK50A	2.05"/52MM	7.87"/200mm
66661452M	WBBB/63-200/HSK-A50	HSK50A	2.48"/63mm	7.87"/200mm
66671229M	WBBB/63-150/HSK-A63	HSK63A	2.48"/63mm	5.91"/150mm
66661458M	WBBB/63-200/HSK-A63	HSK63A	2.48"/63mm	7.87"/200mm
66671195M	WBBB/80-250/HSK-A63	HSK63A	3.15"/80mm	9.84"/250mm
66671213M	WBBB/100-200/HSK-A80	HSK80A	3.94"/100mm	7.87"/200mm
66671214M	WBBB/97.5-250/HSK-A80	HSK80A	3.84"/97.5mm	9.84"/250mm
66661446M	WBBB/63-200/HSK-A100	HSK100A	2.48"/63mm	7.87"/200mm
66661447M	WBBB/80-250/HSK-A100	HSK100A	3.15"/80mm	9.84"/250mm
66661419M	WBBB/97.5-250/HSK-A100	HSK100A	3.84"/97.5mm	9.84"/250mm
66671230M	WBBB/100-250/HSK-A100	HSK100A	3.94"/100mm	9.84"/250mm
66671158M	WBBB/63-250/BT40	BT40	2.48"/63mm	9.84"/250mm





**NC Drill Chuck – BT30**

SAP No.	Designation	Taper	Dimensions (mm)				Weight (kg)
			Capacity	D	L (min)	L <sub>1</sub> (max)	
9890001	BT30-NPU8-70	BT30	0.3~8	36.5	70	75.7	0.80
9890002	BT30-NPU13-100	BT30	1~13	50.4	100	110	1.80



**NC Drill Chuck – CAT40 & CAT 50**

SAP No.	Designation	Taper	Dimensions (mm)			
			Capacity	D	D <sub>1</sub>	L <sub>1</sub>
9890003	NCDC/1-16-3.90/CAT40	CAT40	1mm-16mm	1.97	1.97	4.37
9890004	NCDC/1-16-3.31/CAT50	CAT50	1mm-16mm	3.31	1.97	3.78

**NC Drill Chuck – HSK**

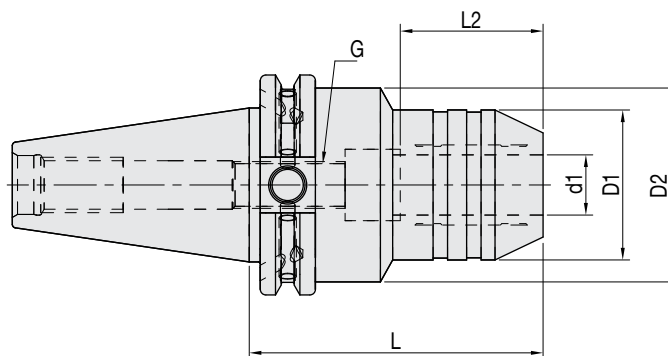
SAP No.	Designation	Taper	Dimensions (mm)			
			Capacity	D	D <sub>1</sub>	L <sub>1</sub>
9890005	NCDC/1-16-3.86/HSK-A63	HSK-A63	1mm-16mm	3.86	1.97	4.33
9890006	NCDC/1-16-3.86/HSK-F63	HSK-F63	1mm-16mm	3.86	1.97	4.33

# HYDRAULIC CHUCKS

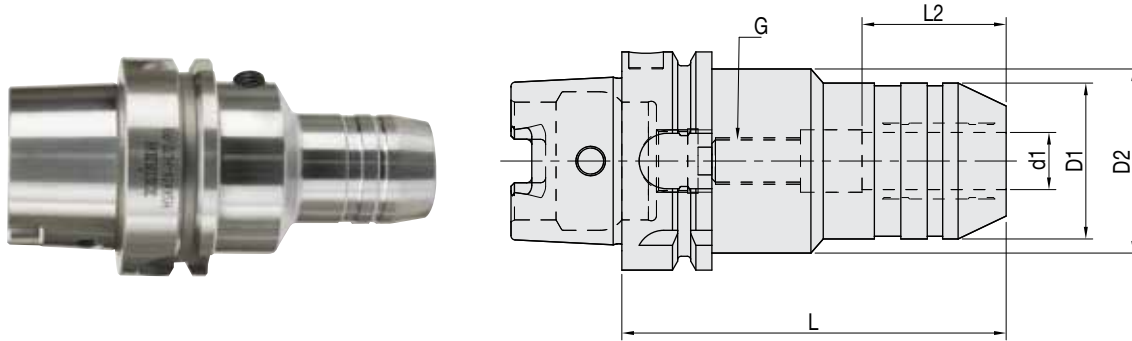
Hydraulic Chucks are ideal tool holders for machining processes that require high accuracy such as drills, reamers, ball endmills, end mills, diamond reamers and grinding tools. With a wide variety of tool diameters and projections to fit any application, they are available for all major interfaces. Hydraulic Chucks are the perfect tool holder for high precision machining in automotive, aerospace, medical, and die & mold.



VIEW  
THE  
WEBSITE

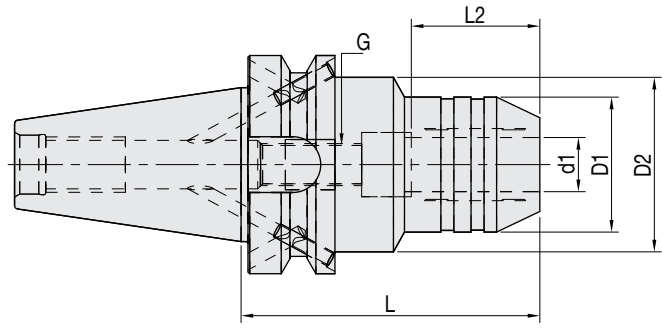


Hydraulic Chucks							
SAP No.	Designation	Dimensions (inch)					
		d1	D1	D2	L	L2	G
<b>CAT 40</b>							
9890007	BHC/.250-3.17/CAT40	0.250	0.87	1.02	3.17	1.18	M5X0.8
9890008	BHC/.250-4.33/CAT40	0.250	0.87	1.02	4.33	1.18	M5X0.8
9890009	BHC/.375-3.17/CAT40	0.375	1.02	1.18	3.17	1.26	M8X1.0
9890010	BHC/.375-4.33/CAT40	0.375	1.02	1.18	4.33	1.26	M8X1.0
9890011	BHC/.500-3.17/CAT40	0.500	1.10	1.26	3.17	1.38	M10X1.0
9890012	BHC/.500-4.33/CAT40	0.500	1.10	1.26	4.33	1.38	M10X1.0
9890013	BHC/.625-3.17/CAT40	0.625	1.34	1.50	3.17	1.57	M12X1.0
9890014	BHC/.625-4.33/CAT40	0.625	1.34	1.50	4.33	1.57	M12X1.0
9890015	BHC/.750-3.17/CAT40	0.750	1.50	1.65	3.17	1.57	M16X1.0
9890017	BHC/.750-4.33/CAT40	0.750	1.50	1.65	4.33	1.57	M16X1.0
9890018	BHC/1.000-3.17/CAT40	1.000	1.81	1.97	3.17	1.89	M16X1.0
9890019	BHC/1.250-4.33/CAT40	1.250	2.20	2.36	4.33	2.17	M16X1.0
<b>CAT 50</b>							
9890020	BHC/.250-3.17/CAT50	0.250	0.87	1.02	3.17	1.18	M5X0.8
9890021	BHC/.375-3.17/CAT50	0.375	1.02	1.18	3.17	1.26	M8X1.0
9890022	BHC/.500-3.17/CAT50	0.500	1.10	1.26	3.17	1.38	M10X1.0
9890023	BHC/.625-3.17/CAT50	0.625	1.34	1.50	3.17	1.57	M12X1.0
9890024	BHC/.750-3.17/CAT50	0.750	1.50	1.65	3.17	1.57	M16X1.0



Hydraulic Chucks							
SAP No.	Designation	Dimensions (inch)					
		d1	D1	D2	L	L2	G
<b>HSK63A</b>							
9890025	BHC/.250-2.75/HSK-A63	0.250	1.02	1.97	2.76	0.94	M5X0.8
9890026	BHC/.375-3.15/HSK-A63	0.375	1.18	1.97	3.15	1.37	M8X1.0
9890027	BHC/.500-3.35/HSK-A63	0.500	1.26	1.97	3.35	1.57	M10X1.0
9890028	BHC/.625-3.54/HSK-A63	0.625	1.50	1.97	3.54	1.81	M12X1.0
9890029	BHC/.750-3.54/HSK-A63	0.750	1.65	1.97	3.54	1.89	M16X1.0
9890030	BHC/1.000-4.72/HSK-A63	1.000	2.24	2.48	4.72	2.32	M16X1.0
9890031	BHC/1.250-4.92/HSK-A63	1.250	2.52	2.95	4.92	2.48	M16X1.0
<b>HSK100A</b>							
9890032	BHC/.250-2.95/HSK-A100	0.250	1.02	1.97	2.95	0.94	M5X0.8
9890033	BHC/.375-3.54/HSK-A100	0.375	1.18	1.97	3.54	1.37	M8X1.0
9890034	BHC/.500-3.74/HSK-A100	0.500	1.26	1.97	3.74	1.57	M10X1.0
9890035	BHC/.625-3.94/HSK-A100	0.625	1.50	1.97	3.94	1.81	M12X1.0
9890036	BHC/.750-4.13/HSK-A100	0.750	1.65	1.97	4.13	1.89	M16X1.0
9890037	BHC/1.000-4.33/HSK-A100	1.000	2.24	2.48	4.33	2.32	M16X1.0
9890038	BHC/1.250-4.33/HSK-A100	1.250	2.52	2.95	4.33	2.48	M16X1.0

For HSK coolant tubes, see page 46.  
 For coolant tube wrenches, see page 47.



Hydraulic Chucks							
SAP No.	Designation	Dimensions (inch)					
		d1	D1	D2	L	L2	G
<b>BT30</b>							
9890039	BHC/.250-2.76/BT30	0.250	1.02	1.75	2.76	1.16	M5X0.8
9890040	BHC/.375-2.95/BT30	0.375	1.18	1.75	2.95	1.22	M8X1.0
9890041	BHC/.500-3.35/BT30	0.500	1.25	1.75	3.35	1.57	M10X1.0
9890042	BHC/.625-3.54/BT30	0.625	1.50	1.75	3.54	1.81	M12X1.0
9890043	BHC/.750-3.54/BT30	0.750	1.65	1.75	3.54	1.89	M16X1.0

# HARDWARE



**Clamping Nut – ER to DIN 6499 – Balanced**

Fig. 1

Fig. 2

SAP No.	Designation	Dimensions				Fig
		Size	D	L	G	
66691320M	ER16 - DIN 6499	1-10	28.0	17.5	M22x1.5	1
66692123M	ER20 - DIN 6499	1-13	34.0	19.0	M25x1.5	1
66691321M	ER25 - DIN 6499	2-16	42.0	20.0	M32x1.5	2
66691322M	ER32 - DIN 6499	2-20	50.0	22.5	M40x1.5	2
66691323M	ER40 - DIN 6499	3-26	63.0	25.5	M50x1.5	2

**Clamping Nut – “Mini” ER**

Fig. 1

Fig. 2

SAP No.	Designation	Dimensions				Fig
		Size	D	L	G	
66691911M	ER11M	1-7	16.0	11.3	M13x0.75	-
66691818M	ER16M	1-10	22.0	17.0	M19x1.0	-
66692124M	ER20M	1-13	28.0	19.0	M24x1.0	-
66691819M	ER25M	2-16	35.0	20.0	M30x1.0	-

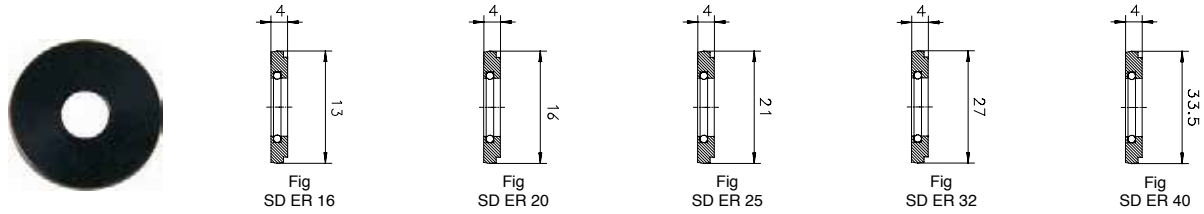
**Clamping Nut – ER for Sealing Discs**

Fig. 1

Fig. 2

SAP No.	Designation	Dimensions				Fig
		Size	D	L	G	
99971327M	ER16-IC	1-10	28.0	22.5	M22x1.5	1
66692125M	ER20-IC	1-13	34.0	24.0	M25x1.5	1
99941678M	ER25-IC	2-16	42.0	25.0	M32x1.5	2
99933897M	ER32-IC	2-20	50.0	27.5	M40x1.5	2
99979974M	ER40-IC	3-26	63.0	30.5	M50x1.5	2

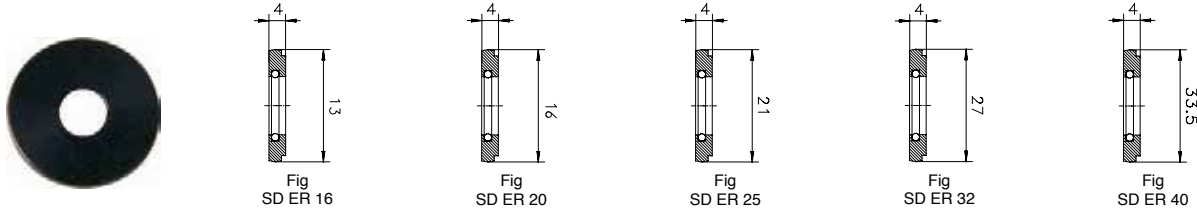
Sealing Discs for ER-IC Clamping Nuts



SAP No.	Designation	Dimensions	
		Sealing Capacity (mm)	Sealing Capacity (inch)
<b>Sealing Discs for ER16-IC Clamping Nuts (Inch &amp; Metric)</b>			
3916.00300	DS/ER16-3.0-2.5mm	3.0-2.5	0.1181"-0.0984"
3916.00350	DS/ER16-3.5-3.0mm	3.5-3.0	0.1378"-0.1181"
3916.00400	DS/ER16-4.0-3.5mm	4.0-3.5	0.1575"-0.1378"
3916.00450	DS/ER16-4.5-4.0mm	4.5-4.0	0.1772"-0.1575"
3916.00500	DS/ER16-5.0-4.5mm	5.0-4.5	0.1969"-0.1772"
3916.00550	DS/ER16-5.5-5.0mm	5.5-5.0	0.2165"-0.1969"
3916.00600	DS/ER16-6.0-5.5mm	6.0-5.5	0.2362"-0.2160"
3916.00650	DS/ER16-6.5-6.0mm	6.5-6.0	0.2559"-0.2362"
3916.00700	DS/ER16-7.0-6.5mm	7.0-6.5	0.2756"-0.2559"
3916.00750	DS/ER16-7.5-7.0mm	7.5-7.0	0.2953"-0.2756"
3916.00800	DS/ER16-8.0-7.5mm	8.0-7.5	0.3150"-0.2953"
3916.00850	DS/ER16-8.5-8.0mm	8.5-8.0	0.3347"-0.3150"
3916.00900	DS/ER16-9.0-8.5mm	9.0-8.5	0.3543"-0.3347"
3916.00950	DS/ER16-9.5-9.0mm	9.5-9.0	0.3740"-0.3543"
3916.01000	DS/ER16-10.0-9.5mm	10.0-9.5	0.3937"-0.3740"
<b>Sealing Discs for ER20-IC Clamping Nuts (Inch &amp; Metric)</b>			
3920.00300	DS/ER20-3.0-2.5mm	3.0-2.5	0.1181"-0.0984"
3920.00350	DS/ER20-3.5-3.0mm	3.5-3.0	0.1378"-0.1181"
3920.00400	DS/ER20-4.0-3.5mm	4.0-3.5	0.1575"-0.1378"
3920.00450	DS/ER20-4.5-4.0mm	4.5-4.0	0.1772"-0.1575"
3920.00500	DS/ER20-5.0-4.5mm	5.0-4.5	0.1969"-0.1772"
3920.00550	DS/ER20-5.5-5.0mm	5.5-5.0	0.2165"-0.1969"
3920.00600	DS/ER20-6.0-5.5mm	6.0-5.5	0.2362"-0.2160"
3920.00650	DS/ER20-6.5-6.0mm	6.5-6.0	0.2559"-0.2362"
3920.00700	DS/ER20-7.0-6.5mm	7.0-6.5	0.2756"-0.2559"
3920.00750	DS/ER20-7.5-7.0mm	7.5-7.0	0.2953"-0.2756"
3920.00800	DS/ER20-8.0-7.5mm	8.0-7.5	0.3150"-0.2953"
3920.00850	DS/ER20-8.5-8.0mm	8.5-8.0	0.3347"-0.3150"
3920.00900	DS/ER20-9.0-8.5mm	9.0-8.5	0.3543"-0.3347"
3920.00950	DS/ER20-9.5-8.0mm	9.5-9.0	0.3740"-0.3543"
3920.01000	DS/ER20-10.0-9.5mm	10.0-9.5	0.3937"-0.3740"
3920.01050	DS/ER20-10.5-10mm	10.5-10.0	0.4134"-0.3937"
3920.01100	DS/ER20-11.0-10.5mm	11.0-10.5	0.4330"-0.4134"
3920.01150	DS/ER20-11.5-11.0mm	11.5-11.0	0.4528"-0.4330"
3920.01200	DS/ER20-12.0-11.5mm	12.0-11.5	0.4724"-0.4528"
3920.01250	DS/ER20-12.5-12.0mm	12.5-12.0	0.4921"-0.4724"
3920.01300	DS/ER20-13.0-12.5mm	13.0-12.5	0.5118"-0.4921"
<b>Sealing Disc for ER25-IC Clamping Nuts (Inch &amp; Metric)</b>			
3925.00300	DS/ER25-3.0-2.5mm	3.0-2.5	0.1181"-0.0984"
3925.00350	DS/ER25-3.5-3.0mm	3.5-3.0	0.1378"-0.1181"
3925.00400	DS/ER25-4.0-3.5mm	4.0-3.5	0.1575"-0.1378"
3925.00450	DS/ER25-4.5-4.0mm	4.5-4.0	0.1772"-0.1575"
3925.00500	DS/ER25-5.0-4.5mm	5.0-4.5	0.1969"-0.1772"
3925.00550	DS/ER25-5.5-5.0mm	5.5-5.0	0.2165"-0.1969"

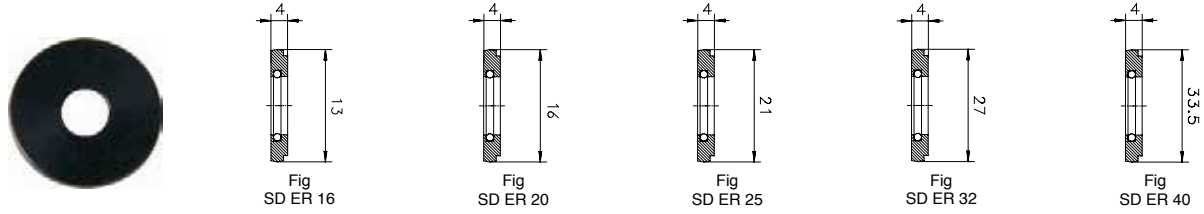


**Sealing Discs for ER-IC Clamping Nuts**



SAP No.	Designation	Dimensions	
		Sealing Capacity (mm)	Sealing Capacity (inch)
3925-00600	DS/ER25-6.0-5.5mm	6.0-5.5	0.2362"-0.2160"
3925.00650	DS/ER25-6.5-6.0mm	6.5-6.0	0.2559"-0.2362"
3925.00700	DS/ER25-7.0-6.5mm	7.0-6.5	0.2756"-0.2559"
3925.00750	DS/ER25-7.5-7.0mm	7.5-7.0	0.2953"-0.2756"
3925.00800	DS/ER25-8.0-7.5mm	8.0-7.5	0.3150"-0.2953"
3925-00850	DS/ER25-8.5-8.0mm	8.5-8.0	0.3347"-0.3150"
3925-00900	DS/ER25-9.0-8.5mm	9.0-8.5	0.3543"-0.3347"
3925-00950	DS/ER25-9.5-9.0mm	9.5-9.0	0.3740"-0.3543"
3925-01000	DS/ER25-10.0-9.5mm	10.0-9.5	0.3937"-0.3740"
3925.01050	DS/ER25-10.5-10.0mm	10.5-10.0	0.4134"-0.3937"
3925.01100	DS/ER25-11.0-10.5mm	11.0-10.5	0.4330"-0.4134"
3925.01150	DS/ER25-11.5-11.0mm	11.5-11.0	0.4528"-0.4330"
3925.01200	DS/ER25-12.0-11.5mm	12.0-11.5	0.4724"-0.4528"
3925.01250	DS/ER25-12.5-12.0mm	12.5-12.0	0.4921"-0.4724"
3925.01300	DS/ER25-13.0-12.5mm	13.0-12.5	0.5118"-0.4921"
3925.01350	DS/ER25-13.5-13.0mm	13.5-13.0	0.5315"-0.5118"
3925.01400	DS/ER25-14.0-13.5mm	14.0-13.5	0.5512"-0.5315"
3925.01450	DS/ER25-14.5-14.0mm	14.5-14.0	0.5709"-0.5512"
3925.01500	DS/ER25-15.0-14.5mm	15.0-14.5	0.5905"-0.5709"
3925.01550	DS/ER25-15.5-15.0mm	15.5-15.0	0.6102"-0.5905"
3925.01600	DS/ER25-16.0-15.5mm	16.0-15.5	0.6300"-0.6102"
<b>Sealing Discs for ER32-IC Clamping Nuts ( Inch &amp; Metric)</b>			
3932.00300	DS/ER32-3.0-2.5mm	3.0-2.5	0.1181"-0.0984"
3932.00350	DS/ER32-3.5-3.0mm	3.5-3.0	0.1378"-0.1181"
3932.00400	DS/ER32-4.0-3.5mm	4.0-3.5	0.1575"-0.1378"
3932.00450	DS/ER32-4.5-4.0mm	4.5-4.0	0.1772"-0.1575"
3932.00500	DS/ER32-5.0-4.5mm	5.0-4.5	0.1969"-0.1772"
3932.00550	DS/ER32-5.5-5.0mm	5.5-5.0	0.2165"-0.1969"
3932.00600	DS/ER32-6.0-5.5mm	6.0-5.5	0.2362"-0.2160"
3932.00650	DS/ER32-6.5-6.0mm	6.5-6.0	0.2559"-0.2362"
3932.00700	DS/ER32-7.0-6.5mm	7.0-6.5	0.2756"-0.2559"
3932.00750	DS/ER32-7.5-7.0mm	7.5-7.0	0.2953"-0.2756"
3932.00800	DS/ER32-8.0-7.5mm	8.0-7.5	0.3150"-0.2953"
3932.00850	DS/ER32-8.5-8.0mm	8.5-8.0	0.3347"-0.3150"
3932.00900	DS/ER32-9.0-8.5mm	9.0-8.5	0.3543"-0.3347"
3932.00950	DS/ER32-9.5-9.0mm	9.5-9.0	0.3740"-0.3543"
3932.01000	DS/ER32-10.0-9.5mm	10.0-9.5	0.3937"-0.3740"
3932.01050	DS/ER32-10.5-10.0mm	10.5-10.0	0.4134"-0.3937"
3932.01100	DS/ER32-11.0-10.5mm	11.0-10.5	0.4330"-0.4134"
3932.01150	DS/ER32-11.5-11.0mm	11.5-11.0	0.4528"-0.4330"
3932.01200	DS/ER32-12.0-11.5mm	12.0-11.5	0.4724"-0.4528"
3932.01250	DS/ER32-12.5-12.0mm	12.5-12.0	0.4921"-0.4724"
3932.01300	DS/ER32-13.0-12.5mm	13.0-12.5	0.5118"-0.4921"
3932.01350	DS/ER32-13.5-13.0mm	13.5-13.0	0.5315"-0.5118"
3932.01400	DS/ER32-14.0-13.5mm	14.0-13.5	0.5512"-0.5315"

Sealing Discs for ER-IC Clamping Nuts



SAP No.	Designation	Dimensions	
		Sealing Capacity (mm)	Sealing Capacity (inch)
3932.01450	DS/ER32-14.5-14.0mm	14.5-14.0	0.5709"-0.5512"
3932.01500	DS/ER32-15.0-14.5mm	15.0-14.5	0.5905"-0.5709"
3932.01550	DS/ER32-15.5-15.0mm	15.5-15.0	0.6102"-0.5905"
3932.01600	DS/ER32-16.0-15.5mm	16.0-15.5	0.6300"-0.6102"
3932.01650	DS/ER32-16.5-16.0mm	16.5-16.0	0.6496"-0.6300"
3932.01700	DS/ER32-17.0-16.5mm	17.0-16.5	0.6693"-0.6496"
3932.01900	DS/ER32-19.0-18.5mm	19.0-18.5	0.7480"-0.7284"
3932.01950	DS/ER32-19.5-19.0mm	19.5-19.0	0.7677"-0.7480"
3932.02000	DS/ER32-20.0-19.5mm	20.0-19.5	0.7874"-0.7677"
<b>Sealing Discs for ER40-IC Clamping Nuts (Inch &amp; Metric)</b>			
3940.00300	DS/ER40-3.0-2.5mm	3.0-2.5	0.1181"-0.0984"
3940.00350	DS/ER40-3.5-3.0mm	3.5-3.0	0.1378"-0.1181"
3940.00400	DS/ER40-4.0-3.5mm	4.0-3.5	0.1575"-0.1378"
3940.00450	DS/ER40-4.5-4.0mm	4.5-4.0	0.1772"-0.1575"
3940.00500	DS/ER40-5.0-4.5mm	5.0-4.5	0.1969"-0.1772"
3940.00550	DS/ER40-5.5-5.0mm	5.5-5.0	0.2165"-0.1969"
3940.00600	DS/ER40-6.0-5.5mm	6.0-5.5	0.2362"-0.2160"
3940.00650	DS/ER40-6.5-6.0mm	6.5-6.0	0.2559"-0.2362"
3940.00700	DS/ER40-7.0-6.5mm	7.0-6.5	0.2756"-0.2559"
3940.00750	DS/ER40-7.5-7.0mm	7.5-7.0	0.2953"-0.2756"
3940.00800	DS/ER40-8.0-7.5mm	8.0-7.5	0.3150"-0.2953"
3940.00850	DS/ER40-8.5-8.0mm	8.5-8.0	0.3347"-0.3150"
3940.00900	DS/ER40-9.0-8.5mm	9.0-8.5	0.3543"-0.3347"
3940.00950	DS/ER40-9.5-9.0mm	9.5-9.0	0.3740"-0.3543"
3940.01000	DS/ER40-10.0-9.5mm	10.0-9.5	0.3937"-0.3740"
3940.01050	DS/ER40-10.5-10.0mm	10.5-10.0	0.4134"-0.3937"
3940.01100	DS/ER40-11.0-10.5mm	11.0-10.5	0.4330"-0.4134"
3940.01150	DS/ER40-11.5-11.0mm	11.5-11.0	0.4528"-0.4330"
3940.01200	DS/ER40-12.0-11.5mm	12.0-11.5	0.4724"-0.4528"
3940.01250	DS/ER40-12.5-12.0mm	12.5-12.0	0.4921"-0.4724"
3940.01300	DS/ER40-13.0-12.5mm	13.0-12.5	0.5118"-0.4921"
3940.01350	DS/ER40-13.5-13.0mm	13.5-13.0	0.5315"-0.5118"
3940.01400	DS/ER40-14.0-13.5mm	14.0-13.5	0.5512"-0.5315"
3940.01450	DS/ER40-14.5-14.0mm	14.5-14.0	0.5709"-0.5512"
3940.01500	DS/ER40-15.0-14.5mm	15.0-14.5	0.5905"-0.5709"
3940.01550	DS/ER40-15.5-15.0mm	15.5-15.0	0.6102"-0.5905"
3940.01600	DS/ER40-16.0-15.5mm	16.0-15.5	0.6300"-0.6102"
3940.01650	DS/ER40-16.5-16.0mm	16.5-16.0	0.6496"-0.6300"
3940.01700	DS/ER40-17.0-16.5mm	17.0-16.5	0.6693"-0.6496"
3940.01750	DS/ER40-17.5-17.0mm	17.5-17.0	0.6890"-0.6693"

**Sealing Discs for ER-IC Clamping Nuts**

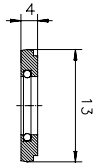


Fig SD ER 16

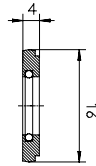


Fig SD ER 20

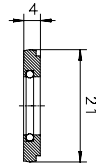


Fig SD ER 25

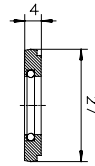


Fig SD ER 32

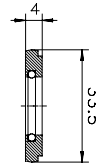


Fig SD ER 40

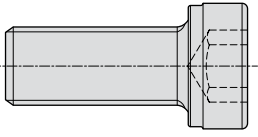
SAP No.	Designation	Dimensions	
		Sealing Capacity (mm)	Sealing Capacity (inch)
3940.01800	DS/ER40-18.0-17.5mm	18.0-17.5	0.7087"-0.6890"
3940.01850	DS/ER40-18.5-18.0mm	18.5-18.0	0.7284"-0.7087"
3940.01900	DS/ER40-19.0-18.5mm	19.0-18.5	0.7480"-0.7284"
3940.01950	DS/ER40-19.5-19.0mm	19.5-19.0	0.7677"-0.7480"
3940.02000	DS/ER40-20.0-19.5mm	20.0-19.5	0.7874"-0.7677"
3940.02050	DS/ER40-20.5-20.0mm	20.5-20.0	0.8070"-0.7874"
3940.02100	DS/ER40-21.0-20.5mm	21.0-20.5	0.8267"-0.8070"
3940.02150	DS/ER40-21.5-21.0mm	21.5-21.0	0.8464"-0.8267"
3940.02200	DS/ER40-22.0-21.5mm	22.0-21.5	0.8661"-0.8464"
3940.02250	DS/ER40-22.5-22.0mm	22.5-22.0	0.8857"-0.8661"
3940.02300	DS/ER40-23.0-22.5mm	23.0-22.5	0.9055"-0.8857"
3940.02350	DS/ER40-23.5-23.0mm	23.5-23.0	0.9251"-0.9055"
3940.02400	DS/ER40-24.0-23.5mm	24.0-23.5	0.9448"-0.9251"
3940.02450	DS/ER40-24.5-24.0mm	24.5-24.0	0.9645"-0.9448"
3940.02500	DS/ER40-25.0-24.5mm	25.0-24.5	0.9842"-0.9645"
3940.02550	DS/ER40-25.5-25.0mm	25.5-25.0	1.0039"-0.9842"
3940.02600	DS/ER40-26.0-25.5mm	26.0-25.5	1.0236"-1.0039"

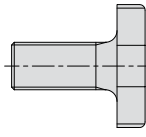
Drive Key for Inch Shell Mill Holders			
	SAP No.	Designation	For Size (inch)
	99964750M	64750	0.500"
	99964751M	64751	0.750"
	99964752M	64752	1.000"
	99964753M	64753	1.250"
	99964754M	64754	1.500"
	99964755M	64755	2.000"
	99964756M	64756	2.500"

Locking Screw for Inch Shell Mill Holders			
	SAP No.	Designation	For Size (inch)
	99964830M	64830	0.500"
	99964831M	64831	0.750"
	99964832M	64832	1.000"
	99964833M	64833	1.250"
	99964834M	64834	1.500"
	99964835M	64835	2.000"
	99964836M	64836	2.500"

Drive Key for Metric Shell Mill Holders			
	SAP No.	Designation	For Size (mm)
	99979665M	Dia 16 - 8x8x14	16
	99977351M	Dia 22 - 10x10x17	22
	99977352M	Dia 27 - 12x14x20	27
	99977353M	Dia 32 - 14x14x22	32
	66691839M	Dia 40 - 15.9x16x21	40
	66691840M	Dia 60 - 25.4x25x31	60

Locking Screw for Metric Shell Mill Holders Drive Keys			
	SAP No.	Designation	For Size (mm)
	99979663M	M 3 x 8 - DIN 912	16
	99977354M	M 4 X 8 - DIN 912	22
	99977355M	M 4 X 14 - DIN 912	27
	99979668M	M 5 X 13 - DIN 912	32
	99979650M	M 6 X 16 - DIN 912	40
	99979556M	M 12 X 25 - DIN 912	60

Locking Screw for Metric Shell Mill Holders (Small Counterbore)			
	SAP No.	Designation	For Size (mm)
	99979664M	M 8 x 20 DIN 912	16
	99977354M	M 10 x 30 DIN 912	22
	99977358M	M 12 x 35 DIN 912	27
	99977359M	M 16 x 40 DIN 912	32

Locking Screw for Metric Shell Mill Holders (Large Counterbore)			
	SAP No.	Designation	For Size (mm)
	99977777M	M 8 x 16 - DIN 6367	16
	99977757M	M 10 x 22 - DIN 6367	22
	99977755M	M 12 x 27 - DIN 6367	27
	99977771M	M 16 x 32 - DIN 6367	32
99977371M	M 20 x 40 - DIN 6367	40	

Locking Screw for End Mill Holders			
	SAP No.	Designation	For Size (inch)
	44431882M	6-32UNC-8	0.125"
	44431883M	8-32UNC-7	0.187"
	44431884M	1/4-28UNF-8	0.250"
	44431885M	5/16-24UNF-10	0.312"
	44431886M	3/8-24UNF-9	0.375"
	44431887M	7/16-20UNF-13	0.437"
	44431888M	7/16-20UNF-12	0.500"
	44431889M	1/2-20UNF-14	0.625"
	44431890M	5/8-18UNF-14	0.750" & 0.875"
	44431891M	3/4-16UNF-14	1.000"
	44431892M	3/4-16UNF-16	1.250" & 1.500"
	44431893M	1-14UNS-23	2.000"


Adjusting Screw Threaded Stud DIN 913 for End Mill Holders			
	SAP No.	Designation	For Size
	99900062M	M5x5 DIN913	CAT40/50
	99900216M	M5x6 DIN913	BT40
	99902345M	M6x10 DIN913	BT50

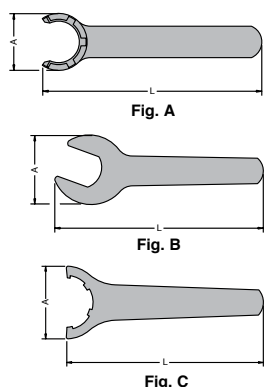
### Hardware | ER Collet Holders

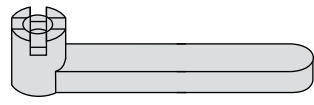
Adjusting Screw for ER Collet Chuck Holders			
	SAP No.	Designation	For Size
	66691814M	M10 x 15-001	ER16
	66691815M	M12 x 15-001	ER20
	66691816M	M16 x 15-001	ER25
	66691822M	M22 x 1.5 x 15-001	ER32 & 40


### Hardware | HSK Holders

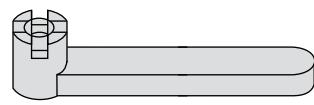
Coolant Tube for HSK Holders			
	SAP No.	Designation	For Size
	66691743M	HSK 32 - 10	HSK 32
	66691744M	HSK 40 - 12	HSK 40
	66691745M	HSK 50 - 16	HSK 50
	66691746M	HSK 63 - 18	HSK 63
	66691747M	HSK 80 - 20	HSK 80
	66691748M	HSK 100 - 24	HSK 100

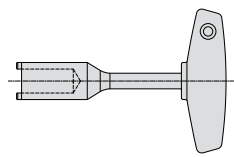
Wrenches for Milling Chucks			
	SAP No.	Designation	Size (metric & inch)
	66611451M	C-20	20 & 0.75"
	66611452M	C-25	25 & 1.000"
	66611453M	C-32	32 & 1.250"
	66611454M	C-1.5"	1.5"
	66611455M	C-2.0"	2.0"

Wrenches for ER Collect Holders							
	SAP No.	Designation	For Clamping Nut	Dimensions			Fig
	A	L	G				
	99942650M	E11M	E11M	16.8	90.0	-	A
	99932510M	E16M	E16M	22.5	110.0	-	A
	66692121M	E20M	E20M	29.0	120.0	-	A
	99933989M	E25M	E25M	36.0	130.0	-	A
	99977342M	GS25(SW25)	ER16-DIN6499	42.0	140.0	-	B
	66692122M	E20	ER20-DIN6499	54.0	168.0	-	B
	99921608M	E25	ER25-DIN6499	65.0	210.0	-	C
	99921609M	E32	ER32-DIN6499	75.0	250.0	-	C
99921610M	E40	ER40-DIN6499	90.0	290.0	-	C	

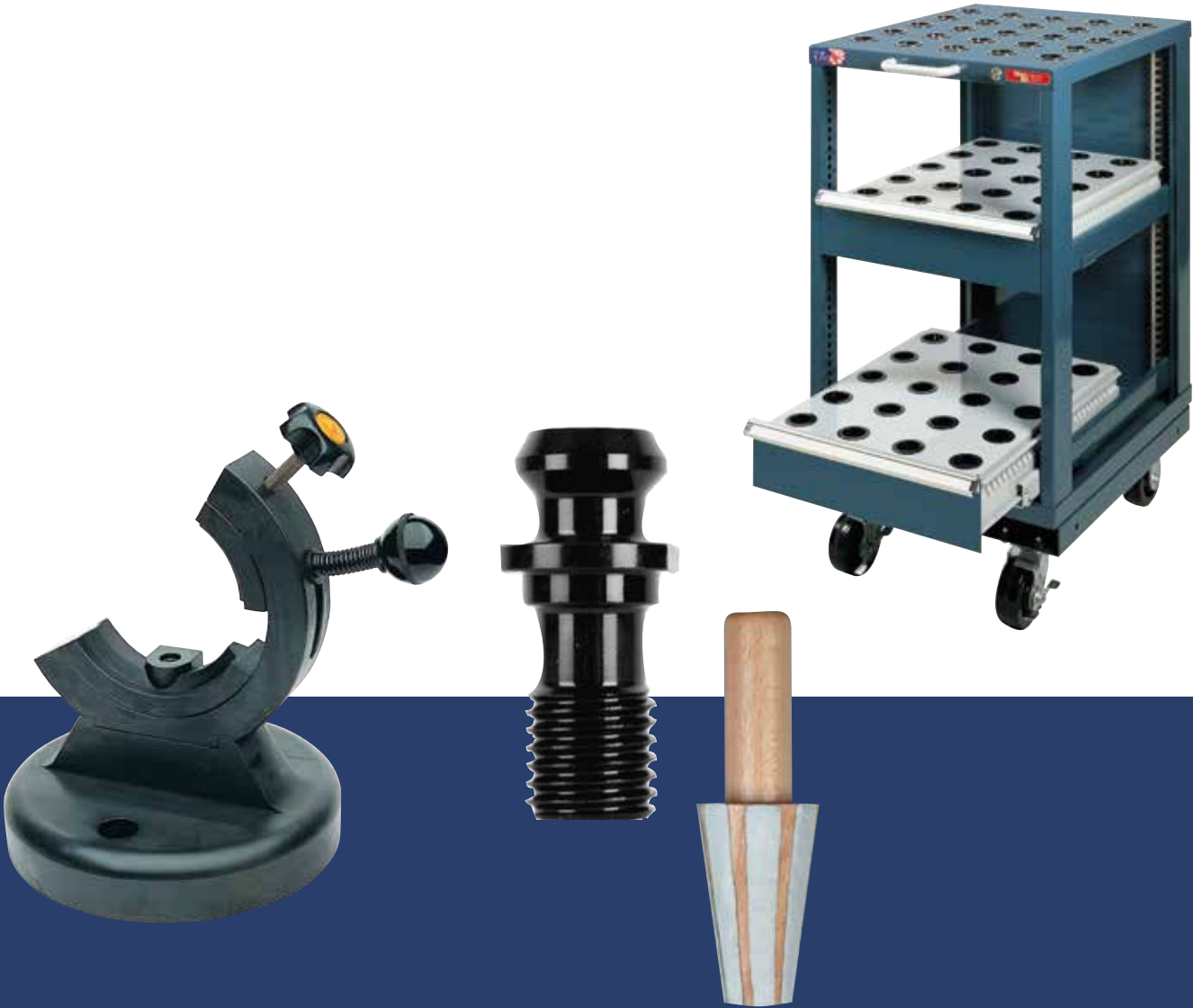
Wrench for Shell Mill Holders Inch Locking Screws			
	SAP No.	Designation	For Size (inch)
	66692077M	SW 3/16"	0.500
	66692078M	SW 1/4"	0.750
	66692079M	SW 5/16"	1.000 & 1.250
	66692080M	SW 3/8"	1.500
	66692081M	SW 1/2"	2.000 & 2.500

Wrench for Shell Mill Holders Metric Locking Screws (Small Counterbore)			
	SAP No.	Designation	For Size (mm)
	66692161M	SW6	16
	66692162M	SW8	22
	66692163M	SW10	27
	66692164M	SW14	32
	66692165M	SW17	40

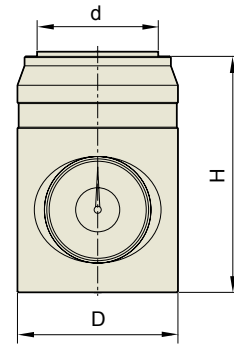
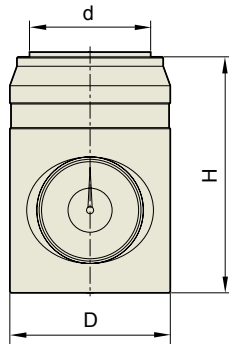
Wrench for Shell Mill Holders Metric Locking Screws (Large Counterbore)			
	SAP No.	Designation	For Size (mm)
	66691654M	S-16 DIN 6368	16
	66691655M	S-22 DIN 6368	22
	66691656M	S-27 DIN 6368	27
	66691657M	S-32 DIN 6368	32
	66691658M	S-40 DIN 6368	40

Wrench for HSK Coolant Tubes			
	SAP No.	Designation	For Size
	66691749M	HSK 32-8.5x115	HSK 32
	66691750M	HSK 40-10.5x115	HSK 40
	66691751M	HSK 50-14.5x115	HSK 50
	66691752M	HSK 63-16.5x136	HSK 63
	66691753M	HSK 80-18.5x136	HSK 80
	66691754M	HSK 100-22x136	HSK 100

# ACCESSORIES

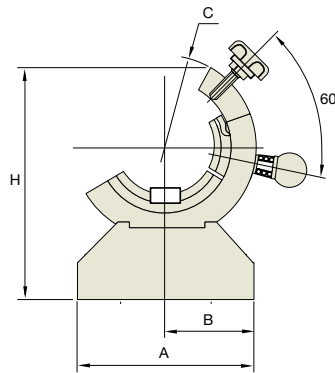








Height Setters						
SAP No.	Designation	Mode	Dimensions (mm)			
			D	H	d	Dial
9890044	MHP-100 (Magnetic)	Metric	98	100	62	0.01
9890045	HP-100	Metric	68	100 +/-0.01	62	0.01
9890046	MHP-100 (Magnetic)	Inch				
9890047	HP-100	Inch				

Tool Clamper | Accessories



Tool Clamper							
<ul style="list-style-type: none"> <li>No surface damage such as abrasion and scratch around taper shank closely associated with tool runout</li> <li>Easy to assemble and disassemble pull stud bolt</li> <li>Convenient and safe when using coolant tube wrench with milling chuck or ER collet chuck</li> </ul>							
SAP No.	Taper No.	Code No.	Dimensions (mm)				Weight (kg)
			A	B	C	H	
9890048	BT30	TCP30	125	65	108	135	3.0
9890049	BT40	TCP40	160	80	138	180	7.6
9890050	BT50	TCP50	180	90	165	205	8.6
9890051	SK30	TSK30	125	65	108	135	3.0
9890052	SK40	TSK40	160	80	138	180	7.6
9890053	SK50	TSK50	180	90	165	205	8.6

Tightening Fixtures				
	SAP No.	Designation	Taper	Length
	66651481M	30-HTF	30	6.2"
	66651483M	40-HTF	40	6.2"
	66651485M	50-HTF	50	6.2"

Spindle Wipes – Professional Series			
	<p>These handy wipers quick-clean your spindles, assuring that your toolholder tapers make continuous positive contact with them for repeatable on-center performance. They're also perfect for cleaning the bores of your collet chucks and Morse Taper holders.</p>		
	SAP No.	Part No.	Description
	9890054	ISO30	30-Taper Spindle Clean equipped with cleaning blades
	9890055	ISO30-S	W30 Standard cleaning blade set
	9890056	ISO30-V	W30 Varnish removing blade set
	9890057	ISO30-P	W30 Polishing blade set
	9890058	ISO40	40-Taper Spindle Clean equipped with cleaning blades
	9890059	ISO40-S	W40 Standard cleaning blade set
	9890060	ISO40-V	W40 Varnish removing blade set
	9890061	ISO40-P	W40 Polishing blade set
	9890062	ISO50	50-Taper Spindle Clean equipped with cleaning blades
	9890063	ISO50-S	W50 Standard cleaning blade set
	9890064	ISO50-V	W50 Varnish removing blade set
	9890065	ISO50-P	W50 Polishing blade set

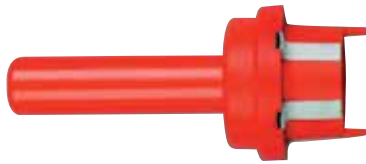
**Taper Cleaners for HSK Tool Tapers**



For cleaning HSK tool tapers. Plastic body with leather inserts.

Part No.	HSK Form A/C/E
76.208.040	40
76.208.050	50
76.208.063	63

**Taper Cleaners for HSK Spindles**



For cleaning HSK spindle tapers. Plastic body with leather inserts.

Part No.	HSK Form A/C
76.205.032	32
76.205.040	40
76.205.050	50
76.205.063	63
76.205.080	80
76.205.100	100

**Taper Cleaners for 7/24 Spindle Tapers (Steep Taper)**



For cleaning 7/24 (Steep Taper) spindle tapers. Plastic body with leather inserts.

Part No.	CAT Size
76.200.030	30
76.200.040	40
76.200.050	50


**Taper Cleaners for Morse Taper Spindles**



For cleaning Morse style Spindle tapers. Plastic body with leather inserts.

Part No.	Taper Size
76.200.001	1
76.200.002	2
76.200.003	3
76.200.004	4
76.200.005	5
76.200.006	6


**Tool Holder Wrenches**



CAT 40 and CAT 50 tool holder wrench. The CAT CLAW 40 and CAT CLAW 50 are designed to enable the machinist to make tool changes without removing the tool holder from the CNC machine. The wrench allows the machinist the ability to hold the spindle while tightening or loosening the collet nut or set screws. Using the CAT Claw will also eliminate the need for manual programming and reduces over-tightening of collets. The CAT CLAW is a quick, easy and safe way to change tools without using vise or fixture. The result: A safe and easy way to change tools that saves time and money.


SAP No.	Description
9890066	CAT CLAW 40
9890067	CAT CLAW 50

**Retention Knobs**



SAP No.	Description	Machine Taper	Common Machines
9890068	RKC50-STD*	C50	HURCO W/COOLANT
9890069		C40	MAZAK W/COOLANT
9890070	RKC40S-4500	C40	HAAS
9890071	RKC40-STD*	C40	FADAL W/COOLANT
9890072	RKC50-4500H	C50	OKK W/COOLANT
9890073	RKC40-1500-ISO	C40	DAEWOO
9890074	RKC40S-4500	C40	HAAS W/COOLANT
9890075	RKC40-1500H	C40	MAKINO W/COOLANT
9890076	RKC50-4500	C50	OKK
9890077	RKC40-STD	C40	FADAL
9890078	RKC40S-9000	C40	MORI-SEKI
9890079	RKC40-4500	C40	OKUMA
9890080	RKC50-MZ	C50	MAZAK W/ O-RING
9890081	RKC50-STD	C50	MAZAK
9890082	RKC50-TOY	C50	TOYOTA W/O-RING

**Retention Knob Wrench**



SAP No.	Description	Part Max. Dia. (inch)	Max. Flat (inch)	Max. Torque Ft-Lb	Drive Size (inch)
9890083	RKW30	0.655	0.535	40	0.375
9890084	RKW30M	0.675	0.511	40	0.375
9890085	RKW30D	0.675	0.556	40	0.375
9890086	RKW40	0.944	0.755	85	0.500
9890087	RKW40M	0.894	0.711	85	0.500
9890088	RKW45	1.205	1.004	100	0.500
9890089	RKW45M	1.225	0.950	100	0.500
9890090	RKW50	1.450	1.255	110	0.500
9890091	RKW50M	1.50	1.185	110	0.500
9890092	RKW60	2.215	1.505	400	0.750
9890093	RKW60M	2.215	1.815	400	0.750

**Stor-Caddy**



The Stor-Loc® Stor-Caddy combines the versatility of the industry's best CNC Storage Cart—The Tool Caddy with Stor-Loc modular drawers. Now you can benefit from organizing your valuable CNC tool holders and be able to store and lock your perishable tools and workholders in one unit.

**Dimensions:** 54"H x 29-1/4"W x 27-3/4"D

Unit available with ONE, TWO, or THREE DRAWERS.

**Other Features:**

- Drawer layouts kits to organize tools
- Rubber mat to protect tools
- Full suspension, 100% extension, 400 lb. capacity drawers

*Use standard parts to create you special product configuration. Call BILZ for configuration support.*

**CNC Tool Cart**



The Stor-Loc® CNC Tool Cart is designed to deliver preset tooling to the shop floor. Includes roll-out tool decks, the CNC Tool Cart can accommodate up to 144 tool holders.

**Dimensions:** 36"H x 23-1/4"W x 27-3/4"D

*Use standard parts to create you special product configuration. Call BILZ for configuration support.*

**CNC Center Insert**



Increase storage capacity by adding CNC Center Inserts to your CNC Stor-Caddy or CNC Tool Cart

*Use standard parts to create you special product configuration. Call BILZ for configuration support.*

CNC Tool Caddy



The STOR-LOC® Tool Caddy offers mobility and is equipped with your choice of six shelves – any taper.

**Dimensions:** 54"H x 29-1/4"W x 27-3/4"D

*Use standard parts to create you special product configuration. Call BILZ for configuration support.*

CNC Tool Rack



When mobility is not needed, the taller STOR-LOC® Tool Rack holds even more tools. Equipped with your choice of eight shelves – any taper.

**Dimensions:** 62"H x 29-1/4"W x 27-3/4"D

*Use standard parts to create you special product configuration. Call BILZ for configuration support.*

CNC Mini Tool Caddy



When space is limited, the STOR-LOC® CNC Mini Tool Caddy offers mobility and is equipped with your choice of four shelves – any taper.

**Dimensions:** 38"H x 23"W x 27-3/4"D

*Use standard parts to create you special product configuration. Call BILZ for configuration support.*

**Turret Tool Decks**

Safely organizing your preset tooling. *Use standard parts to create you special product configuration. Call BILZ for configuration support.*



**CNC Stor-Strip**



Mount to machine or wall for point-of-use convenience.

**Dimensions:** 3-1/2"H x 28"W x 5"D

*Use standard parts to create you special product configuration. Call BILZ for configuration support.*

**Combo Tool/Collet Stands**



Combine tool holders and collets in one bench-mount tray.

**Dimensions:** 4"H x 12"W x 5"D  
6"H x 12"W x 5"D

*Use standard parts to create you special product configuration. Call BILZ for configuration support.*

**CNC Shelves**



Bring CNC storage to your workstation with CNC shelves.

*Use standard parts to create you special product configuration. Call BILZ for configuration support.*

**Bench Mount Collet Racks**



Mount to bench top for point-of-use convenience.

**Dimensions:** 2"H x 16"W x 5"D

*Use standard parts to create you special product configuration. Call BILZ for configuration support.*

### Power Block for Steep Taper Tooling

*Vertical Tool Position:* In the vertical position the drive slots in the taper and the keys in the sleeve hold the tool securely in position.

*Horizontal Tool Position:* The cam arm engages the tool change flange securely, locking the tool into the sleeve. The horizontal position affords easy access to the back end of the tool holder, making it easy to mount coolant tubes, stop bolts or retention knobs. The cam arm can easily be adjusted for different steep taper forms such as CAT, BT or DIN.



Power Block for Steep Taper Tooling	
Order No.	with inserts for
76.440.030	SK30
76.440.031	SK30 Chiron Type
76.440.040	SK40
76.440.045	SK45
76.440.050	SK50

### Power Block for for HSK Taper Tooling Form A + C

*Vertical Tool Position:* In the vertical position the keyways in the taper and the drive keys in the sleeve hold the tool securely in position.

*Horizontal Tool Position:* The cam arm holds the taper flange securely in the taper sleeve. The drive keys at the end of the tool taper hold securely against rotational force.



Power Block for for HSK Taper Tooling Form A + C	
Order No.	with inserts for
76.450.063	HSK 163DIN 69893 Form A + C
76.450.080	HSK 180DIN 69893 Form A + C
76.450.100	HSK 100DIN 69893 Form A + C



### Power Block for Tools with Cylindrical Shank

*Vertical Tool Position:* In the vertical position the keyways in the taper and the drive keys in the sleeve hold the tool securely in position.

*Horizontal Tool Position:* The cam arm locks the tool securely in the horizontal sleeve. A pin holds the tool so that it will not tilt or rotate.

Power Block for Tools with Cylindrical Shank	
Order No.	with inserts for
76.440.030	SK30
76.440.031	SK30 Chiron Type
76.440.040	SK40
76.440.045	SK45
76.440.050	SK50



### The Rear of the Assembly Block

All Diebold assembly blocks afford easy access to the backend of the toolholder to mount coolant tubes, length setting bolts or retention knobs.



## A PARTNERSHIP BETWEEN DIEBOLD GERMANY AND BILZ TOOL USA

Diebold, and many other manufacturers of close-tolerance tool holders and highly precise equipment, have been using Diebold Gauging for many years. We are proud to offer our customers “Simply the Finest” in gauges and measurement products. These gauges will economically verify the dimensional accuracy of your tool holders, spindles and other precision equipment. Quality gauging demands high precision gauge masters, at Diebold we make our own to satisfy this need. Our plant has gauge masters calibrated and certified by some of the world’s most reputable calibration institutes. All of the masters that we manufacture are certified and traceable to the applicable standard.

You have made a significant investment in your machinery and tool holders. By utilizing Diebold Gauging you can be sure you will get the most out of your investment!



VIEW  
THE  
WEBSITE

**Diebold Gauging System – Maintain your machine spindle and tool gauging accuracy**

- **Taper Inspection Gauges**

The only unit in the world where all dimension of taper can be measured in one step. These gauges are available in different levels: basic unit only for taper dimension; extended version for taper and flange, and adapter for run-out test.

- **Gauge Masters**

For calibration of inspection gauges, include with a certificate.

- **Drive Key Inspection Gauges**

These gauges are used in soft part fabrication and final inspection of HSK adapters. Inspects the width of the drive key location and it's accuracy in relation to the taper

- **Cam Angle Inspection Gauges**

This gauge is used to measure the dimension between the inner cam angle position and the HSK flange face. These can be used for soft fabrication and final inspection and a gauge master is required.

- **Run-out Test Spindles**

Run-out test spindles are used to check the amount of run-out for all sizes and styles of HSK holders.

- **Prisms**

Use with all styles and sizes of test spindles.

- **Spindle Taper Verification Gauges**

These gauges are used to check the tapers of machine spindles. Used by maintenance personnel to conduct PM (preventive maintenance) on production machine spindles.

- **Run-out Test Arbors**

These gauges are used to check the run-out of machine spindles. They are typically used by machine maintenance personnel to maintain accurate spindle run-out in production machine spindles.

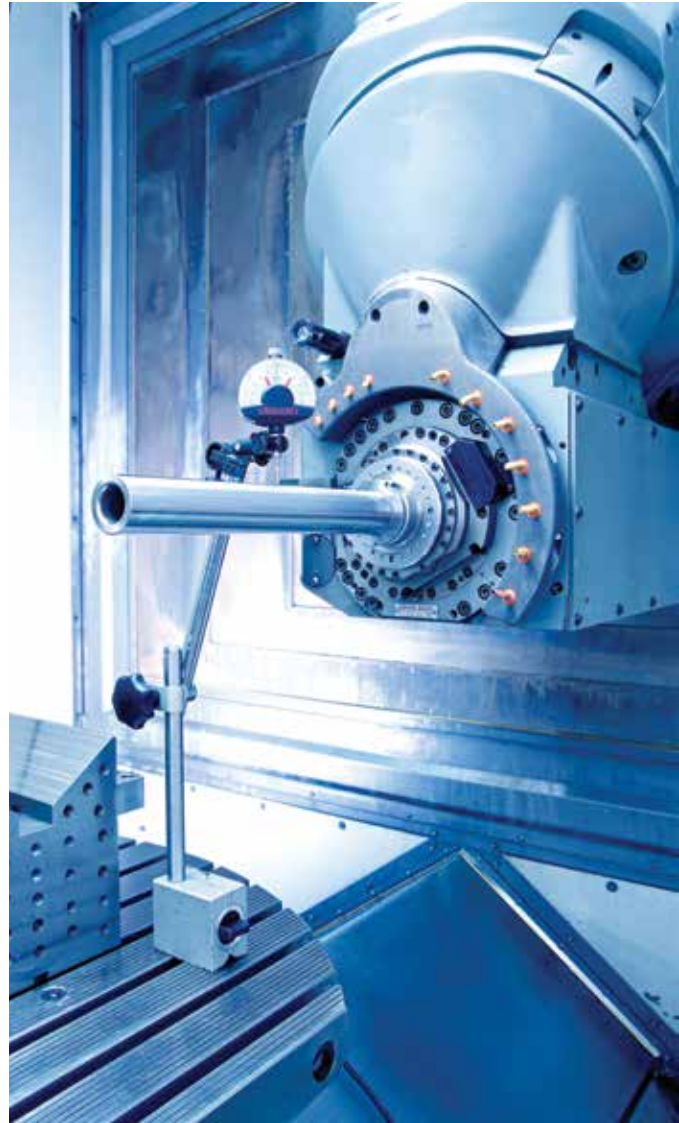
- **Adjustment Gauge**

Used to check and adjust the angle position of HSK and BT spindles. Can also be used to calibrate optical presetters.



Diebold, the leading manufacturer of HSK tool holders and gauges, produces certified test arbors and measurement devices. If you are looking for the best runout test arbors, you will find what you need with Diebold.

We manufacture our gauges in a climatecontrolled, sealed facility in Germany. We calibrate and certify all of our instruments with the finest CMM's and profile verification equipment available in the machine tool world-industry. Diebold runout test arbors are delivered in a fitted wooden case along with an individual certification of conformity traceable to the applicable international standard.



**Runout Test Arbors for HSK Spindles**



Used to measure the runout present in an spindle shaft.

Part No.	Taper Size	d1	A
72.560.740.100	32A	24	180
72.565.740.100	40A	24	180
72.570.740.100	50A	32	236
72.575.740.200	63A	40	346
72.580.740.200	80A	40	346
72.585.740.200	100A	40	349
72.555.740.100	25C	20	140
72.556.740.100	25E	20	140
72.573.740.110	50E	24	150
72.579.740.200	63F	40	346

**Runout Test Arbors for 7/24 Taper Spindles (Steep Taper)**



*Includes:* Test arbor with certificate in fitted wooden case.  
*Runout accuracy:* Taper to cylinder shaft < 0.003 mm.  
*Re-calibration:* Please return gauge master to Diebold for annual recalibration.

Part No.	Taper Size		d1	A
72.050.740.100	SK30	DIN69871	32	200
72.060.740.100	SK40	DIN69871	40	320
72.070.740.100	SK50	DIN69871	40	320
72.005.740.100	SK30	DIN2080	32	200
72.010.740.200	SK40	DIN2080	40	320
72.015.740.200	SK50	DIN2080	40	320
72.150.740.100	BT30	JIS B6339	32	230
72.160.740.200	BT40	JIS B6339	40	320
72.070.740.200	BT50	JIS B6339	40	320

**Test Arbor with Ball Probe**



Test arbor for testing the RTCP (Rotation Centre Point) of 5-axis spindles. Can also be used as runout test arbor (at the ball probe).

*Delivery:* Test arbor with certificate in fitted wooden case.  
*Runout accuracy:* Taper to ball probe < 0,01 mm.  
*Re-calibration:* Please return gauge master

Part No.	Taper Size	Ball ø	A
72.560.742.100	HSK32A	30	150
72.565.742.100	HSK40A	30	150
72.570.742.100	HSK50A	30	150
72.575.742.100	HSK63A	30	150
72.575.742.200	HSK63A	30	200
72.579.742.100	HSK63F	30	150
72.579.742.200	HSK63F	30	200
72.585.742.100	HSK100A	30	150
72.585.742.200	HSK100A	30	200
72.050.742.200	SK30	30	200
72.060.742.100	SK40	30	150
72.070.742.100	SK50	30	150
72.160.742.100	BT40	30	150
72.170.742.100	BT50	30	150

**Test Arbor with Ball Probe**



Part No.	dxL2	d1
72.000.742	12x60	30

Runout Test Adaptor



The Runout Test Adaptor mounts to the Taper Measuring Head, and is used to verify the amount of runout between the I.D. bore of a toolholder, and/or the O.D. of a tool in a toolholder, relative to the taper.

*Includes:* Runout Test Adaptor with indicator mounting adaptor. Indicator to be ordered separately.

Part No.	
76.730.100	One size fits all Taper Measuring Units

High Precision Gauge Masters



**d<sub>1</sub>** Large Taper Diameter

**d<sub>k</sub>** Small Taper Diameter

**MI** Straightness of Taper

Gauge Masters are made of special stabilized gauge material. All surfaces are coated to resist corrosion.

Actual dimensions are laser marked on the Master.

*Includes:* Gauge master with certificate in fitted wooden case.

*Re-calibration:* Please return gauge master to Diebold for annual recalibration.

Part No.	Taper Size
76.750.130	SK30
76.750.140	SK40
76.750.150	SK50
76.750.230	BT30
76.750.240	BT40
76.750.250	BT50

Runout Test Adaptor



**d<sub>2</sub>** Large taper diameter

**d<sub>k</sub>** Small taper diameter

**l<sub>5</sub>** Gripper cam angle

**l<sub>6</sub>** Ejection face depth

**d<sub>11</sub>** Vee-Flange

**f<sub>3</sub>** Vee-Flange

Diebold gauge masters are made of special stabilized gauge material. All surfaces are coated to resist corrosion. Actual dimensions are laser marked on the master.

*Includes:* Gauge master with certificate in fitted wooden case.

*Re-calibration:* Please return gauge master to Diebold for annual recalibration.

Part No.	for Taper HSK Form A/C/E	for Taper HSK Form B/D/F
76.750.025	25	32
76.750.032	32	40
76.750.040	40	50
76.750.050	50	63
76.750.063	63	80
76.750.080	80	100
76.750.100	100	125

Meticulously crafted mechanical gauge used to determine the amount of pull force being exerted on a toolholder in a spindle. Fatigued or damaged spring-packs, damaged or corroded internal components, or improper spindle cam angle, machining can result in potentially dangerously low pull force levels! In addition, runout and chatter will increase, and stiffness and repeatability will decrease. Our Mechanical Pull Force Gauge is accurate, robust, and cost-effective.



**Mechanical Pull Force Gauge**



With analog indicator, scale in kN. With digital indicator, data transfer to PC or printer.

*Includes:* Pull Force Gauge with certificate in fitted wooden case.

*Re-calibration:* Please return gauge master to Diebold for annual recalibration.

All Pull Force Gauges with steep taper DIN/ANSI accept the pull stud of your machine. For BT 30 and BT 40 holders we offer short pullstuds for use of the Pull Force Gauge. Please order BT pull studs separate.

Part No.	for Taper Size	for Taper Size
76.785.025	HSK A/C/E 25	-
76.785.032	HSK A/C/E 32	HSK B/D/F 40
76.785.040	HSK A/C/E 40	HSK B/D/F 50
76.785.050	HSK A/C/E 50	HSK B/D/F 63
76.785.063	HSK A/C/E 63	HSK B/D/F 80
76.785.080	HSK A/C/E 80	HSK B/D/F 100
76.785.100	HSK A/C/E 100	HSK B/D/F 125
76.785.130	SK30/CAT30	-
76.785.130.BT	BT30	-
76.785.140	SK40/CAT40	-
76.785.140.BT	BT40	-
76.785.150	SK50/CAT50	BT50

### WITH THE AVAILABILITY OF SPINDLE ADAPTERS IN ALL MAJOR SPINDLE CONFIGURATIONS, IT'S THE ONLY GAGE NEEDED!

The ClampForce is a universal gage designed for checking drawbar force. It's the first universal gage on the market that is able to check all types of V-Flange, Capto, HSK, and KM spindles. Gage heads are available in 3,000 Lbs to 30,000 Lbs capacity.

Drawbar force is the measure of force that is being applied to a toolholder to keep it in contact with the spindle. The drawbar is a mechanical device that is used to apply clamping force to the toolholder. The drawbar is located out of sight and not easily accessed; it is often left unmonitored. The drawbar works by using Belleville Spring stack, gas systems, or other methods to generate the drawbar force. As the Belleville Springs begin to collapse and gas systems begin to leak, the drawbar loses force. Once drawbar force drops below 80% of its original amount, it is time to have the drawbar system rebuilt.

If drawbar force becomes too low, a cutter can be pulled right out, of the spindle damaging the tool, the spindle, and the work piece. This results in issues with chatter, repeatability, short tool life, and poor finishes. Have you ever wondered why sometimes you can't run the same job on different machines, or tool life is better on one machine than the other? It could be your drawbar.

The ClampForce gage measures in pounds of force. To use it, make sure you are using a gage head that exceeds the maximum force of the drawbar of the machine. Choose the proper adapter for your spindle type and install it on the gage head. Using the manual tool change method, install the ClampForce Gage into the spindle and energize the spindle. The ClampForce gage will read out the force being applied in seconds.

In just a matter of minutes you are able to change adapters to check all, of your machine configurations.

#### HSK, CAPTO, and KM

With the use of many new composite materials, carbon fiber, and exotic metals, high speed machining is necessary more than ever. With spindle speeds as high as 50,000 RPM, regular checks of clamping force is needed. The slightest wear, dirt or out of stroke adjustment can greatly lower holding force. In HSK, CAPTO, and KM tooling where taper contact is needed for tooling to work properly, a regular maintenance check is needed. Once proper face contact no longer occurs, dimensional part variations and rapid spindle wear will occur. The ClampForce Gage is ideal for quick and regular checks to prevent tool wear and avoid machine downtime.

#### WHY YOU NEED A CLAMPFORCE GAGE!

- Prevent expensive machine downtime by scheduling machine maintenance and avoiding costly machine crashes.
- Damaged spindles need to be replaced. The average cost of a new spindle is \$10,000 to \$25,000.
- Increase Tool Life—By improving the toolholder mating relationship with the spindle, tool, and insert, consumption is reduced.
- Operator Safety. A loose tool spinning at high RPM is very dangerous.
- Eliminate scrapped parts because being out of tolerance.
- Repeatability
- Ever wonder why new tooling does not perform the way it should? It can be your drawbar.







The ClampForce gage is used to check the drawbar force of your machine.  
 \*\*When choosing a gage, make sure the gage exceeds your maximum drawbar force by at least 10%

**BT30 ClampForce Gage Kit**

- Carrying case, with accessory tray
- BT30 Spindle adapter
- Internal transfer screw coupling (universal for all retention knobs)
- 3000 lb pull force

**CAT40 ClampForce Gage Kit**

- Carrying case, with accessory tray
- CAT40 Spindle adapter
- Internal transfer screw coupling (universal for all retention knobs)
- 3000 lb pull force

**CAT50 ClampForce Gage Kit**

- Carrying case, with accessory tray
- CAT 50 Spindle adapter
- Internal transfer screw coupling (universal for all retention knobs)
- 5000 lb pull force

**BT40 ClampForce Gage Kit**

- Carrying case, with accessory tray
- BT40 Spindle adapter
- Internal transfer screw coupling (universal for all retention knobs)
- 5000 lb pull force

## 2VPM350/150-ISO50 MANUAL TOOL PRESETTER

Manual tool presetter with integrated vision system and precision ISO50 spindle.

### Technical Data

Length	30-350mm (450mm or 550mm optional)
Diameter	300mm
Resolution	0.002mm (.0001")
Dimensions	35"H X 26"W X 15"D

- Heavy Duty Construction
  - o Cast iron base
  - o Precision pre-loaded ball slides
  - o Backlash free linear drive
  - o Precision linear encoders
- PC Controlled (Windows 7 compatible)
  - o User friendly menu driven software
  - o Capable of storing 1000s of tool data records
  - o Tool presetting programs with graphic representations
  - o Automatic measuring of tool features
- Single point manual operation and fine adjust for each axis

Options: 450mm vertical, 550mm vertical, alternate spindle configurations (HSK, ISO, ABS, ...), preset adapters, gauge benches, communication with networks / machine controls, RF ID, printers for labels and/or reports, tool management software, disassembly fixtures, tool storage, tool transportation.



### 3VPS620/200-AHPS COMBINATION SHRINK-FIT TOOL PRESETTER

Automated tool presetting and shrink fitting with integrated vision system, pneumatic clamping, CNC 4 axis control, high precision spindle, Bilz ThermoGrip® technology and speed chiller.

#### Technical Data

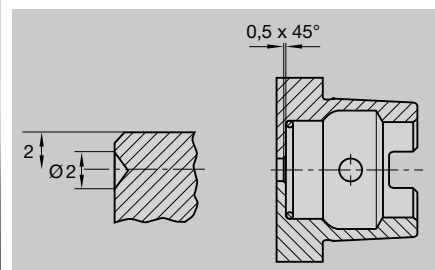
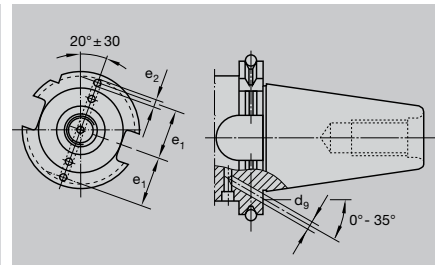
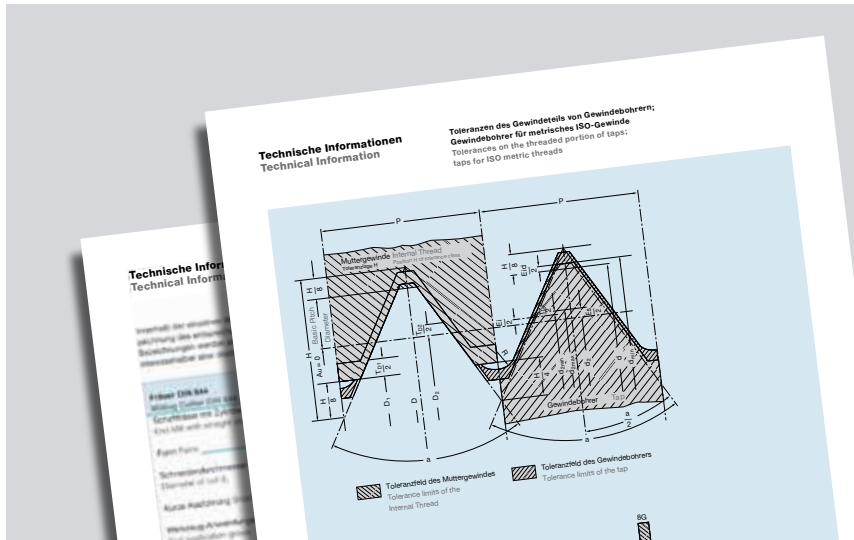
Length	30-620mm (1020mm optional)
Diameter	400mm
Shrink-Fit Length	480mm (1000mm optional)
Shrink-Fit Diameter	3-32mm (50mm optional)
Resolution	0.0005mm (.00002")
Dimensions	83"H X 60"W X 35"D

- Heavy Duty Construction
  - o Cast iron base
  - o High precision pre-loaded vee-roller slides
  - o Backlash free linear drive
  - o High precision linear encoders and rotary encoders
- PC Controlled (Windows 7 compatible)
  - o User friendly menu driven software
  - o Capable of storing 1000s of tool data records
  - o Tool presetting and shrink fitting programs with graphic representations
  - o Automatic positioning, focusing and measuring of tool features
- Manual and automated axis movement
- Automated shrink fitting using Bilz ThermoGrip® technology and axial probe for tool measurement / adjustment.
- Speed chiller with 5 cooling caps to fit different holder sizes

Options: 420mm vertical, 1020mm vertical, interchangeable spindle adapters (HSK, ISO, ABS, ...), gauge benches, communication with networks / machine controls, RF ID, printers for labels and/or reports, tool management software, disassembly fixtures, tool storage, tool transportation, ...



# TECHNICAL



VIEW  
THE  
WEBSITE

Bar (atmospheric pressure at sea level) to Psi (pounds per square inch) conversion							
Bar	Psi	Bar	Psi	Bar	Psi	Bar	Psi
1	15	26	337	51	740	76	1102
2	29	27	392	52	754	77	1117
3	44	28	406	53	769	78	1131
4	58	29	421	54	783	79	1146
5	73	30	435	55	798	80	1160
6	87	31	450	56	812	81	1175
7	102	32	464	57	827	82	1189
8	116	33	479	58	841	83	1204
9	131	34	493	59	856	84	1218
10	145	35	508	60	870	85	1233
11	160	36	522	61	885	86	1247
12	174	37	537	62	899	87	1262
13	189	38	551	63	914	88	1276
14	203	39	566	64	928	89	1291
15	218	40	580	65	943	90	1305
16	232	41	595	66	957	91	1450
17	247	42	609	67	972	92	1813
18	261	43	624	68	986	93	2176
19	276	44	638	69	1001	94	2538
20	290	45	653	70	1015	95	2901
21	305	46	667	71	1030	96	3626
22	319	47	682	72	1044	97	4351
23	334	48	696	73	1059	98	7252
24	348	49	711	74	1073	99	10878
25	366	50	725	75	1088	100	14504

**ER & Milling Chuck Collet Nut Torque Specifications | Technical Information**

ER Collet Size	Tightening Torque Measured ft lbs.
ER16	50 ft lbs (65Nm)
ER20	55 ft lbs (75Nm)
ER25	66 ft lbs (90Nm)
ER32	90 ft lbs (120Nm)
ER40	110 ft lbs (150Nm)
Hi-Power Milling Chuck	Tightening Torque Measured ft lbs.
20mm ID	30 ft lbs (40NM)
25mm ID	35 ft lbs (45Nm)
32mm ID	40 ft lbs (50Nm)
40mm ID	45 ft lbs (60Nm)
50mm ID	55 ft lbs (75Nm)

## HSK

The HSK spindle interface features a hollow taper, which is the connection's mating surface (see drawing below). When the clamping mechanism is actuated, there is intimate contact between the back of the tool holder flange and the face of the spindle. Initially, there is a nominal gap between the spindle face and the flange of the tool holder. The drawbar pulls back the clamping cone, which wedges the gripper fingers into the clamping position. As the fingers lock, they pull the tool holder into the spindle by cam action to affect an interference fit in the spindle and force the flange against the spindle face. This simultaneous fit concept results in excellent radial and axial positioning.

Not only does the drawbar system provide a positive lock between the tool holder and spindle, it does so without preloading the entire spindle as conventional drawbars do. Centrifugal force generated by spindle rotation, usually an enemy of spindle connections, actually increases the gripping strength, increasing the system's rigidity.

At elevated spindle speeds, when spindle growth becomes a factor, the tool holder walls remain in contact with the spindle. This assures continued spindle runout accuracy while the face contact retains the z-axis accuracy.

## STANDARD HSK FORMS

### FORMS A AND B

We manufacture to the latest ISO and DIN standard. Form A for general service and Form B, with greater flange support, for heavier work. The increase in flange dimension was gained by making the taper smaller. Thus, Form A and Form B tool holders with the same flange diameter are not interchangeable because their tapers differ.

### FORMS C AND D

These standards are similar to A and B, but are for manual tool change applications.

### FORMS E AND F

These standards balance tool holders for high speeds by omitting drive key, identification, and indexing features which detract from symmetry of tool holder mass.

## BILZ HSK TOOL HOLDERS

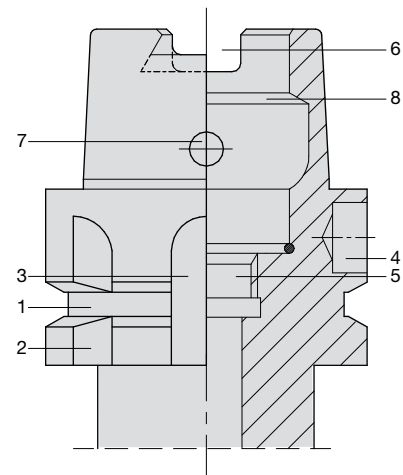
- Premium Material
- BILZ is on the leading edge of changes in the industrial specifications for HSK

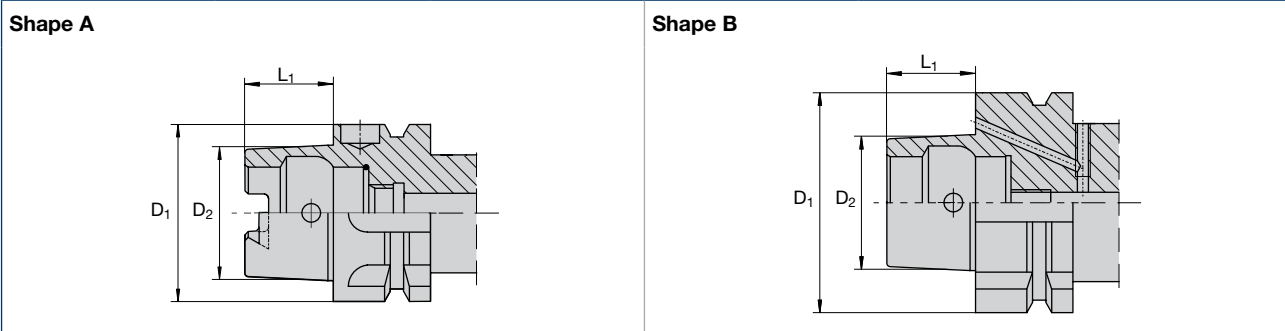
## UNIQUE FIGURES

- Harnesses centrifugal force for higher machining speeds. The faster it spins, the tighter it seats.
- High static and dynamic tool holder rigidity holds radial and axial position well at all speeds for improved accuracy, repeatability, and material removal.
- Short, light taper for reduced tool changer travel and faster tool changes.
- Positive locking and centrifugal clamping enhanced safety.

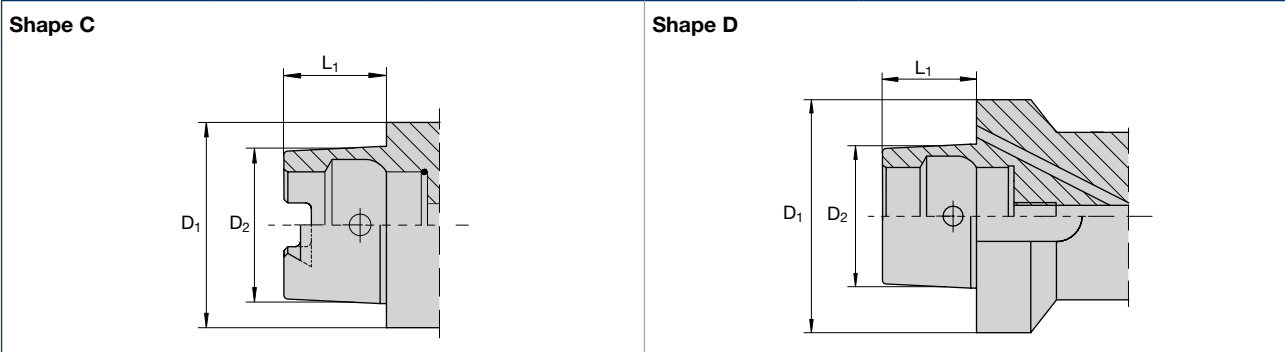
## TERM DEFINITIONS OF HSK-A INTERFACE FOR AUTOMATIC TOOLING SYSTEMS

- (1) Gripper groove: circular groove
- (2) Index notch: sickle-shaped notch across gripper groove
- (3) Keyway on collar: index notch or for attachment in tool magazine or grippers.  
HSK-B/D also provides form closed torque transmission to spindle.
- (4) Coding/identification: bore in collar for attachment of identification system (coding chip)
- (5) Thread for coolant: for attachment of coolant supply set
- (6) Keyway on taper shank: form closed torque transmission to spindle
- (7) Radial bore in taper shank: necessary for manual clamping systems
- (8) Clamping shoulder: circular chamfer for drawing in the tool
- (9) Position of the tool edge of single-edged tools

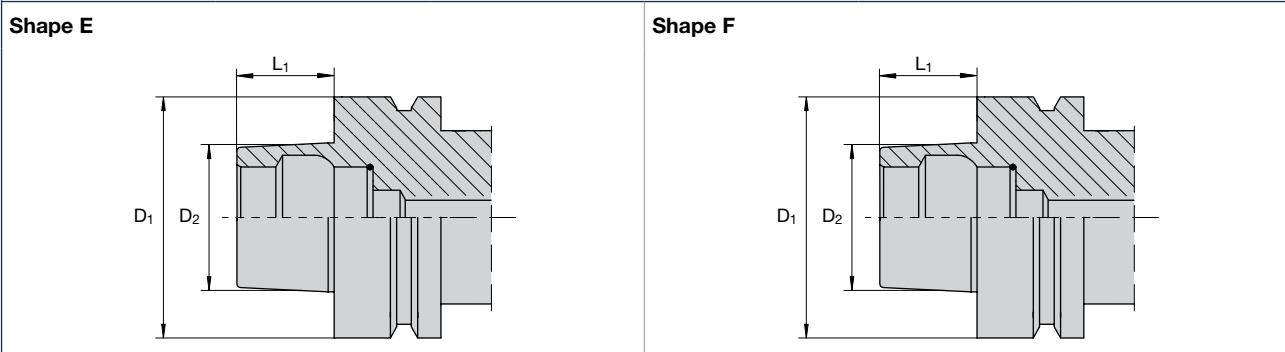




Hollow-shank taper for automatic tool changing with gripping and locating groove. Manual operation is possible through the access hole in the taper. Torque is transmitted both positively and non-positively.



Hollow-shank taper for manual tool changing. Operation is possible through the access hole in the taper. Torque is transmitted both positively and non-positively.



Hollow-shank taper for automatic tool changing (manual operation through access hole in taper not possible). Torque is transmitted non-positively.

HSK Shape A, C, E			HSK Shape B, D, F		
Nominal Size D <sub>1</sub> (mm)	D <sub>2</sub> (mm)	L <sub>1</sub> (mm)	Nominal Size D <sub>1</sub> (mm)	D <sub>2</sub> (mm)	L <sub>1</sub> (mm)
25	19	13	—	—	—
32	24	16	—	—	—
40	30	20	40	24	16
50	38	25	50	30	20
63	48	32	63	38	25
80	60	40	80	48	32
100	75	50	100	60	40

**ASSEMBLE TOOLS AND COLLETS CORRECTLY**

Failure to do so may cause drop or fly-off of tools or collet during machine operation, and may consequently result in injury.

**MOUNT HOLDER ON THE MACHINE TOOL CORRECTLY**

Follow the description in the instruction manual of the machine tool. Failure to do so may cause holder drop or fly-off during machine operation, and may consequently result in injury.

**IF ANY TROUBLE HAPPENS, INSTANTLY STOP THE OPERATION**

Failure to do so may cause drop or fly-off of cutting tool or collet during machine operation, and may consequently result in injury, so please contact dealer, local distributor or us.

**DO NOT DISASSEMBLE OR MODIFY THIS PRODUCT**

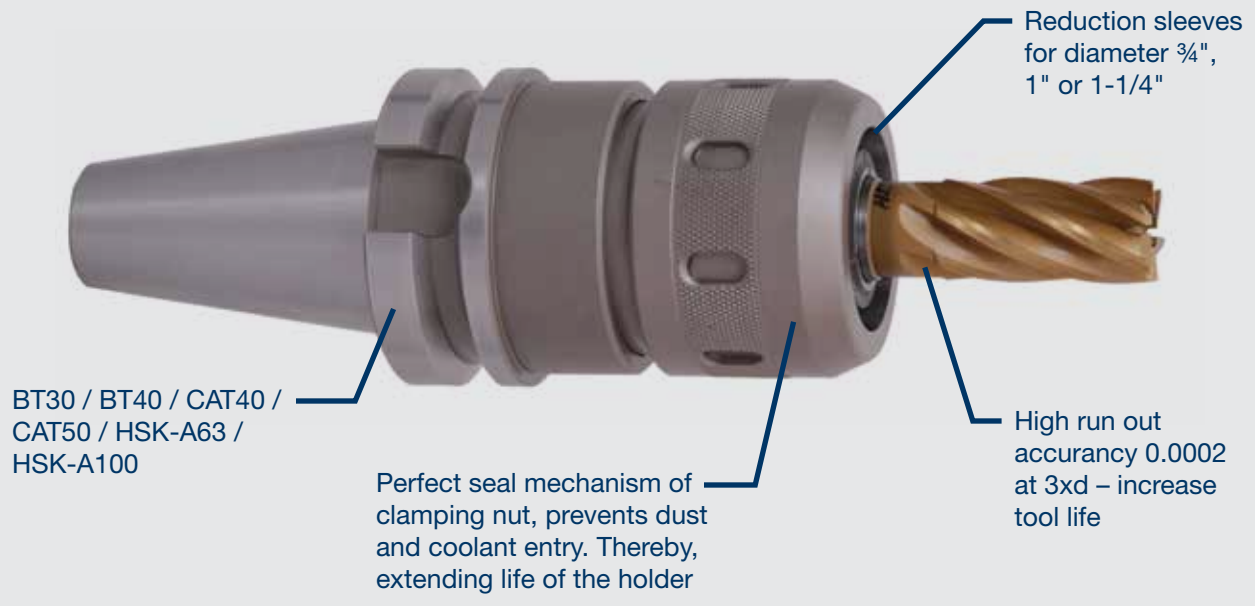
This product is designed to fit the machine tool and the cutting tool. Disassembly or modification may result in damage of cutting tool or holder in tool damage or holders failure.

**WE RECOMMEND TO USE ONLY OUR COLLET FOR THE CHUCKS FOR BETTER PERFORMANCE**

**SAFETY INSTRUCTIONS**

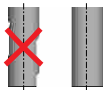
- For two face contact holders (HSK):  
Make sure the coolant tube is firmly tightened before mounting the HSK holder to a machine.  
Contact us for more information on jigs for ascertaining the fitting of coolant tube screws.
- For steep taper holders (BT / SK ) having AT3 tolerance:  
Ensure the pull stud is firmly tightened before mounting the holder to a machine.
- If a chuck should interfere or collide with a machine, a jig or a workpiece, you are requested to check the taper shank if there is any crack or breakage before.
- Stop such machining as accompanies large vibration (chattering).
- Stop using tool holders in case of any sign of abnormalities.

**BILZ Hi-Power Milling Chucks**

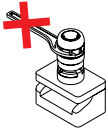
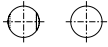




**OPERATING INSTRUCTIONS**



Best performance from the Hi-power milling chuck is attained when the cutting tool shank is round, without flats. Cutting tools with small flats may be held, but run-out will increase.



The Hi-power milling chuck should never be tightened without a cutting tool inside the bore. High gripping forces will cause permanent ID deformation.



By using the wrench provided, clamp the cutting tool into the chuck with hand pressure only. Do not use a hammer, pipe, or any other device to exert added torque on the wrench (Fig. 1). Tighten to the torque value specified on the guide ring or as shown in the torque setting chart (refer Table 1). Do not exceed these values as the milling chuck could be damaged.

Make sure that the adjusting screw is available while direct mounting of tool, that ensures the proper seating of the tool (Fig. 2). And while collet mounting, the adjusting screw should be removed (Fig. 3).

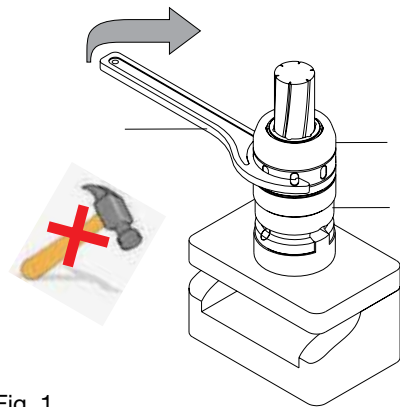


Fig. 1

TORQUE CHART		
Size	Wrench	Tightening Torque
20mm (3/4")	C-20	35–40
25mm (1")	C-25	40–45
32mm (1-1/4")	C32	45–50
40mm (1-1/2")	C-1.5"	55–60
50mm (2")	C-2.0"	70–75

Table 1



Fig. 2



Fig. 3

**ABOUT MAINTENANCE**

- When hi-power milling chuck are not used over a prolonged period, loosen the nut, wipe them clean and dry, and apply rust inhibitor.
- Water-soluble coolant, rust, oil film, dust, etc., remaining on the hi-power milling chuck may stick and result in operation failure.

## BILZ Toolholder Benefits

- AT3 or better shank taper—accurate, rigid toolholder-to-spindle mount
- Concentric to  $<.0002$  (.005 mm or 5 microns)—puts tool precisely on spindle centerline
- Less tool wear and replacement—less scrap
- Fully ground flange and V-groove—easy on tool changers for less spindle and charger maintenance
- All tapers and lengths ready to ship—get your tools fast

BILZ AT3 accuracy for shank taper is a minimum of 35% better than the ANSI Standard. This virtually eliminates play when the machine's spindle bore is in good condition and of equal or better accuracy. The toolholder will not wobble. Superior cutting accuracy raises quality of manufactured parts and reduces rejects. Tools cut smoother with less fatigue for longer life and lower tool costs. Command grinds toolholder shanks to an accurate and uniform taper with ultra-precise computerized equipment. Without uniformity, toolholder and spindle bore tapers will have raised areas or asperities. Cutting pressure and vibration tend to weld these asperities to the surfaces they touch. As the welds break and re-form, both surfaces pit metal from toolholder and spindle bore turns to powder and oxidizes. This is called fretting. Uniform taper, BILZ toolholders keep their accuracy, last longer, and the machine spindles will last longer, too.

Accuracy from the shank-to-spindle union is carried through to the cutting tip of the tool. BILZ toolholder concentricity is the proven best in the industry. This positions the tool precisely on a centerline from the spindle. It runs true. The cut is smooth and uniform for best piece-party quality and minimum scrap. Tools last longer to reduce tooling costs and downtime.

Flanges and V-grooves are fully ground for smooth, sure handling in tool changers and reduced vibration at high RPMs. In addition to protecting machines from costly toolholder hang ups, the cutting performance is improved.

**Improve tool life and part finish**

Correct tool holding force ensures that the spindle-tool holder interface is as rigid as possible. A rigid interface will improve tool life by reducing chatter and excess wear, and in turn improve workpiece finish.

**Protect your spindles and ensure machining accuracy**

Insufficient tool holding force can quickly wear or damage the critical spindle taper resulting in loss of machine accuracy and an expensive repair bill.

For the HSK taper, wear and damage on the spindle taper are even more detrimental. The HSK taper relied on an interference fit between the spindle and tool holder tapers, meaning drawbar force must be sufficient for the tool holder to properly seat. Because the HSK interface seats both on the tool holder taper and flange, dimensional tolerances are extremely tight. For HSK forms E and F, correct clamping force is crucial because there are not drive keys or dogs to transmit torque—the system relies entirely on the power drawbar’s holding force.

**Predict problems with the spindle’s Belleville/disk spring stack**

Machining centers with automatic tool clamping systems typically use Belleville/disk spring stack to hold a tool in the spindle, with a hydraulic cylinder used to overcome the spring force to unclamp the tool.

High RPM is often an important design criterion for a spindle, meaning the use of small diameter bearings makes sense from an engineering standpoint. Small bearings necessitate the use of small diameter springs to fit into the spindle arbor. Small-diameter springs lead to high stressed springs for tool clamping, and even more so during tool unclamp.

A typical drawbar spring stack is designed to last approximately 1 million cycles. This may sound like a big number, but tool changes add up quickly. An example: a process with 3 to 4 tool changer per minute (many do much more), with 2,000 operating hours per year (one shift), means between 360,000 and 480,000 cycles are made per year. In this scenario, the springs have reached the end of the design cycle and should be replaced after two years. We have found some processes that reach 1 million cycles after 6 months—with the complaint that the “springs break all the time.”

Springs will not break all at once. Initially only one spring might break without significant impact on tool holding force. However, soon others will break since they have to do the work of the broken spring (or springs) as well. The rest of the springs will be overloaded and break or take a permanent set.

This failure process can be detected with a clamping force measuring device and action be taken before the clamping system fails completely.

**Check for the role that friction plays in the clamping system and for proper lubrication**

Some drawbar designs use a mechanical force intensification mechanism to increase tool holding force. When force intensification is used, friction is a factor to be watched. It is difficult to quantify friction without measurement. Machine builders typically provide a tool holding force specification for properly lubricated and adjusted clamping system.

Most power drawbar systems with HSK tapers use force intensification in the gripper design. The mechanical intensification of the force is typically between 3 and 9 times, making friction a major factor in the proper operation of the system.

For systems with manual HSK grippers such as those supplied by Mapal and Guehring, periodic verification of correct tool holding force is also of critical importance. Per manufacturer recommendation, tools should be clamped using a torque wrench to ensure correct force. However, if the gripper is not properly lubricated, tool holding force will be much lower at the specified torque.

**Operator Safety**

Eventually, the tool holding system of a machine will fail catastrophically if left unchecked. There will be lots of mysterious problems such as poor part finish and broken tools, and eventually leading to the tool flying out of the spindle and damaging the workpiece, machine, or worse—injuring the operator.

**Standards Compliance**

The ISO and DIN HSK standards have recommended minimum clamping forces. The ForceCheck gauge can verify that these are met.

Minimum Suggested Drawbar Pull Force ISO 12164		
Taper Size		Range of Diebold Pull Force Gauges
HSK25	2.8 kN	0,5 – 10 kN
HSK32	5 kN	1 – 15 kN
HSK40	6.8 kN	2 – 20 kN
HSK50	11 kN	2 – 25 kN
HSK63	18 kN	5 – 40 kN
HSK80	28 kN	10 – 50 kN
HSK100	45 kN	10 – 70 kN
SK30/BT30	6 kN	1 – 15 kN
SK40/BT40	12 kN	2 – 25 kN
SK50/BT50	25 kN	5 – 40 kN



When selecting the proper tool clamping system for your application, you need to make sure that you are always selecting the tool clamping system that will provide you the tightest TIR (total Indicator run-out) to the centerline of the rotating tool. Both the machine tool builder and the cutting tool manufacturer have designed their products to run at “dead center”. Selecting a tool clamping system that maintains center accuracy throughout the entire length of the tool assembly is critical. Maintaining the centerline while in the “cut” is very critical and takes into consideration the tool clamping assembly plus rigidity of the entire tool clamping assembly to maintain the TIR while under tool load forces.

### TAPER DESIGN PRINCIPLES

Common tool holders for machine tool spindles today are typically one of two classes of tapers – Steep Taper [ CAT (ANSI), BT (MAS), and DIN/ISO) and hollow shank taper or HSK (DIN). These designs can be taper-only contact or simultaneous contact between tool taper and spindle face. There are two additional tool shank interfaces most commonly found in multitasking machine spindles due the rotation and static applications of this style machine. In this case you may find KM (Kennametal) or CAPTO (Sandvik) tool shanks designs.



**Steep Taper:** The most commonly used taper principal. Provides very good durability and excellent dampening characteristics for spindle speeds ranging from very low to moderately high. The typical maximum RPMs are 30,000 rpm 30 taper (BT30), 18,000 rpm for 40 taper (CAT40/BT40/SK40), and 12,000 rpm for 50 taper (CAT50/BT50/SK50). AT higher speeds the spindle may expand due to centrifugal forces allowing the taper to draw into the spindle and/or spindle open to expand. This restricts the practical speeds that steep taper can be used at. The length of the steep taper allows for a straight line bending mode based on applied side forces.

**HSK:** Due to the face contact (no movement back into the taper allowed) and the hollow thin wall taper (expands to fill the spindle) of the HSK design, the spindle speed is not restricted by draw-in of the tool holder shank due to centrifugal forces. Speeds for HSK spindles are as high as 60,000 rpm. These higher spindle speeds (Form E or Form F designs) do not utilize a direct tang drive design and therefore are not practical at lower speed, higher force applications. The short thin wall taper and face contact provide a more rigid bending mode at lower forces and very rapid bending at higher forces. This can result is less dynamic stiffness.

### CONCENTRICITY

Tools should be selected based on their ability to maintain the cutting tool concentric to the centerline of the spindle rotation not only at the tool clamping point but axially at the cutting tool tip or cutting edge. This consideration is critical especially when selecting “mechanically clamping/gripping” systems like collet chucks, power milling chucks, or products with pressed-in collets.

**BALANCE**

The effect that unbalanced tools have on the machine spindle and cutting tool operation is relative to the amount of unbalance, RPM of cutting tool, and radial load on the cutting tool. While the higher the cutting forces on a cutting tool may minimize the effect of unbalance, the harmonics created by an excessive amount of unbalance will be evident in spindle bearing wear, tool holder shank wear, and cutting tool life. Under most circumstances, a pre-balanced tool holder is all that is required to achieve a balanced machining condition below 12,000 rpm in 40 taper spindles and 8,000 rpm in 50 taper machines. HSK holders should all be at a minimum 20,000 rpm pre-balance design.

Selecting the proper tool clamping system for higher RPM applications:

**Weldon End Mill Holders** – For heavy milling using cutting tools with Weldon flats on the shanks. The side lock design compromises concentricity and is not useable in higher rpm applications due to the excessive run-out in the assembly.

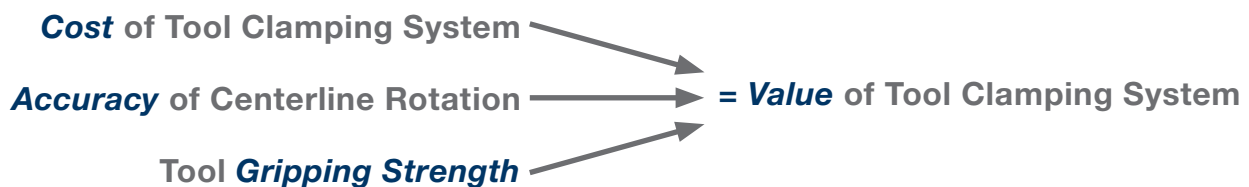
**Double Angle Collet Systems** – This style collet system is design for drilling and reaming applications only. The system design provides good concentricity and acceptable gripping strength for “Z” axis applications. Collet nut design is limited when radial loads for milling applications is used.

**ER Collets/Single Angle Collets** – For most drilling and lighter high speed milling applications. Very good concentricity and very good balance. However, mechanical interface between collet, collet nut, and holder can vary balance and tool run-out. Collet nut torque to specifications is critical to prevent over torque collet nut thus altering axial run-out of assembly. The collet nut design does not lend itself for good balance at higher RPM speeds.

**Hydraulic Chucks** – These tools are designed for high accuracy TIR cutting tools when performing “Z” axis applications. Due to the “fluid manifold” design that grips the shank for the cutting tool, limited side load for milling applications is possible. These tools have very accurate TIR and excellent tool shank gripping strength but their design limits high RPM speeds due to the amount of unbalance in the system design.

**Hi-Power Milling Chucks** – The design of this system is to attain very high tool shank gripping forces while maintaining a very accurate TIR. Unlike the double or single angle collet designs that squeeze the collet against the collet nut to get spring pressure to grip the tool shank, Hi=Power Milling chucks use a roller bearing design that squeezes the tool shank equaling in length and concentrically. The design of these tools allows for the highest tool shank gripping force for heavy duty roughing applications in thrust and radial loads. System design minimizes high RPM speeds.

**ThermoGrip Shrink Fit holders** – This system does not use mechanical gripping forces but physical gripping forces as there are no moving parts to grip the tool shank. Thermal energy (heat) is used to expand the tool bore allowing the shank of the cutting tool to be inserted into the tool holder internal bore. The cooling of the tool holder body then grabs the cutting tool shank with tremendous grip due the “interference design” of the bore. This non-mechanical design allows for the highest cutting tool shank gripping force, high TIR accuracy, and highest RPM speeds. Radial loads with ThermoGrip shrink fit holders can exceed “traditional mechanical clamping” designs since there is no mechanical parts to move under radial or axial tool loads. Small nose diameters makes this system excellent choice for deep pocket milling or drilling, wall clearance in molds or dies, and exceptional clear for most 5 axis machining applications.



CHARACTERISTIC	END MILL HOLDER	DA COLLET CHUCKS	SC COLLET CHUCKS	ER COLLET CHUCKS
<b>PRECISION</b> Toolholder precision is based on run out or TIR from centerline on rotation axis at the shank and cutting tool tip/edge	<b>1</b> Lowest precision due to bore tolerances, diametrical clearance and side lock screw forces.	<b>1</b> Lower precision due to design and gripping accuracy.	<b>2</b> Single angle design lends itself to high gripping strength and accuracy.	<b>3</b> Highest single angle collet accuracy and solid carbide tool shank grip.
<b>VERSATILITY</b> Expanse of use is based on the capability to clamp multiple tool shank diameters and styles	<b>1</b> One size per tool limited to same size tool shank.	<b>3</b> The DA (double angle) collet system has three collet size ranges accommodating shank sizes to 3/4" maximum diameter.	<b>5</b> SC (PG or TG) single angle collet systems have three series sizes accommodating tool shank sizes to a maximum of 1.500" diameter tool shank.	<b>5</b> ER collet system is based on metric nominal sizes and has a tool angle different than the SC collet system. ER collets are available in six different sizes and can accommodate tool shanks to a maximum of 1.181" diameter shank.
<b>TOOL CLAMPING RIGIDITY</b> How rigid is the cutting tool shank secured in the body of the holder under cutting tool loads and RPM changes.	<b>1</b> Minimal rigidity due to set screw design clamp cutting tool shank off center.	<b>2</b> Median tool rigidity due to limit tool shank clamping force of DA collet design.	<b>4</b> Best collet grip strength due to design. 3 to 1 torque value on tool shank.	<b>3</b> Good collet grip strength due to design. 2 to 1 torque value on tool shank.
<b>EASE OF USE</b> Ease of use is based on the simplicity of the "clamping system" to be assembled and disassembled with the cutting tools.	<b>4</b> 1 or 2 set screws required to secure tool shank in tool holder.	<b>3</b> May assemble tool, collet and collet nut in any sequence.	<b>2</b> Requires collet to be inserted in collet nut before tool shank can be inserted into collet and then into tool holder body.	<b>2</b> Requires collet to be inserted in collet nut before tool shank can be inserted into collet and then into tool holder body.
<b>RELIABILITY</b> How reliable is the "clamping system" to maintain the required optimal precision for the assembled system.	<b>3</b> End mill holders require minimal maintenance other than ID bore integrity.	<b>3</b> Regular cleaning of collet surface and collet body surfaces. Care of collets is most critical.	<b>3</b> Regular cleaning of collet surface and collet body surfaces. Care of collets is most critical.	<b>3</b> Regular cleaning of collet surface and collet body surfaces. Care of collets is most critical.
<b>HIGH RPM/ TOOL BALANCE</b> As machining RPM increase, tool balance is important. Value based on ability to maintain tool balance at high RPM.	<b>1</b> End mill holders by design are unbalanced and unstable at high RPM.	<b>1</b> Lack of collet precision design and collet nut design makes DA system weak at high RPM.	<b>2</b> Concentric collet and collet body design allow for moderate RPM use but collet nut design limits high RPM usage.	<b>3</b> Concentric collet and collet body design allow for moderate RPM use but collet nut design limits high RPM usage.
<b>ECONOMY/COST</b> Cost or purchased value of the tool clamping system.	<b>5</b> Lowest cost tool holder system.	<b>4</b> Lowest cost collet system due to lower precision system.	<b>4</b> Median price tool holding system but must secure collet as well TG/PG collets price similar to ER collets.	<b>3</b> Median price tool holding system but must secure collet as well TG/PG collets price similar to ER collets.
<b>VALUE</b> Value of the productivity and tool performance gained from the assembled system.	<b>1</b> While the most economical purchase, this tool style can be the most costly due to it's low TIR and limited applications of tool sizes and RPM capabilities.	<b>2</b> While this was the "original collet chuck system" it is limited in its accuracy and rigidity. It is great for narrow clearances and drilling applications.	<b>2</b> This product was the 2nd generation of collet systems and is widely used today. Its gripping strength is the highest of SC or ER collet systems. One issue still remains and that is the shank engagement required for carbide shank tools.	<b>3</b> The most flexible and accurate of the collet systems that are considered "industry standard" today. Good tool shank gripping strength and high accuracy with regards to TIR.

HP COLLET CHUCKS	MILLING CHUCKS	HYDRAULICS CHUCKS	SHRINK FIT	CHARACTERISTIC
4	4	5	5	<b>PRECISION</b> Toolholder precision is based on run out or TIR from centerline on rotation axis at the shank and cutting tool tip/edge
Highest single angle collet accuracy with close tolerance collet ID sizes for TIR improvement	Precision achieved is based on collet accuracy and torque value of assembled system	High TIR accuracy due to system design and manufacturing tolerances to rotational centerline	Highest TIR accuracy of all clamping systems.	
4	4	1	1	<b>VERSATILITY</b> Expense of use is based on the capability to clamp multiple tool shank diameters and styles
Same as ER collet system but with highest TIR accuracy through a controlled manufacturing process.	Reduction collet system designed to operate in conjunction with the roller bearing clamping system design in the collet nut	Single size ID per tool clamping system. Accommodates a single shank size	Single size ID that accommodates a single size tool shank requiring H6 or H7 shank tolerance	
3	4	4	5	<b>TOOL CLAMPING RIGIDITY</b> How rigid is the cutting tool shank secured in the body of the holder under cutting tool loads and RPM changes.
Good collet grip strength due to design. 2 to 1 torque value on tool shank. Collet collapse restriction limits rigidity	Strongest gripping collet system. Gripping strength is nearest thermal clamping strength	Good clamping rigidity for "Z" axis use only. Radial loads can damage internal hydraulic sleeve design.		
1	3	2	4	<b>EASE OF USE</b> Ease of use is based on the simplicity of the "clamping system" to be assembled and disassembled with the cutting tools.
Requires collet to be inserted in collet nut before tool shank can be inserted into collet and then into tool holder body. HP ER collets have limited collet collapse range.	Reduction collet system.	Tool insertion is completed and then pressure clamp screw is adjusted to increase "hydraulic" clamp forces surrounding the sleeve holding the tool shank.	Requires shrink fit machine to heat the tool clamping bore allowing tool shank insertion.	
4	4	4	5	<b>RELIABILITY</b> How reliable is the "clamping system" to maintain the required optimal precision for the assembled system.
Regular cleaning of collet surface and collet body surfaces. Care of collets is most critical.	Regular cleaning of collet surface and collet body surfaces. Care of collets is most critical.	Regular cleaning of bore required. Only solid and cylindrical shanks with no voids can be used in this system.	No mechanical parts to wear out or be maintained.	
4	3	4	5	<b>HIGH RPM/ TOOL BALANCE</b> As machining RPM increase, tool balance is important. Value based on ability to maintain tool balance at high RPM.
Concentric collet and collet body design allow for moderate RPM use but collet nut design limits high RPM usage.	Concentric collet and collet body design allow for moderate RPM use but collet nut design limits high RPM usage.	Body design and "fluid clamping" system limits high RPM usage.	No mechanical parts and designed for balance stability at high RPM.	
2	2	5	3	<b>ECONOMY/COST</b> Cost or purchased value of the tool clamping system.
Median price tool holding system but must secure collet. HP (PG/TG HP or ER HP) are higher cost than standard collets.	Higher cost of holder due to design and clamping system.	Most expensive tool clamping system.	Median price of tool holder but shrink fit machine needs to be purchased to support the system.	
4	4	3	5	<b>VALUE</b> Value of the productivity and tool performance gained from the assembled system.
Same as the ER collet system but with higher TIR accuracy. Much more costly collets than standard ER style collets.	Great tool shank gripping strength and excellent TIR accuracy. Excellent value for large shank tools and high radial tool loads when using heavy feed rates. Large nose limits clearances in pockets.	Highest accuracy for "Z" axis drilling. Expensive tool that usually needs replacement every 3- 5 years. Limited uses for end milling as radial loads must be light to reduce risk of damaging holder bore.	After investment is made, this system offers all the productivity benefits for milling, drilling, and reaming. Most rigid, highest TIR accuracy, and best tool gripping strength of all clamping systems. Best overall value when considering tooling cost with productivity and part accuracy achievements.	

"EVERY DAY, THE WORLD SHRINKS A LITTLE MORE."



# BILZ

we hold our promise

## We'll Take You Where You Need to Go.

All of our products are "best in class" technologies that help our customers remain competitive and profitable. We have something that can help you too! Learn more at [www.bilzusa.com](http://www.bilzusa.com).

### **The Latest Technology. The Best Quality. Extensive Product Support.**

**We hold our promise in three important ways:** First, by delivering the most advanced tool clamping technology available; Second, by maintaining the highest level of quality; Third, by providing the strongest product, application and engineering support in the industry. **Let us prove it! Bilz Tool Company, Inc.**

[www.bilzusa.com](http://www.bilzusa.com) | 1140 N. Main Street | Lombard, IL 60148 | 847-734-9390

[www.EngineeringBooksPdf.com](http://www.EngineeringBooksPdf.com)