

Dear Customer,

Charis Solutions, Bangalore INDIA is a company established in 2015 to manufacture quality tool holders required by users of CNC Machining Centers. We offer high quality tool holders for both conventional & CNC machines.

CHARIS products are well established and well received by customers both in domestic as well as international markets. We export to hard currency markets like Europe, UK, USA, We have 4000+ domestic customers including companies like Toyota Kirloskar, TVS Motors, Ashok Leyland, Hyundai, Hero motors, Honda Motors, Bajaj Auto, Force motors, Bosch, JCB, AAL, ELGI, LMW, BEML, Titan, NTTTF, Kennametal India, Widia, Rane Group, Ace Manufacturing Systems, Haas etc.

Our Product Range Includes:

1. Collet Chucks (Shank Types: HSK, BT, TC, ISO, CT etc)
2. Collet Chucks (Cylindrical)
3. Shrink Fit Holders
4. Side lock Holders
5. Collets / Expansion Collets
6. Milling Arbors
7. Boring Bars
8. Drill Chuck adaptors
9. Morse Taper Adaptors
10. Sleeves
11. Pull Studs
12. Nuts & Spanners and
13. Semi Standard Tool holders.
14. Tool setting fixture & edge finders.
15. Baby Collet Chucks.

The core competence of **CHARIS** is technical know-how related to precision tooling systems. Above mentioned products are manufactured as per standard. We have established capabilities to deliver AT3 class taper shanks and to manufacture dynamically balanced toolings for use on high rpm machines. Our dedicated quality control team ensures that customer gets superior product every time with following quality measures:

- Raw material adheres to stringent quality in chemical composition, micro structure, hardness and freedom from defects.
- Manufacturing is carried out on high accuracy machines in controlled environment.
- Specialized heat treatment processes followed by quality checks of every batch.
- Stage wise inspection is carried out at all phases of manufacturing processes to ensure conformance to dimensional tolerances as well as consistency of production process.
- Well equipped in Awareness of Quality with precision equipments: taper gauges, balancing machine etc.

The marketing team at **CHARIS** guides customers with valuable inputs which help them find solutions to their tool holding requirements. The products catalogues can be provided on request. You may also visit www.charistoolings.com to view & select products. Please drop your enquiries to mktg@charistoolings.com . We look forward to receiving your enquiries and to have a long mutually beneficial association.

Thanks & Best Regards.

CHARIS

Team - Marketing



CONTACT DETAILS

Charis Solutions

NO: 155, Rajgopal Nagar Main Road
2nd Stage, Peenya
Industrial Area
Bangalore - 560058

Contact Persons: Vaman Dhulekhed / Vijay Kumar Pujari / Sagar

Tel: 080 - 41171018

Mobile: / 09900182697 / 09964246240 / 09620780942

Email: info@charistoolings.com, mktg@charistoolings.com

Website: www.charistoolings.com

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in its best tradition of offering quality products to meet the customer's needs now offers HSK Tool Holders conforming to DIN 69893



ensures that the customer gets a superior product every time with the following measures:

- Raw material adheres to stringent quality in chemical composition, Micro structure, Hardness and Freedom from defects
- Manufacturing is carried out on high accuracy machine tools in "Controlled environment"
- Specialized heat treatment processes followed by quality check of every batch
- Precision Metrology standards and gauging equipment to ensures dimensional and geometrical accuracies
- Dynamic balancing to G6.3 at 12000 rpm as standard and to finer levels according to application



Offers complete range of HSK tool holders including Collet chucks, Side Lock holders, Milling arbors, MT adaptors, Boring bars and Shrink Fit holders – in standard and special length

HSK Tool holders have unique advantages over the solid taper shanks like BT, SK, CT etc.

HSK Tool Holding System

Compared to the conventional solid, 7/24-steep taper shanks, the HAS taper shanks with their hollow taper have several advantages, in application where precision, accuracy, rigidity and speed are critical. Unlike the 7/24 taper shanks in which the radial and axial locations are ensured by the taper, the somewhat elastic hollow shank taper of HSK provides a simultaneous contact with the shoulder face.

High static and dynamic rigidity

The simultaneous contact of the taper and its shoulder face with the machine spindle combined with the high axial and radial forces generated by the Internal Clamping Mechanism ensures high interface rigidity.

Superior positional repeatability

The close dimensional control of taper with reference to the contact face provides very high locational repeatability.

Ideal for high speed application

With the "clamping from inside outward", clamping force increases with rotational speeds unlike solid tapers with pull studs, where the clamping force gets reduced with speed.

Short stroke and small mass

The shorter shank length and its low mass makes tool clamping effortless.



CHARIS the trusted name for Tool Holders now offer Shrink Fit Tool Holders at affordable prices

ADVANTAGES

- Highest concentricity (<5 µm TIR) between and taper shank-meaning uniform load on cutting edges and superior finish on parts
- High torque transmission ensuring better utilization of machine power and increased productivity
- High radial stiffness with the elimination of intermediate elements like collets
- Better balancing quality due to rotational symmetry with sleek design of tool holder, corners in cavities can be machined
- **CHARIS** Shrink Fit Tool holders are made with special steel to withstand thermal fatigue caused by repeated heating and cooling cycles
- These Tool holders can be effectively used with Solid Carbide and HSS tools with suitable heating equipment. Induction heating device will be required for fitting HSS tools

APPLICATIONS

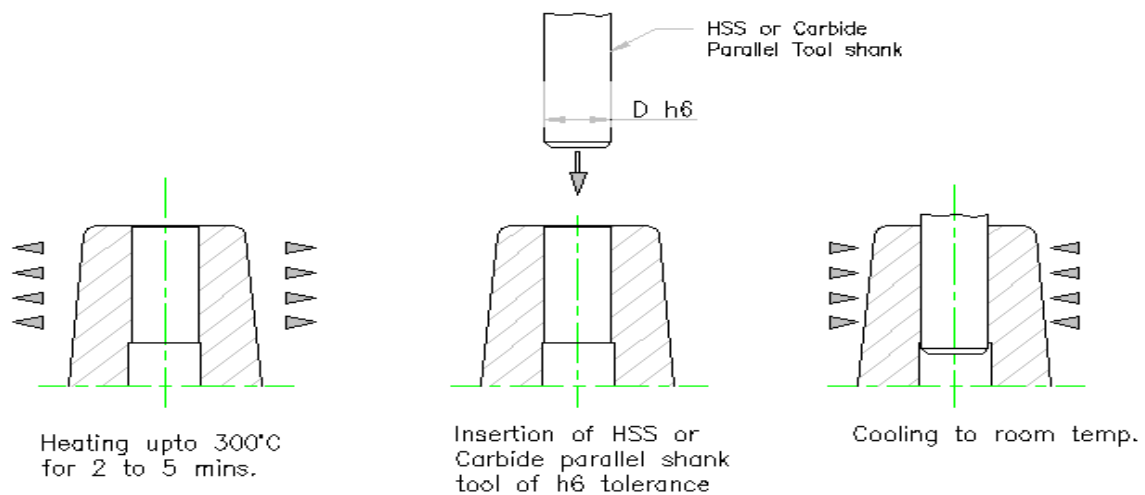
- High speed machining
- Die & Mould machining
- Finish machining
- Precision boring
- Internal grinding

Shrink Fit Tool Holders are offered with any shank including BT, TC, CT, ISO, HSK and parallel shanks **CHARIS** can also offer or assist in selecting suitable heating equipment (Induction Heating Type) for Shrink fitting the HSS Tools.

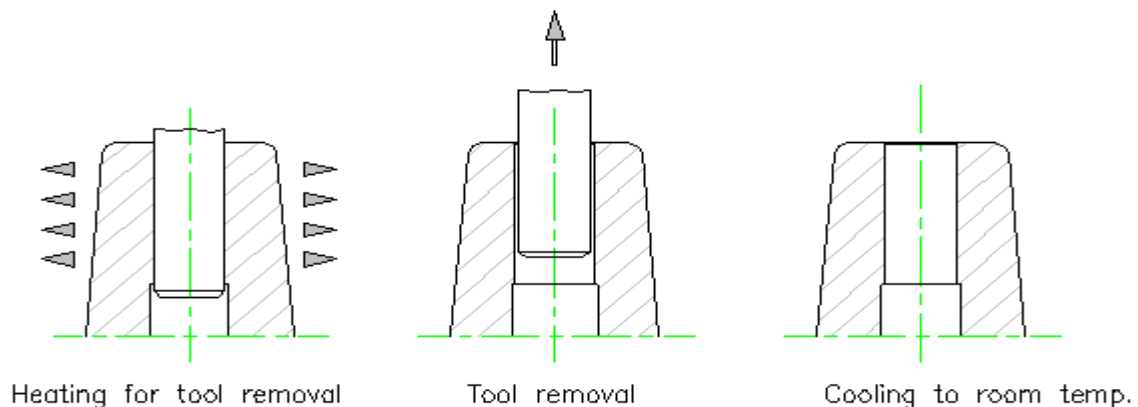
The Technological Concept.

In this tool clamping technology, the tool is clamped by inserting it into a holder that is expanded by heating. Heating is carried out in a hot air device or inductive type equipment. Once the tool is inserted into holder the heater is switched off and the assembly is cooled with a blow of air. The tool holder with the rigidly fixed tool is now ready for use on the Machine. After use, the tool is removed by the same process of heating the assembly and removing the tool. Generally, Hot air heaters are used for solid carbide shank tools only. Otherwise, removal of the tool from the assembly becomes impossible with the same coefficient of thermal expansion for the steel holder and the HSS tools. However with the use of induction heaters it is possible to use HSS tools, since the heating in this case is very fast and the tool can be removed before the heat reaches the tool.

Fitting the Tool in the Holder



Removal of Tool from the Holder



When you choose a tool holder make sure that it conforms to superior quality Standards so that you get the best out of your machine tool and the cutting tools

What makes a high quality Tool holder?

Shank Taper (Refer sketch: page 9)

If it is a taper shank tool holder the quality or the taper is very important. Any variation from the specified value will introduce a clearance between the shank and the spindle bore leading to runout at the cutting edges of the tool. This would cause unequal load among the teeth, reduced tool life and poor surface finish on the work surface. In case of Morse taper shank holders the torque transmitting capacity of the holder will get reduced leading to slippage. All reputed manufacturer offer tool holders with taper shank tolerance of AT3 class. This level of accuracy cannot be achieved by blue matching. Use of good quality pneumatic gauging equipment only can ensure it. The surface finish on the ground shank is also important as any poor surface quality can spoil the bore of the expensive spindle of the machine tool.

Concentricity between shank and the tool (Refer sketch: page)

Even with good taper shank the concentricity between the shank and the tool holding cavity could be poor. The same detrimental effects like unequal load among the teeth, reduced tool life, and poor surface finish will result, if the concentricity between the shank and the tool is not good.

The assured concentricity value varies with different types of tool holders and makes. It would be worthwhile to compare the concentricity values of different tool holders before making a choice.

Material of the tool holders

Tool holders are to be made of good quality raw material to provide good surface hardness and core strength and avoid premature failures. To ensure quality, the manufacturers should have the facility for metallographic tests to detect defects like cracks, voids, inclusions etc. and to check the chemical composition of the material. Every batch of heat treated parts are needed to be checked for hardness, case depth and micro structure. We ensure the quality at every stage from raw material to finished product with the help of our well equipped metallurgical laboratory.

Our Quality Standard

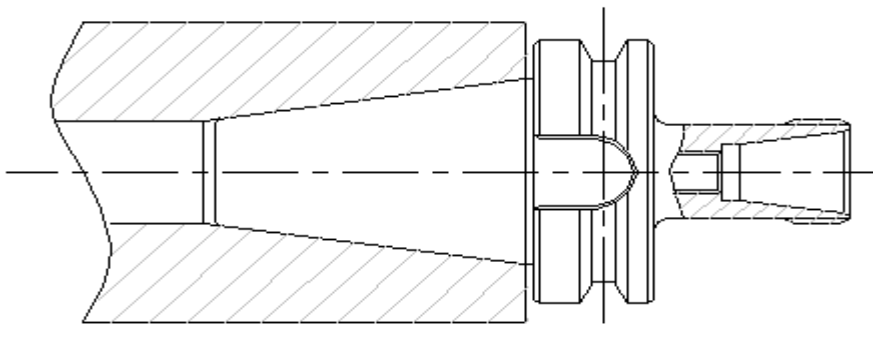
Taper Shanks

Angular tolerance better than AT3 Class (As per ISO 1947 and IS 7615)

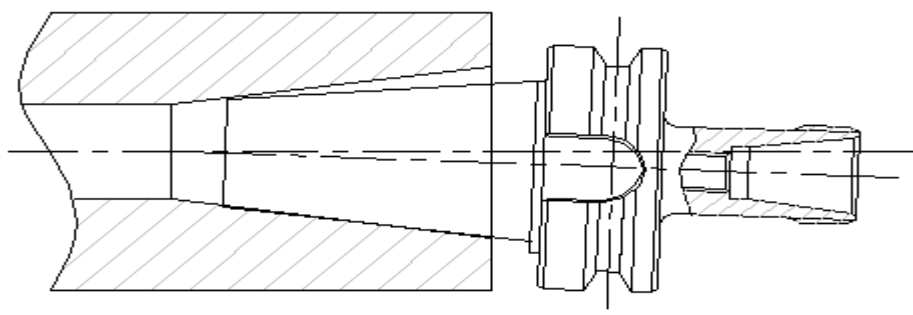
Radial Runout

Side lock holders	:< 5μ m	Reduction Sleeves	:< 5μ m
ER/RD Collet chucks	:< 5μ m	Cylindrical collet chucks	:<5μ m
Face mill arbors	:<5μ m	Shrink fit holders	:<3 μ m

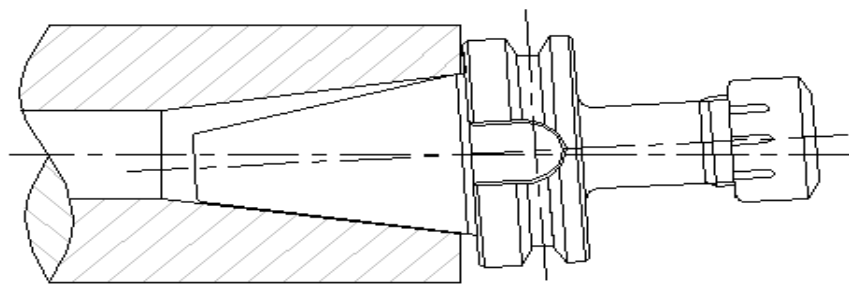
SHANK WITH CORRECT TAPER ANGLE



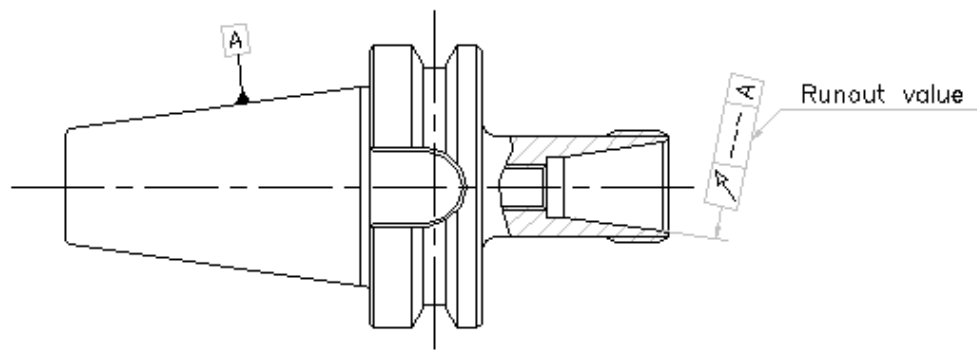
SHANK WITH TAPER ANGLE LESS THAN THAT OF CAVITY



SHANK WITH TAPER ANGLE MORE THAN THAT OF CAVITY



CONCENTRICITY BETWEEN SHANK AND TOOL MOUNTING CAVITY



When the tool holders are subjected to high rotational speeds and also in cases where the rotating tool holders are very heavy, it is essential to have them dynamically balanced.

I. What is imbalance?

When the center of gravity of the rotating mass lies eccentric to the axis, it is said to be in a condition of imbalance.

II. Causes of imbalance

- Asymmetric form of tool holders due to clamping flats drive slots, clamping screws etc.
- Geometrical errors like eccentricity and "Out of roundness" of surfaces

III. Effects of imbalance

- The intermittent form of tool holders due to clamping flats drive slots, clamping screws etc.
- The induced vibrations may lead to inferior surface finish and form errors on the workpiece and reduction in tool life

IV. When is balancing necessary?

It depends on the mass of rotating tool holder assembly, the rotational speed and the amount of existing imbalance and the type of operation. With small tool holders, rotating at low speeds the force due to imbalance will usually be lower than the cutting forces and hence, balancing may not be essential. Balancing is needed for heavy tool holders, high speed applications and where the cutting conditions like surface finish, tool life and manufacturing accuracy are critical. Also, when the machine manufacturers specify it as a condition of warranty, balanced tool holders are essential.

Tool holders can be supplied in balanced condition to suit most of your applications. While ordering the tool holders it is necessary to specify the balancing quality G and the operating speed. For example G 6.3 at 1200rpm. For very high speeds it may be necessary to balance the tool holder with the tool clamping nut, pull stud etc., every time before mounting on the machine. All our shrink-fit tool holders and HSK shank tool holders are supplied in balanced condition as standard.

Balancing quality (Ref:ISO1940)

Some of the usual balancing levels are

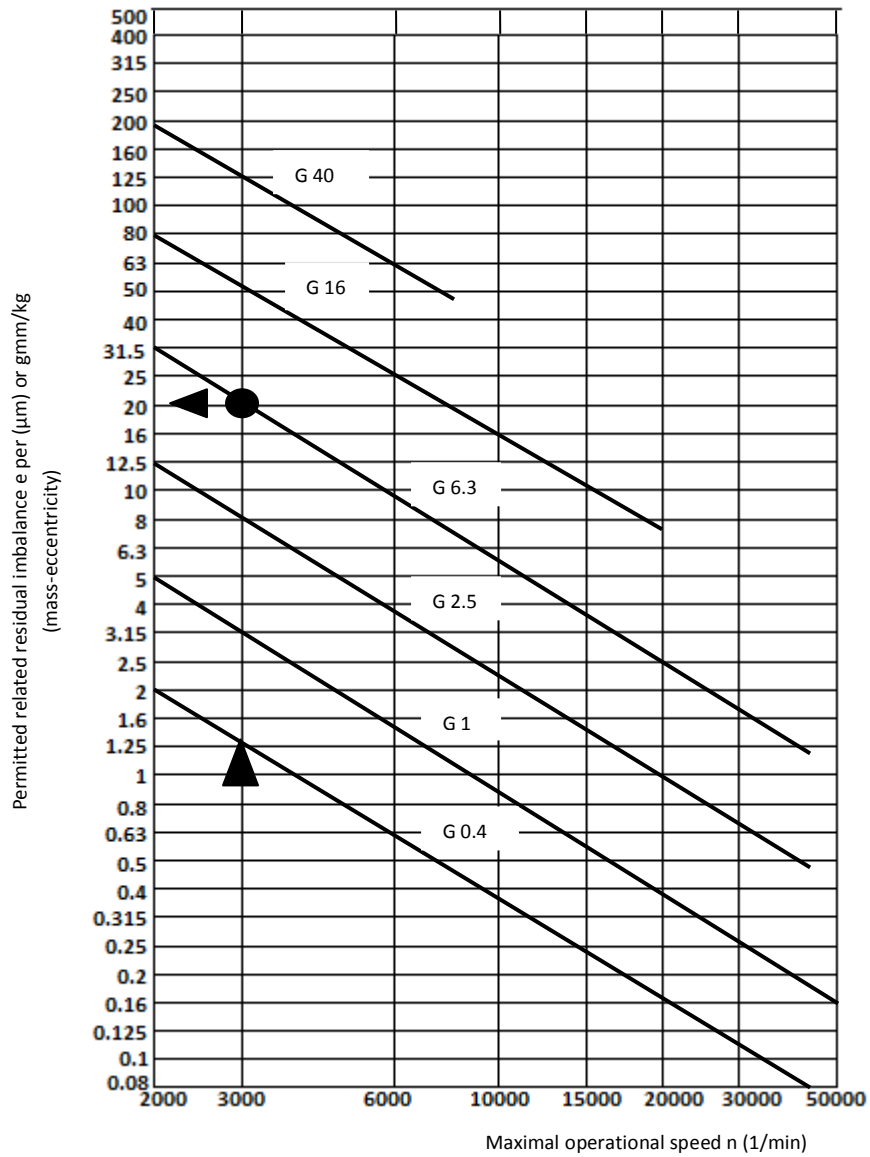
[G6.3@1200rpm](#) (Max. residual imbalance: 5 gmm/kg)

[G6.3@2400rpm](#) (Max. residual imbalance: 2.5 gmm/kg)

[G6.3@1800rpm](#) (Max. residual imbalance: 1.3 gmm/kg)

[G6.3@2000rpm](#) (Max. residual imbalance: 1.2 gmm/kg)

Quality levels according to ISO 1940
and permitted residual imbalance/speed



BALANCING

Example:

Operational Speed	=3,000 rpm
Quality level G	=6.3
Perm. Residual imbalance	=20 μm or gmm/kg

Apart from supplying high quality tool holders of standard designs, we can alone design, manufacture and supply special tool holding systems/collets to meet specific needs of the users.

Machining requirements often go beyond standard tool holders.

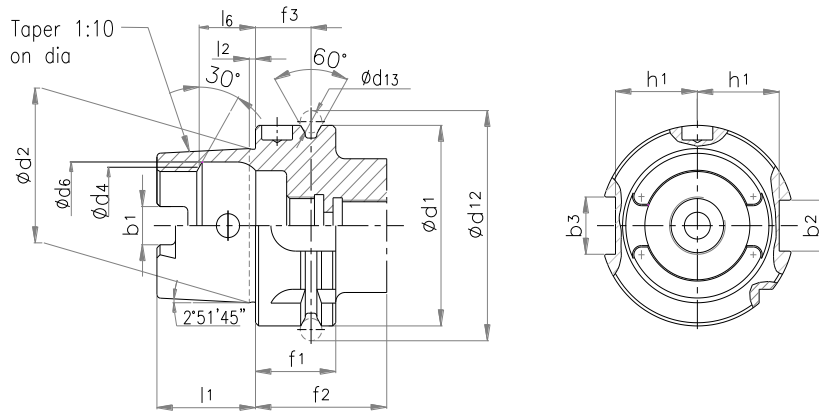
They are often dictated by

- Unusual part shapes
- Extra reach
- High speed machining requirement
- Difficult to machine materials
- Special coolant feed arrangement

Custom made tooling may include special collet chucks/special collets combination boring bars, tool adaptors etc. Our design team, with its vast experience in this field, will be too happy to work with you to find the most optimum solutions for your tool holding needs.

HSK TAPER-TYPE A, DIN 69893-1

SHANK TYPES



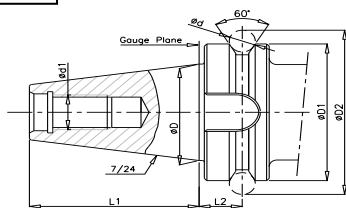
- ❖ STANDAER SUPPLY IS WITHOUT HOLE
- ❖ PROVSION OF HOLE IS OPTIONAL

DIMENSIONS IN mm

TAPER SIZE	d1 H10	d2	d4 H10	d5 H11	d6	d12 0- 0.1	d13	L1 0 -0.2	L2	L6 JS 10	f1 0- 0.1	f2 Min.	f3 ±0.1	h1 0- 0.2	b1 ±0.04	b2 H 10	b3 H 10
HSK A32	32	24	17	21.0	19	37	4	16	3.2	8.92	20	35	16	13	7.05	7	9
HSK A40	40	30	21	25.5	23	45	4	20	4	11.42	20	35	16	17	8.05	9	11
HSK A50	50	38	26	32.0	29	59.3	7	25	5	14.13	26	42	18	21	10.54	12	14
HSK A63	63	48	34	40.0	37	72.3	7	32	6.3	18.13	26	42	18	26.5	12.54	16	18
HSK A80	80	60	42	50.0	46	88.8	7	40	8	22.85	26	42	18	34	16.04	18	20
HSK A100	100	75	53	63.0	58	109.75	7	50	10	28.56	29	45	20	44	20.02	20	22
HSK A125	125	95	67	80.0	73	134.75	7	63	12.5	36.27	29	45	20	55.5	25.02	25	28
HSK A160	160	120	85	100.0	92	169.75	7	80	16	45.98	31	47	22	72	30.02	32	36

SHANK TYPES

BT

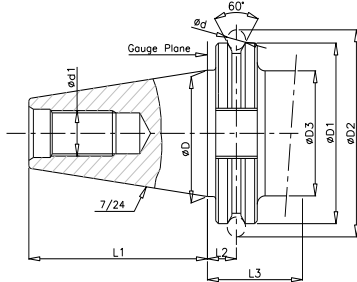


MAS 403

DIMENSION IN mm

TAPER SIZE	Ø D	Ø D1h8	Ø D2 ^{+0.05}	Ø d1 6H	MEASURING PIN Ød	L1 ^{+0.2}	L2 ^{+0.1}
BT 30	31.75	46	56.144	M12	8	48.4	13.6
BT 40	44.5	63	75.679	M16	10	65.4	16.6
BT 45	57.15	85	100.216	M20	12	82.8	21.2
BT 50	69.85	100	119.020	M24	15	101.8	23.2

TC



DIN 69871

ISO 7388

DIMENSIONS IN mm

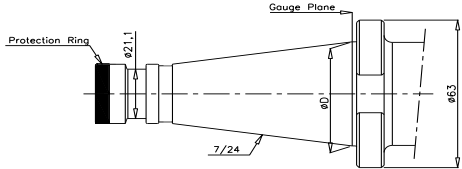
- **DIN 69871-FORM 'A'**
(Without Coolant Holes Through Flange)
- **DIN 69871-FORM 'B'**
(With Coolant Holes through Flange)

TAPER SIZE	Ø D	Ø D1 ^{-0.1}	Ø D2 ^{+0.05}	Ø D3 Max	MEASURING PIN Ød	L1 ^{-0.3}	L2 ^{+0.1}	L3 Min
TC 30	31.75	50	59.3	45	7	47.8	11.1	35
TC 40	44.5	63.55	72.3	50	7	68.4	11.1	35
TC 45	57.15	82.55	91.35	63	7	82.7	11.1	35
TC 50	69.85	97.5	107.3	80	7	101.8	11.1	35

ISO 40 (for CNC Machine)

ISO (for Conventional Machines)

DIN 2080



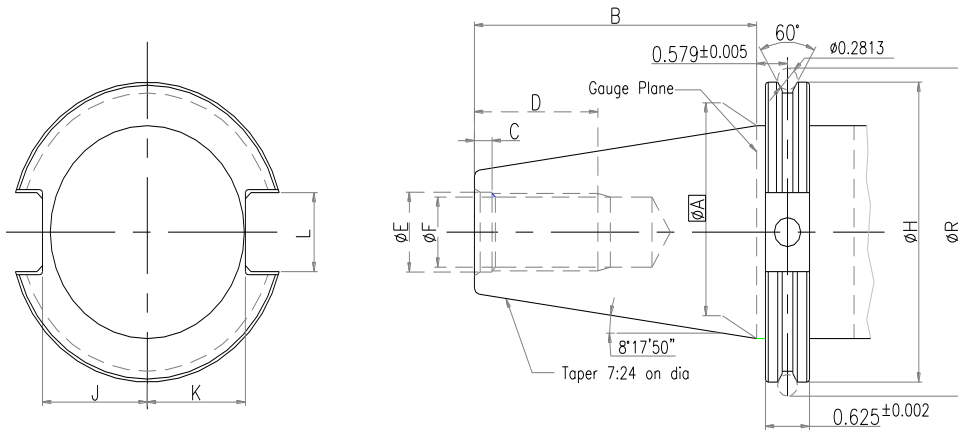
DIMENSION IN mm

TAPER SIZE	Ø D	Ø D1	Ø d1	L1	L2	L3
ISO 30	31.75	50.0	M12	8.0	9.6	68.4
ISO 40	44.45	63.0	M16	10.0	11.6	93.4
ISO 50	69.85	97.5	M24	12.0	15.2	126.8

THESE ARE SUITABLE FOR CONVENTIONAL AND CNC MILLING MACHINE WITH DRAW BAR.



SHANK TYPES



DIMENSIONS IN mm

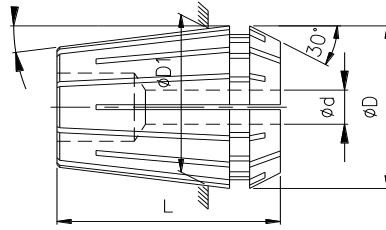
TAPER SIZE	Ø A	B ±0.005	C ±0.010	D Min	Ø E ±0.0150	Ø F UNC 2B-TPI	Ø H ±0.002	J 0-0.015	K 0-0.015	L ±0.010	R ±0.002
CT30	1.250	1.875	0.188	1.00	0.516	½"-13	1.812	0.735	0.640	0.645	2.178
CT40	1.750	2.687	0.188	1.12	0.641	5/8"-10	2.500	0.985	0.985	0.645	2.863
CT45	2.250	3.250	0.188	1.50	0.766	¾"-10	3.250	1.235	1.235	0.770	3.613
CT50	2.750	4.000	0.250	1.75	1.031	1"-8	3.875	1.485	1.485	1.020	4.238

DIMENSIONS IN mm

TAPER SIZE	Ø A	B ±0.127	C ±0.254	D Min	Ø E ±0.3800	Ø F 6H	Ø H ±0.050	J 0-0.381	K 0-0.381	L ±0.254	Ø R ±0.050
CT30	31.75	47.625	4.775	25.40	13.106	M12	46.025	18.669	16.256	16.383	55.270
CT40	44.5	68.250	4.775	28.45	16.281	M16	63.500	25.019	22.606	16.383	72.720
CT45	57.15	82.550	4.775	38.10	19.456	M20	82.550	31.369	28.956	19.558	91.770
CT50	69.85	101.600	4.775	44.45	26.187	M24	98.425	37.719	35.306	25.908	107.645

COLLETS ER TYPE

DIN 6499 – FORM B



DIMENSIONS IN mm

DESIGNATION	ø D1	ø D	L	BORE RANGE ø d	IN STEPS OF	COLLET COLLAPSES BY	NO OF PCS/SET
ER8	8.0	8.50	13.80	1.0 to 5.0	0.5	0.5	9
ER11	11.0	11.50	18.00	1.0 to 7.0	0.5	0.5	13
ER12	12.0	12.00	19.50	1.0 to 7.0	0.5	1.0	13
ER16	16.0	17.00	27.50	1.0 to 10.0	1.0	1.0	10
ER20	20.0	21.00	31.50	2.0 to 13.0	1.0	1.0	12
ER25	25.0	26.00	34.00	2.0 to 16.0	1.0	1.0	15
ER32	32.0	33.00	40.00	3.0 to 20.0	1.0	1.0	18
ER40	40.0	41.00	46.00	4.0 to 26.0	1.0	1.0	23
ER50	50.0	52.00	60.00	12.0 to 34.0	2.0	2.0	12

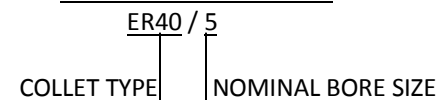
DIMENSIONS IN Inch

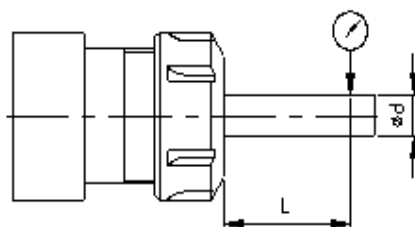
ER8	8.0	0.335	0.543	1/16 to 3/16	1/32	1/64	9
ER11	11.0	0.453	0.709	1/16 to 1/4	1/32	1/64	7
ER12	12.0	0.472	0.768	1/16 to 1/4	1/32	1/64	7
ER16	16.0	0.669	1.083	1/16 to 13/32	1/32	1/32	12
ER20	20.0	0.827	1.240	1/16 to 1/2	1/32	1/32	15
ER25	25.0	1.024	1.399	1/16 to 5/8	1/32	1/32	19
ER32	32.0	1.299	1.575	3/32 to 3/4	1/32	1/32	22
ER40	40.0	1.641	1.811	1/8 to 1.0	1/32	1/32	29
ER50	50.0	2.047	2.362	1/2 to 1 3/8	3/32	5/64	21

*ER8, ER12 & ER50 ARE NOT COVERED IN DIN6499

FOR METHOD OF INSERTION AND RUNOUT DETAILS
SEE NEXT PAGE

ORDERING INSTRUCTION





PERMISSIBLE RUN-OUT-mm

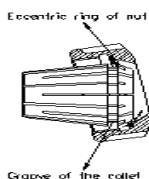
CLAMPING RANGE $\varnothing d$ (mm)		L (mm)	RUNOUT (TIR)	
ABOVE	UPTO		NORMAL PRECISION	HIGH PRECISION
1.0	1.6	6.0	0.015 mm	0.010 mm
1.6	3.0	10.0		
3.0	6.0	16.0		
6.0	10.0	25.0		
10.0	18.0	40.0	0.020 mm	0.015 mm
18.0	26.0	50.0		
26.0	34.0	60.0		

PERMISSIBLE RUN-OUT-Inch

CLAMPING RANGE $\varnothing d$ (Inch)		L (Inch)	RUNOUT (TIR)	
ABOVE	UPTO		NORMAL PRECISION	HIGH PRECISION
-	1/16	¼	0.0006''	0.0004''
1/16	1/8	3/8		
1/8	1/4	5/8		
1/4	3/8	1		
3/8	3/4	1 9/16	0.0008''	0.0006''
3/4	1	2		
1	1 3/8	2 3/8		

METHOD OF INSERTION & RELEASE FOR ER COLLET

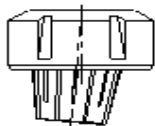
INSERTING



1. PRESS COLLET ON TO THE NUT AT AN ANGLE AS SHOWN TO ENGAGE ECCENTRIC PROJECTION OF NUT WITH GROOVE OF COLLET.
2. SCREW NUT ONTO COLLET CHUCK WITH COLLET SECURELY IN NUT.
3. INSERT THE TOOL TO BE GRIPPED AND TIGHTEN THE NUT

IMPORTANT: NEVER SCREW THE NUT ONTO COLLET CHUCK UNLESS THE COLLET IS PROPERLY SEATED IN NUT

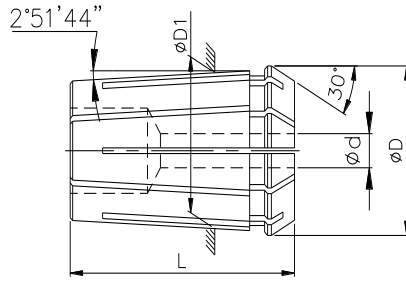
RELEASING



1. UNSCREW THE NUT FROM COLLET CHUCK.
2. THE COLLET IS WITHDRAWN FROM COLLET CHUCK AUTOMATICALLY BY THE ECCENTRIC PROJECTION IN THE NUT.
3. HOLD THE NUT IN ONE HAND AND REMOVE COLLET AT AN ANGLE BY THE OTHER HAND. AS SHOWN IN FIGURE

NOTE: **RD** COLLETS ARE EQUIVALENT TO **ER** & **ESX** COLLETS

ORTLEIB / OZ TYPE, DIN 6388 FORM B



☐ DIMENSIONS IN mm ☐ DIMENSIONS IN Inch

DESIGNATION	BORE RANGE Ø d			NO. OF PIECES PER SET	COLLECT COLLAPSES BY	Ø D	Ø D1	L	REF
	From	To	In steps						
ERO 20	2.0	12.0	0.5	22	0.5	19.80	17.75	34.0	OZ 407E
ERO 25	2.0	16.0	0.5	29	0.5	25.50	22.65	40.0	OZ 415E
ERO 30	2.0	20.0	0.5	37	0.5	29.80	27.40	45.0	OZ 4541E
ERO 35	2.0	25.0	0.5	47	0.5	35.05	32.90	52.0	OZ 462E
ERO 44	2.0	32.0	0.5	57	0.5	43.70	41.30	60.0	OZ 467E
ERO 52	2.0	40.0	0.5	57	0.5	52.20	49.70	68.0	OZ 468E

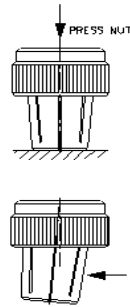
ERO 20	1/16	1/2	1/32	15	1/64	0.780	0.699	1.339	OZ 407E
ERO 25	1/16	5/8	1/32	19	1/64	1.004	0.892	1.575	OZ 415E
ERO 30	1/16	25/32	1/32	24	1/64	1.173	1.079	1.772	OZ 4541E
ERO 35	1/16	1.00	1/32	31	1/64	1.380	1.295	2.047	OZ 462E
ERO 44	1/8	1 1/4	1/32	37	1/64	1.720	1.626	2.362	OZ 467E
ERO 52	1/2	1 9/16	1/32	35	1/64	2.055	1.957	2.677	OZ 468E

METHOD OF INSERTION AND RELEASE OF ERO COLLET INSERTING:

1. PLACE THE COLLET VETICALLY AS SHOWN ON TABLE.
2. PLACE THE NUT ON TOP OF COLLET AS SHOWN.
3. PRESS THE NUT DOWNWAER TO ENGAGE WITH COLLET.

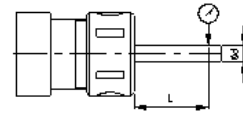
RELEASING:

1. HOLD THE NUT VERTICALLY AS SHOWN IN ONE HAND.
2. PRESS HAER THE COLLET SIDEWAYS BY THE OTHER HAND AS SHOWN TO RELEASE THE COLLET FROM THE NUT.



ORDERING INSTRUCTION

ERO 44 / 5
NOMINAL BORE SIZE
COLLET TYPE



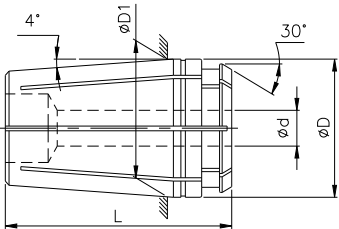
PERMISSIBLE RUN-OUT

CLAMPING RANGE Ød (Inch)		L (Inch)	RUNOUT (TIR)	
ABOVE	UPTO		NORMAL PRECISION	HIGH PRECISION
1/16	1/8	3/8		
1/8	1/4	5/8	0.0006"	0.0004"
1/4	3/8	1		
3/8	3/4	1 9/16		
3/4	1	2	0.0008 "	0.0006"
1	1 1/4	2 3/8		
1 1/4	2	3 1/4	0.0012"	0.0008"

CLAMPING RANGE Ød (mm)		L (mm)	RUNOUT (TIR)	
ABOVE	UPTO		NORMAL PRECISION	HIGH PRECISION
2.0	3.0	10.0		
3.0	6.0	16.0	0.015 mm	0.010 mm
6.0	10.0	25.0		
10.0	18.0	40.0		
18.0	24.0	50.0	0.020 mm	0.015 mm
24.0	30.0	60.0		
30.0	50.0	60.0	0.030 mm	0.020 mm

TIGHT GRIP TYPE

COLLETS ERG TYPE

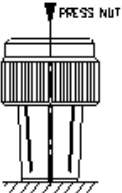


☐ DIMENSIONS IN mm ☐ DIMENSIONS IN Inch

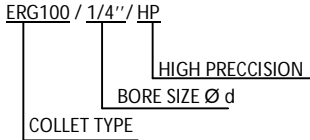
DESIGNATION	BORE RANGE Ø d			NO. OF PIECES PER SET	COLLECT COLLAPSES BY	Ø D	Ø D1	L
	From	To	In steps					
ERG 75	2.0	19.0	0.5	35	0.5	27.002	26.695	46.8
ERG 100	2.0	25.0	0.5	47	0.5	35.026	35.000	60.3
ERG 150	12.5	38.0	0.5	52	0.5	50.825	50.698	70.2
ERG 75	3/32	3/4	1/64	43	1/64	1.063	1.050	1.85
ERG 100	3/32	1.0	1/64	59	1/64	1.378	1.378	2.36
ERG 150	1/2	1 1/2	1/64	65	1/64	2.001	1.996	2.99

METHOD OF INSERTION AND RELEASE OF ERG COLLET
INSERTING:

1. PLACE THE COLLET VETICALLY AS SHOWN ON TABLE.
2. PLACE THE NUT ON TOP OF COLLET AS SHOWN.
3. PRESS THE NUT DOWNWAER TO ENGAGE WITH COLLET.

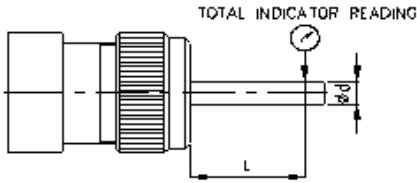
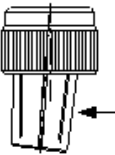


ORDERING INSTRUCTIONS



RELEASING:

1. HOLD THE NUT VERTICALLY AS SHOWN IN ONE HAND.
2. PRESS HAER THE COLLET SIDWAYS BY THE OTHER HAND AS SHOWN TO RELEASE THE COLLET FROM THE NUT.



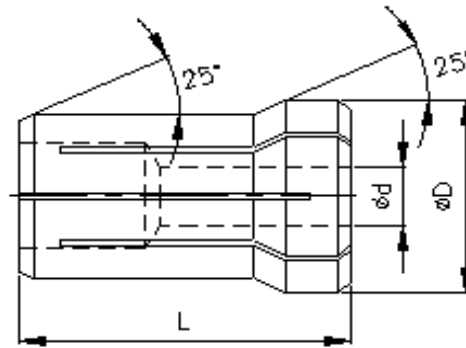
PERMISSIBLE RUN-OUT

CLAMPING RANGE Ød (mm)		L (mm)	RUNOUT (TIR)	
ABOVE	UPTO		NORMAL PRECISION	HIGH PRECISION
2.0	3.0	10.0	0.015 mm	0.010 mm
3.0	6.0	16.0		
6.0	10.0	25.0		
10.0	18.0	40.0		
18.0	26.0	50.0	0.020 mm	0.015 mm
26.0	40.0	60.0		

CLAMPING RANGE Ød (Inch)		L (Inch)	RUNOUT (TIR)	
ABOVE	UPTO		NORMAL PRECISION	HIGH PRECISION
3/32	1/8	3/8	0.0006"	0.0004"
1/8	1/4	5/8		
1/4	3/8	1		
3/8	3/4	1 9/16		
3/4	1	2	0.0008 "	0.0006"
1	1 1/2	2 3/8		

COLLETS DA TYPE

DOUBLE ANGLE TYPE



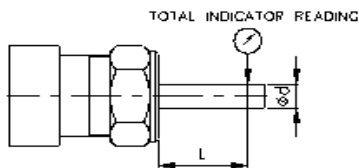
DIMENSIONS IN mm
 DIMENSIONS IN Inch

DESIGNATION	BORE RANGE Ø d			NO. OF PIECES PER SET	COLLECT COLLAPSES BY	Ø D	L
	From	To	In steps				
ERA 300	1.0	6.0	0.5	11	0.5	9.50	25.50
ERA 200	1.0	9.5	0.5	18	0.5	13.50	30.40
ERA 100	2.0	14.0	0.5	25	0.5	19.47	36.70
ERA 180	3.0	19.0	0.5	33	0.5	26.045	41.70
ERA 300	1/16"	1/4"	1/64"	13	1/64"	0.374"	1.004"
ERA 200	1/16"	3/8"	1/64"	21	1/64"	0.535"	1.197"
ERA 100	1/16"	9/16"	1/64"	33	1/64"	0.767"	1.144"
ERA 180	1/8"	3/4"	1/64"	44	1/64"	1.025"	1.640"

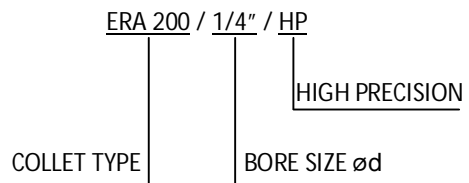
PERMISSIBLE RUNOUT

CLAMPING RANGE Ød (mm)		L (mm)	RUNOUT (TIR)		CLAMPING RANGE Ød (Inch)		L (Inch)	RUNOUT (TIR)	
ABOVE	UPTO		NORMAL PRECISION	HIGH PRECISION	ABOVE	UPTO		NORMAL PRECISION	HIGH PRECISION
1.0	5.0	4Xd	0.025 mm	0.015 mm	1/16"	11/64"	4Xd	0.001"	0.0006"
5.0	19.0	25.0			3/16"	3/4"			

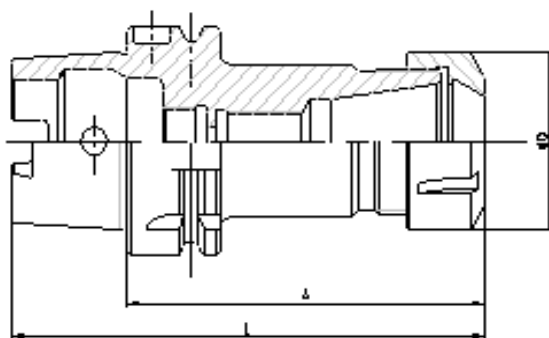
ERA COLLET RUN-OUT



ORDERING INSTRUCTION



SHANK: DIN 69893 (METRIC SIZES)



 DIMENSIONS IN mm

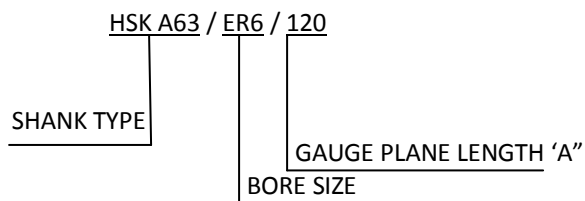
COLLET CHUCKS-HSK SHANK

DESIGNATION	SUITABLE FOR COLLET	∅D	A	L
HSK A63/ER11/80	ER11	19	80	112
HSK A63/ER11/120	ER11	19	120	152
HSK A63/ER16/80	ER16	28	80	112
HSK A63/ER16/120	ER16	28	120	152
HSK A63/ER20/120	ER20	34	120	112
HSK A63/ER20/160	ER20	34	160	152
HSK A63/ER25/120	ER25	42	120	152
HSK A63/ER25/160	ER25	42	160	192
HSK A63/ER32/120	ER32	50	120	152
HSK A63/ER32/160	ER32	50	160	192
HSK A63/ER40/120	ER40	63	120	152
HSK A63/ER40/160	ER40	63	160	192

NOTE:

- ALL THE HOLDERS ARE DYNAMICALLY BALANCED TO G 6.3 AT 12000 RPM.
- SIZES OTHER THAN THOSE LISTED ABOVE ARE AVAILABLE ON REQUEST. OPTIONALLY SIDE LOCK HOLDERS CAN BE SUPPLIED IN BALANCED TO G 2.5 AT 1800 RPM FOR HIGH SPEED APPLICATION MACHINING.

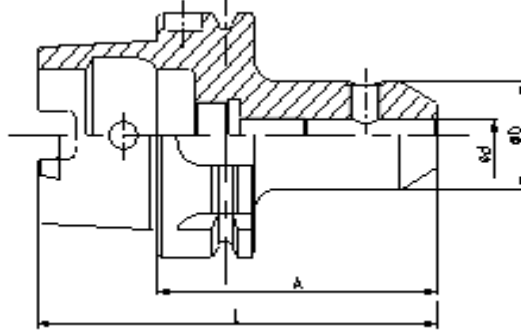
**PROVISION OF HOLE IS OPTIONAL



SIDE LOCK HOLDERS-HSK SHANK

SHANK: DIN 69893 (INCH SIZES)

TOOL CLAMPING END: DIN 1835 FORM B



 DIMENSION IN Inch

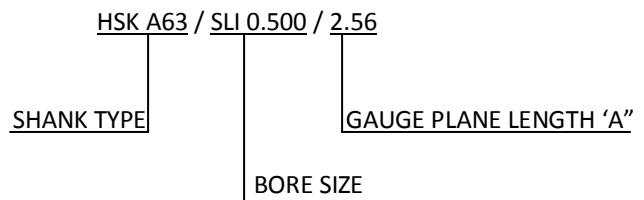
DESIGNATION	$\phi d1H5$	ϕD	A	L
HSK A63/SLI 0.25/2.56	0.250	1.00	2.56	3.82
HSK A63/SLI 0.25/3.94	0.250	1.00	3.94	5.20
HSK A63/SLI 0.312/2.56	0.312	1.10	2.56	3.82
HSK A63/SLI 0.312/3.94	0.312	1.10	3.94	5.20
HSK A63/SLI 0.375/2.56	0.375	1.38	2.56	3.82
HSK A63/SLI 0.375/3.94	0.375	1.38	3.94	5.20
HSK A63/SLI 0.500/2.56	0.500	1.65	2.56	3.82
HSK A63/SLI 0.500/3.94	0.500	1.65	3.94	5.20
HSK A63/SLI 0.625/3.94	0.625	1.89	3.94	5.20
HSK A63/SLI 0.625/6.30	0.625	1.89	6.30	7.56
HSK A63/SLI 0.750/3.94	0.750	2.05	3.94	5.20
HSK A63/SLI 0.750/6.30	0.750	2.05	6.30	7.56
HSK A63/SLI 1.000/3.94	1.000	2.50*	3.94	5.20
HSK A63/SLI 1.000/6.30	1.000	2.50*	6.30	7.56
HSK A63/SLI 1.250/3.94	1.250	2.60*	3.94	5.20
HSK A63/SLI 1.250/6.30	1.250	2.60*	6.30	7.56

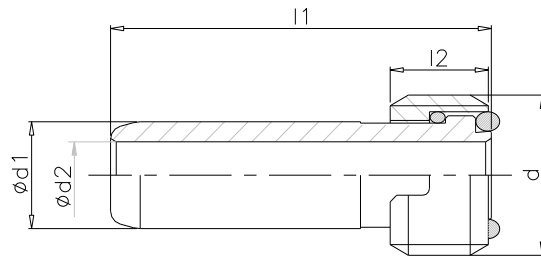
*NOT AS PER DIN 1835 FORM B

NOTE:

- FOR HOLE SIZE 25mm AND ABOVE, TWO CLAMPING SCREWS ARE PROVIDED.
- ALL THE HOLDERS ARE DYNAMICALLY BALANCED TO G 6.3 AT 12000 RPM.
- SIZES OTHER THAN THOSE LISTED ABOVE ARE AVAILABLE ON REQUEST. OPTIONALLY SIDE LOCK HOLDERS CAN BE SUPPLIED IN BALANCED TO G 2.5 AT 1800 RPM FOR HIGH SPEED APPLICATION MACHINING.

** PROVISION OF HOLE IS OPTIONAL





 DIMENSIONS IN mm

DESIGNATION	HSK-A	∅ d1f8	∅ d2	d	l1	l2
CLT/HSK A32	32	6	3.5	M10X1	26.0	5.5
CLT/HSK A40	40	8	5.0	M12X1	29.1	7.5
CLT/HSK A50	50	10	6.4	M16X1	32.7	9.5
CLT/HSK A63	63	12	8.0	M18X1	36.0	11.5
CLT/HSK A80	80	14	10.0	M20X1.5	39.6	13.5
CLT/HSK A100	100	16	12.0	M24X1.5	43.6	15.5

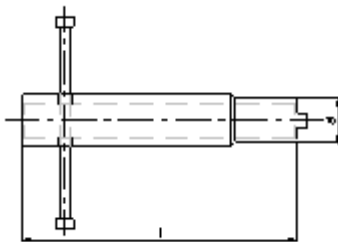
NOTE:
THE COOLANT TUBES ARE SEALED WITH O-RINGS AND ARE BUILT WITH AN ANGULAR FREEDOM OF ± 1° ABOUT THE NEUTRAL AXIS ALONG WHICH IT NORMALLY STAYS.

ORDERING INSTRUCTION

CLT / HSK A63

COOLANT TUBE

SUITABLE FOR SHANK



 DIMENSIONS IN mm

DESIGNATION	l	∅ d
KCL/HSK A32	100	9
KCL/HSK A40	100	11
KCL/HSK A50	100	15
KCL/HSK A63	100	17
KCL/HSK A80	100	18.5
KCL/HSK A100	100	22.5

ORDERING INSTRUCTION

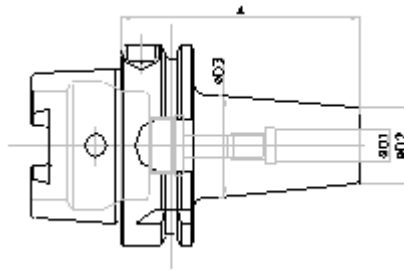
KCLT / HSK A63

KEY FOR COOLANT TUBE

SUITABLE FOR SHANK

SHRINK FIT HOLDERS – HSK SHANK

SHANK: DIN 69893 (METRIC SIZES)



DIMENSIONS IN mm

DESIGNATION	$\phi d1$	$\phi D2$	$\phi D3$	A
HSKA63/SF6/90	6	21	31	90
HSKA63/SF6/160	6	21	31	160
HSKA63/SF8/90	8	21	31	90
HSKA63/SF8/160	8	21	31	160
HSKA63/SF10/90	10	24	34	90
HSKA63/SF10/160	10	24	34	160
HSKA63/SF12/90	12	24	34	90
HSKA63/SF12/160	12	24	34	160
HSKA63/SF16/90	16	27	37	90
HSKA63/SF16/160	16	27	37	160
HSKA63/SF20/90	20	33	43	90
HSKA63/SF20/160	20	33	43	160
HSKA63/SF25/100	25	44	50	100
HSKA63/SF25/160	25	44	50	160

NOTE:

- THESE HOLDERS ARE SUITABLE FOR SOLID CARBIDE PARALLEL SHANK WITH H6 TOLERANCE
- ALL SHRINK FIT HOLDERS ARE DYNAMICALLY BALANCED TO G 2.5 AT 1800 RPM.
- TOOL HOLDERS WITH SHANKS OF OTHER TYPES AND SIZES ARE AVAILABLE ON REQUEST

**PROVISION OF HOLE IS OPTIONAL

ORDERING INSTRUCTION

HSK A63 / SF10 / 160

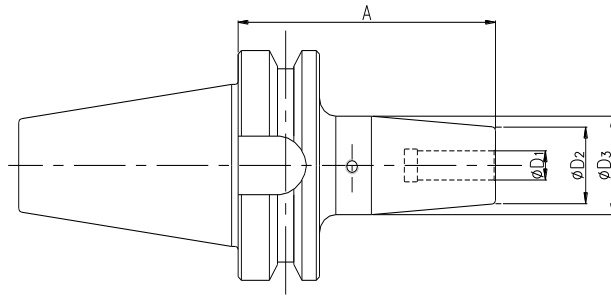
SHANK TYPE

GAUGE PLANE LENGTH 'A'

BORE SIZE – $\phi d1$

BT – SHANK (METRIC SIZES)

SHRINK FIT HOLDERS – BT SHANK



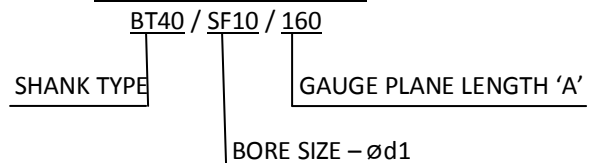
DIMENSIONS IN mm

DESIGNATION	ø d1	ø D2	ø D3	A
BT40/SF6/90	6	21	31	90
BT40/SF6/160	6	21	31	160
BT40/SF8/90	8	21	31	90
BT40/SF8/160	8	21	31	160
BT40/SF10/90	10	24	34	90
BT40/SF10/160	10	24	34	160
BT40/SF12/90	12	24	34	90
BT40/SF12/160	12	24	34	160
BT40/SF16/90	16	27	37	90
BT40/SF16/160	16	27	37	160
BT40/SF20/90	20	33	43	90
BT40/SF20/160	20	33	43	160
BT40/SF25/100	25	44	50	100
BT40/SF25/160	25	44	50	160

NOTE:

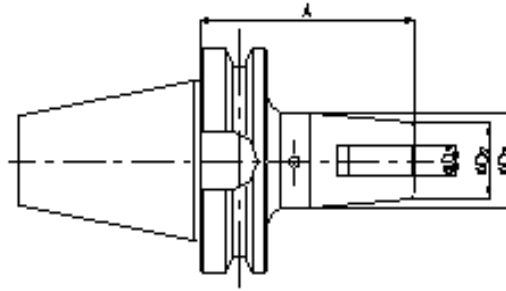
- THESE HOLDERS ARE SUITABLE FOR SOLID CARBIDE PARALLEL SHANK WITH H6 TOLERANCE
- ALL SHRINK FIT HOLDERS ARE BALANCED TO G 2.5 AT 1800 RPM.
- TOOL HOLDERS WITH SHANKS OF OTHER TYPES AND SIZES ARE AVAILABLE ON REQUEST.

ORDERING INSTRUCTION



SHRINK FIT HOLDERS

BT – SHANK (INCH SIZES)



DIMENSIONS IN Inch

DESIGNATION	ø d1	ø D2	ø D3	A
BT40/SFI 0.25/3.54"	0.250	0.83	1.22	3.54
BT40/SFI 0.25/6.30"	0.250	0.83	1.22	6.30
BT40/SFI 0.3125/3.54"	0.312	0.83	1.22	3.54
BT40/SFI 0.3125/6.30"	0.312	0.83	1.22	6.30
BT40/SFI 0.375/3.54"	0.375	0.95	1.34	3.54
BT40/SFI 0.375/6.30"	0.375	0.95	1.34	6.30
BT40/SFI 0.500/3.54"	0.500	0.95	1.34	3.54
BT40/SFI 0.500/6.30"	0.500	0.95	1.34	6.30
BT40/SFI 0.625/3.54"	0.625	1.06	1.46	3.54
BT40/SFI 0.625/6.30"	0.625	1.06	1.46	6.30
BT40/SFI 0.750/3.54"	0.750	1.30	1.69	3.54
BT40/SFI 0.750/6.30"	0.750	1.30	1.69	6.30
BT40/SFI 1.000/3.54"	1.000	1.73	1.97	3.54
BT40/SFI 1.000/6.30"	1.000	1.73	1.97	6.30

NOTE:

- THESE HOLDERS ARE SUITABLE FOR SOLID CARBIDE PARALLEL SHANK WITH h6 TOLERANCE
- ALL SHRINK FIT HOLDERS ARE BALANCED TO G 2.5 AT 1800 RPM.
- TOOL HOLDERS WITH SHANKS OF OTHER TYPES AND SIZES ARE AVAILABLE ON REQUEST.

ORDERING INSTRUCTION

BT40 / SFI 0.375 / 6.30"

SHANK TYPE

GAUGE PLANE LENGTH 'A'

BORE SIZE – ød1

Fig - 1

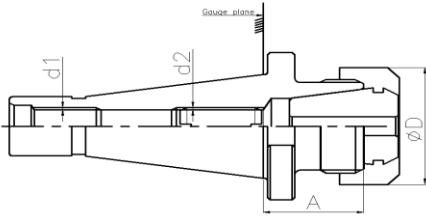
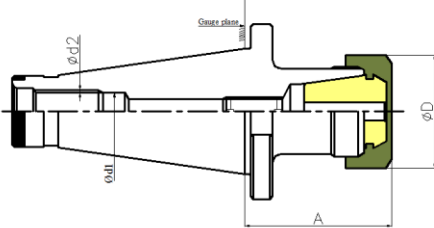


Fig - 2



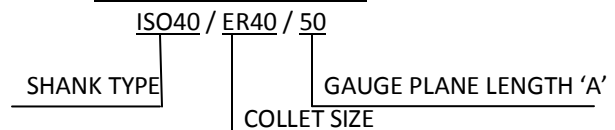
 DIMENSIONS IN mm

DESIGNATION	SUITABLE FOR COLLET	COLLET CLAMPING CAPACITY (MM)	A	ød1	STOPPER SCREW ød2	NUT		SPANNER DESIGNATION	FIG.
						øD	DESIGNATION		
ISO 30/ER32/50	ER32	3-20	50	M12	M16	50	UM/ER32	E32	1
ISO 30/ER40/70	ER40	4-26	70	M12	M16	63	UM/ER40	E40	1
ISO 40/ER16/50	ER16	1-10	50	M16	M8	28	UM/ER16	GS25	2
ISO 40/ER20/50	ER20	2-13	50	M16	M10	34	UM/ER20	GS30	2
ISO 40/ER25/50	ER25	2-16	50	M16	M12	42	UM/ER25	E25	2
ISO 40/ER32/50	ER32	3-20	50	M16	M16	50	UM/ER32	E32	2
ISO 40/ER40/50	ER40	4-26	50	M16	M16	63	UM/ER40	E40	2
ISO 40/ERO25/50	ERO25	2-16	50	M16	M12	43	UM/ERO25	E25	2
ISO 40/ER032/50	ER032	2-25	60	M16	M16	60	UM/ERO32	E40	2
ISO 40/ER044/65	ER044	4-32	65	M16	M16	72	UM/ERO44	E50	2
ISO 50/ER40/60	ER40	4-26	60	M24	M16	63	UM/ER40	E40	1
ISO 30/ER50/65	ER50	12-34	65	M24	M16	78	UM/ER50	E50	1

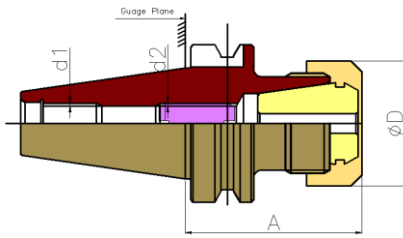
NOTE:

- COLLET CHUCKS ARE SUPPLIED WITH NUTS
- RD COLLETS ARE SAME AS ER COLLETS CONFORMING TO DIN 6499 FORM B.
- **PLACE SEPARATE ORDER FOR SPANNERS. (Refer page No. 59)**

ORDERING INSTRUCTION



BT SHANK



DIMENSIONS IN mm

STANDARD LENGTH

DESIGNATION	SUITABLE FOR COLLET	COLLET CLAMPING CAPACITY (DIA)	A	ød1	STOPPER SCREW ød2	NUT		SPANNER DESIGNATION
						ØD	DESIGNATION	
BT30/ER16/70	ER16	1 - 10	70	M12	M8	28	UM/ER16	GS-25
BT30/ER16M/70	ER16	1 - 10	70	M12	M8	22	UM/ER16M	E-16M
BT30/ER20/70	ER20	2 - 13	70	M12	M10	34	UM/ER20	GS-30
BT30/ER32/70	ER32	3 - 20	70	M12	M8	50	UM/ER32	E-32
BT40/ER16/70	ER16	1 - 10	70	M16	M10	28	UM/ER16	GS-25
BT40/ER20/70	ER20	2 - 13	70	M16	M12	34	UM/ER20	GS-30
BT40/ER25/70	ER25	2 - 16	70	M16	M16	42	UM/ER25	E-25
BT40/ER32/70	ER32	3 - 20	70	M16	M16	50	UM/ER32	E-32
BT40/ER40/80	ER40	4 - 26	80	M16	M12	63	UM/ER40	E-40
BT40/ERO25/70	ERO25	2 - 16	70	M16	M16	43	UM/ERO25	E-25
BT40/ERO35/80	ERO35	2 - 25	80	M16	M16	60	UM/ERO35	E-40
BT40/ERO44/100	ERO44	4 - 32	100	M16	M16	72	UM/ERO44	E-50
BT40/ERG100/80	ERG100	2 - 25	80	M16	M16	60	UM/ERG100	E-40
BT50/ER32/100	ER32	3 - 20	100	M24	M16	50	UM/ER32	E-32
BT40/ER40/80	ER40	4 - 26	80	M24	M16	63	UM/ER40	E-40
BT40/ER50/100	ER50	12 - 34	100	M24	M16	78	UM/ER50	E-50
BT40/ERO35/90	ERO35	2 - 25	90	M24	M16	43	UM/ERO35	E-40
BT40/ERO44/100	ERO44	4 - 32	100	M24	M16	72	UM/ERO44	E-50

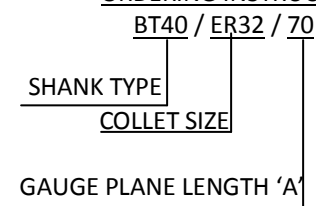
EXTENDED LENGTH

BT30/ER16M/120	ER16	1 - 10	120	M12	M8	22	UM/ER16M	E-16M
BT40/ER16M/125	ER16	1 - 10	125	M16	M8	22	UM/ER16M	E-16M
BT40/ER20M/135	ER20	2 - 13	135	M16	M10	28	UM/ER20M	E-20M
BT40/ER25M/150	ER25	2 - 16	150	M16	M12	35	UM/ER25M	E-25M
BT40/ER16/105	ER16	1 - 10	105	M16	M8	28	UM/ER16	GS-25
BT40/ER20/105	ER20	2 - 13	105	M16	M10	34	UM/ER20	GS-30
BT40/ER25/105	ER25	2 - 16	105	M16	M12	42	UM/ER25	E-25
BT40/ER32/105	ER32	3 - 20	105	M16	M16	50	UM/ER32	E-32
BT40/ER40/105	ER40	4 - 26	105	M16	M16	63	UM/ER40	E-40
BT50/ER16M/135	ER16	1 - 10	135	M24	M8	22	UM/ER16M	E-16M
BT50/ER20M/135	ER20	2 - 13	135	M24	M10	28	UM/ER20M	E-20M
BT50/ER25M/135	ER25	2 - 16	135	M24	M12	35	UM/ER25M	E-25M

NOTE:

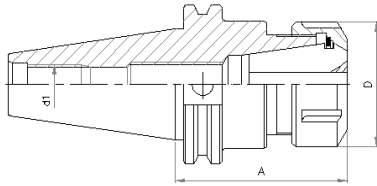
- DETAILS GIVEN ABOVE ARE APPLICABLE FOR COLLET CHUCKS WITH BT SHANK ONLY
- COLLET CHUCKS WITH OTHER TYPES OF SHANK LIKE SK, TC, CT & ISO, ETC. ARE ALSO OFFERED.
- COLLET CHUCKS ARE SUPPLIED WITH NUTS.
- **RD** COLLETS ARE SAME AS **ER** COLLETS CONFORMING TO DIN 6499 FORM B
- OPTIONALLY COLLET CHUCKS CAN BE SUPPLIED IN BALANCED CONDITION FOR HIGH SPEED APPLICATIONS.
- **PLACE SEPARATE ORDER FOR SPANNERS. (Refer page No. 59)**

ORDERING INSTRUCTION



CT SHANK (ANSI/ASME B5.50)

COLLET CHUCKS



STANDARD LENGTH

DIMENSIONS IN mm

DESIGNATION	SUITABLE FOR COLLET	COLLET CLAMPING CAPACITY (DIA)	A	Thread UNC-2B&d1 TPI	NUT		SPANNER DESIGNATION
					ØD	DESIGNATION	
CT30/ER16/3.0"	ER16	1/16-13/32	3.0	0.500-13	1.10	UM/ER16	GS-25
CT30/ER20/3.0"	ER20	1/16-1/2	3.0	0.500-13	1.34	UM/ER20	GS-30
CT30/ER32/3.0"	ER32	3/32-3/4	3.0	0.500-13	1.97	UM/ER32	E-32
CT40/ER11/3.0"	ER11	1/16-1/4	3.0	0.625-11	0.75	UM/ER11	GS-17
CT40/ER16/2.88"	ER16	1/16-13/32	2.88	0.625-11	1.10	UM/ER16	GS-25
CT40/ER20/4.0"	ER20	1/16-1/2	4.0	0.625-11	1.34	UM/ER20	GS-30
CT40/ER25/4.0"	ER25	1/16-5/8	4.0	0.625-11	1.65	UM/ER25	E-25
CT40/ER32/4.0"	ER32	3/32-3/4	4.0	0.625-11	1.97	UM/ER32	E-32
CT40/ER40/4.0"	ER40	5/32-1"	4.0	0.625-11	2.50	UM/ER40	E-40
CT45/ER16/3.88"	ER16	1/16-13/32	3.88	0.625-11	1.10	UM/ER16	GS-25
CT45/ER20/4"	ER20	1/16-1/2	4.0	0.750-10	1.34	UM/ER20	GS-30
CT45/ER32/4.0"	ER32	3/32-3/4	4.0	0.750-10	1.92	UM/ER32	E-32
CT50/ER16/4.88"	ER16	1/16-13/32	4.88	1.000-8	1.10	UM/ER16	GS-25
CT50/ER20/4.0"	ER20	1/16-1/2	4.0	1.000-8	1.34	UM/ER20	GS-30
CT50/ER25/4.0"	ER25	1/16-5/8	4.0	1.000-8	1.65	UM/ER25	E-25
CT50/ER32/4.0"	ER32	3/32-3/4	4.0	1.000-8	1.97	UM/ER32	E-32
CT50/ER40/4.0"	ER40	5/32-1"	4.0	1.000-8	2.50	UM/ER40	E-40

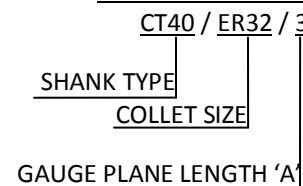
EXTENDED LENGTH

CT40/ER16/4.88"	ER16	1/16-13/32	4.88	0.625-11	1.10	UM/ER16	GS-25
CT40/ER20/6.0"	ER20	1/16-1/2	6.0	0.625-11	1.34	UM/ER20	GS-30
CT40/ER20/8.0"	ER20	1/16-1/2	8.0	0.625-11	1.34	UM/ER20	GS-30
CT40/ER25/6.0"	ER25	1/16-5/8	6.0	0.625-11	1.65	UM/ER25	E-25
CT40/ER32/6.0"	ER32	3/32-3/4	6.0	0.625-11	1.97	UM/ER32	E-32
CT40/ER40/6.0"	ER40	5/32-1"	6.0	0.625-11	2.50	UM/ER40	E-40
CT50/ER16/6.88"	ER16	1/16-13/32	6.88	1.000-8	1.10	UM/ER16	GS-25
CT50/ER20/6.0"	ER20	1/16-1/2	6.0	1.000-8	1.34	UM/ER20	GS-30
CT50/ER20/8.0"	ER20	1/16-1/2	8.0	1.000-8	1.34	UM/ER20	GS-30
CT50/ER25/6.0"	ER25	1/16-5/8	6.0	1.000-8	1.65	UM/ER25	E-25
CT50/ER32/6.0"	ER32	3/32-3/4	6.0	1.000-8	1.97	UM/ER32	E-32
CT50/ER32/8.0"	ER32	3/32-3/4	8.0	1.000-8	1.97	UM/ER32	E-32
CT50/ER40/6.0"	ER40	5/32-1"	6.0	1.000-8	2.50	UM/ER40	E-40

NOTE:

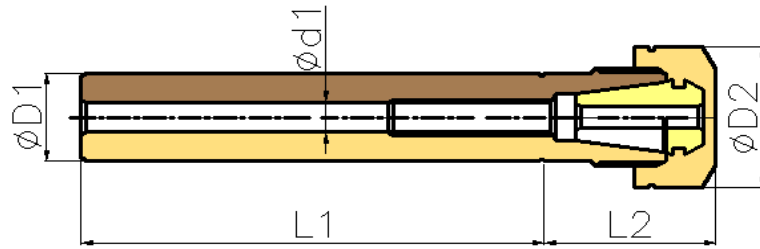
- DETAILS GIVEN ABOVE ARE APPLICABLE FOR COLLET CHUCKS WITH BT SHANK ONLY
- COLLET CHUCKS WITH OTHER TYPES OF SHANK LIKE SK, TC, CT & ISO, ETC. ARE ALSO OFFERED.
- COLLET CHUCKS ARE SUPPLIED WITH NUTS.
- RD COLLETS ARE SAME AS ER COLLETS CONFORMING TO DIN 6499 FORM B
- OPTIONALLY COLLET CHUCKS CAN BE SUPPLIED IN BALANCED CONDITION FOR HIGH SPEED APPLICATIONS.
- PLACE SEPARATE ORDER FOR SPANNERS. (Refer page No. 59)

ORDERING INSTRUCTION



CYLINDRICAL COLLET CHUCKS

BABY CHUCKS (METRIC SIZES)

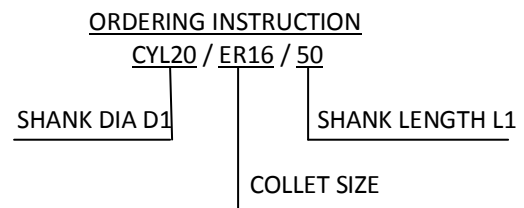


 DIMENSIONS IN mm

DESIGNATION	SUITABLE FOR COLLET	COLLET CLAMPING CAPACITY (DIA)	ØD1	NUT		ØD3	SPANNER DESIGNATION
				ØD2	DESIGNATION		
CYL8/ER8M/56	ER8	1 - 5	8	12	UM/ER8M	-	E-8M
CYL8/ER8M/80	ER8	1 - 5	8	12	UM/ER8M	-	E-8M
CYL8/ER11M/56	ER11	1 - 7	8	16	UM/ER11M	-	E-11M
CYL12/ER11M/100	ER11	1 - 7	12	16	UM/ER11M	-	E-11M
CYL12/ER16M/80	ER16	1 - 10	12	22	UM/ER16M	-	E-16M
CYL16/ER16/60	ER16	1 - 10	16	28	UM/ER16	M8X1	GS-25
CYL20/ER16/50	ER16	1 - 10	20	28	UM/ER16	M8X1	GS-25
CYL20/ER16/100	ER16	1 - 10	20	28	UM/ER16	M8X1	GS-25
CYL16/ER20M/100	ER20	2 - 13	16	28	UM/ER20M	M12X1	E-20M
CYL20/ER20/60	ER20	2 - 13	20	34	UM/ER20	M12X1	GS-30
CYL20/ER20/100	ER20	2 - 13	20	34	UM/ER20	M12X1	GS-30
CYL20/ER25/100	ER25	2 - 16	20	42	UM/ER25	M12X1	E-25
CYL25/ER25/50	ER25	2 - 16	25	42	UM/ER25	M18X1.5	E-25
CYL25/ER25/100	ER25	2 - 16	25	42	UM/ER25	M18X1.5	E-25
CYL20/ER32/50	ER32	3 - 20	20	50	UM/ER32	M12X1	E-32
CYL20/ER32/100	ER32	3 - 20	20	50	UM/ER32	M12X1	E-32
CYL25/ER32/50	ER32	3 - 20	25	50	UM/ER32	M18X1.5	E-32
CYL40/ER32/80	ER32	3 - 20	40	50	UM/ER32	M22X1.5	E-32
CYL25/ER40/50	ER40	4 - 26	25	63	UM/ER40	M18X1.5	E-40
CYL40/ER40/75	ER40	4 - 26	40	63	UM/ER40	M22X1.5	E-40

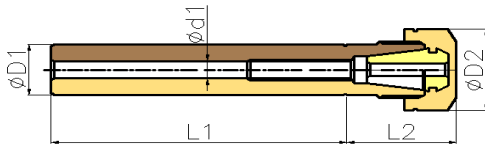
NOTE:

- CYL COLLET CHUCKS ARE SUPPLIED WITH NUTS
- CYL COLLET CHUCKS OF OTHER SIZES AND WITH FLAT ON SHANK ARE AVAILABLE ON REQUEST.
- **RD COLLETS ARE SAME AS ER COLLETS**
- **PLACE SEPARATE ORDER FOR SPANNERS. (Refer page No. 59)**



(BABY CHUCK) – INCH SIZES

CYLINDRICAL COLLET CHUCKS



DIMENSIONS IN mm DIMENSIONS IN Inch

DESIGNATION	SUITABLE FOR COLLET	ØD1		ØD2	NUT	ØD3	L1		L2	SPANNER
		mm	inch	mm			mm	inch		
CYL1/2"/ER8M/80	ER8	12.70	1/2	12	UM/ER8M	-	80	3.15	23	E-8M
CYL1/2"/ER11M/80	ER11	12.70	1/2	16	UM/ER11M	-	80	3.15	30	E-11M
CYL1"/ER11M/80	ER11	25.40	1	16	UM/ER11M	M8x1	80	3.15	30	E-11M
CYL5/8"/ER11M/48	ER11	15.875	5/8	16	UM/ER11M	M8x1	48	1.89	30	E-11M
CYL5/8"/ER11M/154	ER11	15.875	5/8	16	UM/ER11M	M8x1	154	6.06	30	E-11M
CYL3/8"/ER16M/44	ER16	9.525	3/8	22	UM/ER16M		44	1.73	40	E-16M
CYL1/2"/ER16M/154	ER16	12.70	1/2	22	UM/ER16M		154	6.06	40	E-16M
CYL5/8"/ER16M/80	ER16	15.875	5/8	22	UM/ER16M	M8x1	80	3.15	40	E-16M
CYL5/8"/ER16M/154	ER16	15.875	5/8	22	UM/ER16M	M8x1	154	6.06	40	E-16M
CYL3/4"/ER16M/100	ER16	19.05	3/4	22	UM/ER16M	M12x1	80	3.94	40	E-16M
CYL3/4"/ER16M/134	ER16	19.05	3/4	22	UM/ER16M	M12x1	154	5.28	40	E-16M
CYL1"/ER16M/140	ER16	25.40	1	22	UM/ER16M	M12x1	100	5.51	40	E-16M
CYL1/2"/ER16/100	ER16	12.70	½	28	UM/ER16		134	3.94	37	GS25
CYL5/8"/ER16/140	ER16	15.875	5/8	28	UM/ER16	M8x1	140	5.51	37	GS25
CYL3/4"/ER16/100	ER16	19.05	3/4	28	UM/ER16	M12x1	100	3.94	37	GS25
CYL3/4"/ER16/140	ER16	19.05	3/4	28	UM/ER16	M12x1	140	5.51	37	GS25
CYL1"/ER16/134	ER16	25.40	1	28	UM/ER16	M12x1	134	5.28	37	GS25
CYL1"/ER16/140	ER16	25.40	1	28	UM/ER16	M12x1	140	5.51	37	GS25
CYL1/2"/ER20M/134	ER20	12.70	1/2	28	UM/ER20M		134	5.28	46	E-20M
CYL5/8"/ER20M/100	ER20	15.875	5/8	28	UM/ER20M	M8x1	140	3.94	46	E-20M
CYL1"/ER20M/134	ER20	25.40	1	28	UM/ER20M	M18x1.5	134	5.28	46	E-20M
CYL3/4"/ER20/100	ER20	19.05	3/4	34	UM/ER20	M12x1	100	3.94	46	GS30
CYL3/4"/ER25/50	ER25	19.05	3/4	42	UM/ER25	M12x1	50	1.97	47	E-25
CYL3/4"/ER25/100	ER25	19.05	3/4	42	UM/ER25	M12x1	100	3.94	47	E-25
CYL1"/ER25/50	ER25	25.4	1	42	UM/ER25	M18x1.5	50	1.97	47	E-25
CYL1"/ER25/130	ER25	25.4	1	42	UM/ER25	M18x1.5	130	5.12	47	E-25
CYL1"/ER32/50	ER32	25.4	1	50	UM/ER32	M18x1.5	50	1.97	58	E-32
CYL1 -1/4"/ER32/60	ER32	31.75	1 1/4	50	UM/ER32	M22x1.5	60	2.36	58	E-32
CYL1"/ER40/50	ER40	25.40	1	63	UM/ER40	M18x1.5	50	1.97	58	E-40

NOTE:

- CYL COLLET CHUCKS ARE SUPPLIED WITH NUTS
- CYL COLLET CHUCKS OF OTHER SIZES AND WITH FLAT ON SHANK ARE AVAILABLE ON REQUEST.
- **RD** COLLETS ARE SAME AS **ER** COLLETS
- **PLACE SEPARATE ORDER FOR SPANNERS. (Refer page No. 59)**

ORDERING INSTRUCTION

CYL3/4" / ER16 / 1000

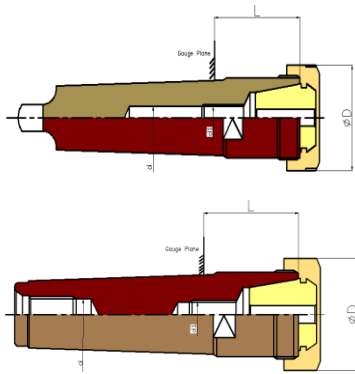
SHANK DIA D1

SHANK LENGTH L1
COLLET SIZE



COLLET CHUCKS

MORSE TAPER SHANK



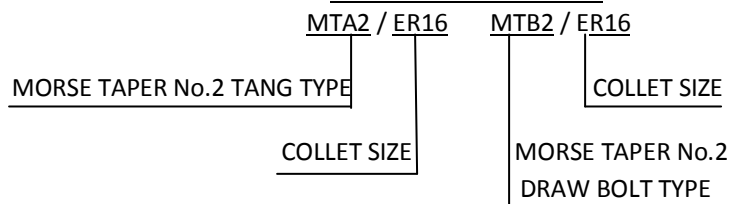
 DIMENSIONS IN mm

DESIGNATION	SUITABLE FOR COLLET	COLLET CLAMPING CAPACITY (DIA)	DRAWBOLT Ød	STOPPER SCREW	L	NUT		SPANNER DESIGNATION
						ØD	DESIGNATION ³	
MTB1/ER11	ER11	1-7	M6	M6	25	19	UM/ER11	GS-17
MTB2/ER11M	ER11	1-7	M10	M6	25	16	UM/ER11M	E-11M
MTB1/ER16	ER16	1-10	M6	M6	45	28	UM/ER16	GS-25
MTB1/ER16M	ER16	1-10	M6	M6	45	22	UM/ER16M	E-16M
MTB2/ER16	ER16	1-10	M10	M8	42	28	UM/ER16	GS-25
MTB2/ER16M	ER16	1-10	M10	M8	42	22	UM/ER16M	E-16M
MTB2/ER20	ER20	2-13	M10	M10	50	34	UM/ER20	GS-30
MTB2/ER20M	ER20	2-13	M10	M10	50	28	UM/ER20M	E-20M
MTB2/ER25	ER25	2-16	M10	M12	55	42	UM/ER25	E-25
MTB2/ER25M	ER25	2-16	M10	M12	54	35	UM/ER25M	E-25M
MTB3/ER16M	ER16	1-10	M12	M8	45	22	UM/ER16M	E-16M
MTB3/ER20M	ER20	2-13	M12	M10	50	28	UM/ER20M	E-20M
MTB3/ER25	ER25	2-16	M12	M12	55	42	UM/ER25	E-25
MTB3/ER25M	ER25	2-16	M12	M12	55	35	UM/ER25M	E-25M
MTB3/ER32	ER32	3-20	M12	M12	70	50	UM/ER32	E-32
MTB3/ER40	ER40	4-26	M12	M16	80	63	UM/ER40	E-40
MTB4/ER25	ER25	2-16	M16	M12	55	42	UM/ER25	E-25
MTB4/ER32	ER32	3-20	M16	M16	60	50	UM/ER32	E-32
MTB4/ER40	ER40	4-26	M16	M16	80	63	UM/ER40	E-40
MTB4/ER50	ER50	12-34	M16	M16	95	78	UM/ER50	E-50
MTB5/ER40	ER40	4-26	M20	M16	80	63	UM/ER40	E-40
MTB5/ER50	ER50	12-34	M20	M16	90	78	UM/ER50	E-50

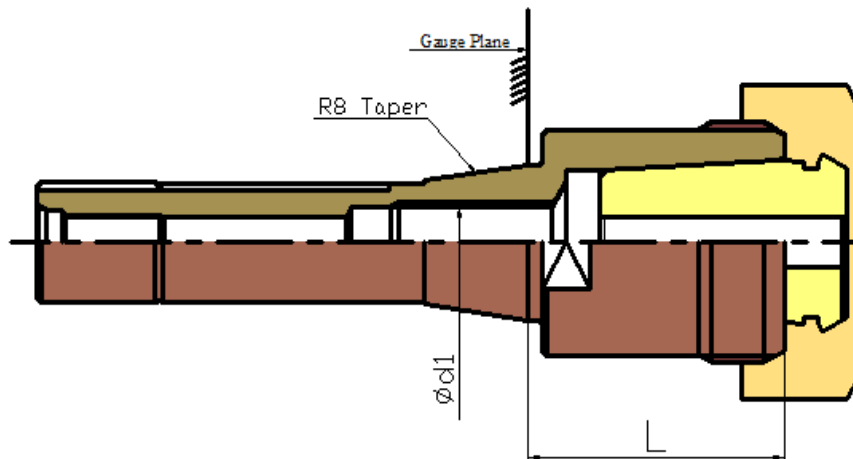
NOTE:

- **RD COLLETS ARE SAME AS ER COLLETS**
- COLLET CHUCK DESIGNATION GIVEN ARE DRAW TYPE ONLY.
- FOR TANG TYPE, REFER OERERING INSTRUCTION.
- COLLET CHUCKS ARE OFFERED WITH NUTS.
- **PLACE SEPARATE OERER FOR SPANNERS. (Refer page No. 59)**

ORDERING INSTRUCTION



R8 SHANK



COLLET CHUCKS

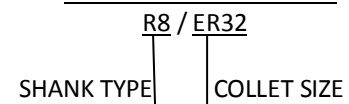
DIMENSIONS IN mm

DESIGNATION	SUITABLE FOR COLLET	COLLET CLAMPING CAPACITY	L	STOPPER SCREW Ød1	NUT		SPANNER DESIGNATION
					ØD	DESIGNATION	
R8/ER25	25	2-16	50	M 12x1	42	UM/ER 25	E-25
R8/ER32	32	3-20	60	M 12x1	50	UM/ER 32	E-32
R8/ERO 25	ERO 25 (OZ415E)	2-16	60	M 12x1	43	UM/RDO 25	E-25
R8/ERO 35	ERO 25 (OZ462E)	2-25	70	M 12x1	60	UM/RDO 35	E-40

NOTE:

- RD COLLETS ARE SAME AS ER COLLETS
- COLLET CHUCKS OF SPECIAL LENGTHS AND OTHER COLLET TYPES ARE OFFERED ON CUSTOMERS REQUEST
- **PLACE SEPARATE ORDER FOR SPANNERS. (Refer page No. 59)**
- OTHER PRODUCTS LIKE MILLING ADAPTERS, DRILL CHUCK ADAPTORS ARE ALSO AVAILABLE WITH R8 SHANK.

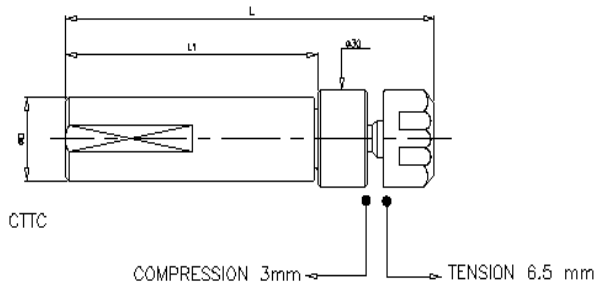
ORDERING INSTRUCTION



TAPPING COLLET CHUCKS

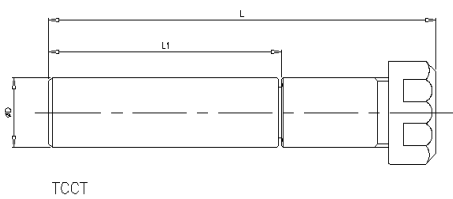
TCCT / CTTC

FIG - 1



COMPRESSION & TENSION TAPPING CHUCK (CTTC)

FIG - 2



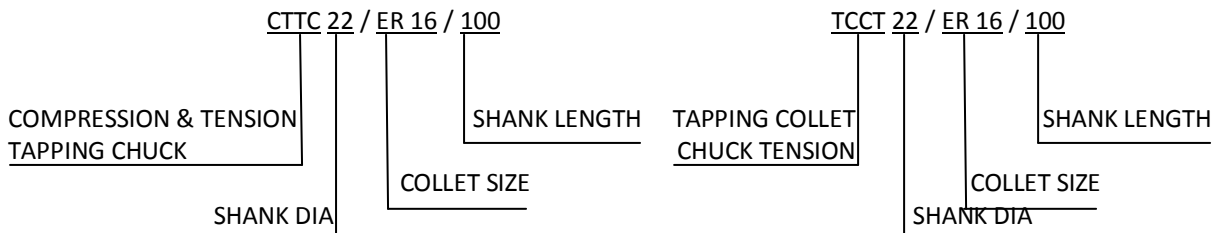
TAPPING COLLET CHUCK TENSION (TCCT)

DIMENSIONS IN mm DIMENSIONS IN INCH

DESIGNATION	SUITABLE FOR COLLET	COLLET CLAMPING CAPACITY (DIA) mm	D		L1		L		NUT DESIGNATION	SPANNER DESIGNATION	FIG REF
			mm	inch	mm	inch	mm	inch			
CTTC 22/ER16/100	ER16*	1-10	22	0.866	100	3.94	151	5.95	UM/ER16	GS25	1
TCCT 22/ER16/100	ER16	1-10	22	0.866	100	3.94	135	5.31	UM/ER16	GS25	2
TCCT 3/4"/ER16M/68	ER16	1-10	19.05	0.75	68	2.68	103	4.10	UM/ER16M	E16M	2
TCCT 3/4"/ER11M/68	ER11	1-7	19.05	0.75	68	2.68	96	3.78	UM/ER11M	E11M	2

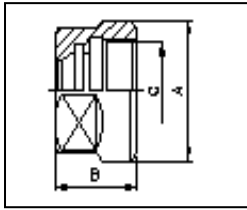
NOTE:

- TAPPING COLLET CHUCKS WITH OTHER TYPES OF SHANKS ARE ALSO AVAILABLE ON REQUEST.
- **PLACE SEPARATE ORDER FOR SPANNERS. (Refer page No. 59)**
- COMPRESSION & TENSION ENSURE BETTER THREAD FORM AND ACCURACY ON JOB.
- SUITABLE ONLY TO CNC MACHINES AND OTHER MACHINES HAVING AUTO REVERSING FACILITY.
- SPECIALLY DEVELOPED **TAPPING COLLETS** FOR HOLDING.



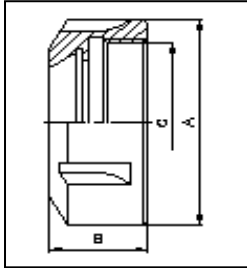
DIMENSIONS IN mm

 DIMENSIONS IN INCH



HEXAGONAL NUTS FOR ER COLLET CHUCKS (DIN 6499)

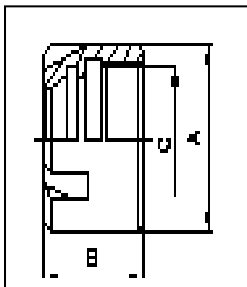
DESIGNATION	A	B	C	SPANNER TO BE USED
UM/ER11	19.0	11.3	M14x0.75	GS 17
UM/ER16	28.0	17.5	M22x1.50	GS 25
UM/ER20	34.0	19.0	M25x1.50	GS 30



SLOTTED NUTS FOR ER COLLET CHUCKS (DIN 6499)

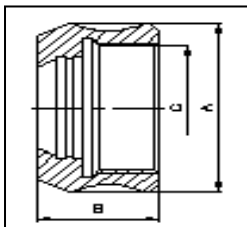
DESIGNATION	A	B	C	SPANNER TO BE USED
UM/ER25	42.0	20.0	M32x1.50	E - 25
UM/ER32	50.0	22.5	M40x1.50	E - 32
UM/ER40	63.0	25.5	M50x1.50	E - 40
UM/ER50*	78.0	35.5	M64x2.00	E - 50

*NOT COVERED UNDER DIN STANDARD



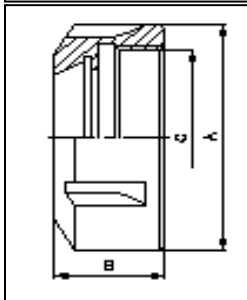
MINI NUTS FOR ER COLLET CHUCKS

DESIGNATION	A	B	C	SPANNER TO BE USED
UM/ER 8M	12.0	12.0	M10x0.75	E - 8M
UM/ER 11M	16.0	12.0	M13x0.75	E - 11M
UM/ER 16M	22.0	17.5	M19x1.00	E - 16M
UM/ER 20M	28.0	19.0	M24x1.00	E - 20M
UM/ER 25M	35.0	20.0	M30x1.00	E - 25M



SLOTTED NUTS FOR ERO COLLET CHUCKS

DESIGNATION	A	B	C	SPANNER TO BE USED
UM/ERO25	43	24.0	M33x1.5	E - 25
UM/ERO35	60	30.0	M48x2.0	E - 40
UM/ERO44	72	33.5	M60x2.5	E - 50



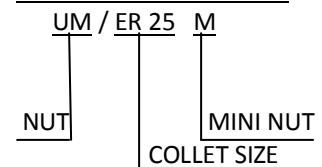
SLOTTED NUTS FOR ERO COLLET CHUCKS

DESIGNATION	A	B	C	SPANNER TO BE USED
UM/ERG75	50	22.5	1 1/2" -12TPI (ACME)	E - 32
	2.0	0.91"		
UM/ERG100	63	28	1 7/8" -12TPI (ACME)I	E - 40
	2.48	1.18"		
UM/ERG150	89	40	1 41/64" -12TPI (ACME)	EG - 150
	3.50	1.57"		

NOTE:

1. OPTIONALLY, CLAMPING NUTS ARE ALSO AVAILABLE IN BALANCED CONDITION.
2. (G6.3 @ 12,000 & G 2.5 @ 20,000) FOR HIGH SPEED APPLICATIONS.
3. ON SPECIAL REQUEST, BALANCED COLLET CHUCKS WITH BALANCED NUTS CAN ALSO BE SUPPLIED

ORDERING INSTRUCTION



MORSE TAPER ADAPTORS

MTA

Fig 1

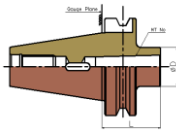
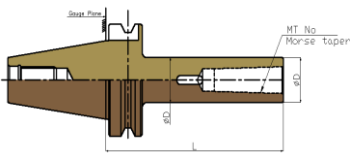


Fig 2



DIMENSIONS IN mm

DESIGNATION	MORSE TAPER NO.	L	D	FIG
BT30/MTA1/50	1	50	25	1
BT30/MTA1/120	1	120	25	2
BT30/MTA2/62	2	62	32	1
BT30/MTA2/120	2	120	32	2
BT30/MTA3/80	3	80	40	1
BT30/MTA3/135	3	135	40	2
BT40/MTA1/45	1	45	25	1
BT40/MTA1/120	1	120	25	2
BT40/MTA2/60	2	60	32	1
BT40/MTA2/120	2	120	32	2
BT40/MTA3/75	3	75	40	1
BT40/MTA3/135	3	135	40	2
BT40/MTA4/95	4	95	50	1
BT40/MTA4/165	4	165	50	2

BT50/MTA1/45	1	45	25	1
BT50/MTA1/120	1	120	25	2
BT50/MTA1/180	1	180	25	2
BT50/MTA2/45	2	45	32	1
BT50/MTA2/135	2	135	32	2
BT50/MTA2/80	2	80	32	2
BT50/MTA3/45	3	45	40	1
BT50/MTA3/150	3	150	40	2
BT50/MTA3/180	3	180	40	2
BT50/MTA4/75	4	75	50	1
BT50/MTA4/180	4	180	50	2
BT50/MTA5/105	5	105	70	1

NOTE:

- MORSE TAPER ADAPTORS WITH OTHER TYPES OF SHANK LIKE TC, CT, ISO ARE AVAILABLE ON REQUEST
- ANY SPECIAL SIZES CAN BE MADE TO CUSTOMER REQUEST.
- MT ADAPTORS OF DRAW BAR TYPE ARE AVAILABLE ON REQUEST.

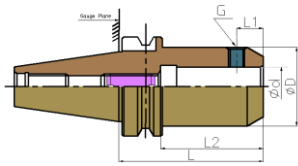
ORDERING INSTRUCTION

BT40 / MTA3 / 75
SHANK TYPE
MORSE TAPER NO.3 TANG TYPE
GAUGE PLANE LENGTH L

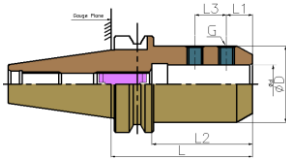
FOR "WELDON" TYPE END MILLS

SIDE LOCK HOLDERS

SL FIG 1



SLA FIG 2



DIMENSION IN mm

DESIGNATION	Dh5	L	D	L1	L2	L3	G	d1 (STOPPER SCREW)	FIG
BT30/SL6/65	6	65	20	15.0	40	-	M6	M5X16	1
BT30/SL8/65	8	65	24	15.0	40	-	M8	M5X18	1
BT30/SL10/65	10	65	30	16.0	44	-	M8	M8X25	1
BT30/SL12/65	12	65	35	20.0	49	-	M10	M10X30	1
BT30/SL16/65	16	65	40	23.0	57	-	M10	M12X30	1
BT30/SLA20/90	20	90	50	25.0	59	20	M10	M16X30	2
BT30/SLA25/90	25	90	50	25.0	64	20	M10	M20X30	2

BT40/SL6/65	6	65	20	15.0	40	-	M6	M5X16	1
BT40/SL8/65	8	65	24	15.0	40	-	M8	M5X18	1
BT40/SL10/65	10	65	30	16.0	44	-	M8	M8X25	1
BT40/SL12/65	12	65	35	20.0	49	-	M10	M10X30	1
BT40/SL16/65	16	65	40	23.0	57	-	M10	M12X30	1
BT40/SLA20/90	20	90	50	25.0	59	20	M10	M16X30	2
BT40/SLA25/90	25	90	50	25.0	64	20	M10	M20X30	2
BT40/SLA32/90	32	90	60	30.0	68	20	M10	M20X30	2
BT40/SLA40/90	40	90	70	30.0	78	25	M12	M20X30	2

BT50/SL6/75	6	75	20	15.0	40	-	M6	M5X16	1
BT50/SL8/75	8	75	24	15.0	40	-	M8	M5X18	1
BT50/SL10/75	10	75	30	16.0	44	-	M8	M8X25	1
BT50/SL12/75	12	75	35	20.0	49	-	M10	M10X30	1
BT50/SL16/75	16	75	40	23.0	57	-	M10	M12X30	1
BT50/SLA20/105	20	105	50	25.0	59	20	M10	M16X30	2
BT50/SLA25/105	25	105	50	25.0	64	20	M10	M20X30	2
BT50/SLA32/105	32	105	60	30.0	68	20	M10	M20X30	2
BT50/SLA40/105	40	105	80	30.0	78	25	M12	M20X30	2

NOTE:

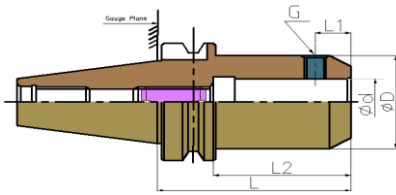
- SIDE LOCK HOLDERS WITH OTHER TYPES OF SHANK LIKE TC, CT, ISO ARE AVAILABLE ON REQUEST
- ANY SPECIAL SIZES CAN BE MADE TO CUSTOMER REQUEST.
- OPTIONALLY SIDE LOCK HOLDERS CAN BE SUPPLIED IN BALANCED CONDITION FOR HIGH SPEED APPLICATIONS.

ORDERING INSTRUCTION

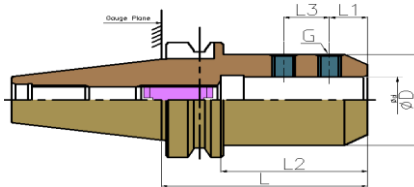
BT40 / SLA25 / 90
 SHANK TYPE |
 HOLDING DIAMETER |
 GAUGE PLANE LENGTH

**FOR "WELDON" TYPE AND MILLS
TOOL HOLDING END ACCOERING TO DIN 1835 FORM B**

SL FIG 1



SLA FIG 2



DIMENSIONS IN mm

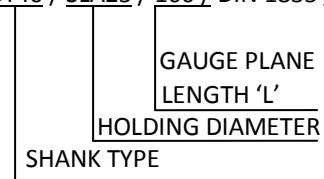
DESIGNATION	Dh5	L	D	L1	L2	L3	G	FIG
BT30/SL6/50/DIN 1835/2B	6	50	25	18.0	35	-	M6	1
BT30/SL8/60/DIN 1835/2B	8	60	28	18.0	35	-	M8	1
BT30/SL10/60/DIN 1835/2B	10	60	35	20.0	39	-	M10	1
BT30/SL12/60/DIN 1835/2B	12	60	42	22.5	44	-	M12	1
BT30/SL16/60/DIN 1835/2B	14	60	48	24.0	47	-	M14	1
BT30/SL20/80/DIN 1835/2B	20	80	52	25.0	49	-	M16	1
BT40/SL6/50/DIN 1835/2B	6	50	25	18.0	35	-	M6	1
BT40/SL8/50/DIN 1835/2B	8	50	28	18.0	35	-	M8	1
BT40/SL10/50/DIN 1835/2B	10	50	35	20.0	39	-	M10	1
BT40/SL12/50/DIN 1835/2B	12	50	42	22.5	44	-	M12	1
BT40/SL16/63/DIN 1835/2B	14	63	48	24.0	47	-	M14	1
BT40/SL20/63/DIN 1835/2B	20	63	52	25.0	49	-	M16	1
BT40/SL25/100/DIN 1835/2B	25	100	65	24.0	59	25	M18X2	2
BT40/SL32/100/DIN 1835/2B	32	100	72	24.0	63	28	M20X2	2
BT50/SL6/63/DIN 1835/2B	6	50	25	18.0	35	-	M6	1
BT50/SL8/63/DIN 1835/2B	8	50	28	18.0	35	-	M8	1
BT50/SL10/63/DIN 1835/2B	10	50	35	20.0	39	-	M10	1
BT50/SL12/63/DIN 1835/2B	12	50	42	22.5	44	-	M12	1
BT50/SL16/63/DIN 1835/2B	14	63	48	24.0	47	-	M14	1
BT50/SL20/63/DIN 1835/2B	20	63	52	25.0	49	-	M16	1
BT50/SL25/80/DIN 1835/2B	25	80	65	24.0	59	25	M18X2	2
BT50/SL32/100/DIN 1835/2B	32	100	72	24.0	63	28	M20X2	2

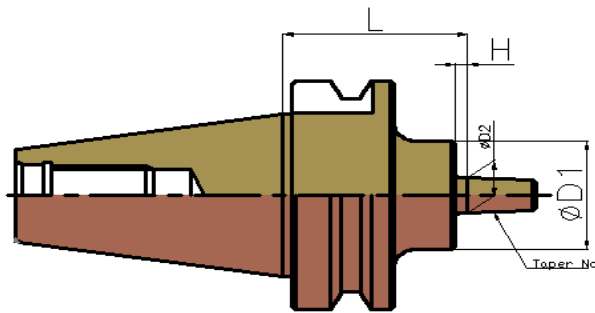
NOTE:

- SIDE LOCK HOLDERS WITH OTHER TYPES OF SHANK ARE AVAILABLE ON REQUEST
- ANY SPECIAL SIZES CAN BE MADE TO CUSTOMER REQUEST.
- OPTIONALLY SIDE LOCK HOLDERS CAN BE SUPPLIED IN BALANCED CONDITION FOR HIGH SPEED APPLICATIONS.

ORDERING INSTRUCTION

BT40 / SLA25 / 100 / DIN 1835 / 2B





(DRILL CHUCK NOT INCLUDED)

DIMENSIONS IN mm
 DIMENSIONS IN INCH

DESIGNATION	KEYLESS CHUCK CLAMPING RANGE		TAPER NO.	L		D2		D1		H
	mm	inch		mm	inch	mm	inch	mm	inch	
BT 30/JTA 2/45	0 - 6	0 - 1/4	JTA2	45	1.771	14.199	0.599	30	1.181	4
BT 30/JTA 2/90	0 - 6	0 - 1/4	JTA2	90	3.543	14.199	0.599	30	1.181	4
BT 30/B 12/45	0 - 6	0 - 1/4	B12	45	1.771	12.065	0.475	30	1.181	3
BT 30/B 12/90	0 - 6	0 - 1/4	B12	90	3.543	12.065	0.475	30	1.181	3
BT 30/B 16/45	0.8 - 13	1/32 - 1/2	B16	45	1.771	15.733	0.619	30	1.181	4
BT 30/B 16/90	0.8 - 13	1/32 - 1/2	B16	90	3.543	15.733	0.619	30	1.181	4

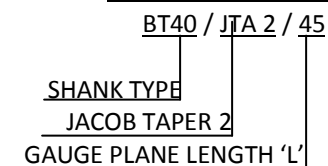
BT40/JTA 2/45	0 - 6	0 - 1/4	JTA2	45	1.771	14.199	0.599	30	1.181	4
BT40/JTA 2/90	0 - 6	0 - 1/4	JTA2	90	3.543	14.199	0.599	30	1.181	4
BT40/JTA 6/45	0.8 - 13	1/32 - 1/2	JTA6	45	1.771	17.170	0.676	30	1.181	4
BT40/JTA 6/90	0.8 - 13	1/32 - 1/2	JTA6	90	3.543	17.170	0.676	30	1.181	4
BT40/B 12/45	0 - 6	0 - 1/4	B12	45	1.771	12.065	0.475	30	1.181	3
BT40/B 12/90	0 - 6	0 - 1/4	B12	90	3.543	12.065	0.475	30	1.181	3
BT40/B 16/45	0.8 - 13	1/32 - 1/2	B16	45	1.771	15.733	0.619	30	1.181	4
BT 40/B 16,90	0.8 - 13	1/32 - 1/2	B16	90	3.543	15.733	0.619	30	1.181	4

BT50/JTA 2/45	0 - 6	0 - 1/4	JTA2	45	1.771	14.199	0.599	30	1.181	4
BT50/JTA 2/90	0 - 6	0 - 1/4	JTA2	90	3.543	14.199	0.599	30	1.181	4
BT50/JTA 6/45	0.8 - 13	1/32 - 1/2	JTA6	45	1.771	17.170	0.676	30	1.181	4
BT50/JTA 6/90	0.8 - 13	1/32 - 1/2	JTA6	90	3.543	17.170	0.676	30	1.181	4
BT50/B 12/45	0 - 6	0 - 1/4	B12	45	1.771	12.065	0.475	30	1.181	3
BT50/B 12/90	0 - 6	0 - 1/4	B12	90	3.543	12.065	0.475	30	1.181	3
BT50/B 16/45	0.8 - 13	1/32 - 1/2	B16	45	1.771	15.733	0.619	30	1.181	4
BT50/B 16/90	0.8 - 13	1/32 - 1/2	B16	90	3.543	15.733	0.619	30	1.181	4

NOTE:

- DETAILS GIVEN ABOVE ARE FOR DRILL CHUCK ADAPTORS BT SHANK ONLY
- DRILL CHUCK ADAPTOR WITH OTHER TYPES OF SHANK LIKE SK TC, CT, ISO ETC ARE OFFERED ON CUSTOMES REQUIREMENT OTHER DETAILS REMAIN THE SAME.

ORDERING INSTRUCTION



FMB (METRIC SIZES)

Fig 1

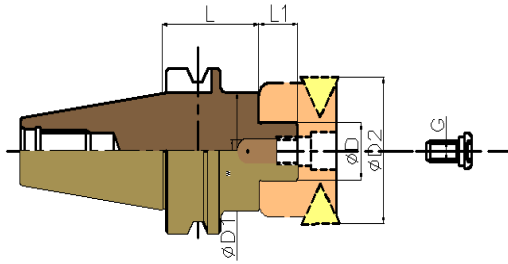
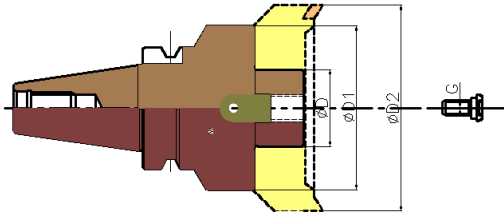


Fig 2



DIMENSIONS IN mm

DESIGNATION	SUITABLE FDh6OR COLLET	L	L1	D1	W	G	G1	P	FIG	CUTTER DIA D2
BT 30/FMB 22/45	22	45	18	56	10	M10	-	-	1	63
BT 30/FMB 27/45	27	45	26	56	12	M12	-	-	1	63

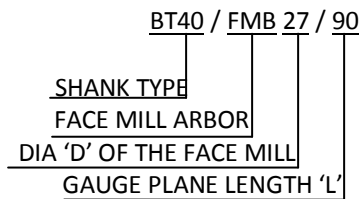
BT 40/FMB 22/60	22	60	18	80	10	M10	-	-	1	63
BT 40/FMB 27/90	27	90	26	80	12	M12	-	-	1	80
BT 40/FMB 32/60	32	60	26	80	14	M16	-	-	1	100
BT 40/FMB 32/90	32	90	26	80	14	M16	-	-	1	100
BT 40/FMB 40/60	40	60	26	85	16	M20	-	-	1	125
BT 40/FMB 40/75	40	75	26	85	16	M20	-	-	1	125

BT 50/FMB 27/45	27	45	26	80	12	M12	-	-	1	80
BT 50/FMB27/150	27	150	26	80	12	M12	-	-	1	80
BT 50/FMB 32/60	32	60	26	80	14	M16	-	-	1	100
BT 50/FMB 32/90	32	90	26	80	14	M16	-	-	1	100
BT 50/FMB 40/45	40	45	26	85	16	M20	-	-	1	125
BT 50/FMB 40/75	40	75	26	85	16	M20	-	-	1	125
BT50/FMB 40/105	40	105	26	85	16	M20	-	-	1	125
BT50/FMB 40F/75	40	75	26	110	16	M20	M12	66.7	2	160
BT50/FMB 60F/75	60	75	26	140	25.4	-	M16	101.6		200-500

NOTE:

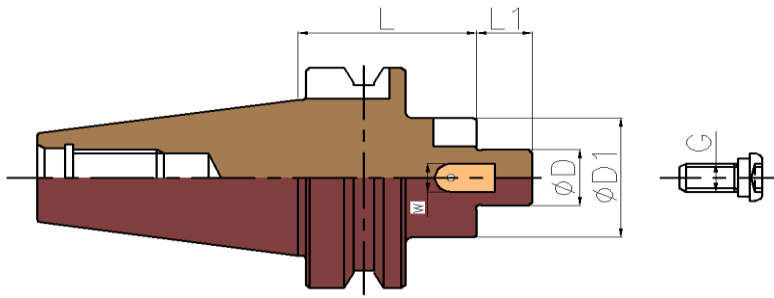
- DETAILS GIVEN ABOVE ARE FOR FACE MILL ARBORS WITH BT SHANK ONLY
- FACE MILL ARBORS WITH OTHER TYPES OF SHANK LIKE SK TC, CT, ISO ETC ARE OFFERED ON CUSTOMES REQUIREMENT OTHER DETAILS REMAIN THE SAME.

ORDERING INSTRUCTION



FMB (INCH SIZES)

FACE MILL ARBORS



DESIGNATION	DIMENSIONS IN mm				DIMENSIONS IN Inch				
	Ø Dh6		L1		L1 mm	D1 mm	W mm	G	CUTTER DIA D2 (INCH)
	mm	inch	mm	inch					
CT30/FMB 1"/45	25.40	1	45	1.77	20	50	9.52	M12	2.5 - 3
CT30/FMB 1"/60	25.40	1	60	2.36	20	50	9.52	M12	2.5 - 3
CT30/FMB 1 1/4"/45	31.75	1 1/4	45	1.77	22	60	12.70	M16	4

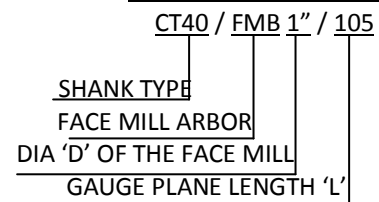
CT40/FMB 1"/45	25.40	1	45	1.77	20	50	9.52	M12	2.5 - 3
CT40/FMB 1"/60	25.40	1	60	2.36	20	50	9.52	M12	2.5 - 3
CT40/FMB 1"/90	25.40	1	90	3.54	20	50	9.52	M12	2.5 - 3
CT40/FMB 1"/105	25.40	1	105	4.13	20	60	9.52	M12	2.5 - 3
CT40/FMB 1 1/4"/45	31.75	1 1/4	45	1.77	22	60	12.70	M16	4
CT40/FMB 1 1/4"/75	31.75	1 1/4	75	2.95	22	60	12.70	M16	4
CT40/FMB 1 1/4"/90	31.75	1 1/4	90	3.54	22	60	12.70	M16	4
CT40/FMB 1 1/2"/60	38.10	1 1/2	60	2.36	25	75	15.87	M20	5 - 6
CT40/FMB 2"/60	50.80	2	60	2.36	26	98	19.05	M24	5 - 6

CT50/FMB 1"/45	25.40	1	45	1.77	20	50	9.52	M12	2.5 - 3
CT50/FMB 1"/60	25.40	1	60	2.36	20	50	9.52	M12	2.5 - 3
CT50/FMB 1"/150									
CT50/FMB 1 1/4"/45	31.75	1 1/4	45	1.77	22	60	12.70	M16	4
CT50/FMB 1 1/4"/75	31.75	1 1/4	75	2.95	22	60	12.70	M16	4
CT50/FMB 1 1/4"/105	31.75	1 1/4	105	4.13	22	98	12.70	M16	4
CT50/FMB 1 1/2"/45	38.10	1 1/2	45	1.77	25	80	15.87	M20	5 - 6
CT50/FMB 1 1/2"/75	38.10	1 1/2	75	2.95	25	80	15.87	M20	5 - 6
CT50/FMB 2"/45	50.80	2	45	1.77	26	98	19.05	M24	5 - 6
CT50/FMB 2"/75	50.80	2	75	2.95	26	98	19.05	M24	5 - 6

NOTE:

- CT SHANKS ARE AS PER ANSI/ASME B5.50.
- WHILE OERER CT HOLDERS MENTION PULL STUD THREAD SIZE IS METRIC OR INCH

ORDERING INSTRUCTION



SHOULDER CUTTER ARBORS

FMC

Fig 1

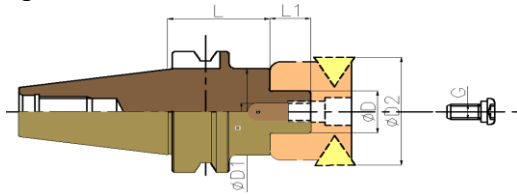
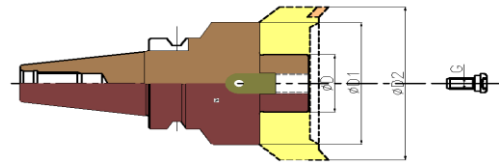


Fig 2



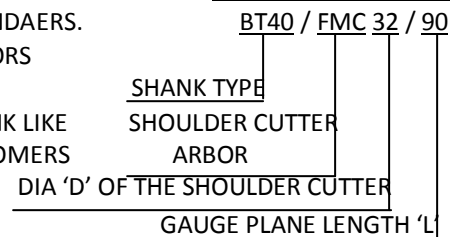
DIMENSION IN mm

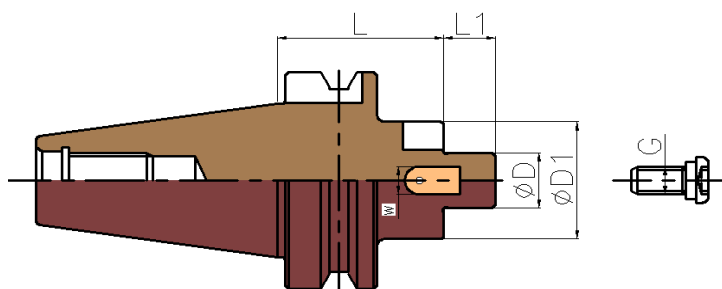
DESIGNATION	ØDh6	L	L1	D1	W	G	FIG	CUTTER DIA D2
BT40/FMC 22/45	22	45	18	45	10	M10	1	50 & 63
BT40/FMC 22/90	22	90	18	45	10	M10	1	50 & 63
BT40/FMC 27/60	27	60	20	70	12	M12	2	80
BT40/FMC 27/90	27	90	20	70	12	M12	2	80
BT40/FMC 32/60	32	60	22	85	14	M16	2	100
BT40/FMC 32/75	32	75	22	85	14	M16	2	100
BT45/FMC 22/45	22	45	18	45	10	M10	1	50 & 63
BT45/FMC22/120	22	120	18	45	10	M10	1	50 & 63
BT45/FMC 27/60	27	60	20	70	12	M12	1	80
BT45/FMC27/120	27	120	20	70	12	M12	1	80
BT45/FMC 32/60	32	60	22	85	14	M16	1	100
BT40/FMC 32/105	32	105	22	85	14	M16	1	100
BT50/FMC 22/60	22	60	18	45	10	M10	1	50 & 63
BT50/FMC 22/105	22	105	18	45	10	M10	1	50 & 63
BT50/FMC 22/150	22	150	18	45	10	M10	1	50 & 63
BT50/FMC 27/45	27	45	20	70	12	M12	1	80
BT50/FMC 27/90	27	90	20	70	12	M12	1	80
BT50/FMC 27/150	27	150	20	70	12	M12	1	100
BT50/FMC 32/45	32	45	22	85	14	M16	1	100
BT50/FMC 32/75	32	75	22	85	14	M16	1	100
BT50/FMC 32/105	32	105	22	85	14	M16	1	100

NOTE:

- LOCATING DIAMETER 'D' CAN BE SUPPLIED TO INCH STANDARDS.
- DETAILS GIVEN ABOVE ARE FOR SHOULDER CUTTER ARBORS WITH BT SHANK ONLY.
- SHOULDER CUTTER ARBORS WITH OTHER TYPES OF SHANK LIKE SK,TC, ANS/ASME B5.50, ISO ETC ARE OFFERED ON CUSTOMERS REQUIREMENT. OTHER DETAILS REMAIN THE SAME

ORDERING INSTRUCTION





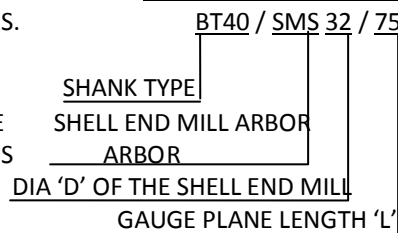
 DIMENSIONS IN mm

DESIGNATION	ØDh6	L	L1	D1	W	G
BT40/SMS 16/60	16	60	14	34	8	M8
BT40/SMS 16/120	16	120	14	34	8	M8
BT40/SMS 22/60	22	60	16	42	10	M10
BT40/SMS 22/120	22	120	16	42	10	M10
BT40/SMS 27/45	27	45	18	50	12	M12
BT40/SMS 27/105	27	105	18	50	12	M12
BT40/SMS 32/45	32	45	20	60	14	M16
BT40/SMS 32/75	32	75	20	60	14	M16
BT45/SMS 16/60	16	60	14	34	8	M8
BT45/SMS 16/120	16	120	14	34	8	M8
BT45/SMS 22/60	22	60	16	42	10	M10
BT45/SMS 22/120	22	120	16	42	10	M10
BT45/SMS 27/45	27	45	18	50	12	M12
BT45/SMS 27/105	27	105	18	50	12	M12
BT45/SMS 32/45	32	45	20	60	14	M16
BT45/SMS 32/75	32	75	20	60	14	M16
BT50/SMS 16/75	16	75	14	34	8	M8
BT50/SMS 16/120	16	120	14	34	8	M8
BT50/SMS 22/75	22	75	16	42	10	M10
BT50/SMS 22/120	22	120	16	42	10	M10
BT50/SMS 27/60	27	60	18	50	12	M12
BT50/SMS 27/105	27	105	18	50	12	M12
BT50/SMS 32/45	32	45	20	60	14	M16
BT50/SMS 32/75	32	75	20	60	14	M16
BT50/SMS 40/45	40	45	23	70	16	M20
BT50/SMS 40/75	40	75	23	70	16	M20
BT50/SMS 50/60	50	60	26	90	18	M24

NOTE:

- LOCATING DIAMETER 'D' CAN BE SUPPLIED TO INCH STANDARDS.
- DETAILS GIVEN ABOVE ARE FOR SHOULDER CUTTER ARBORS WITH BT SHANK ONLY.
- SHOULDER CUTTER ARBORS WITH OTHER TYPES OF SHANK LIKE SK, TC, ANS/ASME B5.50, ISO ETC ARE OFFERED ON CUSTOMERS REQUIREMENT. OTHER DETAILS REMAIN SAME.

ORDERING INSTRUCTION



SIDE AND FACE MILL ARBORS

SCA (STUB ARBORS)

 DIMENSIONS IN mm

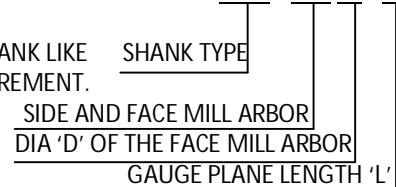
DESIGNATION	ØDh6	L	H	H1	C	W	G
BT40/SCA 13/75	13	75	120	17	20	-	M12 X 1.25
BT40/SCA 13/105	13	105	150	17	20	-	M12 X 1.25
BT40/SCA 16/75	16	75	121	23	26	4	M14 X 1.5
BT40/SCA 16/105	16	105	151	23	26	4	M14 X 1.5
BT40/SCA 22/75	22	75	126	29	34	6	M20 X 1.5
BT40/SCA 22/105	22	105	171	29	34	6	M20 X 1.5
BT40/SCA 27/75	27	75	130	32	40	7	M24 X 2
BT40/SCA 27/120	27	120	175	32	40	7	M24 X 2
BT40/SCA 32/90	32	90	150	41	46	8	M30 X 2
BT45/SCA 13/75	13	75	120	17	20	--	M12 X 1.25
BT45/SCA 13/105	13	105	150	17	20	-	M12 X 1.25
BT45/SCA 16/90	16	90	136	23	26	4	M14 X 1.5
BT45/SCA 16/120	16	120	166	23	26	4	M14 X 1.5
BT45/SCA 22/90	22	90	141	29	34	6	M20 X 1.5
BT45/SCA 22/135	22	135	186	29	34	6	M20 X 1.5
BT45/SCA 27/90	27	90	145	32	40	7	M24 X 2
BT45/SCA 27/135	27	135	190	32	40	7	M24 X 2
BT45/SCA 32/90	32	90	150	41	46	8	M30 X 2
BT45/SCA 32/135	32	135	195	41	46	8	M30 X 2
BT50/SCA 13/75	13	75	120	17	20	-	M12 X 1.25
BT50/SCA 13/105	13	105	150	17	20	-	M12 X 1.25
BT50/SCA 16/90	16	90	136	23	26	4	M14 X 1.5
BT50/SCA 16/120	16	120	166	23	26	4	M14 X 1.5
BT50/SCA 22/90	22	90	141	29	34	6	M20 X 1.5
BT50/SCA 22/135	22	135	186	29	34	6	M20 X 1.5
BT50/SCA 27/90	27	90	145	32	40	7	M24 X 2
BT50/SCA 27/135	27	135	190	32	40	7	M24 X 2
BT50/SCA 32/90	32	90	150	41	46	8	M30 X 2
BT50/SCA 32/135	32	135	195	41	46	8	M30 X 2
BT50/SCA 40/90	40	90	156	46	55	10	M36 X 2
BT50/SCA 40/135	40	135	201	46	55	10	M36 X 2

NOTE:

- DETAILS GIVEN ABOVE ARE FOR SIDE AND FACE MILL CUTTERS WITH BT SHANK ONLY
- SIDE AND FACE MILL CUTTERS WITH OTHER TYPES OF SHANK LIKE SK, TC, CT, ISO ETC ARE OFFERED ON CUSTOMERS REQUIREMENT. OTHER DETAILS REMAIN THE SAME.

ORDERING INSTRUCTION

BT40 / SCA 27 / 120



BSA: A TYPE-ANGULAR MOUNTING

ROUGH BORING BARS

Fig 1

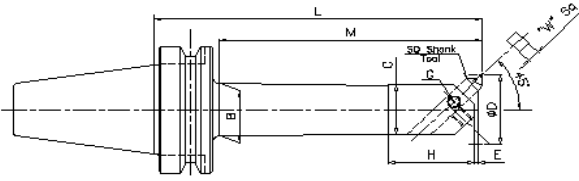


Fig 2

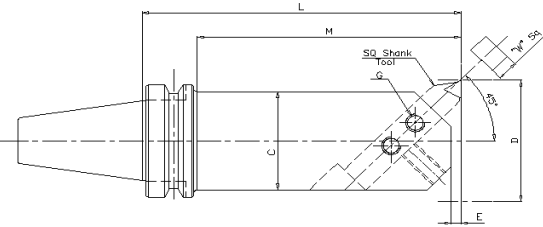
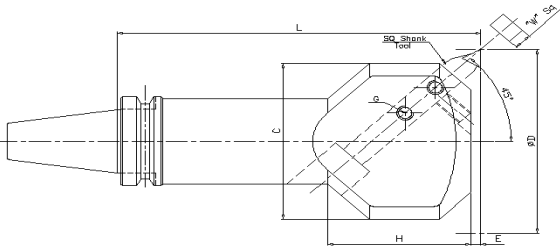


Fig 3



DIMENSIONS IN mm

FIG	DESIGNATION	ØD		L	M	G	W' Sq.	ØC	ØB	H	E	APPROX. WEIGHT (kg)							
		MIN.	MAX																
1	BT 40-BSA25 - 135	25	38	135	105	M6	8	20	22	35	1.0	1.5							
	BT 40-BSA30 - 150	30	42	150	120			24	26	40	1.6								
	BT 40-BSA38 - 165	38	52	165	135	M8	10	30	33	50	2.6	2.0							
	BT 40-BSA50 - 165	50	65	165	135	M10	12	40	44	65	3.0	2.5							
	BT 40-BSA50 - 210			210	180														
2	BT 40-BSA62 - 165	62	90	165	135								16	50	-	-	-	2.0	3.0
1	BT 40-BSA62 - 225			225	195										56	80	4.5		
2	BT 40-BSA72 - 165	72	110	165	-										60	-	-	-	2.4
	BT 40-BSA72 - 225			225	5.5														
3	BT 40-BSA90 - 165	90	125	165	-	75	-	60	4.0	4.5									
	BT 40-BSA90 - 210			210	5.5														

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BSA: 'A' TYPE ANGULAR MOUNTING

 DIMENSION IN mm

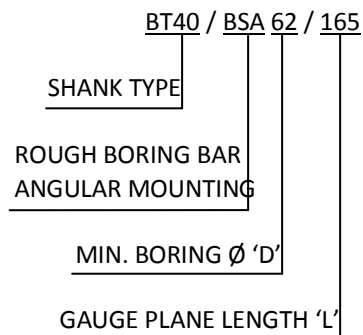
FIG	DESIGNATION	ØD		L	M	G	W' Sq.	ØC	ØB	H	E	APPROX. WEIGHT (kg)
		MIN.	MAX									
1	BT 45-BSA25-135	25	38	135	95	M6	8	20	22	35	1.0	2.4
	BT 45-BSA30-165	30	42	165	125	M6		24	26	40	1.6	2.6
	BT 45-BSA38-180	38	52	180	140	M8	10	30	33	50	2.6	3.0
	BT 45-BSA42-210	42	56	210	170			34	37	60	2.0	3.4
	BT 45-BSA50-180	50	65	180	140	M10	12	40	44	65	3.0	3.6
	BT 45-BSA50-225			225	185							4.1
	BT 45-BSA62-195	62	90	195	155	M10	16	50	56	80	2.0	4.7
	BT 45-BSA62-270			270	230							6.0
	BT 45-BSA72-195	72	110	195	155	M10	16	60	66	95	2.4	5.8
	BT 45-BSA72-285			285	245							8.0
2	BT 45-BSA90-195	90	125	195	160	M12	16	75	-	-	4.0	7.6
1	BT 45-BSA90-285			285	250				80	110	5.1	
1	BT 50-BSA25-135	25	38	135	92	M6	8	20	22	35	1.0	4.2
	BT 50-BSA30-165	30	42	165	122			M6	24	26	40	1.6
	BT 50-BSA38-180	38	52	180	137	M8	10	30	33	50	2.6	4.8
	BT 50-BSA42-210	42	56	210	167			34	37	60	2.0	5.0
	BT 50-BSA50-180	50	65	180	137	M10	12	40	44	65	3.0	5.4
	BT 50-BSA50-240			240	197							5.7
	BT 50-BSA62-195	62	90	195	152	M10	16	50	56	80	2.0	6.2
	BT 50-BSA62-270			270	227							7.6
	BT 50-BSA72-195	72	110	195	152	M10	16	60	66	95	2.4	7.0
	BT 50-BSA72-285			285	242							9.3
2	BT 50-BSA90-210	90	125	210	167	M12	20	75	80	110	4.0	9.2
1	BT 50-BSA90-300			300	257							12.3
3	BT 50-BSA105-195	105	160	195	-	M12	25	90	-	-	3.0	10.7
	BT 50-BSA105-285			285	-				94	130		15.0
	BT 50-BSA130-255	130	190	255	-	M12	25	110	-	85	6.0	14.5

NOTE:

- L, M AND E CORRESPOND TO ØD MIN.
- BORING BARS WITH OTHER TYPES OF SHANK LIKE SK, TC CT, ISO ARE OFFERED ON CUSTOMER REQUEST. OTHER DETAILS REMAIN THE SAME
- DRIVE SLOT AND TOOL ARE IN SAME PLANE.
- BORING BAR IS SUPPLIED WITHOUT TOOL.
- ROUGH BORING BARS, B TYPE FOR SQUARE MOUNTING ARE AVAILABLE ON REQUEST.

TOOLS ARE OFFERED AS OPTIONAL

ORDERING INSTRUCTION



BCA: A TYPE-ANGULAR MOUNTING

MICROBORE BORING BARS

Fig 1

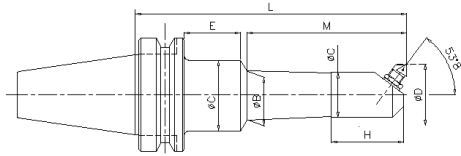


Fig 2

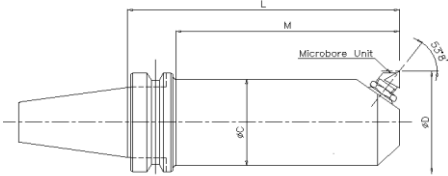
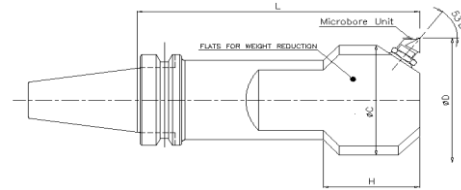


Fig 3



 DIMENSIONS IN mm

FIG	DESIGNATION	ØD		L	E	M	H	ØC	B	MICROBORE UNIT (CARTRIDGE AND INSERT)	APPROX. WEIGHT (kg.)
		MIN.	MAX.								
1	BT 40-BCA 13.5-105	13.5	16.0	105	8	67	15	44	13	M1B2F40 (BRAZED CARBIDE TIP)	1.5
	BT 40-BCA 13.5-165			165	68						2.0
	BT 40-BCA 14.5-105	14.5	17.0	105	8	14	1.5				
	BT 40-BCA 14.5-165			165	68	2.0					
	BT 40-BCA 16-105	16.0	22.5	105	2	73	18		M1A2F40 (BRAZED 'C' TIP)	1.5	
	BT 40-BCA 16-180			180	77				2.0		
	BT 40-BCA 19-120	19.0	23.0	120	4	86	23		M2B2 (CCGT04T004)	1.5	
	BT 40-BCA 19-180			180	64				2.0		
	BT 40-BCA 23-135	23.0	29.0	135	-	105	24		M3B2 (TCMT 06T104 CCMT060204)	1.5	
	BT 40-BCA 23-195			195	60				2.0		
	BT 40-BCA 29-150	29.0	41.0	150	5	115	30		M3A2 (TCMT 110204 CCMT060204)	1.5	
	BT 40-BCA 29-195			195	50				2.0		
	BT 40-BCA 38-150	38.0	49.0	150	5	172	41		M5B2 (TCMT 110204 CCMT060204)	2.0	
	BT 40-BCA 38-210			210	8					2.5	
BT 40-BCA 46-150	46.0	66.0	150	5	115	45	M5A2 (TCMT 110204 CCMT060204)	2.5			
BT 40-BCA 46-225			225	13				3.0			
2	BT 40-BCA 62-165	62.0	87.0	165	-	135	-	51	-	M7A2 (TCMT 160408 CCMT090304)	3.5
1	BT 40-BCA 62-225			225	11	184	60	62	57		4.5
2	BT 40-BCA 83-120	83.0	108.0	120	-	-	-	63	-		3.5
	BT 40-BCA 83-165			165	-	-	-	-	4.5		
BT 40-BCA 83-225	225			-	-	-	-	-	6.0		
3	BT 40-BCA 98-165	98.0	142.0	165	-	-	90	83	-	M10A2 (TCMT 160408 CCMT090304)	6.0

CONT.....NEXT PAGE

MICROBORE BORING BARS

BCA: A TYPE-ANGULAR MOUNTING

DIMENSIONS IN mm

FIG	DESIGNATION	ØD		L	E	M	H	ØC	B	MICROBORE UNIT (CARTRIDGE AND INSERT)	APPROX. WEIGHT (kg.)	
		MIN.	MAX									
1	BT 45-BCA 13.5-105	13.5	16.0	105	17	50	15	44	13	M1B2F40 (BRAZED CARBIDE TIP)	2.4	
	BT 45-BCA 13.5-195			195	107						3.5	
	BT 45-BCA 14.5-105	14.5	17.0	105	15	2.4						
	BT 45-BCA 14.5-195			195	105	3.4						
	BT 45-BCA 16-120	16	22.5	120	24	58	18		15	M1A2F40 BRAZED 'CT'	2.5	
	BT 45-BCA 16-195			195	99						3.4	
	BT 45-BCA 19-135	19	23.0	135	29	68	23		18	M2B2 CCMT060204	2.6	
	BT 45-BCA 19-195			195	89						3.3	
	BT 45-BCA 23-150	23	29.0	150	30	82	24		22	M3B2 (TCMT 06 T1 04 CCMT 060204)	2.7	
	BT 45-BCA 23-210			210	90						3.4	
	BT 45-BCA 29-165	29	41.0	165	12	115	30		28	M3A2 (TCMT 06 T104 CCMT 060204)	2.8	
	BT 45-BCA 29-225			225	72						3.5	
	BT 45-BCA 38-165	38	49.0	165	12	172	41		55	35	M5B2 (TCMT 11 02 04 CCMT 060204)	3.2
	BT 45-BCA 38-210			210	-				-			37
	BT 45-BCA 46-165	46	66.0	165	12	115	45		55	41	M5B2 (TCMT 11 02 04 CCMT 060204)	3.2
	BT 45-BCA 46-225			225	5							182
BT 45-BCA 46-225	255			11	206			4.4				
2	BT 45-BCA 62-165	62	87.0	165	-	127	-	51	-	M7A2 (TCMT 16 04 08 CCMT 060204)	4.2	
1	BT 45-BCA 62-240			225	18	184	-	70	57		6.0	
BT 45-BCA 62-330	255			12	80	60	59	7.7				
2	BT 45-BCA 83-165	83	108.0	165	-	127	-	63	-	M10A2 (TCMT 16 04 08 CCMT 090304)	5.4	
1	BT 45-BCA 83-240			240	-	202	70	-	70		7.6	
2	BT 45-BCA 98-165	98	142.0	240	-	127	-	83	-	M10A2 (TCMT 16 04 08 CCMT 090304)	7.7	
	BT 45-BCA 98-240			165	-	202	-				10.8	
1	BT 50-BCA 13.5-120	13.5	16.0	120	10	67	15	44	13	M1B2F40 (TCMT 16 04 08 CCMT 090304)	4.0	
	BT 50-BCA 13.5-195			195	85						5.0	
	BT 50-BCA 14.5-120	14.5	17.0	120	10	4.0						
	BT 50-BCA 14.5-195			195	85	5.0						
	BT 50-BCA 16-120	16	22.5	120	4	73	18		15	M1A2F40 BRAZED 'CT'	4.0	
	BT 50-BCA 16-195			195	79						5.0	
	BT 50-BCA 19-135	19	23.0	135	6	86	23		18	M2B2 CCMT060204	4.0	
	BT 50-BCA 19-210			210	81						5.0	
	BT 50-BCA 23-150	23	29.0	150	2	105	24		22	M3B2 (TCMT 06 T104 CCMT 060204)	4.0	
	BT 50-BCA 23-225			225	77						5.0	
	BT 50-BCA 29-165	29	41.0	165	7	115	30		28	M3A2 (TCMT 06 T1 04 CCMT 060204)	4.5	
	BT 50-BCA 29-225			255	67						5.5	
	BT 50-BCA 38-165	38	49.0	165	7	172	41		55	35	M5B2 (TCMT 11 02 04 CCMT 060204)	4.5
	BT 50-BCA 38-225			255	10							206
	BT 50-BCA 46-165	46	66.0	165	7	115	45		55	41	M5A2 (TCMT 11 02 04 CCMT 060204)	5.0
	BT 50-BCA 46-225			255	6							206

CONT.....NEXT PAGE

BCA: A TYPE-ANGULAR MOUNTING

MICROBORE BORING BARS

 DIMENSIONS IN mm

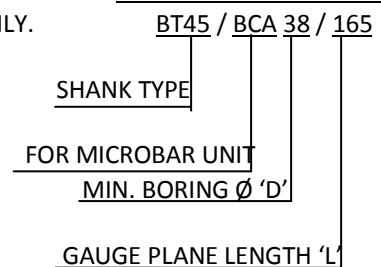
FIG	DESIGNATION	ØD		L	E	M	H	ØC	B	MICROBORE UNIT (CARTRIDGE AND INSERT)	APPROX. WEIGHT (kg.)
		MIN.	MAX.								
2	BT 50-BCA 62-180	62.0	87.0	180	-	137	-	51	-	M7A2 (TCMT 16 04 08) CCMT090304	6.0
1	BT 50-BCA 62-240			240	13	184	60	70	57		7.0
	BT 50-BCA 62-330			330	7	280			59		8.5
2	BT 50-BCA 83-165	83.0	108.0	165	-	122	-	63	-		6.5
1	BT 50-BCA 83-240			240	7	170	70	90	70		9.0
	BT 50-BCA 83-345			345	-	302		-	76		12.0
2	BT 50-BCA 98-165	98.0	142	165	-	122	-	83	-	M10A2 (TCMT 16 04 08) CCMT090304	8.5
1	BT 50-BCA 98-240			240		197					11.5
	BT 50-BCA 98-345			345		302					85
3	BT 50-BCA 132-210	132.0	176	210	-	-	65	108	-		12.0
	BT 50-BCA 132-315			315							18.5
	BT 50-BCA 166-225	166.0	210	225	-	-	70	142	-		13.0
	BT 50-BCA 166-315			315						18.5	
	BT 50-BCA 200-210			200.0						244	210

*GRADUATION ON COLLAR: 1 DIV=0.020mm ON DIA

NOTE:

- DETAILS GIVEN ABOVE ARE FOR BORING BARS WITH BT SHANK ONLY.
- BORING BARS WITH OTHER TYPES OF SHANK LIKE TC, CT, ISO ARE OFFERED ON CUSTOMER REQUEST. OTHER DETAILS REMAIN THE SAME DRIVE SLOT AND TOOL ARE IN SAME PLANE.
- BORING BAR IS SUPPLIED WITHOUT MICROBORE UNIT.
- L & M CORRESPOND TO ØD MIN. MICROBORING BARS, B TYPE – FOR SQUARE MOUNTING ARE AVAILABLE ON REQUEST.
- **PREFERED INSERTS TYPES IS “TCMT”**

ORDERING INSTRUCTION



FINE BORING BARS

FBS/FBA

Fig 1

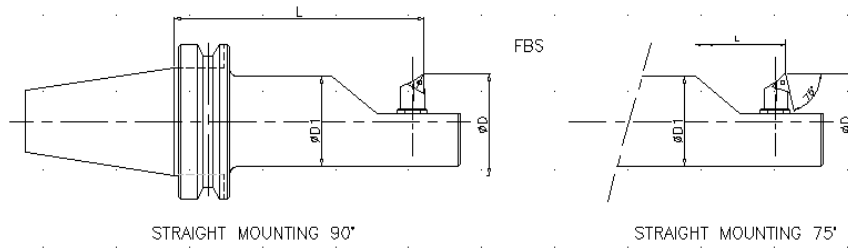
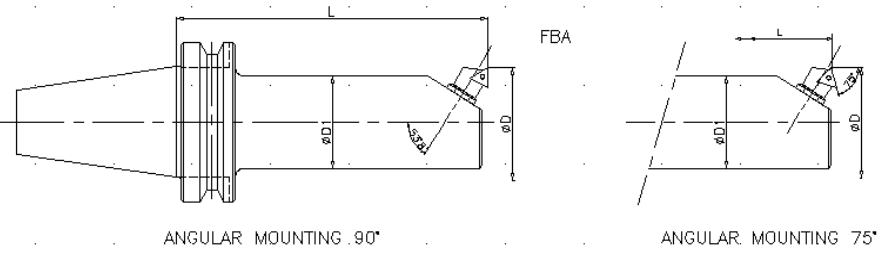


Fig 2



DIMENSIONS IN mm

DESIGNATION	ØD		ØD1	L	Fig Ref.	* CARTRIDGE TO BE USED
	MIN.	MAX.				
BT40/FBS 90-28/150	27.0	32	26	150	1	R/L 148C - 11 - 0602
BT40/FBS 90-38/150	36.5	43.5	34.5	150	1	R/L 148C - 12 - 0902
BT40/FBS 75-51/165	50.1	62.1	46.5	165	1	R/L 148C - 23 - 1102
BT40/FBS 75-72/165	70.65	90.65	67	165	1	R/L 148C - 24 - 16T3
BT40/FBA 90-26/150	24.8	28.8	22	150	2	R/L 148C - 31 - 0602
BT40/FBA 90-33/150	32.5	38.1	28.5	150	2	R/L 148C - 32 - 0902
BT40/FBA 75-44/150	43.5	53.1	38	150	2	R/L 148C - 43 - 1102
BT40/FBA 75-62/165	60.8	76.8	55	165	2	R/L 148C - 44 - 16T3

*GRADUATION ON COLLAR: 1 DIV=0.020mm ON DIA

ORDERING INSTRUCTION

BT40 / FBS90 - 28 / 155

SHANK TYPE

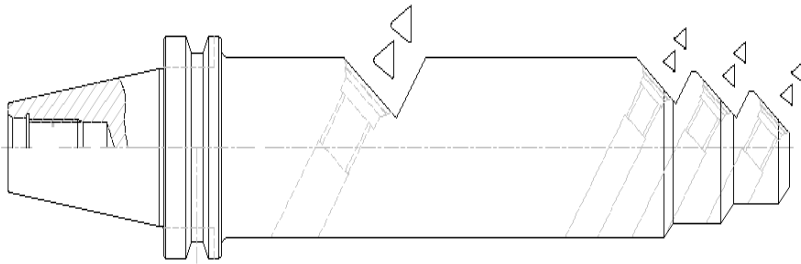
FINE BORING BAR
ST. MOUNTING 90°

NOMINAL BORE SIZE ON COMPONENT

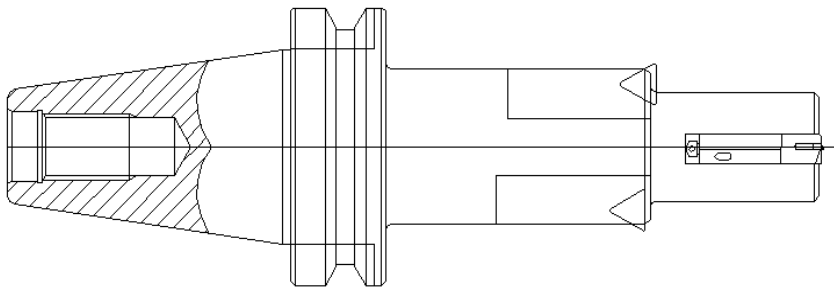
GAUGE PLANE LENGTH 'L'

NOTE:

SPECIAL LENGTHS AND OTHER TYPE OF SHANKS ARE OFFERED ON CUSTOMERS REQUEST



COMBINATION FINISH BORING BAR



COMBINATION ROUGH BORING BAR

WE OFFER CUSTOM DESIGNED COMBINATION BORING BARS

- a) OF ANY SHANK TAPER OR TYPE.
- b) FOR ROUGH BORING, COUNTER BORING, COUNTER SINKING & FACING.
- c) FOR REVERSE BORING.
- d) FOR FINISH BORING
- e) WITH AND WITHOUT COOLANT ARRANGEMENT.

CUSTOMERS ARE REQUESTED TO FURNISH ALL PARTICULARS TO ENABLE US TO QUOTE OUR PRICE AND DELIVERY.

IF REQUIRED, THE BORING BARS CAN BE OFFERED IN BALANCE CONDITION WITH CARTRIDGES IN PLACE.

PULL STUDS

FOR BT, TC, & ISO TAPERS

PULL STUDS FOR BT TAPER SHANK TOOLS

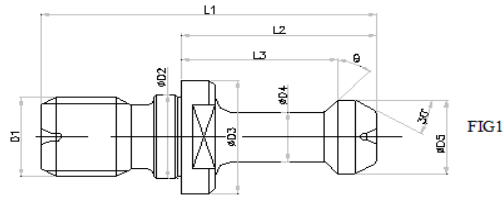


FIG 1

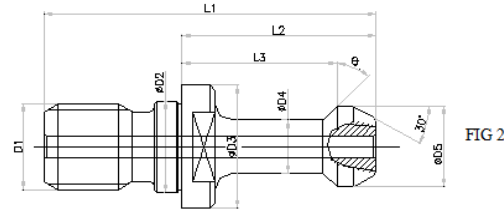


FIG 2

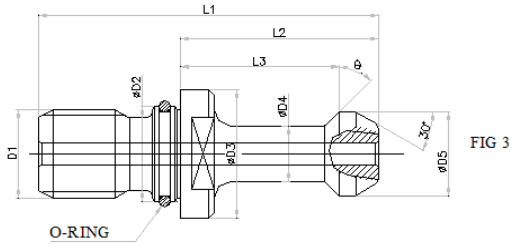


FIG 3

PULL STUDS – DIN 69872

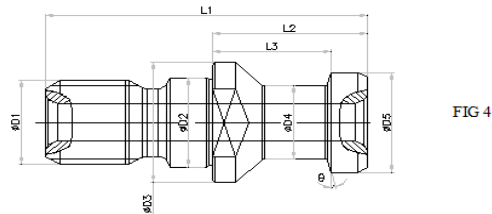


FIG 4

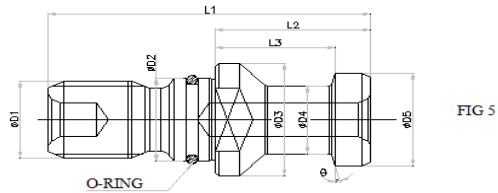


FIG 5

PULL STUDS – IS 11173-TYPE 2 & ISO 7388

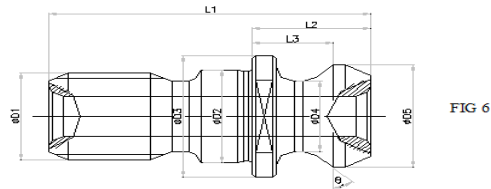


FIG 6

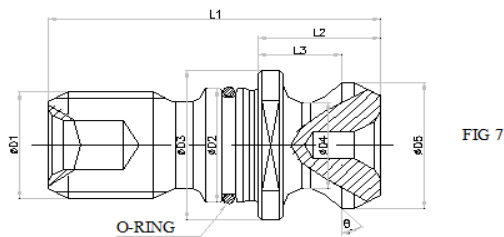


FIG 7

PULL STUDS FOR BT, TC TAPERS

PULL STUDS FOR BT TAPER SHANK TOOLS

DIMENSIONS IN mm

DESIGNATION	D1	D2	D3	D4	D5	L1	L2	L3	θ	FIG
PS/CST1/30/30/01	M12	12.5	16.5	7	11	43	23	18	30	1
PS/CST1/30/45/02	M12	12.5	16.5	7	11	43	23	18	45	1
PS/CST1/30/0/03	M12	12.5	16.5	7	11	43	23	18	0	1
PS/CST1/40/30/06	M16	17	23	10	15	60	35	28	30	1
PS/CST1/40/30/06/C	M16	17	23	10	15	60	35	28	30	2
PS/CST1/40/45/07	M16	17	23	10	15	60	35	28	45	1
PS/CST1/40/45/07/C	M16	17	23	10	15	60	35	28	45	2
PS/CST1/40/45/08	M16	17	23	11.3	15.5	57	35	26	45	1
PS/CST1/40/0/09	M16	17	23	10	15	60	35	28	0	1
PS/CST1/40/0/10	M16	17	23	10	15	50	29	18	0	1
PS/CST1/40/15/11	M16	17	23	14	19	54	29	23	15	1
PS/CST1/40/15/11/C	M16	17	23	14	19	54	29	23	15	2
PS/CST1/40/15/11/C0	M16	17	23	14	19	54	29	23	15	3
PS/CST1/45/30/12	M20	21	31	14	19	70	40	31	30	1
PS/CST1/45/45/13	M20	21	31	14	19	70	40	31	45	1
PS/CST1/50/30/14	M24	25	38	17	23	85	45	35	30	1
PS/CST1/50/30/14/C	M24	25	38	17	23	85	45	35	30	2
PS/CST1/45/0/15	M20	21	31	14	19	70	40	31	0	1
PS/CST1/50/45/16	M24	25	38	17	23	85	45	35	45	1
PS/CST1/50/45/16/C	M24	25	38	17	23	85	45	35	45	2
PS/CST1/50/0/17	M24	25	38	17	23	85	45	35	0	1

PULL STUDS-DIN69872

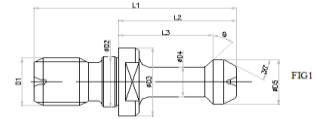
PS/CST2/40/15/01	M16	17	23	14	19	54	26	20	15	5
PS/CST2/40/15/01/C	M16	17	23	14	19	54	26	20	15	4
PS/CST2/30/15/02	M12	13	17	9	13	44	24	19	15	5
PS/CST2/45/15/04/C	M20	21	30	17	23	65	30	23	15	4
PS/CST2/50/15/05	M24	25	36	21	28	74	34	25	15	5
PS/CST2/50/15/05/C	M24	25	36	21	28	74	34	25	15	4

PULL STUDS-ISO11173 TYPE 2 & ISO 7388

PS/CST3/40/45/01	M16	17	22.5	12.95	18.95	44.5	16.4	11.15	45	7
PS/CST3/40/45/01/C	M16	17	22.5	12.95	18.95	44.5	16.4	11.15	45	6
PS/CST3/45/45/02/C	M20	21	30	16.3	24.05	56.0	20.95	14.85	45	6
PS/CST3/50/45/03	M24	25	37	19.6	29.10	60.05	25.55	17.95	45	7
PS/CST3/50/45/03/C	M24	25	37	19.6	29.10	60.05	25.55	17.95	45	6

NEED A SPECIAL PULL STUD

Just call or fax, we will assist you in selecting the proper pull stud



For assistance, provide the following information

Quantity _____

Dimension ØD5 _____ in / mm

Dimension ØD4 _____ in / mm

Dimension ØD2 _____ in / mm

Dimension L2 _____ in / mm

Dimension L3 _____ in / mm

Angle degrees _____ degrees

Thread Size (D1) _____

Tool holder _____

Shank Type _____

Machine _____

Make _____

Machine _____

Model _____

Coolant Hole Yes/No _____

Coolant Hole _____

Diameter _____ in / mm

O-Ring Required Yes/No _____

Send sketch of O-Ring _____

Position _____

At end of Part No.....

C – Indicates Coolant hole.

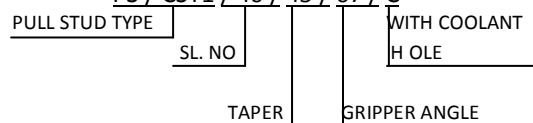
O – Indicates with O-Ring.

NOTE:

- OTHER TYPES OF PULLSTUDS CAN BE SUPPLIED ON REQUEST

ORDERING INSTRUCTION

PS / CST1 / 40 / 45 / 07 / C

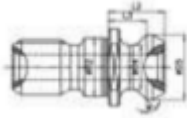


PULL STUDS

FOR CT TAPERS

NEED A SPECIAL PULL STUD

Just call or fax, we will assist you in selecting the proper pull stud



For assistance, provide the following information

Quantity _____

Dimension $\phi D5$ ___ in/mm

Dimension $\phi D4$ ___ in/mm

Dimension $\phi D2$ ___ in/mm

Dimension L2 ___ in/mm

Dimension L3 ___ in/mm

Angle degrees ___ deg

Thread Size (D1) _____

Tool holder
Shank Type _____

Machine
Make _____

Machine
Model _____

Coolant Hole Yes/No

Coolant Hole
Diameter ___ in / mm

O-Ring Required
Yes/No

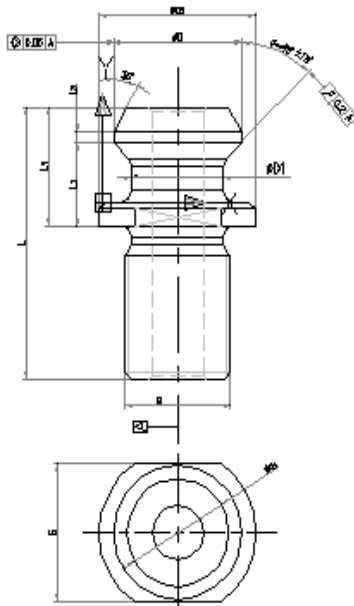


Fig.1
With Coolant Hole

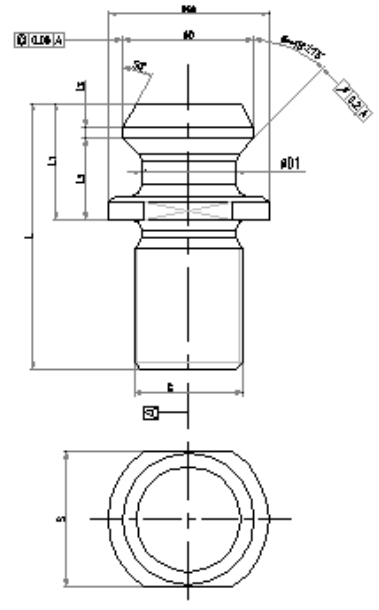


Fig.2
Without Coolant Hole

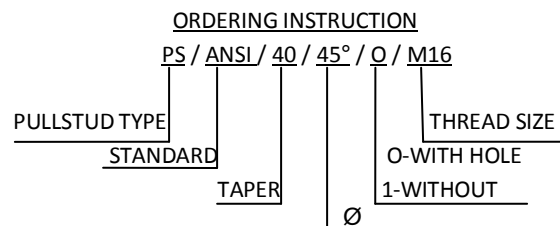
DIMENSION IN mm

DIMENSIONS IN INCH

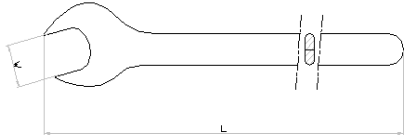
PULL STUDS FOR CT TAPER SHANK TOOLS

DESIGNATION	G		ϕD	$\phi D1$	L	L1	L2	L3	$\phi d1$	$\phi D2$	S	FIG
	METRIC	INCH UNC-2A										
30	M12	1/2" X 13"	0.52	0.38	1.10	0.46	0.32	0.04	-	0.64	0.53	2
40	M16	5/8" X 11"	0.74	0.49	1.50	0.64	0.44	0.06	0.28	0.92	0.75	1
40	M16	5/8" X 11"	0.74	0.49	1.50	0.64	0.44	0.06	-	0.92	0.75	2
50	M20	3/4" X 10"	0.94	0.61	1.80	0.82	0.58	0.08	0.37	1.18	1.00	1
45	M20	3/4" X 10"	0.94	0.61	1.80	0.82	0.58	0.08	-	1.18	1.00	2
50	M24	1" X 8"	1.14	0.82	2.30	1.00	0.70	0.10	0.47	1.42	1.25	1
50	M24	1" X 8"	1.14	0.82	2.30	1.00	0.70	0.10	-	1.42	1.25	2

At end of Part No.....
C – Indicates coolant hole.
O – Indicates with O-Ring.



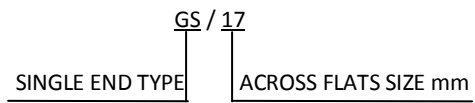
 DIMENSION IN mm  DIMENSIONS IN INCH



TYPE GS FOR HEXAGONAL NUTS

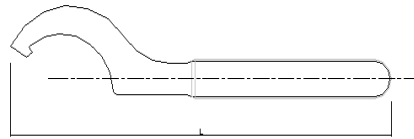
DESIGNATION	W	L		SUITABLE FOR NUTS
	mm	mm	INCH	
GS17	17	155	6.10	UM/RD11
GS25	25	210	8.27	UM/RD16
GS30	30	250	9.84	UM/RD20

ORDERING INSTRUCTION

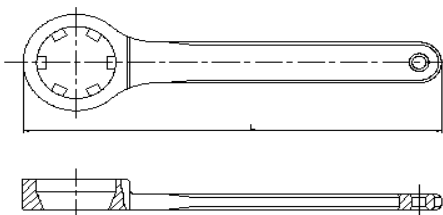


TYPE E FOR SLOTTED NUTS

SPANNER DESIGNATION	L		SUITABLE FOR NUTS
	mm	INCH	
E25	155	6.10	UM/RD25
			UM/RDO25
E32	190	7.50	UM/RD32
			UM/RD40
E40	230	9.0	UM/RDO35
			UM/RDG100
E50	280	11.0	UM/RD50
			UM/RDO44
E150	280	11.0	UM/RDG150

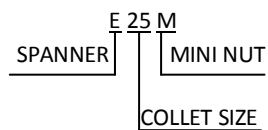


TYPE EM FOR MINI NUTS



SPANNER DESIGNATION	L		SUITABLE FOR NUTS
	mm	INCH	
E8M	100	4.6	UM/RD8M
E11M	125	5.0	UM/RD11M
E16M	150	6.0	UM/RD16M
E20M	175	6.9	UM/RD20M
E25M	175	6.9	UM/RD25M

ORDERING INSTRUCTION



REDUCTION SLEEVES

 DIMENSION IN mm

DESIGNATION	ØD1h6	ØD2	Ød1	ød2	L1	L2	L3	TAPER NO.	FIG NO.
CYL 32/8	32	39	8	10	85	45	5	-	1
CYL 32/10	32	39	10	12	85	45	5	-	1
CYL 32/12	32	39	12	14	85	45	5	-	1
CYL 32/16	32	39	16	18	85	35	5	-	2
CYL 32/20	32	39	20	-	85	-	5	-	3
CYL 32/25	32	39	25	-	85	-	5	-	3
CYL 32/MTA1	32	-	12.065	-	85	56	-	MT1	4
CYL 32/MTA2	32	-	17.78	-	85	67	-	MT2	4
CYL 32/MTA3	32	-	23.825	-	85	84	-	MT3	4

CYL 40/8	40	47	8	10	85	45	5	-	1
CYL 40/10	40	47	10	12	85	45	5	-	1
CYL 40/12	40	47	12	14	85	45	5	-	1
CYL 40/16	40	47	16	18	85	35	5	-	2
CYL 40/20	40	47	20	-	90	-	5	-	3
CYL 40/25	40	47	25	-	90	-	5	-	3
CYL 40/32	40	47	32	-	90	-	5	-	3
CYL 40/MTA1	40	-	12.065	-	85	56	-	MT1	4
CYL 40/MTA2	40	-	17.78	-	95	67	-	MT2	4
CYL 40/MTA3	40	-	23.825	-	115	84	-	MT3	4

NOTE: OTHER SIZES INCLUDING INCH SIZES ARE AVAILABLE ON REQUEST.

ORDERING INSTRUCTION

CYL 40 / MTA 2

MORSE TAPER No.2 TANG TYPE

OUT SIDE DIA 'D1'

ORDERING INSTRUCTION

CYL 40 / 8

BORE DIA 'd1'

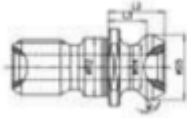
OUTSIDE DIA 'D1'

PULL STUDS

FOR CT TAPERS

NEED A SPECIAL PULL STUD

Just call or fax, we will assist you in selecting the proper pull stud



For assistance, provide the following information

Quantity _____

Dimension $\phi D5$ ___ in/mm

Dimension $\phi D4$ ___ in/mm

Dimension $\phi D2$ ___ in/mm

Dimension L2 ___ in/mm

Dimension L3 ___ in/mm

Angle degrees ___ deg

Thread Size (D1) _____

Tool holder
Shank Type _____

Machine
Make _____

Machine
Model _____

Coolant Hole Yes/No

Coolant Hole
Diameter ___ in / mm

O-Ring Required
Yes/No

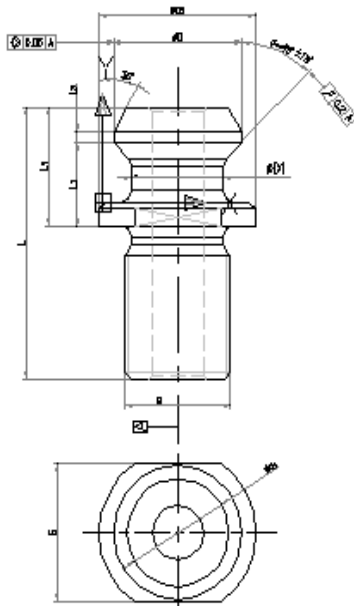


Fig.1
With Coolant Hole

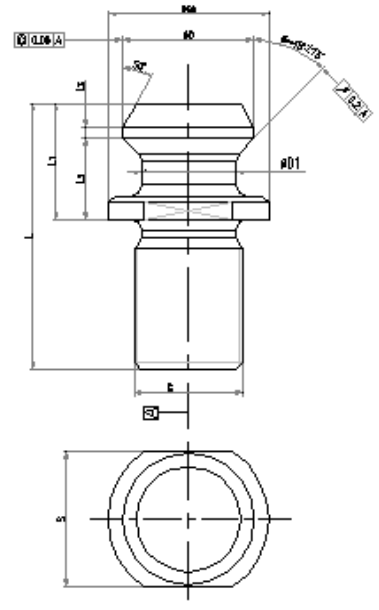


Fig.2
Without Coolant Hole

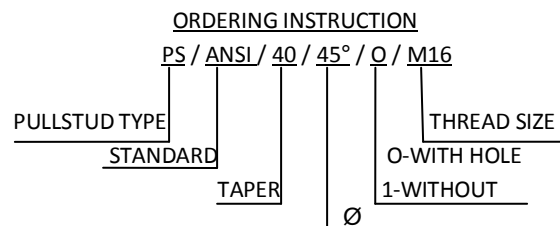
DIMENSION IN mm

DIMENSIONS IN INCH

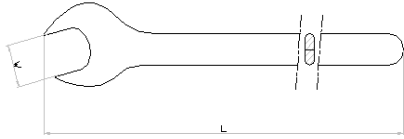
PULL STUDS FOR CT TAPER SHANK TOOLS

DESIGNATION	G		ϕD	$\phi D1$	L	L1	L2	L3	$\phi d1$	$\phi D2$	S	FIG
	METRIC	INCH UNC-2A										
30	M12	1/2" X 13"	0.52	0.38	1.10	0.46	0.32	0.04	-	0.64	0.53	2
40	M16	5/8" X 11"	0.74	0.49	1.50	0.64	0.44	0.06	0.28	0.92	0.75	1
40	M16	5/8" X 11"	0.74	0.49	1.50	0.64	0.44	0.06	-	0.92	0.75	2
50	M20	3/4" X 10"	0.94	0.61	1.80	0.82	0.58	0.08	0.37	1.18	1.00	1
45	M20	3/4" X 10"	0.94	0.61	1.80	0.82	0.58	0.08	-	1.18	1.00	2
50	M24	1" X 8"	1.14	0.82	2.30	1.00	0.70	0.10	0.47	1.42	1.25	1
50	M24	1" X 8"	1.14	0.82	2.30	1.00	0.70	0.10	-	1.42	1.25	2

At end of Part No.....
C – Indicates coolant hole.
O – Indicates with O-Ring.



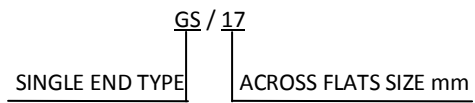
 DIMENSION IN mm  DIMENSIONS IN INCH



TYPE GS FOR HEXAGONAL NUTS

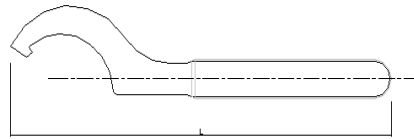
DESIGNATION	W	L		SUITABLE FOR NUTS
	mm	mm	INCH	
GS17	17	155	6.10	UM/RD11
GS25	25	210	8.27	UM/RD16
GS30	30	250	9.84	UM/RD20

ORDERING INSTRUCTION

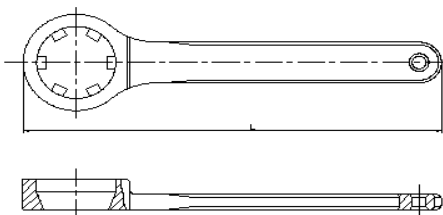


TYPE E FOR SLOTTED NUTS

SPANNER DESIGNATION	L		SUITABLE FOR NUTS
	mm	INCH	
E25	155	6.10	UM/RD25
			UM/RDO25
E32	190	7.50	UM/RD32
			UM/RD40
E40	230	9.0	UM/RDO35
			UM/RDG100
E50	280	11.0	UM/RD50
			UM/RDO44
E150	280	11.0	UM/RDG150

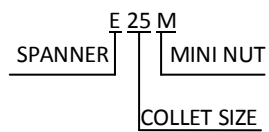


TYPE EM FOR MINI NUTS



SPANNER DESIGNATION	L		SUITABLE FOR NUTS
	mm	INCH	
E8M	100	4.6	UM/RD8M
E11M	125	5.0	UM/RD11M
E16M	150	6.0	UM/RD16M
E20M	175	6.9	UM/RD20M
E25M	175	6.9	UM/RD25M

ORDERING INSTRUCTION



REDUCTION SLEEVES

 DIMENSION IN mm

DESIGNATION	ØD1h6	ØD2	Ød1	ød2	L1	L2	L3	TAPER NO.	FIG NO.
CYL 32/8	32	39	8	10	85	45	5	-	1
CYL 32/10	32	39	10	12	85	45	5	-	1
CYL 32/12	32	39	12	14	85	45	5	-	1
CYL 32/16	32	39	16	18	85	35	5	-	2
CYL 32/20	32	39	20	-	85	-	5	-	3
CYL 32/25	32	39	25	-	85	-	5	-	3
CYL 32/MTA1	32	-	12.065	-	85	56	-	MT1	4
CYL 32/MTA2	32	-	17.78	-	85	67	-	MT2	4
CYL 32/MTA3	32	-	23.825	-	85	84	-	MT3	4

CYL 40/8	40	47	8	10	85	45	5	-	1
CYL 40/10	40	47	10	12	85	45	5	-	1
CYL 40/12	40	47	12	14	85	45	5	-	1
CYL 40/16	40	47	16	18	85	35	5	-	2
CYL 40/20	40	47	20	-	90	-	5	-	3
CYL 40/25	40	47	25	-	90	-	5	-	3
CYL 40/32	40	47	32	-	90	-	5	-	3
CYL 40/MTA1	40	-	12.065	-	85	56	-	MT1	4
CYL 40/MTA2	40	-	17.78	-	95	67	-	MT2	4
CYL 40/MTA3	40	-	23.825	-	115	84	-	MT3	4

NOTE: OTHER SIZES INCLUDING INCH SIZES ARE AVAILABLE ON REQUEST.

ORDERING INSTRUCTION

CYL 40 / MTA 2

MORSE TAPER No.2 TANG TYPE

OUT SIDE DIA 'D1'

ORDERING INSTRUCTION

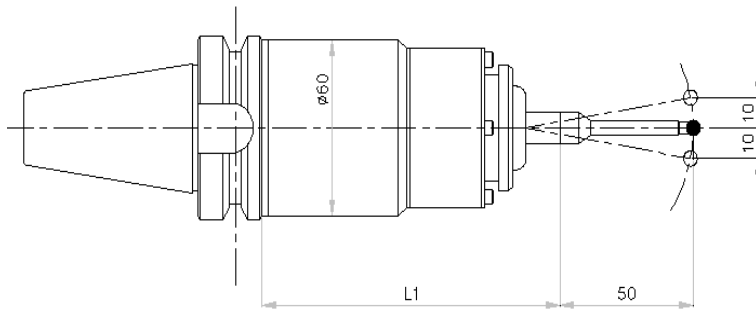
CYL 40 / 8

BORE DIA 'd1'

OUTSIDE DIA 'D1'

BT SHANK (PF)

POINT FINDERS



 DIMENSIONS IN mm

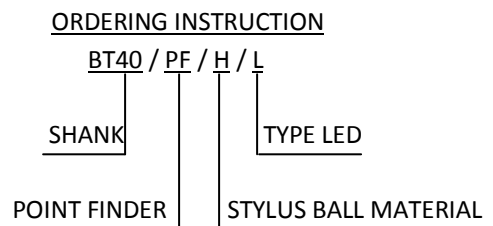
DESIGNATION	TAPER SHANK	STYLUS BALL MATERIAL	LED (L) LED WITH BEEPER (LB)	L1
BT30/PF/H/L	BT30	HARDENED STEEL	L	110
BT30/PF/H/LB	BT30	HARDENED STEEL	LB	125
BT40/PF/H/L	BT40	HARDENED STEEL	L	110
BT40/PF/H/LB	BT40	HARDENED STEEL	LB	125
BT50/PF/H/L	BT50	HARDENED STEEL	L	110
BT50/PF/H/LB	BT50	HARDENED STEEL	LB	125

- FEATURES:**
1. STYLUS RADIAL MOVEMENT 10mm AND AXIAL MOVEMENT 5mm
 2. PRECISE SETTING OF STYLUS RUNOUT ON THE MACHINE IS PROVIDED.
 3. LED IS A STANDARD FEATURE

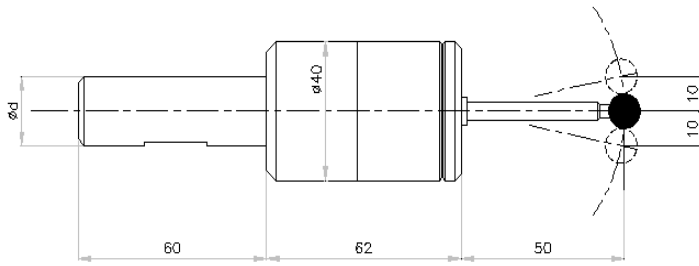
- ACCURACY:**
1. STYLUS REPEATABILITY ± 0.002 mm
 2. STYLUS RUNOUT WITH RESPECT TO SHANK 0.005mm

NOTE:

1. DETAILS GIVEN ARE FOR POINT FINDERS WITH BT SHANK ONLY.
2. POINT FINDERS WITH OTHER TYPES OF SHANKS LIKE SK, TC, CAT, ISO, ETC. ARE OFFERED ON CUSTOMER'S REQUIREMENT.
3. STYLUS OF LENGTH ABOVE 50mm & 100mm CAN BE SUPPLIED ON SPECIFIC ORDER.



CYLINDRICAL SHANK (PF)



 DIMENSIONS IN INCH

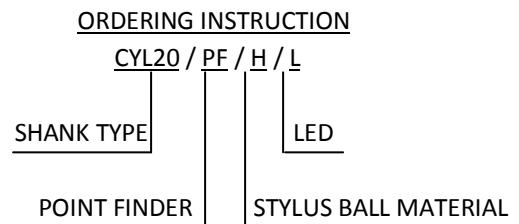
DESIGNATION	Ødh6	STYLUS BALL MATERIAL	LED (L) LED WITH BEEPER (LB)
CYL20/PF/H	20.0	HARDENED STEEL	L
CYL25/PF/H	25.0	HARDENED STEEL	L
CYL32/PF/H	32.0	HARDENED STEEL	L

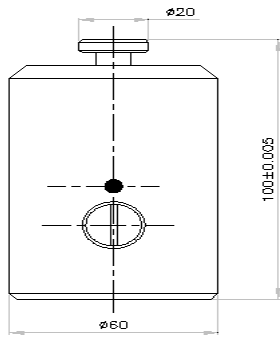
- FEATURES:
1. STYLUS RADIAL MOVEMENT 10mm AND AXIAL MOVEMENT 5mm
 2. PRECISE SETTING OF STYLUS RUNOUT ON THE MACHINE IS PROVIDED.
 3. LED (L) IS A STANDARD FEATURE & LED WITH BEEPER (LB) IS OPTIONAL

- ACCURACY:
1. STYLUS REPEATABILITY ±0.002mm
 2. STYLUS RUNOUT WITH RESPECT TO SHANK 0.005mm

NOTE:

1. DIAMETER & LENGTH OF SHANK CAN BE SUPPLIED ON CUSTOMER'S REQUEST.
2. STYLUS OF LENGTH ABOVE 50mm & 100mm CAN BE SUPPLIED ON SPECIFIC ORDER.



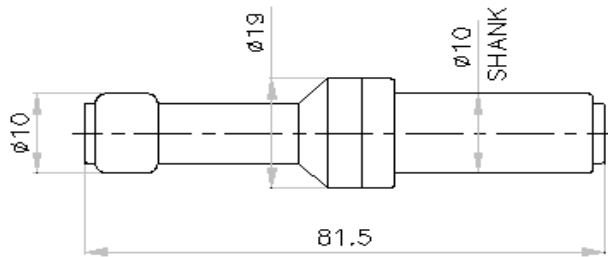


DIMENSION IN mm

- FEATURES:
1. HARDENED & PRECISION GROUND
 2. MAGNETIC BASE ENABLES MOUNTING IN HORIZONTAL POSITION.
 3. SPRING LOADED FOR PROTECTION FROM DAMAGES.
 4. BEEPER WITH LED IS A STANDARD FEATURE

ACCURACY: STYLUS REPEATABILITY ± 0.002 mm
 PARALLELISM: 0.005mm

ORDERING INSTRUCTION
 TOOL SETTER TS-100



DIMENSION IN mm

- FEATURES:
1. EASY CENTERING BY JUST PRESSING TO WORK SURFACE.
 2. ERROR FREE CENTERING EVEN WITH LESS PRECISE HOLDERS, SUCH AS DRILL CHUCKS.
 3. HARDCHROME PLATED

ACCURACY: REPEATABILITY ± 0.002 mm

NOTE:

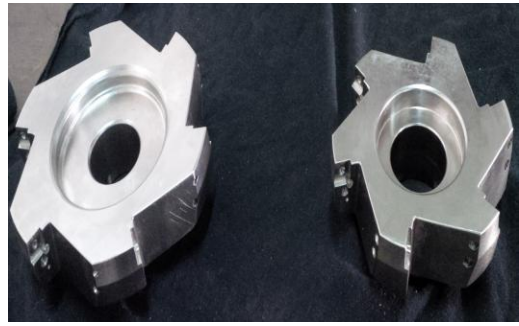
- HANDLE WITH CARE.
- ALWAYS ENSURE CONTACT SURFACES ARE CLEAN
- SPINDLE SPEED SHOULD BE BELOW 600 RPM

ORDERING INSTRUCTION
 EDGE FINDER EF-10

ADAPTORS



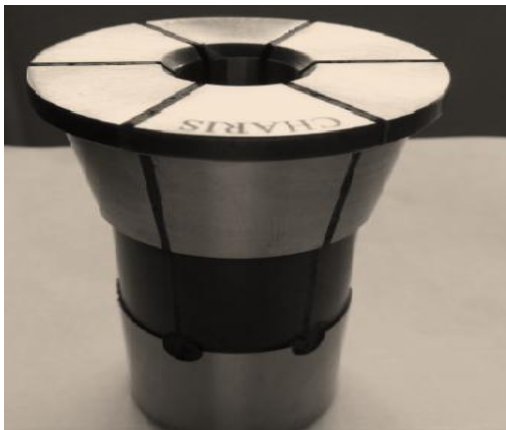
CUTTERS



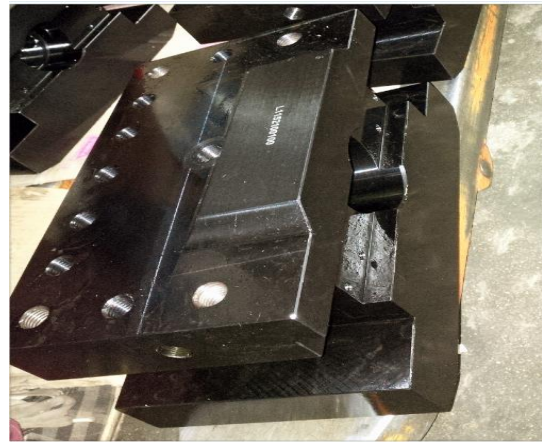
ECCENTRIC COLLETS



RUBBER SEALED COLLET



VTL COLLET



EXPANSION COLLETS



MACHINE SPINDLE

RUN-OUT ADJUSTABLE ADAPTOR



CUSTOM DESIGNED PRODUCTS

ECCENTRIC COLLETS

TOOL SETTING FIXTURE

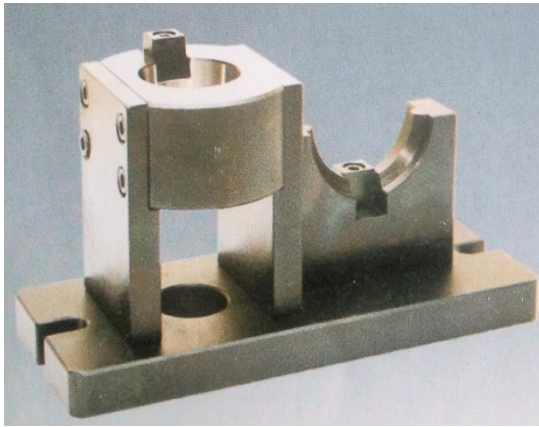


CUTTERS

DUAL CONTACT COLLET CHUCKS



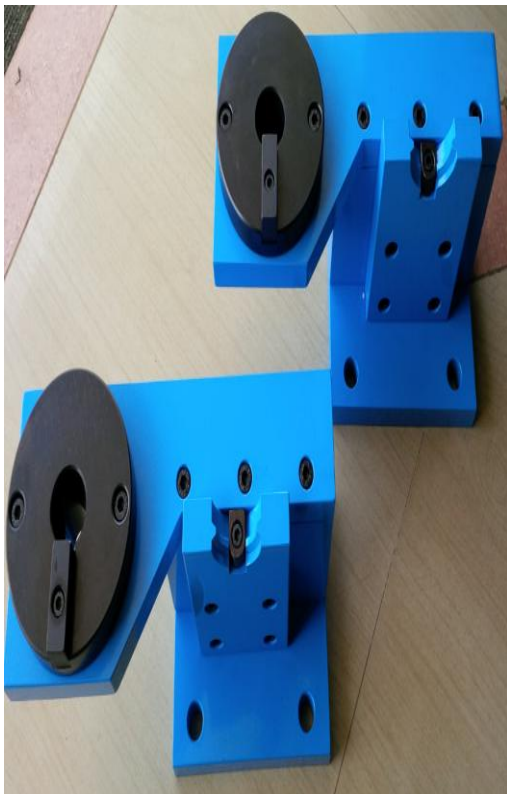
TOOL SETTING FIXTURE



DOUBLE ANGLE COLLETS



TOOL SETTING FIXTURE



TOMB STONE



TOOL TROLLEY



SELF ALIGN PADS

