



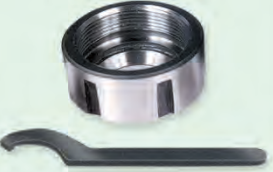

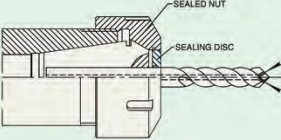
















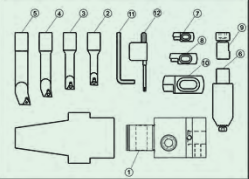






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GENERAL SPECIFICATION OF NAGA TOOL HOLDERS



1) TOOL HOLDERS MATERIAL

Naga Tool holders are made out of good quality alloy case hardening steel to provide good surface hardness and guaranteed tensile core strength of $< 800 \text{ N/mm}$ and heat treated to a good hardness of 58 - 60 HRC with a minimum case depth of 0.6 mm, for a longer durability and maintain its accuracy for many years.

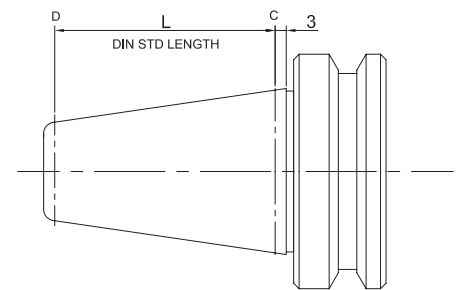
Also where the tool holder wall thickness is very small like ER16, ER16M, ER20M collet chucks, special steel and heat treatment processes are used to ensure optimum balance between core strength and surface hardness.

Also care has been taken to design and manufacturing every tool holder with stringent quality checks to produce products of very high quality.

2) TAPER ACCURACY

All 7 / 24 tapers like ISO 30, 40 & 50 are ground and sizes are controlled and angular tolerance is maintained better than AT3 class. The AT3 specifications as per ISO 1947 and IS 7615 are as below.

TAPER	TOLERANCE at D (AT _D)	L	Roundness	Size are in mm	
				Straightness max error	Taper surface roughness Rz
30	0.002	39	0.001	0.001	Rz < 0.002
40	0.003	59	0.002	0.001	Rz < 0.002
50	0.004	92	0.002	0.001	Rz < 0.002



Tolerance AT_D

- Indicates the tolerance of diameter is difference between the real and theoretical value of the taper diameter at D.
- This Value of tolerance must always be less (negative), never more (positive) in order to GUARANTEE a good tool holder seating at the bigger taper diameter.

Naga is controlling AT3 dimensions by using latest technology Air electronic gauging systems, which is having three point measurement (T, M, B) for making sure that there is no concave (or) convex on the taper.



Fundamentals of balancing



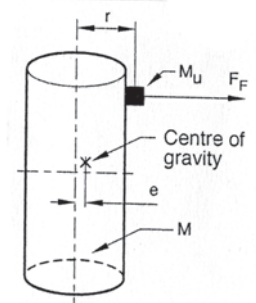
Causes of unbalance

- Unsymmetrical design of the rotor (e.g. gripping groove on tool holders as specified in DIN 69871 or clamping screw on Weldon (side lock) tool holders, Eccentric ring in ER nuts)
- Unsymmetrical distribution of mass due to concentricity errors caused by manufacturing tolerance, e.g. concentricity of the tool outer diameter with respect to the taper.

What is unbalance ?

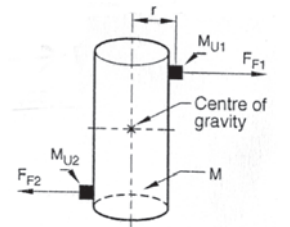
Static unbalance

- The centre of gravity of a rotor lies outside the axis of rotation.
 - This can also be measured in stationary rotors, e.g. by means of unbalance scales for grinding wheels.
 - Upon rotation this causes centrifugal forces perpendicular to the axis of rotation.
 - It can be eliminated by balancing in one plane. Any balancing plane can be chosen.
- Normally there may still be couple unbalance after static balancing.



Couple unbalance

- The centre of gravity lies along the axis of rotation
- This can only be measured in rotating rotors.
- It causes a moment of tilt during rotation.
- The centrifugal forces of both unbalance masses counterbalance each other (no lateral forces).
- It can only be eliminated by balancing in 2 planes.



Dynamic unbalance

Combination of static and couple unbalance

- This is the normal case for tool holders.

What is balancing?

Balancing is used to make compensation for the unsymmetrical distribution of mass in a rotor. This is possible by,

- applying mass, e.g. a clamped weight to balance car tyres.
- removing mass, e.g. by drilling a hole
- adjusting mass, e.g. by adding balancing rings, screws.

Balancing in one plane (static)

Compensation for the static portion of an unbalance

- The centre of gravity of a rotor is brought back to the axis of rotation (eccentricity $e=0$), for the toolholder GPL up to 150 mm static balancing can be done.

Balancing in two planes (dynamic)

Complete compensation for unbalance (static and couple unbalance), which is required for the toolholder GPL is more than 150 mm,

Balancing quality G

DIN ISO 1940 - 1 (previously VDI guideline 2060) defines the principles for measuring unbalance and for balancing.

The accuracy of balancing is expressed as balancing quality grade G (previously : Q)

The permissible residual unbalance is calculated from the balancing quality grade, the rotation speed and the weight for the rotor.

$$U_{per} = \frac{G \times M}{n} \times 9549$$

U_{per} - Permissible residual unbalance of the holder in gmm

G - balancing quality grade

M - Weight of the holder in kg

n - Rotation speed of the holder in rpm

9549 - a constant that is produced after conversion of the measuring units.

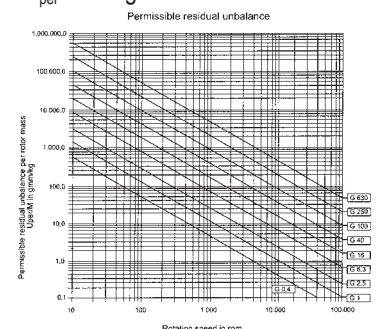
Example :

Operation speed : 15000 rpm

Quality grade : G 2.5

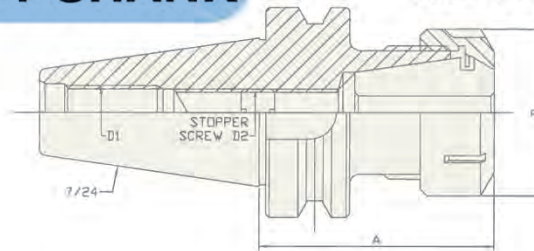
Weight of the holder - 1 kg

U_{per} : 1.59 gmm



ER COLLET CHUCKS – BT SHANK

MAS 403



STANDARD LENGTH

DIMENSIONS IN MM

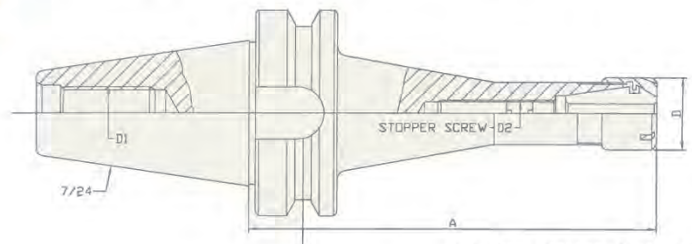
DESIGNATION	SUITABLE COLLET	CLAMPING CAPACITY	A	D1	D2	NUT		WRENCH
						D	TYPE	
BT30/A70/ER16	ER16	0.5 – 10	70	M12	M8 x 1	28	UM/ER16	GS 25
BT30/A70/ER20	ER20	1 – 13	70	M12	M8 x 1	34	UM/ER20	GS 30
BT30/A70/ER32	ER32	2 – 20	70	M12	M18 x 1.5	50	UM/ER32	E 32
BT40/A70/ER16	ER16	0.5 - 10	70	M16	M8 x 1	28	UM/ER16	GS 25
BT40/A70/ER20	ER20	1 – 13	70	M16	M12 x 1	34	UM/ER20	GS 30
BT40/A70/ER25	ER25	1 – 16	80	M16	M18 x 1.5	42	UM/ER25	E 25
BT40/A70/ER32	ER32	2 – 20	70	M16	M22 x 1.5	50	UM/ER32	E 32
BT40/A80/ER40	ER40	3 – 26	70	M16	M22 x 1.5	63	UM/ER40	E 40
BT50/A80/ER40	ER40	3 – 26	80	M24	M22 x 1.5	63	UM/ER40	E 40
BT50/A100/ER50	ER50	10 – 34	100	M24	M22 x 1.5	78	UM/ER50	E 50

EXTENDED LENGTH

DIMENSIONS IN MM

DESIGNATION	SUITABLE COLLET	CLAMPING CAPACITY	A	D1	D2	NUT		WRENCH
						D	TYPE	
BT30/A100/ER16	ER16	0.5 - 10	100	M16	M8 x 1	28	UM/ER16	GS25
BT40/A105/ER16	ER16	0.5 - 10	105	M16	M8 x 1	28	UM/ER16	GS 25
BT40/A105/ER20	ER20	1 – 13	105	M16	M12 x 1	34	UM/ER20	GS 30
BT40/A105/ER25	ER25	1 – 16	105	M16	M18 x 1.5	42	UM/ER25	E 25
BT40/A100/ER32	ER32	2 – 20	100	M16	M22x 1.5	50	UM/ER32	E 32
BT40/A100/ER40	ER40	3 – 26	100	M16	M22 x 1.5	63	UM/ER40	E 40

EXTENDED LENGTH WITH 'M' TYPE NUT



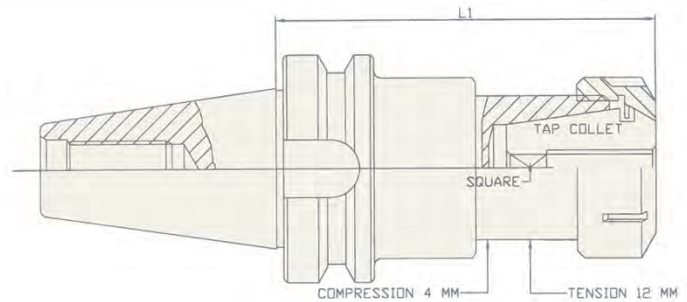
DIMENSIONS IN MM

DESIGNATION	COLLET	CLAMPING CAPACITY	A	D1	D2	NUT		WRENCH
						D	TYPE	
BT30/A120/ER16M	ER16	0.5 – 10	120	M12	M8 x 1	22	UM/ER16M	E16M
BT40/A125/ER16M	ER16	0.5 - 10	125	M16	M8 x 1	22	UM/ER16M	E16M
BT40/A135/ER20M	ER20	1 – 13	125	M16	M12 x 1	28	UM/ER20M	E20M
BT40/A150/ER25M	ER25	1 – 16	150	M16	M18 x 1.5	35	UM/ER25M	E25M
BT50/A135/ER16M	ER16	0.5 - 10	135	M24	M8 x 1	22	UM/ER16M	E16M
BT50/A135/ER20M	ER20	1 – 13	135	M24	M12 x 1	28	UM/ER20M	E20M
BT50/A135/ER25M	ER25	1 – 16	135	M24	M18 x 1.5	35	UM/ER25M	E25M

NOTE:

- Collet chucks are supplied without pullstud.
- Place separate order for collets, pullstuds & spanners
- For pullstud detail refer page No.43
- Other shank like TC, SK, CAT, ANSI, etc. can be supplied on request.
- For taper detail, please refer page No.47

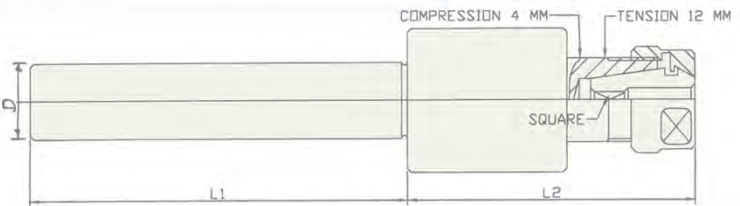
TAPPING COLLET CHUCK – BT SHANK



DIMENSIONS IN MM

DESIGNATION	SUITABLE FOR COLLET	COLLET CAPACITY	L1	NUT DESIGNATION	SPANNER DESIGNATION
BT40/CTTC/ER16	ERT 16	M4 - M10	90	UM/ER16	GS 25
BT40/CTTC/ER20	ERT 20	M4 - M12	90	UM/ER20	GS30
BT40/CTTC/ER25	ERT 25	M4 - M16	100	UM/ER25	E25
BT40/CTTC/ER32	ERT 32	M4 - M20	100	UM/ER32	E32
BT40/CTTC/ER40	ERT 40	M10 - M27	100	UM/ER40	E40

TAPPING COLLET CHUCK – STRAIGHT SHANK



DIMENSIONS IN MM

DESIGNATION	SUITABLE FOR COLLET	COLLET CAPACITY	D	L1	L2	NUT DESIGNATION	SPANNER DESIGNATION
CTTC 20/ ER16/100	ERT 16	M4 - M10	20	100	75	UM/ER16	GS 25
CTTC 20/ ER20/100	ERT 20	M4 - M12	20	100	75	UM/ER20	GS30

TAP COLLET

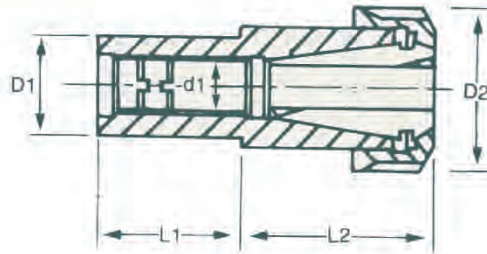


DESCRIPTION	CAPACITY	MAX SHANK	Ø D1	L
ERT 16	M4 - M10	Ø 7	Ø 16.6	27
ERT 20	M4 - M12	Ø 8.5	Ø 20.6	31
ERT 25	M4 - M16	Ø 12.5	Ø 25.6	35
ERT 32	M4 - M20	Ø 15	Ø 32.6	40
ERT 40	M10 - M27	Ø 20	Ø 40.8	46

FEATURES:

- SUITABLE FOR TAPPING M3 TO M12
- COLLETS CAN BE INTERCHANGED ACCORDING TO THE SHANK SIZE OF TAP.
- COMPRESSION & TENSION ENSURE BETTER THREAD FORM AND ACCURACY ON JOB.
- SUITABLE ONLY FOR TURNING & MACHINING CENTRES.
- BEST-SUITED FOR SOFT MATERIALS LIKE ALUMINIUM, BRASS, CAST IRON, ETC.
- TAP COLLET CAN BE USED FOR HARDER MATERIAL FOR RIGID TAPPING.

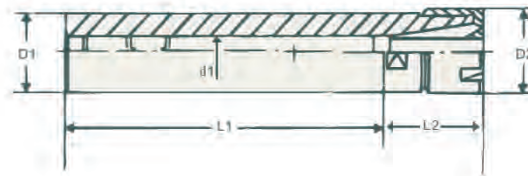
STRAIGHT SHANK ER COLLET CHUCKS



DIMENSIONS IN MM

DESIGNATION	SUITABLE COLLET	CLAMPING CAPACITY	D1	NUT		d1	L1	L2	WRENCH
				D2	TYPE				
CYL16/ER16/60	ER16	0.5-10	16	28	UM/ER16	M8x1	60	37	GS - 25
CYL20/ER16/50			20			M12x1	50		
CYL20/ER16/100			20			M12x1	100		
CYL20/ER20/100	ER20	1-13	20	34	UM/ER20	M12x1	100	41	GS - 30
CYL32/ER20/50			32			M12x1	50		
CYL20/ER25/100	ER25	1-16	20	42	UM/ER25	M12x1	100	47	E-25
CYL25/ER25/100			25			M18x1.5	100		
CYL20/ER32/100	ER32	2-20	20	50	UM/ER32	M12x1	100	58	E-32
CYL40/ER32/80			40			M22x1.5	80		

STRAIGHT SHANK ER COLLET CHUCKS - M TYPE NUT (EXTENSION STYLE)



DIMENSIONS IN MM

DESIGNATION	SUITABLE COLLET	CLAMPING CAPACITY	D1	NUT		d1	L1	L2	WRENCH
				D2	TYPE				
CYL8/ER8M/80	ER8	0.5 - 5	8	12	UM/ER8M	-	80	23	E-8M
CYL12/ER11M/100	ER11	0.5 - 7	12	16	UM/ER11M	-	100	30	E-11M
CYL12/ER16M/80	ER16	0.5 - 10	12	22	UM/ER16M	-	80	40	E-16M
CYL20/ER16M/100			20			M12 x 1	100		
CYL16/ER20M/100	ER20	1 - 13	16	28	UM/ER20M	M8x1	100	46	E-20M
CYL25/ER25M/100	ER25	1 - 16	26	35	UM/ER25M	M18x 1.5	100	55	E-25M

- EX-STOCK SUBJECT TO PRIOR SALE.

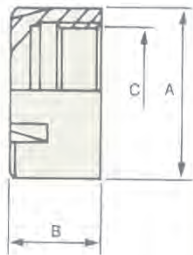
NOTE:

- Place separate order for collets & spanners
- Other shank diameter and length can be supplied on request.

CLAMPING NUT & WRENCH



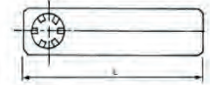
MINI NUTS



DIMENSIONS IN MM

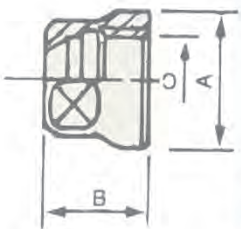
TYPE	A (mm)	B(mm)	C
UM/ER 8M	12	10.8	M10 x 0.75
UM/ER11M	16	11.3	M13 x 0.75
UM/ER16M	22	17	M19 x 1
UM/ER20M	28	19	M24 x 1
UM/ER25M	35	20	M30 x 1

MINI WRENCHES



TYPE	L
E - 8M	75
E - 11M	100
E - 16M	140
E - 20M	140
E - 25M	148

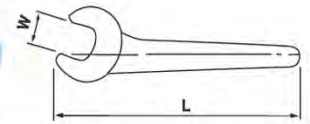
HEX NUTS



DIMENSIONS IN MM

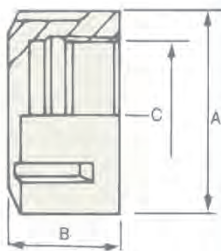
TYPE	A (mm)	B(mm)	C
UM/ER11	19	11.3	M14 x 0.75
UM/ER12	19	12.5	M14 x 0.75
UM/ER16	28	17	M22 x 1.5
UM/ER20	34	19	M22 x 1.5

HEX WRENCH



TYPE	W	L
GS17	17	155
GS17	17	155
GS25	25	210
GS30	30	250

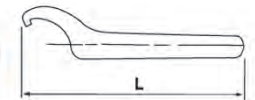
" E " NUT



DIMENSIONS IN MM

TYPE	A (mm)	B(mm)	C
UX/ER16	32	17.5	M22 x 1.5
UX/ER20	35	18.5	M25 x 1.5
UM/ER25	42	20	M32 x 1.5
UM/ER32	50	22	M40 x 1.5
UM/ER40	63	25	M50 x 1.5
UM/ER50	78	35	M64 x 2.0

" E " WRENCHES

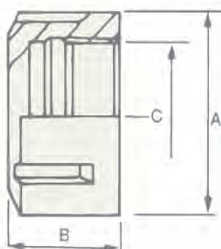


DIA 50 RANGE

DIA 53 RANGE

TYPE	L
E16	160
E20	160
E25	160
E32	170
E40	228
E50	280

" E " NUT



DIMENSIONS IN MM

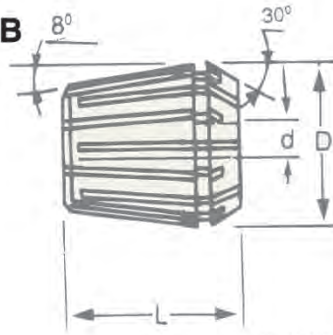
TYPE	A (mm)	B(mm)	C
UM/ER25	42	20	M32 x 1.5
UM/ER32	50	22	M40 x 1.5
UM/ER40	63	25	M50 x 1.5

'E' WRENCHES - 'U' TYPE



TYPE	L
E25	160
E32	170
E40	228

ER SPRING COLLET DIN 6499 FORM B

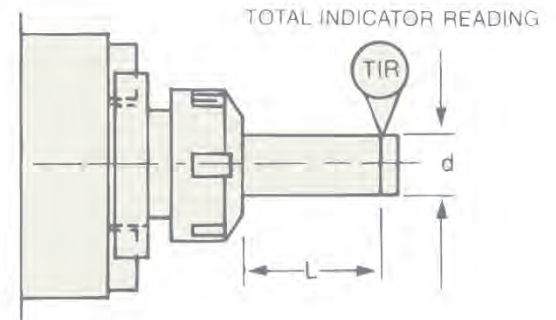


DIMENSIONS IN MM

COLLET TYPE	BORE RANGE-d			CLAMPING CAPACITY		COLLAPSE PER COLLET	D	L
	FROM	TO	In Steps	FROM	TO			
ER8	0.5	5	0.5	0.5	5.0	0.5	8.5	13.5
ER11	0.5	7	0.5	0.5	7.0	0.5	11.5	18.0
ER16	0.5	10	1.0	0.5	10.0	1.0	17.0	27.0
ER20	1.0	13	1.0	1.0	13.0	1.0	21.0	31.0
ER25	1.0	16	1.0	1.0	16.0	1.0	26.0	35.0
ER32	2.0	20	1.0	2.0	20.0	1.0	33.0	40.0
ER40	3.0	26	1.0	3.0	26.0	1.0	41.0	46.0
ER50	10.0	34	2.0	10.0	34.0	2.0	52.0	60.0

ER COLLET CONCENTRICITY – AS PER DIN 6499

METRIC				
Clamping Range d		L	Maximum T.I.R.	
			Precision DIN 6499	High Precision DIN 6499
Min	Max			
1.0	1.6	6	0.015	0.008
1.6	3.0	10		
3.0	6.0	16		
6.0	10.0	25	0.020	0.010
10.0	18.0	40		
18.0	26.0	50		
26.0	34.0	60	0.025	



METHOD OF INSERTION & RELEASE FOR ER COLLET.

INSERTING

- Place collet into the nut at an angle as shown to engage eccentric projection of nut with groove of collet.
- Press the collet as shown to engage the collet in to the nut
- Only then mount nut and collet together into the collet holder or machine spindle.

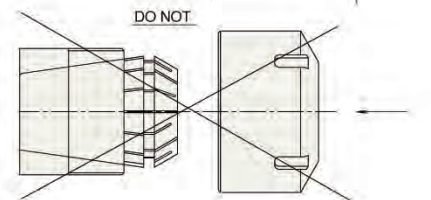
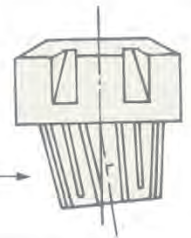
Eccentric Projection of Nut



Groove in the collet

RELEASING

- Unscrew the nut from collet chuck.
- Hold the nut in hand and press the collet by other hand as shown in figure.

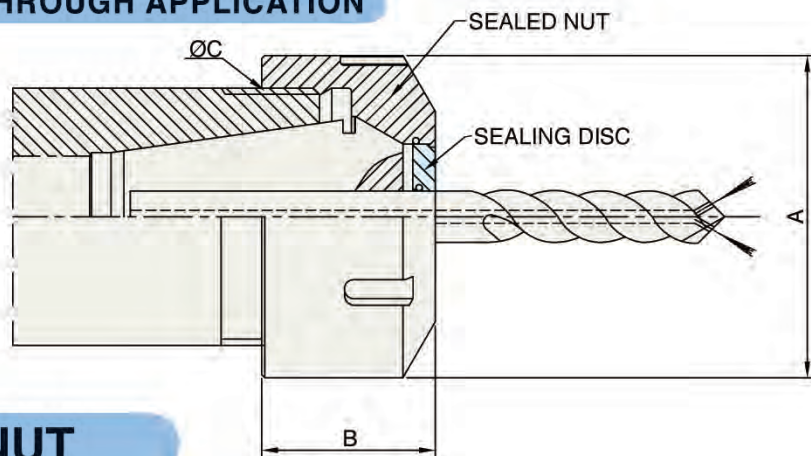


NOTE:

- Never use a 14 - 13mm collet to clamp 14.2mm dia shank, but rather use a 15 - 14mm collet.

SEALED NUT AND SEALING DISC

FOR COOLANT THROUGH APPLICATION

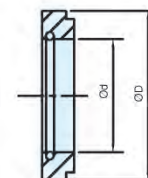


SEALED NUT

TYPE	A(MM)	B (MM)	C
UM / NSN 16	28	22.5	M22 X 1.5
UM / NSN 20	34	24	M25 X 1.5
UM / NSN 25	42	25	M32 X 1.5
UM / NSN 32	50	27.5	M40 X 1.5
UM / NSN 40	63	30.5	M50 X 1.5

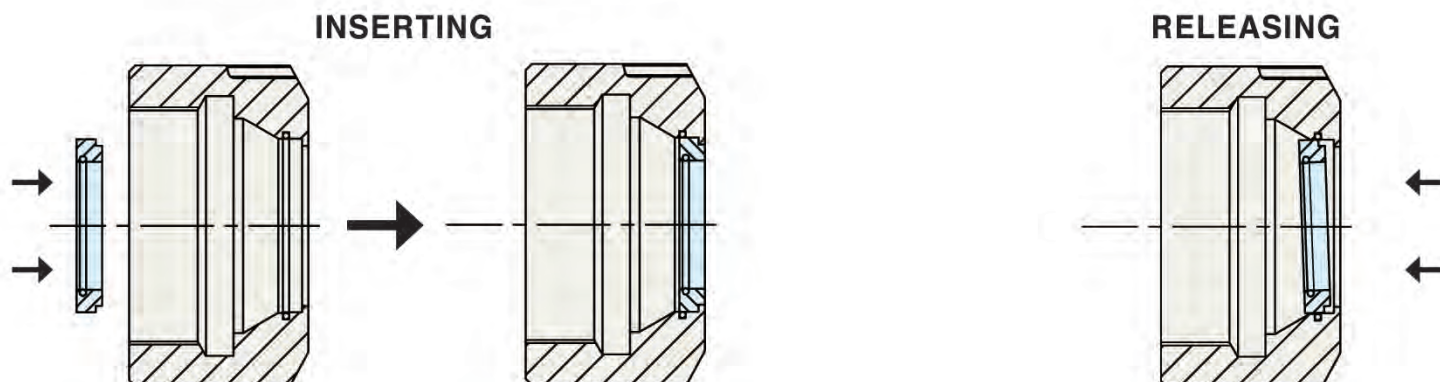
SEALING DISC

SEALING DISC TYPE	NSD / ER16	NSD / ER20	NSD / ER25	NSD / ER32	NSD / ER40
Ø D	13	16	21	27	33.5
Ø d (RANGE) IN 0.5 MM STEP	Ø3 - Ø10	Ø3 - Ø13	Ø3 - Ø16	Ø3 - Ø20	Ø4 - Ø26

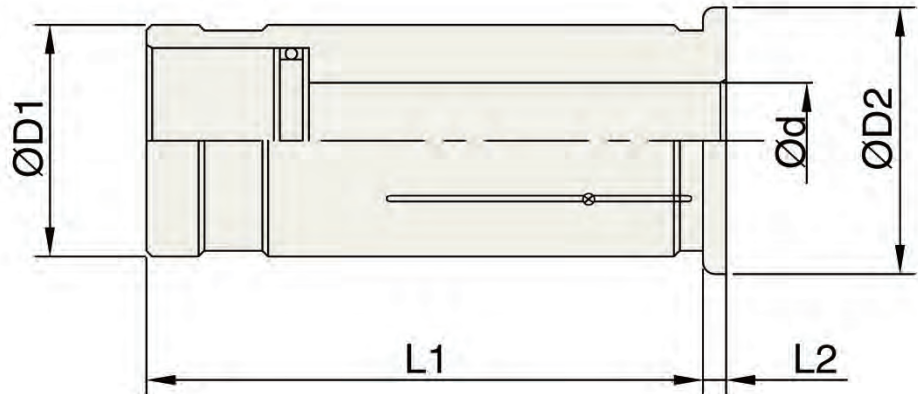


NSD/ER16,ER20,ER25, ER32,ER40

MOUNTING INSTRUCTION OF SEALING DISC



HYDROGRIP SLEEVE



DESCRIPTION	Ø d1	Ø D1	Ø D2	L1	L2
HK12 / 5	5	12	16	44.5	2
HK12 / 6	6				
HK12 / 8	8				
HK 20 / 5	5	20	24	50.5	
HK 20 / 6	6				
HK 20 / 7	7				
HK 20 / 8	8				
HK 20 / 9	9				
HK 20 / 10	10				
HK 20 / 11	11				
HK 20 / 12	12				
HK 20 / 13	13				
HK 20 / 14	14				
HK 20 / 15	15				
HK 20 / 16	16				
HK 32 / 6	6	32	36	60.5	3
HK 32 / 8	8				
HK 32 / 10	10				
HK 32 / 12	12				
HK 32 / 14	14				
HK 32 / 16	16				
HK 32 / 18	18				
HK 32 / 20	20				
HK 32 / 25	25				

Note:

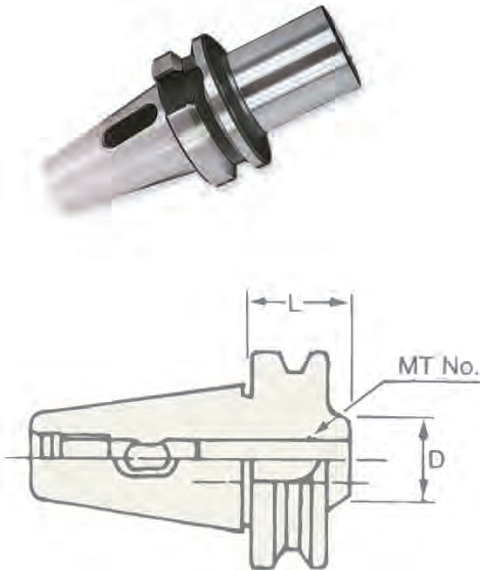
* Other size can be supplied according to customer's need

MORSE TAPER ADAPTOR (WITH TANG END)

MTA



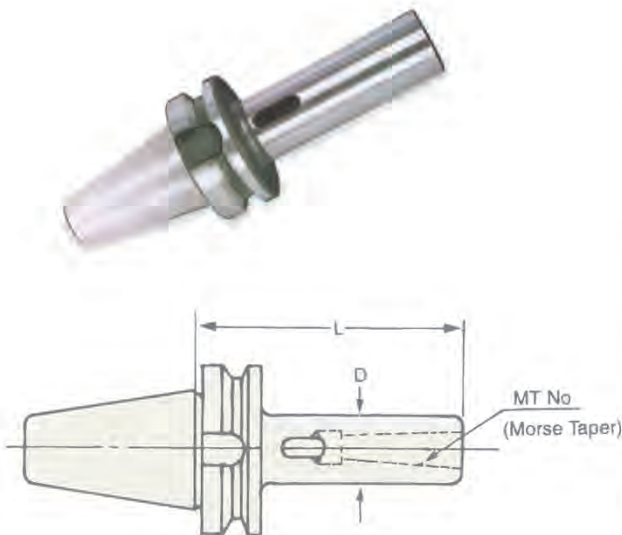
SHORT TYPE



DIMENSIONS IN MM

ITEM DESCRIPTION	TAPER NO	L	D
BT30/MTA1/50	1	50	25
BT30/MTA2/62	2	62	32
BT30/MTA3/80	3	80	40
BT40/MTA1/45	1	45	25
BT40/MTA2/60	2	60	32
BT40/MTA3/75	3	75	40
BT40/MTA4/95	4	95	50
BT50/MTA1/45	1	45	25
BT50/MTA2/45	2	45	32
BT50/MTA3/45	3	45	40
BT50/MTA4/95	4	95	50

LONG TYPE



DIMENSIONS IN MM

ITEM DESCRIPTION	TAPER NO	L	D
BT30/MTA1/120	1	120	25
BT30/MTA2/120	2	120	32
BT30/MTA3/135	3	135	40
BT40/MTA1/120	1	120	25
BT40/MTA2/120	2	120	32
BT40/MTA3/135	3	135	40
BT40/MTA4/165	4	165	50
BT50/MTA1/120	1	120	25
BT50/MTA1/180	1	180	25
BT50/MTA2/135	2	135	32
BT50/MTA2/180	2	180	32
BT50/MTA3/150	3	150	40
BT50/MTA3/180	3	180	40
BT50/MTA4/180	4	180	50

- EX-STOCK SUBJECT TO PRIOR SALE.

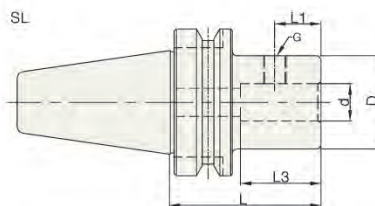
NOTE:

- Adaptors are supplied without pullstuds.
- Place order separately. For detail please refer page No. 43
- For draw type shank please mention MTB in place of MTA.
- For taper details, please refer page No. 47

Guide line to choose MT Adaptors

MT SHANK SIZE	DRILL DIAMETER
MT 1	Upto 14 mm
MT 2	From 14.5 to 23
MT 3	From 23.5 to 31.75
MT 4	From 32 to 50.5
MT 5	From 51 and above

SIDE LOCK HOLDER-STANDARD (SLA)



NAGA

FIG-1

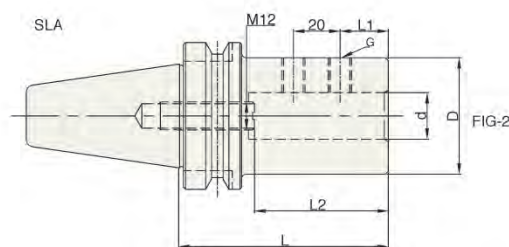


FIG-2

DIMENSIONS IN MM

DESIGNATION	d	L	D	L1	L2		L3	G	FIG
					MIN	MAX			
BT30/SL 6/65	6	65	20	15	-	-	40	M6	1
BT30/SL 8 /65	8	65	24	15	-	-	40	M8	1
BT30/SL 10/65	10	65	30	16	-	-	44	M8	1
BT30/SL 12/65	12	65	35	20	-	-	50	M10	1
BT30/SL 16/65	16	65	40	23	-	-	60	M10	1
BT30/SLA 20/90	20	90	50	25	55	70	-	M10	2
BT30/SLA 25/90	25	90	50	25	55	70	-	M10	2
BT40/SL 6/65	6	65	20	15	-	-	40	M6	1
BT40/SL 8/65	8	65	24	15	-	-	40	M8	1
BT40/SL 10/65	10	65	30	16	-	-	44	M8	1
BT40/SL 12/65	12	65	35	20	-	-	50	M10	1
BT40/SL 16/65	16	65	40	23	-	-	60	M10	1
BT40/SLA20/90	20	90	50	25	55	70	-	M10	2
BT40/SLA25/90	25	90	50	25	55	70	-	M10	2
BT40/SLA32/90	32	90	60	30	55	70	-	M10	2
BT40/SLA40/90	40	90	70	30	55	70	-	M12	2
BT50/SL 6/75	6	75	20	15	-	-	40	M6	1
BT50/SL 8/75	8	75	24	15	-	-	40	M8	1
BT50/SL 10/75	10	75	30	16	-	-	44	M8	1
BT50/SL 12/75	12	75	35	20	-	-	50	M10	1
BT50/SL 16/75	16	75	40	23	-	-	60	M10	1
BT50/SLA20/105	20	105	50	25	55	70	-	M10	2
BT50/SLA25/105	25	105	50	25	55	70	-	M10	2
BT50/SLA32/105	32	105	60	30	65	80	-	M10	2
BT50/SLA40/105	40	105	80	30	65	80	-	M12	2

- EX-STOCK SUBJECT TO PRIOR SALE.

NOTE:

1. Adapters are supplied without pullstuds.
2. Place order separately. For detail please refer page No. 43
3. For taper details, please refer page No. 47

SIDE LOCK HOLDER - WELDEN SHANK

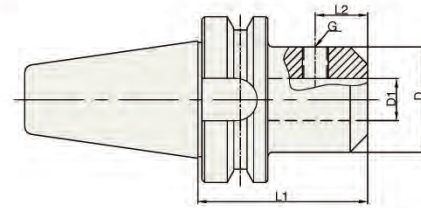


FIG-1

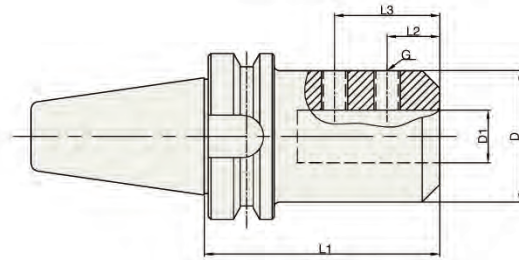


FIG-2

ITEM DESCRIPTION	FIG	D1	D	L1	L2	L3	G	
BT30 / SL 6 / 50 / W	1	6	25	50	18		M6	
BT30 / SL 8 / 50 / W	1	8	28	50	18		M8	
BT30 / SL 10 / 50 / W	1	10	35	50	20		M10	
BT30 / SL 12 / 50 / W	1	12	42	50	22.58		M12	
BT30 / SL 16 / 63 / W	1	16	48	63	24		M12	
BT30 / SL 20 / 70 / W	1	20	52	70	25		M16	
BT40 / SL 6 / 50 / W	1	6	25	50	18		M6	
BT40 / SL 8 / 50 / W	1	8	28	50	18		M8	
BT40 / SL 10 / 63 / W	1	10	35	63	20		M10	
BT40 / SL 12 / 63 / W	1	12	42	63	22.5		M12	
BT40 / SL 16 / 63 / W	1	16	48	63	24		M12	
BT40 / SL 20 / 63 / W	1	20	52	63	25		M16	
BT40 / SLA25/ 100 / W	2	25	65	90	24		49	M20
BT40 / SLA32/ 100 / W	2	32	72	100	24		52	M20
BT50 / SL 6 / 63 / W	1	6	25	63	18		M6	
BT50 / SL 8 / 63 / W	1	8	28	63	18		M8	
BT50 / SL 10 / 63 / W	1	10	35	63	20		M10	
BT50 / SL 12 / 80 / W	1	12	42	80	22.5		M12	
BT50 / SL 16 / 80 / W	1	16	48	80	24		M16	
BT50 / SL 20 / 80 / W	1	20	52	80	25		M16	
BT50 / SLA25/ 100 / W	2	25	65	100	24		49	M20
BT50 / SLA32/ 105 / W	2	32	72	105	24		52	M20
BT50 / SLA40/ 110 / W	2	40	90	110	30		62	M20

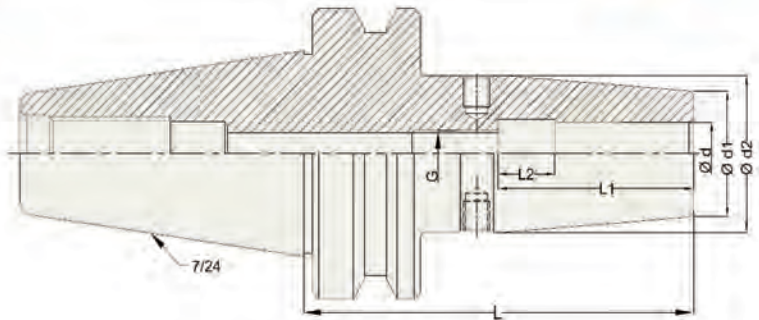
- EX-STOCK SUBJECT TO PRIOR SALE.

NOTE:

1. Adapters are supplied without pullstuds.
2. Place order separately. For detail please refer page No. 40
3. For taper details, please refer page No. 44

SHRINK FIT HOLDERS

NEW



All Dimensions are in mm

DESIGNATION	ϕd	L	$\phi d1$	$\phi d2$	L1	L2	G (Adjustment Screw)
BT 30 / SF 6 / 90	6	90	21	27	33	8.5	M5 x 0.8 x15
BT 30 / SF 8 / 90	8	90	21	27	35	9.5	M6 x 1 x 15
BT 30 / SF 10 / 90	10	90	24	32	40	9.5	M8 x 1 x 15
BT 30 / SF 12 / 90	12	90	24	32	45	13	M10 x 1 x15
BT 30 / SF 14 / 90	14	90	27	34	45	13	M10 x 1 x15
BT 30 / SF 16 / 90	16	90	27	34	48	13	M12 x 1 x15
BT 30 / SF 18 / 90	18	90	33	42	48	13	M16 x 1 x15
BT 30 / SF 20 / 90	20	90	33	42	50	13	M16 x 1 x15

All Dimensions are in mm

BT 40 / SF 6 / 90	6	90	21	27	33	8.5	M5 x 0.8 x15
BT 40 / SF 8 / 90	8	90	21	27	35	9.5	M6 x 1 x 15
BT 40 / SF 10 / 90	10	90	24	32	40	9.5	M8 x 1 x 15
BT 40 / SF 12 / 90	12	90	24	32	45	13	M10 x 1 x15
BT 40 / SF 14 / 90	14	90	27	34	45	13	M10 x 1 x15
BT 40 / SF 16 / 90	16	90	27	34	48	13	M12 x 1 x15
BT 40 / SF 18 / 90	18	90	33	42	48	13	M16 x 1 x15
BT 40 / SF 20 / 90	20	90	33	42	50	13	M16 x 1 x15
BT 40 / SF 25 / 100	25	100	44	52.5	55	13	M16 x 1 x15
BT 40 / SF 32 / 100	32	100	44	53	55	13	M16 x 2 x15

All Dimensions are in mm

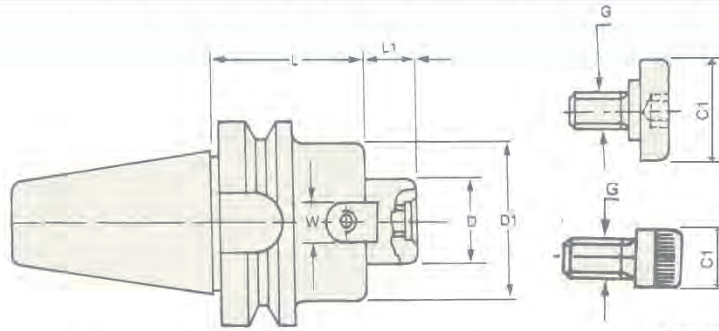
BT 50 / SF 6 / 100	6	100	21	27	33	8.5	M5 x 0.8 x15
BT 50 / SF 8 / 100	8	100	21	27	35	9.5	M6 x 1 x 15
BT 50 / SF 10 / 100	10	100	24	32	40	9.5	M8 x 1 x 15
BT 50 / SF 12 / 100	12	100	24	32	45	13	M10 x 1 x15
BT 50 / SF 14 / 100	14	100	27	34	45	13	M10 x 1 x15
BT 50 / SF 16 / 100	16	100	27	34	48	13	M12 x 1 x15
BT 50 / SF 18 / 100	18	100	33	42	48	13	M16 x 1 x15
BT 50 / SF 20 / 100	20	100	33	42	50	13	M16 x 1 x15
BT 50 / SF 25 / 100	25	100	44	52.5	55	13	M16 x 1 x15
BT 50 / SF 32 / 100	32	100	44	53	55	13	M16 x 2 x15

- EX-STOCK SUBJECT TO PRIOR SALE.

NOTE:

1. Adapters are supplied without pullstuds.
2. Place order separately. For detail please refer page No. 43
3. For taper details, please refer page No. 47

FACE & SHOULDER MILL ARBOR (FOR CUTTER DIA < 160MM)



DIMENSIONS IN MM

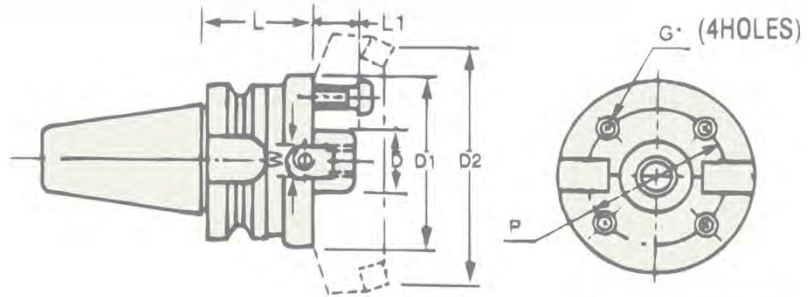
ITEM DESCRIPTION	D	L	L1	D1	C1	G	CUTTER DIA D2
BT30/FMC16/45	16	45	14	35	13	M8	40
BT30/FMC22/45	22	45	19	40	16	M10	50&63
BT30/FMC27/45	27	45	21	48	18	M12	80
BT40/FMC16/45	16	45	14	35	13	M8	40
BT40/FMC22/60	22	60	19	40	16	M10	50&63
BT40/FMC22/90	22	90	19	40	16	M10	50&63
BT40/FMC27/60	27	60	21	48	18	M12	80
BT40/FMC27/90	27	90	21	48	18	M12	80
BT40/FMC32/60	32	60	24	58	42	M16	100
BT40/FMC32/75	32	75	24	58	42	M16	100
BT40/FMC40/60	40	60	26	70	52	M20	125
BT50/FMC22/75	22	75	19	40	16	M10	50&63
BT50/FMC22/120	22	120	19	40	16	M10	50&63
BT50/FMC22/150	22	150	19	40	16	M10	50&63
BT50/FMC27/90	27	90	21	48	18	M12	80
BT50/FMC27/150	27	150	21	48	18	M12	80
BT50/FMC32/75	32	75	24	58	42	M16	100
BT50/FMC32/105	32	105	24	58	42	M16	100
BT50/FMC40/75	40	75	26	70	52	M20	125
BT50/FMC40/105	40	105	26	70	52	M20	125

- EX-STOCK SUBJECTS TO PRIOR SALE.

NOTE:

1. Each adopter is supplied with driving tenons & clamping screw.
2. Tenon size confirm to IS:6310 / ISO240
3. Adopters are supplied without pullstuds. Place order separately.
4. For pullstud detail refer page No. 43
5. For taper detail please see page No. 47

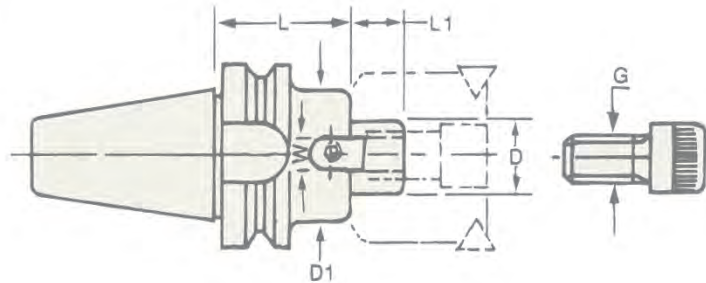
FACE & SHOULDER MILL ARBOR (FOR CUTTER DIA 160 – 500mm)



DIMENSIONS IN MM

ITEM DESCRIPTION	D	L	L1	D1	P	G	CUTTER DIA
BT40/FMB40F/65	40	65	30	90	66.7	M12	160
BT50/FMB40F/75	40	75	30	90	66.7	M12	160
BT50/FMB60/75	60	75	40	130	101.6	M16	200-500

DEEP SHOULDER MILL



DIMENSIONS IN MM

ITEM DESCRIPTION	D	L	L1	D1	G
BT40/SMS32/70	32	70	24	58	M16
BT40/SMS40/70	40	70	27	70	M20
BT50/SMS32/90	32	90	24	58	M16
BT50/SMS40/90	40	90	27	70	M20
BT50/SMS50/90	50	90	30	90	M24

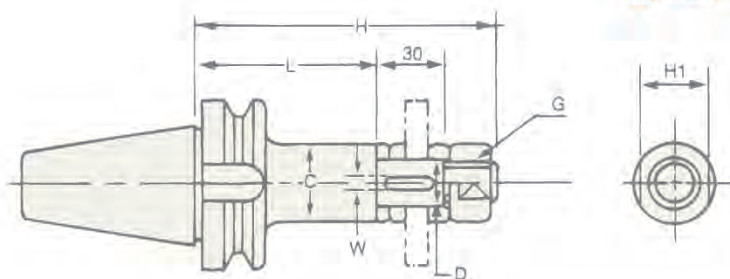
- EX-STOCK SUBJECT TO PRIOR SALE.

NOTE:

1. Each adopter is supplied with driving tenons & clamping screw.
2. Tenon size confirm to IS:6310 / ISO240
3. Adopters are supplied without pullstuds. Please order separately. For detail see page No.43
4. For taper detail please see page No. 47

SIDE & FACE MILL ARBOR

SCA



DIMENSIONS IN MM

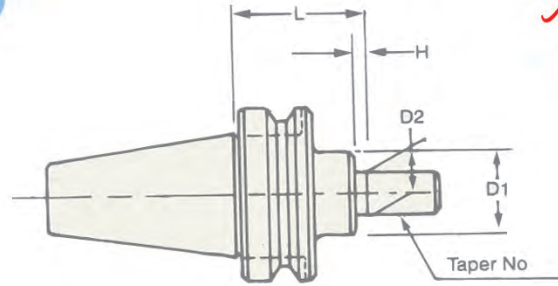
DESIGNATION	D	L	H	H1	C	W	G
BT40/SCA 13/75	13	75	120	17	20	-	M12 x 1.25
BT40/SCA 13/105	13	105	150	17	20	-	M12 x 1.25
BT40/SCA 16/75	16	75	121	23	26	4	M14 x 1.5
BT40/SCA 16/105	16	105	151	23	26	4	M14 x 1.5
BT40/SCA 22/75	22	75	126	29	34	6	M20 x 1.5
BT40/SCA 22/120	22	120	171	29	34	6	M20 x 1.5
BT40/SCA 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	144	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 3
BT50/SCA 40/135	40	135	201	46	55	10	M36 x 3

- EX-STOCK SUBJECTS TO PRIOR SALE.

NOTE:

- Each adapters is supplied with a clamping nut, (IS : 8620) and set of spacers 3,6,10,12, (IS : 8618) and without spanner. Key dimensions confirm to IS : 6285
- Adapters are supplied without pullstuds. Place order separately.
- For pullstud details, please refer page No:43
- For taper details please refer page No:47

KEYLESS CHUCK ADOPTOR - JTA



ITEM DESCRIPTION	CHUCK RANGE	TAPER NO.	L	D2	D1	H
BT30 / JTA2 / 45	0 - 6	JT2	45	14.199	30	4
BT30 / JTA6 / 45	0.8 - 13	JT6	45	17.17	30	4
BT40 / JTA2 / 45	0 - 6	JT2	45	14.199	30	4
BT40 / JTA6 / 90	0.8 - 13	JT6	90	17.17	30	4
BT50 / JTA2 / 45	0 - 6	JT2	45	14.199	30	4
BT50 / JTA6 / 45	0.8 - 13	JT6	45	17.17	30	4

- EX-STOCK SUBJECTS TO PRIOR SALE.

INTEGRAL KEYLESS CHUCK ADOPTOR



- EX-STOCK SUBJECTS TO PRIOR SALE.

NOTE:

1. Keyless chuck adaptor with other types of shank like SK, TC, CAT, ANSI, ISO etc. can be offered against customer's requirement.
2. Other details remain the same.
3. Adopters are supplied without pullstuds. Place order separately.
4. For pullstud detail refer page No.43
5. For taper detail please see page No. 47

MICROBORE BORING BAR

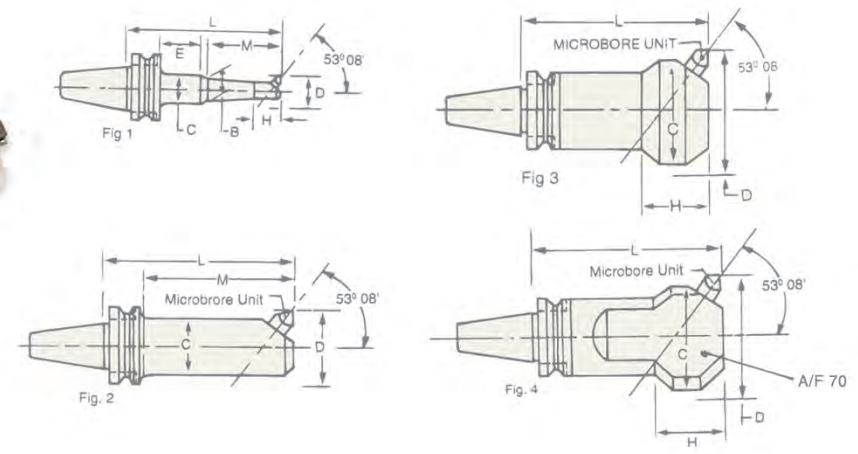


FIG	DESIGNATION	D		L	E	BORING DEPTH	H	C	B	MICROBORE UNIT (CARTRIDGE)		
		MIN	MAX							BRAZED	T TYPE	R TYPE
1	BT40-BCA 13.5-105	13.5	16	105	8	67	15	44	13	M1B2F40	-	-
	BT40-BCA 13.5-165			165	68							
	BT40-BCA 14.5-105	14.5	17	105	8	67	15	44	14	M1B2F40	-	-
	BT40-BCA 14.5-165			165	68							
	BT40-BCA 16 -105	16	22.5	105	2	73	18	44	15	M1A2F40	-	-
	BT40-BCA 16 -180			180	77							
	BT40-BCA 19 - 120	19	23	120	4	86	23	44	18	M2B2F40	-	M2B2R
	BT40-BCA 19 - 180			180	64							
	BT40-BCA 23 - 135	23	29	135	-	105	24	44	22	M3B2F40	M3B2T	M3B2R
	BT40-BCA 23 - 195			195	60							
	BT40-BCA 29 - 150	29	41	150	5	115	30	44	28	M3A2F40	M3A2T	M3A2R
	BT40-BCA 29 - 195			195	50							
	BT40-BCA 38 - 150	38	49	150	5	172	41	44	35	M5B2F40	M5B2T	M5B2R
	BT40-BCA 38 - 210			210	8							
BT40-BCA 46 - 150	46	66	150	5	115	45	55	41	M5A2F40	M5A2T	M5A2R	
BT40-BCA 46 - 225			225	13								
2	BT40-BCA 62 - 165	62	87	165	-	135	-	51	-	M7A2F80	M7A2T	M7A2R
1	BT40-BCA 62 - 225			225	11	184	60	62	57			
2	BT40-BCA 83 - 120	83	108	120	11	-	-	63	-	M7A2F80	M7A2T	M7A2R
	BT40-BCA 83 - 165			165	-		-					
	BT40-BCA 83 - 225	225	-	-	-							
3	BT40-BCA 98 - 165	98	142	165	-	-	90	83	-	M10A2F80	M10A2T	M10A2R

FIG	DESIGNATION	D		L	E	BORING DEPTH	H	C	B	MICROBORE UNIT (CARTRIDGE)				
		MIN	MAX							BRAZED	T TYPE	R TYPE		
1	BT50-BCA 13.5-120	13.5	16	120	10	67	15	44	13	M1B2F40	-	-		
	BT50-BCA 13.5-195			195	85									
	BT50-BCA 14.5-120	14.5	17	120	10									
	BT50-BCA 14.5-195			195	85									
	BT50-BCA 16 - 120	16	22.5	120	4	73	18	44	15	M1A2F40	-	-		
	BT50-BCA 16 - 195			195	79									
	BT50-BCA 19 - 135	19	23	135	6	86	23	44	18	M2B2F40			-	M2B2R
	BT50-BCA 19 - 210			210	81									
	BT50-BCA 23 - 150	23	29	150	2	105	24	44	22	M3B2F40	M3B2T	M3B2R		
	BT50-BCA 23 - 225			225	77									
	BT50-BCA 29 - 165	29	41	165	7	115	30	44	28	M3A2F40	M3A2T	M3A2R		
	BT50-BCA 29 - 225			225	67									
	BT50-BCA 38 - 165	38	49	165	7		172	41	55	35	M5B2F40	M5B2T	M5B2R	
	BT50-BCA 38 - 225			225	10									
	BT50-BCA 46 - 165	46	66	165	7	115	45	55	41	M5A2F40	M5A2T	M5A2R		
	BT50-BCA 46 - 255			255	6	206								
2	BT50-BCA 62 - 180	62	87	180	-	137	-	51	-	M7A2F80	M7A2T	M7A2R		
1	BT50-BCA 62 - 240			240	13	184	60	70	57					
	BT50-BCA 62 - 330			330	7	280			59					
2	BT50-BCA 83 - 165	83	108	165	-	122	-	63	-	M10A2F80	M10A2T	M10A2R		
1	BT50-BCA 83 - 240			240	7	170	70	90	70					
	BT50-BCA 83 - 345			345	-	302			-				76	
2	BT50-BCA 98 - 165	98	142	165	-	122	-	83	-	M10A2F80	M10A2T	M10A2R		
	BT50-BCA 98 - 240			240	-	197	-	83	-					
1	BT50-BCA 98 - 345			345	-	302	85	-	92					
4	BT50-BCA 132 - 210	132	176	210	-	-	65	108	-	M10A2F80	M10A2T	M10A2R		
	BT50-BCA 132 - 315			315	-	-	65	108	-					
	BT50-BCA 166 - 225	166	210	225	-	-	70	142	-					
	BT50-BCA 166 - 315			315	-	-	70	142	-					
	BT50-BCA 200 - 210			210	-	-	75	176	-					

- EX-STOCK SUBJECTS TO PRIOR SALE.

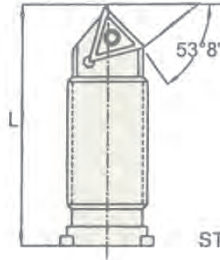
NOTE:

1. Boring bars with other shanks like SK, TC, CAT, ANSI, and ISO etc. are offered against customers' requirements.
2. Boring bars are supplied without cartridge & pullstud.
3. For pullstud description please refer page No:43
4. For Indexable cartridge please refer page No:22
5. Indexable cartridges can be supplied from **M2 & above**.
6. Please specify "T" for TCMT or "R" for CCMT insert in place of F40 or F80.
7. For taper detail please refer page No:47

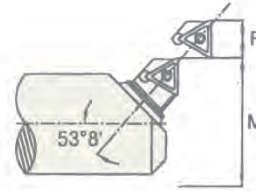
ANGULAR MOUNTED INDEXABLE INSERT TYPE CARTRIDGES.



('T' TYPE)



STYLE 2



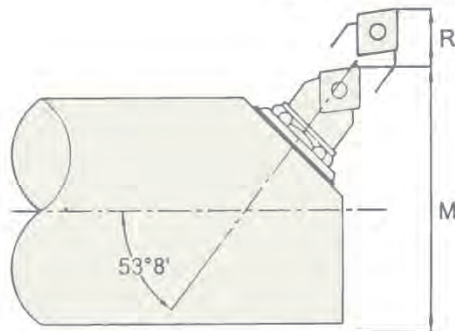
M - Minimum Bore
R - Range
L - Length

DIMENSIONS IN MM

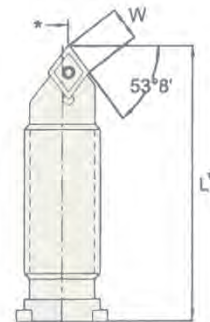
BORING BAR SIZE	RANGE		CARTRIDGE SIZE	M	R	L	INSERT TYPE	TORX KEY	INSERT SCREW	MAKE OF INSERT
	MIN	MAX.								
BCA23	23	29	M3 B2 T	23.0	3.2	21.4	TCMT 06 T1 04	T6	5513020 - 28	SANDVIK
BCA29	29	41	M3 A2 T	26.2	6.4	25.4				
BCA38	38	49	M5 B2 T	37.3	5.6	33.3	TCMT 110204	T8	21480800	WIDIA
BCA46	46	66	M5 A2 T	42.9	10.3	39.7				
BCA62	62	87	M7 A2 T	58.7	12.7	56.1	TCMT 110204	T8	21480800	WIDIA
BCA83	83	108					OR TCMT 160408	OR T15	OR 21480388	
BCA98 & ABOVE	98	ANY	M10 A2 T	78.6	22.2	76.2	TCMT 160408	T15	21480388	WIDIA

ANGULAR MOUNTED INDEXABLE INSERT TYPE CARTRIDGES.

('R' TYPE)



M - Minimum Bore
R - Range
L - Length



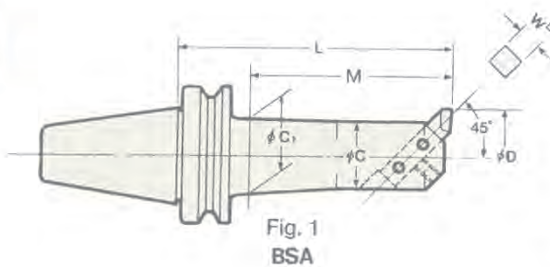
DIMENSIONS IN MM

BORING BAR SIZE	RANGE		CARTRIDGE SIZE	M	R	L	INSERT TYPE	TORX KEY	INSERT SCREW	MAKE OF INSERT
	MIN.	MAX.								
BCA23	23	29	M3 B2 R	23.0	3.2	21.4	CCMT 060204	T8	21480800	WIDIA
BCA29	29	41	M3 A2 R	26.2	6.4	25.4				
BCA38	38	49	M5 B2 R	35.7	5.6	33.3				
BCA46	46	66	M5 A2 R	41.3	10.3	39.7				
BCA62	62	87	M7 A2 R	58.7	12.7	55.6	CCMT 090304	T15	21480388	WIDIA
BCA83	83	108								
BCA98 & ABOVE	98	ANY	M10 A2 R	78.6	22.2	76.2				

NOTE: We can suit any make of ISO insert like

SANDVIK,SECO,WIDIA,MITSUBISHI,ISCAR,TAEGUTEC,KYOCERA,PLANSEE TIZIT, ETC.,

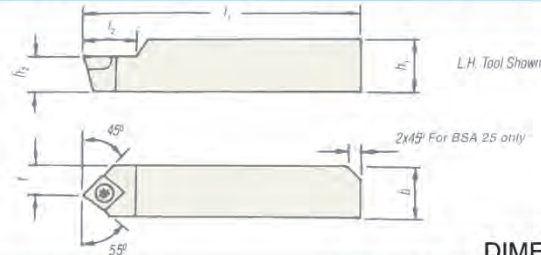
ROUGH BORING BAR



DIMENSIONS IN MM

DESCRIPTION	BORING RANGE	BORING DEPTH	DIMENSIONS			WEIGHT(kg)	FIG	
			W	C	C1			
BT40-BSA 25-135	25 ~ 38	108	8	20	22	1.3	1 BSA	
-BSA 30-165	30 ~ 42	138		24	26	1.5		
-BSA 38-180	38 ~ 52	153	10	30	33	1.8		
-BSA 42-210	42 ~ 56	183		34	37	2.3		
-BSA 50-180,225	50 ~ 65	153,198	12	40	44	2.4,2.9		
-BSA 62-180,240	62 ~ 90	153,218		50	56	3.2,4.2		
-BSA 72-180,240	72 ~ 110	153,213	16	60	-	4.4,5.7		
-BSA 90-180	90 ~ 125	180		75	-	5.4		
BT50-BSA 25-135	25 ~ 38	95	8	20	22	4.4		2 BSB
-BSA 30-165	30 ~ 42	125		24	26	4.6		
-BSA 38-180	38 ~ 52	140	10	30	33	4.8		
-BSA 42-210	42 ~ 56	170		34	37	5.0		
-BSA 50-180,240	50 ~ 65	140,200	12	40	44	5.4,5.7		
-BSA 62-195,270	62 ~ 90	155,230		50	56	6.1,7.5		
-BSA 72-195,285	72 ~ 110	155,245	16	60	66	6.9,9.3		
-BSA 90-210,300	90 ~ 125	170,260		75	80	9.2,12.3		
-BSA105-195,285	105 ~ 160	157,247	90	90	10.5,15.0			
BT40-BSB 25-135	25 ~ 50	108	8	20	22	1.3	2 BSB	
-BSB 38-180	38 ~ 70	153	10	30	33	1.9		
-BSB 50-180,225	50 ~ 90	153,198	12	40	44	2.6, 3.1		
-BSB 62-180,225	62 ~ 115	153,198		50	56	3.4, 4.1		
-BSB 72-180,225	72 ~ 138	153,198	16	60	-	4.7, 5.6		
-BSB 90-180,225	90 ~ 150	180,225		75	63	5.7, 6.6		
BT50-BSB 25-135	25 ~ 50	95	8	20	22	4.1		2 BSB
-BSB 38-180	30 ~ 70	140	10	30	32	4.8		
-BSB 50-180,240	50 ~ 90	140,200	12	40	44	5.5, 5.7		
-BSB 62-195,270	62 ~ 115	155,230		50	56	6.4, 7.9		
-BSB 72-195,285	72 ~ 138	155,245	16	60	66	7.3, 9.6		
-BSB 90-210,300	90 ~ 150	170,260		75	80	9.6, 12.6		
-BSB105-195,285	105 ~ 190	155,245	90	94	11.0, 15.0			

SQUARE CARTRIDGE FOR ROUGH (BSA & BSB) BORING BARS.



DIMENSIONS IN MM

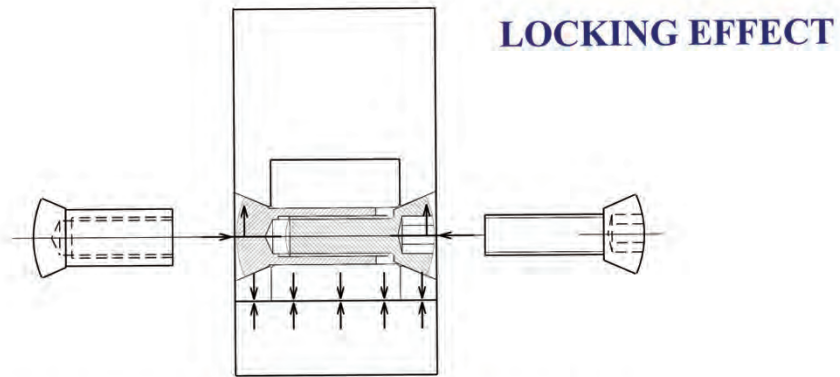
BORING BAR SIZE	RANGE		CARTRIDGE SIZE	H1	H2	L1	L2	INSERT TYPE	TORX KEY	INSERT SCREW	INSERT MAKE
	MIN.	MAX.									
BSA25	25	38	8 SQUARE	8	6	30	11	CCMT 060204	T8	21480800	WIDIA
BSA30	30	42	8 SQUARE	8	6	35	11	CCMT 060204	T8	21480800	WIDIA
BSA38	38	52	10 SQUARE	10	7.5	40	11	CCMT 060204	T8	21480800	WIDIA
BSA42	42	56	10 SQUARE	10	7.5	45	11	CCMT 060204	T8	21480800	WIDIA
BSA50	50	65	12 SQUARE	12	9	50	16.5	CCMT 09T308	T15	21480388	WIDIA
BSA62	62	90	16 SQUARE	16	12	70	16.5	CCMT 09T308	T15	21480388	WIDIA
BSA72	72	110	16 SQUARE	16	12	80	16.5	CCMT 09T308	T15	21480388	WIDIA
BSA90	90	125	16 SQUARE	16	12	100	16.5	CCMT 09T308	T15	21480388	WIDIA

MODULAR ADAPTOR "MC-32" FOR 2 MICRON BORING HEAD

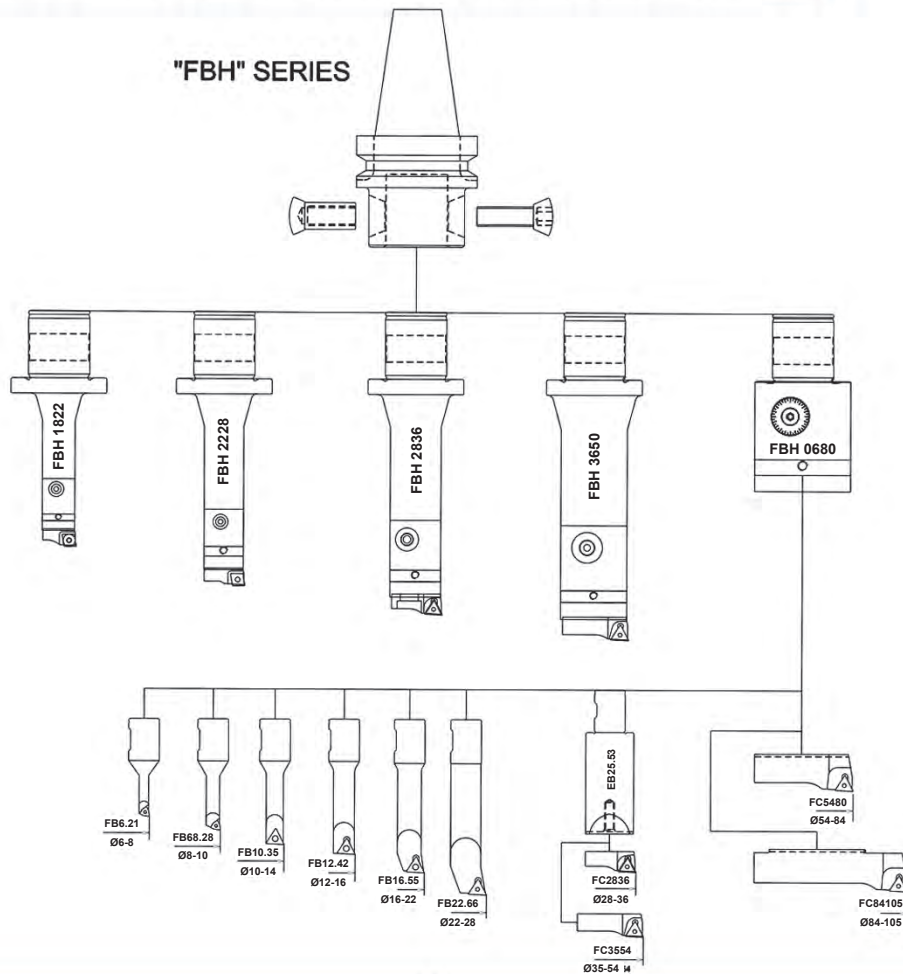


The complete design of boring tools is built on a MODULAR concept. This helps in easy interchanging of tools. The parts to be coupled are inserted and fastened with the help of tapered bolt and nut. On tightening the tapered bolt, it creates an axial thrust to clamp the face rigidly. The diameter and face are accurately ground to give perfect seating, a better concentricity and rigidity.

The modular adaptor are available in different machine tapers (BT-40, BT-50, ISO-40, SK-40, CAT-40 etc.) with MC-32 connector, to suit the FINE BORING HEADS of FB series from dia 18mm to 105mm and rough boring tools



USER SELECTION GUIDE FOR FINISH BORING TOOLS



FINE BORING KIT - 2 Micron Accuracy



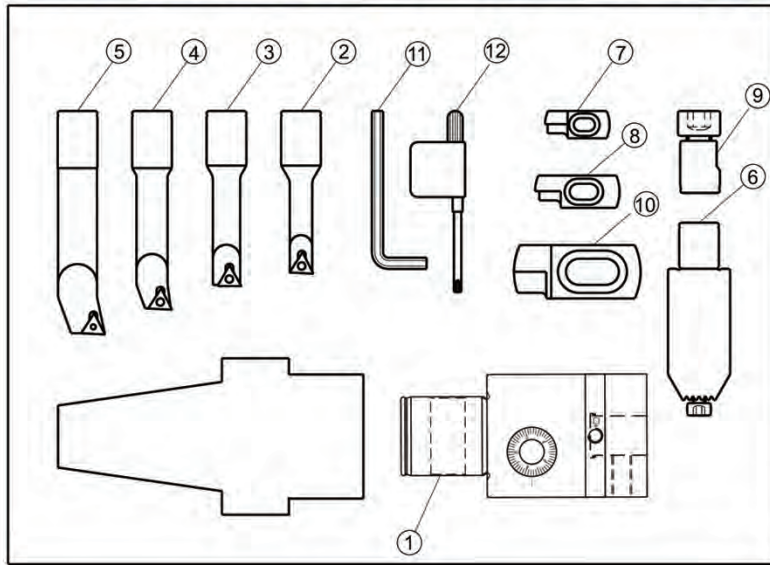
The FINE BORING KIT was developed to accommodate & manufacture a wide range of bores from Dia 10mm to 84mm using a single MICRO BORING HEAD. The parts are made of high quality tool steel & heat treated to a good hardness, for a longer durability and maintain its accuracy for many years.

Also care has been taken to design and manufacture every part with stringent quality checks to produce products of very high quality . The FINE BORING KIT contains all the required accessories to conveniently FINISH bores from Dia 10mm to 84 mm. The boring bars have been manufactured to bore up to 3 times its diameter. Also the design is such that the boring bar does not move too much from its center to maintain a balance and facilitate a good boring accuracy.

Through coolant facility can be provided for easy chip removal and better cutting of material.

FINE BORING KIT & Details

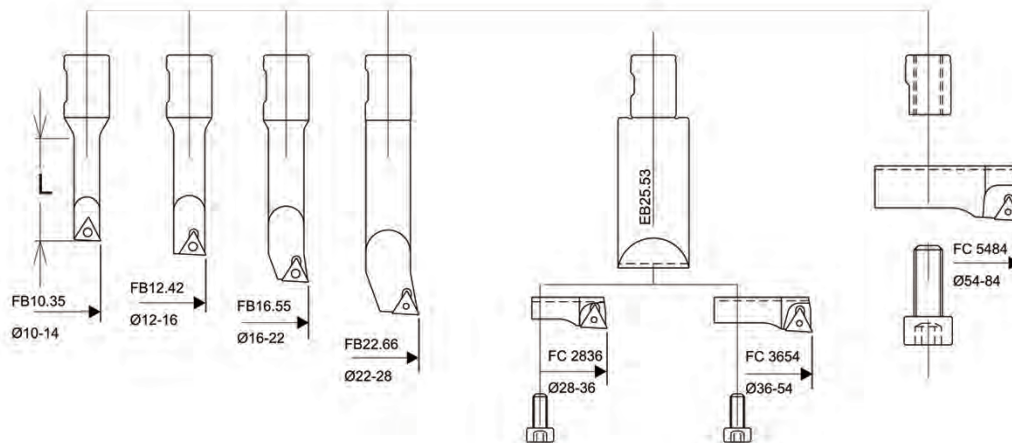
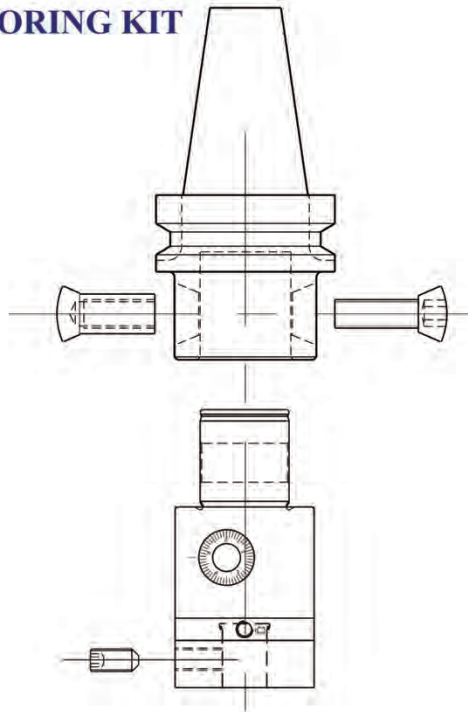
FINE BORING KIT "FBK/FTB01" DIA 10 - 84 mm



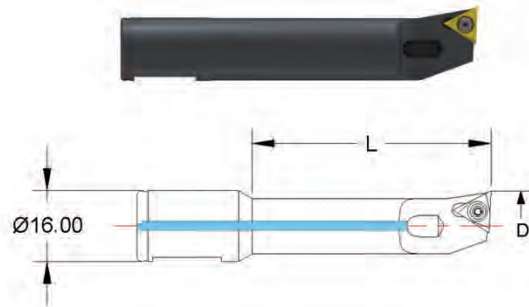
PART LIST

1. FBH 0680
2. FB10.35
3. FB12.42
4. FB16.55
5. FB22.66
6. EB25.53 + M5 SCREW
7. FC 2836
8. FC 3654
9. CLAMPING NUT + M10 SCREW
10. FC 5484
11. 3mm ALLEN KEY
12. T8 TORX KEY

USER GUIDE FOR MICRO BORING KIT



FINE BORING TOOLS AND CARTRIDGES



FINISH BORING BARS DETAILS

FINISH BORING BAR	RANGE 'D'	L	CARTRIDGE	INSERT	SCREW
FB 6.21	Ø 6 - Ø 8	21.0		WCGT 02	TS 21
FB 8.28	Ø 8 - Ø 10	28.0		WCGT 02	TS 21
FB 10.35	Ø 10 - Ø 14	35.0		TPGX 09	CS250T
FB 12.42	Ø 12 - Ø 16	42.0		TPGX 09	CS250T
FB 16.55	Ø16 - Ø22	55.0		TPGX 09	CS250T
FB 22.66	Ø22 - Ø28	66.0		TPGX 09	CS250T
EB 25.53	Ø28 - Ø36	62.0	FC 2836	TPGX 09	CS250T
EB 25.53	Ø36 - Ø54	64.0	FC 3654	TPGX 09	CS250T



FINISH BORING CARTRIDGES

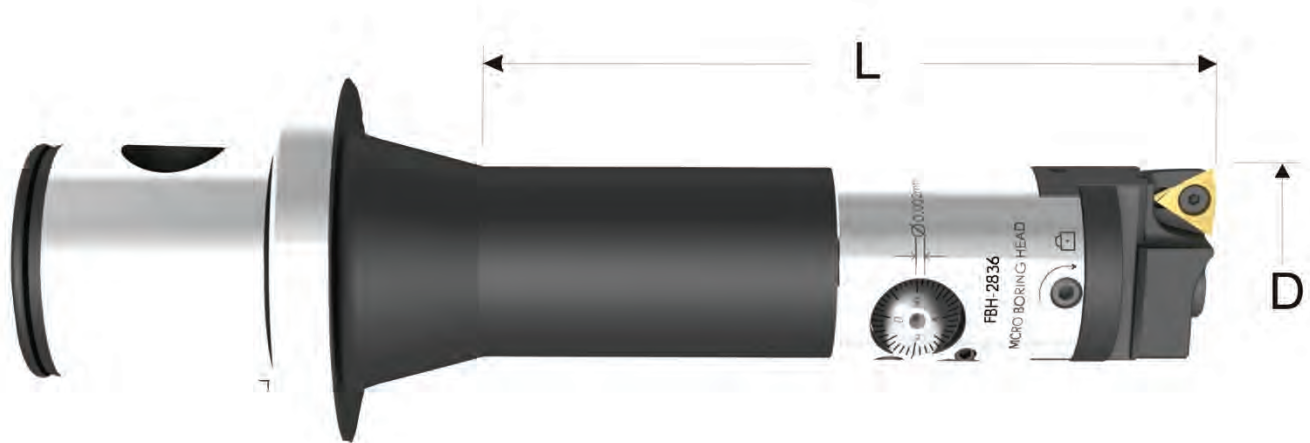
CARTRIDGE	RANGE 'D'	INSERT	INSERT SCREW
FC 1822	Ø 18 - Ø 22	CCGT06	TS 25
FC 2228	Ø 22 - Ø 28	CCGT06	TS 25
FC 2836	Ø 28 - Ø 36	TPGX09	CS250T
FC 3654	Ø 36 - Ø 54	TPGX09	CS250T
FC 5484	Ø 54 - Ø 84	TPGX09	CS250T
FC 84105	Ø 84 - Ø 105	TPGX09	CS250T

NOTE : THROUGH COOLANT IS OPTIONAL

FINE BORING HEADS “FBH” SERIES

The FINE BORING HEAD, **FBH** series are available from dia 18 mm in different sizes up to 105 mm. The head has a fine adjustment of 2 microns on dia. It is designed to be used in combination with modular reducer shanks.

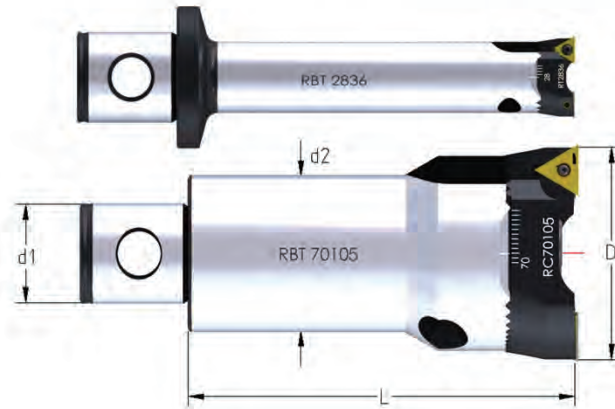
The system is built on a modular concept with **MC-32** connection on one side. The modular reducer shanks are designed with a good dia/length ratio for better depth without compromising on the rigidity and to give excellent hole quality.



FINE BORING HEAD	RANGE ' D'	L	CARTRIDGE	INSERT	SCREW
FBH 1822 - BO1	Ø 18 - Ø 22	66	FC 1822	CCGT06	TS 25
FBH 2228 - BO1	Ø 22 - Ø 28	83	FC 2228	CCGT06	TS 25
FBH 2836 - BO1	Ø 28 - Ø 36	98	FC 2836	TPGX09	CS250T
FBH 3654 - BO1	Ø 36 - Ø 54	110	FC 3654	TPGX09	CS250T
FBH 0680 - BO1	Ø 54 - Ø 84	110	FC 5484	TPGX09	CS250T
FBH 0680 - BO1	Ø 84 - Ø 105	110	FC 84105	TPGX09	CS250T
FBH 0680 - BO1	Ø 105 - Ø 135	110	FC 105-135	TPGX09	CS250T

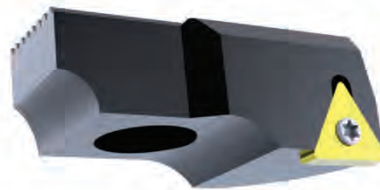
NOTE : EXTENSION OF LARGER LENGTH CAN BE SUPPLIED ON REQUEST

ADJUSTABLE TWIN EDGE ROUGH BORING TOOLS DIA 18 - 105 mm



ROUGH BORING BAR	RANGE 'D'	CARTRIDGE	d2	d1	L	Wt. KG
RBT 1822	Ø 18 - Ø 22	RC 1822	Ø 16.0	Ø 32.0	72	0.41
RBT 2228	Ø 22 - Ø 28	RC 2228	Ø 20.0		90	0.50
RBT 2836	Ø 28 - Ø 36	RT 2836	Ø 25.0		110	0.72
RBT 3650	Ø 36 - Ø 50	RT 3650	Ø 32.0		115	1.00
RBT 5070	Ø 50 - Ø 70	RT 5070	Ø 45.0		125	1.63
RBT 70105	Ø 70 - Ø 105	RT-105-A	Ø 50.0		125	2.08

ROUGH BORING CARTRIDGES FOR ABOVE



CARTRIDGE	RANGE	INSERT	INSERT SCREW	TORX KEY	SET SCREW	CLAMP SCREW
RC 1822	Ø 18 - Ø 22	CCMT 06	M2.5 X 0.45	T8	M3 X 0.5	M3 X 0.5
RC 2228	Ø 22 - Ø 28	CCMT 06	M2.5 X 0.45	T8	M3 X 0.5	M4 X 0.7
RT 2836	Ø 28 - Ø 36	TCMT 09	M2.2 X 0.45	T7	M4 X 0.7	M5 X 0.8
RT 3650	Ø 36 - Ø 50	TCMT 11	M2.5 X 0.45	T8	M5 X 0.8	M6 X 1.0
RT 5070	Ø 50 - Ø 70	TCMT 16	M4.0 X 0.7	T15	M6 X 0.1	M8 X 1.25
RT-105-A	Ø 70 - Ø 105	TCMT 16	M4.0 X 0.7	T15	M6 X 0.1	M10 X 1.5

NOTE : THROUGH COOLANT IS OPTIONAL

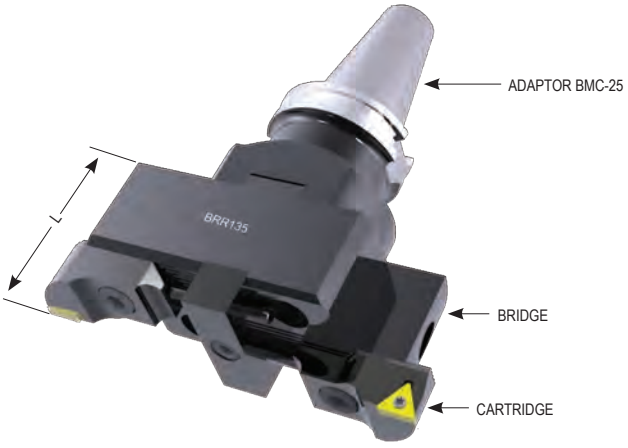
ADAPTOR FOR BRIDGE CLAMPING " BMC-25" FOR Ø105 & ABOVE BORING



This has a very rigid construction, to take the cutting force required while roughing large diameters.

The bridge is firmly clamped to the BMC-25 adaptor, and engages into the slot for a positive drive during machining.

TWIN ROUGH BORING TOOLS "DIA 105-200"



ROUGH BOARING HEAD	RANGE 'D'	BRIDGE	CARTRIDGE	INSERT	L
BRR105	Ø105 - 135	BRR 105	RT-105 A	TCMT 16	66
BRR135	Ø135 - 165	BRR 135	RT-105 A	TCMT 16	66
BRR165	Ø165 - 200	BRR 165	RT-105 A	TCMT 16	66

MICRO BORING HEADS FOR "DIA 135-200" - CBH SERIES



MICRO BOARING HEAD	RANGE 'D'	BRIDGE	CARTRIDGE	INSERT	L
CBH-B01	Ø135 - 165	BRF 135	FC-5484	TPGX09	98
CBH-B01	Ø165 - 200	BRF 165	FC-5484	TPGX09	98

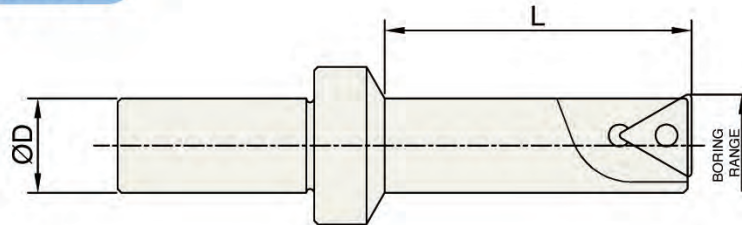
The CBH -B01 is designed to bore large dia bores beyond 135 mm. It has a fine adjustment of 2 microns on dia. It is mounted on a modular bridge BRF series with BMC -25 modular connection to give a very rigid holding. It also has a counter weight to provide a balanced tool. The range can be easily extended by changing the bridge.

FINE BORING HEAD - 10 Micron Accuracy



TYPE	BORING HEAD Ø	BORING TOOL LOCATING Ø	RANGE
BT30/VBC 2	Ø 50	Ø 12	Ø 8 - 25
BT40/VBC 2	Ø 50	Ø 12	Ø 8 - 25
BT50/VBC 3	Ø 75	Ø 18	Ø 8 - 25

BORING TOOL FOR ABOVE HEAD



TYPE	RANGE	SHANK Ø D	L	INSERT	SCREW	TORX KEY
VBC2 /Ø 8	Ø 8 - Ø 10	12	25	WCGT 02	M 2	T 6
VBC2 /Ø 10	Ø 10 - Ø 12	12	30	TCMT 09	M 2.2	T 7
VBC2 /Ø 12	Ø 12 - Ø 16	12	36	TCMT 11	M 2.5	T 8
VBC2 /Ø 16	Ø 16 - Ø 20	12	48	TCMT 11	M 2.5	T 8
VBC2 /Ø 20	Ø 20 - Ø 25	12	60	TCMT 11	M 2.5	T 8
VBC3 /Ø 8	Ø 8 - Ø 10	18	25	WCGT 02	M 2	T 6
VBC3 /Ø 10	Ø 10 - Ø 12	18	30	TCMT 09	M 2.2	T 7
VBC3 /Ø 12	Ø 12 - Ø 16	18	36	TCMT 11	M 2.5	T 8
VBC3 /Ø 16	Ø 16 - Ø 20	18	48	TCMT 11	M 2.5	T 8
VBC3 /Ø 20	Ø 20 - Ø 25	18	60	TCMT 11	M 2.5	T 8

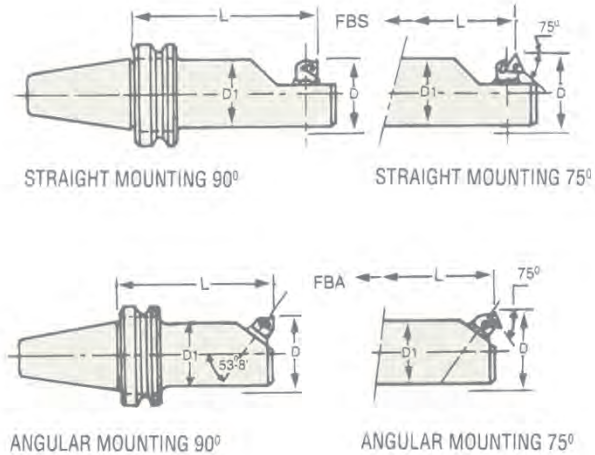
- EX-STOCK SUBJECT TO PRIOR SALE.

NOTE:

1. Adapters are supplied without pullstuds.
2. Place order separately. For detail please refer page No. 43
3. For taper details, please refer page No. 47

FINE BORING BAR

FBA/FBS



DIMENSIONS IN MM

DESIGNATION	D		D1	L	Fig Ref.	CARTRIDGE TO BE USED
	Min.	Max.				
BT40/FBS 90-28/150	27	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

- EX-STOCK SUBJECTS TO PRIOR SALE.

NOTE:

1. Boring bars with other shanks like SK, TC, CAT, ANSI, and ISO etc. are offered against customers' requirements.
2. Boring bars are supplied without cartridge & pullstud.
3. For pullstud details please refer page No: 43
4. Cartridge types given in the table for Sandvik make fine boring unit.
5. For taper detail please refer page No: 47

COMBINATION BORING BAR - CBB



OD TURNING TOOL FOR MACHINING CENTRE



BT 40 INTEGRAL TYPE FACEMILL CUTTER (Insert's other corner used)

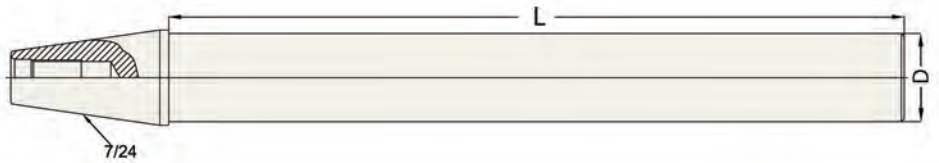


WE SUPPLY COMBINATION BORING BARS

- a) IN ANY OTHER SHANK LIKE TC, SK, ISO, & SPMS ETC.
- b) FOR ROUGH BORING, COUNTER BORING, CHEMFERING & FACING.
- c) FOR FINISH BORING.
- d) WITH (or) WITHOUT COOLANT ARRANGEMENT.

CUSTOMERS ARE REQUESTED TO PROVIDE COMPONENT DRAWING TO ENABLE US TO QUOTE AS WELL AS DESIGN AND DEVELOPING THE TOOL.

TEST MANDREL



All Dimensions are in mm

TAPER	D	L
30	30	250
40	35	300
50	50	350

PRESETTING BLOCK

- Presetting block can be used for measuring the tool height from gauge plane without removing pullstuds.
- The same dimension can be entered in machine offset value



ECCENTRIC SLEEVE FOR U DRILLS



- By using this sleeve along with 'U' drill, the hole diameter can be increased by 0.3 mm and reduced by 0.2 mm.

ELECTRONIC EDGE FINDER



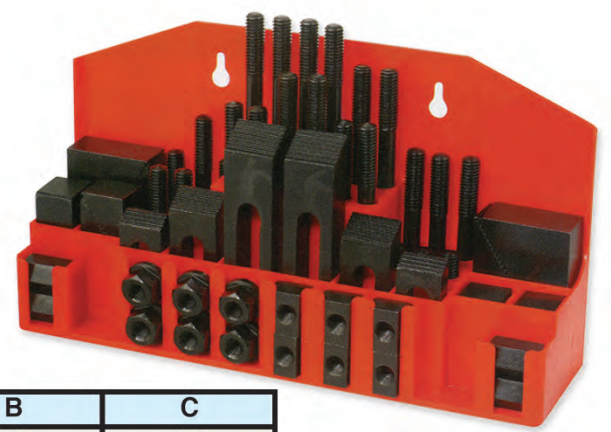
MANUAL EDGE FINDER



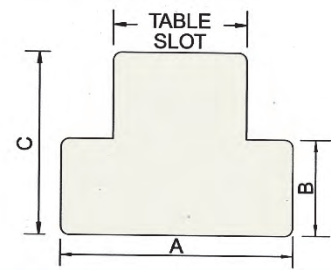
CENTRING PROBE



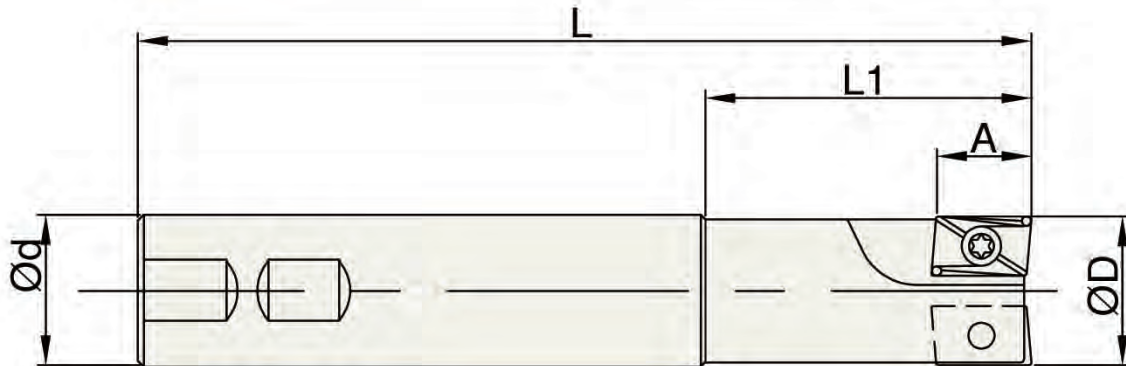
CLAMPING KIT



ORDER NO.	TABLE SLOT	STUD SIZE	A	B	C
CK - 12A	14	M12 X 1.75	22	8	16
CK 16	18	M16 X 2	28	11	20



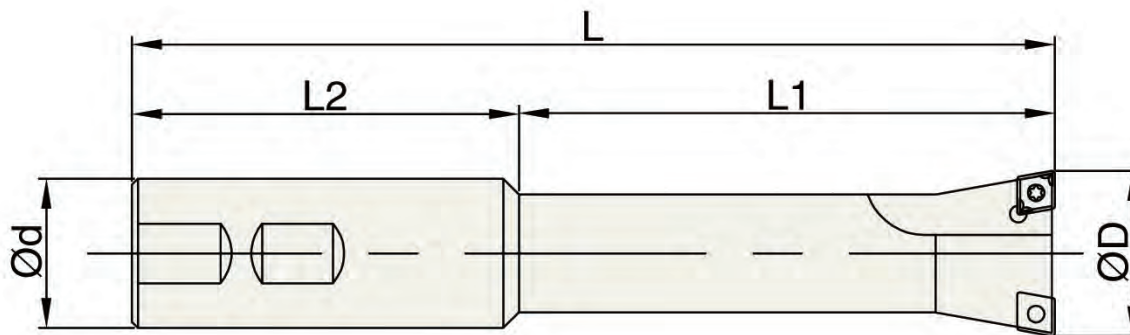
END MILL CUTTER



DESCRIPTION	Ø D	Ød	L1	L	A	NO. OF FLUTES	INSERT	SCREW	TORX KEY
CYL16/EM10/100	10	16	25	100	9	1	APMT1135	M2.5 X 0.45	T8
CYL16/EM12/100	12	16	25	100	9	1			
CYL16/EM16/120	16	16	25	120	9	2			
CYL16/EM16/160	16	16	25	160	9	2			
CYL20/EM20/120	20	20	30	120	9	2			
CYL20/EM20/150	20	20	30	150	9	2			
CYL20/EM20/200	20	20	30	200	9	2			
CYL25/EM25/150	25	25	35	150	14	2	APMT 1604	M3.5 X 0.6	T15
CYL25/EM25/200	25	25	35	200	14	2			
CYL25/EM25/250	25	25	35	250	14	2			
CYL32/EM32/150	32	32	40	150	14	2			
CYL32/EM32/200	32	32	40	200	14	2			
CYL32/EM32/250	32	32	40	250	14	3			
CYL32/EM32/300	32	32	40	300	14	3			
CYL40/EM40/150	40	40	50	150	14	3			
CYL40/EM40/200	40	40	50	200	14	3			
CYL40/EM40/250	40	40	50	250	14	3			

NOTE:- OTHER SIZE WITH OTHER INSERT CAN BE MANUFACTURED ACCORDING TO CUSTOMER'S NEED.

TWIN EDGE ROUGH BORING TOOL – FIXED INSERT



DESCRIPTION	Ø D	Ød	L	L1	L2	INSERT	SCREW	TORXKEY
CYL16/TBT15.7/65	15.7	16	125	70	55	CCMT060204	M 2.5	T8
CYL16/TBT17.7/65	17.7	16	130	70	60			
CYL16/TBT18.7/90	18.7	16	150	90	60			
CYL20/TBT19.7/90	19.7	20	150	90	60			
CYL20/TBT21.7/90	21.7	20	155	90	65			
CYL20/TBT22.7/90	22.7	20	155	90	65			
CYL20/TBT23.7/90	23.7	20	155	90	65			
CYL25/TBT24.7/110	24.7	25	175	110	65	CCMT097308	M 3.5	T15
CYL25/TBT25.7/120	25.7	25	185	120	65			
CYL25/TBT27.7/120	27.7	25	185	120	65			
CYL25/TBT34.7/130	29.7	25	195	130	65			
CYL25/TBT31.7/130	31.7	25	195	130	65			
CYL32/TBT34.7/150	34.7	32	215	150	65			
CYL32/TBT35.7/150	35.7	32	215	150	65			
CYL32/TBT36.7/150	36.7	32	215	150	65			
CYL32/TBT37.7/150	37.7	32	215	150	65			
CYL32/TBT39.7/150	39.7	32	215	150	65			

NOTE:- OTHER SIZE WITH OTHER INSERT CAN BE MANUFACTURED ACCORDING TO CUSTOMER'S NEED.

CHAMFERING TOOL.

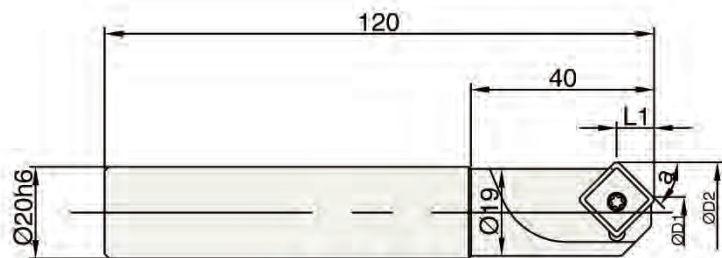


Fig - 1

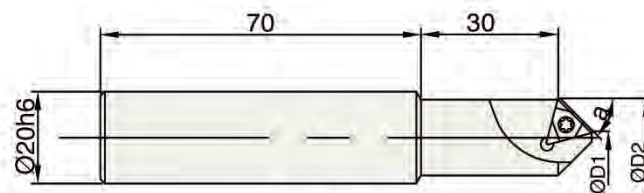


Fig - 3

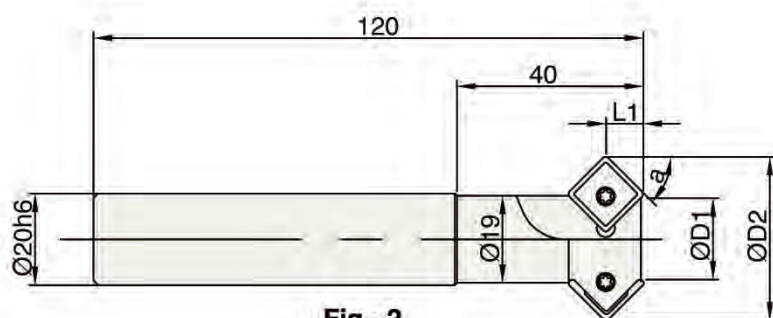


Fig - 2

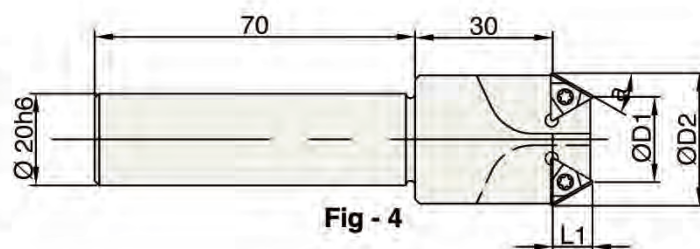
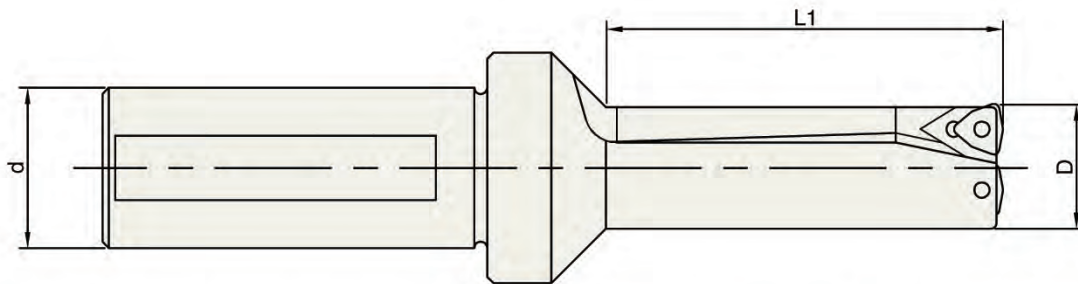


Fig - 4

DESCRIPTION	Ø D1	Ø D2	L1	a	INSERT	NO. OF INSERT	FIG	DIA RANGE
CYL20/ 8 - 20/45°/SCMT 12	7	21.9	7.2	45°	SCMT/1204	1	1	08 - 20
CYL20/ 20 - 32/45°/SCMT 12	19	33.9	7.2	45°	SCMT/1204	2	2	20 - 32
CYL20/ 26 - 38/45°/SCMT 12	25	39.9	7.2	45°	SCMT/1204	2	2	26 - 38
CYL20/ 2-16/45°/TCMT 11	2	16	7	45°	TCMT 11	1	3	02 - 16
CYL20/15-29/45°/TCMT 11	15	29	7	45°	TCMT 11	2	4	15 - 29
CYL20/ 10-20/30°/TCMT 11	10	20	8	30°	TCMT 11	1	3	10 - 20
CYL20/ 15-20/15°/TCMT 11	15	20	9	15°	TCMT 11	1	3	15 - 20
CYL20/ 5-25/45°/TCMT 16	5	25	10	45°	TCMT 16	1	3	05 - 25

NOTE:- OTHER SIZE WITH OTHER INSERT CAN BE MANUFACTURED ACCORDING TO CUSTOMER'S NEED.

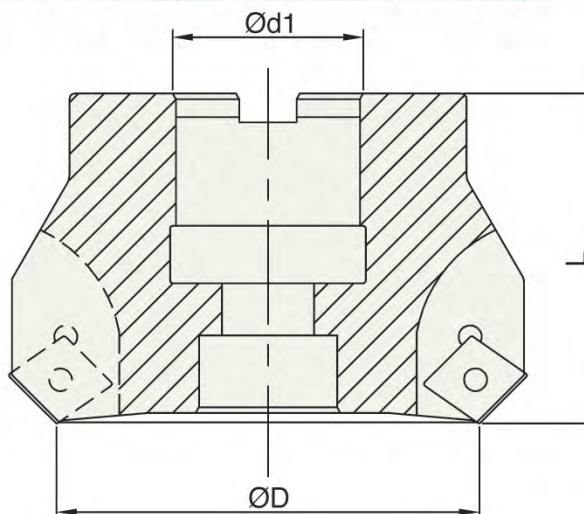
U - DRILL



SPECIFICATION	D	L1	d	INSERT	SCREW	KEY
CYL25/UDRILL Ø14/42	14	42	25	WCMX 30208	M2.5	T8
CYL25/UDRILL Ø15/45	15	45				
CYL25/UDRILL Ø16/48	16	48				
CYL25/UDRILL Ø17/51	17	51				
CYL25/UDRILL Ø18/54	18	54				
CYL25/UDRILL Ø19/57	19	57				
CYL25/UDRILL Ø20/60	20	60				
CYL25/UDRILL Ø21/63	21	63		WCMX 40208	M3.0	T10
CYL25/UDRILL Ø22/66	22	66				
CYL25/UDRILL Ø23/69	23	69				
CYL25/UDRILL Ø24/72	24	72				
CYL25/UDRILL Ø25/75	25	75				
CYL25/UDRILL Ø26/78	26	78				
CYL25/UDRILL Ø27/81	27	81				
CYL25/UDRILL Ø28/84	28	84	WCMX 050308	M3.5	T15	
CYL25/UDRILL Ø29/87	29	87				
CYL25/UDRILL Ø30/90	30	90				
CYL32/UDRILL Ø31/93	31	93				
CYL32/UDRILL Ø32/96	32	96				
CYL32/UDRILL Ø33/99	33	99				
CYL32/UDRILL Ø34/102	34	102				
CYL32/UDRILL Ø35/105	35	105				
CYL32/UDRILL Ø36/108	36	108				
CYL32/UDRILL Ø37/111	37	111				
CYL32/UDRILL Ø38/114	38	114				
CYL32/UDRILL Ø39/117	39	117				
CYL32/UDRILL Ø40/120	40	120				
CYL32/UDRILL Ø41/123	41	123				
CYL32/UDRILL Ø42/126	42	126				

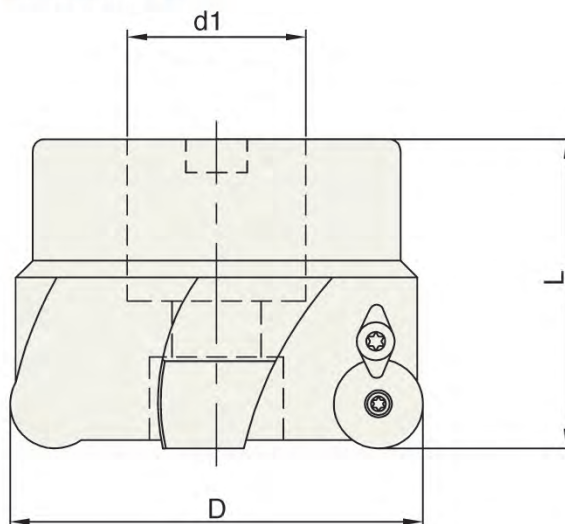
NOTE:- OTHER SIZE WITH OTHER INSERT CAN BE MANUFACTURED ACCORDING TO CUSTOMER'S NEED.

FACE MILL CUTTER WITH CCMT INSERT (OTHER CORNER)



DESCRIPTION	Ø D	L	Ød1	NO. OF FLUTES	INSERT	SCREW	TORX KEY
FMC22/Ø50/ CCMT 09 / OC	50	50	22	4	CCMT 09T308	M3.5 X 0.6	T 15
FMC22/Ø63/ CCMT 09 / OC	63	50	22	5	CCMT 09T308	M3.5 X 0.6	T 15
FMC27/Ø80/ CCMT 12 / OC	80	50	27	5	CCMT 120408	M4.5 X 0.8	T 20
FMC32/Ø100/CCMT 12 / OC	100	55	32	5	CCMT 120408	M4.5 X 0.8	T 20

FACE MILL CUTTER WITH ROUND INSERT



DESCRIPTION	Ø D	L	Ød1	NO. OF FLUTES	INSERT	SCREW	TORX KEY
FMC22/Ø50/ R5	50	50	22	4	RDMT 10T3	M3.5 X 0.6	T 15
FMC22/Ø63/ R5	63	50	22	5	RDMT 10T3	M3.5 X 0.6	T 15
FMC27/Ø80/R8	80	50	27	5	RDMX1604	M5 X 0.8	T 20
FMC32/Ø100/R8	100	55	32	5	RDMX1604	M5 X 0.8	T 20

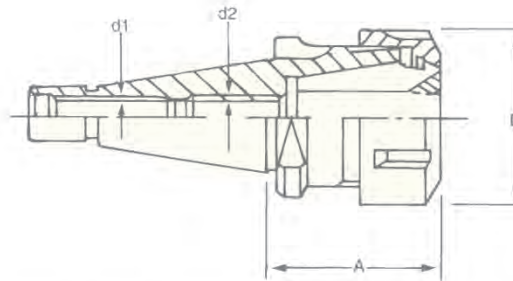
NOTE:- OTHER SIZE WITH OTHER INSERT CAN BE MANUFACTURED ACCORDING TO CUSTOMER'S NEED.

COLLET CHUCK – ISO SHANK

DIN2080



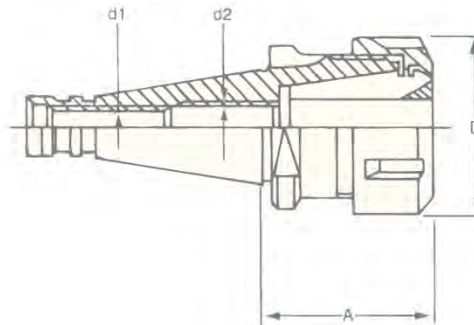
ISO CONVENTIONAL



DIMENSIONS IN MM

DESIGNATION	SUITABLE COLLET	CLAMPING CAPACITY	A	d1	d2	NUT		WRENCH
						D	TYPE	
ISO30 / ER16	ER16	0.5-10	50	M12	M8 x 1	28	UM/ER16	GS 25
ISO30 / ER20	ER20	1.0-13	50	M12	M12 x 1	34	UM/ER20	E 20
ISO30 / ER25	ER25	1.0-16	50	M12	M12 x1	42	UM/ER25	E 25
ISO30 / ER32	ER32	2.0-20	50	M12	M12 x1	50	UM/ER32	E 32
ISO40 / ER16	ER16	0.5-10	50	M16	M8 x 1	28	UM/ER16	GS 25
ISO40 / ER20	ER20	1.0-13	50	M16	M12 x 1	34	UM/ER20	E 20
ISO40 / ER25	ER25	1.0-16	50	M16	M18 x 1.5	42	UM/ER25	E 25
ISO40 / ER32	ER32	2.0-16	50	M16	M22 x 1.5	50	UM/ER32	E 32
ISO40 / ER40	ER40	3.0-26	50	M16	M22 x 1.5	63	UM/ER40	E 40
ISO40/ RTO25	RTO25	1.5-16	50	M16	M18 x 1.5	43	UM/RTO25	E40
ISO40 / RTO35	RTO35	1.5-25	60	M16	M18 x 1.5	60	UM/RTO35	E40
ISO50 / ER40	ER40	3.0-26	60	M24	M22 x 1.5	63	UM/ER40	E 40
ISO50 / ER50	ER50	10.0-34	65	M24	M22 x 1.5	78	UM/ER50	E 50

ISO40 NC TYPE



ISO40 / ER16/NC	ER16	0.5-10	50	M16	M8 x 1	28	UM/ER16	GS 25
ISO40 / ER20/NC	ER20	1.0-13	50	M16	M12 x 1	34	UM/ER20	E 20
ISO40 / ER25/NC	ER25	1.0-16	50	M16	M18 x 1.5	42	UM/ER25	E 25
ISO40 / ER32/NC	ER32	2.0-16	50	M16	M22 x 1.5	50	UM/ER32	E 32
ISO40 / ER40/NC	ER40	3.0-26	50	M16	M22 x 1.5	63	UM/ER40	E 40
ISO40/ RTO25/NC	RTO25	1.5-16	50	M16	M18 x 1.5	43	UM/RTO25	E 25
ISO40/ RTO35/NC	RTO35	1.5-25	60	M16	M22 x 1.5	60	UM/RTO35	E 40

- EX-STOCK SUBJECTS TO PRIOR SALE.

NOTE:

- Collet chucks are supplied with nut & without spanner
- Place separate order for collets & spanners
- For taper detail, please refer page No.47

COLLET CHUCK – MT SHANK

DIN 228

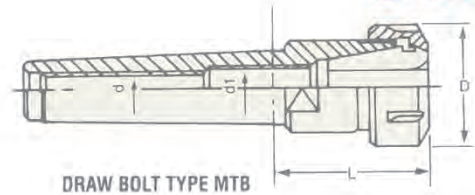
NAGA



MTA TYPE



MTB TYPE



DRAW BOLT TYPE MTB

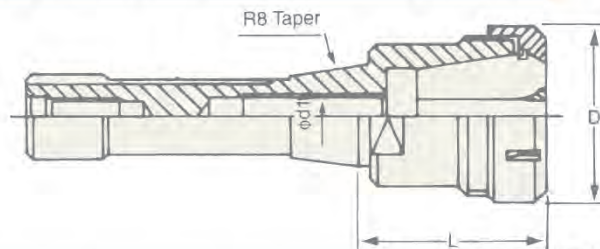
DIMENSIONS IN MM

DESIGNATION	SUITABLE COLLET	CLAMPING CAPACITY	DRAW BOLT-d	d1	L	NUT		WRENCH
						D	TYPE	
MTB 1/ER11	ER11	0.5-7.0	M6	-	25	19	UM/ER11	GS-17
MTB 1/ER11M	ER11	0.5-7.0		-	25	16	UM/ER11M	E-11M
MTB 1/ER16	ER16	0.5-10	M6	-	25	28	UM/ER16	GS-25
MTB 1/ER16M	ER16	0.5-10	M6	-	40	22	UM/ER16M	E-16M
MTB 2/ER16	ER16	0.5-10	M10	M12 x 1	42	28	UM/ER16	GS-25
MTB 2/ER16M	ER16	0.5-10	M10	M12 x 1	42	22	UM/ER16M	E-16M
MTB 2/ER20	ER20	1.0-13	M10	M12 x 1	50	34	UM/ER20	GS-30
MTB 2/ER20M	ER20	1.0-13	M10	M12 x 1	50	28	UM/ER20M	E-20M
MTB 2/ER25	ER25	1.0-16	M10	M12 x 1	53	42	UM/ER25	E-25
MTB 3/ER16	ER16	0.5-10	M12	M12 x1	43	28	UM/ER16	GS25
MTB 3/ER20	ER16	0.5-10	M12	M12 x1	50	34	UM/ER20	GS30
MTB 3/ER25	ER25	1.0-16	M12	M14 x1	53	42	UM/ER25	E-25
MTB 3/ER32	ER32	2.0-20	M12	M14 x1	70	50	UM/ER32	E-32
MTB 4/ER25	ER25	1.0-16	M16	M18 x1 .5	56	42	UM/ER25	E-25
MTB 4/ER32	ER32	2.0-20	M16	M22 x 1.5	60	50	UM/ER32	E-32
MTB 4/ER40	ER40	3.0-26	M16	M22 x 1.5	81	63	UM/ER40	E-40

NOTE:

1. Above details are given for draw type only.
2. For tang type please mention MTA in place of MTB.

COLLET CHUCK – R8 SHANK FOR M1TR MILLING M/C.



DIMENSIONS IN MM

DESIGNATION	SUITABLE COLLET	CLAMPING CAPACITY	L	d1	NUT		WRENCH
					D	TYPE	
R8/ER25	ER25	2-16	50	M14 x 1	42	UM/ER25	E-25
R8/ER32	ER32	3-20	60	M14 x 1	50	UM/ER32	E-32

- EX-STOCK SUBJECTS TO PRIOR SALE.

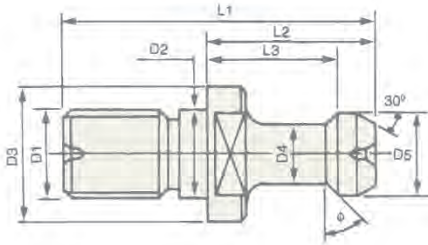
NOTE:

1. Please mention the draw bar thread size whether M12 x 1.5p or 7/16 X 20-UNF.
2. Extra length can be provided against customer request.
3. Collet chucks are supplied with nut.
4. Place separate order for spanners.

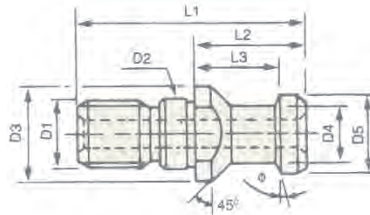
PULL STUDS



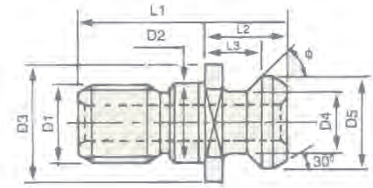
MAS 403



DIN 69872 FORM 'A'



ISO 7388 TYPE 'B'



MAS 403 BT

DIMENSIONS IN MM

DESCRIPTION	TAPER SIZE	DIEMENTIONS								
		D1	D2	D3	D4	D5	L1	L2	L3	DEG
MAS 403/30	30	M12	12.5	16.5	7	11	43	23	18	45
MAS 403/40	40	M16	17	23	10	15	60	35	28	45
MAS 403/50	50	M24	25	38	17	23	85	45	35	45

DIN 69872 FORM A, SIMILAR TO ISO/DIN 7388/2 -TYPE A

DIMENSIONS IN MM

DESCRIPTION	TAPER SIZE	DIEMENTIONS								
		D1	D2	D3	D4	D5	L1	L2	L3	DEG
DIN 69872/30	30	M12	12.5	17	9	13	44	24	19	15
DIN 69872/40	40	M16	17	23	14	19	54	26	20	15
DIN 69872/50	50	M24	25	36	21	28	74	34	25	15

ISO 7388/2 – TYPE B

DIMENSIONS IN MM

DESCRIPTION	TAPER SIZE	DIEMENTIONS								
		D1	D2	D3	D4	D5	L1	L2	L3	DEG
ISO 7388-2 /40	40	M16	17	22.5	12.95	18.95	44.5	16.4	11.15	45
ISO 7388-2 /45	45	M20	21	30	16.3	24.05	56	20.95	14.85	45
ISO 7388-2 /50	50	M24	25	37	19.6	29.1	65.5	25.55	17.95	45

- EX-STOCK SUBJECTS TO PRIOR SALE.

NOTE: In case the pullstuds shown above are not meet with your requirement, please send us a drawing of your requirement along with your enquiry/order.

SLEEVES FOR CNC LATHE.



STRAIGHT SHANK

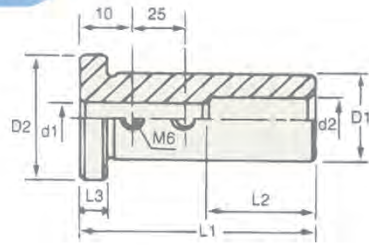


FIG 1

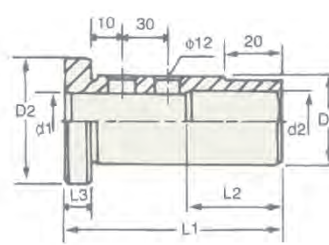


FIG 2

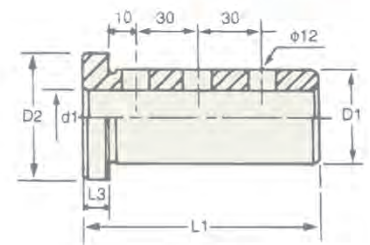


FIG 3

DIMENSIONS IN MM

DESIGNATION	D1	D2	d1	d2	L1	L2	L3	FIG NO.
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	32	40	32	-	90	-	5	3
CYL 32 / 8	32	40	8	10	85	45	5	1
CYL 32 / 10	32	40	10	12	85	45	5	1
CYL 32 / 12	32	40	12	14	85	45	5	1
CYL 32 / 16	32	40	16	18	85	35	5	2
CYL 32 / 20	32	40	20	-	90	-	5	3
CYL 32 / 25	32	40	25	-	90	-	5	3

MT SHANK

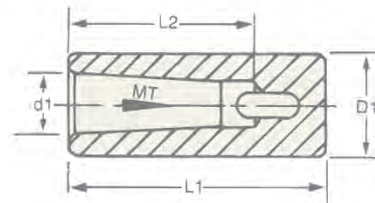
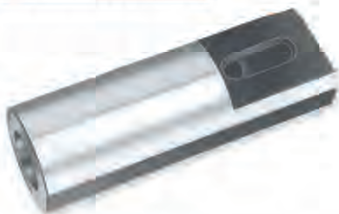


FIG 4

DIMENSIONS IN MM

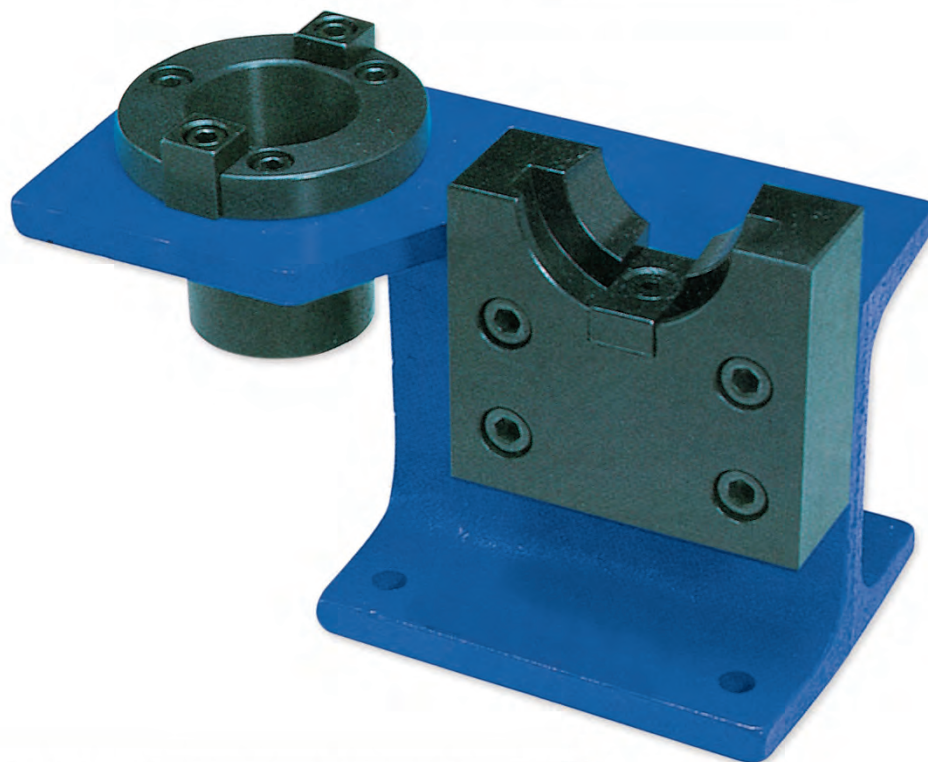
DESIGNATION	D1	D2	d	L1	L2	L3
CYL40/MTA1	40	47	12.065	85	56	5
CYL40/MTA2	40	47	17.78	95	67	5
CYL40/MTA3	40	47	23.825	115	84	5
CYL32/MTA1	32	40	12.065	85	56	5
CYL32/MTA2	32	40	17.78	95	67	5
CYL32/MTA3	32	40	23.825	115	84	5

- EX-STOCK SUBJECTS TO PRIOR SALE.

NOTE: In case the sleeves shown above are not meet with your requirement, please send us a drawing of your requirement along with your enquiry/order.

TOOL CLAMPING FIXTURE – COMBINATION TYPE.

For BT 30, BT 40, BT 50



TOOL CLAMPING FIXTURE

For HSK - A40, A50, A63, A100



RECOMMENDED LIST OF TOOL HOLDERS FOR NEW MACHINE			
S.No.	Designation	Qty	Application
1.	BT 40 / A80 / ER 40	5	For holding straight shank end mills, Drills and taps. (For Clamping range from 16 to 26 mm)
2.	BT 40 / A70 / ER 25	4	(For Clamping range from 10 to 16 mm)
3.	BT 40 / A70 / ER 16	4	(For Clamping range from 1 to 10 mm)
4.	BT 40 / A125 / ER 16	2	For long reach application (For Clamping 1 to 10 mm)
5.	BT 40 / MTA 1 / 45	1	For holding taper shank drills & Reamers.
6.	BT 40 / MTA 2 / 60	1	
7.	BT 40 / MTA 3 / 75	1	
8.	BT 40 / MTA 4 / 95	1	
9.	BT 40 / SLA 20 / 90	1	Holding straight shank End mills, Indexable tooling for heavy duty application
10.	BT 40 / SLA 25 / 90	1	
11.	BT 40 / SLA 32 / 90	1	
12.	BT 40 / FMC 22 / 60	1	For holding face mill cutter 50 (or) 63
13.	BT 40 / FMC 27 / 60	1	For holding face mill cutter 80
14.	BT 40 / JTA 6 / 45 with keyless chuck	1	for holding HSS drill upto 13 mm and also can be used for dialing purpose.
15.	Collet ER 40	11	From 16 mm to 26 mm in 1mm step
16.	Collet ER 25	6	From 11 mm to 16 mm in 1mm step
17.	Collet ER 16	10	From 1 mm to 10 mm in 1mm step
18.	Spanner E 40 & E 25 each 1	2	For clamping and unclamping collect chuck
19.	Pullstud (Retention knob)	25	To clamp the tool holder in to the spindle
20.	Clamping Fixture	1	For clamp & unclamp the cutting tools and pullstud with the tool holder.
21.	Edge Finder (Electronic / Manual)	1	To take work offset
22.	Clamping Kit	2	To clamp the fixture on the table.
23.	Flexible dial stand with magnetic base	1	To hold the dial for dialing application
24.	BT 40 boring head	1	For various small diameter boring from 9 to 20 mm with indexable insert boring tool for bore depth of 2d length.

Note : Boring bars, combination boring bars "U" drills, indexable tooling like twin edge boring tools, chamfering tool, back boring tool, back chamfering tool, etc. can be supplied according to customer's requirement.

Toolings can be recommended based on customer's drawing or component.

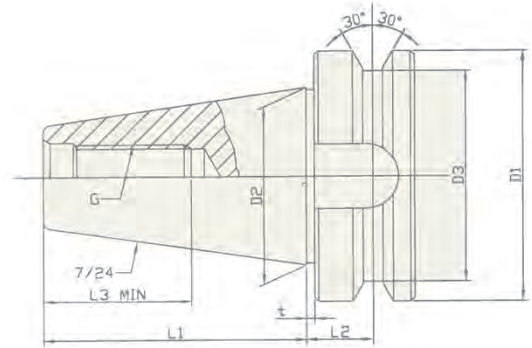
TAPER SHANK SPECIFICATION



BT – MAS403

DIMENSIONS ARE IN MM

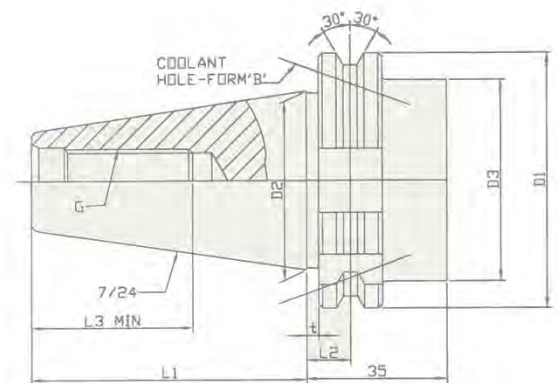
TAPER	D1 h 8	D2	D3	L1±0.2	L2±0.1	G	L3 min	t
30	46	31.75	38	48.4	13.6	M12	24	2
35	53	38.1	43	56.4	13	M12	24	2
35MAS	53	38.1	43	56.4	14.6	M12	27	2
40	63	44.45	53	65.4	16.6	M16	30	2
45	85	57.15	73	82.8	21.2	M20	38	3
50	100	69.85	85	101.8	23.2	M24	45	3



TC/SK – DIN 69871/ ISO 7388

DIMENSIONS ARE IN MM

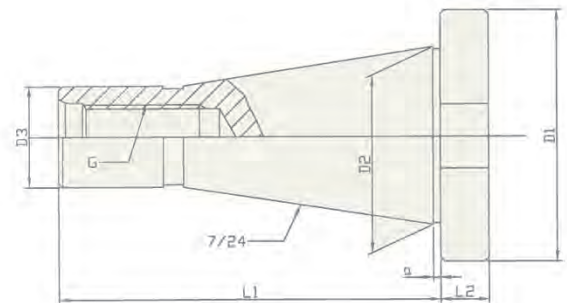
TAPER	D1 h8	D2	D3 max	L1-0.3	L2±0.1	G	L3 min	t
30	50.0	31.75	45	47.8	11.1	M12	26	3.2
40	63.55	44.45	50	68.4		M16	32	
45	82.55	57.15	63	82.7		M20	40	
50	97.5	69.85	80	101.75		M24	47	



ISO DIN 2080 (FOR CONVENTIONAL M/C)

DIMENSIONS ARE IN MM

TAPER	D1 h8	D2	D3	L1	L2	a	G
30	50	31.75	17.4	70	8	1.6	M12
40	63	44.45	25.3	95	10	1.6	M16
45	80	57.15	32.4	110	12	3.2	M20
50	97.5	69.85	39.6	130	12	3.2	M24

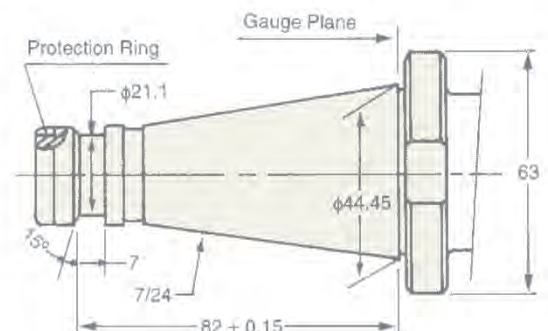


ISO DIN 2080 (FOR CNC M/C)

UNIVERSAL TYPE: SUITABLE FOR

CONVENTIONAL & CNC MILLING MACHINES WITH DRAW BAR

CNC MILLING MACHINES LIKE DECKEL MICKRON, MAHO FITTED WITH HYDRAULIC CLAMPING ARRANGEMENT



CUSTOMER SERVICE

When you need us, we will be by your side. We offer you a number of channels for you to reach us at your convenience.

Reach us by Courier / Post :

Address

NAGA PRECISION TOOLING SYSTEMS

#42, Balaji Nagar,
(Near Stedford Hospital),
Ambattur,
Chennai - 600 053

Phone : + 91 44 - 26582384

Hand Phone : + 91 98410 38499, 98418 12357, 97109 43656

Reach us by Phone : + 91 44 - 26582313, 26582384, 26583751

Reach us by Fax : + 91 44 - 26585134

Reach us by E-mail : info@nagaindia.com, nagaprecision2001@gmail.com
nsbalaguru@gmail.com

Reach us by Website : www.nagaindia.com

Marketing Team : + 91 97109 43655, + 91 97109 43656

FOR TECHNICAL DISCUSSION:

Name : N.S.BALAGURU
Designation : CEO
Contact No : +91 44 - 26582384
H.P. : +91 98410 38499
E-mail ID : nsbalaguru@gmail.com

Our network as below:

- ❖ Coimbatore
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