

Birla Precision

Machining Center Tooling
Production Boosters

ISO 9001 : 2015
ISO 14001 : 2015
CERTIFIED



BPT
B I R L A
P R E C I S I O N

BIRLA PRECISION

AT3 CLASS PRECISION ROTATING TOOL HOLDERS

AT3

WHAT DOES AT3 CLASS MEAN ?

According to the ISO standards, there are 7 Angular Tolerance (AT) grades, as given under.
ATD - Values in mm and **AT α** Angular Values in Seconds (").

TOLERANCE ZONES

Taper		Gauges				Hi-Speed/Hi Accuracy Machining				Normal Machining		Utility Application			
		Master		Working											
		AT 0		AT 1		AT 2		AT 3		AT 4		AT 5		AT 6	
		ATD	AT α	ATD	AT α	ATD	AT α	ATD	AT α	ATD	AT α	ATD	AT α	ATD	AT α
30	47,63	0,0006	0"	0,0010	4"	0,0015	6"	0,0023	10"	0,0038	16"	0,0061	26"	0,0095	41"
40	68,25	0,00069	0"	0,0011	3"	0,0017	5"	0,0028	8"	0,0043	13"	0,0069	21"	0,0109	33"
50	101,60	0,0011	0"	0,0017	2,5"	0,0020	4"	0,0033	6"	0,0051	10"	0,0081	16"	0,0127	26"

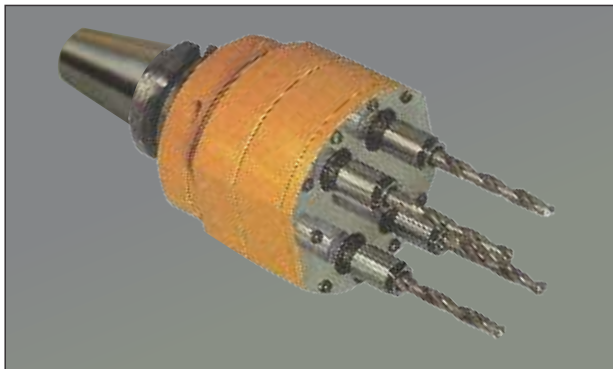


Rotary Coolant Adaptor

Collet Type
End Mill Type

Right Angle Head

ER Collet Type
ISO Spindle Type



Multi-Spindle Heads

Drilling Heads
Tapping Heads



Speeder Unit

Collet Type

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Note:

Our products are under development for improvement & we keep right to change in catalogue without keeping you informed. Believe information given in the catalogue is true & correct, even then have no responsibility for error of any type.

Product Code Identification System

Rotary Coolant Adaptor / Right Angle Head / Speeder Unit

1.
Attachment

BT - MAS 403, JIS B 6339
DV - DIN 69871/1
CV - ANSI B5 50/ISO7388
HSK - Shank Style

4.
Holder Type

ER - DIN 6499 collet chuck
TG - TG collet chuck
DA - Double Angle Collet Chuck
EM - End Mill Type

6.
Projection Length
form Gauge line

BT

40

R

ER

32

155

M

2.
Shank Size

ISD Taper size : 30
40
50
HSK Taper : 50
63
100

3.
Special Feature

R - Rotary Coolant
RAH - Right Angle Head
SU - Speeder Unit

5.
Type Size /Series

Examples :
TG = Collet Series XX(50), XXX(100)
EM = ID Size, Metric - XX=XX,(20)
Inch - XXX = X.XX (075)
SM = OD Size Metric - XX=XX,(20)
Inch - XXX = X.XX (075)
ER = Collet Series XX(16,20,25,32,40)

7.
Metric Standard

M = Tool built to Metric Values
(blank) = Tool built to inch Values

Multi-Spindle Drilling / Tapping Heads

1.
Attachment

BT - MAS 403, JIS B 6339
DV - DIN 69871/1
CV - ANSI B5 50/ISO7388
HSK - Shank Style

3.
Special Feature

SH - Drilling Head
TH - Tapping Head

5.
Holder Type

ER - DIN 6499 collet chuck
TG - TG collet chuck
DA - Double Angle Collet Chuck
EM - End Mill Type

7.
Projection Length
form Gauge line

BT

40

SH

2

ER

16

155

M

2.
Shank Size

ISD Taper size : 30
40
50
HSK Taper : 50
63
100

4.
No. of Spindles

Example : 2
3
4
5
6

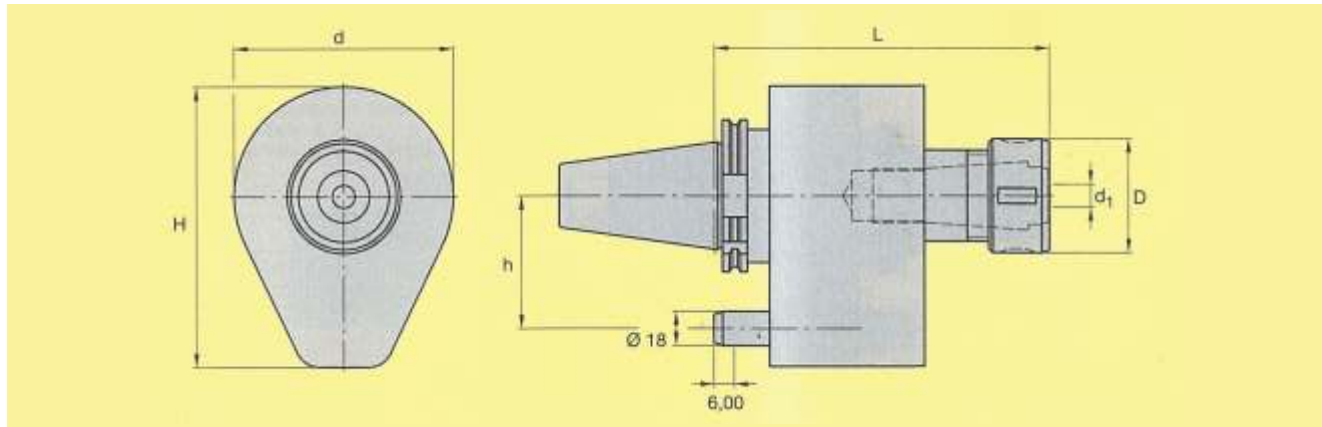
6.
Type Size /Series

Examples :
TG = Collet Series XX(50), XXX(100)
EM = ID Size, Metric - XX=XX,(20)
Inch - XXX = X.XX (075)
SM = OD Size Metric - XX=XX,(20)
Inch - XXX = X.XX (075)
ER = Collet Series XX(16,20,25,32,40)

8.
Metric Standard

M = Tool built to Metric Values
(blank) = Tool built to inch Values

Collet Chuck Type



- Available in - ER, TG, DA Collets

• **Order Example:**

BT40RER32155M

Catalogue No.	d ₁	L	D	H	d	h	Max. RPM	Weight in Kg.
BT40RER32155M	2 to 20	155	50	146	110	65	5000	6.50
BT40RDA188165M	3 to 20	165	43	135	96	65	5800	7.70
BT40RTG100175M	3 to 25.5	175	60	146	110	65	5000	6.50
BT50RER40185M	3 to 26	185	63	162	112	80	5000	9.50
BT50RTG100185M	3 to 25.5	185	60	162	112	80	5000	9.50
DV40RDA188165M	3 to 20	165	43	135	96	65	5800	7.70
DV40RTG100175M	3 to 25.5	175	60	146	110	65	5000	6.50
DV50RTG100185M	3 to 25.5	185	60	162	112	80	5000	9.50

Note:

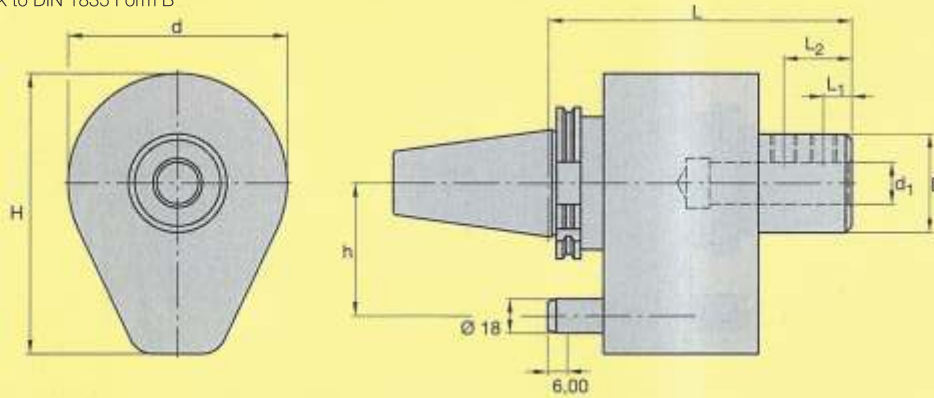
Max. pressure : 10 bar (150 psi)

Caution : Do not run dry - Turn Coolant on Prior to Rotating Spindle !
Filter Coolant, min 0,030mm (0,001)

ER/DA/TG collets, Pull stud & Stop block to be order seperately.

End Mill Type

For tools with shank to DIN 1835 Form B



- Available in - All End Mill Sizes

• **Order Example:**

BT40REM16150M

Catalogue No.	d_1	L	D	H	d	h	L_1	L_2	Max. RPM	Weight in Kg.
BT40REM16150M	16	150	40	127	80	65	13	----	6500	3.9
BT40REM20150M	20	150	40	127	80	65	13	----	6500	3.9
BT40REM25150M	25	150	40	127	80	65	15	----	6500	3.9
BT40REM32155M	32	155	50	133.5	94	65	16	----	5800	4.6
BT40REM40170M	40	170	60	146	110	65	16	35	5000	5.2
BT50REM16155M	16	155	50	152.5	96	80	13	----	5800	7.7
BT50REM20155M	20	155	50	152.5	96	80	13	----	5800	7.7
BT50REM25160M	25	160	50	152.5	96	80	15	----	5800	7.7
BT50REM32175M	32	175	60	161	112	80	16	----	5000	8.7
BT50REM40175M	40	175	60	161	112	80	16	35	5000	8.7
BT50REM50180M	50	180	70	166	114	80	16	35	4500	9.5
DV40REM16150M	16	150	40	127	80	65	13	----	6500	3.9
DV40REM20150M	20	150	40	127	80	65	13	----	6500	3.9
DV40REM25150M	25	150	40	127	80	65	15	----	6500	3.9
DV40REM32155M	32	155	50	133.5	94	65	16	----	5800	4.6
DV40REM40170M	40	170	60	146	110	65	16	35	5000	5.2
DV50REM16155M	16	155	50	152.5	96	80	13	----	5800	7.7
DV50REM20155M	20	155	50	152.5	96	80	13	----	5800	7.7
DV50REM25160M	25	160	50	152.5	96	80	15	----	5800	7.7
DV50REM32175M	32	175	60	161	112	80	16	----	5000	8.7
DV50REM40175M	40	175	60	161	112	80	16	35	5000	8.7
DV50REM50180M	50	180	70	166	114	80	16	35	4500	9.5

Note:

Max. pressure : 10 bar (150 psi)

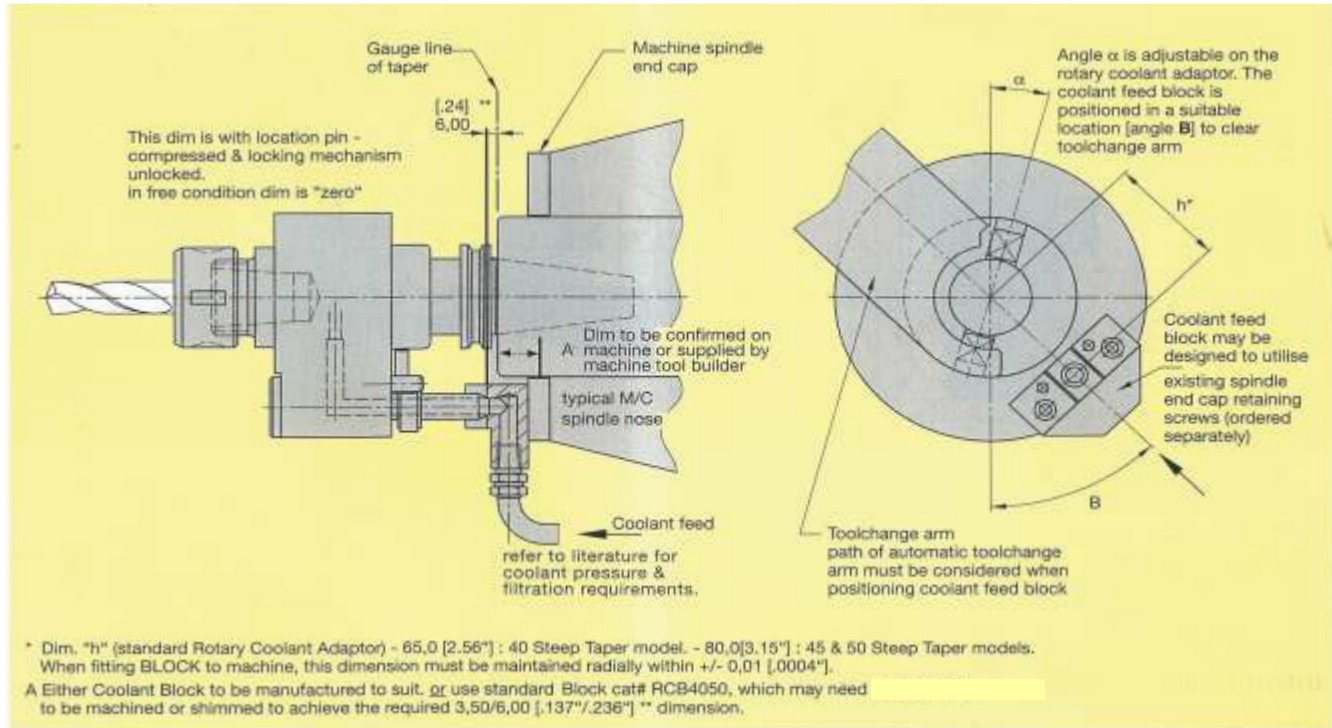
Caution : Do not run dry - Turn Coolant on Prior to Rotating Spindle !

Filter Coolant, min 0,030mm (0,001)

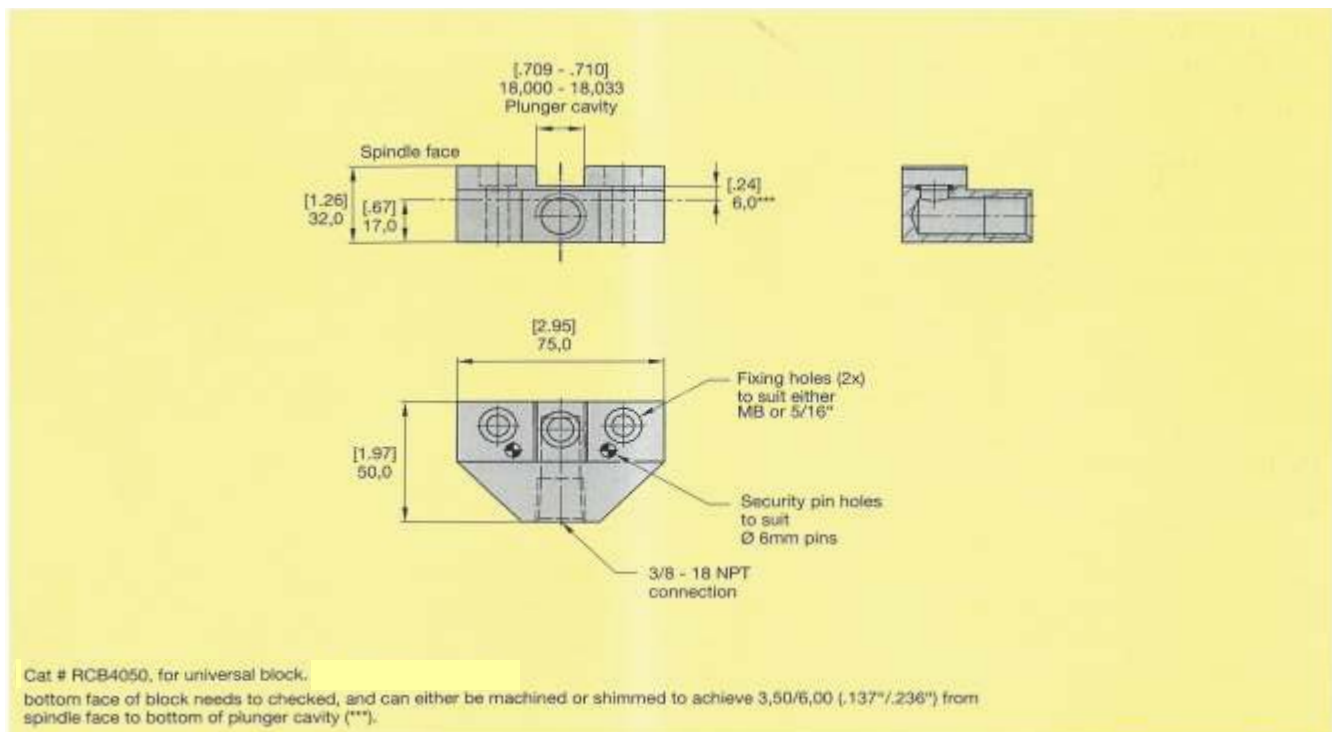
Pull stud & Stop block to be order seperately.

Rotary Coolant Adaptor

Installation recommendations / Information



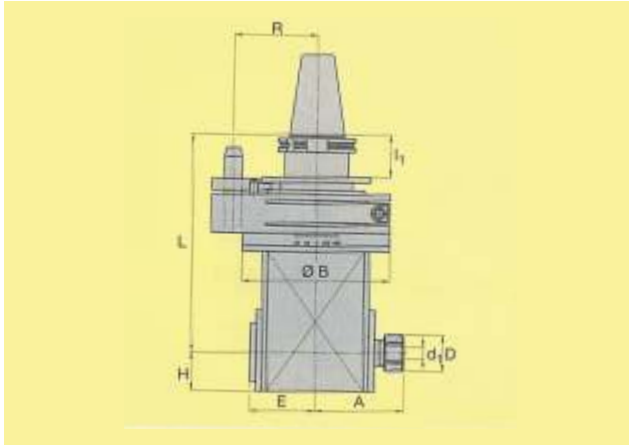
Universal Mounting Block cat# RCB 4050 for both 40 & 50 taper tools



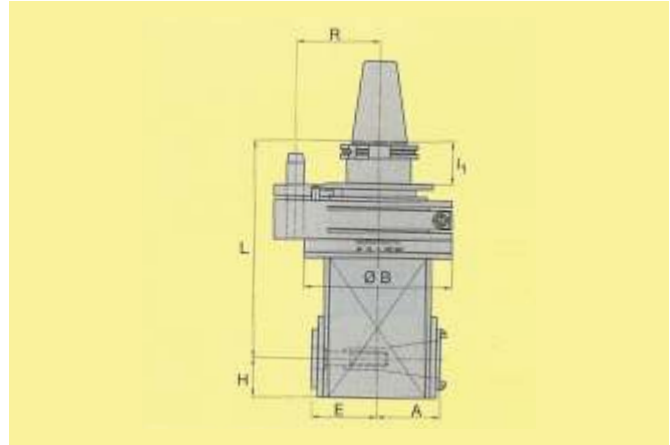
Right Angle Head

Collet Chuck Type & ISO Spindle Type

Collet Chuck Type



ISO Spindle Type



- Gear ratio 1:1
- Spindle rotation opposite to machine spindle
- 360° adjustable

• **Order Example:**

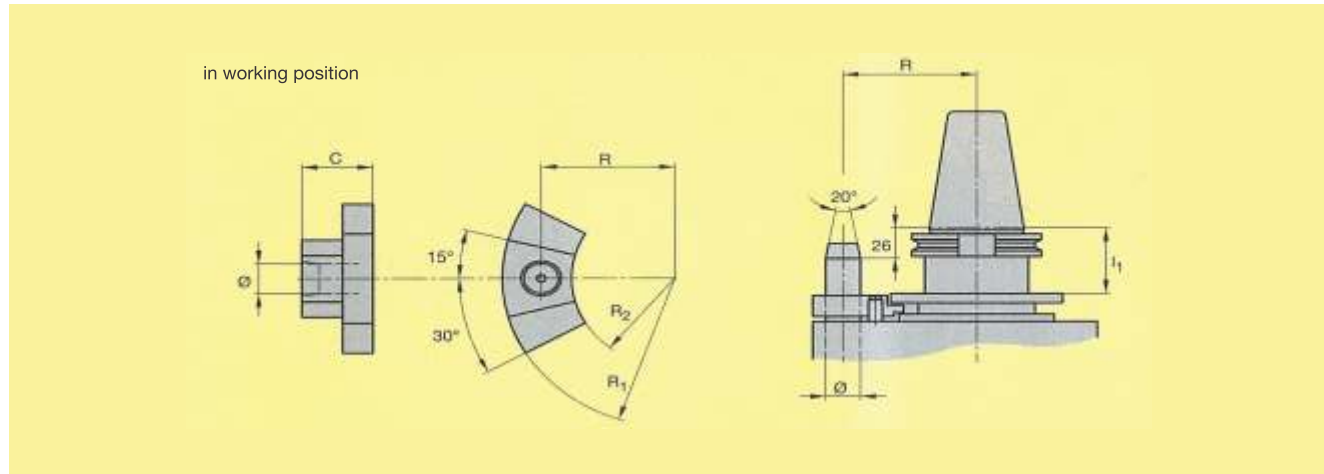
BT40RAHER25185M

Catalogue No.	Spindle	d ₁	B	D	E	R	L	H	A	Max. RPM	Power (KW)	Weight in Kg.	I ₁	Max Torque (NM)
BT40RAHER25185M	ER25	1 to 16	115	42	51	65	185.5	30	74	4500	3	6.5	47	35
BT40RAHISO30178M	ISO30	----	130	----	56.5	65	178.5	35	57.5	3500	4	9	47	40
BT50RAHER40215M	ER40	3 to 26	170	63	65	110	215.5	44	93	3990	6	14	55	50
BT50RAHISO30169M	ISO30	----	130	----	56.5	50	169.5	35	57.5	3000	4	11	36	40
BT50RAHISO40230M	ISO40	----	170	----	62	110	230	50	78.5	2500	8	20	55	150
DV40RAHER25173M	ER25	1 to 16	115	42	51	65	173.5	20	74	4500	3	6	35	35
DV40RAHISO30168M	ISO30	----	130	----	56.5	65	168.5	35	57.5	3500	4	9	35	40
DV50RAHER40198M	ER40	3 to 26	170	63	65	110	198.5	44	93	3050	6	14	38	50
DV50RAHISO30166M	ISO30	----	130	----	56.5	80	166.5	35	57.5	3000	4	11	35	40
DV50RAHISO40213M	ISO40	----	170	----	62	110	213	60	78.5	2500	8	19	38	150

Note:

Special Shanks and other front - end are available upon request
ER/TG/DA Collets and ISO tooling has to be ordered separately
Pull stud must be order seperately.
Stop block to be order seperately.

Stop Block



R	R ₁	R ₂	C	Ø
65/80	170	100	30	18
110	265	175	35	28

Introduction

Birla's Right Angle Heads are designed primary for use on CNC machining centers with automatic tool changers. They are used to machine features in a workpiece, like holes and slots, that are 90 degrees to machine spindle.

Adjustable positioning of the tapered shank drive slots to the anti-rotation pin permits complete flexibility of mounting the stop block to the machining centers spindle face.

Our Right Angle Head's spindle can also be positioned 360 degrees about the centerline of the machine's spindle while remaining 90 degrees to the workpiece. This flexibility allows positioning of the cutting of the cutting tool to any lateral feature to be machined on the workpiece.

Ordering Information

- Select the head with the tool shank style that suits your machine: BT MAS403 or DIN 69571, size 40, 50. Then the metal -cutting needs define the front end, either collet chuck or ISO spindle.
- Check the dimensions spindle and magazine or carousel.
- Make sure the machine will accept the weight of the head.

Stop Block

The use a Right Angle Head requires a stop block to be mounted adjacent to the machine spindle in order to position and hold the non-rotating body and disengage the drive lock mechanism.

- Check the real possibility to install it, next to the spindle.
- Stop blocks shown here accomodate mounting specification for Birla's Right Angle Heads. There are available upon request. However, it may be preferable for you to utilize to manufacture stop blocks that suit your specific machine tool.

Enquiry form for right angle heads

For a complete quote, please copy this questionnaire and fill out this form. If there are any problems, our technical staff will be glad to assist you.

Company _____
Address _____
Last name _____ First name _____
Phone _____ Function _____
Email _____ Date _____

Machine manufacturer
e.g. Haas

Machine model
e.g. DMU 200 P

Machine Spindle Shank
e.g. BT40 / BT50 / DV40/ DV50/ HSK63/HSK100

Machining application:



Single Std 90°Fix



HSK DIN
69893



ISO
SK



MAS
BT

Additional designs possible.

Right angle head specification

Type

- ☐ Single output
☐ Double output
☐ Adjustable
☐ Other

Output

- ☐ ER collet chuck
☐ Other

Internal Coolant

- ☐ Yes ☐ No

Material to be tooled

Cutting tool

Application

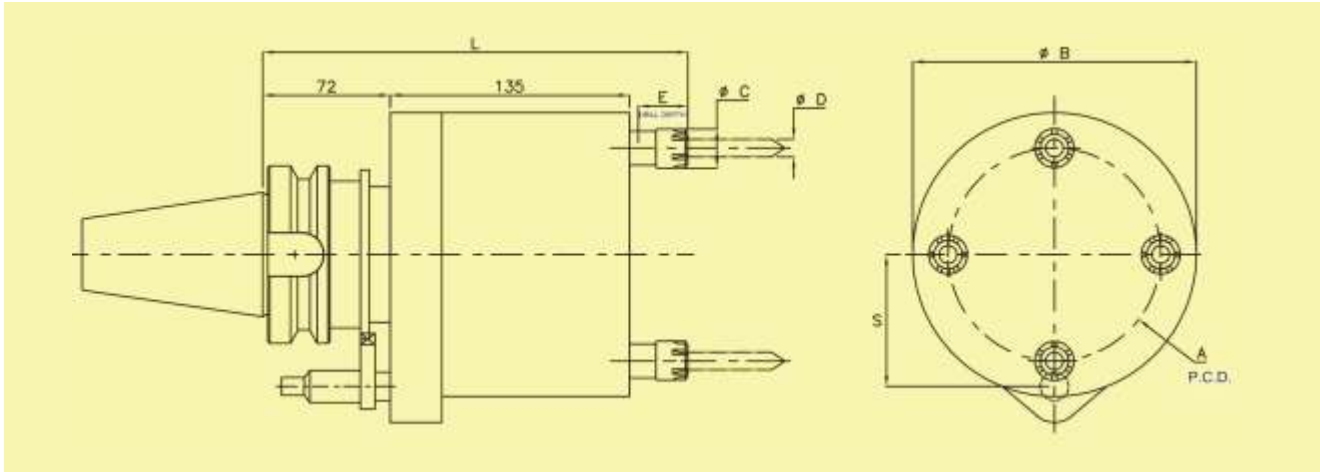
- ☐ Drilling ☐ Milling
☐ Tapping
☐ Milling (interrupted cut)

Other _____

Please attach a drawing or sketch of the workpiece to the form.

Multi-Spindle Drilling Heads

ER Collet Chuck Type



- Greater Machine Productivity
- **Order Example:**
BT40SH2ER16M250M

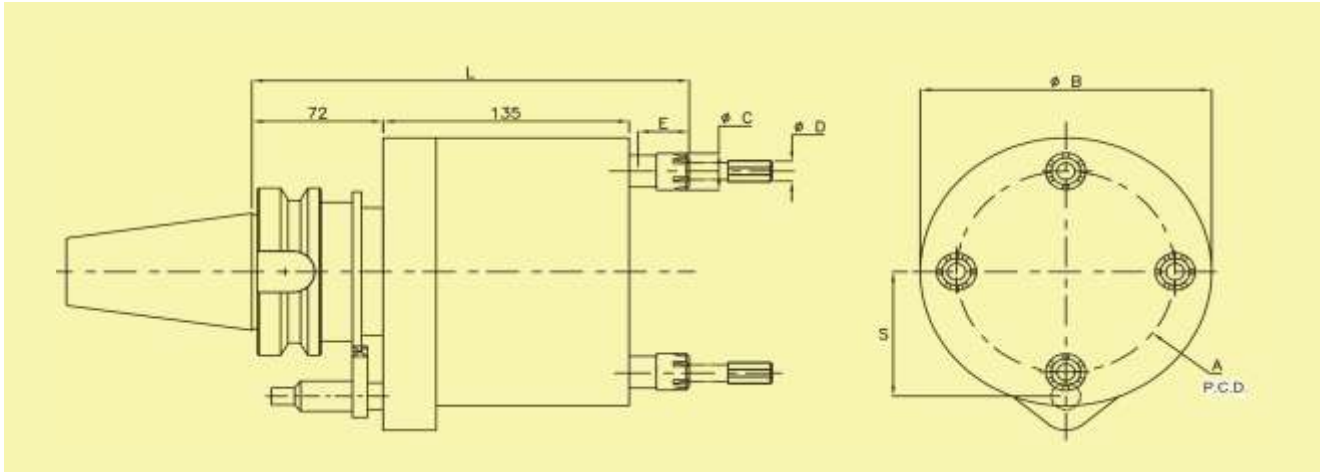
Catalogue No.	No. of spindles	D Range	A	B	S	L	C	E	Weight in Kg.
BT40SH2ER16M250M	2	0.5 to 10	28 to 90	120	65	250	22	33 to 36	9
BT40SH3ER16M250M	3		34 to 90						9.8
BT40SH4ER16M250M	4		42 to 90						10.6
BT40SH5ER16M250M	5		50 to 90						11.4
BT40SH6ER16M250M	6		60 to 90						12.2
BT40SH2ER20M252M	2	1 to 13	32 to 85	120	65	252	28	40 to 43	9.5
BT40SH3ER20M252M	3		38 to 85						10.5
BT40SH4ER20M252M	4		46 to 85						11.5
BT50SH2ER16M250M	2	0.5 to 10	28 to 130	160	80	250	22	33 to 36	13
BT50SH3ER16M250M	3		34 to 130						13.8
BT50SH4ER16M250M	4		42 to 130						14.6
BT50SH5ER16M250M	5		50 to 130						15.4
BT50SH6ER16M250M	6		60 to 130						16
BT50SH2ER20M252M	2	1 to 13	32 to 125	160	80	252	28	40 to 43	13
BT50SH3ER20M252M	3		38 to 125						13.8
BT50SH4ER20M252M	4		46 to 125						14.6
BT50SH5ER20M252M	5		55 to 125						15.4
BT50SH6ER20M252M	6		64 to 125						16

Note:

Built-in fine adjuster for final positioning.
Can be fitted with coolant supply manifold.
Special heads can be quoted upon request.
Connection block supplied upon request.
ER/DA/TG collets, Pull stud & Stop block to be order separately.

Multi-Spindle Tapping Heads

ER Collet Chuck Type



- Greater Machine Productivity

• **Order Example:**

BT40TH2ER16M258M

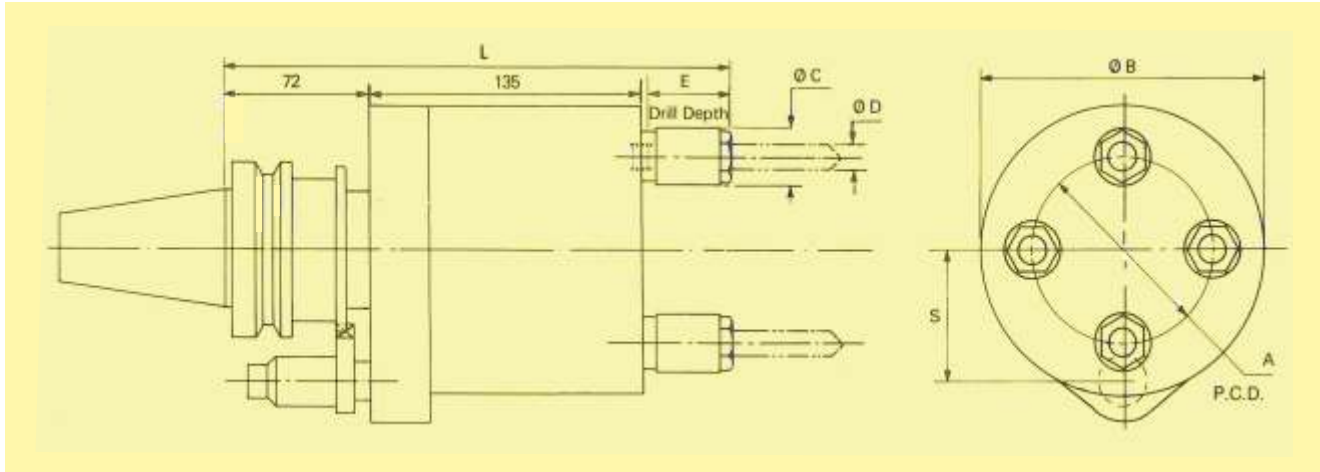
Catalogue No.	No. of spindles	D Range	A	B	S	L	C	E	Weight in Kg.
BT40TH2ER16M258M	2	M4 to M10	28 to 90	120	65	258	22	33 to 36	9.2
BT40TH3ER16M258M	3		34 to 90						10
BT40TH4ER16M258M	4		42 to 90						10.8
BT40TH5ER16M258M	5		50 to 90						11.6
BT40TH6ER16M258M	6		60 to 90						12.4
BT40TH2ER20M260M	2	M4 to M14	32 to 85	120	65	260	28	40 to 43	9.7
BT40TH3ER20M260M	3		38 to 85						10.7
BT40TH4ER20M260M	4		46 to 85						11.7
BT50TH2ER16M258M	2	M4 to M10	28 to 130	160	80	258	22	33 to 36	13.2
BT50TH3ER16M258M	3		34 to 130						14
BT50TH4ER16M258M	4		42 to 130						14.8
BT50TH5ER16M258M	5		50 to 130						15.6
BT50TH6ER16M258M	6		60 to 130						16
BT50TH2ER20M260M	2	M4 to M14	32 to 125	160	80	260	28	40 to 43	13.2
BT50TH3ER20M260M	3		38 to 125						14
BT50TH4ER20M260M	4		46 to 125						14.8
BT50TH5ER20M260M	5		55 to 125						15.6
BT50TH6ER20M260M	6		64 to 125						16

Note:

Built-in fine adjuster for final positioning.
Can be fitted with coolant supply manifold.
Special heads can be quoted upon request.
Connection block supplied upon request.
ER/DA/TG collets, Pull stud & Stop block to be order separately.

Multi-Spindle Drilling Heads

Double Angle Collet Chuck Type



- Greater Machine Productivity

- **Order Example:**

BT40SH2DA204250M

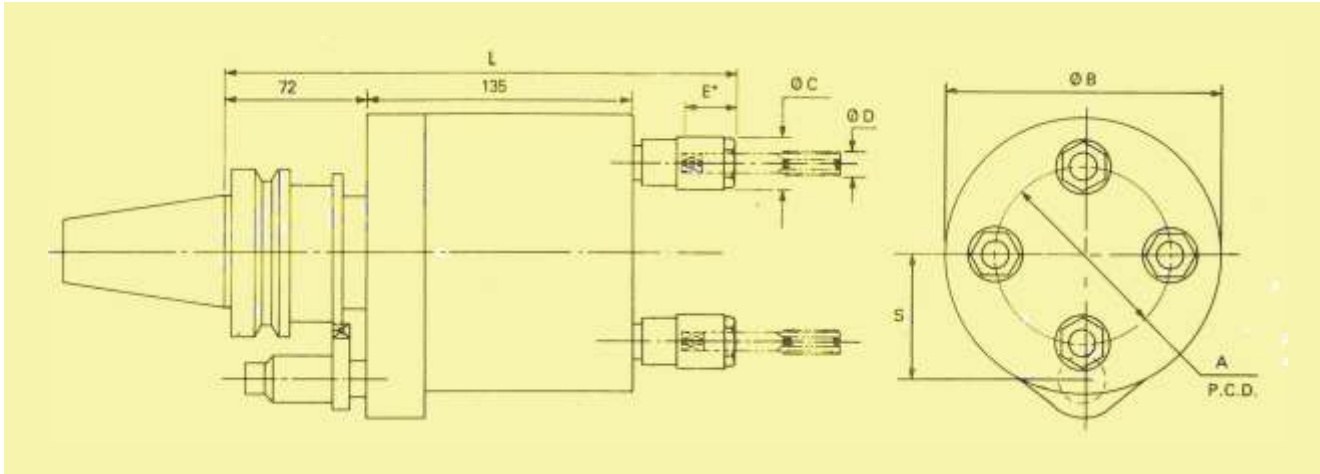
Catalogue No.	No. of spindles	D Range	A	B	S	L	C	E	Weight in Kg.
BT40SH2DA204250M	2	1 to 9.5	28 to 90	120	65	250	21.6	33 to 36	9
BT40SH3DA204250M	3		34 to 90						9.8
BT40SH4DA204250M	4		42 to 90						10.6
BT40SH5DA204250M	5		50 to 90						11.4
BT40SH6DA204250M	6		60 to 90						12.2
BT40SH2DA104252M	2	2.5 to 14	32 to 85	120	65	252	27.2	40 to 43	9.5
BT40SH3DA104252M	3		38 to 85						10.5
BT40SH4DA104252M	4		46 to 85						11.5
BT50SH2DA204250M	2	1 to 9.5	28 to 130	160	80	250	21.6	33 to 36	13
BT50SH3DA204250M	3		34 to 130						13.8
BT50SH4DA204250M	4		42 to 130						14.6
BT50SH5DA204250M	5		50 to 130						15.4
BT50SH6DA204250M	6		60 to 130						16
BT50SH2DA104252M	2	2.5 to 14	32 to 125	160	80	252	27.2	40 to 43	13
BT50SH3DA104252M	3		38 to 125						13.8
BT50SH4DA104252M	4		46 to 125						14.6
BT50SH5DA104252M	5		55 to 125						15.4
BT50SH6DA104252M	6		64 to 125						16

Note:

Built-in fine adjuster for final positioning.
Can be fitted with coolant supply manifold.
Special heads can be quoted upon request.
Connection block supplied upon request.
ER/DA/TG collets, Pull stud & Stop block to be order separately.

Multi-Spindle Tapping Heads

Double Angle Collet Chuck Type



- Greater Machine Productivity

- **Order Example:**

BT40SH2DA204250M

Catalogue No.	No. of spindles	D Range	A	B	S	L	C	E	Weight in Kg.
BBT40TH2DA204258M	2	M3 to M12	28 to 90	120	65	258	21.6	16	9.2
BT40TH3DA204258M	3		34 to 90						10
BT40TH4DA204258M	4		42 to 90						10.8
BT40TH5DA204258M	5		50 to 90						11.6
BT40TH6DA204258M	6		60 to 90						12.4
BT50TH2DA204258M	2	M3 to M12	28 to 130	160	80	258	21.6	16	13.2
BT50TH3DA204258M	3		34 to 130						14
BT50TH4DA204258M	4		42 to 130						14.8
BT50TH5DA204258M	5		50 to 130						15.6
BT50TH6DA204258M	6		60 to 130						16

Note:

Built-in fine adjuster for final positioning.
Can be fitted with coolant supply manifold.
Special heads can be quoted upon request.
Connection block supplied upon request.
ER/DA/TG collets, Pull stud & Stop block to be order seperately.

Enquiry Form for Multi Spindle Heads



ENQ. NO.....

CUSTOMER

ADDRESS

.....

.....

.....

MACHINE

MAKE.....

MODEL.....

SHANK.....

HORIZONTAL.....

MAX WEIGHT OF TOOL HOLDER (IF KNOWN).....

CONTACT

DEPT.....

TEL. NO.....EXT.....

VERTICAL

COMPONENT

DESCRIPTION.....

DRAWING NO.

MATERIAL

(PLEASE ENCLOSE COPY OF COMPONENT DRAWING)

TYPE OF HEAD

Drilling

Tapping

No. of SPINDLES

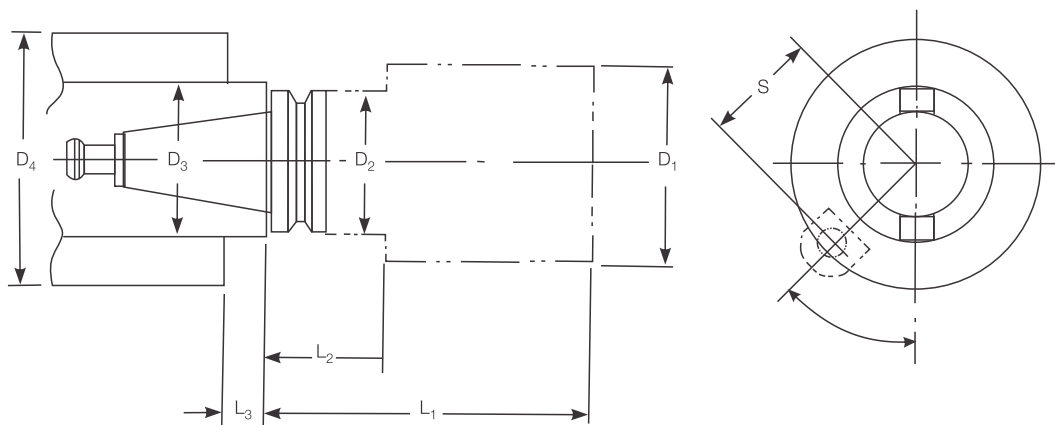
P.C.D.

HOLE SIZE

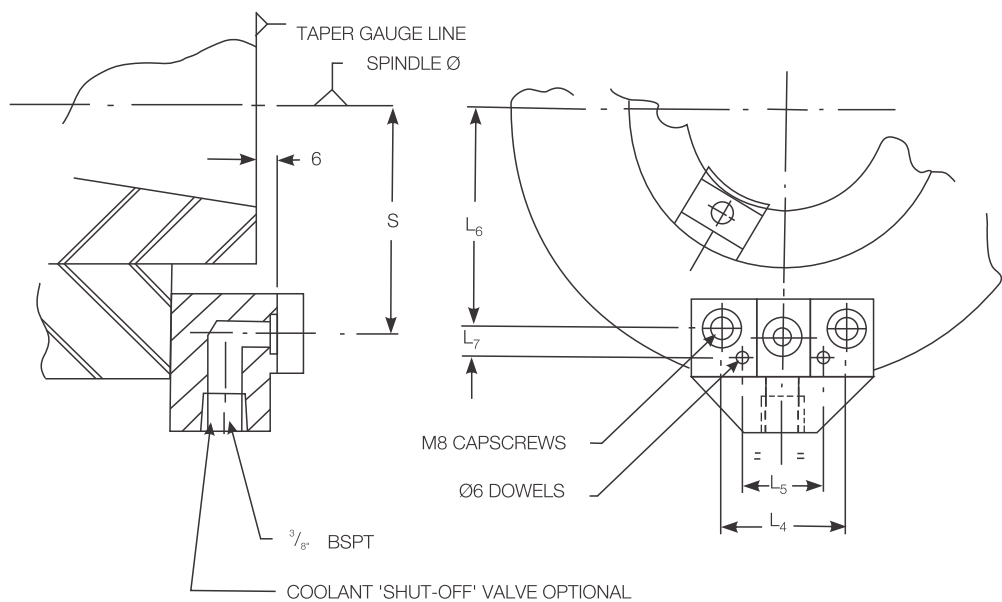
HOLE DEPTH

COOLANT MANIFOLD SUPPLY

Enquiry Form for Multi Spindle Heads

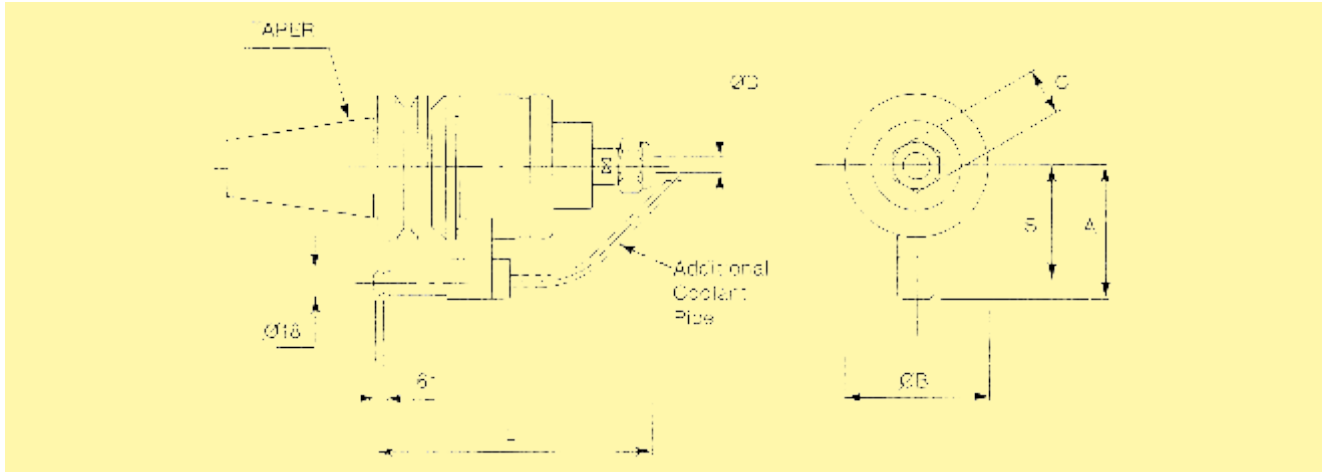


D_1	D_2	D_3	D_4	L_1	L_2	L_3	S	θ°



L_4	L_5	L_6	L_7	S

For Automatic Tool change Machines



- Greater Machine Productivity

- **Order Example:**

BT40SUDA308160M

Catalogue No.	D range	S	L	A	B	C	Spindle Ratio	Max RPM
BT40SUDA308160M	1 to 6	65	160	78	80	17	4.5:1	10000
BT40SUDA108195M	2.5 to 12	80	195	93	102	32	4:01	10000
BT40SUER11160M	1 to 7	65	160	78	80	17	4.5:1	10000
BT40SUER16195M	0.5 to 10	80	195	93	102	32	4:01	10000
BT40SUER25195M	1 to 16	80	195	93	102	32	4:01	10000
BT50SUDA108195M	2.5 to 12	80	195	93	102	32	4:01	7500
BT50SUER11195M	1 to 7	80	195	93	102	32	4:01	7500
BT50SUER16195M	0.5 to 10	80	195	93	102	32	4:01	7500
BT50SUER25195M	1 to 16	80	195	93	102	32	4:01	7500

Note:

Available with BT A.N.S.I. and DIN69871 shanks.

Other available upon request.

Available with optional coolant supply

Technical Specifications upon request

Please specify machine and shank specification when ordering.

ER/DA/TG collets, Pull stud & Stop block to be order seperately.

Birla - Machining Center Tooling



Quicker • Sharper • *More* Powerful

Series with Complete "SILVER" Look



AT3 - Class Maching Center

AT3 Class machining centers

Rotating tool holders on:-

BT30/BT40/BT50 – Form A/FormB.

DV30/DV40/DV50 - Form A/FormB.

CV30/CV40/CV50 - Form A/FormB.

HSK50/HSK63/HSK100 – Form A/B/C/D/E & F.

HIGHLIGHTS:-

- Concentricity at nose with respect to taper datum < 0.005 mm
- Complete SILVER finish to enhance
 - Wear resistance of body due to chip formation
 - Improved surface hardness 58 to 60 HRC
 - Lowering the friction co-efficient and thermal conductivity
- Balanced to
 - G6.3 @ 15,000 rpm
 - G2.5 @ 20,000 rpm
 - G2.5 @ 30,000 rpm (As a special case)
- AT3 class precision taper as per ISO standard
 - Circularity < 1.0 pm
 - Surface finish < 0.4 pm
 - Concaveness < 1.0 pm



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