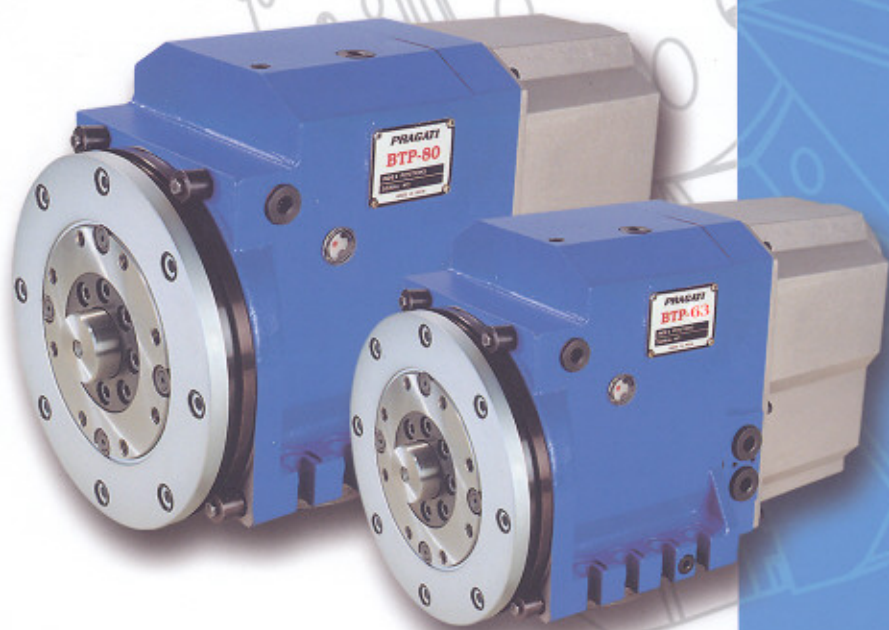


*PRAGATI*

# Tool Turrets and Tool Discs



September 2007

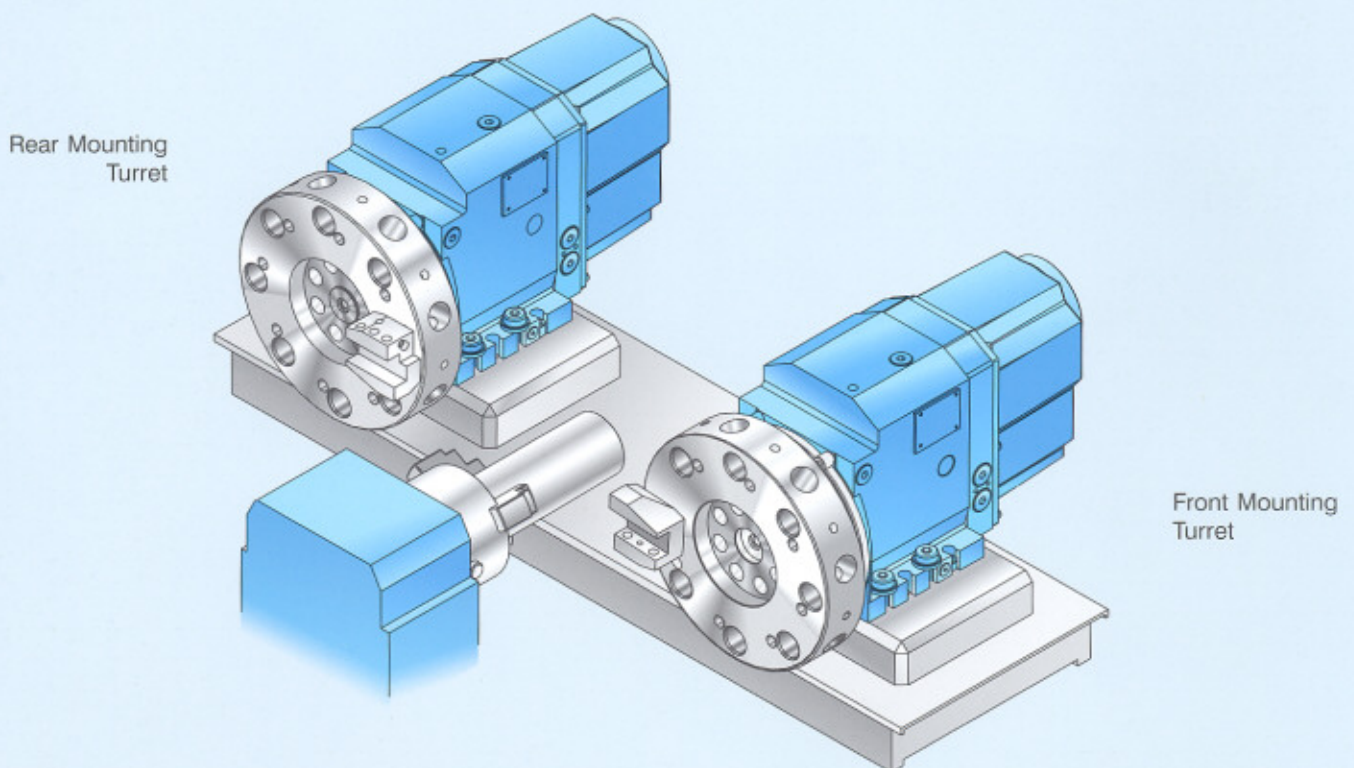
## Ordering Information

BTP	63	12	R	415
<b>Model</b>	<b>Size</b>	<b>No. of Stations</b>	<b>Mounting</b>	<b>Motor voltage, 3 Phase</b>
	50	8 Stations 8	F - Front	<b>Range VAC</b> <b>Specification</b>
	63	12 stations 12	R - Rear	380-440 415
	80			210-230 220
	100			100-120 110
	125			
	160			

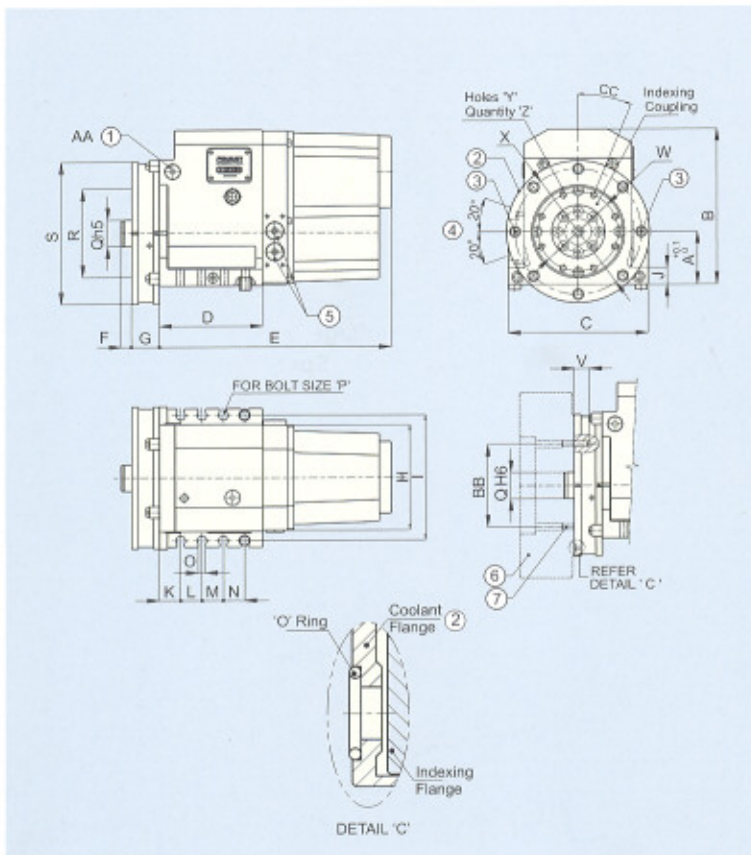
**Ordering Sample : BTP-63-12-R-415**  
**BTP-63 Turret, 12 Station, Rear mounting, 415V, 3ph.**

**Default Values :** BTP 63  
 No. of Stations - 12  
 Mounting Position - R  
 Motor Voltage - 415V, 3ph  
 Frequency - 50 Hz

## Mounting Position



Coolant poppet position of turret depends on the mounting position, Front or Rear. If not specified Rear mounting is standard. It is important to specify front or rear position, while ordering the tool discs.

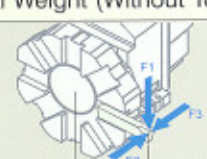


## Technical Specifications

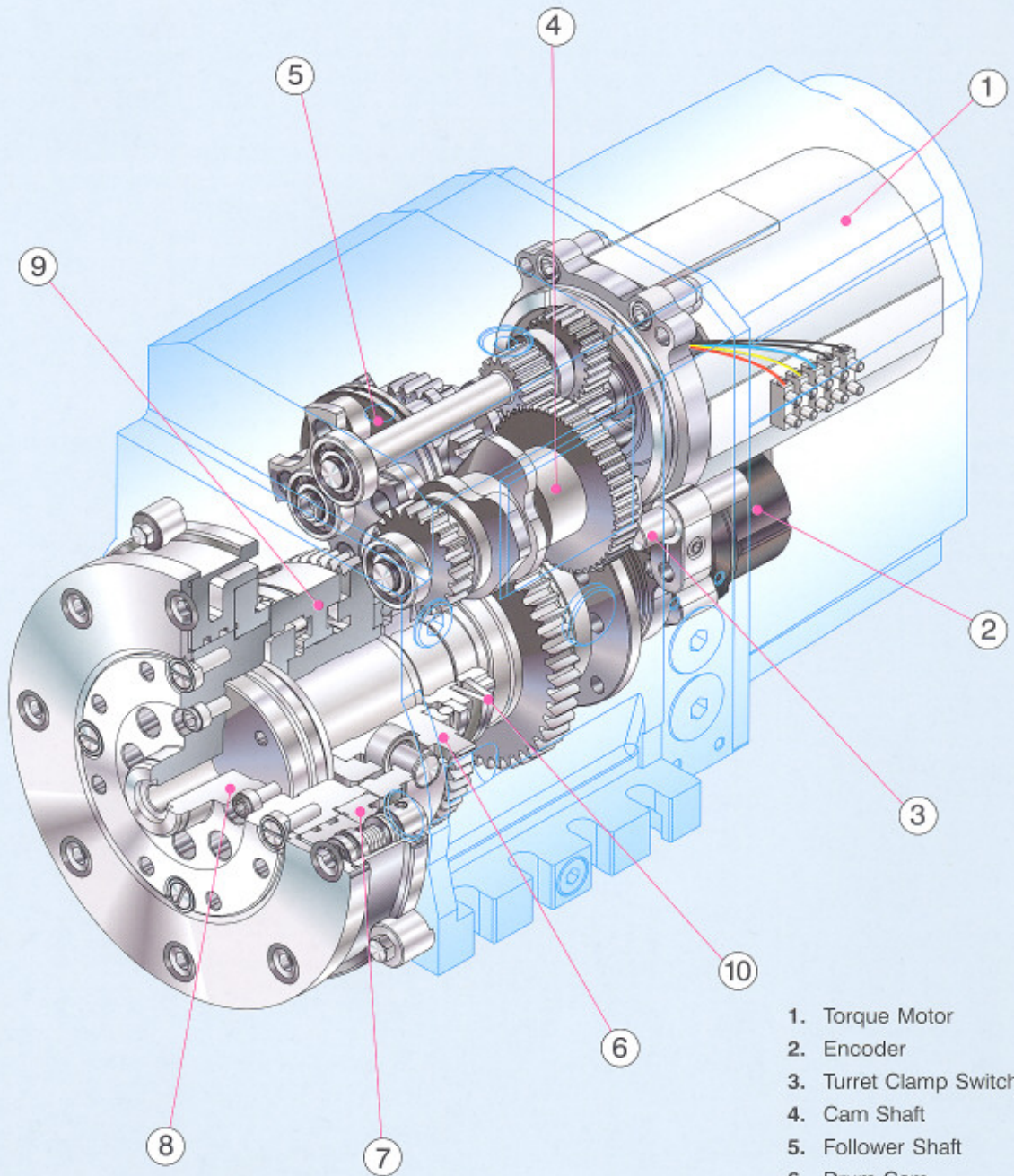
1. Coolant inlet from either side. BSP thread size AA.
2. Coolant Flange can be clamped to indexing flange at a suitable angular position. 8 or 12 coolant outlet positions depending on no. of index positions.
3. Alternative positions of coolant outlet valve.
4. Adjustment range of coolant outlet valve.
5. Electrical connection from either side 1/2" BSP.
6. Tool disc. 7. Reference pin for tool disc if required. To be removed after alignment and clamping of tool disc.

*NOTE : Specify number of index positions ( 8 or 12 ) while ordering. If not specified; 8 position indexing is standard.*

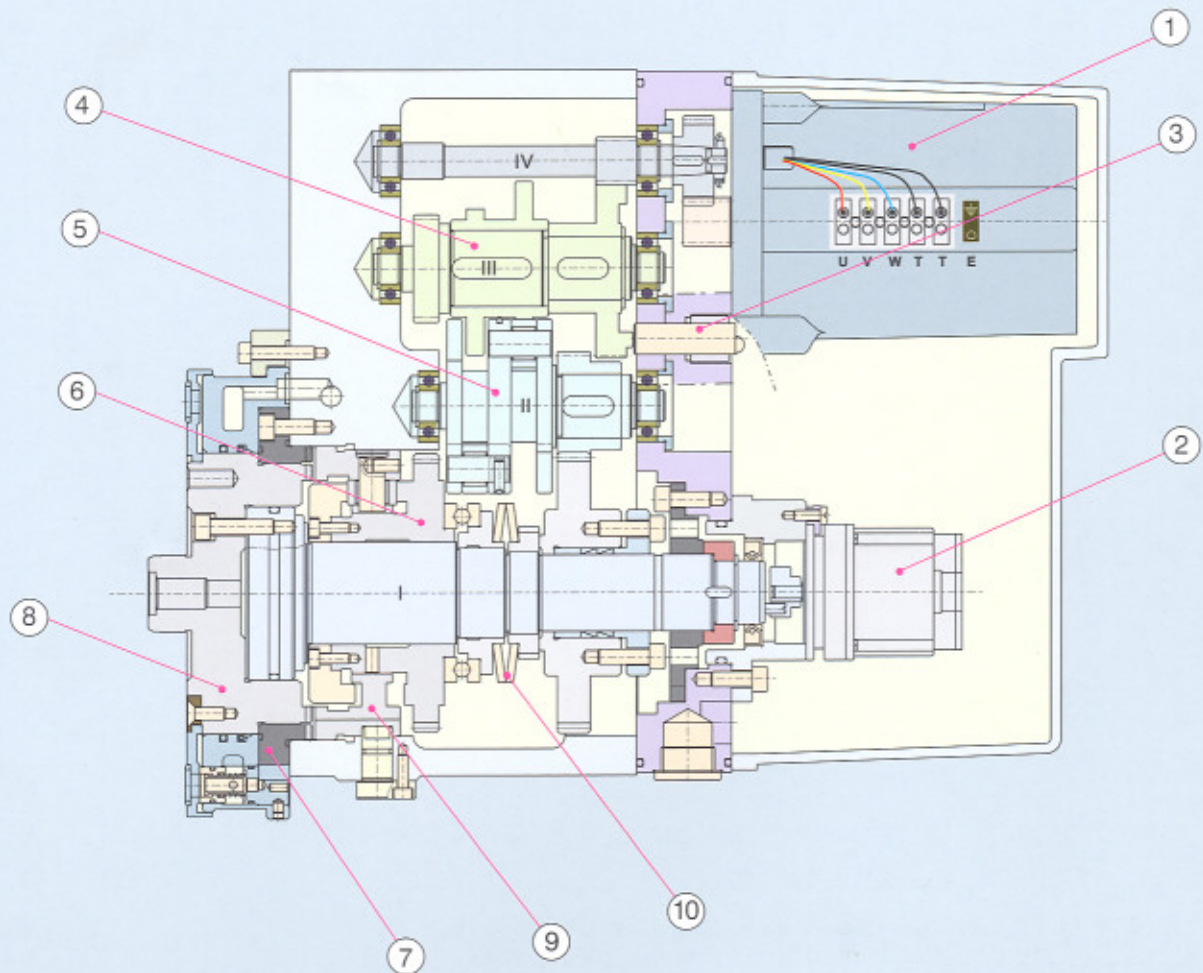
	BTP 160	BTP 125	BTP 100	BTP 80	BTP 63	BTP 50
A	160	125	100	80	63	50
B	430	340	280	236	202	170
C	390	310	250	210	185	128
D	245	197	177	155	135	107
E	510	414	388	348	318	255
F	15	15	15	15	15	12
G	56	50	47	43	40	35
H	308	242	192	159	143	110
I	352	280	220	190	165	110
J	50	40	32	25	20	12
K	40	30	34	32	24	15
L	48	44	40	32	30	60
M	56	43	30	32	30	-
N	48	43	30	32	30	-
O	21	17	16	14	10	12
P	M20	M16	M12	M12	M8	M8
Q	80	63	50	40	30	25
R	272	204	162	134	103	85
S	390	310	250	215	175	140
U	23	16	12	10	8	6
V	32	32	28	24	22	16
W	220	185	145	120	90	70
X	352	280	226	190	150	120
Y	M12	M12	M10	M10	M8	M6
Z	16	12	12	8	8	8
AA	3/8"	3/8"	3/8"	3/8"	1/4"	1/4"
BB	220	175	142	120	90	70
CC	0°	0°	0°	22.5°	22.5°	0°

Specification		BTP-160	BTP-125	BTP-100	BTP-80	BTP-63	BTP-50
Inertia of transportable masses	kg.m <sup>2</sup>	15	5	3	1	0.5	0.25
Indexing Time for 8 station Turret	45° sec.	1.0	0.75	0.6	0.45	0.4	0.35
	90° sec.	1.85	1.4	1.1	0.8	0.7	0.60
	180° sec.	3.6	2.8	2.2	1.6	1.4	1.2
Total Indexing Time for 12 Station Turret	30° sec.	1.0	0.75	0.6	0.45	0.40	0.35
	90° sec.	2.7	2.1	1.6	1.15	1.0	0.85
	180° sec.	5.2	4.1	3.2	2.30	2.0	1.70
Indexing frequency	1/min	8	10	10	10	12	12
Repeat positioning accuracy	deg	±2"	±2"	±2"	±2"	±2"	±2"
Indexing accuracy	deg	±6"	±6"	±6"	±6"	±6"	±6"
Total Weight (Without Tool Disc)	kg	245	140	91	58	38	22
	<b>Loading Capacity Nm</b>						
	F1 X R	12,000	6,000	3,000	1,500	600	400
	F2 X R	16,000	10,000	3,500	1,500	700	350
	F3 X R	6,800	4,000	2,000	600	250	160

## Turret Assembly



1. Torque Motor
2. Encoder
3. Turret Clamp Switch
4. Cam Shaft
5. Follower Shaft
6. Drum Cam
7. Fixed Coupling
8. Indexing Coupling
9. Sliding Coupling
10. Disc Spring



1. Torque Motor 2. Encoder 3. Turret Clamp Switch 4. Cam Shaft 5. Follower Shaft 6. Drum Cam  
7. Fixed Coupling 8. Indexing Coupling 9. Sliding Coupling 10. Disc Spring

## Special Features

Three piece, face gear coupling allows the tool disc to be indexed without lifting. It also ensures high repeat positioning accuracy and rigidity.

'Parallel index' cam mechanism allows fast and smooth indexing of heavy tool discs. Computer generated cam-profiles ensure shock-free indexing action.

Totally enclosed, robust mechanism with oil bath lubrication.

Electrical elements conveniently located in a separate area, free from oil and coolant.

Bidirectional working; can index in either direction to allow shortest indexing time.

## Principle of Working

Fixed Coupling (7), Indexing Coupling (8) and Sliding coupling (9) form a set of 3 piece coupling.

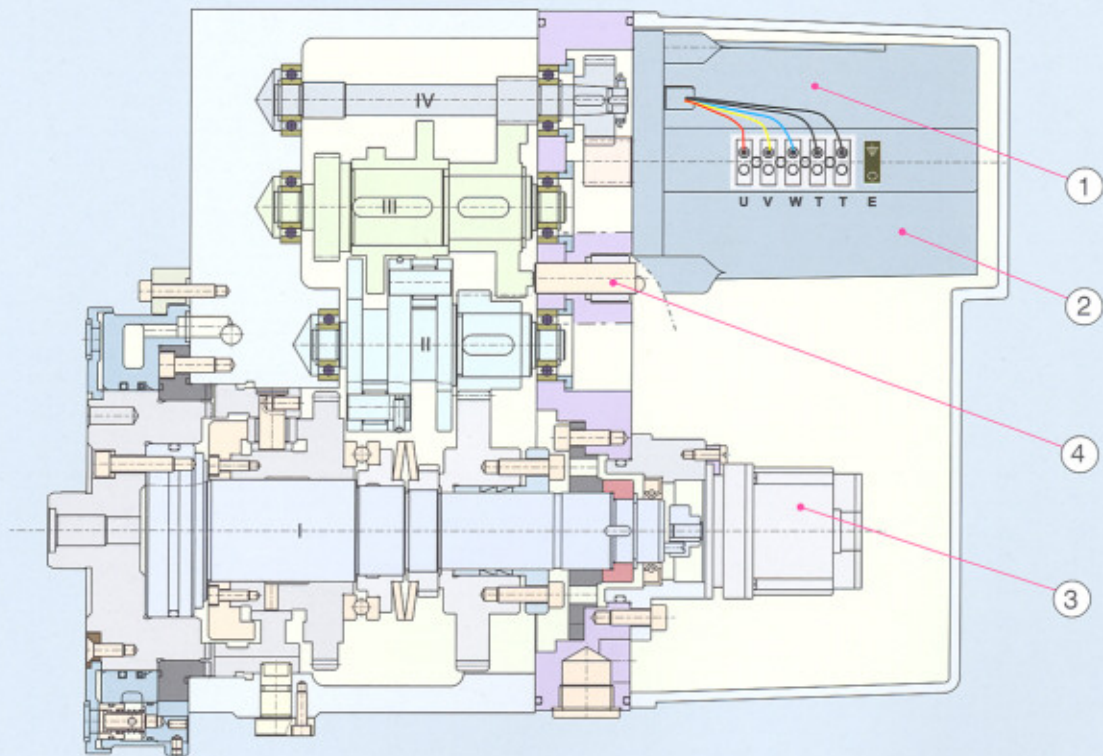
Axial movement of Sliding Coupling (9) is controlled by Drum Cam (6). Movement of Indexing Coupling (8) is controlled by Parallel Index mechanism (4) & (5).

Torque Motor (1) drives the Cam Shaft (4) through a system of gears. Cam Shaft indexes the Follower Shaft (5) through a "Parallel Index" Drive mechanism. Cam shaft is also geared to the "Drum Cam" (6) which controls clamping and release of the 3 piece coupling.

One revolution of Cam Shaft completes one indexing cycle of "declamping-indexing-clamping".

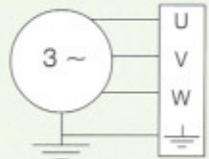

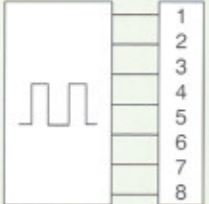

Absolute position Encoder(2) gives feed back of the turret position. Turret clamp Switch(3) inspects the clamped position of the turret.

## Electrical Elements



1. Torque Motor 2. Thermal Switch 3. Absolute Position Encoder 4. Turret Clamp Switch

### WIRING DETAILS FOR BI-DIRECTIONAL TOOL TURRET (BTP SERIES)

NO.	COMPONENT	CHARACTERISTICS	NUMBER	DETAILS	WIRE SIZE
1.	TORQUE MOTOR	ALTERNATIVE VOLTAGES: 415, 380, 220 & 110 VAC 3 PHASE ALTERNATIVE FREQUENCIES: 50 Hz AND 60 Hz. REFER TABLE BELOW FOR MOTOR CURRENTS.		PHASE PHASE PHASE EARTHING	0.75 mm <sup>2</sup>
2.	THERMAL SWITCH	120°, 2A, 415 VAC, NORMALLY CLOSED CONTACT			0.2mm <sup>2</sup>
3.	ABSOLUTE POSITION ENCODER	SUPPLY VOLTAGE: 15-30 V DC; RIPPLE 10%. LOAD CURRENT: 350 m A OUTPUT - PNP ODD PARITY.		BIT 1 BIT 2 BIT 3 BIT 4 STROBE PARITY '0' VOLTS 24 VDC	0.2mm <sup>2</sup>
4.	TURRET CLAMP SWITCH	SUPPLY VOLTAGE: 10-30 V DC; RIPPLE 10% LOAD CURRENT: 200 m A. OUTPUT - PNP		OUTPUT '0' VOLTS 24 VDC	0.2mm <sup>2</sup>

### MOTOR CURRENT (Amp)

Voltage Specification	Voltage Range 50/60 Hz AC	Model					
		BTP-160	BTP-125	BTP-100	BTP-80	BTP-63	BTP-50
415	380-440	3.5	3.2	2.6	2.3	1.6	1.3
220	210-230	6.5	6.2	4.5	3.9	3.0	2.6
110	100-120	9.0	8.0	7.4	6.3	5.0	3.3

## Electrical Signals

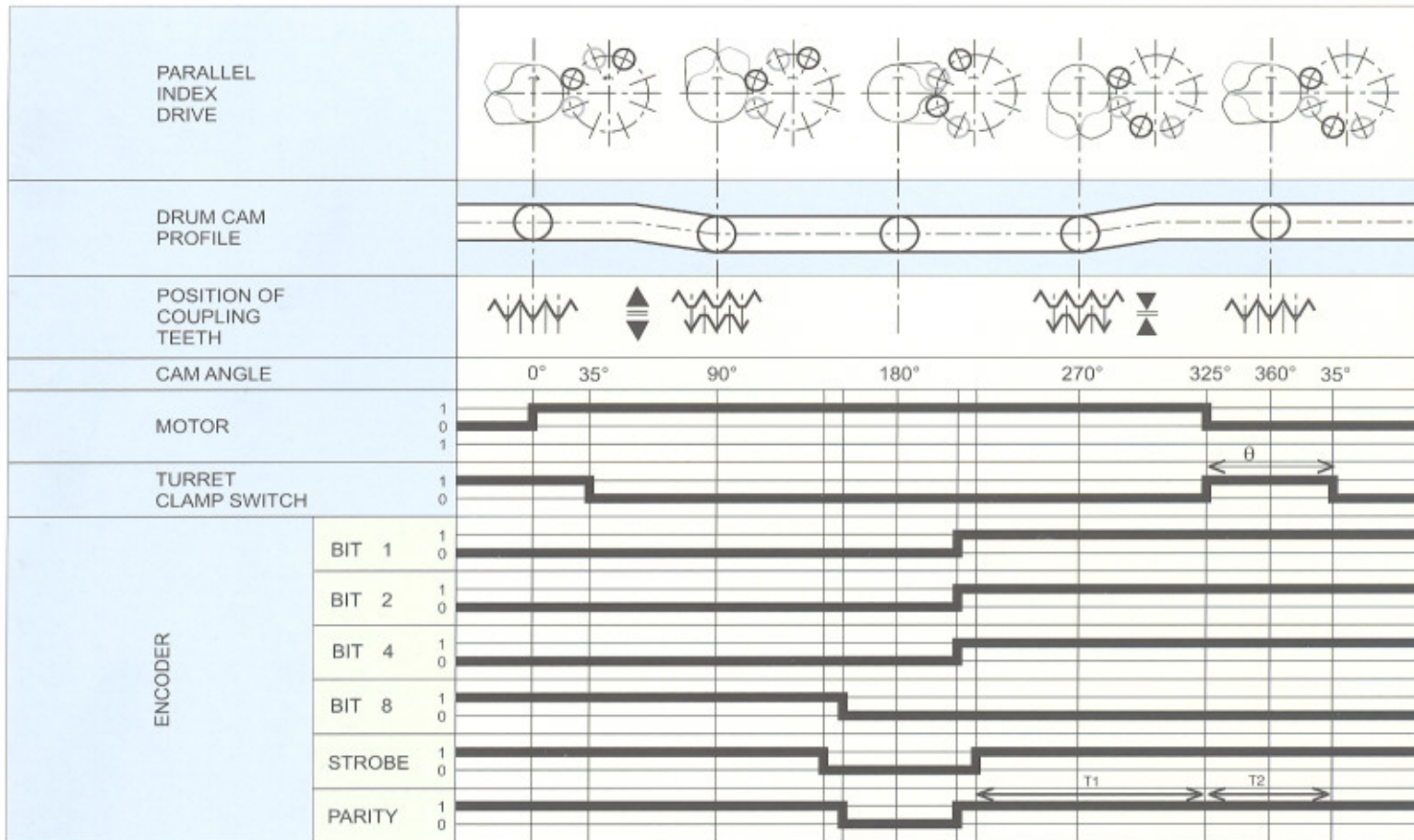


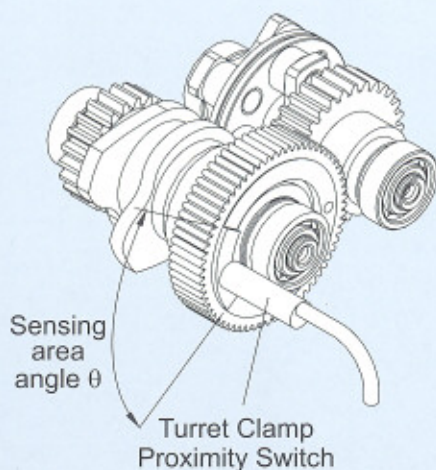
Table-1: Encoder Signals

Table-2: Time in Milisec

	Position No											
	1	2	3	4	5	6	7	8	9	10	11	12
<b>BIT 1</b>	1	0	1	0	1	0	1	0	1	0	1	0
<b>BIT 2</b>	0	1	1	0	0	1	1	0	0	1	1	0
<b>BIT 4</b>	0	0	0	1	1	1	1	0	0	0	0	1
<b>BIT 8</b>	0	0	0	0	0	0	0	1	1	1	1	1
<b>STROBE</b>	1	1	1	1	1	1	1	1	1	1	1	1
<b>PARITY</b>	1	1	0	1	0	0	1	1	0	0	1	0

	T1 ms	T2 ms
<b>BTP-160</b>	210	160
<b>BTP-125</b>	175	135
<b>BTP-100</b>	150	115
<b>BTP-80</b>	125	95
<b>BTP-63</b>	100	75
<b>BTP-50</b>	75	60

Viewed from shaft end : CW -> <- CCW



T1 -Time available for calculating whether desired position has reached; and to look for turret clamp signal, in case the final position has arrived.

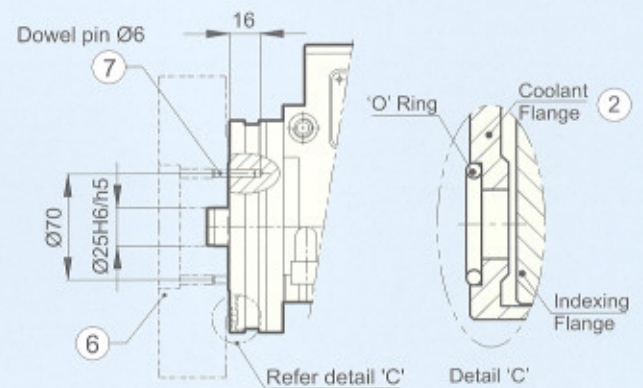
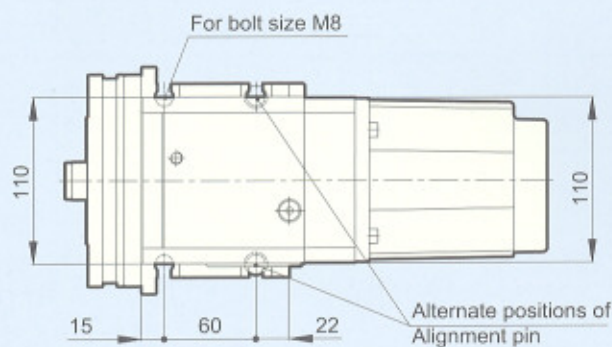
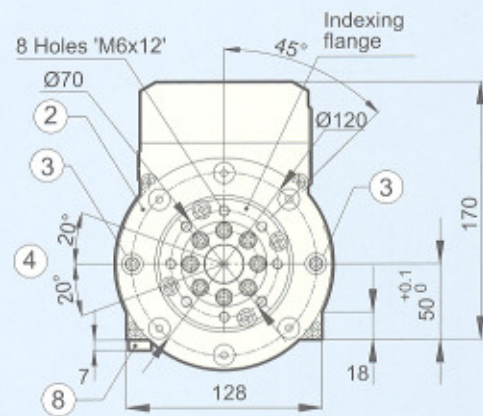
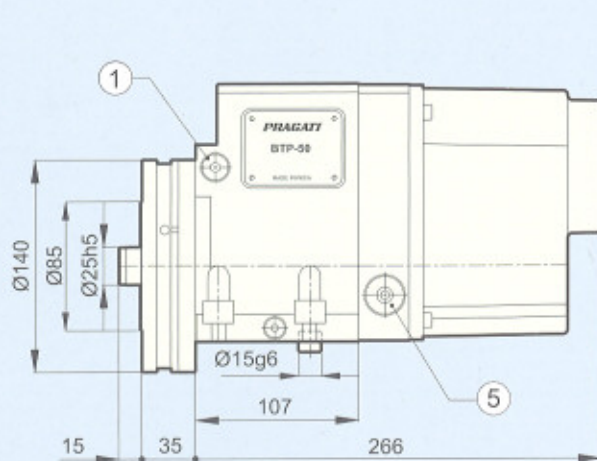
T2 -Duration of clamp signal when moving from one station to adjoining station, without stopping.

$\theta$  -Motor must come to a physical halt within 70° of cam rotation; corresponding to time T2.

### NOTE :

Referring to the signal diagram, value  $q$  represents the sensing angle during which both the cams (drum cam and indexing cam) are in 'dwell' profile. Motor must come to a physical halt within this angle. Otherwise the turret will get de-clamped and the proximity switch signal will be lost. It is therefore important to switch-off the turret motor in the fastest possible manner by using **solid state relays**.

## BTP 50

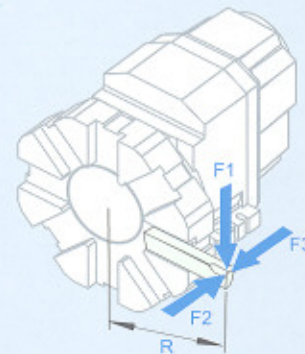


**Note :** All dimensions in mm.

- 1) Coolant inlet from either side. BSP thread size 1/4".
- 2) Coolant flange can be clamped to indexing flange at a suitable angular position 8 or 12 coolant outlet positions depending on no. of index positions.
- 3) Alternative positions of coolant outlet valve.
- 4) Adjustment range of coolant outlet valve.
- 5) Electrical connection 1/2" BSP.
- 6) Tool disc.
- 7) Reference pin for tool disc (if required).
- 8) Turret alignment pin.

Inertia of Transportable Masses		Kg-m <sup>2</sup>	0.25
Indexing time for 8 station	45°	sec	0.35
	90°	sec	0.60
	180°	sec	1.2
Indexing time for 12 stations	30°	sec	0.35
	90°	sec	0.85
	180°	sec	1.70
Indexing frequency		1/min	12
Repeat positioning accuracy		sec	±2
Indexing accuracy		sec	±6
Total weight without tool disc		kg	22

### Loading Details



F1 x R	400 Nm
F2 x R	350 Nm
F3 x R	160 Nm

### Ordering Details

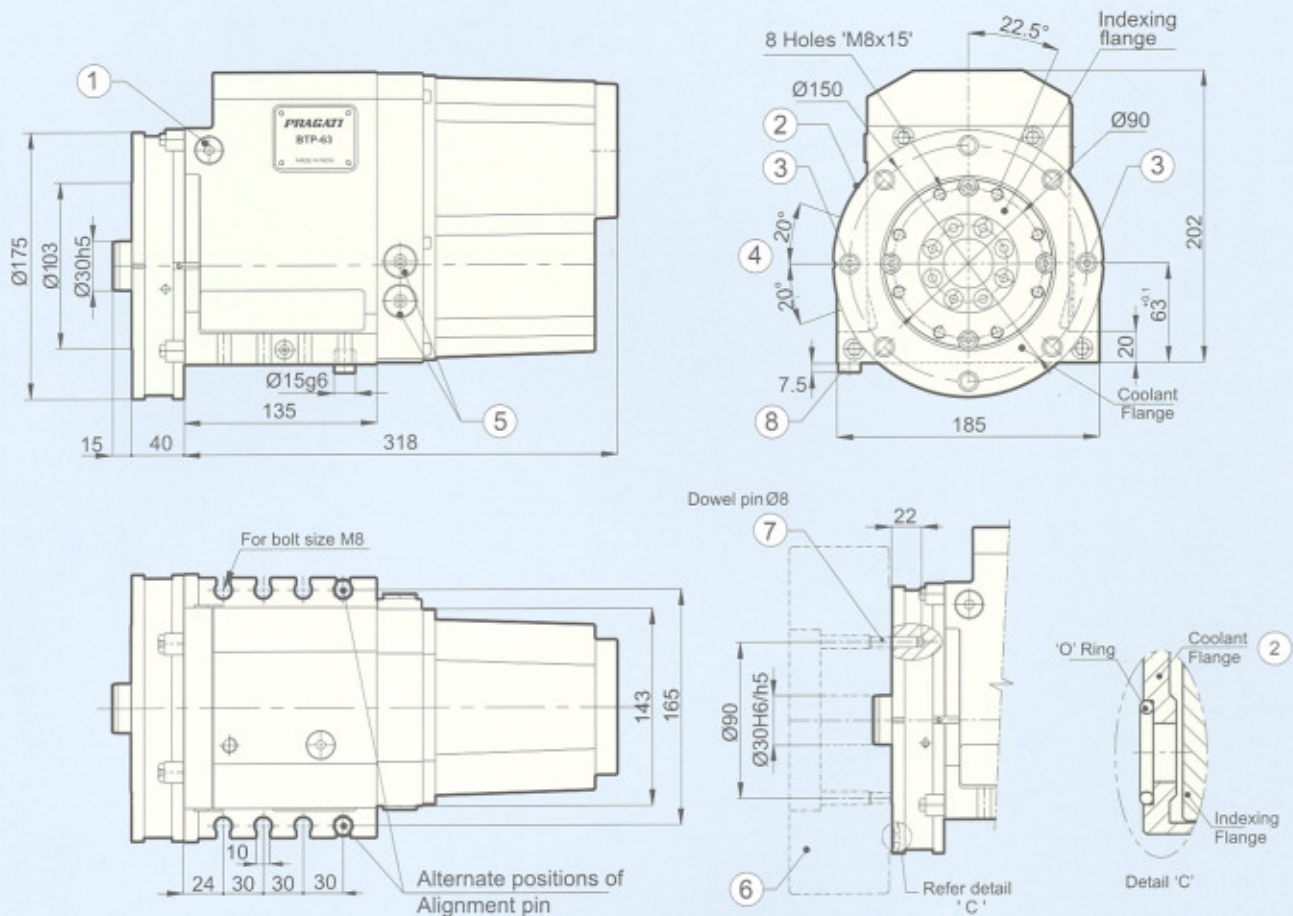
BTP		50	*	*	*
<b>Model</b>	<b>No. of Stations</b>	<b>Mounting</b>	<b>Motor voltage, 3 Phase</b>		
	8 Stations	F - Front	<b>Range VAC</b>	<b>Specification</b>	
	12 stations	R- Rear	380-440	415	
			210-230	220	
			100-120	110	

### STD SUPPLY:

BTP-50-8-R-415  
 No. of Stations - 8 stn  
 Mounting Position - Rear  
 Motor Voltage - 415 VAC  
 Frequency - 50Hz



## BTP 63

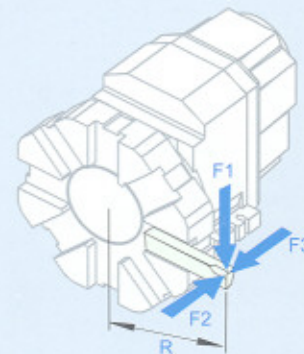


**Note :** All dimensions in mm.

- 1) Coolant inlet from either side. BSP thread size 1/4". 2) Coolant flange can be clamped to indexing flange at a suitable angular position 8 or 12 coolant outlet positions depending on no. of index positions. 3) Alternative positions of coolant outlet valve. 4) Adjustment range of coolant outlet valve. 5) Electrical connection 1/2" BSP. 6) Tool disc. 7) Reference pin for tool disc(if required). 8) Turret alignment pin.

Inertia of Transportable Masses		Kg-m <sup>2</sup>	0.50
Indexing time for 8 station	45°	sec	0.40
	90°	sec	0.70
	180°	sec	1.40
Indexing time for 12 stations	30°	sec	0.40
	90°	sec	1.0
	180°	sec	2.0
Indexing frequency		1/min	12
Repeat positioning accuracy		sec	±2
Indexing accuracy		sec	±6
Total weight without tool disc		kg	38

### Loading Details



F1 x R	600 Nm
F2 x R	700 Nm
F3 x R	250 Nm

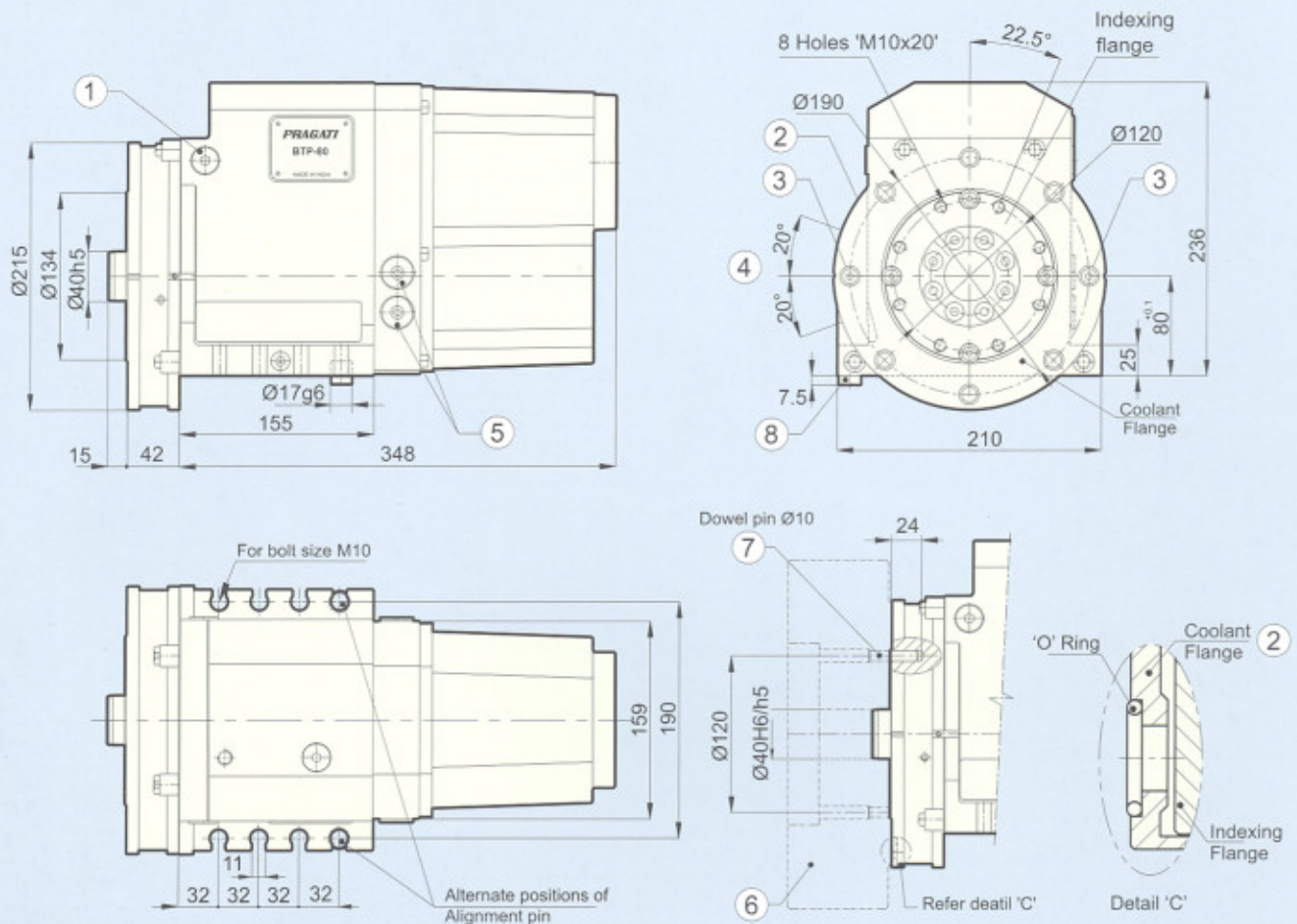
### Ordering Details

Model		No. of Stations		Mounting		Motor voltage, 3 Phase	
BTP	63	8 Stations	8	F - Front	Range VAC	Specification	
		12 stations	12	R- Rear	380-440	415	
					210-230	220	
					100-120	110	

### STD SUPPLY:

BTP-63-8-R-415  
 No. of Stations - 8 stn  
 Mounting Position - Rear  
 Motor Voltage - 415 VAC  
 Frequency - 50Hz

## BTP 80

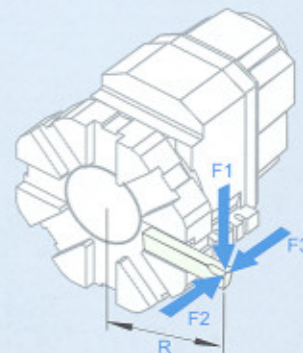


**Note :** All dimensions in mm.

- 1) Coolant inlet from either side. BSP thread size 3/8".
- 2) Coolant flange can be clamped to indexing flange at a suitable angular position
- 3) Alternative positions of coolant outlet valve.
- 4) Adjustment range of coolant outlet valve.
- 5) Electrical connection 1/2" BSP.
- 6) Tool disc.
- 7) Reference pin for tool disc (if required).
- 8) Turret alignment pin.

Inertia of Transportable Masses		Kg-m <sup>2</sup>	1.0
Indexing time for 8 station	45°	sec	0.45
	90°	sec	0.8
	180°	sec	1.6
Indexing time for 12 stations	30°	sec	0.45
	90°	sec	1.15
	180°	sec	2.30
Indexing frequency		1/min	10
Repeat positioning accuracy		sec	±2
Indexing accuracy		sec	±6
Total weight without tool disc		kg	58

### Loading Details



F1 x R	1,500 Nm
F2 x R	1,500 Nm
F3 x R	600 Nm

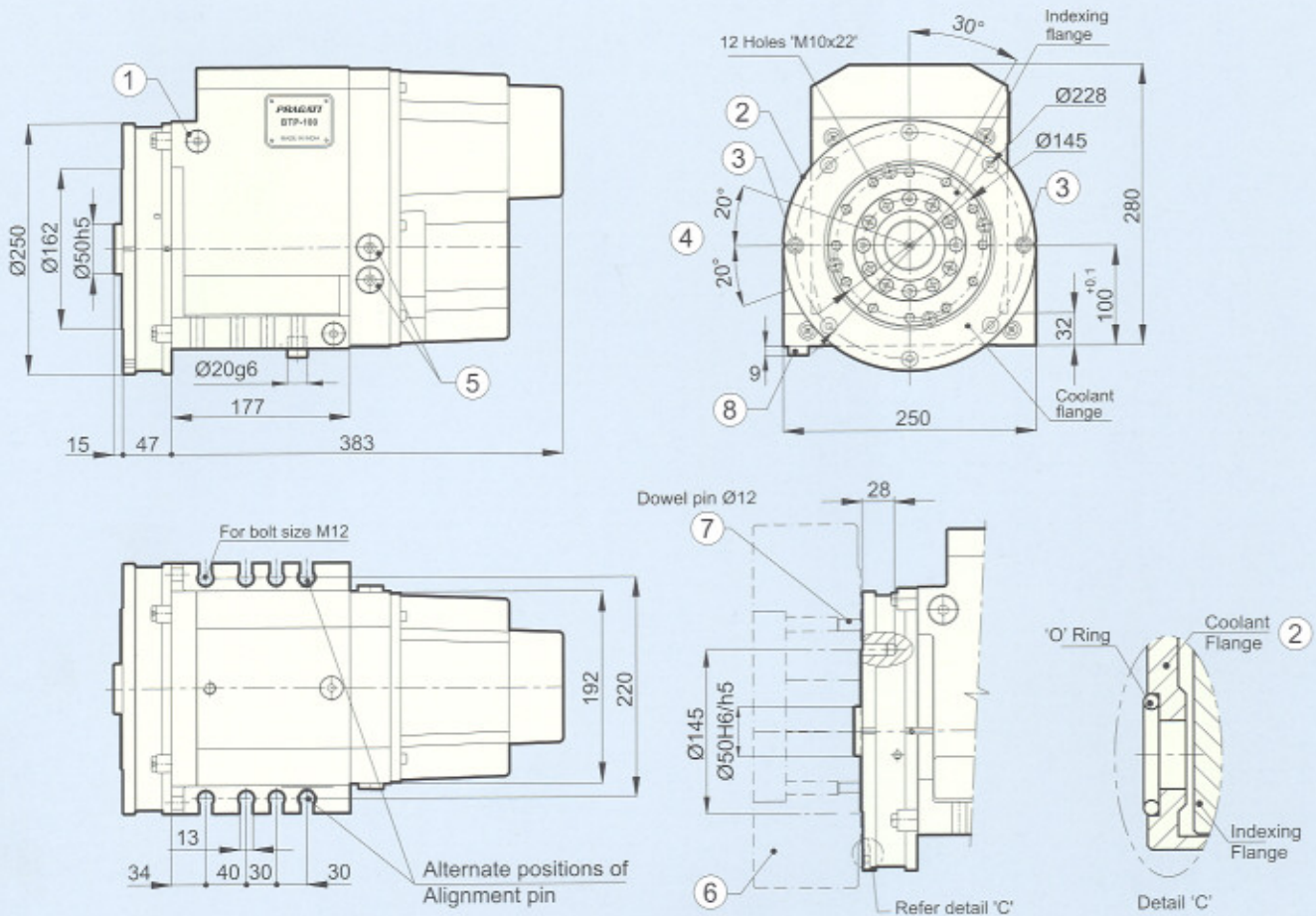
### Ordering Details

Model		No. of Stations		Mounting		Motor voltage, 3 Phase	
BTP-80		8 Stations	8	F - Front		380-440	415
		12 stations	12	R - Rear		210-230	220
						100-120	110

### STD SUPPLY:

BTP-80-8-R-415  
 No. of Stations - 8 stn  
 Mounting Position - Rear  
 Motor Voltage - 415 VAC  
 Frequency - 50Hz

## BTP 100

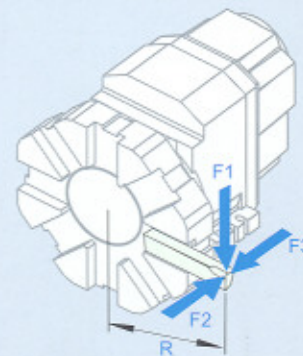


**Note :** All dimensions in mm.

- 1) Coolant inlet from either side. BSP thread size 3/8". 2) Coolant flange can be clamped to indexing flange at a suitable angular position 8 or 12 coolant outlet positions depending on no. of index positions. 3) Alternative positions of coolant outlet valve. 4) Adjustment range of coolant outlet valve. 5) Electrical connection 1/2" BSP. 6) Tool disc. 7) Reference pin for tool disc (if required). 8) Turret alignment pin.

Inertia of Transportable Masses		Kg-m <sup>2</sup>	3.0
Indexing time for 8 station	45°	sec	0.6
	90°	sec	1.1
	180°	sec	2.2
Indexing time for 12 stations	30°	sec	0.6
	90°	sec	1.6
	180°	sec	3.2
Indexing frequency		1/min	10
Repeat positioning accuracy		sec	±2
Indexing accuracy		sec	±6
Total weight without tool disc		kg	91

### Loading Details



F1 x R	3,000 Nm
F2 x R	3,500 Nm
F3 x R	2,000 Nm

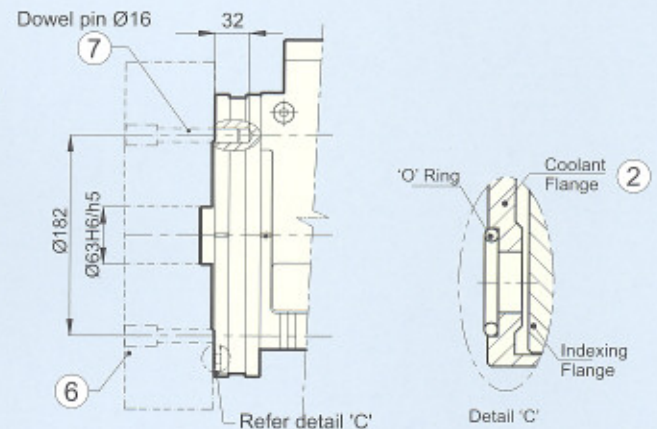
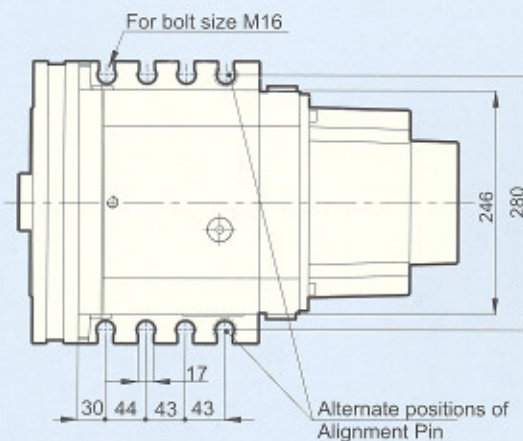
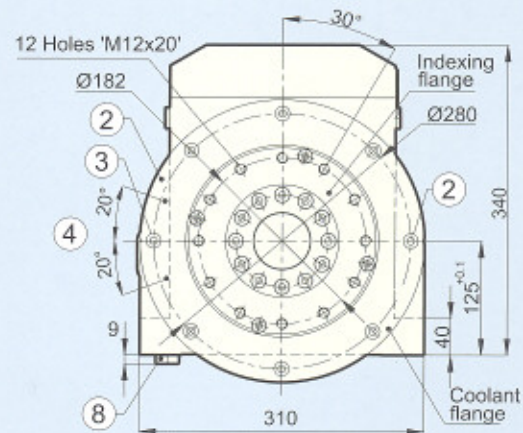
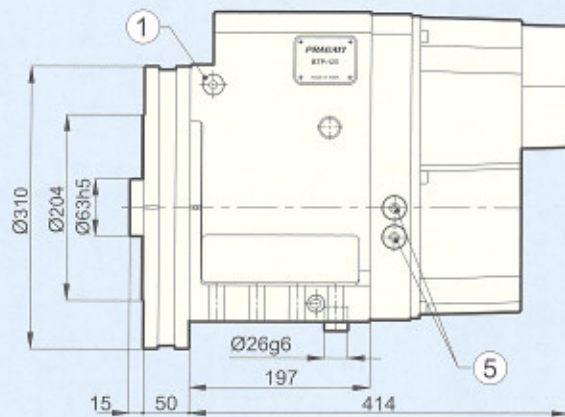
### Ordering Details

BTP — 100		*	*	*
Model	No. of Stations	Mounting	Motor voltage, 3 Phase	
	8 Stations	F - Front	Range VAC	Specification
	12 stations	R - Rear	380-440	415
			210-230	220
			100-120	110

### STD SUPPLY:

BTP-100-8-R-415  
 No. of Stations - 8 stn  
 Mounting Position - Rear  
 Motor Voltage - 415 VAC  
 Frequency - 50Hz

## BTP 125

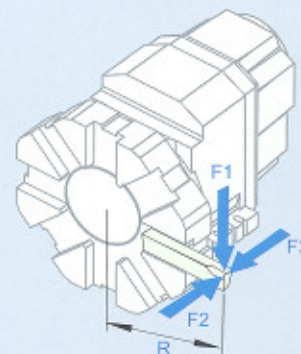


**Note :** All dimensions in mm.

- 1) Coolant inlet from either side. BSP thread size 3/8". 2) Coolant flange can be clamped to indexing flange at a suitable angular position 8 or 12 coolant outlet positions depending on no. of index positions. 3) Alternative positions of coolant outlet valve. 4) Adjustment range of coolant outlet valve. 5) Electrical connection 1/2" BSP. 6) Tool disc. 7) Reference pin for tool disc(if required). 8) Turret alignment pin.

Inertia of Transportable Masses		Kg-m <sup>2</sup>	5.0
Indexing time for 8 station	45°	sec	0.75
	90°	sec	1.4
	180°	sec	2.8
Indexing time for 12 stations	30°	sec	0.75
	90°	sec	2.1
	180°	sec	4.1
Indexing frequency		1/min	10
Repeat positioning accuracy		sec	±2
Indexing accuracy		sec	±6
Total weight without tool disc		kg	140

### Loading Details



F1 x R	6,000 Nm
F2 x R	10,000 Nm
F3 x R	4,000 Nm

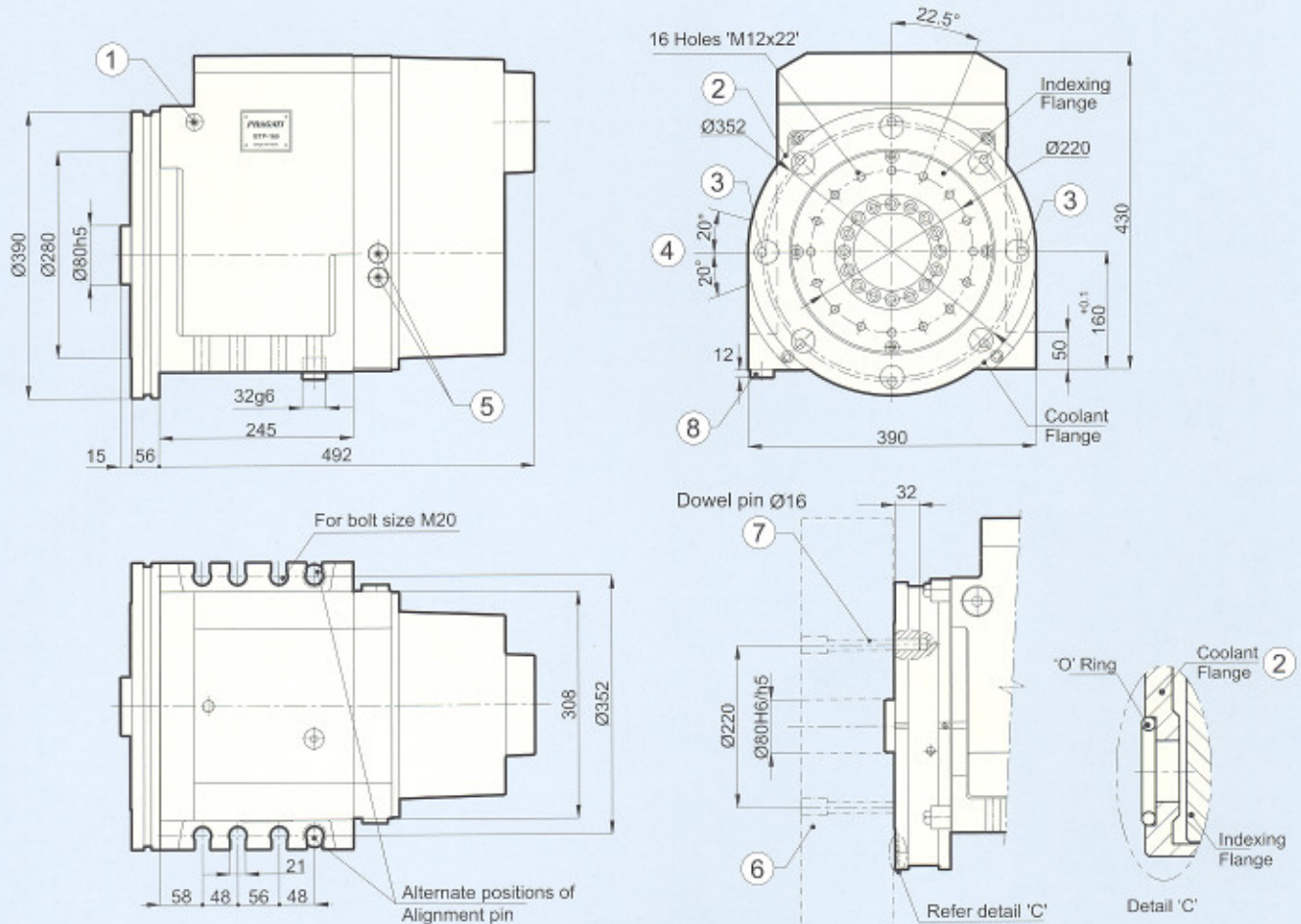
### Ordering Details

BTP-125		*	*	*
<b>Model</b>	<b>No. of Stations</b>	<b>Mounting</b>		<b>Motor voltage, 3 Phase</b>
	8 Stations 8	F - Front		<b>Range VAC</b>
	12 stations 12	R- Rear		<b>Specification</b>
				380-440 415
				210-230 220
				100-120 110

### STD SUPPLY:

BTP-125-8-R-415  
 No. of Stations - 8 stn  
 Mounting Position - Rear  
 Motor Voltage - 415 VAC  
 Frequency - 50Hz

## BTP 160

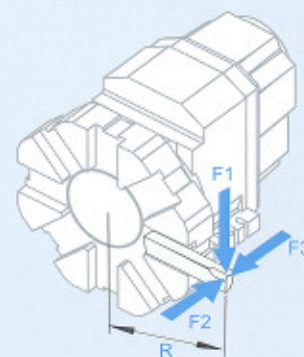


**Note :** All dimensions in mm.

- 1) Coolant inlet from either side. BSP thread size 3/8".
- 2) Coolant flange can be clamped to indexing flange at a suitable angular position
- 3) Alternative positions of coolant outlet valve.
- 4) Adjustment range of coolant outlet valve.
- 5) Electrical connection 1/2" BSP.
- 6) Tool disc.
- 7) Reference pin for tool disc (if required).
- 8) Turret alignment pin.

Inertia of Transportable Masses		Kg-m <sup>2</sup>	15
Indexing time for 8 station	45°	sec	1.0
	90°	sec	1.85
	180°	sec	3.6
Indexing time for 12 stations	30°	sec	1.0
	90°	sec	2.7
	180°	sec	5.2
Indexing frequency		1/min	8
Repeat positioning accuracy		sec	±2
Indexing accuracy		sec	±6
Total weight without tool disc		kg	245

### Loading Details



F1 x R	12,000 Nm
F2 x R	16,000 Nm
F3 x R	6,800 Nm

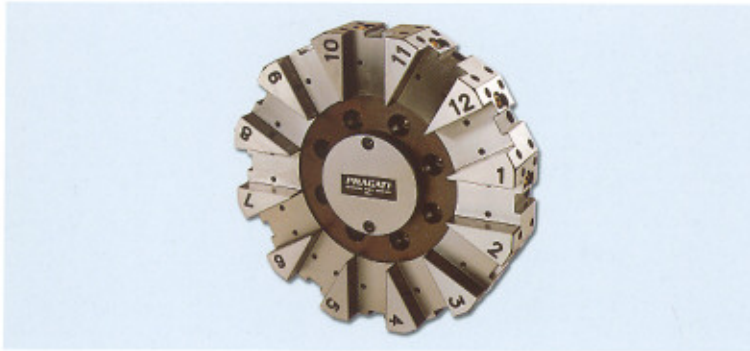
### Ordering Details

Model		No. of Stations		Mounting		Motor voltage, 3 Phase	
BTP	160	8 Stations	8	F - Front		Range VAC	Specification
		12 stations	12	R - Rear		380-440	415
						210-230	220
						100-120	110

### STD SUPPLY:

BTP-160-8-R-415  
 No. of Stations - 8 stn  
 Mounting Position - Rear  
 Motor Voltage - 415 VAC  
 Frequency - 50Hz

## Slotted Tool Discs



CODE	A	B	C	D	E	F	TURRET TYPE
<b>Specification for 8 Station Slotted Tool Disc</b>							
TD-50-8-16	16	180	52	251	238	25	BTP-50
TD-50-8-20	20	200	55	306	292	32	BTP-50
TD-63-8-16	16	200	52	271	256	25	BTP-63
TD-63-8-20	20	220	62	326	294	32	BTP-63
TD-80-8-20	20	250	62	356	324	32	BTP-80
TD-80-8-25	25	280	82	400	360	40	BTP-80
TD-100-8-25	25	304	82	424	384	40	BTP-100
TD-100-8-32	32	350	97	504	440	50	BTP-100
TD-125-8-32	32	380	97	534	470	50	BTP-125
TD-125-8-40	40	400	97	543	500	50	BTP-125
TD-160-8-40	40	480	126	643	616	60	BTP-160

CODE	A	B	C	D	E	F	TURRET TYPE
<b>Specification for 12 Station Slotted Tool Disc</b>							
TD-63-12-16	16	236	52	307	270	25	BTP-63
TD-80-12-20	20	286	62	392	348	32	BTP-80
TD-100-12-25	25	350	82	470	420	40	BTP-100
TD-125-12-32	32	436	97	590	525	50	BTP-125
TD-160-12-40	40	565	126	729	645	60	BTP-160

CODE	A	B	C	D	E	TURRET TYPE
<b>Specification for 8 Station VDI Tool Disc</b>						
TD-VDI-S-50-8-16-160	16	160	34	205	230	BTP-50
TD-VDI-S-63-8-20-240	20	240	42	295	332	BTP-63
TD-VDI-S-80-8-30-270	30	270	57	340	380	BTP-80
TD-VDI-S-100-8-40-340	40	340	65	410	475	BTP-100
TD-VDI-S-125-8-50-400	50	400	80	480	564	BTP-125
TD-VDI-S-160-8-60-460	60	460	96	560	649	BTP-160

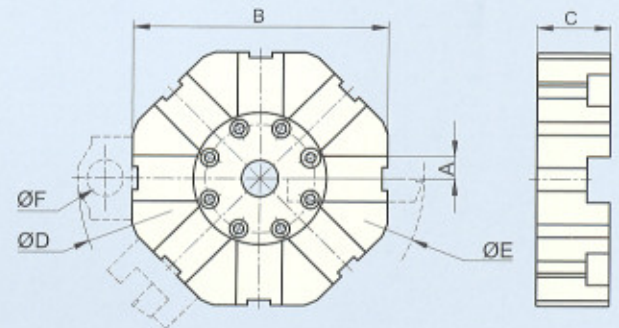
CODE	A	B	C	D	E	TURRET TYPE
<b>Specification for 12 Station VDI Tool Disc</b>						
TD-VDI-S-50-12-16-160	16	160	34	205	230	BTP-50
TD-VDI-S-63-12-20-240	20	240	42	295	332	BTP-63
TD-VDI-S-80-12-30-315	30	315	57	380	425	BTP-80
TD-VDI-S-100-12-40-340	40	340	65	410	475	BTP-100
TD-VDI-S-125-12-50-400	50	400	80	480	555	BTP-125
TD-VDI-S-160-12-60-460	60	460	96	560	649	BTP-160

## VDI Tool Discs

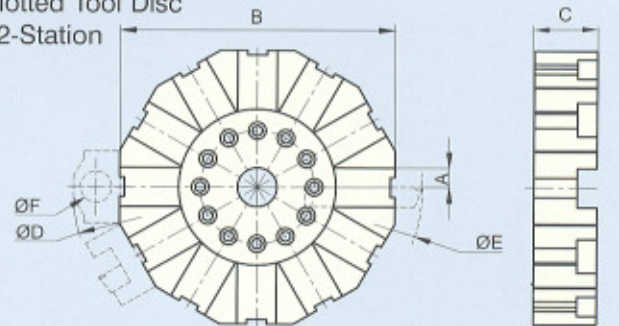


Slotted Tool Disc  
8-Station

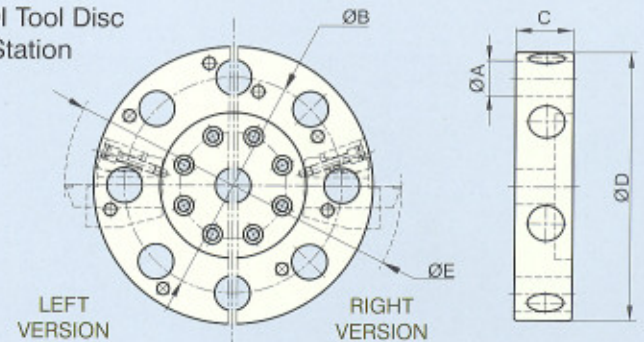
**Note:** All dimensions in mm,  
Inch series Tool discs on request.



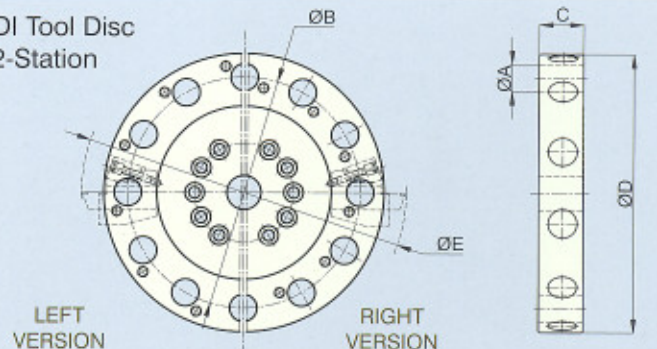
Slotted Tool Disc  
12-Station



VDI Tool Disc  
8-Station

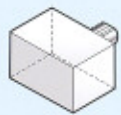


VDI Tool Disc  
12-Station

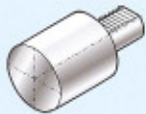


## As per DIN 69880

### PRE-MACHINED BLANKS

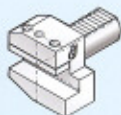


A1 16 44
A1 20 65
A1 30 85
A1 40 100
A1 50 125



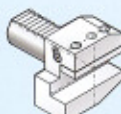
A2 16 60
A2 20 70
A2 30 100
A2 40 120
A2 50 135

### RIGHT HAND SHORT - RADIAL



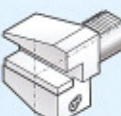
B1 16 12 24
B1 20 16 30
B1 30 20 40
B1 40 25 44
B1 50 32 55

### LEFT HAND SHORT - RADIAL



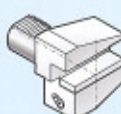
B2 16 12 24
B2 20 16 30
B2 30 20 40
B2 40 25 44
B2 50 32 55

### RIGHT HAND SHORT OVERHEAD - RADIAL



B3 16 12 24
B3 20 16 30
B3 30 20 40
B3 40 23 44
B3 50 32 55

### LEFT HAND SHORT OVERHEAD - RADIAL



B4 16 12 24
B4 20 16 30
B4 30 20 40
B4 40 25 44
B4 50 32 55

### RIGHT HAND LONG - RADIAL



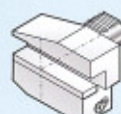
B5 16 12 24
B5 20 16 30
B5 30 20 40
B5 40 25 44
B5 50 32 55

### LEFT HAND LONG - RADIAL



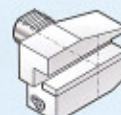
B6 16 12 24
B6 20 16 30
B6 30 20 40
B6 40 25 44
B6 50 32 55

### RIGHT HAND LONG OVERHEAD - RADIAL



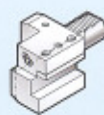
B7 16 12 24
B7 20 16 30
B7 30 20 40
B7 40 25 44
B7 50 32 55

### LEFT HAND LONG OVERHEAD - RADIAL



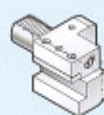
B8 16 12 24
B8 20 16 30
B8 30 20 40
B8 40 25 44
B8 50 32 55

### RIGHT HAND - AXIAL



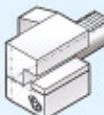
C1 16 12
C1 20 16
C1 30 20
C1 40 25
C1 50 32

### LEFT HAND - AXIAL



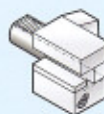
C2 16 12
C2 20 16
C2 30 20
C2 40 25
C2 50 32

### RIGHT HAND OVERHEAD - AXIAL



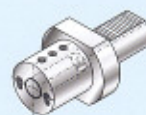
C3 16 12
C3 20 16
C3 30 20
C3 40 25
C3 50 32

### LEFT HAND OVERHEAD - AXIAL



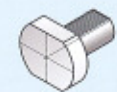
C4 16 12
C4 20 16
C4 30 20
C4 40 25
C4 50 32

### BORING BAR HOLDER



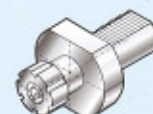
E2 16 X 6
E2 16 X 8
E2 16 X 10
E2 16 X 12
E2 16 X 16
E2 20 X 8
E2 20 X 10
E2 20 X 12
E2 20 X 16
E2 20 X 20
E2 20 X 25
E2 30 X 8
E2 30 X 10
E2 30 X 12
E2 30 X 16
E2 30 X 20
E2 30 X 25
E2 30 X 32
E2 40 X 8
E2 40 X 10
E2 40 X 12
E2 40 X 16
E2 40 X 20
E2 40 X 25
E2 40 X 32
E2 40 X 40
E2 50 X 16
E2 50 X 20
E2 50 X 25
E2 50 X 32
E2 50 X 40
E2 50 X 50

### STEEL PLUG



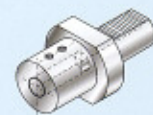
Z2 16
Z2 20
Z2 30
Z2 40
Z2 50

### COLLET CHUCK AS PER DIN 6499



E4 16 16
E4 16 20
E4 20 16
E4 20 20
E4 20 25
E4 30 25
E4 30 32
E4 30 40
E4 40 25
E4 40 32
E4 40 40
E4 50 32
E4 50 40

### BORING BAR HOLDER WITH INTERNAL COOLANT



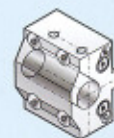
E1 20 X 16
E1 20 X 20
E1 20 X 25
E1 30 X 16
E1 30 X 20
E1 30 X 25
E1 30 X 32
E1 30 X 40
E1 40 X 16
E1 40 X 20
E1 40 X 25
E1 40 X 32
E1 40 X 40
E1 50 X 20
E1 50 X 25
E1 50 X 32
E1 50 X 40
E1 50 X 50

### TOOL HOLDER FOR MORSE TAPER SHANK



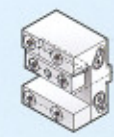
F 20 MT 1
F 30 MT 1
F 30 MT 2
F 30 MT 3
F 40 MT 1
F 40 MT 2
F 40 MT 3
F 40 MT 4
F 50 MT 2
F 50 MT 3
F 50 MT 4

### BORING TOOL HOLDER



BTH 16 - 20
BTH 16 - 25
BTH 20 - 25
BTH 20 - 32
BTH 25 - 32
BTH 25 - 40
BTH 32 - 40
BTH 32 - 50
BTH 40 - 40
BTH 40 - 50
BTH 40 - 60

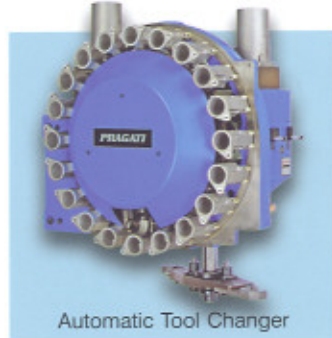
### AXIAL TOOL HOLDER



ATH 16 - 16
ATH 20 - 20
ATH 25 - 25
ATH 32 - 32
ATH 40 - 40

Note : All dimensions in mm.  
Inch series tool holders on request

## Our other products



Automatic Tool Changer



Tool Discs



Chucking Cylinders



Indexing Tables

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E-mail : [info@pragati-automation.com](mailto:info@pragati-automation.com)  
URL : <http://www.pragati-automation.com>