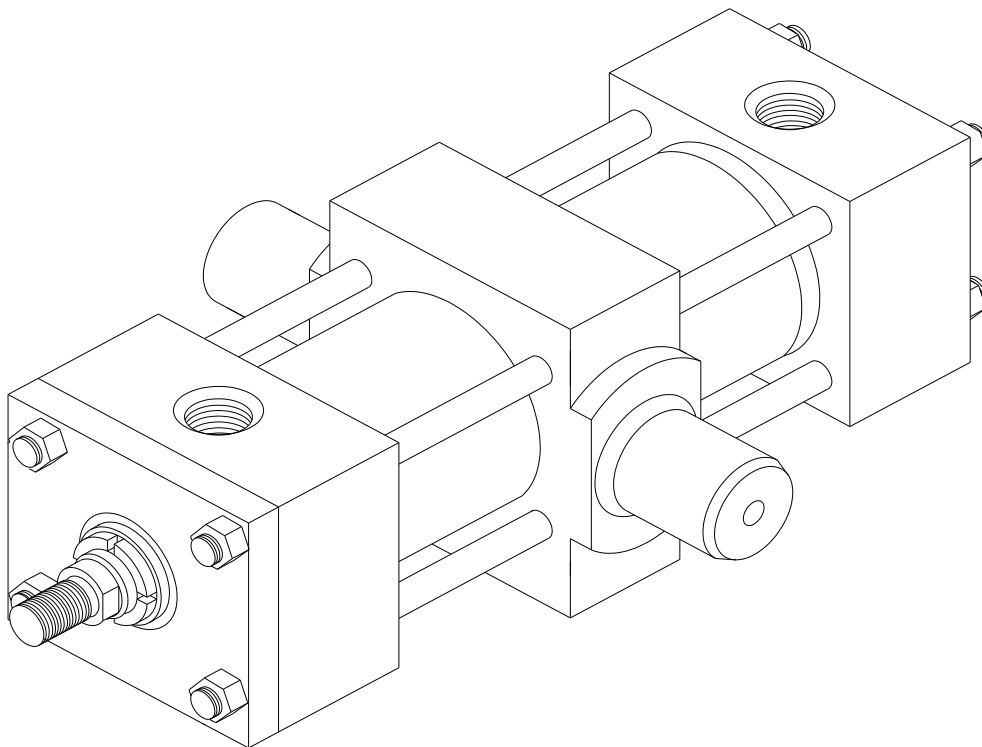


# Hydraulic Cylinders (Metric )

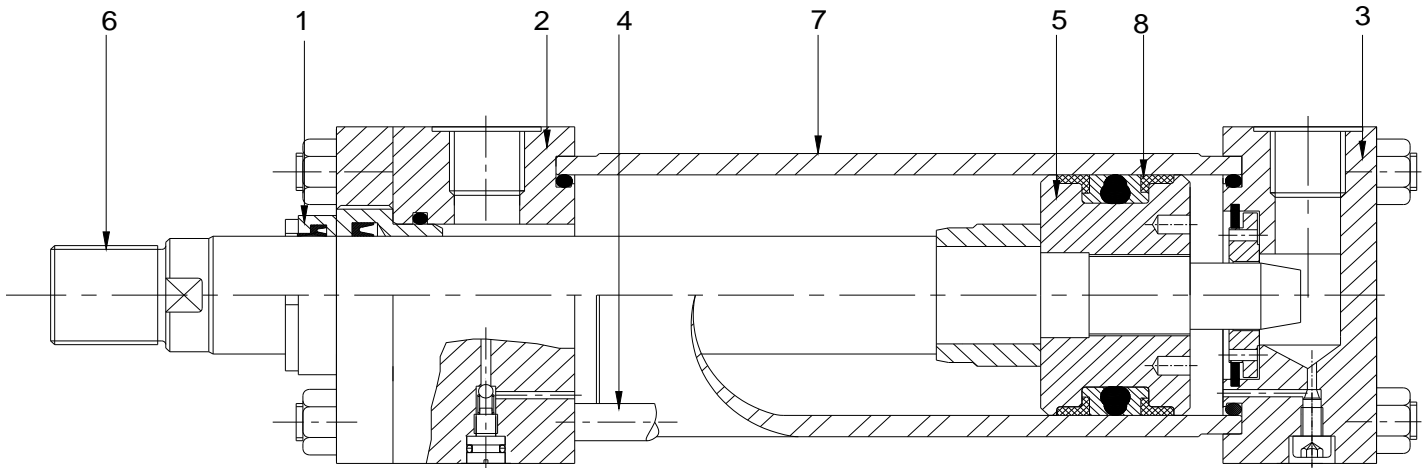
THM Series as per ISO -6020/2

Pressure 180 Bars



**HYDRO DYNE**  
**INDUSTRIES**

Total Fluidpower Performance



Hydrodyne THM series TIE ROD CYLINDERS are designed for rugged industrial applications conforming to ISO , backed by many years of experience in manufacturing high pressure hydraulic cylinders using best quality materials

### 1.The HDI rod gland cartridge

Rod gland cartridge can be externally removed without disassembly of the cylinder. Its long bearing surface is inboard of the seal assuring positive lubrication from within the cylinder. Leak proof cartridge gland seal consists of :

- a) Polyurethane double lip seal completely self compensating and self relieving to withstand all pressure variations and mechanical deflections that may occur.
- b) Hydrodyne standard wiper seal is made of either hard nitrile or ultrathane material and is fitted in the precisely machined groove to perform the function of wiping the rod clean during its return stroke. In case of use of optionally available low friction step seals in the gland cartridge, the wiper seal is designed to perform the additional function of wiping the rod clean of adhering oil film during its advance stroke and pushing the oil back to rod end side of the cylinder during the retractive stroke. A static 'o'ring seal is used to seal between the gland & the head and to serve as a prevailing torque lock for the gland cartridge.

### 2.The Rod End

The series THM steel rod end is through bored and grooved to provide concentricity to common centerline for mating parts .The bottom of this tube locating groove is truly square to the common centerline, thus ensuring precisely square mounting . Ports are positioned to provide unobstructed flow without interference from the gland. The rod end design allows a long space for the cushion sleeve .Flush and interchangeable cushion check and adjusting needle valves are provided on cushioned models. A pressure compensating static 'o' ring, seals between the head and cylinder body .

### 3.The Cap End

Like the rod end ,the steel cap end is bored and grooved to provide concentricity for mating parts , and cylinder body groove is truly square with the cylinder centerline .

### 4.The Tie Rods

Tie rods of high tensile strength have rolled /machined threads for adequate strength

### 5.The Piston

The piston is of one piece construction manufactured from carbon steel/fine grain cast iron ,depending upon the piston seal requirements. The wide piston surface with adequately designed wear rings considerably reduces bearing loads and wear during mechanical deflection. Long thread engagement with the piston rod provides greater shock absorption, and the piston is permanently locked with a pin.

### 6.The Piston Rod

Piston rod is made from high tensile medium ,carbon steel ground and hard chrome plated to thickness of upto 25 microns and surface finish of 0.5um or better and in special cases (with prior acceptance) the rod is induction hardened for long life dent resistant surface.

### 7.The Cylinder Body

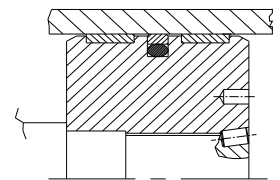
The cylinder is made from heavy wall steel tubing ,honed to a micro-finish bore . All hydrodyne series THM cylinders are constructed with "align - a -groove "making precision cylinders alignment quick and easy . the grooves are wide and machined concentric with the internal diameter of the body and piston rod centerline .

### 8.The Piston Seals

Standard piston seal is a double acting elastomeric seal with both side antiextrusion cum wear rings of reinforced plastic material suitable for working pressure of more than 250 bars. Optionally piston seal for low friction and high speed made of bronze filled teflon with nitrile or viton energisers and separate two wear rings of teflon/reinforced plastic are available.

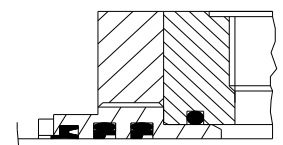
#### Low Friction Pistons

employ a glydring, and may be used for piston speeds up to 1 m/s. They are not suitable for supporting loads in a fixed position. These types of pistons comprises of bronze filled teflon ring with 'o' ring and two composite material wear rings.



#### Low Friction Gland Seals

comprises two low friction PTFE step seals and a conventional double lip wiper seal.

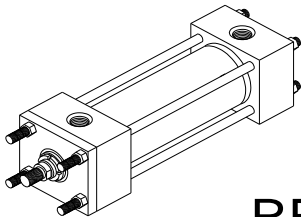


**THM SERIES HIGH PRESSURE TIE ROD TYPE HYDRAULIC CYLINDER**

**SPECIFICATIONS**

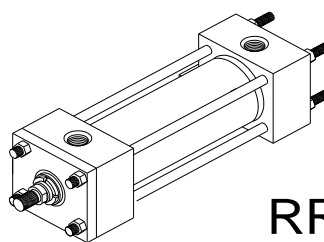
- 1. MAX. OPERATING PRESSURE --- 180 BAR (standard)  
210 BAR (upon request)
- 2. TEMPRATURE --- -20°C to +80°C with standard nitrile/polyurethane seals.  
Higher temperature with viton/teflon seals.
- 3. MEDIUM --- Mineral oil  
Cylinders to oprate with water based fluids available on request.

Front Tie Rod Extension Mounting  
HDI Model RF



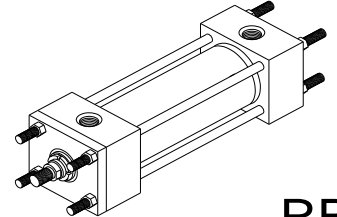
**RF**

Rear Tie Rod Extension Mounting  
HDI Model RR



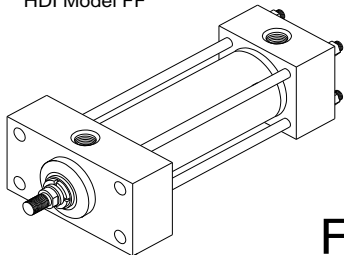
**RR**

Both Side Tie Rod Extension Mounting  
HDI Model RB



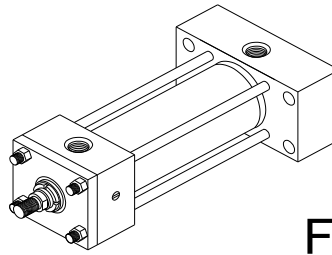
**RB**

Head Rectangular Flange Mounting  
HDI Model FF



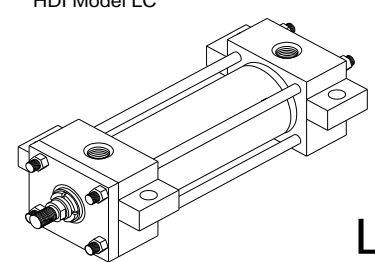
**FF**

Cap Rectangular Flange Mounting  
HDI Model FR



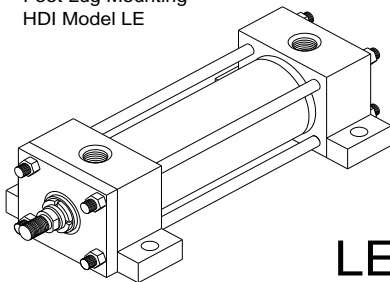
**FR**

Center Lug Mounting  
HDI Model LC



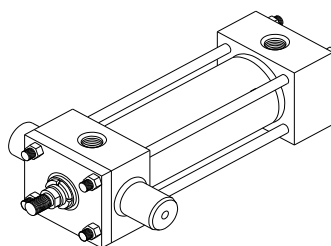
**LC**

Foot Lug Mounting  
HDI Model LE



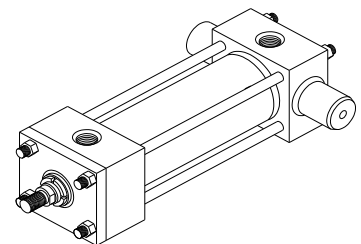
**LE**

Head Trunnion Mounting  
HDI Model UH



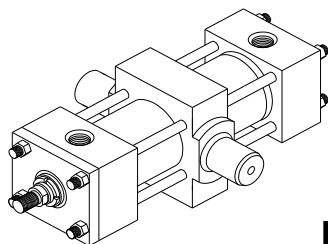
**UH**

Cap Trunnion Mounting  
HDI Model UC



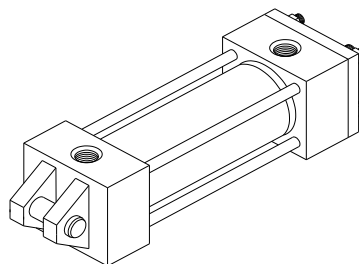
**UC**

Intermediate Trunnion Mounting  
HDI Model UM



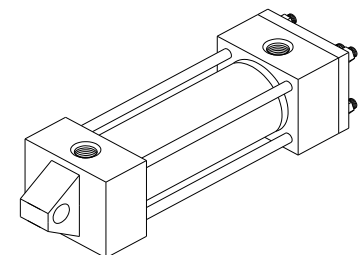
**UM**

Female Clevis Mounting  
HDI Model CF



**CF**

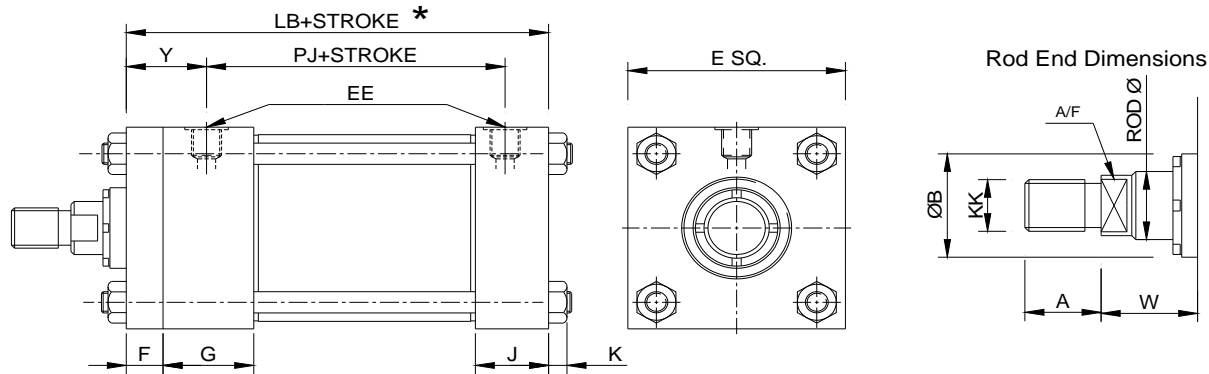
Male Clevis Mounting  
HDI Model CM



**CM**

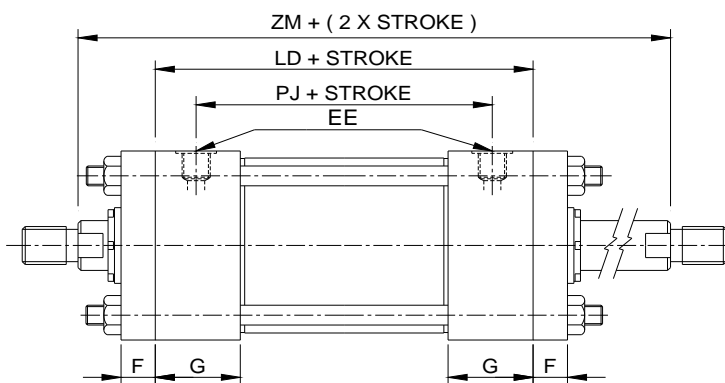
**BASIC CYLINDER THM SERIES**

**A. SINGLE ROD CYLINDER**



BORE Ø	E SQ.	EE BSP	F	G	J	K	Y	+ STROKE		ROD Ø	KK	A/F	W	A	ØB
								LB	PJ						
40.0	63.0	3/8"	10.0	45.0	38	6.5	37	128.0	72.0	18.0	M14X1.5	15.0	25.0	18.0	29.8
										28.0	M20X1.5	22.0		28.0	41.8
50.0	75.0	1/2"	16.0	45.0	38	10.0	42	134.0	73.0	22.0	M16X1.5	18.0	25.0	22.0	35.8
										28.0	M20X1.5	22.0		28.0	41.80
										36.0	M27X2.0	30.0	36.0	50.8	
63.0	90.0	1/2"	16.0	45.0	38	10.0	39	136.0	78.0	28.0	M20X1.5	22.0	32.0	28.0	41.8
										36.0	M27X2.0	30.0		36.0	50.8
										45.0	M33X2.0	39.0	45.0	61.8	
80.0	115.0	3/4"	20.0	50.0	45	13.0	46	159.0	90.5	36.0	M27X2.0	30.0	31.0	36.0	50.8
										45.0	M33X2.0	39.0		45.0	61.8
										56.0	M42X2.0	48.0	56.0	72.8	
100.0	130.0	3/4"	22.0	50.0	45	13.0	47	168.0	98.5	45.0	M33X2.0	39.0	35.0	45.0	61.8
										56.0	M42X2.0	48.0		56.0	72.8
										70.0	M48X2.0	62.0	70.0	88.8	
125.0	165.0	1"	22.0	58.0	58.0	18.0	51	197.0	117.0	56.0	M42X2.0	48.0	35.0	56.0	72.8
										70.0	M48X2.0	62.0		70.0	88.8
										90.0	M64X3.0	80.0	90.0	110.8	
160.0	205.0	1"	25.0	58.0	58.0	22.0	54	213.0	130.0	70.0	M48X2.0	62.0	32.0	63.0	88.8
										90.0	M64X3.0	80.0		85.0	110.8
										110.0	M80X3.0	100.0	110.0	131.8	
200.0	245.0	1 1/4"	25.0	76.0	76.0	24.0	66	267.0	163.0	90.0	M64X3.0	80.0	32.0	85.0	110.8
										110.0	M80X3.0	100.0		95.0	131.8
										140.0	M100X3.0	130.0	112.0	...	

**B. DOUBLE ROD CYLINDER**



NOTE :

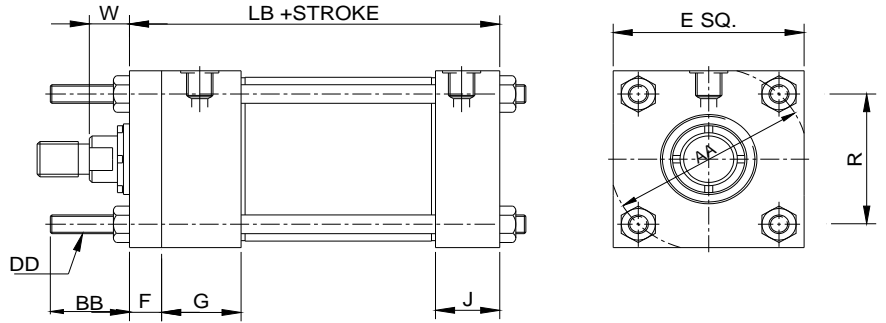
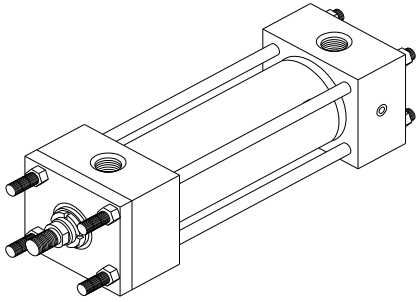
FRONT FLANGE MOUNTING CYLINDERS GLAND PLATE WILL BE SUBSTITUTED BY ROUND GLAND COVER PLATE.

\* FOR CAP TRUNNION CYLINDERS J CHANGES TO J1 FOR BORES 80 TO 200.

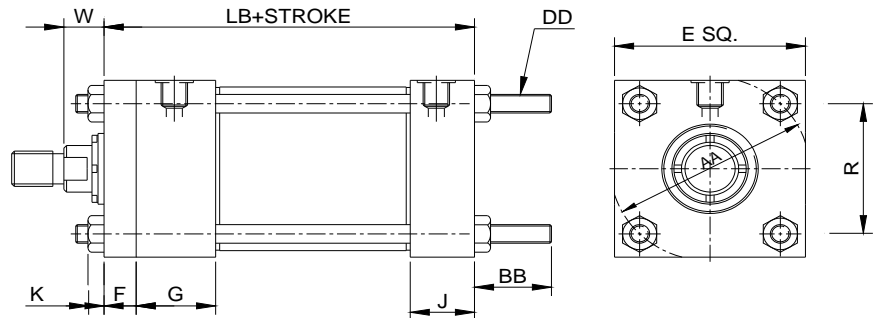
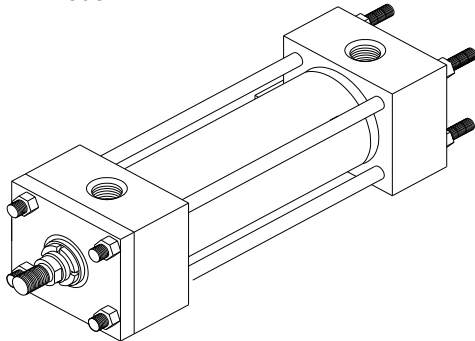
BORE Ø	40.0	50.0	63.0	80.0	100.0	125.0	160.0	200.0
PJ	71.0	73.0	81.0	92.0	101.0	117.0	130.0	160.0
LD	125.0	125.0	127.0	144.0	151.0	175.0	188.0	242.0
ZM	195.0	207.0	223.0	246.0	265.0	289.0	302.0	356.0

ALL OTHER DIMENSIONS REMAINS SAME AS PER SINGLE ROD CYLINDER

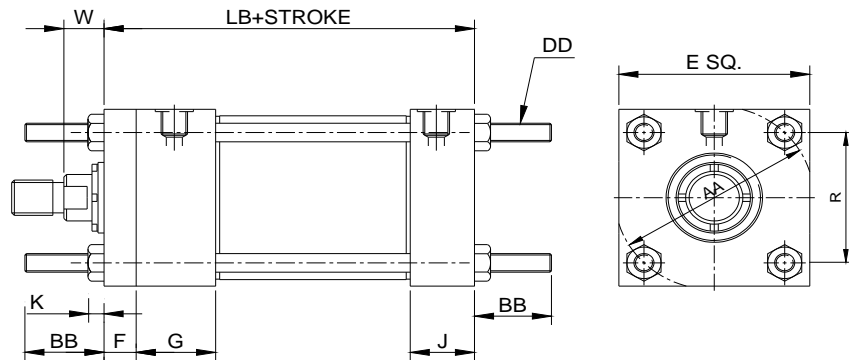
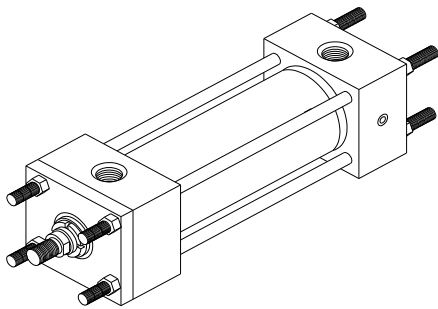
Front Tie Rod Extension Mounting  
HDI Model RF



Rear Tie Rod Extension Mounting  
HDI Model RR



Both Side Tie Rod Extension Mounting  
HDI Model RB



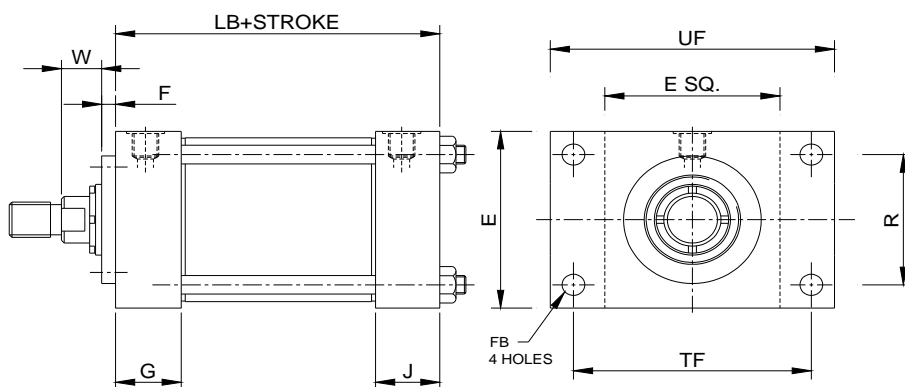
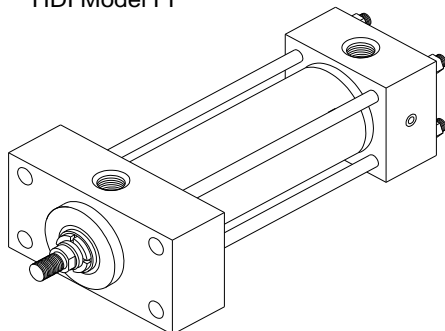
Dimensions - RF,RR & RB

For Rod End Dimensions - see Page 4

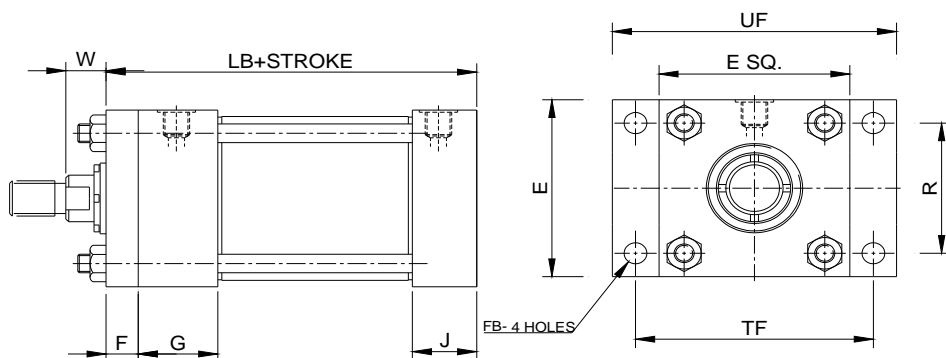
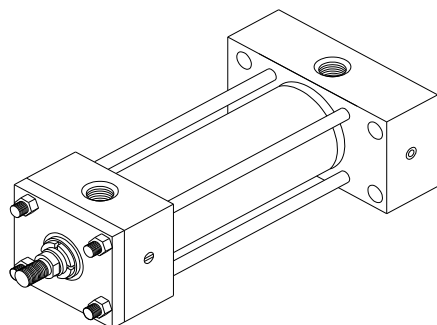
BORE	BB	DD	E	R	AA
40.0	35.0	M8X1.25	63.0	41.7	59
50.0	46.0	M12X1.75	75.0	53.04	74
63.0	46.0	M12X1.75	90.0	64.3	91
80.0	59.0	M16X2.0	115.0	79.9	117
100.0	59.0	M16X2.0	130.0	96.9	137
125.0	81.0	M22X2.0	165.0	125.9	178
160.0	92.0	M27X2.0	205.0	154.9	219
200.0	115.0	M30X2.0	245.0	195.19	269

All dimensions are in millimetres unless otherwise stated.

Head Rectangular Flange Mounting  
HDI Model FF



Cap Rectangular Flange Mounting  
HDI Model FR

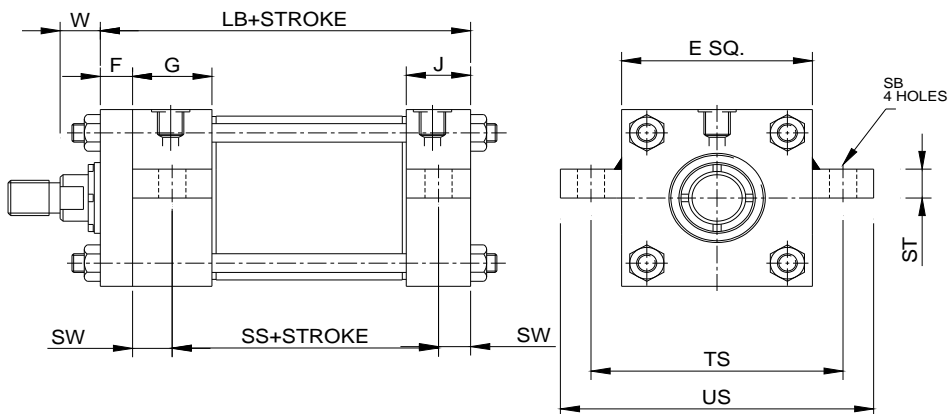
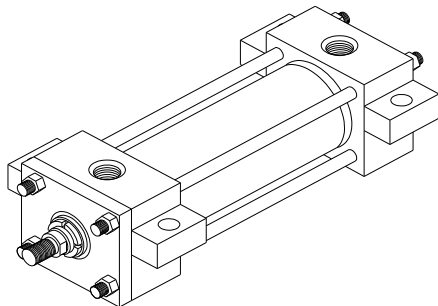


Dimensions - FF & FR For Rod End Dimensions - see Page 4

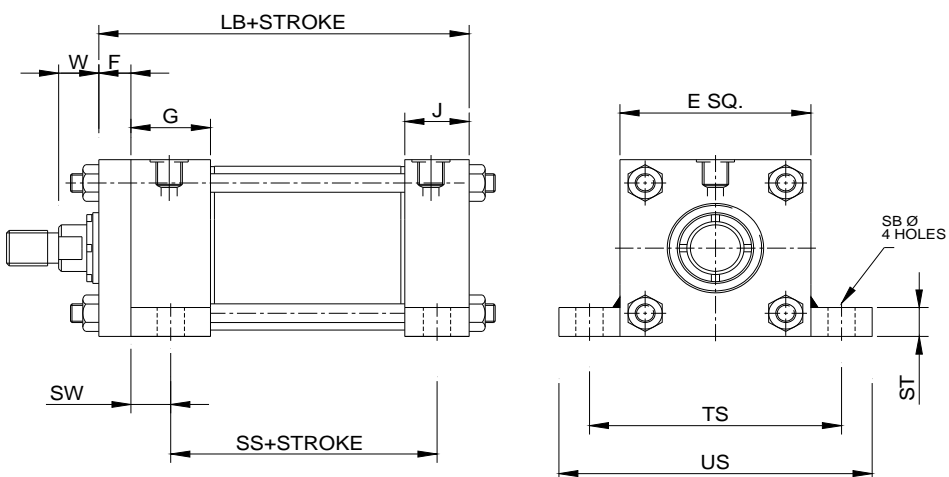
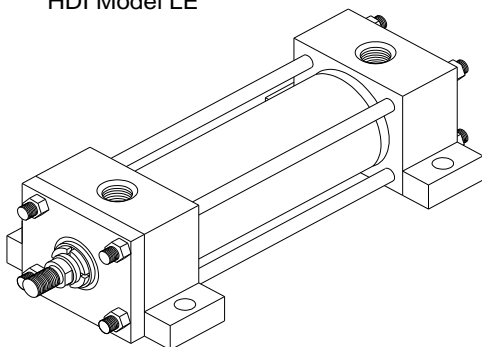
BOREØ	E	EE BSP	FB	TF	UF	R
40.0	63.0	3/8"	11	87.0	110.0	41.0
50.0	75.0	1/2"	14	105.0	130.0	52.0
63.0	90.0	1/2"	14	117.0	145.0	65.0
80.0	115.0	3/4"	18	149.0	180.0	83.0
100.0	130.0	3/4"	18	162.0	200.0	97.0
125.0	165.0	1"	22	208.0	250.0	126.0
160.0	205.0	1"	26	253.0	300.0	155.0
200.0	245.0	1 1/4"	33	300.0	360.0	190.0

All dimensions are in millimetres unless otherwise stated.

Center Lug Mounting  
HDI Model LC



Foot Lug Mounting  
HDI Model LE



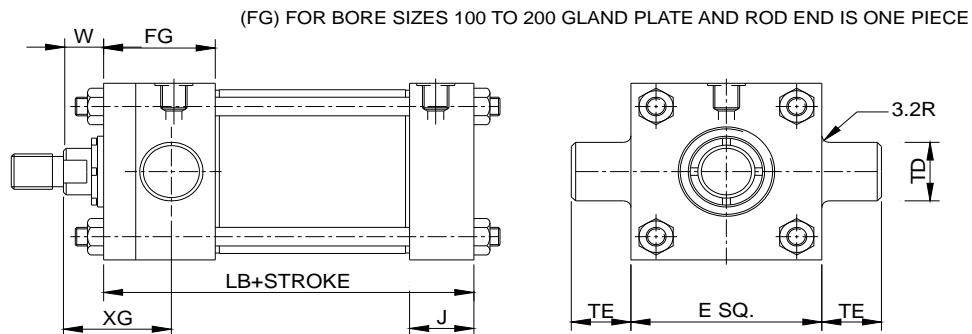
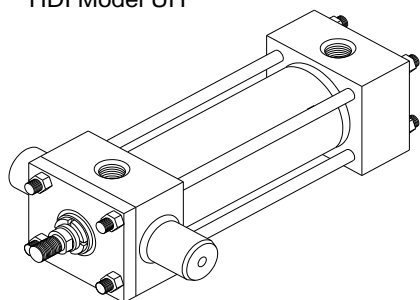
Dimensions - LE & LC

For Rod End Dimensions - see Page 4

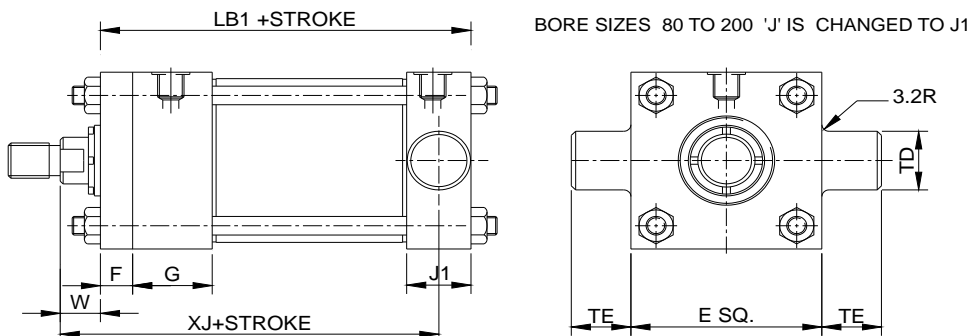
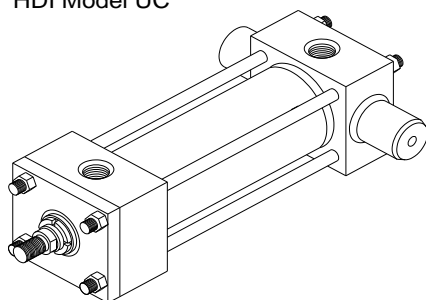
BOREØ	E	EE BSP	ØSB	SW	TS	US	SS	ST
40.0	63.0	3/8"	11.0	10.0	83.0	103.0	98.0	12.5
50.0	75.0	1/2"	14.0	13.0	102.0	127.0	92.0	19.0
63.0	90.0	1/2"	18.0	17.0	124.0	161.0	86.0	26.0
80.0	115.0	3/4"	18.0	17.0	149.0	186.0	105.0	26.0
100.0	130.0	3/4"	26.0	22.0	172.0	216.0	102.0	32.0
125.0	165.0	1"	26.0	22.0	210.0	254.0	131.0	32.0
160.0	205.0	1"	33.0	29.0	260.0	318.0	130.0	38.0
200.0	245.0	1 1/4"	39.0	35.0	311.0	381.0	172.0	44.0

All dimensions are in millimetres unless otherwise stated.

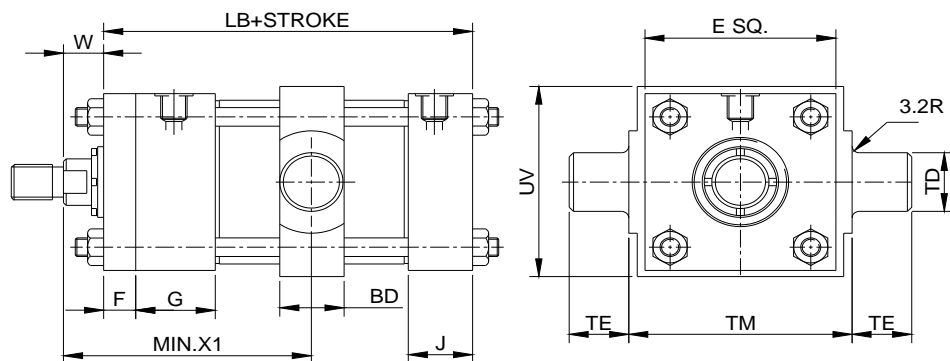
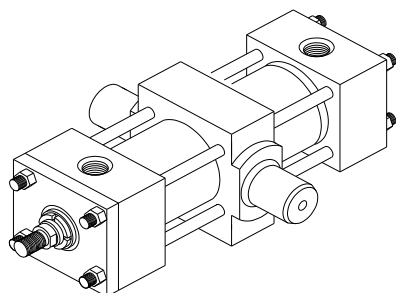
Head Trunnion Mounting  
HDI Model UH



Cap Trunnion Mounting  
HDI Model UC



Intermediate Trunnion Mounting  
HDI Model UM



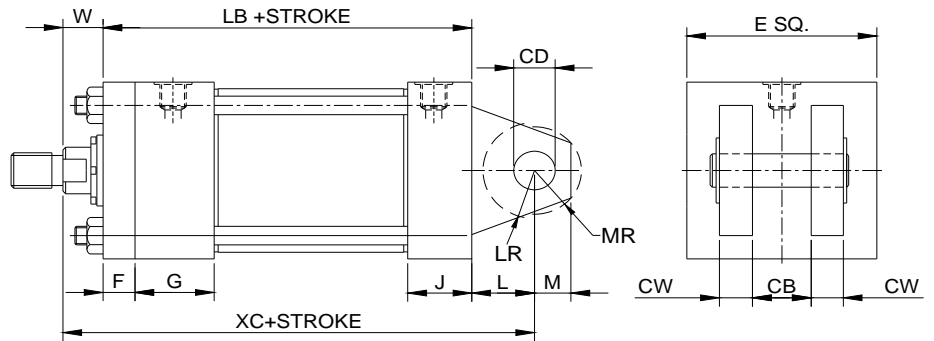
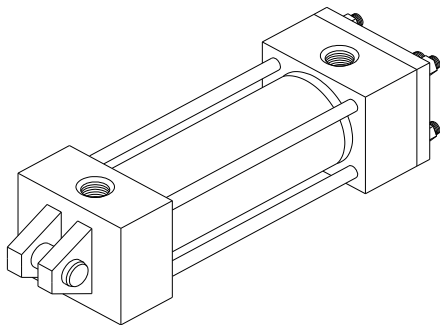
Dimensions - UH,UC & UM

For Rod End Dimensions - see Page 4

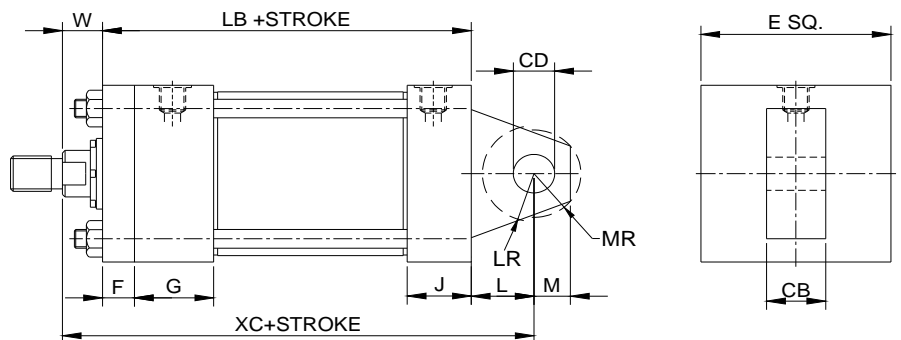
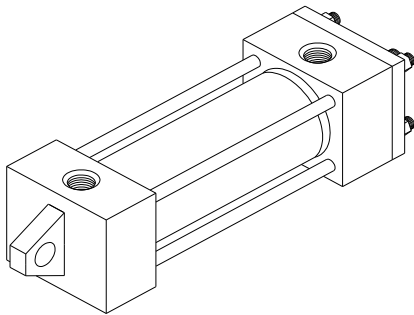
BORE	BD	E	TD f8	TE	TM	UV	XG	MIN.XI	XJ	FG	J1	LB1
40.0	30.0	63.0	20.0	16.0	76.0	76.0	57.0	97.0	134.0	..	..	128
50.0	40.0	75.0	25.0	20.0	89.0	89.0	64.0	107.0	140.0	..	..	134
63.0	40.0	90.0	32.0	25.0	100.0	95.0	70.0	114.0	149.0	..	..	136
80.0	50.0	115.0	40.0	32.0	127.0	127.0	76.0	127.0	168.0	..	50.0	164
100.0	60.0	130.0	50.0	40.0	140.0	140.0	71.0	138.0	187.0	72.0	58.0	181
125.0	73.0	165.0	63.0	50.0	178.0	178.0	75.0	153.0	209.0	80.0	71.0	210
160.0	90.0	205.0	80.0	63.0	215.0	216.0	75.0	161.0	230.0	83.0	88.0	243
200.0	110.0	245.0	100.0	80.0	279.0	280.0	85.0	190.0	276.0	101.0	108.0	299

All dimensions are in millimetres unless otherwise stated.

Female Clevis Mounting  
HDI Model CF



Male Clevis Mounting  
HDI Model CM



Dimensions - CM & CF For Rod End Dimensions - see Page 4

BOREØ	CB	CD	CW	L	LR	M	MR	XC
40	20	14	10	19	17	14	16	172
50	30	20	15	32	29	20	25	191
63	30	20	15	32	29	20	25	200
80	40	28	20	39	34	28	34	229
100	50	36	25	54	50	36	44	257
125	60	45	30	57	53	45	53	289
160	70	56	35	63	59	59	59	308
200	80	70	40	82	78	70	76	381

All dimensions are in millimetres unless otherwise stated.

## MODEL NUMBER

Each HDI Series THM Cylinder is assigned a model number. Consisting of coded symbols, the model number can be used by customers, sales representatives & factory personnel as a complete & accurate description of the cylinder.

To develop a model number for a HDI cylinder, select those

symbols that represents the cylinder features you wants, & put them down in sequence indicated by the example below. This example make use all of the 12 diff. model number symbols groups, although many model numbers will not require all, as in case where cushioning is not required, or where a double rod cylinder is not required, or where there are no special modifications, etc.

Feature	Description	Page	Symbol	Example
				HDI CYL : 40.0 - C - DR - UM - THM - 10 - R - C - 32 - S
Specification	Hydrodyne Industries cylinder	—	HDI CYL	
Bore	Specify in mm	—	—	
Cushioned-Head	Used only if cushioned required		C	
ROD	Use if double rod cylinder Use if single rod cylinder	3	DR SR	
Mounting Style	Front Tie Rods Extended	6	RF	
	Rear Tie Rods Extended	6	RR	
	Both End Tie Rod Extended	6	RB	
	Front Flange	5	FF	
	Rear Flange	5	FR	
	Foot Lug	8	LE	
	Centre lug	8	LC	
	Head End Trunnion	9	UH	
	Cap End Trunnion	9	UC	
	Intermediate Trunnion	9	UM	
	Male Clevis	7	CM	
Female Clevis	7	CF		
Series	Used in all THM Model nos.		THM	
Piston Rod No .	Number as shown "Rod End Dimensions"	3		
	STD1: 1		1	
	STD2: 2		2	
	STD3: 3		3	
Ports	BSP (parallel thread)		R	
Cushion - Cap	Used only if cushion required		C	
Stroke	Specify in mm		—	
special features	One or morwe of the following Air Bleeds Over Size Ports Rod End Bellows Special Seals Stop Tube Stroke Adjuster Tie Rod Supports ...or any other non-standard features		S	

Cylinder  
Division



**HYDRO DYNE INDUSTRIES**

E-MAIL : [hydin@bom4.vsnl.net.in](mailto:hydin@bom4.vsnl.net.in)  
[www.hydrodyneindustries.com](http://www.hydrodyneindustries.com)

# REPLACEMENT PARTS AND SERVICE

## SEAL KIT FOR HDI CYLINDERS

Seal kit for THM series cylinders simplify the ordering & maintenance processes. When ordering the seal kits, please refers to the identification plate on the cylinder body & supply the following information.

Sealkit HDI Cyl - Bore - Mounting - Type - Rod

For Example :

Sealkit HDI Cyl - 40.0 - CM - THM - 10

Where, 40.0 = Cylinder Bore

CM = Clevis Mounting

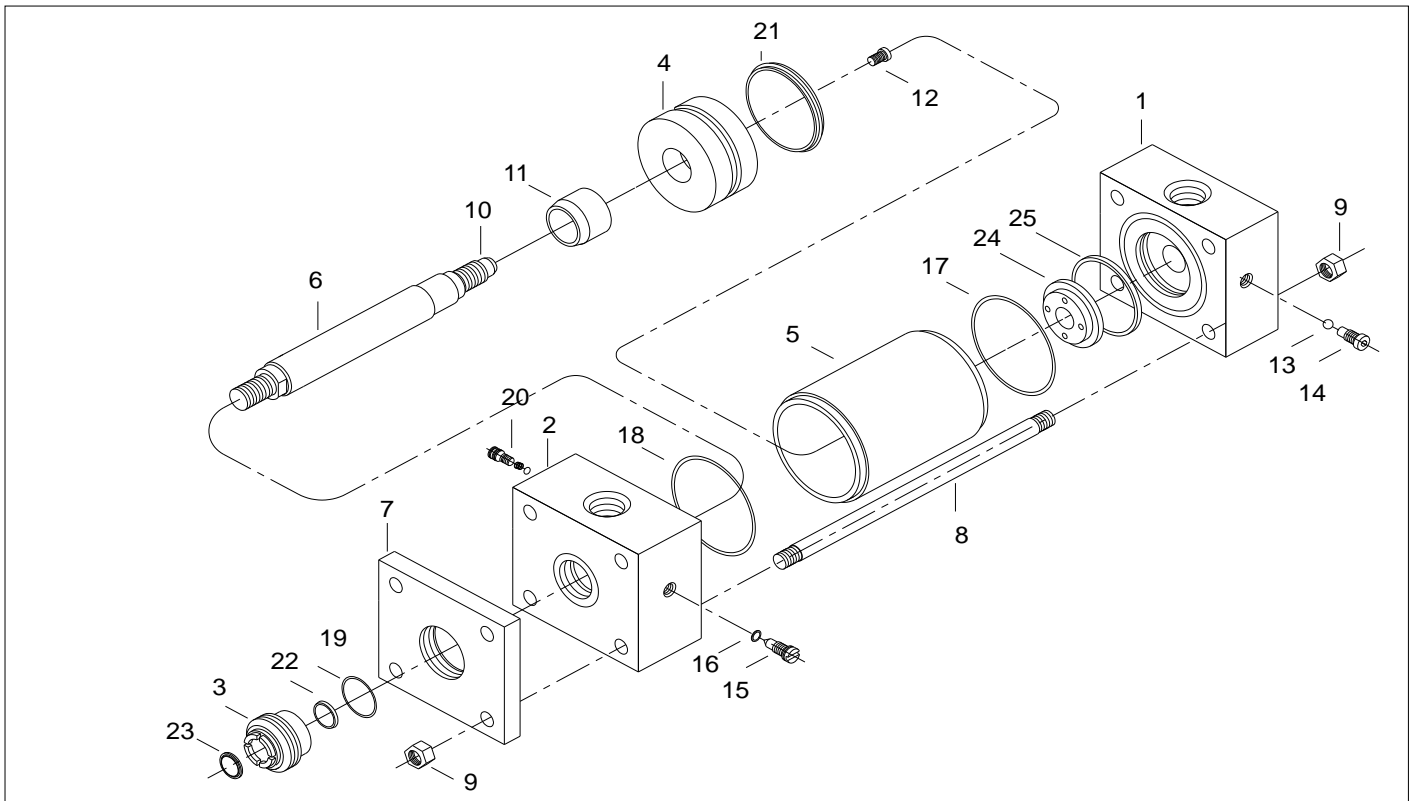
THM = High Pressure Metric Series

10 = STD1. Rod for 40.0 Bore

## Key to Part Number

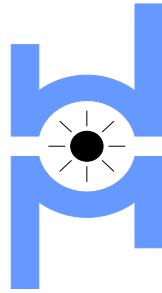
- |                               |                                          |
|-------------------------------|------------------------------------------|
| 1) Cap End                    | 17) Cap End 'O' Ring                     |
| 2) Rod End                    | 18) Rod End 'O' Ring                     |
| 3) Gland / Cartridge          | 19) Gland 'O' Ring                       |
| 4) Piston                     | 20) Check valve                          |
| 5) Pipe                       | 21) Piston Seal std+optional             |
| 6) Piston Rod                 | 22) Gland 'U' Seal std+optional          |
| 7) Flange                     | 23) Rod Wiper Seal std+optional          |
| 8) Tie Rod                    | 24) Cap end floating check & cushi. seat |
| 9) Nut For Tie Rod            | 25) Holding circlip                      |
| 10) Cap End Cushioning Spear  |                                          |
| 11) Rod End Cushioning Sleeve |                                          |
| 12) Locking Pin - Piston Rod  |                                          |
| 13) Needle o ring             |                                          |
| 14) Needle valve              |                                          |
| 15) Needle Valve              |                                          |
| 16) Needle Valve 'O' Ring     |                                          |

## EXPLODED VIEW THM SERIES CYLINDER



### Repairs :

Although THM Cylinders are designed to make onsite maintenance or repairs as easy as possible, some operation can only be carried out in our factory. For Repairing cylinder in our factory the replacement parts, which are necessary to return it to 'as good as new' condition. Should the condition of the returned cylinder be such that repairs would be uneconomical, you will be notified.



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