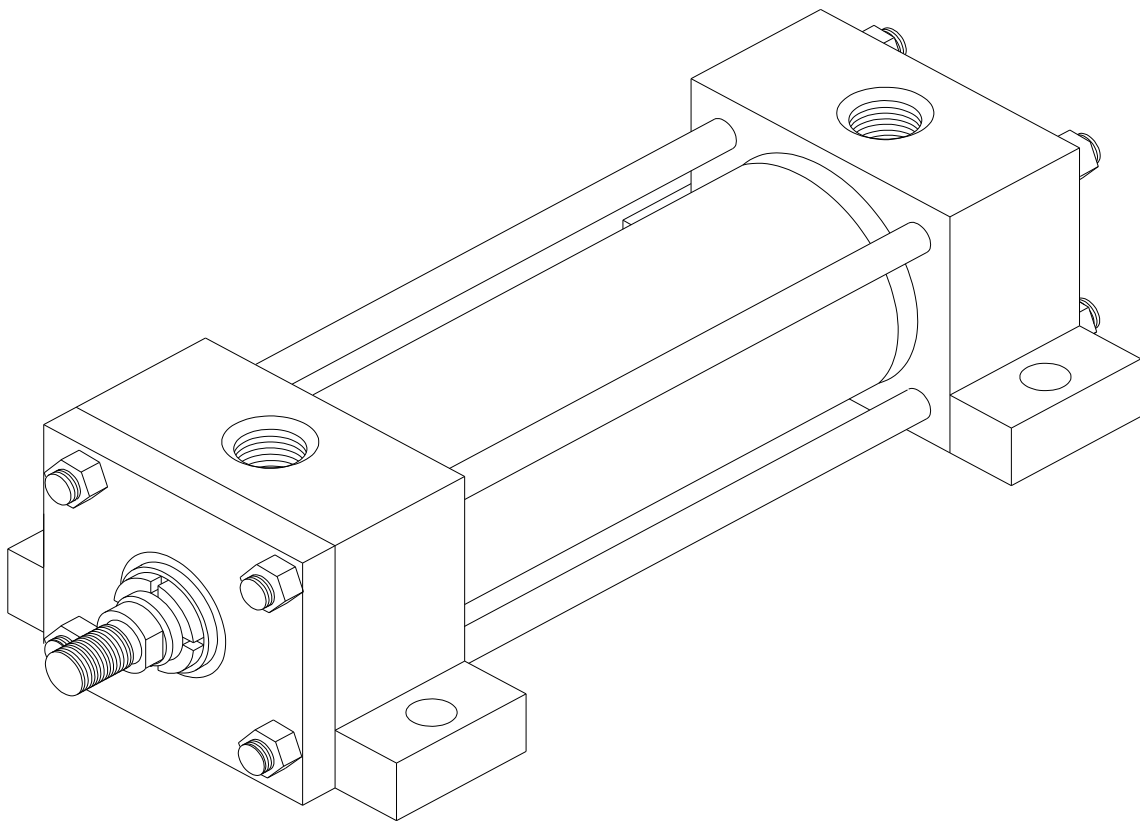


Hydraulic Cylinders (Metric)

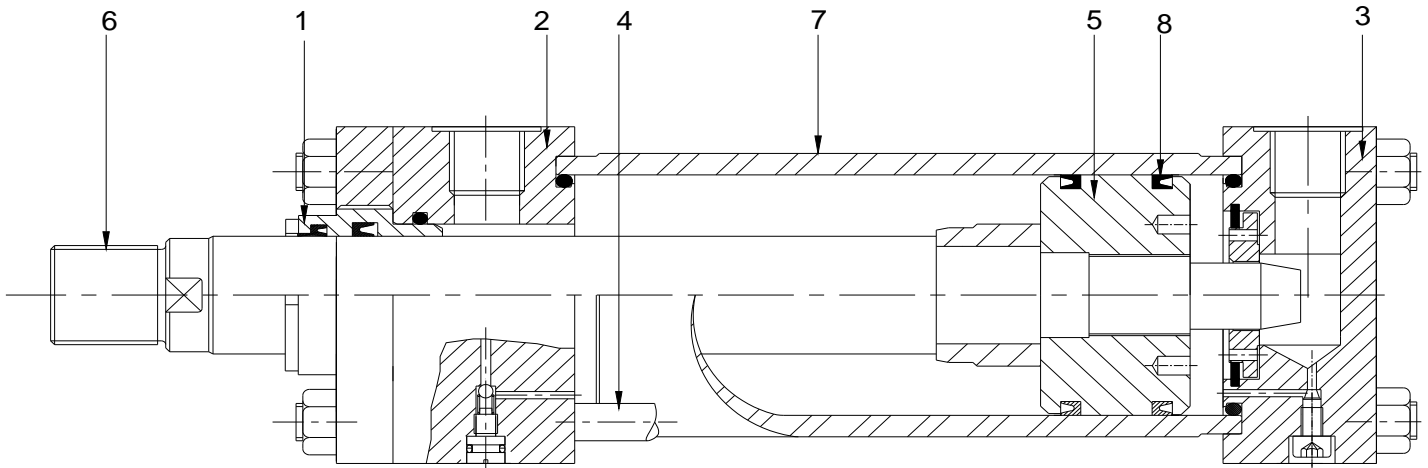
TLM Series

Pressure 60 Bars



HYDRO DYNE
INDUSTRIES

Total Fluidpower Performance



Hydrodyne TLM 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 TLM 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

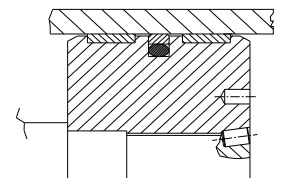
The cylinder is made from heavy wall steel tubing ,honed to a micro-finish bore . All hydrodyne series TLM cylinders are constructed with "align - a -groove "making precision cylinders alignment quick and easy . the grooves are wide and machined concentric with the internal diameter of the body and piston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

8.The Piston Seals

Standard piston seal is two u cup seals of nitrile rubber. 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.

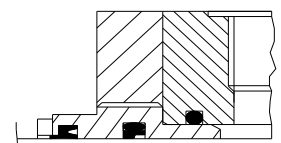
Low Friction Pistons

employ a glyd ring, 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 one low friction PTFE step seals and a dual function nitrile wiper cum U seal.

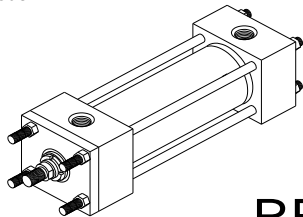


TLM SERIES LOW PRESSURE TIE ROD TYPE HYDRAULIC CYLINDER

SPECIFICATIONS

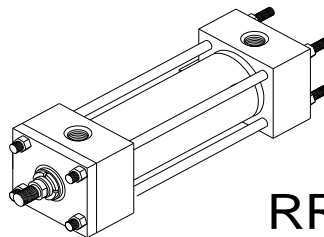
- 1. MAX. OPERATING PRESSURE --- 60 BAR (standard)
- 2. TEMPERATURE --- -20°C to +80°C with standard nitrile/polyurethane seals.
Higher temperature with viton/teflon seals.
- 3. MEDIUM --- Mineral oil
Cylinders to operate with water based fluids available on request.

Front Tie Rod Extension Mounting
HDI Model RF



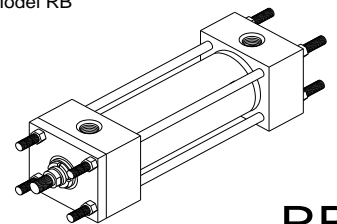
RF

Rear Tie Rod Extension Mounting
HDI Model RR



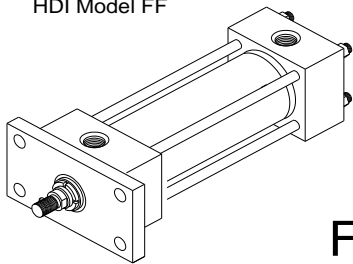
RR

Both Side Tie Rod Extension Mounting
HDI Model RB



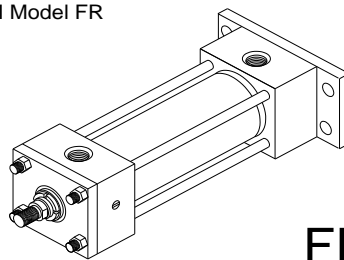
RB

Head Rectangular Flange Mounting
HDI Model FF



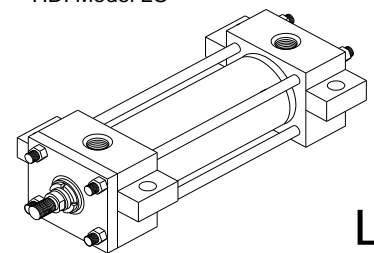
FF

Cap Rectangular Flange Mounting
HDI Model FR



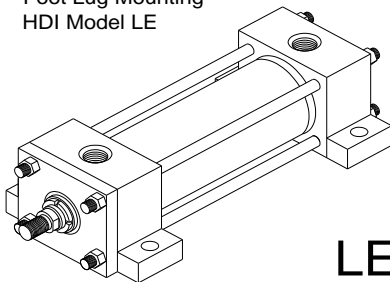
FR

Center Lug Mounting
HDI Model LC



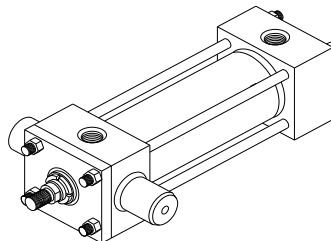
LC

Foot Lug Mounting
HDI Model LE



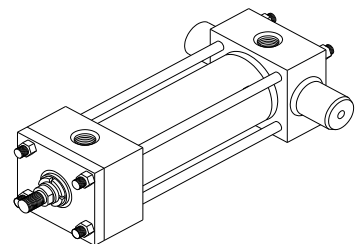
LE

Head Trunnion Mounting
HDI Model UH



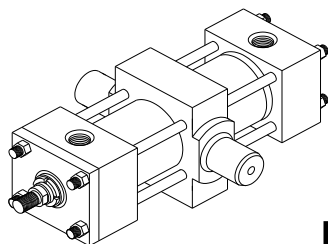
UH

Cap Trunnion Mounting
HDI Model UC



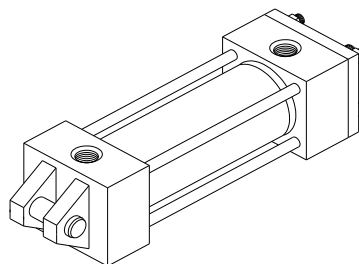
UC

Intermediate Trunnion Mounting
HDI Model UM



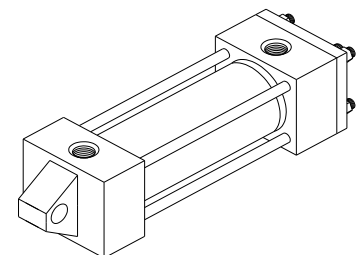
UM

Female Clevis Mounting
HDI Model CF



CF

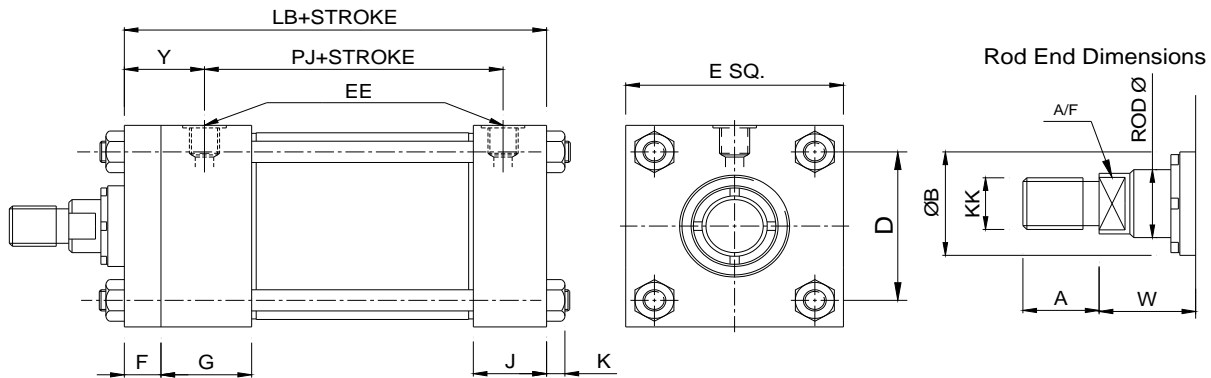
Male Clevis Mounting
HDI Model CM



CM

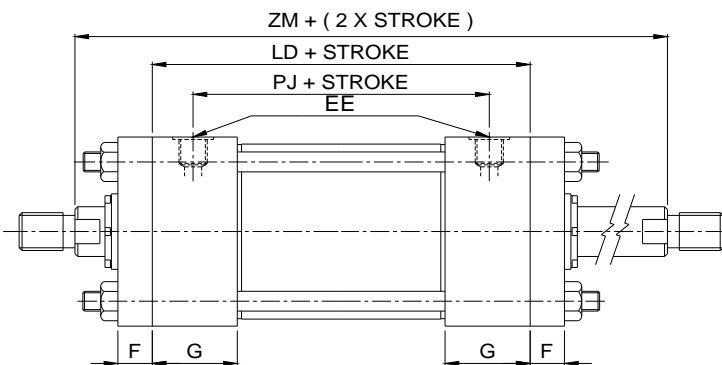
BASIC CYLINDER TLM SERIES

A. SINGLE ROD CYLINDER



BORE Ø	E SQ.	EE BSP	F	G	J	K	Y	STROKE		RODØ	KK	A/F	W	A	ØB	D
								LB	PJ							
40.0	53.0	3/8"	10.0	37	25	6.5	33	102	57	18.0	M14X1.5	15.0	25.0	18.0	29.8	36
50.0	63.0	3/8"	10.0	37	25	10.0	33	102	57	18.0	M14X1.5	15.0	25.0	18.0	29.8	47
										28.0	M20X1.5	22.0		28.0	41.80	
63.0	76.0	3/8"	10.0	38	26	10.0	35	105	60	28.0	M20X1.5	22.0	32.0	28.0	41.8	56
										36.0	M27x2.0	30.0		36.0	50.8	
80.0	95.0	1/2"	16.0	45	33	13.0	43	124	67	36.0	M27x2.0	30.0	31.0	36.0	50.8	70
										45.0	M33X2.0	39.0		45.0	61.8	
100.0	114.0	1/2"	16.0	45	33	13.0	43	124	67	45.0	M33X2.0	39.0	35.0	45.0	61.8	84
										56.0	M42X2.0	48.0		56.0	72.8	
125.0	140.0	1/2"	16.0	45	33	18.0	43	130	73	56.0	M42X2.0	48.0	35.0	56.0	72.8	104
										70.0	M48X2.0	62.0		63.0	88.8	
160.0	175.0	3/4"	20.0	51	38	22.0	50	146	79	70.0	M48X2.0	62.0	32.0	63.0	88.8	124
										90.0	M64x3	80.0		85.0	110.8	

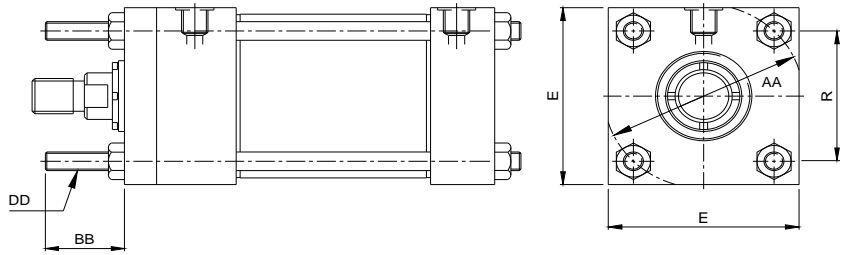
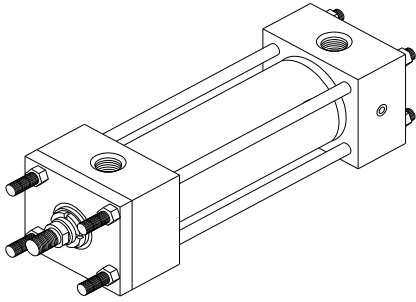
B. DOUBLE ROD CYLINDER



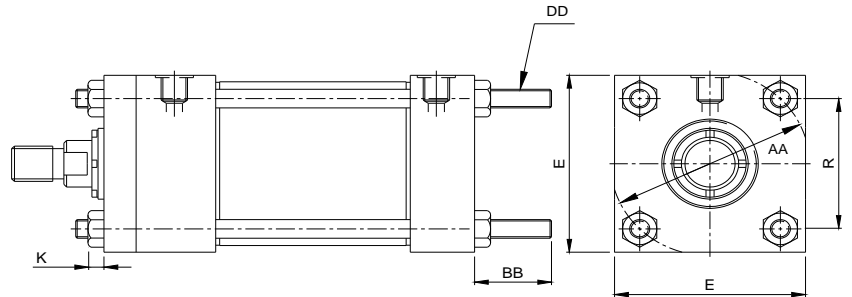
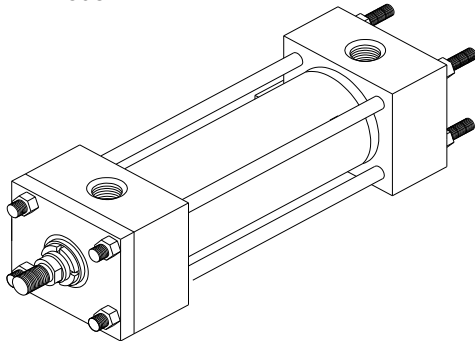
BOREØ	40.0	50.0	63.0	80.0	100.0	125.0	160.0
PJ	58	58	57	66	66	72	79
LD	104	104	107	120	120	126	139
ZM	174	174	187	216	222	228	255

ALL OTHER DIMENSIONS REMAINS SAME AS PER SINGLE ROD CYLINDER

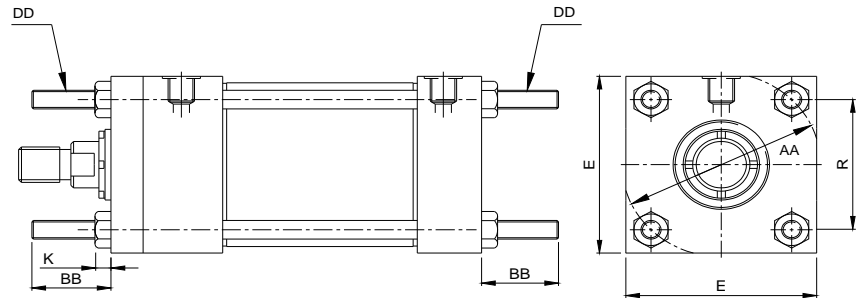
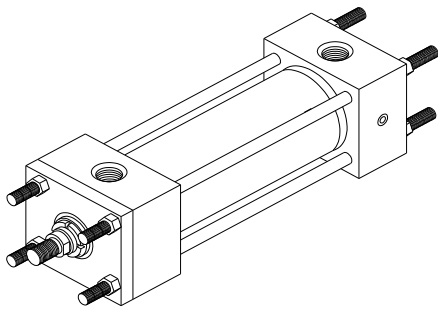
Front Tie Rod Extension Mounting
HDI Model RF



Rear Tie Rod Extension Mounting
HDI Model RR



Both Side Tie Rod Extension Mounting
HDI Model RB



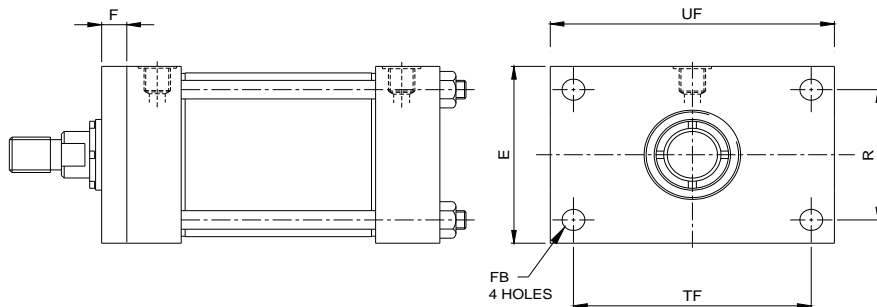
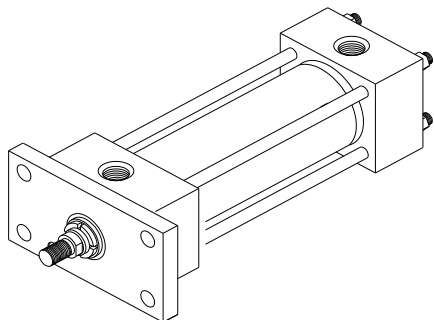
Dimensions - RF,RR & RB

For Rod End Dimensions - see Page 4

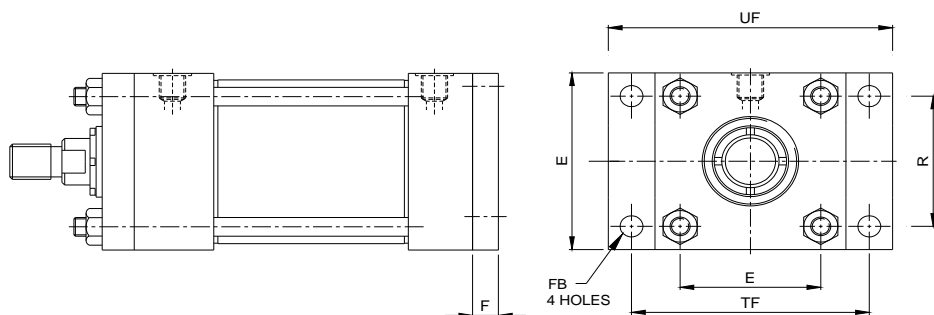
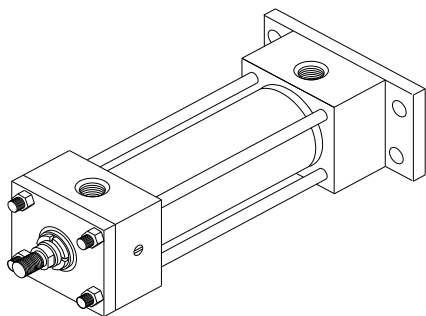
BORE	AA	BB	DD	E	R
40.0	50.90	25.0	M6X1.0	53.0	36
50.0	66.45	29.0	M8X1.25	63.0	47
63.0	79.2	29.0	M8X1.25	76.0	56
80.0	98.98	35.0	M10x1.5	94.0	70
100.0	118.78	35.0	M10x1.5	114.0	84
125.0	147.05	46.0	M12x1.75	140.0	104
160.0	175.35	46.0	M16x2.0	175.0	124

All dimensions are in millimetres unless otherwise stated.

Head Rectangular Flange Mounting
HDI Model FF



Cap Rectangular Flange Mounting
HDI Model FR

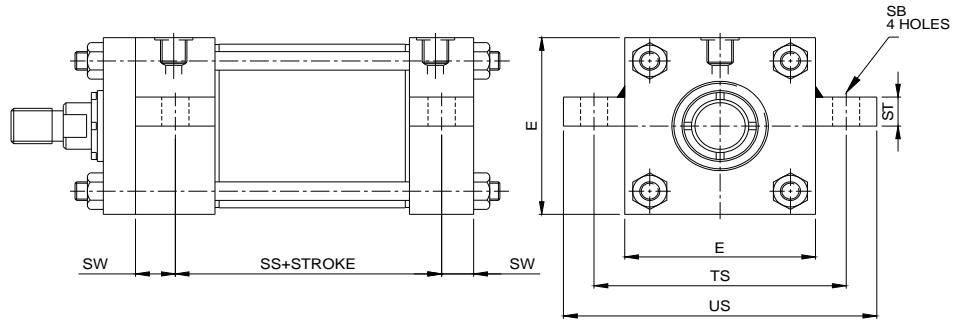
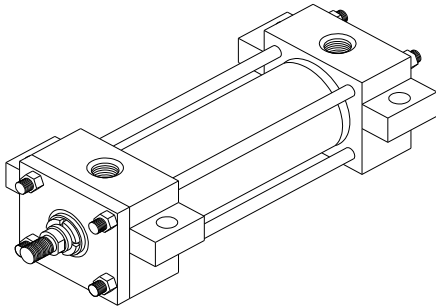


Dimensions - FF & FR For Rod End Dimensions - see Page 4

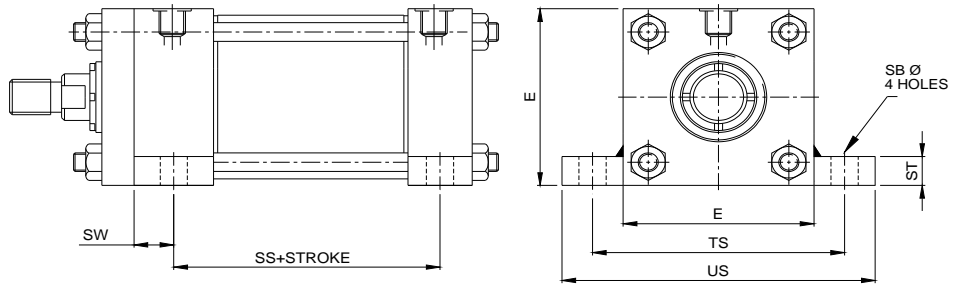
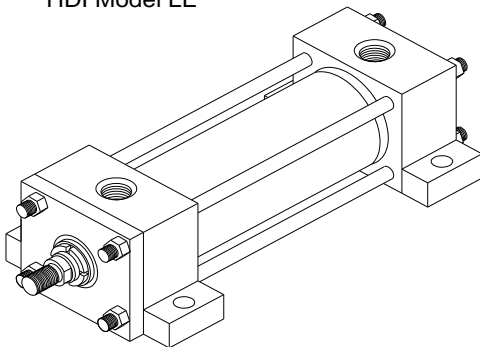
BOREØ	E	F	FB	TF	UF	R
40.0	53.0	10.0	8	70	86	36
50.0	63.0	16.0	10	86	105	47
63.0	76.0	16.0	10	98	117	56
80.0	94.0	20.0	11	119	140	70
100.0	114.0	22.0	11	138	160	84
125.0	140.0	22.0	14	168	194	104
160.0	175.0	25.0	14	194	219	124

All dimensions are in millimetres unless otherwise stated.

Center Lug Mounting
HDI Model LC



Foot Lug Mounting
HDI Model LE



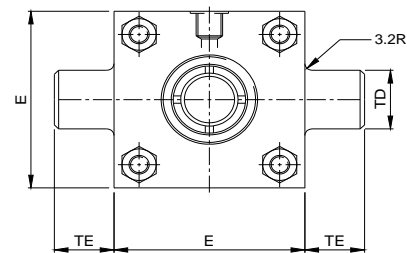
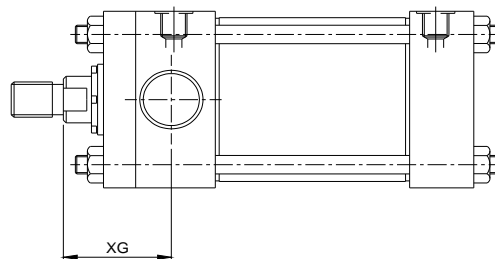
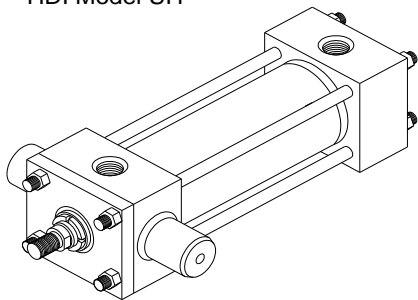
Dimensions - LE & LC

For Rod End Dimensions - see Page 4

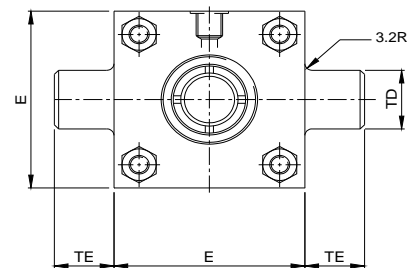
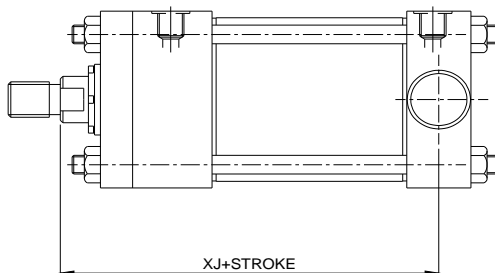
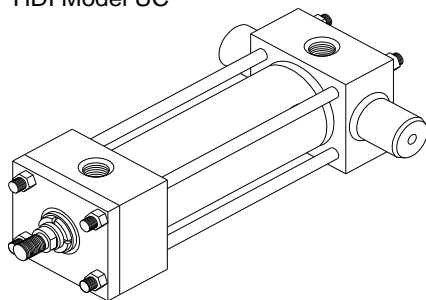
BOREØ	E	ØSB	SW	TS	US	SS	ST	LB
40.0	53.0	11.0	10.0	70	89	72	12.7	128.0
50.0	63.0	11.0	10.0	83	102	72	12.7	134.0
63.0	76.0	11.0	10.0	95	114	75	12.7	136.0
80.0	94.0	14.0	12.7	120	146	82.6	19.0	159.0
100.0	114.0	14.0	12.7	140	165	82.6	19.0	168.0
125.0	140.0	21.0	18.0	175	210	78	25.0	197.0
160.0	175.0	21.0	18.0	200	235	90	25.0	213.0

All dimensions are in millimetres unless otherwise stated.

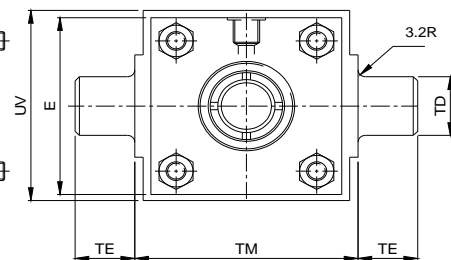
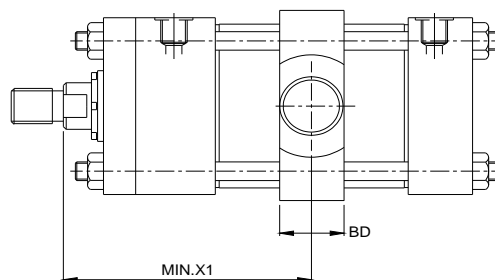
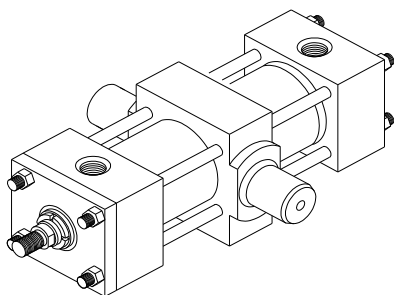
Head Trunnion Mounting
HDI Model UH



Cap Trunnion Mounting
HDI Model UC



Intermediate Trunnion Mounting
HDI Model UM



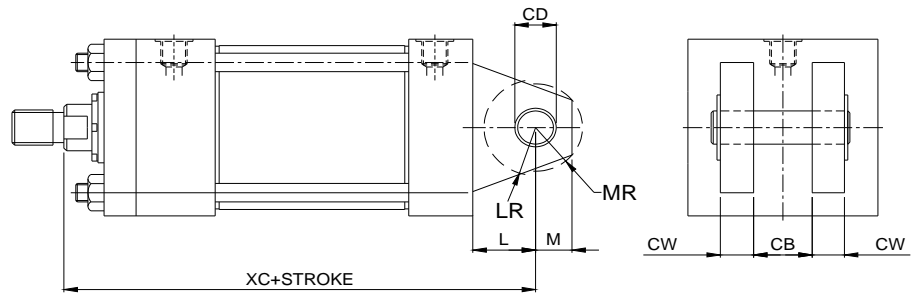
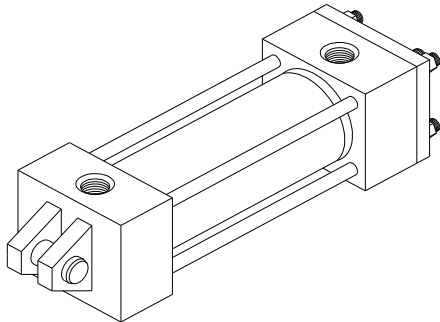
Dimensions - UH,UC & UM

For Rod End Dimensions - see Page 4

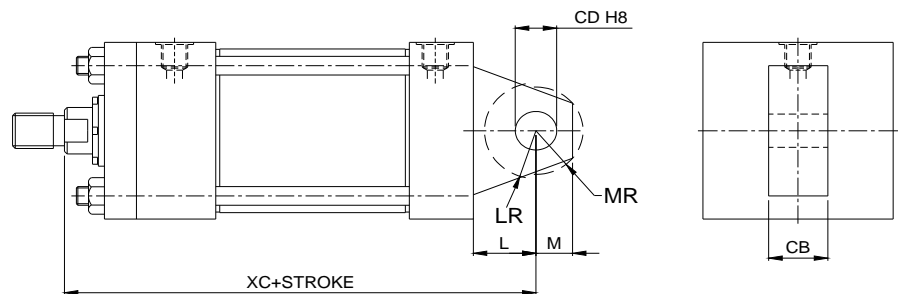
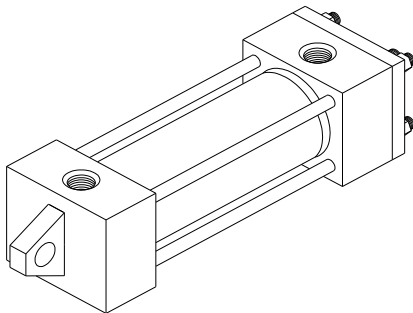
BORE	BD	E	TD f8	TE	TM	UV	XG	MIN.X1	XJ
40.0	30.0	53.0	25.0	25.0	63	63	54	93	114.5
50.0	38.0	63.0	25.0	25.0	76	76	54	97	114.5
63.0	38.0	76.0	25.0	25.0	89	89	60	103	122.5
80.0	50.0	94.0	25.0	25.0	114	108	70	123	140.5
100.0	50.0	114.0	25.0	25.0	133	127	73	125	143.5
125.0	50.0	140.0	25.0	25.0	159	152	73	125	149.5
160.0	63.0	175.0	35.0	35.0	193	178	83	145	165.0

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	40.0	50.0	63.0	80.0	100.0	125.0	160.0
CB	19.0	19.0	19.0	32.0	32.0	32.0	38.0
ØCD	12.7	12.7	12.7	19.0	19.0	19.0	25.4
CW	12.7	12.7	12.7	16.0	16.0	16.0	19.0
L	19.0	19.0	19.0	31.0	31.0	31.0	38.0
LR	19.0	19.0	19.0	25.0	25.0	25.0	38.0
M	12.7	12.7	12.7	19.0	19.0	19.0	25.4
MR	16.0	16.0	16.0	24.0	24.0	24.0	30.0
XC	146	146	154	187	190	196	222

All dimensions are in millimetres unless otherwise stated.

MODEL NUMBER

Each HDI Series TLM 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 - TLM - 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	4	DR SR	↑
Mounting Style	Front Tie Rods Extended	..	RF	↑
	Rear Tie Rods Extended	..	RR	
	Both End Tie Rod Extended	..	RB	
	Front Flange	..	FF	
	Rear Flange	..	FR	
	Foot Lug	..	LE	
	Centre lug	..	LC	
	Head End Trunnion	..	UH	
	Cap End Trunnion	..	UC	
	Intermediate Trunnion	..	UM	
	Male Clevis	..	CM	
	Female Clevis	..	CF	
Series	Used in all TLM Model nos.		TLM	↑
Piston Rod No .	Number as shown "Rod End Dimensions" STD1: 10 STD2: 20	4	10 20	↑
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	↑

REPLACEMENT PARTS AND SERVICE

SEAL KIT FOR HDI TLM CYLINDERS

Seal kit for TLM 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 - TLM - 10

Where, 40.0 = Cylinder Bore

CM = Clevis Mounting

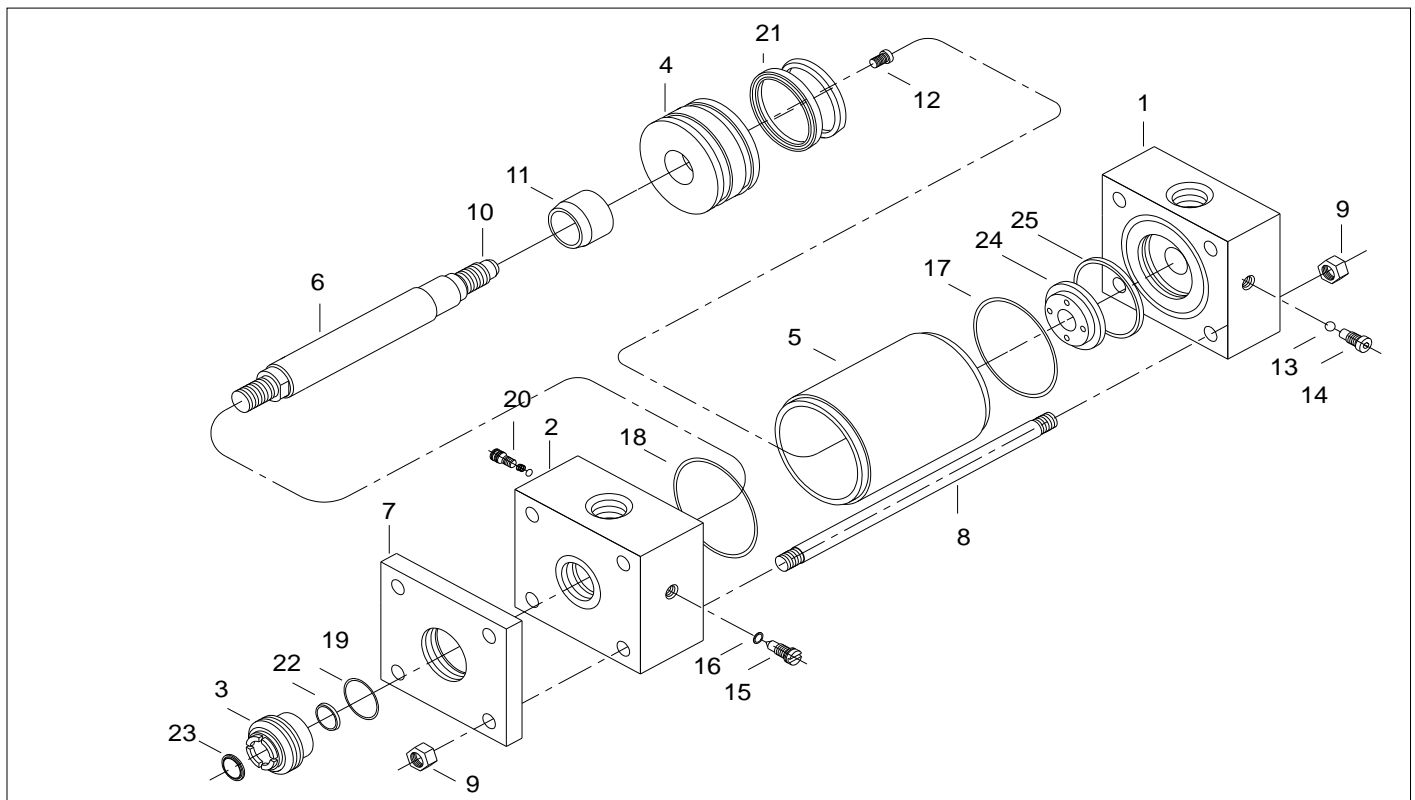
TLM = Low Pressure Metric Series

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 TLM SERIES CYLINDER



Repairs :

Although TLM Cylinders are designed to make onsite maintenance or repairs as easy as possible, some operations 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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