



**FLUID POWER
SOLUTIONS**



TECHNICAL CATALOGUE

HYDRAULICS • HYDRO-PNEUMATICS • PNEUMATICS
CLAMPING DEVICES • WORK HOLDING SOLUTIONS



Year Established: 1972

Quality certification: ISO 9001-2015

Products manufactured: Hydraulic, Hydro-Pneumatic and Pneumatic Cylinders, Systems, Clamping Devices and Work Holding Solutions.

Segments Served: Machine Tool, Rubber & Plastics, Steel Making, Material Handling, Factory Automation, Renewable Energy, Offshore, Municipal and Agriculture equipment.

Business profile: With nearly five decades of experience in the field of Fluid Power, PREAC is a name synonymous with Quality & Reliability. Supported by the latest machinery and testing equipment, PREAC offers a wide range of standard and customized solutions for the discerning customer. The company today represents the highest standards in products and services, ever growing and ever improving its processes to place you right on the top.



www.preacindia.com

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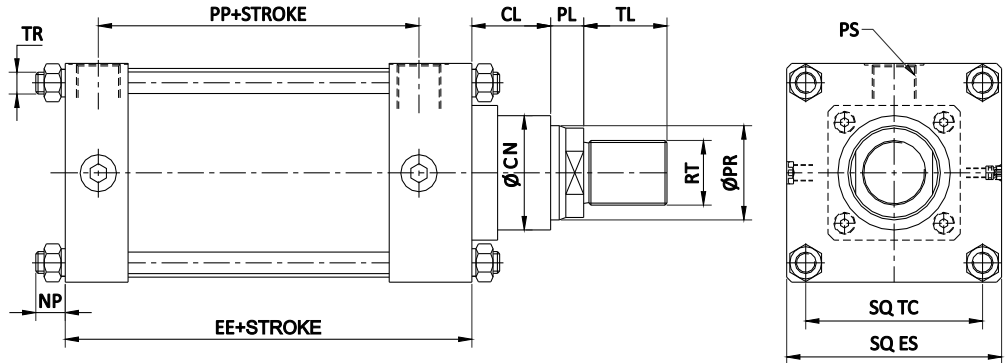


Pneumatic Cylinders - LA Series

- Rated Pressure 10 kg/cm²
- Cylinder bore diameters up to 450mm
- Temperature range:- -20°C to 80°C. (optional seals for temp. up to 180°C)
- Wear and Corrosion resistant, hard-chrome plated piston rods for long seal life



BASIC CYLINDER



FOR BORE Ø75 & ABOVE
SEPARATE CARTRIDGES ARE
PROVIDED AS SHOWN IN
DOTTED LINE

SPECIFICATION OF MATERIALS

END COVERS : Aluminium/Steel

CYLINDER BARREL : Aluminium/Steel

PISTON : Aluminium/Steel

PISTON BEARING : Teflon / Teflon composite for maximum rigidity and minimum friction

PISTON ROD : Medium carbon steel, ground Hard-chrome plated & polished to a maximum roughness of Ra=0.4 microns

PISTON ROD BEARING : PB / Teflon composite for maximum rigidity and minimum friction

SEALING SYSTEM : Wear compensating precisely manufactured NBR/Polyurethane seals. Special sealing systems also available

MOUNTINGS : Accurately machined steel suitable for heavy duty application

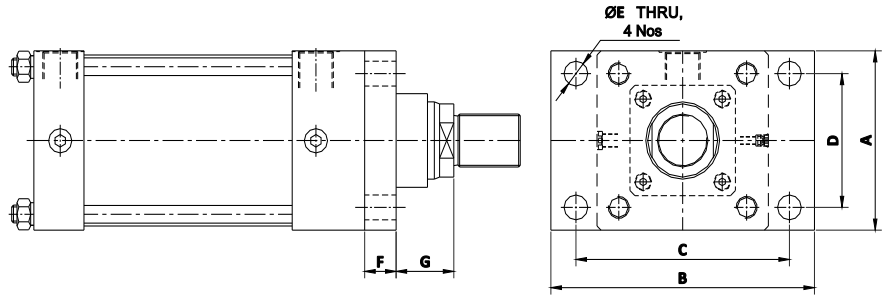
TIE RODS : Cold drawn steel

BORE DIA	PR DIA	ES (Sq)	RT	PS (BSP)	TR	CN	EE	CL	PL	TL	NP	PP	TC
25	12	38	M8x1.25	1/8"	M6x1	25	70	18	10	15	7	54	27.5
32	16	50	M12x1.25	1/8"	M6x1	27	79	20	12	20	8	60	33
38	16	50	M12x1.25	1/4"	M6x1	27	91	27	12	20	8	67	37
50	19	64	M12x1.25	1/4"	M8x1.25	32	96	29	12	20	10	74	48
63	25	75	M20x1.5	3/8"	M10x1.5	40	108	33	15	30	12.5	82	58
75	25	90	M20x1.5	3/8"	M10x1.5	40	122	38	15	30	12.5	94	70
100	32	114	M24x1.5	3/8"	M12x1.75	48	130	44	18	35	15	102	90
125	38	140	M30x2	1/2"	M14x1.5	60	148	64	20	40	17	115	109
150	38	168	M30x2	1/2"	M16x2	60	151	64	20	40	19	118	131
200	45	220	M36x2	3/4"	M20x2.5	75	187	64	22	45	22	145	172
250	57	270	M42x2	1"	M24x2	100	210	76	25	50	26	160	210
300	57	320	M42x2	1"	M24x2	100	220	76	25	50	26	170	245

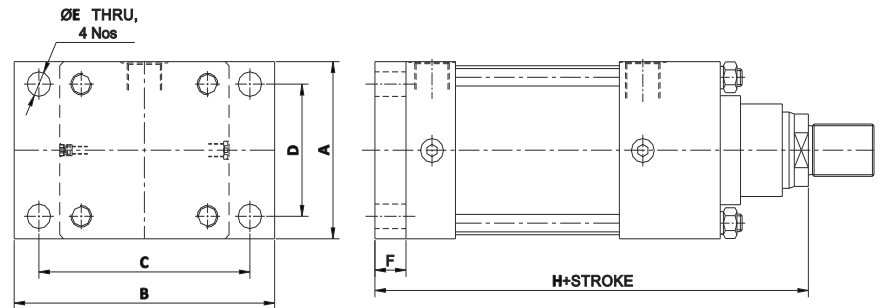
Standard Mountings LA Series



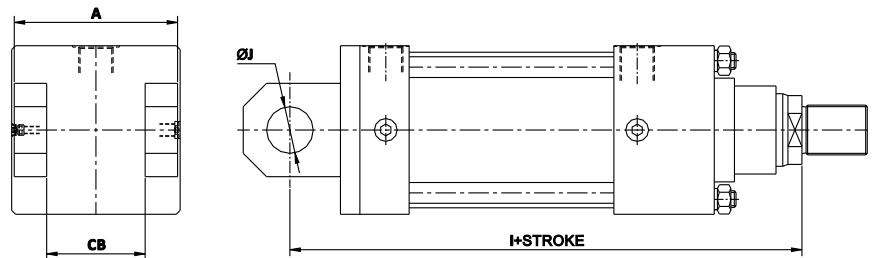
Front Flange (FF)



Rear Flange (RF)



Rear Clevis (RC)



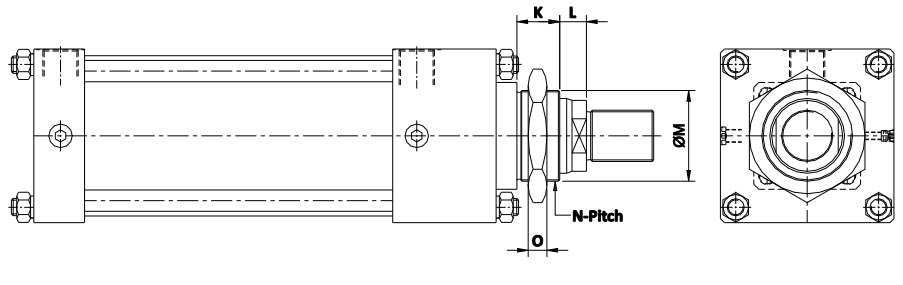
DIMENSIONAL DETAILS

BORE	25	32	38	50	63	75	100	125	150	200	250	300
A	38	50	50	64	75	90	112	140	165	220	270	320
B	60	84	84	105	113	133	178	203	242	315	397	448
C	50	68	68	86	94	111	146	172	205	268	340	384
D	24	34	34	48	56	67	86	108	128	168	210	246
E	6.5	8.5	8.5	8.5	10.5	10.5	13	14.5	16.7	20	26.5	26.5
F	6	8	8	10	12	15	16	20	22	26	30	35
G	22	24	31	31	36	38	46	64	62	60	71	66
H	104	119	138	147	168	190	208	252	257	299	341	356
I	113	129	156	166	186	210	250	302	311	359	-	-
J	10	12	12	16	16	19	19	25	32	38	-	-
CB	18	30	30	32	44	50	74	88	118	160	200	220

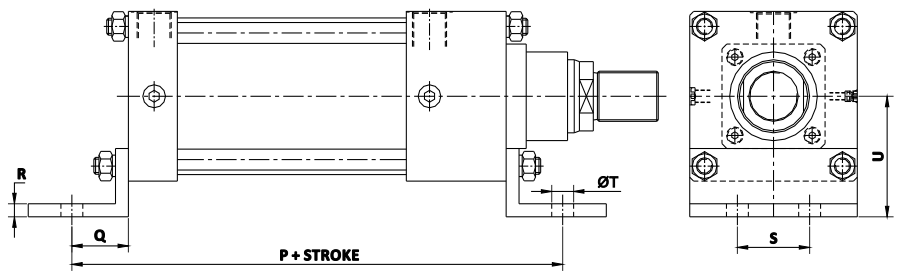


Standard Mountings LA Series

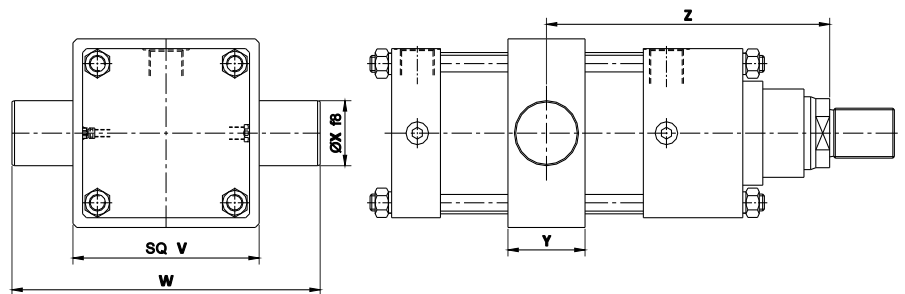
Nose mounting (NM)



Foot Mounting (FM)



Intermediate Trunnion (IT)



BORE	25	32	38	50	63	75	100	125	150	200	250	300
K	18	20	20	20	23	25	31	-	-	-	-	-
L	10	12	12	12	15	15	18	-	-	-	-	-
M	25	27	27	32	40	40	48	-	-	-	-	-
N	1.5	1.5	1.5	1.5	2	2	2	-	-	-	-	-
O	8	8	8	10	10	12	12	-	-	-	-	-
P	106	117	133	134	152	166	186	204	223	277	320	330
Q	18	19	21	19	22	22	28	28	36	45	55	55
R	3.2	3.2	3.2	3.2	5	5	6.3	6.3	6.3	9.5	9.5	9.5
S	18	30	30	-	-	30	50	60	70	82	115	140
T	8.5	8.5	10.5	12	12.5	11	13	16.7	16.7	20	26	26
U	28	30.5	34.5	40	47.5	54	70	79.5	95.5	126	154	178
V	40	50	63	75	90	110	132	160	200	250	320	350
W	60	74	94	107	130	150	180	210	264	314	400	450
X	10	12	16	16	20	20	25	25	32	32	40	50
Y	16	20	24	24	28	28	35	35	42	42	54	65
Z	To be specified by Customer											

Technical Data & Ordering Details for LA Series



TECHNICAL DETAILS									
Bore Dia (mm)	Rod Dia (mm)	Piston Area (cm ²)		Action Force at Pressure in kgf					
		+	-	5 kg/cm ² (70 PSI)		7 kg/cm ² (100 PSI)		10 kg/cm ² (150 PSI)	
		+	-	+	-	+	-	+	-
25	12	5	4	25	19	34	26	49	38
32	16	8	6	40	30	56	42	80	60
38	16	11	9	57	47	79	65	113	93
50	19	20	17	98	84	137	118	196	168
63	25	31	26	156	131	218	184	312	263
75	25	44	39	221	196	309	275	442	393
100	32	79	70	393	352	550	493	785	705
125	38	123	111	613	557	859	779	1227	1113
150	38	177	165	883	826	1236	1157	1766	1653
200	45	314	298	1570	1491	2198	2087	3140	2981
250	57	491	465	2453	2326	3434	3256	4906	4651
300	57	707	681	3533	3405	4946	4767	7065	6810

Model Code Indication

LA - 100 / 500 - FF - 32 - CB - (X) - * * *

Series	Bore sizes	Stroke	Mountings	Piston Rod sizes	Cushioning	Accessories & Special features	Sealing System Code
LA Rated Hydraulic Pressure of 10kg/cm ²	Ø25 - 450mm (12 Std. sizes)	To be specified in mm	FF - Front Flange RF - Rear Flange RC - Rear Clevis FM - Foot Mtd. IT - Intermediate Trunnion NM - Nose Mtd.	Ø12 - 170mm (7 Std. sizes)	CB - Cushioned at both ends CR - Cushioned at Rear end CF - Cushioned at Front end NC - Non Cushioned	PRE - Rod Eye PRF - Rod Fork SR - Spring Return DE - Double Ended DU - Duplex etc....	PS QN

NOTE:- The right of modification for technical improvement is reserved. All dimensions are in mm unless otherwise specified

CUSTOM BUILT CYLINDERS CAN ALSO BE OFFERED ON REQUEST



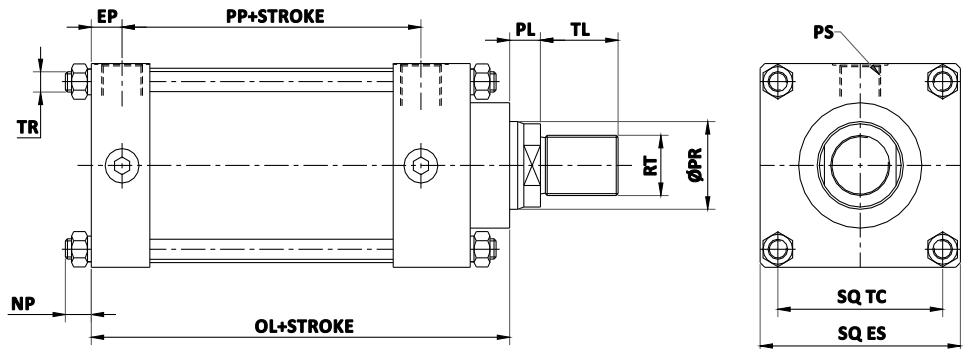
Hydraulic Cylinders - LH7 Series



- Rated Pressure 50 kg/cm²
- Peak Pressure 70 kg/cm²
- Cylinder bore diameters up to 350mm
- Temperature range:- -20°C to 90°C. (optional seals for temp. up to 180°C)



BASIC CYLINDER



SPECIFICATION OF MATERIALS

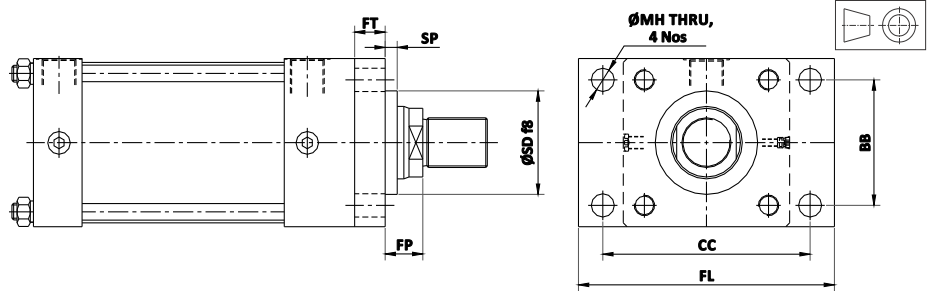
- END COVERS** : Precision machined steel
- CYLINDER BARREL** : Cold drawn seamless steel, honed and polished internally to a maximum surface roughness of Ra=0.4 microns
- PISTON** : Steel, single piece, precisely machined for perfect alignment
- PISTON BEARING** : Polyester fabric with polyester resin+PTFE for maximum rigidity
- PISTON ROD** : Medium carbon steel, ground Hard-chrome plated & polished to a maximum roughness of Ra=0.4 microns
- PISTON ROD BEARING** : Polyester fabric with polyester resin+PTFE for maximum rigidity
- SEALING SYSTEM** : We use a wide range of international standard sealing systems to suit various applications & temperatures
- MOUNTINGS** : Accurately machined steel suitable for heavy duty application
- TIE RODS** : Cold drawn steel

BORE DIA	PR DIA	ES (Sq)	RT	PS (BSP)	OL	PL	TL	PP	TR	NP	EP	TC
25	12	40	M10x1.25	1/4"	115	8	15	62	M6x1	8	12	28
40	16	54	M12x1.25	3/8"	131	8	20	75	M8x1.25	10	14	40
50	20	68	M14x1.5	3/8"	135	10	25	75	M8x1.25	10	14	50
63	25	76	M20x1.5	3/8"	152	10	30	83	M10x1.5	12.5	17	60
80	28	94	M22x1.5	1/2"	171	12	30	99	M12x1.75	15	18	73
100	36	112	M27x2	1/2"	198	16	45	113	M12x1.75	15	20	89
125	45	148	M36x2	1/2"	208	18	45	122	M16x2	18	21	113
160	56	184	M42x2	3/4"	251	20	50	140	M16x2	18	26	138

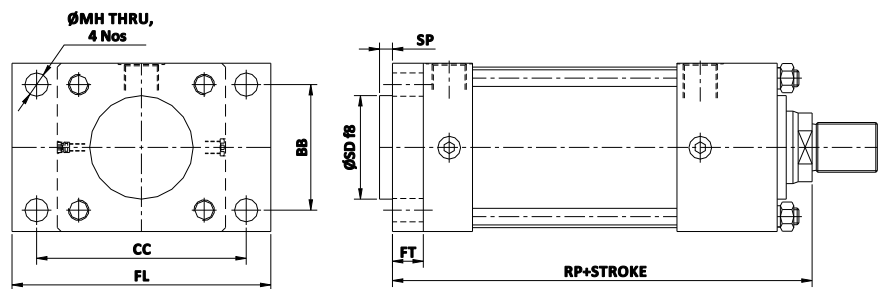


Standard Mountings - LH7 Series

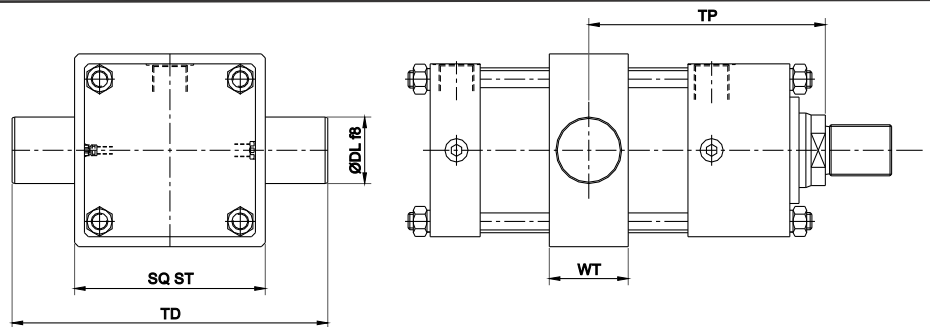
Front Flange (FF)



Rear Flange (RF)



Intermediate Trunnion (IT)

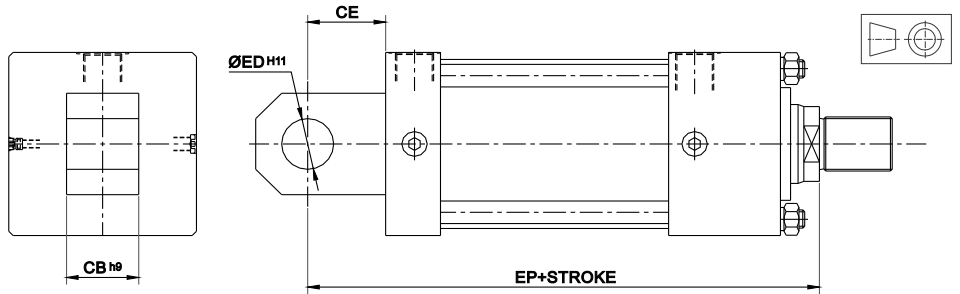


DIMENSIONAL DETAILS								
BORE	25	40	50	63	80	100	125	160
BB	28	42	52	58	72	90	118	156
CC	52	66	84	92	114	134	174	210
FL	65	78	100	108	134	154	200	236
SD	27	44	44	62	62	88	88	100
SP	4	4	4	4	4	4	4	4
MH	6.6	6.6	9	9	11	11	14	14
FT	8	10	10	16	16	20	20	25
FP	12	12	14	14	16	20	22	24
RP	131	149	155	178	199	234	246	296
WT	25	32	38	38	50	50	50	58
TD	80	104	118	130	150	170	208	278
ST	48	58	76	84	100	125	162	208
DL	20	25	25	25	25	25	25	35
TP	TO BE SPECIFIED BY CUSTOMER							

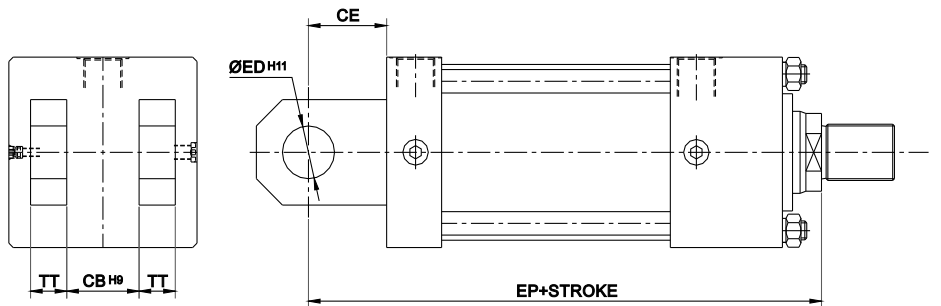


Standard Mountings - LH7 Series

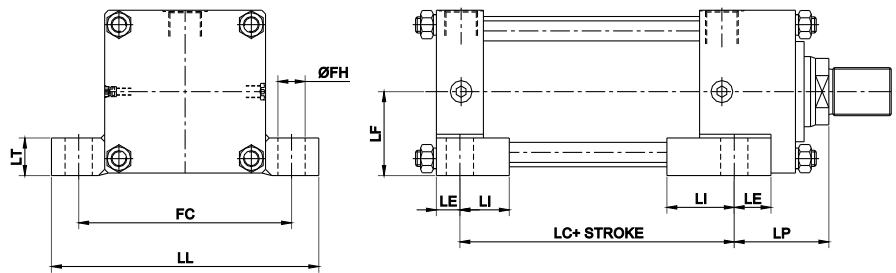
Rear Eye (RE)



Rear Clevis (RC)



Foot Lug (FL)



DIMENSIONAL DETAILS

BORE	25	40	50	63	80	100	125	160
CB	12	20	20	20	32	32	32	40
TT	8	12	12	12	16	16	16	20
ED	10	12	12	12	20	20	20	25
CE	18	20	20	20	32	32	32	40
EP	141	159	165	182	215	246	258	311
LC	65	90	98	100	118	128	135	168
LL	70	98	112	120	146	168	228	264
FC	58	78	92	100	122	144	192	228
LI	8	22	22	22	32	32	40	40
LE	8	10	10	10	12	12	18	18
LT	8	12	12	12	20	20	25	28
LF	20	30	36	40	50	60	76	95
FH	7	11	11	11	14	14	22	22
LP	50	39	37	52	53	74	73	85

Technical Data & Ordering Details for LH7 Series



TECHNICAL DETAILS											
Bore Dia (mm)	Rod Dia (mm)	Piston Area (cm ²)		Action Force at Pressure in kgf				Piston velocity in m/s at flow=1 ltr/min		Requisite flow in ltr/min for velocity=0.1 m/s	
				30 kg/cm ²		50 kg/cm ²					
		+	-	+	-	+	-	+	-	+	-
25	12	4.9	3.8	147.2	113.3	245.3	188.8	0.0340	0.0441	2.94	2.27
40	16	12.6	10.6	376.8	316.5	628.0	527.5	0.0133	0.0158	7.54	6.33
50	20	19.6	16.5	588.8	494.6	981.3	824.3	0.0085	0.0101	11.78	9.89
63	25	31.2	26.3	934.7	787.5	1557.8	1312.5	0.0053	0.0063	18.69	15.75
80	28	50.2	44.1	1507.2	1322.6	2512.0	2204.3	0.0033	0.0038	30.14	26.45
100	36	78.5	68.3	2355.0	2049.8	3925.0	3416.3	0.0021	0.0024	47.10	41.00
125	45	122.7	106.8	3679.7	3202.8	6132.8	5338.0	0.0014	0.0016	73.59	64.06
160	56	201.0	176.3	6028.8	5290.3	10048.0	8817.1	0.0008	0.0009	120.58	105.81

Model Code Indication

LH7 - 100 / 500 - FF - 36 - CB - (X) - SS8

Series	Bore sizes	Stroke	Mountings	Piston Rod sizes	Cushioning	Accessories & Special features	Sealing System Code
LH7 Rated Hydraulic Pressure of 50kg/cm ²	Ø25 - 350mm (8 Std. sizes)	To be specified in mm	FF - Front Flange RF - Rear Flange RC - Rear Clevis RE - Rear Eye FL - Foot Lug IT - Intermediate Trunnion ET - Extended Tie Rod	Ø12 - 140mm (8 Std. sizes)	CB - Cushioned at both ends CR - Cushioned at Rear end CF - Cushioned at Front end NC - Non Cushioned	PRE - Rod Eye PRF - Rod Fork SA - Single Acting DE - Double Ended	SS8 (Std.) for alternatives contact us.

NOTE:- The right of modification for technical improvement is reserved. All dimensions are in mm unless otherwise specified

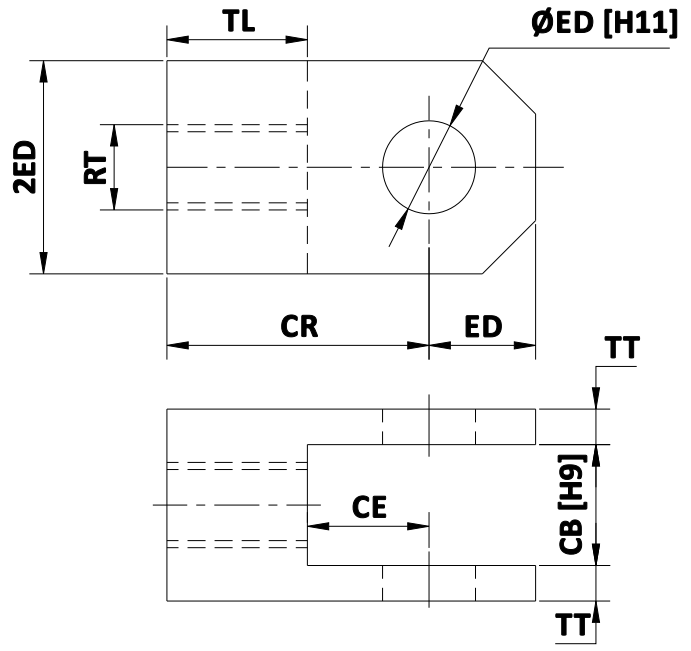
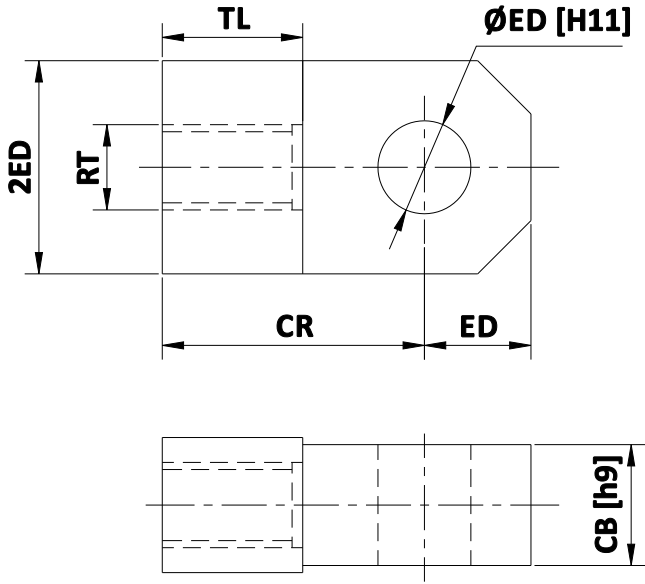
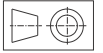
CUSTOM BUILT CYLINDERS CAN ALSO BE OFFERED ON REQUEST

Piston Rod Eye & Piston Rod Fork for LH7 Series



Piston Rod Eye (PRE)

Piston Rod Fork (PRF)



Ordering Code

For Piston Rod Eye :- LH7-PRE-**

where ** - Piston Rod Dia

For Piston Rod Fork :- LH7-PRF-**

where ** - Piston Rod Dia

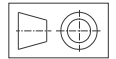
SPECIFICATION & DIMENSIONAL DETAILS							
ROD DIA	RT	TL	CR	ED	CB	TT	CE
12	M10x1.25	18	36	10	12	8	18
16	M12x1.25	22	42	12	20	12	20
20	M14x1.5	29	49	12	20	12	20
25	M20x1.5	35	55	12	20	12	20
28	M22x1.5	35	67	20	32	16	32
36	M27x2	50	82	20	32	16	32
45	M36x2	50	82	20	32	16	32
56	M42x2	55	95	25	40	20	40



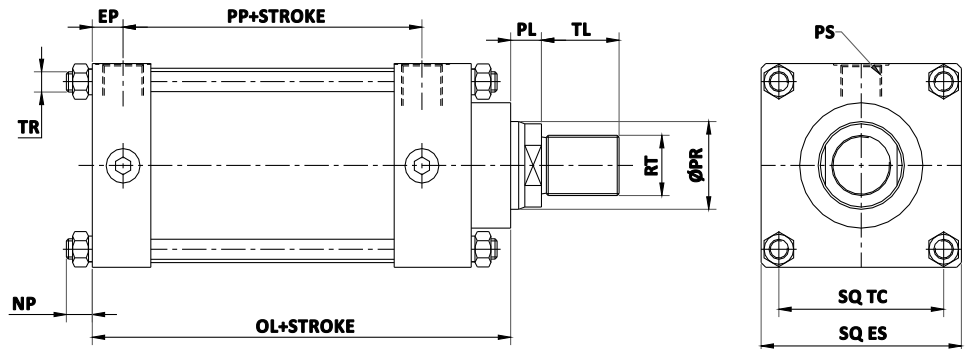
Hydraulic Cylinders - LM7 Series (Magnetic)



- Rated Pressure 50 kg/cm²
- Peak Pressure 70 kg/cm²
- Cylinder bore diameters up to 160 mm
- Temperature range:- -20°C to 90°C. (optional seals for temp. up to 180°C)



BASIC CYLINDER



SPECIFICATION OF MATERIALS

END COVERS : Precision machined steel

CYLINDER BARREL : Stainless steel, honed and polished internally to a maximum surface roughness of Ra=0.4 microns.

PISTON : Stainless steel, precisely machined for perfect alignment

PISTON BEARING : Polyester fabric with polyester resin+PTFE for maximum rigidity

PISTON ROD : Medium carbon steel, ground Hard-chrome plated & polished to a maximum roughness of Ra=0.4 microns

PISTON ROD BEARING : Polyester fabric with polyester resin+PTFE for maximum rigidity

SEALING SYSTEM : We use a wide range of international standard sealing systems to suit various applications & temperatures

MOUNTINGS : Accurately machined steel suitable for heavy duty application

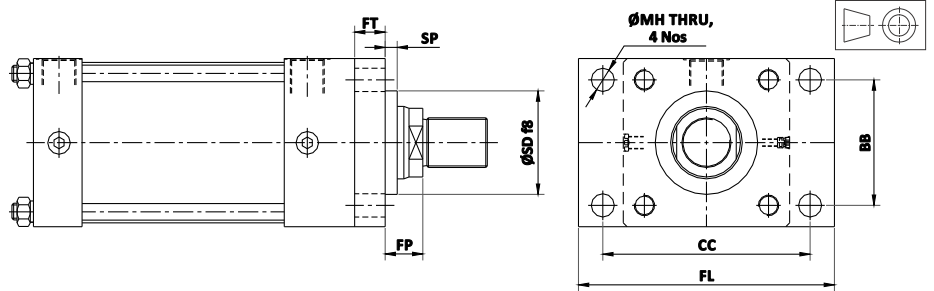
TIE RODS : Stainless Steel

BORE DIA	PR DIA	ES (Sq)	RT	PS (BSP)	OL	PL	TL	PP	TR	NP	EP	Reed Switch Code
25	12	40	M10x1.25	1/4"	135	8	15	82	M6x1	8	12	RS-206
40	16	54	M12x1.25	3/8"	151	8	20	95	M8x1.25	10	14	RS-208
50	20	68	M14x1.5	3/8"	155	10	25	95	M8x1.25	10	14	RS-208
63	25	76	M20x1.5	3/8"	172	10	30	103	M10x1.5	12.5	17	RS-210
80	28	94	M22x1.5	1/2"	191	12	30	119	M12x1.75	15	18	RS-212
100	36	112	M27x2	1/2"	218	16	45	133	M12x1.75	15	20	RS-212
125	45	148	M36x2	1/2"	228	18	45	142	M16x2	18	21	RS-216
160	56	184	M42x2	3/4"	271	20	50	160	M16x2	18	26	RS-216

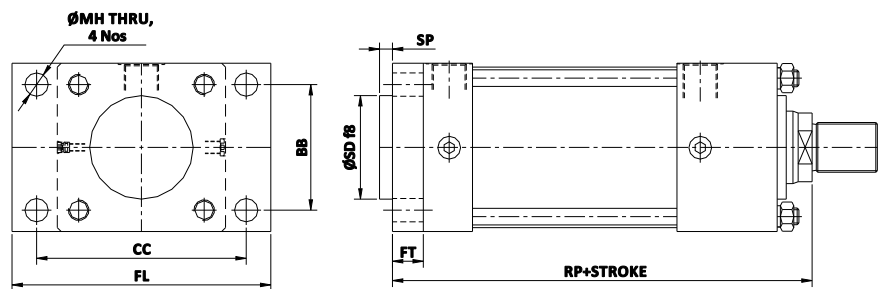


Standard Mountings - LM7 Series

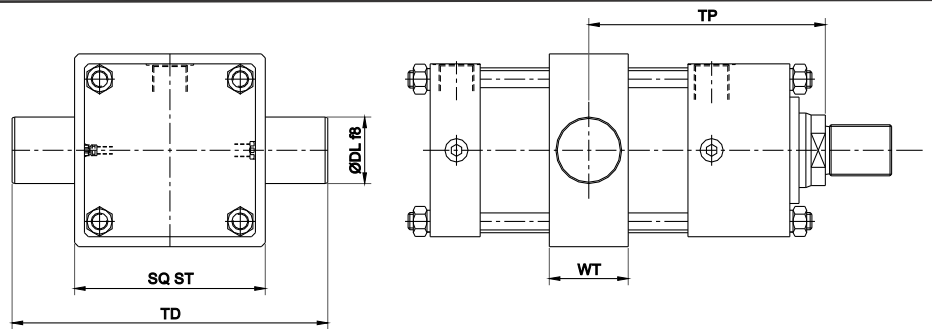
Front Flange (FF)



Rear Flange (RF)



Intermediate Trunnion (IT)



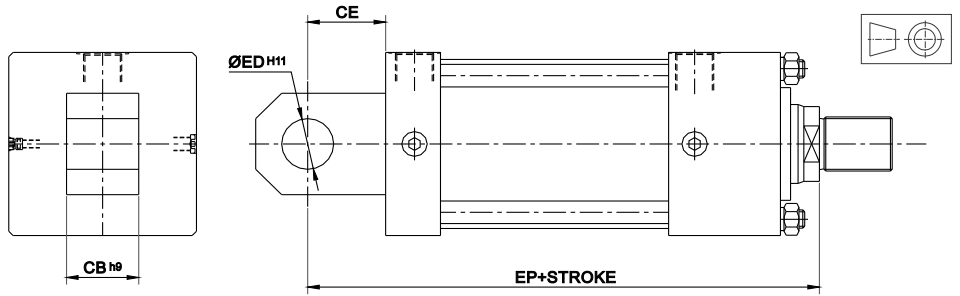
DIMENSIONAL DETAILS

BORE	25	40	50	63	80	100	125	160
BB	28	42	52	58	72	90	118	156
CC	52	66	84	92	114	134	174	210
FL	65	78	100	108	134	154	200	236
SD	27	44	44	62	62	88	88	100
SP	4	4	4	4	4	4	4	4
MH	6.6	6.6	9	9	11	11	14	14
FT	8	10	10	16	16	20	20	25
FP	12	12	14	14	16	20	22	24
RP	151	169	175	198	219	254	266	316
WT	25	32	38	38	50	50	50	58
TD	80	104	118	130	150	170	208	278
ST	48	58	76	84	100	125	162	208
DL	20	25	25	25	25	25	25	35
TP	TO BE SPECIFIED BY CUSTOMER							

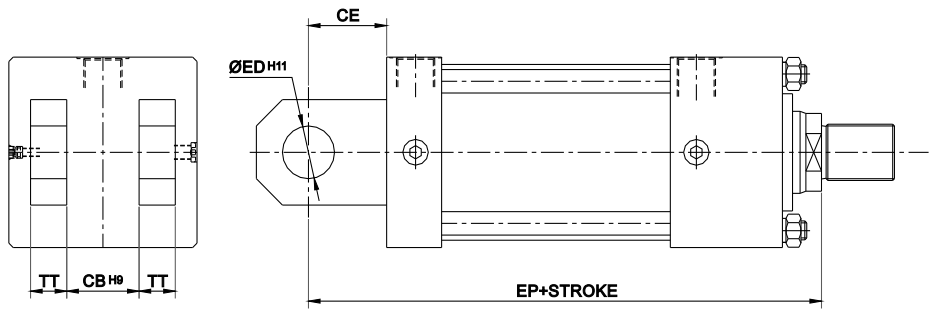


Standard Mountings - LM7 Series

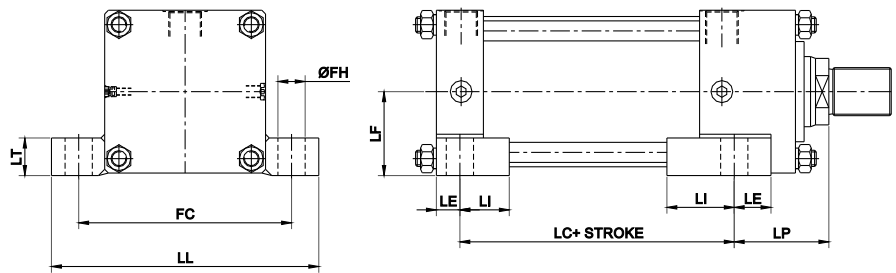
Rear Eye (RE)



Rear Clevis (RC)



Foot Lug (FL)



DIMENSIONAL DETAILS

	25	40	50	63	80	100	125	160
BORE	25	40	50	63	80	100	125	160
CB	12	20	20	20	32	32	32	40
TT	8	12	12	12	16	16	16	20
ED	10	12	12	12	20	20	20	25
CE	18	20	20	20	32	32	32	40
EP	161	179	185	202	235	266	278	331
LC	85	110	118	120	138	148	155	188
LL	70	98	112	120	146	168	228	264
FC	58	78	92	100	122	144	192	228
LI	8	22	22	22	32	32	40	40
LE	8	10	10	10	12	12	18	18
LT	8	12	12	12	20	20	25	28
LF	20	30	36	40	50	60	76	95
FH	7	11	11	11	14	14	22	22
LP	50	39	37	52	53	74	73	85

Technical Data & Ordering Details for LM7 Series



TECHNICAL DETAILS											
Bore Dia (mm)	Rod Dia (mm)	Piston Area (cm ²)		Action Force at Pressure in kgf				Piston velocity in m/s at flow=1 ltr/min		Requisite flow in ltr/min for velocity=0.1 m/s	
				30 kg/cm ²		50 kg/cm ²					
		+	-	+	-	+	-	+	-	+	-
25	12	4.9	3.8	147.2	113.3	245.3	188.8	0.0340	0.0441	2.94	2.27
40	16	12.6	10.6	376.8	316.5	628.0	527.5	0.0133	0.0158	7.54	6.33
50	20	19.6	16.5	588.8	494.6	981.3	824.3	0.0085	0.0101	11.78	9.89
63	25	31.2	26.3	934.7	787.5	1557.8	1312.5	0.0053	0.0063	18.69	15.75
80	28	50.2	44.1	1507.2	1322.6	2512.0	2204.3	0.0033	0.0038	30.14	26.45
100	36	78.5	68.3	2355.0	2049.8	3925.0	3416.3	0.0021	0.0024	47.10	41.00
125	45	122.7	106.8	3679.7	3202.8	6132.8	5338.0	0.0014	0.0016	73.59	64.06
160	56	201.0	176.3	6028.8	5290.3	10048.0	8817.1	0.0008	0.0009	120.58	105.81

Model Code Indication

LM7 - 100 / 500 - FF - 36 - CB - (X) - SS12 - RS-212

Series	Bore sizes	Stroke	Mountings	Piston Rod sizes	Cushioning	Accessories & Special features	Sealing System Code	Reed Switch
LM7 Rated Hydraulic Pressure of 50kg/cm ²	Ø25 - 160mm (8 Std. sizes)	To be specified in mm	FF - Front Flange RF - Rear Flange RC - Rear Clevis RE - Rear Eye FL - Foot Lug IT - Intermediate Trunnion ET - Extended Tie Rod	Ø12 - 56mm (8 Std. sizes)	CB - Cushioned at both ends CR - Cushioned at Rear end CF - Cushioned at Front end NC - Non Cushioned	PRE - Rod Eye PRF - Rod Fork SA - Single Acting DE - Double Ended	SS12 (Std.) for alternatives contact us.	RS-206 RS-208 RS-210 RS-212 RS-216 (Select suitable Reed Switch from page 2.120/1)
NOTE:- The right of modification for technical improvement is reserved. All dimensions are in mm unless otherwise specified								

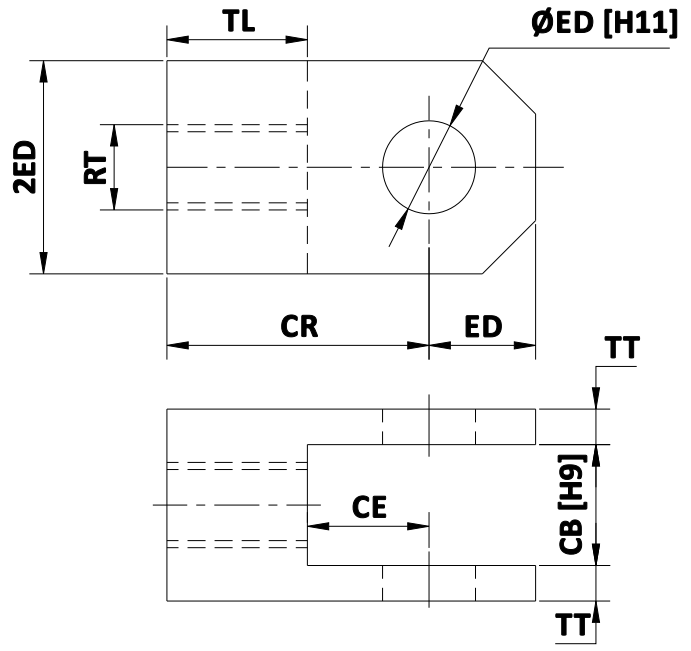
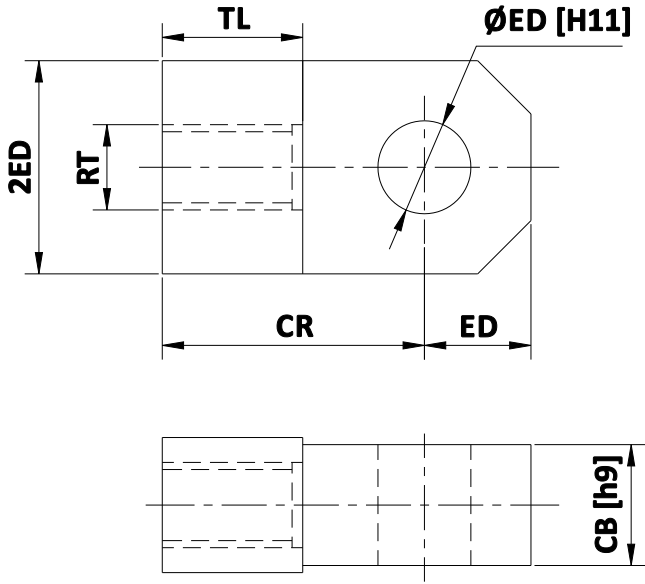
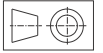
CUSTOM BUILT CYLINDERS CAN ALSO BE OFFERED ON REQUEST

Piston Rod Eye & Piston Rod Fork for LM7 Series



Piston Rod Eye (PRE)

Piston Rod Fork (PRF)



Ordering Code

For Piston Rod Eye :- LM7-PRE-**

where ** - Piston Rod Dia

For Piston Rod Fork :- LM7-PRF-**

where ** - Piston Rod Dia

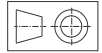
SPECIFICATION & DIMENSIONAL DETAILS							
ROD DIA	RT	TL	CR	ED	CB	TT	CE
12	M10x1.25	18	36	10	12	8	18
16	M12x1.25	22	42	12	20	12	20
20	M14x1.5	29	49	12	20	12	20
25	M20x1.5	35	55	12	20	12	20
28	M22x1.5	35	67	20	32	16	32
36	M27x2	50	82	20	32	16	32
45	M36x2	50	82	20	32	16	32
56	M42x2	55	95	25	40	20	40



Hydraulic Cylinders - HH16 Series



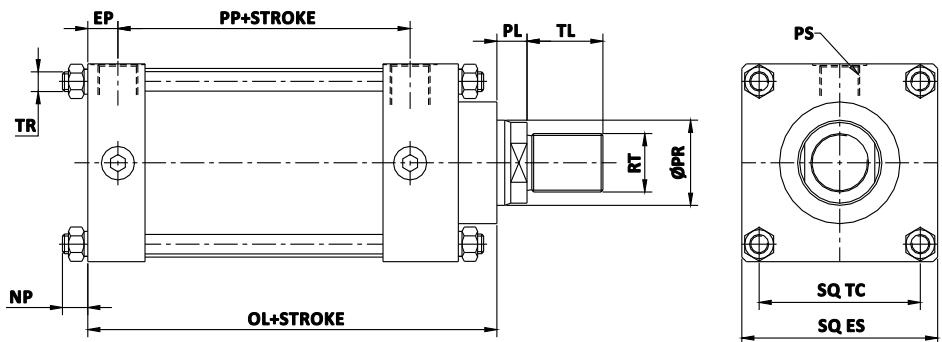
- Rated Pressure 160 kg/cm²
- Peak Pressure 240 kg/cm²
- Cylinder bore diameters up to 350mm
- Temperature range:- -20°C to 90°C. (optional seals for temp. up to 180°C)



BASIC CYLINDER

SPECIFICATION OF MATERIALS

- END COVERS** : Precision machined steel
- CYLINDER BARREL** : Cold drawn seamless steel, honed and polished internally to a maximum surface roughness of Ra=0.4 microns
- PISTON** : Steel, single piece, precisely machined for perfect alignment
- PISTON BEARING** : Polyester fabric with polyester resin+PTFE for maximum rigidity
- PISTON ROD** : Medium carbon steel, toughened ground Hard-chrome plated & polished to a maximum roughness of Ra=0.4 microns
- PISTON ROD BEARING** : Polyester fabric with polyester resin+PTFE for maximum rigidity
- SEALING SYSTEM** : We use a wide range of international standard sealing systems to suit various applications & temperatures
- MOUNTINGS** : Accurately machined steel suitable for heavy duty application
- TIE RODS** : High tensile steel

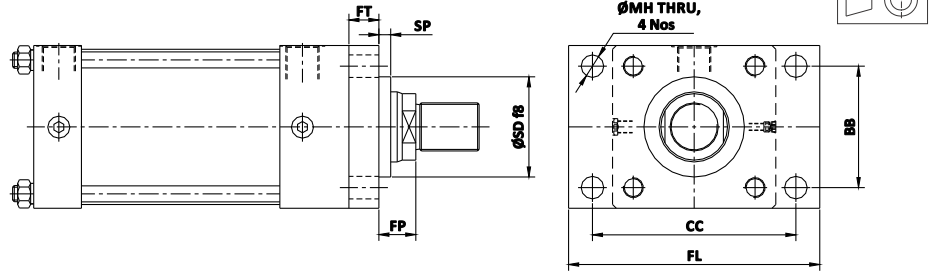


BORE DIA	PR DIA	ES (Sq)	RT	PS (BSP)	OL	PL	TL	PP	TR	NP	EP	TC
25	16	45	M12x1.25	3/8"	142	12	16	76	M8x1.25	12	15	30
40	20	60	M14x1.5	1/2"	161	14	18	89	M10x1.5	13	15	44
50	25	76	M20x1.5	1/2"	179	16	25	93	M12x1.75	15	17	52
63	28	94	M22x1.5	1/2"	176	19	30	94	M12x1.75	15	17	64
80	36	112	M27x2	3/4"	200	19	36	112	M16x2	20	19	82
100	45	125	M33x2	3/4"	216	19	45	124	M16x2	20	19	99
125	56	165	M42x2	3/4"	239	21	56	138	M24x2	28	19	124
160	70	200	M48x2	1"	263	22	63	150	M30x2	37	24	154
200	90	240	M64x3	1 1/4"	309	26	85	174	M30x2	37	30	192

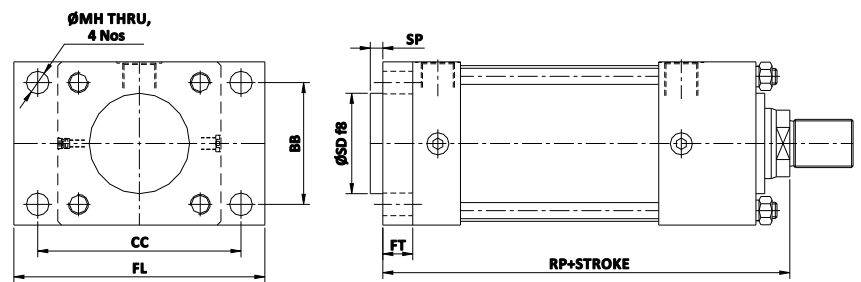


Standard Mountings - HH16 Series

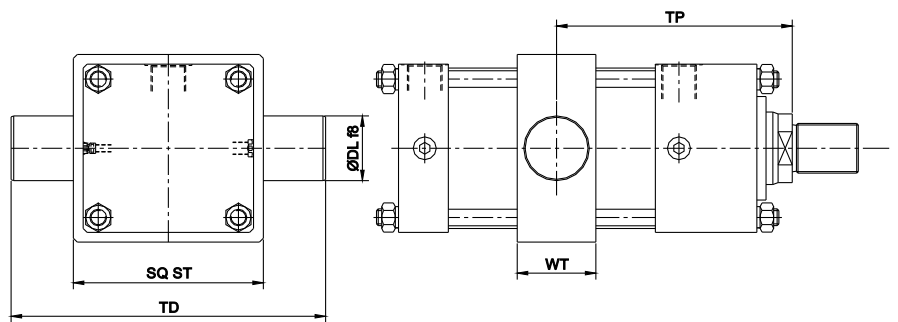
Front Flange (FF)



Rear Flange (RF)



Intermediate Trunnion (IT)



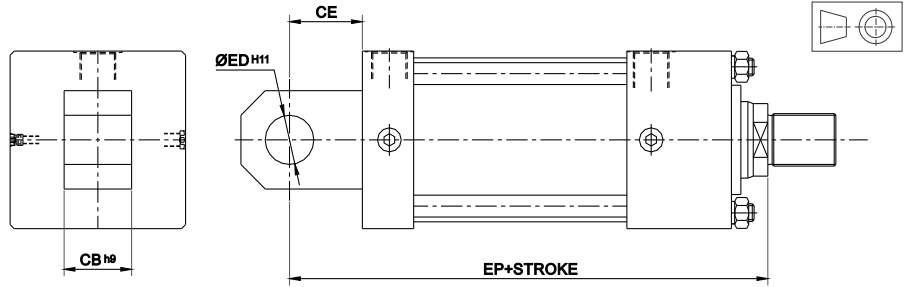
DIMENSIONAL DETAILS

	25	40	50	63	80	100	125	160	200
BORE	25	40	50	63	80	100	125	160	200
BB	28	41	52	65	83	97	128	155	190
CC	65	87	105	117	149	162	208	253	300
FL	85	108	130	142	180	194	248	303	358
SD	30	40	44	50	60	70	85	100	120
SP	4	4	4	4	5	5	5	5	5
MH	8	11	14	14	18	18	22	26	33
FT	10	10	16	16	20	22	22	25	25
FP	16	18	20	23	24	24	26	27	31
RP	164	185	211	211	239	257	282	310	360
WT	25	32	40	40	45	50	50	60	85
TD	88	113	140	158	186	207	245	303	391
ST	48	63	76	95	114	127	165	203	241
DL	20	25	32	32	36	40	40	50	75
TP	TO BE SPECIFIED BY CUSTOMER								

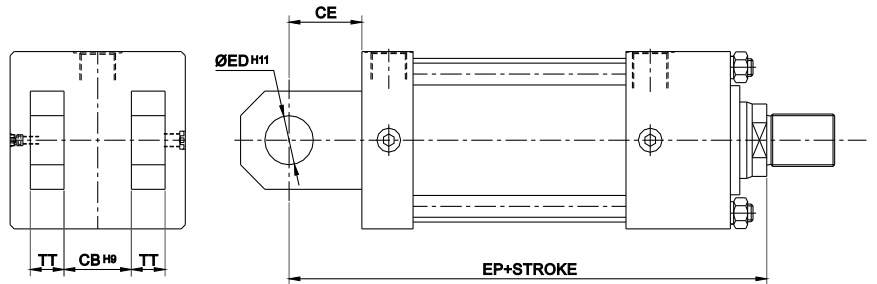
Standard Mountings - HH16 Series



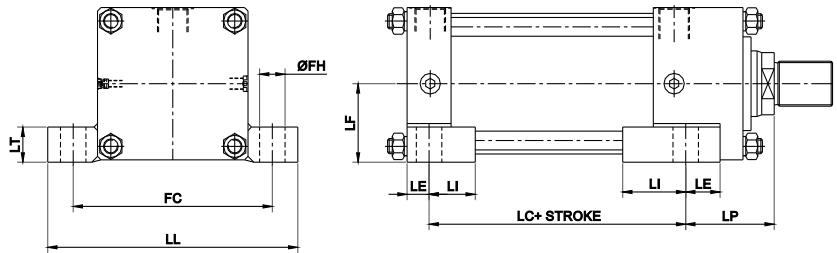
Rear Eye (RE)



Rear Clevis (RC)



Foot Lug (FL)



DIMENSIONAL DETAILS									
BORE	25	40	50	63	80	100	125	160	200
CB	15	20	30	30	40	50	60	70	80
TT	10	12	16	16	20	25	32	38	38
ED	10	14	20	20	28	36	45	56	70
CE	16	19	32	32	39	54	57	63	82
EP	170	194	227	227	258	289	317	348	417
LC	100	120	126	112	132	134	156	174	213
LL	85	102	127	166	185	216	254	310	380
FC	65	83	102	130	149	172	210	260	311
LI	22	24	40	40	45	45	45	55	60
LE	8	10	15	18	20	22	25	25	30
LT	10	12	20	25	30	32	32	40	45
LF	24	31	38	48	57	63	82	101	120
FH	9	11	14	20	20	25	25	33	39
LP	46	45	54	65	67	79	79	86	92

Technical Data & Ordering Details for HH16 Series



TECHNICAL DETAILS											
Bore Dia (mm)	Rod Dia (mm)	Piston Area (cm ²)		Action Force at Pressure in kgf				Piston velocity in m/s at flow= 1 ltr/min		Requisite flow in ltr/min for velocity = 0.1 m/s	
		+	-	100 kg/cm ²		160 kg/cm ²		+	-	+	-
25	16	4.9	2.9	490.6	289.7	785.0	463.5	0.0340	0.0575	2.94	1.74
40	20	12.6	9.4	1256.0	942.0	2009.6	1507.2	0.0133	0.0177	7.54	5.65
50	25	19.6	14.7	1962.5	1471.9	3140.0	2355.0	0.0085	0.0113	11.78	8.83
63	28	31.2	25.0	3115.7	2500.2	4985.1	4000.4	0.0053	0.0067	18.69	15.00
80	36	50.2	40.1	5024.0	4006.6	8038.4	6410.6	0.0033	0.0042	30.14	24.04
100	45	78.5	62.6	7850.0	6260.4	12560.0	10016.6	0.0021	0.0027	47.10	37.56
125	56	122.7	98.0	12265.6	9803.9	19625.0	15686.2	0.0014	0.0017	73.59	58.82
160	70	201.0	162.5	20096.0	16249.5	32153.6	25999.2	0.0008	0.0010	120.58	97.50
200	90	314.0	250.4	31400.0	25041.5	50240.0	40066.4	0.0005	0.0007	188.40	150.25

Model Code Indication

HH16 - 100 / 500 - FF - 45 - CB - (X) - SS4

Series	Bore sizes	Stroke	Mountings	Piston Rod sizes	Cushioning	Accessories & Special features	Sealing System Code
HH16 Rated Hydraulic Pressure of 160kg/cm ²	Ø25 - 350mm (9 Std. sizes)	To be specified in mm	FF - Front Flange RF - Rear Flange RC - Rear Clevis RE - Rear Eye FL - Foot Lug IT - Intermediate Trunnion	Ø12 - 170mm (9 Std. sizes)	CB - Cushioned at both ends CR - Cushioned at Rear end CF - Cushioned at Front end NC - Non Cushioned	PRE - Rod Eye PRF - Rod Fork SA - Single Acting DE - Double Ended	SS4 (Std.) for alternatives contact us.

NOTE:- The right of modification for technical improvement is reserved. All dimensions are in mm unless otherwise specified

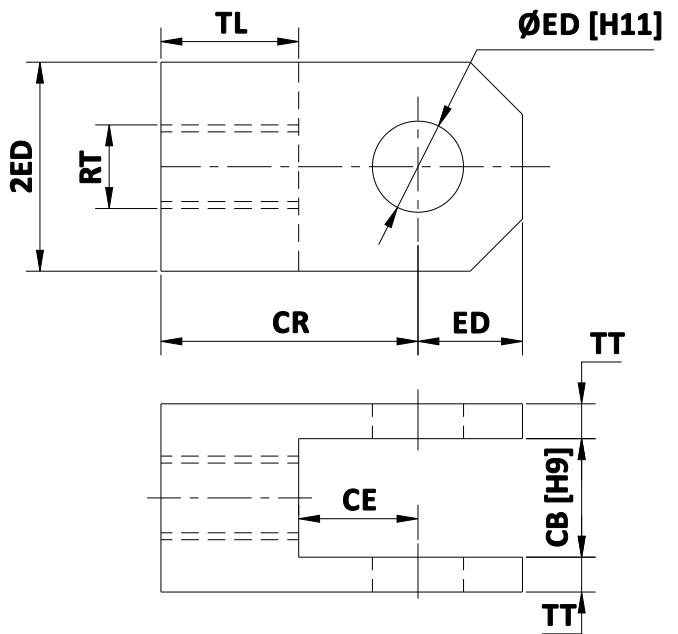
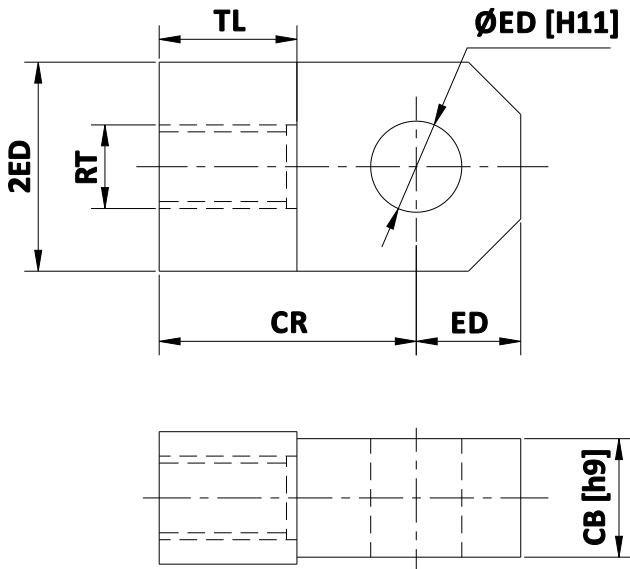
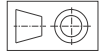
CUSTOM BUILT CYLINDERS CAN ALSO BE OFFERED ON REQUEST

Piston Rod Eye & Piston Rod Fork for HH16 Series



Piston Rod Eye (PRE)

Piston Rod Fork (PRF)



Ordering Code

For Piston Rod Eye :- HH16-PRE-**

where ** - Piston Rod Dia

For Piston Rod Fork :- HH16-PRF-**

where ** - Piston Rod Dia

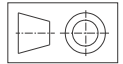
SPECIFICATION & DIMENSIONAL DETAILS							
ROD DIA	RT	TL	CR	ED	CB	TT	CE
16	M12x1.25	19	35	10	15	10	16
20	M14x1.5	22	42	14	20	12	19
25	M20x1.5	29	58	20	30	16	32
28	M22x1.5	32	65	20	30	16	32
36	M27x2	38	75	28	40	20	37
45	M33x2	50	104	36	50	25	54
56	M42x2	61	118	45	60	32	57
70	M48x2	69	132	56	70	38	63
90	M64x3	90	172	70	80	38	82
110	M90x3	100	192	90	100	45	92



Hydraulic Cylinders - HM16 Series (Magnetic)



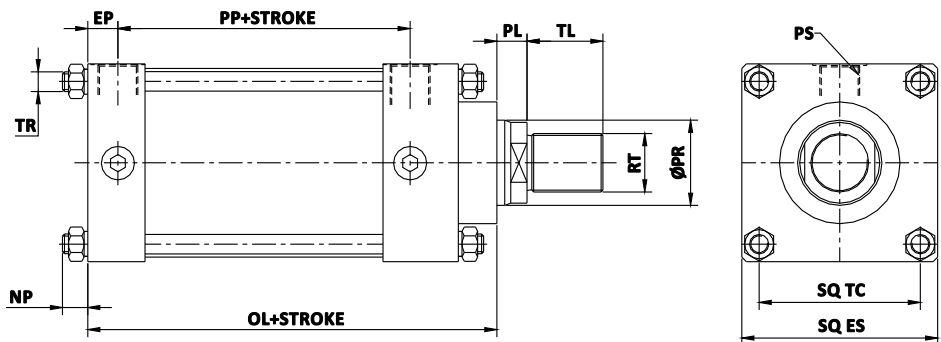
- Rated Pressure 160 kg/cm²
- Peak Pressure 240 kg/cm²
- Cylinder bore diameters up to 125mm
- Temperature range:- -20°C to 90°C. (optional seals for temp. up to 180°C)



BASIC CYLINDER

SPECIFICATION OF MATERIALS

- END COVERS** : Precision machined steel
- CYLINDER BARREL** : Stainless steel, honed and polished internally to a maximum surface roughness of Ra=0.4 microns.
- PISTON** : Stainless steel, precisely machined for perfect alignment
- PISTON BEARING** : Polyester fabric with polyester resin+PTFE for maximum rigidity
- PISTON ROD** : Medium carbon steel, toughened ground Hard-chrome plated & polished to a maximum roughness of Ra=0.4 microns
- PISTON ROD BEARING** : Polyester fabric with polyester resin+PTFE for maximum rigidity
- SEALING SYSTEM** : We use a wide range of international standard sealing systems to suit various applications & temperatures
- MOUNTINGS** : Accurately machined steel suitable for heavy duty application
- TIE RODS** : Stainless Steel

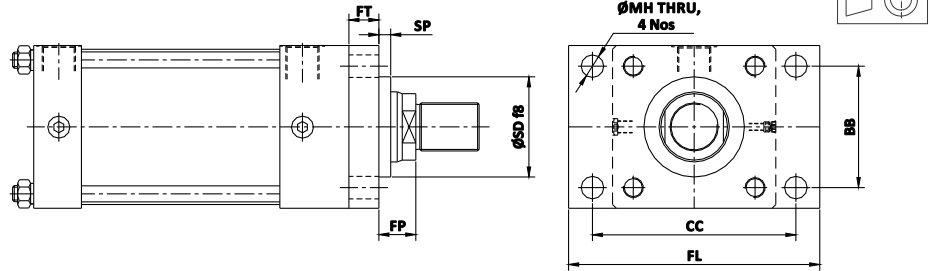


BORE DIA	PR DIA	ES (Sq)	RT	PS (BSP)	OL	PL	TL	PP	TR	NP	EP	Reed Switch
40	20	60	M14x1.5	1/2"	186	14	18	114	M10x1.5	13	15	RS-210
50	25	76	M20x1.5	1/2"	204	16	25	118	M12x1.75	15	17	RS-212
63	28	94	M22x1.5	1/2"	201	19	30	119	M12x1.75	15	17	RS-212
80	36	112	M27x2	3/4"	225	19	36	137	M16x2	20	19	RS-216
100	45	125	M33x2	3/4"	241	19	45	149	M16x2	20	19	RS-216
125	56	165	M42x2	3/4"	264	21	56	163	M24x2	28	19	RS-224

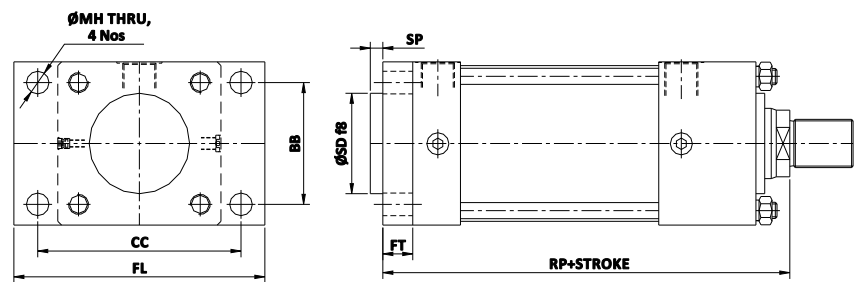


Standard Mountings - HM16 Series

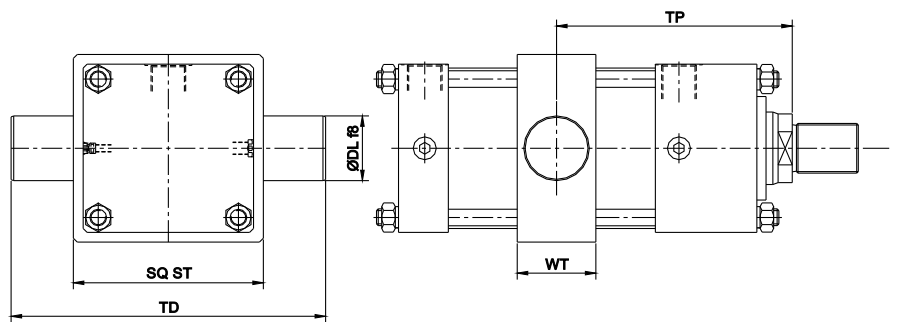
Front Flange (FF)



Rear Flange (RF)



Intermediate Trunnion (IT)

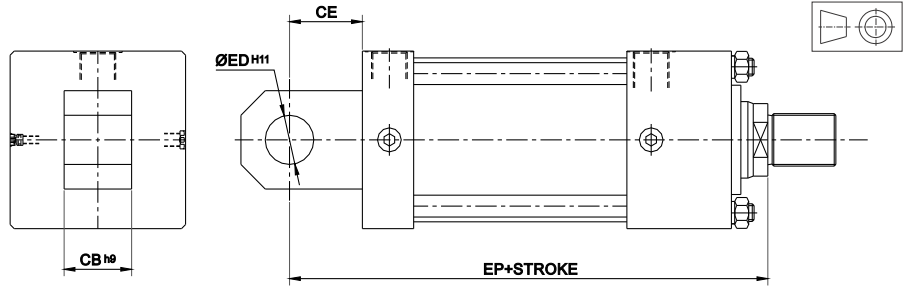


DIMENSIONAL DETAILS						
BORE	40	50	63	80	100	125
BB	41	52	65	83	97	128
CC	87	105	117	149	162	208
FL	108	130	142	180	194	248
SD	40	44	50	60	70	85
SP	4	4	4	5	5	5
MH	11	14	14	18	18	22
FT	10	16	16	20	22	22
FP	18	20	23	24	24	26
RP	210	236	236	264	282	307
WT	32	40	40	45	50	50
TD	113	140	158	186	207	245
ST	63	76	95	114	127	165
DL	25	32	32	36	40	40
TP	TO BE SPECIFIED BY CUSTOMER					

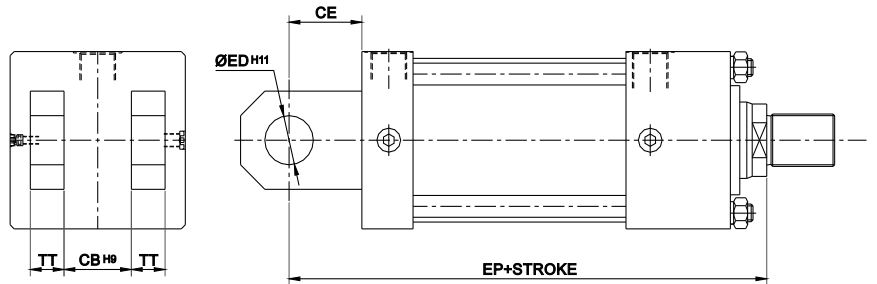


Standard Mountings - HM16 Series

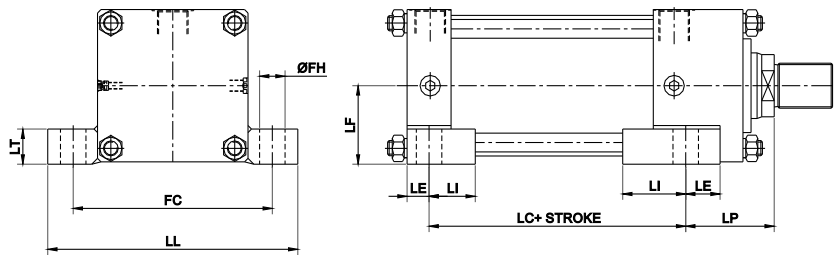
Rear Eye (RE)



Rear Clevis (RC)



Foot Lug (FL)



DIMENSIONAL DETAILS						
BORE	40	50	63	80	100	125
CB	20	30	30	40	50	60
TT	12	16	16	20	25	32
ED	14	20	20	28	36	45
CE	19	32	32	39	54	57
EP	219	252	252	283	314	342
LC	145	151	137	157	159	181
LL	102	127	166	185	216	254
FC	83	102	130	149	172	210
LI	24	40	40	45	45	45
LE	10	15	18	20	22	25
LT	12	20	25	30	32	32
LF	31	38	48	57	63	82
FH	11	14	20	20	25	25
LP	45	54	65	67	79	79

Technical Data & Ordering Details for HM16 Series



TECHNICAL DETAILS											
Bore Dia (mm)	Rod Dia (mm)	Piston Area (cm ²)		Action Force at Pressure in kgf				Piston velocity in m/s at flow= 1 ltr/min		Requisite flow in ltr/min for velocity = 0.1 m/s	
		+	-	100 kg/cm ²		160 kg/cm ²		+	-	+	-
40	20	12.6	9.4	1256.0	942.0	2009.6	1507.2	0.0133	0.0177	7.54	5.65
50	25	19.6	14.7	1962.5	1471.9	3140.0	2355.0	0.0085	0.0113	11.78	8.83
63	28	31.2	25.0	3115.7	2500.2	4985.1	4000.4	0.0053	0.0067	18.69	15.00
80	36	50.2	40.1	5024.0	4006.6	8038.4	6410.6	0.0033	0.0042	30.14	24.04
100	45	78.5	62.6	7850.0	6260.4	12560.0	10016.6	0.0021	0.0027	47.10	37.56
125	56	122.7	98.0	12265.6	9803.9	19625.0	15686.2	0.0014	0.0017	73.59	58.82

Model Code Indication

HM16 - 100 / 500 - FF - 45 - CB - (X) - SS12 - RS-216

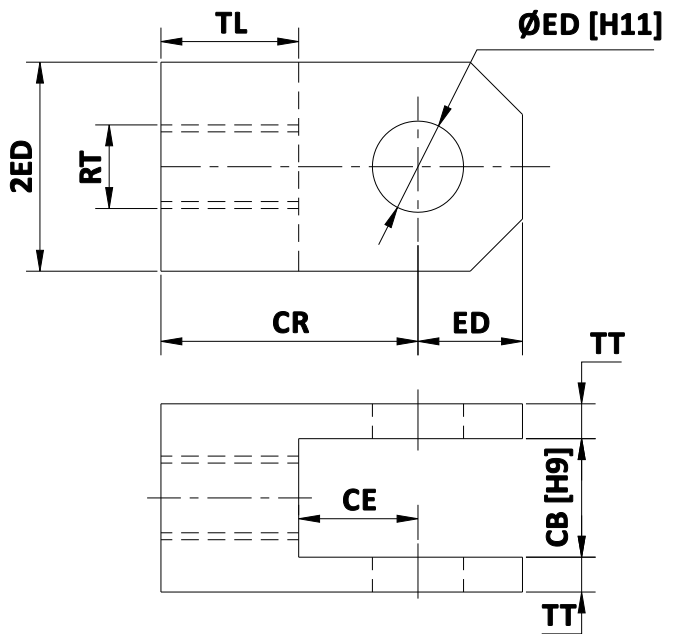
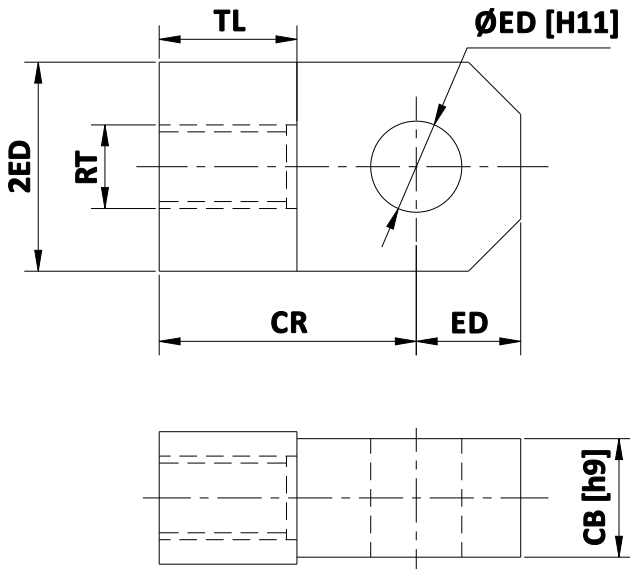
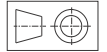
Series	Bore sizes	Stroke	Mountings	Piston Rod sizes	Cushioning	Accessories & Special features	Sealing System Code	Reed Switch
HM16 Rated Hydraulic Pressure of 160kg/cm ²	Ø40 - 125mm (6 Std. sizes)	To be specified in mm	FF - Front Flange RF - Rear Flange RC - Rear Clevis RE - Rear Eye FL - Foot Lug IT - Intermediate Trunnion ET - Extended Tie Rod	Ø20 - 56mm (6 Std. sizes)	CB - Cushioned at both ends CR - Cushioned at Rear end CF - Cushioned at Front end NC - Non Cushioned	PRE - Rod Eye PRF - Rod Fork SA - Single Acting DE - Double Ended	SS12 (Std.) for alternatives contact us.	RS-206 RS-208 RS-210 RS-212 RS-216 Select suitable Reed Switch from page 2.220/1
NOTE:- The right of modification for technical improvement is reserved. All dimensions are in mm unless otherwise specified								

Piston Rod Eye & Piston Rod Fork for HM16 Series



Piston Rod Eye (PRE)

Piston Rod Fork (PRF)



Ordering Code

For Piston Rod Eye :- HM16-PRE-**

where ** - Piston Rod Dia

For Piston Rod Fork :- HM16-PRF-**

where ** - Piston Rod Dia

SPECIFICATION & DIMENSIONAL DETAILS							
ROD DIA	RT	TL	CR	ED	CB	TT	CE
20	M14x1.5	22	42	14	20	12	19
25	M20x1.5	29	58	20	30	16	32
28	M22x1.5	32	65	20	30	16	32
36	M27x2	38	75	28	40	20	37
45	M33x2	50	104	36	50	25	54
56	M42x2	61	118	45	60	32	57



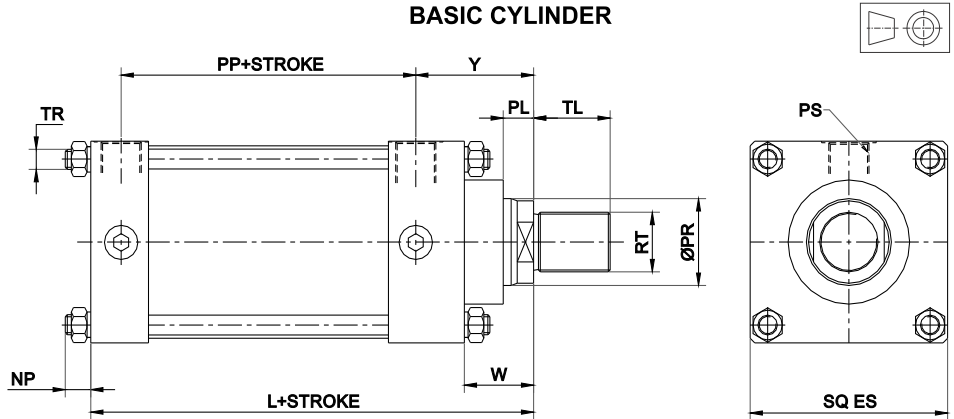
Hydraulic Cylinders - HH21 Series

AS PER ISO 6020/2



- Rated Pressure 210 kg/cm²
- Peak Pressure 315 kg/cm²
- Cylinder bore diameters up to 200mm
- Temperature range:- -20°C to 90°C. (optional seals for temp. up to 180°C)

BASIC CYLINDER



SPECIFICATION OF MATERIALS

END COVERS : Precision machined steel

CYLINDER BARREL : Cold drawn seamless steel, honed and polished internally to a maximum surface roughness of Ra=0.4 microns

PISTON : Steel, single piece, precisely machined for perfect alignment

PISTON BEARING : Polyester fabric with polyester resin+PTFE for maximum rigidity

PISTON ROD : Medium carbon steel, toughened ground Hard-chrome plated & polished to a maximum roughness of Ra=0.4 microns

PISTON ROD BEARING : Polyester fabric with polyester resin+PTFE for maximum rigidity

SEALING SYSTEM : We use a wide range of international standard sealing systems to suit various applications & temperatures

MOUNTINGS : Accurately machined steel suitable for heavy duty application

TIE RODS : High tensile steel

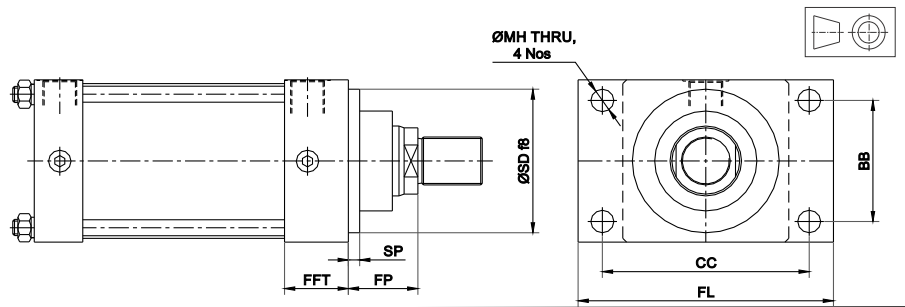
BORE DIA	PR DIA	ES (Sq)	RT	PS (BSP)	L	PL	TL	PP	TR	W	Y	NP (max)
25	12	40	M10x1.25	1/4"	114	9	14	53	M5x0.8	25	50	8
32	14	45	M12x1.25	1/4"	128	13	16	56	M6x1	35	60	9
	22		M16x1.5									
40	18	64	M14x1.5	3/8"	153	13	18	73	M8x1	35	62	9
	28		M20x1.5									
50	22	76	M16x1.5	1/2"	159	16	22	74	M12x1.25	41	67	16
	36		M27x2									
	28		M20x1.5									
63	28	90	M20x1.5	1/2"	168	19	28	80	M12x1.25	48	71	16
	45		M33x2									
	36		M27x2									
80	36	115	M27x2	3/4"	190	22	36	93	M16x1.5	51	77	21
	56		M42x2									
	45		M33x2									
100	45	130	M33x2	3/4"	203	25	45	101	M16x1.5	57	82	21
	70		M48x2									
	56		M42x2									
125	56	165	M42x2	1"	232	25	56	117	M22x1.5	57	86	27
	90		M64x3									
	70		M48x2									
160	70	205	M48x2	1"	245	25	63	130	M27x2	57	86	33
	110		M80x3									
	90		M64x3									
200	90	245	M64x3	1 1/4"	299	25	85	165	M30x2	57	98	36
	140		M100x3									
	110		M80x3									
	110		M80x3									

Note: Head end cushioning will not be provided for larger sized piston rods.

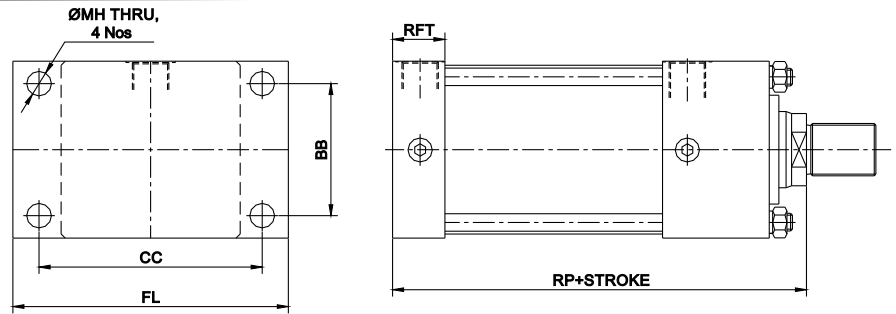


Standard Mountings - HH21 Series

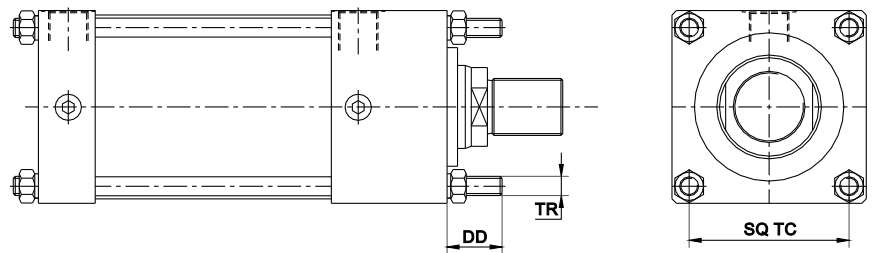
Head Flange (ME5)



Cap Flange (ME6)



Extended Tie Rod Head End (MX3)

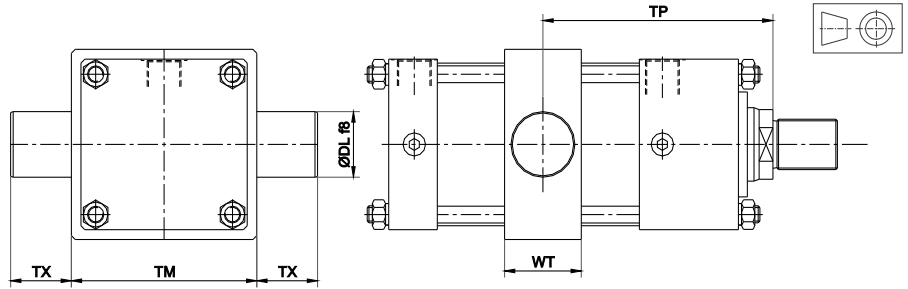


DIMENSIONAL DETAILS																										
BORE	25	32	40	50	63	80	100	125	160	200																
ROD	12	14	22	18	28	22	36	28	28	45	36	36	56	45	45	70	56	56	90	70	70	110	90	90	140	110
BB	27	33	41	52	65	83	97	126	155	190																
CC	51	58	87	105	117	149	162	208	253	300																
FL	65	70	110	130	145	180	200	250	300	360																
SD	38	42	62	74	75	88	88	82	105	105	92	125	125	105	150	150	125	170	170	150	210	210				
SP	3	3	3	4	4	4	5	5	5	5																
MH	5.5	6.6	11	14	14	18	18	22	26	33																
FFT	40	40	45	45	45	50	50	58	58	76																
RFT	25	25	38	38	38	45	45	58	58	76																
FP	25	35	35	41	48	51	57	57	57	57																
RP	114	128	153	159	168	190	203	232	245	299																
DD	19	24	35	46	46	59	59	81	92	115																
TC	28	33	42	52	64	83	97	126	155	190																
TR	M5	M6 x 1	M8 x 1	M12 x 1.25	M12 x 1.25	M16 x 1.5	M16 x 1.5	M22 x 1.5	M27 x 2	M30 x 2																

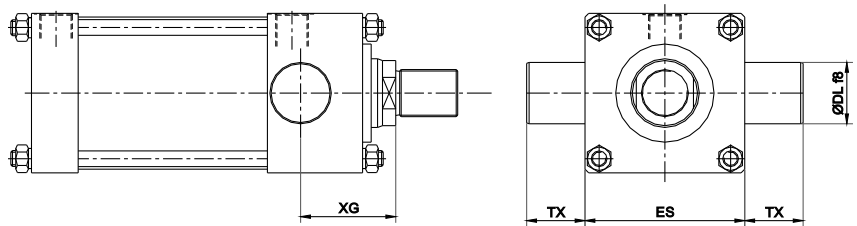


Standard Mountings - HH21 Series

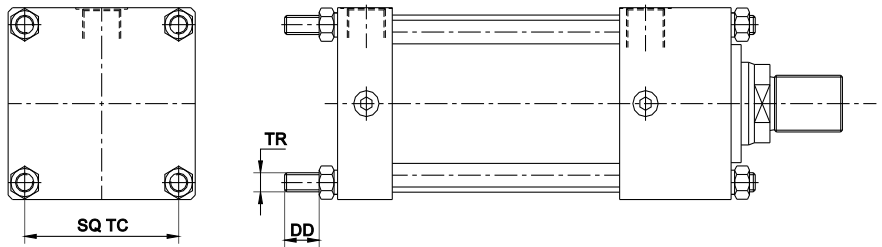
Intermediate Trunnion (MT4)



Head Trunnion (MT1)



Extended Tie Rod Cap End (MX2)

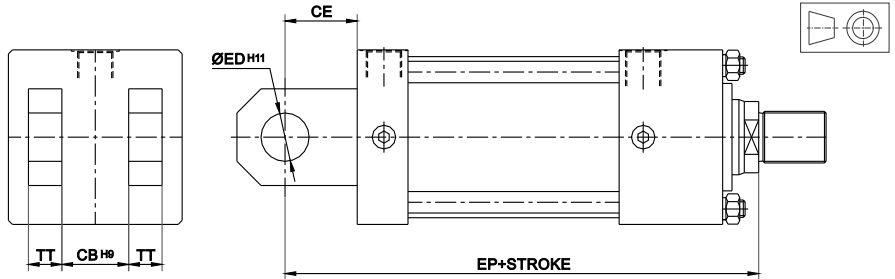


DIMENSIONAL DETAILS																														
BORE	25			32			40			50			63			80			100			125			160			200		
ROD	12	14	22	18	28	22	36	28	28	45	36	36	56	45	45	70	56	56	90	70	70	110	90	90	140	110				
WT	20	25	30	40			40			50			60			73			90			110								
TM	48	55	76	89			100			127			140			178			215			279								
TX	10	12	16	20			25			32			40			50			63			80								
DL	12	16	20	25			32			40			50			63			80			100								
XG	44	54	57	64			70			76			71			75			75			85								
TP	TO BE SPECIFIED BY CUSTOMER																													
DD	19	24	35	26			46			59			59			81			92			115								
TC	28	33	42	52			64			83			97			126			155			190								
TR	M5	M6 x 1	M8 x 1	M12 x 1.25			M12 x 1.25			M16 x 1.5			M16 x 1.5			M22 x 1.5			M27 x 2			M30 x 2								

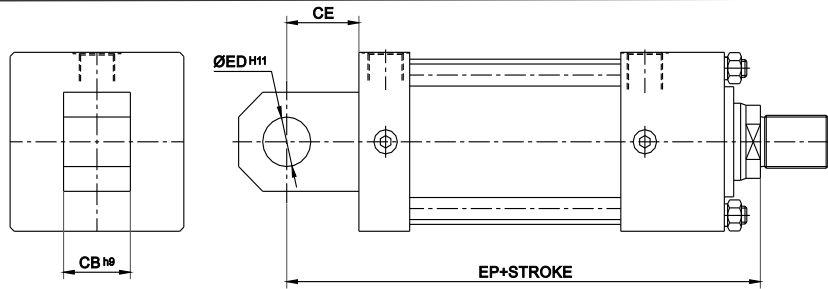


Standard Mountings - HH21 Series

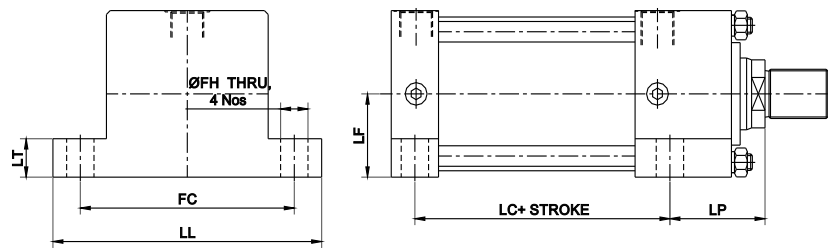
Cap Clevis (MP1)



Cap Eye (MP3)



Foot Lug (MS2)



DIMENSIONAL DETAILS

	25		32		40		50			63			80			100			125			160			200											
BORE	25	32	40	50	63	80	100	125	160	200	12	14	22	18	28	22	36	28	28	45	36	36	56	45	45	70	56	56	90	70	70	110	90	90	140	110
ROD	10	12	14	20	20	28	36	45	56	70	70	82	82	90	90	101	101	122	122	130	130	165	165	205	205	245	245	245	245	245	245	245				
ED	6	8	10	15	15	20	25	30	35	40	40	44	44	57	57	63	63	82	82	82	82	82	82	101	101	122	122	122	122	122	122	122				
TT	12	16	20	30	30	40	50	60	70	80	80	90	90	115	115	130	130	165	165	165	165	205	205	245	245	245	245	245	245	245	245	245				
CB	13	19	19	32	32	39	54	57	63	82	82	90	90	115	115	130	130	165	165	165	165	205	205	245	245	245	245	245	245	245	245	245				
CE	127	147	172	191	200	229	257	289	308	381	381	44	44	57	57	63	63	82	82	82	82	101	101	122	122	122	122	122	122	122	122	122				
EP	40	45	64	76	90	115	130	165	205	245	245	245	245	245	245	245	245	245	245	245	245	245	245	245	245	245	245	245	245	245	245	245				
ES	19	22	31	37	44	57	63	82	101	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122				
LF	6.6	9	11	14	18	18	26	26	33	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39				
FH	8.5	12.5	12.5	19	26	26	32	32	38	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44				
LT	54	63	83	102	124	149	172	210	260	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311				
FC	72	84	103	127	161	186	216	254	318	381	381	381	381	381	381	381	381	381	381	381	381	381	381	381	381	381	381	381	381	381	381	381				
LL	33	45	45	54	65	68	79	79	86	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98				
LP	73	73	98	92	86	105	102	131	130	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172				
LC																																				

Technical Data & Ordering Details for HH21 Series



TECHNICAL DETAILS															
Bore Dia (mm)	Rod Dia (mm)	Piston Area		Action Force at Pressure in kgf				Piston velocity in m/s at flow= 1 ltr/min		Requisite flow in ltr/min for velocity = 0.1 m/s					
		(cm ²)		140 kg/cm ²		210 kg/cm ²		+	-	+	-				
		+	-	+	-	+	-								
25	12	4.9	3.8	686.9	529	1030	793	0.0340	0.0441	2.94	2.27				
32	14	8.0	6.5	1125.4	910	1688	1365	0.0207	0.0256	4.82	3.90				
	22		4.2									593	890	0.0393	2.54
40	18	12.6	10.0	1758.4	1402	2638	2103	0.0133	0.0166	7.54	6.01				
	28		6.4									897	1345	0.0260	3.84
50	22	19.6	15.8	2747.5	2216	4121	3323	0.0085	0.0105	11.78	9.50				
	36		9.5									1323	1985	0.0176	5.67
	28		13.5									1886	2829	0.0124	8.08
63	28	31.2	25.0	4361.9	3500	6543	5250	0.0053	0.0067	18.69	15.00				
	45		15.3									2136	3205	0.0109	9.16
	36		21.0									2938	4406	0.0079	12.59
80	36	50.2	40.1	7033.6	5609	10550	8414	0.0033	0.0042	30.14	24.04				
	56		25.6									3587	5381	0.0065	15.37
	45		34.3									4808	7212	0.0049	20.61
100	45	78.5	62.6	10990.0	8765	16485	13147	0.0021	0.0027	47.10	37.56				
	70		40.0									5605	8407	0.0042	24.02
	56		53.9									7544	11315	0.0031	32.33
125	56	122.7	98.0	17171.9	13725	25758	20588	0.0014	0.0017	73.59	58.82				
	90		59.1									8270	12405	0.0028	35.44
	70		84.2									11787	17680	0.0020	50.51
160	70	201.0	162.5	28134.4	22749	42202	34124	0.0008	0.0010	120.58	97.50				
	110		106.0									14837	22255	0.0016	63.59
	90		137.4									19233	28849	0.0012	82.43
200	90	314.0	250.4	43960.0	35058	65940	52587	0.0005	0.0007	188.40	150.25				
	140		160.1									22420	33629	0.0010	96.08
	110		219.0									30662	45993	0.0008	131.41

Model Code Indication

HH21 - 100 / 500 - ME5 - 45 - CB - (X) - SS12

Series	Bore sizes	Stroke	Mountings	Piston Rod sizes	Cushioning	Accessories & Special features	Sealing System Code
HH21 Rated Hydraulic Pressure of 210kg/cm ²	Ø25 - 200mm (10 Std. sizes)	To be specified in mm	ME5 - Head Flange ME6 - Cap Flange MX2 - Extended Tie Rod-Cap End MX3 - Extended Tie Rod-Head End MT1 - Head Trunnion MT4 - Intermediate Trunnion MP1 - Cap Clevis MP3 - Cap Eye MS2 - Foot Lug	Ø12 - 140mm (26 Std. sizes)	CB - Cushioned at both ends CR - Cushioned at Rear end CF - Cushioned at Front end NC - Non Cushioned	PRE - Rod Eye PRF - Rod Fork SA - Single Acting DE - Double Ended	SS12 (Std.) for alternatives contact us.

NOTE:- The right of modification for technical improvement is reserved. All dimensions are in mm unless otherwise specified

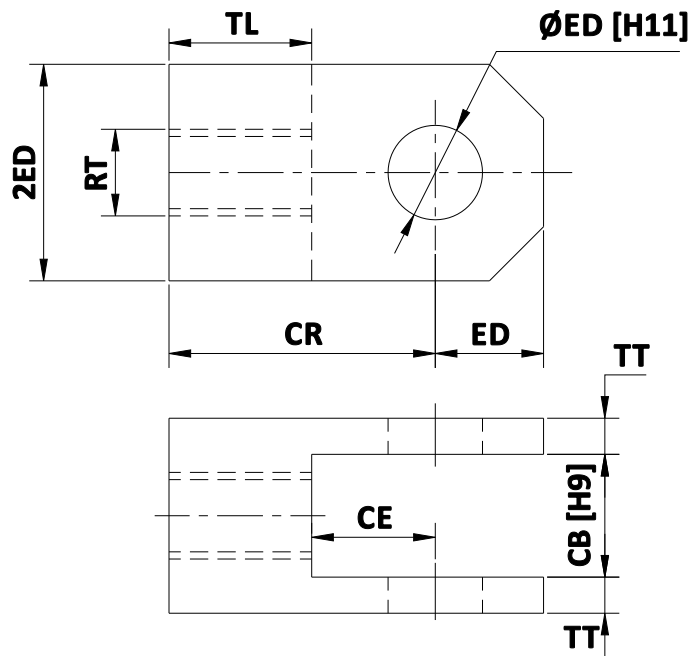
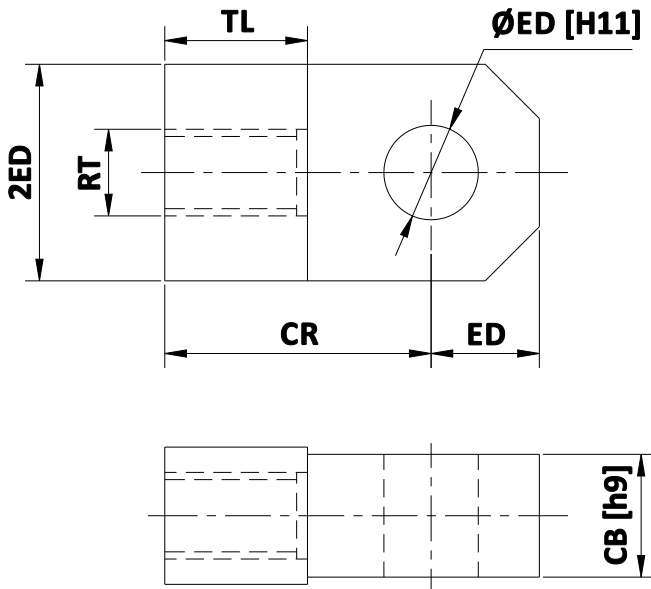
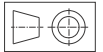
CUSTOM BUILT CYLINDERS CAN ALSO BE OFFERED ON REQUEST

Piston Rod Eye & Piston Rod Fork for HH21 Series



Piston Rod Eye (PRE)

Piston Rod Fork (PRF)



Ordering Code

For Piston Rod Eye :- HH21-PRE-**
where ** - Piston Rod Dia

For Piston Rod Fork :- HH21-PRF-**
where ** - Piston Rod Dia

SPECIFICATION & DIMENSIONAL DETAILS							
ROD DIA	RT	TL	CR	ED	CB	TT	CE
12	M10x1.25	18	32	10	12	7	14
14	M12x1.25	17	36	12	16	9	19
18	M14x1.5	19	38	14	20	11	19
22	M16x1.5	22	54	20	30	16	32
28	M20x1.5	28	60	20	30	21.5	32
36	M27x2	36	75	28	40	26.5	39
45	M33x2	45	99	36	50	31.5	54
56	M 42x2	56	113	45	60	36.5	57
70	M48x2	63	126	56	70	41.5	63
90	M64x3	85	168	70	80	45	83

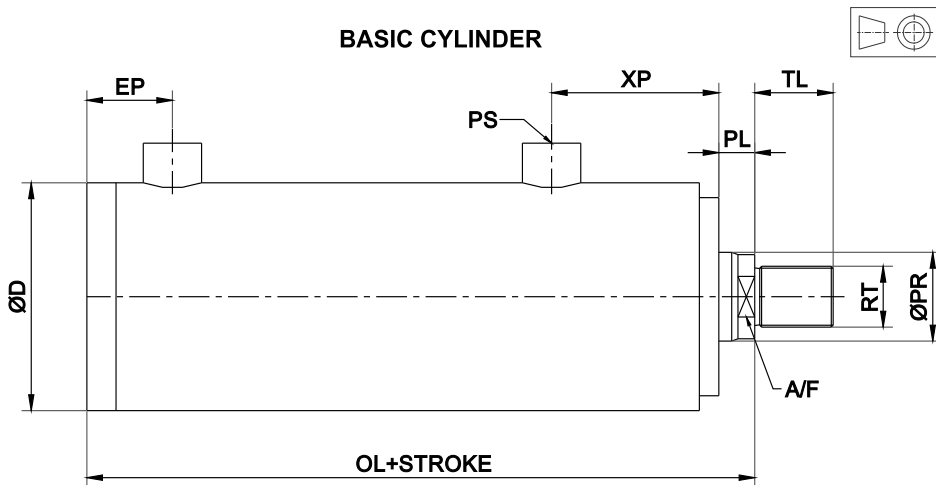


Hydraulic Cylinders - WH21 Series



- Rated Pressure 210 kg/cm²
- Peak Pressure 315 kg/cm²
- Cylinder bore diameters up to 400mm
- Temperature range:- -20°C to 90°C. (optional seals for temp. up to 180°C)

BASIC CYLINDER



SPECIFICATION OF MATERIALS

END COVERS : Precision machined steel

CYLINDER BARREL : Cold drawn seamless steel tube, honed and polished internally to a maximum surface roughness of Ra=0.4 microns

PISTON : Steel, single piece, precisely machined for perfect alignment

PISTON BEARING : Polyester fabric with polyester resin+PTFE for maximum rigidity

PISTON ROD : Medium carbon steel, toughened, ground Hard-chrome plated & polished to a maximum roughness of Ra=0.4 microns

PISTON ROD BEARING : Polyester fabric with polyester resin+PTFE for maximum rigidity

SEALING SYSTEM : We use a wide range of international std sealing systems to suit various applications & temperatures

MOUNTINGS : Accurately machined steel suitable for heavy duty application

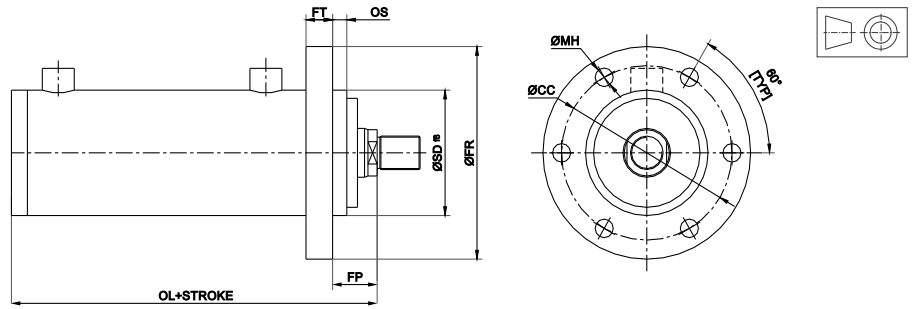
BORE	PR	D	RT	PS	OL	PL	TL	EP	AF	XP
40	20	50	M16X1.5	3/8" BSP	137	20	18	28	16	47
	25		M18X1.5							
50	25	60	M18X1.5	3/8" BSP	150	20	18	28	18	54
	28		M24X2				23		24	
63	28	73	M24X2	3/8" BSP	159	20	23	28	24	57
	36		M24X2						26	
80	45	95	M27X2	1/2" BSP	198	20	30	37	33	73
	50		M30X2						42	
100	50	115	M30X2	1/2" BSP	225	25	30	44	40	86
	70		M56X2				56		56	
125	70	145	M56X2	3/4" BSP	252	25	56	55	56	89
	90		M64X2				64		74	
140	70	160	M56X2	3/4" BSP	279	30	55	62	58	98
	100		M80X2				80		86	
160	80	185	M64X2	3/4" BSP	303	35	60	64	69	117
	100		M80X2				80		86	
180	90	205	M70X2	1" BSP	339	35	70	75	78	122
	125		M110X2				120		110	
200	100	230	M90X2	1" BSP	364	40	80	82	86	135
	140		M105X2				115		125	

Note: cushioning will be fixed at the head end

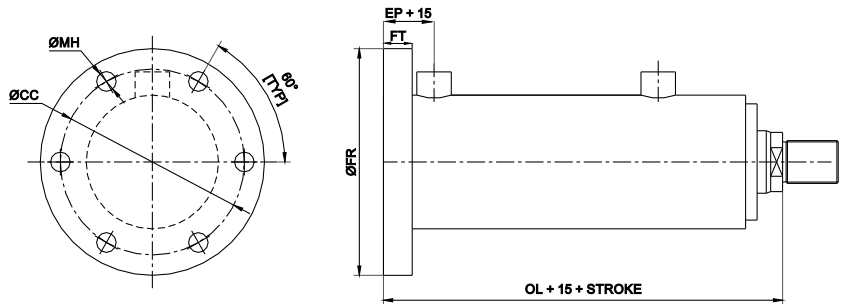
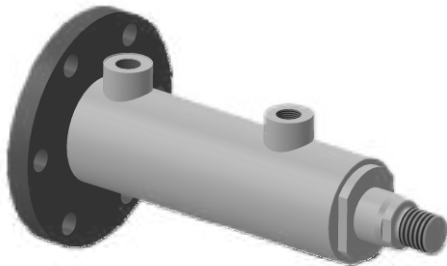


Standard Mountings - WH21 Series

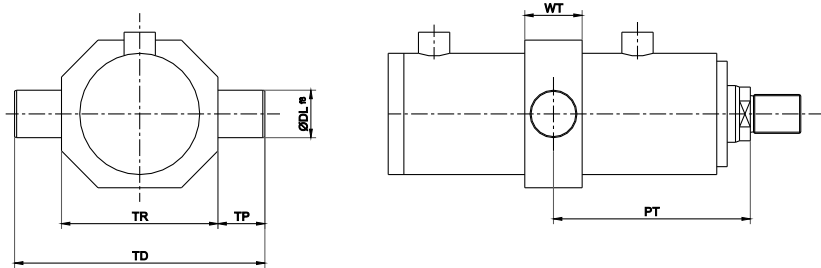
Front Flange (FF)



Rear Flange (RF)



Intermediate Trunnion (IT)



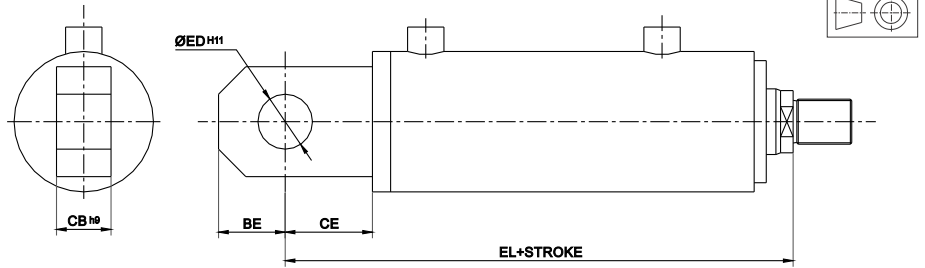
DIMENSIONAL DETAILS

BORE	40	50	63	80	100	125	140	160	180	200
FP	30	34	36	39	43	46	50	57	63	72
FT	12	15	18	20	25	28	35	35	35	40
SD	44	54	67	82	100	135	145	155	190	215
OS	5	8	8	10	10	11	10	12	15	17
FR	110	130	145	170	195	250	280	340	350	380
CC	90	100	115	140	160	210	220	265	290	320
MH	11	13	13	15	17	21	25	32	32	32
WT	30	35	45	50	55	60	65	80	80	100
TD	105	130	165	200	240	285	310	390	400	440
TR	65	80	95	120	150	185	200	260	260	280
TP	20	25	35	40	45	50	55	65	70	80
DL	20	25	35	40	45	50	55	65	70	80
PT	TO BE SPECIFIED BY CUSTOMER									

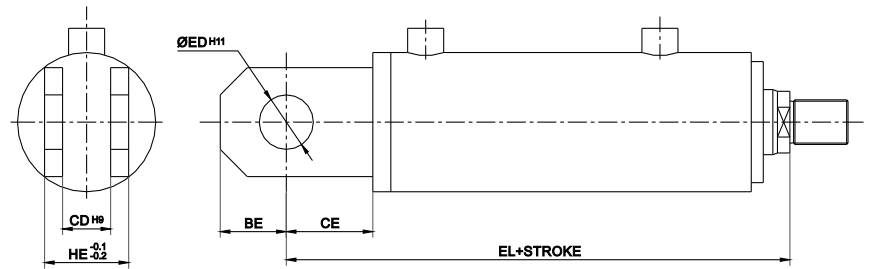


Standard Mountings - WH21 Series

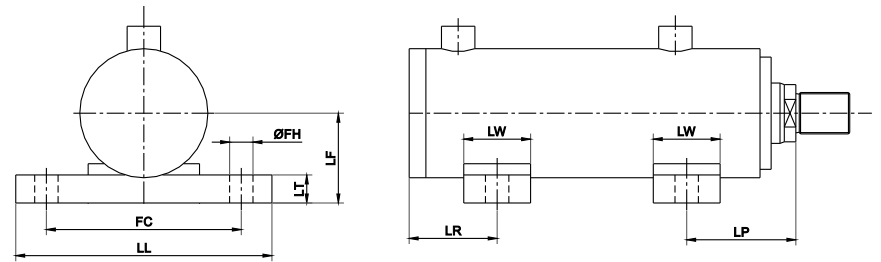
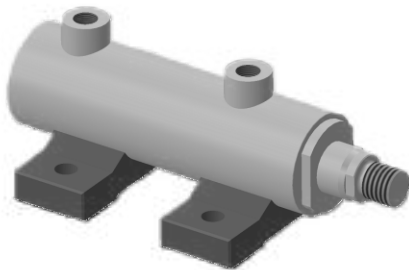
Rear Eye (RE)



Rear Clevis (RC)



Foot Lug (FL)



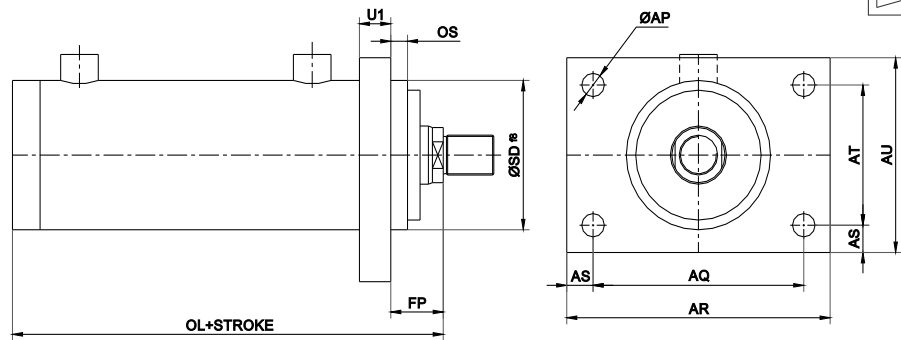
DIMENSIONAL DETAILS

BORE	40	50	63	80	100	125	140	160	180	200
ED	20	25	30	35	45	50	70	80	80	90
BE	27	30	35	42	55	55	80	95	105	115
CB	20	25	32	40	45	50	60	70	80	100
CD	15	20	25	35	40	45	55	70	70	85
CE	34	40	45	55	72	82	95	115	125	135
EL	171	190	204	253	297	334	374	418	463	499
HE	35	40	45	65	70	85	105	120	130	150
LW	40	40	50	50	60	60	70	90	90	90
LP	60	69	76	81	98	101	110	137	143	157
FH	11	11	13	17	21	25	32	32	35	38
FC	80	90	115	140	175	225	240	290	310	340
LL	110	120	150	185	230	285	310	380	390	440
LT	15	15	18	22	25	25	30	40	45	50
LF	35	40	50	60	80	95	105	128	135	160
LR	44	44	55	57	79	83	91	106	110	112

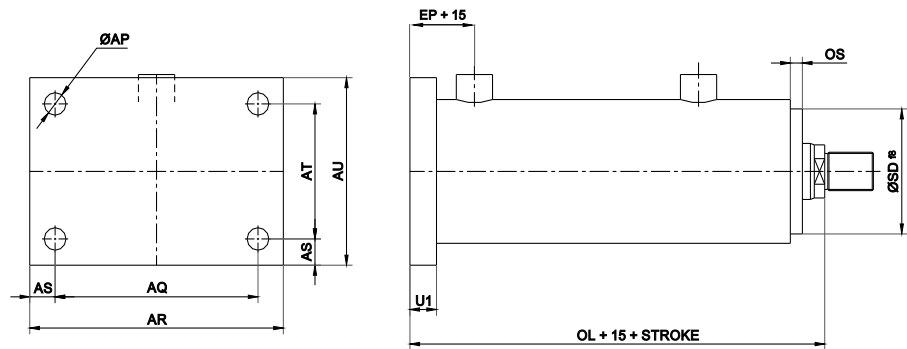
Rectangular Flange Mounting for WH21 Series



Front Flange Rectangular (FFR)



Rear Flange Rectangular (RFR)



BORE	U ₁	ØAP	AQ	AR	AS	AT	AU
40	10	11	87	110	11.5	41	64
50	16	14	105	130	12.5	52	77
63	16	14	120	145	12.5	65	90
80	19	18	136	170	17	86	120
100	22	18	168	210	21	108	150
125	22	23	205	255	25	135	185
160	25	27	258	320	31	178	240
200	25	33	285	365	40	215	295

NOTE: REFER PAGE NO. 2.410/1 FOR UNSPECIFIED DETAILS

Technical Data & Ordering Details for WH21 Series



TECHNICAL DETAILS											
Bore Dia (mm)	Rod Dia (mm)	Piston Area (cm ²)		Action Force at Pressure in kgf				Piston velocity in m/s at flow= 1 ltr/min		Requisite flow in ltr/min for velocity = 0.1 m/s	
		+	-	100 kg/cm ²		200 kg/cm ²		+	-	+	-
40	20	12.6	9.4	1256.0	942	2512	1884	0.0133	0.0177	7.54	5.65
	25		7.7		765		1531		0.0218		4.59
50	25	19.6	14.7	1962.5	1472	3925	2944	0.0085	0.0113	11.78	8.83
	28		13.5		1347		2694		0.0124		8.08
63	28	31.2	25.0	3115.7	2500	6231	5000	0.0053	0.0067	18.69	15.00
	36		21.0		2098		4197		0.0079		12.59
80	45	50.2	34.3	5024.0	3434	10048	6869	0.0033	0.0049	30.14	20.61
	50		30.6		3062		6123		0.0054		18.37
100	50	78.5	58.9	7850.0	5888	15700	11775	0.0021	0.0028	47.10	35.33
	70		40.0		4004		8007		0.0042		24.02
125	70	122.7	84.2	12265.6	8419	24531	16838	0.0014	0.0020	73.59	50.51
	90		59.1		5907		11814		0.0028		35.44
140	70	153.9	115.4	15386.0	11540	30772	23079	0.0011	0.0014	92.32	69.24
	100		75.4		7536		15072		0.0022		45.22
160	80	201.0	150.7	20096.0	15072	40192	30144	0.0008	0.0011	120.58	90.43
	100		122.5		12246		24492		0.0014		73.48
180	90	254.3	190.8	25434.0	19076	50868	38151	0.0007	0.0009	152.60	114.45
	125		131.7		13168		26337		0.0013		79.01
200	100	314.0	235.5	31400.0	23550	62800	47100	0.0005	0.0007	188.40	141.30
	140		160.1		16014		32028		0.0010		96.08

Model Code Indication

W H 2 1 - 1 0 0 / 5 0 0 - F F - 5 0 - N C - (X) - S S 4

Series	Bore sizes	Stroke	Mountings	Piston Rod sizes	Cushioning	Accessories & Special features	Sealing System Code
WH21 Rated Hydraulic Pressure of 210kg/cm ²	Ø40 - 400mm (10 Std. sizes)	To be specified in mm	FF - Front Flange RF - Rear Flange RC - Rear Clevis RE - Rear Eye FL - Foot Lug IT - Intermediate Trunnion	Ø20 - 140mm (12 Std. sizes)	NC - Non Cushioned	PRE - Rod Eye PRF - Rod Fork SA - Single Acting DE - Double Ended	SS4 (Std.) for alternatives contact us.

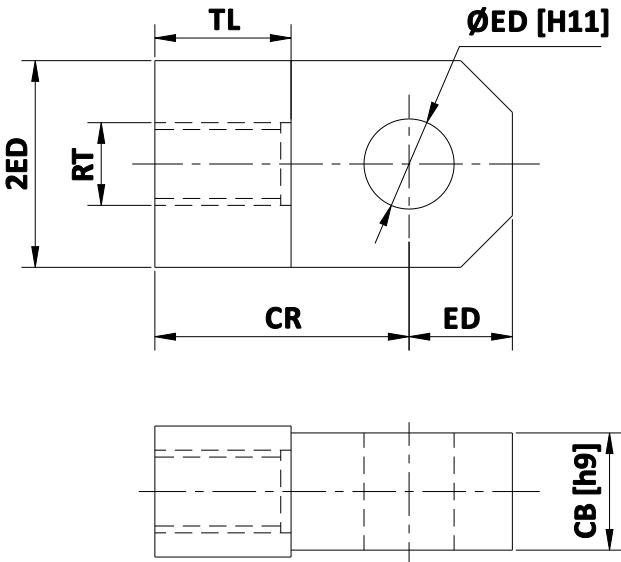
NOTE:- The right of modification for technical improvement is reserved. All dimensions are in mm unless otherwise specified

CUSTOM BUILT CYLINDERS CAN ALSO BE OFFERED ON REQUEST

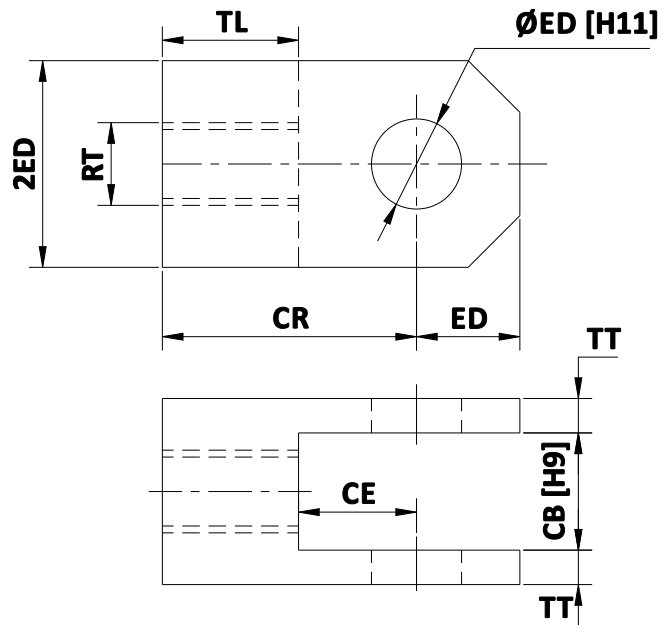
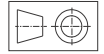
Piston Rod Eye & Piston Rod Fork for WH21 Series



Piston Rod Eye (PRE)



Piston Rod Fork (PRF)



Ordering Code

For Piston Rod Eye :- WH21-PRE-**
where ** - Piston Rod Dia

For Piston Rod Fork :- WH21-PRF-**
where ** - Piston Rod Dia

SPECIFICATION & DIMENSIONAL DETAILS							
ROD DIA	RT	TL	CR	ED	CB	TT	CE
20	M16 x 1.5	20	54	20	20	7.5	34
25	M18 x 1.5	20	60	25	25	10	40
28	M24 x 2	25	70	30	32	12	45
36	M24 x 2	25	80	35	40	16	55
45	M27 x 2	33	105	45	45	18	72
50	M30 x 2	33	115	50	50	20	82
70	M56 x 2	60	155	70	60	24	95
80	M64 x 2	67	182	80	70	28	115
90	M70 x 2	75	200	80	80	32	125
100	M90 x 2	85	220	90	100	40	135



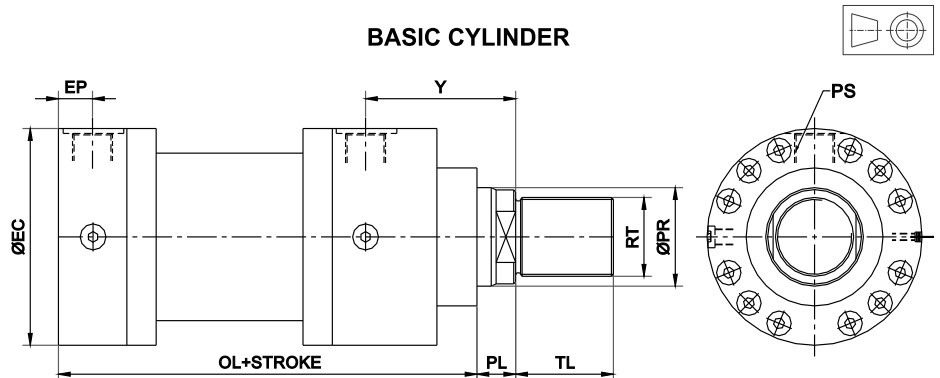
Hydraulic Cylinders - NH16 Series

(Mill Duty Cylinders as per ISO 6020/1)



- Rated Pressure 160 kg/cm²
- Peak Pressure 240 kg/cm²
- Cylinder bore diameters up to 250mm
- Temperature range:- -20°C to 90°C. (optional seals for temp. up to 180°C)

BASIC CYLINDER



SPECIFICATION OF MATERIALS

END COVERS : Precision machined steel

CYLINDER BARREL : Cold drawn seamless steel tube, honed and polished internally to a maximum surface roughness of Ra=0.4 microns

PISTON : Steel, single piece, precisely machined for perfect alignment

PISTON BEARING : Polyester fabric with polyester resin+PTFE for maximum rigidity

PISTON ROD : Medium carbon steel, toughened, ground Hard-chrome plated & polished to a maximum roughness of Ra=0.4 microns

PISTON ROD BEARING : Polyester fabric with polyester resin+PTFE for maximum rigidity

SEALING SYSTEM : We use a wide range of international std sealing systems to suit various applications and temperatures

MOUNTINGS : Accurately machined steel suitable for heavy duty application

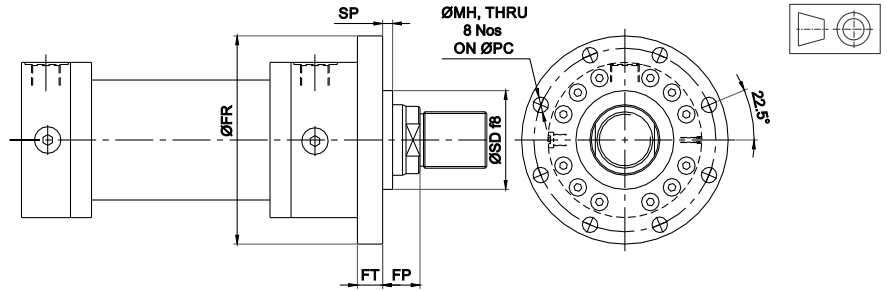
BORE DIA	PR DIA	EC DIA	RT	PS (BSP)	OL	PL	TL	EP	Y
32	18	67	M14x1.5	3/8"	157	13	18	17	64
	22		M16x1.5				22		
40	22	78	M16x1.5	1/2"	177	13	22	22	71
	28		M20x1.5				28		
50	28	95	M20x1.5	1/2"	191	14	28	22	72
	36		M27x2				36		
63	36	116	M27x2	3/4"	208	16	36	25	82
	45		M33x2				45		
80	45	130	M33x2	3/4"	232	18	45	25	91
	56		M42x2				56		
100	56	158	M42x2	1"	280	20	56	30	108
	70		M48x2				63		
125	70	192	M48x2	1"	302	23	63	30	121
	90		M64x3				85		
160	90	238	M64x3	1 1/4"	345	25	85	36	143
	110		M80x3				95		
200	110	285	M80x3	1 1/4"	420	30	95	36	190
	140		M100x3				112		
250	140	365	M100x3	1 1/2"	518	32	112	40	210
	180		M125x4				125		

Note: Head End cushioning will not be provided in higher size piston rod

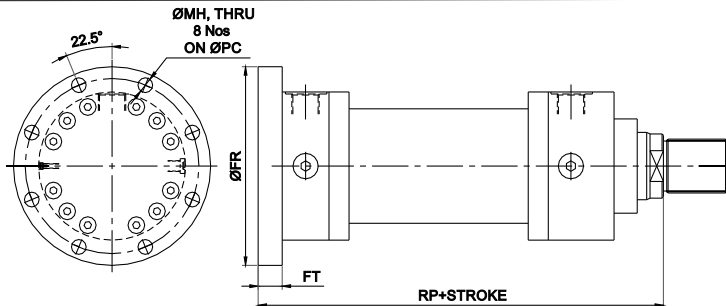


Standard Mountings NH16 Series

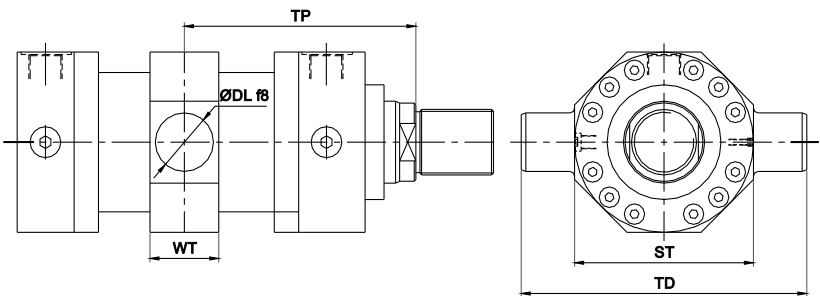
Front Flange (FF)



Rear Flange (RF)



Intermediate Trunnion (IT)



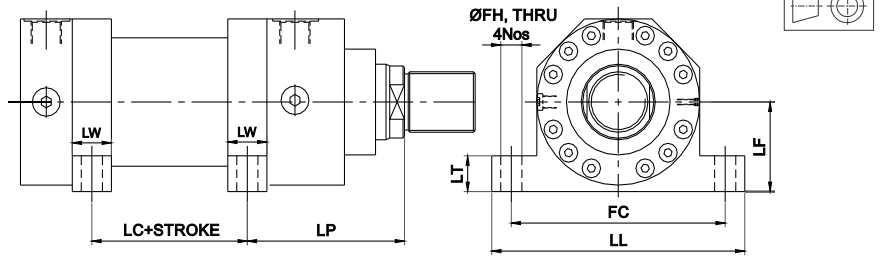
DIMENSIONAL DETAILS

BORE	32	40	50	63	80	100	125	160	200	250
FR	110	125	150	170	195	240	275	320	385	490
PC	92	106	126	145	165	200	235	280	340	420
MH	9	9	11	14	18	22	22	22	26	33
FT	16	16	20	25	32	32	32	36	40	56
SP	3	3	4	4	4	5	5	5	5	8
SD	40	50	60	70	85	106	132	160	200	250
FP	16	16	18	20	22	25	28	30	35	40
RP	186	206	225	249	282	332	357	406	490	606
WT	26	30	35	42	50	60	73	90	110	135
TD	99	122	145	170	199	240	295	366	455	570
ST	75	90	105	120	135	160	195	240	295	370
DL	16	20	25	32	40	50	63	80	100	125
TP	TO BE SPECIFIED BY CUSTOMER									

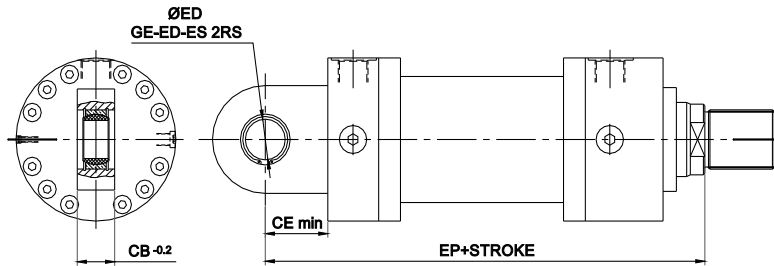


Standard Mountings NH16 Series

Foot Lug (FL)



Rear Eye with Spherical Bearing (RES)



DIMENSIONAL DETAILS

BORE	25	40	50	63	80	100	125	160	200	250
CB	16	20	25	32	40	50	63	80	100	125
ED	16	20	25	32	40	50	63	80	100	125
CE	20	25	32	40	50	63	71	91	112	160
EP	206	231	257	289	332	395	428	505	615	773
LC	40	44	51	51	60	70	76	79	100	154
LL	110	120	145	180	210	250	300	350	415	525
FC	90	100	120	150	170	205	245	295	350	450
LW	25	25	32	32	40	50	56	60	72	80
LT	25	30	40	45	50	60	70	80	100	140
LF	38	43	52	62	70	82	100	119	145	190
FH	11	11	14	18	22	26	33	33	39	45
LP	88.5	97.5	102	115	128	154	170	199	252	288

Technical Data & Ordering Details for NH16 Series



TECHNICAL DETAILS											
Bore Dia (mm)	Rod Dia (mm)	Piston Area (cm ²)		Action Force at Pressure in kgf				Piston Velocity in m/s at flow=1 ltr/min		Requisite flow in ltr/min for Velocity=0.1 m/s	
				100 kg/cm ²		160 kg/cm ²					
		+	-	+	-	+	-	+	-	+	-
32	18	8	5.5	800	550	1280	880	0.02078	0.03	4.81	3.33
	22		4.2		420		672		0.03942		2.54
40	22	12.6	8.8	1260	880	2016	1408	0.0133	0.0189	7.52	5.29
	28		6.4		640		1024		0.02607		3.84
50	28	19.6	13.5	1960	1350	3136	2160	0.00851	0.0124	11.75	8.07
	36		9.5		950		1520		0.01767		5.66
63	36	31.2	20.9	3120	2090	4992	3344	0.00536	0.00796	18.66	12.56
	45		15.3		1530		2448		0.01094		9.14
80	45	50.2	34.4	5020	3440	8032	5504	0.00332	0.00486	30.08	20.57
	56		25.6		2560		4096		0.00652		15.34
100	56	78.5	53.9	7850	5390	12560	8624	0.00213	0.0031	47.01	33.26
	70		40		4000		6400		0.00417		23.97
125	70	122.7	84.2	12270	8420	19632	13472	0.00136	0.00198	73.45	50.41
	90		59		5900		9440		0.00283		35.37
160	90	201	137	20100	13700	32160	21920	0.00083	0.00122	120.34	82.26
	110		106		1060		16960		0.00158		63.46
200	110	314	219	31400	21900	50240	35040	0.00053	0.00076	188.02	131.15
	140		160		16000		25600		0.00104		95.89
250	140	490	337	49000	33700	78400	53920	0.00034	0.00049	294.1	204
	180		236.4		23640		37824		0.00071		140.8

Model Code Indication

NH16 - 100 / 500 - FF - 45 - CB - (X) - SS4

Series	Bore sizes	Stroke	Mountings	Piston Rod sizes	Cushioning	Accessories & Special features	Sealing System Code
NH16 Rated Hydraulic Pressure of 160kg/cm ²	Ø32 - 250mm (10 Std. sizes)	To be specified in mm	FF - Front Flange RF - Rear Flange RES - Rear Eye with Spherical Bearing FL - Foot Lug IT - Intermediate Trunnion	Ø18 - 180mm (11 Std. sizes)	CB - Cushioned at both ends CR - Cushioned at Rear end CF - Cushioned at Front end NC - Non Cushioned	PRES - Rod Eye with Spherical Bearing PRF - Rod Fork SA - Single Acting DE - Double Ended	SS4 (Std.) for alternatives contact us.

NOTE:- The right of modification for technical improvement is reserved. All dimensions are in mm unless otherwise specified

CUSTOM BUILT CYLINDERS CAN ALSO BE OFFERED ON REQUEST

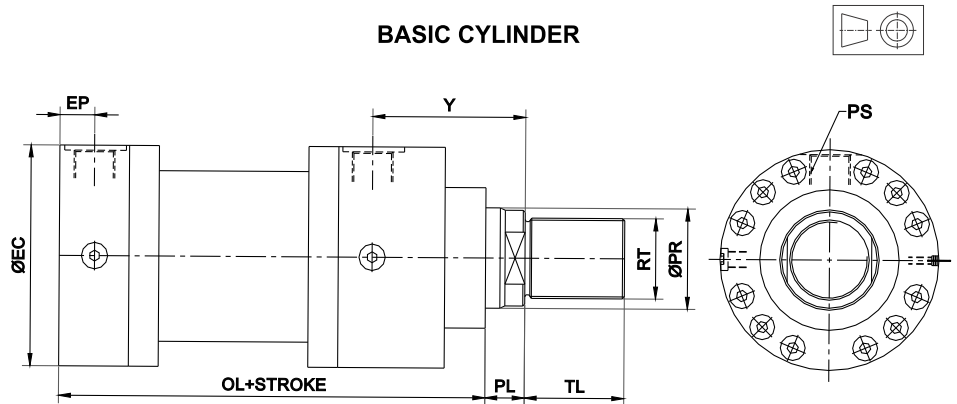


Hydraulic Cylinders - NH25 Series



- Rated Pressure 250 kg/cm²
- Peak Pressure 375 kg/cm²
- Cylinder bore diameters up to 350mm
- Temperature range:- -20°C to 90°C. (optional seals for temp. up to 180°C)

BASIC CYLINDER



SPECIFICATION OF MATERIALS

END COVERS : Precision machined steel

CYLINDER BARREL : Cold drawn seamless steel tube, honed and polished internally to a maximum surface roughness of Ra=0.4 microns

PISTON : Steel, single piece, precisely machined for perfect alignment

PISTON BEARING : Polyester fabric with polyester resin+PTFE for maximum rigidity

PISTON ROD : Medium carbon steel, toughened, ground Hard-chrome plated & polished to a maximum roughness of Ra=0.4 microns

PISTON ROD BEARING : Polyester fabric with polyester resin+PTFE for maximum rigidity

SEALING SYSTEM : We use a wide range of international std sealing systems to suit various applications and temperatures

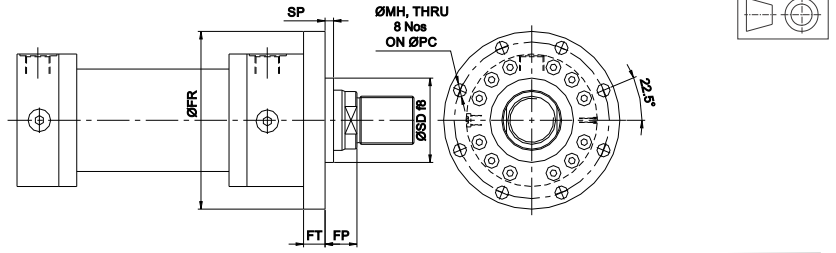
MOUNTINGS : Accurately machined steel suitable for heavy duty application

BORE DIA	PR DIA	EC DIA	RT	PS (BSP)	OL	PL	TL	EP	Y
50	36	100	M27x2	1/2"	222	18	36	36	85
63	45	116	M33x2	3/4"	249	21	45	33	97
80	56	145	M42x2	3/4"	286	24	56	34	110
100	70	175	M48x2	1"	362	27	63	37	125
125	90	214	M64x3	1"	421	31	85	45	144
160	110	270	M80x3	1 ¼"	495	35	95	49	180
200	140	330	M100x3	1 ¼"	580	40	112	57	211

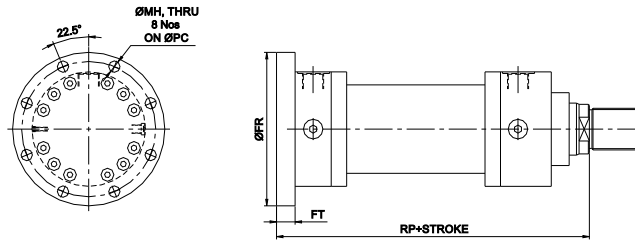


Standard Mountings NH25 Series

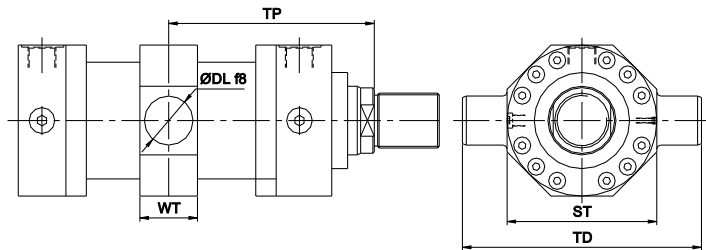
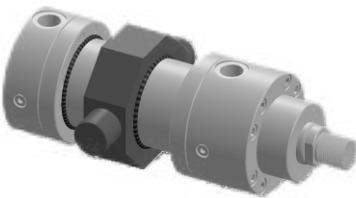
Front Flange (FF)



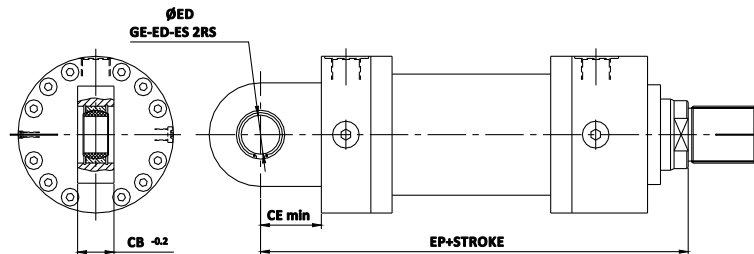
Rear Flange (RF)



Intermediate Trunnion (IT)



Rear Eye with Spherical Bearing (RES)



DIMENSIONAL DETAILS							
BORE	50	63	80	100	125	160	200
FR	165	180	220	260	295	370	460
PC	132	150	180	212	250	315	385
MH	14	14	18	22	22	26	33
FT	25	28	32	36	40	45	56
SP	4	4	4	5	5	5	5
SD	63	75	90	110	132	160	200
FP	22	25	28	32	36	40	45
RP	265	298	332	371	430	505	596
CB	30	35	40	50	60	70	90
ED	30	40	50	60	80	100	120
CE	40	50	63	71	90	112	160
EP	305	348	395	442	520	617	756
WT	50	65	80	100	125	120	140
TD	162	189	240	280	350	440	535
ST	112	125	150	180	225	280	335
DL	32	45.5	50	63	80	100	125
TP	TO BE SPECIFIED BY CUSTOMER						

Technical Data & Ordering Details for NH25 Series



TECHNICAL DETAILS											
Bore Dia (mm)	Rod Dia (mm)	Piston Area		Action Force at Pressure in kgf				Piston velocity in m/s at flow= 1 ltr/min		Requisite flow in ltr/min for velocity = 0.1 m/s	
		(cm ²)		160 kg/cm ²		250 kg/cm ²		+	-	+	-
		+	-	+	-	+	-				
50	36	19.6	9.5	3140.0	1512.2	4906.3	2362.9	0.0085	0.0176	11.78	5.67
63	45	31.2	15.3	4985.1	2441.7	7789.2	3815.1	0.0053	0.0109	18.69	9.16
80	56	50.2	25.6	8038.4	4099.6	12560.0	6405.6	0.0033	0.0065	30.14	15.37
100	70	78.5	40.0	12560.0	6405.6	19625.0	10008.8	0.0021	0.0042	47.10	24.02
125	90	122.7	59.1	19625.0	9451.4	30664.1	14767.8	0.0014	0.0028	73.59	35.44
160	110	201.0	106.0	32153.6	16956.0	50240.0	26493.8	0.0008	0.0016	120.58	63.59
200	140	314.0	160.1	50240.0	25622.4	78500.0	40035.0	0.0005	0.0010	188.40	96.08

Model Code Indication

NH25 - 100 / 500 - FF - 45 - CB - (X) - SS4

Series	Bore sizes	Stroke	Mountings	Piston Rod sizes	Cushioning	Accessories & Special features	Sealing System Code
NH25 Rated Hydraulic Pressure of 250kg/cm ²	Ø50 - 350mm (7 Std. sizes)	To be specified in mm	FF - Front Flange RF - Rear Flange RES - Rear Eye with Spherical Bearing IT - Intermediate Trunnion	Ø36 - 140mm (7 Std. sizes)	CB - Cushioned at both ends CR - Cushioned at Rear end CF - Cushioned at Front end NC - Non Cushioned	PRES - Rod Eye with Spherical Bearing PRF - Rod Fork SA - Single Acting DE - Double Ended	SS4 (Std.) for alternatives contact us.

NOTE:- The right of modification for technical improvement is reserved. All dimensions are in mm unless otherwise specified

CUSTOM BUILT CYLINDERS CAN ALSO BE OFFERED ON REQUEST



Hydraulic Cylinders - CH16 Series

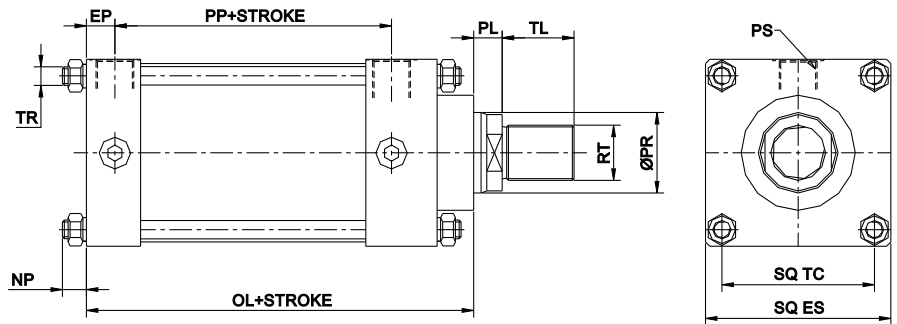
for Counter Balance Applications



- Rated Pressure 160 kg/cm²
- Peak Pressure 240 kg/cm²
- Speed up to 60m/min
- Temperature range:- 20°C to 90°C (alternatives available).



BASIC CYLINDER



SPECIFICATION OF MATERIALS

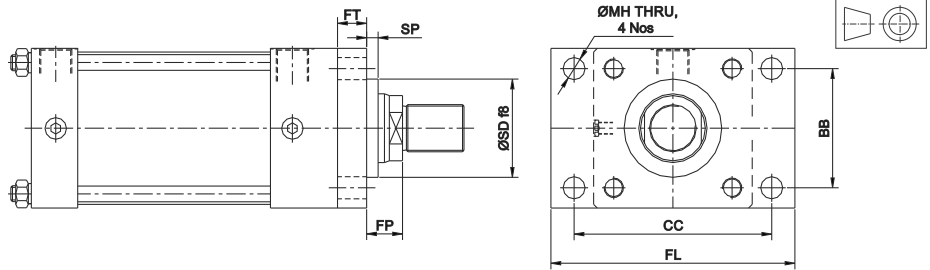
- END COVERS** : Precision machined steel
- CYLINDER BARREL** : Cold drawn seamless steel, honed and polished internally to a maximum surface roughness of Ra=0.4 microns
- PISTON** : Steel, single piece, precisely machined for perfect alignment
- PISTON BEARING** : Polyester fabric with polyester resin+PTFE for maximum rigidity
: Medium carbon steel, toughened, ground Hard-chrome plated & polished to a maximum roughness of Ra=0.4 microns
- PISTON ROD BEARING** : Polyester fabric with polyester resin+PTFE for maximum rigidity
- SEALING SYSTEM** : We use a wide range of international std sealing systems to suit various applications and temperatures
- MOUNTINGS** : Accurately machined steel suitable for heavy duty application

BORE	PR	ES	RT	PS	OL	PL	TL	PP	TR	NP	EP	TC
DIA	DIA	(Sq)		(BSP)								
32	20	54	M16x1.5	1/2"	155	19	25	87	M8x1.25	12	15	34
40	20	64	M16x1.5	1/2"	181	19	25	99	M10x1.5	12	15	44
50	25	76	M20x1.5	3/4"	191	19	30	103	M12x1.75	15	19	52
63	36	94	M27x2	3/4"	196	21	30	104	M12x1.75	15	19	64
80	45	112	M33x2	3/4"	220	21	45	122	M16 x 2	20	19	82

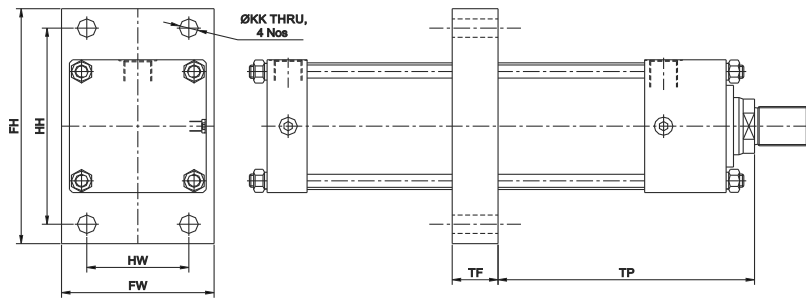


Standard Mountings CH16 Series

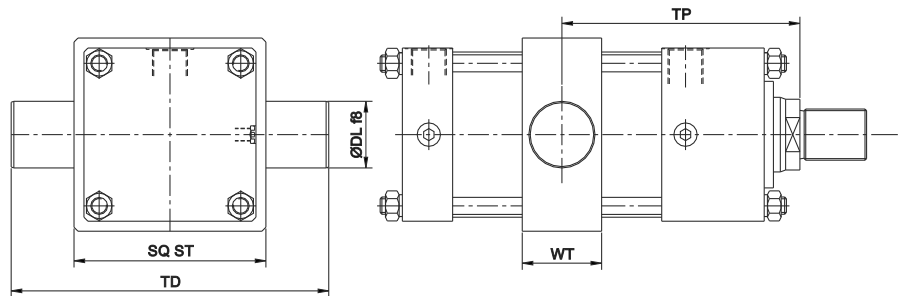
Front Flange (FF)



Intermediate Flange (IF)



Intermediate Trunnion (IT)

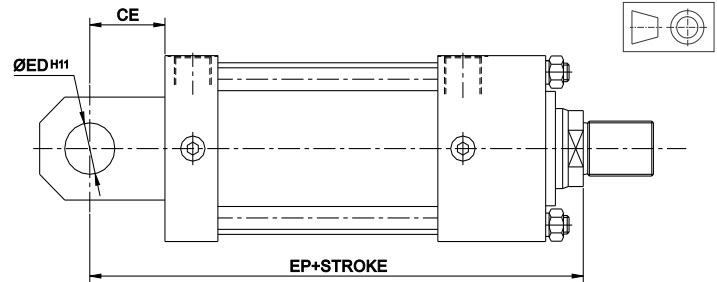
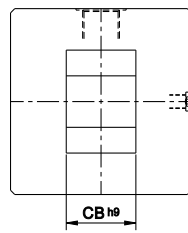


DIMENSIONAL DETAILS					
BORE	32	40	50	63	80
BB	40	42	52	65	83
CC	66	90	105	117	149
FL	85	112	130	142	180
SD	30	40	44	50	60
SP	4	4	4	4	5
MH	9	11	14	14	18
FT	10	10	16	16	20
FP	23	23	23	25	24
TF	15	20	25	25	30
HW	48	52	65	83	97
HH	90	105	117	149	162
FW	65	76	90	112	125
FH	105	130	142	180	194
KK	9	9	11	14	18
WT	32	32	40	40	45
TD	100	116	140	158	186
ST	58	68	76	95	114
DL	22	25	32	32	36
TP	TO BE SPECIFIED BY CUSTOMER				

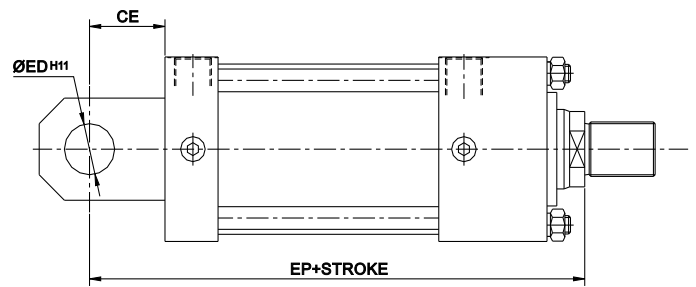
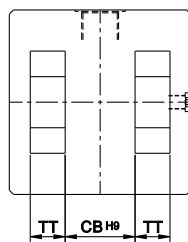
Standard Mountings CH16 Series



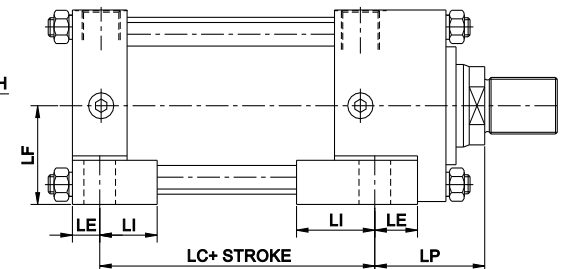
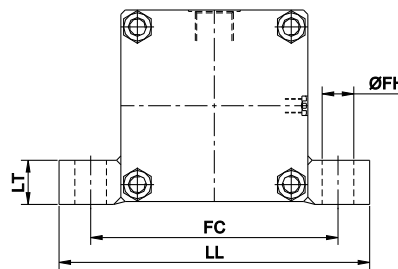
Rear Eye (RE)



Rear Clevis (RC)



Foot Lug (FL)



DIMENSIONAL DETAILS					
BORE	32	40	50	63	80
CB	16	20	30	30	40
TT	12	12	16	16	20
ED	12	14	20	20	28
CE	18	19	32	32	39
EP	182	209	232	239	278
LC	109	130	128	122	142
LL	92	106	127	166	185
FC	75	88	102	130	149
LI	22	24	40	40	45
LE	10	10	15	18	20
LT	12	12	20	25	30
LF	28	33	38	48	57
FH	9	11	14	20	20
LP	45	50	57	67	77

Technical Data & Ordering Details for CH16 Series



TECHNICAL DETAILS											
Bore Dia (mm)	Rod Dia (mm)	Piston Area (cm ²)		Action Force at Pressure in kgf				Piston velocity in m/s at flow= 1 ltr/min		Requisite flow in ltr/min for velocity = 0.1 m/s	
		+	-	50 kg/cm ²		75 kg/cm ²		+	-	+	-
32	20	8.0	4.9	401.9	244.9	602.9	367.4	0.0207	0.0340	4.82	2.94
40	20	12.6	9.4	628.0	471.0	942.0	706.5	0.0133	0.0177	7.54	5.65
50	25	19.6	14.7	981.3	735.9	1471.9	1103.9	0.0085	0.0113	11.78	8.83
63	36	31.2	21.0	1557.8	1049.2	2336.7	1573.7	0.0053	0.0079	18.69	12.59
80	45	50.2	34.3	2512.0	1717.2	3768.0	2575.8	0.0033	0.0049	30.14	20.61

Model Code Indication

CH16 - 80 / 500 - FF - 45 - NC - (X) - SS8

Series	Bore sizes	Stroke	Mountings	Piston Rod sizes	Cushioning	Accessories & Special features	Sealing System Code
CH16 Rated Hydraulic Pressure of 160kg/cm ²	Ø32 - 80mm (5 Std. sizes)	To be specified in mm	FF - Front Flange RF - Rear Flange RC - Rear Clevis RE - Rear Eye FL - Foot Lug IT - Intermediate Trunnion	Ø20 - 45mm (4 Std. sizes)	NC - Non Cushioned	PRE - Rod Eye PRF - Rod Fork SA - Single Acting DE - Double Ended	SS8 for 30 m/min, SS85 for 48 m/min, SS71 for 60 m/min

NOTE:- The right of modification for technical improvement is reserved. All dimensions are in mm unless otherwise specified

CUSTOM BUILT CYLINDERS CAN ALSO BE OFFERED ON REQUEST

Installation Procedure for Rod Seal



Before you begin:

- ⇒ It is essential that the cylinder tube & piston rod are chamfered.
- ⇒ Sharp edges must be deburred & filleted or chamfered.
- ⇒ The crests of threads must be covered.
- ⇒ Any dust, splinters or other foreign particles must be carefully removed.
- ⇒ Do not use tools with sharp edges.
- ⇒ Before assembly, the cylinder, piston rod & seals must be oiled.
(Oil used for lubrication must not contain any solid additives)
- ⇒ Turcon rings can be expanded easily.
- ⇒ Using a resizing tool as shown in the drawing is recommended.

1. Rod step seal installation data (RSSN-XXX)

Step 1: Clean & Lubricate all cylinder parts, seal components & the resizing rod.

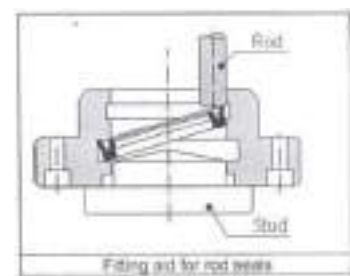
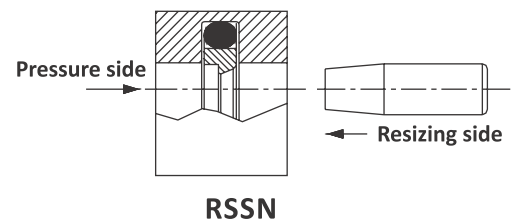
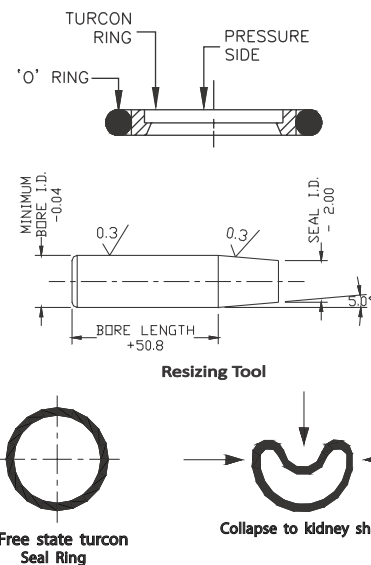
Step 2: Place the 'O' Ring into the groove and ensure it is seated properly without twisting.

Step 3: Collapse the Turcon seal to a kidney shape, ensuring the Turcon seal ring is not creased. Place into groove as shown. If possible use fingers to smooth out the ID of the Turcon seal ring after installation.

Step 4: Twist and push the resizing tool into the bore. Remove the resizing tool from the bore after a short duration.

2. Rod U-Cup seal installation data (RUCP-XXX)

The snap-in fitting, in single piece housings (Installation recommendation I), can be made easier through suitable fitting tools. U-Packing of 35mm diameter (profile thickness 5mm) up to nominal diameter 80mm (profile thickness 10mm) are snapped into the non-split grooves. For this, the ring is formed into a kidney shape & pushed into the rod guide. The tool is withdrawn after the seal snaps into the groove. A further possibility for snap-in fitting of rod seals, exists in the application of a suitable plug and a rod. Here, the seal is first positioned by hand to one side of the groove and then pushed with a rod until it snaps into the groove.



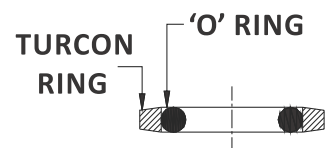
RUCP

Installation Procedure for Piston Seal

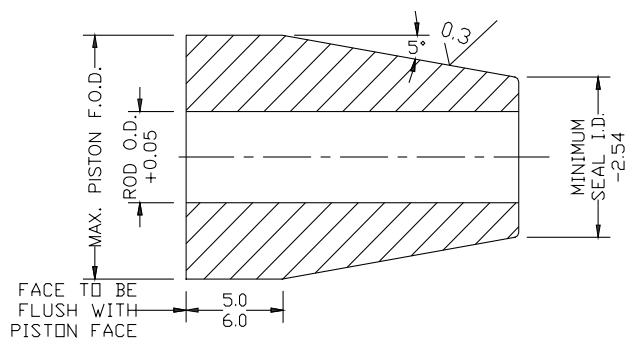


The following installation procedure is for piston seals. Installation tools, as per drawing, are recommended for one piece glands.

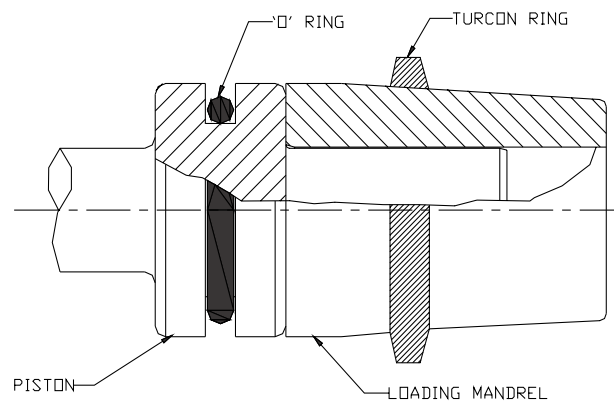
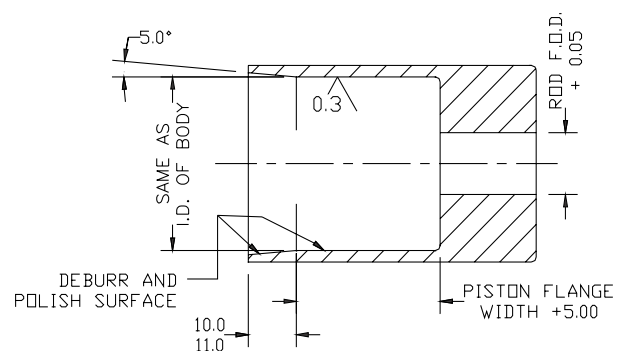
- Step 1: Clean and lubricate the cylinder parts, hardware & seals.
- Step 2: Place 'O' Ring (elastomer) into groove as per drawing. The 'O' Ring must be seated correctly without twisting.
- Step 3: Place the loading mandrel onto the piston.
- Step 4: Place Turcon seal ring on loading mandrel as per drawing.
- Step 5: Push Turcon seal ring up the loading mandrel and into the groove.
- Step 6: Remove the loading mandrel from the piston.
- Step 7: Push, while twisting, the resizing tool onto the seal assembly. Remove after a short duration.



Loading mandrel



Resizing tool



Data Sheet For Calculation

(For Clamping Devices)



CYLINDER FORCE/ THRUST FORCE/ PULL FORCE/ CLAMPING FORCE

Oil Pressure (bar) x Plunger Effective Area (cm²) = Force (kgf)

CYLINDER OIL CAPACITY

Effective Area (cm²) x Stroke (cm) = Cylinder oil capacity (cm³)

DESIGN FOR CALCULATING CLAMPING FORCE

Rated Clamping Force (kgf) = $\frac{\text{Spindle H.P} \times \text{Machine Efficiency} \times \text{Factor of Safety} \times 75 \times 60}{\text{Cutting Speed (m/min)}}$

Where: Machine Efficiency = 0.7 to 0.95

Factor of Safety = 1.5 to 2

Materials	Coefficient of Friction	
	Dry	Lubricated
CI on CI	0.3	0.2
CI on Steel	0.2	0.1
Steel on Steel	0.15	0.12

OR

Rated Clamping Force (kgf) = $\frac{\text{Spindle Power (kW)} \times \text{Machine Efficiency} \times \text{Factor of Safety} \times 60}{\text{Cutting Speed (m/min)} \times 9.81 \times 1000}$

The minimum clamping force of all clamps should be equal to the rated clamping force of machine.

DESIGN FOR CALCULATING CLAMPING FORCE

Stud bolt size used in the existing fixtures with manual clamping is the best clue for selecting the clamping force. Material strength & grade of bolts is assumed to be class 8.8

Std size	M6	M8	M10	M12	M16	M20
Clamping Force in Kgf	402	732	1160	1686	3140	4900

HINT FOR SELECTION

- Selected cylinder capacity should exceed the force required to do job by 20% to 25%. This ensures longer cycle life without overloading & accommodates the friction loss.

GENERAL POINTS

- Check to see that working fluids are compatible to the cylinder/ element seals
- When ordering Seal Kits for any of the elements in this catalogue, add Prefix 'SK' to the respective model code of the element.

NOTE

- Any Special requirement of cylinder & clamping devices to suit customer's requirement will also be met. Technical specifications mentioned may be subjected to alteration due to continual improvements & development.

ISO 9001-2015 -CERTIFICATION

Certificate

Standard **ISO 9001:2015**

Certificate Registr. No. **01 100 1637156**

Certificate Holder: **Precision Engineering Accessories**


SB 109, 2nd Cross, 1st Stage, Peenya Industrial Estate,
Peenya, Bangalore – 560 058, Karnataka, India

Scope: Design, Development, Manufacture and Supply of Hydraulic,
Hydro-Pneumatic and Pneumatic Cylinders, Systems, Clamping
Devices and Work Holding Solutions

Proof has been furnished by means of an audit that the
requirements of **ISO 9001:2015** are met.

Validity: The certificate is valid from **2019-07-09** until **2022-07-04**.
First certification 2013

2019-07-09



TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln



PRODUCT APPLICATIONS



Hydraulic Presses



Material Handling



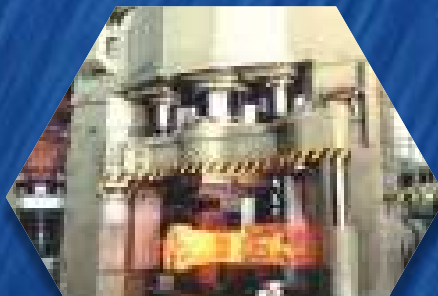
Factory Automation



Steel Mills



Marine and Mining



Metal Forming



Injection Moulding



Tractor & Farm Equipment



Metal Cutting