



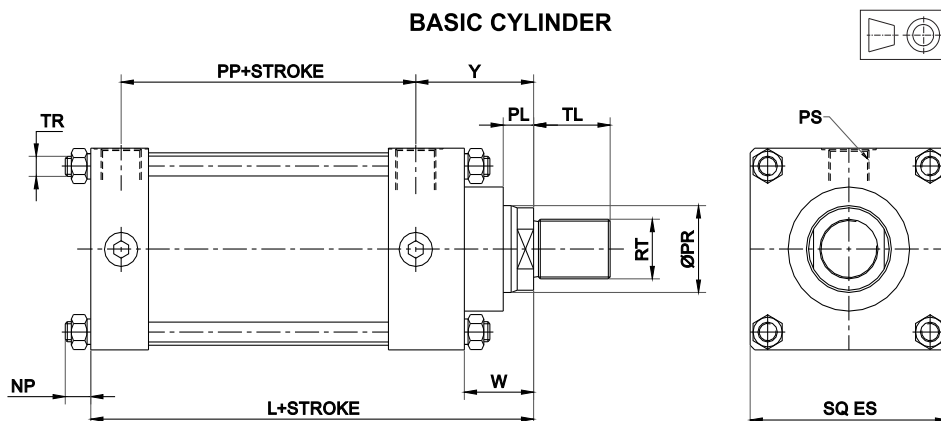
Hydraulic Cylinders - HH21 Series

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

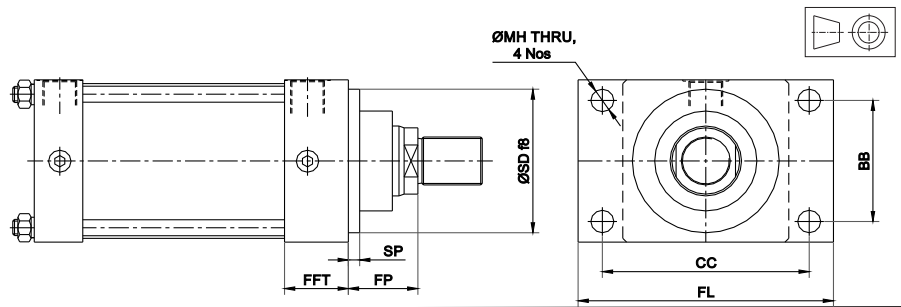
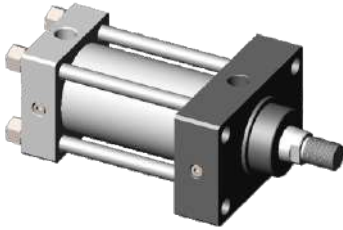
BORE DIA	PR DIA	ES (Sq)	RT	PS (BSP)	L	PL	TL	PP	TR	W	Y	NP (max)
25	12	40	M10x1.25	1/4"	114	9	14	53	M5x0.8	25	50	8
32	14	45	M12x1.25	1/4"	128	13	16	56	M6x1	35	60	9
	22		M16x1.5				22					
40	18	64	M14x1.5	3/8"	153	13	18	73	M8x1	35	62	9
	28		M20x1.5				28					
50	22	76	M16x1.5	1/2"	159	16	22	74	M12x1.25	41	67	16
	36		M27x2				36					
	28		M20x1.5				28					
63	28	90	M20x1.5	1/2"	168	19	28	80	M12x1.25	48	71	16
	45		M33x2				45					
	36		M27x2				36					
80	36	115	M27x2	3/4"	190	22	36	93	M16x1.5	51	77	21
	56		M42x2				56					
	45		M33x2				45					
100	45	130	M33x2	3/4"	203	25	45	101	M16x1.5	57	82	21
	70		M48x2				63					
	56		M42x2				56					
125	56	165	M42x2	1"	232	25	56	117	M22x1.5	57	86	27
	90		M64x3				85					
	70		M48x2				63					
160	70	205	M48x2	1"	245	25	63	130	M27x2	57	86	33
	110		M80x3				95					
	90		M64x3				85					
200	90	245	M64x3	1 1/4"	299	25	85	165	M30x2	57	98	36
	140		M100x3				112					
	110		M80x3				95					

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

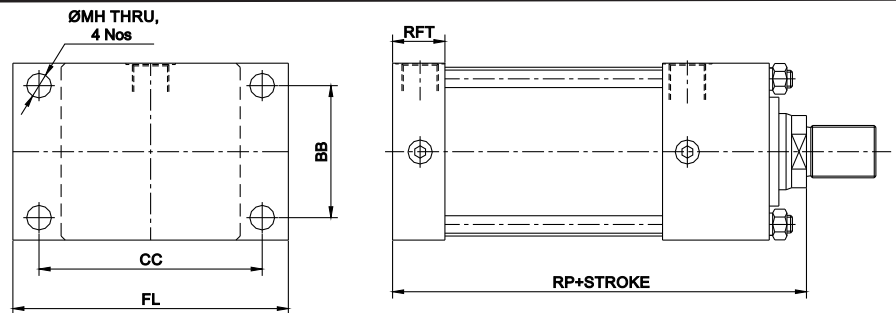
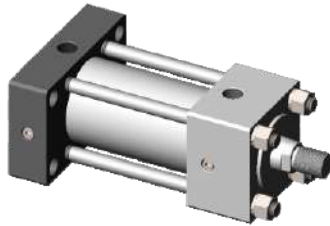
Standard Mountings - HH21 Series



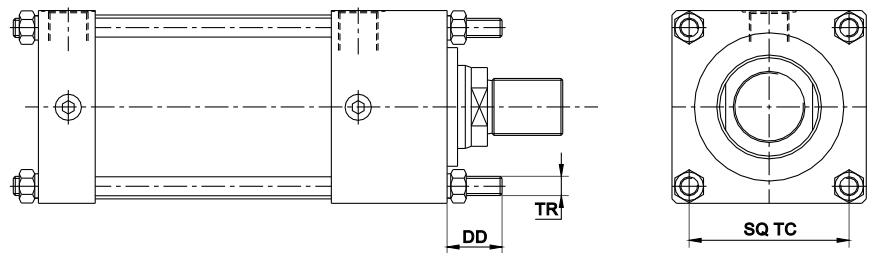
Head Flange (ME5)



Cap Flange (ME6)



Extended Tie Rod Head End (MX3)



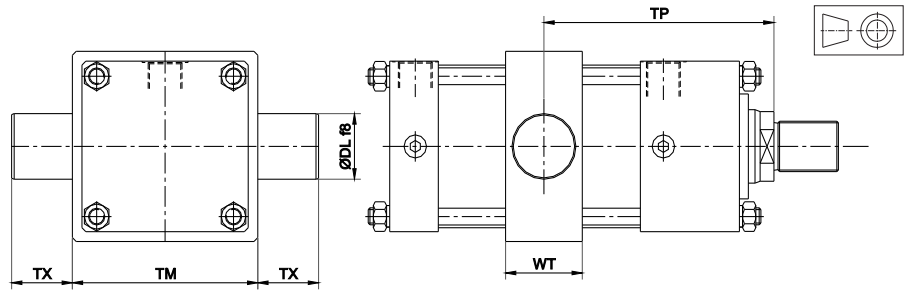
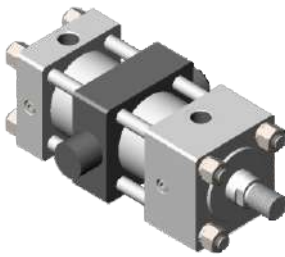
DIMENSIONAL DETAILS

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		

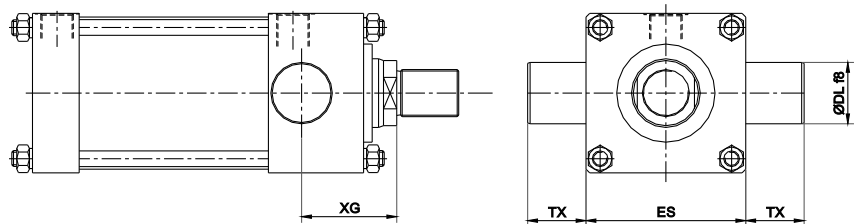
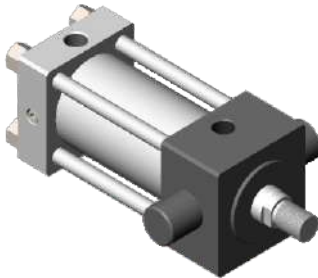
Standard Mountings - HH21 Series



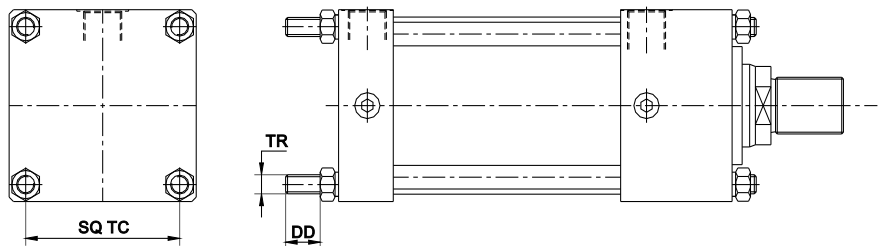
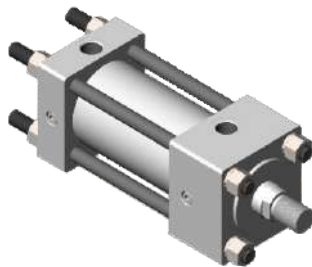
Intermediate Trunnion (MT4)



Head Trunnion (MT1)



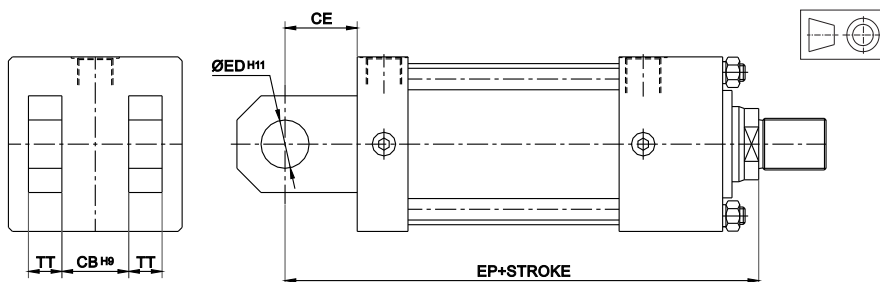
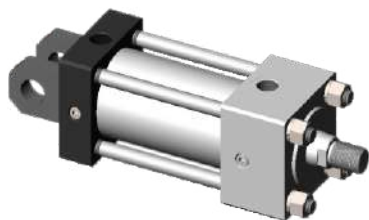
Extended Tie Rod Cap End (MX2)



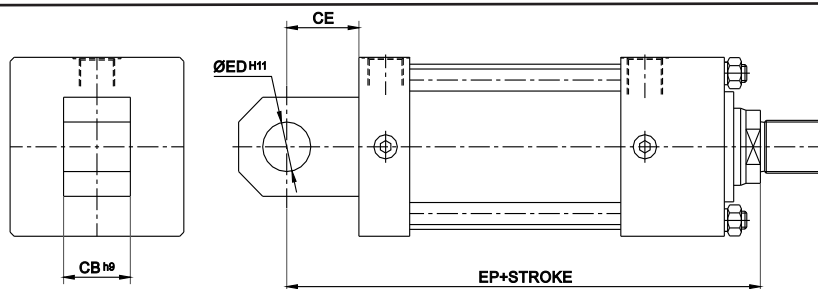
DIMENSIONAL DETAILS																											
BORE	25		32		40		50			63			80			100			125			160			200		
ROD	12	14	22	18	28	22	36	28	28	45	36	36	56	45	45	70	56	56	90	70	70	110	90	90	140	110	
WT	20	25		30		40			40			50			60			73			90			110			
TM	48	55		76		89			100			127			140			178			215			279			
TX	10	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

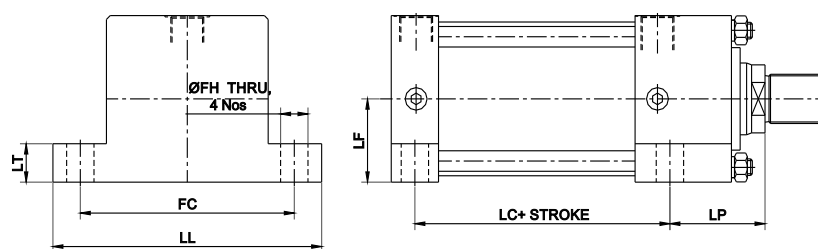
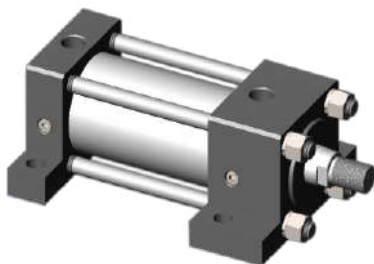
Cap Clevis (MP1)



Cap Eye (MP3)



Foot Lug (MS2)



DIMENSIONAL DETAILS

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

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

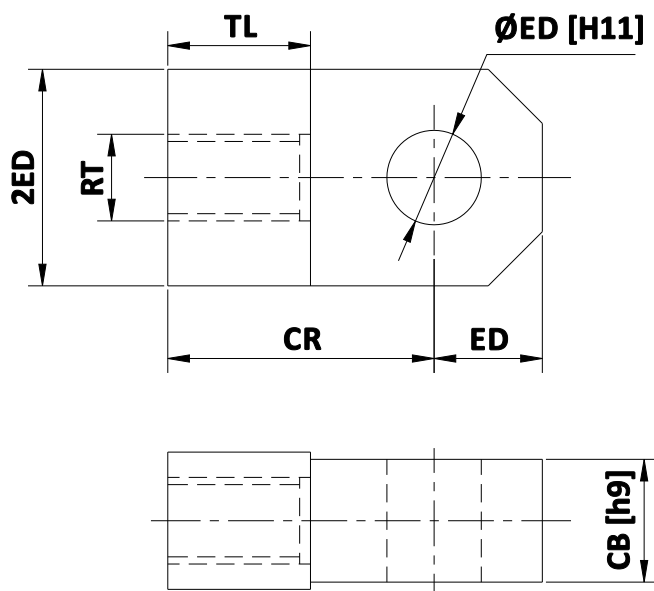
CUSTOM BUILT CYLINDERS CAN ALSO BE OFFERED ON REQUEST

PRECISION ENGINEERING ACCESSORIES

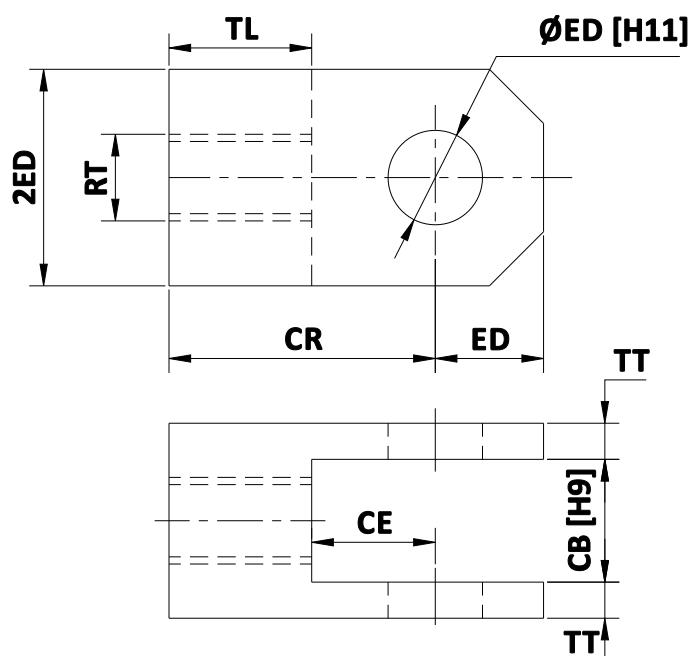
Piston Rod Eye & Piston Rod Fork for HH21 Series



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