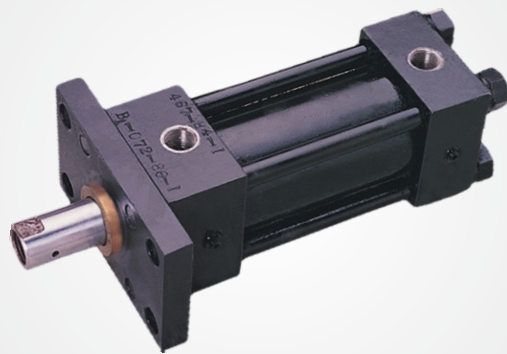


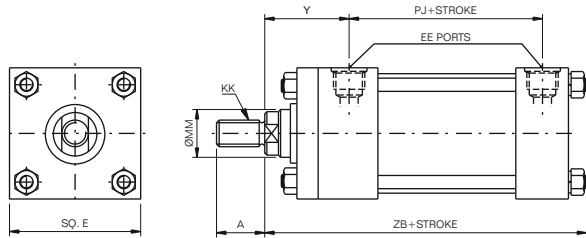


**HT
TIE ROD SERIES
(ISO 6020,
Part II & III)**

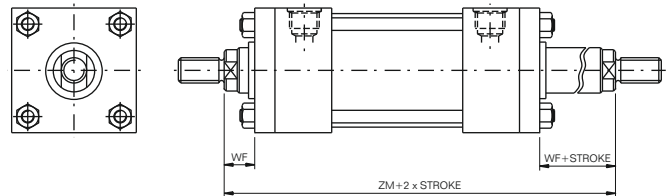
160 BAR, COMPACT SERIES - HT (ISO 6020 PART 2 & 3)

BASIC DIMENSIONS

Bore	Rod ØMM	KK	A	E	EE	ZB MAX	Y	PJ	ZM	WF
40	18	M14 X 1.5	18	63	G3/8"	166	62	73	127	35
	28	M14 X 1.5	18							
		M20 X 1.5	28							
50	22	M16 X 1.5	22	75	G1/2"	176	67	74	126	41
	36	M16 X 1.5	22							
		M27 X 2	36							
63	28	M20 X 1.5	28	90	G1/2"	185	71	80	126	48
	45	M20 X 1.5	28							
		M33 X 2	45							
80	36	M27 X 2	36	115	G3/4"	212	77	93	145	51
	56	M27 X 2	36							
		M42 X 2	56							
100	45	M33 X 2	45	130	G3/4"	225	82	101	151	57
	70	M33 X 2	45							
		M48 X 2	63							
125	56	M42 X 2	56	165	G1"	260	86	117	175	57
	90	M42 X 2	56							
		M64 X 3	85							
160	70	M48 X 2	63	205	G1"	279	86	130	188	57
	110	M48 X 2	63							
		M80 X 3	95							
200	90	M64 X 3	85	245	G1-1/4"	336	98	165	247	57
	140	M64 X 3	85							
		M100 X 3	112							
250	140	M100 X 3	112	320	G1-1/2"	460	160	201	301	110
	180	M125 X 4	125							
320	180	M125 X 4	125	400	G1-1/2"	520	170	245	365	110
	220	M160 X 4	160							

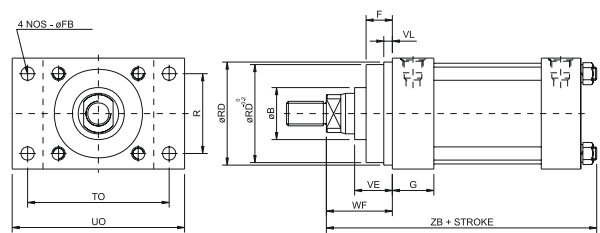


SINGLE ROD END

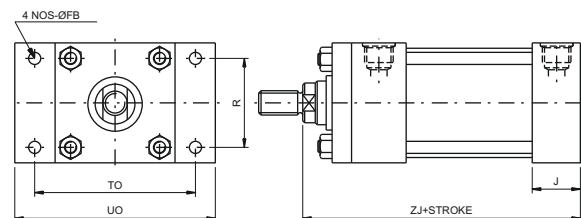


DOUBLE ROD END (NON ISO)

Bore	Rod ØMM	R	WF	TO	UO MAX	FB H13	F MAX	ZB MAX	ZJ	VE MAX	VL MIN	RD (f8)	B MAX	G	J
40	18	41	35	87	110	11	10	166	153	22	3	62	30	45	36
	28											62	42		
50	22	52	41	105	130	14	16	176	159	25	4	74	35	45	37
	36											74	50		
63	28	65	45	117	145	14	16	185	168	29	4	75	42	45	39
	45											88	60		
80	36	83	51	149	180	18	20	212	190	29	4	82	50	48	42
	56											105	72		
100	45	97	57	162	200	18	22	225	203	32	5	92	60	48	43
	70											125	88		
125	56	126	57	208	250	22	22	260	232	32	5	105	72	55	55
	90											150	108		
160	70	155	57	253	300	26	25	279	245	32	5	125	88	55	55
	110											170	133		
200	90	190	57	300	360	33	25	336	299	32	5	150	108	73	68
	140											210	163		

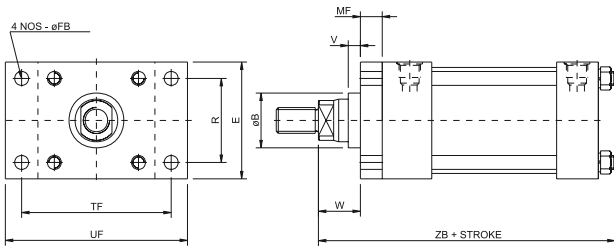


ME5 : HEAD RECTANGULAR FLANGE MOUNTING

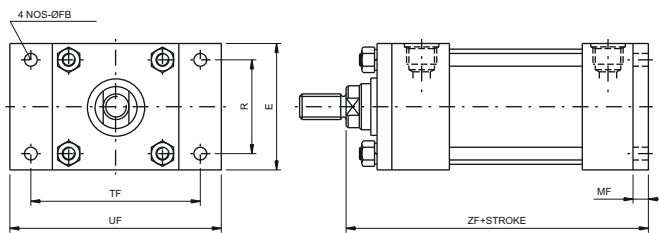


ME6 : CAP RECTANGULAR FLANGE MOUNTING

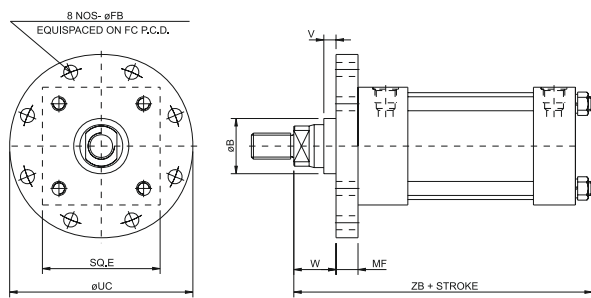
All Unspecified Dimensions are in MM



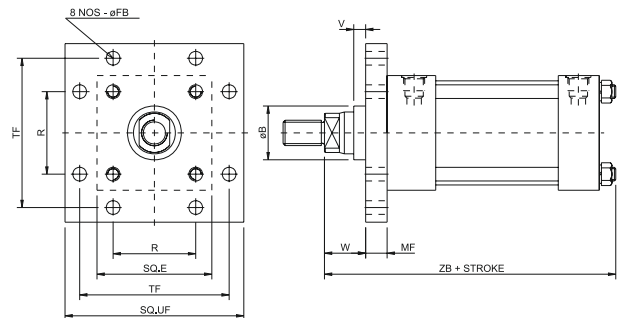
**MF1 : HEAD END RECTANGULAR FLANGE MOUNTING
(NON ISO MOUNTING)**



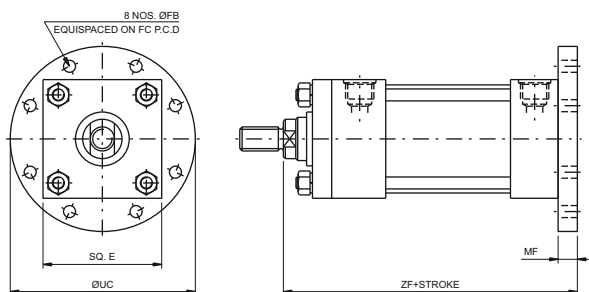
**MF2 : CAP END RECTANGULAR FLANGE MOUNTING
(NON ISO MOUNTING)**



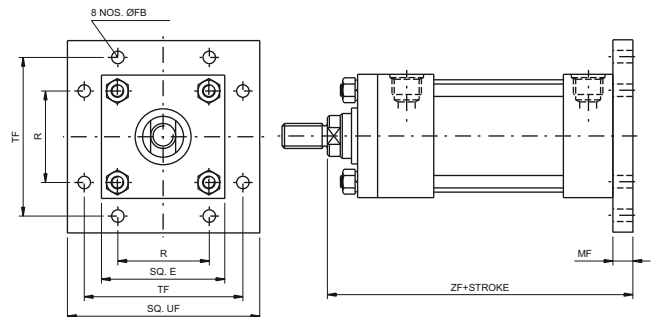
**MF3 : HEAD END CIRCULAR FLANGE MOUNTING
(NON ISO MOUNTING)**



**MF5 : HEAD END SQUARE FLANGE MOUNTING
(NON ISO MOUNTING)**



**MF4 : CAP END CIRCULAR FLANGE MOUNTING
(NON ISO MOUNTING)**

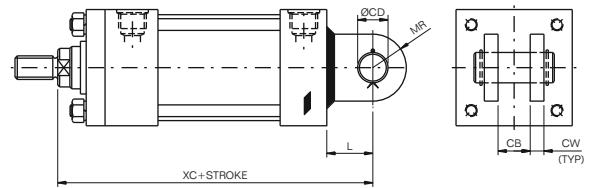


**MF6 : CAP END SQUARE FLANGE MOUNTING
(NON ISO MOUNTING)**

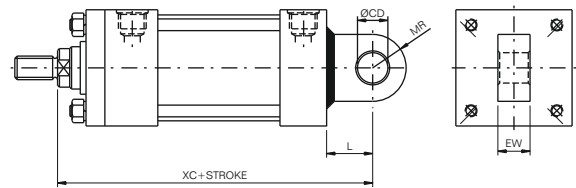
Bore	Rod ØMM	R	W	TF	UF/UC MAX	FB H13	MF MAX	ZB MAX	ZF	V MAX	E	B MAX	G
40	18	41	25	87	110	11	10	166	163	12	63	30	90
	28											42	
50	22	52	25	105	130	14	16	176	175	9	75	35	108
	36											50	
63	28	65	32	117	145	14	16	185	184	13	90	42	122
	45											60	
80	36	83	31	149	180	18	20	212	210	9	115	50	154
	56											72	
100	45	97	35	162	200	18	22	225	225	10	130	60	172
	70											88	
125	56	126	35	208	250	22	22	260	254	10	165	72	216
	90											108	
160	70	155	32	253	300	26	25	279	270	7	205	88	263
	110											133	
200	90	190	32	300	360	33	25	336	324	7	245	108	315
	140											163	

All Unspecified Dimensions are in MM

Bore	Rod ØMM	CB	CD	MR MAX	L	XC	CW	EW
40	18 28	20	14	17	19	172	10	20
50	22 36	30	20	29	32	191	15	30
63	28 45	30	20	29	32	200	15	30
80	36 56	40	28	34	39	229	20	40
100	45 70	50	36	50	54	257	25	50
125	56 90	60	45	53	57	289	30	60
160	70 110	70	56	59	63	308	35	70
200	90 140	80	70	78	82	381	40	80
250	140 90	90	90	100	125	545	45	90
320	180 220	110	110	120	152	627	55	110

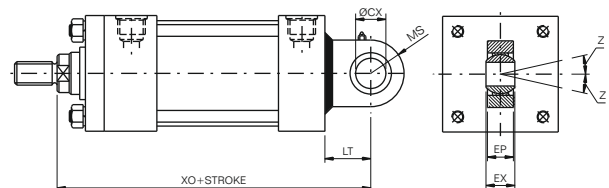


MP1 : CAP FIXED CLEVIS MOUNTING
(SUPPLIED COMPLETE WITH PIVOT PIN)



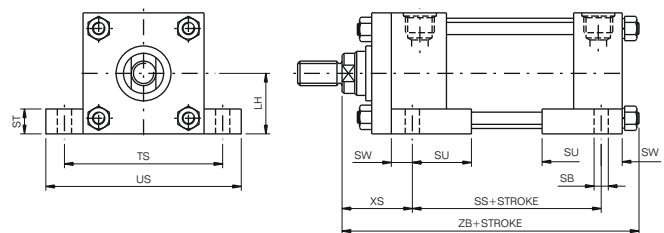
MP3 : CAP FIXED EYE MOUNTING

Bore	Rod ØMM	EP	EX	CX	MS MAX	LT MIN	XO	Z MIN
40	18 28	13	16 ^{0/-0.12}	20 ^{0/-0.12}	29	25	178	3°
50	22 36	17	20 ^{0/-0.12}	25 ^{0/-0.12}	33	31	190	
63	28 45	19	22 ^{0/-0.12}	30 ^{0/-0.12}	40	38	206	
80	36 56	23	28 ^{0/-0.12}	40 ^{0/-0.12}	50	48	238	
100	45 70	30	35 ^{0/-0.12}	50 ^{0/-0.12}	62	58	261	
125	56 90	38	44 ^{0/-0.15}	60 ^{0/-0.15}	80	72	304	
160	70 110	47	55 ^{0/-0.15}	80 ^{0/-0.15}	100	92	337	
200	90 140	57	70 ^{0/-0.20}	100 ^{0/-0.20}	120	116	415	4°
250	140 90	102	125 ^{0/-0.20}	125 ^{0/-0.20}	160	160	580	
320	180 220	130	160 ^{0/-0.20}	160 ^{0/-0.20}	200	200	675	



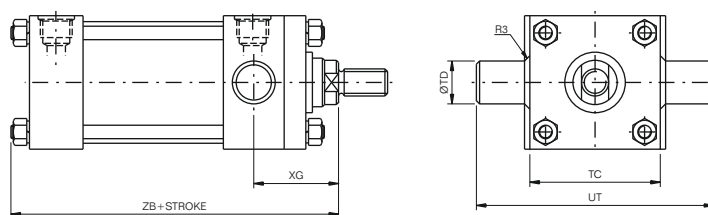
MP5 : CAP FIXED EYE WITH
SPHERICAL PLAIN BEARING MOUNTING

Bore	Rod ØMM	TS	SB	LH	XS	SS	ZB MAX	ST	US	SU	SW
40	18 28	83	11	31	45	98	166	12.5	103	24	10
50	22 36	102	14	37	54	92	176	19	127	32	13
63	28 45	124	18	44	65	86	185	26	161	43	17
80	36 56	149	18	57	68	105	212	26	186	43	17
100	45 70	172	26	63	79	102	225	32	216	54	22
125	56 90	210	26	82	79	131	260	32	254	54	22
160	70 110	260	33	101	86	130	279	38	318	64	29
200	90 140	311	39	122	92	172	336	44	381	74	35



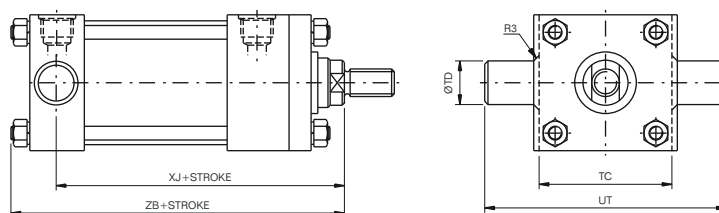
MS2 : SIDE LUG MOUNTING

All Unspecified Dimensions are in MM



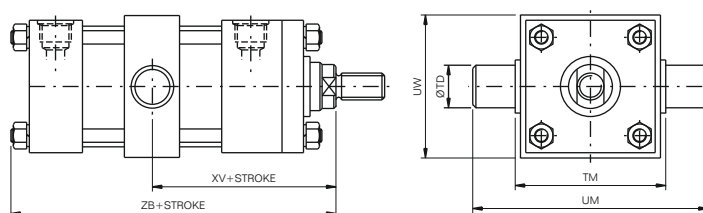
MT1 : HEAD END TRUNNION MOUNTING

FOR 80 MM TO 320 MM BORE SIZES, THE TIE-RODS ARE SCREWED INTO THE HEAD



MT2 : CAP END TRUNNION MOUNTING

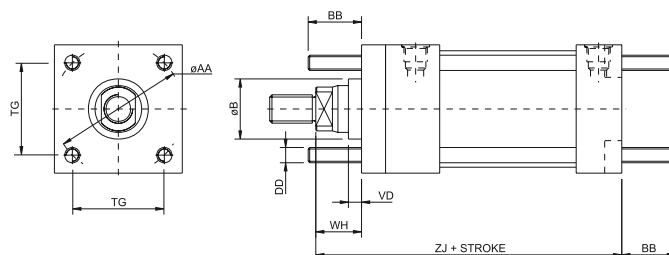
FOR 80 MM TO 320 MM BORE SIZES, THE TIE-RODS ARE SCREWED INTO THE CAP



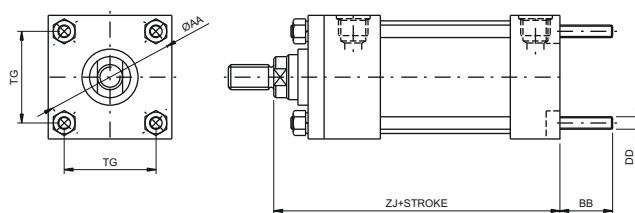
MT4 : INTERMEDIATE TRUNNION MOUNTING

Bore	TD	MT1 / MT2					MT 4						
		ZB MAX	TC	UT	XG	XJ	TM	UM	UW MAX	XV		MIN STROKE	ZB MAX
40	20	166	63	95	57	134	76	108	92	107	88	19	166
50	25	176	76	116	65	140	89	129	112	117	90	27	176
63	32	185	89	139	70	149	100	150	126	132	91	41	185
80	40	212	114	178	76	168	127	191	160	147	99	48	212
100	50	225	127	207	71	187	140	220	180	158	107	51	225
125	63	260	165	265	75	209	178	278	215	180	109	71	260
160	80	279	203	239	75	230	215	341	260	198	104	94	279
200	100	336	241	401	85	276	279	439	355	226	130	96	336
250	125	505	320	520	178	393	380	580	480	310	210	100	460
320	160	580	400	650	195	450	485	735	600	347	237	110	520

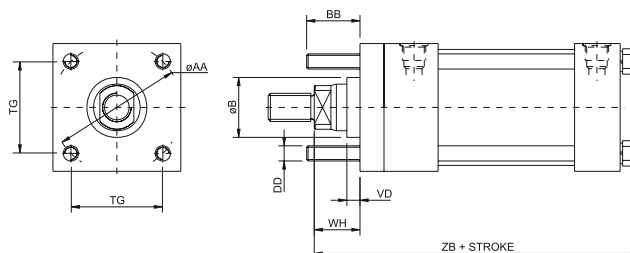
All Unspecified Dimensions are in MM



MX1 : BOTH ENDS TIE RODS EXTENDED MOUNTING



MX2 : CAP END TIE RODS EXTENDED MOUNTING



MX3 : HEAD END TIE RODS EXTENDED MOUNTING

Bore	Rod ØMM	DD	BB	AA	ZJ	TG	WH	B	VD MIN	ZB MAX
40	18	M8*1	35	59	153	41.7	25	30	5	166
	28							42		
50	22	M12*1.25	46	74	159	52.3	25	34		176
	36							50		
63	28	M12*1.25	46	91	168	64.3	32	42		185
	45							60		
80	36	M16*1.5	59	117	190	82.7	31	50		212
	56							72		
100	45	M16*1.5	59	137	203	96.9	35	60		225
	70							88		
125	56	M22*1.5	81	178	232	125.9	35	72		260
	90							108		
160	70	M27*2	92	219	245	154.9	32	88		279
	110							133		
200	90	M30*2	115	269	299	190.2	32	108		336
	140							163		

All Unspecified Dimensions are in MM

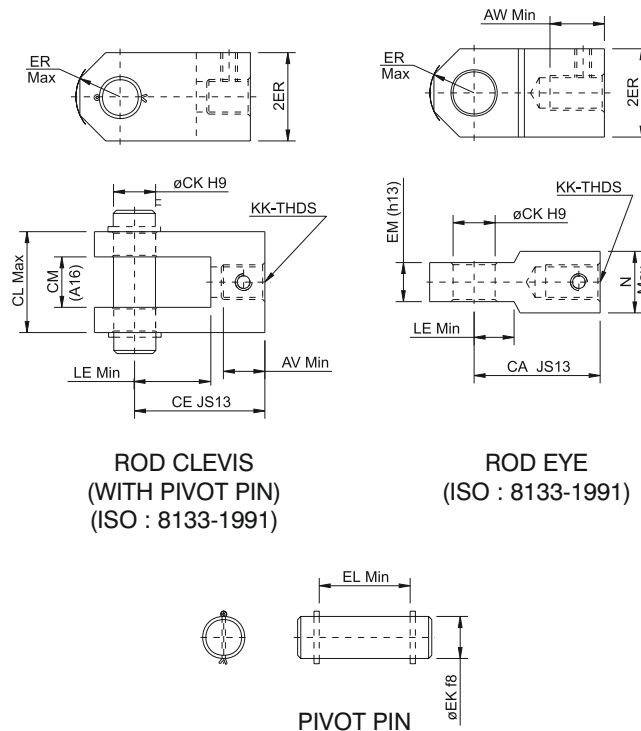
Accessories are used to connect the piston rod to load and to hinge the cap end in case of pivot mountings. Rod end accessories are selected by reference to the rod end thread, whereas cap end accessories are selected corresponding to the size of the mating pivot pin.

Veljan offers the following accessories with mounting dimensions conforming to ISO:8133 for 160 bar compact series-HT.

Rod End : - Rod Clevis
 - Rod Eye (Plain)
 - Rod Eye with Spherical Bearing
 - Pivot Pin

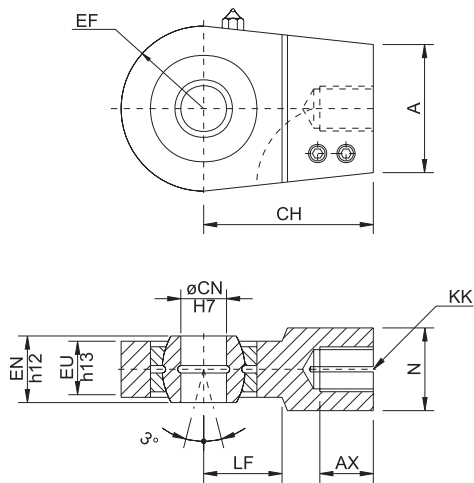
Cap End : - Eye Bracket for MP1 mounting
 - Clevis Bracket for MP1 mounting
 - Pivot Pin

The Eye / Clevis brackets can also be used to connect rod end eye/clevis to the housing.



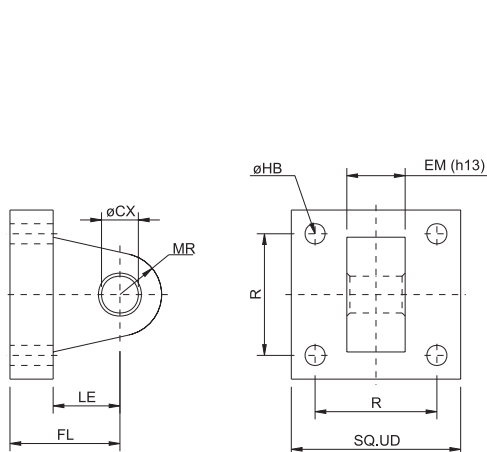
Bore	ROD	FORCE NEWTONS	KK-THDS	AV/ AW	CL	CA/ CE	ER	CK/ EK	EM/ CM	EL MIN	LE	N
40	18	20,000	M14 X 1.5	18	42	38	17	14	20	45	19	25
50	22	32,000	M16 X 1.5	22	62	54	29	20	30	66	32	30
63	28	50,000	M20 X 1.5	28	62	60	29	20	30	66	32	36
80	36	80,000	M27 X 2	36	83	75	34	28	40	87	39	45
100	45	125,000	M33 X 2	45	103	99	50	36	50	107	54	55
125	56	200,000	M42 X 2	56	123	113	53	45	60	129	57	68
160	70	320,000	M48 X 2	70	143	126	59	56	70	149	63	90
200	90	500,000	M64 X 3	90	163	168	78	70	80	169	83	110

All Unspecified Dimensions are in MM

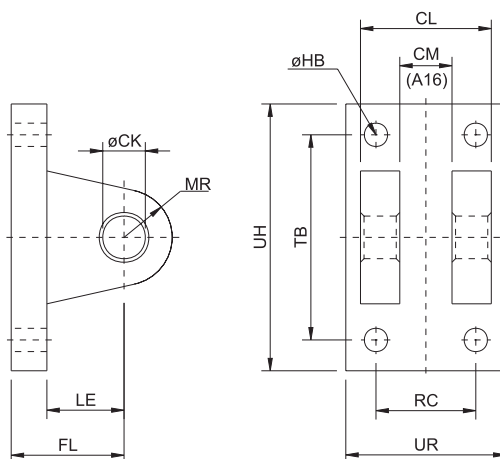


Bore	FORCE NEWTONS	CN	KK	AX MIN	EN	EU h13	CH Js13	LF MIN	N MAX	EF MAX	A	SOC.HD CAP SCREW
20	20,000	20 ^{-0.012}	M14 X 1.5	19	16 ^{-0.012}	13	58	25	25	27.5	48	M8
25	32,000	25 ^{-0.012}	M16 X 1.5	23	20 ^{-0.012}	17	68	30	30	32.5	58	M8
30	50,000	30 ^{-0.012}	M20 X 1.5	29	22 ^{-0.012}	19	85	35	36	40.0	66	M10
40	80,000	40 ^{-0.012}	M27 X 2	37	28 ^{-0.012}	23	105	45	45	50.0	78	M12
50	125,000	50 ^{-0.012}	M33 X 2	46	35 ^{-0.012}	30	130	58	55	62.5	118	M12
60	200,000	60 ^{-0.015}	M42 X 2	57	44 ^{-0.015}	38	150	68	68	80.0	130	M16
80	320,000	80 ^{-0.015}	M48 X 2	64	55 ^{-0.015}	47	185	92	90	102.5	162	M20
100	500,000	100 ^{-0.020}	M64 X 3	86	70 ^{-0.020}	57	240	116	110	120.0	172	M20

ROD EYE WITH SPHERICAL BRACKET



EYE BRACKET
(ISO : 8133-1991)



CLEVIS BRACKET
(ISO : 8133-1991)

Bore	FORCE NEWTONS	CK H9	FL JS14	LE MIN	HB H13	MR MAX	EM/ CM	R JS14	UD	CL MAX	RC JS14	TB JS14	UR	UH
20	20,000	14	29	19	9.0	17	20	41.7	63	42	30	68	55	84
25	32,000	20	48	32	13.5	29	30	52.3	75	62	45	102	80	125
30	50,000	20	48	32	13.5	29	30	52.3	75	62	45	102	80	125
40	80,000	28	59	39	17.5	34	40	82.7	115	83	60	135	100	170
50	125,000	36	79	54	17.5	50	50	96.9	130	103	75	167	130	200
60	200,000	45	87	57	24.0	53	60	125.9	165	123	90	203	150	250
80	320,000	56	103	63	30.0	59	70	154.9	205	143	105	242	180	300
100	500,000	70	132	82	33.0	78	80	190.2	245	163	120	300	200	360

All Unspecified Dimensions are in MM