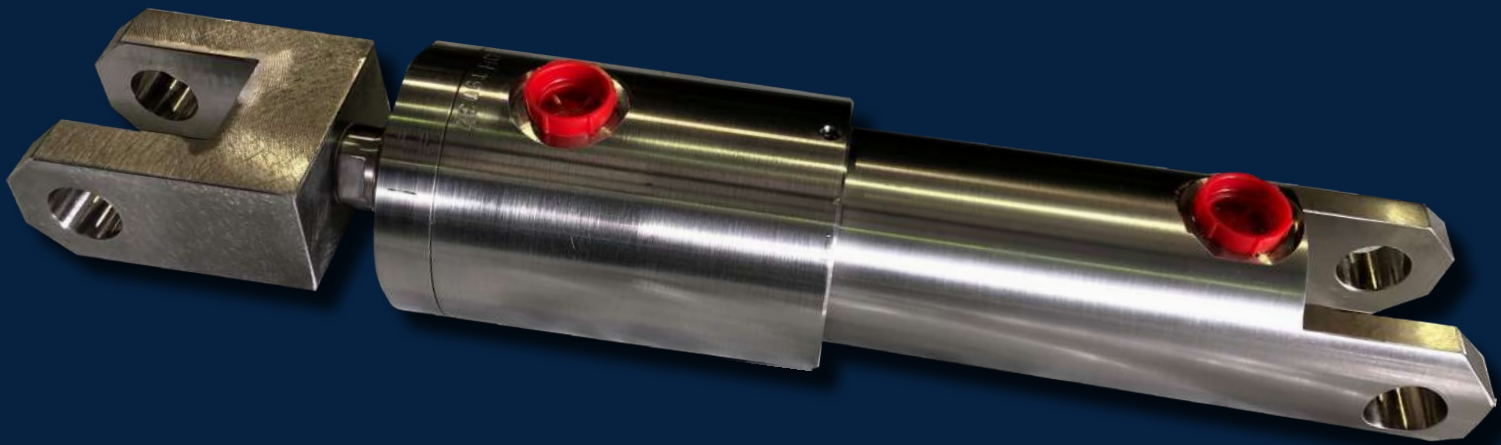




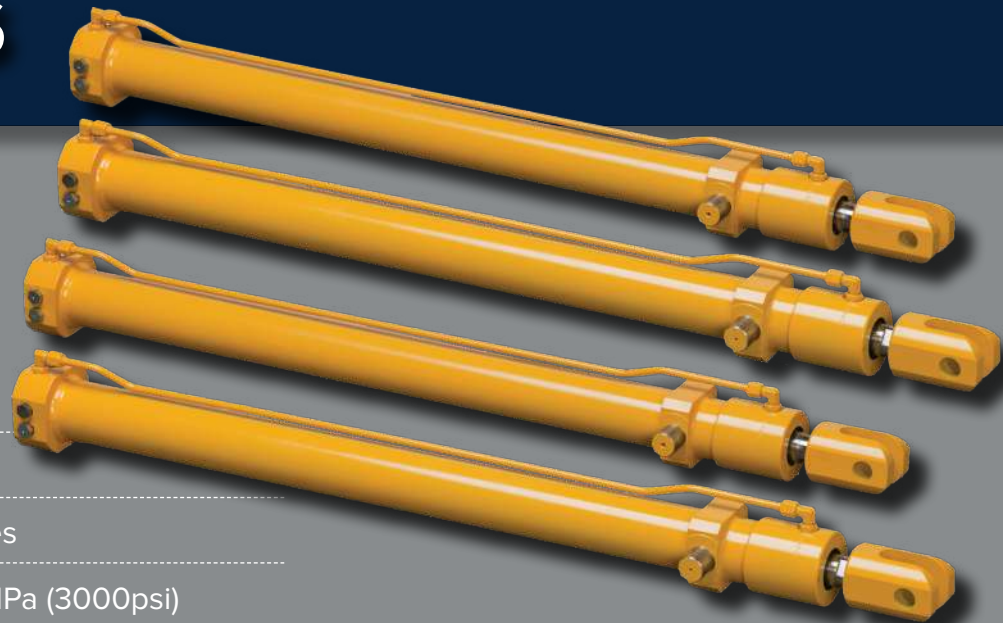
**Queensland
Hydraulics** Pty Ltd



“SUCCESS THROUGH QUALITY”



R3000 ROUNDLINE SERIES INDUSTRIAL HYDRAULIC CYLINDERS



- ⌚ Standard bore size
- ⌚ Standard rod size
- ⌚ Nine standard mounting styles
- ⌚ Max operating pressures 21MPa (3000psi)
- ⌚ Complete stainless steel cylinder option
- ⌚ Factory tested (ISO 10100:2001)
- ⌚ Ceramic coated piston rod option
- ⌚ Maximum length (6 metres)

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Salisbury QLD 4107

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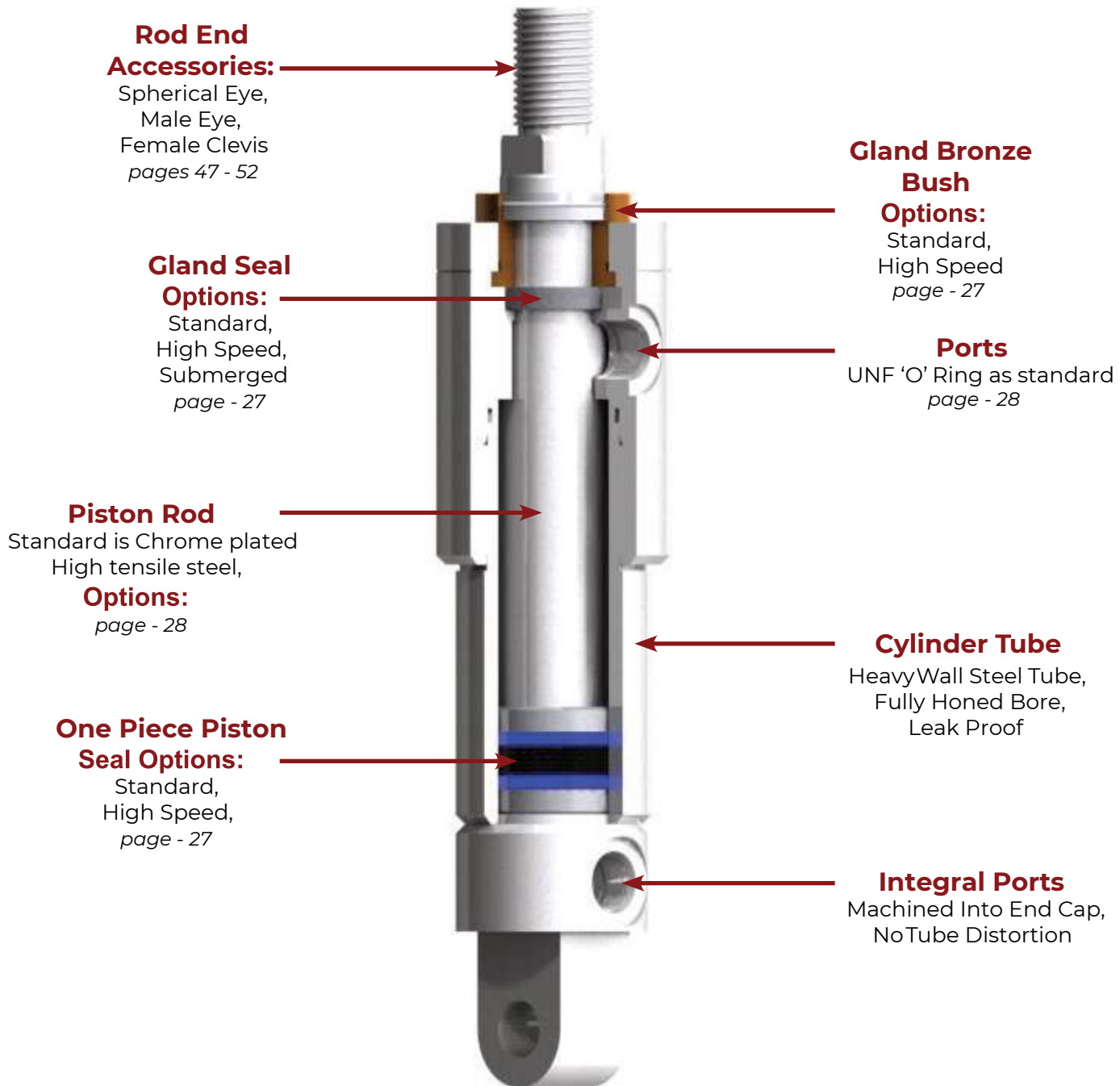
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1. SERIES OVERVIEW

- The series R3000 cylinder range has been developed for extreme industrial applications, incorporating over 40 years of experience within the industry, this is a cylinder range you can depend upon.
- Hydraulic single rod cylinders for use at 3,000 psi (207 bar). All hydraulic cylinders are factory tested to ISO: 10100:2011 standards and Test Certificates are supplied at time of shipment.



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2. SIZE COMBINATIONS

1½” to 4” Bore

Bore	Rod	Area		Force @ 3000 PSI			Oil Flow@ 100 mm/sec		
Ø inch	Ø inch	Piston inch ²	Annulus inch ²	Extend lbf	Retract lbf	Regen lbf	Extend US Gal/min	Retract US Gal/min	Regen USGal/min
1½	5/8	1.77	1.46	5,310	4,380	899	1.80	1.51	0.32
	1		0.98		2,950	2,360		1.00	0.79
2	1	3.14	2.36	9,420	7,060	2,360	3.22	2.4	0.79
	1 3/8		1.6		4,950	4,450		1.69	1.53
2½	1	4.9	4.1	14,700	12,400	2,360	5.02	4.23	0.79
	1 3/8		3.4		10,300	4,450		3.51	1.53
	1 3/4		2.5		7,510	7,220		2.56	2.46
3	1 3/8	7.1	5.6	21,200	16,700	4,450	7.24	5.71	1.53
	1 3/4		4.7		14,000	7,220		4.78	8.48
	2		3.9		11,800	9,420		4.02	3.22
3½	1 3/8	9.6	8.1	28,900	24,400	4,450	9.83	8.32	1.53
	1 3/4		7.2		21,600	7,220		7.37	2.46
	2		6.5		19,400	9,420		6.63	3.22
4	1 3/4	12.6	10.2	37,700	30,500	7,220	12.84	10.38	2.46
	2		9.4		28,300	9,420		9.64	3.22
	2½		7.7		23,000	15,000		7.82	5.02

Bore	Rod	Area		Force @ 20.7 MPa			Oil Flow@ 100 mm/sec		
Ø mm	Ø mm	Piston mm ²	Annulus mm ²	Extend kN	Retract kN	Regen kN	Extend L/min	Retract L/min	Regen L/min
38.1	15.8	1,142	942	23.6	19.5	4.0	6.8	5.7	1.2
	25.4		632		13.1	10.5		3.8	3.0
50.8	25.4	2,026	1,523	41.9	31.4	10.5	12.2	9.1	3.0
	34.9		1,032		22.0	19.8		6.4	5.8
63.5	25.4	3,161	2,645	65.5	55.0	10.5	19.0	16.0	3.0
	34.9		2,194		45.7	19.8		13.3	5.8
	44.5		1,613		33.4	32.1		9.7	9.3
76.2	34.9	4,581	3,613	94.3	74.5	19.8	27.4	21.6	5.8
	44.5		3,032		62.2	32.1		18.1	32.1
	50.8		2,156		52.4	41.9		15.2	12.2
88.9	34.9	6,194	5,226	128.0	108.6	19.8	37.2	31.5	5.8
	44.5		4,645		96.3	32.1		27.9	9.3
	50.8		4,194		86.5	41.9		25.1	12.2
101.6	44.5	8,129	6,581	168.0	135.6	32.1	48.6	39.3	9.3
	50.8		6,065		125.8	41.9		36.5	12.2
	63.5		4,968		102.2	65.5		29.6	19.0



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2.1 SIZE COMBINATIONS

5" to 8" Bore

Bore	Rod	Area		Force @ 3000 PSI			Oil Flow@ 100 mm/sec		
Ø inch	Ø inch	Piston inch ²	Annulus inch ²	Extend lbf	Retract lbf	Regen lbf	Extend US Gal/min	Retract US Gal/min	Regen USGal/min
5	2	19.63	16.49	58,905	49,480	9,425	20.00	16.86	3.21
	2½		17.73		44,179	14,726		15.05	5.02
	3		12.57		37,700	21,205		12.84	7.22
	3½		10.01		30,041	28,863		10.23	9.83
6	2½	28.27	23.37	84,823	70,097	14,726	28.90	23.88	5.02
	3		21.21		63,617	21,205		21.67	7.22
	3½		18.65		55,960	28,863		19.06	9.83
	4		15.71		47,124	37,700		16.05	12.84
7	3	38.48	31.42	115,453	94,248	21,205	39.33	32.10	7.22
	3½		28.86		86,590	28,863		29.50	9.83
	4		25.92		77,754	37,700		26.49	12.84
	4½		22.58		67,740	47,713		23.08	16.25
	5		18.85		56,549	58,905		19.26	20.07
8	3½	50.27	40.64	150,796	121,933	28,863	51.37	41.54	9.83
	4		37.7		113,097	37,700		38.53	12.84
	4½		34.36		103,083	47,713		35.11	16.28
	5		30.63		91,891	58,905		31.3	20.07
	5½		26.51		79,521	71,270		27.09	24.28

Bore	Rod	Area		Force @ 20.7 MPa			Oil Flow@ 100 mm/sec		
Ø mm	Ø mm	Piston mm ²	Annulus mm ²	Extend kN	Retract kN	Regen kN	Extend L/min	Retract L/min	Regen L/min
127	50.8	12,668	10,641	262.0	220.00	41.92	76.01	63.85	12.16
	63.5		9,500		196.51	65.50		57.00	19.00
	76.2		8,107		167.70	94.30		48.64	27.36
	88.9		6,461		133.60	128.40		38.76	37.24
152.4	63.5	18,241	15,075	377.3	311.80	65.50	109.50	90.45	19.00
	76.2		13,681		283.00	94.30		82.09	27.36
	88.9		12,034		248.90	128.40		72.21	37.24
	101.6		10,134		209.60	167.70		60.80	48.64
177.8	76.2	24,829	20,268	513.5	419.20	94.30	148.97	121.61	27.36
	88.9		18,621		385.2	128.40		111.73	37.24
	101.6		16,721		345.85	167.70		100.33	48.64
	114.3		14,568		301.31	212.23		87.41	61.56
	127.0		12,161		251.53	262.00		72.97	76.01
203.2	88.9	32,429	26,222	670.7	542.36	128.40	194.58	157.33	37.24
	101.6		24,322		503.00	167.70		145.93	48.64
	114.1		22,168		458.51	212.23		133.00	61.56
	127.0		19,762		408.70	262.00		118.57	76.01
	139.7		17,101		353.70	317.00		102.6	91.97



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3. MOUNTING STYLE OVERVIEW

- R3000 style cylinders can be supplied with the following nine mounting styles. Cylinder mounting styles can be custom designed and manufactured on request.
- In addition to those shown below, double rod cylinders providing equal force in both retract and extension are available on request.



0

Plain cylinder, pages 9 - 10



MF6

End cap square flange, pages 19 - 20



MB

End cap male clevis, pages 11 - 12



SB

End cap spherical bearing, pages 21 - 22



MF1

Head cap rectangular flange,
pages 13 - 14



MP

End cap fixed female clevis, pages 23 - 24



MF2

End cap rectangular flange, pages 15 - 16



MT4

Mid mount trunnion, pages 25 - 26



MF5

Head cap square flange,
pages 17 - 18



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4. ORDERING INFORMATION

- When requesting a quote or ordering a cylinder it is necessary to supply our staff with the code below in Imperial or Metric style. This will accelerate our quoting process and accurately define all aspects of the cylinder required.
- Custom cylinder requirements must be noted in full within your quote requests and a Special Build number from Queensland Hydraulics will be supplied with their quote outlining your requirements.
- Standard supply for ports is that the head cap and end cap are placed inline on the same face unless otherwise specified and recorded in the Special Build number supplied by Queensland Hydraulics at time of quotation.
- Note:** The Special Build number can cover multiple custom requirements. The special Build number ensures non standard cylinders can be accurately supplied into the future.

Cylinder Ordering Code

Imperial Example

R3000 - 3 1/2 - 1 3/4 - 24 - MF1 - UW/HS - G - 2 - SB001

Model Type
Industrial Style

Bore Ø (inch) *Ref: Pages 5 - 6*

Rod Ø (inch) *Ref: Pages 5 - 6*

Stroke Ø (Inch)

Mounting Style *Ref: Pages 9 - 26*

0	- Plain Cylinder	<i>Ref: Pages</i>	<i>9 - 10</i>
MB	- End Cap Fixed Male Eye	<i>Ref: Pages</i>	<i>11 - 12</i>
MF1	- Head Cap Rectangular Flange	<i>Ref: Pages</i>	<i>13 - 14</i>
MF2	- End Cap Rectangular Flange	<i>Ref: Pages</i>	<i>15 - 16</i>
MF5	- Head Cap Square Flange	<i>Ref: Pages</i>	<i>17 - 18</i>
MF6	- End Cap Square Flange	<i>Ref: Pages</i>	<i>19 - 20</i>
SB	- Spherical Bearing End Cap	<i>Ref: Pages</i>	<i>21 - 22</i>
MP	- End Cap Fixed Female Clevis	<i>Ref: Pages</i>	<i>23 - 24</i>
MT4	- Mid Mount Trunnion	<i>Ref: Pages</i>	<i>25 - 26</i>

Gland Bush Sealing *Ref: Page 27*

UW
S

Piston Sealing *Ref: Page 27*

HS
5

Porting Standard *Ref: Page 28*

G - BSPP Porting
U - UN "O" Ring Port

Piston Rod Material *Ref: Page 28*

1	- Gr1045	Chrome Plated
2	- Gr4140	Chrome Plated
3	- Gr4140	Chrome Plated and Ceramic densified
4	- Gr316	Stainless Steel
5	- Gr630	Stainless Steel (17/4PH)
6	- Gr2205	Stainless Steel

Special Build Number (Optional)

Number issued after consultation with factory

Cylinder Ordering Code

Metric Example of above code. *Ref: Page 5 - 6*

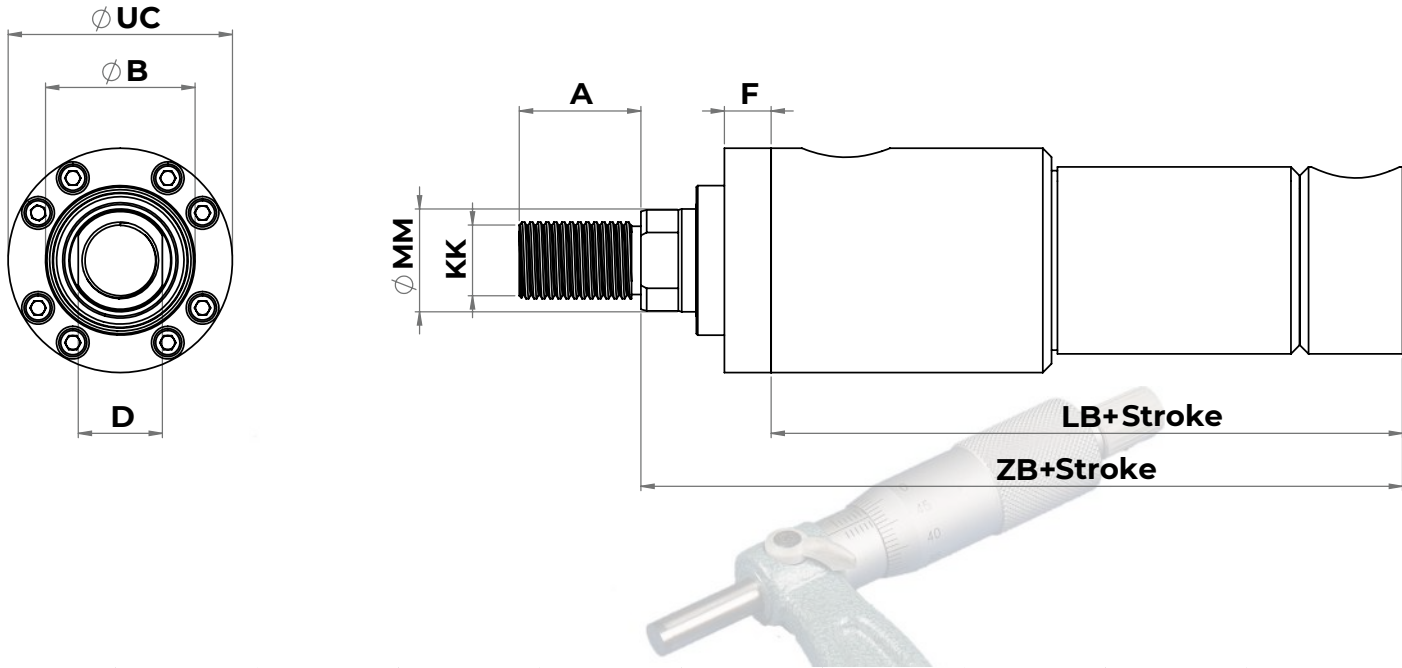
R3000 - 88.9 - 44.5 - 609.6 - MF1 - UW/HS - G - 2 - SB001



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5. DIMENSIONS

Index Reference	Ordering Code	Description	Bore Size
5.1	0	Plain Cylinder	1½" to 4"



Cylinder Bore Ø inch	Rod Ø inch	A	B	D	F	KK UNF	LB+	UC	ZB+
1½	5/8	¾	1/8	17/32	¾	7/16 - 20	4 5/8	66 mm	5 5/8
	1	1 1/8	1 1/2	7/8	¾	¾ - 16	4 5/8	66 mm	6
2	1	1 1/8	1 1/2	7/8	5/8	¾ - 16	4 5/8	3	6
	1 3/8	1 5/8	2	1 1/8	5/8	1 - 14	4 5/8	3	6 1/4
2½	1	1 1/8	1 1/2	7/8	5/8	¾ - 16	4 3/4	3 1/2	6 1/8
	1 3/8	1 5/8	2	1 1/8	5/8	1 - 14	4 3/4	3 1/2	6 3/8
	1 3/4	2	2 3/8	1 1/2	5/8	1 1/4 - 12	4 3/4	3 1/2	6 5/8
3	1 3/8	1 5/8	2	1 1/8	¾	1 - 14	5 7/16	4 1/4	7 1/4
	1 3/4	2	2 3/8	1 1/2	¾	1 1/4 - 12	5 7/16	4 1/4	7 3/8
	2	2 1/4	2 5/8	1 3/4	¾	1 1/2 - 12	5 7/16	4 1/4	7 1/2
3½	1 3/8	1 5/8	2	1 1/8	¾	1 - 14	5 7/16	120 mm	7 1/8
	1 3/4	2	2 3/8	1 1/2	¾	1 1/4 - 12	5 7/16	120 mm	7 3/8
	2	2 1/4	2 5/8	1 3/4	¾	1 1/2 - 12	5 7/16	120 mm	7 1/2
4	1 3/4	2	2 3/8	1 1/2	7/8	1 1/4 - 12	5 3/4	5 1/2	7 5/8
	2	2 1/4	2 5/8	1 3/4	7/8	1 1/2 - 12	5 3/4	5 1/2	7 3/4
	2 1/2	3	3 1/8	2	7/8	1 7/8 - 12	5 3/4	5 1/2	8

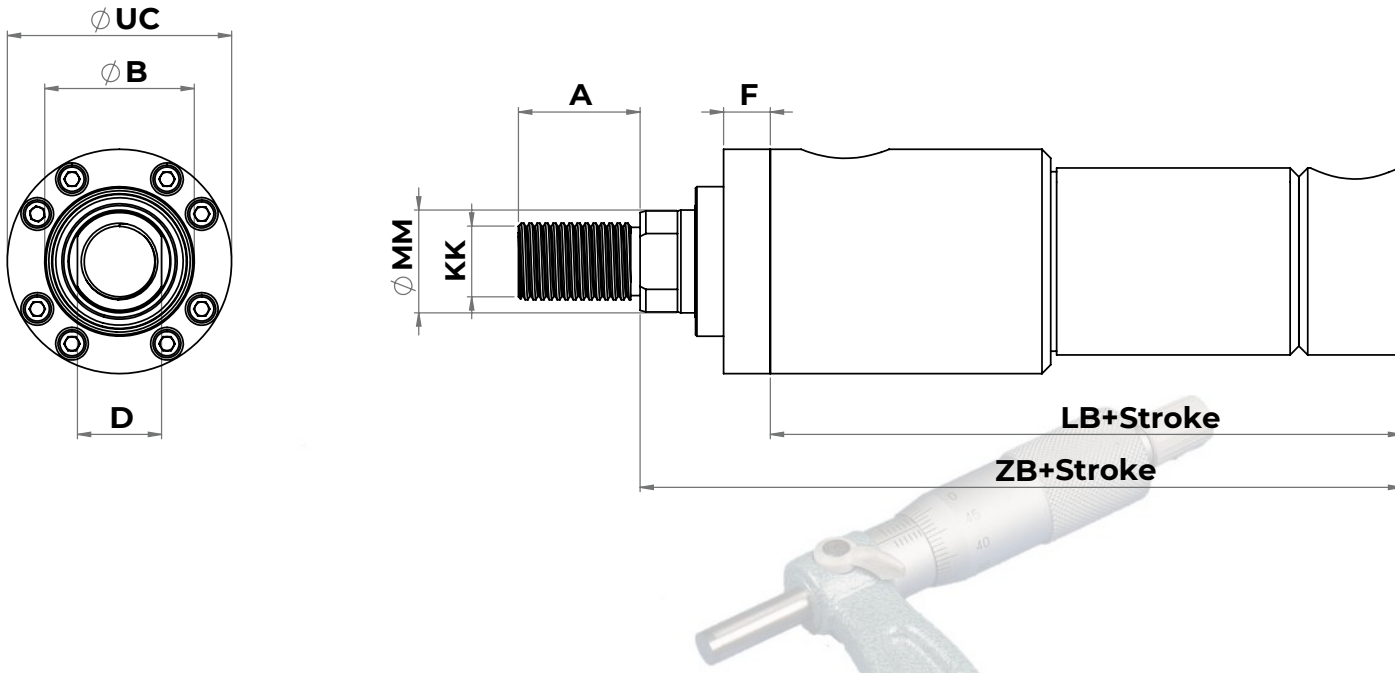
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5. DIMENSIONS

Index Reference	Ordering Code	Description	Bore Size
5.1.1.	0	Plain Cylinder	5" to 8"



Cylinder Bore Ø inch	Rod Ø inch	A	B	D	F	KK UNF	LB+	UC	ZB+
5	2	2¼	2⅝	1¾	19/32	1½ - 12	6¼	7	9⅛
	2½	3	3⅞	2⅞	19/32	1⅞ - 12	6¼	7	9⅝
	3	3½	3¾	2⅝	23/32	2¼ - 12	6¼	7	9⅝
	3½	3½	4¼	3	23/32	2½ - 12	6¼	7	9⅝
6	2½	3	3⅞	2⅞	19/32	1⅞ - 12	7⅜	8	10⅑
	3	3½	3¾	2⅝	23/32	2¼ - 12	7⅜	8	10⅑
	3½	3½	4¼	3	23/32	2½ - 12	7⅜	8	10⅑
	4	4	4¾	*	7/8	3 - 12	7⅜	8	10⅑
7	3	3½	3¾	2⅝	23/32	2¼ - 12	8½	9	11¾
	3½	3½	4¼	3	23/32	2½ - 12	8½	9	11¾
	4	4	4¾	*	7/8	3 - 12	8½	9	11¾
	4½	4½	5¼	*	7/8	3¼ - 12	8½	9	11¾
	5	5	5¾	*	7/8	3½ - 12	8½	9	11¾
8	3½	3½	4¼	3	23/32	2½ - 12	9½	10	12⅞
	4	4	4¾	*	7/8	3 - 12	9½	10	12⅞
	4½	4½	5¼	*	7/8	3¼ - 12	9½	10	12⅞
	5	5	5¾	*	7/8	3½ - 12	9½	10	12⅞
	5½	5½	6¼	*	7/8	4 - 12	9½	10	12⅞

* No spanner flats, shaft drilled "C" spanner.

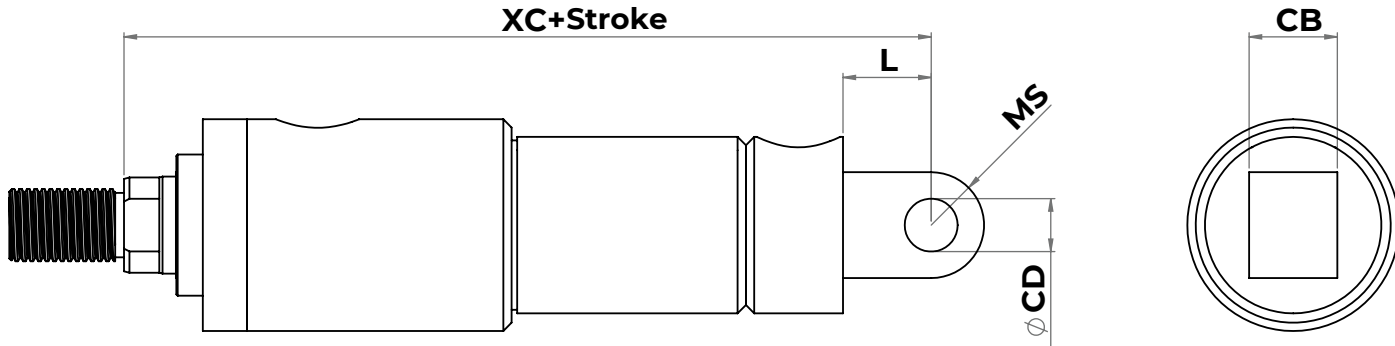
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5. DIMENSIONS

Index Reference	Ordering Code	Description	Bore Size
5.2	MB	End Cap Fixed Male Eye	1½" to 4"



Cylinder Bore Ø inch	Rod Ø inch	CB	CD	L	MS	XC+
1½	5/8	¾	½	¾	1	6¾
	1	¾	½	¾	1	6¾
2	1	1¼	¾	1¼	1½	7¼
	1⅜	1¼	¾	1¼	1½	7½
2½	1	1¼	¾	1¼	1½	7¾
	1⅜	1¼	¾	1¼	1½	7⅝
	1¾	1¼	¾	1¼	1½	7⅞
3	1⅜	1½	1	1½	2	8¾
	1¾	1½	1	1½	2	8⅞
	2	1½	1	1½	2	9
3½	1⅜	1½	1	1½	2	8⅝
	1¾	1½	1	1½	2	8⅞
	2	1½	1	1½	2	9
4	1¾	2	1⅜	2⅛	2¾	9¾
	2	2	1⅜	2⅛	2¾	9⅞
	2½	2	1⅜	2⅛	2¾	10⅛

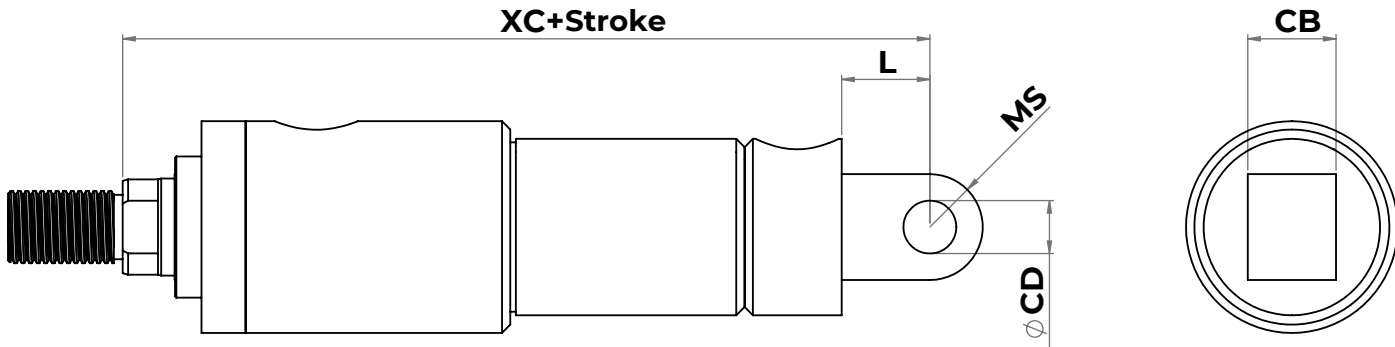
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5. DIMENSIONS

Index Reference	Ordering Code	Description	Bore Size
5.2.1	MB	End Cap Fixed Male Eye	5" to 8"



Cylinder Bore Ø inch	Rod Ø inch	CB	CD	L	MS	XC+
5	2	2½	1¾	2¼	1¾	10½
	2½	2½	1¾	2¼	1¾	10¾
	3	2½	1¾	2¼	1¾	10¾
	3½	2½	1¾	2¼	1¾	10¾
	3½	3	3	3¼	2¾	15
6	2½	2½	2	2½	2	12⅛
	3	2½	2	2½	2	12⅛
	3½	2½	2	2½	2	12⅛
	4	2½	2	2½	2	12⅛
7	3	3	2½	3	2½	13¾
	3½	3	2½	3	2½	13¾
	4	3	2½	3	2½	13¾
	4½	3	2½	3	2½	13¾
	5	3	2½	3	2½	13¾
8	3½	3	3	3¼	2¾	15
	4	3	3	3¼	2¾	15
	4½	3	3	3¼	2¾	15
	5	3	2½	3	2½	13¾
	5½	3	3	3¼	2¾	15

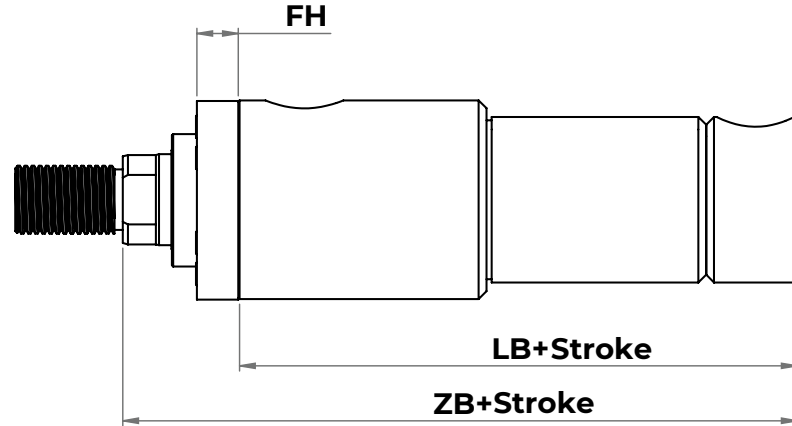
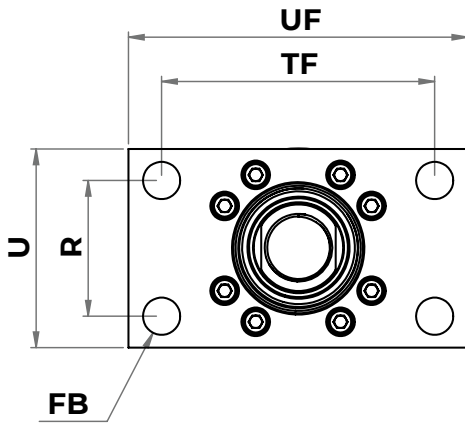
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5. DIMENSIONS

Index Reference	Ordering Code	Description
5.3	MF1	Head Cap Rectangular Flange



Cylinder Bore Ø inch	Rod Ø inch	FB	FH	LB+	R	TF	U	UF	ZB+
1½	5/8	7/16	3/8	4 5/8	1.63	3 7/16	66 mm	4 1/4	5 5/8
	1	7/16	3/8	4 5/8	1.63	3 7/16	66 mm	4 1/4	6
2	1	9/16	5/8	4 5/8	2.05	4 1/8	3	5 1/8	6
	1 3/8	9/16	5/8	4 5/8	2.05	4 1/8	3	5 1/8	6 1/4
2½	1	9/16	5/8	4 3/4	2.55	4 5/8	3 1/2	5 5/8	6 1/8
	1 3/8	9/16	5/8	4 3/4	2.55	4 5/8	3 1/2	5 5/8	6 3/8
	1 3/4	9/16	5/8	4 3/4	2.55	4 5/8	3 1/2	5 5/8	6 5/8
3	1 3/8	1 1/16	3/4	5 7/16	3.25	5 7/8	4 1/4	7 1/8	7 1/4
	1 3/4	1 1/16	3/4	5 7/16	3.25	5 7/8	4 1/4	7 1/8	7 3/8
	2	1 1/16	3/4	5 7/16	3.25	5 7/8	4 1/4	7 1/8	7 1/2
3½	1 3/8	1 1/16	3/4	5 7/16	3.25	5 7/8	120 mm	7 1/8	7 1/8
	1 3/4	1 1/16	3/4	5 7/16	3.25	5 7/8	120 mm	7 1/8	7 3/8
	2	1 1/16	3/4	5 7/16	3.25	5 7/8	120 mm	7 1/8	7 1/2
4	1 3/4	1 1/16	7/8	5 3/4	3.82	6 3/8	5 1/2	7 5/8	7 5/8
	2	1 1/16	7/8	5 3/4	3.82	6 3/8	5 1/2	7 5/8	7 3/4
	2 1/2	1 1/16	7/8	5 3/4	3.82	6 3/8	5 1/2	7 5/8	8

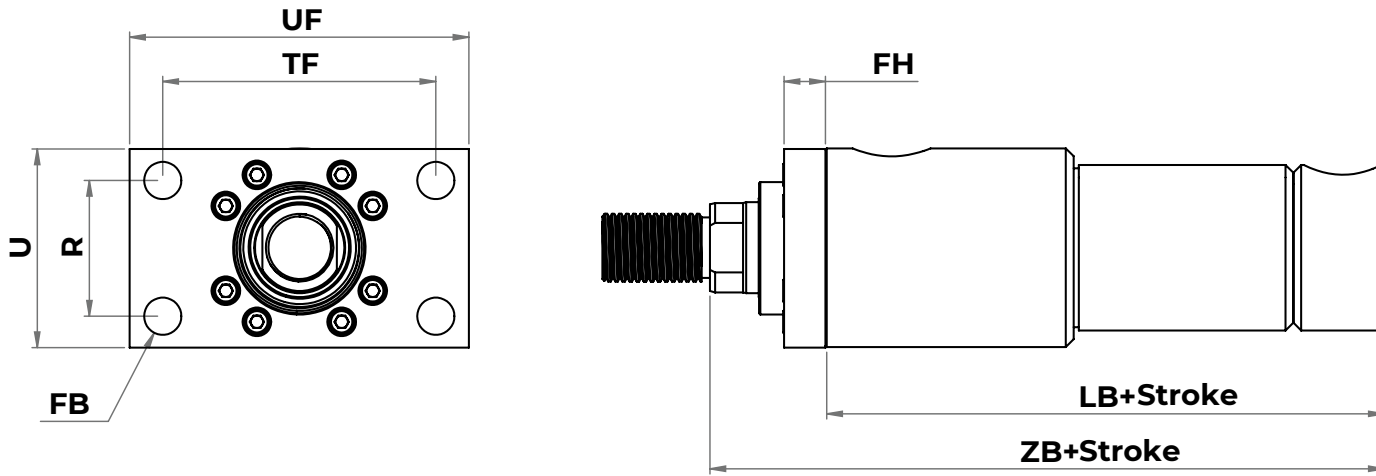
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5. DIMENSIONS

Index Reference	Ordering Code	Description
5.3.1	MF1	Head Cap Rectangular Flange



Cylinder Bore Ø inch	Rod Ø inch	FB	FH	LB+	R	TF	U	UF	ZB+
5	2	15/16	7/8	6¼	4.95	8 ³ / ₁₆	6½	9¾	9 ¹ / ₁₆
	2½	15/16	7/8	6¼	4.95	8 ³ / ₁₆	6½	9¾	9 ¹ / ₁₆
	3	15/16	7/8	6¼	4.95	8 ³ / ₁₆	6½	9¾	9 ¹ / ₁₆
	3½	15/16	7/8	6¼	4.95	8 ³ / ₁₆	6½	9¾	9 ¹ / ₁₆
6	2½	1 ¹ / ₁₆	1	7¾	5.73	9 ⁷ / ₁₆	7½	11¼	10 ⁹ / ₁₆
	3	1 ¹ / ₁₆	1	7¾	5.73	9 ⁷ / ₁₆	7½	11¼	10 ⁹ / ₁₆
	3½	1 ¹ / ₁₆	1	7¾	5.73	9 ⁷ / ₁₆	7½	11¼	10 ⁹ / ₁₆
	4	1 ¹ / ₁₆	1	7¾	5.73	9 ⁷ / ₁₆	7½	11¼	10 ⁹ / ₁₆
7	3	1 ³ / ₁₆	1	8½	6.58	10 ⁵ / ₈	8½	12 ⁵ / ₈	11¾
	3½	1 ³ / ₁₆	1	8½	6.58	10 ⁵ / ₈	8½	12 ⁵ / ₈	11¾
	4	1 ³ / ₁₆	1	8½	6.58	10 ⁵ / ₈	8½	12 ⁵ / ₈	11¾
	4½	1 ³ / ₁₆	1	8½	6.58	10 ⁵ / ₈	8½	12 ⁵ / ₈	11¾
	5	1 ³ / ₁₆	1	8½	6.58	10 ⁵ / ₈	8½	12 ⁵ / ₈	11¾
8	3½	1 ⁵ / ₁₆	1	9½	7.50	11 ³ / ₁₆	9½	14	12 ⁷ / ₈
	4	1 ⁵ / ₁₆	1	9½	7.50	11 ³ / ₁₆	9½	14	12 ⁷ / ₈
	4½	1 ⁵ / ₁₆	1	9½	7.50	11 ³ / ₁₆	9½	14	12 ⁷ / ₈
	5	1 ⁵ / ₁₆	1	9½	7.50	11 ³ / ₁₆	9½	14	12 ⁷ / ₈
	5½	1 ⁵ / ₁₆	1	9½	7.50	11 ³ / ₁₆	9½	14	12 ⁷ / ₈

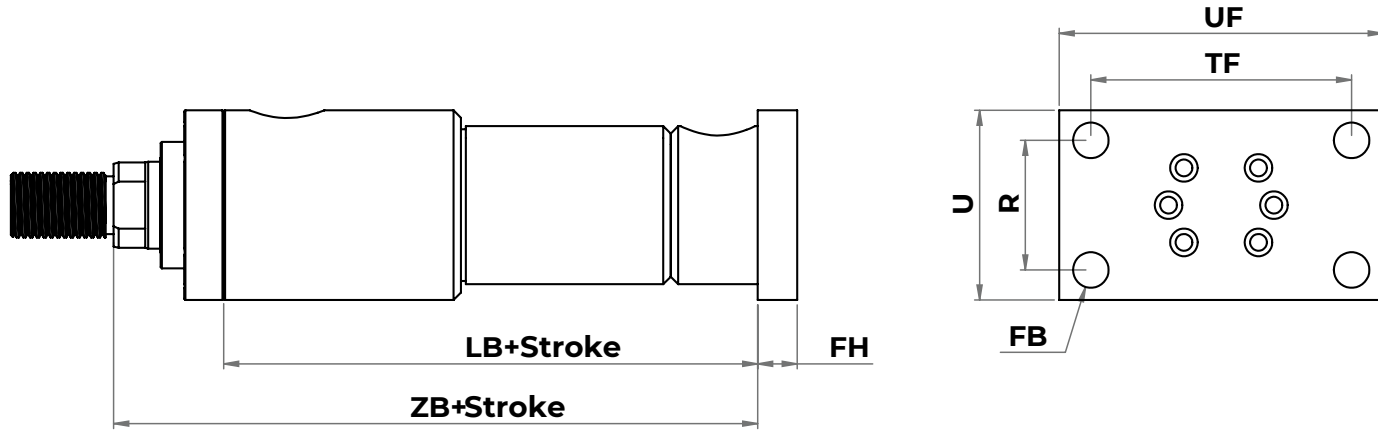
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5. DIMENSIONS

Index Reference	Ordering Code	Description
5.4	MF2	End Cap Rectangular Flange



Cylinder Bore Ø inch	Rod Ø inch	FB	FH	LB+	R	TF	U	UF	ZB+
1½	5/8	7/16	3/8	4 5/8	1.63	3 7/16	66 mm	4 1/4	5 5/8
	1	7/16	3/8	4 5/8	1.63	3 7/16	66 mm	4 1/4	6
2	1	9/16	5/8	4 5/8	2.05	4 1/8	3	5 1/8	6
	1 3/8	9/16	5/8	4 5/8	2.05	4 1/8	3	5 1/8	6 1/4
2½	1	9/16	5/8	4 3/4	2.55	4 5/8	3 1/2	5 5/8	6 1/8
	1 3/8	9/16	5/8	4 3/4	2.55	4 5/8	3 1/2	5 5/8	6 3/8
	1 3/4	9/16	5/8	4 3/4	2.55	4 5/8	3 1/2	5 5/8	6 5/8
3	1 3/8	1 1/16	3/4	5 7/16	3.25	5 7/8	4 1/4	7 1/8	7 1/4
	1 3/4	1 1/16	3/4	5 7/16	3.25	5 7/8	4 1/4	7 1/8	7 3/8
	2	1 1/16	3/4	5 7/16	3.25	5 7/8	4 1/4	7 1/8	7 1/2
3½	1 3/8	1 1/16	3/4	5 7/16	3.25	5 7/8	120 mm	7 1/8	7 1/8
	1 3/4	1 1/16	3/4	5 7/16	3.25	5 7/8	120 mm	7 1/8	7 3/8
	2	1 1/16	3/4	5 7/16	3.25	5 7/8	120 mm	7 1/8	7 1/2
4	1 3/4	1 1/16	7/8	5 3/4	3.82	6 3/8	5 1/2	7 5/8	7 5/8
	2	1 1/16	7/8	5 3/4	3.82	6 3/8	5 1/2	7 5/8	7 3/4
	2 1/2	1 1/16	7/8	5 3/4	3.82	6 3/8	5 1/2	7 5/8	8

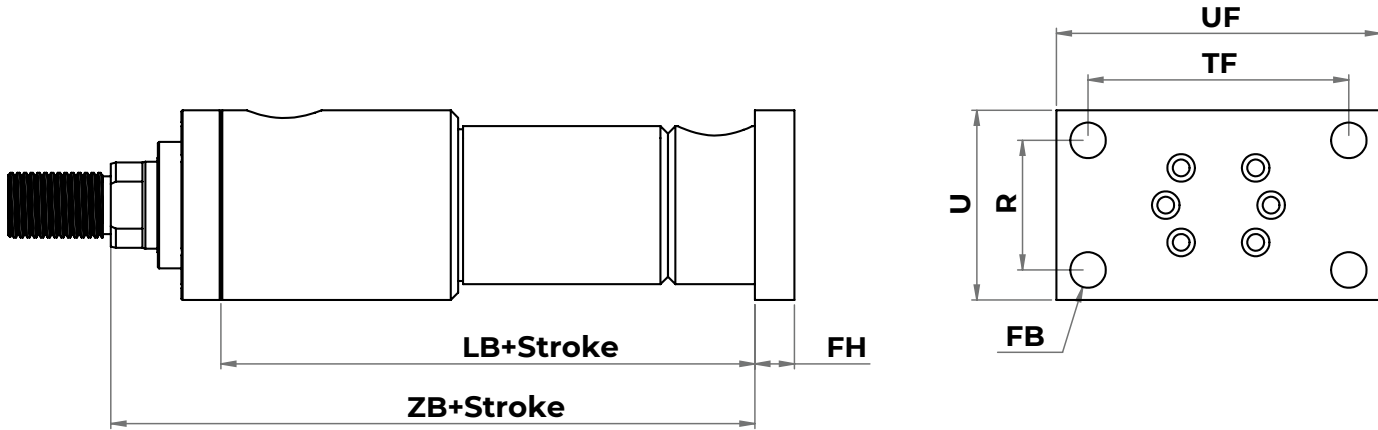
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5. DIMENSIONS

Index Reference	Ordering Code	Description
5.4.1	MF1	End Cap Rectangular Flange



Cylinder Bore Ø inch	Rod Ø inch	FB	FH	LB+	R	TF	U	UF	ZB+
5	2	15/16	7/8	6 1/4	4.95	8 3/16	6 1/2	9 3/4	9 1/16
	2 1/2	15/16	7/8	6 1/4	4.95	8 3/16	6 1/2	9 3/4	9 1/16
	3	15/16	7/8	6 1/4	4.95	8 3/16	6 1/2	9 3/4	9 1/16
	3 1/2	15/16	7/8	6 1/4	4.95	8 3/16	6 1/2	9 3/4	9 1/16
6	2 1/2	1 1/16	1	7 3/8	5.73	9 7/16	7 1/2	11 1/4	10 9/16
	3	1 1/16	1	7 3/8	5.73	9 7/16	7 1/2	11 1/4	10 9/16
	3 1/2	1 1/16	1	7 3/8	5.73	9 7/16	7 1/2	11 1/4	10 9/16
	4	1 1/16	1	7 3/8	5.73	9 7/16	7 1/2	11 1/4	10 9/16
7	3	1 3/16	1	8 1/2	6.58	10 5/8	8 1/2	12 5/8	11 3/4
	3 1/2	1 3/16	1	8 1/2	6.58	10 5/8	8 1/2	12 5/8	11 3/4
	4	1 3/16	1	8 1/2	6.58	10 5/8	8 1/2	12 5/8	11 3/4
	4 1/2	1 3/16	1	8 1/2	6.58	10 5/8	8 1/2	12 5/8	11 3/4
8	3 1/2	1 5/16	1	9 1/2	7.50	11 13/16	9 1/2	14	12 7/8
	4	1 5/16	1	9 1/2	7.50	11 13/16	9 1/2	14	12 7/8
	4 1/2	1 5/16	1	9 1/2	7.50	11 13/16	9 1/2	14	12 7/8
	5	1 5/16	1	9 1/2	7.50	11 13/16	9 1/2	14	12 7/8
	5 1/2	1 5/16	1	9 1/2	7.50	11 13/16	9 1/2	14	12 7/8

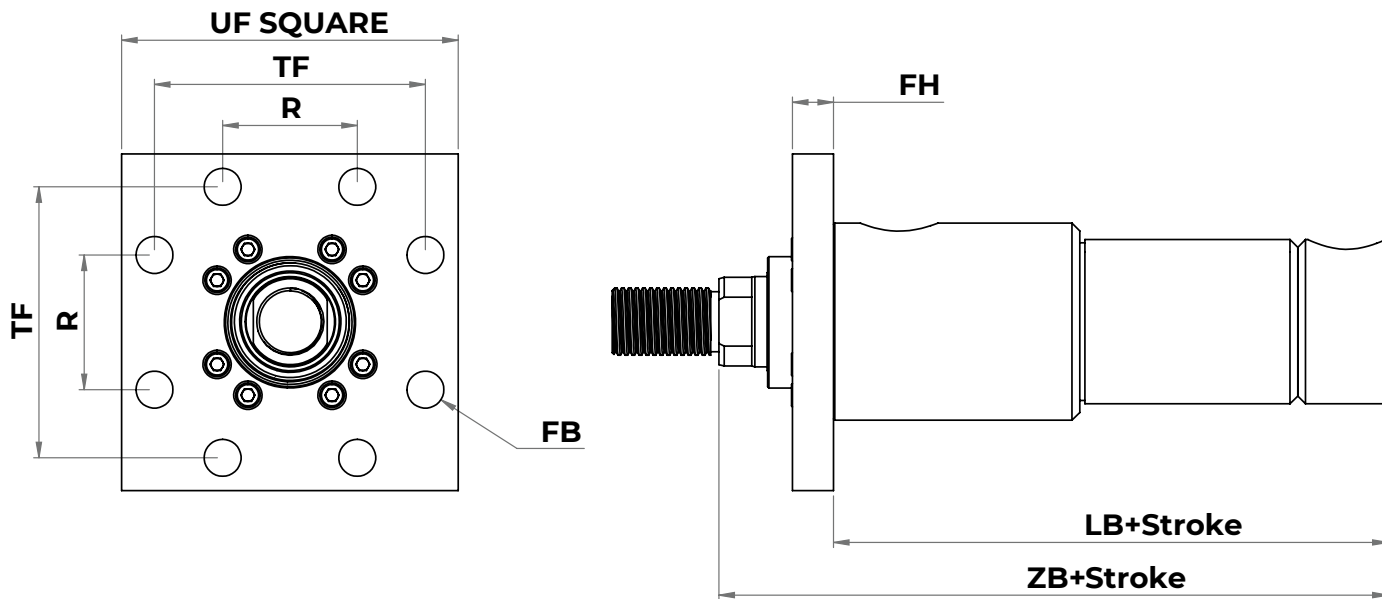
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5. DIMENSIONS

Index Reference	Ordering Code	Description
5.5	MF5	Head Cap Square Flange



Cylinder Bore Ø inch	Rod Ø inch	FB	FH	LB+	R	TF	UF	ZB+
1½	5/8	7/16	3/8	4 5/8	1.63	3 7/16	4 1/4	5 5/8
	1	7/16	3/8	4 5/8	1.63	3 7/16	4 1/4	6
2	1	9/16	5/8	4 5/8	2.05	4 1/8	5 1/8	6
	1 3/8	9/16	5/8	4 5/8	2.05	4 1/8	5 1/8	6 1/4
2½	1	9/16	5/8	4 3/4	2.55	4 5/8	5 5/8	6 1/8
	1 3/8	9/16	5/8	4 3/4	2.55	4 5/8	5 5/8	6 3/8
3	1 3/8	1 1/16	3/4	5 7/16	3.25	5 7/8	7 1/8	7 1/4
	1 3/4	1 1/16	3/4	5 7/16	3.25	5 7/8	7 1/8	7 3/8
3½	2	1 1/16	3/4	5 7/16	3.25	5 7/8	7 1/8	7 1/2
	1 3/8	1 1/16	3/4	5 7/16	3.25	5 7/8	7 1/8	7 1/8
4	1 3/4	1 1/16	7/8	5 3/4	3.82	6 3/8	7 5/8	7 5/8
	2	1 1/16	7/8	5 3/4	3.82	6 3/8	7 5/8	7 3/4
	2 1/2	1 1/16	7/8	5 3/4	3.82	6 3/8	7 5/8	8

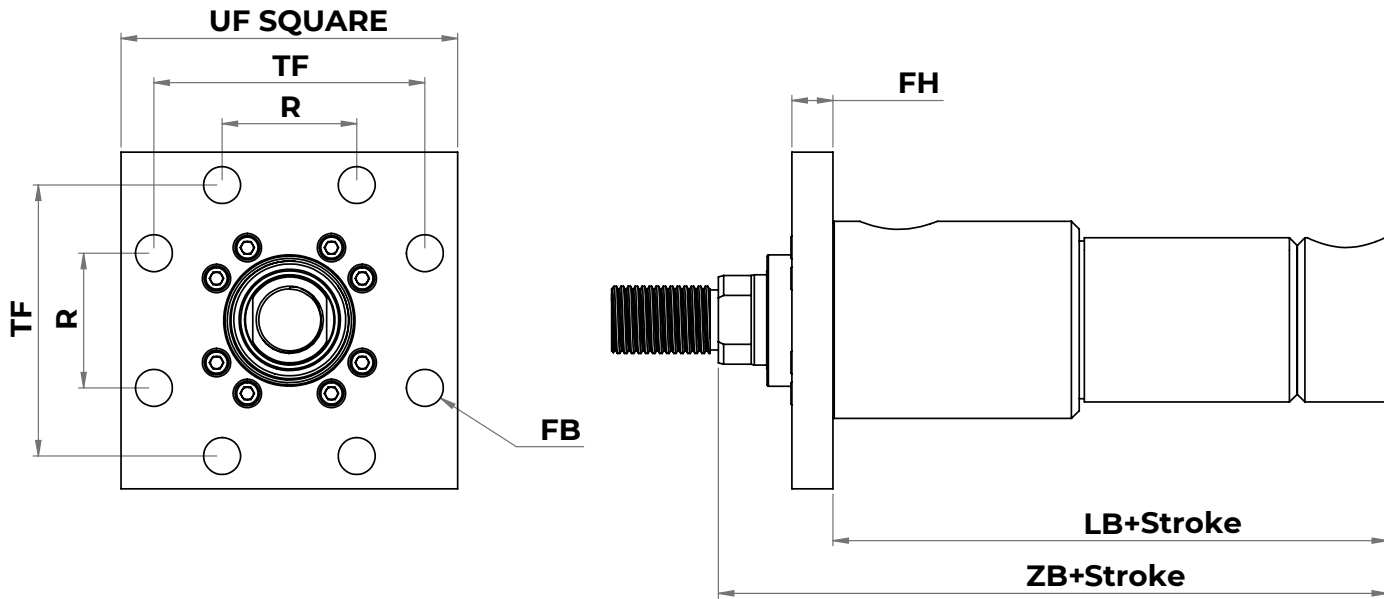
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5. DIMENSIONS

Index Reference	Ordering Code	Description
5.5.1	MF5	Head Cap Square Flange



Cylinder Bore Ø inch	Rod Ø inch	FB	FH	LB+	R	TF	UF	ZB+
5	2	15/16	7/8	6¼	4.95	8 ³ / ₁₆	9¾	9 ¹ / ₁₆
	2½	15/16	7/8	6¼	4.95	8 ³ / ₁₆	9¾	9 ¹ / ₁₆
	3	15/16	7/8	6¼	4.95	8 ³ / ₁₆	9¾	9 ¹ / ₁₆
	3½	15/16	7/8	6¼	4.95	8 ³ / ₁₆	9¾	9 ¹ / ₁₆
6	2½	1 ¹ / ₁₆	1	7 ³ / ₈	5.73	9 ⁷ / ₁₆	11¼	10 ⁹ / ₁₆
	3	1 ¹ / ₁₆	1	7 ³ / ₈	5.73	9 ⁷ / ₁₆	11¼	10 ⁹ / ₁₆
	3½	1 ¹ / ₁₆	1	7 ³ / ₈	5.73	9 ⁷ / ₁₆	11¼	10 ⁹ / ₁₆
	4	1 ¹ / ₁₆	1	7 ³ / ₈	5.73	9 ⁷ / ₁₆	11¼	10 ⁹ / ₁₆
7	3	1 ³ / ₁₆	1	8½	6.58	10 ⁵ / ₈	12 ⁵ / ₈	11¾
	3½	1 ³ / ₁₆	1	8½	6.58	10 ⁵ / ₈	12 ⁵ / ₈	11¾
	4	1 ³ / ₁₆	1	8½	6.58	10 ⁵ / ₈	12 ⁵ / ₈	11¾
	4½	1 ³ / ₁₆	1	8½	6.58	10 ⁵ / ₈	12 ⁵ / ₈	11¾
	5	1 ³ / ₁₆	1	8½	6.58	10 ⁵ / ₈	12 ⁵ / ₈	11¾
8	3½	1 ⁵ / ₁₆	1	9½	7.50	11 ¹³ / ₁₆	14	12 ⁷ / ₈
	4	1 ⁵ / ₁₆	1	9½	7.50	11 ¹³ / ₁₆	14	12 ⁷ / ₈
	4½	1 ⁵ / ₁₆	1	9½	7.50	11 ¹³ / ₁₆	14	12 ⁷ / ₈
	5	1 ⁵ / ₁₆	1	9½	7.50	11 ¹³ / ₁₆	14	12 ⁷ / ₈
	5½	1 ⁵ / ₁₆	1	9½	7.50	11 ¹³ / ₁₆	14	12 ⁷ / ₈

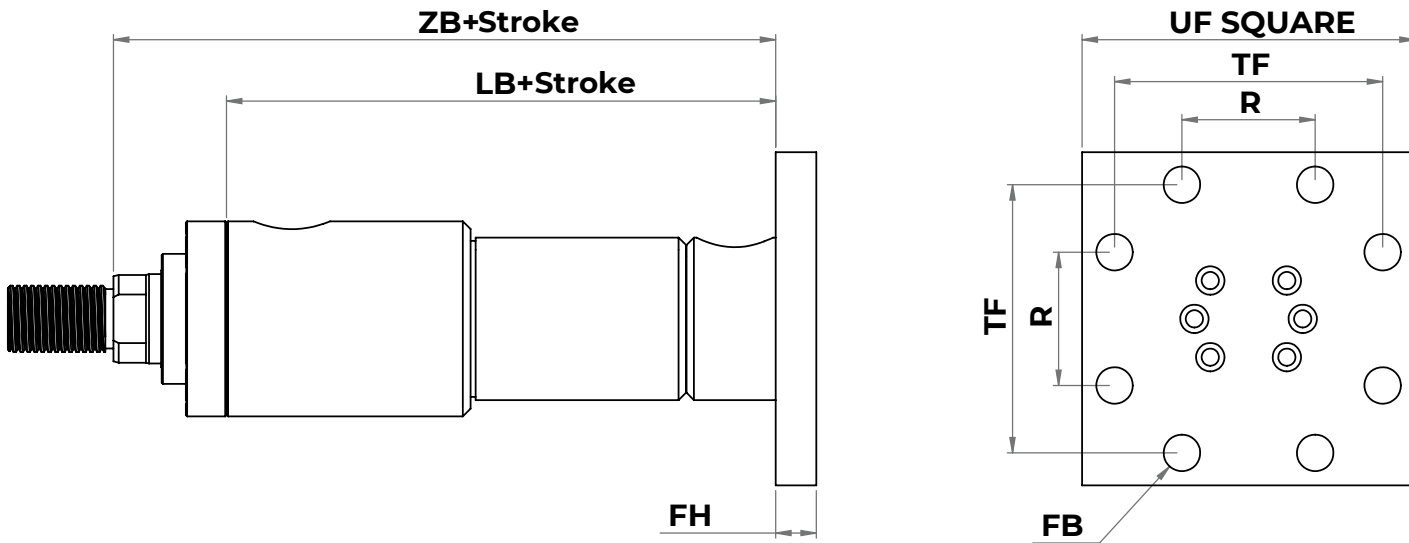
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5. DIMENSIONS

Index Reference	Ordering Code	Description
5.6	MF6	Head Cap Square Flange



Cylinder Bore Ø inch	Rod Ø inch	FB	FH	LB+	R	TF	UF	ZB+
1½	5/8	7/16	3/8	4 5/8	1.63	3 7/16	4 1/4	5 5/8
	1	7/16	3/8	4 5/8	1.63	3 7/16	4 1/4	6
2	1	9/16	5/8	4 5/8	2.05	4 1/8	5 1/8	6
	1 3/8	9/16	5/8	4 5/8	2.05	4 1/8	5 1/8	6 1/4
2½	1	9/16	5/8	4 3/4	2.55	4 5/8	5 5/8	6 1/8
	1 3/8	9/16	5/8	4 3/4	2.55	4 5/8	5 5/8	6 3/8
	1 3/4	9/16	5/8	4 3/4	2.55	4 5/8	5 5/8	6 5/8
3	1 3/8	11/16	3/4	5 7/16	3.25	5 7/8	7 1/8	7 1/4
	1 3/4	11/16	3/4	5 7/16	3.25	5 7/8	7 1/8	7 3/8
	2	11/16	3/4	5 7/16	3.25	5 7/8	7 1/8	7 1/2
3½	1 3/8	11/16	3/4	5 7/16	3.25	5 7/8	7 1/8	7 1/8
	1 3/4	11/16	3/4	5 7/16	3.25	5 7/8	7 1/8	7 3/8
	2	11/16	3/4	5 7/16	3.25	5 7/8	7 1/8	7 1/2
4	1 3/4	11/16	7/8	5 3/4	3.82	6 3/8	7 5/8	7 5/8
	2	11/16	7/8	5 3/4	3.82	6 3/8	7 5/8	7 3/4
	2 1/2	11/16	7/8	5 3/4	3.82	6 3/8	7 5/8	8

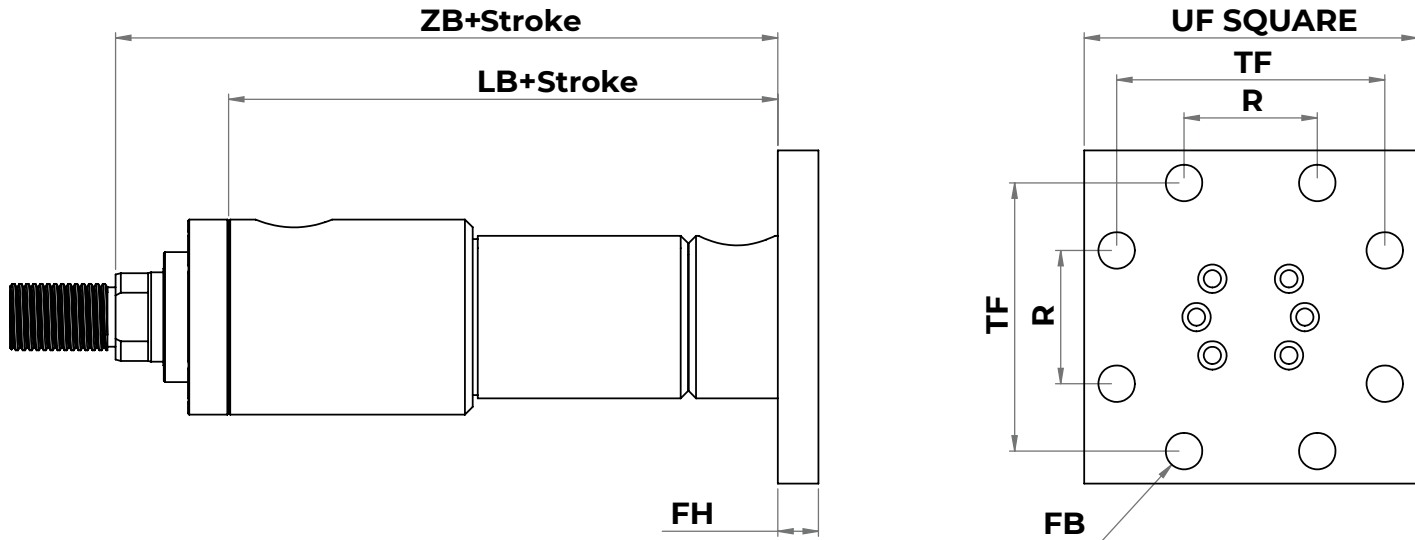
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5. DIMENSIONS

Index Reference	Ordering Code	Description
5.6.1	MF6	Head Cap Square Flange



Cylinder Bore Ø inch	Rod Ø inch	FB	FH	LB+	R	TF	UF	ZB+
5	2	15/16	7/8	6¼	4.95	8 ³ / ₁₆	9¾	9 ¹ / ₁₆
	2½	15/16	7/8	6¼	4.95	8 ³ / ₁₆	9¾	9 ¹ / ₁₆
	3	15/16	7/8	6¼	4.95	8 ³ / ₁₆	9¾	9 ¹ / ₁₆
	3½	15/16	7/8	6¼	4.95	8 ³ / ₁₆	9¾	9 ¹ / ₁₆
6	2½	1 ¹ / ₁₆	1	7¾	5.73	9 ⁷ / ₁₆	11¼	10 ⁹ / ₁₆
	3	1 ¹ / ₁₆	1	7¾	5.73	9 ⁷ / ₁₆	11¼	10 ⁹ / ₁₆
	3½	1 ¹ / ₁₆	1	7¾	5.73	9 ⁷ / ₁₆	11¼	10 ⁹ / ₁₆
	4	1 ¹ / ₁₆	1	7¾	5.73	9 ⁷ / ₁₆	11¼	10 ⁹ / ₁₆
7	3	1 ³ / ₁₆	1	8½	6.58	10 ⁵ / ₈	12 ⁵ / ₈	11¾
	3½	1 ³ / ₁₆	1	8½	6.58	10 ⁵ / ₈	12 ⁵ / ₈	11¾
	4	1 ³ / ₁₆	1	8½	6.58	10 ⁵ / ₈	12 ⁵ / ₈	11¾
	4½	1 ³ / ₁₆	1	8½	6.58	10 ⁵ / ₈	12 ⁵ / ₈	11¾
	5	1 ³ / ₁₆	1	8½	6.58	10 ⁵ / ₈	12 ⁵ / ₈	11¾
8	3½	1 ⁵ / ₁₆	1	9½	7.50	11 ¹³ / ₁₆	14	12 ⁷ / ₈
	4	1 ⁵ / ₁₆	1	9½	7.50	11 ¹³ / ₁₆	14	12 ⁷ / ₈
	4½	1 ⁵ / ₁₆	1	9½	7.50	11 ¹³ / ₁₆	14	12 ⁷ / ₈
	5	1 ⁵ / ₁₆	1	9½	7.50	11 ¹³ / ₁₆	14	12 ⁷ / ₈
	5½	1 ⁵ / ₁₆	1	9½	7.50	11 ¹³ / ₁₆	14	12 ⁷ / ₈

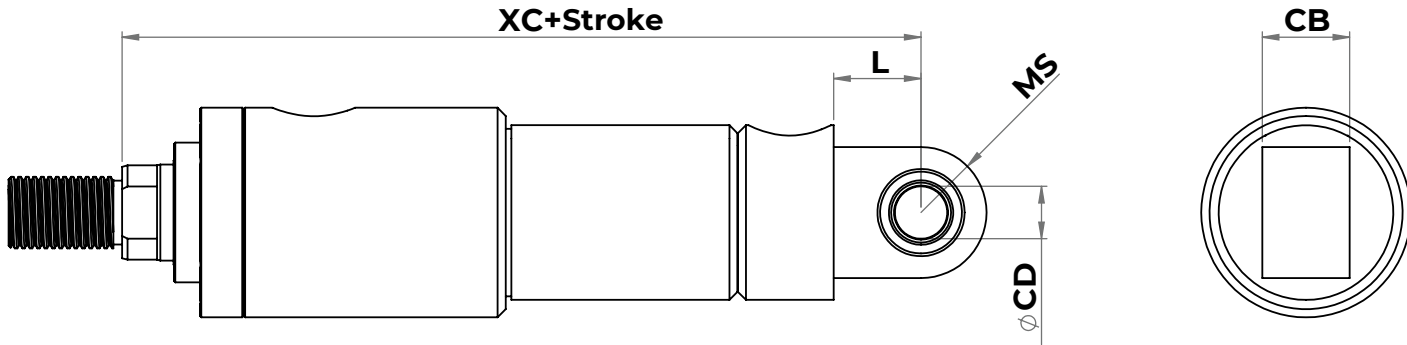
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5. DIMENSIONS

Index Reference	Ordering Code	Description
5.7	SB	End Cap Spherical Bearing



Cylinder Bore Ø inch	Rod Ø inch	CB	CD	L	MS	XC+
1½	5/8	¾	½	¾	1½	6¾
	1	¾	½	¾	1½	6¾
2	1	1¼	¾	1¼	1⅞	7¼
	1⅜	1¼	¾	1¼	1⅞	7½
2½	1	1¼	¾	1¼	1⅞	7¾
	1⅜	1¼	¾	1¼	1⅞	7⅝
	1¾	1¼	¾	1¼	1⅞	7⅞
3	1⅜	1½	1	1½	2½	8¾
	1¾	1½	1	1½	2½	8⅞
	2	1½	1	1½	2½	9
3½	1⅜	1½	1	1½	2½	8⅝
	1¾	1½	1	1½	2½	8⅞
	2	1½	1	1½	2½	9
4	1¾	2	1⅜	2⅛	37/16	9¾
	2	2	1⅜	2⅛	37/16	9⅞
	2½	2	1⅜	2⅛	37/16	10⅛

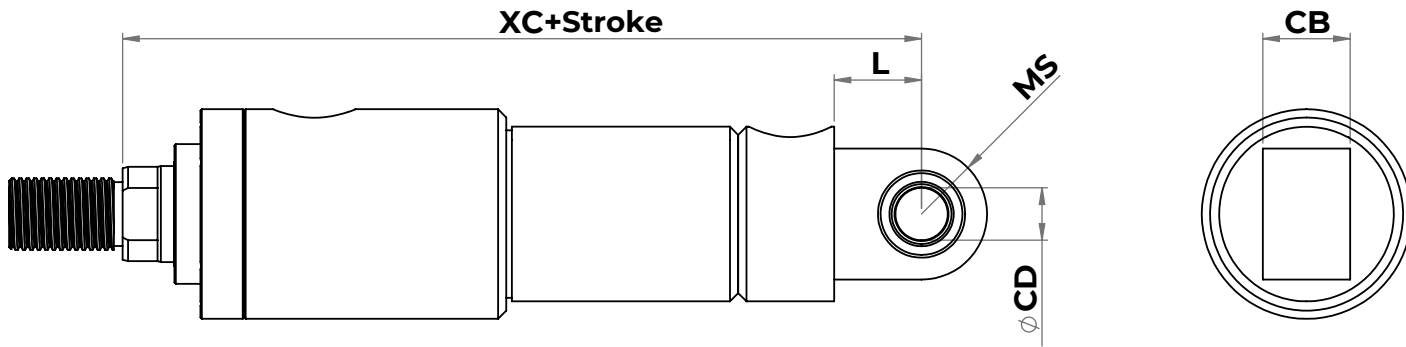
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5. DIMENSIONS

Index Reference	Ordering Code	Description
5.7.1	SB	End Cap Spherical Bearing



Cylinder Bore Ø inch	Rod Ø inch	CB	CD	L	MS	XC+
5	2	2½	1¾	2¼	1¾	10½
	2½	2½	1¾	2¼	1¾	10¾
	3	2½	1¾	2¼	1¾	10¾
	3½	2½	1¾	2¼	1¾	10¾
6	2½	2½	2	2½	2	12⅛
	3	2½	2	2½	2	12⅛
	3½	2½	2	2½	2	12⅛
	4	2½	2	2½	2	12⅛
7	3	3	2½	3	2½	13¾
	3½	3	2½	3	2½	13¾
	4	3	2½	3	2½	13¾
	4½	3	2½	3	2½	13¾
	5	3	2½	3	2½	13¾
8	3½	3	3	3¼	2¾	15
	4	3	3	3¼	2¾	15
	4½	3	3	3¼	2¾	15
	5	3	3	3¼	2¾	15
	5½	3	3	3¼	2¾	15

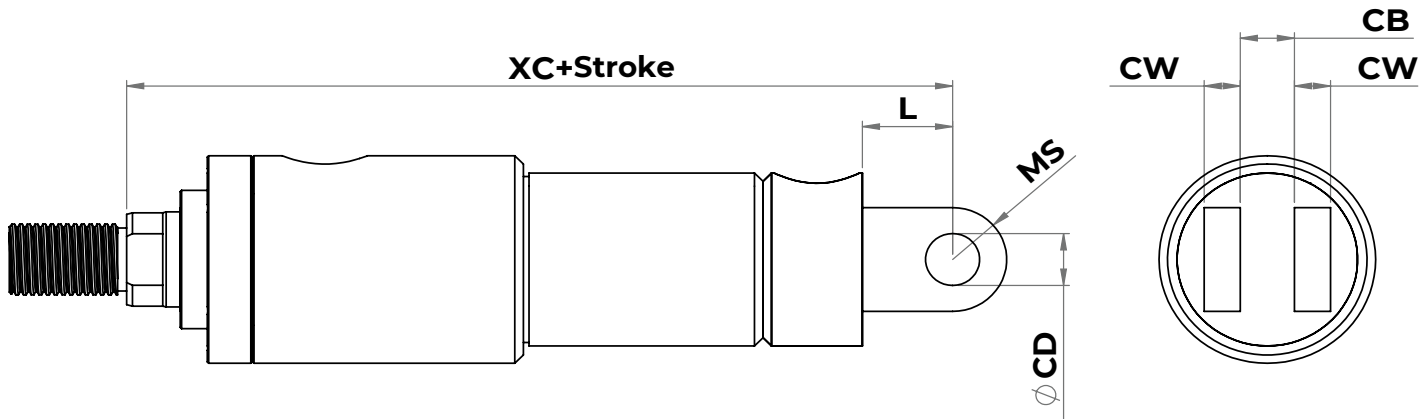
If clarification is required on converting the above imperial measurements to metric values, please consult Queensland Hydraulics.



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5. DIMENSIONS

Index Reference	Ordering Code	Description
5.8	MP	End Cap Fixed Female Clevis



Cylinder Bore Ø inch	Rod Ø inch	CB	CD	CW	L	MS	XC+
1½	5/8	¾	½	½	¾	1½	6¾
	1	¾	½	½	¾	1½	6¾
2	1	1¼	¾	5/8	1¼	1⅞	7¼
	1⅜	1¼	¾	5/8	1¼	1⅞	7½
2½	1	1¼	¾	5/8	1¼	1⅞	7¾
	1⅜	1¼	¾	5/8	1¼	1⅞	7⅝
	1¾	1¼	¾	5/8	1¼	1⅞	7⅞
3	1⅜	1½	1	¾	1½	2½	8¾
	1¾	1½	1	¾	1½	2½	8⅞
	2	1½	1	¾	1½	2½	9
3½	1⅜	1½	1	¾	1½	2½	8⅝
	1¾	1½	1	¾	1½	2½	8⅞
	2	1½	1	¾	1½	2½	9
4	1¾	2	1⅜	1	2⅞	3⅞	9¾
	2	2	1⅜	1	2⅞	3⅞	9⅞
	2½	2	1⅜	1	2⅞	3⅞	10⅞

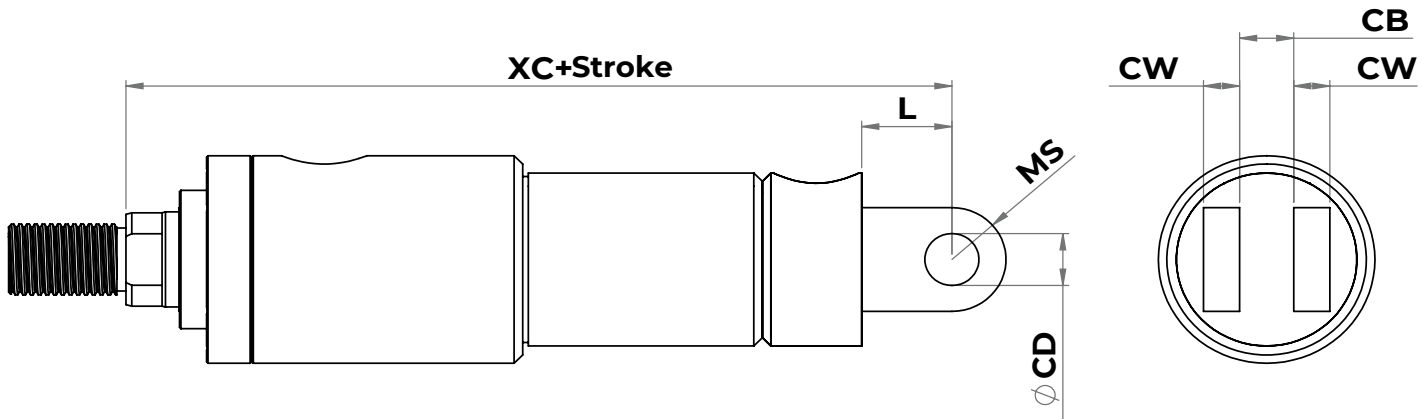
If clarification is required on converting the above imperial measurements to metric values, please consult Queensland Hydraulics.



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5. DIMENSIONS

Index Reference	Ordering Code	Description
5.8.1.	MP	End Cap Fixed Female Clevis



Cylinder Bore Ø inch	Rod Ø inch	CB	CD	CW	L	MS	XC+
5	2	2½	1¾	1¼	2¼	1¾	10½
	2½	2½	1¾	1¼	2¼	1¾	10¾
	3	2½	1¾	1¼	2¼	1¾	10¾
	3½	2½	1¾	1¼	2¼	1¾	10¾
6	2½	2½	2	1¼	2½	2	12½
	3	2½	2	1¼	2½	2	12½
	3½	2½	2	1¼	2½	2	12½
	4	2½	2	1¼	2½	2	12½
7	3	3	2½	1½	3	2½	13¾
	3½	3	2½	1½	3	2½	13¾
	4	3	2½	1½	3	2½	13¾
	4½	3	2½	1½	3	2½	13¾
	5	3	2½	1½	3	2½	13¾
8	3½	3	3	1½	3¼	2¾	15
	4	3	3	1½	3¼	2¾	15
	4½	3	3	1½	3¼	2¾	15
	5	3	3	1½	3¼	2¾	15
	5½	3	3	1½	3¼	2¾	15

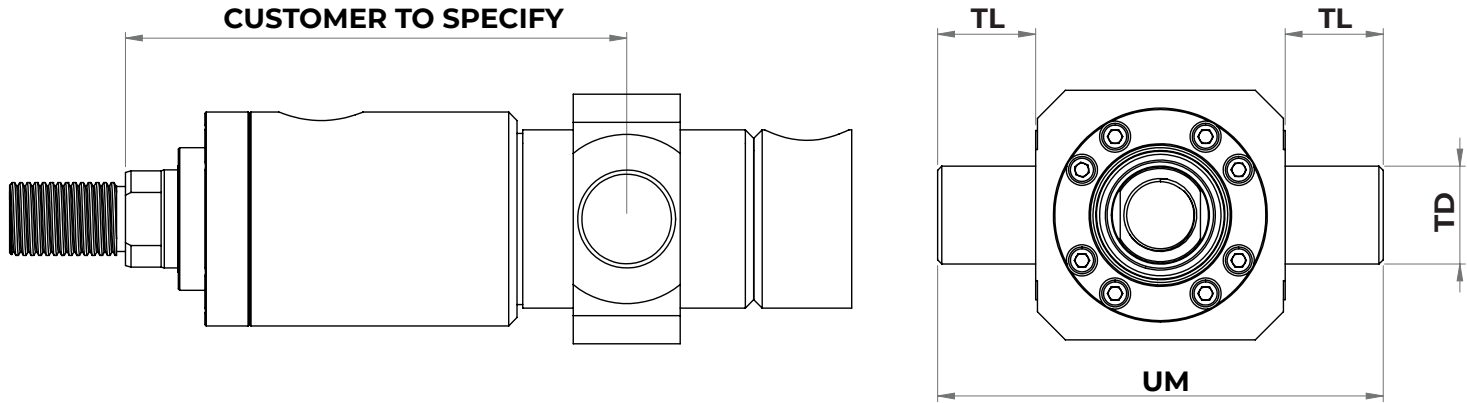
If clarification is required on converting the above imperial measurements to metric values, please consult Queensland Hydraulics.



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5. DIMENSIONS

Index Reference	Ordering Code	Description
5.9	MT4	Intermediate Trunnion Mount



Cylinder Bore Ø inch	Rod Ø inch	TL	UM	TD
1½	5/8	1	5	1
	1	1	5	1
2	1	1¾	6¼	1¾
	1¾	1¾	6¼	1¾
2½	1	1¾	6¾	1¾
	1¾	1¾	6¾	1¾
	1¾	1¾	6¾	1¾
3	1¾	1¾	8½	1¾
	1¾	1¾	8½	1¾
	2	1¾	8½	1¾
3½	1¾	1¾	9	1¾
	2	1¾	9	1¾
	2½	1¾	9	1¾
4	1¾	1¾	9	1¾
	2	1¾	9	1¾
	2½	1¾	9	1¾

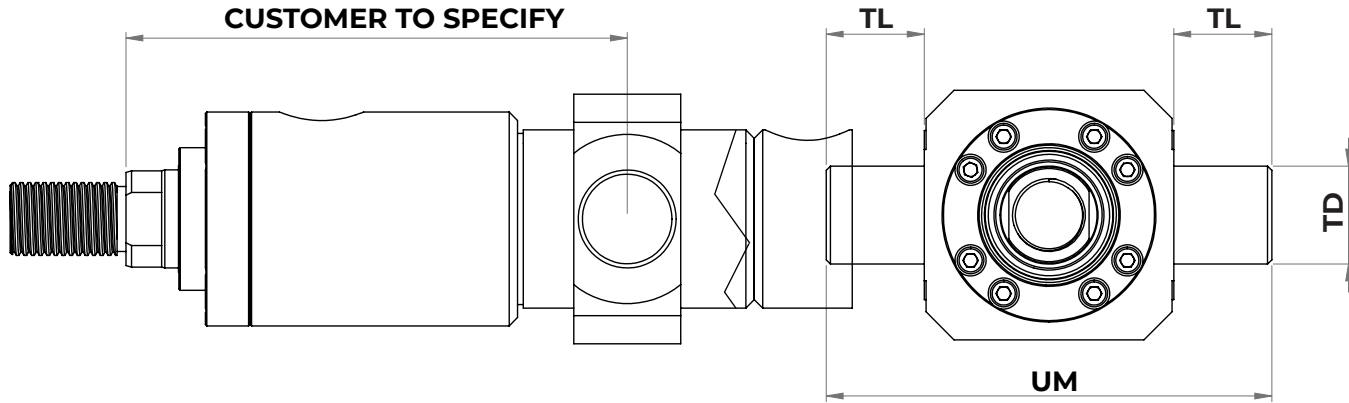
If clarification is required on converting the above imperial measurements to metric values, please consult Queensland Hydraulics.



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5. DIMENSIONS

Index Reference	Ordering Code	Description
5.9.1	MT4	Intermediate Trunnion Mount



Cylinder Bore Ø inch	Rod Ø inch	TL	UM	UD
5	2	1¾	10½	1¾
	2½	1¾	10½	1¾
	3	1¾	10½	1¾
	3½	1¾	10½	1¾
6	2½	2	12½	2
	3	2	12½	2
	3½	2	12½	2
	4	2	12½	2
7	3	2½	14¾	2½
	3½	2½	14¾	2½
	4	2½	14¾	2½
	4½	2½	14¾	2½
8	3½	3	17	3
	4	3	17	3
	4½	3	17	3
	5	3	17	3
	5½	3	17	3

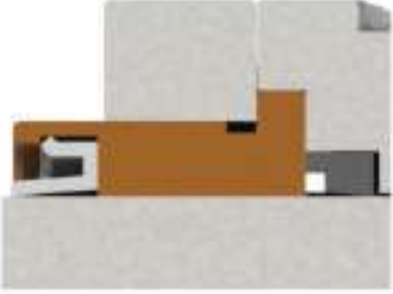
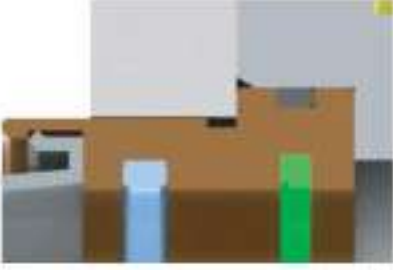


If clarification is required on converting the above imperial measurements to metric values, please consult Queensland Hydraulics.



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6. SEALING ALTERNATIVES

- Appropriate sealing methodology is imperative to a long-lasting and maintainable hydraulic cylinder. R3000 cylinders contain removable gland bushes which allow all rod seals to be removed without disassembly of the main cylinder barrel.
- These cartridge style gland bushes are able to be supplied with a myriad of seal types and materials to suit individual applications.
- Standard sealing methods are shown below; non-standard sealing arrangements in addition to exotic sealing materials are available on request. For these applications please consult with Queensland Hydraulics who will then issue a Special Build number for ordering.

ORDERING CODE	DESCRIPTION	APPLICATION	GENERAL ARRANGEMENT
S	ROD Single double acting seals	Non-sensitive environment with no external fluid pressure	
UW	ROD Single acting primary seal with double acting secondary seal	High Speed Applications Non-sensitive environments with external fluid pressure	
HS	PISTON Single O-ring energised seal with two independent wear strips	High Speed Applications Long life applications	
5	PISTON Integrated five piece piston seal with support ring and bearings	Standard applications	



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7. PISTON ROD MATERIALS

- In order to combat the varied physical and environmental conditions of each application the correct rod material must be selected. The following table outlines the most common materials available and their strength and typical applications.
- For rod materials other than those below please consult Queensland Hydraulics who will issue a Special Build number for your requirements. Please consult pages 30 through 41 for cylinder buckling data based upon carbon steel rod material.
- Please consult Queensland Hydraulics if you require assistance in choosing a rod material for your specific application.

Ordering Code	Material	Yield Strength (MPa)	Description
1	Gr1045 Chrome Plated	~410	Medium tensile mild steel with little corrosion resistance and low abrasion resistance.
2	Gr4140 Chrome Plated	~655	Chrome plated (0.25 - 0.5mm thickness) Gr4140 bar. High abrasion resistance and increased corrosion resistance over standard Gr4140 bar.
3	Gr4140 Chrome plated with ceramic densification	~655	Ceramic densification of the porous chrome microstructure increases the corrosion resistance to above that of 3 series stainless steel while maintaining high impact resistance and core strength. Economical alternative to super-stainless steel grade (Gr2130 etc).
4	Gr316 Stainless Steel	~220	Heat treatable Austenite stainless steel.
5	Gr630 Stainless Steel (17/4PH)	~590 - 1,170	High tensile precipitation hardened stainless steel, corrosion resistance similar to Gr304 stainless steel.
6	Gr2205 Stainless Steel	~450	High tensile strength with excellent corrosion resistance.

8. PORT STYLES

- Recommended port sizes are outlined in the table below.
- If a particular application requires a porting arrangement for size and orientation that is non standard then please consult with Queensland Hydraulics for a special build number.
- Standard supply for ports is that the head cap and end cap are placed inline on the same face unless otherwise specified

ORDERING CODE	G	U	ORDERING CODE	G	U
Cylinder Bore Ø inch	BSPP Port Inch	UNF "O" Ring Port Inch	Cylinder Bore Ø inch	BSPP Port Inch	UNF "O" Ring Port Inch
1½	½ - 14	¾ - 16	4	¾ - 14	1½ - 12
2	½ - 14	¾ - 16	5	¾ - 14	1½ - 12
2½	½ - 14	¾ - 16	6	1 - 11	1½ - 12
3	½ - 14	¾ - 16	7	1 - 11	1½ - 12
3½	¾ - 14	1½ - 12	8	1 - 11	1½ - 12



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9. TECHNICAL REFERENCE DATA

Index Reference	Description
9.1	Tolerances

Table I

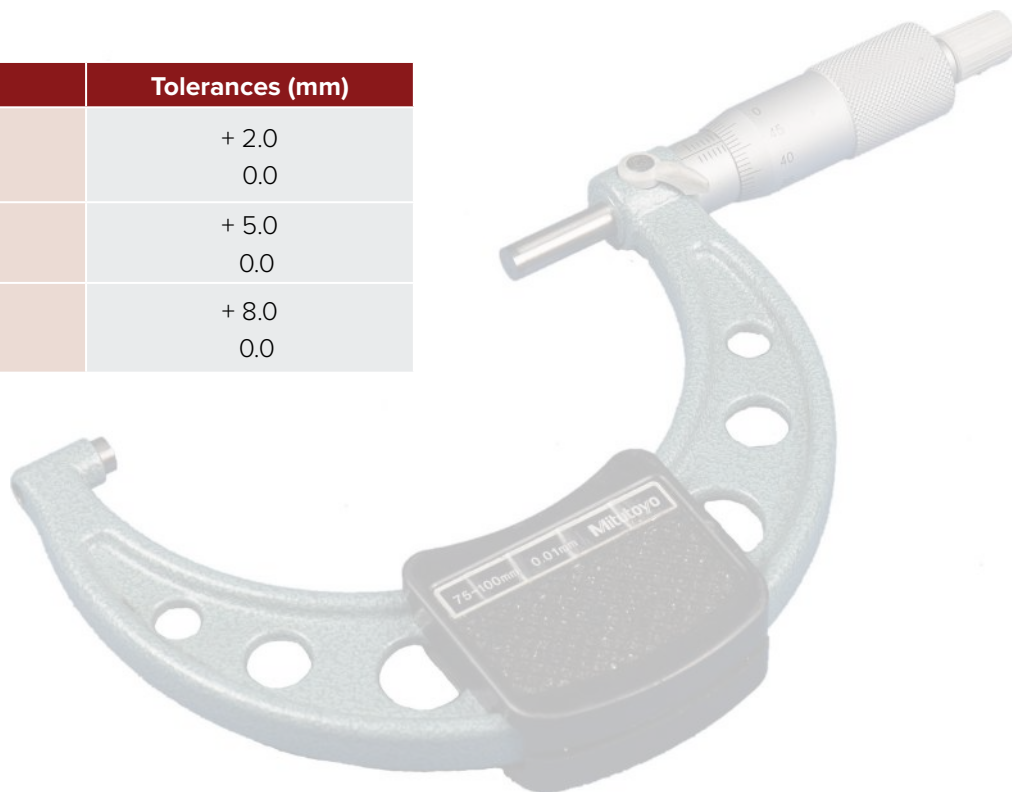
Tolerances for mounting dimensions that are dependant on stroke.

Code for Mounting Dimension	LB	ZB	XC
Nominal Stroke (mm)	Tolerances (mm)		
≤ 1,250	± 1.5	± 1.5	± 2.0
>1,250 ≤ 3,150	± 3.0	± 3.0	± 4.0
≤ 6,000	± 5.0	± 5.0	± 8.0

Table II

Tolerances on piston stroke.

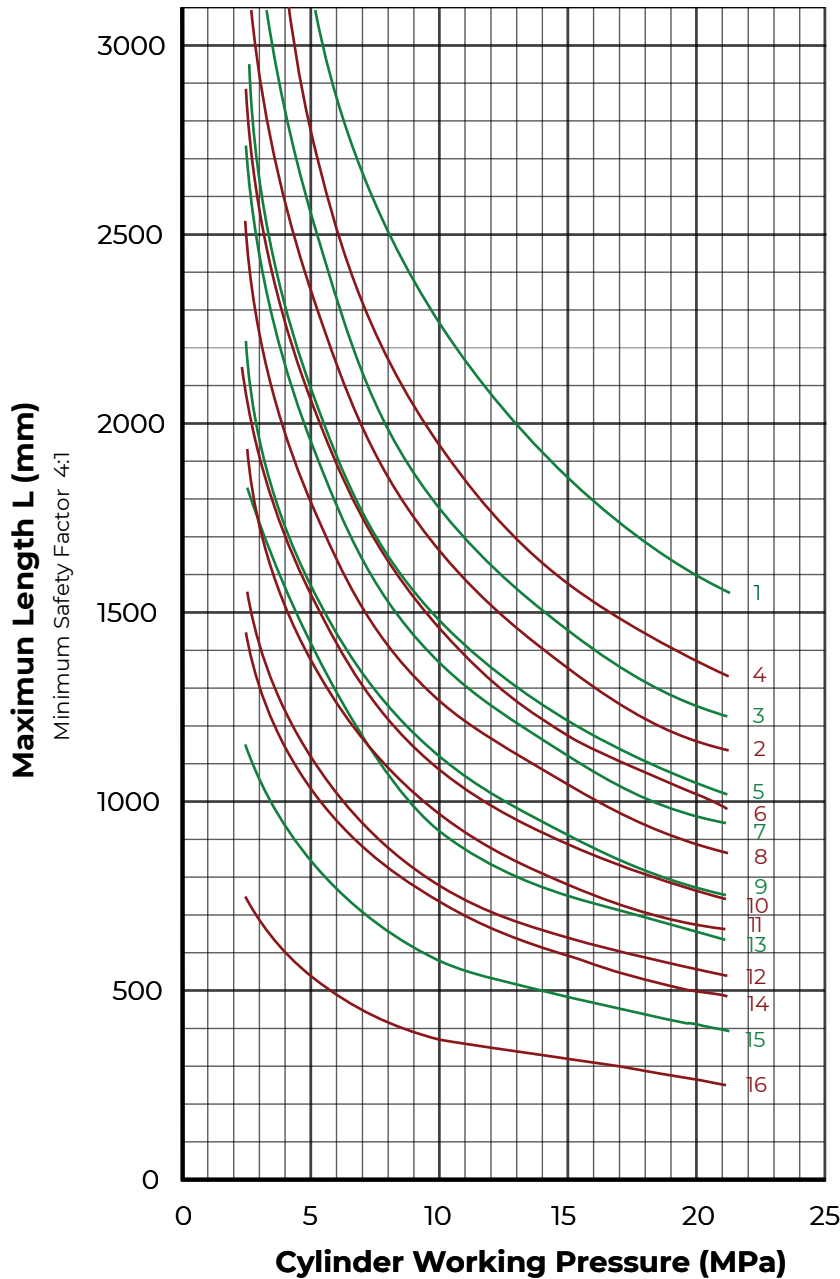
Nominal Stroke (mm)	Tolerances (mm)
≤ 1,250	+ 2.0 0.0
>1,250 ≤ 3,150	+ 5.0 0.0
≤ 6,000	+ 8.0 0.0



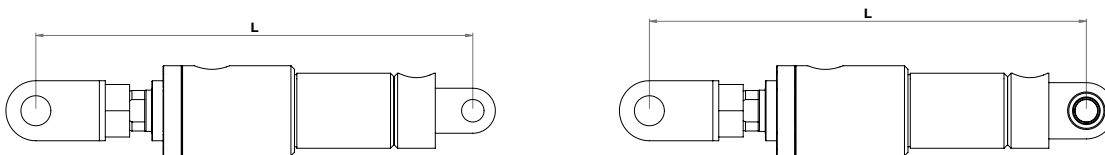
9. TECHNICAL REFERENCE DATA

Index Reference	Description
9.2.1	Pinned connections both ends

- All Buckling calculations are based on a 4:1 safety factor on the critical buckling force. The standard maximum length for this cylinder range is 3,000 mm and as such any figures above this value are limited in the following tables. The charts and tables are based upon piston rod material grade 1045 (page28).



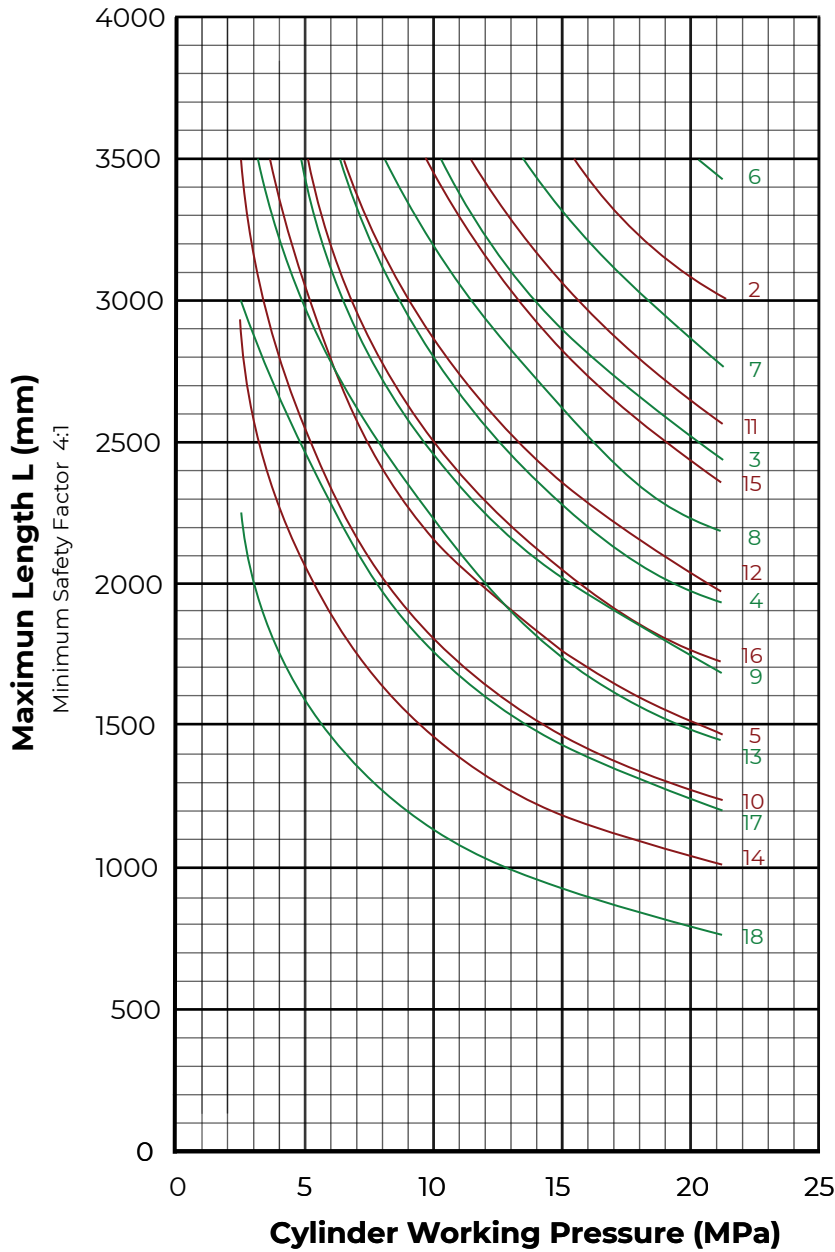
Cylinder Size	Graph #
1½ X 5⁄₈	16
1½ X 1	11
2 X 1	14
2 X 1¾	7
2½ X 1	15
2½ X 1¾	10
2½ X 1¾	3
3 X 1¾	13
3 X 1¾	5
3 X 2	4
3½ X 1¾	12
3½ X 1¾	8
3½ X 2	2
4 X 1¾	9
4 X 2	6
4 X 2½	1



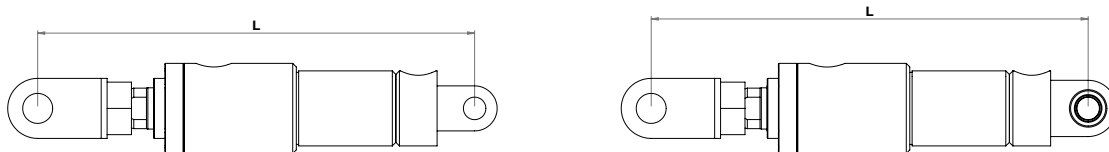
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9. TECHNICAL REFERENCE DATA

Index Reference	Description
9.22	Pinned Connections Both Ends



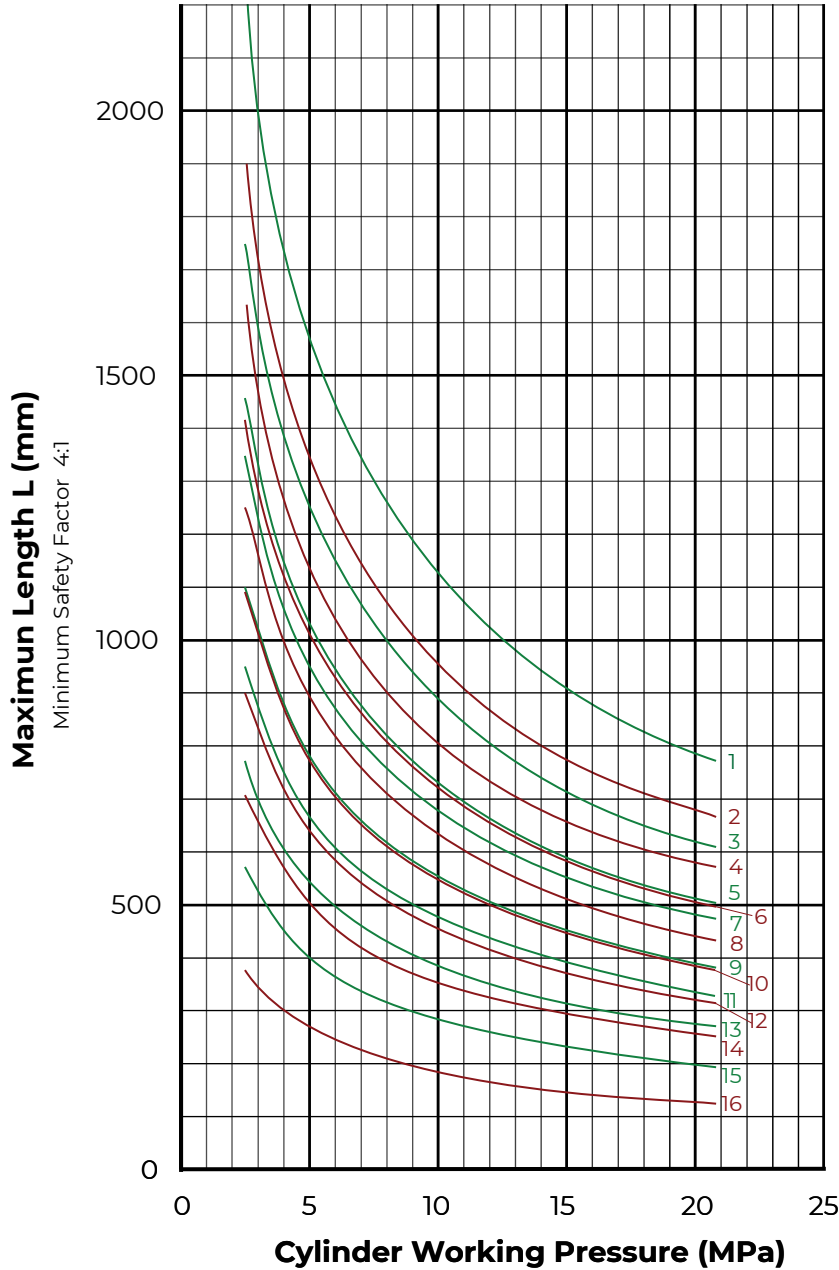
Cylinder Size	Graph #
5 X 2	18
5 X 2½	17
5 X 3	16
5 X 3½	15
6 X 2½	14
6 X 3	13
6 X 3½	12
6 X 4	11
7 X 3	10
7 X 3½	9
7 X 4	8
7 X 4½	7
7 X 5	6
8 X 3½	5
8 X 4	4
8 X 4½	3
8 X 5	2



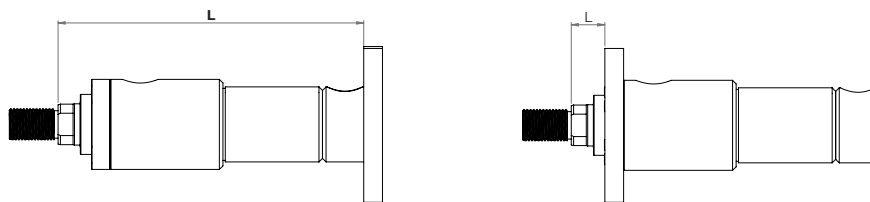
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9. TECHNICAL REFERENCE DATA

Index Reference	Description
9.23	Fixed Base with Free End



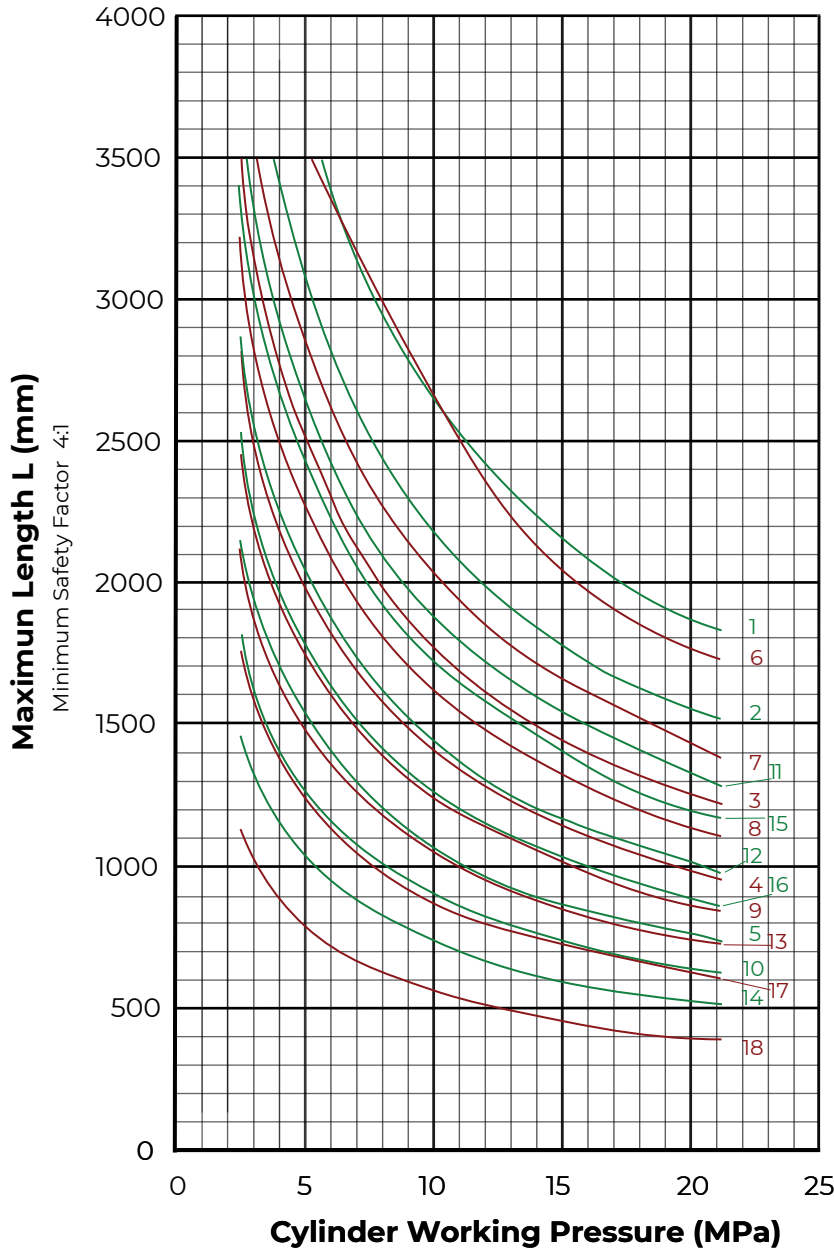
Cylinder Size	Graph #
1½ X 5⁄8	16
1½ X 1	11
2 X 1	14
2 X 1¾	7
2½ X 1	15
2½ X 1¾	10
2½ X 1¾	3
3 X 1¾	12
3 X 1¾	5
3 X 2	4
3½ X 1¾	13
3½ X 1¾	8
3½ X 2	2
4 X 1¾	9
4 X 2	6
4 X 2½	1



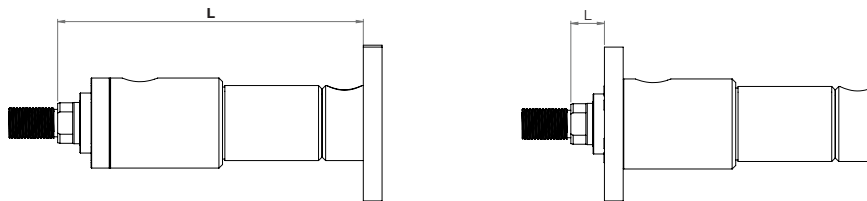
E: admin@hydraulics.net.au www.hydraulics.net.au

9. TECHNICAL REFERENCE DATA

Index Reference	Description
9.2.4	Fixed Base with Free End



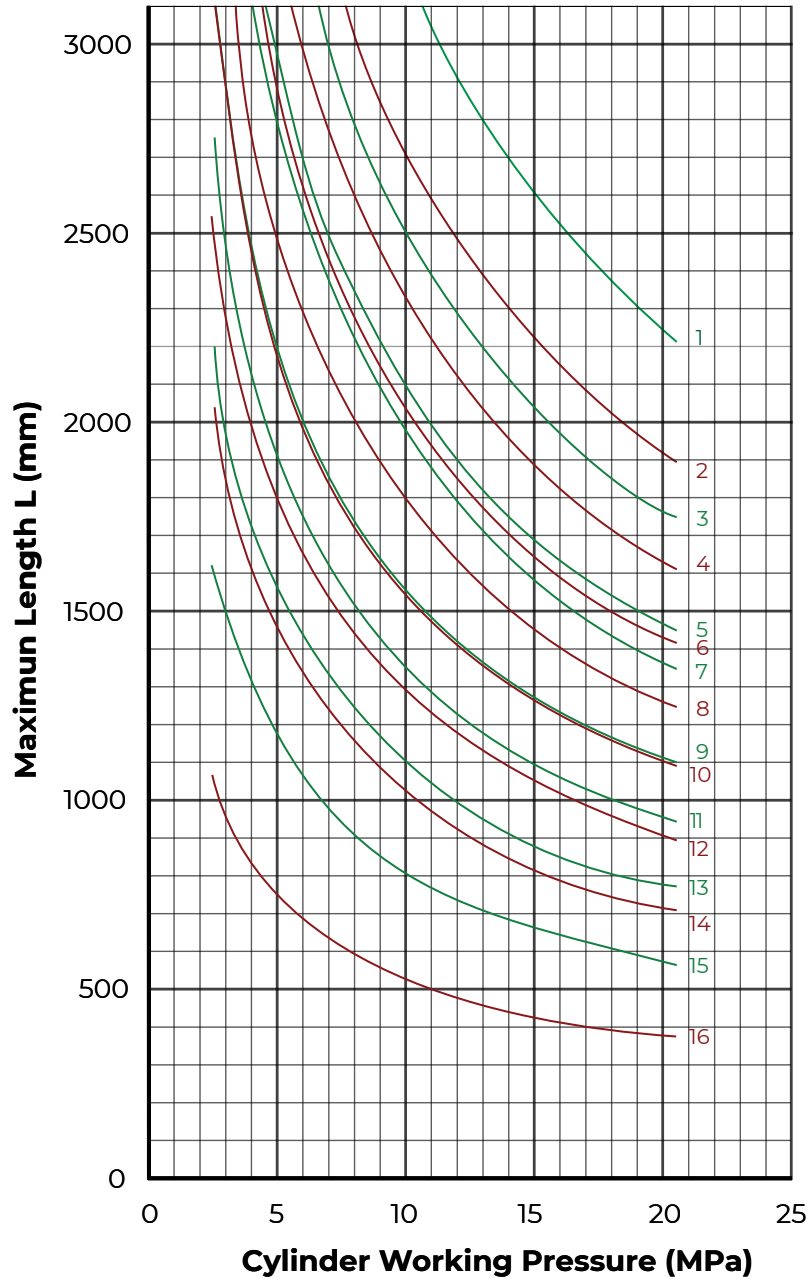
Cylinder Size	Graph #
5 X 2	18
5 X 2½	17
5 X 3	16
5 X 3½	15
6 X 2½	14
6 X 3	13
6 X 3½	12
6 X 4	11
7 X 3	10
7 X 3½	9
7 X 4	8
7 X 4½	7
7 X 5	6
8 X 3½	5
8 X 4	4
8 X 4½	3
8 X 5	2
8 X 5½	1



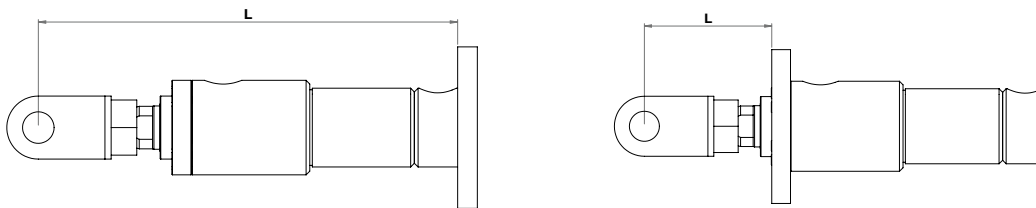
E: admin@hydraulics.net.au www.hydraulics.net.au

9. TECHNICAL REFERENCE DATA

Index Reference	Description
9.2.5	Fixed Base with Pinned End



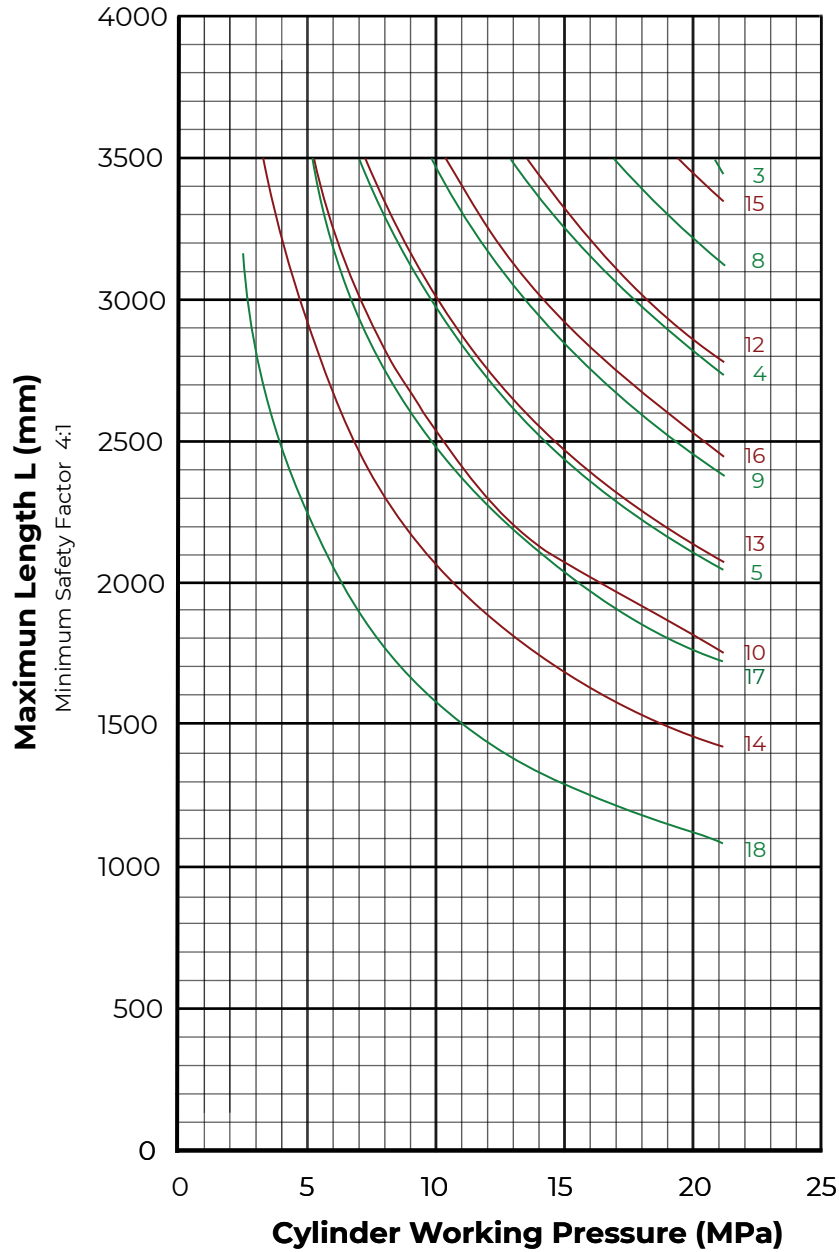
Cylinder Size	Graph #
1½ X 5/8	16
1½ X 1	11
2 X 3	14
5 X 3½	7
6 X 2½	15
6 X 3	10
6 x 3½	3
6 X 4	12
3 X 1¾	5
3 X 2	4
3½ X 1¾	12
3½ X 1¾	8
3½ X 2	2
4 X 1¾	9
4 X 2	6
4 X 2½	1



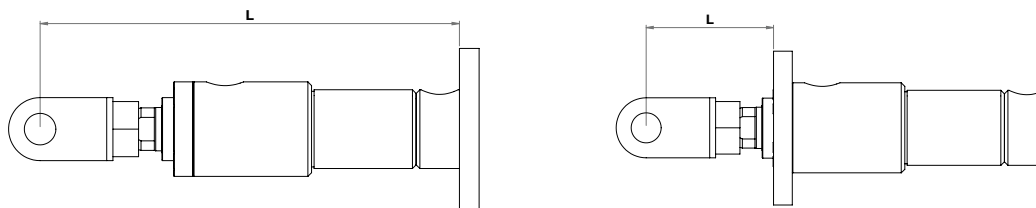
E: admin@hydraulics.net.au www.hydraulics.net.au

9. TECHNICAL REFERENCE DATA

Index Reference	Description
9.2.6	Fixed Base with Pinned End



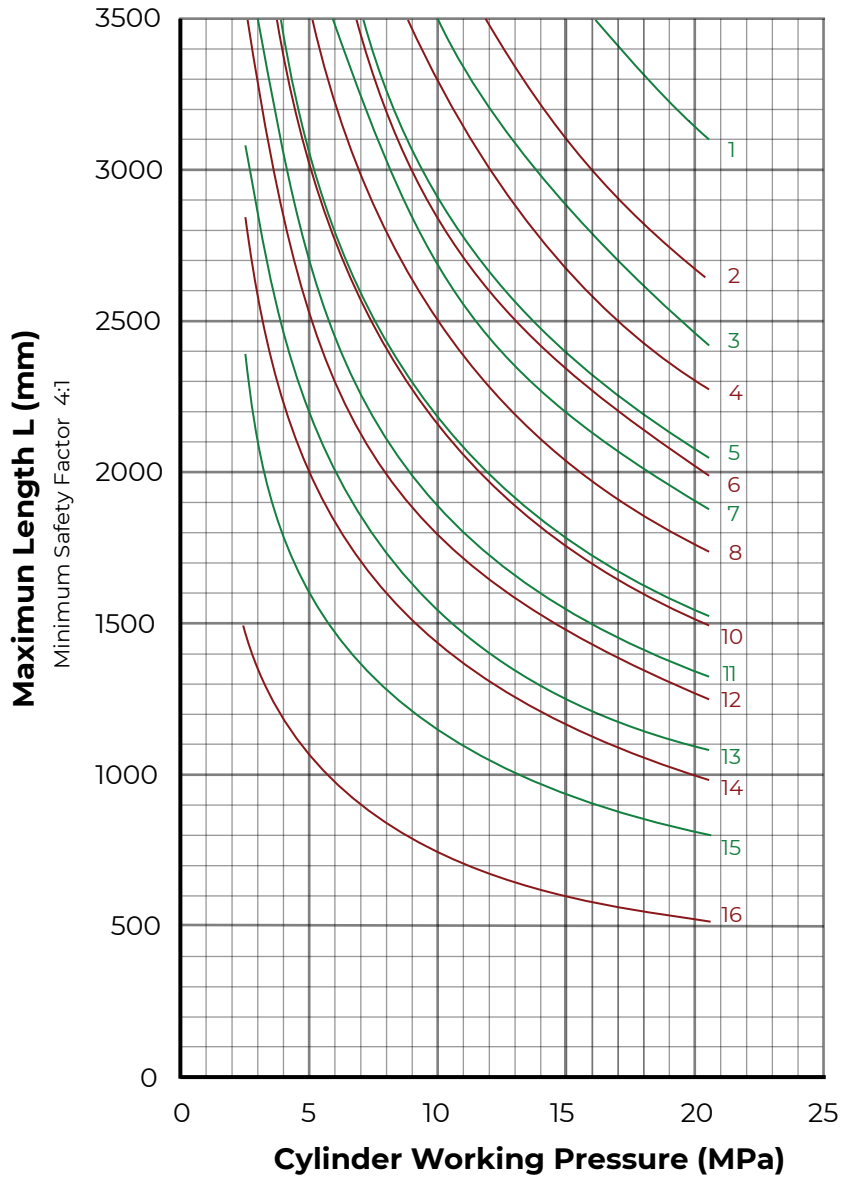
Cylinder Size	Graph #
5 x 2	18
5 x 2½	17
5 x 3	16
5 x 3½	15
6 x 2½	14
6 x 3	13
6 x 3½	12
6 x 4	11
7 x 3	10
7 x 3½	9
7 x 4	8
8 x 3½	5
8 x 4	4
8 x 4½	3



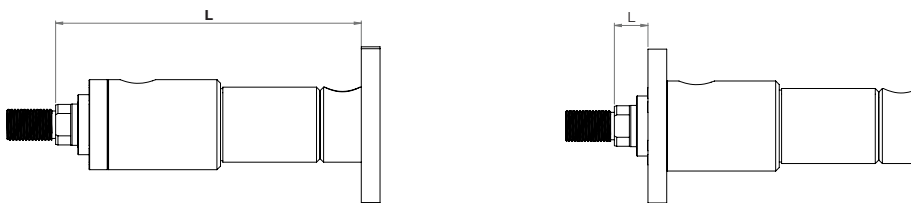
E: admin@hydraulics.net.au www.hydraulics.net.au

9. TECHNICAL REFERENCE DATA

Index Reference	Description
9.2.7	Fixed Base With Fixed End



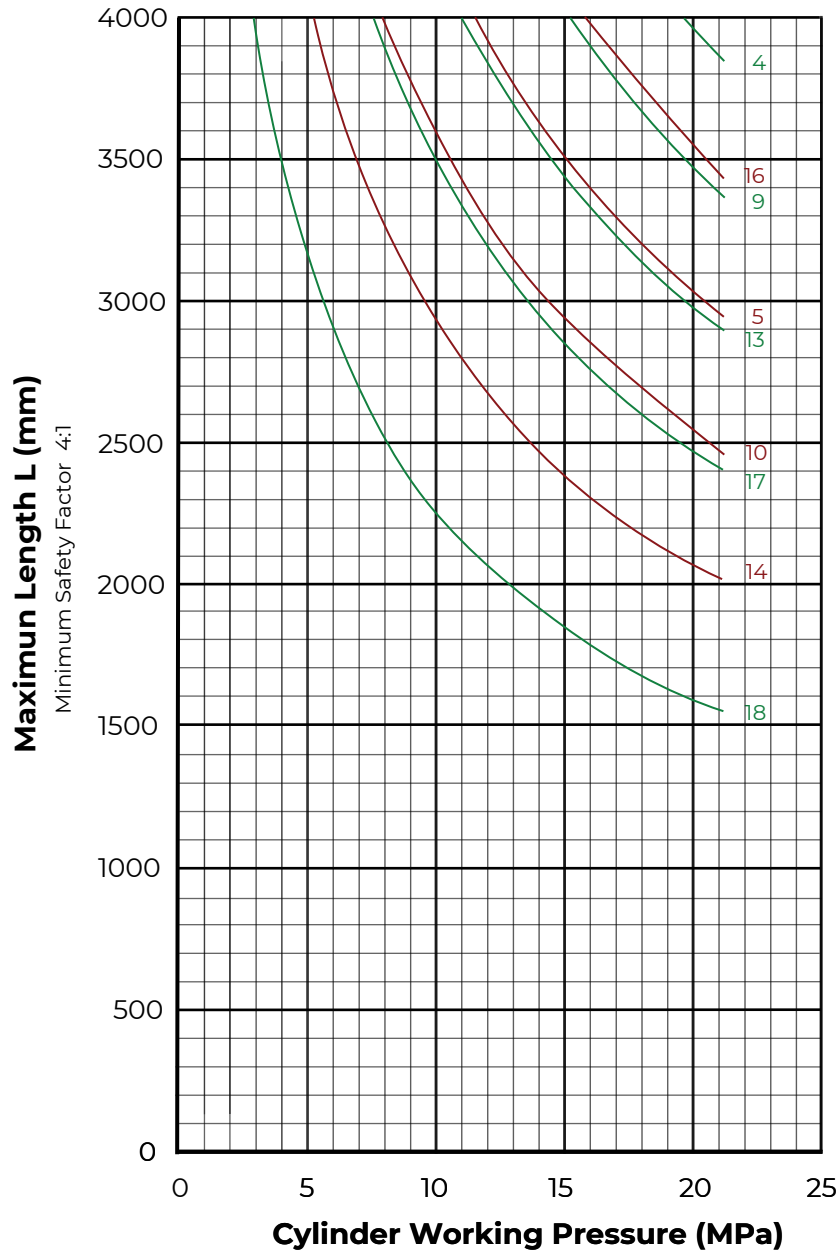
Cylinder Size	Graph #
1½ X 5⁄₈	16
1½ X 1	11
2 X 1	14
2 X 1³⁄₈	7
2½ X 1	15
2½ X 1³⁄₈	10
2½ X 1¾	3
3 X 1³⁄₈	12
3 X 1¾	5
3 X 2	4
3½ X 1³⁄₈	12
3½ X 1¾	5
3½ X 2	2
4 X 1¾	9
4 X 2	6
4 X 2½	1



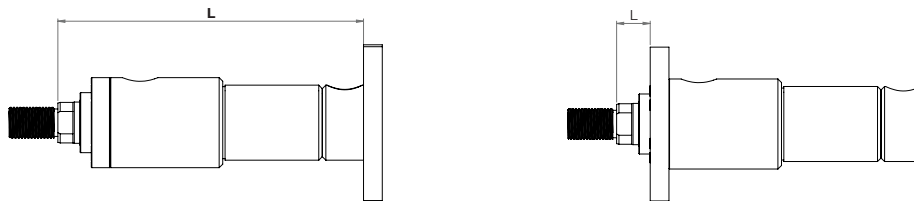
E: admin@hydraulics.net.au www.hydraulics.net.au

9. TECHNICAL REFERENCE DATA

Index Reference	Description
9.2.8	Fixed Base With Fixed End



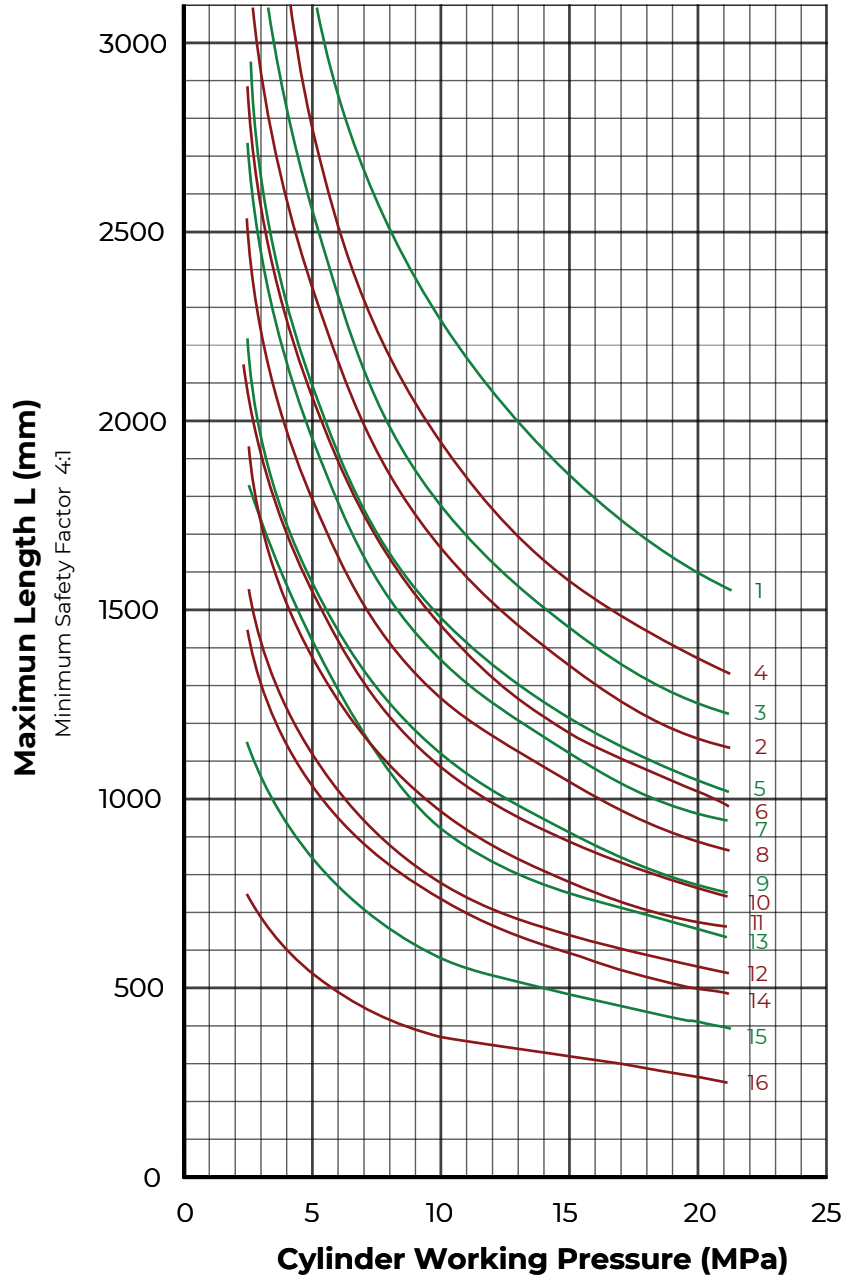
Cylinder Size	Graph #
5 X 2	18
5 X 2½	17
5 X 3	16
6 X 2½	14
6 X 3	13
7 X 3	10
7 X 3½	9
8 X 3½	5
8 X 4	4



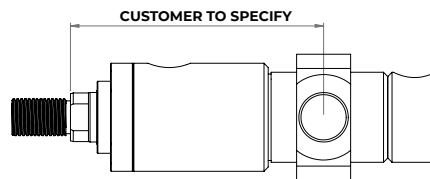
E: admin@hydraulics.net.au www.hydraulics.net.au

9. TECHNICAL REFERENCE DATA

Index Reference	Description
9.2.9	Intermediate Trunnion Mount with Free End



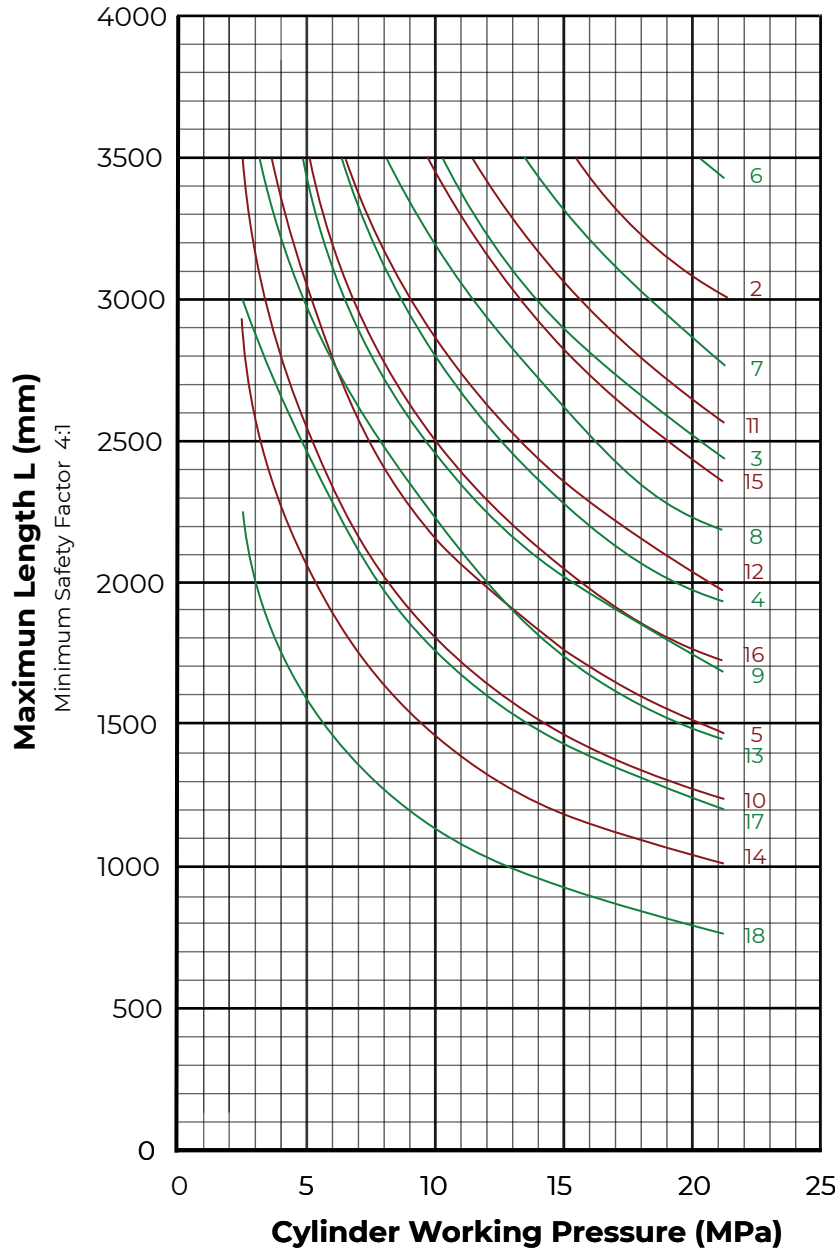
Cylinder Size	Graph #
1½ X 5⁄₈	16
1½ X 1	11
2 X 1	14
2 X 1¾	7
2½ X 1	15
2½ X 1¾	10
2½ X 1¾	3
3 X 1¾	12
3 X 1¾	5
3 X 2	4
3½ X 1¾	12
3½ X 1¾	5
3½ X 2	2
4 X 1¾	9
4 X 2	6
4 X 2½	1



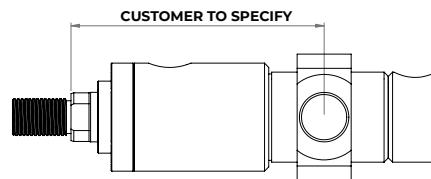
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9. TECHNICAL REFERENCE DATA

Index Reference	Description
9.3	Intermediate Trunnion Mount with Free End



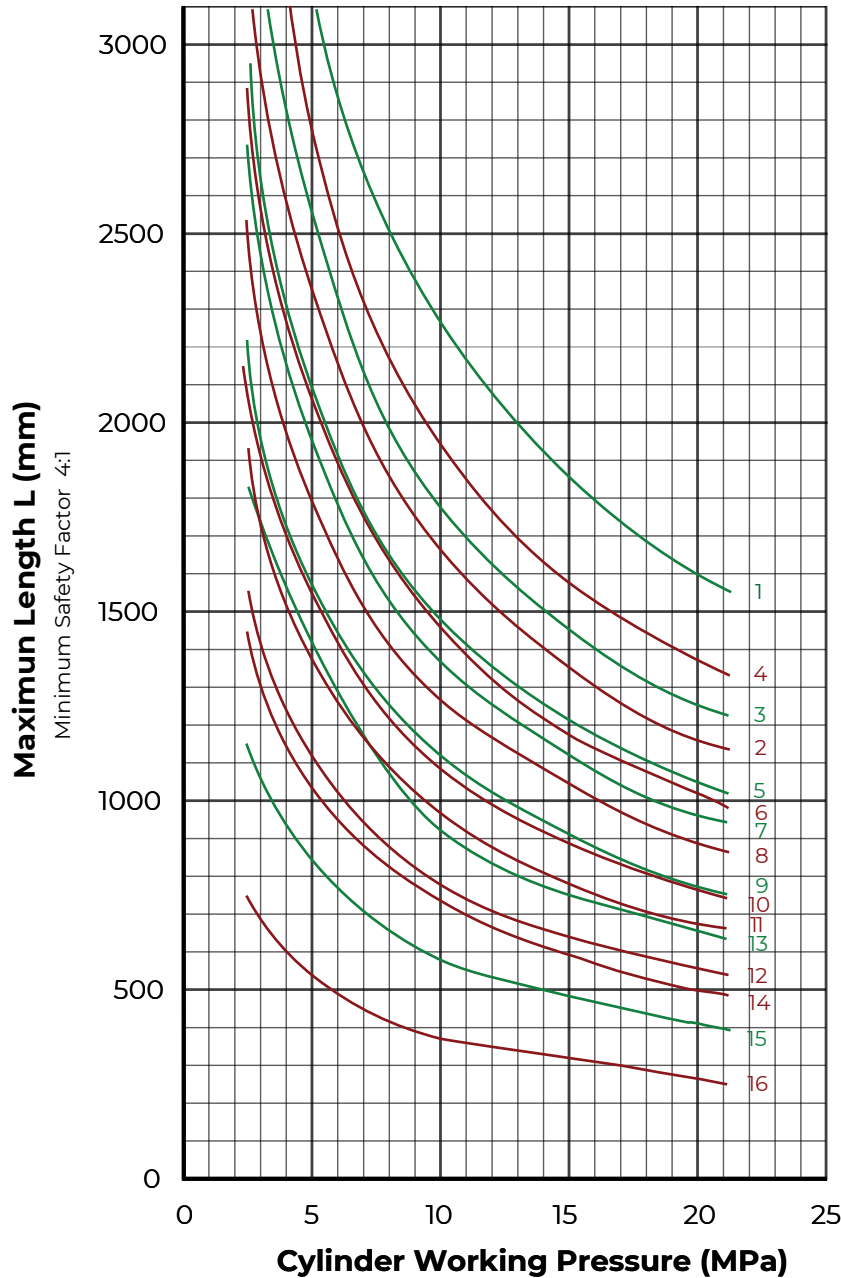
Cylinder Size	Graph #
5 X 2	18
5 X 2½	17
5 X 3	16
5 X 3½	15
6 X 2½	14
6 X 3	13
6 X 3½	12
6 X 4	11
7 X 3	10
7 X 3½	9
7 X 4	8
7 X 4½	7
7 X 5	6
8 X 3½	5
8 X 4	4
8 X 4½	3
8 X 5	2



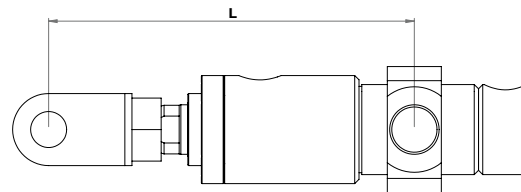
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9. TECHNICAL REFERENCE DATA

Index Reference	Description
9.3.1	Intermediate Trunnion Mount with Fixed Clevis End



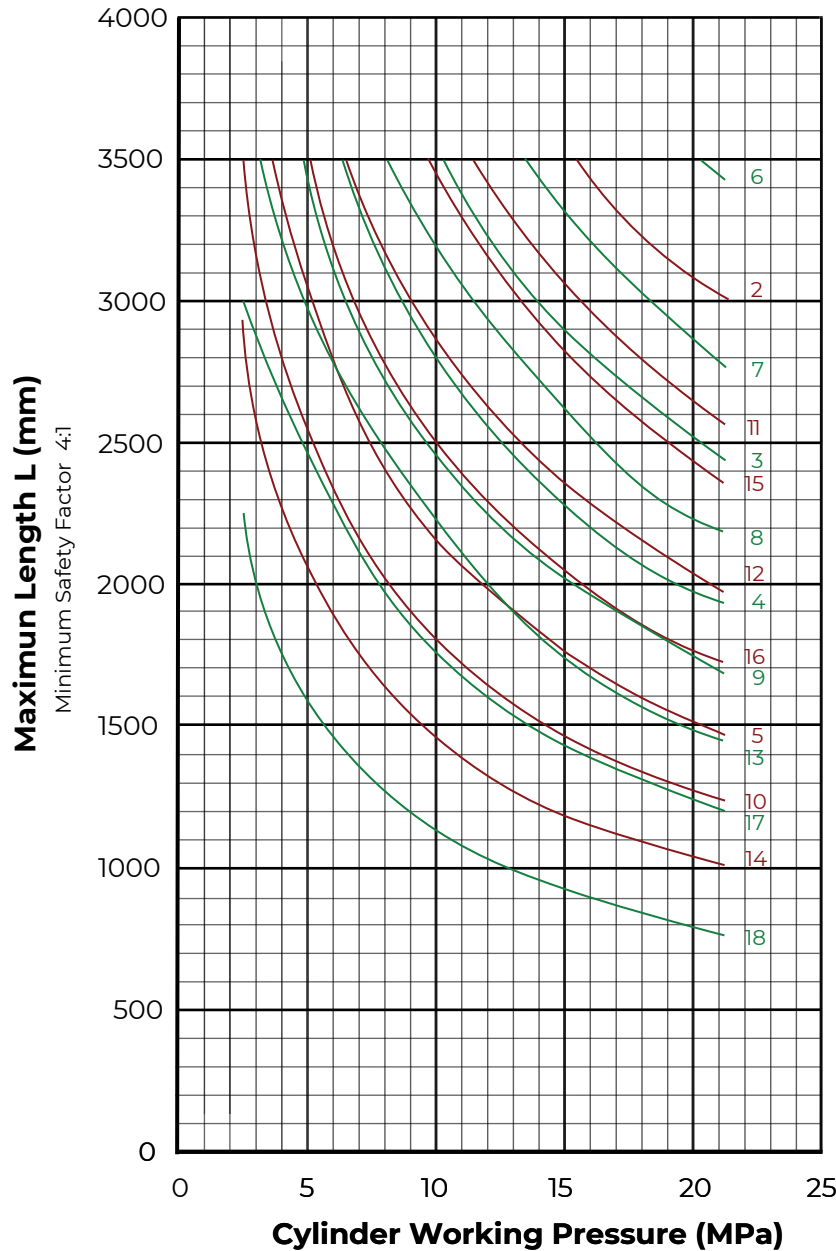
Cylinder Size	Graph #
1½ X 5⁄₈	16
1½ X 1	11
2 X 1	14
2 X 1⅜	7
2½ X 1	15
2½ X 1⅜	10
2½ X 1¾	3
3 X 1⅜	12
3 X 1¾	5
3 X 2	4
3½ X 1⅜	12
3½ X 1¾	5
3½ X 2	2
4 X 1¾	9
4 X 2	6
4 X 2½	1



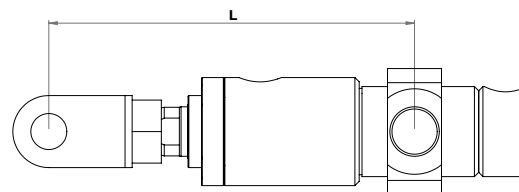
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9. TECHNICAL REFERENCE DATA

Index Reference	Description
9.3.2	Intermediate Trunnion Mount with Fixed Clevis End

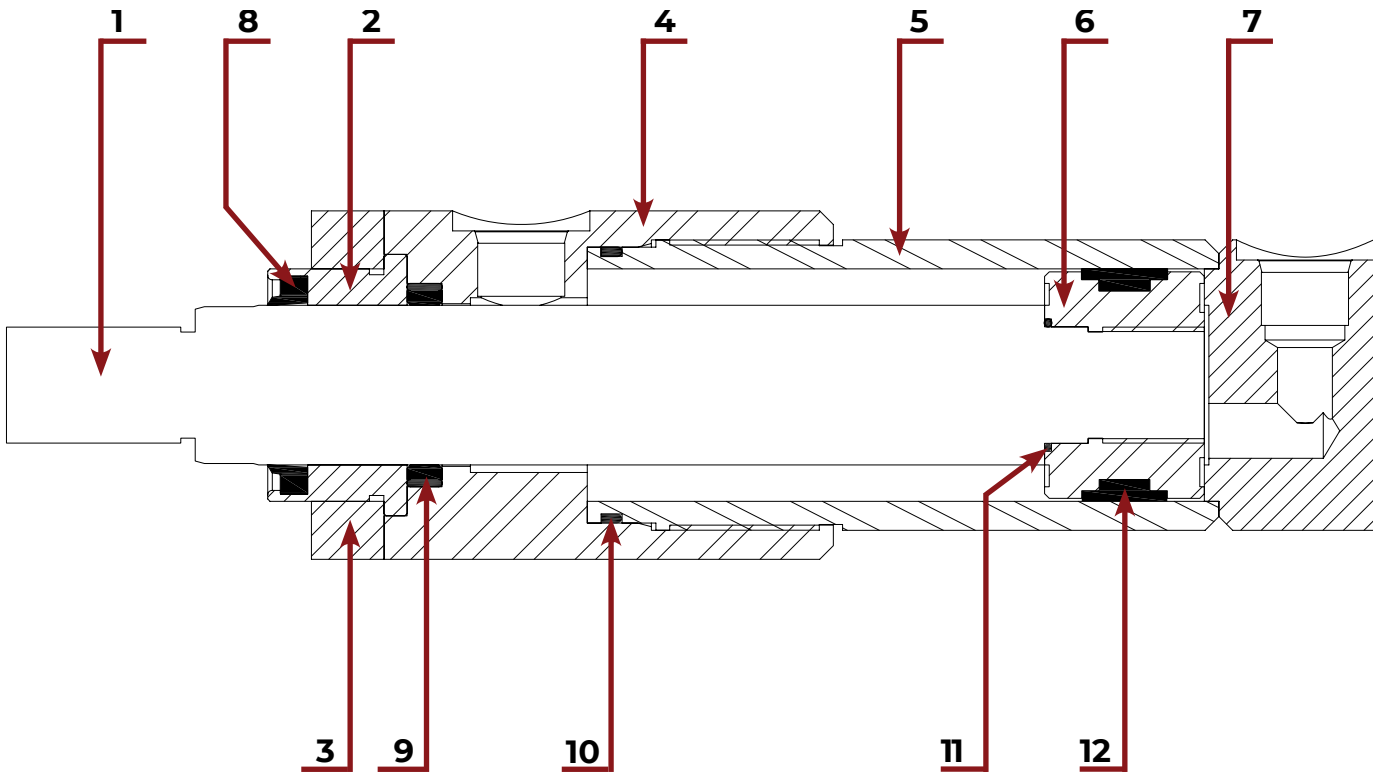


Cylinder Size	Graph #
5 X 2	18
5 X 2½	17
5 X 3	16
5 X 3½	15
6 X 2½	14
6 X 3	13
6 X 3½	12
6 X 4	11
7 X 3	10
7 X 3½	9
7 X 4	8
7 X 4½	7
7 X 5	6
8 X 3½	5
8 X 4	4
8 X 4½	3
8 X 5	2



10. MAINTENANCE DATA

Index Reference	Description
10.1	Typical Plain Cylinder Section



Items	Description	Material
1	Piston Rod	Steel / Stainless (Page 28)
2	Gland Bush	Lg2 Bronze
3	Retainer Ring	Steel
4	Head Cap	Steel
5	Barrel	Steel
6	Piston	Steel
7	End Cap	Steel
8	Rod Wiper	Nylon
9	Rod Seal	Ptfe / Nitrile (Page 27)
10	"O" Ring Seal	Nitrile
11	"O" Ring Seal	Nitrile
12	Piston Seal	Polyurethane / Nitrile (Page 27)

10. MAINTENANCE DATA

Index Reference	Description
10.1.1	General Considerations

- Disassemble the cylinder in a clean location.
- Dismantled parts should be cleaned and covered in a protected area.
- Avoid using installation tools with sharp edges and burrs.
- Parts should be lubricated prior to assembly.
- Extra caution should be taken when a seal is forced over sharp edges, slots and undercuts.

Index Reference	Description
10.1.2	To Replace Rod Cartridge Seals

- Put the cylinder in a fully retracted position. Release any oil pressure in the cylinder.
- Remove the socket head screws from the Retainer Ring (Item 3), slowly remove the Retainer Ring and Gland Bush (Item 2).
- Clean all cartridge recesses in the Gland Bush. Fit new rod seals and wiper.
- Lubricate the inside of the rod cartridge and the outside of the new cartridge prior to assembly.
- Replace the socket head screws and tighten them to the specified torque according to the cylinder size. Refer to pages 45 - 46 for torque settings.



10. MAINTENANCE DATA

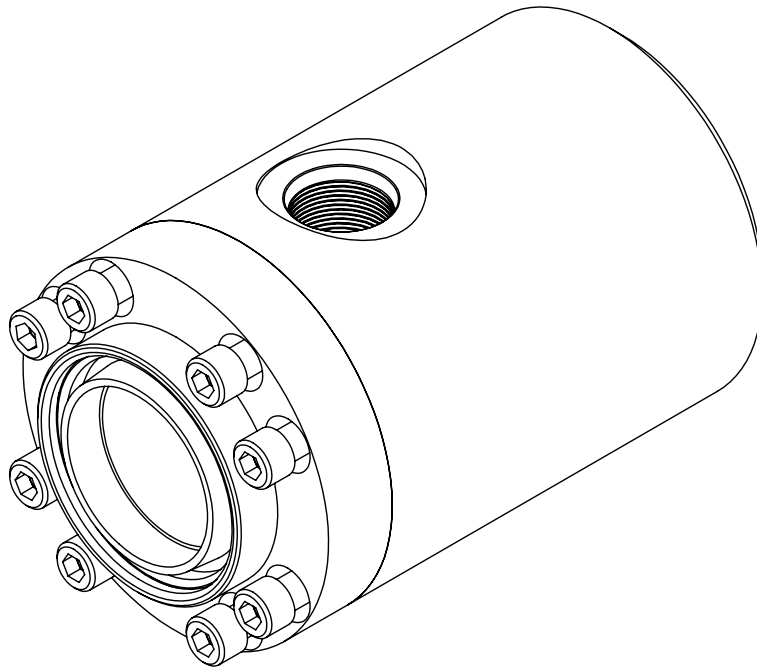
Index Reference	Description
10.1.3	To Replace Cylinder Tube Seals

- Put the cylinder in a fully retracted position.
- Release any oil pressure in the system.
- Remove the socket head screws from the Retainer Ring (Item 3), slowly remove the Retainer Ring and Gland Bush (Item 2).
- Gently unscrew and remove the Head Cap (Item 2).
- Remove the socket head screws from the Head Cap (Item 3), slowly remove the Head Cap.
- Discard used seals and clean all parts thoroughly, including the inside of the Cylinder Tube and grooves in the Head Cap.
- Fit new seals, wear strips and “O” Ring seals.
- Lubricate the Piston seals, inside of the Rod Cartridge and the outside of the new Cartridge prior to assembly.
- Replace all the socket head screws and tighten them to the specified torque according to the cylinder size. Refer to page 25 for torque settings



10. MAINTENANCE DATA

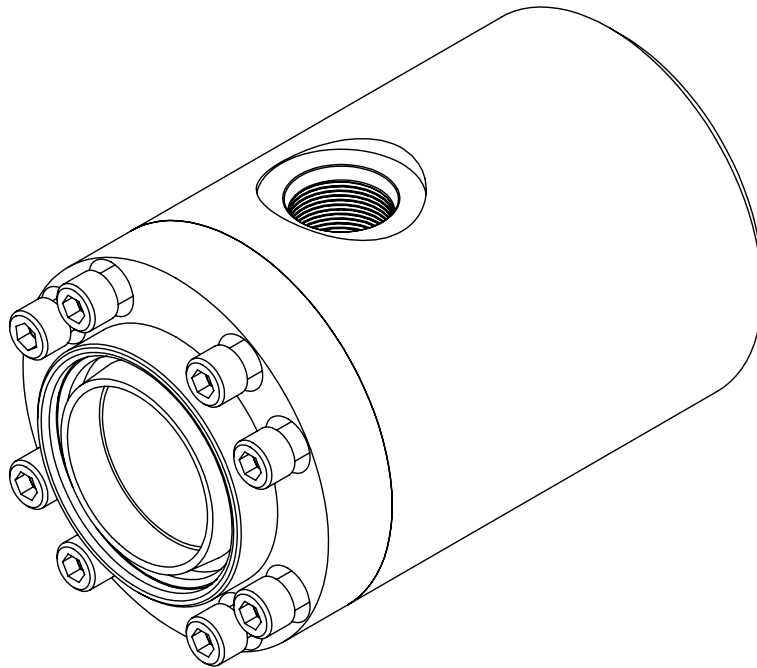
Index Reference	Description
10.2	Bolt Torque



Cylinder Bore Ø inch	Rod Ø inch	Tightening Torque	Screw Size	Screw Grade	Quantity
1½	5/8	19 Nm	¼ - 28	12.9	8
	1	19 Nm	¼ - 28	12.9	8
2	2½	19 Nm	¼ - 28	12.9	8
	1¾	19 Nm	¼ - 28	12.9	8
2½	1	19 Nm	¼ - 28	12.9	8
	1¾	19 Nm	¼ - 28	12.9	8
	1¾	19 Nm	¼ - 28	12.9	8
3	1¾	36 Nm	5/16 - 24	12.9	8
	1¾	36 Nm	5/16 - 24	12.9	8
	2	36 Nm	5/16 - 24	12.9	8
3½	1¾	36 Nm	5/16 - 24	12.9	8
	1¾	36 Nm	5/16 - 24	12.9	8
	2	36 Nm	5/16 - 24	12.9	8
4	1¾	36 Nm	5/16 - 24	12.9	8
	2	36 Nm	5/16 - 24	12.9	8
	2½	36 Nm	5/16 - 24	12.9	8

10. MAINTENANCE DATA

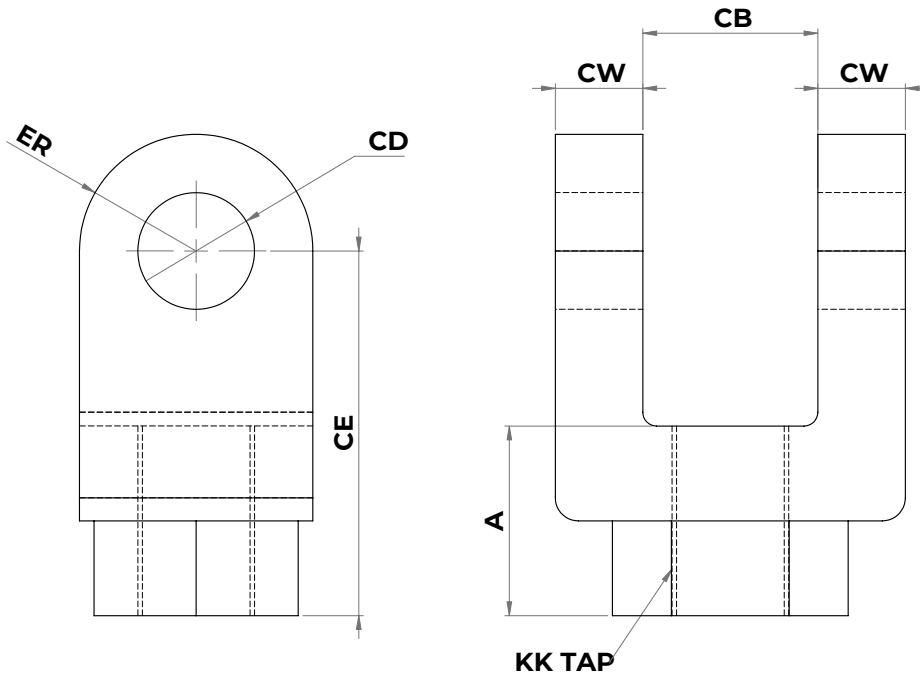
Index Reference	Description
10.2.1	Bolt Torque



Cylinder Bore Ø inch	Rod Ø inch	Tightening Torque	Screw Size	Screw Grade	Quantity
5	2	36 Nm	5/16 - 24	12.9	8
	2½	36 Nm	5/16 - 24	12.9	8
	3	36 Nm	5/16 - 24	12.9	8
	3½	36 Nm	5/16 - 24	12.9	8
6	2½	36 Nm	5/16 - 24	12.9	8
	3	36 Nm	5/16 - 24	12.9	8
	3½	36 Nm	5/16 - 24	12.9	8
	4	36 Nm	5/16 - 24	12.9	8
7	3	36 Nm	5/16 - 24	12.9	8
	3½	36 Nm	5/16 - 24	12.9	8
	4	36 Nm	5/16 - 24	12.9	8
	4½	36 Nm	5/16 - 24	12.9	8
	5	36 Nm	5/16 - 24	12.9	8
8	3½	36 Nm	5/16 - 24	12.9	8
	4	36 Nm	5/16 - 24	12.9	8
	4½	36 Nm	5/16 - 24	12.9	8
	5	36 Nm	5/16 - 24	12.9	8
	5½	36 Nm	5/16 - 24	12.9	8

11. CYLINDER ACCESSORIES

Index Reference	Description
11.1	Female Clevis - Rod



Cylinder Bore Ø inch	Rod Ø inch	Part Number	KK UNF	A	CB	CD	CE	CW	ER
1½	5/8	QH-FC-0437	7/16 - 20	¾	¾	½	1½	½	½
	1	QH-FC-0750	¾ - 16	¾	1¼	¾	2¾	5/8	¾
2	1	QH-FC-0750	¾ - 16	1⅛	1¼	¾	2¾	5/8	¾
	1⅜	QH-FC-1000	1 - 14	1⅝	1½	1	3⅛	¾	1
2½	1	QH-FC-0750	¾ - 16	1⅛	1¼	¾	2¾	1	¾
	1⅜	QH-FC-1000	1 - 14	1⅝	1½	1	3⅛	¾	1
	1¾	QH-FC-1250	1¼ - 12	2	2	1⅜	4⅛	1	1⅜
3	1⅜	QH-FC-1000	1 - 14	1⅝	1½	1	3⅛	¾	1
	1¾	QH-FC-1250	1¼ - 12	2	2	1⅜	4⅛	1	1⅜
	2	QH-FC-1500	1½ - 12	1⅝	2½	1¾	4½	1¼	1¾
3½	1⅜	QH-FC-1000	1 - 14	1⅝	1½	1	3⅛	¾	1
	1¾	QH-FC-1250	1¼ - 12	2	2	1⅜	4⅛	1	1⅜
	2	QH-FC-1500	1½ - 12	2¼	2½	1¾	4½	1¼	1¾
4	1¾	QH-FC-1250	1¼ - 12	2	2	1⅜	4⅛	1	1⅜
	2	QH-FC-1500	1½ - 12	2¼	2½	1¾	4½	1¼	1¾
	2½	QH-FC-1875	1⅞ - 12	3	2½	2	5½	1¼	2

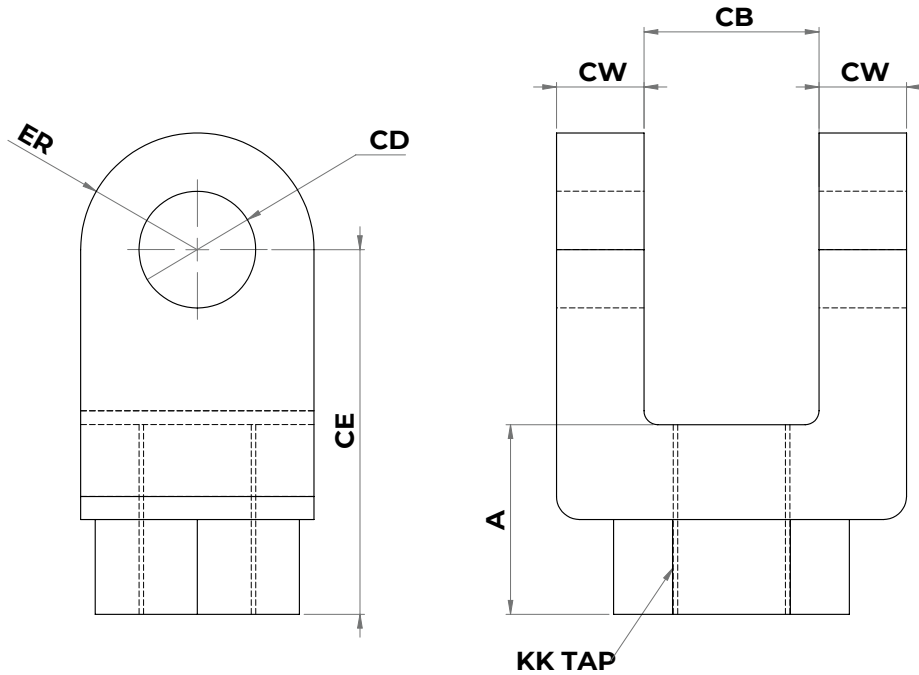
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11. CYLINDER ACCESSORIES

Index Reference	Description
11.1	Female Clevis - Rod



Cylinder Bore Ø inch	Rod Ø inch	Part Number	KK UNF	A	CB	CD	CE	CW	ER
5	2	QH-FC-1500	1½ - 12	2¼	2½	1¾	4½	1¼	1¾
	2½	QH-FC-1875	1⅞ - 12	3	2½	2	5½	1¼	2
	3	QH-FC-2250	2¼ - 12	3½	3	2½	6½	1½	2½
	3½	QH-FC-2500	2½ - 12	3½	3	3	6¾	1½	2¾
6	2½	QH-FC-1875	1⅞ - 12	3	2½	2	5½	1¼	2
	3	QH-FC-2250	2¼ - 12	3½	3	2½	6½	1½	2½
	3½	QH-FC-2500	2½ - 12	3½	3	3	6¾	1½	2¾
	4	QH-FC-3000	3 - 12	4	4	3½	8		
7	3	QH-FC-2250	2¼ - 12	3½	3	2½	6½	1½	2½
	3½	QH-FC-2500	2½ - 12	3½	3	3	6¾	1½	2¾
	4	QH-FC-3000	3 - 12	4	4	3½	8		
	4½	QH-FC-3250	3¼ - 12	4½	4	3½	8½	2	3½
	5	QH-FC-3500	3½ - 12	5	4	3½	9		
8	3½	QH-FC-3250	2½ - 12	3½	4	3½	8½	2	3½
	4	QH-FC-3000	3 - 12	4	4	3½	8		
	4½	QH-FC-3250	3¼ - 12	4½	4	3½	8½	2	3½
	5	QH-FC-3500	3½ - 12	5	4	3½	9		
	5½	QH-FC-4000	4 - 12	5½	4½	4	10	2¼	4

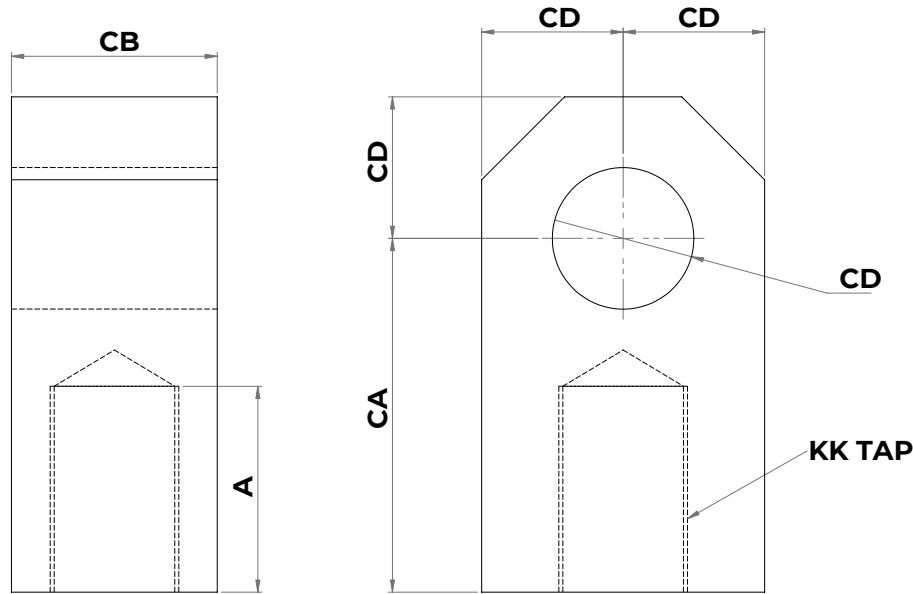
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11. CYLINDER ACCESSORIES

Index Reference	Description
11.2	Male Eye - Rod



Cylinder Bore Ø inch	Rod Ø inch	Part Number	KK UNF	A	CA	CB	CD
1½	5/8	QH-FC-0437	7/16 - 20	3/4	1½	3/4	1/2
	1	QH-FC-0750	3/4 - 16	1/8	2 1/16	1/4	3/4
2	1	QH-FC-0750	3/4 - 16	1/8	2 1/16	1/4	3/4
	1 3/8	QH-FC-1000	1 - 14	1 5/8	2 13/16	1/2	1
2½	1	QH-FC-0750	3/4 - 16	1/8	2 1/16	1/4	3/4
	1 3/8	QH-FC-1000	1 - 14	1 5/8	2 13/16	1/2	1
	1 3/4	QH-FC-1250	1 1/4 - 12	2	3 7/16	2	1 3/8
3	1 3/8	QH-FC-1000	1 - 14	1 5/8	2 13/16	1/2	1
	1 3/4	QH-FC-1250	1 1/4 - 12	2	3 7/16	2	1 3/8
	2	QH-FC-1500	1 1/2 - 12	1 5/8	4	2 1/2	1 3/4
3½	1 3/8	QH-FC-1000	1 - 14	1 5/8	16	1/2	1
	1 3/4	QH-FC-1250	1 1/4 - 12	2	3 7/16	2	1 3/8
	2	QH-FC-1500	1 1/2 - 12	2 1/4	4	2 1/2	1 3/4
4	1 3/4	QH-FC-1250	1 1/4 - 12	2	3 7/16	2	1 3/8
	2	QH-FC-1500	1 1/2 - 12	2 1/4	4	2 1/2	1 3/4
	2 1/2	QH-FC-1875	1 7/8 - 12	3	5	2 1/2	2

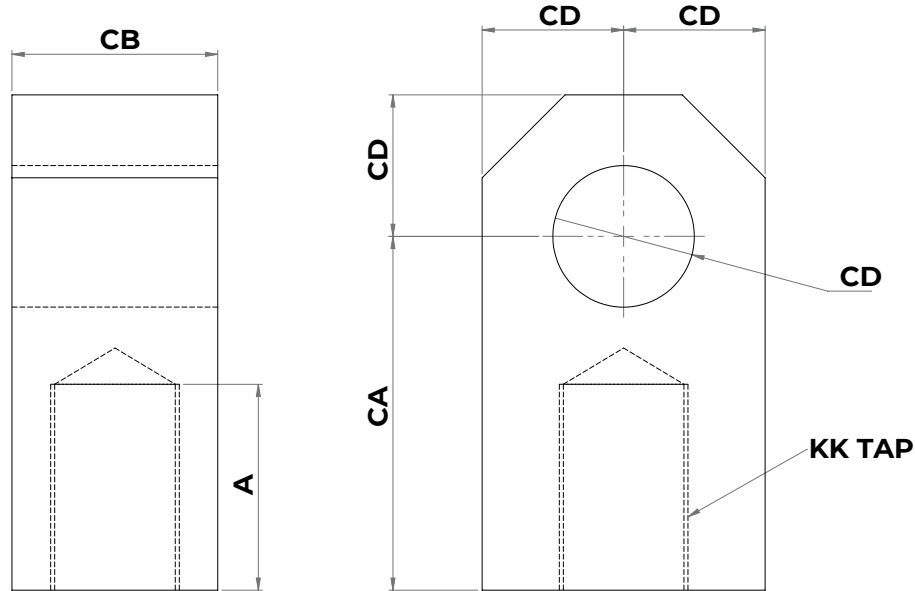
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11. CYLINDER ACCESSORIES

Index Reference	Description
11.2.1	Male Eye - Rod



Cylinder Bore Ø inch	Rod Ø inch	Part Number	KK UNF	A	CA	CB	CD
5	2	QH-FC-1500	1½ - 12	2¼	4	2½	1¾
	2½	QH-FC-1875	1⅞ - 12	3	5	2½	2
	3	QH-FC-2250	2¼ - 12	3½	5 ¹³ / ₁₆	3	2½
	3½	QH-FC-2500	2½ - 12	3½	6⅛	3	3
6	2½	QH-FC-1875	1⅞ - 12	3	5	2½	2
	3	QH-FC-2250	2¼ - 12	3½	5 ¹³ / ₁₆	3	2½
	3½	QH-FC-2500	2½ - 12	3½	6⅛	3	3
	4	QH-FC-3000	3 - 12	4	7⅞	4	3½
7	3	QH-FC-2250	2¼ - 12	3½	5 ¹³ / ₁₆	3	2½
	3½	QH-FC-2500	2½ - 12	3½	6⅛	3	3
	4	QH-FC-3000	3 - 12	4	7⅞	4	3½
	4½	QH-FC-3250	3¼ - 12	4½	7 ⁵ / ₈	4	3½
	5	QH-FC-3500	3½ - 12	5	8⅛	4	3½
8	3½	QH-FC-3250	2½ - 12	3½	6⅛	3	3½
	4	QH-FC-3000	3 - 12	4	7⅞	4	3½
	4½	QH-FC-3250	3¼ - 12	4½	7 ⁵ / ₈	4	3½
	5	QH-FC-3500	3½ - 12	5	8⅛	4	3½
	5½	QH-FC-4000	4 - 12	5½	9⅞	4½	4

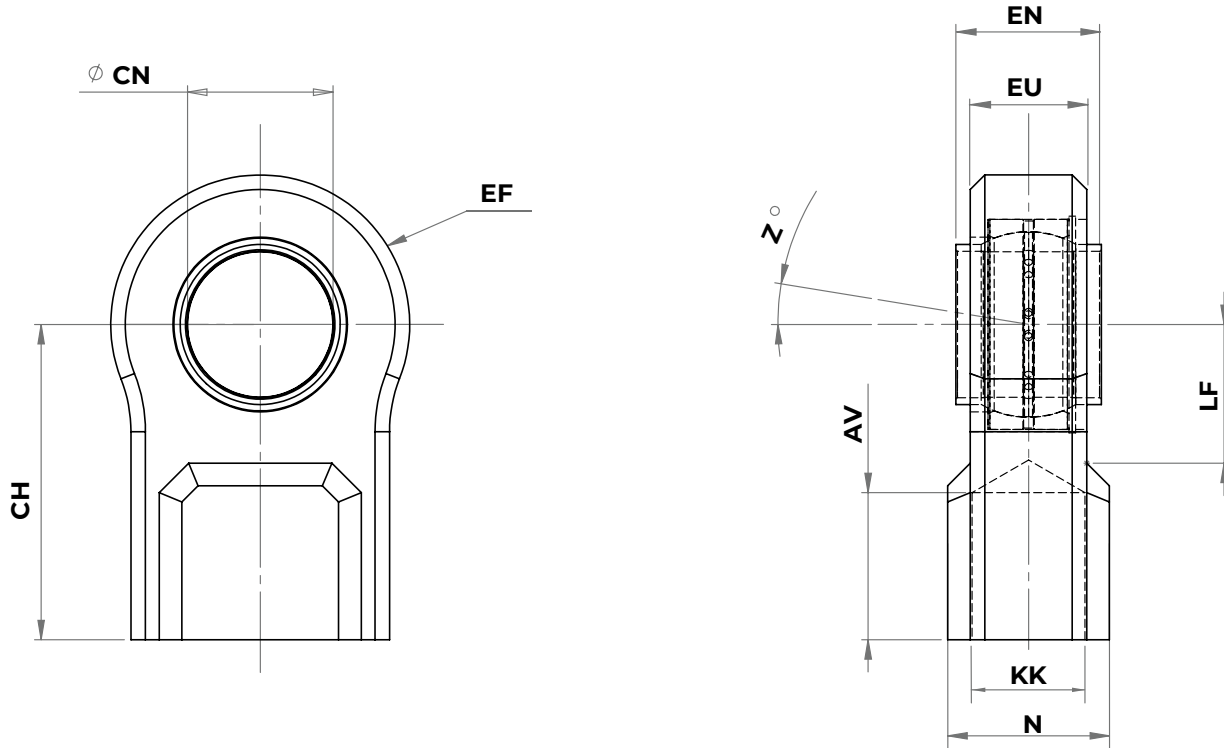
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11. CYLINDER ACCESSORIES

Index Reference	Description
11.3	Spherical Bearing - Rod End



Cylinder Bore Ø inch	Rod Ø inch	Part Number	KK UNF	AV	CH	CN	EF	EN	EU	LF	N	Z°
1½	5/8	QH-SBME-0437	7/16 - 20	3/4	1½	1/2	1¼	0.437	11/16	0.600	3/4	6
	1	QH-SBME-0750	3/4 - 16	1½	2¼	3/4	1¾	0.659	15/16	0.937	1¼	6
2	1	QH-SBME-0750	3/4 - 16	1½	2¼	3/4	1¾	0.659	15/16	0.937	1¼	6
	1¾	QH-SBME-1000	1 - 14	1½	3	1	2¾	0.875	13/16	1.160	1½	6
2½	1	QH-SBME-0750	3/4 - 16	1½	2¼	3/4	1¾	0.690	15/16	0.937	1¼	6
	1¾	QH-SBME-1000	1 - 14	1½	3	1	2¾	0.875	13/16	1.160	1½	6
	1¾	QH-SBME-1250	1¼ - 12	2	3¾	1¾	3¼	1.187	15/8	1.500	2	6
3	1¾	QH-SBME-1000	1 - 14	1½	3	1	2¾	0.875	13/16	1.160	1½	6
	1¾	QH-SBME-1250	1¼ - 12	2	3¾	1¾	3¼	1.187	15/8	1.500	2	6
	2	QH-SBME-1500	1½ - 12	1½	4½	1¾	4	1.531	2	1.750	2½	6
3½	1¾	QH-SBME-1000	1 - 14	1½	3	1	2¾	0.875	13/16	1.160	1½	6
	1¾	QH-SBME-1250	1¼ - 12	2	3¾	1¾	3¼	1.187	15/8	1.500	2	6
	2	QH-SBME-1500	1½ - 12	2¼	4½	1¾	4	1.531	2	1.750	2½	6
4	1¾	QH-SBME-1250	1¼ - 12	2	3¾	1¾	3¼	1.187	15/8	1.500	2	6
	2	QH-SBME-1500	1½ - 12	2¼	4½	1¾	4	1.531	2	1.750	2½	6
	2½	QH-SBME-1875	17/8 - 12	3	5¾	2	4½	1.750	2¼	2.000	2½	6

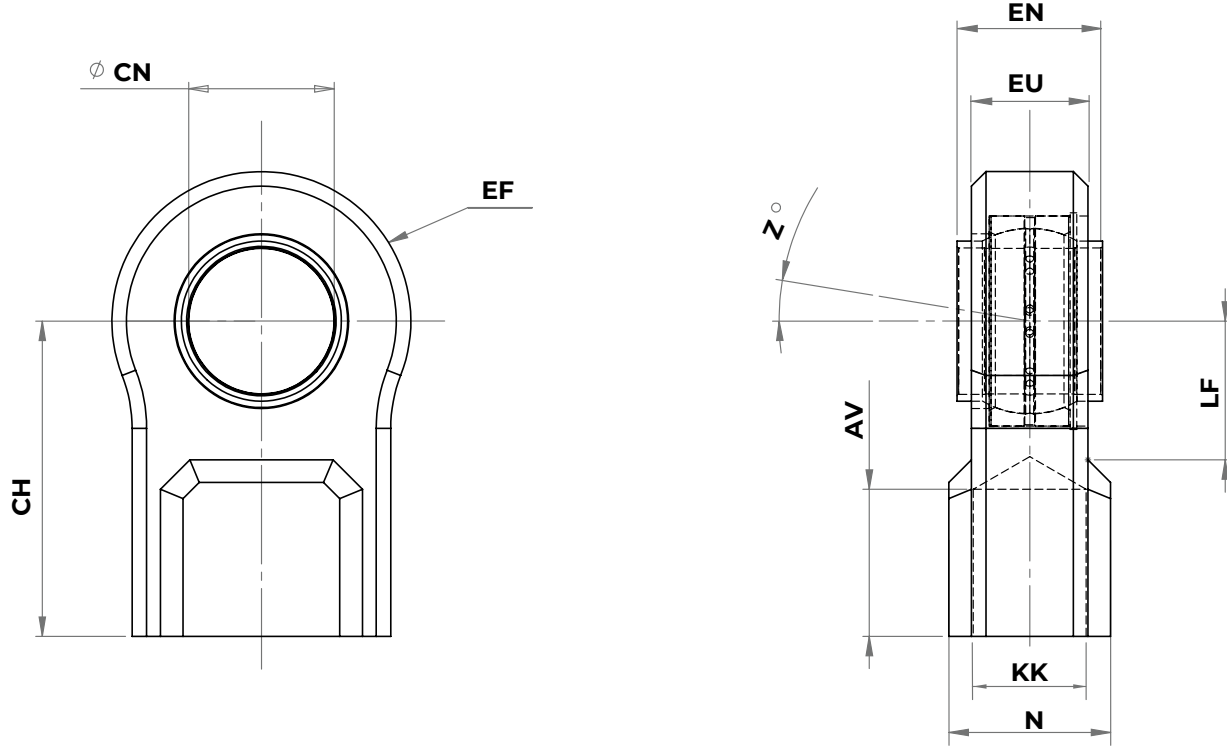
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11. CYLINDER ACCESSORIES

Index Reference	Description
11.3.1	Spherical Bearing - Rod End



Cylinder Bore Ø inch	Rod Ø inch	Part Number	KK UNF	AV	CH	CN	EF	EN	EU	LF	N	Z°
5	2	QH-SBME-1500	1½ - 12	2¼	4½	1¾	4	1.531	2	1¾	2½	6
	2½	QH-SBME-1875	1⅞ - 12	3	5¾	2	4½	1.750	2¼	2	2½	6
	3	QH-SBME-2250	2¼ - 12	3½	6½	2½	6	2.187	2¾	2½	3	6
	3½	QH-SBME-2500	2½ - 12	3½	7	3	6¾	2.625	2⅞	3	3⅞	6
6	2½	QH-SBME-1875	1⅞ - 12	3	5¾	2	4½	1.750	2¼	2	2½	6
	3	QH-SBME-2250	2¼ - 12	3½	6½	2½	6	2.187	2¾	2½	3	6
	3½	QH-SBME-2500	2½ - 12	3½	7	3	6¾	2.625	2⅞	3	3⅞	6
	4	QH-SBME-3000	3 - 12	4½	8⅞	3½	7½	3.062	3¾	3½	4	6
7	3	QH-SBME-2250	2¼ - 12	3½	6½	2½	6	2.187	2¾	2½	3	6
	3½	QH-SBME-2500	2½ - 12	3½	7	3	6¾	2.250	2⅞	3	3⅞	6
	4	QH-SBME-3000	3 - 12	4½	8⅞	3½	7½	3.062	3¾	3½	4	6
	4½	QH-SBME-3250	3¼ - 12	4½	8⅞	3½	7½	3.062	3¾	3½	4	6
	5	QH-SBME-3500	3½ - 12	5½	9⅞	4	8¼	3.500	2⅞	4	4½	6
8	3½	QH-SBME-2500	2½ - 12	3½	7	3	6¾	2.625	3¾	3	3⅞	6
	4	QH-SBME-3000	3 - 12	4½	8⅞	3½	7½	3.062	3¾	3½	4	6
	4½	QH-SBME-3250	3¼ - 12	4½	8⅞	3½	7½	3.062	3¾	3½	4	6
	5	QH-SBME-3500	3½ - 12	5½	9⅞	4	8¼	3.500	4¼	4	4½	6
	5½	QH-SBME-4000	4 - 12	5½	9⅞	4	8¼	3.500	4¼	4	½	6

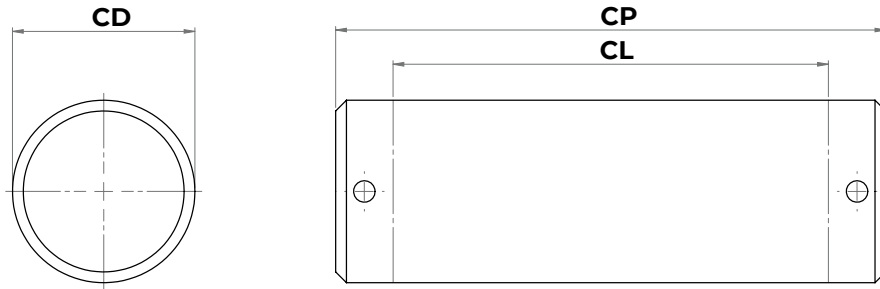
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11. CYLINDER ACCESSORIES

Index Reference	Description
11.4	Pivot Pin



Cylinder Bore Ø inch	Rod Ø inch	Part Number	CD	CL	CP
1½	5/8	QH-PP-0500	½	1¾	2¾
	1	QH-PP-0750	¾	2½	3½
2	1	QH-PP-0750	¾	2½	3½
	1¾	QH-PP-1000	1	3	3¾
2½	1	QH-PP-0750	¾	2½	3½
	1¾	QH-PP-1000	1	3	3¾
	1¾	QH-PP-1375	1¾	4	4¾
3	1¾	QH-PP-1000	1	3	3¾
	1¾	QH-PP-1375	1¾	4	4¾
	2	QH-PP-1750	1¾	5	6 ¹ / ₃₂
3½	1¾	QH-PP-1000	1	3	3¾
	1¾	QH-PP-1375	1¾	4	4¾
	2	QH-PP-1750	1¾	5	6 ¹ / ₃₂
4	1¾	QH-PP-1375	1¾	4	4¾
	2	QH-PP-1750	1¾	5	6 ¹ / ₃₂
	2½	QH-PP-2000	2	5	6 ¹ / ₃₂

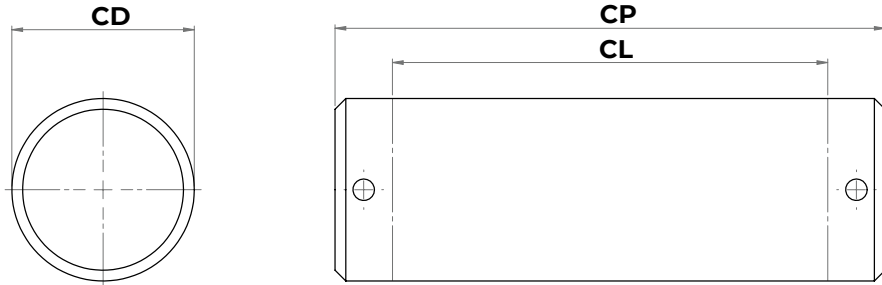
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11. CYLINDER ACCESSORIES

Index Reference	Description
11.4	Pivot Pin



Cylinder Bore Ø inch	Rod Ø inch	Part Number	CD	CL	CP
5	2	QH-PP-1750	1¾	5	6 ¹ / ₃₂
	2½	QH-PP-2000	2	5	6 ¹ / ₃₂
	3	QH-PP-2500	2½	6	7 ¹ / ₃₂
	3½	QH-PP-3000	3	6	7 ¹ / ₈
6	2½	QH-PP-2000	2	5	6 ¹ / ₃₂
	3	QH-PP-2500	2½	6	7 ¹ / ₃₂
	3½	QH-PP-3000	3	6	7 ¹ / ₈
	4	QH-PP-3500	3½	8	9 ¹ / ₈
7	3	QH-PP-2500	2½	6	7 ¹ / ₃₂
	3½	QH-PP-3000	3	6	7 ¹ / ₈
	4	QH-PP-3500	3½	8	9 ¹ / ₈
	4½	QH-PP-3500	3½	8	9 ¹ / ₈
	5	QH-PP-3500	3½	8	9 ¹ / ₈
8	3½	QH-PP-3000	3	6	7 ¹ / ₈
	4	QH-PP-3500	3½	8	9 ¹ / ₈
	4½	QH-PP-3500	3½	8	9 ¹ / ₈
	5	QH-PP-3500	3½	8	9 ¹ / ₈
	5½	QH-PP-4000	4	9	10 ¹ / ₈

If clarification is required on converting the above imperial measurements to metric values, please consult Queensland Hydraulics.

While all due care has been taken in the preparation of this catalogue it is recommended that the end user verify any information given within. Before ordering any hydraulic cylinder it is recommended to consult Queensland Hydraulics to confirm the hydraulic cylinder selected is fit for purpose.



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