

 **American[®]**

Mini-Pak[®] Series Air Cylinders
Space Saving Air Cylinders

MSP[®] Series Air Cylinders
Multi-Stage Power Air Cylinders



American Cylinder Co., Inc.

Mini-Pak[®] Series
MSP[®] Series

Standard Catalog
1-1/2 inch through
8 inch bore

American's Mini-Pak® Cylinders were designed for applications requiring space saving configurations and NFPA mounting styles. American's Mini-Pak® Cylinders are available in 1½", 2", 2½", 3¼", 4", 5", 6" and 8" bore sizes. For special requirements, consult the factory or your nearest local stocking American Cylinder Distributor.

TABLE OF CONTENTS

Mini-Pak® Series

Table of Contents	Page 1
Lubrication/Temperature Ratings	Page 1
Standard Features & Benefits	Page 2
How to Order	Page 3
Standard Stroke Lengths	Page 3
Models	Page 4
Basic Model: Model B	
Double End Rod: Model DE	
Models	Page 5
Front Flange: Model FF	
Rear Flange: Model RF	
Models	Page 6
Bottom Tap: Model BT	
Bottom Bar: Model BB	
Models	Page 7
Extended Tie Rod	
Cap End: Model ETR	
Extended Tie Rod	
Rod End: Model ERE	
Models	Page 8
Detachable Clevis: Model DC	
Fixed Clevis: Model FC	
Accessories	Page 9

MSP® Series

Standard Features & Benefits	Page 10
How to Order	Page 11
Specifications	Page 12
Standard Stroke Lengths	Page 13
Lubrication/Temperature Ratings	Page 13
Other Products	Page 14
Special Design Cylinders	Page 14
Warranty	Page 15

Product enhancements resulting from our quality improvement program may necessitate changes in specifications without notice.

American Cylinder Distributors are located in every major industrial market.

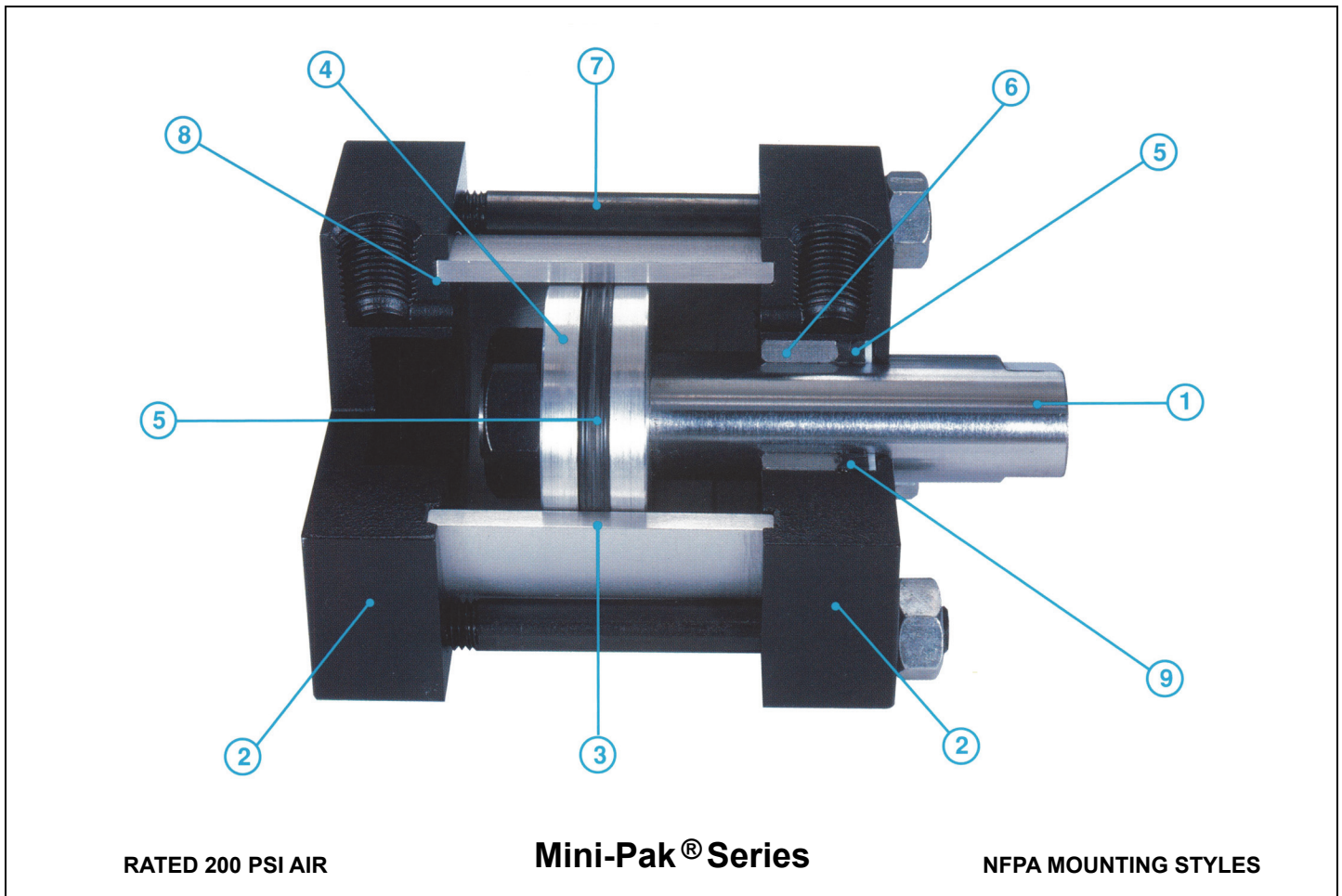
LUBRICATION

American cylinders are prelubricated at the factory prior to shipment to provide millions of trouble free cycles. Most applications do not require additional lubrication, however, cylinder life can be maximized through periodic direct lubrication or continuous air line mist lubrication. Dow Corning Molykote 710G is recommended for cylinders with Buna-N or high temperature Fluroelastomer (FKM) seals. Consult your American Cylinder distributor or the factory for special lubrication requirements.

TEMPERATURE RATINGS

Buna-N seals are supplied as standard in all American Cylinder models and are recommended for operating temperatures in the -20°F (-25°C) to 200°F (95°C) range. Fluroelastomer (FKM) seals are recommended for high temperature cylinder applications having operating temperatures up to 400°F (204°C).

STANDARD FEATURES & BENEFITS: Mini-Pak® Series



1 1/2 Inch through 8 Inch Bore

① Hard Chrome-Plated & Polished Piston Rod:

Minimum yield of 100,000 PSI. High tensile strength steel provides for reliable performance and longer rod seal life.

② Solid Anodized Aluminum Alloy Heads:

Designed for corrosion resistance and extra strength.

③ Aluminum Alloy Tube 6063-T832:

PSI of 35,000. Hard coated I.D. resists scoring and wear.

④ Aluminum Alloy Piston:

Provides excellent characteristics against the hard coated I.D. cylinder body.

⑤ Seals:

Piston and rod seals are of Quad-Ring design to provide for low dynamic friction and positive sealing. O-Ring or U-Cup piston seals are available in 1 1/2" thru 5" bores. (6" & 8" bores are standard with U-Cup piston seals.)

⑥ Cast Iron Rod Bushing:

Compatible with the hard chrome plated rod. Close grain cast iron bearing provides maximum wear resistance for long life.

⑦ Tie Rods:

High strength steel to maintain compression on tube end seals.

⑧ Tube End Seals:

Fiber and nitrile base elastomer acting as a binder for positive sealing.

⑨ Teflon Back-Up Washer:

Wipes the rod clean and keeps out contamination.

⑩ Factory Lubricated:

Cylinder bodies are lubricated with Magnalube-G® grease.

⑪ Pretested:

The quality of each cylinder is assured by testing each unit for leakage prior to shipment. Quality control provides added value to American Cylinders.

Product enhancements resulting from our quality improvement program may necessitate changes in specifications without notice.

HOW TO ORDER:

Example: 2" Bore, Front Flange Mount, Mini-Pak®
1 1/2" Stroke, Fluroelastomer (FKM) Seals

Model No.: 2000FF-1.50-31

Model No.

Composition: 2000 FF - 1.50 - 31



Bore	No.	Model Description	Model	Standard Options	No.
1 1/2"	1500	Basic Mount	B	Magnetic Piston	4
2"	2000	Double End Rod*	DE*	Fluroelastomer (FKM) Seals	31
2 1/2"	2500	Front Flange Mount	FF	Bumpers	32
3 1/4"	3250	Rear Flange Mount	RF	Ports Rotated 90°	33**
4"	4000	Bottom Tap Mount	BT		
5"	5000	Bottom Bar Mount	BB		
6"	6000	Extended Tie Rod Mount - Cap End	ETR		
8"	8000	Extended Tie Rod Mount - Rod End	ERE		
		Detachable Clevis Mount	DC		
		Fixed Clevis Mount	FC		

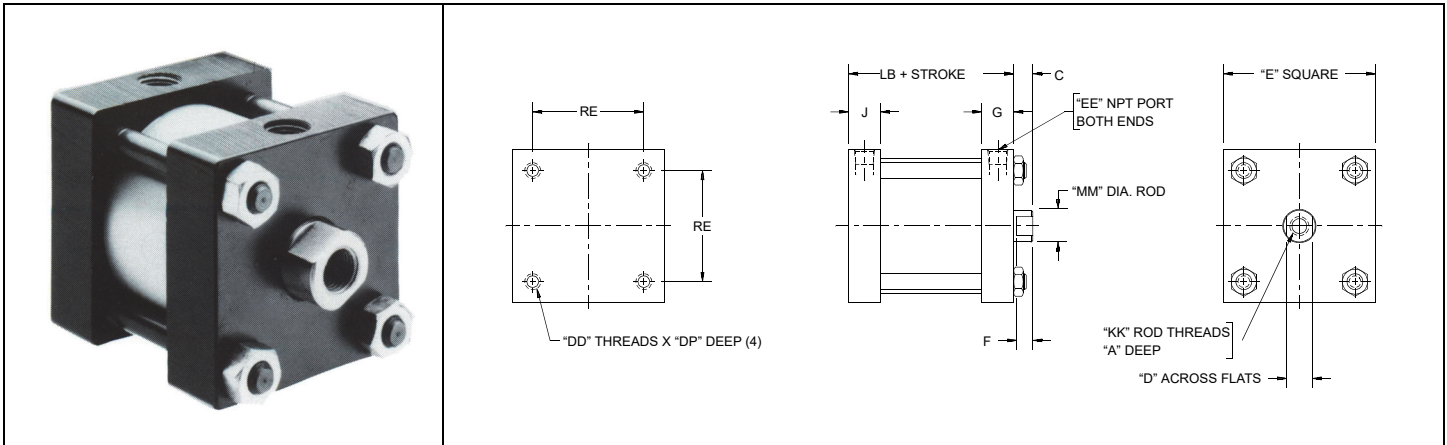
NOTES

*Must include mounting style with Double End. (Example: Double End Rod Front Flange Mount = DEFF)
**Not available with FF or RF mount

Standard Stroke Lengths ALL MODELS

Bore	Standard Stroke Lengths (in.)
1 1/2"	1/2, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6
2"	1/2, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6
2 1/2"	1/2, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6
3 1/4"	1/2, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6
4"	1/2, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6
5"	1/2, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6
6"	1/2, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6 & 1/2" increments thru 30"
8"	1/2, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6 & 1/2" increments thru 30"

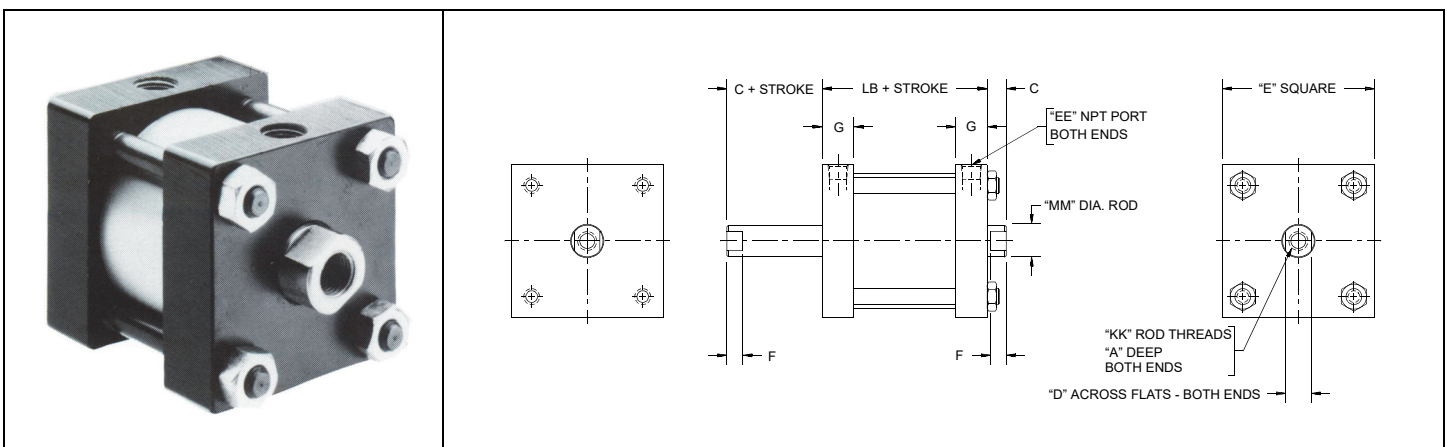
BASIC MOUNT: Model B



□.□□ Enter stroke length to complete number.

Bore	Model	Dimension														Power Factor	
		A	C	D	DD	DP	E	EE	F	G	J	KK	LB	MM	RE	Push	Pull
1 1/2"	1500B-□.□□	0.62	.37	0.50	1/4-28	.31	2.00	1/8	.31	0.62	0.62	3/8-24	1.75	0.62	1.43	1.77	1.46
2"	2000B-□.□□	0.62	.37	0.50	5/16-24	.31	2.50	1/8	.31	0.62	0.62	3/8-24	1.75	0.62	1.84	3.14	2.83
2 1/2"	2500B-□.□□	0.62	.37	0.50	5/16-24	.31	3.00	1/8	.31	0.62	0.62	3/8-24	1.75	0.62	2.19	4.91	4.61
3 1/4"	3250B-□.□□	0.87	.50	0.81	7/16-20	.43	3.75	1/4	.43	0.87	0.87	5/8-18	2.50	1.00	2.94	8.30	7.51
4"	4000B-□.□□	0.87	.50	0.81	7/16-20	.43	4.50	1/4	.43	0.87	0.87	5/8-18	2.50	1.00	3.56	12.57	11.78
5"	5000B-□.□□	0.87	.50	0.81	1/2-20	.50	5.50	3/8	.43	1.00	1.00	5/8-18	2.75	1.00	4.10	19.63	18.85
6"	6000B-□.□□	1.62	.62	1.12	1/2-20	.50	6.50	3/8	.50	1.50	1.00	1-14	3.87	1.37	4.88	28.27	26.78
8"	8000B-□.□□	1.62	.62	1.12	5/8-18	.50	8.50	3/8	.50	1.50	1.00	1-14	3.87	1.37	6.44	50.26	48.77

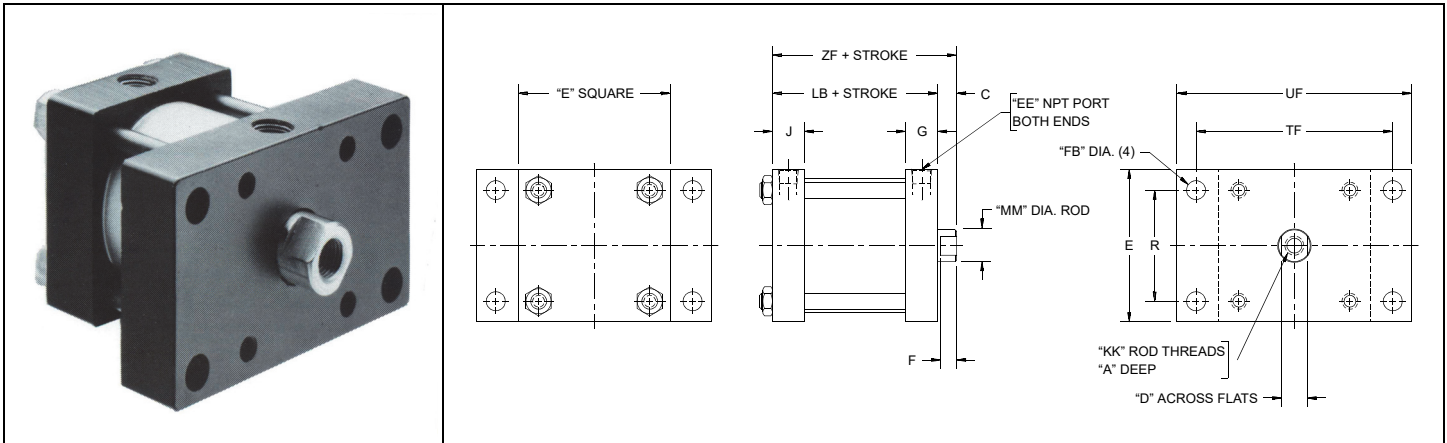
DOUBLE END ROD: Model DE



□.□□ Enter stroke length and ◇◇ mounting style to complete number.

Bore	Model	Dimension										Power Factor	
		A	C	D	E	EE	F	G	KK	LB	MM	Push	Pull
1 1/2"	1500DE◇◇-□.□□	0.62	.37	0.50	2.00	1/8	.31	0.62	3/8-24	1.75	0.62		1.46
2"	2000DE◇◇-□.□□	0.62	.37	0.50	2.50	1/8	.31	0.62	3/8-24	1.75	0.62		2.83
2 1/2"	2500DE◇◇-□.□□	0.62	.37	0.50	3.00	1/8	.31	0.62	3/8-24	1.75	0.62		4.61
3 1/4"	3250DE◇◇-□.□□	0.87	.50	0.81	3.75	1/4	.43	0.87	5/8-18	2.50	1.00		7.51
4"	4000DE◇◇-□.□□	0.87	.50	0.81	4.50	1/4	.43	0.87	5/8-18	2.50	1.00		11.78
5"	5000DE◇◇-□.□□	0.87	.50	0.81	5.50	3/8	.43	1.00	5/8-18	2.75	1.00		18.85
6"	6000DE◇◇-□.□□	1.62	.62	1.12	6.50	3/8	.50	1.50	1-14	4.37	1.37		26.78
8"	8000DE◇◇-□.□□	1.62	.62	1.12	8.50	3/8	.50	1.50	1-14	4.37	1.37		48.77

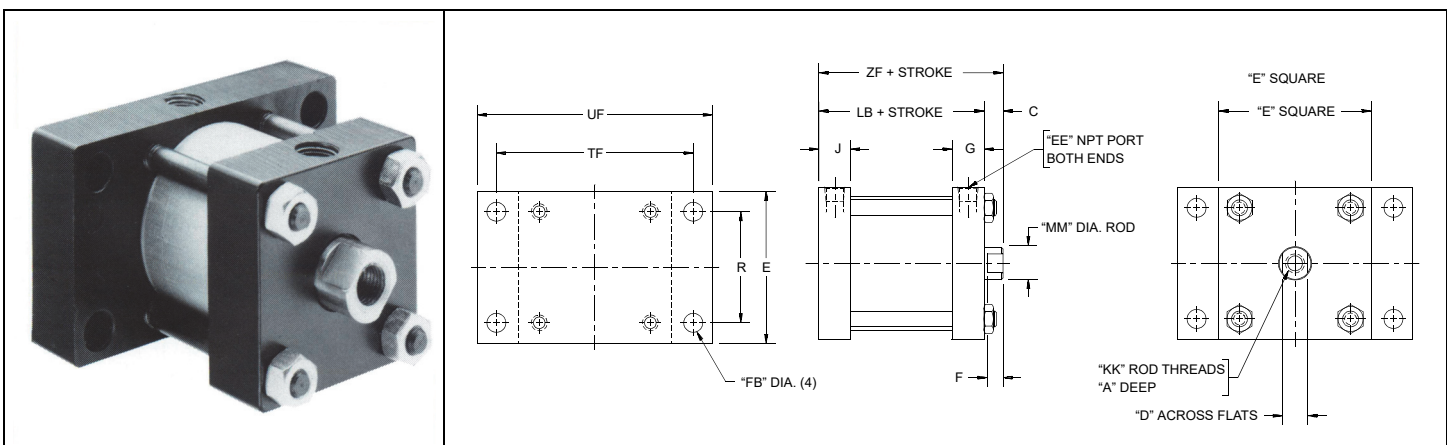
FRONT FLANGE MOUNT: Model FF



□.□□ Enter stroke length to complete number.

Bore	Model	Dimension																Power Factor	
		A	C	D	E	EE	F	FB	G	J	KK	LB	MM	R	TF	UF	ZF	Push	Pull
1 1/2"	1500FF-□.□□	0.62	.37	0.50	2.00	1/8	.31	.31	0.62	0.62	3/8-24	1.75	0.62	1.43	2.75	3.37	2.12	1.77	1.46
2"	2000FF-□.□□	0.62	.37	0.50	2.50	1/8	.31	.37	0.62	0.62	3/8-24	1.75	0.62	1.84	3.37	4.12	2.12	3.14	2.83
2 1/2"	2500FF-□.□□	0.62	.37	0.50	3.00	1/8	.31	.37	0.62	0.62	3/8-24	1.75	0.62	2.19	3.87	4.62	2.12	4.91	4.61
3 1/4"	3250FF-□.□□	0.87	.50	0.81	3.75	1/4	.43	.43	0.87	0.87	5/8-18	2.50	1.00	2.76	4.68	5.50	3.00	8.30	7.51
4"	4000FF-□.□□	0.87	.50	0.81	4.50	1/4	.43	.43	0.87	0.87	5/8-18	2.50	1.00	3.32	5.43	6.25	3.00	12.57	11.78
5"	5000FF-□.□□	0.87	.50	0.81	5.50	3/8	.43	.56	1.00	1.00	5/8-18	2.75	1.00	4.10	6.62	7.62	3.25	19.63	18.85
6"	6000FF-□.□□	1.62	.62	1.12	6.50	3/8	.50	.56	1.50	1.00	1-14	3.87	1.37	4.88	7.62	8.62	4.50	28.27	26.78
8"	8000FF-□.□□	1.62	.62	1.12	8.50	3/8	.50	.68	1.50	1.00	1-14	3.87	1.37	7.57	7.57	8.50	4.50	50.26	48.77

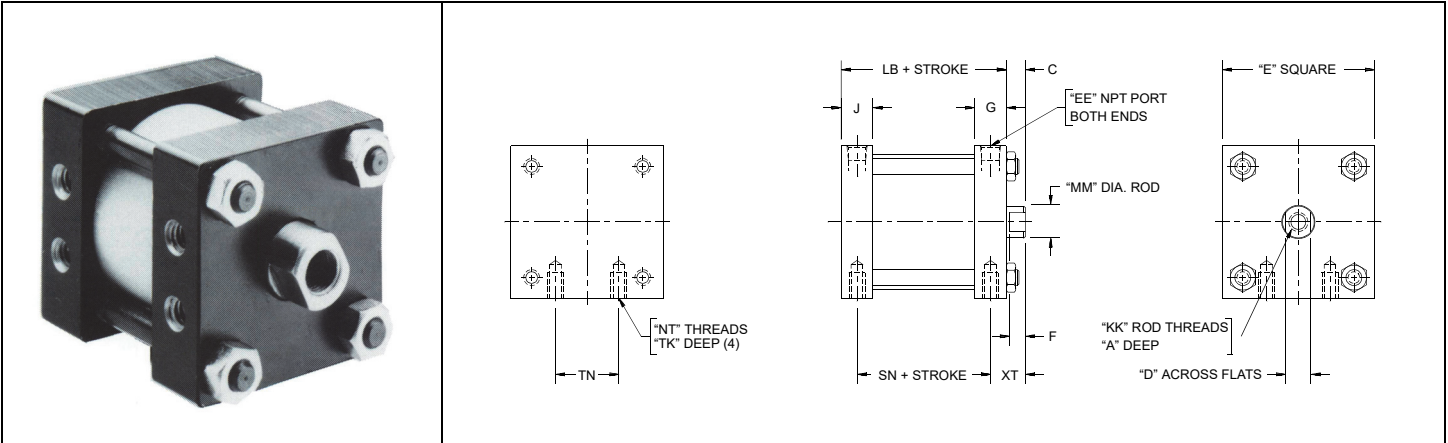
REAR FLANGE MOUNT: Model RF



□.□□ Enter stroke length to complete number.

Bore	Model	Dimension																Power Factor	
		A	C	D	E	EE	F	FB	G	J	KK	LB	MM	R	TF	UF	ZF	Push	Pull
1 1/2"	1500RF-□.□□	0.62	.37	0.50	2.00	1/8	.31	.31	0.62	0.62	3/8-24	1.75	0.62	1.43	2.75	3.37	2.12	1.77	1.46
2"	2000RF-□.□□	0.62	.37	0.50	2.50	1/8	.31	.37	0.62	0.62	3/8-24	1.75	0.62	1.84	3.37	4.12	2.12	3.14	2.83
2 1/2"	2500RF-□.□□	0.62	.37	0.50	3.00	1/8	.31	.37	0.62	0.62	3/8-24	1.75	0.62	2.19	3.87	4.62	2.12	4.91	4.61
3 1/4"	3250RF-□.□□	0.87	.50	0.81	3.75	1/4	.43	.43	0.87	0.87	5/8-18	2.50	1.00	2.76	4.68	5.50	3.00	8.30	7.51
4"	4000RF-□.□□	0.87	.50	0.81	4.50	1/4	.43	.43	0.87	0.87	5/8-18	2.50	1.00	3.32	5.43	6.25	3.00	12.57	11.78
5"	5000RF-□.□□	0.87	.50	0.81	5.50	3/8	.43	.56	1.00	1.00	5/8-18	2.75	1.00	4.10	6.62	7.62	3.25	19.63	18.85
6"	6000RF-□.□□	1.62	.62	1.12	6.50	3/8	.50	.56	1.50	1.00	1-14	3.87	1.37	4.88	7.62	8.62	4.50	28.27	26.78
8"	8000RF-□.□□	1.62	.62	1.12	8.50	3/8	.50	.68	1.50	1.00	1-14	3.87	1.37	7.57	7.57	8.50	4.50	50.26	48.77

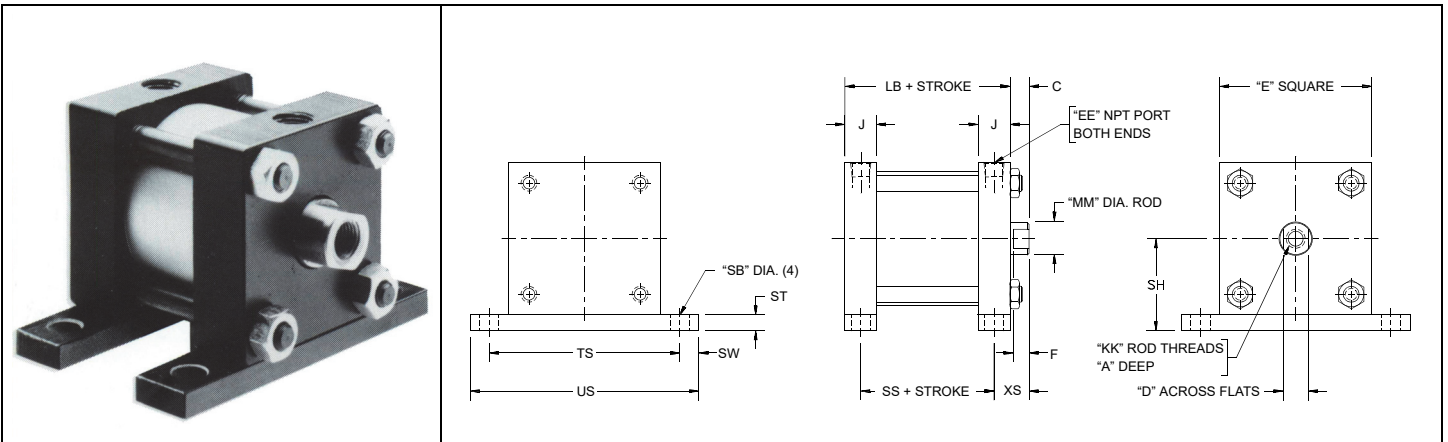
BOTTOM TAP MOUNT: Model BT



□.□□ Enter stroke length to complete number.

Bore	Model	Dimension																Power Factor	
		A	C	D	E	EE	F	G	J	KK	LB	MM	NT	SN	TK	TN	XT	Push	Pull
1 1/2"	1500BT-□.□□	0.62	.37	0.50	2.00	1/8	.31	0.62	0.62	3/8-24	1.75	0.62	1/4-20	1.12	0.37	0.62	0.68	1.77	1.46
2"	2000BT-□.□□	0.62	.37	0.50	2.50	1/8	.31	0.62	0.62	3/8-24	1.75	0.62	1/4-20	1.12	0.37	0.87	0.68	3.14	2.83
2 1/2"	2500BT-□.□□	0.62	.37	0.50	3.00	1/8	.31	0.62	0.62	3/8-24	1.75	0.62	5/16-18	1.06	0.50	1.25	0.71	4.91	4.61
3 1/4"	3250BT-□.□□	0.87	.50	0.81	3.75	1/4	.43	0.87	0.87	5/8-18	2.50	1.00	3/8-16	1.50	0.62	1.50	1.00	8.30	7.51
4"	4000BT-□.□□	0.87	.50	0.81	4.50	1/4	.43	0.87	0.87	5/8-18	2.50	1.00	3/8-16	1.50	0.62	2.06	1.00	12.57	11.78
5"	5000BT-□.□□	0.87	.50	0.81	5.50	3/8	.43	1.00	1.00	5/8-18	2.75	1.00	1/2-13	1.75	0.75	2.68	1.00	19.63	18.85
6"	6000BT-□.□□	1.62	.62	1.12	6.50	3/8	.50	1.50	1.00	1-14	3.87	1.37	5/8-11	2.37	1.00	3.25	1.62	28.27	26.78
8"	8000BT-□.□□	1.62	.62	1.12	8.50	3/8	.50	1.50	1.00	1-14	3.87	1.37	5/8-11	2.37	1.00	4.50	1.62	50.26	48.77

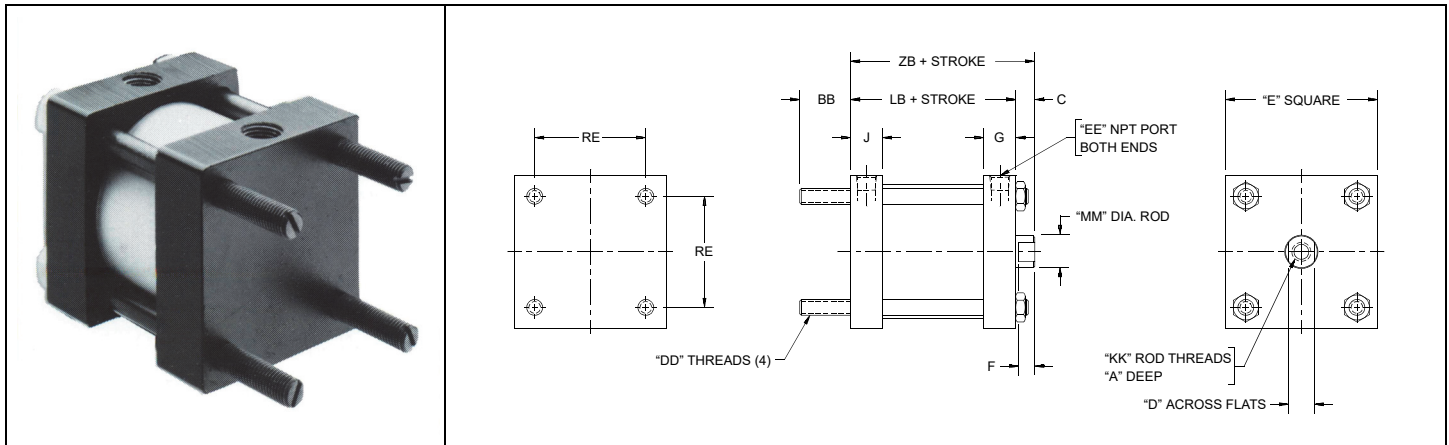
BOTTOM BAR MOUNT: Model BB



□.□□ Enter stroke length to complete number.

Bore	Model	Dimension																	Power Factor		
		A	C	D	E	EE	F	J	KK	LB	MM	SB	SH	SS	ST	SW	TS	US	XS	Push	Pull
1 1/2"	1500BB-□.□□	0.62	.37	.50	2.00	1/8	.31	0.62	3/8-24	1.75	0.62	.31	1.25	1.12	.25	.37	2.75	3.50	0.68	1.77	1.46
2"	2000BB-□.□□	0.62	.37	.50	2.50	1/8	.31	0.62	3/8-24	1.75	0.62	.31	1.50	1.12	.25	.37	3.25	4.00	0.68	3.14	2.83
2 1/2"	2500BB-□.□□	0.62	.37	.50	3.00	1/8	.31	0.62	3/8-24	1.75	0.62	.37	1.81	1.06	.31	.37	3.75	4.50	0.71	4.91	4.61
3 1/4"	3250BB-□.□□	0.87	.50	.81	3.75	1/4	.43	0.87	5/8-18	2.50	1.00	.50	2.37	1.50	.50	.50	4.75	5.75	1.00	8.30	7.51
4"	4000BB-□.□□	0.87	.50	.81	4.50	1/4	.43	0.87	5/8-18	2.50	1.00	.50	2.75	1.50	.50	.50	5.50	6.50	1.00	12.57	11.78
5"	5000BB-□.□□	0.87	.50	.81	5.50	3/8	.43	1.00	5/8-18	2.75	1.00	.50	3.25	1.75	.50	.50	6.50	7.50	1.00	19.63	18.85

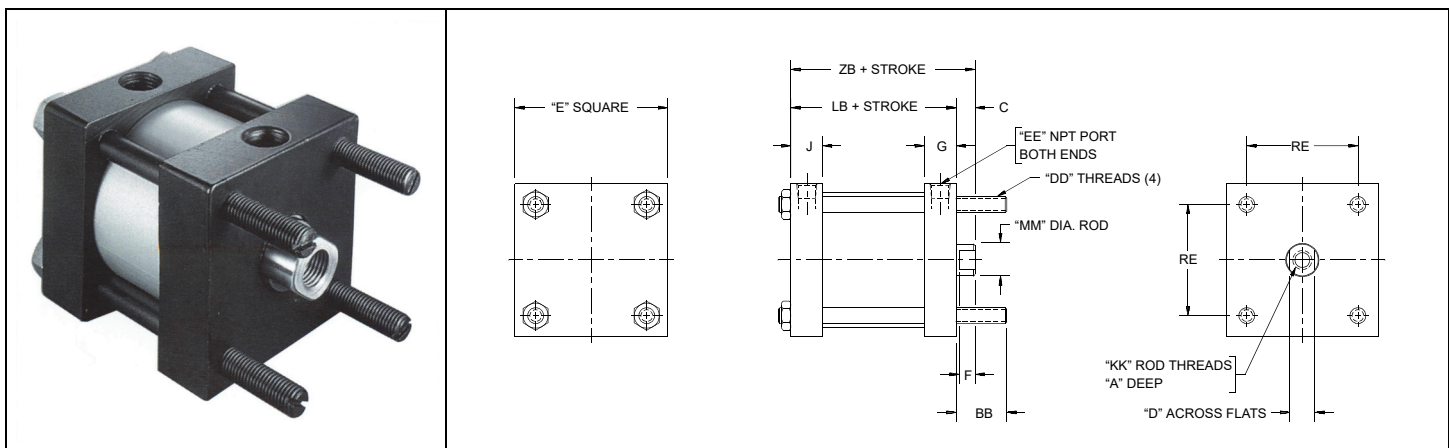
EXTENDED TIE ROD MOUNT-CAP END: Model ETR



□.□□ Enter stroke length to complete number.

Bore	Model	Dimension																Power Factor	
		A	BB	C	D	DD	E	EE	F	G	J	KK	LB	MM	RE	ZB	Push	Pull	
1 1/2"	1500ETR-□.□□	0.62	0.87	.37	0.50	1/4-28	2.00	1/8	.31	0.62	0.62	3/8-24	1.75	0.62	1.43	2.12	1.77	1.46	
2"	2000ETR-□.□□	0.62	1.00	.37	0.50	5/16-24	2.50	1/8	.31	0.62	0.62	3/8-24	1.75	0.62	1.84	2.12	3.14	2.83	
2 1/2"	2500ETR-□.□□	0.62	1.00	.37	0.50	5/16-24	3.00	1/8	.31	0.62	0.62	3/8-24	1.75	0.62	2.19	2.12	4.91	4.61	
3 1/4"	3250ETR-□.□□	0.87	1.25	.50	0.81	7/16-20	3.75	1/4	.43	0.87	0.87	5/8-18	2.50	1.00	2.94	3.00	8.30	7.51	
4"	4000ETR-□.□□	0.87	1.25	.50	0.81	7/16-20	4.50	1/4	.43	0.87	0.87	5/8-18	2.50	1.00	3.56	3.00	12.57	11.78	
5"	5000ETR-□.□□	0.87	1.50	.50	0.81	1/2-20	5.50	3/8	.43	1.00	1.00	5/8-18	2.75	1.00	4.10	3.25	19.63	18.85	
6"	6000ETR-□.□□	1.62	1.50	.62	1.12	1/2-20	6.50	3/8	.50	1.50	1.00	1-14	3.87	1.37	4.88	4.50	28.27	26.78	
8"	8000ETR-□.□□	1.62	1.75	.62	1.12	5/8-18	8.50	3/8	.50	1.50	1.00	1-14	3.87	1.37	6.44	4.50	50.26	48.77	

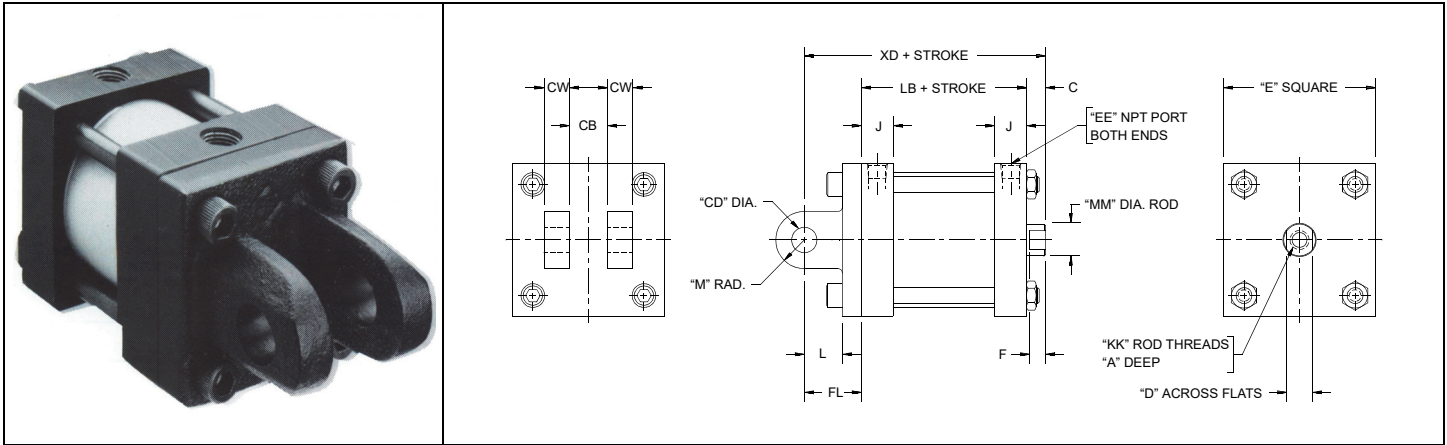
EXTENDED TIE ROD MOUNT-ROD END: Model ERE



□.□□ Enter stroke length to complete number.

Bore	Model	Dimension																Power Factor	
		A	BB	C	D	DD	E	EE	F	G	J	KK	LB	MM	RE	ZB	Push	Pull	
1 1/2"	1500ERE-□.□□	0.62	0.87	.37	0.50	1/4-28	2.00	1/8	.31	0.62	0.62	3/8-24	1.75	0.62	1.43	2.12	1.77	1.46	
2"	2000ERE-□.□□	0.62	1.00	.37	0.50	5/16-24	2.50	1/8	.31	0.62	0.62	3/8-24	1.75	0.62	1.84	2.12	3.14	2.83	
2 1/2"	2500ERE-□.□□	0.62	1.00	.37	0.50	5/16-24	3.00	1/8	.31	0.62	0.62	3/8-24	1.75	0.62	2.19	2.12	4.91	4.61	
3 1/4"	3250ERE-□.□□	0.87	1.25	.50	0.81	7/16-20	3.75	1/4	.43	0.87	0.87	5/8-18	2.50	1.00	2.94	3.00	8.30	7.51	
4"	4000ERE-□.□□	0.87	1.25	.50	0.81	7/16-20	4.50	1/4	.43	0.87	0.87	5/8-18	2.50	1.00	3.56	3.00	12.57	11.78	
5"	5000ERE-□.□□	0.87	1.50	.50	0.81	1/2-20	5.50	3/8	.43	1.00	1.00	5/8-18	2.75	1.00	4.10	3.25	19.63	18.85	
6"	6000ERE-□.□□	1.62	1.50	.62	1.12	1/2-20	6.50	3/8	.50	1.50	1.00	1-14	3.87	1.37	4.88	4.50	28.27	26.78	
8"	8000ERE-□.□□	1.62	1.75	.62	1.12	5/8-18	8.50	3/8	.50	1.50	1.00	1-14	3.87	1.37	6.44	4.50	50.26	48.77	

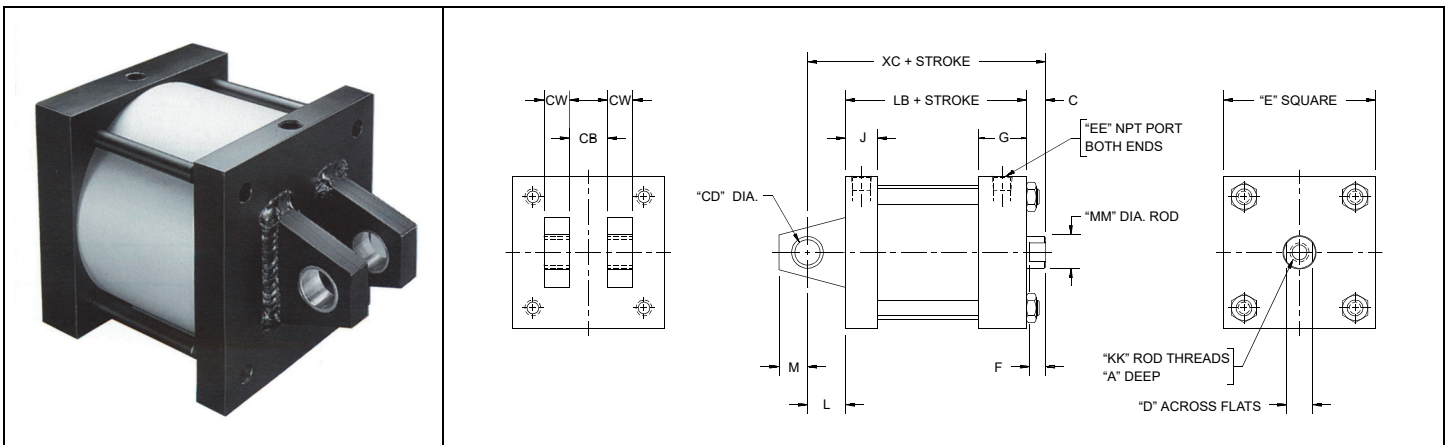
DETACHABLE CLEVIS MOUNT: Model DC



□.□□ Enter stroke length to complete number.

Bore	Model	Dimension																	Power Factor	
		A	C	CB	CD	CW	D	E	EE	F	FL	J	KK	L	LB	M	MM	XD	Push	Pull
1 1/2"	1500DC-□.□□	0.62	.37	0.75	0.50	.50	0.50	2.00	1/8	.31	1.12	0.62	3/8-24	0.75	1.75	0.56	0.62	3.25	1.77	1.46
2"	2000DC-□.□□	0.62	.37	0.75	0.50	.50	0.50	2.50	1/8	.31	1.12	0.62	3/8-24	0.75	1.75	0.56	0.62	3.25	3.14	2.83
2 1/2"	2500DC-□.□□	0.62	.37	0.75	0.50	.50	0.50	3.00	1/8	.31	1.12	0.62	3/8-24	0.75	1.75	0.56	0.62	3.25	4.91	4.61
3 1/4"	3250DC-□.□□	0.87	.50	1.25	0.75	.62	0.81	3.75	1/4	.43	1.75	0.87	5/8-18	1.25	2.50	0.81	1.00	4.75	8.30	7.51
4"	4000DC-□.□□	0.87	.50	1.25	0.75	.62	0.81	4.50	1/4	.43	1.75	0.87	5/8-18	1.25	2.50	0.81	1.00	4.75	12.57	11.78
5"	5000DC-□.□□	0.87	.50	1.25	0.75	.62	0.81	5.50	3/8	.43	1.75	1.00	5/8-18	1.25	2.75	0.81	1.00	5.00	19.63	18.85

FIXED CLEVIS MOUNT: Model FC



□.□□ Enter stroke length to complete number.

Bore	Model	Dimension																	Power Factor	
		A	C	CB	CD	CW	D	E	EE	F	G	J	KK	L	LB	M	MM	XC	Push	Pull
6"	6000FC-□.□□	1.62	.62	1.50	1.00	.75	1.12	6.50	3/8	.50	1.50	1.00	1-14	1.50	3.87	1.00	1.37	6.00	28.27	26.78
8"	8000FC-□.□□	1.62	.62	1.50	1.00	.75	1.12	8.50	3/8	.50	1.50	1.00	1-14	1.50	3.87	1.00	1.37	6.00	50.26	48.77

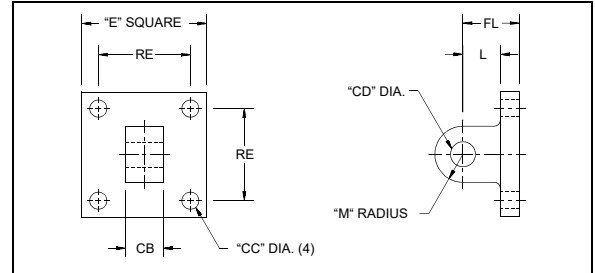
ACCESSORIES

ACCESSORIES ARE ASSEMBLED ON CYLINDER PRIOR TO SHIPPING UNLESS OTHERWISE SPECIFIED.

EYE MOUNTING BRACKET

Use with Detachable Clevis or Fixed Clevis - Models DC & FC										
Use with Bore	Part No.	Dimension								
		E	L	M	CB	CC	CD	FL	RE	
1½, 2, 2½	EB-1	2.50	0.75	0.56	0.75	.34	0.50	1.12	1.84	
3¼, 4, 5	EB-2	3.75	1.25	0.81	1.25	.46	0.75	1.75	2.94	
6, 8	EB-3	4.50	1.50	1.00	1.50	.65	1.00	2.25	3.25	

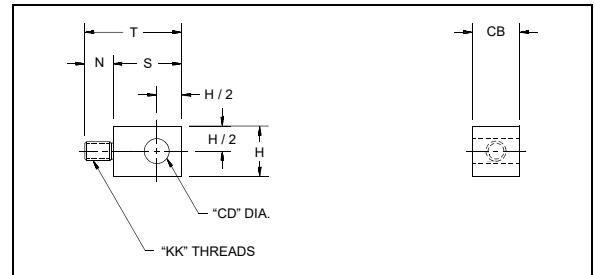
MATERIAL: PAINTED CAST IRON



MALE ROD EYE

Use with Bore	Part No.	Dimension						
		H	N	S	T	CB	CD	KK
1½, 2, 2½	MRE-1	1.00	.56	1.37	1.93	0.75	.50	¾-24
3¼, 4, 5	MRE-2	1.50	.81	1.68	2.50	1.25	.75	5/8-18

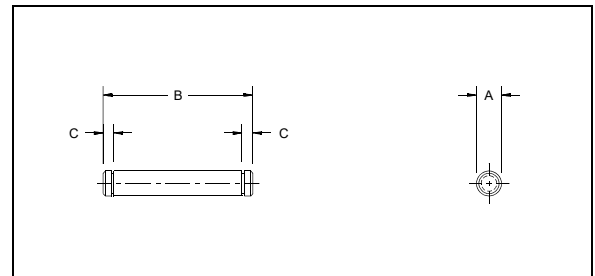
MATERIAL: BLACK OXIDE COATED STEEL



CLEVIS PIN

Use with Bore	Part No.	Dimension		
		A	B	C
1½, 2, 2½	CP-1	0.50	2.25	.18
3¼, 4, 5	CP-2	0.75	3.00	.18
6, 8	CP-3	1.00	3.50	.18

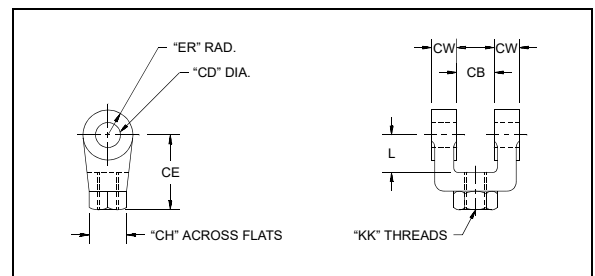
MATERIAL: CHROME PLATED STEEL



ROD CLEVIS

Use with Bore	Part No.	Dimension							
		CB	CD	CE	CH	CW	ER	KK	L
1½, 2, 2½	RC-1	0.75	0.50	1.50	0.75	.50	0.50	7/16-20	0.75
3¼, 4, 5	RC-2	1.25	0.75	2.37	1.25	.62	0.75	¾-16	1.25
6, 8	RC-3	1.50	1.00	3.12	1.62	.75	1.00	1-14	1.50

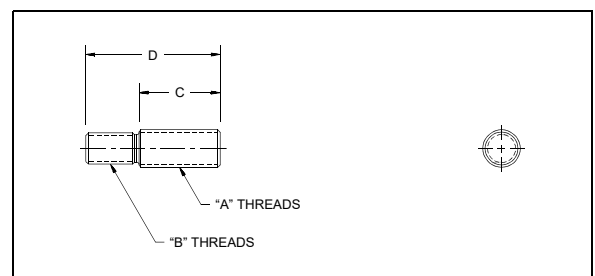
MATERIAL: BLACK OXIDE COATED FORGED STEEL



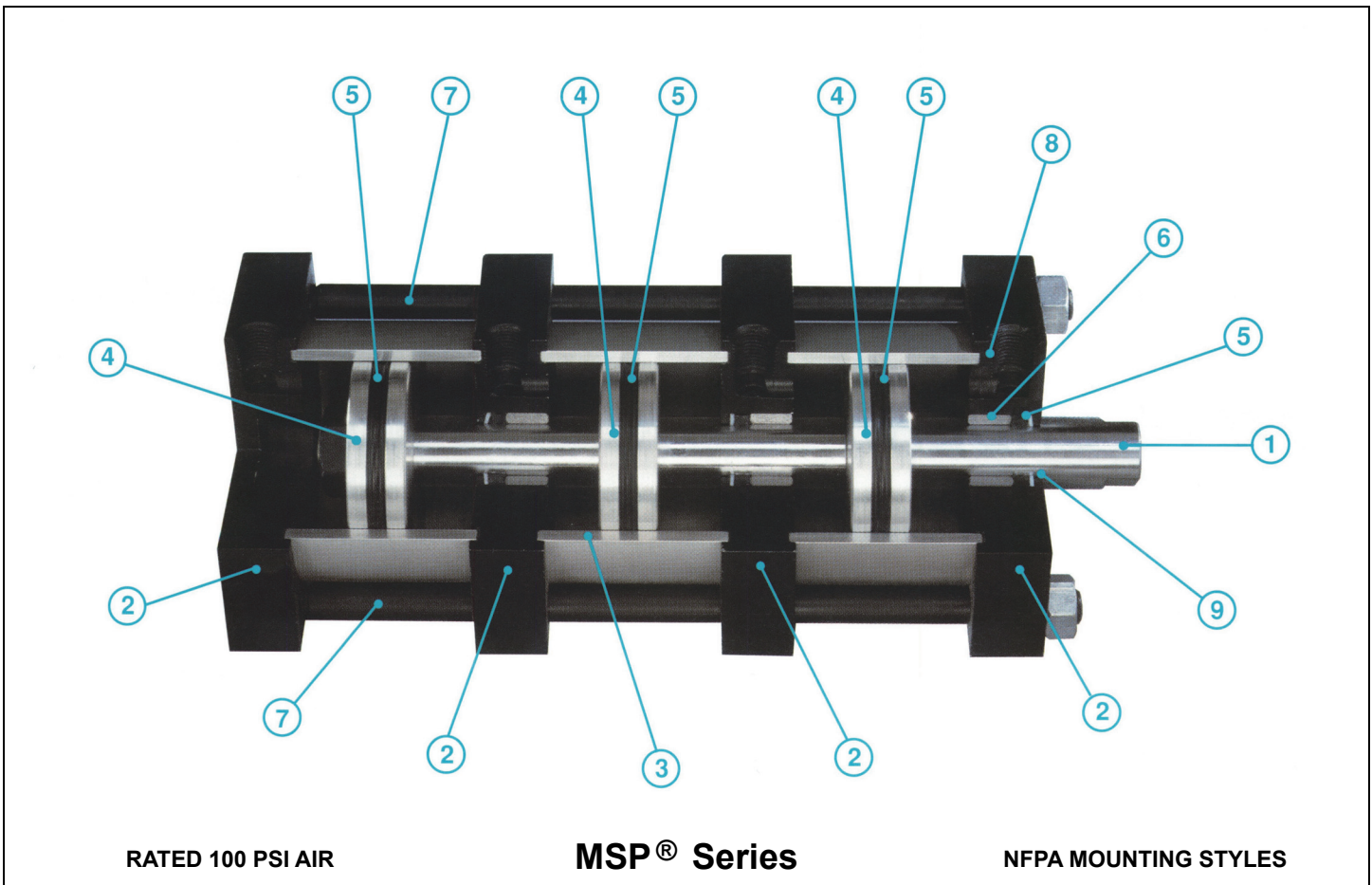
MALE ROD END STUD

Use with Bore	Part No.	Dimension			
		A	B	C	D
1½, 2, 2½	MRES-1	7/16-20	¾-24	0.75	1.31
3¼, 4, 5	MRES-2	¾-16	5/8-18	1.12	1.93
6, 8	MRES-3	1-14	1-14	----	3.12

MATERIAL: BLACK OXIDE COATED STEEL



STANDARD FEATURES & BENEFITS: MSP® Series



1 1/2 Inch through 8 Inch Bore

① **Hard Chrome-Plated & Polished Piston Rod:** Minimum yield of 100,000 PSI. High tensile strength steel provides for reliable performance and longer rod seal life.

② **Solid Anodized Aluminum Alloy Heads:** Designed for corrosion resistance and extra strength.

③ **Aluminum Alloy Tube 6063-T832:** PSI of 35,000. Hard coated I.D. resists scoring and wear.

④ **Aluminum Alloy Piston:** Provides excellent characteristics against the hard coated I.D. cylinder body.

⑤ **Seals:** Piston and rod seals are of Quad-Ring design to provide for low dynamic friction and positive sealing. O-Ring or U-Cup piston seals are available in 1 1/2" thru 5" bores. (6" & 8" bores are standard with U-Cup piston seals.)

⑥ **Cast Iron Rod Bushing:** Compatible with the hard chrome plated rod. Close grain cast iron bearing provides maximum wear resistance for long life.

⑦ **Tie Rods:** High strength steel to maintain compression on tube end seals.

⑧ **Tube End Seals:** Fiber and nitrile base elastomer acting as a binder for positive sealing.

⑨ **Teflon Back-Up Washer:** Wipes the rod clean and keeps out contamination.

⑩ **Factory Lubricated:** Cylinder bodies are lubricated with Magnalube-G® grease.

⑪ **Pretested:** The quality of each cylinder is assured by testing each unit for leakage prior to shipment. Quality control provides added value to American Cylinders.

American Cylinder Distributors are located in every major industrial market.

American's MSP® Multi-Stage Power Air Cylinders were designed for applications requiring an output force several times that of a single piston air cylinder at the same pressure and bore size.

MSP® Air Cylinders are constructed with multiple pistons, on a single rod, separated by aluminum ported block partitions. When air is pressurized simultaneously through each port, output force is increased.

Output force is determined by air line pressure times the power factor.

Return strokes, which require less power, can be completed by pressurizing one piston. All Multi-stage Power cylinders are assembled for push applications unless otherwise specified.

Product enhancements resulting from our quality improvement program may necessitate changes in specifications without notice.

HOW TO ORDER:

Example: 2" Bore, 3 Stage, Front Flange Mount, MSP® Series
1 1/2" Stroke, Fluroelastomer (FKM) Seals

Model No.: 2000FF3MSP-1.50-31

Model No.

Composition: 2000 FF 3 MSP - 1.50 - 31

Bore No. ———— ↑
 Model ———— ↑
 Stages ———— ↑ Series ———— ↑
 Option No. ———— ↑
 Stroke ———— ↑

Bore	No.	Model Description	Model	Stages	Series	Standard Options	No.
1 1/2"	1500	Front Flange Mount	FF	2	MSP	Magnetic Pistons*	4
2"	2000	Rear Flange Mount	RF	3		FKM Seals	31
2 1/2"	2500	Bottom Tap Mount	BT	4		Bumpers	32
3 1/4"	3250	Detachable Clevis Mount	DC				
4"	4000	Fixed Clevis Mount	FC				
5"	5000	Extended Tie Rod Mount - Cap End	ETR				
6"	6000	Extended Tie Rod Mount - Rod End	ERE				
8"	8000						

NOTES

*Bores 1-1/2" - 5" increase in OAL by 1/2". **1-1/2" bore only:** add 1.00" to OAL when combining (-4) and (-32) options

NOTE: All cylinders designed for push applications. Specials for pull applications are available.

MULTI-STAGE POWER AIR CYLINDERS: All Models

2 STAGE
"A" + (2 TIMES STROKE)

3 STAGE
"A" + (3 TIMES STROKE)

4 STAGE
"A" + (4 TIMES STROKE)

OUTPUT FORCE IS DETERMINED BY AIR LINE PRESSURE TIMES THE POWER FACTOR.

Port Positions

1. All mounts have operational ports in position 1.
2. BT mounts have vents in position 2.
3. All other mounts have vents in position 3.

Bore	Stages			Dimension			Power Factor*
				A	B	C	
1 1/2"	2			2.87	2.00	.37	3.22
		3		4.00			4.68
			4	5.12			6.15
2"	2			2.87	2.50	.37	5.97
		3		4.00			8.81
			4	5.12			11.64
2 1/2"	2			2.87	3.00	.37	9.51
		3		4.00			14.11
			4	5.12			18.71
3 1/4"	2			4.12	3.75	.50	15.80
		3		5.75			23.31
			4	7.37			30.82
4"	2			4.12	4.50	.50	24.34
		3		5.75			36.12
			4	7.37			47.90
5"	2			4.50	5.50	.50	38.48
		3		6.25			57.33
			4	8.00			76.18
6"	2			6.75	6.50	.62	55.06
		3		9.62			81.85
			4	12.50			108.64
8"	2			6.75	8.50	.62	99.04
		3		9.62			147.82
			4	12.50			196.60

For detailed dimensions on MSP® mounting styles refer to corresponding Mini-Pak® mounting style.

*Output force is determined by air line pressure times the power factor.

Standard Stroke Lengths ALL MODELS

Bore	Standard Stroke Lengths (in.)
1 1/2"	1/2, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6
2"	1/2, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6
2 1/2"	1/2, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6
3 1/4"	1/2, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6
4"	1/2, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6
5"	1/2, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6
6"	1/2, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6 & 1/2" increments thru 30"
8"	1/2, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6 & 1/2" increments thru 30"

NOTE: All cylinders will be assembled for push applications unless specified for pull applications.

LUBRICATION

American cylinders are prelubricated at the factory prior to shipment to provide millions of trouble free cycles. Most applications do not require additional lubrication, however, cylinder life can be maximized through periodic direct lubrication or continuous air line mist lubrication. Dow Corning Molykote 710G is recommended for cylinders with Buna-N or high temperature Fluoroelastomer seals. Consult your American Cylinder distributor or the factory for special lubrication requirements.

TEMPERATURE RATINGS

Buna-N seals are supplied as standard in all American Cylinder models and are recommended for operating temperatures in the -20°F (-25°C) to 200°F (95°C) range. Fluoroelastomer (FKM) seals are recommended for high temperature cylinder applications having operating temperatures up to 400°F (204°C).

CONSULT YOUR AMERICAN CYLINDER CO. DISTRIBUTOR OR THE FACTORY FOR SPECIAL OPTIONS.



American Cylinder Co., Inc.

American Cylinder Co., Inc.
Peotone, Illinois 60468-9116
708/258-3935
FAX 708/258-3980

ON THE INTERNET

<https://www.americancylinder.com>

E-MAIL: amcyl@americancylinder.com

Warranty

American Cylinder Co., Inc. warrants its products to be free from defects in material and workmanship under normal wear and service for a period of 3 years from date of shipment of the order. American Cylinder Company shall have no liability under this warranty if: 1) The product is used other than in accordance with specifications. 2) The product is subjected to abuse, negligence, accident, misapplication, or unintended use. 3) The product is manufactured to buyer's specifications.

Manufacturer's liability shall be limited to allowance of credit or replacement of defective product. American Cylinder Company shall not be liable or responsible for injuries or damages to persons or property arising out of the use or operation of American Cylinder products.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, LIABILITY FOR LOST PROFIT OR FOR INDIRECT, INCIDENTAL, CONSEQUENTIAL OR COMMERCIAL LOSSES, AND OF ALL OTHER OBLIGATIONS OR LIABILITIES.

These conditions subject to change without notice.