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®

American's Mini-Pak® Cylinders were designed for applications requiring space saving configurations and NFPA mounting styles. American's Mini-Pak® Cylinders are available and in stock for delivery in 1 1/2", 2", 2 1/2", 3 1/4", 4", 5", 6" and 8" bore sizes. For special requirements, consult the factory or your nearest local stocking American Cylinder Distributor.

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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

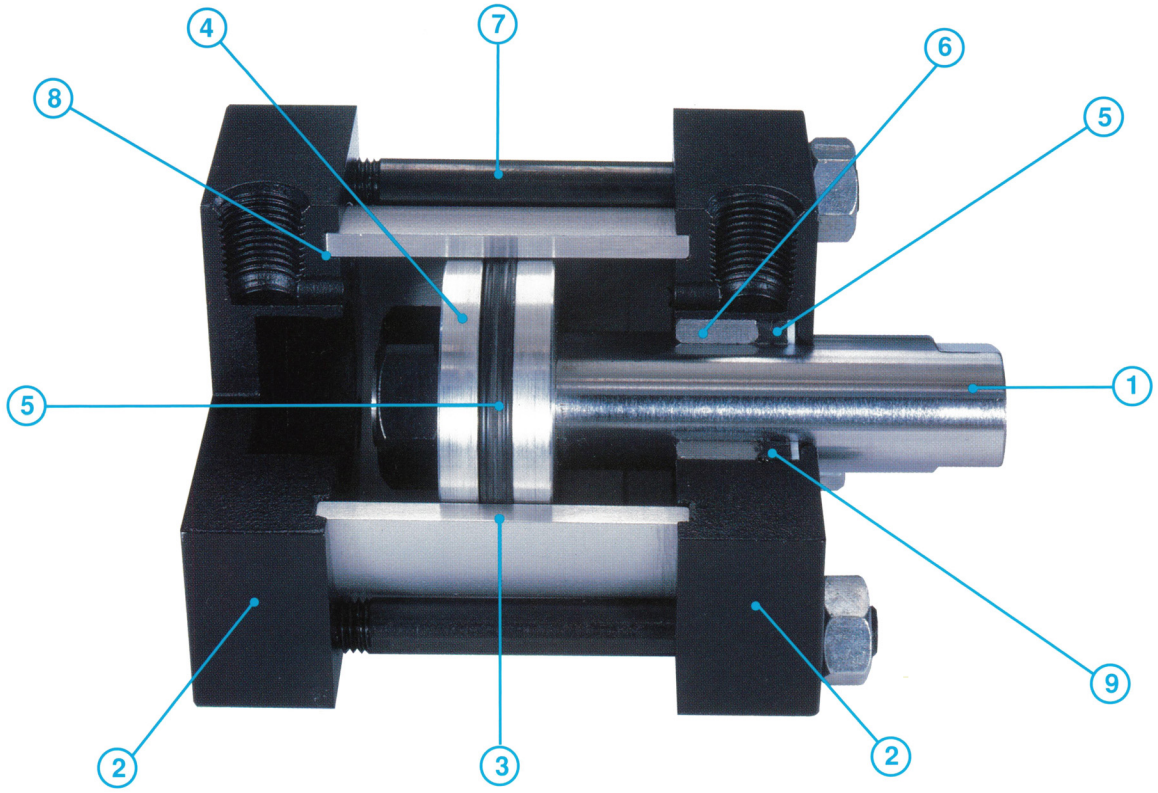
American cylinders are prelubricated at the factory prior to shipment to provide millions of trouble free cycles. Most applications do not require additional lubrication, however, cylinder life can be maximized through periodic direct lubrication or continuous air line mist lubrication. Dow Corning Molykote 710G is recommended for cylinders with Buna-N or high temperature Fluroelastomer 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 seals are recommended for high temperature cylinder applications having operating temperatures up to 400°F (204°C).

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STANDARD FEATURES & BENEFITS: *Mini-Pak® Series*



RATED 200 PSI AIR **Mini-Pak® Series** **NFPA MOUNTING STYLES**

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 AC 2119 Teflon-based compound.

(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.

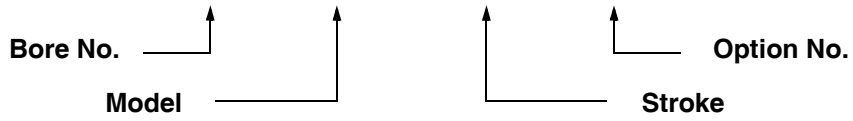
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HOW TO ORDER:

Example: **2" Bore, Front Flange Mount, Mini-Pak®**
1 1/2" Stroke, Fluroelastomer 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	Fluroelastomer Seals	31
2"	2000	Double End Rod*	DE*	Bumpers	32
2 1/2"	2500	Front Flange Mount	FF	Ports Rotated 90°	33
3 1/4"	3250	Rear Flange Mount	RF		
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

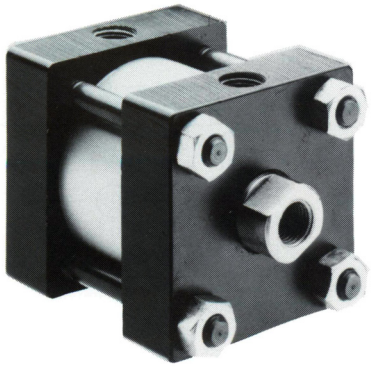
*Must include mounting style with Double End. (Example: Double End Rod Front Flange Mount = DEFF)

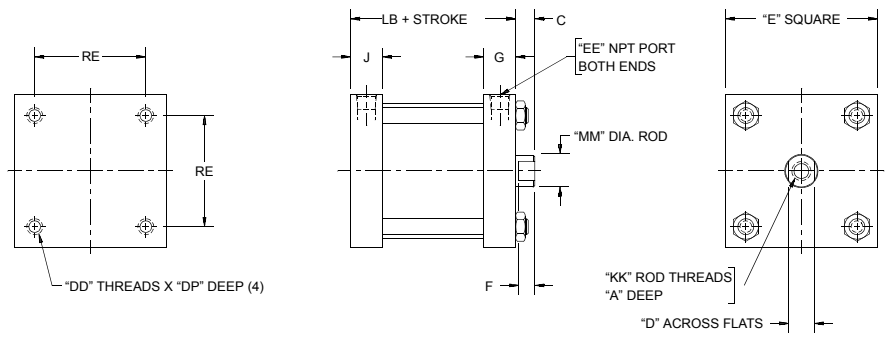
Standard Stroke Lengths *ALL MODELS*

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"

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BASIC MOUNT: Model B

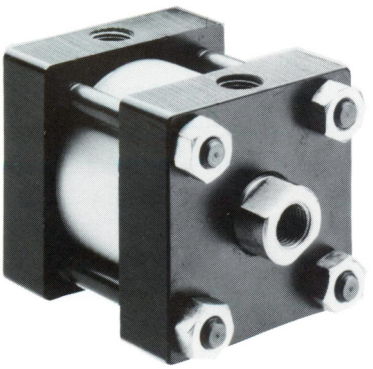


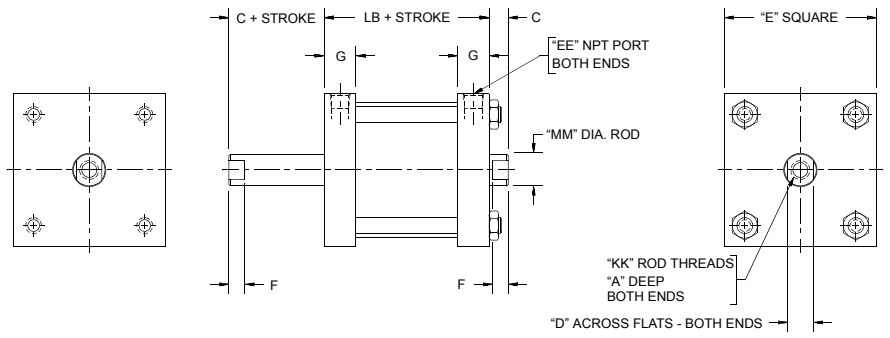


☐.☐☐ Enter stroke length to complete number.

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



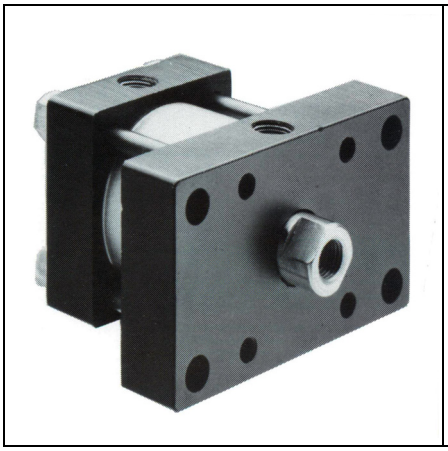


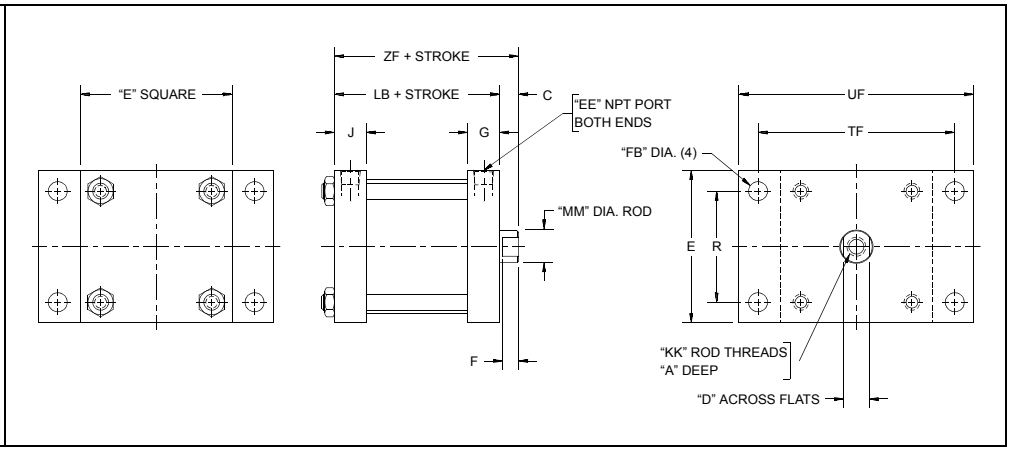
☐.☐☐ Enter stroke length and ◊◊ mounting style to complete number.

Bore	Model	Dimension										Power Factor
		A	C	D	E	EE	F	G	KK	LB	MM	
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

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FRONT FLANGE MOUNT: Model FF

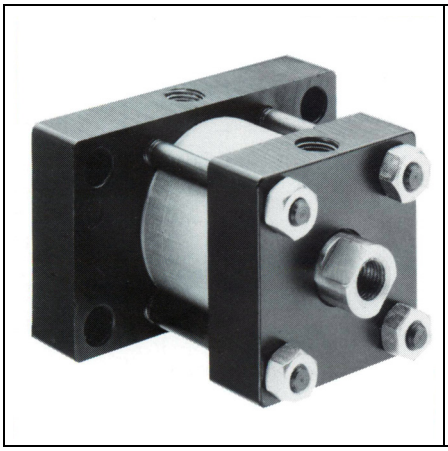


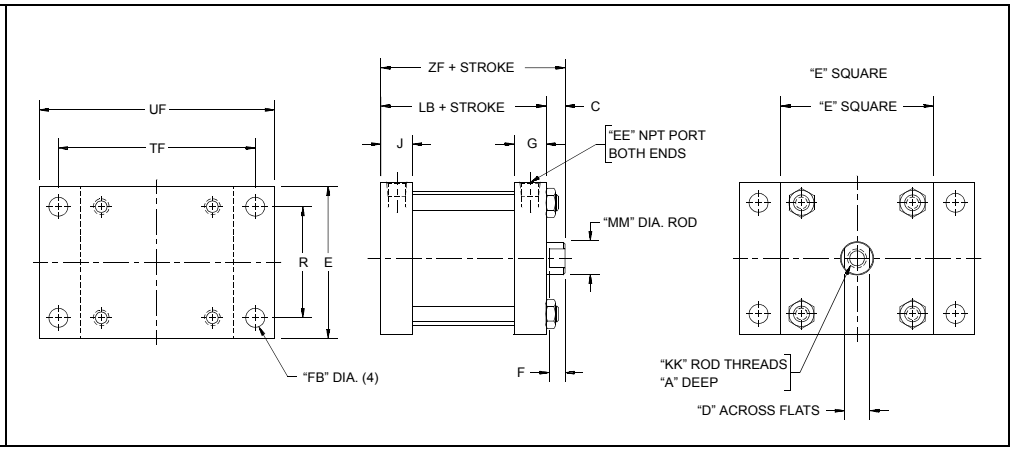


☐.☐☐ Enter stroke length to complete number.

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



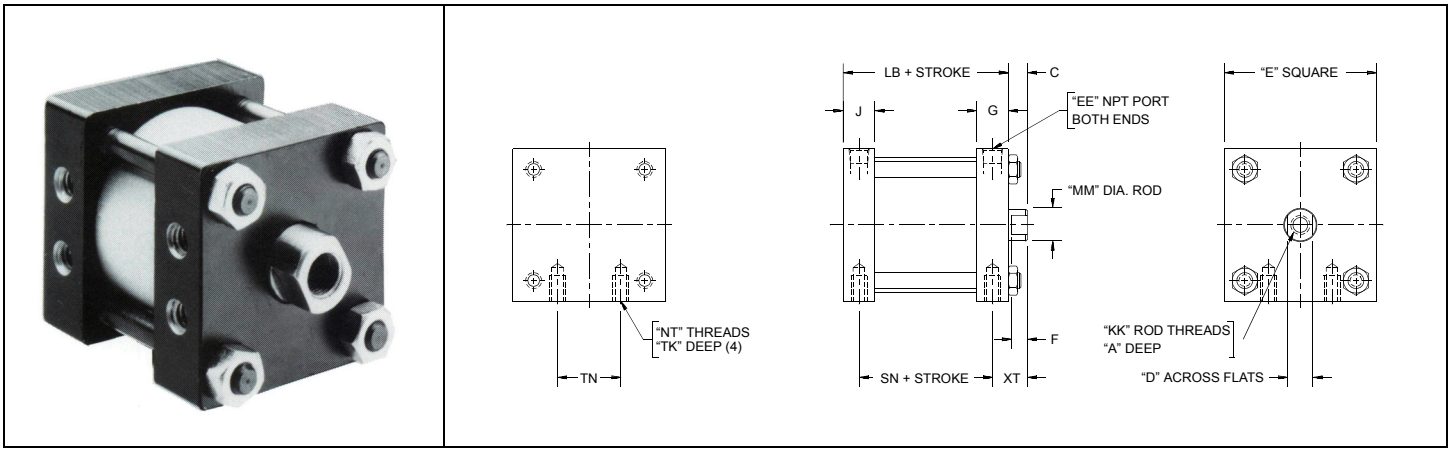


☐.☐☐ Enter stroke length to complete number.

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

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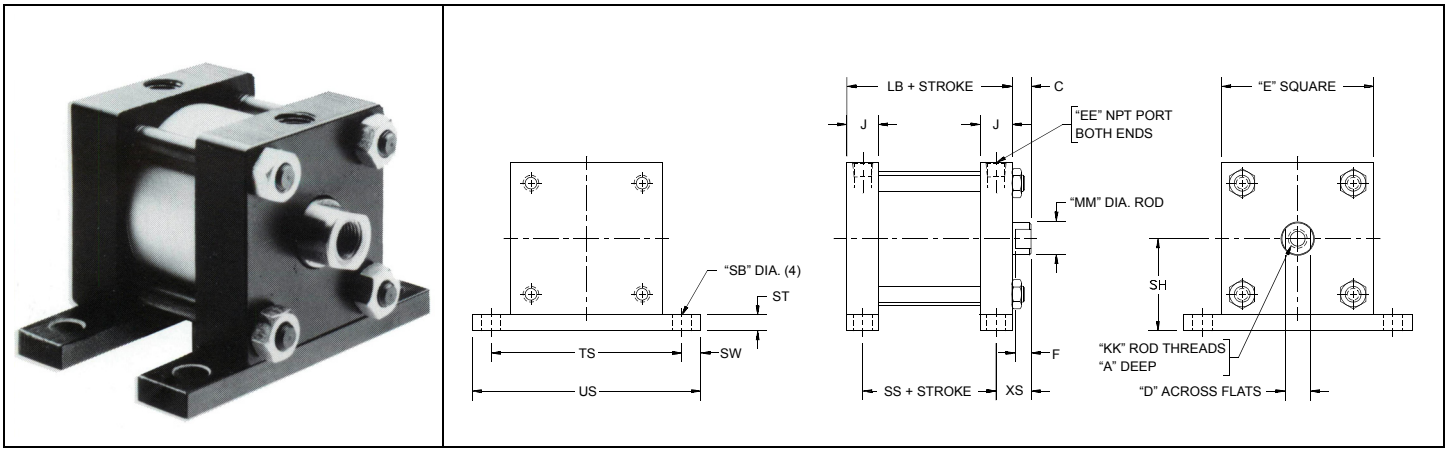
BOTTOM TAP MOUNT: Model BT



□.□□ 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

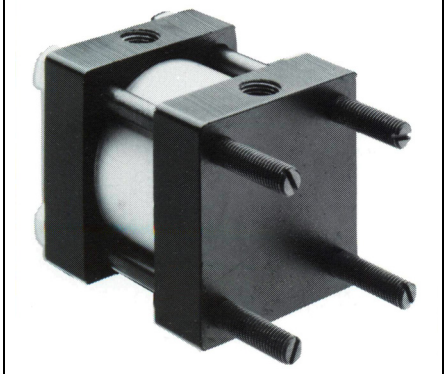


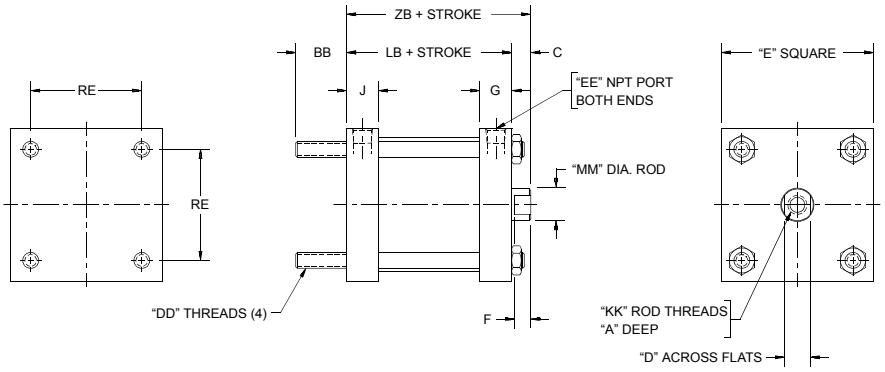
□.□□ Enter stroke length to complete number.

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

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EXTENDED TIE ROD MOUNT-CAP END: Model ETR

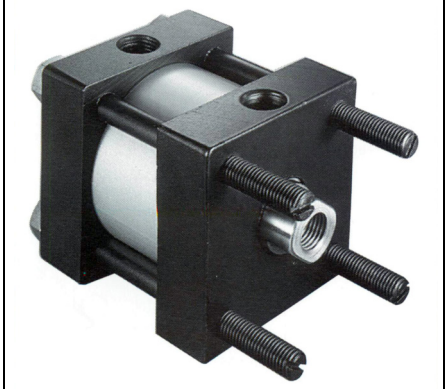


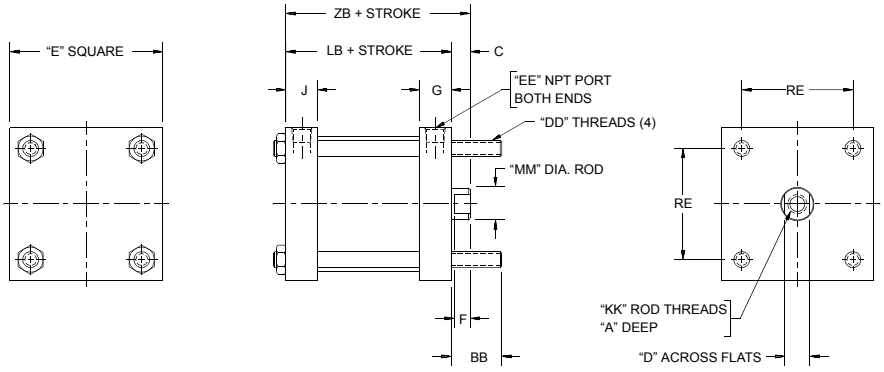


☐.☐☐ Enter stroke length to complete number.

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



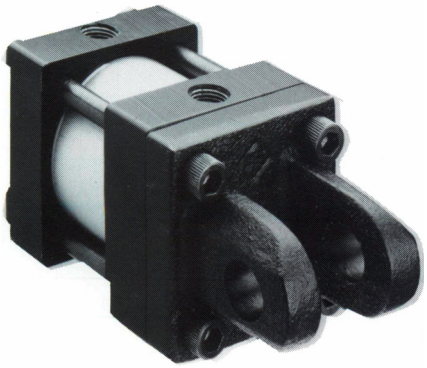


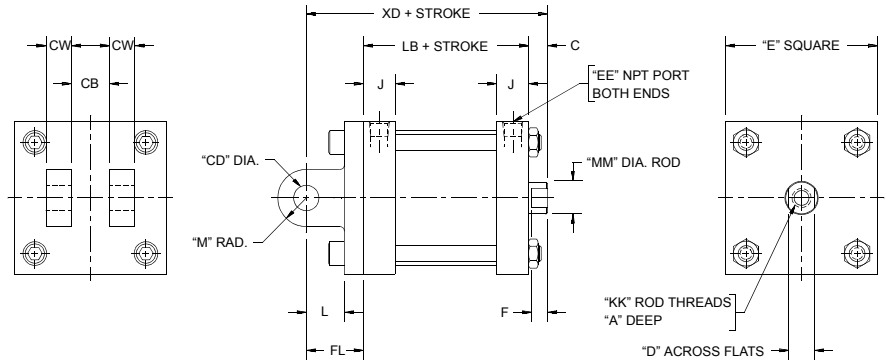
☐.☐☐ Enter stroke length to complete number.

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

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DETACHABLE CLEVIS MOUNT: Model DC

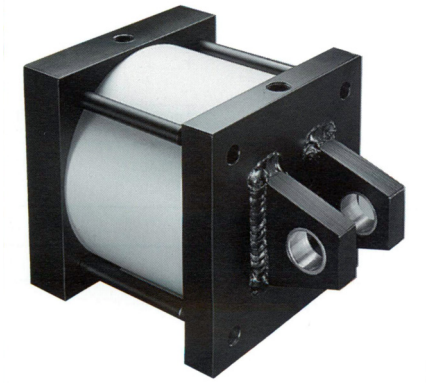


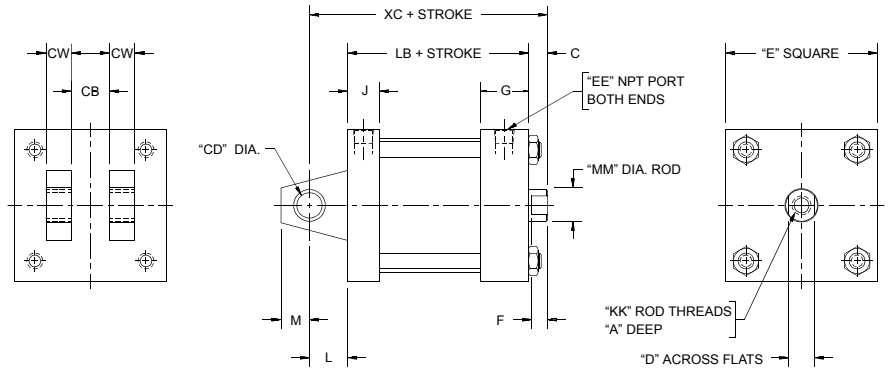


☐.☐☐ Enter stroke length to complete number.

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

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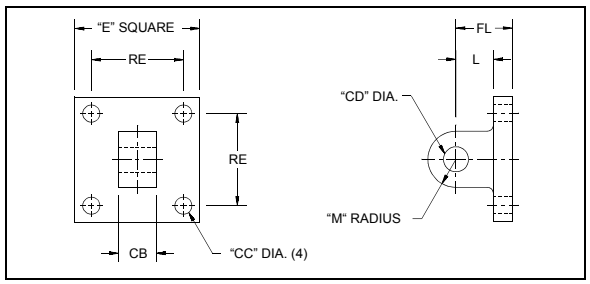
ACCESSORIES

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

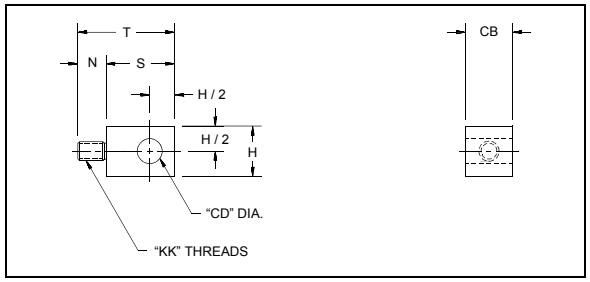
MATERIAL: PAINTED CAST IRON



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	3/8-24
3¼, 4, 5	MRE-2	1.50	.81	1.68	2.50	1.25	.75	5/8-18

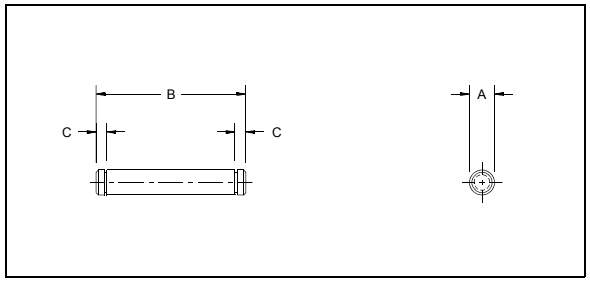
MATERIAL: BLACK OXIDE COATED STEEL



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

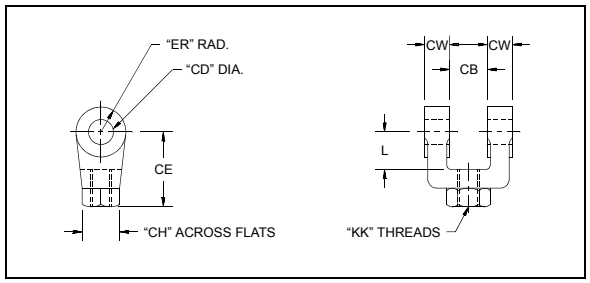
MATERIAL: CHROME PLATED STEEL



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	3/4-16	1.25
6, 8	RC-3	1.50	1.00	3.12	1.62	.75	1.00	1-14	1.50

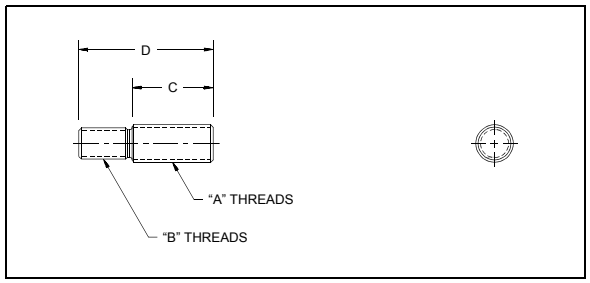
MATERIAL: BLACK OXIDE COATED FORGED STEEL



MALE ROD END STUD

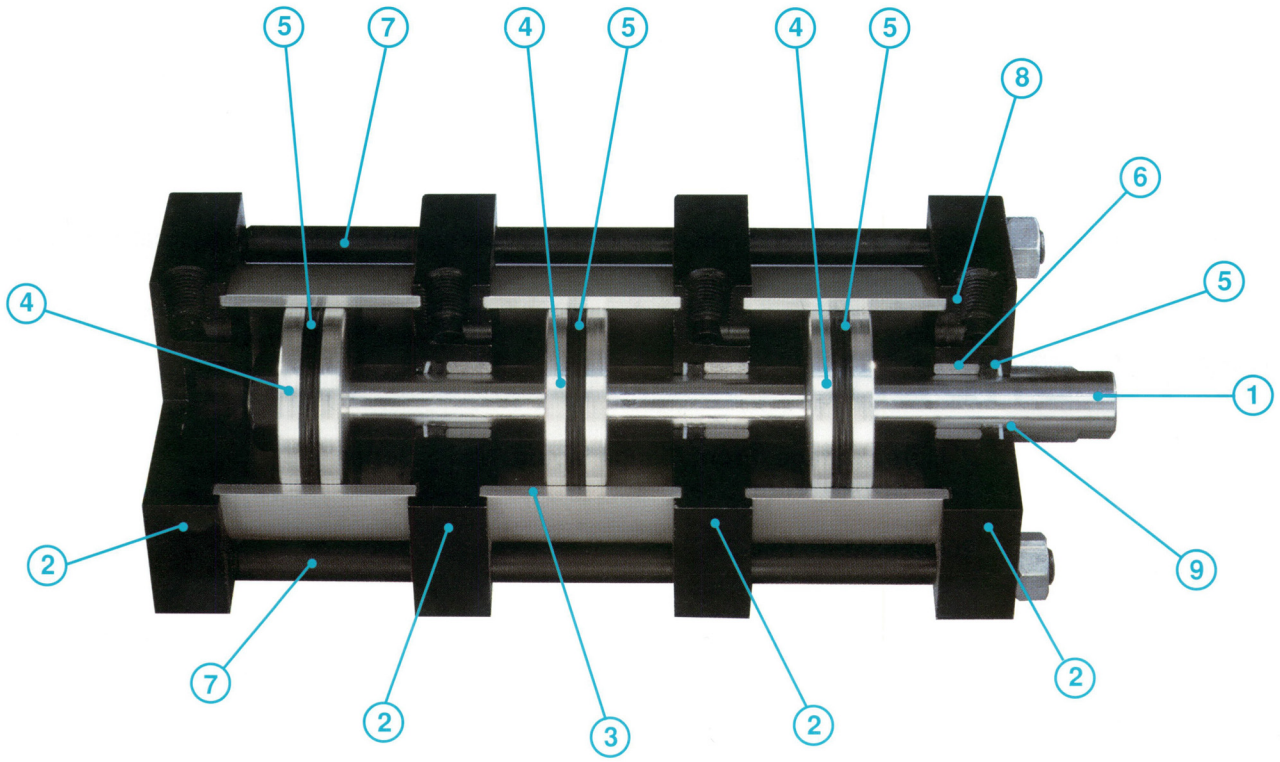
Use with Bore	Part No.	Dimension			
		A	B	C	D
1½, 2, 2½	MRES-1	7/16-20	3/8-24	0.75	1.31
3¼, 4, 5	MRES-2	3/4-16	5/8-18	1.12	1.93
6, 8	MRES-3	1-14	1-14	----	3.12

MATERIAL: BLACK OXIDE COATED STEEL



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STANDARD FEATURES & BENEFITS: *MSP® Series*



RATED 100 PSI AIR | **MSP® Series** | NFPA MOUNTING STYLES

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 AC 2119 Teflon-based compound.

(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.

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American®

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.

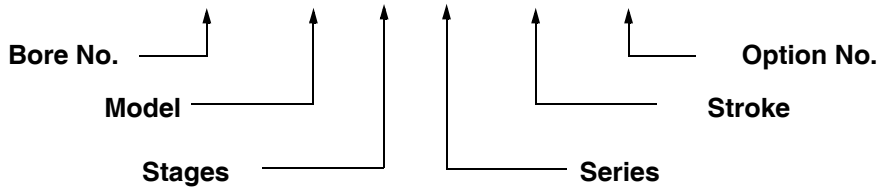
Product enhancements resulting from our quality improvement program may necessiate changes in specifications without notice.

HOW TO ORDER:

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

Model No.: **2000FF3MSP-1.50-31**

Model No. Composition: **2000 FF 3 MSP 1.50 - 31**



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

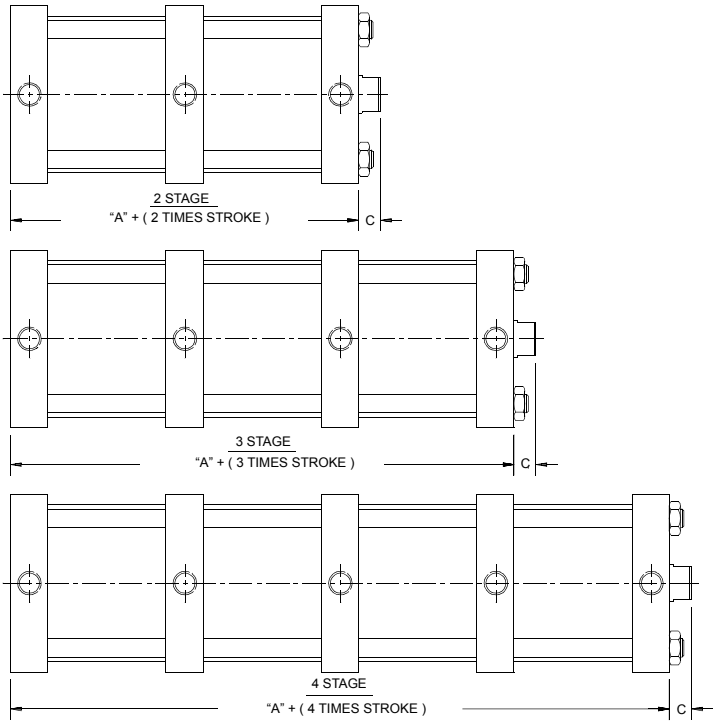
NOTES

*Must include mounting style with Double End. (Example: Double End Rod Front Flange Mount = DEFF)
** On selected bore sizes only. Please consult factory.

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

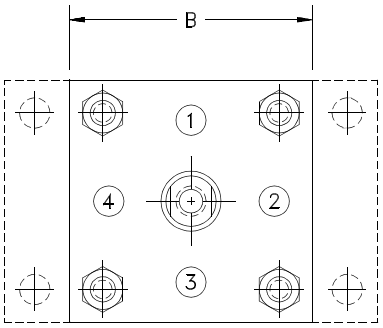
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MULTI-STAGE POWER AIR CYLINDERS: All Models



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	
1½"	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
2½"	2			2.87	3.00	.37	9.51
		3		4.00			14.11
			4	5.12			18.71
3¼"	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.**

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Standard Stroke Lengths *ALL MODELS*

Bore	Standard Stroke Lengths (in.)
1½"	½, 1, 1½, 2, 2½, 3, 3½, 4, 4½, 5, 5½, 6
2"	½, 1, 1½, 2, 2½, 3, 3½, 4, 4½, 5, 5½, 6
2½"	½, 1, 1½, 2, 2½, 3, 3½, 4, 4½, 5, 5½, 6
3¼"	½, 1, 1½, 2, 2½, 3, 3½, 4, 4½, 5, 5½, 6
4"	½, 1, 1½, 2, 2½, 3, 3½, 4, 4½, 5, 5½, 6
5"	½, 1, 1½, 2, 2½, 3, 3½, 4, 4½, 5, 5½, 6
6"	½, 1, 1½, 2, 2½, 3, 3½, 4, 4½, 5, 5½, 6 & ½" increments thru 30"
8"	½, 1, 1½, 2, 2½, 3, 3½, 4, 4½, 5, 5½, 6 & ½" 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 Fluroelastomer 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 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.

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American Cylinder Co., Inc.

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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.

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