

**Tie Rod
Pneumatic Cylinders**

4MA / 4ML Series - Non-Lube NFPA Air Cylinders

1-1/2" to 5" Bore Sizes

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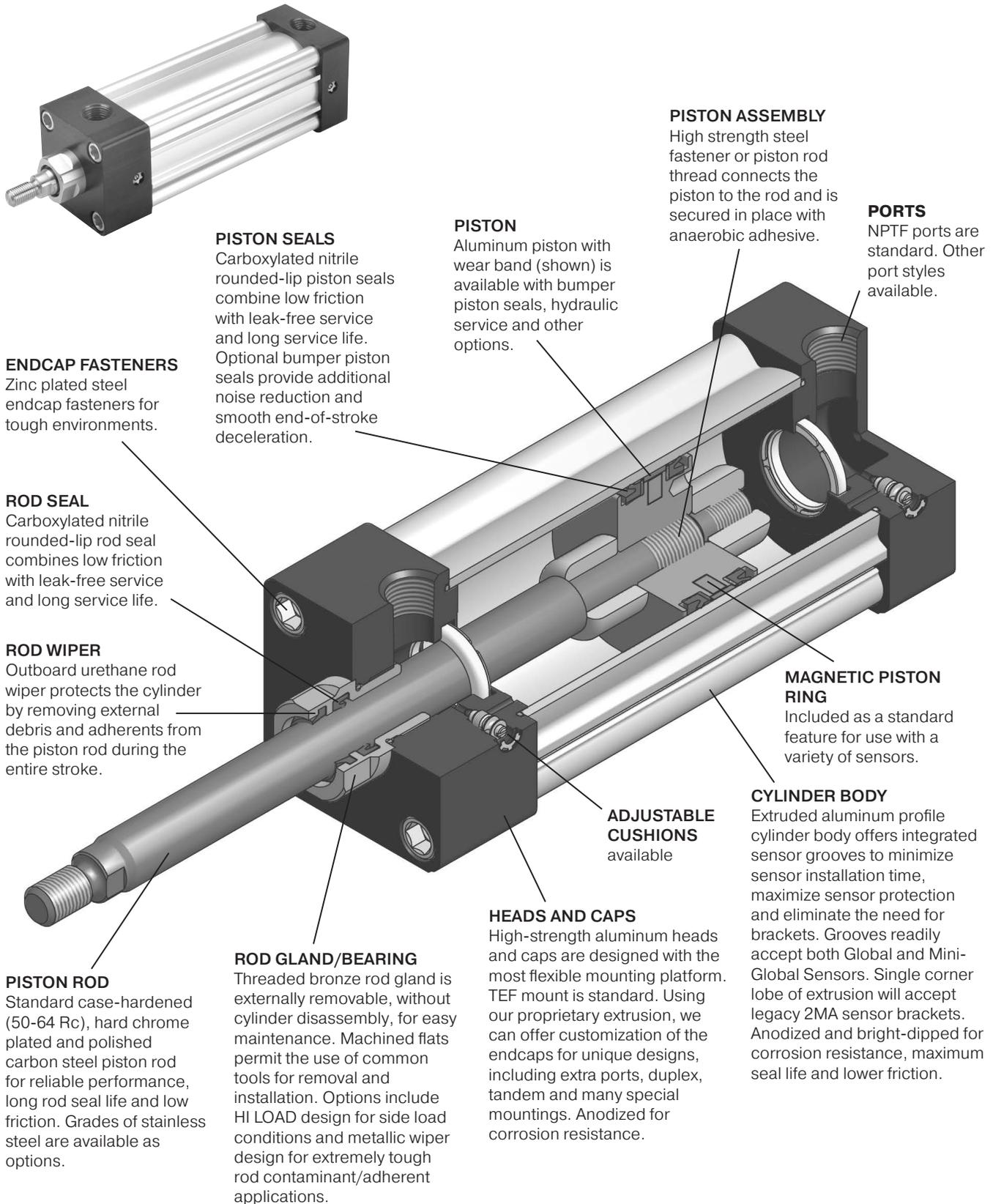
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4MA/4ML Series – 1-1/2" to 5" Bore Size

B	Tie Rod Pneumatic Cylinders
4MA	Series
4MAP	Series
ACVB	Option
LPSO	Option
P1D	Series
P1F	Series
2MNR	Series



For a complete list of 4MA options, please see pages B3 and B8.

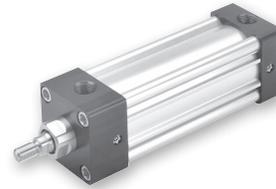


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Features

- Industry leading aluminum NFPA interchangeable cylinder with flexible construction
- Bore sizes – 1-1/2", 2", 2-1/2", 3-1/4", 4" and 5"
- Removable bronze alloy gland/bearing for easy maintenance
- Available in any practical stroke length
- 20 standard mounting styles available
- Extruded-profile aluminum body with integrated switch grooves
- Single rod end or double rod ends
- Cushions – standard and adjustable at both ends, optional non-cushioned
- RoHS compliant

Tie Rod Pneumatic Cylinders 4MA/4ML Series – 1-1/2" to 5" Bore Size



Operating Information

	4MA	4ML
Operating pressure:	250 PSIG (17 bar) maximum air service	400 PSIG (27 bar) maximum hydraulic service
Temperature range –		
Standard seals	-10°F to 165°F (-23°C to 74°C)	
Fluorocarbon seals	-10°F to 250°F (-23°C to 121°C)	
Low temperature seals	-50°F to 150°F (-46°C to 66°C)	
Filtration requirements:	40 micron, dry filtered air	Filtered hydraulic oil

Ordering Information

2.00	J	4MA	U	1	4	A	6.000
Bore Size	Double Rod Cylinder	Series	Ports	Piston Rod Number	Cushion Cap End	Piston Rod Thread Type	Stroke Length
1.50 ¹	Specify "K" only if double rod cylinder is required.	4MA Air Service 4ML Hydraulic Service ²	U NPTF R BSPP B BSPT T SAE	Specify rod code number for required diameter. ^{8, 2}	Blank Non-Cushioned Cap End C Cushioned Cap End (not available for 4ML)	A Standard (UNF unified thread) W BSF British Fine M* Metric	Specify stroke length required in inches. ¹¹
2.00	Mounting Style		Special Modification				
2.50	Specify mounting style code (see table on following page).		Specify "S" only for special modification other than rod end, and then describe modification in item notes. (Includes 4MA with Linear Position Sensor Option) ⁷				
3.25			Seals				
4.00			Blank Standard (nitrile seals)				
5.00			V Fluorocarbon Seals ⁴				
	Cushion Head End		E Fluorocarbon Rod Wiper and Rod Seal Only ⁵				
	Blank Non-Cushioned Head End		4 Low Temperature Seals ⁴				
	C Cushioned Head End (not available for 1.50" bore with 1" rod or 4ML)		M Metallic Rod Wiper, Nitrile Seals ⁶				
	Cylinder Construction		Piston Rod Thread Style				
	Blank* Standard (extruded body, standard round lobe orientation)		4 Small Male				
	A* Extruded Body, Round Lobe Orientation Rotated 90 Degrees from Standard		8 Intermediate Male				
	N* Extruded Body, Round Lobe Orientation Rotated 180 Degrees from Standard		9 Short Female				
	Z* Extruded Body, Round Lobe Orientation Rotated 270 Degrees from Standard		55 For Use with Split Coupler 9				
	T Aluminum Round Tube and Carbon Steel Tie Rods & Nuts		3 Special (and specify all dimensions required)				
			6 Full Male				
	Piston Type²		Rod Material and Gland Code				
	Blank Lipseals and Magnetic Ring (legacy) (standard for 4ML)		Blank Standard Rod and Gland				
	1 Lipseals, No Magnetic Ring (legacy)		H Standard Rod and HI LOAD Gland ¹³				
	2 Lipseals, No Magnetic Ring (aluminum piston)		Y 17-4 PH Stainless Steel Rod and Standard Gland				
	3 Lipseals and Magnetic Ring (aluminum piston) (standard for 4ML)		Z 17-4 PH Stainless Steel Rod and HI LOAD Gland ¹³				
	4 Bumper Seals, No Magnetic Ring ¹²		J 303 Stainless Steel Rod and Standard Gland				
	6 Bumper Seals and Magnetic Ring ¹²		K 303 Stainless Steel Rod and HI LOAD Gland ¹³				
	B Lipseals, 1/4" Thick Bumpers Both Ends ³		S 316 Stainless Steel Rod and Standard Gland				
	H Lipseals, 1/4" Thick Bumper Head End ³		T 316 Stainless Steel Rod and HI LOAD Gland ¹³				
	C Lipseals, 1/4" Thick Bumper Cap End ³						
	D Lipseals and Magnetic Ring, 1/4" Thick Bumpers Both Ends ³						
	F Lipseals and Magnetic Ring, 1/4" Thick Bumper Head End ³						
	R Lipseals and Magnetic Ring, 1/4" Thick Bumper Cap End ³						

* See table on page B5. Only applies to 1-1/2" to 4" bore size.

¹ Not available with Linear Position Sensor Option (LPSO).

² Piston Types (blank), 1, 4 and 6 not available for 4ML. Piston Types (blank) and 1 not available for oversize rod numbers 2 and 3. Seals option V only available with Piston Types 2 and 4. Seals option 4 only available with Piston Types 2 and 3.

³ Addition of 1/4" bumper results in a 1/4" stroke loss per bumper, per end. For example, a 6" stroke cylinder with 1/4" bumpers at both ends (option B) has an effective stroke of 5-1/2".

⁴ Reed and solid-state sensors only available with standard seals or options E and M. See footnote 2.

⁵ Used for external chemical compatibility applications, not high temperature.

⁶ If fluorocarbon seals are required with this option, please place an "S" for special in the Special Modification field and specify the "fluorocarbon seals and metallic rod wiper" in the item notes.

⁷ For Linear Position Sensor Option (LPSO), please include the following information for the Special Modification item notes:
a. Sensor part number reference LPSO section
b. Sensor position
c. Port position (if other than position 1)

⁸ Length of stop tubing, gross stroke and net stroke (if required).

⁹ Also, Piston Type option (blank), 3, 6, D, F or R is required. Review Piston Rod Selection Chart, please reference page A14 to determine proper piston rod diameter.

¹⁰ For additional information regarding this style, please reference page B79. If non-standard Rod Material and Gland Code is required with this option, please place an "S" for special in Special Modification field and specify Rod Material and Gland Code in the item notes.

¹¹ If a stop tube is required, specify gross stroke (net stroke + stop tube) in the model number, then place an "S" for special in the Special Modification field and specify the stop tube length in the item notes.

¹² See page B81 for stroke loss on bumper seal option.

¹³ HI LOAD gland not available with metallic rod wiper.

For ordering purposes, when special options or common modifications are requested, the factory will assign a sequential part number in place of the model number.

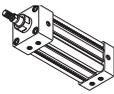
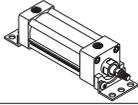
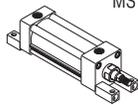
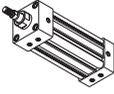
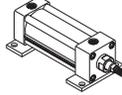
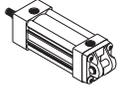
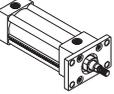
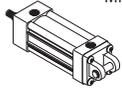
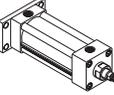
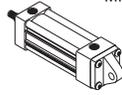
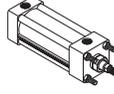
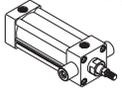
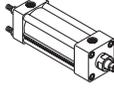
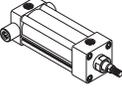
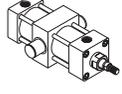
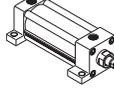
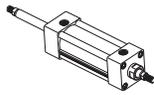


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Mounting Styles

Tie Rod Pneumatic Cylinders 4MA/4ML Series – 1-1/2" to 5" Bore Size

4MA/4ML Mounting Styles for 1-1/2" to 5" Bore

Mounting Style	NFPA Mounting	Description	Bore Size	Mounting Style	NFPA Mounting	Description	Bore Size		
TEF 	MX5/MS4	Sleeve Nut with Side Tap (standard mount)	4MA/4ML	1-1/2 - 5*	CB 	MS1	Side End Angle	4MA/4ML	1-1/2 - 5
			w/LPSO	2 - 5				w/LPSO	2 - 5
			w/LPSO w/stop tube	2 - 5				w/LPSO w/stop tube	2 - 5
T 	MX0	No Mount (same construction as TEF)	4MA/4ML	1-1/2 - 5	G 	MS7	Side End Lug	4MA/4ML	1-1/2 - 4*
			w/LPSO	2 - 5				w/LPSO	2 - 4
			w/LPSO w/stop tube	2 - 5				w/LPSO w/stop tube	2 - 4
TE 	MX5	Sleeve Nut (same construction as TEF)	4MA/4ML	1-1/2 - 5	NB 	N/A	Base Bar	4MA/4ML	1-1/2 - 4*
			w/LPSO	2 - 5				w/LPSO	2 - 4
			w/LPSO w/stop tube	2 - 5				w/LPSO w/stop tube	2 - 4
F 	MS4	Side Tap (same construction as TEF)	4MA/4ML	1-1/2 - 5*	BB 	MP1	Cap Fixed Clevis	4MA/4ML	1-1/2 - 5
			w/LPSO	2 - 5				w/LPSO	2 - 5 **
			w/LPSO w/stop tube	2 - 5				w/LPSO w/stop tube	2 - 5 **
J 	MF1	Head Rectangular Flange	4MA/4ML	1-1/2 - 5	BC 	MP2	Cap Detachable Clevis	4MA/4ML	1-1/2 - 5
			w/LPSO	2 - 5 **				w/LPSO	2 - 5 **
			w/LPSO w/stop tube	2 - 5				w/LPSO w/stop tube	2 - 5 **
H 	MF2	Cap Rectangular Flange	4MA/4ML	1-1/2 - 5	BE 	MP4	Cap Detachable Eye	4MA/4ML	1-1/2 - 5
			w/LPSO	2 - 5 **				w/LPSO	2 - 5 **
			w/LPSO w/stop tube	2 - 5 **				w/LPSO w/stop tube	2 - 5 **
TB 	MX3	Tie Rods Extended Head End	4MA/4ML	1-1/2 - 5	D 	MT1	Head Trunnion	4MA/4ML	1-1/2 - 5*
			w/LPSO	2 - 5				w/LPSO	2 - 5
			w/LPSO w/stop tube	2 - 5				w/LPSO w/stop tube	2 - 5
TC 	MX2	Tie Rods Extended Cap End	4MA/4ML	1-1/2 - 5	DB 	MT2	Cap Trunnion	4MA/4ML	1-1/2 - 5
			w/LPSO	2 - 5 **				w/LPSO	2 - 5 **
			w/LPSO w/stop tube	2 - 5 **				w/LPSO w/stop tube	2 - 5 **
TD 	MX1	Tie Rods Extended Both Ends	4MA/4ML	1-1/2 - 5	DD 	MT4	Intermediate Trunnion	4MA/4ML	1-1/2 - 5
			w/LPSO	2 - 5				w/LPSO	2 - 5
			w/LPSO w/stop tube	2 - 5				w/LPSO w/stop tube	2 - 5
C 	MS2	Side Lug	4MA/4ML	1-1/2 - 5	KTEF † 	MDX5/MDS4	Double Rod End, TEF Mount	4MA/4ML	1-1/2 - 5
			w/LPSO	2 - 5				w/LPSO	2 - 5
			w/LPSO w/stop tube	2 - 5				w/LPSO w/stop tube	2 - 5

* Not available for 1-1/2" bore with 1" rod.

** May interfere with mounting. Please provide clearance for Linear Sensor overhang (see page B75).

† Double rod end cylinders can be ordered with head mountings, i.e. KJ.

B
 Tie Rod Pneumatic Cylinders
 4MA Series
 4MAP Series
 ACVB Option
 LPSO Option
 P1D Series
 P1F Series
 2MNR Series

Sensors
See section L for sensors. 

Kits & Accessories
See page B34.



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