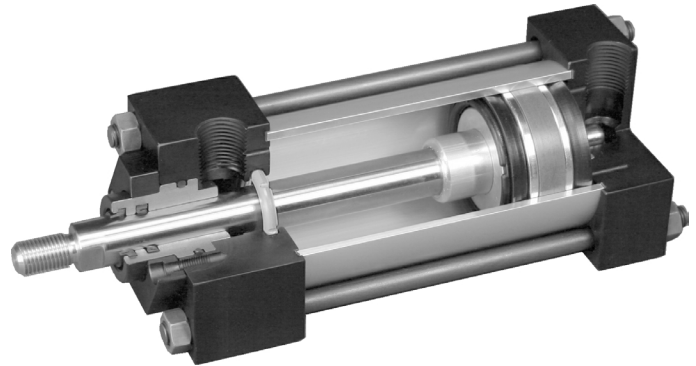
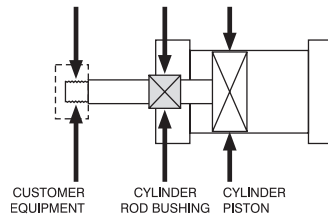


TD Series NFPA Tough Duty Cylinders

Floating Rod Bushing

Self Alignment Feature: Rod Bushing is designed to float .002" to improve bearing surface alignment.

- Reduces cylinder drag and erratic operation
- Reduces cylinder wear
- Provides a minimum of 25% longer life than fixed rod bushing designs



Tough-Duty Design

Same construction as TA Series with these performance features standard:

- **Impact Dampening Piston Seals** – BP Seals are designed to reduce machine vibration and noise. Higher piston velocities can be achieved due to the rapid deceleration feature, increasing productivity. Bumper Seals are rated for tough-duty, yet offer quieter operation than standard cylinder designs (refer to Options: BP Seals for performance considerations).
- **Fixed Cushions** – Head and Cap Cushions are standard. The fixed design utilizes an internal orifice for a predetermined flow rate, eliminating the need for adjustments. The fixed cushion design provides tamper-free operation and guarantees a cushion function at each end of full stroke.

Self-Lubricating Cylinder Design

PTFE coated cast iron bushing, PTFE Wear Band, Hard-Chrome Plated Piston Rod, Hard-Coated Aluminum Tube and PTFE based grease provide permanent lubrication and long cylinder life.

Operating Specifications

Operating Pressure	Operating Temperature
250 PSI Air (17 BAR)	Carboxylated Nitrile: -20°F to 200°F (-29°C to 93°C)
	Fluorocarbon: 0°F to 400°F (-18°C to 204°C)

Performance Options

Refer to Options for Details.

H or C – Adjustable Cushions allow the cylinder to be adjusted to each application, providing the optimum cushion performance and harmonious motion.

Extended Cushion Lengths – Longer cushions increase the capacity of air cushions, eliminating costly hydraulic shock absorbers in some cases. Choose from three different cushion lengths for maximum performance.

MPR – Magnetic Piston (for position sensing switches).

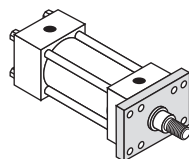
BSP or SAE Ports – Special ports are available and do not increase delivery time.

Any English or Metric Piston Rod Thread – Non-standard rod threads are available and do not increase delivery time.

TMS Steel Tube – Hydraulic grade chrome plated ID and honed steel tubing, black epoxy paint finish OD.

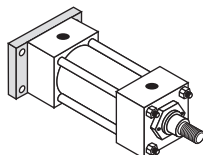
NFPA Mounts

MF1



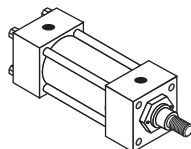
1.50"-6.00"
Bores

MF2



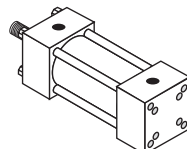
1.50"-6.00"
Bores

ME3



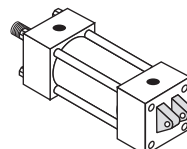
8.00"-8.00"
Bores

ME4



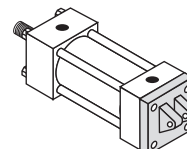
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Bores

MP1



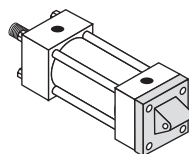
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Bores

MP2



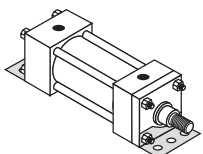
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Bores

MP4



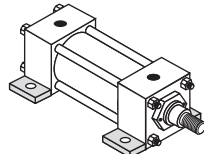
1.50"-6.00"
Bores

MS1



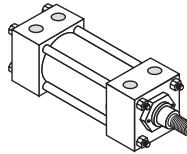
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Bores

MS2



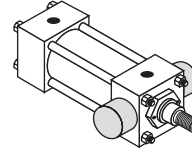
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Bores

MS4



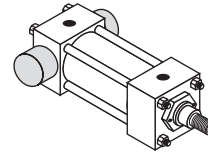
1.50"-8.00"
Bores

MT1



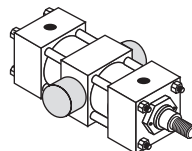
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Bores

MT2



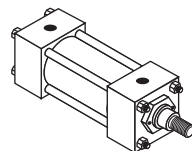
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Bores

MT4



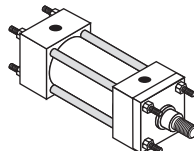
1.50"-8.00"
Bores

MX0



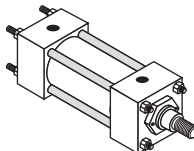
1.50"-8.00"
Bores

MX1



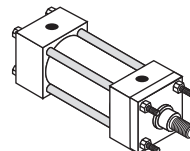
1.50"-8.00"
Bores

MX2



1.50"-8.00"
Bores

MX3



1.50"-8.00"
Bores

TD - MF1 - 2.5 x 10 - MPR

Series
TD 250 PSI Air

Stroke
0" to 120" Made-To-Order

NFPA Mounts
MF1 Front Flange (1.50" - 6.00" Bore)
MF2 Rear Flange (1.50" - 6.00" Bore)
ME3 Front Mounting Holes (8.00" - 12.00" Bore)
ME4 Rear Mounting Holes (8.00" - 12.00" Bore)
MP1 Rear Pivot Clevis (1.50" - 12.00" Bore)
MP2 Rear Pivot Clevis (1.50" - 6.00" Bore)
MP4 Rear Pivot Eye (1.50" - 6.00" Bore)
MS1 Front & Rear End Angle (1.50" - 8.00" Bore)
MS2 Side Lug (1.50" - 8.00" Bore)
MS4 Bottom Tapped Holes (1.50" - 12.00" Bore)
MT1 Front Trunnion (1.50" - 8.00" Bore)
MT2 Rear Trunnion (1.50" - 8.00" Bore)
MT4 Intermediate Trunnion (1.50" - 8.00" Bore)
MX0 No Mount (1.50" - 12.00" Bore)
MX1 Extended Tie Rods - Head & Cap (1.50" - 12.00" Bore)
MX2 Extended Tie Rods (Cap) (1.50" - 12.00" Bore)
MX3 Extended Tie Rods (Head) (1.50" - 12.00" Bore)

Bore
1.5 1.50"
2 2.00"
2.5 2.50"
3.25 3.25"
4 4.00"
5 5.00"
6 6.00"
8 8.00"

Style
(Blank) Single Rod
D Double Rod End

Options
A Extended Piston Rod Thread (Example: A = 2")
AS Adjustable Stroke - Retract (Specify Length, Example: AS = 4")
BSPP British Standard Pipe Taper (Specify Size, Example: BSPP = 1/4)
BSPT British Standard Pipe Parallel (Specify Size, Example: BSPT = 1/4)
C Extended Piston Rod (Example: if C = 0.50", then 1" Rod Extension Is C = 1.50")
KK2 Large Male Rod Thread
KK3 Female Rod Thread
KK3S Studded Piston Rod (KK3 With Stud, Loctite In Place)
KK4 Full Diameter Male Rod Thread
KK5 Blank Rod End (No Threads, "A" = 0")
MA Micro-Adjust (12" Max Stroke) Available On Double Rod End Models
MAB Micro-Adjust W/ Sound Dampening Bumper (12" Max Stroke)
MPR Magnetic Piston for Reed or Solid State Switches (R10, R10P, RAC, RHT & MSS)
MS Metallic Rod Scraper (Brass Construction)
NR Non-Rotating
OP Optional Port Location (Example: OP=3,7)
OS Oversize Rod Diameter (Specify Size, Example: OS = 1.375")
SAE SAE Ports (Specify Size, Example: SAE#10)
SSA Stainless Steel Piston Rod, Tie Rods, Nuts & Fasteners
SSF Stainless Steel Fasteners
SSN Stainless Steel Tie Rod Nuts
SSR Stainless Steel Piston Rod
SST Stainless Steel Tie Rods
» ST Stop Tube - Specify Stop Tube Length (Inches) Specify Stroke as ES (Effective Stroke) (Example: TA-MS4-2X24ES-ST=3)
TMS Steel Cylinder Tube, Black Urethane Paint Finish
TMSS Stainless Steel Cylinder Tube
VS Fluorocarbon Seals
XX Special Variation (Specify)

Cushions
Non-Adjustable (Fixed) Head & Cap Cushions Are Standard (Leave Blank)
Optional Adjustable Cushions
H Adjustable Head Cushion Position 2 Is Standard Specify For Positions: 1, 3 & 4
LH Adjustable Long Head Cushion Position 2 Is Standard Specify For Positions: 1, 3 & 4
» ELH Adjustable Extra Long Head Cushion Position 2 Is Standard Specify For Positions: 1, 3 & 4
C Adjustable Cap Cushion Position 6 Is Standard Specify For Positions: 5, 7 & 8
LC Adjustable Long Cap Cushion Position 6 Is Standard Specify For Positions: 5, 7 & 8
» ELC Adjustable Extra Long Cap Cushion Position 6 Is Standard Specify For Positions: 5, 7 & 8

Notes:
Ordering example for adjustable cushions in non-standard locations: H3C7
Refer to Options for assistance with cushion length selection.
Cushions can be ordered on same side as ports.
"L" and "EL" cushion options can be ordered as fixed cushions. Example: FCLH, FCELH

Note: Refer to Options for specifications

*Steel tubes do not work with MPR magnetic pistons.
Refer to Balluff end of stroke sensors within Switches.

» Refer to Option Length Adder

About our Part Number System

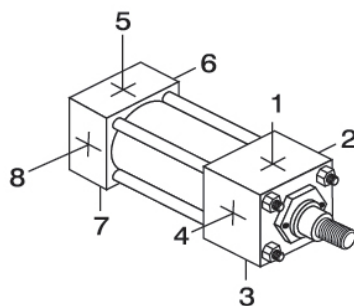
- Simple, easy to understand
- No excessive codes!
- Eliminates mistakes when ordering

Example: A 2.5" bore by 10" stroke NFPA cylinder, Front Flange Mount, (NON-ADJUSTABLE Head & Cap Cushions), and Magnetic Piston for Switches.

Part Number:
TD-MF1-2.5x10-MPR

Standard Port and Cushion Adjustment Positions

- Ports - Positions 1 and 5
- Fixed Cushions - No adjustment needle required
- Cushion Adjustment - Positions 2 and 6
- Specify Non-Standard Positions When Ordering



Option Length Adder (Add to Catalog Basic Overall Length Dimensions)			
Bore	ELC	ELH	ST ¹ (Stop Tube) Example: ST=2
1.50	1.000	1.000	2
2.00	1.000	1.000	2
2.50	1.000	1.000	2
3.25	1.250	1.250	2
4.00	1.250	1.250	2
5.00	1.250	1.250	2
6.00	1.500	1.500	2
8.00	1.500	1.500	2

¹ The desired ST length adds directly to the overall cylinder length.