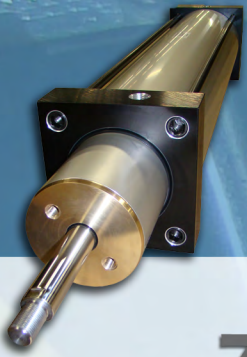


# TC Series NFPA 2-STAGE TELESCOPING Aluminum Cylinders 1.50" to 2.50" Effective Bore



**.750" Effective Bore      Page 104**

**1.500" Effective Bore      Page 107**

**2.500" Effective Bore      Page 110**



**95% OF OUR CYLINDERS SHIP IN 2-3 DAYS!  
ONE DAY RUSH SERVICE AVAILABLE ON ALL CATALOGED CYLINDER MODELS!**

# SERIES 'TC' 2-STAGE TELESCOPING CYLINDER

## CONSTRUCTION



### Features

- 3 Bore Sizes: 0.75", 1.50" and 2.50" effective bores
- Strokes up to 60"
- 2-Stage Telescoping
- Space Saving Design
- 100% Double Action
- Heavy-Duty Construction
- Rated for Non-Lube Service
- Standard NFPA Mounting
- Internal Bumpers at Each Stage

### SPACE SAVING DESIGN STROKE EXAMPLES FOR 1.50" BORE NOTE: CYLINDERS ARE MADE TO ANY STROKE

Cylinder Stroke	Standard NFPA Cylinder	Telescoping Cylinder	Space Savings
12"	16.625"	10.750"	35.34%
18"	22.625"	13.750"	39.23%
24"	28.625"	16.750"	41.48%
30"	34.625"	19.750"	42.96%
36"	40.625"	22.750"	44.00%
42"	46.625"	25.750"	44.77%
48"	52.625"	28.750"	45.37%
54"	58.625"	31.750"	45.84%
60"	64.625"	34.750"	46.23%

# SERIES 'TC': HOW TO ORDER

TC - MS4 - 1.50 x 10 x 2S - KK2 - SSA

SERIES	BORE	STROKE	STAGES	OPTIONS																														
TC   125 PSI AIR	0.75" 1.50" 2.50"	0" to 60" MADE TO ORDER	2S   TWO STAGE	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">OPTIONS</th> </tr> </thead> <tbody> <tr><td>A=</td><td>EXTENDED PISTON ROD THREAD (EXAMPLE: A=2)</td></tr> <tr><td>C=</td><td>EXTENDED PISTON ROD (EXAMPLE C=3)</td></tr> <tr><td>KK2</td><td>LARGE MALE ROD THREAD</td></tr> <tr><td>KK3</td><td>FEMALE ROD THREAD</td></tr> <tr><td>KK3S</td><td>STUDDED PISTON ROD (KK3 WITH STUD, LOCTITE IN PLACE)</td></tr> <tr><td>KK4</td><td>FULL DIAMETER MALE ROD THREAD</td></tr> <tr><td>MPR</td><td>MAGNETIC PISTON FOR REED OR SOLID STATE SWITCHES TRD MODELS R10, RAC, AND MSS. NOTE: MAGNET IS ONLY ON 1ST STAGE AND WILL ONLY DETECT THE POSITION OF ONE STAGE.</td></tr> <tr><td>OS</td><td>OS = 1" PISTON ROD (AVAILABLE ON 2.50" BORE ONLY)</td></tr> <tr><td>OP</td><td>OPTIONAL PORT LOCATION (EXAMPLE: OP=3 AND 7)</td></tr> <tr><td>SSA</td><td>STAINLESS STEEL PISTON ROD, TIE RODS &amp; NUTS, AND FASTENERS</td></tr> <tr><td>SSF</td><td>STAINLESS STEEL FASTENERS</td></tr> <tr><td>SSR</td><td>STAINLESS STEEL PISTON ROD</td></tr> <tr><td>SST</td><td>STAINLESS STEEL TIE RODS &amp; NUTS</td></tr> <tr><td>XX</td><td>SPECIAL VARIATION (SPECIFY: XX=)</td></tr> </tbody> </table>	OPTIONS		A=	EXTENDED PISTON ROD THREAD (EXAMPLE: A=2)	C=	EXTENDED PISTON ROD (EXAMPLE C=3)	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	MPR	MAGNETIC PISTON FOR REED OR SOLID STATE SWITCHES TRD MODELS R10, RAC, AND MSS. NOTE: MAGNET IS ONLY ON 1ST STAGE AND WILL ONLY DETECT THE POSITION OF ONE STAGE.	OS	OS = 1" PISTON ROD (AVAILABLE ON 2.50" BORE ONLY)	OP	OPTIONAL PORT LOCATION (EXAMPLE: OP=3 AND 7)	SSA	STAINLESS STEEL PISTON ROD, TIE RODS & NUTS, AND FASTENERS	SSF	STAINLESS STEEL FASTENERS	SSR	STAINLESS STEEL PISTON ROD	SST	STAINLESS STEEL TIE RODS & NUTS	XX	SPECIAL VARIATION (SPECIFY: XX=)
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NFFA MOUNTS	
MF1	FRONT FLANGE
MF2	REAR FLANGE
MP1	REAR PIVOT CLEVIS
MP2	REAR PIVOT CLEVIS
MP4	REAR PIVOT EYE
MS1	FRONT & REAR ANGLES
MS4	BOTTOM TAPPED HOLES
MT2	REAR TRUNNION
Basebar	SIDE LUG MOUNT (Non-NFFA)
MX0	NO MOUNT

## Design Tips:

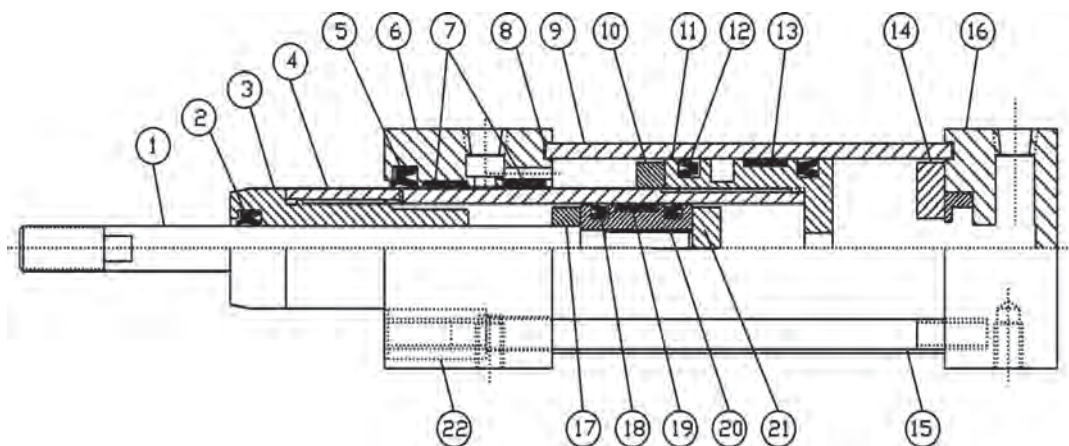
- Cylinders are designed to support the unit's weight only, and not intended for "side-load" applications. All loads should be guided and supported.
- For proper speed control, use "meter-in" type flow control devices.
- In high cycle speed applications, external shock absorbers should be used at end of strokes.

<b>OPERATING PRESSURE</b>	125 PSI AIR
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<b>OPERATING TEMPERATURE</b>	-20°F to 200°F (-25°C to 90°C)
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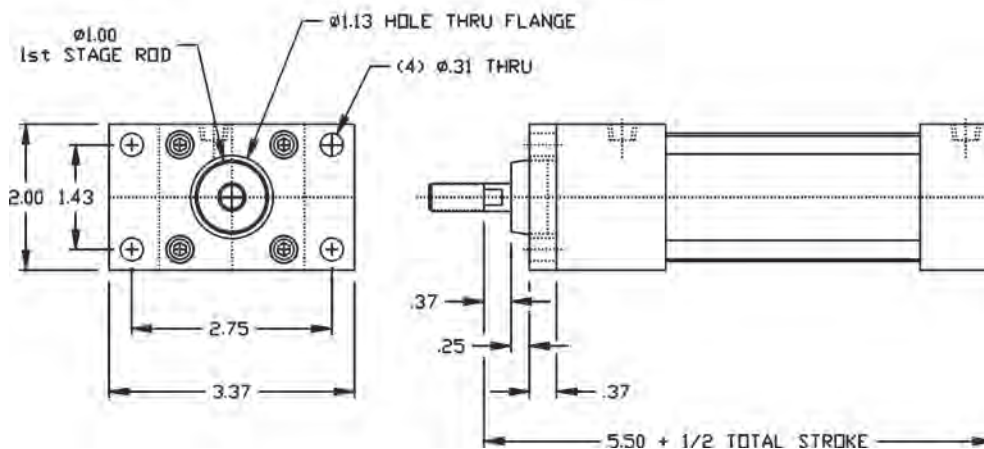


# SERIES 'TC' 0.75" BORE: CONSTRUCTION



- ① 0.625" ROD PISTON
- ② ROD SEAL
- ③ ROD BUSHING
- ④ 0.750" I.D. TUBE
- ⑤ ROD SEAL
- ⑥ ALUMINUM HEAD
- ⑦ PTFE WEAR BANDS (2)
- ⑧ 0.750" TUBE SEALS (2)
- ⑨ 1.500" TUBE
- ⑩ 1.500" HEAD BUMPER
- ⑪ 1.500" PISTON
- ⑫ 1.500" PISTON SEAL (2)
- ⑬ PTFE WEAR BAND
- ⑭ 1.500" CAP BUMPER
- ⑮ TIE ROD (4)
- ⑯ ALUMINUM CAP
- ⑰ 0.750" HEAD BUMPER
- ⑱ 0.750" PISTON SEAL (2)
- ⑲ PTFE WEAR BAND
- ⑳ 0.750" PISTON
- ㉑ 0.750" CAP BUMPER
- ㉒ SLEEVE NUT (4)

## MF1 MOUNT

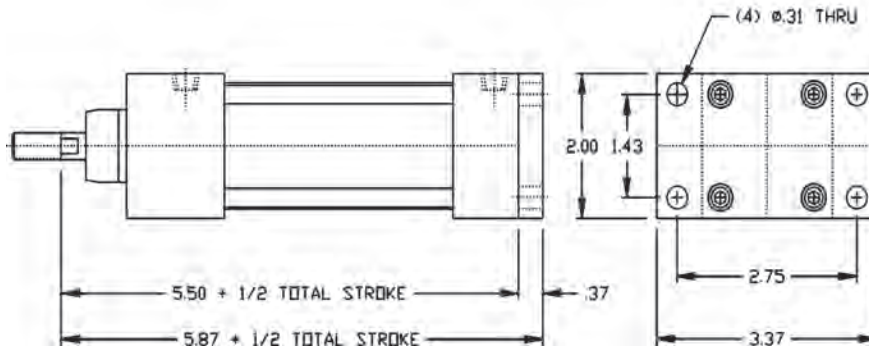


CYLINDER FORCE COMPARISON CHART (at 100 PSI)

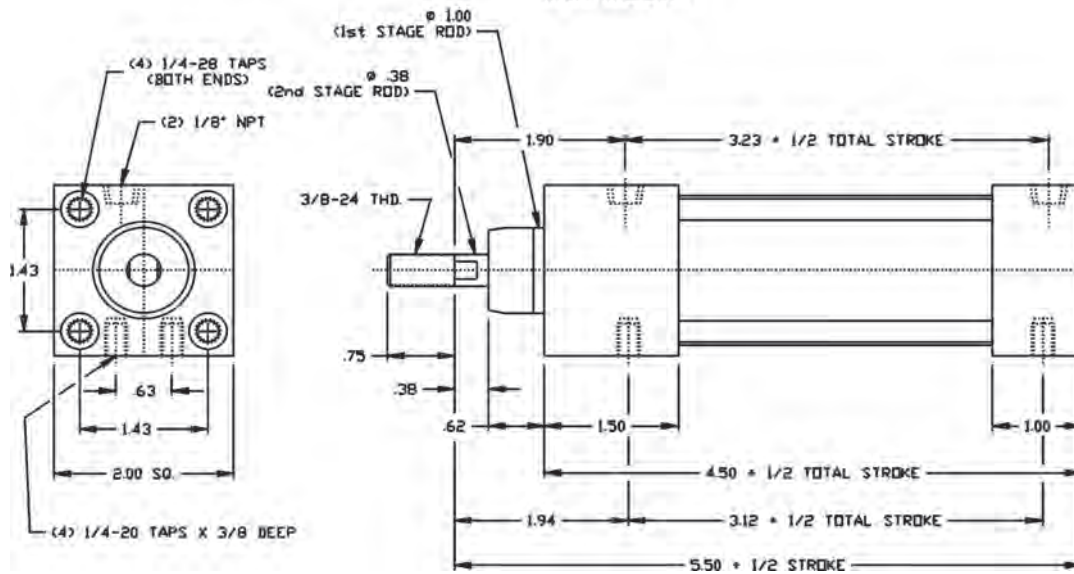
Type	Stroke	1st Stage	2nd Stage
2-Stage Telescoping	Push	176 lbs	44 lbs
	Pull	98 lbs	33 lbs
Standard 0.75" Bore	Push	44 lbs	N/A
	Pull	33 lbs	N/A

# SERIES 'TC' DIMENSIONS: BASE MOUNTS (STROKES 0" to 36")

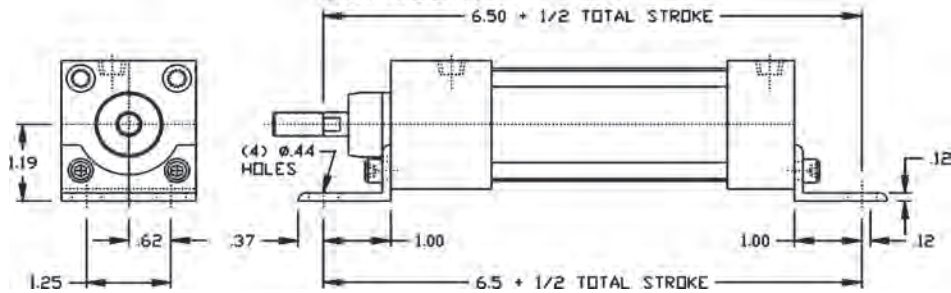
## MF2 MOUNT



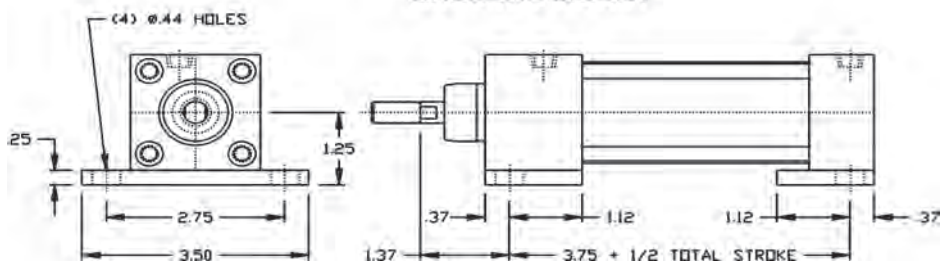
## MS4 MOUNT



## MS1 MOUNT



## BASEBAR MOUNT



# SERIES 'TC' DIMENSIONS: PIVOT MOUNTS (STROKES 0" to 24")

TC- How to Order

TC - .75" Bore  
Dimensions

TC - 1.50" Bore  
Dimensions

TC - 2.50" Bore  
Dimensions

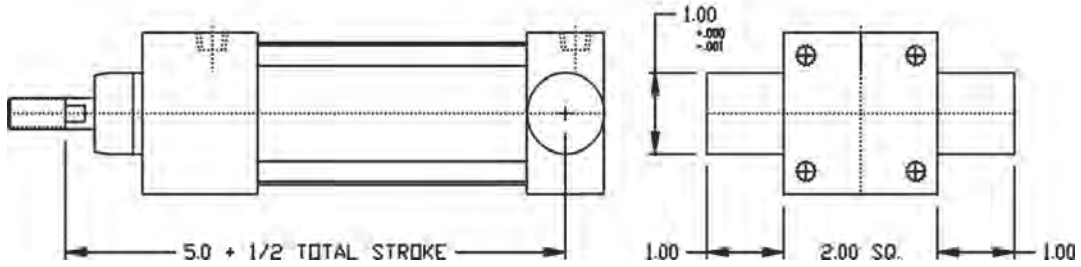
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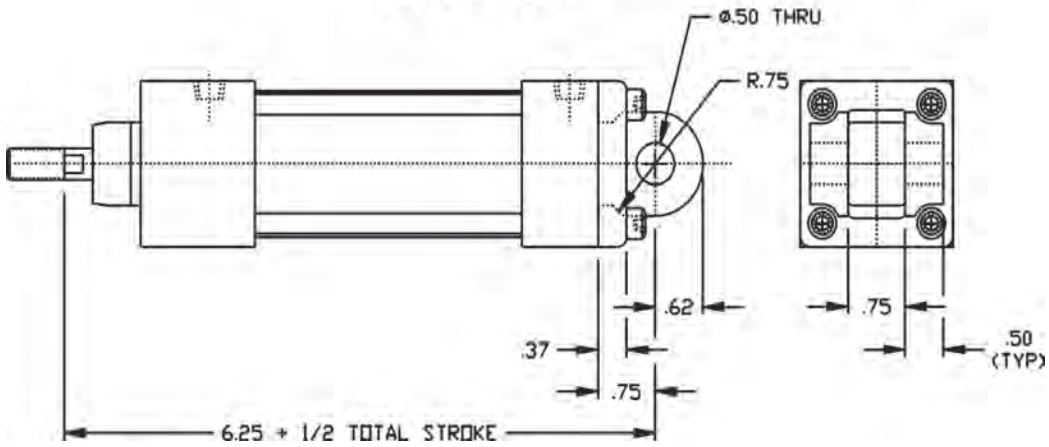
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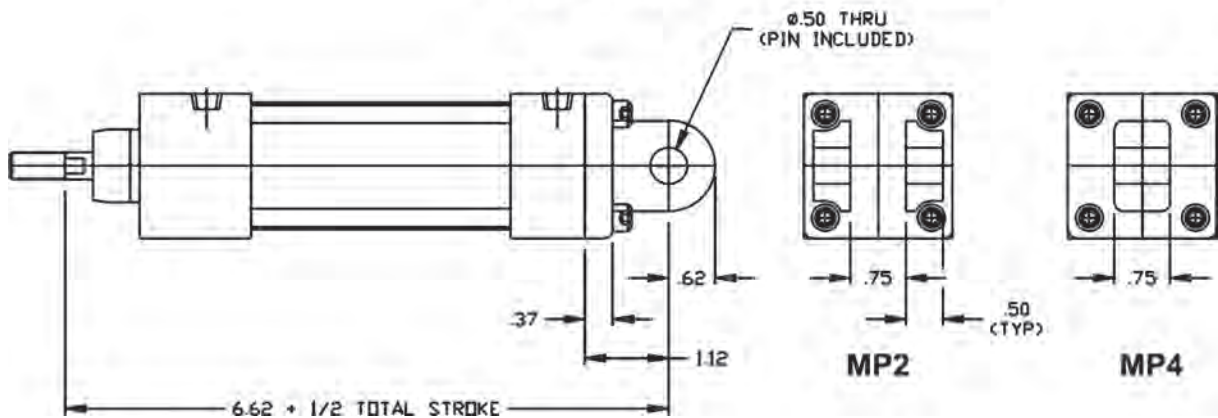
## MT2 MOUNT



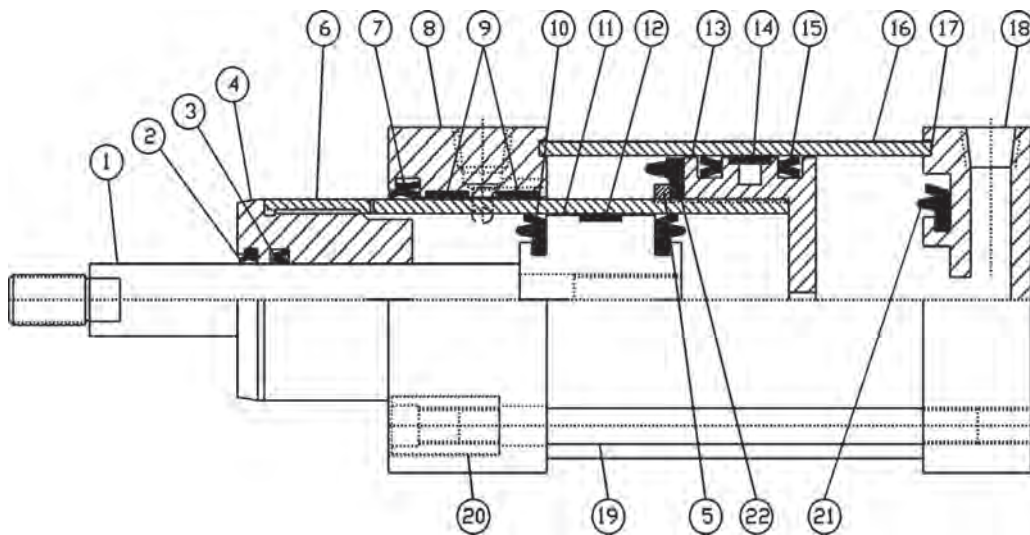
## MP1 MOUNT



## MP2 & MP4 (CAST BOLT ON) MOUNT

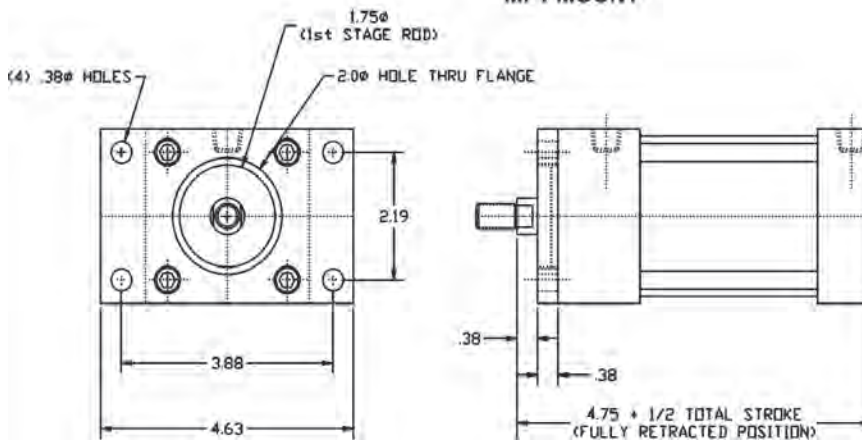


# SERIES 'TC' 1.50" BORE: CONSTRUCTION



- ① 0.625" PISTON ROD
- ② ROD WIPER
- ③ ROD SEAL
- ④ ROD BUSHING
- ⑤ BUMPER RETAINER
- ⑥ 1.750" O.D. TUBE
- ⑦ ROD WIPER/SEAL
- ⑧ ALUMINUM HEAD
- ⑨ PTFE WEAR BAND (2)
- ⑩ 1.500" BUMPER PISTON SEALS (2)
- ⑪ 1.500" O.D. PISTON
- ⑫ PTFE WEAR BAND
- ⑬ 2.500" PISTON
- ⑭ PTFE WEAR BAND
- ⑮ 2.500" PISTON SEAL (2)
- ⑯ 2 .500" TUBE
- ⑰ TUBE SEALS (2)
- ⑱ ALUMINUM CAP
- ⑲ TIE RODS (4)
- ⑳ SLEEVE NUT (4)
- ㉑ CAP BUMPER
- ㉒ HEAD BUMPER

## MF1 MOUNT



CYLINDER FORCE COMPARISON CHART (at 100 PSI)			
Type	Stroke	1st Stage	2nd Stage
2-Stage Telescoping	Push	490 lbs	176 lbs
	Pull	250 lbs	146 lbs
Standard 1.50" Bore	Push	176 lbs	N/A
	Pull	146 lbs	N/A

TC- How to Order  
 TC - .75" Bore Dimensions  
 TC - 1.50" Bore Dimensions  
 TC - 2.50" Bore Dimensions  
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 Accessories Page 206  
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 Technical Data Page 256



# SERIES 'TC' DIMENSIONS: PIVOT MOUNTS (STROKES 0" to 36")

TC- How to Order

TC - .75" Bore Dimensions

TC - 1.50" Bore Dimensions

TC - 2.50" Bore Dimensions

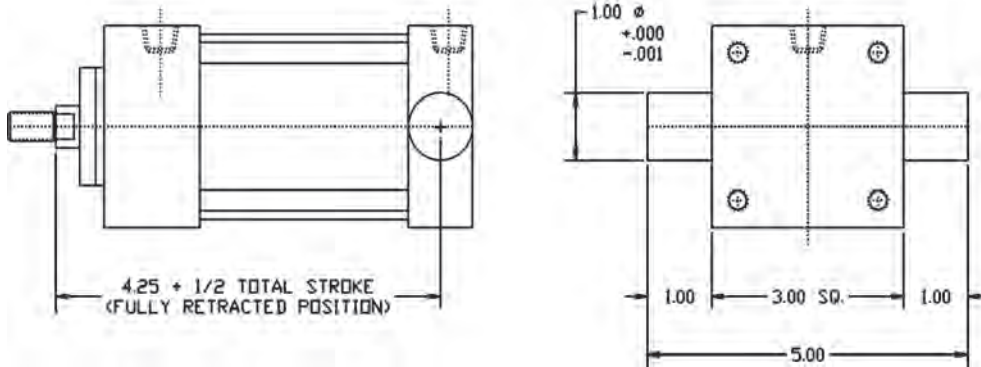
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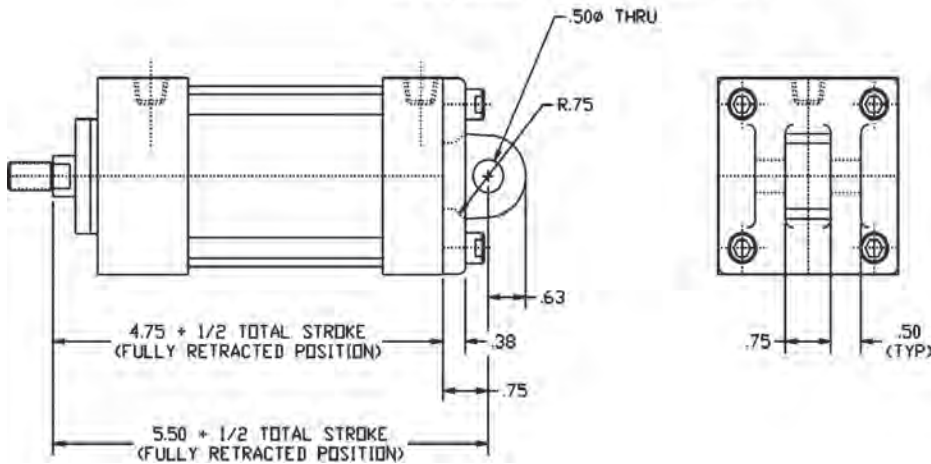
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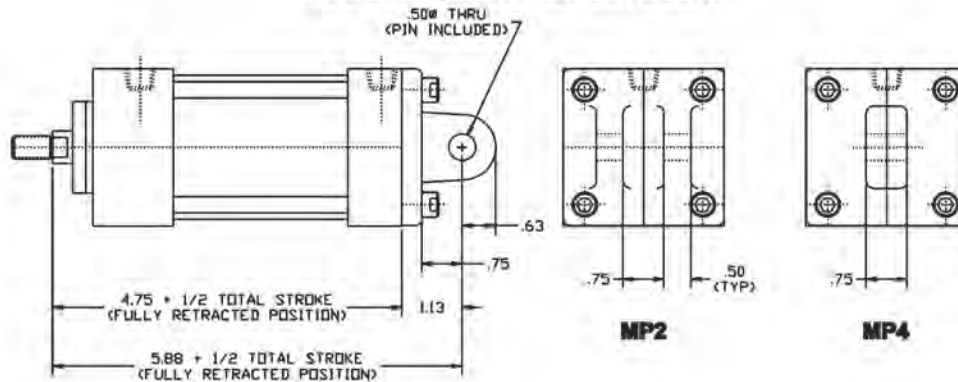
## MT2 MOUNT



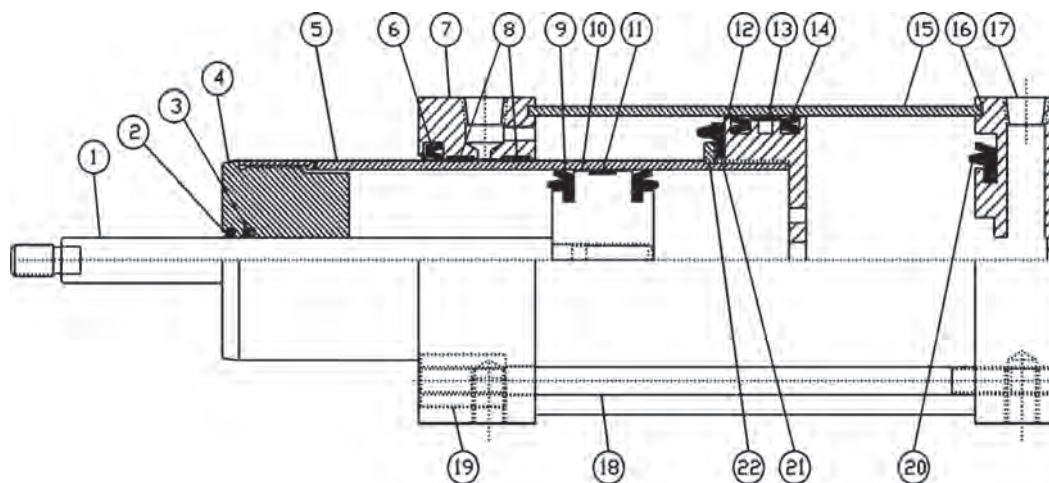
## MP1 ( CAST BOLT ON ) MOUNT



## MP2 & MP4 ( CAST BOLT ON ) MOUNT

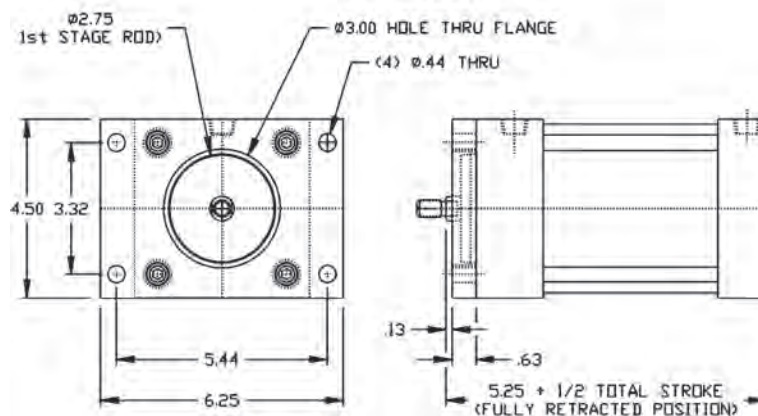


# SERIES 'TC' 2.50" BORE: CONSTRUCTION



- |                                  |                              |
|----------------------------------|------------------------------|
| ① 0.625" PISTON ROD              | ⑫ 4.00" PISTON               |
| ② ROD WIPER                      | ⑬ PTFE WEAR BAND             |
| ③ ROD SEAL                       | ⑭ 4.00" PISTON SEAL (2)      |
| ④ ROD BUSHING                    | ⑮ 4.00" TUBE                 |
| ⑤ 2.500" O.D. TUBE               | ⑯ 4.00" TUBE SEALS (2)       |
| ⑥ ROD WIPER/SEAL                 | ⑰ ALUMINUM CAP               |
| ⑦ ALUMINUM HEAD                  | ⑱ TIE RODS (4)               |
| ⑧ PTFE WEAR BAND (2)             | ⑲ SLEEVE NUT (4)             |
| ⑨ 2.500" BUMPER PISTON SEALS (2) | ⑳ 3.250" BUMPER PISTON SEALS |
| ⑩ 2.500" PISTON                  | ㉑ BUMPER PISTON SEAL         |
| ⑪ PTFE WEAR BAND                 | ㉒ BUMPER RETAINER            |

## MF1 MOUNT



### Other Models in Development

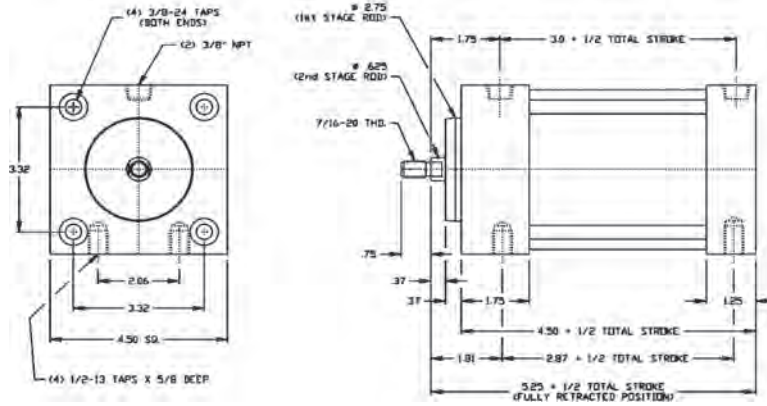
Stainless Steel for Food Applications  
 (Note: Rod Orifices are replaced with NPT Port for "sealed" System - Contact TRD with your application)

### CYLINDER FORCE COMPARISON CHART (at 100 PSI)

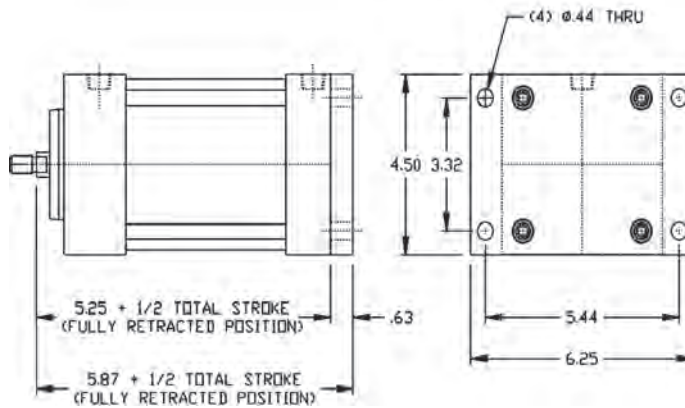
Type	Stroke	1st Stage	2nd Stage
2-Stage Telescoping	Push	1256 lbs	490 lbs
	Pull (0.625" rod)	662 lbs	460 lbs
	Pull (1.000" rod)	662 lbs	412 lbs
Standard 2.50" Bore	Push	490 lbs	N/A
	Pull	460 lbs	N/A

# SERIES 'TC' DIMENSIONS: BASE MOUNTS (STROKES 0" to 36")

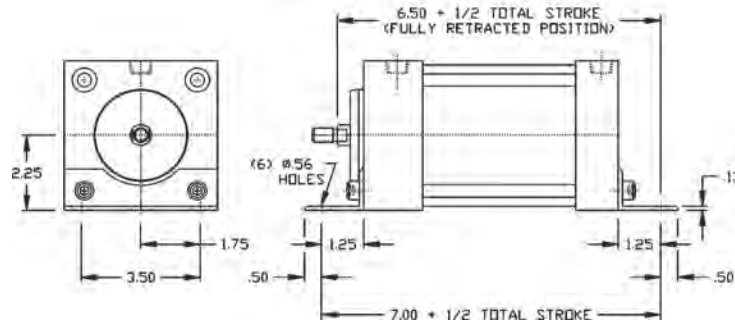
## MS4 MOUNT



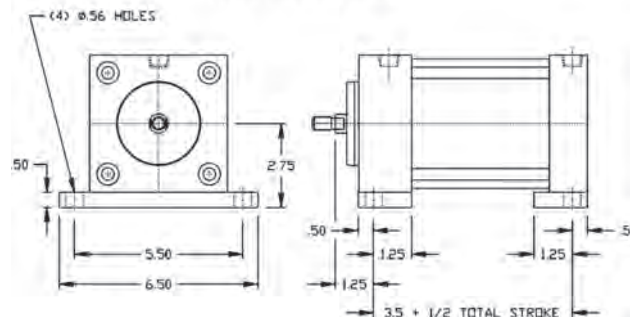
## MF2 MOUNT



## MS1 MOUNT



## BASEBAR MOUNT



# SERIES 'TC' DIMENSIONS: PIVOT MOUNTS (STROKES 0" to 36")

TC- How to Order

TC - .75" Bore Dimensions

TC - 1.50" Bore Dimensions

TC - 2.50" Bore Dimensions

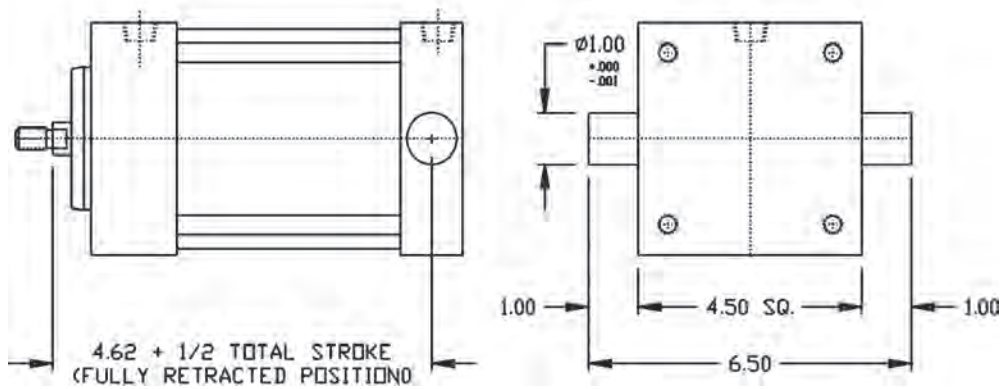
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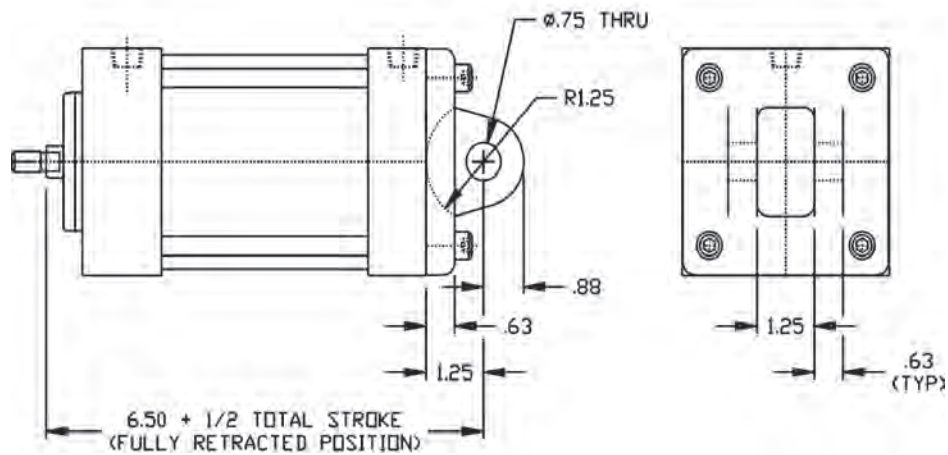
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## MT2 MOUNT



## MP1 MOUNT



## MP2 & MP4 (CAST BOLT ON) MOUNT

