

TA Series NFPA Aluminum Cylinders 1.50" to 12.00" Bore

Single Rod End

Page 8

Double Rod End

Page 16

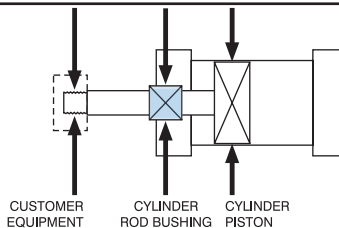
95% OF OUR CYLINDERS SHIP IN 2-3 DAYS!
ONE DAY RUSH SERVICE AVAILABLE ON ALL CATALOGED CYLINDER MODELS!

SERIES 'TA' (NFPA) CYLINDER

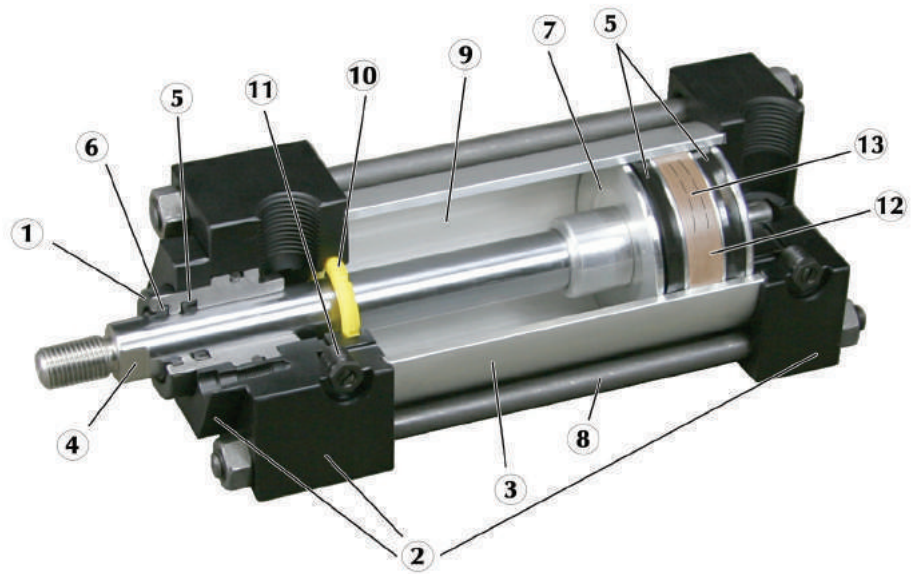
Floating Rod Bushing

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



HEAVY-DUTY DESIGN FOR RELIABLE, CONSISTENT OPERATION

- FLOATING ROD BUSHING** – Precision machined from 150,000 PSI rated graphite-filled cast iron and PTFE coated to reduce friction and extend cycle life. Bushing design traps lubrication in effective bearing area.
- HEAD, CAP & RETAINER** – Precision machined from high strength 6061-T6 aluminum alloy. Black anodized for corrosion resistance.
- CYLINDER TUBE** – Precision machined from 6063-T6832 high tensile aluminum alloy and hard coat to 60 Rc for wear resistance and extended cycle life.
- PISTON ROD** – Precision machined from high yield, polished and hard chrome plated steel.
- PISTON & ROD SEALS** – Heavy lip design Carboxylated Nitrile construction. Seals are pressure activated and wear-compensating for long life (self-lubricating material).
- ROD WIPER** – Abrasion resistant urethane provides aggressive wiping action in all environments. External lip design prevents debris from entering cylinder.
- PISTON** – Precision machined from 6061-T651 alloy aluminum, provides an excellent bearing surface for extended cylinder life.
- TIE RODS** – Pre-stressed high carbon steel tie rod construction eliminates axial loading of cylinder tube and maintains compression on tube and end seals.
- PERMANENT LUBRICATION** – Permanently lubricated with Magnalube-G PTFE based grease on all internal components. This is a non-migratory type high performance grease providing outstanding service life. No additional lubrication is required.
- CUSHIONS** – Floating cushion seal designed for maximum cushion performance, quick return stroke break-away and extended life (Options H & C).
- CUSHION ADJUSTMENT NEEDLE** – Adjustable steel needle design has fine thread metering and is positively captured to prevent needle ejection during adjustment.
- PISTON WEAR BAND** - 90% Virgin PTFE and 10% Polyphenylene Sulfide-filled wear band; extremely low wear rate.
- PISTON MAGNET** – For TRD magnetically operated reed and solid state switches (Option MPR).

OPERATING PRESSURE

250 PSI AIR (17 BAR)

OPERATING TEMPERATURE

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:

- **ST** – Stop tubes are used to reduce rod bearing and piston stress (refer to pages 201-202 for cylinder design guidance).
- **MA** – Micro-Adjust provides a precision adjustment on the cylinder extend stroke, providing quick and accurate cylinder positioning to reduce set-up time.
- **SSA** – Stainless steel piston rod, tie rods, nuts and fasteners provide corrosion resistance in outdoor applications and wet environments.
- **LF** – Low friction seals reduce breakaway and running friction. Effective at all operating pressures.

HOW TO ORDER: SERIES 'TA' (STANDARD CYLINDER)

TA - MF1 - 2.50 x 10 - HC - MPR

SERIES

TA	250 PSI AIR
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BORE

1.50	2.00
2.50	3.25
4.00	5.00
6.00	8.00
10.00	12.00

STROKE

0" TO 120" MADE-TO-ORDER

CUSHIONS

H	HEAD CUSHION POSITION 2 IS STANDARD SPECIFY FOR POSITIONS: 1, 3 & 4
LH	LONG HEAD CUSHION POSITION 2 IS STANDARD SPECIFY FOR POSITIONS: 1, 3 & 4
ELH	EXTRA LONG HEAD CUSHION POSITION 2 IS STANDARD SPECIFY FOR POSITIONS: 1, 3 & 4
C	CAP CUSHION POSITION 6 IS STANDARD SPECIFY FOR POSITIONS: 5, 7 & 8
LC	LONG CAP CUSHION POSITION 6 IS STANDARD SPECIFY FOR POSITIONS: 5, 7 & 8
ELC	EXTRA LONG CAP CUSHION POSITION 6 IS STANDARD SPECIFY FOR POSITIONS: 5, 7 & 8

OPTIONS

ADD LENGTH TO CYLINDER - SEE "OPTION LENGTH ADDER" CHART BELOW.

A =	EXTENDED PISTON ROD THREAD (EXAMPLE: A = 2")
AS	ADJUSTABLE STROKE - RETRACT (SPECIFY LENGTH, EXAMPLE: AS = 4")
A/O	AIR / OIL PISTON
X B	.250" URETHANE BUMPER BOTH ENDS
X BC	.250" URETHANE BUMPER CAP ONLY
X BH	.250" URETHANE BUMPER HEAD ONLY
BP	BUMPER PISTON SEALS (1.50" - 8" BORE)
BSP	BSP PORTS (SPECIFY SIZE, EXAMPLE: BSP = .250")
C =	EXTENDED PISTON ROD (EXAMPLE: IF C = 0.50", THEN 1" ROD EXTENSION IS C = 1.50")
EN	ELECTROLESS NICKEL PLATED
KK2	LARGE MALE ROD THREAD
KK3	FEMALE ROD THREAD
KK3S	STUDED PISTON ROD (KK3 WITH STUD, LOCTITE IN PLACE)
KK4	FULL DIAMETER MALE ROD THREAD
KK5	BLANK ROD END (NO THREADS, "A" = 0")
LF	LOW FRICTION SEALS
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 - MODELS: R10, R10P, RAC, RHT & MSS
MS	METALLIC ROD SCRAPER (BRASS CONSTRUCTION)
NR	NON-ROTATING
OP	OPTIONAL PORT LOCATION (EXAMPLE: PORTS @ 3 & 7)
OS	OVERSIZE ROD DIAMETER (SPECIFY SIZE, EXAMPLE: OS = 1.375")
SAE	SAE PORTS (SPECIFY SIZE, EXAMPLE: SAE #10)
X SE	SPRING EXTEND (1.50, 2.00, 2.50 BORE)
X SR	SPRING RETURN (1.50, 2.00, 2.50 BORE)
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
X ST	STOP TUBE - SPECIFY STOP TUBE LENGTH (IN INCHES) SPECIFY STROKE AS ES (EFFECTIVE STROKE) (EXAMPLE: TA MS4 2 X 24ES-ST=3)
TMS	STEEL CYLINDER TUBE, BLACK EPOXY PAINT FINISH
TH	400 PSI HYDRAULIC NON-SHOCK
VS	FLUOROCARBON SEALS
XX	SPECIAL VARIATION (SPECIFY)

STYLE

SINGLE ROD (LEAVE BLANK)
D = DOUBLE ROD END

About our Part Number System

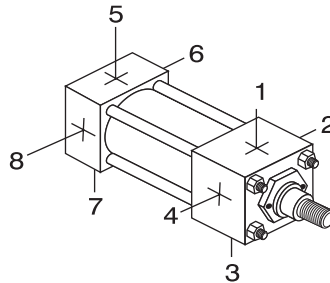
- Simple, easy to understand
- No excessive codes!
- Eliminates mistakes when ordering

Example: A 2.50" Bore by 10" Stroke NFPA cylinder, Front Flange Mount, Head & Cap Cushions, Magnetic Piston for Switches.

Part Number: TA-MF1-2.50 x 10-HC-MPR

STANDARD PORT AND CUSHION ADJUSTMENT POSITIONS

- Ports - Positions 1 and 5
- Cushion Adjustment - Positions 2 and 6
- Specify Non-Standard Positions When Ordering



OPTION LENGTH ADDER								
(ADD TO CATALOG BASIC OVERALL LENGTH DIMENSIONS)								
BORE	OPTION							
	B	BC	BH	ELC	ELH	SE	SR	ST* (STOP TUBE) EXAMPLE: ST=2
1.50	0.500	0.250	0.250	1.000	1.000	REFER TO PAGE 184 FOR LENGTH ADDERS AND AVAILABLE BORE SIZES AND STROKES		2
2.00	0.500	0.250	0.250	1.000	1.000			2
2.50	0.500	0.250	0.250	1.000	1.000			2
3.25	0.500	0.250	0.250	1.250	1.250			2
4.00	0.500	0.250	0.250	1.250	1.250			2
5.00	0.500	0.250	0.250	1.250	1.250			2
6.00	0.500	0.250	0.250	1.500	1.500			2
8.00	0.500	0.250	0.250	1.500	1.500			2
10.00	0.500	0.250	0.250	2.000	2.000			2
12.00	0.500	0.250	0.250	2.000	2.000			2

*The desired Stop Tube length adds directly to the overall cylinder length.

NFPA MOUNTS

 1.50"-6.00" Bores	 1.50"-6.00" Bores	 8.00"-12.00" Bores	 8.00"-12.00" Bores	 1.50"-12.00" Bores	 1.50"-6.00" Bores
 1.50"-6.00" Bores	 1.50"-8.00" Bores	 1.50"-8.00" Bores	 1.50"-12.00" Bores	 1.50"-8.00" Bores	 1.50"-8.00" Bores
 1.50"-8.00" Bores	 1.50"-12.00" Bores	 1.50"-12.00" Bores	 1.50"-12.00" Bores	 1.50"-12.00" Bores	

SERIES 'TA' DIMENSIONS: BASIC CYLINDER (NO MOUNT)

EASY FLIP OUT PAGE FOR REFERENCE

About Rod End Styles

Style 1 Male Rod End is STANDARD

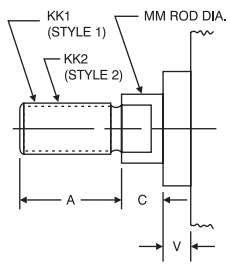
Other NFPA styles can be specified (see chart).

Need a rod end not listed? NO PROBLEM! Each Piston Rod is made-to-order and does not delay shipment. Coarse UNC threads, Metric threads or just plain rod ends are common. Thread lengths are also made-to-order (Specify: "A"=Length).

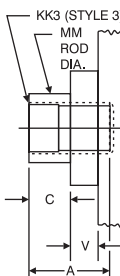
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PISTON ROD END STYLES

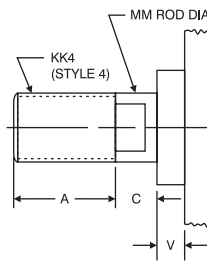
STYLE 1 & 2 KK1 & KK2



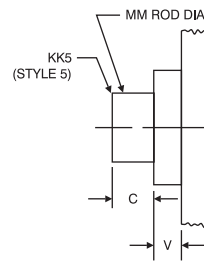
STYLE 3 KK3



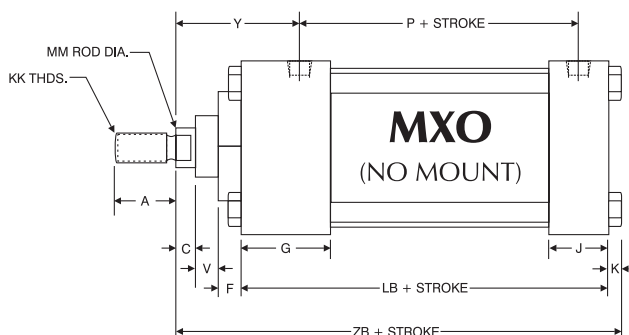
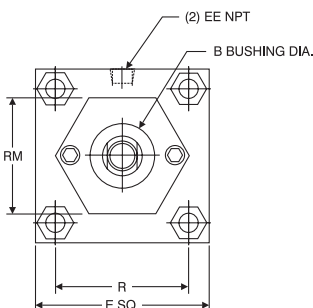
STYLE 4 KK4



STYLE 5 KK5



BORE	MM ROD DIAMETER	STANDARD		OPTIONAL							C	V
		Style 1 - Male		Style 2 - Male		Style 3 - Female		Style 4 - Male		Style 5 - Blank		
		KK1	A	KK2	A	KK3	A	KK4	A	KK5		
1.50,	0.625 Standard	7/16 -20	0.750	1/2 -20	0.750	7/16 -20	0.750	5/8 -18	0.750	No Threads	0.375	0.250
2.00, 2.50	1.000 Oversize	3/4 -16	1.125	7/8 -14	1.125	3/4 -16	1.125	1-14	1.125	No Threads	0.500	0.500
3.25,	1.000 Standard	3/4 -16	1.125	7/8 -14	1.125	3/4 -16	1.125	1-14	1.125	No Threads	0.500	0.250
4.00, 5.00	1.375 Oversize	1-14	1.625	1 1/4 -12	1.625	1-14	1.625	1 3/8 -12	1.625	No Threads	0.625	0.375
6.00 & 8.00	1.375 Standard	1-14	1.625	1 1/4 -12	1.625	1-14	1.625	1 3/8 -12	1.625	No Threads	0.625	0.375
10.00	1.750 Oversize	1 1/4 -12	2.000	1 1/2 -12	2.000	1 1/4 -12	2.000	1 3/4 -12	2.000	No Threads	0.750	0.500
	2.000 Standard	1 1/4 -12	2.250	1 1/2 -12	2.250	1 1/2 -12	2.250	2-12	2.250	No Threads	0.875	0.375
12.00	2.000 Standard	1 1/2 -12	2.250	1 3/4 -12	2.250	1 1/2 -12	2.250	2-12	2.250	No Threads	0.875	0.375
	2.500 Oversize	1 7/8 -12	3.000	2 1/4 -12	3.000	1 7/8 -12	3.000	2 1/2 -12	3.000	No Threads	1.000	0.500



BASIC DIMENSIONS 'MXO' STANDARD & OVERSIZE RODS																			
BORE	ROD DIAMETER	A	B	C	E	EE	F	G	J	K	KK	LB	MM	P	R	RM	V	Y	ZB
1.50	0.625 Standard	0.750	1.125	0.375	2.000	0.375	0.375	1.500	1.000	0.250	7/16 -20	3.625	0.625	2.375	1.438	2.00 SQ.	0.250	1.875	4.875
	1.000 Oversize	1.125	1.500	0.500							3/4 -16		1.000				0.500	2.250	5.250
2.00	0.625 Standard	0.750	1.125	0.375	2.500	0.375	0.375	1.500	1.000	0.313	7/16 -20	3.625	0.625	2.375	1.844	1.75 HEX	0.250	1.875	4.938
	1.000 Oversize	1.125	1.500	0.500							3/4 -16		1.000			0.500	2.250	5.313	
2.50	0.625 Standard	0.750	1.125	0.375	3.000	0.375	0.375	1.500	1.000	0.313	7/16 -20	3.750	0.625	2.500	2.188	1.75 HEX	0.250	1.875	5.063
	1.000 Oversize	1.125	1.500	0.500							3/4 -16		1.000			0.500	2.250	5.438	
3.25	1.000 Standard	1.125	1.500	0.500	3.750	0.500	0.625	1.750	1.250	0.375	3/4 -16	4.250	1.000	2.750	2.766	2.75 DIA.	0.250	2.375	6.000
	1.375 Oversize	1.625	2.000	0.625							1-14		1.375			0.375	2.625	6.250	
4.00	1.000 Standard	1.125	1.500	0.500	4.500	0.500	0.625	1.750	1.250	0.375	3/4 -16	4.250	1.000	2.750	3.320	2.75 DIA.	0.250	2.375	6.000
	1.375 Oversize	1.625	2.000	0.625							1-14		1.375			0.375	2.625	6.250	
5.00	1.000 Standard	1.125	1.500	0.500	5.500	0.500	0.625	1.750	1.250	0.438	3/4 -16	4.500	1.000	3.000	4.100	2.75 DIA.	0.250	2.375	6.313
	1.375 Oversize	1.625	2.000	0.625							1-14		1.375			0.375	2.625	6.563	
6.00	1.375 Standard	1.625	2.000	0.625	6.500	0.750	0.625	2.000	1.500	0.438	1-14	5.000	1.375	3.250	4.875	3.50 DIA.	0.375	2.750	7.063
	1.750 Oversize	2.000	2.375	0.750							1 1/4 -12		1.750			0.500	3.000	7.313	
8.00	1.375 Standard	1.625	2.000	0.625	8.500	0.750	0.625	2.000	1.500	0.563	1-14	5.125	1.375	3.375	6.438	3.50 DIA.	0.375	2.750	7.313
	1.750 Oversize	2.000	2.375	0.750							1 1/4 -12		1.750			0.500	3.000	7.563	
10.00	1.750 Standard	2.000	2.375	0.750	10.625	1.000	0.625	2.250	2.000	0.688	1 1/4 -12	6.375	1.750	4.313	7.922	3.50 DIA.	0.500	3.063	8.938
	2.000 Oversize	2.250	2.625	0.875			0.750				1 1/2 -12		2.000			0.375	3.188	9.063	
12.00	2.000 Standard	2.250	2.625	0.875	12.750	1.000	0.750	2.250	2.000	0.688	1 1/2 -12	6.875	2.000	4.813	9.400	5.00 DIA.	0.375	3.188	9.563
	2.500 Oversize	3.000	3.125	1.000							1 7/8 -12		2.500			0.500	3.438	9.813	

SERIES 'TA' DIMENSIONS: BASIC CYLINDER (NO MOUNT)

About Rod End Styles

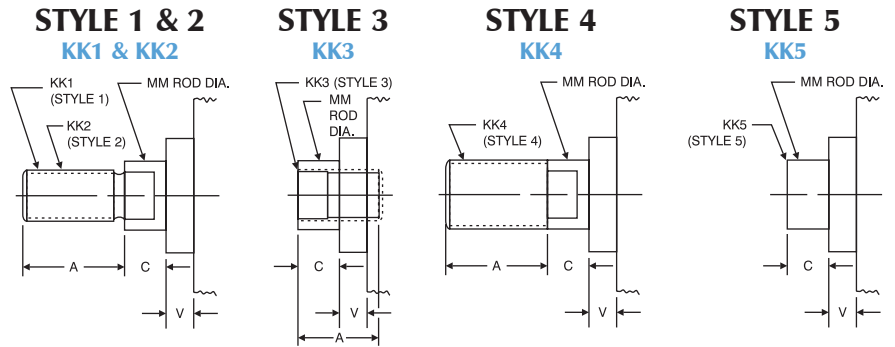
Style 1 Male Rod End is STANDARD

Other NFPA Styles can be specified (see chart).

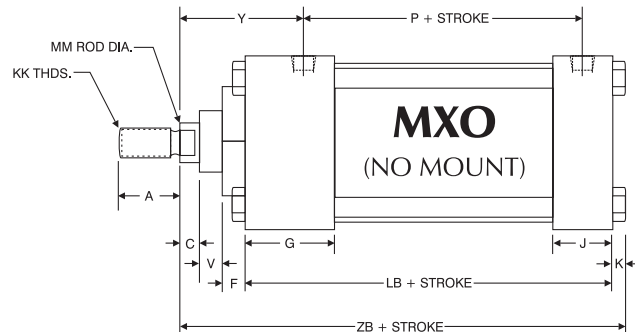
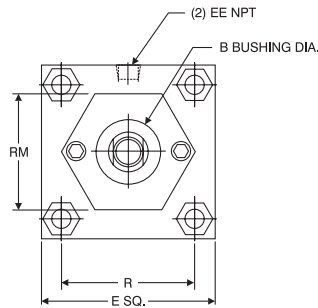
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PISTON ROD END STYLES



BORE	MM ROD DIAMETER	STANDARD		OPTIONAL							C	V
		Style 1 - Male KK1	Style 2 - Male A	Style 3 - Female KK3	Style 4 - Male A	Style 5 - Blank KK5	Style 2 - Male A	Style 3 - Female A	Style 4 - Male A	Style 5 - Blank KK5		
1.50, 2.00, 2.50	0.625 Standard	7/16 -20	0.750	1/2 -20	0.750	7/16 -20	0.750	5/8 -18	0.750	No Threads	0.375	0.250
	1.000 Oversize	3/4 -16	1.125	7/8 -14	1.125	3/4 -16	1.125	1-14	1.125	No Threads	0.500	0.500
3.25, 4.00, 5.00	1.000 Standard	3/4 -16	1.125	7/8 -14	1.125	3/4 -16	1.125	1-14	1.125	No Threads	0.500	0.250
	1.375 Oversize	1-14	1.625	1 1/4 -12	1.625	1-14	1.625	1 3/8 -12	1.625	No Threads	0.625	0.375
6.00 & 8.00	1.375 Standard	1-14	1.625	1 1/4 -12	1.625	1-14	1.625	1 3/8 -12	1.625	No Threads	0.625	0.375
	1.750 Oversize	1 1/4 -12	2.000	1 1/2 -12	2.000	1 1/4 -12	2.000	1 3/4 -12	2.000	No Threads	0.750	0.500
10.00	1.750 Standard	1 1/4 -12	2.000	1 1/2 -12	2.000	1 1/4 -12	2.000	1 3/4 -12	2.000	No Threads	0.750	0.500
	2.000 Oversize	1 1/2 -12	2.250	1 3/4 -12	2.250	1 1/2 -12	2.250	2-12	2.250	No Threads	0.875	0.375
12.00	2.000 Standard	1 1/2 -12	2.250	1 3/4 -12	2.250	1 1/2 -12	2.250	2-12	2.250	No Threads	0.875	0.375
	2.500 Oversize	1 7/8 -12	3.000	2 1/4 -12	3.000	1 7/8 -12	3.000	2 1/2 -12	3.000	No Threads	1.000	0.500



BASIC DIMENSIONS 'MXO' STANDARD & OVERSIZE RODS																			
BORE	ROD DIAMETER	A	B	C	E	EE	F	G	J	K	KK	LB	MM	P	R	RM	V	Y	ZB
1.50	0.625 Standard	0.750	1.125	0.375	2.000	0.375	0.375	1.500	1.000	0.250	7/16 -20	3.625	0.625	2.375	1.438	2.00 SQ.	0.250	1.875	4.875
	1.000 Oversize	1.125	1.500	0.500							3/4 -16		1.000				0.500		
2.00	0.625 Standard	0.750	1.125	0.375	2.500	0.375	0.375	1.500	1.000	0.313	7/16 -20	3.625	0.625	2.375	1.844	1.75 HEX	0.250	1.875	4.938
	1.000 Oversize	1.125	1.500	0.500							3/4 -16		1.000			0.500	2.250		
2.50	0.625 Standard	0.750	1.125	0.375	3.000	0.375	0.375	1.500	1.000	0.313	7/16 -20	3.750	0.625	2.500	2.188	1.75 HEX	0.250	1.875	5.063
	1.000 Oversize	1.125	1.500	0.500							3/4 -16		1.000			0.500	2.250		
3.25	1.000 Standard	1.125	1.500	0.500	3.750	0.500	0.625	1.750	1.250	0.375	3/4 -16	4.250	1.000	2.750	2.766	2.75 DIA.	0.250	2.375	6.000
	1.375 Oversize	1.625	2.000	0.625							1-14		1.375			0.375	2.625		
4.00	1.000 Standard	1.125	1.500	0.500	4.500	0.500	0.625	1.750	1.250	0.375	3/4 -16	4.250	1.000	2.750	3.320	2.75 DIA.	0.250	2.375	6.000
	1.375 Oversize	1.625	2.000	0.625							1-14		1.375			0.375	2.625		
5.00	1.000 Standard	1.125	1.500	0.500	5.500	0.500	0.625	1.750	1.250	0.438	3/4 -16	4.500	1.000	3.000	4.100	2.75 DIA.	0.250	2.375	6.313
	1.375 Oversize	1.625	2.000	0.625							1-14		1.375			0.375	2.625		
6.00	1.375 Standard	1.625	2.000	0.625	6.500	0.750	0.625	2.000	1.500	0.438	1-14	5.000	1.375	3.250	4.875	3.50 DIA.	0.375	2.750	7.063
	1.750 Oversize	2.000	2.375	0.750							1 1/4 -12		1.750			0.500	3.000		
8.00	1.375 Standard	1.625	2.000	0.625	8.500	0.750	0.625	2.000	1.500	0.563	1-14	5.125	1.375	3.375	6.438	3.50 DIA.	0.375	2.750	7.313
	1.750 Oversize	2.000	2.375	0.750							1 1/4 -12		1.750			0.500	3.000		
10.00	1.750 Standard	2.000	2.375	0.750	10.625	1.000	0.625	2.250	2.000	0.688	1 1/4 -12	6.375	1.750	4.313	7.922	3.50 DIA.	0.500	3.063	8.938
	2.000 Oversize	2.250	2.625	0.875			1 1/2 -12				2.000		0.375			3.188	9.063		
12.00	2.000 Standard	2.250	2.625	0.875	12.750	1.000	0.750	2.250	2.000	0.688	1 1/2 -12	6.875	2.000	4.813	9.400	5.00 DIA.	0.375	3.188	9.563
	2.500 Oversize	3.000	3.125	1.000							1 7/8 -12		2.500			0.500	3.438		

SERIES 'TA' DIMENSIONS: PIVOT MOUNTS

TA - How to Order

TA - Base Dimensions

TA - Single Rod Mounts

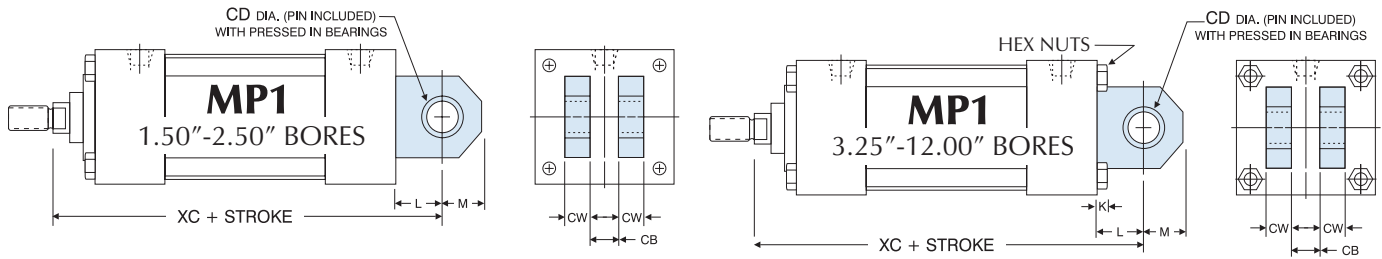
TA - Double Rod Mounts

Options Page 189

Accessories Page 227

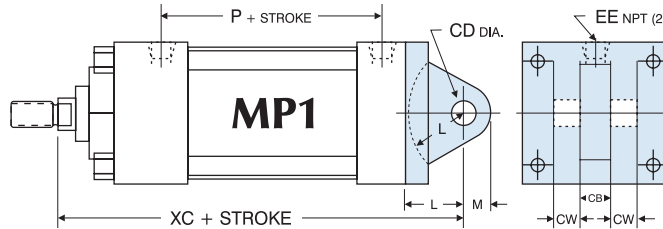
Switches Page 241

Technical Data Page 277



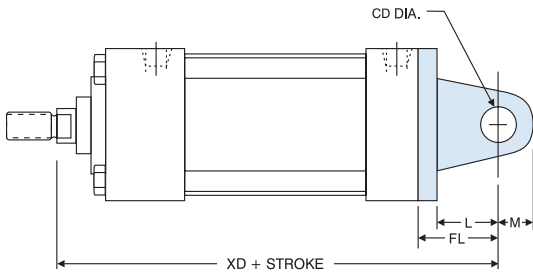
EXTRUDED MP1 MOUNT

(EXTRUDED: 1.50" - 8.00" BORES, WELDMENT: 10.00" & 12.00" BORES)

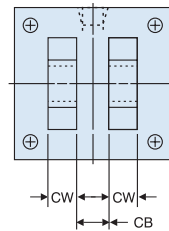


IRON CASTING MP1 MOUNT

(OPTIONAL)**

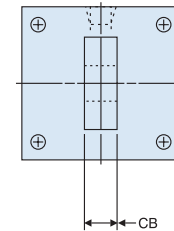


MP2/MP4



MP2 MOUNT

IRON CASTING:
1.50"-6.00" BORES



MP4 MOUNT

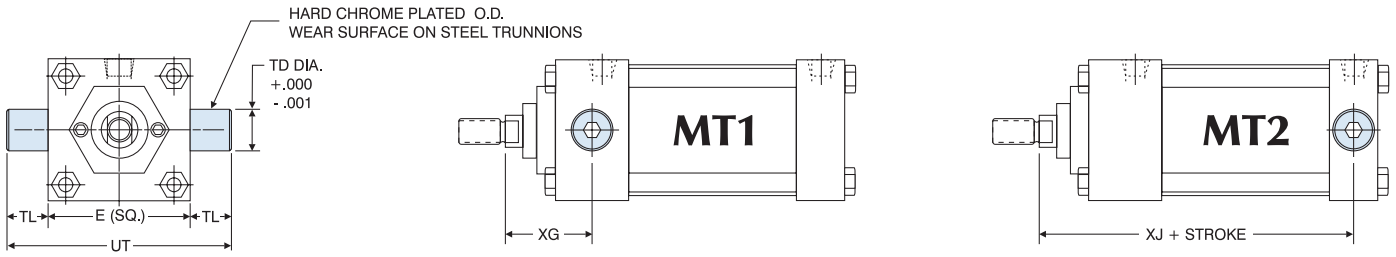
IRON CASTING: 1.50"- 4.00" BORES
WELDMENT: 5.00"- 6.00" BORES*

'MP1', 'MP2' CLEVIS AND 'MP4' EYE MOUNT DIMENSIONS										ACCESSORIES					
BORE	ROD DIAMETER	CB	CD	CW	FL	K	L	M	XC	XD	ROD CLEVIS	ROD EYE	CLEVIS PIN	EYE BRACKET (FOR MP1)	CLEVIS BRKT (FOR MP4)
1.50	0.625 Standard	0.750	0.500	0.500	1.125	N/A	0.750	0.625	5.375	5.750	RC437	RE437	CP500	EB500	CB500
	5.750								6.125	RC750	RE750	CP750			
2.00	0.625 Standard	0.750	0.500	0.500	1.125	N/A	0.750	0.625	5.375	5.750	RC437	RE437	CP500	EB500	CB500
	5.750								6.125	RC750	RE750	CP750			
2.50	0.625 Standard	0.750	0.500	0.500	1.125	N/A	0.750	0.625	5.500	5.875	RC437	RE437	CP500	EB500	CB500
	5.875								6.250	RC750	RE750	CP750			
3.25	1.000 Standard	1.250	0.750	0.625	1.875	0.375	1.250	0.875	6.875	7.500	RC750	RE750	CP750	EB750	CB750
	7.125								7.750	RC1000	RE1000	CP1000			
4.00	1.000 Standard	1.250	0.750	0.625	1.875	0.375	1.250	0.875	6.875	7.500	RC750	RE750	CP750	EB750	CB750
	7.125								7.750	RC1000	RE1000	CP1000			
5.00*	1.000 Standard	1.250	0.750	0.625	1.875	0.438	1.250	0.875	7.125	7.750	RC750	RE750	CP750	EB750	CB750
	7.375								8.000	RC1000	RE1000	CP1000			
6.00*	1.375 Standard	1.500	1.000	0.750	2.250	0.438	1.500	1.000	8.125	8.875	RC1000	RE1000	CP1000	EB1000	CB1000
	8.375								9.125	RC1250	RE1250	CP1375			
8.00	1.375 Standard	1.500	1.000	0.750	N/A	0.563	1.500	1.000	8.250	N/A	RC1000	RE1000	CP1000	EB1000	CB1000
	8.500								RC1250		RE1250	CP1375			
10.00	1.750 Standard	2.000	1.375	1.000	N/A	0.688	2.125	1.375	10.375	N/A	RC1250	RE1250	CP1375	EB1375	CB1375
	10.500								RC1500		RE1500	CP1750	EB1750	CB1750	
12.00	2.000 Standard	2.500	1.750	1.250	N/A	0.688	2.250	1.750	11.125	N/A	RC1500	RE1500	CP1750	EB1750	CB1750
	11.375								RC1875		N/A	CP2000			

Clevis pins are provided with pivot mounts.
*MP4 5.00"-6.00" bores are 5-7 day delivery.
For dimensions not shown, see page 10.

**Extruded MP1 mounts are standard (1.50"-8.00" bores). Cast Iron removable mounts are optional, and must be requested when ordering (1.50"-6.00" bores). Specify "CAST MP1" when ordering.

SERIES 'TA' DIMENSIONS: PIVOT MOUNTS

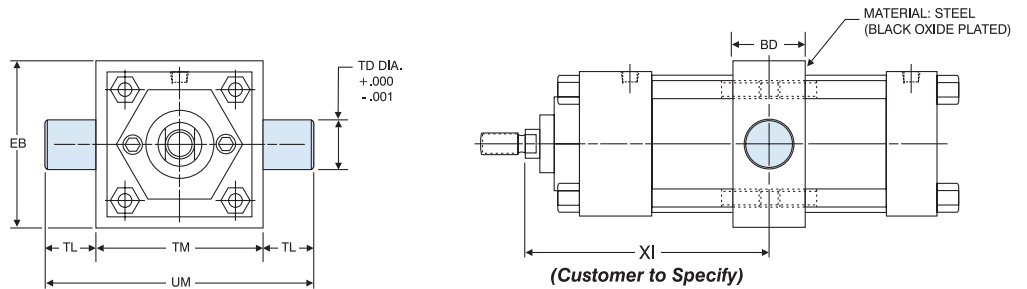


MT1 / MT2

Note: MT1 and MT2 Trunnions are bolt on, non-removable design.
Optional: One-piece solid steel trunnion available.

'MT1' HEAD TRUNNION AND 'MT2' CAP TRUNNION MOUNT DIMENSIONS								ACCESSORIES		
BORE	ROD DIAMETER	E	TD	TL	UT	XG	ADD STROKE	ROD CLEVIS	ROD EYE	CLEVIS PIN
							XJ			
1.50	0.625 Standard	2.000	1.000	1.000	4.000	1.750	4.125	RC437	RE437	CP500
	1.000 Oversize						N/A*	4.500	RC750	RE750
2.00	0.625 Standard	2.500	1.000	1.000	4.500	1.750	4.125	RC437	RE437	CP500
	1.000 Oversize						2.125	4.500	RC750	RE750
2.50	0.625 Standard	3.000	1.000	1.000	5.000	1.750	4.250	RC437	RE437	CP500
	1.000 Oversize						2.125	4.625	RC750	RE750
3.25	1.000 Standard	3.750	1.000	1.000	5.750	2.250	5.000	RC750	RE750	CP750
	1.375 Oversize						2.500	5.250	RC1000	RE1000
4.00	1.000 Standard	4.500	1.000	1.000	6.500	2.250	5.000	RC750	RE750	CP750
	1.375 Oversize						2.500	5.250	RC1000	RE1000
5.00	1.000 Standard	5.500	1.000	1.000	7.500	2.250	5.250	RC750	RE750	CP750
	1.375 Oversize						2.500	5.500	RC1000	RE1000
6.00	1.375 Standard	6.500	1.375	1.375	9.250	2.625	5.875	RC1000	RE1000	CP1000
	1.750 Oversize						2.875	6.125	RC1250	RE1250
8.00	1.375 Standard	8.500	1.375	1.375	11.250	2.625	6.000	RC1000	RE1000	CP1000
	1.750 Oversize						2.875	6.250	RC1250	RE1250

*No oversize rod available on 1.50" bore MT1.
For dimensions not shown, see page 10.



MT4

Example: TA - MT4 4 X 12
XI = 6"

Note: MT4 Trunnions and Intermediate Section are one-piece steel construction.

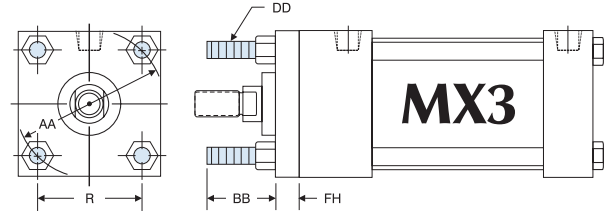
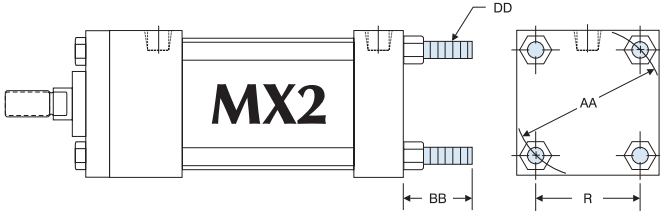
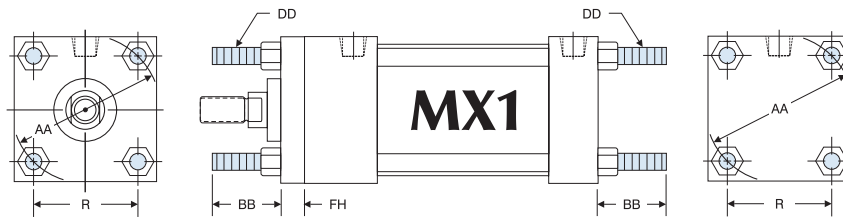
'MT4' INTERMEDIATE TRUNNION MOUNT DIMENSIONS							
BORE	BD	EB	TD	TL	TM	UM	XI
1.50	1.250	2.500	1.000	1.000	2.500	4.500	CUSTOMER TO SPECIFY
2.00	1.500	3.000	1.000	1.000	3.000	5.000	
2.50	1.500	3.500	1.000	1.000	3.500	5.500	
3.25	2.000	4.250	1.000	1.000	4.500	6.500	
4.00	2.000	5.000	1.000	1.000	5.250	7.250	
5.00	2.000	6.000	1.000	1.000	6.250	8.250	
6.00	2.000	7.000	1.375	1.375	7.625	10.375	
8.00	2.500	9.500	1.375	1.375	9.750	12.500	

'MT1', 'MT2', 'MT4' STANDARD CUSHION LOCATIONS		
MOUNT	HEAD CUSHION	CAP CUSHION
MT1	3	6
MT2	2	7
MT4	2	6

Note: Ports or cushions cannot be on same side as MT1 & MT2 Trunnions.

SERIES 'TA' DIMENSIONS: TIE ROD & FLANGE MOUNTS

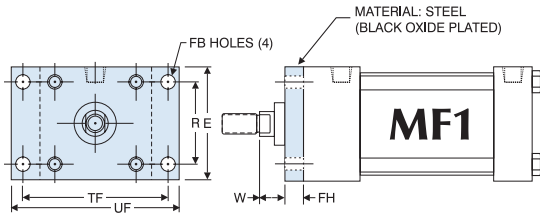
TA - How to Order
 TA - Base Dimensions
 TA - Single Rod Mounts
 TA - Double Rod Mounts
 Options Page 189
 Accessories Page 227
 Switches Page 241
 Technical Data Page 277



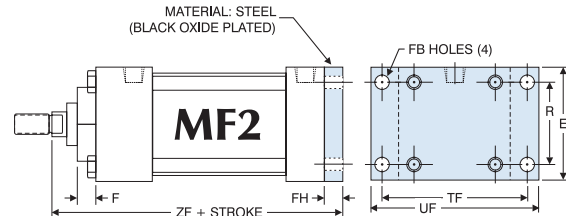
TIE ROD EXTENDED 'MX1', 'MX2' & 'MX3' MOUNT DIMENSIONS						
BORE	ROD DIAMETER	AA	BB	DD	FH	R
1.50	0.625 Standard	2.020	1.000	1/4 -28	0.375	1.430
	1.000 Oversize					
2.00	0.625 Standard	2.600	1.125	5/16 -24	0.375	1.840
	1.000 Oversize					
2.50	0.625 Standard	3.100	1.125	5/16 -24	0.375	2.190
	1.000 Oversize					
3.25	1.000 Standard	3.900	1.375	3/8 -24	0.625	2.760
	1.375 Oversize					
4.00	1.000 Standard	4.700	1.375	3/8 -24	0.625	3.320
	1.375 Oversize					

TIE ROD EXTENDED 'MX1', 'MX2' & 'MX3' MOUNT DIMENSIONS						
BORE	ROD DIAMETER	AA	BB	DD	FH	R
5.00	1.000 Standard	5.800	1.813	1/2 -20	0.625	4.100
	1.375 Oversize					
6.00	1.375 Standard	6.900	1.813	1/2 -20	0.750	4.880
	1.750 Oversize					
8.00	1.375 Standard	9.100	2.313**	5/8 -18	0.625*	6.440
	1.750 Oversize					
10.00	1.750 Oversize	11.200	2.688**	3/4 -16	0.625*	7.920
	2.000 Oversize					
12.00	2.000 Standard	13.300	2.688**	3/4 -16	0.750*	9.400
	2.500 Oversize					

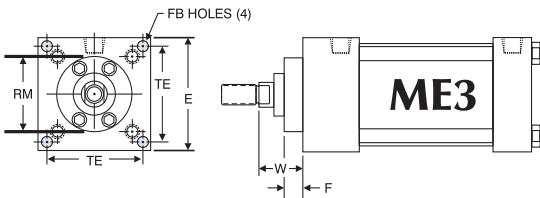
*MX1 & MX3 have full square bushing retainer on 1.50" - 6.00" bores, round retainers on 8.00" - 12.00" bores.
 **BB dimension from face of head.
 For dimensions not shown, see page 10.



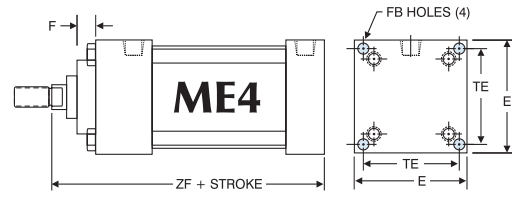
1.50" - 6.00" BORES



1.50" - 6.00" BORES



8.00" - 12.00" BORES



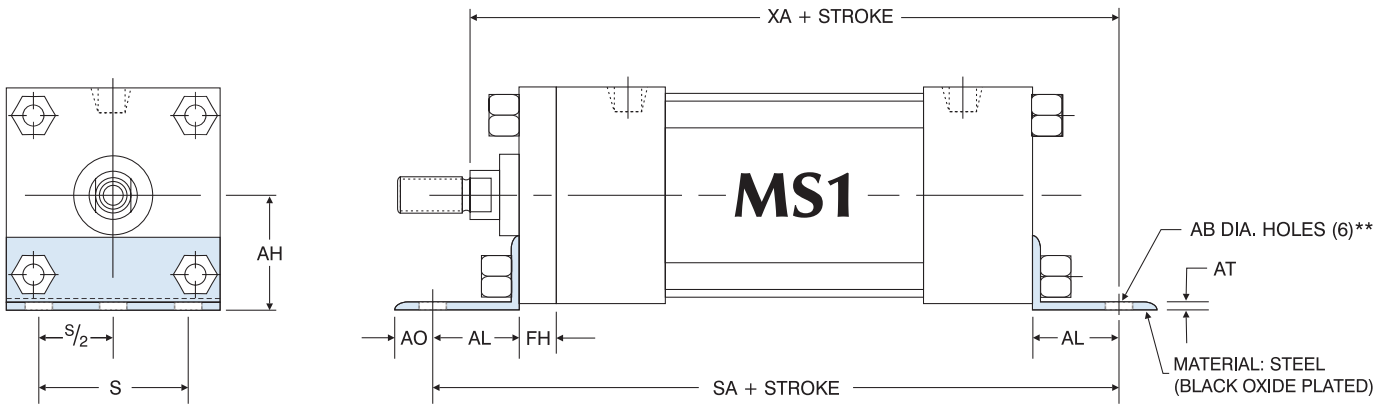
8.00" - 12.00" BORES

'MF1', 'MF2' FLANGE & 'ME3', 'ME4' CAP MOUNT DIMENSIONS												
BORE	ROD DIAMETER	E	F	FB	FH	R	RM	TE	TF	UF	W	ZF
1.50	0.625 Standard	2.000	0.375	0.313	0.375	1.438	—	—	2.750	3.375	0.625	5.000
	1.000 Oversize										1.000	5.375
2.00	0.625 Standard	2.500	0.375	0.375	0.375	1.848	—	—	3.375	4.125	0.625	5.000
	1.000 Oversize										1.000	5.375
2.50	0.625 Standard	3.000	0.375	0.375	0.375	2.188	—	—	3.875	4.625	0.625	5.125
	1.000 Oversize										1.000	5.500
3.25	1.000 Standard	3.750	0.625	0.438	0.625	2.766	—	—	4.688	5.500	0.750	6.250
	1.375 Oversize										1.000	6.500
4.00	1.000 Standard	4.500	0.625	0.438	0.625	3.328	—	—	5.438	6.250	0.750	6.250
	1.375 Oversize										1.000	6.500

'MF1', 'MF2' FLANGE & 'ME3', 'ME4' CAP MOUNT DIMENSIONS												
BORE	ROD DIAMETER	E	F	FB	FH	R	RM	TE	TF	UF	W	ZF
5.00	1.000 Standard	5.500	0.625	0.563	0.625	4.100	—	—	6.625	7.625	0.750	6.500
	1.375 Oversize										1.000	6.750
6.00	1.375 Standard	6.500	0.625	0.563	0.750	4.875	—	—	7.625	8.625	0.875	7.375
	1.750 Oversize										1.125	7.625
8.00	1.375 Standard	8.500	0.625	0.688	N/A	N/A	3.500	7.570	N/A	N/A	1.625	6.750
	1.750 Oversize										1.875	7.000
10.00	1.750 Standard	10.625	0.625	0.813	N/A	N/A	3.500	9.400	N/A	N/A	1.875	8.250
	2.000 Oversize										2.000	8.375
12.00	2.000 Standard	12.750	0.750	0.813	N/A	N/A	5.000	11.100	N/A	N/A	2.000	8.875
	2.500 Oversize										2.250	9.125

For dimensions not shown, see page 10.

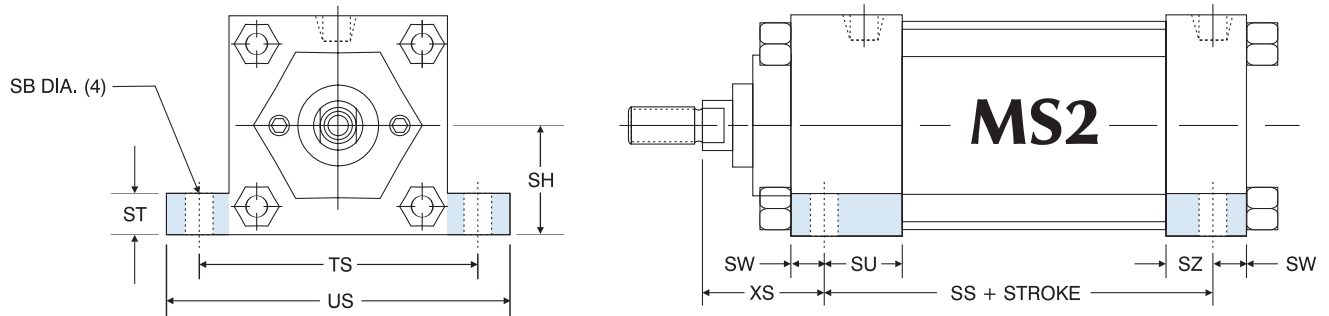
SERIES 'TA' DIMENSIONS: BASE MOUNTS



'MS1' ANGLE MOUNT DIMENSIONS										
BORE	ROD DIAMETER	AB	AH	AL	AO	AT	FH	S	ADD STROKE	
									SA	XA
1.50	0.625 Standard	0.438	1.188	1.000	0.375	0.188	0.375	1.250	6.000	5.625
	1.000 Oversize									6.000
2.00	0.625 Standard	0.438	1.438	1.000	0.375	0.188	0.375	1.750	6.000	5.625
	1.000 Oversize									6.000
2.50	0.625 Standard	0.438	1.625	1.000	0.375	0.188	0.375	2.250	6.125	5.750
	1.000 Oversize									6.125
3.25	1.000 Standard	0.563	1.938	1.250	0.500	0.125	0.625	2.750	7.375	6.875
	1.375 Oversize									7.125
4.00	1.000 Standard	0.563	2.250	1.250	0.500	0.125	0.625	3.500	7.375	6.875
	1.375 Oversize									7.125
5.00	1.000 Standard	0.688	2.750	1.375	0.625	0.188	0.625	4.250	7.875	7.250
	1.375 Oversize									7.500
6.00	1.375 Standard	0.813	3.250	1.375	0.625	0.188	0.750	5.250	8.500	8.000
	1.750 Oversize									8.250
8.00	1.375 Standard	0.813	4.250	1.813	0.688	0.250	0.625*	7.125	8.750	8.563
	1.750 Oversize									8.813

*3.50" diameter round retainer on 8.00" bore (MS1 BRACKET BOLTED DIRECTLY TO HEAD).

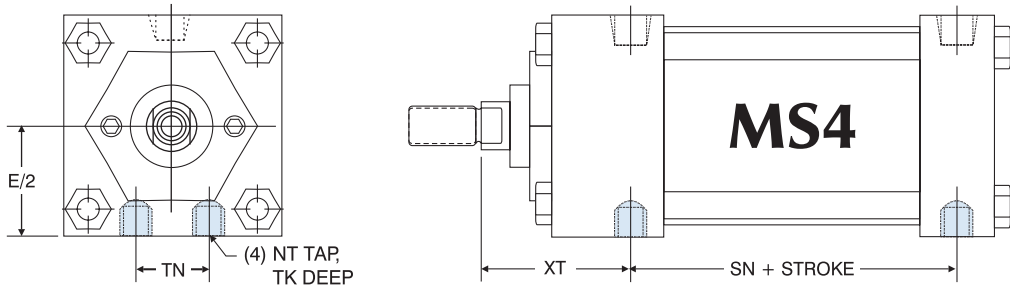
**1.50" bore has four (4) AB diameter holes.



'MS2' SIDE LUG MOUNT DIMENSIONS											
BORE	ROD DIAMETER	SB	SH	ST	SU	SW	SZ	TS	US	XS	ADD STROKE
											SS
1.50	0.625 Standard	0.438	1.000	0.500	1.125	0.375	0.625	2.750	3.500	1.375	2.875
	1.000 Oversize										1.750
2.00	0.625 Standard	0.438	1.250	0.500	1.125	0.375	0.625	3.250	4.000	1.375	2.875
	1.000 Oversize										1.750
2.50	0.625 Standard	0.438	1.500	0.500	1.125	0.375	0.625	3.750	4.500	1.375	3.000
	1.000 Oversize										1.750
3.25	1.000 Standard	0.563	1.875	0.750	1.250	0.500	0.750	4.750	5.750	1.875	3.250
	1.375 Oversize										2.125
4.00	1.000 Standard	0.563	2.250	0.750	1.250	0.500	0.750	5.500	6.500	1.875	3.250
	1.375 Oversize										2.125
5.00	1.000 Standard	0.813	2.750	1.000	1.063	0.688	0.563	6.875	8.250	2.063	3.125
	1.375 Oversize										2.313
6.00	1.375 Standard	0.813	3.250	1.000	1.313	0.688	0.813	7.875	9.250	2.313	3.625
	1.750 Oversize										2.563
8.00	1.375 Standard	0.813	4.250	1.000	1.313	0.688	0.813	9.875	11.250	2.313	3.750
	1.750 Oversize										2.563

For dimensions not shown, see page 10.

SERIES 'TA' DIMENSIONS: BASE MOUNTS



'MS4' BOTTOM TAPPED MOUNT DIMENSIONS							
BORE	ROD DIAMETER	E/2	NT	TK	TN	XT	ADD STROKE
							SN
1.50	0.625 Standard	1.000	1/4 -20	0.375	0.625	1.938	2.250
	1.000 Oversize						
2.00	0.625 Standard	1.250	5/16 -18	0.500	0.875	1.938	2.250
	1.000 Oversize						
2.50	0.625 Standard	1.500	3/8 -16	0.625	1.250	1.938	2.375
	1.000 Oversize						
3.25	1.000 Standard	1.875	1/2 -13	0.750	1.500	2.438	2.625
	1.375 Oversize						
4.00	1.000 Standard	2.250	1/2 -13	0.750	2.063	2.438	2.625
	1.375 Oversize						
5.00	1.000 Standard	2.750	5/8 -11	1.000	2.688	2.438	2.875
	1.375 Oversize						
6.00	1.375 Standard	3.250	3/4 -10	1.125	3.250	2.813	3.125
	1.750 Oversize						
8.00	1.375 Standard	4.250	3/4 -10	1.125	4.500	2.813	3.250
	1.750 Oversize						
10.00	1.750 Standard	5.313	1 -8	1.500	5.500	3.125	4.125
	2.000 Oversize						
12.00	2.000 Standard	6.375	1 -8	1.500	7.250	3.250	4.625
	2.500 Oversize						

For dimensions not shown, see page 10.

COMBINATION MOUNTS

Cylinders can be ordered with a combination of mounts for added design flexibility.

How to Order:

Combination mount part numbers can be constructed by adding a dash (-) in between the desired mounts in the part number.

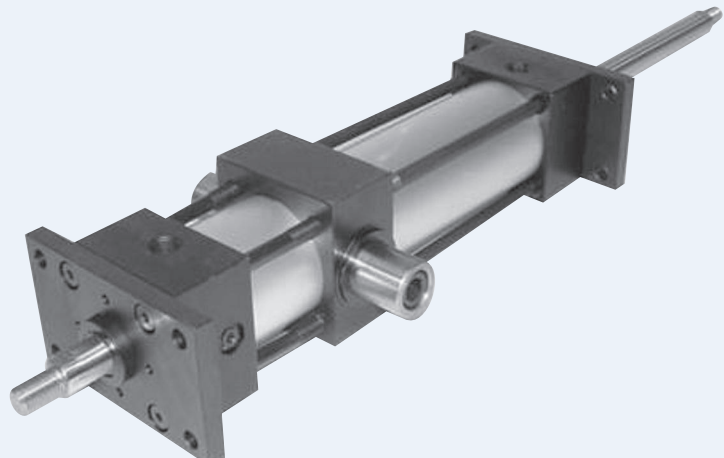
Example:

5.00" Bore 'TA' Series cylinder with 12.00" Stroke, Head and Cap Cushions, Magnetic Piston for Reed Switches and having a MS4 and MF1 Mount:

Part Number:

TA-MS4-MF1-5 x 12-HC-MPR

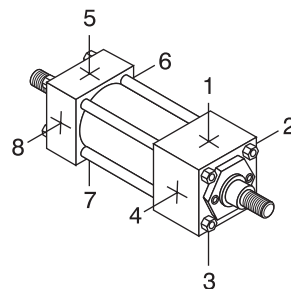
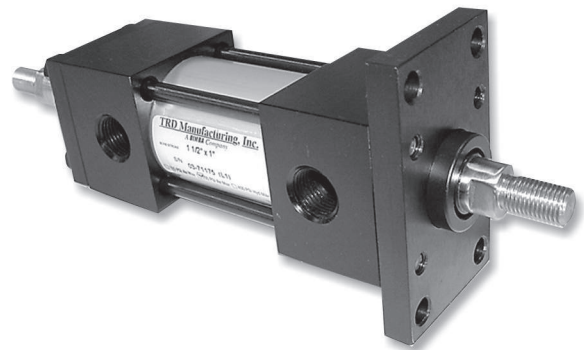
(FM-MF1-MF2-MT4D)



SERIES 'TA' DIMENSIONS: DOUBLE ROD END

Benefits

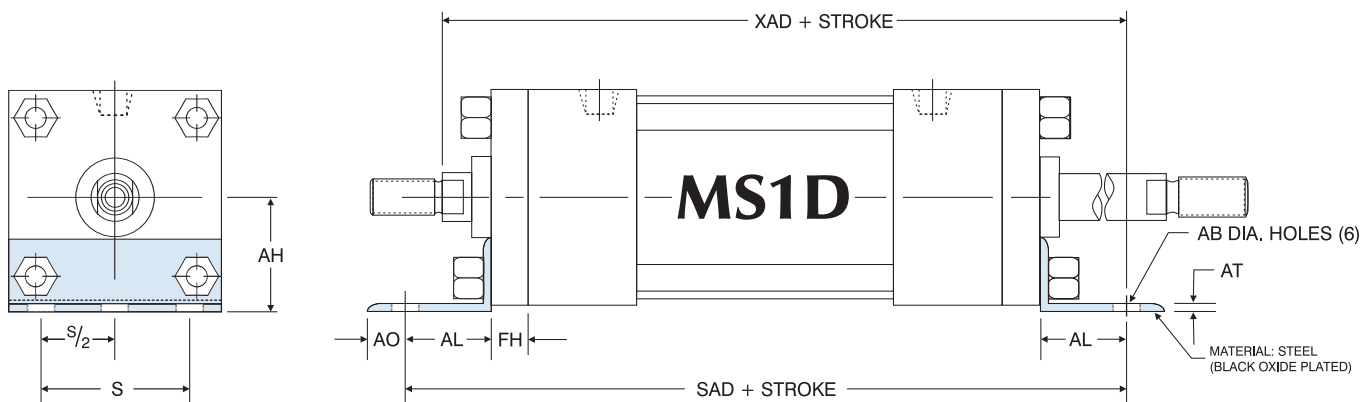
- Standard and Oversize Piston Rods available.
- Full range of Standard Options.
- Durable design. Full Rod Bearing at each end of cylinder.
- Can be provided with Hollow Piston Rods (gun-drilled through to your size requirements).
- Can be used in adjustable extend stroke applications by adding a stop collar on one rod end or option "MA" (refer to Options).



STANDARD PORT AND CUSHION ADJUSTMENT POSITIONS

- Ports - Positions 1 and 5
- Cushion Adjustment - Positions 2 and 6
- Specify Non-Standard Positions When Ordering

SERIES 'TA' DIMENSIONS: DOUBLE ROD END BASE MOUNTS



'MS1D' ANGLE MOUNT DIMENSIONS										
BORE	ROD DIAMETER	AB	AH	AL	AO	AT	FH	S	ADD STROKE	
									SAD	XAD
1.50	0.625 Standard	0.438	1.188	1.000	0.375	0.188	0.375	1.250	6.875	6.500
	1.000 Oversize									6.875
2.00	0.625 Standard	0.438	1.438	1.000	0.375	0.188	0.375	1.750	6.875	6.500
	1.000 Oversize									6.875
2.50	0.625 Standard	0.438	1.625	1.000	0.375	0.188	0.375	2.250	7.000	6.625
	1.000 Oversize									7.000
3.25	1.000 Standard	0.563	1.938	1.250	0.500	0.125	0.625	2.750	8.500	8.000
	1.375 Oversize									8.250
4.00	1.000 Standard	0.563	2.250	1.250	0.500	0.125	0.625	3.500	8.500	8.000
	1.375 Oversize									8.250
5.00	1.000 Standard	0.688	2.750	1.375	0.625	0.188	0.625	4.250	9.000	8.375
	1.375 Oversize									8.625
6.00	1.375 Standard	0.813	3.250	1.375	0.625	0.188	0.750	5.250	9.750	9.250
	1.750 Oversize									9.500
8.00	1.375 Standard	0.813	4.250	1.813	0.688	0.250	0.625*	7.125	9.250	9.063
	1.750 Oversize									9.313

*3.50 diameter round retainer on 8.00" bore (MS1 BRACKETS BOLTED DIRECTLY TO HEAD).

SERIES 'TA' DIMENSIONS: DOUBLE ROD END

EASY FLIP OUT PAGE FOR REFERENCE

About Rod End Styles

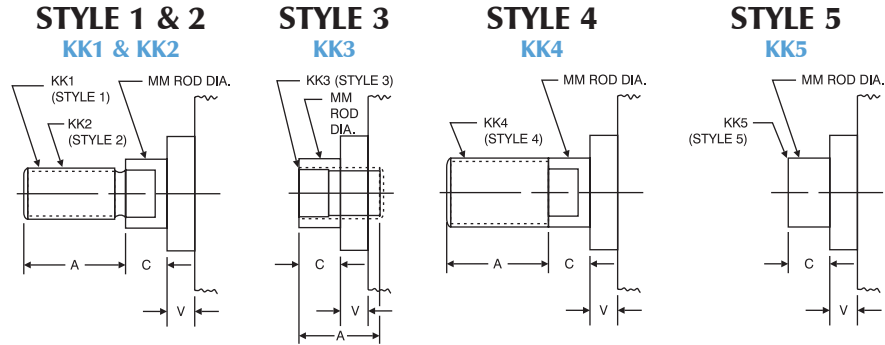
Style 1 Male Rod End is STANDARD

Other NFPA Styles can be specified (see chart).

Need a rod end not listed? NO PROBLEM! Each Piston Rod is made-to-order and does not delay shipment. Coarse UNC threads, Metric threads or just plain rod ends are common. Thread lengths are also made-to-order (Specify: "A"=Length).

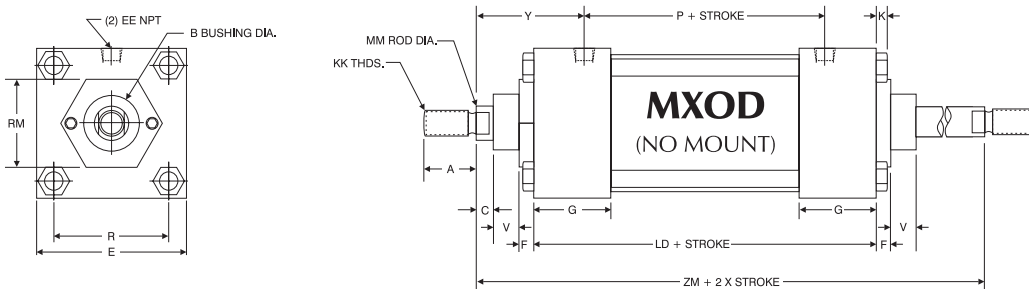
NEED SOMETHING NOT LISTED? Just send us a sketch. In most cases, quotes are turned around in one day!

PISTON ROD END STYLES



BORE	MM ROD DIAMETER	STANDARD				OPTIONAL						C	V
		Style 1 - Male		Style 2 - Male		Style 3 - Female		Style 4 - Male		Style 5 - Blank			
		KK1	A	KK2	A	KK3	A	KK4	A	KK5			
1.50,	0.625 Standard	7/16-20	0.750	1/2-20	0.750	7/16-20	0.750	5/8-18	0.750	No Threads	0.375	0.250	
2.00, 2.50	1.000 Oversize	3/4-16	1.125	7/8-14	1.125	3/4-16	1.125	1-14	1.125	No Threads	0.500	0.500	
3.25,	1.000 Standard	3/4-16	1.125	7/8-14	1.125	3/4-16	1.125	1-14	1.125	No Threads	0.500	0.250	
4.00, 5.00	1.375 Oversize	1-14	1.625	1 1/4-12	1.625	1-14	1.625	1 3/8-12	1.625	No Threads	0.625	0.375	
6.00 &	1.375 Standard	1-14	1.625	1 1/4-12	1.625	1-14	1.625	1 3/8-12	1.625	No Threads	0.625	0.375	
8.00	1.750 Oversize	1 1/4-12	2.000	1 1/2-12	2.000	1 1/4-12	2.000	1 3/4-12	2.000	No Threads	0.750	0.500	
10.00	1.750 Standard	1 1/4-12	2.000	1 1/2-12	2.000	1 1/4-12	2.000	1 3/4-12	2.000	No Threads	0.750	0.500	
	2.000 Oversize	1 1/2-12	2.250	1 3/4-12	2.250	1 1/2-12	2.250	2-12	2.250	No Threads	0.875	0.375	
12.00	2.000 Standard	1 1/2-12	2.250	1 3/4-12	2.250	1 1/2-12	2.250	2-12	2.250	No Threads	0.875	0.375	
	2.500 Oversize	1 7/8-12	3.000	2 1/4-12	3.000	1 7/8-12	3.000	2 1/2-12	3.000	No Threads	1.000	0.500	

DOUBLE ROD END DIMENSIONS: 'MX0D' (NO MOUNT)



DOUBLE ROD END BASIC DIMENSIONS 'MX0D' STANDARD & OVERSIZE RODS																		
BORE	ROD DIAMETER	A	B	C	E	EE	F	G	K	KK	LD	MM	P	R	RM	V	Y	ZM
1.50	0.625 Standard	0.750	1.125	0.375	2.000	0.375	0.375	1.500	0.250	7/16-20	4.125	0.625	2.375	1.430	2.00 SQ.	0.250	1.875	6.125
	1.000 Oversize	1.125	1.500	0.500						3/4-16		1.000						
2.00	0.625 Standard	0.750	1.125	0.375	2.500	0.375	0.375	1.500	0.313	7/16-20	4.125	0.625	2.375	1.844	1.75 HEX	0.250	1.875	6.125
	1.000 Oversize	1.125	1.500	0.500						3/4-16		1.000			0.500			
2.50	0.625 Standard	0.750	1.125	0.375	3.000	0.375	0.375	1.500	0.313	7/16-20	4.250	0.625	2.500	2.188	1.75 HEX	0.250	1.875	6.250
	1.000 Oversize	1.125	1.500	0.500						3/4-16		1.000			0.500			
3.25	1.000 Standard	1.125	1.500	0.500	3.750	0.500	0.625	1.750	0.375	3/4-16	4.750	1.000	2.750	2.760	2.75 DIA.	0.250	2.375	7.500
	1.375 Oversize	1.625	2.000	0.625						1-14		1.375			0.375			
4.00	1.000 Standard	1.125	1.500	0.500	4.500	0.500	0.625	1.750	0.375	3/4-16	4.750	1.000	2.750	3.320	2.75 DIA.	0.250	2.375	7.500
	1.375 Oversize	1.625	2.000	0.625						1-14		1.375			0.375			
5.00	1.000 Standard	1.125	1.500	0.500	5.500	0.500	0.625	1.750	0.438	3/4-16	5.000	1.000	3.000	4.100	2.75 DIA.	0.250	2.375	7.750
	1.375 Oversize	1.625	2.000	0.625						1-14		1.375			0.375			
6.00	1.375 Standard	1.625	2.000	0.625	6.500	0.750	0.625	2.000	0.438	1-14	5.500	1.375	3.250	4.875	3.50 DIA.	0.375	2.750	8.750
	1.750 Oversize	2.000	2.375	0.750						1 1/4-12		1.750			0.500			
8.00	1.375 Standard	1.625	2.000	0.625	8.500	0.750	0.625	2.000	0.563	1-14	5.625	1.375	3.375	6.438	3.50 DIA.	0.375	2.750	8.875
	1.750 Oversize	2.000	2.375	0.750						1 1/4-12		1.750			0.500			
10.00	1.750 Standard	2.000	2.375	0.750	10.625	1.000	0.625	2.250	0.688	1 1/4-12	6.625	1.750	4.313	7.922	3.50 DIA.	0.500	3.060	10.375
	2.000 Oversize	2.250	2.625	0.875			1 1/2-12			2.000		0.375			3.188			
12.00	2.000 Standard	2.250	2.625	0.875	12.750	1.000	0.750	2.250	0.688	1 1/2-12	7.125	2.000	4.813	9.400	5.00 DIA.	0.375	3.188	11.125
	2.500 Oversize	3.000	3.125	1.000						1 7/8-12		2.500			0.500			

SERIES 'TA' DIMENSIONS: DOUBLE ROD END

About Rod End Styles

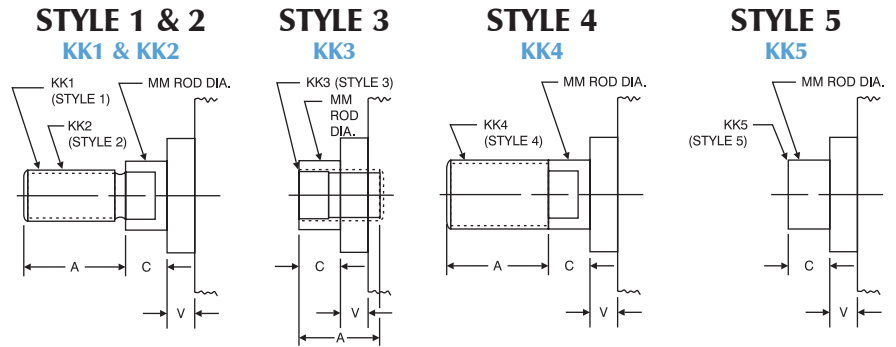
Style 1 Male Rod End is STANDARD

Other NFPA Styles can be specified (see chart).

Need a rod end not listed? NO PROBLEM! Each Piston Rod is made-to-order and does not delay shipment. Coarse UNC threads, Metric threads or just plain rod ends are common. Thread lengths are also made-to-order (Specify: "A"=Length).

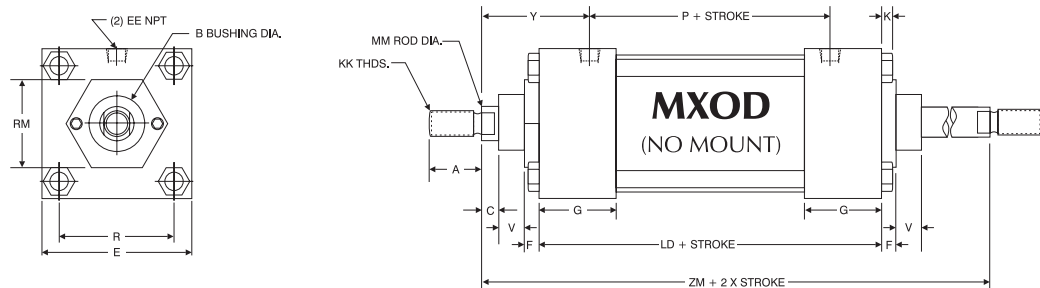
NEED SOMETHING NOT LISTED? Just send us a sketch. In most cases, quotes are turned around in one day!

PISTON ROD END STYLES



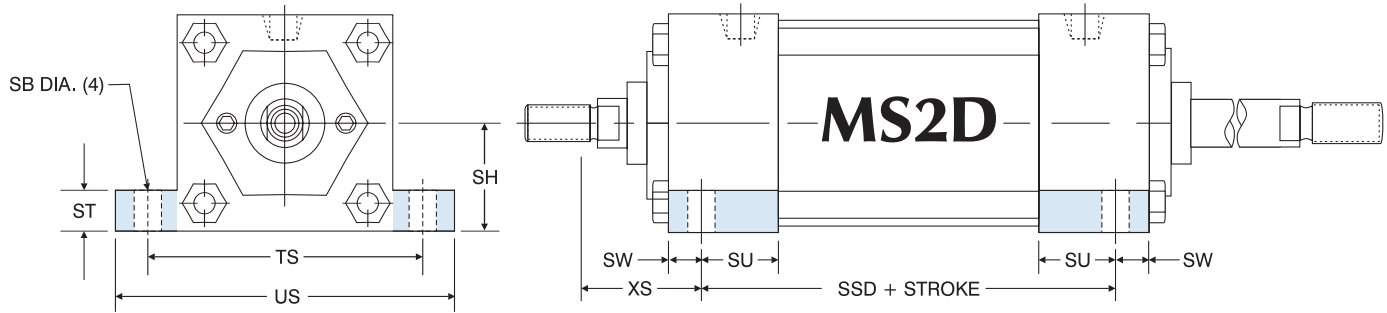
BORE	MM ROD DIAMETER	STANDARD		OPTIONAL							C	V
		Style 1 - Male		Style 2 - Male	Style 3 - Female		Style 4 - Male		Style 5 - Blank			
		KK1	A	KK2	A	KK3	A	KK4	A	KK5		
1.50,	0.625 Standard	7/16 -20	0.750	1/2 -20	0.750	7/16 -20	0.750	5/8 -18	0.750	No Threads	0.375	0.250
2.00, 2.50	1.000 Oversize	3/4 -16	1.125	7/8 -14	1.125	3/4 -16	1.125	1 -14	1.125	No Threads	0.500	0.500
3.25,	1.000 Standard	3/4 -16	1.125	7/8 -14	1.125	3/4 -16	1.125	1 -14	1.125	No Threads	0.500	0.250
4.00, 5.00	1.375 Oversize	1 -14	1.625	1 1/4 -12	1.625	1 -14	1.625	1 3/8 -12	1.625	No Threads	0.625	0.375
6.00 & 8.00	1.375 Standard	1 -14	1.625	1 1/4 -12	1.625	1 -14	1.625	1 3/8 -12	1.625	No Threads	0.625	0.375
	1.750 Oversize	1 1/4 -12	2.000	1 1/2 -12	2.000	1 1/4 -12	2.000	1 3/4 -12	2.000	No Threads	0.750	0.500
10.00	1.750 Standard	1 1/4 -12	2.000	1 1/2 -12	2.000	1 1/4 -12	2.000	1 3/4 -12	2.000	No Threads	0.750	0.500
	2.000 Oversize	1 1/2 -12	2.250	1 3/4 -12	2.250	1 1/2 -12	2.250	2 -12	2.250	No Threads	0.875	0.375
12.00	2.000 Standard	1 1/2 -12	2.250	1 3/4 -12	2.250	1 1/2 -12	2.250	2 -12	2.250	No Threads	0.875	0.375
	2.500 Oversize	1 7/8 -12	3.000	2 1/4 -12	3.000	1 7/8 -12	3.000	2 1/2 -12	3.000	No Threads	1.000	0.500

DOUBLE ROD END DIMENSIONS: 'MX0D' (NO MOUNT)



DOUBLE ROD END BASIC DIMENSIONS 'MX0D' STANDARD & OVERSIZE RODS																		
BORE	ROD DIAMETER	A	B	C	E	EE	F	G	K	KK	LD	MM	P	R	RM	V	Y	ZM
1.50	0.625 Standard	0.750	1.125	0.375	2.000	0.375	0.375	1.500	0.250	7/16 -20	4.125	0.625	2.375	1.430	2.00 SQ.	0.250	1.875	6.125
	1.000 Oversize	1.125	1.500	0.500						3/4 -16		1.000				0.500	2.250	6.875
2.00	0.625 Standard	0.750	1.125	0.375	2.500	0.375	0.375	1.500	0.313	7/16 -20	4.125	0.625	2.375	1.844	1.75 HEX	0.250	1.875	6.125
	1.000 Oversize	1.125	1.500	0.500						3/4 -16		1.000			0.500	2.250	6.875	
2.50	0.625 Standard	0.750	1.125	0.375	3.000	0.375	0.375	1.500	0.313	7/16 -20	4.250	0.625	2.500	2.188	1.75 HEX	0.250	1.875	6.250
	1.000 Oversize	1.125	1.500	0.500						3/4 -16		1.000			0.500	2.250	7.000	
3.25	1.000 Standard	1.125	1.500	0.500	3.750	0.500	0.625	1.750	0.375	3/4 -16	4.750	1.000	2.750	2.760	2.75 DIA.	0.250	2.375	7.500
	1.375 Oversize	1.625	2.000	0.625						1 -14		1.375			0.375	2.625	8.000	
4.00	1.000 Standard	1.125	1.500	0.500	4.500	0.500	0.625	1.750	0.375	3/4 -16	4.750	1.000	2.750	3.320	2.75 DIA.	0.250	2.375	7.500
	1.375 Oversize	1.625	2.000	0.625						1 -14		1.375			0.375	2.625	8.000	
5.00	1.000 Standard	1.125	1.500	0.500	5.500	0.500	0.625	1.750	0.438	3/4 -16	5.000	1.000	3.000	4.100	2.75 DIA.	0.250	2.375	7.750
	1.375 Oversize	1.625	2.000	0.625						1 -14		1.375			0.375	2.625	8.250	
6.00	1.375 Standard	1.625	2.000	0.625	6.500	0.750	0.625	2.000	0.438	1 -14	5.500	1.375	3.250	4.875	3.50 DIA.	0.375	2.750	8.750
	1.750 Oversize	2.000	2.375	0.750						1 1/4 -12		1.750			0.500	3.000	9.250	
8.00	1.375 Standard	1.625	2.000	0.625	8.500	0.750	0.625	2.000	0.563	1 -14	5.625	1.375	3.375	6.438	3.50 DIA.	0.375	2.750	8.875
	1.750 Oversize	2.000	2.375	0.750						1 1/4 -12		1.750			0.500	3.000	9.375	
10.00	1.750 Standard	2.000	2.375	0.750	10.625	1.000	0.625	2.250	0.688	1 1/4 -12	6.625	1.750	4.313	7.922	3.50 DIA.	0.500	3.060	10.375
	2.000 Oversize	2.250	2.625	0.875			1 1/2 -12			2.000		0.375			3.188	10.625		
12.00	2.000 Standard	2.250	2.625	0.875	12.750	1.000	0.750	2.250	0.688	1 1/2 -12	7.125	2.000	4.813	9.400	5.00 DIA.	0.375	3.188	11.125
	2.500 Oversize	3.000	3.125	1.000						1 7/8 -12		2.500			0.500	3.438	11.625	

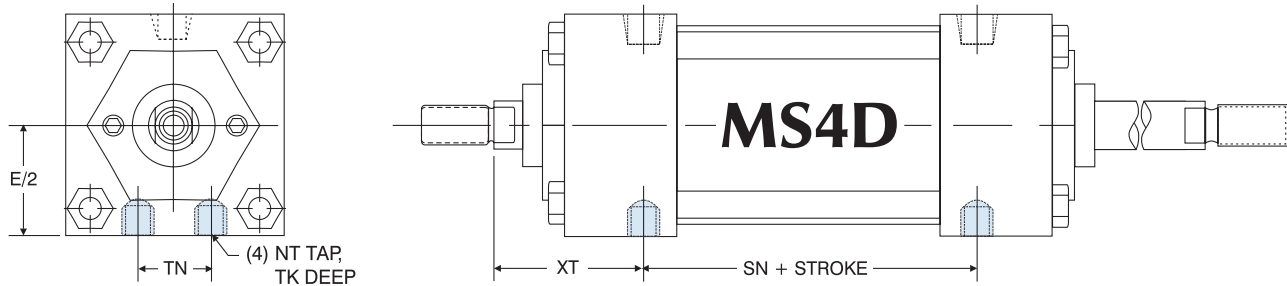
SERIES 'TA' DIMENSIONS: DOUBLE ROD END BASE MOUNTS



DOUBLE ROD END 'MS2D' SIDE LUG MOUNT DIMENSIONS

BORE	ROD DIAMETER	SB	SH	ST	SU	SW	TS	US	XS	ADD STROKE	
										SSD	
1.50	0.625 Standard	0.438	1.000	0.500	1.125	0.375	2.750	3.500	1.375	1.750	3.375
	1.000 Oversize										
2.00	0.625 Standard	0.438	1.250	0.500	1.125	0.375	3.250	4.000	1.375	1.750	3.375
	1.000 Oversize										
2.50	0.625 Standard	0.438	1.500	0.500	1.125	0.375	3.750	4.500	1.375	1.750	3.500
	1.000 Oversize										
3.25	1.000 Standard	0.563	1.875	0.750	1.250	0.500	4.750	5.750	1.875	2.125	3.750
	1.375 Oversize										
4.00	1.000 Standard	0.563	2.250	0.750	1.250	0.500	5.500	6.500	1.875	2.125	3.750
	1.375 Oversize										
5.00	1.000 Standard	0.813	2.750	1.000	1.063	0.688	6.875	8.250	2.063	2.313	3.625
	1.375 Oversize										
6.00	1.375 Standard	0.813	3.250	1.000	1.313	0.688	7.875	9.250	2.313	2.563	4.125
	1.750 Oversize										
8.00	1.375 Standard	0.813	4.250	1.000	1.563	0.688	9.875	11.250	2.313	2.563	4.250
	1.750 Oversize										

For dimensions not shown, see page 17.



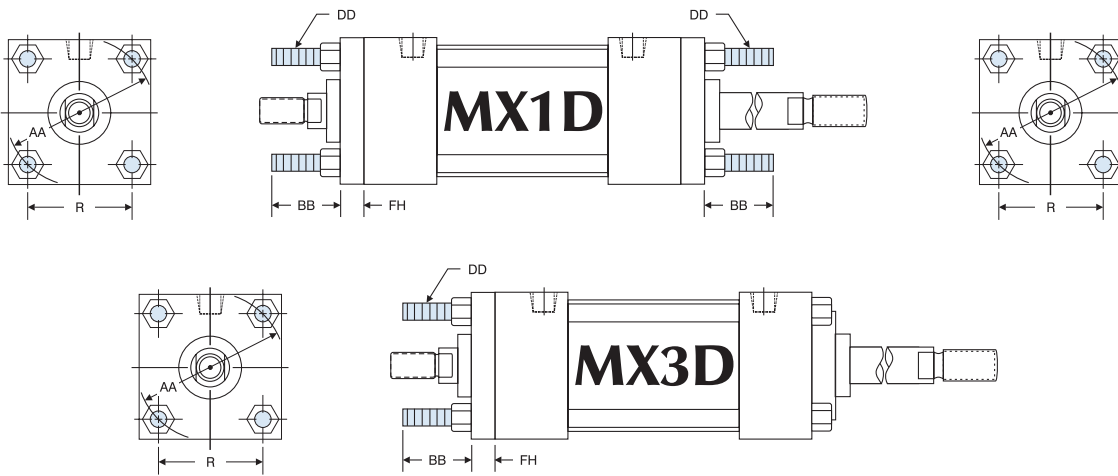
DOUBLE ROD END 'MS4D' BOTTOM TAPPED MOUNT DIMENSIONS

BORE	ROD DIAMETER	E/2	NT	TK	TN	XT	ADD STROKE	
							SN	
1.50	0.625 Standard	1.000	1/4-20	0.375	0.625	1.938	2.313	2.250
	1.000 Oversize							
2.00	0.625 Standard	1.250	5/16-18	0.500	0.875	1.938	2.313	2.250
	1.000 Oversize							
2.50	0.625 Standard	1.500	3/8-16	0.625	1.250	1.938	2.313	2.375
	1.000 Oversize							
3.25	1.000 Standard	1.875	1/2-13	0.750	1.500	2.438	2.688	2.625
	1.375 Oversize							
4.00	1.000 Standard	2.250	1/2-13	0.750	2.063	2.438	2.688	2.625
	1.375 Oversize							
5.00	1.000 Standard	2.750	5/8-11	1.000	2.688	2.438	2.688	2.875
	1.375 Oversize							
6.00	1.375 Standard	3.250	3/4-10	1.125	3.250	2.813	3.063	3.125
	1.750 Oversize							
8.00	1.375 Standard	4.250	3/4-10	1.125	4.500	2.813	3.063	3.250
	1.750 Oversize							
10.00	1.750 Standard	5.313	1-8	1.500	5.500	3.125	3.250	4.125
	2.000 Oversize							
12.00	2.000 Standard	6.375	1-8	1.500	7.250	3.250	3.500	4.625
	2.500 Oversize							

For dimensions not shown, see page 17.

TA - How to Order
TA - Base Dimensions
TA - Single Rod Mounts
TA - Double Rod Mounts
Options Page 189
Accessories Page 227
Switches Page 241
Technical Data Page 277

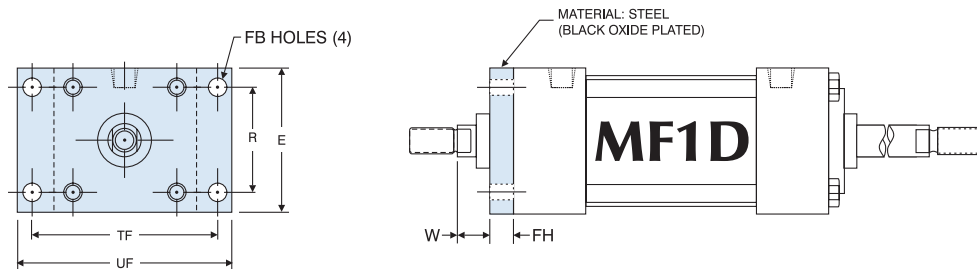
SERIES 'TA' DIMENSIONS: DOUBLE ROD END TIE ROD & FLANGE MOUNTS



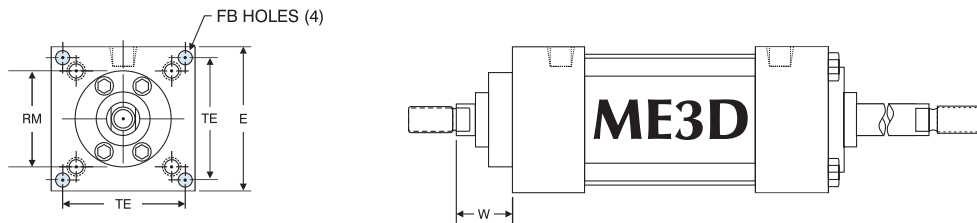
TIE ROD EXTENDED 'MX1D' & 'MX3D' MOUNT DIMENSIONS						
BORE	ROD DIAMETER	AA	BB	DD	FH	R
1.50	0.625 Standard	2.020	1.000	1/4-28	0.375	1.438
	1.000 Oversize					
2.00	0.625 Standard	2.600	1.125	5/16-24	0.375	1.844
	1.000 Oversize					
2.50	0.625 Standard	3.100	1.125	5/16-24	0.375	2.188
	1.000 Oversize					
3.25	1.000 Standard	3.900	1.375	3/8-24	0.625	2.760
	1.375 Oversize					
4.00	1.000 Standard	4.700	1.375	3/8-24	0.625	3.320
	1.375 Oversize					

TIE ROD EXTENDED 'MX1D' & 'MX3D' MOUNT DIMENSIONS						
BORE	ROD DIAMETER	AA	BB	DD	FH	R
5.00	1.000 Standard	5.800	1.813	1/2-20	0.625	4.100
	1.375 Oversize					
6.00	1.375 Standard	6.900	1.813	1/2-20	0.750	4.880
	1.750 Oversize					
8.00	1.375 Standard	9.100	2.313**	5/8-18	0.625*	6.440
	1.750 Oversize					
10.00	1.750 Oversize	11.200	2.688**	3/4-16	0.625*	7.920
	2.000 Oversize					
12.00	2.000 Standard	13.300	2.688**	3/4-16	0.750*	9.400
	2.500 Oversize					

*Full square bushing retainer on 1.50" - 6.00" bores, round retainers on 8.00" - 12.00" bores.
 **"BB" dimension from head on 8.00", 10.00" & 12.00" bores.



1.50" - 6.00" BORES



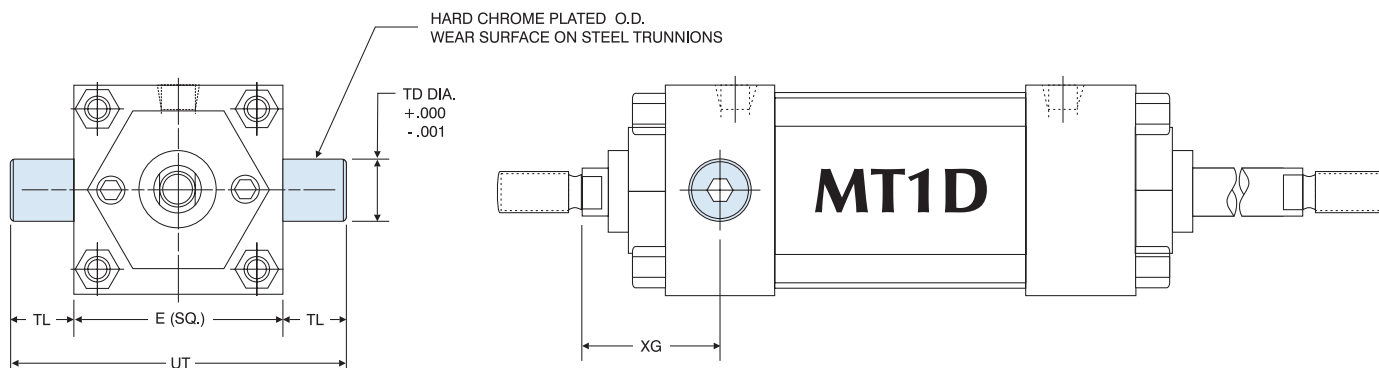
8.00" - 12.00" BORES ONLY

'MF1D' FLANGE & 'ME3D' CAP MOUNT DIMENSIONS										
BORE	ROD DIAMETER	E	FB	FH	R	RM	TE	TF	UF	W
1.50	0.625 Standard	2.000	0.313	0.375	1.438	—	—	2.750	3.375	0.625
	1.000 Oversize									1.000
2.00	0.625 Standard	2.500	0.375	0.375	1.844	—	—	3.375	4.125	0.625
	1.000 Oversize									1.000
2.50	0.625 Standard	3.000	0.375	0.375	2.188	—	—	3.875	4.625	0.625
	1.000 Oversize									1.000
3.25	1.000 Standard	3.750	0.438	0.625	2.760	—	—	4.688	5.500	0.750
	1.375 Oversize									1.000
4.00	1.000 Standard	4.500	0.438	0.625	3.320	—	—	5.438	6.250	0.750
	1.375 Oversize									1.000

'MF1D' FLANGE & 'ME3D' CAP MOUNT DIMENSIONS										
BORE	ROD DIAMETER	E	FB	FH	R	RM	TE	TF	UF	W
5.00	1.000 Standard	5.500	0.563	0.625	4.100	—	—	6.625	7.625	0.750
	1.375 Oversize									1.000
6.00	1.375 Standard	6.500	0.563	0.750	4.875	—	—	7.625	8.625	0.875
	1.750 Oversize									1.125
8.00	1.375 Standard	8.500	0.688	N/A	N/A	3.500	7.570	N/A	N/A	1.625
	1.750 Oversize									1.875
10.00	1.750 Standard	10.625	0.813	N/A	N/A	3.500	9.400	N/A	N/A	1.875
	2.000 Oversize									2.000
12.00	2.000 Standard	12.750	0.813	N/A	N/A	5	11.100	N/A	N/A	2.000
	2.500 Oversize									2.250

For dimensions not shown, see page 17.

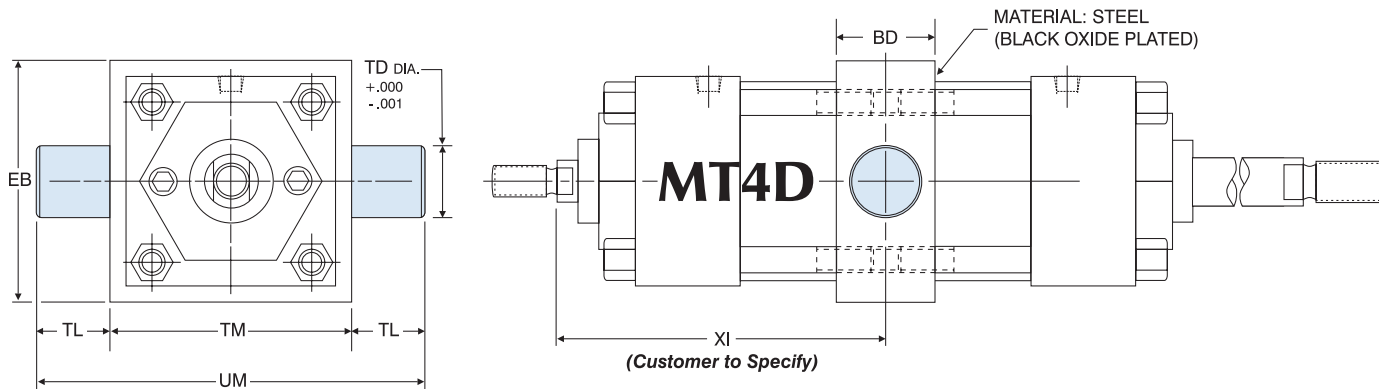
SERIES 'TA' DIMENSIONS: DOUBLE ROD END PIVOT MOUNTS



Note: MT1D Trunnions are bolt on, non-removable design.

DOUBLE ROD END 'MT1D' HEAD TRUNNION MOUNT DIMENSIONS						
BORE	ROD DIAMETER	E	TD	TL	UT	XG
1.50	0.625 Standard	2.000	1.000	1.000	4.000	1.750
	N/A*					N/A
2.00	0.625 Standard	2.500	1.000	1.000	4.500	1.750
	1.000 Oversize					2.125
2.50	0.625 Standard	3.000	1.000	1.000	5.000	1.750
	1.000 Oversize					2.125
3.25	1.000 Standard	3.750	1.000	1.000	5.750	2.250
	1.375 Oversize					2.500
4.00	1.000 Standard	4.500	1.000	1.000	6.500	2.250
	1.375 Oversize					2.500
5.00	1.000 Standard	5.500	1.000	1.000	7.500	2.250
	1.375 Oversize					2.500
6.00	1.375 Standard	6.500	1.375	1.375	9.250	2.625
	1.750 Oversize					2.875
8.00	1.375 Standard	8.500	1.375	1.375	11.250	2.625
	1.750 Oversize					2.875

*No oversize rod available on 1.50" bore MT1D.
For dimensions not shown, see page 17.



(Customer to Specify)
Example: TA - MT4 4 X 12
XI = 6"

Note: MT4D Trunnions and Intermediate Section are one-piece steel construction.

DOUBLE ROD END 'MT4D' INTERMEDIATE TRUNNION MOUNT DIMENSIONS							
BORE	BD	EB	TD	TL	TM	UM	XI
1.50	1.250	2.500	1.000	1.000	2.500	4.500	CUSTOMER TO SPECIFY
2.00	1.500	3.000	1.000	1.000	3.000	5.000	
2.50	1.500	3.500	1.000	1.000	3.500	5.500	
3.25	2.000	4.250	1.000	1.000	4.500	6.500	
4.00	2.000	5.000	1.000	1.000	5.250	7.250	
5.00	2.000	6.000	1.000	1.000	6.250	8.250	
6.00	2.000	7.000	1.375	1.375	7.625	10.375	
8.00	2.500	9.500	1.375	1.375	9.750	12.500	

'MT1D', 'MT4D' STANDARD CUSHION LOCATIONS		
MOUNT	HEAD CUSHION	CAP CUSHION
MT1D	3	6
MT4D	2	6

Note: Ports or cushions cannot be on same side as MT1D Trunnions.