

TAS Series Steel Cylinders

Bimba's TAS Series standard steel cylinders are built to handle the toughest , most abusive applications and keep going. Hard chrome-plated, honed I.D.s and durable walls that can resist the impacts of metal debris keep this NFPA actuator going through the toughest environments.

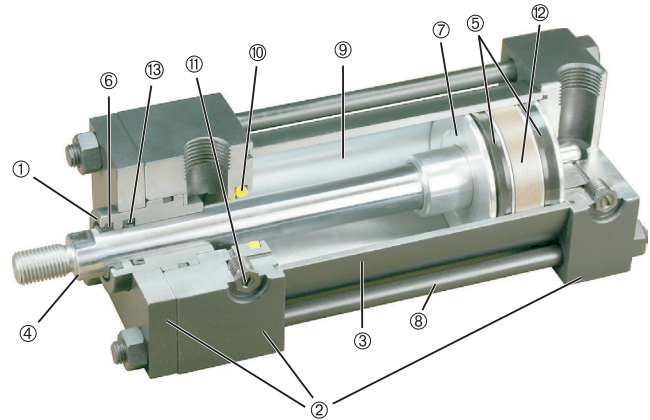
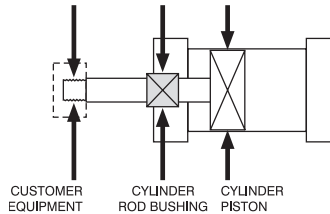


Series TAS (NFPA) Cylinder

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

- 1. 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.
- 2. Head, Cap & Retainer** – Precision machined steel head, cap and retainer are held to close tolerances and ensure accurate alignment for a truly square cylinder.
- 3. Cylinder Tube** – Precision machined steel tube with hard chrome ID, is honed and micro finished for extended seal life and improved cycle rates.
- 4. Piston Rod** – Precision machined from high yield, polished and hard chrome plated steel.
- 5. Piston Seals** – Heavy lip design Carboxilated Nitrile construction. Seals are pressure activated and wear compensating for extended life.
- 6. Rod Wiper** – Urethane construction on 3.5" rod and under. Flocked Nitrile construction on the other rod diameters. External lip design prevents debris from entering cylinder.
- 7. Piston** – Precision machined from 6061-T651 alloy aluminum, provides an excellent bearing surface for extended cylinder life.
- 8. Tie Rods** – Pre-stressed high carbon steel tie rod construction eliminates axial loading of cylinder tube and maintains compression on tube and end seals.
- 9. 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.
- 10. Cushions** – (Options H & C) Floating cushion seal designed for maximum cushion performance, quick return stroke break-away and extended life.
- 11. Cushion Adjustment Needle** – Adjustable steel needle design has fine thread metering and is positively captured to prevent needle ejection during adjustment.
- 12. Wear Band** – 90% Virgin PTFE and 10% Polyphenylene Sulfide material provides extended life due to extremely low wear factor.
- 13. Rod Seal** – Carboxilated Nitrile construction on 3.5" rod and under. Polyurethane construction on the other rod diameters. Both seals are pressure activated and wear compensating for extended life.
- 14. Finish** – Black urethane paint.

Operating Pressure

250 PSI Air (17 BAR)

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, reducing set-up time.

Operating Temperature

Standard Seals: -20°F to 200°F (-29°C to 93°C)

Fluorocarbon: 0°F to 400°F (-18°C to 204°C)

SSA – Stainless steel piston rod, tie rods, nuts and fasteners provide corrosion resistance. Refer to Series 'SS' for a complete stainless steel solution.

LF – Low friction seals reduce breakaway and running friction. Effective at all operating pressures.

TAS - MF1 - 2.5 x 10 - HC - KK3

Series
TAS 250 PSI Air

Style
(Blank) Single Rod
D Double Rod End

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"

Stroke
0" to 120"
Made-to-Order

Options
A Extended Piston Rod Thread (Example: A=2")
AS Adjustable Stroke - Retract (Specify Length, Example: AS=4")
AO Air / Oil Piston
» B 0.250" Urethane Bumper Both Ends
» BC 0.250" Urethane Bumper Cap Only
» BH 0.250" Urethane Bumper Head Only
BP Bumper Piston Seals
BSPP British Standard Pipe Taper (Specify Size, Example: BSPP= 1/4)
BSPT British Standard Pipe Parallel (Specify Size, Example: BSPP= 1/4)
C Extended Piston Rod (Example: If C=0.50", Then 1" Rod Extension Is C=1.50")
CS Center Support
EK Extended Key Plate
KK2 Large Male Rod Thread
KK3 Female Rod Thread
KK3M Female Metric Rod Thread
KK3S Studded Piston Rod (KK3 With Stud, Loctite In Place)
KK3X Female Special Thread
KK4 Full Diameter Male Rod Thread
KK5 Blank Rod End (No Threads, A=0")
KK10 Rod Coupler End
KKM Male Metric Thread
KKX Male Special Thread
LF Low Friction Seals
LT Low Temperature Seals (Temp Rating: -30°F To 200°F)
LTE Low Temperature Extreme Seals (Temp Rating: -65°F To 200°F)
MA Micro-Adjust (12" Max. Stroke) Available On Double Rod Ends
MAB Micro-Adjust With Sound Dampening Bumper (12" Max. Stroke)
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")
PLS Piston Lock Screw
PMC Solid Cast Iron Piston
RBB Rod Bushing Material: Bronze
SAE SAE Ports (Specify Size, Example: SAE#6)
SE Spring Extend
» SR Spring Retract
SSA Stainless Steel Piston Rod, Tie Rods & Nuts, And Fasteners
SSC Stainless Steel Cushion Needles
SSF Stainless Steel Fasteners
SSN Stainless Steel Tie Rod Nuts
SSR Stainless Steel Piston Rod
SST Stainless Steel Tie Rods & Nuts
» ST Stop Tube Note: Specify Stop Tube Length (In Inches) Specify Stroke As ES (Effective Stroke) (Example: TAS MS4 2 X 24ES-ST=3")*
TH 400 PSI Hyd. Non-Shock
VS Fluorocarbon Seals
XX Special Variation (Specify)

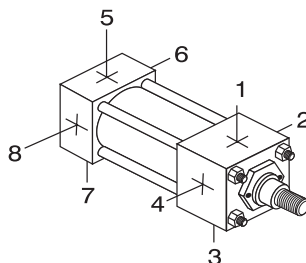
NFPA Mounts
MF1 Front Flange (1.50" - 6.00" Bore)
MF2 Rear Flange (1.50" - 6.00" Bore)
MF5 Front Square Flange (1.50" - 6.00" Bore)
MF6 Rear Square Flange (1.50" - 6.00" Bore)
ME3 Front Mounting Holes (8.00" Bore)
ME4 Rear Mounting Holes (8.00" Bore)
MP1 Rear Pivot Clevis (1.50" - 8.00" Bore)
MP2 Rear 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" - 8.00" 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" - 8.00" Bore)
MX1 Extended Tie Rods - Head & Cap (1.50" - 8.00" Bore)
MX2 Extended Tie Rods - Cap (1.50" - 8.00" Bore)
MX3 Extended Tie Rods - Head (1.50" - 8.00" Bore)
SB Spherical Bearing Cap Pivot (1.50" - 8.00" Bore)

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
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
Fixed Cushions
FCH Fixed Head Cushion (Non-Adjustable, No Adjustment Needle)
FCC Fixed Cap Cushion (Non-Adjustable, No Adjustment Needle)
FC Fixed Head and Cap Cushion (Non-Adjustable, No Adjustment Needle)

Note: "L" Cushion Option Can Be Ordered As Fixed Cushions.
Example: FCLH

Standard Port and Cushion Adjustment Positions

- Ports - Positions 1 and 5
- Cushion Adjustment - Positions 2 and 6
- Specify Non-Standard Positions When Ordering
- Port Location 9 is Center of Cap Face.



Option Length Adder For Bumpers & Stop Tubes (Add To Catalog Basic Overall Length Dimensions)

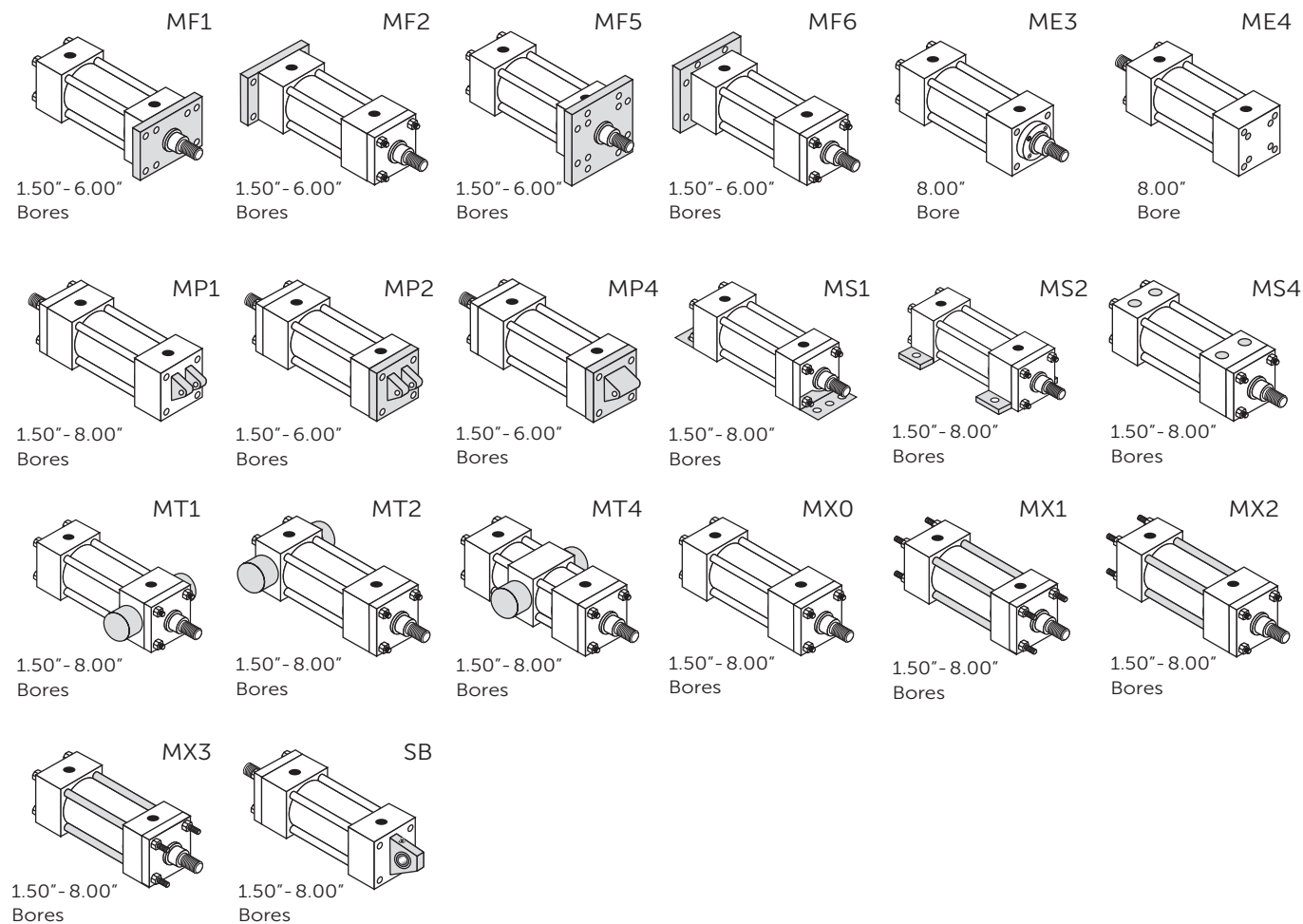
Bore	Option			
	B	BC	BH	ST* (Stop Tube) Example: ST=2
1.50	0.500	0.250	0.250	2
2.00	0.500	0.250	0.250	2
2.50	0.500	0.250	0.250	2
3.25	0.500	0.250	0.250	2
4.00	0.500	0.250	0.250	2
5.00	0.500	0.250	0.250	2
6.00	0.500	0.250	0.250	2
8.00	0.500	0.250	0.250	2

Maximum Stroke Recommendations

Bore	No Center Support	With Center Supports (CS Option)	
		One Support	Two Supports
1.50", 2.00" & 2.50"	48 Inches	Over 48 Inches	Over 72 Inches
3.25", 4.00" & 5.00"	65 Inches	Over 65 Inches	Over 92 Inches
6.00"	72 Inches	Over 72 Inches	Not Required

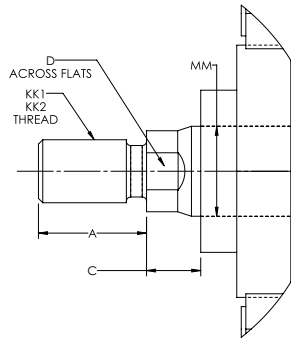
See Options section (page XXX) for SE and SR adder options.

NFPA Mounts

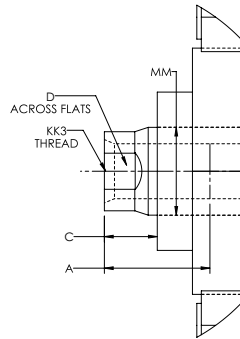


Series TAS Dimensions – Threads

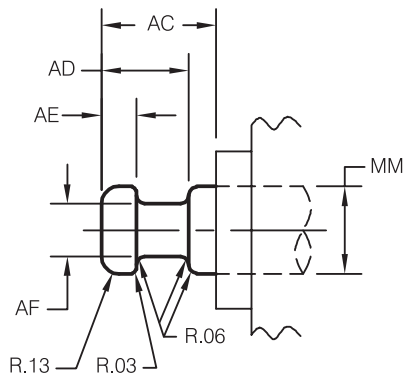
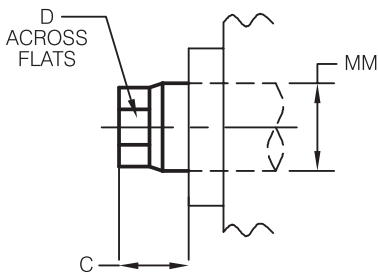
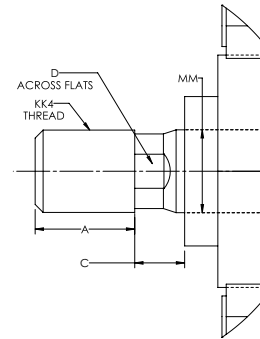
Style 1 & 2
KK1 & KK2



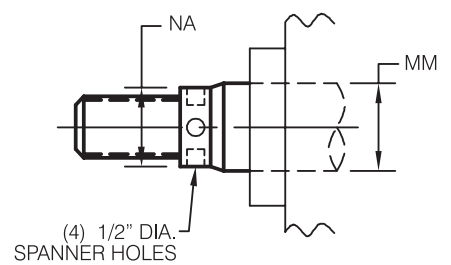
Style 3
KK3



Style 4
KK4



KK10



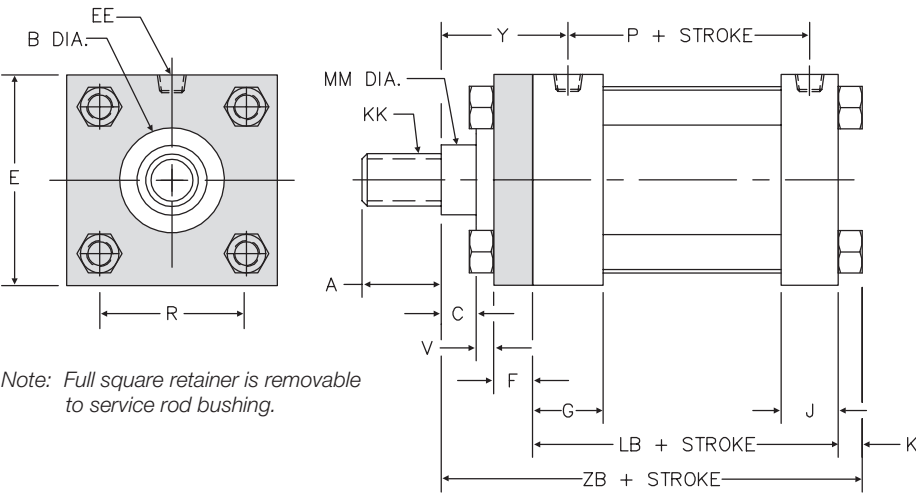
Spanner Holes
(shown on KK1-KK2)

Rod Diameter (mm)	A	C	D	AC	AD	AE	AF	KK1	KK2	KK3	KK4	NA ±.002
0.625	0.750	0.375	0.500	1.125	0.625	0.250	0.375	7/16 - 20	1/2 - 20	7/16 - 20	5/8 - 18	—
1.000	1.125	0.500	0.875	1.625	0.938	0.375	0.688	3/4 - 16	7/8 - 14	3/4 - 16	1 - 14	—
1.375	1.625	0.625	1.125	1.750	1.062	0.375	0.875	1 - 14	1 1/4 - 12	1 - 14	1 3/8 - 12	—
1.750	2.000	0.750	1.500	2.000	1.313	0.500	1.125	1 1/4 - 12	1 1/2 - 12	1 1/4 - 12	1 3/4 - 12	—
2.000	2.250	0.875	1.750	2.625	1.688	0.625	1.375	1 1/2 - 12	1 3/4 - 12	1 1/2 - 12	2 - 12	—
2.500	3.000	1.000	2.250	3.250	1.938	0.750	1.750	1 7/8 - 12	2 1/4 - 12	1 7/8 - 12	2 1/2 - 12	—
3.000	3.500	1.000	2.625	3.625	2.438	0.875	2.250	2 1/4 - 12	2 3/4 - 12	2 1/4 - 12	3 - 12	—
3.500	3.500	1.000	3.000	4.375	2.688	1.000	2.500	2 1/2 - 12	3 1/4 - 12	2 1/2 - 12	3 1/2 - 12	—
4.000	4.000	1.000	—	4.500	2.688	1.000	3.000	3 - 12	3 3/4 - 12	3 - 12	4 - 12	3.875
4.500	4.500	1.000	—	5.250	3.188	1.500	3.500	3 1/4 - 12	4 1/4 - 12	3 1/4 - 12	4 1/2 - 12	4.375
5.000	5.000	1.000	—	5.375	3.188	1.500	3.875	3 1/2 - 12	4 3/4 - 12	3 1/2 - 12	5 - 12	4.875
5.500	5.500	1.000	—	6.250	3.938	1.875	4.375	4 - 12	5 1/4 - 12	4 - 12	5 1/2 - 12	5.375

Four (4) wrench flats is an option.

Rods larger than 3.50" diameter utilize four (4) 0.50" diameter spanner holes 0.50" deep in place of wrench flats and also utilize rod end turn down above.

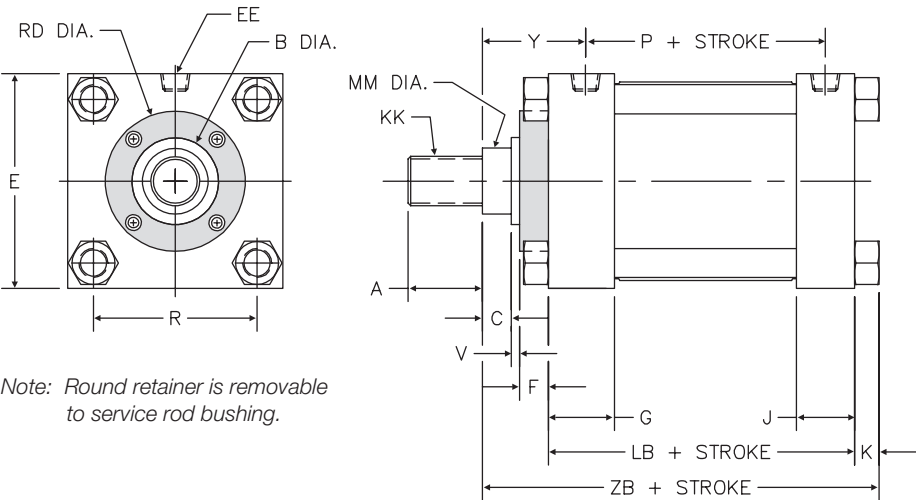
Series TAS Dimensions – Basic Cylinder (MX0 Mount)



Note: Full square retainer is removable to service rod bushing.

Full Square Retainer Used On:	
Bore	Rod Diameter
1.50	0.625
	1.000
2.00	0.625
	1.000
2.50	1.375
	0.625
	1.000
	1.750
3.25	1.000
	1.375
	1.750
	2.000
4.00	1.000
	1.375
	1.750
	2.000
5.00	2.500
	3.000
	3.500
	1.375
	1.750
6.00	2.000
	2.500
	3.000
	3.500
	4.000

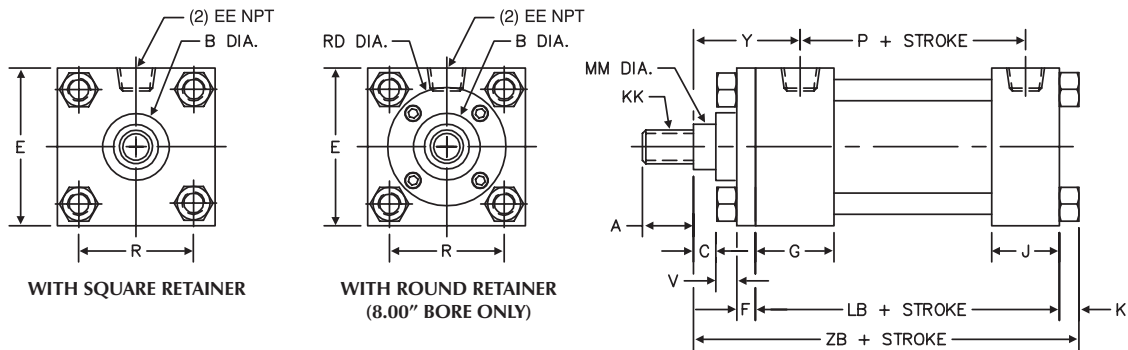
Round Retainer Construction



Note: Round retainer is removable to service rod bushing.

Round Retainer Used On:	
Bore	Rod Diameter
8.00	1.375
	1.750
	2.000
	2.500
	3.000
	3.500
	4.000
	4.500
	5.000
	5.500

Series TAS Dimensions – Basic Cylinder (MX0 Mount)



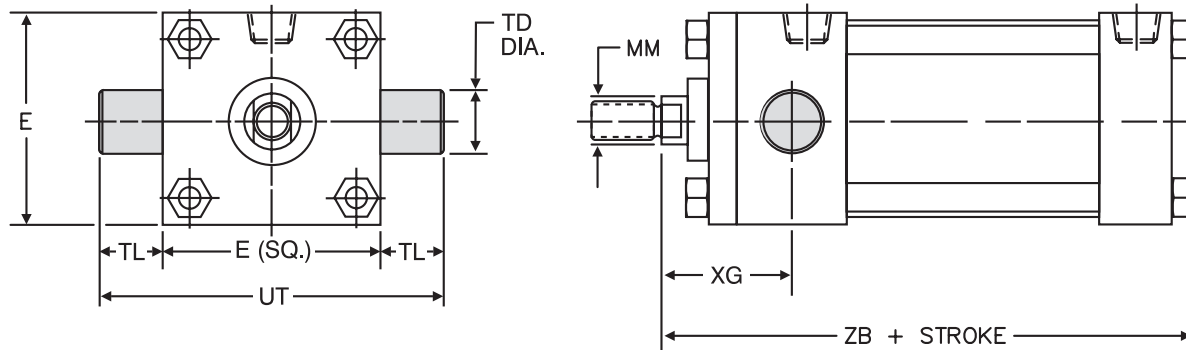
Bore	Rod Diameter (MM)	A	B	C	E	EE NPT	F	G	J	K	KK	LB	P	R	RD¹	V	Y	ZB				
1.50	0.625	0.750	1.124	0.375	2.000	3/8	0.375	1.500	1.000	0.250		3.625	2.375	1.430	SQ	0.250	1.875	4.875				
	1.000	1.125	1.499	0.500												0.500	2.250	5.250				
2.00	0.625	0.750	1.124	0.375	2.500	3/8	0.375	1.500	1.000	0.313		3.625	2.375	1.840	SQ	0.250	1.875	4.938				
	1.000	1.125	1.499	0.500												0.500	2.250	5.313				
	1.375	1.625	1.999	0.625												0.625	2.500	5.563				
2.50	0.625	0.750	1.124	0.375	3.000	3/8	0.375	1.500	1.000	0.313		3.750	2.500	2.190	SQ	0.250	1.875	5.063				
	1.000	1.125	1.499	0.500												0.500	2.250	5.438				
	1.375	1.625	1.999	0.625												0.625	2.500	5.688				
	1.750	2.000	2.374	0.750												0.750	2.750	5.938				
	1.000	1.125	1.499	0.500												0.250	2.375	6.000				
3.25	1.375	1.625	1.999	0.625	3.750	1/2	0.625	1.750	1.250	0.375		4.250	2.750	2.760	SQ	0.375	2.625	6.250				
	1.750	2.000	2.374	0.750												0.500	2.875	6.500				
	2.000	2.250	2.624	0.875												0.500	3.000	6.625				
	1.000	1.125	1.499	0.500												0.250	2.375	6.000				
4.00	1.375	1.625	1.999	0.625	4.500	1/2	0.625	1.750	1.250	0.375		4.250	2.750	3.320	SQ	0.375	2.625	6.250				
	1.750	2.000	2.374	0.750												0.500	2.875	6.500				
	2.000	2.250	2.624	0.875												0.500	3.000	6.625				
	2.500	3.000	3.124	1.000												0.625	3.250	6.875				
	1.000	1.125	1.499	0.500												0.250	2.375	6.313				
5.00	1.375	1.625	1.999	0.625	5.500	1/2	0.625	1.750	1.250	0.438		4.500	3.000	4.100	SQ	0.375	2.625	6.563				
	1.750	2.000	2.374	0.750												0.500	2.875	6.813				
	2.000	2.250	2.624	0.875												0.500	3.000	6.983				
	2.500	3.000	3.124	1.000												0.625	3.250	7.188				
	3.000	3.500	3.749	1.000												0.625	3.250	7.188				
	3.500	3.500	4.249	1.000												0.625	3.250	7.188				
	1.375	1.625	1.999	0.625												0.250	2.750	7.063				
	1.750	2.000	2.374	0.750												0.375	3.000	7.313				
6.00	2.000	2.250	2.624	0.875	6.500	3/4	0.750	2.000	1.500	0.438		5.000	3.250	4.880	SQ	0.375	3.125	7.438				
	2.500	3.000	3.124	1.000												0.500	3.375	7.688				
	3.000	3.500	3.749	1.000												0.500	3.375	7.688				
	3.500	3.500	4.249	1.000												0.500	3.375	7.688				
	4.000	4.000	4.749	1.000												0.500	3.375	7.688				
	1.375	1.625	1.999	0.625															3.500	0.375	2.750	7.313
	1.750	2.000	2.374	0.750															3.500	0.500	3.000	7.563
	2.000	2.250	2.624	0.875															5.000	0.500	3.125	7.688
8.00	2.500	3.000	3.124	1.000	8.500	3/4	0.750	2.000	1.500	0.563		5.125	3.375	6.440		5.000	0.500	3.375	7.938			
	3.000	3.500	3.749	1.000												5.250	0.500	3.375	7.938			
	3.500	3.500	4.249	1.000												5.625	0.500	3.375	7.938			
	4.000	4.000	4.749	1.000												6.500	0.500	3.375	7.938			
	4.500	4.500	5.249	1.000												7.250	0.500	3.375	7.938			
	5.000	5.000	5.749	1.000												7.500	0.500	3.375	7.938			
	5.500	5.500	6.249	1.000												7.500	0.500	3.375	7.938			

See Rod End Detail Chart On Page 160

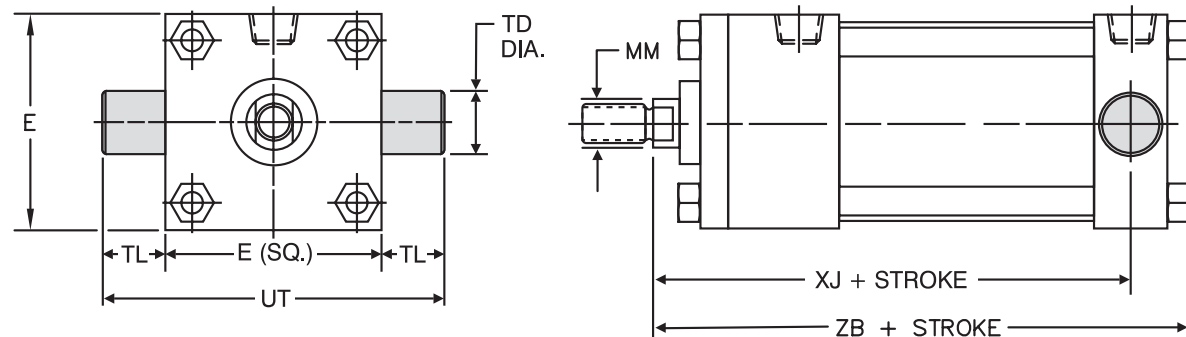
¹ Where SQ is shown in chart, cylinder utilizes a full square retainer.

Series TAS Dimensions – Trunnion Mounts

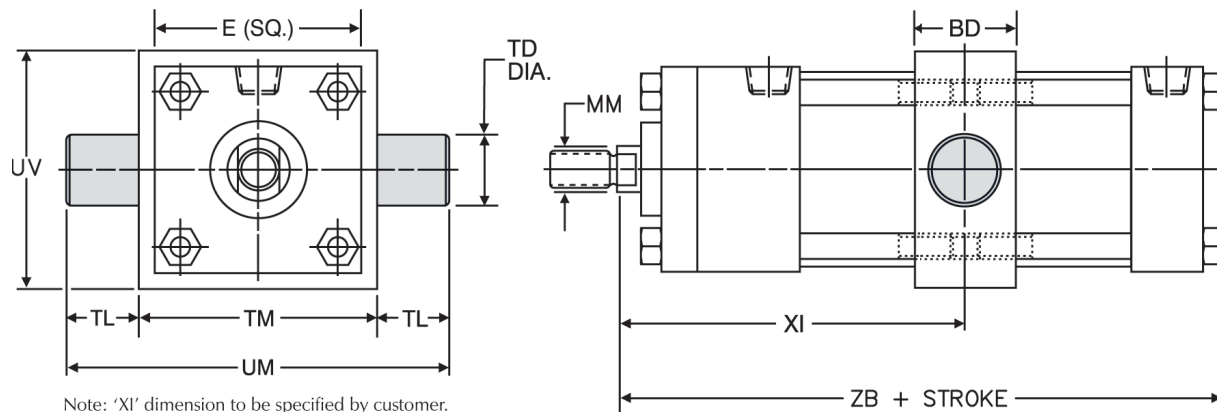
MT1: Head Trunnion



MT2: Cap Trunnion



MT4: Intermediate Trunnion



Note: 'XI' dimension to be specified by customer.

'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 TAS Dimensions – Trunnion Mounts

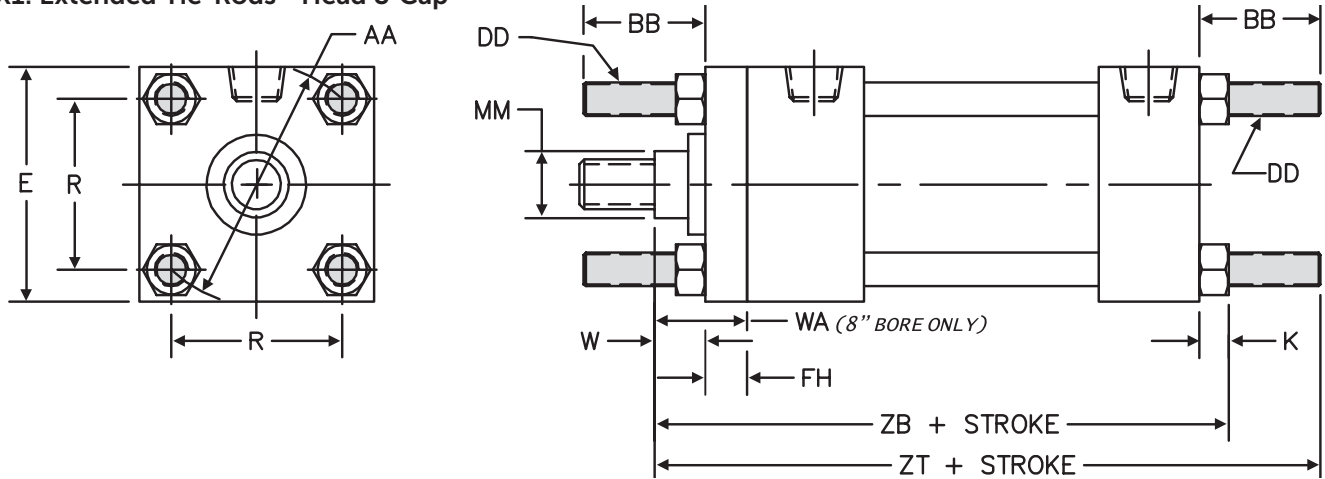
Bore	Rod Diameter (mm)	E	BD	TD ¹	TL	TM	UM	UT	UV	XG	XI ²	MT4 Min. Stroke	Add To Stroke	
													XJ	ZB
1.50	0.625	2.000	1.250	1.000	1.000	2.500	4.500	4.000	2.500	1.750	3.250	0.375	4.125	4.875
	1.000									2.125	3.625		4.500	5.250
2.00	0.625	2.500	1.500	1.000	1.000	3.000	5.000	4.500	3.000	1.750	3.375	0.625	4.125	4.938
	1.000									2.125	3.750		4.500	5.313
	1.375									2.375	4.000		4.750	5.563
2.50	0.625	3.000	1.500	1.000	1.000	3.500	5.500	5.000	3.500	1.750	3.375	0.500	4.250	5.063
	1.000									2.125	3.750		4.625	5.438
	1.375									2.375	4.000		4.875	5.688
	1.750									2.625	4.250		5.125	5.938
3.25	1.000	3.750	2.000	1.000	1.000	4.500	6.500	5.750	4.250	2.250	4.250	1.000	5.000	6.000
	1.375									2.500	4.500		5.250	6.250
	1.750									2.750	4.750		5.500	6.500
	2.000									2.875	4.875		5.625	6.625
4.00	1.000	4.500	2.000	1.000	1.000	5.250	7.250	6.500	5.000	2.250	4.250	1.000	5.000	6.000
	1.375									2.500	4.500		5.250	6.250
	1.750									2.750	4.750		5.500	6.500
	2.000									2.875	4.875		5.625	6.625
	2.500									3.125	5.125		5.875	6.875
5.00	1.000	5.500	2.000	1.000	1.000	6.250	8.250	7.500	6.000	2.250	4.250	0.750	5.250	6.313
	1.375									2.500	4.500		5.500	6.563
	1.750									2.750	4.750		5.750	6.813
	2.000									2.875	4.875		5.875	6.938
	2.500									3.125	5.125		6.125	7.188
	3.000									3.125	5.125		6.125	7.188
	3.500									3.125	5.125		6.125	7.188
6.00	1.375	6.500	2.000	1.375	1.375	7.625	10.375	9.250	7.000	2.625	4.750	0.750	5.875	7.063
	1.750									2.875	5.000		6.125	7.313
	2.000									3.000	5.125		6.250	7.438
	2.500									3.250	5.375		6.500	7.688
	3.000									3.250	5.375		6.500	7.688
	3.500									3.250	5.375		6.500	7.688
8.00	4.000									3.250	5.375		6.500	7.688
	1.375	8.500	2.500	1.375	1.375	9.750	12.500	11.250	9.500	2.625	5.000	1.125	6.000	7.313
	1.750									2.875	5.250		6.250	7.563
	2.000									3.000	5.375		6.375	7.688
	2.500									3.250	5.625		6.625	7.938
	3.000									3.250	5.625		6.625	7.938
	3.500									3.250	5.625		6.625	7.938
	4.000									3.250	5.625		6.625	7.938
	4.500									3.250	5.625		6.625	7.938
	5.000									3.250	5.625		6.625	7.938
	5.500									3.250	5.625		6.625	7.938

¹ 'TD' dimension tolerance is + .000 / - .001

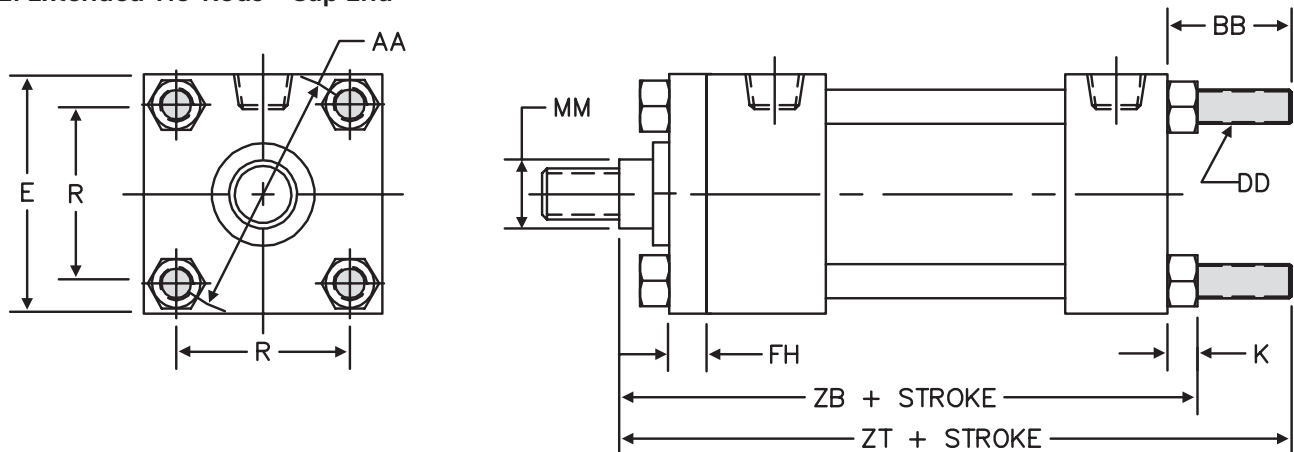
² 'XI' dimension is the minimum that can be supplied and leaves 1/8" gap between head & trunnion block; customer to specify 'XI' dimension.

Series TAS Dimensions – Extended Tie Rod Mounts

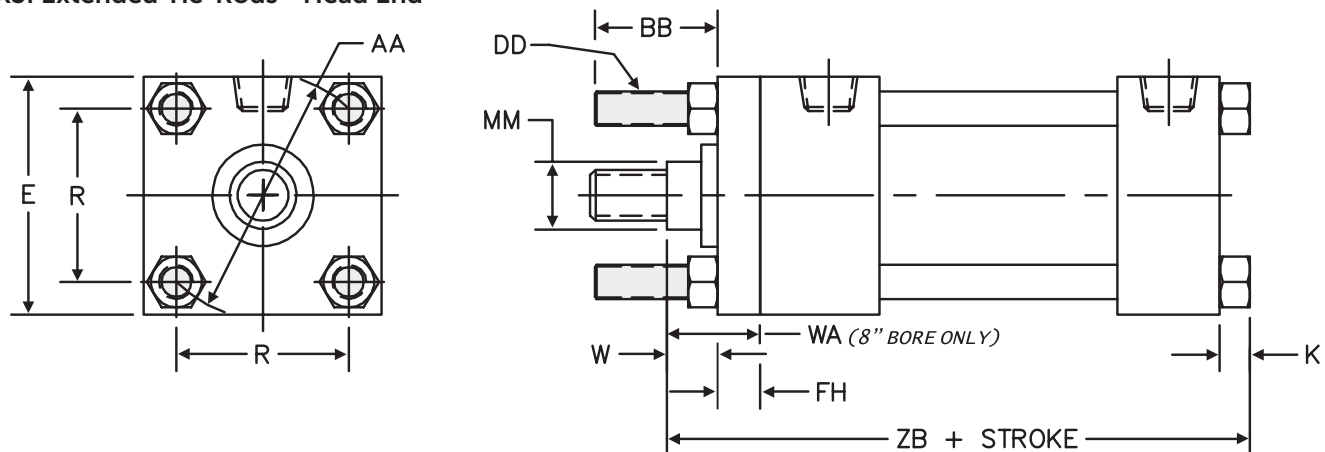
MX1: Extended Tie-Rods - Head & Cap



MX2: Extended Tie-Rods - Cap End



MX3: Extended Tie-Rods - Head End



Series TAS Dimensions – Extended Tie Rod Mounts

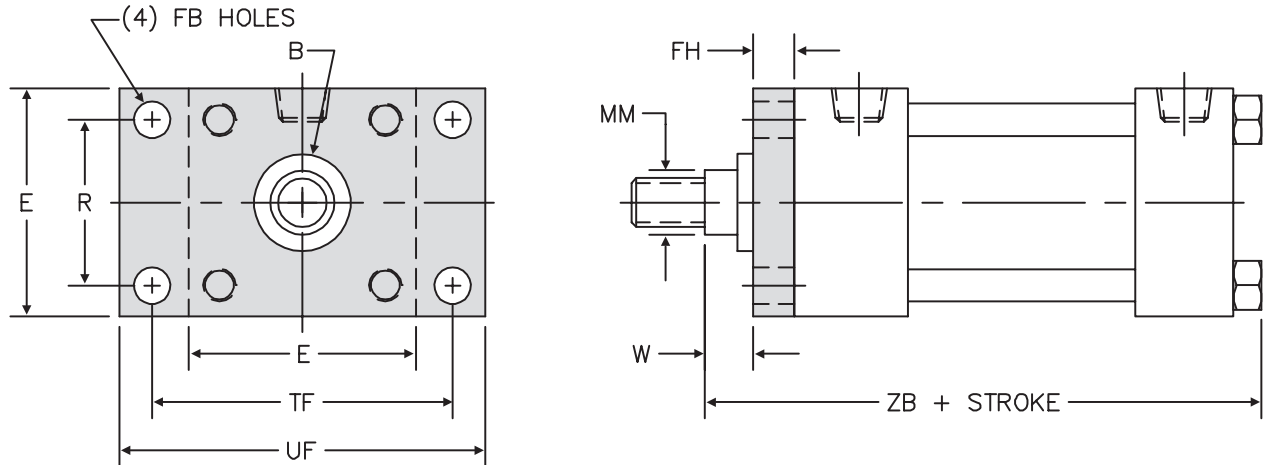
Bore	Rod Dia. (mm)	E	FH	AA	BB	DD	K	R	RD ¹	W or WA (8")	Add To Stroke	
											ZB	ZT
1.50	0.625	2.000	0.375	2.020	1.000	1/4 - 28	0.250	1.430	SQ	0.625	4.875	5.625
	1.000									1.000	5.250	6.000
2.00	0.625	2.500	0.375	2.600	1.125	5/16 - 24	0.313	1.840	SQ	0.625	4.938	5.750
	1.000									1.000	5.313	6.125
	1.375									1.250	5.563	6.375
2.50	0.625	3.000	0.375	3.100	1.125	5/16 - 24	0.313	2.190	SQ	0.625	5.063	5.875
	1.000									1.000	5.438	6.250
	1.375									1.250	5.688	6.500
	1.750									1.500	5.938	6.750
3.25	1.000	3.750	0.625	3.900	1.375	3/8 - 24	0.375	2.760	SQ	0.750	6.000	7.000
	1.375									1.000	6.250	7.250
	1.750									1.250	6.500	7.500
	2.000									1.375	6.625	7.625
4.00	1.000	4.500	0.625	4.700	1.375	3/8 - 24	0.375	3.320	SQ	0.750	6.000	7.000
	1.375									1.000	6.250	7.250
	1.750									1.250	6.500	7.500
	2.000									1.375	6.625	7.625
	2.500									1.625	6.875	7.875
5.00	1.000	5.500	0.625	5.800	1.813	1/2 - 20	0.438	4.100	SQ	0.750	6.313	7.688
	1.375									1.000	6.563	7.938
	1.750									1.250	6.813	8.188
	2.000									1.375	6.938	8.313
	2.500									1.625	7.188	8.563
	3.000									1.625	7.188	8.563
6.00	1.375	6.500	0.750	6.900	1.813	1/2 - 20	0.438	4.880	SQ	0.750	6.313	7.688
	1.750									1.000	6.563	7.938
	2.000									1.250	6.813	8.188
	2.500									1.375	6.938	8.313
	3.000									1.625	7.188	8.563
	3.500									1.625	7.188	8.563
8.00	1.375	8.500	0.625	9.100	2.3132	5/8 - 18	0.563	6.440	SQ	0.750	6.313	7.688
	1.750									1.000	6.563	7.938
	2.000									1.250	6.813	8.188
	2.500									1.375	6.938	8.313
	3.000									1.625	7.188	8.563
	3.500									1.625	7.188	8.563
	4.000									1.625	7.188	8.563
	4.500									1.625	7.188	8.563
	5.000									1.625	7.188	8.563
	5.500									1.625	7.188	8.563

¹Where SQ is shown in chart, cylinder utilizes a full square retainer.

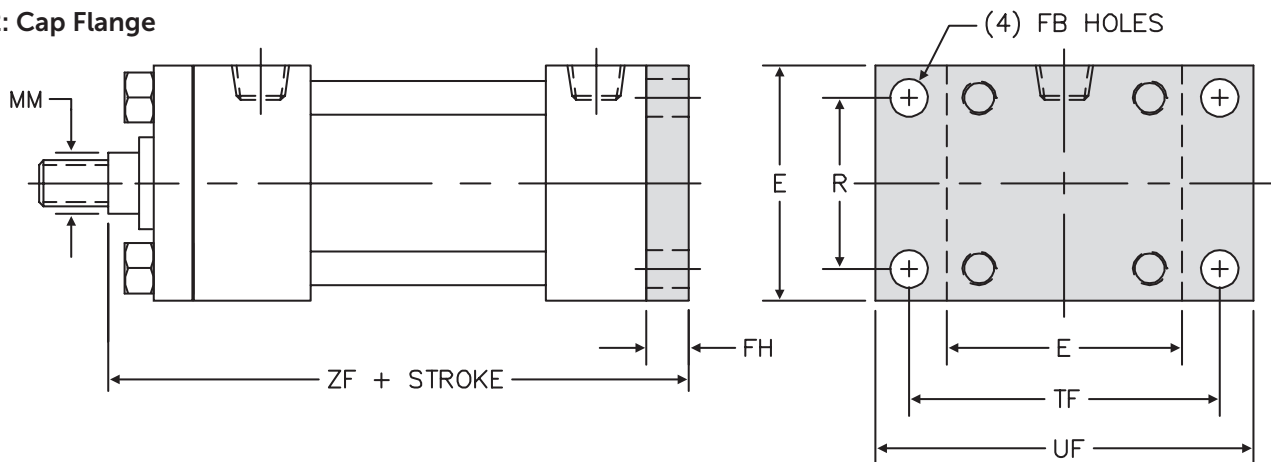
²Round retainer used to retain bushing, not a full front plate as other bores. 'BB' is dimension from head on the 8.00" bore.

Series TAS Dimensions – Flange Mounts

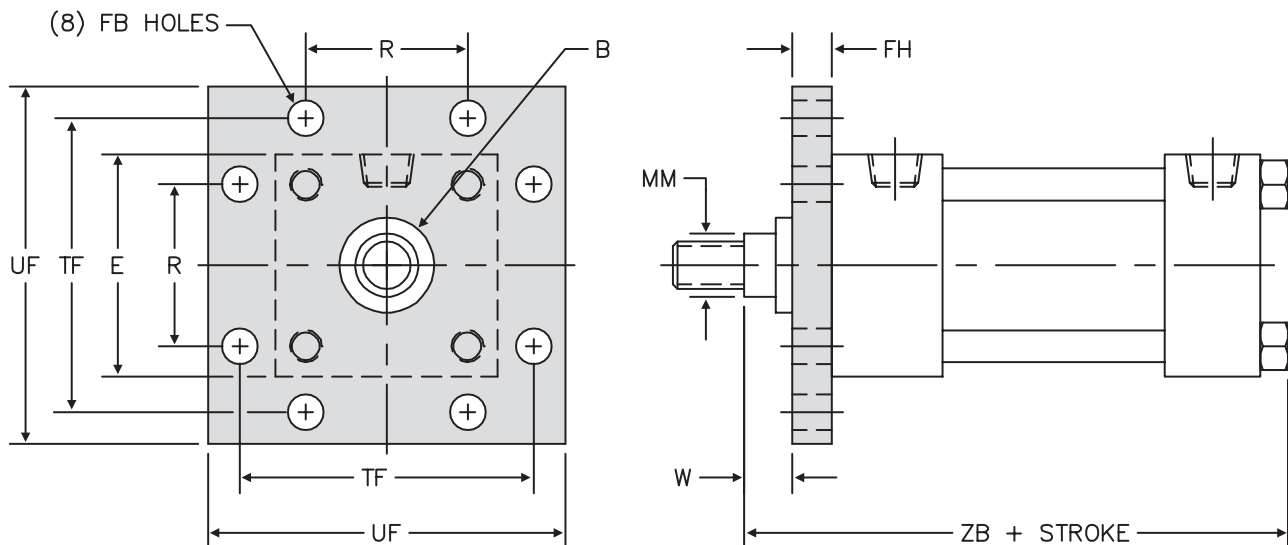
MF1: Head Flange



MF2: Cap Flange

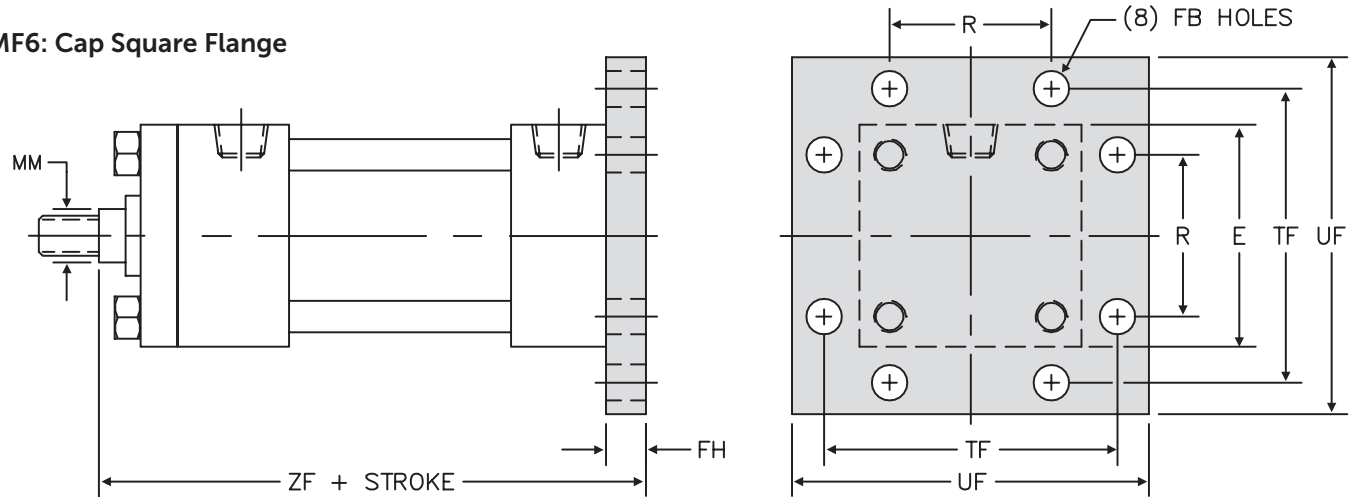


MF5: Head Square Flange



Series TAS Dimensions – Flange Mounts

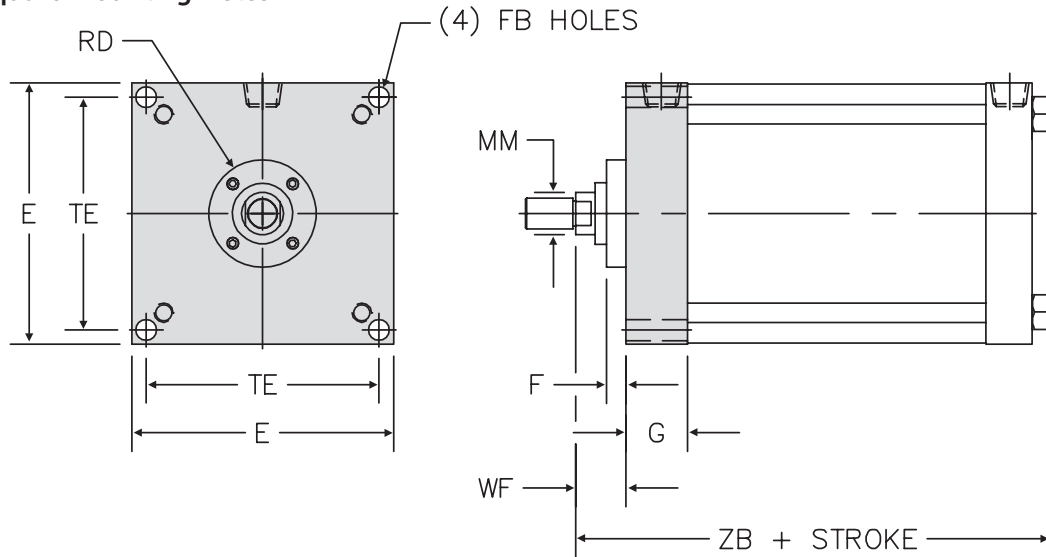
MF6: Cap Square Flange



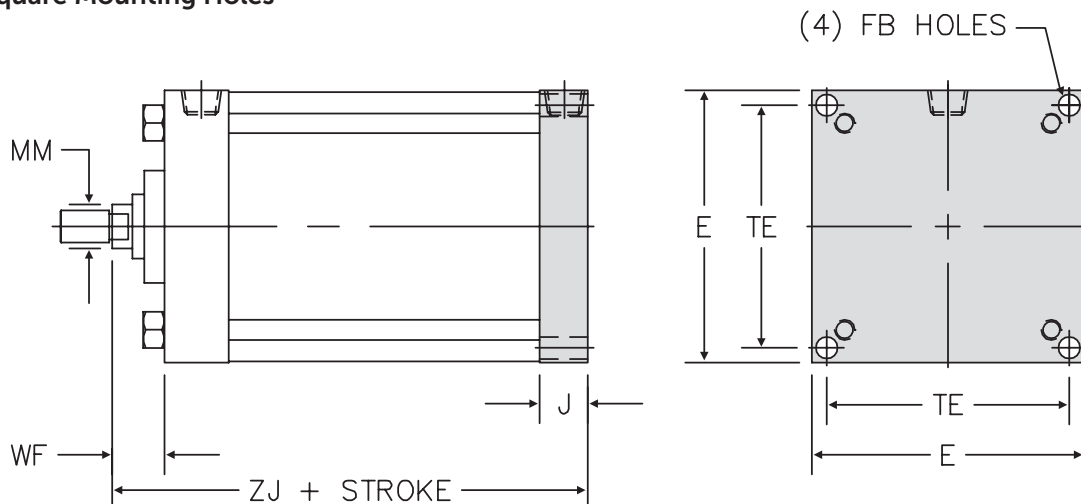
Bore	Rod Diameter (mm)	B	E	FB	FH	R	TF	UF	W	Add To Stroke	
										ZB	ZF
1.50	0.625	1.124	2.000	0.313	0.375	1.438	2.750	3.375	0.625	4.875	5.000
	1.000	1.499							1.000	5.250	5.375
2.00	0.625	1.124	2.500	0.375	0.375	1.844	3.375	4.125	0.625	4.938	5.000
	1.000	1.499							1.000	5.313	5.375
	1.375	1.999							1.250	5.563	5.625
2.50	0.625	1.124	3.000	0.375	0.375	2.188	3.875	4.625	0.625	5.063	5.125
	1.000	1.499							1.000	5.438	5.500
	1.375	1.999							1.250	5.688	5.750
	1.750	2.374							1.500	5.938	6.000
3.25	1.000	1.499	3.750	0.438	0.625	2.766	4.688	5.500	0.750	6.000	6.250
	1.375	1.999							1.000	6.250	6.500
	1.750	2.374							1.250	6.500	6.750
	2.000	2.624							1.375	6.625	6.875
4.00	1.000	1.499	4.500	0.438	0.625	3.328	5.438	6.250	0.750	6.000	6.250
	1.375	1.999							1.000	6.250	6.500
	1.750	2.374							1.250	6.500	6.750
	2.000	2.624							1.375	6.625	6.875
	2.500	3.124							1.625	6.875	7.125
5.00	1.000	1.499	5.500	0.563	0.625	4.109	6.625	7.625	0.750	6.313	6.500
	1.375	1.999							1.000	6.563	6.750
	1.750	2.374							1.250	6.813	7.000
	2.000	2.624							1.375	6.938	7.125
	2.500	3.124							1.625	7.188	7.375
	3.000	3.749							1.625	7.188	7.375
6.00	3.500	4.249	6.500	0.563	0.750	4.875	7.625	8.625	1.625	7.188	7.375
	1.375	1.999							0.875	7.063	7.375
	1.750	2.374							1.125	7.313	7.625
	2.000	2.624							1.250	7.438	7.750
	2.500	3.124							1.500	7.688	8.000
	3.000	3.749							1.500	7.688	8.000
	3.500	4.249							1.500	7.688	8.000
	4.000	4.749							1.500	7.688	8.000

Series TAS Dimensions – Flange Mounts

ME3: Head Square Mounting Holes



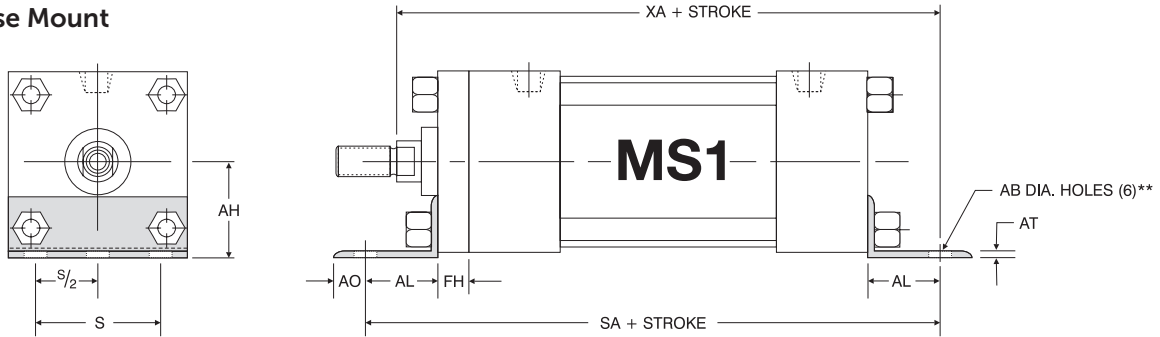
ME4: Cap Square Mounting Holes



Bore	Rod Diameter (mm)	E	F	FB	G	J	TE	RD	WF	Add To Stroke	
										ZB	ZJ
8.00	1.375	8.500	0.625	0.688	2.000	1.500	7.570	3.500	1.625	7.313	6.750
	1.750		0.625					3.500	1.875	7.563	7.000
	2.000		0.625					5.000	2.000	7.688	7.125
	2.500		0.750					5.000	2.250	7.938	7.375
	3.000		0.750					5.250	2.250	7.938	7.375
	3.500		0.750					5.625	2.250	7.938	7.375
	4.000		0.750					6.500	2.250	7.938	7.375
	4.500		0.750					7.250	2.250	7.938	7.375
	5.000		0.750					7.500	2.250	7.938	7.375
	5.500		0.750					7.500	2.250	7.938	7.375

Series TAS Dimensions – Base Mounts

MS1: Base Mount



'MS1' Angle Mount Dimensions

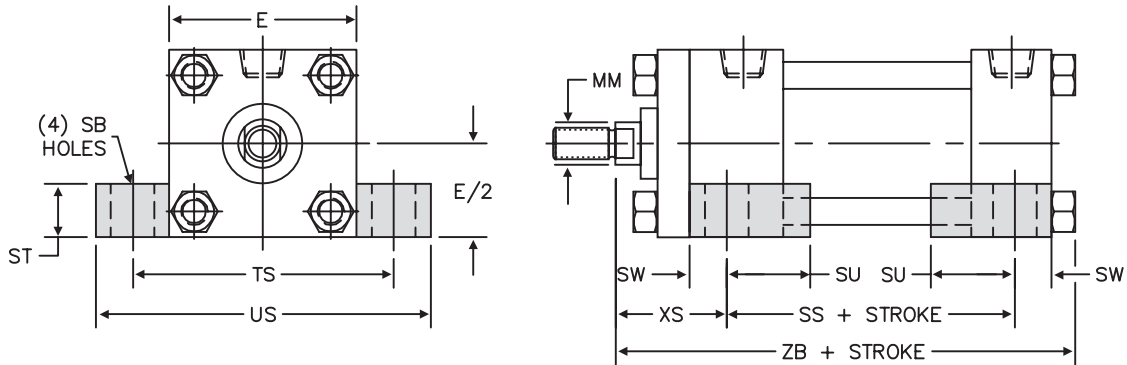
Bore	Rod Diameter (MM)	AB	AH	AL	AO	AT	FH	S	Add To Stroke	
									SA	XA
1.50	0.625	0.438	1.188	1.000	0.375	0.188	0.375	1.250	6.000	5.625
	1.000									6.000
2.00	0.625	0.438	1.438	1.000	0.375	0.188	0.375	1.750	6.000	5.625
	1.000									6.000
	1.375									6.250
2.50	0.625	0.438	1.625	1.000	0.375	0.188	0.375	2.250	6.125	5.750
	1.000									6.125
	1.375									6.375
	1.750									6.625
3.25	1.000	0.563	1.938	1.250	0.500	0.125	0.625	2.750	7.375	6.875
	1.375									7.125
	1.750									7.375
	2.000									7.500
4.00	1.000	0.563	2.250	1.250	0.500	0.125	0.625	3.500	7.375	6.875
	1.375									7.125
	1.750									7.375
	2.000									7.500
	2.500									7.750
5.00	1.000	0.688	2.750	1.375	0.625	0.188	0.625	4.250	7.875	7.250
	1.375									7.500
	1.750									7.750
	2.000									7.875
	2.500									8.125
	3.000									8.125
6.00	3.500	0.813	3.250	1.375	0.625	0.188	0.750	5.250	8.500	8.125
	4.000									8.625
	1.375									8.000
	1.750									8.250
	2.000									8.375
	2.500									8.625
8.00*	3.000	0.813	4.250	1.813	0.688	0.250	0.750	7.125	8.750	8.625
	3.500									8.625
	4.000									8.625
	4.500									8.625
	5.000									8.625
	5.500									8.625
	1.375						0.625			8.563
	1.750						0.625			8.813
	2.000						0.625			8.938
	2.500						0.750			9.188
	3.000						0.750			9.188
	3.500						0.750			9.188
	4.000						0.750			9.188
	4.500						0.750			9.188
	5.000						0.750			9.188
	5.500						0.750			9.188

*8.00" bore utilizes a round retainer.

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

Series TAS Dimensions – Lug Mounts

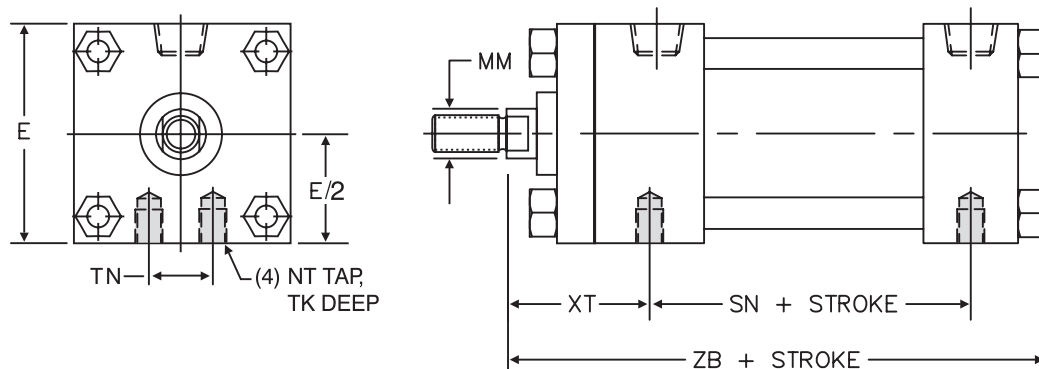
MS2: Side Lugs



Bore	Rod Diameter (MM)	E	SB	ST	SU	SW	TS	US	XS	Add To Stroke	
										SS	ZB
1.50	0.625	2.000	0.438	0.500	1.125	0.375	2.750	3.500	1.375	2.875	4.875
	1.000								1.750		5.250
2.00	0.625	2.500	0.438	0.500	1.125	0.375	3.250	4.000	1.375	2.875	4.938
	1.000								1.750		5.313
	1.375								2.000		5.563
2.50	0.625	3.000	0.438	0.500	1.125	0.375	3.750	4.500	1.375	3.000	5.063
	1.000								1.750		5.438
	1.375								2.000		5.688
	1.750								2.250		5.938
3.25	1.000	3.750	0.563	0.750	1.250	0.500	4.750	5.750	1.875	3.250	6.000
	1.375								2.125		6.250
	1.750								2.375		6.500
	2.000								2.500		6.625
4.00	1.000	4.500	0.563	0.750	1.250	0.500	5.500	6.500	1.875	3.250	6.000
	1.375								2.125		6.250
	1.750								2.375		6.500
	2.000								2.500		6.625
	2.500								2.750		6.875
5.00	1.000	5.500	0.813	1.000	1.063	0.688	6.875	8.250	2.063	3.125	6.313
	1.375								2.313		6.563
	1.750								2.563		6.813
	2.000								2.688		6.938
	2.500								2.938		7.188
	3.000								2.938		7.188
	3.500								2.938		7.188
6.00	1.375	6.500	0.813	1.000	1.313	0.688	7.875	9.250	2.313	3.625	7.063
	1.750								2.563		7.313
	2.000								2.688		7.438
	2.500								2.938		7.688
	3.000								2.938		7.688
	3.500								2.938		7.688
	4.000								2.938		7.688
8.00	1.375	8.500	0.813	1.000	1.313	0.688	9.875	11.250	2.313	3.750	7.313
	1.750								2.563		7.563
	2.000								2.688		7.688
	2.500								2.938		7.938
	3.000								2.938		7.938
	3.500								2.938		7.938
	4.000								2.938		7.938
	4.500								2.938		7.938
	5.000								2.938		7.938
	5.500								2.938		7.938

Series TAS Dimensions – Bottom Mounts

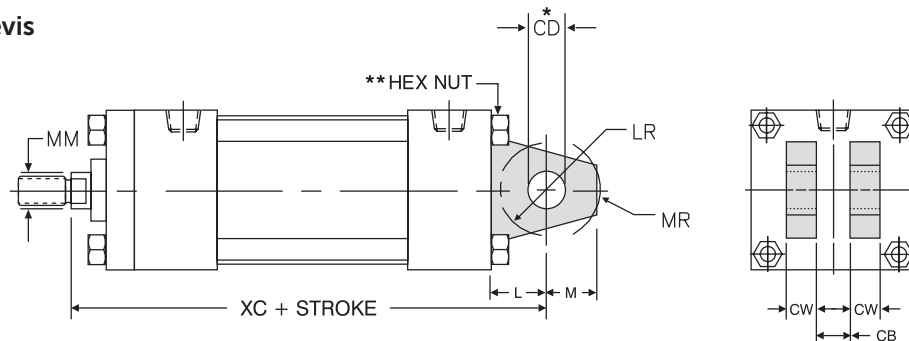
MS4: Bottom Tapped Holes



Bore	Rod Diameter (MM)	E	NT	TN	TK	XT	Add To Stroke	
							SN	ZB
1.50	0.625	2.000	1/4- 20	0.625	0.375	1.938	2.250	4.875
	1.000					2.313		5.250
2.00	0.625	2.500	5/16- 18	0.875	0.500	1.938	2.250	4.938
	1.000				0.500	2.313		5.313
	1.375				0.375	2.563		5.563
2.50	0.625	3.000	3/8 - 16	1.250	0.625	1.938	2.375	5.063
	1.000				0.625	2.313		5.438
	1.375				0.438	2.563		5.688
	1.750				0.375	2.813		5.938
3.25	1.000	3.750	1/2 - 13	1.500	0.750	2.438	2.625	6.000
	1.375				0.750	2.688		6.250
	1.750				0.500	2.938		6.500
	2.000				0.500	3.063		6.625
4.00	1.000	4.500	1/2 - 13	2.063	0.750	2.438	2.625	6.000
	1.375				0.750	2.688		6.250
	1.750				0.750	2.938		6.500
	2.000				0.750	3.063		6.625
	2.500				0.625	3.313		6.875
5.00	1.000	5.500	5/8 - 11	2.688	1.000	2.438	2.875	6.313
	1.375				1.000	2.688		6.563
	1.750				1.000	2.938		6.813
	2.000				1.000	3.063		6.938
	2.500				1.000	3.313		7.188
	3.000				0.750	3.313		7.188
6.00	3.500	6.500	3/4- 10	3.250	0.625	3.313	3.125	7.188
	1.375				1.125	2.813		7.063
	1.750				1.125	3.063		7.313
	2.000				1.125	3.188		7.438
	2.500				1.125	3.438		7.688
	3.000				1.125	3.438		7.688
8.00	3.500	8.500	3/4- 10	4.500	1.125	3.438	3.250	7.688
	4.000					3.438		7.688
	4.500					3.438		7.688
	5.000					3.438		7.688
	5.500					3.438		7.688
						2.813		7.313
						3.063		7.563
						3.188		7.688
						3.438		7.938

Series TAS Dimensions – Pivot Mounts

MP1: Rear Pivot Clevis



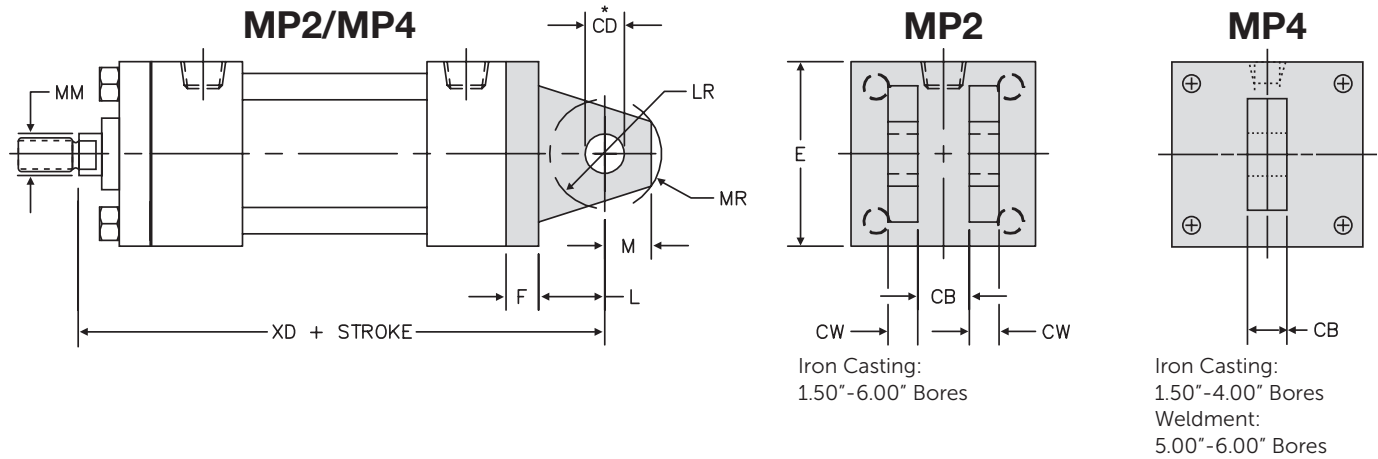
Bore	Rod Diameter (MM)	CB	CD	CW	E	L	LR	M	MR	Add To Stroke XC
1.50	0.625	0.750	0.500	0.500	2.000	0.750	0.750	0.500	0.625	5.375
	1.000									5.750
2.00	0.625	0.750	0.500	0.500	2.500	0.750	0.750	0.500	0.625	5.375
	1.000									5.750
	1.375									6.000
2.50	0.625	0.750	0.500	0.500	3.000	0.750	0.750	0.500	0.625	5.500
	1.000									5.875
	1.375									6.125
	1.750									6.375
3.25	1.000	1.250	0.750	0.625	3.750	1.250	1.000	0.875	0.938	6.875
	1.375									7.125
	1.750									7.375
	2.000									7.500
4.00	1.000	1.250	0.750	0.625	4.500	1.250	1.000	0.875	0.938	6.875
	1.375									7.125
	1.750									7.375
	2.000									7.500
5.00	2.500	1.250	0.750	0.625	5.500	1.250	1.000	0.875	0.938	7.750
	3.000									8.000
	3.500									8.000
	4.000									8.000
	4.500									8.000
6.00	1.375	1.500	1.000	0.750	6.500	1.500	1.250	1.000	1.188	8.125
	1.750									8.375
	2.000									8.500
	2.500									8.750
	3.000									8.750
8.00	3.500	1.500	1.000	0.750	8.500	1.500	1.250	1.000	1.188	8.750
	4.000									8.750
	4.500									8.750
	5.000									8.750
	5.500									8.750
	6.000									8.750
	6.500									8.750
	7.000									8.750

*Clevis pins are provided with pivot mounts.

**Hex nuts are located on cap end (4.00"-8.00" bores).

Series TAS Dimensions – Pivot Mounts

MP2 & MP4: Rear Pivot Detachable Clevis

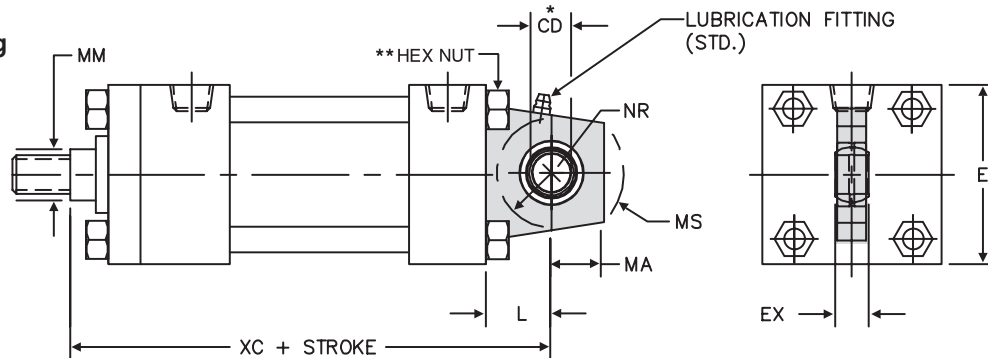


Bore	Rod Diameter (MM)	CB	CD	CW	E	F	L	LR	M	MR	Add To Stroke XD
1.50	0.625	0.750	0.500	0.500	2.000	0.375	0.750	0.750	0.500	0.625	5.750
	1.000										6.125
2.00	0.625	0.750	0.500	0.500	2.500	0.375	0.750	0.750	0.500	0.625	5.750
	1.000										6.125
	1.375										6.375
2.50	0.625	0.750	0.500	0.500	3.000	0.375	0.750	0.750	0.500	0.625	5.875
	1.000										6.250
	1.375										6.500
	1.750										6.750
3.25	1.000	1.250	0.750	0.625	3.750	0.625	1.250	1.000	0.875	0.938	7.500
	1.375										7.750
	1.750										8.000
	2.000										8.125
4.00	1.000	1.250	0.750	0.625	4.500	0.625	1.250	1.000	0.875	0.938	7.500
	1.375										7.750
	1.750										8.000
	2.000										8.125
5.00	2.500	1.250	0.750	0.625	5.500	0.625	1.250	1.000	0.875	0.938	8.375
	3.000										8.625
	3.500										8.625
	1.375										8.875
	1.750										9.125
6.00	2.000	1.500	1.000	0.750	6.500	0.750	1.500	1.250	1.000	1.188	9.250
	2.500										9.500
	3.000										9.500
	3.500										9.500
	4.000										9.500

*Clevis pins are provided with pivot mounts.

Series TAS Dimensions – Spherical Bearing Mount

SB: Spherical Bearing



Bore	Rod Diameter (MM)	CD	E	EX	L	MA	MS	NR	Add To Stroke XC
1.50	0.625	0.500	2.000	0.437	0.750	0.750	0.938	0.625	5.375
	1.000								5.750
2.00	0.625	0.500	2.500	0.437	0.750	0.750	0.938	0.625	5.375
	1.000								5.750
	1.375								6.000
2.50	0.625	0.500	3.000	0.437	0.750	0.750	0.938	0.625	5.500
	1.000								5.875
	1.375								6.125
	1.750								6.375
3.25	1.000	0.750	3.750	0.656	1.250	1.000	1.375	1.000	6.875
	1.375								7.125
	1.750								7.375
	2.000								7.500
4.00	1.000	0.750	4.500	0.656	1.250	1.000	1.375	1.000	6.875
	1.375								7.125
	1.750								7.375
	2.000								7.500
	2.500								7.750
5.00	1.000	0.750	5.500	0.656	1.250	1.000	1.375	1.000	7.125
	1.375								7.375
	1.750								7.625
	2.000								7.750
	2.500								8.000
	3.000								8.000
	3.500								8.000
6.00	1.375	1.000	6.500	0.875	1.500	1.250	1.688	1.250	8.125
	1.750								8.375
	2.000								8.500
	2.500								8.750
	3.000								8.750
	3.500								8.750
	4.000								8.750
8.00	1.375	1.000	8.500	0.875	1.500	1.250	1.688	1.250	8.250
	1.750								8.500
	2.000								8.625
	2.500								8.875
	3.000								8.875
	3.500								8.875
	4.000								8.875
	4.500								8.875
	5.000								8.875
	5.500								8.875

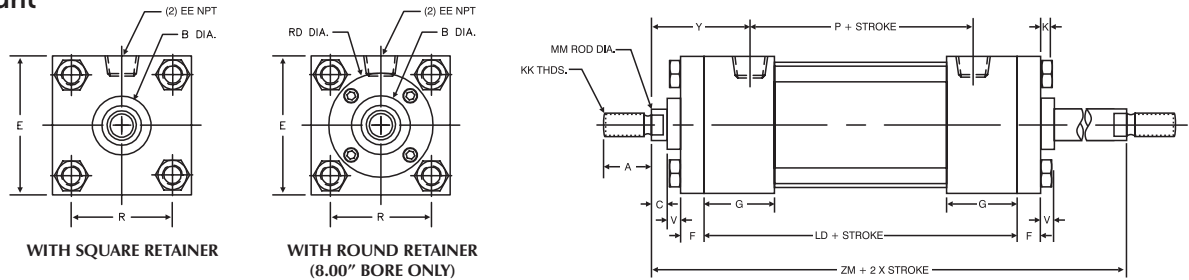
*Clevis pins are provided with pivot mounts.

Note: Must specify KK3 rod end if to be used with 'MSRE' series rod eye.

**Hex nuts are located on cap end (3.25"-8.00" bores).

Series TAS Dimensions – Basic Double Rod End Mounts

MX0D: No Mount



Bore	Rod Dia. (MM)	A	B	C	E	EE NPT	F	G	K	KK	LD	P	R	RD¹	V	Y	ZM	
1.50	0.625	0.750	1.124	0.375	2.000	3/8	0.375	1.500	0.250		4.125	2.375	1.438	SQ	0.250	1.875	6.125	
	1.000	1.125	1.499	0.500											0.500	2.250	6.875	
2.00	0.625	0.750	1.124	0.375	2.500	3/8	0.375	1.500	0.313		4.125	2.375	1.844	SQ	0.250	1.875	6.125	
	1.000	1.125	1.499	0.500											0.500	2.250	6.875	
2.50	1.375	1.625	1.999	0.625	3.000	3/8	0.375	1.500	0.313		4.250	2.500	2.188	SQ	0.625	2.500	7.375	
	0.625	0.750	1.124	0.375											0.250	1.875	6.250	
	1.000	1.125	1.499	0.500											0.500	2.250	7.000	
	1.375	1.625	1.999	0.625											0.625	2.500	7.500	
3.25	1.750	2.000	2.374	0.750	3.750	1/2	0.625	1.750	0.375		4.750	2.750	2.766	SQ	0.750	2.750	8.000	
	1.000	1.125	1.499	0.500											0.250	2.375	7.500	
	1.375	1.625	1.999	0.625											0.375	2.625	8.000	
	1.750	2.000	2.374	0.750											0.500	2.875	8.500	
	2.000	2.250	2.624	0.875											0.500	3.000	8.750	
4.00	1.000	1.125	1.499	0.500	4.500	1/2	0.625	1.750	0.375		4.750	2.750	3.328	SQ	0.250	2.375	7.500	
	1.375	1.625	1.999	0.625											0.375	2.625	8.000	
	1.750	2.000	2.374	0.750											0.500	2.875	8.500	
	2.000	2.250	2.624	0.875											0.500	3.000	8.750	
	2.500	3.000	3.124	1.000											0.625	3.250	9.250	
5.00	1.000	1.125	1.499	0.500	5.500	1/2	0.625	1.750	0.438		5.000	3.000	4.109	SQ	0.250	2.375	7.750	
	1.375	1.625	1.999	0.625											0.375	2.625	8.250	
	1.750	2.000	2.374	0.750											0.500	2.875	8.750	
	2.000	2.250	2.624	0.875											0.500	3.000	9.000	
	2.500	3.000	3.124	1.000											0.625	3.250	9.500	
	3.000	3.500	3.749	1.000											0.625	3.250	9.500	
6.00	3.500	3.500	4.249	1.000	6.500	3/4	0.750	2.000	0.438		5.500	3.250	4.875	SQ	0.625	3.250	9.500	
	1.375	1.625	1.999	0.625											0.250	2.750	8.750	
	1.750	2.000	2.374	0.750											0.375	3.000	9.250	
	2.000	2.250	2.624	0.875											0.375	3.125	9.500	
	2.500	3.000	3.124	1.000											0.500	3.375	10.000	
	3.000	3.500	3.749	1.000											0.500	3.375	10.000	
8.00	3.500	3.500	4.249	1.000	8.500	3/4	0.750	2.000	0.563		5.625	3.375	6.438		0.500	3.375	10.000	
	4.000	4.000	4.749	1.000											0.500	3.375	10.000	
	1.375	1.625	1.999	0.625											3.500	0.250	2.750	8.875
	1.750	2.000	2.374	0.750											3.500	0.375	3.000	9.375
	2.000	2.250	2.624	0.875											5.000	0.375	3.125	9.625
	2.500	3.000	3.124	1.000											5.000	0.500	3.375	10.125
	3.000	3.500	3.749	1.000											5.250	0.500	3.375	10.125
	3.500	3.500	4.249	1.000											5.625	0.500	3.375	10.125
	4.000	4.000	4.749	1.000											6.500	0.500	3.375	10.125
	4.500	4.500	5.249	1.000											7.250	0.500	3.375	10.125
5.000	5.000	5.749	1.000	7.500	0.500	3.375	10.125											
5.500	5.500	6.249	1.000	7.500	0.500	3.375	10.125											

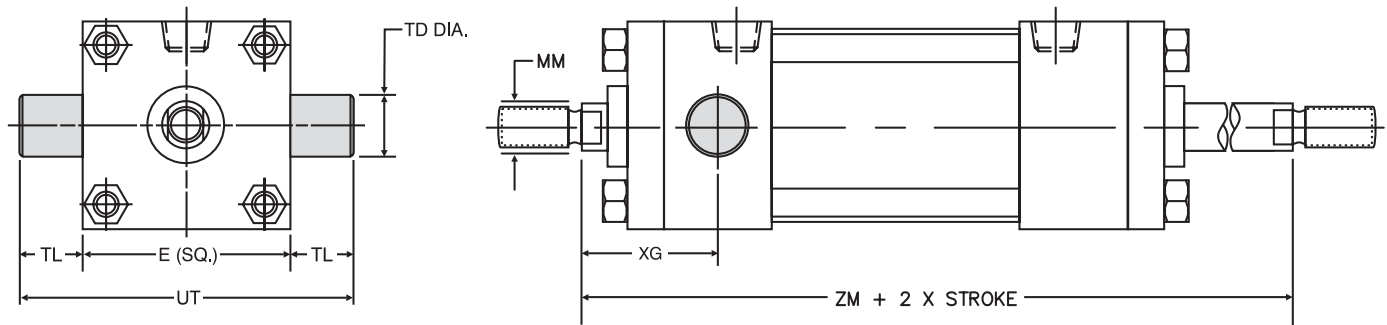
See rod end detail chart on page 160

See rod end detail chart on page 160

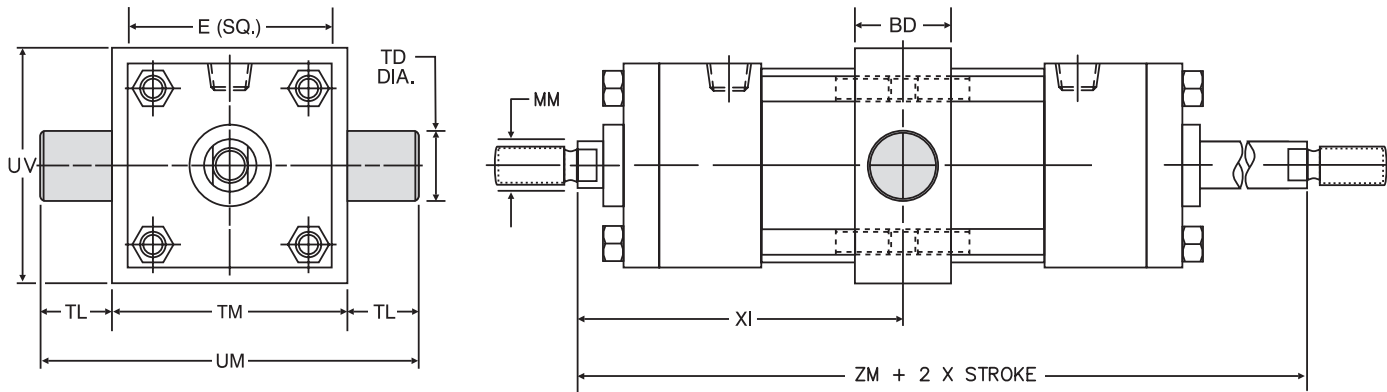
¹ Where SQ is shown in chart, cylinder utilizes a full square retainer.

Series TAS Dimensions – Double Rod End Mounts

MT1D: Head Trunnion



MT4D: Intermediate Trunnion



Note: 'XI' dimensions to be specified by customer.

'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.

Series TAS Dimensions – Double Rod End Mounts

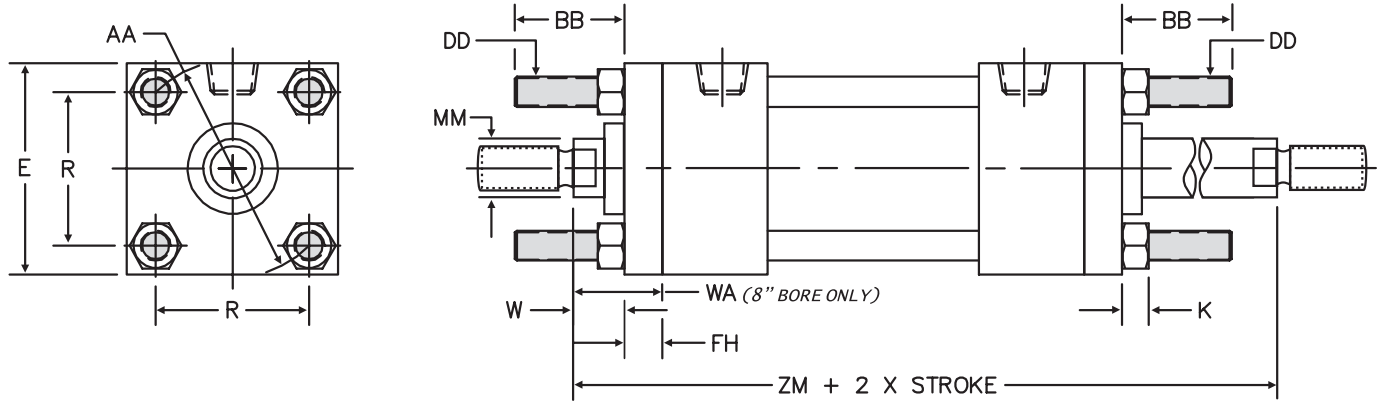
Bore	Rod Diameter (MM)	E	BD	TD ¹	TL	TM	UM	UT	UV	XG	XI ²	MT4D Min. Stroke	Add 2X Stroke ZM
1.50	0.625	2.000	1.250	1.000	1.000	2.500	4.500	4.000	2.500	1.750	3.250	0.375	6.125
	1.000									2.125	3.625		6.875
2.00	0.625	2.500	1.500	1.000	1.000	3.000	5.000	4.500	3.000	1.750	3.375	0.625	6.125
	1.000									2.125	3.750		6.875
	1.375									2.375	4.000		7.375
2.50	0.625	3.000	1.500	1.000	1.000	3.500	5.500	5.000	3.500	1.750	3.375	0.500	6.250
	1.000									2.125	3.750		7.000
	1.375									2.375	4.000		7.500
	1.750									2.625	4.250		8.000
3.25	1.000	3.750	2.000	1.000	1.000	4.500	6.500	5.750	4.250	2.250	4.250	1.000	7.500
	1.375									2.500	4.500		8.000
	1.750									2.750	4.750		8.500
	2.000									2.875	4.875		8.750
4.00	1.000	4.500	2.000	1.000	1.000	5.250	7.250	6.500	5.000	2.250	4.250	1.000	7.500
	1.375									2.500	4.500		8.000
	1.750									2.750	4.750		8.500
	2.000									2.875	4.875		8.750
	2.500									3.125	5.125		9.250
5.00	1.000	5.500	2.000	1.000	1.000	6.250	8.250	7.500	6.000	2.250	4.250	0.750	7.750
	1.375									2.500	4.500		8.250
	1.750									2.750	4.750		8.750
	2.000									2.875	4.875		9.000
	2.500									3.125	5.125		9.500
	3.000									3.125	5.125		9.500
	3.500									3.125	5.125		9.500
6.00	1.375	6.500	2.000	1.375	1.375	7.625	10.375	9.250	7.000	2.625	4.750	0.750	8.750
	1.750									2.875	5.000		9.250
	2.000									3.000	5.125		9.500
	2.500									3.250	5.375		10.000
	3.000									3.250	5.375		10.000
	3.500									3.250	5.375		10.000
8.00	1.375	8.500	2.500	1.375	1.375	9.750	12.500	11.250	9.500	2.625	5.000	1.125	8.875
	1.750									2.875	5.250		9.375
	2.000									3.000	5.375		9.625
	2.500									3.250	5.625		10.125
	3.000									3.250	5.625		10.125
	3.500									3.250	5.625		10.125
	4.000									3.250	5.625		10.125
	4.500									3.250	5.625		10.125
	5.000									3.250	5.625		10.125
	5.500									3.250	5.625		10.125

¹ 'TD' dimension tolerance is + .000 / - .001

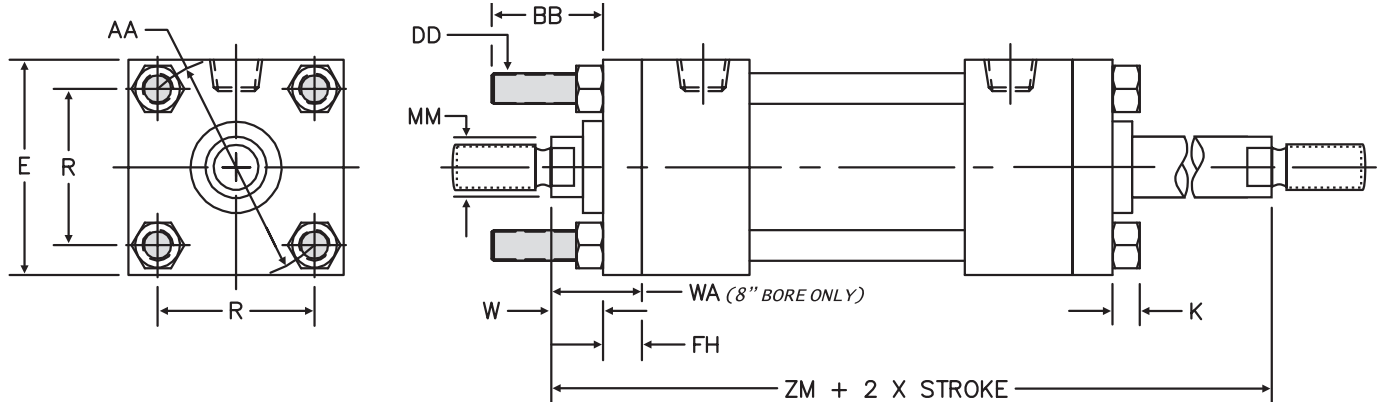
² 'XI' dimension is the minimum that can be supplied and leaves 1/8" gap between head & trunnion block (customer to specify 'XI' dimension).

Series TAS Dimensions – Double Rod End Mounts

MX1D: Extended Tie Rods - Head & Cap



MX3D: Extended Tie Rods - Head End



Series TAS Dimensions – Double Rod End Mounts

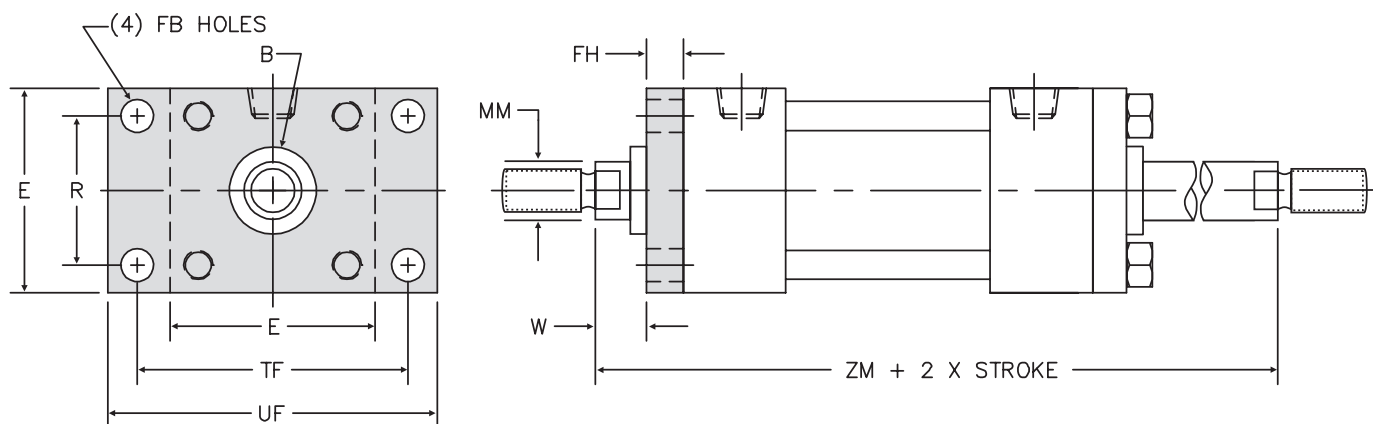
Bore	Rod Diameter (MM)	E	FH	AA	BB	DD	K	R	RD ¹	W or WA (8")	Add 2X Stroke ZM
1.50	0.625	2.000	0.375	2.020	1.000	1/4- 28	0.250	1.430	SQ	0.625	6.125
	1.000									1.000	6.875
2.00	0.625	2.500	0.375	2.600	1.125	5/16 - 24	0.313	1.840	SQ	0.625	6.125
	1.000									1.000	6.875
	1.375									1.250	7.375
2.50	0.625	3.000	0.375	3.100	1.125	5/16 - 24	0.313	2.190	SQ	0.625	6.250
	1.000									1.000	7.000
	1.375									1.250	7.500
	1.750									1.500	8.000
3.25	1.000	3.750	0.625	3.900	1.375	3/8 - 24	0.375	2.760	SQ	0.750	7.500
	1.375									1.000	8.000
	1.750									1.250	8.500
	2.000									1.375	8.750
4.00	1.000	4.500	0.625	4.700	1.375	3/8 - 24	0.375	3.320	SQ	0.750	7.500
	1.375									1.000	8.000
	1.750									1.250	8.500
	2.000									1.375	8.750
	2.500									1.625	9.250
5.00	1.000	5.500	0.625	5.800	1.813	1/2 - 20	0.438	4.100	SQ	0.750	7.750
	1.375									1.000	8.250
	1.750									1.250	8.750
	2.000									1.375	9.000
	2.500									1.625	9.500
	3.000									1.625	9.500
	3.500									1.625	9.500
6.00	1.375	6.500	0.750	6.900	1.813	1/2 - 20	0.438	4.880	SQ	0.875	8.750
	1.750									1.125	9.250
	2.000									1.250	9.500
	2.500									1.500	10.000
	3.000									1.500	10.000
	3.500									1.500	10.000
	4.000									1.500	10.000
8.00	1.375	8.500	0.625	9.100	2.3132	5/8 - 18	0.563	6.440	3.500	1.500	8.875
	1.750		0.625						3.500	1.750	9.375
	2.000		0.625						5.000	1.875	9.625
	2.500		0.750						5.000	2.125	10.125
	3.000		0.750						5.250	2.125	10.125
	3.500		0.750						5.625	2.125	10.125
	4.000		0.750						6.500	2.125	10.125
	4.500		0.750						7.250	2.125	10.125
	5.000		0.750						7.500	2.125	10.125
	5.500		0.750						7.500	2.125	10.125

¹ Where SQ is shown in chart, cylinder utilizes a full square retainer.

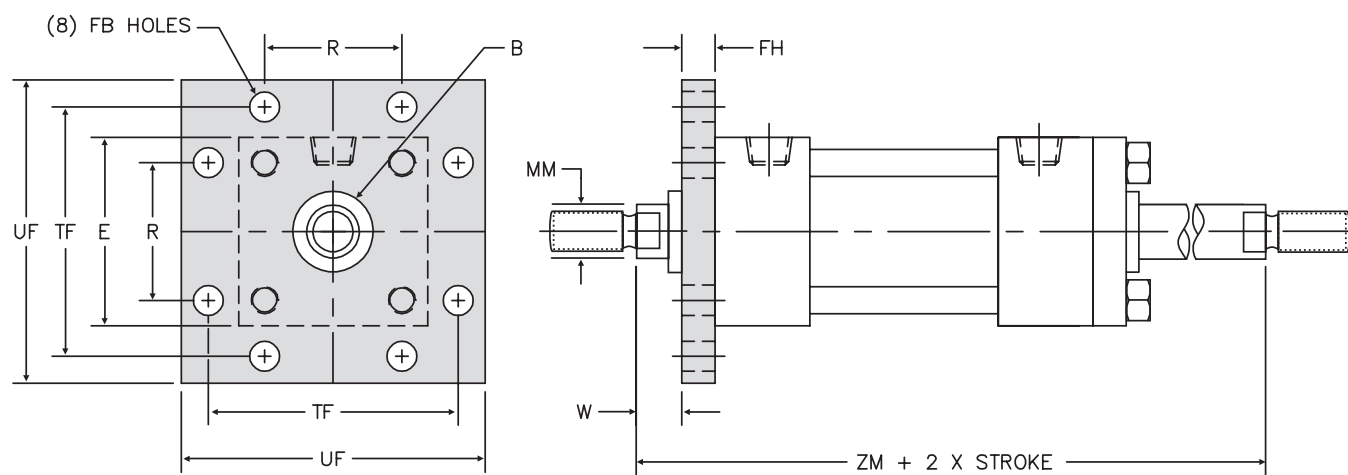
² Round retainer used to retain bushing, not a full front plate as other bores. 'BB' is dimension from head on the 8.00" bore.

Series TAS Dimensions – Double Rod End Mounts

MF1D: Head Flange



MF5D: Head Square Flange

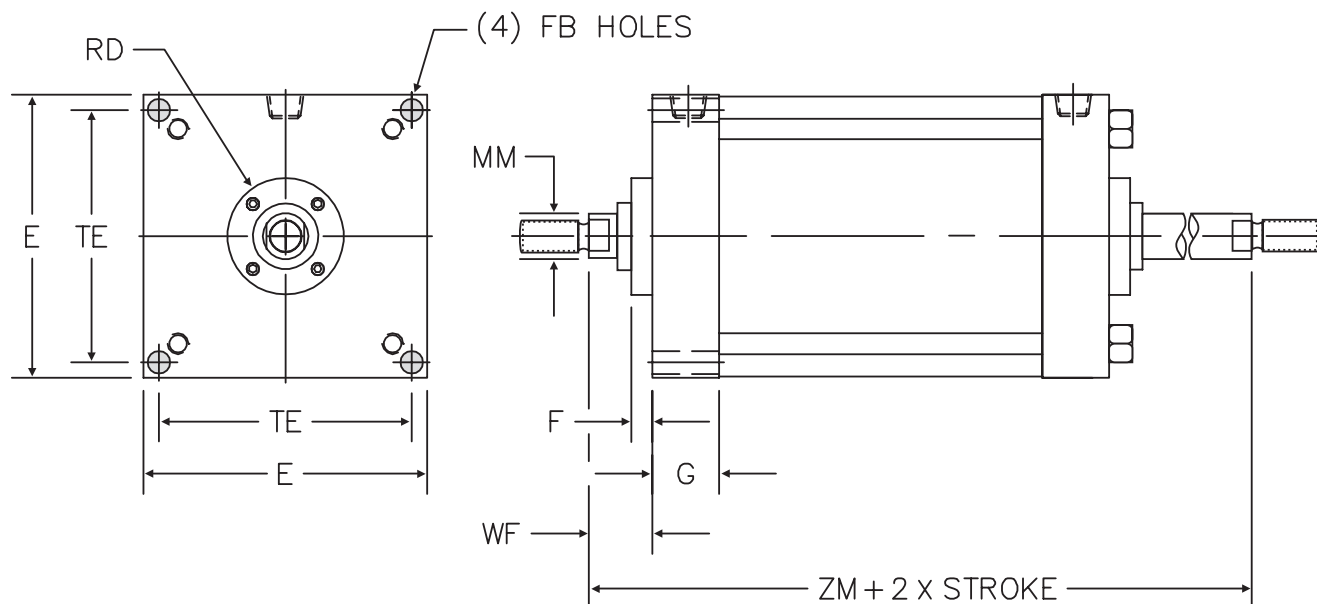


Series TAS Dimensions – Double Rod End Mounts

Bore	Rod Diameter (MM)	B	E	FB	FH	R	TF	UF	W	Add 2X Stroke ZM
1.50	0.625	1.124	2.000	0.313	0.375	1.430	2.750	3.375	0.625	6.125
	1.000	1.499							1.000	6.875
2.00	0.625	1.124	2.500	0.375	0.375	1.840	3.375	4.125	0.625	6.125
	1.000	1.499							1.000	6.875
	1.375	1.999							1.250	7.375
2.50	0.625	1.124	3.000	0.375	0.375	2.190	3.875	4.625	0.625	6.250
	1.000	1.499							1.000	7.000
	1.375	1.999							1.250	7.500
	1.750	2.374							1.500	8.000
3.25	1.000	1.499	3.750	0.438	0.625	2.760	4.688	5.500	0.750	7.500
	1.375	1.999							1.000	8.000
	1.750	2.374							1.250	8.500
	2.000	2.624							1.375	8.750
4.00	1.000	1.499	4.500	0.438	0.625	3.320	5.438	6.250	0.750	7.500
	1.375	1.999							1.000	8.000
	1.750	2.374							1.250	8.500
	2.000	2.624							1.375	8.750
	2.500	3.124							1.625	9.250
5.00	1.000	1.499	5.500	0.563	0.625	4.100	6.625	7.625	0.750	7.750
	1.375	1.999							1.000	8.250
	1.750	2.374							1.250	8.750
	2.000	2.624							1.375	9.000
	2.500	3.124							1.625	9.500
	3.000	3.749							1.625	9.500
	3.500	4.249							1.625	9.500
6.00	1.375	1.999	6.500	0.563	0.750	4.880	7.625	8.625	0.875	8.750
	1.750	2.374							1.125	9.250
	2.000	2.624							1.250	9.500
	2.500	3.124							1.500	10.000
	3.000	3.749							1.500	10.000
	3.500	4.249							1.500	10.000
	4.000	4.749							1.500	10.000

Series TAS Dimensions – Double Rod End Mounts

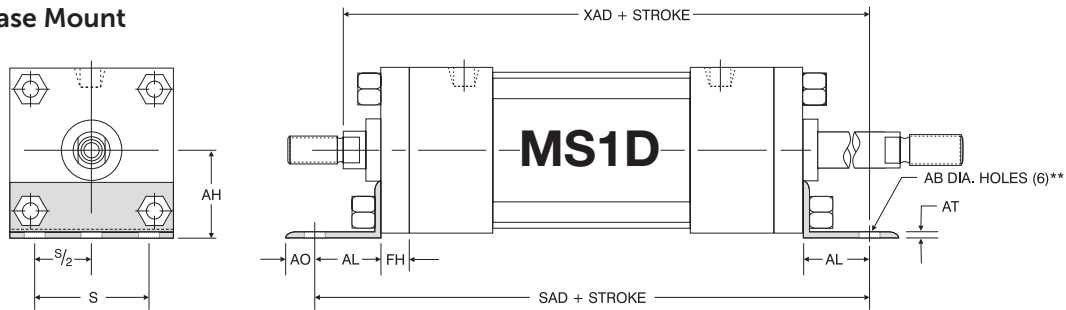
ME3D: Head Square Mounting Holes



Bore	Rod Diameter (MM)	E	F	FB	G	TE	RD	WF	Add 2X Stroke ZM
8.00	1.375	8.500	0.625	0.688	2.000	7.570	3.500	1.625	8.875
	1.750		0.625				3.500	1.875	9.375
	2.000		0.625				5.000	2.000	9.625
	2.500		0.750				5.000	2.250	10.125
	3.000		0.750				5.250	2.250	10.125
	3.500		0.750				5.625	2.250	10.125
	4.000		0.750				6.500	2.250	10.125
	4.500		0.750				7.250	2.250	10.125
	5.000		0.750				7.500	2.250	10.125
	5.500		0.750				7.500	2.250	10.125

Series TAS Dimensions – Double Rod End Mounts

MS1D: Base Mount



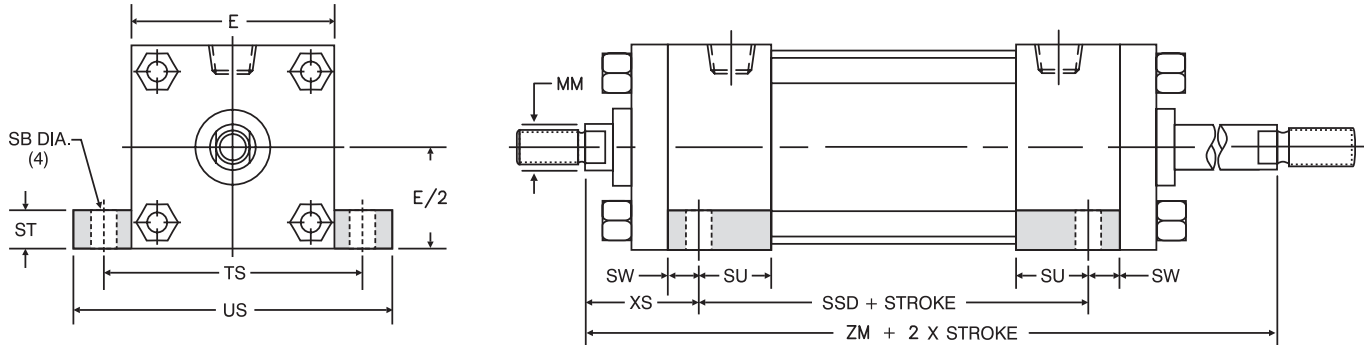
'MS1D' Angle Mount Dimensions										
Bore	Rod Diameter (MM)	AB	AH	AL	AO	AT	FH	S	Add To Stroke	
									SAD	XAD
1.50	0.625	0.438	1.188	1.000	0.375	0.188	0.375	1.250	6.875	6.500
	1.000									6.875
2.00	0.625	0.438	1.438	1.000	0.375	0.188	0.375	1.750	6.875	6.500
	1.000									6.875
	1.375									7.125
2.50	0.625	0.438	1.625	1.000	0.375	0.188	0.375	2.250	7.000	6.625
	1.000									7.000
	1.375									7.250
	1.750									7.500
	2.000									8.000
3.25	1.000	0.563	1.938	1.250	0.500	0.125	0.625	2.750	8.500	8.250
	1.375									8.500
	1.750									8.625
	2.000									8.000
4.00	1.000	0.563	2.250	1.250	0.500	0.125	0.625	3.500	8.500	8.250
	1.375									8.500
	1.750									8.625
	2.000									8.875
	2.500									8.375
5.00	1.000	0.688	2.750	1.375	0.625	0.188	0.625	4.250	9.000	8.375
	1.375									8.625
	1.750									8.875
	2.000									9.000
	2.500									9.250
	3.000									9.250
6.00	3.500	0.813	3.250	1.375	0.625	0.188	0.750	5.250	9.750	9.250
	1.375									9.500
	1.750									9.625
	2.000									9.875
	2.500									9.875
	3.000									9.875
8.00*	3.500	0.813	4.250	1.813	0.688	0.250	0.750	7.125	9.250	9.063
	4.000									9.313
	4.500									9.438
	5.000									9.688
	5.500									9.688
	6.000									9.688
	6.500									9.688
	7.000									9.688
	7.500									9.688
	8.000									9.688

*8.00" bore utilizes round retainer.

**1.50" bore uses (4) "AB" holes.

Series TAS Dimensions – Double Rod End Mounts

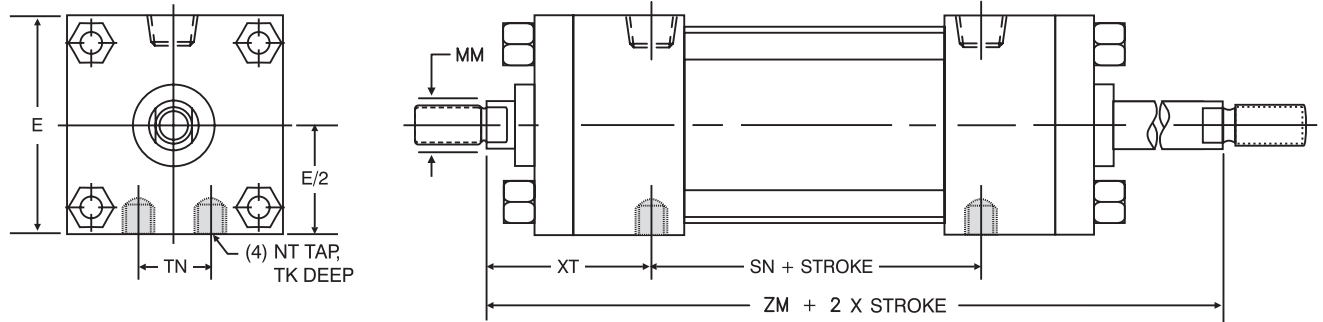
MS2D: Side Lugs



Bore	Rod Diameter (MM)	E	SB	ST	SU	SW	TS	US	XS	Add To Stroke SSD	Add 2X Stroke ZM
1.50	0.625	2.000	0.438	0.500	1.125	0.375	2.750	3.500	1.375	3.375	6.125
	1.000								1.750		6.875
2.00	0.625	2.500	0.438	0.500	1.125	0.375	3.250	4.000	1.375	3.375	6.125
	1.000								1.750		6.875
	1.375								2.000		7.375
2.50	0.625	3.000	0.438	0.500	1.125	0.375	3.750	4.500	1.375	3.500	6.250
	1.000								1.750		7.000
	1.375								2.000		7.500
	1.750								2.250		8.000
3.25	1.000	3.750	0.563	0.750	1.250	0.500	4.75	5.750	1.875	3.750	7.500
	1.375								2.125		8.000
	1.750								2.375		8.500
	2.000								2.500		8.750
4.00	1.000	4.500	0.563	0.750	1.250	0.500	5.500	6.500	1.875	3.750	7.500
	1.375								2.125		8.000
	1.750								2.375		8.500
	2.000								2.500		8.750
	2.500								2.750		9.250
5.00	1.000	5.500	0.813	1.000	1.063	0.688	6.875	8.250	2.063	3.625	7.750
	1.375								2.313		8.250
	1.750								2.563		8.750
	2.000								2.688		9.000
	2.500								2.938		9.500
	3.000								2.938		9.500
	3.500								2.938		9.500
6.00	1.375	6.500	0.813	1.000	1.313	0.688	7.875	9.250	2.313	4.125	8.750
	1.750								2.563		9.250
	2.000								2.688		9.500
	2.500								2.938		10.000
	3.000								2.938		10.000
	3.500								2.938		10.000
	4.000								2.938		10.000
8.00	1.375	8.500	0.813	1.000	1.313	0.688	9.875	11.250	2.313	4.250	8.875
	1.750								2.563		9.375
	2.000								2.688		9.625
	2.500								2.938		10.125
	3.000								2.938		10.125
	3.500								2.938		10.125
	4.000								2.938		10.125
	4.500								2.938		10.125
	5.000								2.938		10.125
	5.500								2.938		10.125

Series TAS Dimensions – Double Rod End Mounts

MS4D: Bottom Tapped Holes



Bore	Rod Diameter (MM)	E	NT	TN	TK	XT	Add To Stroke SN	Add 2X Stroke ZM
1.50	0.625	2.000	1/4 - 20	0.625	0.375	1.938	2.250	6.125
	1.000					2.313		6.875
2.00	0.625	2.500	5/16 - 18	0.875	0.500	1.938	2.250	6.125
	1.000				0.500	2.313		6.875
	1.375				0.375	2.563		7.375
2.50	0.625	3.000	3/8 - 16	1.250	0.625	1.938	2.375	6.250
	1.000				0.625	2.313		7.000
	1.375				0.438	2.563		7.500
	1.750				0.375	2.813		8.000
3.25	1.000	3.750	1/2 - 13	1.500	0.750	2.438	2.625	7.500
	1.375				0.750	2.688		8.000
	1.750				0.500	2.938		8.500
	2.000				0.500	3.063		8.750
4.00	1.000	4.500	1/2 - 13	2.063	0.750	2.438	2.625	7.500
	1.375				0.750	2.688		8.000
	1.750				0.750	2.938		8.500
	2.000				0.750	3.063		8.750
	2.500				0.625	3.313		9.250
5.00	1.000	5.500	5/8 - 11	2.688	1.000	2.438	2.875	7.750
	1.375				1.000	2.688		8.250
	1.750				1.000	2.938		8.750
	2.000				1.000	3.063		9.000
	2.500				1.000	3.313		9.500
	3.000				0.750	3.313		9.500
6.00	3.500	6.500	3/4 - 10	3.250	0.625	3.313	3.125	9.500
	1.375				1.125	2.813		8.750
	1.750				1.125	3.063		9.250
	2.000				1.125	3.188		9.500
	2.500				1.125	3.438		10.000
	3.000				1.125	3.438		10.000
8.00	3.500	8.500	3/4 - 10	4.500	1.125	1.125	3.250	10.000
	4.000					1.125		10.000
	4.500					1.125		10.000
	5.000					1.125		10.000
	5.500					1.125		10.000
	1.375					2.813		8.875
	1.750					3.063		9.375
	2.000					3.188		9.625
	2.500					3.438		10.125
	3.000					3.438		10.125
	3.500					3.438		10.125
	4.000					3.438		10.125
	4.500					3.438		10.125
	5.000					3.438		10.125
	5.500					3.438		10.125