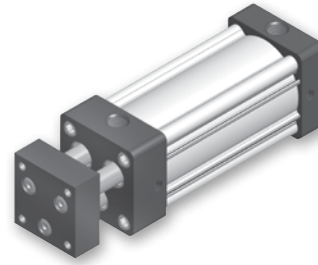


- Bore sizes – 1-1/8", 1-1/2", 2", 2-1/2", 3-1/4", and 4"
- Non-rotating cylinder, multiple piston rods
- Strokes available in any practical stroke length
- Steel tooling plate standard, specials available
- Single rod end or double rod ends
- Optional adjustable cushions available
- Mounting styles – 14 standard styles
- RoHS compliant



Operating information

Operating pressure: 250 PSIG (17 bar)
 Temperature range –
 Standard seals -10°F to 165°F (-23°C to 74°C)
 Fluorocarbon seals -10°F to 250°F (-23°C to 121°C)
 Filtration requirements: 40 micron, dry filtered air
 For technical information see CD

Ordering information

2.00	J	4MNR	2	U	T	9	A	6.000
Bore size 1.12 ¹ 1.50 ¹ 2.00 2.50 3.25 4.00	Double rod cylinder Specify "K" only if double rod cylinder is required.	Series 4MNR	Ports U NPTF R BSPP	Seals Blank Standard (nitrile seals) V Fluorocarbon seals ³ E Fluorocarbon rod wiper and rod seal only ⁴	Tooling plate T Standard plate M Special plate (please specify details)	Stroke length Specify stroke length required in inches.	Cushion cap end Blank Non-cushioned cap end C Cushioned cap end	Stroke length Specify stroke length required in inches.
Cushion head end Blank Non-cushioned head end C Cushioned head end	Mounting style Specify mounting style code (see table on following page).	Cylinder construction Blank* Standard (extruded body, standard round lobe orientation) A* Extruded body, round lobe orientation rotated 90 degrees from standard N* Extruded body, round lobe orientation rotated 180 degrees from standard Z* Extruded body, round lobe orientation rotated 270 degrees from standard T Aluminum round tube and carbon steel tie rods & nuts	Special modification Specify "S" only for special modification other than rod end, and then describe modification in item notes. (Includes 4MNR with Linear Position Sensor Option) ⁵	Rod material and gland code Blank Standard rod and gland H Standard rod and HI LOAD gland Y 17-4 PH stainless steel rod and standard gland	Piston rod thread type A Standard (UNF unified thread)	Piston rod thread style 9 Standard 3 Special (and specify all dimensions required)	Piston type² 2 Lipseals, no magnetic ring (aluminum piston) 3 Lipseals and magnetic ring (aluminum piston)	

* Please reference table in catalog 0900P-E, page B10

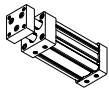
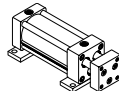
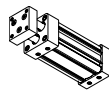
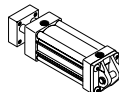
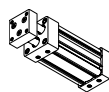
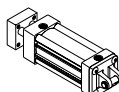
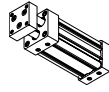
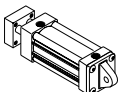
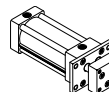
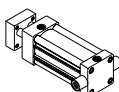
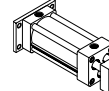
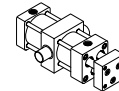
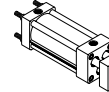
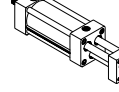
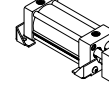
Sensors
For sensors see page B294.

¹ Not available with Linear Position Sensor Option (LPSO).
² Seals option V only available with Piston Type 2.
³ Reed and solid-state sensors only available with standard seals or options E. See footnote 2.
⁴ Used for external chemical compatibility applications, not high temperature.

B
 Tie Rod Cylinders
 Actuator Products
 Series
 3MA
 4MA/4ML
 3MAJ/4MAJ
 4MNR
 P1D



4MNR Mounting Styles

Mounting style	NFPA mounting	Description	Bore size	Mounting style	NFPA mounting	Description	Bore size
TEF 	MX5/MS4	Sleeve Nut with Side Tap (standard mount)	1-1/2 - 4	NB 	N/A	Base Bar	1-1/8 - 4
T 	MX0	No Mount (same construction as TEF)	1-1/8 - 4	BB 	MP1	Cap Fixed Clevis	1-1/2 - 4
TE 	MX5	Sleeve Nut (same construction as TEF)	1-1/2 - 4	BC 	MP2	Cap Detachable Clevis	1-1/8 - 4
F 	MS4	Side Tap (same construction as TEF)	1-1/8 - 4	BE 	MP4	Cap Detachable Eye	1-1/8 - 4
J 	MF1	Head Rectangular Flange	1-1/8 - 4	DB 	MT2	Cap Trunnion	1-1/2 - 4
H 	MF2	Cap Rectangular Flange	1-1/2 - 4	DD 	MT4	Intermediate Trunnion	1-1/2 - 4
TC 	MX2	Tie Rods Extended Cap End	1-1/2 - 5	KTEF / KT / KTE / KF * 	MDX0 / MDX5 / MDS4	Double Rod End	1-1/2 - 4
C 	MS2	Side Lug	1-1/2 - 4				

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

B

Tie Rod Cylinders
 Actuator Products

3MA Series

4MA/4ML Series

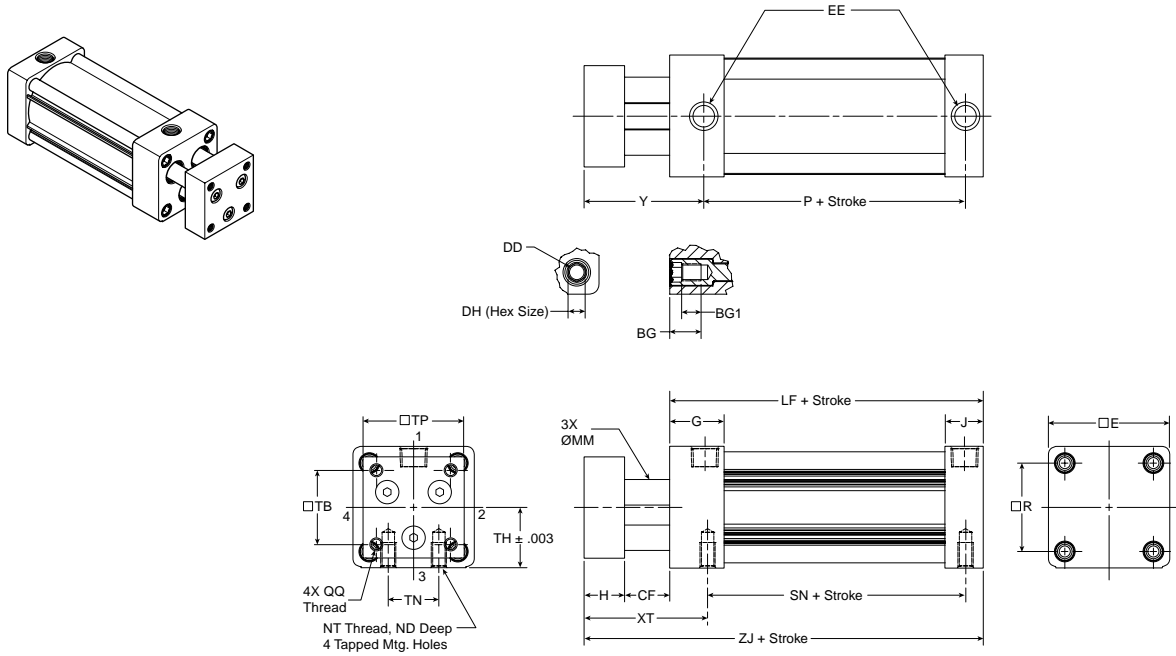
3MAJ/4MAJ Series

4MNR Series

P1D Series

4MNR Single Rod Dimensioned Drawings (Styles TEF, T, TE and F)

(NFPA MX0, MX5, MS4)



Thread Style 3 - "Special Thread"

Special threads, rod extensions, rod eyes, blanks, etc. are also available. To order, specify "Style 3" and give desired dimensions for KK (thread size), A (thread length) and W or WF. If otherwise special, please supply dimensioned sketch.

Styles TEF, T, TE and F

Bore size	Rod dia. MM	BG	BG1	CF	DD	DH	E	EE (NPTF)	G	H	J	ND	NT
1-1/8 *	5/16	-	-	0.875	10-32	-	1.500	1/8	1.000	0.625	0.625	0.250	10-32
1-1/2	8mm	0.056	0.375	1.125	1/4-28	1/4	2.000	3/8	1.438	0.750	0.938	0.375	1/4-20
2	12mm	0.056	0.362	1.125	5/16-24	5/16	2.500	3/8	1.375	0.750	0.938	0.438	5/16-18
2-1/2	16mm	0.056	0.362	1.125	5/16-24	5/16	3.000	3/8	1.344	1.000	0.938	0.625	3/8-16
3-1/4	16mm	0.700	0.500	1.375	3/8-24	3/8	3.750	1/2	1.594	1.000	1.125	0.750	1/2-13
4	16mm	0.700	0.500	1.375	3/8-24	3/8	4.500	1/2	1.594	1.000	1.125	0.750	1/2-13

Bore size	Rod dia. MM	Add stroke											
		QQ	R	TB	TH	TP	TN	XT	Y	LF	P	SN	ZJ
1-1/8 *	5/16	6-32	1.125	0.750	0.750	1.250	0.500	2.000	2.031	2.500	1.468	1.500	3.750
1-1/2	8mm	10-32	1.430	1.120	0.993	1.500	0.625	2.812	2.750	3.625	2.313	2.250	5.375
2	12mm	1/4-28	1.840	1.430	1.243	2.000	0.875	2.812	2.750	3.625	2.313	2.250	5.375
2-1/2	16mm	5/16-24	2.190	1.840	1.493	2.500	1.250	3.062	3.062	3.750	2.375	2.375	5.875
3-1/4	16mm	3/8-24	2.760	2.190	1.680	3.250	1.500	3.437	3.437	4.250	2.625	2.625	6.500
4	16mm	3/8-24	3.320	2.760	2.243	4.000	2.063	3.437	3.437	4.250	2.625	2.625	6.500

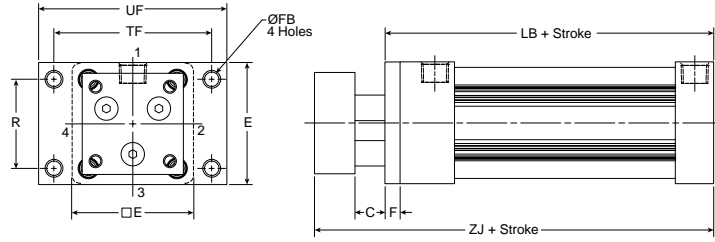
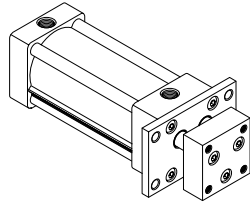
* Twin rod with flange construction (not shown)

B
 Tie Rod Cylinders
 Actuator Products
 Series
 3MA
 4MA/4ML
 3MAJ/4MAJ
 4MNR
 P1D



Head Rectangular Flange

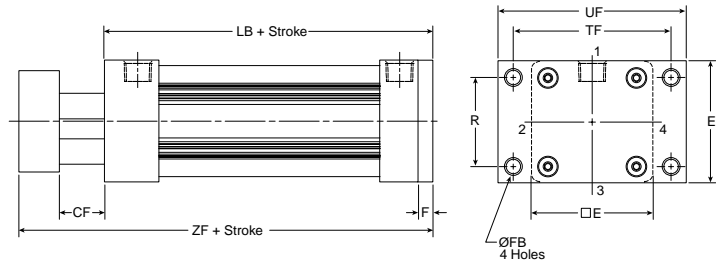
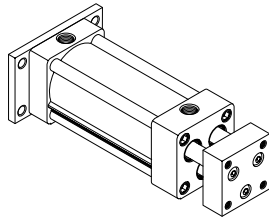
Style J
 (NFPA MF1)



Note: Style J has a “C” dimension instead of “CF” because of the flange installation. For reference, CF = C + F

Cap Rectangular Flange

Style H
 (NFPA MF2)



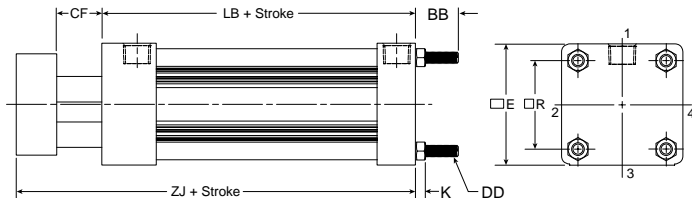
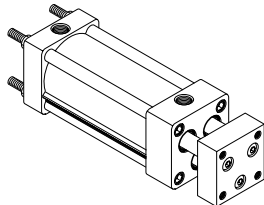
Styles J and H

Bore size	Rod dia. MM	C	CF	E	F	FB	H	R	TF	UF	Add stroke		
											LB	ZF	ZJ
1-1/8 *	5/16	0.625	0.875	1.500	0.250	0.219	0.625	1.000	2.000	2.500	2.750	4.250	4.000
1-1/2	8mm	0.750	1.125	2.000	0.375	0.313	0.750	1.430	2.750	3.375	4.000	5.875	5.500
2	12mm	0.750	1.125	2.500	0.375	0.375	0.750	1.840	3.375	4.125	4.000	5.875	5.500
2-1/2	16mm	0.750	1.125	3.000	0.375	0.375	1.000	2.190	3.875	4.625	4.125	6.250	5.875
3-1/4	16mm	0.750	1.375	3.750	0.625	0.438	1.000	2.760	4.688	5.500	4.875	7.250	6.625
4	16mm	0.750	1.375	4.500	0.625	0.438	1.000	3.320	5.438	6.250	4.875	7.250	6.625

* Twin rod with flange construction (not shown)

Tie Rods Ext. Cap End

Style TC
 (NFPA MX2)



Style TC

Bore size	Rod dia. MM	BB	DD	CF	E	K	R	Add stroke	
								LB	ZJ
1-1/2	8mm	1.000	1/4-28	1.125	2.000	0.250	1.430	4.000	5.500
2	12mm	1.125	5/16-24	1.125	2.500	0.313	1.840	4.000	5.500
2-1/2	16mm	1.125	5/16-24	1.125	3.000	0.313	2.190	4.125	5.875
3-1/4	16mm	1.375	3/8-24	1.375	3.750	0.375	2.760	4.875	6.625
4	16mm	1.375	3/8-24	1.375	4.500	0.375	3.320	4.875	6.625

B

Tie Rod Cylinders
 Actuator Products

3MA
 Series

4MA/4ML
 Series

3MAJ/4MAJ
 Series

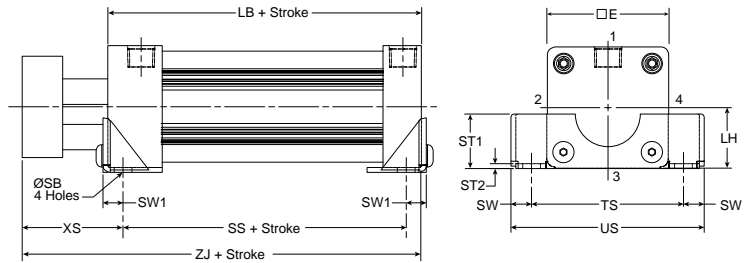
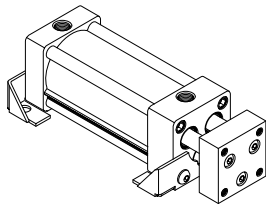
4MNR
 Series

P1D
 Series



Side Lug

Style C
 (NFPA MS2)

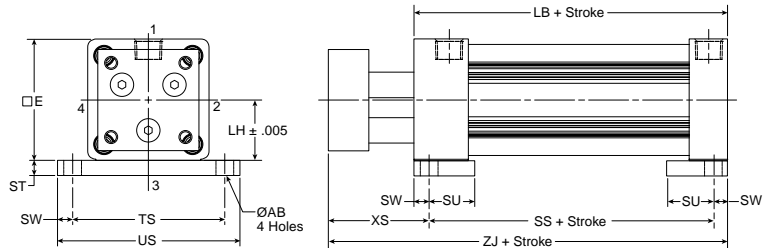
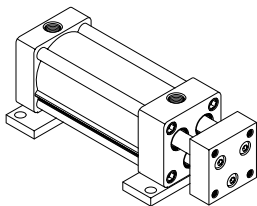


Style C

Bore size	Rod dia. MM	E	LH	SB	ST1	ST2	SW	SW1	TS	US	XS	Add stroke		
												LB	SS	ZJ
1-1/2	8mm	2.000	0.993	0.438	1.000	0.120	0.375	0.495	2.750	3.500	2.250	4.000	2.875	5.500
2	12mm	2.500	1.243	0.438	1.250	0.120	0.375	0.495	3.250	4.000	2.250	4.000	2.875	5.500
2-1/2	16mm	3.000	1.493	0.438	1.343	0.120	0.375	0.495	3.750	4.500	2.500	4.125	3.000	5.875
3-1/4	16mm	3.750	1.868	0.563	1.500	0.188	0.500	0.688	4.750	5.750	2.875	4.875	3.250	6.625
4	16mm	4.500	2.243	0.563	1.500	0.188	0.500	0.688	5.500	6.500	2.875	4.875	3.250	6.625

Base Bar Mount

Style NB



Note: Fasteners for NB base bar mount have been applied with removable threadlocking compound and torqued to bottom of endcaps.

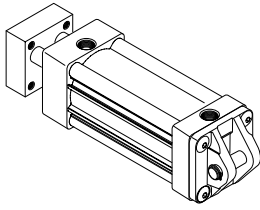
Style NB

Bore size	Rod dia. MM	AB	E	LH	ST	SU	SW	TS	US	XS	Add stroke		
											LB	SS	ZJ
1-1/8 *	5/16	0.203	1.500	1.000	0.250	0.750	0.250	1.875	2.375	1.750	2.750	1.750	3.750
1-1/2	8mm	0.438	2.000	1.243	0.250	1.125	0.375	2.750	3.500	2.250	4.000	2.875	5.500
2	12mm	0.438	2.500	1.493	0.250	1.125	0.375	3.250	4.000	2.250	4.000	2.875	5.500
2-1/2	16mm	0.438	3.000	1.868	0.375	1.125	0.375	3.750	4.500	2.500	4.125	3.000	5.875
3-1/4	16mm	0.563	3.750	2.368	0.500	1.250	0.500	4.750	5.750	2.875	4.875	3.250	6.625
4	16mm	0.563	4.500	2.743	0.500	1.250	0.500	5.500	6.500	2.875	4.875	3.250	6.625

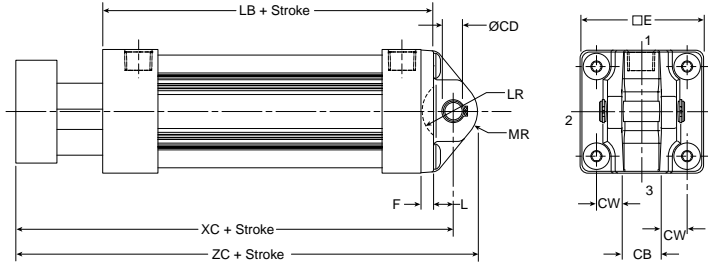
* Twin rod with flange construction (not shown)

Cap Fixed Clevis

Style BB (NFPA MP1)

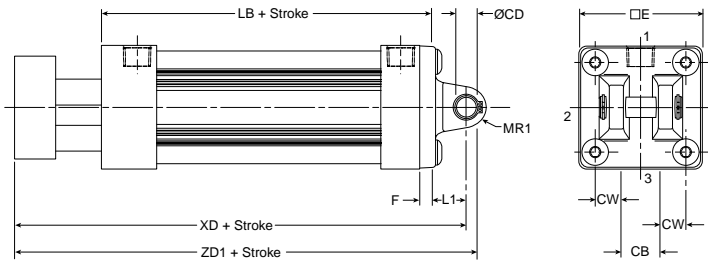
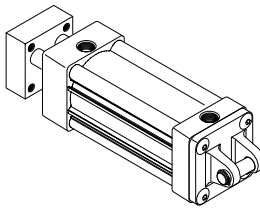


Note: For maximum swivel angle of BB mount with rear mounting plate, please reference catalog 0900P-E, accessories page B141.



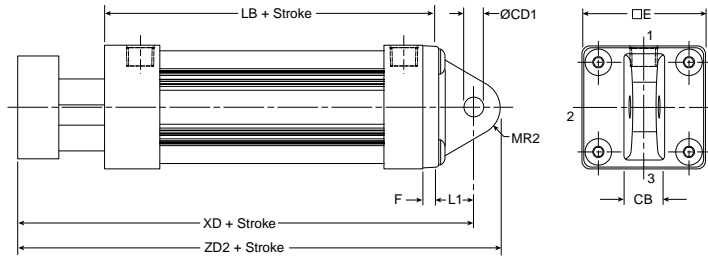
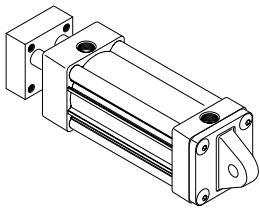
Cap Detachable Clevis

Style BC (NFPA MP2)



Cap Detachable Eye

Style BE (NFPA MP4)



Styles BB, BC and BE

Bore size	Rod dia. MM	CB	CD	CD1	CW	E	F	L	LR	L1
1-1/2	8mm	0.750	0.501	0.500	0.500	2.000	0.375	0.375	0.750	0.750
2	12mm	0.750	0.501	0.500	0.500	2.500	0.375	0.375	0.750	0.750
2-1/2	16mm	0.750	0.501	0.500	0.500	3.000	0.375	0.375	0.750	0.750
3-1/4	16mm	1.250	0.751	0.750	0.625	3.750	0.625	0.625	1.000	1.250
4	16mm	1.250	0.751	0.750	0.625	4.500	0.625	0.625	1.000	1.250

Bore size	Rod dia. MM	MR	MR1	MR2	Add stroke					
					LB	XC	XD	ZC	ZD1	ZD2
1-1/2	8mm	0.625	0.500	0.625	4.000	6.250	6.625	6.875	7.125	7.250
2	12mm	0.625	0.500	0.625	4.000	6.250	6.625	6.875	7.125	7.250
2-1/2	16mm	0.625	0.500	0.688	4.125	6.625	7.000	7.250	7.500	7.688
3-1/4	16mm	0.938	0.750	0.875	4.875	7.875	8.500	8.813	9.250	9.375
4	16mm	0.938	0.750	0.875	4.875	7.875	8.500	8.813	9.250	9.375

B

Tie Rod Cylinders
Actuator Products

3MA Series

4MA/4ML Series

3MAJ/4MAJ Series

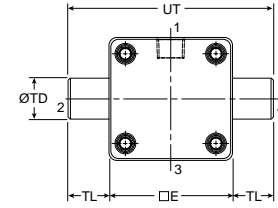
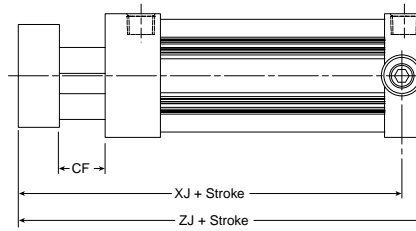
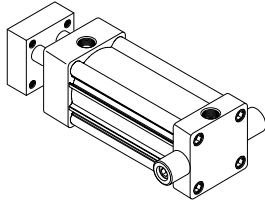
4MNR Series

P1D Series



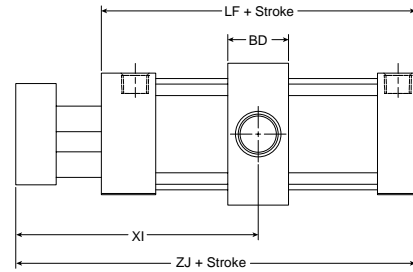
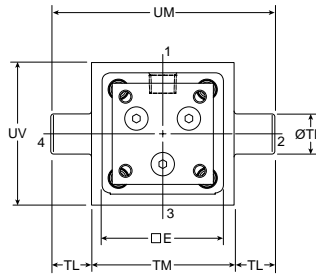
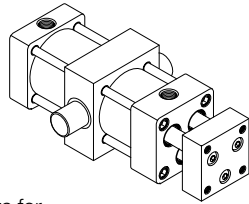
Cap Trunnion

Style DB
 (NFPA MT2)



Intermediate Trunnion

Style DD
 (NFPA MT4)



Note: Tie rod nuts for Style DD have a slot instead of internal hex.

B
 Tie Rod Cylinders
 Actuator Products
 Series
 3MA
 Series
 4MA/4ML
 Series
 3MAJ/4MAJ
 Series
 4MNR
 Series
 P1D
 Series

Styles DD and DD

Bore size	Rod dia. MM	E	BD	CF	TD	TL	TM	UM	UT	UV	Min. XI	Add stroke		
												LF	XJ	ZJ
1-1/2	8mm	2.000	1.250	1.125	1.000	1.000	2.500	4.500	4.000	2.500	4.000	4.000	5.000	5.875
2	12mm	2.500	1.500	1.125	1.000	1.000	3.000	5.000	4.500	3.000	4.125	4.000	5.000	5.875
2-1/2	16mm	3.000	1.500	1.125	1.000	1.000	3.500	5.500	5.000	3.500	4.375	4.125	5.375	6.250
3-1/4	16mm	3.750	2.000	1.375	1.000	1.000	4.500	6.500	5.750	4.250	5.125	4.875	6.000	7.250
4	16mm	4.500	2.000	1.375	1.000	1.000	5.250	7.250	6.500	5.000	5.125	4.875	6.000	7.250