cowan dynamics

Actuation Solutions and Systems for the
World's Most Challenging Environments

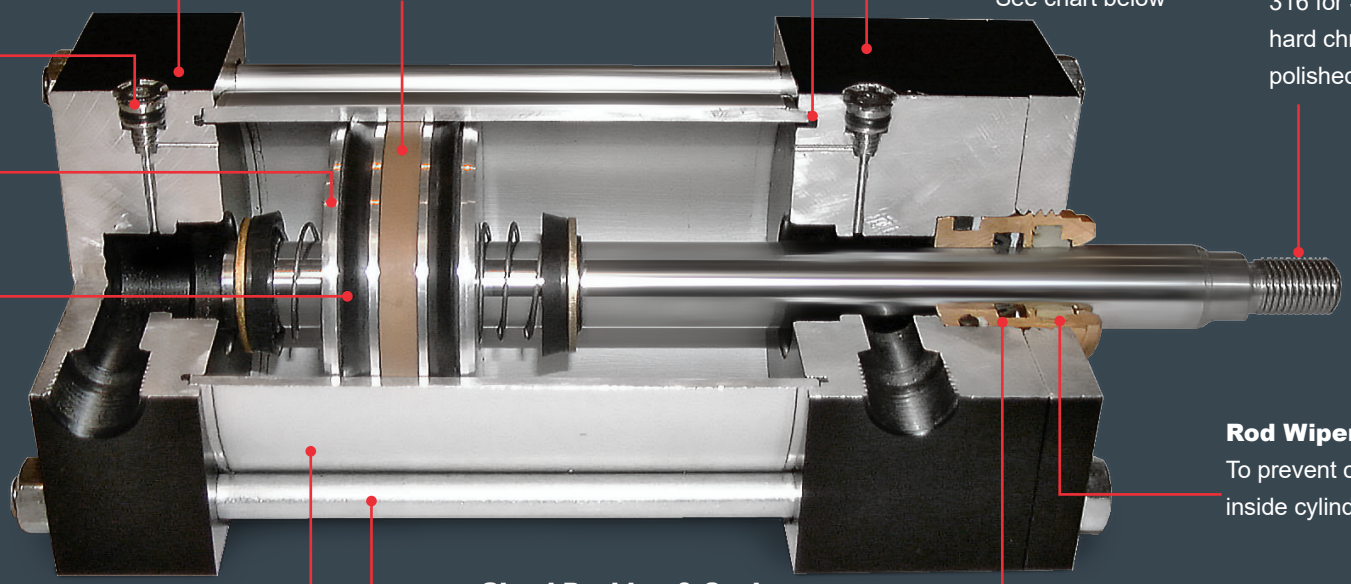
P SERIES

250 psi

NFPA Pneumatic Cylinder

Bore Sizes from 11/2" to 14"

Design & Materials



Cap
See chart below

Cushion Screw (opt)
Fully adjustable

Piston
See chart below

Piston Packing

Wear Band
Bronze-teflon

Barrel Seal

Head
See chart below

Piston Rod
Steel SAE-1045 (St. St. 316 for Series "PC"), hard chrome plated and polished

Rod Wiper
To prevent contamination inside cylinder

Gland Packing & Seal

Barrel
See chart below

Tie Rod
See chart below

Medium Duty Series "PA"		
Head & Cap	1 1/2" ~ 6"	8"
Aluminum	Std	N/A
Steel	N/A	Std
Barrel	1 1/2" ~ 6"	8"
Aluminum	Std	Std
Fiberglass	Opt	Opt
Tie Rod	1 1/2 ~ 6"	8"
C12L14 **	Std	N/A
Stressproof **	Opt	Std
Piston	1 1/2" ~ 6"	8"
Aluminum	Std	Std

** *Denotes Zinc plated*

Heavy Duty Series "PS"		
Head & Cap	1 1/2" ~ 6"	8" ~ 14"
Steel	Std	N/A
Barrel	1 1/2" ~ 6"	8"
Steel	Std	Std
Fiberglass	Opt	Opt
Tie Rod	1 1/2 ~ 6"	8"
C12L14	Std	N/A
Stressproof	Opt	Std
Piston	1 1/2" ~ 6"	8"
Aluminum	Std	Std
Steel	Opt	Std

Heavy Duty Series "PC"		
Head & Cap	1 1/2" ~ 6"	8"
Stainless Steel	Std	Std
Barrel	1 1/2" ~ 6"	8"
St. St. 316	Std	Std
Fiberglass	Opt	Opt
Tie Rod	1 1/2 ~ 6"	8"
St. St. 316	Std	N/A
17-4PH	Opt	Std
Piston	1 1/2" ~ 6"	8"
Aluminum	Std	Std
Steel	Opt	Std

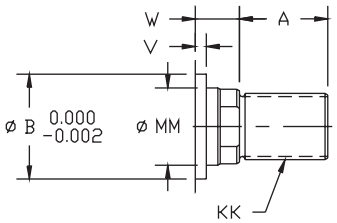
Technical Specs	
Type	NFPA Standard
Fluid	Air
Lubrication	Non Lube
Max Oper. Pressure	250 PSI
Min Oper. Pressure	5 PSI
Ambiant & Fluid Temp	See Seal Options

Temperature Ratings	
Low Temp.	-54 C to 90 C
Standard Temp.	-20 C to 104 C
High Temp.	-10 C to 200 C

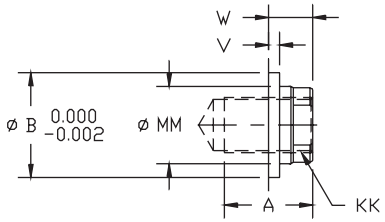
Rod Thread Sizes

1½”- 6” Bore

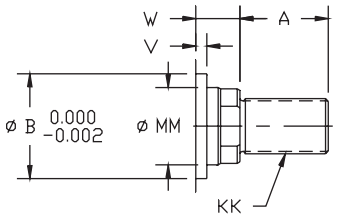
INTERMEDIATE MALE



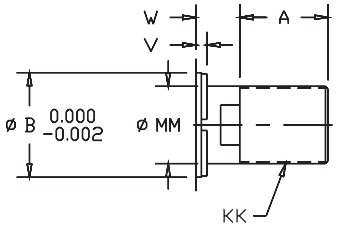
SMALL FEMALE



SMALL MALE

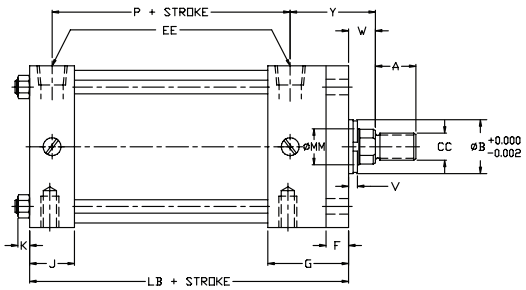


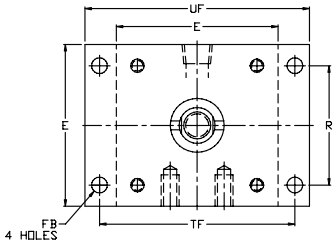
FULL MALE



Actuator Dimensions (in)							
Bore	Rod Φ MM	Thread (KK)		A	B	V	W
		SM-SF	IM				
1 1/2	0.63	7/16-20	½-20	0.75	1.13	0.25	0.63
	1.00	¾-16	⅞-14	1.13	1.50	0.50	1.00
2	0.63	7/16-20	½-20	0.75	1.13	0.25	0.63
	1.00	¾-16	⅞-14	1.13	1.50	0.50	1.00
	1.38	1-14	1¼-12	1.63	2.00	0.63	1.25
2 1/2	0.63	7/16-20	½-20	0.75	1.13	0.25	0.63
	1.00	¾-16	⅞-14	1.13	1.50	0.50	1.00
	1.38	1-14	1¼-12	1.63	2.00	0.63	1.25
3 1/4	1.00	¾-16	⅞-14	1.13	1.50	0.25	0.75
	1.38	1-14	1¼-12	1.63	2.00	0.38	1.00
4	1.00	¾-16	⅞-14	1.13	1.50	0.25	0.75
	1.38	1-14	1¼-12	1.63	2.00	0.38	1.00
5	1.00	¾-16	⅞-14	1.13	1.50	0.25	0.75
	1.38	1-14	1¼-12	1.63	2.00	0.38	1.00
	1.75	1¼-12	1½-12	2.00	2.38	0.50	1.25
6	1.38	1-14	1¼-12	1.63	2.00	0.25	0.88
	1.75	1¼-12	1½-12	2.00	2.38	0.38	1.13
	2.00	1½-12	1¾-12	2.25	2.63	0.38	1.25

MF1





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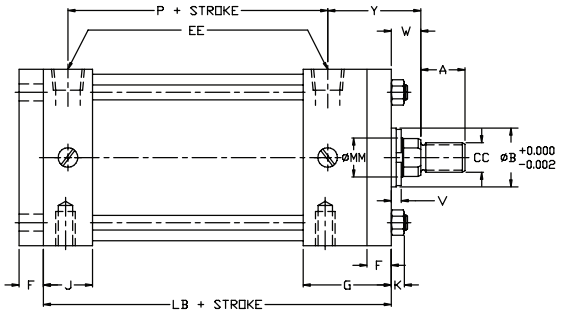

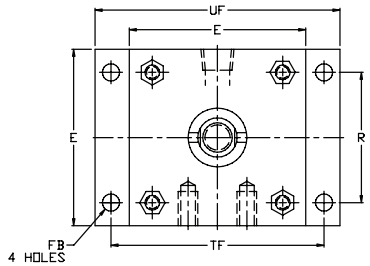

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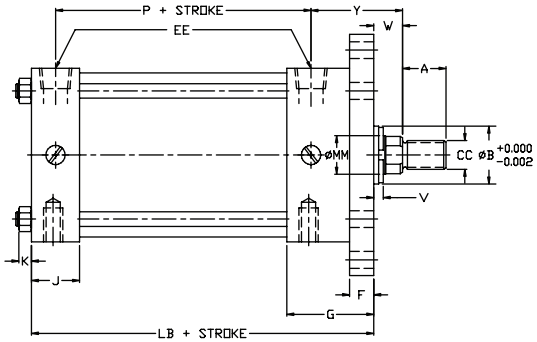

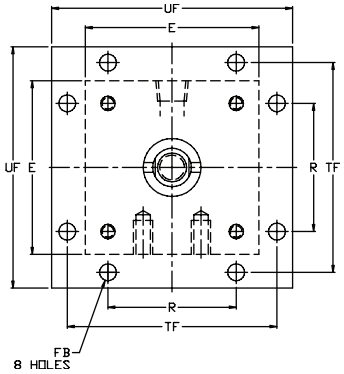

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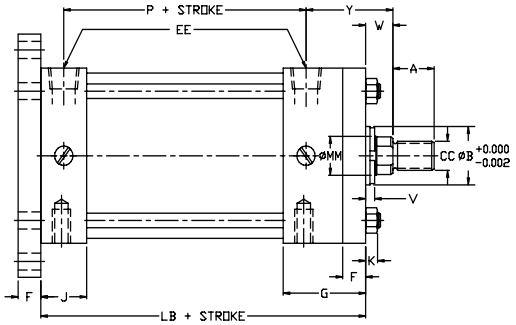
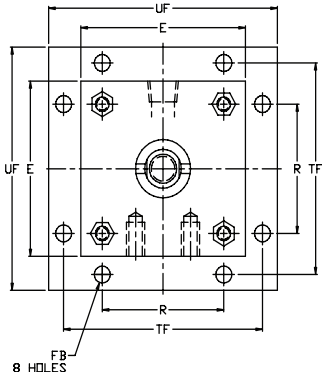




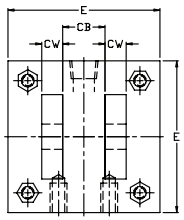
Dimensions (in)						
BORE	E	EE (NPT)	F	FB	G	J
1½	2.00	0.38	0.38	0.31	2.00	1.00
2	2.50	0.38	0.38	0.38	2.00	1.00
2½	3.00	0.38	0.38	0.38	2.00	1.13
3¼	3.75	0.50	0.63	0.44	2.25	1.25
4	4.50	0.50	0.63	0.44	2.25	1.25
5	5.50	0.50	0.63	0.56	2.25	1.50
6	6.50	0.75	0.75	0.56	2.75	1.63

Dimensions (in)						
BORE	K	TF	UF	LB	P	R
1½	0.25	2.75	3.38	4.00	2.25	1.43
2	0.31	3.38	4.13	4.00	2.25	1.84
2½	0.31	3.88	4.63	4.13	2.38	2.19
3¼	0.38	4.69	5.50	4.88	2.63	2.76
4	0.38	5.44	6.25	4.88	2.63	3.32
5	0.44	6.63	7.63	5.13	2.88	4.10
6	0.44	7.63	8.63	5.75	3.13	4.88

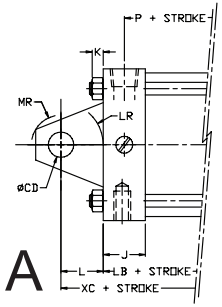
Rod Thread Table

Dimensions (in)			
Bore	Rod Φ MM	Y	For other values please see chart on pg 3
1½	0.63	1.94	
	1.00	2.31	
2	0.63	1.94	
	1.00	2.31	
	1.38	2.56	
2½	0.63	1.94	
	1.00	2.31	
	1.38	2.56	
3¼	1.00	2.38	
	1.38	2.63	
4	1.00	2.38	
	1.38	2.63	
5	1.00	2.31	
	1.38	2.56	
	1.75	2.81	
6	1.38	2.81	
	1.75	3.06	
	2.00	3.19	

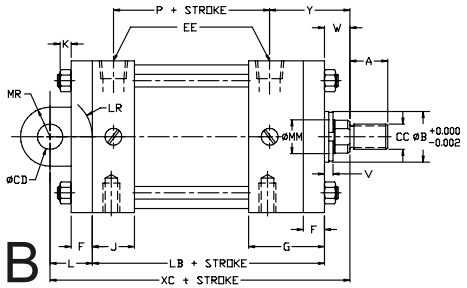
MP1



PS & PC Series



PA Series



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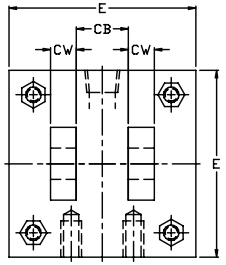

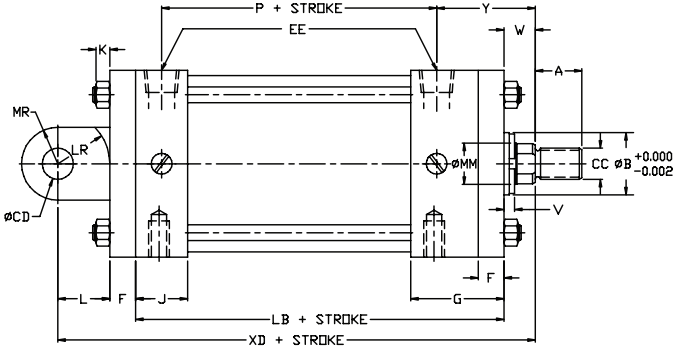

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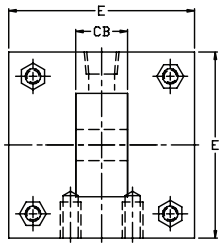
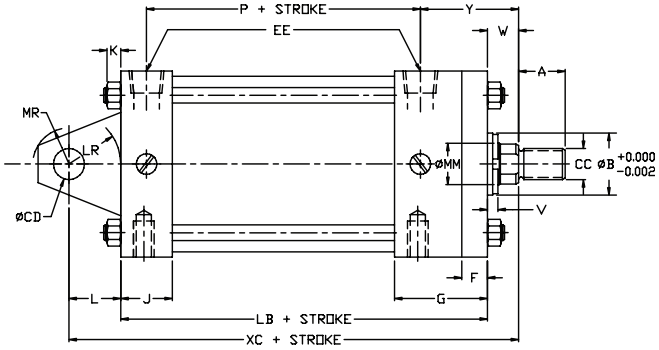
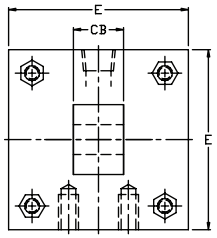
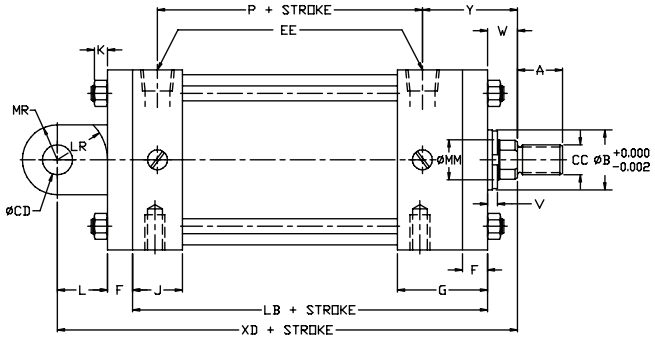




MP4





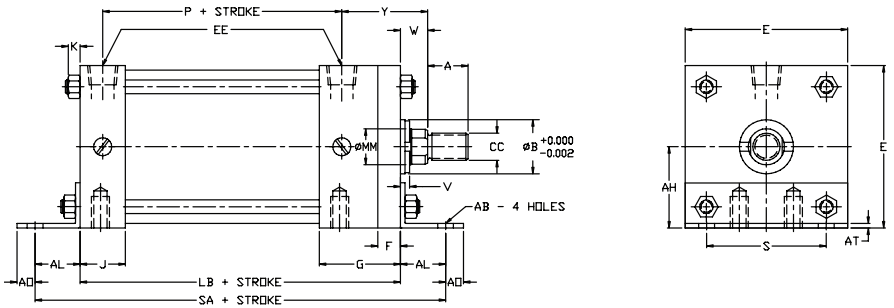
Dimensions (in)							
BORE	CB	CD	CW	E	EE (NPT)	F	G
1½	0.75	0.50	0.50	2.00	0.38	0.38	2.00
2	0.75	0.50	0.50	2.50	0.38	0.38	2.00
2½	0.75	0.50	0.50	3.00	0.38	0.38	2.00
3¼	1.25	0.75	0.64	3.75	0.50	0.63	2.25
4	1.25	0.75	0.64	4.50	0.50	0.63	2.25
5	1.25	0.75	0.64	5.50	0.50	0.63	2.25
6	1.50	1.00	0.75	6.50	0.75	0.75	2.75

Dimensions (in)							
BORE	J	K	L	LB	LR	MR	P
1½	1.00	0.25	0.75	4.00	0.75	0.63	2.25
2	1.00	0.31	0.75	4.00	0.75	0.63	2.25
2½	1.13	0.31	0.75	4.13	0.75	0.63	2.38
3¼	1.25	0.38	1.25	4.88	1.25	0.88	2.63
4	1.25	0.38	1.25	4.88	1.25	0.88	2.63
5	1.50	0.44	1.25	5.13	1.25	0.88	2.88
6	1.63	0.44	1.50	5.75	1.50	1.25	3.13

Rod Thread Table

Dimensions (in)					
Bore	Rod Φ MM	XC	XD	Y	
1½	0.63	5.38	5.75	1.94	For other values please see chart on pg 3
	1.00	5.75	6.13	2.31	
2	0.63	5.38	5.75	1.94	
	1.00	5.75	6.13	2.31	
	1.38	6.00	6.38	2.56	
2½	0.63	5.50	5.88	1.94	
	1.00	5.88	6.25	2.31	
	1.38	6.13	6.50	2.56	
3¼	1.00	6.88	7.50	2.38	
	1.38	7.13	7.75	2.63	
4	1.00	6.88	7.50	2.38	
	1.38	7.13	7.75	2.63	
5	1.00	7.13	7.75	2.31	
	1.38	7.38	8.00	2.56	
	1.75	7.63	8.25	2.81	
6	1.38	8.13	8.88	2.81	
	1.75	8.38	9.13	3.06	
	2.00	8.50	9.25	3.19	

MS1



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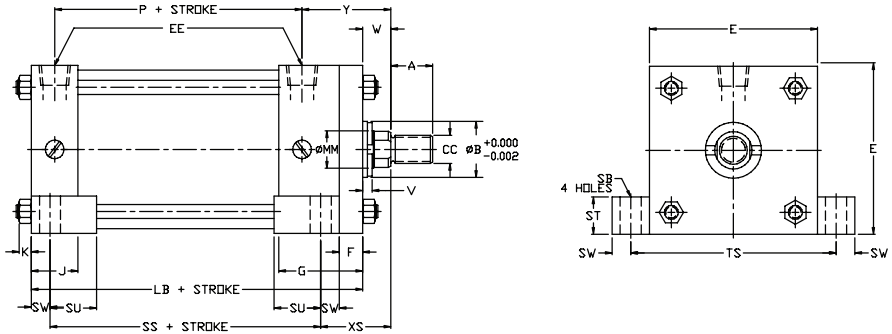

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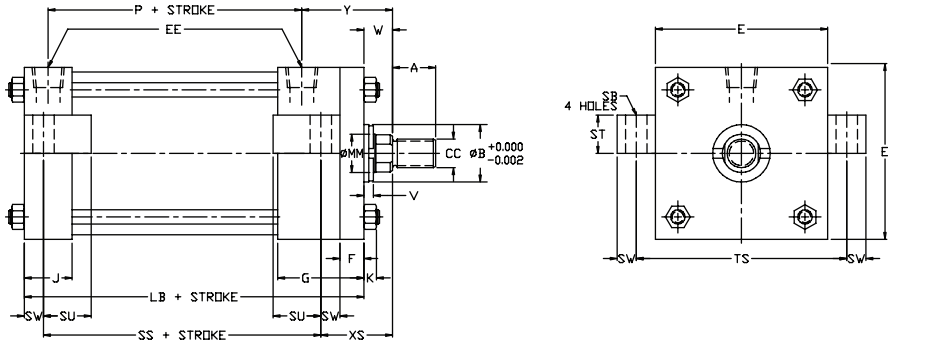


MS1

Dimensions (in)														
BORE	AB	AH	AL	AO	AT	E	EE (NPT)	F	G	J	K	LB	P	S
1½	0.44	1.19	1.00	0.38	0.13	2.00	0.38	0.38	2.00	1.00	0.25	4.00	2.25	1.25
2	0.44	1.44	1.00	0.38	0.13	2.50	0.38	0.38	2.00	1.00	0.31	4.00	2.25	1.75
2½	0.44	1.63	1.00	0.38	0.13	3.00	0.38	0.38	2.00	1.13	0.31	4.13	2.38	1.25
3¼	0.56	1.94	1.25	0.50	0.13	3.75	0.50	0.63	2.25	1.25	0.38	4.88	2.63	2.75
4	0.56	2.25	1.25	0.50	0.13	4.50	0.50	0.63	2.25	1.25	0.38	4.88	2.63	3.50
5	0.69	2.75	1.38	0.63	0.19	5.50	0.50	0.63	2.25	1.50	0.44	5.13	2.88	4.25
6	0.81	3.25	1.38	0.63	0.19	6.50	0.75	0.75	2.75	1.63	0.44	5.75	3.13	5.25

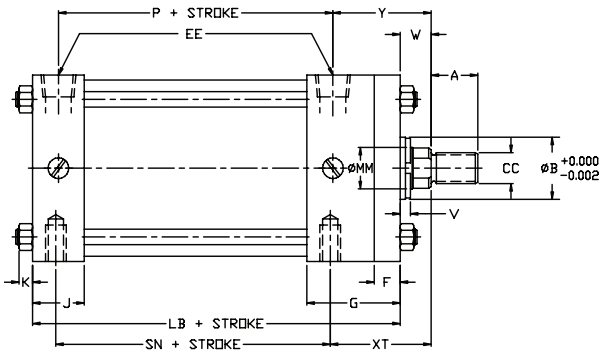
MS2, MS3

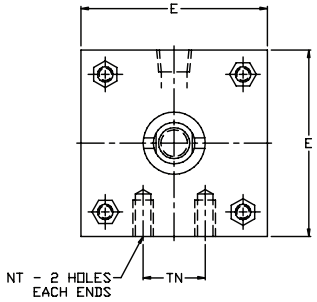
Dimensions (in)													
BORE	E	EE (NPT)	F	G	J	K	LB	P	SB	ST	SU	SW	TS
1½	2.00	0.38	0.38	2.00	1.00	0.25	4.00	2.25	0.44	0.50	0.94	0.38	2.75
2	2.50	0.38	0.38	2.00	1.00	0.31	4.00	2.25	0.44	0.50	0.94	0.38	3.25
2½	3.00	0.38	0.38	2.00	1.13	0.31	4.13	2.38	0.44	0.50	0.94	0.38	3.75
3¼	3.75	0.50	0.63	2.25	1.25	0.38	4.88	2.63	0.56	0.75	1.25	0.50	4.75
4	4.50	0.50	0.63	2.25	1.25	0.38	4.88	2.63	0.56	0.75	1.25	0.50	5.50
5	5.50	0.50	0.63	2.25	1.50	0.44	5.13	2.88	0.81	1.00	1.56	0.69	6.88
6	6.50	0.75	0.75	2.75	1.63	0.44	5.75	3.13	0.81	1.00	1.56	0.69	7.88

Rod Thread Table

Dimensions (in)						
Bore	Rod Φ MM	SA	SS	XS	Y	
1½	0.63	6.00	2.88	1.38	1.94	For other values please see chart on pg 3
	1.00	6.00	2.88	1.75	2.31	
2	0.63	6.00	2.88	1.38	1.94	
	1.00	6.00	2.88	1.75	2.31	
	1.38	6.00	2.88	2.00	2.56	
2½	0.63	6.13	3.00	1.38	1.94	
	1.00	6.13	3.00	1.75	2.31	
	1.38	6.13	3.00	2.00	2.56	
3¼	1.00	7.38	3.25	1.88	2.38	
	1.38	7.38	3.25	2.13	2.63	
4	1.00	7.38	3.25	1.88	2.38	
	1.38	7.38	3.25	2.13	2.63	
5	1.00	7.88	3.13	2.06	2.31	
	1.38	7.88	3.13	2.31	2.56	
	1.75	7.88	3.13	2.56	2.81	
6	1.38	8.50	3.63	2.31	2.81	
	1.75	8.50	3.63	2.56	3.06	
	2.00	8.50	3.63	2.69	3.19	

MS4





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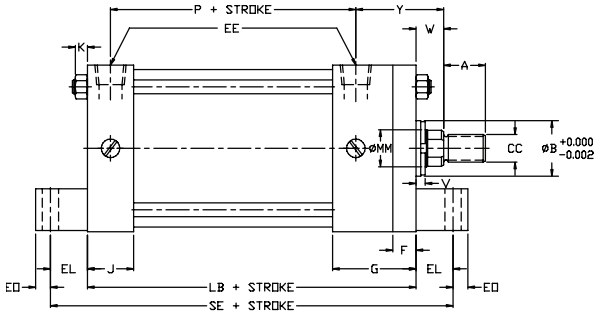
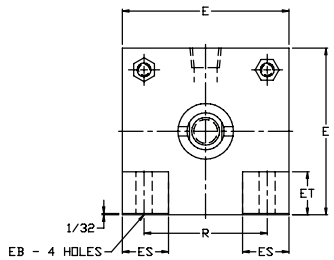




MS4

Dimensions (in)												
BORE	E	EE (NPT)	F	G	H	J	K	LB	P	NT	TN	SN
1½	2.00	0.38	0.38	2.00	1.00	1.00	0.25	4.00	2.25	¼-20	0.63	2.25
2	2.50	0.38	0.38	2.00	1.00	1.00	0.31	4.00	2.25	5/16-18	0.88	2.25
2½	3.00	0.38	0.38	2.00	1.00	1.13	0.31	4.13	2.38	⅜-16	1.25	2.38
3¼	3.75	0.50	0.63	2.25	1.38	1.25	0.38	4.88	2.63	½-13	1.50	2.63
4	4.50	0.50	0.63	2.25	1.38	1.25	0.38	4.88	2.63	½-13	2.06	2.63
5	5.50	0.50	0.63	2.25	1.38	1.50	0.44	5.13	2.88	⅝-11	2.69	2.88
6	6.50	0.75	0.75	2.75	1.38	1.63	0.44	5.75	3.13	¾-10	3.25	3.13

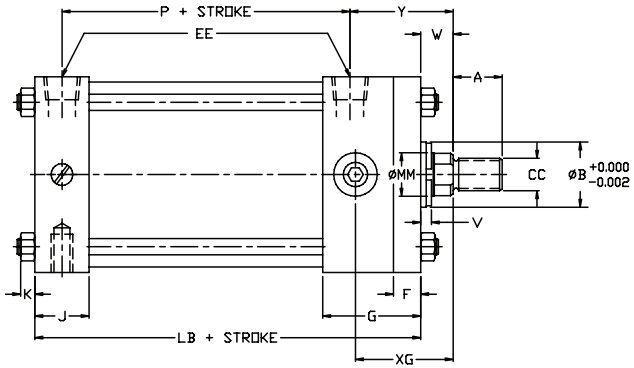
MS7

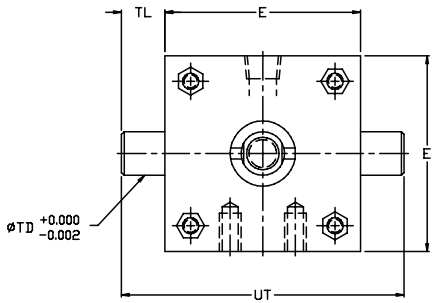
Dimensions (in)														
BORE	E	EB	EE (NPT)	EL	EO	ES	ET	F	G	J	K	LB	P	R
1½	2.00	0.31	0.38	0.75	0.25	0.56	0.53	0.38	2.00	1.00	0.25	4.00	2.25	1.43
2	2.50	0.38	0.38	0.94	0.31	0.63	0.63	0.38	2.00	1.00	0.31	4.00	2.25	1.84
2½	3.00	0.38	0.38	1.06	0.31	0.81	0.78	0.38	2.00	1.13	0.31	4.13	2.38	2.19
3¼	3.75	0.44	0.50	0.88	0.38	1.00	0.94	0.63	2.25	1.25	0.38	4.88	2.63	2.76
4	4.50	0.44	0.50	1.00	0.38	1.25	1.16	0.63	2.25	1.25	0.38	4.88	2.63	3.32
5	5.50	0.56	0.50	1.06	0.50	1.38	1.38	0.63	2.25	1.50	0.44	5.13	2.88	4.10
6	6.50	0.56	0.75	1.00	0.50	1.75	0.59	0.75	2.75	1.63	0.44	5.75	3.13	4.88

Rod Thread Table

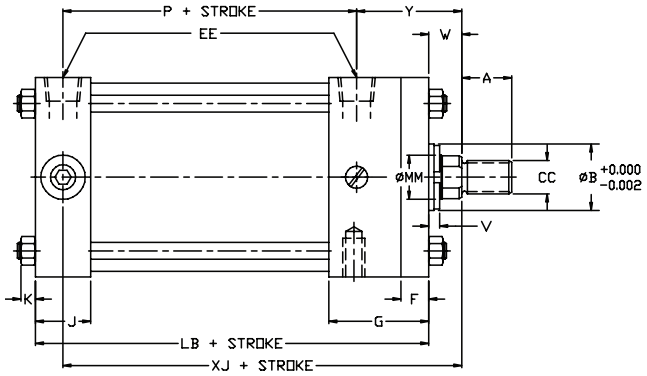
Dimensions (in)					
Bore	Rod Φ MM	XT	SE	Y	
1½	0.63	1.94	5.50	1.94	For other values please see chart on pg 3
	1.00	2.31	5.50	2.31	
2	0.63	1.94	5.88	1.94	
	1.00	2.31	5.88	2.31	
	1.38	2.56	5.88	2.56	
2½	0.63	1.94	6.25	1.94	
	1.00	2.31	6.25	2.31	
	1.38	2.56	6.25	2.56	
3¼	1.00	2.44	6.63	2.38	
	1.38	2.69	6.63	2.63	
4	1.00	2.44	6.88	2.38	
	1.38	2.69	6.88	2.63	
5	1.00	2.44	7.25	2.31	
	1.38	2.69	7.25	2.56	
	1.75	2.94	7.25	2.81	
6	1.38	2.81	7.75	2.81	
	1.75	3.06	7.75	3.06	
	2.00	3.19	7.75	3.19	

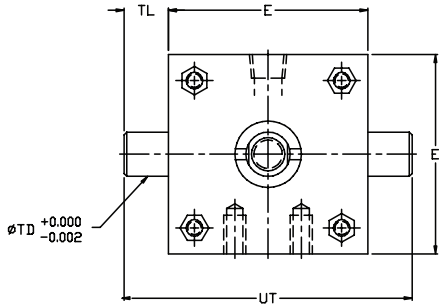
MT1





MT2



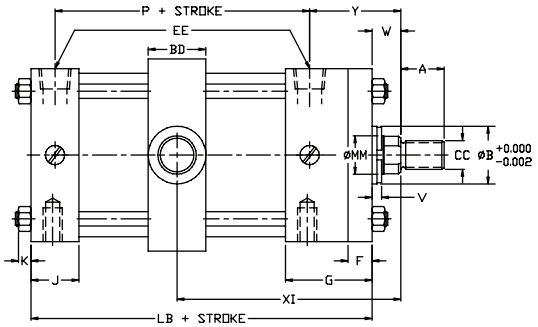


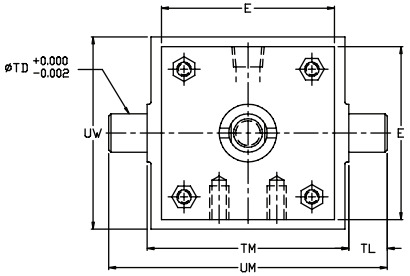
Dimensions (in)											
BORE	E	EE (NPT)	F	G	J	K	LB	P	TD	TL	UT
1½	2.00	0.38	0.38	2.00	1.00	0.25	4.00	2.25	1.00	1.00	4.00
2	2.50	0.38	0.38	2.00	1.00	0.31	4.00	2.25	1.00	1.00	4.50
2½	3.00	0.38	0.38	2.00	1.13	0.31	4.13	2.38	1.00	1.00	5.00
3¼	3.75	0.50	0.63	2.25	1.25	0.38	4.88	2.63	1.00	1.00	5.75
4	4.50	0.50	0.63	2.25	1.25	0.38	4.88	2.63	1.00	1.00	6.50
5	5.50	0.50	0.63	2.25	1.50	0.44	5.13	2.88	1.00	1.00	7.50
6	6.50	0.75	0.75	2.75	1.63	0.44	5.75	3.13	1.38	1.38	9.25

Rod Thread Table

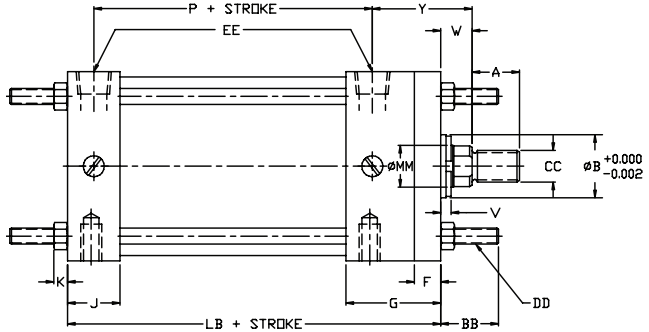
Dimensions (in)					
Bore	Rod Φ MM	XG	XJ	Y	
1½	0.63	1.75	4.13	1.94	For other values please see chart on pg 3
	1.00	2.13	4.50	2.31	
2	0.63	1.75	4.13	1.94	
	1.00	2.13	4.50	2.31	
	1.38	2.38	4.75	2.56	
2½	0.63	1.75	4.25	1.94	
	1.00	2.13	4.63	2.31	
	1.38	2.38	4.88	2.56	
3¼	1.00	2.25	5.00	2.38	
	1.38	2.50	5.25	2.63	
4	1.00	2.25	5.00	2.38	
	1.38	2.50	5.25	2.63	
5	1.00	2.25	5.25	2.31	
	1.38	2.50	5.50	2.56	
	1.75	2.75	5.75	2.81	
6	1.38	2.63	5.88	2.81	
	1.75	2.88	6.13	3.06	
	2.00	3.00	6.25	3.19	

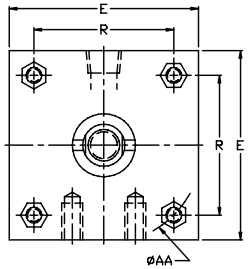
MT4





MX1, MX2, MX3





MT4

Dimensions (in)														
BORE	BD	E	EE (NPT)	F	G	J	K	LB	P	TD	TL	TM	UM	UW
1½	1.25	2.00	0.38	0.38	2.00	1.00	0.25	4.00	2.25	1.00	1.00	2.50	4.50	2.50
2	1.25	2.50	0.38	0.38	2.00	1.00	0.31	4.00	2.25	1.00	1.00	3.00	5.00	3.00
2½	1.25	3.00	0.38	0.38	2.00	1.13	0.31	4.13	2.38	1.00	1.00	3.50	5.50	3.50
3¼	1.50	3.75	0.50	0.63	2.25	1.25	0.38	4.88	2.63	1.00	1.00	4.50	6.50	4.50
4	1.50	4.50	0.50	0.63	2.25	1.25	0.38	4.88	2.63	1.00	1.00	5.25	7.25	5.25
5	1.50	5.50	0.50	0.63	2.25	1.50	0.44	5.13	2.88	1.00	1.00	6.25	8.25	6.25
6	1.75	6.50	0.75	0.75	2.75	1.63	0.44	5.75	3.13	1.38	1.38	7.63	10.38	7.63

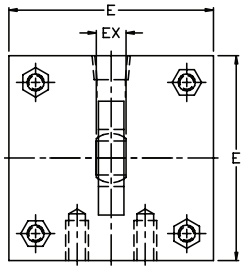
MX1, MX2, MX3

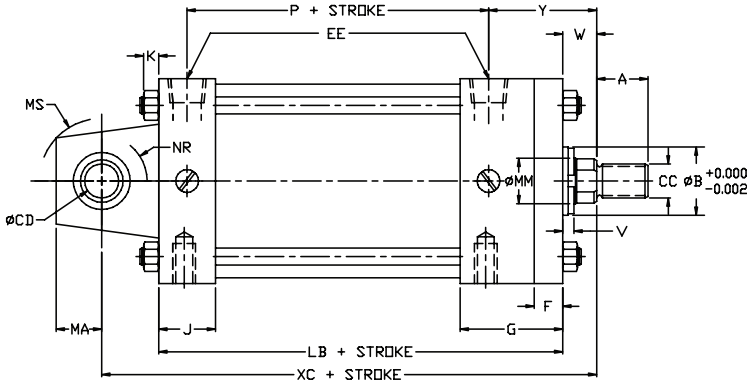
Dimensions (in)												
BORE	AA	BB	DD	E	EE (NPT)	F	G	J	K	LB	P	R
1½	2.02	1.00	¼-28	2.00	0.38	0.38	2.00	1.00	0.25	4.00	2.25	1.43
2	2.60	1.13	5/16-24	2.50	0.38	0.38	2.00	1.00	0.31	4.00	2.25	1.84
2½	3.10	1.13	5/16-24	3.00	0.38	0.38	2.00	1.13	0.31	4.13	2.38	2.19
3¼	3.90	1.13	⅜-24	3.75	0.50	0.63	2.25	1.25	0.38	4.88	2.63	2.76
4	4.70	1.38	⅜-24	4.50	0.50	0.63	2.25	1.25	0.38	4.88	2.63	3.32
5	5.80	1.81	½-20	5.50	0.50	0.63	2.25	1.50	0.44	5.13	2.88	4.10
6	6.90	1.81	½-20	6.50	0.75	0.75	2.75	1.63	0.44	5.75	3.13	4.88

Rod Thread Table

Dimensions (in)				
Bore	Rod Φ MM	Min XI	Y	
1½	0.63	3.31	1.94	For other values please see chart on pg 3
	1.00	3.69	2.31	
2	0.63	3.44	1.94	
	1.00	3.81	2.31	
	1.38	4.16	2.56	
2½	0.63	3.44	1.94	
	1.00	3.81	2.31	
	1.38	4.16	2.56	
3¼	1.00	4.19	2.38	
	1.38	4.44	2.63	
4	1.00	4.19	2.38	
	1.38	4.44	2.63	
5	1.00	4.31	2.31	
	1.38	4.44	2.56	
	1.75	4.69	2.81	
6	1.38	4.94	2.81	
	1.75	5.19	3.06	
	2.00	5.31	3.19	

MP5



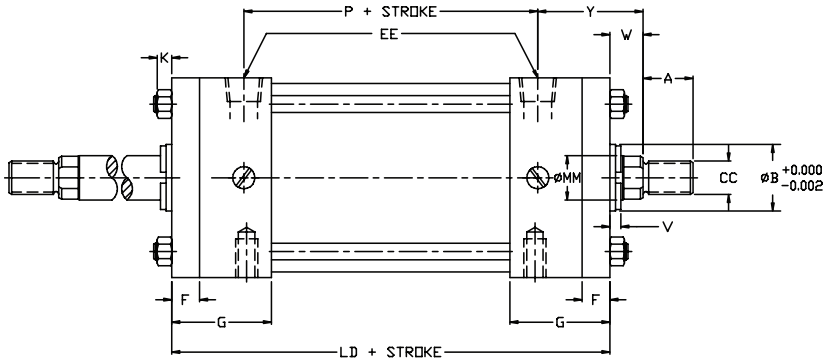


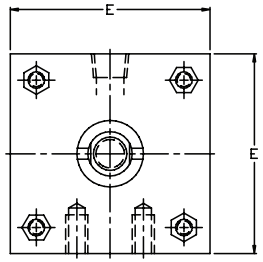
Dimensions (in)													
BORE	CD	E	EE (NPT)	EX	F	G	J	K	MA	MS	NR	LB	P
1½	0.50	2.00	0.38	0.44	0.38	2.00	1.00	0.25	0.75	0.94	0.63	4.00	2.25
2	0.50	2.50	0.38	0.44	0.38	2.00	1.00	0.31	0.75	0.94	0.63	4.00	2.25
2½	0.50	3.00	0.38	0.44	0.38	2.00	1.13	0.31	0.75	0.94	0.63	4.13	2.38
3¼	0.75	3.75	0.50	0.66	0.63	2.25	1.25	0.38	1.00	1.38	1.00	4.88	2.63
4	0.75	4.50	0.50	0.66	0.63	2.25	1.25	0.38	1.00	1.38	1.00	4.88	2.63
5	0.75	5.50	0.50	0.66	0.63	2.25	1.50	0.44	1.00	1.38	1.00	5.13	2.88
6	1.00	6.50	0.75	0.88	0.75	2.75	1.63	0.44	1.25	1.69	1.25	5.75	3.13

Rod Thread Table

Dimensions (in)				
Bore	Rod Φ MM	XC	Y	
1½	0.63	5.38	1.94	For other values please see chart on pg 3
	1.00	5.75	2.31	
2	0.63	5.38	1.94	
	1.00	5.75	2.31	
	1.38	6.00	2.56	
2½	0.63	5.50	1.94	
	1.00	5.88	2.31	
	1.38	6.13	2.56	
3¼	1.00	6.88	2.38	
	1.38	7.13	2.63	
4	1.00	6.88	2.38	
	1.38	7.13	2.63	
5	1.00	7.13	2.31	
	1.38	7.38	2.56	
	1.75	7.63	2.81	
6	1.38	8.13	2.81	
	1.75	8.38	3.06	
	2.00	8.50	3.19	

Double Rod Ended



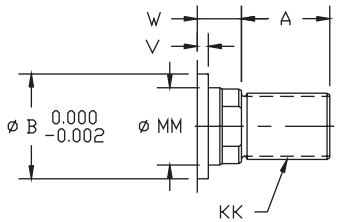


Actuator Dimensions (in)								
BORE	E	EE (NPT)	F	G	J	K	LD	P
1½	2.00	0.38	0.38	2.00	1.00	0.25	5.00	2.38
2	2.50	0.38	0.38	2.00	1.00	0.31	5.00	2.38
2½	3.00	0.38	0.38	2.00	1.13	0.31	5.00	2.38
3¼	3.75	0.50	0.63	2.25	1.25	0.38	5.88	2.63
4	4.50	0.50	0.63	2.25	1.25	0.38	5.88	2.63
5	5.50	0.50	0.63	2.25	1.50	0.44	5.88	2.75
6	6.50	0.75	0.75	2.75	1.63	0.44	6.88	3.00

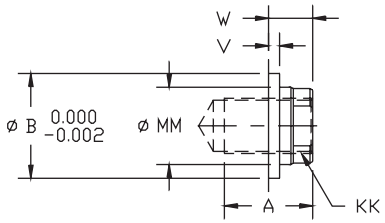
Rod Thread Size

8”-14” Bore

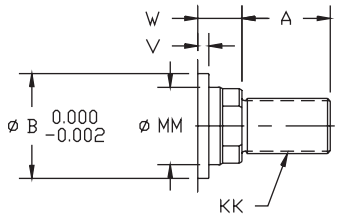
INTERMEDIATE MALE



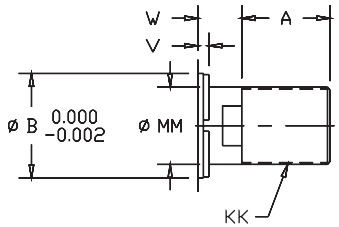
SMALL FEMALE



SMALL MALE

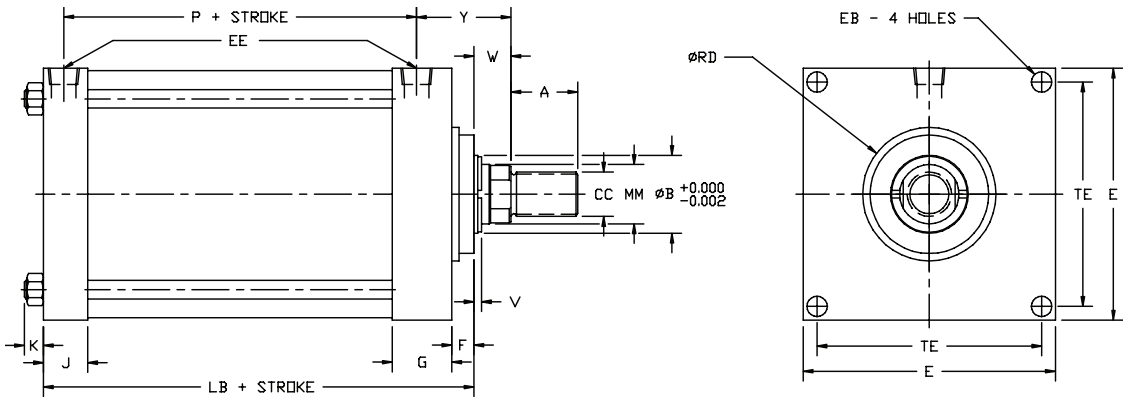


FULL MALE

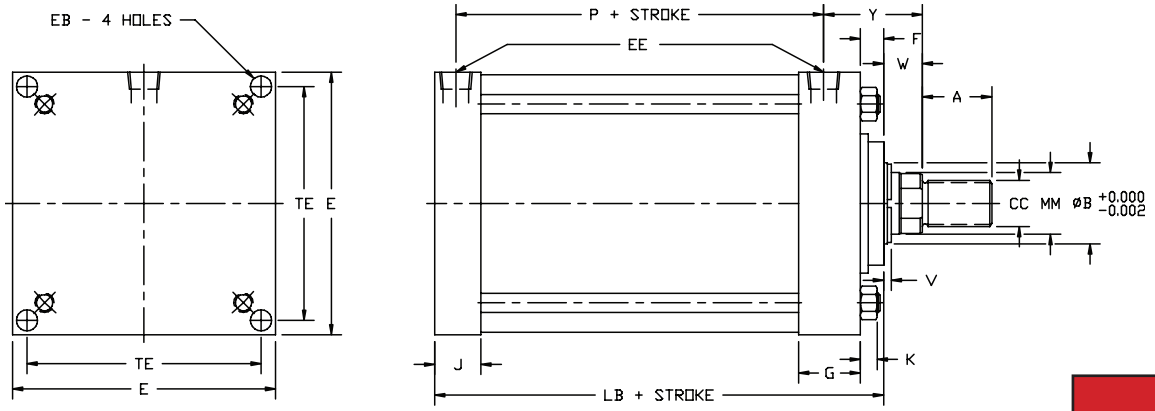


Actuator Dimensions (in)							
Bore	Rod Φ MM	Thread (KK)		A	B	V	W
		SM-SF	IM				
8	1.38	1¼-12	1-14	1.63	2.00	0.25	0.88
	1.75	1½-12	1¼-12	2.00	2.34	0.38	1.13
	2.00	1¾-12	1½-12	2.25	2.63	0.38	1.25
	2.50	2¼-12	1⅞-12	3.00	3.13	0.50	1.50
10	1.75	1½-12	1¼-12	2.00	2.38	0.38	1.13
	2.00	1¾-12	1½-12	2.25	2.63	0.38	1.25
	2.50	2¼-12	1⅞-12	3.00	3.13	0.50	1.50
12	2.00	1¾-12	1½-12	2.25	2.63	0.38	1.25
	2.50	2¼-12	1⅞-12	3.00	3.13	0.50	1.50
	3.00	2¾-12	2¼-12	3.50	3.75	0.50	1.50
14	2.50	2¼-12	1⅞-12	3.00	3.13	0.50	1.50
	3.00	2¾-12	2¼-12	3.50	3.75	0.50	1.50
	3.50	3¼-12	2½-12	3.50	4.25	0.50	1.50

ME3



ME4

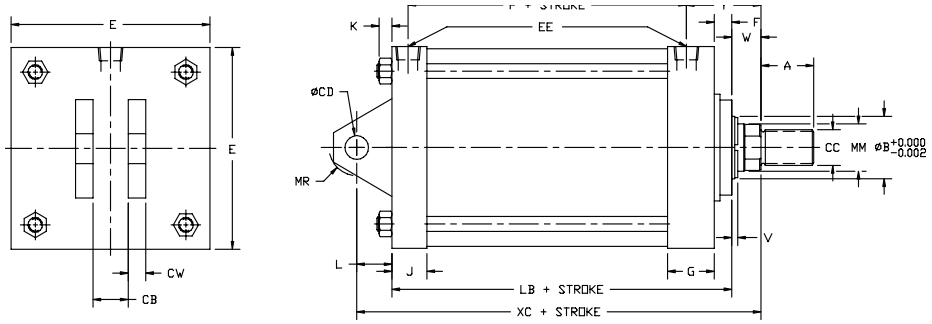


Rod Thread Table

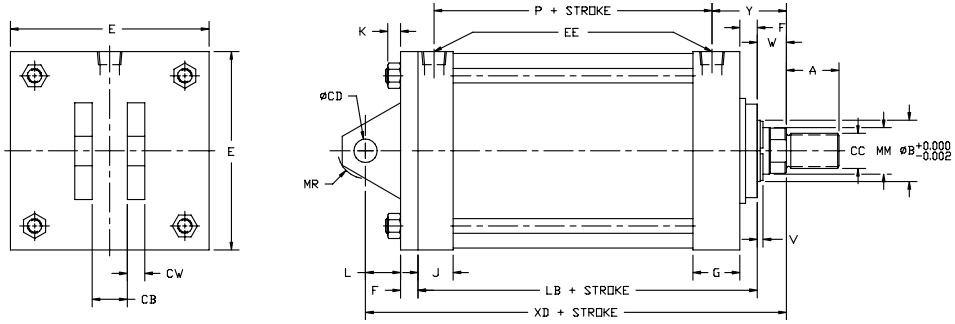
Dimensions (in)			
Bore	Rod Φ MM	Y	
8	1.38	2.81	For other values please see chart on pg 11
	1.75	3.06	
	2.00	3.19	
	2.50	3.44	
10	1.75	3.13	
	2.00	3.25	
	2.50	3.50	
12	2.00	3.25	
	2.50	3.50	
	3.00	3.50	
14	2.50	3.81	
	3.00	3.81	
	3.50	3.81	

Actuator Dimensions (in)											
BORE	E	EE (NPT)	EB	F	G	J	K	RD	TE	LB	P
8	8.50	0.75	0.69	0.75	2.00	1.50	0.56	4.00	7.57	5.88	3.25
10	10.63	1.00	0.81	0.75	2.25	2.00	0.69	4.50	9.40	7.13	4.13
12	12.75	1.00	0.81	0.75	2.25	2.00	0.69	5.50	11.10	7.63	4.63
14	14.75	1.25	0.94	0.75	2.75	2.25	0.75	6.00	12.87	8.88	5.50

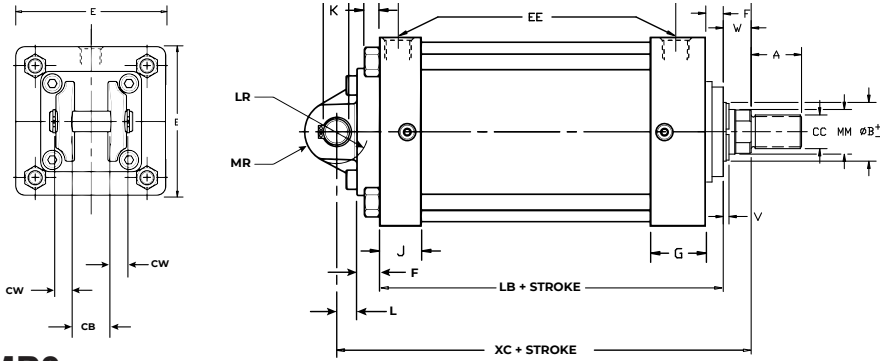
MP1 - A Style (PS & PC Series)



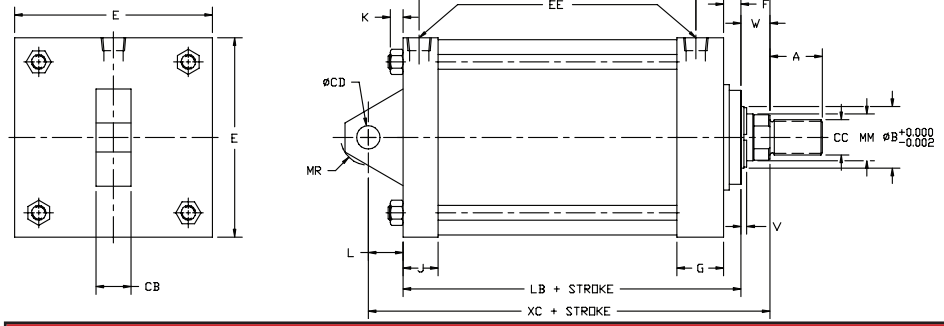
MP2



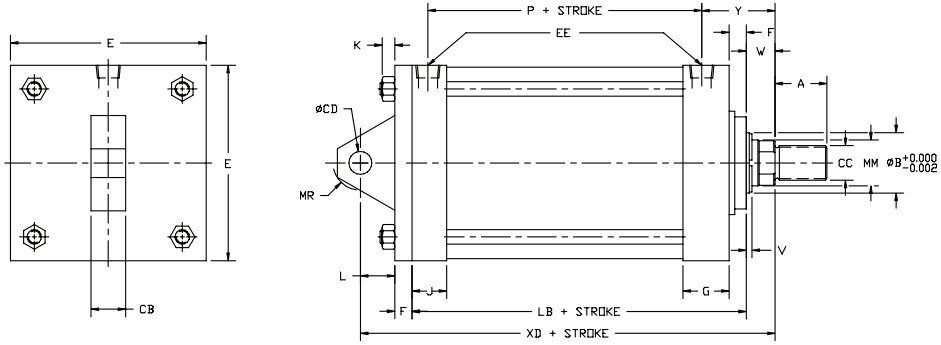
MP1 - B Style (PA Series - *8" Bore Only*)



MP3



MP4



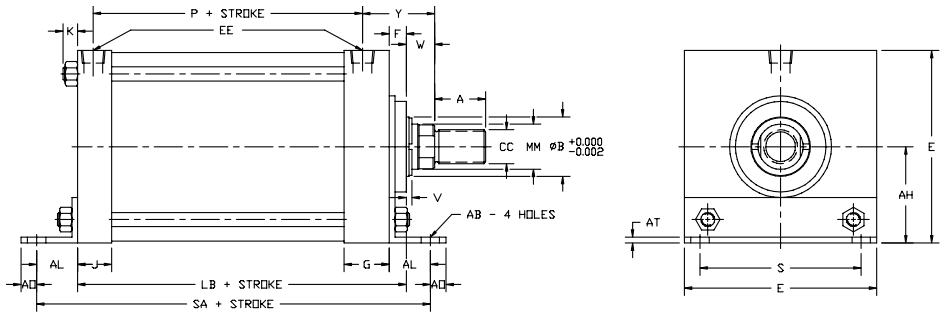
Dimensions (in)														
BORE	CB	CD	CW	E	EE (NPT)	F	G	J	K	L	MR	LB	P	LR
8	1.50	1.00	0.75	8.50	0.75	0.75	2.00	1.50	0.56	1.50	1.19	5.88	3.25	1.25
10	2.00	1.38	1.00	10.63	1.00	0.75	2.25	2.00	0.69	2.13	1.63	7.13	4.13	1.88
12	2.50	1.75	1.25	12.75	1.00	0.75	2.25	2.00	0.69	2.25	2.13	7.63	4.63	2.13
14	2.50	2.00	1.25	14.75	1.25	0.75	2.75	2.25	0.75	2.50	2.38	8.88	5.50	2.38

Note: PA Series (MP1 B Style) is only available in an 8" bore

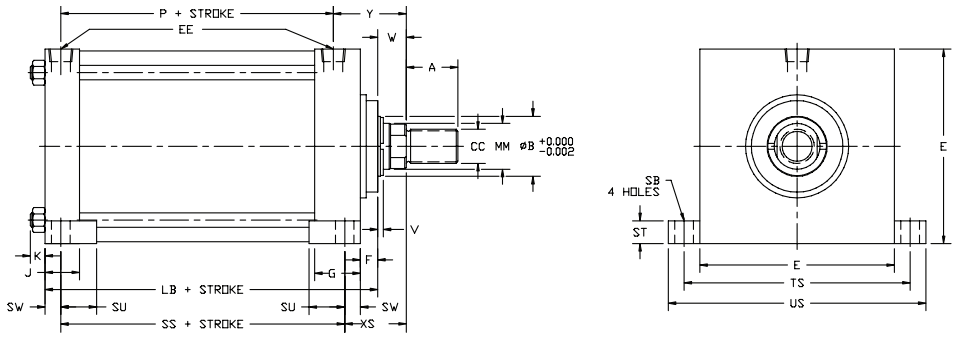
Rod Thread Table

Dimensions (in)					
Bore	Rod Φ MM	XC	XD	Y	
8	1.38	8.25	9.00	2.81	For other values please see chart on pg 11
	1.75	8.50	9.25	3.06	
	2.00	8.63	9.38	3.19	
	2.50	8.88	9.63	3.44	
10	1.75	10.38	11.13	3.13	
	2.00	10.50	11.25	3.25	
	2.50	10.75	11.50	3.50	
12	2.00	11.13	11.88	3.25	
	2.50	11.38	12.13	3.50	
	3.00	11.38	12.13	3.50	
14	2.50	12.88	13.63	3.81	
	3.00	12.88	13.63	3.81	
	3.50	12.88	13.63	3.81	

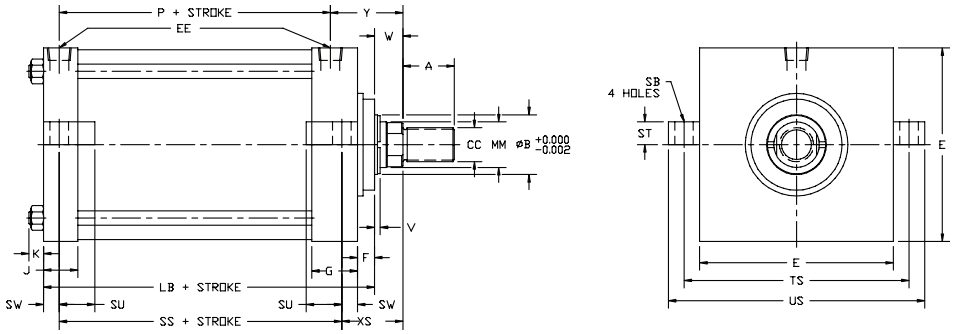
MS1



MS2



MS3



MS1

Dimensions (in)															
BORE	AB	AH	AL	AO	AT	E	EE (NPT)	F	G	J	K	LB	P	S	SA
8	0.81	4.25	1.81	0.69	0.25	8.50	0.75	0.75	2.00	1.50	0.56	5.88	3.25	7.13	8.75
10	1.06	5.31	2.13	0.88	0.25	10.63	1.00	0.75	2.25	2.00	0.69	7.13	4.13	8.88	10.63
12	1.06	6.38	2.13	0.88	0.38	12.75	1.00	0.75	2.25	2.00	0.69	7.63	4.63	11.00	11.13
14	1.31	7.38	2.44	1.06	0.38	14.75	1.25	0.75	2.75	2.25	0.75	8.88	5.50	12.63	13.00

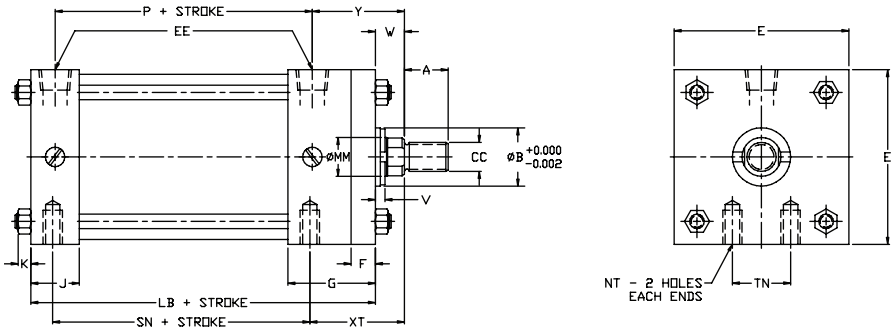
MS2, MS3

Dimensions (in)													
BORE	SB	E	EE (NPT)	F	G	J	K	LB	P	ST	SU	SW	SS	TS
8	0.81	8.50	0.75	0.75	2.00	1.50	0.56	5.88	3.25	1.00	1.56	0.69	3.75	9.88
10	1.06	10.63	1.00	0.75	2.25	2.00	0.69	7.13	4.13	1.25	2.00	0.88	4.63	12.38
12	1.06	12.75	1.00	0.75	2.25	2.00	0.69	7.63	4.63	1.25	2.00	0.88	5.13	14.50
14	1.31	14.75	1.25	0.75	2.75	2.25	0.75	8.88	5.50	1.50	2.50	1.13	5.88	17.00

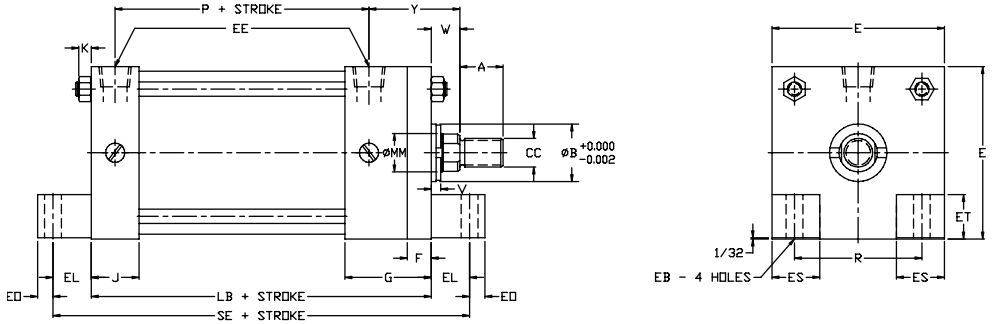
Rod Thread Table

Dimensions (in)				
Bore	Rod Φ MM	XS	Y	
8	1.38	2.31	2.81	For other values please see chart on pg 11
	1.75	2.56	3.06	
	2.00	2.69	3.19	
	2.50	2.94	3.44	
10	1.75	2.75	3.13	
	2.00	2.88	3.25	
	2.50	3.13	3.50	
12	2.00	2.88	3.25	
	2.50	3.13	3.50	
	3.00	3.13	3.50	
14	2.50	3.38	3.81	
	3.00	3.38	3.81	
	3.50	3.38	3.81	

MS4



MS7



MS4

Dimensions (in)												
BORE	E	EE (NPT)	F	G	J	K	LB	P	ND	NT	SN	TN
8	8.50	0.75	0.75	2.00	1.50	0.56	5.88	3.25	1.13	¾-10	3.25	4.50
10	10.63	1.00	0.75	2.25	2.00	0.69	7.13	4.13	1.50	1-8	4.13	5.50
12	12.75	1.00	0.75	2.25	2.00	0.69	7.63	4.63	1.50	1-8	4.63	7.25
14	14.75	1.25	0.75	2.75	2.25	0.75	8.88	5.50	1.88	1¼-7	5.50	8.38

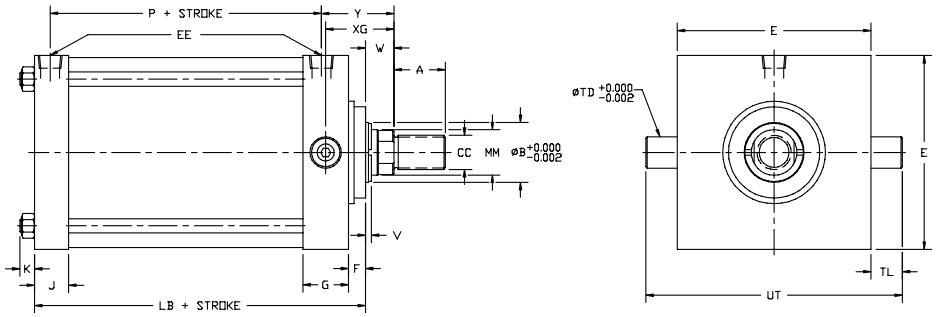
MS7

Dimensions (in)															
BORE	E	EB	EE (NPT)	EL	EO	ES	ET	F	G	J	K	LB	P	R	SE
8	8.50	0.69	0.75	1.13	0.63	2.25	2.03	0.75	2.00	1.50	0.56	5.88	3.25	6.44	7.38
10	10.63	0.81	1.00	1.31	0.63	2.75	2.69	0.75	2.25	2.00	0.69	7.13	4.13	7.92	9.00
12	12.75	0.81	1.00	1.31	0.63	3.50	3.31	0.75	2.25	2.00	0.69	7.63	4.63	9.40	9.50
14	14.75	0.56	1.25	1.50	0.75	4.00	3.81	0.75	2.75	2.25	0.75	8.88	5.50	10.90	11.13

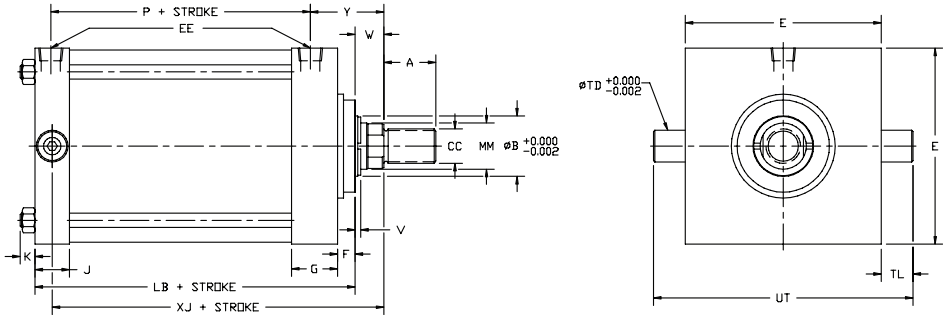
Rod Thread Table

Dimensions (in)				
Bore	Rod Φ MM	XT	Y	
8	1.38	2.81	2.81	For other values please see chart on pg 11
	1.75	3.06	3.06	
	2.00	3.19	3.19	
	2.50	3.44	3.44	
10	1.75	3.13	3.13	
	2.00	3.25	3.25	
	2.50	3.50	3.50	
12	2.00	3.25	3.25	
	2.50	3.50	3.50	
	3.00	3.50	3.50	
14	2.50	3.81	3.81	
	3.00	3.81	3.81	
	3.50	3.81	3.81	

MT1



MT2

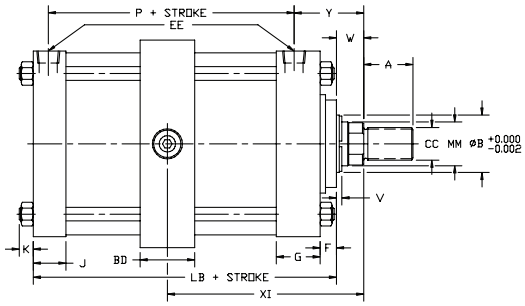


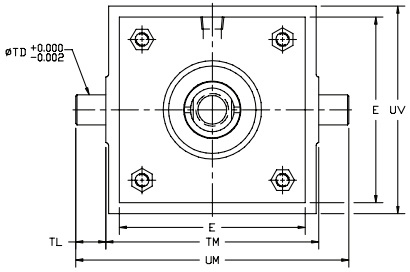
Dimensions (in)											
BORE	E	EE (NPT)	F	G	J	K	LB	P	TD	TL	UT
8	8.50	0.75	0.75	2.00	1.50	0.56	5.88	3.25	1.38	1.38	11.25
10	10.63	1.00	0.75	2.25	2.00	0.69	7.13	4.13	1.75	1.75	14.13
12	12.75	1.00	0.75	2.25	2.00	0.69	7.63	4.63	1.75	1.75	16.25
14	14.75	1.25	0.75	2.75	2.25	0.75	8.88	5.50	2.00	2.00	18.75

Rod Thread Table

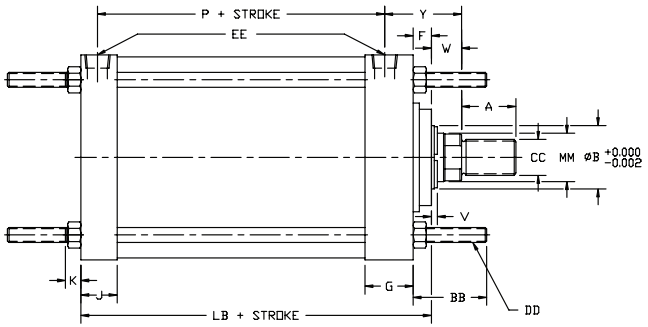
Dimensions (in)					
Bore	Rod Φ MM	XG	XJ	Y	
8	1.38	2.63	6.00	2.81	For other values please see chart on pg 11
	1.75	2.88	6.25	3.06	
	2.00	3.00	6.38	3.19	
	2.50	3.25	6.63	3.44	
10	1.75	3.00	7.25	3.13	
	2.00	3.13	7.38	3.25	
	2.50	3.38	7.63	3.50	
12	2.00	3.13	7.88	3.25	
	2.50	3.38	8.13	3.50	
	3.00	3.38	8.13	3.50	
14	2.50	3.63	9.25	3.81	
	3.00	3.63	9.25	3.81	
	3.50	3.63	9.25	3.81	

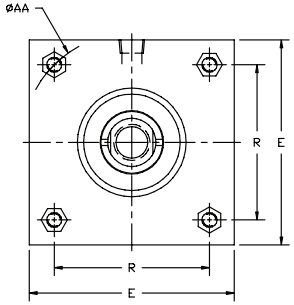
MT4





MX1, MX2, MX3





MT4

Dimensions (in)														
BORE	BD	E	EE (NPT)	F	G	J	K	LB	P	TD	TL	TM	UM	UW
8	2.50	8.50	0.75	0.75	2.00	1.50	0.56	5.88	3.25	1.38	1.38	9.75	12.50	9.50
10	3.00	10.63	1.00	0.75	2.25	2.00	0.69	7.13	4.13	1.75	1.75	12.00	15.50	11.75
12	3.00	12.75	1.00	0.75	2.25	2.00	0.69	7.63	4.63	1.75	1.75	14.00	17.50	13.75
14	3.50	14.75	1.25	0.75	2.75	2.25	0.75	8.88	5.50	2.00	2.00	16.25	20.25	16.00

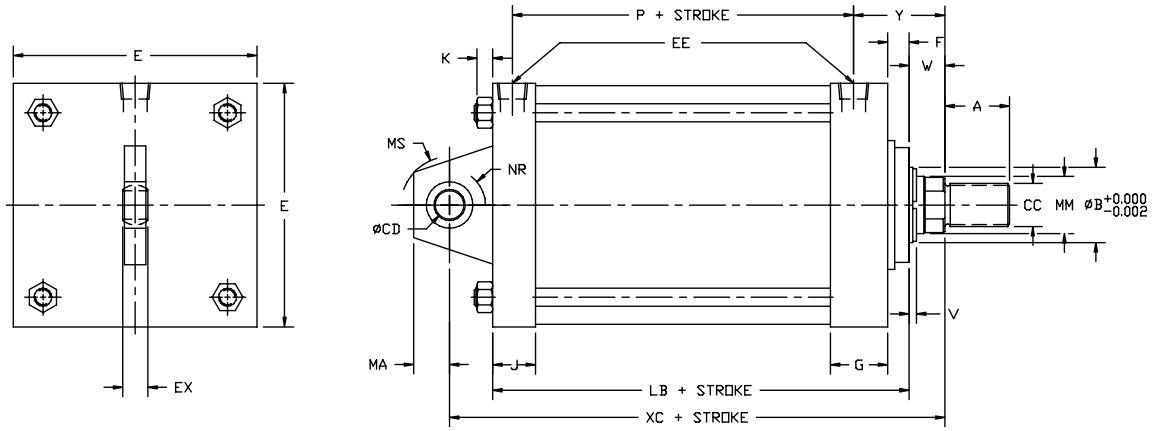
MX1, MX2, MX3

Dimensions (in)												
BORE	AA	BB	DD	E	EE (NPT)	F	G	J	K	LB	P	R
8	9.10	2.31	5⁄8-18	8.50	0.75	0.75	2.00	1.50	0.56	5.88	3.25	6.44
10	11.20	2.69	¾-16	10.63	1.00	0.75	2.25	2.00	0.69	7.13	4.13	7.92
12	13.30	2.69	¾-16	12.75	1.00	0.75	2.25	2.00	0.69	7.63	4.63	9.40
14	15.40	3.19	⅞-14	14.75	1.25	0.75	2.75	2.25	0.75	8.88	5.50	10.90

Rod Thread Table

Dimensions (in)				
Bore	Rod Φ MM	Min XI	Y	
8	1.38	4.94	2.81	For other values please see chart on pg 11
	1.75	5.19	3.06	
	2.00	5.31	3.19	
	2.50	5.56	3.44	
10	1.75	5.69	3.13	
	2.00	5.81	3.25	
	2.50	6.06	3.50	
12	2.00	5.81	3.25	
	2.50	6.06	3.50	
	3.00	6.06	3.50	
14	2.50	6.81	3.81	
	3.00	6.81	3.81	
	3.50	6.81	3.81	

MP5



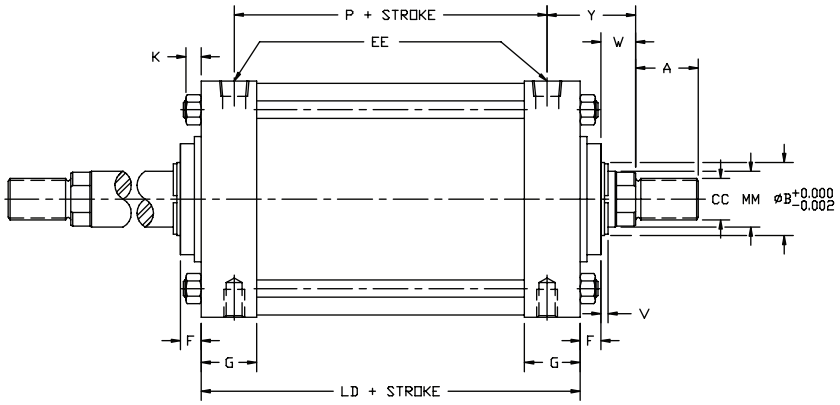
MP5

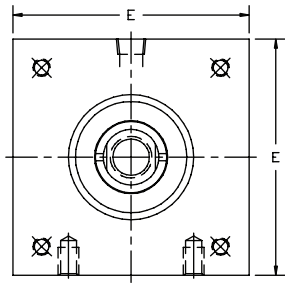
Dimensions (in)													
BORE	CD	E	EE (NPT)	EX	F	G	J	K	LB	P	MA	MS	NR
8	1.00	8.50	0.75	0.88	0.75	2.00	1.50	0.56	5.88	3.25	1.25	1.69	1.25
10	1.38	10.63	1.00	1.19	0.75	2.25	2.00	0.69	7.13	4.13	1.88	2.44	1.63
12	1.75	12.75	1.00	1.53	0.75	2.25	2.00	0.69	7.63	4.63	2.50	2.88	2.06
14	2.00	14.75	1.25	1.75	0.75	2.75	2.25	0.75	8.88	5.50	2.50	3.31	2.38

Rod Thread Table

Dimensions (in)					
Bore	Rod Φ MM	XC	LD	Y	
8	1.38	2.63	5.63	2.81	For other values please see chart on pg 11
	1.75	2.88	5.63	3.06	
	2.00	3.00	5.63	3.19	
	2.50	3.25	5.63	3.44	
10	1.75	3.00	6.63	3.13	
	2.00	3.13	6.63	3.25	
	2.50	3.38	6.63	3.50	
12	2.00	3.13	7.13	3.25	
	2.50	3.38	7.13	3.50	
	3.00	3.38	7.13	3.50	
14	2.50	3.63	8.63	3.81	
	3.00	3.63	8.63	3.81	
	3.50	3.63	8.63	3.81	

Double Rod Ended





Actuator Dimensions (in)								
BORE	E	EE (NPT)	F	G	J	K	LD	P
8	8.50	0.75	0.75	2.00	1.50	0.56	5.63	3.25
10	10.63	1.00	0.75	2.25	2.00	0.69	6.63	4.13
12	12.75	1.00	0.75	2.25	2.00	0.69	7.13	4.63
14	14.75	1.25	0.75	2.75	2.25	0.75	8.63	5.50

How to Order

SERIES

PA - Aluminum
PS - Steel
PC - Stainless Steel

BORE SIZE

C - 1 1/2"
D - 2"
E - 2 1/2"
G - 3 1/4"
H - 4"
K - 5"
L - 6"
M - 7"
N - 8"
P - 10"
R - 12"
S - 14"

ROD DIAMETER

C - 5/8"
E - 1"
G - 1 3/8"
H - 1 3/4"
J - 2"
K - 2 1/2"
L - 3"
M - 3 1/2"

ROD THREAD STYLE

N - Standard Thread
M - Metric

ROD THREAD SIZE

1 - Small Male
2 - Intermediate Male
3 - Full Male
4 - Small Female
P - Plain (Use with style N thread)

CUSHIONS

2 - Non adjustable both ends
3 - Non adjustable head end
4 - Non adjustable cap end
5 - Adjustable both ends
6 - Adjustable head end
7 - Adjustable cap end
8 - None

CUSHIONS POS

- Omit if non Cushion
- Cushion on one end CX
  X denotes position
  ex: C1 = Pos 1
- Cushion on one end CXX
  XX denotes position
  ex: C12 = Pos 1 head Pos 2 Cap

APPLICATION MODS

- - Omit if not required
GR2 - Metallic rod scrapper
P2 - Magnetic pioston
S5 - Hydraulic use (250psi max)
S5 not available with cushions

List application mods alpha numerically

SEALS

N - Standard Seals
F - High Temp
L - Low Temp

PORTS

SXX - SAE
NXX - NPT
TXX - BSPT

XX denotes position
ex: 12 = Pos 1 head, Pos 2 Cap

SPECIAL OPTIONS

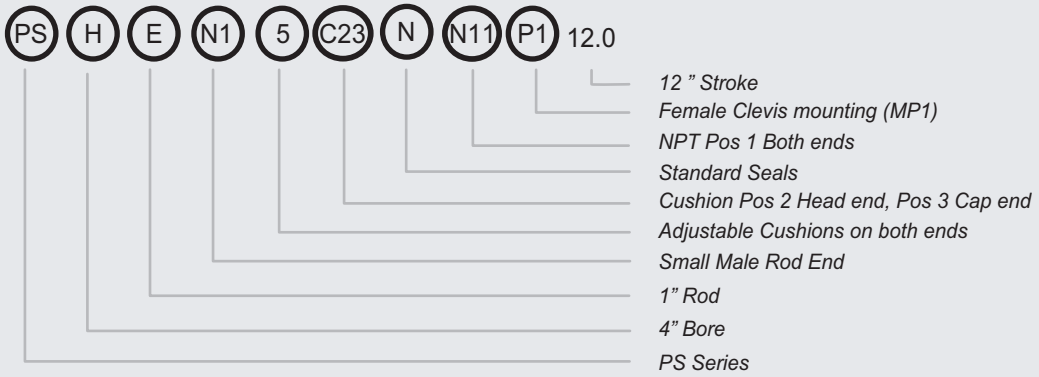
- - Omit if not required
A# - Thread extension ex:A2.50 = A = 2.50"
BN - Neoprene Rod Boot (-46C to 107C)*
BS - Silicone Rod Boot (-46C to 266C)*
C1 - Polyurethane Paint
C2 - Nickel Plating
M2 - Stainless Steel tie rods
M3 - 316 Stainless Steel piston rod
ST - Stop Tube
W# - Rod Extension ex: W2.50 = W = 2.50"
XI - For T4 mount only
Modifications to be listed alphanumerically after the stroke
ex:PSHEN15C22NN11X012.00A2.5C1W5.5

**Cylinders with rod boots require special W*
W=Stroke x 0.125 + 3/4 + std W

MOUNTINGS

P1 MP1 mount: Female clevis
P2 MP2 mount: Detachable female clevis
P3 MP3 mount: Male clevis
P4 MP4 mount: Detachable male clevis
P5 MP5 mount: Spherical bearing
P6 MP6 mount: Detahcabel spherical bearing
E3 ME3 mount: Head square
E4 ME4 mount: Cap square
F1 MF1 mount: Head rectangular flange
F2 MF2 mount: Cap rectangular flange
F5 MF5 mount: Head square flange
F6 MF6 mount: Cap square flange
X1 MX1 mount: Extended tie rod both ends
X3 MX3 mount: Extended tie rod head end
X2 MX2 mount: Extended tie rod cap end
X0 MX0 mount: No mount
S1 MS1 mount: Side end angles
S2 MS2 mount: Side lugs
SC2 MS2 mount: Side lugs, thrust key on cap end
SH2 MS2 mount: side lugs, thrust key on head end
S3 MS3 mount: Centerline lugs
S4 MS4 mount: Side tapped
S7 MS7 mount: Side end lugs
T1 MT1 mount: Head end trunnion
T1S MT1 mount: Steel Head with welded trunnion pins
T1I MT1 mount: Steel Head with integral trunnion pins
T2 MT2 mount: Cap end trunnion
T2S MT2 mount: Steel Cap with welded trunnion pins
T2I MT2 mount: Steel Cap with integral trunnion pins
T4 MT4 moung: Intermediate trunnions
(Specify XI at end of stroke)

EXAMPLE



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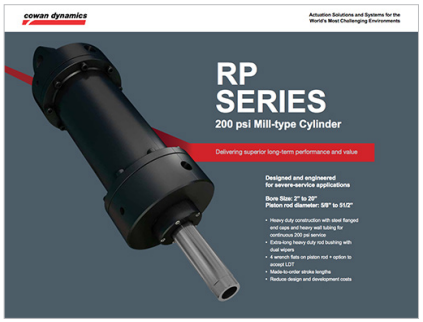

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