

A black, industrial-grade pneumatic valve actuator is shown mounted on a large, white, cylindrical pipe. The actuator has a vertical, cylindrical body with a flange at the top and a mounting bracket at the bottom. The pipe has a flange with a gasketed seal. The background is a dark blue gradient with a teal diagonal line.

# A SERIES Double-Acting Pneumatic Valve Actuator

Designed & engineered for severe-service applications

**TECHNICAL BROCHURE**

# A SERIES Design & Materials

## Barrel Seals

Nitrile "O"-ring standard.  
High or low temp optional

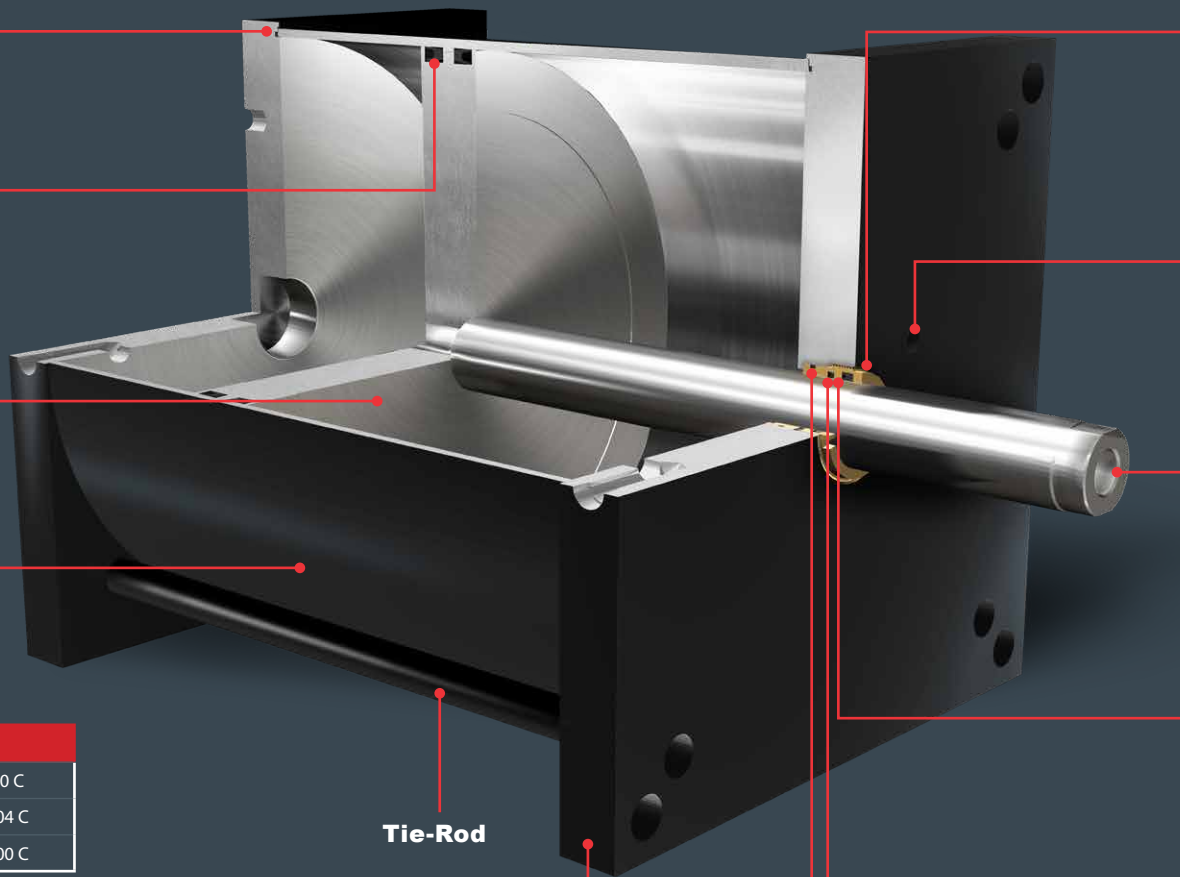
## Piston Packing

Nitrile U Cup standard.  
High and Low Temp optional.

## Piston

Aluminum Steel with wearband on 7" and above

**Barrel** | High strength carbon fiber composite standard. Aluminum, Steel or Stainless Steel optional



## Gland Bushing

Cartridge type SAE 660 bronze standard. Delrin and cast iron optional

## Flange Mounting Hole

ISO/ MSS Flange mounting holes See *Actuator Dimensions Page* for details

**Piston Rod** | Steel SAE 1045, ground, hard chrome plated & polished 316 and 17-4 PH Stainless steel available as an option

**Rod Wiper** | To prevent contamination inside the cylinder

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

Material Breakdown	STANDARD	Corrosion Resistant	AWWA
Head & Cap	Steel	SS 316	Cad Plated
Barrel	Composite	Composite	Composite
Piston	Aluminum (4"-8") & Steel (10" and above)	Steel	Cad Plated
Piston Rod	AISI 1045	SS 316	SS 316
Gland	SAE 660	Delrin	Delrin
Tie Rod 4" - 10"	AISI 1045	SS 316	SS 316
Tie Rod 12" & Above	AISI 1045	SS 17 - 4 PH	SS 17 - 4 PH

**Tie-Rod**

**Head & Cap** | ASTM A-36 hot rolled steel. Stainless Steel available as an option

## Gland Packing

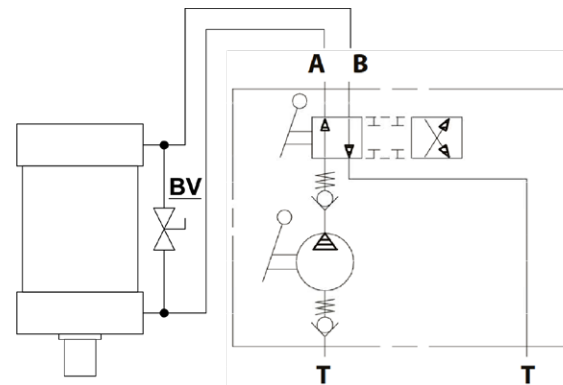
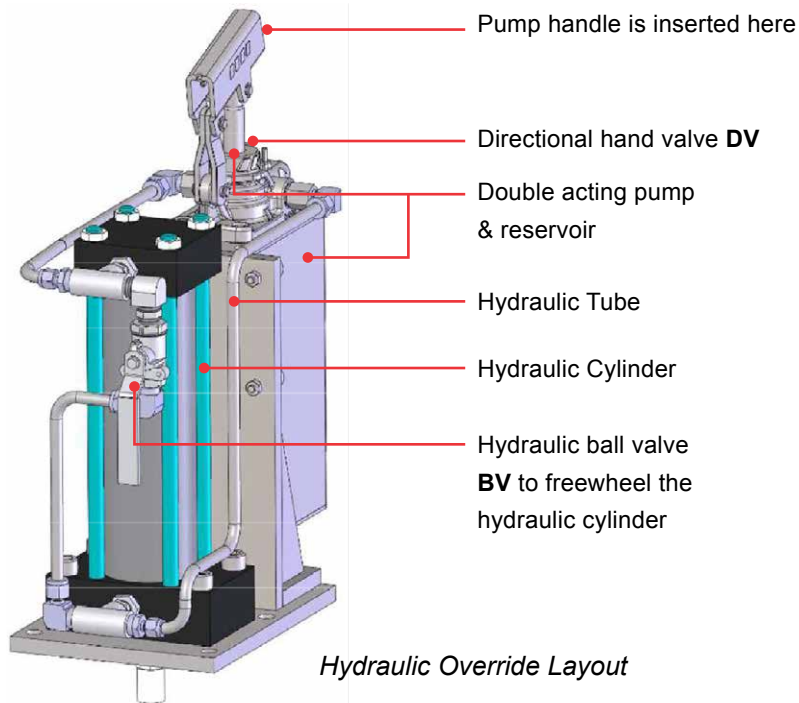
Nitrile "U"-cup standard.  
High or low temp optional

## Gland Seal

Nitrile "O"-ring with a backup ring standard High or low temp optional

# Double-Acting Hydraulic Manual Override

## Overview and Operation



### OPERATION

#### Actuator Normal Operation:

Open ball valve **BV** and ensure directional valve **DV** is not centered. The hydraulic override cylinder free-wheels (cylinder pulls and pushes oil from and to the hydraulic reservoir freely through directional valve **DV**)

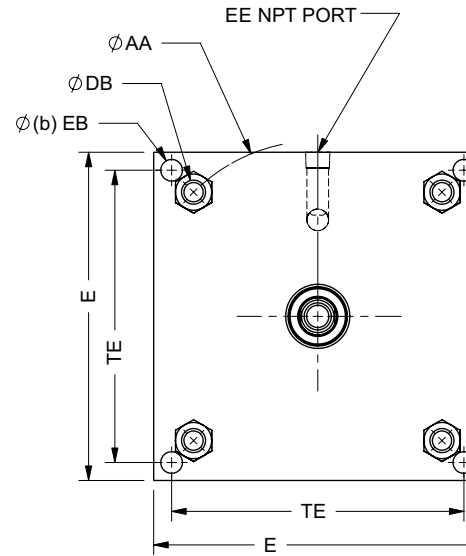
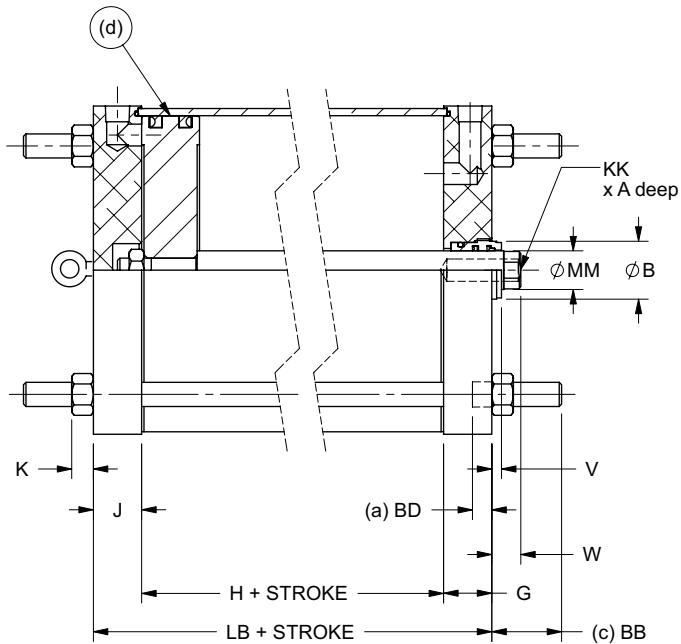
#### Actuator Override Operation:

1. Close ball valve **BV**
2. Insert pump actuation handle and operate, pump operates during both handle strokes. Directional valve **DV** determines direction of travel of hydraulic override cylinder.
3. Return to normal operation by opening ball valve **BV**

**IMPORTANT: Never close ball valve **BV** or position directional valve **DV** in mid position during normal operation.**

# "A" Series Single Ended

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



- NOTES:  
a- 4" TO 7" BORE ONLY  
b- 8" TO 26" BORE ONLY  
c- FOR MOUNTING MX1, MX2, MX3  
d- WEAR BAND FOR 10" BORE AND OVER

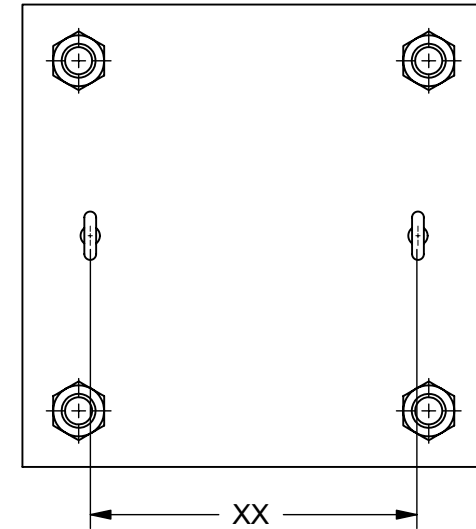
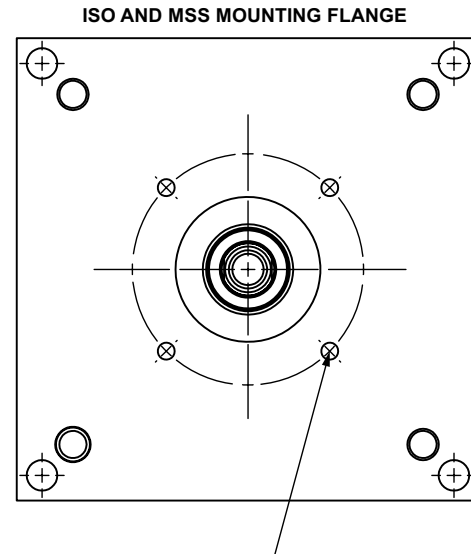
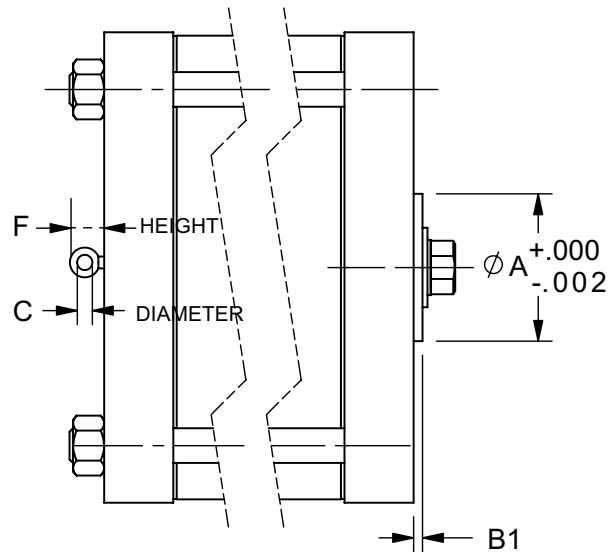
Actuator Dimensions																			
BORE	A	AA	B	BB	BD	DB UNF	E	EB	EE NPT	G	H	J	K	KK	LB	MM	TE	V	W
4	1.75	4.70	1.50	1-3/8	1/16	3/8-24	4.50	x	1/4	1.25	1.00	1.25	0.38	5/8-18	3.50	1.00	x	0.25	0.75
5	1.75	5.80	1.50	1-13/16	3/4	1/2-20	5.50	x	1/4	1.50	1.00	1.5	0.60	5/8-18	4.00	1.00	x	0.25	0.75
6	1.75	6.90	1.50	1-13/16	7/8	1/2-20	6.50	x	1/4	1.63	1.25	1.63	0.56	5/8-18	4.50	1.00	x	0.25	0.75
7	1.75	8.10	1.50	2-5/16	1/2	5/8-18	7.50	x	3/8	1.25	1.50	1.25	0.43	5/8-18	4.00	1.00	x	0.25	0.75
8	1.75	9.10	1.50	2-5/16	x	5/8-18	8.50	0.56	3/8	1.25	1.50	1.25	0.43	5/8-18	4.00	1.00	7.60	0.25	0.75
10	2.25	11.20	2.00	2-11/16	x	3/4-16	10.75	0.80	1/2	1.25	1.63	1.25	0.75	1-14	4.13	1.38	9.40	0.25	0.88
12	2.25	13.30	2.00	2-11/16	x	3/4-16	12.75	0.80	1/2	1.25	2.00	1.25	0.75	1-14	4.50	1.38	11.10	0.25	0.88
14	2.25	15.40	2.00	3-3/16	x	7/8-14	14.88	0.94	1/2	1.50	2.25	1.50	0.87	1-14	5.25	1.38	12.87	0.25	0.88
16	2.25	17.80	2.63	3-5/8	x	1-14	17.00	1.00	3/4	1.75	2.25	1.75	1.00	1-1/4-12	5.75	2.00	14.85	0.25	1.13
18	2.25	20.00	2.63	3-3/4	x	1-1/8-12	19.00	1.2	3/4	1.75	2.25	1.75	1.12	1-1/4-12	5.75	2.00	16.70	0.25	1.13
20	2.25	22.25	3.13	4	x	1-1/4-12	21.00	1.30	3/4	2.00	2.50	2.00	1.25	1-1/4-12	6.50	2.50	18.40	0.25	1.13
22	2.25	24.25	3.750	4-1/4	x	1-1/4-12	23.00	1.30	3/4	2.00	3.50	2.00	1.25	2-1/4-12	7.50	3.00	20.15	0.25	1.25
24	3.50	26.50	3.75	4-1/2	x	1-1/4-12	25.25	1.30	3/4	2.50	3.50	2.50	1.25	2-1/4-12	8.50	3.00	21.75	0.25	1.25
26	3.50	28.75	4.25	4-1/2	x	1-1/2-12	27.50	1.30	3/4	2.50	4.50	2.50	1 9/32	2-1/4-12	9.50	3.50	23.34	0.25	1.25

# "A" Series Single Ended

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

## Optional Flange Mounting Dims

## Eye Bolts



C1 OF BOLTS, D1 THREADS  
E1 DEEP ON F1 P.C.D.

EYE BOLT DIMENSIONS  
FOR 12" TO 42" BORE

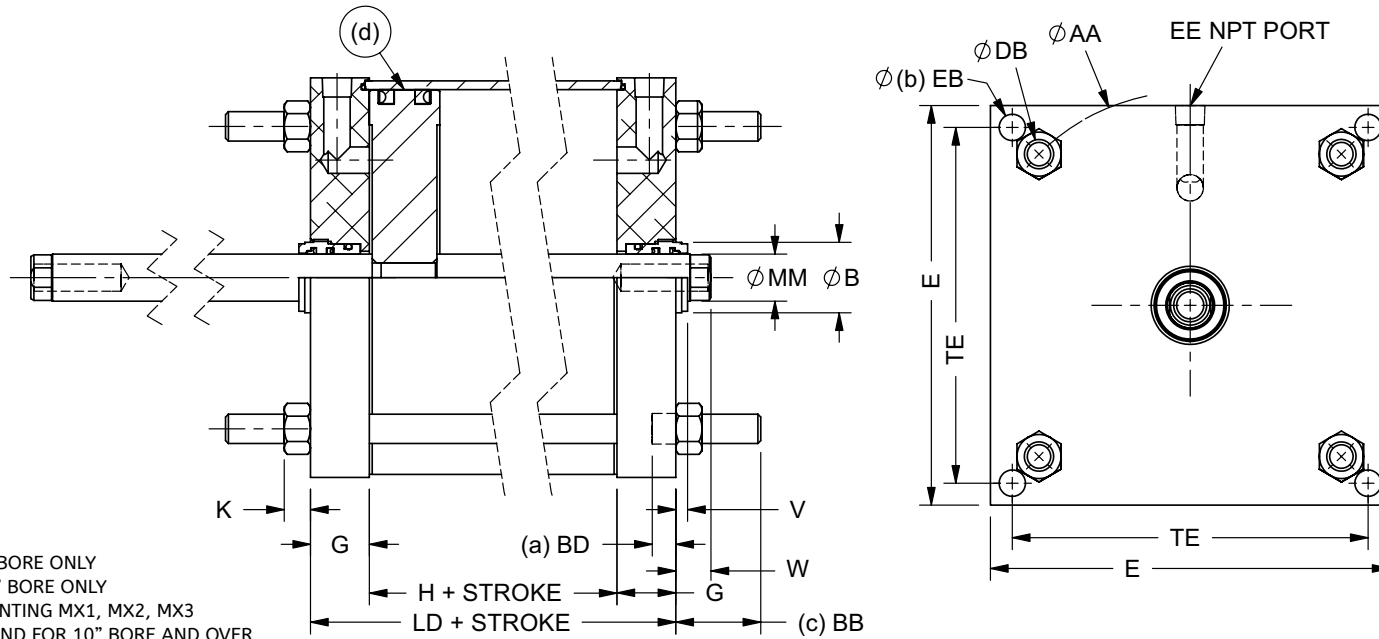
MSS Flange Mounting Dimensions (in)							
MSS FLANGE	MAX. THRUST (lbs.)	A1	B1	C1	D1	E1	F1
FA07	4,500	2.166	0.120	4	7/16-18	1 1/16	2.750
FA10	9,000	2.312	0.120	4	3/8-16	1 1/16	4.000
FA14	25,000	3.750	0.160	4	5/8-11	1 3/16	5.500
FA16	35,000	5.000	0.190	4	3/4-10	1 1/8	6.500
FA25	50,000	6.000	0.190	8	5/8-11	1 1/8	10.000
FA30	75,000	7.000	0.190	8	3/4-10	1 1/8	11.750
FA35	140,000	8.500	0.190	8	1-8	1 1/4	14.000
FA40	230,000	9.000	0.320	8	1 1/4-7	1 1/2	16.000

ISO Flange Mounting Dimensions (in)							
ISO FLANGE	MAX. THRUST (lbs.)	A1	B1	C1	D1	E1	F1
F07	4,495	2.165	0.118	4	M8	7/16	2.755
F10	8,990	2.756	0.118	4	M10	5/8	4.016
F14	22,480	3.937	0.157	4	M16	3/4	5.512
F16	33,723	5.118	0.197	4	M20	7/8	6.496
F25	44,964	7.874	0.197	8	M16	7/8	10.000
F30	73,066	9.055	0.197	8	M20	7/8	11.732
F35	157,374	10.236	0.197	8	M30	7/8	14.016
F40	247,302	11.811	0.314	8	M36	7/8	15.984

Eye bolt mounting holes			
BORE	XX	C	F
12	9.00	1	2
14	10.00	1	2
16	12.00	1 1/3	3
18	12.00	1 1/3	3
20	14.00	1 4/5	3 1/2
22	16.00	1 4/5	3 1/2
24	18.00	1 4/5	3 1/2
26	20.00	1 5/5	3 3/8
28	20.00	1 5/5	3 3/8
30	20.00	1 5/5	3 3/8
32	26.00	1 2/3	4 1/3
36	30.00	1 2/3	4 1/3
42	36.00	2 4/5	6 1/4

# "A" Series Double Ended

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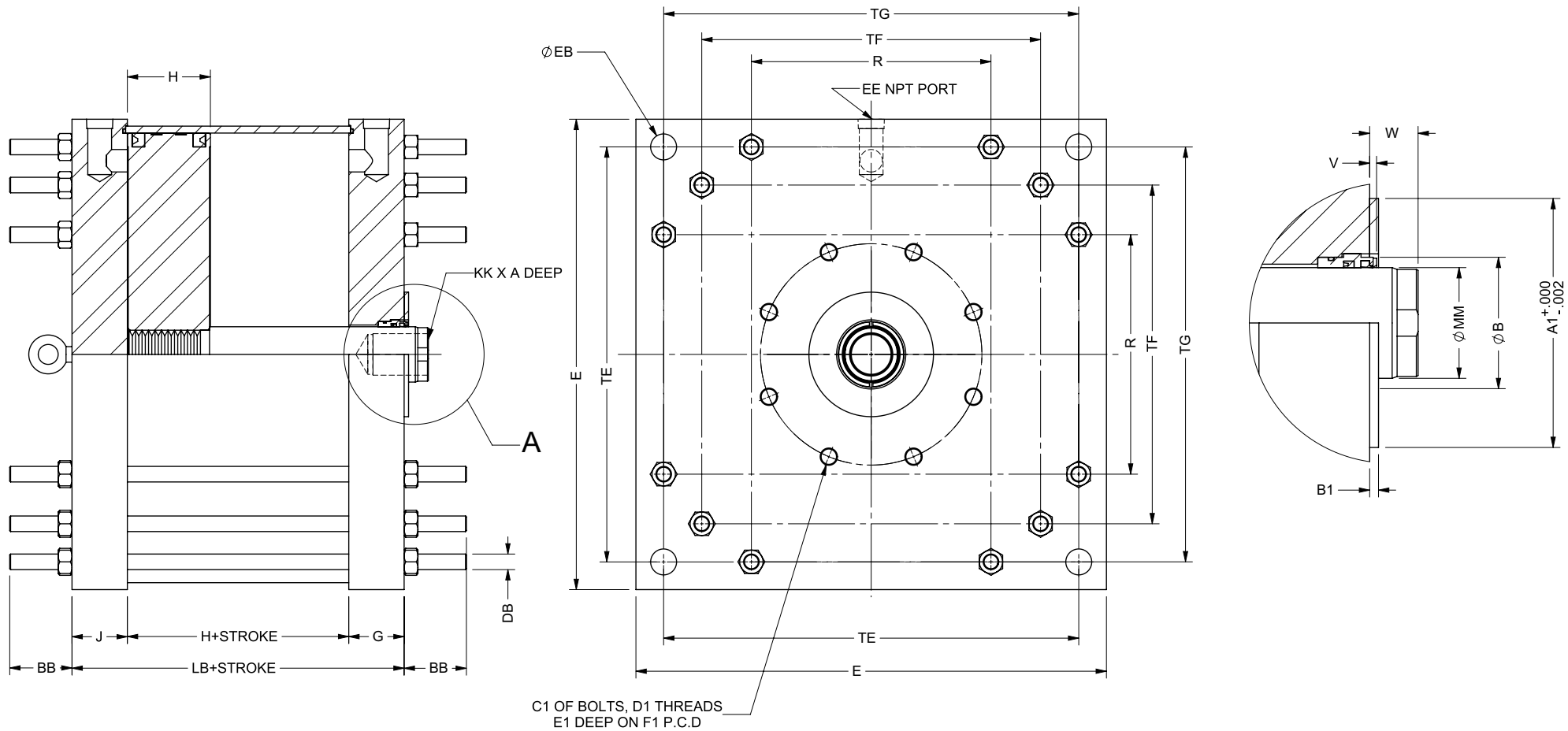


NOTE:  
 A- 4" TO 7" BORE ONLY  
 B- 8" TO 26" BORE ONLY  
 C- FOR MOUNTING MX1, MX2, MX3  
 D- WEAR BAND FOR 10" BORE AND OVER

Actuator Dimensions																		
BORE	A	AA	B	BB	BD	DB UNF	E	EB	EE NPT	G	H	K	KK	LD	MM	TE	V	W
4	1.75	4.70	1.50	1-3/8	5/16	3/8-24	4.50	x	1/4	1.25	1.00	0.38	5/8-18	3.50	1.00	x	0.25	0.75
5	1.75	5.80	1.50	1-13/16	3/4	1/2-20	5.50	x	1/4	1.50	1.00	0.60	5/8-18	4.00	1.00	x	0.25	0.75
6	1.75	6.90	1.50	1-13/16	7/8	1/2-20	6.50	x	1/4	1.63	1.25	0.56	5/8-18	4.50	1.00	x	0.25	0.75
7	1.75	8.10	1.50	2-5/16	1/2	5/8-18	7.50	x	3/8	1.25	1.50	0.43	5/8-18	4.00	1.00	x	0.25	0.75
8	1.75	9.10	1.50	2-5/16	x	5/8-18	8.50	0.56	3/8	1.25	1.50	0.43	5/8-18	4.00	1.00	7.60	0.25	0.75
10	2.25	11.20	2.00	2-11/16	x	3/4-16	10.75	0.80	1/2	1.25	1.63	0.75	1-14	4.13	1.38	9.40	0.25	0.88
12	2.25	13.30	2.00	2-11/16	x	3/4-16	12.75	0.80	1/2	1.25	2.00	0.75	1-14	4.50	1.38	11.10	0.25	0.88
14	2.25	15.40	2.00	3-3/16	x	7/8-14	14.88	0.94	1/2	1.50	2.25	0.87	1-14	5.25	1.38	12.87	0.25	0.88
16	2.25	17.80	2.63	3-5/8	x	1-14	17.00	1.00	3/4	1.75	2.25	1.00	1-1/4-12	5.75	2.00	14.85	0.25	1.13
18	2.25	20.00	2.63	3-3/4	x	1-1/8-12	19.00	1.2	3/4	1.75	2.25	1.12	1-1/4-12	5.75	2.00	16.70	0.25	1.13
20	2.25	22.25	3.13	4	x	1-1/4-12	21.00	1.30	3/4	2.00	2.50	1.25	1-1/4-12	6.50	2.50	18.40	0.25	1.13
22	2.25	24.25	3.750	4-1/4	x	1-1/4-12	23.00	1.30	3/4	2.00	3.50	1.25	2-1/4-12	7.50	3.00	20.15	0.25	1.25
24	3.50	26.50	3.75	4-1/2	x	1-1/4-12	25.25	1.30	3/4	2.50	3.50	1.25	2-1/4-12	8.50	3.00	21.75	0.25	1.25
26	3.50	28.75	4.25	4-1/2	x	1-1/2-12	27.50	1.30	3/4	2.50	4.50	1 9/32	2-1/4-12	9.50	3.50	23.34	0.25	1.25

# Actuator Dimensions Large Bore

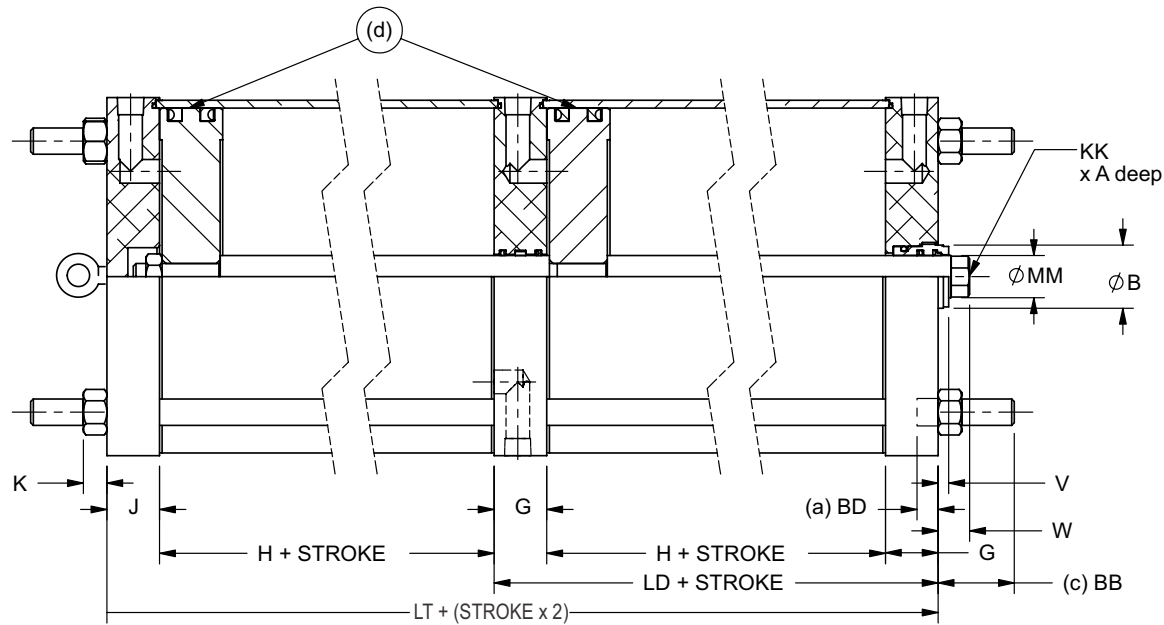
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Actuator Dimensions (in)																						
BORE	Code letter	A	AA	B	BB	DB	E	EB	EE	G	H	J	K	KK	LB+Stroke (single stage)	MM	V	W	R	TE	TF	TG
28	F	3.50	30.63	4.25	4.13	8x1 1/8-12	31.25	1.56	3/4	4.00	5.00	3.25	31/32	2 1/4-12UN	12.25	3.50	0.25	1.25	17.60	26.00	25.00	x
30	I	3.50	30.63	4.25	4.13	8x1 1/8-12	31.50	1.88	1 1/2NP	4.00	5.00	3.25	31/32	2 1/4-12UN	12.25	3.50	0.25	1.50	18.70	26.70	26.70	x
32	J	3.50	34.63	4.75	4.75	8x1 1/8-12	34.00	1.88	1 1/2NP	4.00	6.00	4.00	31/32	2 3/4-12UN	14	4.00	0.25	1.75	17.30	30.00	30.00	x
36	Q	4.50	41.00	6.25	4.75	12x1 1/8-12	39.00	2.50	1 1/2NP	6.00	8.00	6.00	31/32	4-12UN	20	5.50	0.25	1.75	13.30	33.00	27.60	36.60
42	U	4.50	47.50	6.25	4.75	12x1 1/8-12	45.00	2.50	1 1/2NP	6.00	8.00	6.00	31/32	4-12UN	20	5.50	0.25	1.75	15.40	38.00	31.80	42.30

# “A” Series Tandem

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Actuator Dimensions		
BORE	LT	MM
4	5.75	1.00
5	6.50	1.00
6	7.38	1.00
7	6.75	1.00
8	6.75	1.00
10	7.00	1.38
12	7.75	1.38
14	9.00	1.38
16	9.75	2.00
18	9.75	2.00
20	11.00	2.50
22	13.00	3.00
24	14.50	3.00
26	16.50	3.50
28	21.25	3.50
30	21.25	3.50



# How to Order

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

## SERIES

A - Standard  
 AC\* - Corrosion Resistant  
 \*See page 2 for details

## BORE SIZE

H - 4" S - 14" F - 28"  
 K - 5" T - 16" I - 30"  
 L - 6" W - 18" J - 32"  
 M - 7" X - 20" Q - 36"  
 N - 8" A - 22" V - 42"  
 P - 10" Y - 24"  
 R - 12" B - 26"

## ROD DIAMETER

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

## ROD END

A4 - Series A Female

## CUSHIONS

8 - none

## DOUBLE ROD DIA

**Omit if not required**  
 DE2 - 1" DL2 - 3"  
 DG2 - 1 3/8" DM2 - 3 1/2"  
 DH2 - 1 3/4" DW2 - 4"  
 DJ2 - 2" DS2 - 5 1/2"  
 DK2 - 2 1/2"

## 2nd ROD END

**Omit if not required**  
 RA4 - Series A Female

## APPLICATION MOD

**- Omit if none required**  
 GT3 - Triple Seal Gland with GR2  
 P2 - Magnetic piston  
 S5 - Hydraulic use (150 PSI)  
 W1 - "AWWA" Cylinder (See Page 2)  
 List application mods alpha numerically

## SEALS

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

## PORTS

NXX - NPT  
 TXX - BSPT  
 \*\*XX denotes position  
 ex: 12 = Pos 1 head,  
 Pos 2 Cap

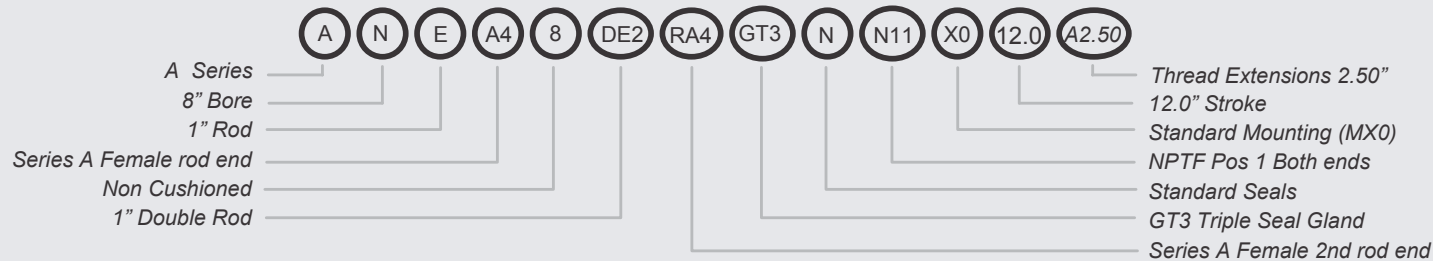
## MOUNTINGS

X1 - tie rods extended b.e. (MX1)  
 X3 - tie rods extended h.e. (MX3)  
 X2 - tie rods extended c.e. (MX2)  
 X0 - standard (MX0)  
 IS - ISO mounting flange  
 MS - MSS mounting flange

## MODS

**- Omit if none required**  
 A# - Thread extensions ex: A2.50 = A = 2.50"  
 C1 - Epoxy Paint (Do not specify with C2)  
 M2 - Stainless Steel tie rods (Do not specify with W1 or AC)  
 M3 - Stainless Steel piston rod (Do not specify with W1 or AC)  
 M7 - Steel Barrel  
 TC - Tandem Cylinders (Rods attached)  
 W# - Rod Extension ex: W2.50 = W = 2.50"  
 Modifications to be listed alpha numerically after the stroke #  
 ex: ANEDE2A4RA48GT3NN11X012.0A2.50C1W5.50

## EXAMPLE

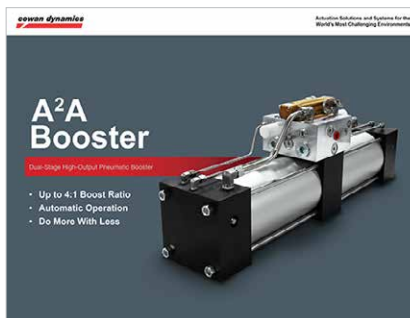


## EXAMPLE WITH AUTOMATION OPTIONS



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