cowan dynamics

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

R5 SERIES

5000 psi Mill-type Cylinder

Delivering superior long-term performance and value

Designed and engineered for severe-service applications

Bore Size: 4" to 16"
Piston rod diameter: 2" to 10"

- Heavy duty construction with steel flanged end caps and heavy wall tubing for continuous 5,000 psi service
- Extra-long heavy duty rod bushing with dual wipers
- 4 wrench flats on piston rod + option to accept LDT
- Made-to-order stroke lengths
- Reduce design and development costs

Overview

Our 5000psi Mill-type cylinder is designed to handle the most severe service applications.

Cowan's R5 Series was designed in response to our customers' need for a more durable, more reliable product to reduce their replacement and maintenance costs. As a result there is an increase to productivity and efficiency of operations. Based on design specifications that are not subject to NFPA limitations, the R5 Series uses thicker end caps, bigger pistons, bearings, advanced gland design, and numerous other features. Together these assure greater reliability under the severest environmental and operational conditions.

Over 50 years of cylinder design and manufacturing experience

- High pressure rating - well above industry standards
- Extra bearing surface accommodates additional side loading
- Advanced gland design keeps the cylinder interior clean for increased seal longevity
- Dual buffer rod seals
- Wide ductile iron piston for long bearing and seal life
- Custom mounts to suit any application

Fully backed by Cowan Dynamics' warranty and service/support guarantee

Series Design & Materials

Temperature Ratings	
Low Temperature	-54C to 60C
Standard Temperature	-50C to 105C
High Temperature	-29C to 205C

Seals | Standard seals are suitable for water glycol or standard mineral oil; High temp seals available as an option

Barrel | Seamless steel tubing, honed & polished to minimize friction

Barrel Seal
Nitrite "O" Ring

Head
Machined steel

1st Rod Seal | PTFE - Low friction and long service life; Protects secondary seal from pressure spikes; Allows a fine film of oil to pass ensuring the necessary lubrication of the secondary seal; Geometry designed to vent pressure from the reverse side - to reduce possibility of pressure trap between seals; Acts as an internal wiper to protect secondary seal from internal contaminants

Cap | Machined steel

2nd Rod Seal | PTFE - Low friction; Excellent low-pressure seal ability, long service life

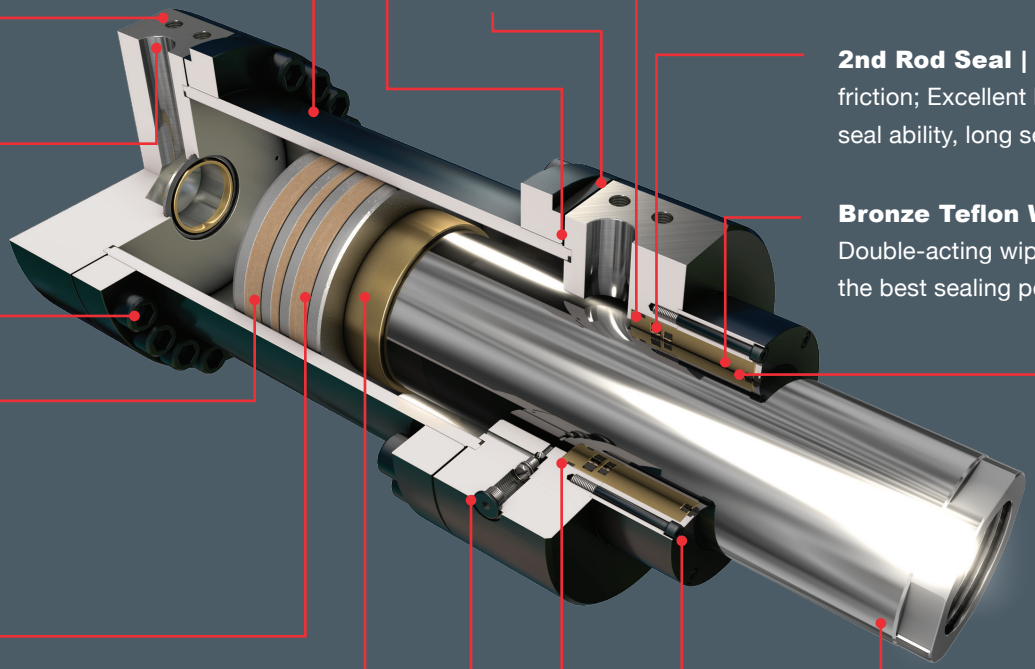
Sae Code 62
Flange ports are standard; BSPP, SAE, NPT also available

Bronze Teflon Wiper
Double-acting wiper ensures the best sealing performance

Cap Screw | Grade 8

Metallic Rod Scrapper
(Standard) Rugged scrapper deflects contamination away from the rod seals for long service life

High Strength Nylon Wear Ring (2X)
BZ-PTFE for high temp version



Piston | Ductile iron is standard

High Load Piston Seal

Piston Rod
Steel SAE 1045 Ground, hard chrome-plated & polished 17 - 4 PH; stainless steel available as an option

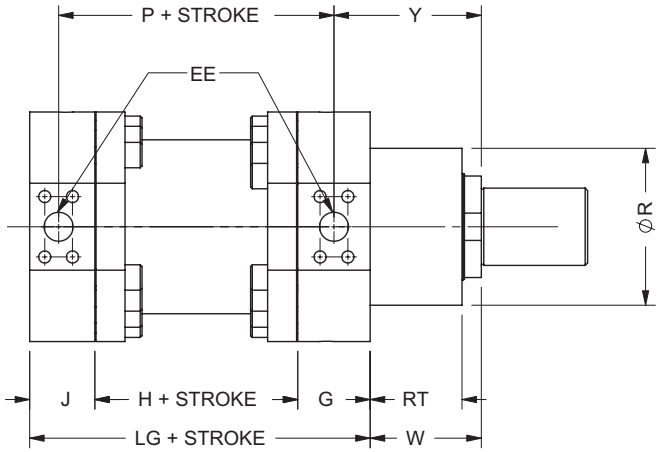
Gland Retainer

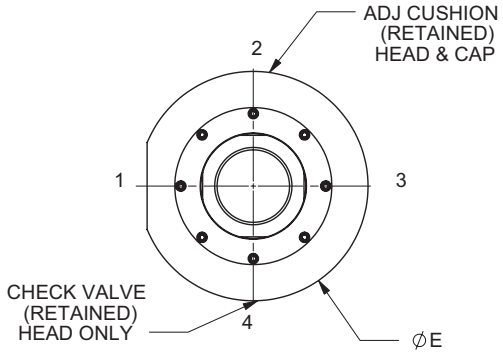
Cushion Plunger
Floating cushion plunger provides maximum cushioning effect combined with a quick start for optimum performance

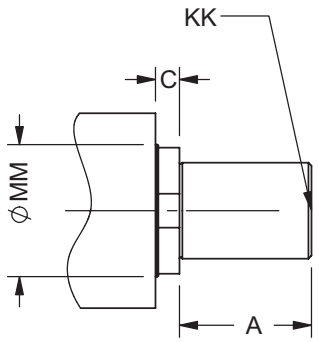
Gland Bushing
Cartridge-type AL - bronze

Check Valve & Cushion Valve | Fully retained for safety

Standard Cylinder – No Mounting



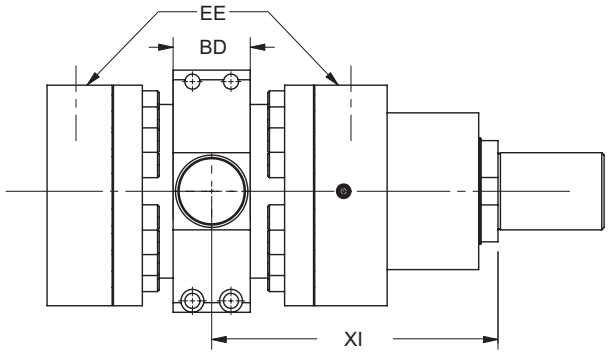


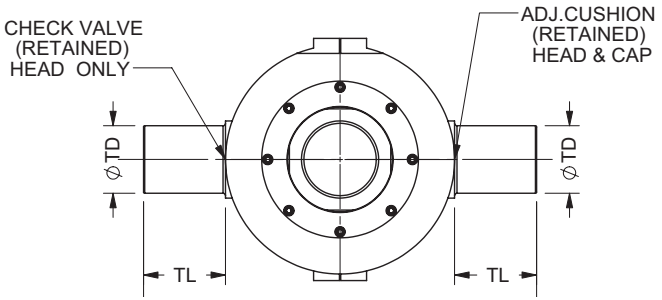


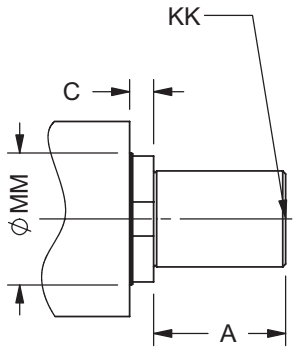
Dimensions (in)								
BORE	SAE CODE 62	E	EE (SAE)	G	J	P	LG	H
4	3/4	6.50	12	2.75	2.25	5.56	8.50	3.50
5	3/4	7.50	12	3.00	2.50	6.31	9.75	4.25
6	1	9.13	16	3.25	2.75	7.25	11.00	5.00
8	1-1/2	11.88	24	3.75	3.38	9.38	13.63	6.50
10	2	14.88	32	4.50	4.25	10.63	15.63	6.88
12	2	18.13	32	5.00	4.50	12.75	17.75	8.25
14	2	20.13	32	5.50	4.88	13.00	18.88	8.50
16	2	23.50	32	6.50	5.88	14.13	22.00	9.63

Dimensions (in)								
BORE	Rod Φ MM	KK	A	R	RT	C	W	Y
4	2.00	1 3/4-12	2.25	4.19	2.25	1.00	3.25	4.97
	2.50	2 1/4-12	3.00	4.69	2.75	1.00	3.75	5.47
	3.00	2 3/4-12	3.50	5.19	3.00	1.00	4.00	5.72
5	2.50	2 1/4-12	3.00	4.69	2.75	1.00	3.75	5.56
	3.00	2 3/4-12	3.50	5.19	3.00	1.00	4.00	5.81
	3.50	3 1/4-12	3.50	5.69	3.38	1.00	4.38	6.19
6	3.00	2 3/4-12	3.50	5.19	3.00	1.00	4.00	5.88
	3.50	3 1/4-12	3.50	5.69	3.38	1.00	4.38	6.25
	4.00	3 3/4-12	4.00	6.31	3.88	1.00	4.88	6.75
8	4.00	3 3/4-12	4.00	6.31	3.88	1.00	4.88	7.19
	4.50	4 1/4-12	4.50	6.94	4.00	1.00	5.00	7.31
	5.00	4 3/4-12	5.00	7.31	4.25	1.00	5.25	7.56
	5.50	5 1/4-12	5.50	7.94	4.75	1.00	5.75	8.06
10	5.00	4 3/4-12	5.00	7.31	4.25	1.00	5.25	7.88
	5.50	5 1/4-12	5.50	7.94	4.75	1.00	5.75	8.38
	6.00	5 1/2-12	6.00	8.31	5.00	1.00	6.00	8.63
	7.00	6 1/2-12	7.00	9.31	5.25	1.00	6.25	8.88
12	5.50	5 1/4-12	5.50	7.94	4.75	1.00	5.75	8.50
	6.00	5 1/2-12	6.00	8.31	5.00	1.00	6.00	8.75
	7.00	6 1/2-12	7.00	9.31	5.25	1.00	6.25	9.00
	8.00	7 1/2-12	8.00	10.31	5.25	1.00	6.25	9.00
14	7.00	6 1/2-12	7.00	9.31	5.25	1.00	6.25	9.50
	8.00	7 1/2-12	8.00	10.31	5.25	1.00	6.25	9.50
	9.00	8 1/2-12	9.00	11.31	5.25	1.00	6.25	9.50
16	8.00	7 1/2-12	8.00	10.31	5.25	1.00	6.25	10.00
	9.00	8 1/2-12	9.00	11.31	5.25	1.00	6.25	10.00
	10.00	9 1/2-12	10.00	12.56	5.25	1.00	6.25	10.00

Intermediate Trunnion



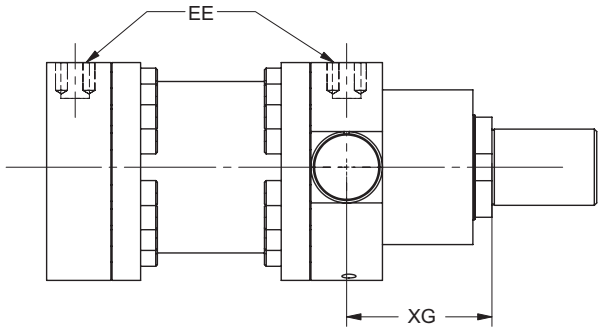


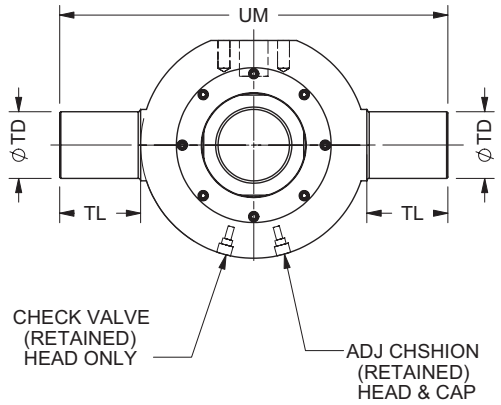


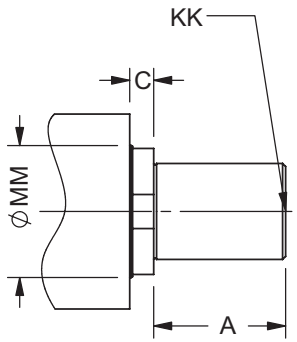
Dimensions (in)					
BORE	BD	EE (SAE)	TD	TL	UM
4	2.00	12	1.75	2.13	10.75
5	2.75	12	2.25	2.63	12.75
6	3.00	16	2.50	3.00	15.13
8	4.50	24	3.50	4.25	20.38
10	5.00	32	4.00	5.25	25.38
12	6.00	32	5.00	6.25	30.63
14	6.50	32	5.50	6.75	33.63
16	7.50	32	6.50	7.25	38.00

Dimensions (in)			
BORE	Rod Φ MM	XI	
4	2.00	Customers Specs	For other values please see chart on pg 3
	2.50		
	3.00		
5	2.50		
	3.00		
	3.50		
6	3.00		
	3.50		
	4.00		
8	4.00		
	4.50		
	5.00		
	5.50		
10	5.00		
	5.50		
	6.00		
	7.00		
12	5.50		
	6.00		
	7.00		
	8.00		
14	7.00		
	8.00		
	9.00		
16	8.00		
	9.00		
	10.00		

Head Trunnion



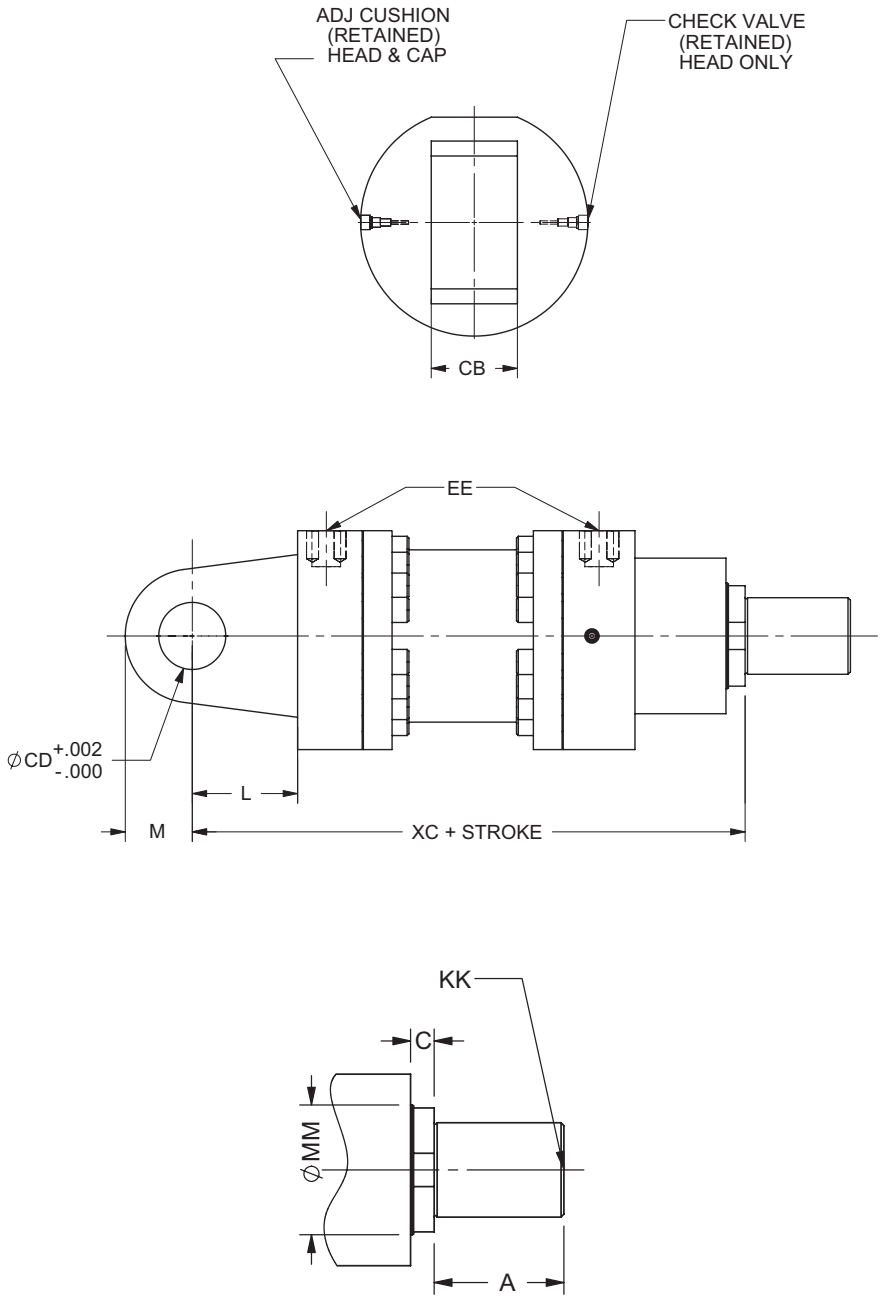




Dimensions (in)				
BORE	EE (SAE)	TD	TL	UM
4	12	1.75	2.13	10.75
5	12	2.25	2.63	12.75
6	16	2.50	3.00	15.13
8	24	3.50	4.25	20.38
10	32	4.00	5.25	25.38
12	32	5.00	6.25	30.63
14	32	5.50	6.75	33.63
16	32	6.50	7.25	38.00

Dimensions (in)			
BORE	Rod Φ MM	XG	
4	2.00	4.63	For other values please see chart on pg 3
	2.50	5.13	
	3.00	5.38	
5	2.50	5.25	
	3.00	5.50	
	3.50	5.88	
6	3.00	5.63	
	3.50	6.00	
	4.00	6.50	
8	4.00	6.75	
	4.50	6.88	
	5.00	7.13	
	5.50	7.63	
10	5.00	7.50	
	5.50	8.00	
	6.00	8.25	
	7.00	8.50	
12	5.50	8.25	
	6.00	8.50	
	7.00	8.75	
	8.00	8.75	
14	7.00	9.00	
	8.00	9.00	
	9.00	9.00	
16	8.00	9.50	
	9.00	9.50	
	10.00	9.50	

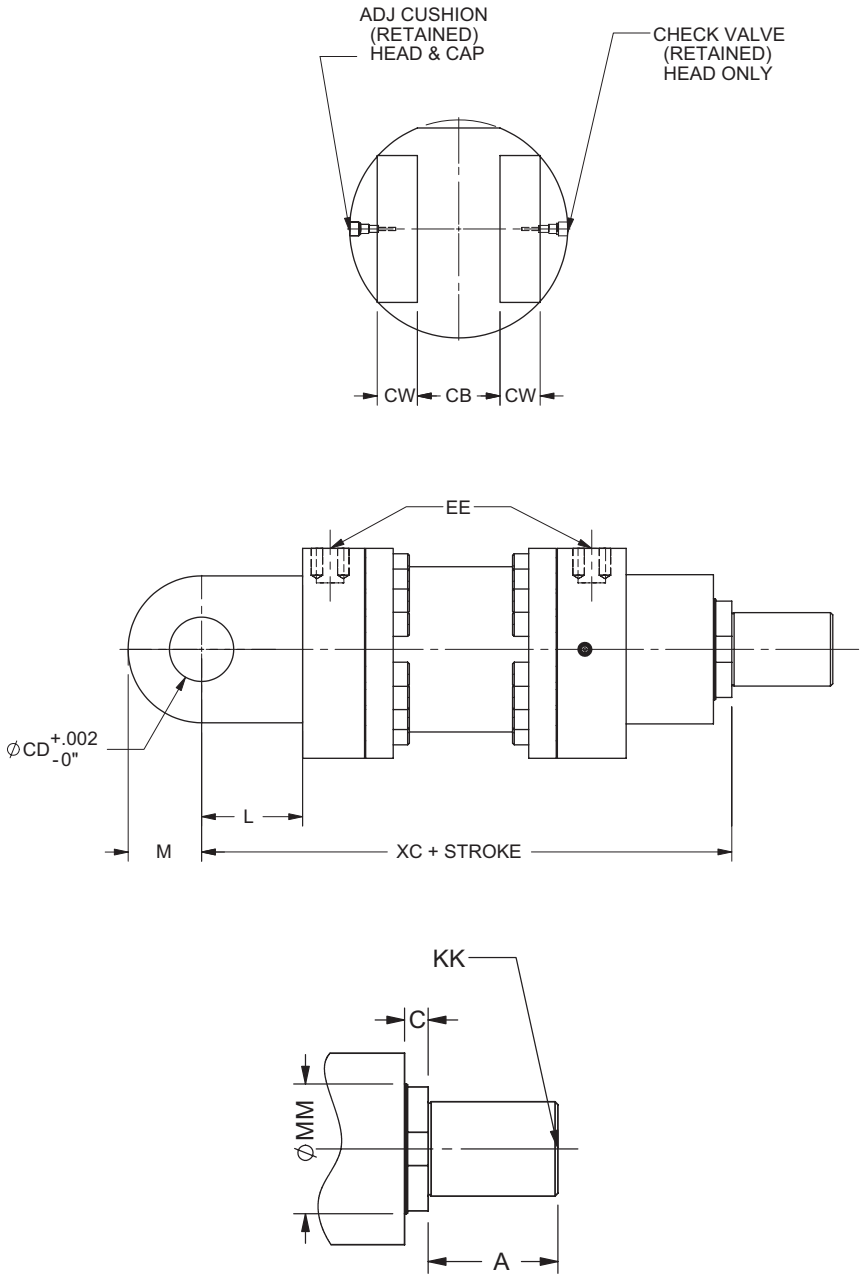
Male Clevis



Dimensions (in)					
BORE	CD	CB	EE (SAE)	L	M
4	1.75	2.50	12	3.00	1.63
5	2.00	2.50	12	3.44	2.00
6	2.00	3.00	16	3.81	1.88
8	3.50	4.50	24	5.50	4.00
10	4.00	5.50	32	5.81	4.50
12	5.00	6.50	32	6.75	5.50
14	5.50	8.00	32	7.31	6.00
16	6.50	9.50	32	8.25	7.00

Dimensions (in)			
BORE	Rod Φ MM	XC	
4	2.00	14.75	For other values please see chart on pg 3
	2.50	15.25	
	3.00	15.50	
5	2.50	16.94	
	3.00	17.19	
	3.50	17.56	
6	3.00	18.81	
	3.50	19.19	
	4.00	19.69	
8	4.00	24.00	
	4.50	24.13	
	5.00	24.38	
	5.50	24.88	
10	5.00	26.69	
	5.50	27.19	
	6.00	27.44	
	7.00	27.69	
12	5.50	30.25	
	6.00	30.50	
	7.00	30.75	
	8.00	30.75	
14	7.00	32.31	
	8.00	32.31	
	9.00	32.31	
16	8.00	36.00	
	9.00	36.00	
	10.00	36.00	

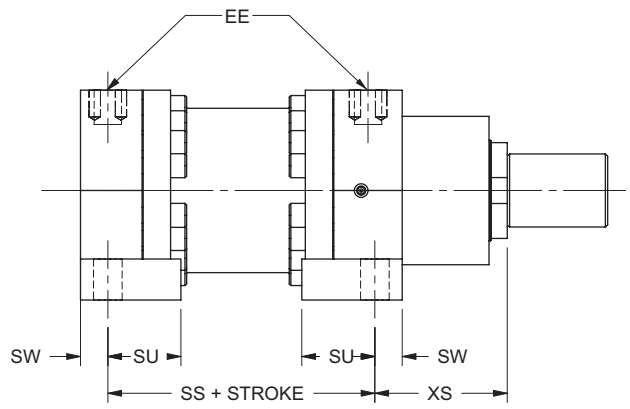
Female Clevis

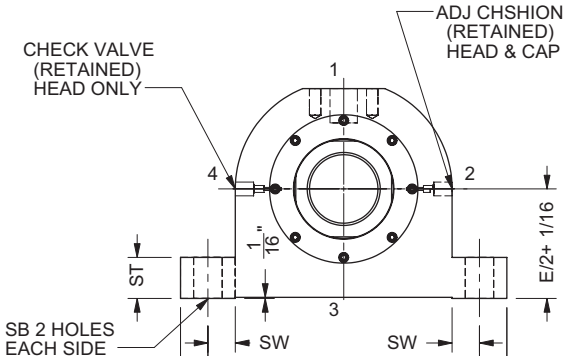


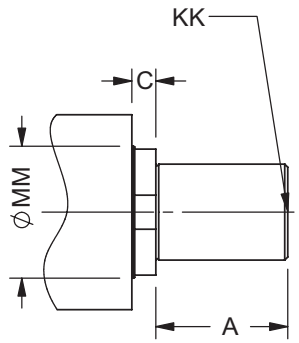
Dimensions (in)						
BORE	CD	CB	CW	EE (SAE)	L	M
4	1.75	2.50	1.25	12	3.00	1.63
5	2.00	2.50	1.25	12	3.44	2.00
6	2.00	3.00	1.50	16	3.81	1.88
8	3.50	4.50	2.25	24	5.50	4.00
10	4.00	5.50	2.75	32	5.81	4.50
12	5.00	6.50	3.25	32	6.75	5.50
14	5.50	8.00	4.00	32	7.31	6.00
16	6.50	9.50	4.75	32	8.25	7.00

Dimensions (in)			
BORE	Rod Φ MM	XC	
4	2.00	14.75	For other values please see chart on pg 3
	2.50	15.25	
	3.00	15.50	
5	2.50	16.94	
	3.00	17.19	
	3.50	17.56	
6	3.00	18.81	
	3.50	19.19	
	4.00	19.69	
8	4.00	24.00	
	4.50	24.13	
	5.00	24.38	
	5.50	24.88	
10	5.00	26.69	
	5.50	27.19	
	6.00	27.44	
	7.00	27.69	
12	5.50	30.25	
	6.00	30.50	
	7.00	30.75	
	8.00	30.75	
14	7.00	32.31	
	8.00	32.31	
	9.00	32.31	
16	8.00	36.00	
	9.00	36.00	
	10.00	36.00	

Side Lug



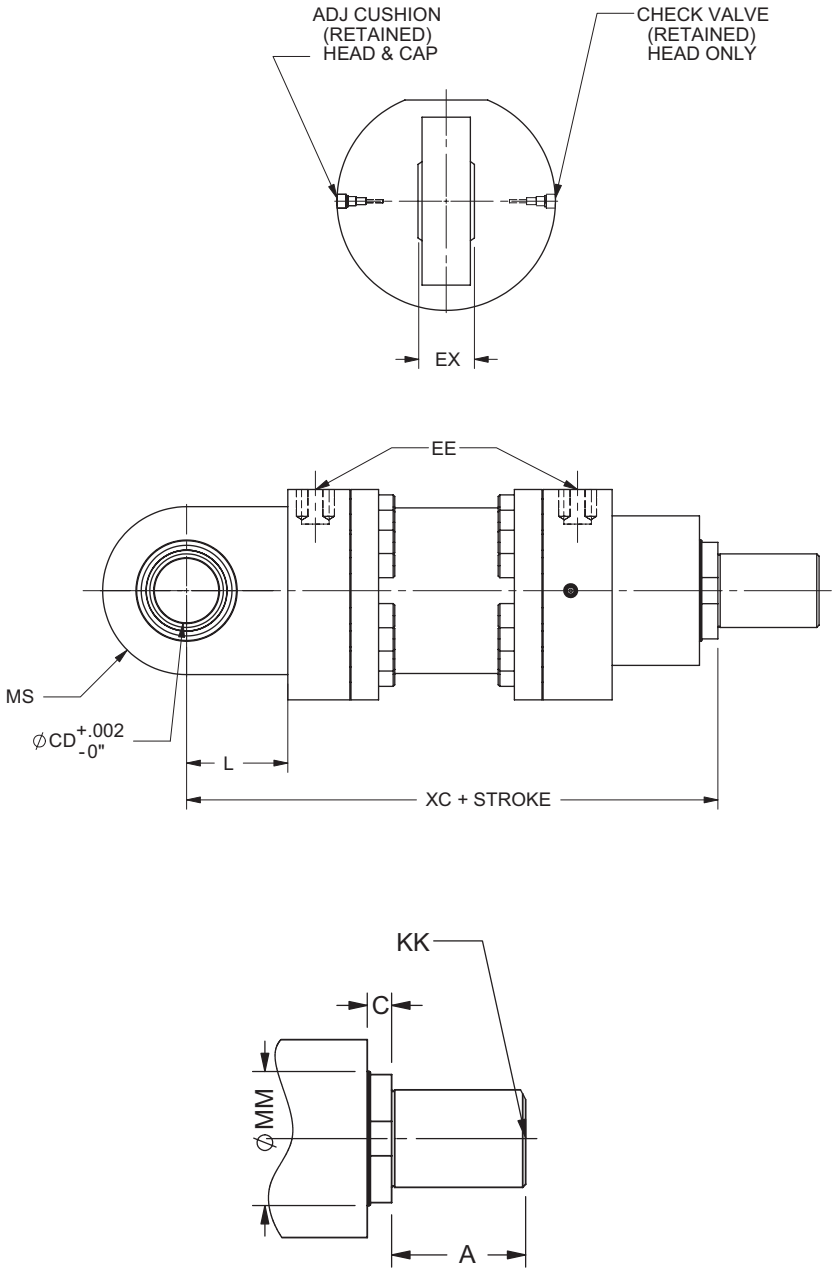




Dimensions (in)									
BORE	E	EE (SAE)	SB	ST	SU	SW	TS	US	SS
4	6.50	12	0.81	1.00	2.50	0.75	8.00	9.50	7.00
5	7.50	12	1.06	1.50	3.00	1.00	9.50	11.50	7.75
6	9.13	16	1.31	1.88	3.50	1.25	11.63	14.13	8.50
8	11.88	24	1.57	2.25	4.00	1.50	14.88	17.88	10.63
10	14.88	32	1.88	2.50	5.00	1.88	18.63	22.38	11.88
12	18.13	32	2.38	2.75	5.00	2.25	22.63	27.13	13.25
14	20.13	32	2.63	2.88	6.88	2.50	25.13	30.13	13.88
16	23.50	32	3.13	2.88	7.75	3.00	29.50	35.50	16.00

Dimensions (in)			
BORE	Rod Φ MM	XS	
4	2.00	4.00	For other values please see chart on pg 3
	2.50	4.50	
	3.00	4.75	
5	2.50	4.75	
	3.00	5.00	
	3.50	5.38	
6	3.00	5.25	
	3.50	5.63	
	4.00	6.13	
8	4.00	6.38	
	4.50	6.50	
	5.00	6.75	
	5.50	7.25	
10	5.00	7.13	
	5.50	7.63	
	6.00	7.88	
	7.00	8.13	
12	5.50	8.00	
	6.00	8.25	
	7.00	8.50	
	8.00	8.50	
14	7.00	8.75	
	8.00	8.75	
	9.00	8.75	
16	8.00	9.25	
	9.00	9.25	
	10.00	9.25	

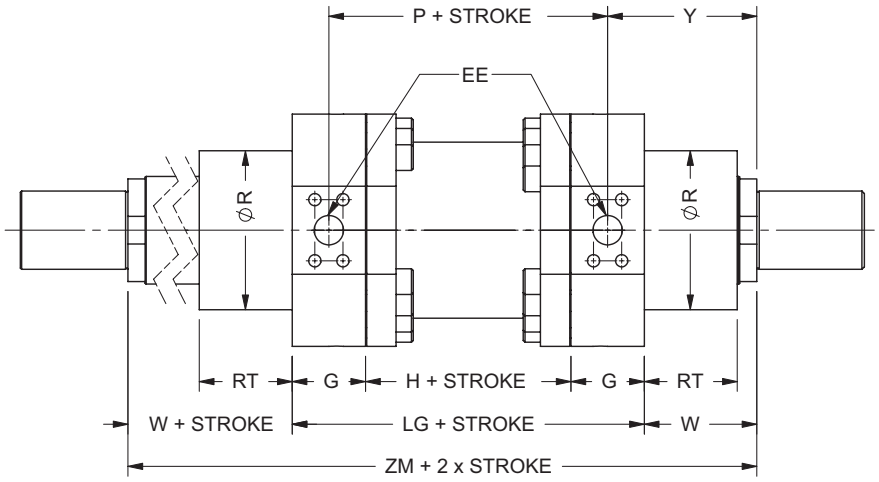
Spherical Bearing

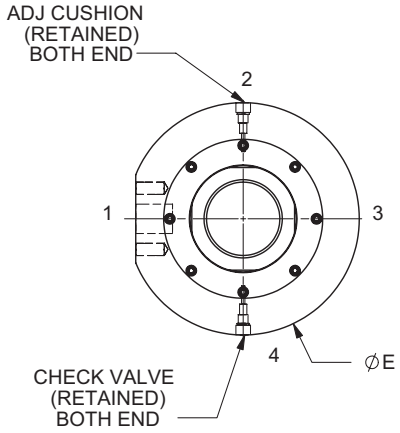


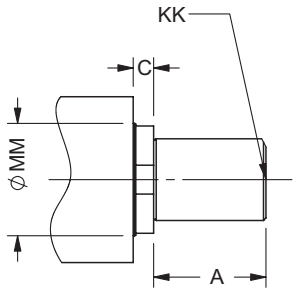
Dimensions (in)					
BORE	CD	EE (SAE)	L	MS	EX
4	1.75	12	3.00	1.75	1.53
5	2.00	12	3.44	2.00	1.75
6	2.50	16	3.81	2.50	2.18
8	3.50	24	5.50	3.50	3.06
10	4.00	32	5.81	4.00	3.50
12	5.00	32	6.75	5.00	4.38

Dimensions (in)			
BORE	Rod Φ MM	XC	
4	2.00	14.75	For other values please see chart on pg 3
	2.50	15.25	
	3.00	15.50	
5	2.50	16.94	
	3.00	17.19	
	3.50	17.56	
6	3.00	18.81	
	3.50	19.19	
	4.00	19.69	
8	4.00	24.00	
	4.50	24.13	
	5.00	24.38	
	5.50	24.88	
10	5.00	26.69	
	5.50	27.19	
	6.00	27.44	
	7.00	27.69	
12	5.50	30.25	
	6.00	30.50	
	7.00	30.75	
	8.00	30.75	

Double-Ended Cylinder – No Mounting



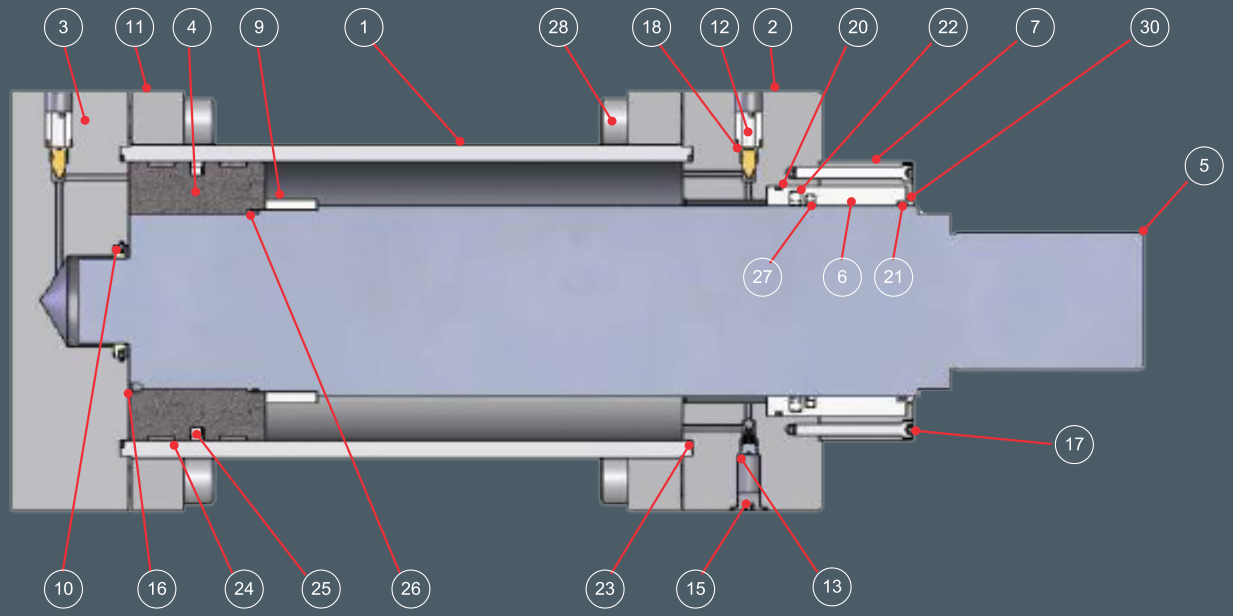




Dimensions (in)							
BORE	SAE CODE 62	E	EE (SAE)	G	P	LG	H
4	3/4	6.50	12	2.75	5.56	8.50	3.50
5	3/4	7.50	12	3.00	6.31	9.75	4.25
6	1	9.13	16	3.25	7.25	11.00	5.00
8	1-1/2	11.88	24	3.75	9.38	13.63	6.50
10	2	14.88	32	4.50	10.63	15.63	6.88
12	2	18.13	32	5.00	12.75	17.75	8.25
14	2	20.13	32	5.50	13.00	18.88	8.50
16	2	23.50	32	6.50	14.13	22.00	9.63

Dimensions (in)									
BORE	Rod Φ MM	KK	A	R	RT	C	W	Y	ZM
4	2.00	1 3/4-12	2.25	4.19	2.25	1.00	3.25	4.97	15.50
	2.50	2 1/4-12	3.00	4.69	2.75	1.00	3.75	5.47	16.50
	3.00	2 3/4-12	3.50	5.19	3.00	1.00	4.00	5.72	17.00
5	2.50	2 1/4-12	3.00	4.69	2.75	1.00	3.75	5.56	17.75
	3.00	2 3/4-12	3.50	5.19	3.00	1.00	4.00	5.81	18.25
	3.50	3 1/4-12	3.50	5.69	3.38	1.00	4.38	6.19	19.00
6	3.00	2 3/4-12	3.50	5.19	3.00	1.00	4.00	5.88	19.50
	3.50	3 1/4-12	3.50	5.69	3.38	1.00	4.38	6.25	20.25
	4.00	3 3/4-12	4.00	6.31	3.88	1.00	4.88	6.75	21.25
8	4.00	3 3/4-12	4.00	6.31	3.88	1.00	4.88	7.19	23.75
	4.50	4 1/4-12	4.50	6.94	4.00	1.00	5.00	7.31	24.00
	5.00	4 3/4-12	5.00	7.31	4.25	1.00	5.25	7.56	24.50
	5.50	5 1/4-12	5.50	7.94	4.75	1.00	5.75	8.06	25.50
10	5.00	4 3/4-12	5.00	7.31	4.25	1.00	5.25	7.88	26.38
	5.50	5 1/4-12	5.50	7.94	4.75	1.00	5.75	8.38	27.38
	6.00	5 1/2-12	6.00	8.31	5.00	1.00	6.00	8.63	27.88
	7.00	6 1/2-12	7.00	9.31	5.25	1.00	6.25	8.88	28.38
12	5.50	5 1/4-12	5.50	7.94	4.75	1.00	5.75	8.50	29.75
	6.00	5 1/2-12	6.00	8.31	5.00	1.00	6.00	8.75	30.25
	7.00	6 1/2-12	7.00	9.31	5.25	1.00	6.25	9.00	30.75
	8.00	7 1/2-12	8.00	10.31	5.25	1.00	6.25	9.00	30.75
14	7.00	6 1/2-12	7.00	9.31	5.25	1.00	6.25	9.50	32.00
	8.00	7 1/2-12	8.00	10.31	5.25	1.00	6.25	9.50	32.00
	9.00	8 1/2-12	9.00	11.31	5.25	1.00	6.25	9.50	32.00
16	8.00	7 1/2-12	8.00	10.31	5.25	1.00	6.25	10.00	35.13
	9.00	8 1/2-12	9.00	11.31	5.25	1.00	6.25	10.00	35.13
	10.00	9 1/2-12	10.00	12.56	5.25	1.00	6.25	10.00	35.13

Spare Parts List



Item Number	Description	Quantity
1	Cylinder Barrel	1
2	Cylinder Head	1
3	Cylinder Cap	1
4	Piston	1
5	Piston Rod	1
6	Gland Bushing	1
7	Gland Retainer	1
9	Cushion Plunger	1
10	Cushion Bushing	1
11	Flange	2
12	Cushion Needle Valve Retainer	2
13	Check Valve	1
15	Check Valve Retainer	1
16	Piston Lock Pin	1
17	SHCS	*
18	Cushion Needle Valve	2
20	Gland O-ring with Backup	1
21	Teflon Bronze Wiper	1
22	Primary Rod Seal	1
23	Barrel O-ring	2
24	Piston Wear Band	2
25	Piston Seal	1
26	Piston-to-Rod O-ring	1
22	Secondary Rod Seal	1
26	SHCS	*
30	Metallic Rod Wiper	1

**Varies with Bore size. Contact your local Cowan office for more information*

How to Order

SERIES

R5

BORE SIZE

H - 4"
K - 5"
L - 6"
M - 7"
N - 8"
P - 10"
R - 12"
S - 14"
T - 16"

ROD DIAMETER

J - 2"
K - 2 1/2"
L - 3"
M - 3 1/2"
N - 4"
P - 4 1/2"
R - 5"
S - 5 1/2"
W - 7"
X - 8"
V - 9"
Y - 10"

ROD THREAD STYLE

N2 - Intermediate Male
M2 - Intermediate Male Metric*

**Contact Cowan for size*

CUSHIONS

5C - Adjustable both ends
6C - Adjustable head end
7C - Adjustable cap end
8 - None

CUSHIONS POS

Omit if non Cushion
CXX

XX denotes position
ex: 23 = Pos 2 head
Pos 3 Cap

DOUBLE ROD DIA

Omit if not required

DJ2 - 2"
DK2 - 2 1/2"
DL2 - 3"
DM2 - 3 1/2"
DN2 - 4"
DP2 - 4 1/2"
DR2 - 5"
DS2 - 5 1/2"
DW2 - 7"
DX2 - 8"
DV2 - 9"
DY2 - 10"

2ND ROD THREAD STYLE

RN2 - 2nd Rod: Intermediate Male
RM2 - 2nd Rod: Intermediate Male Metric*

**Contact Cowan for size*

PORTS

GXX - SAE Code 62 flange
FXX - SAE Code 61 flange
SXX - SAE
NXX - NPT
BXX - BSPP
MXX - ISO

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

SEALS

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

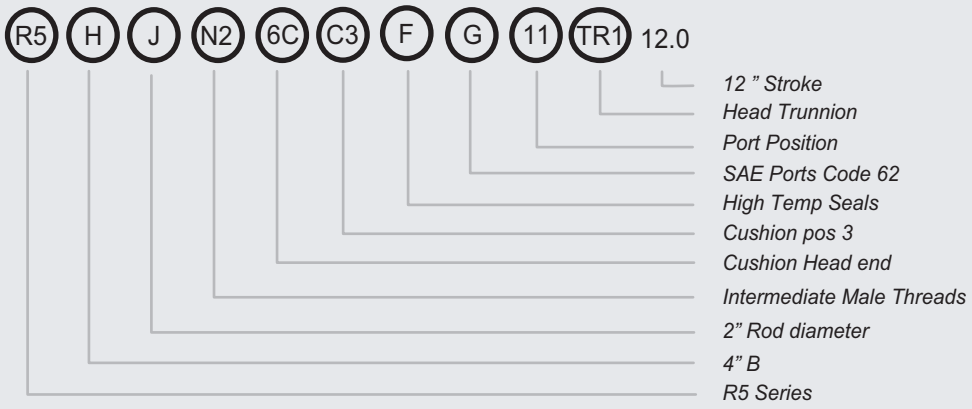
MOUNTINGS

PR1 Cap Fixed Clevis (with Clevis pin)
PR3 Male Clevis (with pivot pin)
SR2 Side lugs
TR1 Head Trunnion
TR2 Cap Trunnion
TR4 Intermediate Trunnion
SRB Sperical Bearing
X0 No mount

OPTIONS

Please consult the factory for additional option codes

EXAMPLE



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