

Actuators

NFPA Aluminum & Steel Cylinders

NFPA Aluminum & Steel Cylinders

1-1/2 to 12 inch bore size

Impact dampening seals

Adjustable captive cushion needle

Ecology cylinders meet OSHA noise standards

Constructed of the finest materials

Technical data

Medium:

Filtered compressed air to 250
PSI

Petroleum based hydraulic fluid
to 400 PSI*

Operating temperature:

Series A & J -20°F to 200°F
with Viton Seals -20°F to 400°F

Operating Pressure:

250 PSIG Air, 400 PSIG
Hydraulic*

Bore Sizes: 1-1/2", 2", 2-1/2",
3-1/4", 4", 5", 6", 7", 8", 10",
12"

Lubrication:

None required

Norgren Air Cylinders are rated
for "no lube added" service. All
internal components are
lubricated at time of assembly
with a Teflon® based grease.

Materials:

Head and End Caps: black
anodized 6061-T6 aluminum

Head and End Caps: precision
machined steel*

Tube: 6063-T832 aluminum,
clear anodized O.D., hard coat
anodized I.D.

Rod: hard chrome plated steel

Piston: machined high-strength
aluminum alloy

Rod: hard chrome plated steel

Rod Bearing: oil impregnated
sintered iron*

Seals: nitrile rod seal, urethane
rod wiper, nitrile piston seals,
nitrile tube end seals

Tie Rods: high-tensile strength
steel

* J and EJ series only

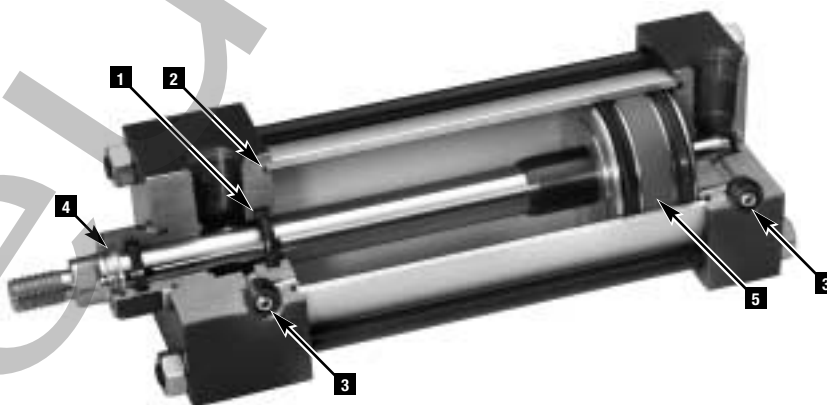


1 Ultra Cushion® Seals: Advanced design features a unique, one-piece, compound seal of nitrile* captured within a precision machined groove. Linear and radial "float" of the cushion seals eliminates misalignment. Ultra Cushions provide exceptionally fast "out of cushion" stroke reversal. (Head and Cap Cushions are optional.)

*Nitrile seals on the 5/8" & 1" rod diameter.
For rod sizes 1-3/8" and larger, urethane seals are standard.

2 O-Ring Tube Seal: Buna is standard. (Viton is optional.)

3 Adjustable Captive Cushion Needle: A one-piece, precision threaded brass cushion adjustment screw with a threaded steel capture ring. It provides safe and precise cushion adjustment.

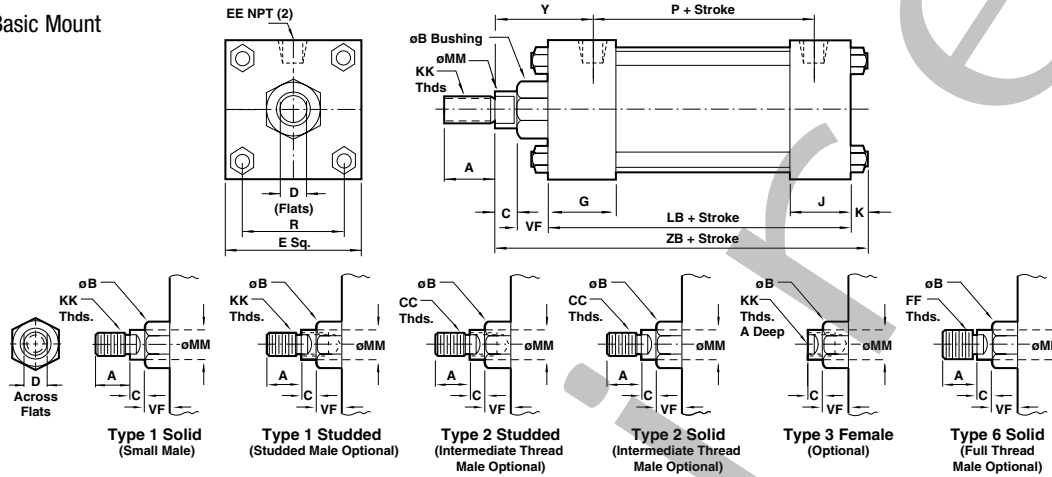


4 Wiper Seal: Lip-type urethane wiper seal keeps contaminants from getting into cylinder by aggressively wiping foreign materials from the piston rod, enhancing the rod seal life.

5 Wear Ring: Reinforced Teflon® compounded with polyphenylene sulfide provides supreme wear and excellent bearing support.

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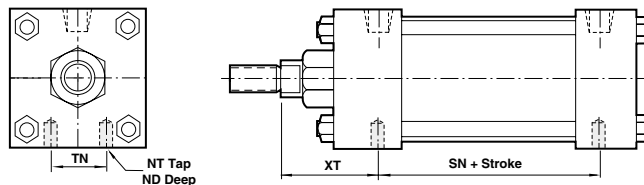
NFPA (MX0) 05 Basic Mount



Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"	7"	8"	10"	12"
ø Rod Std.	5/8"	5/8"	5/8"	1"	1"	1"	1-3/8"	1-3/8"	1-3/8"	1-3/4"	2"
MM O.S.	1"	1"	1"	1-3/8"	1-3/8"	1-3/8"	1-3/4"	1-3/4"	1-3/4"	2"	2-1/2"
A Std.	.750	.750	.750	1.125	1.125	1.125	1.625	1.625	1.625	2.000	2.250
A O.S.	1.125	1.125	1.125	1.625	1.625	1.625	2.000	2.000	2.000	2.250	3.000
B +.000 Std.	1.124	1.124	1.124	1.499	1.499	1.499	1.999	1.999	1.999	2.374	2.624
B -.002 O.S.	1.499	1.499	1.499	1.999	1.999	1.999	2.374	2.374	2.374	2.624	3.124
C Std.	.375	.375	.375	.500	.500	.500	.625	.625	.625	.750	.875
C O.S.	.500	.500	.500	.625	.625	.625	.750	.750	.750	.875	1.000
CC Std.	1/2 - 20	1/2 - 20	1/2 - 20	7/8 - 14	7/8 - 14	7/8 - 14	1-1/4 - 12	1-1/4 - 12	1-1/4 - 12	1-1/2 - 12	1-3/4 - 12
CC O.S.	7/8 - 14	7/8 - 14	7/8 - 14	1-1/4 - 12	1-1/4 - 12	1-1/4 - 12	1-1/2 - 12	1-1/2 - 12	1-1/2 - 12	1-3/4 - 12	2-1/4 - 12
D Std.	.500	.500	.500	.813	.813	.813	1.125	1.125	1.125	1.500	1.688
D O.S.	.813	.813	.813	1.125	1.125	1.125	1.500	1.500	1.500	1.688	2.063
E	2.000	2.500	3.000	3.750	4.500	5.500	6.500	7.500	8.500	10.625	12.750
EE	.375	.375	.375	.500	.500	.500	.750	.750	.750	1.000	1.000
FF Std.	5/8-18	5/8-18	5/8-18	1 - 14	1 - 14	1 - 14	1-3/8-12	1-3/8-12	1-3/8-12	1-3/4-12	2-12
FF O.S.	1 - 14	1 - 14	1 - 14	1-3/8-12	1-3/8-12	1-3/8-12	1-3/4-12	1-3/4-12	1-3/4-12	2-12	2-1/2-12
G	1.500	1.500	1.500	1.750	1.750	1.750	2.000	2.000	2.000	2.250	2.250
J	1.000	1.000	1.000	1.250	1.250	1.250	1.500	1.500	1.500	2.000	2.000
K	.250	.313	.313	.375	.375	.438	.438	.563	.563	.688	.688
KK Std.	7/16 - 20	7/16 - 20	7/16 - 20	3/4 - 16	3/4 - 16	3/4 - 16	1 - 14	1 - 14	1 - 14	1-1/4 - 12	1-1/2 - 12
KK O.S.	3/4 - 16	3/4 - 16	3/4 - 16	1 - 14	1 - 14	1 - 14	1-1/4 - 12	1-1/4 - 12	1-1/4 - 12	1-1/2 - 12	1-7/8 - 12
LB	3.625	3.625	3.750	4.250	4.250	4.500	5.000	5.125	5.125	6.375	6.875
P	2.340	2.340	2.470	2.690	2.690	2.940	3.125	3.250	3.250	4.125	4.625
R	1.428	1.838	2.192	2.758	3.323	4.101	4.87	5.730	6.442	7.969	9.4069
VF Std.	.625	.625	.625	.875	.875	1.000	1.000	1.000	1.000	1.125	1.125
VF O.S.	.875	.875	.875	1.000	1.000	1.000	1.125	1.125	1.125	1.125	1.250
Y Std.	1.840	1.840	1.840	2.380	2.380	2.380	2.813	2.813	2.813	3.125	3.250
Y O.S.	2.220	2.220	2.220	2.630	2.630	2.630	3.063	3.063	3.063	3.250	3.500
ZB Std.	4.875	4.938	5.063	6.000	6.000	6.313	7.063	7.313	7.313	8.938	9.563
ZB O.S.	5.250	5.313	5.438	6.250	6.250	6.563	7.313	7.563	7.563	9.063	9.813

All dimensions ± .015 unless otherwise noted.

NFPA (MS4) 01 Side Tapped Mount



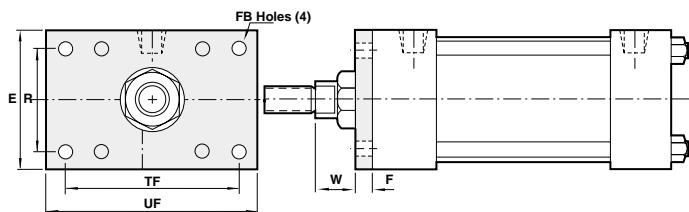
Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"	7"	8"	10"	12"
ND	.375	.375	.500	.750	.750	.938	1.125	1.125	1.125	1.500	1.500
NT	1/4 - 20	5/16 - 18	3/8 - 16	1/2 - 13	1/2 - 13	5/8 - 11	3/4 - 10	3/4 - 10	3/4 - 10	1 - 8	1 - 8
SN	2.250	2.250	2.375	2.625	2.625	2.875	3.125	3.250	3.250	4.125	4.625
TN	.625	.875	1.250	1.500	2.063	2.688	3.250	3.500	4.500	5.500	7.250
XT Std.	1.938	1.938	1.938	2.438	2.438	2.438	2.813	2.813	2.813	3.125	3.250
XT O.S.	2.313	2.313	2.313	2.688	2.688	2.688	3.063	3.063	3.063	3.250	3.500

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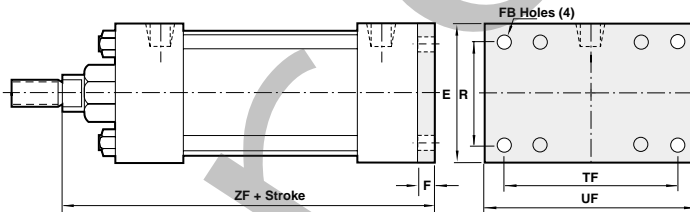
NFPA (MF1) 03 Head Rectangular Flange Mount



Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"
E	2.000	2.500	3.000	3.750	4.500	5.500	6.500
F	.375	.375	.375	.625	.625	.625	.750
FB	.313	.375	.375	.438	.438	.563	.563
R	1.428	1.838	2.192	2.758	3.323	4.101	4.879
TF	2.750	3.375	3.875	4.688	5.438	6.625	7.625
UF	3.375	4.125	4.625	5.500	6.250	7.625	8.625
W	Std. .625	.625	.625	.750	.750	.750	.875
O.S.	1.000	1.000	1.000	1.000	1.000	1.000	1.125

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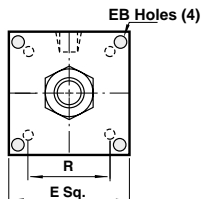
NFPA (MF2) 04 Cap Rectangular Flange Mount



Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"
E	2.000	2.500	3.000	3.750	4.500	5.500	6.500
F	.375	.375	.375	.625	.625	.625	.750
R	1.428	1.838	2.192	2.758	3.323	4.101	4.879
TF	2.750	3.375	3.875	4.687	5.438	6.625	7.625
UF	3.375	4.125	4.625	5.500	6.250	7.625	8.625
ZF	Std. 5.000	5.000	5.125	6.250	6.250	6.500	7.375
O.S.	5.375	5.375	5.500	6.500	6.500	6.750	7.625

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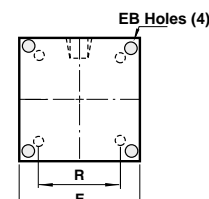
NFPA (ME3) 03 Head Square Mount



Bore	7"	8"	10"	12"
E	7.500	8.500	10.625	12.750
EB	.563	.688	.813	.813
R	5.730	6.442	7.969	9.406

All dimensions ± .015 unless otherwise noted.

NFPA (ME4) 04 Cap Square Mount



Bore	7"	8"	10"	12"
E	7.500	8.500	10.625	12.750
EB	.563	.688	.813	.813
R	5.730	6.442	7.969	9.406

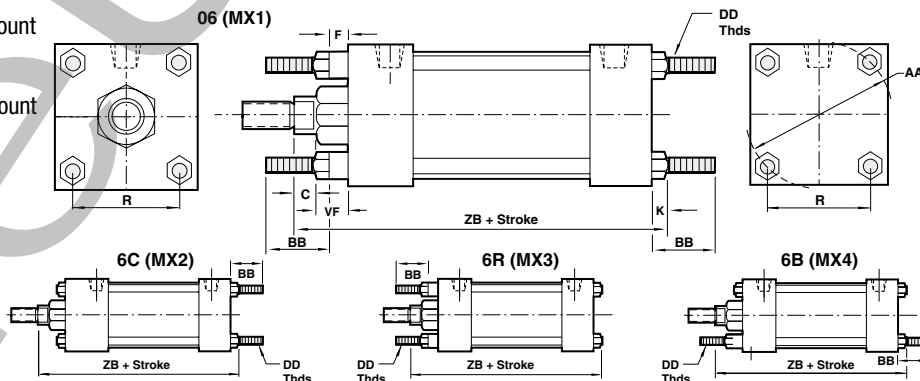
All dimensions ± .015 unless otherwise noted.

NFPA (MX1) 06 (4) Extended Tie Rods Both Ends Mount

NFPA (MX2) 6C Cap Tie Rods Extended Mount

NFPA (MX3) 6R Head Tie Rods Extended Mount

NFPA (MX4) 6B (2) Extended Tie Rods Both Ends Mount

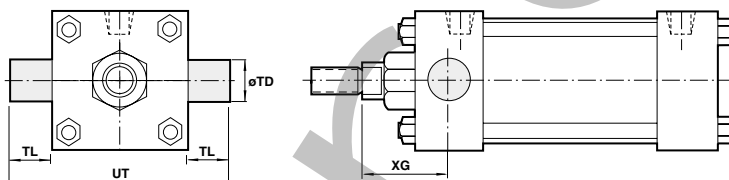


Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"	7"	8"	10"	12"
AA	2.020	2.600	3.100	3.900	4.700	5.800	6.900	8.100	9.100	11.313	13.313
BB	1.000	1.125	1.125	1.375	1.375	1.813	1.813	2.313	2.313	2.688	2.688
C	Std. .375	.375	.375	.500	.500	.500	.625	.625	.625	.750	.875
O.S.	.500	.500	.500	.625	.625	.625	.750	.625	.750	.875	1.000
DD	1/4 - 28	5/16 - 24	5/16 - 24	3/8 - 24	3/8 - 24	1/2 - 20	1/2 - 20	5/8 - 18	5/8 - 18	3/4 - 16	3/4 - 16
F	.375	.375	.375	.625	.625	.625	.750	.750	.750	—	—
K	.250	.313	.313	.375	.375	.438	.438	.563	.563	.688	.688
R	1.428	1.838	2.192	2.758	3.323	4.101	4.879	5.730	6.442	7.969	9.406
VF	Std. .625	.625	.625	.875	.875	.875	1.000	1.000	1.000	1.125	1.125
O.S.	.875	.875	.875	1.000	1.000	1.000	1.125	1.125	1.125	1.125	1.250
ZB	Std. 4.875	4.938	5.063	6.000	6.000	6.313	7.063	7.313	7.313	8.938	9.563
O.S.	5.250	5.313	5.438	6.250	6.250	6.563	7.313	7.563	7.563	9.063	9.813

All dimensions ± .015 unless otherwise noted.

NFPA Aluminum & Steel Cylinders

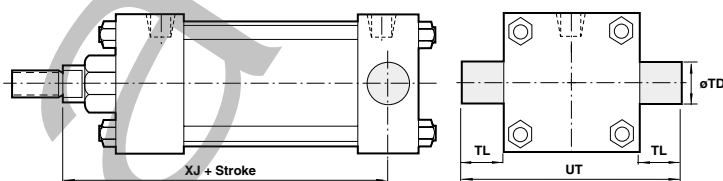
NFPA (MT1) 07 Head Trunnion Mount



Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"	7"	8"	10"	12"
TD $+0.000 -0.001$	1.000	1.000	1.000	1.000	1.000	1.000	1.375	1.375	1.375	1.750	1.750
TL	1.000	1.000	1.000	1.000	1.000	1.000	1.375	1.375	1.375	1.750	1.750
UT	4.000	4.500	5.000	5.750	6.500	7.500	9.250	10.250	11.250	14.125	16.250
XG Std.	1.750	1.750	1.750	2.250	2.250	2.250	2.625	2.625	2.625	3.000	3.125
XG O.S.	2.125	2.125	2.125	2.500	2.500	2.500	2.875	2.875	2.875	3.125	3.375

All dimensions $\pm .015$ unless otherwise noted.

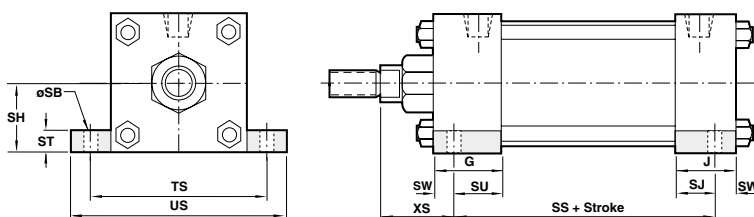
NFPA (MT2) 8R & 08 Cap Trunnion Mount



Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"	7"	8"	10"	12"
TD $+0.000 -0.001$	1.000	1.000	1.000	1.000	1.000	1.000	1.375	1.375	1.375	1.750	1.750
TL	1.000	1.000	1.000	1.000	1.000	1.000	1.375	1.375	1.375	1.750	1.750
UT	4.000	4.500	5.000	5.750	6.500	7.500	9.250	10.250	11.250	14.125	16.250
XJ Std.	4.125	4.125	4.250	5.000	5.000	5.250	5.875	6.000	6.000	7.250	7.875
XJ O.S.	4.500	4.500	4.625	5.250	5.250	5.500	6.125	6.250	6.250	7.375	8.125

All dimensions $\pm .015$ unless otherwise noted.

NFPA (MS2) 09 Side Lug Mount



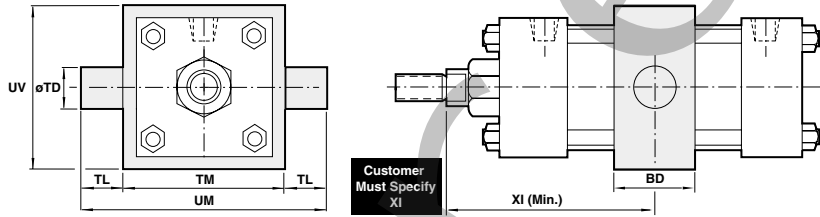
Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"	7"	8"	10"	12"
G	1.500	1.500	1.500	1.750	1.750	1.750	2.000	2.000	2.000	2.250	2.250
J	1.000	1.000	1.000	1.250	1.250	1.250	1.500	1.500	1.500	2.000	2.000
SB	.438	.438	.438	.563	.563	.813	.813	.813	.813	1.063	1.063
SH	1.000	1.250	1.500	1.875	2.250	2.750	3.250	3.750	4.250	5.313	6.375
SJ	.625	.625	.625	.750	.750	.813	.813	.813	.813	2.000	2.000
SS	2.875	2.875	3.000	3.250	3.250	3.125	3.625	3.750	3.750	4.625	5.125
ST	.500	.500	.500	.750	.750	1.000	1.000	1.000	1.000	1.250	1.250
SU	1.125	1.125	1.125	1.250	1.250	1.063	1.313	1.563	1.563	2.000	2.000
SW	.375	.375	.375	.500	.500	.688	.688	.688	.688	.875	.875
TS	2.750	3.250	3.750	4.750	5.500	6.875	7.875	8.875	9.875	12.375	14.500
US	3.500	4.000	4.500	5.750	6.500	8.250	9.250	10.250	11.250	14.125	16.250
XS Std.	1.375	1.375	1.375	1.875	1.875	2.062	2.313	2.313	2.313	2.750	2.875
XS O.S.	1.750	1.750	1.750	2.125	2.125	2.313	2.562	2.563	2.563	2.875	3.125

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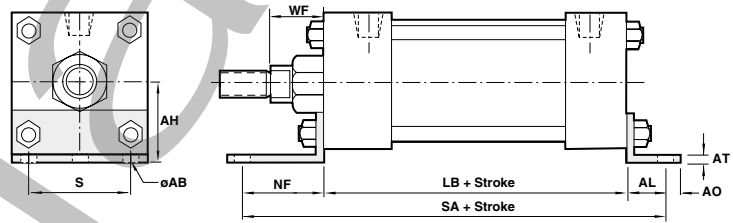
NFPA (MT4) 10 Center Trunnion Mount



Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"	7"	8"	10"	12"
BD	1.250	1.500	1.500	2.000	2.000	2.000	2.500	2.500	2.500	3.000	3.000
TD $\pm .000$ $-.001$	1.000	1.000	1.000	1.000	1.000	1.000	1.375	1.375	1.375	1.750	1.750
TL	1.000	1.000	1.000	1.000	1.000	1.000	1.375	1.375	1.375	1.750	1.750
TM	2.500	3.000	3.500	4.500	5.250	6.250	7.625	8.750	9.750	12.000	14.000
UM	4.500	5.000	5.500	6.500	7.250	8.250	10.375	11.500	12.500	15.500	17.500
UV	2.500	3.000	3.500	4.250	5.000	6.000	7.000	8.500	9.500	11.750	13.750
XI min.	Std. 3.125	3.250	3.250	4.125	4.125	4.125	4.625	4.875	4.875	5.625	5.750
	O.S. 3.500	3.625	3.625	4.375	4.375	4.375	4.875	5.125	5.125	5.750	6.000

All dimensions $\pm .015$ unless otherwise noted.

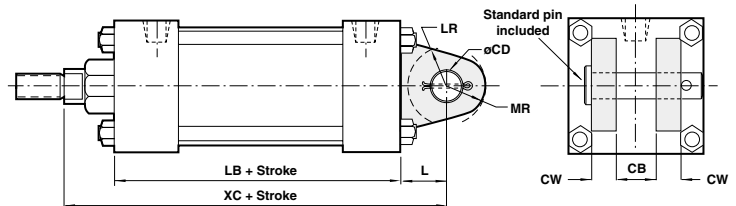
NFPA (MS1) 11 Side End Angle Mount



Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"	7"	8"	10"	12"
AB	.438	.438	.438	.563	.563	.688	.813	.813	.813	1.063	1.063
AH	1.188	1.438	1.625	1.938	2.250	2.750	3.250	3.750	4.250	5.313	6.375
AL	1.000	1.000	1.000	1.250	1.250	1.375	1.375	1.813	1.813	2.125	2.125
AO	.375	.375	.375	.500	.500	.625	.625	.688	.688	.875	.875
AT	.125	.125	.125	.125	.125	.187	.187	.250	.250	.250	.250
LB	3.625	3.625	3.750	4.250	4.250	4.500	5.000	5.125	5.125	6.375	6.875
NF	1.375	1.375	1.375	1.875	1.875	2.000	2.125	1.813	1.813	1.813	1.813
S	1.250	1.750	2.250	2.750	3.500	4.250	5.250	6.125	7.125	8.875	11.000
SA	6.000	6.000	6.125	7.375	7.375	7.875	8.500	8.750	8.750	10.625	11.125
WF	Std. 1.000	1.000	1.000	1.375	1.375	1.375	1.625	1.625	1.625	1.875	2.000
	O.S. 1.375	1.375	1.375	1.625	1.625	1.625	1.875	1.875	1.875	2.000	2.250

All dimensions $\pm .015$ unless otherwise noted.

NFPA (MP1) 12 Cap Fixed Clevis Mount



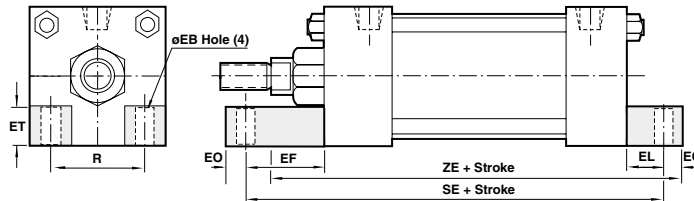
Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"	7"	8"	10"	12"
CB	.750	.750	.750	1.250	1.250	1.250	1.500	1.500	1.500	2.000	2.500
CD	.500	.500	.500	.750	.750	.750	1.000	1.000	1.000	1.375	1.750
CW	.500	.500	.500	.625	.625	.625	.750	.750	.750	1.000	1.250
L	.750	.750	.750	1.250	1.250	1.250	1.500	1.500	1.500	2.125	2.250
LB	3.625	3.625	3.750	4.250	4.250	4.500	5.000	5.125	5.125	6.375	6.875
LR	.750	.750	.750	1.250	1.250	1.250	1.500	1.500	1.500	1.875	2.125
MR	.625	.625	.625	.938	.938	.938	1.188	1.188	1.188	1.625	2.125
XC	Std. 5.375	5.375	5.500	6.875	6.875	7.125	8.125	8.250	8.250	10.375	11.125
	O.S. 5.750	5.750	5.875	7.125	7.125	7.375	8.375	8.500	8.500	10.500	11.375

All dimensions $\pm .015$ unless otherwise noted.

NFPA Aluminum & Steel Cylinders

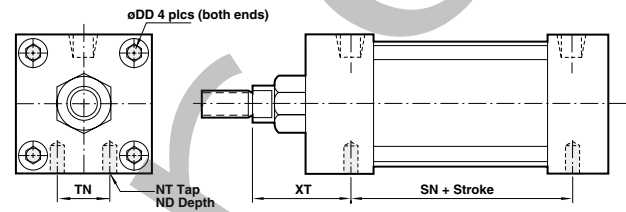
All dimensions ± .015 unless otherwise noted.

NFPA (MS7) 15 End Lug Mount



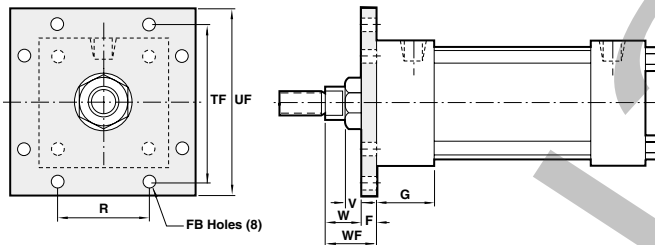
Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"	7"	8"
EB	.313	.375	.375	.438	.438	.563	.563	.688	.688
EF	1.125	1.313	1.438	1.500	1.625	1.688	1.750	1.750	1.750
EL	.750	.938	1.063	.875	1.000	1.063	1.000	1.125	1.125
EO	.250	.313	.313	.375	.375	.500	.500	.625	.625
ET	.500	.750	.750	1.000	1.250	1.500	1.500	1.750	2.063
R	1.428	1.838	2.192	2.758	3.323	4.101	4.879	5.730	6.442
SE	5.500	5.875	6.250	6.625	6.875	7.250	7.750	7.375	7.375
ZE	Std. 5.625	5.875	6.125	6.875	7.000	7.438	8.125	8.500	8.500
O.S.	6.000	6.250	6.500	7.125	7.250	7.688	8.375	8.750	8.750

16 Sleeve Nut Construction Side Tapped (Universal Mount)



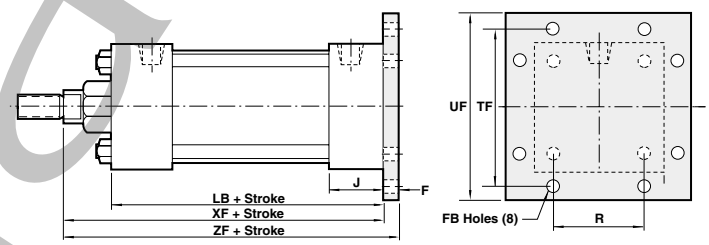
Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"
DD	1/4-28	5/16-24	5/16-24	3/8-24	3/8-24	1/2-20	1/2-20
NT	1/4 - 20	5/16 - 18	3/8 - 16	1/2 - 13	1/2 - 13	5/8 - 11	3/4 - 10
ND	.375	.375	.500	.750	.750	.938	1.125
SN	2.250	2.250	2.375	2.625	2.625	2.875	3.125
TN	.625	.875	1.250	1.500	2.063	2.688	3.250
XT	Std. 1.938	1.938	1.938	2.438	2.438	2.438	2.813
O.S.	2.313	2.313	2.313	2.688	2.688	2.688	3.063

NFPA (MF5) 20 Head Square Flange Mount



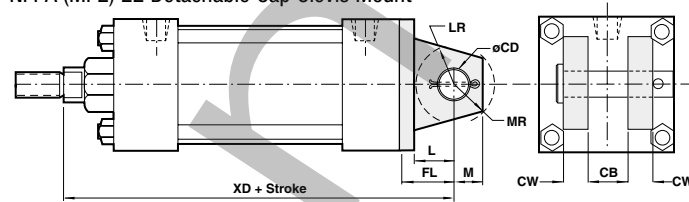
Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"
F	.375	.375	.375	.625	.625	.625	.750
FB	.313	.375	.375	.438	.438	.563	.563
G	1.500	1.500	1.500	1.750	1.750	1.750	2.000
R	1.428	1.838	2.192	2.758	3.323	4.101	4.879
TF	2.750	3.375	3.875	4.688	5.438	6.625	7.625
UF	3.375	4.125	4.625	5.500	6.250	7.625	8.625
V	Std. .250	.250	.250	.250	.250	.250	.250
O.S.	.500	.500	.500	.375	.375	.375	.375
W	Std. .625	.625	.625	.750	.750	.750	.875
O.S.	1.000	1.000	1.000	1.000	1.000	1.000	1.125
WF	Std. 1.000	1.000	1.000	1.375	1.375	1.375	1.625
O.S.	1.375	1.375	1.375	1.625	1.625	1.625	1.875

NFPA (MF6) 21 Cap Square Flange Mount



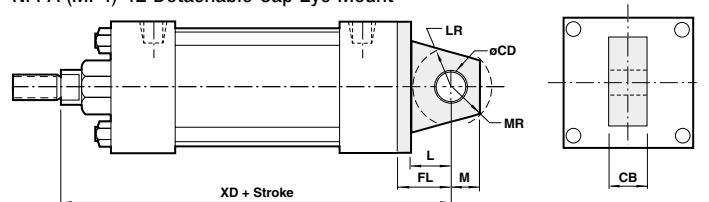
Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"
F	.375	.375	.375	.625	.625	.625	.750
FB	.313	.375	.375	.438	.438	.563	.563
J	1.000	1.000	1.000	1.250	1.250	1.250	1.500
LB	3.625	3.625	3.750	4.250	4.250	4.500	5.000
R	1.428	1.838	2.192	2.758	3.323	4.101	4.879
TF	2.750	3.375	3.875	4.688	5.438	6.625	7.625
UF	3.375	4.125	4.625	5.500	6.250	7.625	8.625
XF	Std. 4.625	4.625	4.750	5.625	5.625	5.875	6.625
O.S.	5.000	5.000	5.125	5.875	5.875	6.125	6.875
ZF	Std. 5.000	5.000	5.125	6.250	6.250	6.500	7.375
O.S.	5.375	5.375	5.500	6.500	6.500	6.750	7.625

NFPA (MP2) 22 Detachable Cap Clevis Mount



Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"	7"	8"
CB	.750	.750	.750	1.250	1.250	1.250	1.500	1.500	1.500
CD	.500	.500	.500	.750	.750	.750	1.000	1.000	1.000
CW	.500	.500	.500	.625	.625	.625	.750	.750	.750
FL	1.125	1.125	1.125	1.875	1.875	1.875	2.250	2.250	2.250
L	.750	.750	.750	1.250	1.250	1.250	1.500	1.500	1.500
LR	.750	.750	.750	1.250	1.250	1.250	1.500	1.500	1.500
M	.500	.500	.500	.750	.750	.750	1.000	1.000	1.000
MR	.625	.625	.625	.938	.938	.938	1.188	1.188	1.188
XD	Std. 5.750	5.750	5.875	7.500	7.500	7.750	8.875	9.000	9.000
O.S.	6.125	6.125	6.250	7.750	7.750	8.000	9.125	9.250	9.250

NFPA (MP4) 42 Detachable Cap Eye Mount

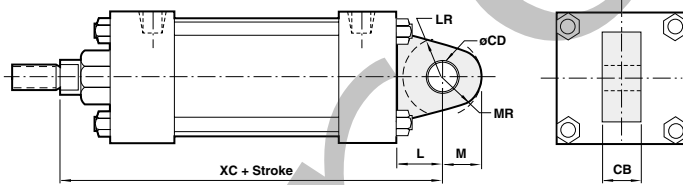


Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"	7"	8"
CB	.750	.750	.750	1.250	1.250	1.250	1.500	1.500	1.500
CD	.500	.500	.500	.750	.750	.750	1.000	1.000	1.000
FL	1.125	1.125	1.125	1.875	1.875	1.875	2.250	2.250	2.250
L	.750	.750	.750	1.250	1.250	1.250	1.500	1.500	1.500
LR	.750	.750	.750	1.250	1.250	1.250	1.500	1.500	1.500
M	.500	.500	.500	.750	.750	.750	1.000	1.000	1.000
MR	.625	.625	.625	.938	.938	.938	1.188	1.188	1.188
XD	Std. 5.750	5.750	5.875	7.500	7.500	7.750	8.875	9.000	9.000
O.S.	6.125	6.125	6.250	7.750	7.750	8.000	9.125	9.250	9.250

Actuators

NFPA Aluminum & Steel Cylinders

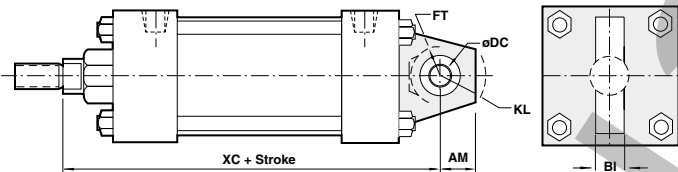
NFPA (MP3) 32 Cap Fixed Eye



Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"	7"	8"	10"	12"
CB	.750	.750	.750	1.250	1.250	1.250	1.500	1.500	1.500	2.000	2.500
CD	.500	.500	.500	.750	.750	.750	1.000	1.000	1.000	1.375	1.750
L	.750	.750	.750	1.250	1.250	1.250	1.500	1.500	1.500	2.125	2.250
LR	.750	.750	.750	1.250	1.250	1.250	1.500	1.500	1.500	1.875	2.125
M	.500	.500	.500	.750	.750	.750	1.000	1.000	1.000	1.375	1.750
MR	.625	.625	.625	.938	.938	.938	1.188	1.188	1.188	1.625	2.125
XC Std.	5.375	5.375	5.500	6.875	6.875	7.125	8.125	8.250	8.250	10.375	11.125
O.S.	5.750	5.750	5.875	7.125	7.125	7.375	8.375	8.500	8.500	10.500	11.375

All dimensions ± .015 unless otherwise noted.

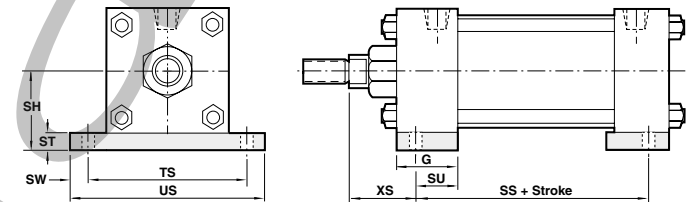
52 (Not NFPA) Spherical Bearing Mount



Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"	7"	8"
AM	.750	.750	.750	1.000	1.000	1.000	1.250	1.250	1.250
BI	.438	.438	.438	.656	.656	.656	.875	.875	.875
DC	.500	.500	.500	.750	.750	.750	1.000	1.000	1.000
FT	.625	.625	.625	1.000	1.000	1.000	1.250	1.250	1.250
KL	.969	.969	.969	1.406	1.406	1.406	1.719	1.719	1.719
XC Std.	5.375	5.375	5.500	6.875	6.875	7.125	8.125	8.250	8.250
O.S.	5.750	5.750	5.875	7.125	7.125	7.375	8.375	8.500	8.500

All dimensions ± .015 unless otherwise noted.

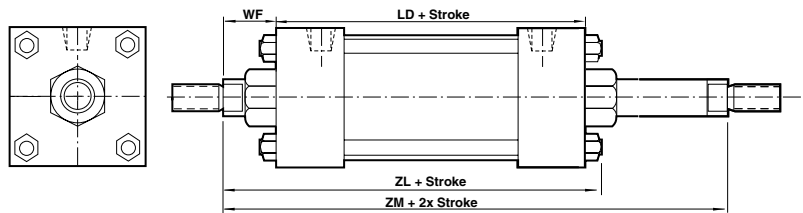
60 Base (Not NFPA) Bar Mount



Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"
G	1.500	1.500	1.500	1.750	1.750	1.750	2.000
SH	1.250	1.500	1.875	2.375	2.750	3.500	4.000
SS	2.875	2.875	3.000	3.250	3.250	3.125	3.625
ST	.250	.250	.375	.500	.500	.750	.750
SU	1.125	1.125	1.125	1.250	1.250	1.063	1.313
SW	.375	.375	.375	.500	.500	.688	.688
TS	2.750	3.250	3.750	4.750	5.500	6.875	7.875
US	3.500	4.000	4.500	5.750	6.500	8.250	9.250
XS Std.	1.375	1.375	1.375	1.875	1.875	2.063	2.313
O.S.	1.750	1.750	1.750	2.125	2.125	2.313	2.563

All dimensions ± .015 unless otherwise noted.

NFPA (MX0) 05 Basic with Double Rod End Cylinder



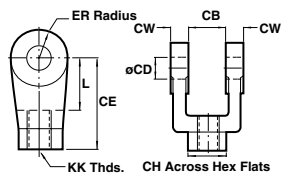
Bore	1-1/2"	2"	2-1/2"	3-1/4"	4"	5"	6"	7"	8"	10"	12"
LD	4.125	4.125	4.250	4.750	4.750	5.000	5.500	5.625	5.625	6.625	7.125
WF Std.	1.000	1.000	1.000	1.375	1.375	1.375	1.625	1.625	1.625	1.875	2.000
O.S.	1.375	1.375	1.375	1.625	1.625	1.625	1.875	1.875	1.875	2.000	2.250
ZL Std.	5.375	5.438	5.563	6.500	6.500	6.813	7.563	7.813	7.813	10.375	11.125
O.S.	5.750	5.813	5.938	6.750	6.750	7.063	7.813	8.125	8.125	10.625	11.625
ZM Std.	6.125	6.125	6.250	7.500	7.500	7.500	8.750	8.875	8.875	9.250	9.675
O.S.	6.875	6.875	7.000	8.000	8.000	8.000	9.250	9.375	9.375	9.375	10.375

All dimensions ± .015 unless otherwise noted.

All dimensions ± .015 unless otherwise noted.

NFPA Aluminum & Steel Cylinders

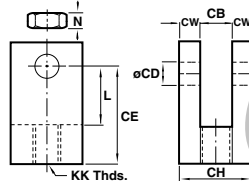
NFPA Rod Clevis



Note: Rod Clevis Assembly 49102A and 49103A are supplied with NFPA Pin. All others are with Standard Pin

Rod Clevis	Rod Clevis Assy.	KK	CB	CD	CE	CH	CW	ER	L
49028	49028A	7/16 - 20	.750	.500	1.500	1.000	.500	.500	.750
49029	49029A	1/2 - 20	.750	.500	1.500	1.000	.500	.500	.750
49097	49097A	5/8 - 18	.750	.500	1.500	1.000	.500	.500	.750
49030	49030A	3/4 - 16	1.250	.750	2.375	1.250	.625	.750	1.250
49098	49098A	7/8 - 14	1.250	.750	2.375	1.250	.625	.750	1.250
49032	49032A	1 - 14	1.500	1.000	3.125	1.500	.750	1.000	1.500
49033	49033A	1 1/4 - 12	2.000	1.375	4.125	2.000	1.000	1.375	2.125
49099	49099A	1 3/8 - 12	2.000	1.375	4.125	2.000	1.000	1.000	2.125
49034	49034A	1 1/2 - 12	2.500	1.750	4.500	2.375	1.250	1.750	2.250
49100	49100A	1 3/4 - 12	2.500	1.750	4.500	2.375	1.250	1.750	2.250
49036	49036A	1 7/8 - 12	2.500	2.000	5.500	2.937	1.250	2.000	2.500
49101	49101A	2 - 12	2.500	2.000	5.500	2.937	1.250	2.000	2.500
49102	49102A	2 1/4 - 12	3.000	2.500	6.500	3.500	1.500	2.750	3.000
49103	49103A	2 1/2 - 12	3.000	3.000	6.750	3.875	1.500	2.750	3.250

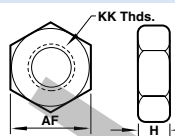
Small Rod Clevis & Jam Nut



Note: Rod Clevis Assembly is supplied with Jam Nut and Standard Pin.

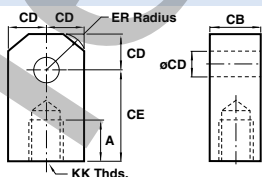
Rod Clevis	Rod Clevis Assy.	KK	CB	CD	CE	CH	CW	L	N
49218	49218A	1/2 - 20	.500	.500	1.375	1.000	.250	.750	.375
49219	49219A	3/4 - 16	.750	.750	1.750	1.500	.375	1.000	.500

Rod Jam Nut



52025	52026	52027	52010	52029	52030	52085
KK 7/16 - 20	1/2 - 20	5/8 - 18	3/4 - 16	7/8 - 14	1 - 14	1 1/4 - 12
AF .688	.750	.938	1.125	1.313	1.500	1.875
H .250	.313	.375	.422	.484	.547	.719
52092	52068	52082	52070	52093	52083	52075
KK 1 3/8 - 12	1 1/2 - 12	1 3/4 - 12	1 7/8 - 12	2 - 12	2 1/4 - 12	2 1/2 - 12
AF 2.063	2.250	2.625	2.938	3.125	3.500	3.875
H .781	.844	.969	1.031	1.094	1.203	1.453

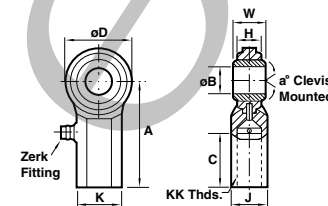
NFPA Rod Eye



Note: Rod Eye Assembly 49062A and 49096A are supplied with NFPA Pin. All others are supplied with Standard Pin

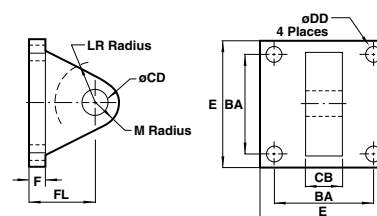
Rod Eye	Rod Eye Assy.	KK	A	CB	CD	CE	ER
49015	49015A	7/16 - 20	.750	.750	.500	1.500	.563
49014	49014A	1/2 - 20	.750	.750	.500	1.500	.563
49091	49091A	5/8 - 18	.750	1.250	.750	2.063	.500
49013	49013A	3/4 - 16	1.125	1.250	.750	2.063	.938
49092	49092A	7/8 - 14	1.125	1.250	.750	2.063	.750
49011	49011A	1 - 14	1.625	1.500	1.000	2.813	1.125
49010	49010A	1 1/4 - 12	2.000	2.000	1.375	3.438	1.563
49093	49093A	1 3/8 - 12	1.625	2.000	1.375	3.438	1.375
49009	49009A	1 1/2 - 12	2.250	2.500	1.750	4.000	2.500
49094	49094A	1 3/4 - 12	2.250	2.500	1.750	4.000	2.500
49007	49007A	1 7/8 - 12	3.000	2.500	2.000	5.000	2.875
49095	49095A	2 - 12	2.250	2.500	2.000	5.000	2.875
49062	49062A	2 1/4 - 12	3.000	3.000	2.500	5.813	3.250
49096	49096A	2 1/2 - 12	3.000	3.000	3.000	6.125	3.250

Spherical Rod Eye



Spherical Rod Eye	49220	49221	49222	
Spherical Rod Eye Assy.	49220A	49221A	49222A	
Bore	1-1/2, 2 & 2-1/2	3-1/4, 4 & 5	6 & 8	
KK	UNF-2B	1/2 - 20	3/4 - 16	1 - 14
a°	Misalignment Angle	12	14	14
A		2.125	2.875	4.125
B	+ .0025 / -.0005	.500	.750	1.000
C	+ .062 / -.031	1.063	1.563	2.125
D	± .010	1.313	1.750	2.750
H	Reference	.453	.593	1.000
J	± .010	.750	1.000	1.500
K	± .010	.875	1.125	1.625
W	+ .000 / -.005	.625	.875	1.375

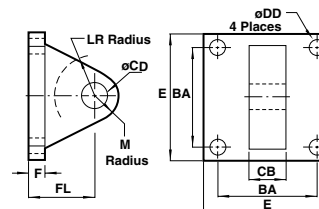
NFPA Eye Bracket



Note: NFPA Eye Bracket Assembly is supplied with Standard Pin.

NFPA Eye Bracket	49021	49020	49019	49016	49017	49018
Eye Bracket Assembly	49021A	49020A	49019A	49016A	49017A	49018A
BA	1.625	2.563	3.250	3.813	4.937	5.750
CB	.750	1.250	1.500	2.000	2.500	2.500
CD	.500	.750	1.000	1.375	1.750	2.000
DD	.406	.531	.656	.656	.906	1.026
E	2.500	3.500	4.500	5.000	6.500	7.500
F	.375	.625	.750	.875	.875	1.000
FL	1.125	1.875	2.250	3.000	3.125	3.500
LR	.750	1.250	1.500	2.125	2.250	2.500
M	.500	.750	1.000	1.375	1.750	2.000

Norgren Eye Bracket



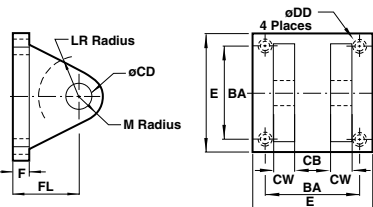
Note: Norgren Eye Bracket Assembly is supplied with Standard Pin.

Eye Bracket	49240	49241	49242	49243	49244	49019	49016	49017	49018
Assembly	49240A	49241A	49242A	49243A	49244A	49019A	49016A	49017A	49018A
BA	1.438	1.844	2.188	2.938	3.563	3.250	3.813	4.950	5.730
CB	.750	.750	.750	1.250	1.250	1.500	2.000	2.500	2.500
CD	.500	.500	.500	.750	.750	1.000	1.375	1.750	2.000
DD	.281	.344	.344	.469	.469	.656	.656	.906	1.062
E	2.000	2.500	3.000	3.750	4.500	4.500	5.000	6.500	7.500
F	.375	.375	.375	.500	.500	.750	.875	.875	1.000
FL	1.125	1.125	1.125	1.750	1.750	2.250	3.000	3.125	3.500
LR	.563	.563	.563	1.000	1.000	1.500	2.125	2.250	2.500
M	.625	.625	.625	.875	.875	1.000	1.375	1.750	2.000

Actuators

NFPA Aluminum & Steel Cylinders

NFPA Clevis Bracket

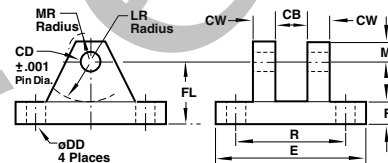


Note: NFPA Clevis Bracket Assembly is supplied with Standard Pin.

NFPA Clevis Bracket	49250	49251	49252
Clevis Bracket Assembly	49250A	49251A	49252A
BA	1.625	2.563	3.250
CB	.750	1.250	1.500
CD	.500	.750	1.000
CW	.500	.625	.750
DD	3/8 - 24	1/2 - 20	5/8 - 18
E	2.500	3.500	4.500
F	.375	.625	.750
FL	1.125	1.875	2.250
LR	.750	1.250	1.500
M	.500	.813	1.000

All dimensions ± .015 unless otherwise noted.

Norgren Clevis Bracket

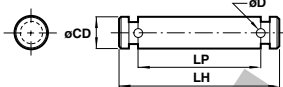


Note: Norgren Clevis Bracket Assembly is supplied with Standard Pin.

Norgren Clevis Bracket	49022	49023	49024	49027	49025	49026
Clevis Bracket Assembly	49022A	49023A	49024A	49027A	49025A	49026A
CB	.750	1.250	1.500	2.000	2.500	2.500
CD	.500	.750	1.000	1.375	1.750	2.000
CW	.500	.625	.750	1.000	1.250	1.500
DD	.406	.531	.656	.656	.906	1.026
E	3.500	5.000	6.500	8.000	10.000	12.000
F	.500	.625	.750	.875	.875	1.000
FL	1.500	1.875	2.250	3.000	3.625	4.520
LR	.750	1.188	1.500	2.000	2.750	3.188
M	.500	.750	1.000	1.375	1.750	2.250
MR	.625	.906	1.250	1.656	2.219	2.781
R	2.547	3.828	4.953	5.734	7.500	9.938

All dimensions ± .015 unless otherwise noted.

NFPA Pin

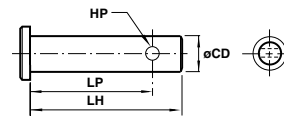


Note: ø.500, .750, 1.000 are Retainer type design ø1.375 and larger are Cotter Pin design.

NFPA Pin	49006-R	49005-R	49004-R	49003	49002	49001	49000	49126	49127
CD	.500	.750	1.000	1.375	1.750	2.000	2.000	2.500	3.000
LH	2.219	3.125	3.750	4.750	5.812	5.812	6.312	6.875	6.875
LP	1.875	2.750	3.250	4.250	5.250	5.281	5.770	6.312	6.344
D	-	-	-	.173	.173	.204	.204	.219	.250

All dimensions ± .015 unless otherwise noted.

Standard Pin



Std. Pin	49207*	49208*	49206	49205	49204	49203	49202	49201
CD	.500	.750	.500	.750	1.000	1.375	1.750	2.000
HP	.156	.156	.156	.156	.203	.250	.250	.250
LH	1.421	2.000	2.250	3.000	3.500	5.000	6.000	6.000
LP	1.266	1.843	2.093	2.843	3.297	4.500	5.500	5.500

All dimensions ± .015 unless otherwise noted.

Switches

Note: 1-1/2" to 2-1/2" bore steel cylinders are supplied with an aluminum tube as standard. If a 3-1/4" to 12" bore steel cylinder requires switches the aluminum tube and magnetic piston options must be selected.

Switch Model	CS8-2-04 Reed	CS8-2-31 Hall	CS8-2-32 Hall	CS7-04 Reed	CS7-24 Reed	CS7-31 Hall	CS7-32 Hall
Bore Sizes	1-1/8" - 2-1/2"	1-1/8" - 2-1/2"	1-1/8" - 2-1/2"	2" - 4"	2" - 4"	2" - 4"	2" - 4"
Switch Type	Reed Switch *MOV & Light	Hall Effect/Light, Sourcing PNP	Hall Effect/Light, Sinking NPN	Reed Switch *MOV & Light	Reed Switch *MOV & Light, 3 Wire	Hall Effect/Light, Sourcing PNP	Hall Effect/Light, Sinking NPN
Function	SPST NO	Normally Open	Normally Open	Normally Open	Normally Open	Normally Open	Normally Open
Switching Voltage	5-120 VDC/VAC	6-24 VDC	6-24 VDC	5-240 VDC/VAC	24-240 VAC	6-24 VDC	6-24 VDC
Switching Current	50/60 Hz	.5 Amp Max	.5 Amp Max	50/60 Hz	50/60 Hz	1 Amp Max	1 Amp Max
Switching Power	.5 Amp Max	.5 Amp Max	.5 Amp Max	1 Amp Max	4 Amp Max 50 Amp Inrush	1 Amp Max	1 Amp Max
Max Voltage Drop	10 VA	12 Watts Max	12 Watts Max	30 Watts Max	100 Watts Max	24 Watts Max	24 Watts Max
Magnetic Sensitivity	3.5 Volts	.5 Volts	.5 Volts	3 Volts	N/A	.5 Volts	.5 Volts
Enclosure Class	85 Gauss	85 Gauss	85 Gauss	85 Gauss Parallel	85 Gauss Parallel	85 Gauss Parallel	85 Gauss Parallel
Temperature Range	NEMA 6/CSA	NEMA 6/CSA	NEMA 6/CSA	NEMA 6/CSA	NEMA 6/CSA	NEMA 6/CSA	NEMA 6/CSA
	-22°F to +176°F	-22°F to +176°F	-22°F to +176°F	-22°F to +176°F	-22°F to +176°F	-22°F to +176°F	-22°F to +176°F

* Metal Oxide Varistor Surge Suppression. NOTE: All CS8 series switches are supplied with 9' leads.

NFPA Aluminum & Steel Cylinders

Norgren Ecology Cylinder Options offer these advantages:

Energy Absorption Capacity of the Impact Dampening Seals

*Usable Pounds Stoppable at the Following Piston Speeds

This chart features the energy absorption capacity of the impact dampening piston seals with a Non-Adjustable cushions.

In/Sec	Cylinder Bore										
	1-1/2	2	2-1/2	3-1/4	4	5	6	7	8	10**	12**
6	155.6	275.5	499.8	969.3	1505.4	2603.2	4159.8	5794.2	8067.6	12,242	20,139
12	38.4	68.1	123.4	239.7	372.6	644.8	1030.2	1435.8	2000.4	3026	4971
18	16.7	29.7	53.7	104.6	162.8	282.1	450.6	628.7	876.8	1319.3	2162.1
24	9.2	16.3	29.4	57.3	89.4	155.2	247.8	346.2	483.6	722	1179
30	5.6	10.0	18.1	35.4	55.4	96.4	153.9	215.4	301.6	445.5	724
36	3.7	6.7	11.9	23.5	37.0	64.5	102.9	144.4	202.7	295.3	476.8
42	2.6	4.6	8.2	16.3	25.8	45.3	72.2	101.6	143.1	204.8	327.7
48	1.8	3.2	5.8	11.7	18.6	32.8	52.2	73.8	104.4	146	231
54	1.3	2.4	4.2	8.5	13.6	24.2	38.5	54.7	77.9	105.7	164.7
60	1.0	1.8	3.0	6.2	10.1	18.1	28.7	41.1	58.9	76.9	117.2

*The weight of the cylinder piston has been deducted from the figures shown above.

Note: The use of Viton® Seals limits the absorption of the impact dampening seals by 50%.

** Series J & EJ only

Operates Quietly to Meet OSHA Specifications.

Series EA cylinders provide substantial reductions in impact noise, which reduces overall machine noise and helps meet government regulations.

Summary of Sound Levels in Decibels

PSI Air Sound Pressure Level+	Cylinder Model			
	A133B3 J133B3	EA155B3 EJ155B3	A1133A3 J1133A3	EA1155A3 EJ1155A3
95	108	73	110	74
PSI+ End++	112	84	110	81
50	108	73	113	74
PSI+ End++	113	85	110	81

+Peak sound pressure is given in decibels (dB) re:2 x 105 N/m2.

++End position of mike was 3' on centerline from end of cylinder; side position of mike was 3' perpendicular to centerline abeam of end of cylinder.

Note: At 5 feet, cylinder sound levels would be less by 9 dB from side figure and 13 dB from end figure. The total noise emitted will depend on the structure to which the cylinder is attached. If it is mounted on a thin flat plate of considerable area, the noise will be increased by a sounding board effect.

Energy absorption capacity of the impact dampening piston seals with an adjustable cushion.

In/Sec	Cylinder Bore										
	1-1/2	2	2-1/2	3-1/4	4	5	6	7	8	10*	12*
6	279	495	899	1,744	2,709	4,685	7,486	10,429	4,520	22,035	36,250
12	68	122	221	430	699	1,159	1,854	2,583	3,800	5,446	8,947
18	30	53	95	187	291	507	810	1,130	1,576	2,374	3,891
24	16	29	52	102	160	279	444	622	869	1,299	1,414
30	10	18	32	63	99	172	275	387	541	801	1,303
36	6.7	12	21.6	42	66	116	183	259	363	531	856
42	4.7	8.3	14.7	29	46	81	129	181	257	367	588
48	3.4	5.7	10.4	21	33	59	93	131	187	262	415
54	2.3	4.3	7.6	15.3	24	43	68	97	138	189	295
60	1.8	3.2	5.4	11	18	33	52	74	106	138	211

* Series J & EJ only

Effect of Impact Dampening Seals on Total Stroke of Cylinders

PSI	Cylinder Bore										
	1-1/2	2	2-1/2	3-1/4	4	5	6	7	8	10*	12*
0	.14	.15	.17	.19	.22	.25	.28	.32	.32	.36	.40
20	.10	.10	.12	.14	.16	.18	.20	.22	.22	.24	.26
40	.07	.07	.08	.09	.10	.12	.13	.14	.14	.15	.16
60	.04	.04	.05	.05	.06	.07	.07	.08	.08	.09	.10
80	.02	.02	.02	.02	.03	.03	.03	.04	.04	.04	.04
100	0	0	0	0	0	0	0	0	0	0	0

* Series J & EJ only

Note: These figures are for new cylinders. The impact dampening seals will take some compression set during operation of the cylinder and the stroke loss will decrease. Also, the pressure at zero stroke loss will decrease to about 80 psi. At pressures above those of zero stroke loss, a slight clicking sound may be produced during impact. To determine the stroke loss for either the head or cap end, divide the value shown by 2.

NFPA Aluminum & Steel Cylinders

Decel-Air™ Cushion

Explanation of Decel-Air Cushion:

Norgren's Decel Cushioned cylinder was designed for applications where high velocity, low mass, material transfer or machine function is required, and where the kinetic energy to be absorbed during cushioning exceeds the parameters of our standard Series EA or EJ air cylinders equipped with non-adjustable or adjustable cushions. Decel cushions employ longer-than-standard air cushions to assist our Impact Dampening Piston Seal.

Decel Cushioned Cylinder

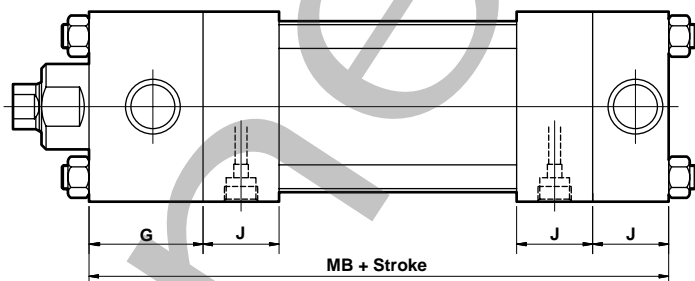
Fully Cushioned Load Stopping Capacity in Pounds*

In/ Sec	Cylinder Bore										
	1-1/2	2	2-1/2	3-1/4	4	5	6	7	8	10	12
6	558	990	1.798	3.488	5.418	9.370	14.972	20.040	20.858	44.070	72.500
12	136	244	442	860	1.338	2.318	3.708	5.166	7.600	10.892	17.894
18	60	106	190	374	582	1.014	1.620	2.260	3.152	4.748	7.782
24	32	58	104	204	320	558	888	1.244	1.738	2.598	2.828
30	20	36	64	126	198	344	550	774	1.082	1.602	2.606
36	13.4	24	43	84	132	232	366	518	726	1.062	1.712
42	9.4	16.6	29	58	92	162	258	362	514	734	1.176
48	6.8	11.4	20.8	42	66	118	186	262	374	524	830
54	4.6	8.6	10.8	30	48	86	136	194	276	378	590

Piston Rod Dia. Weights*	
5/8"	- .30 lb. + 0.09 lb./in. stroke
1"	- .90 lb. + 0.22 lb./in. stroke
1-3/8"	- 2.2 lb. + 0.42 lb./in. stroke
1-3/4"	- 4.0 lb. + 0.68 lb./in. stroke
2"	- 5.5 lb. + 0.90 lb./in. stroke
2-1/2"	- 10.1 lb. + 1.40 lb./in. stroke

*Double Weight for double rod end cylinders

*Include piston rod weight in total load to be stopped.



Basic Envelope Dimensions

Cyl. Bore	G	J	Add Stroke MB
1-1/2	1-1/2	1	5-5/8
2	1-1/2	1	5-5/8
2-1/2	1-1/2	1	5-3/4
3-1/4	1-3/4	1-1/4	6-3/4
4	1-3/4	1-1/4	6-3/4
5	1-3/4	1-1/4	7
6	2	1-1/2	8
7	2	1-1/2	8-1/8
8	2	1-1/2	8-1/8

Cylinder Order Information

EJ 01 - 7 7 - A 1 - HR-L(14)-MS-P(1/4)-V - 2" x 6"



Series	
Series A Cylinder	A
Series A Double Rod End Cylinder	DA
Series EA Cylinder	EA
Series EA Double Rod End Cylinder	EDA
Series J Cylinder	J
Series J Double Rod End Cylinder	DJ
Series EJ Cylinder	EJ
Series EJ Double Rod End Cylinder	EDJ

Bore and Stroke (write out)

Additional Options – order alphabetically – More on page ??

Case Hardened (45 Rc)	HR
Port Location position 1 standard: L(Head Cap)	
(specify position 1 thru 4 for head and/or cap)	L()
Metal Rod Scraper	MS
Cushion Adjust Screw Location position 2 standard:	
N(Head Cap) (specify position 1 thru 4 for head and/or cap)	N()
Non-Standard Port Sizes: [specify port size for P()_H]	
head only, P()_C cap only, or P()_ both head & cap]	*P()
Magnetic Piston – includes aluminum tube option - J & EJ	PS
Rod Stud	RS
Type 1 (5/8" – 1-3/4" øRod)	
Type 2 (5/8" & 1" øRod)	
Rod Extensions (specify length of additional rod extension)	RX
Single Acting Spring Extend (Cap End)–See page ACT-1-95	SC
Single Acting Spring Retract (Rod End)–See page ACT-1-95	SR
303 Stainless Steel (Hard Chrome Plated)	SS
Stop Tube (Cap End) (specify stop tube length)	ST()_C
Stop Tube (Rod End) (specify stop tube length)	ST()_R
Special Rod Threads (specify rod thread)	T
Thread Extensions (specify length of thread extension)	TX
Viton® Seals	V

Mounting Options	
Side Tapped (MS4)	01
Head Rectangular Flange (MF1)	03
Head Square (ME3) – 7" & 8" Bores	03
Cap Rectangular Flange (MF2)	04
Cap Square (ME4) – 7" & 8" Bores	04
Basic Cylinder No Mounting (MX0)	05
Both Ends (4) Tie Rods Ext. (MX1)	06
Both Ends (2) Tie Rods Ext. (MX4)	6B
Cap Tie Rods Ext. (MX2)	6C
Head Tie Rods Ext. (MX3)	6R
Removable Head Trunnion (MT1) - A & EA	7R
Head Trunnion (MT1) - J & EJ	07
Removable Cap Trunnion (MT2) - A & EA	8R
Cap Trunnion (MT2) - J & EJ	08
Side Lugs (MS2)	09
Center Trunnion (MT4)	10
Side End Angles (MS1)	11
Cap Fixed Clevis (MP1)	12
Side End Lugs (MS7)	15
Sleeve Nut Construction (Universal)	16
Head Square Flange (MF5)	20
Cap Square Flange (MF6)	21
Detachable Cap Clevis (MP2)	22
Cap Fixed Eye (MP3)	32
Detachable Cap Eye (MP4)	42
Spherical Bearing	52
Base Bar (Not NFPA A & EA Only)	60

Piston Rod Threads Type

Small Male (Solid)	1
Intermediate Thread Male (Solid)	2
Female	3
Full Thread Male (Solid)	6
Plain Rod End	7

Piston Rod Diameters

Standard on 1-1/2", 2", 2-1/2"	5/8"	A
Standard on 3-1/4", 4", 5"	1"	B
Oversized on 1-1/2", 2", 2-1/2"	1"	B
Standard on 6", 7", 8"	1-3/8"	C
Oversized on 3-1/4", 4", 5"	1-3/8"	C
Standard on 10"	1-3/4"	D
Oversized on 6", 7", 8"	1-3/4"	D
Standard on 12"	2"	E
Oversized on 10"	2"	E
Oversized on 10", 12"	2-1/2"	F

Cushion in Head	
None	3
Non-Adjustable Cushion	†5
Adjustable Cushion (Position 2)	7
Decel Cushion	9

† Standard with EA & EJ

Cushion in Cap	
None	3
Non-Adjustable Cushion	†5
Adjustable Cushion (Position 2)	7
Decel Cushion	9

† Standard with EA & EJ

Port and Cushion Adjustment Positions
(As viewed from rod end: Port standard position 1, Cushion Adjustment standard position 2.)

NOTE: A Port and a Cushion Adjustment cannot be in the same position.

