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Features

Global Design:

Engineered for ANSI B93.15/NFPA interchangeability with the durability required for heavy-duty applications.

1 Rod Cartridge Assembly:

Machined to maximum bearing support and wear resistance. Unitized, threadless assembly is pilot-fitted into the head on a precision bored diameter to assure true concentricity.

SureSeal Sealing System:

Carefully selected wiper and seal combinations are mated with a hard chrome plated piston rod to deliver exceptional all-around performance and durability.

2 Special Wearbands:

Metal-to-metal contact is eliminated, providing superior wearability, increased load carrying capability, and prolonged cylinder life.

3 Piston Sealing System:

This system offers not only a selection of highly efficient seal materials, but also an extra wide wearband that rides smoothly within the precision-honed cylinder body to provide extended piston seal life.

4 Square Head Tie-Rod Design:

Suitable for nominal working pressure up to 3000 psi [210 Bar].

Full Range of Ports:

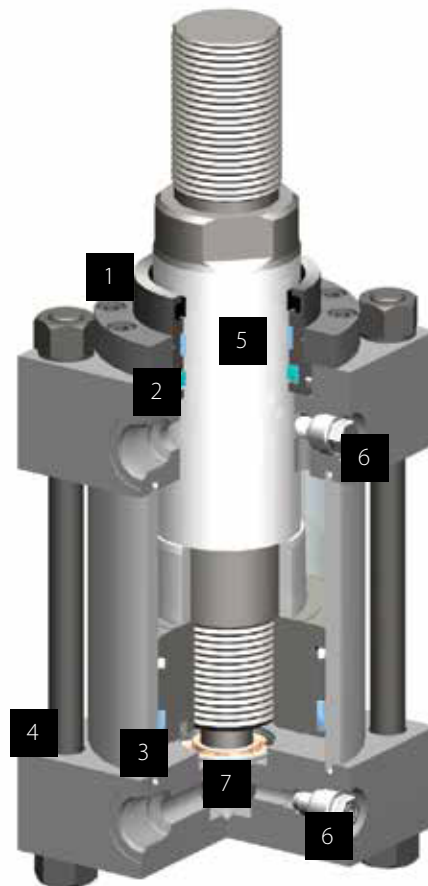
Including SAE, BSP, and metric to ISO 6149 and DIN standard 3852 to provide the broadest piping flexibility.

5 Piston Rod:

Hard chrome plated piston rod in a variety of diameters between 25.4 MM [1"] and 140 MM [5.5"] provides maximum durability and extends seal life. Case hardened rods are standard up to 102 MM [4"], and are an option for 114 MM [4 1/2"] and larger rods.

ISO Standard Grooves:

Rod and piston sealing systems both conform to ISO standard groove specifications.



5 Captive Screws:

Inadvertent removal of cushion screws is prevented, while still allowing a full range of adjustment.

Bore Size Range:

Cylinder bores available between 1.5" (38 MM) and 8" (203 MM).

7 Fully Adjustable Cushioning System:

This design has been engineered to provide the ability to tune the cushion performance for an optimized deceleration profile. Our patented floating ring cushion seal or an alternate ball check design allows maximum acceleration. This excellent acceleration profile translates into faster cycle times and increased machine production.

Attention to Details :

One example is the careful design of the body-to-head joint. The design assures ease of assembly while maintaining tight tolerances for exceptional concentricity between cylinder parts.

How To Order

Standard Cylinders

Danfoss has created an easy system for ordering NZ cylinders, developed to improve our service to you. The Standard model code consists of sixteen alpha-numeric digits which fully describe the most common standard options offered on Series NZ cylinders.

To specify your Series NZ cylinder, review the following pages for a full description of each option available and select the desired code.

This model code system will:

Simplify the re-order process.

Each NZ cylinder is assigned a sixteen digit model code. That code is unique to a particular cylinder description. That way, when you re-order your Series NZ cylinder, you're assured of exactly the same top quality cylinder design.

WARNING

It is the user's responsibility to select the correct system, product or components.

Improve identification.

Every Series NZ cylinder has its sixteen digit model code clearly marked on the product, impression stamped in the metal head or cap. Each sixteen digit code completely describes a specific cylinder. This allows seals and replacement components to be easily identified in the field.

Facilitate communications.

This fully descriptive model code system allows you to work directly with your local Danfoss sales engineer to identify and service your cylinder.

NOTE

See pages 6 and 7 for a summary of model code options.

Custom Cylinders

New Cylinders

Although the model code has been arranged to cover the vast majority of available options, there will be occasions when you require an option which cannot be coded.

When specifying such an option, enter an "X" for the appropriate item in the sixteen digit model code, then describe your requirements. For example, if you have an application which requires a custom thread on the end of the piston rod, enter an "X" for item 7. Then add a full description at the end of the model code, such as "With 3.25 inch total rod projection and M22 x 1,5 thread 1.375 inches long". The cylinder will then be given a unique six digit design number on receipt of order (as explained below).

If more than one of the available options represented in items 15 and 16 are required, add the appropriate codes as a suffix. The cylinder will then be given a unique six digit design number on receipt of order (as explained below).

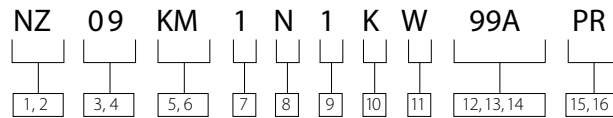
Replacement Cylinders

Every custom Danfoss cylinder is assigned a unique design number. A Custom cylinder will have 22 digits vs. 16 for the standard cylinder. The design number is contained in the last six digits of the model code, and position 17 is always an alpha character. In other words, the design number begins after position 16. When ordering a replacement cylinder, simply give the model code or the six digit design number to your local Danfoss Cylinder Sales representative.

Replacement Parts

Each design number is stored in a quick retrieval computerized storage system. This gives our field sales representatives rapid access to assist you in identifying and specifying genuine Danfoss replacement parts.

Model Codes



1,2 Series

NZ – ANSI B93.15/NFPA Interchangeable Hydraulic cylinder

3,4 Mounting Styles

| | |
|--|-----|
| 01 – Side Lug | MS2 |
| 02 – Side Tapped | MS4 |
| 03 – End Lug Mount | MS7 |
| 04 – Keyed Side Lug | |
| 05 – Keyed Tapped | |
| 07 – Head Rectangular Flange | MF1 |
| 08 – Head Square Flange | MF5 |
| 09 – Head Rectangular Flange | ME5 |
| 10 – Clevis | MP1 |
| 11 – Spherical Bushing | MP5 |
| 12 – Cap Rectangular Flange | MF2 |
| 13 – Cap Square Flange | MF6 |
| 14 – Cap Rectangular Flange | ME6 |
| 15 – Intermediate Trunnion | MT4 |
| 16 – Cap Trunnion | MT2 |
| 17 – Head Trunnion | MT1 |
| 19 – Centerline Lug | MS3 |
| 21 – Cap End Extended Tie Rod | MX2 |
| 22 – Head End Extended Tie Rod | MX3 |
| 23 – Both Ends Extended Tie Rod | MX1 |
| 24 – No Mount | - |
| 25 – Double Rod, Side Lug | - |
| 26 – Double Rod, Tapped | - |
| 27 – Double Rod, End Lug | - |
| 28 – Double Rod, Keyed Side Lug | - |
| 29 – Double Rod, Keyed Tapped | - |
| 31 – Double Rod, Rectangular Flange | - |
| 32 – Double Rod, Square Flange | - |
| 33 – Double Rod, Head Rectangular | - |
| 34 – Double Rod, Intermediate Trunnion | - |
| 35 – Double Rod, Head Trunnion | - |

| | |
|---|-----|
| 37 – Double Rod, Centerline Lug | - |
| 39 – Double Rod, Extended Tie Rod | - |
| 40 – Double Rod, Both Ends Extended Tie Rod | - |
| 41 – Double Rod, No Mount | - |
| 47 – Cap Fixed Eye | MP3 |
| 48 – Detachable Eye | MP4 |
| 50 – Detachable Clevis | MP2 |

5,6 Bore and Rod Size Combinations

| Code | Bore mm[in] | Rod mm[in] |
|------|--------------|--------------|
| CC | 38.1 [1.5] | 15.88 [0.63] |
| CE | 38.1 [1.5] | 25.4 [1] |
| DE | 50.8 [2] | 25.4 [1] |
| DH | 50.8 [2] | 34.93 [1.38] |
| EE | 63.5 [2.5] | 25.4 [1] |
| EH | 63.5 [2.5] | 34.93 [1.38] |
| EL | 63.5 [2.5] | 44.45 [1.75] |
| GH | 82.55 [3.25] | 34.93 [1.38] |
| GL | 82.55 [3.25] | 44.45 [1.75] |
| GM | 82.55 [3.25] | 50.8 [2] |
| HL | 101.6 [4] | 44.45 [1.75] |
| HM | 101.6 [4] | 50.8 [2] |
| HP | 101.6 [4] | 63.5 [2.5] |
| KM | 127 [5] | 50.8 [2] |
| KP | 127 [5] | 63.5 [2.5] |
| KU | 127 [5] | 76.2 [3] |
| KV | 127 [5] | 88.9 [3.5] |
| LP | 152.4 [6] | 63.5 [2.5] |
| LU | 152.4 [6] | 76.2 [3] |
| LV | 152.4 [6] | 88.9 [3.5] |
| LW | 152.4 [6] | 101.6 [4] |
| MU | 177.8 [7] | 77.62 [3] |
| MV | 177.8 [7] | 88.9 [3.5] |
| MW | 177.8 [7] | 101.6 [4] |
| MY | 177.8 [7] | 111.43 [4.5] |
| MZ | 177.8 [7] | 127 [5] |
| NV | 203.2 [8] | 88.9 [3.5] |
| NW | 203.2 [8] | 101.6 [4] |
| NY | 203.2 [8] | 111.43 [4.5] |
| NZ | 203.2 [8] | 127 [5] |
| N1 | 203.2 [8] | 139.7 [5.5] |

7 Rod End Type

| Code | Type |
|------|--|
| 1 | Short Female Metric Thd. |
| 2 | Short Female UN Thd. |
| 5 | Small Male UN Thd. |
| 6 | Plain No Attachment |
| 7 | Small Male Metric Thd. |
| 9 | Intermediate Male UN Thd. |
| 0 | Intermediate Male Metric |
| G | Grooved End |
| K | Extended Small Male UN Thd. |
| L | Extended Small Male Metric Thd. |
| M | Extended Intermediate Male UN Thd. |
| N | Extended Intermediate Male Metric Thd. |
| R | Studded Small Male UN Thd. |

8 Seal Options

N – Normal
 L – Low Friction
 T – High Temperature
 C – Normal with Cast Iron Piston Rings
 R – High Temperature with Cast Iron Piston Rings

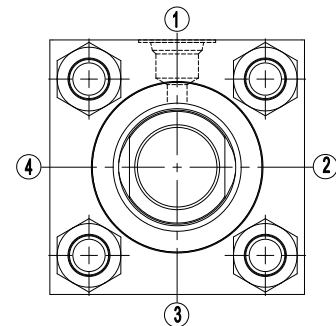
9 Port Options

1 – Standard NPTF*
 2 – Oversize NPTF*
 3 – SAE/UN O-ring
 4 – Oversize SAE/UN
 5 – NFPA Standard SAE/UN
 6 – SAE 4-Bolt Flange
 7 – BSPP
 8 – Oversize BSPP
 9 – Metric
 0 – Oversize Metric
 A – ISO 6149
 B – Oversize ISO 6149
 K – Undersize ISO 6149
 C – Undersize 4-Bolt Flange
 D – Undersize NPTF*
 G – Undersize Metric
 M – Standard Manifold
 * Not recommended for maximum reliability on new applications.

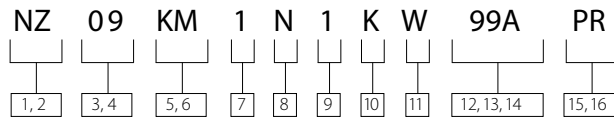
10 Port Locations

Ports are located as shown in Rod end type section when viewing cylinder from head end (mounting end of double rod cylinders).

| Code | Head | Cap |
|------|------|-----|
| K | 1 | 1 |
| L | 1 | 2 |
| M | 1 | 3 |
| N | 1 | 4 |
| P | 2 | 1 |
| R | 2 | 2 |
| S | 2 | 3 |
| T | 2 | 4 |
| U | 3 | 1 |
| V | 3 | 2 |
| W | 3 | 3 |
| Y | 3 | 4 |
| 1 | 4 | 1 |
| 2 | 4 | 2 |
| 3 | 4 | 3 |
| 4 | 4 | 4 |
| 5 | 1 | 5 |
| 6 | 2 | 5 |
| 7 | 3 | 5 |
| 8 | 4 | 5 |



Model Codes



11 Cushion Location

Cushions are located as shown in Rod end type section when viewing cylinder from head end (mounting end of double rod cylinders). “-” in table indicates no cushion.

| Code | Head | Cap |
|------|------|-----|
| A | - | - |
| B | - | 1 |
| C | - | 2 |
| D | - | 3 |
| E | - | 4 |
| F | 1 | - |
| G | 2 | - |
| H | 3 | - |
| J | 4 | - |
| K | 1 | 1 |
| L | 1 | 2 |
| M | 1 | 3 |
| N | 1 | 4 |
| P | 2 | 1 |
| R | 2 | 2 |
| S | 2 | 3 |
| T | 2 | 4 |
| U | 3 | 1 |
| V | 3 | 2 |
| W | 3 | 3 |
| Y | 3 | 4 |
| 1 | 4 | 1 |
| 2 | 4 | 2 |
| 3 | 4 | 3 |
| 4 | 4 | 4 |

Double Rod Cylinders:
 “Head” = “Mounting End”
 “Cap” = Non-mounting End

12,13,14 Cylinder Stroke

Items 12 and 13 indicate stroke length from 00 to 99 inches (0 to 2500mm). Item 14 indicates fraction of an inch per the following codes:

| Code | Fraction |
|------|---------------|
| 0 | 0 |
| 1 | 1/16 (1.6mm) |
| 2 | 1/8 (3.2mm) |
| 3 | 3/16 (4.8mm) |
| 4 | 1/4 (6.4mm) |
| 5 | 5/16 (7.9mm) |
| 6 | 3/8 (9.5mm) |
| 7 | 7/16 (11.1mm) |

Item 14 continued

| Code | Fraction |
|------|----------------|
| 8 | 1/2 (12.6mm) |
| 9 | 9/16 (14.2mm) |
| A | 5/8 (15.9mm) |
| B | 11/16 (17.5mm) |
| C | 3/4 (19.1mm) |
| D | 13/16 (20.6mm) |
| E | 7/8 (22.2mm) |
| F | 15/16 (23.8mm) |

15,16 Extra Rod Projection

Item 15 indicates inches from 0 to 228MM.
 Item 16 indicates fraction of an inch per the following codes:

----- OR -----

Proximity Switch, Gland Drain, Air Bleeder / flats / rod material / Limit switch / stop tube / keyed piston

| Code | No. of A/C Flat* |
|------|------------------|
| F4 | 4 |
| F6 | 6 |

*Only upto 88.9mm[3.50]

Gland Drain

| Code | Head | Cap |
|------|------|-----|
| *GB | - | 1 |
| *GC | - | 2 |
| *GD | - | 3 |
| *GE | - | 4 |
| GF | 1 | - |
| GG | 2 | - |
| GH | 3 | - |
| GJ | 4 | - |
| *GK | 1 | 1 |
| *GG | 1 | 2 |
| *GM | 1 | 3 |
| *GN | 1 | 4 |
| *GP | 2 | 1 |
| *GR | 2 | 2 |
| *GS | 2 | 3 |
| *GT | 2 | 4 |
| *GU | 3 | 1 |
| *GV | 3 | 2 |
| *GW | 3 | 3 |
| *GY | 3 | 4 |
| *G1 | 4 | 1 |
| *G2 | 4 | 2 |
| *G3 | 4 | 3 |
| *G4 | 4 | 4 |

* Codes applicable to Double Rods only

Proximity/Positions

| Code | Head | Cap |
|------|------|-----|
| PB | - | 1 |
| PC | - | 2 |
| PD | - | 3 |
| PE | - | 4 |
| PF | 1 | - |
| PG | 2 | - |
| PH | 3 | - |
| PJ | 4 | - |
| PK | 1 | 1 |
| PL | 1 | 2 |
| PM | 1 | 3 |
| PN | 1 | 4 |
| PP | 2 | 1 |
| PR | 2 | 2 |
| PS | 2 | 3 |
| PT | 2 | 4 |
| PU | 3 | 1 |
| PV | 3 | 2 |
| PW | 3 | 3 |
| PY | 3 | 4 |
| P1 | 4 | 1 |
| P2 | 4 | 2 |
| P3 | 4 | 3 |
| P4 | 4 | 4 |
| **P5 | 1 | 5 |
| **P6 | 2 | 5 |
| **P7 | 3 | 5 |
| **P8 | 4 | 5 |

** Applicable for Single rods, Except 38MM” Bore Cushioned option

Air Bleed/Positions

| Code | Head | Cap |
|------|------|-----|
| HB | - | 1 |
| HC | - | 2 |
| HD | - | 3 |
| HE | - | 4 |
| HF | 1 | - |
| HG | 2 | - |
| HH | 3 | - |
| HJ | 4 | - |
| HK | 1 | 1 |
| HL | 1 | 2 |
| HM | 1 | 3 |
| HN | 1 | 4 |
| HP | 2 | 1 |
| HR | 2 | 2 |
| HS | 2 | 3 |
| HT | 2 | 4 |
| HU | 3 | 1 |
| HV | 3 | 2 |
| HW | 3 | 3 |
| HY | 3 | 4 |
| H1 | 4 | 1 |

| | | |
|----|---|---|
| H2 | 4 | 2 |
| H3 | 4 | 3 |
| H4 | 4 | 4 |

Double Rod Cylinders:
 “Head” = “Mounting End”
 “Cap” = Non-mounting End

Stop Tube/Positions

| Code | Length in MM |
|------|--------------|
| S1 | 25.4 |
| S2 | 50.8 |
| S3 | 76.2 |
| S4 | 101.6 |
| S5 | 127.0 |
| S6 | 152.4 |
| S7 | 177.8 |
| S8 | 203.2 |
| S9 | 228.6 |
| SA | 254.0 |
| SB | 279.4 |
| SC | 304.8 |
| SD | 330.2 |
| SE | 355.6 |
| SF | 381.0 |
| SG | 406.4 |
| SH | 431.8 |
| SJ | 457.2 |
| SK | 482.6 |
| SL | 508.0 |

Keyed Piston to Rod

| Code | Type |
|------|--------------------|
| KG | Grub Screw |
| KS | Weld Piston to rod |

Rod Material Options

| Code | Type |
|-------|----------------------|
| * RP | Thick Chrome Plate |
| RS | Stainless Steel 17-4 |
| ** RT | Stainless Steel 303 |

* 25 Microns Chrome thickness

** Consult factory for pressure Rating

Mounting Styles

Available Mountings

The variety of standard ANSI/NFPA mountings available in the Series NZ gives you a broad selection to match the proper mount to your application. Danfoss offers rigid mounts (including side lug mounts, flange mounts, and extended tie rod mounts) and swivel mounts (including clevis mounts and trunnion mounts). For

custom mounts, enter "XX" for model code item 2, and give a detailed description with drawings. Series NZ cylinders are available in all mounting styles listed.

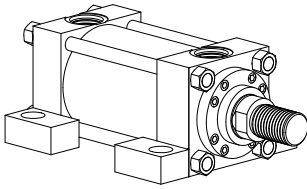
Selecting the Proper Mounting

Just as the cylinder bore must be sized to provide the proper force for an application, a cylinder mounting that can absorb these application forces must also be specified.

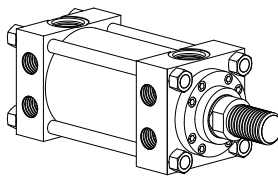
CAUTION
In the mounting information, some mounts have been downrated to minimize deflection.

For applications where the motion is linear and parallel to the cylinder rod motion, a rigid mount is recommended. For curvilinear motion, a swivel mount should be chosen. The specifics of each application dictate the correct mounting style it is the user's responsibility to make the correct determination.

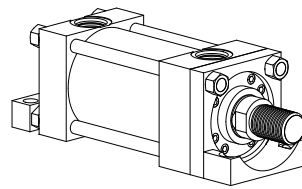
NZ01
Side lug
ANSI MS2



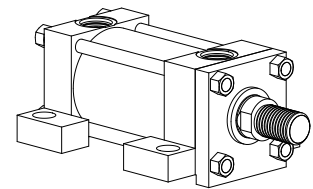
NZ02
Side Tapped
ANSI MS4



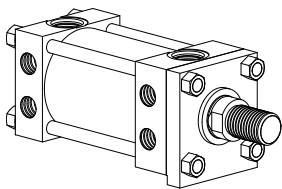
NZ03
End lug
ANSI MS7



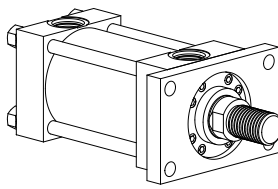
NZ04
Keyed Side Lug



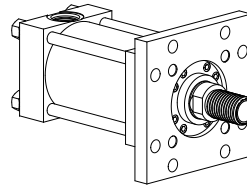
NZ05
Keyed Side Tapped



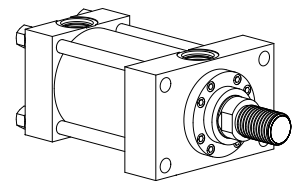
NZ07
Head Rectangular flange
ANSI MF1
(Maximum working pressure 55 bar)



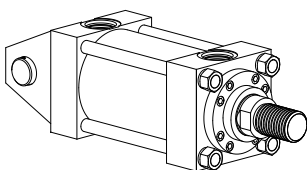
NZ08
Head Square flange
ANSI MF5
(Maximum working pressure 103 bar)



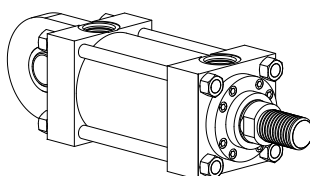
NZ09
Head Rectangular
ANSI ME5



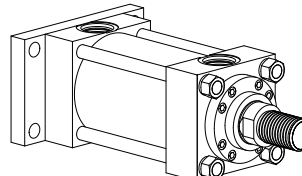
NZ10
Cap Clevis
ANSI MP1



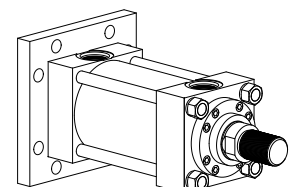
NZ11
Cap Spherical bearing
(Maximum working pressure per Bore on page 28.)



NZ12
Cap Rectangular flange
ANSI MF2
(Maximum working pressure 55 bar)

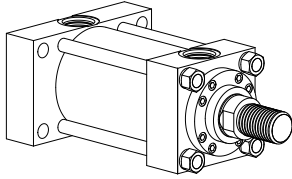


NZ13
Cap Square flange
ANSI MF6
(Maximum working pressure 103 bar)

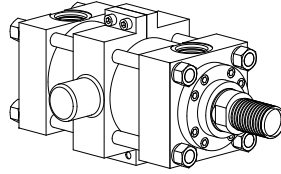


Mounting Styles

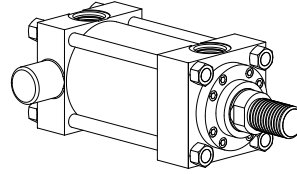
NZ14
Cap Rectangular
ANSI ME6



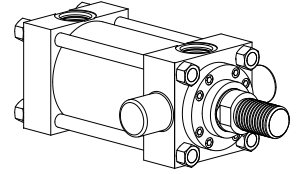
NZ15
Intermediate Trunnion
ANSI MT4



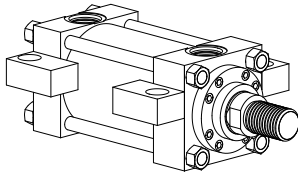
NZ16
Cap Trunnion
ANSI MT2



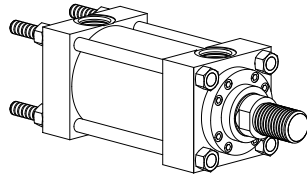
NZ17
Head Trunnion
ANSI MT1



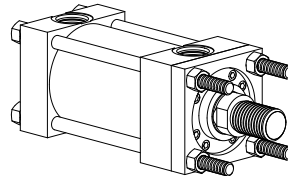
NZ19
Center Lug
ANSI MS3



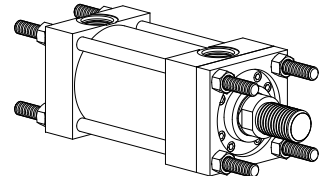
NZ21
Cap Extended Tie rod
ANSI MX2



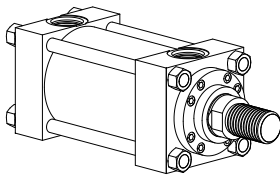
NZ22
Head Extended Tie rod
ANSI MX3



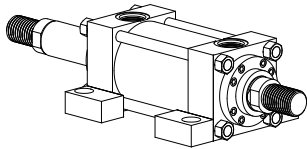
NZ23
Both Ends Extended Tie rod
ANSI MX1



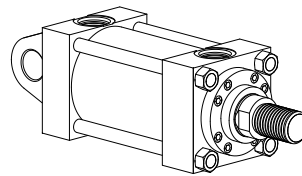
NZ24
No Mount



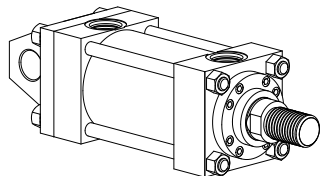
NZ25
Double rod, Side Lug



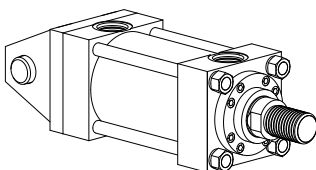
NZ47
Cap Fixed Eye
ANSI MP3



NZ48
Cap Detachable Eye
ANSI MP4

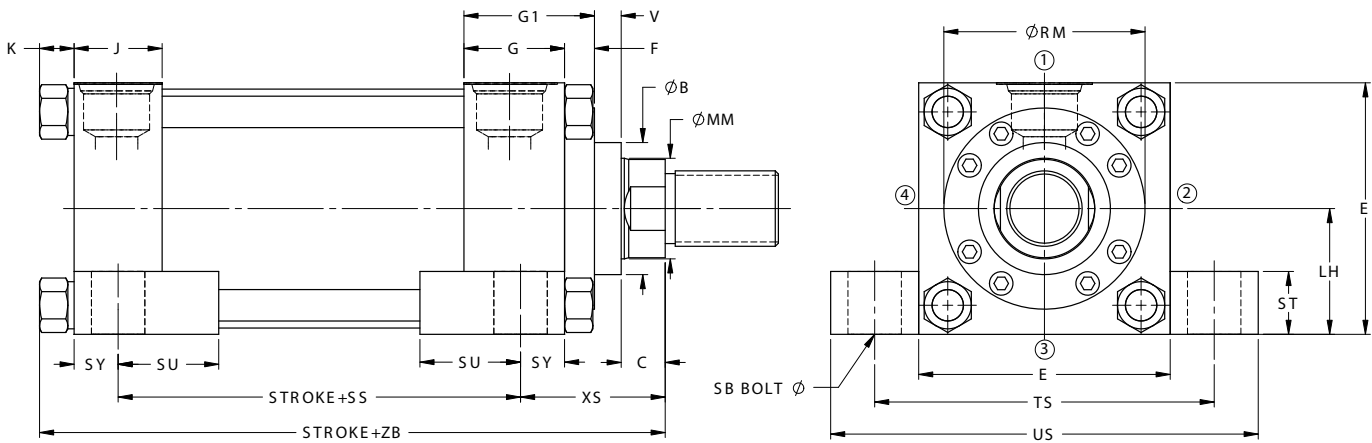


NZ50
Cap Detachable Clevis
ANSI MP2



Mounting Style and Installation

Dimensions –NZ01 Side Lug Mount



| Bore mm[in] | Rod Dia mm[in] | B (+.00/ -.05) | C | E | G | J | F | V | RM | LH ± 0.05 | SB |
|-----------------|-------------------|-------------------|------|-------|------|------|------|------|-------|------------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 | - | 31.57 | 9.7 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 | - | 31.57 | 9.7 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 | - | 37.92 | 12.7 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 | - | 37.92 | 12.7 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 9.7 | 66.8 | 44.27 | 19.1 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 | - | 44.27 | 19.1 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 | - | 44.27 | 19.1 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 10.4 | 82.6 | 56.97 | 19.1 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - | 56.97 | 19.1 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - | 56.97 | 19.1 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 98.6 | 63.32 | 25.4 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 | 63.32 | 25.4 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 | 63.32 | 25.4 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 | 82.37 | 25.4 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 | 82.37 | 25.4 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 133.4 | 82.37 | 25.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 143.0 | 82.37 | 25.4 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 15.0 | 16.8 | 112.8 | 95.07 | 31.8 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 133.4 | 95.07 | 31.8 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 143.0 | 95.07 | 31.8 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 9.7 | 163.6 | 95.07 | 31.8 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 133.4 | 107.77 | 38.1 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 143.0 | 107.77 | 38.1 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 163.6 | 107.77 | 38.1 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 181.1 | 107.77 | 38.1 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 192.0 | 107.77 | 38.1 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 18.3 | 13.5 | 143.0 | 120.47 | 38.1 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 163.6 | 120.47 | 38.1 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 181.1 | 120.47 | 38.1 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 192.0 | 120.47 | 38.1 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 212.9 | 120.47 | 38.1 |

+ Plus Stroke

† For Port and Switch at position 2 & 4 please refer page 71, Mounting Holes requires counter Bore

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ01 Side Lug Mount

Side lug mounts are for moving loads along a flat guided surface as in a carriage along rails. The mounting surface should be flat and parallel to the centerline of the piston rod. The load should be guided to traverse along the centerline of the piston rod.

The frame on which the cylinder is mounted **must** be sufficiently rigid to resist bending moments.

NOTE

Limit operating pressure to 2320 Psi [160 Bar] for

minimum deflection on 6, 7 and 8 inch bores. For strokes in excess of 762 MM [30"], see "Stop tube selection" on page 77.

WARNING

With unsupported loads, the bearing must absorb more force. For these applications, the larger available rod is recommended, and stop tubes should be considered.

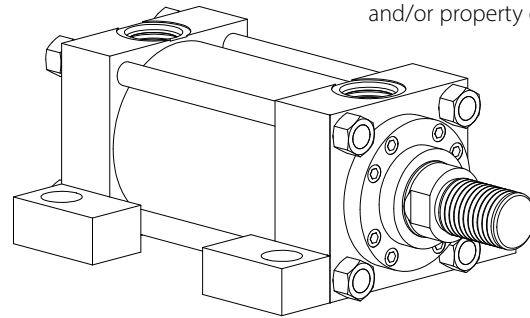
Use high tensile socket head cap screws or hex head bolts tightened to the manufacturer's recommended torque.

For high shock applications, dowel pins or shear keys should be incorporated in the mounting design. For these applications, consider a keyed side lug mount, NZ04.

For severe side load applications, consult your local Danfoss sales engineer.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



| Bore mm[in] | Rod Dia mm[in] | SS+ | ST | SU | SY | TS | US | XS | ZB+ Max | Piston Thick. | K Max |
|-----------------|-------------------|-------|------|------|------|-------|-------|------|------------|------------------|----------|
| 38.1 [1.5] | 15.88 [0.63] | 98.6 | 12.7 | 23.1 | 9.7 | 82.6 | 101.6 | 35.1 | 155.7 | 35.1 | 10.4 |
| | 25.4 [1] | 98.6 | 12.7 | 23.1 | 9.7 | 82.6 | 101.6 | 44.5 | 165.1 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 92.2 | 19.1 | 31.5 | 12.7 | 101.6 | 1270 | 478 | 169.2 | 35.1 | 14.0 |
| | 34.93 [1.38] | 92.2 | 19.1 | 31.5 | 12.7 | 101.6 | 1270 | 54.1 | 175.8 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 85.9 | 25.4 | 39.6 | 175 | 124.0 | 158.8 | 52.3 | 172.2 | 38.1 | 14.0 |
| | 34.93 [1.38] | 85.9 | 25.4 | 39.6 | 175 | 124.0 | 158.8 | 58.7 | 178.8 | 38.1 | 14.0 |
| | 44.45 [1.75] | 85.9 | 25.4 | 39.6 | 175 | 124.0 | 158.8 | 65.0 | 184.9 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 104.9 | 25.4 | 39.4 | 175 | 149.4 | 184.2 | 58.7 | 200.9 | 44.5 | 17.0 |
| | 44.45 [1.75] | 104.9 | 25.4 | 39.4 | 175 | 149.4 | 184.2 | 65.0 | 207.3 | 44.5 | 17.0 |
| | 50.8 [2] | 104.9 | 25.4 | 39.4 | 175 | 149.4 | 184.2 | 68.3 | 210.6 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 101.6 | 31.8 | 50.8 | 22.4 | 171.5 | 215.9 | 69.9 | 213.4 | 50.8 | 19.8 |
| | 50.8 [2] | 101.6 | 31.8 | 50.8 | 22.4 | 171.5 | 215.9 | 73.2 | 216.7 | 50.8 | 19.8 |
| | 63.5 [2.5] | 101.6 | 31.8 | 50.8 | 22.4 | 171.5 | 215.9 | 79.5 | 223.0 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 114.3 | 31.8 | 50.8 | 22.4 | 209.6 | 254.0 | 73.2 | 236.7 | 63.5 | 23.4 |
| | 63.5 [2.5] | 114.3 | 31.8 | 50.8 | 22.4 | 209.6 | 254.0 | 79.5 | 243.1 | 63.5 | 23.4 |
| | 76.2 [3] | 114.3 | 31.8 | 50.8 | 22.4 | 209.6 | 254.0 | 79.5 | 242.8 | 63.5 | 23.4 |
| | 88.9 [3.5] | 114.3 | 31.8 | 50.8 | 22.4 | 209.6 | 254.0 | 79.5 | 242.8 | 63.5 | 23.4 |
| 152.4[6] | 63.5 [2.5] | 130.3 | 38.1 | 63.5 | 28.7 | 247.7 | 304.8 | 85.9 | 274.3 | 73.2 | 26.2 |
| | 76.2 [3] | 130.3 | 38.1 | 63.5 | 28.7 | 247.7 | 304.8 | 85.9 | 274.3 | 73.2 | 26.2 |
| | 88.9 [3.5] | 130.3 | 38.1 | 63.5 | 28.7 | 247.7 | 304.8 | 85.9 | 274.3 | 73.2 | 26.2 |
| | 101.6 [4] | 130.3 | 38.1 | 63.5 | 28.7 | 247.7 | 304.8 | 85.9 | 274.3 | 73.2 | 26.2 |
| 177.8[7] | 76.2 [3] | 146.1 | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 92.2 | 307.1 | 76.2 | 29.7 |
| | 88.9 [3.5] | 146.1 | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 92.2 | 307.1 | 76.2 | 29.7 |
| | 101.6 [4] | 146.1 | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 92.2 | 307.1 | 76.2 | 29.7 |
| | 114.3 [4.5] | 146.1 | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 92.2 | 307.1 | 76.2 | 29.7 |
| | 127 [5] | 146.1 | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 92.2 | 307.1 | 76.2 | 29.7 |
| 203.2[8] | 88.9 [3.5] | 171.5 | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 92.2 | 334.8 | 88.9 | 32.0 |
| | 101.6 [4] | 171.5 | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 92.2 | 334.8 | 88.9 | 32.0 |
| | 114.3 [4.5] | 171.5 | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 92.2 | 334.8 | 88.9 | 32.0 |
| | 127 [5] | 171.5 | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 92.2 | 334.8 | 88.9 | 32.0 |
| | 139.7 [5.5] | 171.5 | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 92.2 | 334.8 | 88.9 | 32.0 |

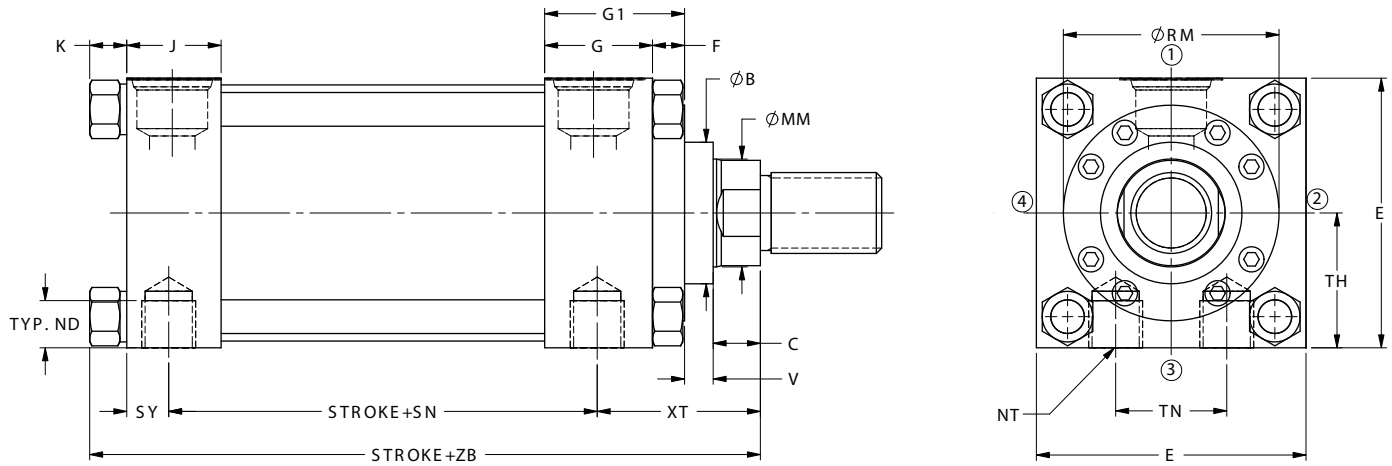
+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions – NZ02 Side Tapped

Mounts ANSI MS4



| Bore mm[in] | Rod Dia mm[in] | B (+.00/ -.05) | C | E | G | J | F | V | RM | TH ±.05 |
|-----------------|-------------------|-------------------|------|-------|------|------|------|------|-------|------------|
| 38.10 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 | - | 31.57 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 | - | 31.57 |
| 50.80 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 | - | 37.92 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 | - | 37.92 |
| 63.50 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 9.7 | 66.8 | 44.27 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 | - | 44.27 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 | - | 44.27 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 10.4 | 82.6 | 56.97 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - | 56.97 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - | 56.97 |
| 101.60 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 98.6 | 63.32 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 | 63.32 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 | 63.32 |
| 127.00 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 | 82.37 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 | 82.37 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 133.4 | 82.37 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 143.0 | 82.37 |
| 152.40 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 15.0 | 16.8 | 112.8 | 95.07 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 133.4 | 95.07 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 143.0 | 95.07 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 9.7 | 163.6 | 95.07 |
| 177.80 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 133.4 | 107.77 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 143.0 | 107.77 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 163.6 | 107.77 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 181.1 | 107.77 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 192.0 | 107.77 |
| 203.20 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 18.3 | 13.5 | 143.0 | 120.47 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 163.6 | 120.47 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 181.1 | 120.47 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 192.0 | 120.47 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 212.9 | 120.40 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ02 Side Tapped Mounts ANSI MS4

Tapped mounts are for moving loads along a flat guided surface as in a carriage along rails.

The mounting surface should be flat and parallel to the centerline of the piston rod.

The load should be guided to traverse along the centerline of the piston rod.

The frame on which the cylinder is mounted **must** be sufficiently rigid to resist bending moments.

NOTE

For strokes in excess of 762 MM [30"], see "Stop tube selection" on page 77.

WARNING

With unsupported loads, the bearing must absorb more force. For these applications, the larger available rod is recommended, and stop tubes should be considered.

Use high tensile socket head cap screws or hex head bolts tightened to the manufacturer's recommended torque.

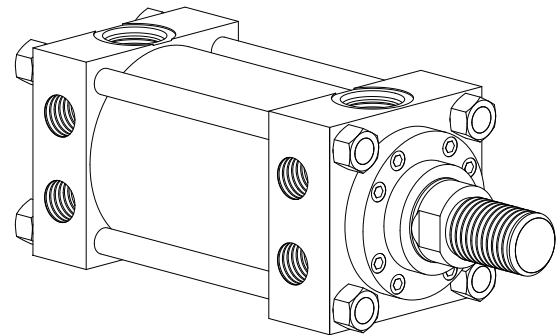
For high shock applications, dowel pins or shear keys

should be incorporated in the mounting design. For these applications, consider a keyed side lug mount, NZ04.

For severe side load applications, consult your local Danfoss sales engineer.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



| Bore mm[in] | Rod Dia mm[in] | ND | NT (Tap) | SN+ | TN | SY | XT | ZB+ Max | Piston Thick. | K |
|-----------------|-------------------|------|-------------|-------|-------|------|-------|------------|------------------|------|
| 38.10 [1.5] | 15.88 [0.63] | 14.2 | 0.375-16 | 73.2 | 19.1 | 19.1 | 50.8 | 153.4 | 35.1 | 10.4 |
| | 25.4 [1] | 12.7 | 0.375-16 | 73.2 | 19.1 | 19.1 | 60.5 | 162.8 | 35.1 | 10.4 |
| 50.80 [2] | 25.4 [1] | 12.7 | 0.500-13 | 73.2 | 23.9 | 19.1 | 60.5 | 166.6 | 35.1 | 14.0 |
| | 34.93 [1.38] | 12.7 | 0.500-13 | 73.2 | 23.9 | 19.1 | 66.8 | 173.2 | 35.1 | 14.0 |
| 63.50 [2.5] | 25.4 [1] | 20.6 | 0.625-11 | 76.2 | 33.3 | 19.1 | 60.5 | 169.7 | 38.1 | 14.0 |
| | 34.93 [1.38] | 15.5 | 0.625-11 | 76.2 | 33.3 | 19.1 | 66.8 | 176.3 | 38.1 | 14.0 |
| | 44.45 [1.75] | 15.5 | 0.625-11 | 76.2 | 33.3 | 19.1 | 73.2 | 182.4 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 19.1 | 0.750-10 | 88.9 | 38.1 | 22.4 | 69.9 | 198.1 | 44.5 | 17.0 |
| | 44.45 [1.75] | 19.1 | 0.750-10 | 88.9 | 38.1 | 22.4 | 76.2 | 204.5 | 44.5 | 17.0 |
| | 50.8 [2] | 19.1 | 0.750-10 | 88.9 | 38.1 | 22.4 | 79.5 | 207.8 | 44.5 | 17.0 |
| 101.60 [4] | 44.45 [1.75] | 25.4 | 1.000-8 | 95.3 | 52.3 | 22.4 | 76.2 | 213.4 | 50.8 | 19.8 |
| | 50.8 [2] | 19.1 | 1.000-8 | 95.3 | 52.3 | 22.4 | 79.5 | 216.7 | 50.8 | 19.8 |
| | 63.5 [2.5] | 17.5 | 1.000-8 | 95.3 | 52.3 | 22.4 | 85.9 | 223.0 | 50.8 | 19.8 |
| 127.00 [5] | 50.8 [2] | 28.7 | 1.000-8 | 108.0 | 74.7 | 22.4 | 79.5 | 233.2 | 63.5 | 23.4 |
| | 63.5 [2.5] | 28.7 | 1.000-8 | 108.0 | 74.7 | 22.4 | 85.9 | 239.5 | 63.5 | 23.4 |
| | 76.2 [3] | 28.7 | 1.000-8 | 108.0 | 74.7 | 22.4 | 85.9 | 239.3 | 63.5 | 23.4 |
| | 88.9 [3.5] | 25.4 | 1.000-8 | 108.0 | 74.7 | 22.4 | 85.9 | 239.3 | 63.5 | 23.4 |
| 152.40 [6] | 63.5 [2.5] | 33.3 | 1.250-7 | 130.3 | 84.1 | 25.4 | 88.9 | 270.8 | 73.2 | 26.2 |
| | 76.2 [3] | 33.3 | 1.250-7 | 130.3 | 84.1 | 25.4 | 88.9 | 274.3 | 73.2 | 26.2 |
| | 88.9 [3.5] | 33.3 | 1.250-7 | 130.3 | 84.1 | 25.4 | 88.9 | 274.3 | 73.2 | 26.2 |
| | 101.6 [4] | 31.8 | 1.250-7 | 130.3 | 84.1 | 25.4 | 88.9 | 274.6 | 73.2 | 26.2 |
| 177.80 [7] | 76.2 [3] | 54.1 | 1.500-6 | 149.4 | 95.3 | 26.9 | 96.8 | 302.8 | 76.2 | 29.7 |
| | 88.9 [3.5] | 54.1 | 1.500-6 | 149.4 | 95.3 | 26.9 | 96.8 | 302.8 | 76.2 | 29.7 |
| | 101.6 [4] | 44.5 | 1.500-6 | 149.4 | 95.3 | 26.9 | 96.8 | 302.8 | 76.2 | 29.7 |
| | 114.3 [4.5] | 38.1 | 1.500-6 | 149.4 | 95.3 | 26.9 | 96.8 | 302.8 | 76.2 | 29.7 |
| | 127 [5] | 28.7 | 1.500-6 | 149.4 | 95.3 | 26.9 | 96.8 | 302.8 | 76.2 | 29.7 |
| 203.20 [8] | 88.9 [3.5] | 39.6 | 1.500-6 | 168.4 | 108.0 | 30.2 | 100.1 | 330.2 | 88.9 | 32.0 |
| | 101.6 [4] | 39.6 | 1.500-6 | 168.4 | 108.0 | 30.2 | 100.1 | 330.2 | 88.9 | 32.0 |
| | 114.3 [4.5] | 39.6 | 1.500-6 | 168.4 | 108.0 | 30.2 | 100.1 | 330.2 | 88.9 | 32.0 |
| | 127 [5] | 39.6 | 1.500-6 | 168.4 | 108.0 | 30.2 | 100.1 | 330.2 | 88.9 | 32.0 |
| | 139.7 [5.5] | 35.1 | 1.500-6 | 168.4 | 108.0 | 30.2 | 100.1 | 330.2 | 88.9 | 32.0 |

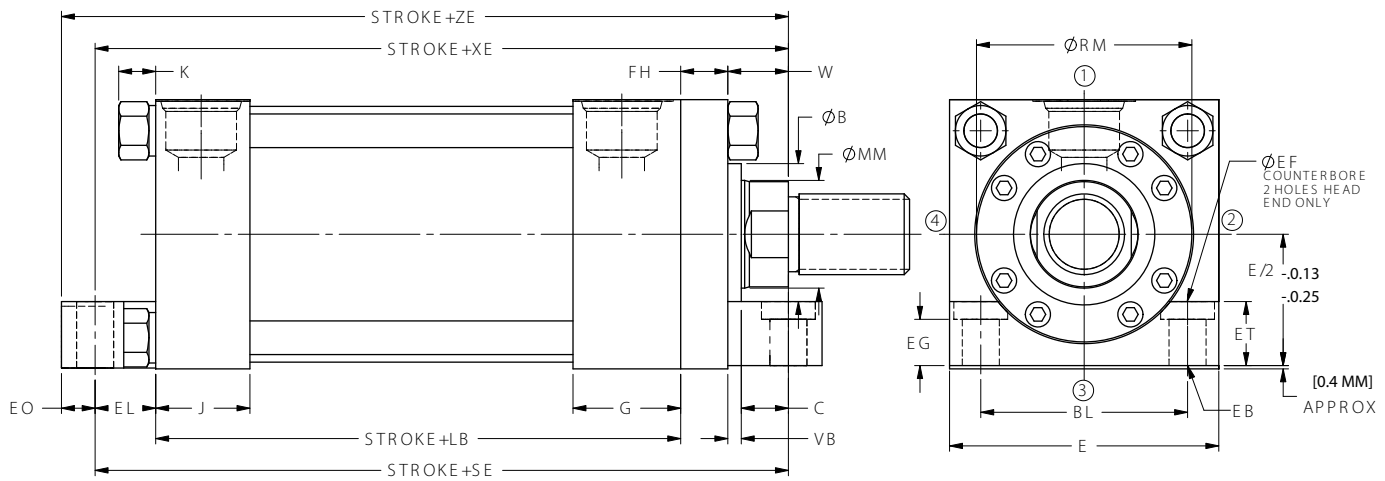
+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions – NZ03 End Lug

Mounts ANSI MS7



| Bore mm[in] | Rod Dia mm[in] | B (+0.00/- 0.05) | C | E | G | J | FH | VB | W | EB | SE+ |
|-----------------|-------------------|------------------------|------|-------|------|------|------|------|------|------|-------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 | 16.0 | 9.7 | 171.5 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 | 25.4 | 9.7 | 171.5 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 | 19.1 | 12.7 | 181.1 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 | 25.7 | 12.7 | 181.1 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 16.0 | 6.4 | 19.1 | 12.7 | 184.2 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 | 25.7 | 12.7 | 184.2 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 | 31.8 | 12.7 | 184.2 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 19.1 | 6.4 | 22.4 | 16.0 | 215.9 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | 28.7 | 16.0 | 215.9 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | 32.0 | 16.0 | 215.9 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 22.4 | 6.4 | 25.4 | 16.0 | 225.6 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 22.4 | 6.4 | 28.7 | 16.0 | 225.6 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 22.4 | 9.7 | 35.1 | 16.0 | 225.6 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 22.4 | 6.4 | 28.7 | 22.4 | 257.3 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 22.4 | 9.7 | 35.1 | 22.4 | 257.3 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 22.4 | 9.7 | 35.1 | 22.4 | 257.3 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 22.4 | 9.7 | 35.1 | 22.4 | 257.3 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 25.4 | 6.4 | 31.8 | 25.4 | 298.5 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 25.4 | 6.4 | 31.8 | 25.4 | 298.5 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 25.4 | 6.4 | 31.8 | 25.4 | 298.5 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 25.4 | 6.4 | 31.8 | 25.4 | 298.5 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 25.4 | 6.4 | 31.8 | 28.7 | 333.5 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 25.4 | 6.4 | 31.8 | 28.7 | 333.5 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 25.4 | 6.4 | 31.8 | 28.7 | 333.5 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 25.4 | 6.4 | 31.8 | 28.7 | 333.5 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 25.4 | 6.4 | 31.8 | 28.7 | 333.5 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 25.4 | 6.4 | 31.8 | 31.8 | 368.3 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 25.4 | 6.4 | 31.8 | 31.8 | 368.3 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 25.4 | 6.4 | 31.8 | 31.8 | 368.3 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 25.4 | 6.4 | 31.8 | 31.8 | 368.3 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 25.4 | 6.4 | 31.8 | 31.8 | 368.3 |

+ Plus Stroke

† Port at Position 3 not available on 38.1mm, 50.8mm, 63.5mm, 82.5mm and 101.6mm

All other dimensions shown in mm

Mounting Style and Installation Dimensions – NZ03 End Lug Mounts ANSI MS7

End lug mounts are for moving loads along a flat guided surface as in a carriage along rails.

The mounting surface should be flat and parallel to the centerline of the piston rod.

The load should be guided to traverse along the centerline of the piston rod.

The frame on which the cylinder is mounted **must** be sufficiently rigid to resist bending moments.

NOTE

Port at position 3 not available on 38.1mm, 50.8mm, 63.5mm, 82.5mm and 101.6mm diameter bores.

WARNING

With unsupported loads, the bearing must absorb more force.

For these applications, the larger available rod is recommended, and stop tubes should be considered.

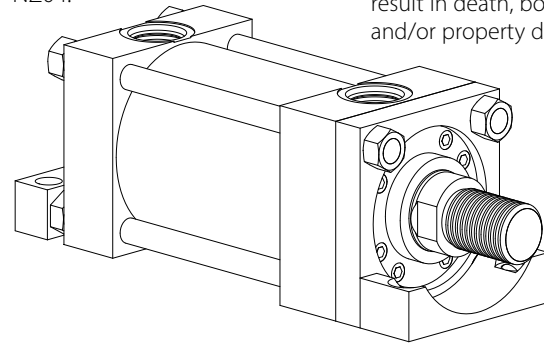
Use high tensile socket head cap screws or hex head bolts tightened to the manufacturer's recommended torque.

For high shock applications, dowel pins or shear keys should be incorporated in the mounting design. For these applications, consider a keyed side lug mount, NZ04.

For severe side load applications, consult your local Danfoss sales engineer.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.

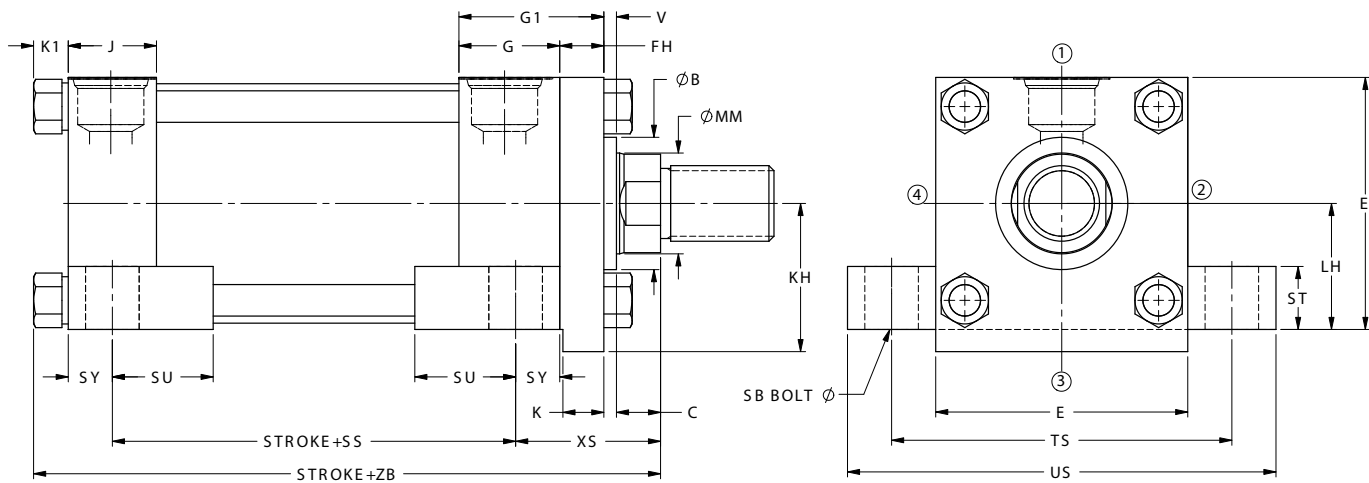


| Bore mm[in] | Rod Dia mm[in] | ET | EG | EL | EF | BL | XE+ | LB+ | E0 | ZE+ Max | Piston Thick. | K |
|-----------------|-------------------|------|------|------|------|-------|-------|-------|------|------------|------------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 22.4 | 175 | 22.4 | 16.0 | 41.4 | 165.4 | 1176 | 9.7 | 175.0 | 35.1 | 10.4 |
| | 25.4 [1] | 22.4 | 175 | 22.4 | 16.0 | 41.4 | 174.8 | 1176 | 9.7 | 184.4 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 25.4 | 19.1 | 23.9 | 20.6 | 52.6 | 176.3 | 1176 | 12.7 | 189.0 | 35.1 | 14.0 |
| | 34.93 [1.38] | 25.4 | 19.1 | 23.9 | 20.6 | 52.6 | 182.9 | 1176 | 12.7 | 195.6 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 25.4 | 19.1 | 23.9 | 20.6 | 65.0 | 179.6 | 120.7 | 12.7 | 192.3 | 38.1 | 14.0 |
| | 34.93 [1.38] | 25.4 | 19.1 | 23.9 | 20.6 | 65.0 | 186.2 | 120.7 | 12.7 | 198.9 | 38.1 | 14.0 |
| | 44.45 [1.75] | 25.4 | 19.1 | 23.9 | 20.6 | 65.0 | 192.3 | 120.7 | 12.7 | 205.0 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 31.8 | 26.9 | 28.7 | 25.4 | 83.1 | 209.8 | 139.7 | 16.0 | 225.6 | 44.5 | 17.0 |
| | 44.45 [1.75] | 31.8 | 26.9 | 28.7 | 25.4 | 83.1 | 216.2 | 139.7 | 16.0 | 231.9 | 44.5 | 17.0 |
| | 50.8 [2] | 31.8 | 26.9 | 28.7 | 25.4 | 83.1 | 219.5 | 139.7 | 16.0 | 235.2 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 31.8 | 22.4 | 28.7 | 25.4 | 97.5 | 222.3 | 146.1 | 16.0 | 238.3 | 50.8 | 19.8 |
| | 50.8 [2] | 31.8 | 22.4 | 28.7 | 25.4 | 97.5 | 225.6 | 146.1 | 16.0 | 241.6 | 50.8 | 19.8 |
| | 63.5 [2.5] | 31.8 | 22.4 | 28.7 | 25.4 | 97.5 | 231.9 | 146.1 | 16.0 | 247.9 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 38.1 | 31.8 | 38.1 | 35.1 | 125.7 | 247.9 | 158.8 | 19.1 | 267.0 | 63.5 | 23.4 |
| | 63.5 [2.5] | 38.1 | 31.8 | 38.1 | 35.1 | 125.7 | 254.3 | 158.8 | 19.1 | 273.3 | 63.5 | 23.4 |
| | 76.2 [3] | 38.1 | 31.8 | 38.1 | 35.1 | 125.7 | 254.3 | 158.8 | 19.1 | 273.3 | 63.5 | 23.4 |
| | 88.9 [3.5] | 38.1 | 31.8 | 38.1 | 35.1 | 125.7 | 254.3 | 158.8 | 19.1 | 273.3 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 44.5 | 38.1 | 42.9 | 41.4 | 145.8 | 287.3 | 187.5 | 22.4 | 309.6 | 73.2 | 26.2 |
| | 76.2 [3] | 44.5 | 38.1 | 42.9 | 41.4 | 145.8 | 287.3 | 187.5 | 22.4 | 309.6 | 73.2 | 26.2 |
| | 88.9 [3.5] | 44.5 | 38.1 | 42.9 | 41.4 | 145.8 | 287.3 | 187.5 | 22.4 | 309.6 | 73.2 | 26.2 |
| | 101.6 [4] | 44.5 | 38.1 | 42.9 | 41.4 | 145.8 | 287.3 | 187.5 | 22.4 | 309.6 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 50.8 | 38.1 | 46.0 | 41.4 | 167.1 | 319.0 | 215.9 | 25.4 | 344.4 | 76.2 | 29.7 |
| | 88.9 [3.5] | 50.8 | 38.1 | 46.0 | 41.4 | 167.1 | 319.0 | 215.9 | 25.4 | 344.4 | 76.2 | 29.7 |
| | 101.6 [4] | 50.8 | 38.1 | 46.0 | 41.4 | 167.1 | 319.0 | 215.9 | 25.4 | 344.4 | 76.2 | 29.7 |
| | 114.3 [4.5] | 50.8 | 38.1 | 46.0 | 41.4 | 167.1 | 319.0 | 215.9 | 25.4 | 344.4 | 76.2 | 29.7 |
| | 127 [5] | 50.8 | 38.1 | 46.0 | 41.4 | 167.1 | 319.0 | 215.9 | 25.4 | 344.4 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 50.8 | 44.5 | 50.8 | 53.1 | 190.8 | 349.3 | 241.3 | 28.7 | 378.0 | 88.9 | 32.0 |
| | 101.6 [4] | 50.8 | 44.5 | 50.8 | 53.1 | 190.8 | 349.3 | 241.3 | 28.7 | 378.0 | 88.9 | 32.0 |
| | 114.3 [4.5] | 50.8 | 44.5 | 50.8 | 53.1 | 190.8 | 349.3 | 241.3 | 28.7 | 378.0 | 88.9 | 32.0 |
| | 127 [5] | 50.8 | 44.5 | 50.8 | 53.1 | 190.8 | 349.3 | 241.3 | 28.7 | 378.0 | 88.9 | 32.0 |
| | 139.7 [5.5] | 50.8 | 44.5 | 50.8 | 53.1 | 190.8 | 349.3 | 241.3 | 28.7 | 378.0 | 88.9 | 32.0 |

+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation Dimensions –NZ04 Keyed Side Lug Mounts



| Bore mm[in] | Rod Dia mm[in] | B (+0.00/- 0.05) | C | E | G1 | J | FH | K (+0.00 / -0.05) | Max KH | LH ±0.05 | V |
|-----------------|-------------------|------------------------|------|-------|-------|------|------|-------------------------|-----------|-------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 54.1 | 38.1 | 9.7 | 9.19 | 36.6 | 31.57 | 6.4 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 54.1 | 38.1 | 9.7 | 9.19 | 36.3 | 31.57 | 12.7 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 60.5 | 38.1 | 16.0 | 15.54 | 46.0 | 37.92 | 6.4 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 60.5 | 38.1 | 16.0 | 15.54 | 46.0 | 37.92 | 9.7 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 60.5 | 38.1 | 16.0 | 15.54 | 52.3 | 44.27 | 6.4 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 60.5 | 38.1 | 16.0 | 15.54 | 52.3 | 44.27 | 9.7 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 60.5 | 38.1 | 16.0 | 15.54 | 52.3 | 44.27 | 12.7 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 69.9 | 44.5 | 19.1 | 18.72 | 66.8 | 56.97 | 6.4 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 69.9 | 44.5 | 19.1 | 18.72 | 66.8 | 56.97 | 9.7 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 69.9 | 44.5 | 19.1 | 18.72 | 66.8 | 56.97 | 9.7 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 73.2 | 44.5 | 22.4 | 21.89 | 74.7 | 63.32 | 6.4 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 73.2 | 44.5 | 22.4 | 21.89 | 74.7 | 63.32 | 6.4 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 73.2 | 44.5 | 22.4 | 21.89 | 74.7 | 63.32 | 9.7 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 73.2 | 44.5 | 22.4 | 21.89 | 93.5 | 82.37 | 6.4 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 73.2 | 44.5 | 22.4 | 21.89 | 93.5 | 82.37 | 9.7 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 73.2 | 44.5 | 22.4 | 21.89 | 93.5 | 82.37 | 9.7 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 73.2 | 44.5 | 22.4 | 21.89 | 93.5 | 82.37 | 9.7 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 82.6 | 57.2 | 25.4 | 25.07 | 108.0 | 95.07 | 6.4 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 82.6 | 57.2 | 25.4 | 25.07 | 108.0 | 95.07 | 6.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 82.6 | 57.2 | 25.4 | 25.07 | 108.0 | 95.07 | 6.4 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 82.6 | 57.2 | 25.4 | 25.07 | 108.0 | 95.07 | 6.4 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 25.07 | 120.7 | 107.77 | 6.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 25.07 | 120.7 | 107.77 | 6.4 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 25.07 | 120.7 | 107.77 | 6.4 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 25.07 | 120.7 | 107.77 | 6.4 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 25.07 | 120.7 | 107.77 | 6.4 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 25.07 | 133.4 | 120.47 | 6.4 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 25.07 | 133.4 | 120.47 | 6.4 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 25.07 | 133.4 | 120.47 | 6.4 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 25.07 | 133.4 | 120.47 | 6.4 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 25.07 | 133.4 | 120.47 | 6.4 |

+ Plus Stroke

† For Port and Switch at position 2 & 4 please refer page 71, Mounting Holes requires counter Bore

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ04 Keyed Side Lug Mounts

Keyed side lug mounts are for moving loads along a flat guided surface as in a carriage along rails.

The mounting surface should be flat and parallel to the centerline of the piston rod.

The load should be guided to traverse along the centerline of the piston rod.

The frame on which the cylinder is mounted **must** be sufficiently rigid to resist bending moments.

NOTE

For strokes in excess of 762mm [30"], see "Stop tube selection" on page 77.

WARNING

With unsupported loads, the bearing must absorb more force.

For these applications, the larger available rod is recommended, and stop tubes should be considered.

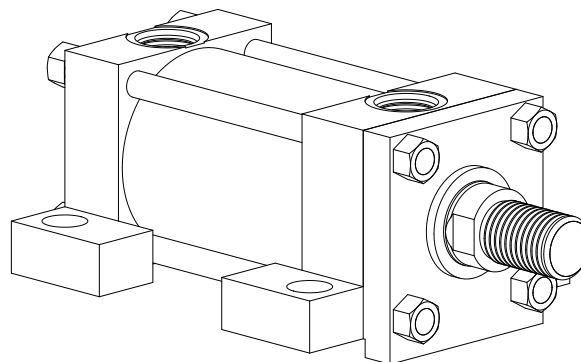
Use high tensile socket head cap screws or hex head bolts tightened to the

manufacturer's recommended torque.

For severe side load applications, consult your local Danfoss sales engineer.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



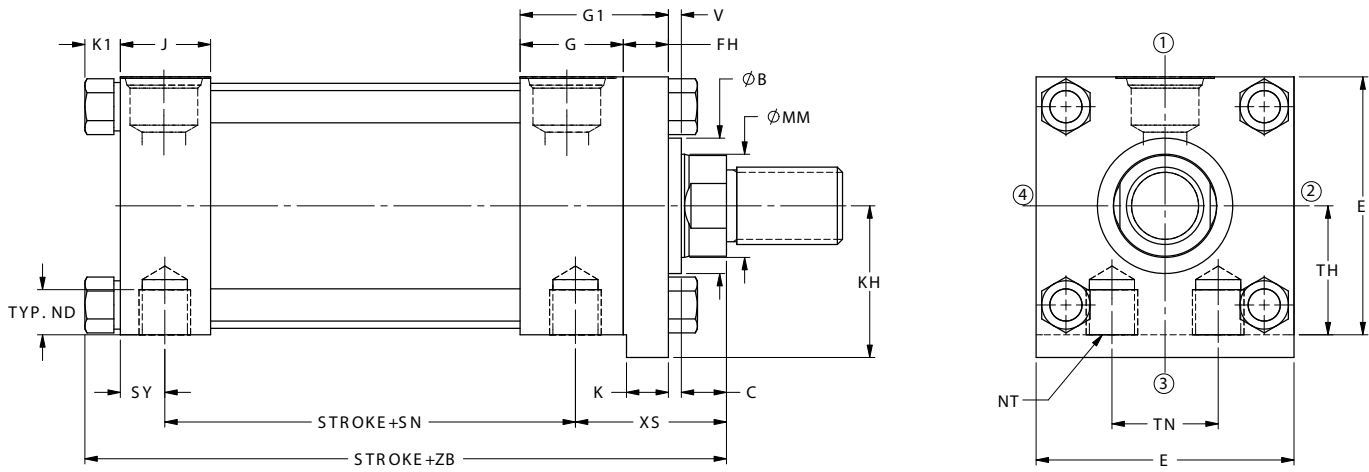
| Bore mm[in] | Rod Dia mm[in] | SB | SS+ | ST | SU | SY | TS | US | XS | ZB+ Max | Piston Thick. | K1 |
|--------------|----------------|------|-------|------|------|------|-------|-------|------|---------|---------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 9.7 | 98.6 | 12.7 | 23.1 | 9.7 | 82.6 | 101.6 | 35.1 | 153.4 | 35.1 | 10.4 |
| | 25.4 [1] | 9.7 | 98.6 | 12.7 | 23.1 | 9.7 | 82.6 | 101.6 | 44.5 | 162.8 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 12.7 | 92.2 | 19.1 | 31.5 | 12.7 | 101.6 | 1270 | 478 | 166.6 | 35.1 | 14.0 |
| | 34.93 [1.38] | 12.7 | 92.2 | 19.1 | 31.5 | 12.7 | 101.6 | 1270 | 54.1 | 173.2 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 19.1 | 85.9 | 25.4 | 39.6 | 17.5 | 124.0 | 158.8 | 52.3 | 169.7 | 38.1 | 14.0 |
| | 34.93 [1.38] | 19.1 | 85.9 | 25.4 | 39.6 | 17.5 | 124.0 | 158.8 | 58.7 | 176.3 | 38.1 | 14.0 |
| | 44.45 [1.75] | 19.1 | 85.9 | 25.4 | 39.6 | 17.5 | 124.0 | 158.8 | 65.0 | 182.4 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 19.1 | 104.9 | 25.4 | 39.4 | 17.5 | 149.4 | 184.2 | 58.7 | 198.1 | 44.5 | 17.0 |
| | 44.45 [1.75] | 19.1 | 104.9 | 25.4 | 39.4 | 17.5 | 149.4 | 184.2 | 65.0 | 204.5 | 44.5 | 17.0 |
| | 50.8 [2] | 19.1 | 104.9 | 25.4 | 39.4 | 17.5 | 149.4 | 184.2 | 68.3 | 207.8 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 25.4 | 101.6 | 31.8 | 50.8 | 22.4 | 171.5 | 215.9 | 69.9 | 213.4 | 50.8 | 19.8 |
| | 50.8 [2] | 25.4 | 101.6 | 31.8 | 50.8 | 22.4 | 171.5 | 215.9 | 73.2 | 216.7 | 50.8 | 19.8 |
| | 63.5 [2.5] | 25.4 | 101.6 | 31.8 | 50.8 | 22.4 | 171.5 | 215.9 | 79.5 | 223.0 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 25.4 | 114.3 | 31.8 | 50.8 | 22.4 | 209.6 | 254.0 | 73.2 | 233.2 | 63.5 | 23.4 |
| | 63.5 [2.5] | 25.4 | 114.3 | 31.8 | 50.8 | 22.4 | 209.6 | 254.0 | 79.5 | 239.5 | 63.5 | 23.4 |
| | 76.2 [3] | 25.4 | 114.3 | 31.8 | 50.8 | 22.4 | 209.6 | 254.0 | 79.5 | 239.5 | 63.5 | 23.4 |
| | 88.9 [3.5] | 25.4 | 114.3 | 31.8 | 50.8 | 22.4 | 209.6 | 254.0 | 79.5 | 239.5 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 31.8 | 130.3 | 38.1 | 63.5 | 28.7 | 247.7 | 304.8 | 85.9 | 270.8 | 73.2 | 26.2 |
| | 76.2 [3] | 31.8 | 130.3 | 38.1 | 63.5 | 28.7 | 247.7 | 304.8 | 85.9 | 270.8 | 73.2 | 26.2 |
| | 88.9 [3.5] | 31.8 | 130.3 | 38.1 | 63.5 | 28.7 | 247.7 | 304.8 | 85.9 | 270.8 | 73.2 | 26.2 |
| | 101.6 [4] | 31.8 | 130.3 | 38.1 | 63.5 | 28.7 | 247.7 | 304.8 | 85.9 | 270.8 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 38.1 | 146.1 | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 92.2 | 302.8 | 76.2 | 29.7 |
| | 88.9 [3.5] | 38.1 | 146.1 | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 92.2 | 302.8 | 76.2 | 29.7 |
| | 101.6 [4] | 38.1 | 146.1 | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 92.2 | 302.8 | 76.2 | 29.7 |
| | 114.3 [4.5] | 38.1 | 146.1 | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 92.2 | 302.8 | 76.2 | 29.7 |
| | 127 [5] | 38.1 | 146.1 | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 92.2 | 302.8 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 38.1 | 171.5 | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 92.2 | 330.2 | 88.9 | 32.0 |
| | 101.6 [4] | 38.1 | 171.5 | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 92.2 | 330.2 | 88.9 | 32.0 |
| | 114.3 [4.5] | 38.1 | 171.5 | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 92.2 | 330.2 | 88.9 | 32.0 |
| | 127 [5] | 38.1 | 171.5 | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 92.2 | 330.2 | 88.9 | 32.0 |
| | 139.7 [5.5] | 38.1 | 171.5 | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 92.2 | 330.2 | 88.9 | 32.0 |

+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions – NZ05 Keyed Tapped Lug Mounts



| Bore mm[in] | Rod mm[in] | B (+.00/ -.05) | C | E | G1 | J | FH | K (+.00 / -.05) | Max KH | V | TH ±.05 |
|-----------------|---------------|-------------------|------|-------|-------|------|------|-----------------------|-----------|------|------------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 54.1 | 38.1 | 9.7 | 9.19 | 36.6 | 6.4 | 31.57 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 54.1 | 38.1 | 9.7 | 9.19 | 36.6 | 12.7 | 31.57 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 60.5 | 38.1 | 16.0 | 15.54 | 46.0 | 6.4 | 37.92 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 60.5 | 38.1 | 16.0 | 15.54 | 46.0 | 9.7 | 37.92 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 60.5 | 38.1 | 16.0 | 15.54 | 52.3 | 6.4 | 44.27 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 60.5 | 38.1 | 16.0 | 15.54 | 52.3 | 9.7 | 44.27 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 60.5 | 38.1 | 16.0 | 15.54 | 52.3 | 12.7 | 44.27 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 69.9 | 44.5 | 19.1 | 18.72 | 66.8 | 6.4 | 56.97 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 69.9 | 44.5 | 19.1 | 18.72 | 66.8 | 9.7 | 56.97 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 69.9 | 44.5 | 19.1 | 18.72 | 66.8 | 9.7 | 56.97 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 73.2 | 44.5 | 22.4 | 21.89 | 74.7 | 6.4 | 63.32 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 73.2 | 44.5 | 22.4 | 21.89 | 74.7 | 6.4 | 63.32 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 73.2 | 44.5 | 22.4 | 21.89 | 74.7 | 9.7 | 63.32 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 73.2 | 44.5 | 22.4 | 21.89 | 93.5 | 6.4 | 82.37 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 73.2 | 44.5 | 22.4 | 21.89 | 93.5 | 9.7 | 82.37 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 73.2 | 44.5 | 22.4 | 21.89 | 93.5 | 9.7 | 82.37 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 73.2 | 44.5 | 22.4 | 21.89 | 93.5 | 9.7 | 82.37 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 82.6 | 57.2 | 25.4 | 25.07 | 108.0 | 6.4 | 95.07 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 82.6 | 57.2 | 25.4 | 25.07 | 108.0 | 6.4 | 95.07 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 82.6 | 57.2 | 25.4 | 25.07 | 108.0 | 6.4 | 95.07 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 82.6 | 57.2 | 25.4 | 25.07 | 108.0 | 6.4 | 95.07 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 25.07 | 120.7 | 6.4 | 107.77 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 25.07 | 120.7 | 6.4 | 107.77 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 25.07 | 120.7 | 6.4 | 107.77 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 25.07 | 120.7 | 6.4 | 107.77 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 25.07 | 120.7 | 6.4 | 107.77 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 25.07 | 133.4 | 6.4 | 120.47 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 25.07 | 133.4 | 9.7 | 120.47 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 25.07 | 133.4 | 9.7 | 120.47 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 25.07 | 133.4 | 9.7 | 120.47 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 25.07 | 133.4 | 9.7 | 120.47 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ05 Keyed Tapped Lug Mounts

Tapped mounts are for moving loads along a flat guided surface as in a carriage along rails.

The mounting surface should be flat and parallel to the centerline of the piston rod.

The load should be guided to traverse along the centerline of the piston rod.

The frame on which the cylinder is mounted **must** be sufficiently rigid to resist bending moments.

NOTE

For strokes in excess of 762mm [30"], see "Stop tube selection" on page 77.

WARNING

With unsupported loads, the bearing must absorb more force.

For these applications, the larger available rod is recommended, and stop tubes should be considered.

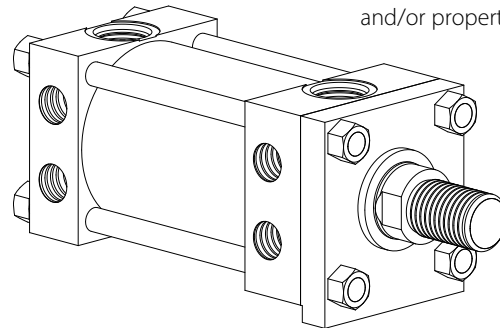
Use high tensile socket head cap screws or hex head bolts tightened to the manufacturer's recommended torque.

For high shock applications, dowel pins or shear keys should be incorporated in the mounting design. For these applications, consider a keyed side lug mount, NZ04.

For severe side load applications, consult your local Danfoss sales engineer.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



| Bore mm[in] | Rod mm[in] | ND | NT (Tap) | SN+ | TN | SY | XS | ZB+ Max | Piston Thick. | K1 |
|-----------------|---------------|-------|-------------|-------|-------|------|-------|------------|------------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 14.22 | 0.375-16 | 73.2 | 19.1 | 19.1 | 50.8 | 153.4 | 35.1 | 10.4 |
| | 25.4 [1] | 12.70 | 0.375-16 | 73.2 | 19.1 | 19.1 | 60.5 | 162.8 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 12.70 | 0.500-13 | 73.2 | 23.9 | 19.1 | 60.5 | 166.6 | 35.1 | 14.0 |
| | 34.93 [1.38] | 12.70 | 0.500-13 | 73.2 | 23.9 | 19.1 | 66.8 | 173.2 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 20.57 | 0.625-11 | 76.2 | 33.3 | 19.1 | 60.5 | 169.7 | 38.1 | 14.0 |
| | 34.93 [1.38] | 15.49 | 0.625-11 | 76.2 | 33.3 | 19.1 | 66.8 | 176.3 | 38.1 | 14.0 |
| | 44.45 [1.75] | 15.49 | 0.625-11 | 76.2 | 33.3 | 19.1 | 73.2 | 182.4 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 19.05 | 0.750-10 | 88.9 | 38.1 | 22.4 | 69.9 | 198.1 | 44.5 | 17.0 |
| | 44.45 [1.75] | 19.05 | 0.750-10 | 88.9 | 38.1 | 22.4 | 76.2 | 204.5 | 44.5 | 17.0 |
| | 50.8 [2] | 19.05 | 0.750-10 | 88.9 | 38.1 | 22.4 | 79.5 | 207.8 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 25.40 | 1.000-8 | 95.3 | 52.3 | 22.4 | 76.2 | 213.4 | 50.8 | 19.8 |
| | 50.8 [2] | 19.05 | 1.000-8 | 95.3 | 52.3 | 22.4 | 79.5 | 216.7 | 50.8 | 19.8 |
| | 63.5 [2.5] | 17.53 | 1.000-8 | 95.3 | 52.3 | 22.4 | 85.9 | 223.0 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 28.70 | 1.000-8 | 108.0 | 74.7 | 22.4 | 79.5 | 233.2 | 63.5 | 23.4 |
| | 63.5 [2.5] | 28.70 | 1.000-8 | 108.0 | 74.7 | 22.4 | 85.9 | 239.5 | 63.5 | 23.4 |
| | 76.2 [3] | 28.70 | 1.000-8 | 108.0 | 74.7 | 22.4 | 85.9 | 239.5 | 63.5 | 23.4 |
| | 88.9 [3.5] | 25.40 | 1.000-8 | 108.0 | 74.7 | 22.4 | 85.9 | 239.5 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 33.27 | 1.250-7 | 130.3 | 84.1 | 25.4 | 88.9 | 270.8 | 73.2 | 26.2 |
| | 76.2 [3] | 33.27 | 1.250-7 | 130.3 | 84.1 | 25.4 | 88.9 | 270.8 | 73.2 | 26.2 |
| | 88.9 [3.5] | 33.27 | 1.250-7 | 130.3 | 84.1 | 25.4 | 88.9 | 270.8 | 73.2 | 26.2 |
| | 101.6 [4] | 31.75 | 1.250-7 | 130.3 | 84.1 | 25.4 | 88.9 | 270.8 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 54.10 | 1.500-6 | 149.4 | 95.3 | 26.9 | 96.8 | 302.8 | 76.2 | 29.7 |
| | 88.9 [3.5] | 54.10 | 1.500-6 | 149.4 | 95.3 | 26.9 | 96.8 | 302.8 | 76.2 | 29.7 |
| | 101.6 [4] | 44.45 | 1.500-6 | 149.4 | 95.3 | 26.9 | 96.8 | 302.8 | 76.2 | 29.7 |
| | 114.3 [4.5] | 38.10 | 1.500-6 | 149.4 | 95.3 | 26.9 | 96.8 | 302.8 | 76.2 | 29.7 |
| | 127 [5] | 28.70 | 1.500-6 | 149.4 | 95.3 | 26.9 | 96.8 | 302.8 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 39.62 | 1.500-6 | 168.4 | 108.0 | 30.2 | 100.1 | 330.2 | 88.9 | 32.0 |
| | 101.6 [4] | 39.62 | 1.500-6 | 168.4 | 108.0 | 30.2 | 100.1 | 330.2 | 88.9 | 32.0 |
| | 114.3 [4.5] | 39.62 | 1.500-6 | 168.4 | 108.0 | 30.2 | 100.1 | 330.2 | 88.9 | 32.0 |
| | 127 [5] | 39.62 | 1.500-6 | 168.4 | 108.0 | 30.2 | 100.1 | 330.2 | 88.9 | 32.0 |
| | 139.7 [5.5] | 35.05 | 1.500-6 | 168.4 | 108.0 | 30.2 | 100.1 | 330.2 | 88.9 | 32.0 |

+ Plus Stroke

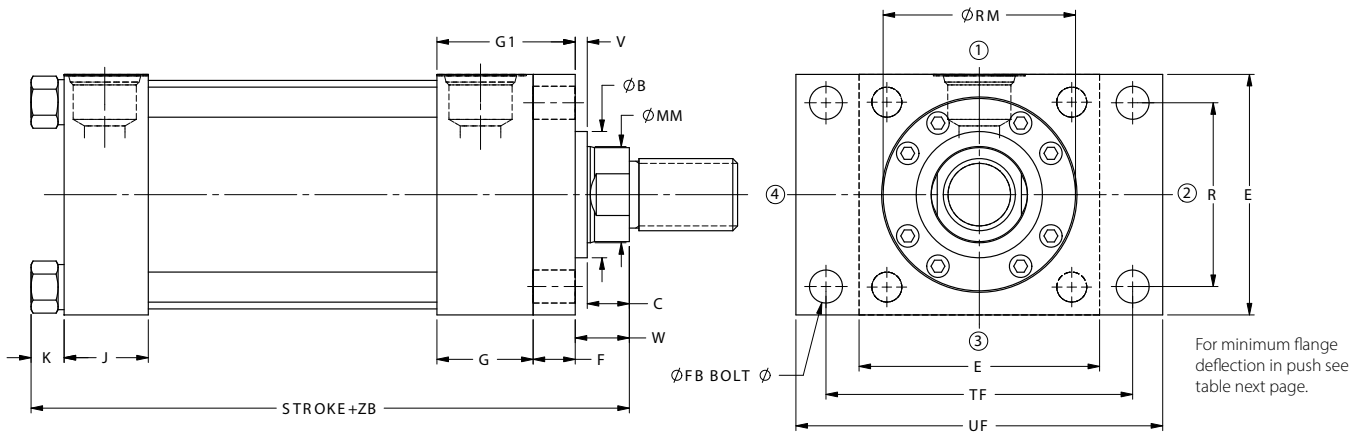
See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions –NZ07 Head

Rectangular Flange Mount

ANSI MF1



| Bore mm[in] | Rod mm[in] | B (+.00/ -.05) | C | E | G1 | J | F | V | RM | W |
|----------------|---------------|-------------------|--------|-------|-------|-------|------|------|-------|-------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 54.1 | 38.1 | 9.7 | 6.4 | - | 16.0 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 54.1 | 38.1 | 9.7 | 12.7 | - | 25.4 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 60.5 | 38.1 | 16.0 | 6.4 | - | 19.1 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 60.5 | 38.1 | 16.0 | 9.7 | - | 25.4 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 60.5 | 38.1 | 16.0 | 6.4 | 66.8 | 19.1 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 60.5 | 38.1 | 16.0 | 9.7 | - | 25.4 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 60.5 | 38.1 | 16.0 | 12.7 | - | 31.8 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 69.9 | 44.5 | 19.1 | 6.4 | 82.6 | 22.4 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 69.9 | 44.5 | 19.1 | 9.7 | - | 28.7 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 69.9 | 44.5 | 19.1 | 9.7 | - | 31.8 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 73.2 | 44.5 | 22.4 | 6.4 | 98.6 | 25.4 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 73.2 | 44.5 | 22.4 | 6.4 | 101.6 | 28.7 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 73.2 | 44.5 | 22.4 | 9.7 | 112.8 | 35.1 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 73.2 | 44.5 | 22.4 | 6.4 | 101.6 | 28.7 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 73.2 | 44.5 | 22.4 | 9.7 | 112.8 | 35.1 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 73.2 | 44.5 | 22.4 | 9.7 | 133.4 | 35.1 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 73.2 | 44.5 | 22.4 | 9.7 | 143.0 | 35.1 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 82.6 | 57.2 | 25.4 | 6.4 | 112.8 | 31.8 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 82.6 | 57.2 | 25.4 | 6.4 | 133.4 | 31.8 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 82.6 | 57.2 | 25.4 | 6.4 | 143.0 | 31.8 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 82.6 | 57.2 | 25.4 | 6.4 | 163.6 | 31.8 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 6.4 | 133.4 | 31.8 |
| 177.8 [7] | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 6.4 | 143.0 | 31.8 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 6.4 | 163.6 | 31.8 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 6.4 | 181.1 | 31.8 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 6.4 | 192.0 | 31.8 |
| | 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 6.4 | 143.0 |
| 203.2 [8] | 101.6 [4] | 120.62 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 6.4 | 163.6 | 31.8 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 6.4 | 181.1 | 31.8 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 6.4 | 192.0 | 31.8 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 6.4 | 212.9 | 31.8 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ07 Head Rectangular Flange Mount ANSI MF1

These mounts are ideal for straight line force transfer applications in which the cylinder is used in tension (pulling). The mounting surface should be flat, and the rod end cartridge should be piloted into it.

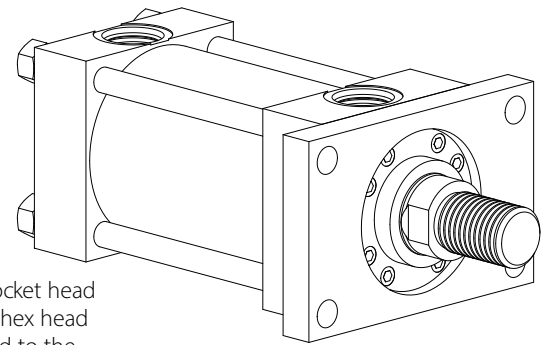
The frame on which the cylinder is mounted **must** be sufficiently rigid to resist bending moments.

NOTE

For strokes in excess of 762mm [30"], see "Stop tube selection" on page 77.

The force of the load should be perpendicular to the mounting surface and parallel to the centerline of the piston rod. For eccentric loads, the larger of the two available rods in each bore size is recommended. Stop tubes should also be considered.

The head rectangular mounts (NZ09) is recommended for heavy duty applications. Refer the table for recommended pressure ratings in push stroke. Use



high tensile socket head cap screws or hex head bolts tightened to the manufacturer's recommended torque.

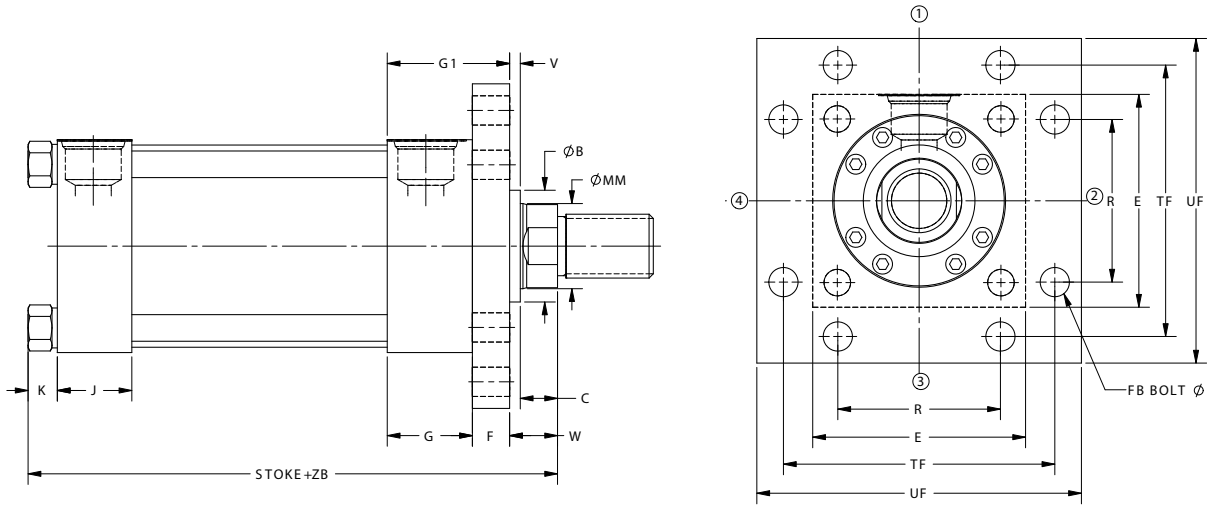
| Bore Size MM | Recommended Pressure Rating in Push Stroke |
|-----------------|---|
| 38.1 to 101.6 | 210 Bar |
| 127 | 99 Bar |
| 152.4 | 99 Bar |
| 177.8 | 72 Bar |
| 203.2 | 55 Bar |

| Bore mm[in] | Rod Dia mm[in] | FB | R | TF | UF | ZB+ Max | Piston Thick. | K |
|----------------|-------------------|------|-------|-------|-------|------------|------------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 9.7 | 41.4 | 874 | 108.0 | 153.4 | 35.1 | 10.4 |
| | 25.4 [1] | 9.7 | 41.4 | 874 | 108.0 | 162.8 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 12.7 | 52.1 | 104.9 | 130.3 | 166.6 | 35.1 | 14.0 |
| | 34.93 [1.38] | 12.7 | 52.1 | 104.9 | 130.3 | 173.2 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 12.7 | 64.8 | 1176 | 143.0 | 169.7 | 38.1 | 14.0 |
| | 34.93 [1.38] | 12.7 | 64.8 | 1176 | 143.0 | 176.3 | 38.1 | 14.0 |
| | 44.45 [1.75] | 12.7 | 64.8 | 1176 | 143.0 | 182.4 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 16.0 | 82.6 | 149.4 | 181.1 | 198.1 | 44.5 | 17.0 |
| | 44.45 [1.75] | 16.0 | 82.6 | 149.4 | 181.1 | 204.5 | 44.5 | 17.0 |
| | 50.8 [2] | 16.0 | 82.6 | 149.4 | 181.1 | 207.8 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 16.0 | 97.0 | 162.1 | 193.8 | 213.4 | 50.8 | 19.8 |
| | 50.8 [2] | 16.0 | 97.0 | 162.1 | 193.8 | 216.7 | 50.8 | 19.8 |
| | 63.5 [2.5] | 16.0 | 97.0 | 162.1 | 193.8 | 223.0 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 22.4 | 125.7 | 208.0 | 247.7 | 233.2 | 63.5 | 23.4 |
| | 63.5 [2.5] | 22.4 | 125.7 | 208.0 | 247.7 | 239.5 | 63.5 | 23.4 |
| | 76.2 [3] | 22.4 | 125.7 | 208.0 | 247.7 | 239.5 | 63.5 | 23.4 |
| | 88.9 [3.5] | 22.4 | 125.7 | 208.0 | 247.7 | 239.5 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 25.4 | 145.5 | 239.8 | 285.8 | 270.8 | 73.2 | 26.2 |
| | 76.2 [3] | 25.4 | 145.5 | 239.8 | 285.8 | 270.8 | 73.2 | 26.2 |
| | 88.9 [3.5] | 25.4 | 145.5 | 239.8 | 285.8 | 270.8 | 73.2 | 26.2 |
| | 101.6 [4] | 25.4 | 145.5 | 239.8 | 285.8 | 270.8 | 73.2 | 26.2 |
| | 114.3 [4.5] | 25.4 | 145.5 | 239.8 | 285.8 | 270.8 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 28.7 | 167.1 | 270.0 | 320.8 | 302.8 | 76.2 | 29.7 |
| | 88.9 [3.5] | 28.7 | 167.1 | 270.0 | 320.8 | 302.8 | 76.2 | 29.7 |
| | 101.6 [4] | 28.7 | 167.1 | 270.0 | 320.8 | 302.8 | 76.2 | 29.7 |
| | 114.3 [4.5] | 28.7 | 167.1 | 270.0 | 320.8 | 302.8 | 76.2 | 29.7 |
| | 127 [5] | 28.7 | 167.1 | 270.0 | 320.8 | 302.8 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 31.8 | 190.5 | 300.0 | 355.6 | 330.2 | 88.9 | 32.0 |
| | 101.6 [4] | 31.8 | 190.5 | 300.0 | 355.6 | 330.2 | 88.9 | 32.0 |
| | 114.3 [4.5] | 31.8 | 190.5 | 300.0 | 355.6 | 330.2 | 88.9 | 32.0 |
| | 127 [5] | 31.8 | 190.5 | 300.0 | 355.6 | 330.2 | 88.9 | 32.0 |
| | 139.7 [5.5] | 31.8 | 190.5 | 300.0 | 355.6 | 330.2 | 88.9 | 32.0 |

+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation Dimensions – NZ08 Head Square Flange Mount ANSI MF5



| Bore mm[in] | Rod Dia mm[in] | B (+.00/ -.05) | C | E | G1 | J | F | V |
|----------------|-------------------|-------------------|------|-------|-------|------|------|------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 54.1 | 38.1 | 9.7 | 6.4 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 54.1 | 38.1 | 9.7 | 12.7 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 60.5 | 38.1 | 16.0 | 6.4 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 60.5 | 38.1 | 16.0 | 9.7 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 60.5 | 38.1 | 16.0 | 6.4 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 60.5 | 38.1 | 16.0 | 9.7 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 60.5 | 38.1 | 16.0 | 12.7 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 69.9 | 44.5 | 19.1 | 6.4 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 69.9 | 44.5 | 19.1 | 9.7 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 69.9 | 44.5 | 19.1 | 9.7 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 73.2 | 44.5 | 22.4 | 6.4 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 73.2 | 44.5 | 22.4 | 6.4 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 73.2 | 44.5 | 22.4 | 9.7 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 73.2 | 44.5 | 22.4 | 6.4 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 73.2 | 44.5 | 22.4 | 9.7 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 73.2 | 44.5 | 22.4 | 9.7 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 73.2 | 44.5 | 22.4 | 9.7 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 82.6 | 57.2 | 25.4 | 6.4 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 82.6 | 57.2 | 25.4 | 6.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 82.6 | 57.2 | 25.4 | 6.4 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 82.6 | 57.2 | 25.4 | 6.4 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 6.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 6.4 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 6.4 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 6.4 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 95.3 | 69.9 | 25.4 | 6.4 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 6.4 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 6.4 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 6.4 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 6.4 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 101.6 | 76.2 | 25.4 | 6.4 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions – NZ08 Head Square Flange Mount ANSI MF5

These mounts are ideal for straight line force transfer applications in which the cylinder is used in tension (pulling).

The mounting surface should be flat, and the rod end cartridge should be piloted into it.

The frame on which the cylinder is mounted **must** be sufficiently rigid to resist bending moments.

NOTE

For strokes in excess of 762mm [30"], see "Stop tube selection" on page 77.

WARNING

The force of the load should be perpendicular to the mounting surface and parallel to the centerline of the piston rod. For eccentric loads, the larger of the two available rods in each bore size is recommended. Stop tubes should also be considered.

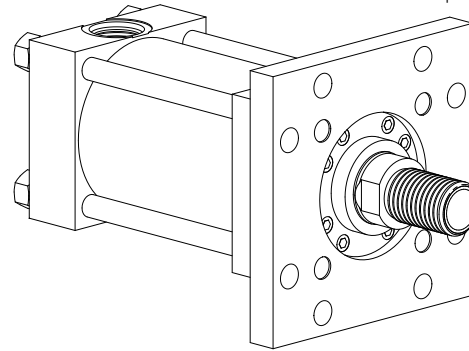
The head rectangular mounts (NZ09) is recommended for heavy duty applications.

Use high tensile socket head cap screws or hex head bolts tightened to the

manufacturer's recommended torque.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



| Bore mm[in] | Rod Dia mm[in] | W | FB | R | TF | UF | ZB+ Max | Piston Thick. | K |
|--------------|----------------|------|------|-------|-------|-------|---------|---------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 16.0 | 9.7 | 41.4 | 874 | 108.0 | 153.4 | 35.1 | 10.4 |
| | 25.4 [1] | 25.4 | 9.7 | 41.4 | 874 | 108.0 | 162.8 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 19.1 | 12.7 | 52.1 | 104.9 | 130.3 | 166.6 | 35.1 | 14.0 |
| | 34.93 [1.38] | 25.4 | 12.7 | 52.1 | 104.9 | 130.3 | 173.2 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 19.1 | 12.7 | 64.8 | 1176 | 143.0 | 169.7 | 38.1 | 14.0 |
| | 34.93 [1.38] | 25.4 | 12.7 | 64.8 | 1176 | 143.0 | 176.3 | 38.1 | 14.0 |
| | 44.45 [1.75] | 31.8 | 12.7 | 64.8 | 1176 | 143.0 | 182.4 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 22.4 | 16.0 | 82.6 | 149.4 | 181.1 | 198.1 | 44.5 | 17.0 |
| | 44.45 [1.75] | 28.7 | 16.0 | 82.6 | 149.4 | 181.1 | 204.5 | 44.5 | 17.0 |
| | 50.8 [2] | 31.8 | 16.0 | 82.6 | 149.4 | 181.1 | 207.8 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 25.4 | 16.0 | 97.0 | 162.1 | 193.8 | 213.4 | 50.8 | 19.8 |
| | 50.8 [2] | 28.7 | 16.0 | 97.0 | 162.1 | 193.8 | 216.7 | 50.8 | 19.8 |
| | 63.5 [2.5] | 35.1 | 16.0 | 97.0 | 162.1 | 193.8 | 223.0 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 28.7 | 22.4 | 125.7 | 208.0 | 247.7 | 233.2 | 63.5 | 23.4 |
| | 63.5 [2.5] | 35.1 | 22.4 | 125.7 | 208.0 | 247.7 | 239.5 | 63.5 | 23.4 |
| | 76.2 [3] | 35.1 | 22.4 | 125.7 | 208.0 | 247.7 | 239.5 | 63.5 | 23.4 |
| | 88.9 [3.5] | 35.1 | 22.4 | 125.7 | 208.0 | 247.7 | 239.5 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 31.8 | 25.4 | 145.5 | 239.8 | 285.8 | 270.8 | 73.2 | 26.2 |
| | 76.2 [3] | 31.8 | 25.4 | 145.5 | 239.8 | 285.8 | 270.8 | 73.2 | 26.2 |
| | 88.9 [3.5] | 31.8 | 25.4 | 145.5 | 239.8 | 285.8 | 270.8 | 73.2 | 26.2 |
| | 101.6 [4] | 31.8 | 25.4 | 145.5 | 239.8 | 285.8 | 270.8 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 31.8 | 28.7 | 167.1 | 270.0 | 320.8 | 302.8 | 76.2 | 29.7 |
| | 88.9 [3.5] | 31.8 | 28.7 | 167.1 | 270.0 | 320.8 | 302.8 | 76.2 | 29.7 |
| | 101.6 [4] | 31.8 | 28.7 | 167.1 | 270.0 | 320.8 | 302.8 | 76.2 | 29.7 |
| | 114.3 [4.5] | 31.8 | 28.7 | 167.1 | 270.0 | 320.8 | 302.8 | 76.2 | 29.7 |
| | 127 [5] | 31.8 | 28.7 | 167.1 | 270.0 | 320.8 | 302.8 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 31.8 | 31.8 | 190.5 | 300.0 | 355.6 | 330.2 | 88.9 | 32.0 |
| | 101.6 [4] | 31.8 | 31.8 | 190.5 | 300.0 | 355.6 | 330.2 | 88.9 | 32.0 |
| | 114.3 [4.5] | 31.8 | 31.8 | 190.5 | 300.0 | 355.6 | 330.2 | 88.9 | 32.0 |
| | 127 [5] | 31.8 | 31.8 | 190.5 | 300.0 | 355.6 | 330.2 | 88.9 | 32.0 |
| | 139.7 [5.5] | 31.8 | 31.8 | 190.5 | 300.0 | 355.6 | 330.2 | 88.9 | 32.0 |

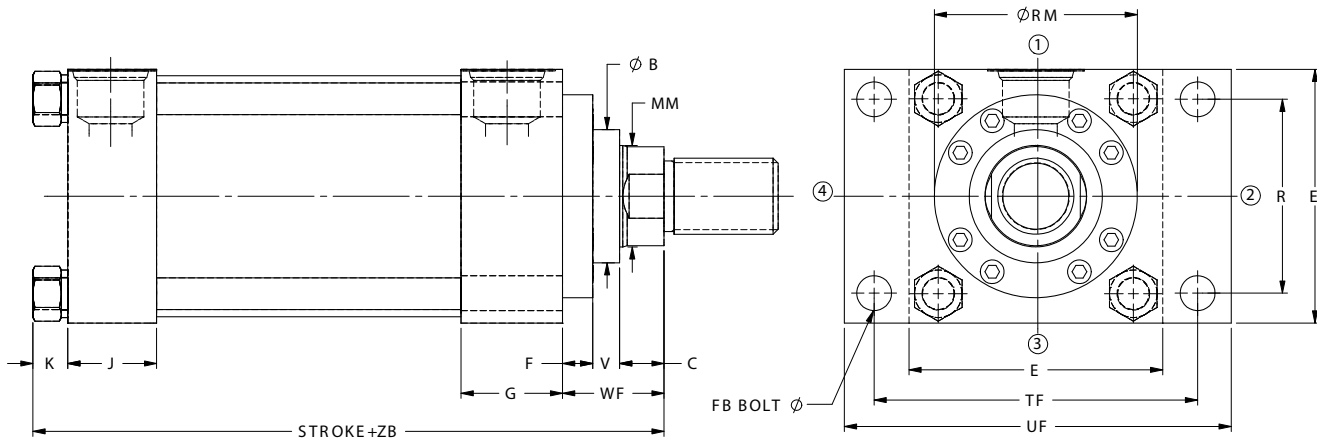
+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions – NZ09 Head

Rectangular Mount ANSI ME5



| Bore mm[in] | Rod Dia mm[in] | B (+.00/-.05) | C | E | G | J | F Max | V | WF |
|-----------------|-------------------|------------------|------|-------|------|------|----------|------|------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 8.6 | 7.1 | 25.4 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 12.7 | 9.7 | 35.1 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 12.7 | 9.7 | 35.1 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 15.0 | 10.4 | 41.4 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 9.7 | 35.1 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 15.0 | 10.4 | 41.4 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 15.0 | 13.7 | 47.8 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 10.4 | 41.4 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 15.0 | 13.7 | 47.8 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 15.0 | 13.5 | 50.8 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 15.0 | 13.7 | 47.8 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 50.8 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 15.0 | 16.8 | 57.2 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 13.5 | 50.8 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 16.8 | 57.2 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 57.2 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 57.2 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 15.0 | 16.8 | 57.2 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 57.2 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 57.2 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 9.7 | 57.2 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 57.2 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 57.2 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 57.2 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 57.2 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 57.2 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 18.3 | 13.5 | 57.2 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 57.2 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 57.2 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 57.2 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 57.2 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ09 Head Rectangular Mount ANSI ME5

These mounts are ideal for straight line force transfer applications in which the cylinder is used in tension (pulling). The mounting surface should be flat, and the rod end cartridge should be piloted into it.

The frame on which the cylinder is mounted **must** be sufficiently rigid to resist bending moments.

NOTE

For strokes in excess of 762mm [30"], see "Stop tube selection" on page 77.

WARNING

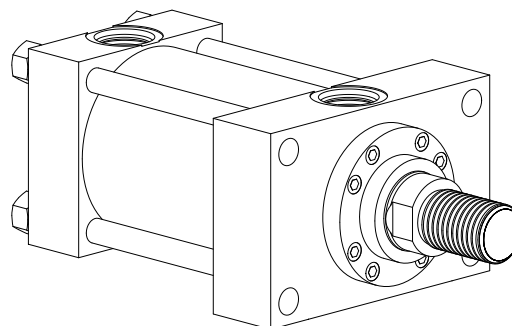
The force of the load should be perpendicular to the mounting surface and parallel to the centerline of the piston rod. For eccentric loads, the larger of the two available rods in each bore size is recommended. Stop tubes should also be considered.

The head rectangular mounts (NZ09) is recommended for heavy duty applications. Use high tensile socket

head cap screws or hex head bolts tightened to the manufacturer's recommended torque.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



| Bore mm[in] | Rod Dia mm[in] | RM | FB | R | TF | UF | ZB+ Max | Piston Thick. | K |
|--------------|----------------|-------|------|-------|-------|-------|---------|---------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 60.5 | 9.7 | 41.4 | 87.4 | 108.0 | 153.4 | 35.1 | 10.4 |
| | 25.4 [1] | 66.8 | 9.7 | 41.4 | 87.4 | 108.0 | 162.8 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 66.8 | 12.7 | 52.1 | 104.9 | 130.3 | 166.6 | 35.1 | 14.0 |
| | 34.93 [1.38] | 82.6 | 12.7 | 52.1 | 104.9 | 130.3 | 173.2 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 66.8 | 12.7 | 64.8 | 117.6 | 143.0 | 169.7 | 38.1 | 14.0 |
| | 34.93 [1.38] | 82.6 | 12.7 | 64.8 | 117.6 | 143.0 | 176.3 | 38.1 | 14.0 |
| | 44.45 [1.75] | 98.6 | 12.7 | 64.8 | 117.6 | 143.0 | 182.4 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 82.6 | 16.0 | 82.6 | 149.4 | 181.1 | 198.1 | 44.5 | 17.0 |
| | 44.45 [1.75] | 98.6 | 16.0 | 82.6 | 149.4 | 181.1 | 204.5 | 44.5 | 17.0 |
| | 50.8 [2] | 101.6 | 16.0 | 82.6 | 149.4 | 181.1 | 207.8 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 98.6 | 16.0 | 97.0 | 162.1 | 193.8 | 213.4 | 50.8 | 19.8 |
| | 50.8 [2] | 101.6 | 16.0 | 97.0 | 162.1 | 193.8 | 216.7 | 50.8 | 19.8 |
| | 63.5 [2.5] | 112.8 | 16.0 | 97.0 | 162.1 | 193.8 | 223.0 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 101.6 | 22.4 | 125.7 | 208.0 | 247.7 | 233.2 | 63.5 | 23.4 |
| | 63.5 [2.5] | 112.8 | 22.4 | 125.7 | 208.0 | 247.7 | 239.5 | 63.5 | 23.4 |
| | 76.2 [3] | 133.4 | 22.4 | 125.7 | 208.0 | 247.7 | 239.5 | 63.5 | 23.4 |
| | 88.9 [3.5] | 143.0 | 22.4 | 125.7 | 208.0 | 247.7 | 239.5 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 112.8 | 25.4 | 145.5 | 239.8 | 285.8 | 270.8 | 73.2 | 26.2 |
| | 76.2 [3] | 133.4 | 25.4 | 145.5 | 239.8 | 285.8 | 270.8 | 73.2 | 26.2 |
| | 88.9 [3.5] | 143.0 | 25.4 | 145.5 | 239.8 | 285.8 | 270.8 | 73.2 | 26.2 |
| | 101.6 [4] | 163.6 | 25.4 | 145.5 | 239.8 | 285.8 | 270.8 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 133.4 | 28.7 | 167.1 | 270.0 | 320.8 | 302.8 | 76.2 | 29.7 |
| | 88.9 [3.5] | 143.0 | 28.7 | 167.1 | 270.0 | 320.8 | 302.8 | 76.2 | 29.7 |
| | 101.6 [4] | 163.6 | 28.7 | 167.1 | 270.0 | 320.8 | 302.8 | 76.2 | 29.7 |
| | 114.3 [4.5] | 181.1 | 28.7 | 167.1 | 270.0 | 320.8 | 302.8 | 76.2 | 29.7 |
| | 127 [5] | 192.0 | 28.7 | 167.1 | 270.0 | 320.8 | 302.8 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 143.0 | 31.8 | 190.5 | 300.0 | 355.6 | 330.2 | 88.9 | 32.0 |
| | 101.6 [4] | 163.6 | 31.8 | 190.5 | 300.0 | 355.6 | 330.2 | 88.9 | 32.0 |
| | 114.3 [4.5] | 181.1 | 31.8 | 190.5 | 300.0 | 355.6 | 330.2 | 88.9 | 32.0 |
| | 127 [5] | 192.0 | 31.8 | 190.5 | 300.0 | 355.6 | 330.2 | 88.9 | 32.0 |
| | 139.7 [5.5] | 212.9 | 31.8 | 190.5 | 300.0 | 355.6 | 330.2 | 88.9 | 32.0 |

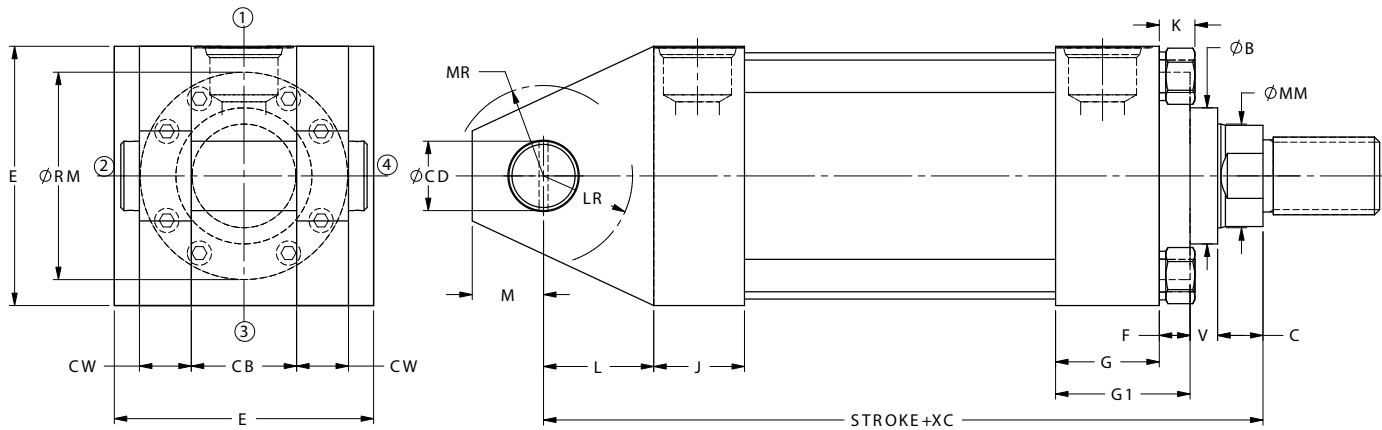
+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions – NZ10 Cap Fixed

Clevis Mount ANSI MP1



| Bore mm[in] | Rod Dia mm[in] | B (+0.00/-0.05) | C | E | G | J | F | V | RM | L |
|-----------------|-------------------|--------------------|------|-------|------|------|------|------|-------|------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 | - | 19.1 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 | - | 19.1 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 | - | 31.8 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 | - | 31.8 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 9.7 | 66.8 | 31.8 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 | - | 31.8 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 | - | 31.8 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 10.4 | 82.6 | 38.1 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - | 38.1 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - | 38.1 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 98.6 | 54.1 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 | 54.1 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 | 54.1 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 | 57.2 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 | 57.2 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 133.4 | 57.2 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 143.0 | 57.2 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 15.0 | 16.8 | 112.8 | 63.5 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 133.4 | 63.5 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 143.0 | 63.5 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 9.7 | 163.6 | 63.5 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 133.4 | 76.2 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 143.0 | 76.2 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 163.6 | 76.2 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 181.1 | 76.2 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 192.0 | 76.2 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 18.3 | 13.5 | 143.0 | 82.6 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 163.6 | 82.6 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 181.1 | 82.6 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 192.0 | 82.6 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 212.9 | 82.6 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ10 Cap Fixed Clevis Mount ANSI MP1

These mounts are for applications in which the machine member travels in a curved path within one plane.

These mounts can be used both in compression (push) and tension (pull). Care **must** be exercised to prevent rod buckling in compression applications with long strokes. See page 80 for stroke limitations.

NOTE

For strokes in excess of 610mm [24"], see "Stop tube selection" on page 77.

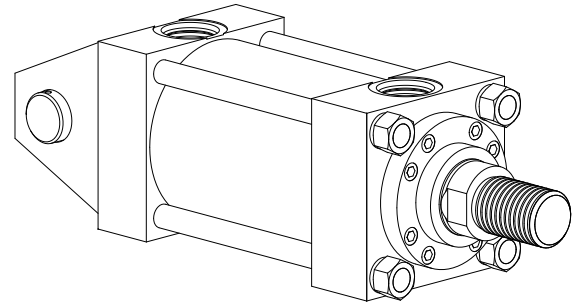
WARNING

The centerline of the machine member that attaches to the swivel pin must be perpendicular to the centerline of the piston rod and the curved path must be in one plane only. Any misalignment will cause excess side loading on the bearing and piston. This will lead to premature failure.

For applications with small amounts of misalignment, consider the spherical bearing mount, as shown in theNZ11

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



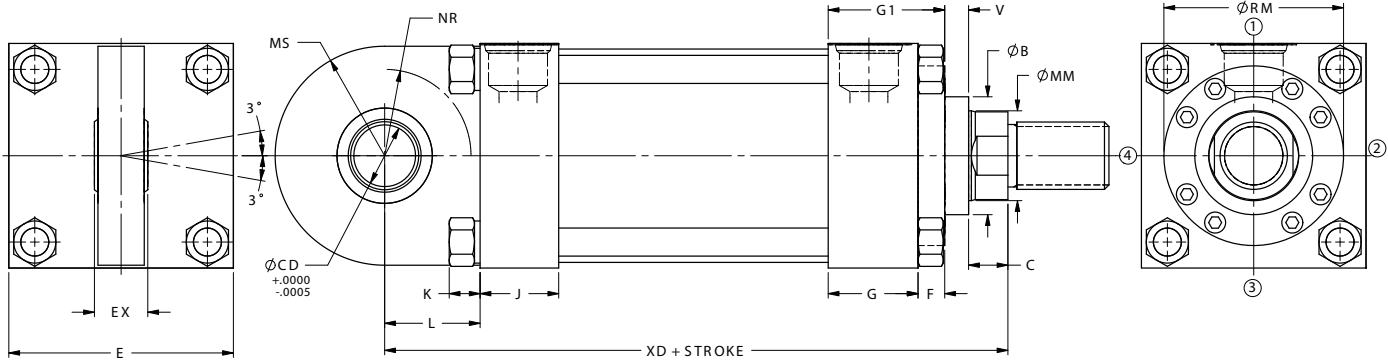
| Bore mm[in] | Rod Dia mm[in] | M | CB | CD | CW | LR | MR | XC+ | Piston Thick. | K |
|--------------|----------------|------|------|------|------|------|------|-------|---------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 12.7 | 19.1 | 12.7 | 12.7 | 14.2 | 14.2 | 162.1 | 35.1 | 10.4 |
| | 25.4 [1] | 12.7 | 19.1 | 12.7 | 12.7 | 14.2 | 14.2 | 171.5 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 19.1 | 31.8 | 19.1 | 16.0 | 26.9 | 26.9 | 184.2 | 35.1 | 14.0 |
| | 34.93 [1.38] | 19.1 | 31.8 | 19.1 | 16.0 | 26.9 | 26.9 | 190.5 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 19.1 | 31.8 | 19.1 | 16.0 | 26.9 | 26.9 | 187.5 | 38.1 | 14.0 |
| | 34.93 [1.38] | 19.1 | 31.8 | 19.1 | 16.0 | 26.9 | 26.9 | 193.8 | 38.1 | 14.0 |
| | 44.45 [1.75] | 19.1 | 31.8 | 19.1 | 16.0 | 26.9 | 26.9 | 200.2 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 25.4 | 38.1 | 25.4 | 19.1 | 31.8 | 28.7 | 219.2 | 44.5 | 17.0 |
| | 44.45 [1.75] | 25.4 | 38.1 | 25.4 | 19.1 | 31.8 | 28.7 | 225.6 | 44.5 | 17.0 |
| | 50.8 [2] | 25.4 | 38.1 | 25.4 | 19.1 | 31.8 | 28.7 | 228.6 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 35.1 | 50.8 | 35.1 | 25.4 | 47.8 | 44.5 | 247.7 | 50.8 | 19.8 |
| | 50.8 [2] | 35.1 | 50.8 | 35.1 | 25.4 | 47.8 | 44.5 | 251.0 | 50.8 | 19.8 |
| | 63.5 [2.5] | 35.1 | 50.8 | 35.1 | 25.4 | 47.8 | 44.5 | 257.3 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 44.5 | 63.5 | 44.5 | 31.8 | 49.3 | 47.8 | 266.7 | 63.5 | 23.4 |
| | 63.5 [2.5] | 44.5 | 63.5 | 44.5 | 31.8 | 49.3 | 47.8 | 273.1 | 63.5 | 23.4 |
| | 76.2 [3] | 44.5 | 63.5 | 44.5 | 31.8 | 49.3 | 47.8 | 273.1 | 63.5 | 23.4 |
| | 88.9 [3.5] | 44.5 | 63.5 | 44.5 | 31.8 | 49.3 | 47.8 | 273.1 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 50.8 | 63.5 | 50.8 | 31.8 | 52.3 | 54.1 | 308.1 | 73.2 | 26.2 |
| | 76.2 [3] | 50.8 | 63.5 | 50.8 | 31.8 | 52.3 | 54.1 | 308.1 | 73.2 | 26.2 |
| | 88.9 [3.5] | 50.8 | 63.5 | 50.8 | 31.8 | 52.3 | 54.1 | 308.1 | 73.2 | 26.2 |
| | 101.6 [4] | 50.8 | 63.5 | 50.8 | 31.8 | 52.3 | 54.1 | 308.1 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 63.5 | 76.2 | 63.5 | 38.1 | 65.0 | 63.5 | 349.3 | 76.2 | 29.7 |
| | 88.9 [3.5] | 63.5 | 76.2 | 63.5 | 38.1 | 65.0 | 63.5 | 349.3 | 76.2 | 29.7 |
| | 101.6 [4] | 63.5 | 76.2 | 63.5 | 38.1 | 65.0 | 63.5 | 349.3 | 76.2 | 29.7 |
| | 114.3 [4.5] | 63.5 | 76.2 | 63.5 | 38.1 | 65.0 | 63.5 | 349.3 | 76.2 | 29.7 |
| | 127 [5] | 63.5 | 76.2 | 63.5 | 38.1 | 65.0 | 63.5 | 349.3 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 69.9 | 76.2 | 76.2 | 38.1 | 68.3 | 69.9 | 381.0 | 88.9 | 32.0 |
| | 101.6 [4] | 69.9 | 76.2 | 76.2 | 38.1 | 68.3 | 69.9 | 381.0 | 88.9 | 32.0 |
| | 114.3 [4.5] | 69.9 | 76.2 | 76.2 | 38.1 | 68.3 | 69.9 | 381.0 | 88.9 | 32.0 |
| | 127 [5] | 69.9 | 76.2 | 76.2 | 38.1 | 68.3 | 69.9 | 381.0 | 88.9 | 32.0 |
| | 139.7 [5.5] | 69.9 | 76.2 | 76.2 | 38.1 | 68.3 | 69.9 | 381.0 | 88.9 | 32.0 |

+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions – NZ11 Cap Spherical Bearing Mount



Max. operating pressure

| Bore mm[in] | Bar |
|----------------|-----|
| 138.1 [1.5] | 114 |
| 50.8 [2] | 138 |
| 63.5 [2.5] | 97 |
| 82.55 [3.25] | 103 |
| 101.6 [4] | 121 |
| 127 [5] | 131 |
| 152.4 [6] | 117 |

| Bore mm[in] | Rod Dia mm[in] | B (+.00/-0.05) | C | E | G | J | F | V |
|----------------|-------------------|-------------------|------|-------|------|------|------|------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 9.7 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 10.4 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 1270 | 50.8 | 44.5 | 15.0 | 13.5 |
| | 50.8 [2] | 66.65 | 22.4 | 1270 | 50.8 | 44.5 | 15.0 | 13.5 |
| | 63.5 [2.5] | 79.35 | 25.4 | 1270 | 50.8 | 44.5 | 15.0 | 16.8 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 13.5 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 16.8 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 572 | 572 | 15.0 | 16.8 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 572 | 572 | 18.3 | 13.5 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 572 | 572 | 18.3 | 13.5 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 572 | 572 | 22.4 | 9.7 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ11 Cap Spherical Bearing Mount

This mount is for applications in which the machine member travels in a curved path in one plane where some misalignment is unavoidable. The amount of allowable misalignment can be calculated. This mount can be used both in compression (push) and tension (pull) applications. Care **must** be exercised to prevent rod buckling in compression applications with long strokes.

NOTE

For strokes in excess of 610mm [24"], see "Stop tube selection" on page 77.

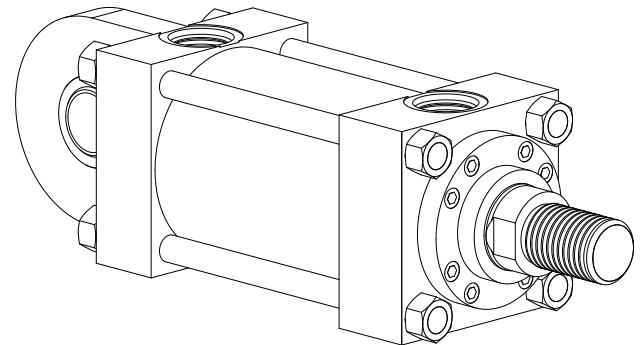
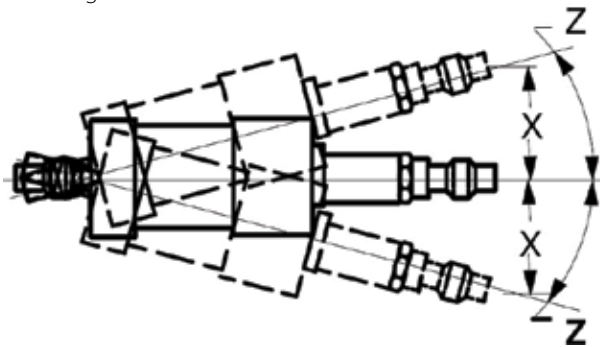
WARNING

Maximum radial static and dynamic bearing loads must not exceed the recommended ratings shown in the following table. Angle Z is the recommended maximum angle of misalignment.

To find the maximum recommended X distance, multiply the distance between pivot mounting holes (see NZ11 dimensional drawing) by the tangent of angle Z.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



| Bore mm[in] | Rod Dia mm[in] | RM | L | CD | EX | NR | MS | XD+ | Piston Thick. | K |
|-----------------|-------------------|-------|------|-------|------|------|------|-------|------------------|------|
| 38.1 [1.5] | 15.88 [0.63] | - | 19.1 | 12.70 | 11.2 | 16.0 | 23.9 | 162.1 | 35.1 | 10.4 |
| | 25.4 [1] | - | 19.1 | 12.70 | 11.2 | 16.0 | 23.9 | 171.5 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | - | 31.8 | 19.05 | 16.8 | 25.4 | 35.1 | 184.2 | 35.1 | 14.0 |
| | 34.93 [1.38] | - | 31.8 | 19.05 | 16.8 | 25.4 | 35.1 | 190.5 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 66.8 | 31.8 | 19.05 | 16.8 | 25.4 | 35.1 | 187.5 | 38.1 | 14.0 |
| | 34.93 [1.38] | - | 31.8 | 19.05 | 16.8 | 25.4 | 35.1 | 193.8 | 38.1 | 14.0 |
| | 44.45 [1.75] | - | 31.8 | 19.05 | 16.8 | 25.4 | 35.1 | 200.2 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 82.6 | 38.1 | 25.40 | 22.4 | 31.8 | 42.9 | 219.2 | 44.5 | 17.0 |
| | 44.45 [1.75] | - | 38.1 | 25.40 | 22.4 | 31.8 | 42.9 | 225.6 | 44.5 | 17.0 |
| | 50.8 [2] | - | 38.1 | 25.40 | 22.4 | 31.8 | 42.9 | 228.6 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 98.6 | 54.1 | 34.93 | 30.2 | 41.4 | 62.0 | 247.7 | 50.8 | 19.8 |
| | 50.8 [2] | 101.6 | 54.1 | 34.93 | 30.2 | 41.4 | 62.0 | 251.0 | 50.8 | 19.8 |
| | 63.5 [2.5] | 112.8 | 54.1 | 34.93 | 30.2 | 41.4 | 62.0 | 257.3 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 101.6 | 57.2 | 44.45 | 38.9 | 52.3 | 73.2 | 266.7 | 63.5 | 23.4 |
| | 63.5 [2.5] | 112.8 | 57.2 | 44.45 | 38.9 | 52.3 | 73.2 | 273.1 | 63.5 | 23.4 |
| | 76.2 [3] | 133.4 | 57.2 | 44.45 | 38.9 | 52.3 | 73.2 | 273.1 | 63.5 | 23.4 |
| | 88.9 [3.5] | 143.0 | 57.2 | 44.45 | 38.9 | 52.3 | 73.2 | 273.1 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 112.8 | 63.5 | 50.80 | 44.5 | 60.5 | 84.1 | 308.1 | 73.2 | 26.2 |
| | 76.2 [3] | 133.4 | 63.5 | 50.80 | 44.5 | 60.5 | 84.1 | 308.1 | 73.2 | 26.2 |
| | 88.9 [3.5] | 143.0 | 63.5 | 50.80 | 44.5 | 60.5 | 84.1 | 308.1 | 73.2 | 26.2 |
| | 101.6 [4] | 163.6 | 63.5 | 50.80 | 44.5 | 60.5 | 84.1 | 308.1 | 73.2 | 26.2 |

+ Plus Stroke

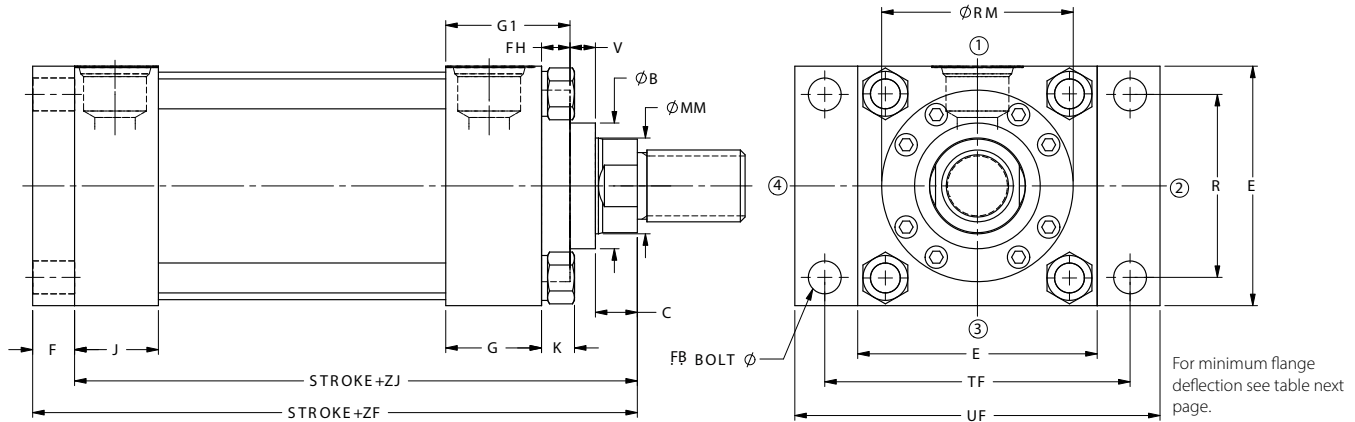
See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions –NZ12 Cap

Rectangular Flange Mount

ANSI MF2



| Bore mm[in] | Rod Dia mm[in] | B (+.00/-05) | C | E | G | J | FH | RM | V | F |
|-----------------|-------------------|-----------------|-------|-------|-------|------|-------|-------|-------|------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | - | 6.4 | 9.7 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | - | 12.7 | 9.7 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | - | 6.4 | 16.0 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | - | 9.7 | 16.0 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 66.8 | 9.7 | 16.0 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | - | 9.7 | 16.0 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | - | 12.7 | 16.0 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 82.6 | 10.4 | 19.1 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | - | 9.7 | 19.1 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | - | 9.7 | 19.1 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 15.0 | 98.6 | 13.5 | 22.4 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 15.0 | 101.6 | 13.5 | 22.4 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 15.0 | 112.8 | 16.8 | 22.4 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 101.6 | 13.5 | 22.4 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 112.8 | 16.8 | 22.4 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 133.4 | 13.5 | 22.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 143.0 | 13.5 | 22.4 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 15.0 | 112.8 | 16.8 | 25.4 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 133.4 | 13.5 | 25.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 143.0 | 13.5 | 25.4 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 163.6 | 9.7 | 25.4 |
| | 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 133.4 | 13.5 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 143.0 | 13.5 | 25.4 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 163.6 | 9.7 | 25.4 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 181.1 | 9.7 | 25.4 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 192.0 | 9.7 | 25.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 18.3 | 143.0 | 13.5 | 25.4 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 163.6 | 9.7 | 25.4 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 181.1 | 9.7 | 25.4 |
| 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 192.0 | 9.7 | 25.4 | |
| 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 76.2 | 22.4 | 212.9 | 9.7 | 25.4 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation

Dimensions –NZ12 Cap

Rectangular Flange Mount

ANSI MF2

These mounts are ideal for straight line force transfer applications in which the cylinder is used in compression (pushing), as in push presses.

For tension applications (pulling), a head rectangular mount is more appropriate.

NOTE

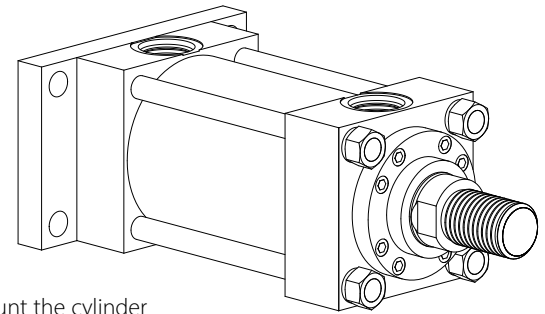
For strokes in excess of 762mm [30"], see "Stop tube selection" on page 77.

WARNING

The frame on which the cylinder is mounted must be sufficiently rigid to resist bending moments.

The cap rectangular mounts (NZ14) is recommended for heavy duty applications. Refer to the table for recommended pressure ratings in pull stroke.

Use high tensile socket head cap screws or hex head bolts tightened to the manufacturer's recommended torque.



WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.

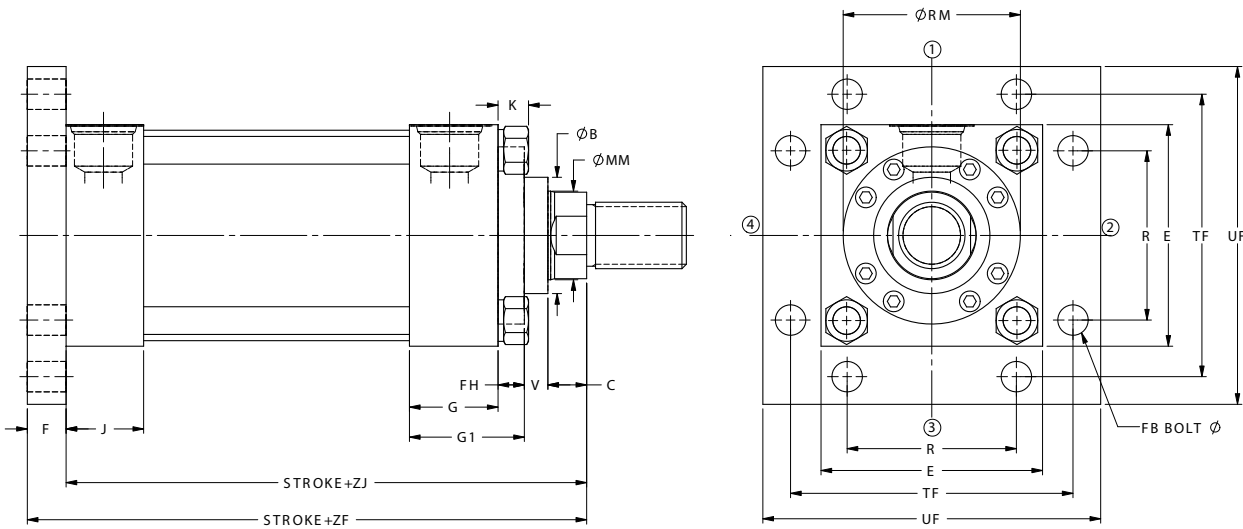
| Bore Size MM | Recommended Pressure Rating | |
|-----------------|-----------------------------|--|
| | in Pull Stroke | |
| 38.1 to 101.6 | 210 Bar | |
| 127 | 124 bar | |
| 152.4 | 124 bar | |
| 177.8 | 90 bar | |
| 203.2 | 90 bar | |

| Bore mm[in] | Rod Dia mm[in] | FB | R | TF | UF | ZF+ Max | ZJ+ Max | Piston Thick. | K |
|----------------|-------------------|------|-------|-------|-------|------------|------------|------------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 9.7 | 41.4 | 874 | 108.0 | 152.4 | 143.0 | 35.1 | 10.4 |
| | 25.4 [1] | 9.7 | 41.4 | 874 | 108.0 | 162.1 | 152.4 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 12.7 | 52.1 | 104.9 | 130.3 | 168.4 | 152.4 | 35.1 | 14.0 |
| | 34.93 [1.38] | 12.7 | 52.1 | 104.9 | 130.3 | 174.8 | 159.0 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 12.7 | 64.8 | 117.6 | 143.0 | 171.5 | 155.7 | 38.1 | 14.0 |
| | 34.93 [1.38] | 12.7 | 64.8 | 117.6 | 143.0 | 177.8 | 162.1 | 38.1 | 14.0 |
| | 44.45 [1.75] | 12.7 | 64.8 | 117.6 | 143.0 | 184.2 | 168.4 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 16.0 | 82.6 | 149.4 | 181.1 | 200.2 | 181.1 | 44.5 | 17.0 |
| | 44.45 [1.75] | 16.0 | 82.6 | 149.4 | 181.1 | 206.5 | 187.5 | 44.5 | 17.0 |
| | 50.8 [2] | 16.0 | 82.6 | 149.4 | 181.1 | 209.6 | 190.5 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 16.0 | 97.0 | 162.1 | 193.8 | 215.9 | 193.8 | 50.8 | 19.8 |
| | 50.8 [2] | 16.0 | 97.0 | 162.1 | 193.8 | 219.2 | 196.9 | 50.8 | 19.8 |
| | 63.5 [2.5] | 16.0 | 97.0 | 162.1 | 193.8 | 225.6 | 203.2 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 22.4 | 125.7 | 208.0 | 247.7 | 231.9 | 209.6 | 63.5 | 23.4 |
| | 63.5 [2.5] | 22.4 | 125.7 | 208.0 | 247.7 | 238.3 | 215.9 | 63.5 | 23.4 |
| | 76.2 [3] | 22.4 | 125.7 | 208.0 | 247.7 | 238.3 | 215.9 | 63.5 | 23.4 |
| | 88.9 [3.5] | 22.4 | 125.7 | 208.0 | 247.7 | 238.3 | 215.9 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 25.4 | 145.5 | 239.8 | 285.8 | 270.0 | 244.6 | 73.2 | 26.2 |
| | 76.2 [3] | 25.4 | 145.5 | 239.8 | 285.8 | 270.0 | 244.6 | 73.2 | 26.2 |
| | 88.9 [3.5] | 25.4 | 145.5 | 239.8 | 285.8 | 270.0 | 244.6 | 73.2 | 26.2 |
| | 101.6 [4] | 25.4 | 145.5 | 239.8 | 285.8 | 270.0 | 244.6 | 73.2 | 26.2 |
| | 114.3 [4.5] | 25.4 | 145.5 | 239.8 | 285.8 | 270.0 | 244.6 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 28.7 | 167.1 | 270.0 | 320.8 | 298.5 | 273.1 | 76.2 | 29.7 |
| | 88.9 [3.5] | 28.7 | 167.1 | 270.0 | 320.8 | 298.5 | 273.1 | 76.2 | 29.7 |
| | 101.6 [4] | 28.7 | 167.1 | 270.0 | 320.8 | 298.5 | 273.1 | 76.2 | 29.7 |
| | 114.3 [4.5] | 28.7 | 167.1 | 270.0 | 320.8 | 298.5 | 273.1 | 76.2 | 29.7 |
| | 127 [5] | 28.7 | 167.1 | 270.0 | 320.8 | 298.5 | 273.1 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 31.8 | 190.5 | 300.0 | 355.6 | 323.9 | 298.5 | 88.9 | 32.0 |
| | 101.6 [4] | 31.8 | 190.5 | 300.0 | 355.6 | 323.9 | 298.5 | 88.9 | 32.0 |
| | 114.3 [4.5] | 31.8 | 190.5 | 300.0 | 355.6 | 323.9 | 298.5 | 88.9 | 32.0 |
| | 127 [5] | 31.8 | 190.5 | 300.0 | 355.6 | 323.9 | 298.5 | 88.9 | 32.0 |
| | 139.7 [5.5] | 31.8 | 190.5 | 300.0 | 355.6 | 323.9 | 298.5 | 88.9 | 32.0 |

+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation Dimensions –NZ13 Cap Square Flange Mount ANSI MF6



| Bore mm[in] | Rod Dia mm[in] | B (+0.00/-0.05) | C | E | G | J | FH | RM | V | F |
|-----------------|-------------------|--------------------|------|-------|------|------|------|-------|------|------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | - | 6.4 | 9.7 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | - | 12.7 | 9.7 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | - | 6.4 | 16.0 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | - | 9.7 | 16.0 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 66.8 | 9.7 | 16.0 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | - | 9.7 | 16.0 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | - | 12.7 | 16.0 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 82.6 | 10.4 | 19.1 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | - | 9.7 | 19.1 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | - | 9.7 | 19.1 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 15.0 | 98.6 | 13.5 | 22.4 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 15.0 | 101.6 | 13.5 | 22.4 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 15.0 | 112.8 | 16.8 | 22.4 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 101.6 | 13.5 | 22.4 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 112.8 | 16.8 | 22.4 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 133.4 | 13.5 | 22.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 143.0 | 13.5 | 22.4 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 15.0 | 112.8 | 16.8 | 25.4 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 133.4 | 13.5 | 25.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 143.0 | 13.5 | 25.4 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 163.6 | 9.7 | 25.4 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 133.4 | 13.5 | 25.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 143.0 | 13.5 | 25.4 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 163.6 | 9.7 | 25.4 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 181.1 | 9.7 | 25.4 |
| 203.2 [8] | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 192.0 | 9.7 | 25.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 18.3 | 143.0 | 13.5 | 25.4 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 163.6 | 9.7 | 25.4 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 181.1 | 9.7 | 25.4 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 192.0 | 9.7 | 25.4 |
| 203.2 [8] | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 212.9 | 9.7 | 25.4 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ13 Cap Square Flange Mount ANSI MF6

These mounts are ideal for straight line force transfer applications in which the cylinder is used in compression (pushing), as in push presses.

For tension applications (pulling), a head rectangular mount is more appropriate.

NOTE

For strokes in excess of 762mm [30"], see "Stop tube selection" on page 77.

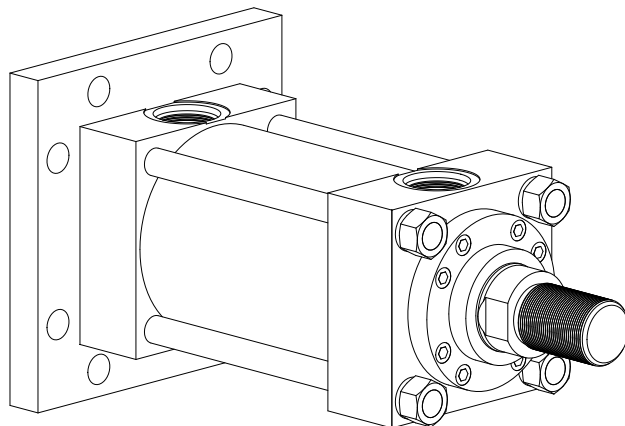
WARNING

The frame on which the cylinder is mounted must be sufficiently rigid to resist bending moments. The cap rectangular mounts (NZ14) is recommended for heavy duty applications.

Use high tensile socket head cap screws or hex head bolts tightened to the manufacturer's recommended torque.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.

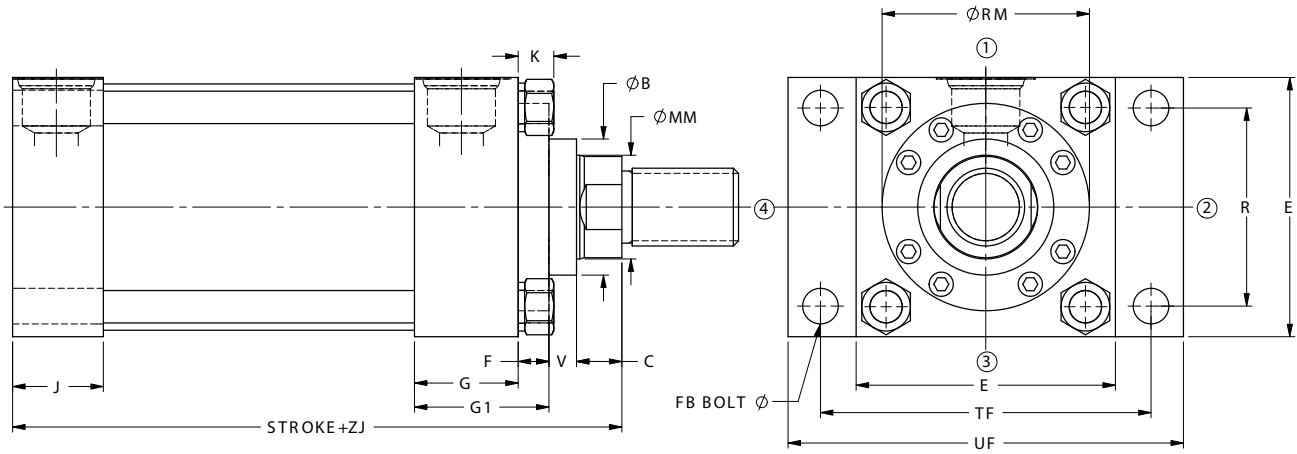


| Bore mm[in] | Rod Dia mm[in] | FB | R | TF | UF | ZF+ Max | ZJ+ Max | Piston Thick. | K |
|--------------|----------------|------|-------|-------|-------|---------|---------|---------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 9.7 | 41.4 | 874 | 108.0 | 152.4 | 143.0 | 35.1 | 10.4 |
| | 25.4 [1] | 9.7 | 41.4 | 874 | 108.0 | 162.1 | 152.4 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 12.7 | 52.1 | 104.9 | 130.3 | 168.4 | 152.4 | 35.1 | 14.0 |
| | 34.93 [1.38] | 12.7 | 52.1 | 104.9 | 130.3 | 174.8 | 159.0 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 12.7 | 64.8 | 1176 | 143.0 | 171.5 | 155.7 | 38.1 | 14.0 |
| | 34.93 [1.38] | 12.7 | 64.8 | 1176 | 143.0 | 177.8 | 162.1 | 38.1 | 14.0 |
| | 44.45 [1.75] | 12.7 | 64.8 | 1176 | 143.0 | 184.2 | 168.4 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 16.0 | 82.6 | 149.4 | 181.1 | 200.2 | 181.1 | 44.5 | 17.0 |
| | 44.45 [1.75] | 16.0 | 82.6 | 149.4 | 181.1 | 206.5 | 187.5 | 44.5 | 17.0 |
| | 50.8 [2] | 16.0 | 82.6 | 149.4 | 181.1 | 209.6 | 190.5 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 16.0 | 97.0 | 162.1 | 193.8 | 215.9 | 193.8 | 50.8 | 19.8 |
| | 50.8 [2] | 16.0 | 97.0 | 162.1 | 193.8 | 219.2 | 196.9 | 50.8 | 19.8 |
| | 63.5 [2.5] | 16.0 | 97.0 | 162.1 | 193.8 | 225.6 | 203.2 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 22.4 | 125.7 | 208.0 | 247.7 | 231.9 | 209.6 | 63.5 | 23.4 |
| | 63.5 [2.5] | 22.4 | 125.7 | 208.0 | 247.7 | 238.3 | 215.9 | 63.5 | 23.4 |
| | 76.2 [3] | 22.4 | 125.7 | 208.0 | 247.7 | 238.3 | 215.9 | 63.5 | 23.4 |
| | 88.9 [3.5] | 22.4 | 125.7 | 208.0 | 247.7 | 238.3 | 215.9 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 25.4 | 145.5 | 239.8 | 285.8 | 270.0 | 244.6 | 73.2 | 26.2 |
| | 76.2 [3] | 25.4 | 145.5 | 239.8 | 285.8 | 270.0 | 244.6 | 73.2 | 26.2 |
| | 88.9 [3.5] | 25.4 | 145.5 | 239.8 | 285.8 | 270.0 | 244.6 | 73.2 | 26.2 |
| | 101.6 [4] | 25.4 | 145.5 | 239.8 | 285.8 | 270.0 | 244.6 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 28.7 | 167.1 | 270.0 | 320.8 | 298.5 | 273.1 | 76.2 | 29.7 |
| | 88.9 [3.5] | 28.7 | 167.1 | 270.0 | 320.8 | 298.5 | 273.1 | 76.2 | 29.7 |
| | 101.6 [4] | 28.7 | 167.1 | 270.0 | 320.8 | 298.5 | 273.1 | 76.2 | 29.7 |
| | 114.3 [4.5] | 28.7 | 167.1 | 270.0 | 320.8 | 298.5 | 273.1 | 76.2 | 29.7 |
| | 127 [5] | 28.7 | 167.1 | 270.0 | 320.8 | 298.5 | 273.1 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 31.8 | 190.5 | 300.0 | 355.6 | 323.9 | 298.5 | 88.9 | 32.0 |
| | 101.6 [4] | 31.8 | 190.5 | 300.0 | 355.6 | 323.9 | 298.5 | 88.9 | 32.0 |
| | 114.3 [4.5] | 31.8 | 190.5 | 300.0 | 355.6 | 323.9 | 298.5 | 88.9 | 32.0 |
| | 127 [5] | 31.8 | 190.5 | 300.0 | 355.6 | 323.9 | 298.5 | 88.9 | 32.0 |
| | 139.7 [5.5] | 31.8 | 190.5 | 300.0 | 355.6 | 323.9 | 298.5 | 88.9 | 32.0 |

+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation Dimensions – NZ14 Cap Rectangle Mount ANSI ME6



| Bore mm[in] | Rod Dia mm[in] | B (+.00/-0.05) | C | E | G | J | F | V | RM |
|----------------|-------------------|-------------------|------|-------|------|------|------|------|-------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 | - |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 | - |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 | - |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 | - |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 9.7 | 66.8 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 | - |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 | - |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 10.4 | 82.6 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 98.6 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 133.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 143.0 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 15.0 | 16.8 | 112.8 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 133.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 143.0 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 9.7 | 163.6 |
| | 114.3 [4.5] | 133.32 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 9.7 | 181.1 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 133.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 143.0 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 163.6 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 181.1 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 192.0 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 18.3 | 13.5 | 143.0 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 163.6 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 181.1 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 192.0 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 212.9 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation

Dimensions – NZ14 Cap Rectangle

Mount ANSI ME6

These mounts are for straight line force transfer applications in which the cylinder is used in compression (pushing) and tension (pulling) applications.

The mounting surface should be flat and perpendicular to the force of the load.

The frame on which the cylinder is mounted **must** be sufficiently rigid to resist bending moments.

The cap rectangular mount (NZ14) is recommended for heavy duty applications.

NOTE

For strokes in excess of 762mm [30"], see "Stop tube selection" on page 77.

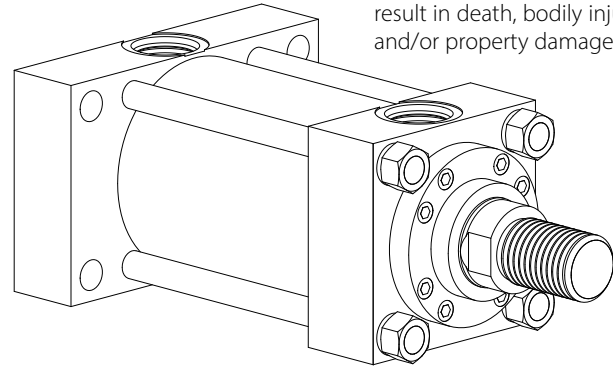
WARNING

Use high tensile socket head cap screws or hex

head bolts tightened to the manufacturer's recommended torque value.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



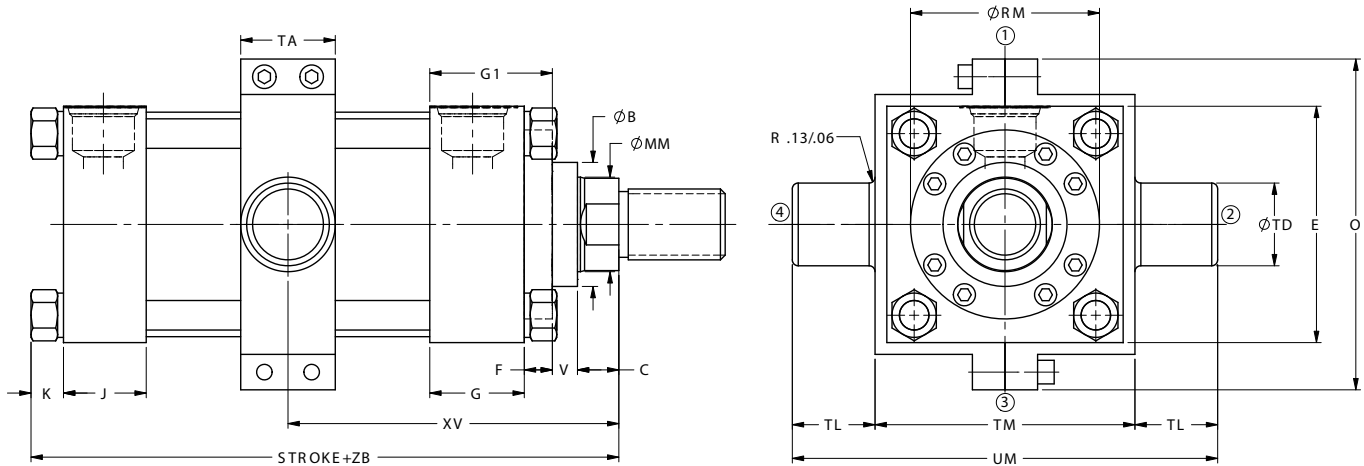
| Bore mm[in] | Rod Dia mm[in] | FB | R | TF | UF | ZJ+ Max | Piston Thick. | K |
|----------------|-------------------|------|-------|-------|-------|------------|------------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 9.7 | 41.4 | 874 | 108.0 | 143.0 | 35.1 | 10.4 |
| | 25.4 [1] | 9.7 | 41.4 | 874 | 108.0 | 152.4 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 12.7 | 52.1 | 104.9 | 130.3 | 152.4 | 35.1 | 14.0 |
| | 34.93 [1.38] | 12.7 | 52.1 | 104.9 | 130.3 | 158.8 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 12.7 | 64.8 | 1176 | 143.0 | 155.7 | 38.1 | 14.0 |
| | 34.93 [1.38] | 12.7 | 64.8 | 1176 | 143.0 | 162.1 | 38.1 | 14.0 |
| | 44.45 [1.75] | 12.7 | 64.8 | 1176 | 143.0 | 168.4 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 16.0 | 82.6 | 149.4 | 181.1 | 181.1 | 44.5 | 17.0 |
| | 44.45 [1.75] | 16.0 | 82.6 | 149.4 | 181.1 | 187.5 | 44.5 | 17.0 |
| | 50.8 [2] | 16.0 | 82.6 | 149.4 | 181.1 | 190.5 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 16.0 | 97.0 | 162.1 | 193.8 | 193.8 | 50.8 | 19.8 |
| | 50.8 [2] | 16.0 | 97.0 | 162.1 | 193.8 | 196.9 | 50.8 | 19.8 |
| | 63.5 [2.5] | 16.0 | 97.0 | 162.1 | 193.8 | 203.2 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 22.4 | 125.7 | 208.0 | 247.7 | 209.6 | 63.5 | 23.4 |
| | 63.5 [2.5] | 22.4 | 125.7 | 208.0 | 247.7 | 215.9 | 63.5 | 23.4 |
| | 76.2 [3] | 22.4 | 125.7 | 208.0 | 247.7 | 215.9 | 63.5 | 23.4 |
| | 88.9 [3.5] | 22.4 | 125.7 | 208.0 | 247.7 | 215.9 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 25.4 | 145.5 | 239.8 | 285.8 | 244.6 | 73.2 | 26.2 |
| | 76.2 [3] | 25.4 | 145.5 | 239.8 | 285.8 | 244.6 | 73.2 | 26.2 |
| | 88.9 [3.5] | 25.4 | 145.5 | 239.8 | 285.8 | 244.6 | 73.2 | 26.2 |
| | 101.6 [4] | 25.4 | 145.5 | 239.8 | 285.8 | 244.6 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 28.7 | 167.1 | 270.0 | 320.8 | 273.1 | 76.2 | 29.7 |
| | 88.9 [3.5] | 28.7 | 167.1 | 270.0 | 320.8 | 273.1 | 76.2 | 29.7 |
| | 101.6 [4] | 28.7 | 167.1 | 270.0 | 320.8 | 273.1 | 76.2 | 29.7 |
| | 114.3 [4.5] | 28.7 | 167.1 | 270.0 | 320.8 | 273.1 | 76.2 | 29.7 |
| | 127 [5] | 28.7 | 167.1 | 270.0 | 320.8 | 273.1 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 31.8 | 190.5 | 300.0 | 355.6 | 298.5 | 88.9 | 32.0 |
| | 101.6 [4] | 31.8 | 190.5 | 300.0 | 355.6 | 298.5 | 88.9 | 32.0 |
| | 114.3 [4.5] | 31.8 | 190.5 | 300.0 | 355.6 | 298.5 | 88.9 | 32.0 |
| | 127 [5] | 31.8 | 190.5 | 300.0 | 355.6 | 298.5 | 88.9 | 32.0 |
| | 139.7 [5.5] | 31.8 | 190.5 | 300.0 | 355.6 | 298.5 | 88.9 | 32.0 |

+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions –NZ15 Intermediate Trunnion Mounts NFPA MT4 Mount



| Bore mm[in] | Rod Dia mm[in] | B (+.00/-0.05) | C | E | G | J | F | V | RM | TD +.00 -.02 | TL |
|----------------|-------------------|-------------------|------|-------|------|------|------|------|-------|--------------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 | - | 25.40 | 25.4 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 | - | 25.40 | 25.4 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 | - | 34.93 | 35.1 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 | - | 34.93 | 35.1 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 9.7 | 66.8 | 34.93 | 35.1 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 | - | 34.93 | 35.1 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 | - | 34.93 | 35.1 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 10.4 | 82.6 | 44.45 | 44.5 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - | 44.45 | 44.5 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - | 44.45 | 44.5 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 98.6 | 44.45 | 44.5 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 | 44.45 | 44.5 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 | 44.45 | 44.5 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 | 44.45 | 44.5 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 | 44.45 | 44.5 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 133.4 | 44.45 | 44.5 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 143.0 | 44.45 | 44.5 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 15.0 | 16.8 | 112.8 | 50.80 | 50.8 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 133.4 | 50.80 | 50.8 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 143.0 | 50.80 | 50.8 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 9.7 | 163.6 | 50.80 | 50.8 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 133.4 | 63.50 | 63.5 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 143.0 | 63.50 | 63.5 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 163.6 | 63.50 | 63.5 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 181.1 | 63.50 | 63.5 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 192.0 | 63.50 | 63.5 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 18.3 | 13.5 | 143.0 | 76.20 | 76.2 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 163.6 | 76.20 | 76.2 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 181.1 | 76.20 | 76.2 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 192.0 | 76.20 | 76.2 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 212.9 | 76.20 | 76.2 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ15 Intermediate Trunnion Mounts NFPA MT4 Mount

The Intermediate Trunnion Mount is for longer stroke applications in which the machine member travels in a curved path in one plane.

On special orders, the trunnion can be located anywhere along the body.

This mount can be used both in compression (push) and tension (pull) applications.

NOTE

For strokes in excess of 610mm [24"], see "Stop tube selection" on page 77.

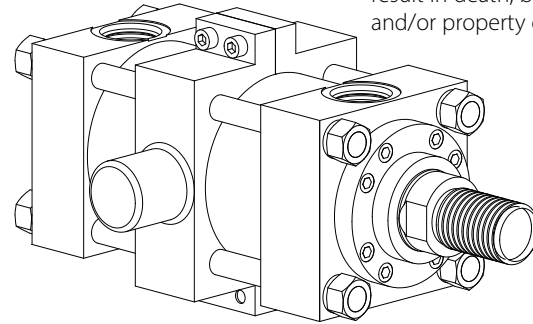
WARNING

It is recommended that rigidly mounted pillow blocks with bearings at least as long as the trunnion pins be used. The pillow blocks should

be installed as close to the shoulder of the trunnion as possible.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



| Bore mm[in] | Rod Dia mm[in] | UM | TM | TA | Max. O | XV Std * | ZB+ Max | Piston Thick. | K | Minimum stroke Required |
|----------------|-------------------|-------|-------|------|-----------|-------------|------------|------------------|------|-------------------------------|
| 38.1 [1.5] | 15.88 [0.63] | 1270 | 76.2 | 38.1 | - | 874 | 153.4 | 35.1 | 10.4 | 6.4 |
| | 25.4 [1] | 1270 | 76.2 | 38.1 | - | 96.8 | 162.8 | 35.1 | 10.4 | 6.4 |
| 50.8 [2] | 25.4 [1] | 158.8 | 88.9 | 38.1 | - | 96.8 | 166.6 | 35.1 | 14.0 | 6.4 |
| | 34.93 [1.38] | 158.8 | 88.9 | 38.1 | - | 106.4 | 173.2 | 35.1 | 14.0 | 6.4 |
| 63.5 [2.5] | 25.4 [1] | 171.5 | 101.6 | 38.1 | - | 98.6 | 169.7 | 38.1 | 14.0 | 3.3 |
| | 34.93 [1.38] | 171.5 | 101.6 | 38.1 | - | 105.2 | 176.3 | 38.1 | 14.0 | 3.3 |
| | 44.45 [1.75] | 171.5 | 101.6 | 38.1 | - | 111.3 | 182.4 | 38.1 | 14.0 | 3.3 |
| 82.55 [3.25] | 34.93 [1.38] | 215.9 | 127 | 50.8 | - | 114.3 | 198.1 | 44.5 | 170 | 9.7 |
| | 44.45 [1.75] | 215.9 | 127 | 50.8 | - | 120.9 | 204.5 | 44.5 | 170 | 9.7 |
| | 50.8 [2] | 215.9 | 127 | 50.8 | - | 124.2 | 2078 | 44.5 | 170 | 9.7 |
| 101.6 [4] | 44.45 [1.75] | 228.6 | 139.7 | 50.8 | - | 124.0 | 213.4 | 50.8 | 19.8 | 3.3 |
| | 50.8 [2] | 228.6 | 139.7 | 50.8 | - | 1270 | 216.7 | 50.8 | 19.8 | 3.3 |
| | 63.5 [2.5] | 228.6 | 139.7 | 50.8 | - | 133.4 | 223.0 | 50.8 | 19.8 | 3.3 |
| 127 [5] | 50.8 [2] | 266.7 | 1778 | 63.5 | - | 133.4 | 233.2 | 63.5 | 23.4 | 3.3 |
| | 63.5 [2.5] | 266.7 | 1778 | 63.5 | - | 139.7 | 239.5 | 63.5 | 23.4 | 3.3 |
| | 76.2 [3] | 266.7 | 1778 | 63.5 | - | 139.7 | 239.5 | 63.5 | 23.4 | 3.3 |
| | 88.9 [3.5] | 266.7 | 1778 | 63.5 | - | 139.7 | 239.5 | 63.5 | 23.4 | 3.3 |
| 152.4 [6] | 63.5 [2.5] | 3175 | 215.9 | 76.2 | 241.3 | 150.9 | 270.8 | 73.2 | 26.2 | 6.4 |
| | 76.2 [3] | 3175 | 215.9 | 76.2 | 241.3 | 150.9 | 270.8 | 73.2 | 26.2 | 6.4 |
| | 88.9 [3.5] | 3175 | 215.9 | 76.2 | 241.3 | 150.9 | 270.8 | 73.2 | 26.2 | 6.4 |
| | 101.6 [4] | 3175 | 215.9 | 76.2 | 241.3 | 150.9 | 270.8 | 73.2 | 26.2 | 6.4 |
| 1778 [7] | 76.2 [3] | 374.7 | 24765 | 76.2 | 292.1 | 165.1 | 302.8 | 76.2 | 29.7 | 3.3 |
| | 88.9 [3.5] | 374.7 | 24765 | 76.2 | 292.1 | 165.1 | 302.8 | 76.2 | 29.7 | 3.3 |
| | 101.6 [4] | 374.7 | 24765 | 76.2 | 292.1 | 165.1 | 302.8 | 76.2 | 29.7 | 3.3 |
| | 114.3 [4.5] | 374.7 | 24765 | 76.2 | 292.1 | 165.1 | 302.8 | 76.2 | 29.7 | 3.3 |
| | 127 [5] | 374.7 | 24765 | 76.2 | 292.1 | 165.1 | 302.8 | 76.2 | 29.7 | 3.3 |
| 203.2 [8] | 88.9 [3.5] | 431.8 | 279.4 | 88.9 | 336.55 | 181.1 | 330.2 | 88.9 | 32.0 | - |
| | 101.6 [4] | 431.8 | 279.4 | 88.9 | 336.55 | 181.1 | 330.2 | 88.9 | 32.0 | - |
| | 114.3 [4.5] | 431.8 | 279.4 | 88.9 | 336.55 | 181.1 | 330.2 | 88.9 | 32.0 | - |
| | 127 [5] | 431.8 | 279.4 | 88.9 | 336.55 | 181.1 | 330.2 | 88.9 | 32.0 | - |
| | 139.7 [5.5] | 431.8 | 279.4 | 88.9 | 336.55 | 181.1 | 330.2 | 88.9 | 32.0 | - |

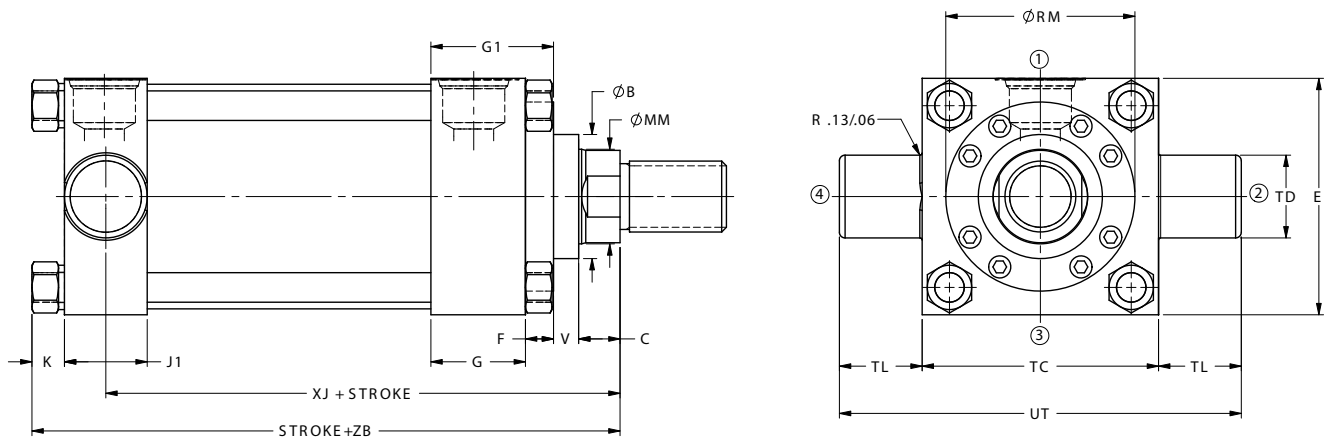
*The standard XV dimension is Stroke/2 + XV (std) unless otherwise specified
+ Plus Stroke

Stroke required should be more or equal to minimum stroke recommended.

Mounting Style and Installation

Dimensions –NZ16 Trunnion

Mounts NFPA MT2 Mount



| Bore mm[in] | Rod Dia mm[in] | B (+.00/-0.05) | C | E | G | J1 | F | V | RM |
|----------------|-------------------|-------------------|------|-------|------|------|------|------|-------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 | - |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 | - |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 | - |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 | - |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 9.7 | 66.8 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 | - |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 | - |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 10.4 | 82.6 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 98.6 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 133.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 143.0 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 15.0 | 16.8 | 112.8 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 133.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 143.0 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 9.7 | 163.6 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 133.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 143.0 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 163.6 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 181.1 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 192.0 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 18.3 | 13.5 | 143.0 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 163.6 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 181.1 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 192.0 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 212.9 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ16 Trunnion Mounts NFPA MT2 Mount

These mounts are for applications in which the machine member travels in a curved path in one plane.

Either mount can be used both in compression (push) and tension (pull) applications. When used in compression

applications, head trunnion mounts provide a longer maximum stroke than cap trunnion mounts.

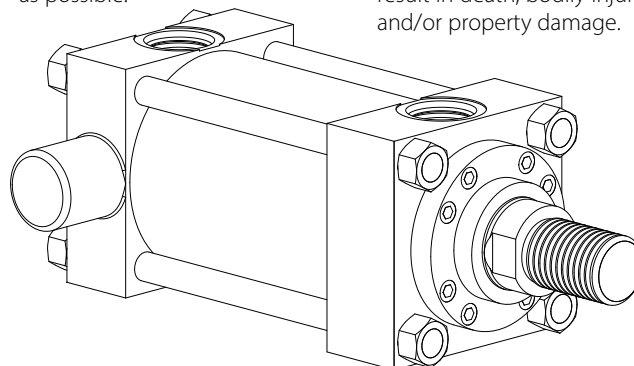
NOTE

For strokes in excess of 610mm [24"], see "Stop tube selection" on page 77.

The trunnion pins are an integral part of the head and can be sleeved to provide an extremely tight fit to the mating machine member and permit curvilinear motion.

It is recommended that rigidly mounted pillow blocks with bearings at least as long as the trunnion pins be used.

The pillow blocks should be installed as close to the shoulder of the trunnion as possible.



WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.

| Bore mm[in] | Rod Dia mm[in] | TD +0.00-.02 | TL | TC | UT | XJ+ | ZB+ Max | Piston Thick. | K |
|-----------------|-------------------|-----------------|------|-------|-------|-------|------------|------------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 25.40 | 25.4 | 63.5 | 114.3 | 124.0 | 153.4 | 35.1 | 10.4 |
| | 25.4 [1] | 25.40 | 25.4 | 63.5 | 114.3 | 133.4 | 162.8 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 34.93 | 35.1 | 76.2 | 146.1 | 133.4 | 166.6 | 35.1 | 14.0 |
| | 34.93 [1.38] | 34.93 | 35.1 | 76.2 | 146.1 | 139.7 | 173.2 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 34.93 | 35.1 | 88.9 | 158.8 | 136.7 | 169.7 | 38.1 | 14.0 |
| | 34.93 [1.38] | 34.93 | 35.1 | 88.9 | 158.8 | 143.0 | 176.3 | 38.1 | 14.0 |
| | 44.45 [1.75] | 34.93 | 35.1 | 88.9 | 158.8 | 149.4 | 182.4 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 44.45 | 44.5 | 114.3 | 203.2 | 158.8 | 198.1 | 44.5 | 17.0 |
| | 44.45 [1.75] | 44.45 | 44.5 | 114.3 | 203.2 | 165.1 | 204.5 | 44.5 | 17.0 |
| | 50.8 [2] | 44.45 | 44.5 | 114.3 | 203.2 | 168.4 | 207.8 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 44.45 | 44.5 | 127.0 | 215.9 | 171.5 | 213.4 | 50.8 | 19.8 |
| | 50.8 [2] | 44.45 | 44.5 | 127.0 | 215.9 | 174.8 | 216.7 | 50.8 | 19.8 |
| | 63.5 [2.5] | 44.45 | 44.5 | 127.0 | 215.9 | 181.1 | 223.0 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 44.45 | 44.5 | 165.1 | 254.0 | 187.5 | 233.2 | 63.5 | 23.4 |
| | 63.5 [2.5] | 44.45 | 44.5 | 165.1 | 254.0 | 193.8 | 239.5 | 63.5 | 23.4 |
| | 76.2 [3] | 44.45 | 44.5 | 165.1 | 254.0 | 193.8 | 239.5 | 63.5 | 23.4 |
| | 88.9 [3.5] | 44.45 | 44.5 | 165.1 | 254.0 | 193.8 | 239.5 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 50.80 | 50.8 | 190.5 | 292.1 | 212.9 | 270.8 | 73.2 | 26.2 |
| | 76.2 [3] | 50.80 | 50.8 | 190.5 | 292.1 | 212.9 | 270.8 | 73.2 | 26.2 |
| | 88.9 [3.5] | 50.80 | 50.8 | 190.5 | 292.1 | 212.9 | 270.8 | 73.2 | 26.2 |
| | 101.6 [4] | 50.80 | 50.8 | 190.5 | 292.1 | 212.9 | 270.8 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 63.50 | 63.5 | 215.9 | 342.9 | 238.3 | 302.8 | 76.2 | 29.7 |
| | 88.9 [3.5] | 63.50 | 63.5 | 215.9 | 342.9 | 238.3 | 302.8 | 76.2 | 29.7 |
| | 101.6 [4] | 63.50 | 63.5 | 215.9 | 342.9 | 238.3 | 302.8 | 76.2 | 29.7 |
| | 114.3 [4.5] | 63.50 | 63.5 | 215.9 | 342.9 | 238.3 | 302.8 | 76.2 | 29.7 |
| | 127 [5] | 63.50 | 63.5 | 215.9 | 342.9 | 238.3 | 302.8 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 76.20 | 76.2 | 241.3 | 393.7 | 260.4 | 330.2 | 88.9 | 32.0 |
| | 101.6 [4] | 76.20 | 76.2 | 241.3 | 393.7 | 260.4 | 330.2 | 88.9 | 32.0 |
| | 114.3 [4.5] | 76.20 | 76.2 | 241.3 | 393.7 | 260.4 | 330.2 | 88.9 | 32.0 |
| | 127 [5] | 76.20 | 76.2 | 241.3 | 393.7 | 260.4 | 330.2 | 88.9 | 32.0 |
| | 139.7 [5.5] | 76.20 | 76.2 | 241.3 | 393.7 | 260.4 | 330.2 | 88.9 | 32.0 |

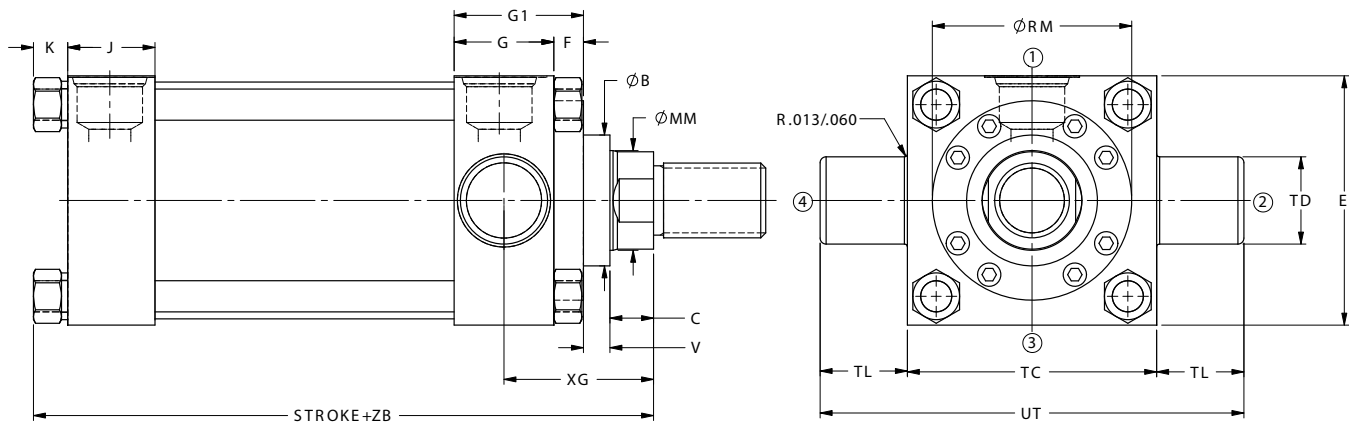
+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions –NZ17 Head Trunnion

Mounts NFPA MT1 Mount



| Bore mm[in] | Rod Dia mm[in] | B (+.00/-0.05) | C | E | G | J | F | V | RM |
|----------------|-------------------|-------------------|------|-------|------|------|------|------|-------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 | 60.5 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 | 66.8 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 | 66.8 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 | 82.6 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 9.7 | 66.8 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 | 82.6 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 | 98.6 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 10.4 | 82.6 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | 98.6 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | 101.6 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 98.6 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 133.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 143.0 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 15.0 | 16.8 | 112.8 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 133.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 143.0 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 9.7 | 163.6 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 133.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 143.0 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 163.6 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 181.1 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 192.0 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 18.3 | 13.5 | 143.0 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 163.6 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 181.1 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 192.0 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 212.9 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ17 Head Trunnion Mounts NFPA MT1 Mount

These mounts are for applications in which the machine member travels in a curved path in one plane.

Either mount can be used both in compression (push) and tension (pull) applications. When used in compression applications, head trunnion mounts provide a longer maximum stroke than cap trunnion mounts.

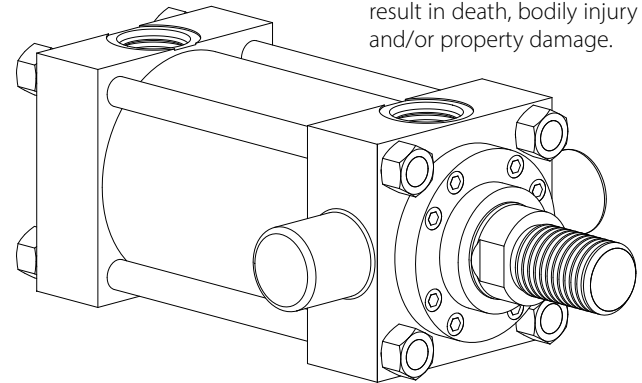
NOTE

For strokes in excess of 610mm [24"], see "Stop tube selection" on page 77.

The trunnion pins are an integral part of the head and can be sleeved to provide an extremely tight fit to the mating machine member and permit curvilinear motion.

It is recommended that rigidly mounted pillow blocks with bearings at least as long as the trunnion pins be used. The pillow blocks should

be installed as close to the shoulder of the trunnion as possible.



WARNING

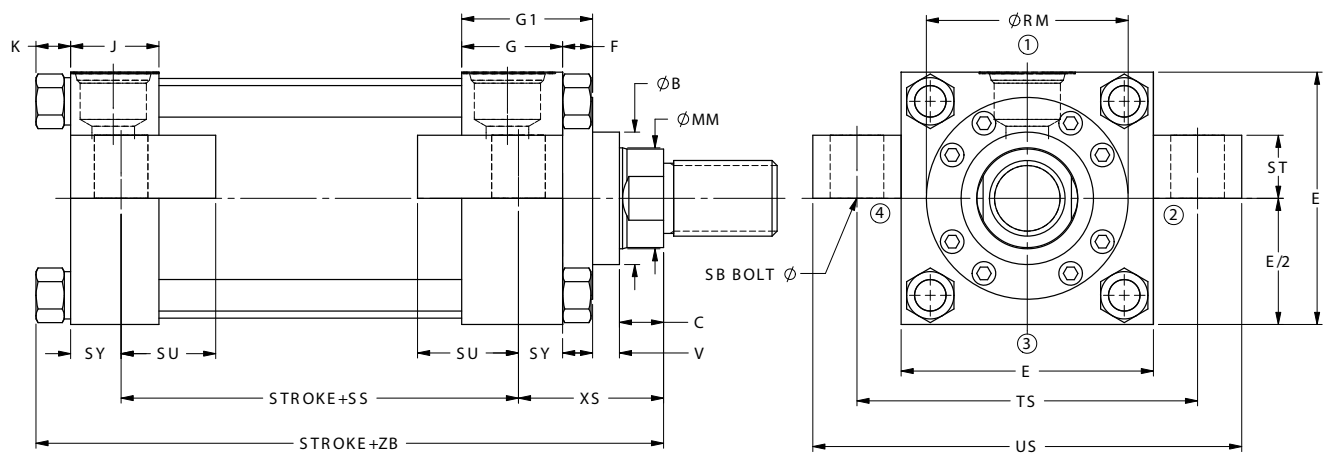
Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.

| Bore mm[in] | Rod Dia mm[in] | TD +00-.02 | TL | TC | UT | XG+ | ZB+ Max | Piston Thick. | K |
|----------------|-------------------|---------------|------|-------|-------|------|------------|------------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 25.40 | 25.4 | 63.5 | 114.3 | 478 | 153.4 | 35.1 | 10.4 |
| | 25.4 [1] | 25.40 | 25.4 | 63.5 | 114.3 | 572 | 162.8 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 34.93 | 35.1 | 76.2 | 146.1 | 572 | 166.6 | 35.1 | 14.0 |
| | 34.93 [1.38] | 34.93 | 35.1 | 76.2 | 146.1 | 63.5 | 173.2 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 34.93 | 35.1 | 88.9 | 158.8 | 572 | 169.7 | 38.1 | 14.0 |
| | 34.93 [1.38] | 34.93 | 35.1 | 88.9 | 158.8 | 63.5 | 176.3 | 38.1 | 14.0 |
| | 44.45 [1.75] | 34.93 | 35.1 | 88.9 | 158.8 | 69.9 | 182.4 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 44.45 | 44.5 | 114.3 | 203.2 | 66.8 | 198.1 | 44.5 | 17.0 |
| | 44.45 [1.75] | 44.45 | 44.5 | 114.3 | 203.2 | 73.2 | 204.5 | 44.5 | 17.0 |
| | 50.8 [2] | 44.45 | 44.5 | 114.3 | 203.2 | 76.2 | 207.8 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 44.45 | 44.5 | 127.0 | 215.9 | 73.2 | 213.4 | 50.8 | 19.8 |
| | 50.8 [2] | 44.45 | 44.5 | 127.0 | 215.9 | 76.2 | 216.7 | 50.8 | 19.8 |
| | 63.5 [2.5] | 44.45 | 44.5 | 127.0 | 215.9 | 82.6 | 223.0 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 44.45 | 44.5 | 165.1 | 254.0 | 76.2 | 233.2 | 63.5 | 23.4 |
| | 63.5 [2.5] | 44.45 | 44.5 | 165.1 | 254.0 | 82.6 | 239.5 | 63.5 | 23.4 |
| | 76.2 [3] | 44.45 | 44.5 | 165.1 | 254.0 | 82.6 | 239.5 | 63.5 | 23.4 |
| | 88.9 [3.5] | 44.45 | 44.5 | 165.1 | 254.0 | 82.6 | 239.5 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 50.80 | 50.8 | 190.5 | 292.1 | 85.9 | 270.8 | 73.2 | 26.2 |
| | 76.2 [3] | 50.80 | 50.8 | 190.5 | 292.1 | 85.9 | 270.8 | 73.2 | 26.2 |
| | 88.9 [3.5] | 50.80 | 50.8 | 190.5 | 292.1 | 85.9 | 270.8 | 73.2 | 26.2 |
| | 101.6 [4] | 50.80 | 50.8 | 190.5 | 292.1 | 85.9 | 270.8 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 63.50 | 63.5 | 215.9 | 342.9 | 92.2 | 302.8 | 76.2 | 29.7 |
| | 88.9 [3.5] | 63.50 | 63.5 | 215.9 | 342.9 | 92.2 | 302.8 | 76.2 | 29.7 |
| | 101.6 [4] | 63.50 | 63.5 | 215.9 | 342.9 | 92.2 | 302.8 | 76.2 | 29.7 |
| | 114.3 [4.5] | 63.50 | 63.5 | 215.9 | 342.9 | 92.2 | 302.8 | 76.2 | 29.7 |
| | 127 [5] | 63.50 | 63.5 | 215.9 | 342.9 | 92.2 | 302.8 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 76.20 | 76.2 | 241.3 | 393.7 | 95.3 | 330.2 | 88.9 | 32.0 |
| | 101.6 [4] | 76.20 | 76.2 | 241.3 | 393.7 | 95.3 | 330.2 | 88.9 | 32.0 |
| | 114.3 [4.5] | 76.20 | 76.2 | 241.3 | 393.7 | 95.3 | 330.2 | 88.9 | 32.0 |
| | 127 [5] | 76.20 | 76.2 | 241.3 | 393.7 | 95.3 | 330.2 | 88.9 | 32.0 |
| | 139.7 [5.5] | 76.20 | 76.2 | 241.3 | 393.7 | 95.3 | 330.2 | 88.9 | 32.0 |

+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation Dimensions –NZ19 Center Lug Mounts ANSI MS3



| Bore mm[in] | Rod Dia mm[in] | B (+.00/-05) | C | E | G | J | F | V | RM | SB | SS+ |
|----------------|-------------------|-----------------|------|-------|------|------|------|------|-------|------|-------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 | - | 9.7 | 98.6 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 | - | 9.7 | 98.6 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 | - | 12.7 | 92.2 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 | - | 12.7 | 92.2 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 9.7 | 66.8 | 19.1 | 85.9 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 | - | 19.1 | 85.9 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 | - | 19.1 | 85.9 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 10.4 | 82.6 | 19.1 | 104.9 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - | 19.1 | 104.9 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - | 19.1 | 104.9 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 1270 | 50.8 | 44.5 | 15.0 | 13.5 | 98.6 | 25.4 | 101.6 |
| | 50.8 [2] | 66.65 | 22.4 | 1270 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 | 25.4 | 101.6 |
| | 63.5 [2.5] | 79.35 | 25.4 | 1270 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 | 25.4 | 101.6 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 | 25.4 | 114.3 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 | 25.4 | 114.3 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 133.4 | 25.4 | 114.3 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 143.0 | 25.4 | 114.3 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 15.0 | 16.8 | 112.8 | 31.8 | 130.3 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 133.4 | 31.8 | 130.3 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 143.0 | 31.8 | 130.3 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 9.7 | 163.6 | 31.8 | 130.3 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 133.4 | 38.1 | 146.1 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 143.0 | 38.1 | 146.1 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 163.6 | 38.1 | 146.1 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 181.1 | 38.1 | 146.1 |
| 203.2 [8] | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 192.0 | 38.1 | 146.1 |
| | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 18.3 | 13.5 | 143.0 | 38.1 | 171.5 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 163.6 | 38.1 | 171.5 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 181.1 | 38.1 | 171.5 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 192.0 | 38.1 | 171.5 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 212.9 | 38.1 | 171.5 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions – NZ19 Center Lug Mounts ANSI MS3

Centerline lug mounts are for moving loads along a flat guided surface as in a carriage along rails.

The mounting surface should be flat and parallel to the centerline of the piston rod.

The load should be guided to traverse along the centerline of the piston rod.

The frame on which the cylinder is mounted **must** be sufficiently rigid to resist bending moments.

NOTE

Limit operating pressure to 103 Bar for minimum deflection. For strokes in excess of 762mm [30"], see "Stop tube selection" on page 77.

WARNING

With unsupported loads, the bearing must absorb more force. For these applications, the larger available rod is recommended, and stop tubes should be considered.

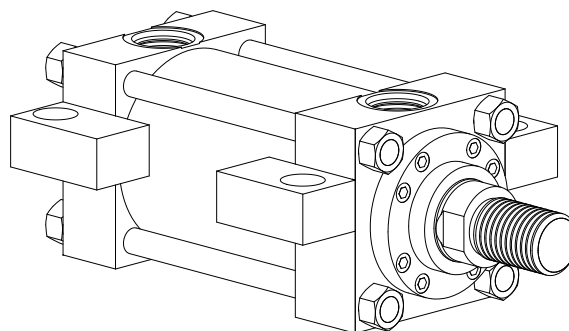
Use high tensile socket head cap screws or hex head bolts tightened to the manufacturer's recommended torque.

For high shock applications, dowel pins or shear keys should be incorporated in the mounting design.

For severe side load applications, consult your local Danfoss sales engineer.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



| Bore mm[in] | Rod Dia mm[in] | ST | SU | SY | TS | US | XS | ZB+ Max | Piston Thick. | K |
|----------------|-------------------|------|------|------|-------|-------|------|------------|------------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 12.7 | 23.1 | 9.7 | 82.6 | 101.6 | 35.1 | 153.4 | 35.1 | 10.4 |
| | 25.4 [1] | 12.7 | 23.1 | 9.7 | 82.6 | 101.6 | 44.5 | 162.8 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 19.1 | 31.5 | 12.7 | 101.6 | 127.0 | 47.8 | 166.6 | 35.1 | 14.0 |
| | 34.93 [1.38] | 19.1 | 31.5 | 12.7 | 101.6 | 127.0 | 54.1 | 173.2 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 25.4 | 39.6 | 17.5 | 124.0 | 158.8 | 52.3 | 169.7 | 38.1 | 14.0 |
| | 34.93 [1.38] | 25.4 | 39.6 | 17.5 | 124.0 | 158.8 | 58.7 | 176.3 | 38.1 | 14.0 |
| | 44.45 [1.75] | 25.4 | 39.6 | 17.5 | 124.0 | 158.8 | 65.0 | 182.4 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 25.4 | 39.4 | 17.5 | 149.4 | 184.2 | 58.7 | 198.1 | 44.5 | 17.0 |
| | 44.45 [1.75] | 25.4 | 39.4 | 17.5 | 149.4 | 184.2 | 65.0 | 204.5 | 44.5 | 17.0 |
| | 50.8 [2] | 25.4 | 39.4 | 17.5 | 149.4 | 184.2 | 68.3 | 207.8 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 31.8 | 50.8 | 22.4 | 171.5 | 215.9 | 69.9 | 213.4 | 50.8 | 19.8 |
| | 50.8 [2] | 31.8 | 50.8 | 22.4 | 171.5 | 215.9 | 73.2 | 216.7 | 50.8 | 19.8 |
| | 63.5 [2.5] | 31.8 | 50.8 | 22.4 | 171.5 | 215.9 | 79.5 | 223.0 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 31.8 | 50.8 | 22.4 | 209.6 | 254.0 | 73.2 | 233.2 | 63.5 | 23.4 |
| | 63.5 [2.5] | 31.8 | 50.8 | 22.4 | 209.6 | 254.0 | 79.5 | 239.5 | 63.5 | 23.4 |
| | 76.2 [3] | 31.8 | 50.8 | 22.4 | 209.6 | 254.0 | 79.5 | 239.5 | 63.5 | 23.4 |
| | 88.9 [3.5] | 31.8 | 50.8 | 22.4 | 209.6 | 254.0 | 79.5 | 239.5 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 38.1 | 63.5 | 28.7 | 247.7 | 304.8 | 85.9 | 270.8 | 73.2 | 26.2 |
| | 76.2 [3] | 38.1 | 63.5 | 28.7 | 247.7 | 304.8 | 85.9 | 270.8 | 73.2 | 26.2 |
| | 88.9 [3.5] | 38.1 | 63.5 | 28.7 | 247.7 | 304.8 | 85.9 | 270.8 | 73.2 | 26.2 |
| | 101.6 [4] | 38.1 | 63.5 | 28.7 | 247.7 | 304.8 | 85.9 | 270.8 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 92.2 | 302.8 | 76.2 | 29.7 |
| | 88.9 [3.5] | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 92.2 | 302.8 | 76.2 | 29.7 |
| | 101.6 [4] | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 92.2 | 302.8 | 76.2 | 29.7 |
| | 114.3 [4.5] | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 92.2 | 302.8 | 76.2 | 29.7 |
| | 127 [5] | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 92.2 | 302.8 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 92.2 | 330.2 | 88.9 | 32.0 |
| | 101.6 [4] | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 92.2 | 330.2 | 88.9 | 32.0 |
| | 114.3 [4.5] | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 92.2 | 330.2 | 88.9 | 32.0 |
| | 127 [5] | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 92.2 | 330.2 | 88.9 | 32.0 |
| | 139.7 [5.5] | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 92.2 | 330.2 | 88.9 | 32.0 |

+ Plus Stroke

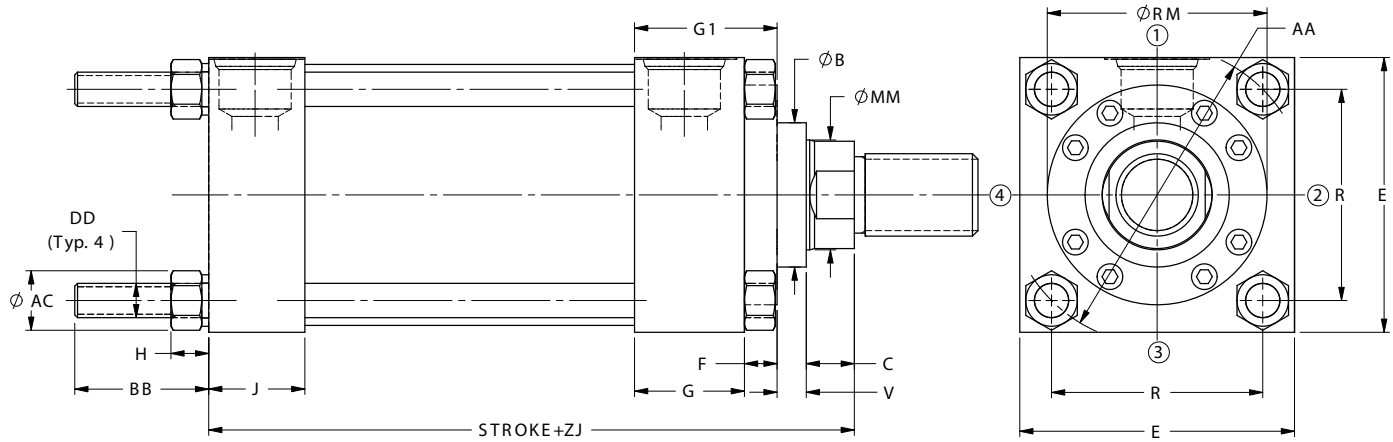
See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions –NZ21 Cap End

Extended Tie Rod Mounts NFPA

MX2 Mount



| Bore mm[in] | Rod Dia mm[in] | B (+.00/-05) | C | E | G | J | F | V | RM |
|----------------|-------------------|-----------------|------|-------|------|------|------|------|-------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 | - |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 | - |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 | - |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 | - |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 9.7 | 66.8 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 | - |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 | - |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 10.4 | 82.6 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 98.6 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 133.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 143.0 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 15.0 | 16.8 | 112.8 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 133.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 143.0 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 9.7 | 163.6 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 133.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 143.0 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 163.6 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 181.1 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 192.0 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 18.3 | 13.5 | 143.0 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 163.6 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 181.1 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 192.0 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 212.9 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ21 Cap End Extended Tie Rod Mounts NFPA MX2 Mount

These mounts are for straight line force transfer applications. The cap extended tie rod mount is recommended for compression (pushing) applications.

The mounting surface should be flat and the frame on which the cylinder is mounted **must** be sufficiently rigid to resist bending moments.

Once fitted into the application framework, mounting nuts should be

torqued to the values listed in the table (right).

Tie Rod Torque Values

Torque values in the following table apply to all mounting styles.

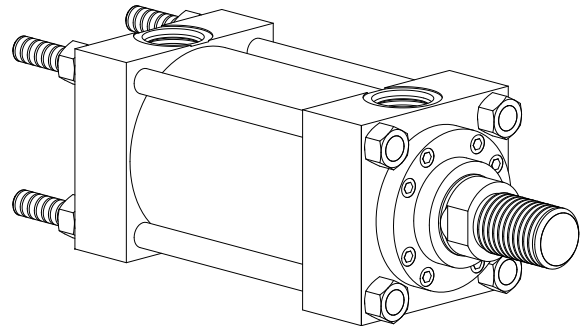
| Bore | Tie Rod Torque Nm |
|-------------|-------------------|
| 138.1 (1.5) | 41 |
| 50.8 (2) | 54 |
| 63.5 (2.5) | 108 |
| 82.5 (3.25) | 258 |
| 101.6 (4) | 258 |
| 127.0 (5) | 746 |
| 152.4 (6) | 949 |
| 177.8 (7) | 1017 |
| 203.2 (8) | 1695 |

NOTE

For strokes in excess of 762mm [30"], see "Stop tube selection" on page 77.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



| Bore mm[in] | Rod Dia mm[in] | R | AA | Max AC | BB | (UN) DD | ZJ+ | Piston Thick. | Max H |
|--------------|----------------|-------|-------|--------|-------|----------|-------|---------------|-------|
| 38.1 [1.5] | 15.88 [0.63] | 41.4 | 58.4 | 175 | 35.1 | .375-24 | 143.0 | 35.1 | 9.7 |
| | 25.4 [1] | 41.4 | 58.4 | 175 | 35.1 | .375-24 | 152.4 | 35.1 | 9.7 |
| 50.8 [2] | 25.4 [1] | 52.1 | 73.7 | 22.4 | 46.0 | .500-20 | 152.4 | 35.1 | 12.7 |
| | 34.93 [1.38] | 52.1 | 73.7 | 22.4 | 46.0 | .500-20 | 159.0 | 35.1 | 12.7 |
| 63.5 [2.5] | 25.4 [1] | 64.8 | 91.4 | 22.4 | 46.0 | .500-20 | 155.7 | 38.1 | 12.7 |
| | 34.93 [1.38] | 64.8 | 91.4 | 22.4 | 46.0 | .500-20 | 162.1 | 38.1 | 12.7 |
| | 44.45 [1.75] | 64.8 | 91.4 | 22.4 | 46.0 | .500-20 | 168.4 | 38.1 | 12.7 |
| 82.55 [3.25] | 34.93 [1.38] | 82.6 | 116.8 | 28.4 | 58.7 | .625-18 | 181.1 | 44.5 | 16.0 |
| | 44.45 [1.75] | 82.6 | 116.8 | 28.4 | 58.7 | .625-18 | 187.5 | 44.5 | 16.0 |
| | 50.8 [2] | 82.6 | 116.8 | 28.4 | 58.7 | .625-18 | 190.8 | 44.5 | 16.0 |
| 101.6 [4] | 44.45 [1.75] | 97.0 | 137.2 | 28.4 | 58.7 | .625-18 | 193.8 | 50.8 | 16.0 |
| | 50.8 [2] | 97.0 | 137.2 | 28.4 | 58.7 | .625-18 | 196.9 | 50.8 | 16.0 |
| | 63.5 [2.5] | 97.0 | 137.2 | 28.4 | 58.7 | .625-18 | 203.2 | 50.8 | 16.0 |
| 127 [5] | 50.8 [2] | 125.7 | 177.8 | 39.6 | 81.0 | .875-14 | 209.8 | 63.5 | 20.6 |
| | 63.5 [2.5] | 125.7 | 177.8 | 39.6 | 81.0 | .875-14 | 215.9 | 63.5 | 20.6 |
| | 76.2 [3] | 125.7 | 177.8 | 39.6 | 81.0 | .875-14 | 215.9 | 63.5 | 20.6 |
| | 88.9 [3.5] | 125.7 | 177.8 | 39.6 | 81.0 | .875-14 | 215.9 | 63.5 | 20.6 |
| 152.4 [6] | 63.5 [2.5] | 145.5 | 205.7 | 44.5 | 92.2 | 1.000-14 | 244.6 | 73.2 | 23.9 |
| | 76.2 [3] | 145.5 | 205.7 | 44.5 | 92.2 | 1.000-14 | 244.6 | 73.2 | 23.9 |
| | 88.9 [3.5] | 145.5 | 205.7 | 44.5 | 92.2 | 1.000-14 | 244.6 | 73.2 | 23.9 |
| | 101.6 [4] | 145.5 | 205.7 | 44.5 | 92.2 | 1.000-14 | 244.6 | 73.2 | 23.9 |
| 177.8 [7] | 76.2 [3] | 167.1 | 236.2 | 50.8 | 104.9 | 1.125-12 | 273.1 | 76.2 | 26.9 |
| | 88.9 [3.5] | 167.1 | 236.2 | 50.8 | 104.9 | 1.125-12 | 273.1 | 76.2 | 26.9 |
| | 101.6 [4] | 167.1 | 236.2 | 50.8 | 104.9 | 1.125-12 | 273.1 | 76.2 | 26.9 |
| | 114.3 [4.5] | 167.1 | 236.2 | 50.8 | 104.9 | 1.125-12 | 273.1 | 76.2 | 26.9 |
| | 127 [5] | 167.1 | 236.2 | 50.8 | 104.9 | 1.125-12 | 273.1 | 76.2 | 26.9 |
| 203.2 [8] | 88.9 [3.5] | 190.5 | 269.2 | 55.6 | 114.3 | 1.250-12 | 298.5 | 88.9 | 28.4 |
| | 101.6 [4] | 190.5 | 269.2 | 55.6 | 114.3 | 1.250-12 | 298.5 | 88.9 | 28.4 |
| | 114.3 [4.5] | 190.5 | 269.2 | 55.6 | 114.3 | 1.250-12 | 298.5 | 88.9 | 28.4 |
| | 127 [5] | 190.5 | 269.2 | 55.6 | 114.3 | 1.250-12 | 298.5 | 88.9 | 28.4 |
| | 139.7 [5.5] | 190.5 | 269.2 | 55.6 | 114.3 | 1.250-12 | 298.5 | 88.9 | 28.4 |

+ Plus Stroke

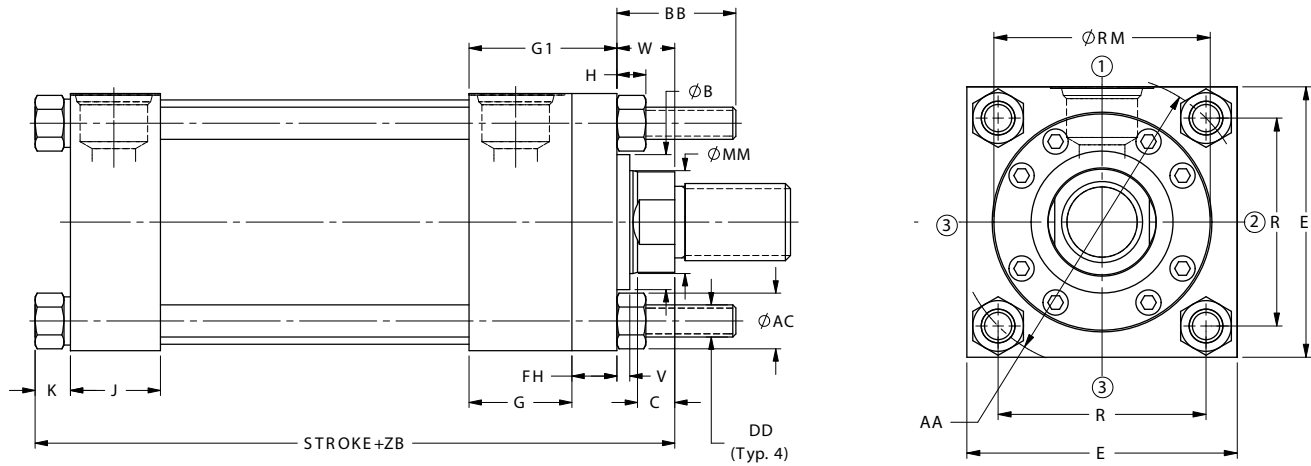
See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions – NZ22 Head End

Extended Tie Rod Mounts NFPA

MX3 Mount



| Bore mm[in] | Rod Dia mm[in] | B (+.00/- .05) | C | E | G | J | FH | V | R |
|----------------|-------------------|-------------------|------|-------|------|------|------|------|-------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 | 41.4 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 | 41.4 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 | 52.1 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 | 52.1 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 16.0 | 6.4 | 64.8 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 | 64.8 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 | 64.8 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 19.1 | 6.4 | 82.6 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | 82.6 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | 82.6 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 22.4 | 6.4 | 97.0 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 22.4 | 6.4 | 97.0 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 22.4 | 9.7 | 97.0 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 22.4 | 6.4 | 125.7 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 22.4 | 9.7 | 125.7 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 22.4 | 9.7 | 125.7 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 22.4 | 9.7 | 125.7 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 25.4 | 6.4 | 145.5 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 25.4 | 6.4 | 145.5 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 25.4 | 6.4 | 145.5 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 25.4 | 6.4 | 145.5 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 25.4 | 6.4 | 167.1 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 25.4 | 6.4 | 167.1 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 25.4 | 6.4 | 167.1 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 25.4 | 6.4 | 167.1 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 25.4 | 6.4 | 167.1 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 25.4 | 6.4 | 190.5 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 25.4 | 6.4 | 190.5 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 25.4 | 6.4 | 190.5 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 25.4 | 6.4 | 190.5 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 25.4 | 6.4 | 190.5 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ22 Head End Extended Tie Rod Mounts NFPA MX3 Mount

These mounts are for straight line force transfer applications. The head extended tie rod mount is recommended for tension (pulling) applications.

The mounting surface should be flat and the frame on which the cylinder is mounted **must** be sufficiently rigid to resist bending moments.

On head mount applications, the cartridge provides a pilot diameter to align the rod in the mounting frame.

Once fitted into the application framework, mounting nuts should be torqued to the values listed in the table on page 45.

NOTE

For strokes in excess of 762mm [30"], see "Stop tube selection" on page 77.

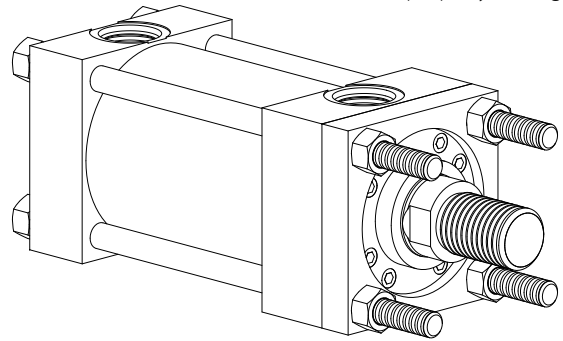
WARNING

The force on the rod should be perpendicular to the mounting surface and coincide with the centerline of the piston rod. For eccentric loads, the larger of the

two available rods in each bore size is recommended. Stop tubes should also be considered.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



| Bore mm[in] | Rod Dia mm[in] | AA | Max AC | BB | (UN) DD | Max H | ZB+ Max | PistonThick. | K |
|----------------|-------------------|-------|-----------|-------|------------|----------|------------|--------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 58.4 | 175 | 35.1 | .375-24 | 8.6 | 153.4 | 35.1 | 10.4 |
| | 25.4 [1] | 58.4 | 175 | 35.1 | .375-24 | 8.6 | 162.8 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 73.7 | 22.4 | 46.0 | .500-20 | 11.4 | 166.6 | 35.1 | 14.0 |
| | 34.93 [1.38] | 73.7 | 22.4 | 46.0 | .500-20 | 11.4 | 173.2 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 91.4 | 22.4 | 46.0 | .500-20 | 11.4 | 169.7 | 38.1 | 14.0 |
| | 34.93 [1.38] | 91.4 | 22.4 | 46.0 | .500-20 | 11.4 | 176.3 | 38.1 | 14.0 |
| | 44.45 [1.75] | 91.4 | 22.4 | 46.0 | .500-20 | 11.4 | 182.4 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 116.8 | 28.4 | 58.7 | .625-18 | 14.2 | 198.1 | 44.5 | 17.0 |
| | 44.45 [1.75] | 116.8 | 28.4 | 58.7 | .625-18 | 14.2 | 204.5 | 44.5 | 17.0 |
| | 50.8 [2] | 116.8 | 28.4 | 58.7 | .625-18 | 14.2 | 207.8 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 137.2 | 28.4 | 58.7 | .625-18 | 14.2 | 213.4 | 50.8 | 19.8 |
| | 50.8 [2] | 137.2 | 28.4 | 58.7 | .625-18 | 14.2 | 216.7 | 50.8 | 19.8 |
| | 63.5 [2.5] | 137.2 | 28.4 | 58.7 | .625-18 | 14.2 | 223.0 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 177.8 | 39.6 | 81.0 | .875-14 | 19.8 | 233.2 | 63.5 | 23.4 |
| | 63.5 [2.5] | 177.8 | 39.6 | 81.0 | .875-14 | 19.8 | 239.5 | 63.5 | 23.4 |
| | 76.2 [3] | 177.8 | 39.6 | 81.0 | .875-14 | 19.8 | 239.5 | 63.5 | 23.4 |
| | 88.9 [3.5] | 177.8 | 39.6 | 81.0 | .875-14 | 19.8 | 239.5 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 205.7 | 44.5 | 92.2 | 1.000-14 | 22.6 | 270.8 | 73.2 | 26.2 |
| | 76.2 [3] | 205.7 | 44.5 | 92.2 | 1.000-14 | 22.6 | 270.8 | 73.2 | 26.2 |
| | 88.9 [3.5] | 205.7 | 44.5 | 92.2 | 1.000-14 | 22.6 | 270.8 | 73.2 | 26.2 |
| | 101.6 [4] | 205.7 | 44.5 | 92.2 | 1.000-14 | 22.6 | 270.8 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 236.2 | 50.8 | 104.9 | 1.125-12 | 25.4 | 302.8 | 76.2 | 29.7 |
| | 88.9 [3.5] | 236.2 | 50.8 | 104.9 | 1.125-12 | 25.4 | 302.8 | 76.2 | 29.7 |
| | 101.6 [4] | 236.2 | 50.8 | 104.9 | 1.125-12 | 25.4 | 302.8 | 76.2 | 29.7 |
| | 114.3 [4.5] | 236.2 | 50.8 | 104.9 | 1.125-12 | 25.4 | 302.8 | 76.2 | 29.7 |
| | 127 [5] | 236.2 | 50.8 | 104.9 | 1.125-12 | 25.4 | 302.8 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 269.2 | 55.6 | 114.3 | 1.250-12 | 27.7 | 330.2 | 88.9 | 32.0 |
| | 101.6 [4] | 269.2 | 55.6 | 114.3 | 1.250-12 | 27.7 | 330.2 | 88.9 | 32.0 |
| | 114.3 [4.5] | 269.2 | 55.6 | 114.3 | 1.250-12 | 27.7 | 330.2 | 88.9 | 32.0 |
| | 127 [5] | 269.2 | 55.6 | 114.3 | 1.250-12 | 27.7 | 330.2 | 88.9 | 32.0 |
| | 139.7 [5.5] | 269.2 | 55.6 | 114.3 | 1.250-12 | 27.7 | 330.2 | 88.9 | 32.0 |

+ Plus Stroke

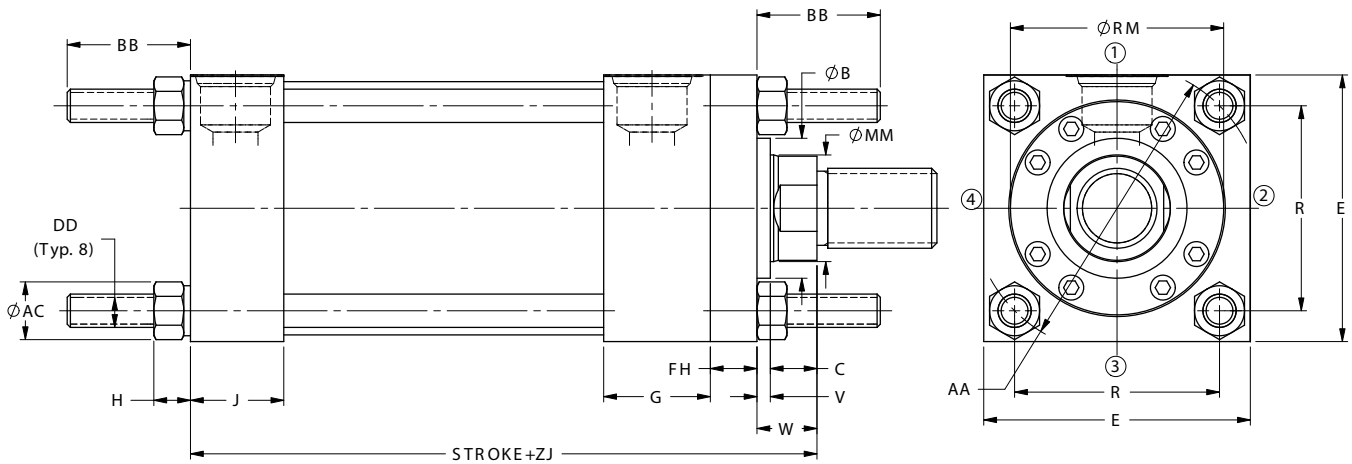
See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions –NZ23 Both End

Extended Tie Rod Mounts NFPA

MX1 Mount



| Bore mm[in] | Rod Dia mm[in] | B (+.00/-.05) | C | E | G | J | FH | V | W |
|----------------|-------------------|------------------|------|-------|------|------|------|------|------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 | 16.0 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 | 25.4 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 | 19.1 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 | 25.7 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 16.0 | 6.4 | 19.1 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 | 25.7 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 | 31.8 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 19.1 | 6.4 | 22.4 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | 28.7 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | 32.0 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 22.4 | 6.4 | 25.4 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 22.4 | 6.4 | 28.7 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 22.4 | 9.7 | 35.1 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 22.4 | 6.4 | 28.7 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 22.4 | 9.7 | 35.1 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 22.4 | 9.7 | 35.1 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 22.4 | 9.7 | 35.1 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 25.4 | 6.4 | 31.8 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 25.4 | 6.4 | 31.8 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 25.4 | 6.4 | 31.8 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 25.4 | 6.4 | 31.8 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 25.4 | 6.4 | 31.8 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 25.4 | 6.4 | 31.8 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 25.4 | 6.4 | 31.8 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 25.4 | 6.4 | 31.8 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 25.4 | 6.4 | 31.8 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 25.4 | 6.4 | 31.8 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 25.4 | 6.4 | 31.8 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 25.4 | 6.4 | 31.8 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 25.4 | 6.4 | 31.8 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 25.4 | 6.4 | 31.8 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ23 Both End Extended Tie Rod Mounts NFFPA MX1 Mount

These mounts are for straight line force transfer applications. Both ends extended tie rod mounts are suited for tension and compression applications or applications where additional hardware is to be attached to cylinders.

The mounting surface should be flat and the frame on which the cylinder is mounted **must** be sufficiently rigid to resist bending moments.

Once fitted into the application framework, mounting nuts should be torqued to the values listed in the table on page 46.

NOTE

For strokes in excess of 762mm [30"], see "Stop tube selection" on page 77.

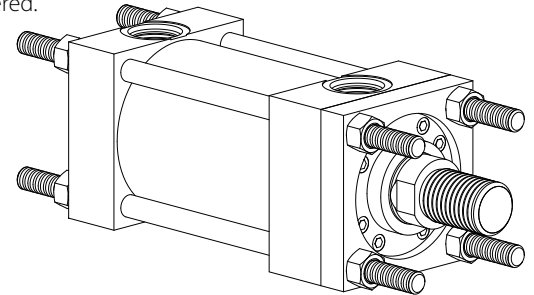
WARNING

The force on the rod should be perpendicular to the mounting surface and coincide with the centerline of

the piston rod. For eccentric loads, the larger of the two available rods in each bore size is recommended. Stop tubes should also be considered.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



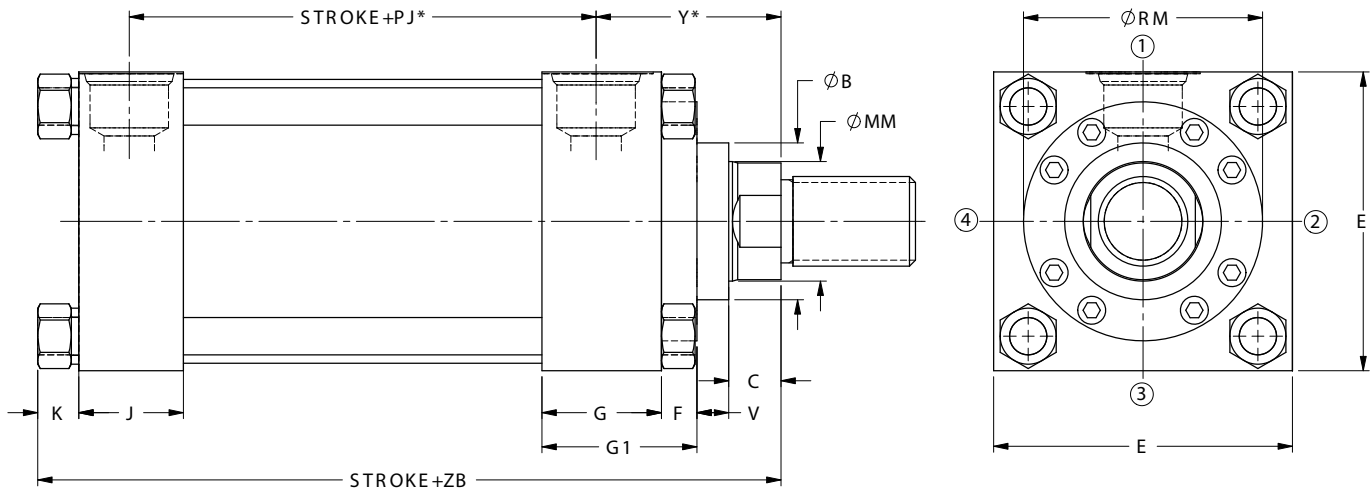
| Bore mm[in] | Rod Dia mm[in] | R | AA | Max AC | BB | (UN) DD | ZJ+ Max | Piston Thick. | Max H |
|--------------|----------------|-------|-------|--------|-------|----------|---------|---------------|-------|
| 38.1 [1.5] | 15.88 [0.63] | 41.4 | 58.4 | 175 | 35.1 | .375-24 | 143.0 | 35.1 | 8.6 |
| | 25.4 [1] | 41.4 | 58.4 | 175 | 35.1 | .375-24 | 152.4 | 35.1 | 8.6 |
| 50.8 [2] | 25.4 [1] | 52.1 | 73.7 | 22.4 | 46.0 | .500-20 | 152.4 | 35.1 | 11.4 |
| | 34.93 [1.38] | 52.1 | 73.7 | 22.4 | 46.0 | .500-20 | 159.0 | 35.1 | 11.4 |
| 63.5 [2.5] | 25.4 [1] | 64.8 | 91.4 | 22.4 | 46.0 | .500-20 | 155.7 | 38.1 | 11.4 |
| | 34.93 [1.38] | 64.8 | 91.4 | 22.4 | 46.0 | .500-20 | 162.1 | 38.1 | 11.4 |
| | 44.45 [1.75] | 64.8 | 91.4 | 22.4 | 46.0 | .500-20 | 168.4 | 38.1 | 11.4 |
| 82.55 [3.25] | 34.93 [1.38] | 82.6 | 116.8 | 28.4 | 58.7 | .625-18 | 181.1 | 44.5 | 14.2 |
| | 44.45 [1.75] | 82.6 | 116.8 | 28.4 | 58.7 | .625-18 | 187.5 | 44.5 | 14.2 |
| | 50.8 [2] | 82.6 | 116.8 | 28.4 | 58.7 | .625-18 | 190.8 | 44.5 | 14.2 |
| 101.6 [4] | 44.45 [1.75] | 97.0 | 137.2 | 28.4 | 58.7 | .625-18 | 193.8 | 50.8 | 14.2 |
| | 50.8 [2] | 97.0 | 137.2 | 28.4 | 58.7 | .625-18 | 197.1 | 50.8 | 14.2 |
| | 63.5 [2.5] | 97.0 | 137.2 | 28.4 | 58.7 | .625-18 | 203.2 | 50.8 | 14.2 |
| 127 [5] | 50.8 [2] | 125.7 | 177.8 | 39.6 | 81.0 | .875-14 | 209.8 | 63.5 | 19.8 |
| | 63.5 [2.5] | 125.7 | 177.8 | 39.6 | 81.0 | .875-14 | 215.9 | 63.5 | 19.8 |
| | 76.2 [3] | 125.7 | 177.8 | 39.6 | 81.0 | .875-14 | 215.9 | 63.5 | 19.8 |
| | 88.9 [3.5] | 125.7 | 177.8 | 39.6 | 81.0 | .875-14 | 215.9 | 63.5 | 19.8 |
| 152.4 [6] | 63.5 [2.5] | 145.5 | 205.7 | 44.5 | 92.2 | 1.000-14 | 244.6 | 73.2 | 22.6 |
| | 76.2 [3] | 145.5 | 205.7 | 44.5 | 92.2 | 1.000-14 | 244.6 | 73.2 | 22.6 |
| | 88.9 [3.5] | 145.5 | 205.7 | 44.5 | 92.2 | 1.000-14 | 244.6 | 73.2 | 22.6 |
| | 101.6 [4] | 145.5 | 205.7 | 44.5 | 92.2 | 1.000-14 | 244.6 | 73.2 | 22.6 |
| 177.8 [7] | 76.2 [3] | 167.1 | 236.2 | 50.8 | 104.9 | 1.125-12 | 273.1 | 76.2 | 25.4 |
| | 88.9 [3.5] | 167.1 | 236.2 | 50.8 | 104.9 | 1.125-12 | 273.1 | 76.2 | 25.4 |
| | 101.6 [4] | 167.1 | 236.2 | 50.8 | 104.9 | 1.125-12 | 273.1 | 76.2 | 25.4 |
| | 114.3 [4.5] | 167.1 | 236.2 | 50.8 | 104.9 | 1.125-12 | 273.1 | 76.2 | 25.4 |
| | 127 [5] | 167.1 | 236.2 | 50.8 | 104.9 | 1.125-12 | 273.1 | 76.2 | 25.4 |
| 203.2 [8] | 88.9 [3.5] | 190.5 | 269.2 | 55.6 | 114.3 | 1.250-12 | 298.5 | 88.9 | 27.7 |
| | 101.6 [4] | 190.5 | 269.2 | 55.6 | 114.3 | 1.250-12 | 298.5 | 88.9 | 27.7 |
| | 114.3 [4.5] | 190.5 | 269.2 | 55.6 | 114.3 | 1.250-12 | 298.5 | 88.9 | 27.7 |
| | 127 [5] | 190.5 | 269.2 | 55.6 | 114.3 | 1.250-12 | 298.5 | 88.9 | 27.7 |
| | 139.7 [5.5] | 190.5 | 269.2 | 55.6 | 114.3 | 1.250-12 | 298.5 | 88.9 | 27.7 |

+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions – NZ24 No Mounts



| Bore mm[in] | Rod Dia mm[in] | B (+0.00/-0.05) | C | E | G | J | F | V | Y | PJ+ | RM | ZB+ Max | Piston Thick. | K |
|----------------|-------------------|--------------------|------|-------|------|------|------|------|-------|-------|-------|------------|------------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 | 62.7 | 68.3 | - | 153.4 | 35.1 | 10.4 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 | 62.7 | 68.3 | - | 162.8 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 | 62.7 | 68.3 | - | 166.6 | 35.1 | 14.0 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 | 69.1 | 68.3 | - | 173.2 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 9.7 | 62.7 | 71.4 | 66.8 | 169.7 | 38.1 | 14.0 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 | 69.1 | 71.4 | - | 176.3 | 38.1 | 14.0 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 | 75.4 | 71.4 | - | 182.4 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 10.4 | 69.1 | 90.4 | 82.6 | 198.1 | 44.5 | 17.0 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | 75.4 | 90.4 | - | 204.5 | 44.5 | 17.0 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | 78.5 | 90.4 | - | 207.8 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 75.4 | 96.8 | 98.6 | 213.4 | 50.8 | 19.8 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 78.5 | 96.8 | 101.6 | 216.7 | 50.8 | 19.8 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 15.0 | 16.8 | 84.8 | 96.8 | 112.8 | 223.0 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 13.5 | 78.5 | 109.5 | 101.6 | 233.2 | 63.5 | 23.4 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 16.8 | 84.8 | 109.5 | 112.8 | 239.5 | 63.5 | 23.4 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 84.8 | 109.5 | 133.4 | 239.5 | 63.5 | 23.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 84.8 | 109.5 | 143.0 | 239.5 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 15.0 | 16.8 | 91.2 | 119.1 | 112.8 | 270.8 | 73.2 | 26.2 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 91.2 | 119.1 | 133.4 | 270.8 | 73.2 | 26.2 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 91.2 | 119.1 | 143.0 | 270.8 | 73.2 | 26.2 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 9.7 | 91.2 | 119.1 | 163.6 | 270.8 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 100.1 | 130.3 | 133.4 | 302.8 | 76.2 | 29.7 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 100.1 | 130.3 | 143.0 | 302.8 | 76.2 | 29.7 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 100.1 | 130.3 | 163.6 | 302.8 | 76.2 | 29.7 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 100.1 | 130.3 | 181.1 | 302.8 | 76.2 | 29.7 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 100.1 | 130.3 | 192.0 | 302.8 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 18.3 | 13.5 | 103.1 | 149.4 | 143.0 | 330.2 | 88.9 | 32.0 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 103.1 | 149.4 | 163.6 | 330.2 | 88.9 | 32.0 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 103.1 | 149.4 | 181.1 | 330.2 | 88.9 | 32.0 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 103.1 | 149.4 | 192.0 | 330.2 | 88.9 | 32.0 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 103.1 | 149.4 | 212.9 | 330.2 | 88.9 | 32.0 |

+ Plus Stroke

* Port dimensions for standard ports only. Consult Eaton for flange, manifold and special ports.

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ24 No Mounts

No mounts are for moving loads on a flat guided surface such as carriage rails.

Mounting surface should be flat and parallel to centerline of the piston rod.

The load should be guided to traverse along the centerline of the piston rod.

The frame on which the cylinder is mounted **must** be sufficiently rigid to resist bending moments.

NOTE

For strokes in excess of 762mm [30"], see "Stop tube selection" on page 77.

WARNING

With unsupported loads, the bearing must absorb more force.

For these applications, the larger available rod is recommended, and stop tubes should be considered.

External clamping mechanism on head and cap is required to hold cylinder in place during operation.

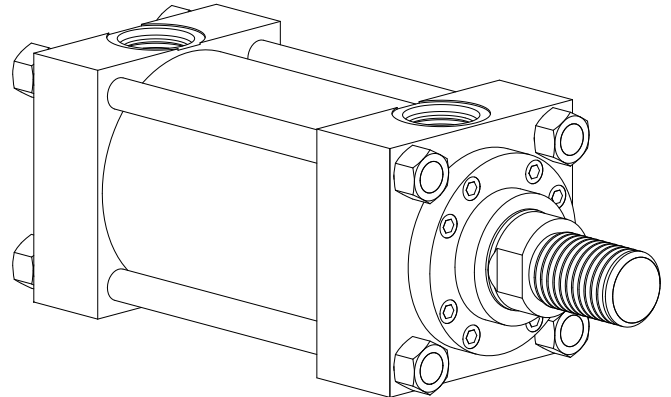
Use high tensile socket head cap screws or hex head bolts tightened to the manufacturer's recommended torque in clamping.

For high shock applications, dowel pins or shear keys should be incorporated in the mounting design. For these applications, consider a keyed side lug mount, NZ04.

For severe side load applications, consult your local Danfoss sales engineer.

WARNING

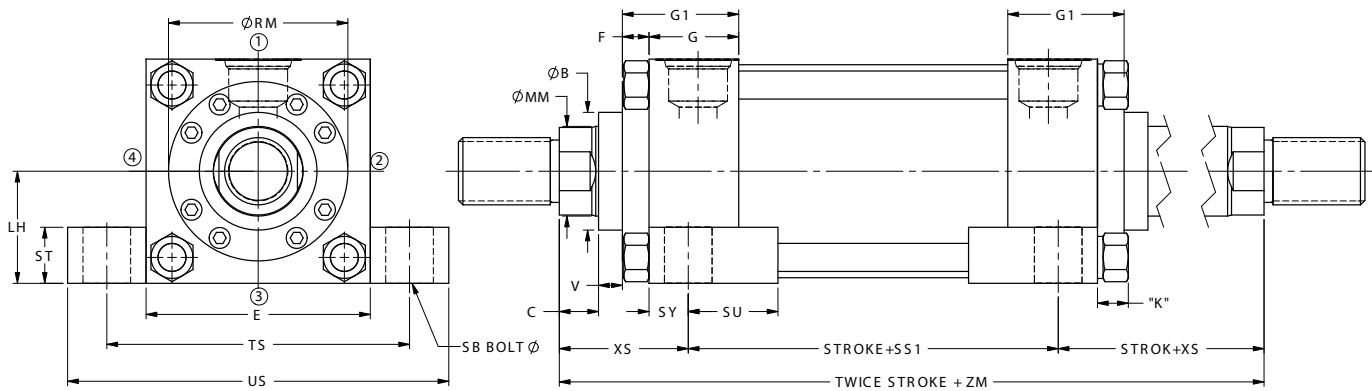
Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



Mounting Style and Installation

Dimensions –NZ25 Double Rod

Side Lug Mount NFPA MS7 Mount



| Bore mm[in] | Rod Dia mm[in] | B (+.00/-05) | C | E | G | F | V | RM | LH ± 05 | SS1+ |
|----------------|-------------------|-----------------|------|-------|------|------|------|-------|----------------|-------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 9.7 | 6.4 | - | 31.57 | 104.9 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 9.7 | 12.7 | - | 31.57 | 104.9 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 16.0 | 6.4 | - | 37.92 | 98.6 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 16.0 | 9.7 | - | 37.92 | 98.6 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 12.7 | 9.7 | 66.8 | 44.27 | 92.2 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 16.0 | 9.7 | - | 44.27 | 92.2 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 16.0 | 12.7 | - | 44.27 | 92.2 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 15.0 | 10.4 | 82.6 | 56.97 | 111.3 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 19.1 | 9.7 | - | 56.97 | 111.3 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 19.1 | 9.7 | - | 56.97 | 111.3 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 15.0 | 13.5 | 98.6 | 63.32 | 108.0 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 15.0 | 13.5 | 101.6 | 63.32 | 108.0 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 15.0 | 16.8 | 112.8 | 63.32 | 108.0 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 15.0 | 13.5 | 101.6 | 82.37 | 120.7 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 15.0 | 16.8 | 112.8 | 82.37 | 120.7 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 18.3 | 13.5 | 133.4 | 82.37 | 120.7 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 18.3 | 13.5 | 143.0 | 82.37 | 120.7 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 15.0 | 16.8 | 112.8 | 95.07 | 130.3 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 18.3 | 13.5 | 133.4 | 95.07 | 130.3 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 18.3 | 13.5 | 143.0 | 95.07 | 130.3 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 22.4 | 9.7 | 163.6 | 95.07 | 130.3 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 18.3 | 13.5 | 133.4 | 107.77 | 146.1 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 18.3 | 13.5 | 143.0 | 107.77 | 146.1 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 22.4 | 9.7 | 163.6 | 107.77 | 146.1 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 22.4 | 9.7 | 181.1 | 107.77 | 146.1 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 22.4 | 9.7 | 192.0 | 107.77 | 146.1 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 18.3 | 13.5 | 143.0 | 120.47 | 171.5 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 22.4 | 9.7 | 163.6 | 120.47 | 171.5 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 22.4 | 9.7 | 181.1 | 120.47 | 171.5 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 22.4 | 9.7 | 192.0 | 120.47 | 171.5 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 22.4 | 9.7 | 212.9 | 120.47 | 171.5 |

+ Plus Stroke

All other dimensions shown in mm

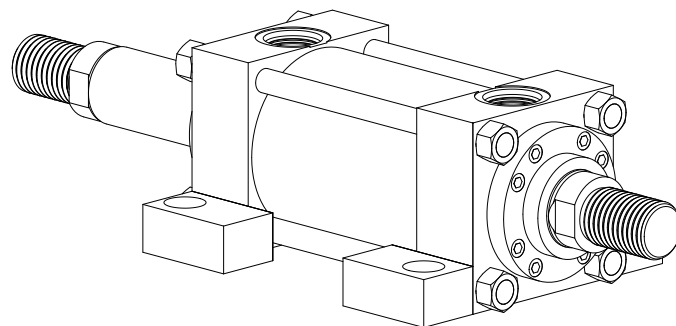
Mounting Style and Installation Dimensions –NZ25 Double Rod Side Lug Mount NFPA MS7 Mount

Double rod cylinders are specified when equal displacement is desired on both sides of the piston, or when the application is such that another function can be performed simultaneously with a second rod. The single rod mount application

data is also applicable to double rod cylinders. Rod and pilot related dimensions are typical for both ends.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



| Bore mm[in] | Rod Dia mm[in] | ST | SU | SY | TS | US | SB | XS | ZM+ | Piston Thick. | K |
|----------------|-------------------|------|------|------|-------|-------|------|------|-------|------------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 12.7 | 23.1 | 9.7 | 82.6 | 101.6 | 9.7 | 35.1 | 174.8 | 35.1 | 10.4 |
| | 25.4 [1] | 12.7 | 23.1 | 9.7 | 82.6 | 101.6 | 9.7 | 44.5 | 193.8 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 19.1 | 31.5 | 12.7 | 101.6 | 127.0 | 12.7 | 47.8 | 193.8 | 35.1 | 14.0 |
| | 34.93 [1.38] | 19.1 | 31.5 | 12.7 | 101.6 | 127.0 | 12.7 | 54.1 | 206.5 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 25.4 | 39.6 | 17.5 | 124.0 | 158.8 | 19.1 | 52.3 | 196.9 | 38.1 | 14.0 |
| | 34.93 [1.38] | 25.4 | 39.6 | 17.5 | 124.0 | 158.8 | 19.1 | 58.7 | 209.6 | 38.1 | 14.0 |
| | 44.45 [1.75] | 25.4 | 39.6 | 17.5 | 124.0 | 158.8 | 19.1 | 65.0 | 222.3 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 25.4 | 39.4 | 17.5 | 149.4 | 184.2 | 19.1 | 58.7 | 228.6 | 44.5 | 17.0 |
| | 44.45 [1.75] | 25.4 | 39.4 | 17.5 | 149.4 | 184.2 | 19.1 | 65.0 | 241.3 | 44.5 | 17.0 |
| | 50.8 [2] | 25.4 | 39.4 | 17.5 | 149.4 | 184.2 | 19.1 | 68.3 | 247.7 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 31.8 | 50.8 | 22.4 | 171.5 | 215.9 | 25.4 | 69.9 | 247.7 | 50.8 | 19.8 |
| | 50.8 [2] | 31.8 | 50.8 | 22.4 | 171.5 | 215.9 | 25.4 | 73.2 | 254.0 | 50.8 | 19.8 |
| | 63.5 [2.5] | 31.8 | 50.8 | 22.4 | 171.5 | 215.9 | 25.4 | 79.5 | 266.7 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 31.8 | 50.8 | 22.4 | 209.6 | 254.0 | 25.4 | 73.2 | 266.7 | 63.5 | 23.4 |
| | 63.5 [2.5] | 31.8 | 50.8 | 22.4 | 209.6 | 254.0 | 25.4 | 79.5 | 279.4 | 63.5 | 23.4 |
| | 76.2 [3] | 31.8 | 50.8 | 22.4 | 209.6 | 254.0 | 25.4 | 79.5 | 279.4 | 63.5 | 23.4 |
| | 88.9 [3.5] | 31.8 | 50.8 | 22.4 | 209.6 | 254.0 | 25.4 | 79.5 | 279.4 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 38.1 | 63.5 | 28.7 | 247.7 | 304.8 | 31.8 | 85.9 | 301.8 | 73.2 | 26.2 |
| | 76.2 [3] | 38.1 | 63.5 | 28.7 | 247.7 | 304.8 | 31.8 | 85.9 | 301.8 | 73.2 | 26.2 |
| | 88.9 [3.5] | 38.1 | 63.5 | 28.7 | 247.7 | 304.8 | 31.8 | 85.9 | 301.8 | 73.2 | 26.2 |
| | 101.6 [4] | 38.1 | 63.5 | 28.7 | 247.7 | 304.8 | 31.8 | 85.9 | 301.8 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 38.1 | 92.2 | 330.2 | 76.2 | 29.7 |
| | 88.9 [3.5] | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 38.1 | 92.2 | 330.2 | 76.2 | 29.7 |
| | 101.6 [4] | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 38.1 | 92.2 | 330.2 | 76.2 | 29.7 |
| | 114.3 [4.5] | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 38.1 | 92.2 | 330.2 | 76.2 | 29.7 |
| | 127 [5] | 44.5 | 73.2 | 35.1 | 285.8 | 355.6 | 38.1 | 92.2 | 330.2 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 38.1 | 92.2 | 355.6 | 88.9 | 32.0 |
| | 101.6 [4] | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 38.1 | 92.2 | 355.6 | 88.9 | 32.0 |
| | 114.3 [4.5] | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 38.1 | 92.2 | 355.6 | 88.9 | 32.0 |
| | 127 [5] | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 38.1 | 92.2 | 355.6 | 88.9 | 32.0 |
| | 139.7 [5.5] | 44.5 | 73.2 | 35.1 | 311.2 | 381.0 | 38.1 | 92.2 | 355.6 | 88.9 | 32.0 |

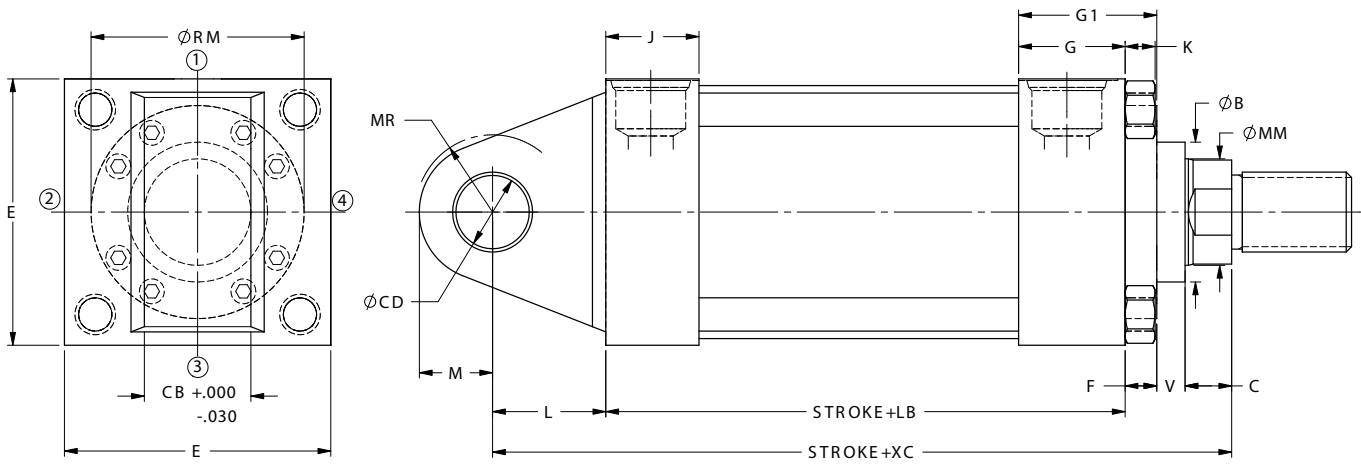
+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions – NZ47 Cap Fixed Eye

Mount ANSI MP3



| Bore mm[in] | Rod Dia mm[in] | B (+.00/-05) | C | E | G | J | F | V | RM |
|----------------|-------------------|-----------------|------|-------|------|------|------|------|-------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 | - |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 | - |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 | - |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 | - |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 9.7 | 66.8 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 | - |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 | - |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 10.4 | 82.6 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 98.6 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 133.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 143.0 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 15.0 | 16.8 | 112.8 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 133.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 143.0 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 9.7 | 163.6 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 133.4 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 143.0 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 163.6 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 181.1 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 192.0 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 18.3 | 13.5 | 143.0 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 163.6 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 181.1 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 192.0 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 212.9 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ47 Cap Fixed Eye Mount ANSI MP3

These mounts are for applications in which the machine member travels in a curved path within one plane.

These mounts can be used both in compression (push) and tension (pull). Care must be exercised to prevent rod buckling in compression applications with long strokes. See page 81 for stroke limitations.

NOTE

For strokes in excess of 610mm [24"], see "Stop tube selection" on page 77.

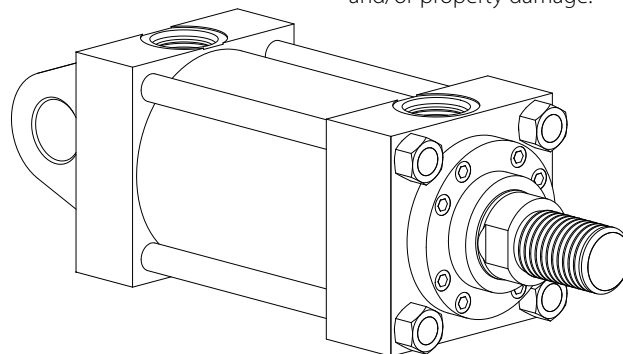
WARNING

The centerline of the machine member that attaches to the swivel pin must be perpendicular to the centerline of the piston rod and the curved path must be in one plane only. Any misalignment will cause excess side loading on the bearing and piston. This will lead to premature failure.

For applications with small amounts of misalignment, consider the spherical bearing mount NZ11.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



| Bore mm[in] | Rod Dia mm[in] | L | M | CB | CD | MR | LB+ | XC+ | Piston Thick. | K |
|--------------|----------------|------|------|------|-------|------|-------|-------|---------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 19.1 | 12.7 | 19.1 | 12.70 | 14.2 | 1176 | 162.1 | 35.1 | 10.4 |
| | 25.4 [1] | 19.1 | 12.7 | 19.1 | 12.70 | 14.2 | 1176 | 171.5 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 31.8 | 19.1 | 31.8 | 19.05 | 26.9 | 1176 | 184.2 | 35.1 | 14.0 |
| | 34.93 [1.38] | 31.8 | 19.1 | 31.8 | 19.05 | 26.9 | 1176 | 190.5 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 31.8 | 19.1 | 31.8 | 19.05 | 26.9 | 120.7 | 187.5 | 38.1 | 14.0 |
| | 34.93 [1.38] | 31.8 | 19.1 | 31.8 | 19.05 | 26.9 | 120.7 | 193.8 | 38.1 | 14.0 |
| | 44.45 [1.75] | 31.8 | 19.1 | 31.8 | 19.05 | 26.9 | 120.7 | 200.2 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 38.1 | 25.4 | 38.1 | 25.40 | 28.7 | 139.7 | 219.2 | 44.5 | 17.0 |
| | 44.45 [1.75] | 38.1 | 25.4 | 38.1 | 25.40 | 28.7 | 139.7 | 225.6 | 44.5 | 17.0 |
| | 50.8 [2] | 38.1 | 25.4 | 38.1 | 25.40 | 28.7 | 139.7 | 228.6 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 54.1 | 35.1 | 50.8 | 34.93 | 44.5 | 146.1 | 247.7 | 50.8 | 19.8 |
| | 50.8 [2] | 54.1 | 35.1 | 50.8 | 34.93 | 44.5 | 146.1 | 251.0 | 50.8 | 19.8 |
| | 63.5 [2.5] | 54.1 | 35.1 | 50.8 | 34.93 | 44.5 | 146.1 | 257.3 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 57.2 | 44.5 | 63.5 | 44.45 | 47.8 | 158.8 | 266.7 | 63.5 | 23.4 |
| | 63.5 [2.5] | 57.2 | 44.5 | 63.5 | 44.45 | 47.8 | 158.8 | 273.1 | 63.5 | 23.4 |
| | 76.2 [3] | 57.2 | 44.5 | 63.5 | 44.45 | 47.8 | 158.8 | 273.1 | 63.5 | 23.4 |
| | 88.9 [3.5] | 57.2 | 44.5 | 63.5 | 44.45 | 47.8 | 158.8 | 273.1 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 63.5 | 50.8 | 63.5 | 50.80 | 54.1 | 187.5 | 308.1 | 73.2 | 26.2 |
| | 76.2 [3] | 63.5 | 50.8 | 63.5 | 50.80 | 54.1 | 187.5 | 308.1 | 73.2 | 26.2 |
| | 88.9 [3.5] | 63.5 | 50.8 | 63.5 | 50.80 | 54.1 | 187.5 | 308.1 | 73.2 | 26.2 |
| | 101.6 [4] | 63.5 | 50.8 | 63.5 | 50.80 | 54.1 | 187.5 | 308.1 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 76.2 | 63.5 | 76.2 | 63.50 | 63.5 | 215.9 | 349.3 | 76.2 | 29.7 |
| | 88.9 [3.5] | 76.2 | 63.5 | 76.2 | 63.50 | 63.5 | 215.9 | 349.3 | 76.2 | 29.7 |
| | 101.6 [4] | 76.2 | 63.5 | 76.2 | 63.50 | 63.5 | 215.9 | 349.3 | 76.2 | 29.7 |
| | 114.3 [4.5] | 76.2 | 63.5 | 76.2 | 63.50 | 63.5 | 215.9 | 349.3 | 76.2 | 29.7 |
| | 127 [5] | 76.2 | 63.5 | 76.2 | 63.50 | 63.5 | 215.9 | 349.3 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 82.6 | 69.9 | 76.2 | 76.20 | 69.9 | 241.3 | 381.0 | 88.9 | 32.0 |
| | 101.6 [4] | 82.6 | 69.9 | 76.2 | 76.20 | 69.9 | 241.3 | 381.0 | 88.9 | 32.0 |
| | 114.3 [4.5] | 82.6 | 69.9 | 76.2 | 76.20 | 69.9 | 241.3 | 381.0 | 88.9 | 32.0 |
| | 127 [5] | 82.6 | 69.9 | 76.2 | 76.20 | 69.9 | 241.3 | 381.0 | 88.9 | 32.0 |
| | 139.7 [5.5] | 82.6 | 69.9 | 76.2 | 76.20 | 69.9 | 241.3 | 381.0 | 88.9 | 32.0 |

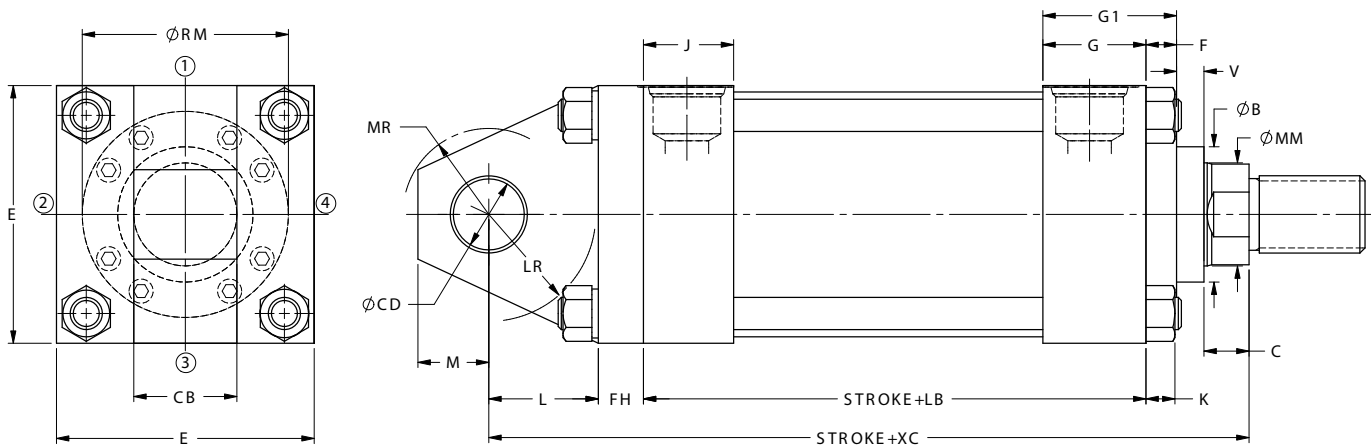
+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions – NZ48 Cap

Detachable Eye Mount ANSI MP4



| Bore mm[in] | Rod Dia mm[in] | B (+.00/-05) | C | E | G | J | F | V | RM | L |
|----------------|-------------------|-----------------|------|-------|------|------|------|------|-------|------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 | - | 19.1 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 | - | 19.1 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 | - | 31.8 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 | - | 31.8 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 9.7 | 66.8 | 31.8 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 | - | 31.8 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 | - | 31.8 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 10.4 | 82.6 | 38.1 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - | 38.1 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - | 38.1 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 98.6 | 54.1 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 | 54.1 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 | 54.1 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 | 57.2 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 | 57.2 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 133.4 | 57.2 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 143.0 | 57.2 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 15.0 | 16.8 | 112.8 | 63.5 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 133.4 | 63.5 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 143.0 | 63.5 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 9.7 | 163.6 | 63.5 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 133.4 | 76.2 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 143.0 | 76.2 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 163.6 | 76.2 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 181.1 | 76.2 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 192.0 | 76.2 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 18.3 | 13.5 | 143.0 | 82.6 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 163.6 | 82.6 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 181.1 | 82.6 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 192.0 | 82.6 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 212.9 | 82.6 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ48 Cap Detachable Eye Mount ANSI MP4

These mounts are for applications in which the machine member travels in a curved path within one plane.

These mounts can be used both in compression (push) and tension (pull). Care must be exercised to prevent rod buckling in compression applications with long strokes. See page 80 for stroke limitations.

NOTE

For strokes in excess of 610mm [24"], see "Stop tube selection" on page 77.

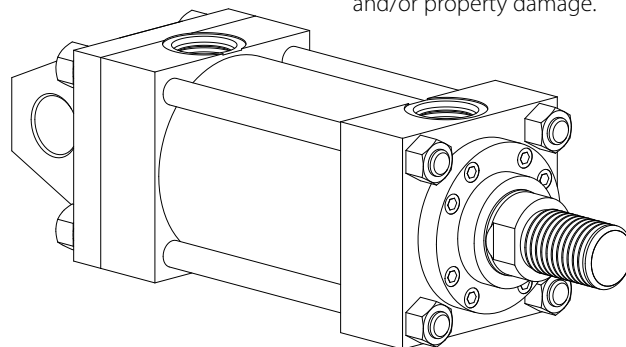
WARNING

The centerline of the machine member that attaches to the swivel pin must be perpendicular to the centerline of the piston rod and the curved path must be in one plane only. Any misalignment will cause excess side loading on the bearing and piston. This will lead to premature failure.

For applications with small amounts of misalignment, consider the spherical bearing mount NZ11.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



| Bore mm[in] | Rod Dia mm[in] | M | CB | CD | MR | LB+ | FH | XC+ | Piston Thick. | K |
|----------------|-------------------|------|------|-------|------|-------|------|-------|------------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 12.7 | 19.1 | 12.70 | 14.2 | 1176 | 9.7 | 171.5 | 35.1 | 10.4 |
| | 25.4 [1] | 12.7 | 19.1 | 12.70 | 14.2 | 1176 | 9.7 | 181.1 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 19.1 | 31.8 | 19.05 | 26.9 | 1176 | 16.0 | 200.2 | 35.1 | 14.0 |
| | 34.93 [1.38] | 19.1 | 31.8 | 19.05 | 26.9 | 1176 | 16.0 | 206.5 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 19.1 | 31.8 | 19.05 | 26.9 | 120.7 | 16.0 | 203.2 | 38.1 | 14.0 |
| | 34.93 [1.38] | 19.1 | 31.8 | 19.05 | 26.9 | 120.7 | 16.0 | 209.6 | 38.1 | 14.0 |
| | 44.45 [1.75] | 19.1 | 31.8 | 19.05 | 26.9 | 120.7 | 16.0 | 215.9 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 25.4 | 38.1 | 25.40 | 28.7 | 139.7 | 19.1 | 238.3 | 44.5 | 17.0 |
| | 44.45 [1.75] | 25.4 | 38.1 | 25.40 | 28.7 | 139.7 | 19.1 | 244.6 | 44.5 | 17.0 |
| | 50.8 [2] | 25.4 | 38.1 | 25.40 | 28.7 | 139.7 | 19.1 | 247.7 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 35.1 | 50.8 | 34.93 | 44.5 | 146.1 | 22.4 | 270.0 | 50.8 | 19.8 |
| | 50.8 [2] | 35.1 | 50.8 | 34.93 | 44.5 | 146.1 | 22.4 | 273.1 | 50.8 | 19.8 |
| | 63.5 [2.5] | 35.1 | 50.8 | 34.93 | 44.5 | 146.1 | 22.4 | 279.4 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 44.5 | 63.5 | 44.45 | 47.8 | 158.8 | 22.4 | 289.1 | 63.5 | 23.4 |
| | 63.5 [2.5] | 44.5 | 63.5 | 44.45 | 47.8 | 158.8 | 22.4 | 295.4 | 63.5 | 23.4 |
| | 76.2 [3] | 44.5 | 63.5 | 44.45 | 47.8 | 158.8 | 22.4 | 295.4 | 63.5 | 23.4 |
| | 88.9 [3.5] | 44.5 | 63.5 | 44.45 | 47.8 | 158.8 | 22.4 | 295.4 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 50.8 | 63.5 | 50.80 | 54.1 | 187.5 | 25.4 | 333.5 | 73.2 | 26.2 |
| | 76.2 [3] | 50.8 | 63.5 | 50.80 | 54.1 | 187.5 | 25.4 | 333.5 | 73.2 | 26.2 |
| | 88.9 [3.5] | 50.8 | 63.5 | 50.80 | 54.1 | 187.5 | 25.4 | 333.5 | 73.2 | 26.2 |
| | 101.6 [4] | 50.8 | 63.5 | 50.80 | 54.1 | 187.5 | 25.4 | 333.5 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 63.5 | 76.2 | 63.50 | 63.5 | 215.9 | 25.4 | 374.7 | 76.2 | 29.7 |
| | 88.9 [3.5] | 63.5 | 76.2 | 63.50 | 63.5 | 215.9 | 25.4 | 374.7 | 76.2 | 29.7 |
| | 101.6 [4] | 63.5 | 76.2 | 63.50 | 63.5 | 215.9 | 25.4 | 374.7 | 76.2 | 29.7 |
| | 114.3 [4.5] | 63.5 | 76.2 | 63.50 | 63.5 | 215.9 | 25.4 | 374.7 | 76.2 | 29.7 |
| | 127 [5] | 63.5 | 76.2 | 63.50 | 63.5 | 215.9 | 25.4 | 374.7 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 69.9 | 76.2 | 76.20 | 69.9 | 241.3 | 25.4 | 406.4 | 88.9 | 32.0 |
| | 101.6 [4] | 69.9 | 76.2 | 76.20 | 69.9 | 241.3 | 25.4 | 406.4 | 88.9 | 32.0 |
| | 114.3 [4.5] | 69.9 | 76.2 | 76.20 | 69.9 | 241.3 | 25.4 | 406.4 | 88.9 | 32.0 |
| | 127 [5] | 69.9 | 76.2 | 76.20 | 69.9 | 241.3 | 25.4 | 406.4 | 88.9 | 32.0 |
| | 139.7 [5.5] | 69.9 | 76.2 | 76.20 | 69.9 | 241.3 | 25.4 | 406.4 | 88.9 | 32.0 |

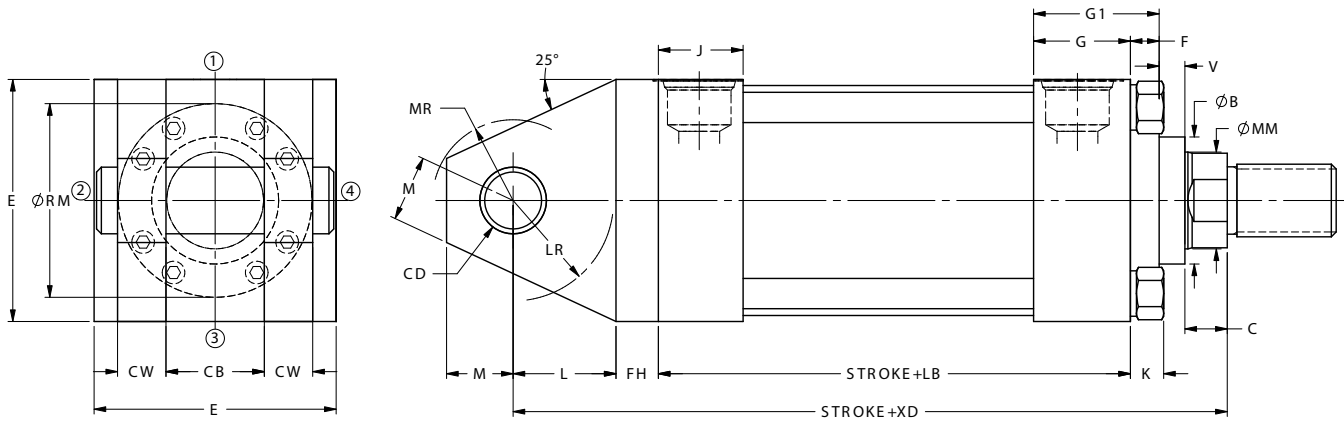
+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Mounting Style and Installation

Dimensions – NZ50 Cap

Detachable Clevis Mount ANSI MP2



| Bore mm[in] | Rod Dia mm[in] | B (+0.00/-0.05) | C | E | G | J | F | V | RM | FH | L |
|----------------|-------------------|--------------------|------|-------|------|------|------|------|-------|------|------|
| 38.1 [1.5] | 15.88 [0.63] | 28.55 | 9.7 | 63.5 | 44.5 | 38.1 | 9.7 | 6.4 | - | 9.7 | 19.1 |
| | 25.4 [1] | 38.07 | 12.7 | 63.5 | 44.5 | 38.1 | 9.7 | 12.7 | - | 9.7 | 19.1 |
| 50.8 [2] | 25.4 [1] | 38.07 | 12.7 | 76.2 | 44.5 | 38.1 | 16.0 | 6.4 | - | 16.0 | 31.8 |
| | 34.93 [1.38] | 50.77 | 16.0 | 76.2 | 44.5 | 38.1 | 16.0 | 9.7 | - | 16.0 | 31.8 |
| 63.5 [2.5] | 25.4 [1] | 38.07 | 12.7 | 88.9 | 44.5 | 38.1 | 12.7 | 9.7 | 66.8 | 16.0 | 31.8 |
| | 34.93 [1.38] | 50.77 | 16.0 | 88.9 | 44.5 | 38.1 | 16.0 | 9.7 | - | 16.0 | 31.8 |
| | 44.45 [1.75] | 60.30 | 19.1 | 88.9 | 44.5 | 38.1 | 16.0 | 12.7 | - | 16.0 | 31.8 |
| 82.55 [3.25] | 34.93 [1.38] | 50.77 | 16.0 | 114.3 | 50.8 | 44.5 | 15.0 | 10.4 | 82.6 | 19.1 | 38.1 |
| | 44.45 [1.75] | 60.30 | 19.1 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - | 19.1 | 38.1 |
| | 50.8 [2] | 66.65 | 22.4 | 114.3 | 50.8 | 44.5 | 19.1 | 9.7 | - | 19.1 | 38.1 |
| 101.6 [4] | 44.45 [1.75] | 60.30 | 19.1 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 98.6 | 22.4 | 54.1 |
| | 50.8 [2] | 66.65 | 22.4 | 127.0 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 | 22.4 | 54.1 |
| | 63.5 [2.5] | 79.35 | 25.4 | 127.0 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 | 22.4 | 54.1 |
| 127 [5] | 50.8 [2] | 66.65 | 22.4 | 165.1 | 50.8 | 44.5 | 15.0 | 13.5 | 101.6 | 22.4 | 57.2 |
| | 63.5 [2.5] | 79.35 | 25.4 | 165.1 | 50.8 | 44.5 | 15.0 | 16.8 | 112.8 | 22.4 | 57.2 |
| | 76.2 [3] | 95.22 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 133.4 | 22.4 | 57.2 |
| | 88.9 [3.5] | 107.92 | 25.4 | 165.1 | 50.8 | 44.5 | 18.3 | 13.5 | 143.0 | 22.4 | 57.2 |
| 152.4 [6] | 63.5 [2.5] | 79.35 | 25.4 | 190.5 | 57.2 | 57.2 | 15.0 | 16.8 | 112.8 | 25.4 | 63.5 |
| | 76.2 [3] | 95.22 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 133.4 | 25.4 | 63.5 |
| | 88.9 [3.5] | 107.92 | 25.4 | 190.5 | 57.2 | 57.2 | 18.3 | 13.5 | 143.0 | 25.4 | 63.5 |
| | 101.6 [4] | 120.62 | 25.4 | 190.5 | 57.2 | 57.2 | 22.4 | 9.7 | 163.6 | 25.4 | 63.5 |
| 177.8 [7] | 76.2 [3] | 95.22 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 133.4 | 25.4 | 76.2 |
| | 88.9 [3.5] | 107.92 | 25.4 | 215.9 | 69.9 | 69.9 | 18.3 | 13.5 | 143.0 | 25.4 | 76.2 |
| | 101.6 [4] | 120.62 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 163.6 | 25.4 | 76.2 |
| | 114.3 [4.5] | 133.32 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 181.1 | 25.4 | 76.2 |
| | 127 [5] | 146.02 | 25.4 | 215.9 | 69.9 | 69.9 | 22.4 | 9.7 | 192.0 | 25.4 | 76.2 |
| 203.2 [8] | 88.9 [3.5] | 107.92 | 25.4 | 241.3 | 76.2 | 76.2 | 18.3 | 13.5 | 143.0 | 25.4 | 82.6 |
| | 101.6 [4] | 120.62 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 163.6 | 25.4 | 82.6 |
| | 114.3 [4.5] | 133.32 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 181.1 | 25.4 | 82.6 |
| | 127 [5] | 146.02 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 192.0 | 25.4 | 82.6 |
| | 139.7 [5.5] | 158.72 | 25.4 | 241.3 | 76.2 | 76.2 | 22.4 | 9.7 | 212.9 | 25.4 | 82.6 |

+ Plus Stroke

All other dimensions shown in mm

Mounting Style and Installation Dimensions –NZ50 Cap Detachable Clevis Mount ANSI MP2

These mounts are for applications in which the machine member travels in a curved path within one plane.

These mounts can be used both in compression (push) and tension (pull). Care must be exercised to prevent rod buckling in compression applications with long strokes. See page 80 for stroke limitations.

NOTE

For strokes in excess of 610mm [24"], see "Stop tube selection" on page 77.

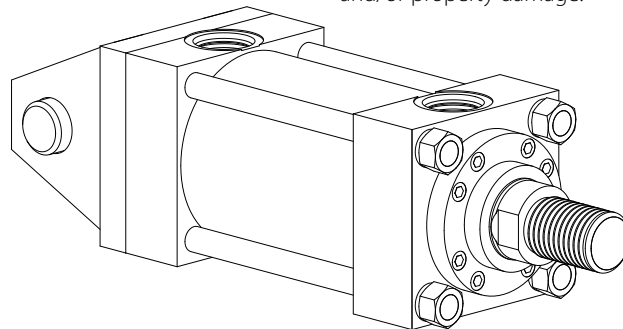
WARNING

The centerline of the machine member that attaches to the swivel pin must be perpendicular to the centerline of the piston rod and the curved path must be in one plane only. Any misalignment will cause excess side loading on the bearing and piston. This will lead to premature failure.

For applications with small amounts of misalignment, consider the spherical bearing mount NZ11.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.



| Bore mm[in] | Rod Dia mm[in] | M | CB | CD | CW | LR | MR | LB+ | XD+ | Piston Thick. | K |
|----------------|-------------------|------|------|-------|------|------|------|-------|-------|------------------|------|
| 38.1 [1.5] | 15.88 [0.63] | 12.7 | 19.1 | 12.70 | 12.7 | 14.2 | 14.2 | 1176 | 171.5 | 35.1 | 10.4 |
| | 25.4 [1] | 12.7 | 19.1 | 12.70 | 12.7 | 14.2 | 14.2 | 1176 | 181.1 | 35.1 | 10.4 |
| 50.8 [2] | 25.4 [1] | 19.1 | 31.8 | 19.05 | 16.0 | 26.9 | 26.9 | 1176 | 200.2 | 35.1 | 14.0 |
| | 34.93 [1.38] | 19.1 | 31.8 | 19.05 | 16.0 | 26.9 | 26.9 | 1176 | 206.5 | 35.1 | 14.0 |
| 63.5 [2.5] | 25.4 [1] | 19.1 | 31.8 | 19.05 | 16.0 | 26.9 | 26.9 | 120.7 | 203.2 | 38.1 | 14.0 |
| | 34.93 [1.38] | 19.1 | 31.8 | 19.05 | 16.0 | 26.9 | 26.9 | 120.7 | 209.6 | 38.1 | 14.0 |
| | 44.45 [1.75] | 19.1 | 31.8 | 19.05 | 16.0 | 26.9 | 26.9 | 120.7 | 215.9 | 38.1 | 14.0 |
| 82.55 [3.25] | 34.93 [1.38] | 25.4 | 38.1 | 25.40 | 19.1 | 31.8 | 28.7 | 139.7 | 238.3 | 44.5 | 17.0 |
| | 44.45 [1.75] | 25.4 | 38.1 | 25.40 | 19.1 | 31.8 | 28.7 | 139.7 | 244.6 | 44.5 | 17.0 |
| | 50.8 [2] | 25.4 | 38.1 | 25.40 | 19.1 | 31.8 | 28.7 | 139.7 | 247.7 | 44.5 | 17.0 |
| 101.6 [4] | 44.45 [1.75] | 35.1 | 50.8 | 34.93 | 25.4 | 47.8 | 44.5 | 146.1 | 270.0 | 50.8 | 19.8 |
| | 50.8 [2] | 35.1 | 50.8 | 34.93 | 25.4 | 47.8 | 44.5 | 146.1 | 273.1 | 50.8 | 19.8 |
| | 63.5 [2.5] | 35.1 | 50.8 | 34.93 | 25.4 | 47.8 | 44.5 | 146.1 | 279.4 | 50.8 | 19.8 |
| 127 [5] | 50.8 [2] | 44.5 | 63.5 | 44.45 | 31.8 | 49.3 | 47.8 | 158.8 | 289.1 | 63.5 | 23.4 |
| | 63.5 [2.5] | 44.5 | 63.5 | 44.45 | 31.8 | 49.3 | 47.8 | 158.8 | 295.4 | 63.5 | 23.4 |
| | 76.2 [3] | 44.5 | 63.5 | 44.45 | 31.8 | 49.3 | 47.8 | 158.8 | 295.4 | 63.5 | 23.4 |
| | 88.9 [3.5] | 44.5 | 63.5 | 44.45 | 31.8 | 49.3 | 47.8 | 158.8 | 295.4 | 63.5 | 23.4 |
| 152.4 [6] | 63.5 [2.5] | 50.8 | 63.5 | 50.80 | 31.8 | 52.3 | 54.1 | 187.5 | 333.5 | 73.2 | 26.2 |
| | 76.2 [3] | 50.8 | 63.5 | 50.80 | 31.8 | 52.3 | 54.1 | 187.5 | 333.5 | 73.2 | 26.2 |
| | 88.9 [3.5] | 50.8 | 63.5 | 50.80 | 31.8 | 52.3 | 54.1 | 187.5 | 333.5 | 73.2 | 26.2 |
| | 101.6 [4] | 50.8 | 63.5 | 50.80 | 31.8 | 52.3 | 54.1 | 187.5 | 333.5 | 73.2 | 26.2 |
| 177.8 [7] | 76.2 [3] | 63.5 | 76.2 | 63.50 | 38.1 | 65.0 | 63.5 | 215.9 | 374.7 | 76.2 | 29.7 |
| | 88.9 [3.5] | 63.5 | 76.2 | 63.50 | 38.1 | 65.0 | 63.5 | 215.9 | 374.7 | 76.2 | 29.7 |
| | 101.6 [4] | 63.5 | 76.2 | 63.50 | 38.1 | 65.0 | 63.5 | 215.9 | 374.7 | 76.2 | 29.7 |
| | 114.3 [4.5] | 63.5 | 76.2 | 63.50 | 38.1 | 65.0 | 63.5 | 215.9 | 374.7 | 76.2 | 29.7 |
| | 127 [5] | 63.5 | 76.2 | 63.50 | 38.1 | 65.0 | 63.5 | 215.9 | 374.7 | 76.2 | 29.7 |
| 203.2 [8] | 88.9 [3.5] | 69.9 | 76.2 | 76.20 | 38.1 | 68.3 | 69.9 | 241.3 | 406.4 | 88.9 | 32.0 |
| | 101.6 [4] | 69.9 | 76.2 | 76.20 | 38.1 | 68.3 | 69.9 | 241.3 | 406.4 | 88.9 | 32.0 |
| | 114.3 [4.5] | 69.9 | 76.2 | 76.20 | 38.1 | 68.3 | 69.9 | 241.3 | 406.4 | 88.9 | 32.0 |
| | 127 [5] | 69.9 | 76.2 | 76.20 | 38.1 | 68.3 | 69.9 | 241.3 | 406.4 | 88.9 | 32.0 |
| | 139.7 [5.5] | 69.9 | 76.2 | 76.20 | 38.1 | 68.3 | 69.9 | 241.3 | 406.4 | 88.9 | 32.0 |

+ Plus Stroke

See Mount 24 on page 50 for Port Dimensions

Technical Data

WARNING

All rod accessories must be torqued against the rod shoulder.

Mounting brackets, rod clevises, and rod eyes for all NZ cylinders are available from Danfoss. These accessories are detailed below showing part numbers and all pertinent dimensional data. Make sure the rod end type selected has threads that match the threads of any required accessory. Dimensions are in inches unless otherwise noted. When ordering, please specify the part name and part number. It is user's responsibility to select the correct accessory.

WARNING

Failure to mount the cylinder correctly on the frame may result in death, bodily injury and/or property damage.

WARNING

It is the user's responsibility to select the correct accessory.

WARNINGS – Piston Rods

Cylinder users must always make sure that the piston rod is securely attached to the machine member.

Piston rods are not normally designed to absorb bending moments or loads which are perpendicular to the axis of piston rod motion. These additional loads can cause the piston rod end to fail. If these types of additional loads are expected to be imposed on the piston rods, their magnitude should be made known to our Engineering Department so they may be properly addressed.

On occasion, cylinders are ordered with double rods. In some cases, a stop is threaded onto one of the piston rods and used as an external stroke adjuster. This type of usage may result in a potential safety hazard and can also lead to premature piston rod failure. The external

stop will create a pinch point. As a result, the cylinder user must use guards.

Furthermore, if an external stop is not parallel to the final contact surface, it will place a bending moment on the piston rod. An external stop will also negate the effect of a cushion and will subject the piston rod to an impact loading. These two (2) conditions can cause premature piston rod failure. The use of external stroke adjusters should be reviewed with our Engineering Department.

WARNINGS – Mounting & Accessories

The cylinder user should avoid severe vibration and high impact load. Severe vibration can cause joints to become loose. A high impact load can reduce the fatigue life of the piston rod, rod end, accessories and other components. Consult

the Danfoss Engineering Department if there is severe vibration or a high impact load.

Proper selection and installation of the mounting style options and accessories will improve cylinder performance and extend service life. Cylinders are capable of generating a very high force, so proper selection and maintenance is necessary. It is the user's responsibility to ensure proper selection and installation.

The failure to select the correct mounting options and accessories, the failure to mount the cylinder correctly and/or the failure to install the piston rod, rod ends, accessories and other components correctly may cause or result in Death, Bodily Injury and/or Property Damage.

Accessories

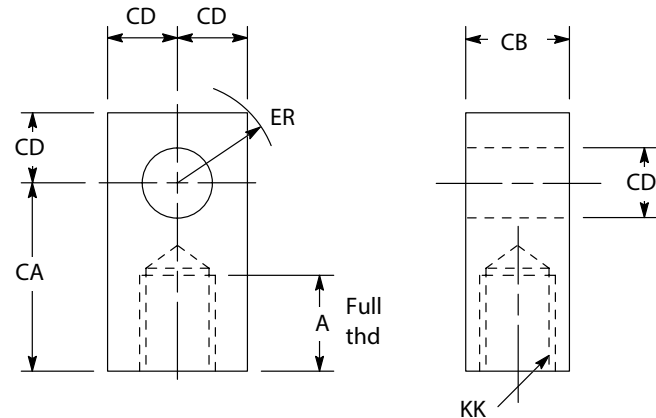
All rod accessories must be torqued against the rod shoulder.

"Mounting brackets, rod clevises, and rod eyes for all NZ cylinders are available from Danfoss. These accessories are detailed below showing part

numbers and all pertinent "dimensional data. Make sure the rod end type selected has threads that match the threads of any required accessory. Dimensions are in inches unless otherwise "noted. When ordering, please specify the part name and part number."

Accessories

Rod Eye

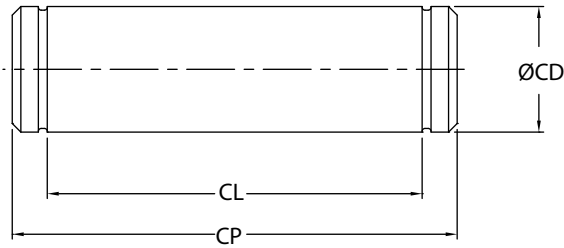


* Recommended torque values using MoS₂ lubricant with 0.12 co-efficient of friction.

| Bore mm[in] | KK | Torque (Nm) | Part Number | Weight (Kg) | A | CA | CB | CD | ER |
|-------------|-----------------|-------------|-------------|-------------|------|-------|------|------|------|
| 38.1[1.5] | 7/16-20 UNF-2B | 48.8 | FRE-0437 | 0.17 | 19.1 | 38.1 | 19.1 | 12.7 | 16.0 |
| 50.8[2] | 3/4-16 UNF-2B | 169.5 | FRE-0750 | 0.57 | 28.7 | 52.3 | 31.8 | 19.1 | 22.4 |
| 63.5[2.5] | 3/4-16 UNF-2B | 169.5 | FRE-0750 | 0.57 | 28.7 | 52.3 | 31.8 | 19.1 | 22.4 |
| 82.6[3.25] | 1-14 NS-2B | 339 | FRE-1000 | 1.13 | 41.4 | 71.4 | 38.1 | 25.4 | 30.0 |
| 101.6[4] | 1 1/4-12 UNF-2B | 623.7 | FRE-1250 | 2.69 | 50.8 | 87.4 | 50.8 | 35.1 | 39.6 |
| 127[5] | 1 1/2-12 UNF-2B | 898.9 | FRE-1500 | 5.17 | 57.2 | 101.6 | 63.5 | 44.5 | 50.8 |
| 152.4[6] | 1 7/8-12 UNF-2B | 1279.9 | FRE-1875 | 6.85 | 76.2 | 127.0 | 63.5 | 50.8 | 57.2 |
| 177.8[7] | 2 1/4-12 UNF-2B | 1782.9 | FRE-2250 | 12.25 | 88.9 | 147.6 | 76.2 | 63.5 | 71.4 |
| 203.2[8] | 2 1/2-12 UNF-2B | 6846.9 | FRE-2500 | 15.88 | 88.9 | 155.4 | 76.2 | 76.2 | 82.6 |

Accessories

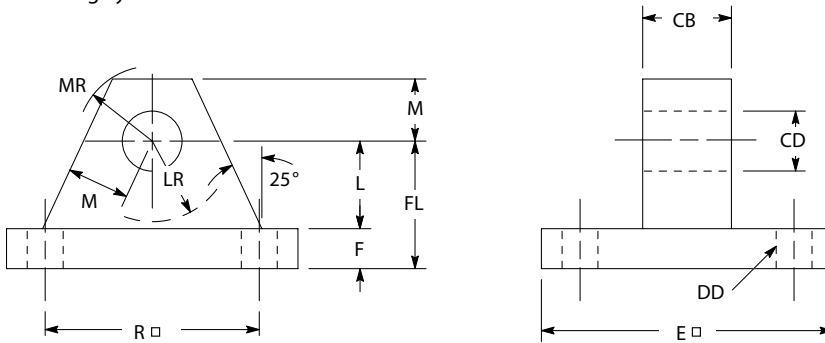
Pivot Pin



1. Pivot pins are furnished with clevis mounted cylinders.
2. Pivot pins supplied with retainer clips.

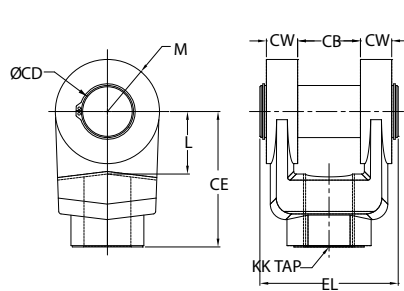
| Bore mm[in] | Part Number | CD | CL | CP |
|-------------|--------------|------|-------|-------|
| 38.1[1.5] | SVPIN-050-10 | 12.7 | 478 | 53.3 |
| 50.8[2] | SVPIN-075-10 | 19.1 | 66.8 | 73.4 |
| 63.5[2.5] | SVPIN-075-10 | 19.1 | 66.8 | 73.4 |
| 82.6[3.25] | SVPIN-100-10 | 25.4 | 79.5 | 86.1 |
| 101.6[4] | SVPIN-138-10 | 34.9 | 105.7 | 113.5 |
| 127[5] | SVPIN-175-10 | 44.5 | 131.1 | 141.2 |
| 152.4[6] | SVPIN-200-10 | 50.8 | 131.1 | 141.2 |
| 177.8[7] | SVPIN-250-10 | 63.5 | 156.5 | 168.7 |
| 203.2[8] | SVPIN-300-10 | 76.2 | 157.2 | 172.0 |

Mounting Eye Bracket



| Bore mm[in] | Part Number | Weight (Kg) | E | F | L | M | R | CB | CD | DD | FL | LR | MR |
|-------------|-------------|-------------|-------|------|------|------|-------|------|------|------|-------|------|------|
| 38.1[1.5] | SEB-0500 | 0.43 | 63.5 | 9.7 | 19.1 | 12.7 | 41.4 | 19.1 | 12.7 | 9.7 | 28.7 | 12.7 | 14.2 |
| 50.8[2] | SEB-0750 | 1.45 | 88.9 | 16.0 | 31.8 | 19.1 | 64.8 | 31.8 | 19.1 | 12.7 | 47.8 | 25.4 | 26.9 |
| 63.5[2.5] | SEB-0750 | 1.45 | 88.9 | 16.0 | 31.8 | 19.1 | 64.8 | 31.8 | 19.1 | 12.7 | 47.8 | 25.4 | 26.9 |
| 82.6[3.25] | SEB-1000 | 3.25 | 114.3 | 22.4 | 38.1 | 25.4 | 82.6 | 38.1 | 25.4 | 16 | 60.5 | 25.4 | 28.7 |
| 101.6[4] | SEB-1375 | 5.31 | 127 | 22.4 | 54.1 | 35.1 | 97 | 50.8 | 35.1 | 16 | 76.2 | 28.7 | 44.5 |
| 127[5] | SEB-1750A | 9.98 | 165.1 | 28.7 | 57.2 | 44.5 | 125.7 | 63.5 | 44.5 | 22.4 | 85.9 | 44.5 | 47.8 |
| 152.4[6] | SEB-2000A | 15.65 | 190.5 | 38.1 | 63.5 | 50.8 | 145.5 | 63.5 | 50.8 | 25.4 | 101.6 | 50.8 | 54.1 |
| 177.8[7] | SEB-2500A | 25.13 | 215.9 | 44.5 | 76.2 | 63.5 | 167.1 | 76.2 | 63.5 | 28.7 | 120.7 | 63.5 | 63.5 |
| 203.2[8] | SEB-3000 | 32.89 | 241.3 | 50.8 | 82.6 | 69.9 | 190.5 | 76.2 | 76.2 | 31.8 | 133.4 | 69.9 | 69.9 |

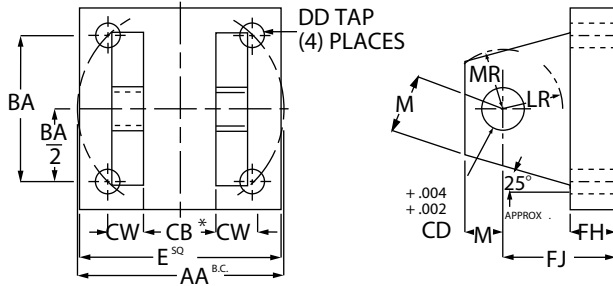
Rod Clevis



| Bore mm[in] | KK | Part Number | Weight (Kg) | L | M | CB | CD | CE | CW | EL |
|-------------|-----------------|-------------|-------------|------|------|------|------|-------|------|-------|
| 38.1[1.5] | 7/16-20 UNF-2B | FRC-0437 | 0.25 | 19.1 | 12.7 | 19.1 | 12.7 | 38.1 | 12.7 | 60.5 |
| 50.8[2] | 3/4-16 UNF-2B | FRC-0750 | 0.71 | 31.8 | 19.1 | 31.8 | 19.1 | 60.5 | 16.0 | 79.5 |
| 63.5[2.5] | 3/4-16 UNF-2B | FRC-0750 | 0.71 | 31.8 | 19.1 | 31.8 | 19.1 | 60.5 | 16.0 | 79.5 |
| 82.6[3.25] | 1-14 NS-2B | FRC-1000 | 1.50 | 38.1 | 25.4 | 38.1 | 25.4 | 79.5 | 19.1 | 95.3 |
| 101.6[4] | 1 1/4-12 UNF-2B | FRC-1250 | 4.20 | 54.1 | 35.1 | 50.8 | 35.1 | 104.9 | 25.4 | 120.7 |
| 127[5] | 1 1/2-12 UNF-2B | FRC-1500 | 6.63 | 57.2 | 44.5 | 63.5 | 44.5 | 114.3 | 31.8 | 153.2 |
| 152.4[6] | 1 7/8-12 UNF-2B | FRC-1875 | 9.52 | 63.5 | 50.8 | 63.5 | 50.8 | 139.7 | 31.8 | 153.2 |
| 177.8[7] | 2 1/4-12 UNF-2B | FRC-2250 | 16.32 | 76.2 | 63.5 | 76.2 | 63.5 | 165.1 | 38.1 | 178.6 |
| 203.2[8] | 2 1/2-12 UNF-2B | FRC-2500 | 19.50 | 82.6 | 69.9 | 76.2 | 76.2 | 171.5 | 38.1 | 181.1 |

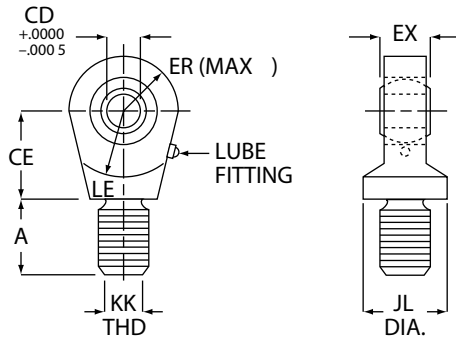
Accessories

Clevis Bracket



| Bore mm[in] | Part number | AA | BA | CB | CD | CW | DD | E | FH | FJ | LR | M | MR |
|----------------|-------------|-------|-------|------|------|------|----------|-------|------|-------|------|------|------|
| 38.1[1.5] | ECB-0500 | 58.4 | 41.4 | 19.8 | 12.7 | 12.7 | 3/8-24 | 63.5 | 9.7 | 35.1 | 12.7 | 12.7 | 14.2 |
| 50.8[2] | ECB-0750 | 73.7 | 52.3 | 15.0 | 19.1 | 16.0 | 1/2-20 | 76.2 | 16.0 | 478 | 25.4 | 19.1 | 175 |
| 63.5[2.5] | ECB-0750A | 91.4 | 65.0 | 15.0 | 19.1 | 16.0 | 1/2-20 | 88.9 | 16.0 | 478 | 26.9 | 19.1 | 175 |
| 82.6[3.25] | ECB-1000 | 116.8 | 82.6 | 38.9 | 25.4 | 19.1 | 5/8-18 | 114.3 | 19.1 | 572 | 31.8 | 25.4 | 28.7 |
| 101.6[4] | ECB-1380 | 137.2 | 96.8 | 51.6 | 35.1 | 25.4 | 5/8-18 | 152.4 | 22.4 | 76.2 | 478 | 35.1 | 44.5 |
| 127[5] | ECB-1750 | 177.8 | 125.5 | 64.3 | 44.5 | 31.8 | 7/8-14 | 165.1 | 22.4 | 79.5 | 50.8 | 44.5 | 478 |
| 152.4[6] | ECB-2000 | 205.7 | 146.1 | 64.3 | 50.8 | 31.8 | 1-14 | 190.5 | 25.4 | 88.9 | 54.1 | 50.8 | 54.1 |
| 177.8[7] | ECB-2500 | 236.2 | 167.4 | 77.0 | 63.5 | 38.1 | 1 1/8-12 | 215.9 | 25.4 | 101.6 | 66.8 | 63.5 | 63.5 |
| 203.2[8] | ECB-3000 | 269.2 | 190.5 | 77.0 | 69.9 | 38.1 | 1 1/4-12 | 241.3 | 25.4 | 108.0 | 73.2 | 69.9 | 69.9 |

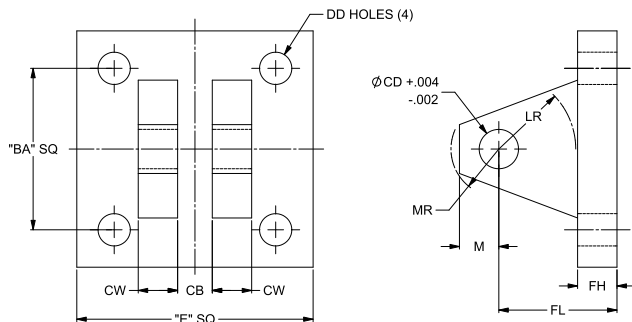
Spherical Rod Eye



| Bore mm[in] | KK | Part number | A | CD (+0.00/- 0.01) | CE | EX | ER | JL | LE | Load Capacity (Kg) |
|----------------|----------|-------------|------|-------------------------|------|------|------|------|------|--------------------------|
| 38.1[1.5] | 7/16-20 | BRE-0437 | 175 | 12.70 | 22.4 | 11.2 | 22.4 | 22.4 | 19.1 | 1179.3 |
| 50.8[2] | 3/4-16 | BRE-0750 | 25.4 | 19.05 | 31.8 | 16.8 | 31.8 | 33.3 | 26.9 | 4263.7 |
| 63.5[2.5] | 3/4-16 | BRE-0750 | 25.4 | 19.05 | 31.8 | 16.8 | 31.8 | 33.3 | 26.9 | 4263.7 |
| 82.6[3.25] | 1-14 | BRE-1000 | 38.1 | 25.40 | 47.8 | 22.4 | 35.1 | 38.1 | 36.6 | 7620.3 |
| 101.6[4] | 1 1/4-12 | BRE-1250 | 50.8 | 34.93 | 54.1 | 30.2 | 46.0 | 50.8 | 47.8 | 12972.7 |
| 127[5] | 1 1/2-12 | BRE-1500 | 54.1 | 44.45 | 63.5 | 38.9 | 55.6 | 57.2 | 54.1 | 19504.5 |
| 152.4[6] | 1 7/8-12 | BRE-1875 | 73.2 | 50.80 | 69.9 | 44.5 | 66.8 | 69.9 | 63.5 | 31751.5 |

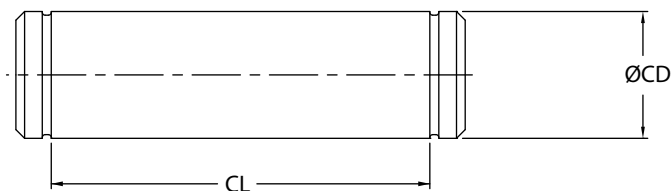
Accessories – For Spherical Mounted Cylinder

Spherical Clevis Bracket



| Bore mm[in] | Part Number | BA | CB | CD | CW | DD | E | FH | FL | LR | M | MR |
|----------------|-------------|-------|------|-------|------|------|-------|------|-------|------|------|------|
| 38.1[1.5] | SCB-0500 | 52.1 | 11.2 | 12.70 | 12.7 | 10.4 | 76.2 | 12.7 | 38.1 | 23.9 | 12.7 | 15.7 |
| 50.8[2] | SCB-0750 | 70.1 | 16.8 | 19.05 | 15.7 | 13.5 | 95.3 | 15.7 | 50.8 | 35.1 | 22.4 | 25.4 |
| 63.5[2.5] | SCB-0750 | 70.1 | 16.8 | 19.05 | 15.7 | 13.5 | 95.3 | 15.7 | 50.8 | 35.1 | 22.4 | 25.4 |
| 82.6[3.25] | SCB-1000 | 104.1 | 22.4 | 25.40 | 19.1 | 13.5 | 139.7 | 19.1 | 63.5 | 42.9 | 25.4 | 30.2 |
| 101.6[4] | SCB-1380 | 125.7 | 30.2 | 34.93 | 25.4 | 16.8 | 165.1 | 22.4 | 88.9 | 62.0 | 35.1 | 41.1 |
| 127[5] | SCB-1750 | 167.1 | 38.9 | 44.45 | 31.8 | 23.1 | 215.9 | 31.8 | 114.3 | 73.2 | 44.5 | 52.3 |
| 152.4[6] | SCB-2000 | 201.2 | 44.5 | 50.80 | 38.1 | 23.1 | 269.7 | 38.1 | 127 | 84.1 | 50.8 | 60.5 |

Pivot Pin - for Spherical Bearing

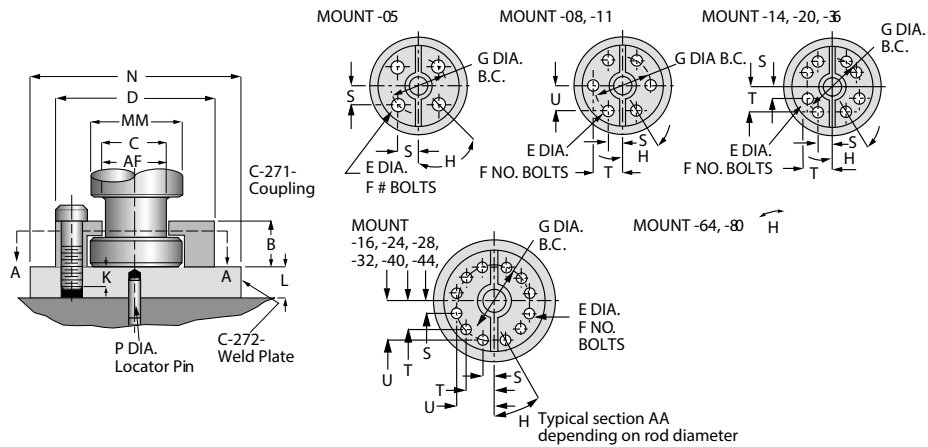
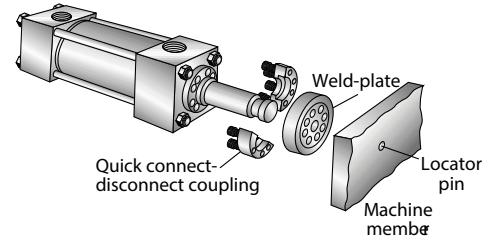


| Bore mm[in] | Part Number | CD | CL |
|----------------|--------------|------|-------|
| 38.1[1.5] | SBPIN-050-10 | 12.7 | 39.6 |
| 50.8[2] | SBPIN-075-10 | 19.1 | 51.6 |
| 63.5[2.5] | SBPIN-075-10 | 19.1 | 51.6 |
| 82.6[3.25] | SBPIN-100-10 | 25.4 | 63.5 |
| 101.6[4] | SBPIN-138-10 | 34.9 | 84.1 |
| 127[5] | SBPIN-175-10 | 44.5 | 107.2 |
| 152.4[6] | SBPIN-200-10 | 50.8 | 125.5 |

1. Pivot pins supplied with retainer clips.

Rod End Couplings

Used with the style G Rod End, the Rod End Coupling provides for close lateral alignment between the rod end and machine member. The two-piece steel coupling features high tensile strength socket head cap screws (with safety factor designed to take full load), permits quick assembly/disassembly for fast and easy installation and servicing.



"Coupling and Weld plate Assembly

| "Coupling and Weld plate Assembly | Coupling NZ-271-1 | Rod dia | AF | B | C | D | E | F | G | H | K |
|-----------------------------------|-------------------|---------|-------|------|-------|-------|------|-------|-------|---------|------|
| NZ-275-05 | NZ-271-05 | 16.0 | 9.7 | 11.2 | 10.4 | 38.1 | 5.6 | 101.6 | 28.4 | 45° | 11.2 |
| NZ-275-08 | NZ-271-08 | 25.4 | 17.5 | 15.7 | 19.1 | 50.8 | 7.1 | 152.4 | 38.1 | 30° | 9.7 |
| NZ-275-11 | NZ-271-11 | 35.1 | 22.4 | 17.5 | 23.9 | 63.5 | 8.6 | 152.4 | 50.8 | 30° | 14.2 |
| NZ-275-14 | NZ-271-14 | 44.5 | 28.4 | 22.4 | 30.0 | 76.2 | 10.4 | 203.2 | 60.5 | 22° 30' | 15.7 |
| NZ-275-16 | NZ-271-16 | 50.8 | 35.1 | 31.8 | 36.6 | 88.9 | 10.4 | 304.8 | 68.3 | 15° | 19.1 |
| NZ-275-20 | NZ-271-20 | 63.5 | 44.5 | 35.1 | 47.8 | 108.0 | 13.5 | 203.2 | 87.4 | 22° 30' | 22.4 |
| NZ-275-24 | NZ-271-24 | 76.2 | 57.2 | 47.8 | 60.5 | 127.0 | 13.5 | 304.8 | 101.6 | 15° | 22.4 |
| NZ-275-28 | NZ-271-28 | 88.9 | 63.5 | 50.8 | 66.5 | 149.4 | 16.8 | 304.8 | 119.1 | 15° | 25.4 |
| NZ-275-32 | NZ-271-32 | 101.6 | 76.2 | 50.8 | 79.2 | 162.1 | 16.8 | 304.8 | 131.6 | 15° | 25.4 |
| NZ-275-36 | NZ-271-36 | 114.3 | 88.9 | 60.5 | 91.9 | 174.8 | 19.8 | 203.2 | 144.5 | 22° 30' | 28.4 |
| NZ-275-40 | NZ-271-40 | 127.0 | 98.6 | 63.5 | 101.6 | 187.5 | 16.8 | 304.8 | 157.0 | 15° | 31.8 |
| NZ-275-44 | NZ-271-44 | 139.7 | 111.3 | 79.2 | 114.3 | 209.6 | 19.8 | 304.8 | 174.8 | 15° | 35.1 |

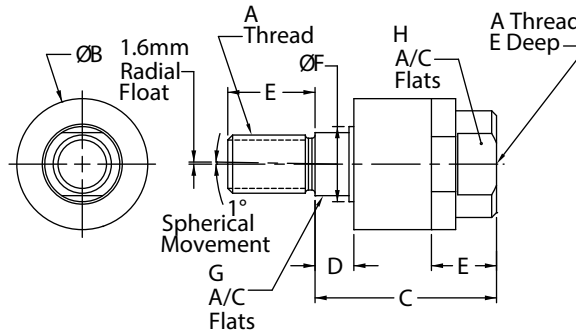
| Weld Plate | L | N | P | SHCS(Inch) | BoltTorq (Nm) | S | T | U | X |
|------------|------|-------|-----|--------------|---------------|------|------|------|---|
| WP-05 | 12.7 | 50.8 | 6.4 | #10-24x.88 | 6.8 | 10.2 | - | - | - |
| WP-08 | 12.7 | 63.5 | 6.4 | 1/4-20x1.00 | 18.9 | 9.7 | 19.1 | 16.5 | - |
| WP-11 | 15.7 | 76.2 | 6.4 | 5/16-18x1.25 | 40.7 | 12.7 | 25.4 | 22.1 | - |
| WP-14 | 19.1 | 88.9 | 6.4 | 3/8-16x1.5 | 70.5 | 11.4 | 27.9 | - | - |
| WP-16 | 22.4 | 101.6 | 9.7 | 3/8-16x2 | 70.5 | 8.9 | 24.1 | 33.0 | - |
| WP-20 | 25.4 | 127.0 | 9.7 | 1/2-13x2.25 | 173.5 | 16.8 | 40.4 | - | - |
| WP-24 | 25.4 | 139.7 | 9.7 | 1/2-13x2.75 | 173.5 | 13.2 | 35.8 | 49.0 | - |
| WP-28 | 28.4 | 165.1 | 9.7 | 5/8-11x3 | 345.7 | 15.5 | 42.2 | 57.4 | - |
| WP-32 | 28.4 | 177.8 | 9.7 | 5/8-11x3 | 345.7 | 17.0 | 46.5 | 63.8 | - |
| WP-36 | 31.8 | 190.5 | 9.7 | 3/4-10x3.5 | 610.1 | 27.7 | 66.8 | - | - |
| WP-40 | 35.1 | 203.2 | 9.7 | 5/8-11x3.75 | 345.7 | 20.3 | 55.6 | 75.9 | - |
| WP-44 | 38.1 | 228.6 | 9.7 | 3/4-10x4.5 | 610.1 | 22.6 | 61.7 | 84.3 | - |

Self-Aligning Coupler

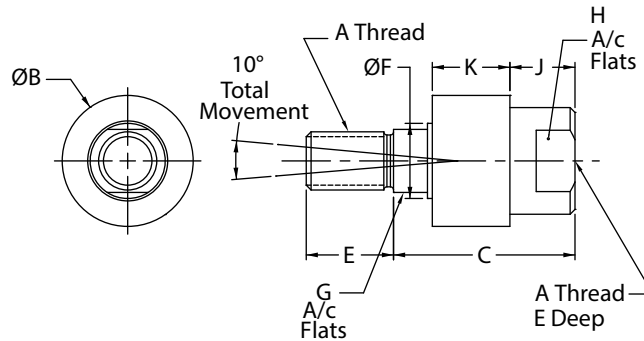
Lateral movement (on push only) and radial movement provide precision alignment between cylinder and machine. Couplers preset with proper clearances and completely lubricated at factory before shipping.

Note

When ordering oversize and 2:1 rod cylinders, specify modification to suit standard rod diameter's coupler.



SAC-0312 Thru SAC-2000, SAC-4000



SAC-2250 Thru SAC-3250, SAC-4250

| Part No. | "A" Thread | B | C | D | E | F | G | H | J | K | M° of Movement | Load Rating Max Pull at Yield (kN) |
|----------|------------|-------|-------|------|-------|-------|-------|-------|------|-------|----------------|------------------------------------|
| SAC-0312 | 5/16-24 | 22.4 | 31.8 | 6.4 | 16.0 | 7.9 | 6.4 | 20.6 | - | - | 1 | 178 |
| SAC-0375 | 3/8-24 | 22.4 | 31.8 | 6.4 | 16.0 | 9.4 | 7.9 | 20.6 | - | - | 1 | 22.2 |
| SAC-0437 | 7/16-20 | 31.8 | 50.8 | 12.7 | 19.1 | 16.0 | 14.2 | 28.7 | - | - | 1 | 44.5 |
| SAC-0500 | 1/2-20 | 31.8 | 50.8 | 12.7 | 19.1 | 16.0 | 14.2 | 28.7 | - | - | 1 | 62.3 |
| SAC-0625 | 5/8-18 | 31.8 | 50.8 | 12.7 | 19.1 | 16.0 | 12.7 | 28.7 | - | - | 1 | 62.3 |
| SAC-0750 | 3/4-16 | 44.5 | 58.7 | 7.9 | 28.7 | 24.6 | 22.4 | 38.1 | - | - | 1 | 151.2 |
| SAC-0875 | 7/8-14 | 44.5 | 58.7 | 7.9 | 28.7 | 24.6 | 22.4 | 38.1 | - | - | 1 | 151.2 |
| SAC-1000 | 1-14 | 63.5 | 74.7 | 12.7 | 41.4 | 35.1 | 31.8 | 57.2 | - | - | 1 | 284.7 |
| SAC-1250 | 1-1/4-12 | 63.5 | 74.7 | 12.7 | 41.4 | 35.1 | 31.8 | 57.2 | - | - | 1 | 284.7 |
| SAC-1500 | 1-1/2-12 | 82.6 | 111.3 | 20.6 | 57.2 | 44.5 | 38.1 | 76.2 | - | - | 1 | 533.8 |
| SAC-1750 | 1-3/4-12 | 82.6 | 111.3 | 20.6 | 57.2 | 44.5 | 38.1 | 76.2 | - | - | 1 | 533.8 |
| SAC-1875 | 1-7/8-12 | 95.3 | 138.2 | 17.5 | 76.2 | 57.2 | 47.8 | 88.9 | - | - | 1 | 1067.6 |
| SAC-2000 | 2-12 | 95.3 | 138.2 | 17.5 | 76.2 | 57.2 | 47.8 | 88.9 | - | - | 1 | 1067.6 |
| SAC-2250 | 2-1/4-12 | 171.5 | 162.1 | - | 88.9 | 69.9 | 60.5 | 73.2 | 41.4 | 85.9 | 10 | 1765.9 |
| SAC-2500 | 2-1/2-12 | 177.8 | 165.1 | - | 88.9 | 82.6 | 73.2 | 85.9 | 41.4 | 98.6 | 10 | 2201.9 |
| SAC-2750 | 2-3/4-12 | 177.8 | 165.1 | - | 88.9 | 82.6 | 73.2 | 85.9 | 41.4 | 98.6 | 10 | 2685.8 |
| SAC-3000 | 3-12 | 177.8 | 165.1 | - | 88.9 | 82.6 | 73.2 | 85.9 | 41.4 | 98.6 | 10 | 3216.2 |
| SAC-3250 | 3-1/4-12 | 235.0 | 215.9 | - | 114.3 | 101.6 | 85.9 | 114.3 | 50.8 | 139.7 | 10 | 3797.9 |
| SAC-4000 | 4-12 | 184.2 | 238.3 | 25.4 | 139.7 | 138.9 | - | 47.8 | - | - | 1 | 3336.2 |
| SAC-4250 | 4-1/4-12 | 327.2 | 285.8 | - | 114.3 | 139.7 | 124.0 | 177.8 | 38.1 | 222.3 | 10 | 6598.5 |

Rod End Types

In addition to selecting the correct bore, you must specify the appropriate rod size and rod ends configuration for your application.

Twelve different inch and Metric rod ends configurations are available. If a custom design is

required contact your local Danfoss sales engineer and we will build to your requirements.

Table on page 80 gives maximum allowable push length at various operating pressures for available rod diameters. Rod ends on rigid mount should be supported.

Longer strokes allowable for pull only applications.

Contact your local Danfoss sales engineer for application assistance if necessary

Note: Code 0, 1, and N threads are to ISO 4395 and are based on the metric fine pitch series. Rod end

accessories locknuts, tooling and gauges are available.

These threads are also specified in ISO 6020-2 (160 Bar compact) cylinder series. Code 7 and L threads are based on the closest metric threads to the UN series and are recommended for replacement only.

Inch Rod Ends

Inch Rod Ends

| | | | |
|------------------|--|----------------------------------|--|
| Code 2 | | For rod sizes 3 1/2" thru 5 1/2" | |
| Code 5 | | Code K | |
| Code 6 | | Code G | |
| Code 9 | | Code M | |

Rod

Ø

| mm[in] | A | C | D | AC | AD | AE | AF | AX | DC | CC | KK | NA |
|--------------|-------|------|------|-------|-------|------|-------|-------|------|----------|----------|-------|
| 15.88 [0.63] | 19.1 | 9.5 | 12.7 | 28.6 | 15.9 | 6.4 | 9.5 | 28.6 | - | 1/2-10 | 7/16-20 | 14.9 |
| 25.4 [1] | 28.6 | 12.7 | 22.2 | 38.1 | 23.8 | 9.5 | 17.5 | 42.9 | - | 7/8-14 | 3/4-16 | 24.6 |
| 34.93 [1.38] | 41.3 | 16.0 | 28.6 | 44.5 | 27.0 | 9.5 | 22.2 | 61.9 | - | 1 1/4-12 | 1-14 | 34.1 |
| 44.45 [1.75] | 50.8 | 19.1 | 38.1 | 50.8 | 33.3 | 12.7 | 28.6 | 76.2 | - | 1 1/2-12 | 1 1/4-12 | 43.6 |
| 50.8 [2] | 57.2 | 22.2 | 44.5 | 66.7 | 42.9 | 15.9 | 34.9 | 85.7 | - | 1 3/4-12 | 1 1/2-12 | 49.6 |
| 63.5 [2.5] | 76.2 | 25.4 | 54.0 | 82.6 | 49.2 | 19.1 | 44.5 | 114.3 | - | 2 1/4-12 | 1 7/8-12 | 61.9 |
| 76.2 [3] | 88.9 | 25.4 | 66.7 | 92.1 | 61.9 | 22.2 | 57.2 | 133.4 | - | 2 3/4-12 | 2 1/4-12 | 74.6 |
| 88.9 [3.5] | 88.9 | 25.4 | 76.2 | 111.1 | 68.3 | 25.4 | 63.5 | 133.4 | - | 3 1/4-12 | 2 1/2-12 | 87.3 |
| 101.6 [4] | 101.6 | 25.4 | - | 114.3 | 68.3 | 25.4 | 76.2 | 152.4 | 12.7 | 3 3/4-12 | 3-12 | 99.2 |
| 114.3 [4.5] | 114.3 | 25.4 | - | 133.4 | 81.0 | 38.1 | 88.9 | 171.5 | 12.7 | 4 1/2-12 | 3 1/4-12 | 111.9 |
| 127 [5] | 127.0 | 25.4 | - | 136.5 | 81.0 | 38.1 | 98.4 | 190.5 | 12.7 | 4 3/4-12 | 3 1/2-12 | 124.6 |
| 139.7 [5.5] | 139.7 | 25.4 | - | 158.8 | 100.0 | 47.6 | 111.1 | 209.6 | 12.7 | 5 1/4-12 | 4-12 | 137.3 |

* Dimensions are in mm

Rod End Types

Metric Rod Ends

| | | | |
|------------------|--|----------------------------------|--|
| Code 1 | | For rod sizes 3 1/2" thru 5 1/2" | |
| Code 7 | | | |
| Code 0 | | N | |

| Rod Ø mm[in] | | | | | | | Metric Thread | | | |
|--------------------|-----|------|----|-------|-----|-------|---------------|---------------|--------------|--------|
| | A | C | D | AF | AX | DC | CC (ISO 4395) | KF (ISO 4395) | KK (ISO 261) | NA |
| 15.88 [0.63] | 16 | 9.5 | 13 | 19 | 24 | - | M12X1.25 | M10X1.25 | M10X1.5 | 14.86 |
| 25.4 [1] | 28 | 12.7 | 22 | 28.6 | 40 | - | * | M20X1.5 | M20X1.5 | 24.59 |
| 34.93 [1.38] | 36 | 15.9 | 30 | 41.3 | 54 | - | M27X2 | M27X2 | M26X1.5 | 34.11 |
| 44.45 [1.75] | 45 | 19 | 36 | 50.8 | 66 | - | * | M33X2 | M33X2 | 43.64 |
| 50.8 [2] | 56 | 22.2 | 41 | 57.1 | 84 | - | M42X2 | M42X2 | M39X2 | 49.61 |
| 63.5 [2.5] | 63 | 25.4 | 55 | 76.2 | 96 | - | * | M48X2 | M48X2 | 61.9 |
| 76.2 [3] | 85 | 25.4 | 65 | 88.9 | 128 | - | M64X3 | M58X2 | M58X2 | 74.6 |
| 88.9 [3.5] | 85 | 25.4 | 75 | 88.9 | 128 | 9.52 | M64X3 | M64X3 | M64X2 | 87.3 |
| 101.6 [4] | 95 | 25.4 | - | 101.6 | 140 | 11.11 | M80X3 | M80X3 | M76X2 | 99.21 |
| 114.3 [4.5] | 106 | 25.4 | - | 114.3 | 158 | 11.11 | M90X3 | M90X3 | M80X2 | 111.91 |
| 127 [5] | 112 | 25.4 | - | 139.7 | 168 | 12.7 | M100X3 | M100X3 | M90X2 | 124.61 |
| 139.7 [5.5] | 112 | 25.4 | - | 139.7 | 168 | 12.7 | M100X3 | M100X3 | M100X2 | 137.31 |

* Intermediate male metric thread not available for 1, 1 3/4, and 2 1/2 inch rod sizes. Use codes 7 or L.
Note: Dimensions in millimeters.

Port Type and Size

Available Ports

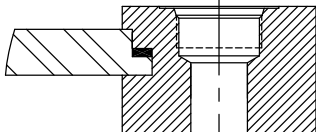
Series NZ cylinders are available with SAE straight thread O-ring ports and the alternate ports listed below.

The table below lists the port types and sizes available for each bore diameter. The table on the next page lists the maximum piston velocities

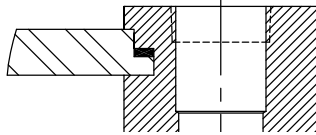
obtainable with each bore diameter and port type combination. Some mounting styles have port location restrictions. Check the port

location table on page 71 for your particular mounting style. Where a port or port boss interferes with cylinder mounting, mounting should take precedence.

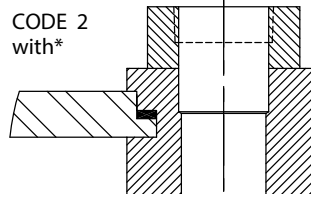
CODE 3, 4, 5,



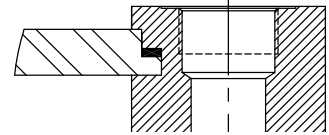
CODE D,1,2



CODE 2 with*



CODE H,7,8, G, 9, 0, K, A, B



Port Code

| Bore mm[in] | Rod mm[in] | SAE J1926 / UN O-ring | | NPTF ƒ Pipe | | | BSPP ƒ ISO 228-1 | | SAE 518 Code 61 Flange | | | | | |
|--------------|--------------|-----------------------|-----------|-------------|------------|-------|------------------|-------|------------------------|------------|----------|---------|------|---------|
| | | Std | Over size | NFPA Std | Under Size | Std | Under Size | Std | Over size | Under Size | Std | | | |
| 38.1 [1.5] | 15.88 [0.63] | # 6 | #10 | #8 | 3/8 | 1/2 | 3/4 | 3/4 | G 3/8 | G 1/2 | G 3/4* | G 3/4* | NA | NA |
| | 25.4 [1] | # 6 | #10 | #8 | 3/8 | 1/2 | 3/4* | 3/4 | G 3/8 | G 1/2 | G 3/4* | G 3/4* | NA | NA |
| 50.8 [2] | 25.4 [1] | # 6 | #10 | #8 | 3/8 | 1/2 | 3/4 | 3/4 | G 3/8 | G 1/2 | G 3/4* | G 3/4* | NA | NA |
| | 34.93 [1.38] | # 6 | #10 | #8 | 3/8 | 1/2 | 3/4* | 3/4 | G 3/8 | G 1/2 | G 3/4* | G 3/4* | NA | NA |
| 63.5 [2.5] | 25.4 [1] | # 6 | #10 | #8 | 3/8 | 1/2 | 3/4 | 3/4 | G 3/8 | G 1/2 | G 3/4* | G 3/4* | NA | 0.50 ** |
| | 34.93 [1.38] | # 6 | #10 | #8 | 3/8 | 1/2 | 3/4 | 3/4 | G 3/8 | G 1/2 | G 3/4* | G 3/4* | NA | 0.50 ** |
| | 44.45 [1.75] | # 6 | #10 | #8 | 3/8 | 1/2 | 3/4* | 3/4 | G 3/8 | G 1/2 | G 3/4* | G 3/4* | NA | NA |
| 82.55 [3.25] | 34.93 [1.38] | # 10 | #14 | # 12 | 1/2 | 3/4 | 1 | 1 | G 1/2 | G 3/4 | G1 | G 1 | .50 | 0.75 ** |
| | 44.45 [1.75] | # 10 | #14 | # 12 | 1/2 | 3/4 | 1 | 1 | G 1/2 | G 3/4 | G1 | G 1 | .50 | 0.75 ** |
| | 50.8 [2] | # 10 | #14 | # 12 | 1/2 | 3/4 | 1 | 1 | G 1/2 | G 3/4 | G1 | G 1 | .50 | 0.75 ** |
| 101.6 [4] | 44.45 [1.75] | # 10 | #14 | # 12 | 1/2 | 3/4 | 1 | 1 | G 1/2 | G 3/4 | G1 | G 1 | .50 | 0.75 ** |
| | 50.8 [2] | # 10 | #14 | # 12 | 1/2 | 3/4 | 1 | 1 | G 1/2 | G 3/4 | G1 | G 1 | .50 | 0.75 ** |
| | 63.5 [2.5] | # 10 | #14 | # 12 | 1/2 | 3/4 | 1 | 1 | G 1/2 | G 3/4 | G1 | G 1 | .50 | 0.75 ** |
| 127 [5] | 50.8 [2] | # 10 | #14 | # 12 | 1/2 | 3/4 | 1 | 1 | G 1/2 | G 3/4 | G1 | G 1 | .50 | 0.75 |
| | 63.5 [2.5] | # 10 | #14 | # 12 | 1/2 | 3/4 | 1 | 1 | G 1/2 | G 3/4 | G1 | G 1 | .50 | 0.75 |
| | 76.2 [3] | # 10 | #14 | # 12 | 1/2 | 3/4 | 1 | 1 | G 1/2 | G 3/4 | G1 | G 1 | .50 | 0.75 |
| | 88.9 [3.5] | # 10 | #14 | #12 | 1/2 | 3/4 | 1 | 1 | G 1/2 | G 3/4 | G1 | G 1 | .50 | 0.75 |
| 152.4 [6] | 63.5 [2.5] | # 12 | #20 | # 16 | 3/4 | 1 | 1 1/4 | 1 1/4 | G 3/4 | G 1 | G 1 1/4 | G 1 1/4 | .75 | 1.00 |
| | 76.2 [3] | # 12 | #20 | # 16 | 3/4 | 1 | 1 1/4 | 1 1/4 | G 3/4 | G 1 | G 1 1/4 | G 1 1/4 | .75 | 1.00 |
| | 88.9 [3.5] | # 12 | #20 | # 16 | 3/4 | 1 | 1 1/4 | 1 1/4 | G 3/4 | G 1 | G 1 1/4* | G 1 1/4 | .75 | 1.00 |
| | 101.6 [4] | # 12 | #20 | # 16 | 3/4 | 1 | 1 1/4 | 1 1/4 | G 3/4 | G 1 | G 1 1/4* | G 1 1/4 | .75 | 1.00 |
| 177.8 [7] | 76.2 [3] | # 16 | # 24 | # 20 | 1 | 1 1/4 | 1 1/2 | 1 1/2 | G 1 | G 1 1/4 | G 1 1/2 | G 1 1/2 | 1.00 | 1.25 |
| | 88.9 [3.5] | # 16 | # 24 | # 20 | 1 | 1 1/4 | 1 1/2 | 1 1/2 | G 1 | G 1 1/4 | G 1 1/2 | G 1 1/2 | 1.00 | 1.25 |
| | 101.6 [4] | # 16 | # 24 | # 20 | 1 | 1 1/4 | 1 1/2 | 1 1/2 | G 1 | G 1 1/4 | G 1 1/2 | G 1 1/2 | 1.00 | 1.25 |
| | 114.3 [4.5] | # 16 | # 24 | # 20 | 1 | 1 1/4 | 1 1/2 | 1 1/2 | G 1 | G 1 1/4 | G 1 1/2 | G 1 1/2 | 1.00 | 1.25 |
| | 127 [5] | # 16 | # 24 | # 20 | 1 | 1 1/4 | 1 1/2 | 1 1/2 | G 1 | G 1 1/4 | G 1 1/2 | G 1 1/2 | 1.00 | 1.25 |
| 203.2 [8] | 88.9 [3.5] | # 16 | # 20 | # 24 | 1 1/4 | 1 1/2 | 2 | 2 | G 1 | G 1 1/4 | G 1 1/2 | G 1 1/2 | 1.25 | 1.50 |
| | 101.6 [4] | # 16 | # 20 | # 24 | 1 1/4 | 1 1/2 | 2 | 2 | G 1 | G 1 1/4 | G 1 1/2 | G 1 1/2 | 1.25 | 1.50 |
| | 114.3 [4.5] | # 16 | # 20 | # 24 | 1 1/4 | 1 1/2 | 2 | 2 | G 1 | G 1 1/4 | G 1 1/2 | G 1 1/2 | 1.25 | 1.50 |
| | 127 [5] | # 16 | # 20 | # 24 | 1 1/4 | 1 1/2 | 2 | 2 | G 1 | G 1 1/4 | G 1 1/2 | G 1 1/2 | 1.25 | 1.50 |
| | 139.7 [5.5] | # 16 | # 20 | # 24 | 1 1/4 | 1 1/2 | 2 | 2 | G 1 | G 1 1/4 | G 1 1/2 | G 1 1/2 | 1.25 | 1.50 |

*With Port Boss

ƒ NPTF and BSPP ports are not recommended for maximum reliability on new application

Following notes applies to 01,04 mounts

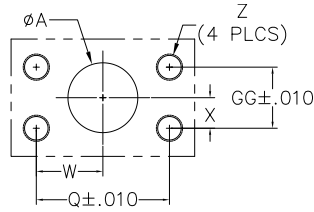
* Port Boss required for port position 1 and 3, These ports are not feasible for port position 2 & 4

** Port is not feasible for port position 2 and 4

Port at position 3 not available for bores 38.1mm, 50.2mm, 63.5mm, 82.55mm, 101.6mm for 03 mount

Port Type and Size

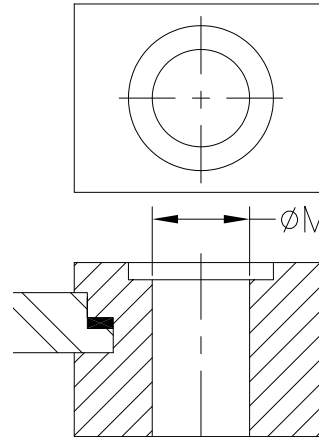
CODE C,6



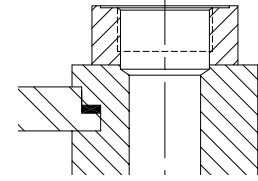
Dimensions in inches

| Flange Size | A | Q | W | X | GG | Z |
|-------------|------|-------|------|------|-------|------------|
| 3/4 (-12) | 0.75 | 1.875 | 0.94 | 0.44 | 0.875 | 3/8 (-16) |
| 1 (-16) | 1.00 | 2.062 | 1.03 | 0.52 | 1.031 | 3/8 (-16) |
| 1 1/4 (-20) | 1.25 | 2.312 | 1.16 | 0.59 | 1.118 | 7/16 (-14) |
| 1 1/2 (-24) | 1.50 | 2.750 | 1.38 | 0.70 | 1.406 | 1/2 (-13) |

CODE M



CODE H,7,8, G, 9, 0, K, A, B with*



| Bore mm[in] | Rod mm[in] | Port Code | | | | | | | | | | | | | |
|--------------|--------------|------------------------|-----------|----------|----------|------------|-----------|----------|----------|----------|----------|-------|--|---|--|
| | | G | | 9 | | 0 | | K | | A | | B | | M | |
| | | DIN 3852 Form X Metric | | | | ISO 6149-1 | | | | Manifold | | | | | |
| | | Under Size | Std | Oversize | | Under Size | Std | Oversize | | Std | Φ M | | | | |
| | | | | Head | Cap | | | Head | Cap | | | | | | |
| 38.1 [1.5] | 15.88 [0.63] | M20 x 1.5 | M22 x 1.5 | M27 x 2* | M27 x 2* | M20 x 1.5 | M22 x 1.5 | M27 x 2* | M27 x 2* | M27 x 2* | M27 x 2* | 9/16 | | | |
| | 25.4 [1] | M20 x 1.5 | M22 x 1.5 | M27 x 2* | M27 x 2* | M20 x 1.5 | M22 x 1.5 | M27 x 2* | M27 x 2* | M27 x 2* | M27 x 2* | 9/16 | | | |
| 50.8 [2] | 25.4 [1] | M20 x 1.5 | M22 x 1.5 | M27 x 2* | M27 x 2* | M20 x 1.5 | M22 x 1.5 | M27 x 2* | M27 x 2* | M27 x 2* | M27 x 2* | 9/16 | | | |
| | 34.93 [1.38] | M20 x 1.5 | M22 x 1.5 | M27 x 2* | M27 x 2* | M20 x 1.5 | M22 x 1.5 | M27 x 2* | M27 x 2* | M27 x 2* | M27 x 2* | 9/16 | | | |
| 63.5 [2.5] | 25.4 [1] | M20 x 1.5 | M22 x 1.5 | M27 x 2* | M27 x 2* | M20 x 1.5 | M22 x 1.5 | M27 x 2* | M27 x 2* | M27 x 2* | M27 x 2* | 9/16 | | | |
| | 34.93 [1.38] | M20 x 1.5 | M22 x 1.5 | M27 x 2* | M27 x 2* | M20 x 1.5 | M22 x 1.5 | M27 x 2* | M27 x 2* | M27 x 2* | M27 x 2* | 9/16 | | | |
| | 44.45 [1.75] | M20 x 1.5 | M22 x 1.5 | M27 x 2* | M27 x 2* | M20 x 1.5 | M22 x 1.5 | M27 x 2* | M27 x 2* | M27 x 2* | M27 x 2* | 9/16 | | | |
| 82.55 [3.25] | 34.93 [1.38] | M22 x 1.5 | M27 x 2 | M33 X 2* | M33 X 2* | M22 x 1.5 | M27 x 2 | M33 X 2* | M33 X 2* | M33 X 2* | M33 X 2* | 3/4 | | | |
| | 44.45 [1.75] | M22 x 1.5 | M27 x 2 | M33 X 2* | M33 X 2* | M22 x 1.5 | M27 x 2 | M33 X 2* | M33 X 2* | M33 X 2* | M33 X 2* | 3/4 | | | |
| | 50.8 [2] | M22 x 1.5 | M27 x 2 | M33 X 2* | M33 X 2* | M22 x 1.5 | M27 x 2 | M33 X 2* | M33 X 2* | M33 X 2* | M33 X 2* | 3/4 | | | |
| 101.6 [4] | 44.45 [1.75] | M22 x 1.5 | M27 x 2 | M33 X 2 | M33 X 2 | M22 x 1.5 | M27 x 2 | M33 X 2 | M33 X 2 | M33 X 2 | M33 X 2 | 3/4 | | | |
| | 50.8 [2] | M22 x 1.5 | M27 x 2 | M33 X 2 | M33 X 2 | M22 x 1.5 | M27 x 2 | M33 X 2 | M33 X 2 | M33 X 2 | M33 X 2 | 3/4 | | | |
| | 63.5 [2.5] | M22 x 1.5 | M27 x 2 | M33 X 2 | M33 X 2 | M22 x 1.5 | M27 x 2 | M33 X 2 | M33 X 2 | M33 X 2 | M33 X 2 | 3/4 | | | |
| 127 [5] | 50.8 [2] | M22 x 1.5 | M27 x 2 | M33 X 2 | M33 X 2 | M22 x 1.5 | M27 x 2 | M33 X 2 | M33 X 2 | M33 X 2 | M33 X 2 | 3/4 | | | |
| | 63.5 [2.5] | M22 x 1.5 | M27 x 2 | M33 X 2 | M33 X 2 | M22 x 1.5 | M27 x 2 | M33 X 2 | M33 X 2 | M33 X 2 | M33 X 2 | 3/4 | | | |
| | 76.2 [3] | M22 x 1.5 | M27 x 2 | M33 X 2 | M33 X 2 | M22 x 1.5 | M27 x 2 | M33 X 2 | M33 X 2 | M33 X 2 | M33 X 2 | 3/4 | | | |
| | 88.9 [3.5] | M22 x 1.5 | M27 x 2 | M33 X 2 | M33 X 2 | M22 x 1.5 | M27 x 2 | M33 X 2 | M33 X 2 | M33 X 2 | M33 X 2 | 3/4 | | | |
| 152.4 [6] | 63.5 [2.5] | M27 x 1.5 | M33 x 2 | M42 X 2 | M42 X 2 | M27 x 1.5 | M33 x 2 | M42 X 2 | M42 X 2 | M42 X 2 | M42 X 2 | 1 | | | |
| | 76.2 [3] | M27 x 1.5 | M33 x 2 | M42 X 2 | M42 X 2 | M27 x 1.5 | M33 x 2 | M42 X 2 | M42 X 2 | M42 X 2 | M42 X 2 | 1 | | | |
| | 88.9 [3.5] | M27 x 1.5 | M33 x 2 | M42 X 2 | M42 X 2 | M27 x 1.5 | M33 x 2 | M42 X 2 | M42 X 2 | M42 X 2 | M42 X 2 | 1 | | | |
| | 101.6 [4] | M27 x 1.5 | M33 x 2 | M42 X 2* | M42 X 2 | M27 x 1.5 | M33 x 2 | M42 X 2* | M42 X 2 | M42 X 2 | M42 X 2 | 1 | | | |
| 177.8 [7] | 76.2 [3] | M33 x 2 | M42 x 2 | M48 X 2 | M48 X 2 | M33 x 2 | M42 x 2 | M48 X 2 | M48 X 2 | M48 X 2 | M48 X 2 | 1 3/8 | | | |
| | 88.9 [3.5] | M33 x 2 | M42 x 2 | M48 X 2 | M48 X 2 | M33 x 2 | M42 x 2 | M48 X 2 | M48 X 2 | M48 X 2 | M48 X 2 | 1 3/8 | | | |
| | 101.6 [4] | M33 x 2 | M42 x 2 | M48 X 2 | M48 X 2 | M33 x 2 | M42 x 2 | M48 X 2 | M48 X 2 | M48 X 2 | M48 X 2 | 1 3/8 | | | |
| | 114.3 [4.5] | M33 x 2 | M42 x 2 | M48 X 2 | M48 X 2 | M33 x 2 | M42 x 2 | M48 X 2 | M48 X 2 | M48 X 2 | M48 X 2 | 1 3/8 | | | |
| | 127 [5] | M33 x 2 | M42 x 2 | M48 X 2 | M48 X 2 | M33 x 2 | M42 x 2 | M48 X 2 | M48 X 2 | M48 X 2 | M48 X 2 | 1 3/8 | | | |
| 203.2 [8] | 88.9 [3.5] | M42 x 2 | M48 x 2 | NA | NA | M42 x 2 | M48 x 2 | M48 x 2 | NA | NA | NA | 1 5/8 | | | |
| | 101.6 [4] | M42 x 2 | M48 x 2 | NA | NA | M42 x 2 | M48 x 2 | M48 x 2 | NA | NA | NA | 1 5/8 | | | |
| | 114.3 [4.5] | M42 x 2 | M48 x 2 | NA | NA | M42 x 2 | M48 x 2 | M48 x 2 | NA | NA | NA | 1 5/8 | | | |
| | 127 [5] | M42 x 2 | M48 x 2 | NA | NA | M42 x 2 | M48 x 2 | M48 x 2 | NA | NA | NA | 1 5/8 | | | |
| | 139.7 [5.5] | M42 x 2 | M48 x 2 | NA | NA | M42 x 2 | M48 x 2 | M48 x 2 | NA | NA | NA | 1 5/8 | | | |

Port Selections

Use this table to determine which bore diameter, rod diameter and port combination will provide the piston velocity required for your application.

| Bore Ø mm | Rod Ø mm | Fluid Required per MM of stroke | | Port Codes 1,5,6,9 & A | | Port Codes 2,4,0 & B | | Port Code 3 | | Port Code 7 | | Port Code 8 | |
|-----------------|----------------|---------------------------------------|---------|---------------------------|-------------------------------|-------------------------|-------------------------------|----------------|-------------------------------|----------------|-------------------------------|----------------|-------------------------------|
| | | | | Flow (lpm) | Piston Velocity (m/sec) | Flow (lpm) | Piston Velocity (m/sec) | Flow (lpm) | Piston Velocity (m/sec) | Flow (lpm) | Piston Velocity (m/sec) | Flow (lpm) | Piston Velocity (m/sec) |
| 38.1 | Cap | 0.008 | 1140.1 | 22.7 | 0.33 | 34.8 | 0.51 | 22.7 | 0.33 | 12.9 | 0.19 | 34.8 | 0.51 |
| | 15.9 | 0.006 | 942.2 | 22.7 | 0.40 | 34.8 | 0.62 | 22.7 | 0.40 | 12.9 | 0.23 | 34.8 | 0.62 |
| | 25.4 | 0.004 | 633.4 | 22.7 | 0.60 | 34.8 | 0.92 | 22.7 | 0.60 | 12.9 | 0.23 | 34.8 | 0.92 |
| 50.8 | Cap | 0.014 | 2026.8 | 22.7 | 0.19 | 34.8 | 0.29 | 22.7 | 0.19 | 12.9 | 0.11 | 34.8 | 0.29 |
| | 25.4 | 0.010 | 1520.1 | 22.7 | 0.25 | 34.8 | 0.38 | 22.7 | 0.25 | 12.9 | 0.14 | 34.8 | 0.38 |
| | 34.9 | 0.007 | 1068.8 | 22.7 | 0.35 | 34.8 | 0.54 | 22.7 | 0.35 | 12.9 | 0.20 | 34.8 | 0.54 |
| 63.5 | Cap | 0.021 | 3166.9 | 22.7 | 0.12 | 34.8 | 0.18 | 22.7 | 0.12 | 12.9 | 0.07 | 34.8 | 0.18 |
| | 25.4 | 0.018 | 2660.2 | 22.7 | 0.14 | 34.8 | 0.22 | 22.7 | 0.14 | 12.9 | 0.08 | 34.8 | 0.22 |
| | 34.9 | 0.015 | 2208.9 | 22.7 | 0.17 | 34.8 | 0.26 | 22.7 | 0.17 | 12.9 | 0.10 | 34.8 | 0.26 |
| | 44.5 | 0.011 | 1615.1 | 22.7 | 0.23 | 34.8 | 0.36 | 22.7 | 0.23 | 12.9 | 0.13 | 34.8 | 0.36 |
| 82.55 | Cap | 0.036 | 5352.1 | 54.9 | 0.17 | 76.5 | 0.24 | 54.9 | 0.17 | 34.8 | 0.11 | 105.6 | 0.33 |
| | 34.9 | 0.029 | 4394.1 | 54.9 | 0.21 | 76.5 | 0.29 | 54.9 | 0.21 | 34.8 | 0.13 | 105.6 | 0.40 |
| | 44.5 | 0.026 | 3800.3 | 54.9 | 0.24 | 76.5 | 0.33 | 54.9 | 0.24 | 34.8 | 0.15 | 105.6 | 0.46 |
| | 50.8 | 0.022 | 3325.3 | 54.9 | 0.27 | 76.5 | 0.38 | 54.9 | 0.27 | 34.8 | 0.17 | 105.6 | 0.53 |
| 101.6 | Cap | 0.054 | 8107.3 | 54.9 | 0.11 | 76.5 | 0.16 | 54.9 | 0.11 | 34.8 | 0.07 | 105.6 | 0.22 |
| | 44.5 | 0.044 | 6555.5 | 54.9 | 0.14 | 76.5 | 0.19 | 54.9 | 0.14 | 34.8 | 0.09 | 105.6 | 0.27 |
| | 50.8 | 0.041 | 6080.5 | 54.9 | 0.15 | 76.5 | 0.21 | 54.9 | 0.15 | 34.8 | 0.10 | 105.6 | 0.29 |
| | 63.5 | 0.033 | 4940.4 | 54.9 | 0.19 | 76.5 | 0.26 | 54.9 | 0.19 | 34.8 | 0.12 | 105.6 | 0.36 |
| 127 | Cap | 0.085 | 12667.7 | 54.9 | 0.07 | 76.5 | 0.10 | 54.9 | 0.07 | 34.8 | 0.05 | 105.6 | 0.14 |
| | 50.8 | 0.071 | 10640.9 | 54.9 | 0.09 | 76.5 | 0.12 | 54.9 | 0.09 | 34.8 | 0.05 | 105.6 | 0.17 |
| | 63.5 | 0.064 | 9500.8 | 54.9 | 0.10 | 76.5 | 0.13 | 54.9 | 0.10 | 34.8 | 0.06 | 105.6 | 0.19 |
| | 76.2 | 0.054 | 8107.3 | 54.9 | 0.11 | 76.5 | 0.16 | 54.9 | 0.11 | 34.8 | 0.07 | 105.6 | 0.22 |
| | 88.9 | 0.043 | 6460.5 | 54.9 | 0.14 | 76.5 | 0.20 | 54.9 | 0.14 | 34.8 | 0.09 | 105.6 | 0.27 |
| 152.4 | Cap | 0.122 | 18241.5 | 105.6 | 0.10 | 172.2 | 0.16 | 105.6 | 0.10 | 54.9 | 0.05 | 172.2 | 0.16 |
| | 63.5 | 0.101 | 15074.6 | 105.6 | 0.12 | 172.2 | 0.19 | 105.6 | 0.12 | 54.9 | 0.06 | 172.2 | 0.19 |
| | 76.2 | 0.092 | 13681.1 | 105.6 | 0.13 | 172.2 | 0.21 | 105.6 | 0.13 | 54.9 | 0.07 | 172.2 | 0.21 |
| | 88.9 | 0.081 | 12034.3 | 105.6 | 0.15 | 172.2 | 0.24 | 105.6 | 0.15 | 54.9 | 0.08 | 172.2 | 0.24 |
| | 101.6 | 0.068 | 10134.2 | 105.6 | 0.17 | 172.2 | 0.28 | 105.6 | 0.17 | 54.9 | 0.09 | 172.2 | 0.28 |
| 177.8 | Cap | 0.167 | 24828.7 | 172.2 | 0.12 | 255.1 | 0.17 | 172.2 | 0.12 | 105.6 | 0.07 | 255.1 | 0.17 |
| | 76.2 | 0.136 | 20268.3 | 172.2 | 0.14 | 255.1 | 0.21 | 172.2 | 0.14 | 105.6 | 0.09 | 255.1 | 0.21 |
| | 88.9 | 0.125 | 18621.5 | 172.2 | 0.15 | 255.1 | 0.23 | 172.2 | 0.15 | 105.6 | 0.09 | 255.1 | 0.23 |
| | 101.6 | 0.112 | 16721.4 | 172.2 | 0.17 | 255.1 | 0.25 | 172.2 | 0.17 | 105.6 | 0.11 | 255.1 | 0.25 |
| | 114.3 | 0.098 | 14567.9 | 172.2 | 0.20 | 255.1 | 0.29 | 172.2 | 0.20 | 105.6 | 0.12 | 255.1 | 0.29 |
| | 127.0 | 0.082 | 12161.0 | 172.2 | 0.24 | 255.1 | 0.35 | 172.2 | 0.24 | 105.6 | 0.14 | 255.1 | 0.35 |
| 203.20 | Cap | 0.218 | 32429.4 | 255.1 | 0.13 | 172.2 | 0.09 | 172.2 | 0.09 | 105.6 | 0.05 | 255.1 | 0.13 |
| | 88.9 | 0.176 | 26222.2 | 255.1 | 0.16 | 172.2 | 0.11 | 172.2 | 0.11 | 105.6 | 0.07 | 255.1 | 0.16 |
| | 101.6 | 0.163 | 24322.0 | 255.1 | 0.18 | 172.2 | 0.12 | 172.2 | 0.12 | 105.6 | 0.07 | 255.1 | 0.17 |
| | 114.3 | 0.149 | 22168.5 | 255.1 | 0.19 | 172.2 | 0.13 | 172.2 | 0.13 | 105.6 | 0.08 | 255.1 | 0.19 |
| | 127.0 | 0.133 | 19761.6 | 255.1 | 0.22 | 172.2 | 0.15 | 172.2 | 0.15 | 105.6 | 0.09 | 255.1 | 0.21 |
| | 139.7 | 0.115 | 17101.4 | 255.1 | 0.25 | 172.2 | 0.17 | 172.2 | 0.17 | 105.6 | 0.10 | 255.1 | 0.25 |

Note: Under size port velocities are not shown

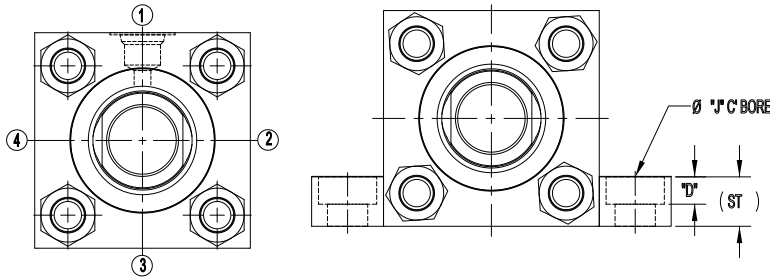
Port Locations

Port locations are identified by viewing the cylinder from the head end (or from the mounting end of double rod cylinders). The location

numbers are shown here.

Certain Port locations cannot be specified with some mounting styles. The table

below indicates which of the head and cap port locations are available for each Series NZ mounting style.



| Bore | J | D |
|-------|-------|------|
| 38.1 | 15.88 | 5.6 |
| 50.8 | 20.63 | 9.7 |
| 63.5 | 30.18 | 17.8 |
| 82.6 | 30.18 | 11.2 |
| 101.6 | 39.67 | 16.8 |
| 127.0 | 39.67 | 1.6 |
| 152.4 | 50.8 | - |
| 177.8 | 58.72 | 7.9 |
| 203.2 | 58.72 | - |

| Mounting Style code | Description | Head location | | | | Cap location | | | | |
|---------------------|--|---------------|---|---|---|--------------|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 5 |
| 01 | Side Lug | A | W | A | W | A | W | A | W | A |
| 02 | Side Tapped | A | A | N | A | A | A | N | A | A |
| 03 | End Lug Mount | A | A | N | A | A | A | N | A | A |
| 04 | Keyed Side Lug | A | W | A | W | A | W | A | W | A |
| 05 | Keyed Tapped | A | A | N | A | A | A | N | A | A |
| 07 | Head Rectangular Flange | A | W | A | W | A | A | A | A | A |
| 08 | Head Square Flange | W | W | W | W | A | A | A | A | A |
| 09 | Head Rectangular | A | A | A | A | A | A | A | A | A |
| 10 | Clevis | A | A | A | A | A | A | A | A | N |
| 11 | Spherical Bushing | A | A | A | A | A | A | A | A | N |
| 12 | Cap Rectangular Flange | A | A | A | A | A | W | A | W | N |
| 13 | Cap Square Flange | A | A | A | A | W | W | W | W | N |
| 14 | Cap Rectangular | A | A | A | A | A | A | A | A | N |
| 15 | Intermediate Trunnion | A | A | A | A | A | A | A | A | A |
| 16 | Cap Trunnion | A | A | A | A | A | N | A | N | A |
| 17 | Head Trunnion | A | N | A | N | A | A | A | A | A |
| 19 | Centerline Lug | A | N | A | N | A | N | A | N | A |
| 21 | Cap End Extended Tie Rod | A | A | A | A | A | A | A | A | A |
| 22 | Head End Extended Tie Rod | A | A | A | A | A | A | A | A | A |
| 23 | Both Ends Extended Tie Rod | A | A | A | A | A | A | A | A | A |
| 24 | No Mount | A | A | A | A | A | A | A | A | A |
| 25 | Double Rod, Side Lug | A | A | A | A | | | | | |
| 26 | Double Rod, Tapped | A | A | N | A | | | | | |
| 27 | Double Rod, End Lug | A | A | N | A | | | | | |
| 28 | Double Rod, Keyed Side Lug | A | W | A | W | | | | | |
| 29 | Double Rod, Keyed Tapped | A | A | N | A | | | | | |
| 31 | Double Rod, Rectangular Flange | A | W | A | W | | | | | |
| 32 | Double Rod, Square Flange | W | W | W | W | | | | | |
| 33 | Double Rod, Head Rectangular | A | A | A | A | | | | | |
| 34 | Double Rod, Intermediate Trunnion | A | A | A | A | | | | | |
| 35 | Double Rod, Head Trunnion | A | N | A | N | | | | | |
| 37 | Double Rod, Centerline Lug | A | N | A | N | | | | | |
| 39 | Double Rod, Extended Tie Rod | A | A | A | A | | | | | |
| 40 | Double Rod, Both Ends Extended Tie Rod | A | A | A | A | | | | | |
| 41 | Double Rod, No Mount | A | A | A | A | | | | | |
| 47 | Cap Fixed Eye | A | A | A | A | A | A | A | A | N |
| 48 | Cap Detachable Eye | A | A | A | A | A | A | A | A | N |
| 50 | Cap Detachable Clevis | A | A | A | A | A | A | A | A | N |

A - Available

N - Not available

W - Port is available without port Boss only

Refer Page 69 for port Boss requirements, refer Page 74 for switch availability

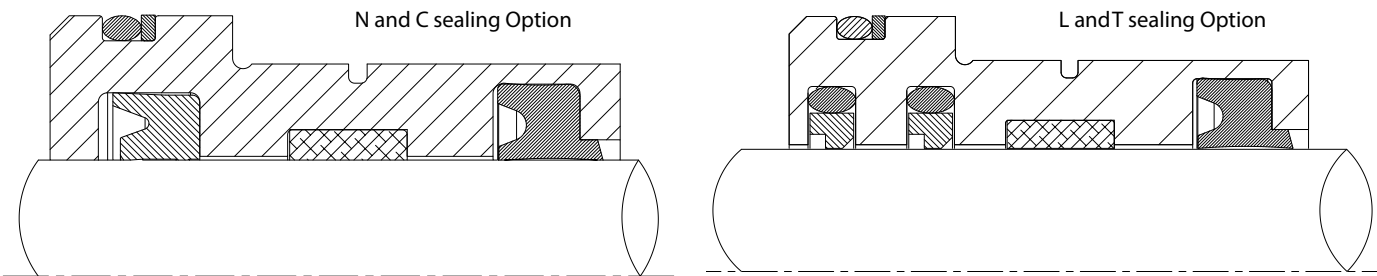
Sealing system

Four different sealing systems are available in Series NZ cylinders.

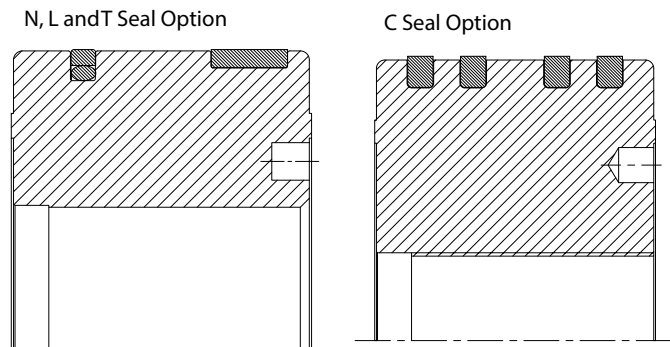
Determine the correct seal code for your application, then enter it as item 8 in the model code.

| Code | Fluid | Temperature (°C) | Max. Speed (ft/s) | (m/sec) | Application |
|--|--|------------------|-------------------|---------|----------------------------|
| N | Mineral oil, petroleum base | -35 to 80 | 2.25 | 0.69 | Normal, typical industrial |
| | Automotive transmission fluid | | | | |
| L | Mineral oil | -35 to 120 | 15 | 4.57 | Low friction servo |
| | Water glycol (HFC) | 10 to 70 | 3 | 0.91 | Fire retardant fluids |
| | Oil-in-water emulsions (HFA) | | | | |
| | Water-in-oil emulsions (HFB) | | | | |
| T | Mineral oil | -25 to 200 | 15 | 4.57 | High temperature |
| | Phosphate esters, petroleum oil blends | 0 to 200 | 15 | 4.57 | Fire retardant fluids |
| | Fyrquel 220, 550, 1000 | | | | |
| | Hought-O-Safe 1340 | | | | |
| Pydraul 200, 230C, 280, 312C, 540C, A200 | | | | | |
| C | Mineral oil, petroleum base | -35 to 80 | 2.25 | 0.69 | Normal, typical industrial |
| | Automotive transmission fluid | | | | |

Rod Seal Configuration



Piston Seal Configuration

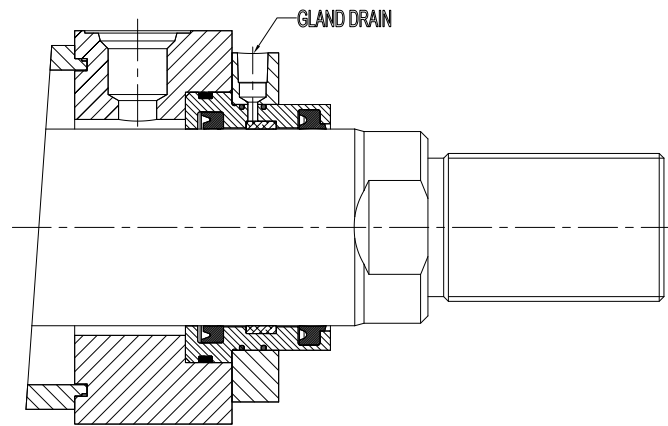


Gland drains/Air bleeds

Gland Drain Option

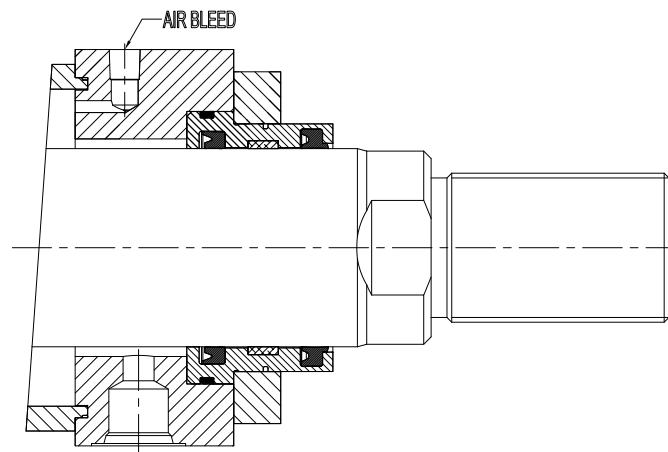
Gland drains are primarily used for long stroke cylinders (over 762mm) and when extended speed exceeds retract speed.

The gland drain is used to return any accumulated fluid, between the rod seal and wiper, to tank. This is used in servo applications, for ultra-low leakage requirements, or for remote visual monitoring of rod seal leakage for preventive maintenance purposes.



Air Bleed Option

Usually cylinders will bleed themselves of air when ports are vertical, on top. Bleed ports are often desirable to remove entrapped air, when the ports are on the bottom. High performance and high speed or heavy load applications are a few examples where air bleeds are desirable.



Technical Data Proximity Switches

Proximity switches for series NZ cylinder are inductive type switches with sensing probe that “looks” at the cushion collar or button to provide extended or retracted indication. Since the probe is inside the cylinder, harsh external environments don't affect sensing. The 2-wire circuit will operate on AC or DC

and works as reliably as a programmable controller. Proximity switches will meet UL requirements for 3000-psi (210 bar) hydraulic cylinder.

Switch will allow 304° rotations. Short Circuit protection is standard feature on Proximity proximity switch. SCP protects the switch from

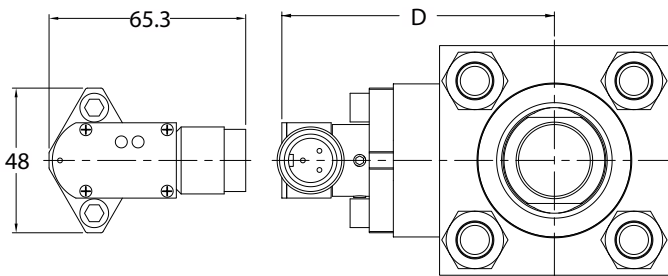
shorts in load or line. Upon sensing short condition, the switch assumes a non-conducting mode. The fault condition **must** be removed and power turned off in order to reset the switch.

This feature prevents unintended automatic restarts. The switch indicated when it is in SCP mode by flashing both leads.

Torque ¼-20 mounting screws to 15 ft-lb (20 Nm)

Series PS 200 2-wire AC / DC Proximity Switch

| | |
|-------------------------------------|---|
| Pressure | 3000 PSI |
| Sensing Range | 2mm ± 10 % |
| Sensing distance from End of stroke | 6.4mm - 9.7mm stroke to go |
| Operating temperature range | -25°C to 70° C |
| Repeatability | 0.025mm |
| Switching differential | ≤ 15% |
| Supply Voltage | 20 - 250V AC / DC |
| Voltage drop | ≤ 6V |
| Load Current capacity @ 25° C | 5-400mA |
| Inrush current | ≤ 3A (t<=20ms) |
| Indicating LED's (Standard) | 1 lit: Power on non-conducting 2 lit: Target present (both flashing = SCP mode) |



Note : NA - Not available

Proximity switch for 38.1mm bore at position 2 & 4 is not available for 07 Mount at Head end, 12 Mount at Cap end

Proximity switch for 38.1mm bore is unavailable for 08 Mount at Head end, 3 Mount at Cap end

Proximity switch for 177.8mm & 203.2 mm bore is unavailable for 14 mount at Cap end

| BORE mm[in] | ROD mm[in] | “D” Max. | “D” Max. | “D” Max. |
|-----------------|---------------|-------------|-------------------------|-------------------------|
| | | | 09 mounts Pos. 2 & 4 | 14 mounts Pos. 2 & 4 |
| " | 15.88 [0.63] | 75.9 | 102.4 | 75.9 |
| 38.1 [1.5]" | 25.4 [1] | 79.2 | 105.5 | 79.2 |
| | CAP | 75.9 | 96.6 | 96.6 |
| 50.8 [2] | 25.4 [1] | 85.7 | 126.9 | 85.7 |
| | 34.93 [1.38] | 83.9 | 110.3 | 83.9 |
| | CAP | 99.5 | 99.5 | 120.1 |
| 63.5 [2.5] | 25.4 [1] | 106.3 | 127.0 | 106.3 |
| | 34.93 [1.38] | 89.6 | 130.9 | 89.6 |
| | 44.45 [1.75] | 88.7 | 115.0 | 88.7 |
| | CAP | 99.5 | 99.5 | 120.1 |
| 82.55 [3.25] | 34.93 [1.38] | 111.9 | 155.3 | 111.9 |
| | 44.45 [1.75] | 116.6 | 137.3 | 116.6 |
| | 50.8 [2] | 118.2 | 138.9 | 118.2 |
| | CAP | 102.3 | 102.3 | 145.9 |
| 101.6 [4] | 44.45 [1.75] | 116.6 | 160.1 | 116.6 |
| | 50.8 [2] | 121.4 | 142.0 | 121.4 |
| | 63.5 [2.5] | 124.6 | 145.2 | 124.6 |
| | CAP | 123.0 | 123.0 | 145.8 |
| 127 [5] | 50.8 [2] | 142.0 | 184.9 | 142.0 |
| | 63.5 [2.5] | 127.8 | 171.2 | 127.8 |
| | 76.2 [3] | 134.1 | 177.6 | 134.1 |
| | 88.9 [3.5] | 137.3 | 180.8 | 137.3 |
| | CAP | 127.8 | 127.8 | 170.6 |
| 152.4 [6] | 63.5 [2.5] | 148.4 | 191.3 | 148.4 |
| | 76.2 [3] | 154.7 | 197.6 | 154.7 |
| | 88.9 [3.5] | 157.9 | 200.8 | 157.9 |
| | 101.6 [4] | 143.6 | 187.1 | 143.6 |
| | CAP | 157.0 | 157.0 | 188.1 |
| 177.8 [7] | 76.2 [3] | 154.7 | 208.7 | 154.7 |
| | 88.9 [3.5] | 161.1 | 215.0 | 161.1 |
| | 101.6 [4] | 164.3 | 207.1 | 164.3 |
| | 114.3 [4.5] | 153.1 | 216.6 | 153.1 |
| | 127 [5] | 157.1 | 220.6 | 157.1 |
| | CAP | 157.0 | 157.0 | NA |
| 203.2 [8] | 88.9 [3.5] | 183.9 | NA | 183.9 |
| | 101.6 [4] | 164.3 | 218.4 | 164.3 |
| | 114.3 [4.5] | 173.8 | 227.8 | 173.8 |
| | 127 [5] | 177.7 | 220.5 | 177.7 |
| | 139.7 [5.5] | 164.3 | 227.7 | 164.3 |
| | CAP | 177.0 | 177.0 | NA |

Application Engineering Data

Transducer Options

A wide variety of precision cylinder position sensing and feedback devices are available. These packaged cylinder systems can handle virtually any application requiring feedback throughout the cylinder stroke with or without velocity monitoring and with resolutions of 0.02 MM [$\pm 0.001"$] or better. Cylinders can be manufactured prepared for transducer or with transducer already installed.

Two different protective cover options are available for rugged environments to protect the electronics.

Transducer Cover

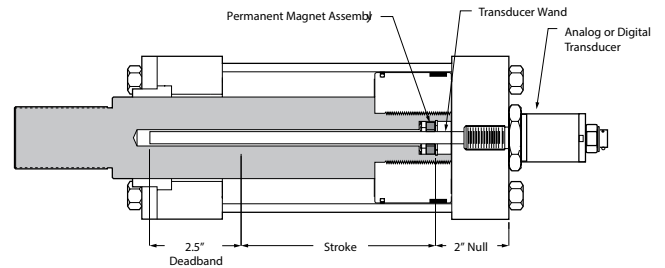
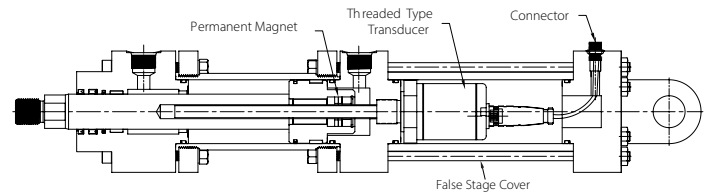
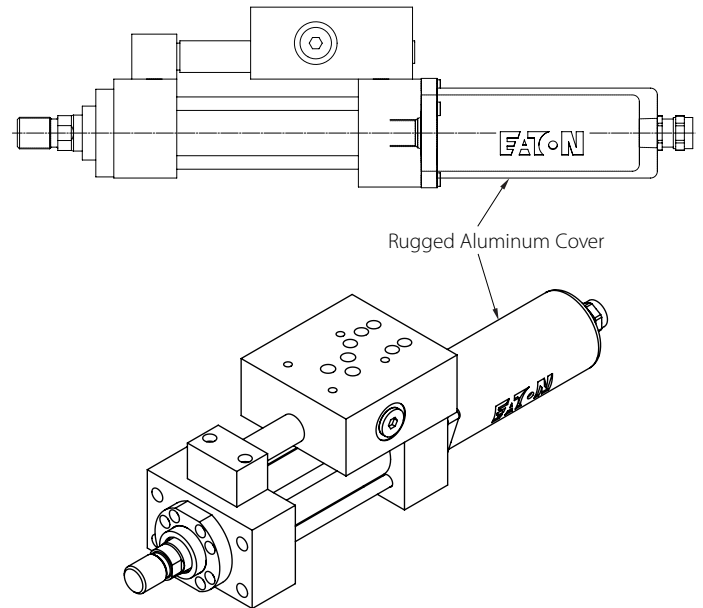
Rugged aluminum casting cover protects the transducer from minor wear and tear, yet is easily removable to service the transducer.

False Stage Cover

Transducer is protected by a tie-rod Cylinder body and end cap for the best protection of the Sensor. Utilize this design when you need Heavy duty protection for the Transducer.

Additional Probe Options

Eaton has years of experience providing cylinders with a variety of transducer feedback options. From the common mangetostrictive type transducers to solid state transducers, Eaton can provide a solution for your feedback needs regardless of application or condition. Danfoss can also provide a cylinder "prepared" for a transducer if you prefer to provide your own feedback. Please contact your Danfoss representative with your requirements and we can provide a cylinder solution.



Typical Probe Design Threaded in Cap

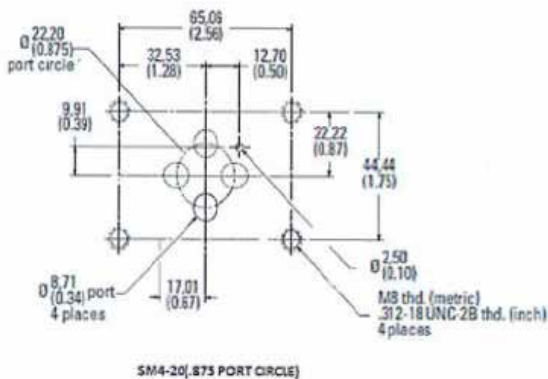
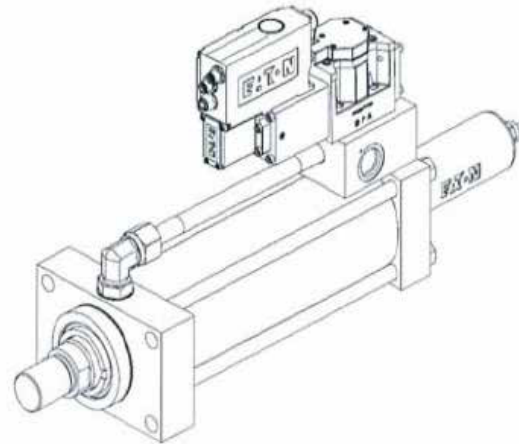
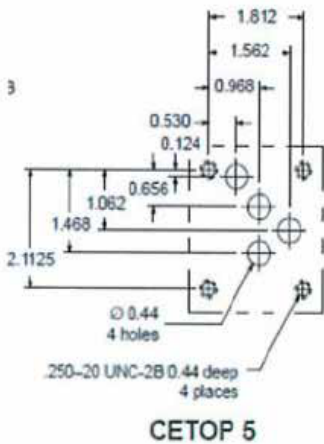
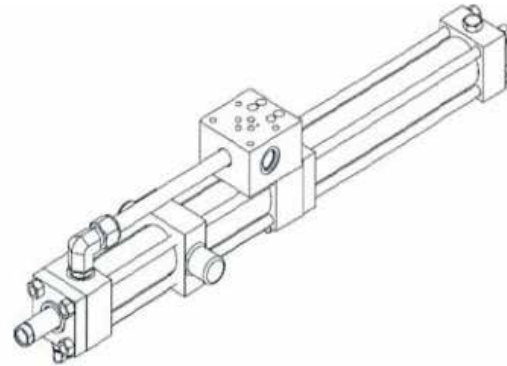
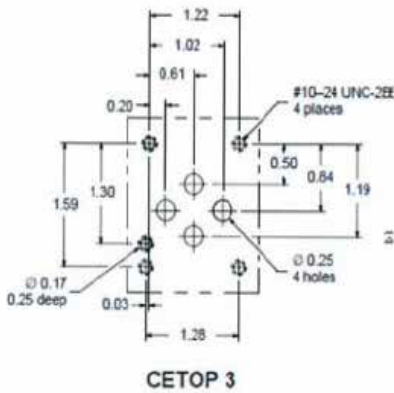
Application/Engineering Data

Manifold Options

Danfoss cylinders can be specified to include hydraulic manifolds and plumbing to simplify the integration of the cylinder with a control valve. Danfoss offers standard hydraulic manifold options for valve interfaces of CETOP D03, D05 and SM4-20. Other manifolds can be designed as a special and incorporated with or without feedback.

Customer Requirements

Danfoss has been an industry pioneer incorporating positioning systems into industrial cylinders, and can design systems for any application. If a specific type of system is required and not covered here, we can work with you to create a cylinder configuration incorporating your needs.



Technical Data

Stop Tubes

Stop tubes are located between the piston and the rod shoulder on the head end of the cylinder. Bearing loading is reduced by separating the piston and the rod bushing. Bearing wear and tendency to buckle is reduced. To determine if a stop tube is required and the length of stop tube needed, use the following procedure:

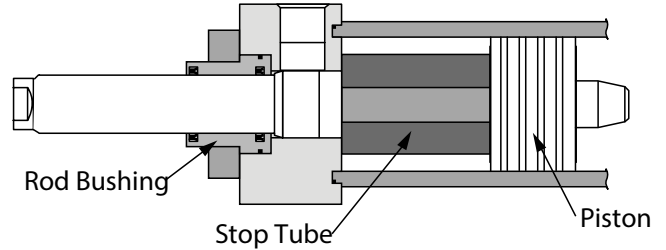
Determine the value of D with the piston rod in the fully extended position. If the value of D is under 1016mm, no stop tube is needed.

If D is greater than 1016mm, one inch of stop tube is recommended for each 254mm, or fraction thereof, beyond 1016mm.

Special Note

When specifying stroke and stop tube lengths, please

include net working stroke plus stop tube length.



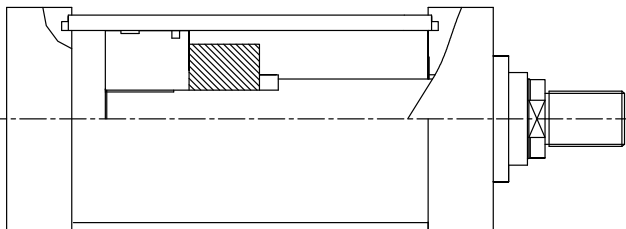
| | | | |
|---------------------------------------|------------------------------------|---|---|
| <p>D = 4S Unsupported Rod End</p> | <p>D = S Supported Rod End</p> | <p>D = 0.5S Firmly Guided Rod End</p> | <p>D = 4S Unsupported Rod End</p> |
| <p>Cap Clevis or Trunnion</p> | <p>Intermediate Trunnion</p> | <p>Head Trunnion</p> | <p>D = S Supported Rod End</p> |
| | | | <p>D = 0.5S Firmly Guided Rod End</p> |

Stop Tubes

There are two stop tube designs depending on the length required.

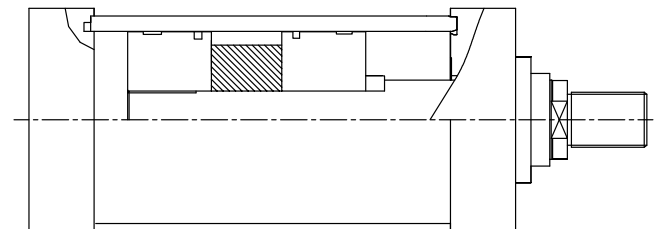
Design A

The standard stop tube design for lengths under 254mm.



Design B

The standard stop tube design for lengths over 254mm. Note that the piston's effective bearing area is doubled, in addition to gaining the normal increased minimum distance between bearing points.



Technical Data

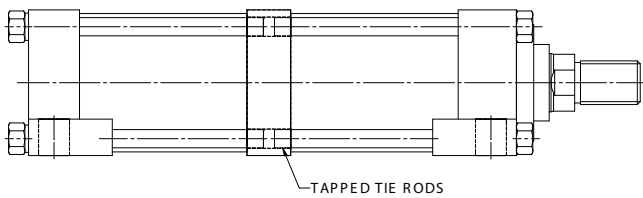
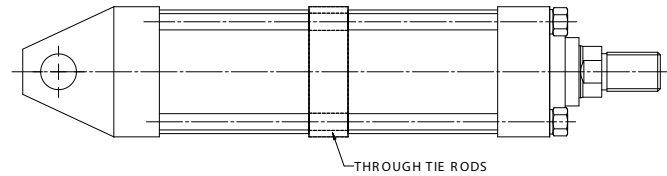
Tie rod Spacers and Center supports

A tie rod spacer or center support should be applied when the stroke length exceeds 20 times the bore diameter.

Tie rod spacer

Tie rod spacers and center supports are used to improve the structural rigidity of long

stroke tie rod cylinders. The spacers have through holes for the tie rods and are held in place on the cylinder barrel with a small tack weld or set screw. The spacer keeps the tie rod in the proper position around the centerline of the cylinder and acts much like a truss in preventing excessive deflection in a long stroke cylinder that is not rigidly mounted (clevis mount, etc.).



Tie rod center support

The center support has side mounting lugs similar to side lug mount heads and serves as an additional mounting location. The tie rods are threaded into the center support and it becomes a load-carrying component of the cylinder assembly.

The exact location of the tie rod center support is generally optional, which greatly increases the flexibility in mounting a long stroke cylinder.

Bore & Rod Diameter – Cylinder Size Selection

To choose the proper size of cylinder for your application, first determine the maximum push or pull force required to do the job. Then use the below table to select the cylinder that will provide that force.

Remember that force capabilities derived from charts and formulas may be theoretically correct, but other factor must be considered. Be sure to allow for pressure drop between pump outlet and cylinder port. Also some

of a cylinder force is used up overcoming seal friction and lesser extent the inertia of the piston itself.

WARNING

It is the user's responsibility to select the correct cylinder size.

| Bore φ mm[in] | Rod φ mm[in] | Work Area (mm ²) | Maximum Force (kN) At working pressure(bar) | | | | | |
|---------------------|--------------------|------------------------------------|---|-------------|-------------|--------------|--------------|--------------|
| | | | 35 (bar) | 52 (bar) | 69 (bar) | 103 (bar) | 138 (bar) | 207 (bar) |
| 38.1 [1.5] | CAP | 1140.1 | 3.93 | 5.90 | 786 | 11.79 | 15.72 | 23.58 |
| | 15.88 [0.63] | 942.0 | 3.25 | 4.87 | 6.50 | 9.74 | 12.99 | 19.49 |
| | 25.4 [1] | 633.4 | 2.18 | 3.28 | 4.37 | 6.55 | 8.73 | 13.10 |
| 50.8 [2] | CAP | 2026.8 | 6.99 | 10.48 | 13.97 | 20.96 | 27.95 | 41.92 |
| | 25.4 [1] | 1520.1 | 5.24 | 7.86 | 10.48 | 15.72 | 20.96 | 31.44 |
| | 34.93 [1.375] | 1068.6 | 3.68 | 5.53 | 7.37 | 11.05 | 14.74 | 22.11 |
| 63.5 [2.5] | CAP | 3166.9 | 10.92 | 16.38 | 21.84 | 32.75 | 43.67 | 65.51 |
| | 25.4 [1] | 2660.2 | 9.17 | 13.76 | 18.34 | 27.51 | 36.68 | 55.02 |
| | 34.93 [1.375] | 2208.7 | 7.62 | 11.42 | 15.23 | 22.85 | 30.46 | 45.69 |
| | 44.5 [1.75] | 1611.6 | 5.57 | 8.35 | 11.14 | 16.70 | 22.27 | 33.41 |
| 82.5 [3.25] | CAP | 5345.6 | 18.45 | 27.68 | 36.90 | 55.35 | 73.80 | 110.70 |
| | 34.93 [1.375] | 4387.4 | 15.15 | 22.72 | 30.30 | 45.44 | 60.59 | 90.89 |
| | 44.5 [1.75] | 3790.3 | 13.10 | 19.65 | 26.20 | 39.30 | 52.40 | 78.61 |
| | 50.8 [2] | 3318.8 | 11.46 | 17.20 | 22.93 | 34.39 | 45.85 | 68.78 |
| 101.6 [4] | CAP | 8107.3 | 27.95 | 41.92 | 55.90 | 83.85 | 111.80 | 167.69 |
| | 44.5 [1.75] | 6552.1 | 22.60 | 33.90 | 45.20 | 67.80 | 90.40 | 135.60 |
| | 50.8 [2] | 6080.5 | 20.96 | 31.44 | 41.92 | 62.89 | 83.85 | 125.77 |
| | 63.5 [2.5] | 4940.4 | 17.03 | 25.55 | 34.06 | 51.09 | 68.13 | 102.19 |
| 127 [5] | CAP | 1695.7 | 43.67 | 65.51 | 87.34 | 131.01 | 174.68 | 262.02 |
| | 50.8 [2] | 10640.9 | 36.68 | 55.02 | 73.37 | 110.05 | 146.73 | 220.10 |
| | 63.5 [2.5] | 9500.8 | 32.75 | 49.13 | 65.51 | 98.26 | 131.01 | 196.52 |
| | 76.2 [3] | 8107.3 | 27.95 | 41.92 | 55.90 | 83.85 | 111.80 | 167.69 |
| | 88.9 [3.5] | 6460.5 | 22.27 | 33.41 | 44.54 | 66.82 | 89.09 | 133.63 |
| 152.4 [6] | CAP | 18241.5 | 62.89 | 94.33 | 125.77 | 188.66 | 251.54 | 377.31 |
| | 63.5 [2.5] | 15074.6 | 51.97 | 77.95 | 103.94 | 155.90 | 207.87 | 311.81 |
| | 76.2 [3] | 13681.1 | 47.16 | 70.75 | 94.33 | 141.49 | 188.66 | 282.98 |
| | 88.9 [3.5] | 12034.3 | 41.49 | 62.23 | 82.97 | 124.46 | 165.95 | 248.92 |
| | 101.6 [4] | 10134.2 | 34.94 | 52.40 | 69.87 | 104.81 | 139.75 | 209.62 |
| 177.8 [7] | CAP | 24828.7 | 85.59 | 128.39 | 171.19 | 256.78 | 342.38 | 513.56 |
| | 76.2 [3] | 20268.3 | 69.87 | 104.81 | 139.75 | 209.62 | 279.49 | 419.24 |
| | 88.9 [3.5] | 18621.5 | 64.20 | 96.29 | 128.39 | 192.59 | 256.78 | 385.17 |
| | 101.6 [4] | 16721.4 | 57.64 | 86.47 | 115.29 | 172.93 | 230.58 | 345.87 |
| | 114.3 [4.5] | 14567.9 | 50.22 | 75.33 | 100.44 | 150.66 | 200.88 | 301.33 |
| | 127 [5] | 12161.0 | 41.92 | 62.89 | 83.85 | 125.77 | 167.69 | 251.54 |
| 203.2 [8] | CAP | 32429.4 | 111.80 | 167.69 | 223.59 | 335.39 | 447.19 | 670.78 |
| | 88.9 [3.5] | 26222.2 | 90.40 | 135.60 | 180.80 | 271.19 | 361.59 | 542.39 |
| | 101.6 [4] | 24322.0 | 83.85 | 125.77 | 167.69 | 251.54 | 335.39 | 503.08 |
| | 114.3 [4.5] | 22168.5 | 76.42 | 114.63 | 152.85 | 229.27 | 305.69 | 458.54 |
| | 127 [5] | 19761.6 | 68.13 | 102.19 | 136.25 | 204.38 | 272.50 | 408.76 |
| | 139.7 [5.5] | 17101.4 | 58.96 | 88.43 | 117.91 | 176.87 | 235.82 | 353.73 |

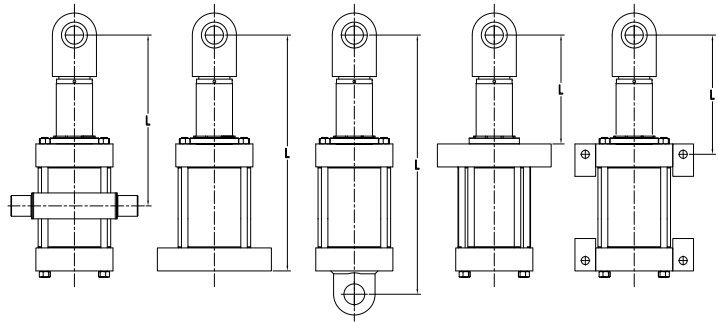
Maximum Allowable Push Stroke (Recommended "L")

In Push application, a cylinder acts as loaded column.

To use the side table first go to section for your mounting style. Then locate the column which is closest to, but not below, your application's operating pressure. The intersection of operating pressure and Bore /rod size represents the allowable length (L) in full extended condition.

The maximum allowable length "L" is based on column spelling analysis only and does not consider side loading, stop tube requirements or other cylinder stroke limitations.

For pressure above 3000 PSI Consult your local Danfoss representative.



Maximum Length L (mm) at Working Pressure (bar) { Length L in full extend condition}

| Bore φ mm[in] | Rod φ mm[in] | Rigid Mount (01,02,04,05,07,08,09,12, 13,14,19,21,22,23,24) | | | | | | | Swivel Mount (10,11,15,16,17,47,48,50) | | | | | | |
|---------------------|--------------------|--|------------|------------|-----------|-----------|-----------|-----------|---|------------|------------|-----------|-----------|-----------|-----------|
| | | 210 bar | 138 bar | 103 bar | 69 bar | 52 bar | 35 bar | 17 bar | 210 bar | 138 bar | 103 bar | 69 bar | 52 bar | 35 bar | 17 bar |
| 38.1 [1.5] | 15.88[0.63] | 356 | 483 | 559 | 686 | 787 | 965 | 1372 | 254 | 330 | 381 | 483 | 559 | 686 | 965 |
| | 25.4 [1] | 1016 | 1219 | 1422 | 1753 | 2007 | 2464 | 3480 | 711 | 864 | 1016 | 1219 | 1422 | 1753 | 2464 |
| 50.8[2] | 25.4 [1] | 762 | 914 | 1067 | 1295 | 1499 | 1854 | 2616 | 533 | 660 | 762 | 914 | 1067 | 1295 | 1854 |
| | 34.93 [1.375] | 1422 | 1753 | 2007 | 2464 | 2845 | 3480 | 4928 | 1016 | 1245 | 1422 | 1753 | 2007 | 2464 | 3480 |
| 63.5[2.5] | 25.4 [1] | 508 | 483 | 864 | 1041 | 1194 | 1473 | 2083 | 356 | 483 | 610 | 737 | 864 | 1041 | 1473 |
| | 34.93 [1.375] | 1143 | 1397 | 1600 | 1981 | 2286 | 2794 | 3962 | 813 | 991 | 1143 | 1397 | 1600 | 1981 | 2794 |
| | 44.5 [1.75] | 1854 | 2261 | 2616 | 3200 | 3683 | 4521 | 6401 | 1295 | 1600 | 1854 | 2261 | 2616 | 3200 | 4521 |
| 82.5[3.25] | 34.93 [1.375] | 813 | 1067 | 1245 | 1524 | 1753 | 2159 | 3048 | 584 | 762 | 889 | 1067 | 1245 | 1524 | 2159 |
| | 44.5 [1.75] | 1422 | 1753 | 2007 | 2464 | 2845 | 3480 | 4928 | 1016 | 1219 | 1422 | 1753 | 2007 | 2464 | 3480 |
| | 50.8 [2] | 1854 | 2261 | 2616 | 3226 | 3708 | 4547 | 6426 | 1321 | 1600 | 1854 | 2261 | 2616 | 3226 | 4547 |
| 101.6[4] | 44.5 [1.75] | 1092 | 1422 | 1626 | 2007 | 2311 | 2819 | 3988 | 787 | 991 | 1143 | 1422 | 1626 | 2007 | 2819 |
| | 50.8 [2] | 1499 | 1854 | 2134 | 2616 | 3023 | 3683 | 5232 | 1067 | 1295 | 1499 | 1854 | 2134 | 2616 | 3683 |
| | 63.5 [2.5] | 2362 | 2896 | 3327 | 4089 | 4724 | 5766 | 8153 | 1676 | 2032 | 2362 | 2896 | 3327 | 4089 | 5766 |
| 127[5] | 50.8 [2] | 1016 | 965 | 1702 | 2083 | 2413 | 2946 | 4191 | 711 | 686 | 1194 | 1473 | 1702 | 2083 | 2946 |
| | 63.5 [2.5] | 1880 | 2311 | 2667 | 3277 | 3759 | 4623 | 6528 | 1321 | 1626 | 1880 | 2311 | 2667 | 3277 | 4623 |
| | 76.2 [3] | 2718 | 3327 | 3835 | 4699 | 5436 | 6655 | 9398 | 1930 | 2362 | 2718 | 3327 | 3835 | 4699 | 6655 |
| | 88.9 [3.5] | 3683 | 4521 | 5232 | 6401 | 7391 | 9042 | 12802 | 2616 | 3200 | 3683 | 4521 | 5232 | 6401 | 9042 |
| 152.4[6] | 63.5 [2.5] | 1422 | 1930 | 2210 | 2718 | 3150 | 3835 | 5436 | 1016 | 1372 | 1575 | 1930 | 2210 | 2718 | 3835 |
| | 76.2 [3] | 2261 | 2769 | 3200 | 3912 | 4521 | 5537 | 7823 | 1600 | 1956 | 2261 | 2769 | 3200 | 3912 | 5537 |
| | 88.9 [3.5] | 3073 | 3759 | 4343 | 5334 | 6147 | 7544 | 10668 | 2184 | 2667 | 3073 | 3759 | 4343 | 5334 | 7544 |
| | 101.6 [4] | 4013 | 4928 | 5690 | 6960 | 8052 | 9855 | 13919 | 2845 | 3480 | 4013 | 4928 | 5690 | 6960 | 9855 |
| 177.8[7] | 76.2 [3] | 1829 | 2362 | 2743 | 3353 | 3886 | 4750 | 6706 | 1295 | 1676 | 1930 | 2362 | 2743 | 3353 | 4750 |
| | 88.9 [3.5] | 2642 | 3226 | 3734 | 4572 | 5283 | 6452 | 9144 | 1854 | 2286 | 2642 | 3226 | 3734 | 4572 | 6452 |
| | 101.6 [4] | 3454 | 4216 | 4877 | 5969 | 6883 | 8433 | 11938 | 2438 | 2997 | 3454 | 4216 | 4877 | 5969 | 8433 |
| | 114.3 [4.5] | 4369 | 5334 | 6172 | 7544 | 8738 | 10693 | 15113 | 3073 | 3785 | 4369 | 5334 | 6172 | 7544 | 10693 |
| | 127 [5] | 5385 | 6604 | 7620 | 9322 | 10770 | 13183 | 18669 | 3810 | 4674 | 5385 | 6604 | 7620 | 9322 | 13183 |
| 203.2[8] | 88.9 [3.5] | 2210 | 2819 | 3277 | 3988 | 4623 | 5664 | 8001 | 1575 | 2007 | 2311 | 2819 | 3277 | 3988 | 5664 |
| | 101.6 [4] | 3023 | 3683 | 4267 | 5232 | 6020 | 7391 | 10439 | 2134 | 2616 | 3023 | 3683 | 4267 | 5232 | 7391 |
| | 114.3 [4.5] | 3810 | 4674 | 5410 | 6604 | 7645 | 9347 | 13233 | 2692 | 3302 | 3810 | 4674 | 5410 | 6604 | 9347 |
| | 127 [5] | 4724 | 5766 | 6655 | 8153 | 9423 | 11532 | 16332 | 3327 | 4089 | 4724 | 5766 | 6655 | 8153 | 11532 |
| | 139.7 [5.5] | 5690 | 6985 | 8052 | 9881 | 11405 | 13970 | 19761 | 4039 | 4928 | 5690 | 6985 | 8052 | 9881 | 13970 |

Calculation according to Euler

$$P = \frac{C \pi^2 E I}{F L^2}$$

$$\frac{L}{k} > \left[\frac{2C \pi^2 E}{S_y} \right]$$

End conditions for above chart

| Mount | Condition |
|---------------|--------------|
| Rigid Mounts | Fixed-Guided |
| Swivel Mounts | Pin-Pin |

Calculation according to Jb Johnson

$$P = \frac{A S_y}{F} \left[1 - \frac{S_y L^2}{4C \pi^2 E k^2} \right]$$

$$\frac{L}{k} \leq \left[\frac{2C \pi^2 E}{S_y} \right]$$

| | |
|---|------------------------------------|
| F | Safety factor |
| P | Critical load, N |
| E | Modulus of elasticity, 206.8 Gpa |
| L | Length, mm |
| I | Moment of inertia, mm ⁴ |
| C | End condition |
| | Fixed-Guided 2 |
| | Fixed-Fixed 4 |
| | Pin-Pin 1 |
| A | Rod area, mm ² |
| k | Radius of gyration, mm |

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| Sketch | | Special Requirements | |
| | | | |
| Prepared By | Date | Reviewed By | Date |

ext = cylinder extends ret = cylinder retracts

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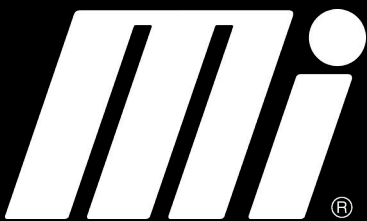
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