Numatics, Inc. is a leading manufacturer of pneumatic products and motion control products. Our broad spectrum of standard, custom developed products and application components have made a significant impact on pneumatic innovation as well as pneumatic and motion control technology. Our company has an extensive history of generating innovative concepts and technological breakthroughs. Many of today’s standard features in pneumatic technology were industry firsts from Numatics. We continue our innovative approach to product development by developing electric motion control solutions and enhancing our embedded Fieldbus and I/O products to continually meet and solve our customer’s application requirements.

Today Numatics is proud to be a part of the Industrial Automation Division of Emerson Electric Co. Emerson (NYSE:EMR), based in St. Louis, Missouri (USA), is a global leader in bringing technology and engineering together to provide innovative solutions for customers in industrial, commercial, and consumer markets through its network power, process management, industrial automation, climate technologies, and appliance and tools businesses. For more information, visit www.Emerson.com.
We are committed to providing you with an unmatched level of customer service, quality, and reliability. If you cannot locate the specific product for your application or need additional product specifications, visit www.numatics.com or call 888-686-2842. Numatics Express orders cannot be canceled or adjusted once entered. Saturdays, Sundays, and Holidays are excluded.

†As industry requirements change, Numatics reserves the right to modify the contents of this catalog and program without notification. Updates on this program can be obtained from the Numatics website www.numatics.com or by calling 888-686-2842, or by contacting your local Numatics representative or distributor and referencing the Numatics Express program.

*Sentronic Proportional Valves, CGT Compact Slides, NR Series Rodless and Air Bellows are limited to orders up to 5.
**A Series Large Bore NFPA, ASP Series Steel Body NFPA and G Series Guide Rail Rodless are limited to orders up to 5.
Welcome to the World of Fluid Automation...

Since 1945, Numatics has emerged as the prominent specialist in developing and manufacturing pneumatic and fluid power components for a widely diverse field of automated industry. From idea to implementation, leading engineers choose Numatics as their single source for:

- Quality Fluid Power components
- Technologically advanced design resources
- Quick response time in delivery and service from around the world

Numasizing®
Developed by Numatics, Numasizing® offers a whole new level of fluid power system optimization. Compare large amounts of component and process data against user objectives and industry benchmarks for the best possible size, pneumatic pressure, actuator stroke velocities and other part and process variable determinations.

CAD Modeling
Save critical development time with the most innovative CAD configuration program in the pneumatic component industry. Numatics in 3D eliminates the time consuming process associated with designing components from scratch based on information found in conventional paper catalogs. The models are available in 85 different native CAD formats in 2D drawings and 3D models, including all the popular formats including Catia, I-DEAS, Pro/Engineer, SolidWorks, Unigraphics and more.
# EQ Series

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<td>15-17</td>
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<tr>
<td>Quick Disconnect Cables</td>
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The **EQ Series** combines cost-effectiveness with proven dependability. It is a repairable OEM NFPA Interchangeable cylinder line that was specially designed to give our customers an economical alternative. This Non-Lube air cylinder offers elasticity to tight design budgets without sacrificing quality.

**Tube**
The tube is hard coat anodized. The hard coating is an electro-chemical process, which produces a very dense surface of aluminum oxide. This surface has extreme hardness (60 RC.), excellent wear and corrosion resistance, and low coefficient of friction.

**End Caps**
The end caps are accurately machined from (6061-T6) solid aluminum bar stock. They are anodized for corrosion resistance. Additionally, a recess on the piston-mating surface (at both ends) enables the air to work on a larger piston area for effortless breakaway.

**Rod Bushing**
The EQ Series includes a graphite filled, cast iron rod bushing that is extra long in length. Graphite filled offers the best bearing surface when using a hard chrome plated piston rod. Cast iron provides maximum resistance against wear. The added length adds superior alignment and support of the piston rod as well as provides maximum load bearing support.

**Rod Seal**
The nitrile, rounded lip design ensures proper sealing and long life.

**Rod Wiper**
The standard rod wiper construction is a highly durable polyurethane.

**Piston Rod**
High strength steel (100,000 psi minimum yield) piston rod has a ground, polished, and chrome plated surface. This surface provides maximum life for both the rod bushing and the seals.

**Bushing Retainer**
The bushing retainer allows cartridge removal (cylinder repair) without complete disassembly.

**Tie-Rods**
The tie rods are 100,000 psi minimum yield steel for maximum holding power. They are roll formed for superior strength and engagement.

**Piston Seal**
The piston seal is a nitrile over-sized o-ring seal.

**Wear Band**
The wear band is a stable, lubricating strip located on the piston. We separated the load bearing points by locating the wear band at the rear of the piston. This maximizes column strength at full extension.

Reference the EQ Series section for drawings and dimensional information.

**Piston**
The solid aluminum alloy piston is strong and durable.

**Cushion Seal**
The floating cushion seal design enables rapid stroke reversal by providing instantaneous full flow to the piston. Each cushion has a flush, retained adjustment needle.

**Tube End Seal**
The tube end seals are compression type and reusable.

**Ports**
Our enhanced port design enables the cylinder to work more efficiently. Through the use of precise machining depths and tool shape, we are able to smooth the flow path into and out of the cylinder.

**Standard Specifications:**
- Meets NFPA specifications
- Bore sizes from 1-1/2” through 6”
- Piston rod diameters from 5/8” to 1-3/4”
- Maximum pressure rating is 250 psi air
- Standard temperature -10°F to 165°F (-23°C to 74°C)
- NPTF ports
- Multitude of mounting options
Standard EQ Series Mounts

**Centerline Mounts**

- **X0 Mount**
  - Basic No Mount
- **X1 Mount**
  - Extended Tie Rods – Both Ends
- **X2 Mount**
  - Extended Tie Rods – Cap End
- **X3 Mount**
  - Extended Tie Rods – Head End

- **F1 Mount**
  - Head Rectangular Flange
- **F2 Mount**
  - Cap Rectangular Flange
- **DA Mount**
  - Double Rod End
- **SN Mount**
  - Sleeve Nut

**Pivot Mounts**

- **P1 Mount**
  - Fixed Clevis
- **P2 Mount**
  - Detachable Clevis
- **P3 Mount**
  - Fixed Eye
- **P4 Mount**
  - Detachable Eye

- **T6 Mount**
  - Head Trunnion
- **T7 Mount**
  - Cap Trunnion
- **T8 Mount**
  - Intermediate Trunnion

**Foot Mounts**

- **S1 Mount**
  - Angle Mount
- **S2 Mount**
  - Side Lugs
- **S4 Mount**
  - Bottom Tapped
How to Order

EQ Series Cylinder

Cylinder Mounting
X0 = Basic No Mount
SN = Head Sleeve Nut
F1 = Front Flange
F2 = Rear Flange
P1 = Fixed Clevis
P2 = Detachable Clevis
P3 = Fixed Eye
P4 = Detachable Eye
S1 = Angle Mount
S2 = Side Lug
S4 = Bottom Tapped
T6* = Head Trunnion
T7* = Cap Trunnion
T8* = Mid Trunnion
X1 = Extended Tie Rods (Both Ends)
X2 = Cap Ext. Tie Rods
X3 = Head Ext. Tie Rods
*Removable Trunnion Ears

Cylinder Type
EQ = Type "EQ" Cylinder

Cylinder Bore
K = 1-1/2"  L = 2"
M = 2-1/2"  U = 6"
P = 3-1/4"

Full Inches of Stroke
00 = 0" Stroke
01 = 1" Stroke
02 = 2" Stroke
03 = 3" Stroke
48* = 48" Stroke (Maximum)
*Consult factory for strokes greater than 48".

Fractional Inches of Stroke
A = 0"  G = 3/8"  M = 3/4"
B = 1/16"  H = 7/16"  N = 13/16"
C = 1/8"  I = 1/2"  O = 7/8"
D = 3/16"  J = 9/16"  P = 15/16"
E = 1/4"  K = 5/8"
F = 5/32"  L = 11/32"

Rod Code
1 = Style # 1 Standard Rod Diameter
2 = Style # 2 Standard Rod Diameter
3 = Style # 3 Standard Rod Diameter
4 = Special Rod End Standard Rod Diameter
5 = Special Rod End Oversize Rod Diameter
6 = Style # 1 Oversize Rod Diameter
7 = Style # 2 Oversize Rod Diameter
8 = Style # 3 Oversize Rod Diameter
U = Male Coupling Rod End Standard Rod Diameter
V = Male Coupling Rod End Oversize Rod Diameter

Magnetic Piston
0 = No Magnet
2 = Reed Magnet

Options
AA = No Option
BA** = Bumpers, Both Ends
BH** = Bumper, Head Only
BT = Bronze Bushing
CT = Composite Tube
DA = Double Rod End
EB = Silencer Bumpers
LP = Profile Tubing
MA = Metallic Rod Scraper
MB = Rear Metallic Rod Scraper
SA = Stainless Rod
SS = Stainless Rod & Tie Rods
ST = Stainless Tie Rods
VA = High Temperature Seals
1A* = Rod Extension
1B* = Rear Rod Extension
2B = Rear Thread Extension
2A* = Rear Rod Stud
3A = Rod Stud
*Specify Length
**Bumpers add .062" to OAL (per bumper)

Adjustable Cushions
Position 1 2 3 4 Fixed
No Cushions A A A A
Head & Cap B C D E
Head Only F G H J W
Cap Only K L M N V

Ports
Size Code
Position 1/8" 1/4" 3/8" 1/2" 3/4"
1 B C D E
2 H I J K L
3 N O P Q R
4 T U V W X

Reference the EQ Series section for drawings and dimensional information.
### Standard and Optional Rod Ends

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### Male Coupling Rod End

**U** = Male Coupling Rod End Standard Rod Diameter  
**V** = Male Coupling Rod End Oversized Rod Diameter

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Information subject to change without notice. For ordering information or regarding your local sales office visit www.numatics.com.
## EQ SERIES

**Dimensions: Inches**

**Basic No Mount Cylinder**

![Diagram of EQ SERIES cylinder](image)

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<td>2.706</td>
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<td>1.375</td>
<td>5.500</td>
<td>0.500</td>
<td>0.625</td>
<td>1.750</td>
<td>1.250</td>
<td>0.500</td>
<td>4.500</td>
<td>2.875</td>
<td>4.100</td>
<td>3.125</td>
<td>1.625</td>
<td>2.688</td>
<td>6.625</td>
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<tr>
<td>6&quot;</td>
<td>1.375</td>
<td>6.500</td>
<td>0.750</td>
<td>0.625</td>
<td>2.000</td>
<td>1.500</td>
<td>0.500</td>
<td>5.000</td>
<td>3.125</td>
<td>4.880</td>
<td>3.788</td>
<td>1.875</td>
<td>3.063</td>
<td>7.375</td>
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<tr>
<td>1.750</td>
<td>6.500</td>
<td>0.750</td>
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<td>2.000</td>
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<td>4.880</td>
<td>3.788</td>
<td>1.875</td>
<td>3.063</td>
<td>7.375</td>
<td></td>
</tr>
</tbody>
</table>

* Uses a full-face bushing retainer.
How to Order

EQ Series Piston Rod Assembly

**Type**
EQ92 = EQ Series Piston Rod Assembly

**Bore**
- K = 1-1/2"  
- L = 2"  
- M = 2-1/2"  
- P = 3-1/4"  
- R = 4"  
- T = 5"  
- U = 6"

**Rod Code**
- 1 = Style # 1 Standard Rod Diameter  
- 2 = Style # 2 Standard Rod Diameter  
- 3 = Style # 3 Standard Rod Diameter  
- 4 = Special Rod End Standard Rod Diameter (must specify threads)  
- 5 = Special Rod End Oversize Rod Diameter (must specify threads)  
- 6 = Style # 1 Oversize Rod Diameter  
- 7 = Style # 2 Oversize Rod Diameter  
- 8 = Style # 3 Oversize Rod Diameter  
- U = Male Coupling Rod End Standard Rod Diameter  
- V = Male Coupling Rod End Oversize Rod Diameter

**Cushion**
- N = No Cushion  
- B = Both Ends Cushioned  
- H = Head End Cushioned  
- C = Cap End Cushioned

**Magnet**
- 0 = No Magnet  
- 2 = Reed Magnet

Note: Options listed are ones that apply to a piston rod assembly only. Model number is set up to use option code supplied with original cylinder or with any above.

---

**Rod End Styles, Diameters and Threads**

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Style #1 Standard Male</th>
<th>Style #2 Optional Male</th>
<th>Style #3 Optional Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.625</td>
<td>7/16-20</td>
<td>1/2-20</td>
<td>7/16-20</td>
</tr>
<tr>
<td>1.000</td>
<td>3/4-16</td>
<td>7/8-14</td>
<td>3/4-16</td>
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<tr>
<td>1.375</td>
<td>1-14</td>
<td>1 1/4-12</td>
<td>1-14</td>
</tr>
<tr>
<td>1.750</td>
<td>1 1/4-12</td>
<td>1 1/2-12</td>
<td>1 1/4-12</td>
</tr>
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</table>

**Rod Diameters by Bore Size**

<table>
<thead>
<tr>
<th>Bore</th>
<th>Standard Dia.</th>
<th>Oversize Dia.</th>
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</thead>
<tbody>
<tr>
<td>1-1/2&quot;</td>
<td>0.625</td>
<td>1.000</td>
</tr>
<tr>
<td>2&quot;</td>
<td>0.625</td>
<td>1.000</td>
</tr>
<tr>
<td>2-1/2&quot;</td>
<td>0.625</td>
<td>1.000</td>
</tr>
<tr>
<td>3-1/4&quot;</td>
<td>1.000</td>
<td>1.375</td>
</tr>
<tr>
<td>4&quot;</td>
<td>1.000</td>
<td>1.375</td>
</tr>
<tr>
<td>5&quot;</td>
<td>1.000</td>
<td>1.375</td>
</tr>
<tr>
<td>6&quot;</td>
<td>1.375</td>
<td>1.750</td>
</tr>
</tbody>
</table>

Information subject to change without notice. For ordering information or regarding your local sales office visit www.numatics.com.
How to Order

EQ Series Repair Kit

EQ98 - K 1 N - AA

Type
EQ98 = EQ Series Repair Kit

Bore
K = 1-1/2"
L = 2"
M = 2-1/2"
P = 3-1/4"
R = 4"
T = 5"
U = 6"

Rod Size
0 = Standard Rod
1 = Oversize Rod

Option
AA = No Option
BZ = Bronze Bushing
DA = Double Rod
EB = Silencer Bumpers
MA = Metallic Rod Scraper
MB = Rear Metallic Rod Scraper
VA = FKM Seals

Cushion
N = No Cushion
B = Both Ends Cushioned
H = Head End Cushioned
C = Cap End Cushioned

NOTE: Options listed are ones that apply to a repair kit only. Model number is set up to use option code supplied with original cylinder or with any above.

How to Order

EQ Series Seal Kit

EQ97 - K 1 N - AA

Type
EQ97 = EQ Series Seal Kit

Bore
K = 1-1/2"
L = 2"
M = 2-1/2"
P = 3-1/4"
R = 4"
T = 5"
U = 6"

Rod Size
0 = Standard Rod
1 = Oversize Rod

Option
AA = No Option
DA = Double Rod
EB = Silencer Bumpers
MA = Metallic Rod Scraper
MB = Rear Metallic Rod Scraper
VA = FKM Seals

Cushion
N = No Cushion
B = Both Ends Cushioned
H = Head End Cushioned
C = Cap End Cushioned

NOTE: Options listed are ones that apply to a seal kit only. Model number is set up to use option code supplied with original cylinder or with any above.
Piston Rod Assembly

Kit Removal/Installation Instructions
1. Loosen 4 Tie Rod Nuts (Part #18) to remove Piston/Rod Assembly (Part #15 & #16).
2. Carefully remove old seals and Wear Band (Part #12 & #14). Any damage to the seals may result in leakage.
3. Lubricate Piston Seal(s) and Wear Band (Part #12) with supplied Numatics Lube. Examine seals before installing for any contamination. Contamination may cause leakage.
4. Install Piston Seal (Part #14). Make sure the Piston Seal is not twisted inside groove.
6. Apply lube inside the cylinder tube.
7. Sink piston/rod assembly into cylinder tube.
8. Press piston/rod assembly flush with the cylinder tube. Wipe off any lube from the face of the piston.
9. Examine all seals before reassembling cylinder for any contamination. Contamination may cause leakage.
10. Lightly grease Rod Seal (Part #3) of Loaded Bushing before installing. This will ease the installation of the rod bushing over the rod.
11. Reassemble cylinder. Loosely torque tie rod nuts to allow head and cap to rotate slightly.
12. Before final torque, place cylinder on level surface. This will ensure that the cylinder head and cap are square. Torque tie rod nuts in a crisscross pattern. Use torque tolerance charts for tie rod nuts.
13. Stroke cylinder by hand. This will enable detection of any binding. If binding does occur, repeat steps 11 -13.

See Seal Installation Guide on page 12 for additional (visual) instructions.

Repair Kit and Seal Kit

Removal/Installation Instructions
1. Loosen 2 or 4 Retainer Screws (Part #11) to remove Bushing Retainer (Part #10) and Loaded Bushing (Part #9).
2. Loosen 4 Tie Rod Nuts (Part #18) to remove Head (Part #8) and Piston/Rod Assembly (Part #15 & #16).
3. Carefully remove old seals and Wear Band. (Part #1, #2, #3 Seal Kit only), #5, #6, #7, #12, & #14) Any damage to the seal grooves may result in leakage.
4. Lubricate new seals with supplied Numatics Lube. Examine seals before installing for any contamination. Contamination may cause leakage.
5. Install Piston Seal (Part #14). Make sure the Piston Seal is not twisted inside groove.
7. Apply lube inside the cylinder tube.
8. Sink piston/rod assembly into cylinder tube.
9. Press piston/rod assembly flush with the cylinder tube. Wipe off any lube from the face of the piston.
10. Place Tube End Seals (Part #6) into head and cap seal grooves. Examine seals after installing for any contamination. Contamination may cause leakage.
11. Install Rod Wiper (Part #1), Bushing O-ring (Part #2), and Rod Seal (Part #3) into bushing (Seal Kit only). Lightly grease Rod Seal and Bushing O-ring after installation. This will ease the installation of the rod bushing over the rod and into the head.
12. Reassemble cylinder except for loaded rod bushing. First, loosely torque tie rod nuts to allow head and cap to rotate slightly. Carefully place bushing over the rod until getting interference. With a twisting motion, slide the bushing down onto the rod and into the bushing pocket on the head.
13. Place Bushing Retainer (Part #10). Lightly tighten retainer screws.
14. Before final torque, place cylinder on level surface to square head and cap. Torque tie rod nuts in a crisscross pattern. Use the torque tolerance chart for Tie Rod Nuts and Retainer Screws.
15. Stroke cylinder by hand. This will enable detection of any binding. If binding does occur, repeat steps 12-14.

See Seal Installation Guide on page 12 for additional (visual) instructions.
Pneumatic Service Temperatures:
Nitrile Seals: -10°F (-23°C) to 165°F (74°C)
FKM Seals: 0°F (-17°C) to 400°F (204°C)

**Diagrams**

**EQ Series**

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
<th>Seal Kit</th>
<th>Repair Kit</th>
<th>Piston/Rod Assembly</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rod Wiper</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Bushing O-ring</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Rod Seal</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cap</td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>Cap Cushion Seal</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Tube End Seals</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Head Cushion Seal</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Head</td>
<td></td>
<td></td>
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<td>9</td>
<td>Loaded Bushing Assembly</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Bushing Retainer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Retainer Screws</td>
<td></td>
<td></td>
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<tr>
<td>12</td>
<td>Wear Band</td>
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<td>13</td>
<td>Magnet</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Piston Seal</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Rod</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>16</td>
<td>Piston</td>
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<td>X</td>
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<tr>
<td>17</td>
<td>Tube</td>
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<td></td>
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</tr>
<tr>
<td>18</td>
<td>Hex Nuts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Tie Rods</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Head Cushion Spear</td>
<td></td>
<td>X</td>
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# Seal Installation Guide

## Torque Tolerances (lbs-ft) Tie Rod Nut Part #19

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<thead>
<tr>
<th>Bore</th>
<th>Min</th>
<th>Max</th>
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<tbody>
<tr>
<td>1-1/2&quot;</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>2&quot;</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>2-1/2&quot;</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>3-1/4&quot;</td>
<td>23</td>
<td>30</td>
</tr>
<tr>
<td>4&quot;</td>
<td>23</td>
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<td>50</td>
<td>60</td>
</tr>
<tr>
<td>6&quot;</td>
<td>50</td>
<td>60</td>
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</table>

## Retainer Screws Torque Tolerances (lbs-ft) Part #11

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<th>Size</th>
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<tr>
<td>#10-32</td>
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<tr>
<td>1/4-28</td>
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<td>7</td>
</tr>
<tr>
<td>5/16-24</td>
<td>10</td>
<td>12</td>
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</table>

Note: Sinker Tubes are not included in kits. They can be ordered using the part numbers from the provided chart.

## Sinker Tube Part Numbers

<table>
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<th>Min</th>
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<tr>
<td>1-1/2&quot;</td>
<td>A06-K91</td>
</tr>
<tr>
<td>2&quot;</td>
<td>A06-L91</td>
</tr>
<tr>
<td>2-1/2&quot;</td>
<td>A06-M91</td>
</tr>
<tr>
<td>3-1/4&quot;</td>
<td>A06-P91</td>
</tr>
<tr>
<td>4&quot;</td>
<td>A06-R91</td>
</tr>
<tr>
<td>5&quot;</td>
<td>A06-T91</td>
</tr>
<tr>
<td>6&quot;</td>
<td>A06-U91</td>
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</table>
EQ Series Switch Information

EQ Series World Switch Application Detail

Round Tube and Tie Rod Detail
1. World Switch
2. Tie Rod Bracket
3. Adjustment Screw
4. Cylinder Tie Rod

EQ Series World Switch Bracket

<table>
<thead>
<tr>
<th>Cylinders</th>
<th>Bore</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQ series Tie Rod</td>
<td>1 1/2&quot;</td>
<td>SB6-K01</td>
</tr>
<tr>
<td>EQ series Tie Rod</td>
<td>2&quot;-2 1/2&quot;</td>
<td>SB6-L01</td>
</tr>
<tr>
<td>EQ series Tie Rod</td>
<td>3 1/4&quot;-4&quot;</td>
<td>SB6-P01</td>
</tr>
<tr>
<td>EQ series Tie Rod</td>
<td>5&quot;-6&quot;</td>
<td>SB6-T01</td>
</tr>
</tbody>
</table>

EQ Series World Switch Hall Effect Part Numbers

<table>
<thead>
<tr>
<th>P/N</th>
<th>Switch Style</th>
<th>Electrical Design</th>
<th>Output</th>
<th>Operating Voltage</th>
<th>Current Rating</th>
<th>Switching Power</th>
<th>Voltage Drop</th>
<th>NEMA IP Rating</th>
<th>Temperature Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH6-031</td>
<td>Flying Lead</td>
<td>PNP</td>
<td>Normally Open</td>
<td>6-24 VDC</td>
<td>0.3 Amps Max.</td>
<td>7.2 Watts Max.</td>
<td>.5 Volts</td>
<td>NEMA 6</td>
<td>-25º to +75º C</td>
</tr>
<tr>
<td>SH6-032</td>
<td>Flying Lead</td>
<td>NPN</td>
<td>Normally Open</td>
<td>6-24 VDC</td>
<td>0.3 Amps Max.</td>
<td>7.2 Watts Max.</td>
<td>.5 Volts</td>
<td>NEMA 6</td>
<td>-25º to +75º C</td>
</tr>
<tr>
<td>SH6-021</td>
<td>M8 Connector</td>
<td>PNP</td>
<td>Normally Open</td>
<td>6-24 VDC</td>
<td>0.3 Amps Max.</td>
<td>7.2 Watts Max.</td>
<td>.5 Volts</td>
<td>NEMA 6</td>
<td>-25º to +75º C</td>
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<tr>
<td>SH6-022</td>
<td>M8 Connector</td>
<td>NPN</td>
<td>Normally Open</td>
<td>6-24 VDC</td>
<td>0.3 Amps Max.</td>
<td>7.2 Watts Max.</td>
<td>.5 Volts</td>
<td>NEMA 6</td>
<td>-25º to +75º C</td>
</tr>
</tbody>
</table>

Hall Effect Switch

PNP Sourcing

NPN Sinking

* Pin out for 8 mm connector version
EQ Series World Switch Reed Switch Part Numbers

<table>
<thead>
<tr>
<th>P/N</th>
<th>Switch Style</th>
<th>Electrical Design</th>
<th>Output</th>
<th>Operating Voltage</th>
<th>Current Rating</th>
<th>Switching Power</th>
<th>Voltage Drop</th>
<th>NEMA IP Rating</th>
<th>Temperature Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR6-002</td>
<td>Flying Lead</td>
<td>AC/DC REED</td>
<td>Normally Open</td>
<td>5-120 VAC/DC</td>
<td>0.025 Amps Max. 0.001 Amps Min.</td>
<td>3 Watts Max.</td>
<td>3.5 Volts</td>
<td>NEMA 6</td>
<td>-25º to +75º C</td>
</tr>
<tr>
<td>SR6-004</td>
<td>Flying Lead</td>
<td>AC/DC REED</td>
<td>Normally Open</td>
<td>5-120 VAC/DC</td>
<td>0.5 Amps Max. 0.005 Amps Min.</td>
<td>10 Watts Max.</td>
<td>3.0 Volts</td>
<td>NEMA 6</td>
<td>-25º to +75º C</td>
</tr>
<tr>
<td>SR6-022</td>
<td>MB Connector</td>
<td>AC/DC REED</td>
<td>Normally Open</td>
<td>5-50 VAC 5-60 VDC</td>
<td>0.025 Amps Max. 0.001 Amps Min.</td>
<td>12 Watts Max.</td>
<td>.5 Volts</td>
<td>NEMA 6</td>
<td>-25º to +75º C</td>
</tr>
<tr>
<td>SR6-024</td>
<td>MB Connector</td>
<td>AC/DC REED</td>
<td>Normally Open</td>
<td>5-50 VAC 5-60 VDC</td>
<td>0.5 Amps Max. 0.005 Amps Min.</td>
<td>10 Watts Max.</td>
<td>3.0 Volts</td>
<td>NEMA 6</td>
<td>-25º to +75º C</td>
</tr>
</tbody>
</table>

Reed Switch - Normally Open Type SR6

NFPA Interchangeable Cylinders

EQ Series (Tie Rod)

<table>
<thead>
<tr>
<th>Bore</th>
<th>Bracket P/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/2”</td>
<td>N99-1181</td>
</tr>
<tr>
<td>2”</td>
<td>N99-1182</td>
</tr>
<tr>
<td>2 1/2”</td>
<td>N99-1182</td>
</tr>
<tr>
<td>3 1/4”</td>
<td>N99-1183</td>
</tr>
<tr>
<td>4”</td>
<td>N99-1183</td>
</tr>
<tr>
<td>5”</td>
<td>N99-1184</td>
</tr>
<tr>
<td>6”</td>
<td>N99-1184</td>
</tr>
<tr>
<td>8”</td>
<td>N99-1184</td>
</tr>
<tr>
<td>10”</td>
<td>N99-1191</td>
</tr>
<tr>
<td>12”</td>
<td>N99-1191</td>
</tr>
<tr>
<td>14”</td>
<td>N99-1200</td>
</tr>
</tbody>
</table>

Sensor Description | Standard Cord Set | Quick Disconnect
--- | --- | ---
Reed Switch | REED-FL2-00 | REED-QDS-M8U
Hall PNP | PNP-FL2-00-U | PNP-QDS-M8-U
Hall NPN | NPN-FL2-00-U | NPN-QDS-M8-U

See page 15, 16, & 17 for sensor specifications.
## Sensing Part Numbers

### PNP-FL2-00-U

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Number</th>
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<tbody>
<tr>
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<td>.25 [6.4]</td>
</tr>
<tr>
<td>M8 x 1.0</td>
<td>.20 [5.1]</td>
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</table>

### PNP-QDS-M8-U

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>P494A0022300A00</td>
<td>.25 [6.4]</td>
</tr>
<tr>
<td>M8 x 1.0</td>
<td>.20 [5.1]</td>
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### Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td><strong>Electrical Design</strong></td>
<td>DC PNP</td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td>Normally Open</td>
</tr>
<tr>
<td><strong>Operating Voltage</strong></td>
<td>10-30 VDC</td>
</tr>
<tr>
<td><strong>Current Rating</strong></td>
<td>100 mA</td>
</tr>
<tr>
<td><strong>Short-Circuit Protection</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Overload Protection</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Reverse Polarity Protection</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Voltage Drop</strong></td>
<td>&lt; 2.5 V</td>
</tr>
<tr>
<td><strong>Current Consumption</strong></td>
<td>&lt; 12 mA</td>
</tr>
<tr>
<td><strong>Repeatability</strong></td>
<td>&lt; .2mm</td>
</tr>
<tr>
<td><strong>Power-On Delay Time</strong></td>
<td>&lt; 30 ms</td>
</tr>
<tr>
<td><strong>Switch Frequency</strong></td>
<td>&gt; 3000 Hz</td>
</tr>
<tr>
<td><strong>Ambient Temperature</strong></td>
<td>-25°C to 85°C</td>
</tr>
<tr>
<td><strong>Protection</strong></td>
<td>IP 67, III</td>
</tr>
<tr>
<td><strong>Hysteresis</strong></td>
<td>1.0mm</td>
</tr>
<tr>
<td><strong>Magnetic Sensitivity</strong></td>
<td>2.0 mT</td>
</tr>
<tr>
<td><strong>Travel Speed</strong></td>
<td>&gt; 10 m/s</td>
</tr>
<tr>
<td><strong>Housing Material</strong></td>
<td>PA (Polyamide) Black; Fastening Clamp: Stainless Steel</td>
</tr>
<tr>
<td><strong>Function Display Switching Status</strong></td>
<td>Yellow LED</td>
</tr>
<tr>
<td><strong>Connection</strong></td>
<td>Flying Leads, Pur Cable (2m Long, 3 x 26 Gauge Wire)</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5 cULus - Class 2 Source Required</td>
</tr>
<tr>
<td><strong>Accessories</strong></td>
<td>Rubber Placehold, Cable Clip, and Cut Sheet To Be Provided with Every Switch</td>
</tr>
<tr>
<td><strong>Agency Approvals</strong></td>
<td>RoHS</td>
</tr>
</tbody>
</table>

### Switches are not designed for wet environments. Please see your distributor for additional information.

Information subject to change without notice. For ordering information or regarding your local sales office visit www.numatics.com.
### Sensing Part Numbers

<table>
<thead>
<tr>
<th>Model</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPN-FL2-00-U</td>
<td>DC NPN</td>
</tr>
<tr>
<td>NPN-QDS-M8-U</td>
<td>DC NPN</td>
</tr>
</tbody>
</table>

#### NPN-FL2-00-U
- **Electrical Design**: DC NPN
- **Output**: Normally Open
- **Operating Voltage**: 10-30 VDC
- **Current Rating**: 100 mA
- **Short-Circuit Protection**: Yes
- **Overload Protection**: Yes
- **Reverse Polarity Protection**: Yes
- **Voltage Drop**: < 2.5 V
- **Current Consumption**: < 12 mA
- **Repeatability**: < .2mm
- **Power-On Delay Time**: < 30 ms
- **Switch Frequency**: > 3000 Hz
- **Ambient Temperature**: -25°C to 85°C
- **Protection**: IP 67, III
- **Hysteresis**: 1.0 mm
- **Magnetic Sensitivity**: 2.0 mT
- **Travel Speed**: > 10 m/s
- **Housing Material**: PA (Polyamide) Black; Fastening Clamp: Stainless Steel
- **Function Display Switching Status**: Yellow LED
- **Connection**: Flying Leads, Pur Cable (2m Long, 3 x 26 Gauge Wire)
- **Remarks**: Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5 cULus - Class 2 Source Required
- **Accessories**: Rubber Placehold, Cable Clip, and Cut Sheet To Be Provided with Every Switch
- **Agency Approvals**: CE, cULus, RoHS

#### NPN-QDS-M8-U
- **Electrical Design**: DC NPN
- **Output**: Normally Open
- **Operating Voltage**: 10-30 VDC
- **Current Rating**: 100 mA
- **Short-Circuit Protection**: Yes
- **Overload Protection**: Yes
- **Reverse Polarity Protection**: Yes
- **Voltage Drop**: < 2.5 V
- **Current Consumption**: < 12 mA
- **Repeatability**: < .2mm
- **Power-On Delay Time**: < 30 ms
- **Switch Frequency**: > 3000 Hz
- **Ambient Temperature**: -25°C to 85°C
- **Protection**: IP 67, III
- **Hysteresis**: 1.0 mm
- **Magnetic Sensitivity**: 2.0 mT
- **Travel Speed**: > 10 m/s
- **Housing Material**: PA (Polyamide) Black; Fastening Clamp: Stainless Steel
- **Function Display Switching Status**: Yellow LED
- **Connection**: M8 Connector (Snap Fit), Pur Cable (.3 m)
- **Remarks**: Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5 cULus - Class 2 Source Required
- **Accessories**: Rubber Placehold, Cable Clip, and Cut Sheet To Be Provided with Every Switch
- **Agency Approvals**: CE, cULus, RoHS

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**Sensing Part Numbers**

**REED-FL2-00**

- **Output**: AC/DC Reed
- **Operating Voltage**: 5-120 VAC/DC
- **Current Rating**: 100 mA
- **Short-Circuit Protection**: No
- **Overload Protection**: No
- **Reverse Polarity Protection**: Yes
- **Voltage Drop**: < 5 V
- **Repeatability**: ± .2mm
- **Make Time Including Bounce**: < .6 ms
- **Break Time**: < .1 ms
- **Switching Power (Max)**: 5 W
- **Switch Frequency**: 1000 Hz
- **Ambient Temperature**: -25ºC to 70ºC
- **Protection**: IP 67, II
- **Hysteresis**: .9mm
- **Housing Material**: PA (Polyamide) Black; Fastening Clamp: Stainless Steel
- **Function Display Switching Status**: Yellow LED
- **Connection**: Flying Leads, Pur Cable (2m Long, 2 x 26 Gauge Wire)

**REED-QDS-M8U**

- **Output**: AC/DC Reed
- **Operating Voltage**: 5-60 VDC / 5-50 VAC
- **Current Rating**: 100 mA
- **Short-Circuit Protection**: No
- **Overload Protection**: No
- **Reverse Polarity Protection**: Yes
- **Voltage Drop**: < 5 V
- **Repeatability**: ± .2mm
- **Make Time Including Bounce**: < .6 ms
- **Break Time**: < .1 ms
- **Switching Power (Max)**: 5 W
- **Switch Frequency**: 1000 Hz
- **Ambient Temperature**: -25ºC to 70ºC
- **Protection**: IP 67, II
- **Hysteresis**: .9mm
- **Housing Material**: PA (Polyamide) Black; Fastening Clamp: Stainless Steel
- **Function Display Switching Status**: Yellow LED
- **Connection**: M8 Connector (Snap Fit), Pur Cable (.3m)

**Remarks**

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Quick Disconnect Cables

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Type</th>
<th>Operating Voltage</th>
<th>Current Rating</th>
<th>Cable Material</th>
<th>Protection</th>
<th>Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>PXCST</td>
<td>Straight 5 m Cable (3 x 26 Gauge wire)</td>
<td>60 AC/75 DC</td>
<td>3 A</td>
<td>PUR</td>
<td>IP 68, III</td>
<td>M8</td>
</tr>
<tr>
<td>PXC90</td>
<td>90° 5 m Cable (3 x 26 Gauge wire)</td>
<td>60 AC/75 DC</td>
<td>3 A</td>
<td>PUR</td>
<td>IP 68, III</td>
<td>M8</td>
</tr>
</tbody>
</table>

**Wiring Colors**

- BLUE (-)
- BROWN (+)
- BLACK (OUTPUT)

26 GAUGE WIRES

1.06 [27] 1.50 [38.1] Ø.4 [10] M8 x 1