Quick Index

**Series SMA Aluminum**

Pages 4 thru 34

Pancake and conventional lengths 1 1/8 thru 3” bore

**Series SMS Solid Stainless**

Pages 35 thru 49

Pancake and conventional lengths for hostile environments

**Series SS Solid Stainless**

Pages 50 thru 61

The benchmark since ‘83
3/4 thru 2” bore

**Series HB Brass**

Pages 62 thru 83

For general industrial use in most environments
3/4 thru 2” bore
SMA Aluminum Cylinders

PNEUMATIC TO 200 PSI
HYDRAULIC 250 TO 400 PSI  Non shock

1 1/8”, 1 1/2”,
2”, 3” BORE

SPACE SAVING AND CONVENTIONAL DESIGNS

REPAIRABLE

Very high quality “Pancake” type cylinders with all of the engineering features you need to outpace the competition – generous bearing lengths, rod wipers, chromed shafts, superior seals and materials throughout.

— PLUS —

Cylinders of conventional length with longer bearings and increased distance between support points which provide exceptional service where space permits. U cup piston optional.

A GRAPH OF CYLINDER LENGTH vs QUALITY . . .

<table>
<thead>
<tr>
<th>Conventional Pancake</th>
<th>SMA Short Mount</th>
<th>SMA Conventional Mount</th>
<th>Crimped Stainless Non Repairable</th>
<th>N.F.P.A. Tie Rod Cylinder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too short to provide rod wipers, adequate bearing length, and quality seals. Length too short to provide end caps of sufficient strength for many applications. Piston rod wrench flats virtually unusable without special thin wrenches. Suitable for light duty pneumatic applications only.</td>
<td>“Common sense engineered” to the shortest length possible without sacrificing areas critical to high performance. Excellent for both pneumatic and hydraulic service.</td>
<td>Premium material in generous proportions yet small enough to fit.</td>
<td>Although significantly longer, they fall short in design and materials.</td>
<td>Conventional design is too long and too costly for many applications.</td>
</tr>
</tbody>
</table>

Cylinder body length 1 1/2” Bore 0” Stroke
Strokes longer than the maximum listed in the ordering procedure can be produced but careful consideration must be given to how the cylinder is applied — how well is the load supported or guided, is the cylinder used in push or tension, is the cylinder vertical or horizontal, etc. Consult factory on all strokes longer than standard. Stroke increments other than standard can also be made. Special lengths are generally available in a few days and are priced as “non-standard” strokes.

If space permits for applications involving side loads or long strokes, select SMA 1, 2, 3, 5, 7, 8, 9, 12, 13, 19, 21, 23, 25, 28 which have extra long bearings with added space between support points.

Strokes longer than the maximum listed in the ordering procedure can be produced but careful consideration must be given to how the cylinder is applied — how well is the load supported or guided, is the cylinder used in push or tension, is the cylinder vertical or horizontal, etc. Consult factory on all strokes longer than standard. Stroke increments other than standard can also be made. Special lengths are generally available in a few days and are priced as “non-standard” strokes.
**1 1/8” BORE SMA ALUMINUM**

**Spring Return Cylinders**

- **Pneumatic only**
- Springs add to cyl. length
- 0-2” stroke add 1 1/2” extra
- 2 1/2-4” stroke add 3” extra
- Over 4” stroke not available

- **Spring force**
  - Fully extended—8#
  - Fully compressed—20#

- **Spring material**—Plated steel

**Optional Male Rod Thread**

**1-14 Nut**

- Nose Mounting Nut
- Not included with cylinder
- Order Separately

**HB-375**

- Rod Clevis & Nut
- Zinc Plated Steel

**HB-200**

- Clevis Pin Assembly
- Used on HB 375
- Stainless Pin/Steel Clips
All Aurora products available for 24 hour delivery

**SMA Options**
- Shock Pads
- Viton Seals
- Non-lube Service
- Magnetic Piston
- U Cup Piston
- Non-rotate (SMA 7,8,9)
- 90° Rear Clevis

**AURORA... BETTER BY DESIGN**

**STC-40**
Low Profile Clevis Brk’t
Used on SMA 2
Zinc plated steel

**HB-90**
St’d Clevis Brk’t
Used on SMA 2
Zinc plated steel

**HB-90T**
Trunnion Bracket
Used on SMA 10, 11
Zinc plated steel
For the ultimate in cycle life or where side load exists, select the U cup piston with teflon wear strip.

Adds 1/2" to length.

Spring Return Cylinders

Pneumatic only
Springs add to cyl. length
0-2" stroke add 1 1/2" extra
2 1/2-4" stroke add 3" extra
over 4" stroke not available

Spring force
Fully extended—8#
Fully compressed—20#
Spring material—Plated steel

Optional Male Rod Thread

1 1/8-27 NPT
Nose Mounting Nut
Not included with cylinder
Order Separately

HB-375
Rod Clevis & Nut
Zinc Plated Steel

HB-200
Clevis Pin Assembly
Used on HB 375
Stainless Pin/Steel Clips
Adjustable stroke models – Adjustment screw prevents the piston from fully retracting. Maximum adjustment is 1”

Spherical mount models – Eliminate side load where misalignment exists. Br’g is plated steel with teflon liner for non-lube service

SMA Options
- Shock Pads
- Viton Seals
- Non-lube Service
- Magnetic Piston
- U Cup Piston
- Non-rotate (SMA 12, 14, 15, 17, 20)
- 90° Rear Clevis

STC-40
Low Profile Clevis Brk’t
Used on SMA 16
Zinc plated steel

HB-90
St’d Clevis Brk’t
Used on SMA 16
Zinc plated steel

SMA12

SMA20

SMA21

SMA22

SMA23

SMA Options

Series SMA Aluminum
Three Position Cylinders are two in-line cylinders with a common cap but two separate and independent piston rods. By pressuring Port 1, 3, or 4, any combination of stroke 1 and total stroke may be achieved. Port 2 is a vent port only for Cylinder 1. In hydraulic applications it should be connected to a tank by a drain line.

Pressurize Port 1 and Cylinder 1 will extend pushing Cylinder 2 by the same amount. Then pressurize port 3 and Cylinder 2 will extend further to its maximum length. Pressurize Port 4 and both cylinders will retract.

*Stroke of Cylinder 2 = TOTAL Stroke

EXAMPLE: If Cylinder 1 extends 2" when port 1 is pressurized, it will also push Cylinder 2 by 2". If, when Port 3 is pressurized, Cylinder 2 moves an ADDITIONAL 1 1/2", then the total stroke of Cylinder 2 is 2" + 1 1/2" = 3 1/2". Always specify the stroke of Cylinder 2 as the total stroke.

### Spring Return 3 Position

Pneumatic only

Springs add to cyl. length

Cyl. #1 and/or Cyl. #2

0-2" stroke add 1 1/2" extra

2 1/2-4" stroke add 3" extra

over 4" not available

Spring force

- Fully extended—8#
- Fully compressed—20#

Spring material—Plated steel

### Optional Male Rod Thread

1 1/4-14 Nut

Nose Mounting Nut

Not included with cylinder

Order Separately

### HB-375

Rod Clevis & Nut

Zinc Plated Steel

- 1 3/16 DIA.
- 3/8-24 UNF THREAD
- 1 1/2 SQUARE
- 12-24 THREAD

### HB-200

Clevis Pin Assembly

Used on HB-375 Stainless Pin/Steel Clips

- 3/8-24 THREADED
- 1/4 DIA.
Tandem Cylinders are two in-line cylinders of the same stroke length with a common cap. Both pistons are attached to a common rod. By simultaneously pressurizing Ports 1 and 3 or 2 and 4, the force on the piston rod is nearly doubled. This can be useful when more force is required, but the diameter of the cylinder cannot be increased due to size restrictions.

Tandem cylinders can also be used as part of an air/oil system. Fill the front cylinder (Cyl.2) with oil and pipe its ports (3 & 4) in series using one or two flow controls. Using the rear cylinder (Cyl.1) as an air powered driver, meter the oil from end to end on Cylinder 2. This will provide smooth, precise control of piston rod motion at all speeds.

A small reservoir of oil at 10-20 psi should be connected to Cylinder 2 if oil loss or expansion/contraction due to heat are a concern.
Back to back cylinders are simply two standard double acting or single acting spring return cylinders with a common cap. By proper valve sequencing, four distinct stroke lengths may be achieved.

**SMA18**

![Diagram of SMA18](image)

**SMA19**

![Diagram of SMA19](image)

**BACK TO BACK OPTIONS**
- Shock pads
- Non-lube service
- Viton seals
- U cup piston
- Magnetic piston

### 1 1/8” Bore SMA Volumetric Pump

**VOLUMETRIC PUMPS** measure and dispense specific volumes of fluid with compressed air. These tandem type cylinders have two pistons connected to a common rod. The air powered driver section is normally reciprocated with a four way valve. The inlet/discharge port is connected to a fluid supply line and a discharge line, both of which contain a check valve. On each stroke the pump section first draws in a specific volume of fluid from the supply line, and then forces it out the discharge line as both check valves shift. Maximum pressure of discharge fluid is approximately equal to the air pressure on the driver section. Standard construction materials are the same as all SMA cylinders – anodized aluminum tube and end caps, stainless rod, and brass pistons. Other materials, including all stainless construction, are available. Special seal configurations are also available.

SMA30 Volumetric Pumps are available only as double acting, pneumatic, and in 1” increments of stroke. U cup piston and shock pads not available.
**1 1/2” BORE SMA ALUMINUM**

**Spring Return Cylinders**
- Pneumatic only
- Springs add to cyl. length
- 0-2” stroke add 1 1/2” extra
- 2 1/2-4” stroke add 3” extra
- over 4” stroke not available
- Spring force
  - Fully extended—15#
  - Fully compressed—50#
- Spring material—Plated steel

**Optional Male Rod Thread**
- 1/2-20 UNF—2A

**1 1/4-12 Nut**
- Nose Mounting Nut
- Not included with cylinder Order Separately

**HB-500**
- Rod Clevis & Nut
- Zinc Plated Steel

**HB-501**
- Clevis Pin Assembly
- Used on HB-500

**STC-90**
- Low Profile Clevis Brk’t
- Zinc plated steel

**HB-100**
- St’d Clevis Brk’t
- Used on SMA 2 Zinc plated steel

**SMA1**
- 2 DIA.
- 3/8-27 NPT
- 1/8-27 NPT
- 1 1/4 DIA.
- 3/8 FLATS

**SMA2**
- 2 DIA.
- 9/16-12 NPT
- 1/8-27 NPT
- 3/8-24 x 5/8 DP.
- 1/2 FLATS

**SMA3**
- 2 DIA.
- 1/8-27 NPT
- 3/8-24 x 5/8 DP.
- 1/2 FLATS

**SMA5**
- 1/4-20 UNC THRD. 4 HOLES EQUAL SPACED ON 2.187 B.C. (CLEARANCE FOR #10 S.H.C.S.)
- 2 31/32 x 5/8 DP.
- 1 1/2 DIA.

**SMA6**
- 1/8-27 N.P.T.
- 1 5/8 DIA.

**Series SMA Aluminum**

**HB-500**
- Male Rod Thread

**HB-501**
- Clevis Pin Assembly

**STC-90**
- Low Profile Clevis Brk’t

**HB-100**
- St’d Clevis Brk’t

**HB-500**
- Male Rod Thread

**HB-501**
- Clevis Pin Assembly

**STC-90**
- Low Profile Clevis Brk’t

**HB-100**
- St’d Clevis Brk’t

**Series SMA Aluminum**

**HB-500**
- Male Rod Thread

**HB-501**
- Clevis Pin Assembly

**STC-90**
- Low Profile Clevis Brk’t

**HB-100**
- St’d Clevis Brk’t

**Series SMA Aluminum**
1 1/2” BORE SMA ALUMINUM

200 PSI MAX. AIR
500 PSI MAX. HYD. Non shock

Single Acting Cylinders
Pneumatic only
Springs add to cyl. length
0-2" stroke add 1 1/2" extra
2 1/2-4" stroke add 3" extra
over 4" stroke not available
Spring force
Fully extended—15#
Fully compressed—50#
Spring material—Plated steel

Optional Male Rod Thread
1 1/4 Nut
Nose Mounting Nut
Not included with cylinder
Order Separately

HB-500
Rod Clevis & Nut
Zinc Plated Steel

HB-501
Clevis Pin Assembly
Used on HB-500
Stainless Pin/Steel Clips
Adjustable stroke models – Adjustment screw prevents the piston from fully retracting. Maximum adjustment is 1”.

Spherical mount models – Eliminate side load where misalignment exists. Br’g is plated steel with teflon liner for non-lube service.

Spring Return Cylinders
Pneumatic only
Springs add to cyl. length
0-2” stroke add 1 1/2” extra
2-2 1/2” stroke add 3” extra
Over 4” stroke not available
Spring force
Fully extended—15#
Fully compressed—50#
Spring material—Plated steel
Also applies to Cyl. #1
and or Cyl. #2 of 3 position models

Optional Male Rod Thread

1 1/4 Nut
Nose Mounting Nut
Not included with cylinder
Order separately
Three Position Cylinders are two in-line cylinders with a common cap but two separate and independent piston rods. By pressuring Port 1, 3, or 4, any combination of stroke 1 and total stroke may be achieved. Port 2 is a vent port only for Cylinder 1. In hydraulic applications it should be connected to a tank by a drain line.

Pressurize Port 1 and Cylinder 1 will extend pushing Cylinder 2 by the same amount. Then pressurize port 3 and Cylinder 2 will extend further to its maximum length. Pressurize Port 4 and both cylinders will retract.

*Stroke of Cylinder 2 = TOTAL Stroke

EXAMPLE: If Cylinder 1 extends 2" when port 1 is pressurized, it will also push Cylinder 2 by 2".
If, when Port 3 is pressurized, Cylinder 2 moves an ADDITIONAL 1 1/2". Then the total stroke of Cylinder 2 is 2" + 1 1/2" = 3 1/2". Always specify the stroke of Cylinder 2 as the total stroke.
Tandem Cylinders are two in-line cylinders of the same stroke length with a common cap. Both pistons are attached to a common rod. By simultaneously pressurizing Ports 1 and 3 or 2 and 4, the force on the piston rod is nearly doubled. This can be useful when more force is required, but the diameter of the cylinder cannot be increased due to size restrictions.

Tandem cylinders can also be used as part of an air/oil system. Fill the front cylinder (Cyl.2) with oil and pipe its ports (3 & 4) in series using one or two flow controls. Using the rear cylinder (Cyl. 1) as an air powered driver, meter the oil from end to end on Cylinder 2. This will provide smooth, precise control of piston rod motion at all speeds.

A small reservoir of oil at 10-20 psi should be connected to Cylinder 2 if oil loss or expansion/contraction due to heat are a concern.

**SMA27**

**SMA28**

**SMA29**

**SMA31**

**STC-90**

**HB-100**

Tandem models double acting only

Spring return not available

Viton seals
Non-lube service
90° Rear clevis
Shock pads not available
Magnetic piston not available
U cup piston not available
Non-rotate not available

Optional Male Rod Thread

1 1/4-12 Nut
Nose Mounting Nut
Not included with cylinder
Order Separately

Low Profile Clevis Brk't
Used on SMA 29
Zinc plated steel

St'd Clevis Brk't
Used on SMA 29
Stainless steel
VOLUMETRIC PUMPS measure and dispense specific volumes of fluid with compressed air. These tandem type cylinders have two pistons connected to a common rod. The air powered driver section is normally reciprocated with a four way valve. The inlet/discharge port is connected to a fluid supply line and a discharge line, both of which contain a check valve. On each stroke the pump section first draws in a specific volume of fluid from the supply line, and then forces it out the discharge line as both check valves shift. Maximum pressure of discharge fluid is approximately equal to the air pressure on the driver section. Standard construction materials are the same as all SMA cylinders – anodized aluminum tube and end caps, stainless rod, and brass pistons. Other materials, including all stainless construction, are available. Special seal configurations are also available.

SMA 30 Volumetric Pumps are available only as double acting, pneumatic, and in 1” increments of stroke. U cup piston and shock pads not available.
2" BORE SMA ALUMINUM

SMA1
Optional 1/4 -18 ports available

SMA2
Optional 1/4 -18 ports available

SMA3
Optional 1/4 -18 ports available

SMA4
Optional 1/4 -18 ports available

SMA5
Optional 1/4 -18 ports available

SMA6
Optional 1/4 -18 ports available

Spring Return Cylinders
Pneumatic only
Springs add to cyl. length
0-2" stroke add 1 1/2" extra
2 1/2-4" stroke add 3" extra
over 4" stroke not available
Spring force
Fully extended—20#
Fully compressed—75#
Spring material—Plated steel

Optional Male Rod Thread

1 1/4-12 Nut
Nose Mounting Nut
Not included with cylinder
Order Separately

HB-625
Rod Clevis & Nut
Zinc plated steel
Used on HB 625 assembly
Stainless pin/steel clips

HB-601 Clevis Pin Assembly

See Pages 84–86
For Reed and Hall Effect Switches and Magnetic Pistons
SMA Options

- Shock Pads
- Viton Seals
- Non-lube Service
- Magnetic Piston
- U Cup Piston
- Non-rotate (SMA 7,8,9)
- 90° Rear Clevis
- Oversize ports

UNIQUE APPLICATIONS SOMETIMES REQUIRE UNIQUE CYLINDERS
See our custom design capabilities on page 87

HB-100
St'd Clevis Brk't
Used on SMA 2 Stainless steel

SS-100
St'd Clevis Brk't
Used on SMA 2 Stainless steel

SS-100T
Trunnion Brk't
Used on SMA 10, 11 Stainless steel

All Aurora products available for 24 hour delivery
For the ultimate in cycle life or where side load exists select the U cup piston with teflon wear strip

Adds 1/2" to length
Three Position Cylinders are two in-line cylinders with a common cap but two separate and independent piston rods. By pressuring Port 1, 3, or 4, any combination of stroke 1 and total stroke may be achieved. Port 2 is a vent port only for Cylinder 1. In hydraulic applications it should be connected to a tank by a drain line.

Pressurize Port 1 and Cylinder 1 will extend pushing Cylinder 2 by the same amount. Then pressurize port 3 and Cylinder 2 will extend further to its maximum length. Pressurize Port 4 and both cylinders will retract.

*Stroke of Cylinder 2 = TOTAL Stroke

EXAMPLE: If Cylinder 1 extends 2" when port 1 is pressurized, it will also push Cylinder 2 by 2".

If, when Port 3 is pressurized, Cylinder 2 moves an ADDITIONAL 1 1/2" extra over 4" not available

Spring force
Fully extended—20#
Fully compressed—75#
Spring material—Plated steel

Optional Male Rod Thread

1 1/4-12
Nose Mounting Nut
Not included with cylinder
Order Separately

HB-625
Rod Clevis & Nut
Zinc Plated Steel

HB-601 Clevis Pin Assembly
Used on HB 625
Stainless Pin/Steel Clips
Tandem Cylinders are two in-line cylinders of the same stroke length with a common cap. Both pistons are attached to a common rod. By simultaneously pressurizing Ports 1 and 3 or 2 and 4, the force on the piston rod is nearly doubled. This can be useful when more force is required, but the diameter of the cylinder cannot be increased due to size restrictions.

Tandem cylinders can also be used as part of an air/oil system. Fill the front cylinder (Cyl.2) with oil and pipe its ports (3 & 4) in series using one or two flow controls. Using the rear cylinder (Cyl. 1) as an air powered driver, meter the oil from end to end on Cylinder 2. This will provide smooth, precise control of piston rod motion at all speeds.

A small reservoir of oil at 10-20 psi should be connected to Cylinder 2 if oil loss or expansion/contraction due to heat are a concern.

3 Position options
- Viton seals
- Non-lube service
- Magnetic piston
- U Cup piston
- Non-rotate (SMA 13, 24)
- 90° Rear clevis
- Shock pads not available

Tandem options
- Viton seals
- Non-lube service
- 90° Rear clevis
- Shock pads not available
- Magnetic piston not available
- U Cup piston not available
- Non-rotate not available
VOLUMETRIC PUMPS measure and dispense specific volumes of fluid with compressed air. These tandem type cylinders have two pistons connected to a common rod. The air powered driver section is normally reciprocated with a four way valve. The inlet/discharge port is connected to a fluid supply line and a discharge line, both of which contain a check valve. On each stroke the pump section first draws in a specific volume of fluid from the supply line, and then forces it out the discharge line as both check valves shift. Maximum pressure of discharge fluid is approximately equal to the air pressure on the driver section. Standard construction materials are the same as all SMA cylinders – anodized aluminum tube and end caps, stainless rod, and brass pistons. Other materials, including all stainless construction, are available. Special seal configurations are also available.

SMA 30 Volumetric Pumps are available only as double acting, pneumatic, and in 1” increments of stroke. U cup piston and shock pads not available.
**3” BORE SMA ALUMINUM**

**200 PSI MAX. AIR**
**250 PSI MAX. HYD. Non shock**

**Spring Return Cylinders**
Pneumatic only
Springs add to cyl. length
0.2” stroke add 1 1/2” extra
0.2”-0.4” stroke add 3” extra
over 4” stroke not available
Spring force
Fully extended—20#
Fully compressed—75#
Spring material—Plated steel

**Optional Male Rod Thread**

**1 3/4 -12 UNF Nose Mounting Nut**
Not included with cylinder
Order Separately

**SMA-750 Rod Clevis & Nut**
Plated steel

**SMA-701 Clevis Pin Assembly**
Used on SMA 750 Stainless pin/Steel clips

**SSC-300 Clevis Brkt**
Used on SMA 2 Stainless steel

**Series SMA Aluminum**

**SMA Options**
- Shock Pads
- Viton Seals
- Non-lube Service
- Magnetic Piston
- U Cup Piston
- 90° Rear Clevis

**SMA1**

**SMA2**

**SMA3**

**SMA5**
3” BORE SMA ALUMINUM

Spring Return Cylinders
Pneumatic only
Springs add to cyl. length
0-2” stroke add 1 1/2” extra
2 1/4” stroke add 3” extra
over 4” stroke not available
Spring force
Fully extended—20#
Fully compressed—75#
Spring material—Plated steel

Optional Male Rod Thread

1 3/4 -12 Nut
Nose Mounting Nut
Not included with cylinder Order Separately

SMA-750
Rod Clevis & Nut
Plated steel

SMA-701
Clevis Pin Assembly
Used on SMA 750 Stainless pin/Steel clips

SSC-300 Clevis Brk’t
Used on SMA 16 Stainless steel
SMA Options
- Shock Pads
- Viton Seals
- Non-lube Service
- Magnetic Piston
- U Cup Piston
- 90° Rear Clevis

Back to Back models – Back to Back cylinders are two standard cylinders with a common cap.
Spherical mount models – Eliminate side load where misalignment exists. Br’g is plated steel with teflon liner for non-lube service.

Breather Vents and Mufflers Protect Vent Ports from Dirt in Single Acting Cylinders.
Three Position Cylinders are two in-line cylinders with a common cap but two separate and independent piston rods. By pressurizing Port 1, 3, or 4, any combination of stroke 1 and total stroke may be achieved. Port 2 is a vent port only for Cylinder 1. In hydraulic applications it should be connected to a tank by a drain line.

Pressurize Port 1 and Cylinder 1 will extend pushing Cylinder 2 by the same amount. Then pressurize port 3 and Cylinder 2 will extend further to its maximum length. Pressurize Port 4 and both cylinders will retract.

*Stroke of Cylinder 2 = TOTAL Stroke
EXAMPLE: If Cylinder 1 extends 2" when port 1 is pressurized, it will also push Cylinder 2 by 2".
If, when Port 3 is pressurized, Cylinder 2 moves an ADDITIONAL 1 1/2". Then the total stroke of Cylinder 2 is 2" + 1 1/2" = 3 1/2". Always specify the stroke of Cylinder 2 as the total stroke.

**Optional Male Rod Thread**

- 1 3/4 -12 UNF
- Nose Mounting Nut
- Not included with cylinder
- Order Separately

**3 Position options**

- Viton seals
- Non-lube service
- Magnetic piston
- U Cup piston
- 90° Rear clevis

**Shock pads not available**
Tandem Cylinders are two in-line cylinders of the same stroke length with a common cap. Both pistons are attached to a common rod. By simultaneously pressurizing Ports 1 and 3 or 2 and 4, the force on the piston rod is nearly doubled. This can be useful when more force is required, but the diameter of the cylinder cannot be increased due to size restrictions.

Tandem cylinders can also be used as part of an air/oil system. Fill the front cylinder (Cyl. 2) with oil and pipe its ports (3 & 4) in series using one or two flow controls. Using the rear cylinder (Cyl. 1) as an air powered driver, meter the oil from end to end on Cylinder 2. This will provide smooth, precise control of piston rod motion at all speeds.

A small reservoir of oil at 10-20 psi should be connected to Cylinder 2 if oil loss or expansion/contraction due to heat are a concern.

Viton options

Viton seals
Non-lube service
90° Rear clevis

Shock pads not available
Magnetic piston not available
U cup piston not available
Add a stainless tooling bar to prevent rotation on standard square or flange mount cylinders.

Guide bushings of P.E.T. plastic can be adjusted to take up wear. Superior registration can be achieved and maintained.

Hard chromed stainless guide rods.

Available on double acting cylinders in mounting styles SMA7, 8, 9, 12, 13, 14, 15, 17, 20, 24, and SMS7, 8, 9, 14, 15, 17.

Where space permits U cup piston with wear strip is recommended.

<table>
<thead>
<tr>
<th>BORE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/16</td>
<td>11/16</td>
<td>3/4</td>
<td>1/2</td>
<td>5/16-24 x 3/4</td>
<td>2 3/4</td>
<td>2 1/2</td>
<td>1.062</td>
<td>1/4-20</td>
<td>#10</td>
</tr>
<tr>
<td>1 1/2</td>
<td>11/16</td>
<td>5/8</td>
<td>5/8</td>
<td>3/8-24 x 1</td>
<td>3 1/4</td>
<td>3</td>
<td>1.250</td>
<td>5/16-18</td>
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<td>2</td>
<td>9/16</td>
<td>5/8</td>
<td>3/4</td>
<td>1/2-20 x 1 1/4</td>
<td>3 3/4</td>
<td>3 1/2</td>
<td>1.750</td>
<td>5/16-18</td>
<td>1/4</td>
</tr>
<tr>
<td>3</td>
<td>NOT AVAILABLE</td>
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</tbody>
</table>
Select code numbers/letters (**bold type**) from each of the six boxes below - then select options desired from the table below. List codes in the same sequence as shown.

<table>
<thead>
<tr>
<th>Bore</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/8&quot;</td>
<td>11</td>
</tr>
<tr>
<td>1 1/2&quot;</td>
<td>15</td>
</tr>
<tr>
<td>2&quot;</td>
<td>20</td>
</tr>
<tr>
<td>3&quot;</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double acting</td>
<td>C</td>
</tr>
<tr>
<td>Single acting spring return (Add to cyl. length)</td>
<td>A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumatic</td>
<td>E</td>
</tr>
<tr>
<td>Hydraulic</td>
<td>G</td>
</tr>
<tr>
<td>SMA 30 always</td>
<td>E</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mounting Style/Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMA 1</td>
</tr>
<tr>
<td>SMA 2</td>
</tr>
<tr>
<td>SMA 3</td>
</tr>
<tr>
<td>SMA 4</td>
</tr>
<tr>
<td>SMA 5</td>
</tr>
<tr>
<td>SMA 6</td>
</tr>
<tr>
<td>SMA 7</td>
</tr>
<tr>
<td>SMA 8</td>
</tr>
<tr>
<td>SMA 9</td>
</tr>
<tr>
<td>SMA 10</td>
</tr>
<tr>
<td>SMA 11</td>
</tr>
<tr>
<td>SMA 12</td>
</tr>
<tr>
<td>SMA 13</td>
</tr>
<tr>
<td>SMA 14</td>
</tr>
<tr>
<td>SMA 15</td>
</tr>
<tr>
<td>SMA 16</td>
</tr>
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<td>SMA 17</td>
</tr>
<tr>
<td>SMA 18</td>
</tr>
<tr>
<td>SMA 19</td>
</tr>
<tr>
<td>SMA 20</td>
</tr>
<tr>
<td>SMA 21</td>
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<td>SMA 22</td>
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<tr>
<td>SMA 26</td>
</tr>
<tr>
<td>SMA 27</td>
</tr>
<tr>
<td>SMA 28</td>
</tr>
<tr>
<td>SMA 29</td>
</tr>
<tr>
<td>SMA 30</td>
</tr>
<tr>
<td>SMA 31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stroke Code is stroke in total 1/8&quot; increments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: 1&quot; stroke = 8</td>
</tr>
<tr>
<td>2 1/4&quot; stroke = 18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&quot;/1/8&quot;, 1 1/4&quot;, 3/8&quot;, 1/2&quot;, 3/4&quot;, 1&quot;</td>
</tr>
<tr>
<td>1 1/2&quot;, 1 3/4&quot;, 2&quot;</td>
</tr>
<tr>
<td>and 1/2&quot; increments to 10&quot;</td>
</tr>
</tbody>
</table>

3" bore - Limited to 8" max. stroke

Note: SMA 27, 28, 29, 31 available only 1/2" increments

<table>
<thead>
<tr>
<th>Piston Rod Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bore</td>
</tr>
<tr>
<td>1.125</td>
</tr>
<tr>
<td>1.125</td>
</tr>
<tr>
<td>1.500</td>
</tr>
<tr>
<td>1.500</td>
</tr>
<tr>
<td>2.000</td>
</tr>
<tr>
<td>3.000</td>
</tr>
<tr>
<td>3.000</td>
</tr>
<tr>
<td>3/8-24 x 3/4</td>
</tr>
<tr>
<td>5/16-18 x 5/8</td>
</tr>
<tr>
<td>5/16-18 x 5/8</td>
</tr>
<tr>
<td>5/8-18 x 1 1/8</td>
</tr>
<tr>
<td>5/8-18 x 1 1/8</td>
</tr>
<tr>
<td>3/4-16 x 1 1/4</td>
</tr>
<tr>
<td>3/4-16 x 1 1/4</td>
</tr>
<tr>
<td>3/8-24 x 5/8</td>
</tr>
<tr>
<td>3/8-24 x 5/8</td>
</tr>
<tr>
<td>3/8-16 x 5/8</td>
</tr>
<tr>
<td>3/8-16 x 5/8</td>
</tr>
<tr>
<td>3/8-16 x 5/8</td>
</tr>
<tr>
<td>3/8-16 x 5/8</td>
</tr>
<tr>
<td>3/8-16 x 1</td>
</tr>
<tr>
<td>3/8-16 x 1</td>
</tr>
<tr>
<td>1/2-20 x 3/4</td>
</tr>
<tr>
<td>1/2-20 x 3/4</td>
</tr>
<tr>
<td>1/4-24 x 1 1/4</td>
</tr>
<tr>
<td>3/4-16 x 1 1/4</td>
</tr>
<tr>
<td>3/4-16 x 1 1/4</td>
</tr>
<tr>
<td>1/4-24 x 1 1/4</td>
</tr>
<tr>
<td>1/4-24 x 1 1/4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thread Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra rod extension 1/4&quot; increments</td>
<td>Specify code letter J followed by extra length required as a two place decimal Example: J.50 = 1/2&quot; extra</td>
<td>J</td>
</tr>
<tr>
<td>Shock pads Pne. only to 180° F Double acting only</td>
<td>Add to either or both ends in 1 1/8&quot;, 1 1/2&quot;, 2&quot; bore up to 2&quot; stroke. Over 2&quot; stroke and on all 3&quot; bore must be added to both ends. Each pad adds 1/4&quot; length — not available SMA 12, 13, 20, 21, 24, 25, 26, 27, 28, 29, 30, 31</td>
<td>L</td>
</tr>
<tr>
<td>Non-lube service Available on standard O ring Piston. Not available or necessary on U cup piston</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>Viton seals Standard seals are nitrile and urethane +10 to +200° F For service -10 to +400° F specify viton</td>
<td></td>
<td>R</td>
</tr>
<tr>
<td>U cup piston Extends cycle life and reduces friction Piston is aluminum and includes teflon wear strip — adds 1/2&quot; to length Not available SMA 27, 28, 29, 31</td>
<td></td>
<td>S</td>
</tr>
<tr>
<td>Clevis 90° to std SMA 2, 16, 26, 29, only</td>
<td></td>
<td>T</td>
</tr>
<tr>
<td>Magnetic piston Adds 1/2&quot; to length — not available SMA 27, 28, 31</td>
<td></td>
<td>W</td>
</tr>
<tr>
<td>Non rotate Available only on double acting SMA 7, 8, 9, 12, 13, 14, 15, 17, 20, 24 with male stud without male stud</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>1/4&quot; oversize ports 2&quot; bore only — SMA 1, 2, 3, 6, 7, 8, 9, only Not available with option x,y</td>
<td></td>
<td>Z</td>
</tr>
</tbody>
</table>

Part No. Example:

- Mounting style SMA9
- 1.500 stroke
- 1 1/2-20 x 1 male thread
- Magnetic piston
- Viton seals
- Pneumatic

**These models are combinations of two cylinders with a common cap. The dimensional drawings illustrate them as being composed of a cylinder #1 section and a cylinder #2 section. The part number also contains 2 sections. Compose the part number for cylinder #1 as shown above. Mounting styles SMA 13, 24, 25, 26, 27, 28, 29, 31 will always have piston rod code II. Then add a dash (-) and the part number for cylinder #2 skipping the “bore” and “mounting style” codes and beginning with the “type” code.**

Example:

11 SMA 18 C 10 E 11 R — C 16 E F 3 R
## SMA Service Parts

When ordering any repair part please provide the part number and description shown below along with the serial number and part number of the cylinder being serviced.

### Key Description
- **Bore**
  - 1/8 Bore
  - 1/2 Bore
  - 2 Bore
  - 3 Bore
- **Seal kits for standard cylinders with O ring piston — SMA 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 20, 21, 22, 23**
  - Pneumatic, Nitrile: SMA 3411, SMA 3415, SMA 3420, SMA 3430
  - Pneumatic, Viton: SMA 3411V, SMA 3415V, SMA 3420V, SMA 3430V
  - Hydraulic, Nitrile: SMA 3511, SMA 3515, SMA 3520, SMA 3530
  - Hydraulic, Viton: SMA 3511V, SMA 3515V, SMA 3520V, SMA 3530V

### Seal kits for standard cylinders with U cup piston — SMA 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 20, 21, 22, 23
- Pneumatic, Nitrile: SMA 5411, SMA 5415, SMA 5420, SMA 5430
- Pneumatic, Viton: SMA 5411V, SMA 5415V, SMA 5420V, SMA 5430V
- Hydraulic, Nitrile: SMA 5511, SMA 5515, SMA 5520, SMA 5530
- Hydraulic, Viton: SMA 5511V, SMA 5515V, SMA 5520V, SMA 5530V

### Seal kits for combination cylinders with O Ring piston — SMA 13, 18, 19, 24, 25, 26, 27, 28, 29, 30, 31
- Pneumatic, Nitrile: SMA 3611, SMA 3615, SMA 3620, SMA 3630
- Pneumatic, Viton: SMA 3611V, SMA 3615V, SMA 3620V, SMA 3630V
- Hydraulic, Nitrile: SMA 3711, SMA 3715, SMA 3720, SMA 3730
- Hydraulic, Viton: SMA 3711V, SMA 3715V, SMA 3720V, SMA 3730V

### Seal kits for combination cylinders with U cup piston — SMA 13, 18, 19, 24, 25, 26
- Pneumatic, Nitrile: SMA 5611, SMA 5615, SMA 5620, SMA 5630
- Pneumatic, Viton: SMA 5611V, SMA 5615V, SMA 5620V, SMA 5630V
- Hydraulic, Nitrile: SMA 5711, SMA 5715, SMA 5720, SMA 5730
- Hydraulic, Viton: SMA 5711V, SMA 5715V, SMA 5720V, SMA 5730V

### Rear port cap
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 1011, SMA 1015, SMA 1020, SMA 1030

### Rear pivot cap
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 1111, SMA 1115, SMA 1120, SMA 1130

### Side port cap
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 1211, SMA 1215, SMA 1220, SMA 1230

### Rear flange cap
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 1311, SMA 1315, SMA 1320, SMA 1330

### Spherical bearing cap
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 1411, SMA 1415, SMA 1420, SMA 1430

### Adjustable stroke cap
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 1511, SMA 1515, SMA 1520, SMA 1530

### Square cap
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 1611, SMA 1615, SMA 1620, SMA 1630

### Back to back body
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 1811, SMA 1815, SMA 1820, SMA 1830

### Tube
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 1911, SMA 1915, SMA 1920, SMA 1930

### Piston rod assembly
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 2011, SMA 2015, SMA 2020, SMA 2030

### Spring guide
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 2111, SMA 2115, SMA 2120, SMA 2130

### Magnet
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 2211, SMA 2215, SMA 2220, SMA 2230

### 3 position/Tandem/Pump body
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 2311, SMA 2315, SMA 2320, SMA 2330

### Flange head
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 2411, SMA 2415, SMA 2420, SMA 2430

### Nose Mount Head
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 2511, SMA 2515, SMA 2520, SMA 2530

### Short square head
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 2611, SMA 2615, SMA 2620, SMA 2630

### Long square head
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 2711, SMA 2715, SMA 2720, SMA 2730

### Square non rotate head
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 2811, SMA 2815, SMA 2820, SMA 2830

### Trunnion head
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 2911, SMA 2915, SMA 2920, SMA 2930

### Non-rotate guide bushing
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 3011, SMA 3015, SMA 3020, SMA 3030

### Cap end shock pad
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 3111, SMA 3115, SMA 3120, SMA 3130

### Head end shock pad
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 3211, SMA 3215, SMA 3220, SMA 3230

### SMA 30 cap
- Add suffix 250 for 2" bore 1/4 NPT
  - SMA 3311, SMA 3315, SMA 3320, SMA 3330
SMS Solid Stainless Cylinders

Space Saving and Conventional Lengths
Pneumatic to 200 PSI
Hydraulic 400 to 500 PSI Non shock
1 1/8", 1 1/2", 2", 3" Bore

300 Series Stainless Exterior Assures Aesthetics and Function in Washdown Applications or other Harsh Environments

AURORA AIR PRODUCTS
Strokes longer than the maximum listed in the ordering procedure can be produced but careful consideration must be given to how the cylinder is applied — how well is the load supported or guided, is the cylinder used in push or tension, is the cylinder vertical or horizontal, etc. Consult factory on all strokes longer than standard.

Stroke increments other than standard can also be made.

Special lengths are generally available in a few days and are priced as "non-standard" strokes.

If space permits for applications involving side loads or long strokes, select SMS 1, 2, 3, 5, 7, 8, 9, which have extra long bearings with added space between support points.

Pneumatic rod seal is a "longlife" nitrile cup. Hydraulic rod seal is pressure energized and extra long wearing for improved sealability.

Piston rod is hard chrome plated type 303 stainless.

End caps are type 303 stainless steel.

Clean crevice free threaded construction assures maximum strength and allows easy wash down.

Heavy 1/8" wall type 304 stainless tube is precision honed.

Brass or aluminum piston is attached with a high strength threaded joint.

Reduce noise and fatigue problems such as rod breakage with urethane/nitrile shock pads. Add 1/4" to the cylinder length for each pad. Pneumatic use only to 180° F.

Standard piston seal is large cross section O ring. Compounds are carefully selected for maximum cycle life. Optional U cup piston seals with teflon wear strip stretch the limits of service even further. Reduce friction and operate without lube in the severest applications while extending or eliminating the service interval.

Optional wick provides teflon lube for non-lube service on O ring piston.

Composite rod bushing has high temperature capability and excellent chemical resistance. Solid lubricant fillers provide excellent wear characteristics for non-lube service. The bearing is inboard of the wiper and seal, away from the environment.

Brass or aluminum piston is attached with a high strength threaded joint.
**SMS Options**
- Shock Pads
- Viton Seals
- Non-lube Service
- Magnetic Piston
- U Cup Piston
- 90° Rear Clevis

**Spring Return Cylinders**
Pneumatic only
Springs add to cyl. length
0-2" stroke add 1 1/2" extra
2 1/2-4" stroke add 3" extra
over 4" stroke not available
Spring force
- Fully extended—8#
- Fully compressed—22#
Spring material—Stainless steel

**Optional Male Rod Thread**

**1-14SS Nut**
Nose Mounting Nut
Not included with cylinder Order Separately

**SS-375**
Rod Clevis & Nut
303 Stainless

**SS-301**
Clevis Pin assembly
Used on SS-375
303 Stainless

**SS-90**
St’d Clevis Brk’t
Used on SMS 2
Series 300 Stainless

**SSC-40**
Low Profile Clevis Brk’t
Used on SMS 2
303 Stainless

---

**Series SMS Solid Stainless**

**SMS1**

**SMS2**

**SMS3**

**SMS5**

---

**200 PSI MAX. AIR**
**500 PSI MAX. HYD. Non shock**
1 1/8” BORE SMS STAINLESS

Spring Return Cylinders
Pneumatic only
Springs add to cyl. length
0-2” stroke add 1 1/2” extra
2 1/2-4” stroke add 3” extra
over 4” stroke not available
Spring force
Fully extended—8#
Fully compressed—22#
Spring material—Stainless steel

Optional Male Rod Thread

WHEN YOU’VE FINALLY HAD IT WITH PLATED CYLINDERS . . .

SS-375
Rod Clevis & Nut
303 Stainless

SS-301
Clevis Pin assembly
Used on SS-375
303 Stainless
RAISE THE BAR FOR YOUR COMPETITORS BY SELECTING AURORA SOLID STAINLESS PRODUCTS
**1 1/2” BORE SMS STAINLESS**

**SMS1**
2 DIA. 1/8-27 NPT 1/8-27 NPT
2 3/32 + STROKE DOUBLE ACTING
1 3/4
1 1/4-12 UNF 1.249
3/8 PILOT DIA. 2.246 x 11/64 LG.
1 1/4-12 UNF 1.246 x 11/64 LG.
1/2 FLATS
3/8-24 x 5/8 DP.

**SMS2**
2 DIA. 1/8-27 NPT 1/8-27 NPT
3 7/8 + STROKE DOUBLE ACTING
9/32
1 1/4-12 UNF 1.249
3/8 PILOT DIA. 2.246 x 11/64 LG.
1 1/4-12 UNF 1.246 x 11/64 LG.
1/2 FLATS
3/8-24 x 5/8 DP.

**SMS3**
2 DIA. 1/8-27 NPT 1/8-27 NPT
3 3/16 + STROKE DOUBLE ACTING
1 3/4
1 1/4-12 UNF 1.249
3/8 PILOT DIA. 2.246 x 11/64 LG.
1 1/4-12 UNF 1.246 x 11/64 LG.
1/2 FLATS
3/8-24 x 5/8 DP.

**SMS5**
1/4-20 UNF THRD. 4 HOLES EQUAL SPACED ON 2.187 B.C. (CLEARANCE FOR #10 S.H.C.S.)
2 1/4
1/8-27 NPT 1/8-27 NPT
2 3/32 + STROKE DOUBLE ACTING
1 3/4
1 1/4-12 UNF 1.249
3/8 PILOT DIA. 2.246 x 11/64 LG.
1 1/4-12 UNF 1.246 x 11/64 LG.
1/2 FLATS
3/8-24 x 5/8 DP.

**SMS6**
1/8-27 N.P.T. 1/8-27 N.P.T.
2 5/32 + STR DOUBLE ACTING
1 5/8 + STR DOUBLE ACTING
1 1/2
1/8-27 N.P.T. 1/8-27 N.P.T.
17/32
1.375
9/32 DRILL & BORE TO CLEAR 1/4-20 S.H.C.S., 4 HOLES
1.8875
3/8-24 x 5/8
1.960
3/8-24 x 5/8
3/8-24 x 5/8

---

**Spring Return Cylinders**
Pneumatic only
Springs add to cyl. length
0-2” stroke add 1 1/2” extra
2 1/2-4” stroke add 1 1/2” extra
over 4” stroke not available

Spring force
Fully extended—15#
Fully compressed—50#
Spring material—Stainless steel

**Optional Male Rod Thread**

**1 1/4 -12SS Nut**
Nose Mounting Nut
Not included with cylinder
Order Separately

**SS-500**
Rod Clevis and Nut

**SS-501**
Clevis Pin Assembly
Used on SS-500 303 Stainless
SMS Options
- Shock Pads
- Viton Seals
- Non-lube Service
- Magnetic Piston
- U Cup Piston
- Non-rotate (SMA 7,8,9)
- 90° Rear Clevis

SSC-90
Low Profile Clevis Brk’t
Used on SMS 2
Series 300 Stainless

SS-100
St’d Clevis Brk’t
Used on SMS 2
Series 300 Stainless

SS-100T
Trunnion Brk’t
Used on SMS 10, 11
304 Stainless

All Aurora Cylinders are 100% Factory Tested to Insure Trouble Free Performance

Series SMS Solid Stainless

ALL AURORA PRODUCTS AVAILABLE FOR 24 HOUR DELIVERY
### SMS14

2 DIA. 1/8-27 NPT

### SMS15

2 DIA. 1/8-27 NPT

### SMS16

2 DIA. 1/8-27 NPT

### SMS17

2 3/16 + STROKE

**2 7/8 + STROKE**

**1 31/32 + STROKE**

**1 3/16 + STROKE**

**1 31/32 + STROKE**

### SS-500

**Optional Male Rod Thread**

SS-500

**Rod Clevis and Nut**

SS-501

**Clevis Pin Assembly**

Used on SS-500 303 Stainless

### SSC-90

**Low Profile Clevis Brkt**

Used on SMS 16 Series 300 Stainless

### SS-100

**St’d Clevis Brkt**

Used on SMS 16 Series 300 Stainless

---

### Spring Return Cylinders

- **Pneumatic only**
- Springs add to cyl. length
- 0-2” stroke add 1 1/2” extra
- 2 1/2-4” stroke add 3” extra
- over 4” stroke not available

**Spring force**
- Fully extended—15#
- Fully compressed—50#

**Spring material**—Stainless steel

---

### All Aurora Cylinders are Fully Repairable
Spring Return Cylinders

Pneumatic only
Springs add to cyl. length
0-2" stroke add 1 1/2" extra
2 1/2-4" stroke add 3" extra
over 4" stroke not available
Spring force
Fully extended—20#
Fully compressed—75#
Spring material—Stainless steel

Optional Male Rod Thread

1 1/4 -12SS Nut
Nose Mounting Nut
Not included with cylinder
Order Separately

1 1/2
1 1/8
1 7/8
23/32
1 1/8
750 DIA.
5/8-18 UNF—2A
18-8 Stainless

SS-625
Rod Clevis and Nut

2
1 1/4
1/2
3/8
1/2
5/8-18 THREAD
502 DIA.
1 SQUARE
303 Stainless

SS-601
Clevis Pin Assembly
Used on SS-625  303 Stainless

SS-100
St’d Clevis Brk’t
Used on SMS 2
Series 300 Stainless

Make the Best Choice

1 630 851 4515
ask for Technical Support
2" BORE SMS STAINLESS

Spring Return Cylinders
- Pneumatic only
- Springs add to cyl. length
- 0-2" stroke add 1 1/2" extra
- 2 1/2-4" stroke add 3" extra
- Over 4" stroke not available
- Spring force:
  - Fully extended—20#
  - Fully compressed—75#
- Spring material—Stainless steel

Optional Male Rod Thread

SS-625 Rod Clevis and Nut

SS-601 Clevis Pin Assembly
Used on SS-625

Aurora Stainless
ALL AURORA PRODUCTS AVAILABLE FOR 24 HOUR DELIVERY

Unique Applications Sometimes Require Unique Cylinders

See our custom design capabilities on page 87

SS-100
St’d Clevis Brk’t
Used on SMS 16 Series 300 Stainless

SS-100T
Trunnion Brk’t
Used on SMS 10, 11 304 Stainless steel

SMS Options
• Shock Pads
• Viton Seals
• Non-lube Service
• Magnetic Piston
• U Cup Piston
• Non-rotate (SMA 7, 8, 9, 14, 15, 17)
• 90° Rear Clevis
**Spring Return Cylinders**

Pneumatic only
Springs add to cyl. length
0.2" stroke add 1 1/2" extra
2 1/2-4" stroke add 3" extra
over 4" stroke not available

Spring force
Fully extended—20#
Fully compressed—75#
Spring material—Stainless steel

**Optional Male Rod Thread**

**1 3/4 -12SS Nut**
Nose Mounting Nut
Not included with cylinder Order Separately

**SMS-750**
Rod Clevis and Nut

**SS-701**
Clevis Pin Assembly
Used on SMS-750 303 Stainless

---

**Standard Cylinders + Corrosion = Liability**
**Aurora Stainless + Corrosion = Peace of Mind**
SMS Options
- Shock Pads
- Viton Seals
- Non-lube Service
- Magnetic Piston
- U Cup Piston
- 90° Rear Clevis

SSC-300
Clevis Brkt
Used on SMS2, 16 Series 300 Stainless steel

Help in Making the Best Choice
Technical Assistance @ 630 851 4515
Select code numbers/letters (bold type) from each of the six boxes below - then select options desired from the table below. List codes in the same sequence as shown.

### Bore

<table>
<thead>
<tr>
<th>Bore</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/8”</td>
<td>11</td>
</tr>
<tr>
<td>1 1/2”</td>
<td>15</td>
</tr>
<tr>
<td>2”</td>
<td>20</td>
</tr>
<tr>
<td>3”</td>
<td>30</td>
</tr>
</tbody>
</table>

### Type

- Double acting  
  - Code: C
- Single acting spring return  
  - (Adds to cyl. length)
  - Spring extend not available  
  - Code: A

### Service

- Pneumatic  
  - Code: E
- Hydraulic  
  - Code: G

### Stroke

Code is stroke in total 1/8” increments  
Example: 1” stroke = 8 
2 1/4” stroke = 18

Stocked in the following strokes:  
1/8, 1/4, 3/8, 1/2, 3/4, 1, 1 1/4, 1 1/2, 1 3/4, 2 
and 1/2” increments to 10”

3” bore - Limited to 8” max. stroke

### Piston Rod Codes

<table>
<thead>
<tr>
<th>Bore</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.125</td>
<td>3/8-24 x 3/4 Male</td>
</tr>
<tr>
<td>1.125</td>
<td>5/16-18 x 5/8 Female F3</td>
</tr>
<tr>
<td>1.125</td>
<td>5/16-24 x 5/8 Female F4</td>
</tr>
<tr>
<td>1.500</td>
<td>1/2-20 x 1 Male M8</td>
</tr>
<tr>
<td>1.500</td>
<td>3/8-16 x 5/8 Female F5</td>
</tr>
<tr>
<td>1.500</td>
<td>3/8-24 x 5/8 Female F6</td>
</tr>
<tr>
<td>2.000</td>
<td>5/8-18 x 1 1/8 Male M12</td>
</tr>
<tr>
<td>2.000</td>
<td>1/2-20 x 3/4 Female F8</td>
</tr>
<tr>
<td>3.000</td>
<td>3/4-16 x 1 1/4 Male M10</td>
</tr>
<tr>
<td>3.000</td>
<td>3/4-16 x 1 Female F10</td>
</tr>
</tbody>
</table>

With non-rotate option enter code 11

### Mounting Style/Code

- SMS 1  
  - SMS 9
- SMS 2  
  - SMS 10
- SMS 3  
  - SMS 11
- SMS 5  
  - SMS 14
- SMS 6  
  - SMS 15
- SMS 7  
  - SMS 16
- SMS 8  
  - SMS 17

### Stocked in the following strokes:

- 1/8, 1/4, 3/8, 1/2, 3/4, 1, 1 1/4, 1 1/2, 1 3/4, 2
- and 1/2” increments to 10”

- 3” bore - Limited to 8” max. stroke

### Order Part Numbers

**Part No. Example:**

```
15 SMS9 C 12 E M8 R W
```

- 1.500 bore
- Mounting style SMS9
- 1.500 stroke
- 1/2-20 x 1 male thread
- Magnetic piston
- Pneumatic
- Double acting
- Viton seals
- U cup piston
- Clevis 90° to std SMS 2, 16, only
- Magnetic piston
- Adds 1/2” to length
- Non rotate
- Available only on double acting SMS 7, 8, 9, 14, 15, 17
- Non-lube service
- Available on standard O ring Piston. Not available or necessary on U cup piston
- Viton seals
- Standard seals are nitrile and urethane +10 to +200° F
- For service -10 to +400° F specify viton
- U cup piston
- Extends cycle life and reduces friction
- Pistons is aluminum and includes teflon wear strip — adds 1/2” to length
- Clevis 90° to std
- SMS 2, 16, only
- Magnetic piston
- Adds 1/2” to length
- Non rotate
- Available only on double acting SMS 7, 8, 9, 14, 15, 17
- Extra rod extension
- Specify code letter J followed by extra length required as a two place decimal
- Example: J .50 = 1/2” extra  
  - J 1.25 = 1 1/4” extra
- Shock pads
- Add to either or both ends in 1 1/8”, 1 1/2”, 2” bore up to 2” stroke.
- Each pad adds 1/4” length
### Key Description

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rear port cap Add suffix 250 for 2&quot; bore 1/4 NPT</td>
</tr>
<tr>
<td>2</td>
<td>Rear pivot cap Add suffix 250 for 2&quot; bore 1/4 NPT</td>
</tr>
<tr>
<td>3</td>
<td>90° Rear pivot cap Add suffix 250 for 2&quot; bore 1/4 NPT</td>
</tr>
<tr>
<td>4</td>
<td>Side port cap Add suffix 250 for 2&quot; bore 1/4 NPT</td>
</tr>
<tr>
<td>5</td>
<td>Square cap Add suffix 250 for 2&quot; bore 1/4 NPT</td>
</tr>
<tr>
<td>6</td>
<td>Tube part No. is T followed by the complete cylinder part number</td>
</tr>
<tr>
<td>7</td>
<td>Piston rod assembly part No. is PR followed by the complete cylinder part number</td>
</tr>
<tr>
<td>8</td>
<td>Spring guide Pair</td>
</tr>
<tr>
<td>9</td>
<td>Spring</td>
</tr>
<tr>
<td>10</td>
<td>Magnet SMS5911 and SS3215 supplied in pairs</td>
</tr>
<tr>
<td>11</td>
<td>Flange head Add suffix NR for non-rotate</td>
</tr>
<tr>
<td>12</td>
<td>Nose Mount Head Add suffix 250 for 2&quot; bore, 1/4 NPT</td>
</tr>
<tr>
<td>13</td>
<td>Short square Head Add suffix 250 for 2&quot; bore, 1/4 NPT</td>
</tr>
<tr>
<td>14</td>
<td>Long square Head Add suffix 250 for 2&quot; bore, 1/4 NPT</td>
</tr>
<tr>
<td>15</td>
<td>Square non rotate head</td>
</tr>
<tr>
<td>16</td>
<td>Trunnion head</td>
</tr>
<tr>
<td>17</td>
<td>Non-rotate guide bushing Pair</td>
</tr>
<tr>
<td>18</td>
<td>Cap end shock pad Consult factory 3MSP</td>
</tr>
<tr>
<td>19</td>
<td>Head end shock pad 11CSP 15CSP 2CSP 3MSP</td>
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</tbody>
</table>

### Seal kits for cylinders with O ring piston

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Pneumatic, Nitrile Add suffix NL for Non-Lube</td>
</tr>
<tr>
<td>2</td>
<td>Pneumatic, Viton Add suffix NL for Non-Lube</td>
</tr>
<tr>
<td>3</td>
<td>Hydraulic, Nitrile</td>
</tr>
<tr>
<td>4</td>
<td>Hydraulic, Viton</td>
</tr>
</tbody>
</table>

### Seal kits for cylinders with U cup piston - includes Teflon wear strip

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pneumatic, Nitrile</td>
</tr>
<tr>
<td>2</td>
<td>Pneumatic, Viton</td>
</tr>
<tr>
<td>3</td>
<td>Hydraulic, Nitrile</td>
</tr>
<tr>
<td>4</td>
<td>Hydraulic, Viton</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key</th>
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<tbody>
<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>Rear pivot cap Add suffix 250 for 2&quot; bore 1/4 NPT</td>
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<tr>
<td>3</td>
<td>90° Rear pivot cap Add suffix 250 for 2&quot; bore 1/4 NPT</td>
</tr>
<tr>
<td>4</td>
<td>Side port cap Add suffix 250 for 2&quot; bore 1/4 NPT</td>
</tr>
<tr>
<td>5</td>
<td>Square cap Add suffix 250 for 2&quot; bore 1/4 NPT</td>
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</table>

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SMS 3411 SMS 3415 SMS 3420 SMS 3430</td>
</tr>
<tr>
<td>2</td>
<td>SMS 3411V SMS 3415V SMS 3420V SMS 3430V</td>
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<tr>
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<td>SMS 3511 SMS 3515 SMS 3520 SMS 3530</td>
</tr>
<tr>
<td>4</td>
<td>SMS 3511V SMS 3515V SMS 3520V SMS 3530V</td>
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<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Rear flange cap</td>
</tr>
<tr>
<td>2</td>
<td>Rear pivot cap Add suffix 250 for 2&quot; bore 1/4 NPT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SMS 1011 SMS 1015 SMS 1020 SMS 1030</td>
</tr>
<tr>
<td>2</td>
<td>SMS 1111 SMS 1115 SMS 1120 SMS 1130</td>
</tr>
<tr>
<td>3</td>
<td>SMS 111190 SMS 111590 SMS 112090 SMS 113090</td>
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<tr>
<td>4</td>
<td>SMS 4811 SMS 4815 SMS 4820 SMS 4830</td>
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<tr>
<td>5</td>
<td>SMS 4611 SMS 4615 SMS 4620</td>
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<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Square cap Add suffix 250 for 2&quot; bore 1/4 NPT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>2</td>
<td>SMS 5511V SMS 5515V SMS 5520V SMS 5530V</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>SMS 5411 SMS 5415 SMS 5420 SMS 5430</td>
</tr>
<tr>
<td>2</td>
<td>SMS 5411V SMS 5415V SMS 5420V SMS 5430V</td>
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<tr>
<td>3</td>
<td>SMS 5511 SMS 5515 SMS 5520 SMS 5530</td>
</tr>
<tr>
<td>4</td>
<td>SMS 5511V SMS 5515V SMS 5520V SMS 5530V</td>
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<th>Description</th>
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<td>1</td>
<td>SMS 1311 SMS 1315 SMS 1320 SMS 1330</td>
</tr>
<tr>
<td>2</td>
<td>SMS 4611 SMS 4615 SMS 4620</td>
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<tr>
<td>3</td>
<td>SMS 5111 SMS 5115 SMS 5120 SMS 5130</td>
</tr>
<tr>
<td>4</td>
<td>SMS 4511 SMS 4515 SMS 4520</td>
</tr>
<tr>
<td>5</td>
<td>SMS 4511NR SMS 4515NR SMS 4520NR</td>
</tr>
<tr>
<td>6</td>
<td>SMS 4511T SMS 4515T SMS 4520T</td>
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<td>7</td>
<td>SMS 5111 SMS 5115 SMS 5120 SMS 5130</td>
</tr>
<tr>
<td>8</td>
<td>SMS 4511 NR SMS 4515 NR SMS 4520 NR</td>
</tr>
<tr>
<td>9</td>
<td>SMS 4511T SMS 4515T SMS 4520T</td>
</tr>
<tr>
<td>10</td>
<td>SMS 5111 SMS 5115 SMS 5120 SMS 5130</td>
</tr>
<tr>
<td>11</td>
<td>SMS 4511 NR SMS 4515 NR SMS 4520 NR</td>
</tr>
<tr>
<td>12</td>
<td>SMS 4511T SMS 4515T SMS 4520T</td>
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<td>13</td>
<td>SMS 5111 SMS 5115 SMS 5120 SMS 5130</td>
</tr>
<tr>
<td>14</td>
<td>SMS 4511 NR SMS 4515 NR SMS 4520 NR</td>
</tr>
<tr>
<td>15</td>
<td>SMS 4511T SMS 4515T SMS 4520T</td>
</tr>
<tr>
<td>16</td>
<td>SMS 5111 SMS 5115 SMS 5120 SMS 5130</td>
</tr>
<tr>
<td>17</td>
<td>SMS 4511 NR SMS 4515 NR SMS 4520 NR</td>
</tr>
<tr>
<td>18</td>
<td>SMS 4511T SMS 4515T SMS 4520T</td>
</tr>
</tbody>
</table>
Series SS Solid Stainless Cylinders

Pneumatic to 200 PSI
Hydraulic to 1000 PSI Non shock
3/4", 1 1/8", 1 1/2", 2" Bore

To Help Brighten Your Corner of the World.
All exterior components 300 series stainless
**SS STAINLESS DESIGN FEATURES**

- **Piston rod** is hard chrome plated type 303 stainless. Optional hollow piston rods available (hollow rod is not chrome plated).
- **End caps** are machined from type 303 stainless steel.
- **Removable stainless retaining rings** hold the seal and rod wiper in place.
- **Extra long rod bearings** of sintered bronze provide ample support and serve as an oil reservoir for pneumatic use. The bearing is inboard of the seal, away from the environment to ensure proper lubrication. Optional non-metallic rod bearings available for chemically inert or severe applications.
- **Brass piston** silver brazed to the piston rod provides an almost indestructable joint. Optional solid stainless steel piston with teflon wearstrip available for chemically inert or clean applications.
- **Piston seals** are extra long wearing pressure energized lip seals of the highest quality.
- **Optional wick** provides teflon lube for non-lube service.
- **Magnetic piston** available to operate Aurora stainless proximity switches.

- **Heavy duty urethane rod wipers** seal out the environment. Other materials available.
- **Pneumatic Rod Seal** is a “longlife” nitrile cup. Hydraulic Rod Seal is pressure energized and extra long wearing for improved stability.
- **Tube** is heavy 1/8 inch wall type 304 stainless steel and is precision honed to insure proper size, roundness, and finish for maximum cylinder life.
- **O ring static tube seal**
- **Adjustable cushions** to provide deceleration at the end of the stroke are available on most models above 3/4” bore.
- **Reduce noise and fatigue problems such as rod breakage with urethane shock pads. Pneumatic use only to 180° F.**

---

**AURORA AIR PRODUCTS INC.**

51
3/4” BORE SERIES SS STAINLESS

**Single Acting Cylinders**
Pneumatic only

<table>
<thead>
<tr>
<th>TYPE</th>
<th>STROKE</th>
<th>CYL. O.A.L.</th>
<th>STROKE</th>
<th>CYL. O.A.L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring return</td>
<td>0-1”</td>
<td>1”</td>
<td>Not available over 2” stroke</td>
<td></td>
</tr>
<tr>
<td>Spring extend</td>
<td>0-1”</td>
<td>1”</td>
<td>1 1/8’-2”</td>
<td>2”</td>
</tr>
</tbody>
</table>

Spring Force: Spring fully extended approx. 4# Spring fully compressed approx. 12#

**7/8 -14SS Nut**
Nose Mounting Nut
Not included with cylinder
Order Separately

**SS1**

**SS2**

90° REAR PIVOT HOLE OPTIONAL

**SS3**

**SS4**

**SS5**

**SS6**

3/4” BORE SERIES SS STAINLESS
200 PSI MAX. AIR
1000 PSI MAX. HYD. Non shock

Suitable for Submerged Service with Reverse Polypak Wiper
SS Options

- Shock Pads
- Wrench Flats
- Viton Seals
- Non-lube Service
- Non-Metallic Rod Br’g
- Reverse Polypack Wiper
- Stainless Piston
- Magnetic Piston
- Hollow Piston Rod
- 90° Rear Clevis

Wrench Flats Optional

STAIN • LESS
(STÁN’LÍS) Adjective
1. Without blemish or stain: a stainless reputation

SS-40
St’d Clevis Brk’t
Used on SS 2 Series 300 Stainless

SSC-30
Low Profile Clevis Brk’t
Used on SS 2 Series 303 Stainless
**1 1/8” BORE SERIES SS STAINLESS**

### Single Acting Cylinders

<table>
<thead>
<tr>
<th>Type</th>
<th>Stroke</th>
<th>Add to Cyl. O.A.L.</th>
<th>Stroke</th>
<th>Add to Cyl. O.A.L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring Extend</td>
<td>0.2&quot;</td>
<td>1 1/2&quot;</td>
<td>Not available over 2&quot; stroke</td>
<td></td>
</tr>
<tr>
<td>Spring Return</td>
<td>0.2&quot;</td>
<td>1 1/2&quot;</td>
<td>2 1/8&quot;-4&quot;</td>
<td>3&quot;</td>
</tr>
</tbody>
</table>

Spring Force:
- Spring fully extended approx. 7#
- Spring fully compressed approx. 22#

### 1 -14SS Nut

Nose Mounting Nut

Not included with cylinder

Order Separately

### SS1

**3 3/4" x 1 3/8" HEX DOUBLE ACTING**

*Indicates standard cushion screw location

* 1/8-27 NPT

1 1/4 UNS

3/8 DIA.

999 Pilot Dia.

.996 x 7/64 LG.

### SS2

**4 1/2" Stroke 3 3/4" x 1 3/8" HEX DOUBLE ACTING**

*Indicates standard cushion screw location

90° rear pivot hole optional

* 1/8-27 NPT

1 1/4 UNS

3/8 DIA.

999 Pilot Dia.

.996 x 7/64 LG.

### SS3

**4 1/2" x 1 3/8" HEX DOUBLE ACTING**

*Indicates standard cushion screw location

* 1/8-27 NPT

1 1/4 UNS, TYP.

3/8 DIA.

999 Pilot Dia.

.996 x 7/64 LG. TYP.

### SS4

**4 1/2" Stroke 3 3/4" x 1 3/8" HEX DOUBLE ACTING**

*Indicates standard cushion screw location

* 1/8-27 NPT

1 1/4 UNS, TYP.

3/8 DIA.

999 Pilot Dia.

.996 x 7/64 LG. TYP.

### SS5

**4 5/16" Stroke 3 3/4" x 1 3/8" HEX DOUBLE ACTING**

*Indicates standard cushion screw location

* 1/8-27 NPT

1 1/4 UNS, TYP.

3/8 DIA.

999 Pilot Dia.

.996 x 7/64 LG. TYP.

### SS6

**4 1/2" Stroke 3 3/4" x 1 3/8" HEX DOUBLE ACTING**

*Indicates standard cushion screw location

* 1/8-27 NPT

1 1/4 UNS, TYP.

3/8 DIA.

999 Pilot Dia.

.996 x 7/64 LG. TYP.

### Conventional Cylinder Cost

+ Warranty Repairs
+ Downtime
+ Liability

* Aurora Stainless
SS Options

- Shock Pads
- Wrench Flats
- Viton Seals
- Non-lube Service
- Non-Metallic Rod Br’g
- Reverse Polypak Wiper
- Stainless Piston
- Magnetic Piston
- Hollow Piston Rod
- 90° Rear Clevis
- Adjustable Cushions

Wrench Flats Optional

Series SS
Stainless have been field proven since 1983

SS-90
St’d Clevis Brk’t
Used on SS 2
Series 300 Stainless

SSC-40
St’d Clevis Brk’t
Used on SS 2
Series 303 Stainless

SOLID STAINLESS CYLINDERS IN 24 HOURS
1 1/2” BORE SERIES SS STAINLESS

200 PSI MAX. AIR
1000 PSI MAX. HYD. Non shock

Single Acting Cylinders
Pneumatic only Adds to cylinder length

<table>
<thead>
<tr>
<th>TYPE</th>
<th>STROKE Add to</th>
<th>cyl. O.A.L.</th>
<th>STROKE Add to</th>
<th>cyl. O.A.L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
<td>0.2” 1 1/2”</td>
<td>2.1/8-4”</td>
<td>3”</td>
<td></td>
</tr>
<tr>
<td>Spring</td>
<td>0.2” 1 1/2”</td>
<td>2.1/8-4”</td>
<td>3”</td>
<td></td>
</tr>
<tr>
<td>Spring Force: Spring fully extended approx. 154#</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spring fully compressed approx. 50#</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 1/4 -12SS Nut
Nose Mounting Nut
Not included with cylinder
Order Separately

We’ll Bill You for the Cylinders... but Our Experience is Free

630 851 4515
2” BORE SERIES SS STAINLESS

200 PSI MAX. AIR
1000 PSI MAX. HYD. Non shock

Single Acting Cylinders
Pneumatic only  Adds to cylinder length

<table>
<thead>
<tr>
<th>TYPE</th>
<th>STROKE</th>
<th>Add to cyb O.A.L.</th>
<th>STROKE</th>
<th>Add to cyb O.A.L.</th>
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</thead>
<tbody>
<tr>
<td>Spring</td>
<td>0-2”</td>
<td>1 1/2”</td>
<td>2 1/8”-4”</td>
<td>3”</td>
</tr>
<tr>
<td>Spring extend</td>
<td>0-2”</td>
<td>1 1/2”</td>
<td>2 1/8”-4”</td>
<td>3”</td>
</tr>
</tbody>
</table>

Spring Force: Spring fully extended approx. 20#
Spring fully compressed approx. 75#

1 1/4-12SS Nut
Nose Mounting Nut
Not included with cylinder
Order Separately

SS1

SS2

SS3

SS5

SS6

Make the Best Choice
1 630 851 4515
ask for Technical Support

SS-625
Rod Clevis and Nut
303 Stainless

SS-601
Clevis Pin Assembly
Used on SS-625 303 Stainless

2” BORE SERIES SS STAINLESS

58
Select code numbers/letters (bold type) from each of the six boxes below - then select options desired from the table below. List codes in the same sequence as shown.

<table>
<thead>
<tr>
<th>Bore</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4&quot;</td>
<td>07</td>
</tr>
<tr>
<td>1 1/8&quot;</td>
<td>11</td>
</tr>
<tr>
<td>1 1/2&quot;</td>
<td>15</td>
</tr>
<tr>
<td>2&quot;</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Acting Spring return*</td>
<td>A</td>
</tr>
<tr>
<td>Single Acting Spring extend*</td>
<td>B</td>
</tr>
<tr>
<td>Double acting</td>
<td>C</td>
</tr>
</tbody>
</table>

*Adds to cyl. length
If double rod end model is to be single acting, select A

<table>
<thead>
<tr>
<th>Service</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumatic</td>
<td>E</td>
</tr>
<tr>
<td>Hydraulic</td>
<td>G</td>
</tr>
</tbody>
</table>

Mounting Style/Code

<table>
<thead>
<tr>
<th>SS 1</th>
<th>SS 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS 2</td>
<td>SS 11</td>
</tr>
<tr>
<td>SS 3</td>
<td>SS 12</td>
</tr>
<tr>
<td>SS 5</td>
<td>SS 13</td>
</tr>
<tr>
<td>SS 6</td>
<td>SS 14</td>
</tr>
</tbody>
</table>

Stroke
Code is stroke in total 1/8" increments
Example: 1" stroke = 8
2 1/4" stroke = 18
Stocked in 1/2" increments as follows:
3/4" bore to 6"  1 1/8" bore to 8"
1 1/2" bore to 10"  2" bore to 12"

Piston Rod Codes

<table>
<thead>
<tr>
<th>Bore</th>
<th>Piston Rod Codes</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>.750</td>
<td>5/16-18 x 3/4</td>
<td>0</td>
</tr>
<tr>
<td>.750</td>
<td>5/16-24 x 3/4</td>
<td>3</td>
</tr>
<tr>
<td>1.125</td>
<td>3/8-16 x 3/4</td>
<td>4</td>
</tr>
<tr>
<td>1.125</td>
<td>3/8-24 x 3/4</td>
<td>5</td>
</tr>
<tr>
<td>1.500</td>
<td>1/2-13 x 1</td>
<td>6</td>
</tr>
<tr>
<td>1.500</td>
<td>1/2-20 x 1</td>
<td>7</td>
</tr>
<tr>
<td>2.000</td>
<td>5/8-T11 x 11/4</td>
<td>8</td>
</tr>
<tr>
<td>2.000</td>
<td>5/8-18 x 11/4</td>
<td>11</td>
</tr>
</tbody>
</table>

SS 6, 14 Double rod models will have same rod thread both ends

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra rod extension</td>
<td>Specify code letter J followed by the extra length as a two place decimal. Example: J .50 = 1/2&quot; extra J 1.25 = 1 1/4&quot;extra</td>
<td>J</td>
</tr>
<tr>
<td></td>
<td>SS6, 14 double rod cylinders with extra extension cannot be ordered by a standard part number - consult factory for a special part number.</td>
<td></td>
</tr>
<tr>
<td>Wrench flats</td>
<td>Specify if required if specified will be added to both ends of SS6, 14 double rod cylinders</td>
<td>K</td>
</tr>
<tr>
<td>Shock pads</td>
<td>Double acting cylinders only — must be added to both ends Adds 1/2&quot; to length — pneumatic use only to 180° F</td>
<td>N</td>
</tr>
<tr>
<td>Non-lube service</td>
<td>Pneumatic only — Not available with magnetic piston or solid stainless piston</td>
<td>P</td>
</tr>
<tr>
<td>Viton seals</td>
<td>Standard seals are nitrile and urethane +10 to +180° F For service –10 to +400° F specify viton</td>
<td>R</td>
</tr>
<tr>
<td>Reverse poly pack rod wiper</td>
<td>More effective at keeping liquids and gases out of the cylinder</td>
<td>S</td>
</tr>
<tr>
<td>Clevis 90° to st’d</td>
<td>SS 2 only</td>
<td>T</td>
</tr>
<tr>
<td>Stainless piston</td>
<td>303 Stainless with teflon wear strip Not available with magnet, non lube, or cushion options</td>
<td>V</td>
</tr>
<tr>
<td>Magnetic piston</td>
<td>Adds 1/2&quot; to length on 3/4&quot; bore only Not available with Non-lube or stainless piston options</td>
<td>W</td>
</tr>
<tr>
<td>Hollow piston rod</td>
<td>Available in 5/16 dia.rod - thru hole .135&quot; Available in 3/8 dia.rod - thru hole .248&quot; Available in 1/2 dia.rod - thru hole .313&quot; Rod is plain 304 stainless - no chrome plating</td>
<td>X</td>
</tr>
<tr>
<td>Non - metallic rod bushings</td>
<td>Fiberglass backed teflon</td>
<td>Y</td>
</tr>
<tr>
<td>Adjustable Cushions</td>
<td>Not Available on: 3/4&quot; bore cylinders Rear port caps (SS1, 10) Solid stainless piston Cylinders with shock pads Cushion head end only Cushion cap end only Cushion both ends</td>
<td>AA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CC</td>
</tr>
</tbody>
</table>

Part No. Example: Mounting style SS10 2" stroke 1/2-20 x 1 th’d rod

1.500" bore 15 SS10 C 16 G 8 K W — Magnetic piston Double acting Hydraulic Wrench flats
Series SS Service Parts

When ordering any repair part please provide the part number and description shown below along with the serial number and part number of the cylinder being serviced.

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
<th>3/4 Bore</th>
<th>1 1/8 Bore</th>
<th>1 1/2 Bore</th>
<th>2 Bore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seal kit - Pneumatic, Nitrile</td>
<td>SS 2207 PB</td>
<td>SS 2211 PB</td>
<td>SS 2215 PB</td>
<td>SS 2220 PB</td>
<td></td>
</tr>
<tr>
<td>Seal kit - Pneumatic, Viton</td>
<td>SS 2207 PV</td>
<td>SS 2211 PV</td>
<td>SS 2215 PV</td>
<td>SS 2220 PV</td>
<td></td>
</tr>
<tr>
<td>Seal kit - Hydraulic, Urethane</td>
<td>SS 2207 HU</td>
<td>SS 2211 HU</td>
<td>SS 2215 HU</td>
<td>SS 2220 HU</td>
<td></td>
</tr>
<tr>
<td>Seal kit - Hydraulic, Viton</td>
<td>SS 2207 HV</td>
<td>SS 2211 HV</td>
<td>SS 2215 HV</td>
<td>SS 2220 HV</td>
<td></td>
</tr>
</tbody>
</table>

1. Rear port cap
2. Rear pivot cap
3. 90° Rear pivot cap
4. Rear stud cap
5. Side port cap
6. Square cap
7. Tube
8. Piston rod assembly
9. Spring guide pair
10. Spring
11. Magnet
12. Shock pad
13. Rod bearing
14. Head w/ Bronze br’g
15. Head w/ Non-metallic br’g
16. Head w/ Bronze br’g
17. Head w/ Non-metallic br’g
18. Rod seal retaining washer
19. Rod seal/rod wiper snap ring
20. Rod wiper outside retaining washer
21. Cushion screw 3/4” long
22. Cushion screw 7/8” long
23. Cushion screw locknut

Add suffix for:
- REV for Reverse Polypak Wiper
- W with Stainless Piston
- NL for Non-lube
Series HB Solid Brass Cylinders

For General Industrial Use in most Environments
200 PSI Pneumatic
500 PSI Hydraulic Non shock
3/4", 1", 1 1/8", 1 1/2", 2" Bores

Pressure energized wear compensating cup type piston seals on all models and bore sizes with one exception: 3/4" bore oversize piston rod model has an O ring piston seal.

Threaded construction provides a clean and compact exterior.

Brass piston is silver brazed to the rod for an almost indestructible joint.

Tube is heavy wall brass honed to insure proper size, roundness, and finish for maximum cylinder life.

Magnetic piston available to operate Aurora stainless proximity switches.

Solid brass heads and caps are precision machined.

3/4, 1, 1 1/8 Bore Cylinders have four lobed rod seal.
1 1/2, 2 Bore Cylinders have cup type rod seal.

A natural choice where moisture is a problem.
### ADDITIONAL DESIGN FEATURES

#### SHOCK PADS
Reduce noise and fatigue problems such as rod breakage with energy absorbing shock pads. Add 1/4” to the cylinder length for each pad. For pneumatic use only to 180°F.

#### ROD WIPPERS
Prolong the life of cylinders operating in dirty environments by adding rod wipers. Polyurethane or Viton wipers are wear compensating and effectively prevent damaging contaminants from entering the critical rod seal/rod bushing area. Limited availability.

#### SEAL COMPOUNDS
Standard cylinders contain buna n (nitrile) seals and polyurethane wipers which are compatible with most lubricants and fluids, and can withstand temperatures from –40° to +200°F.

- Viton seals and wipers may be ordered for temperatures ranging from –10° to +400°F and for added chemical resistance.
- “Long Life” seals will provide significantly increased service life due to their excellent abrasion resistance. Fluid compatibility is identical to buna n seals and their effective temperature range is +20° - +200°F. Long life rod seals are standard on all 3/4, 1, 1 1/8” bore cylinders.

#### HYDRAULIC SEALS
Rod seal weepage can be substantially reduced by specifying polypak® rod seals. They are available on all 1 1/2 and 2” bore cylinders. For availability on other bore sizes consult factory.

#### HARD CHROMED PISTON ROD
The standard rod in all HB cylinders is ground and polished type 303 stainless steel. Hard chrome plated steel rods are available. The plating gives the rod a very hard scratch resistant surface which increases the wear life of the rod, rod bushing, and rod seal. The result is increased cycle life on all cylinders and improved sealability on hydraulic cylinders.

#### PISTON ROD THREADS
Rods are stocked with both fine and coarse male threads as listed in the ordering procedure. Almost any special thread – female, metric, etc. – can be produced to customer requirements in just a day or so for a modest extra charge.

- Female thread depth: #10, 1/4, 5/16, 3/8 threads are 5/8 deep.
  - 1/2, 5/8, 3/4 threads are 1 1/4 deep.
- Threads smaller than the nominal rod diameter will be per the photo unless otherwise noted.

#### PIVOT BUSHING
All HB2 caps have a stainless steel pivot bushing.

#### STOP TUBE
Stop tubes are spacers between the piston and the cylinder head which prevent the piston from fully extending. This will reduce the bearing loads by increasing the distance between bearing points. Stop tubes should be used on long stroke cylinders and on cylinders where side load is a concern. See ordering procedure for available lengths. Also consider SMA aluminum cylinders for long strokes and side load conditions.

#### ADJUSTABLE CUSHIONS
Reduce noise and decelerate the piston at the end of stroke. Aurora’s cup type cushion seal provides positive cushioning yet allows a high flow rate when reversing for minimum cycle time. A stainless steel metering screw offers simple adjustment of the cushion rate. The adjusting screw is fully recessed and self locking on 1 1/2 and 2” bore cylinders. The adjusting screw on 1 1/8” bore cylinders is locked in place by a low profile nut.

* Polypak is a registered trademark of Parker Hannifin
**3/4” BORE HB BRASS**

**Single Acting Cylinders**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>STROKE</th>
<th>cyl. O.A.L.</th>
<th>STROKE</th>
<th>cyl. O.A.L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring return</td>
<td>0-1 3/4”</td>
<td>1”</td>
<td>1 7/8”</td>
<td>3 1/2”</td>
</tr>
<tr>
<td>Spring extend</td>
<td>0-1 3/4”</td>
<td>1”</td>
<td>Not available over 1 3/4” stroke</td>
<td></td>
</tr>
</tbody>
</table>

Spring Force: Spring fully extended approx. 4#
Spring fully compressed approx. 9#

**Wrench Flats**
Optional

<table>
<thead>
<tr>
<th>ROD DIA.</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>.187</td>
<td>1/4</td>
</tr>
<tr>
<td>5/16</td>
<td>.250</td>
<td>1/4</td>
</tr>
</tbody>
</table>

**Nose Mounting Nut**
Included with Cylinder  Zinc plated steel

Thread 5/8 – 18

**HB-250**
1/4-28 Thread

**HB-312**
5/16-18 Thread

**Rod Clevis and Nut**

**HB-200**
Clevis Pin Assembly
Used on HB-250, 312

**HB1**

**HB2**

**HB29**

**HB3**

**HB4**

---

**ROD DIA.**

- 1/4
- 5/16

**B NOSE THREAD**

- 5/16 – 18

**C PILOT DIA. COMBINATIONS**

- .684/.682

**Part No. Code**

- D
- E

**HB1**

**HB2**

**HB29**

**HB3**

**HB4**

---

**3/4” BORE HB BRASS**

**200 PSI MAX. AIR**

**500 PSI MAX. HYD.**
Non shock
HB Options

• Shock Pads
• Wrench Flats
• Viton or Long Life Seals
• Chrome Rod
• Magnetic Piston
• Hollow Rod  5/16 ONLY

HB-10
Flange Bracket
Used on HB1, 3, 4, 5, 6
Zinc plated steel

HB-20
Foot Bracket
Used on HB1, 3, 4, 5, 6
Zinc plated steel

HB-30
Clevis Bracket
Used on HB2, 29
Zinc plated steel

HB-30T
Trunnion Bracket
Used on HB7, 8, 9
Zinc plated steel

ALL AURORA PRODUCTS AVAILABLE FOR 24 HOUR DELIVERY

Series HB BRASS

<table>
<thead>
<tr>
<th></th>
<th>A ROD DIA.</th>
<th>B NOSE THREAD</th>
<th>C PILOT DIA.</th>
<th>COMBINATIONS</th>
<th>Part No. Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>5/32</td>
<td>1/8 -18</td>
<td>.684/882</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>5/16</td>
<td>5/32</td>
<td>1/8 -18</td>
<td>.684/882</td>
<td>E</td>
<td></td>
</tr>
</tbody>
</table>
3/4” BORE HB BRASS

200 PSI MAX. AIR
500 PSI MAX. HYD. Non shock

**Single Acting Cylinders**

Pneumatic only

<table>
<thead>
<tr>
<th>TYPE</th>
<th>STROKE</th>
<th>cyl. O.A.L.</th>
<th>STROKE</th>
<th>cyl. O.A.L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring return</td>
<td>0-1 3/4&quot;</td>
<td>1&quot;</td>
<td>1 7/8&quot;-3 1/2&quot;</td>
<td>2&quot;</td>
</tr>
<tr>
<td>Spring extend</td>
<td>0-1 3/4&quot;</td>
<td>1&quot;</td>
<td>Not available over 1 3/4&quot; stroke</td>
<td></td>
</tr>
</tbody>
</table>

Spring Force: Spring fully extended approx. 4# Spring fully compressed approx. 9#

---

**Wrench Flats** Optional

### HB-250

1/4-28 Thread

### HB-312

5/16-18 Thread

**Rod Clevis and Nut**

For Higher Cycle Life

Add Chrome Rod & Long Life Seal Options. . . or Switch to Series SMA

---

**For Higher Cycle Life**

**Add Chrome Rod & Long Life Seal Options. . . or Switch to Series SMA**

---

**Part No. Code**

<table>
<thead>
<tr>
<th>A ROD DIA.</th>
<th>B NOSE THREAD</th>
<th>C PILOT DIA. COMBINATIONS</th>
<th>Part No. Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>5/8 –18</td>
<td>.684/.682</td>
<td>D</td>
</tr>
<tr>
<td>5/16</td>
<td>5/8 –18</td>
<td>.684/.682</td>
<td>E</td>
</tr>
</tbody>
</table>
**Single Acting Cylinders**

Pneumatic only. Adds to cylinder length.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>STROKE</th>
<th>A ROD DIA.</th>
<th>B NOSE THREAD</th>
<th>C PILOT DIA. x 7/64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring return</td>
<td>0.2”</td>
<td>3/4</td>
<td>1 11/32</td>
<td>2 5/16 + STROKE</td>
</tr>
<tr>
<td>Spring extend</td>
<td>0.2”</td>
<td>3/4</td>
<td>1 11/32</td>
<td>2 5/16 + STROKE</td>
</tr>
</tbody>
</table>

Spring Force:
- Spring fully extended approx. 4F
- Spring fully compressed approx. 13a

**Wrench Flat Chart - Pg 68**

**Nose Mounting Nut**

<table>
<thead>
<tr>
<th>TH’D</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8</td>
<td>15/16</td>
<td>3/8</td>
</tr>
<tr>
<td>3/4</td>
<td>1 1/8</td>
<td>27/64</td>
</tr>
</tbody>
</table>

**HB-312** 5/16 – 18 Thread

**HB-375** 3/8 – 24 Thread

**Rod Clevis & Nut**

- Zinc plated steel

**HB-200 Clevis Pin**

Used on HB 312, 375

**HB-10 Flange Brk’t**

Used on HB 1, 3, 4

Zinc plated steel

**HB-20 Foot Brk’t**

Used on HB 1, 3, 4

Zinc plated steel

**HB-40 Clevis Brk’t**

Used on HB 2, 29

Zinc plated steel

**Series HB BRASS**

HB1

HB2

HB29

HB3

HB4

**1” BORE HB BRASS**

200 PSI MAX. AIR

500 PSI MAX. HYD. Non shock

---

**TMD**

1” BORE HB BRASS

500 PSI MAX. HYD.
**1” BORE HB BRASS**

**200 PSI MAX. AIR**
**500 PSI MAX. HYD. Non shock**

---

**Single Acting Cylinders**

Pneumatic only  Adds to cylinder length

<table>
<thead>
<tr>
<th>TYPE</th>
<th>STROKE</th>
<th>Add to cy l.o.a.l.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring return</td>
<td>0-2”</td>
<td>1”</td>
</tr>
<tr>
<td>Spring extend</td>
<td>0-2”</td>
<td>1”</td>
</tr>
</tbody>
</table>

Spring Force: Spring fully extended approx. 4# Spring fully compressed approx. 13#

---

**Wrench Flats** Optional

---

**Nose Mounting Nut**

Included with Cylinder  Zinc plated steel

---

**HB-250** 1/4-28 Thread
**HB-312** 5/16-18 Thread

**Rod Clevis and Nut**

Zinc plated steel

---

**HB-200** Clevis Pin

Used on HB 312, 375

---

"For Improved Hydraulic Service Upgrade to Series SMA with U Cup Piston"
HB Options

- Shock Pads
- Wrench Flats
- Viton or Long Life Seals
- Chrome Rod
- Hollow Rod

HB-10
Flange Bracket
Used on HB1, 3, 4, 5, 6
Zinc plated steel

HB-20
Foot Bracket
Used on HB1, 3, 4, 5, 6
Zinc plated steel

HB-40T
Trunnion Bracket
Used on HB7, 8, 9
Zinc plated steel

Don’t Guess—
Call Us to
Review Your
Application
630 851 4515

24 HOUR DELIVERY

Series HB BRASS

<table>
<thead>
<tr>
<th>A ROD DIA.</th>
<th>B NOSE THREAD</th>
<th>C PILOT DIA.</th>
<th>COMBINATIONS</th>
<th>Part No. Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/16 Standard</td>
<td>5/8 – 18</td>
<td>.684/.682</td>
<td>D</td>
<td></td>
</tr>
</tbody>
</table>
**Single Acting Cylinders**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>STROKE</th>
<th>Add to cyl. O.A.L.</th>
<th>STROKE</th>
<th>Add to cyl. O.A.L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring return</td>
<td>0-2”</td>
<td>1”</td>
<td>2.5/8”-4”</td>
<td>2”</td>
</tr>
<tr>
<td>Spring extend</td>
<td>0-2 1/2”</td>
<td>1”</td>
<td>Not available over 2 1/2” stroke</td>
<td></td>
</tr>
</tbody>
</table>

Spring Force:
- Spring fully extended approx. 4#
- Spring fully compressed approx. 20#
- Spring fully compressed approx. 13#

**Wrench Flats**

- 1/8” BORE HB BRASS
- 200 PSI MAX. AIR
- 500 PSI MAX. HYD.
- Non shock

**Cushion Screw Location and Availability**

- * INDICATES ADJUSTABLE CUSHION SCREW LOCATION AND AVAILABILITY

**Part No. Code**

- HB1
- HB2
- HB29
- HB3
- HB4

**HB-312 Rod Clevis & Nut**
- 5/16 –18 Thread
- 3/8 –24 Thread

**HB-500 Rod Clevis & Nut**
- 1/2 –20 Thread

**Cushions not available on cylinders with 1/2” diameter rod.**

<table>
<thead>
<tr>
<th>A ROD DIA.</th>
<th>B NOSE THREAD</th>
<th>C PILOT DIA. COMBINATIONS</th>
<th>Part No. Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/16 Standard</td>
<td>5/8 –18</td>
<td>.684/.682</td>
<td>D</td>
</tr>
<tr>
<td>3/8 Oversize</td>
<td>5/8 –18</td>
<td>.684/.682</td>
<td>E</td>
</tr>
<tr>
<td>3/8 Oversize</td>
<td>7/8 –14</td>
<td>.934/.932</td>
<td>G</td>
</tr>
<tr>
<td>1/2 Oversize</td>
<td>7/8 –14</td>
<td>.934/.932</td>
<td>H</td>
</tr>
</tbody>
</table>

**HB-200 Clevis Pin**

- Used on HB-312, 375

**HB-501 Clevis Pin**

- Used on HB-500

303 Stainless
HB Options

- Shock Pads
- Wrench Flats
- Viton or Long Life Seals
- Chrome Rod
- Magnetic Piston
- Hollow Rod
- Adjustable Cushions

HB-10
Flange Bracket
Used on HB1, 3, 4, 5, 6
Zinc plated steel

HB-20
Foot Bracket
Used on HB1, 3, 4, 5, 6
Zinc plated steel

HB-40
Clevis Bracket
Used on HB2, 29
Zinc plated steel

HB-40T
Trunnion Bracket
Used on HB7, 8, 9
Zinc plated steel

HB Options Table

<table>
<thead>
<tr>
<th>A ROD DIA</th>
<th>B NOSE THREAD</th>
<th>C PILOT DIA. COMBINATIONS</th>
<th>Part No. Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/16 Standard</td>
<td>5/8 –18</td>
<td>.684/682</td>
<td>D</td>
</tr>
<tr>
<td>3/8 Oversize</td>
<td>5/8 –18</td>
<td>.684/682</td>
<td>E</td>
</tr>
<tr>
<td>3/8 Oversize</td>
<td>7/8 –14</td>
<td>.934/932 HB5, 6 Only</td>
<td>G</td>
</tr>
<tr>
<td>1/2 Oversize</td>
<td>7/8 –14</td>
<td>.934/932</td>
<td>H</td>
</tr>
</tbody>
</table>
1 1/8” BORE HB BRASS

**Single Acting Cylinders**

Pneumatic only  Adds to cylinder length

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring return</td>
<td>0.2-1 1/2”</td>
<td>1”</td>
<td>Spring extend</td>
<td>0.2-1 1/2”</td>
<td>1” Not available over 2 1/2” stroke</td>
</tr>
<tr>
<td>Spring return</td>
<td>2 5/8-4”</td>
<td>2”†</td>
<td>Spring extend</td>
<td>2 5/8-4”</td>
<td>2”†</td>
</tr>
</tbody>
</table>

† Spring fully extended approx. 44#  Spring fully compressed approx. 20#  Spring fully compressed approx. 13#  Spring Force: Spring fully extended approx. 44#  Spring fully compressed approx. 20#  Spring fully compressed approx. 13#

<table>
<thead>
<tr>
<th>Wrench Flats</th>
<th>Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROD DIA.</td>
<td>A</td>
</tr>
<tr>
<td>5/16</td>
<td>.220</td>
</tr>
<tr>
<td>3/8</td>
<td>.312</td>
</tr>
<tr>
<td>1/2</td>
<td>.437</td>
</tr>
</tbody>
</table>

| HB-312 Rod Clevis & Nut | 5/16 –18 Thread |
| HB-375 Rod Clevis & Nut | 3/8 –24 Thread |

| Rod Clevis | 1/2 SQUARE |
| HB-500 Rod Clevis & Nut | 1/2 –20 Thread |

| Zinc plated steel | 7/8 SQ |
| Rod Clevis & Nut | 7/8 –14 |
| 1/2-20 THREAD | 3/8 |
| 1/2 SQUARE | 15/16 |
| 1/16 | 1/4 |

Cushions not available on cylinders with 1/2” diameter rod.

- Back to Back
- Three Position
- Tandems
- Adjustable Stroke
- Spherical Mount
- Non-Rotate

*All from Stock in the SMA Section*
Single Acting Cylinders
Pneumatic only  Adds to cylinder length

| TYPE    | STROKE | SPRING EXTEND | STROKE | SPRING RETURN |
|---------|--------|--------------|--------|---------------|----------------|
|          | 0.2"   | 1 1/2"       | 2 1/8" | 1 3/4"        |

* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

Wrench Flat chart pg 74

HB-500 Rod Clevis and Nut
Zinc plated steel

HB-750 Rod Clevis and Nut
Zinc plated steel

HB-50 Flange Brkt
Order 1-14 nut separately
Zinc plated steel

HB-70 Foot Brkt
Order 1-14 nut separately
Zinc plated steel

HB-500 Rod Clevis and Nut
Zinc plated steel

Cushions not available on cylinders with 3/4" diameter rod or oversize 1/4" ports
1 1/2" BORE HB BRASS

HB5

3 1/4 + STROKE
DOUBLE ACTING

1 13/16

1 3/4 DIA.

1/8-27 NPT

* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB6

2 1/2 + STR
DBL ACTING

3 1/4 + STROKE
DOUBLE ACTING

1 13/16

1 3/4 DIA.

1/8-27 NPT

3/8

* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB7

2 7/8 + STROKE
DOUBLE ACTING

2 3/16

1 3/4 DIA.

1/8-27 NPT

3/8

HB8

1 13/16 + STR
DOUBLE ACTING

2 3/16

1 3/4 DIA.

1/8-27 NPT

3/8

HB9

A ROD DIA.
B NOSE THREAD
C PILOT DIA. x 11/64

1/8-27 NPT

3/8

1/2 Standard 1 1/4 –12 1.123/1.121 D
3/4 Oversize 1 1/4 –12 1.378/1.371 E

Single Acting Cylinders
Pneumatic only  Adds to cylinder length

<table>
<thead>
<tr>
<th>TYPE</th>
<th>STROKE</th>
<th>Cyl. O.A.L.</th>
<th>STROKE</th>
<th>Cyl. O.A.L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
<td>0-2&quot;</td>
<td>1 1/2&quot;</td>
<td>2.1/4&quot;</td>
<td>3&quot;</td>
</tr>
<tr>
<td>Spring</td>
<td>0-2&quot;</td>
<td>1 1/2&quot;</td>
<td>2.1/4&quot;</td>
<td>3&quot;</td>
</tr>
</tbody>
</table>

Spring Force: Spring fully extended approx. 15#
Spring fully compressed approx. 50#

Wrench Flats  Optional

HB-500 Rod Clevis and Nut

HB-750 Rod Clevis and Nut

HB-501 Clevis Pin Assembly
Used on HB-500

HB-601 Clevis Pin Assembly
Used on HB-750

1/4” Oversize
Ports Available
on 1 1/2 Bore
Series HB
HB Options
- Shock Pads
- Wrench Rats
- Rod Wiper
- Viton or Long Life Seals
- Polypak Rod Seal
- Chrome Rod
- Magnetic Piston
- Hollow Rod (1/2" only)
- Stop Tube
- Oversized Ports
- Adjustable Cushions

HB-50
Flange Bracket
Order 1–14 Nut separately
Zinc plated steel

HB-70
Foot Bracket
Order 1–14 Nut separately
Zinc plated steel

HB-90T
Trunnion Bracket
Used on HB7, 8, 9
Zinc plated steel

HB Options
- Shock Pads
- Wrench Rats
- Rod Wiper
- Viton or Long Life Seals
- Polypak Rod Seal
- Chrome Rod
- Magnetic Piston
- Hollow Rod (1/2" only)
- Stop Tube
- Oversized Ports
- Adjustable Cushions

HB-50
Flange Bracket
Order 1–14 Nut separately
Zinc plated steel

HB-70
Foot Bracket
Order 1–14 Nut separately
Zinc plated steel

HB-90T
Trunnion Bracket
Used on HB7, 8, 9
Zinc plated steel

Cushions not available on cylinders with 3/4" diameter rod or oversize 1/4" ports.

HB-10

HB-11

HB-12

HB-13

HB-14

Series HB BRASS

24 HOUR DELIVERY

Part No. Code
A ROD DIA. B NOSE THREAD C PILOT DIA. COMBINATIONS
1/2 Standard 1–14 1.123/1.121 D
3/4 Oversize 1–14 1.123/1.121 E
3/4 Oversize 1 1/4–12 1.373/1.371 HB13 Only E
### Single Acting Cylinders

Pneumatic only

<table>
<thead>
<tr>
<th>TYPE</th>
<th>STROKE</th>
<th>Add to Cyl. O.A.L.</th>
<th>Add to Cyl. O.A.L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring return</td>
<td>0-2&quot;</td>
<td>1 1/2&quot;</td>
<td>2 1/8&quot; - 4&quot;</td>
</tr>
<tr>
<td>Spring extend</td>
<td>0-2&quot;</td>
<td>1 1/2&quot;</td>
<td>2 1/8&quot; - 4&quot;</td>
</tr>
</tbody>
</table>

Spring Force: Spring fully extended approx. 20#  
Spring fully compressed approx. 75#

### Wrench Flats Optional

**A** 1/32

**B** 45°

### 1 1/4-12 Nut

**Nose Mounting Nut**

Not included with Cylinder  
Order separately

- Thread 1 1/4-12  
- Zinc plated steel

### HB-625  5/8-18 Thread

**HB-750  3/4-16 Thread**

**Rod Clevis and Nut**

- Zinc plated steel

### HB-601

**Clevis Pin Assembly**

Used on HB-625, 750

- Cushions not available on cylinders with 3/4" diameter rod.
**HB Options**

- Shock Pads
- Wrench Rats
- Rod Wiper
- Viton or Long Life Seals
- Polypak Rod Seal
- Chrome Rod
- Magnetic Piston
- Stop Tube
- Adjustable Cushions

---

**HB-60**

Flange Bracket
Order 1 1/4-12 nut separately
Zinc plated steel

---

**HB-80**

Foot Bracket
Order 1 1/4-12 nut separately
Zinc plated steel

---

**HB-100**

Clevis Bracket
Used on HB2, 29
Zinc plated steel

---

**HB-100T**

Trunnion Bracket
Used on HB7, 8, 9
Zinc plated steel

---

**Part No. Code**

- A ROD DIA.
- B NOSE THREAD
- C PILOT DIA.

**Combinations**

- Standard
- Oversize

**Part No.**

- D
- E
**Single Acting Cylinders**

**Pneumatic only**  
Adds to cylinder length

<table>
<thead>
<tr>
<th>TYPE</th>
<th>STROKE</th>
<th>Add to cyl. O.A.L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring return</td>
<td>0-2”</td>
<td>1 1/2”</td>
</tr>
<tr>
<td>Spring extend</td>
<td>0-2”</td>
<td>1 1/2”</td>
</tr>
</tbody>
</table>

Spring Force: Spring fully extended approx. 20#  
Spring fully compressed approx. 75#

**Wrench Flats**

Optional

*INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.*

**HB-625**  
5/8-18 Thread

**HB-750**  
3/4-16 Thread

**Rod Clevis and Nut**

Zinc plated steel

**Problem:** Side Load

**Solution:** Series SMA with Wear Strip Piston and Teflon Rod Bushing

**HB-601**  
Clevis Pin Assembly

Used on HB-625, 750

**HB10**

2” BORE HB BRASS  
200 PSI MAX. AIR  
400 PSI MAX. HYD.  
Non shock

1 7/8 FLATS  
1/4-18 NPT  
A ROD DIA.

3 11/16 + STR DBL ACTING  
1 9/16  
1 3/16

9/32 DRILL, 6 HOLES

*INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.*

**HB11**

2” BORE HB BRASS  
200 PSI MAX. AIR  
400 PSI MAX. HYD.  
Non shock

1/4-18 NPT  
A ROD DIA.

4 1/16 + STR DBL ACTING  
1 9/16  
1 3/16

9/32 DRILL, 6 HOLES

*INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.*

**HB12**

2” BORE HB BRASS  
200 PSI MAX. AIR  
400 PSI MAX. HYD.  
Non shock

1/4-18 NPT  
A ROD DIA.

3 1/4 + STROKE DOUBLE ACTING  
2 1/4  
1 1/2

9/32 DRILL, 6 HOLES

*INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.*

**HB13**

2” BORE HB BRASS  
200 PSI MAX. AIR  
400 PSI MAX. HYD.  
Non shock

1/4-18 NPT  
A ROD DIA.

4 7/8 + STROKE DOUBLE ACTING  
1 11/16  
1 9/16  
1 3/16

9/32 DRILL, 12 HOLES

*INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.*

**HB14**

2” BORE HB BRASS  
200 PSI MAX. AIR  
400 PSI MAX. HYD.  
Non shock

1/4-18 NPT  
A ROD DIA.

C PILOT DIA.  
1 9/16  
1 3/16

9/32 DRILL, 12 HOLES

*INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.*

---

**Part No. Code**

<table>
<thead>
<tr>
<th>A ROD DIA.</th>
<th>B NOSE THREAD</th>
<th>C PILOT DIA.</th>
<th>COMBINATIONS</th>
<th>Part No. Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8 Standard</td>
<td>1 1/4 – 12</td>
<td>1.373/1.371</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>3/4 Oversize</td>
<td>1 1/4 – 12</td>
<td>1.373/1.371</td>
<td>E</td>
<td></td>
</tr>
</tbody>
</table>
Select code numbers/letters (bold type) from each of the six boxes below - then select any options desired from the opposite page. List codes in the same sequence as shown.

The cylinder part number is an alpha numeric code.
### Series HB cylinder options

List codes in the same sequence as they appear below

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra rod extension</td>
<td>Specify code letter J followed by the extra length as a two place decimal.</td>
<td>J</td>
</tr>
</tbody>
</table>
|                               | Example: J.50 = 1/2" extra  
|                               | J1.25 = 1 1/4" extra  
|                               | HB6, 9, 14 double rod cylinders with extra extension cannot be ordered by a standard  |
|                               | part number - consult factory for a special part number.                    |      |
| Wrench flats                   | Specify if required  
|                               | If specified will be added to both ends of HB6, HB9, HB14 double rod cylinders | K    |
| Shock pads                     | Available on both ends of double acting cylinders and the end  
|                               | opposite the spring on single acting cylinders.  
|                               | Each pad adds 1/4" to cylinder length.  
|                               | Pads on rod end only  
|                               | Pad on cap end only  
|                               | Pads on both ends                                                      | L    |
| Rod wiper                     | 3/4", 1" bore - Not available  
|                               | 1 1/8" bore - Available only with 3/8" rod, 7/8 - 14 nose mount  
|                               | 1 1/2, 2" bore - Available all models - standard with trunnion & adj. cushion heads | P    |
| Optional seal compounds       | Fit'd seals are buna (nitrile) and require no code -40 to +200°F  
|                               | Long life available for extended cycle life +10 to +200°F  
|                               | Viton available for temps -10 to +400°F                                      | Q    |
| Polypak rod seal              | For optimum sealing on hydraulic cylinders  
|                               | Available only in 1 1/2 and 2" bore sizes                                   | S    |
| Hard chromed rod              | Hard chrome plated steel - 100,000 min. yield                                | T    |
| Magnetic piston                | Not available in 1" bore  
|                               | Adds 1/2" to cylinder length                                               | W    |
| Hollow piston rod             | Available in 5/16 dia. rod - thru hole .135"  
|                               | Available in 3/8 dia. rod - thru hole .248"  
|                               | Available in 1/2 dia. rod - thru hole .313"  
|                               | Not available on hard chrome rods                                         | X    |
| Stop tube                     | Available on 1 1/2 & 2" bore only in 2" increments  
|                               | Specify code Y followed by length in inches  
|                               | Example: Y4 = 4" stop tube  
|                               | Adds to cylinder length. An 8" stroke cyl. with 2" stop tube will be  
|                               | as long as a 10" stroke cylinder. Order actual stroke req. (8" above)      | Y    |
| Oversize ports                | 1/4 NPT ports on 1 1/2 bore cylinder (both ends)                            | Z    |
| Adjustable Cushions           | Available on 1 1/8, 1 1/2, 2" bore except as follows:  
|                               | Mounting styles HB7, 8, 9  
|                               | Rear port cap on mt'g styles HB1, 4, 10  
|                               | Cyl. with 1/2" or 3/4" oversize rods or oversize ports  
|                               | Cylinders with shock pads                                                  |      |
|                               | Cushion head end only  
|                               | Cushion cap end only  
|                               | Cushion both ends                                                          |      |

**Part No. Example:**

11 HB2 C16 E6 K W

- **Mounting style HB2**
- **2" stroke**
- **3/8-24 x 5/8 th'd rod**
- **Double acting**
- **1-125" bore**
- **Wrench flats**
- **Magnetic piston**
- **3/8 rod, 5/8-18 nose mount**
## 3/4" Bore Service Parts

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seal Kit, Buna</td>
<td>07522-B</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Long life</td>
<td>07522-LL</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Viton</td>
<td>07522-V</td>
<td></td>
</tr>
<tr>
<td>1 Reaprt cap</td>
<td>07503</td>
<td></td>
</tr>
<tr>
<td>2 Rear pivot cap</td>
<td>07506</td>
<td></td>
</tr>
<tr>
<td>2 90° Rear pivot cap</td>
<td>0750690</td>
<td></td>
</tr>
<tr>
<td>3 Rear stud cap</td>
<td>07507</td>
<td></td>
</tr>
<tr>
<td>4 Cap</td>
<td>07508</td>
<td></td>
</tr>
<tr>
<td>5 Cap</td>
<td>07509</td>
<td></td>
</tr>
<tr>
<td>6 Cap</td>
<td>07525</td>
<td></td>
</tr>
<tr>
<td>7 Tube</td>
<td>0750690</td>
<td></td>
</tr>
<tr>
<td>8 Rod</td>
<td>0750690</td>
<td></td>
</tr>
</tbody>
</table>

*Tube - P.N. is T followed by the complete cyl. part no.*

*Rod - P.N. is PR followed by the complete cyl. part no.*

## 1" Bore Service Parts

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seal Kit, Buna</td>
<td>10022-B</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Long life</td>
<td>10022-LL</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Viton</td>
<td>10022-V</td>
<td></td>
</tr>
<tr>
<td>1 Cap</td>
<td>10003</td>
<td></td>
</tr>
<tr>
<td>2 Cap</td>
<td>10006</td>
<td></td>
</tr>
<tr>
<td>2 90° Cap</td>
<td>1000690</td>
<td></td>
</tr>
<tr>
<td>3 Cap</td>
<td>10007</td>
<td></td>
</tr>
<tr>
<td>4 Cap</td>
<td>10008</td>
<td></td>
</tr>
<tr>
<td>5 Cap</td>
<td>10009</td>
<td></td>
</tr>
<tr>
<td>6 Cap</td>
<td>10025</td>
<td></td>
</tr>
</tbody>
</table>

*Tube - P.N. is T followed by the complete cyl. part no.*

*Rod - P.N. is PR followed by the complete cyl. part no.*

## 1 1/8" Bore Service Parts

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seal Kit, Buna, 5/16 rod</td>
<td>11222-312B</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Buna, 3/8 rod</td>
<td>11222-375B</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Buna, 1/2 rod</td>
<td>11222-500B</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Long life, 5/16 rod</td>
<td>11222-312LL</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Long life, 3/8 rod</td>
<td>11222-375LL</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Long life, 1/2 rod</td>
<td>11222-375LL</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Viton, 5/16 rod</td>
<td>11222-312V</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Viton, 3/8 rod</td>
<td>11222-375V</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Viton, 1/2 rod</td>
<td>11222-500V</td>
<td></td>
</tr>
<tr>
<td>1 Cap</td>
<td>11203</td>
<td></td>
</tr>
<tr>
<td>2 Cap Add suffix C for cushion</td>
<td>11206</td>
<td></td>
</tr>
<tr>
<td>2 90° Cap Add suffix C for cushion</td>
<td>1120690</td>
<td></td>
</tr>
</tbody>
</table>

## 1" Bore Service Parts

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seal Kit, Buna</td>
<td>07522-B</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Long life</td>
<td>07522-LL</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Viton</td>
<td>07522-V</td>
<td></td>
</tr>
<tr>
<td>1 Head</td>
<td>07503</td>
<td></td>
</tr>
<tr>
<td>2 Head</td>
<td>07506</td>
<td></td>
</tr>
<tr>
<td>2 90° Head</td>
<td>0750690</td>
<td></td>
</tr>
<tr>
<td>3 Head</td>
<td>07507</td>
<td></td>
</tr>
<tr>
<td>4 Cap</td>
<td>07508</td>
<td></td>
</tr>
<tr>
<td>5 Cap</td>
<td>07509</td>
<td></td>
</tr>
<tr>
<td>6 Cap</td>
<td>07525</td>
<td></td>
</tr>
</tbody>
</table>

*Spring stop 1/4" rod pair 07512-250*

*Spring stop 5/16" rod pair 07512-312*

*Spring - Must supply cyl. stroke 07515*

*Head 1/4 rod 07510-250*

*Head 5/16 rod 07510-312*

*Head 1/4 rod 07510-250 TRN*

*Head 5/16 rod 07510-312 TRN*

*Head 1/4 rod 07524-250*

*Head 5/16 rod 07524-312*

*Magnet pair S53207*

*Shock pad 75MSP*

## 1/2" Bore Service Parts

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seal Kit, Buna, 5/16 rod</td>
<td>11222-312B</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Buna, 3/8 rod</td>
<td>11222-375B</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Buna, 1/2 rod</td>
<td>11222-500B</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Long life, 5/16 rod</td>
<td>11222-312LL</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Long life, 3/8 rod</td>
<td>11222-375LL</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Long life, 1/2 rod</td>
<td>11222-375LL</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Viton, 5/16 rod</td>
<td>11222-312V</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Viton, 3/8 rod</td>
<td>11222-375V</td>
<td></td>
</tr>
<tr>
<td>Seal Kit, Viton, 1/2 rod</td>
<td>11222-500V</td>
<td></td>
</tr>
<tr>
<td>1 Cap</td>
<td>11203</td>
<td></td>
</tr>
<tr>
<td>2 Cap Add suffix C for cushion</td>
<td>11206</td>
<td></td>
</tr>
<tr>
<td>2 90° Cap Add suffix C for cushion</td>
<td>1120690</td>
<td></td>
</tr>
</tbody>
</table>

*Spring 0 - 2 1/2" Stroke 11215*

*Spring 0ver - 2 1/2" Stroke 10015*

*Head, 5/16 Rod, 5/8 - 18 Nose 11253-312-625*

*Head, 5/16 Rod, 5/8 - 18 Nose, Cushion 11253-312-625C*

*Head, 3/8 Rod, 5/8 - 18 Nose 11253-375-625*

*Head, 3/8 Rod, 5/8 - 18 Nose, Cushion 11253-375-625C*

*Head, 3/8 Rod, 3/4 - 16 Nose 11253-375-750*

*Head, 3/8 Rod, 3/4 - 16 Nose, Cushion 11253-375-750C*

*Head, 3/8 Rod, 7/8 - 14 Nose 11253-375-875*

*Head, 3/8 Rod, 7/8 - 14 Nose, Cushion 11253-375-875C*

*Head, 3/8 Rod, 7/8 - 14 Nose, wiper 11253-375-875W*

*Head, 1/2 Rod, 7/8 - 14 Nose 11253-500-875*
### 1 1/8" Bore Service Parts (Cont.)

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Cap</td>
<td>11207</td>
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<tr>
<td>4</td>
<td>Cap</td>
<td>11208</td>
</tr>
<tr>
<td>5</td>
<td>Cap</td>
<td>11209</td>
</tr>
<tr>
<td>6</td>
<td>Cap</td>
<td>11225</td>
</tr>
<tr>
<td>7</td>
<td>Tube - P/N. is T followed by the complete cyl. P/N.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Rod - P/N. is PR followed by the complete cyl. P/N.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Stop 5/16 rod, 0 - 2 1/2&quot; stroke</td>
<td>11212-312</td>
</tr>
<tr>
<td>9</td>
<td>Stop 5/16 rod, over 2 1/2&quot; stroke (pair)</td>
<td>10012-312</td>
</tr>
<tr>
<td>9</td>
<td>Stop 3/8 rod, 0 - 2 1/2&quot; stroke</td>
<td>11212-375</td>
</tr>
<tr>
<td>9</td>
<td>Stop 3/8 rod, over 2 1/2&quot; stroke (pair)</td>
<td>10012-375</td>
</tr>
<tr>
<td>9</td>
<td>Stop 1/2 rod, 0 - 2 1/2&quot; stroke</td>
<td>11212-500</td>
</tr>
<tr>
<td>9</td>
<td>Stop 1/2 rod, over 2 1/2&quot; stroke (pair)</td>
<td>10012-500</td>
</tr>
</tbody>
</table>

### 1 1/2" Bore Service Parts

Add suffix HYD to seal kit part no. if polypak hyd. rod seal is required.

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cap</td>
<td>15003</td>
</tr>
<tr>
<td>2</td>
<td>Cap 1/4&quot; port</td>
<td>15003250</td>
</tr>
<tr>
<td>2</td>
<td>Cap add suffix C for cushion</td>
<td>15006</td>
</tr>
<tr>
<td>2</td>
<td>Cap 1/4&quot; port</td>
<td>15006250</td>
</tr>
<tr>
<td>2</td>
<td>90° Cap add suffix C for cushion</td>
<td>1500690</td>
</tr>
<tr>
<td>3</td>
<td>Cap add suffix C for cushion</td>
<td>15007</td>
</tr>
<tr>
<td>3</td>
<td>Cap 1/4&quot; port</td>
<td>15007250</td>
</tr>
<tr>
<td>4</td>
<td>Cap</td>
<td>15008</td>
</tr>
<tr>
<td>5</td>
<td>Cap 1/4&quot; port</td>
<td>15008250</td>
</tr>
<tr>
<td>5</td>
<td>Cap add suffix C for cushion</td>
<td>15009</td>
</tr>
<tr>
<td>5</td>
<td>Cap 1/4&quot; port</td>
<td>15009250</td>
</tr>
<tr>
<td>6</td>
<td>Cap add suffix C for cushion</td>
<td>15025</td>
</tr>
<tr>
<td>6</td>
<td>Cap 1/4&quot; port</td>
<td>15025250</td>
</tr>
<tr>
<td>7</td>
<td>Tube - P/N. is T followed by the complete cyl. part no.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Rod - P/N. is PR followed by the complete cyl. part no.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Stop, 1/2 rod, st’d pair</td>
<td>15012-500</td>
</tr>
<tr>
<td>9</td>
<td>Stop, 1/2 rod, spring extend over 2&quot; str.</td>
<td>15012-500L</td>
</tr>
<tr>
<td>9</td>
<td>Stop 3/4 rod, st’d pair</td>
<td>15012-750</td>
</tr>
<tr>
<td>9</td>
<td>Stop 3/4 rod, spring extend over 2&quot; str.</td>
<td>15012-750L</td>
</tr>
</tbody>
</table>

### 2" Bore Service Parts

Add suffix HYD to seal kit part no. if polypak hyd. rod seal is required.

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cap</td>
<td>20003</td>
</tr>
<tr>
<td>2</td>
<td>Cap add suffix C for cushion</td>
<td>20006</td>
</tr>
<tr>
<td>2</td>
<td>90° Cap add suffix C for cushion</td>
<td>2000690</td>
</tr>
<tr>
<td>3</td>
<td>Cap add suffix C for cushion</td>
<td>20007</td>
</tr>
<tr>
<td>4</td>
<td>Cap</td>
<td>20008</td>
</tr>
<tr>
<td>5</td>
<td>Cap add suffix C for cushion</td>
<td>20009</td>
</tr>
<tr>
<td>6</td>
<td>Cap add suffix C for cushion</td>
<td>20025</td>
</tr>
<tr>
<td>7</td>
<td>Tube - P/N. is T followed by the complete cyl. part no.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Rod - P/N. is PR followed by the complete cyl. part no.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Stop, 5/8 rod, st’d pair</td>
<td>20012-625</td>
</tr>
</tbody>
</table>
1 FILL IN 4 BLANK SPACES TO SELECT A SWITCH AND TO CREATE ITS PART NUMBER

A S

1 REED SWITCH
2 HALL SWITCH
3 SWITCH with permanent 9 foot cable
4 SWITCH ONLY with 8mm male quick connect

2 SELECT A SWITCH MOUNTING CLAMP  To securely fasten any switch to the cylinder tube choose the proper size stainless steel band clamp from the table below

<table>
<thead>
<tr>
<th>CYLINDER BORE SIZE</th>
<th>CLAMP PART NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4”</td>
<td>750CLAMP</td>
</tr>
<tr>
<td>1 1/8”</td>
<td>112CLAMP</td>
</tr>
<tr>
<td>1 1/2”</td>
<td>150CLAMP</td>
</tr>
<tr>
<td>2”</td>
<td>200CLAMP</td>
</tr>
<tr>
<td>3”</td>
<td>300CLAMP</td>
</tr>
</tbody>
</table>

ORDER SEPARATELY - NOT INCLUDED WITH SWITCH

3 SELECT A QUICK CONNECT CABLE IF REQUIRED  Cable part No. ARC130 fits any Aurora switch with 8mm male quick connect and is 16 feet long

120VAC/DC 4Amp max.

- Brown = Pin 1
- Blue = Pin 3
- Black = Pin 4

- Poles - 3 pole
- Nominal Volt. Rating - 60 VAC / 75 VDC
- Environmental Resistance - IP67
- Cable - Black PUR or PVC
- Current Rating - 4 Amps
- Insulation Resistance - > 10^10 Ω
- Housing - Nylon
- Contact Resistance - < 5mΩ
- Contact Finish - Au
- Temperature Rating - -25°C to 85°C
- Male Contact - Cu Zn
- Wire Gauge - .25mm² wire / 24 AWG
- Female Contact - Cu Sn

4 SELECT MAGNETIC PISTON  When ordering a cylinder along with a switch be sure to include a magnetic piston on the cylinder – see next page.
**MAGNETIC PISTON**

Add this option to your cylinder to operate Aurora reed or hall switches

Flexible Nitrile based permanent magnets are suitable for pneumatic and hydraulic service –20°F to +180°F.

Aurora piston magnets are made from high energy material and sufficient mass to create a strong stable magnetic field parallel to the cylinder axis.

All magnets are impact resistant and will retain maximum strength indefinitely.

Magnetic pistons are available in all series Aurora cylinders. They are compatible with most options and usually add 1/2” to cylinder length. Consult ordering procedure options for your choice.

---

**BREATHER VENTS, MUFFLERS, SPEED CONTROLS**

**Breather Vent**

<table>
<thead>
<tr>
<th>PART</th>
<th>NPT</th>
<th>HEX</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABV-1</td>
<td>1/8</td>
<td>7/16</td>
<td>7/16</td>
</tr>
<tr>
<td>ABV-2</td>
<td>1/4</td>
<td>9/16</td>
<td>5/8</td>
</tr>
</tbody>
</table>

Aurora breather vents can be used to vent single acting cylinders gear boxes, etc. where contamination from foreign particles is a problem. The vent is made of sintered bronze fitted to a brass body, and is rated at 40 microns. Threaded construction allows easy removal for cleaning.

**Exhaust Muffler**

<table>
<thead>
<tr>
<th>PART</th>
<th>NPT</th>
<th>HEX</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-1</td>
<td>1/8</td>
<td>7/16</td>
<td>1 1/8</td>
</tr>
<tr>
<td>AM-2</td>
<td>1/4</td>
<td>9/16</td>
<td>1 3/8</td>
</tr>
</tbody>
</table>

These muffler-filters utilize porous sintered bronze bonded to copper plated steel bodies, and are used to silence exhaust air from the port of cylinders, valves, air tools, etc. The standard filter is rated at 40 microns, and may be removed for cleaning.

**Speed Control Muffler**

<table>
<thead>
<tr>
<th>PART</th>
<th>NPT</th>
<th>HEX</th>
<th>LENGTH CLOSED</th>
<th>LENGTH OPEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASC-1</td>
<td>1/8</td>
<td>9/16</td>
<td>1 3/8</td>
<td>2</td>
</tr>
<tr>
<td>ASC-2</td>
<td>1/4</td>
<td>5/8</td>
<td>1 9/16</td>
<td>2 3/16</td>
</tr>
</tbody>
</table>

These units provide an infinite variation of metered air flow at an acceptable sound level on exhaust ports of air valves, cylinders, etc. The operating speed of cylinders or air tools may be varied with the adjusting screw, which is locked in place with a locknut. The standard unit contains a 40 micron bronze element on a brass body.
Hall Effect and Reed Switch Magnetic Sensors

One Series of switches fits all Aurora cylinders

All switches have a corrosion and moisture resistant 300 series stainless housing with translucent inert plastic cover and epoxy filled circuit board. Nema 6 rated for wet environments

LED indicator light shows same brightness throughout voltage range

Hall switches are completely solid state with no moving parts making them shock and vibration resistant

Reed switches operational to 30g (11msec) shock and 20g (10–55hz) vibration

Operational from 0° to 170° F

Both reed and hall switches work with the same magnet. 85 Gauss required at cylinder O.D. See page 86

Stainless band clamp fastens the switch to any cylinder. Not included with switch - order separately

All housings have the same slim profile 8mm male quick connect model shown

Cable

Part number ARC130 quick connect cable connects to any switch that has the 8mm male quick connect thread

Not included with switch - order separately

Extra long 16 foot length
Unique Applications Sometimes Require Unique Cylinders

In special design our only bounds are the limits of imagination...

We turn ideas into reality.