

QUICK INDEX

A U R O R A A I R P R O D U C T S



Series SMA Aluminum

Pages
4 thru 34

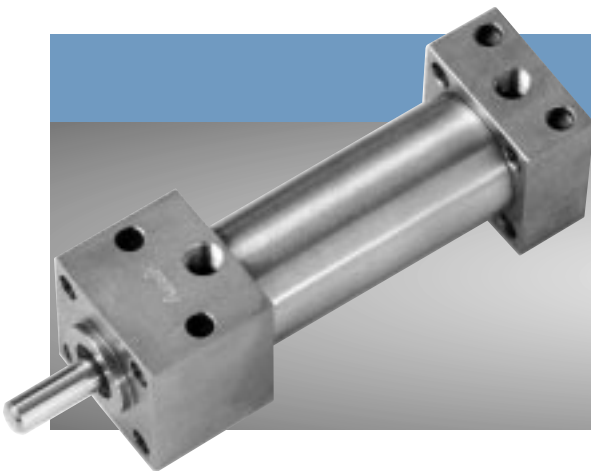
*Pancake and conventional
lengths 1 1/8 thru 3" bore*



Series SMS Solid Stainless

Pages
35 thru 49

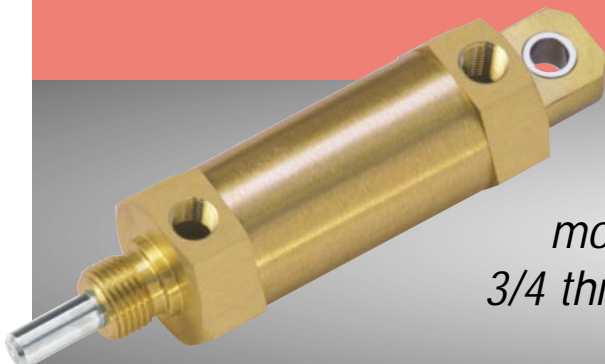
*Pancake and conventional
lengths for hostile
environments*



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 . . .

**Conventional
Pancake**

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.



SMA Short Mount

"Common sense engineered" to the shortest length possible without sacrificing areas critical to high performance. Excellent for both pneumatic and hydraulic service.



SMA Conventional Mount

Premium material in generous proportions yet small enough to fit.

Crimped Stainless Non Repairable

Although significantly longer, they fall short in design and materials.

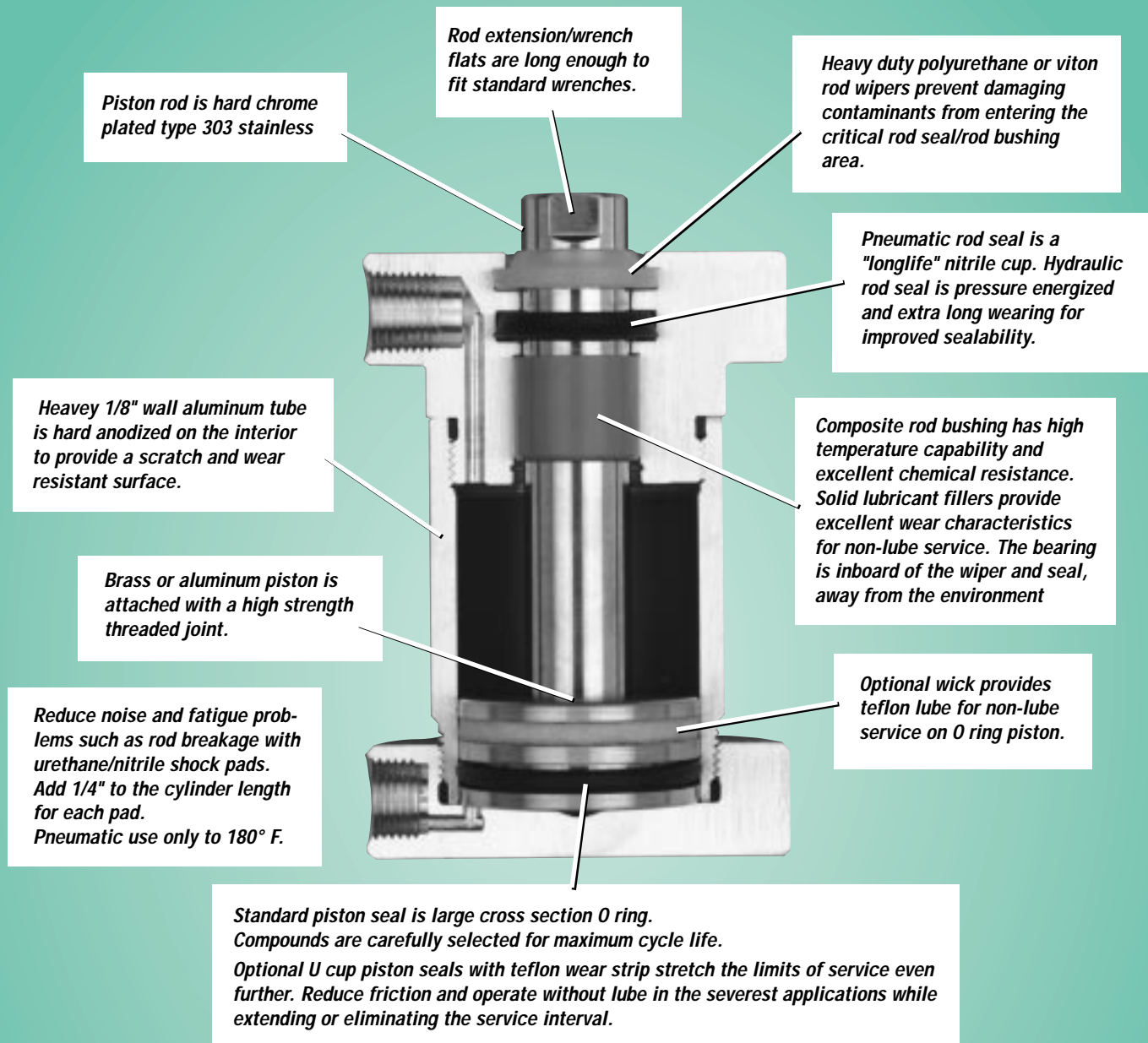
N.F.P.A. Tie Rod Cylinder

Conventional design is too long and too costly for many applications.

0" 1" 2" 3" 4" 5" 6"

Cylinder body length 1 1/2" Bore 0" Stroke

SMA DESIGN FEATURES



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.

AIR PRODUCTS INC.

TM

1 1/8" BORE SMA ALUMINUM

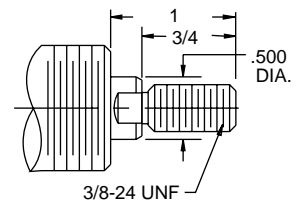
200 PSI MAX. AIR
400 PSI MAX. HYD. Non shock

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

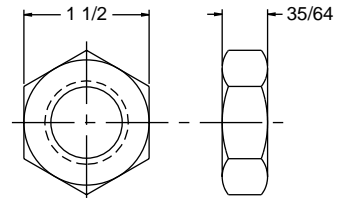
Spring force
Fully extended—8#
Fully compressed—20#
Spring material—Plated steel

Optional Male Rod Thread



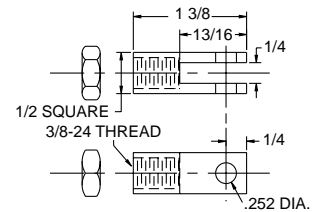
1-14 Nut Nose Mounting Nut

Not included with cylinder
Order Separately



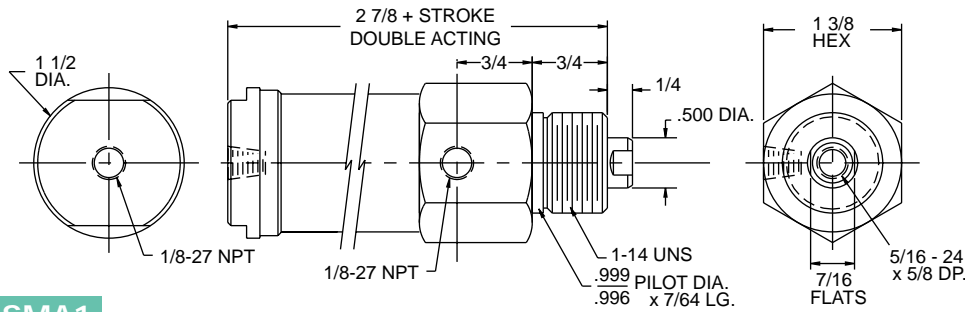
HB-375 Rod Clevis & Nut

Zinc Plated Steel

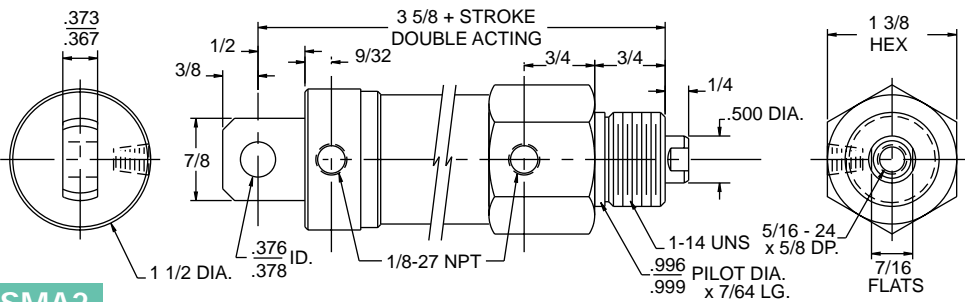


HB-200 Clevis Pin Assembly

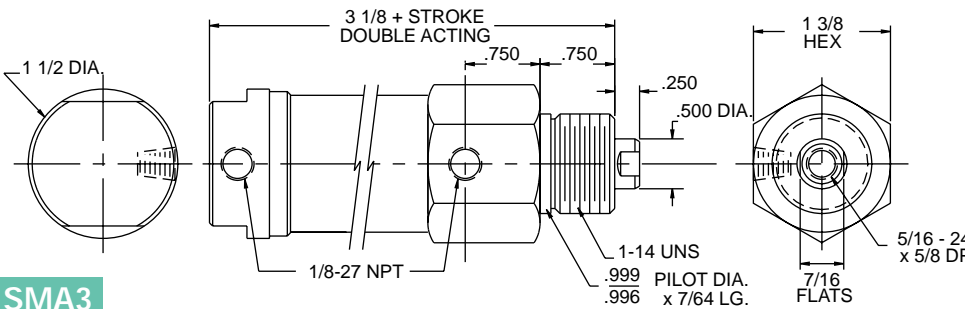
Used on HB 375
Stainless Pin/Steel Clips



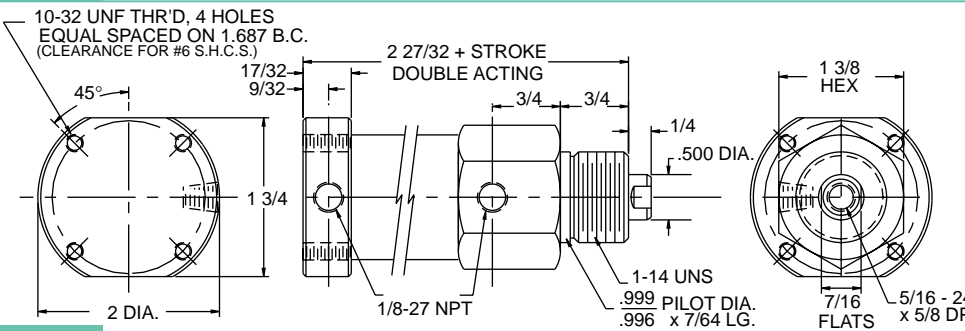
SMA1



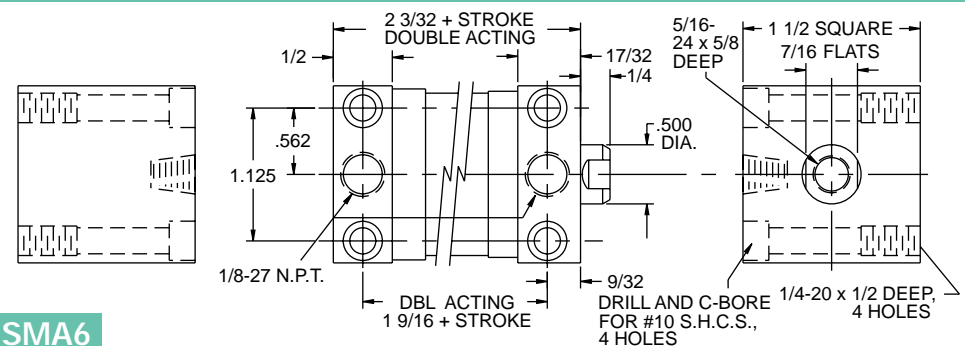
SMA2



SMA3



SMA5



SMA6

SMA Options

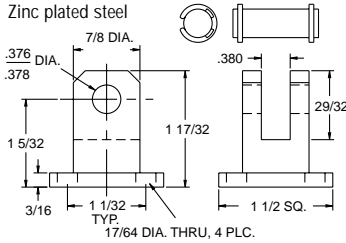
- Shock Pads
- Viton Seals
- Non-lube Service
- Magnetic Piston
- U Cup Piston
- Non-rotate (SMA 7,8,9)
- 90° Rear Clevis

**AURORA...
BETTER BY
DESIGN**

STC-40

Low Profile Clevis Brk't

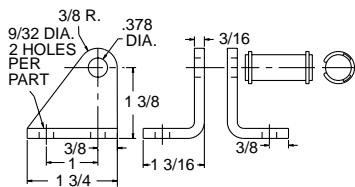
Used on SMA 2
Zinc plated steel



HB-90

St'd Clevis Brk't

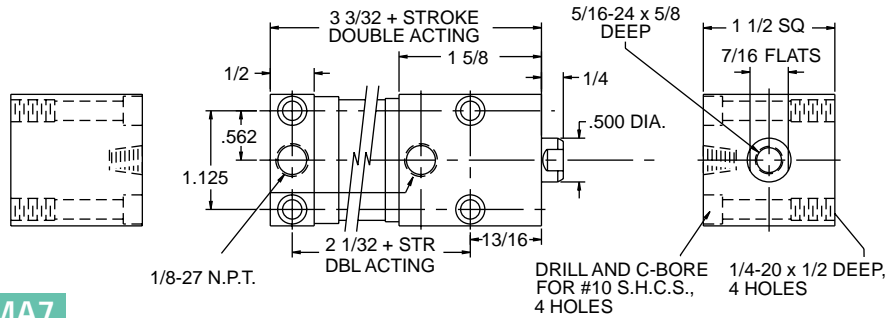
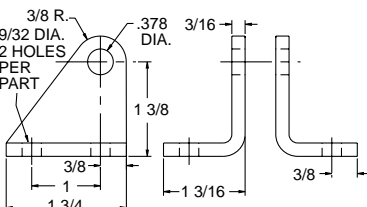
Used on SMA 2
Zinc plated steel



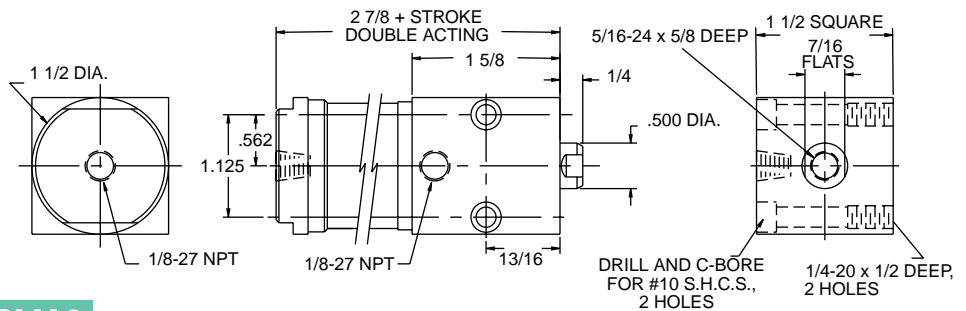
HB-90T

Trunnion Bracket

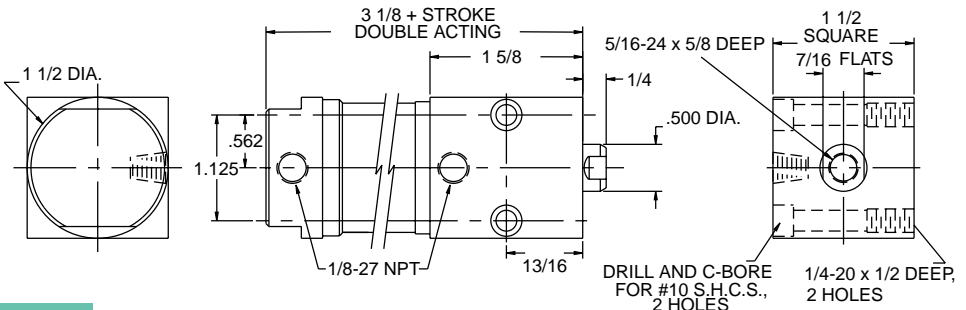
Used on SMA 10, 11
Zinc plated steel



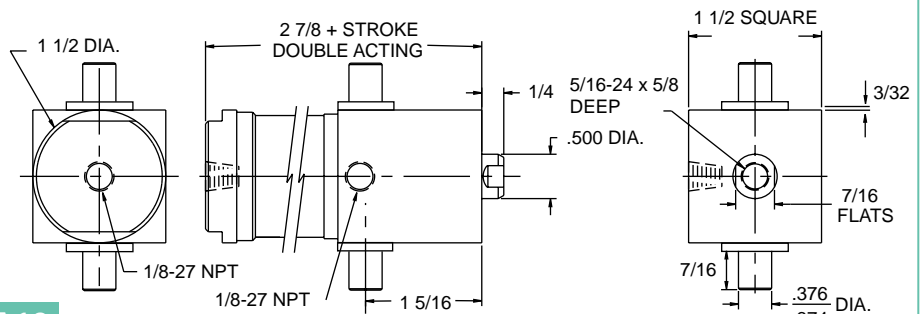
SMA7



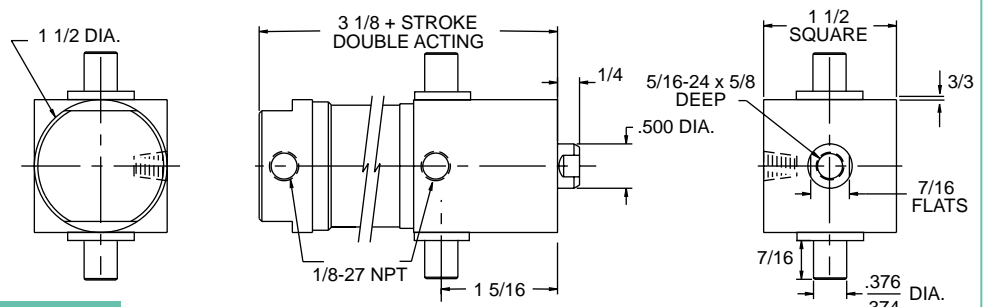
SMA8



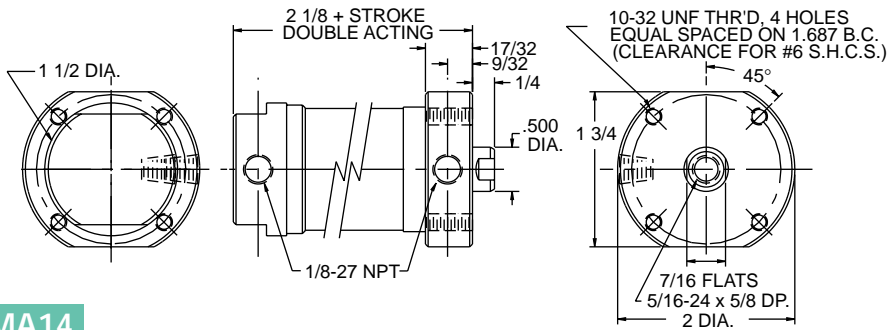
SMA9



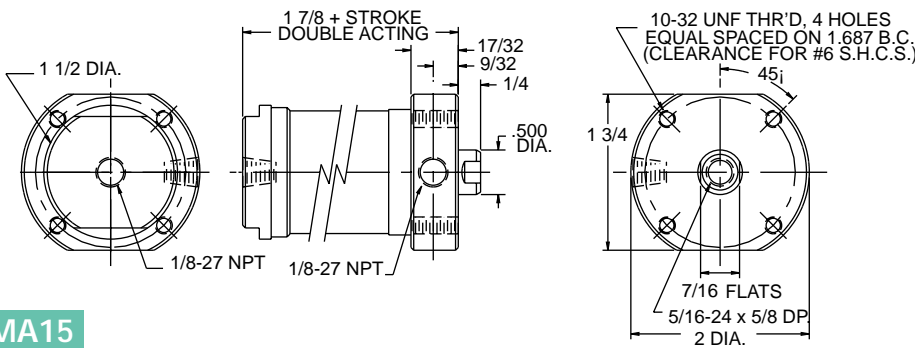
SMA10



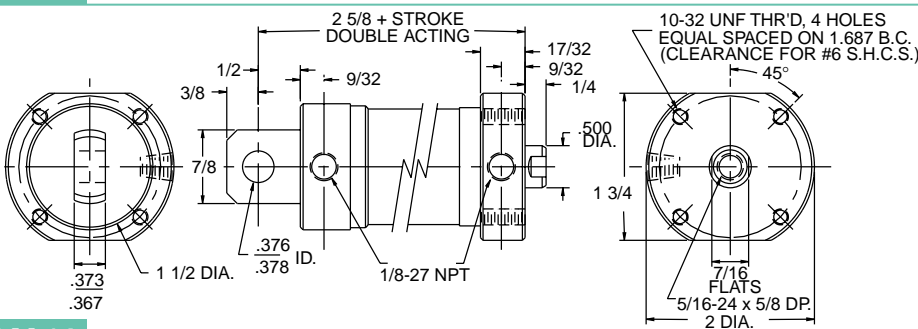
SMA11



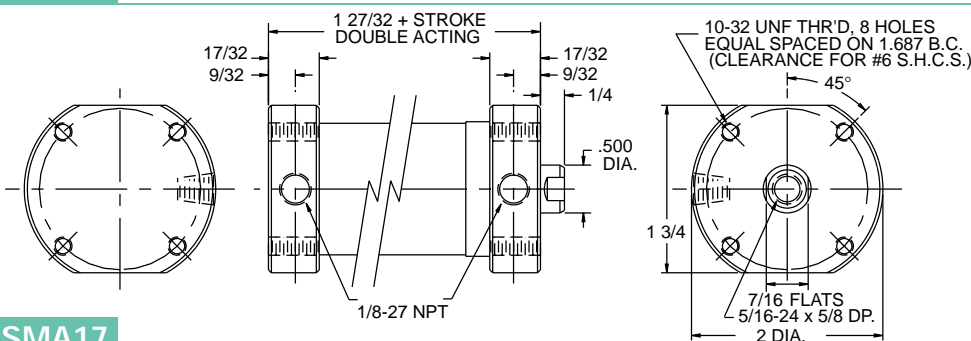
SMA14



SMA15



SMA16



SMA17

*For the ultimate in cycle life or where side load exists
select the U cup piston with teflon wear strip*

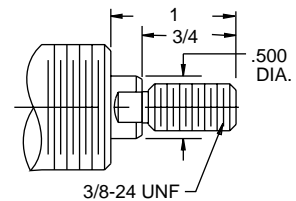
Adds 1/2" to length

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

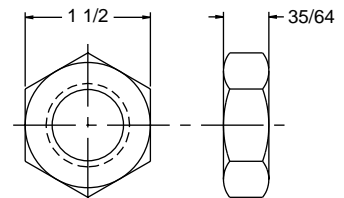
Spring force
Fully extended—8#
Fully compressed—20#
Spring material—Plated steel

Optional Male Rod Thread



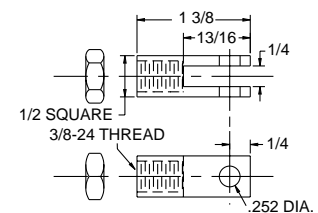
1"-14 Nut Nose Mounting Nut

Not included with cylinder
Order Separately



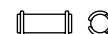
HB-375 Rod Clevis & Nut

Zinc Plated Steel



HB-200 Clevis Pin Assembly

Used on HB 375
Stainless Pin/Steel Clips



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



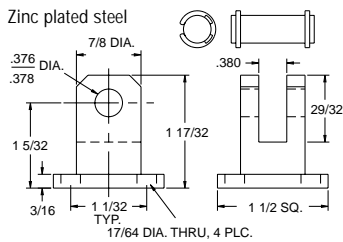
Series SMA Aluminum

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

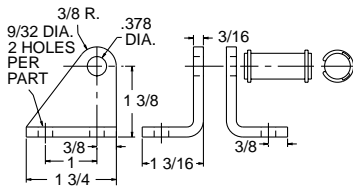
STC-40 Low Profile Clevis Brk't

Used on SMA 16
Zinc plated steel

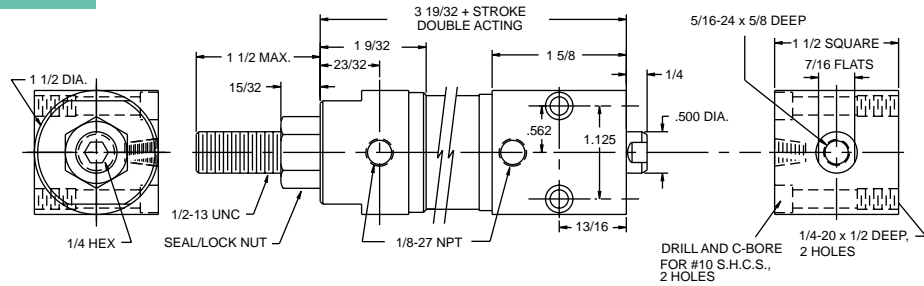


HB-90 St'd Clevis Brk't

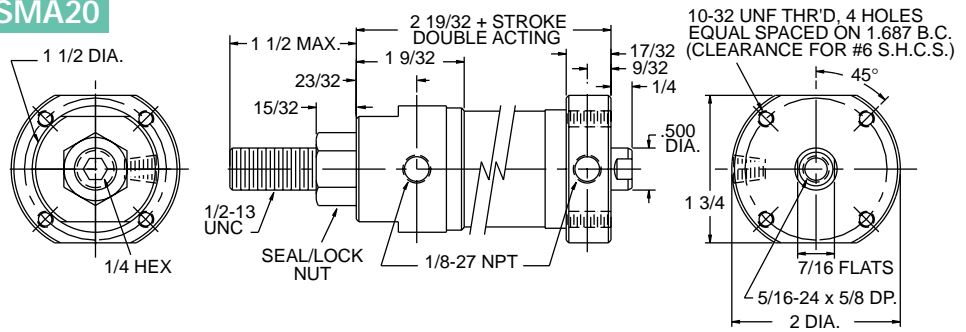
Used on SMA 16
Zinc plated steel



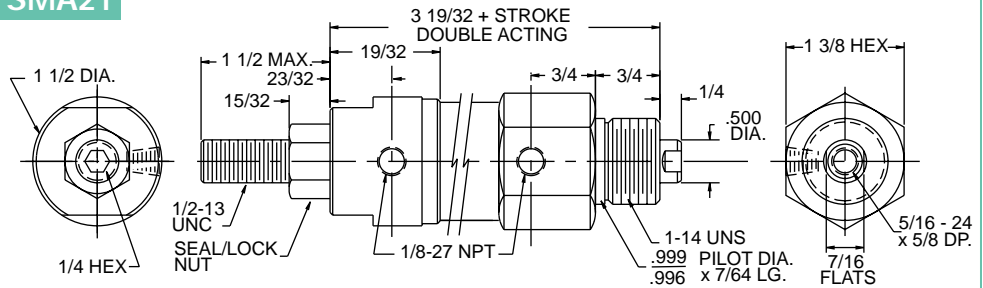
SMA12



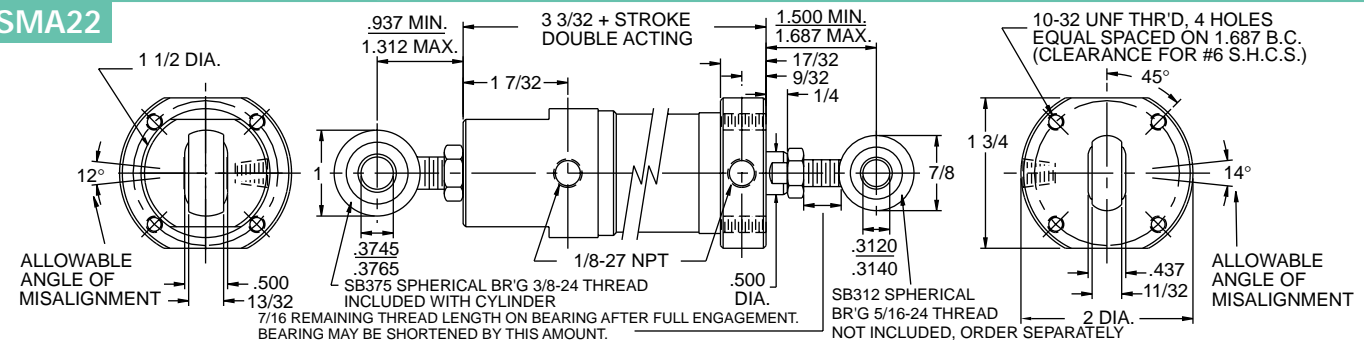
SMA20



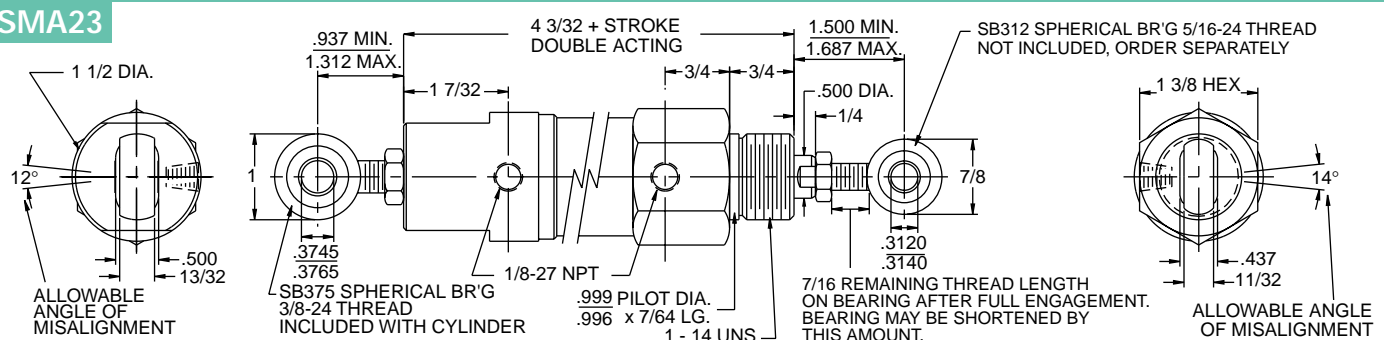
SMA21

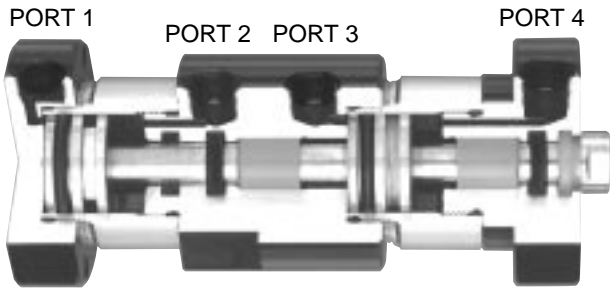


SMA22



SMA23





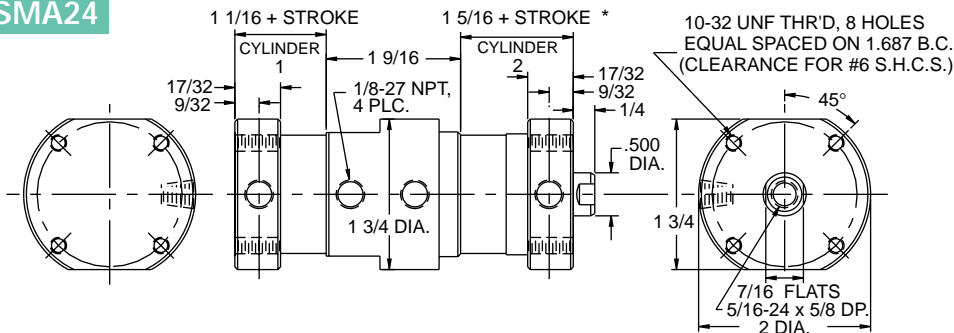
Three Position Cylinders are two in-line cylinders with a common cap but two separate and independent piston rods. By pressuring Port 1, 3, or 4, any combination of stroke 1 and total stroke may be achieved. Port 2 is a vent port only for Cylinder 1. In hydraulic applications it should be connected to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

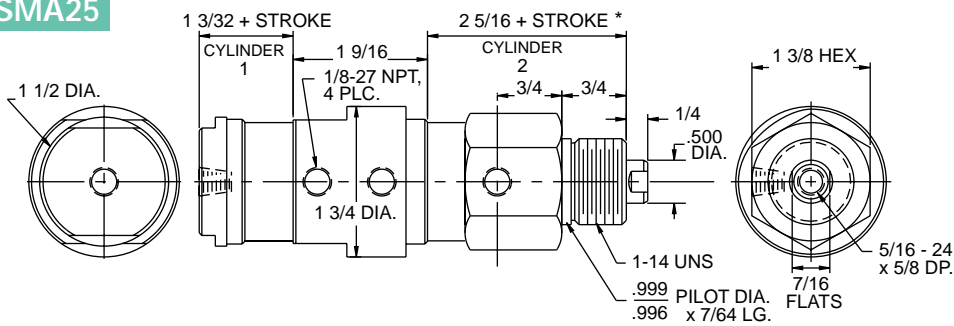
*Stroke of Cylinder 2 = TOTAL Stroke

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 11/2". 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.

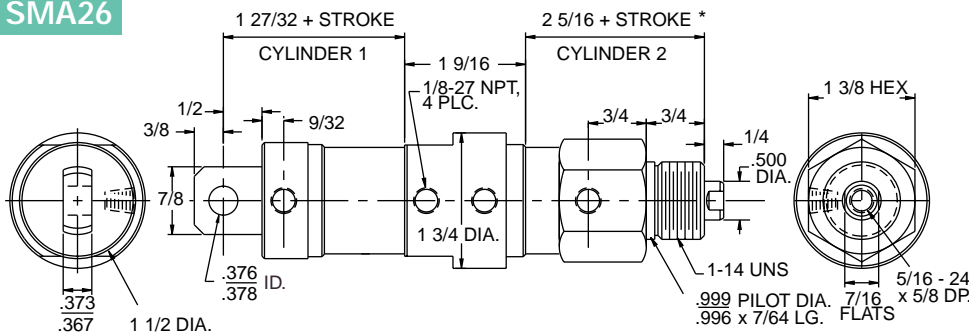
SMA24



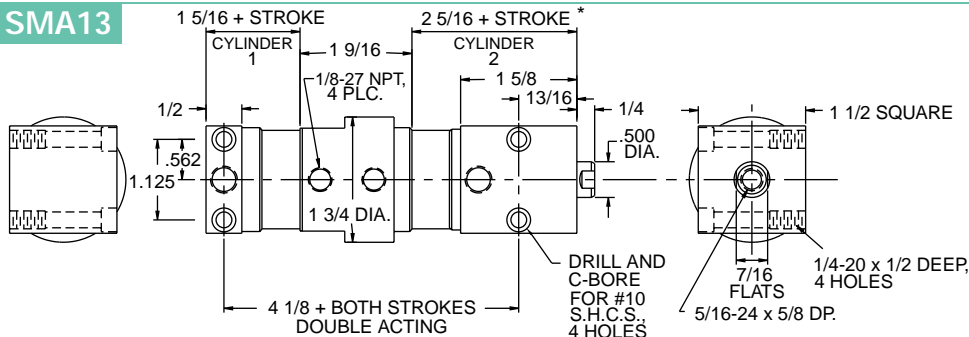
SMA25



SMA26



SMA13

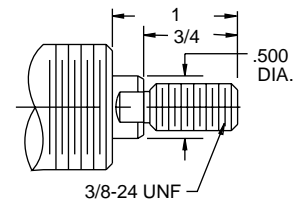


Spring Return 3 Position

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

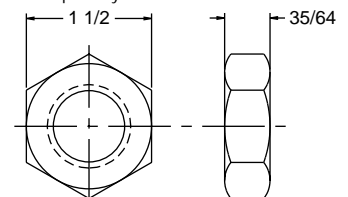
Spring force
Fully extended—8#
Fully compressed—20#
Spring material—Plated steel

Optional Male Rod Thread



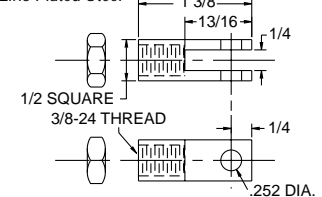
1"-14 Nut Nose Mounting Nut

Not included with cylinder
Order Separately



HB-375 Rod Clevis & Nut

Zinc Plated Steel



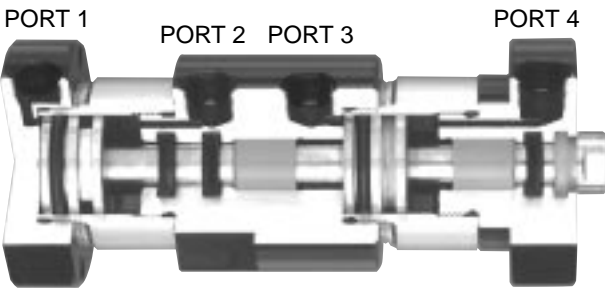
HB-200 Clevis Pin Assembly

Used on HB-375 Stainless Pin/Steel Clips



1 1/8" BORE SMA ALUMINUM

Tandem models 200 PSI MAX. AIR
400 PSI MAX. HYD. Non shock



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.

Tandem models double acting only
Spring return not available

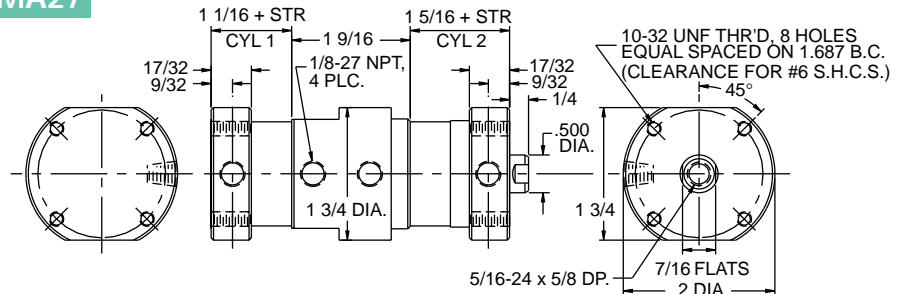
3 Position options

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

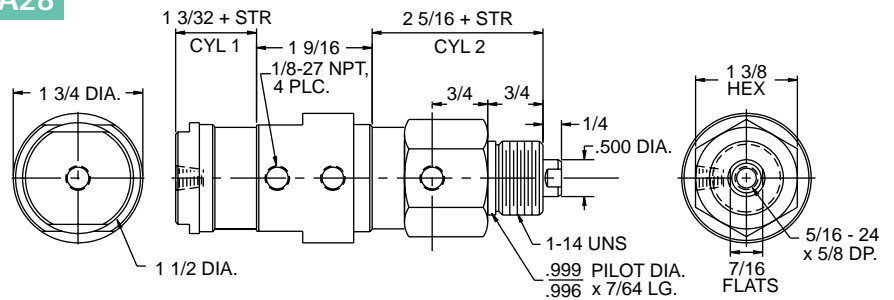
Tandem options

- 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

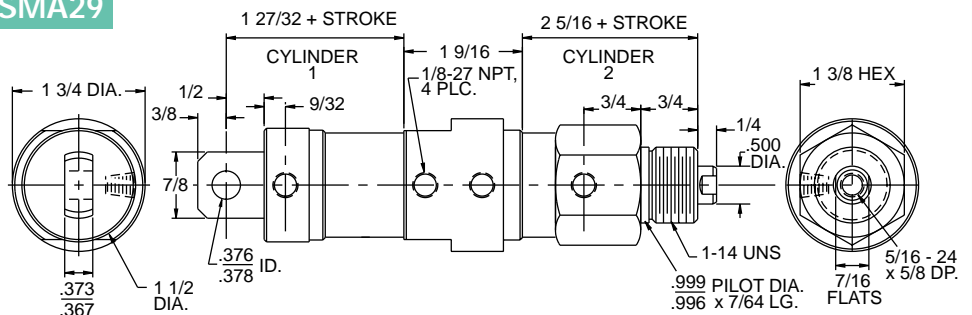
SMA27



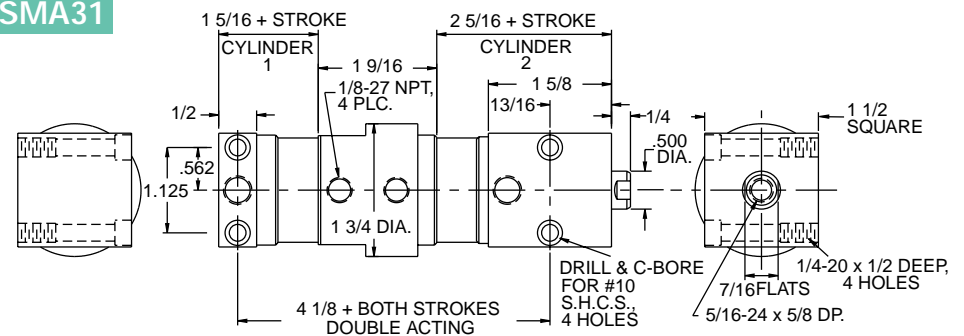
SMA28



SMA29



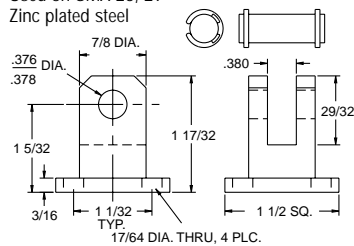
SMA31



STC -40

Low Profile Clevis Brk't

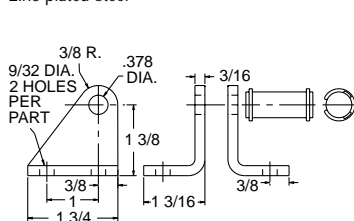
Used on SMA 26, 29
Zinc plated steel



HB-90

St'd Clevis Brk't

Used on SMA 26, 29
Zinc plated steel

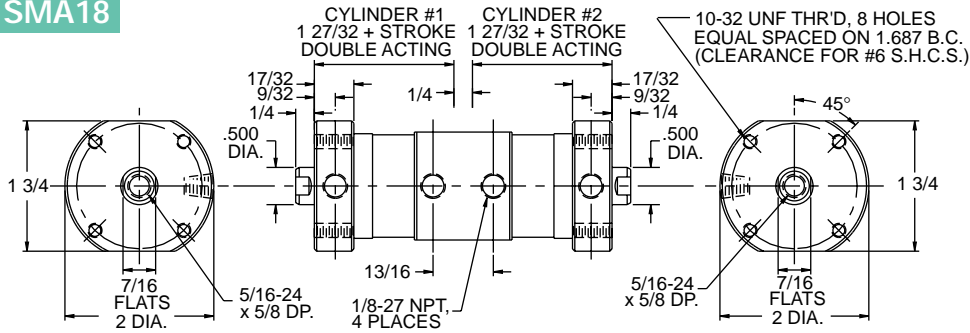


1 1/8" BORE SMA ALUMINUM

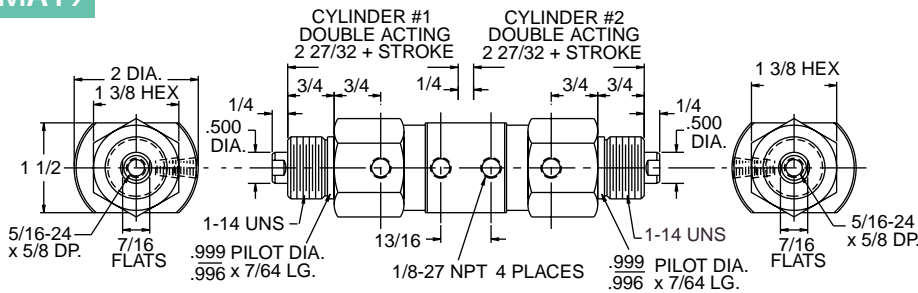
Back to Back and Pump

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



SMA19



Shock pads

BACK TO BACK OPTIONS

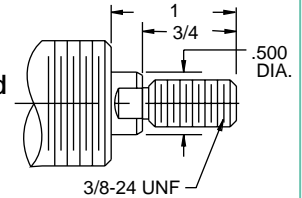
Non-lube service Viton seals U cup piston

Magnetic piston

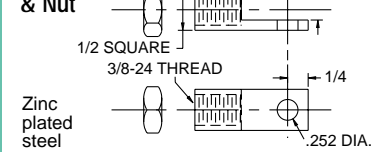
Spring Return Cylinders

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

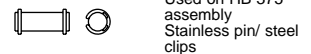
Optional Male Rod Thread



HB-375 Rod Clevis & Nut

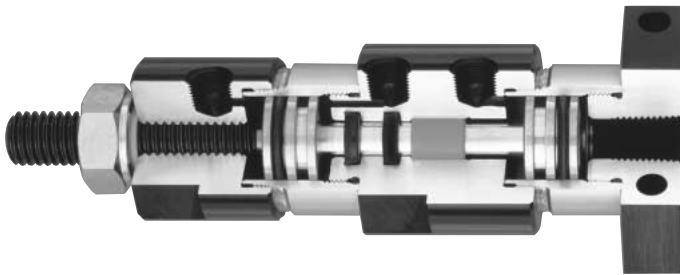


HB 200 Clevis Pin Assembly



1 1/8" Bore SMA Volumetric Pump

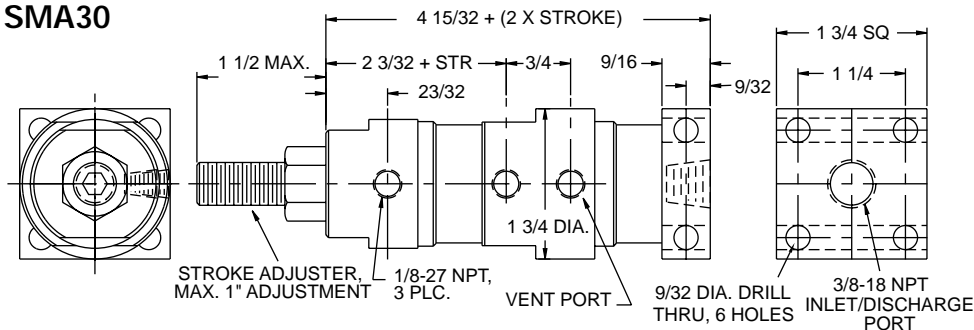
VOLUMETRIC PUMPS measure and dispense specific volumes of fluid with compressed air. These tandem type cylinders have two pistons connected to a common rod. The air powered driver section is normally reciprocated with a four way valve. The inlet/discharge port is connected to a fluid supply line and 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.

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.

SMA30



1 1/2" BORE SMA ALUMINUM

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

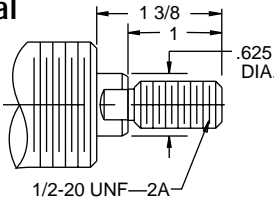


Series SMA Aluminum

Spring Return Cylinders

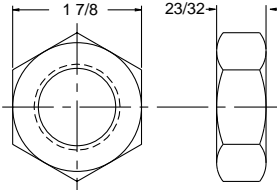
Pneumatic only
Springs add to cyl. length
0-2" stroke add 1 1/2" extra
2 1/2-4" stroke add 3" extra
over 4" stroke not available
Spring force
Fully extended—15#
Fully compressed—50#
Spring material—Plated steel

Optional Male Rod Thread



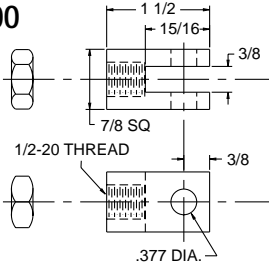
1 1/4-12 Nut Nose Mounting Nut

Not included with cylinder Order Separately



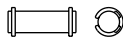
HB-500 Rod Clevis & Nut

Zinc Plated Steel



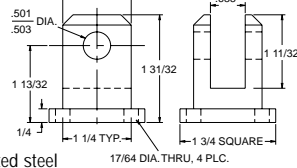
HB-501 Clevis Pin Assembly

Used on HB-500



STC-90 Low Profile Clevis Brk't

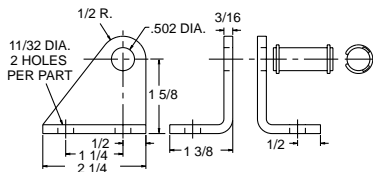
Used on SMA 2



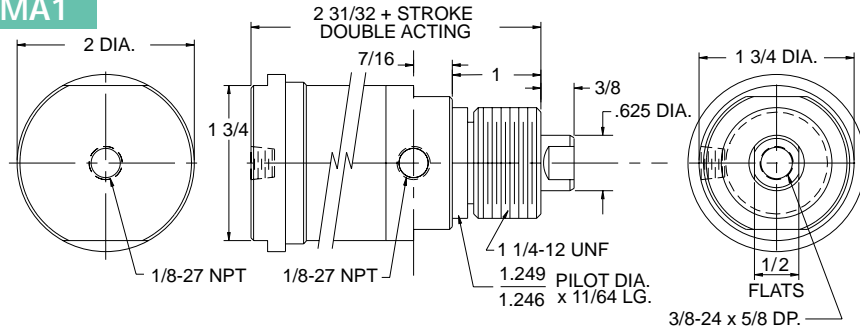
Zinc plated steel

HB-100 St'd Clevis Brk't

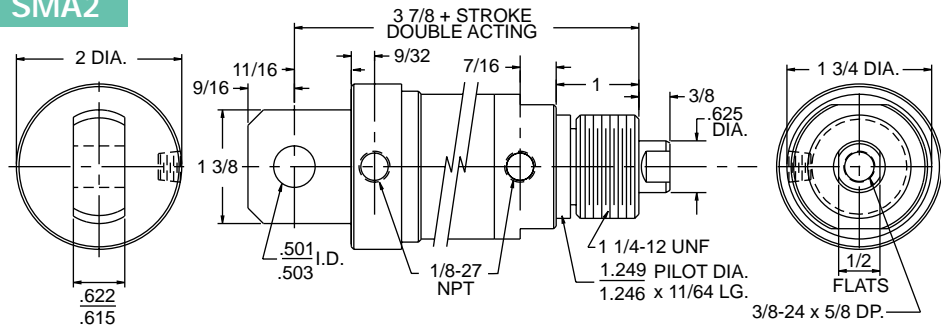
Used on SMA 2 Zinc plated steel



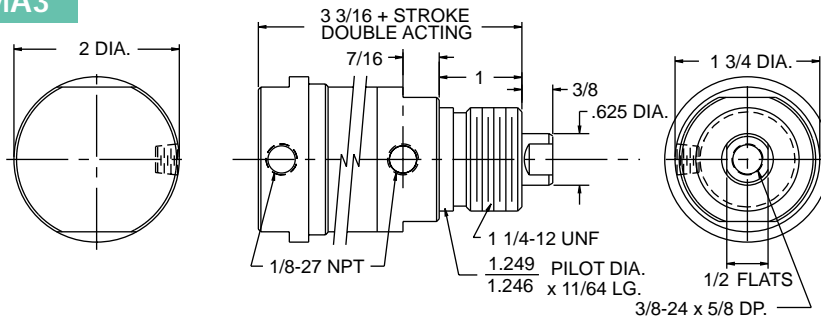
SMA1



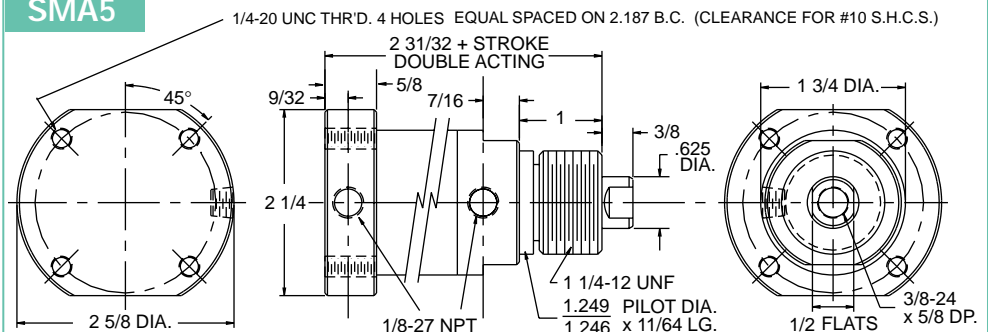
SMA2



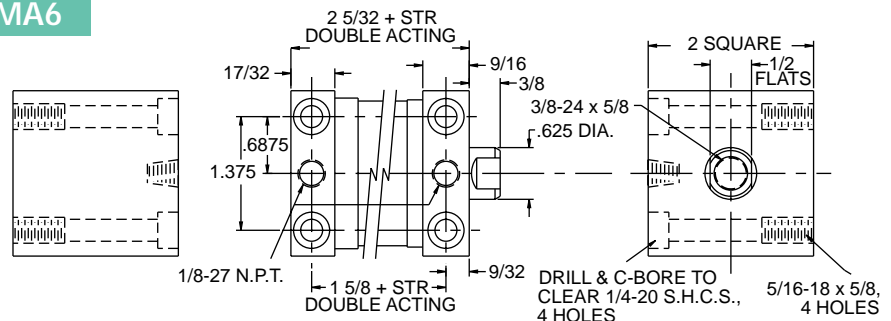
SMA3



SMA5



SMA6



1 1/2" BORE SMA ALUMINUM

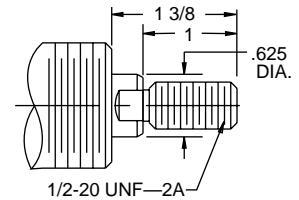
200 PSI MAX. AIR
500 PSI MAX. HYD. Non shock

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

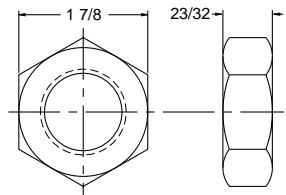
Spring force
Fully extended—15#
Fully compressed—50#
Spring material—Plated steel

Optional Male Rod Thread



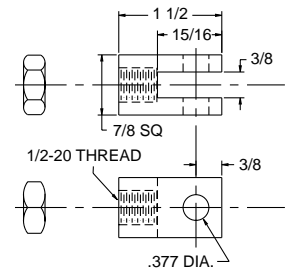
1 1/4 Nut Nose Mounting Nut

Not included with cylinder
Order Separately



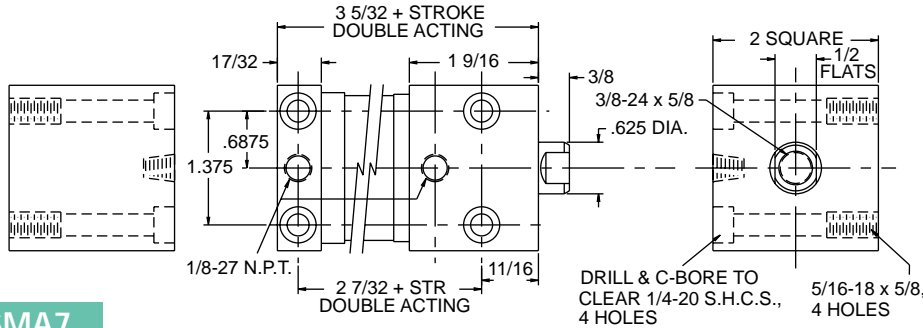
HB-500 Rod Clevis & Nut

Zinc Plated Steel

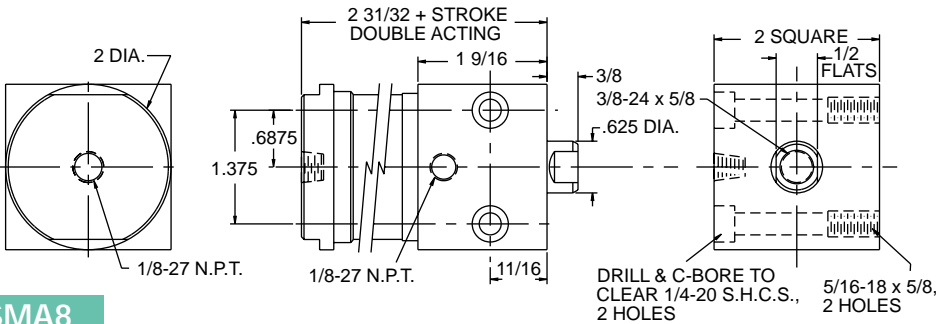


HB-501 Clevis Pin Assembly

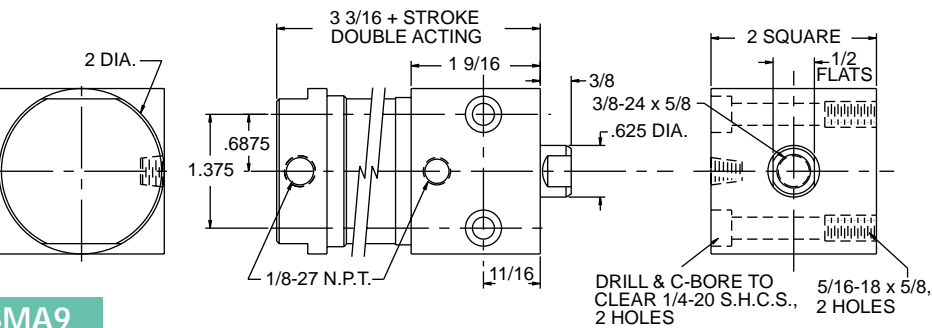
Used on HB-500
Stainless Pin/Steel Clips



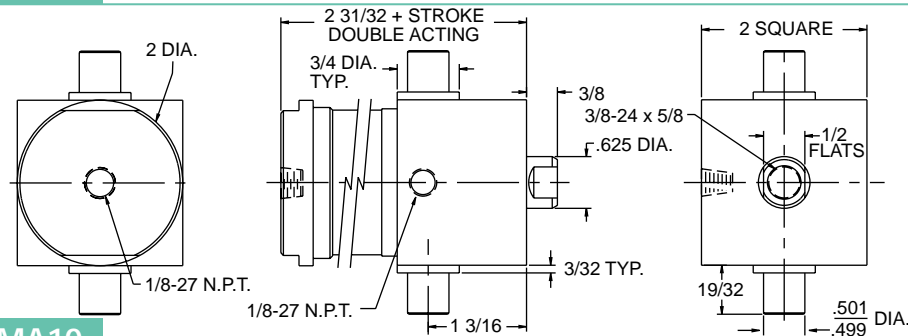
SMA7



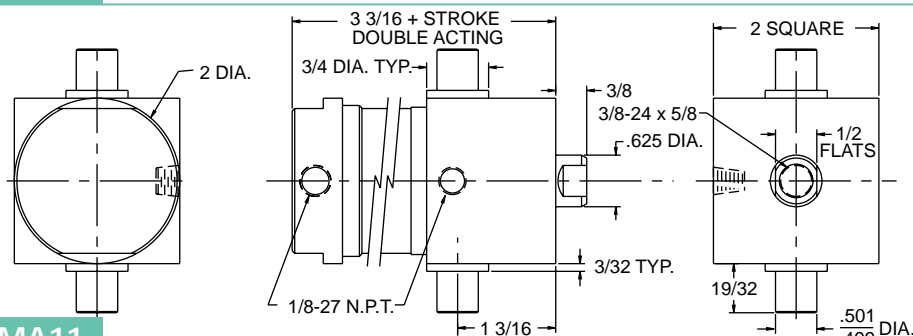
SMA8



SMA9



SMA10



SMA11

SMA Options

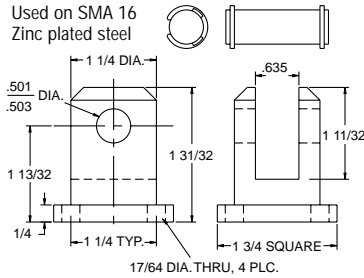
- Shock Pads
- Viton Seals
- Non-lube Service
- Magnetic Piston
- U Cup Piston
- Non-rotate
(SMA 7,8,9,14,15,17)
- 90° Rear Clevis

**FOR MAXIMUM SUPPORT
SELECT MODELS
WITH LONG HEADS
IF SPACE PERMITS**

STC-90

Low Profile Clevis Brk't

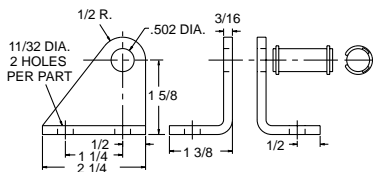
Used on SMA 16
Zinc plated steel



HB-100

St'd Clevis Brk't

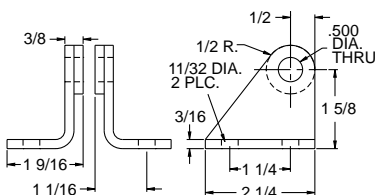
Used on SMA 16
Zinc plated steel



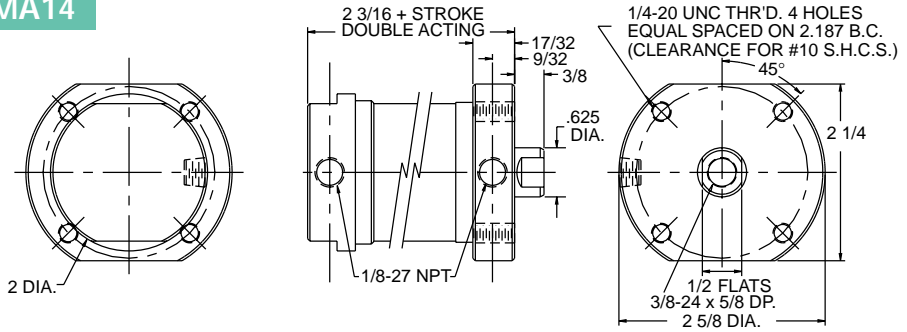
SS-100T

Trunnion Bracket

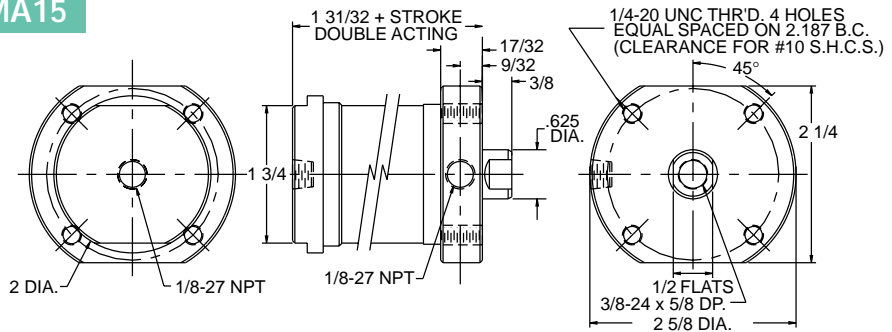
Used on SMA 10, 11



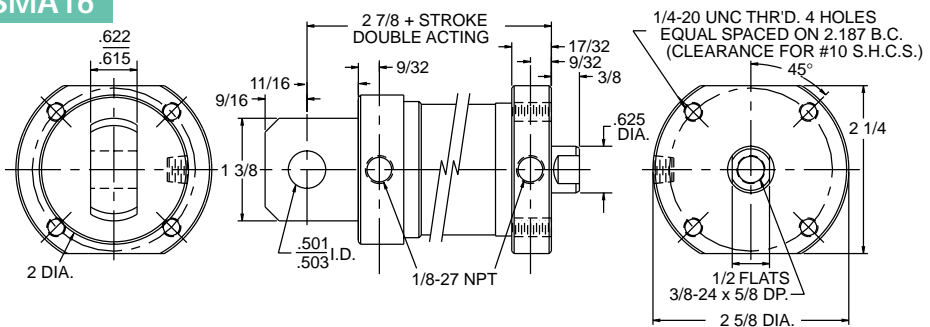
SMA14



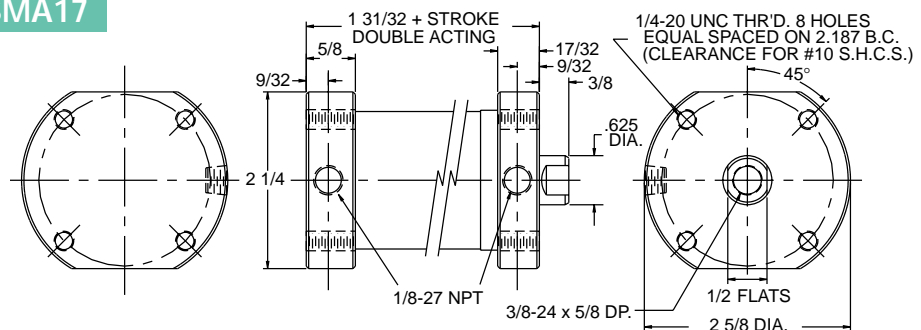
SMA15



SMA16



SMA17



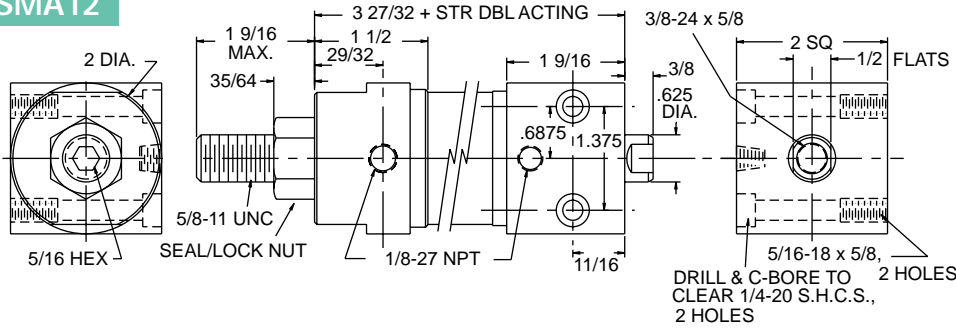
Don't
Paint Yourself
into a Corner

Choose the pancake that's better by design...
SMA and SMS by Aurora

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

SMA12

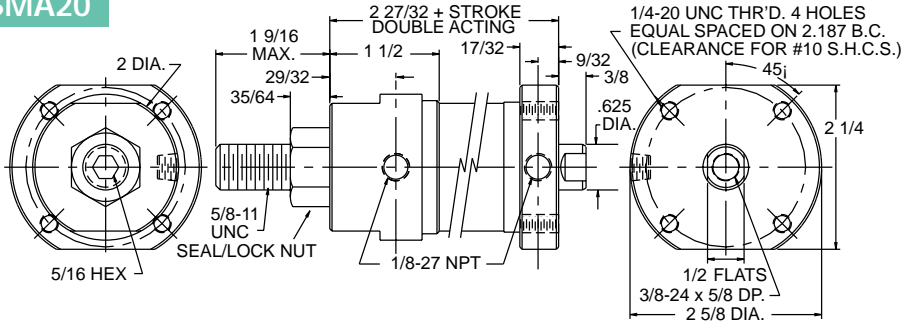


Spring Return Cylinders

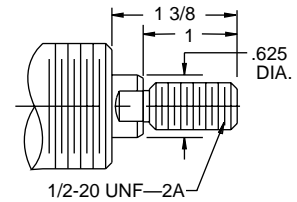
Pneumatic only
Springs add to cyl. length
0-2" stroke add 1 1/2" extra
2 1/2-4" stroke add 3" extra
over 4" stroke not available

Spring force
Fully extended—15#
Fully compressed—50#
Spring material—Plated steel
Also applies to Cyl. #1
and/or Cyl. #2 of 3
position models

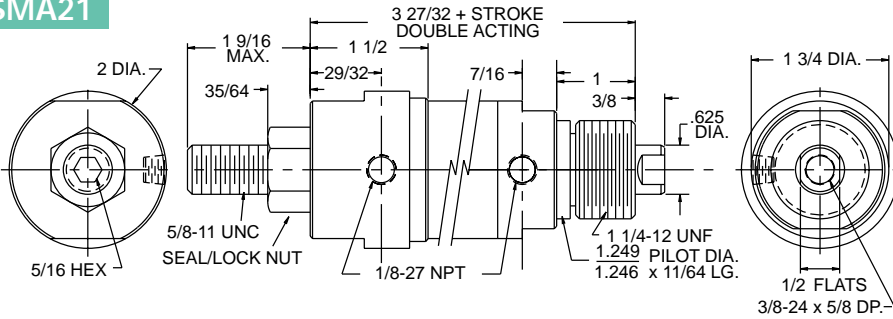
SMA20



Optional Male Rod Thread

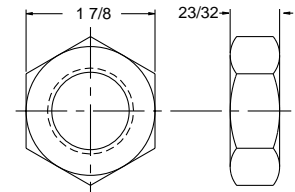


SMA21

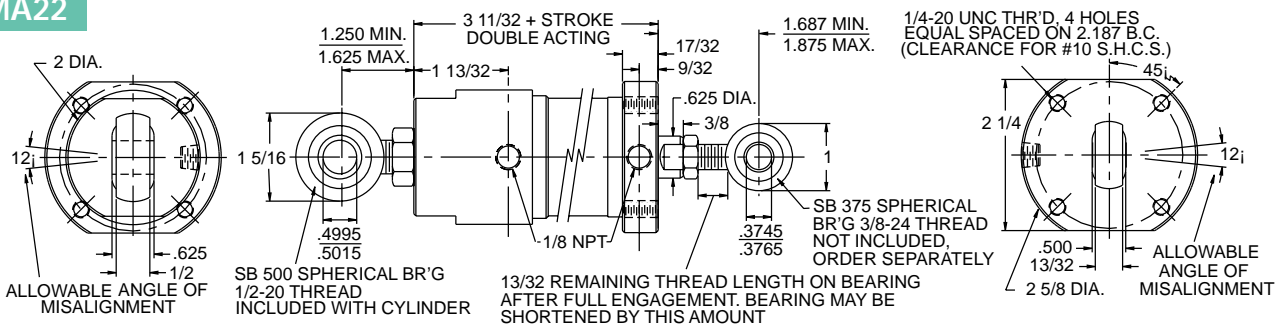


1 1/4 Nut Nose Mounting Nut

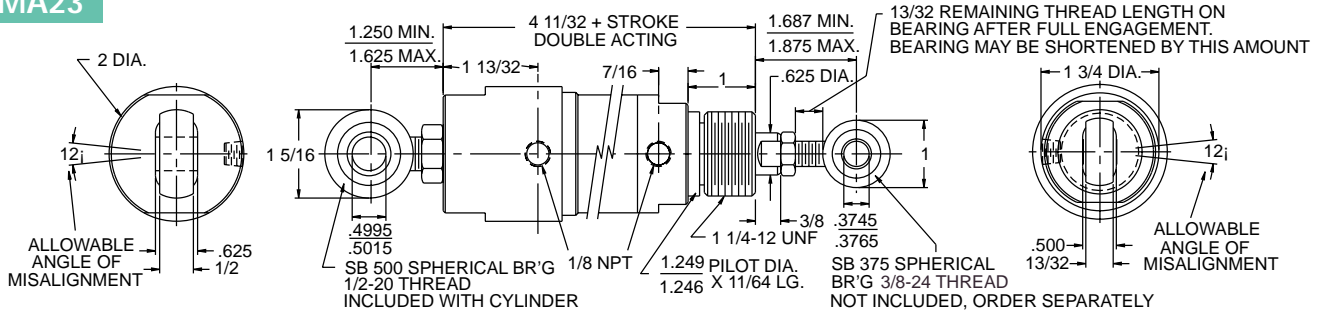
Not included with cylinder
Order separately



SMA22



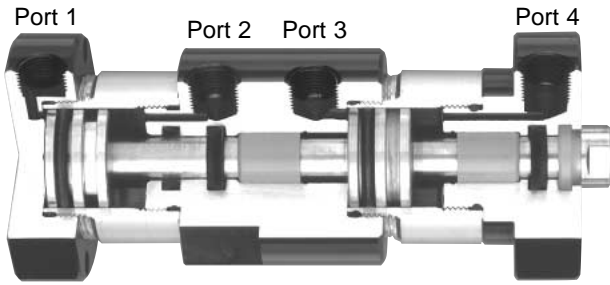
SMA23



1 1/2" BORE SMA ALUMINUM

3 Position models

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



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

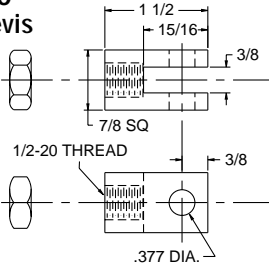
EXAMPLE: If Cylinder 1 extends 2" when port 1 is pressurized, it will also push Cylinder 2 by 2". If, when Port 3 is pressurized, Cylinder 2 moves an ADDITIONAL 11/2". Then the total stroke of Cylinder 2 is 2" + 1 1/2" = 3 1/2". Always specify the stroke of Cylinder 2 as the total stroke.

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

HB-500 Rod Clevis & Nut

Zinc plated steel



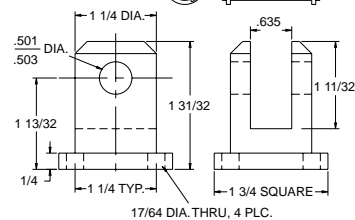
HB-501 Clevis Pin Assembly

Used on HB-500
Stainless
pin/Steel clips



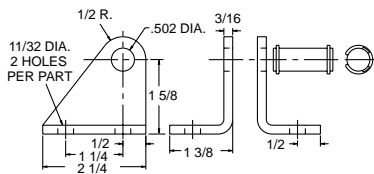
STC-90 Low Profile Clevis Brk't

Used on SMA 26
Zinc plated steel

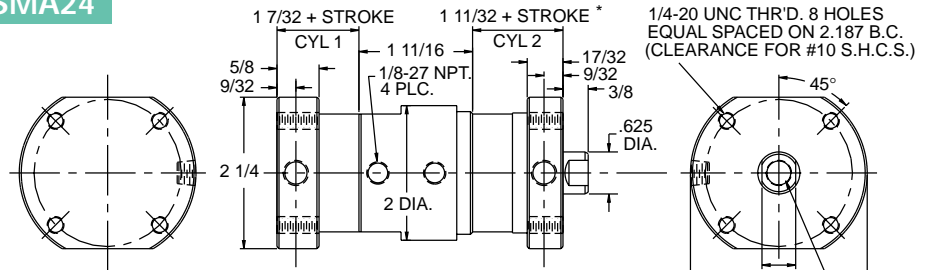


HB-100 St'd Clevis Brk't

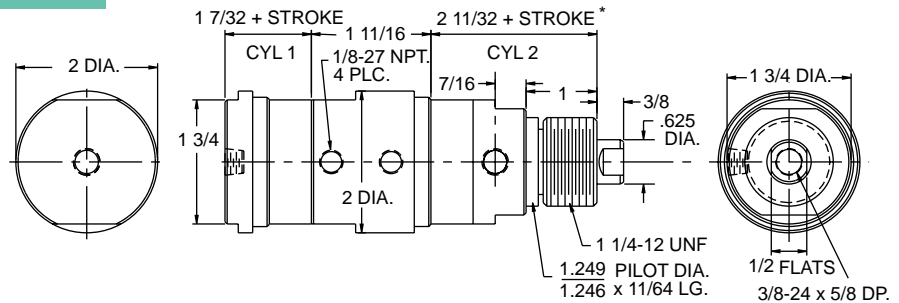
Used on SMA 26
Zinc plated steel



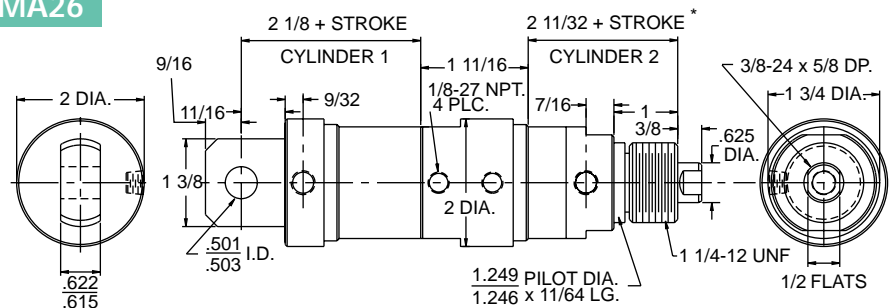
SMA24



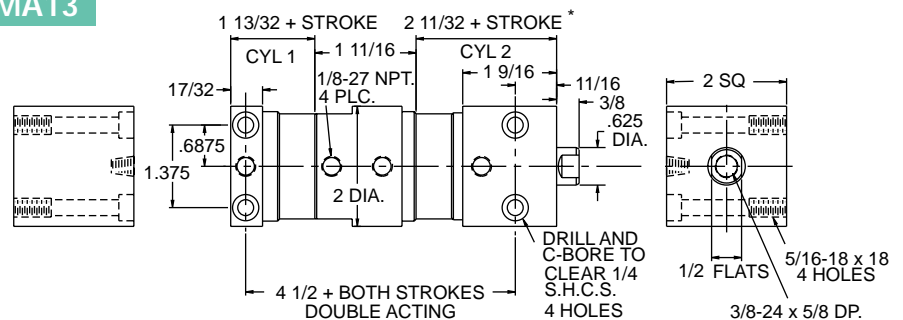
SMA25



SMA26



SMA13

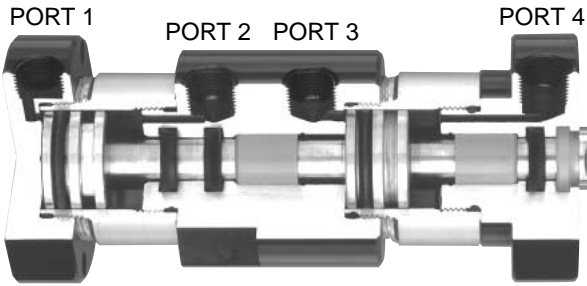


Series SMA Aluminum

1 1/2" BORE SMA ALUMINUM

Tandem models

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

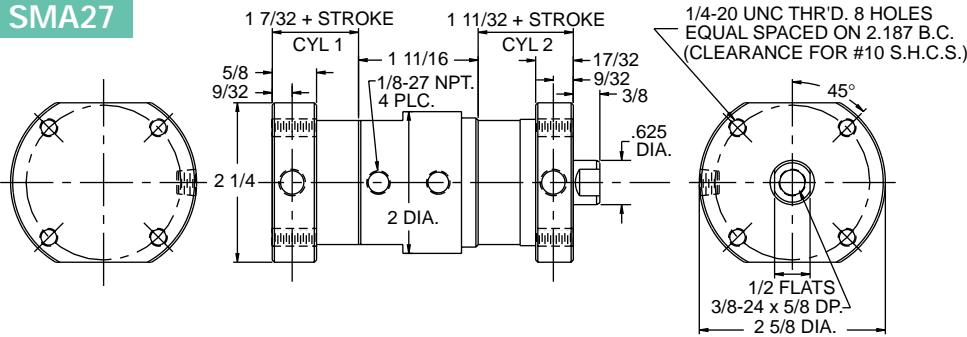


Tandem Cylinders are two in-line cylinders of the same stroke length with a common cap. Both pistons are attached to a common rod. By simultaneously pressurizing Ports 1 and 3 or 2 and 4, the force on the piston rod is nearly doubled. This can be useful when more force is required, but the diameter of 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

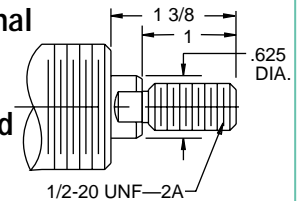


Tandem models double acting only
Spring return not available

Tandem options

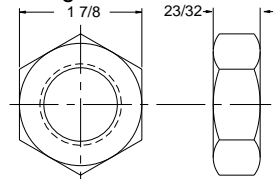
- Viton seals
- Non-lube service
- 90° Rear clevis
- Shock pads not available*
- Magnetic piston not available*
- U cup piston not available*
- Non-rotate not available*

Optional Male Rod Thread



1 1/4-12 Nut Nose Mounting Nut

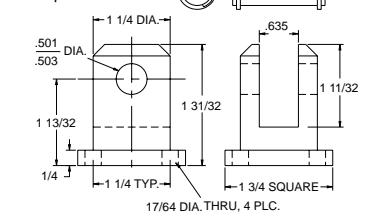
Not included with cylinder



Order Separately

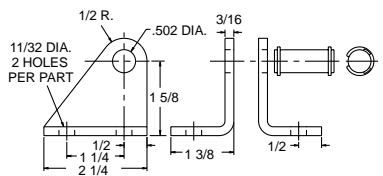
STC -90 Low Profile Clevis Brk't

Used on SMA 29
Zinc plated steel

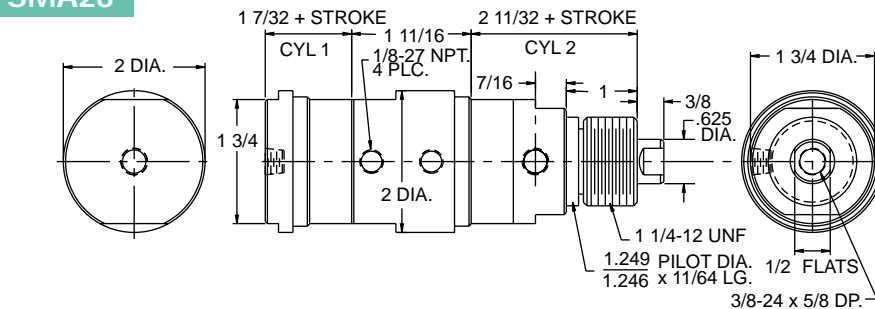


HB-100 St'd Clevis Brk't

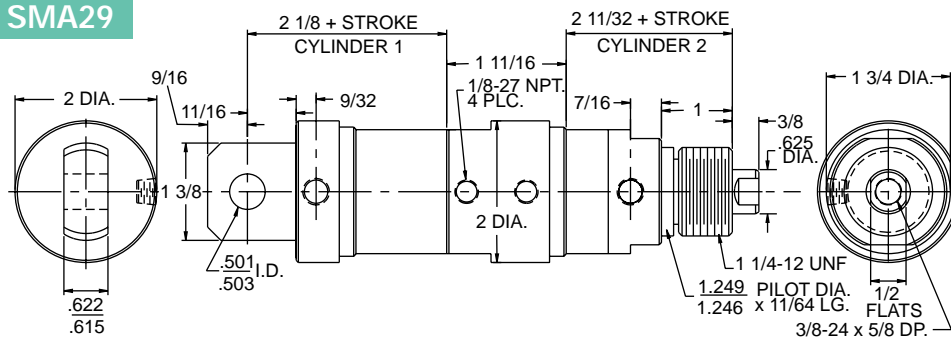
Used on SMA 29 Stainless steel



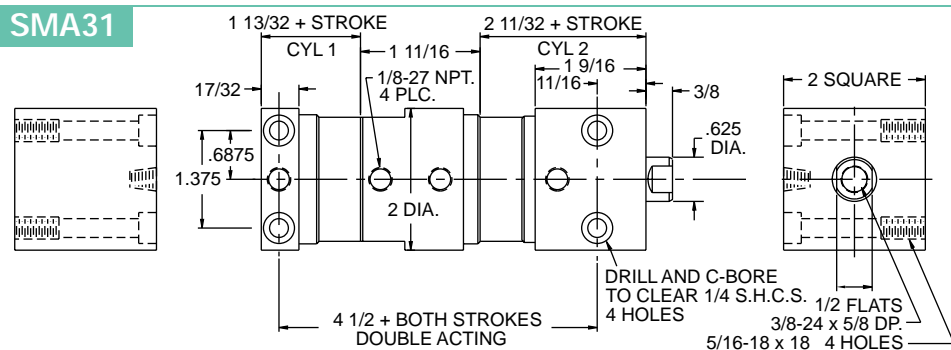
SMA28



SMA29



SMA31





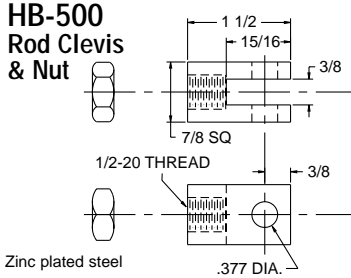
Spring Return Cylinders

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

BACK TO BACK OPTIONS

Shock pads
 Non-lube service
 Viton seals
 U cup piston
 Magnetic piston

HB-500 Rod Clevis & Nut



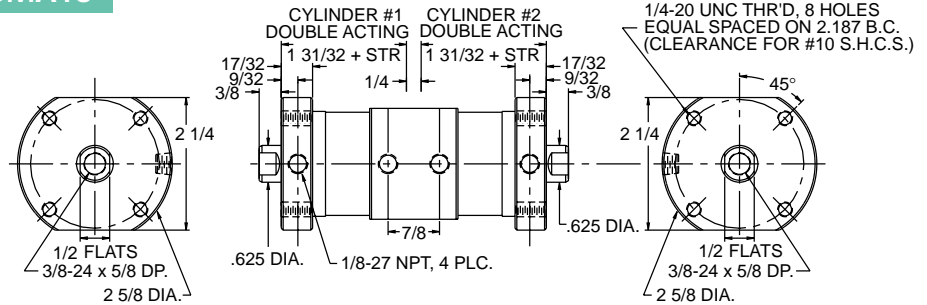
HB 501 Clevis Pin Assembly



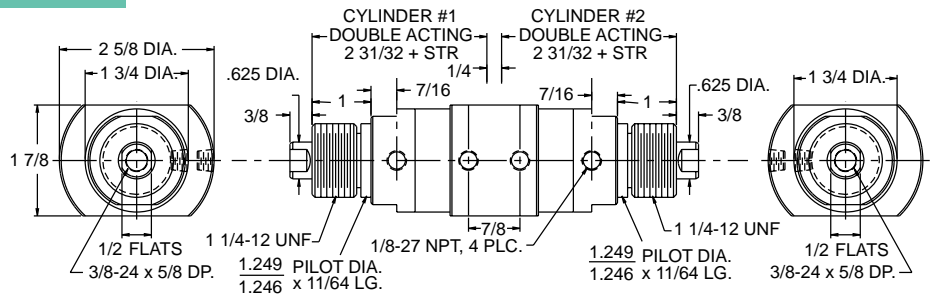
Used on HB 500
 Stainless pin/
 steel clips

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



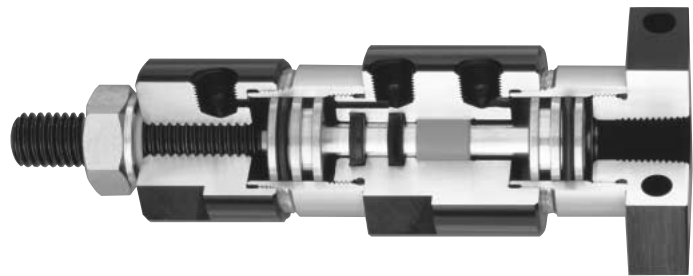
SMA19



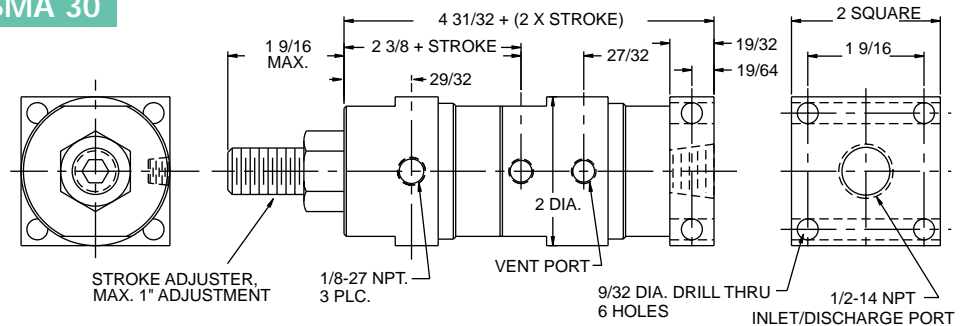
1 1/2" Bore SMA Volumetric Pump

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.

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.

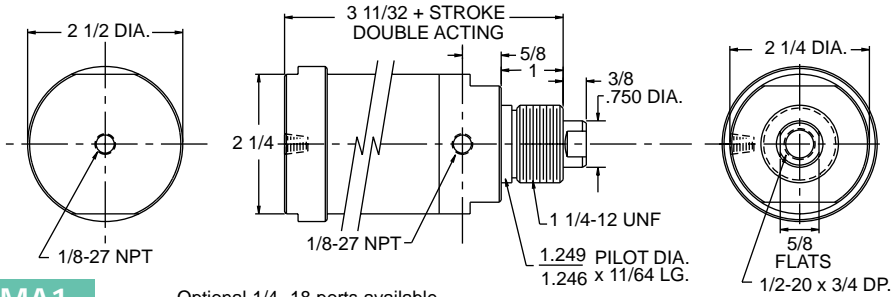


SMA 30



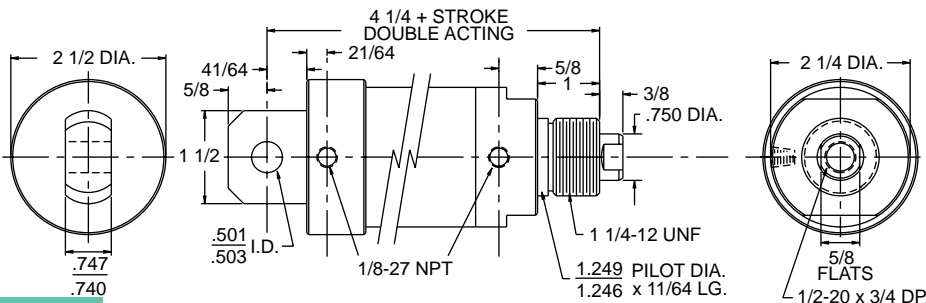
2" BORE SMA ALUMINUM

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



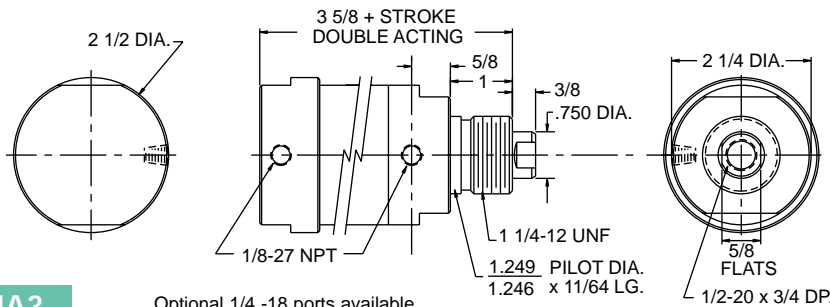
SMA1

Optional 1/4 -18 ports available



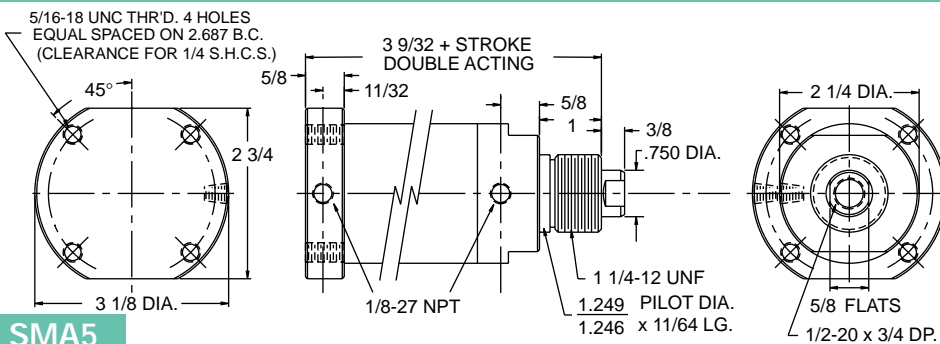
SMA2

Optional 1/4 -18 ports available

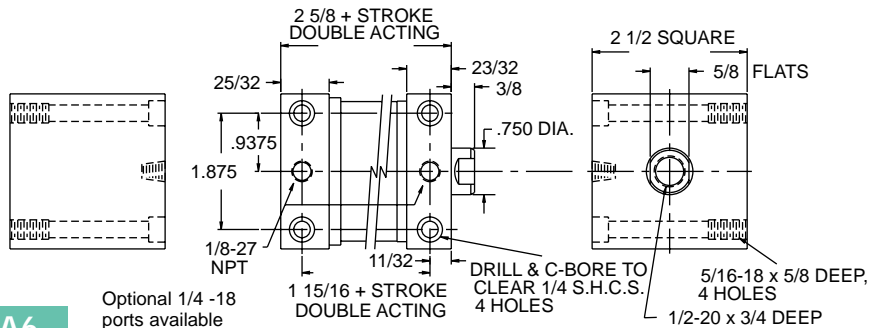


SMA3

Optional 1/4 -18 ports available



SMA5



SMA6

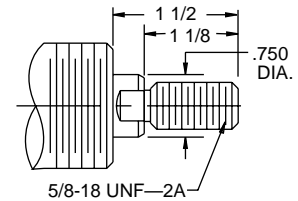
Optional 1/4 -18 ports available

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

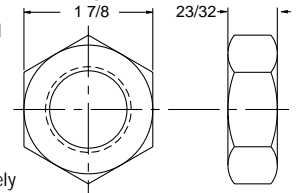
Optional Male Rod Thread



1 1/4-12 Nut

Nose Mounting Nut

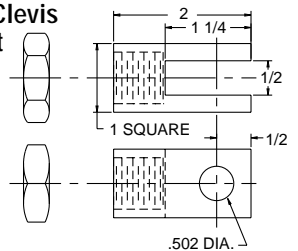
Not included with cylinder



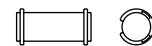
Order Separately

HB-625 Rod Clevis & Nut

Zinc plated steel



HB-601 Clevis Pin Assembly



Used on HB 625 assembly
Stainless pin/ steel clips

SEE PAGES 84-86

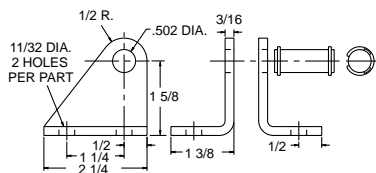
**FOR
REED AND HALL
EFFECT SWITCHES
AND
MAGNETIC PISTONS**

SMA Options

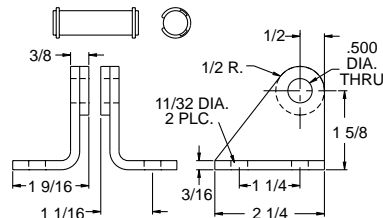
- Shock Pads
- Viton Seals
- Non-lube Service
- Magnetic Piston
- U Cup Piston
- Non-rotate (SMA 7,8,9)
- 90° Rear Clevis
- Oversize ports

UNIQUE APPLICATIONS SOMETIMES REQUIRE UNIQUE CYLINDERS
 See our custom design capabilities on page 37

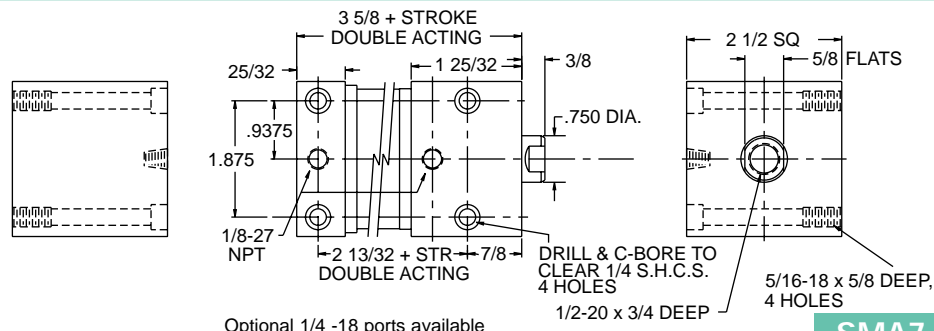
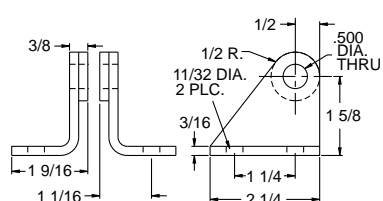
HB-100 St'd Clevis Brk't
 Used on SMA 2 Stainless steel



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

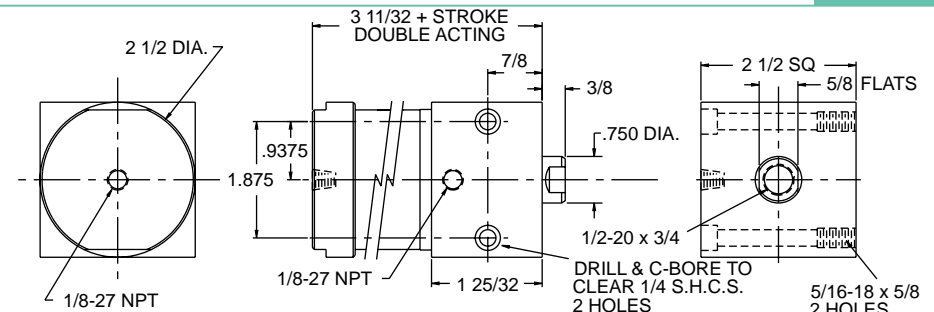


SS-100T Trunnion Brk't
 Used on SMA 10, 11 Stainless steel



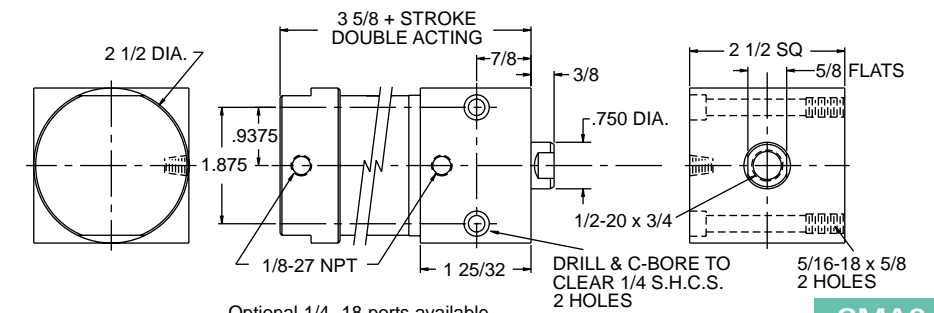
Optional 1/4 -18 ports available

SMA7



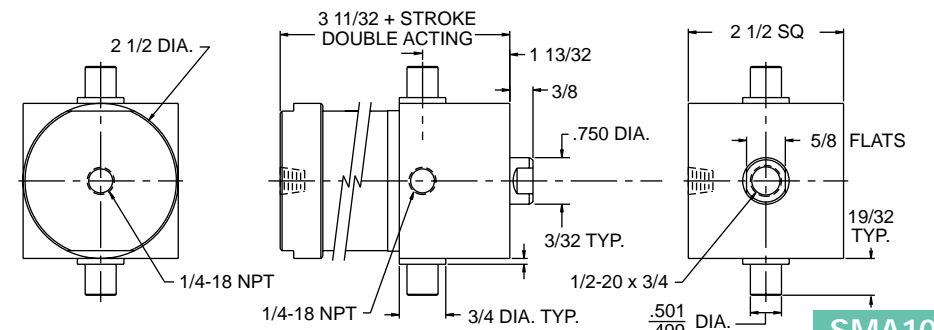
Optional 1/4 -18 ports available

SMA8

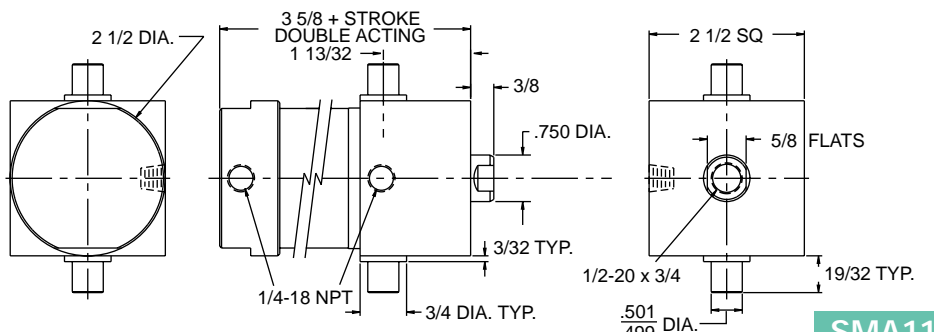


Optional 1/4 -18 ports available

SMA9



SMA10

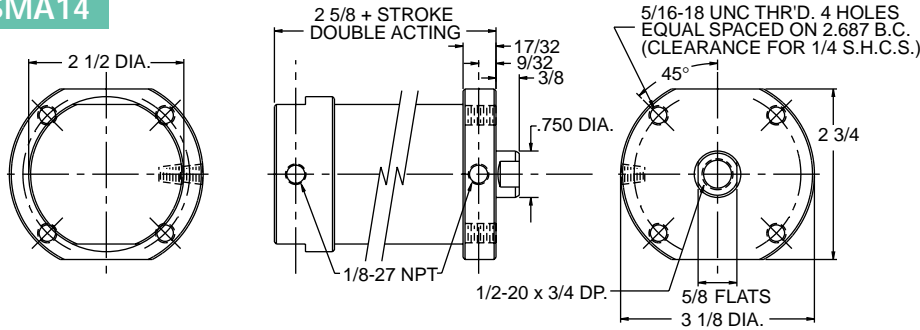


SMA11

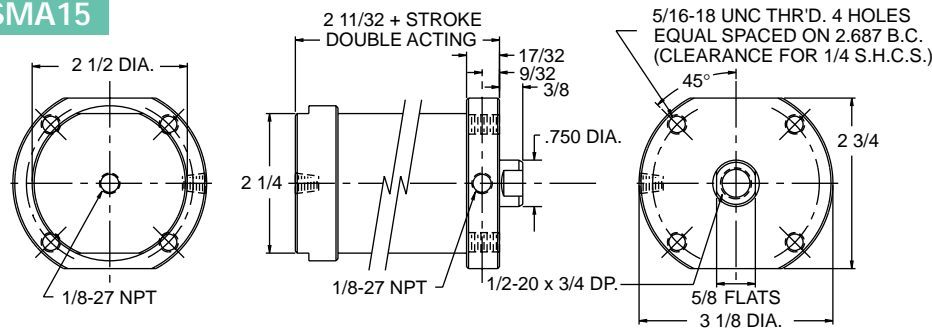
2" BORE SMA ALUMINUM

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

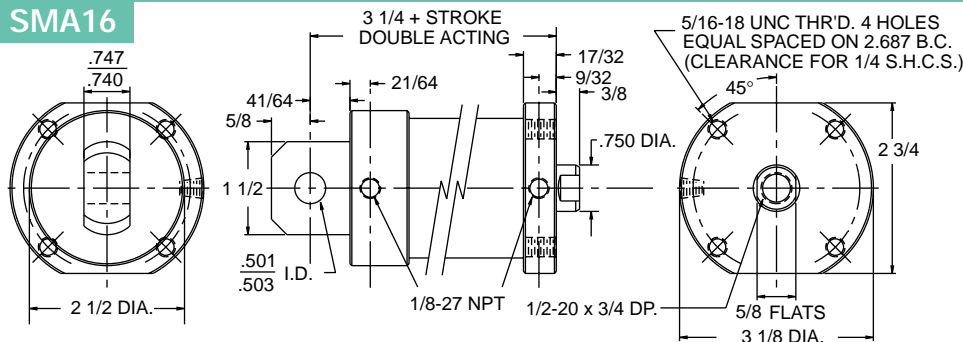
SMA14



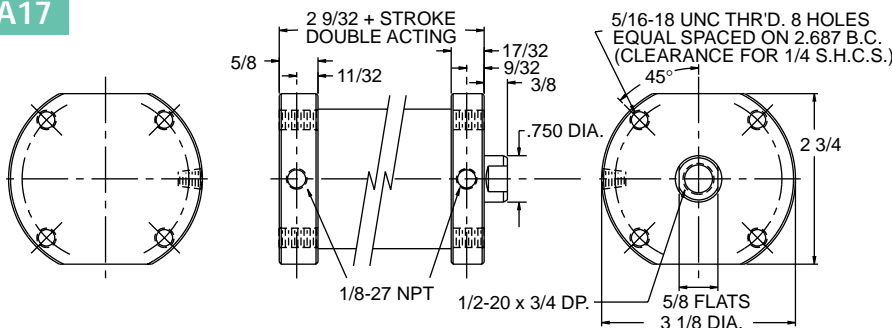
SMA15



SMA16



SMA17



*For the ultimate in cycle life or where side load exists
select the U cup piston with teflon wear strip*

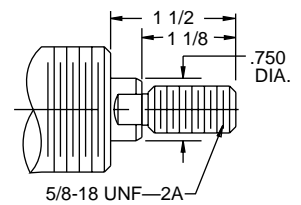
Adds 1/2" to length

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

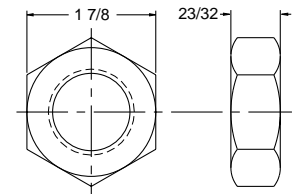
Spring force
Fully extended—20#
Fully compressed—75#
Spring material—Plated steel

Optional Male Rod Thread



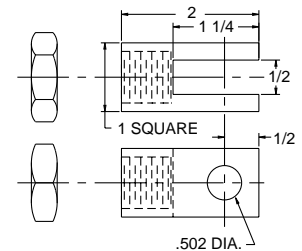
1 1/4-12 Nut Nose Mounting Nut

Not included with cylinder
Order Separately



HB-625 Rod Clevis & Nut

Zinc Plated Steel



HB-601 Clevis Pin Assembly

Used on HB 625
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

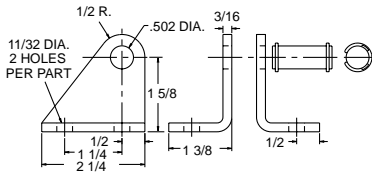


SMA Options

- Shock Pads
- Viton Seals
- Non-lube Service
- Magnetic Piston
- U Cup Piston
- Non-Rotate (SMA12, 14, 15, 17, 20)
- 90° Rear Clevis

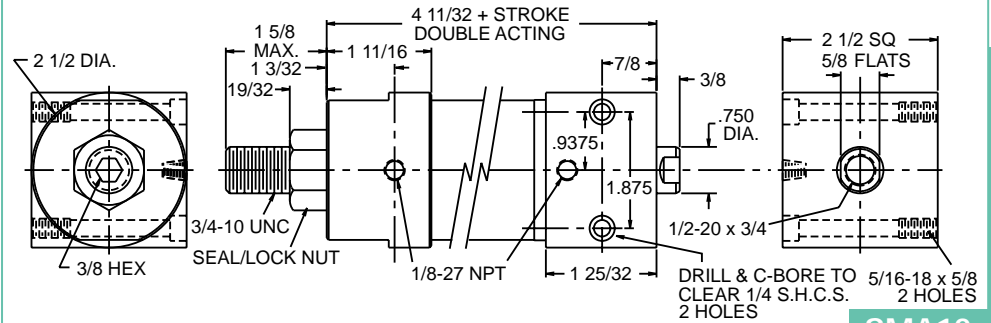
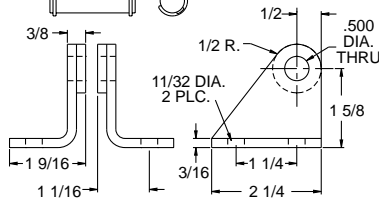
HB-100

St'd Clevis Brk't
 Used on SMA 16 Stainless steel

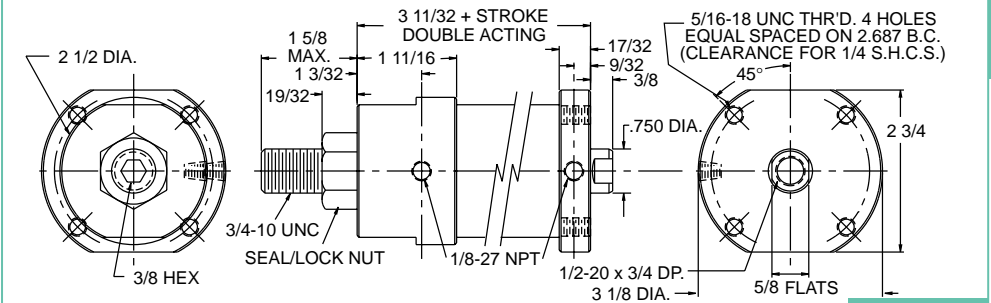


SS-100

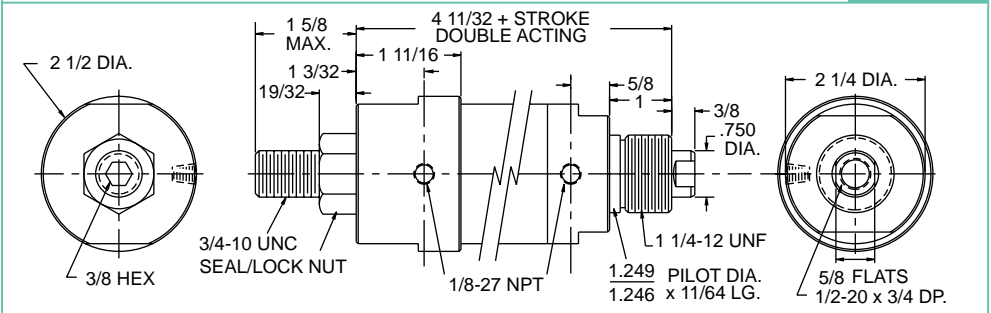
St'd Clevis Brk't
 Used on SMA 16 Stainless steel



SMA12

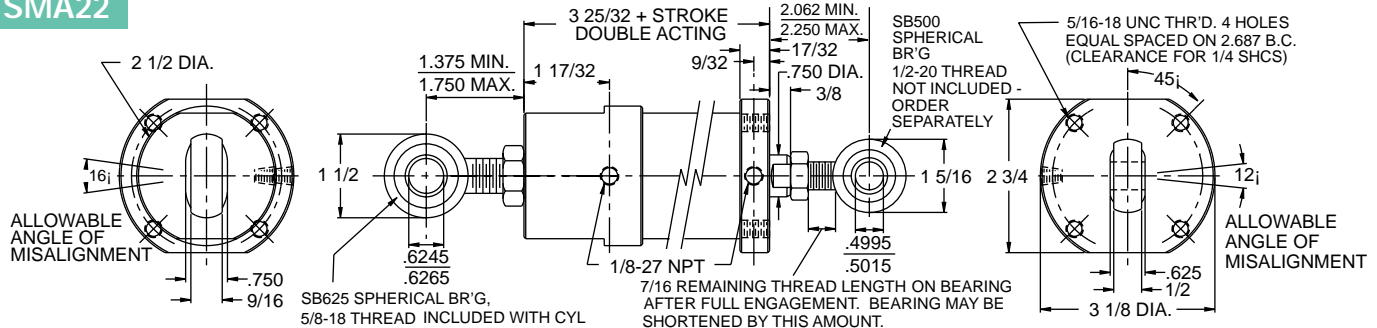


SMA20

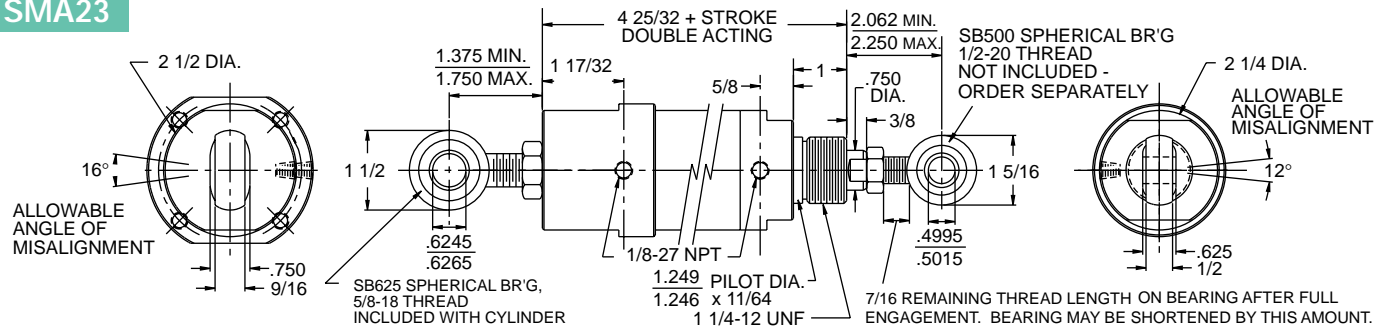


SMA21

SMA22



SMA23



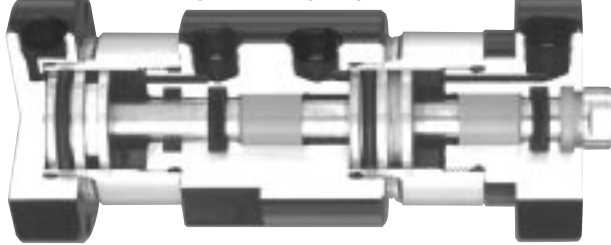
Series SMA Aluminum

2" BORE SMA ALUMINUM

3 Position models

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

PORT 1 PORT 2 PORT 3 PORT 4

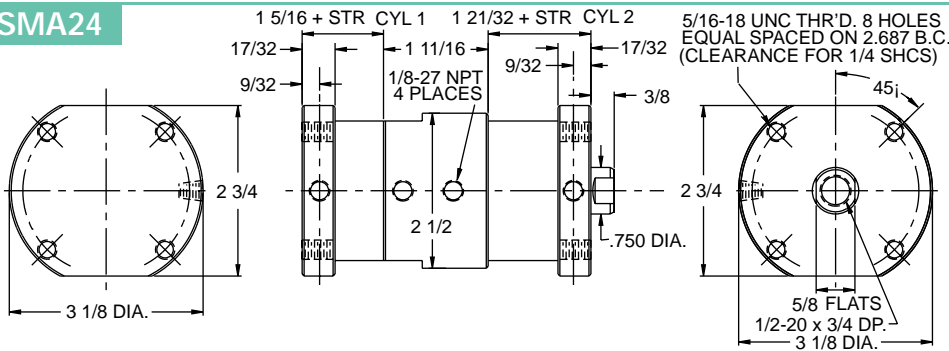


Three Position Cylinders are two in-line cylinders with a common cap but two separate and independent piston rods. By pressuring Port 1, 3, or 4, any combination of stroke 1 and total stroke may be achieved. Port 2 is a vent port only for Cylinder 1. In hydraulic applications it should be connected to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

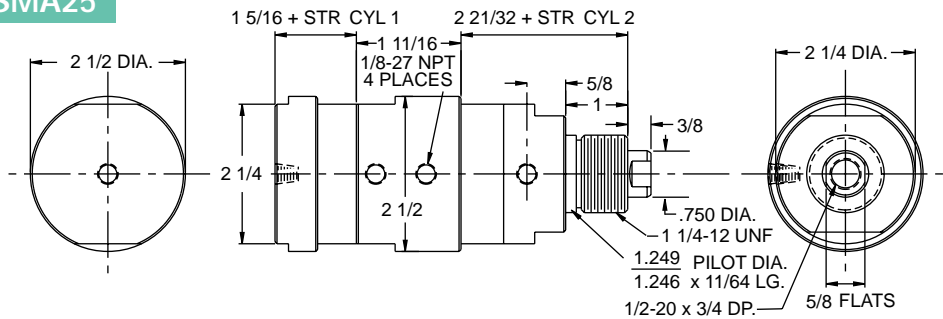
Pressurize Port 1 and Cylinder 1 will extend pushing Cylinder 2 by the same amount. Then pressurize port 3 and Cylinder 2 will extend further to its maximum length. Pressurize Port 4 and both cylinders will retract.

*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.

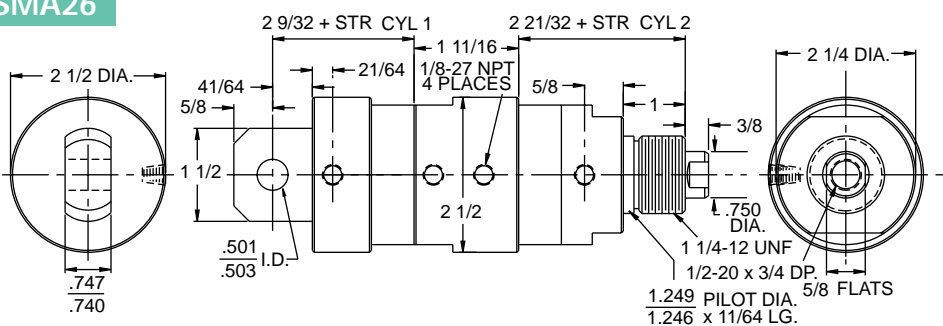
SMA24



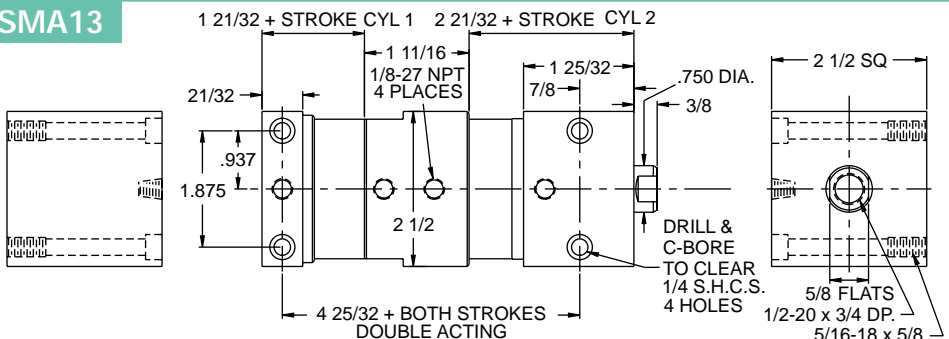
SMA25



SMA26



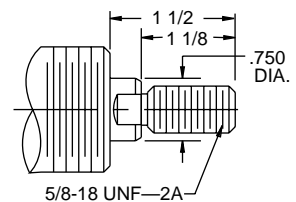
SMA13



Spring Return 3 Position

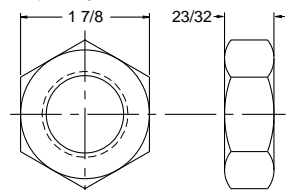
Pneumatic only
Springs add to cyl. length
Cyl. #1 and/or Cyl. #2
0-2" stroke add 1 1/2" extra
2 1/2-4" stroke add 3" extra
over 4" not available
Spring force
Fully extended—20#
Fully compressed—75#
Spring material—Plated steel

Optional Male Rod Thread



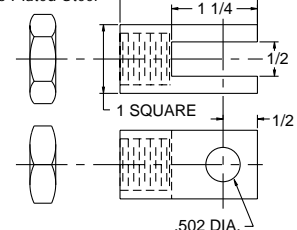
1 1/4-12 Nose Mounting Nut

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



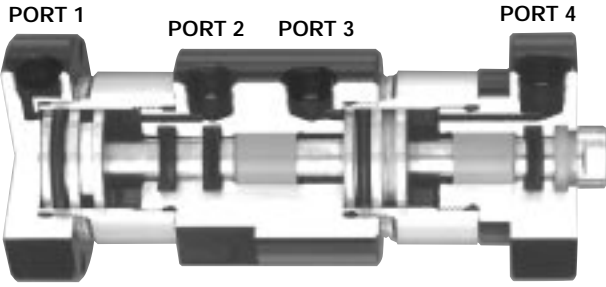
2" BORE SMA ALUMINUM

Tandem
models

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



Series SMA Aluminum



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.

Tandem models double acting only
Spring return not available

3 Position options

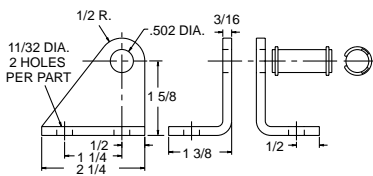
- Viton seals
- Non-lube service
- Magnetic piston
- U Cup piston
- Non-rotate (SMA 13, 24)
- 90° Rear clevis
- Shock pads not available*

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*

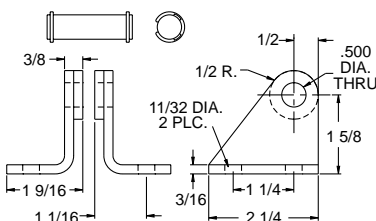
HB -100 Clevis Brk't

Used on SMA 2
Zinc plated steel

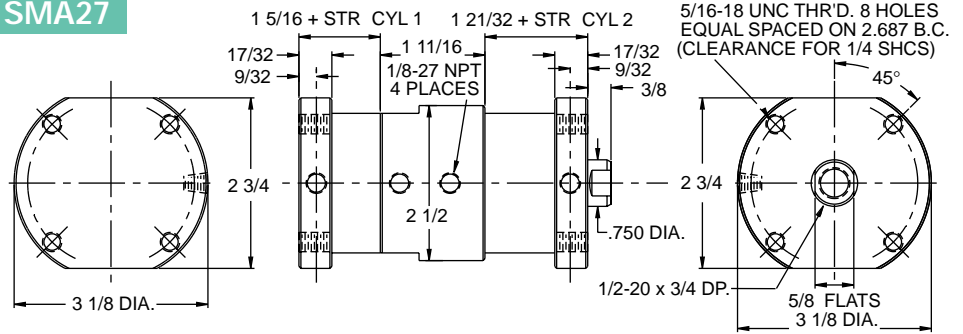


SS-100

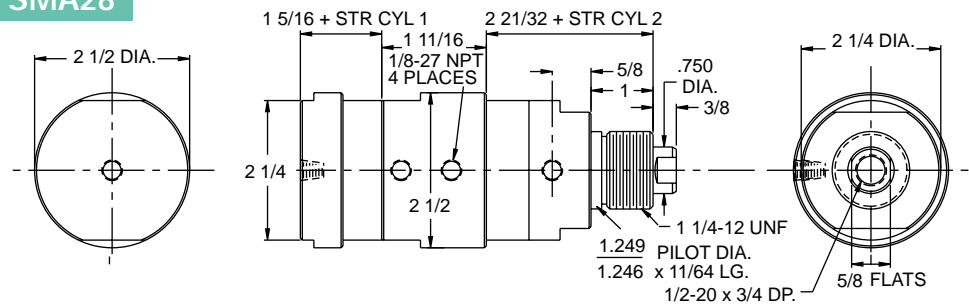
St'd Clevis Brk't
Used on SMA 2
Zinc plated steel



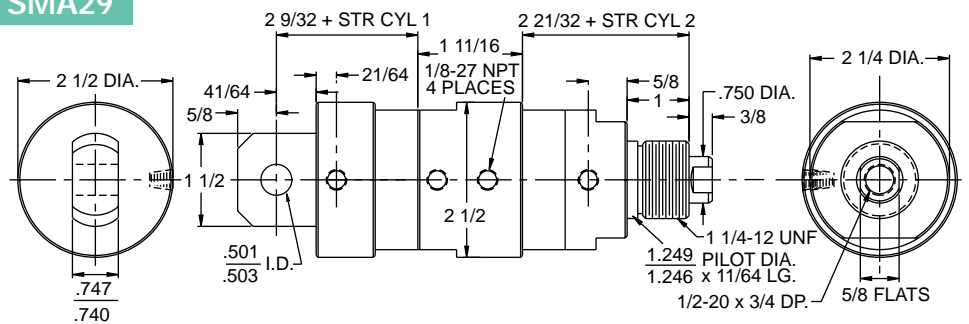
SMA27



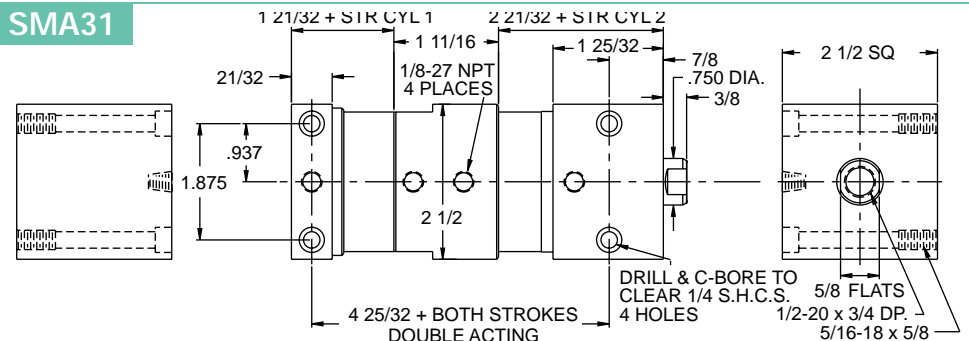
SMA28



SMA29

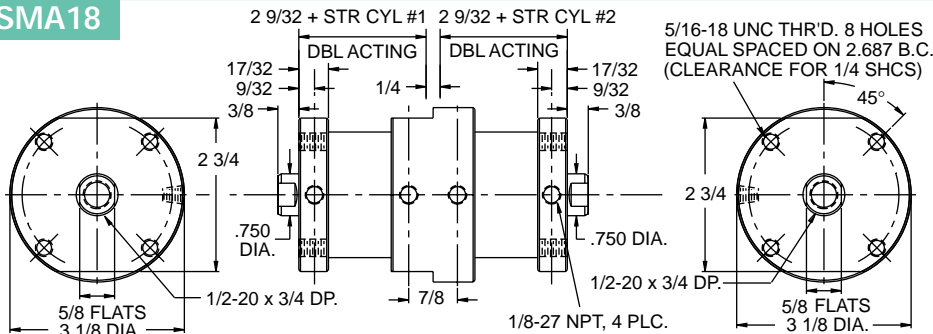


SMA31

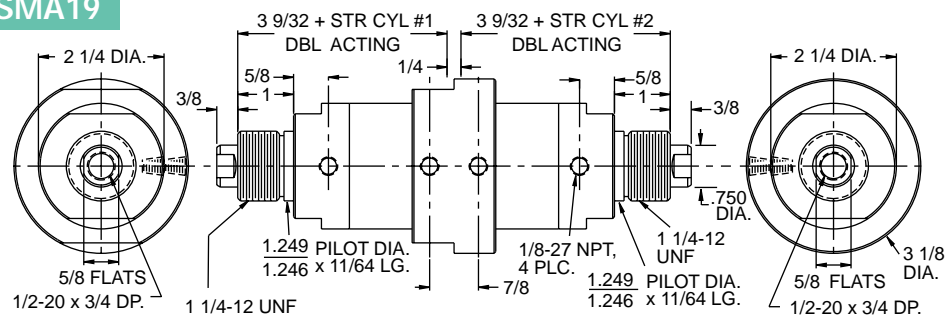


Back to back cylinders are simply two standard double acting or single acting spring return cylinders with a common cap. By proper valve sequencing, four distinct stroke lengths may be achieved.

SMA18



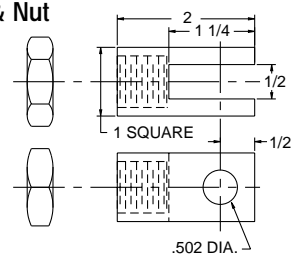
SMA19



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

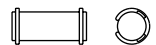
HB-625 Rod Clevis & Nut



Zinc plated steel

HB-601 Clevis Pin Assembly

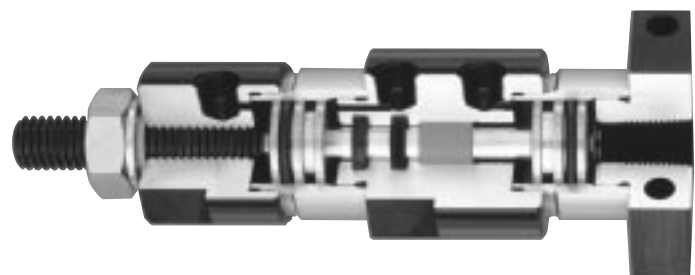
Used on HB 625
 Stainless pin/ steel clips



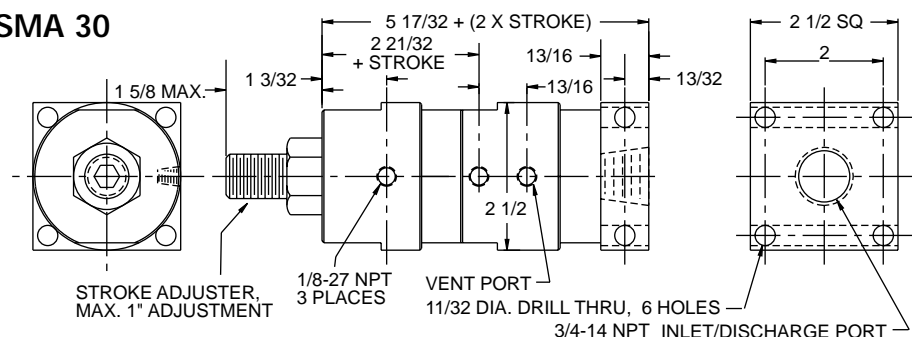
2" Bore SMA Volumetric Pump

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.

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.



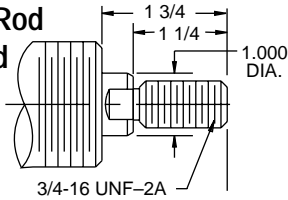
SMA 30



Spring Return Cylinders

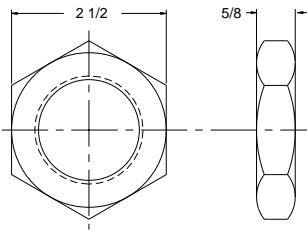
Pneumatic only
Springs add to cyl. length
0-2" stroke add 1 1/2" extra
2 1/2-4" stroke add 3" extra
over 4" stroke not available
Spring force
Fully extended—20#
Fully compressed—75#
Spring material—Plated steel

Optional Male Rod Thread



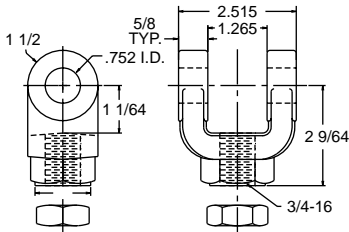
1 3/4 - 12 Nut Nose Mounting Nut

Not included with cylinder
Order Separately



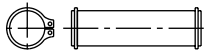
SMA-750 Rod Clevis & Nut

Plated steel



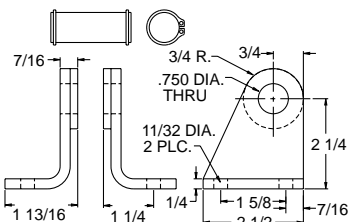
SMA-701 Clevis Pin Assembly

Used on SMA 750 Stainless pin/Steel clips



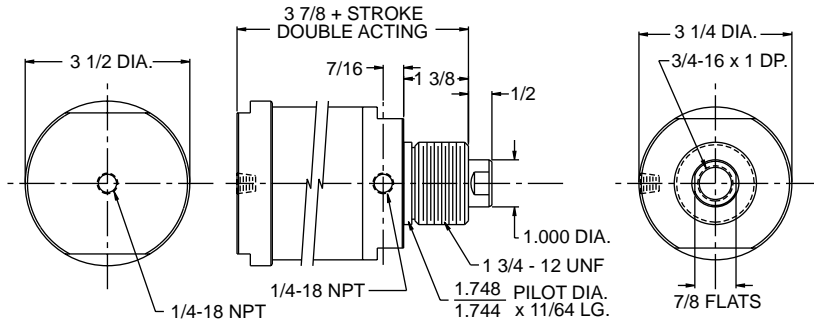
SSC-300 Clevis Brk't

Used on SMA 2 Stainless steel

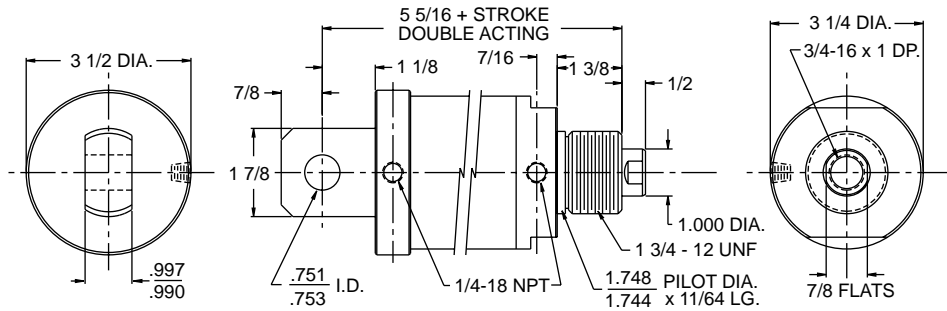


SMA Options

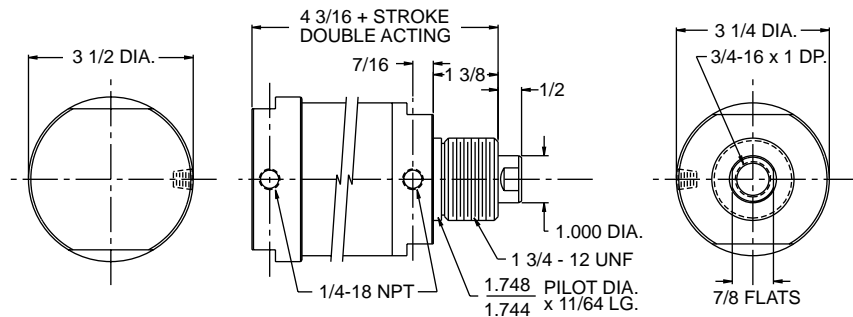
- Shock Pads
- Viton Seals
- Non-lube Service
- Magnetic Piston
- U Cup Piston
- 90° Rear Clevis



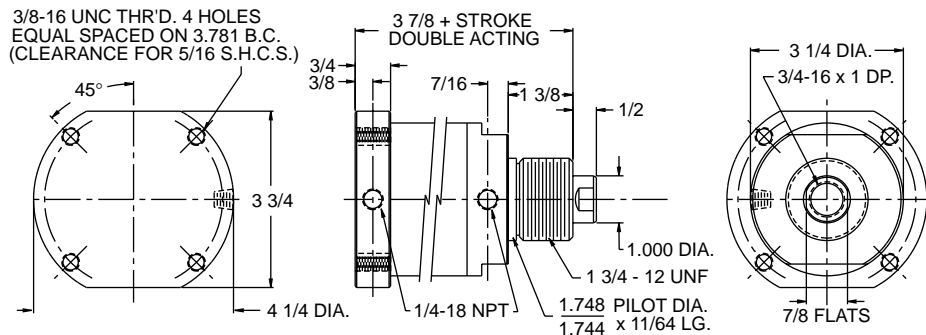
SMA1



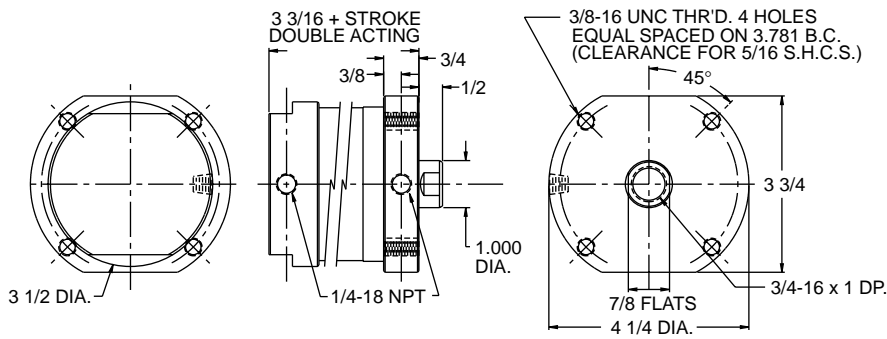
SMA2



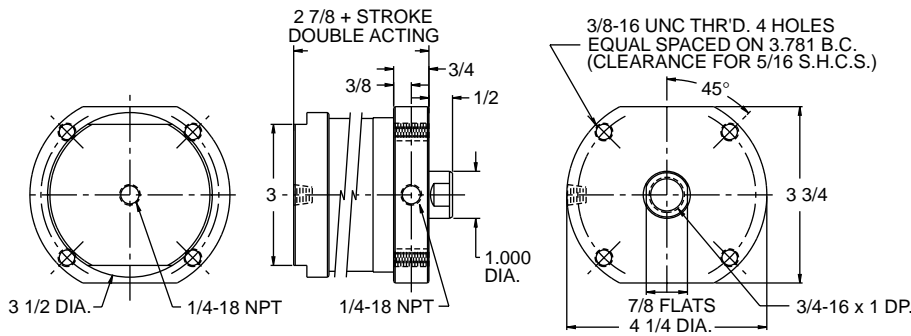
SMA3



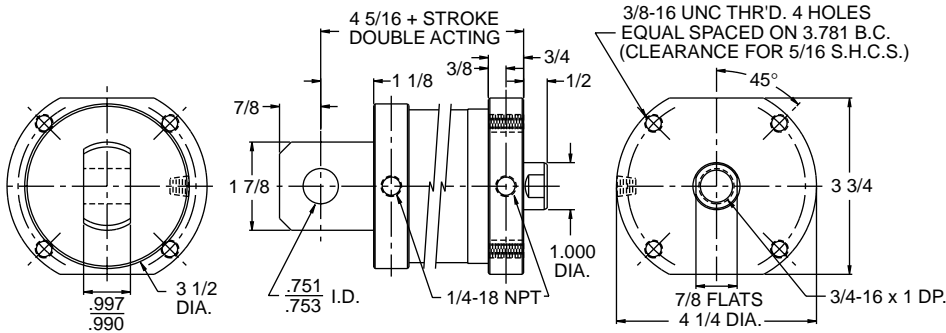
SMA5



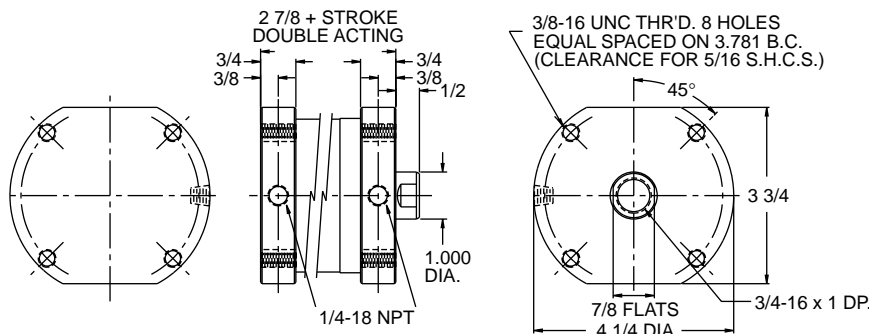
SMA14



SMA15



SMA16

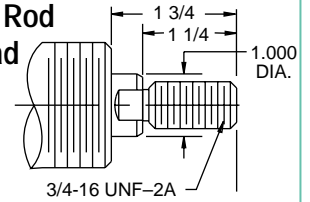


SMA17

Spring Return Cylinders

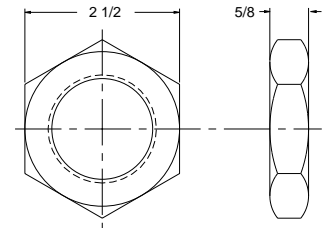
Pneumatic only
Springs add to cyl. length
0-2" stroke add 1 1/2" extra
2 1/2-4" stroke add 3" extra
over 4" stroke not available
Spring force
Fully extended—20#
Fully compressed—75#
Spring material—Plated steel

Optional Male Rod Thread



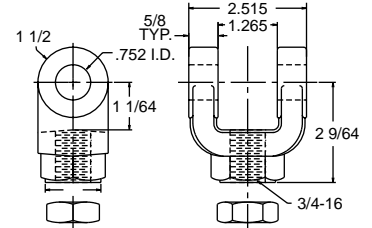
1 3/4 -12 Nut Nose Mounting Nut

Not included with cylinder
Order Separately



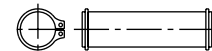
SMA-750 Rod Clevis & Nut

Plated steel



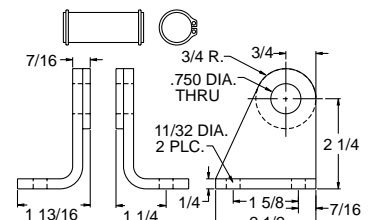
SMA-701 Clevis Pin Assembly

Used on SMA 750 Stainless pin/Steel clips



SSC-300 Clevis Brk't

Used on SMA16 Stainless steel



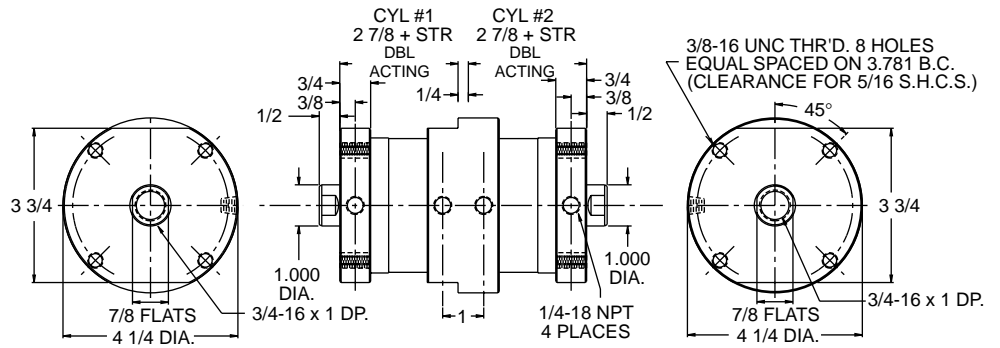
Back to Back models – Back to Back cylinders are two standard cylinders with a common cap.

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



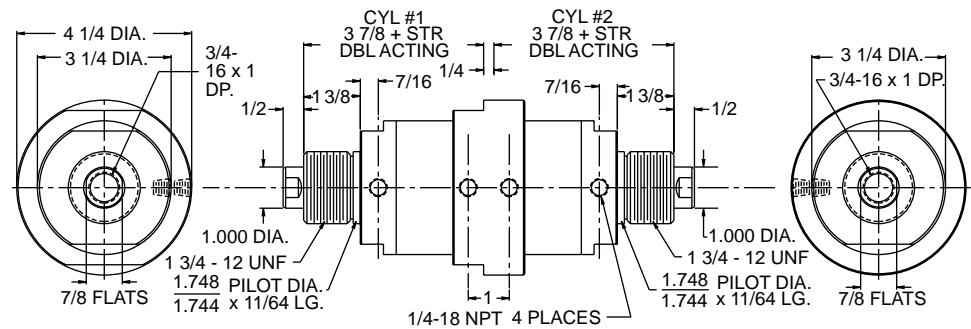
SMA Options

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

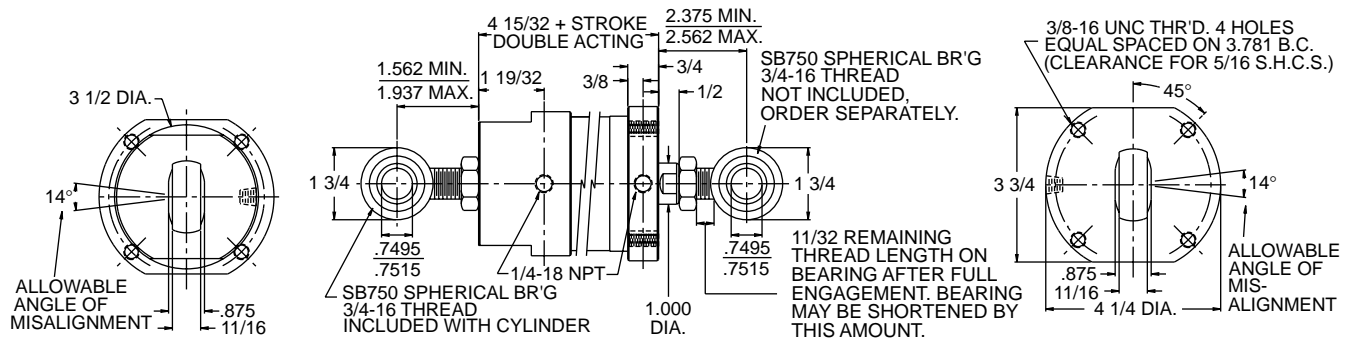


SMA18

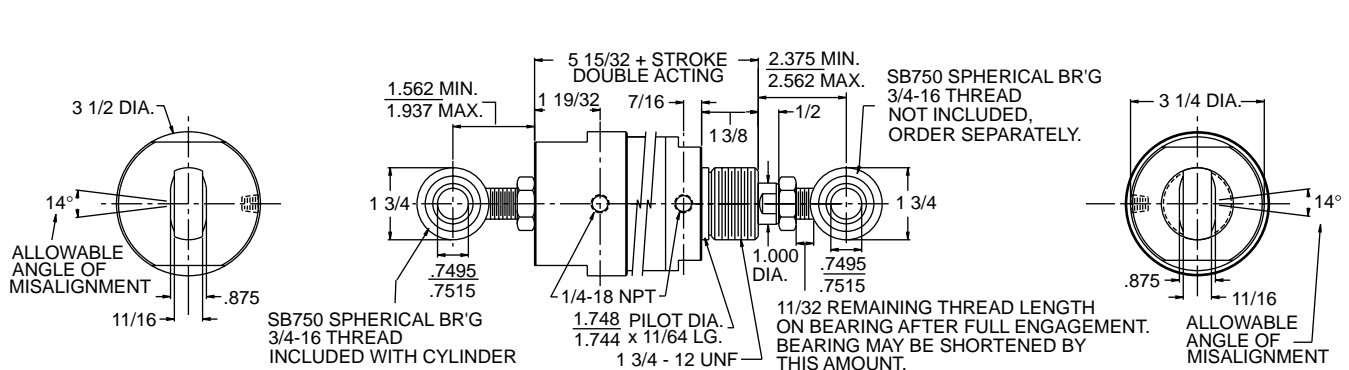
Breather Vents and Mufflers
Protect Vent Ports from Dirt in Single Acting Cylinders.



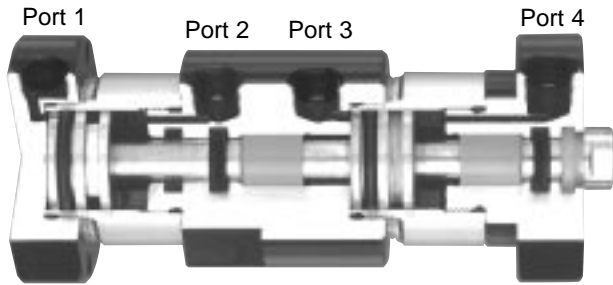
SMA19



SMA22



SMA23

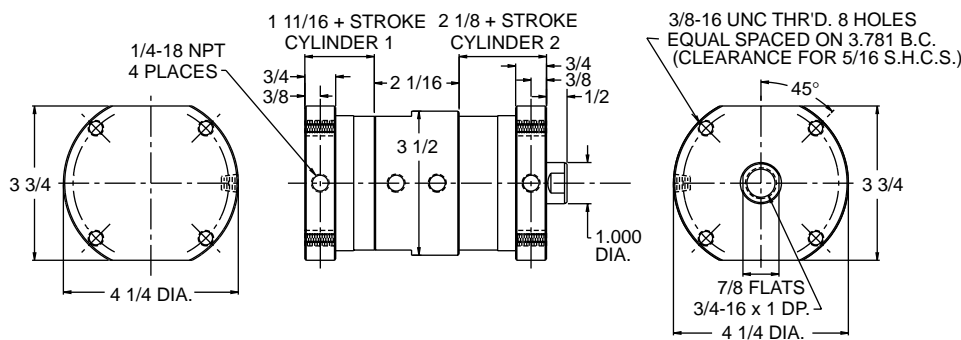


Three Position Cylinders are two in-line cylinders with a common cap but two separate and independent piston rods. By pressuring Port 1, 3, or 4, any combination of stroke 1 and total stroke may be achieved. Port 2 is a vent port only for Cylinder 1. In hydraulic applications it should be connected to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

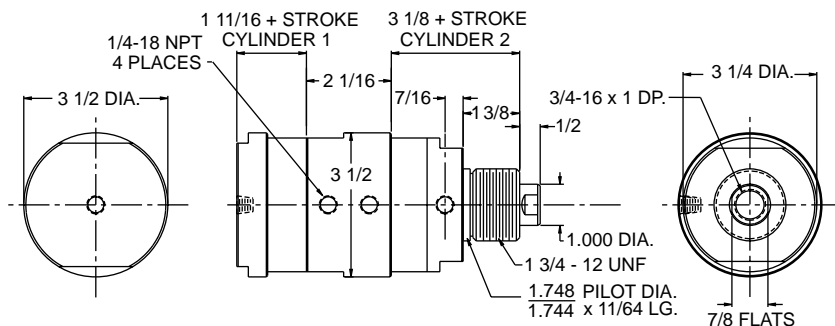
Pressurize Port 1 and Cylinder 1 will extend pushing Cylinder 2 by the same amount. Then pressurize port 3 and Cylinder 2 will extend further to its maximum length. Pressurize Port 4 and both cylinders will retract.

*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.

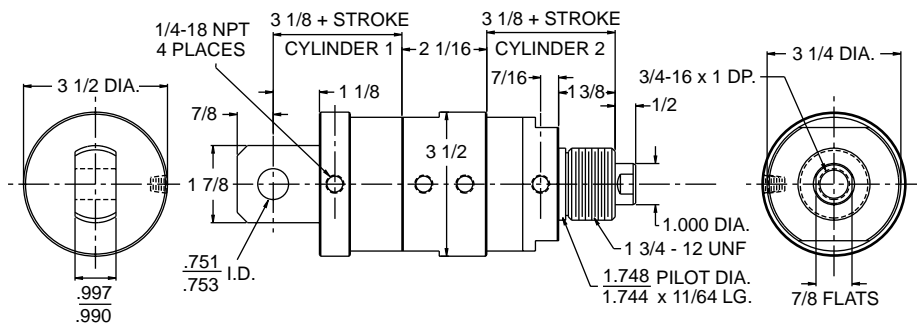
SMA24



SMA25



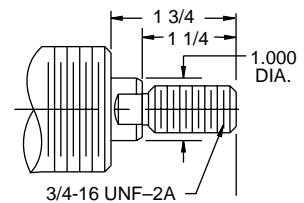
SMA26



Spring Return 3 Position

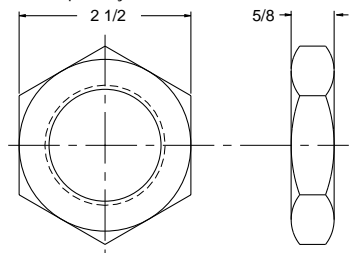
Pneumatic only
Springs add to cyl. length
Cyl. #1 and/or Cyl. #2
0-2" stroke add 1 1/2" extra
2 1/2-4" stroke add 3" extra over 4" not available
Spring force
Fully extended—20#
Fully compressed—75#
Spring material—Plated steel

Optional Male Rod Thread



1 3/4 - 12 Nut Nose Mounting Nut

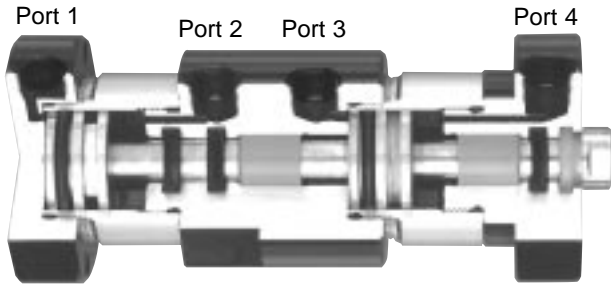
Not included with cylinder
Order Separately



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.

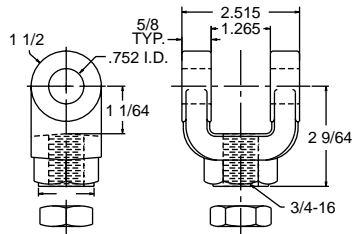
Tandem cylinders can also be used as part of an air/oil system. Fill the front cylinder (Cyl.2) with oil and pipe its ports (3 & 4) in series using one or two flow controls. Using the rear cylinder (Cyl. 1) as an air powered driver, meter the oil from end to end on Cylinder 2. This will provide smooth,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

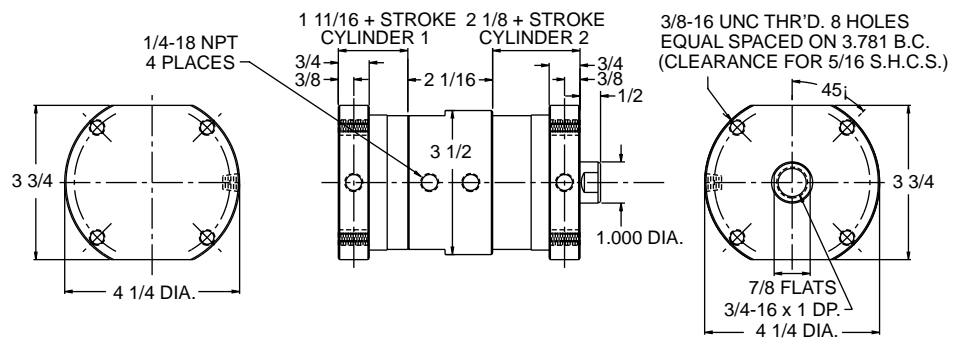
Tandem models double acting only
Spring return not available

SMA-750
Rod Clevis & Nut

Plated steel

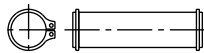


SMA27

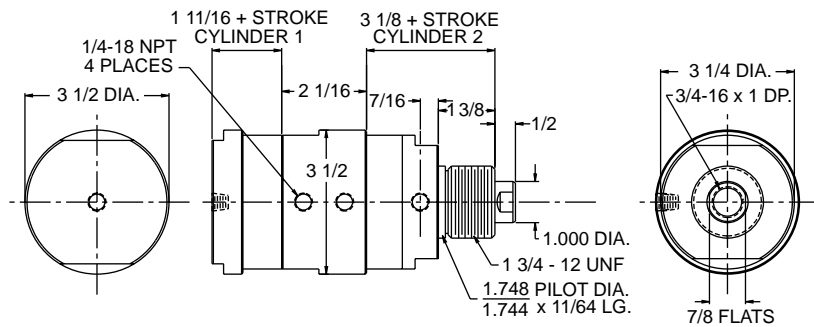


SMA-701
Clevis Pin Assembly

Used on SMA 750
Stainless pin/Steel clips

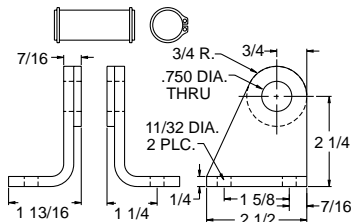


SMA28

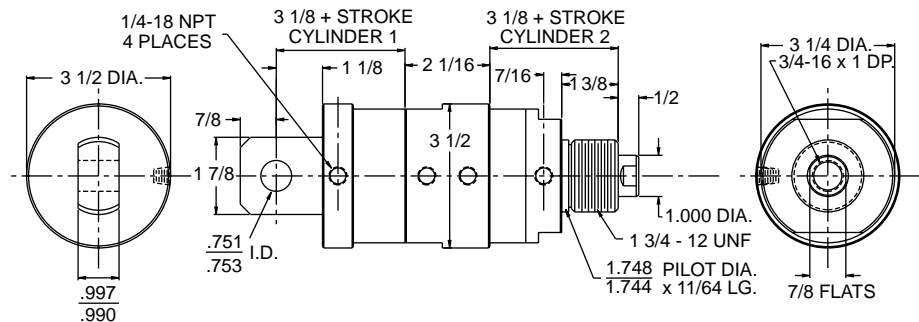


SSC-300
Clevis Bracket

Used on SMA 26, 29 Stainless steel



SMA29



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 Option SMA Aluminum and SMS Stainless

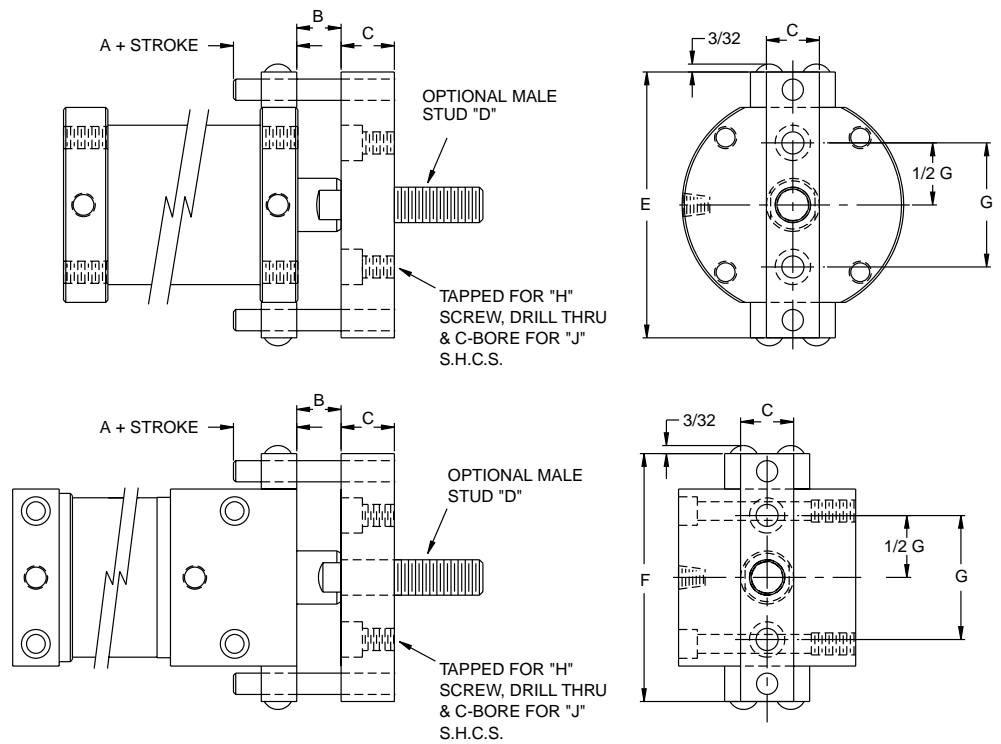
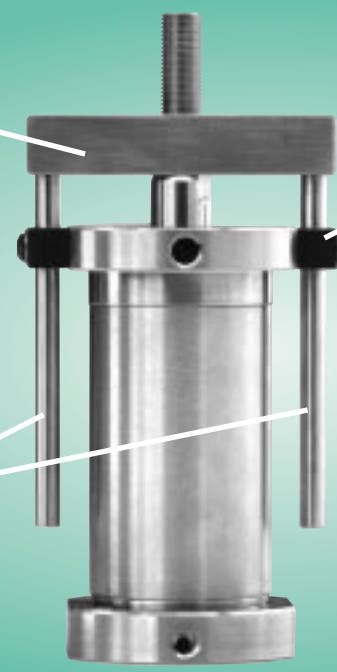
Add a stainless tooling bar to prevent rotation on standard square or flange mount cylinders.

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.

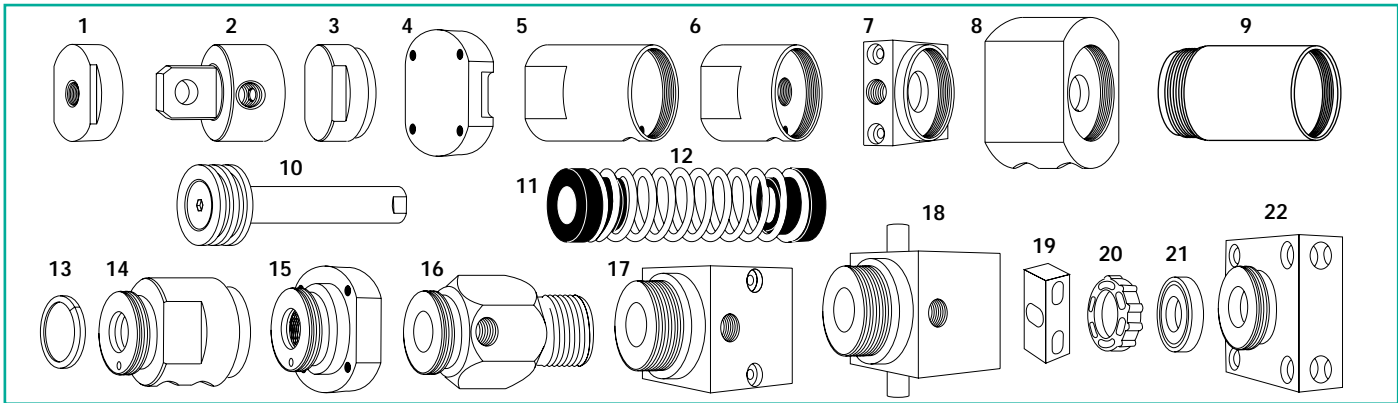
Where space permits U cup piston with wear strip is recommended.



BORE	A	B	C	D	E	F	G	H	J
1 1/8	11/16	3/4	1/2	5/16-24 x 3/4	2 3/4	2 1/2	1.062	1/4-20	#10
1 1/2	11/16	5/8	5/8	3/8-24 x 1	3 1/4	3	1.250	5/16-18	1/4
2	9/16	5/8	3/4	1/2-20 x 1 1/4	3 3/4	3 1/2	1.750	5/16-18	1/4
3	NOT AVAILABLE								

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	1 1/8 Bore	1 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 Add suffix NL for Non-Lube	SMA 3411	SMA 3415	SMA 3420	SMA 3430
	Pneumatic, Viton Add suffix NL for Non-Lube	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 Add suffix NL for Non-Lube	SMA 3611	SMA 3615	SMA 3620	SMA 3630
	Pneumatic, Viton Add suffix NL for Non-Lube	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
1	Rear port cap Add suffix 250 for 2" bore 1/4 NPT	SMA 1011	SMA 1015	SMA 1020	SMA 1030
2	Rear pivot cap Add suffix 250 for 2" bore 1/4 NPT	SMA 1111	SMA 1115	SMA 1120	SMA 1130
2	90° Rear pivot cap Add suffix 250 for 2" bore 1/4 NPT	SMA 111190	SMA 111590	SMA 112090	SMA 113090
3	Side port cap Add suffix 250 for 2" bore 1/4 NPT	SMA 4811	SMA 4815	SMA 4820	SMA 4830
4	Rear flange cap	SMA 1311	SMA 1315	SMA 1320	SMA 1330
5	Spherical bearing cap	SMA 2211	SMA 2215	SMA 2220	SMA 2230
6	Adjustable stroke cap	SMA 2011	SMA 2015	SMA 2020	
7	Square cap Add suffix 250 for 2" bore 1/4 NPT	SMA 4611	SMA 4615	SMA 4620	
8	Back to back body	SMA 1811	SMA 1815	SMA 1820	SMA 1830
9	Tube	part No. is T followed by the complete cylinder part number			
10	Piston rod assembly	part No. is PR followed by the complete cylinder part number			
11	Spring guide Pair	SMA 1211	SMA 1215	SMA 1220	SMA 1230
12	Spring	11215	15015	20015	20015
13	Magnet SMS5911 and SS3215 supplied in pairs	SMS 5911	SS 3215	SS 3220	SS 3230
14	3 position/Tandem/Pump body	SMA 2411	SMA 2415	SMA 2420	SMA 2430
15	Flange head Add suffix NR for non-rotate	SMA 1411	SMA 1415	SMA 1420	SMA 1430
16	Nose Mount Head Add suffix 250 for 2" bore, 1/4 NPT	SMA 0111	SMA 0115	SMA 0120	SMA 0130
17	Short square Head Add suffix 250 for 2" bore, 1/4 NPT	SMA 4411	SMA 4415	SMA 4420	
17	Long square Head Add suffix 250 for 2" bore, 1/4 NPT	SMA 4511	SMA 4515	SMA 4520	
17	Square non rotate head	SMA 4511NR	SMA 4515NR	SMA 4520NR	
18	Trunnion head	SMA 4511T	SMA 4515T	SMA 4520T	
19	Non-rotate guide bushing Pair	SMS 5111	SMS 5111	SMS 5111	
20	Cap end shock pad	Consult factory			3MSP
21	Head end shock pad	11CSP	15CSP	2CSP	3MSP
22	SMA 30 cap	SMA 6011	SMA 6015	SMA 6020	

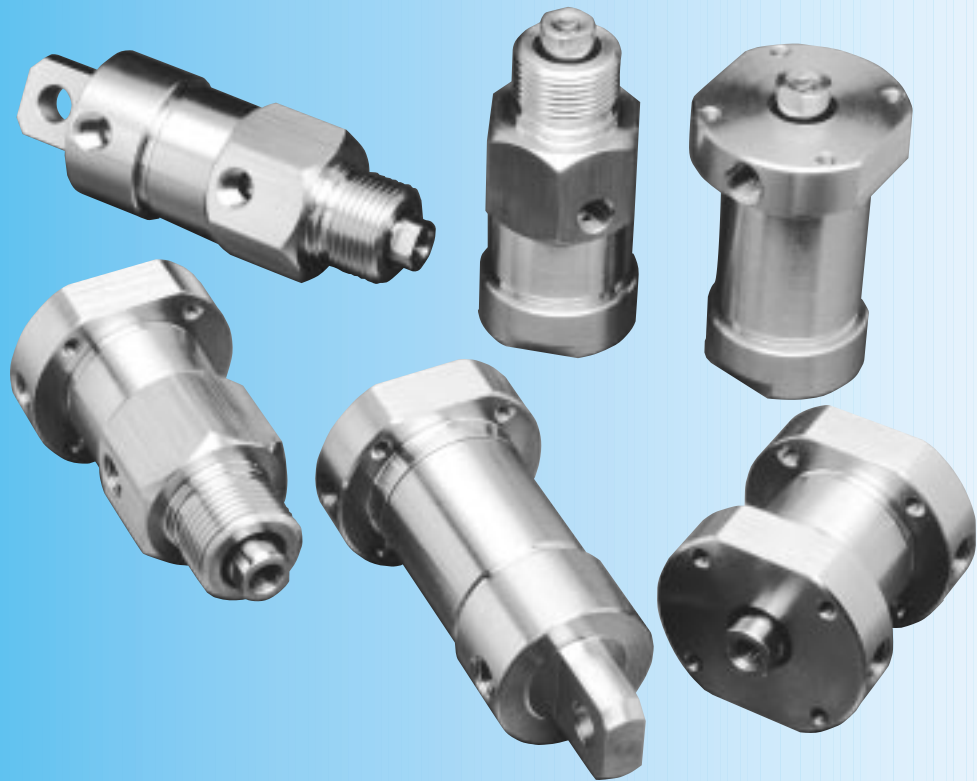
SMS Solid Stainless Cylinders

Space Saving and Conventional Lengths

Pneumatic to 200 PSI

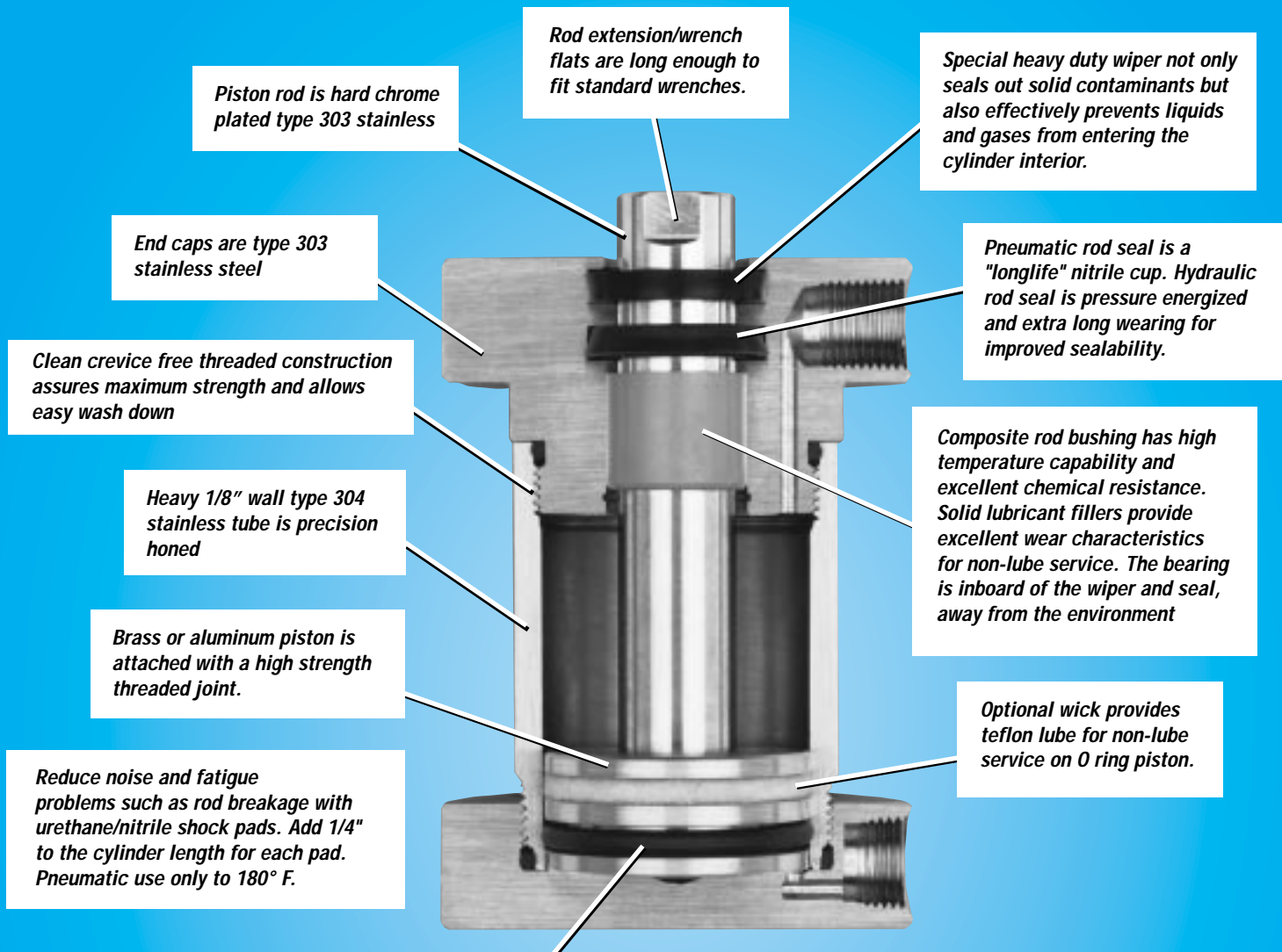
Hydraulic 400 to 500 PSI Non shock

1 1/8", 1 1/2", 2", 3" Bore



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

SMS DESIGN FEATURES



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.



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.

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.

TM



SMS Options

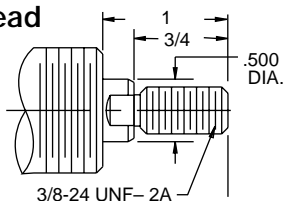
- Shock Pads
- Viton Seals
- Non-lube Service
- Magnetic Piston
- U Cup Piston
- 90° Rear Clevis

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

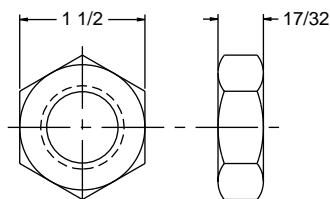
Spring force
Fully extended—8#
Fully compressed—22#
Spring material—Stainless steel

Optional Male Rod Thread



1-14SS Nut Nose Mounting Nut

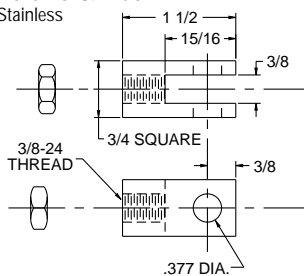
Not included with cylinder Order Separately



18-8 Stainless

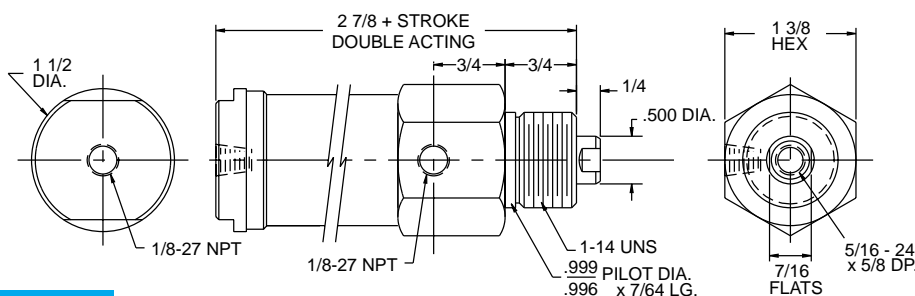
SS-375 Rod Clevis & Nut

303 Stainless

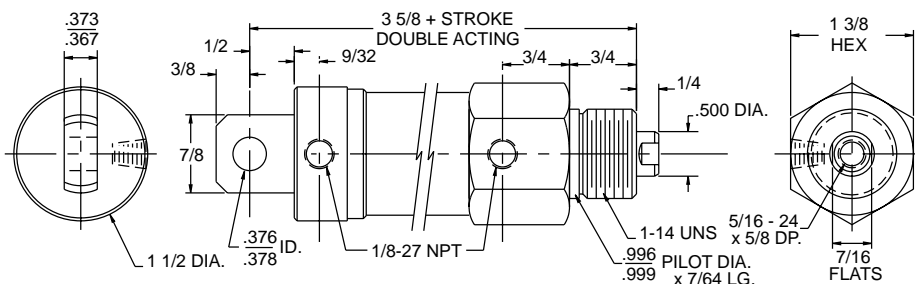


SS-301 Clevis Pin assembly

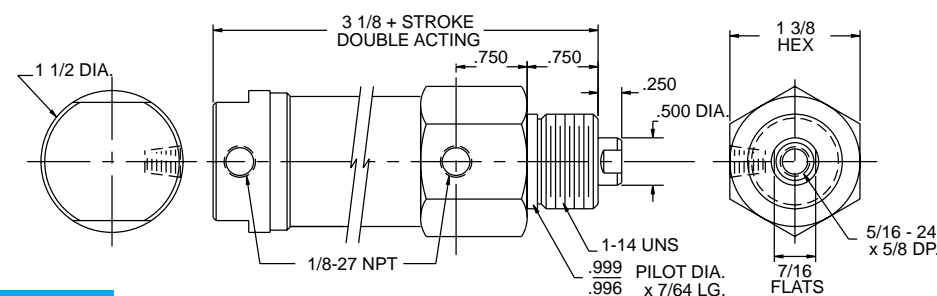
Used on SS-375
303 Stainless



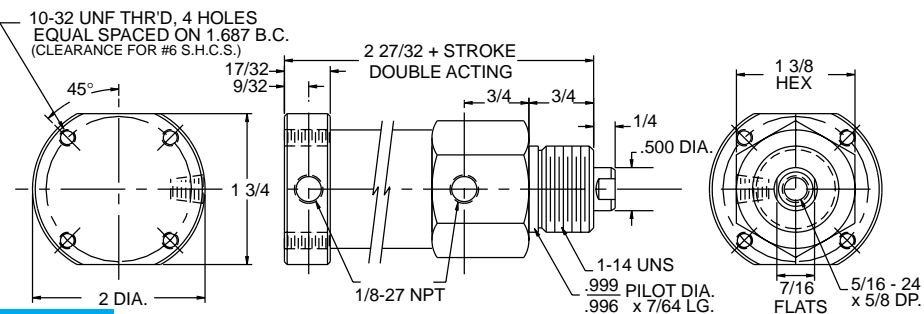
SMS1



SMS2



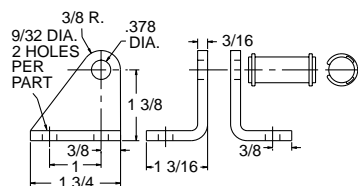
SMS3



SMS5

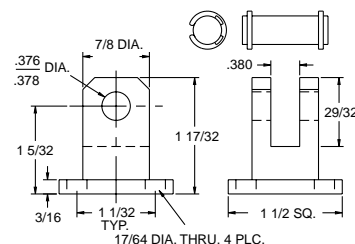
SS-90 St'd Clevis Brk't

Used on SMS 2
Series 300 Stainless



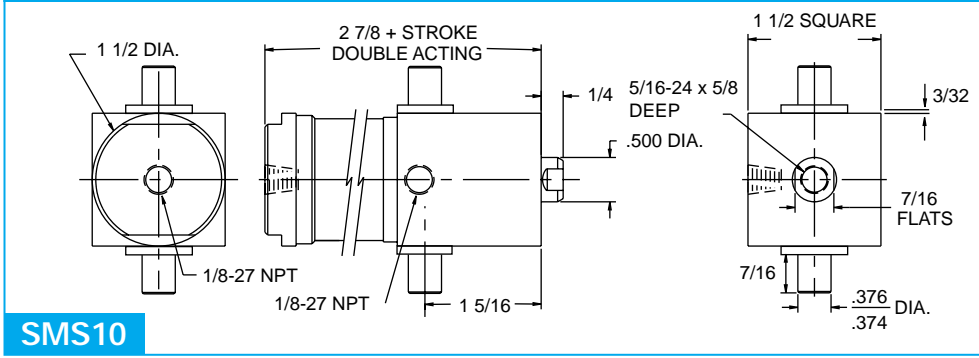
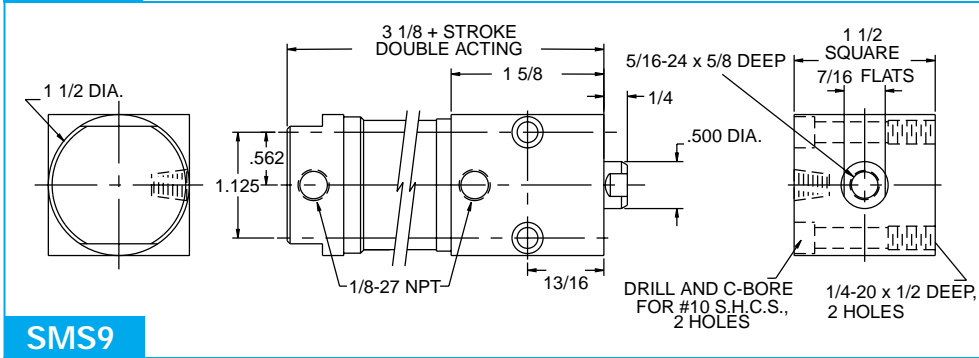
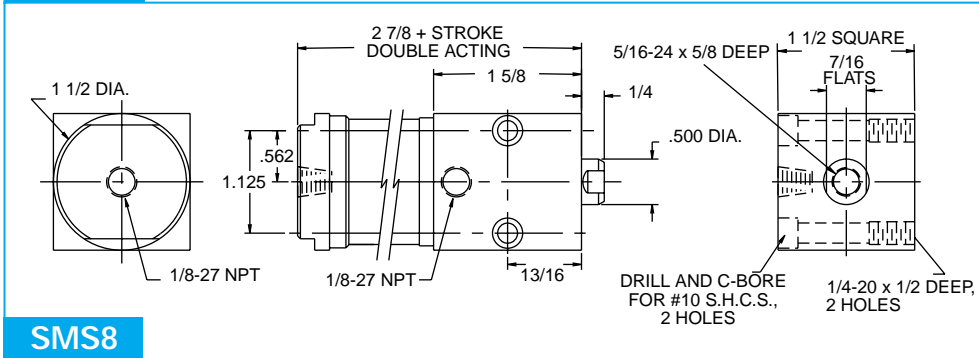
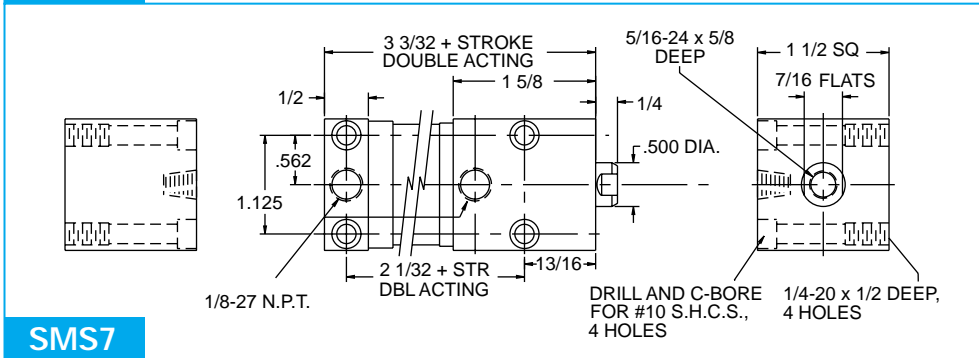
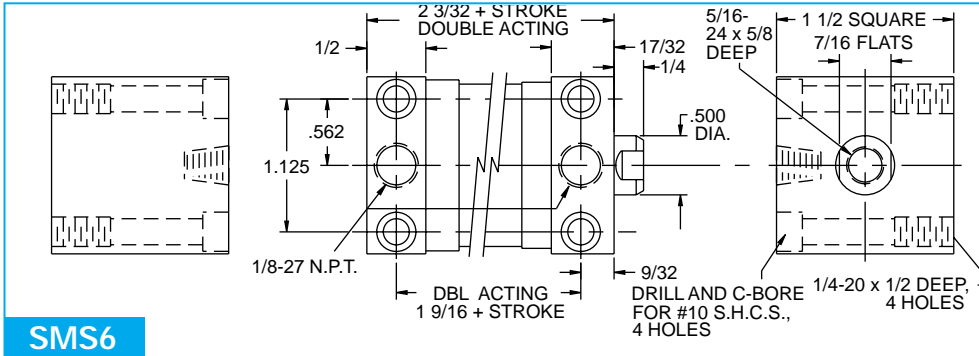
SSC-40 Low Profile Clevis Brk't

Used on SMS 2
303 Stainless



Series SMS Solid Stainless

1 1/8" BORE SMS STAINLESS

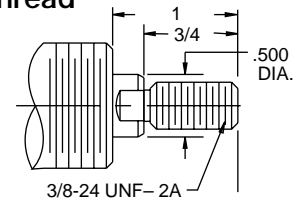


Spring Return Cylinders

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

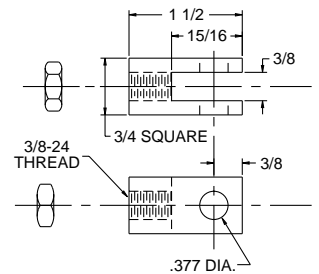


WHEN YOU'VE FINALLY HAD IT WITH PLATED CYLINDERS . . .



SS-375 Rod Clevis & Nut

303 Stainless



SS-301 Clevis Pin assembly

Used on SS-375
 303 Stainless

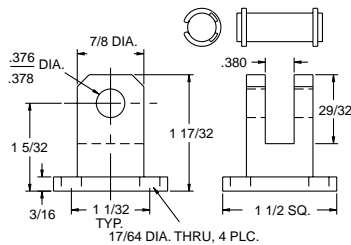


SMS Options

- Shock Pads
- Viton Seals
- Non-lube Service
- Magnetic Piston
- U Cup Piston
- Non-rotate
(SMA 7, 8, 9, 14, 15, 17)
- 90° Rear Clevis

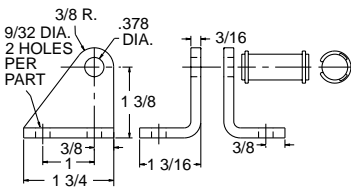
SSC-40

Low Profile Clevis Brk't
Used on SMS16 303 Stainless



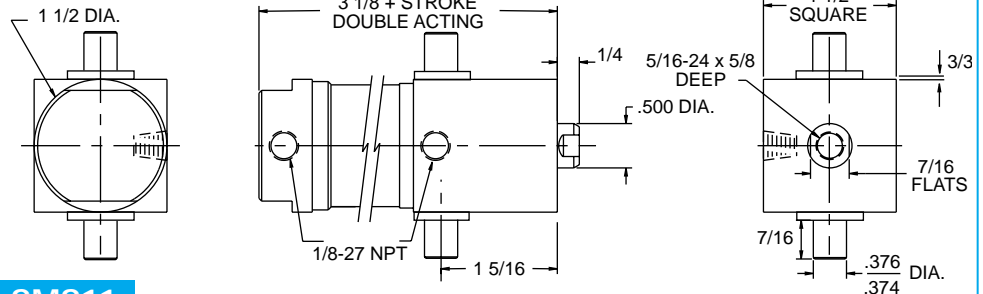
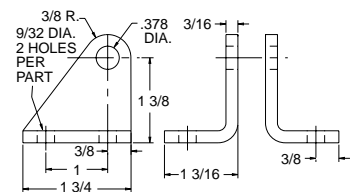
SS-90

St'd Clevis Brk't
Used on SMS 16
Series 300 Stainless steel

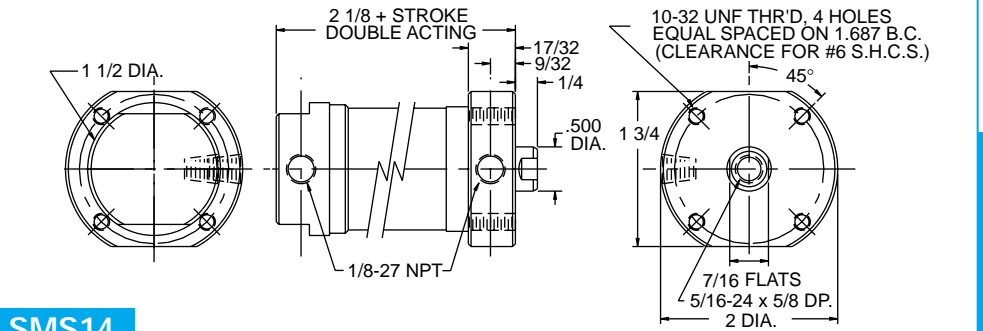


SS-90T

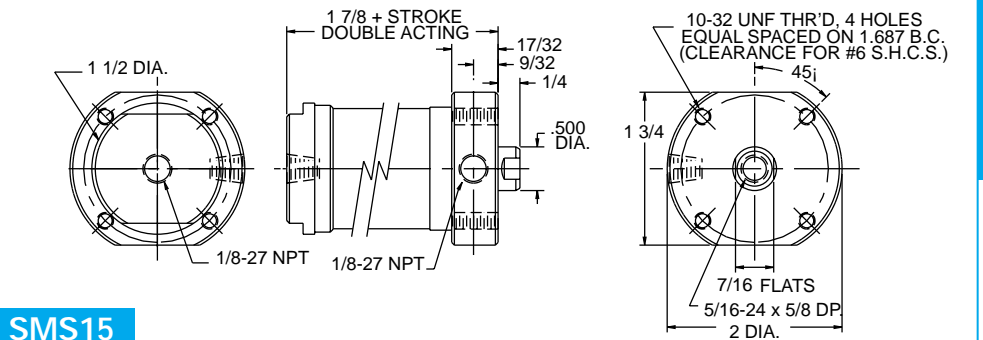
Trunnion Brk't
Used on SMS 10, 11 304 Stainless



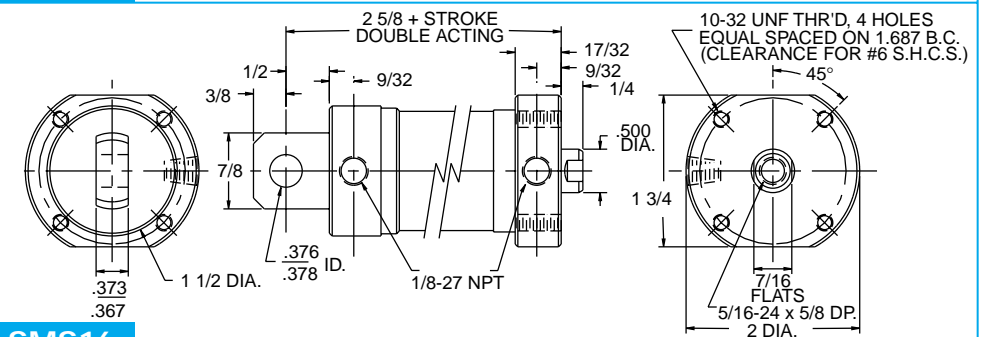
SMS11



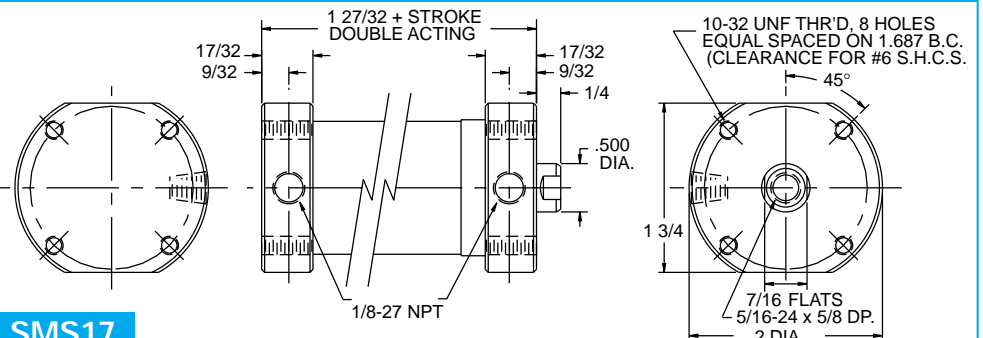
SMS14



SMS15



SMS16



SMS17

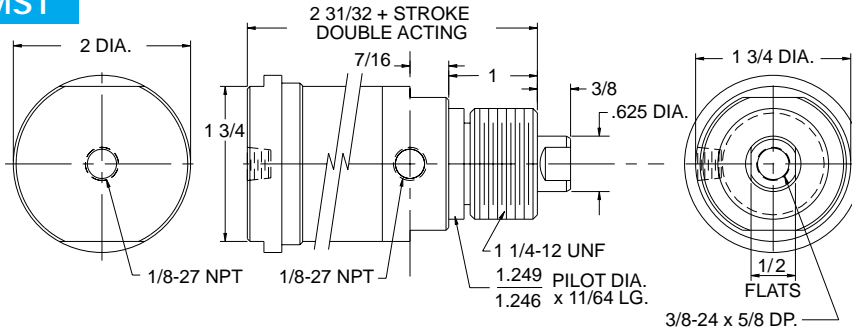
Series SMS Solid Stainless

**RAISE THE BAR FOR
YOUR COMPETITORS
BY SELECTING
AURORA
SOLID STAINLESS
PRODUCTS**

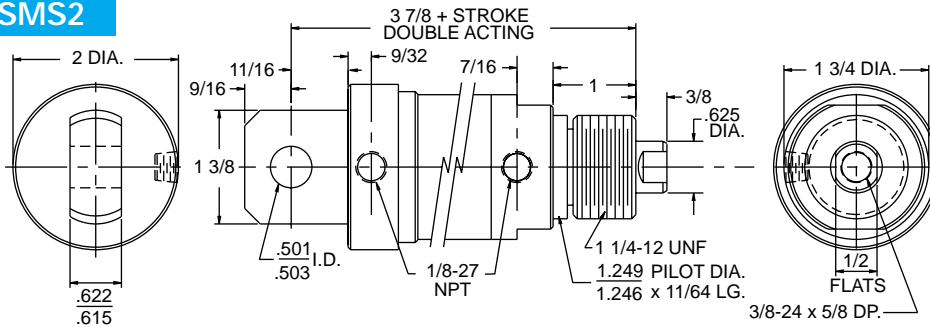
1 1/2" BORE SMS STAINLESS

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

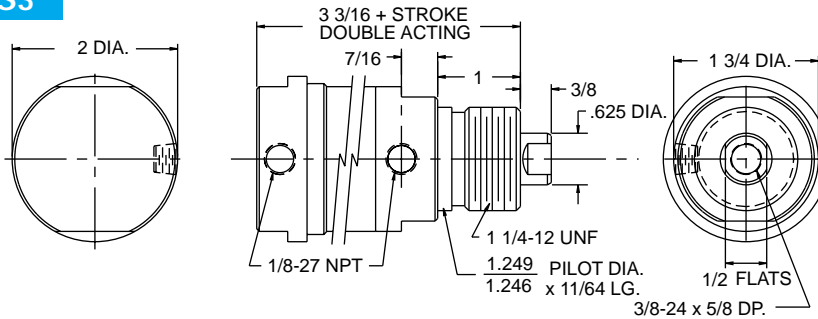
SMS1



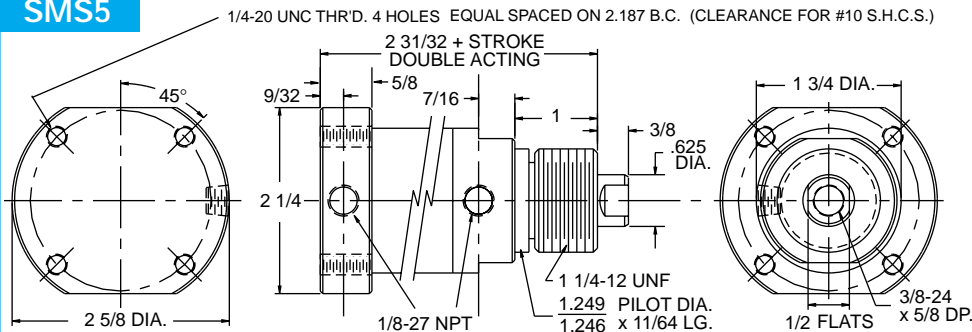
SMS2



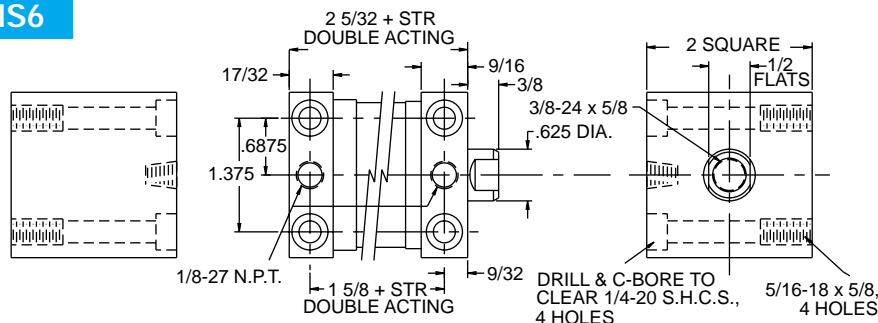
SMS3



SMS5



SMS6

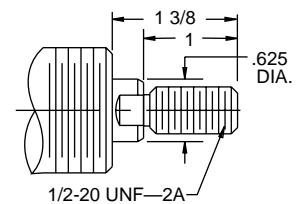


Spring Return Cylinders

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

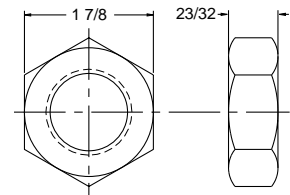
Spring force
Fully extended—15#
Fully compressed—50#
Spring material—Stainless steel

Optional Male Rod Thread

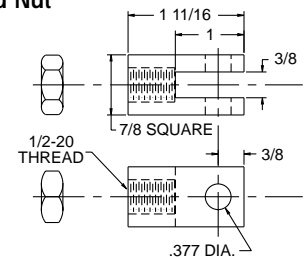


1 1/4 -12SS Nut Nose Mounting Nut

Not included with cylinder
Order Separately



SS-500 Rod Clevis and Nut



303 Stainless

SS-501 Clevis Pin Assembly

Used on SS-500 303 Stainless

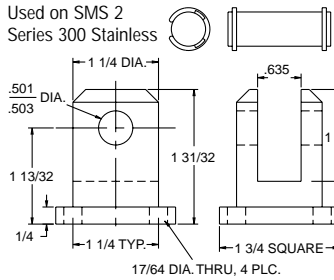


SMS Options

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

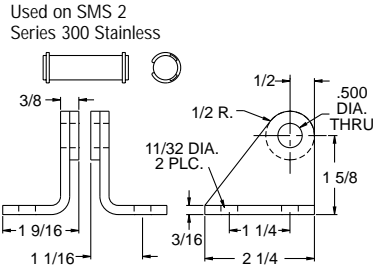
SSC-90

Low Profile Clevis Brk't



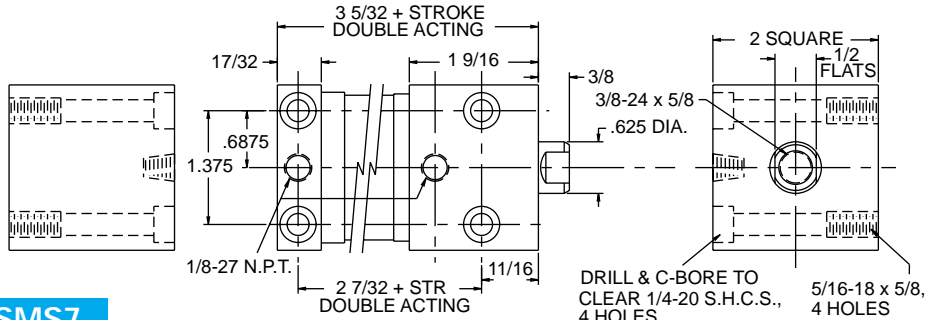
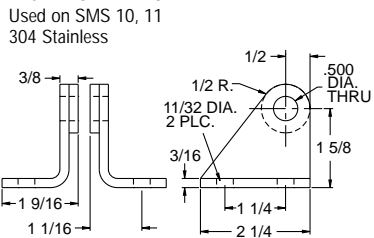
SS-100

St'd Clevis Brk't

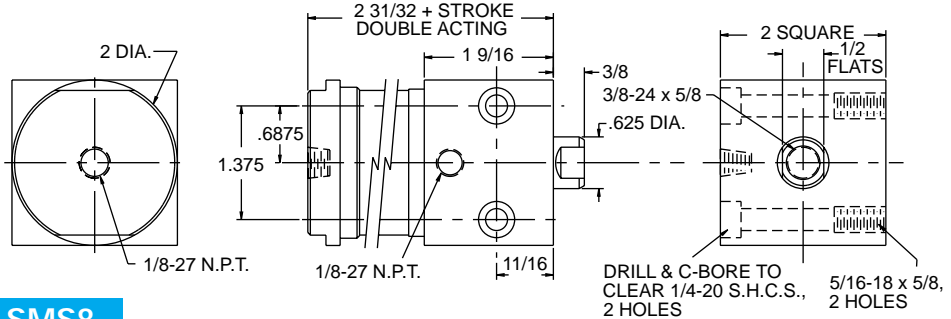


SS-100T

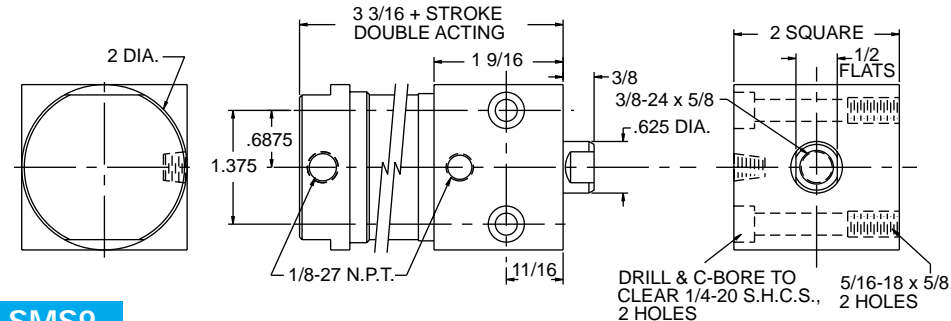
Trunnion Brk't



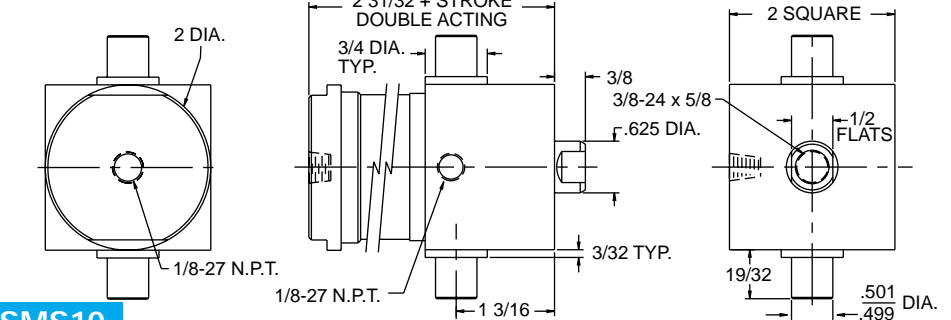
SMS7



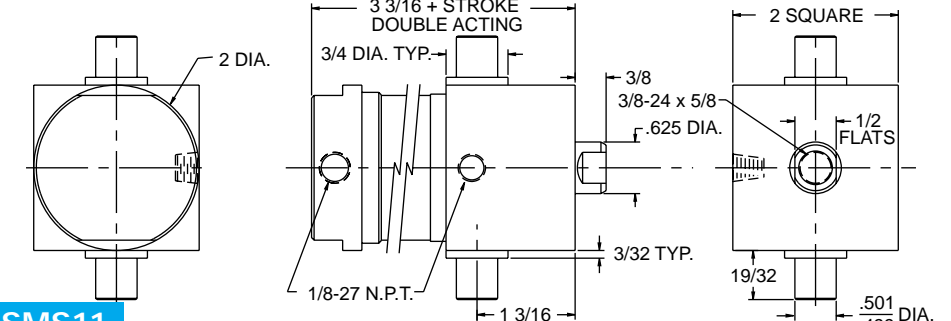
SMS8



SMS9



SMS10



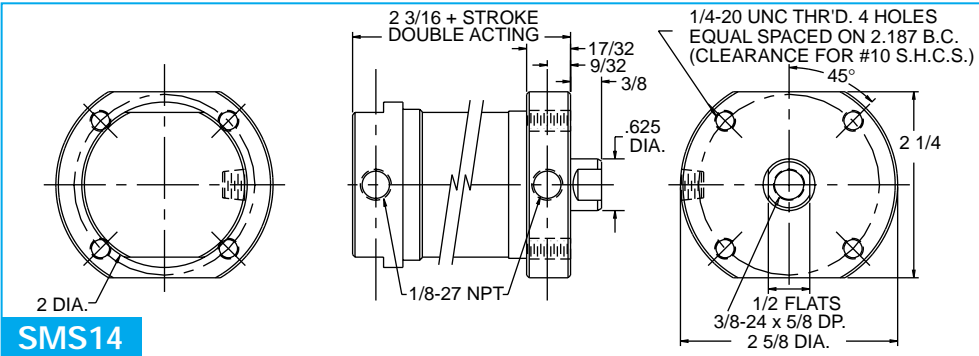
SMS11

Series SMS Solid Stainless

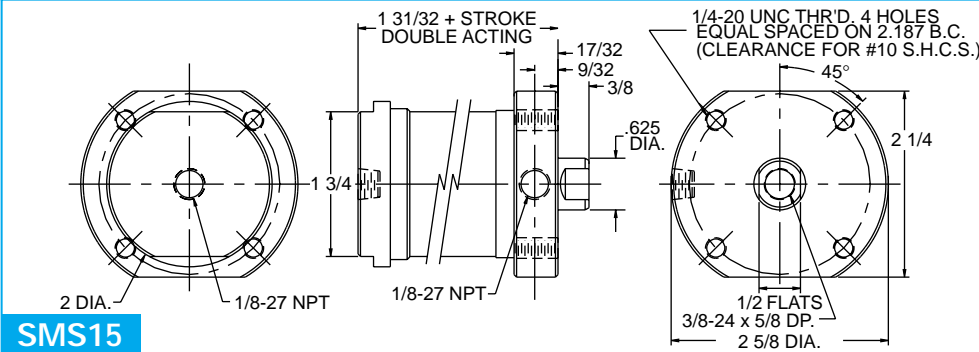
All Aurora Cylinders
are 100% Factory
Tested to insure
Trouble Free
Performance

1 1/2" BORE SMS STAINLESS

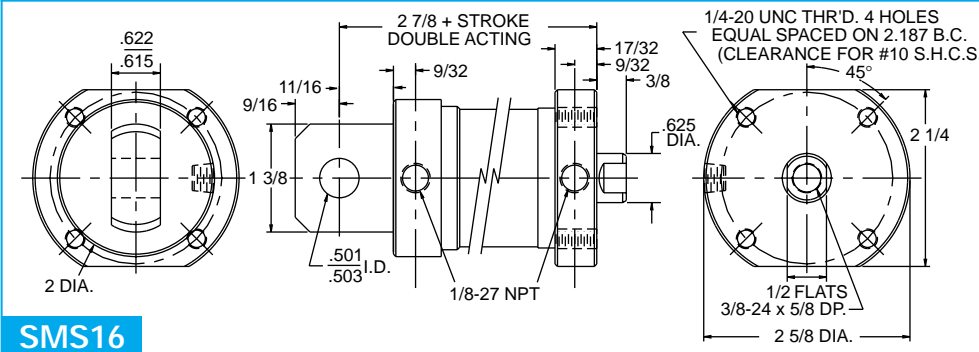
200 PSI MAX. AIR
500 PSI MAX. HYD. *Non shock*



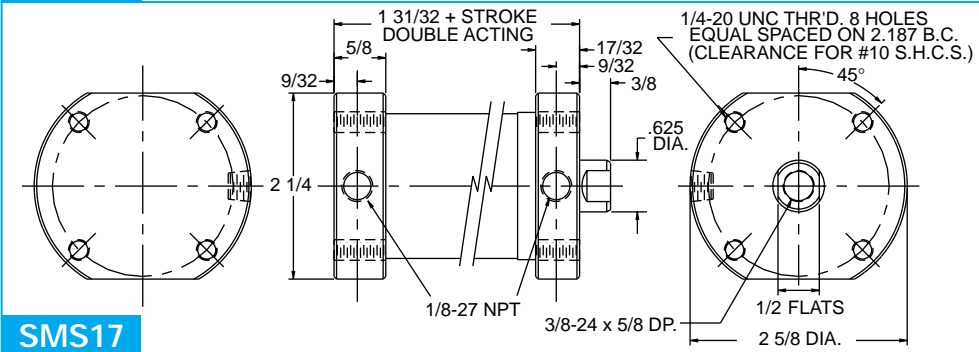
SMS14



SMS15



SMS16

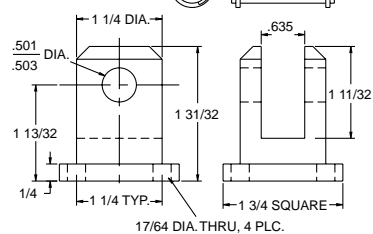


SMS17

SSC-90

Low Profile Clevis Brk't

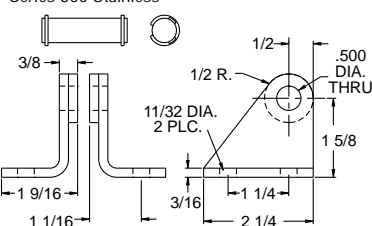
Used on SMS 16
Series 300 Stainless



SS-100

St'd Clevis Brk't

Used on SMS 16
Series 300 Stainless

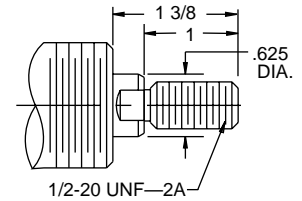


Spring Return Cylinders

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

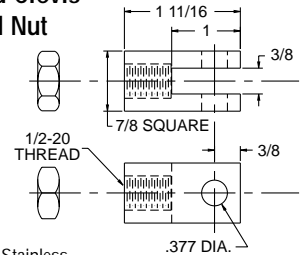
Spring force
Fully extended—15#
Fully compressed—50#
Spring material—Stainless steel

Optional Male Rod Thread



SS-500

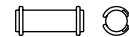
Rod Clevis and Nut



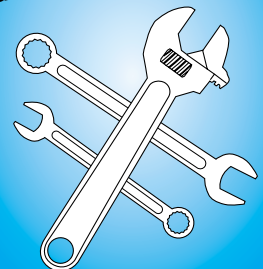
SS-501

Clevis Pin Assembly

Used on SS-500 303 Stainless



*All Aurora Cylinders
are Fully Repairable*



2" BORE SMS STAINLESS

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

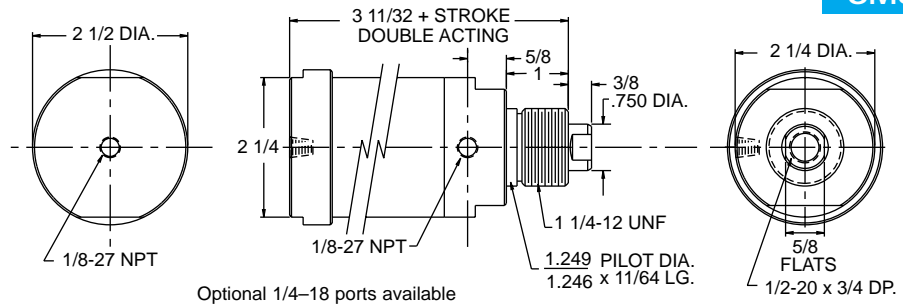


SMS1

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

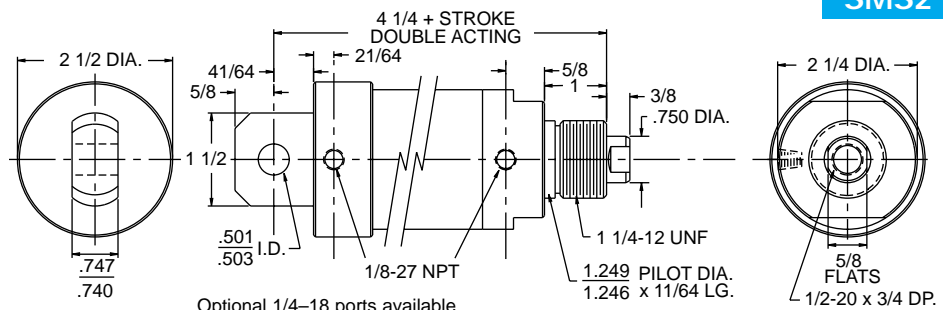
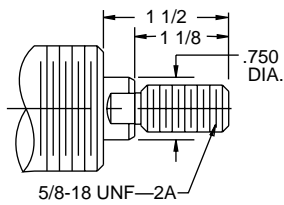
Spring force
Fully extended—20#
Fully compressed—75#
Spring material—Stainless steel



Optional 1/4-18 ports available

SMS2

Optional Male Rod Thread

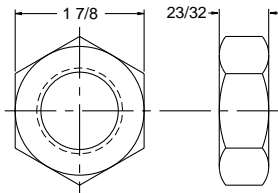


Optional 1/4-18 ports available

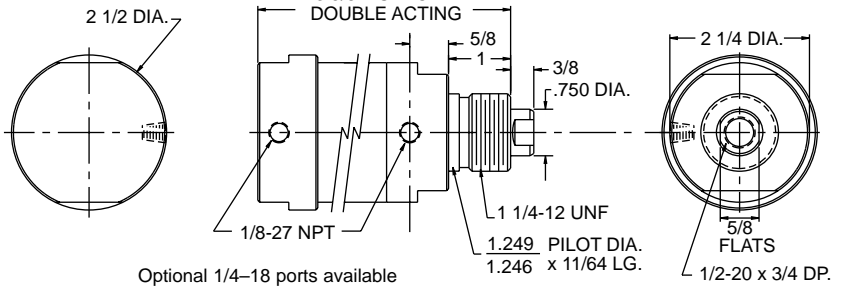
SMS3

1 1/4 - 12SS Nut Nose Mounting Nut

Not included with cylinder
Order Separately



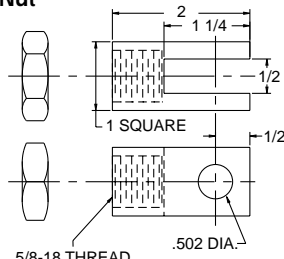
18-8 Stainless



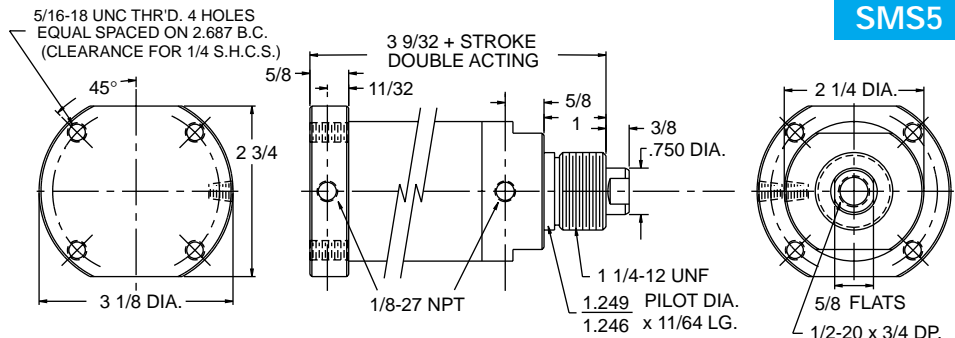
Optional 1/4-18 ports available

SMS5

SS-625 Rod Clevis and Nut

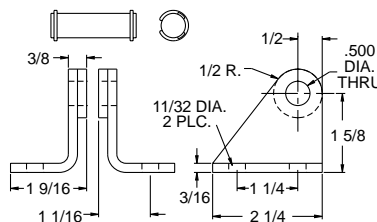


303 Stainless



SS-100 St'd Clevis Brk't

Used on SMS 2
Series 300 Stainless

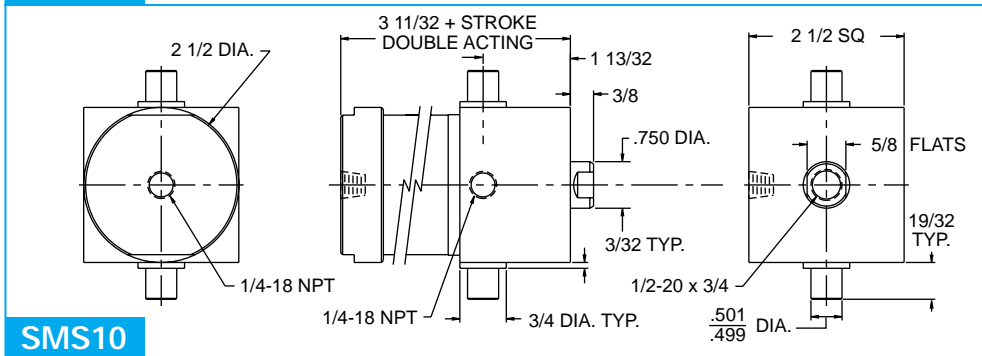
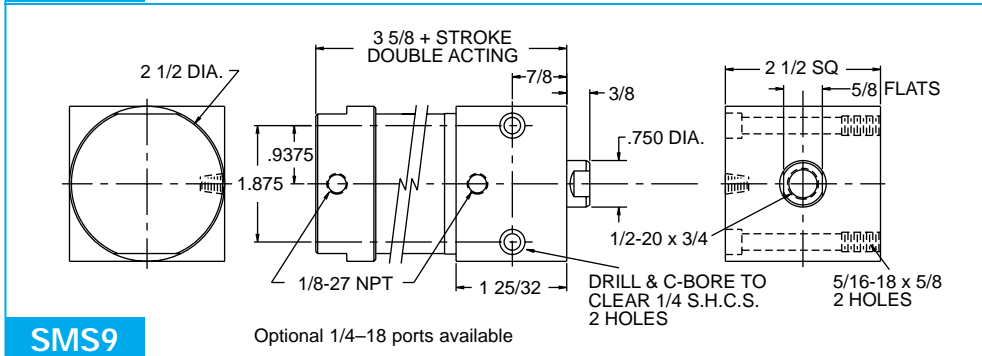
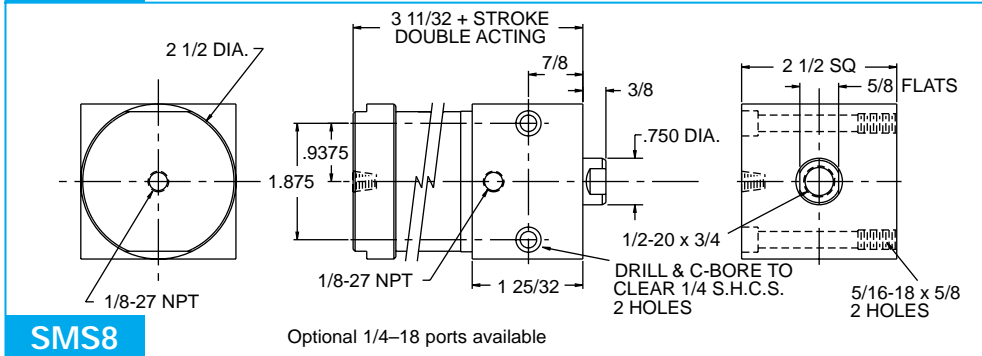
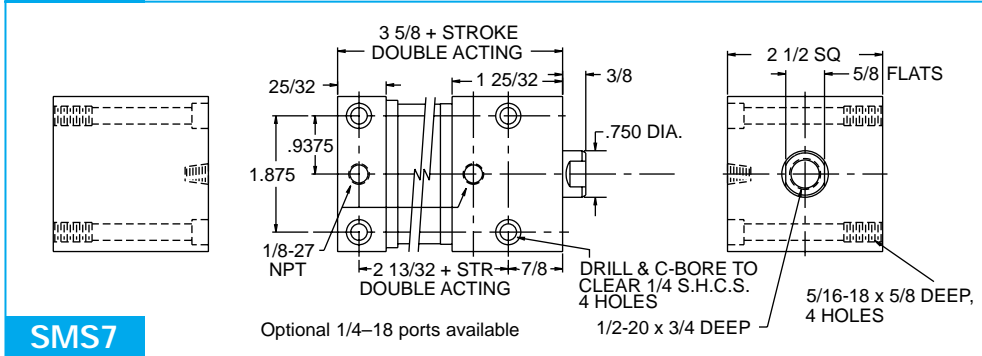
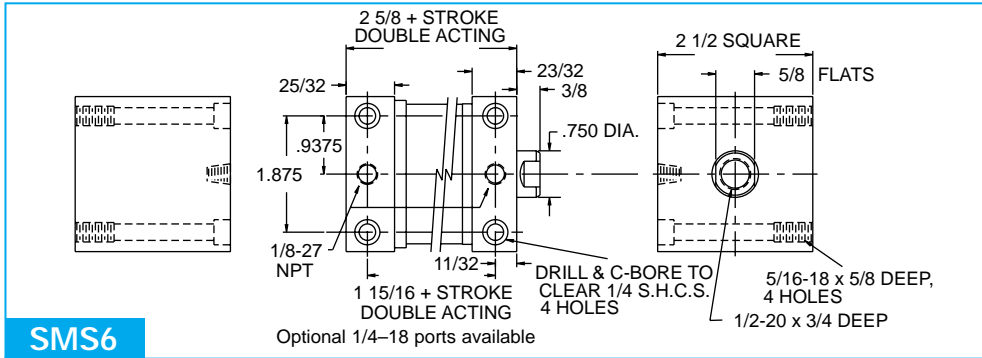


Make the Best Choice

1 630 851 4515

ask for Technical Support

Series SMS Solid Stainless

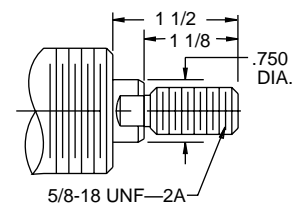


Spring Return Cylinders

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

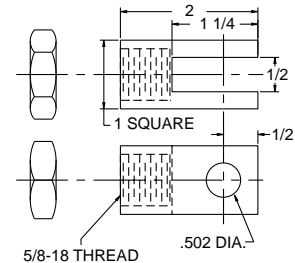
Spring force
Fully extended—20#
Fully compressed—75#
Spring material—Stainless steel

Optional Male Rod Thread



SS-625

Rod Clevis and Nut



303 Stainless

SS-601

Clevis Pin Assembly

Used on SS-625 303 Stainless



You CAN Buy
Peace of Mind

Aurora Stainless

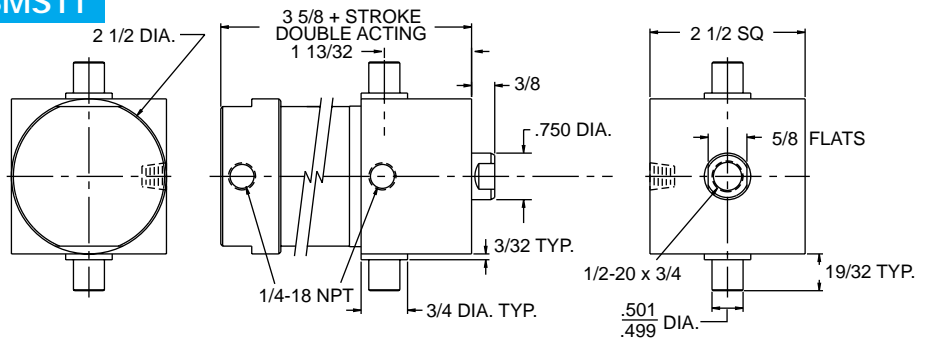
SMS Options

- Shock Pads
- Viton Seals
- Non-lube Service
- Magnetic Piston
- U Cup Piston
- Non-rotate
(SMA 7, 8, 9, 14, 15, 17)
- 90° Rear Clevis

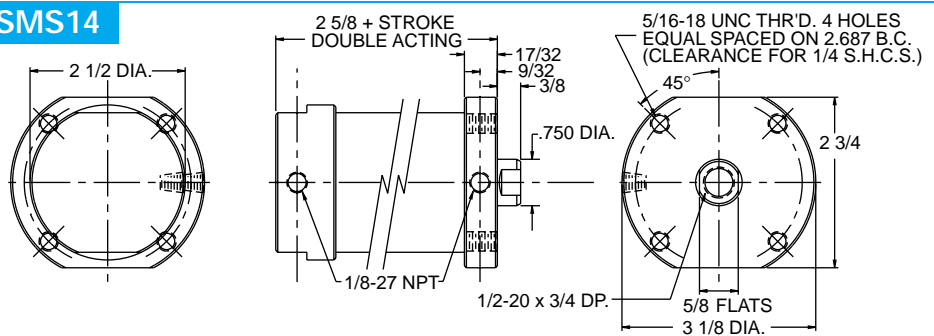
Unique Applications Sometimes Require Unique Cylinders

See our custom design capabilities on page 87

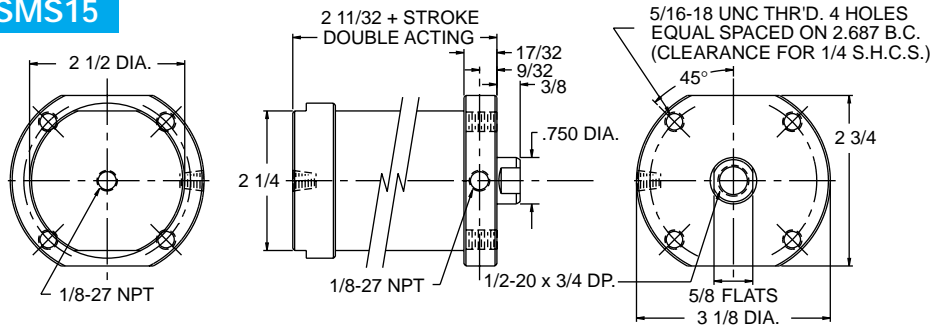
SMS11



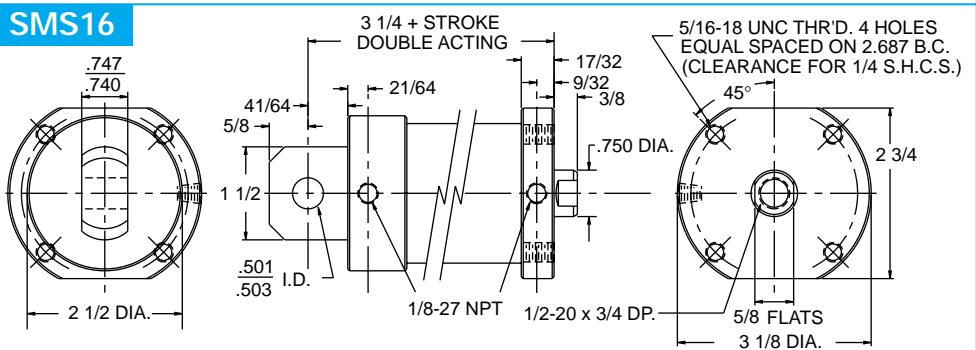
SMS14



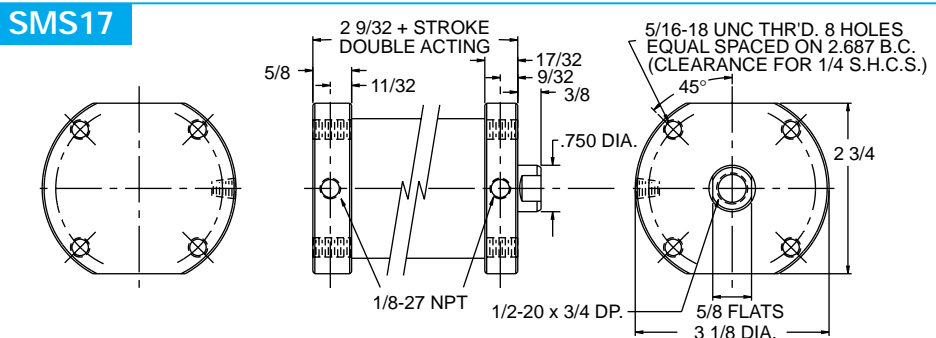
SMS15



SMS16



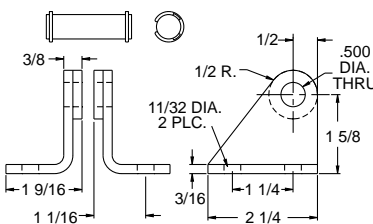
SMS17



Series SMS Solid Stainless

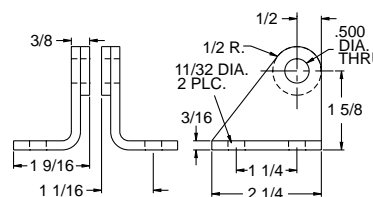
SS-100

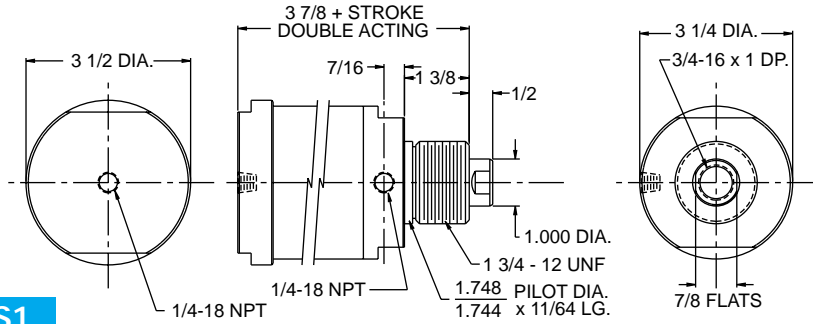
St'd Clevis Brk't
Used on SMS 16 Series 300 Stainless



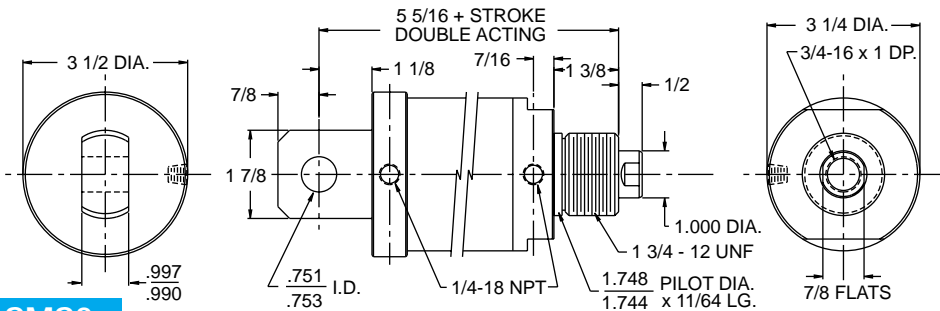
SS-100T

Trunnion Brk't
Used on SMS 10, 11 304 Stainless steel

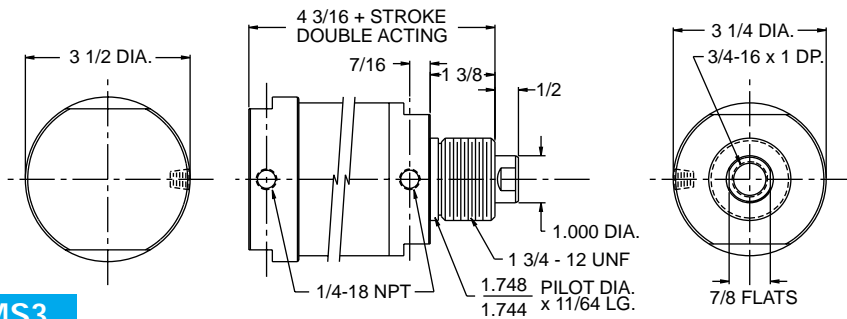




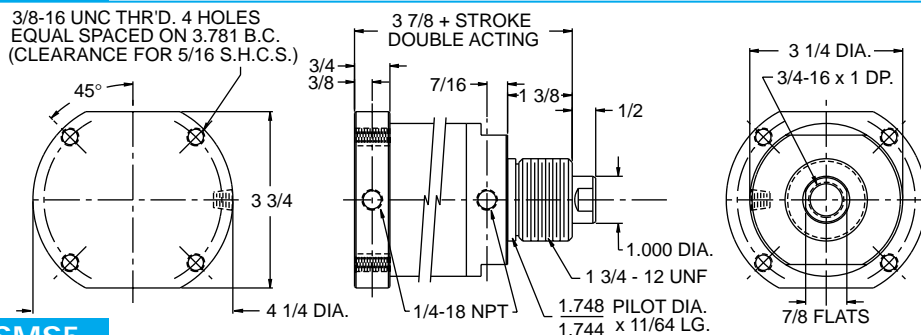
SMS1



SMS2



SMS3



SMS5

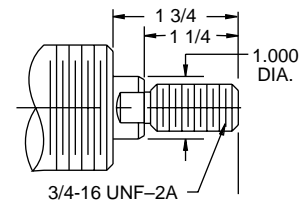
STANDARD CYLINDERS + CORROSION = LIABILITY
AURORA STAINLESS + CORROSION = PEACE OF MIND

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

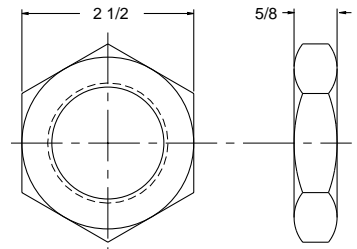
Spring force
Fully extended—20#
Fully compressed—75#
Spring material—Stainless steel

Optional Male Rod Thread

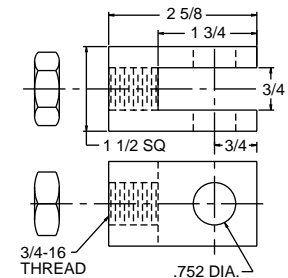


1 3/4 -12SS Nut Nose Mounting Nut

Not included with cylinder Order Separately



SMS-750 Rod Clevis and Nut

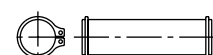


303 Stainless

SS-701

Clevis Pin Assembly

Used on SMS-750 303 Stainless

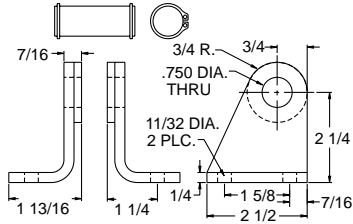


SMS Options

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

SSC-300

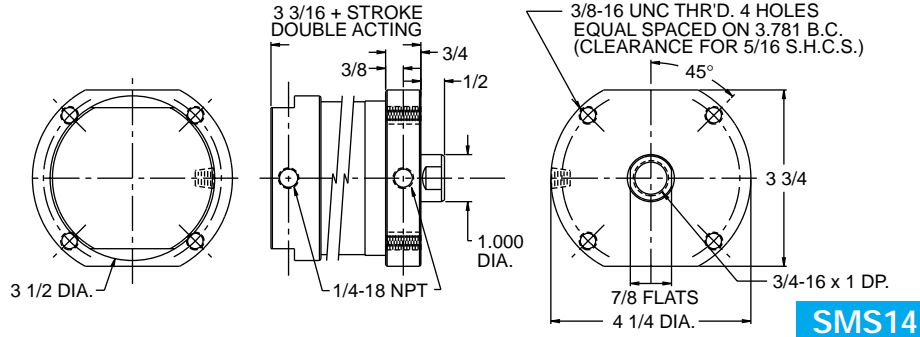
Clevis Brk't
Used on SMS2, 16
Series 300 Stainless steel



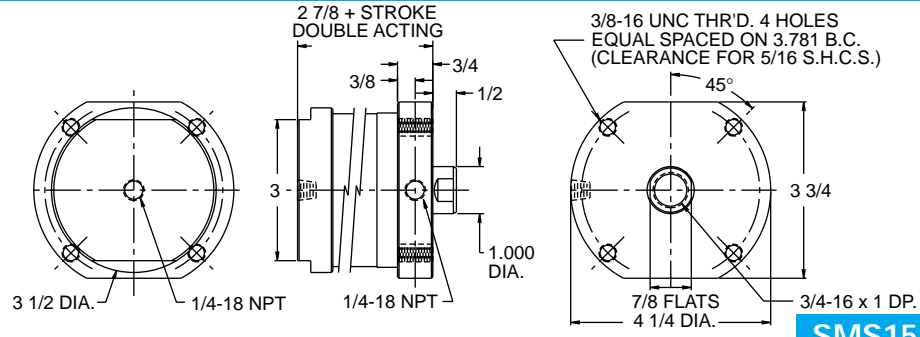
**STAINLESS
CYLINDERS**



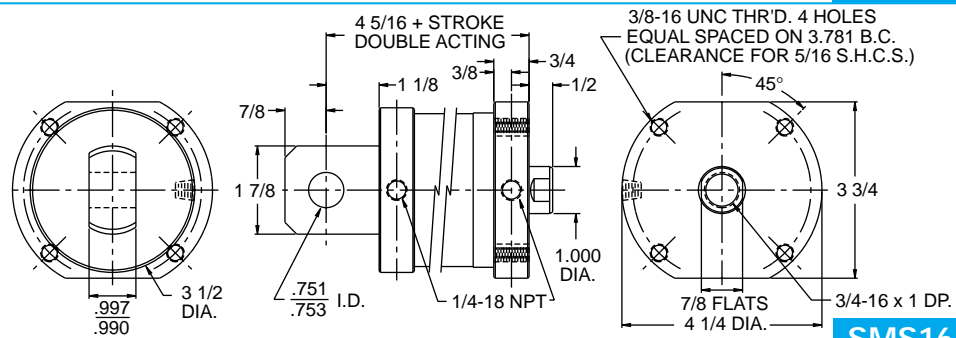
**STAINLESS
ACCESSORIES**



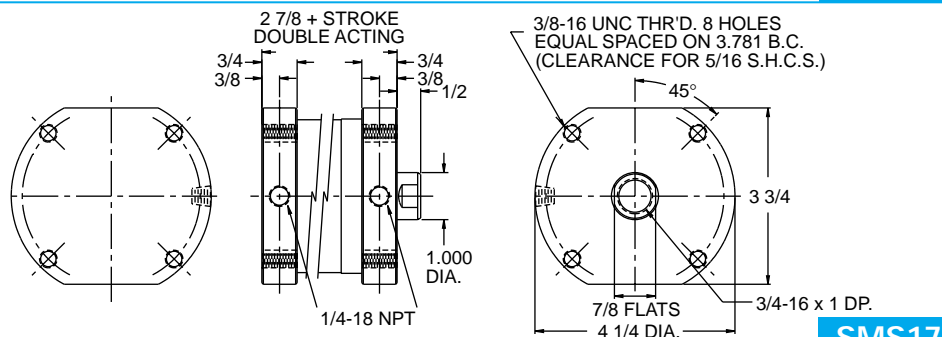
SMS14



SMS15



SMS16



SMS17

Series SMS Solid Stainless

Help in Making the Best Choice

Technical Assistance @ 630 851 4515

ORDERING PROCEDURE - SMS Stainless

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	Code
1 1/8"	11
1 1/2"	15
2"	20
3"	30

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

Service	Code
Pneumatic	E
Hydraulic	G



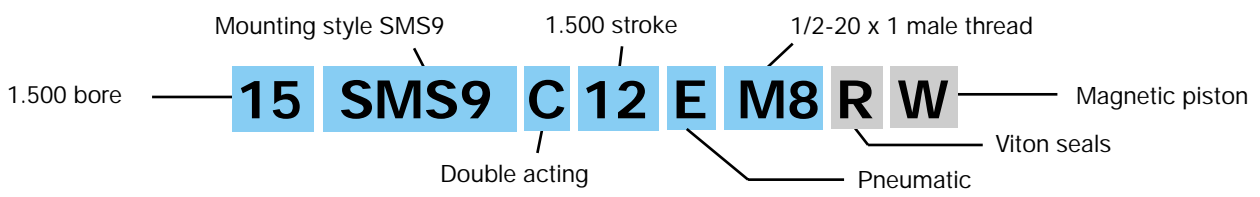
Mounting Style/Code	
SMS 1	SMS 9
SMS 2	SMS 10
SMS 3	SMS 11
SMS 5	SMS 14
SMS 6	SMS 15
SMS 7	SMS 16
SMS 8	SMS 17

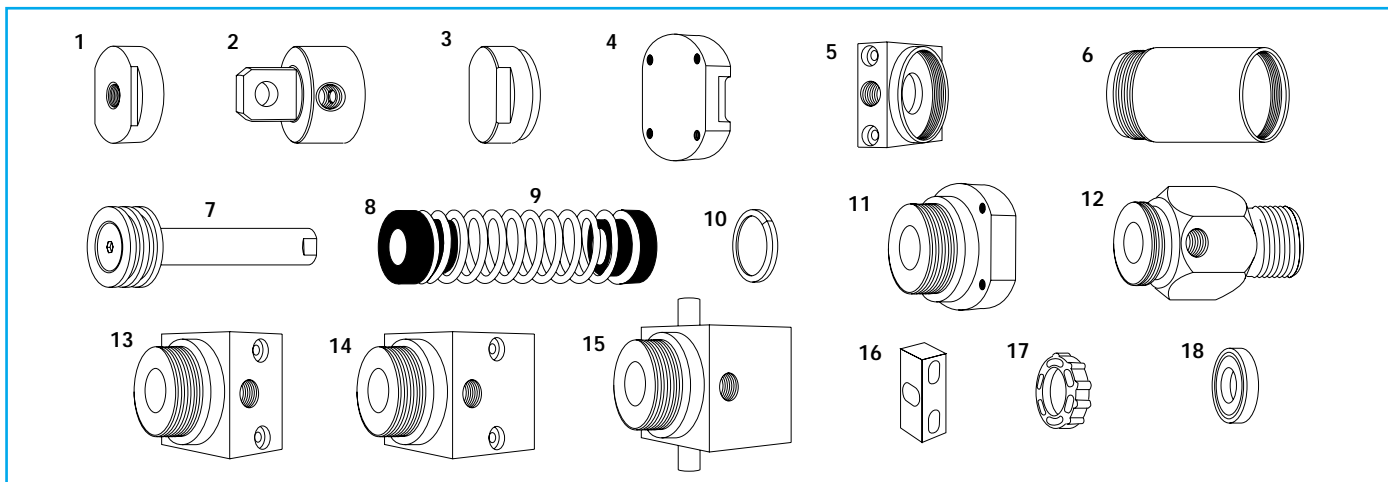
Stroke
Code is stroke in total 1/8" increments Example: 1" stroke = 8 2 1/4" stroke = 18
Stocked in the following strokes: 1/8, 1/4, 3/8, 1/2, 3/4, 1, 1 1/4, 1 1/2, 1 3/4, 2 and 1/2" increments to 10"
3" bore - Limited to 8" max. stroke

Piston Rod Codes			
Bore	Thread		Code
1.125	3/8-24 x 3/4	Male	M6
1.125	5/16-18 x 5/8	Female	F3
1.125	5/16-24 x 5/8	Female	F4
1.500	1/2-20 x 1	Male	M8
1.500	3/8-16 x 5/8	Female	F5
1.500	3/8-24 x 5/8	Female	F6
2.000	5/8-18 x 1 1/8	Male	M12
2.000	1/2-20x 3/4	Female	F8
3.000	3/4-16 x 1 1/4	Male	M10
3.000	3/4-16 x 1	Female	F10
With non-rotate option enter code			11

Option	Description	Code
Extra rod extension 1/4 " increments	Specify code letter J followed by extra length required as a two place decimal Example: J.50 = 1/2" extra J1.25 = 1 1/4"extra	J
Shock pads	Add to either or both ends in 1 1/8", 1 1/2", 2" bore up to 2" stroke.	Rod end only L
Pneu. only to 180° F	Over 2" stroke and on all 3" bore must be added to both ends	Cap end only M
Double acting only	Each pad adds 1/4" length	Both ends N
Non-lube service	Available on standard O ring Piston. Not available or necessary on U cup piston	P
Viton seals	Standard seals are nitrile and urethane +10 to +200° F For service -10 to +400° F specify viton	R
U cup piston	Extends cycle life and reduces friction Piston is aluminum and includes teflon wear strip — adds 1/2" to length	S
Clevis 90° to std	SMS 2, 16, only	T
Magnetic piston	Adds 1/2" to length	W
Non rotate	Available only on double acting SMS 7, 8, 9, 14, 15, 17	with male stud X without male stud Y
1/4" oversize ports	2" bore only — SMS 1, 2, 3, 6, 7, 8, 9, only Not available with option x,y	Z

Part No. Example:

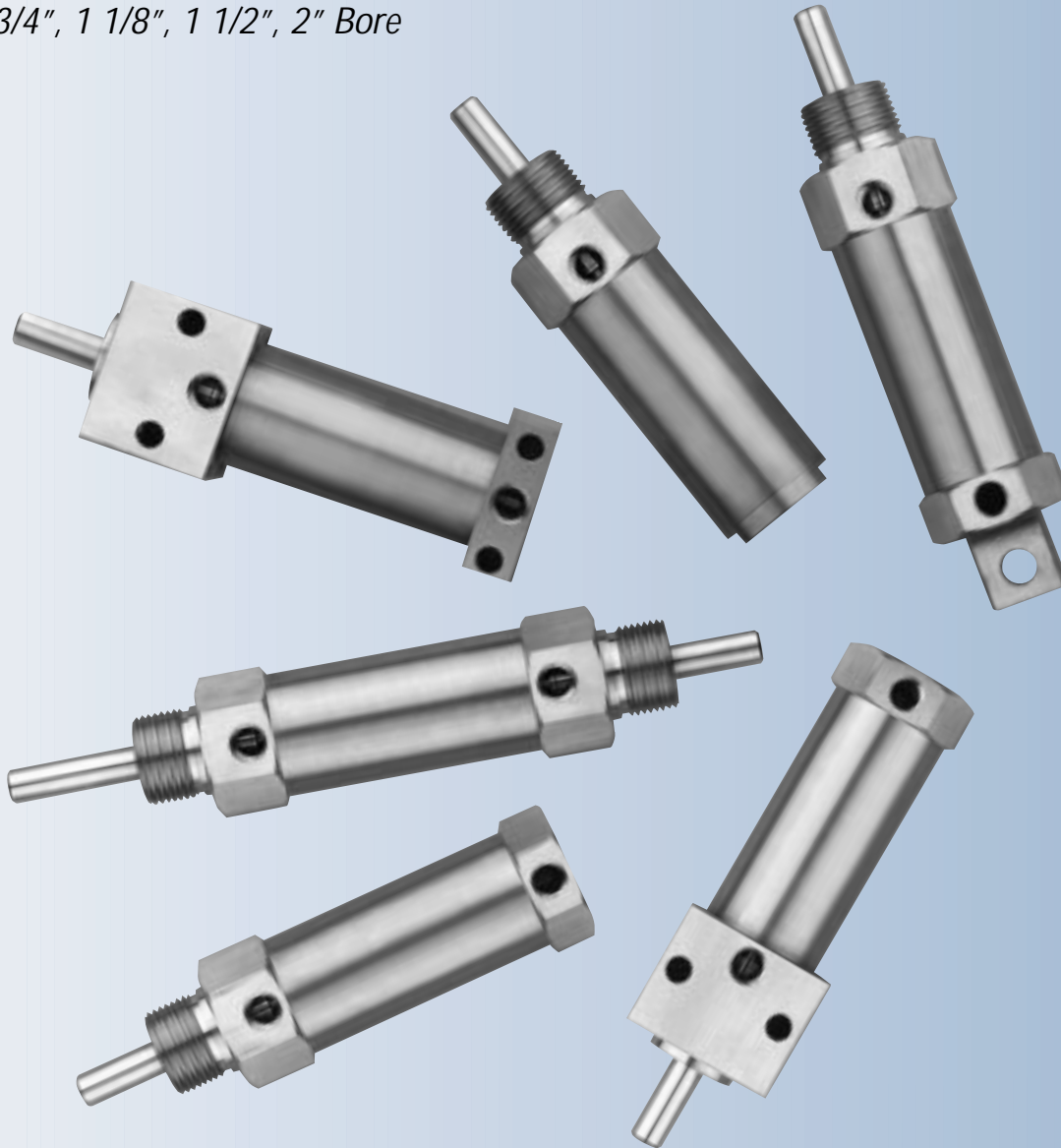




Key	Description	1 1/8 Bore	1 1/2 Bore	2 Bore	3 Bore
Seal kits for cylinders with O ring piston					
	Pneumatic, Nitrile Add suffix NL for Non-Lube	SMS 3411	SMS 3415	SMS 3420	SMS 3430
	Pneumatic, Viton Add suffix NL for Non-Lube	SMS 3411V	SMS 3415V	SMS 3420V	SMS 3430V
	Hydraulic, Nitrile	SMS 3511	SMS 3515	SMS 3520	SMS 3530
	Hydraulic, Viton	SMS 3511V	SMS 3515V	SMS 3520V	SMS 3530V
Seal kits for cylinders with U cup piston – includes Teflon wear strip					
	Pneumatic, Nitrile	SMS 5411	SMS 5415	SMS 5420	SMS 5430
	Pneumatic, Viton	SMS 5411V	SMS 5415V	SMS 5420V	SMS 5430V
	Hydraulic, Nitrile	SMS 5511	SMS 5515	SMS 5520	SMS 5530
	Hydraulic, Viton	SMS 5511V	SMS 5515V	SMS 5520V	SMS 5530V
1	Rear port cap Add suffix 250 for 2" bore 1/4 NPT	SMS 1011	SMS 1015	SMS 1020	SMS 1030
2	Rear pivot cap Add suffix 250 for 2" bore 1/4 NPT	SMS 1111	SMS 1115	SMS 1120	SMS 1130
2	90° Rear pivot cap Add suffix 250 for 2" bore 1/4 NPT	SMS 111190	SMS 111590	SMS 112090	SMS 113090
3	Side port cap Add suffix 250 for 2" bore 1/4 NPT	SMS 4811	SMS 4815	SMS 4820	SMS 4830
4	Rear flange cap	SMS 1311	SMS 1315	SMS 1320	SMS 1330
5	Square cap Add suffix 250 for 2" bore 1/4 NPT	SMS 4611	SMS 4615	SMS 4620	
6	Tube	part No. is T followed by the complete cylinder part number			
7	Piston rod assembly	part No. is PR followed by the complete cylinder part number			
8	Spring guide Pair	SMS 1211	SMS 1215	SMS 1220	SMS 1230
9	Spring	SS 2111	SS 2115	SS 2120	SS 2120
10	Magnet SMS5911 and SS3215 supplied in pairs	SMS 5911	SS 3215	SS 3220	SS 3230
11	Flange head Add suffix NR for non-rotate	SMS 1411	SMS 1415	SMS 1420	SMS 1430
12	Nose Mount Head Add suffix 250 for 2" bore, 1/4 NPT	SMS 0111	SMS 0115	SMS 0120	SMS 0130
13	Short square Head Add suffix 250 for 2" bore, 1/4 NPT	SMS 4411	SMS 4415	SMS 4420	
14	Long square Head Add suffix 250 for 2" bore, 1/4 NPT	SMS 4511	SMS 4515	SMS 4520	
14	Square non rotate head	SMS 4511NR	SMS 4515NR	SMS 4520NR	
15	Trunnion head	SMS 4511T	SMS 4515T	SMS 4520T	
16	Non-rotate guide bushing Pair	SMS 5111	SMS 5111	SMS 5111	
17	Cap end shock pad	Consult factory			3MSP
18	Head end shock pad	11CSP	15CSP	2CSP	3MSP

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.

Heavy duty urethane rod wipers seal out the environment. Other materials available.

Removable stainless retaining rings hold the seal and rod wiper in place.

Pneumatic Rod Seal is a "longlife" nitrile cup. Hydraulic Rod Seal is pressure energized and extra long wearing for improved stability

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

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.

Brass piston silver brazed to the piston rod provides an almost indestructible joint. Optional solid stainless steel piston with teflon wearstrip available for chemically inert or clean applications.

Reduce noise and fatigue problems such as rod breakage with urethane shock pads. Pneumatic use only to 180° F.

Piston seals are extra long wearing pressure energized lip seals of the highest quality

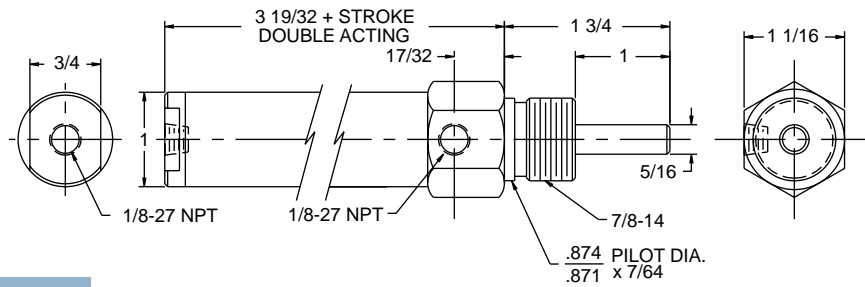
O ring static tube seal

Optional wick provides teflon lube for non-lube service

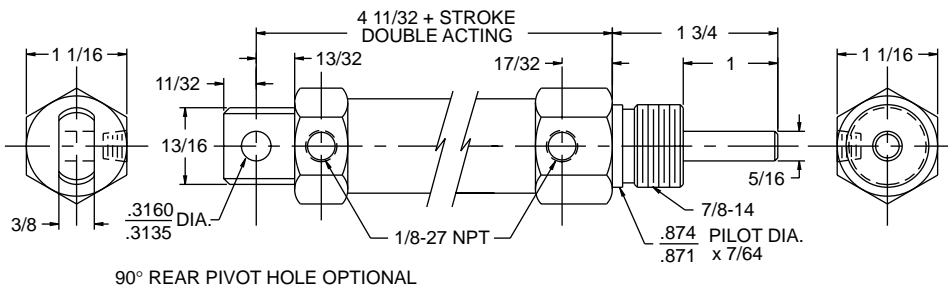
Adjustable cushions to provide deceleration at the end of the stroke are available on most models above 3/4" bore

Magnetic piston available to operate Aurora stainless proximity switches

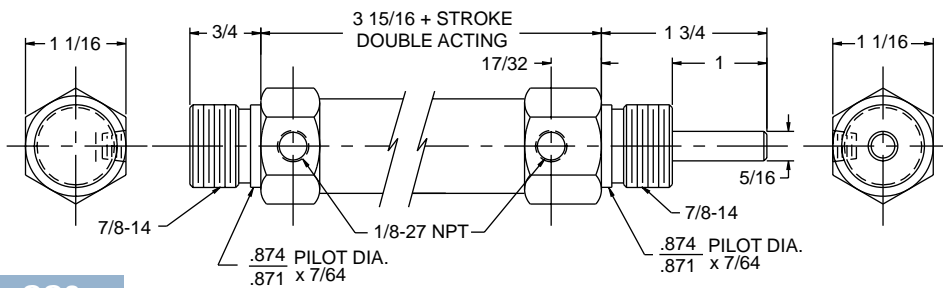




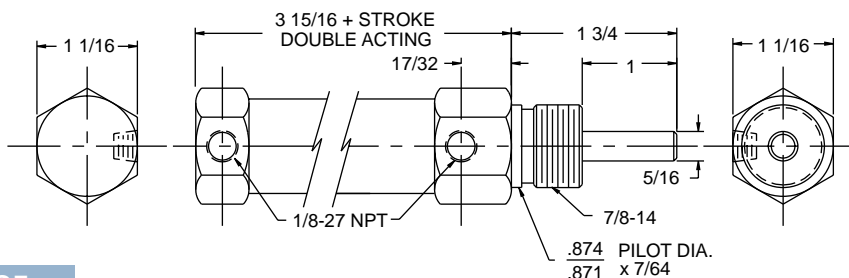
SS1



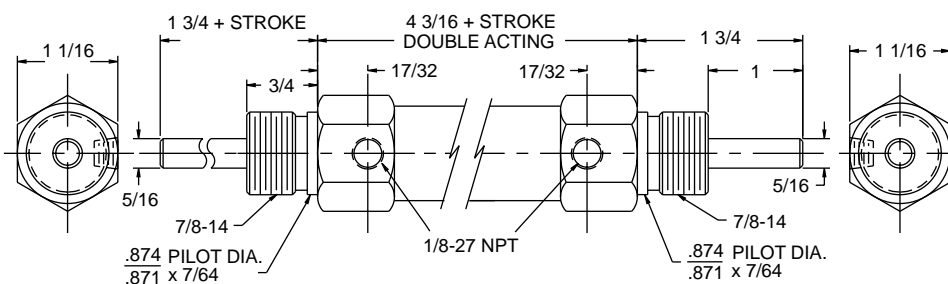
SS2



SS3



SS5



SS6

Single Acting Cylinders

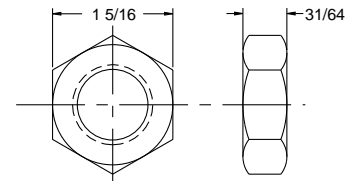
Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring extend	0-1"	1"	Not available over 2" stroke	
Spring return	0-1"	1"	1 1/8"-2"	2"

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

7/8 -14SS Nut Nose Mounting Nut

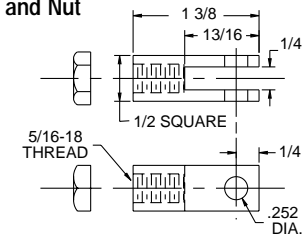
Not included with cylinder
Order Separately



18-8 Stainless

SS-312

Rod Clevis
and Nut

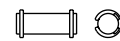


303 Stainless

SS-200

Clevis Pin Assembly

Used on SS-312 303 Stainless

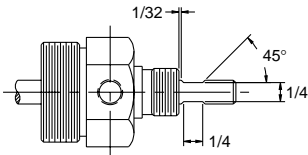


*Suitable
for
Submerged
Service
with Reverse
Polypak Wiper*

SS Options

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

Wrench Flats Optional



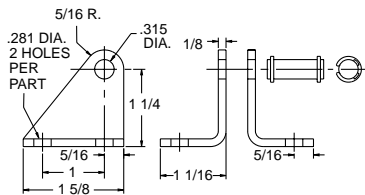
STAIN • LESS

(STAN'LIS) Adjective
1. Without blemish or stain: a stainless reputation

SS-40

St'd Clevis Brk't

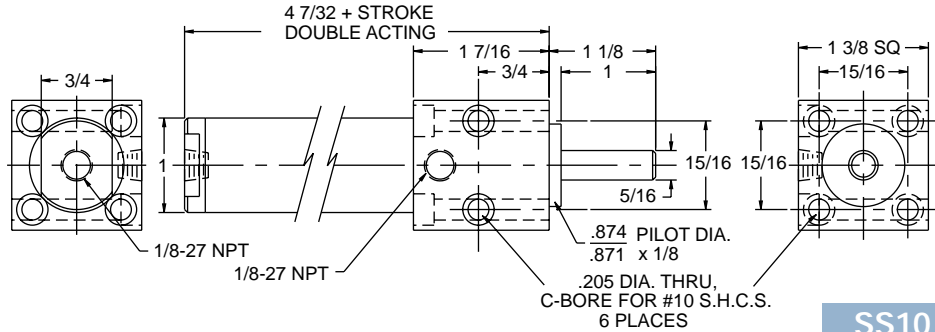
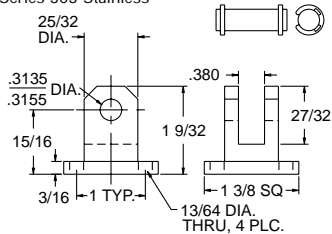
Used on SS 2
Series 300 Stainless



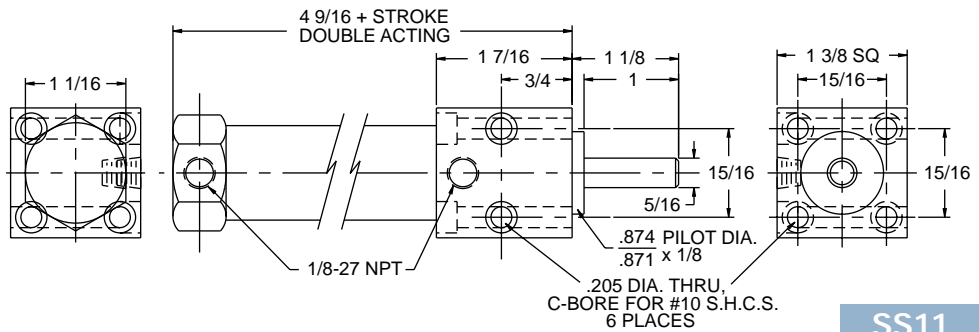
SSC-30

Low Profile Clevis Brk't

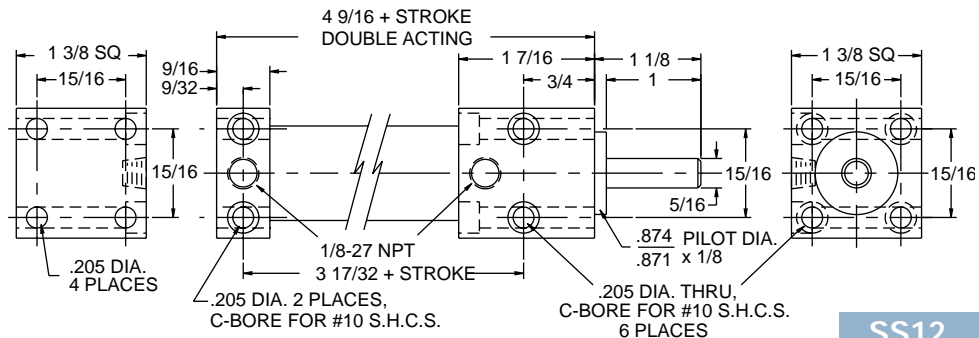
Used on SS 2
Series 303 Stainless



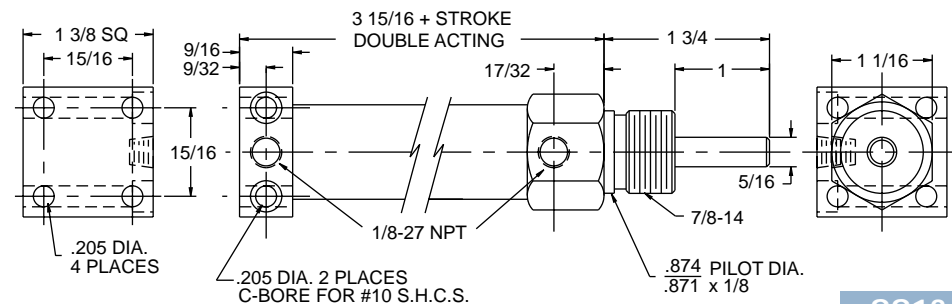
SS10



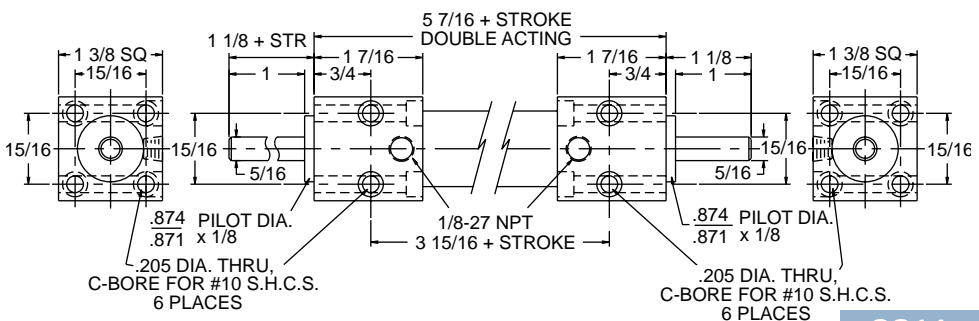
SS11



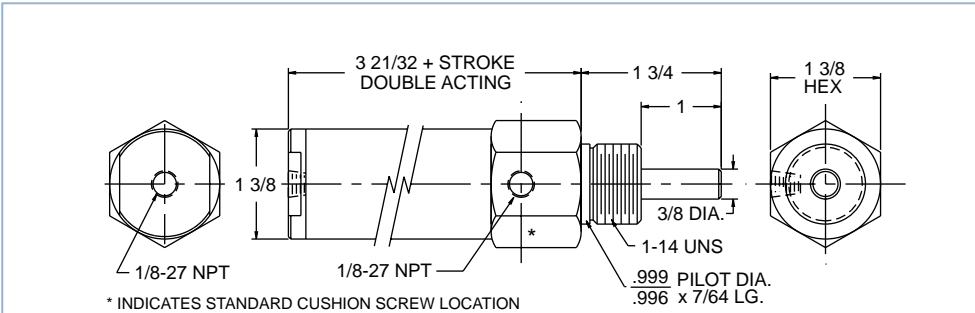
SS12



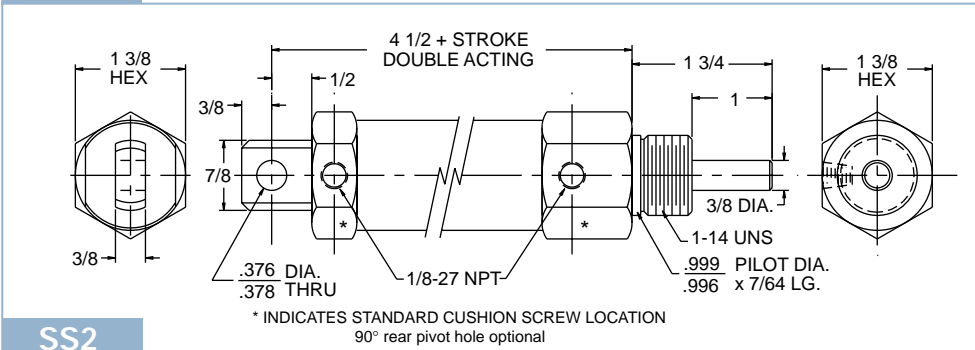
SS13



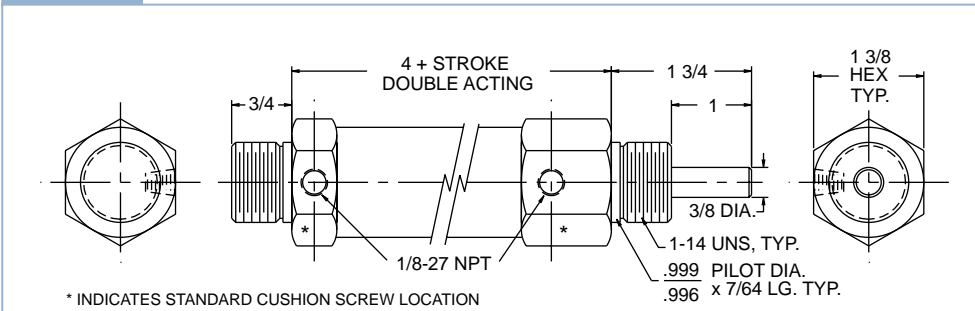
SS14



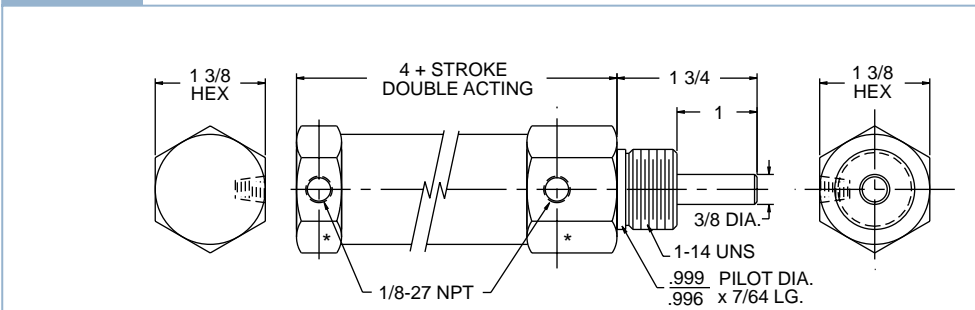
SS1



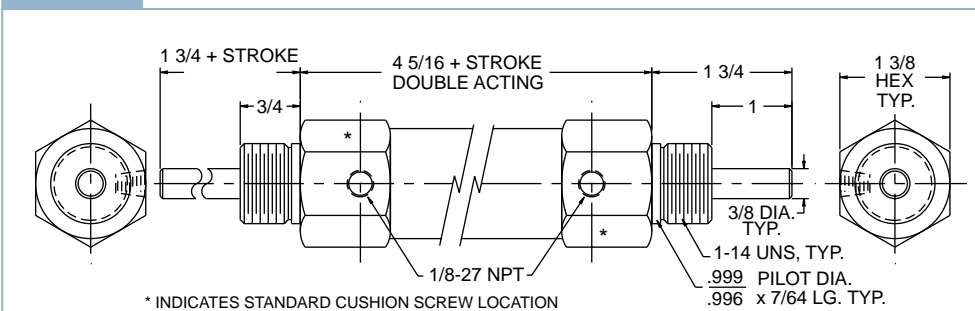
SS2



SS3



SS5



SS6

Single Acting Cylinders

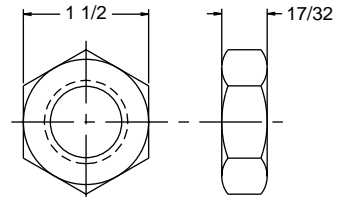
Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring extend	0-2"	1 1/2"	Not available over 2" stroke	
Spring return	0-2"	1 1/2"	2 1/8"-4"	3"

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

1 -14SS Nut Nose Mounting Nut

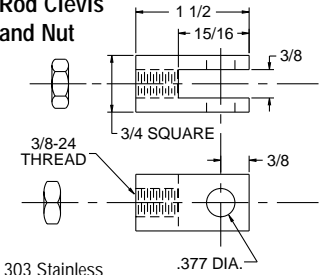
Not included with cylinder
Order Separately



18-8 STAINLESS

SS-375

Rod Clevis
and Nut

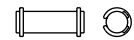


303 Stainless

SS-301

Clevis Pin Assembly

Used on SS-375



303 Stainless

**Conventional
Cylinder
Cost**

+ Warranty Repairs

+ Downtime

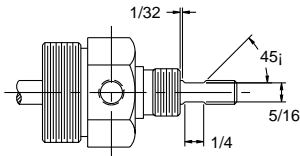
+ Liability

> 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

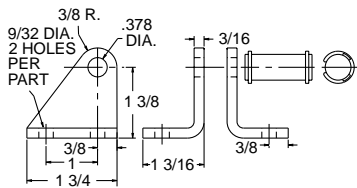
Wrench Flats Optional



Series SS
Stainless have
been field proven
since 1983

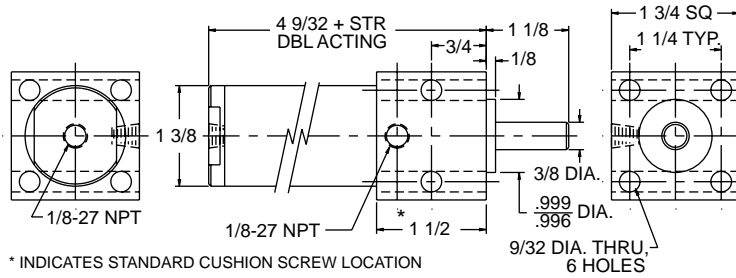
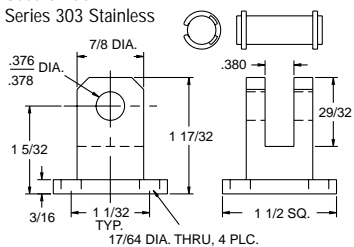
SS-90

St'd Clevis Brk't
Used on SS 2
Series 300 Stainless



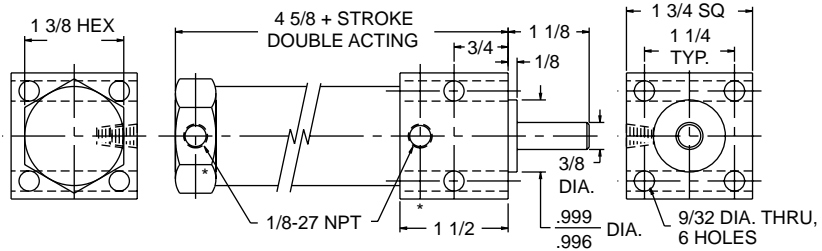
SSC-40

St'd Clevis Brk't
Used on SS 2
Series 303 Stainless



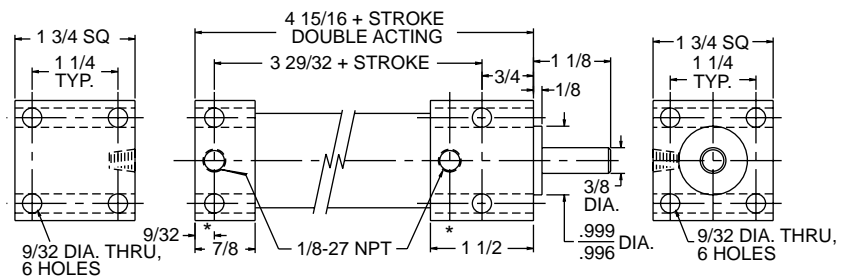
* INDICATES STANDARD CUSHION SCREW LOCATION

SS10



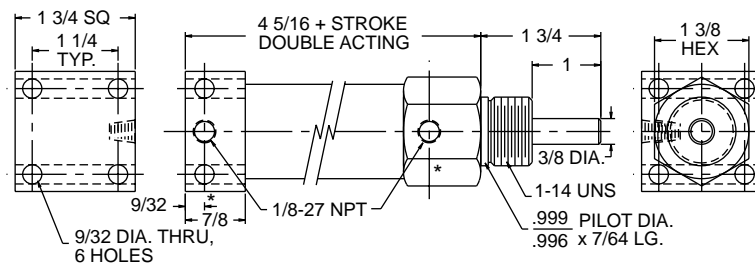
* INDICATES STANDARD CUSHION SCREW LOCATION

SS11



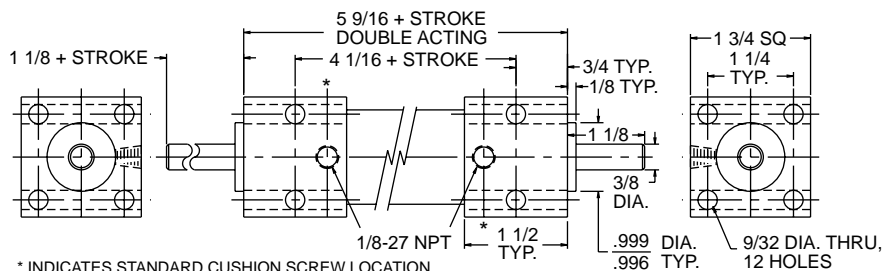
* INDICATES STANDARD CUSHION SCREW LOCATION

SS12



* INDICATES STANDARD CUSHION SCREW LOCATION

SS13



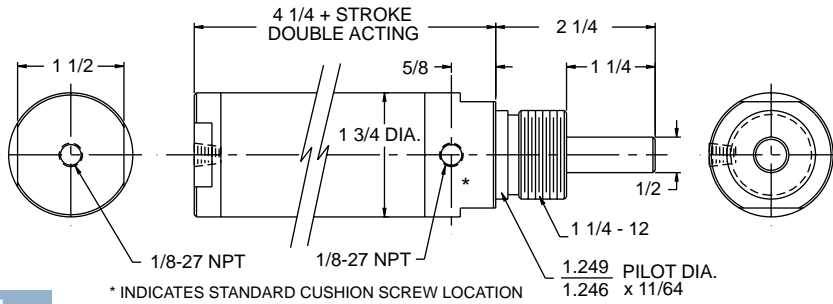
* INDICATES STANDARD CUSHION SCREW LOCATION

SS14

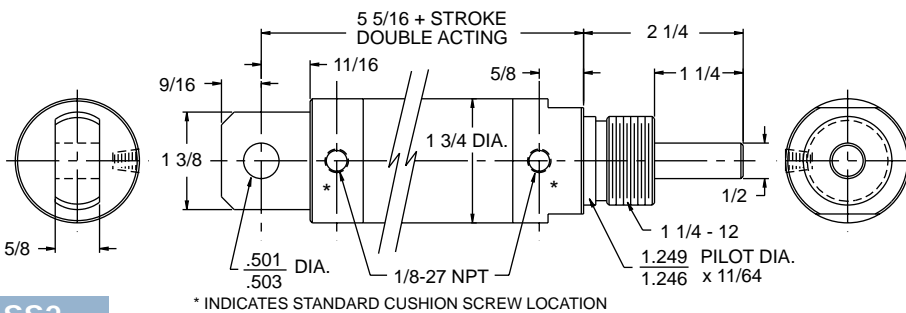
Series SS Solid Stainless

1 1/2" BORE SERIES SS STAINLESS

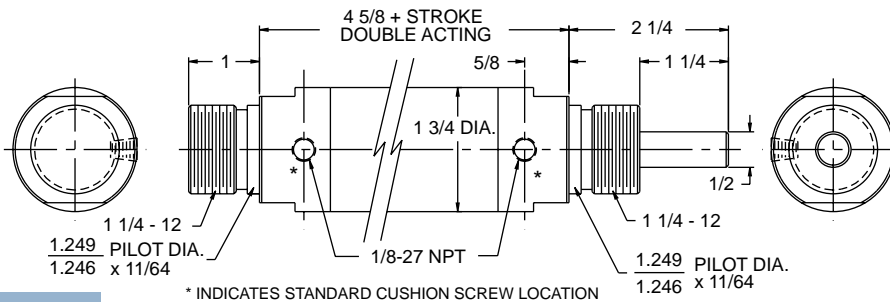
200 PSI MAX. AIR
1000 PSI MAX. HYD. Non shock



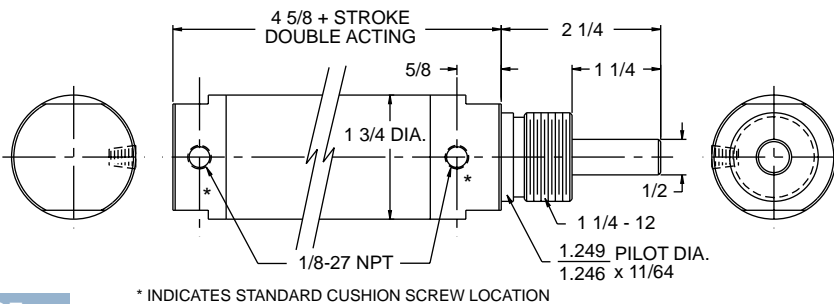
SS1



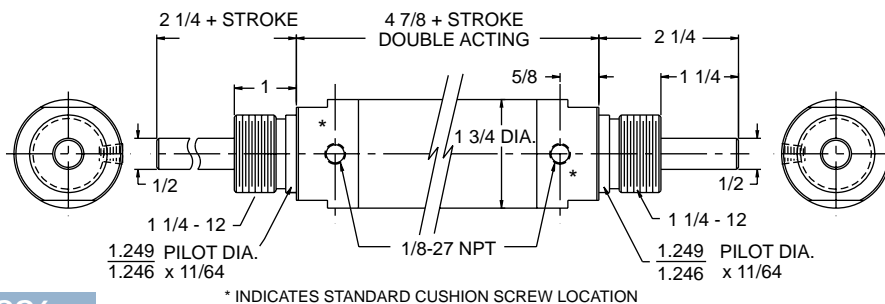
SS2



SS3



SS5



SS6

Single Acting Cylinders

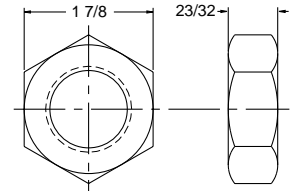
Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring extend	0-2"	1 1/2"	2 1/8"-4"	3"
Spring return	0-2"	1 1/2"	2 1/8"-4"	3"

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

1 1/4 - 12SS Nut Nose Mounting Nut

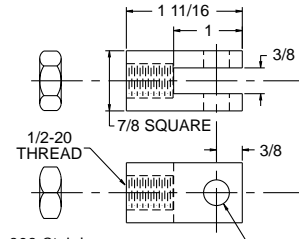
Not included with cylinder
Order Separately



18-8 Stainless

SS-500

Rod Clevis and Nut



303 Stainless

SS-501

Clevis Pin Assembly

Used on SS-500



303 Stainless

*We'll Bill You for the
Cylinders. . .*

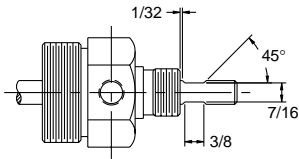
*but Our Experience is
Free*

630 851 4515

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

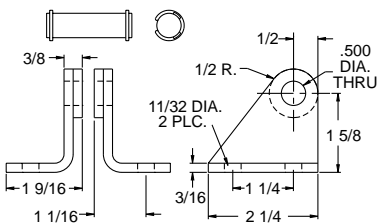
Wrench Flats Optional



See SMS Stainless for More Compact Size and Lower Cost

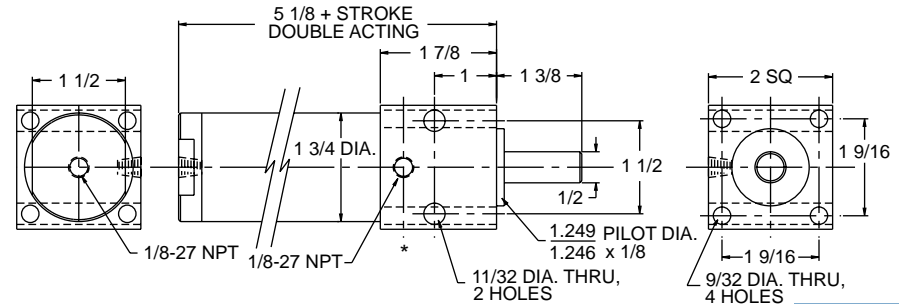
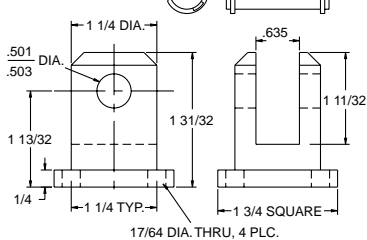
SS-100 St'd Clevis Brk't

Used on SS 2 Series 300 Stainless



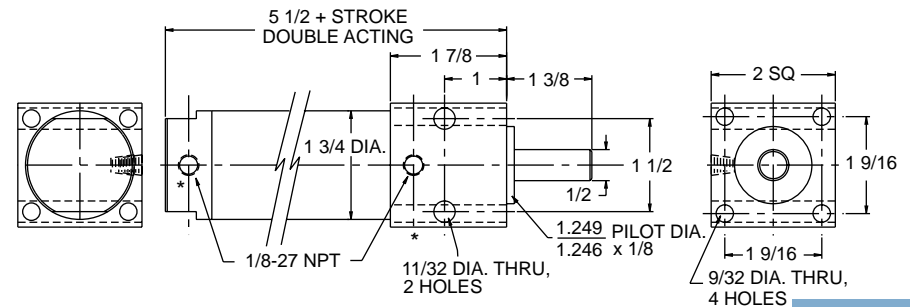
SSC-90 Low Profile Clevis Brk't

Used on SS 2 Series 300 Stainless



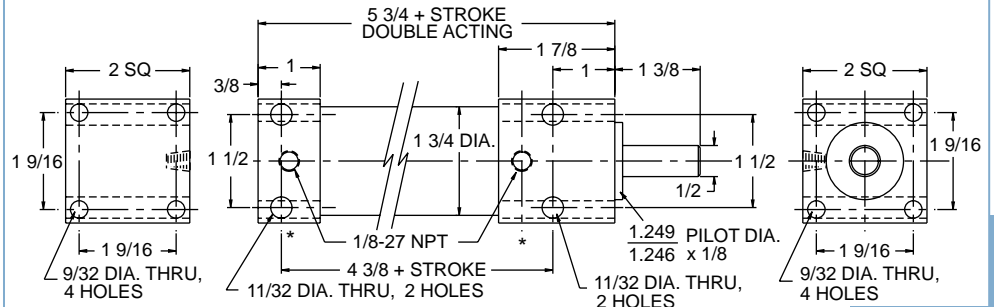
* INDICATES STANDARD CUSHION SCREW LOCATION

SS10



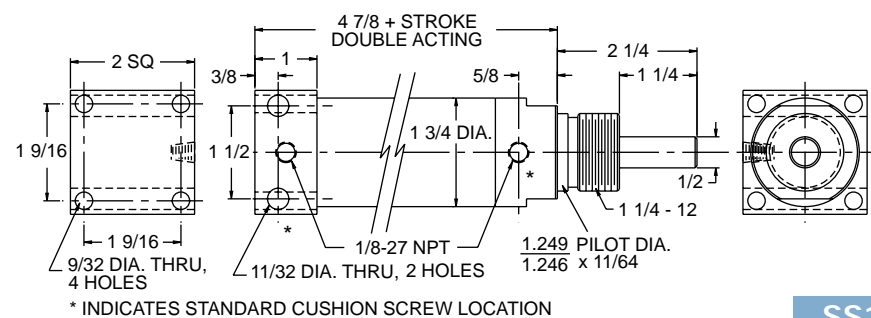
* INDICATES STANDARD CUSHION SCREW LOCATION

SS11



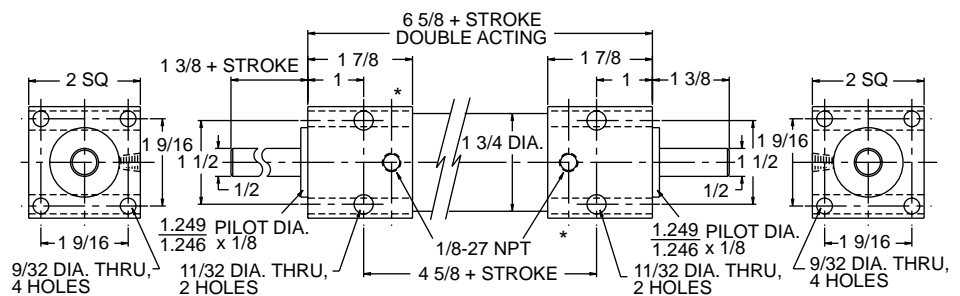
* INDICATES STANDARD CUSHION SCREW LOCATION

SS12



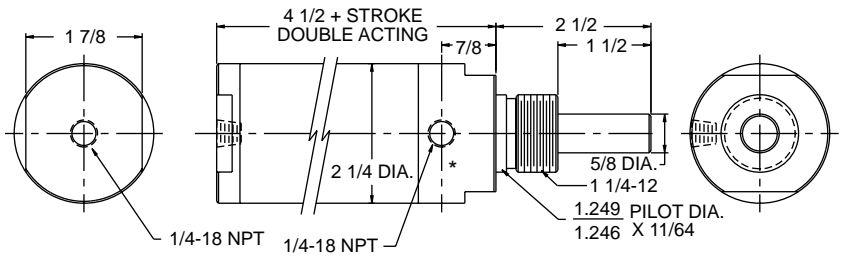
* INDICATES STANDARD CUSHION SCREW LOCATION

SS13



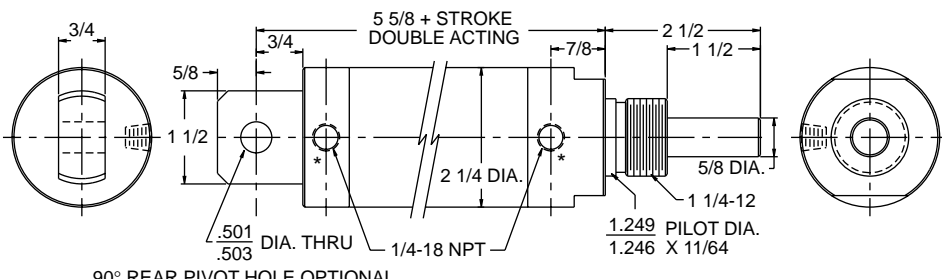
* INDICATES STANDARD CUSHION SCREW LOCATION

SS14



SS1

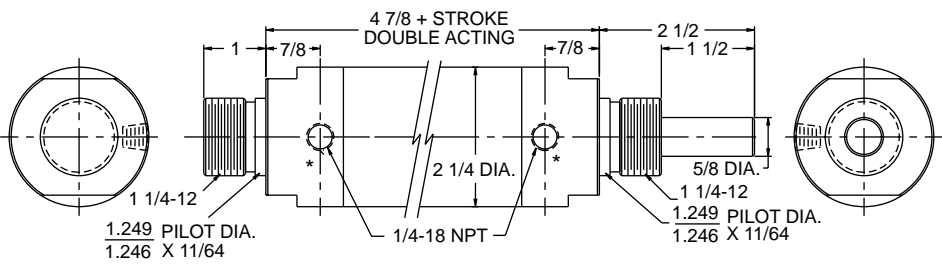
* INDICATES STANDARD CUSHION SCREW LOCATION



SS2

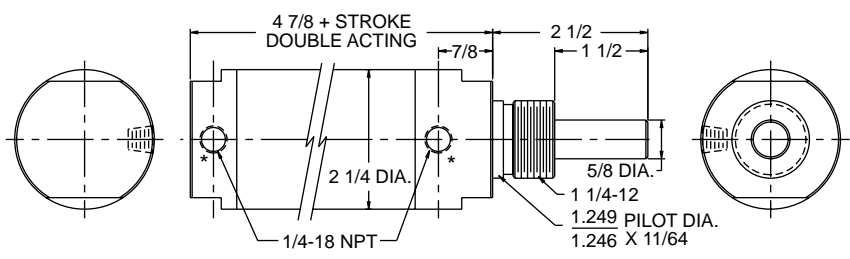
90° REAR PIVOT HOLE OPTIONAL

* INDICATES STANDARD CUSHION SCREW LOCATION



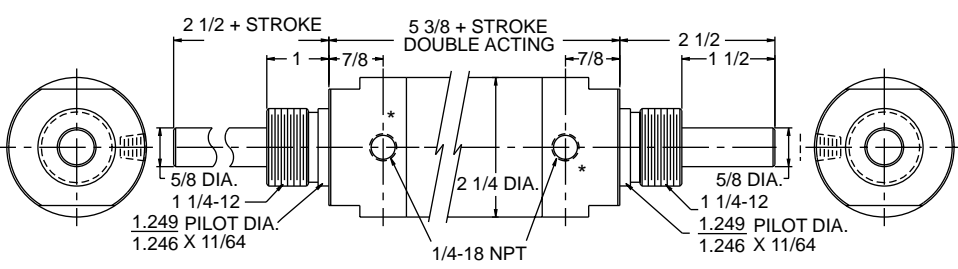
SS3

* INDICATES STANDARD CUSHION SCREW LOCATION



SS5

* INDICATES STANDARD CUSHION SCREW LOCATION



SS6

* INDICATES STANDARD CUSHION SCREW LOCATION

Single Acting Cylinders

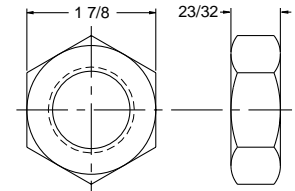
Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring extend	0-2"	1 1/2"	2 1/8"-4"	3"
Spring return	0-2"	1 1/2"	2 1/8"-4"	3"

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

1 1/4 -12SS Nut Nose Mounting Nut

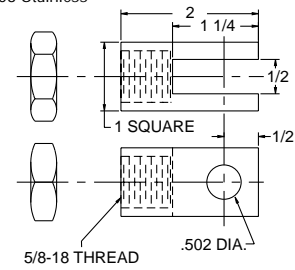
Not included with cylinder
Order Separately



18-8 Stainless

SS-625

Rod Clevis and Nut
303 Stainless



SS-601

Clevis Pin Assembly

Used on SS-625 303 Stainless



**Make the
Best Choice**

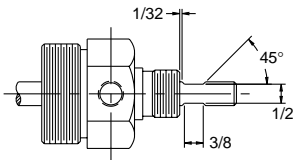
1 630 851 4515

ask for
Technical Support

SS Options

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

Wrench Flats Optional



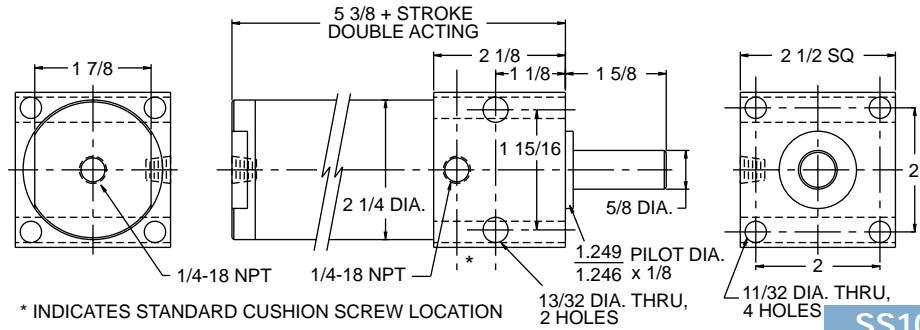
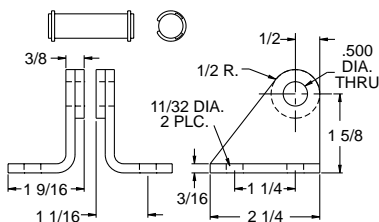
UNIQUE APPLICATIONS SOMETIMES REQUIRE UNIQUE CYLINDERS

See our custom design capabilities on page 87

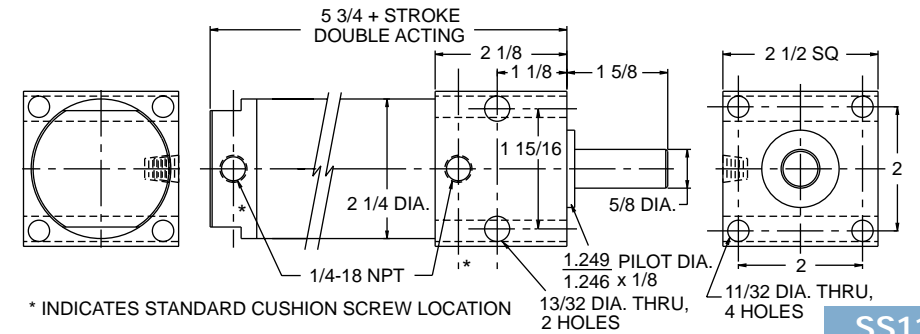
SS-100

St'd Clevis Br'k't

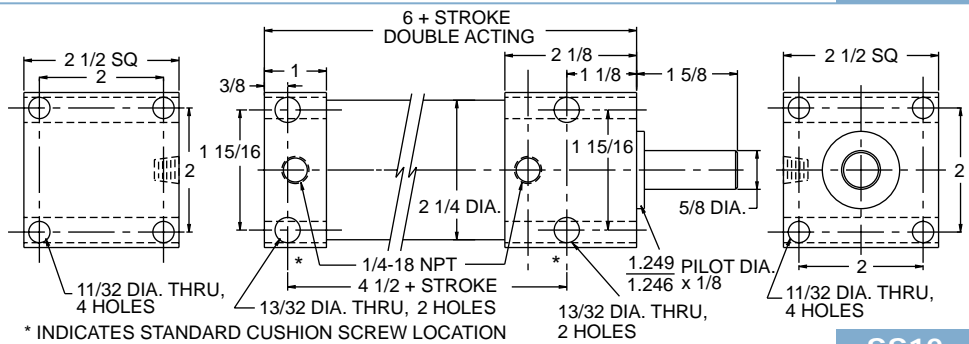
Used on SS 2
Series 300 Stainless



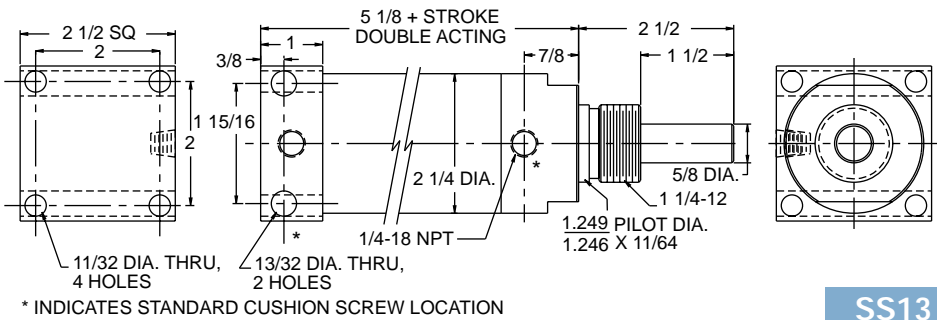
SS10



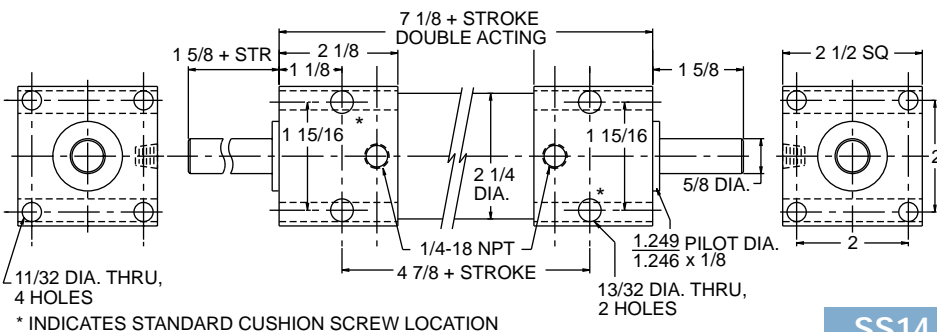
SS11



SS12



SS13



SS14

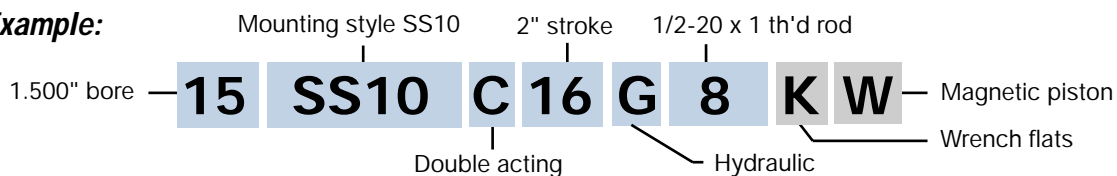
ORDERING PROCEDURE - Series SS Stainless

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 border="1" style="width: 100%; border-collapse: collapse;"> <tr><th style="width: 50%;">Bore</th><th style="width: 50%;">Code</th></tr> <tr><td>3/4"</td><td>07</td></tr> <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> </table>	Bore	Code	3/4"	07	1 1/8"	11	1 1/2"	15	2"	20		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th style="width: 50%;">Type</th><th style="width: 50%;">Code</th></tr> <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> <tr><td colspan="2">*Adds to cyl. length If double rod end model is to be single acting, select A</td></tr> </table>	Type	Code	Single Acting Spring return*	A	Single Acting Spring extend*	B	Double acting	C	*Adds to cyl. length If double rod end model is to be single acting, select A		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th style="width: 50%;">Service</th><th style="width: 50%;">Code</th></tr> <tr><td>Pneumatic</td><td>E</td></tr> <tr><td>Hydraulic</td><td>G</td></tr> </table>	Service	Code	Pneumatic	E	Hydraulic	G																																				
Bore	Code																																																																
3/4"	07																																																																
1 1/8"	11																																																																
1 1/2"	15																																																																
2"	20																																																																
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Pneumatic	E																																																																
Hydraulic	G																																																																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Mounting Style/Code</th></tr> <tr><td>SS 1</td><td>SS 10</td></tr> <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> </table>	Mounting Style/Code		SS 1	SS 10	SS 2	SS 11	SS 3	SS 12	SS 5	SS 13	SS 6	SS 14	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Stroke</th></tr> <tr><td colspan="2">Code is stroke in total 1/8" increments</td></tr> <tr><td colspan="2">Example: 1" stroke = 8</td></tr> <tr><td colspan="2">2 1/4" stroke = 18</td></tr> <tr><td colspan="2">Stocked in 1/2" increments as follows:</td></tr> <tr><td>3/4" bore to 6"</td><td>1 1/8" bore to 8"</td></tr> <tr><td>1 1/2" bore to 10"</td><td>2" bore to 12"</td></tr> </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"	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="3">Piston Rod Codes</th></tr> <tr><th style="width: 33%;">Bore</th><th style="width: 33%;">Thread</th><th style="width: 33%;">Code</th></tr> <tr><td>All</td><td>Plain rod No thread</td><td>0</td></tr> <tr><td>.750</td><td>5/16-18 x 3/4</td><td>3</td></tr> <tr><td>.750</td><td>5/16-24 x 3/4</td><td>4</td></tr> <tr><td>1.125</td><td>3/8-16 x 3/4</td><td>5</td></tr> <tr><td>1.125</td><td>3/8-24 x 3/4</td><td>6</td></tr> <tr><td>1.500</td><td>1/2-13 x 1</td><td>7</td></tr> <tr><td>1.500</td><td>1/2-20 x 1</td><td>8</td></tr> <tr><td>2.000</td><td>5/8-11x 1 1/4</td><td>11</td></tr> <tr><td>2.000</td><td>5/8-18 x 1 1/4</td><td>12</td></tr> <tr><td colspan="3">SS 6, 14 Double rod models will have same rod thread both ends</td></tr> </table>	Piston Rod Codes			Bore	Thread	Code	All	Plain rod No thread	0	.750	5/16-18 x 3/4	3	.750	5/16-24 x 3/4	4	1.125	3/8-16 x 3/4	5	1.125	3/8-24 x 3/4	6	1.500	1/2-13 x 1	7	1.500	1/2-20 x 1	8	2.000	5/8-11x 1 1/4	11	2.000	5/8-18 x 1 1/4	12	SS 6, 14 Double rod models will have same rod thread both ends			
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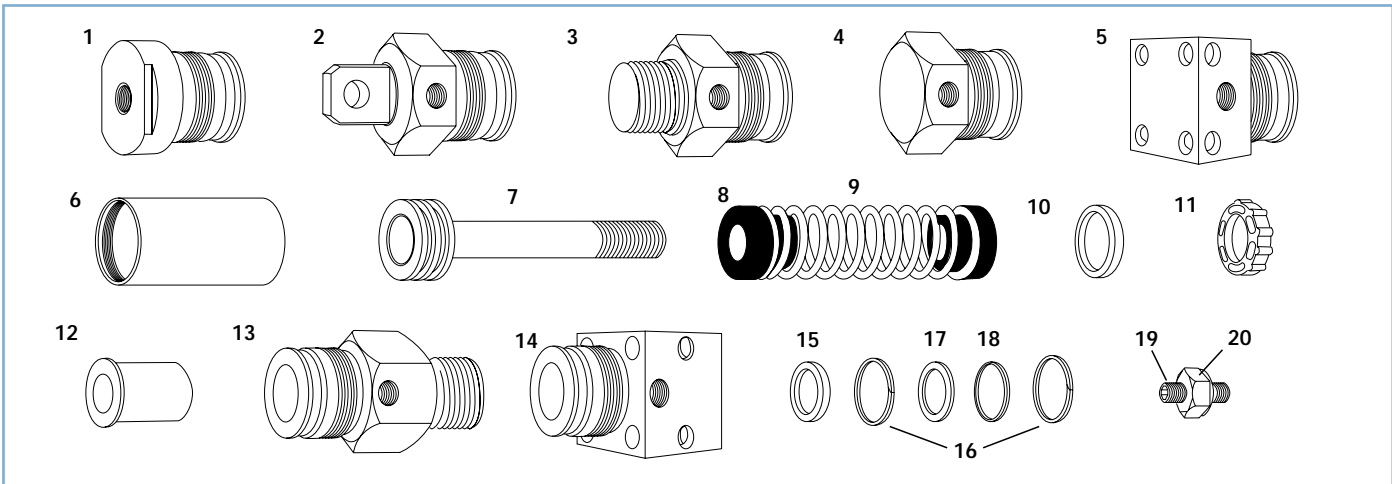
Option	Description	Code
Extra rod extension	Specify code letter J followed by the extra length as a two place decimal. Example: J.50 = 1/2" extra J1.25 = 1 1/4" extra SS6, 14 double rod cylinders with extra extension cannot be ordered by a standard part number - consult factory for a special part number.	J
Wrench flats	Specify if required If specified will be added to both ends of SS6, 14 double rod cylinders	K
Shock pads	Double acting cylinders only — must be added to both ends Adds 1/2" to length — pneumatic use only to 180°F	N
Non-lube service	Pneumatic only — Not available with magnetic piston or solid stainless piston	P
Viton seals	Standard seals are nitrile and urethane +10 to +180°F For service -10 to +400°F specify viton	R
Reverse polypak rod wiper	More effective at keeping liquids and gases out of the cylinder	S
Clevis 90° to st'd	SS 2 only	T
Stainless piston	303 Stainless with teflon wear strip Not available with magnet, non lube, or cushion options	V
Magnetic piston	Adds 1/2" to length on 3/4" bore only Not available with Non-lube or stainless piston options	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" Rod is plain 304 stainless - no chrome plating	X
Non - metallic rod bushings	Fiberglass backed teflon	Y
Adjustable Cushions	Not Available on: 3/4" bore cylinders Rear port caps (SS1, 10) Solid stainless piston Cylinders with shock pads	Cushion head end only AA Cushion cap end only BB Cushion both ends CC

Part No. Example:



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.



Key	Description	3/4 Bore	1 1/8 Bore	1 1/2 Bore	2 Bore
	Seal kit – Pneumatic, Nitrile Add suffix NL for Non-lube Add suffix REV for Reverse Polypak Wiper Add suffix W with Stainless Piston	SS 2207 PB	SS 2211 PB	SS 2215 PB	SS 2220 PB
	Seal kit – Pneumatic, Viton Add suffix NL for Non-lube Add suffix REV for Reverse Polypak Wiper Add suffix W with Stainless Piston	SS 2207 PV	SS 2211 PV	SS 2215 PV	SS 2220 PV
	Seal kit – Hydraulic, Urethane Add suffix REV for Reverse Polypak Wiper Add suffix W with Stainless Piston	SS 2207 HU	SS 2211 HU	SS 2215 HU	SS 2220 HU
	Seal kit – Hydraulic, Viton Add suffix REV for Reverse Polypak Wiper Add suffix W with Stainless Piston	SS 2207 HV	SS 2211 HV	SS 2215 HV	SS 2220 HV
1	Rear port cap	SS 1007	SS 1011	SS 1015	SS 1020
2	Rear pivot cap Add suffix C for adjustable cushion	SS 1107	SS 1111	SS 1115	SS 1120
2	90° Rear pivot cap Add suffix C for adjustable cushion	SS 110790	SS 111190	SS 111590	SS 112090
3	Rear stud cap Add suffix C for adjustable cushion	SS 1207	SS 1211	SS 1215	SS 1220
4	Side port cap Add suffix C for adjustable cushion	SS 1307	SS 1311	SS 1315	SS 1320
5	Square cap Add suffix C for adjustable cushion	SS 1507	SS 1511	SS 1515	SS 15 20
6	Tube	part No. is T followed by the complete cylinder part number			
7	Piston rod assembly	part No. is PR followed by the complete cylinder part number			
8	Spring guide Pair	SS 2007	SS 2011	SS 2015	SS 2020
9	Spring	SS 2107	SS 2111	SS 2115	SS 2120
10	Magnet 1 or 2 as necessary	SS 3207	SS 3211	SS 3215	SS 3220
11	Shock pad	75MSP	11MSP	15MSP	2MSP
12	Rod bearing Add suffix DU for non-metallic		SS 0211	SS 0215	SS 0220
13	Head w/ Bronze br'g Add suffix C for adjustable cushion	SS 0107	SS 0111	SS 0115	SS 0120
13	Head w/ Non-metallic br'g Add suffix C for adjustable cushion	SS 0107 DU	SS 0111 DU	SS 0115 DU	SS 0120 DU
14	Head w/ Bronze br'g Add suffix C for adjustable cushion	SS 1407	SS 1411	SS 1415	SS 1420
14	Head w/ Non-metallic br'g Add suffix C for adjustable cushion	SS 1407 DU	SS 1411 DU	SS 1415 DU	SS 1420 DU
15	Rod seal retaining washer	SS 0507	SS 0511	SS 0515	SS 0520
16	Rod seal/Rod wiper snap ring	SS 0607	SS 0611	SS 0615	SS 0620
17	Rod wiper inside retaining washer Add suffix REV for Reverse Polypak Wiper	SS 0307	SS 0311	SS 0315	SS 0320
18	Rod wiper outside retaining washer Add suffix REV for Reverse Polypak Wiper	SS 0407	SS 0411	SS 0415	SS 0420
19	Cushion screw 3/4" long		SS 2611	SS 2615	
19	Cushion screw 7/8" long		SS 2611L	SS 2615L	SS 2620L
20	Cushion screw locknut		SS 2711	SS 2715	SS 2720

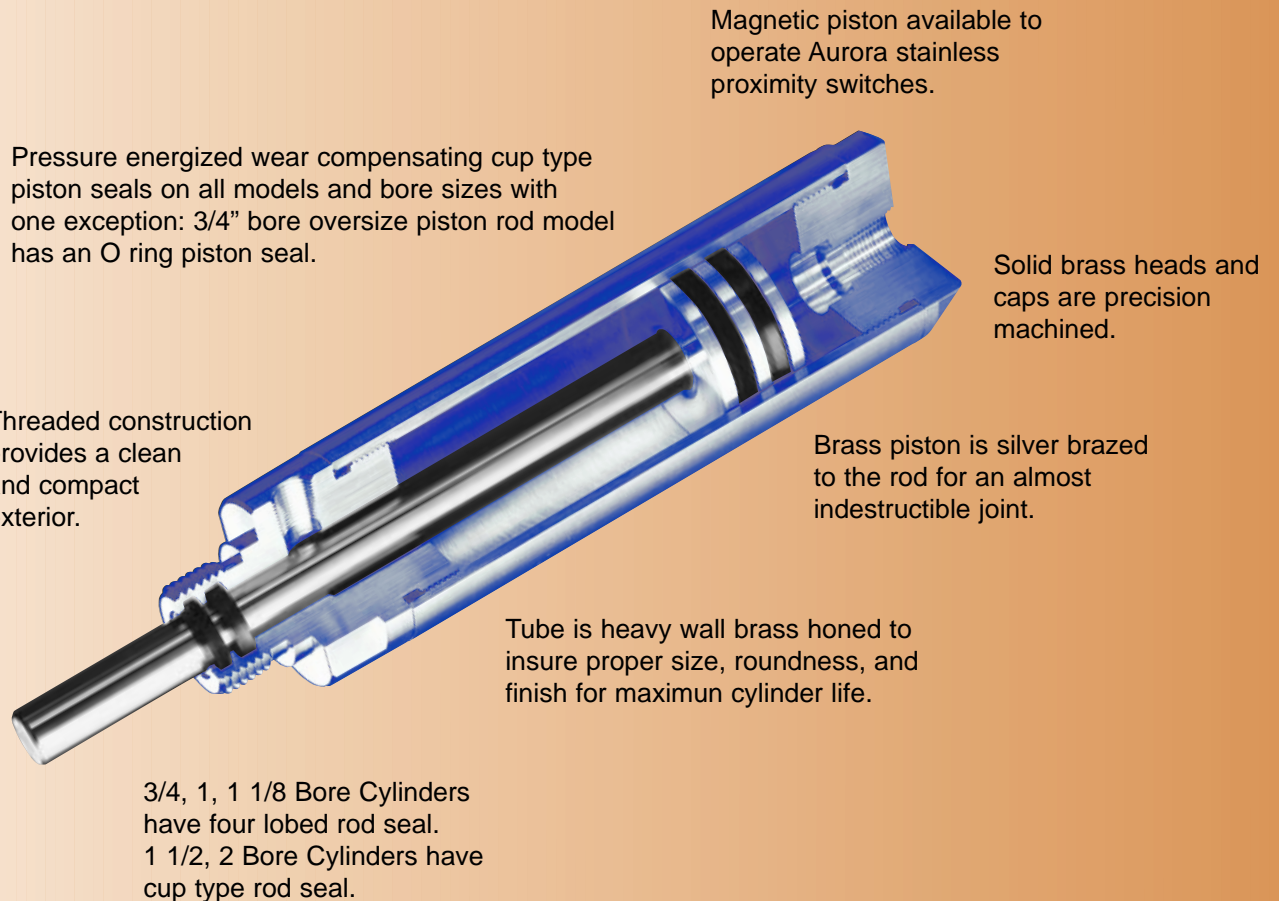
Series HB Solid Brass Cylinders

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



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 WIPERS

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.

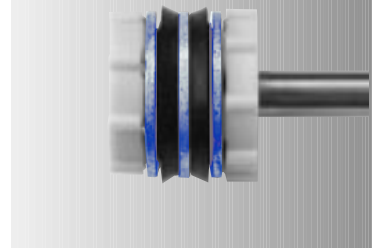
STOP TUBE

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.

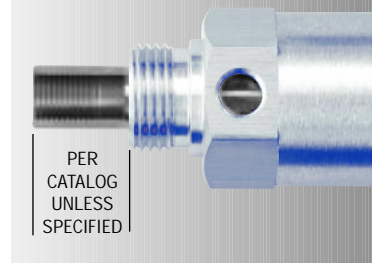
SHOCK PADS



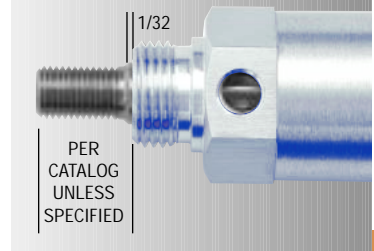
ROD WIPERS



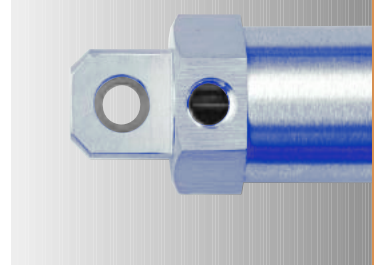
FEMALE ROD THREADS



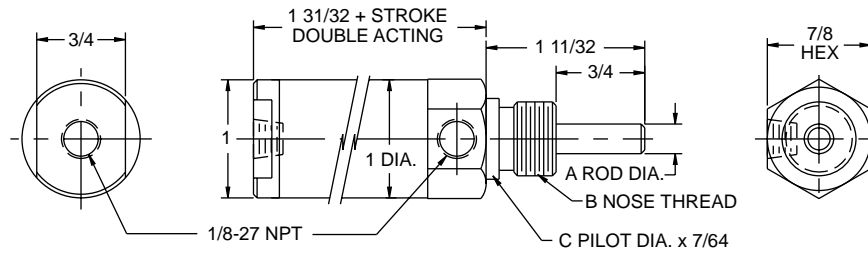
SPECIAL DIAMETER MALE THREADS



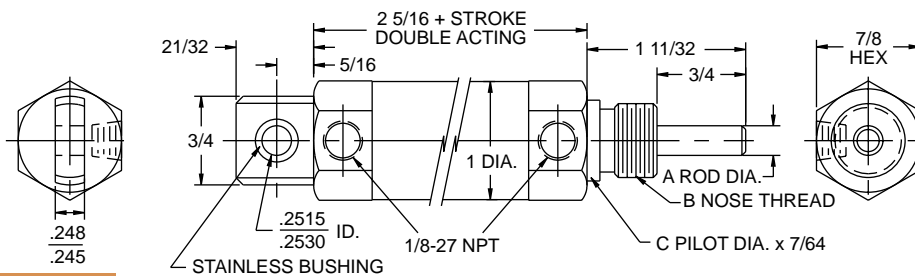
PIVOT BUSHING



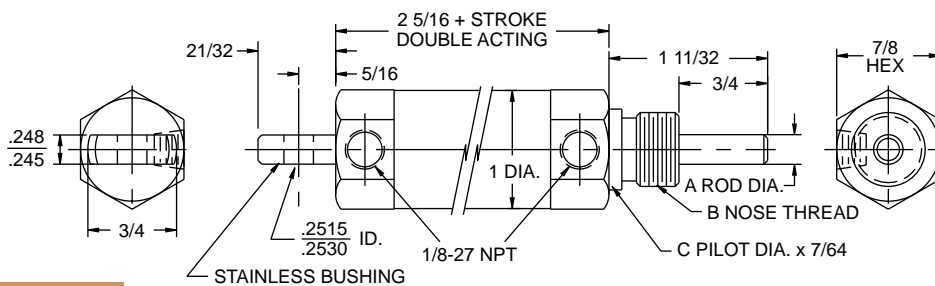
* Polypak is a registered trademark of Parker Hannifin



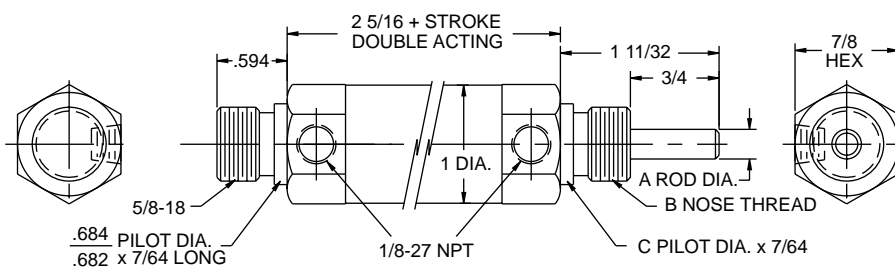
HB1



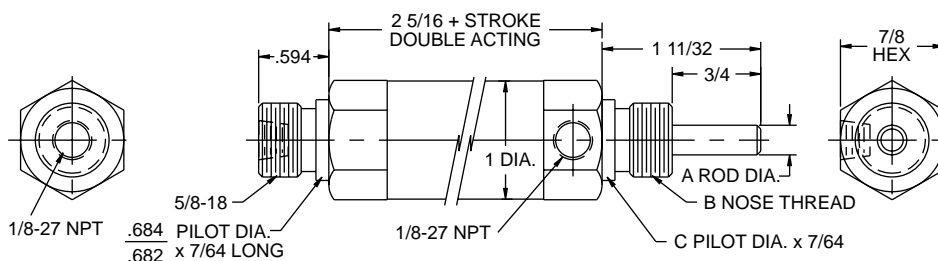
HB2



HB29



HB3



HB4

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
1/4	5/8 -18	.684/.682	D
5/16	5/8 -18	.684/.682	E

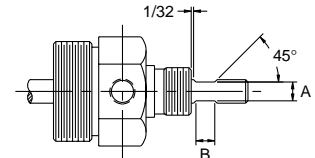
Single Acting Cylinders

Pneumatic only Adds to cylinder length

TYPE	STROKE	cyl. O.A.L.	STROKE	cyl. O.A.L.
Spring return	0-1 3/4"	1"	1 7/8"-3 1/2"	2"
Spring extend	0-1 3/4"	1"	Not available over 1 3/4" stroke	

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

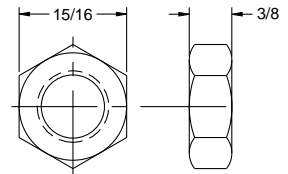
Wrench Flats Optional



ROD DIA.	A	B
1/4	.187	1/4
5/16	.250	1/4

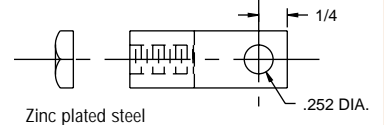
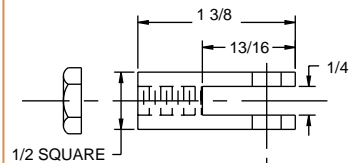
Nose Mounting Nut

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

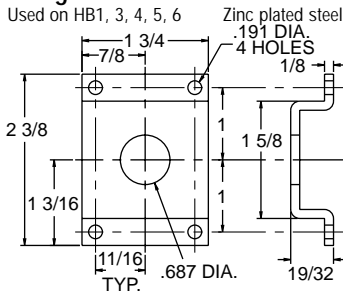


HB Options

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

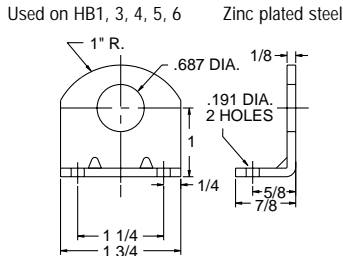
HB-10

Flange Bracket



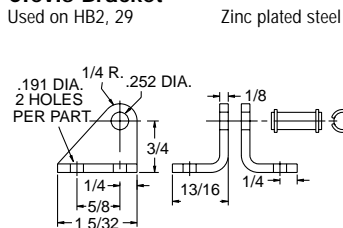
HB-20

Foot Bracket



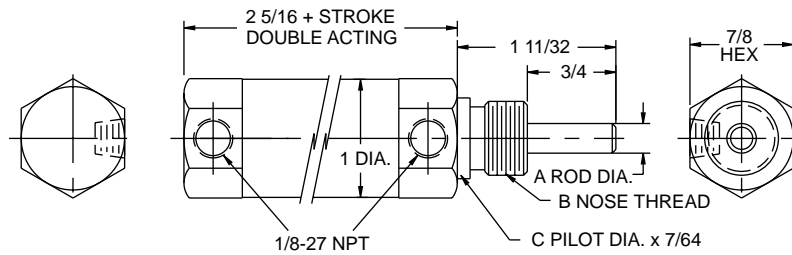
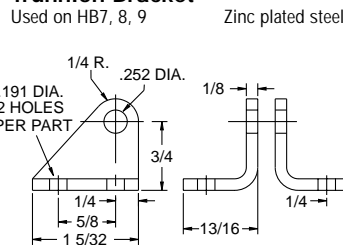
HB-30

Clevis Bracket

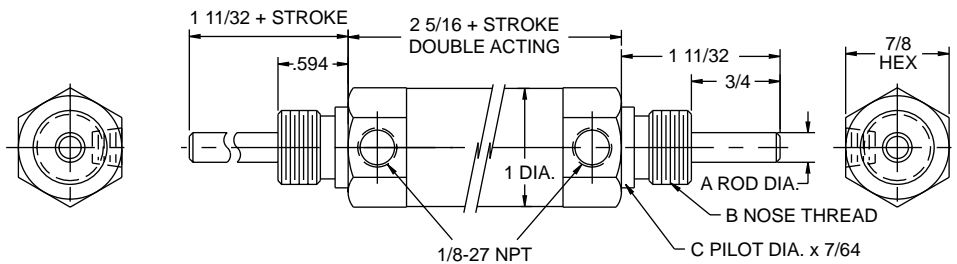


HB-30T

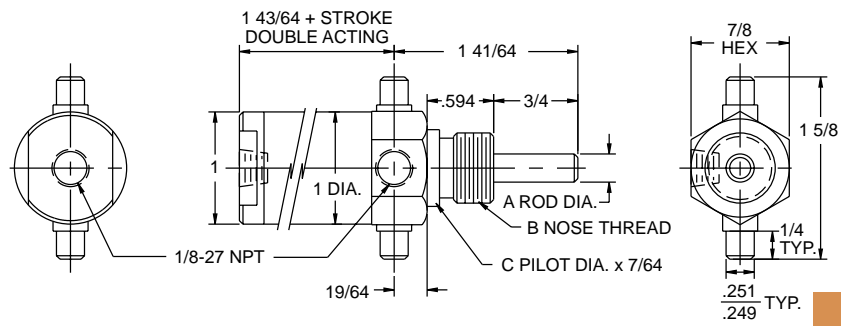
Trunnion Bracket



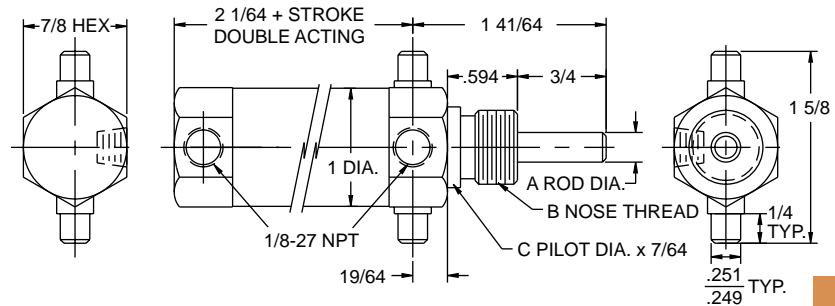
HB5



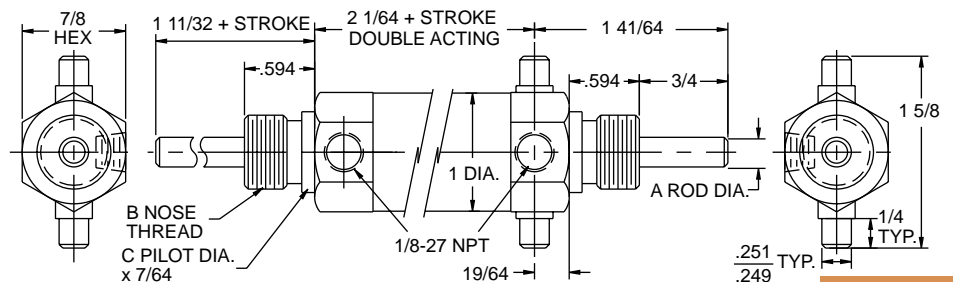
HB6



HB7



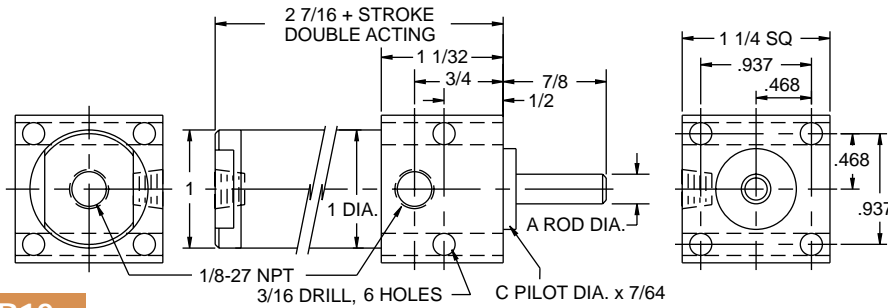
HB8



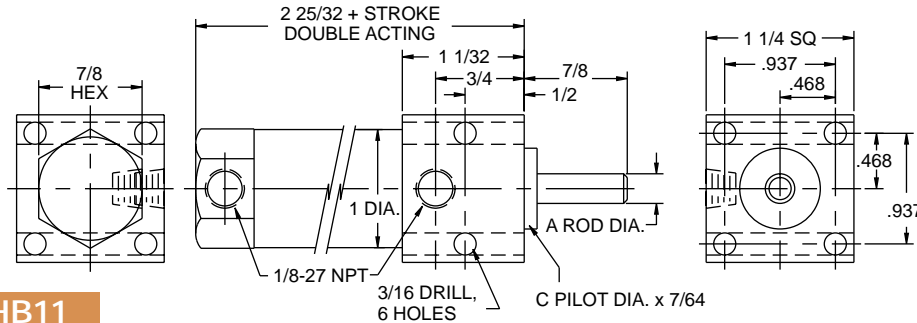
HB9

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
1/4	5/8 -18	.684/.682	D
5/16	5/8 -18	.684/.682	E

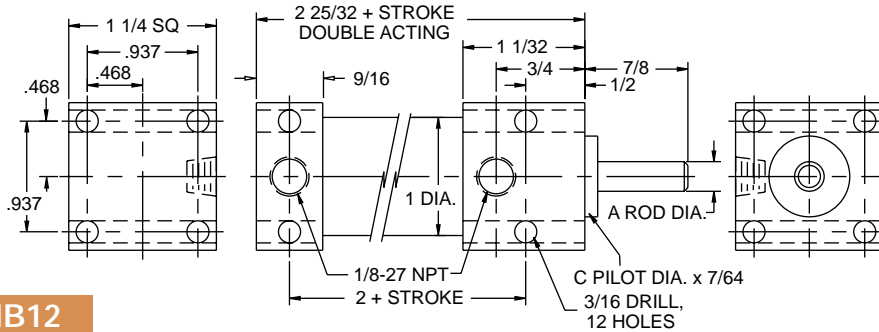
Series HB BRASS



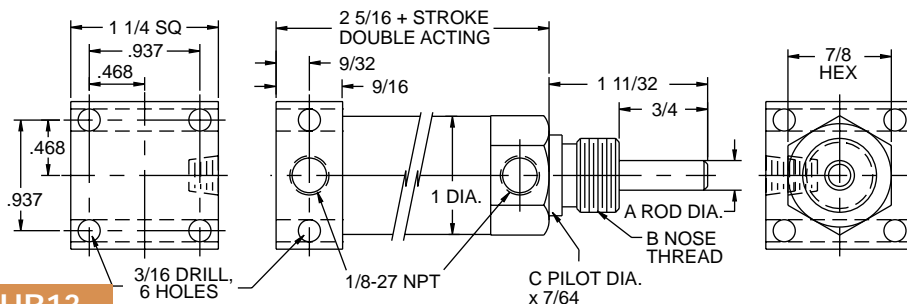
HB10



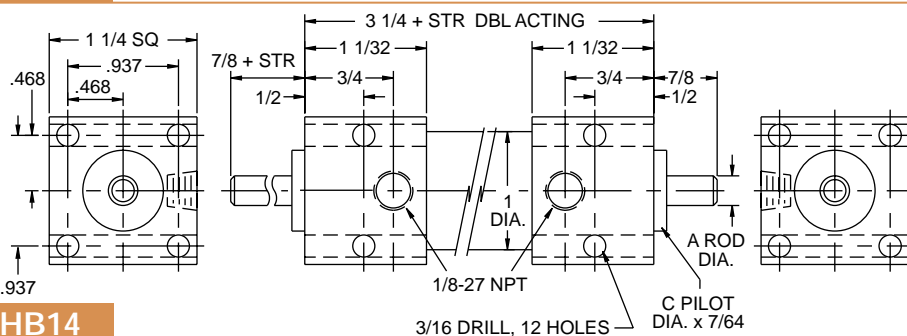
HB11



HB12



HB13



HB14

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
1/4	5/8 -18	.684/.682	D
5/16	5/8 -18	.684/.682	E

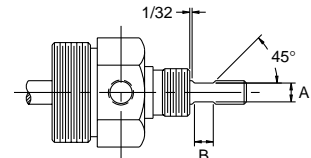
Single Acting Cylinders

Pneumatic only Adds to cylinder length

TYPE	STROKE	cyl. O.A.L.	STROKE	cyl. O.A.L.
Spring return	0-1 3/4"	1"	1 7/8"- 3 1/2"	2"
Spring extend	0-1 3/4"	1"	Not available over 1 3/4" stroke	

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

Wrench Flats Optional

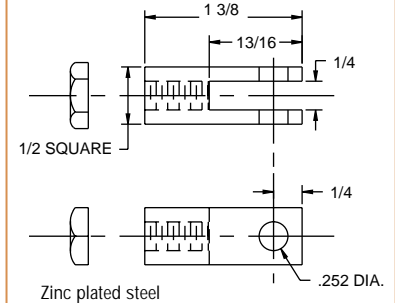


ROD DIA.	A	B
1/4	.187	1/4
5/16	.250	1/4

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



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

1" BORE HB BRASS

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



Single Acting Cylinders

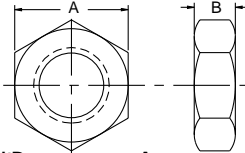
Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring return	0-2"	1"	2 1/8"-4"	2"
Spring extend	0-2"	1"	Not available over 2" stroke	

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

Wrench Flat Chart - Pg 68

Nose Mounting Nut

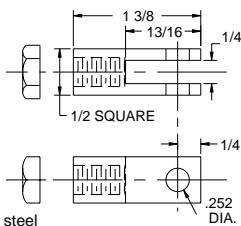


TH'D	A	B
5/8 -18	15/16	3/8
3/4 -16	1 1/8	27/64

HB-312 5/16 -18 Thread

HB-375 3/8 -24 Thread

Rod Clevis & Nut



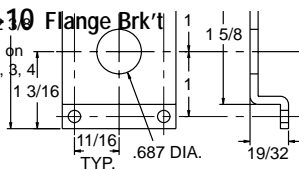
Zinc plated steel

HB-200 Clevis Pin

Used on HB 312, 375

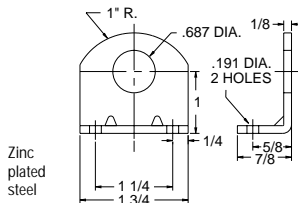
HB₂10 Flange Brk't

Used on HB 1, 3, 4



Zinc plated steel

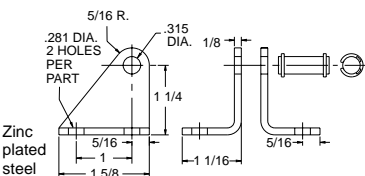
HB-20 Foot Brk't Used on HB 1, 3, 4



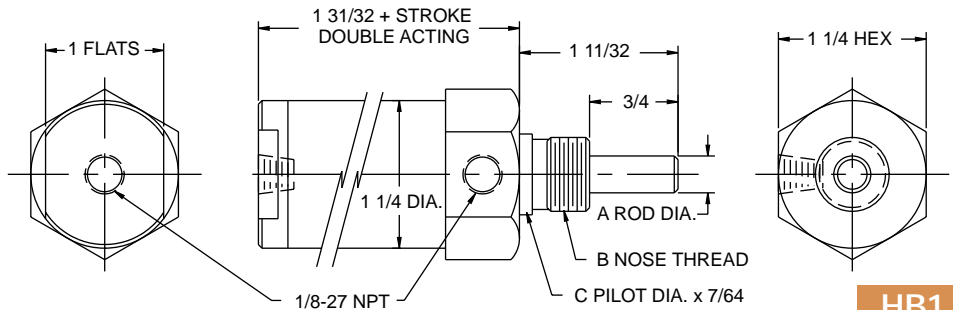
Zinc plated steel

HB-40 Clevis Brk't

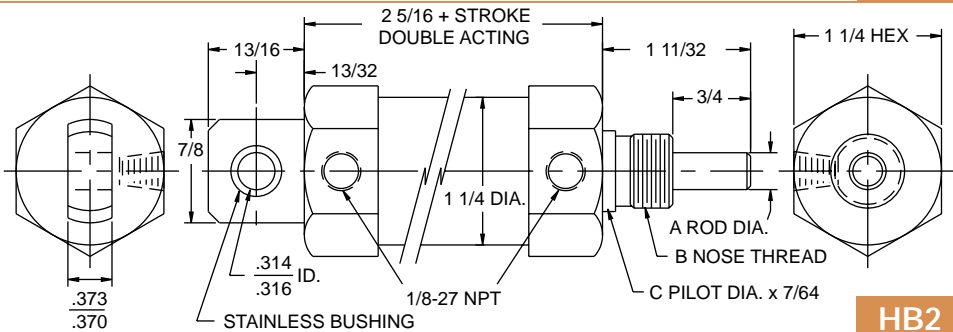
Used on HB 2, 29



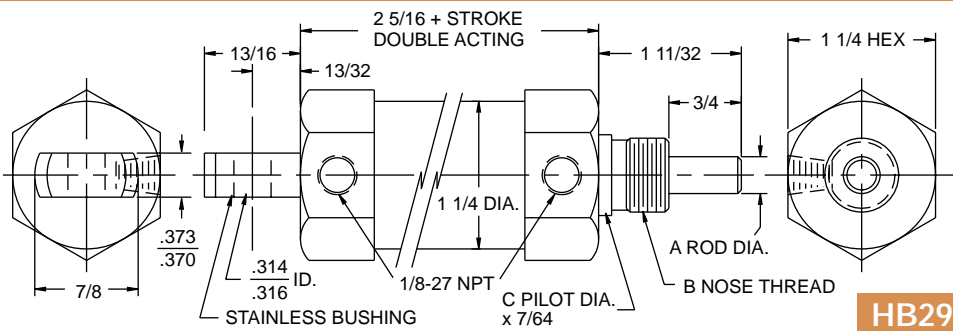
Zinc plated steel



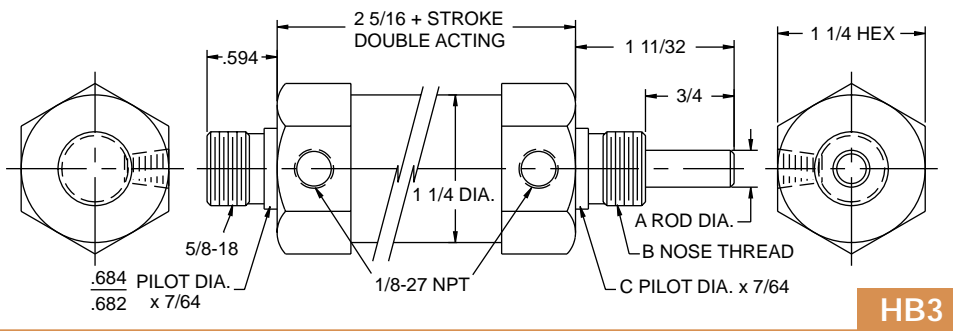
HB1



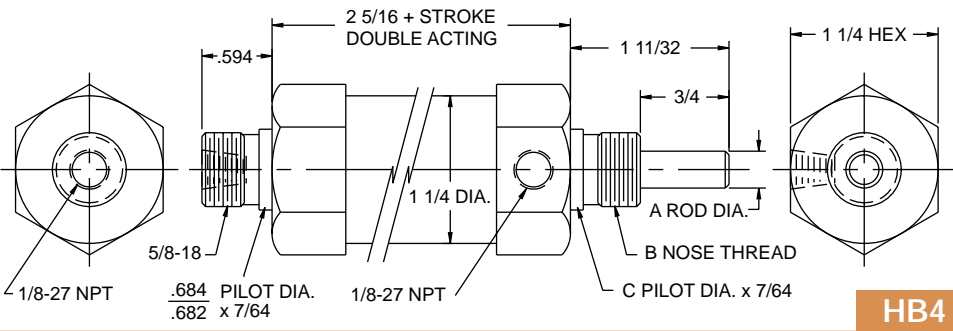
HB2



HB29



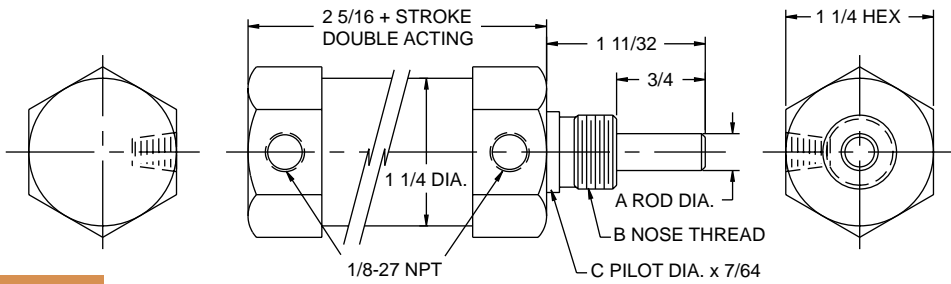
HB3



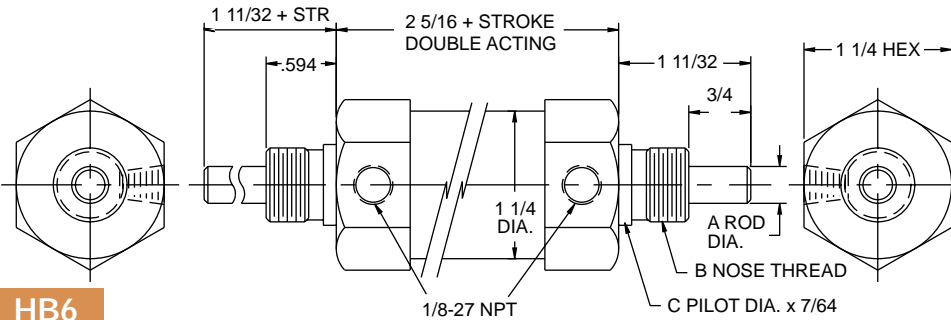
HB4

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/16 Standard	5/8 -18	.684/.682	D
3/8 Oversize	5/8 -18	.684/.682	E
3/8 Oversize	3/4 -16	.747/.745	F

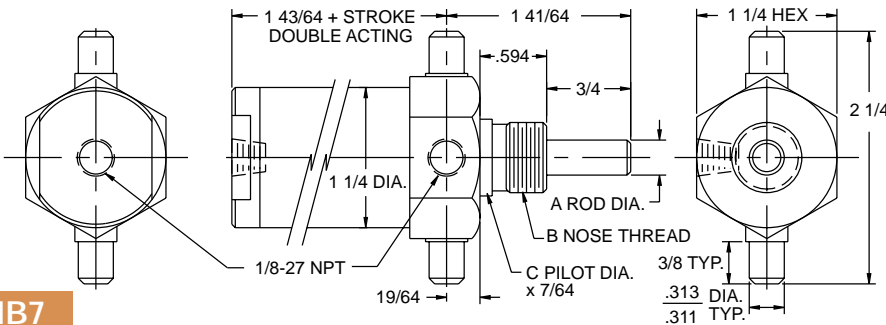
Series HB BRASS



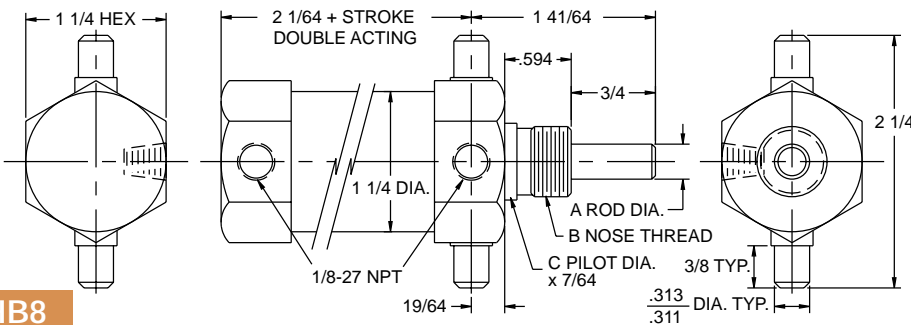
HB5



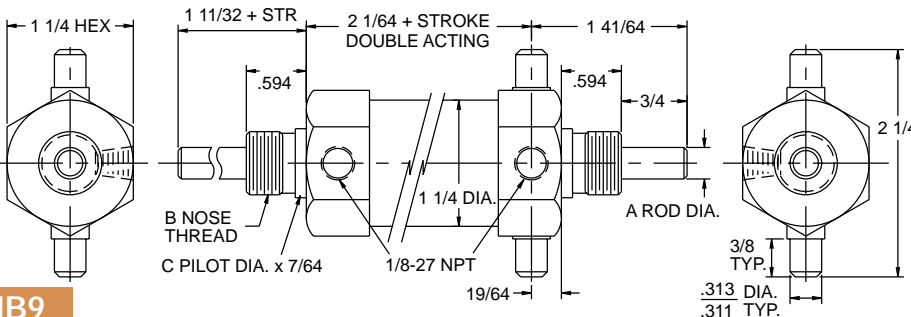
HB6



HB7



HB8



HB9

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/16 Standard	5/8 -18	.684/.682	D
3/8 Oversize	5/8 -18	.684/.682	E
3/8 Oversize	3/4 -16	.747/.745 HB5, 6 ONLY	F

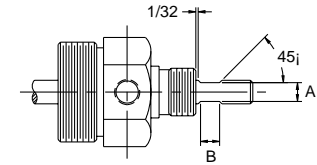
Single Acting Cylinders

Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring return	0-2"	1"	2 1/8"-4"	2"
Spring extend	0-2"	1"	Not available over 2" stroke	

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

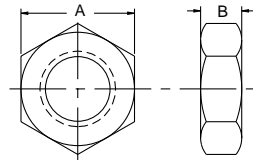
Wrench Flats Optional



ROD DIA.	A	B
5/16	.250	1/4
3/8	.312	1/4

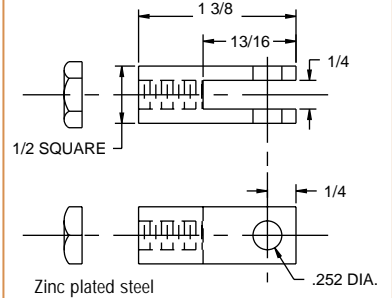
Nose Mounting Nut

Included with Cylinder Zinc plated steel



TH'D	A	B
5/8 -18	15/16	3/8
3/4 -16	1 1/8	27/64

HB-250 1/4-28 Thread HB-312 5/16-18 Thread Rod Clevis and Nut



HB-200 Clevis Pin



Used on HB 312, 375

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

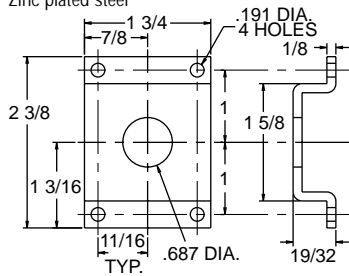
HB Options

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

HB-10

Flange Bracket

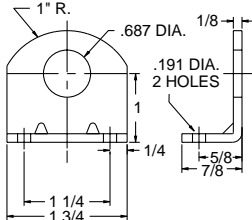
Used on HB1, 3, 4, 5, 6
Zinc plated steel



HB-20

Foot Bracket

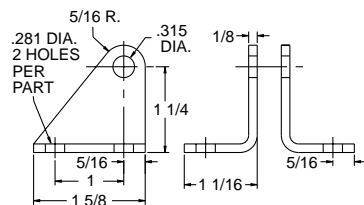
Used on HB1, 3, 4, 5, 6
Zinc plated steel



HB-40T

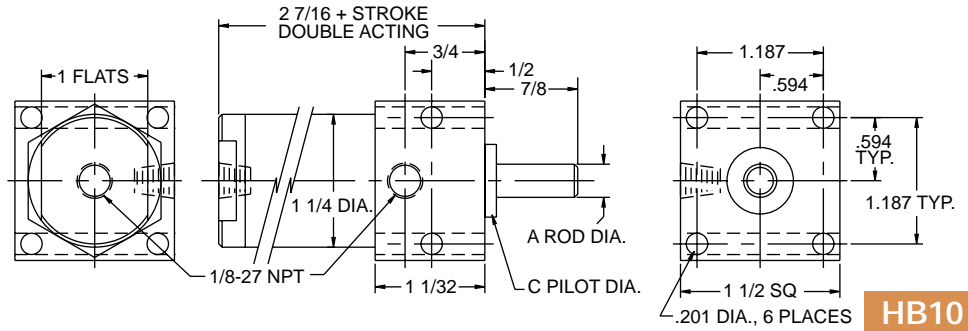
Trunnion Bracket

Used on HB7, 8, 9
Zinc plated steel

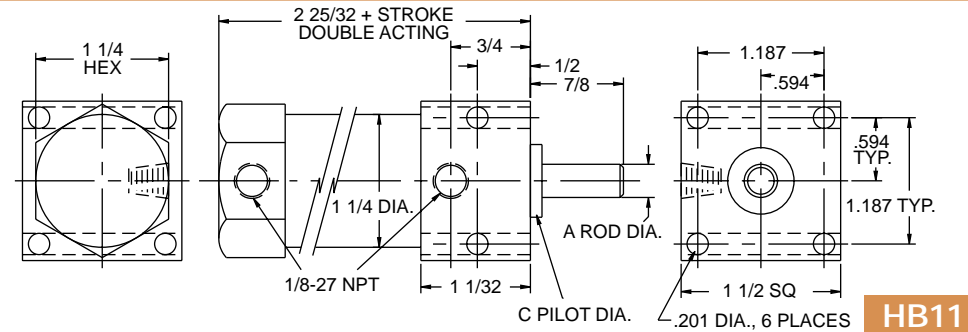


**Don't Guess-
Call Us to
Review Your
Application**

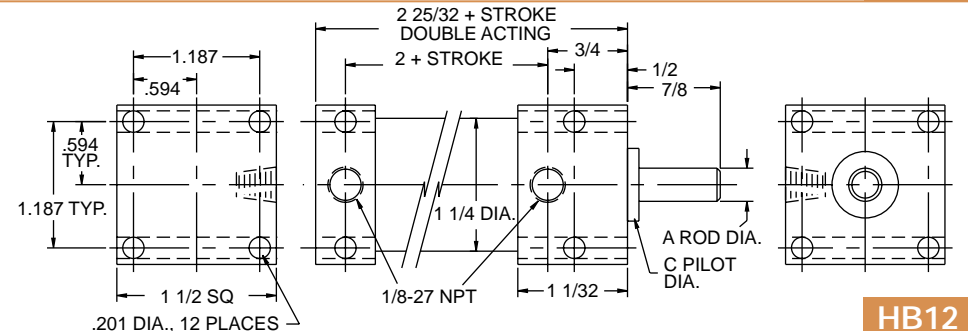
630 851 4515



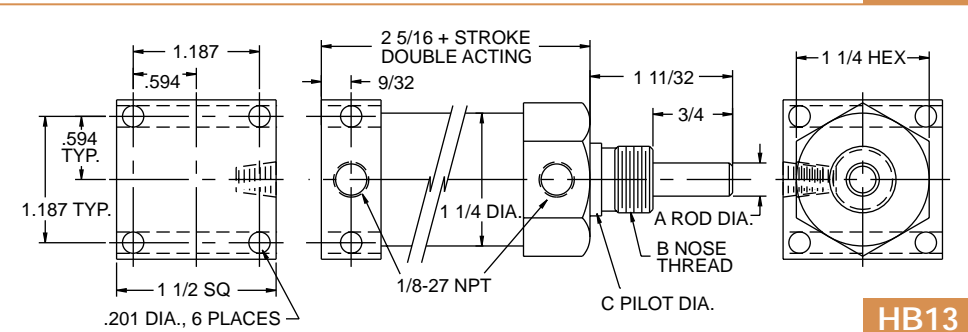
HB10



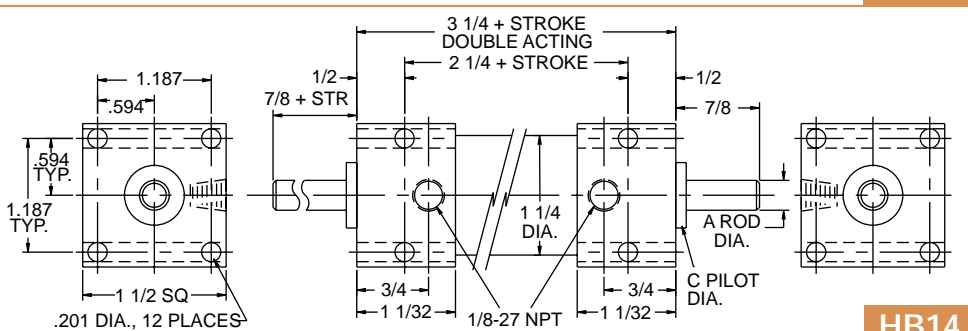
HB11



HB12



HB13

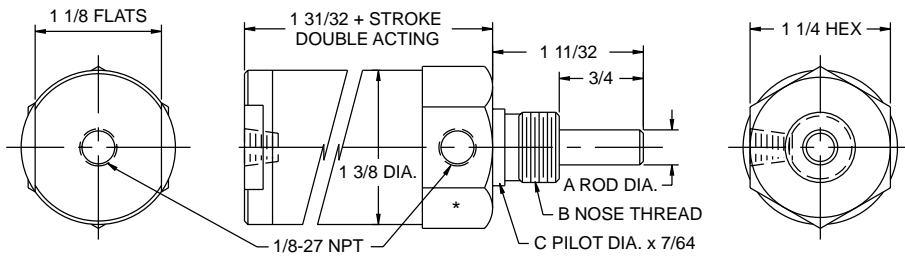


HB14

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/16 Standard	5/8 -18	.684/.682	D
3/8 Oversize	5/8 -18	.684/.682 HB13 ONLY	E
3/8 Oversize	3/4 -16	.747/.745	F

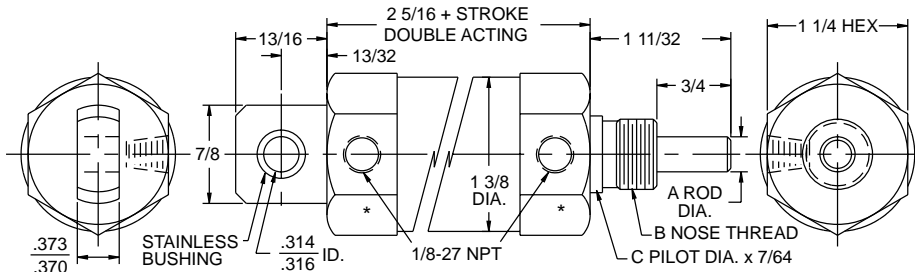
1 1/8" BORE HB BRASS

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



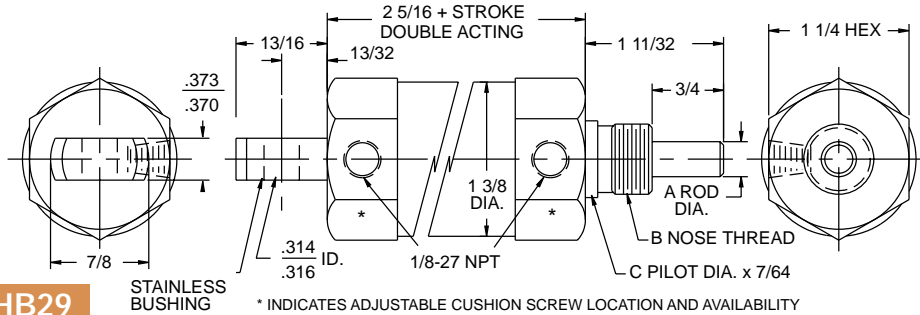
HB1

* INDICATES ADJUSTABLE CUSHION SCREW LOCATION AND AVAILABILITY



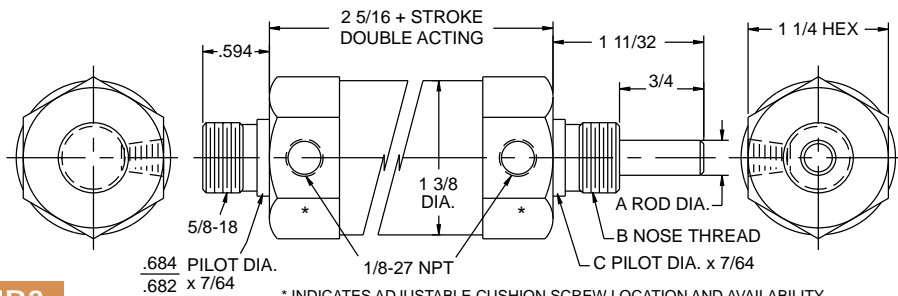
HB2

* INDICATES ADJUSTABLE CUSHION SCREW LOCATION AND AVAILABILITY



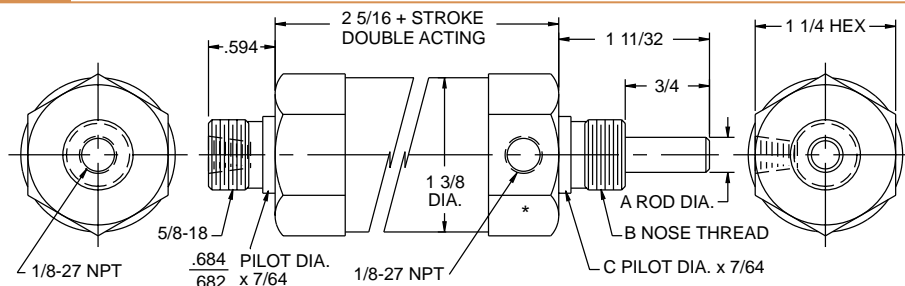
HB29

* INDICATES ADJUSTABLE CUSHION SCREW LOCATION AND AVAILABILITY



HB3

* INDICATES ADJUSTABLE CUSHION SCREW LOCATION AND AVAILABILITY



HB4

* INDICATES ADJUSTABLE CUSHION SCREW LOCATION AND AVAILABILITY

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/16 Standard	5/8 -18	.684/.682	D
3/8 Oversize	5/8 -18	.684/.682	E
3/8 Oversize	3/4 -16	.747/.745	F
3/8 Oversize	7/8 -14	.934/.932	G
1/2 Oversize	7/8 -14	.934/.932	H

Single Acting Cylinders

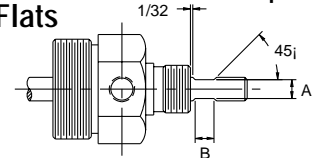
Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring return	0-2"	1"	2 5/8"-4"	2" [†]
Spring extend	0-2 1/2"	1"	Not available over 2 1/2" stroke	

Spring Force: Spring fully extended approx. 4#
Spring fully compressed approx. 20#
[†] Spring fully compressed approx. 13#

Wrench Flats

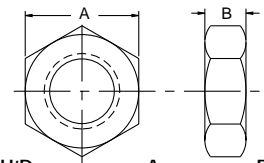
Optional



ROD DIA.	A	B
5/16	.250	1/4
3/8	.312	1/4
1/2	.437	1/4

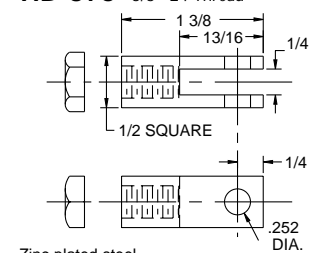
Nose Mounting Nut

Included with Cylinder Zinc plated steel



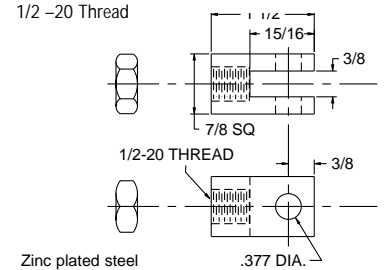
TH'D	A	B
5/8 -18	15/16	3/8
3/4 -16	1 1/8	27/64
7/8 -14	1 5/16	31/64

HB-312 5/16 -18 Thread Rod Clevis & Nut



Zinc plated steel

HB-500 Rod Clevis & Nut



Zinc plated steel

HB-200 Clevis Pin Used on HB-312, 375

HB-501 Clevis Pin Used on HB-500

303 Stainless



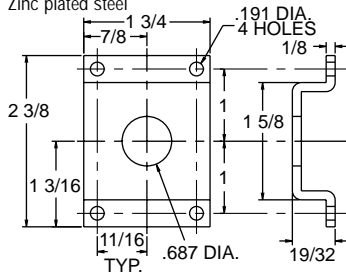
Cushions not available on cylinders with 1/2" diameter rod.

HB Options

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

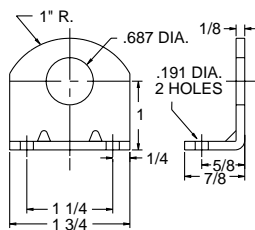
HB-10 Flange Bracket

Used on HB1, 3, 4, 5, 6
Zinc plated steel



HB-20 Foot Bracket

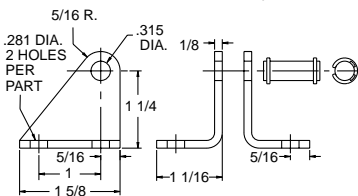
Used on HB1, 3, 4, 5, 6
Zinc plated steel



HB-40 Clevis Bracket

Used on HB2, 29

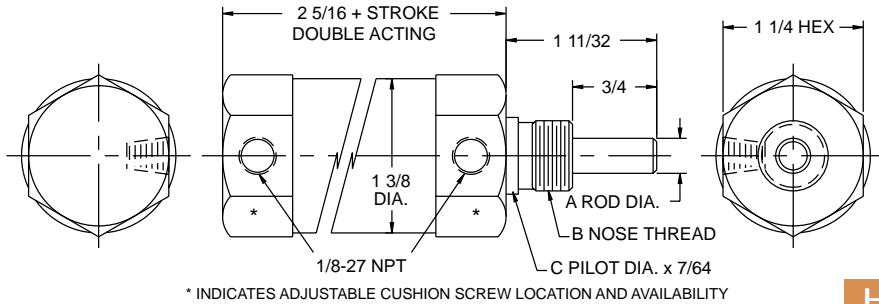
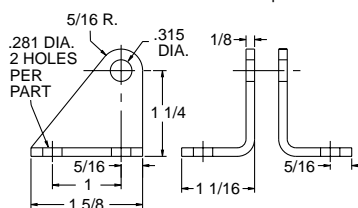
Zinc plated steel



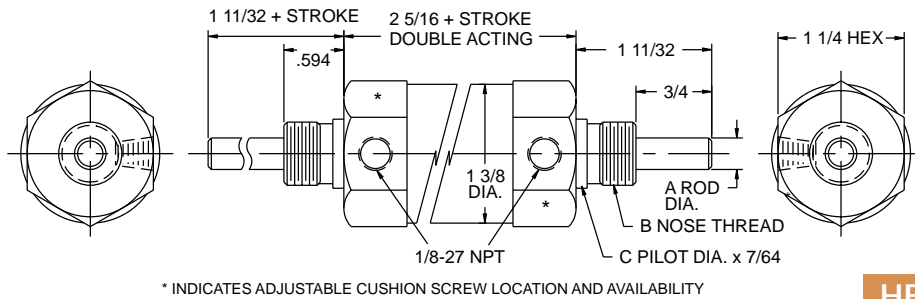
HB-40T Trunnion Bracket

Used on HB7, 8, 9

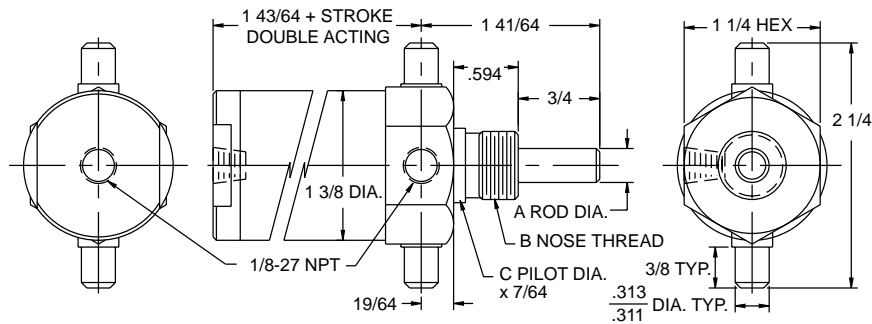
Zinc plated steel



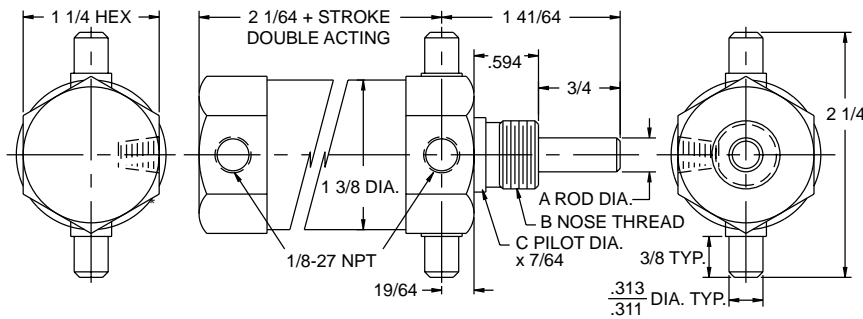
HB5



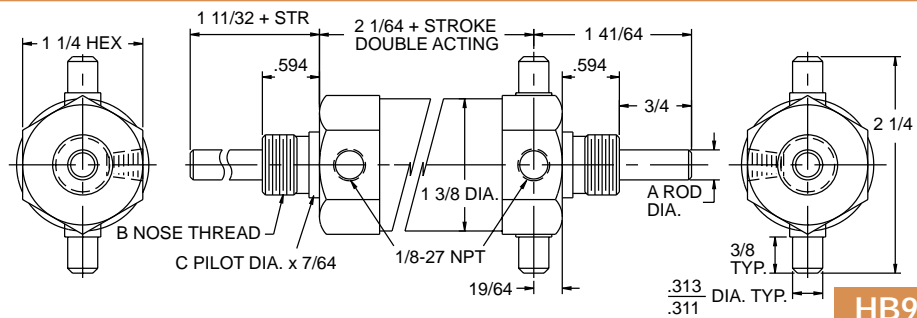
HB6



HB7

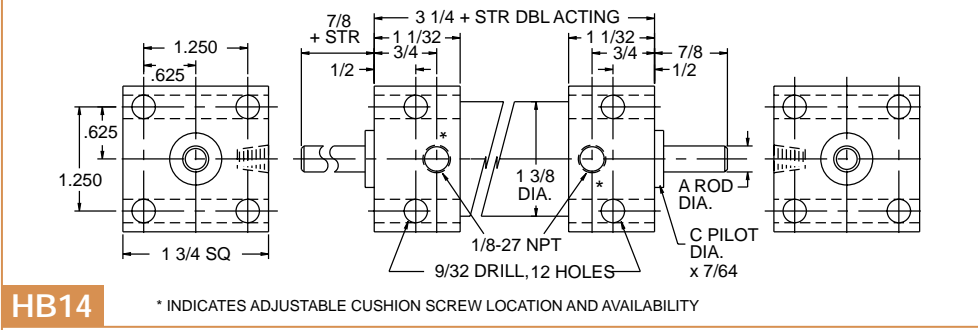
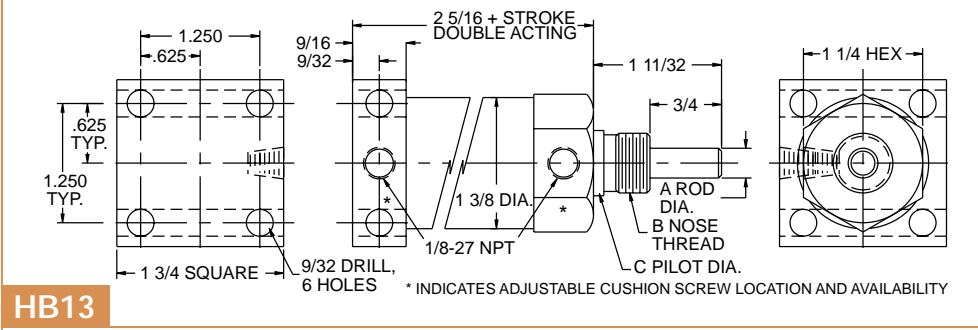
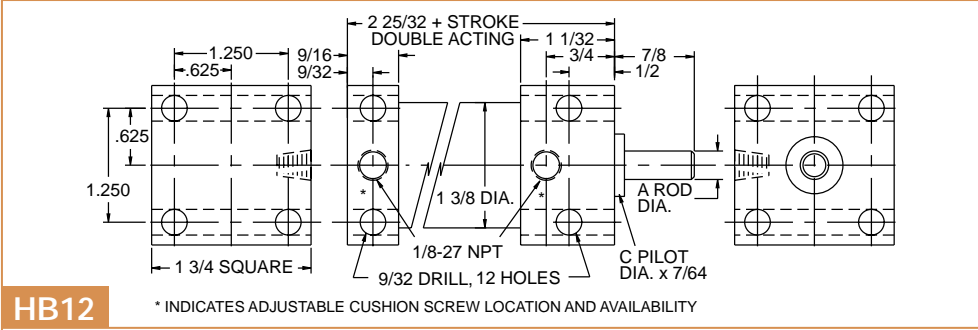
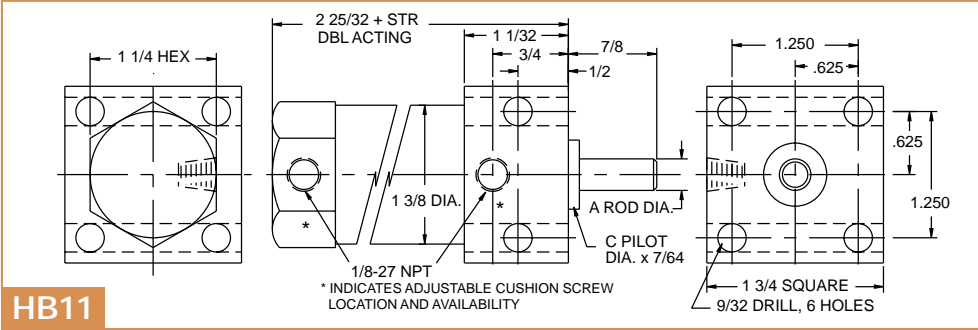
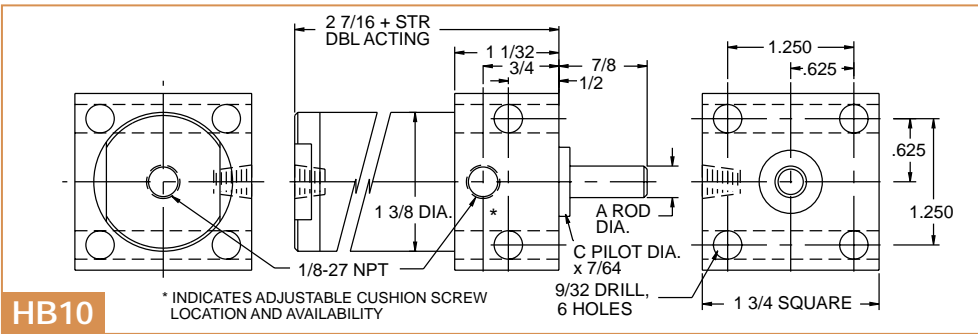


HB8



HB9

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/16 Standard	5/8 -18	.684/.682	D
3/8 Oversize	5/8 -18	.684/.682	E
3/8 Oversize	3/4 -16	.747/.745 HB5, 6 Only	F
3/8 Oversize	7/8 -14	.934/.932 HB5, 6 Only	G
1/2 Oversize	7/8 -14	.934/.932	H



A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/16 Standard	5/8 -18	.684/.682	D
3/8 Oversize	5/8 -18	.684/.682 HB13 Only	E
3/8 Oversize	3/4 -16	.747/.745	F
3/8 Oversize	7/8 -14	.934/.932 HB13 Only	G
1/2 Oversize	7/8 -14	.934/.932	H

Single Acting Cylinders

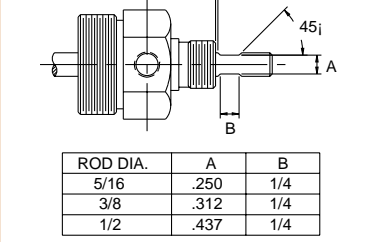
Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring return	0-2 1/2"	1"	2 5/8"-4"	2" [†]
Spring extend	0-2 1/2"	1"	Not available over 2 1/2" stroke	

Spring Force: Spring fully extended approx. 4#
 Spring fully compressed approx. 20#
[†] Spring fully compressed approx. 13#

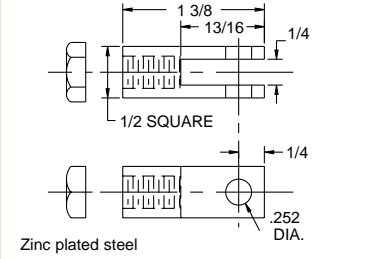
Wrench Flats

Optional



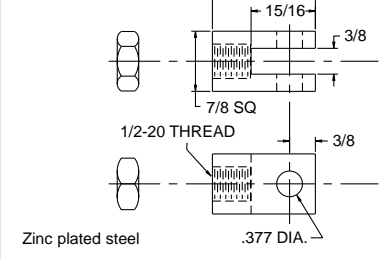
HB-312 5/16 -18 Thread Rod Clevis & Nut

HB-375 3/8 -24 Thread Rod Clevis & Nut



HB-500 Rod Clevis & Nut

1/2 -20 Thread



HB-200 Clevis Pin Assembly

Used on HB-312, HB-375

HB-501 Clevis Pin Assembly

Used on HB-500

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

1 1/2" BORE HB BRASS

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



Single Acting Cylinders

Pneumatic only Adds to cylinder length

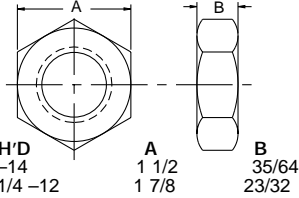
TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring return	0-2"	1 1/2"	2 1/8"-4"	3"
Spring extend	0-2"	1 1/2"	2 1/8"-4"	3"

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

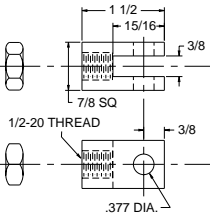
Wrench Flat chart pg 74

1-14 Nut & 1 1/4-12 Nut

Not included with Cylinder Order separately

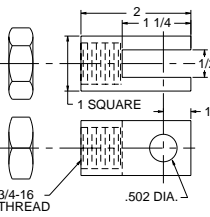


HB-500 Rod Clevis and Nut



Zinc plated steel

HB-750 Rod Clevis and Nut

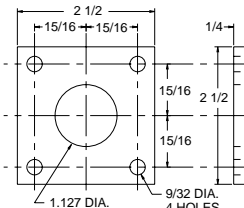


Zinc plated steel

HB-50 Flange Brk't

Order 1"-14 nut separately

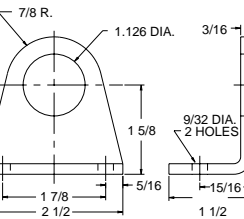
Zinc plated steel



HB-70 Foot Brk't

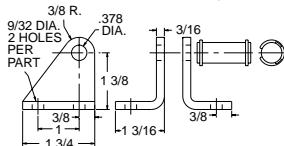
Order 1"-14 nut separately

Zinc plated steel

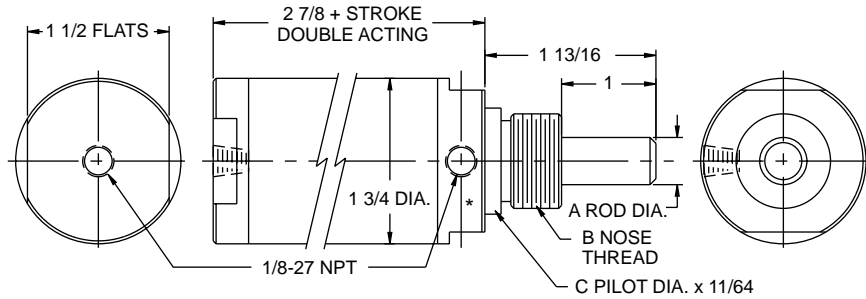


HB-90 St'd Clevis Brk't

Used on HB2, 29 Zinc plated steel

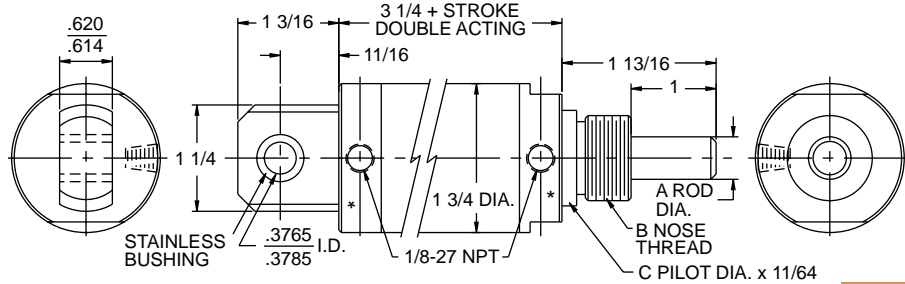


Cushions not available on cylinders with 3/4" diameter rod or oversize 1/4" ports



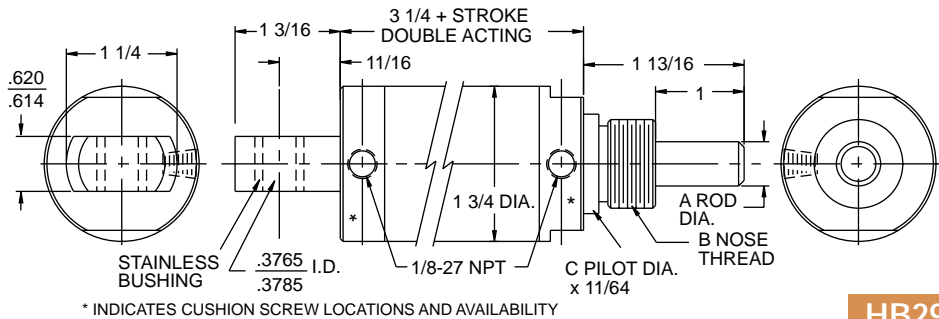
* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB1



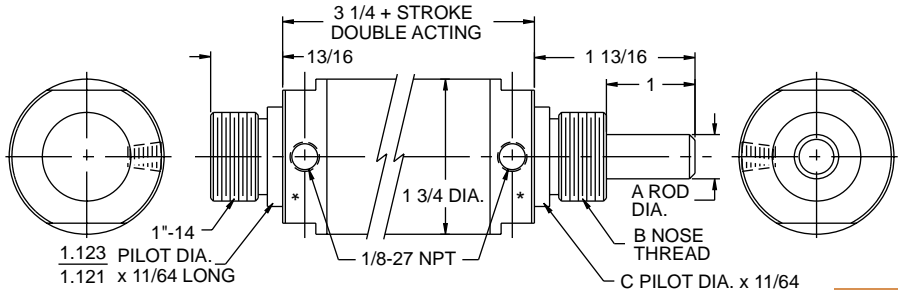
* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB2



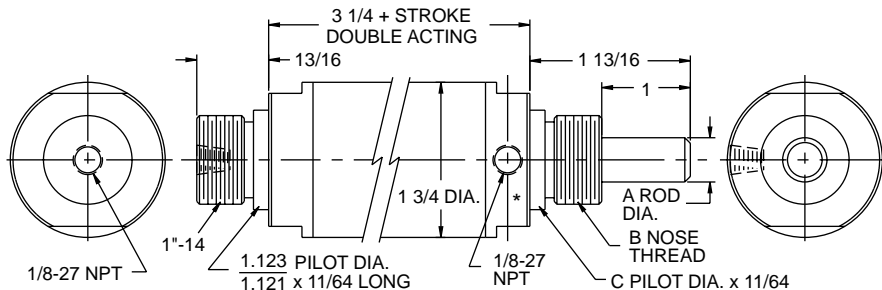
* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB29



* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB3



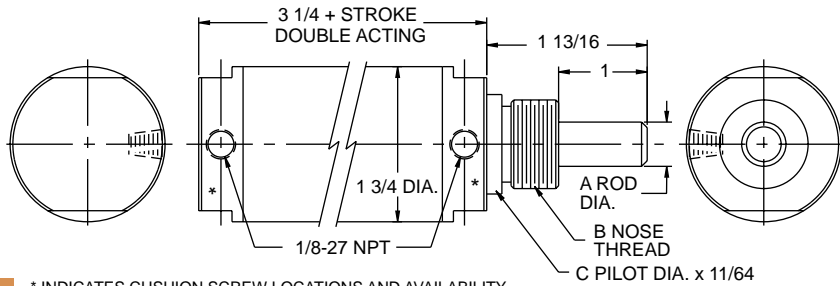
* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB4

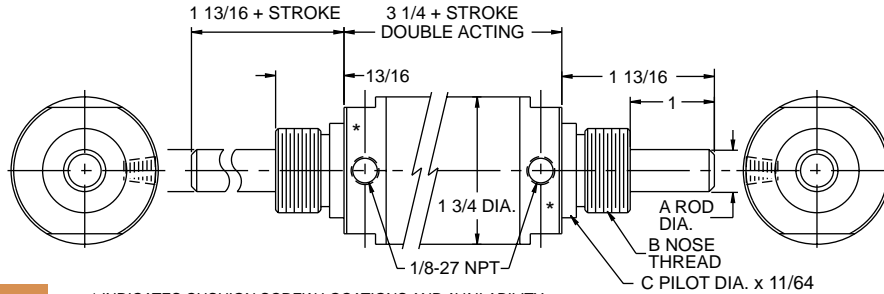
A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
1/2 Standard	1-14	1.123/1.121	D
3/4 Oversize	1 1/4-12	1.373/1.371	E

Series HB BRASS

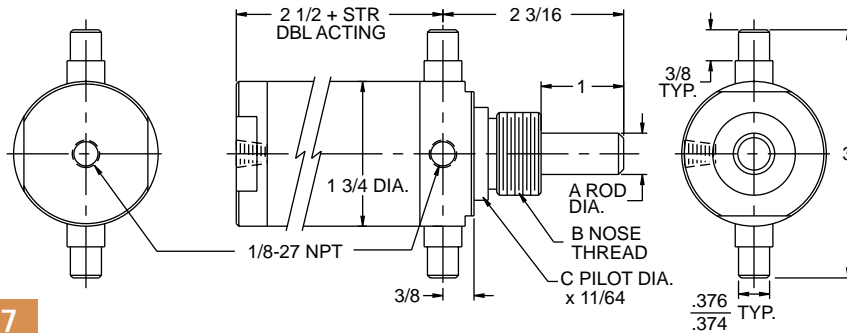
1 1/2" BORE HB BRASS



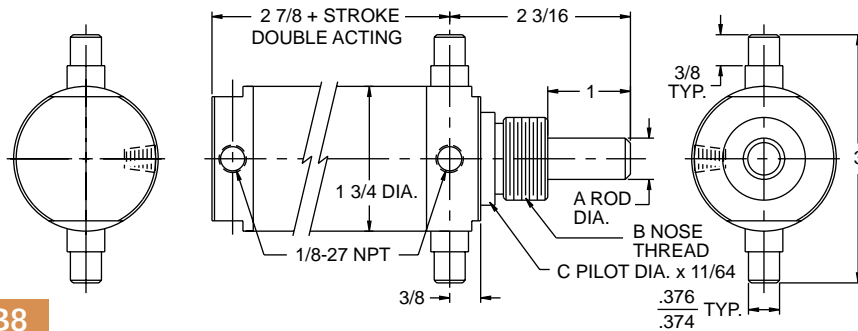
HB5 * INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY



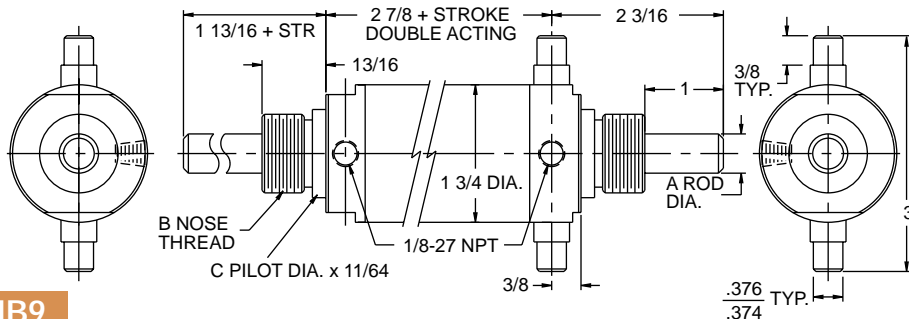
HB6 * INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY



HB7



HB8



HB9

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
1/2 Standard	1-14	1.123/1.121	D
3/4 Oversize	1 1/4-12	1.373/1.371	E

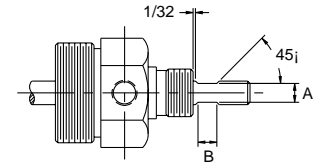
Single Acting Cylinders

Pneumatic only Add to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring return	0-2"	1 1/2"	2 1/8"-4"	3"
Spring extend	0-2"	1 1/2"	2 1/8"-4"	3"

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

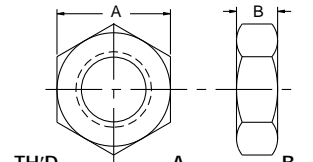
Wrench Flats Optional



ROD DIA.	A	B
1/2	.437	3/8
3/4	.625	3/8

1-14 Nut & 1 1/4-12 Nut Nose Mounting Nut

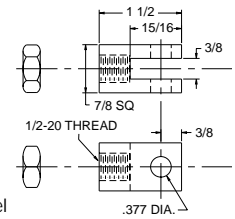
Included with Cylinder Zinc plated steel



TH'D	A	B
1-14	1 1/2	35/64
1 1/4-12	1 7/8	23/32

HB-500

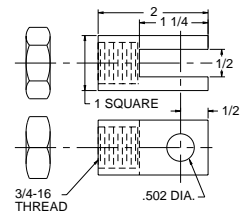
Rod Clevis and Nut



Zinc plated steel

HB-750

Rod Clevis and Nut



Zinc plated steel

HB-501 Clevis Pin Assembly

Used on HB-500

HB-601 Clevis Pin Assembly

Used on HB-750



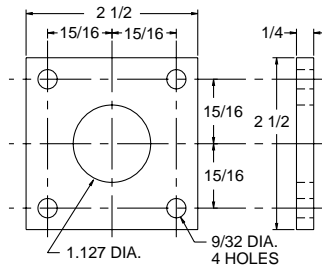
1/4" Oversize Ports Available on 1 1/2 Bore Series HB

HB Options

- Shock Pads
- Wrench Flats
- 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

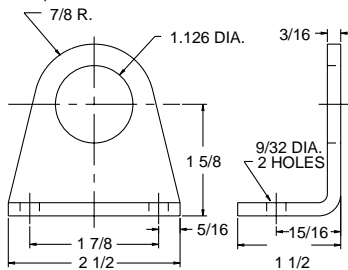
**HB-50
Flange Bracket**

Order 1"-14 Nut separately
Zinc plated steel



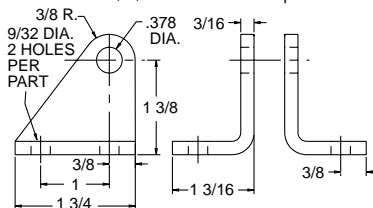
**HB-70
Foot Bracket**

Order 1"-14 Nut separately
Zinc plated steel

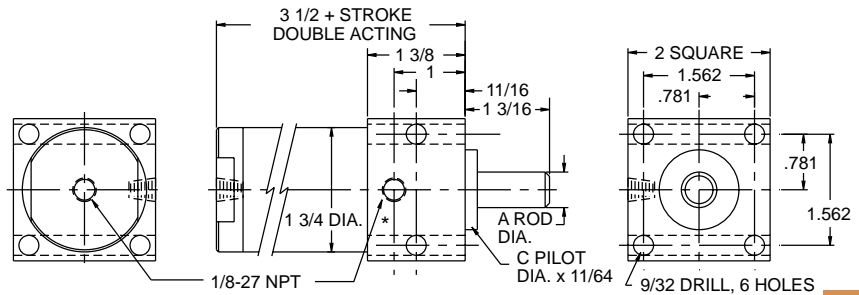


**HB-90T
Trunnion Bracket**

Used on HB7, 8, 9
Zinc plated steel

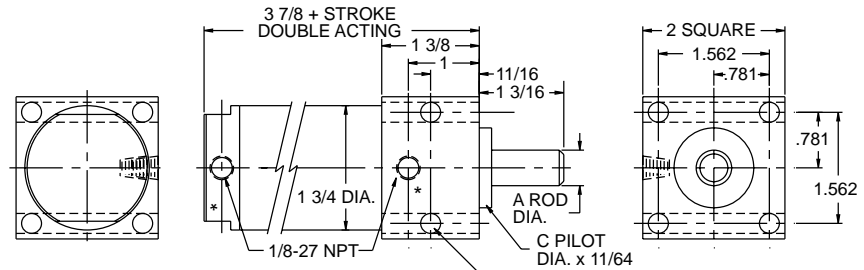


Cushions not available on cylinders with 3/4" diameter rod or oversized 1/4" ports.



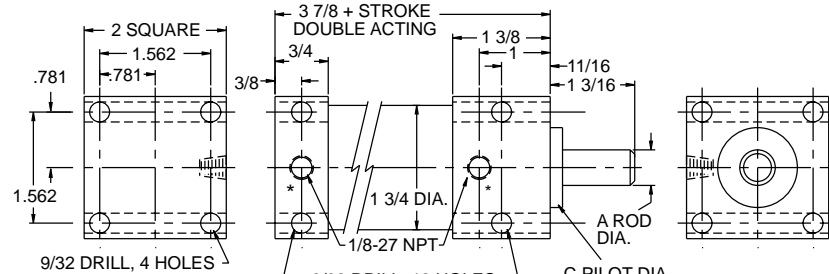
* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB10



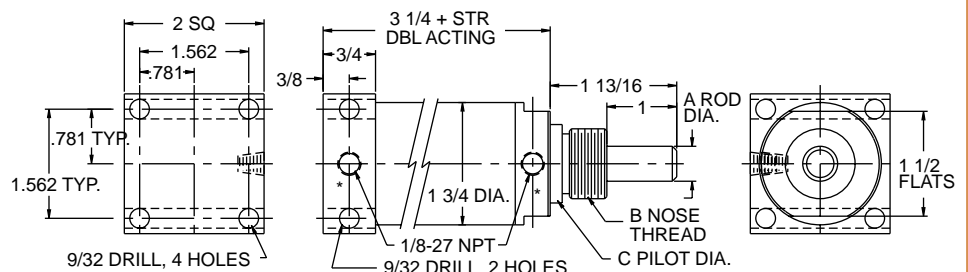
* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB11



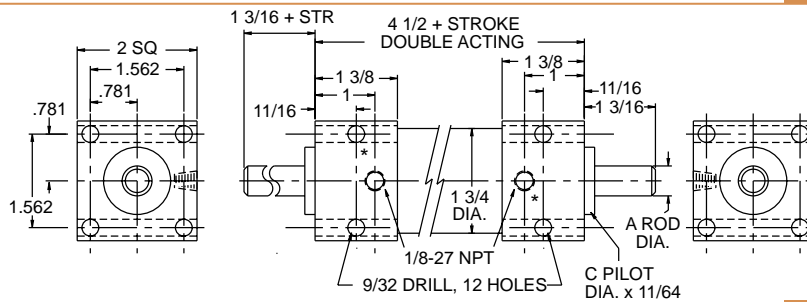
* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

HB12



* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

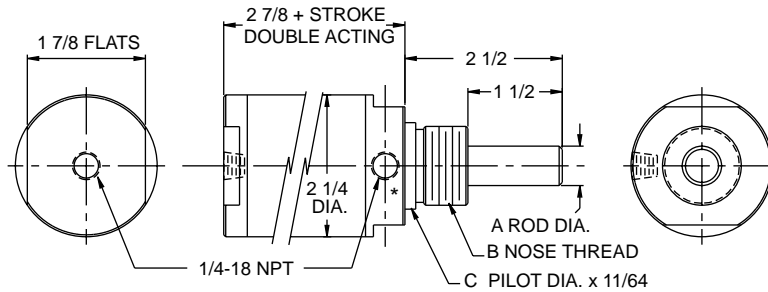
HB13



* INDICATES CUSHION SCREW LOCATIONS AND AVAILABILITY

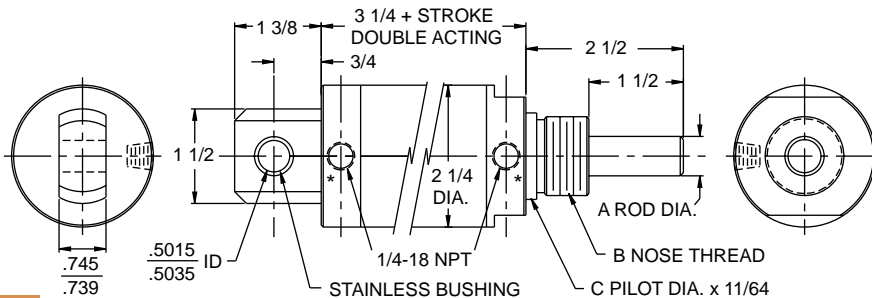
HB14

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



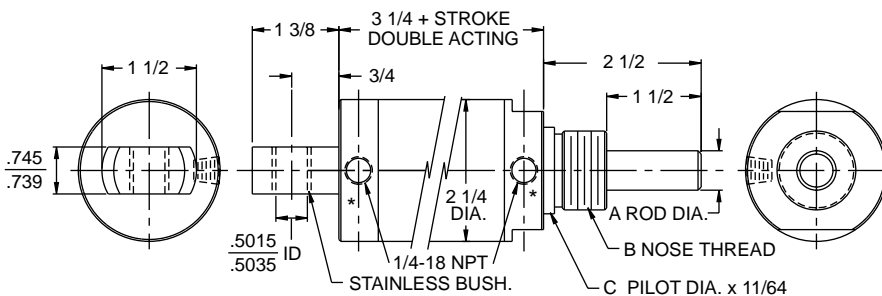
HB1

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.



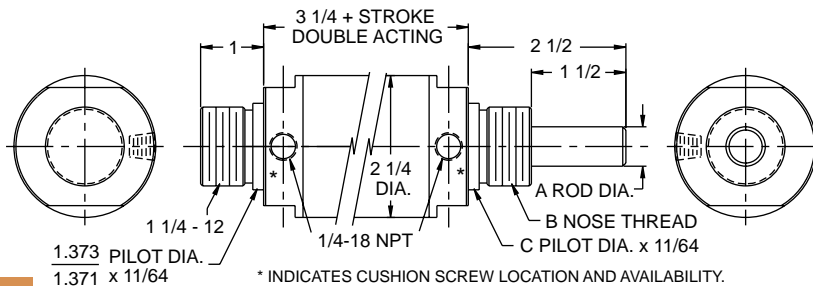
HB2

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.



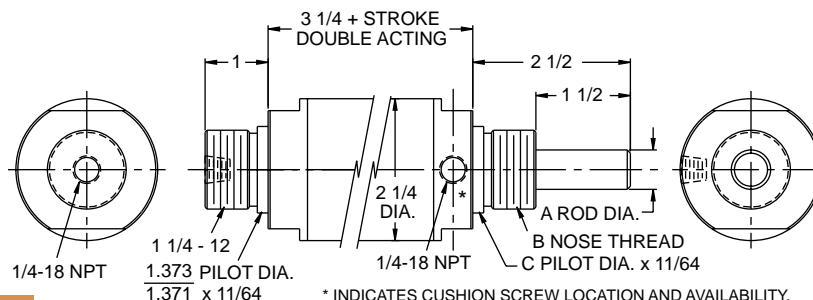
HB29

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.



HB3

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.



HB4

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.

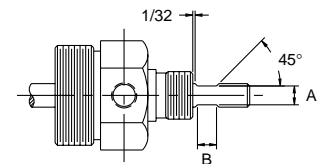
Single Acting Cylinders

Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring return	0-2"	1 1/2"	2 1/8"-4"	3"
Spring extend	0-2"	1 1/2"	2 1/8"-4"	3"

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

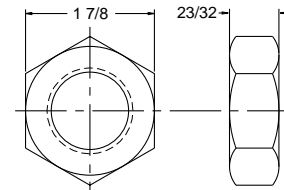
Wrench Flats Optional



ROD DIA.	A	B
5/8	.500	3/8
3/4	.625	3/8

1 1/4-12 Nut Nose Mounting Nut

Not included with Cylinder Order separately



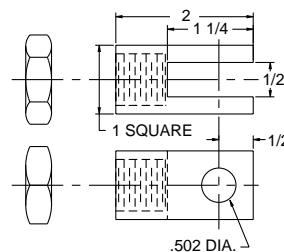
Thread 1 1/4 -12

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.

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/8 Standard	1 1/4 -12	1.373/1.371	D
3/4 Oversize	1 1/4 -12	1.373/1.371	E

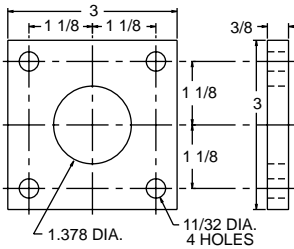
HB Options

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

HB-60

Flange Bracket

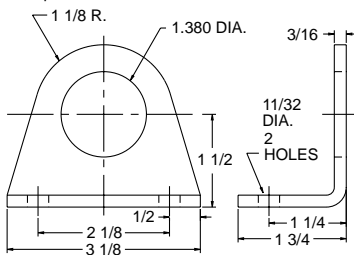
Order 1 1/4-12 nut separately
Zinc plated steel



HB-80

Foot Bracket

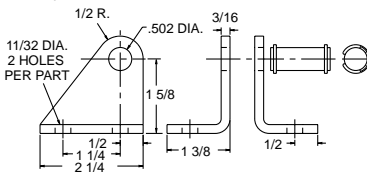
Order 1 1/4-12 nut separately
Zinc plated steel



HB-100

Clevis Bracket

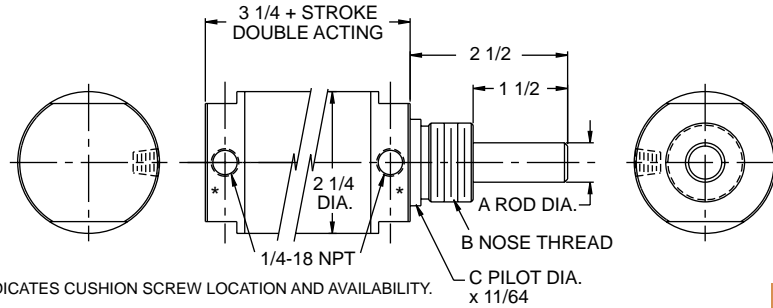
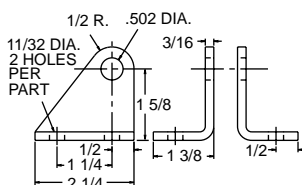
Used on HB2, 29
Zinc plated steel



HB-100T

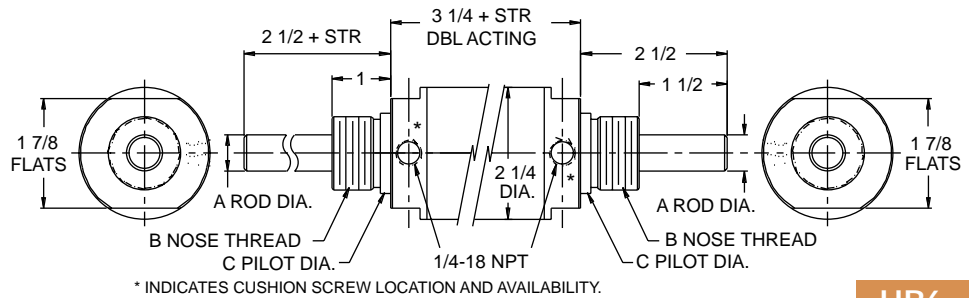
Trunnion Bracket

Used on HB7, 8, 9
Zinc plated steel



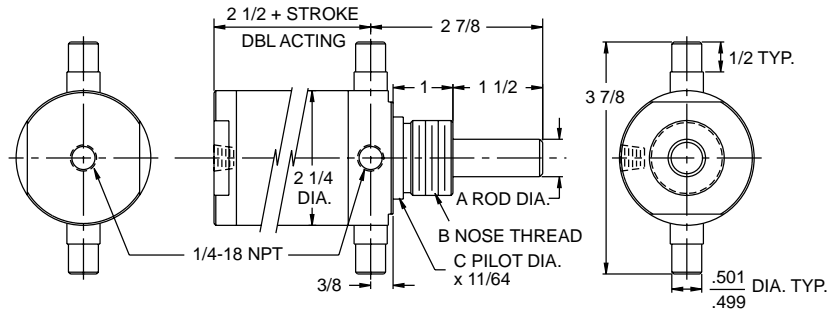
* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.

HB5

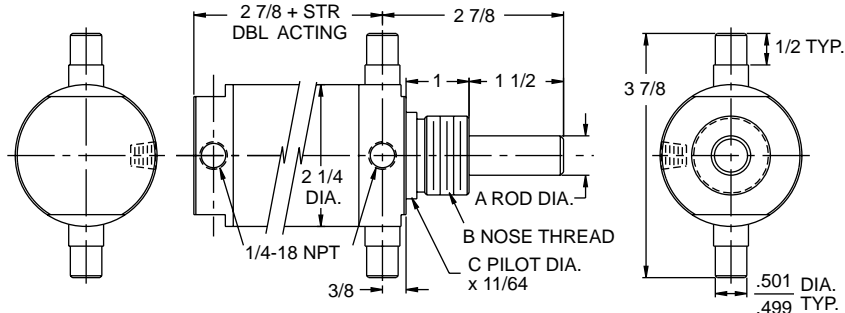


* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.

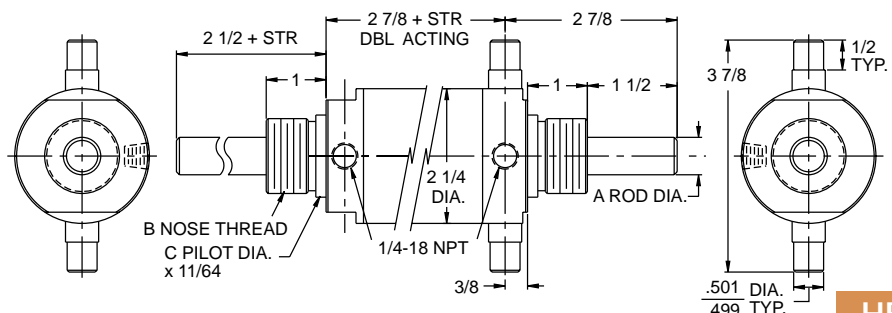
HB6



HB7



HB8

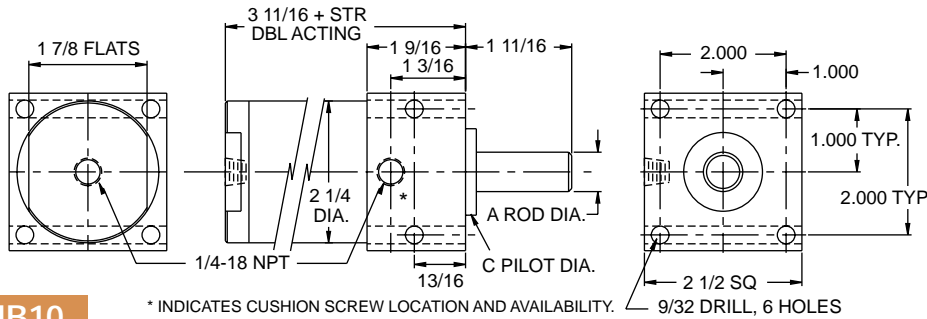


HB9

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/8 Standard	1 1/4 -12	1.373/1.371	D
3/4 Oversize	1 1/4 -12	1.373/1.371	E

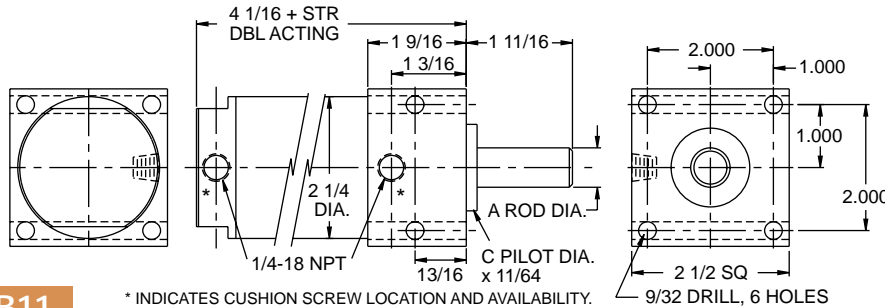
2" BORE HB BRASS

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



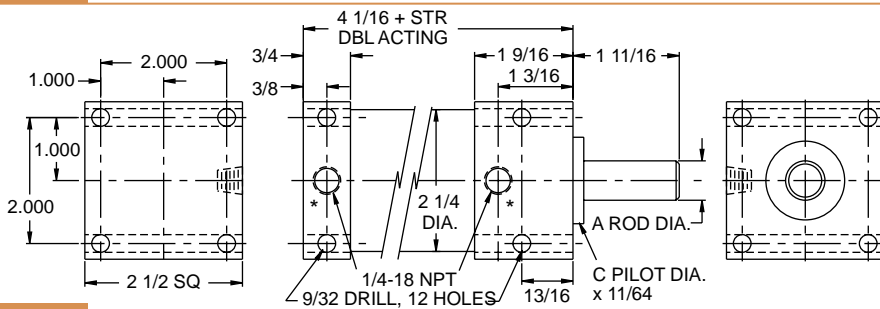
HB10

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.



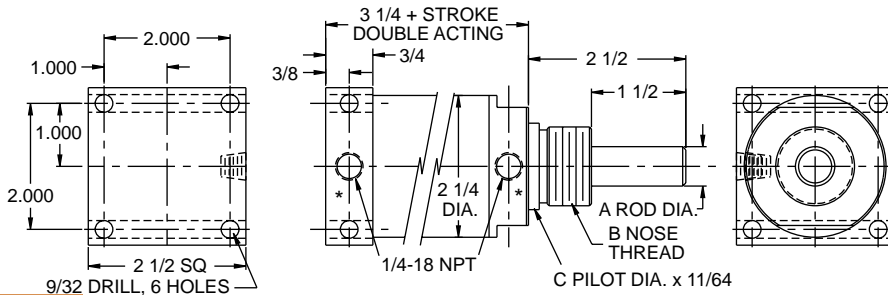
HB11

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.



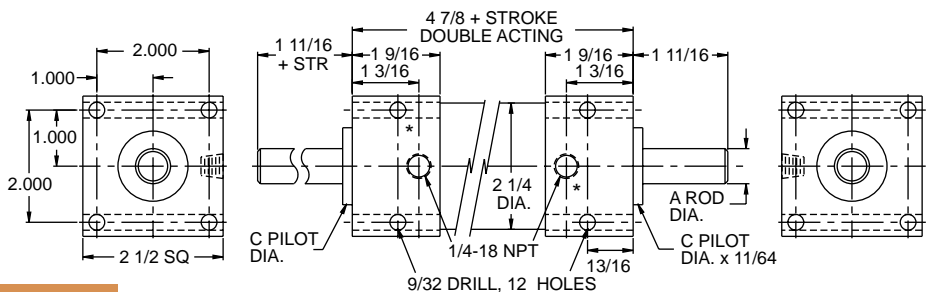
HB12

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.



HB13

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.



HB14

* INDICATES CUSHION SCREW LOCATION AND AVAILABILITY.

A ROD DIA.	B NOSE THREAD	C PILOT DIA. COMBINATIONS	Part No. Code
5/8 Standard	1 1/4 -12	1.373/1.371	D
3/4 Oversize	1 1/4 -12	1.373/1.371	E

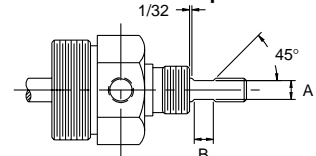
Single Acting Cylinders

Pneumatic only Adds to cylinder length

TYPE	STROKE	Add to cyl. O.A.L.	STROKE	Add to cyl. O.A.L.
Spring return	0-2"	1 1/2"	2 1/8"-4"	3"
Spring extend	0-2"	1 1/2"	2 1/8"-4"	3"

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

Wrench Flats Optional

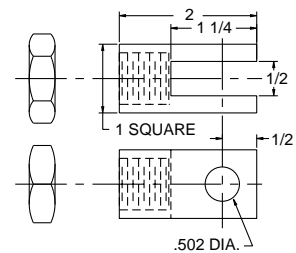


ROD DIA.	A	B
5/8	.500	3/8
3/4	.625	3/8

HB-625 5/8-18 Thread

HB-750 3/4-16 Thread

Rod Clevis and Nut

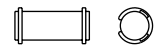


Zinc plated steel

HB-601

Clevis Pin Assembly

Used on HB-625, 750



Problem:

Side Load

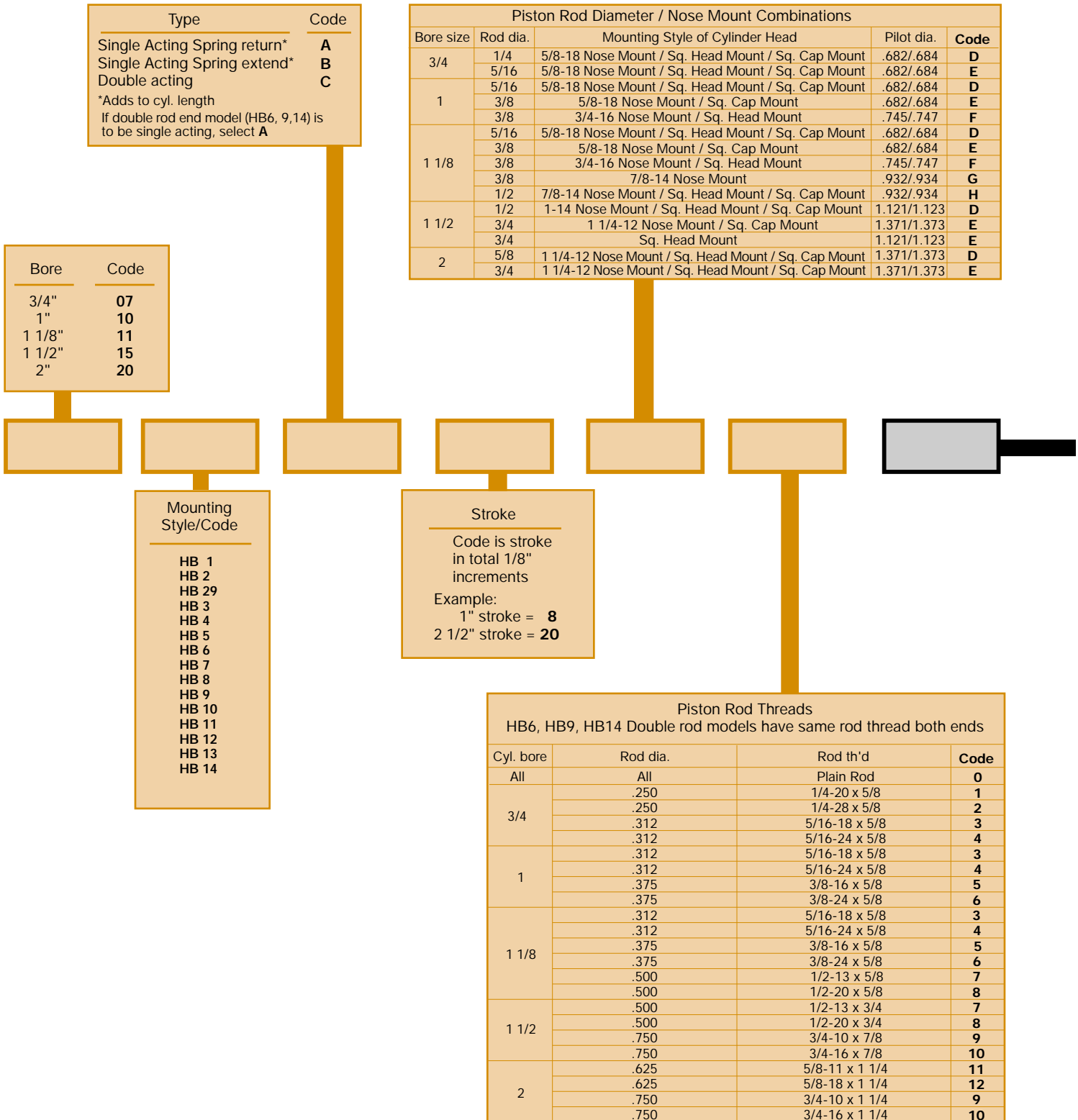
Solution:

Series SMA with Wear Strip Piston and Teflon Rod Bushing

ORDERING PROCEDURE HB Brass

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.

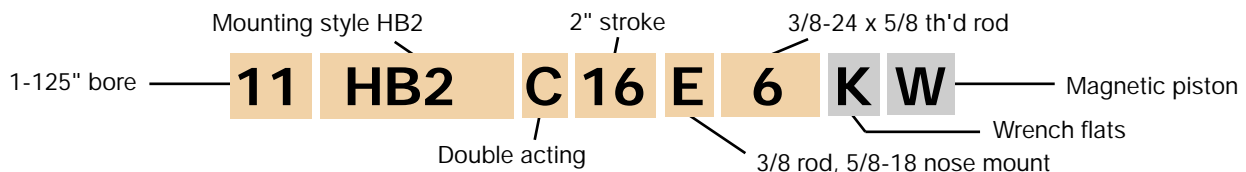


Series HB cylinder options

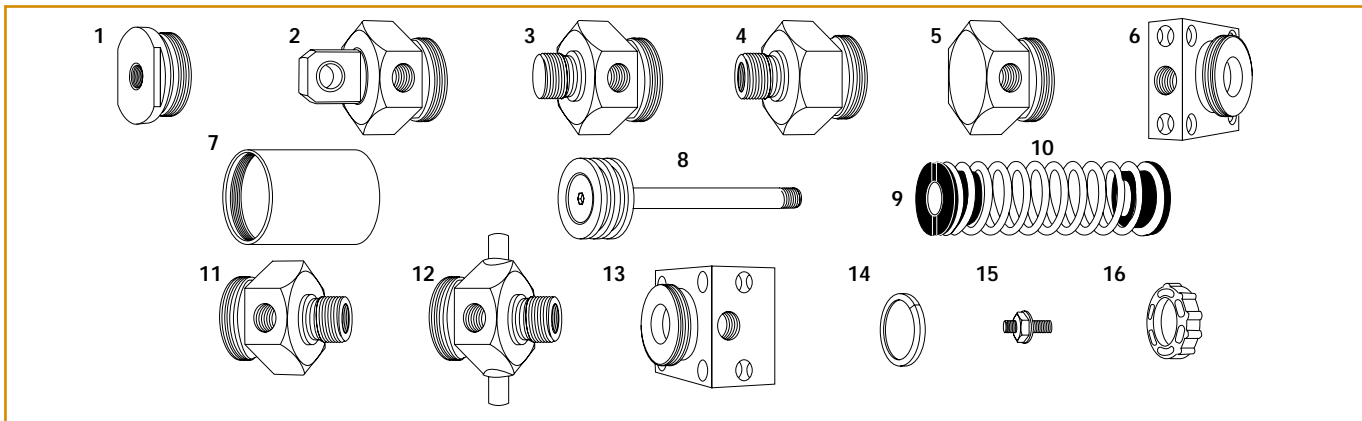
List codes in the same sequence as they appear below

Option	Description	Code	
Extra rod extension	Specify code letter J followed by the extra length as a two place decimal. 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.	J	
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. Pneumatic use only to 180° F	Pad on rod end only	L
		Pad on cap end only	M
		Pads on both ends	N
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	St'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	
		R	
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" Not available on hard chrome rods Available in 1/2 dia. rod - thru hole .313"	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	AA
		Cushion cap end only	BB
		Cushion both ends	CC

Part No. Example:



HB Brass SERVICE PARTS



3 / 4 " B o r e S e r v i c e P a r t s

Key	Description	Part Number
	Seal Kit, Buna	07522-B
	Seal Kit, Long life	07522-LL
	Seal Kit, Viton	07522-V
1	Rear port cap	07503
2	Rear pivot cap	07506
2	90° Rear pivot cap	0750690
3	Rear stud cap	07507
4	Cap	07508
5	Cap	07509
6	Cap	07525
7	Tube - P.N. is T followed by the complete cyl. part no.	
8	Rod - P.N. is PR followed by the complete cyl. part no.	

Key	Description	Part Number
9	Spring stop 1/4" rod pair	07512-250
9	Spring stop 5/16" rod pair	07512-312
10	Spring - Must supply cyl. stroke	07515
11	Head 1/4 rod	07510-250
11	Head 5/16 rod	07510-312
12	Head 1/4 rod	07510-250 TRN
12	Head 5/16 rod	07510-312 TRN
13	Head 1/4 rod	07524-250
13	Head 5/16 rod	07524-312
14	Magnet pair	SS3207
16	Shock pad	75MSP

1 " B o r e S e r v i c e P a r t s

Key	Description	Part Number
	Seal Kit, Buna	10022-B
	Seal Kit, Long life	10022-LL
	Seal Kit, Viton	10022-V
1	Cap	10003
2	Cap	10006
2	90° Cap	1000690
3	Cap	10007
4	Cap	10008
5	Cap	10009
6	Cap	10025
7	Tube - P.N. is T followed by the complete cyl. part no.	
8	Rod - P.N. is PR followed by the complete cyl. part no.	

Key	Description	Part Number
9	Spring stop 5/16" rod pair	10012-312
9	Spring stop 3/8" rod pair	10012-375
10	Spring	10015
11	Head 5/16 rod, 5/8 - 18 nose	10010-312-625
11	Head 3/8 rod, 5/8 - 18 nose	10010-375-625
11	Head 3/8 rod, 3/4 - 16 nose	10010-375-750
12	Head 5/16 rod, 5/8 - 18 nose	10010-312TRN
12	Head 3/8 rod, 5/8 - 18 nose	10010-375TRN
13	Head 5/16 rod	10024-312
13	Head 3/8 rod	10024-375

1 1 / 8 " B o r e S e r v i c e P a r t s

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

Key	Description	Part Number
10	Spring 0 - 2 1/2" Stroke	11215
10	Spring Over - 2 1/2" Stroke	10015
11	Head, 5/16 Rod, 5/8 - 18 Nose	11253-312-625
11	Head, 5/16 Rod, 5/8 - 18 Nose, Cushion	11253-312-625C
11	Head, 3/8 Rod, 5/8 - 18 Nose	11253-375-625
11	Head, 3/8 Rod, 5/8 - 18 Nose, Cushion	11253-375-625C
11	Head, 3/8 Rod, 3/4 - 16 Nose	11253-375-750
11	Head, 3/8 Rod 3/4 - 16 Nose, Cushion	11253-375-750C
11	Head, 3/8 Rod 7/8 - 14 Nose	11253-375-875
11	Head, 3/8 rod, 7/8 - 14 nose, cushion	11253-375-875C
11	Head, 3/8 rod, 7/8 - 14 nose, wiper	11253-375-875W
11	Head, 1/2 rod, 7/8 - 14 nose	11253-500-875

1 1/8" Bore Service Parts (Cont.)

Key	Description	Part Number
3	Cap Add suffix C for cushion	11207
4	Cap	11208
5	Cap Add suffix C for cushion	11209
6	Cap Add suffix C for cushion	11225
7	Tube - P.N. is T followed by the complete cyl. P.N.	
8	Rod - P.N. is PR followed by the complete cyl. P.N.	
9	Stop 5/16 rod, 0 - 2 1/2" stroke	11212-312
9	Stop 5/16 rod, over 2 1/2" stroke (pair)	10012-312
9	Stop 3/8 rod, 0 - 2 1/2" stroke	11212-375
9	Stop 3/8 rod, over 2 1/2" stroke (pair)	10012-375
9	Stop 1/2 rod, 0 - 2 1/2" stroke	11212-500
9	Stop 1/2 rod, over 2 1/2" stroke (pair)	10012-500

Key	Description	Part Number
12	Head, 5/16 rod, 5/8 - 18 nose	11253-312TRN
12	Head, 3/8 rod, 5/8 - 18 nose	11253-375TRN
12	Head, 1/2 rod, 7/8 - 14 nose	11253-500 TRN
13	Head, 5/16 rod	11224-312
13	Head, 5/16 rod, cushion	11224-312C
13	Head, 3/8 rod	11224-375
13	Head, 3/8 rod, cushion	11224-375C
13	Head, 1/2 rod	11224-500
14	Magnet pair	SMS5911
15	Screw ass'y Add suffix V for Viton	11227
16	Shock pad	11 MSP

1 1/2" Bore Service Parts

Key	Description	Part Number
Add suffix HYD to seal kit part no. if polypak hyd. rod seal is required		
	Seal Kit, Buna, 1/2 rod	15022-500B
	Seal Kit, Buna, 3/4 rod	15022-750B
	Seal Kit, Longlife, 1/2 rod	15022-500LL
	Seal Kit, Longlife, 3/4 rod	15022-750LL
	Seal Kit, Viton, 1/2 rod	15022-500V
	Seal Kit, Viton, 3/4 rod	15022-750V
1	Cap	15003
1	Cap 1/4" port	15003250
2	Cap add suffix C for cushion	15006
2	Cap 1/4" port	15006250
2	90i Cap add suffix C for cushion	1500690
2	90i Cap 1/4" port	1500690250
3	Cap add suffix C for cushion	15007
3	Cap 1/4" port	15007250
4	Cap	15008
4	Cap 1/4" port	15008250
5	Cap add suffix C for cushion	15009
5	Cap 1/4" port	15009250
6	Cap add suffix C for cushion	15025
6	Cap 1/4" port	15025250
7	Tube - P.N. is T followed by the complete cyl. part no.	
8	Rod - P.N. is PR followed by the complete cyl. part no.	
9	Stop, 1/2 rod, st'd pair	15012-500
9	Stop, 1/2 rod, spring extend over 2" str.	15012-500L
9	Stop 3/4 rod, st'd pair	15012-750
9	Stop 3/4 rod, spring extend over 2" str.	15012-750L

Key	Description	Part Number
10	St'd spring	15015
10	Spring, over 2" spring extend only	15015L
11	Head, 1/2 rod	15010-500
11	Head, 1/2 rod, 1/4 port	15010-500250
11	Head, 1/2 rod, wiper	15010-500W
11	Head, 1/2 rod, 1/4 port, wiper	15010-500250W
11	Head, 1/2 rod, cushion	15010-500C
11	Head, 3/4 rod	15010-750
11	Head, 3/4 rod, 1/4 port	15010-750250
11	Head, 3/4 rod, wiper	15010-750W
11	Head, 3/4 rod, 1/4 port, wiper	15010-750250W
12	Head, 1/2 rod	15010-500TRN
12	Head, 3/4 rod	15010-750TRN
12	Head, 1/2 rod, 1/4 port	15010-500250TRN
12	Head, 3/4 rod, 1/4 port	15010-750250TRN
13	Head, 1/2 rod	15024-500
13	Head, 1/2 rod, 1/4 port	15024-500250
13	Head, 1/2 rod, wiper	15024-500W
13	Head, 1/2 rod, 1/4 port, wiper	15024-500250W
13	Head, 1/2 rod, cushion	15024-500C
13	Head, 3/4 rod	15024-750
13	Head, 3/4 rod, 1/4 port	15024-750250
13	Head, 3/4 rod, wiper	15024-750W
13	Head, 3/4 rod, 1/4 port, wiper	15024-750250W
14	Magnet pair	SS3215
16	Shock pad	15MSP

2" Bore Service Parts

Key	Description	Part Number
Add suffix HYD to seal kit part no. if polypak hyd. rod seal is required		
	Seal Kit, Buna, 5/8 rod	20022-625B
	Seal Kit, Buna, 3/4 rod	20022-750B
	Seal Kit, Long life, 5/8 rod	20022-625LL
	Seal Kit, Long life, 3/4 rod	20022-750LL
	Seal Kit, Viton, 5/8 rod	20022-625V
	Seal Kit, Viton, 3/4 rod	20022-750V
1	Cap	20003
2	Cap add suffix C for cushion	20006
2	90i Cap add suffix C for cushion	2000690
3	Cap add suffix C for cushion	20007
4	Cap	20008
5	Cap add suffix C for cushion	20009
6	Cap add suffix C for cushion	20025
7	Tube - P.N. is T followed by the complete cyl. part no.	
8	Rod - P.N. is PR followed by the complete cyl. part no.	
9	Stop, 5/8 rod, st'd pair	20012-625
9	Stop, 5/8 rod, spring extend over 2" str.	20012-625L

Key	Description	Part Number
9	Stop, 3/4 rod, st'd pair	20012-750
9	Stop, 3/4 rod, spring extend over 2" str.	20012-750L
10	St'd spring	20015
10	Spring Over - 2" spring extend only	20015L
11	Head, 5/8 Rod	20010-625
11	Head, 5/8 Rod, wiper	20010-625W
11	Head, 5/8 Rod, Cushion	20010-625C
11	Head, 3/4	20010-750
11	Head, 3/4 Rod, wiper	20010-750W
12	Head, 5/8 Rod	20010-625TRN
12	Head, 3/4 Rod	20010-750TRN
13	Head, 5/8 Rod, wiper	20024-625
13	Head, 5/8 Rod, wiper	20024-625W
13	Head, 5/8 Rod, cushion	20024-625C
13	Head, 3/4 Rod	20024-750
13	Head, 3/4 Rod, wiper	20024-750W
14	Magnet pair	SS3220
16	Shock pad	2MSP

ORDERING PROCEDURE AND TECHNICAL DATA



1 FILL IN 4 BLANK SPACES TO SELECT A SWITCH AND TO CREATE ITS PART NUMBER

A S

R	REED SWITCH
H	HALL SWITCH
O	SWITCH with permanent 9 foot cable
3	SWITCH ONLY with 8mm male quick connect

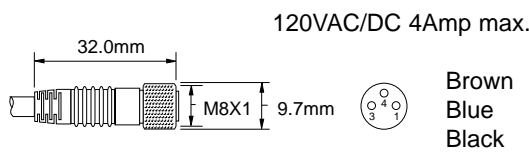
TYPE CODE	DESCRIPTION	FUNCTION	SWITCHING VOLTAGE	SWITCHING CURRENT	SWITCHING POWER	SWITCHING SPEED	VOLTAGE DROP
02	Reed Switch for PLC's w/ LED	SPST Normally Open	5 - 120 VDC/VAC 50/60 Hz	0.03 Amp Max. 0.001 Amp Min.	4 Watts Max.	0.5 ms operate 0.1 ms release	3.5 Volts
31	Electronic Hall Sensor, LED, Sourcing	Normally Open PNP output	6 - 24 VDC	0.5 Amp Max.	12 Watts Max.	1.5 μ s operate 0.5 μ s release	1.0 Volts
32	Electronic Hall Sensor, LED, Sinking	Normally Open NPN output	6 - 24 VDC	0.5 Amp Max.	12 Watts Max.	1.5 μ s operate 0.5 μ s release	1.0 Volts

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

CYLINDER BORE SIZE	CLAMP PART NUMBER
3/4"	750CLAMP
1 1/8"	112CLAMP
1 1/2"	150CLAMP
2"	200CLAMP
3"	300CLAMP

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



Poles -	3 pole	Nominal Volt. Rating -	60 VAC / 75 VDC
Materials -		Environmental Resistance -	IP67
Cable -	Black PUR or PVC	Current Rating -	4 Amps
Housing -	Nylon	Insulation Resistance -	$\geq 10^{10} \Omega$
Contact Finish -	Au	Contact Resistance -	$\leq 5m\Omega$
Male Contact -	Cu Zn	Temperature Rating -	-25° to 85°C
Female Contact -	Cu Sn	Wire Gauge -	.25mm ² wire / 24 AWG

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 $+180^{\circ}\text{F}$.

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



PART	NPT	HEX	LENGTH
ABV-1	1/8	7/16	7/16
ABV-2	1/4	9/16	5/8

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



PART	NPT	HEX	LENGTH
AM-1	1/8	7/16	1 1/8
AM-2	1/4	9/16	1 3/8

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



PART	NPT	HEX	LENGTH CLOSED	LENGTH OPEN
ASC-1	1/8	9/16	1 3/8	2
ASC-2	1/4	5/8	1 9/16	2 3/16

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

Aurora quality American made switches with broad spectrum application and durability

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

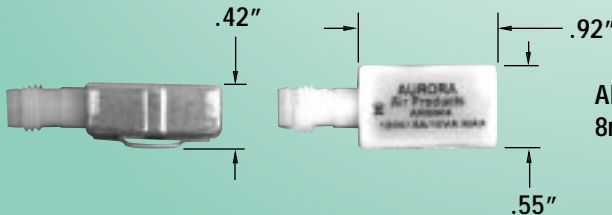
Hall switches are completely solid state with no moving parts making them shock and vibration resistant

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.