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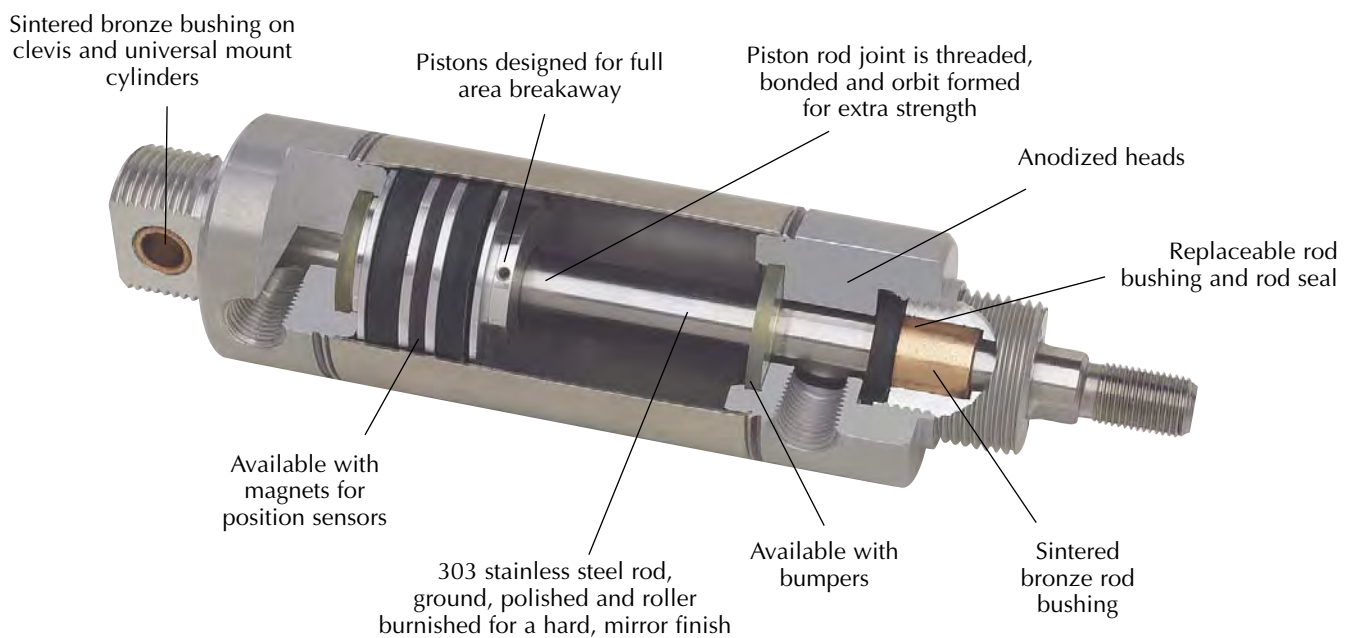




STAINLESS STEEL CYLINDER CONSTRUCTION

In the early 1950's, Clippard introduced miniature pneumatic cylinders and valves to industry. No other manufacturer can boast of the same experience or knowledge of miniature components.

Air cylinders have always been an integral part of the Clippard Minimatic® line. Over the years Clippard has responded to requests from cylinder users to provide additional sizes of air cylinders and auxiliary support products. While competitively priced, these products maintain the Clippard standard for quality and reliability that has been the industry standard for many years.



Features

- Polished I.D. 304 stainless steel tubes for low breakaway
- Precision rolled construction for a solid, leakproof cylinder at a reasonable price
- Machined aluminum heads are clear anodized for extra protection against corrosion
- Cylinder heads are machined from one side for better concentricity
- Sintered bronze rod bushing
- Sintered bronze clevis bushing on all clevis and universal mount cylinders
- Rods are threaded, bonded and orbit formed to pistons
- Replaceable rod seal on 28 through 48 series
- Ground, polished and roller burnished 303 stainless rods provide a smoother rod finish that protects rod seals, giving longer life
- Full piston area breakaway to assure full power from the beginning of each stroke
- Buna-N "U"-cup piston seals for full power, low friction and trouble-free performance
- Buna-N "U"-cup rod seals for leakproof operation
- Temperature range: 32 to 230°F
- Maximum pressure: 250 psig



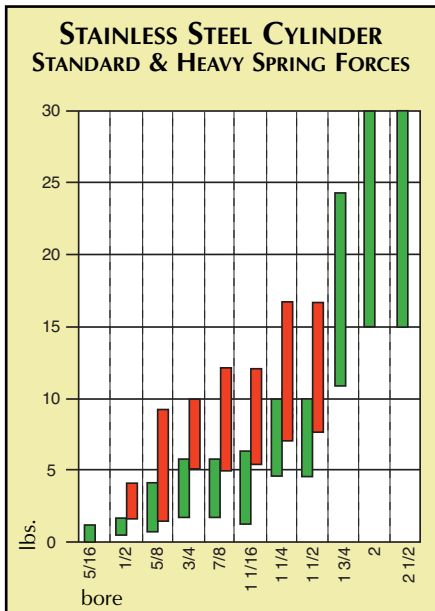
NUMBERING SYSTEM

Stroke
In inches & fractions of an inch

□	□	□	-	□	-	□	-	□
Mounting Type		Rod Type		Bore				Options
S - Stud U - Universal C - Clevis F - Front Block E - End Stud T - Trunnion		D - Double Ended Rod R - Rotating Rod N - Non-Rotating Rod H - Hollow Rod		5/32" - page 7 1/4" - page 7 05 - 5/16" 08 - 1/2" NEW! 09 - 9/16" 10 - 5/8" 12 - 3/4" 14 - 7/8"		17 - 1 1/16" 20 - 1 1/4" 24 - 1 1/2" 28 - 1 3/4" 32 - 2" 40 - 2 1/2" 48 - 3"		B - Bumpers V - Fluorocarbon Seals C - Cushions M - Magnetic Piston for Position Sensors F - Cushion Front End R - Cushion Rear End W - Rod Wiper S - Side Ported H - Heavy Spring P - Rotated Ports N - No Threads
	Cylinder Type							
	D - Double Acting S - Single Acting R - Reverse Acting F - Front Spring Bias B - Back Spring Bias							

Not all combinations are available - consult factory

SPECIFICATIONS

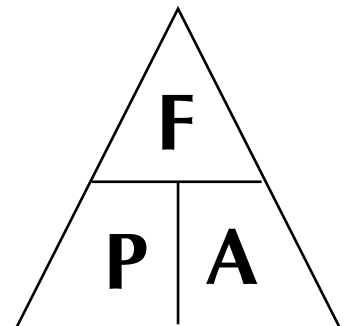


Bore Size	5/16"	1/2"	9/16"	5/8"	3/4"	7/8"	1-1/16"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/2"	3"
Force Factor - Extend (Area)	0.07	0.19	0.25	0.31	0.44	0.60	0.88	1.2	1.7	2.4	3.1	4.9	7.0
Rod Size	1/8"	3/16"	3/16"	3/16"	1/4"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	5/8"	3/4"
Rod Area	0.01	0.03	0.03	0.03	0.05	0.05	0.08	0.11	0.15	0.20	0.31	0.31	0.44
Force Factor - Retract (Area)	0.06	0.16	0.22	0.28	0.39	0.55	0.80	1.09	1.55	2.20	2.90	4.59	6.56

The force required, operating air pressure and cylinder bore are all factors that must be determined or known when sizing an air cylinder. If two are known the other is easily calculated per the formulas and triangle shown below.

F - Force or load in pounds $F = P \times A$
P - Pressure $P = F / A$
A - Area of cylinder $A = F / P$
 (square inches)

Area is derived using either of the following formulas: **Diameter**² x 0.7854 or **Radius**² x π



Standard Spring Forces (lbs)

Bore	5/16"	1/2"	9/16"	5/8"	3/4"	7/8"	1-1/16"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/2"
At Rest	0.5	0.9	1.7	1.3	3.0	3.0	2.0	4.5	4.5	11.0	15.0	15.0
Compressed	1.0	2.0	4.0	4.0	6.0	6.0	7.0	10.0	10.0	24.0	30.0	30.0

Heavy Spring Forces (lbs)

Bore	5/16"	1/2"	9/16"	5/8"	3/4"	7/8"	1-1/16"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/2"
At Rest	N/A	2.0	N/A	3.3	5.0	5.0	5.5	8.5	8.5	N/A	N/A	N/A
Compressed	N/A	4.0	N/A	9.0	10.0	10.0	13.0	17.0	17.0	N/A	N/A	N/A



STAINLESS STEEL CYLINDER

OPTIONS

The following options are available with Clippard stainless steel cylinders. Available options are shown by the abbreviations noted in the information shown with each standard cylinder.

Fluorocarbon Seals -V

This option is used in applications where chemical resistance, compatibility and temperature become an issue. Temperature ranges: -20 up to 400°F.

Cushions -C

(Front Cushion Only) -F

(Rear Cushion Only) -R

Clippard's cushion cylinders offer an adjustable cushion to slow the cylinder near the end of the stroke to reduce impact and prolong cylinder life. Our adjustment needle is held captive to prevent the needle from blowing out. The cushion can be adjusted to have a dead stop 1/2" from end of stroke or adjusted to have virtually no effect on the action of the cylinder. See specific cylinder specifications for availability of this option.

No Rod Threads -N

Rods are provided with no threads when this option is ordered.

Magnetic Piston -M

Clippard stainless steel pneumatic cylinders that are equipped with an internal magnet can be used with the Reed Switch and GMR Sensor. By accurately sensing the magnetic field of the piston when it passes beneath the sensor, the position of the rod piston is determined, and the feedback signal is created. Use of this option may add to the overall length of the cylinder. See specific cylinder listings on the following pages for availability and details of the overall length adder.

Rod Wipers -W

Rod Wipers are added to cylinders in applications where a liquid wash could dry out the rod seals of a double acting cylinder.

Heavy Spring -H

In single acting, reverse acting or spring bias cylinders the standard spring force can be changed by ordering the -H option. The spring forces for the heavy springs are shown on page 3.

Private Label Option

Call Clippard for further information about private label options.

If you can't find a cylinder to suit your needs call your Clippard distributor to inquire about custom cylinders.

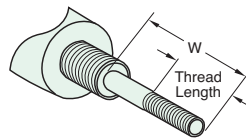
Bumpers -B

Internal polyurethane bumpers are supplied for applications where the cylinder is cycled with a light load and/or high speeds. The elastic bumpers reduce noise and shock to the load. Use of this option may add to the overall length of the cylinder. See specific cylinder listings on the following pages for availability and details of the overall length added. Maximum temperature 200°F.

Side Ported -S

Side ported rear heads are sometimes needed when the standard cylinder has the rear port out the back. This option changes the design of the rear head so the rear port is located on the side of the cylinder. Overall length of cylinder changes with this option.

Rod Extensions



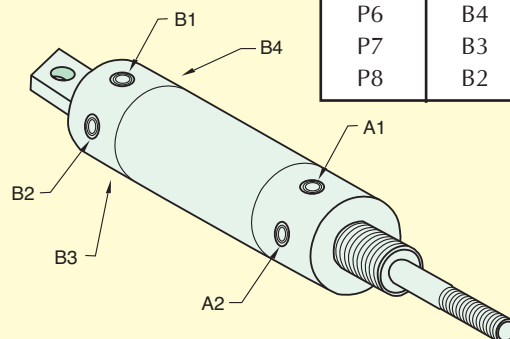
If a special rod extension is required, please refer to the drawing at left. For a special rod extension on single- or double-acting cylinders, indicate desired "W" when rod is at rest

(retracted) with no pressure to either port. For reverse acting cylinders, indicate "W" when rod is at rest (extended) with no pressure to either port.

W = _____ Thread Length = _____

Rotated Ports

Option #	Rear Port	Front Port
P2	B2	A2
P3	B1	A2
P4	B4	A2
P5	B3	A2
P6	B4	A1
P7	B3	A1
P8	B2	A1



This option is used in applications where ports need to be rotated to accommodate a specific space requirement or port orientation for the fittings and tube attachments. The diagram explains the options and orientation of the ports. See the specific cylinder to find availability of these options.



STROKE LENGTHS

Standard stroke lengths for each bore size and cylinder style are



listed in this catalog. Non-standard stroke lengths (not listed in the catalog) up to 24" for single acting cylinders and 36" for double acting cylinders are available. Stroke length should be specified in inches and fractions of an inch. Consult the factory for other requirements.

In applications, attention should be given to minimizing the side load on the rod to insure a smooth stroke without binding. Also, in applications where the cylinder rod is subjected to an unsupported column load, the load on the rod should be less than the force shown in the table below to prevent buckling of the rod.

Maximum Load (lbs) to Prevent Buckling of the Rod											Rod Thread	Bore Size	Series	Rod Size	Rod Flats
Rod dia.	Rod Length														
	1"	5"	10"	15"	20"	25"	30"	35"	40"						
1/8"	110	12	3	1.3						#5-40 UNC-2A	5/16"	05	1/8"	none	
3/16"	262	59	15	6.6	3.7					#10-32 UNF-2A	1/2"	08	3/16"	none	
1/4"	478	190	47	21	12	7.5				#10-32 UNF-2A	9/16"	09	3/16"	none	
5/16"	756	451	116	52	29	19	13			#10-32 UNF-2A	5/8"	10	3/16"	none	
3/8"	1091	786	240	106	60	38	27	20		1/4-28 UNF-2A	3/4"	12	1/4"	0.218	
7/16"	1490	1184	444	197	111	71	49	36	28	1/4-28 UNF-2A	7/8"	14	1/4"	0.218	
1/2"	1950	1645	757	336	189	120	84	62	47	5/16-24 UNF-2A	1 1/16"	17	5/16"	0.250	
5/8"	3055	2750	1795	821	462	295	205	150	115	3/8-24 UNF-2A	1 1/4"	20	3/8"	0.312	
3/4"	4405	4100	3140	1700	950	613	425	312	240	7/16-20 UNF-2A	1 1/2"	24	7/16"	0.375	
										1/2-20 UNF-2A	1 3/4"	28	1/2"	0.437	
										1/2-20 UNF-2A	2"	32	5/8"	0.500	
										1/2-20 UNF-2A	2 1/2"	40	5/8"	0.500	
										5/8-18 UNF-2A	3"	48	3/4"	0.625	

CUSTOM CYLINDERS

If your application requires a custom feature that you do not see in our catalog please contact our distributor in your area

for assistance. We manufacture a wide variety of special cylinders. Examples of our custom cylinder capabilities would include: stroke and rod modifications, special mounting configurations and ports, seal and lubrication options, integrated valving and adjustable stroke cylinders. We also provide application based special cylinder design for those customers having unique parameters.

FREE CYLINDER SAMPLE PROGRAM

We invite competitive comparisons. If you are an OEM that uses air cylinders, Clippard will provide a free sample for your evaluation. Contact us or your local distributor and ask for the "Free Sample Cylinder" request form.





STAINLESS STEEL ACCESSORIES

POSITION SENSORS

Clippard stainless steel pneumatic cylinders that are equipped with an internal magnet can be used with the Reed Switch and GMR Sensor. By accurately sensing the magnetic field of the piston when it passes beneath the sensor, the position of the rod piston is determined, and the feedback signal is created. Use of this option may add to the overall length of the cylinder. See specific cylinder listings on the following pages for availability and details of the overall length adder.

GMR (Giant Magneto Resistive) Sensor

Clippard's GMR sensor is a solid-state device that is made up of alternating layers of conductive magnetic and non-magnetic materials. When a magnetic field is applied, there is a large drop in resistance. This decrease produces a signal that can be used to determine the location of the piston.

Some of the benefits of GMR technology include small size, high durability, high sensitivity, high response time, low power consumption and low cost. These benefits make this sensor a clear choice for piston location in pneumatic system control.



A 1/2" minimum stroke is required when multiple sensors are used.



A 1/2" minimum stroke is required when multiple sensors are used.

Reed Switch

Clippard's Reed Switch is a Single Pole, Single Throw (SPST) Normally-Open electronic switch. When the cylinder's magnet-equipped piston moves to a location where the magnet is positioned below the Reed Switch, the Switch sends a feedback signal to indicate the location of the piston.

ACCESSORIES

Mounting Hardware

For efficient power and easy mounting, Clippard has designed and manufactured brackets suitable for each cylinder shown in this catalog.

These products are shown on the last page of each corresponding bore size and include clevis mounting brackets, foot mounting brackets, rod clevis assemblies and rod eye assemblies. Extra mounting nuts are available.

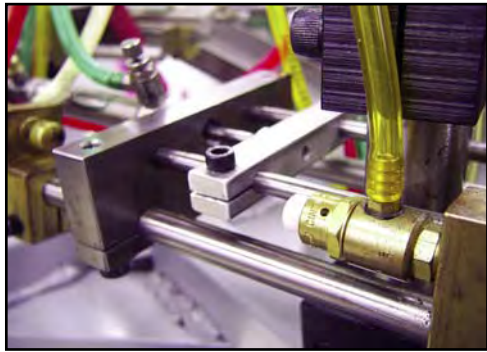


CUSTOMer solutions

If you need a product that fits your application perfectly, Clippard has the capability to design or modify one of its products to suit your exact needs. We understand that a standard catalog product may be close but not be exactly what you need. **Let us know YOUR Need, and we will help to find YOUR Solution!**



5/32" BORE STAINLESS STEEL CYLINDER & ACCESSORIES



Limit Valves

A limit valve is the best way to have a mechanical limit to return air signals to control

valves or circuits. Clippard offers limit valves in ports ranging from #3-56 up to 1/8" NPT, high force and heavy duty limits as well as non-contact sensing valves. See [Control Valves section](#).



Quick Exhaust Valves

The primary function of a quick exhaust valve is to increase cylinder speed. This also enables the use of smaller directional valves and longer control lines. Offered with several port configurations from #10-32 models up to 1/4". See [pages 161 and 162](#).



Flow Controls

Clippard offers a large variety of flow controls and needle valves for adjusting the speed of the cylinder. Several models are available from fine adjustments to coarse adjustments in a variety of mounting configurations. See [pages 141 through 144](#).



NEW Pilot-Operated Check Valves

These valves provide control functions with cylinders and with other control circuits. See [page 150](#) for a complete range of Pilot-Operated Check Valves.

SM-2

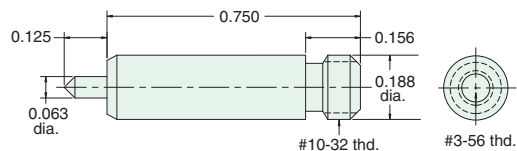
Single Acting



Bore: 5/32" **Available Stroke Length:** 1/4"
Mount: Rear Thread **Materials:** Stainless steel body, piston & rod, Buna-N U-cup, Beryllium copper spring
Type: Spring Return

Did you know...

The tiny SM-2 cylinder gives 2 lbs. of force at 100 psig.



SM-3-□

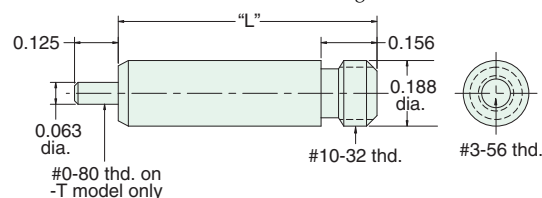
Single Acting



Model	SM-3-1	SM-3-2	SM-3-3	SM-3-4	Materials: Stainless steel tube and rod, brass piston, Buna-N U-cup
Stroke	1/4"	1/2"	3/4"	1"	
Length "L"	0.740	1.171	1.593	2.000	

Bore: 5/32" **Mount:** Rear Thread **Type:** Spring Return

To order: Add stroke length to the end of the part number



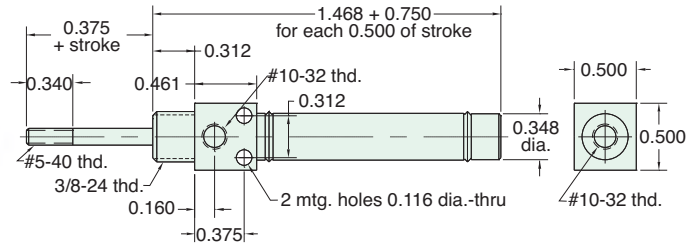
5/16" BORE STAINLESS STEEL CYLINDER



SRR-05-□-□

Reverse Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 1 lbs. **Spring At Rest:** 0.5 lbs.
Options: B, V, N **Maximum Stroke:** 17" For B option add 0.250

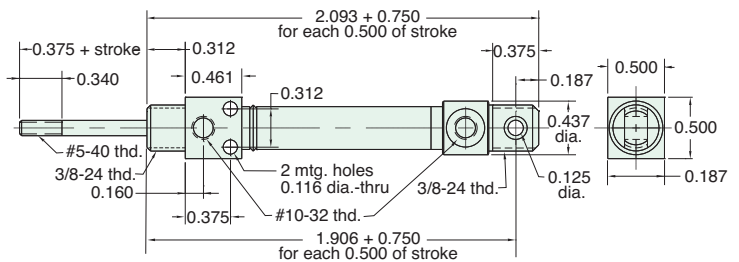


Nuts included, but not shown on drawing

URR-05-□-□

Reverse Acting

Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 1 lbs. **Spring At Rest:** 0.5 lbs.
Options: B, V, P2, P3, P4, P5, P6, P7, P8, N **Maximum Stroke:** 17" For B option add 0.250

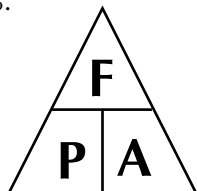


Nuts included, but not shown on drawing

FORCE FACTOR

The "force factor" is the nominal area of the cylinder bore size. The chart to the right provides theoretical forces in both the extend and retract stroke of all available bore sizes.

These values are theoretical and make no allowance for friction which varies with the bore size. It is recommended that a 25% safety factor be allowed when selecting a cylinder bore for normal load movement. In high speed applications that number should be at least 40%.



The extend and retract values differ due to the rod diameter.

Bore Size	5/16"	1/2"	9/16"	5/8"	3/4"	7/8"	1-1/16"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/2"	3"
Force Factor - Extend (area)	0.07	0.19	0.25	0.31	0.44	0.60	0.88	1.2	1.7	2.4	3.1	4.9	7.0
Rod Size	1/8"	3/16"	3/16"	3/16"	1/4"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	5/8"	3/4"
Rod Area	0.01	0.03	0.03	0.03	0.05	0.05	0.08	0.11	0.15	0.20	0.20	0.31	0.44
Force Factor - Retract (area)	0.06	0.16	0.22	0.28	0.39	0.55	0.80	1.09	1.55	2.2	2.9	4.59	6.56
20 psig - Extend (lbs)	1.4	3.8	4.9	6.2	8.8	12.0	17.6	24.0	34.0	48.0	62.0	98.0	140.0
20 psig - Retract (lbs)	1.16	3.25	4.4	5.65	7.82	11.02	16.07	21.79	31.0	44.07	58.07	91.86	131.16
50 psig - Extend (lbs)	3.5	9.5	12.4	15.5	22.0	30.0	44.0	60.0	85.0	120.0	155.0	245.0	350.0
50 psig - Retract (lbs)	2.9	8.13	11.00	14.13	19.55	27.55	40.17	54.48	77.5	110.18	145.18	229.66	327.91
80 psig - Extend (lbs)	5.6	15.2	19.8	24.8	35.2	48.0	70.4	96.0	136.0	192.0	248.0	392.0	560.0
80 psig - Retract (lbs)	4.64	13.0	17.6	22.6	31.27	44.07	64.26	87.17	124.0	176.29	232.29	367.46	524.66

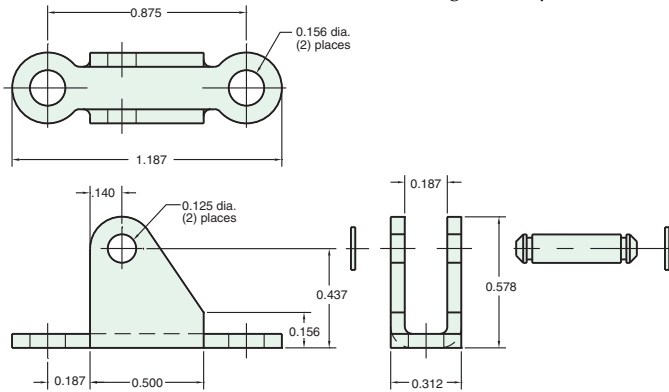


5/16" BORE ACCESSORIES



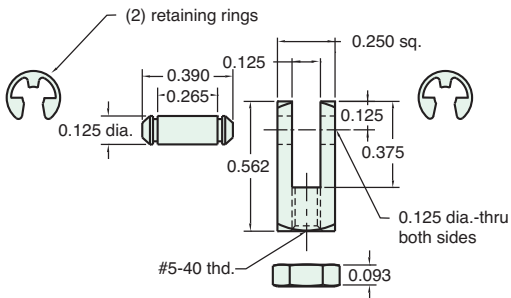
CB-0595

Clevis Bracket
Material: Steel, bright zinc plated



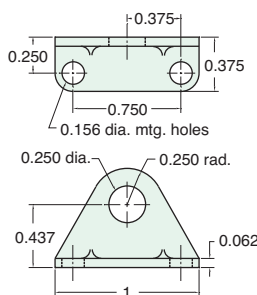
RC-0581

Rod Clevis
Material: Steel, electroless nickel plate



FB-0591

Foot Bracket
Material: Steel, bright zinc plated



MOUNTING NUTS

Stud Nut

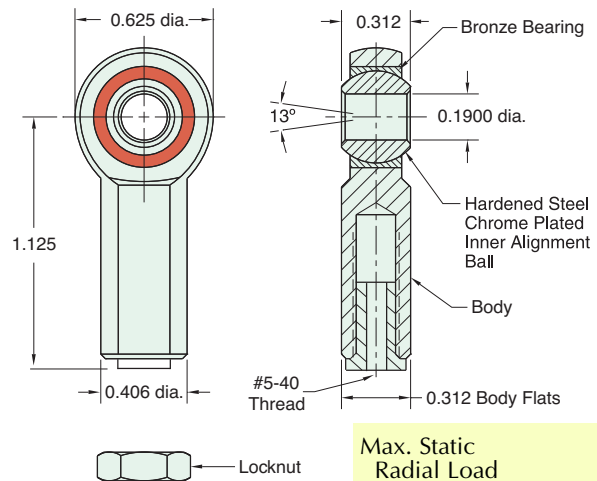
Part Number	Across Flats	Nut Thickness	Nut (Thread)
N04-28A	7/16"	5/32"	1/4-28
N04-28B	3/8"	1/8"	1/4-28
N06-24A	9/16"	7/32"	3/8-24
N06-24B	1/2"	3/32"	3/8-24

Rod Nut

Part Number	Across Flats	Nut Thickness	Nut (Thread)
N02-40	1/4"	3/32"	#5-40

RE-0585

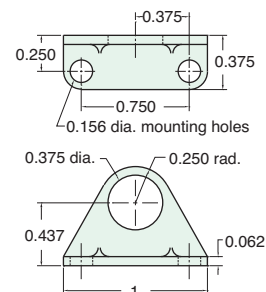
Rod End
Material: Steel, bright zinc plated body



Max. Static Radial Load (rod end only): 1,624 lbs.
Fits Rod Thread Size: #5-40

FB-0592

Foot Bracket
Material: Steel, bright zinc plated



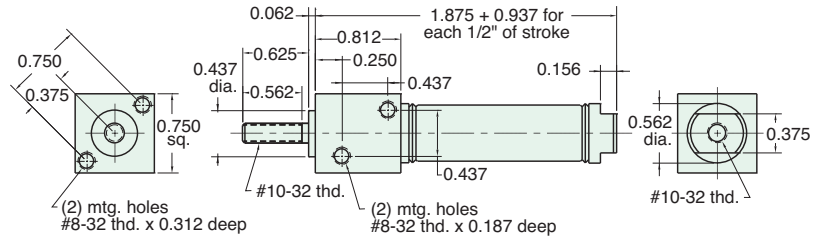
1/2" BORE STAINLESS STEEL CYLINDER



FSR-08-□-□

Single Acting

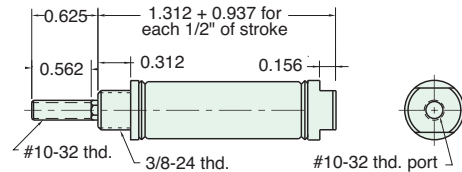
Mount: Front **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 2 lbs. **Spring At Rest:** 0.9 lbs.
Options: M, B, H, V, S, N, W **Maximum Stroke:** 23"
 For B option add 0.375
 For M option add 0.312
 For S option add 0.187



SSN-08-□-□

Single Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 2 lbs. **Spring At Rest:** 0.9 lbs.
Options: M, B, H, V, S, N **Maximum Stroke:** 23"
 For B option add 0.500
 For M option add 0.312
 For S option add 0.187

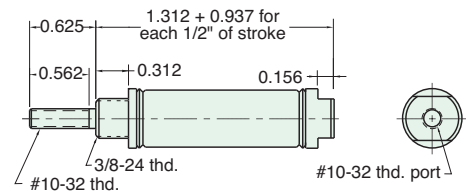


Nuts included, but not shown on drawing

SSR-08-□-□

Single Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 2 lbs. **Spring At Rest:** 0.9 lbs.
Options: M, B, H, V, S, N, W **Maximum Stroke:** 23"
 For B option add 0.500
 For M option add 0.312
 For S option add 0.187

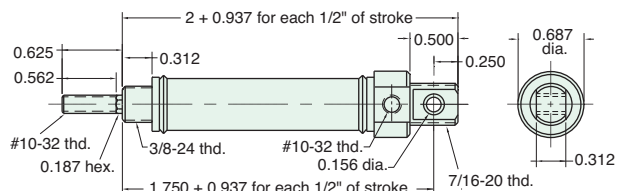


Nuts included, but not shown on drawing

USN-08-□-□

Single Acting

Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 2 lbs. **Spring At Rest:** 0.9 lbs.
Options: M, B, H, V, P6, N **Maximum Stroke:** 23"
 For B option add 0.500
 For M option add 0.312



Furnished without nut(s). See Chart on Page 14.



1/2" BORE STAINLESS STEEL CYLINDER

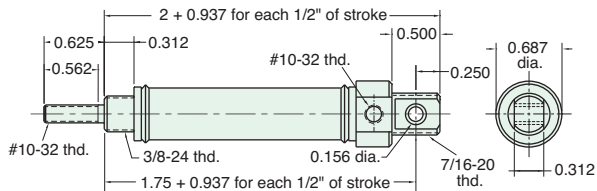
USR-08-□-□

Single Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 2 lbs. **Spring At Rest:** 0.9 lbs.
Options: M, B, H, V, P6, N, W **Maximum Stroke:** 23"

For B option add 0.500
For M option add 0.312



Furnished without nut(s). See Chart on Page 14.

FDR-08-□-□

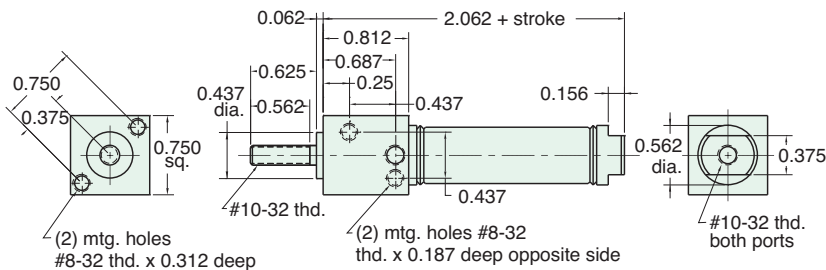
Double Acting



Mount: Front **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Maximum Stroke:** 43"
Options: M, B, V, P6, P7, P8, S, N, W

For B option add 0.500
For M option add 0.312

For S option add 0.187



SDR-08-□-□

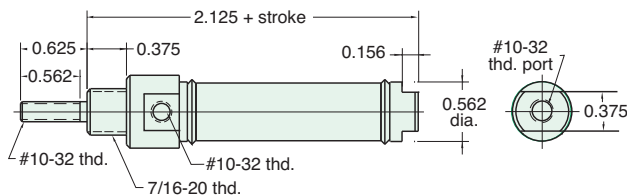
Double Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Maximum Stroke:** 43"
Options: M, B, V, P6, P7, P8, S, N, W

For B option add 0.500
For M option add 0.312

For S option add 0.187



Nut included, but not shown on drawing

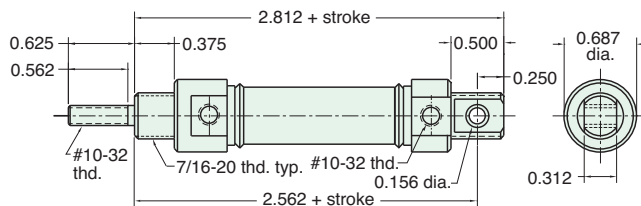
UDR-08-□-□

Double Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Maximum Stroke:** 42"
Options: M, B, V, P2, P3, P4, P5, P6, P7, P8, N, W

For B option add 0.500
For M option add 0.312



Furnished without nut(s). See Chart on Page 14.

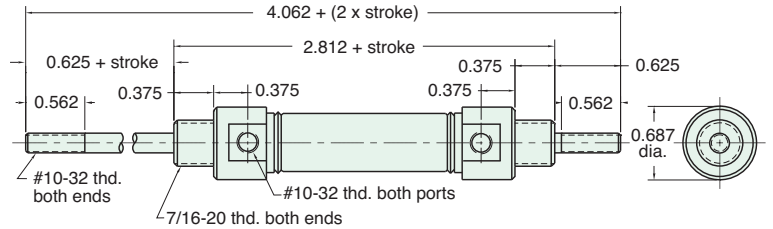
1/2" BORE STAINLESS STEEL CYLINDER



SDD-08-□-□

Double Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Double Rod **Maximum Stroke:** 20" For B option add 0.500
Options: M, B, V, P6, P7, P8, N, W For M option add 0.312

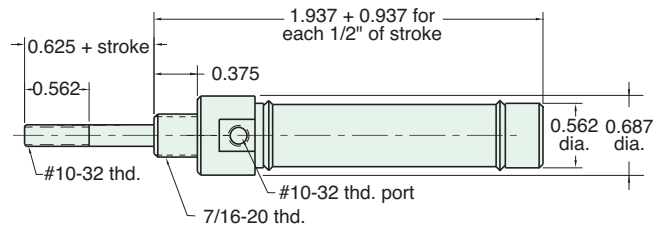


Nuts included, but not shown on drawing

SRR-08-□-□

Reverse Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 2 lbs. **Spring At Rest:** 0.9 lbs.
Options: M, B, H, V, N, W **Maximum Stroke:** 15" For B option add 0.500
 For M option add 0.312

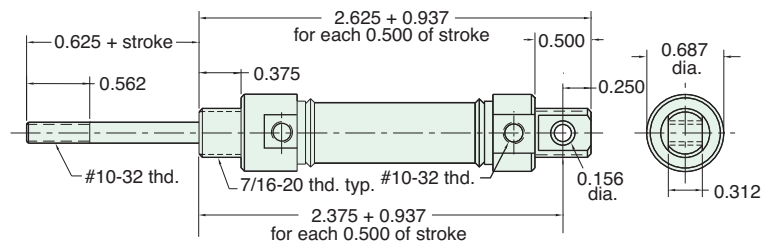


Nut included, but not shown on drawing

URR-08-□-□

Reverse Acting

Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 2 lbs. **Spring At Rest:** 0.9 lbs.
Options: M, B, H, V, P2, P3, P4, P5, P6, P7, P8, N, W **Maximum Stroke:** 15" For B option add 0.500
 For M option add 0.312



Furnished without nut(s). See Chart on [Page 14](#).

Did you know that all Clippard Cylinders are 100% tested.

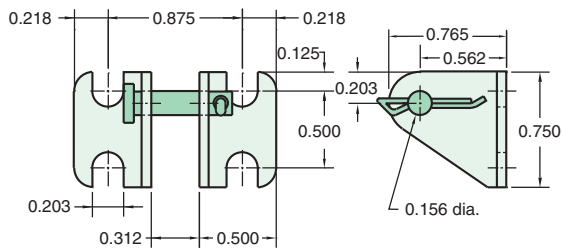


1/2" BORE ACCESSORIES



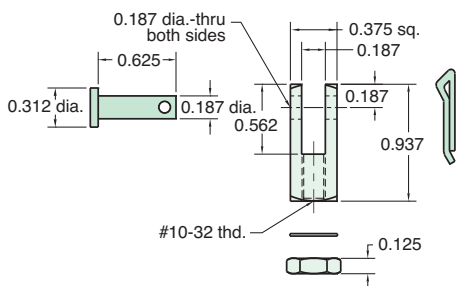
CB-0895

Clevis Bracket
Material: Steel, bright zinc plated



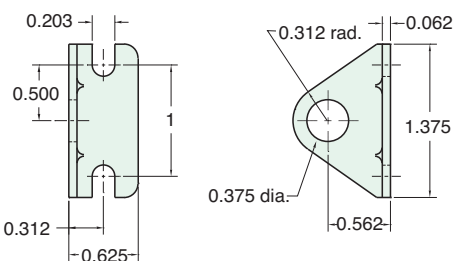
RC-0881

Rod Clevis
Material: Steel, electroless nickel plate



FB-0891

Foot Bracket
Material: Steel, bright zinc plated



MOUNTING NUTS

Stud Nut

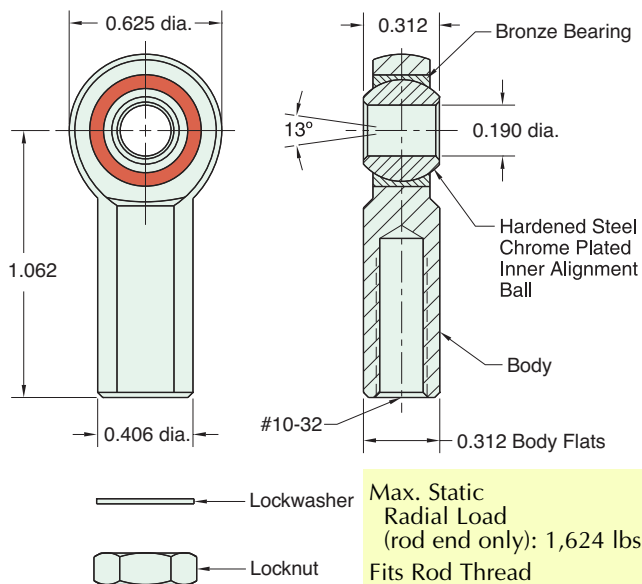
Part Number	Across Flats	Nut Thickness	Nut (Thread)
N06-24A	9/16"	7/32"	3/8-24
N06-24B	1/2"	3/32"	3/8-24
N07-20	11/16"	1/4"	7/16-20

Rod Nut

Part Number	Across Flats	Nut Thickness	Nut (Thread)
N03-32	3/8"	1/8"	#10-32

RE-0885

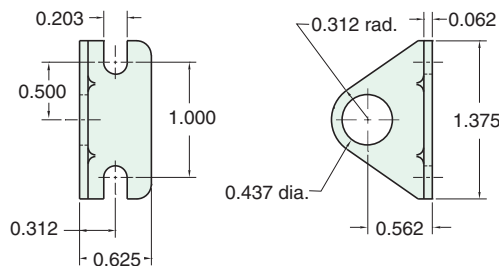
Rod End
Material: Steel, bright zinc plated body



Max. Static Radial Load (rod end only): 1,624 lbs.
Fits Rod Thread Size: #10-32

FB-0892

Foot Bracket
Material: Steel, bright zinc plated



NEW! 9/16" BORE STAINLESS STEEL CYLINDER

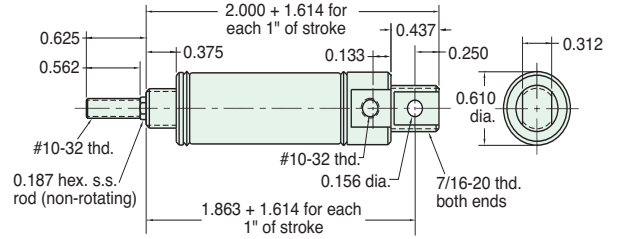


USN-09-□-□

Single Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 4 lbs. **Spring At Rest:** 1.7 lbs.
Options: B, V, P6, N, M, MB **Maximum Stroke:** 23" For B option add 0.063
 For M or MB option add 0.125



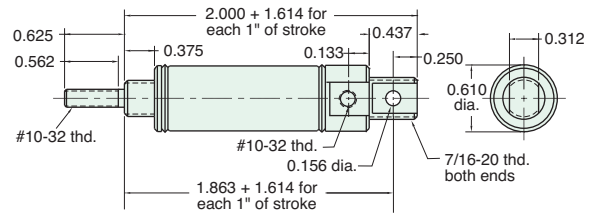
Furnished without nut(s). See Chart on [Page 17](#).

USR-09-□-□

Single Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 4 lbs. **Spring At Rest:** 1.7 lbs.
Options: B, V, P6, N, M, MB **Maximum Stroke:** 23" For B option add 0.063
 For M or MB option add 0.125



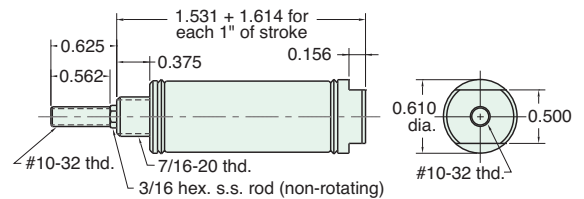
Furnished without nut(s). See Chart on [Page 17](#).

SSN-09-□-□

Single Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 4 lbs. **Spring At Rest:** 1.7 lbs.
Options: B, V, N, M, MB **Maximum Stroke:** 23" For B option add 0.063
 For M or MB option add 0.125



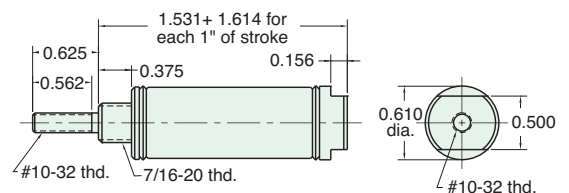
Nut included, but not shown on drawing

SSR-09-□-□

Single Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 4 lbs. **Spring At Rest:** 1.7 lbs.
Options: B, V, N, M, MB **Maximum Stroke:** 23" For B option add 0.063
 For M or MB option add 0.125



Nut included, but not shown on drawing

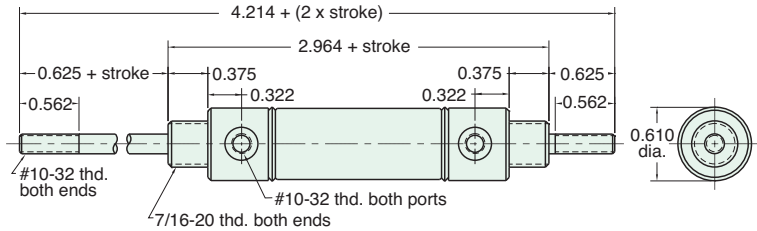


NEW! 9/16" BORE STAINLESS STEEL CYLINDER

SDD-09-□-□

Double Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Double Rod **Maximum Stroke:** 20"
Options: B, V, P6, P7, P8, N, M, MB For B option add 0.125

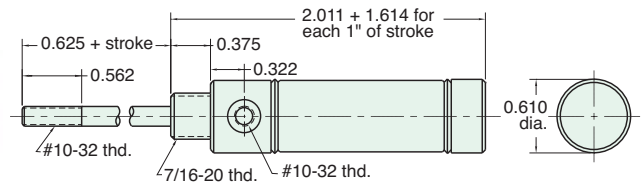


Nuts included, but not shown on drawing

SRR-09-□-□

Reverse Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 4 lbs. **Spring At Rest:** 1.7 lbs.
Options: B, V, N, M, MB **Maximum Stroke:** 15"
For B option add 0.563
For M or MB option add 0.125

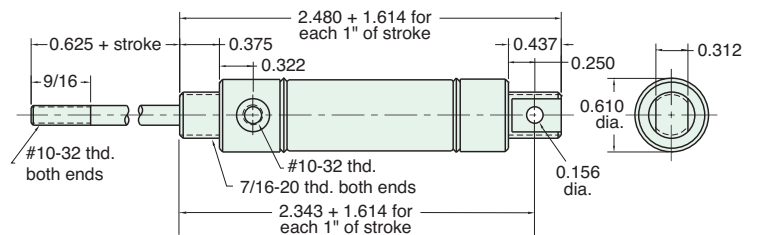


Nut included, but not shown on drawing

URR-09-□-□

Reverse Acting

Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 4 lbs. **Spring At Rest:** 1.7 lbs.
Options: B, V, P2, N, M, MB **Maximum Stroke:** 14"
For B option add 0.063
For M or MB option add 0.125

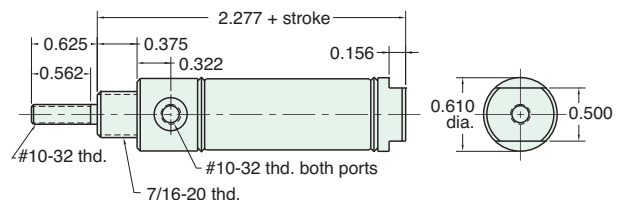


Furnished without nut(s). See Chart on Page 17.

SDR-09-□-□

Double Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Maximum Stroke:** 43"
Options: B, V, P6, P7, P8, N, M, MB For B option add 0.125



Nut included, but not shown on drawing

NEW! 9/16" BORE STAINLESS STEEL CYLINDER



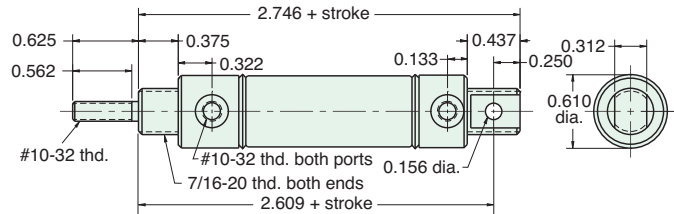
UDR-09-□-□

Double Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Maximum Stroke:** 43"
Options: B, V, P2, P3, P4, P5, P6, P7, P8, N, M, MB

For B option add 0.125



Furnished without nut(s). See Chart below.



MOUNTING NUTS

Stud Nut

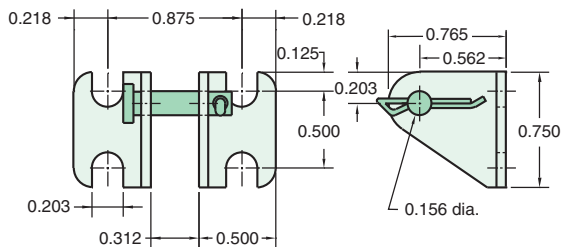
Part Number	Across Flats	Nut Thickness	Nut (Thread)
N07-20	11/16"	1/4"	7/16-20

Rod Nut

Part Number	Across Flats	Nut Thickness	Nut (Thread)
N03-32	3/8"	1/8"	#10-32

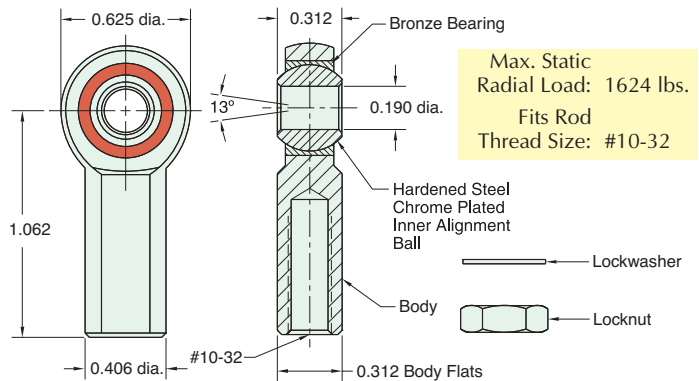
CB-0895

Clevis Bracket
Material: Steel, bright zinc plated



RE-0885

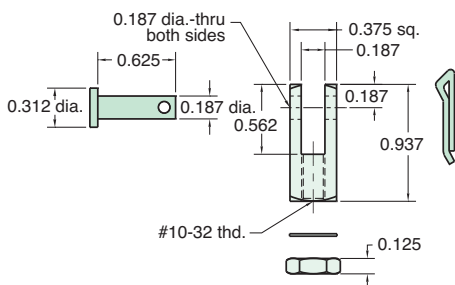
Rod End
Material: Steel, bright zinc plated body



Max. Static Radial Load: 1624 lbs.
Fits Rod Thread Size: #10-32

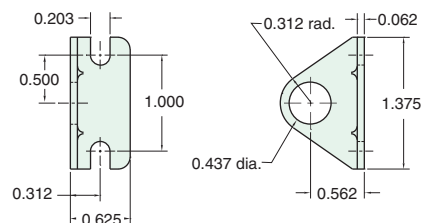
RC-0881

Rod Clevis
Material: Steel, electroless nickel plate



FB-0892

Foot Bracket
Material: Steel, bright zinc plated





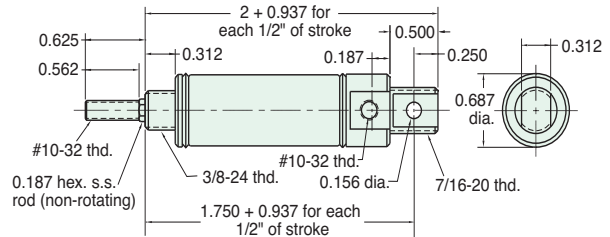
5/8" BORE STAINLESS STEEL CYLINDER

USN-10-□-□

Single Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 4 lbs. **Spring At Rest:** 1.3 lbs.
Options: M, B, H, V, P6, N **Maximum Stroke:** 23" For B option add 0.500
For M option add 0.312



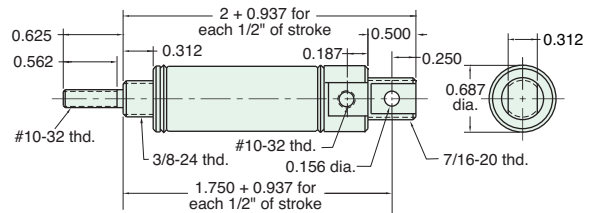
Furnished without nut(s). See Chart on Page 21.

USR-10-□-□

Single Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 4 lbs. **Spring At Rest:** 1.3 lbs.
Options: M, B, H, V, P6, N, W **Maximum Stroke:** 23" For B option add 0.500
For M option add 0.312



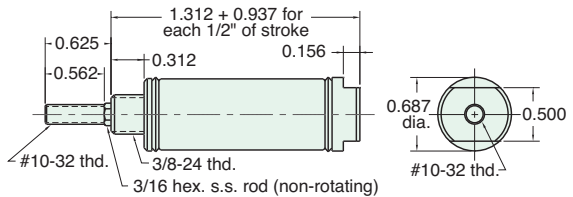
Furnished without nut(s). See Chart on Page 21.

SSN-10-□-□

Single Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 4 lbs. **Spring At Rest:** 1.3 lbs.
Options: M, B, H, V, S, N **Maximum Stroke:** 23" For B option add 0.500
For M option add 0.312



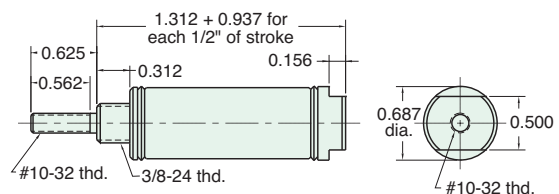
Nut included, but not shown on drawing

SSR-10-□-□

Single Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 4 lbs. **Spring At Rest:** 1.3 lbs.
Options: M, B, H, V, S, N, W **Maximum Stroke:** 23" For B option add 0.500
For M option add 0.312



Nut included, but not shown on drawing

5/8" BORE STAINLESS STEEL CYLINDER

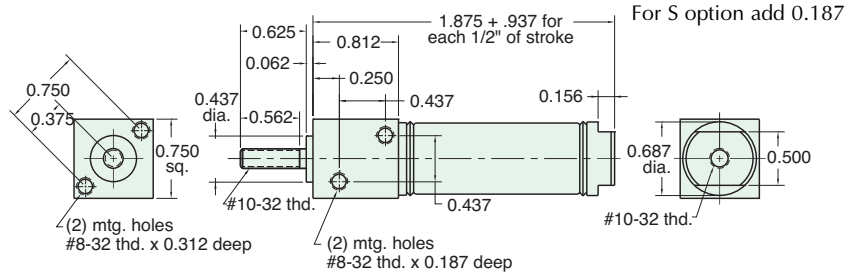


FSR-10-□-□

Single Acting



Mount: Front **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 4 lbs. **Spring At Rest:** 1.3 lbs. For B option add 0.375
Options: M, B, H, V, S, N, W **Maximum Stroke:** 13" For M option add 0.312

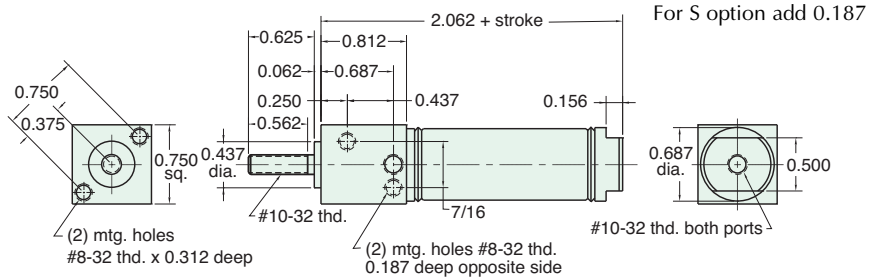


FDR-10-□-□

Double Acting



Mount: Front **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Maximum Stroke:** 43"
Options: M, B, V, P6, P7, P8, S, N, W For B option add 0.500
 For M option add 0.312

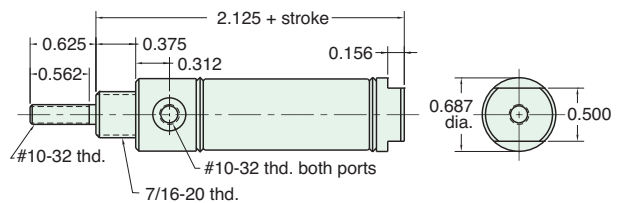


SDR-10-□-□

Double Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Maximum Stroke:** 43"
Options: M, B, V, P6, P7, P8, S, N, W For B option add 0.500
 For M option add 0.312



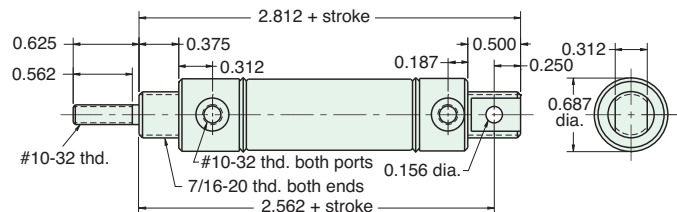
Nut included, but not shown on drawing

UDR-10-□-□

Double Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Maximum Stroke:** 43"
Options: M, B, V, P2, P3, P4, P5, P6, P7, P8, N, W For B option add 0.500
 For M option add 0.312



Furnished without nut(s). See Chart on Page 21.



MOUNTING NUTS

Stud Nut

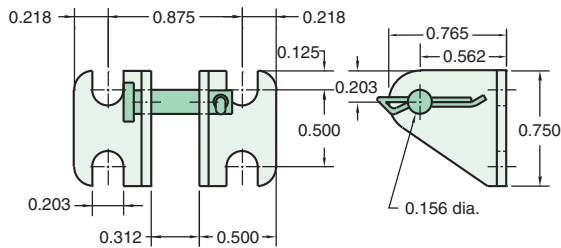
Part Number	Across Flats	Nut Thickness	Nut (Thread)
N06-24A	9/16"	7/32"	3/8-24
N06-24B	1/2"	3/32"	3/8-24
N07-20	11/16"	1/4"	7/16-20

Rod Nut

Part Number	Across Flats	Nut Thickness	Nut (Thread)
N03-32	3/8"	1/8"	#10-32

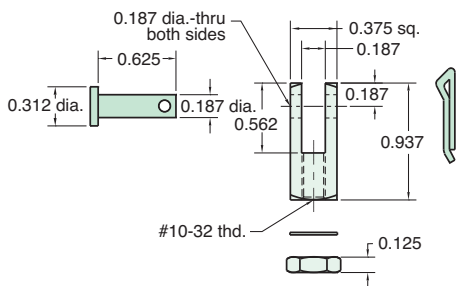
CB-0895

Clevis Bracket
Material: Steel, bright zinc plated



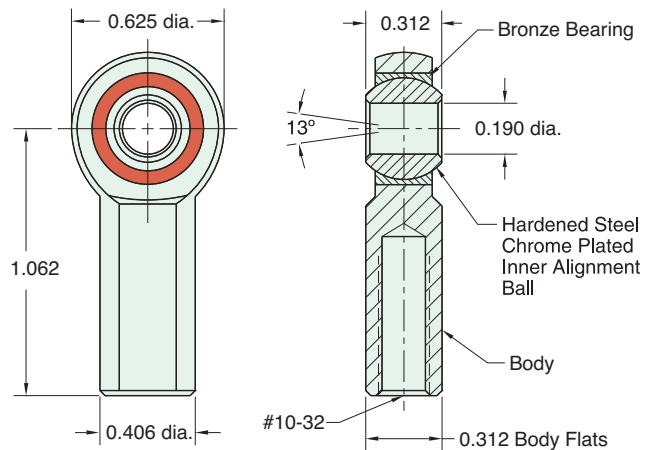
RC-0881

Rod Clevis
Material: Steel, electroless nickel plate



RE-0885

Rod End
Material: Steel, bright zinc plated body



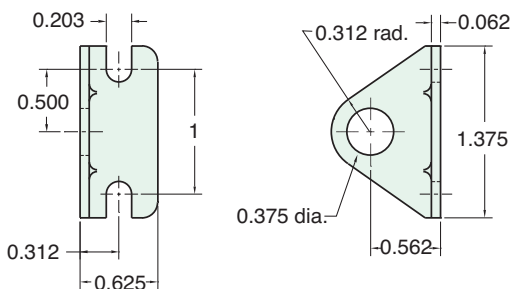
Lockwasher

Locknut

Max. Static Radial Load (rod end only): 1,624 lbs.
Fits Rod Thread Size: #10-32

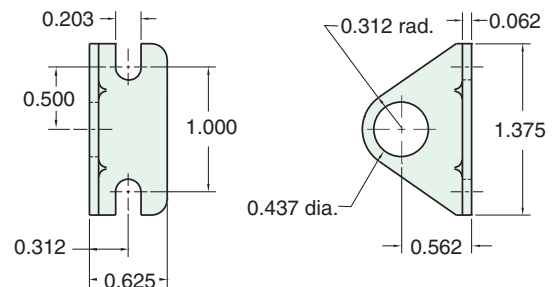
FB-0891

Foot Bracket
Material: Steel, bright zinc plated



FB-0892

Foot Bracket
Material: Steel, bright zinc plated



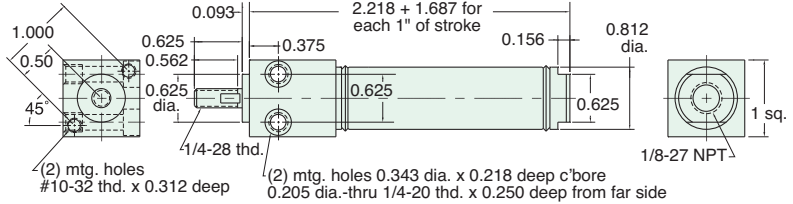


3/4" BORE STAINLESS STEEL CYLINDER

FSR-12-□-□

Single Acting

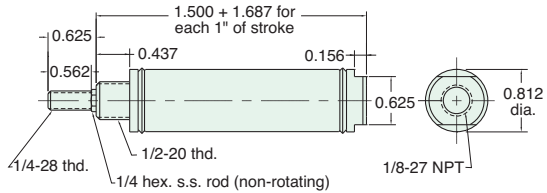
Mount: Front **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 6 lbs. **Spring At Rest:** 3 lbs.
Options: M, B, H, V, S, N, W **Maximum Stroke:** 25" For B option add 0.375
For M option add 0.125
For S option add 0.437



SSN-12-□-□

Single Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 6 lbs. **Spring At Rest:** 3 lbs.
Options: M, B, H, V, S, N **Maximum Stroke:** 26" For B option add 0.500
For M option add 0.125
For S option add 0.437

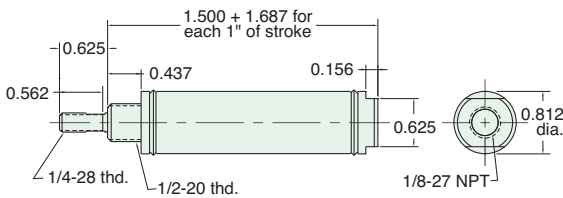


Nut included, but not shown on drawing

SSR-12-□-□

Single Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 6 lbs. **Spring At Rest:** 3 lbs.
Options: M, B, H, V, S, N, W **Maximum Stroke:** 26" For B option add 0.500
For M option add 0.125
For S option add 0.437

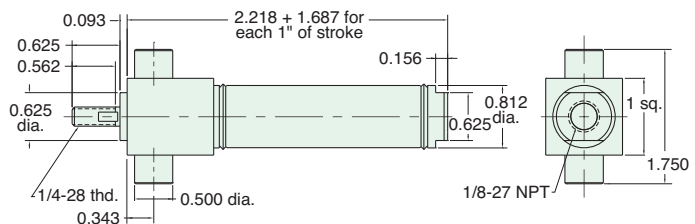


Nut included, but not shown on drawing

TSR-12-□-□

Single Acting

Mount: Trunnion **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 6 lbs. **Spring At Rest:** 3 lbs.
Options: M, B, H, V, S, N **Maximum Stroke:** 25" For B option add 0.500
For M option add 0.125
For S option add 0.437



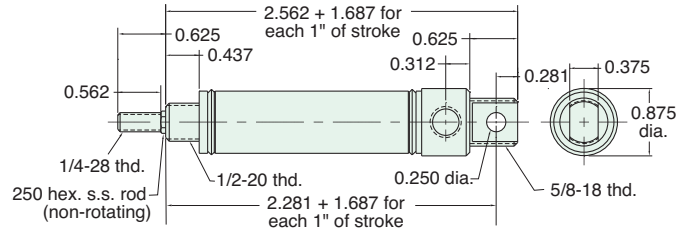
3/4" BORE STAINLESS STEEL CYLINDER



USN-12-□-□

Single Acting

Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 6 lbs. **Spring At Rest:** 3 lbs.
Options: M, B, H, V, P6, N **Maximum Stroke:** 25" For B option add 0.500
 For M option add 0.125

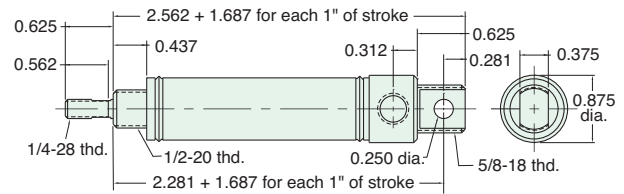


Furnished without nut(s). See Chart on Page 27.

USR-12-□-□

Single Acting

Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 6 lbs. **Spring At Rest:** 3 lbs.
Options: M, B, H, V, P6, N, W **Maximum Stroke:** 25" For B option add 0.500
 For M option add 0.125

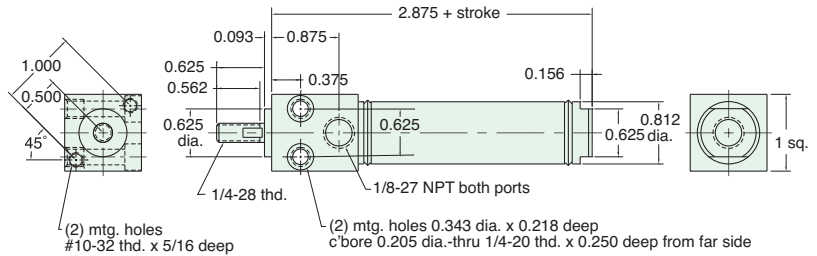


Furnished without nut(s). See Chart on Page 27.

FDR-12-□-□

Double Acting

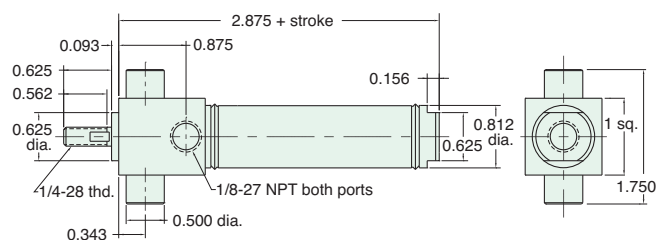
Mount: Front **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"
Type: Rotating Rod **Maximum Stroke:** 42" For B option add 0.500
Options: M, B, W, V, P6, P7, P8, S, N For S option add 0.437



TDR-12-□-□

Double Acting

Mount: Trunnion **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"
Type: Rotating Rod **Maximum Stroke:** 42" For B option add 0.500
Options: M, B, W, V, S, N, P6, P7, P8 For S option add 0.437





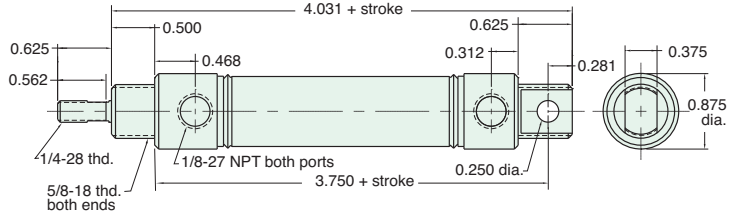
3/4" BORE STAINLESS STEEL CYLINDER

UDR-12-□-□

Double Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6", 8", 10", 12"
Type: Rotating rod **Maximum Stroke:** 41"
Options: C, F, R, B, W, V, P2, P3, P4, P5, P6, P7, P8, M, N For B option add 0.500



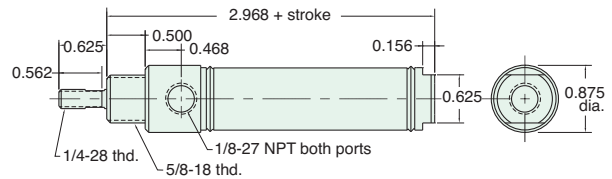
Furnished without nut(s). See Chart on Page 27.

SDR-12-□-□

Double Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"
Type: Rotating Rod **Maximum Stroke:** 42"
Options: C, F, R, B, W, V, P6, P7, P8, S, M, N For B option add 0.500
For C, F, R & S options add 0.437



For harsh environments, refer to pages 64 through 69 for Clippard's Corrosion-Resistant Stainless Steel 3/4" cylinders.

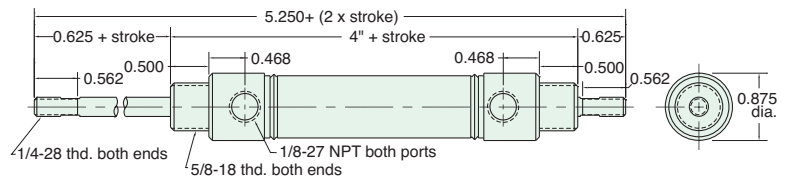
Nuts included, but not shown on drawing
C, F, & R options use side ported rear head

SDD-12-□-□

Double Acting



Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6"
Type: Double Rod **Maximum Stroke:** 20"
Options: C, F, B, W, V, P6, P7, P8, M, N For B option add 0.500



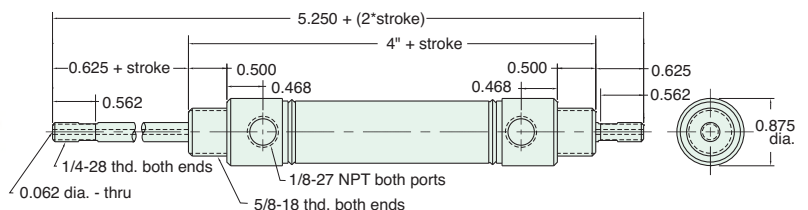
Nuts included, but not shown on drawing

SDH-12-□-□

Double Acting



Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6"
Type: Hollow Rod **Maximum Stroke:** 20"
Options: B, W, V, P6, P7, P8, M, N For B option add 0.500



Nuts included, but not shown on drawing

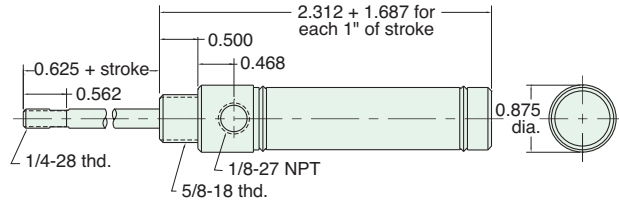
3/4" BORE STAINLESS STEEL CYLINDER



SRR-12-□-□

Reverse Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 6 lbs. **Spring At Rest:** 3 lbs.
Options: M, B, H, W, V, N **Maximum Stroke:** 16" For B option add 0.375
 For M option add 0.125

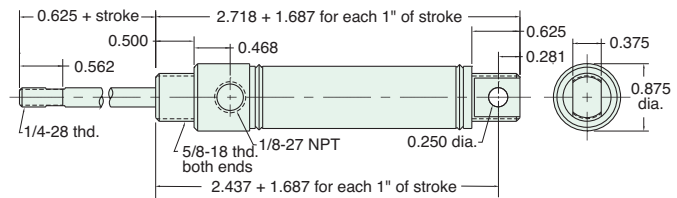


Nut included, but not shown on drawing

URR-12-□-□

Reverse Acting

Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 6 lbs. **Spring At Rest:** 3 lbs.
Options: M, B, H, W, V, P2, N, W **Maximum Stroke:** 15" For B option add 0.500
 For M option add 0.125

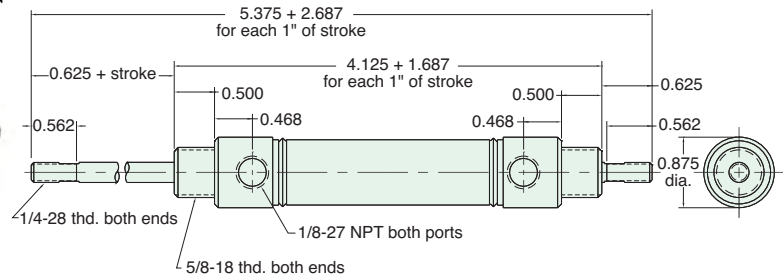


Furnished without nut(s). See Chart on Page 27.

SFD-12-□-□

Double Acting, Spring Bias

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Double Rod **Spring Compressed:** 6 lbs. **Spring At Rest:** 3 lbs.
Options: M, B, H, W, V, P6, P7, P8, N **Maximum Stroke:** 15" For B option add 0.375

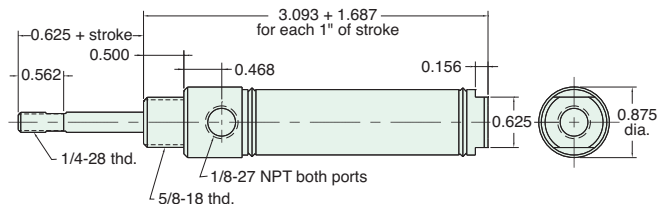


Nuts included, but not shown on drawing

SBR-12-□-□

Double Acting, Rear Spring Bias

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 6 lbs. **Spring At Rest:** 3 lbs.
Options: M, B, H, W, V, P6, P7, P8, S, N **Maximum Stroke:** 15" For B option add 0.375
 For S option add 0.437



Nut included, but not shown on drawing



MOUNTING NUTS

Stud Nut

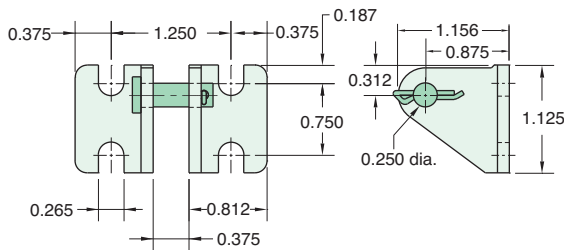
Part Number	Across Flats	Nut Thickness	Nut (Thread)
<u>N08-20</u>	3/4"	5/16"	1/2-20
<u>N10-18</u>	15/16"	3/8"	5/8-18

Rod Nut

Part Number	Across Flats	Nut Thickness	Nut (Thread)
<u>N04-28A</u>	7/16"	5/32"	1/4-28
<u>N04-28B</u>	3/8"	1/8"	1/4-28

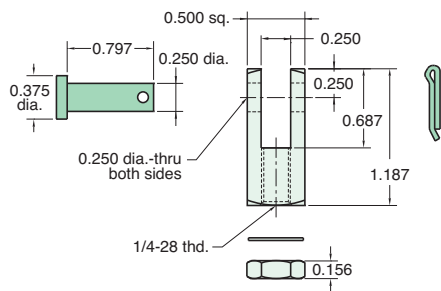
CB-1795

Clevis Bracket
Material: Steel, bright zinc plated



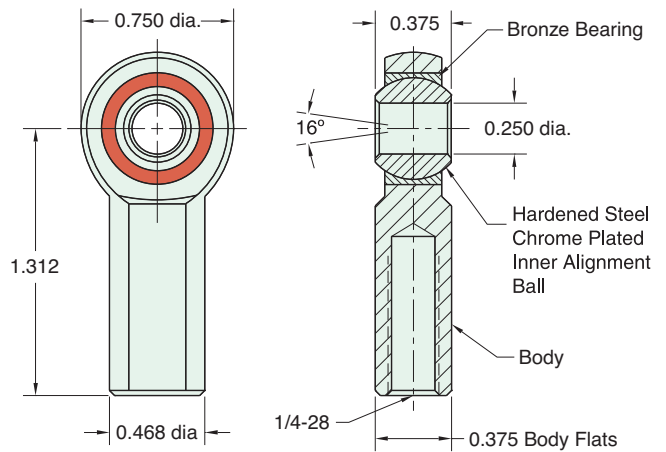
RC-1281

Rod Clevis
Material: Steel, electroless nickel plate



RE-1285

Rod End
Material: Steel, bright zinc plated body



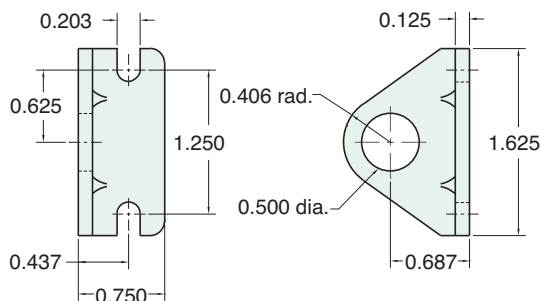
Lockwasher

Locknut

Max. Static Radial Load (rod end only): 2,545 lbs.
Fits Rod Thread Size: 1/4-28

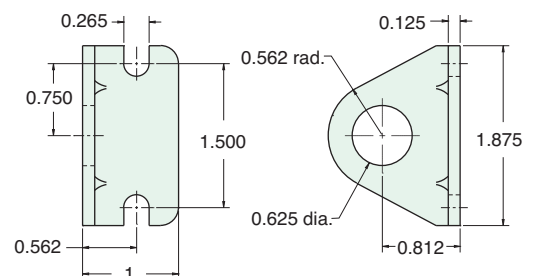
FB-1291

Foot Bracket
Material: Steel, bright zinc plated



FB-1791

Foot Bracket
Material: Steel, bright zinc plated





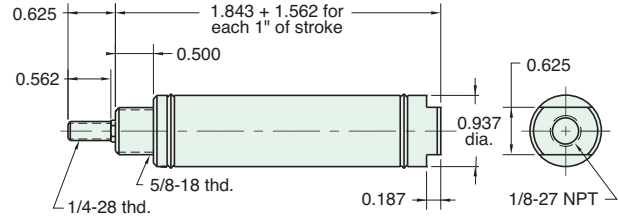
7/8" BORE STAINLESS STEEL CYLINDER

SSN-14-□-□

Single Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 6 lbs. **Spring At Rest:** 3 lbs.
Options: M, H, V, S, N **Maximum Stroke:** 27"
Bumpers are standard
For M option add 0.125
For S option add 0.281



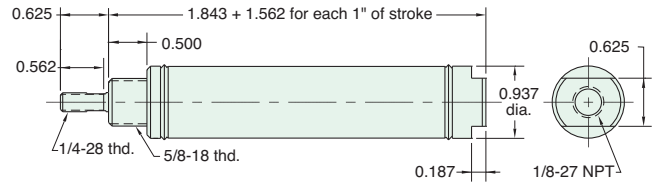
Nut included, but not shown on drawing

SSR-14-□-□

Single Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 6 lbs. **Spring At Rest:** 3 lbs.
Options: M, H, V, S, N, W **Maximum Stroke:** 27"
Bumpers are standard
For M option add 0.125
For S option add 0.281



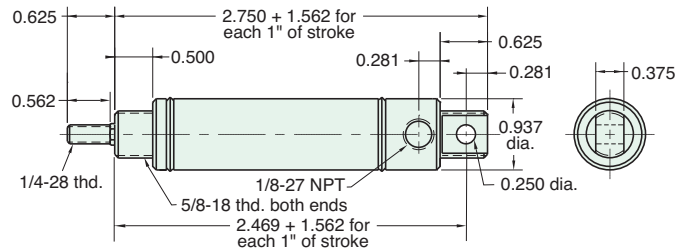
Nut included, but not shown on drawing

USN-14-□-□

Single Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 6 lbs. **Spring At Rest:** 3 lbs.
Options: M, H, V, P6, N **Maximum Stroke:** 27"
Bumpers are standard
For M option add 0.125



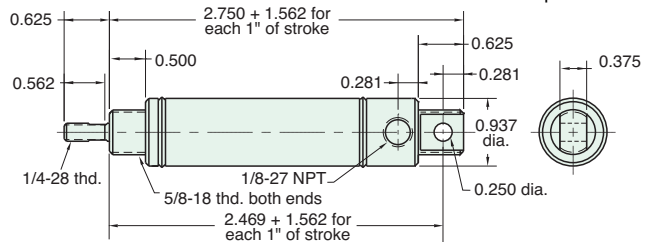
Furnished without nut(s). See Chart on Page 31.

USR-14-□-□

Single Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 6 lbs. **Spring At Rest:** 3 lbs.
Options: M, H, V, W, P6, N **Maximum Stroke:** 27"
Bumpers are standard
For M option add 0.125



Furnished without nut(s). See Chart on Page 31.

7/8" BORE STAINLESS STEEL CYLINDER



SDR-14-□-□

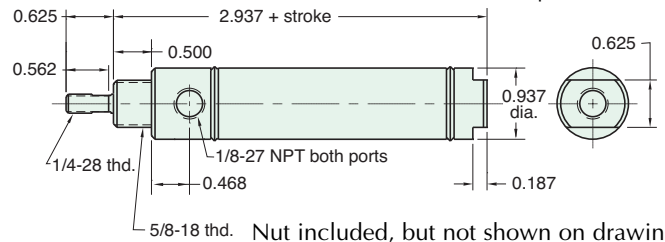
Double Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"
Type: Rotating Rod **Maximum Stroke:** 42"
Options: C, F, R, M, W, V, P6, P7, P8, S, N

Bumpers are standard
 For M option add 0.125

For C, F, R and S option add 0.281
 For CM, FM, RM and SM option add 0.593



Nut included, but not shown on drawing
 C, F, & R options use side ported rear head

UDR-14-□-□

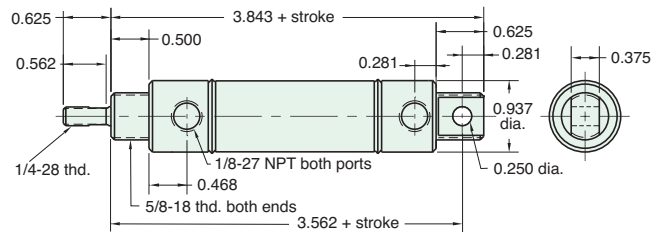
Double Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"
Type: Rotating Rod **Maximum Stroke:** 41"
Options: C, F, R, M, W, V, P2, P3, P4, P5, P6, P7, P8, N

Bumpers are standard
 For M option add 0.125

For CM, FM and RM option add 0.312



Furnished without nut(s). See Chart on Page 31.

SDD-14-□-□

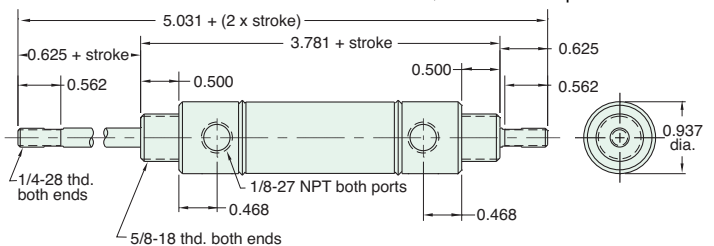
Double Acting



Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6"
Type: Double Rod **Maximum Stroke:** 20"
Options: C, F, M, W, V, P6, P7, P8, N

Bumpers are standard
 For M option add 0.125

For CM, FM and RM option add 0.312



Nuts included, but not shown on drawing

SDH-14-□-□

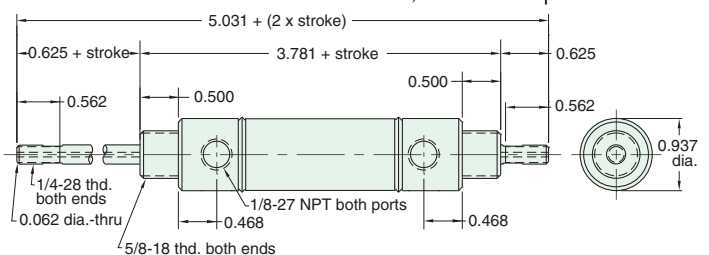
Double Acting



Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6"
Type: Hollow Rod **Maximum Stroke:** 20"
Options: C, F, M, W, V, P6, P7, P8, N

Bumpers are standard
 For M option add 0.125

For CM, FM and RM option add 0.312



Nuts included, but not shown on drawing



7/8" BORE STAINLESS STEEL CYLINDER

SRR-14-□-□

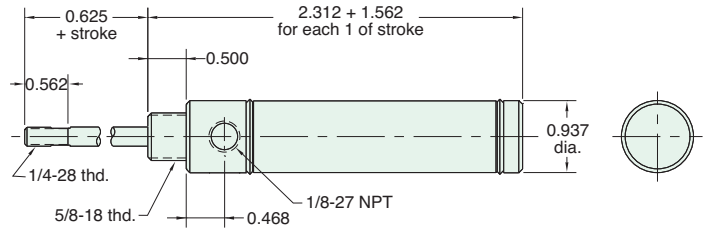
Reverse Acting

Mount: Stud
Type: Rotating Rod
Options: M, H, W, V, N

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"
Spring Compressed: 6 lbs. **Spring At Rest:** 3 lbs.
Maximum Stroke: 16"

Bumpers are standard

For M option add 0.125



Nut included, but not shown on drawing

URR-14-□-□

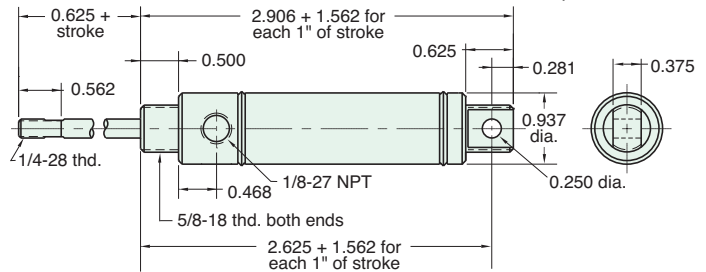
Reverse Acting

Mount: Universal
Type: Rotating Rod
Options: M, H, W, V, P2, N

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"
Spring Compressed: 6 lbs. **Spring At Rest:** 3 lbs.
Maximum Stroke: 16"

Bumpers are standard

For M option add 0.125



Furnished without nut(s). See Chart on Page 31.

7/8" bore cylinders are also available in heavy-duty brass. See pages 92 and 93.

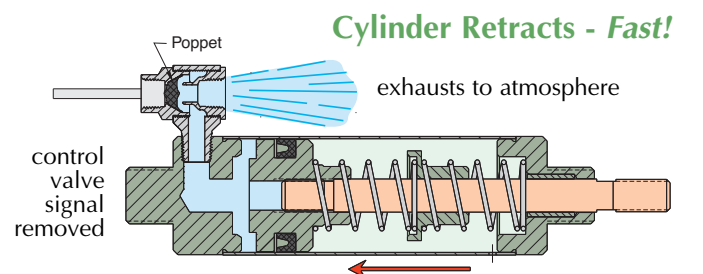
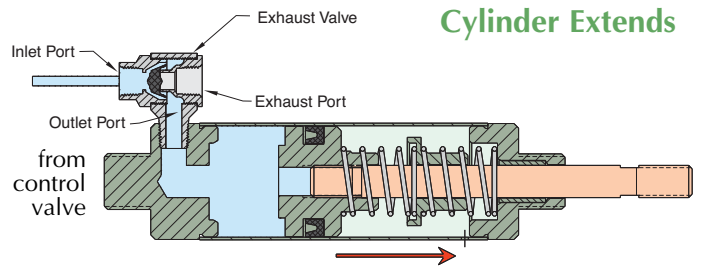
I-Series Exhaust Valve

In a typical application the exhaust valve is installed in the inlet of a spring return or double acting pneumatic cylinder. Supply air from a control valve is directed into the inlet port of the exhaust valve. The Buna-N poppet seals the exhaust port and allows air to flow from the outlet port of the valve into the cylinder.

The pressurized air pushes against the piston and extends the rod, compressing the spring, until full rod extension is achieved.

When the control valve exhausts air from the exhaust valve inlet port, the Buna-N poppet shifts to seal the inlet port and open the exhaust port to the cylinder. The pressurized air is allowed to exhaust directly through the exhaust valve to atmosphere.

Normally the air must travel back through the long air line to the control valve to exhaust. By mounting the exhaust valve directly on the cylinder, the piston retracts quickly since the distance to atmosphere is very short and unrestricted.





MOUNTING NUTS

Stud Nut

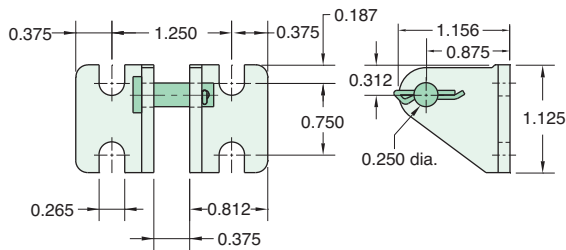
Part Number	Across Flats	Nut Thickness	Nut (Thread)
<u>N10-18</u>	15/16"	3/8"	5/8-18

Rod Nut

Part Number	Across Flats	Nut Thickness	Nut (Thread)
<u>N04-28A</u>	7/16"	5/32"	1/4-28
<u>N04-28B</u>	3/8"	1/8"	1/4-28

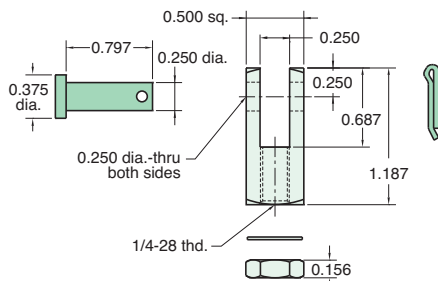
CB-1795

Clevis Bracket
Material: Steel, bright zinc plated



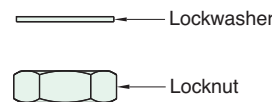
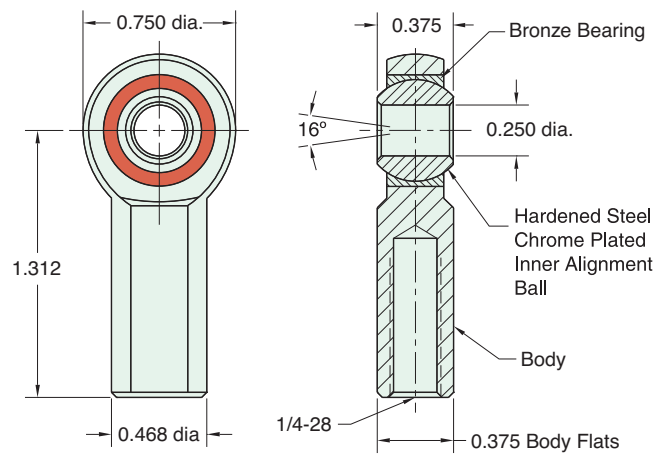
RC-1281

Rod Clevis
Material: Steel, electroless nickel plate



RE-1285

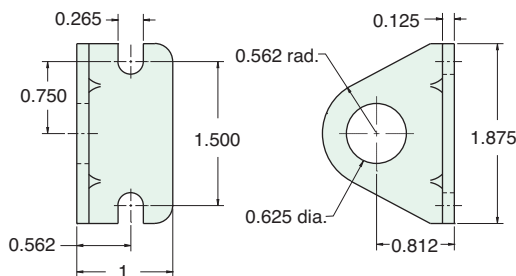
Rod End
Material: Steel, bright zinc plated body



Max. Static Radial Load (rod end only): 2,545 lbs.
Fits Rod Thread Size: 1/4-28

FB-1791

Foot Bracket
Material: Steel, bright zinc plated



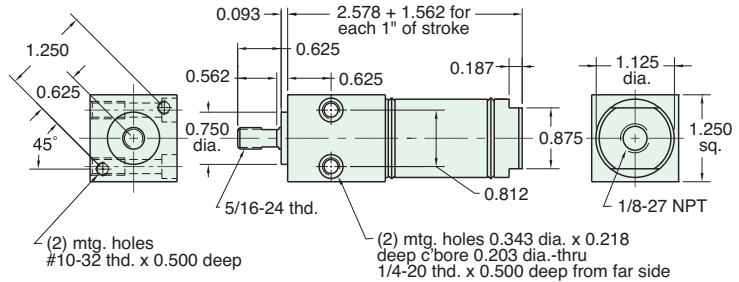


1 1/16" BORE STAINLESS STEEL CYLINDER

FSR-17-□-□

Single Acting

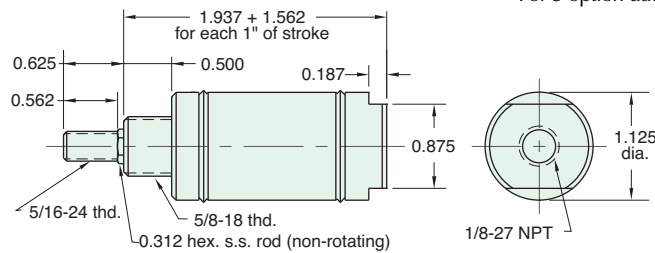
Mount: Front **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 7 lbs. **Spring At Rest:** 2 lbs.
Options: M, B, H, V, S, N, W **Maximum Stroke:** 27" For M option add 0.125
 For S option add 0.250



SSN-17-□-□

Single Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 7 lbs. **Spring At Rest:** 2 lbs.
Options: M, B, H, V, S, N **Maximum Stroke:** 27" For M option add 0.125
 For S option add 0.250

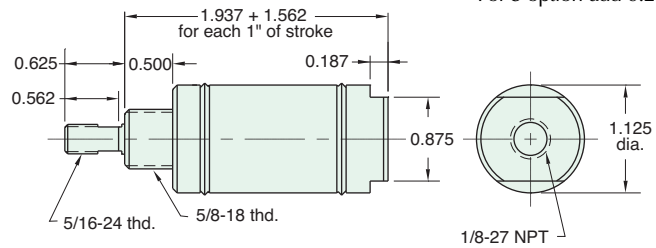


Nut included, but not shown on drawing

SSR-17-□-□

Single Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 7 lbs. **Spring At Rest:** 2 lbs.
Options: M, B, H, V, S, N, W **Maximum Stroke:** 27" For M option add 0.125
 For S option add 0.250

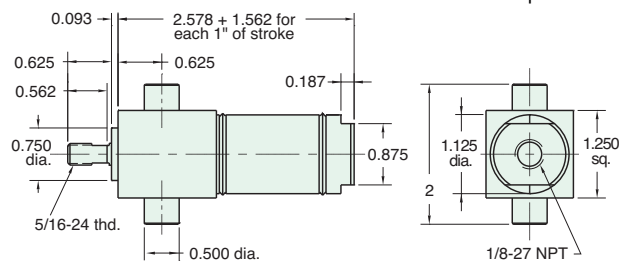


Nut included, but not shown on drawing

TSR-17-□-□

Single Acting

Mount: Trunnion **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 7 lbs. **Spring At Rest:** 2 lbs.
Options: M, B, H, V, S, N, W **Maximum Stroke:** 26" For M option add 0.125
 For S option add 0.250



1 1/16" BORE STAINLESS STEEL CYLINDER

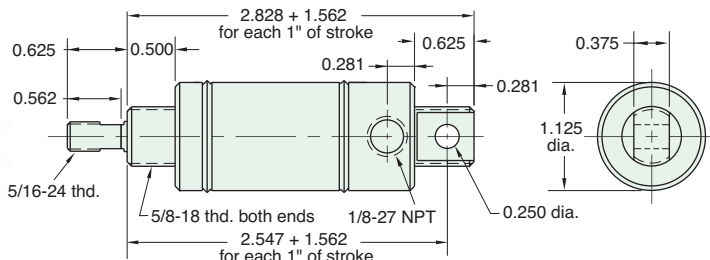


USN-17-□-□

Single Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 7 lbs. **Spring At Rest:** 2 lbs.
Options: M, B, H, V, P6, N **Maximum Stroke:** 27" For M option add 0.125



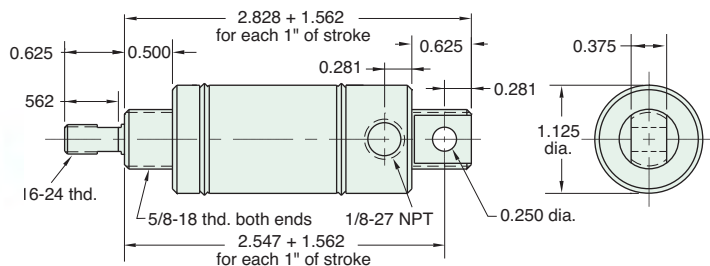
Furnished without nut(s). See Chart on Page 37

USR-17-□-□

Single Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 7 lbs. **Spring At Rest:** 2 lbs.
Options: M, B, H, V, P6, N, W **Maximum Stroke:** 27" For M option add 0.125



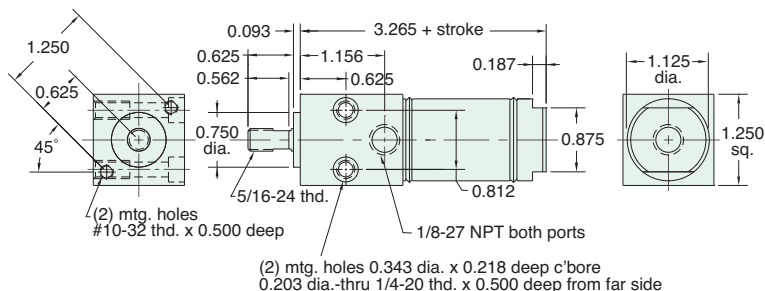
Furnished without nut(s). See Chart on Page 37.

FDR-17-□-□

Double Acting



Mount: Front **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"
Type: Rotating Rod **Maximum Stroke:** 42"
Options: M, B, W, V, P6, P7, P8, S, N For S option add 0.250

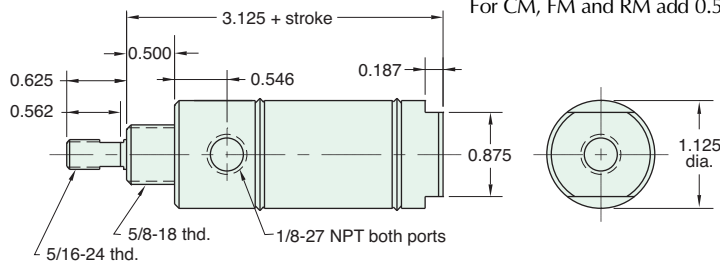


SDR-17-□-□

Double Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"
Type: Rotating Rod **Maximum Stroke:** 42"
Options: C, F, R, M, B, W, V, P6, P7, P8, S, N For C, F, R or S option add 0.250
 For CM, FM and RM add 0.562



Nut included, but not shown on drawing
 C, F, & R options use side ported rear head



1 1/16" BORE STAINLESS STEEL CYLINDER

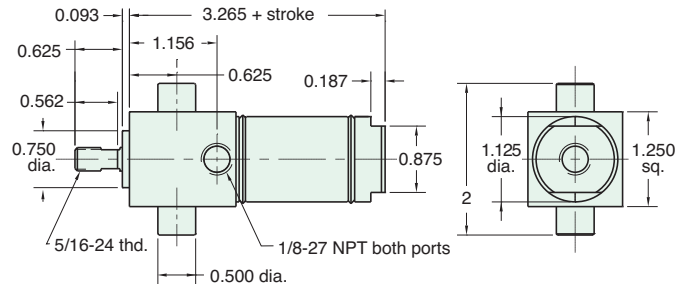
TDR-17-□-□

Double Acting



Mount: Trunnion **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"
Type: Rotating Rod **Maximum Stroke:** 42"
Options: M, B, W, V, S, N, P6, P7, P8

For S option add 0.250



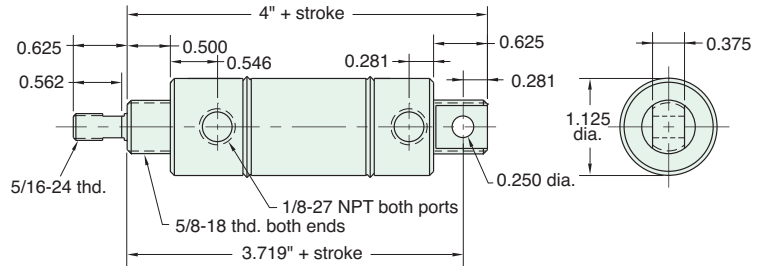
UDR-17-□-□

Double Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6", 8", 10", 12"
Type: Rotating Rod **Maximum Stroke:** 41"
Options: C, F, R, M, B, W, V, P2, P3, P4, P5, P6, P7, P8, N

For CM, FM and RM add 0.312



Furnished without nut(s). See Chart on Page 37.

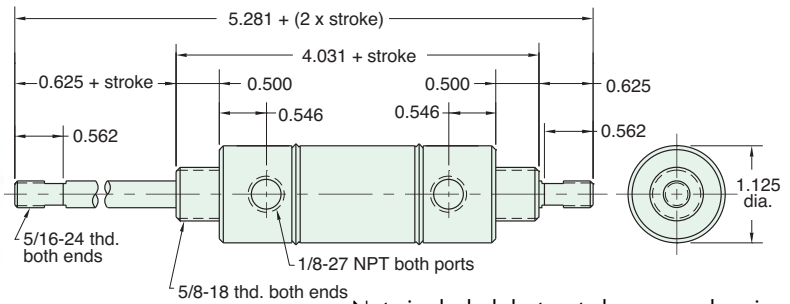
SDD-17-□-□

Double Acting



Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6"
Type: Double Rod **Maximum Stroke:** 20"
Options: C, F, M, B, W, V, P6, P7, P8, N

For CM, FM and RM add 0.312



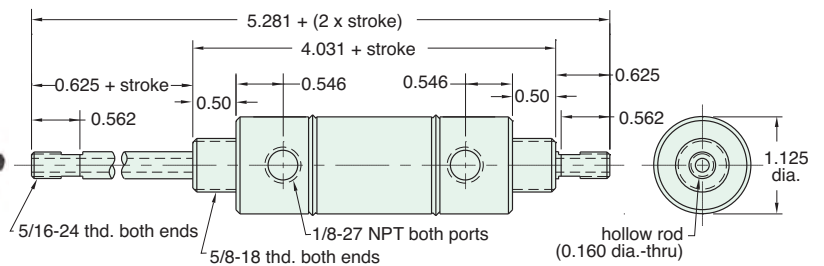
Nuts included, but not shown on drawing

SDH-17-□-□

Double Acting



Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6"
Type: Hollow Rod **Maximum Stroke:** 20"
Options: M, B, W, V, P6, P7, P8, N



Nuts included, but not shown on drawing

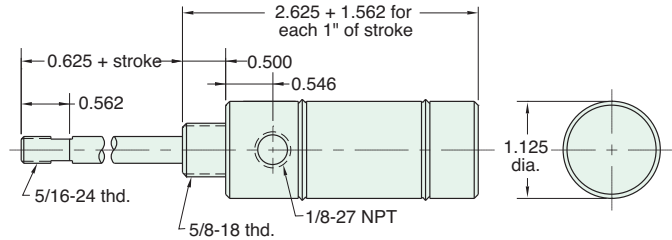
1 1/16" BORE STAINLESS STEEL CYLINDER



SRR-17-□-□

Reverse Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 7 lbs. **Spring At Rest:** 2 lbs.
Options: M, B, H, W, V, N **Maximum Stroke:** 16" For M option add 0.125

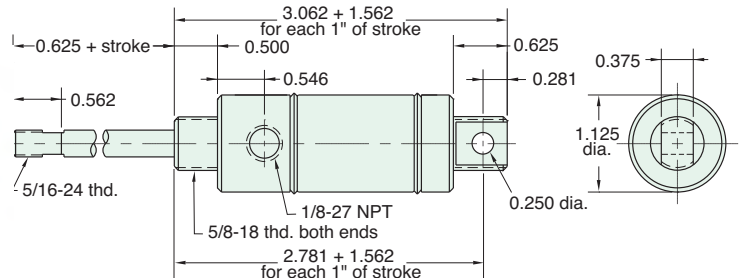


Nuts included, but not shown on drawing

URR-17-□-□

Reverse Acting

Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 7 lbs. **Spring At Rest:** 2 lbs.
Options: M, B, H, W, V, P2, N **Maximum Stroke:** 16" For M option add 0.125

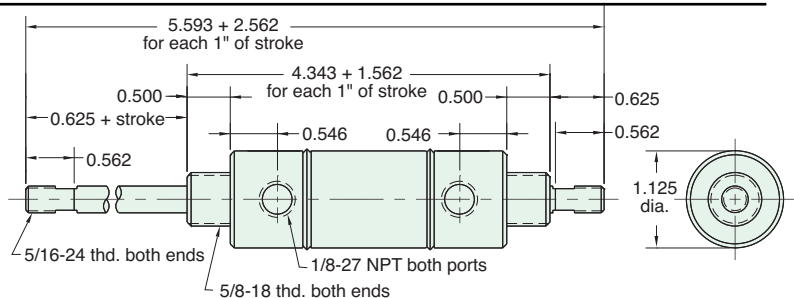


Furnished without nut(s). See Chart on Page 37.

SFD-17-□-□

Spring Bias

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Double Rod **Spring Compressed:** 7 lbs. **Spring At Rest:** 2 lbs.
Options: M, B, H, W, V, P6, P7, P8, N **Maximum Stroke:** 15"

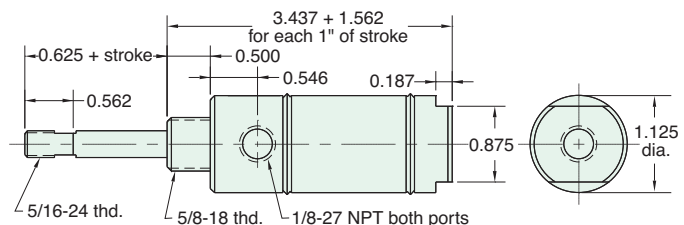


Nuts included, but not shown on drawing

SBR-17-□-□

Double Acting Rear Spring Bias

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 7 lbs. **Spring At Rest:** 2 lbs.
Options: M, B, H, W, V, P6, P7, P8, S, N **Maximum Stroke:** 16" For S option add 0.250



Nut included, but not shown on drawing



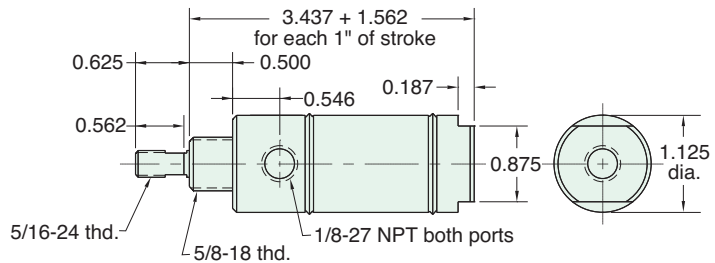
1 1/16" BORE STAINLESS STEEL CYLINDER

SFR-17-□-□

Double Acting, Spring Bias



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 7 lbs. **Spring At Rest:** 2 lbs.
Options: M, B, H, W, V, P6, P7, P8, S, N **Maximum Stroke:** 26" For S option add 0.250



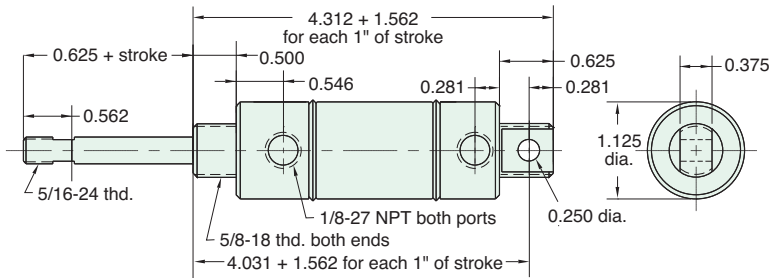
Nut included, but not shown on drawing

UBR-17-□-□

Double Acting, Rear Spring Bias



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 7 lbs. **Spring At Rest:** 2 lbs.
Options: M, B, H, W, V, P2, P3, P4, P5, P6, P7, P8, N **Maximum Stroke:** 16"



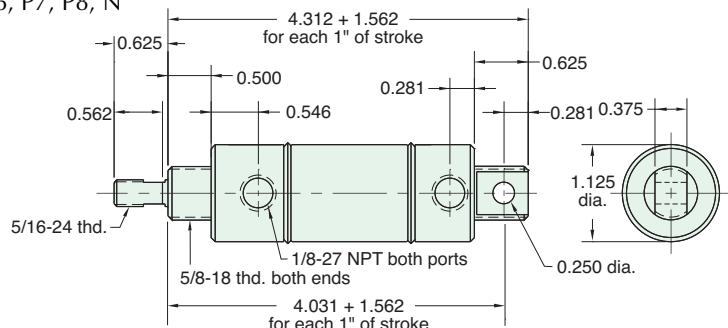
Furnished without nut(s). See Chart on Page 37.

UFR-17-□-□

Double Acting Front Spring Bias



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 7 lbs. **Spring At Rest:** 2 lbs.
Options: M, B, H, W, V, P2, P3, P4, P5, P6, P7, P8, N **Maximum Stroke:** 26"



Furnished without nut(s). See Chart on Page 37.

For harsh environments, refer to [page 67](#) for Clippard's Corrosion-Resistant Stainless Steel 1/16" cylinders.



MOUNTING NUTS

Stud Nut

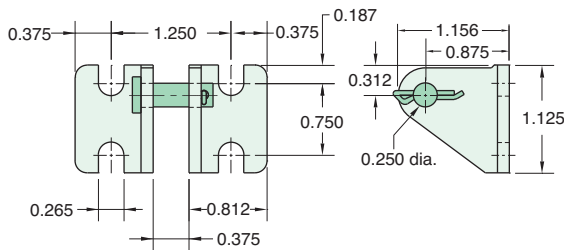
Part Number	Across Flats	Nut Thickness	Nut (Thread)
<u>N10-18</u>	15/16"	3/8"	5/8-18

Rod Nut

Part Number	Across Flats	Nut Thickness	Nut (Thread)
<u>N05-24</u>	1/2"	3/16"	5/16-24

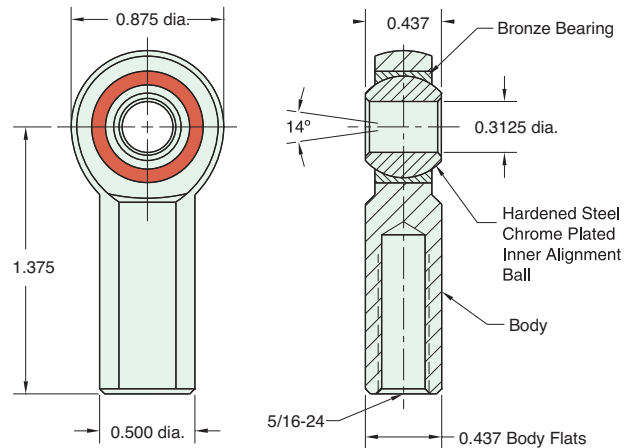
CB-1795

Clevis Bracket
Material: Steel, bright zinc plated



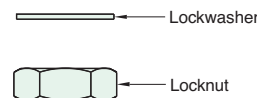
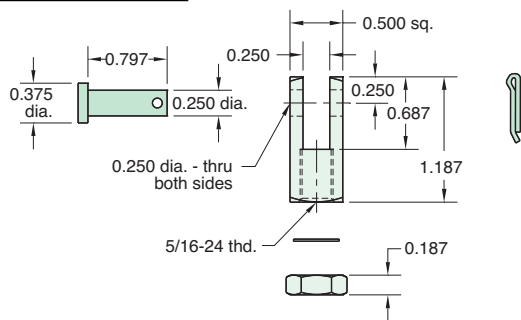
RE-1785

Rod End
Material: Steel, bright zinc plated body



RC-1781

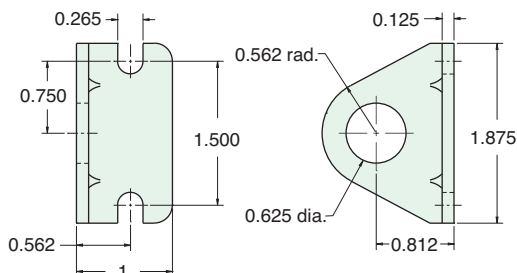
Rod Clevis
Material: Steel, electroless nickel plate



Max. Static Radial Load (rod end only): 3,200 lbs.
Fits Rod Thread Size: 5/16-24

FB-1791

Foot Bracket
Material: Steel, bright zinc plated



1 1/4" BORE STAINLESS STEEL CYLINDER



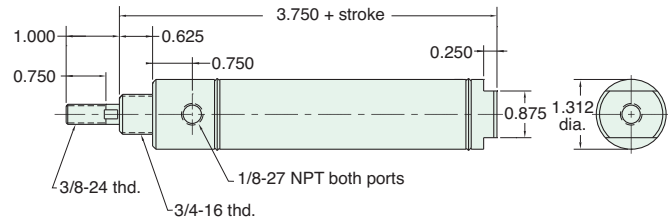
Note: The 1 1/4" bore is also available with a 7/16-20 threaded rod. Order -LR option.

SDR-20-□-□

Double Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"
Type: Rotating Rod **Maximum Stroke:** 41"
Options: C, F, R, M, B, W, V, P6, P7, P8, S, N For C, F, R and S option add 0.312
 For CM, FM, RM and SM options add 0.625



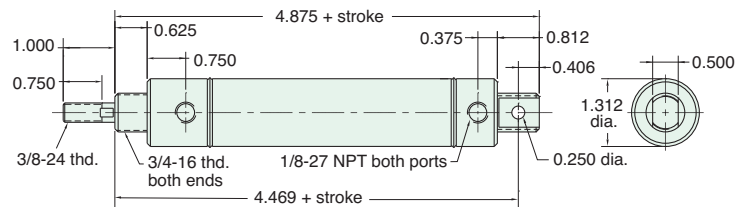
Nut included, but not shown on drawing
 C, F, & R options use side ported rear head

UDR-20-□-□

Double Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 6", 8", 10", 12"
Type: Rotating Rod **Maximum Stroke:** 40"
Options: C, F, R, M, B, W, V, P2, P3, P4, P5, P6, P7, P8, N For CM, FM and RM options add 0.312



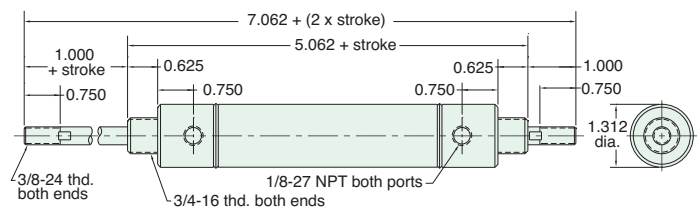
Furnished without nut(s). See Chart on Page 41.

SDD-20-□-□

Double Acting



Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6"
Type: Double Rod **Maximum Stroke:** 19"
Options: C, F, M, B, W, V, P6, P7, P8, N For CM and FM options add 0.312



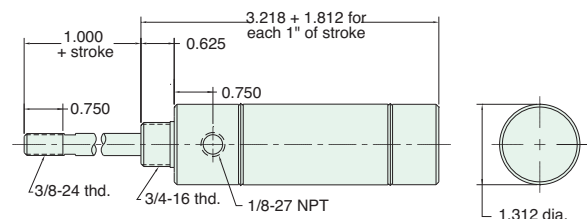
Nuts included, but not shown on drawing

SRR-20-□-□

Reverse Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 10 lbs. **Spring At Rest:** 4.5 lbs.
Options: M, B, H, W, V, N **Maximum Stroke:** 14" For M option add 0.125



Nuts included, but not shown on drawing



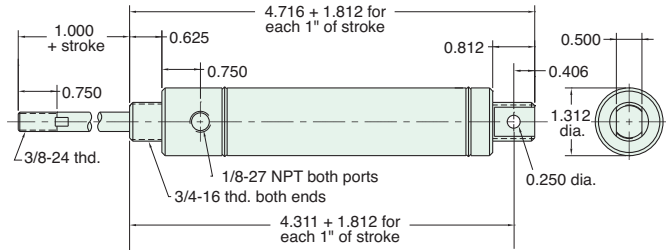
1 1/4" BORE STAINLESS STEEL CYLINDER

Note: The 1 1/4" bore is also available with a 7/16-20 threaded rod. Order -LR option.

URR-20-□-□

Reverse Acting

Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 10 lbs. **Spring At Rest:** 4.5 lbs.
Options: M, B, H, W, V, P2, N **Maximum Stroke:** 14" For M option add 0.125



Furnished without nut(s). See Chart on Page 41.

For harsh environments, refer to [page 68](#) for Clippard's Corrosion-Resistant Stainless Steel 1 1/4" cylinders.



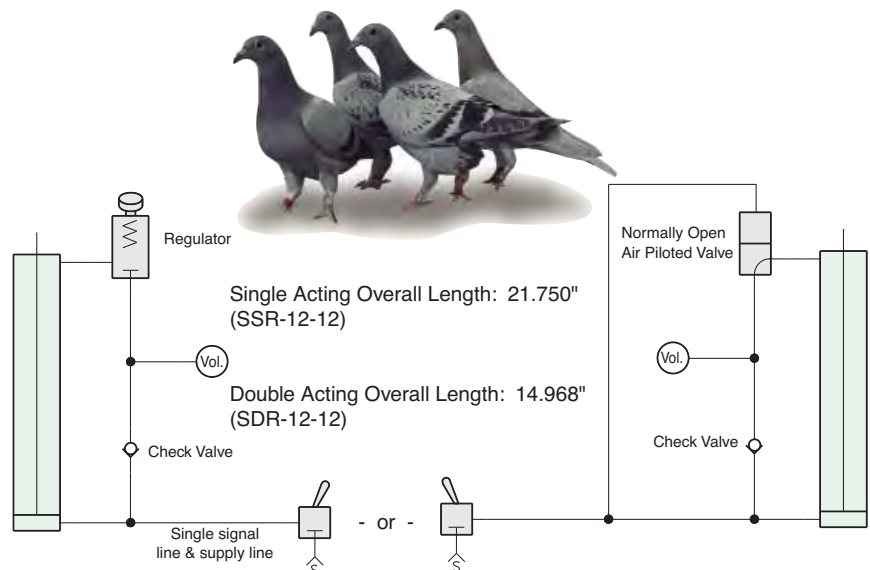
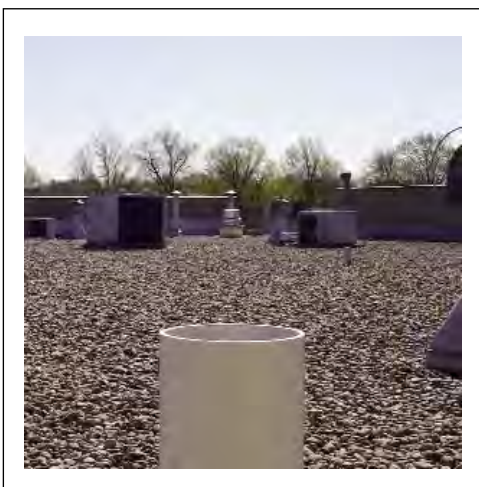
APPLICATION STORY

ap-ply-i-ca-tion \ap-l ə-ˈkâ-sh ən 1 : the act of applying 2 : assiduous attention 3 : REQUEST; also : a form used in making a request 4 : something placed or spread on a surface 5 : capacity for use

Clippard Applications Have Gone to the Birds

Pneumatic automation plays a role on the roof tops of Clippard. Over time, pigeons become unruffled by the presence of a motionless plastic owl. By automating several owls throughout the area to pop up out of 8" PVC pipes, the pigeon problem has flown away.

While this application only requires a single acting cylinder, they tend to be longer than double acting cylinders of the same stroke. To fit the cylinder inside of the owl and have enough stroke to raise it fully, these wise old birds used double acting cylinders with a little circuitry to make them act like single acting cylinders.





MOUNTING NUTS

Stud Nut

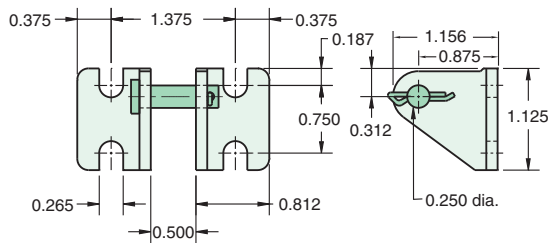
Part Number	Across Flats	Nut Thickness	Nut (Thread)
<u>N12-16</u>	1 3/32"	27/64"	3/4-16

Rod Nut

Part Number	Across Flats	Nut Thickness	Nut (Thread)
<u>N06-24A</u>	9/16"	7/32"	3/8-24
<u>N06-24B</u>	1/2"	3/32"	3/8-24

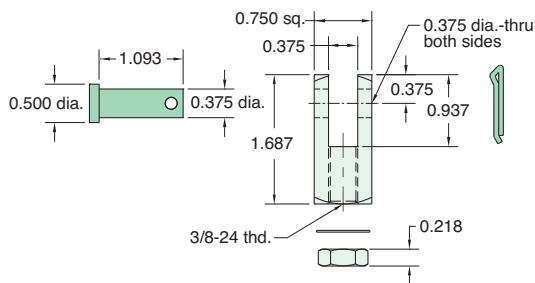
CB-2095

Clevis Bracket
Material: Steel, bright zinc plated



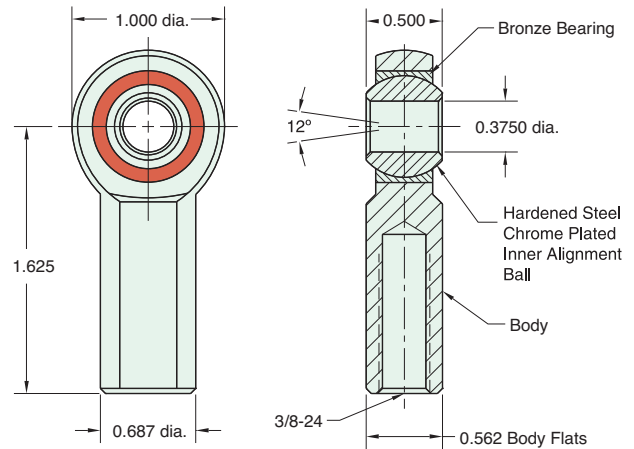
RC-2081

Rod Clevis
Material: Steel, electroless nickel plate



RE-2085

Rod End
Material: Steel, bright zinc plated body



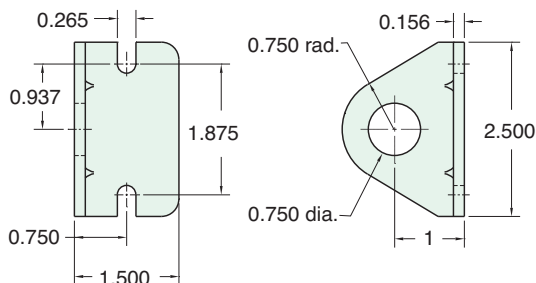
Lockwasher

Locknut

Max. Static Radial Load (rod end only): 3,950 lbs.
Fits Rod Thread Size: 3/8-24

FB-2491

Foot Bracket
Material: Steel, bright zinc plated





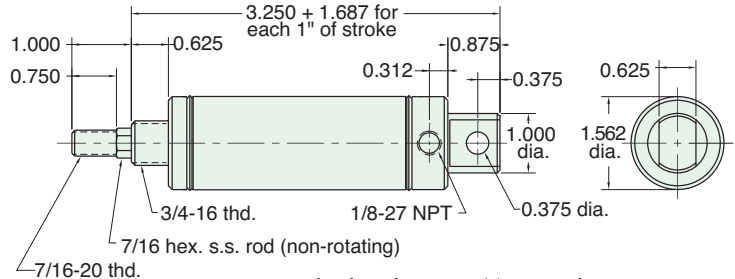
1 1/2" BORE STAINLESS STEEL CYLINDER

CSN-24-□-□

Single Acting



Mount: Clevis **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Options: M, B, H, V, P6, N **Maximum Stroke:** 24" For M option add 0.125



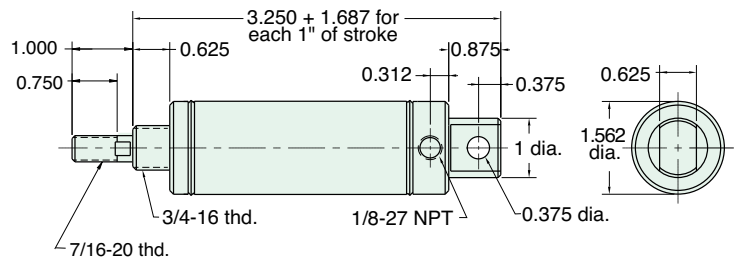
Furnished without nut(s). See Chart on Page 49.

CSR-24-□-□

Single Acting



Mount: Clevis **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Options: M, B, H, V, P6, N, W **Maximum Stroke:** 24" For M option add 0.125



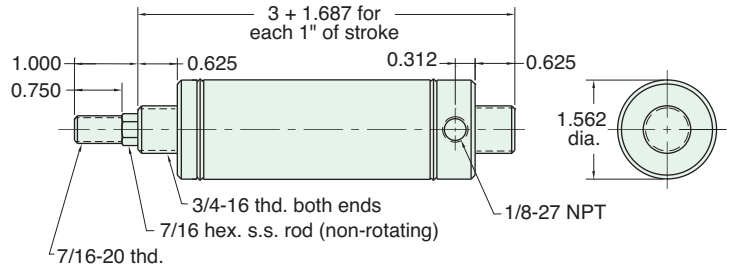
Furnished without nut(s). See Chart on Page 49.

ESN-24-□-□

Single Acting



Mount: End **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Options: M, B, H, V, N **Maximum Stroke:** 24" For M option add 0.125



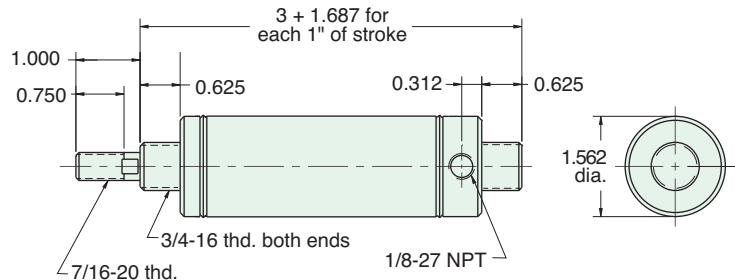
Nuts included, but not shown on drawing

ESR-24-□-□

Single Acting



Mount: End **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Options: M, B, H, V, N, W **Maximum Stroke:** 15" For M option add 0.125



Nut included, but not shown on drawing

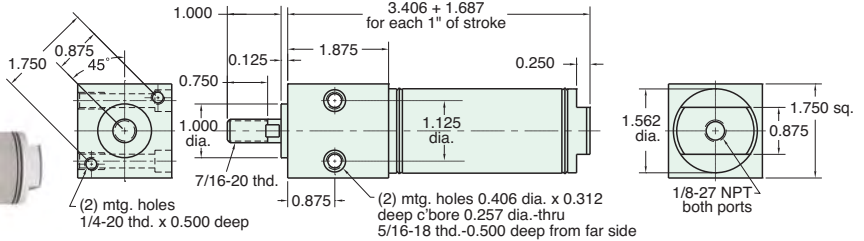
1 1/2" BORE STAINLESS STEEL CYLINDER



FSR-24-□-□

Single Acting

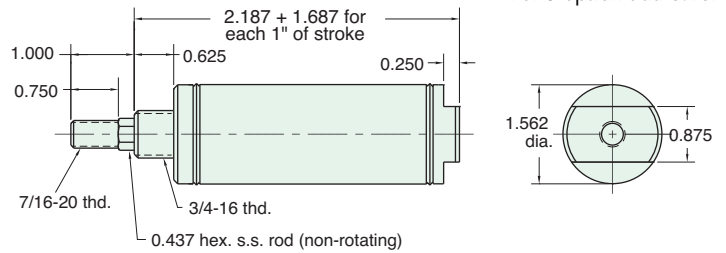
Mount: Front **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Options: M, B, H, V, S, N, W **Maximum Stroke:** 24" For M option add 0.125
 For S option add 0.187



SSN-24-□-□

Single Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Options: M, B, H, V, S, N **Maximum Stroke:** 24" For M option add 0.125
 For S option add 0.187

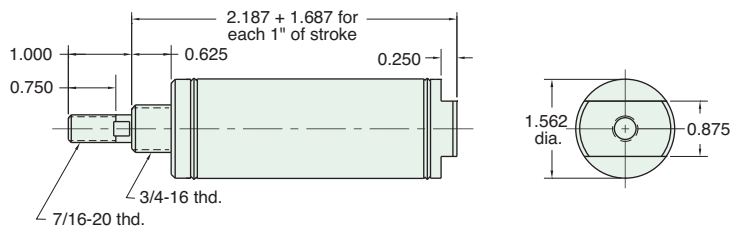


Nut included, but not shown on drawing

SSR-24-□-□

Single Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Options: M, B, H, V, S, N, W **Maximum Stroke:** 24" For M option add 0.125
 For S option add 0.187

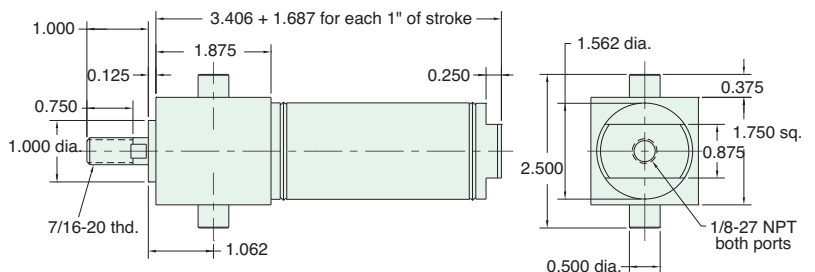


Nut included, but not shown on drawing

TSR-24-□-□

Single Acting

Mount: Trunnion **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Options: M, B, H, V, S, N, W **Maximum Stroke:** 23" For M option add 0.125
 For S option add 0.187





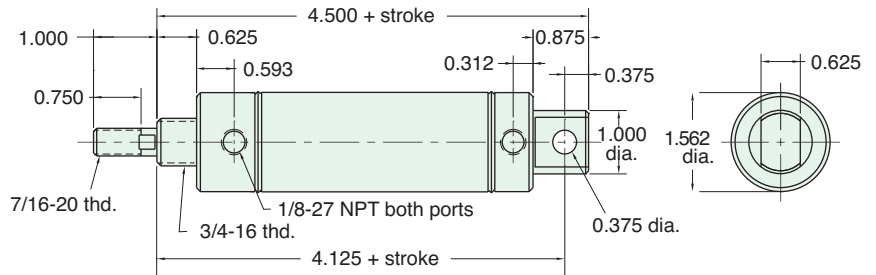
1 1/2" BORE STAINLESS STEEL CYLINDER

CDR-24-□-□

Double Acting



Mount: Clevis **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 6", 8", 10", 12"
Type: Rotating Rod **Maximum Stroke:** 39"
Options: C, F, R, M, B, W, V, P2, P3, P4, P5, P6, P7, P8, N



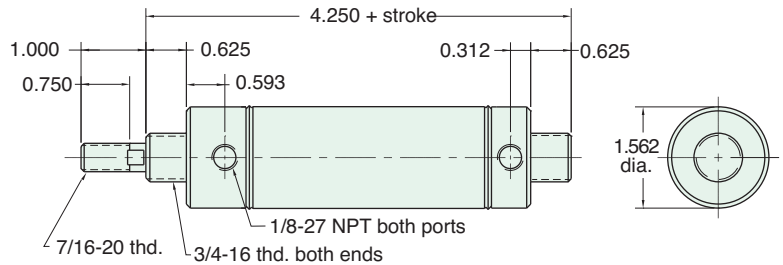
Furnished without nut(s). See Chart on Page 49.

EDR-24-□-□

Double Acting



Mount: End **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 6", 8", 10", 12"
Type: Rotating Rod **Maximum Stroke:** 39"
Options: C, F, R, M, B, W, V, P6, P7, P8, N



Nuts included, but not shown on drawing

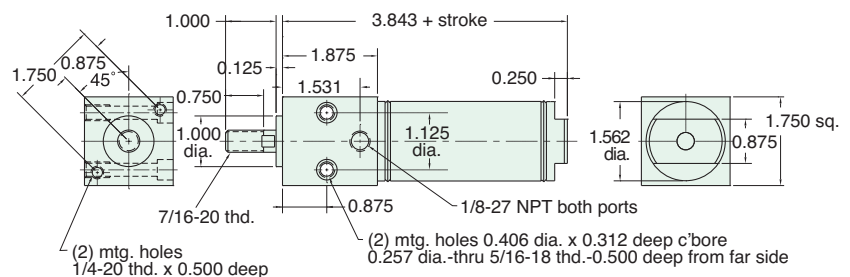
FDR-24-□-□

Double Acting



Mount: Front **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"
Type: Rotating Rod **Maximum Stroke:** 40"
Options: M, B, W, V, P6, P7, P8, S, N

For S option add 0.187



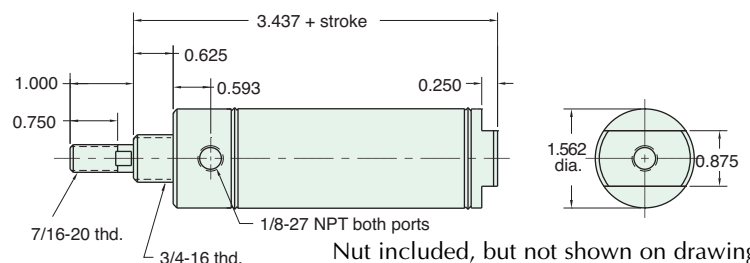
SDR-24-□-□

Double Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 6", 8", 10", 12"
Type: Rotating Rod **Maximum Stroke:** 40"
Options: C, F, R, M, B, W, V, P6, P7, P8, S, N

C, F, R and S option add 0.187



Nut included, but not shown on drawing
C, F, & R options use side ported rear head

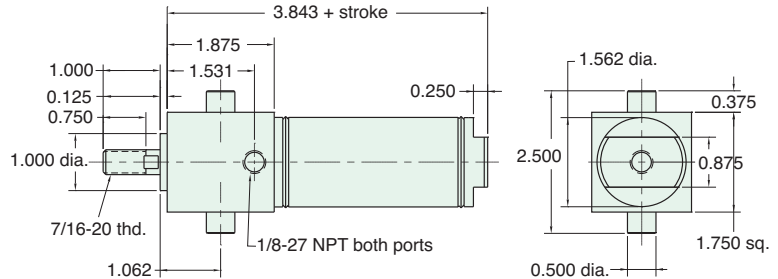
1 1/2" BORE STAINLESS STEEL CYLINDER



TDR-24-□-□

Double Acting

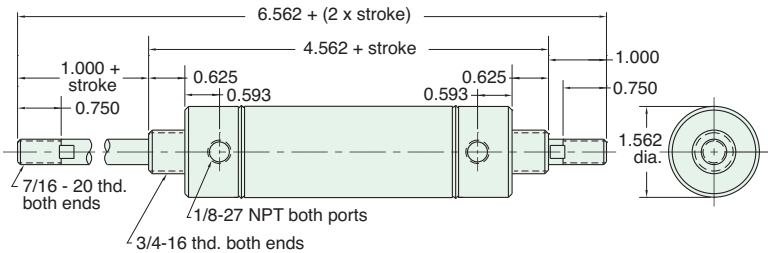
Mount: Trunnion **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"
Type: Rotating Rod **Maximum Stroke:** 40"
Options: M, B, W, V, S, N
 For S option add 0.187
 P6, P7, P8



SDD-24-□-□

Double Acting

Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6", 8", 10", 12"
Type: Double Rod **Maximum Stroke:** 19"
Options: C, F, M, B, W, V, P6, P7, P8, N

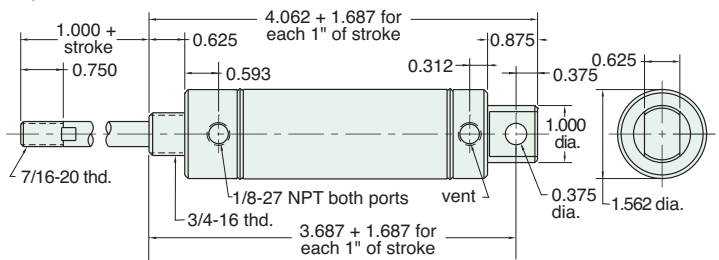


Nuts included, but not shown on drawing

CRR-24-□-□

Reverse Acting

Mount: Clevis **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Options: M, B, H, W, V, P2, **Maximum Stroke:** 14"
 P3, P4, P5, P6, P7, P8, N

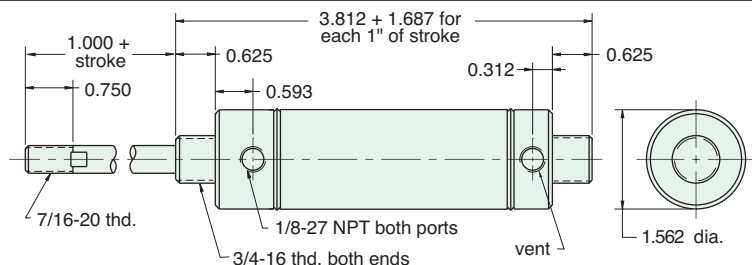


Furnished without nut(s). See Chart on Page 49.

ERR-24-□-□

Reverse Acting

Mount: End **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Options: M, B, H, W, V, N **Maximum Stroke:** 14"



Nuts included, but not shown on drawing

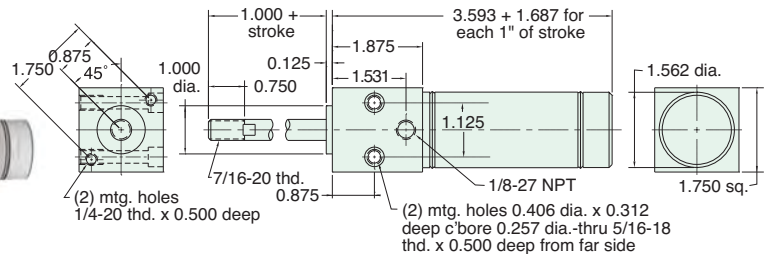


1 1/2" BORE STAINLESS STEEL CYLINDER

FRR-24-□-□

Reverse Acting

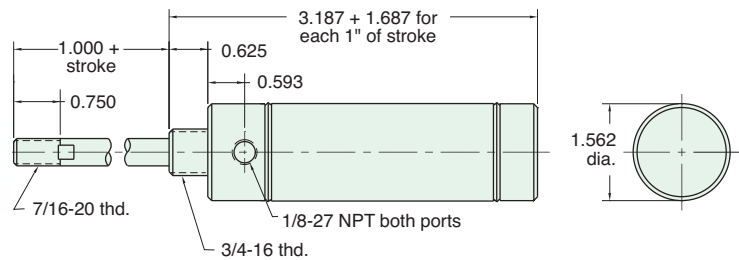
Mount: Front **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Options: M, B, H, W, V, N **Maximum Stroke:** 15"



SRR-24-□-□

Reverse Acting

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Options: M, B, H, W, V, N **Maximum Stroke:** 15"

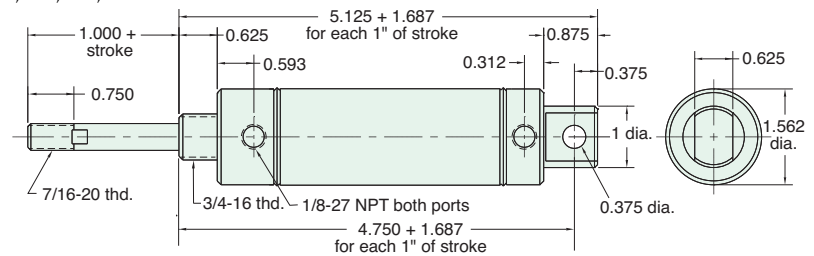


Nut included, but not shown on drawing

CBR-24-□-□

Double Acting, Spring Bias

Mount: Clevis **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Options: M, B, H, W, V, P2, P3, P4, P5, P6, P7, P8, N **Maximum Stroke:** 14"

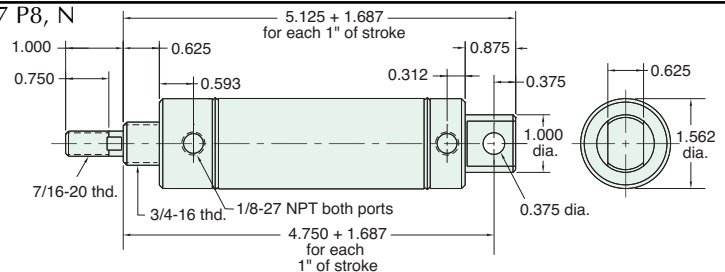


Furnished without nut(s). See Chart on Page 49.

CFR-24-□-□

Double Acting, Front Spring Bias

Mount: Clevis **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Options: M, B, H, W, V, P2, P3, P4, P5, P6, P7 P8, N **Maximum Stroke:** 23"



Furnished without nut(s). See Chart on Page 49.

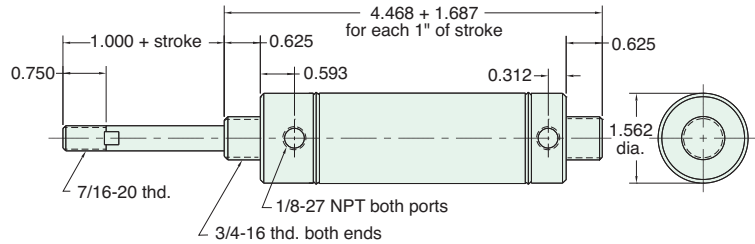
1 1/2" BORE STAINLESS STEEL CYLINDER



EBR-24-□-□

Double Acting, Rear Spring Bias

Mount: End
Type: Rotating Rod
Options: M, B, H, W, V, P6, P7, P8, N
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"
Spring Compressed: 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Maximum Stroke: 14"

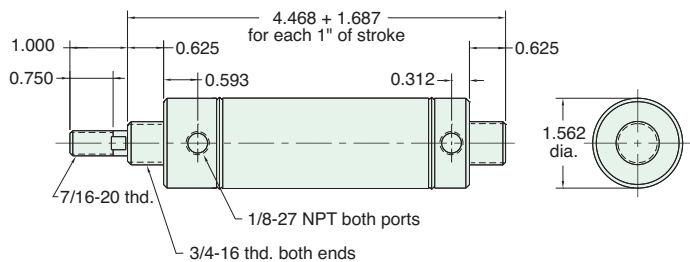


Nuts included, but not shown on drawing

EFR-24-□-□

Double Acting, Front Spring Bias

Mount: End
Type: Rotating Rod
Options: M, B, H, W, V, P6, P7, P8, N
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"
Spring Compressed: 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Maximum Stroke: 23"

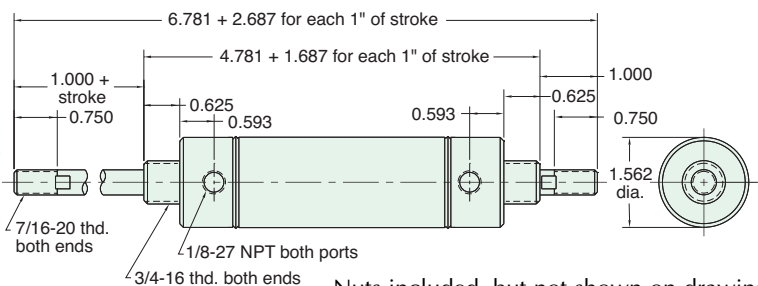


Nuts included, but not shown on drawing

SFD-24-□-□

Double Acting, Front Spring Bias

Mount: Stud
Type: Double Rod
Options: M, B, H, W, V, P6, P7, P8, N
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"
Spring Compressed: 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Maximum Stroke: 14"

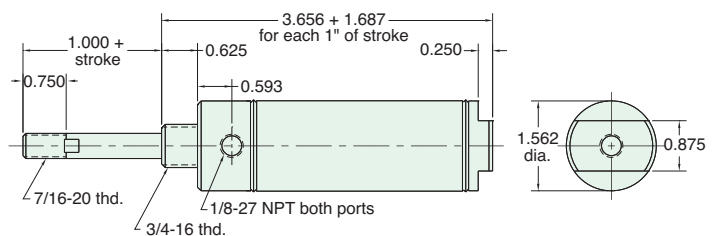


Nuts included, but not shown on drawing

SBR-24-□-□

Double Acting, Rear Spring Bias

Mount: Stud
Type: Rotating Rod
Options: M, B, H, W, V, P6, P7, P8, S, N
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"
Spring Compressed: 10 lbs. **Spring At Rest:** 4 1/2 lbs.
Maximum Stroke: 15" For S option add 0.187



Nuts included, but not shown on drawing

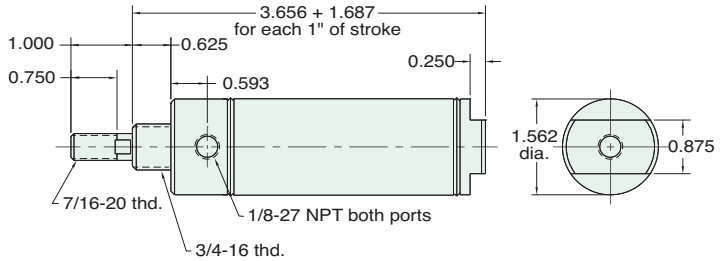


1 1/2" BORE STAINLESS STEEL CYLINDER

SFR-24-□-□

Double Acting, Front Spring Bias

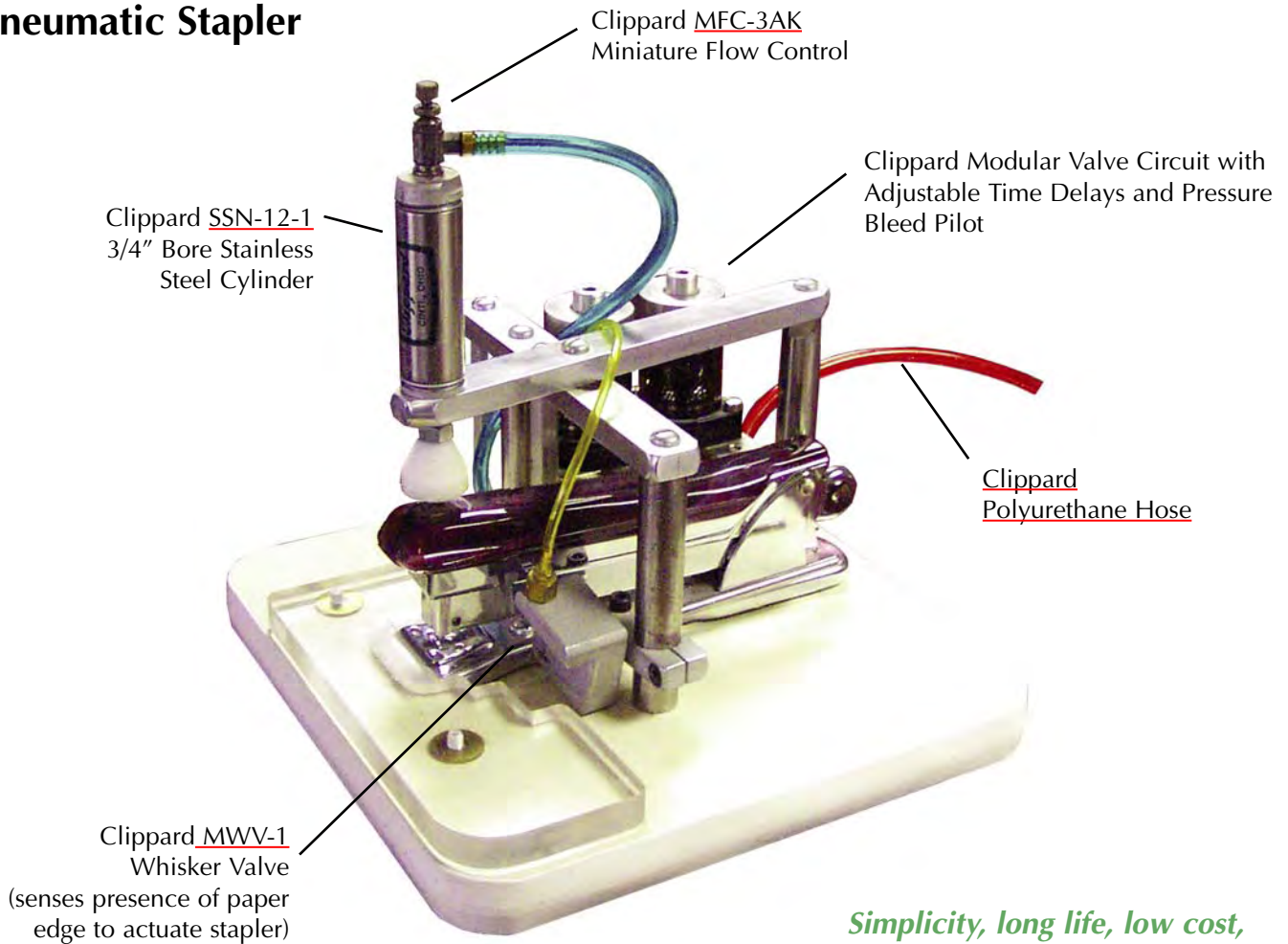
Mount: Stud	Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod	Spring Compressed: 10 lbs. Spring At Rest: 4 1/2 lbs.
Options: M, B, H, W, V, P6, P7, P8, S, N	Maximum Stroke: 23" For S option add 0.187



Nut included, but not shown on drawing

For harsh environments, refer to [page 69](#) for Clippard's Corrosion-Resistant Stainless Steel 1 1/2" cylinders.

Pneumatic Stapler



Simplicity, long life, low cost, ease of maintenance and high power are combined in this unique office stapler application.



MOUNTING NUTS

Stud Nut

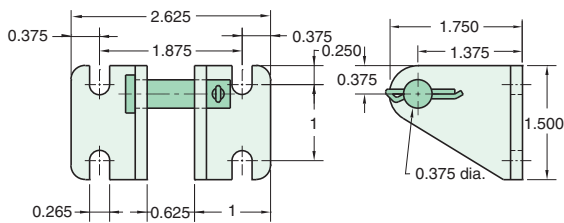
Part Number	Across Flats	Nut Thickness	Nut (Thread)
<u>N12-16</u>	1 3/32"	27/64"	3/4-16

Rod Nut

Part Number	Across Flats	Nut Thickness	Nut (Thread)
<u>N08-20</u>	3/4"	5/16"	1/2-20

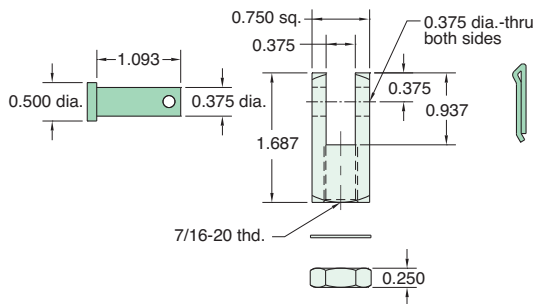
CB-2495

Clevis Bracket
Material: Steel, bright zinc plated



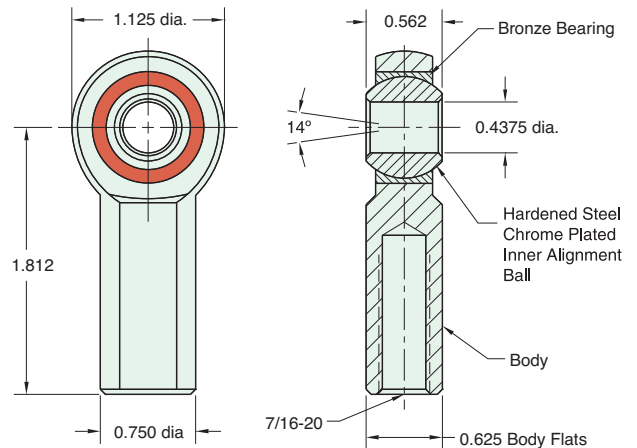
RC-2481

Rod Clevis
Material: Steel, electroless nickel plate



RE-2485

Rod End
Material: Steel, bright zinc plated body



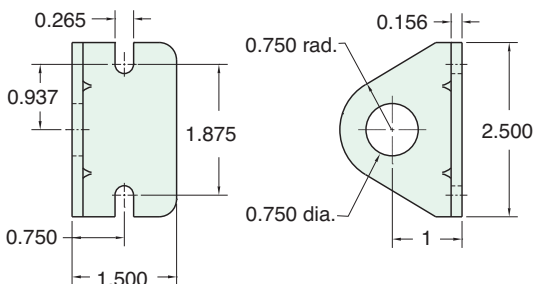
Lockwasher

Locknut

Max. Static Radial Load (rod end only): 4,300 lbs.
Fits Rod Thread Size: 7/16-20

FB-2491

Foot Bracket
Material: Steel, bright zinc plated





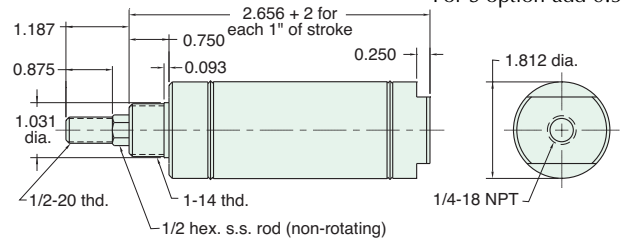
1 3/4" BORE STAINLESS STEEL CYLINDER

SSN-28-□-□

Single Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 24 lbs. **Spring At Rest:** 11 lbs.
Options: M, V, S, N **Maximum Stroke:** 20" **Bumpers are standard**
For M option add 0.125
For S option add 0.562



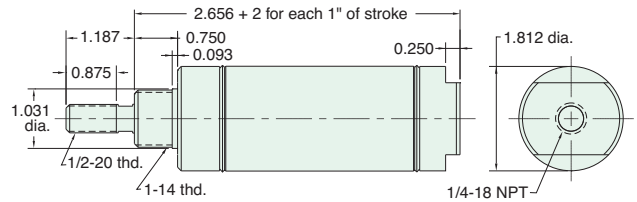
Nut included, but not shown on drawing

SSR-28-□-□

Single Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 24 lbs. **Spring At Rest:** 11 lbs.
Options: M, V, S, N, W **Maximum Stroke:** 20" **Bumpers are standard**
For M option add 0.125
For S option add 0.562



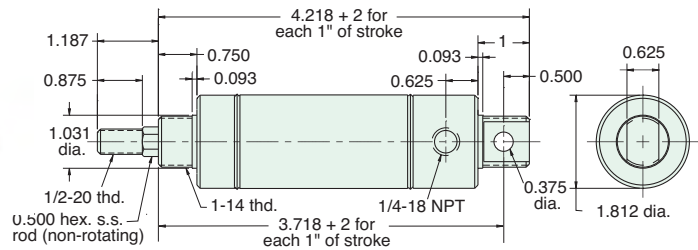
Nut included, but not shown on drawing

USN-28-□-□

Single Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Non-Rotating Rod **Spring Compressed:** 24 lbs. **Spring At Rest:** 11 lbs.
Options: M, V, P6, N **Bumpers are standard.** For M option add 0.125



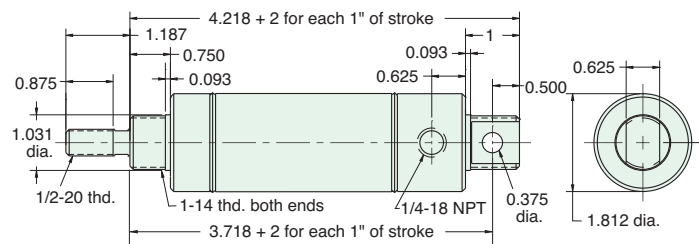
Furnished without nut(s). See Chart on Page 53.

USR-28-□-□

Single Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 24 lbs. **Spring At Rest:** 11 lbs.
Options: M, V, P6, N, W **Bumpers are standard.** For M option add 0.125



Furnished without nut(s). See Chart on Page 53.

1 3/4" BORE STAINLESS STEEL CYLINDER



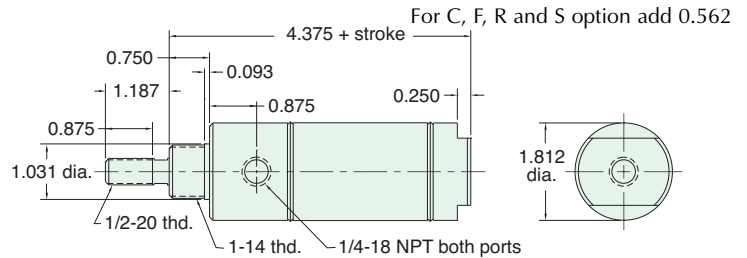
SDR-28-□-□

Double Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"
Type: Rotating Rod **Maximum Stroke:** 39"
Options: C, F, R, M, W, V, P6, P7, P8, S, N

Bumpers are standard



Nut included, but not shown on drawing
 C, F, & R options use side ported rear head

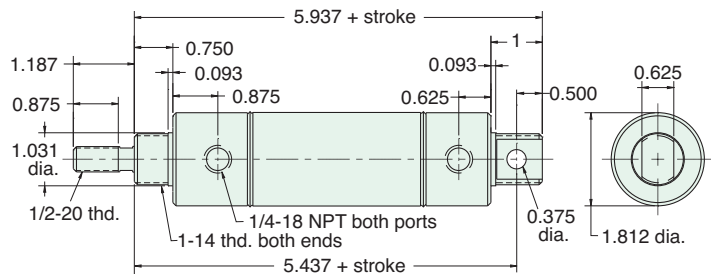
UDR-28-□-□

Double Acting



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 6", 8", 10", 12"
Type: Rotating Rod **Maximum Stroke:** 37"
Options: C, F, R, M, W, V, P2, P3, P4, P5, P6, P7, P8, N

Bumpers are standard



Furnished without nut(s). See Chart on Page 53.

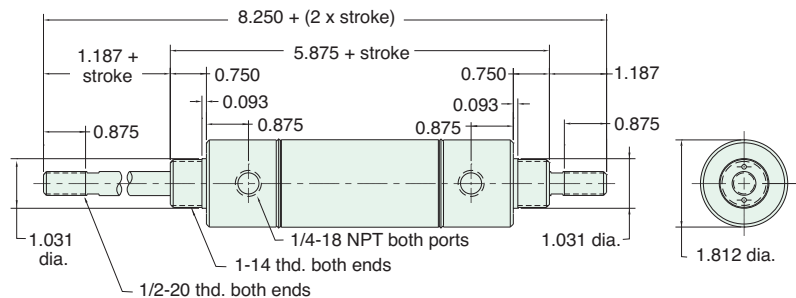
SDD-28-□-□

Double Acting



Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6", 8", 10", 12"
Type: Double Rod **Maximum Stroke:** 18"
Options: C, F, M, W, V, P6, P7, P8, N

Bumpers are standard



Nuts included, but not shown on drawing

SRR-28-□-□

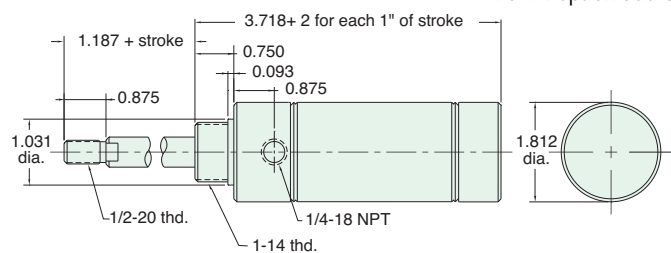
Reverse Acting



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 24 lbs. **Spring At Rest:** 11 lbs.
Options: M, W, V, N **Maximum Stroke:** 13"

Bumpers are standard

For M option add 0.125



Nut included, but not shown on drawing

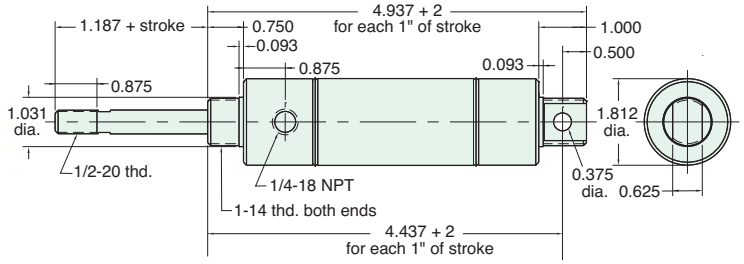


1 3/4" BORE STAINLESS STEEL CYLINDER

URR-28-□-□

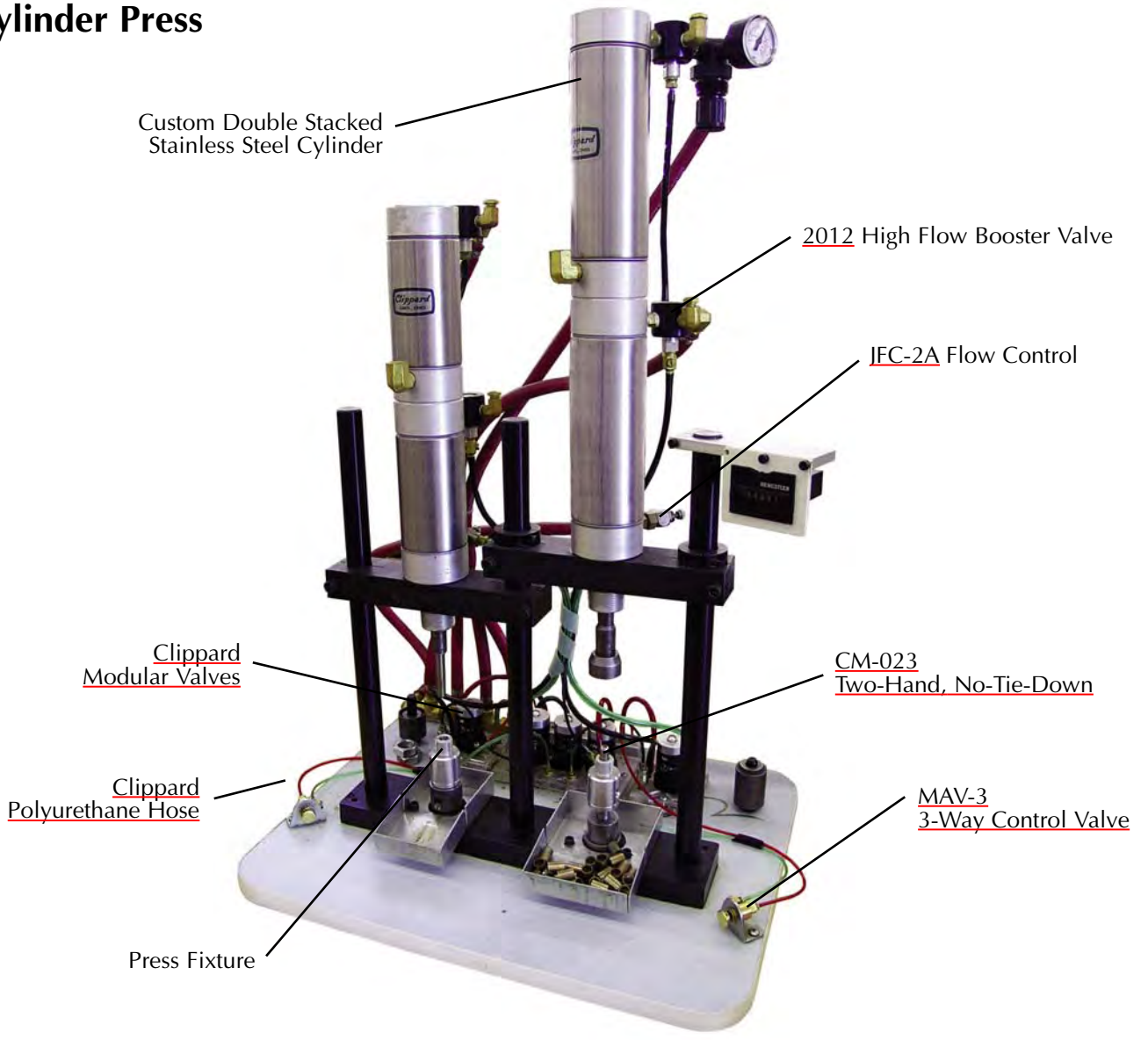
Reverse Acting

Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 24 lbs. **Spring At Rest:** 11 lbs.
Options: M, W, V, P2, N **Maximum Stroke:** 12" **Bumpers are standard**
For M option add 0.125



Furnished without nut(s). See Chart on [Page 53](#).

Dual Double Stacked Cylinder Press





MOUNTING NUTS

Stud Nut

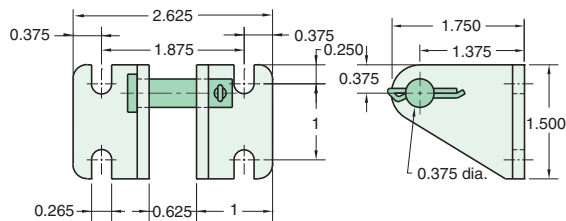
Part Number	Across Flats	Nut Thickness	Nut (Thread)
N16-14	1 1/2"	35/64"	1-14

Rod Nut

Part Number	Across Flats	Nut Thickness	Nut (Thread)
N08-20	3/4"	5/16"	1/2-20

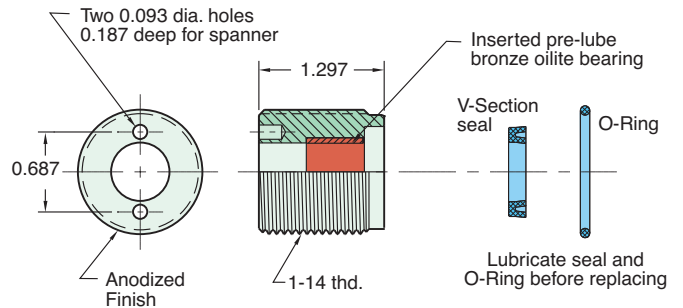
CB-2495

Clevis Bracket
Material: Steel, bright zinc plated



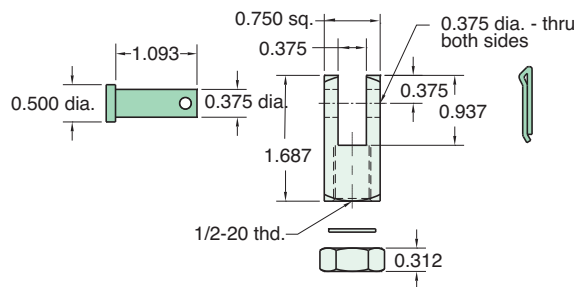
RK-2899

Replaceable Rod Seal
Material: Aluminum body



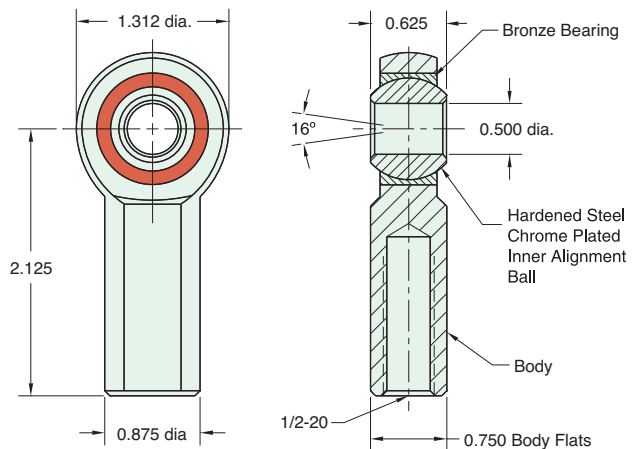
RC-3281

Rod Clevis
Material: Steel, electroless nickel plate



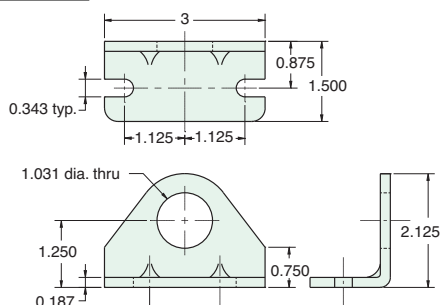
RE-3285

Rod End
Material: Steel, bright zinc plated body



FB-2891

Foot Bracket
Material: Steel, bright zinc plated



Lockwasher

Locknut

Max. Static Radial Load (rod end only): 6,700 lbs.
Fits Rod Thread Size: 1/2-20

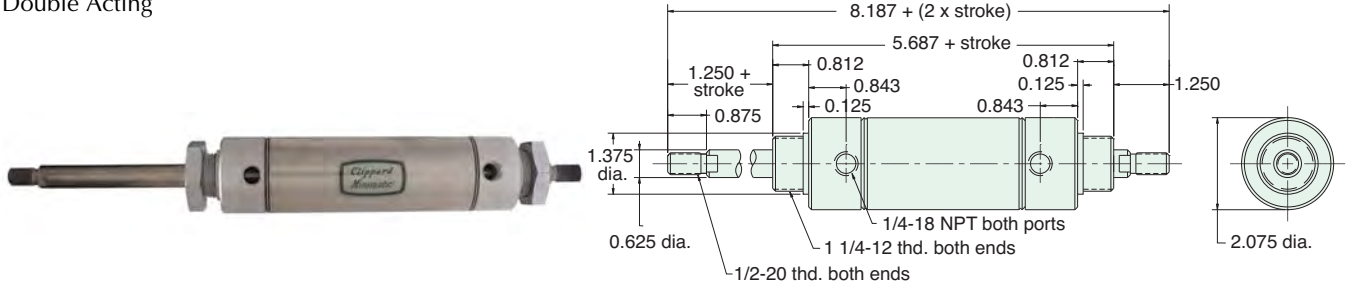
2" BORE STAINLESS STEEL CYLINDER



SDD-32-□-□

Double Acting

Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6", 8", 10", 12"
Type: Double Rod **Maximum Stroke:** 18"
Options: C, F, M, B, W, V, P6, P7, P8, N

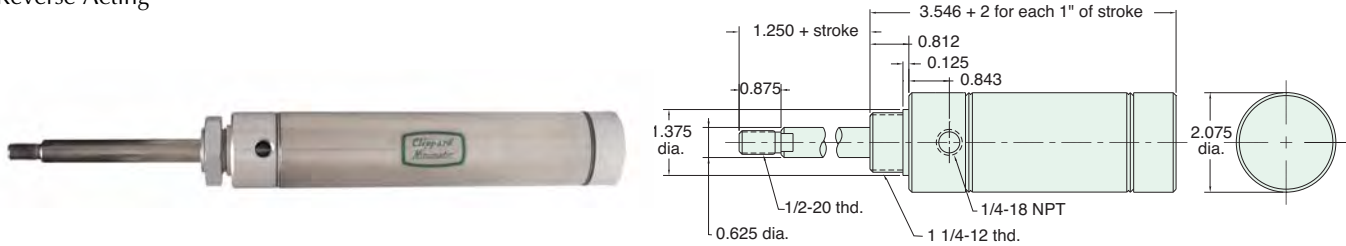


Nuts included, but not shown on drawing

SRR-32-□-□

Reverse Acting

Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6"
Type: Rotating Rod **Spring Compressed:** 30 lbs. **Spring At Rest:** 15 lbs.
Options: M, B, W, V, N **Maximum Stroke:** 12" For M option add 0.125

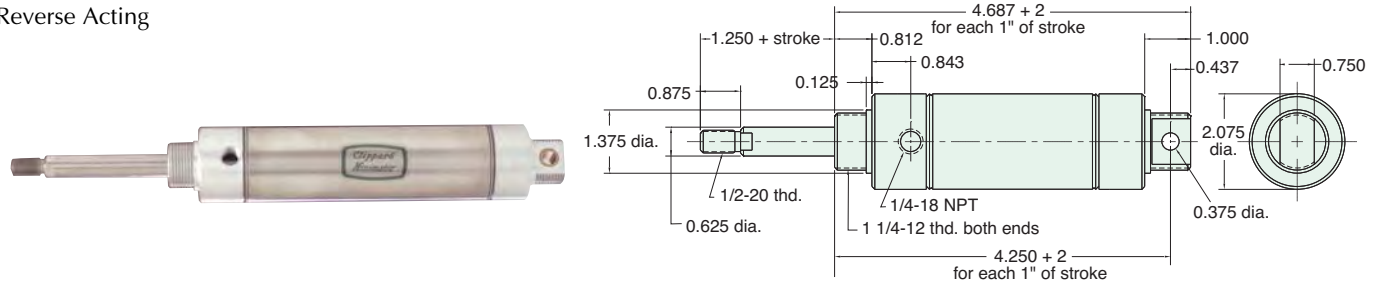


Nut included, but not shown on drawing

URR-32-□-□

Reverse Acting

Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 30 lbs. **Spring At Rest:** 15 lbs.
Options: M, B, W, V, P2, N **Maximum Stroke:** 13" For M option add 0.125

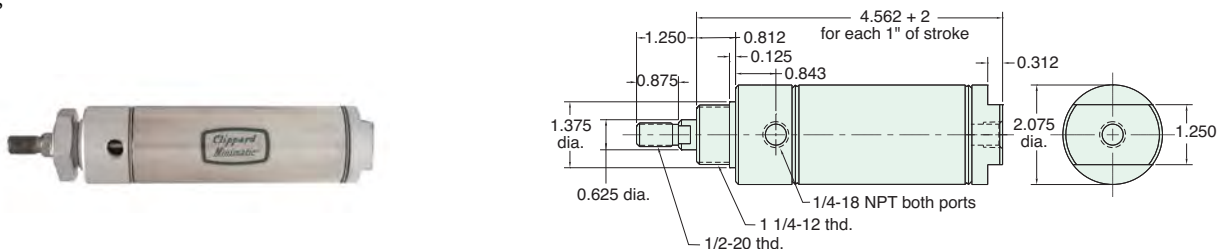


Furnished without nut(s). See Chart on Page 57.

SFR-32-□-□

Spring Bias

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 30 lbs. **Spring At Rest:** 15 lbs.
Options: M, B, W, V, P6, P7, P8, S, N For S option add 0.375



Nut included, but not shown on drawing



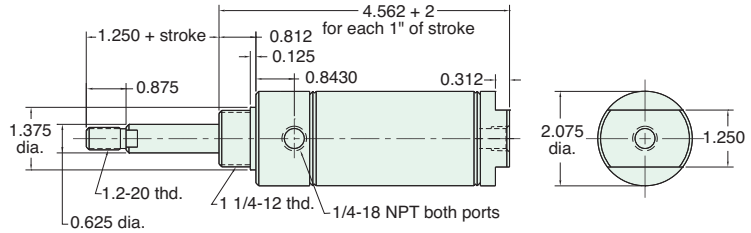
2" BORE STAINLESS STEEL CYLINDER

SBR-32-□-□

Spring Bias



Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 30 lbs. **Spring At Rest:** 15 lbs.
Options: M, B, W, V, P6, P7, P8, S, N For S option add 0.375



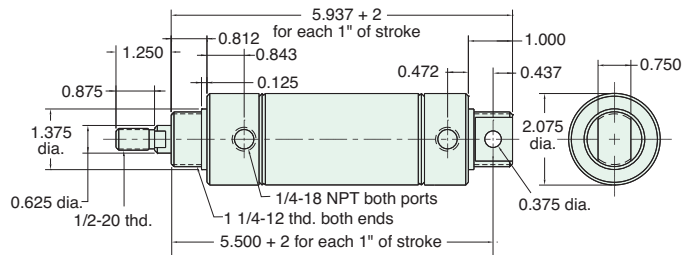
Nut included, but not shown on drawing

UFR-32-□-□

Spring Bias



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 30 lbs. **Spring At Rest:** 15 lbs.
Options: M, B, W, V, P2, P3, P4, P5, P6, P7, P8, N



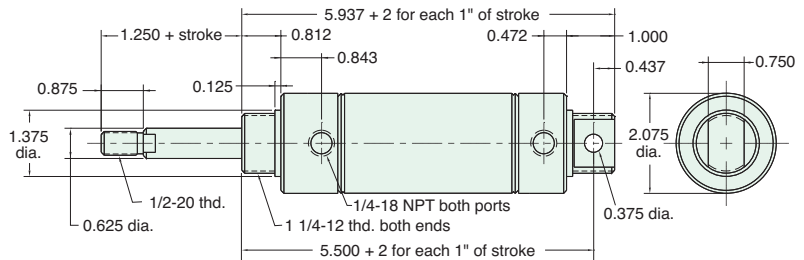
Furnished without nut(s). See Chart on Page 57.

UBR-32-□-□

Spring Bias



Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"
Type: Rotating Rod **Spring Compressed:** 30 lbs. **Spring At Rest:** 15 lbs.
Options: M, B, W, V, P2, P3, P4, P5, P6, P7, P8, N



Furnished without nut(s). See Chart on Page 57.

CUSTOMer solutions

If you need a product that fits your application perfectly, Clippard has the capability to design or modify one of its products to suit your exact needs. We understand that a standard catalog product may be close but not be exactly what you need. **Let us know YOUR Need, and we will help to find YOUR Solution!**

Custom Cylinders

"Twice the force in half the size" was the goal for one custom cylinder. Multiple cylinder positions, or multiplied force can be achieved with this design.





MOUNTING NUTS

Stud Nut

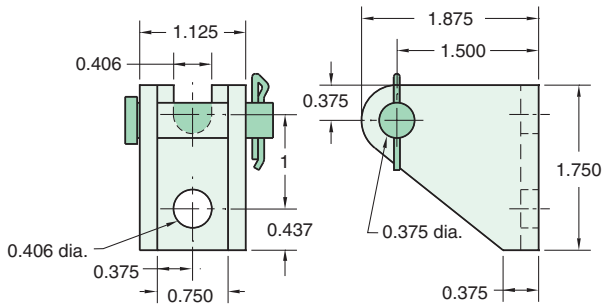
Part Number	Across Flats	Nut Thickness	Nut (Thread)
N20-12	1 3/4"	7/16"	1 1/4-12

Rod Nut

Part Number	Across Flats	Nut Thickness	Nut (Thread)
N08-20	3/4"	5/16"	1/2-20

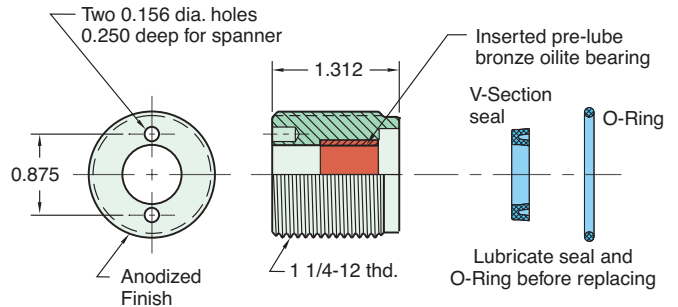
CB-3295

Clevis Bracket
Material: Steel, bright zinc plated



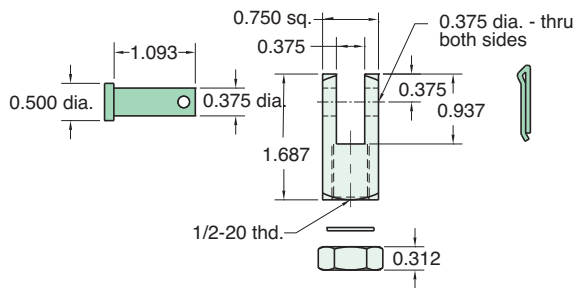
RK-3299

Replaceable Rod Seal
Material: Aluminum body



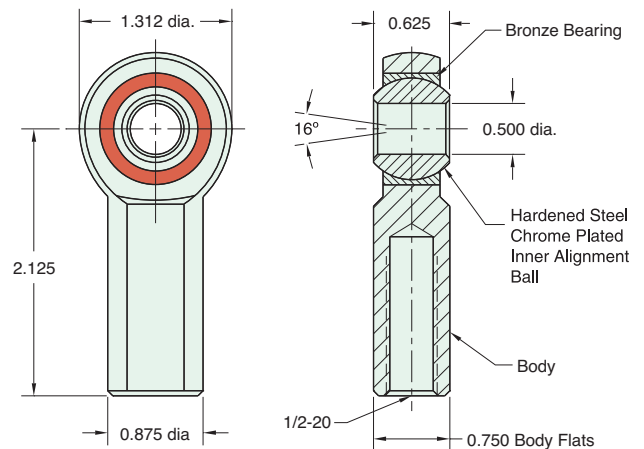
RC-3281

Rod Clevis
Material: Steel, electroless nickel plate



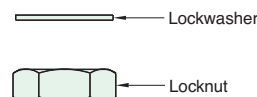
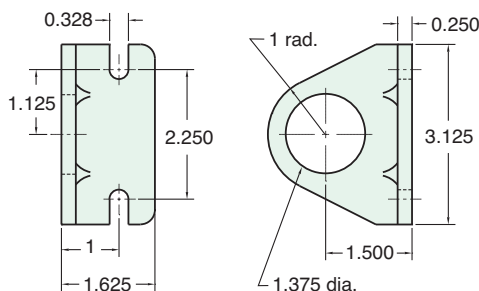
RE-3285

Rod End
Material: Steel, bright zinc plated body



FB-3291

Foot Bracket
Material: Steel, bright zinc plated



Max. Static Radial Load (rod end only): 6,700 lbs.
Fits Rod Thread Size: 1/2-20



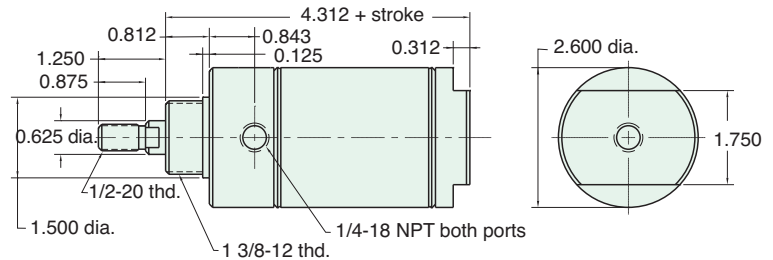
2 1/2" BORE STAINLESS STEEL CYLINDER

SDR-40-□-□

Double Acting

Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6"
Type: Rotating Rod **Maximum Stroke:** 39"
Options: C, F, R, M, W, V, P6, P7, P8, S, N

Bumpers are standard
For M option add 0.312
For C, F, R and S option add 0.375



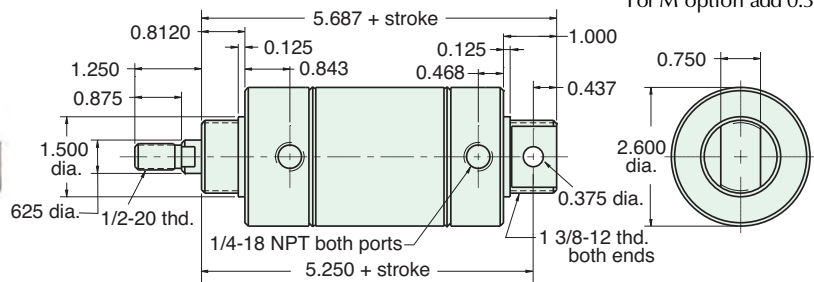
Nut included, but not shown on drawing

UDR-40-□-□

Double Acting

Mount: Universal **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6", 7", 8", 10", 12"
Type: Rotating Rod **Maximum Stroke:** 38"
Options: C, F, R, M, W, V, P2, P3, P4, P5, P6, P7, P8, N

Bumpers are standard
For M option add 0.312



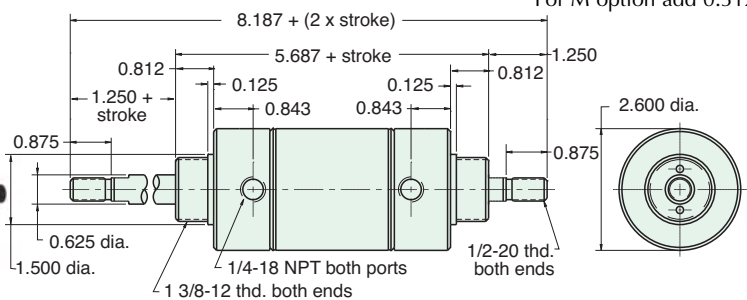
Furnished without nut(s). See Chart on Page 59.

SDD-40-□-□

Double Acting

Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6", 8", 10", 12"
Type: Double Rod **Maximum Stroke:** 18"
Options: C, F, M, W, V, P6, P7, P8, N

Bumpers are standard
For M option add 0.312



Nut included, but not shown on drawing

Did you know that all Clippard Cylinders are 100% tested.



MOUNTING NUTS

Stud Nut

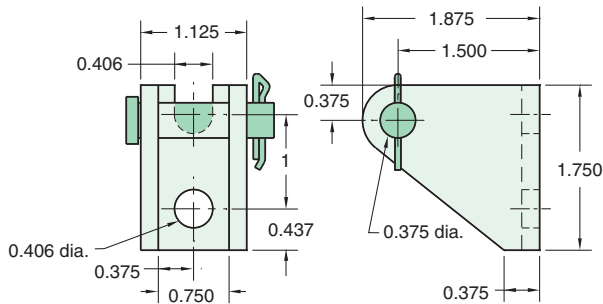
Part Number	Across Flats	Nut Thickness	Nut (Thread)
N22-12	1 7/8"	1/2"	1 3/8-12

Rod Nut

Part Number	Across Flats	Nut Thickness	Nut (Thread)
N08-20	3/4"	5/16"	1/2-20

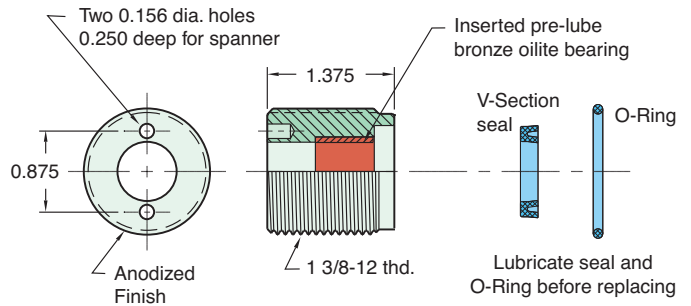
CB-3295

Clevis Bracket
Material: Steel, bright zinc plated



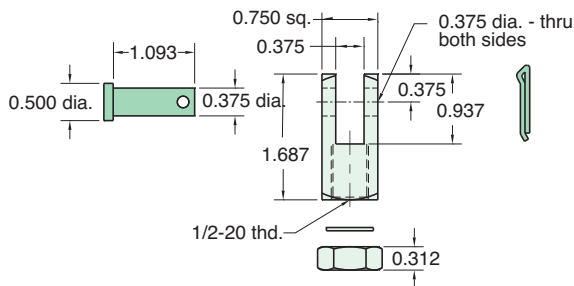
RK-4099

Replaceable Rod Seal
Material: Aluminum body



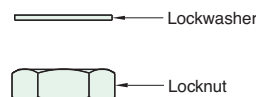
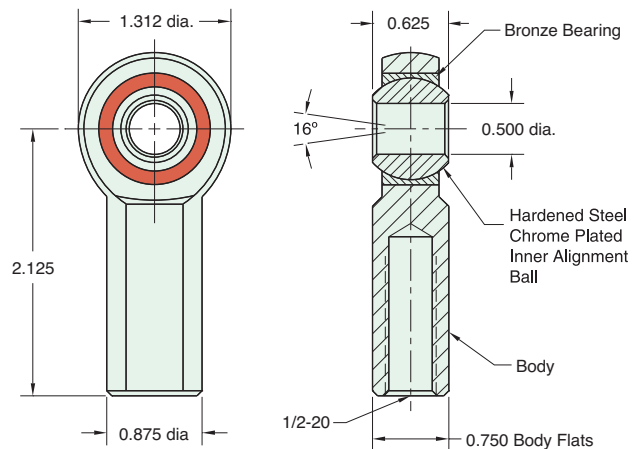
RC-3281

Rod Clevis
Material: Steel, electroless nickel plate



RE-3285

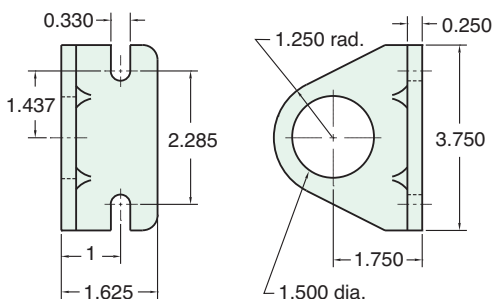
Rod End
Material: Steel, bright zinc plated body



Max. Static Radial Load (rod end only): 6,700 lbs.
Fits Rod Thread Size: 1/2-20

FB-4091

Foot Bracket
Material: Steel, bright zinc plated





3" BORE STAINLESS STEEL CYLINDER

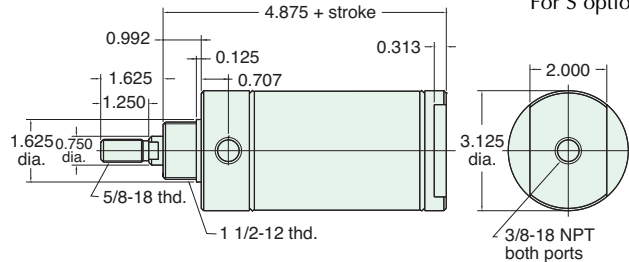
SDR-48-□-□

Double Acting



Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6"
Type: Rotating Rod **Maximum Stroke:** 34"
Options: M, W, V, P6, P7, P8, S, N

Bumpers are standard
No additional length for bumpers
For S option add 0.437



Nut included, but not shown on drawing

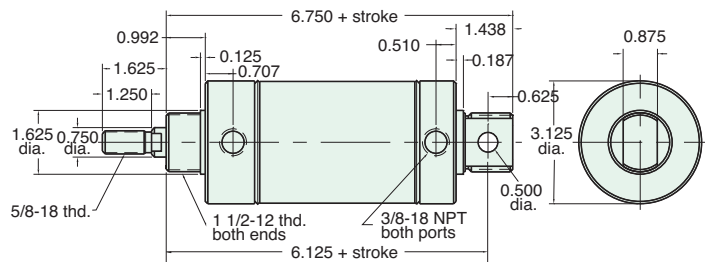
UDR-48-□-□

Double Acting



Mount: Universal **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6", 7", 8", 10", 12"
Type: Rotating Rod **Maximum Stroke:** 32"
Options: M, W, V, P2, P3, P4, P5, P6, P7, P8, N

Bumpers are standard
No additional length for bumpers



Furnished without nut(s). See Chart on Page 61.

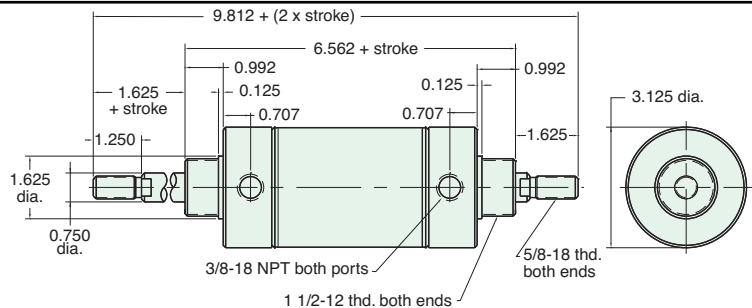
SDD-48-□-□

Double Acting



Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6", 8", 10", 12"
Type: Double Rod **Maximum Stroke:** 15"
Options: M, W, V, P6, P7, P8, N

Bumpers are standard
No additional length for bumpers



Nuts included, but not shown on drawing

Did you know...

Minimatic®, Maximatic®, Minimetric®, Fluidamp®, Octoport®, Air-2-Electric® and Air Force One® are all Clippard registered trademarks.





MOUNTING NUTS

Stud Nut

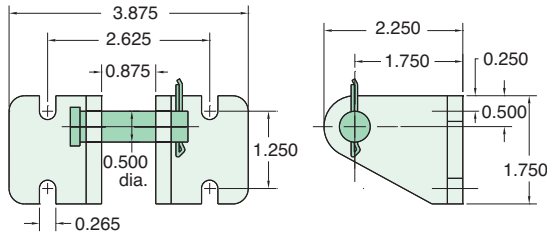
Part Number	Across Flats	Nut Thickness	Nut (Thread)
<u>N24-12</u>	2 1/4"	1/2"	1 1/2-12

Rod Nut

Part Number	Across Flats	Nut Thickness	Nut (Thread)
<u>N10-18</u>	15/16"	3/8"	5/8-18

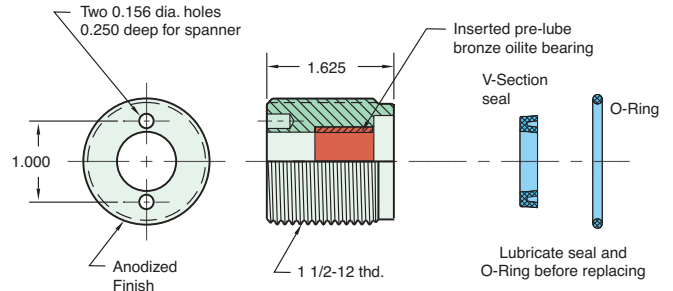
CB-4895

Clevis Bracket
Material: Steel, bright zinc plated



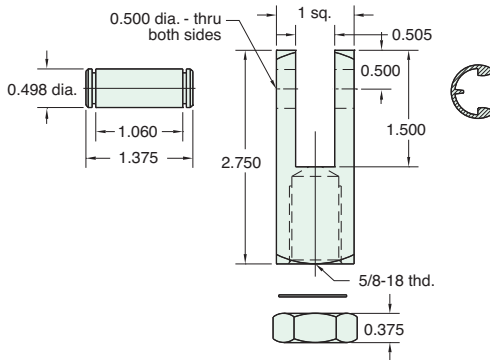
RK-4899

Replaceable Rod Seal
Material: aluminum body



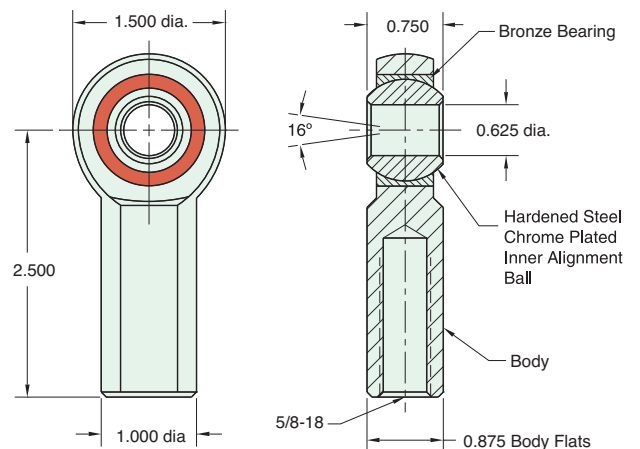
RC-4881

Rod Clevis
Material: Steel, electroless nickel plate



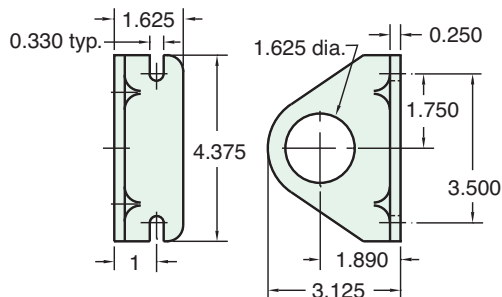
RE-4885

Rod End
Material: Steel, bright zinc plated body



FB-4891

Foot Bracket
Material: Steel, bright zinc plated



Lockwasher

Locknut

Max. Static Radial Load (rod end only): 7,400 lbs.
Fits Rod Thread Size: 5/8-18



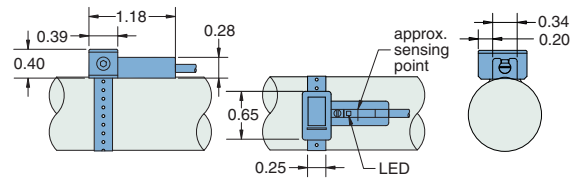
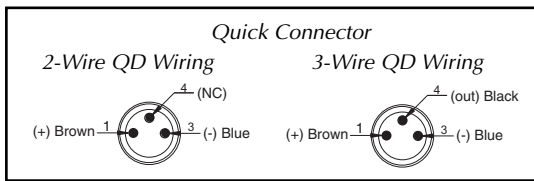
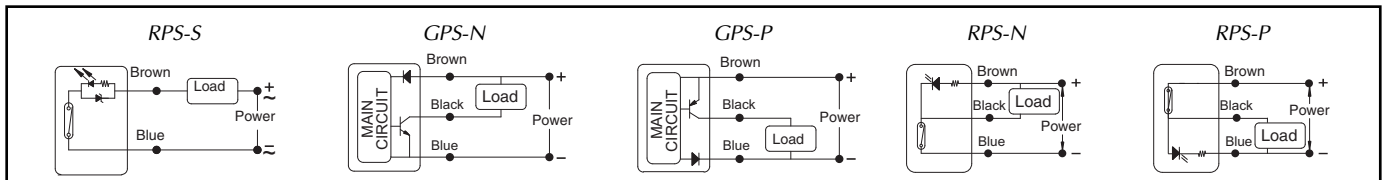
POSITION SENSORS

Magnetic Piston -M

Clippard stainless steel pneumatic cylinders that are equipped with an internal magnet that can be used with the Reed Switch and GMR Sensor. By accurately sensing the magnetic field of the piston when it passes beneath the sensor, the position of the rod piston is determined, and the feedback signal is created. Use of this option may add to the overall length of the cylinder. See specific cylinder listings for availability and details of the overall length adder.



Characteristic/Type	RPS-S	GPS-N	GPS-P	RPS-N	RPS-P
Switching Logic	SPST Normally-Open	Solid State Output, Normally-Open	Solid State Output, Normally-Open	SPST Normally-Open	SPST Normally-Open
Sensor Type	Reed Switch	NPN Current Sinking	PNP Current Sourcing	Reed Switch NPN	Reed Switch PNP
Operating Voltage	RPS-S3: 5 to 120 VAC RPS-S8Q: 5 to 60 VAC/DC	5 to 28 VDC	5 to 28 VDC	5 to 30 VDC	5 to 30 VDC
Switching Current	100 mA max.	200 mA max.	200 mA max.	250 mA max.	250 mA max.
Switching Rating	10 W max.	6 W max.	6 W max.	10 W max.	10 W max.
Current Consumption	-	7.5 mA max. @ 24 V (Switch Active)	7.5 mA max. @ 24 V (Switch Active)	10 mA max. @ 24 V (Switch Active)	10 mA max. @ 24 V (Switch Active)
Voltage Drop	2.5 V max. @ 40 mA DC	0.5 V max. @ 200 mA (Resistive Load)	0.5 V max. @ 200 mA (Resistive Load)	0.5 V max. @ 550 mA (Resistive Load)	0.5 V max. @ 550 mA (Resistive Load)
Leakage Current	-	0.01 mA max.	0.01 mA max.	-	-
Indicator	Red LED	Red LED	Green LED	Red LED	Green LED
Cable	2.8\$, 2C, Oil-Resistant PVC	2.8\$, 3C, Oil-Resistant PVC	2.8\$, 3C, Oil-Resistant PVC	2.8\$, 3C, Oil-Resistant PVC	2.8\$, 3C, Oil-Resistant PVC
Sensitivity	60 G	40 ~ 750 G	40 ~ 750 G	60 G	60 G
Max. Switching Frequency	200 Hz	5,000 Hz	5,000 Hz	1,000 Hz	1,000 Hz
Temperature Range	14 to 158°F (-10 to 70°C)	14 to 158°F (-10 to 70°C)	14 to 158°F (-10 to 70°C)	14 to 158°F (-10 to 70°C)	14 to 158°F (-10 to 70°C)
Shock	30 G	50 G	50 G	30 G	30 G
Vibration	9 G	9 G	9 G	9 G	9 G
Enclosure Classification	IP 67 (NEMA 6)	IP 67 (NEMA 6)	IP 67 (NEMA 6)	IP 67 (NEMA 6)	IP 67 (NEMA 6)
Protection Circuit	-	Power Source Reverse Polarity; Surge Suppression	Power Source Reverse Polarity; Surge Suppression	-	-



Mounting Bracket

Clippard's Universal Mounting Bracket is designed to be used with both the Solid State (GMR)

Sensor and the Reed Switch. The Universal Bracket can be used on any Clippard stainless steel cylinder where the -M option is available. Comes complete with 5/64" hex wrench.

Order No.
UC-0848 Mounting Bracket

Reed Switch Order No.

- RPS-P3 Sourcing Switch with 3 m Wire Leads
- RPS-P8Q Sourcing Switch with 8 mm Male QC 6" Pigtail
- RPS-N3 Sinking Switch with 3 m Wire Leads
- RPS-N8Q Sinking Switch with 8 mm Male QC 6" Pigtail
- RPS-S3 Simple Switch (2-Wire) with 3 m Wire Leads
- RPS-S8Q Simple Switch (2-Wire) with 8 mm Male QC 6" Pigtail
- CPS-C8Q5 Mating Cable Assembly, 8 mm Female QC with 5 m Leads

GMR Switch Order No.

- GPS-P3 Sourcing Switch with 3 m Wire Leads
- GPS-P8Q Sourcing Switch with 8 mm Male QC 6" Pigtail
- GPS-N3 Sinking Switch with 3 m Wire Leads
- GPS-N8Q Sinking Switch with 8 mm Male QC 6" Pigtail
- CPS-C8Q5 Mating Cable Assembly, 8 mm Female QC with 5 m Leads

AVT-□-□

[AVT-12-1](#)

[AVT-17-2](#)
[AVT-17-3](#)

[AVT-24-4](#)
[AVT-24-6](#)

[AVT-24-8](#)
[AVT-24-10](#)

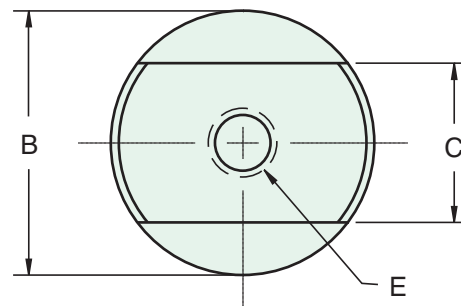
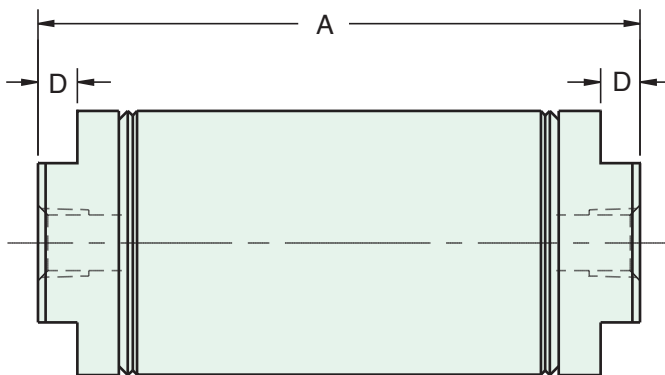
[AVT-32-12](#)
[AVT-32-14](#)

[AVT-32-16](#)

Additional models are available upon request

Clippard offers a line of air volume tanks suitable for use with Clippard air components. Using the same quality rolled construction as Clippard stainless steel cylinders, tanks are manufactured to exacting standards. Each is provided with a threaded port at both ends. See chart for volume capacity, dimensions, and port information.

For additional corrosion resistance Clippard can offer air volume tanks with Delrin® heads. Call for more information.



- FEATURES**
- Volumes from 1 to 16 cu. in.
 - Ten models
 - 304 stainless steel tubes
 - Precision rolled construction
 - Easy to connect, mount and use in your circuits
 - Anodized aluminum heads
 - Maximum pressure 250 psig

Part Number	Volume Cubic In.	A	B	C	D	E
AVT-12-1	1.0	3.281	0.812	0.625	0.156	1/8 27
AVT-17-2	2.0	3.593	1.125	0.875	0.187	1/8 27
AVT-17-3	3.0	4.718	1.125	0.875	0.187	1/8 27
AVT-24-4	4.0	3.687	1.562	0.875	0.250	1/8 27
AVT-24-6	6.0	4.843	1.562	0.875	0.250	1/8 27
AVT-24-8	8.0	5.968	1.562	0.875	0.250	1/8 27
AVT-24-10	10.0	7.093	1.562	0.875	0.250	1/8 27
AVT-32-12	12.0	5.718	2.062	1.250	0.312	1/4 18
AVT-32-14	14.0	6.343	2.062	1.250	0.312	1/4 18
AVT-32-16	16.0	6.968	2.062	1.250	0.312	1/4 18



CORROSION-RESISTANT CYLINDER

Clippard's line of Delrin® head stainless steel cylinders offer all of the advantages of Clippard's high quality, reliable stainless steel cylinders, with the added benefit of corrosion resistance. These cylinders are ideal for applications where equipment cleanliness is critical, since they can be put to work in harsh environments requiring frequent use of hot water and chemicals.

Clippard corrosion-resistant cylinders are available in bore sizes ranging from 5/8" to 1 1/2". Standard stroke lengths range from 1/2" to 6". The cylinder tubes and rods are made of stainless steel. The rods are ground, polished, and roller burnished. Buna-N® seals are standard with a Fluorocarbon option available for compatibility. A magnetic piston is also optional.

These lightweight cylinders have a temperature range from 32 to 180°F, and have a pressure rating of 150 psig (air). A variety of mounting styles are available.

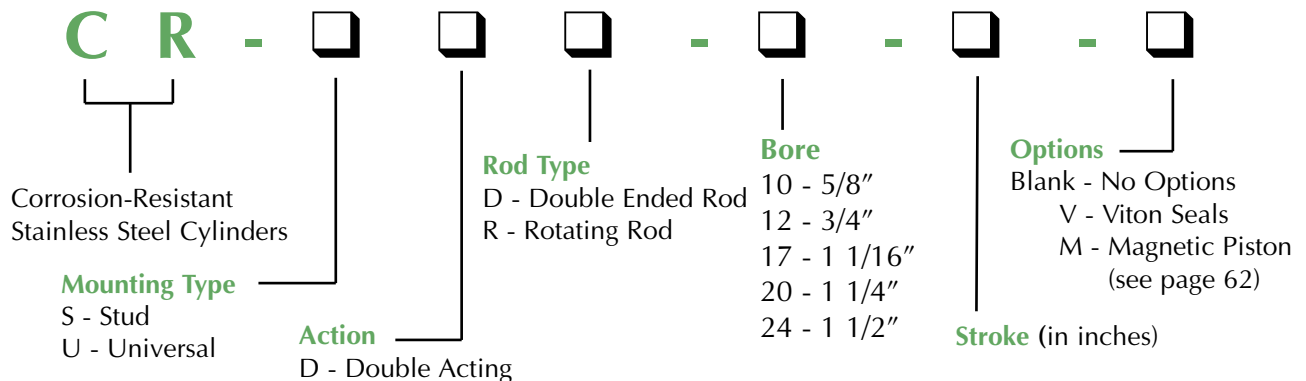
Delrin® is a registered trademark of E.I. DuPont Co.



Features

- Delrin® heads with a positive double seal
- Available with magnetic pistons
- 303 stainless steel ground, polished and roller burnished piston rods
- Precision rolled construction for a solid leakproof cylinder
- Buna-N seals (Fluorocarbon optional for compatibility only)
- 304 stainless steel tube
- Pressure Range 0 to 150 psig
- Temperature range: 32 to 180°F
- Optional stainless steel mounting nuts
- Aluminum alloy pistons, optional Delrin® pistons available; consult factory

NUMBERING SYSTEM



5/8" BORE CORROSION-RESISTANT CYLINDER



CR-SDD-10-□-□

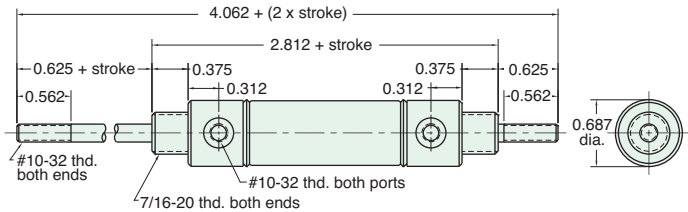
Double Acting

Mount: Stud
Type: Double Rod

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"

Options: M, V, N, P2, P3, P4, P5, P6, P7, P8

For M option add 0.312



Furnished without nut(s). Order Part No. [N07-20-SS](#).

CR-SDR-10-□-□

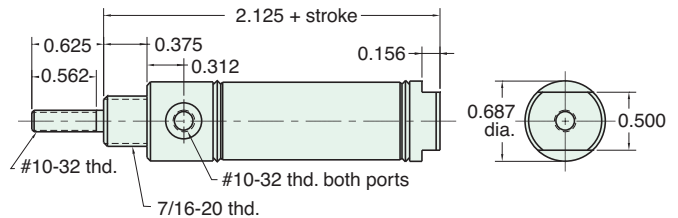
Double Acting

Mount: Stud
Type: Rotating Rod

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"

Options: M, V, N

For M option add 0.312



Furnished without nut(s). Order Part No. [N07-20-SS](#).

CR-UDR-10-□-□

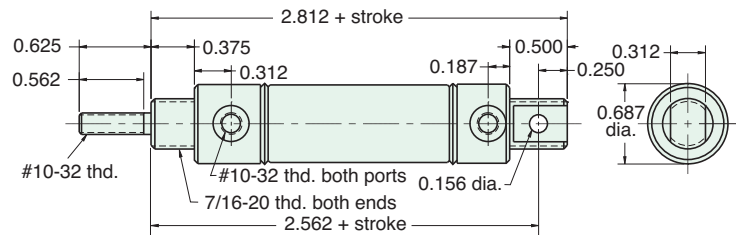
Double Acting

Mount: Universal
Type: Rotating Rod

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"

Options: M, V, N, P2, P3, P4, P5, P6, P7, P8

For M option add 0.312



Furnished without nut(s). Order Part No. [N07-20-SS](#).

Stainless Steel Mounting

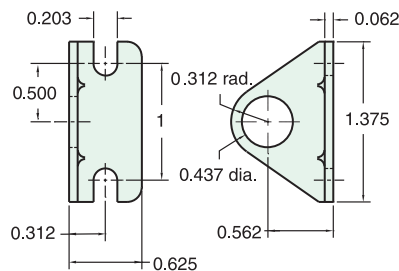
Foot Bracket

Model Number: [FB-0892-SS](#)

Nut

Model Number: [N07-20-SS](#)

Max. Torque in lbs.: 4.0





3/4" BORE CORROSION-RESISTANT CYLINDER

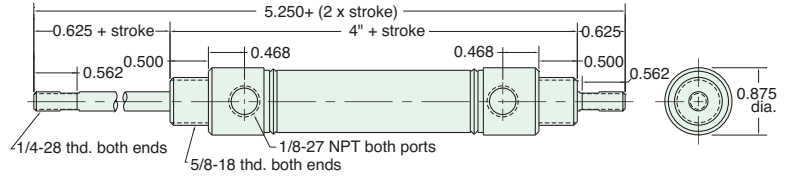
CR-SDD-12-□-□

Mount: Stud
Type: Double Rod

Standard Stroke Lengths: 1", 2", 3", 4", 5", 6"

Options: M, V, N, P2, P3, P4, P5, P6, P7, P8

Double Acting



Furnished without nut(s). Order Part No. [N10-18-SS.](#)

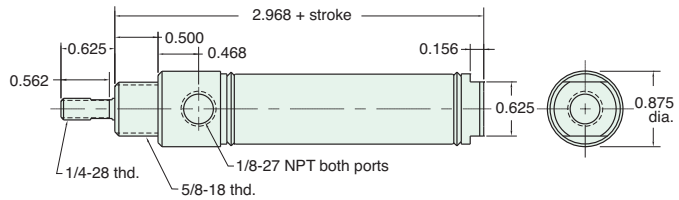
CR-SDR-12-□-□

Mount: Stud
Type: Rotating Rod

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"

Options: M, V, N, P6, P7, P8

Double Acting



Furnished without nut(s). Order Part No. [N10-18-SS.](#)

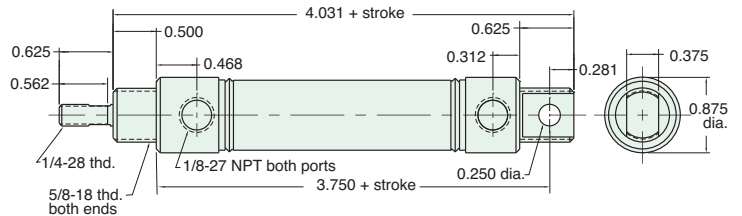
CR-UDR-12-□-□

Mount: Universal
Type: Rotating Rod

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4", 5", 6", 8", 10", 12"

Options: M, V, N, P2, P3, P4, P5, P6, P7, P8

Double Acting



Furnished without nut(s). Order Part No. [N10-18-SS.](#)

Stainless Steel Mounting

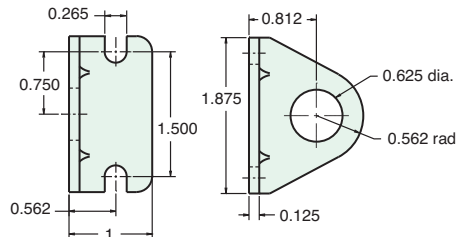
Foot Bracket

Model Number: [FB-1791-SS](#)

Nut

Model Number: [N10-18-SS](#)

Max. Torque in lbs.: 12



1 1/16" BORE CORROSION-RESISTANT CYLINDER

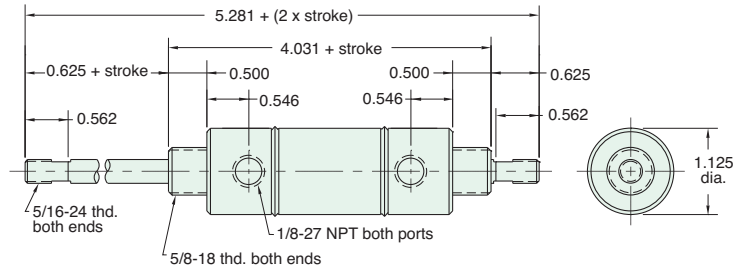


CR-SDD-17-□-□

Mount: Stud
Type: Double Rod

Standard Stroke Lengths: 1", 2", 3", 4", 5", 6"
Options: M, V, N, P6, P7, P8

Double Acting



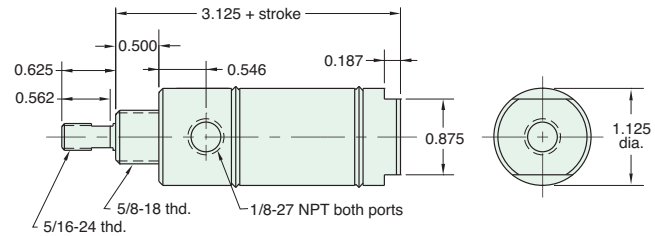
Furnished without nut(s). Order Part No. [N10-18-SS.](#)

CR-SDR-17-□-□

Mount: Stud
Type: Rotating Rod

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"
Options: M, V, N

Double Acting



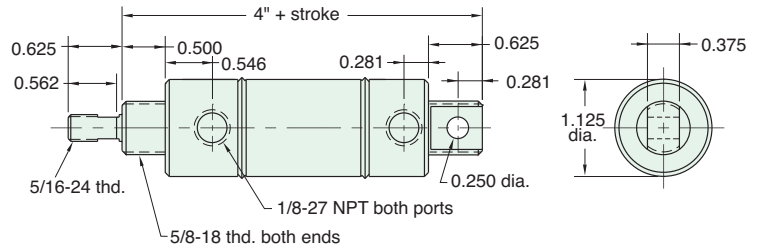
Furnished without nut(s). Order Part No. [N10-18-SS.](#)

CR-UDR-17-□-□

Mount: Universal
Type: Rotating Rod

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4", 5", 6",
Options: M, V, N, P2, P3, P4, P5, P6, P7, P8

Double Acting

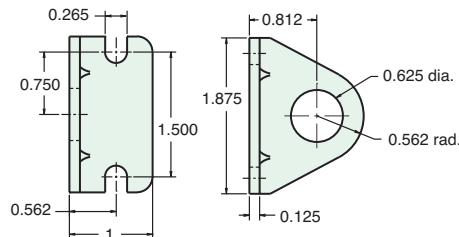


Furnished without nut(s). Order Part No. [N10-18-SS.](#)

Stainless Steel Mounting

Foot Bracket
Model Number: [FB-1791-SS](#)

Nut
Model Number: [N10-18-SS](#)
Max. Torque in lbs.: 12





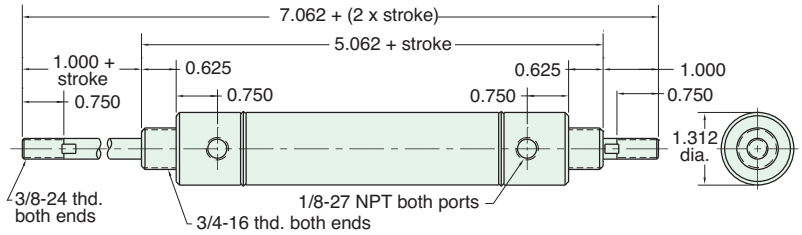
1 1/4" BORE CORROSION-RESISTANT CYLINDER

CR-SDD-20-□-□

Mount: Stud
Type: Double Rod

Standard Stroke Lengths: 1", 2", 3", 4", 5", 6"
Options: M, V, N, P6, P7, P8

Double Acting



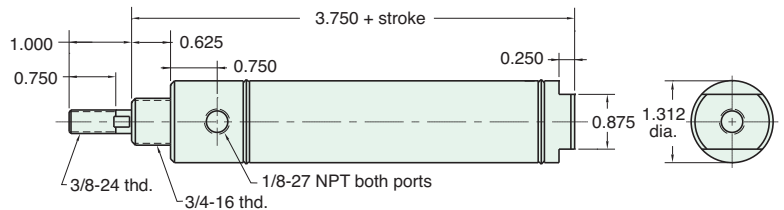
Furnished without nut(s). Order Part No. [N12-16-SS.](#)

CR-SDR-20-□-□

Mount: Stud
Type: Rotating Rod

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"
Options: M, V, N

Double Acting



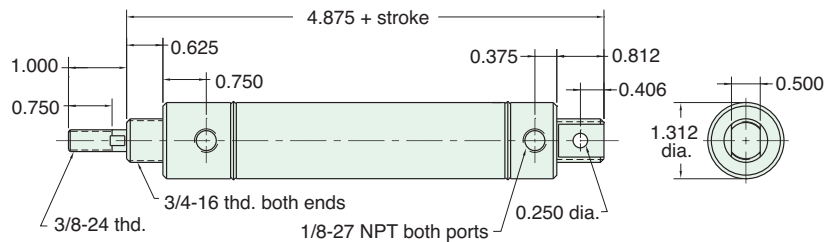
Furnished without nut(s). Order Part No. [N12-16-SS.](#)

CR-UDR-20-□-□

Mount: Universal
Type: Rotating Rod

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4", 5", 6", 8", 10", 12"
Options: M, V, N, P2, P3, P4, P5, P6, P7, P8

Double Acting



Furnished without nut(s). Order Part No. [N12-16-SS.](#)

Stainless Steel Mounting

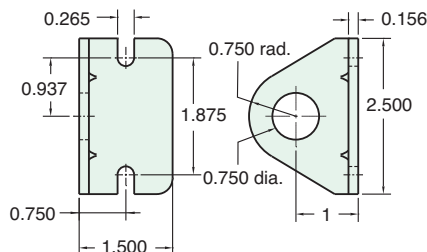
Foot Bracket

Model Number: [FB-2491-SS](#)

Nut

Model Number: [N12-16-SS](#)

Max. Torque in lbs.: 20



1 1/2" BORE CORROSION-RESISTANT CYLINDER

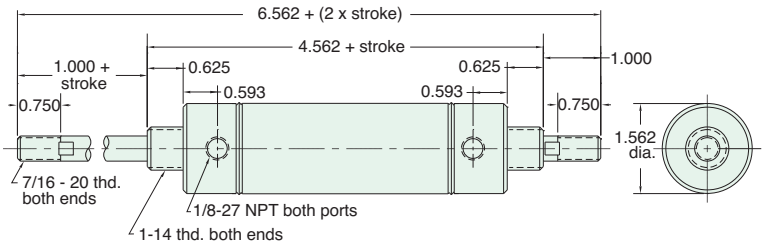


CR-SDD-24-□-□

Mount: Stud
Type: Double Rod

Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 8", 10", 12"
Options: M, V, N, P6, P7, P8

Double Acting



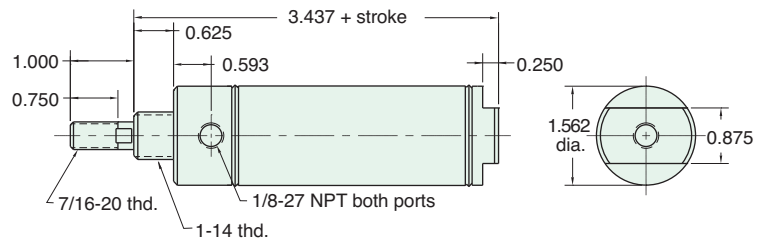
Furnished without nut(s). Order Part No. [N16-14-SS.](#)

CR-SDR-24-□-□

Mount: Stud
Type: Rotating Rod

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"
Options: M, V, N

Double Acting



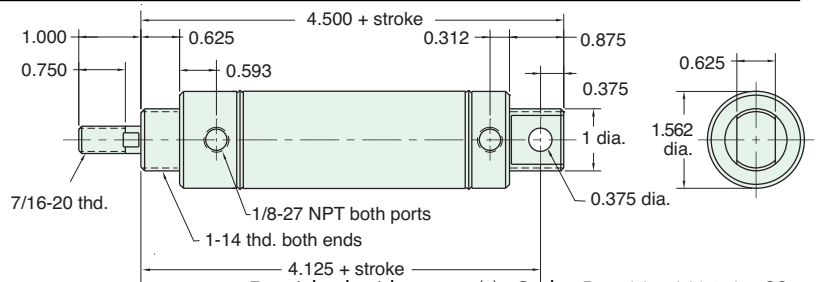
Furnished without nut(s). Order Part No. [N16-14-SS.](#)

CR-UDR-24-□-□

Mount: Universal
Type: Rotating Rod

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4", 5", 6", 8", 10", 12"
Options: M, V, N, P2, P3, P4, P5, P6, P7, P8

Double Acting

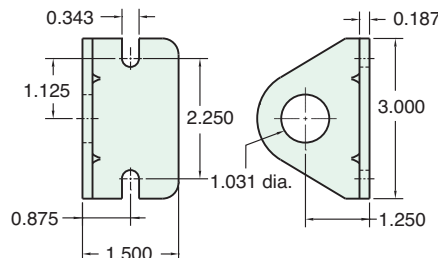


Furnished without nut(s). Order Part No. [N16-14-SS.](#)

Stainless Steel Mounting

Foot Bracket
Model Number: [FB-2891-SS](#)

Nut
Model Number: [N16-14-SS](#)
Max. Torque in lbs.: 30





AIR FORCE ONE® COMPACT CYLINDER



Clippard Instrument Laboratory, Inc. Air Force One compact cylinders are available in double acting, spring return, spring extend and double rod models. GMR sensors and magnetic piston versions are also available.

The AFO cylinder features include a stainless steel tube and roller burnished piston rod. This means longer rod and piston seal life. For corrosive environments, where dirt and abrasives may be ingested, and cause seals to wear faster than normally expected, the AFO offers the benefit of tie rod construction. This enables seals to be replaced, rather than replacing the entire cylinder. The non-corrosive construction of the AFO cylinder body is reliable in abrasive environments, able to withstand the toughest conditions.

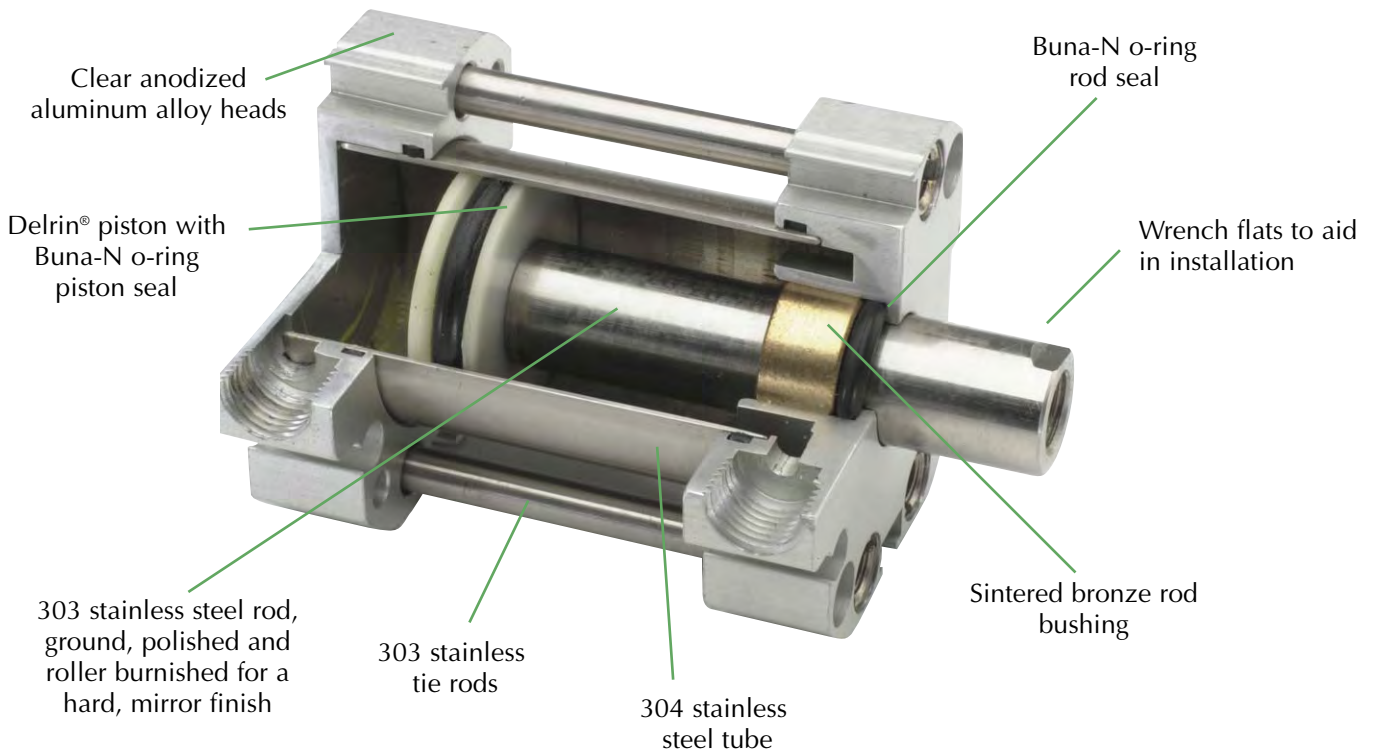
The various mounting configurations available in the AFO cylinders assure freedom to interchange with most cylinders on the market. This means most systems can be upgraded to include quality AFO cylinders.

AIR FORCE ONE® COMPACT CYLINDER



FEATURES

- Oil impregnated sintered bronze rod bushing
- Available with magnetic pistons
- 303 stainless steel ground, polished and roller burnished piston rods
- Double acting, spring return, spring extend & double rod cylinders
- 304 stainless steel tube
- Temperature range: 30 to 180° F
- Anodized aluminum heads
- Air pressure rating to 250 psig



Delrin® is a registered trademark of E.I. DuPont Co.

NUMBERING SYSTEM

A F - □ □ □ - □ - □ - □

Air Force One®
Compact Cylinder

Mounting Type

- B - Bottom Mount
- F - Front Mount
- R - Rear Mount
- U - Universal
- T - Thread

Cylinder Type

- D - Double Acting
- S - Single Acting (Spring Return)
- R - Reverse Acting (Spring Extend)

Rod Type

- R - Rotating Rod
- D - Double Rod

Bore

- 10 - 5/8"
- 12 - 3/4"
- 17 - 1 1/16"
- 24 - 1 1/2"
- 32 - 2"
- 40 - 2 1/2"

Stroke

- 1/4" - 4"
- in 1/8" increments

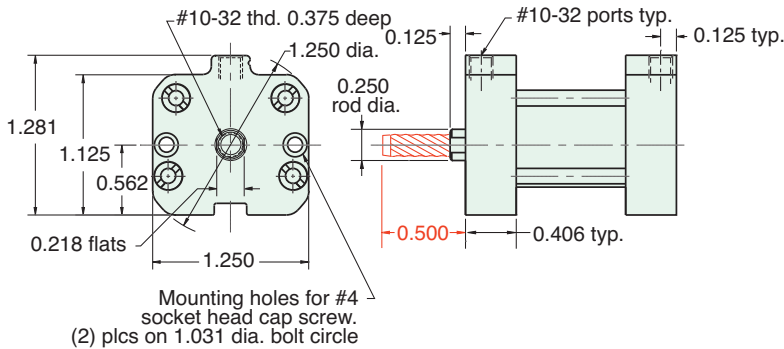
Options

- Blank - No Options
- V - Viton Seals
- M - Magnetic Piston
- T - Threaded Rod



5/8" BORE AFO COMPACT CYLINDER

AF - □□□ - 10 - □

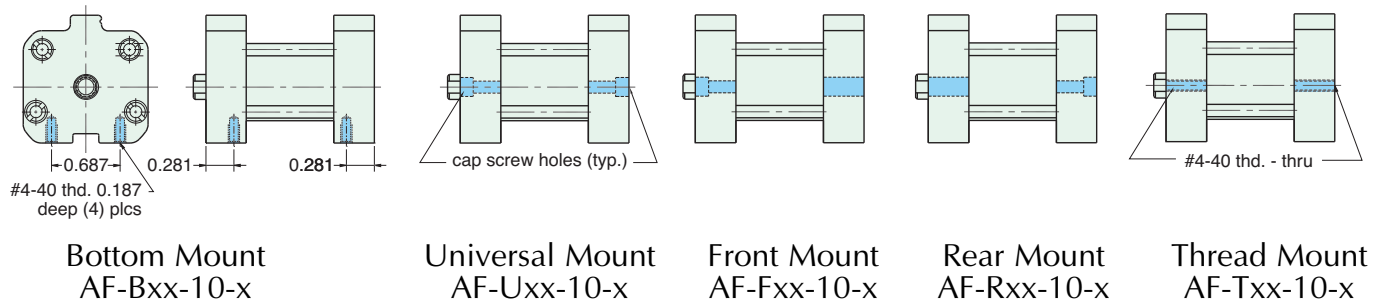


For rod with male thread option, add -T to the end of the part number after Stroke

See page 71 for Air Force One numbering system

MOUNTING STYLES

Five mounting styles give you versatility and fast, easy installation.

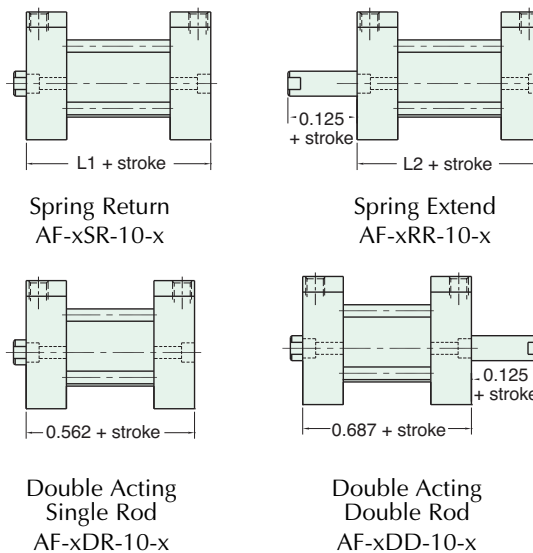


CYLINDER LENGTHS

"L"	Stroke	Spring Return	Spring Extend
L1	1/4" - 1"	13/16"	
L1	1 1/8" - 2"	1 3/8"	
L1	2 1/8" - 3"	1 15/16"	
L1	3 1/8" - 4"	2 1/2"	
L2	1/4" - 1"		1 1/16"
L2	1 1/8" - 2"		1 5/8"
L2	2 1/8" - 3"		2 3/16"
L2	3 1/8" - 4"		2 3/4"

Overall length of body is stroke plus "L"

Add 7/8" for Magnetic Piston

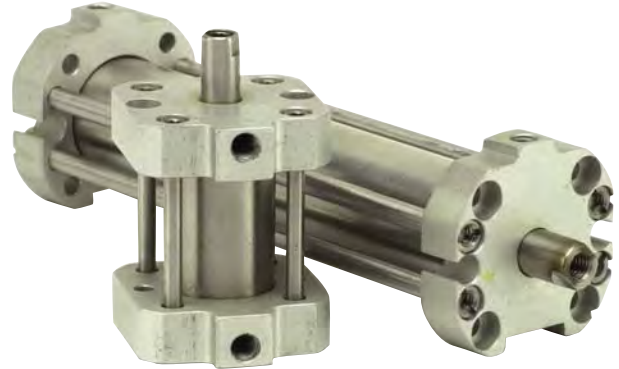
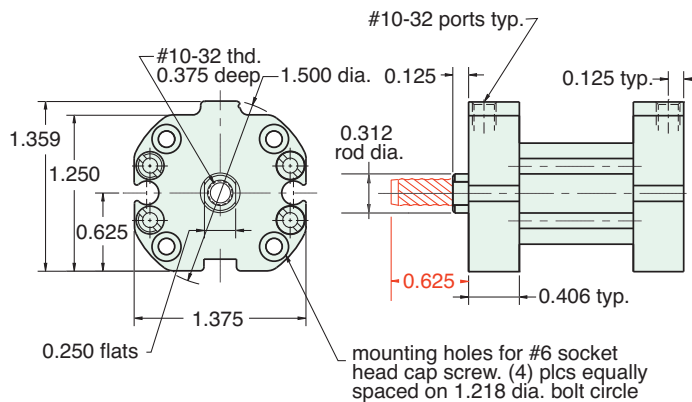


Spring Forces	
Spring Return	
Compressed	At Rest
5.75 lbs.	1.5 lbs.
Spring Extend	
Compressed	At Rest
5.75 lbs.	1.5 lbs.

3/4" BORE AFO COMPACT CYLINDER



AF - □□□ - 1 2 - □

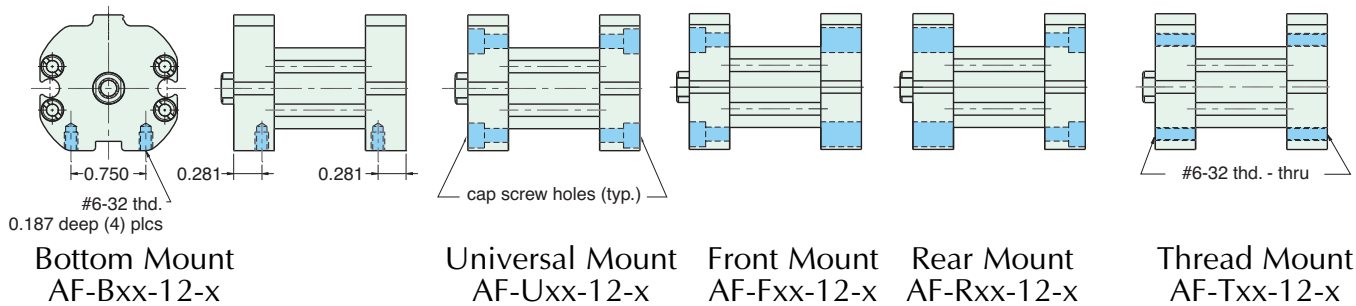


For rod with male thread option, add -T to the end of the part number after Stroke

See [page 71](#) for Air Force One numbering system

MOUNTING STYLES

Five mounting styles give you versatility and fast, easy installation.

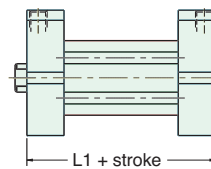


CYLINDER LENGTHS

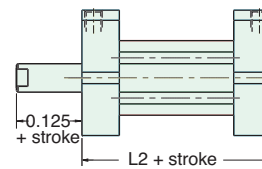
"L"	Stroke	Spring Return	Spring Extend
L1	1/4" - 1"	13/16"	
L1	1 1/8" - 2"	1 3/8"	
L1	2 1/8" - 3"	1 15/16"	
L1	3 1/8" - 4"	2 1/2"	
L2	1/4" - 1"		1 1/16"
L2	1 1/8" - 2"		1 5/8"
L2	2 1/8" - 3"		2 3/16"
L2	3 1/8" - 4"		2 3/4"

Overall length of body is stroke plus "L"

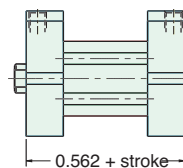
Add 7/8" for Magnetic Piston



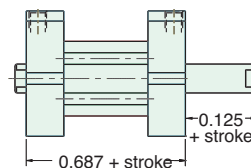
Spring Return
AF-xSR-12-x



Spring Extend
AF-xRR-12-x



Double Acting
Single Rod
AF-xDR-12-x



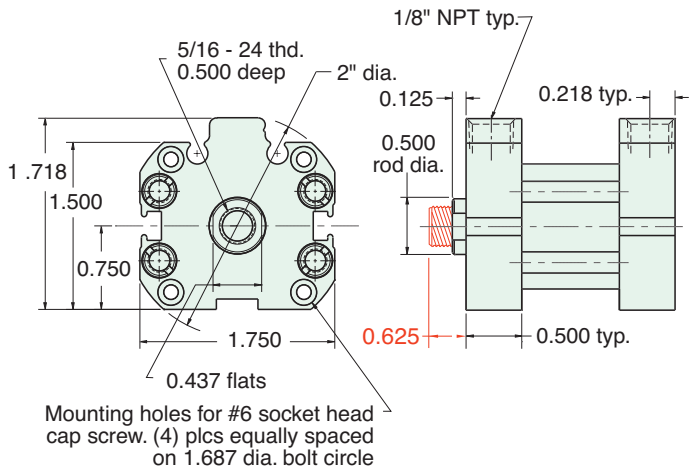
Double Acting
Double Rod
AF-xDD-12-x

Spring Forces	
Spring Return	
Compressed	At Rest
10 lbs.	4 lbs.
Spring Extend	
Compressed	At Rest
10 lbs.	4 lbs.



1 1/16" BORE AFO COMPACT CYLINDER

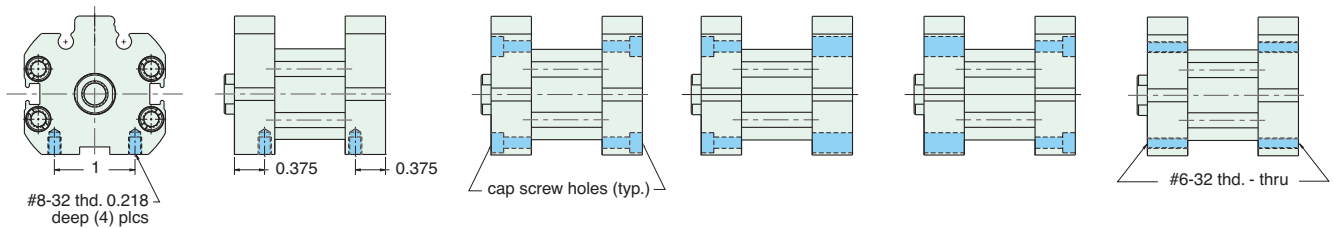
AF - □□□ - 17 - □



For rod with male thread option, add -T to the end of the part number after Stroke
 See [page 71](#) for Air Force One numbering system

MOUNTING STYLES

Five mounting styles give you versatility and fast, easy installation.



Bottom Mount
AF-Bxx-17-x

Universal Mount
AF-Uxx-17-x

Front Mount
AF-Fxx-17-x

Rear Mount
AF-Rxx-17-x

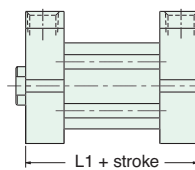
Thread Mount
AF-Txx-17-x

CYLINDER LENGTHS

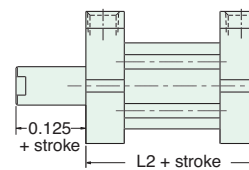
"L"	Stroke	Spring Return	Spring Extend
L1	1/4" - 1"	7/8"	
L1	1 1/8" - 2"	1 1/2"	
L1	2 1/8" - 3"	2 1/8"	
L1	3 1/8" - 4"	2 3/4"	
L2	1/4" - 1"		1 3/8"
L2	1 1/8" - 2"		2"
L2	2 1/8" - 3"		2 5/8"
L2	3 1/8" - 4"		3 1/4"

Overall length of body is stroke plus "L"

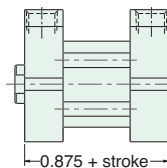
Add 7/8" for Magnetic Piston



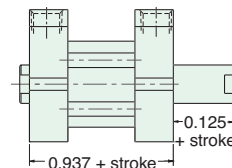
Spring Return
AF-xSR-17-x



Spring Extend
AF-xRR-17-x



Double Acting
Single Rod
AF-xDR-17-x



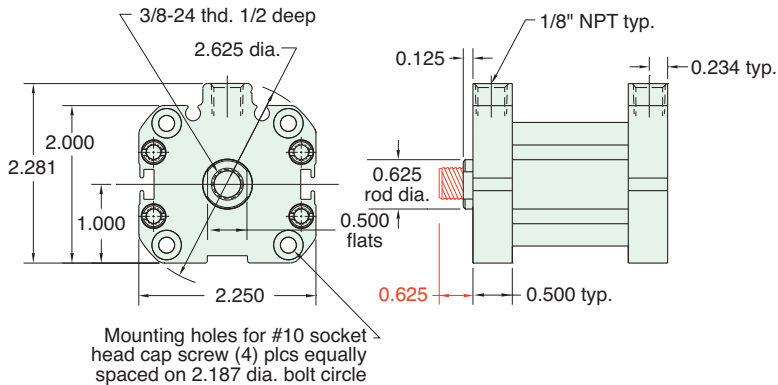
Double Acting
Double Rod
AF-xDD-17-x

Spring Forces	
Spring Return	
Compressed	At Rest
11.5 lbs.	5.5 lbs.
Spring Extend	
Compressed	At Rest
11.5 lbs.	5.5 lbs.

1 1/2" BORE AFO COMPACT CYLINDER



AF - □□□ - 24 - □

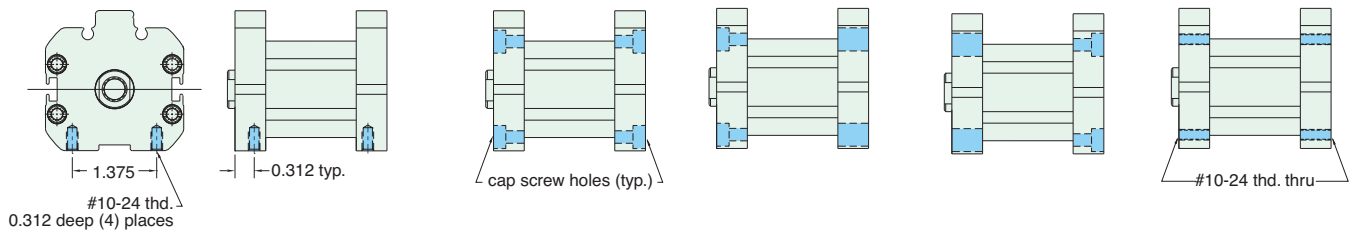


For rod with male thread option, add -T to the end of the part number after Stroke

See [page 71](#) for Air Force One numbering system

MOUNTING STYLES

Five mounting styles give you versatility and fast, easy installation.



Bottom Mount
AF-Bxx-24-x

Universal Mount
AF-Uxx-24-x

Front Mount
AF-Fxx-24-x

Rear Mount
AF-Rxx-24-x

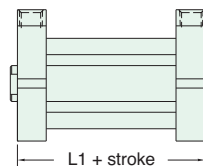
Thread Mount
AF-Txx-24-x

CYLINDER LENGTHS

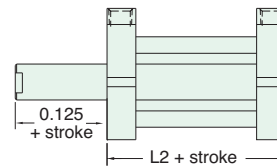
"L"	Stroke	Spring Return	Spring Extend
L1	1/4" - 1"	7/8"	
L1	1 1/8" - 2"	1 1/2"	
L1	2 1/8" - 3"	2 1/8"	
L1	3 1/8" - 4"	2 3/4"	
L2	1/4" - 1"		1 3/8"
L2	1 1/8" - 2"		2"
L2	2 1/8" - 3"		2 5/8"
L2	3 1/8" - 4"		3 1/4"

Overall length of body is stroke plus "L"

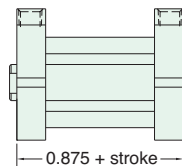
Add 7/8" for Magnetic Piston



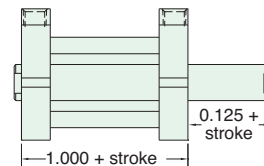
Spring Return
AF-xSR-24-x



Spring Extend
AF-xRR-24-x



Double Acting
Single Rod
AF-xDR-24-x



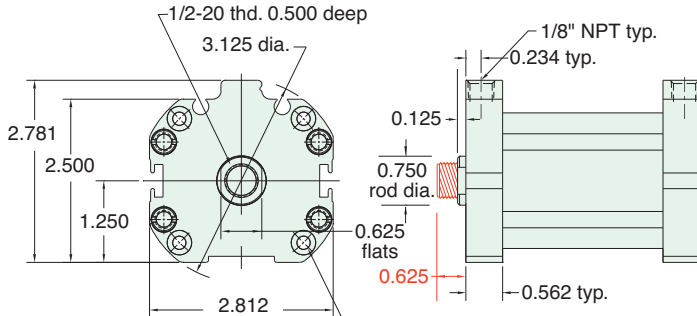
Double Acting
Double Rod
AF-xDD-24-x

Spring Forces	
Spring Return	
Compressed	At Rest
13 lbs.	7.5 lbs.
Spring Extend	
Compressed	At Rest
13 lbs.	7.5 lbs.

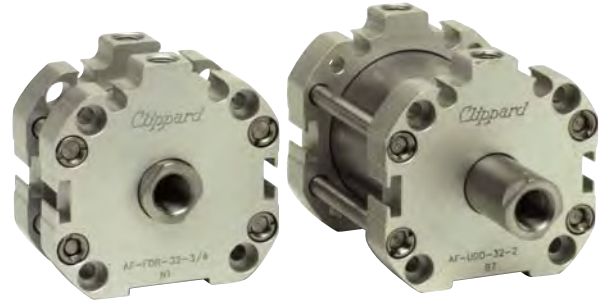


2" BORE AFO COMPACT CYLINDER

AF - □□□ - 3 2 - □



Mounting holes for #10 socket head cap screw (4) plcs equally spaced on 2.687 dia. bolt circle

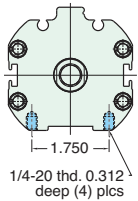


For rod with male thread option, add -T to the end of the part number after Stroke

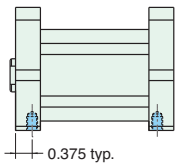
See page 71 for Air Force One numbering system

MOUNTING STYLES

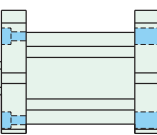
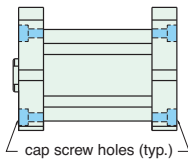
Five mounting styles give you versatility and fast, easy installation.



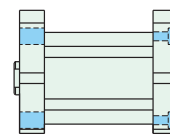
Bottom Mount
AF-Bxx-32-x



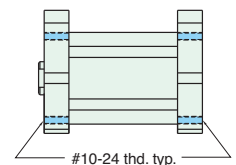
Universal Mount
AF-Uxx-32-x



Front Mount
AF-Fxx-32-x



Rear Mount
AF-Rxx-32-x

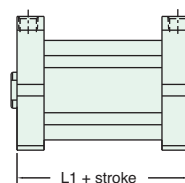


Thread Mount
AF-Txx-32-x

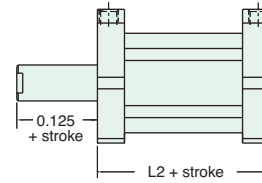
CYLINDER LENGTHS

"L"	Stroke	Spring Return	Spring Extend
L1	1/4" - 1"	15/16"	
L1	1 1/8" - 2"	1 9/16"	
L1	2 1/8" - 3"	2 3/16"	
L1	3 1/8" - 4"	2 13/16"	
L2	1/4" - 1"		1 7/16"
L2	1 1/8" - 2"		2 1/16"
L2	2 1/8" - 3"		2 11/16"
L2	3 1/8" - 4"		3 5/16"

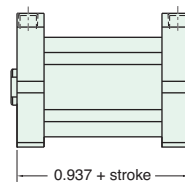
Overall length of body is stroke plus "L"
Add 7/8" for Magnetic Piston



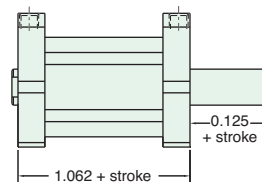
Spring Return
AF-xSR-32-x



Spring Extend
AF-xRR-32-x



Double Acting
Single Rod
AF-xDR-32-x



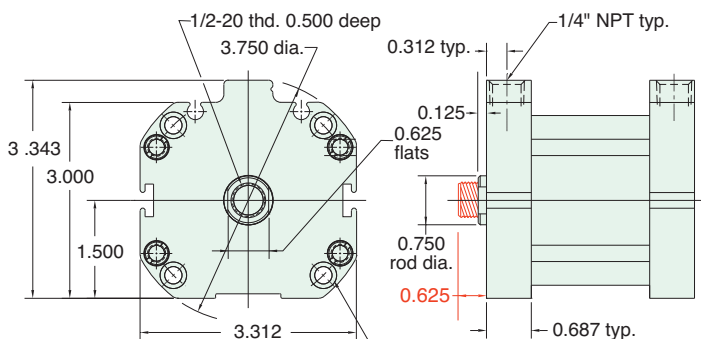
Double Acting
Double Rod
AF-xDD-32-x

Spring Forces	
Spring Return	
Compressed	At Rest
13 lbs.	7.5 lbs.
Spring Extend	
Compressed	At Rest
13 lbs.	7.5 lbs.

2 1/2" BORE AFO COMPACT CYLINDER



AF - □□□ - 40 - □



Mounting holes for 0.250 socket head cap screw (4) plcs equally spaced on 3.250 dia. bolt circle

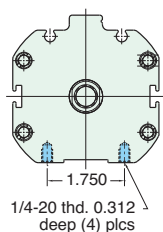


For rod with male thread option, add -T to the end of the part number after Stroke

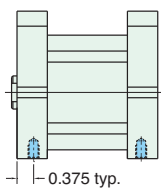
See [page 71](#) for Air Force One numbering system

MOUNTING STYLES

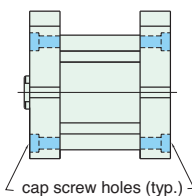
Five mounting styles give you versatility and fast, easy installation.



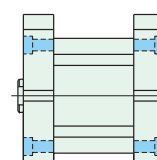
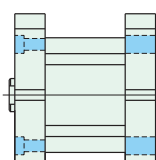
Bottom Mount
AF-Bxx-40-x



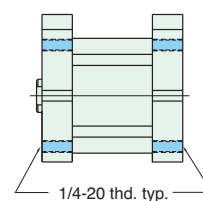
Universal Mount
AF-Uxx-40-x



Front Mount
AF-Fxx-40-x



Rear Mount
AF-Rxx-40-x



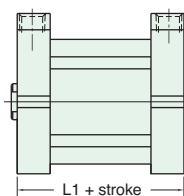
Thread Mount
AF-Txx-40-x

CYLINDER LENGTHS

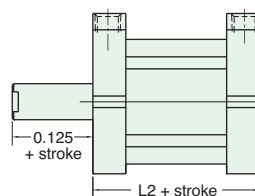
"L"	Stroke	Spring Return	Spring Extend
L1	1/4" - 1"	1 3/16"	
L1	1 1/8" - 2"	2 1/16"	
L1	2 1/8" - 3"	2 15/16"	
L1	3 1/8" - 4"	3 13/16"	
L2	1/4" - 1"		1 15/16"
L2	1 1/8" - 2"		2 13/16"
L2	2 1/8" - 3"		3 11/16"
L2	3 1/8" - 4"		4 9/16"

Overall length of body is stroke plus "L"

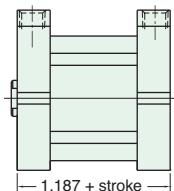
Add 7/8" for Magnetic Piston



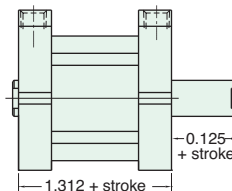
Spring Return
AF-xSR-40-x



Spring Extend
AF-xRR-40-x



Double Acting
Single Rod
AF-xDR-40-x



Double Acting
Double Rod
AF-xDD-40-x

Spring Forces	
Spring Return	
Compressed	At Rest
25 lbs.	18.5 lbs.
Spring Extend	
Compressed	At Rest
25 lbs.	18.5 lbs.



AFO COMPACT CYLINDER GMR SENSORS

AIR FORCE ONE® GMR SENSORS NUMBERING SYSTEM

A F H S -  

AFHS
Air
Force
GMR
Switch

Switch Type
N - Sinking (NPN)
P - Sourcing (PNP)
C - Mating Cable Only
(No hall sensors, available with
Q6 & Q16 options only)

Connection
4 - 4' Wire Lead
12 - 12' Wire Lead
Q - 8 mm dia. 3-Pin Quick Connect
Q6 - 8 mm dia. 3-Pin Quick Connect
with 6' mating cable
Q16 - 8 mm dia. 3-Pin Quick Connect
with 16' mating cable

MAGNETIC PISTONS

Additional Length Required for Magnetic Piston

Add 0.875 to all bore sizes and mounting styles to accommodate the magnetic piston. Low friction U-Cup style piston seals are standard on all magnetic pistons. A minimum stroke of 3/8" is required for effective use of GMR sensors.

Magnetic Piston

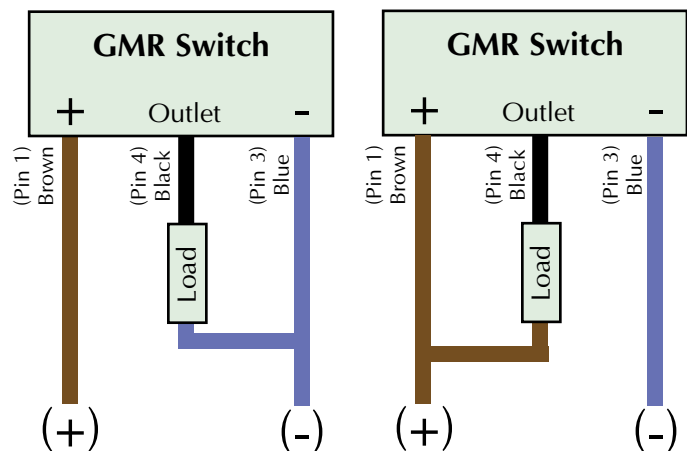
A specialized magnet is attached to the piston that will actuate the Clippard GMR sensors. This allows one or more of these dependable electronic sensor/switches to accurately determine the position of the cylinder rod. To order cylinders with magnetic pistons, specify model numbers that end with -M. GMR sensors must be ordered separately.

ELECTRICAL SPECIFICATIONS

Output Type:	Sinking or Sourcing
Input Voltage:	6 to 28 VDC
Input Current:(no load)	15 mA maximum
Voltage Drop:	0.5 VDC maximum
Output Current:	300 mA maximum
Switching Power:	7.2 Watts maximum
Circuit Protection:	Reverse Polarity Protected Transient Voltage Protected
Temperature Range:	0 to 175°F
LED Indicator	

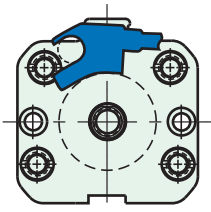
Sourcing PNP

Sinking NPN

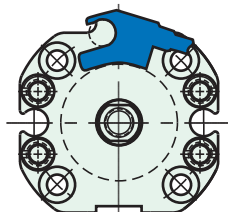


MAGNETIC PISTON & GMR SENSORS

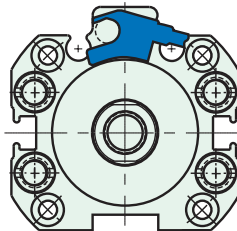
When ordered with the M option, an extra rod is added to the AFO for mounting and positioning the switch.



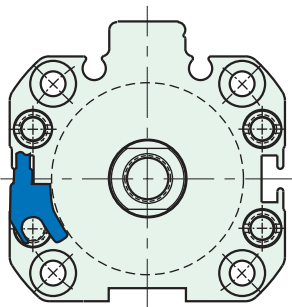
5/8" Bore



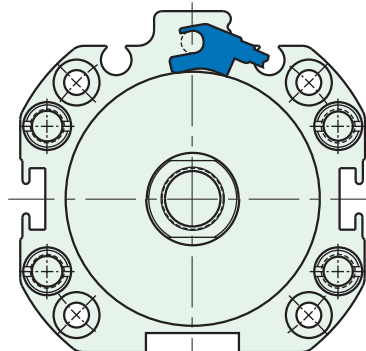
3/4" Bore



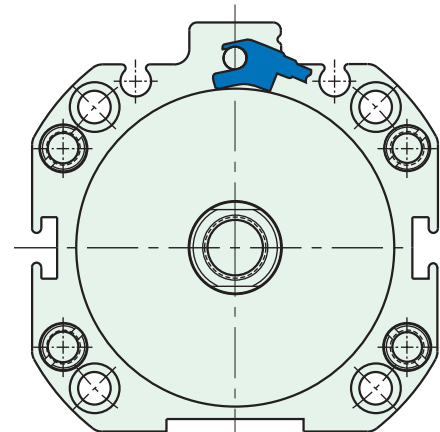
1 1/16" Bore



1 1/2" Bore



2" Bore



2 1/2" Bore

GMR SENSORS

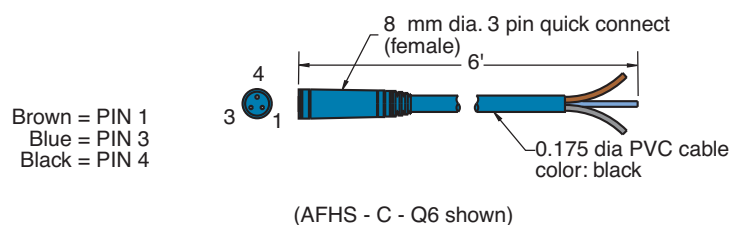
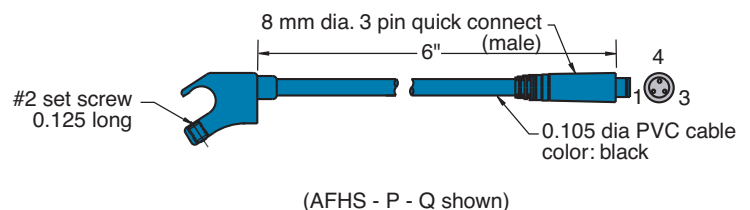
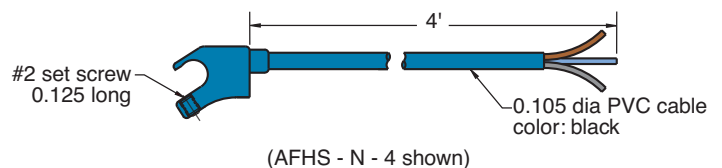
Position Sensing Switch

Clippard offers the solid state circuitry of the GMR Switch to reliably detect the presence of a magnet attached to the piston. Clippard's GMR Switch incorporates an LED to visually show switch actuation. The GMR Switch is offered in sinking (NPN) and sourcing (PNP) and with a variety of cable configurations.

Locating GMR Sensors on Cylinders

Cylinders ordered with magnetic pistons come with an additional attached rod* on which the GMR Switch can be attached. The Switch snaps onto the rod and can be slid into the desired location. A set screw is used to lock the GMR Switch in place.

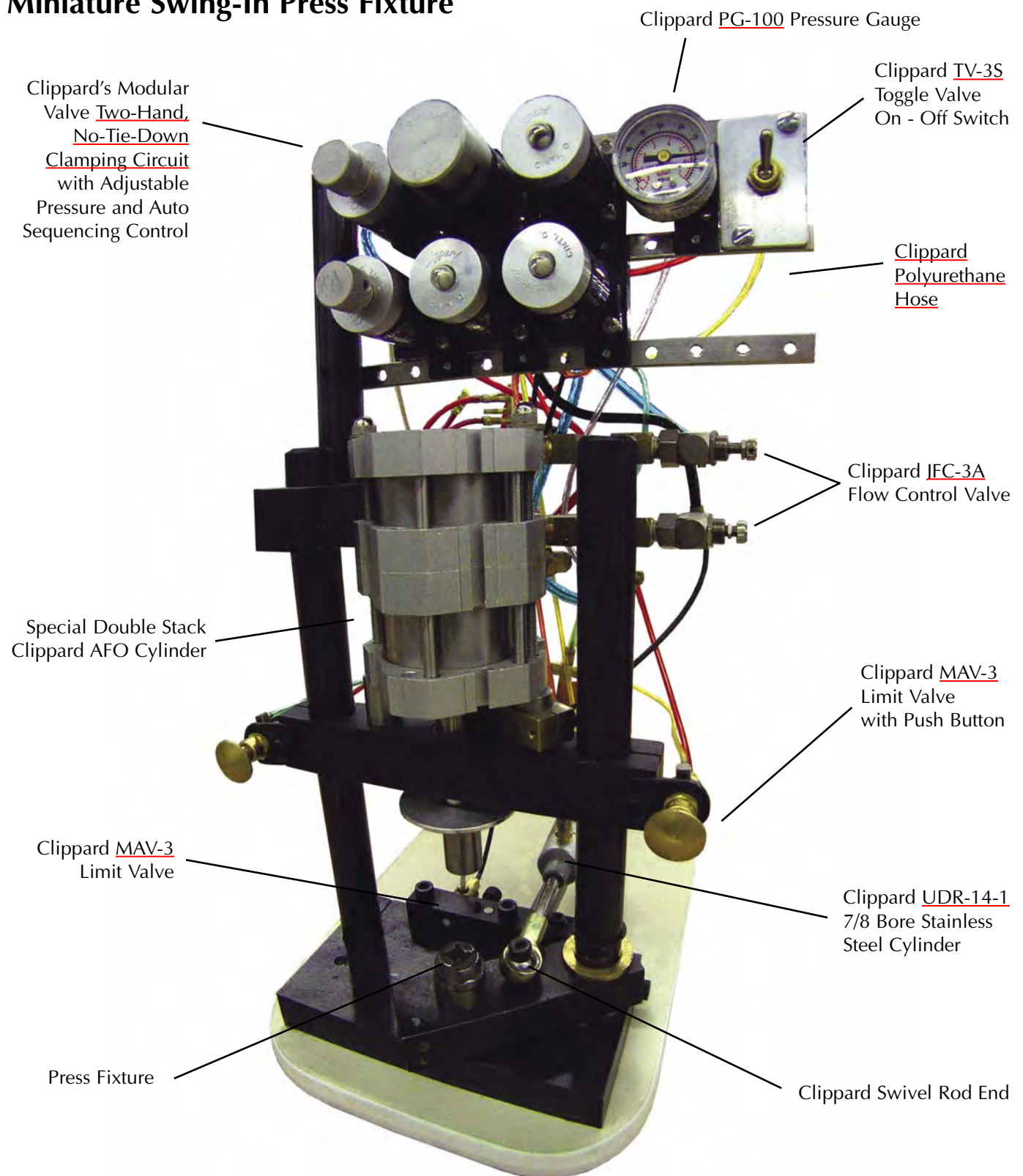
* Additional rod is not used on 1 1/2" Bore Cyl. GMR Switch can mount directly to any tie rod.





SWING-IN PRESS APPLICATION

Miniature Swing-In Press Fixture



Clippard's Modular Valve Two-Hand No-Tie-Down Clamping Circuit with Adjustable Pressure and Auto Sequencing Control

Clippard PG-100 Pressure Gauge

Clippard TV-3S Toggle Valve On - Off Switch

Clippard Polyurethane Hose

Clippard IFC-3A Flow Control Valve

Clippard MAV-3 Limit Valve with Push Button

Clippard UDR-14-1 7/8 Bore Stainless Steel Cylinder

Clippard Swivel Rod End

Special Double Stack Clippard AFO Cylinder

Clippard MAV-3 Limit Valve

Press Fixture

Clippard offers more types of miniature pneumatic cylinders for the designer's convenience, including: spring return, spring extend, air retract, double-acting and double rod models. From sub-miniature (5/32" bore) to heavy-duty (7/8" bore), the extensive Clippard line provides a wide selection of bore sizes to suit any application requirement. An even wider range of strokes are available in the complete Clippard line of miniature cylinders, in stroke sizes ranging from 1/4" to 20".

- Rods are threaded and bonded to piston
- The original miniature pneumatic cylinder
- Buna-N "U"-cup rod seals for smooth leakproof operation
- Buna-N "U"-cup piston seals for full power, low friction and trouble-free performance
- 100% tested
- Pneumatic & hydraulic performance
- Sturdy, compact and long life
- Temperature range: 30 to 180°F

The Clippard line offers numerous choices in the mounting of Clippard Minimatic® cylinders. The cylinders are provided in several types of mounting styles including plain end, stud mount, block mount, and clevis mount (male and female). In addition, a complementary line of mounting hardware, including brackets, male and female clevises and Clippard's Minimatic® super structures are available for almost any application.



Clippard cylinders are of original design, pioneered by the world's most experienced manufacturer of miniature pneumatic equipment. They are of the finest OEM quality, fully tested for outstanding performance and long life. Special steps in manufacture insure the high quality of Clippard cylinders. These include: ground, polished and roller burnished rods to protect seals and provide smooth action; tube I.D. precision through "ballizing" with carbide precision balls; high precision screw machine parts manufacture, based on concentric design that lends itself to close tolerance machining. The reputation Clippard has earned in the field is a result of our policy to test every cylinder (100%) we manufacture.

**Every Cylinder
is 100% tested**

Cylinder Tubes:

Machined from heavy wall, cold-drawn brass tubing; ballized internally for precise size, fine finish and low seal friction

Piston Rods:

Except where otherwise specified, all rods are stainless steel, ground, polished and roller burnished for long seal life, low friction and smooth action

Pistons:

Brass in all models except aluminum in 7/8" bore single acting series

Springs:

Stainless steel for long life and resistance to corrosion

Seals:

Buna-N compound, impervious to a wide range of hydraulic fluids, liquids, and gases; rod seals replaceable on models where applicable; piston seals replaceable only on threaded construction models

Bumpers:

Resilient bumpers of Buna-N or polyurethane absorb shock, increase life and reduce noise level

Finish:

All external brass parts are "bright-dipped" to resist corrosion and preserve finished appearance

1949

Did you know that Clippard built the first miniature rolled construction air cylinder, the 3PS-1/2 in 1949.



MINIMATIC® CYLINDER

Minimatic® Cylinders	Pg.	Engineering Data			Design Features						Remarks
		Medium	Force Factor	Rec. Max. Working Pres.	Piston Seals	Rod Seals	Rod Dia.	Rod End	Ports Tapped	Construction	
5/32" Bore Spring Return	<u>83</u>	Air	0.02	150 psig	U-Cup		0.062"	Plain	#10-32 #3-56	Rolled or Welded	45° Tapered rod end on SM-2 Spring force extend- 2 oz. Spring force compressed- 5 oz.
1/4" Bore 6.35 mm Spring Return	<u>83</u>	Air	0.05	125 psig	U-Cup		0.135"	Thd.	#10-32	Rolled	Spring force extend- 6 oz. Spring force compressed-10 oz.
3/8" Bore Spring Return	<u>84</u>	Air	0.10	125 psig	U-Cup		3/16"	Plain	#10-32	RF Silver Soldered	Model 3PS-1/2 is rolled construction with non-rotating thd. brass rod, others; non-thd. stainless steel Spring force extend- 12 oz. Spring force compressed- 30 oz.
3/8" Bore Double Acting	<u>85</u>	Air & Hyd.	0.10	125 psig-Air	U-Cup	Vee Ring	1/8"	Plain	#10-32	RF Silver Soldered	
3/8" Bore Spring Extend Air Retract	<u>84</u>	Air	0.10	125 psig	U-Cup		1/8"	Thd.	#10-32	RF Silver Soldered	Min. of 14 psig to retract Spring force extend- 12 oz. Spring force compressed- 30 oz.
9/16" Bore Spring Return	<u>86</u>	Air	0.22	125 psig	U-Cup		3/16"	Plain	#10-32	RF Silver Soldered	9PS-3/4 & 9SS-3/4 have non- rotating, thd., stainless steel rods, others; non-thd., stainless steel Spring force extend- 1.6 oz. Spring force compressed- 3.7 oz.
9/16" Bore Double Acting	<u>86</u>	Air & Hyd.	0.22	125 psig-Air	U-Cup	Vee Ring	3/16"	Plain	#10-32	RF Silver Soldered	
9/16" Bore Spring Extend Air Retract	<u>86</u>	Air	0.22	250 psig	U-Cup	Vee Ring	1/4"	Thd.	#10-32	Threaded	Min. of 19 psig to retract Spring force extend- 2 lb. Spring force compressed- 4 lb.
9/16" Bore Heavy Duty Spring Return	<u>88</u>	Air	0.20	250 psig	U-Cup		1/4"	Thd.	1/16" NPT	Threaded	Spring force extend- 2 lb. Spring force compressed- 4 lb.
9/16" Bore Heavy Duty Double Acting	<u>89</u> **	Air & Hyd.	0.20	250 psig-Air 1000 psig-Hyd.*	T- Ring	Vee Ring	1/4"	Thd.	1/16" NPT	Threaded	
7/8" Bore Spring Return	<u>90</u>	Air	0.60	250 psig	U-Cup		1/4"	Thd.	1/8" NPT	Threaded	Sintered bronze rod bushing Spring force extend- 7 lb. Spring force compressed- 12 lb.
7/8" Bore Double Acting	<u>91</u> **	Air & Hyd.	0.60	250 psig-Air 1000 psig-Hyd.*	T- Ring	Vee Ring	1/4"	Thd.	1/8" NPT	Threaded	Sintered bronze rod bushing
7/8" Bore Spring Extend Air Retract	<u>90</u>	Air	0.60	250 psig	U-Cup	Vee Ring	1/4"	Thd.	1/8" NPT	Threaded	Min. of 23 psig to retract Spring force extend- 7 lb. Spring force compressed- 12 lb.

Quick Cylinder Computations:

Cylinder Force = Force Factor x Pressure

Displacement = Force Factor x Stroke

(Force factor given in table above equals effective piston area)

**NOTE: Double rods also available in these models.
Temperature: 30 to 230°F

*Consult factory for hydraulic applications

SUB-MINIATURE MINIMATIC® CYLINDER



SM-2

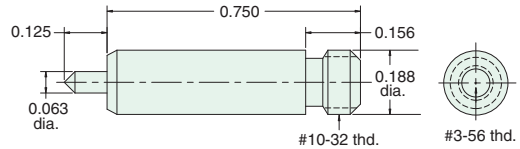
Single Acting



Did you know...

The tiny SM-2 cylinder gives 2 lbs of force at 100 psig.

Bore: 5/32"
Mount: Rear Thread
Type: Spring Return
Available Stroke Length: 1/4"
Materials: Stainless steel body, piston & rod, Buna-N U-cup, Beryllium copper spring



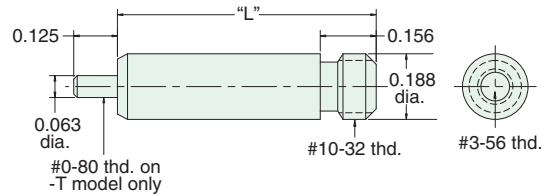
SM-3-□

Single Acting



Bore: 5/32"	Model	SM-3-1	SM-3-2	SM-3-3	SM-3-4	Materials: Stainless steel tube and rod, brass piston, Buna-N U-cup
Mount: Rear Thread	Stroke	1/4"	1/2"	3/4"	1"	
Type: Spring Return	Length "L"	0.740	1.171	1.593	2.000	

To order: Add stroke length to the end of the part number

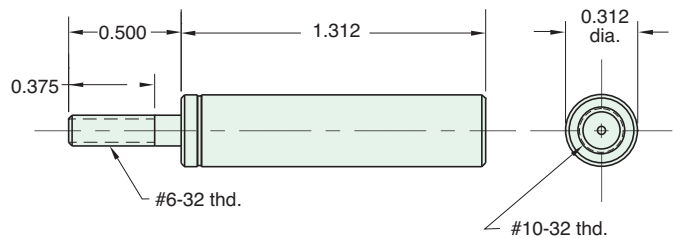


SM-6

Single Acting



Bore: 1/4"
Mount: Body
Type: Spring Return
Available Stroke Lengths: 3/8"
Materials: Brass body, Buna-N U-cup, stainless steel piston & rod



Nut included, but not shown on drawing

CUSTOMer solutions

If you need a product that fits your application perfectly, Clippard has the capability to design or modify one of its products to suit your exact needs. We understand that a standard catalog product may be close but not be exactly what you need. **Let us know YOUR Need, and we will help to find YOUR Solution!**

Special Configurations

This Clippard produced the first rolled-construction cylinder in 1949. Since then, we have produced thousands of special configurations from cartridge designs to low break-away **miniature cylinders**.



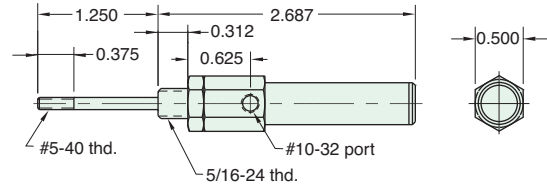


3/8" BORE BRASS MINIMATIC® CYLINDER

3SS-AR-1/2

Mount: Stud **Available Stroke Lengths:** 1/2"
Type: Single Acting
 Spring Extended

Add -N to the end of the part number for a non-threaded rod



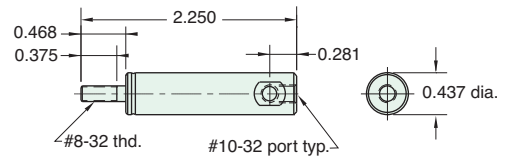
Rod nut included, but not shown on drawing

3PS-1/2

Mount: Body **Available Stroke Lengths:** 1/2"
Type: Single Acting
 Spring Return **Ports:** End or Side

Brass Rod - non-rotating

First Cylinder - 1949



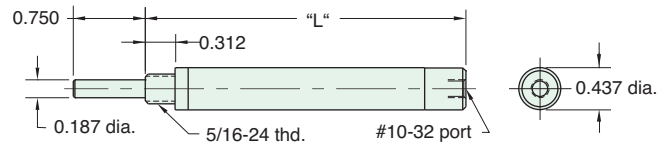
Rod nut included, but not shown on drawing

3SS-□

Mount: Stud **Stroke** | 1/2" | 1" | 2" | 3"
Type: Single Acting
 Spring Return **Length "L"** | 2.093 | 3.343 | 5.218 | 7.093

To order: Add stroke length to the end of the part number

Add -T to the end of the part number after stroke for a #10-32 x 1/2" rod thread

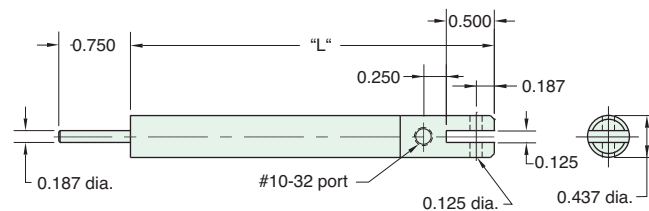


3CS-□

Mount: Clevis **Stroke** | 1/2" | 1" | 2" | 3"
Type: Single Acting
 Spring Return **Length "L"** | 2.468 | 3.406 | 5.281 | 7.156

To order: Add stroke length to the end of the part number

Add -T to the end of the part number after stroke for a #10-32 x 1/2" rod thread



3/8" BORE BRASS MINIMATIC® CYLINDER

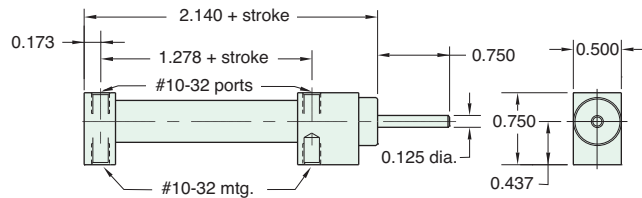


3BDS-□

Mount: Block **Available Stroke Lengths:** 1", 2", 3", 4", 5", 6"
Type: Double Acting

To order: Add stroke length to the end of the part number

Add -T to the end of the part number after stroke for a #5-40 x 1/2" rod thread

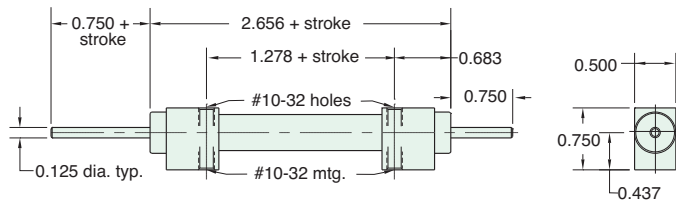


3BDD-□

Mount: Block **Available Stroke Lengths:** 1", 2", 3", 4"
Type: Double Acting
 Double Rod

To order: Add stroke length to the end of the part number

Add -T to the end of the part number after stroke for a #5-40 x 1/2" rod thread

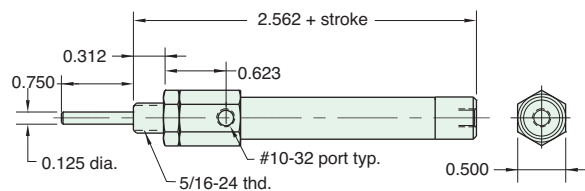


3SD-□

Mount: Stud **Available Stroke Lengths:** 1", 2", 3", 4"
Type: Double Acting

To order: Add stroke length to the end of the part number

Add -T to the end of the part number after stroke for a #5-40 x 1/2" rod thread



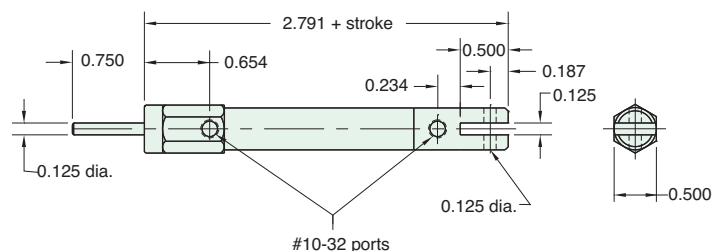
Nut included, but not shown on drawing

3CD-□

Mount: Clevis **Available Stroke Lengths:** 1", 2", 3", 4"
Type: Double Acting

To order: Add stroke length to the end of the part number

Add -T to the end of the part number after stroke for a #5-40 x 1/2" rod thread

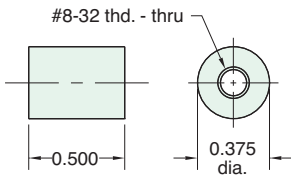




3/8" BORE MOUNTING BRACKETS

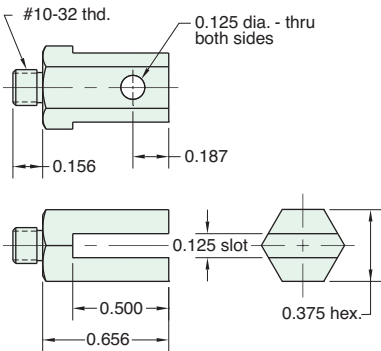
11767

Ceramic Insulator
Use with cylinder having #8-32 threaded shaft to insulate cylinder from heat or electricity



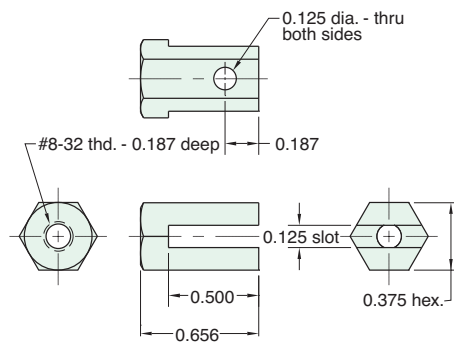
11996

Male Clevis
Mounts in rear of cylinder tapped #10-32



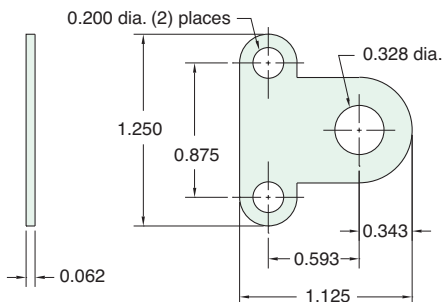
11997

Female Clevis
Use with cylinder having #8-32 threaded shaft



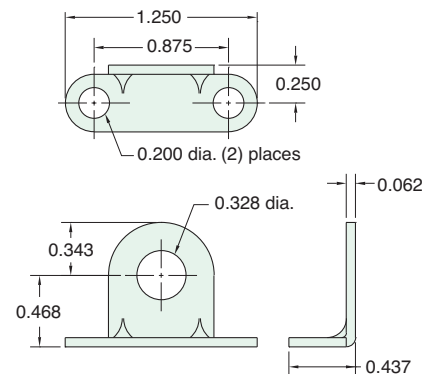
11917-2

Mounting Bracket (flat)



11918-2

Mounting Bracket (angled)



9/16" BORE BRASS MINIMATIC® CYLINDER



9PS-3/4

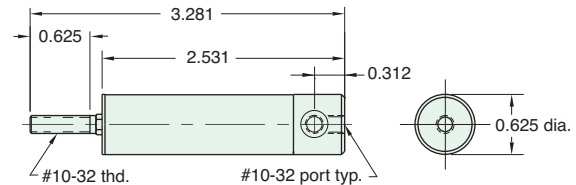
Mount: Body

Type: Single Acting
Spring Return

Available Stroke Lengths: 3/4"

Non-Rotating Shaft

Add **-N** to the end of the part number for a non-threaded rod



Rod nut included, but not shown on drawing

9BS-□

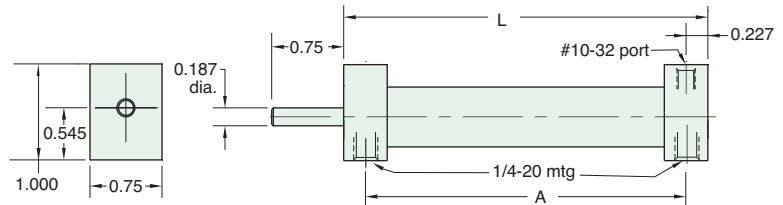
Mount: Block

Type: Single Acting
Spring Return

Stroke Length "L"	3/4"	1 1/2"	2 1/4"	3"
"A"	2.750	4.218	5.593	6.937
	2.298	3.764	5.139	6.483

To order: Add stroke length to the end of the part number

Add **-T** to the end of the part number after stroke for a #10-32 x 1/2" rod thread



9SS-□

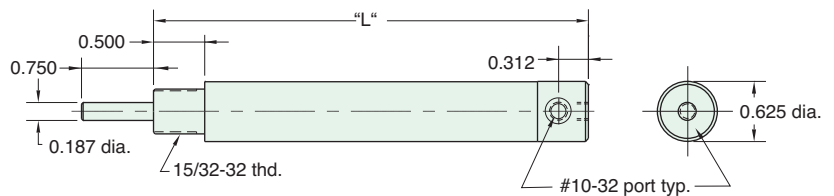
Mount: Stud

Type: Single Acting
Spring Return

Stroke Length "L"	3/4"	1 1/2"	2 1/4"	3"
	3.031	4.531	5.875	7.250

To order: Add stroke length to the end of the part number

Add **-T** to the end of the part number after stroke for a #10-32 x 1/2" rod thread



Rod nut included, but not shown on drawing

Note: On 3/4" stroke rod is hexagonal stainless steel (non-rotating) and threaded #10-32 x 5/8

9CS-□

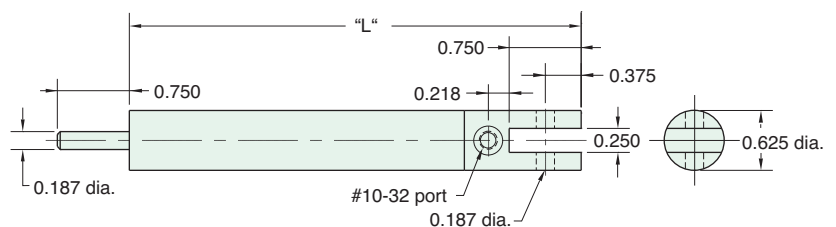
Mount: Clevis

Type: Single Acting
Spring Return

Stroke Length "L"	3/4"	1 1/2"	2 1/4"	3"
	3.343	4.703	6.062	7.421

To order: Add stroke length to the end of the part number

Add **-T** to the end of the part number after stroke for a #10-32 x 1/2" rod thread





9/16" BORE BRASS MINIMATIC® CYLINDER

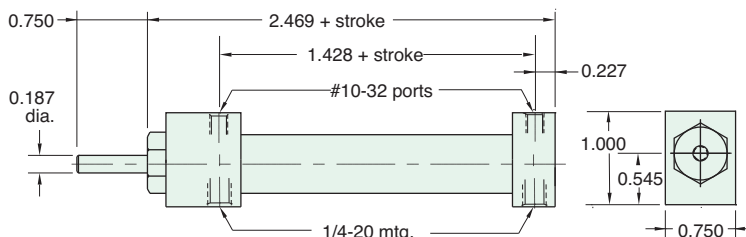
9BDS-□

Mount: Block Available Stroke Lengths: 1", 2", 3", 4", 5", 6"

Type: Double Acting

To order: Add stroke length to the end of the part number

Add -T to the end of the part number after stroke for a #10-32 x 1/2" rod thread



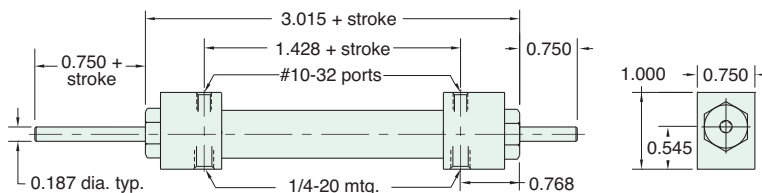
9BDD-□

Mount: Block Available Stroke Lengths: 1", 2", 3", 4", 5", 6"

Type: Double Acting Double Rod

To order: Add stroke length to the end of the part number

Add -T to the end of the part number after stroke for a #10-32 x 1/2" rod thread



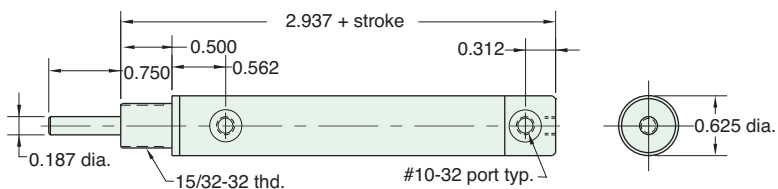
9SD-□

Mount: Stud Available Stroke Lengths: 1", 2", 3", 4", 5", 6"

Type: Double Acting

To order: Add stroke length to the end of the part number

Add -T to the end of the part number after stroke for a #10-32 x 1/2" rod thread



Nut included, but not shown on drawing

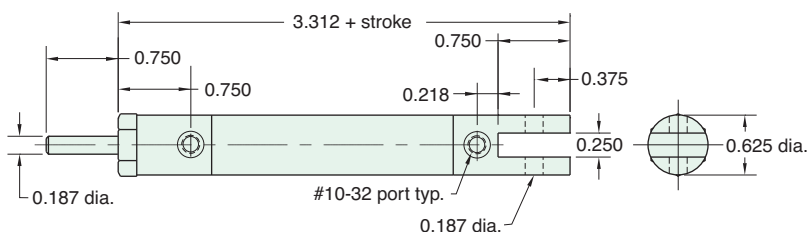
9CD-□

Mount: Clevis Available Stroke Lengths: 1", 2", 3", 4", 5", 6"

Type: Double Acting

To order: Add stroke length to the end of the part number

Add -T to the end of the part number after stroke for a #10-32 x 1/2" rod thread



9/16" BORE BRASS HEAVY DUTY CYLINDER

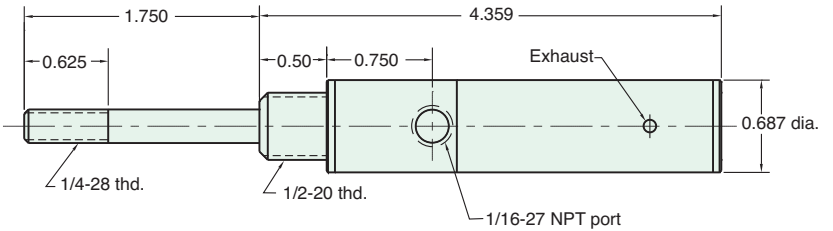


9SS-AR-1

Mount: Stud
Type: Single Acting
 Spring Extended

Available Stroke Lengths: 1"

Add -N to the end of the part number for a non-threaded rod



Nut included, but not shown on drawing

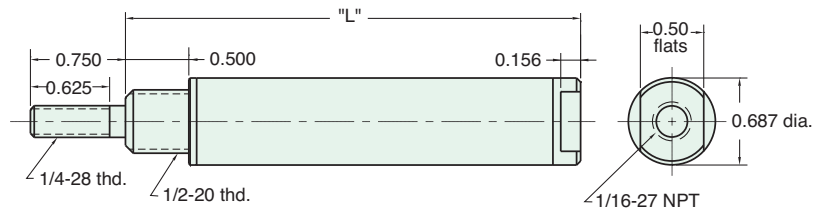
H9S-□S

Mount: Stud
Type: Single Acting
 Spring Return

Stroke Length "L"	1"	2"	3"
	3.593	5.250	6.906

To order: Indicate stroke in box □

Add -N to the end of the part number for a non-threaded rod



Nut included, but not shown on drawing

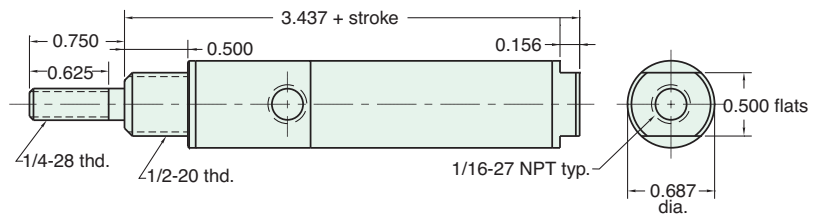
H9S-□D

Mount: Stud
Type: Double Acting

Available Stroke Lengths: 1", 2", 3", 4", 5", 6"

To order: Indicate stroke in box □

Add -N to the end of the part number for a non-threaded rod



Nut included, but not shown on drawing

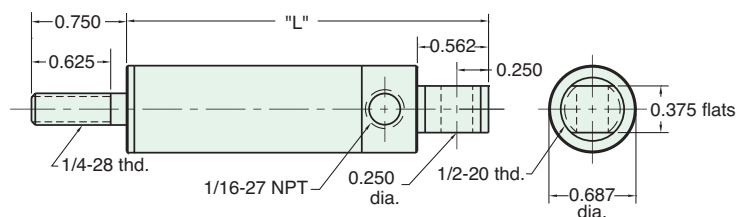
H9C-□S

Mount: Clevis
Type: Single Acting
 Spring Return

Stroke Length "L"	1"	2"	3"
	3.875	5.531	7.187

To order: Indicate stroke in box □

Add -N to the end of the part number for a non-threaded rod



Nut included, but not shown on drawing



9/16" BORE BRASS HEAVY DUTY CYLINDER

Consult factory for hydraulic applications

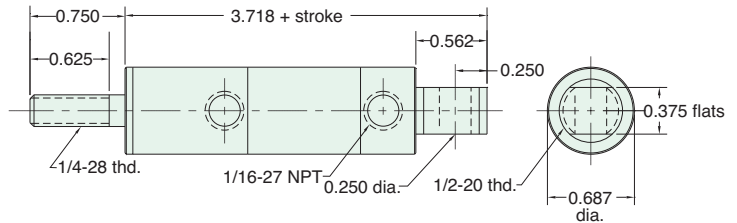
Note: Maximum recommended hydraulic working pressure for heavy duty cylinders is 1000 psig.

H9C-□D

Mount: Clevis **Available Stroke Lengths:** 1", 2", 3", 4", 5", 6"
Type: Double Acting

To order: Indicate stroke in box □

Add **-N** to the end of the part number for a non-threaded rod



Nuts included, but not shown on drawing

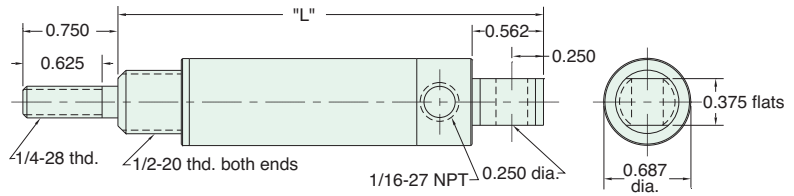
H9U-□S

Mount: Universal
Type: Single Acting
 Spring Return

Stroke Length "L"	1"	2"	3"
	4.375"	6.031	7.687

To order: Indicate stroke in box □

Add **-N** to the end of the part number for a non-threaded rod



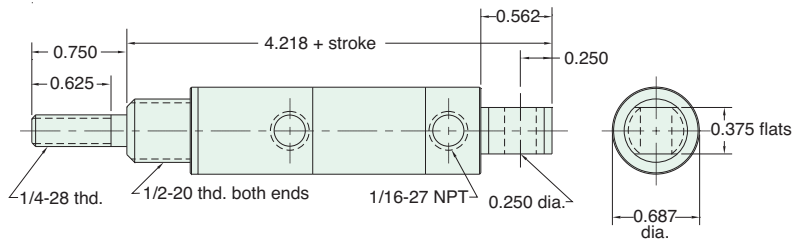
Nuts included, but not shown on drawing

H9U-□D

Mount: Universal **Available Stroke Lengths:** 1", 2", 3", 4", 5", 6"
Type: Double Acting

To order: Indicate stroke in box □

Add **-N** to the end of the part number for a non-threaded rod



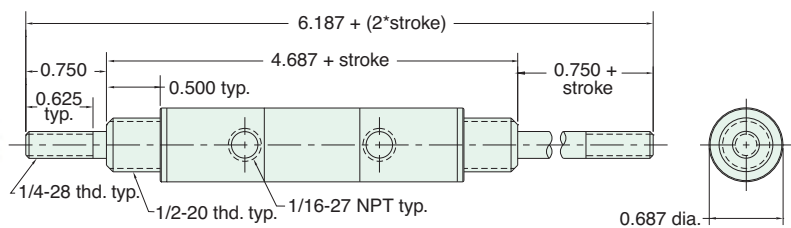
Nuts included, but not shown on drawing

H9D-□D

Mount: Stud **Available Stroke Lengths:** 1", 2", 3", 4", 5", 6"
Type: Double Acting
 Double Rod

To order: Indicate stroke in box □

Add **-N** to the end of the part number for a non-threaded rod



Nuts included, but not shown on drawing

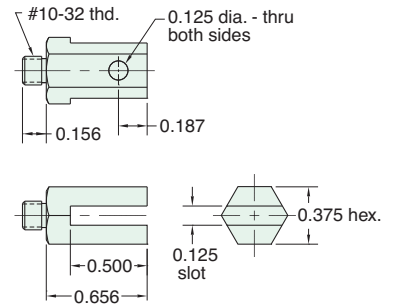
9/16" BORE MOUNTING BRACKETS



11996

Male Clevis

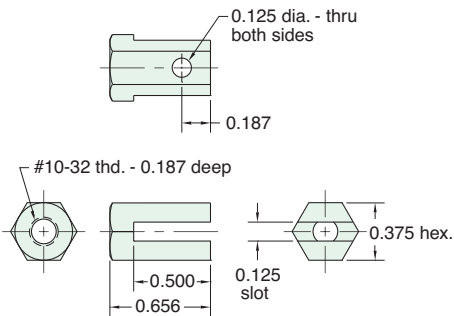
Mounts in rear of cylinder tapped #10-32



15009

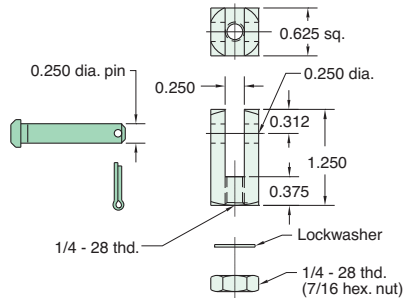
Female Clevis

For use with cylinders having #10-32 threaded shaft



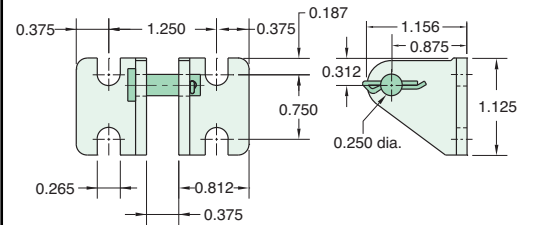
15015

Rod Clevis Assembly



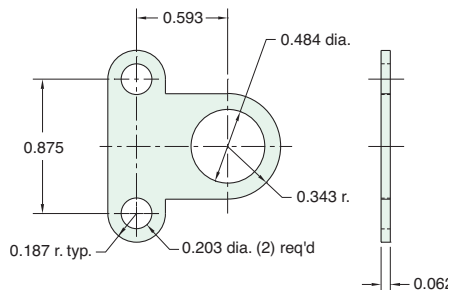
CB-1795

Clevis Bracket
Material: Steel,
bright zinc plated



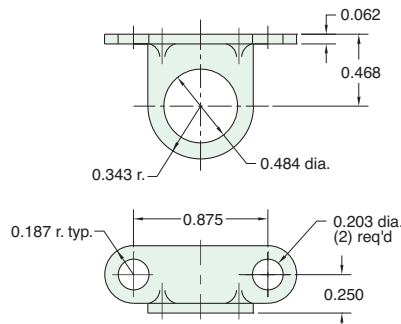
11917-1

Mounting Bracket (flat)



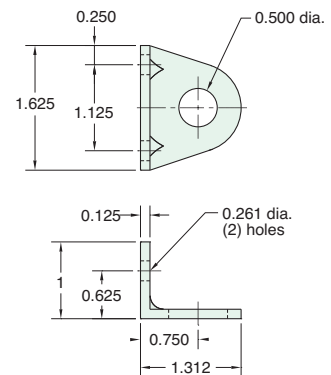
11918-1

Mounting Bracket (angled)



15018-2

Foot Bracket (angled)





7/8" BORE BRASS HEAVY DUTY CYLINDER

Consult factory for hydraulic applications

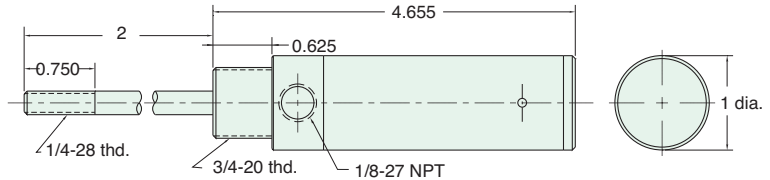
7SS-AR-1

Mount: Stud

Available Stroke Lengths: 1"

Type: Single Acting
Spring Extended

Add -N to the end of the part number for a non-threaded rod



Nut included, but not shown on drawing

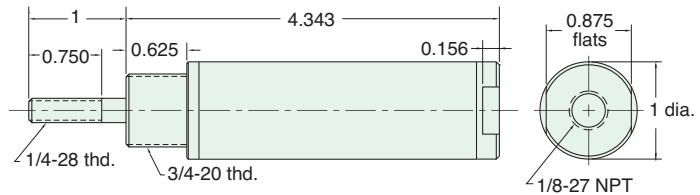
7SS-1

Mount: Stud

Available Stroke Lengths: 1"

Type: Single Acting
Spring Return

Add -N to the end of the part number for a non-threaded rod



Nut included, but not shown on drawing

7SD-□

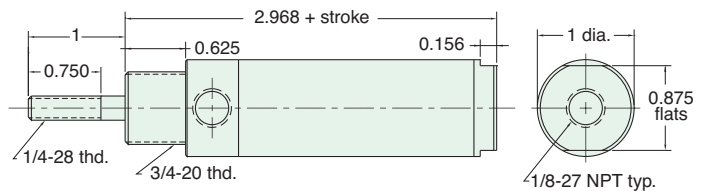
Mount: Stud

Available Stroke Lengths: 1", 2", 3", 5", 7", 9"

Type: Double Acting

To order: Add stroke length to the end of the part number

Add -N to the end of the part number for a non-threaded rod



Nut included, but not shown on drawing

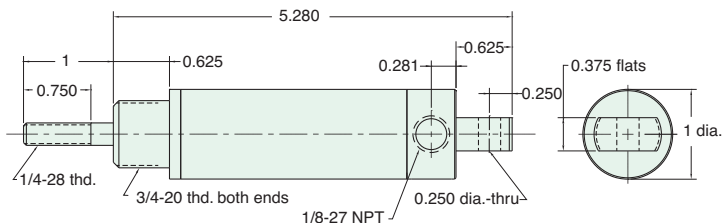
7S-1

Mount: Universal

Available Stroke Lengths: 1"

Type: Single Acting
Spring Return

Add -N to the end of the part number for a non-threaded rod



Nuts included, but not shown on drawing

7/8" BORE BRASS HEAVY DUTY CYLINDER



Consult factory for hydraulic applications

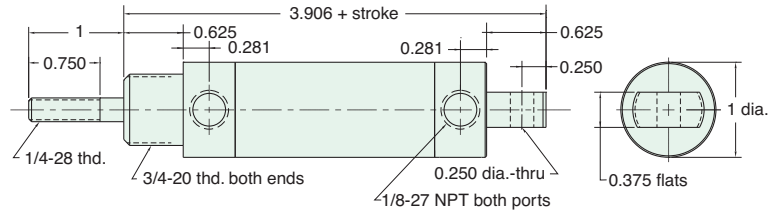
Note: Maximum recommended hydraulic working pressure for heavy duty cylinders is 1,000 psig.



Mount: Universal **Available Stroke Lengths:** 1", 2", 3", 5", 7", 9"
Type: Double Acting

To order: Add stroke length to the end of the part number

Add -N to the end of the part number for a non-threaded rod



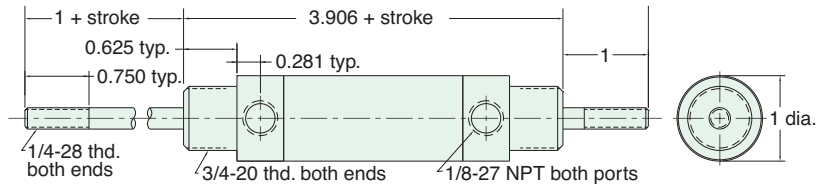
Nut included, but not shown on drawing



Mount: Universal **Available Stroke Lengths:** 1", 2", 3", 5", 7", 9"
Type: Double Acting
 Double Rod

To order: Add stroke length to the end of the part number

Add -N to the end of the part number for a non-threaded rod



Nut included, but not shown on drawing

Did you know...

Leonard Clippard made the prototype cylinder piston seals by punching leather disks from his kids old shoe tongues.

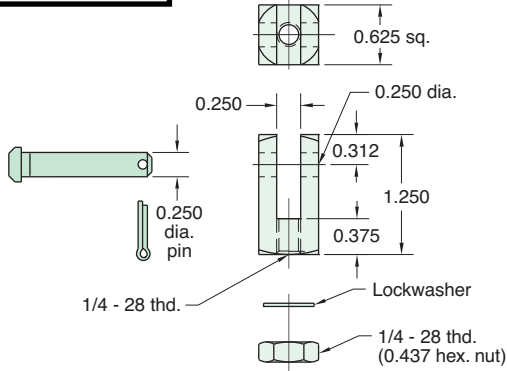




7/8" BORE MOUNTING BRACKETS

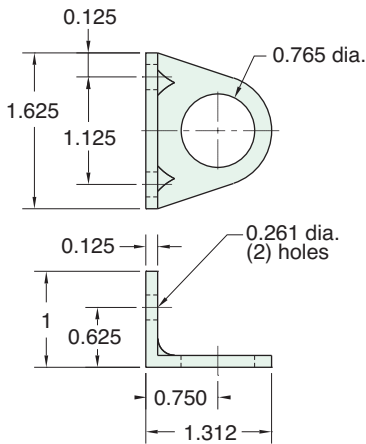
15015

Rod Clevis Assembly



15018-1

Foot Mounting Bracket



CUSTOMer solutions

If you need a product that fits your application perfectly, Clippard has the capability to design or modify one of its products to suit your exact needs. We understand that a standard catalog product may be close but not be exactly what you need. Let us know YOUR Need, and we will help to find YOUR Solution!

Special Cylinders

Clippard produced the first rolled-construction cylinder in 1949. Since then, we have produced thousands of special configurations from cartridge designs to low break-away miniature cylinders.



Miniature Swing-In Automated Arbor Press

