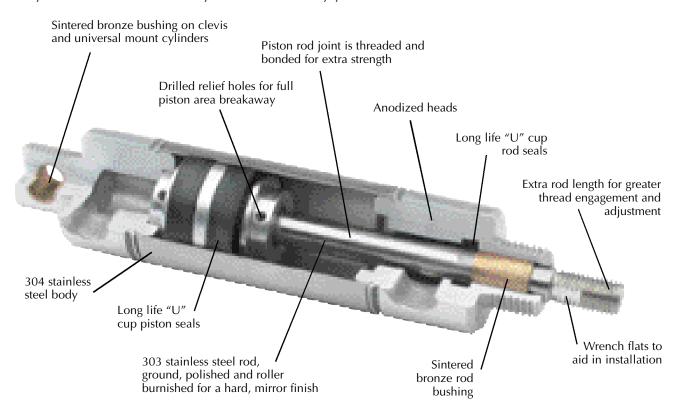
CYLINDERS Clippar

	STAINLESS STEEL CYLINDERS	2
	NEW! STAINLESS STEEL METRIC CYLINDERS	61
	CORROSION RESISTANT CYLINDERS	67
an and an analysis of the second	AIR FORCE ONE COMPACT CYLINDERS	75
	MINIMATIC® CYLINDERS	86

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

- 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 and bonded to pistons

- Polished I.D. 304 stainless steel tubes for low breakaway
 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°F to 230°F
 - Maximum pressure: 250 psig

STAINLESS STEEL CYLINDER



NUMBERING SYSTEM

Stroke In inches & fractions of an inch

Mounting Type

- S Stud
- U Universal
- C Clevis
- F Front Block
- E End Stud
- T Trunnion

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

Bore

08 - 1/2"

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"

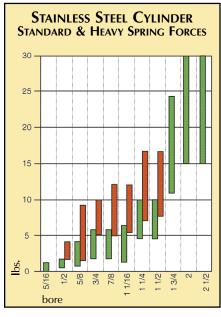
- **Rod Type** D - Double Ended Rod 05 - 5/16"
- R Rotating Rod
- N Non-Rotating Rod
- H Hollow Rod

40 - 2 1/2" 48 - 3"

Options

- **B** Bumpers
- V Viton® Seals
- C Cushions
- MB Magnetic Piston for Hall Effect sensors (includes bumpers)
- F Cushion Front End
- R Cushion Rear End
- W Rod Wiper
- S Side Ported
- H Heavy Spring
- P Rotated Ports

SPECIFICATIONS



Bore S	Bore Size										
5/16′	1/2"	5/8"	3/4"	7/8"	1-1/16"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/2"	3"
Force	Force Factor - Extend (Area)										
0.07	0.19	0.31	0.44	0.60	0.88	1.2	1.7	2.4	3.1	4.9	7.0
Rod Si	Rod Size										
1/8"	3/16"	3/16"	1/4"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	5/8"	3/4"
Rod A	Rod Area										
0.01	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	0.28	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.

Area is derived using either of the following

formulas: Diameter 2 x 0.7854 or Radius 2 x

F - Force or load in pounds

P - Pressure

A - Area of cylinder (square inches)

 $F = P \times A$ P = F / A

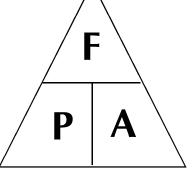
A = F / P

Standard Spring Forces (lbs)

Bore	5/16"	1/2"	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	1.3	3.0	3.0	2.0	4.5	4.5	11.0	15.0	15.0
Compressed	1.0	2.0	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"	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	3.3	5.0	5.0	5.5	8.5	8.5	N/A	N/A	N/A
Compressed	N/A	4.0	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.

Viton® 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 - MB

A magnet is attached to the piston that will actuate the Hall Effect and reed switches. This option also includes bumpers and extends the overall length of the cylinder. Switches and clamps need to be ordered separately. For more information see page 60 on Clippard's Hall Effect and reed switches. For multiple reed switches we need a 1" stroke or more. Maximum temperature 300° F.

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.

Non-standard Options

Extra Rod Extensions Thread Modifications Silk Screening Private Labels

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

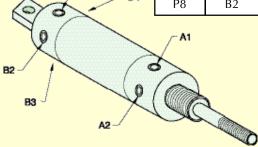
Side ported rear heads are sometimes needed when the standard cylinder has the rear port out the back. This option changes the design of the rear head so the rear port is located on the side of the cylinder. Overall length of cylinder changes with this option.

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 three.



Option #	Rear Port	Front Port
P2	B2	A2
Р3	B1	A2
P4	B4	A2
P5	В3	A2
P6	B4	A1
P7	В3	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.

STAINLESS STEEL CYLINDER



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	Rod Length								
dia.	1″	5″	10"	15"	20"	25"	30"	35"	40"
1/8″	110	12	3	1.3					
3/16"	262	59	15	6.6	3.7				
1/4"	478	190	47	21	12	7.5			
5/16"	756	451	116	52	29	19	13		
3/8"	1091	786	240	106	60	38	27	20	
7/16"	1490	1184	444	197	111	71	49	36	28
1/2"	1950	1645	757	336	189	120	84	62	47
5/8"	3055	2750	1795	821	462	295	205	150	115
3/4"	4405	4100	3140	1700	950	613	425	312	240

Rod Thread	Bore Size	Series	Rod Size	Rod Flats
#5-40 UNC-2A	5/16"	05	1/8″	none
#10-32 UNF-2A	1/2"	80	3/16"	none
#10-32 UNF-2A	5/8″	10	3/16"	none
1/4-28 UNF-2A	3/4"	12	1/4"	0.218
1/4-28 UNF-2A	7/8"	14	1/4"	0.218
5/16-24 UNF-2A	1 1/16"	17	5/16"	0.250
3/8-24 UNF-2A	1 1/4"	20	3/8"	0.312
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 CILinder" request form.







STAINLESS STEEL ACCESSORIES

POSITION SENSORS

Clippard pneumatic cylinders are available with a choice of magnetically operated position sensors. The magnetic reed switch or Hall Effect sensor . . . on cylinders equipped with magnetic piston option.

Hall Effect Position Sensors

Clippard Hall Effect sensors offer the user more accurate sensing of piston location for the ultimate in pneumatic system control.

The Hall Effect sensor operates with Clippard stainless steel pneumatic cylinders equipped with internal magnets on the pistons. By accurately sensing the magnetic field of the piston when it passes beneath the sensor, the position of the rod piston is determined, and a feedback signal is created. See page 59.





Reed Switches

The Clippard RS magnetic reed switches have power ranges to 25 watts, current up to 1.5 amperes and a rated life span of 10 million cycles. Plan to use them where the high performance of the Clippard HS Hall Effect switch is not required.

Two models are available: 36 volts or 200 volts AC/DC. Each is a SPST normally open configuration. 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 piston location. In the 36 VDC model, an LED provides switch closing indication. See page 59.

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.



STAINLESS STEEL ACCESSORIES

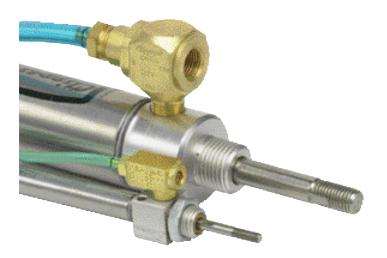


Flow Controls

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 148 through 150.



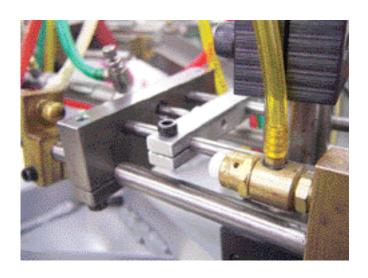


Quick Exhaust Valves

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 inch. See pages 153 and 154.

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 pages 113 through 129.



_





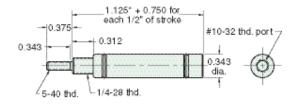
Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"

Spring Compressed: 1 lbs. Spring At Rest: 0.5 lbs. Type: Rotating Rod

Options: B, V, S, N For bumpers add .250 Single Acting

For S option add .220





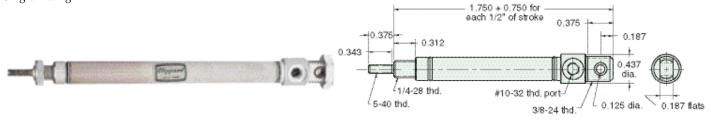
Nut included, but not shown on drawing

USR-05-

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" Mount: Universal Type: Rotating Rod Spring Compressed: 1 lbs. Spring At Rest: 0.5 lbs.

Options: B, V, N For bumpers add .250

Single Acting



Nuts included, but not shown on drawing

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

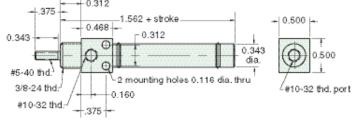
Type: Rotating Rod

Options: B, V, P6, P7, P8, S, N For bumpers add .250

Double Acting

For S option add .220





Nut included, but not shown on drawing

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

Type: Rotating Rod

Options: B, V, P2, P3, P4, P5, P6, P7, P8, N For bumpers add .250

Double Acting 2.187 + stroke -0.3120.3750.187 -- 0.500 |---0.468 0.375 0.312 0 0.500 -2 mounting holes 0.116 dia. thru 3/8-24 thd. - 0.187 flats #10-32 thd. 0.125 dia. #10-32 thd. port-0.160 3/8-24 thd. 0.375 Nuts included, but not shown on drawing



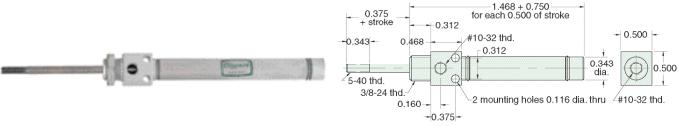


Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"

Type: Rotating Rod Spring Compressed: 1 lbs. Spring At Rest: 0.5 lbs.

Options: B, V, N For bumpers add .250

Reverse Acting



Nuts included, but not shown on drawing



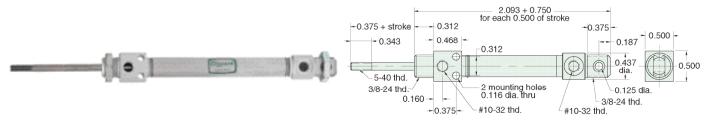
Mount: Universal Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"

Type: Rotating Rod Spring Compressed: 1 lbs. Spring At Rest: 0.5 lbs.

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

For bumpers add .250

Reverse Acting



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.

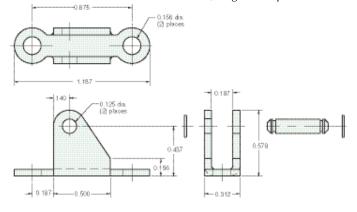
Bore Siz	œ.										
5/16"	1/2"	5/8"	3/4"	7/8"	1-1/16"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/2"	3"
Force Fa	actor - Ext	end (are	ea)								
0.07	0.19	0.31	0.44	0.60	0.88	1.2	1.7	2.4	3.1	4.9	7.0
Rod Size	2										
1/8"	3/16"	3/16"	1/4″	1/4″	5/16"	3/8"	7/16"	1/2"	5/8"	5/8"	3/4"
Rod Are	a										
0.01	0.03	0.03	0.05	0.05	0.08	0.11	0.15	00.20	0.20	0.31	0.44
Force Factor - Retract (area)											
0.06	0.16	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	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	5.65	7.82	11.02	16.07	21.79	31.0	44.07	58.07	91.86	131.16
50 psig	- Extend (
3.5	9.5	15.5	22.0	30.0	44.0	60.0	85.0	120.0	155.0	245.0	350.0
50 psig	- Retract (
2.9	8.13	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	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	22.6	31.27	44.07	64.26	87.17	124.0	176.29	232.29	367.46	524.66

_

5/16" BORE ACCESSORIES

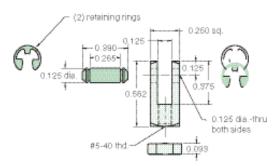


Clevis Bracket Material: steel, bright zinc plated



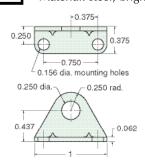
RC-0581

Material: steel, bright zinc plated



FB-0591

Foot Bracket Material: steel, bright zinc plated



Mounting Nuts

Stud Nut

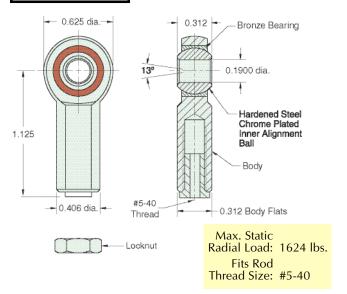
Part Number	Across Flats	Nut Thickness	Nut (Thread)
N04-28A	7/16"	5/32"	1/4-28
N04-28B	3/8"	1/8"	1/4-28
N06-24A	9/16"	7/32"	3/8-24
N06-24B	1/2"	1/8"	3/8-24

Rod Nut

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

FB-0585

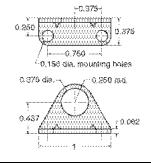
Material: steel, bright zinc plated body



FB-0592

Foot Bracket

Material: steel, bright zinc plated





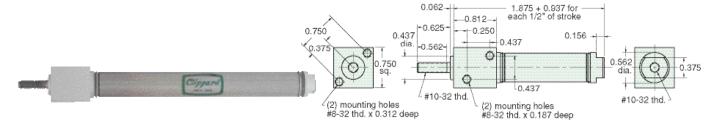
FSR-08-

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" **Mount:** Front Type: Rotating Rod Spring Compressed: 2 lbs. Spring At Rest: 0.9 lbs.

Options: MB, B, H, V, S, N For bumpers add .500" For magnetic bumpers add .812

Single Acting

For S option add .187



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: MB, B, H, V, S, N

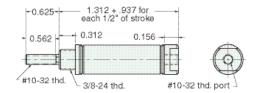
For bumpers add .500" For magnetic bumpers add .812

Single Acting

For S option add .187

For S option add .187





Nuts included, but not shown on drawing

SSR-08-

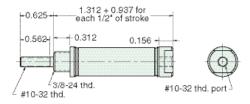
Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4" Type: Rotating Rod Spring Compressed: 2 lbs. Spring At Rest: 0.9 lbs.

Options: MB, B, H, V, S, N

Single Acting

For bumpers add .500" For magnetic bumpers add .812





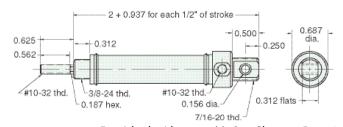
Nuts included, but not shown on drawing

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. Bumpers add .500 Options: MB, B, H, V, P6, N For magnetic bumpers add .812

Single Acting





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





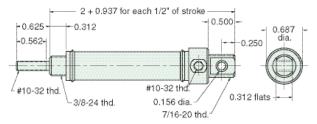
Mount: Universal Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"

Type: Rotating Rod Spring Compressed: 2 lbs. Spring At Rest: 0.9 lbs.

Options: MB, B, H, V, P6, N Bumpers add .500 For magnetic bumpers add .812

Single Acting





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

FDR-08-□-□

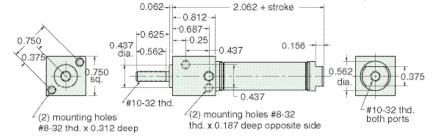
Mount: Front **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"

Type: Rotating Rod

Options: MB, B, V, P6, P7, P8, S, N

Bumpers add .500 For magnetic bumpers add .812





SDR-08-□-□

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

Type: Rotating Rod

For bumpers add .500

Options: MB, B, V, P6, P7, P8, S, N

For magnetic bumpers add .812

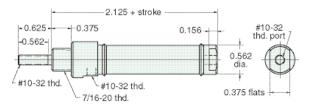
Double Acting

Double Acting

For S option add .187

For S option add .187





Nut included, but not shown on drawing

UDR-08-□-□

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

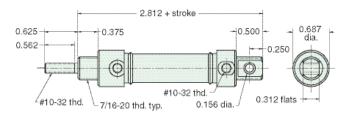
Type: Rotating Rod

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

For bumpers add .500
For magnetic bumpers add .812

Double Acting





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





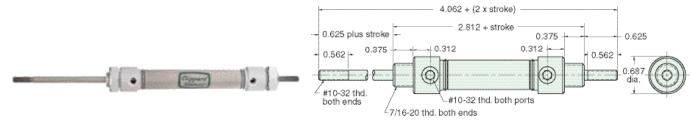
Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"

Type: Double Rod

Options: MB, B, V, P6, P7, P8, N For bumpers add .500

Double Acting

For Magnetic Bumper add .812



Nut included, but not shown on drawing

SRR-08-□-□

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

Type: Potating Rod Spring Compressed: 2 lbs Spring At Rost: 0.9 lbs

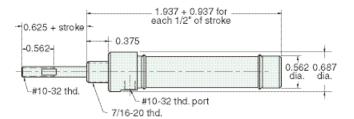
Type: Rotating Rod **Spring Compressed:** 2 lbs. **Spring At Rest:** 0.9 lbs. **Options:** MB, B, H, V, N

For bumpers add .500

Reverse Acting

For Magnetic Bumper add .812





Nut included, but not shown on drawing

URR-08-□-□

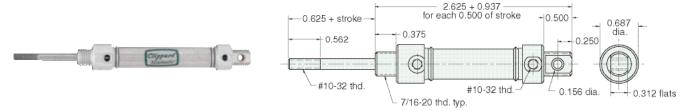
Mount: Universal Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"

Type: Rotating Rod Spring Compressed: 2 lbs. Spring At Rest: 0.9 lbs.

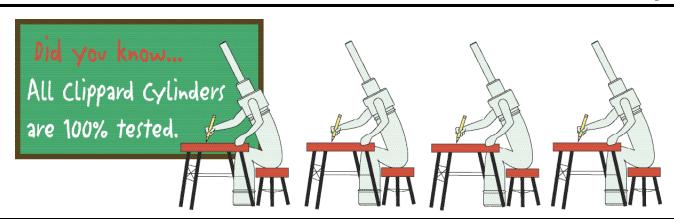
Options: MB, B, H, V, P6, P7, P8, N For bumpers add .500

Reverse Acting

For Magnetic Bumper add .812



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

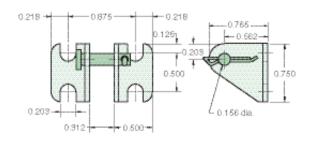


1/2" BORE ACCESSORIES



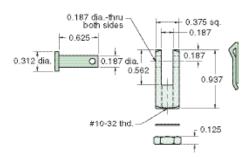
CB-0895

Clevis Bracket Material: steel, bright zinc plated



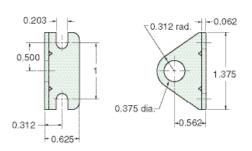
RC-0881

Rod Clevis Material: steel, bright zinc plated



FB-0891

Foot Bracket Material: steel, bright zinc plated



Mounting Nuts

Stud Nut

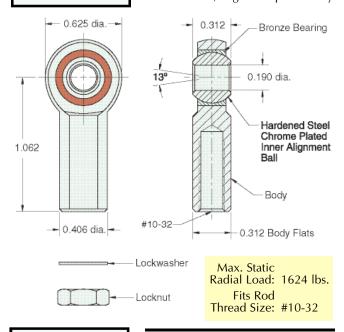
Part Number	Across Flats	Nut Thickness	Nut (Thread)
N06-24A	9/16"	7/32"	3/8-24
N06-24B	1/2"	1/8"	3/8-24
N07-20	11/16"	1/4"	7/16-20

Rod Nut

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

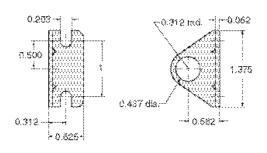
RE-0885

Rod End Material: steel, bright zinc plated body

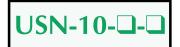


FB-0892

Foot Bracket Material: steel, bright zinc plated







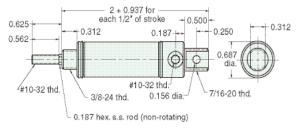
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" **Mount:** Universal

Type: Non-Rotating Rod Spring Compressed: 4 lbs. Spring At Rest: 1.3 lbs. Options: MB, B, H, V, P6, N

Single Acting

For bumpers add .500. For magnetic bumpers add .812





Furnished without nut(s). See Chart on Page 18.

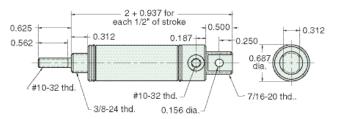


Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4" Spring Compressed: 4 lbs. Spring At Rest: 1.3 lbs. **Type:** Rotating Rod

Options: MB, B, H, V, P6, N For bumpers add .500. For magnetic bumpers add .812 $\,$

Single Acting





Furnished without nut(s). See Chart on Page 18.

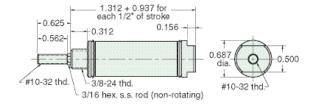


Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" **Mount:** Stud Type: Non-Rotating Rod Spring Compressed: 4 lbs. Spring At Rest: 1.3 lbs.

Options: MB, B, H, V, S, N For bumpers add .500. For magnetic bumpers add .812

Single Acting





Nut included, but not shown on drawing

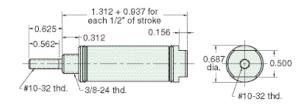


Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" **Mount:** Stud Spring Compressed: 4 lbs. Spring At Rest: 1.3 lbs. **Type:** Rotating Rod

Options: MB, B, H, V, S, N For bumpers add .500. For magnetic bumpers add .812

Single Acting





Nut included, but not shown on drawing



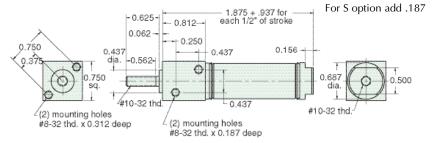


Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" Type: Rotating Rod Spring Compressed: 4 lbs. Spring At Rest: 1.3 lbs.

Options: MB, B, H, V, S, N For bumpers add .500. For magnetic bumpers add .812

Single Acting





Furnished without nut(s). See Chart on Page 18.

FDR-10-

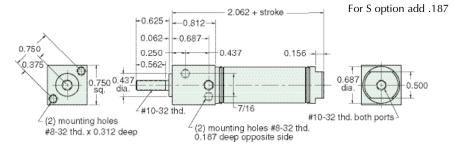
Mount: Front **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"

Type: Rotating Rod **Options:** MB, B, V, P6, P7, P8, S, N

For bumpers add .500 For magnetic bumpers add .812

Double Acting





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

Type: Rotating Rod

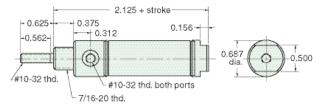
Options: MB, B, V, P6, P7, P8, S, N

For bumpers add .500 For magnetic bumpers add .812

Double Acting

For S option add .187





Nut included, but not shown on drawing

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

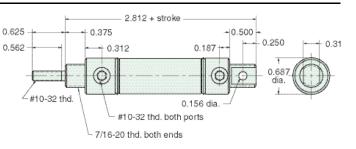
Type: Rotating Rod

For bumpers add .500 For magnetic bumpers add .812

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

Double Acting





Furnished without nut(s). See Chart on Page 18.



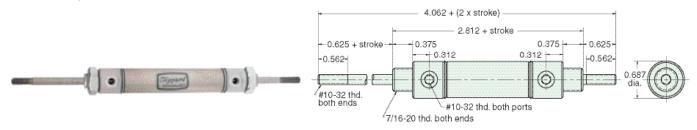


Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3', 4"

Type: Double Rod

For bumpers add .500 **Options:** MB, B, V, P6, P7, P8, N For magnetic bumpers add .812

Double Acting



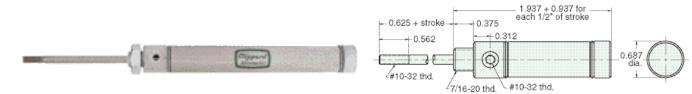
Nut included, but not shown on drawing

SRR-10-

Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4" **Spring Compressed:** 4 lbs. **Spring At Rest:** 1.3 lbs. **Type:** Rotating Rod

For bumpers add .500 Options: MB, B, H, V, N For magnetic bumpers add .812

Reverse Acting



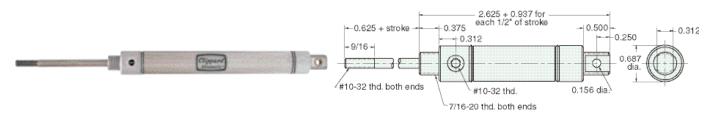
Nut included, but not shown on drawing



Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" **Mount:** Universal **Type:** Rotating Rod Spring Compressed: 4 lbs. Spring At Rest: 1.3 lbs.

For bumpers add .500 For magnetic bumpers add .812 Options: MB, B, H, V, P6, N

Reverse Acting



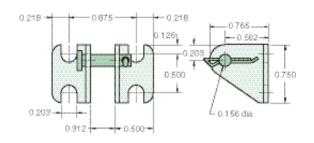
Furnished without nut(s). See Chart on Page 18.

5/8" Bore Accessories



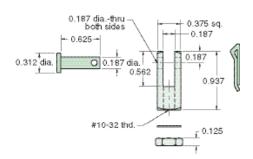
CB-0895

Clevis Bracket Material: steel, bright zinc plated



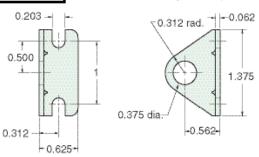
RC-0881

Rod Clevis Material: steel, bright zinc plated



FB-0891

Foot Bracket Material: steel, bright zinc plated



Mounting Nuts

Stud Nut

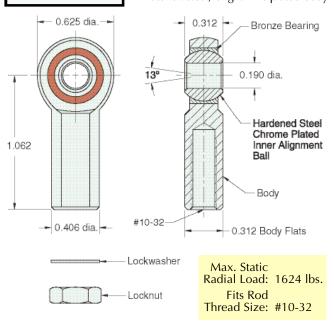
Part Number	Across Flats	Nut Thickness	Nut (Thread)
N06-24A	9/16"	7/32"	3/8-24
N06-24B	1/2"	1/8"	3/8-24
N07-20	11/16"	1/4"	7/16-20

Rod Nut

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

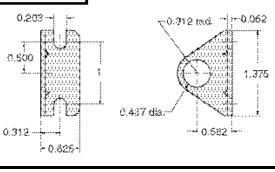
RE-0885

Rod End Material: steel, bright zinc plated body



FB-0892

Foot Bracket Material: steel, bright zinc plated





FSR-12-□-□

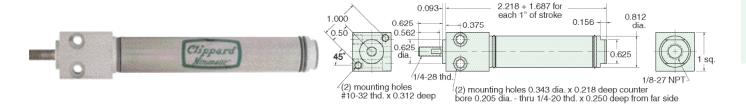
Mount: Front Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"

Type: Rotating Rod Spring Compressed: 6 lbs. Spring At Rest: 3 lbs.

Options: MB, B, H, V, S, N For bumpers add .500. For magnetic bumpers add .812

Single Acting

For S option add .437





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

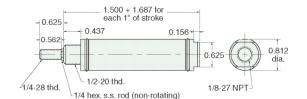
Type: Non-Rotating Rod Spring Compressed: 6 lbs. Spring At Rest: 3 lbs.

Options: MB, B, H, V, S, N For bumpers add .500. For magnetic bumpers add .812

Single Acting

For S option add .437





Nut included, but not shown on drawing

SSR-12-□-□

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

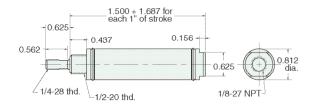
Type: Rotating Rod Spring Compressed: 6 lbs. Spring At Rest: 3 lbs.

Options: MB, B, H, V, S, N For bumpers add .500. For magnetic bumpers add .812

Single Acting

For S option add .437





Nut included, but not shown on drawing

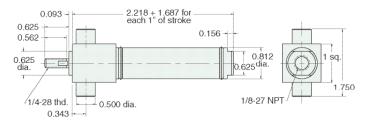
TSR-12-□-□

Mount: Trunnion
Type: Rotating Rod
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"
Spring Compressed: 6 lbs. Spring At Rest: 3 lbs.

Options: MB, B, H, V, S, N For bumpers add .500. For magnetic bumpers add .812

Single Acting For S option add .437





- -



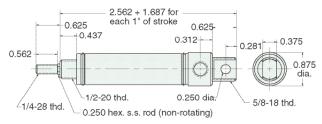


Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4" Type: Non-Rotating Rod Spring Compressed: 6 lbs. Spring At Rest: 3 lbs.

Options: MB, B, H, V, P6, N For bumpers add .500. For magnetic bumpers add .812

Single Acting





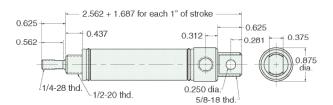
Furnished without nut(s). See Chart on Page 24.

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: MB, B, H, V, P6, N For bumpers add .500. For magnetic bumpers add .812

Single Acting





Furnished without nut(s). See Chart on Page 24.

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

Type: Rotating Rod

For bumpers add .500 Options: MB, B, W, V, P6, P7, P8, S, N For magnetic bumpers add .812

Double Acting

0.093--0.875-0.625 0.156 0.375 0.562 0.812 0.625 dia Clippard dia. 1/8-27 NPT both ports 1/4-28 thd. (2) mounting holes 0.343 dia. x 0.218 deep counter bore 0.205 dia. - thru 1/4-20 thd. x 0.250 deep from far side (2) mounting holes #10-32 thd. x 5/16 deep

Furnished without nut(s). See Chart on Page 24.

TDR-12-

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

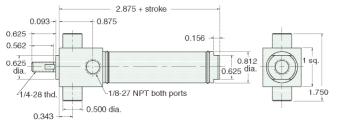
Type: Rotating Rod For bumpers add .500 For magnetic bumpers add .812 Options: MB, B, W, V, S, N

Double Acting

For S option add .437

For S option add .437





2.875 + stroke





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

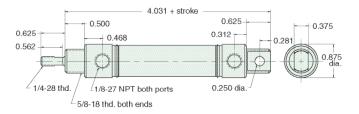
5", 6", 8", 10", 12 Type: Rotating rod

For bumpers add .500 Options: C, F, R, MB, B, W, V, P2, P3, P4, P5, P6, P7, P8, M, N For magnetic bumpers add .812

Double Acting

For magnet add .312





Furnished without nut(s). See Chart on Page 24.



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

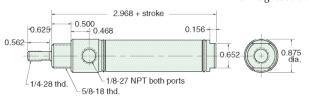
Type: Rotating Rod

For bumpers add .500 For magnetic bumpers add .812 Options: C, F, R, MB, B, W, V, P6, P7, P8, S, M, N

Double Acting

For C, F, R & S options add .437 For magnet add .312





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

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

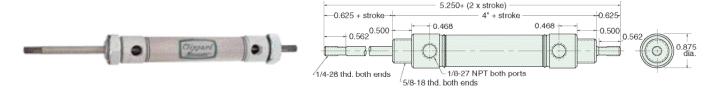
Type: Double Rod

Options: C, F, MB, B, W, V, P6, P7, P8, M, N Bumpers add .500. For magnetic bumpers add .812

Double Acting

Double Acting

For CM, FM add .312



Nuts included, but not shown on drawing

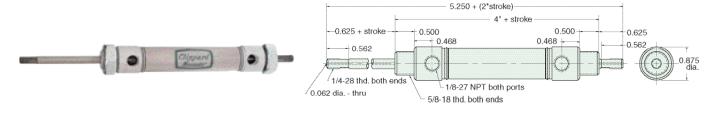


Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6"

Type: Hollow Rod For bumpers add .500 For magnetic bumpers add .812

Options: C, F, MB, B, W, V, P6, P7, P8, M, N

For CM, FM add .312



Nuts included, but not shown on drawing





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

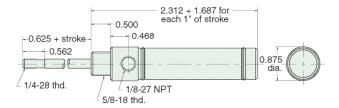
Type: Rotating Rod Spring Compressed: 6 lbs. Spring At Rest: 3 lbs.

Options: MB, B, H, W, V, N For bumpers add .375

Reverse Acting

For magnetic bumpers add .687





Nut included, but not shown on drawing

URR-12-□-□

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

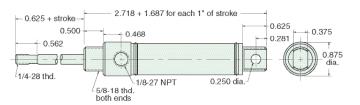
Type: Rotating Rod Spring Compressed: 6 lbs. Spring At Rest: 3 lbs.

Options: MB, B, H, W, V, P6, N For bumpers add .500

Reverse Acting

For magnetic bumpers add .812





Furnished without nut(s). See Chart on Page 24.

SFD-12-□-□

Mount: Stud

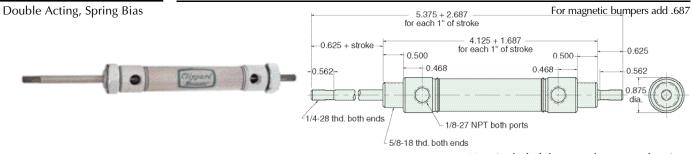
Type: Double Rod

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

Spring Compressed: 6 lbs. Spring At Rest: 3 lbs.

Options: MB, B, H, W, V, P6, P7, P8, N

For bumpers add .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"

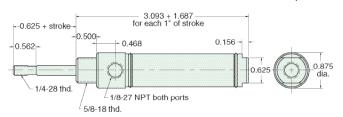
Type: Rotating Rod Spring Compressed: 6 lbs. Spring At Rest: 3 lbs.

Options: MB, B, H, W, V, P6, P7, P8, S, N

For bumpers add .375

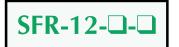
For magnetic bumpers add .687 For S option add .437





Nut included, but not shown on drawing





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.

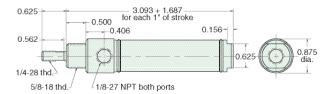
Options: MB, B, H, W, V, P6, P7, P8, S, N For bumpers add .375

Double Acting, Front Spring Bias

For magnetic bumpers add .687

For S option add .437





Nut included, but not shown on drawing

UBR-12-□-□

Double Acting, Rear Spring Bias

Mount: Universal Type: Rotating Rod

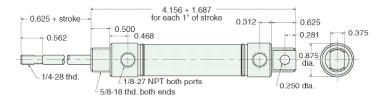
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"

Spring Compressed: 6 lbs. Spring At Rest: 3 lbs.

Options: MB, B, H, W, V, P2, P3, P4, P5, P6, P7, P8, N

For bumpers add .375 For magnetic bumpers add .687





Furnished without nut(s). See Chart on Page 24.

UFR-12-□-□

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.

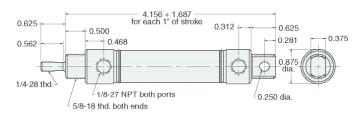
Type: Rotating Rod Spring Compressed: 6 lbs. Options: MB, B, H, W, V, P2, P3, P4, P5, P6, P7, P8, N

For bumpers add .375

Double Acting, Front Spring Bias

For magnetic bumpers add .687





Furnished without nut(s). See Chart on Page 24.

NEW CAD 2D & 3D Models Now Available

2D & 3D CAD models of all Clippard stainless steel cylinders are now available via www.clippard.com/cylinders/. A wide range of formats are offered for your convenience. Clippard's on-line, state-of-the-art cylinder configurator allows users to build their own cylinder exactly to the required specifications, and then view the details, drawings, CAD models, pricing and much more!

www.clippard.com/cylinders/

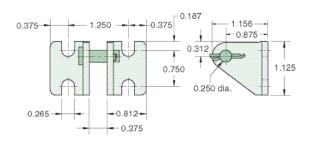
- -

3/4" BORE ACCESSORIES



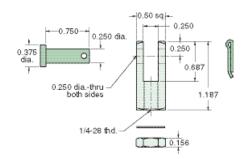
CB-1795

Clevis Bracket Material: steel, bright zinc plated



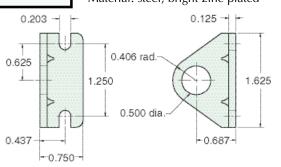
RC-1281

Rod Clevis Material: steel, bright zinc plated



FB-1291

Foot Bracket Material: steel, bright zinc plated



MOUNTING NUTS

Stud Nut

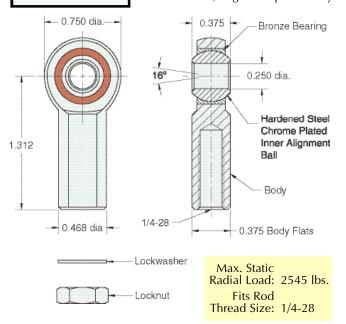
Part Number	Across Flats	Nut Thickness	Nut (Thread)
N08-20	3/4"	5/16"	1/2-20
N10-18	15/16"	3/8"	5/8-18

Rod 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

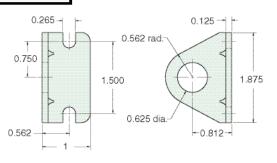
RE-1285

Rod End Material: steel, bright zinc plated body



FB-1791

Foot Bracket Material: steel, bright zinc plated







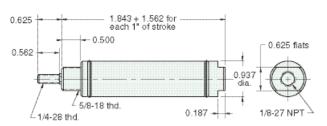
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" Mount: Stud Type: Non-Rotating Rod Spring Compressed: 6 lbs. Spring At Rest: 3 lbs.

Options: MB, H, V, S, N **Bumpers are standard.** For magnetic bumpers add .312

Single Acting

For S option add .281





Nut included, but not shown on drawing

SSR-14-

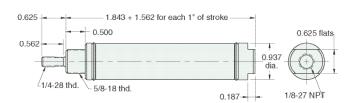
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" Mount: Stud Type: Rotating Rod Spring Compressed: 6 lbs. Spring At Rest: 3 lbs.

Bumpers are standard. For magnetic bumpers add .312

Single Acting

Options: MB, H, V, S, N For S option add .281





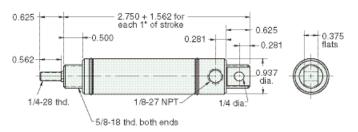
Nut included, but not shown on drawing

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" **Mount:** Universal Type: Non-Rotating Rod Spring Compressed: 6 lbs. Spring At Rest: 3 lbs.

Options: MB, H, V, P2, P3, P4, P5, P6, P7, P8, N Bumpers are standard. For magnetic bumpers add .312

Single Acting





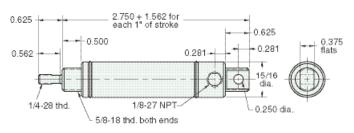
Furnished without nut(s). See Chart on Page 28.

Furnished without nut(s) **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: MB, H, V, P2, P3, P4, P5, P6, P7, P8, N Bumpers are standard. For magnetic bumpers add .312

Single Acting





Furnished without nut(s). See Chart on Page 28.





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

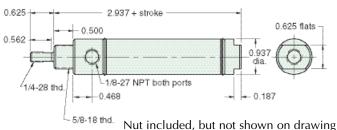
Type: Rotating Rod

Bumpers are standard For magnetic bumpers add .312 Options: C, F, R, MB, W, V, P6, P7, P8, S, N

Double Acting

For C, F, R and S option add .281





For C, F, & R options use side ported rear head

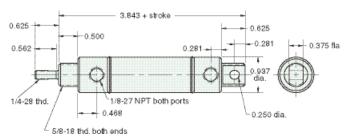
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4", Furnished without nut(s) See chart on page 29 **Mount:** Universal Type: Rotating Rod

Options: C, F, R, MB, W, V, P2, P3, P4, P5, P6, P7, P8, N

Bumpers are standard For magnetic bumpers add .312

Double Acting





Furnished without nut(s). See Chart on Page 18.

Mount: Stud Standardt Strokelednigthen of "shawna" on 4 drawing"

Type: Double Rod

Bumpers are standard

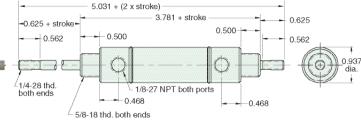
Options: C, F, MB, W, V, P6, P7, P8, N

For magnetic bumpers add .312

Double Acting

Double Acting





Nuts included, but not shown on drawing

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

Type: Hollow Rod

Bumpers are standard For magnetic bumpers add .312

Options: C, F, MB, W, V, P6, P7, P8, N

5.031 + (2 x stroke) 0.625 0.500 - 0.500 0.562 -0.5621/4-28 thd both ends 1/8-27 NPT both ports -0.062 dia.-thru $^{/}$ 5/8-18 thd. both ends

Nuts included, but not shown on drawing





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.

Type: Rotating Rod Spring Compressed: 6 lbs. Spring At Rest: 3 lbs.

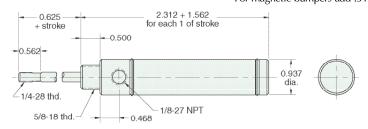
Options: MB, H, W, V, N

Bumpers are standard

Reverse Acting

For magnetic bumpers add .312





Nut included, but not shown on drawing

URR-14-□-□

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: MB, H, W, V, P6, P7, P8, N

Bumpers are standard

Reverse Acting

For magnetic bumpers add .312

0.625 + 2.906 + 1.562 for each 1" of stroke

0.625 - 0.500

0.625 - 0.281

1/4-28 thd. 1/8-27 NPT

0.250 dla.

5/8-18 thd. both ends

Furnished without nut(s). See Chart on Page 28.

J-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

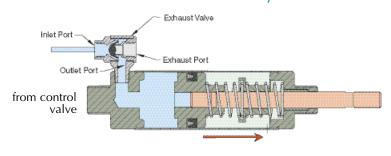
outlet port of the valve into the cylinder.

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

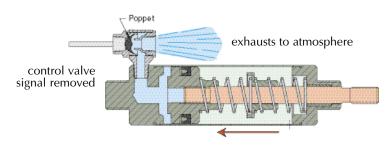
When the control valve exhausts air from the exhaust valve inlet port, the Buna-N poppet shifts to seal the inlet port and open the exhaust port to the cylinder. The pressurized air is allowed to exhaust directly through the exhaust valve to atmosphere.

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.

Cylinder Extends



Cylinder Retracts - Fast!

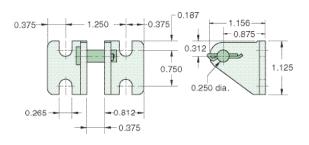


- -



CB-1795

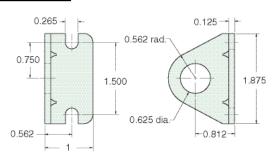
Clevis Bracket Material: steel, bright zinc plated



Rod Clevis Material: steel, bright zinc plated -|0.50 sq|-0.250 0.250 dia. 0.250 0.687 0.250 dia.-thru both sides 1/4-28 thd. 0.156

FB-1791

Foot Bracket Material: steel, bright zinc plated



Mounting Nuts

Stud Nut

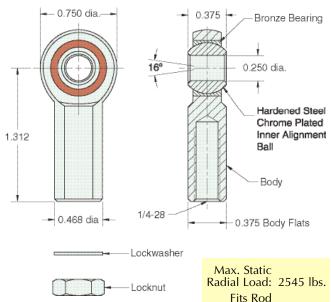
Part	Across	Nut	Nut
Number	Flats	Thickness	(Thread)
N10-18	15/16"	3/8"	5/8-18

Rod 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

RE-1285

Rod End Material: steel, bright zinc plated body



Fits Rod Thread Size: 1/4-28



FSR-17-□-□

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

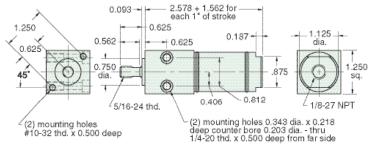
Type: Rotating Rod Spring Compressed: 7 lbs. Spring At Rest: 2 lbs.

Options: MB, B, H, V, S, N For magnetic bumpers add .312

Single Acting

For S option add .250







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

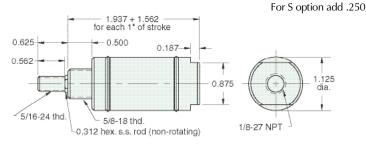
Type: Non-Rotating Rod Spring Compressed: 7 lbs. Spring At Rest: 2 lbs.

Options: MB, B, H, V, S, N

For magnetic bumpers add .312







Nut included, but not shown on drawing

SSR-17-□-□

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

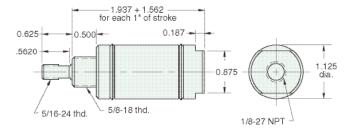
Type: Rotating Rod Spring Compressed: 7 lbs. Spring At Rest: 2 lbs.

Options: MB, B, H, V, S, N

For magnetic bumpers add .312







Nut included, but not shown on drawing

TSR-17-□-□

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.

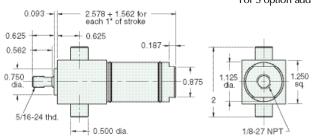
Options: MB, B, H, V, S, N

For magnetic bumpers add .312

Single Acting

For S option add .250





- -



1 1/16" Bore Stainless Steel Cylinder



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

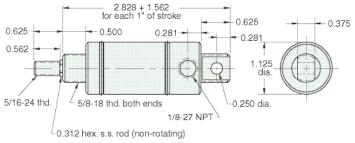
Type: Non-Rotating Rod Spring Compressed: 7 lbs. Spring At Rest: 2 lbs.

Options: MB, B, H, V, P6, N

For magnetic bumpers add .312







Furnished without nut(s). See Chart on Page 34.

USR-17-□-□

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

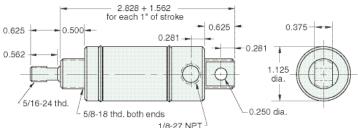
Type: Rotating Rod Spring Compressed: 7 lbs. Spring At Rest: 2 lbs.

Options: MB, B, H, V, P6, N

For magnetic bumpers add .312







Furnished without nut(s). See Chart on Page 34.

FDR-17-□-□

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

Type: Rotating Rod

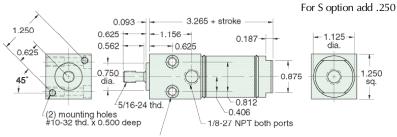
Options: MB, B, W, V, P6, P7, P8, S, N

For magnetic bumpers add .312

Double Acting

Double Acting





(2) mounting holes 0.343 dia. x .218 deep counter bore 0.203 dia.- thru 1/4-20 thd. x 0.500 deep from far side

SDR-17-□-□

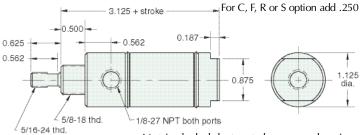
Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"

Type: Rotating Rod

Options: C, F, R, MB, B, W, V, P6, P7, P8, S, N

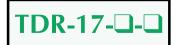
For magnetic bumpers add .312





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





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

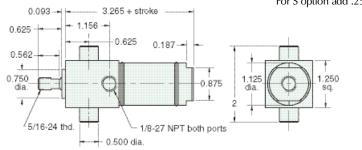
Type: Rotating Rod

Options: MB, B, W, V, S, N For magnetic bumpers add .312

Double Acting

For S option add .250







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

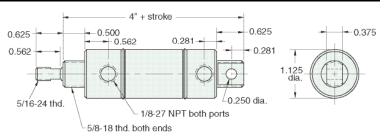
Type: Rotating Rod 5", 6", 8", 10", 12"

Options: C, F, R, MB, B, W, V, P2, P3, P4, P5, P6, P7, P8, N

For magnetic bumpers add .312

Double Acting





Furnished without nut(s). See Chart on Page 34.

SDD-17-□-□

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

Type: Double Rod

Options: C, F, R, MB, B, W, V, P6, P7, P8, N

For magnetic bumpers add .312

5.281 + (2 x stroke)

4.031 + stroke

0.502

0.562

0.562

0.562

0.562

1.125

dia.

1/8-27 NPT both ports

5/8-18 thd. both ends

Nuts included, but not shown on drawing

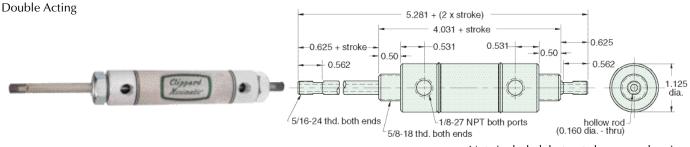
SDH-17-□-□

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

Type: Hollow Rod

Options: C, F, MB, B, W, V, P6, P7, P8, N

For magnetic bumpers add .312



Nuts included, but not shown on drawing

- -





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

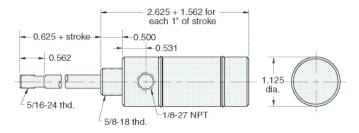
Type: Rotating Rod Spring Compressed: 7 lbs. Spring At Rest: 2 lbs.

Options: MB, B, H, W, V, N

For magnetic bumpers add .312

Reverse Acting





Nuts included, but not shown on drawing

URR-17-□-□

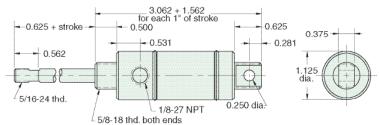
Mount: Universal Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"

Type: Rotating Rod Spring Compressed: 7 lbs. Spring At Rest: 2 lbs.

Options: MB, B, H, W, V, P6, N For magnetic bumpers add .312

Reverse Acting





Furnished without nut(s). See Chart on Page 34.

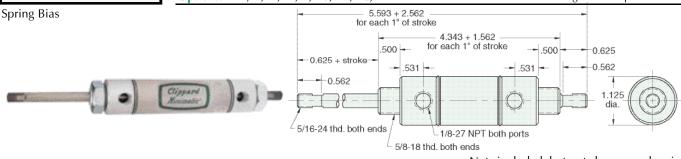
SFD-17-□-□

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: MB, B, H, W, V, P6, P7, P8, N

For magnetic bumpers add .312



Nuts included, but not shown on drawing

SBR-17-□-□

Mount: Stud
Type: Rotating Rod
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"
Spring Compressed: 7 lbs. Spring At Rest: 2 lbs.

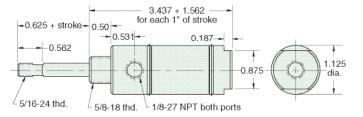
Options: MB, B, H, W, V, P6, P7, P8, S, N

For magnetic bumpers add .312

Double Acting Rear Spring Bias

For S option add .250





Nut included, but not shown on drawing





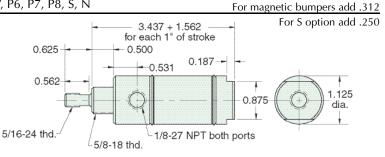
Mount: Stud Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"

Type: Rotating Rod Spring Compressed: 7 lbs. Spring At Rest: 2 lbs.

Options: MB, B, H, W, V, P6, P7, P8, S, N

Double Acting, Spring Bias





Nut included, but not shown on drawing

UBR-17-□-□

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

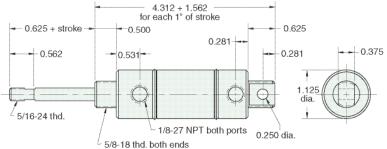
Type: Rotating Rod Spring Compressed: 7 lbs. Spring At Rest: 2 lbs.

Options: MB, B, H, W, V, P2, P3, P4, P5, P6, P7, P8, N

For magnetic bumpers add .312

Double Acting, Rear Spring Bias





Furnished without nut(s). See Chart on Page 34.

UFR-17-□-□

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

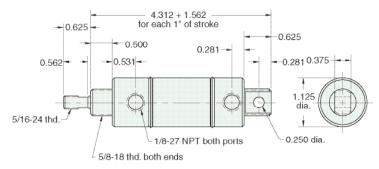
Type: Rotating Rod Spring Compressed: 7 lbs. Spring At Rest: 2 lbs.

Options: MB, B, H, W, V, P2, P3, P4, P5, P6, P7, P8, N

For magnetic bumpers add .312

Double Acting Front Spring Bias





Furnished without nut(s). See Chart on Page 34.

- -

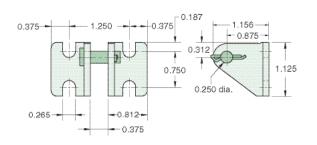


1 1/16" Bore Accessories



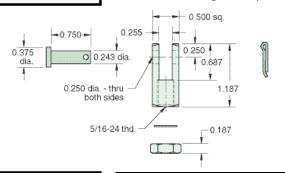
CB-1795

Clevis Bracket Material: steel, bright zinc plated



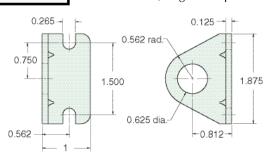
RC-1781

Rod Clevis Material: steel, bright zinc plated



FB-1791

Foot Bracket Material: steel, bright zinc plated



Mounting Nuts

Stud Nut

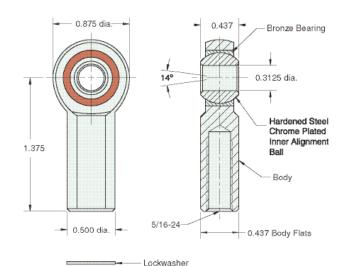
Part	Across	Nut	Nut
Number	Flats	Thickness	(Thread)
N10-18	15/16"	3/8"	5/8-18

Rod Nut

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

RE-1785

Rod End Material: steel, bright zinc plated body





Max. Static Radial Load: 3200 lbs. Fits Rod Thread Size: 5/16-24



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

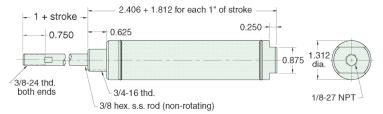


Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" Type: Non-Rotating Rod Spring Compressed: 10 lbs. Spring At Rest: 4.5 lbs.

Options: MB, B, H, V, S, N

Single Acting For S option add .312





Nut included, but not shown on drawing

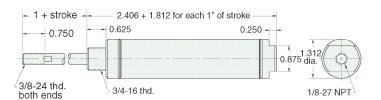


Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4" Spring Compressed: 10 lbs. Spring At Rest: 4.5 lbs. **Type:** Rotating Rod

Options: MB, B, H, V, S, N

For S option add .312 Single Acting



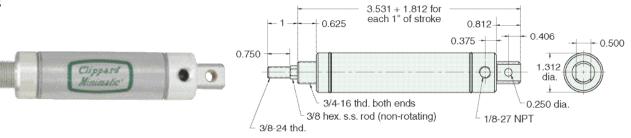


Nut included, but not shown on drawing

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" **Mount:** Universal Type: Non-Rotating Rod Spring Compressed: 10 lbs. Spring At Rest: 4.5 lbs.

Options: MB, B, H, V, P2, P3, P4, P5, P6, P7, P8, N For magnetic bumpers add .312





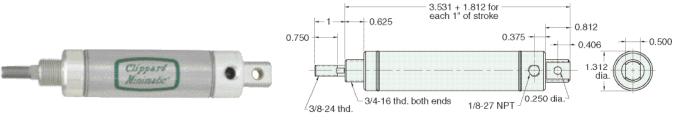
Furnished without nut(s). See Chart on Page 38.

USR-20-

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" **Mount:** Universal Spring Compressed: 10 lbs. Spring At Rest: 4.5 lbs. **Type:** Rotating Rod

Options: MB, B, H, V, P2, P3, P4, P5, P6, P7, P8, N For magnetic bumpers add .312

Single Acting



Furnished without nut(s). See Chart on Page 38.



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

SDR-20-□-□

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

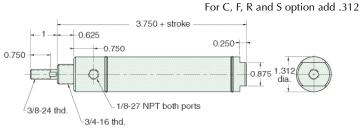
Type: Rotating Rod

Options: C, F, R, MB, B, W, V, P6, P7, P8, S, N

For magnetic bumpers add .312

Double Acting





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

UDR-20-□-□

Mount: Universal

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

1/2", 1", 1-1/2", 2", 3", 4" 6, 8", 10", 12

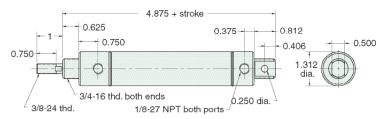
Type: Rotating Rod

Options: C, F, R, MB, B, W, V, P2, P3, P4, P5, P6, P7, P8, N

For magnetic bumpers add .312

Double Acting





Furnished without nut(s). See Chart on Page 38.

SDD-20-□-□

Mount: Stud

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

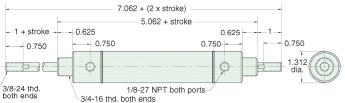
Type: Double Rod

Options: C, F, MB, B, W, V, P6, P7, P8, N

For magnetic bumpers add .312

Double Acting





Nuts included, but not shown on drawing

SRR-20-□-□

Mount: Stud Sta

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

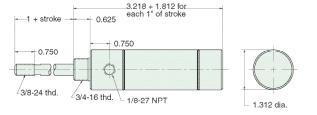
Spring Compressed: 10 lbs. Spring At Rest: 4.5 lbs.

Type: Rotating Rod
Options: MB, B, H, W, V, N

For magnetic bumpers add .312

Reverse Acting





Nuts included, but not shown on drawing



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

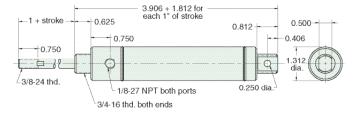


Mount: Universal
Type: Rotating RodStandard Stroke Lengths:
Spring Compressed:1/2", 1", 1-1/2", 2", 3", 4"10 lbs.Spring At Rest: 4.5 lbs.

Options: MB, B, H, W, V, P6, N

Reverse Acting





Furnished without nut(s). See Chart on Page 38.

APPLICATION STORY

 $ap\cdot pli\cdot ca\cdot tion \\ ap-l \\ a\cdot k\hat{a}-sh \\ an \\ n \\ 1: the act of applying 2: assiduous attention 3: REQUEST; also: a form used in making a request 4: something placed or spread on a surface 5: capacity for use$

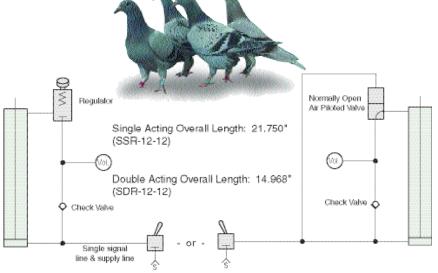
Clippard Applications Have Gone to the Birds

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 inch 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.





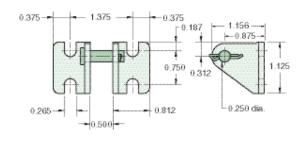


1 1/4" Bore Accessories



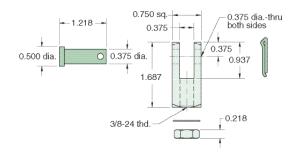
CB-2095

Clevis Bracket Material: steel, bright zinc plated



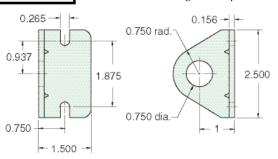
RC-2081

Rod Clevis Material: steel, bright zinc plated



FB-2491

Foot Bracket Material: steel, bright zinc plated



MOUNTING NUTS

Stud Nut

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

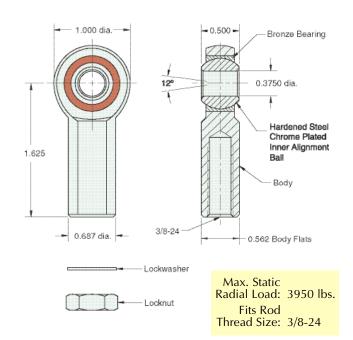
Rod Nut

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

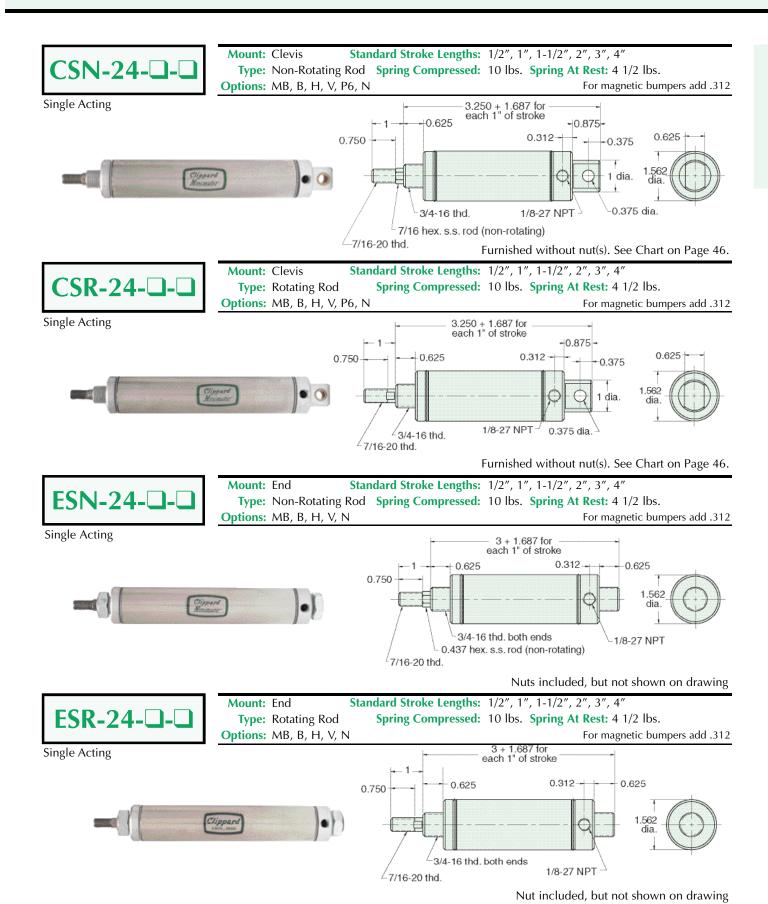
RE-2085

Rod End

Material: steel, bright zinc plated body







- -





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

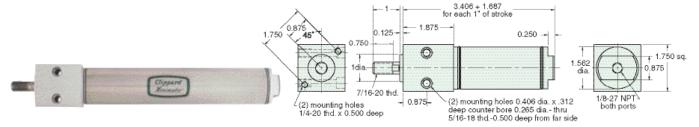
Type: Rotating Rod Spring Compressed: 10 lbs. Spring At Rest: 4 1/2 lbs.

Options: MB, B, H, V, S, N For magnetic bumpers add .312

Single Acting

Single Acting

For S option add .187





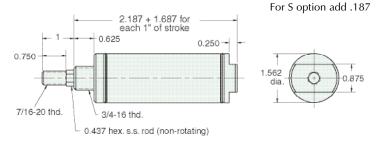
Mount: Stud Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"

Type: Non-Rotating Rod Spring Compressed: 10 lbs. Spring At Rest: 4 1/2 lbs.

Options: MB, B, H, V, S, N

For magnetic bumpers add .312





Nut included, but not shown on drawing

SSR-24-□-□

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.

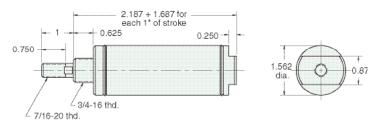
Options: MB, B, H, V, S, N

For magnetic bumpers add .312

Single Acting

For S option add .187





Nut included, but not shown on drawing

TSR-24-□-□

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

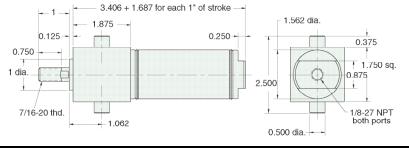
Type: Rotating Rod Spring Compressed: 10 lbs. Spring At Rest: 4 1/2 lbs.

Options: MB, B, H, V, S, N For magnetic bumpers add .312

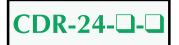
Single Acting

For S option add .187









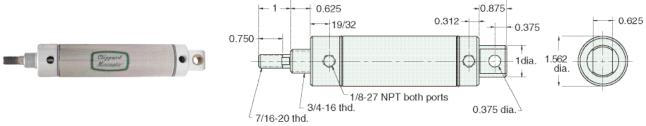
Mount: Clevis **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"

Type: Rotating Rod 6, 8", 10", 12"

Options: C, F, R, MB, B, W, V, P2, P3, P4, P5, P6, P7, P8, N For magnetic bumpers add .312

4.500 + stroke





Furnished without nut(s). See Chart on Page 46.



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

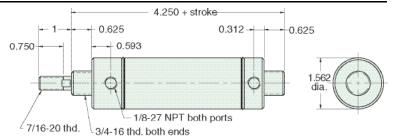
Type: Rotating Rod

Options: C, F, R, MB, B, W, V, P6, P7, P8, N

For magnetic bumpers add .312

Double Acting





Nuts included, but not shown on drawing



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

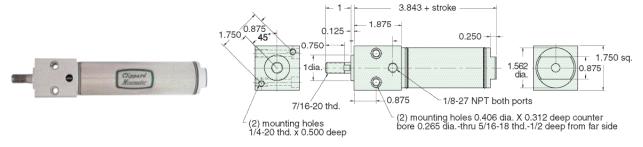
Type: Rotating Rod

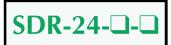
Options: MB, B, W, V, P6, P7, P8, S, N

For magnetic bumpers add .312

Double Acting

For S option add .187





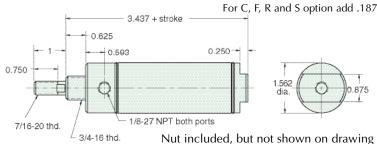
Mount: Stud Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4", 6, 8", 10", 12"

Type: Rotating Rod

Options: C, F, R, MB, B, W, V, P6, P7, P8, S, N

For magnetic bumpers add .312

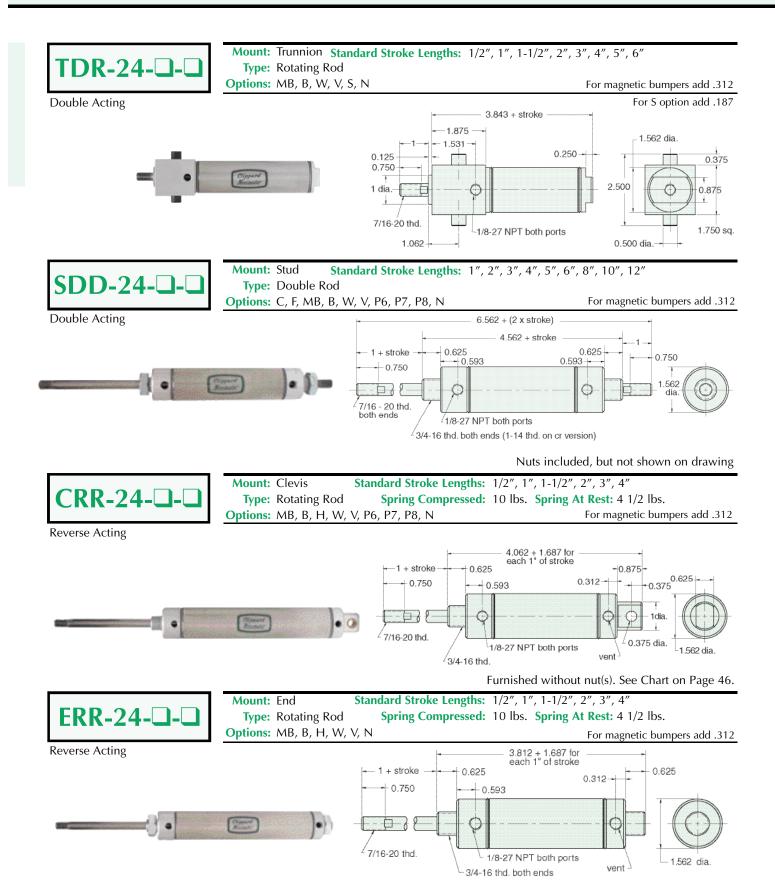
Double Acting



For C, F, & R options use side ported rear head







Nuts included, but not shown on drawing



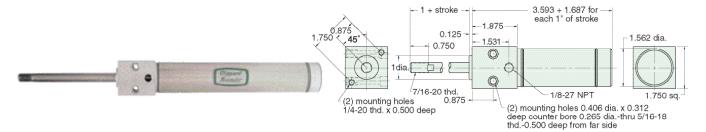


Mount: Front **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"

Type: Rotating Rod Spring Compressed: 10 lbs. Spring At Rest: 4 1/2 lbs.

Options: MB, B, H, W, V, N For magnetic bumpers add .312

Reverse Acting



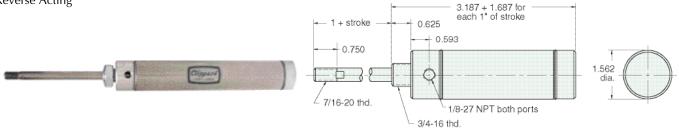


Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"

Type: Rotating Rod Spring Compressed: 10 lbs. Spring At Rest: 4 1/2 lbs.

Options: MB, B, H, W, V, N For magnetic bumpers add .312

Reverse Acting



Nut included, but not shown on drawing

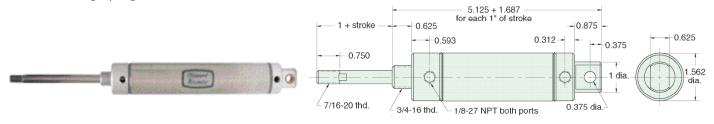
CBR-24-□-□

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: MB, B, H, W, V, P2, P3, P4, P5, P6, P7, P8, N For magnetic bumpers add .312

Double Acting, Spring Bias



Furnished without nut(s). See Chart on Page 46.

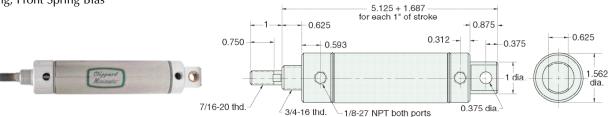
CFR-24-□-□

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: MB, B, H, W, V, P2, P3, P4, P5, P6, P7 P8, N For magnetic bumpers add .312

Double Acting, Front Spring Bias



Furnished without nut(s). See Chart on Page 46.

- -





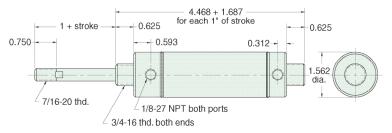
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" Mount: End

Spring Compressed: 10 lbs. Spring At Rest: 4 1/2 lbs. Type: Rotating Rod

Options: MB, B, H, W, V, P6, P7, P8, N For magnetic bumpers add .312

Double Acting, Rear Spring Bias





Nuts included, but not shown on drawing

EFR-24-

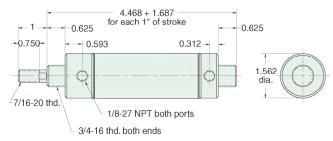
Mount: End **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"

Spring Compressed: 10 lbs. Spring At Rest: 4 1/2 lbs. Type: Rotating Rod

Options: MB, B, H, W, V, P6, P7, P8, N For magnetic bumpers add .312

Double Acting, Front Spring Bias





Nuts included, but not shown on drawing

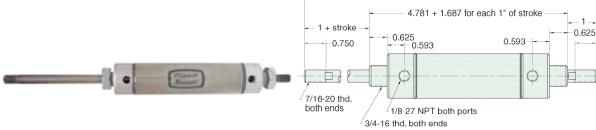
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" Mount: Stud

Type: Double Rod Spring Compressed: 10 lbs. Spring At Rest: 4 1/2 lbs.

Options: MB, B, H, W, V, P6, P7, P8, N For magnetic bumpers add .312

6.781 + 2.687 for each 1" of stroke

Double Acting, Front Spring Bias



Nuts included, but not shown on drawing

0.750

1.562

SBR-24-

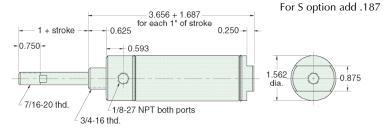
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" Mount: Stud

Spring Compressed: 10 lbs. Spring At Rest: 4 1/2 lbs. **Type:** Rotating Rod

Options: MB, B, H, W, V, P6, P7, P8, S, N For magnetic bumpers add .312

Double Acting, Rear Spring Bias





Nuts included, but not shown on drawing





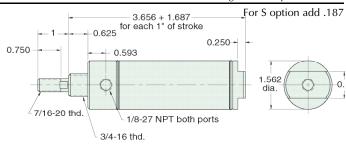
Double Acting, Front Spring Bias

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.

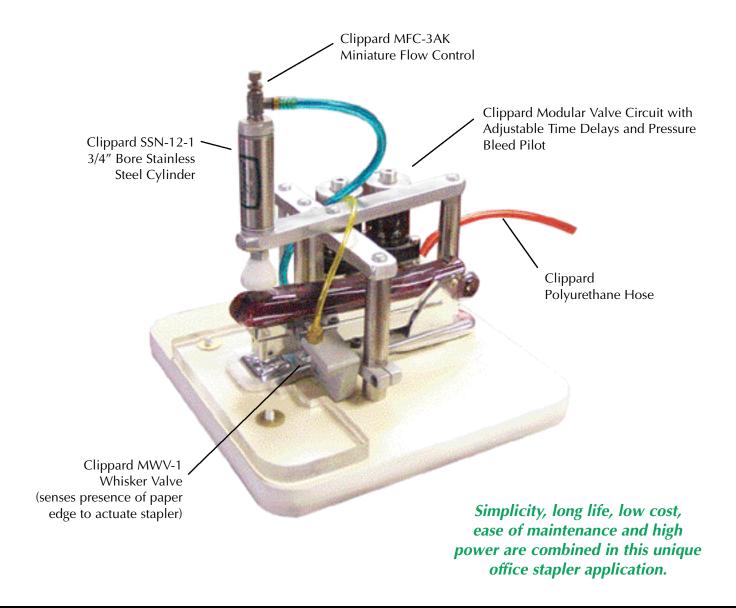
Options: MB, B, H, W, V, P6, P7, P8, S, N For magnetic bumpers add .312





Nut included, but not shown on drawing

Pneumatic Stapler



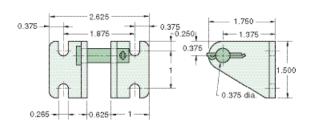


1 1/2" Bore Accessories



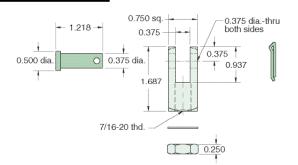
CB-2495

Clevis Bracket Material: steel, bright zinc plated



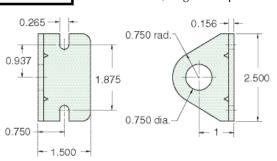
RC-2481

Rod Clevis Material: steel, bright zinc plated



FB-2491

Foot Bracket Material: steel, bright zinc plated



Mounting Nuts

Stud Nut

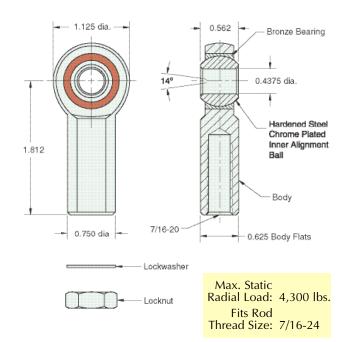
Part	Across	Nut	Nut
Number	Flats	Thickness	(Thread)
N12-16	1 3/32"	27/64"	3/4-16

Rod Nut

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

RE-2485

Rod End Material: steel, bright zinc plated body







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.

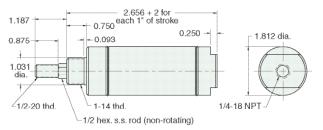
Options: MB, V, S, N

Bumpers are standard For magnetic bumpers add .312

Single Acting

For S option add .562





Nut included, but not shown on drawing

SSR-28-□-□

Mount: Stud

Type: Rotating Rod

Options: MB, V, S, N

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

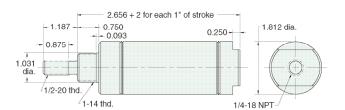
Spring Compressed: 24 lbs. Spring At Rest: 11 lbs.

Bumpers are standard For magnetic bumpers add .312

Single Acting

For S option add .562





Nut included, but not shown on drawing

USN-28-**□**-**□**

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

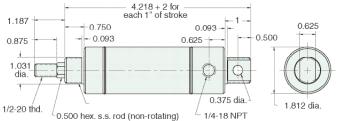
Type: Non-Rotating Rod Spring Compressed: 24 lbs. Spring At Rest: 11 lbs.

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

Bumpers are standard For magnetic bumpers add .312

Single Acting





Furnished without nut(s). See Chart on Page 50.

USR-28-□-□

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

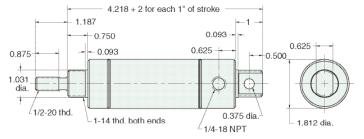
Type: Rotating Rod Spring Compressed: 24 lbs. Spring At Rest: 11 lbs.

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

Bumpers are standard For magnetic bumpers add .312

Single Acting





Furnished without nut(s). See Chart on Page 50.

- —





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

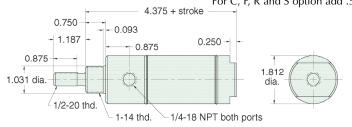
Type: Rotating Rod

Options: C, F, R, MB, W, V, P6, P7, P8, S, N

Bumpers are standard For magnetic bumpers add .312

Double Acting For C, F, R and S option add .562





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

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

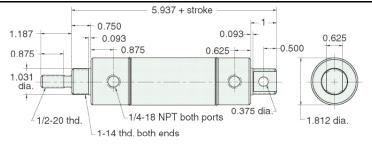
Type: Rotating Rod

Options: C, F, R, MB, W, V, P2, P3, P4, P5, P6, P7, P8, N

Bumpers are standard For magnetic bumpers add .312

Double Acting





Furnished without nut(s). See Chart on Page 50.

SDD-28

Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6", 8", 10", 12"

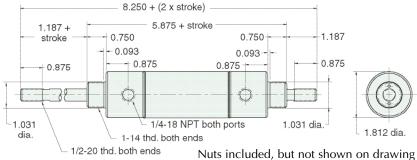
Type: Double Rod

Options: C, F, MB, W, V, P6, P7, P8, N

Bumpers are standard For magnetic bumpers add .312

Double Acting





Mount: Stud Type: Rotating Rod Options: MB, W, V, N

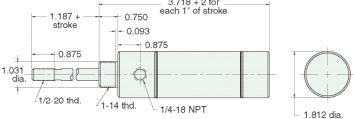
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" Spring Compressed: 24 lbs. Spring At Rest: 11 lbs.

Bumpers are standard

Reverse Acting

For magnetic bumpers add .312 _ 3.718 + 2 for _ each 1" of stroke 1.187 + + 0.750





Nut included, but not shown on drawing

1 3/4" Bore Stainless Steel Cylinder





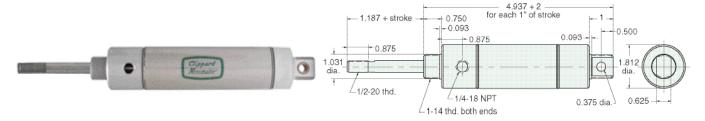
Reverse Acting

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

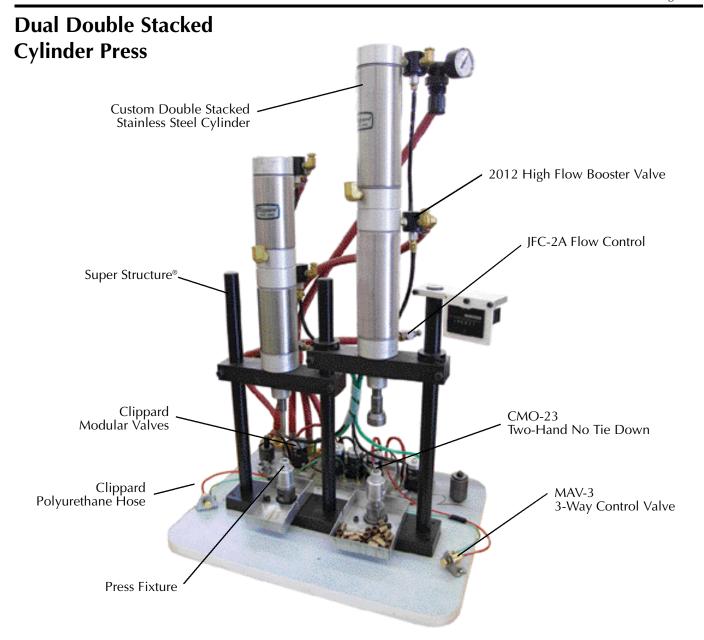
Type: Rotating Rod Spring Compressed: 24 lbs. Spring At Rest: 11 lbs.

Options: MB, W, V, P6, N

Bumpers are standard
For magnetic bumpers add .312



Furnished without nut(s). See Chart on Page 50.



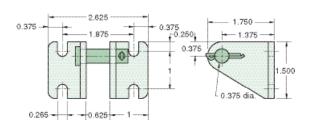


1 3/4" BORE ACCESSORIES



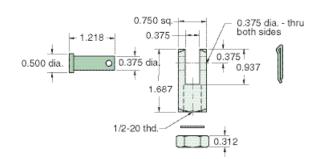
CB-2495

Clevis Bracket Material: steel, bright zinc plated



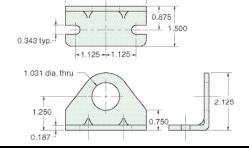
RC-3281

Rod Clevis Material: steel, bright zinc plated



FB-2891

Foot Bracket Material: steel, bright zinc plated



Mounting Nuts

Stud Nut

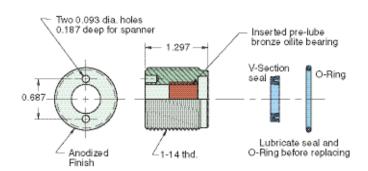
Part	Across	Nut	Nut
Number	Flats	Thickness	(Thread)
N16-14	1 1/2"	35/64"	1-14

Rod Nut

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

RK-2899

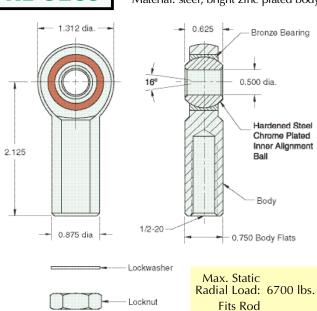
Replaceable Rod Seal Material: aluminum body



RE-3285

Rod End Material: steel, bright zinc plated body

Thread Size: 1/2-20







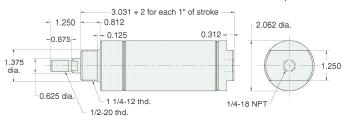
Mount: Stud Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7, 8", 10", 12"

Type: Rotating Rod Spring Compressed: 30 lbs. Spring At Rest: 15 lbs.

Options: MB, B, V, S, N For magnetic bumpers add .312

For S option add .375





Nut included, but not shown on drawing



Mount: Universal Type: Rotating Rod Options: MB, B, V, N **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"

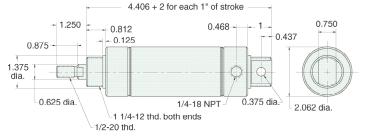
Spring Compressed: 30 lbs. **Spring At Rest:** 15 lbs.

For magnetic bumpers add .312

Single Acting

Single Acting





Furnished without nut(s). See Chart on Page 54.



Mount: Stud

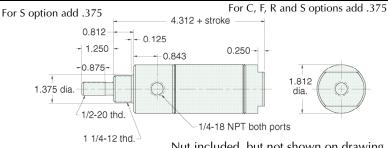
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"

Type: Rotating Rod

Options: C, F, R, MB, B, W, V, P6, P7, P8, S, N

For magnetic bumpers add .312





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



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

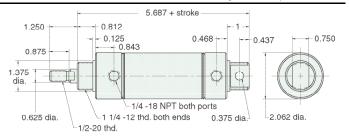
Type: Rotating Rod 5", 6", 7, 8", 10", 12"

Options: C, F, R, MB, B, W, V, P2, P3, P4, P5, P6, P7, P8, N For magnetic bumpers add .312

Double Acting

Double Acting

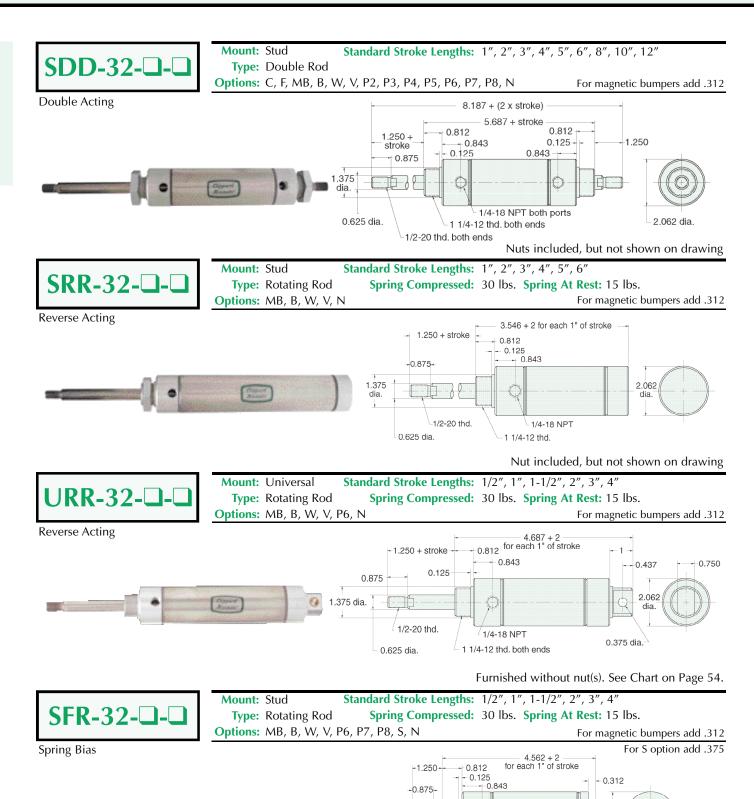




Furnished without nut(s). See Chart on Page 54.

_ -





1.375

0.625 dia.

Nut included, but not shown on drawing

2.062

dia.

1/4-18 NPT both ports

1 1/4-12 thd

1/2-20 thd.

1.250





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

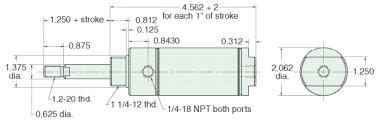
Type: Rotating Rod Spring Compressed: 30 lbs. Spring At Rest: 15 lbs.

Options: MB, B, W, V, P6, P7, P8, S, N For magnetic bumpers add .312

Spring Bias

For S option add .375





Nut included, but not shown on drawing

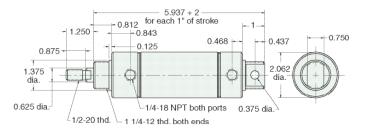


Mount: Universal **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4" Type: Rotating Rod **Spring Compressed:** 30 lbs. **Spring At Rest:** 15 lbs.

Options: MB, B, W, V, P2, P3, P4, P5, P6, P7, P8, N For magnetic bumpers add .312

Spring Bias





5.937 + 2 for each 1" of stroke

0.468

Furnished without nut(s). See Chart on Page 54.

UBR-32-

Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4" **Mount:** Universal **Type:** Rotating Rod Spring Compressed: 30 lbs. Spring At Rest: 15 lbs.

Options: MB, B, W, V, P2, P3, P4, P5, P6, P7, P8, N For magnetic bumpers add .312

Spring Bias

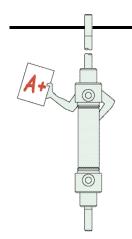


Furnished without nut(s). See Chart on Page 54.

0.375 dia.

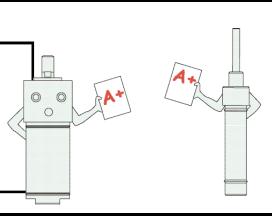
0.437

2.062



Did you know...

All Clippard Cylinders are 100% tested.



0.750

2" BORE ACCESSORIES



Mounting Nuts

Stud Nut

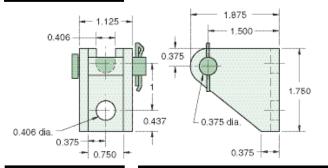
Part	Across	Nut	Nut
Number	Flats	Thickness	(Thread)
N20-12	1 3/4"	7/16"	1 1/4-12

Rod Nut

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

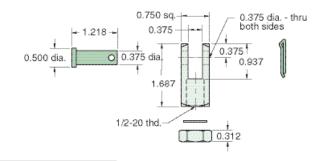
CB-3295

Clevis Bracket Material: steel, bright zinc plated



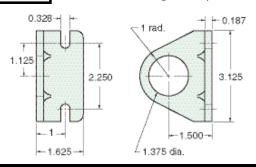
RC-3281

Rod Clevis Material: steel, bright zinc plated



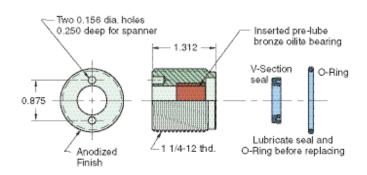
FB-3291

Foot Bracket Material: steel, bright zinc plated



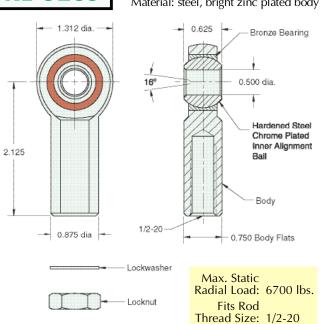
RK-3299

Replaceable Rod Seal Material: aluminum body



RE-3285

Rod End Material: steel, bright zinc plated body







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

Type: Rotating Rod

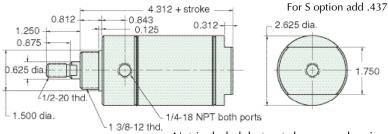
Bumpers are standard

Options: C, F, R, MB, W, V, P6, P7, P8, S, N

For magnetic bumpers add .312







Nut included, but not shown on drawing

For C, F, & R options use side ported rear head

UDR-40-

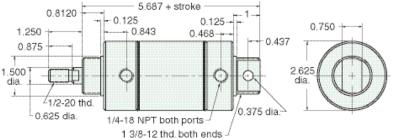
Mount: Universal **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6", 7", 8",

Type: Rotating Rod 10", 12"

Options: C, F, R, MB, W, V, P2, P3, P4, P5, P6, P7, P8, N Bumpers are standard For magnetic bumpers add .312

Double Acting





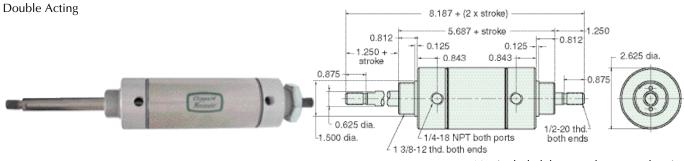
Furnished without nut(s). See Chart on Page 56.

Mount: Stud **Standard Stroke Lengths:** 1", 2", 3", 4", 5", 6", 8", 10", 12"

Type: Double Rod

Options: C, F, R, MB, W, V, P6, P7, P8, N

Bumpers are standard For magnetic bumpers add .312



Nut included, but not shown on drawing

2 1/2" Bore Accessories



Mounting Nuts

Stud Nut

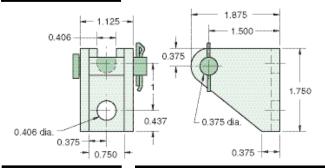
Part	Across	Nut	Nut
Number	Flats	Thickness	(Thread)
N22-12	1 7/8"	1/2"	1 3/8-12

Rod Nut

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

CB-3295

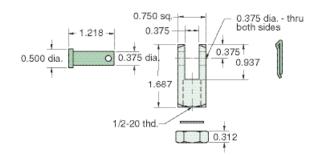
Clevis Bracket Material: steel, bright zinc plated



RC-3281

Rod Clevis

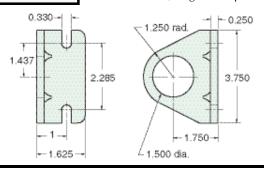
Material: steel, bright zinc plated



FB-4091

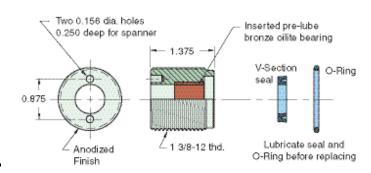
Foot Bracket

Material: steel, bright zinc plated



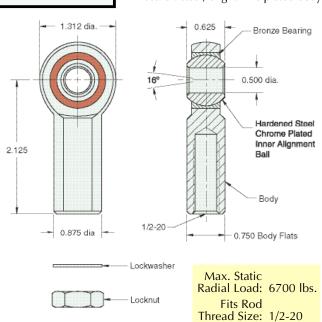
RK-4099

Replaceable Rod Seal Material: aluminum body



RE-3285

Rod End Material: steel, bright zinc plated body







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

Type: Rotating Rod

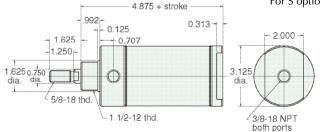
Options: MB, W, V, P6, P7, P8, S, N

Bumpers are standard No additional length for bumpers

For S option add .437

Double Acting





Nut included, but not shown on drawing

Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7, 8", 10", Mount: Universal

Type: Rotating Rod 12"

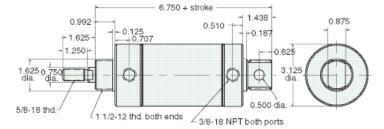
Options: MB, W, V, P2, P3, P4, P5, P6, P7, P8, N

Bumpers are standard No additional length for bumpers

Double Acting

Double Acting





Furnished without nut(s). See Chart on Page 58.

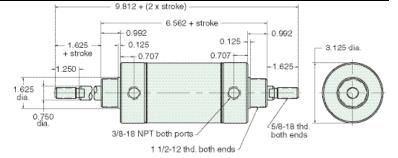
Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 8", 10", 12" **Mount:** Stud

Type: Double Rod

Options: MB, W, V, P6, P7, P8, N

Bumpers are standard

No additional length for bumpers



Nuts included, but not shown on drawing



Minimatic[®] Minimetric Fluidamp® Octoport®

Air-2-Electric® and Air Force One® are all Clippard's registered trademarks.



3" BORE ACCESSORIES



Mounting Nuts

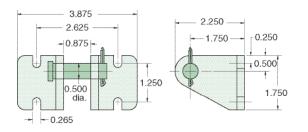
Part Across Nut Nut Nut Number Flats Thickness (Thread) N24-12 2 1/4" 1/2" 1 1/2-12

Rod Nut

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

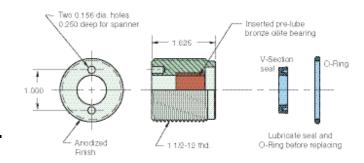
CB-4895

Clevis Bracket Material: steel, bright zinc plated



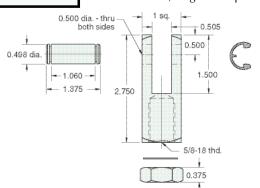
RK-4899

Replaceable Rod Seal Material: aluminum body



RC-4881

Rod Clevis Material: steel, bright zinc plated

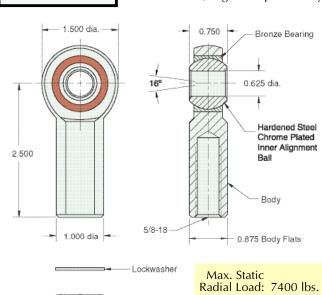


RE-4885

Rod End Material: steel, bright zinc plated body

Fits Rod

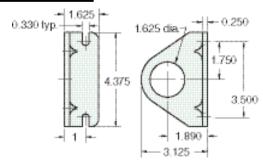
Thread Size: 5/8-18



-Locknut

FB-4891

Foot Bracket Material: steel, bright zinc plated

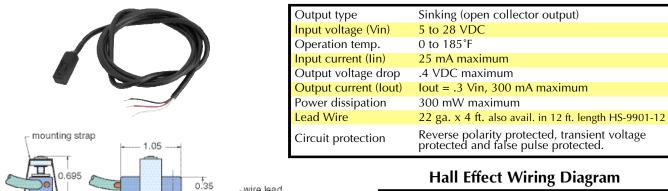


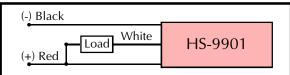
POSITION SENSORS



HS-9901

Hall Effect Sensors





RS-

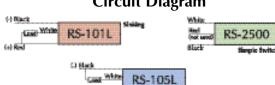
approximate sensing point

Magnetic Reed Switch

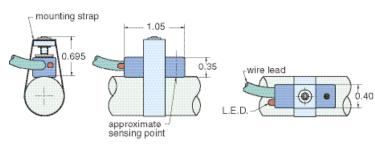
RS-101L • RS-105L • RS-2500

wire lead

Circuit Diagram







RS-101L	RS-105L	RS-2500
Sinking	Sourcing	Simple Switch
10w		25W
3 to 36 VAC	or VDC	220 VAC or VDC
1.0 A max.		
Provided	Provided	Not Provided
22 ga. x 4 ft.		
0 to 300°		
10,000,000 cycles		
molded plastic		
1 mSec		
SPST norma	dly open	
	Sinking 10w 3 to 36 VAC 1.0 A max. Provided 22 ga, x 4 fi 0 to 300° 10,000,000 molded plac 1 mSec	Sinking Sourcing 10w 3 to 36 VAC or VDC 1.0 A max. Provided Provided 22 ga, x 4 ft. 0 to 300° 10,000,000 cycles molded plastic

an Red

RS-105L pictured

Universal Clamps

SC-08 • SC-10 • SC-12 • SC-14 • SC-17 • SC-20 SC-24 • SC-28 • SC-32 • SC-40 • SC48



Clippard's stainless steel clamps are designed to be used with the Hall Effect and the reed switch. All clamps should be ordered based upon the size of the cylinder on which it will be mounted. The part numbers show the bore size using the numerical code. Each clamp is 0.375 wide stainless steel, and is equipped with a locking screw with #5-40 threads.



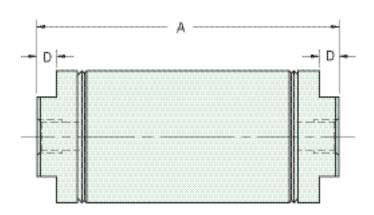
AVT-12-1 AVT-17-2 AVT-24-4 AVT-24-8 AVT-32-12 AVT-32-16 AVT-17-3 AVT-24-6 AVT-24-10 AVT-32-14

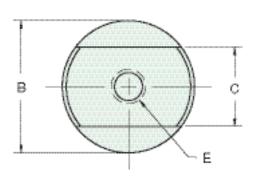
Additional models are available upon request

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.	Α	В	С	D	Е
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

STAINLESS STEEL METRIC CYLINDERS





Clippard's newly-designed metric cylinders offer all of the advantages of Clippard's high quality, reliable stainless steel cylinders—now available with metric threads. Five bore sizes ranging from 8 mm to 25 mm with stroke lengths of 10 mm to 160 mm are offered.

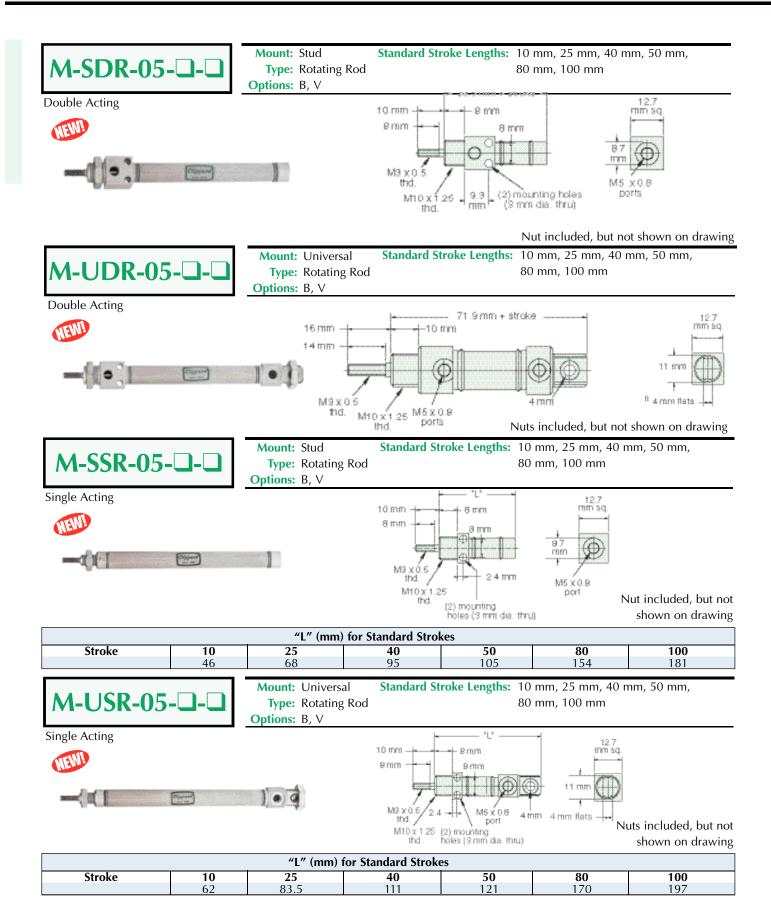
Features

- Polished I.D. 304 stainless steel tubes for low breakaway provides smooth action
- Typical breakaway less than 1/2 bar
- Precision double rolled construction for solid, leak-proof cylinders
- Sintered bronze rod bushing reduces wear and friction
- Sintered bronze clevis bushing on all clevis mount cylinders means less wear
- Rods are threaded and bonded to pistons
- Ground, polished, and roller burnished 303 stainless steel rod saves seal wear
- Full piston area breakaway to assure full power from the beginning of each stroke
- Buna-N "U" cup piston and rod seals for reliable leak-free operation
- Temperature range: -35° to 110°C
- Maximum pressure of 17 bar

Nominal Bore Size	8 mm	12 mm	16 mm	20 mm	25 mm
Actual Bore Size	7.9 mm	12.7 mm	15.9 mm	19.1 mm	26.9 mm
Series Number*	05	08	10	12	17
Rod Diameter	3.1 mm	4.8 mm	4.8 mm	6.4 mm	7.9 mm
Rod Thread	M3 x 0.5	M4 x 0.7	M4 x 0.7	M6 x 1.0	M8 x 1.25
Mounting Thread	M10 x 1.25	M12 x 1.25	M12 x 1.25	M16 x 1.5	M16 x 1.5
Port Size	M5	M5	M5	M5	G1/8
(Optional)				(R1/8)	(R1/8)
Spring Force (SSR & USR)	4.4 N	8.9 N	17.8 N	26.7 N	31.1 N
Clevis Pin Diameter	4 mm	4 mm	4 mm	8 mm	8 mm
Clevis Width	4 mm	8 mm	8 mm	10 mm	10 mm

- -









Mount: Stud
Type: Rotating Rod

Options: B, V

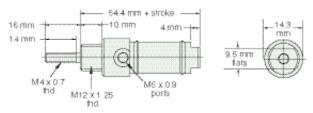
Standard Stroke Lengths: 10 mm, 25 mm, 40 mm, 50 mm,

80 mm, 100 mm, 125 mm, 160 mm

Double Acting







Nut included, but not shown on drawing

M-UDR-08-□-□

Mount: Universal Type: Rotating Rod

Standard Stroke Lengths: 10 mm, 25 mm, 40 mm, 50 mm,

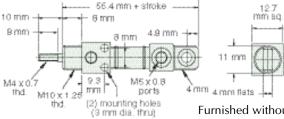
80 mm, 100 mm, 125 mm, 160 mm

Options: B, V

Double Acting







Furnished without nut(s). Order Part No. NM10-125.

M-SSR-08-□-□

Mount: Stud
Type: Rotating Rod

Standard Stroke Lengths: 10 mm, 25 mm, 40 mm, 50 mm,

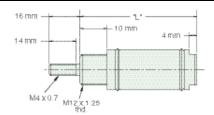
80 mm, 100 mm

Options: B, V

Single Acting



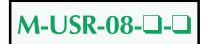






Nut included, but not shown on drawing

		"L" (mm) for Standard Stro	kes		
Stroke	10	25	40	50	80	100
	56	83	120	130	193	224



Mount: Universal
Type: Rotating Rod

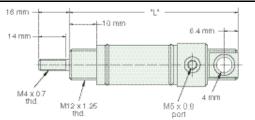
Standard Stroke Lengths: 10 mm, 25 mm, 40 mm, 50 mm,

80 mm, 100 mm

Options: B, V









Furnished without nut(s). Order Part No. NM10-125.

	"L" (mm) for Standard Strokes								
Stroke	10	25	40	50	80	100			
	73	100	137	141	210	241			





Mount: Stud

Type: Rotating Rod

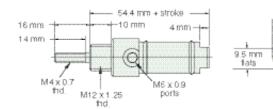
Standard Stroke Lengths: 10 mm, 25 mm, 40 mm, 50 mm,

80 mm, 100 mm, 125 mm, 160 mm

Options: B, V
Double Acting







Nut included, but not shown on drawing

M-UDR-10-□-□

Mount: Universal Type: Rotating Rod Standard Stroke Lengths: 10 mm, 25 mm, 40 mm, 50 mm,

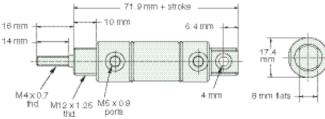
80 mm, 100 mm, 125 mm, 160 mm

Options: B, V Mounting nuts not included. Part No. NM12-125 may be ordered separately.

Double Acting







Furnished without nut(s). Order Part No. NM12-125.

M-SSR-10-□-□

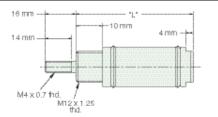
Mount: Stud
Type: Rotating Rod
Options: B, V

Standard Stroke Lengths: 10 mm, 25 mm, 40 mm, 50 mm,

tating Rod 80 mm, 100 mm, 125 mm, 160 mm

Single Acting







Nut included, but not shown on drawing

			"L" (mm) for	Standard Stro	okes			
Stroke	10	25	40	50	80	100	125	160
	56	83	120	130	193	224	260	329



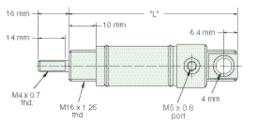
Mount: Universal Type: Rotating Rod

Standard Stroke Lengths: 10 mm, 25 mm, 40 mm, 50 mm,

80 mm, 100 mm, 125 mm, 160 mm

Options: B, V







Furnished without nut(s). Order Part No. NM12-125.

	"L" (mm) for Standard Strokes									
Stroke	10	25	40	50	80	100	125	160		
	73	100	137	141	210	241	278	346		





Mount: Stud Type: Rotating Rod

Options: B, R, V

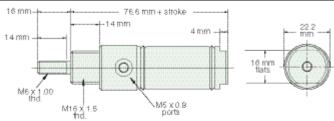
Standard Stroke Lengths: 10 mm, 25 mm, 40 mm, 50 mm,

80 mm, 100 mm, 125 mm, 160 mm

Double Acting







Nut included, but not shown on drawing



Mount: Universal Type: Rotating Rod Standard Stroke Lengths: 10 mm, 25 mm, 40 mm, 50 mm,

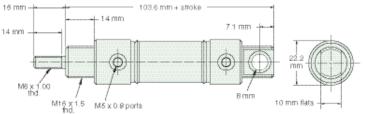
80 mm, 100 mm, 125 mm, 160 mm

Options: B, R, V

Double Acting







Furnished without nut(s). Order Part No. NM16-150.

M-SSR-12-

Mount: Stud Type: Rotating Rod Standard Stroke Lengths: 10 mm, 25 mm, 40 mm, 50 mm,

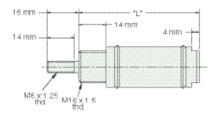
80 mm, 100 mm, 125 mm, 160 mm

Options: B, R, V

Single Acting









Nut included, but not shown on drawing

	"L" (mm) for Standard Strokes									
Stroke	10	25	40	50	80	100	125	160		
	68	83	116	126	191	211	254	324		

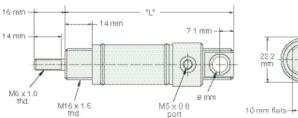
M-USR-12-

Mount: Universal Type: Rotating Rod Standard Stroke Lengths: 10 mm, 25 mm, 40 mm, 50 mm,

80 mm, 100 mm, 125 mm, 160 mm

Options: B, R, V







Furnished without nut(s). Order Part No. NM16-150.

	"L" (mm) for Standard Strokes									
Stroke	10	25	40	50	80	100	125	160		
	95	110	143	153	218	238	281	351		





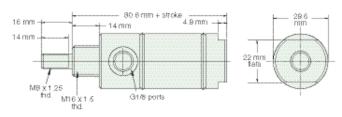
Mount: Stud Standard Stroke Lengths: 10 mm, 25 mm, 40 mm, 50 mm,

Type: Rotating Rod 80 mm, 100 mm, 125 mm, 160 mm

Options: B, R, V

Double Acting





Nut included, but not shown on drawing



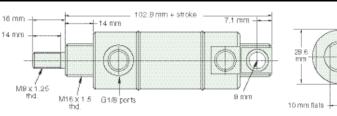
Mount: Universal Sympe: Rotating Rod Options: B, R, V

Standard Stroke Lengths: 10 mm, 25 mm, 40 mm, 50 mm,

80 mm, 100 mm, 125 mm, 160 mm

Double Acting





Furnished without nut(s). Order Part No. NM16-150.

M-SSR-17-□-□

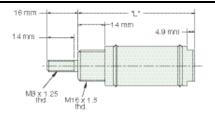
Mount: Stud Standard Str Type: Rotating Rod

Standard Stroke Lengths: 10 mm, 25 mm, 40 mm, 50 mm,

Type: Rotating Rod 80 mm, 100 mm, 125 mm, 160 mm **Options:** B, R, V

Single Acting







Nut included, but not shown on drawing

			"L" (mm) for	Standard Stro	okes			
Stroke	10	25	40	50	80	100	125	160
	75	90	120	129	188	208	247	311



Mount: Universal

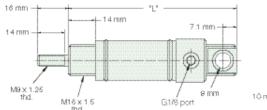
Type: Rotating Rod

Standard Stroke Lengths: 10 mm, 25 mm, 40 mm, 50 mm,

80 mm, 100 mm, 125 mm, 160 mm

Options: B, R, V







Furnished without nut(s). Order Part No. NM16-150.

	"L" (mm) for Standard Strokes									
Stroke	10	25	40	50	80	100	125	160		
	97	112	142	151	210	230	269	333		

CORROSION RESISTANT CYLINDERS





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 $^{\circ}$ seals are standard with a Viton $^{\circ}$ option available for compatibility. A magnetic piston is also optional.

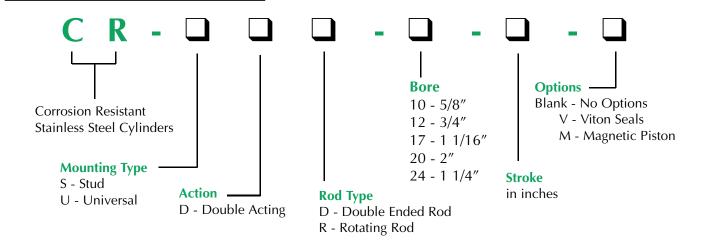
These lightweight cylinders have a temperature range from 32° F to 180° F, and have a pressure rating of 150 psig (air). A variety of mounting styles are available.

Delrin® and Viton® are registered trademarks of E.I. DuPont Co.

- —

CORROSION RESISTANT CYLINDER

NUMBERING SYSTEM



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 (Viton® optional for compatibility only)
- 304 stainless steel tube
- Pressure Range 0 to 150 psig
- Temperature range: 32° F to 180° F
- Optional stainless steel mounting nuts
- Aluminum alloy pistons, optional Delrin® pistons available; consult factory



5/8" Bore Corrosion Resistant Cylinder





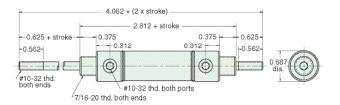
Mount: Stud **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"

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

For magnetic option add .312

Double Acting





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

CR-SDR-10-

Mount: Stud Type: Rotating Rod

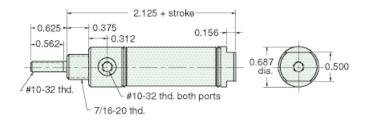
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4"

Options: M, V, N

For magnetic option add .312

Double Acting





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

CR-UDR-10-

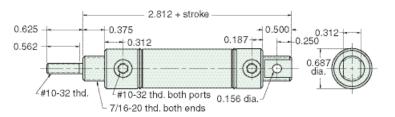
Mount: Universal Type: Rotating Rod **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4"

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

For magnetic option add .312

Double Acting





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

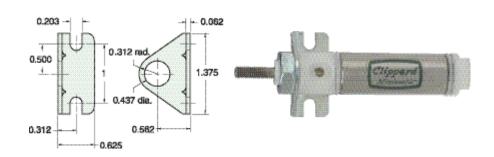
Stainless Steel Mounting

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



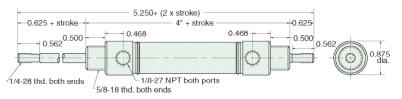
Mount: Stud Standard Stroke Lengths: 1", 2", 3", 4", 5", 6"

Type: Double Rod **Options:** M, V, N, P2, P3, P4, P5, P6, P7, P8

For magnetic option add .312

Double Acting





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



Mount: Stud

Type: Rotating Rod

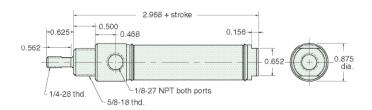
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"

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

For magnetic option add .312

Double Acting





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



Mount: Stud

Type: Rotating Rod

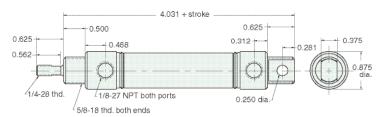
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4", 5", 6", 8", 10", 12"

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

For magnetic option add .312

Double Acting





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

Stainless Steel Mounting

Foot Bracket Model Number: FB-1791-SS

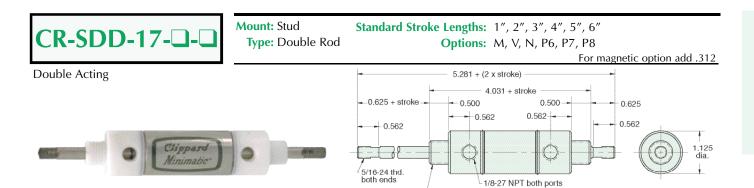
Nut Model Number: N10-18-SS Max. Torque in lbs.: 12

SS



1 1/16" BORE CORROSION RESISTANT CYLINDER





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"

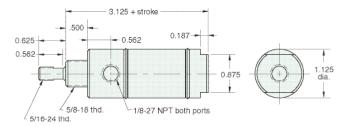
Options: M, V, N

5/8-18 thd. both ends

For magnetic option add .312

Double Acting





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



Mount: Stud

Type: Rotating Rod

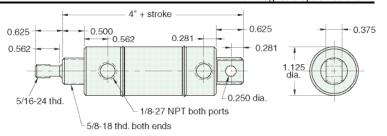
Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 3", 4", 5", 6",

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

For magnetic option add .312

Double Acting





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

Stainless Steel Mounting

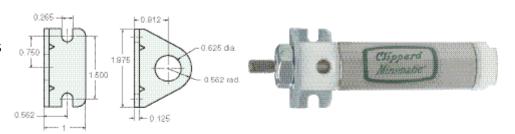
Foot Bracket

Model Number: FB-1791-SS

Nut

Model Number: N10-18-SS

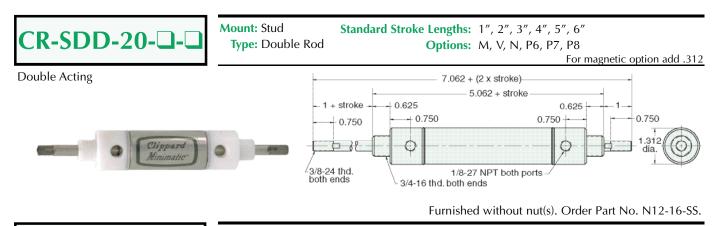
Max. Torque in lbs.: 12



- -



1 1/4" Bore Corrosion Resistant Cylinder



CR-SDR-20-

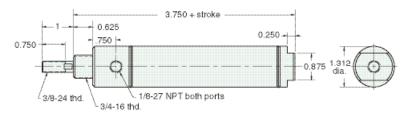
Mount: Stud Type: Rotating Rod **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"

Options: M, V, N

For magnetic option add .312

Double Acting





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

CR-UDR-20-

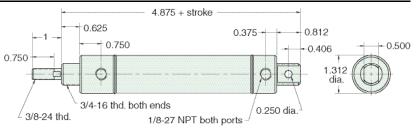
Mount: Universal Type: Rotating Rod **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6", 8", 10", 12"

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

For magnetic option add .312

Double Acting





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

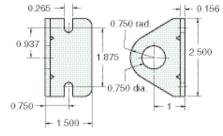
Stainless Steel Mounting

Foot Bracket

Model Number: FB-2491-SS

Model Number: N12-16-SS

Max. Torque in lbs.: 20





1 1/2" BORE CORROSION RESISTANT CYLINDER





4.562 + stroke 0.625 0.625 1 + stroke - - 0.593 0.593 + -0.750--0.750 7/16 - 20 thd. both ends 1/8-27 NPT both ports 1-14 thd. both ends

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



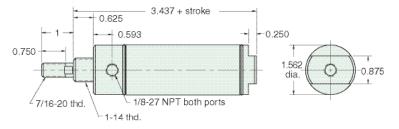
Mount: Stud Type: Rotating Rod **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6"

Options: M, V, N

For magnetic option add .312







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

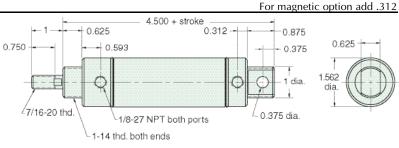


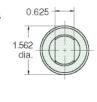
Mount: Universal Type: Rotating Rod **Standard Stroke Lengths:** 1/2", 1", 1-1/2", 2", 3", 4", 5", 6", 8", 10", 12"

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

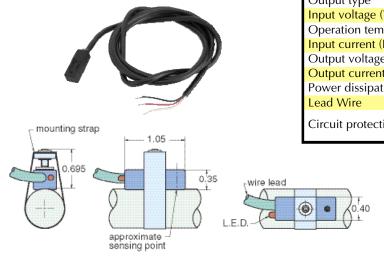
Model Number: N16-14-SS Max. Torque in lbs.: 30

0.343 → 0.187 1.125 3.000 2,250 1.031 dia 0.875 -+1.250+ 1.500 →



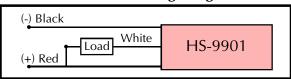
HS-9901

Hall Effect Sensor



Output type Sinking (open collector output) Input voltage (Vin) 5 to 28 VDC Operation temp. 0 to 185°F Input current (Iin) 25 mA maximum 0.4 VDC maximum Output voltage drop Output current (lout) lout = 0.3 Vin, 300 mA maximum Power dissipation 300 mW maximum 22 ga. x 4 ft. also avail. in 12 ft. length HS-9901-12 Reverse polarity protected, transient voltage protected and false pulse protected. Circuit protection

Hall Effect Wiring Diagram

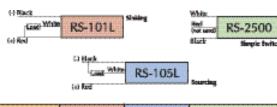


RS-

Magnetic Reed Switch

RS-101L • RS-105L • RS-2500

Circuit Diagram



mounting str	0.38	wire lead	6 .40
	approximate sensing point		

inking	Sourcing	Chamle Cudhele	
	acounting.	Simple Switch	
0w		25w	
3 to 36 VAC or VDC		220 VAC or VDC	
1.0 A max.			
Provided Provided Not Provided			
22 ga. x 4 ft.			
0 to 300°			
10,000,000 cycles			
molded plastic			
1 mSec			
SPST normally open			
	to 36 VAC .0 A max. rovided 2 ga. x 4 ft. to 300° 0,000,000 coolded plast mSec	to 36 VAC or VDC .0 A max. rovided Provided 2 ga. x 4 ft. to 300° 0,000,000 cycles holded plastic mSec PST normally open	

RS-2500 pictured

Universal Clamps

SC-08 • SC-10 • SC-12 • SC-14 • SC-17 • SC-20 SC-24 • SC-28 • SC-32 • SC-40 • SC48



Clippard's stainless steel clamps are designed to be used with the Hall Effect and the reed switch. All clamps should be ordered based upon the size of the cylinder on which it will be mounted. The part numbers show the bore size using the numerical code. Each clamp is 3/8" wide stainless steel, and is equipped with a locking screw with #5-40 threads.



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. Hall Effect 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.

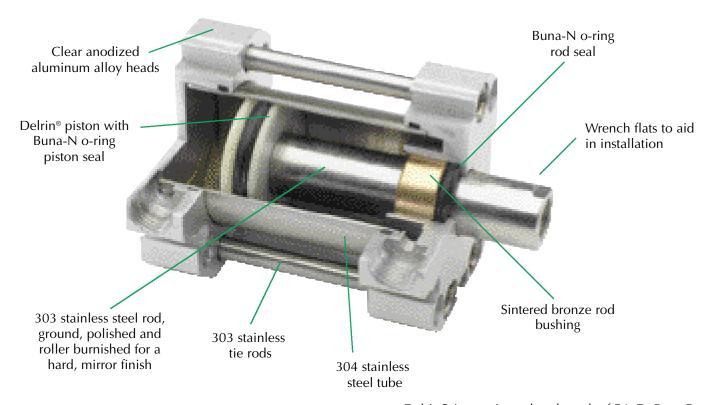
The various mounting configurations available in the AFO cylinders assure freedom to interchange with most cylinders on the market. This means most systems can be upgraded to include quality AFO cylinders.

AIR FORCE ONE COMPACT CYLINDER



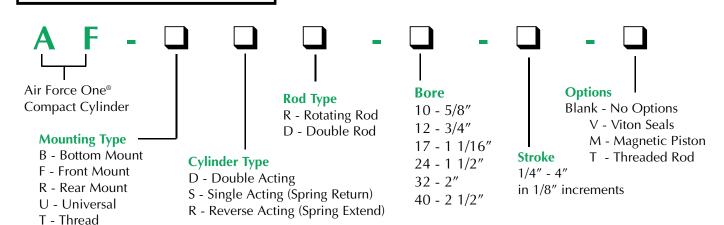
FEATURES

- 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° F to 180° F
- Anodized aluminum heads
- Air pressure rating to 250 psig



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

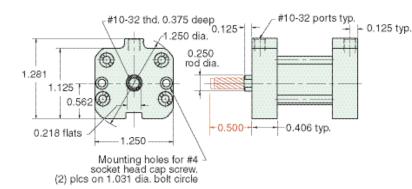
NUMBERING SYSTEM





5/8" BORE AFO COMPACT CYLINDER





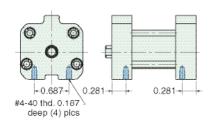


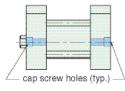
For rod with male thread option, add -T to the end of the part number after Stroke

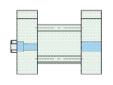
See page 76 for Air Force One numbering system

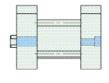
MOUNTING STYLES

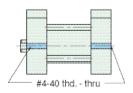
Five mounting styles give you versatility and fast, easy installation.











Bottom Mount AF-Bxx-10-x

Universal Mount AF-Uxx-10-x

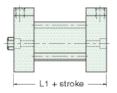
Front Mount AF-Fxx-10-x

Rear Mount AF-Rxx-10-x

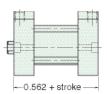
Thread Mount AF-Txx-10-x

CYLINDER LENGTHS

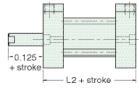
"L"	Stroke	Spring Return	Spring Extend
L1	1/4" - 1"	13/16"	
L1	1 1/8" - 2"	1 3/8"	
L1	2 1/8" - 3"	1 15/16"	
L1	3 1/8" - 4"	2 1/2"	
L2	1/4" - 1"		1 1/16"
L2	1 1/8" - 2"		1 5/8"
L2	2 1/8" - 3"		2 3/16"
L2	3 1/8" - 4"		2 3/4"



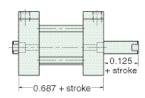
Spring Return AF-xSR-10-x



Double Acting Single Rod AF-xDR-10-x



Spring Extend AF-xRR-10-x



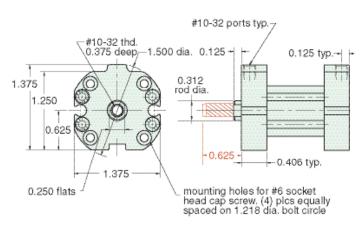
Double Acting Double Rod AF-xDD-10-x

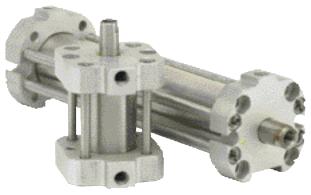
Spring	Forces		
Spring Return			
Compressed At Rest			
5.750 lbs.	1.500 lbs.		
Spring Extend			
Compressed	At Rest		
5.750 lbs.	1 500 lbs		



3/4" BORE AFO COMPACT CYLINDER





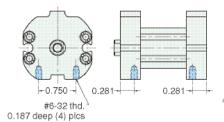


For rod with male thread option, add -T to the end of the part number after Stroke

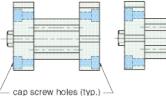
See page 76 for Air Force One numbering system

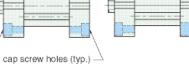
MOUNTING STYLES

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

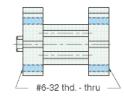


Bottom Mount AF-Bxx-12-x





Universal Mount Front Mount Rear Mount AF-Uxx-12-x AF-Fxx-12-x AF-Rxx-12-x

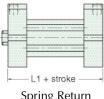


Thread Mount AF-Txx-12-x

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"

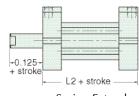
Overall length of body is stroke plus "L"



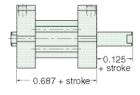
Spring Return AF-xSR-12-x



Double Acting Single Rod AF-xDR-12-x



Spring Extend AF-xRR-12-x



Double Acting Double Rod AF-xDD-12-x

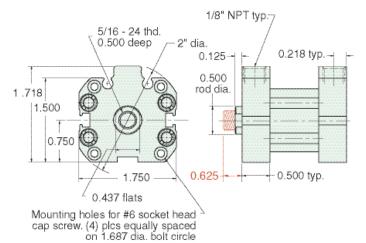
Spring Forces			
Spring Return			
Compressed	ompressed At Rest		
10 lbs.	4 lbs.		
Spring Extend			
Compressed	At Rest		
10 lbs.	4 lbs.		



1 1/16" BORE AFO COMPACT CYLINDER



A F - 🗆 🗆 🗆 - 1 7 - 🗆



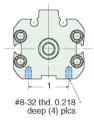


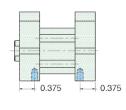
For rod with male thread option, add -T to the end of the part number after Stroke

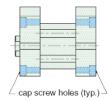
See page 76 for Air Force One numbering system

MOUNTING STYLES

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

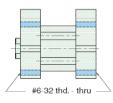












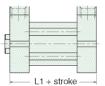
Bottom Mount AF-Bxx-17-x

Universal Mount Front Mount AF-Uxx-17-x AF-Fxx-17-x

Rear Mount Thread Mount AF-Rxx-17-x AF-Txx-17-x

CYLINDER LENGTHS

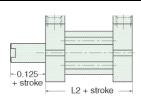
"L"	Stroke	Spring Return	Spring Extend
L1	1/4" - 1"	7/8"	
L1	1 1/8" - 2"	1 1/2"	
L1	2 1/8" - 3"	2 1/8"	
L1	3 1/8" - 4"	2 3/4"	
L2	1/4" - 1"		1 3/8"
L2	1 1/8" - 2"		2"
L2	2 1/8" - 3"		2 5/8"
L2	3 1/8" - 4"		3 1/4"



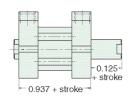
Spring Return AF-xSR-17-x



Double Acting Single Rod AF-xDR-17-x



Spring Extend AF-xRR-17-x



Double Acting Double Rod
Double Rod
AF-xDD-17-x

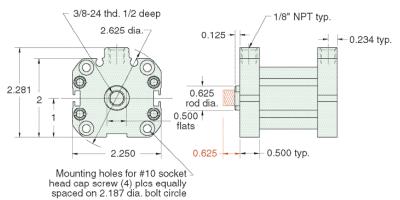
Spring Forces			
Spring Return			
Compressed	At Rest		
11.500 lbs.	s. 5.500 lbs.		
Spring Extend			
Compressed	At Rest		
11.500 lbs.	5.500 lbs.		



1 1/2" BORE AFO COMPACT CYLINDER



A F - 🗆 🗆 - 2 4 - 🗆



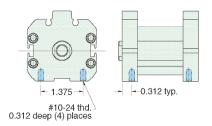


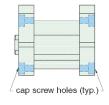
For rod with male thread option, add -T to the end of the part number after Stroke

See page 76 for Air Force One numbering system

Mounting Styles

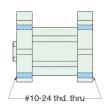
Five mounting styles give you versatility and fast, easy installation.











Bottom Mount AF-Bxx-24-x

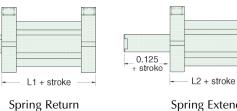
Universal Mount AF-Uxx-24-x

Front Mount AF-Fxx-24-x

Rear Mount Thread Mount AF-Rxx-24-x AF-Txx-24-x

CYLINDER LENGTHS

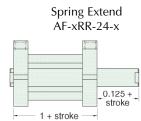
"L"	Stroke	Spring Return	Spring Extend
L1	1/4" - 1"	7/8"	
L1	1 1/8" - 2"	1 1/2"	
L1	2 1/8" - 3"	2 1/8"	
L1	3 1/8" - 4"	2 3/4"	
L2	1/4" - 1"		1 3/8"
L2	1 1/8" - 2"		2"
L2	2 1/8" - 3"		2 5/8"
L2	3 1/8" - 4"		3 1/4"



Spring Return AF-xSR-24-x



Double Acting Single Rod AF-xDR-24-x



Double Acting Double Rod AF-xDD-24-x

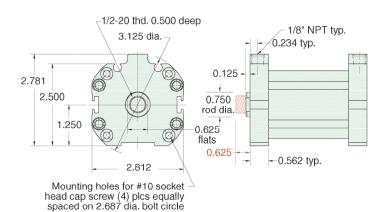
Spring Forces			
Spring Return			
Compressed At Rest			
13 lbs.	7.500 lbs.		
Spring Extend			
Compressed	At Rest		
13 lbs.	7.500 lbs.		



2" BORE AFO COMPACT CYLINDER



A F - 🗆 🗆 - 3 2 - 🗆



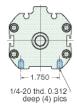


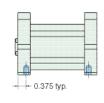
For rod with male thread option, add -T to the end of the part number after Stroke

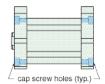
See page 76 for Air Force One numbering system

MOUNTING STYLES

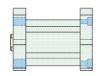
Five mounting styles give you versatility and fast, easy installation.

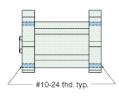












Bottom Mount AF-Bxx-32-x

Universal Mount AF-Uxx-32-x

Front Mount AF-Fxx-32-x

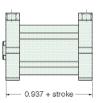
Rear Mount AF-Rxx-32-x

Thread Mount AF-Txx-32-x

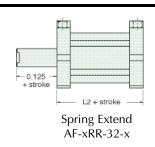
CYLINDER LENGTHS

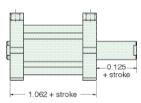
"L"	Stroke	Spring Return	Spring Extend
L1	1/4" - 1"	15/16"	
L1	1 1/8" - 2"	1 9/16"	
L1	2 1/8" - 3"	2 3/16"	
L1	3 1/8" - 4"	2 13/16"	
L2	1/4" - 1"		1 7/16"
L2	1 1/8" - 2"		2 1/16"
L2	2 1/8" - 3"		2 11/16"
L2	3 1/8" - 4"		3 5/16"





Double Acting Single Rod AF-xDR-32-x





Double Acting Double Rod AF-xDD-32-x

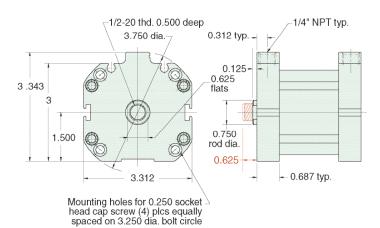
Spring Forces					
Spring Return					
Compressed	At Rest				
13 lbs.	7.500 lbs.				
Spring	Extend				
Compressed	At Rest				
13 lbs.	7.500 lbs.				



2 1/2" BORE AFO COMPACT CYLINDER







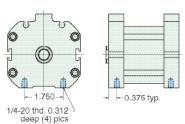


For rod with male thread option, add -T to the end of the part number after Stroke

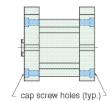
See page 76 for Air Force One numbering system

MOUNTING STYLES

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



Bottom Mount AF-Bxx-40-x



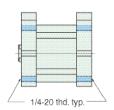
Universal Mount AF-Uxx-40-x



Front Mount AF-Fxx-40-x



Rear Mount AF-Rxx-40-x

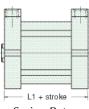


Thread Mount AF-Txx-40-x

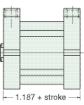
CYLINDER LENGTHS

"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"	

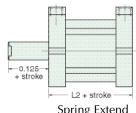
Overall length of body is stroke plus "L"



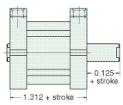
Spring Return AF-xSR-40-x



Double Acting Single Rod AF-xDR-40-x



Spring Extend AF-xRR-40-x



Double Acting Double Rod AF-xDD-40-x

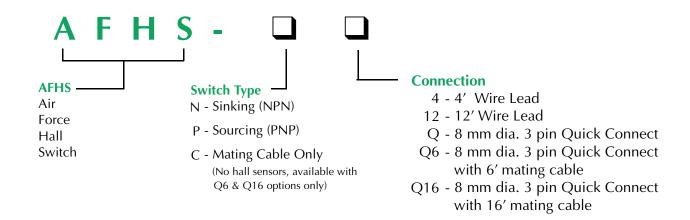
Spring Forces						
Spring	Return					
Compressed	At Rest					
25 lbs.	18.500 lbs.					
Spring	Extend					
Compressed	At Rest					
25 lbs.	18.500 lbs.					



AFO COMPACT CYLINDER HALL SENSORS



AIR FORCE ONE® HALL SENSORS NUMBERING SYSTEM



MAGNETIC PISTONS

Additional Length Required for Magnetic Piston

Add 7/8" 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 Hall Effect sensors.

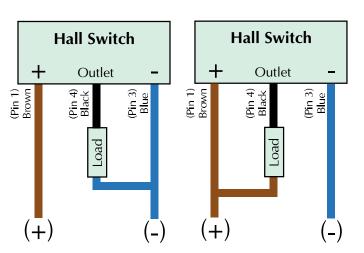
Magnetic Piston

A specialized magnet is attached to the piston that will actuate the Clippard Hall Effect 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. Hall Effect sensors must be ordered separately.

ELECTRICAL SPECIFICATIONS

Sinking or Sourcing
6 to 28 VDC
15 mA maximum
0.5 VDC maximum
300 mA maximum
7.2 Watts maximum
Reverse Polarity Protected
Transient Voltage Protected
0 -175° F

Sourcing PNP



Sinking NPN

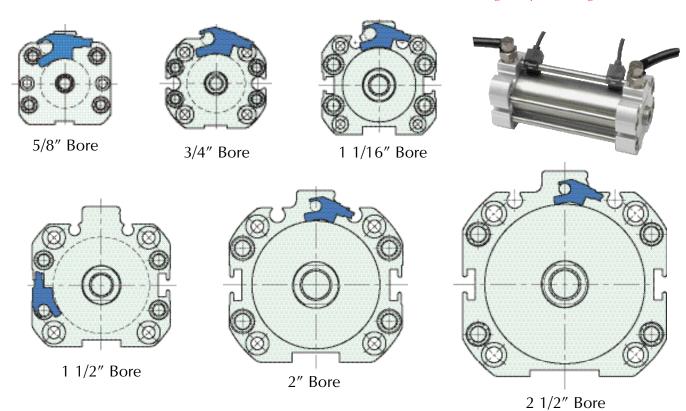


AFO COMPACT CYLINDER HALL SENSORS



MAGNETIC PISTON & HALL EFFECT SENSORS

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



HALL EFFECT SENSORS

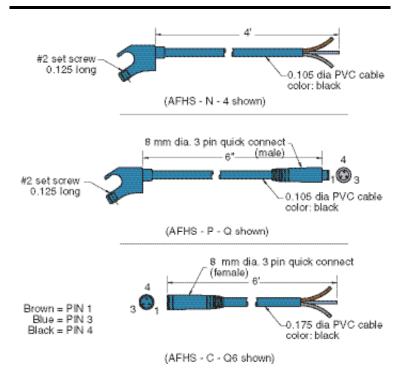
Position Sensing Switch

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

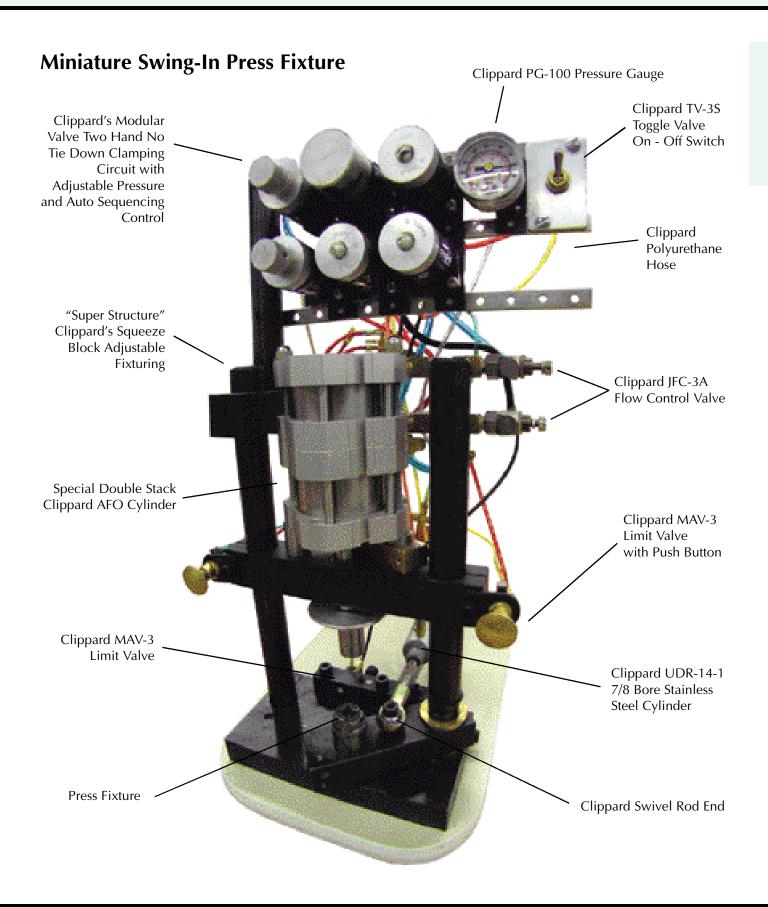
Locating Hall Effect Sensors on Cylinders

Cylinders ordered with magnetic pistons come with an additional attached rod* on which the Hall Effect 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 Hall Effect Switch in place.

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









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 (1 1/8" 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".

MINIMATIC® CYLINDER



FEATURES

- 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° F 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; 1 1/8" bore: hard coat aluminum

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:**

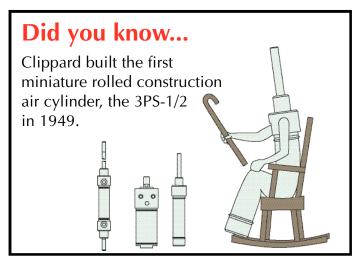
Buna-N compound, impervious to a wide range of hydraulic fluids, liquids, and gases; rod seals replaceable on models where applicable; piston seals replaceable only on threaded construction models

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; 1 1/8" bore: hard coated aluminum with black oxide steel heads



Minimatic [®]	Engineering Data Design Features			Pomarka							
Cylinders	pg.	Medium	Force Factor	Rec. Max. Working Pres.	Piston Seals	Rod Seals	Rod Dia.	Rod End	Ports Tapped	Construction	Remarks
5/32" Bore Spring Return	89	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	89	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	90	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	91	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	90	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	92	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	92	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	92	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	94	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	95 +*	Air & lyd.	0.20 000 psig-	250 psig-Air Hyd.* Ring	T- Rin	Vee g N	1/4" PT	Thd.	1/16"	Threaded	
7/8" Bore Spring Return	96	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	97 **	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	96	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.
1-1/8" Bore Double Acting	99 **	Air	1.0	250 psig	U-Cup	Vee Ring	3/8"	Thd.	1/8" NPT	Threaded	Sintered bronze rod bushing Low friction - 2 psig to operate
1-1/8" Bore Spring Return	98	Air	1.0	250 psig	U-Cup		3/8"	Thd.	1/8" NPT	Threaded	Spring force extend- 8 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° F to $+230^{\circ}$ F

*Consult factory for hydraulic applications

SUB-MINIATURE MINIMATIC® CYLINDER



SM-2

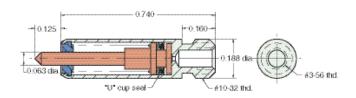
Bore: 5/32" **Mount:** Rear Thread **Available Stroke Lengths: 1/4**

Materials: Stainless steel body, piston & rod, Buna-N U-cup, **Type:** Spring Return

Beryllium copper spring

Single Acting





SM-3-□

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

Model **SM-3-2 SM-3-3** 1/2' 3/4' Stroke Length "L" 1.593 1.171

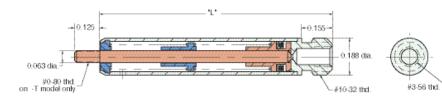
Materials: Stainless steel tube and rod, brass piston, Buna-N

U-cup

Single Acting

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





SM-6

Bore: 1/4" Mount: Body*

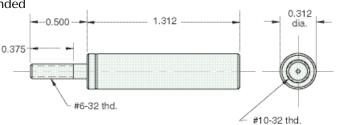
Type: Spring Return

Available Stroke Lengths: 3/8" Materials: Brass body, Buna-N U-cup, stainless steel piston & rod

Single Acting

*Super structure recommended

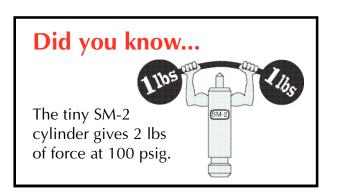




Nut included, but not shown on drawing



Super structure 12327 pictured here is recommended for mounting the SM-6 cylinder. For more information see page 105.





3/8" BORE BRASS MINIMATIC® CYLINDER

3SS-AR-1/2

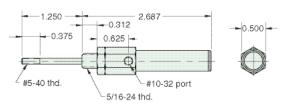
Mount: Stud

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

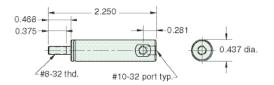
Brass Rod - non-rotating

First Cylinder - 1949

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

*Super Structure recommended





Rod nut included, but not shown on drawing

3\$\$-□

Mount: Stud

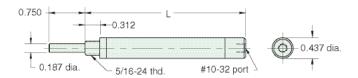
Type: Single Acting Spring Return

Stroke 1/2" **Length "L"** 2.093 3.343 5.218

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





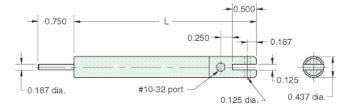
3CS-□

Mount: Clevis **Type:** Single Acting Spring Return

Stroke 1/2" **Length "L"** 2.468 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-□

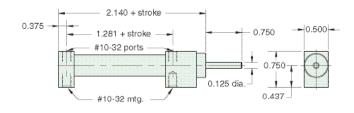
Mount: Block Available Stroke Lengths: 1", 2", 3", 4", 5", 6"

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-□

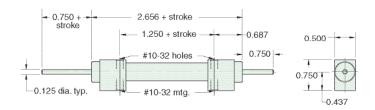
Mount: Block Available Stroke Lengths: 1", 2", 3", 4"

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-□

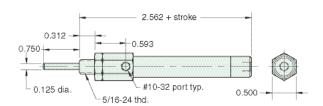
Mount: Stud Available Stroke Lengths: 1", 2", 3", 4"

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 $\#5-40 \times 1/2"$ rod thread





Nut included, but not shown on drawing

3CD-□

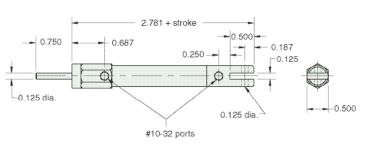
Mount: Clevis **Available Stroke Lengths:** 1", 2", 3", 4"

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 $\#5-40 \times 1/2$ " rod thread







9/16" BORE BRASS MINIMATIC® CYLINDER

9PS-3/4

Mount: Body*

Available Stroke Lengths: 3/4"

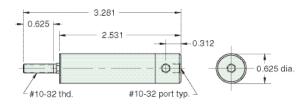
Type: Single Acting Spring Return

Non-Rotating Shaft

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

*Super Structure recommended





Rod nut included, but not shown on drawing

9BS-□

Mount: Block
Type: Single Acting
Spring Return

 Stroke
 3/4"
 1 1/2"
 2 1/4"
 3"

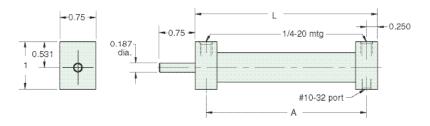
 Length "L"
 2.750
 4.218
 5.593
 6.937

 "A"
 2.312
 3.750
 5.125
 6.500

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\$\$-□

Mount: Stud

Type: Single Acting Spring Return

Stroke	3/4"	1 1/2"	2 1/4"	3"
Length "L"	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

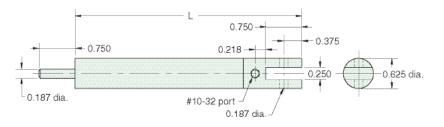
 Stroke
 3/4"
 1 1/2"
 2 1/4"
 3"

 Length "L"
 3.343
 4.687
 6.062
 7.406

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-□

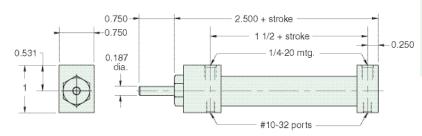
Mount: Block Available Stroke Lengths: 1", 2", 3", 4", 5", 6"

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-□

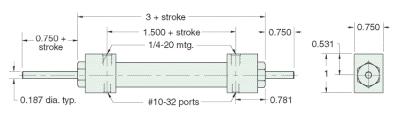
Mount: Block Available Stroke Lengths: 1", 2", 3", 4", 5", 6"

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 $\#10-32 \times 1/2"$ rod thread





9SD-

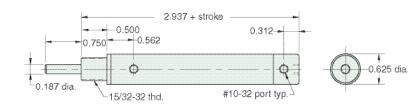
Mount: Stud Available Stroke Lengths: 1", 2", 3", 4", 5", 6"

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-□

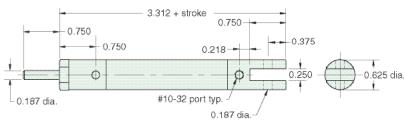
Mount: Clevis Available Stroke Lengths: 1", 2", 3", 4", 5", 6"

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 $\#10-32 \times 1/2"$ rod thread





- -



9/16" BORE BRASS HEAVY DUTY CYLINDER

9SS-AR-1

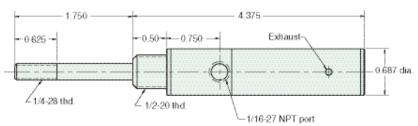
Mount: Stud

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

H9S-□**S**

Mount: Stud

Type: Single Acting
Spring Return

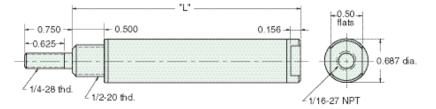
 Stroke
 1"
 2"
 3"

 Length "L"
 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

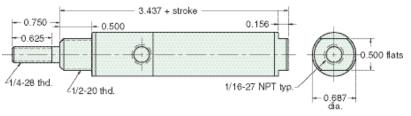
Available Stroke Lengths: 1", 2", 3", 4", 5", 6"

Type: Double Acting

To order: Indicate stroke in box □

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





Nut included, but not shown on drawing

H9C-□S

Mount: Clevis
Type: Single Acting
Spring Return

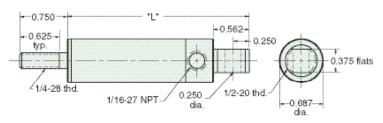
 Stroke
 1"
 2"
 3"

 Length "L"
 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.



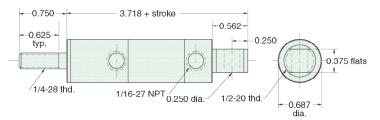
Mount: Clevis Available Stroke Lengths: 1", 2", 3", 4", 5", 6"

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 1"
Length "L" 4.375"

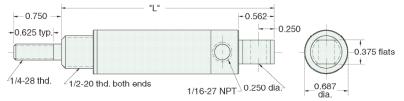
 se
 1"
 2"
 3"

 "
 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

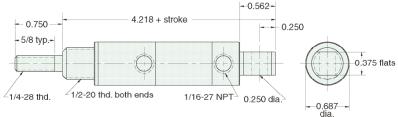
Mount: Universal Available Stroke Lengths: 1", 2", 3", 4", 5", 6"

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

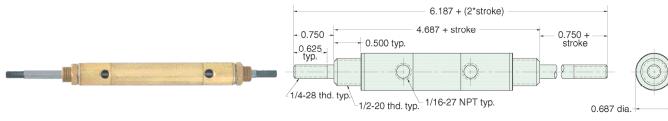
H9D-□D

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

Type: Double Acting Double Rod

To order: Indicate stroke in box □

Add $\operatorname{-N}$ 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

7SS-AR-1

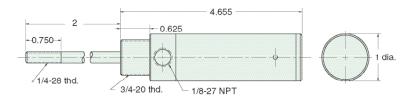
Mount: Stud

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

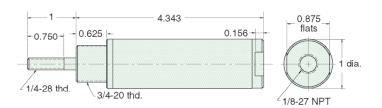
Mount: Stud

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

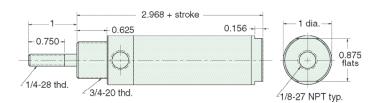
Available Stroke Lengths: 1", 2", 3", 5", 7", 9"

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

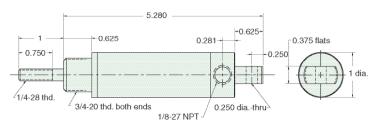
Mount: Universal

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 1000 psig.



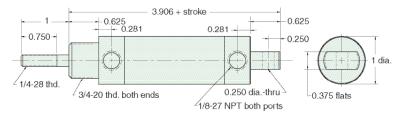
Mount: Universal Available Stroke Lengths: 1", 2", 3", 5", 7", 9"

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

7DD-□

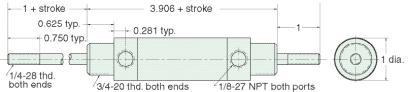
Mount: Universal Available Stroke Lengths: 1", 2", 3", 5", 7", 9"

Type: Double Acting Double Rod

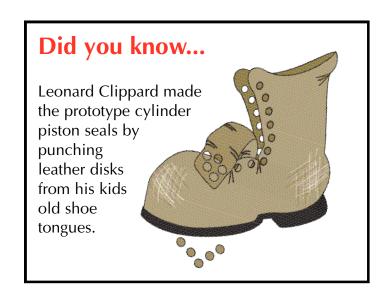
To order: Add stroke length to the end of the part number

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





Nut included, but not shown on drawing



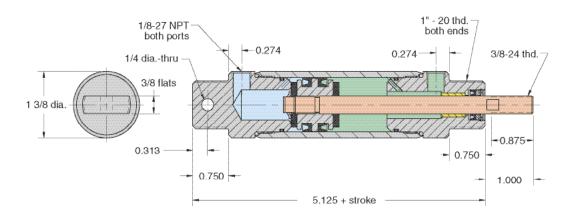
- -



1 1/8" BORE HEAVY DUTY ALUMINUM CYLINDER

Features

- Very low breakaway force allows for a consistent stroke speed (no sudden jumps)
- Hard-anodized aluminum body attractive, yet durable
- Force factor of 1 100 psig input provides 100 lbs. output force
- Available in many stroke lengths (even up to 8 ft. in special quantities!)
- Brass piston, stainless steel rod



18SS-1

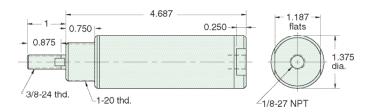
Mount: Stud

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

18S-1

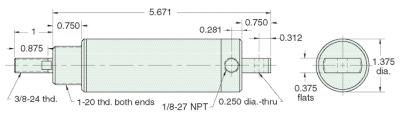
Mount: Universal

Type: Single Acting
Spring Return

Available Stroke Lengths: 1"

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





1 1/8" BORE HEAVY DUTY ALUMINUM CYLINDER



18CSD-□

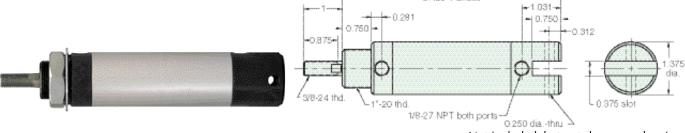
Mount: Clevis

Available Stroke Lengths: 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 12",

14", 16", 18", 20" **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

18SD-□

Mount: Stud

Type: Double Acting

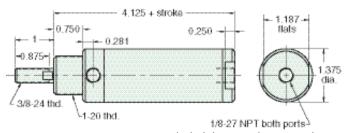
14", 16", 18', 20"

Available Stroke Lengths: 1", 2", 3", 4", 5", 6", '7, 8", 9", 10", 12",

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

18DD-

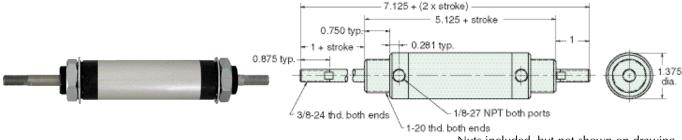
Mount: Stud

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

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



Nuts included, but not shown on drawing

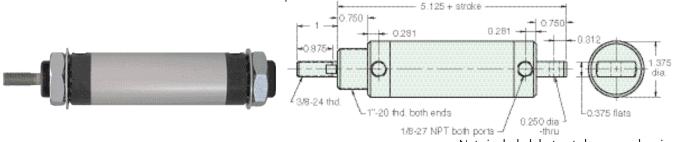
18D-□

Mount: Universal Type: Double Acting Available Stroke Lengths: 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 12",

14", 16," 18", 20"

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

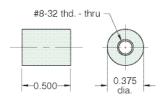


Nuts included, but not shown on drawing

3/8" BORE MOUNTING BRACKETS

11767

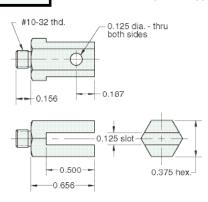
Ceramic Insulator Use with cylinder having #8-32 threaded shaft to insulate cylinder from heat or electricity





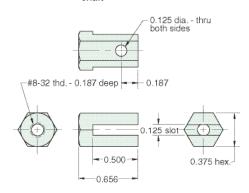
11996

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



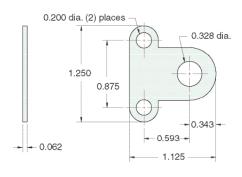
11997

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



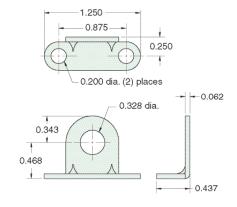
11917-2

Mounting Bracket (flat)



11918-2

Mounting Bracket (angled)



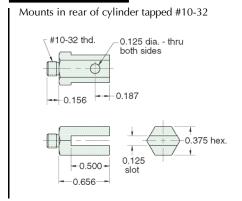
9/16" BORE MOUNTING BRACKETS





11996

Male Clevis





threaded shaft

For use with cylinders having #10-32

Female Clevis

both sides

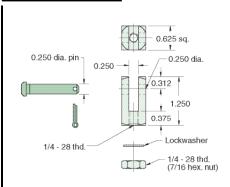
- 0.187

0.125

slot

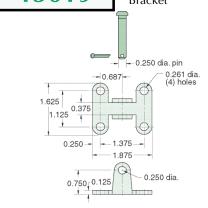
15015

Rod Clevis Assembly



15019

Clevis Mounting **Bracket**





#10-32 thd. - 0.187 deep

-0.500 -

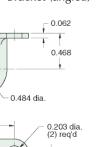
-0.656--

Mounting Bracket (flat)

0.375 hex.

11918-1

Mounting Bracket (angled)

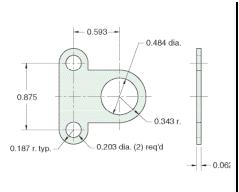


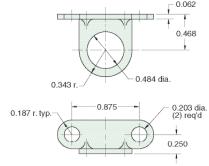
15018-2

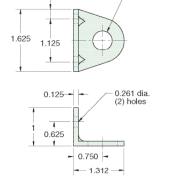
0.250

Mounting Bracket (angled)

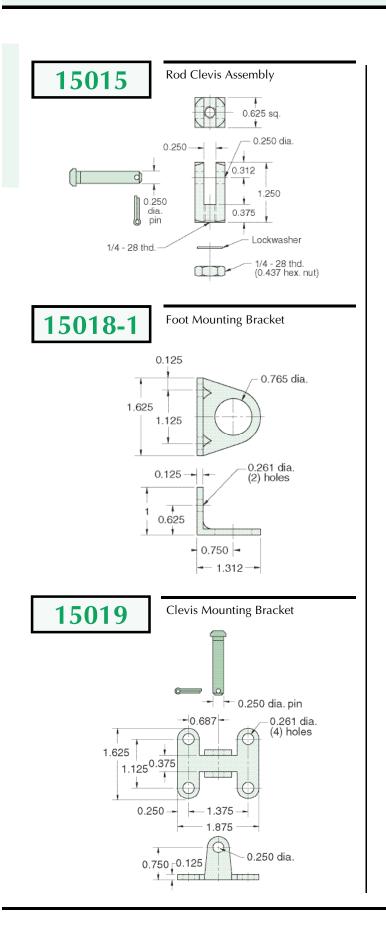
0.500 dia.







7/8" BORE MOUNTING BRACKETS





1 1/8" BORE MOUNTING BRACKETS



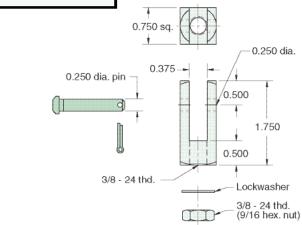


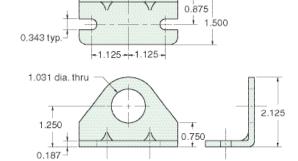


Foot Mounting Bracket

12346

Rod Clevis Assembly



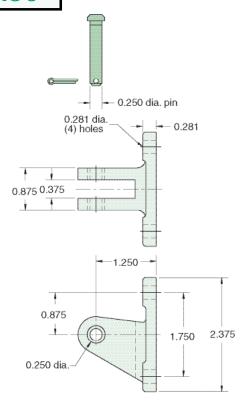


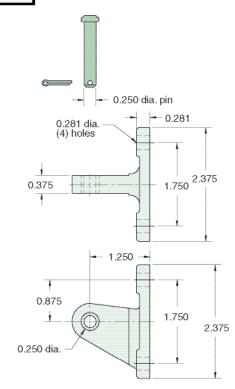
12456

Female Clevis Mounting Bracket

12458

Male Clevis Mounting Bracket

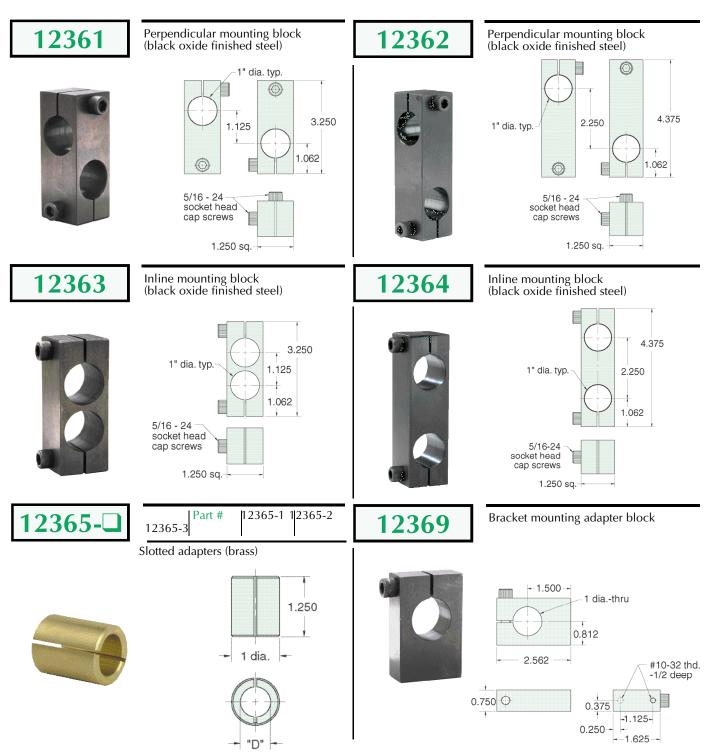




- - -

SUPER STRUCTURE

Here's a building block concept to speed construction of small equipment, fixtures, jigs and tooling. Machined steel blocks adapt to any position on the column and base. Offset extensions are provided through use of fixture and block mounting shafts of various lengths. Use of proper size brass slotted adapter permits mounting small bore cylinders or other parts. Column base is drilled for mounting. The Super Structure is extremely solid and secure, yet fully adjustable.



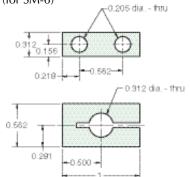
SQUEEZE BLOCKS



12327

Cylinder mounting squeeze block (for SM-6)

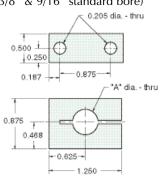




12326-

Cylinder mounting squeeze blocks (for 3/8" & 9/16" standard bore)



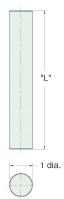


Part #	"A"	
12326-1	5/8"	(for 9/16" stand. bore cylinder)
12326-2	7/16"	(for 3/8" stand, bore cylinder)

12366-□

Fixture and bracket mounting shafts (black oxide finished steel)





Part #	"L"
12366-4	4"
12366-6	6"
12366-8	8"
12366-10	10"
12366-12	12"
12366-14	14"
12366-16	16"
12366-18	18"
12366-20	20"

CMB

Column and mounting base (black oxide finished steel)

