

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

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



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



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

**Every Cylinder  
is 100% tested**

#### Cylinder Tubes:

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

#### Piston Rods:

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

#### Pistons:

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

#### Springs:

Stainless steel for long life and resistance to corrosion

#### Seals:

Nitrile 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 Nitrile or polyurethane absorb shock, increase life and reduce noise level

#### Finish:

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

# 1949

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

Minimatic® Cylinders	Pg.	Engineering Data			Design Features						Remarks
		Medium	Force Factor	Rec. Max. Working Pres.	Piston Seals	Rod Seals	Rod Dia.	Rod End	Ports Tapped	Construction	
5/32" Bore Spring Return	90	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	90	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	91	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	92	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	91	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	93	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	93	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	93	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	95	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	96 **	Air & Hyd.	0.20	250 psig-Air 1000 psig-Hyd.*	T- Ring	Vee Ring	1/4"	Thd.	1/16" NPT	Threaded	
7/8" Bore Spring Return	97	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	98 **	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	97	Air	0.60	250 psig	U-Cup	Vee Ring	1/4"	Thd.	1/8" NPT	Threaded	Min. of 23 psig to retract Spring force extend- 7 lb. Spring force compressed- 12 lb.

### Quick Cylinder Computations:

Cylinder Force = Force Factor x Pressure

Displacement = Force Factor x Stroke

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

\*\*NOTE: Double rods also available in these models.

Temperature: 30 to 230°F

\*Consult factory for hydraulic applications

## SM-2

Single Acting

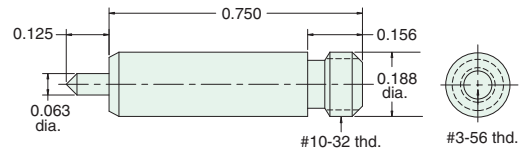


### Did you know...

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

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

**Available Stroke Length:** 1/4"  
**Materials:** Stainless steel body, piston & rod, Nitrile U-cup, Beryllium copper spring



## SM-3-□

Single Acting

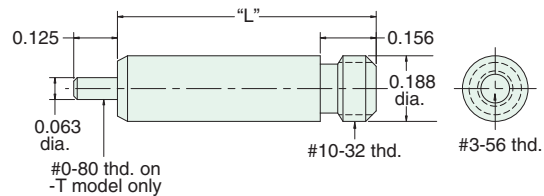


**Bore:** 5/32"  
**Mount:** Rear Thread  
**Type:** Spring Return

Model	SM-3-1	SM-3-2	SM-3-3	SM-3-4
<b>Stroke</b>	1/4"	1/2"	3/4"	1"
<b>Length "L"</b>	0.740	1.171	1.593	2.000

**Materials:** Stainless steel tube and rod, brass piston, Nitrile U-cup

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



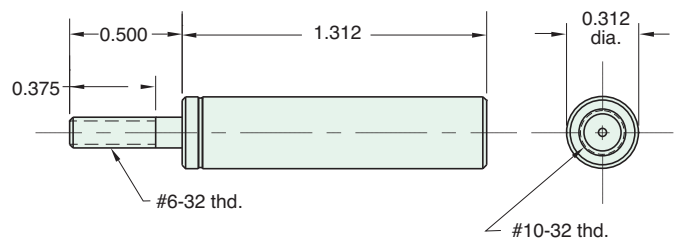
## SM-6

Single Acting



**Bore:** 1/4"  
**Mount:** Body  
**Type:** Spring Return

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



Nut included, but not shown on drawing

## CUSTOMer solutions

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

### Special Configurations

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

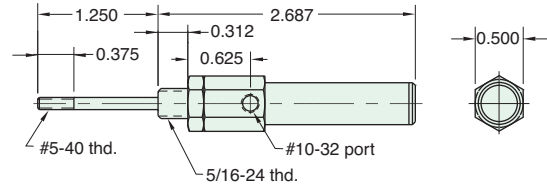


# 3/8" BORE BRASS MINIMATIC® CYLINDER

## 3SS-AR-1/2

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

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



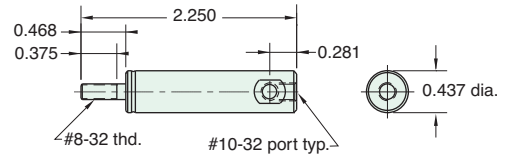
Rod nut included, but not shown on drawing

## 3PS-1/2

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

Brass Rod - non-rotating

First Cylinder - 1949



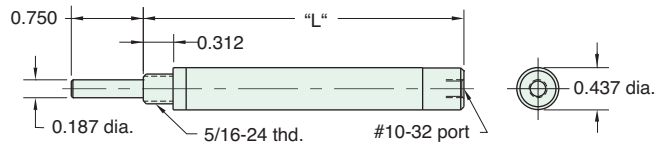
Rod nut included, but not shown on drawing

## 3SS-□

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

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

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

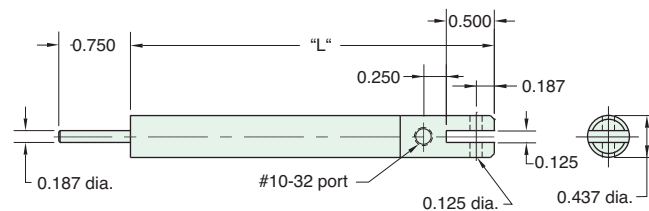


## 3CS-□

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

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

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



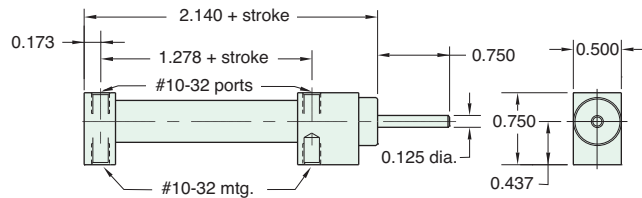
# 3/8" BORE BRASS MINIMATIC® CYLINDER

## 3BDS-□

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

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

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

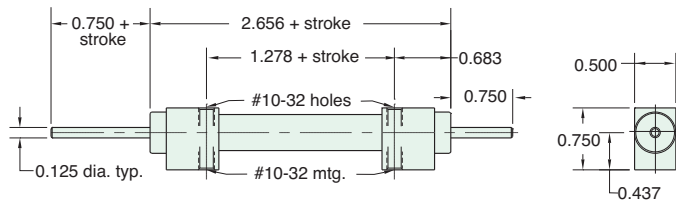


## 3BDD-□

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

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

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

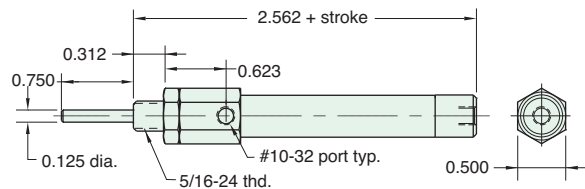


## 3SD-□

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

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

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



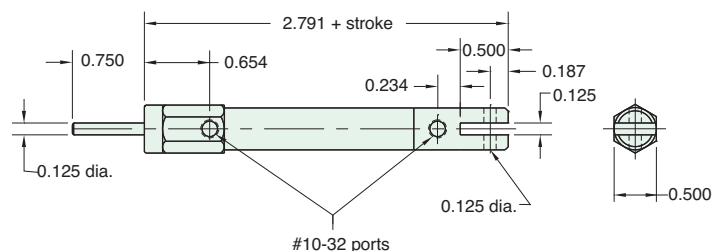
Nut included, but not shown on drawing

## 3CD-□

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

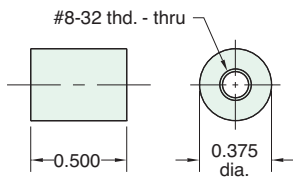
**To order:** Add stroke length to the end of the part number

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



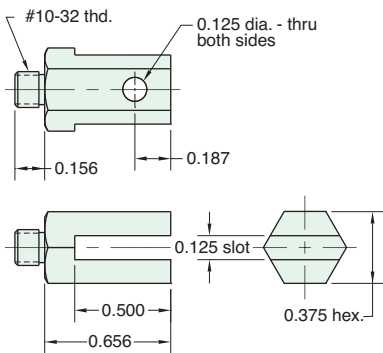
## 11767

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



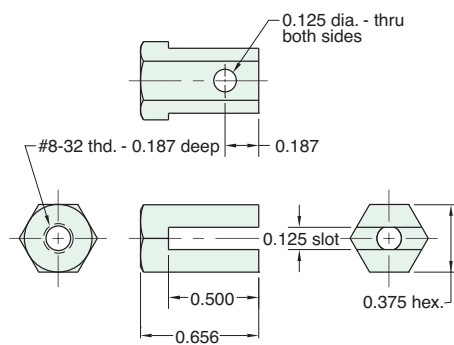
## 11996

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



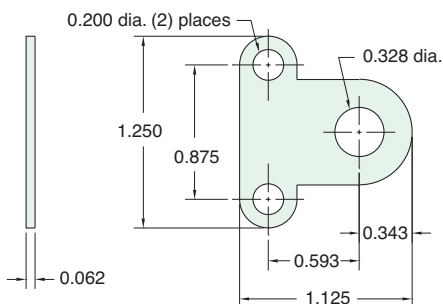
## 11997

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



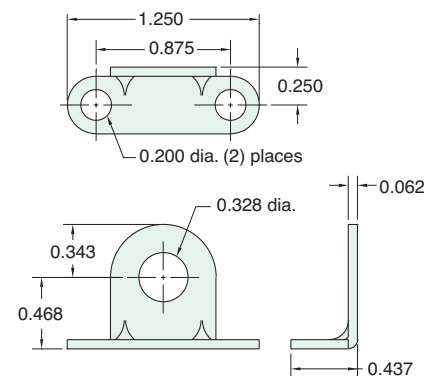
## 11917-2

**Mounting Bracket (flat)**



## 11918-2

**Mounting Bracket (angled)**



# 9/16" BORE BRASS MINIMATIC® CYLINDER

## 9PS-3/4

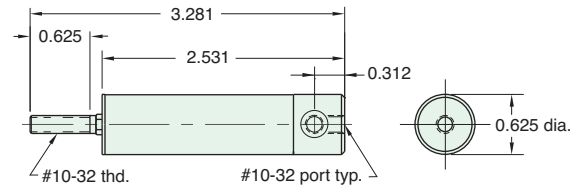
**Mount:** Body

**Type:** Single Acting  
Spring Return

**Available Stroke Lengths:** 3/4"

Non-Rotating Shaft

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



Rod nut included, but not shown on drawing

## 9BS-□

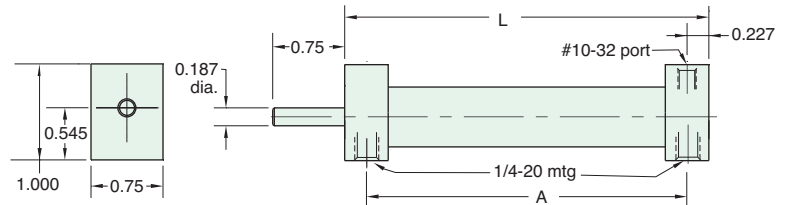
**Mount:** Block

**Type:** Single Acting  
Spring Return

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

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

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



## 9SS-□

**Mount:** Stud

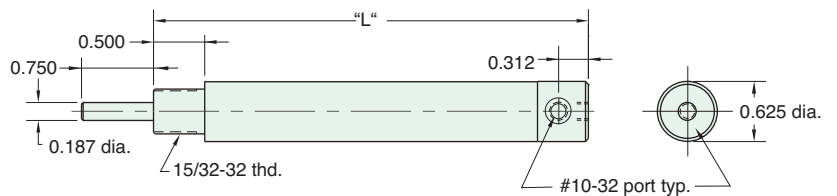
**Type:** Single Acting  
Spring Return

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

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

\* Provided threaded standard

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



Rod nut included, but not shown on drawing

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

## 9CS-□

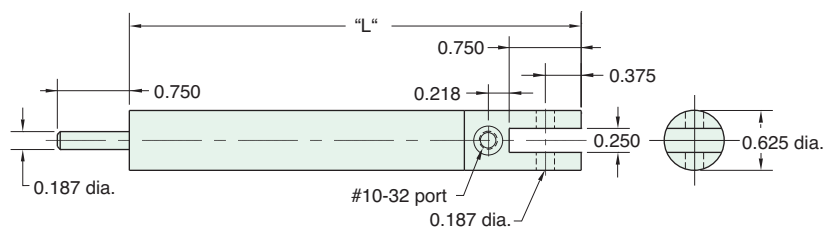
**Mount:** Clevis

**Type:** Single Acting  
Spring Return

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

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

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



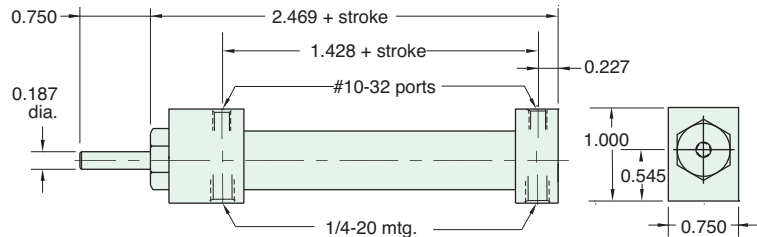
# 9/16" BORE BRASS MINIMATIC® CYLINDER

## 9BDS-□

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

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

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

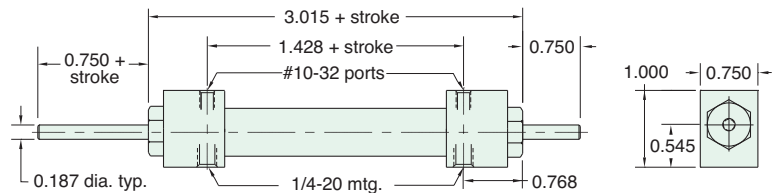


## 9BDD-□

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

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

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

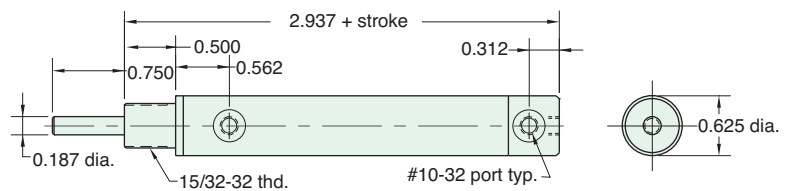


## 9SD-□

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

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

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



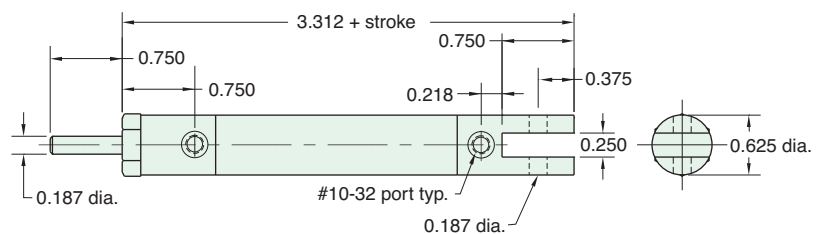
Nut included, but not shown on drawing

## 9CD-□

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

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

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





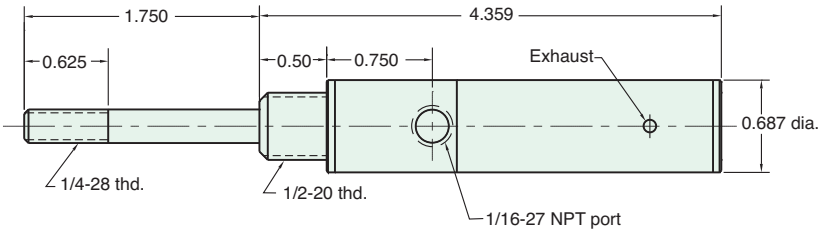
# 9/16" BORE BRASS HEAVY DUTY CYLINDER

## 9SS-AR-1

**Mount:** Stud  
**Type:** Single Acting  
 Spring Extended

**Available Stroke Lengths:** 1"

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



Nut included, but not shown on drawing

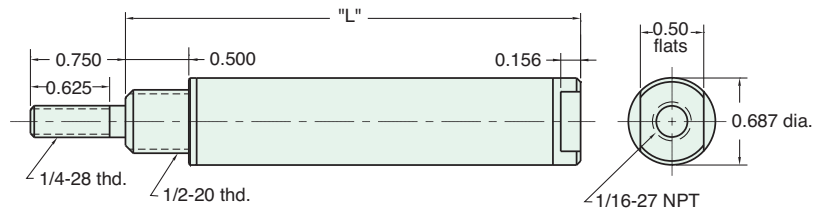
## H9S-□S

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

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

**To order:** Indicate stroke in box □

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



Nut included, but not shown on drawing

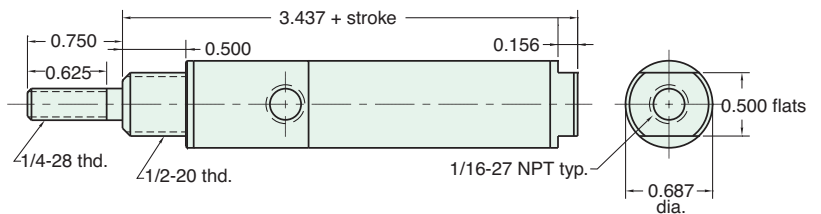
## H9S-□D

**Mount:** Stud  
**Type:** Double Acting

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

**To order:** Indicate stroke in box □

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



Nut included, but not shown on drawing

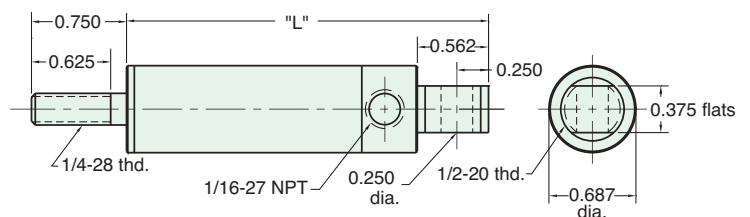
## H9C-□S

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

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

**To order:** Indicate stroke in box □

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



Nut included, but not shown on drawing

# 9/16" BORE BRASS HEAVY DUTY CYLINDER

Consult factory for hydraulic applications

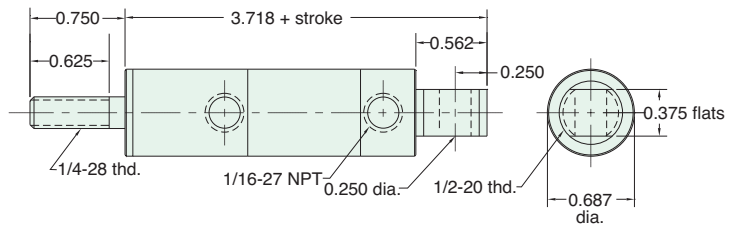
Note: Maximum recommended hydraulic working pressure for heavy duty cylinders is 1000 psig.

## H9C-□D

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

**To order:** Indicate stroke in box □

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



Nuts included, but not shown on drawing

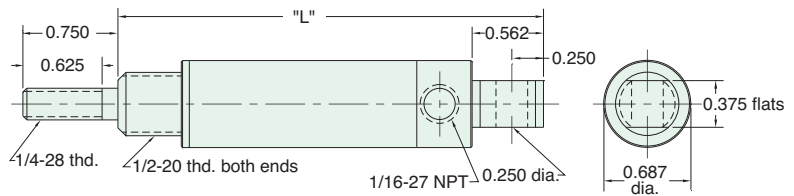
## H9U-□S

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

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

**To order:** Indicate stroke in box □

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



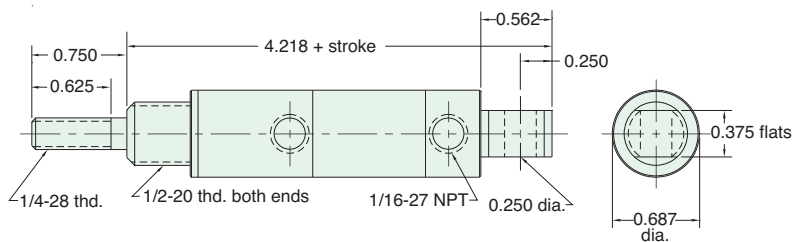
Nuts included, but not shown on drawing

## H9U-□D

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

**To order:** Indicate stroke in box □

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



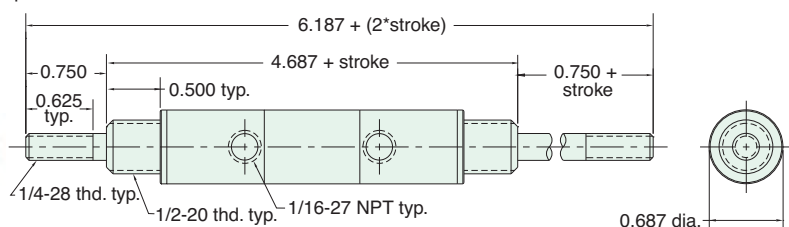
Nuts included, but not shown on drawing

## H9D-□D

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

**To order:** Indicate stroke in box □

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



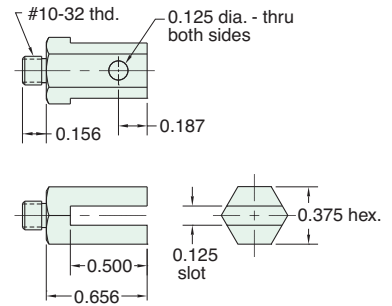
Nuts included, but not shown on drawing



## 11996

Male Clevis

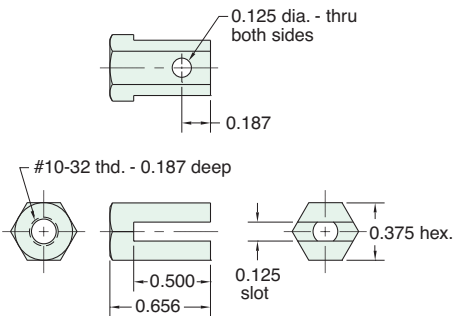
Mounts in rear of cylinder tapped #10-32



## 15009

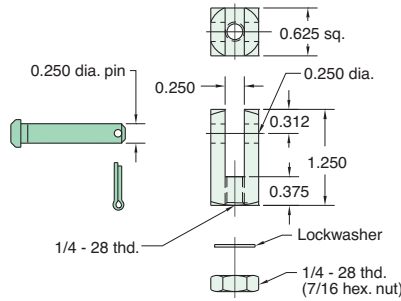
Female Clevis

For use with cylinders having #10-32 threaded shaft



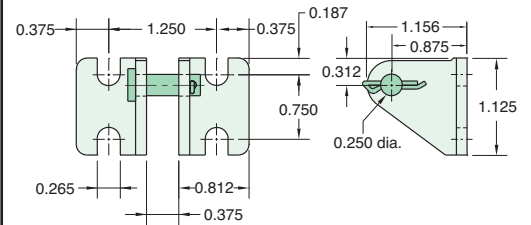
## 15015

Rod Clevis Assembly



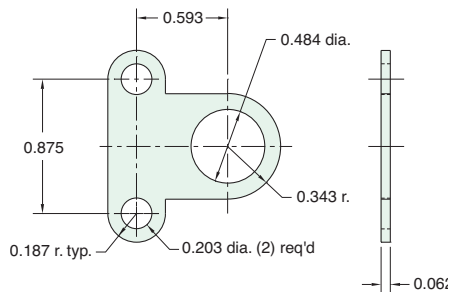
## CB-1795

Clevis Bracket  
Material: Steel, bright zinc plated



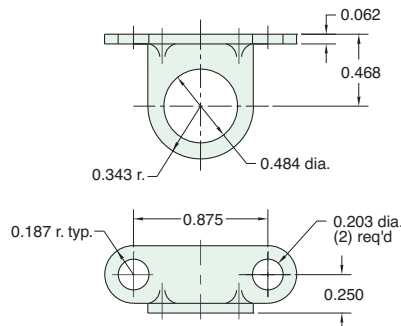
## 11917-1

Mounting Bracket (flat)



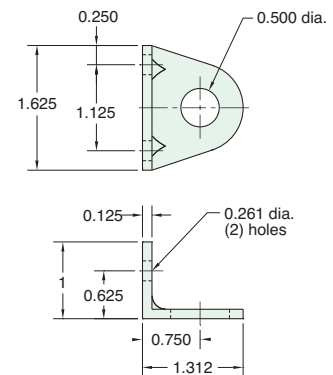
## 11918-1

Mounting Bracket (angled)



## 15018-2

Foot Bracket (angled)



Consult factory for hydraulic applications

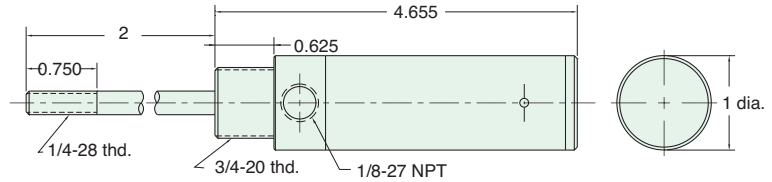
## 7SS-AR-1

**Mount:** Stud

**Available Stroke Lengths:** 1"

**Type:** Single Acting  
Spring Extended

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



Nut included, but not shown on drawing

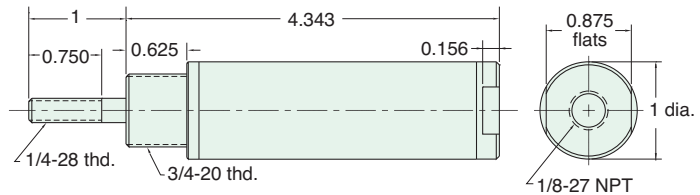
## 7SS-1

**Mount:** Stud

**Available Stroke Lengths:** 1"

**Type:** Single Acting  
Spring Return

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



Nut included, but not shown on drawing

## 7SD-□

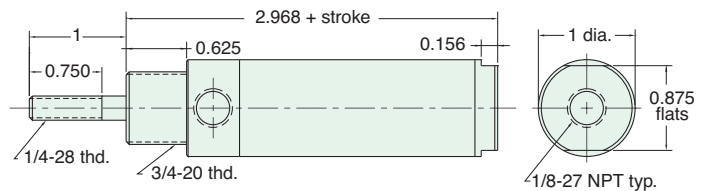
**Mount:** Stud

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

**Type:** Double Acting

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

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



Nut included, but not shown on drawing

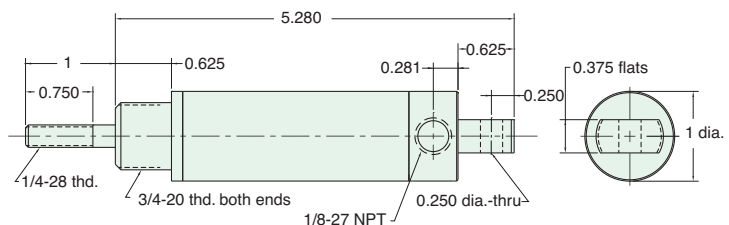
## 7S-1

**Mount:** Universal

**Available Stroke Lengths:** 1"

**Type:** Single Acting  
Spring Return

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



Nuts included, but not shown on drawing

# 7/8" BORE BRASS HEAVY DUTY CYLINDER

Consult factory for hydraulic applications

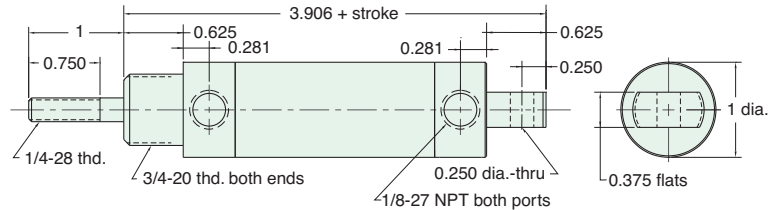
Note: Maximum recommended hydraulic working pressure for heavy duty cylinders is 1,000 psig.

**7D-** 

**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



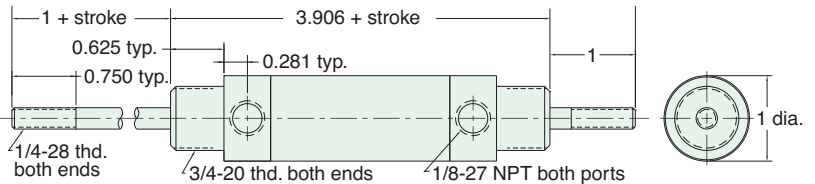
Nut included, but not shown on drawing

**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

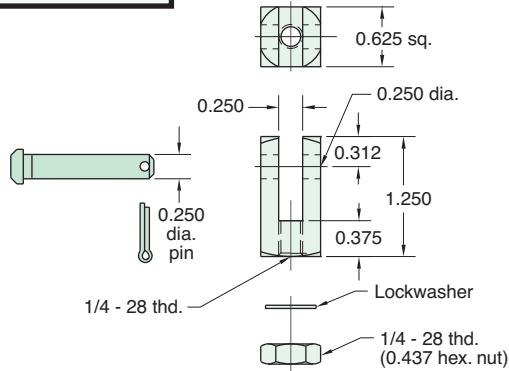
## Did you know...

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



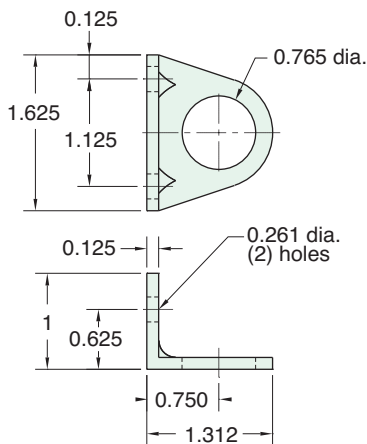
## 15015

Rod Clevis Assembly



## 15018-1

Foot Mounting Bracket



## CUSTOMer solutions

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

### Special Cylinders

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



## Miniature Swing-In Automated Arbor Press

