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 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

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	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 & 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	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° F
*Consult factory for hydraulic applications