



**WATSON
PNEUMATICS**

Rod Clevis



If it is versatility you seek, **Watson Pneumatics** is your answer! In addition to the threaded O.D., the aluminum base, the tie mount and the nose mount options already offered, **Watson Pneumatics** is pleased to introduce the Rod Clevis option! You may count on top-notch quality and service from **Watson** — our products live up to your expectations!

Rod Clevis / Pin Dimensions



Cyl	A	Pin O.D.	Nut
42	5/8	5/16	6/32
43	3/4	5/16	8/32
45	3/4	5/16	1/4 - 28

Miniature Adjustable Location Air Cylinders - All Series



Features

Miniature adjustable location air cylinders offer the most compact and precise location control available. They are available in standard and special order configurations. They are available in 1/8" and 1/4" stroke lengths.

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Key Note: Mount Option

Standard mounting options are available for all cylinders. Special mounting options are available for cylinders with special order configurations. They are available in 1/8" and 1/4" stroke lengths. They are available in 1/8" and 1/4" stroke lengths.



Specifications

- Standard stroke lengths: 1/8" and 1/4"
- Standard mounting options: 1/8" and 1/4" stroke lengths
- Special order mounting options: 1/8" and 1/4" stroke lengths
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- Standard mounting options: 1/8" and 1/4" stroke lengths
- Special order mounting options: 1/8" and 1/4" stroke lengths



New Mounting System

The new mounting system offers a more compact and precise location control. It is available in 1/8" and 1/4" stroke lengths. It is available in 1/8" and 1/4" stroke lengths.

Product Size Selection Guide

Stroke Length	Part No.	Part No.	Part Number
1/8"		1/8"	1/8" stroke length
		1/8"	1/4" stroke length
		1/8"	1/8" stroke length, special order
		1/8"	1/4" stroke length, special order
1/4"		1/4"	1/8" stroke length
		1/4"	1/4" stroke length
		1/4"	1/8" stroke length, special order
		1/4"	1/4" stroke length, special order

Visit us at www.airtec.com for more information.

Front & Rear Base Mounting Air Cylinders



Features

Need more mounting options? Consider these electric nickel plated "Aluminum" models. They come with a factory installed, aluminum mounting plate that can be located on the front or rear of the cylinder body – or anywhere in between.

Rugged, over-sized ball bearings assure longer cycle life and reliable performance.

You get a variety of port location choices to easily mate air connectors. Whether the air supply is hooked up directly to the cylinder body, or through the aluminum mounting block is your option.

Our new **non-rotating, hex-rod option** is now offered on single acting, spring return cylinders.

Our standard stroke lengths in single acting are:

- 1/4" bore - 1 1/4" stroke
- 3/8" & 1/2" bore - 1 1/4" & 1 1/2" strokes

Our standard stroke lengths in double-acting are:

- 1/4" bore - 1 1/4", 1 1/2" & 1" strokes
- 3/8" & 1/2" bore - 1 1/4", 1 1/2", 1", 1 1/2" & 2" strokes

Although not standard, we offer strokes in 1/8" increments up to our maximum stroke lengths by use of internal stops. When ordering, for example, a 3/8" bore X 1 1/4" stroke in the double-acting with both side ports/ports in the AL series, the part number will be "AL308B-5/4" *Keep in mind that when calculating your DA Dimensions, use the NEXT LONGEST STANDARD bore diameter.

Mounting Base

The standard bases are aluminum. If you require complete corrosion resistance, electric nickel plated mounting bases can be ordered subject to a minimum fee charge.



New Non-rotating Option

Hexagonal piston rod and mating rod bushing create rod rotation 2 1/2" average in single acting, spring return cylinders.

When ordering, please specify the "Hex rod option" in your part number as shown in the Selection Guide below.

How to Order:

[1] Choose the basic model number of the cylinder you want from the conversion Cylinder Selection Guide below. [2] Replace the (1*) with the Cyl. # corresponding to bore size. [3] Add the stroke.

Cyl. # Bore	2	3	5
	1/4"	3/8"	1/2"

Example: If your basic model selection is AF1880+, and you want to specify a 3/8" bore with a 1 1/2" stroke, then your part number becomes AF3880+1 1/2".

For the non-rotating option, use the hex rod code given in the selection guide. The part number would become AF3880+1 1/2".

Cylinder Selection Guide (Basic Model No.)

	Spring Return	Spring Return	Spring Return
Single Acting	AF1880+ AF1880+ (hex rod option)	AF3880+ AF3880+ (hex rod option)	AF1120+ AF1120+ (hex rod option)
	AF3880+ AF3880+ (hex rod option)	AF1880+ AF1880+ (hex rod option)	AF1880+ AF1880+ (hex rod option)
Double Acting	AF1880+ AF1880+ (hex rod option)	AF3880+ AF3880+ (hex rod option)	AF1120+ AF1120+ (hex rod option)
	AF3880+ AF3880+ (hex rod option)	AF1880+ AF1880+ (hex rod option)	AF1880+ AF1880+ (hex rod option)

NOTE: For custom location of your mounting base please specify the "Y" dimension and parts required.

MOUNTING BASE DIMENSIONS									
Cyl. #	A	B	C	D	E	F	G	H	I
AF 1/4"	0.500	1.5	1.5	0.500	1.5	0.500	1.5	1.5	1.5
AF 3/8"	0.500	1.5	1.5	0.500	1.5	0.500	1.5	1.5	1.5
AF 1/2"	0.500	1.5	1.5	0.500	1.5	0.500	1.5	1.5	1.5

CYLINDER DIMENSIONS															
Cyl. Bore	A ₁	A ₂	B	C	D	E	F	G	H	I	J	K	L	M	N
AF 1/4"	0.625	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
AF 3/8"	0.875	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
AF 1/2"	1.125	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Rectangular Flat Mount Air Cylinders - FM Series



Figure 1: for strokes up to 12".
 A¹ indicates location of ports L & M; A² indicates port T.
 The "M" dimension is for spring extend cylinders only.

Features

Heavy Jet alternative mounting choice for your cylinders. Centered around the design of the smooth bodied, rose mount cylinders on page 6. Watson flat mount cylinders are available in both single and double acting models with strokes up to 2" in 1/4" increments.

As an optional cylinders can be ordered with electrocoat and plating for a bright appearance and corrosion protection in harsh environments.

To facilitate making your plumbing connections, Watson offers a choice of rear and side port locations as shown in the side view of Figure 1 above right. Rear ports located at the center line at dimension "N". Standard side ports are located at dimensions "L" & "M" in position #1 (if port in position #2 is optional). The end view shows part positions #1 & #2.

For strokes over 1 1/2" Figure 2 shows available ports: rear ports "N" only, and side port at "M" in position #1. (if port location is optional.)

Do you need a special rod extension, odd stroke, or different port locations? Ask us for a quotation. We want to work with you on your special requirements.

Specifications

- Standard stroke availability: Single acting: 1/4" bore, 1/4" only, 3/8" & 1/2" bores, 3/4" & 1 1/2" Double Acting: 1/4" bore to 1", 3/8" & 1/2" bores to 2"
- Bore: Buna N (oil on optional)
- Temperature: Buna N seal: -25°F to 220°F (Alon: -15°F to 400°F)
- Operating pressure to 125 psi
- Piston rods are stainless steel
- Rod bearings are 640 Series: Length = 2 times rod diameter
- Cylinder bodies are brass

When Ordering

Use the Cylinder Selection Guide to choose your part number, specify your stroke, and indicate any optional porting.

Cylinder Selection Guide			
	Bore	Part No.	
Single Acting	Single Acting Spring Return Rear Port	1/4" FM3803 + 1/4 3/8" FM3803 + 3/8 1/2" FM3803 + 1/2	
	Single Acting Spring Return Rear Side Port	1/4" FM3803 + 1/4 3/8" FM3803 + 3/8 1/2" FM3803 + 1/2	
	Single Acting Spring Extend Front Side Port	1/4" FM3808 + 1/4 3/8" FM3808 + 3/8 1/2" FM3808 + 1/2	
	Double Acting	Double Acting Rear Port and Front Side Port	1/4" FM3809 + 1/4 3/8" FM3809 + 3/8 1/2" FM3809 + 1/2
		Double Acting Both Side Ports	1/4" FM3808 + Stroke 3/8" FM3808 + Stroke 1/2" FM3808 + Stroke

Longer Strokes Made To Order



Figure 2: for strokes over 12".

General Cylinder Dimensions

Cyl. Bore	Stroke	A	A ¹	A ²	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z		
1/4"	1/4"	1.18	0.80	0.80	0.75	1.1	0.94	0.94	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	
	3/8"	1.24	0.80	0.80	0.75	1.1	0.94	0.94	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	
3/8"	1/4"	1.18	0.80	0.80	0.75	1.1	0.94	0.94	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
	3/8"	1.24	0.80	0.80	0.75	1.1	0.94	0.94	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
1/2"	1/4"	1.18	0.80	0.80	0.75	1.1	0.94	0.94	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
	3/8"	1.24	0.80	0.80	0.75	1.1	0.94	0.94	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74

Dimensions for cylinders with strokes over 1 1/2"			
Cyl. Bore	A ¹	A ²	A ³
1/4"	1.06	0.80	Stroke
3/8"	1.24	1.00	Stroke
1/2"	1.31	1.00	Stroke

¹ Note: TYPICAL APPROXIMATE DIMENSIONS OF 1/4" BORE MODEL. 1/2" UP TO 1 1/2" UP TO 1 1/2" BORE MODEL. DIMENSION "L" IS NOT FOR SIDE PORT CYLINDERS.

² When calculating your OIL demand, use the NEW ISO 6458 standard stroke dimensions.



Features

88 models consist of two separate, single-ended AL Series cylinders joined together by a control nut (not sold please).

You have the complete flexibility within a given bore size to select the combination of strokes and cylinder action you need.

These units also perform as 3 or 4 position cylinders as shown in the diagrams at the top right of this page.

Specifications & Dimensions

Please refer to AL Series cylinder specifications and dimensions on pages 2 and 3.

Cyl. #	Bore Dimensions		
	Bore	ID	Length
42	1/8"	1.00"	1.68"
43	1/8"	1.25"	1.68"
44	1/8"	1.50"	1.68"

How to Order

Refer to the Cylinder Selection Guide for the Model No. which gives you the action you require. Replace the **42** with Cylinder Bore Number (L, 3 or S) and add your stroke (-, +).

Use as 3-Position Cylinder



Use as 4-Position Cylinder



■ Pressure applied to piston ■ Open to atmosphere

Cylinder Selection Guide

Simultaneous Operation Cylinders separated by "NUT"

Model 884 (4) 885 (+)



Individual Operation Cylinders built together

Model 884 (+) 885 (+)



Model 884 (+) 885 (+)



Model 884 (+) 885 (+)



Model 884 (+) 885 (+)



Model 884 (+) 885 (+)



Accessories & Technical Data

Brass Barb Fittings

For use with 1/8" ID hose.

Dimensions: D: 888 ORL
4-32 Thread, 0.002 Hole size



Start always by fitting in about 1/2 - 1 turn. Use minor under slight torque a "disinfectant" soaking 40% Antiseptic/Gasket with junction of thread and tapered hole. Finish threading fitting into hole and allow to cure.

Taps for Cylinder Bodies

Can be located at: Latch Machinery

8408 St. Clair Avenue, Cleveland, Ohio 44102
Phone (216) 881-3053

When nominal forces are being used, this table may be helpful.

Typical Spring Forces

Spring Return		Spring Extend	
42 - 1/8" stroke	14 - 18 lbs.	42 - 1/8" stroke	25 - 29 lbs.
43 - 1/8" stroke	22 - 26 lbs.	43 - 1/8" stroke	38 - 44 lbs.
44 - 1/8" stroke	22 - 26 lbs.	44 - 1/8" stroke	54 - 58 lbs.
45 - 1/8" stroke	42 - 46 lbs.	45 - 1/8" stroke	62 - 66 lbs.
46 - 1/8" stroke	51 - 55 lbs.	46 - 1/8" stroke	78 - 82 lbs.

Right Angle Flow Control, Needle and Check Valves



Features

Expectable performance and proven construction for reliable water supply. Water right angle flow control and needle valves. You get 2 PSI break-away with generous reverse flow volume, and bubble tight sealing with precise adjustability for the controlled flowable. Motion checked valves, no bubble tight and optional 2 PSI reverse flow.

Every Water Valve is 100% factory tested. We want your satisfaction. Refer to our technical application manual.

Water valves are effective with your choice of backends for easy fit, adjustment, or with standard or active driver adjustment. Active auto standard to ensure your flow control. Long engineering experience. Choose either in-line or spool-in configuration style.

Specifications

- Valve body and spool - aluminum
- Valve for air, ammonia and gas
- 1/8" NPT needle valve w/ included angle
- 1/8" NPT needle valve w/ included angle
- 3/8" NPT needle valve w/ included angle
- Seal: Viton® (Nitrile optional)
- Temperature: (Gasket seal) -20°F to 200°F (Viton seal) -50°F to 400°F
- Operating pressure to 50psi

Product Dimensions

NPT Size	A	B	B	C	D
1/8"	3/8"	1-1/4"	1-5/8"	2-3/32"	1/2-28
1/4"	1"	1-1/8"	1-7/16"	2-8/32"	5/8-28
3/8"	1-1/4"	1-5/8"	2-1/8"	2-9/32"	3/4-28

Ordering Guide - Flow Control & Needle Valves

Right Angle Valve Type & Configuration	NPT Size	Flow Control Part Number	Needle Valve Part Number
Panel Mount, Spool-In	1/8" 1/4" 3/8"	90-F-PM 140-F-PM 200-F-PM	90-N-PM 140-N-PM 200-N-PM
Spool-In	1/8" 1/4" 3/8"	90-F 140-F 200-F	90-N 140-N 200-N
Panel Mount With Knob	1/8" 1/4" 3/8"	90-F-PM-K 140-F-PM-K 200-F-PM-K *Flare "L" for large knob	90-N-PM-K 140-N-PM-K 200-N-PM-K *Flare "L" for large knob
With Knob	1/8" 1/4" 3/8"	90-F-K 140-F-K 200-F-K *Flare "L" for large knob	90-N-K 140-N-K 200-N-K *Flare "L" for large knob

Ordering Guide - Check Valves & Knobs

Check Valve Configuration	NPT Size	Check Valve Part Number	Knob	Std Knob	Large Knob
	1/8"	90-C	Knob 1/4"	90-K	90-LK
	1/4"	140-C	Knob 3/8"	140-K	140-LK
	3/8"	200-C	Knob 1/2"	200-K	200-LK

*Note: Small knob fits throughout with mounting hole without removal.

