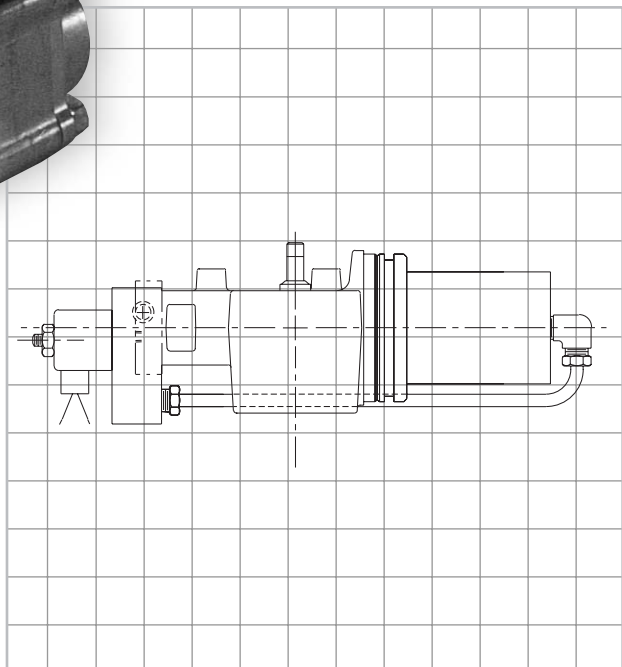


AN ISO 9001 REGISTERED COMPANY



## ***Series 34 Pneumatic Actuator***

*For dependable high-cycle on/off valve operation.  
Two sizes provide torques to 1000 in-lb.*

## The Series 34 Pneumatic Actuator Provides Increased Productivity Through Precise, Reliable On/Off Automated Control

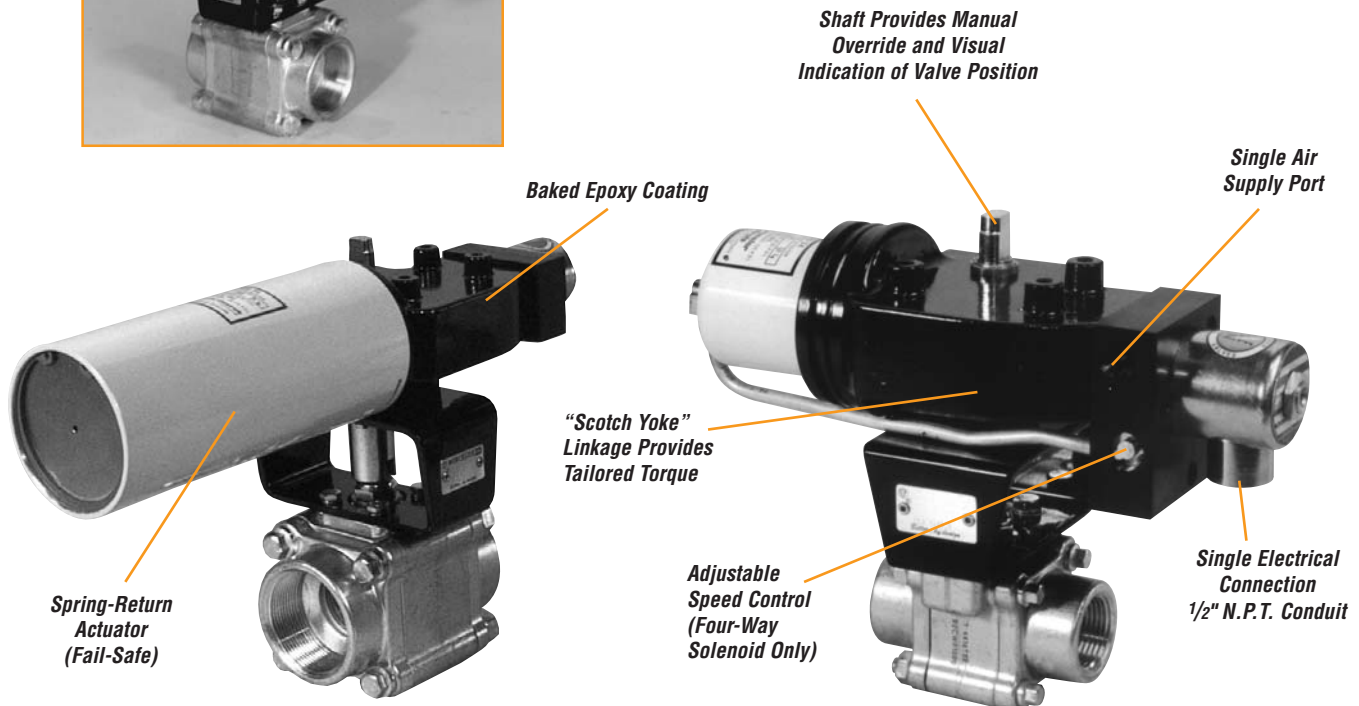
- Compact, space-saving design.
- “Scotch Yoke” linkage provides tailored torque.
- Single external air and electrical connections on solenoid models.
- Torque outputs to 1000 in-lb (113 N m) @ 100 psi. Air supply (7 kg/cm<sup>2</sup>).
- Minimum air consumption.
- Adjustable speed control.
- Built-in solenoid air pilot as standard.
- Fail-safe spring-return options.
- NEMA 1, 4, 4x, or 7 solenoids.
- Limit switches for general purpose, watertight, or hazardous environments.
- High-temperature option to 250°F (121°C) ambient.
- Baked epoxy coating resists corrosion for longer life.

The Worcester Controls Series 34 Pneumatic Actuator is the most efficient actuator available, delivering “tailored torque” to provide fast, smooth and positive operation through the full cycle.

### The Series 34 is available in the following configurations:

- On double-acting models, a four-way, solenoid-piloted air valve built into the actuator along with two speed controls, adjusts opening and closing speeds independently.
- On spring-return, fail-safe models, a three-way solenoid-piloted air valve built into the actuator along with a speed control screw, allows adjustment of the spring stroke cycle time.
- An actuator without a solenoid for remote operation.
- A spring-return actuator to provide positive valve actuation in case of air pressure or electrical failure. The unit can be installed to either fail-open or fail-closed.
- An actuator with limit switches. Limit switches available in NEMA 1, General Purpose (Electrical Rating: UL and CSA listed, 15 amps and 120, 240, 480 VAC. Temperature range -25°F to +160°F); Type 4, 7, 9 Hazardous Environments (Electrical Rating: UL and CSA listed, 15 amps and 120, 240, 480 VAC. Temperature range -25°F to +160°F); and NEMA 1, 3, and 4 Watertight (Electrical Rating: UL and CSA listed 15 amps; 120, 240, 480 VAC. Temperature range -25°F to 160°F).

### Optional Limit Switches



Spring-Return Actuator (Fail-Safe)

Baked Epoxy Coating

“Scotch Yoke” Linkage Provides Tailored Torque

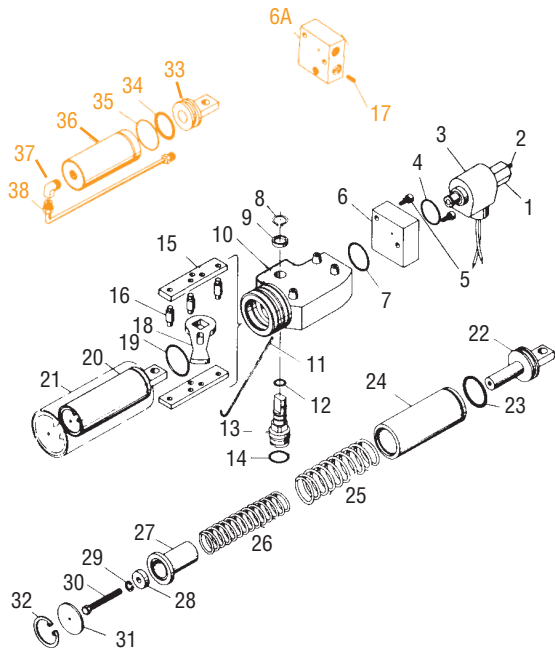
Adjustable Speed Control (Four-Way Solenoid Only)

Shaft Provides Manual Override and Visual Indication of Valve Position

Single Air Supply Port

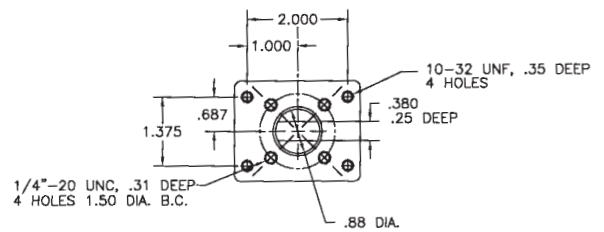
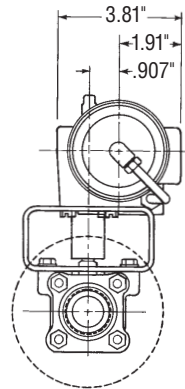
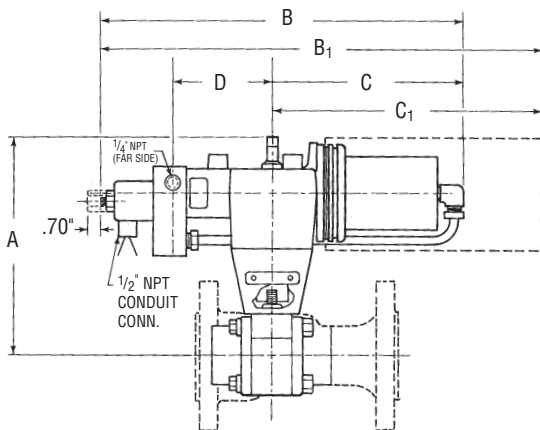
Single Electrical Connection 1/2" N.P.T. Conduit

## Parts List and Materials of Construction



Part	Description	Materials	Double-Acting or Spring-Return
1	Speed Control Nut	Steel/Plated	Both
2	Speed Control Screw	Nylon	Both
3	Solenoid	Stainless Steel Plunger, Carbon Steel Housing	Both
4	O-Ring Solenoid	Buna "N"	Both
5	Block Mtng. Screw	Steel/Plated	Both
6	Valve Block	Aluminum	Spring-Return
6A	Valve Block	Aluminum	Double-Acting
6B	"N" Block	Aluminum	Both
7	O-Ring Block	Buna "N"	Both
8	Retaining Ring	Steel	Both
9	Washer	Brass	Both
10	Housing	Aluminum	Both
11	Locking Wire	Carbon Steel	Both
12	O-Ring upper	Buna "N"	Both
13	Shaft	Steel/Plated	Both
14	O-Ring lower	Buna "N"	Both
15	Link	Sintered Metal	Both
16	Pin	Carbon Steel	Both
17	Speed Control Screw	Nylon	Double-Acting
18	Lever	Sintered Metal	Both
19	O-Ring Cylinder	Buna "N"	Spring-Return
20	A 34S Cylinder Assembly		Spring-Return
21	B 34S Cylinder Assembly		Spring-Return
22	Piston Assembly	Carbon Steel/Plated	Spring-Return
23	O-Ring Piston	Buna "N"	Spring-Return
24	Cylinder	Aluminum	Spring-Return
25	Spring-outer	Spring Wire	Spring-Return
26	Spring-inner	Spring Wire	Spring-Return
27	Cylinder Cap Sub-assembly	Carbon Steel	Spring-Return
28	Stop	Brass	Spring-Return
29	Washer Assembly Bolt	Steel/Plated	Spring-Return
30	Assembly Bolt	Steel/Plated	Spring-Return
31	Cylinder End Cap	Carbon Steel/Plated	Spring-Return
32	Retaining Ring	Steel	Spring-Return
33	Piston Assembly	Carbon Steel/Plated	Double-Acting
34	O-Ring Piston	Buna "N"	Double-Acting
35	O-Ring Cylinder	Buna "N"	Double-Acting
36	Cylinder	Aluminum	Double-Acting
37	Elbow Fitting	Brass	Double-Acting
38	Tubing Assembly	Aluminum w/Steel Fittings	Double-Acting

## Dimensions inches (mm)



Valve Size	Valve Style	Actuator Size	A	Double-Acting		Spring-Return		D	Actuator Weight - lb. (kg) with Solenoid	
				B	C	B <sub>1</sub>	C <sub>1</sub>		Double-Acting	Spring-Return
1/4", 1/8", 1/2"	Series 44 3-Piece Valves	A	6.38 (162)	10.60 (269)	4.91 (125)	12.63 (321)	6.94 (176)	3.06 (77.7)	4.8 (2.2)	5.0 (2.3)
3/4"		A	6.47 (164)	10.60 (269)	4.91 (125)	12.63 (321)	6.94 (176)	3.06 (77.7)	4.8 (2.2)	5.0 (2.3)
1"		A	6.71 (170)	10.60 (269)	4.91 (125)	12.63 (321)	6.94 (176)	3.06 (77.7)	4.8 (2.2)	5.0 (2.3)
1 1/4"		B	6.90 (175)	11.54 (293)	5.85 (149)	14.59 (371)	8.90 (226)	3.06 (77.7)	4.9 (2.2)	9.1 (4.1)
1 1/2"		B	7.67 (195)	11.54 (293)	5.85 (149)	14.59 (371)	8.90 (226)	3.06 (77.7)	4.9 (2.2)	9.1 (4.1)
2"		B	7.86 (200)	11.54 (293)	5.85 (149)	14.59 (371)	8.90 (226)	3.06 (77.7)	4.9 (2.2)	9.1 (4.1)
1/2"	Series AF51 AF52 Flanged Valves	A	6.38 (162)	10.60 (269)	4.91 (125)	12.63 (321)	6.94 (176)	3.06 (77.7)	4.8 (2.2)	5.0 (2.3)
1/2"		A	6.47 (164)	10.60 (269)	4.91 (125)	12.63 (321)	6.94 (176)	3.06 (77.7)	4.8 (2.2)	5.0 (2.3)
1"		A	6.71 (170)	10.60 (269)	4.91 (125)	12.63 (321)	6.94 (176)	3.06 (77.7)	4.8 (2.2)	5.0 (2.3)
1 1/2"		B	7.67 (195)	11.54 (293)	5.85 (149)	14.59 (371)	8.90 (226)	3.06 (77.7)	4.9 (2.2)	9.1 (4.1)
2"		B	7.86 (200)	11.54 (293)	5.85 (149)	14.59 (371)	8.90 (226)	3.06 (77.7)	4.9 (2.2)	9.1 (4.1)

Actuator without solenoid assembly: subtract 2.62" (66.55 mm) from unit length (dimension B or B<sub>1</sub>). Dimensions are given for layout purposes only. For tolerances, consult your Worcester Distributor. NOTE: Add .70 (19.05 mm) to dimension B or B<sub>1</sub> when optional speed control is used. For sizing information see back page.

### Specifications

**Sizing:** There are two actuator sizes for perfect mating with various valve sizes. It is possible that actuators smaller than standard could be used on specific valves if higher air pressure is available and/or the valves are used under conditions where their break-away and running torques are relatively low. Consult the factory for special sizing.

**Torque:** Output varies directly with supply pressure. (Except on spring stroke.)

**Speed Control:** Independently adjustable in each direction on double-acting models; spring stroke only on spring-return models.

**Solenoids:**

**Solenoid Enclosures:** Solenoids are available in the following types: General Purpose NEMA 1; Watertight NEMA 4/4x; Hazardous Locations NEMA 7 (UL & CSA listed for Class I, Division I, Groups A, B, C & D) and TYPE 9 (UL & CSA listed for Class II, Groups E, F & G). The NEMA 7 solenoid is also rated NEMA 4, 4x.

**Solenoid Mounting Thread:** 1" - 32 UN 2A

**Exhaust Orifice:** .094"

**Conduit Connection:** 1/2" NPT

**Operating Pressure:** 60–125 psi

**Maximum Solenoid Ambient Temperature:**

General Purpose: 100°F

Watertight and Hazardous: 160°F

### Torque Output

**Series 34 – Double-Acting**

Actuator Size	Operating Pressure			
	60 psi	80 psi	100 psi	
A	120 (13.6)	160 (18.1)	200 (22.6)	in-lb (N m)
B	600 (67.8)	800 (90.4)	1000 (113.0)	in-lb (N m)

**Series 34 – Spring-Return**

Actuator Size	Stroke	Operating Pressure 80 PSI		
		Start	End	
A	Air	140 (15.8)	75 (8.5)	in-lb (N m)
	Spring	140 (15.8)	75 (8.5)	in-lb (N m)
B	Air	800 (90.4)	170 (19.2)	in-lb (N m)
	Spring	800 (90.4)	200 (22.6)	in-lb (N m)

**Limit Switches:** General Purpose, Watertight, or Hazardous Environments.

For ratings, see page 2.

**Air Pressure:** Clean lubricated air is required. All Series 34 pneumatic actuators require a minimum of 60 psig (4 kg/cm<sup>2</sup>). Maximum air pressure is 125 psig (9 kg/cm<sup>2</sup>). Spring-return requires 80 psi.

**Air Volume:** The swept chamber volume, per stroke:

A Size 5.09 cubic inches (83cc)

B Size 8.10 cubic inches (133cc)

**Air Requirements:** A34 and B34 actuators require 1/4" tubing.

**Air Connections:** A34 and B34 have a single 1/4" N.P.T. connection. ("N") – models for these actuators have 1/8" N.P.T. connections.)

**Speed (Nominal):** Size A – 1-second/90°;  
Size B – 2-second/90°.

Speed independently adjustable in each direction on standard model. Adjustable only on spring-stroke of spring-return model.

Ratio is 3:1. Example: B Size: Fastest = 2 seconds, Slowest = 6 seconds.

**Temperature:** Maximum ambient temperature for standard units is 160°F (71°C).

**High Temperature Option:** Designed for ambients between 160°F (71°C) and 250°F (120°C). (300°F, [149°C] intermittent), using Viton® seals, and special lubricant, as well as incorporating other internal modifications. Available as N-model only.

**General Purpose TYPE1 Solenoid Coil Data (Class A Coil)**

VOLTAGE	INRUSH AMPS	HOLDING AMPS
24 VAC 50/60 Hz	1.20	.80
120 VAC 50/60 Hz	.30	.15
240 VAC 50/60 Hz	.12	.08
12 VDC	—	.70
24 VDC	—	.35

**Watertight/Hazardous Locations TYPE 4, 4x, 7 & 9 Solenoid Coil Data (Class F Coil)**

VOLTAGE	INRUSH AMPS	HOLDING AMPS
24 VAC 50/60 Hz	1.13	.71
120 VAC 50/60 Hz	.23	.14
240 VAC 50/60 Hz	.11	.07
12 VDC	—	.81
24 VDC	—	.41

### How To Order

Actuator Size	Code Variation	Product Series	Modifications	Limit Switches	Solenoid Voltage
A	9 = Shaft turned 90° from normal	34	Blank = General purpose solenoid (NEMA 1) S = Spring-Return W = Watertight solenoid (NEMA 4, 4x) X = Hazardous Location Solenoid (NEMA 4,4x,7,9) N = No solenoid or block	M = General purpose W = Watertight X = Hazardous environments 1 = One limit switch 2 = Two limit switches	12 DC 24 DC 24/60 AC 120/60 AC 240/60 AC
B	H = High temperature (N models only)				

Ordering example depicts size A Spring-Return Series 34 with Hazardous environment solenoid, two General purpose limit switches and 120/60 solenoid voltage.

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