AIRTROL

PRECISION MINIATURE PNEUMATIC COMPONENTS

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PRECISION MINIATURE PNEUMATIC COMPONENTS

Airtrol Components' line of miniature pneumatic components are designed for use in light to medium duty applications where small size, light weight and precision are a must.
Typical applications include medical and dental equipment, laboratory / analytical instruments, HVAC applications, test equipment, and process control / automation.

The standard products listed in this catalog may be modified to meet your specific needs. Contact an Airtrol Application Engineer with your requirements.

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PP-700 SERIES

Air Valve - Switch

Pressure Series

The 700 series is a pilot actuated pressure valve with a precision adjustable pilot setpoint. Perfect for use in applications that require intrinsic safety, pneumatic sequencing, and precise pressure relief. Four mounting styles are available for design flexibility. Valves can be ordered as normally open or normally closed and pilot actuation can be factory preset.

SPECIFICATIONS

VALVE TYPE	3 WAY (Exhaust to Atmosphere) Air Assisted Servo	
OPERATING PRESSURE	PILOT = SEE CHART	VALVE = 20-115 (Pressure Only)
OPERATION SPEED	64 MSEC @ 90 psi VALVE INPUT	
PORTING	PILOT = See Ordering info.	Valve = 5/32 OD Tube Push In
FLOW RATE	Cv=0.06 Orifice=0.080	2.5 CFM @ 100 psi
SUPPLY CONSUMPTION	Approximately 275 cc/min @ 30 psi Valve input 700 cc/min @ 100 psi	
MATERIALS	**PILOT** = Body…Polysulfone Diaphragm…Polyurethane Spring…Stainless Other…Nylon, Acetal	**VALVE** = Housing…Nylon Plunger… Aluminum Seals...Buna-N Other…Brass
OP. TEMPERATURE	40° to 140° F (4° - 60° C)	
REPEATABILITY	Less than +/- 2% of full scale pilot adj.	
EFFECT OF SUPPLY	Less than 0.1 psi increase in pilot setpoint per 10 psi increase in supply	
MEDIA	Filtered Air (5 Micron)	

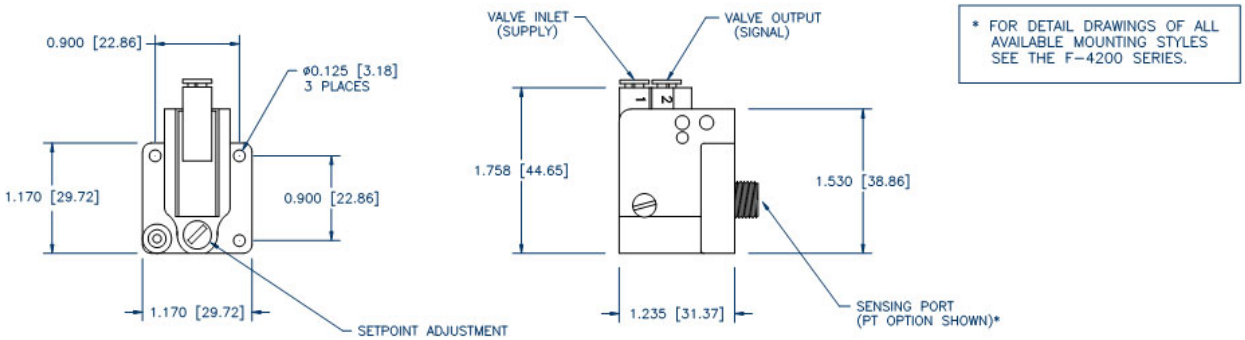
PART NUMBER	ADJUSTMENT RANGE (PSI)		MAXIMUM OVERPRESSURE (PSI)	DEADBAND (PSI)	
	MIN.	MAX.		TYP.	MAX.
PP-700-5	1	5	30	0.2	0.4
PP-700-15	1	15	60	0.3	0.6
PP-700-30	1	30	60	0.3	1.0
PP-700-60	3	60	120	0.5	2.0
PP-700-100	5	100	120	0.7	3.5

ORDERING INFORMATION

PP-_____-_____-_____-_____

VALVE FUNCTION	RANGE (PSI)	MOUNTING STYLE	BARBED FITTING (FM & PM ONLY)
700 = N.O. 701 = N.C.	5 15 30 60 100	FM = FLUSH MOUNT PM = PANEL MOUNT PT = PIPE THREAD MM = MANIFOLD	B80 = NYLON 1/16" I.D. TUBE B85 = NYLON 1/8" I.D. TUBE P80 = POLYSULFONE 1/16" P85 = POLYSULFONE 1/8"

MOUNTING DIMENSIONS



VP-700 SERIES

Air Valve - Switch

Vacuum Series

The 700 series is a pilot actuated pressure valve with a precision adjustable pilot setpoint. Perfect for use in applications which require intrinsic safety, pneumatic sequencing, and precise pressure relief. Four mounting styles are available for design flexibility. Valves can be ordered as normally open or normally closed and pilot actuation can be factory preset.

SPECIFICATIONS

VALVE TYPE	3 WAY (Exhaust to Atmosphere) Air Assisted Servo	
OPERATING PRESSURE	PILOT = Vacuum 1-30 InHg	VALVE = 20-115 (Pressure Only)
OPERATION SPEED	64 MSEC @ 90 psi VALVE INPUT	
PORTING	PILOT = See Ordering info.	Valve = 5/32 OD Tube Push In
FLOW RATE	Cv=.06 Orifice=0.080	2.5 CFM @ 100 psi
SUPPLY CONSUMPTION	Approximately 275 cc/min @ 30 psi Valve Input 700 cc/min @ 100 psi	
MATERIALS	**PILOT** = Body…Polysulfone Diaphragm…Polyurethane Spring…Stainless Other…Nylon, Acetal	**VALVE** = Housing…Nylon Plunger… Aluminum Seals...Buna-N Other…Brass
OP. TEMPERATURE	40° to 140° F (4° - 60° C)	
REPEATABILITY	Less than +/- 2% of full scale pilot adj.	
EFFECT OF SUPPLY	Less than 0.1 InHg increase in pilot setpoint per 5 psi increase in supply	
MEDIA	Filtered Air (5 Micron)	

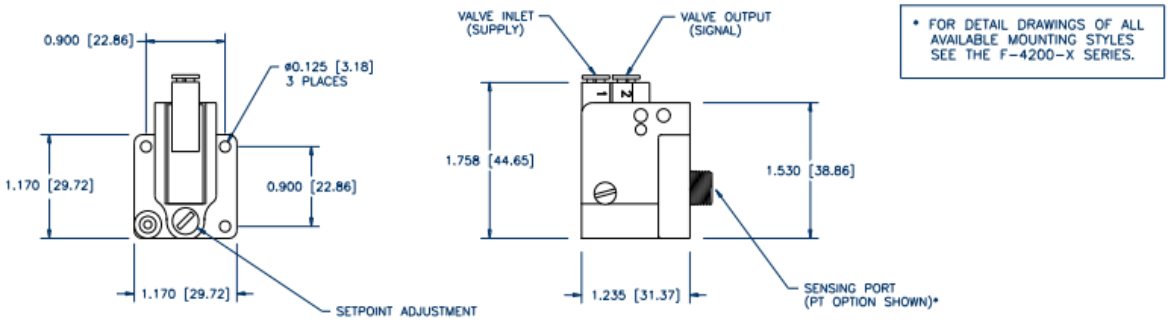
PART NUMBER	ADJUSTMENT RANGE (In Hg)		MAXIMUM OVERPRESSURE (In Hg)	DEADBAND (In Hg)	
	MIN.	MAX.		TYP.	MAX.
VP-700-5	1	5	30	0.5	1.0
VP-700-10	1	10	30	0.6	1.2
VP-700-30	2	30	30	1.0	2.0

ORDERING INFORMATION

VP-_____-_____-_____-_____

VALVE FUNCTION	RANGE (InHg)	MOUNTING STYLE	BARBED FITTING (FM & PM ONLY)
700 = N.O. 701 = N.C.	5 10 30	PM = PANEL MOUNT PT = PIPE THREAD MM = MANIFOLD FM = FLUSH MOUNT	B80 = NYLON 1/16" I.D. TUBE B85 = NYLON 1/8" I.D. TUBE P80 = POLYSULFONE 1/16" P85 = POLYSULFONE 1/8"

MOUNTING DIMENSIONS



F-3000 SERIES

Subminiature Pressure Switch

The F-3000 Series pressure to electric switch is designed to meet the strictest space limitations. This unique pressure switch is constructed of chemical resistant and heat stable material. Factory pressure settings from 3 to 50 psi, for extended life, higher setpoints can be attained for devices not requiring extended life. A variety of mounting options and port connections make the F-3000 Series an excellent choice for the O.E.M.

FEATURES

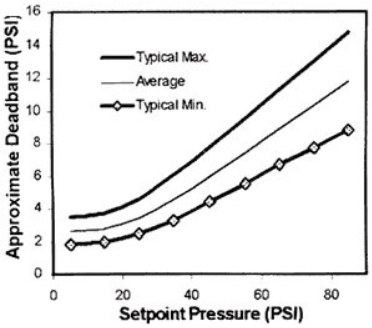
* SUBMINITURE SIZE
* CHEMICAL RESISTANCE
* PIPE, PANEL, OR CIRCUIT BOARD MOUNTING
* 3 AMP, SNAP ACTION SWITCHING
* 1/8" NPT OR 10-32 PORTING
* FACTORY PRESET

APPLICATIONS

* HOSTILE ENVIRONMENTS (CHEMICALS / SOLVENTS)
*AUTOMOTIVE
*HAND HELD DEVICES

SPECIFICATIONS

CONTACT FORM	SPDT, Silver, 3 Amp, 125 VAC (Standard)
TERMINATIONS	0.090" Solder Terminals or PC Board Terminals
AGENCY COMPLIANCES	UL/CSA Marking Designations (Microswitch)
MATERIALS	Body…Stanyl (Glass-filled Nylon) Diaphragm…EPDM or Fluorocarbon (FKM) Spring…Blue Spring Steel Spring Retaining Bands….EPDM and Polyolefin
TEMPERATURE RANGE	40° - 185° F (4° - 85° C)
REPEATABILITY	+/- 5% of Setpoint, or +/- 0.5 psi (whichever is greater)
MEDIA	Air, Gas, Oil, Water, etc.
OVER PRESSURE	100 psi Maximum
SETPOINT ACCURACY	+/- 10% or +/- 0.5 psi (whichever is greater)

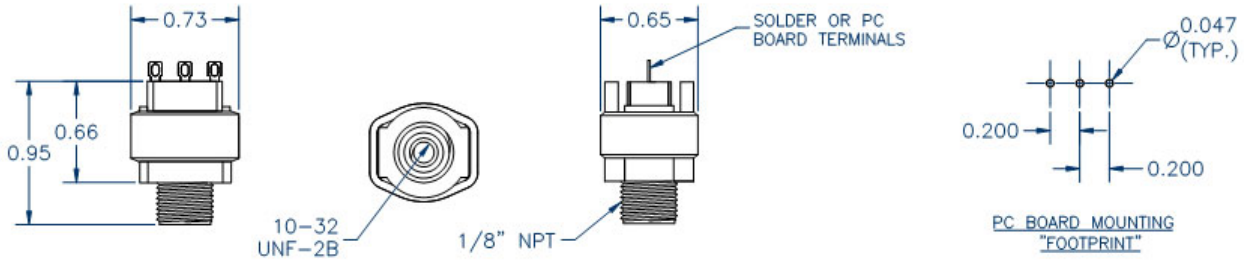


ORDERING INFORMATION

F-3 ____ 0 ____ - ____ - ____ - ____ - ____

SWITCH TERMINALS	DIAPHRAGM MATERIAL	SET POINT ON RISE OR FALL	BARBED FITTINGS (OPTIONAL)	CONTACT TYPE (OPTIONS)	(OPTIONAL)
2 = SOLDER 4 = CIRCUIT BOARD	0 = EPDM 2 = FKM (HIGH TEMP)	XXR = RISE XXF = FALL	B80 = NYLON, FOR 1/16" ID TUBING B85 = NYLON, FOR 1/8" ID TUBING	.1B = GOLD, 0.1 AMP, 125 VAC	N = PANEL MOUNT NUT

MOUNTING DIMENSIONS



F-4000 SERIES Adjustable Deadband Pressure Switch	F-4000-X SERIES Adjustable Deadband Vacuum Switch

The 4000 Series pressure and vacuum switches are unique in that both the actuation and release points can be set independently of each other. Available In pressure ranges to 60" WC and vacuum to 15" Hg.

APPLICATIONS

*Medical Equipment *Process Control *Custom Machinery

SPECIFICATIONS

CONTACT FORM	Single Pole, Double Throw
TERMINATIONS	0.187 Quick-Connect
AGENCY COMPLIANCES	UL/CSA Approved Microswitch
MATERIALS	Body…Polysulfone ① Diaphragm…Polyurethane ① Springs…Stainless Steel ② Other…Acetal, Nylon ①
TEMPERATURE RANGE	40° - 150° F (4° - 66° C)
REPEATABILITY	+/- 2% F.S.
CURRENT RATING	15 AMPS

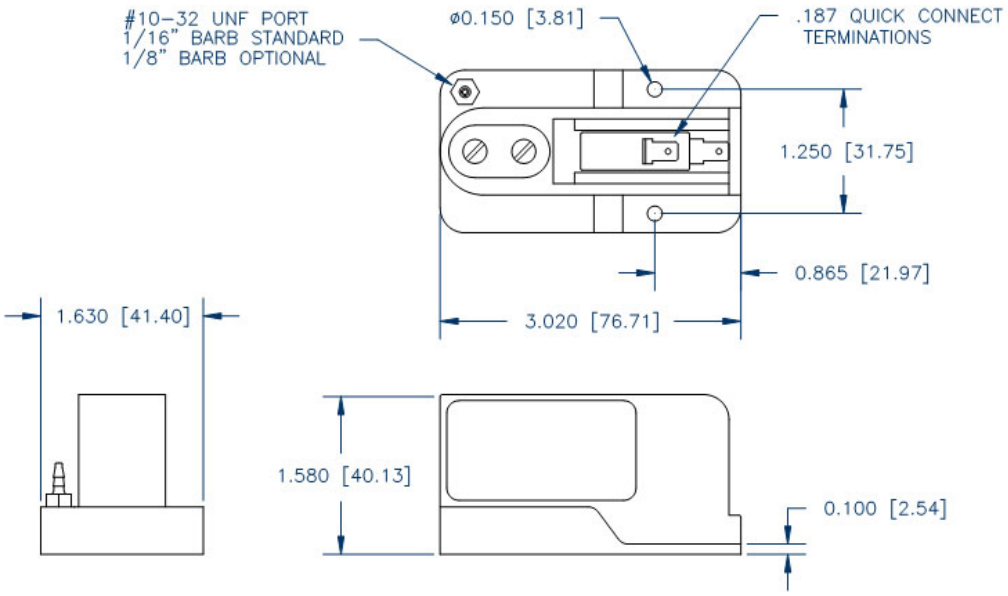
① **Wetted Materials** ② **Wetted on vacuum version only**

ORDERING INFORMATION

PART NUMBER	ACTUATION PRESSURE	RELEASE PRESSURE
F-4000-10	Non-Adjustable, 2.5" WC, +/- .5"	1.0" Below actuation pressure
F-4000-20	2.5 - 15" WC	1.5 - 5" WC
F-4000-30	3 - 60" WC	1.5 - 15" WC
F-4000 - X (vacuum)	4 - 15" Hg	2 - 11" Hg

*** for 1/8" barb, add -B85 to the end of P/N**

MOUNTING DIMENSIONS



F-4200 SERIES
Pressure Switch

The F-4200 Series pressure to electric switch is designed for the customer with cost and space limitations, and is available In adjustment ranges from 0.5 to 100 PSI full scale. Four mounting styles, plus a wide variety of options including gold contacts, factory pre-set and special deadbands, make the F-4200 series an excellent choice for the O.E.M.

SPECIFICATIONS

CONTACT FORM	Single Pole, Double Throw
TERMINATIONS	0.187 Quick-Connect
AGENCY COMPLIANCES	UL/CSA Approved Microswitch
OPERATING SPEED	25 MSEC
MATERIALS	Body….Polysulfone ① Diaphragm…Polyurethane ① Spring…Stainless Steel Other… Nylon, Carbon Filled Nylon, Acetal
TEMPERATURE RANGE	40° - 150° F (4° - 66° C)
REPEATABILITY	+/- 2% F.S. OR 0.15 PSI, (1.03 kPa) whichever is greater, after 10,000 cycles

PART NUMBER	ADJUSTMENT RANGE (PSI)		MAXIMUM OVERPRESSURE (PSI)	DEADBAND (PSI) ②		STD. CURRENT RATING ② ③
	MIN.	MAX.		TYP.	MAX.	
F-4200-0.5	0.05	0.5	15	0.05	0.15	3A
F-4200-2	0.2	2	30	0.1	0.3	10A
F-4200-5	0.5	5	30	0.4	0.8	10A
F-4200-15	0.5	15	45	1.0	1.6	10A
F-4200-30	0.5	30	60	1.8	2.4	10A
F-4200-60	0.5	60	120	3.5	5.0	10A
F-4200-100	1	100	120	5.5	7.5	10A

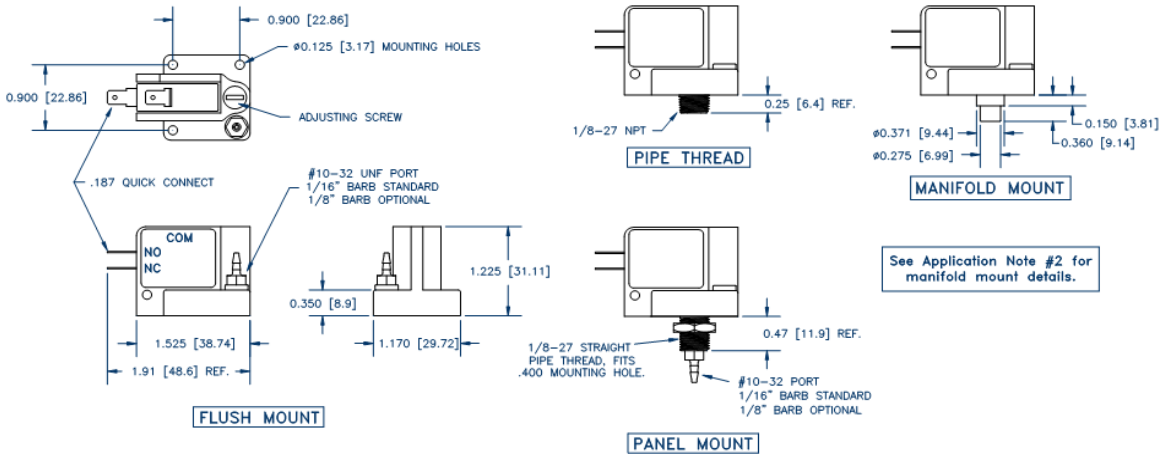
① Wetted materials ② For special deadband or current requirements, contact factory ③ See Appendix A

ORDERING INFORMATION

F-4200-_____-_____-_____-_____

RANGE (PSI)	MOUNTING STYLE	BARBED FITTING ④	SPECIAL OPTIONS
0.5	PM = PANEL MOUNT	B80 = NYLON 1/16 ID	.1B = GOLD CONTACTS
2	FM = FLUSH MOUNT	B85 = NYLON 1/8 ID	FOR OTHER SPECIAL
5	MM = MANIFOLD MOUNT	P80 = POLYSULFONE 1/16 ID	REQUIREMENTS
15	PT = PIPE THREAD	P85 = POLYSULFONE 1/8 ID	CONTACT FACTORY
30			
60	④ FM and PM models supplied with 1/16" barb standard		
100	**Ex - F-4200-30-FM-B85 = 30 PSI adj. range, flush mount with 1/8" barb**		

MOUNTING DIMENSIONS



F-4200-X SERIES
Vacuum Switch

The F-4200-X Series vacuum to electric switch is designed for the customer with cost and space limitations, and is available in adjustment ranges from 4" WC to 30" Hg full scale. A wide variety of options including gold contacts, factory pre-set and special deadbands, make the F-4200-X series an excellent choice for the O.E.M.

SPECIFICATIONS

CONTACT FORM	Single Pole, Double Throw
TERMINATIONS	0.187 Quick-Connect
AGENCY COMPLIANCES	UL/CSA Approved Microswitch
OPERATING SPEED	25 MSEC
MATERIALS	Body….Polysulfone ① Diaphragm…Polyurethane ① Spring…Stainless Steel ① Other… Nylon, Carbon Filled Nylon ①, Acetal
TEMPERATURE RANGE	40° - 150° F (4° - 66° C)
REPEATABILITY	+/- 2% F.S. OR 0.15" Hg (3.8 mm Hg) whichever is greater, after 10,000 cycles

PART NUMBER	ADJUSTMENT RANGE (In. Hg)		MAXIMUM OVERPRESSURE (In. Hg)	DEADBAND (In. Hg) ②		STD. CURRENT RATING ② ③
	MIN.	MAX.		TYP.	MAX.	
F-4200-X4W	0.5" WC	4" WC	10	0.5" WC	1.2" WC	3A
F-4200-X5	0.2	5	30	0.5	0.8	10A
F-4200-X10	0.5	10	30	1.0	1.5	10A
F-4200-X30	1.5	30	30	2.0	3.0	10A

① Wetted materials ② For special deadband or current requirements, contact factory ③ See Appendix A

ORDERING INFORMATION

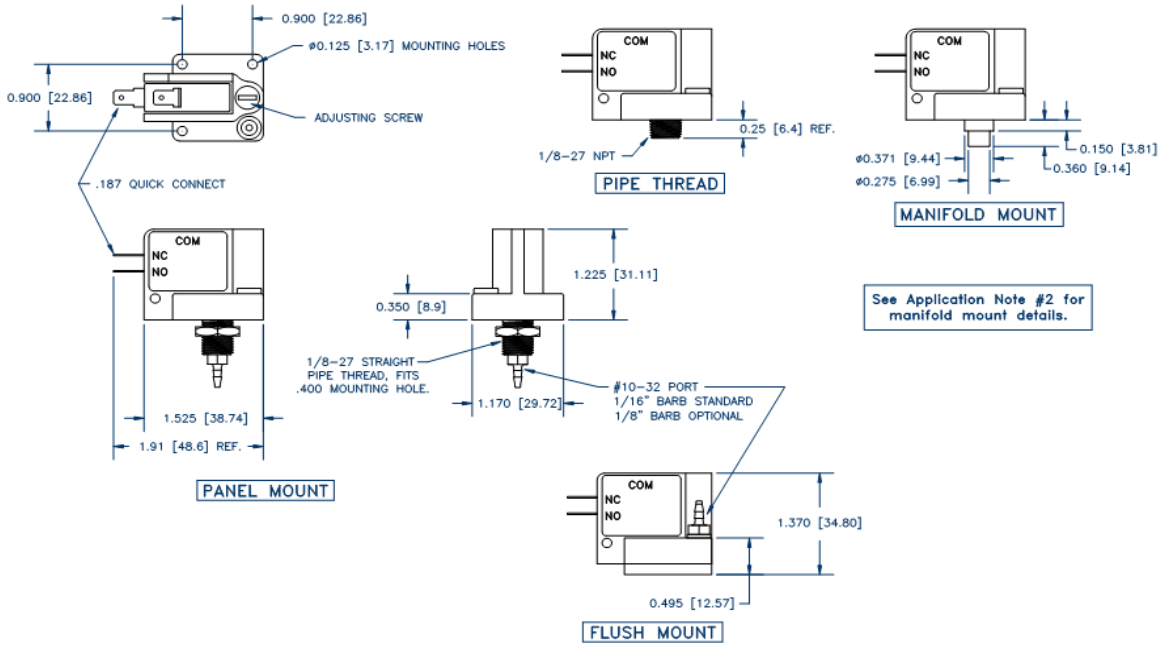
F-4200-X_____-_____-_____-_____

RANGE (Hg)	MOUNTING STYLE	BARBED FITTING ④	SPECIAL OPTIONS
4W	PM = PANEL MOUNT	B80 = NYLON 1/16 ID	.1B = GOLD CONTACTS
5	MM = MANIFOLD MOUNT	B85 = NYLON 1/8 ID	FOR OTHER SPECIAL
10	PT = PIPE THREAD	P80 = POLYSULFONE 1/16 ID	REQUIREMENTS
30	FM = FLUSH MOUNT	P85 = POLYSULFONE 1/8 ID	CONTACT FACTORY

④ FM and PM models supplied with 1/16" barb standard

Ex - F-4200-X30-PM-.1B = 30 Hg adj. range, panel mount with 1/16" barb, with gold contacts

MOUNTING DIMENSIONS



F-4300 SERIES

Low Deadband Pressure Switch

The F-4300 Series pressure to electric switches are designed for applications requiring narrow operating deadband. They are available In adjustment ranges from 2 to 100 PSI full scale. Four mounting styles, plus a wide variety of options including gold contacts, factory pre-set, and solvent bonded barbed fittings, make the F-4300 series an excellent choice for the O.E.M.

SPECIFICATIONS

CONTACT FORM	Single Pole, Double Throw
TERMINATIONS	0.110 Quick-Connect
AGENCY COMPLIANCES	UL/CSA Approved Microswitch
OPERATING SPEED	25 MSEC
MATERIALS	Body….Polysulfone ① Diaphragm…Polyurethane ① Spring…Stainless Steel Other… Nylon, Carbon Filled Nylon, Acetal
TEMPERATURE RANGE	40° - 150° F (4° - 66° C)
REPEATABILITY	+/- 2% F.S. OR 0.15" PSI, (1.03 kPa) whichever is greater, after 10,000 cycles

PART NUMBER	ADJUSTMENT RANGE (PSI)		MAXIMUM OVERPRESSURE (PSI)	DEADBAND (PSI) ②		STD. CURRENT RATING ② ③
	MIN.	MAX.		TYP.	MAX.	
F-4300-2	0.2	2	30	0.1	0.2	4A
F-4300-5	0.5	5	30	0.2	0.35	4A
F-4300-15	0.5	15	45	0.4	.6	4A
F-4300-30	0.5	30	60	0.6	1.0	4A
F-4300-60	0.5	60	120	1.5	2.5	4A
F-4300-100	1	100	120	2.0	3.5	4A

① Wetted materials ② For special deadband or current requirements, contact factory ③ See Appendix A

ORDERING INFORMATION

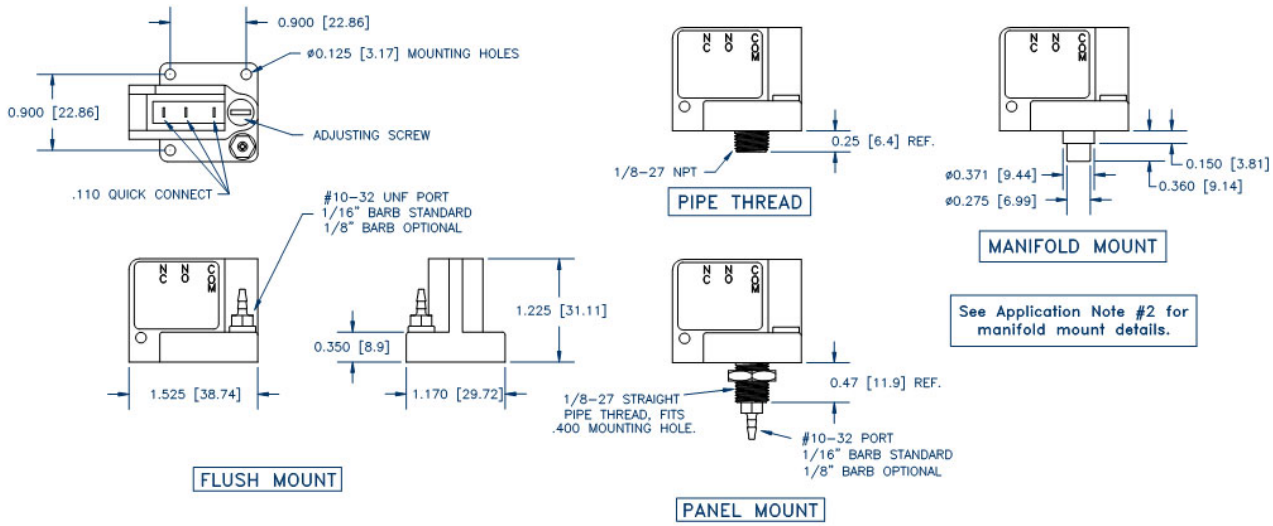
F-4300-_____-_____-_____-_____

RANGE (PSI)	MOUNTING STYLE	BARBED FITTING ④	SPECIAL OPTIONS
2	PM = PANEL MOUNT	B80 = NYLON 1/16 ID	.1B = GOLD CONTACTS
5	FM = FLUSH MOUNT	B85 = NYLON 1/8 ID	FOR OTHER SPECIAL
15	MM = MANIFOLD MOUNT	P80 = POLYSULFONE 1/16 ID	REQUIREMENTS
30	PT = PIPE THREAD	P85 = POLYSULFONE 1/8 ID	CONTACT FACTORY
60			
100			

④ FM and PM models supplied with 1/16" barb standard

Ex - F-4300-60-PM = 60 PSI adj. range, panel mount with 1/16" barb

MOUNTING DIMENSIONS



F-4300-X SERIES

Low Deadband Vacuum Switch

The F-4300-X Series vacuum to electric switch is designed for the customer with low deadband requirements and is available in adjustment ranges from 5 to 30" Hg full scale. A wide variety of options including gold contacts, factory pre-set and special deadbands, make the F-4300-X series an excellent choice for the O.E.M.

SPECIFICATIONS

CONTACT FORM	Single Pole, Double Throw
TERMINATIONS	0.110 Quick-Connect
AGENCY COMPLIANCES	UL/CSA Approved Microswitch
OPERATING SPEED	25 MSEC
MATERIALS	Body….Polysulfone ① Diaphragm…Polyurethane ① Spring…Stainless Steel ① Other… Nylon, Carbon Filled Nylon ①, Acetal
TEMPERATURE RANGE	40° - 150° F (4° - 66° C)
REPEATABILITY	+/- 2% F.S. OR 0.15" Hg whichever is greater, after 10,000 cycles

PART NUMBER	ADJUSTMENT RANGE (In. Hg)		MAXIMUM OVERPRESSURE (In. Hg)	DEADBAND (In. Hg.) ②		STD. CURRENT RATING ② ③
	MIN.	MAX.		TYP.	MAX.	
F-4300-X5	0.2	5	30	0.3	0.6	4A
F-4300-X10	0.5	10	30	0.6	1.0	4A
F-4300-X30	1.5	30	30	1.0	1.5	4A

① Wetted materials ② For special deadband or current requirements, contact factory ③ See Appendix A

ORDERING INFORMATION

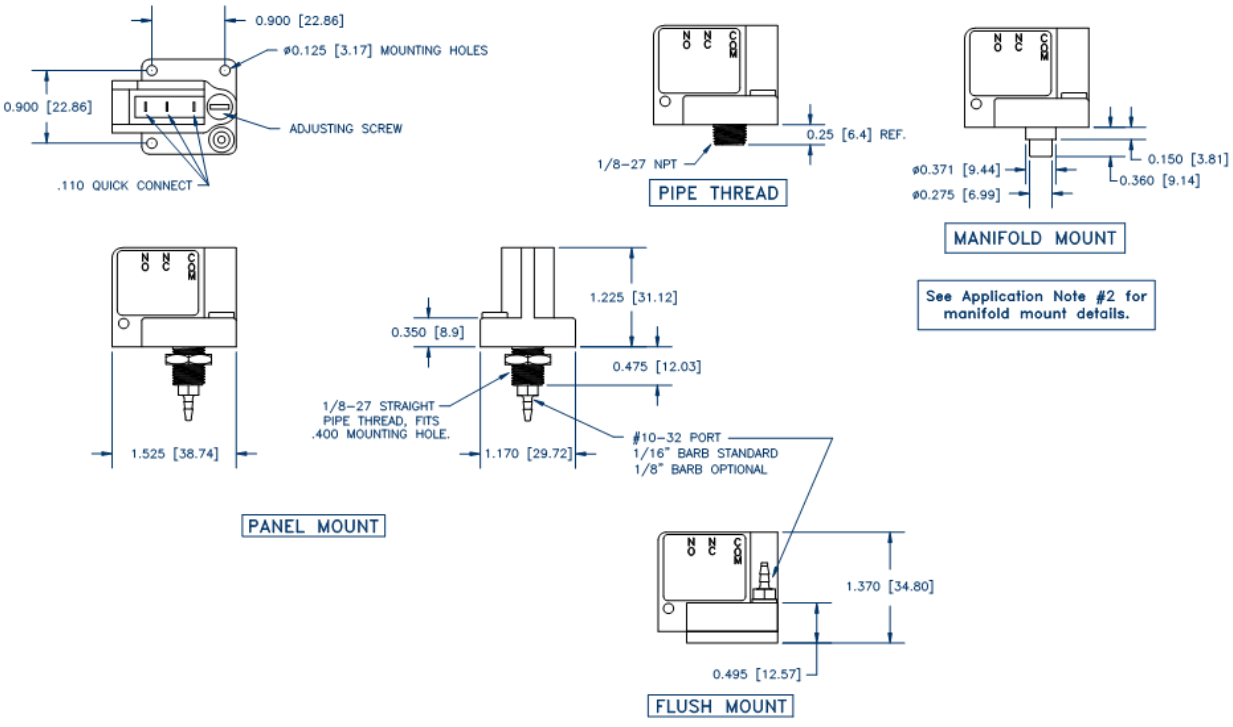
F-4300-X_____-_____-_____-_____

RANGE (Hg)	MOUNTING STYLE	BARBED FITTING ④	SPECIAL OPTIONS
5	PM = PANEL MOUNT	B80 = NYLON 1/16 ID	.1B = GOLD CONTACTS
10	MM = MANIFOLD MOUNT	B85 = NYLON 1/8 ID	FOR OTHER SPECIAL
30	PT = PIPE THREAD	P80 = POLYSULFONE 1/16 ID	REQUIREMENTS
	FM = FLUSH MOUNT	P85 = POLYSULFONE 1/8 ID	CONTACT FACTORY

④ FM and PM models supplied with 1/16" barb standard

Ex - F-4300-X10-MM = 10" Hg adj. range, manifold mount

MOUNTING DIMENSIONS



F-4400 SERIES

P.C. Board Mount Pressure Switch

The F-4400 series pressure to electric switches are designed for P.C. board mount applications and are available in adjustment ranges from 2 to 100 psi full scale. A wide variety of options including gold contacts, factory pre-set and solvent bonded barbed fittings, make the F-4400 series an excellent choice for the O.E.M.

SPECIFICATIONS

CONTACT FORM	Single Pole, Double Throw
TERMINATIONS	0.060 (1.52mm) Solder Leads
AGENCY COMPLIANCES	UL/CSA Approved Microswitch
OPERATING SPEED	25 MSEC
MATERIALS	Body….Polysulfone ① Diaphragm…Polyurethane ① Spring…Stainless Steel Other… Nylon, ① Carbon Filled Nylon, Acetal
TEMPERATURE RANGE	40° - 150° F
REPEATABILITY	+/- 2% F.S. OR 0.1 PSI, whichever is greater, after 10,000 cycles

PART NUMBER	ADJUSTMENT RANGE (PSI)		MAXIMUM OVERPRESSURE (PSI)	DEADBAND (PSI) ②		STD. CURRENT RATING ② ③
	MIN.	MAX.		TYP.	MAX.	
F-4400-2	0.4	2	30	0.1	0.2	4A
F-4400-5	0.5	5	30	0.2	0.35	4A
F-4400-15	0.5	15	45	0.4	0.6	4A
F-4400-30	0.5	30	60	0.6	1.0	4A
F-4400-60	0.5	60	120	1.5	2.5	4A
F-4400-100	1	100	120	2.0	3.5	4A

① Wetted materials ② For special deadband or current requirements, contact factory ③ See Appendix A

ORDERING INFORMATION

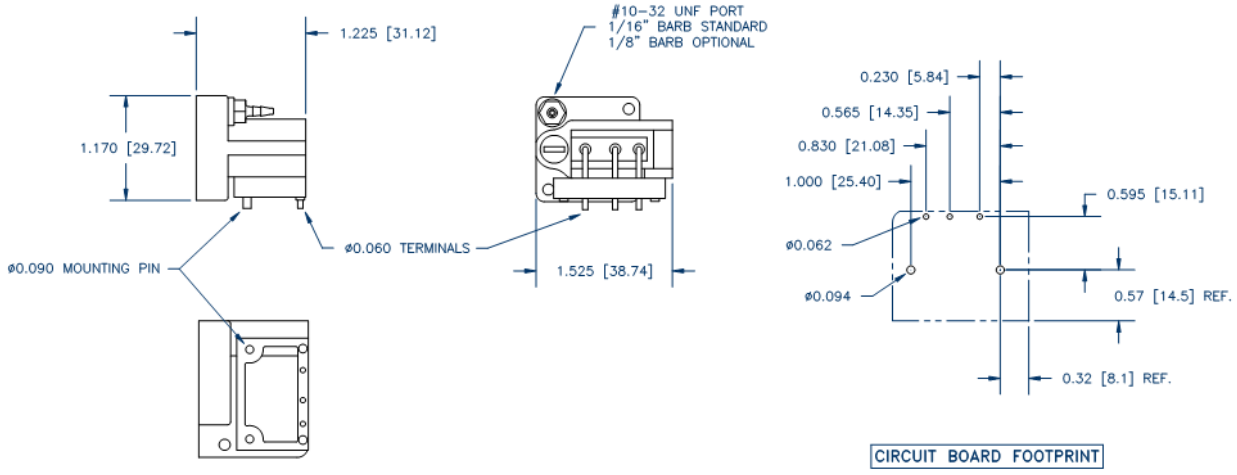
F-4400-_____-_____

RANGE (PSI) ⑤	BARBED FITTING ④
2	B80 = NYLON 1/16 ID
5	B85 = NYLON 1/8 ID
15	P80 = POLYSULFONE 1/16 ID
30	P85 = POLYSULFONE 1/8 ID
60	
100	

④ Units supplied with 1/16" nylon barb standard ⑤ Vacuum versions available: contact factory

Ex - F-4400-2-B85 = 2 PSI adjusting range, with 1/8" barb

MOUNTING DIMENSIONS



AT-1004 SERIES

Low Pressure, Factory Pre-Set Pressure Switch

The AT-1004 series of low pressure switches is designed for applications where adjustability is not required. Available preset from 1.5 to 17 inches of water column. Applications include liquid level sensing, confirmation of system pressure and footpedal interfacing. Contact an Airtrol Application Engineer with your requirements.

SPECIFICATIONS

CONTACT FORM	Single Pole, Double Throw
TERMINATIONS	.187 Quick-Connect
AGENCY COMPLIANCES	UL/CSA Approved Microswitch
OPERATING SPEED	25 MSEC
MATERIALS	Body….Polysulfone ① Diaphragm…Polyurethane ①
TEMPERATURE RANGE	40° - 150° F (4° - 66° C)
SET-POINT TOLERANCE	+/- 10% of setting OR 0.5" WC, whichever is greater
MAXIMUM OVERPRESSURE	Contact Factory
DEADBAND	Contact Factory
CURRENT RATING	Contact Factory

① Wetted materials

ORDERING INFORMATION

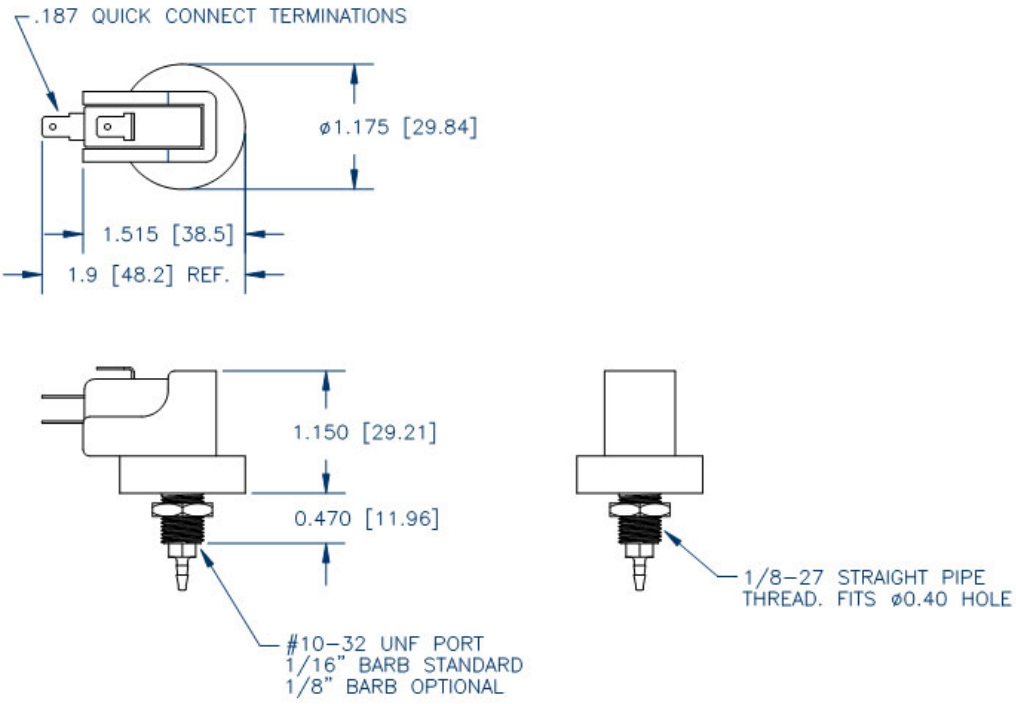
AT-1004-_____-_____

SET POINT - INCHES WC	BARB OPTION B85 = 1/8" ID

NOTE: Standart Units supplied with 1/16" barb

Ex - AT-1004-12 = preset to 12" WC, with 1/16" barb

MOUNTING DIMENSIONS



R-800 SERIES

Miniature Precision Pressure Regulator 1/8" NPT ports

U.S. PATENT NO. 5,358,004

The R-800 Series regulators offer high performance in a compact size. 1/8-27 NPT ports allow the use of a wide range of fittings for design flexibility.

FEATURES

*Twenty turn hysteresis free adjustment allows pressure settings to 1″ WC resolution.

*Four adjusting styles allow maximum design flexibility. The non-rising stem is available with an attractive knob, or plain, allowing installation of OEM knobs. Also available is a flush adjusting shaft, for applications where pressure settings are changed less frequently. Factory pre-set “tamperproof” models are also available. (See drawings)

*Mounting options include panel mount, through a 9/16″ hole (nut included), and base mount, through 4 holes 0.125″ dia. (See drawings)

*Plastic construction – Corrosion resistant wetted materials.

*High accuracy – Low effect of supply variation on output.

*Low cost – Perfect for OEM applications

Applications:
Medical Equipment
*Oxygen Concentrators
*Ventilator / Respirators
*Nebulizers

Air Bearings
HVAC Systems
Custom Machinery
Robotics

Options
Oxygen Clean
Factory Pre-set

SPECIFICATIONS

R-800 SERIES	
REGULATOR TYPE	Constant Bleed, Relieving
WETTED MATERIALS	Polysulfone, Buna-N, EPDM, Acetal, Polyurethane, Stainless steel
SUPPLY CONSUMPTION	< 9 SCIM (150 cc/min) @ 30 PSI (207 kPa) supply < 21 SCIM (350 cc/min) @ 100 PSI (689 kPa) supply
MAX SUPPLY	150 PSI (1.03 MPa)
TEMPERATURE RANGE	40° - 150° F (4° - 66° C)
EFFECT OF SUPPLY VARIATION	< 0.05 PSI (0.35 kPa) per 10 PSI (68.9 kPa) supply change when dead-ended
REPEATAVILITY	< +/- 0.1 PSI (0.69 kPa) when supply is removed and re-applied
SENSITIVITY	1" H_2O (0.25 kPa)
MAXIMUM FLOW	2.5 cu. ft/min. (70 LPM)
RELIEF CAPACITY	0.5 cu. ft/min. (14 LPM) with outlet 5 PSI (34.5 kPa) above set-point
RECOMMENDED FILTRATION	5 micron

R-810 SERIES	
REGULATOR TYPE	Non-bleed, non-relieving
Note: R-810 series regulators are not recommened for dead-end, no flow applications. A downstream relief of at least 20 cc/min is recommened.	
REPEATABILITY	< +/- 0.25 PSI (1.72 kPa) when supply is removed and re-applied
EFFECT OF SUPPLY VARIATION	< 0.1 PSI (0.69 kPa) per 5 PSI (34.5 kPa) supply change
All other specifications remain the same as the R-800 series	

R-820 SERIES	
REGULATOR TYPE	Non-bleed, relieving
SUPPLY CONSUMPTION	< 0.3 SCIM (5 cc/min)
Note: R-820 series regulators have “near zero” bleed to atmosphere under normal operating conditions. Should any overshoot, or downstream pressure increases occur, the unit will relieve only what is necessary to stabilize the pressure setting. Important: Proper filtration is a must to maintain correct operation of the R-820 Series. Airtrol Components Inc. cannot guarantee perfect “non-bleed” operation under any circumstances. Consult with an Airtrol Application Engineer for more information.	
REPEATABILITY	< +/- 0.25 PSI (1.72 kPa) when supply is removed and re-applied
EFFECT OF SUPPLY VARIATION	< 0.1 PSI (0.69 kPa) per 5 PSI (34.5 kPa) supply change
SENSITIVITY	2" H_2O (0.5 kPa)
All other specifications remain the same as the R-800 series	

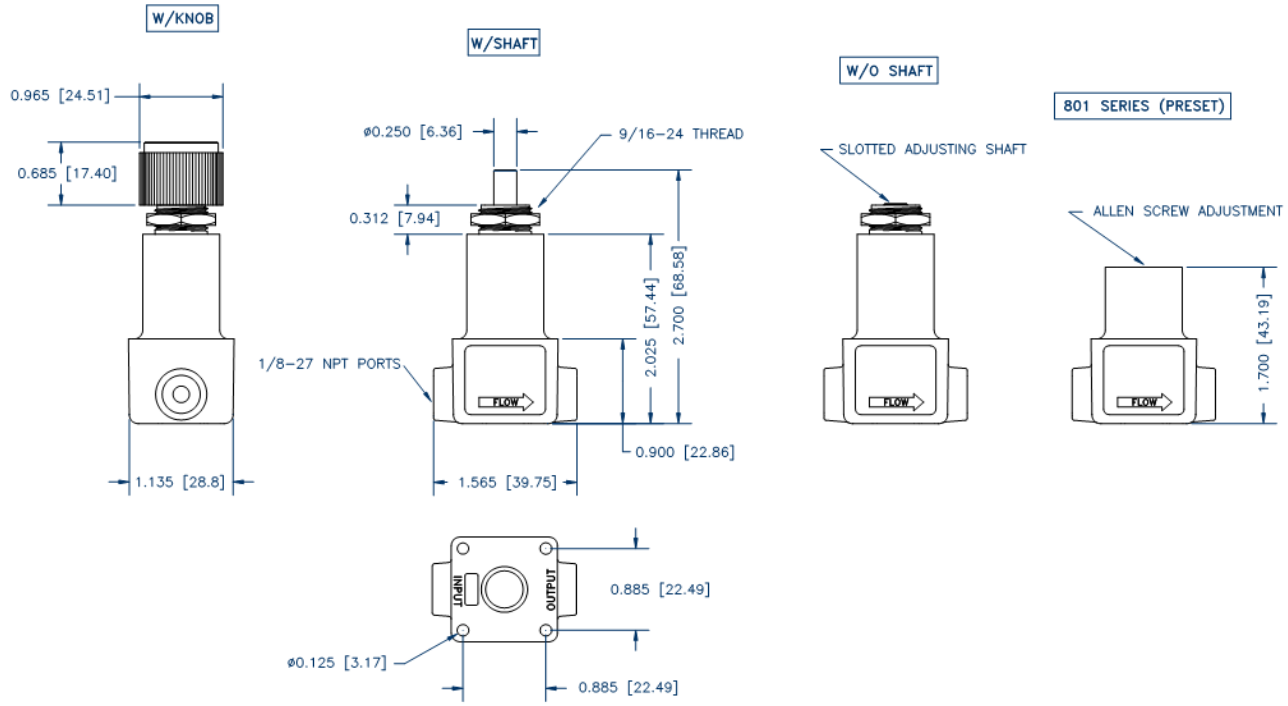
ORDERING INFORMATION

MODEL NUMBER	DESCRIPTION
R-800-XX-W/K	Precision regulator with adjustment knob
R-800-XX-W/S	Precision regulator with 1/4" adusting shaft
R-800-XX-W/OS	Precision regulator with slotted adjusting shaft
R-801-XX	Facotry pre-set regulator
R-810-XX-W/K	Non-bleed, non relieving with adjusting knob
R-810-XX-W/S	Non-bleed, non relieving 1/4" adjusting shaft
R-810-XX-W/OS	Non-bleed, non relieving with slotted adjusting shaft
R-811-XX	Non-bleed, non relieving, pre-set regulator
R-820-XX-W/K	Non-bleed, relieving with adjusting knob
R-820-XX-W/S	Non-bleed, relieving with 1/4" adjusting shaft
R-820-XX-W/OS	Non-bleed, relieving with slotted adjusting shaft
R-821-XX	Non-bleed, relieving, pre-set regulator

RANGE (PSI)	
0.5	3.5
0.5	10
0.5	30
0.5	60
0.5	90

Please specify the upper adjustment range when ordering. For factory pre-set models, specify the:
set point, input pressure, and flow, if not dead-ended.

MOUNTING DIMENSIONS



R-900 SERIES

Miniature Precision Pressure Regulator 10-32 ports

The R-900 Series regulators are designed for applications requiring miniature size, light weight, and precision. 10-32 ports accommodate a wide range of miniature fittings, including Airtrol Components B-062 and B-125 barbed fittings.

FEATURES

*Twenty turn hysteresis free adjustment allows pressure settings to 1″ WC resolution.

*Four adjusting styles allow maximum design flexibility. The non-rising stem is available with an attractive knob, or plain, allowing installation of OEM knobs. Also available is a flush adjusting shaft, for applications where pressure settings are changed less frequently. Factory pre-set “tamperproof” models are also available.

*Three Mounting options include panel mount, through a 9/16″ hole (nut included), and base mount, through 4 - 0.125″ dia. holes and manifold mount (See drawings)

*Plastic construction – Corrosion resistant wetted materials.

*High accuracy – Low effect of supply variation on output.

*Low cost – Perfect for OEM applications

Applications:
Medical Equipment
*Oxygen Concentrators
*Ventilator / Respirators
*Nebulizers

Air Bearings
HVAC Systems
Custom Machinery
Robotics

Options
Oxygen Clean
Factory Pre-set
Factory Installed Fittings

SPECIFICATIONS

R-900 SERIES	
REGULATOR TYPE	Constant Bleed, Relieving
WETTED MATERIALS	Polysulfone, Buna-N, EPDM, Acetal, Polyurethane, Stainless steel
SUPPLY CONSUMPTION	< 9 SCIM (150 cc/min) @ 30 PSI (207 kPa) supply < 21 SCIM (350 cc/min) @ 100 PSI (689 kPa) supply
MAX SUPPLY	150 PSI (1.03 Mpa)
TEMPERATURE RANGE	40° - 150° F (4° - 66° C)
EFFECT OF SUPPLY VARIATION	< 0.07 PSI (0.48 kPa) per 10 PSI (68.9 kPa) supply change when dead-ended
REPEATABILITY	< +/- 0.1 PSI (0.69 kPa) when supply is removed and re-applied
SENSITIVITY	1" H_2O (0.25 kPa)
MAXIMUM FLOW	2.3 cu. Ft/min. (65 LPM)
RELIEF CAPACITY	0.5 cu. ft/min. (14 LPM) with outlet 5 PSI (34.5 kPa) above set-point
RECOMMENDED FILTRATION	5 micron

R-910 SERIES	
REGULATOR TYPE	Non-bleed, non-relieving
	Note: R-910 series regulators are not recommended for dead-end, no flow applications. A downstream relief of at least 20 cc/min is recommended.
REPEATABILITY	< +/- 0.25 PSI (1.72 kPa) when supply is removed and re-applied
EFFECT OF SUPPLY VARIATION	< 0.1 PSI (0.69 kPa) per 5 PSI (34.5 kPa) supply change
All other specifications remain the same as the R-900 series	

R-920 SERIES	
REGULATOR TYPE	Non-bleed, relieving
SUPPLY CONSUMPTION	< 0.3 SCIM (5 cc/min)
	Note: R-920 series regulators have “near zero” bleed to atmosphere under normal operating conditions. Should any overshoot, or downstream pressure increases occur, the unit will relieve only what is necessary to stabilize the pressure setting. Important: Proper filtration is a must to maintain correct operation of the R-920 Series. Airtrol Components Inc. cannot guarantee perfect “non-bleed” operation under any circumstances. Consult with an Airtrol Application Engineer for more information.
REPEATABILITY	< +/- 0.25 PSI (1.72 kPa) when supply is removed and re-applied
EFFECT OF SUPPLY VARIATION	< 0.1 PSI (0.69 kPa) per 5 PSI (34.5 kPa) supply change
SENSITIVITY	2" H_2O (0.5 kPa)
All other specifications remain the same as the R-900 series	

ORDERING INFORMATION

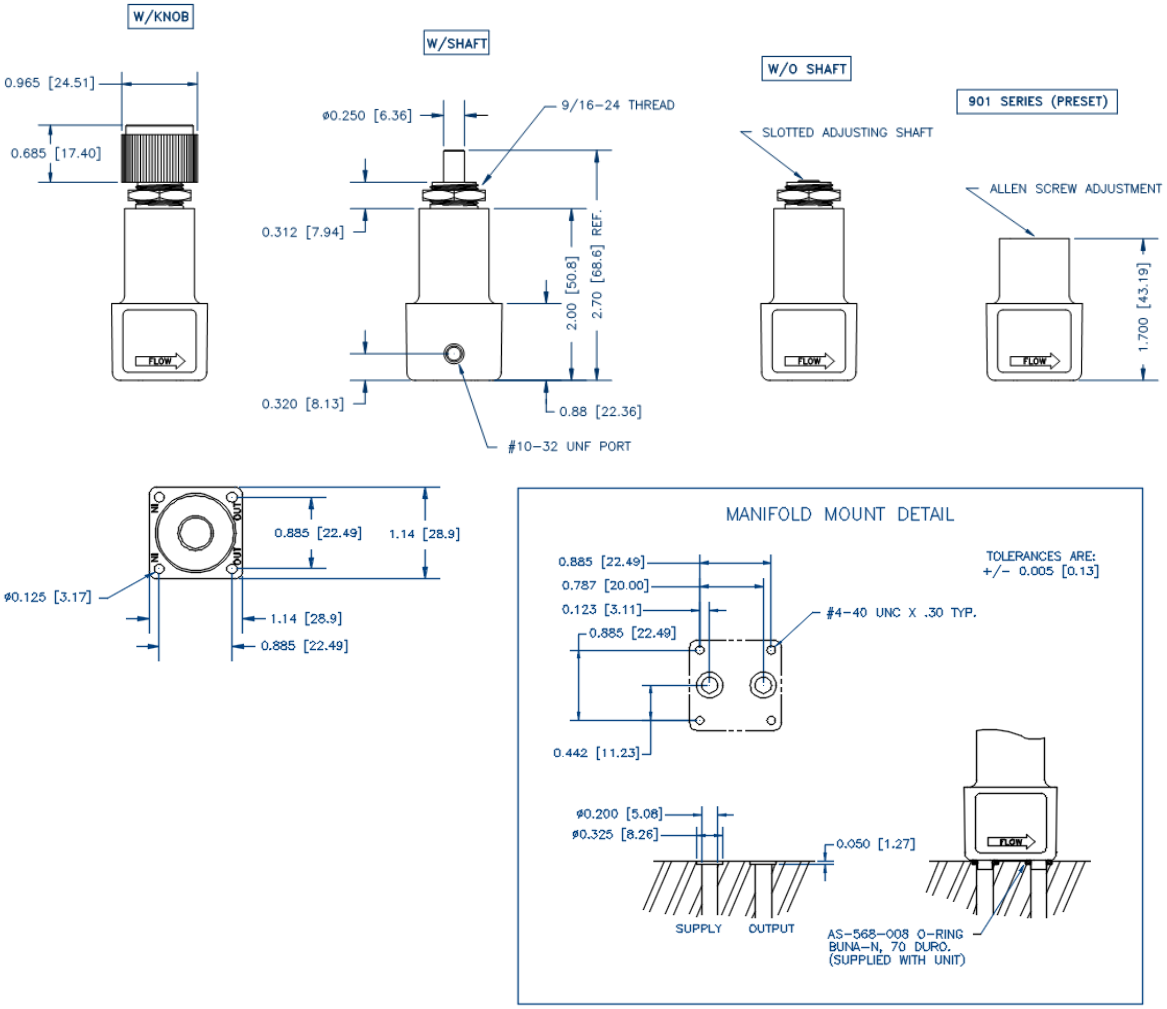
MODEL NUMBER	DESCRIPTION
R-900-XX-W/K	Precision regulator with adjustment knob
R-900-XX-W/S	Precision regulator with 1/4" adusting shaft
R-900-XX-W/OS	Precision regulator with slotted adjusting shaft
R-901-XX	Factory pre-set regulator
R-910-XX-W/K	Non-bleed, non relieving with adjusting knob
R-910-XX-W/S	Non-bleed, non relieving 1/4" adjusting shaft
R-910-XX-W/OS	Non-bleed, non relieving with slotted adjusting shaft
R-911-XX	Non-bleed, non relieving, pre-set regulator
R-920-XX-W/K	Non-bleed, relieving with adjusting knob
R-920-XX-W/S	Non-bleed, relieving with 1/4" adjusting shaft
R-920-XX-W/OS	Non-bleed, relieving with slotted adjusting shaft
R-921-XX	Non-bleed, relieving, pre-set regulator

RANGE (PSI)	
0.5	3.5
0.5	10
0.5	30
0.5	60
0.5	90

Please specify the upper adjustment range when ordering. For factory pre-set models, specify the:
set point, input pressure, and flow, if not dead-ended.

Note: For manifold mount option, add "M" to part number after range: Ex - R-900-60M-W/S

MOUNTING DIMENSIONS



V-800 SERIES

Miniature Precision Vacuum Regulator 1/8" NPT ports

U.S. PATENT NO. 5,358,004

The V-800 Series vacuum regulators are designed for applications requiring high precision in a miniature package. Hysteresis free adjustments are made through a non-rising stem. Available with an attractive knob, or plain, allowing installation of OEM knobs. Also available is a flush adjusting shaft, and factory pre-set tamper-resistant models. Units may be base mounted or panel mounted.

APPLICATIONS

*Medical Equipment *Process Control *Pick 'n Place *Laboratory Instruments

SPECIFICATIONS

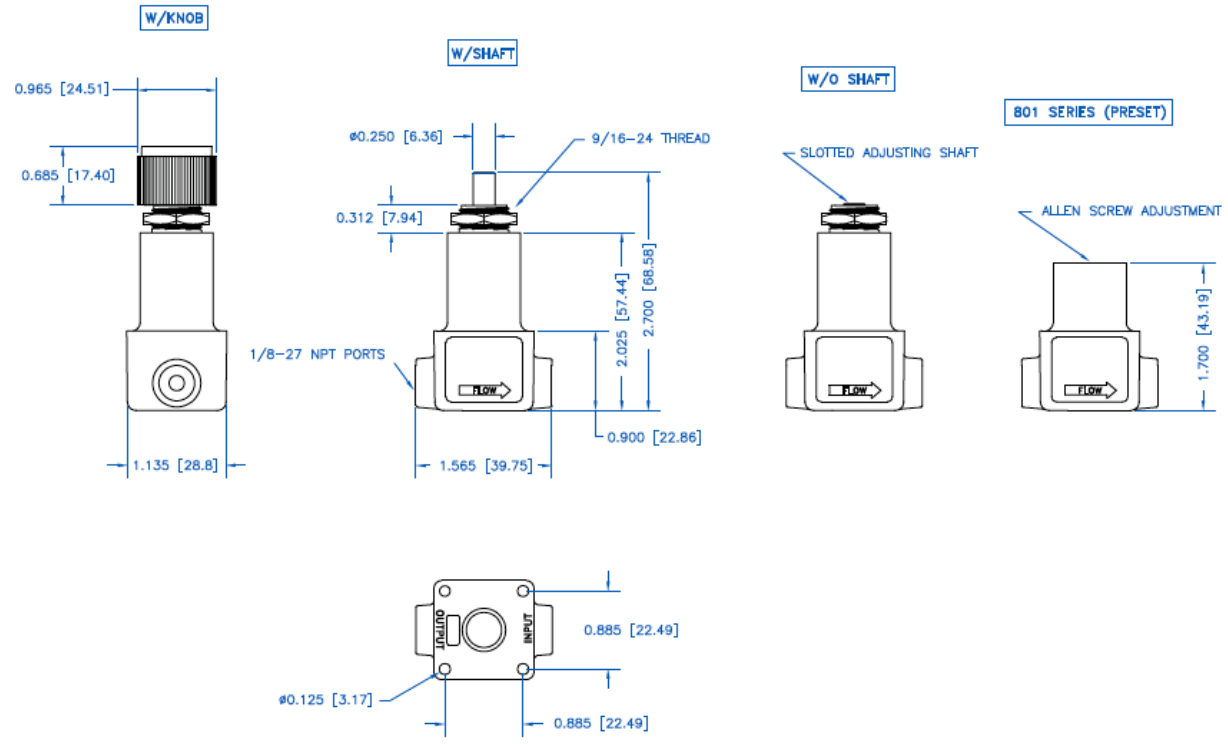
REGULATOR TYPE	Constant Bleed, Relieving
WETTED MATERIALS	Polysulfone, Buna-N, EPDM, Acetal, Polyurethane, Stainless Steel
SUPPLY CONSUMPTION	< 16 SCIM (260 cc/min) @ 30" (760 mm) Hg supply
MAX SUPPLY	30" (760 mm) Hg
TEMPERATURE RANGE	40° - 150° F (4° - 66° C)
EFFECT OF SUPPLY VARIATION	< 0.03" (0.76 mm) Hg supply change when dead-ended
REPEATABILITY	< +/- 0.05" (1.25 mm) Hg when supply is removed and re-applied
SENSITIVITY	1" (25.4 mm) H_2O
MAXIMUM FLOW	1.0 cu. ft/min. (28 LPM)
RECOMMENDED FILTRATION	5 micron

ORDERING INFORMATION

MODEL NUMBER	DESCRIPTION
V-800-10-W/K	0.5-10" Vacuum regulator with adjusting knob
V-800-10-W/S	0.5-10" Vacuum regulator with 1/4" adjusting shaft
V-800-10-W/OS	0.5-10" Vacuum regulator with slotted adjusting shaft
V-800-30-W/K	0.5-30" Vacuum regulator with adjusting knob
V-800-30-W/S	0.5-30" Vacuum regulator with 1/4" adjusting shaft
V-800-30-W/OS	0.5-30" Vacuum regulator with slotted adjusting shaft

PRESET MODELS AVAILABLE - CONTACT FACOTRY

MOUNTING DIMENSIONS



V-900 SERIES

Miniature Precision Vacuum Regulator 10-32 ports

The V-900 Series vacuum regulators are designed for applications requiring high precision in a miniature package. Hysteresis free adjustments are made through a non-rising stem. Available with an attractive knob, or plain, allowing installation of OEM knobs. Also available is a flush adjusting shaft, and factory pre-set tamper-resistant models. Units may be base mounted, panel mounted, or manifold mounted.

APPLICATIONS

*Medical Equipment *Process Control *Pick 'n Place *Laboratory Instruments

SPECIFICATIONS

REGULATOR TYPE	Constant Bleed, Relieving
WETTED MATERIALS	Polysulfone, Buna-N, EPDM, Acetal, Polyurethane, Stainless Steel
SUPPLY CONSUMPTION	< 16 SCIM (260 cc/min) @ 30" (760 mm) Hg supply
MAX SUPPLY	30" (760 mm) Hg
TEMPERATURE RANGE	40° - 150° F (4° - 66° C)
EFFECT OF SUPPLY VARIATION	< 0.03" (0.76 mm) Hg per 5" (127 mm) Hg supply change when dead-ended
REPEATABILITY	< +/- 0.05" (1.25 mm) Hg when supply is removed and re-applied
SENSITIVITY	1" (25.4 mm) H_2O
MAXIMUM FLOW	0.8 cu. ft/min. (22.5 LPM)
RECOMMENDED FILTRATION	5 micron

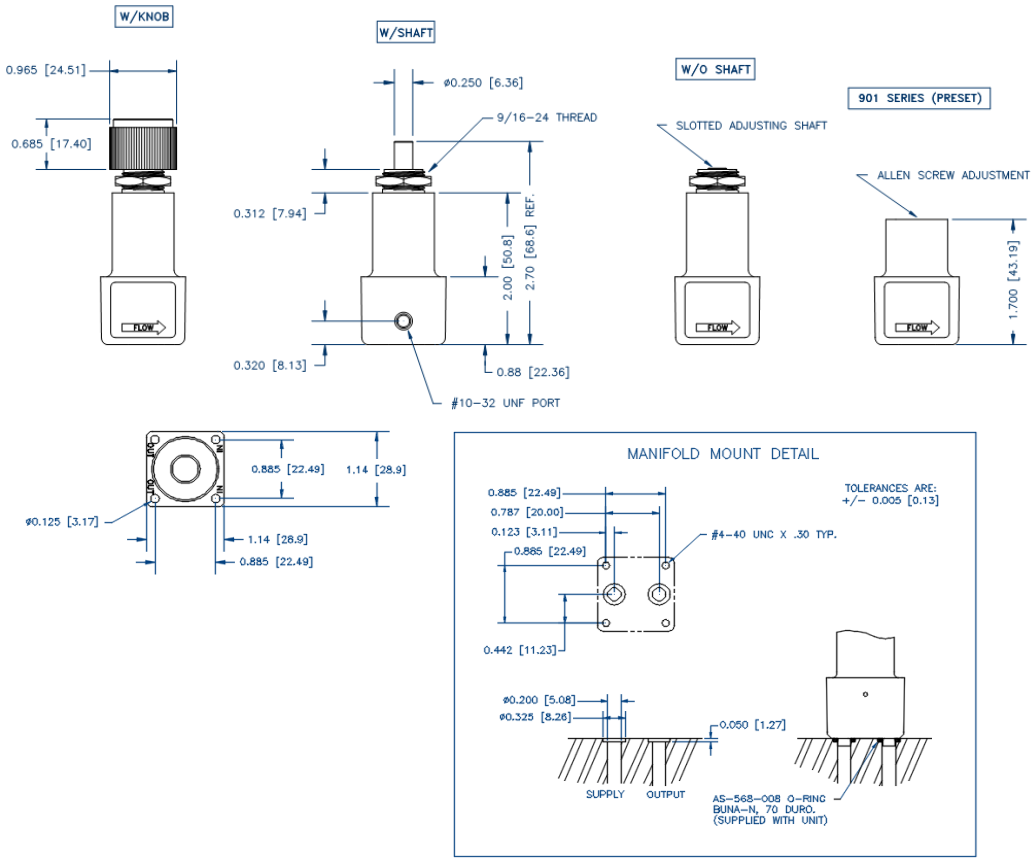
ORDERING INFORMATION

MODEL NUMBER	DESCRIPTION
V-900-10-W/K	0.5-10" Hg Vacuum regulator with adjusting knob
V-900-10-W/S	0.5-10" Hg Vacuum regulator with 1/4" adjusting shaft
V-900-10-W/OS	0.5-10" Hg Vacuum regulator with slotted adjusting shaft
V-900-30-W/K	0.5-30" Hg Vacuum regulator with adjusting knob
V-900-30-W/S	0.5-30" Hg Vacuum regulator with 1/4" adjusting shaft
V-900-30-W/OS	0.5-30" Hg Vacuum regulator with slotted adjusting shaft

Note: For manifold mount option, add "M" to part number afer range: Ex - V900-30M-W/K

PRESET MODELS AVAILABLE - CONTACT FACOTRY

MOUNTING DIMENSIONS



F-4103 SERIES

Spring Biased Comparators

U.S. PATENT NO. 4,315,520

Airtrol Components F-4103 Series spring biased comparators are essentially a regulator with an adjustable bias (positive or negative), and a control or pilot input. Standard units offer a 1:1 ratio, plus or minus the initial bias. Special 3:1 and 5:1 ratio units are also available. Perfect for HVAC applications, and unique control applications requiring a positive or negative offset. Non-rising stem is available with an attractive knob, plain (allowing installation of OEM knobs) or flush for “back panel” installations.

SPECIFICATIONS

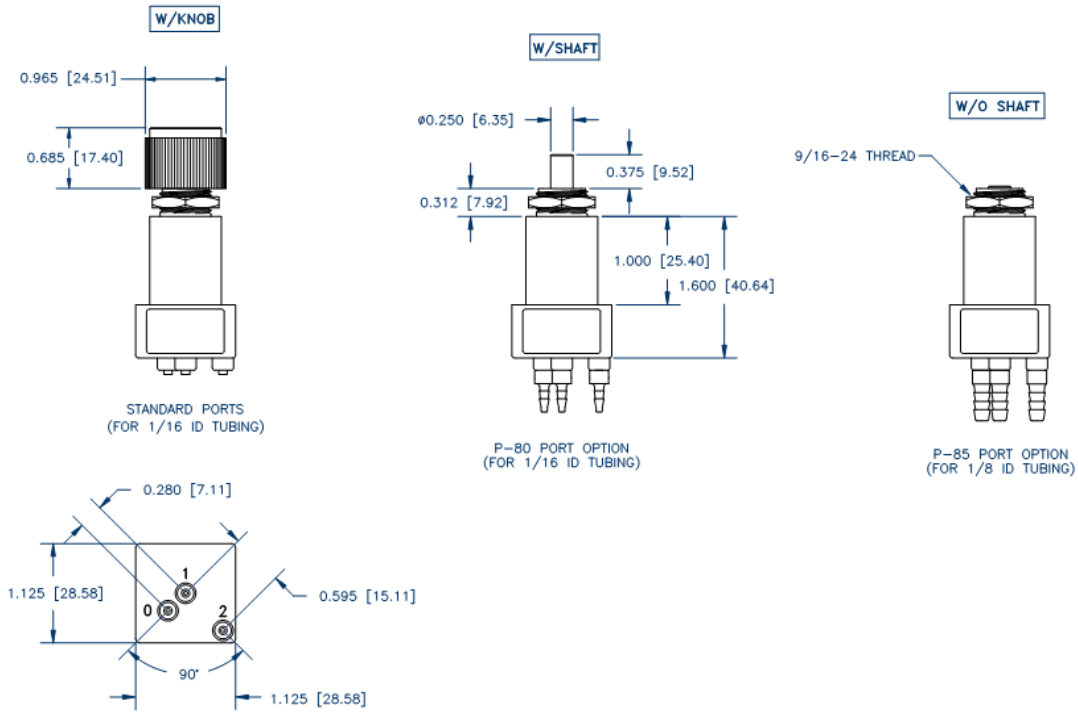
REGULATOR TYPE	Constant Bleed, Relieving
WETTED MATERIALS	Polysulfone, Silicone, Stainless Steel
SUPPLY CONSUMPTION	See Orifice Flow Data Graphs
MAX SUPPLY	35 PSI (242 kPa)
TEMPERATURE RANGE	40° - 150° F (4° - 66° C)
EFFECT OF SUPPLY VARIATION	< 0.02" PSI (0.14 kPa) per 1 PSI (6.89 kPa) supply change
	when dead-ended
REPEATABILITY	< +/- 0.05 PSI (0.35 kPa)
DRIFT	< +/- 0.03 PSI (0.21 kPa) after 24 hours
RECOMMENDED FILTRATION	5 micron

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
F-4103-30-XX-XX	-5 to 5 PSI
F-4103-33-XX-XX	-5 to 10 PSI
F-4103-36-XX-XX	-5 to 20 PSI
F-4103-37-XX-XX	-8 to 5 PSI
F-4103-38-XX-XX	-8 to 20 PSI
F-4103-39-XX-XX	-13 to 20 PSI
F-4103-39N-XX-XX	0 to 10 PSI
F-4103-40-XX-XX	0 to 20 PSI, 3:1 RATIO
F-4103-50-XX-XX	0 to 20 PSI, 5:1 RATIO

ADJUSTING OPTION	BARB OPTIONS	
W/K = WITH ADJUSTING KNOB W/S = WITH 1/4" SHAFT W/OS = FLUSH SHAFT	P80 = 1/16" ID BARBS P85 = 1/8" ID BARBS	**NOTE:** UNITS COME STANDARD WITH STRAIGHT CONNECTIONS FOR 1/16" ID TUBING

MOUNTING DIMENSIONS



4104 SERIES

Pressure & Vacuum Regulators

U.S. PATENT NO. 4,315,520

Airtrol 4104 series pressure and vacuum regulators are designed for applications requiring very low output settings and low flow. Full scale ranges as low as 1.5 psi pressure and 3″ Hg vacuum are available. Settings as low as 1″ WC are easily maintained with both. Both units will also accept a pilot input, allowing pneumatic control of the output setting (see schematics). Hysteresis free adjustments are made through a non-rising stem, available with an attractive knob, plain (to allow the installation of OEM knobs) or flush for “back panel” applications.

SPECIFICATIONS

R-4104 SERIES (PRESSURE)	
REGULATOR TYPE	Constant Bleed, Relieving
WETTED MATERIALS	Polysulfone, Silicone, Stainless Steel
SUPPLY CONSUMPTION	See Orifice Flow Data Graphs
MAX SUPPLY	35 PSI (242 kPa)
TEMPERATURE RANGE	40° - 150° F (4° - 66° C)
EFFECT OF SUPPLY VARIATION	< 0.02" PSI (0.14 kPa) per 1 PSI (6.89 kPa) supply change when dead-ended
REPEATABILITY	< +/- 0.05 PSI (0.35 kPa)
DRIFT	< 0.03 PSI (0.21 kPa) after 24 hours
RECOMMENDED FILTRATION	5 micron
V-4104 SERIES (VACUUM)	
MAX SUPPLY	30" (760 mm) Hg
EFFECT OF SUPPLY VARIATION	< 0.01" (0.254 mm) Hg per 5" (127 mm) Hg supply change when dead-ended
REPEATABILITY	< +/- 0.03" (0.76 mm) Hg
DRIFT	< 0.05" (1.27 mm) Hg after 24 hours

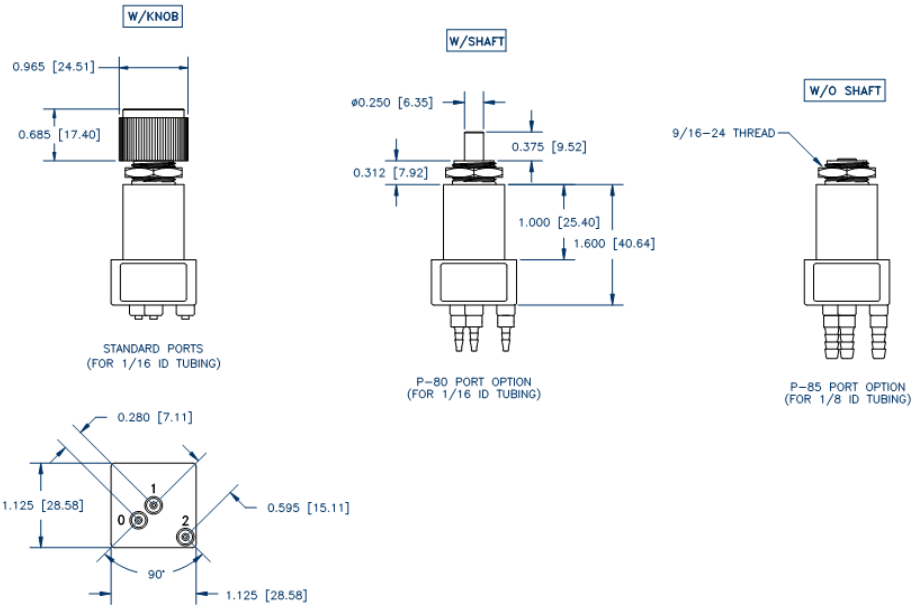
ALL OTHER SPECIFICATIONS REMAIN THE SAME AS PRESSURE VERSION

ORDERING INFORMATION

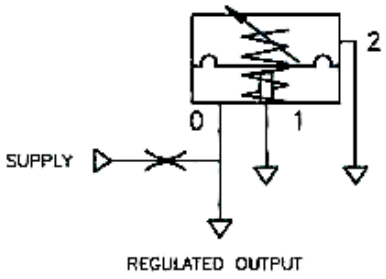
PART NUMBER	DESCRIPTION
R-4104-1.5-XX-XX	0-1.5 PSI pressure regulator
R-4104-3.5-XX-XX	0-3.5 PSI pressure regulator
R-4104-10-XX-XX	0-10 PSI pressure regulator
R-4104-20-XX-XX	0-20 PSI pressure regulator
R-4104-30-XX-XX	0-30 PSI pressure regulator
V-4104-3-XX-XX	0-3" Hg vacuum regulator
V-4104-10-XX-XX	0-10" Hg vacuum regulator
V-4104-25-XX-XX	0-25" Hg vacuum regulator

ADJUSTING OPTION	BARB OPTIONS	
W/K = WITH ADJUSTING KNOB W/S = WITH 1/4" SHAFT W/OS = FLUSH SHAFT	P80 = 1/16" ID BARBS P85 = 1/8" ID BARBS	**NOTE:** UNITS COME STANDARD WITH STRAIGHT CONNECTIONS FOR 1/16" ID TUBING

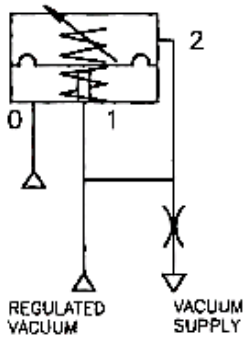
MOUNTING DIMENSIONS



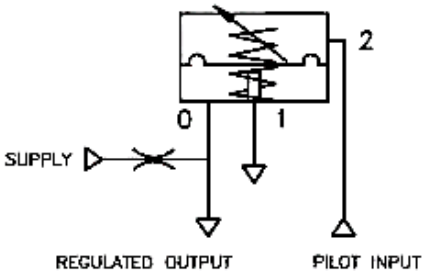
SPRING BIASED COMPARATOR SCHEMATICS



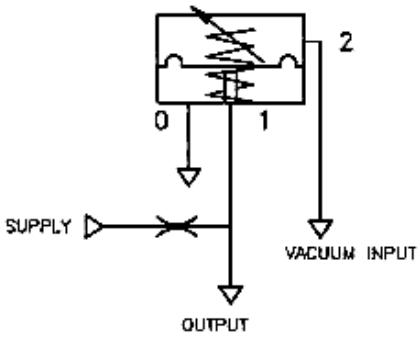
PRESSURE REGULATOR



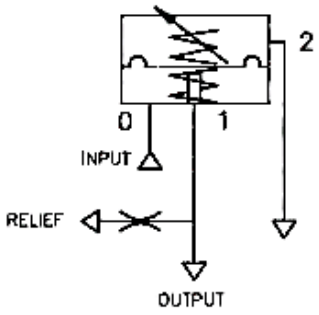
VACUUM REGULATOR



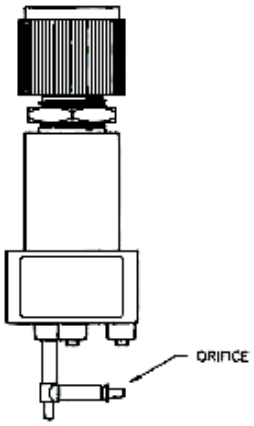
COMPARATOR (ADJUSTABLE BIAS)

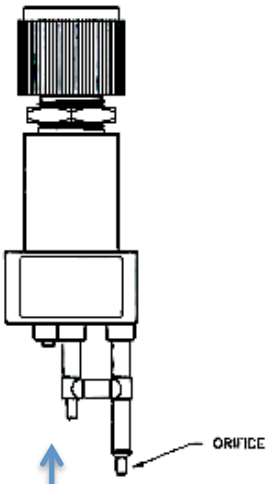


VACUUM SWITCH



PRESSURE SWITCH





RECOMMENDED ORIFICE SIZES:		R-4104 SERIES SUPPLIED (as shown)	V-4104 SERIES SUPPLIED (as shown)
0.007	STANDARD		
0.010	FOR FASTER RESPONSE		
0.005	FOR LOWER CONSUMPTION		

RV-5200 SERIES
Miniature Relief Valve
10-32 PORTS

RV-5300 SERIES
Miniature Relief Valve
1/8" NPT PORTS

The RV-5200 and RV-5300 Series operate as either a relief valve or low flow back pressure regulator. Adjustments are made through a non-rising stem available with an attractive knob, plain to allow installation of OEM knobs, or flush for “back panel” applications. A typical application would be the use of a unit between a compressor and a load to prevent the compressor from “loading up” when dead-ended.

SPECIFICATIONS

WETTED MATERIALS		Polysulfone, Silicone, Buna-N
TEMPERATURE RANGE		40° - 150° F (4° - 66° C)
REPEATABILITY		< +/- 1% F.S. ①
FLOW CAPACITY	10-32 port	0.6 CFM (16 LPM) @ 30 PSI (207 kPa) set
	1/8" NPT port	0.7 CFM (19 LPM) @ 30 PSI (207 kPa) set

① Operating characteristics are influenced by flow and outlet restriction

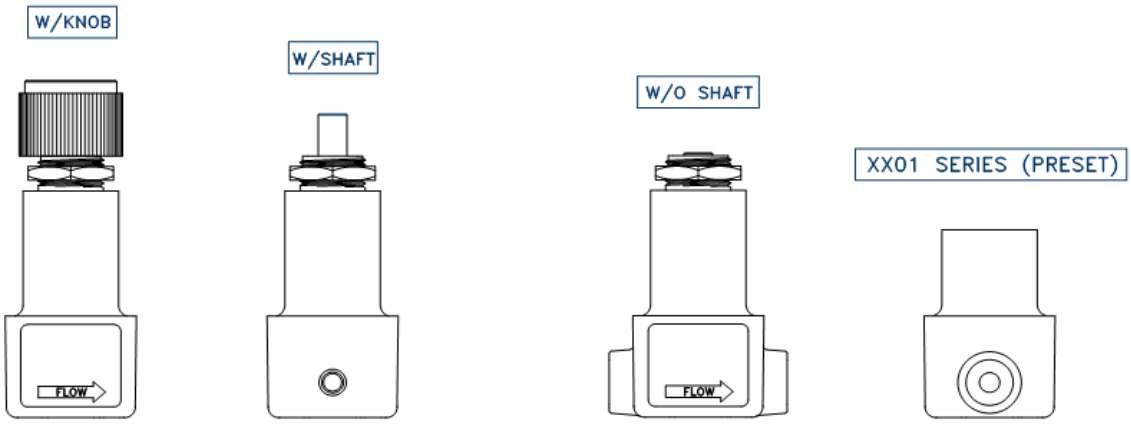
ORDERING INFORMATION

PART NUMBER	DESCRIPTION
RV-5200-10-XX	0-10 PSI, 10-32 ports
RV-5200-30-XX	0-30 PSI, 10-32 ports
RV-5200-60-XX	0-60 PSI, 10-32 ports
RV-5200-100-XX	0-100 PSI, 10-32 ports
RV-5300-10-XX	0-10 PSI, 1/8" NPT ports
RV-5300-30-XX	0-30 PSI, 1/8" NPT ports
RV-5300-60-XX	0-60 PSI, 1/8" NPT ports
RV-5300-100-XX	0-100 PSI, 1/8" NPT ports

ADJUSTING OPTION
W/K = WITH KNOB
W/S = WITH 1/4" SHAFT
W/OS = FLUSH SHAFT

NOTE: PRESET VERSIONS AVAILABLE - CONTACT FACTORY

MOUNTING DIMENSIONS



(See R-900 Series for complete drawings)

(See R-800 Series for complete drawings)

Note: The "IN" and "OUT" ports contradict the flow arrow on these parts. (The flow arrow is correct.)

S-5200 SERIES
Miniature Sequence Valve
10-32 PORTS

S-5300 SERIES
Miniature Sequence Valve
1/8" NPT PORTS

The S-5200 and S-5300 Series are designed for applications requiring precise sequencing of pneumatic control circuits. Sequencing and deadband characteristics can be tuned by varying the output restriction. Adjustments are made through a non-rising stem, available with an attractive knob, plain to allow the installation of OEM knobs or flush for “back panel” applications.

SPECIFICATIONS

WETTED MATERIALS		Polysulfone, Silicone, Buna-N
TEMPERATURE RANGE		40° - 150° F (4° - 66° C)
REPEATABILITY		< +/- 1% F.S. ①
FLOW CAPACITY	10-32 port	2.0 CFM (56 LPM) with supply 10 PSI above set-point
	1/8" NPT port	2.3 CFM (65 LPM) with supply 10 PSI above set-point

① Operating characteristics are influenced by flow and output restriction

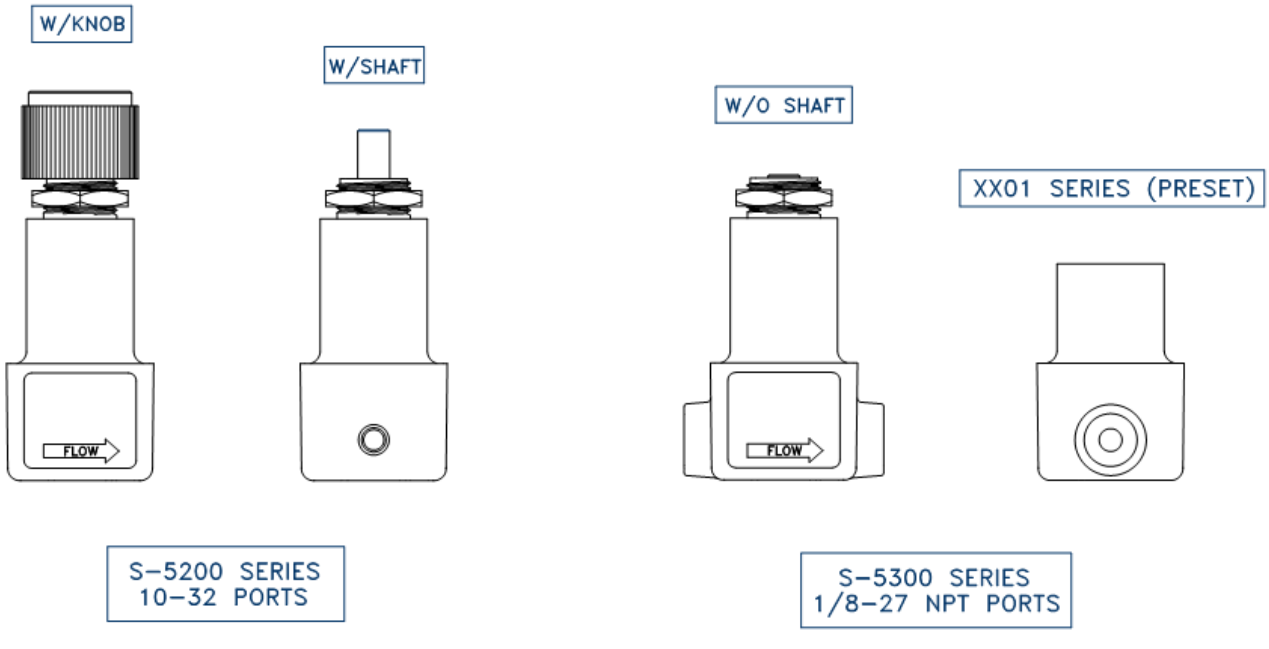
ORDERING INFORMATION

PART NUMBER	DESCRIPTION
S-5200-10-XX	0-10 PSI, 10-32 ports
S-5200-30-XX	0-30 PSI, 10-32 ports
S-5200-60-XX	0-60 PSI, 10-32 ports
S-5200-100-XX	0-100 PSI, 10-32 ports
S-5300-10-XX	0-10 PSI, 1/8" NPT ports
S-5300-30-XX	0-30 PSI, 1/8" NPT ports
S-5300-60-XX	0-60 PSI, 1/8" NPT ports
S-5300-100-XX	0-100 PSI, 1/8" NPT ports

ADJUSTING OPTION
W/K = WITH KNOB
W/S = WITH 1/4" SHAFT
W/OS = FLUSH SHAFT

NOTE: PRESET VERSIONS AVAILABLE - CONTACT FACTORY

MOUNTING DIMENSIONS



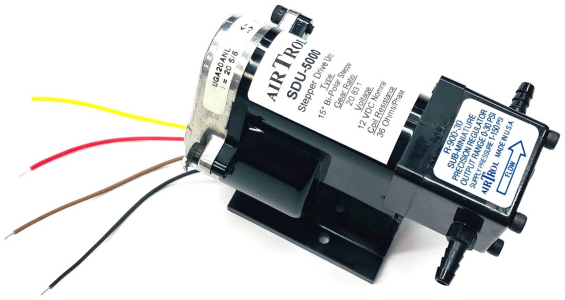
(See R-900 Series for complete drawings)

(See R-800 Series for complete drawings)

SDU-5000 SERIES

Stepper Motor Driven Regulators

The SDU-5000 Series offers unique and practical method of controlling pressure or vacuum electronically. This is accomplished by interfacing a stepping motor and gear box to a modified 800 or 900 series subminiature regulator. A calibration report included with every unit provides a detailed test data including a scale factor that corresponds to a slope that will yield a open loop accuracy including linearity, repeatability and hysteresis, of +/- 3% FS. The unit can also be interfaced with Airtrol's 4103/4104 Series spring biased comparators.



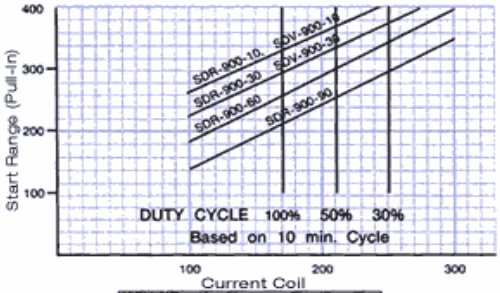
SPECIFICATIONS

OVERALL	
ACCURACY	<+/- 3% FS BFSL including linerity, repeatability and hysteresis
DIMENSIONS	2.875" x 2.125" x 3.5" (73 x 54 x 89 mm)
WEIGHT	8 oz (227 g)
DRIVE UNIT	
MOTOR TYPE	15° bi-polar stepping
COIL RESISTANCE	36 Ohms/Phase
RECOMMENDED CURRENT	< 170 mA / coil for 100% duty cycle
GEAR RATIO	20.83:1
TYPICAL STEP RATE	200 steps/sec
SDR-800/SDR-900 SERIES REGULATORS	
REGULATOR TYPE	Constant Bleed, Relieving
WETTED MATERIALS	Polysulfone, Buna-N, EPDM, Acetal, Polyurethane, Stainless Steel
SUPPLY CONSUMPTION	< 9 scim (150 cc/min) @ 30 PSI (207 kPa) supply < 21 scim (350 cc/min) @ 100 PSI (689 kPa) supply
MAX SUPPLY	150 PSI (1.03 Mpa)
TEMPERATURE RANGE	40° - 150° F (4° - 66° C)
EFFECT OF SUPPLY VARIATION	< 0.07 PSI (0.48 kPa) per 10 PSI (68.9 kPa) supply change when dead-ended
REPEATABILITY	< +/- 0.1 PSI (0.69 kPa) when supply is removed and re-applied
SENSITIVITY	1" H_2O (0.25 kPa)
MAXIMUM FLOW	2.3 cu ft / min. (65 LPM)
RELIEF CAPACITY	0.5 cu ft / min. (14 LPM) with outlet 5 PSI (34.5 kPa) above set-point
RECOMMEND FILTRATION	5 micron
SDR-810 / SDR-910 SERIES NON-BLEED REGULATORS	
REGULATOR TYPE	Non-bleed, non-relieving
Note: R-810/910 Series regulators are not recommended for dead-end, no flow applications. A downstream relief of at least 20 cc/min. is recommended.	
REPEATABILITY	< +/- 0.25 PSI (1.72 kPa) when supply is removed and re-applied
EFFECT OF SUPPLY VARIATION	< 0.1 PSI (0.69 kPa) per 5 PSI (34.5 kPa) supply change
ALL OTHER SPECIFICATIONS REMAIN THE SAME AS THE SDR-800/SDR-900 SERIES	
SDR-820 / SDR-920 SERIES NON-BLEED, RELIEVING REGULATOR	
REGULATOR TYPE	Non-bleed, relieving
SUPPLY CONSUMPTION	< 0.3 SCIM (5 cc/min)
Note: R-820/920 Series regulators have “near zero” bleed to atmosphere under normal operating conditions. Should any overshoot, or downstream pressure increases occur, the unit will relieve only what is necessary to stabilize the pressure setting. *Important: Proper filtration is a must to maintain correct operation of the R-820/920 Series. Airtrol Components Inc. cannot guarantee perfect “non-bleed” operation under any circumstances. Consult with an Airtrol Application Engineer for more information.*	
REPEATABILITY	< +/- 0.25 PSI (0.172 kPa) when supply is removed and re-applied
EFFECT OF SUPPLY VARIATION	< 0.1 PSI (0.69 kPa) per 5 PSI (34.5 kPa) supply change
SENSITIVITY	2" H_2O (0.5 kPa)
ALL OTHER SPECIFICATIONS REMAIN THE SAME AS THE SDR-800/SDR-900 SERIES	

DRIVE INFORMATION

The SDU-5000 can be driven using a variety of drive methods, including constant voltage, L/R, constant current (chopper) and bi-level (two voltage) drives. For more demanding applications, a bi-level or chopper drive is recommended. A bi-level drive is also recommended for high speed applications where a frequency ramp is not being used to accelerate the motor. This will allow pressure changes to be made at an increased power setting, after which the power can be reduced to an “idle” setting to prevent over heating. The figure to the right shows recommended fixed frequencies for various current levels. Note that the current levels above 170 mA/coil, a duty cycle must be observed (based on a 10 min. cycle).

The truth table shown to the right defines the step sequence/direction relationship for the SDU-5000 Stepper Drive Unit.

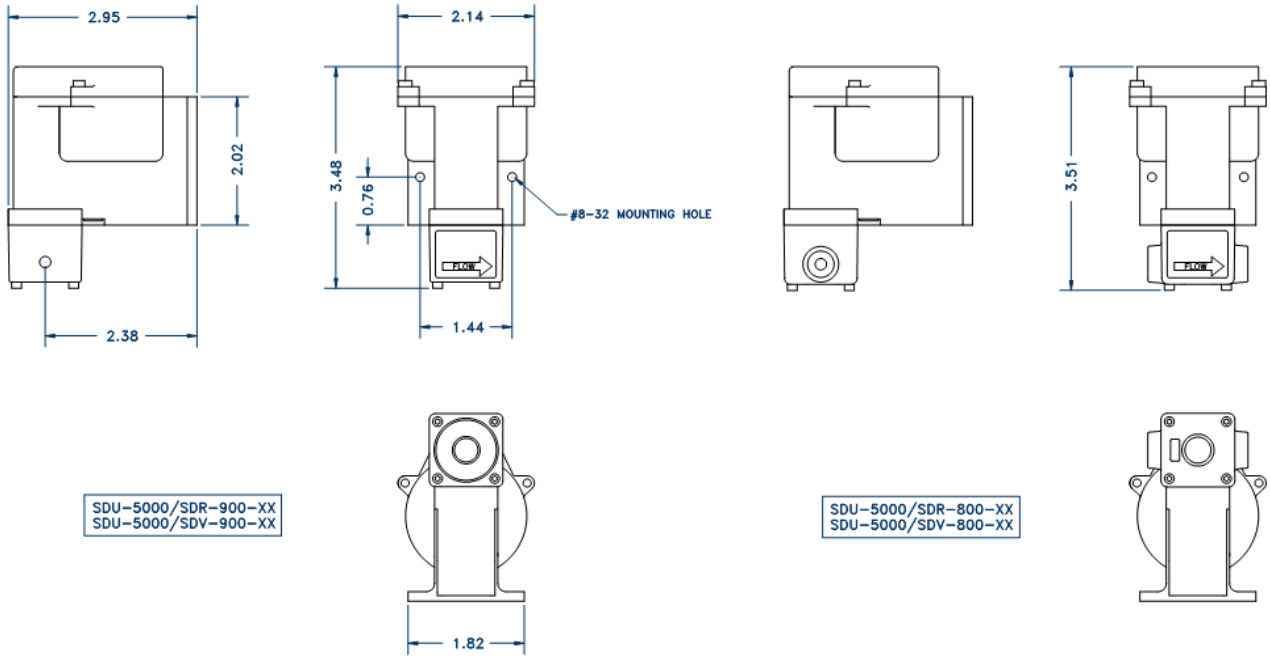


PRESSURE OR VACUUM SETTING	STEP	COIL 1		COIL 2	
		BLK	BRN	YEL	RED
INCREASE	1	+	−	+	−
	2	−	+	+	−
	3	−	+	−	+
	4	+	−	−	+
DECREASE	1	+	−	+	−

ORDERING INFORMATION

MODEL NUMBER	DESCRIPTION
SDU-5000/SDR-800/10	Stepper Driven Regulator, 0.7-10 PSI, 1/8" NPT Ports
SDU-5000/SDR-800/30	Stepper Driven Regulator, 0.7-30 PSI, 1/8" NPT Ports
SDU-5000/SDR-800/60	Stepper Driven Regulator, 0.7-60 PSI, 1/8" NPT Ports
SDU-5000/SDR-800/90	Stepper Driven Regulator, 0.7-90 PSI, 1/8" NPT Ports
SDU-5000/SDR-900/10	Stepper Driven Regulator, 0.7-10 PSI, 10-32 Ports
SDU-5000/SDR-900/30	Stepper Driven Regulator, 0.7-30 PSI, 10-32 Ports
SDU-5000/SDR-900/60	Stepper Driven Regulator, 0.7-60 PSI, 10-32 Ports
SDU-5000/SDR-900/90	Stepper Driven Regulator, 0.7-90 PSI, 10-32 Ports
SDU-5000/SDV-800/10	Stepper Driven Regulator, 0.7-10" Hg Vac, 1/8 NPT Ports
SDU-5000/SDV-800/30	Stepper Driven Regulator, 0.7-30" Hg Vac, 1/8 NPT Ports
SDU-5000/SDV-900/10	Stepper Driven Regulator, 0.7-10" Hg Vac, 10-32 Ports
SDU-5000/SDV-900/30	Stepper Driven Regulator, 0.7-30" Hg Vac, 10-32 Ports

MOUNTING DIMENSIONS



PRECISION ORIFICES & ACCESSORIES

ORIFICES BY SIZE AND COLOR

Precision Orifices - Plain Part Number			Precision Orifices with Barbs Part Number	
Orifice	Color		With 1/16 Barbs	With 1/8 Barbs
O-003	Gold		O-003-062	O-003-125
O-004	Purple		O-004-062	O-004-125
O-005	White		O-005-062	O-005-125
O-007	Yellow		O-007-062	O-007-125
O-008	Lt. Green		O-008-062	O-008-125
O-009	Lavender		O-009-062	O-009-125
O-010	Lt. Blue		O-010-062	O-010-125
O-012	Green		O-012-062	O-012-125
O-014	Orange		O-014-062	O-014-125
O-016	Grey		O-016-062	O-016-125
O-017	Brown		O-017-062	O-017-125
O-019	Red		O-019-062	O-019-125
O-020	Dk. Blue		O-020-062	O-020-125
O-025	Black		O-025-062	O-025-125
O-030	Beige		O-030-062	O-030-125
O-035	Dk. Grey		O-035-062	O-035-125
O-040	Teal		O-040-062	O-040-125

In-Line Filters				
Micron	Color		With 1/16 Barbs Part Number	With 1/8 Barbs Part Number
5	Smoke		F-05-062	F-05-125
40	Smoke		F-40-062	F-40-125
80	Smoke		F-80-062	F-80-125

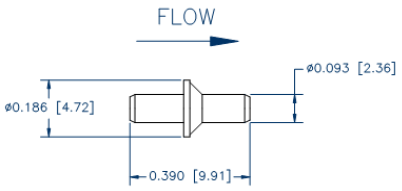
PRECISION ORIFICES

U.S. PATENT NO. 5,354,530

Precision Orifices - Plain

Precision molded orifices feature accuracy comparable to jewel orifices at a fraction of the cost. Color coded for easy identification.

SPECIFICATIONS	
ACCURACY	ORIFICE SIZE +/- 0.0003"
MATERIAL	FDA Approved Polycarbonate
MAXIMUM OPERATING PRESSURE	100 PSI
CONNECTION	Straight Connection for 1/16" I.D. tubing
REPEATABILITY	+/- 0.0002" or +/- 3% Flow whichever is greater



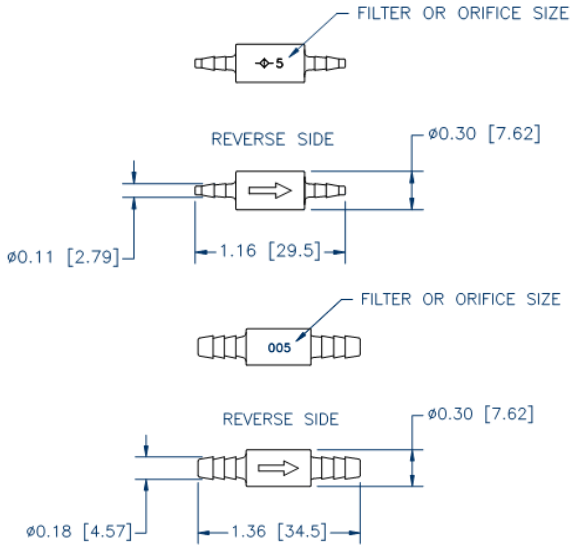
SIZE	PART NUMBER	COLOR
0.003	O-003	GOLD
0.004	O-004	PURPLE
0.005	O-005	WHITE
0.007	O-007	YELLOW
0.008	O-008	LT. GREEN
0.009	O-009	LAVENDER
0.010	O-010	LT. BLUE
0.012	O-012	GREEN
0.014	O-014	ORANGE
0.016	O-016	GREY
0.017	O-017	BROWN
0.019	O-019	RED
0.020	O-020	DK. BLUE
0.025	O-025	BLACK
0.030	O-030	BEIGE
0.035	O-035	DK. GREY
0.040	O-040	TEAL

PRECISION ORIFICES WITH BARBS AND IN-LINE FILTERS

Precision Orifices with Barbs

Feature integral filter to prevent clogging. Barbed connections allow higher working pressures. Color coded and clearly marked with size and flow directions.

SPECIFICATIONS	
ACCURACY	See "Precision Orifices"
MATERIALS	FDA Approved Polycarbonate, Buna-N (Nitrite) O-Rings, Stainless Steel Screen
MAXIMUM OPERATING PRESSURE	100 PSI



SIZE	COLOR	PART NUMBER	
		WITH 1/16 BARBS	WITH 1/8 BARBS
0.003	GOLD	O-003-062	O-003-125
0.004	PURPLE	O-004-062	O-004-125
0.005	WHITE	O-005-062	O-005-125
0.007	YELLOW	O-007-062	O-007-125
0.008	LT. GREEN	O-008-062	O-008-125
0.009	LAVENDER	O-009-062	O-009-125
0.010	LT. BLUE	O-010-062	O-010-125
0.012	GREEN	O-012-062	O-012-125
0.014	ORANGE	O-014-062	O-014-125
0.016	GREY	O-016-062	O-016-125
0.017	BROWN	O-017-062	O-017-125
0.019	RED	O-019-062	O-019-125
0.020	DK. BLUE	O-020-062	O-020-125
0.025	BLACK	O-025-062	O-025-125
0.030	BEIGE	O-030-062	O-030-125
0.035	DK. GREY	O-035-062	O-035-125
0.040	TEAL	O-040-062	O-040-125

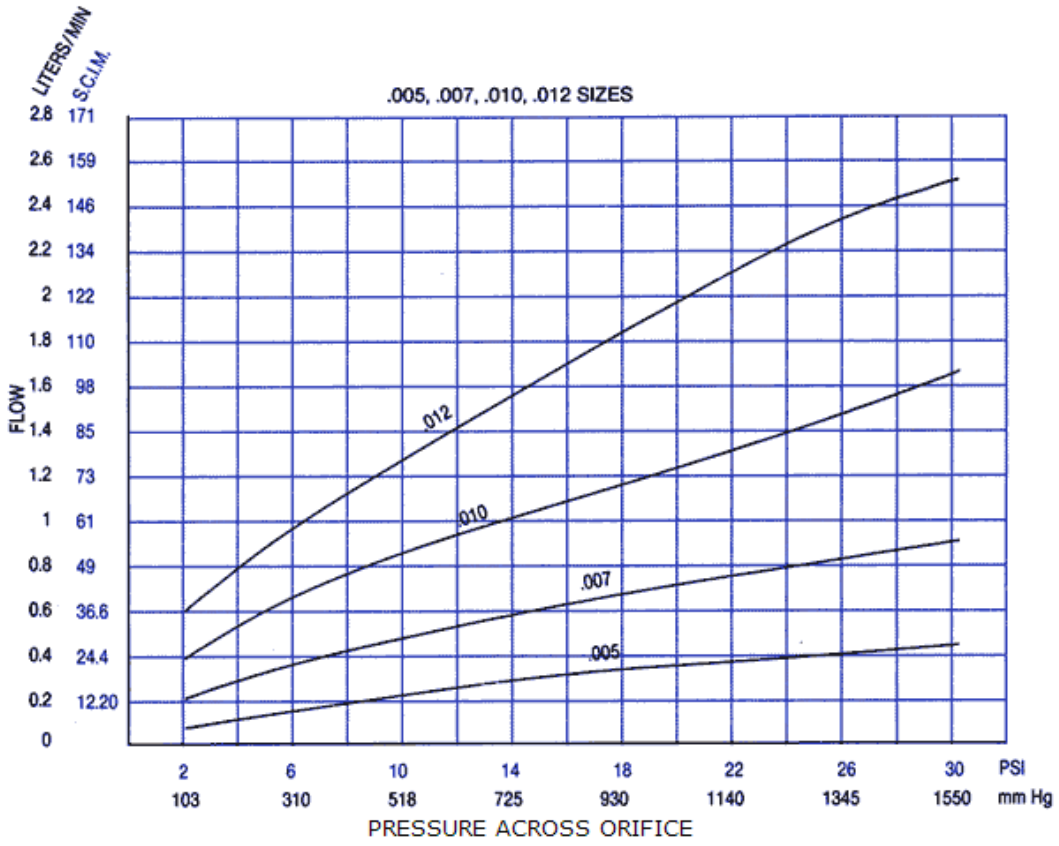
In-Line Filters

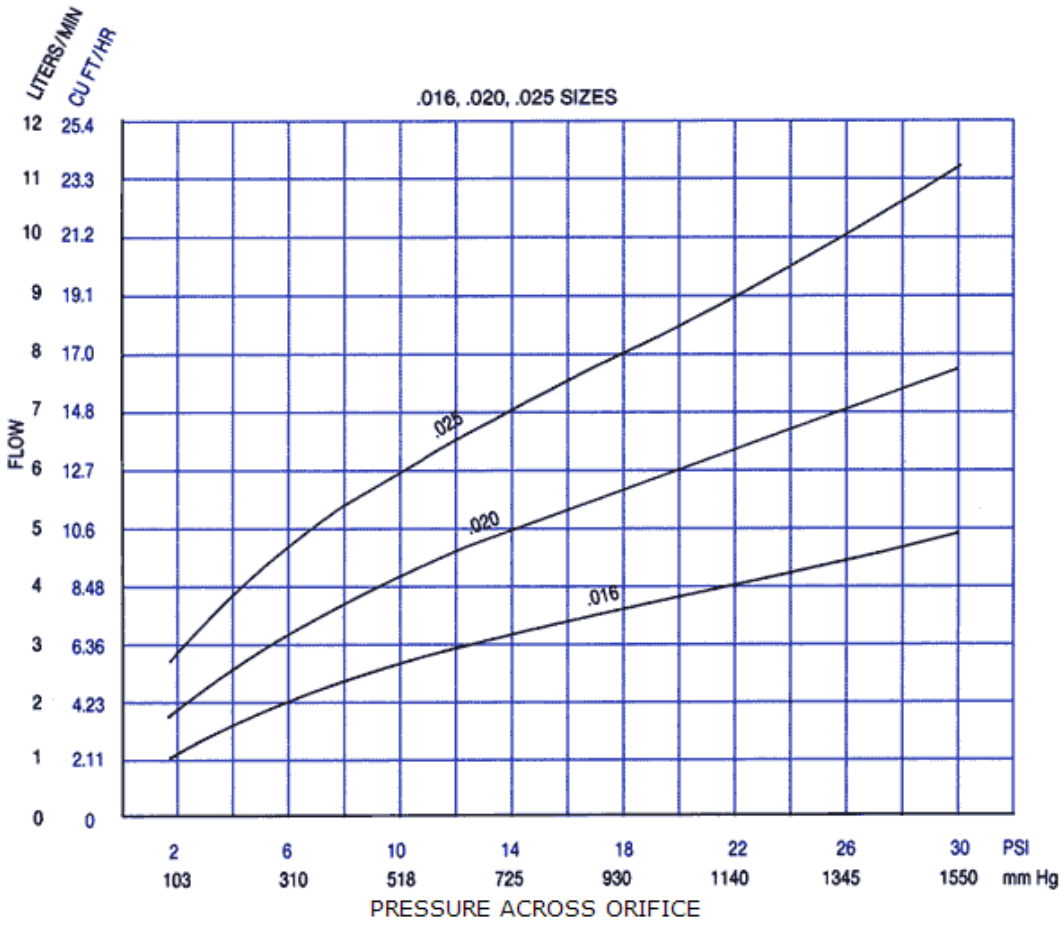
Disposable In-Line Filters have Type 304 stainless, Dutch weave screens. Clearly marked with size and flow direction arrow.

SPECIFICATIONS	
MATERIALS	FDA Approved Polycarbonate, Buna-N (Nitrite) O-Rings, Stainless Steel Screen

MICRON	COLOR	PART NUMBER	
		WITH 1/16 BARBS	WITH 1/8 BARBS
5	SMOKE	F-05-062	F-05-125
40	SMOKE	F-40-062	F-40-125
80	SMOKE	F-80-062	F-80-125

ORIFICE FLOW DATA





CV-062 SERIES

Check Valve

A check valve is a type of valve that allows fluids to flow in one direction but closes automatically to prevent flow in the opposite direction (backflow).

APPLICATIONS

*Medical *HVAC *Light Industrial *Process Control

*Pumps *Gas Mixers *Drip Irrigation

SPECIFICATIONS

REVERSE FLOW	< 0.15 SCIM (2.5 cc/min) @ 1 PSI Differential
MAXIMUM SUPPLY	30 PSI
CRACKING PRESSURE	< 0.8" Water Column
FORWARD FLOW	0.25 SCFM (7 LPM) at 5 PSI Supply
RECOMMENDED FILTRATION	5 micron
OPERATING TEMPERATURE	40° - 150° F (4° - 66° C)
PORT CONNECTIONS	Straight Connection for 1/16" ID Flexible Tubing

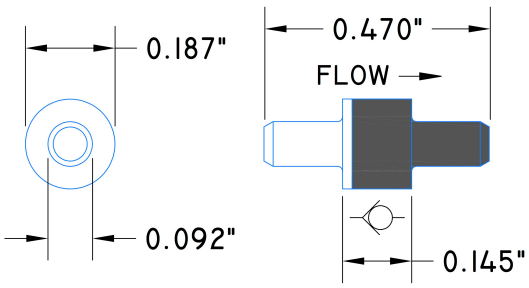
ORDERING INFORMATION

CV-062-_____

BODY
P = Polycarbonate (White ---> Black)
N = Noryl (Grey ---> Black)

Note: (Internal Seal = Silicone)

DIMENSIONS



CV-125 SERIES
Check Valve

A check valve is a type of valve that allows fluids to flow in one direction but closes automatically to prevent flow in the opposite direction (backflow).

APPLICATIONS

*Medical *HVAC *Light Industrial *Process Control
*Pumps *Gas Mixers *Drip Irrigation

SPECIFICATIONS

REVERSE FLOW	< 0.06 SCIM (1.0 cc/min) @ all pressures
MAXIMUM SUPPLY	100 PSI
CRACKING PRESSURE	< 0.5 PSI (Typically 0.3 PSI or 8" Water Column)
FORWARD FLOW	3.0 SCFM (85 LPM) at 30 PSI Supply
RECOMMENDED FILTRATION	5 micron
OPERATING TEMPERATURE	40° - 150° F (4° - 66° C)
PORT CONNECTIONS	Barbs for 1/8" ID Flexible Tubing

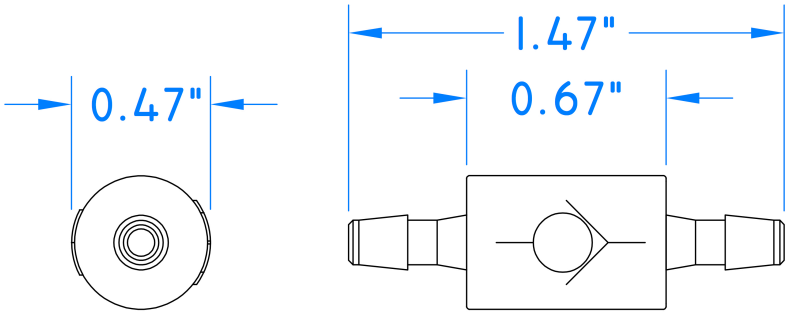
ORDERING INFORMATION

CV-125-_____

BODY
GN = Grey Noryl
BP = Black Polysulfone
WP = White Polycarbonate

Internal Materials:
Spring = 302 Stainless Steel
Seal = Buna-N (With Silicone Lubricant)
Ball = Acetal

DIMENSIONS



NV-30 SERIES

Precision Needle Valve

The NV-30 series is a precision adjustable flow control used in pneumatic and fluidic systems. 303 Stainless Steel construction provides excellent corrosion resistance. Flow control needle has 7 to 8 turns of precision adjustment, and maximum flow approximately equal to a 0.025″ orifice. Unique laminar flow design ensures sensitive, repeatable control. Perfect for use in application requiring precision gas metering, and circuit speed or sequencing control.

FEATURES

* **3 degree Pin Angle**
* **Subminiature Size**
* **Simple Panel Mount**
* **Fine Adjustment, 64 TPI**
* **Attractive Finish**
* **Barbed Fittings for flexible tubing**

SPECIFICATIONS

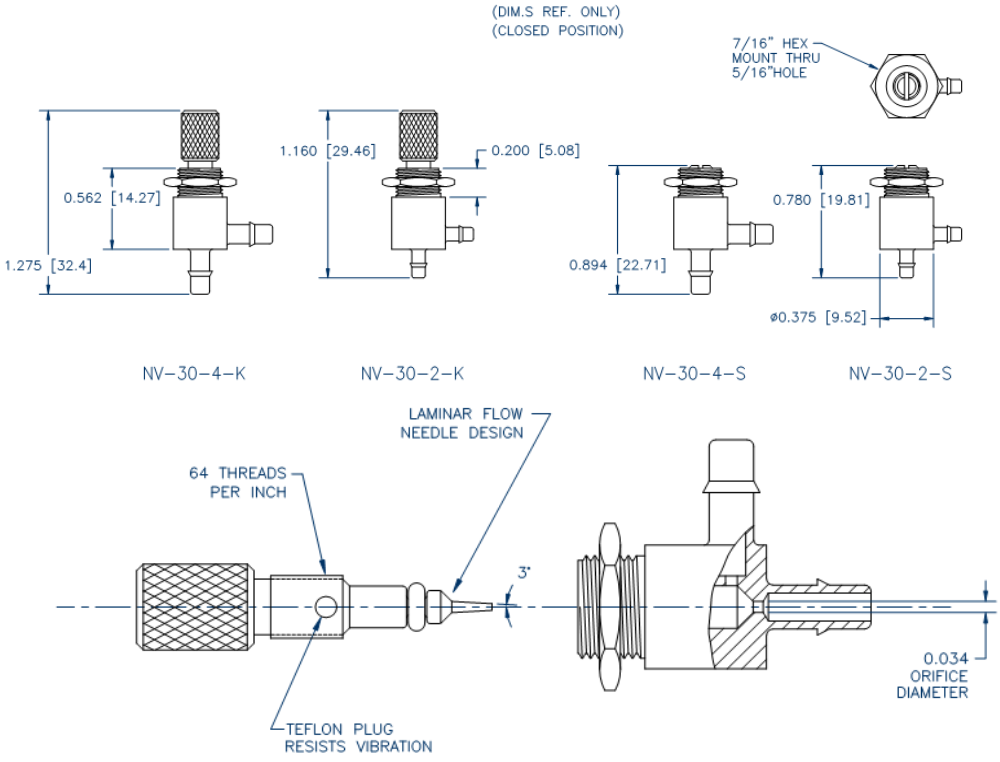
OPERATING PRESSURE	Vacuum through 180 PSI
MATERIALS	Body & Needle … 303 Stainless Steel Seal … Buna-N (Nitrile)
OPERATING TEMPERATURE	-40° to 200° F (-40° to 93° C)
RECOMMENDED FILTRATION	5 micron
PANEL MOUNT	Thru hole - 5/16" (0.312) Diameter Max. Panel Thickness - 0.15"

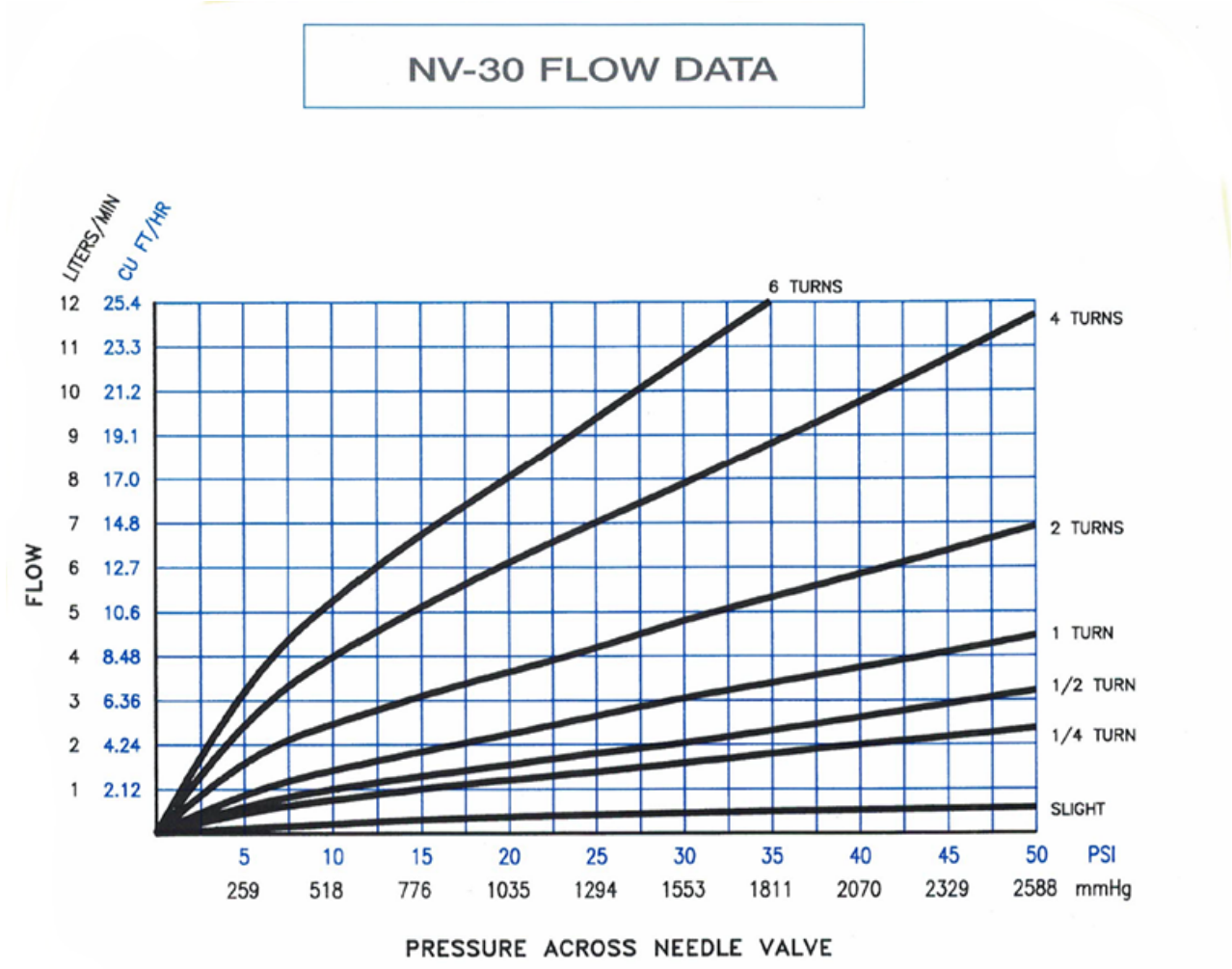
ORDERING INFORMATION

NV-30-_____-_____

FITTING SIZE	ADJUSTMENT STYLE
2 = 1/16" BARB	S = SCREWDRIVER
4 = 1/8" BARB	K = KNOB

MOUNTING DIMENSIONS

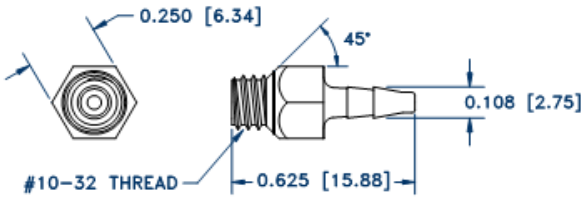


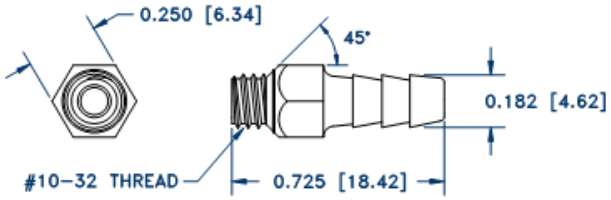

NV-30 FLOW DATA
LITERS/MIN
CU FT/HR
FLOW
12 25.4
11 23.3
10 21.2
9 19.1
8 17.0
7 14.8
6 12.7
5 10.6
4 8.48
3 6.36
2 4.24
1 2.12
6 TURNS
4 TURNS
2 TURNS
1 TURN
1/2 TURN
1/4 TURN
SLIGHT
5 10 15 20 25 30 35 40 45 50 PSI
259 518 776 1035 1294 1553 1811 2070 2329 2588 mmHg
PRESSURE ACROSS NEEDLE VALVE

BARBED FITTINGS

Barbed fittings fit Airtrol R-900 and V-900 series regulators, and all Airtrol switches. They are also compatible with components from most major pneumatic component manufacturers.

SIZE	MATERIAL	PART NUMBER
1/16 x 10-32	Nylon	B-062-N
1/8 x 10-32	Nylon	B-125-N
1/16 x 10-32	Polysulfone	B-062-P
1/8 x 10-32	Polysulfone	B-125-P
1/16 x 10-32	Clear Polycarbonate	B-062-C
1/8 X 10-32	Clear Polycarbonate	B-125-C





BARBED FITTINGS WITH ORIFICE INSERT

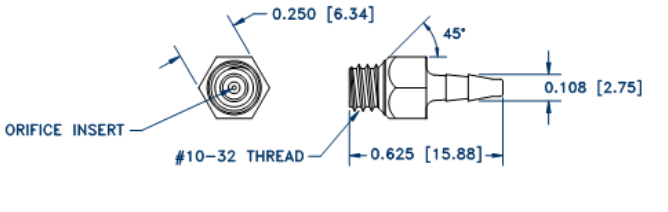
Barbed fittings with Orifice Insert

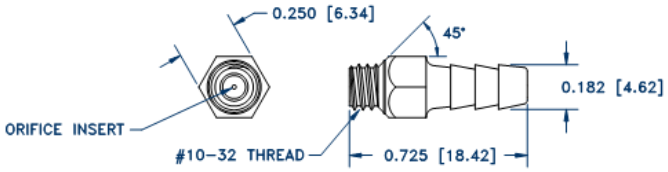
These barbed fittings feature an integral precision orifice.

SPECIFICATIONS

ACCURACY	See "Precision Orifices"
MATERIALS	FDA Approved Polysulfone/Polycarbonate
MAXIMUM OPERATING PRESSURE	100 PSI

SIZE	PART NUMBER	
	1/16 x 10-32	1/8 x 10-32
0.003	B-062-003	B-125-003
0.004	B-062-004	B-125-004
0.005	B-062-005	B-125-005
0.007	B-062-007	B-125-007
0.008	B-062-008	B-125-008
0.009	B-062-009	B-125-009
0.010	B-062-010	B-125-010
0.012	B-062-012	B-125-012
0.014	B-062-014	B-125-014
0.016	B-062-016	B-125-016
0.017	B-062-017	B-125-017
0.019	B-062-019	B-125-019
0.020	B-062-020	B-125-020
0.025	B-062-025	B-125-025
0.030	B-062-030	B-125-030
0.035	B-062-035	B-125-035
0.040	B-062-040	B-125-040





NOTE: These parts can also be made with clear Polycarbonate Barbs, Just add a "-C" to the end of the corresponding part number. ➔

APPLICATION NOTE #1

FITTINGS AND SEALANTS

When selecting a fitting and/or sealant for use with an Airtrol Component, the following parameters must be considered:

*Compatibility with the wetted materials.

*Compatibility with the system media.

*Ease of application.

Airtrol recommends plastic fittings whenever possible, especially in Airtrol Components which feature a female 10-32 port. Airtrol B-062-N and B-125-N barbed fittings seal bubble tight to 100PSI without the use of a sealant. The B-062-P and B-125-P barbed fittings are molded in polysulfone and can offer the added benefit of being solvent bonded in place. Contact an Airtrol application engineer for more information regarding this option.

When using Airtrol Components with a pipe thread port connection, the choice of sealant is of major concern. Sealants containing chlorinated solvents, cyanoacrylates, or any type of “thread locking” compounds must be strictly avoided. This includes sealant use in any part of a system where destructive fumes could be carried to an Airtrol Component.

Teflon tape is our primary recommendation for all applications.

For applications requiring the use of a pipe dope/sealant, recommended sources are listed below. Contact an Airtrol applications engineer for additional information regarding these products.

In pipe thread applications, it is important to remember that overtightening will break the plastic component. Airtrol recommends conservative use of teflon tape, followed by tightening no more than one turn beyond finger tight (PT-switches), or more than two turns beyond finger tight (800-series regulators), The pipe threads in Airtrol Components are 1/8-27 SAE-short series and may appear to be insufficiently engaged when properly installed.

SOURCES

General Purpose
Permatex Ind.
Division of Loctite
Newington, CT 06111
1-800-641-7376

Product: No More Leaks
P/N 80725

Distributor Info:
1-800-828-2524

Oxygen Compatible
Hernon Mfg. Inc.
121 Tech Drive
Sanford, FL 32771
(407) 322-4000

Product: 01242 Pipe Sealant

APPLICATION NOTE #2

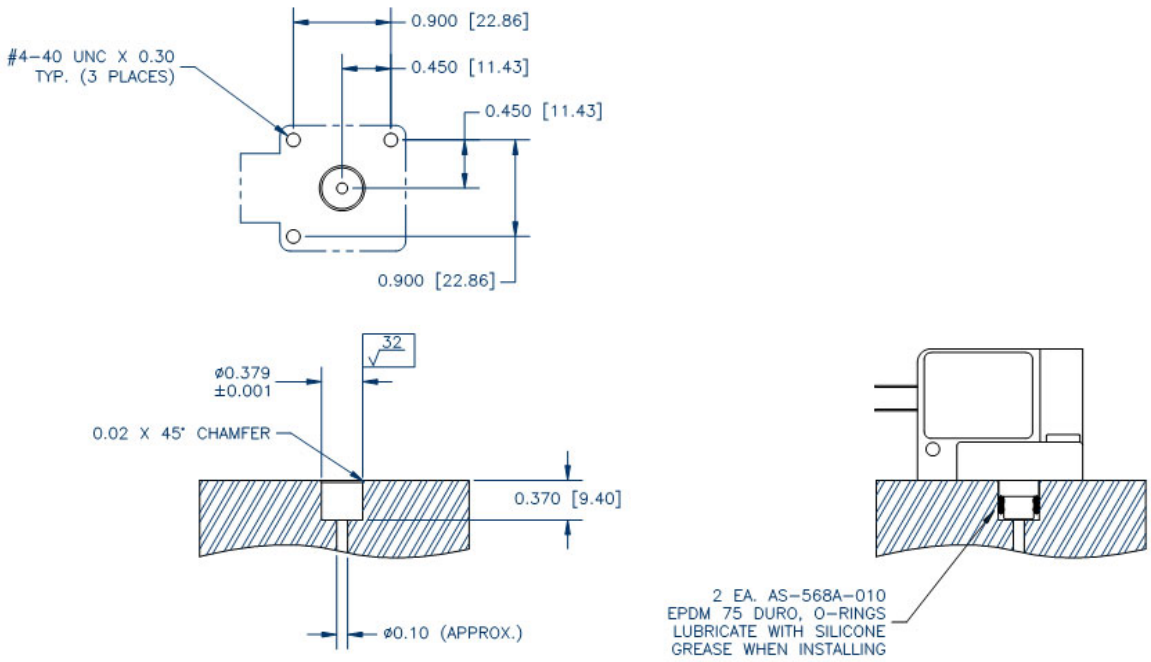
MANIFOLD MOUNT SWITCHES

Most Airtrol Components' pressure and vacuum switches are available in manifold mount configurations. Figure 1 shows the recommended manifold detail. Attention must be paid to the tolerance and surface finish of the .379 ID. Two EPDM 75 durometer O-rings are supplied with each unit. Two O-rings are recommended in case of surface imperfections, damage to an O-ring during assembly, etc. The O-rings must be lubricated with silicone grease during assembly. This not only eases the assembly procedure, it also enhances the sealing characteristics of the O-ring, especially in vacuum applications.

Typically, #4-40 x 5/8 SHCS are used to mount the switch to the manifold. Avoid overtightening the screws during assembly. "Threadlock" compounds should be avoided, as most will attack the polysulfone switch body.

For further information, contact an Airtrol Applications Engineer at 1-800-762-0758.

MANIFOLD MOUNT FOOTPRINT



APPENDIX A

AGENCY LISTINGS/APPROVALS

UL / CSA LISTINGS

The microswitch used in Airtrol Component's pressure and vacuum switches are UL recognized and CSA certified to the following specifications:

CURRENT RATING LISTED IN CATALOG	UL/CSA RATING
15A	15.1 Amps and 1/2 HP, 125 or 250 VAC. 1.2 Amp, 125 VDC; 1/4 Amp, 250 VDC 5 Amps, 120 VAC "L" (lamp load)
10A	10 Amps and 1/4 HP, 125 or 250 VAC. 1/2 Amp, 125 VDC; 1/4 Amp, 250 VDC 3 Amps, 125 VAC "L" (lamp load)
4A	4 Amps, 250 VAC 1/10 HP, 125 VAC
3A	3 Amps, 125, 250, 277 VAC 1/10 HP, 125 VAC
GOLD OPTION	0.1Amp, 125 VAC

MATERIAL APPROVALS

Components listed as polysulfone are made of UDEL P-1700 Polysulfone #937 (black). This material is approved by the National Sanitation Foundation Testing Laboratories for use in potable water applications, by the FDA for use in repeated contact with food products (177.2500) and by 3A Sanitary Standards for use in contact surfaces for dairy equipment.

Components listed as polycarbonate are made of Makrolon 2458 Series resin, and comply with USP Class VI (121°C), and FDA regulation 21 CFR 177.1580.

ELECTRICAL CONNECTORS

For switches with .187 quick-connect terminations

MANUFACTURER	PART NUMBER	DESCRIPTION
Molex	2191-3 (06-02-3031) 2211 (06-02-3011)	3 circuit connector 1 circuit connector
Both use terminal numbers 2176, 2328, 2698, 2799		

For switches with 110 quick-connect terminators

MANUFACTURER	PART NUMBER	DESCRIPTION
Molex/ETC	AA-2204, AA-1131, AA-2131	0.110 quick-connect

APPENDIX C

CHEMICAL RESISTANCE

When using AIRTROL products made from polysulfone or polycarbonate, please check material compatibility. Certain chemicals or contaminants can attack polysulfone and cause the product to fail. Chemical resistance data given in these tables is based on laboratory testing in normal conditions. The rating should be only used as a guide.

Inorganic Chemicals
73° F (22° C)

ACIDS	
Chromic Acid, 12%	NR
Chromic Acid 60%	NR
Hydrobromic Acid, 20%	R
Hydrochloric Acid, 10%	R
Hydrochloric Acid, 15%	R
Hydrochloric Acid, 20%	R
Hydrochloric Acid, 37%	R
Hydrofluoric Acid, 50%	LR
Nitric Acid, 10%	*
Nitric Acid, 20%	R
Nitric Acid, 40%	R
Nitric Acid, 71%	NR
Phosphoric Acid, 20%	R
Phosphoric Acid, 50%	R
Phosphoric Acid, 85%	R
Phosphoric Acid, 100%	R
Sulfuric Acid, 40%	R
Sulfuric Acid, 65%	R
Sulfuric Acid, 75%	R
Sulfuric Acid, 85%	R
Sulfuric Acid, 95%	NR
BASES	
Ammonia, 15%	R
Ammonia 29%	R
Potassium Hydroxide 20%	R
Potassium Hydroxide 35%	R
Sodium Hydroxide, 5%	R
Sodium Hydroxide, 10%	R
Sodium Hydroxide, 25%	R
Sodium Hydroxide, 50%	R
OTHER	
Ammonium Persulfate, 24%	R
Ammonium Persulfate, 40%	R
Antimony Trichloride, Sat.	*
Black Liquor	*
Calcium Chloride, Sat	R
Calcium Hypochlorite	R
†Chlorine, 100% Wet	*
Cupric Chloride, Sat,	R
Ferrous Sulfate, Sat	R
Green Liquor	R
Hydrogen Peroxide, 100%	R
Oxygen	R
Ozone	R
Potassium Nitrate, Sat.	R
Sodium Carobonate, 1.7%	R
Sodium Hypochlorite, 5.25%	R
Sodium Hupochlorite, 1.7%	R
Sodium Silicate, 1.7%	*
Water	R
Zinc Chloride, Sat.	R

Organic Chemicals
73° F (22° C)

Acetic Acid, 10%	R
Acetc Acid, 20%	R
Acetic Acid, 50%	R
Acetic Acid, Glacial	LR
Acetic Anhydride	NR
Acetone, 5%	R
Acetone 100%	NR
Acetonitrile, 100%	NR
Benzene, 100%	NR
Butanol, 100%	LR
Butyl Acetate, 100%	NR
Butyl CELLOSOLVE Solvent, 100%	R
Butylated Hydroxy Anisole, 100%	LR
Butylated Hydroxy Toluene, 100%	R
Calcium Proplanate	R
CARBITOL Solvent, 100%	R
Carbon Tetrachloride, 100%	R
CELLOSOLVE Solvent, 100	R
Chlorobenzene, 100%	NR
Chloroform, 100%	NR
Citric Acid, 40%	R
Cottonseed Oil, 100%	R
Crude Oil, Texas, 100%	R
Cyclohexane, 100%	R
Cyclohexaneone, 100%	NR
Diethyl Ether, 100%	NR
Diisopropyl ether, 100%	NR
Dioctyl Phthalate 100%	R
Ethanol, 100%	R
Ethanolamine, 100%	R
Ethyl Acetate, 100%	NR
2-Ethyl Butyric Acid, 100%	R
Ethylene Diamine, 92%	LR
Ethylene Glycole, 100%	R
Formaldehyde, 100%	R
"Freon" 11, 100%	NR
"Freon" 22, 100%	NR
"Freon" BF, 100%	NR
"Freon" TMC, 100%	NR
Furfural	NR
Gasoline, 100%	LR
Glucose	R
Glycerine, 100%	R
n-Heptane, 100%	R
n-Hexane, 100%	R
Isooctane, 100%	R
Isopropanol, 100%	LR
Kerosene, 100%	LR
Lactic Acid, 60%	R
Lauric Acid	*
Linseed Oil, 100%	R
Malonic Acid 100%	R

MEK, 100%	NR
Methanol, 100%	R
Methylene Chloride, 100%	NR
Morpholine	NR
Oleic Acid, 100%	R
Oxalic Acid, 20%	R
Pyrideine	NR
Sorbic Acid, 100%	R
1, 1, 2, 2-Tetracholoroethane, 100%	NR
Tetrachloroethylene 100%	NR
Tributyl Phosphate	NR
Turpentine, 100%	LR
"Varsol" 100%	R
VM&P Naphtha,100%	R
Xylene, 100%	NR
PIPE SEAL COMPOUNDS	
"Loc-Tite" AV 100%	NR
"Loc-Tite" B, 100%	NR
"Loc-Tite" E, 100%	NR
"Masters" Metallic, 100%	R
"Permatex" #2, 100%	R
"Teflon" TF-15, 100%	R
MISCELLANEOUS COMMERICIAL PRODUCTS	
"Clobber" Acidi Drain Cleaner, 100%	LR
"Copperbrite" Copper Cleaner,100%	R
"Duckseal Sealant," 100%	LR
OILS:	
ASTM Oil # 1, 100%	R
ASTM Oil #2, 100%	R
ASTM Oil #3, 100%	R
ASTM Oil #10, 100%	R
SILICONES:	
"Silastic" 140, 100%	R
RTV-88 (GE), 100%	LR
RTV-106(GE)	R
RTV-109 (GE)	R
"Zephiran" Disinfectant, 100%	R

Key to ratings:

R Recommended
LR Limited Recommendation (many applications possible depending on stress level.)
NR Not Recommended
***** No Data