JOHNSON CONTROLS

C-9500
Two-Position Pilot Cumulator

The C-9500 Two-Position Pilot Cumulator is designed to switch its output from zero to full input pressure at a preselected pressure. It provides two-position output from a proportional input signal.

The C-9500 features an adjustable set point and differential. The set point is adjustable from 4 to 20 PSIG (28 to 140 kPa) and is factory set at approximately 9 PSIG (63 kPa); the differential is adjustable from 1 to 7.5 PSI (7 to 52.5 kPa) below the set point and is factory set at approximately 1 PSI (7 kPa). When the input pressure is below the set point, the output will be zero. When the input reaches the set point, the output will switch and become equal to the input. Beyond the set point, the output pressure will increase at a 1 to 1 ratio with a rising input pressure.

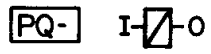
Operation

In a typical application (see Fig. 2), the input of the C-9500 is connected to a proportional controller and the output is connected directly to the valve actuator. As the controller output pressure increases, the output of the C-9500 remains at zero until the controller output pressure reaches the set point of the C-9500. At that pressure, the C-9500 snaps open and the input is delivered to the output, closing the valve completely. After the controller completes its cycle, its output pressure decreases and the output of the C-9500 also decreases. As the controller output pressure reaches 8 PSIG (56 kPa), the pilot chamber of the C-9500 snaps closed and the output goes to zero, opening the valve.

Note: The signal to the C-9500 must be a high volume signal; a low volume signal or a situation where the output line is very long may cause the C-9500 to cycle. This device is specifically designed for direct mounting on the controlled device (as described in the installation section) to keep its output working capacity at a minimum.

Fig. 1: C-9500 Two-Position Pilot Cumulator

Application and Drawing Identification



Specifications

Product		C-9500-1 Two-Position Pilot Cumulator
Action		Two-Position, Direct Acting
Ratio		1:1 Beyond Set Point Value
Set Point		Factory Set at Approximately 9 PSIG (63 kPa), Adjustable from 4 to 20 PSIG (28 to 140 kPa)
Differential		Factory Set at Approximately 1 PSI (7 kPa), Adjustable from 1 to 7.5 PSI (7 to 52.5 kPa)
Max Input Pressure		25 PSIG (175 kPa)
Materials	**Body**	Glass-Filled Noryl
	Diaphragm	Synthetic Elastomer
Air Connections	**Input**	1/8 in. NPT Barbed Fitting for 5/32 or 1/4 in. O.D. Polytubing
	Output	1/8 in. NPT with Thread Sealant
Mounting		Directly to Controlled Device
Ambient Operating Temperature Limits		40 to 125°F (4 to 52°C)
Ambient Storage Temperature Limits		-20 to 150°F (-29 to 66°C)
Max Air Consumption		5 SCIM (1.4 mL/s)
Output Flow Capacity		11 SCIM/PSI (0.4 mL/s/kPa) Beyond Set Point Value
Shipping Weight		0.2 lb (.09 kg)

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

Part No. 24-1233-18, Rev. B
Code No. LIT-7171445

Installation

The C-9500 is designed for direct mounting to the actuator (it is simply hand tightened on) and features a 1/8 in. NPT output connection and a 1/8 in. NPT barbed fitting for 5/32 or 1/4 in. O.D. polytubing. Only one actuator can be controlled by each C-9500.

For applications where the output from the C-9500 is connected to a low capacity device (for example a C-5226 or a P-7100), the maximum line length must not exceed the following:

5 ft (152 cm) for 5/32 in. O.D. polytubing

3 ft (91 cm) for 1/4 in. O.D. polytubing

Calibration (See Fig. 3)

When making field adjustments, the set point must be adjusted before the differential. Changes to the set point will affect the differential; however, the differential may be adjusted without affecting the set point.

Set Point Adjustment

1. Remove the bottom cap from the cumulator body.
2. Using a screwdriver, rotate the spring adjusting screw clockwise to decrease or counterclockwise to increase the set point. One full turn of the screw in either direction will provide approximately a 2 PSI (14 kPa) change in the set point.
3. In order to check the set point, the output must be dead-ended. With the bottom cap opening blocked and an X-200-140 Hypodermic Needle Test Probe (ordered separately) inserted in the test point, determine and reset the C-9500 to the desired set point. When the desired set point is obtained, replace the bottom cap.

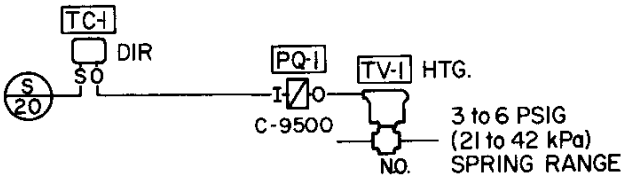


Fig. 2: Typical Application using C-9500

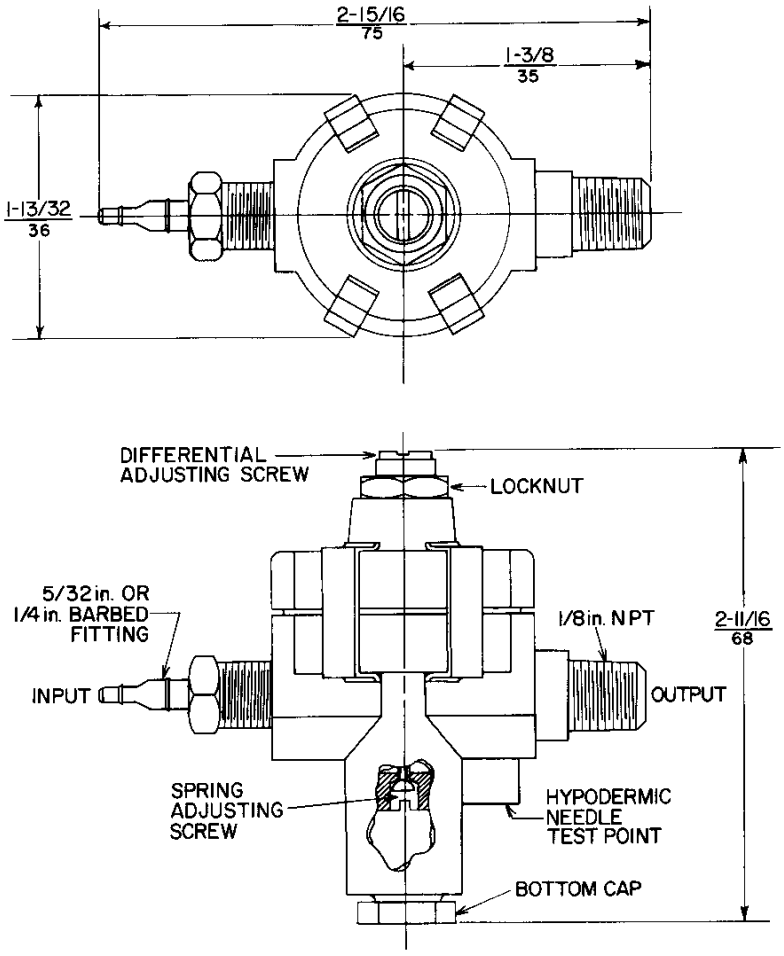


Fig. 3: Dimensions $\frac{\text{in.}}{\text{mm}}$

Differential Adjustment

1. Loosen the locknut.
2. Using a screwdriver, slowly rotate the differential adjusting screw clockwise to increase or counterclockwise to decrease the differential. Turn the screw approximately 1/8 of a turn at a time.
3. To check the differential, observe the pressure on the output gage for the point at which the pressure drops to zero. When the desired differential is obtained, retighten the locknut.

The maximum differential is obtained by slowly turning the screw clockwise into the body until it stops, then backing it out 1/8 of a turn. **Note: The screw will stop because it contacts the valve disc. Be careful not to force the screw down onto the disc.** Refer to Fig. 4 for the approximate maximum differential pressures obtainable for each respective set point.

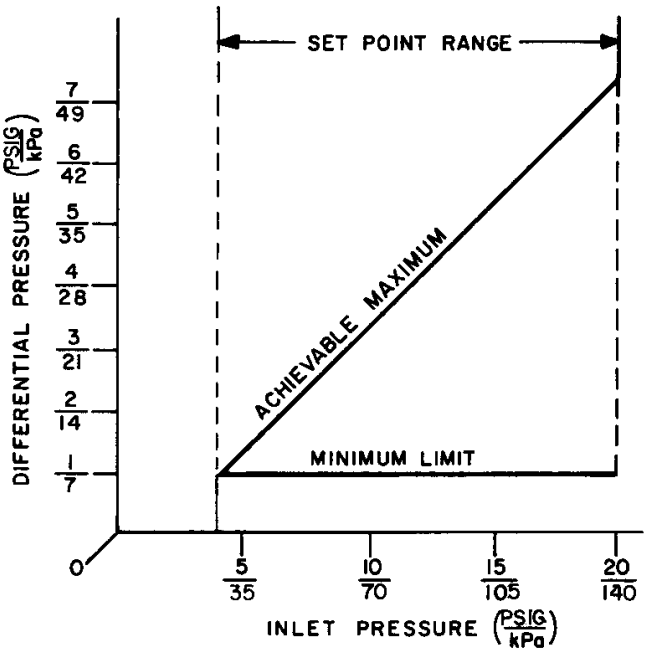


Fig. 4: Maximum and Minimum Differential Adjustments

Repair Information

If the C-9500 fails to operate within its specifications, unit replacement is required; field repairs cannot be made.

Note: When checking or replacing the C-9500, be sure that the change in output pressure will not upset the system and cause damage (for example allow a coil to freeze, burn out a heater, collapse duct work).

Notes

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