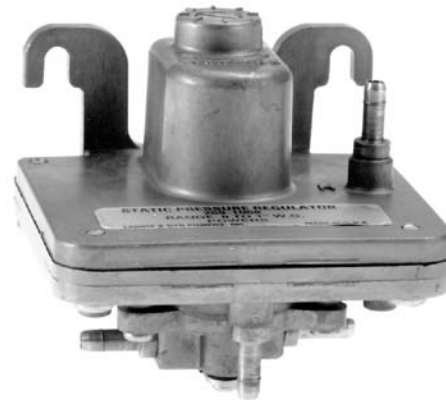


# Powers™ Controls

## Static Pressure and Liquid Level Regulator



<b>Description</b>	The PR 269 Static Pressure Regulator and Liquid Level Regulator is a pneumatic differential controller that can be referenced to atmospheric pressure. It measures static pressures and pneumatically controls a damper or similar device to maintain a constant air volume discharge in an air handling unit. A model that measures head pressure due to liquid level and pneumatically controls a valve to maintain a constant liquid level is also available.	
<b>Features</b>	<ul style="list-style-type: none"> <li>• Removable restriction for ease in servicing.</li> <li>• Integral mounting bracket for either horizontal or vertical mounting.</li> <li>• An unlimited length of tubing may be connected to each sensing port.</li> </ul>	
<b>Accessories</b>	Static Pressure Sensor Kit	189-142
<b>Product Numbers</b>	See Table 1.	
<b>Application</b>	<p>The PR 269 Static Pressure Regulator is used to control velocity (high velocity mixing boxes), static or differential pressure, and can be referenced to atmospheric pressure.</p> <p>The liquid level regulator is primarily used to maintain liquid level when controlling an industrial process.</p>	
<b>Specifications</b>	Control Action	Direct
	Air Supply Pressure	
	Normal	20 psi (140 kPa)
	Maximum	30 psi (207 kPa)
	Maximum Ambient Temperature	120°F (50°C)
	Maximum Allowable Pressure in "H" and "L" Port	10-inch W.G. (2.5 kPa) Differential

**Specifications,  
 Continued**

Number of turns for setpoint Change of one-inch W.G.	
269-1066	6 turns (approx.)
269-1067	1/2 turn (approx.)
269-1068	6 turns (approx.)
269-1069	1/4 turn (approx.)
Response	
269-1066, 269-1067 and 269-1068	0.005-inch W.G. (1.2 Pa)
269-1069	0.01-inch W.G. (2.5 Pa)
Air Connections	Barb fitting for 1/4-inch (6.4 mm) O.D. Poly Tubing
Weight	1.5 lb (0.7 kg)

**Table 1. Product Numbers.**

Product Numbers	Differential Range	Mounting	Sensitivity (Fixed)
269-1066	0.05 to 1.00" W.G. (12 to 249 Pa)	Upright	2.25 psi per 0.01" W.G. (6.2 kPa per Pa) 40 SCIM Restrictor
	0.20 to 1.00" W.G. (50 to 249 Pa)	Upside Down	
269-1067	0.05 to 3.00" W.G. (12 to 746 Pa)	Upright	1 psi per 0.01" W.G. (2.8 kPa per Pa) 40 SCIM Restrictor
	0.20 to 3.00" W.G. (50 to 746 Pa)	Upside Down	
269-1068	0.05 to 1.00" W.G. (12 to 249 Pa)	Upright	2.25 psi per 0.01" W.G. (6.2 kPa per Pa) 80 SCIM Restrictor
	0.20 to 1.00" W.G. (50 to 249 Pa)	Upside Down	
269-1069	*Liquid Level 1.00 to 8.00" W.G. (250 to 1990 Pa)	Upright or Upside Down	1 psi per 0.1" W.G. (0.3 kPa per Pa) 40 SCIM Restrictor

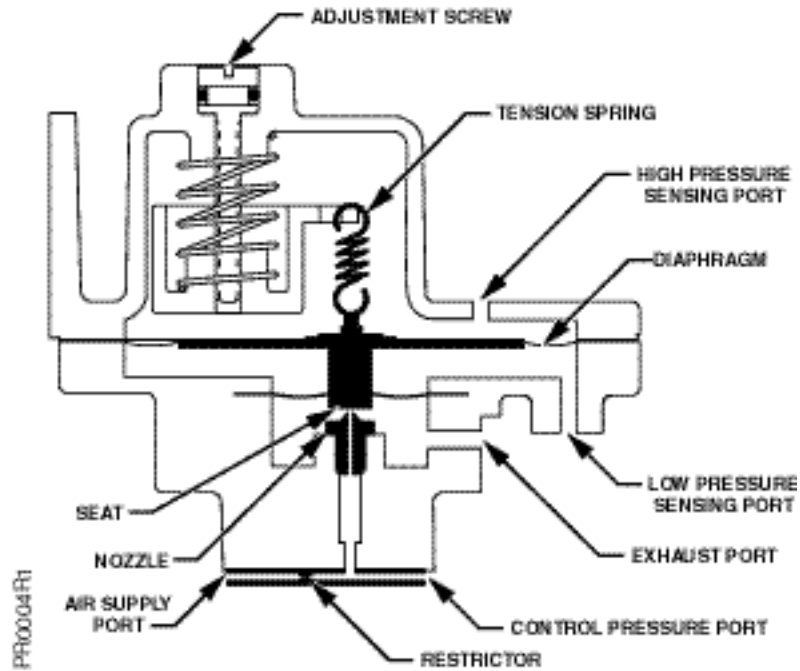
\* This is not a differential range, "H" and "L" ports are internally connected.

**Operation**

The PR 269 Regulator is a constant bleed instrument. When controlling at its setpoint, the nozzle leaks air at a rate that maintains a predetermined pressure in the control line. When the sensing pressure increases above the setpoint, the diaphragm moves the seat closer to the nozzle. This reduces the leakage and increases the control pressure. When the sensing pressure decreases below the setpoint, the seat moves away from the nozzle, increasing the leakage and decreasing the control pressure. Air leakage from the nozzle wastes to atmosphere through the exhaust port.

The adjustment screw changes the force exerted on the diaphragm by the tension spring. When turned clockwise, the force is increased. A greater sensing pressure is required to move the diaphragm and seat toward the nozzle and the setpoint is increased.

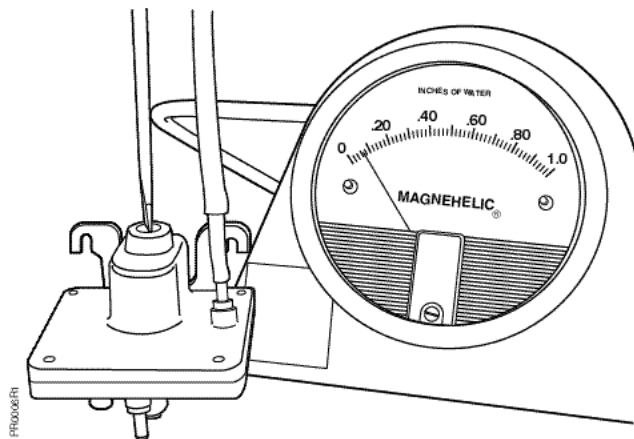
**Operation,  
 Continued**



**Figure 1. Operation Diagram.**

**Installation**

1. The PR 269 Regulator may be mounted in any position, but the operating range is affected accordingly. In addition, the regulator must be calibrated in the position in which it will be used. When mounted upright, as shown in Figure 2, minimum operating pressure is 0.05-inch W.G. (12 Pa). The same pressure applies when the regulator is rotated 90°. But when rotated 180° (adjustment screw pointing downward), the minimum operating pressure is 0.20-inch W.G. (50 Pa).



**Figure 2. Mounting in an Upright Position.**

2. Connect the high pressure sensing line to port "H" and the low pressure sensing line to port "L". Connect constant 20 psi (138 kPa) air supply to port "S" and the control pressure to port "R".

**NOTE:** When using this controller for velocity pressure control applications, the exhaust port should be connected to the high static pressure sensing line (Port H) to equalize the pressure in these two chambers and obtain better response.

## Installation, Continued

3. Siemens Building Technologies recommends that the regulator be fed by separate air supply to ensure constant air source. This is because the control pressure varies with the supply pressure, and increases 1 psi for each 5 psi (35 kPa) increase in supply pressure. For example, if the control pressure is 7 psi (48 kPa) with 20 psi (138 kPa) supply, it will rise to 8 psi (55 kPa) with 25 psi (173 kPa) supply, with W.G. pressures remaining constant.
4. There is no limitation on the length of tubing that can be connected to the "H" and "L" ports. For practical reasons it should not exceed 50 feet (15 m) of 1/4-inch (6.3 mm) tubing.
5. Consideration should be given in using the regulator with long branch lines. See *TB 113* (155-202P25) for air capacities.
6. The regulator may be mounted on either a vertical or horizontal surface.

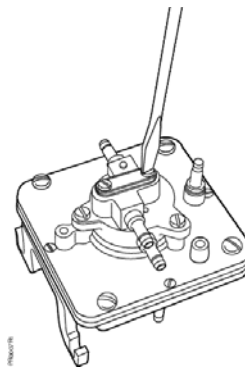
The installation is now complete.

## Calibration

1. Connect a static pressure gauge that covers the range to be controlled. Tee it into the sensing line between the sensing tip (installed in duct) and the regulator. Place the tee as close to the regulator as possible for convenience in noting pressure and making adjustment.
2. With the system operating, note the sensing static pressure. If pressure is below the desired control point, slowly rotate the adjustment screw clockwise. Allow control to settle out and check pressure. If not at control point, readjust.

**NOTE:** The system must have sufficient capacity to bring the pressure up to the control point.

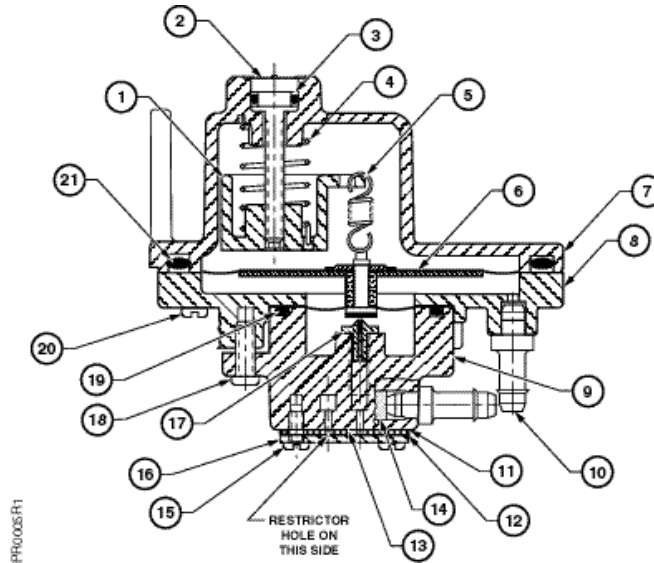
3. If pressure is above the desired control point, slowly rotate the adjustment screw counterclockwise. Allow control to settle out and check pressure. Readjust, if necessary.
4. When the system is under control, remove the static pressure gauge and tee.



**Figure 3. Removing the Restrictor.**

**Maintenance,  
 Continued**

1. The regulator incorporates two filters and an 0.007-inch diameter restrictor in the inlet. If the regulator does not pass control pressure as setpoint is changed, restrictor may be clogged.



**Figure 4. Components.**

**Table 2.**

Item	Description	Number Required	Material
1	Adj. Spring Holder	1	Zamac
2	Adjusting Screw	1	Steel
3	O-ring	1	Buna N
4	Bias Load Spring	1	Steel
5	Tension Spring	1	Steel
	Tension Spring (269-1067 only)	1	Steel
6	Diaphragm Assembly	1	-
	Diaphragm (269-1069 only)	1	-
7	Upper Housing	1	Zamac
8	Middle Housing	1	Zamac
9	Lower Housing	1	Zamac
10	Tube Connector	4,5	Brass
	Plug	1	Brass
11	Lower Gasket	1	Neoprene
12	Upper Gasket	1	Neoprene
13	Restriction Plate	1	Brass
	Restriction Plate - 80 SCIM (269-1068 Only)	1	Brass
14	Filter	2	Polyurethane
15	No. 4 - 40 x 1/4 Long Pan Head Screw	2	Steel
16	Restriction Cover	1	Steel
17	Nozzle	1	Brass
18	No. 6 - 32 A 7/16 Long Pan Head Screw	3	Steel
19	O-ring	1	Buna N
20	No. 8 - 32 x 1/2 Long Pan Head Sems Screw	4	Steel
21	O-ring	1	Buna N

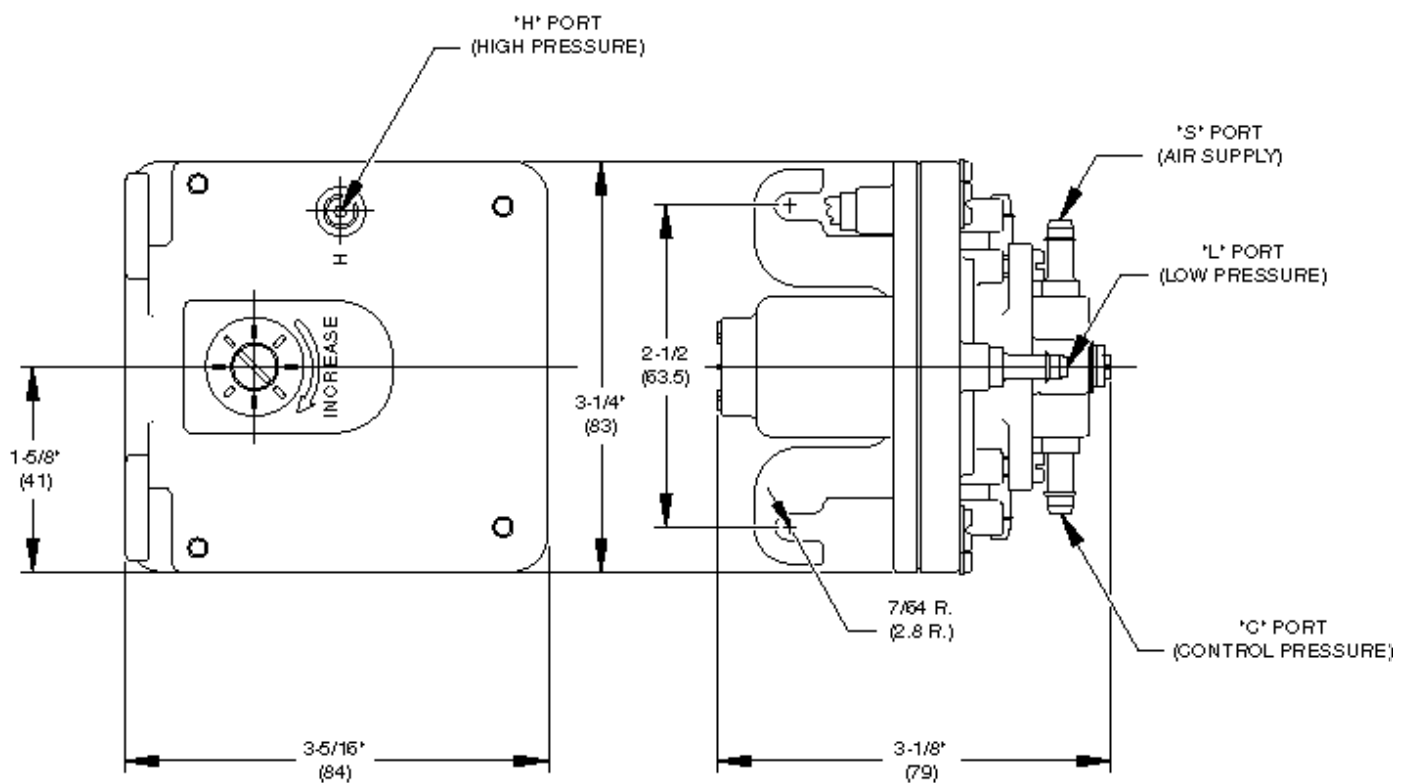
## Maintenance, Continued

**NOTE:** Item numbers refer to Figure 4 and Table 2.

2. If the restrictor is clogged, replace this plate using the replacement parts in Restriction Plate Kit 188-159. The kit includes items (11), (12), and (13). Remove the two screws (15), holding the cover (16). Remove the old gaskets (11 and 12), and plate (13). Reassemble with the new kit parts, putting them in the same relative positions as the original parts. Ensure that the gasket connecting the two holes is between the restriction plate and the cover. If the regulator is still inoperative, return to factory.

**NOTE:** The regulator should not be disassembled. Precision fixtures are used to properly align parts.

## Dimensions



NOTE:  
DIMENSIONS IN PARENTHESES  
ARE MILLIMETERS (mm)

Figure 5. Dimensions.

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