Bell & Gossett
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INSTRUCTION MANUAL
V57050B

SRS Pneumatic Purge Valve

**WARNING LABEL PART NO. V56845
INSTALLED IN THIS LOCATION.
IF MISSING, IT MUST BE REPLACED.**

INSTALLER: PLEASE LEAVE THIS MANUAL FOR THE OWNER'S USE.

SAFETY INSTRUCTIONS

This safety alert symbol will be used in this manual to draw attention to safety related instructions. When used, the safety alert symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD.

DESCRIPTION

The SRS Pneumatic Purge Valve is an air-operated diaphragm valve with programmable timer. It is used to purge sediment from an open or closed loop hydronic system that is separated out and collected in the bottom of the SRS.

OPERATIONAL LIMITS

Maximum Fluid Operating Temperature: 250°F (121°C)

Maximum Fluid Operating Pressure: 150 PSI (1034 kPa)

Min/Max Ambient Temperature: 32-130°F (0-54°C)

Min/Max Control Air Pressure: 65-145 PSI (450-1000 kPa)

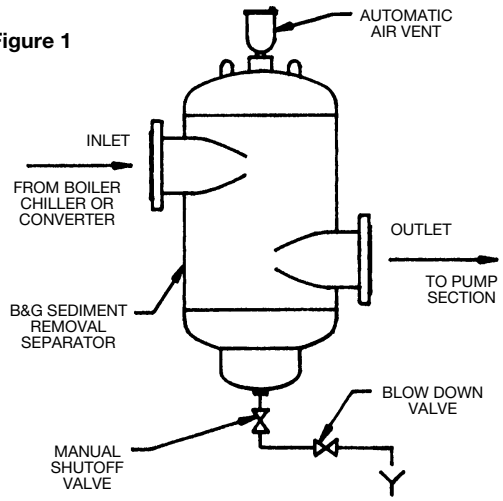
INSTALLATION INSTRUCTIONS

Connections Required To Valve/Timer:
120V AC (±10%) to timer 3-terminal strip.
Air connection to 1/4" FNPT port on solenoid
Valve. 1" FNPT inlet and outlet.

1. Reference Sediment Removal Separator Instruction Manual A05767.
2. For best results, purge valve/timer should be installed upstream of any pipe bends.
3. The purge valve/timer can be installed in any orientation.
4. A manual gate or ball valve is recommended between the SRS and the purge valve/timer in the event that the purge valve needs repair. During normal operation, this manual valve must remain fully open.

CAUTION: The use of PTFE impregnated pipe compound and PTFE tape on pipe threads provides lubricity which can lead to overtightening and breakage. Do not overtighten. Failure to follow this instruction can result in MODERATE personal injury from hot water and/or property damage.

Figure 1



5. Pipe as required to allow gravity flow of sediment and water, and proper drainage.
6. Apply approximately 2 wraps of PTFE tape to the male end of 1" field piping as it comes from the SRS and recommended service valve, and install into the inlet of the 1" FNPT connection of the purge valve. Do the same for the 1" FNPT outlet and run the piping to a nearby drain.
7. Run air for the valve in accordance with local code. Be certain that the minimum and maximum control pressure for the air are complied with. Purchase a 1/4" air hose adapter, apply PTFE tape to the threads, and insert into the 1/4" air port on the side of the solenoid valve as shown in Figure 2. Then attach tubing.

Figure 2

WARNING: Water at temperatures above 100°F (38°C) can be very hazardous. Piping from valve to drain should be such that there is no risk of exposure of hot water to personnel or equipment. Failure to follow these instructions could result in serious personal injury or death and property damage.

WARNING: Electrical shock and potential circuit damage. Disconnect power before beginning installation. Failure to follow these instructions could result in serious personal injury or death and property damage.

WARNING: Improper wiring and wire can cause electrical shock and fires. Wiring connections must be made in accordance with all applicable electrical codes and ordinances. Use copper wire only. Failure to follow these instructions could result in serious personal injury or death and property damage.

8. Install 120V AC to the timer per local code. Remove the timer cover to expose the 3 terminal strip. Connect 120V AC to the terminal strip. Attach the middle terminal to ground. These connections provide the power for the solenoid and timer. See Figure 3.

OPERATING INSTRUCTIONS

The timer is factory set as follows:
Cycle Time (how often the valve opens): 4 hrs.
Purge Duration (how long valve remains open per cycle): 10 sec

At start-up, the valve can be manually purged by depressing the button located on the side of the solenoid. (See Figure 4). We recommend manually purging the valve approximately every 30 minutes for 2 hours to determine if the factory setting is sufficient to handle the sediment problem in the system. Keep in mind that the first hour of start up will typically have a greater concentration of sediment than that found after several hours of operation.

If the factory setting is insufficient, adjustment is made by a series of DIP switches in the timer. The switches are accessed by removing the cover of the timer. Figure 3 is a sketch of the timer assembly, and Figure 5 is a diagram of the DIP switches and the range of settings available.

TIMER CONNECTIONS & ADJUSTMENTS

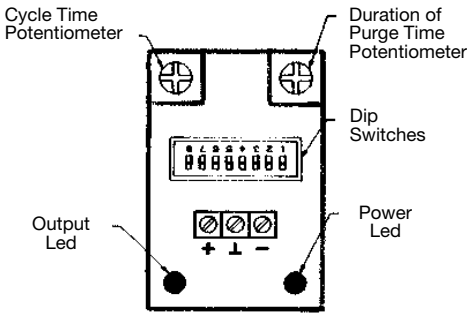


Figure 3

		t_{on}					t_{off}		
t_{min}	t_{max}	1	2	3	4	5	6	7	8
.5 s	10 s	down	down	down	down	up	down	down	down
1.5 s	30 s	down	down	up	down	up	down	down	up
5 s	100 s	down	up	down	down	up	down	up	down
.5 min	10 min	down	up	up	down	up	down	up	up
1.5 min	30 min	up	down	down	down	up	up	down	down
5 min	100 min	up	down	up	down	up	up	down	up
12 min	240 min	up	up	down	down	up	up	up	down
.5 h	10 h	up	up	up	down	up	up	up	up

CAUTION: Changing the #4 and #5 setting can result in excessive water loss. Do not change these settings. Failure to follow this instruction can result in property damage.

POTENTIOMETERS

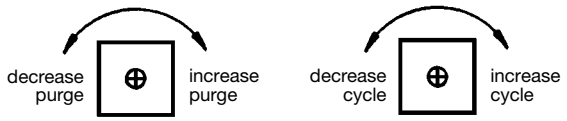


Figure 5

As indicated in Figure 5, there are 8 ranges to choose from. The potentiometers below the DIP switches are used to adjust the settings within the desired range. DIP switches 1-3 are used to adjust the duration. DIP switches 6-8 are used to adjust the cycle. Note that setting of time is proportional, e.g. 8 sec in the .5 s - 10 s range becomes 8 h when changed to the .5 - 10 h range. Adjustment is as follows:

DANGER: ELECTRICAL SHOCK HAZARD: Disconnect or otherwise interrupt power to the timer before programming the unit. Failure to follow these instructions will result in serious personal injury or death.

1. Disconnect or otherwise interrupt power to the timer before programming the unit.
2. Remove cover of timer (using a screw driver to remove the screw in the center of the cover).
3. Calculate the percentage of the cycle range required.
4. Change the DIP settings 1-3 and/or 6-8 to a lower range.
5. Adjust potentiometers as labeled in Figure 5 to fine-tune to desired setting:
   Counter clock-wise (CCW) = decrease
   (t_{min} is maximum CCW setting)
   Clock-wise (CW) = increase
   (t_{max} is maximum CW setting)
6. Connect the power to the timer and observe the results. Determine if additional adjustment of the potentiometer is necessary. If additional adjustment is required then disconnect or interrupt power to the timer and repeat from Step 4, if not proceed to Step 7.
7. Return DIP settings to desired range.
8. Replace cover on the timer.
9. Supply power to the timer.

EXAMPLE

An example will help illustrate the procedure:

Desired setting: Cycle every 8 hours with 20 sec purge duration per cycle.

Current factory setting: Cycle every 4 hours with 10 sec purge duration per cycle.

Step 1: Disconnect or interrupt the power to the timer.

Step 2: Remove the cover to the timer by removing the screw on the face of the coverplate.

Step 3: 8 hours is 8/10 of the present range.

Step 4: Since settings are proportional, adjustment can be made in shorter time ranges to enable observation of the results of the changes in a shorter period of time. Adjust the cycle time by setting the DIP switches to the .5 s - 10 s range (6-8 are all set down). Now the valve will cycle every 4 seconds (instead of 4 hours).

Step 5: Adjust the potentiometer located below the 6-8 DIP switches CW to increase the cycle time to the desired 8 seconds. Turn on the power briefly to confirm that the desired setting is attained, then disconnect or interrupt the power before further adjustments are made or before proceeding. Once complete, set the DIP switches to a range which will facilitate the setting of the purge duration. In our example, 20 sec falls within the 1.5 s - 30 s range. Since t_{max} and t_{min} are obtained by potentiometer adjustment fully CW and CCW respectively, adjust the potentiometer under DIP settings 1-3 to a setting between these two values. Turn on the power briefly to confirm that the desired setting is attained, then disconnect or interrupt the power before further adjustments are made or before proceeding.

Step 6: Return the cycle time setting to the .5 h - 10 h range by adjusting the DIP settings 6-8 all up, and the purge setting to the 1.5 s - 30 s range by adjusting DIP settings 1-3 down, down and up respectively.

Step 7: Replace cover to the timer.

Step 8: Turn on the power to the timer.

SERVICE INSTRUCTIONS

These valves are designed for sediment service. It is possible, particularly in abrasive service, that sediment may become lodged in valve seat upon valve closure which results in leaking. If the valve is leaking, manually purge the valve by depressing the button on the side of the solenoid valve until the water appears relatively clear. See Figure 4.

Then release your finger from the button to stop the purge. If leaking continues, this may be a sign that the valve seat is damaged and in need of replacement. The following is a procedure to replace the diaphragm. Other parts in need of replacement or repair shall be done at the factory.

DIAPHRAGM REPLACEMENT (See Figure 6)

WARNING: System fluid under pressure and/or at high temperature can be very hazardous. Before servicing, reduce system pressure to zero or close the upstream shutoff valve (See No. 4 Installation Instruction Section). Leave purge valve in open position, and allow system fluid trapped between the shutoff valve and the drain to drain completely. Failure to follow these instructions could result in serious personal injury or death and property damage.

Required parts: EPDM screwed-in diaphragm part no. V57051

1. Turn valve to stand on the cover (18)
2. Unfasten the 4 body screws (24)
3. Remove body (22) and screws (24)
4. Unscrew and remove old/defective diaphragm (21)
5. Slightly grease screw threads in the actuator housing (1) (**NOTE:** use lithium grease ZETGE M 51)

CAUTION: Diaphragm and all diaphragm connecting parts must be kept free of petroleum based lubricating fluids and greases.

6. Align the diaphragm with the actuator. Mold seam of diaphragm must be perpendicular to the flow direction.
7. Put body (22) back on. Press down on body to start screws (24) into the actuator thread.
8. Switch actuator on and off twice, fasten screws (24) crosswise in unpressurized condition (torque at 5 N-m).
9. Examine valve to make sure it is operating properly and there are no leaks.

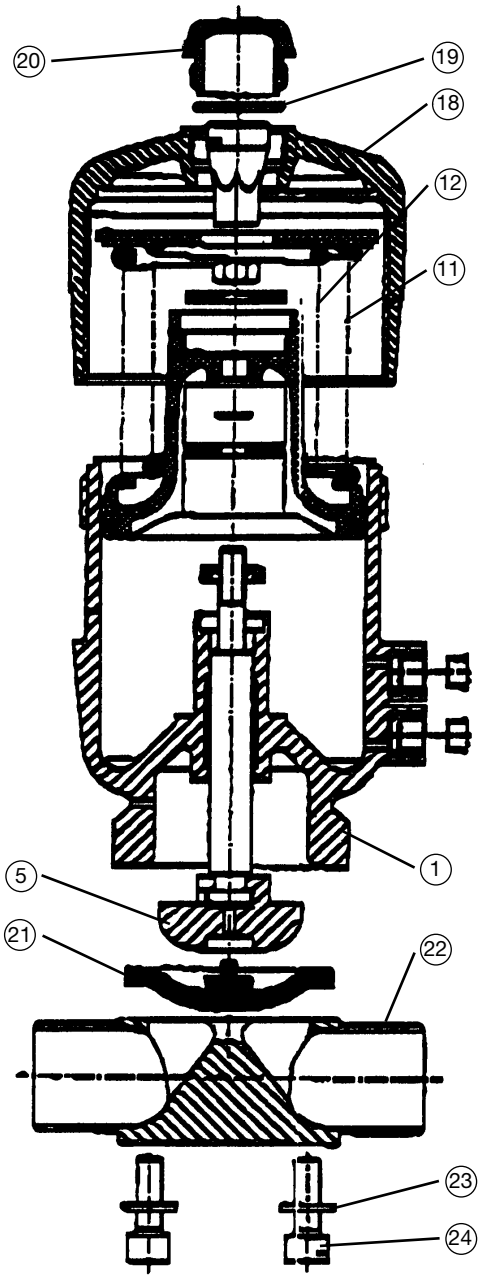


Figure 6

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Let's Solve Water

Xylem Inc.
8200 N. Austin Avenue
Morton Grove, Illinois 60053
Phone: (847) 966-3700
Fax: (847) 965-8379
www.xyleminc.com/brands/bellgossett