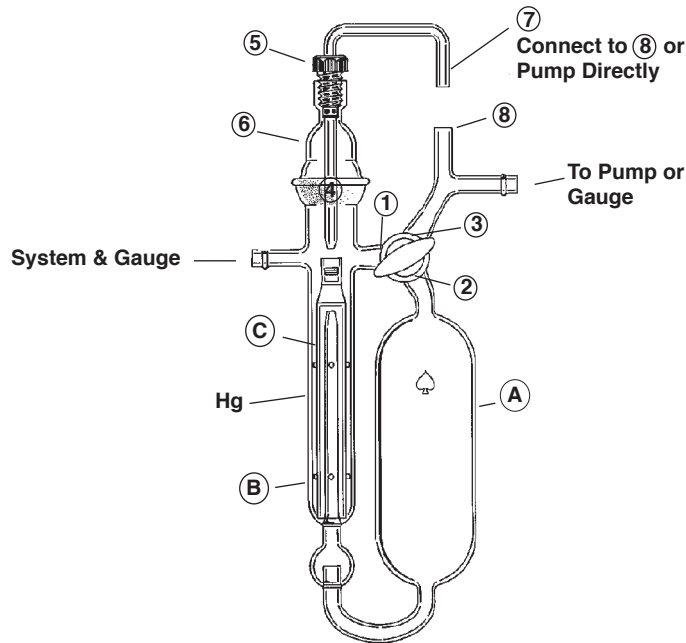


# OPERATING INSTRUCTIONS FOR 8741 VACUUM REGULATOR

## Improved Cartesian Type

(Increased sensitivity—Reduced mercury requirement)



### **General**

The Cartesian Regulator operates by balancing the system pressure to coincide with a user set reference pressure.

At equilibrium, the float's septum closes off the restricted opening to the vacuum pump; its position is fine tuned by raising or lowering the restricted tube (4).

When the pressure increases on the system side, which terminates at the outer cavity surrounding the float, the float drops away from the restriction and opens the system to the pump, allowing it to exhaust enough gas to cause the rising float to seal it off again at the orifice.

Obviously, the pumping capacity must be greater than the leak rate, usually negligible. However, if sudden large changes in system pressure are permitted, the float will drop with enough energy to cause it to impact against the bottom and might cause breakage. Whenever large changes are contemplated, the stopcock should first be opened to communicate with the reference chamber so that the pressure is equalized.

### **ASSEMBLY**

(a) Wipe ground surfaces of the stopcock to be sure they are clean. Grease and secure the stopcock plug. Use as little grease as possible.

(b) Adjust plug to connect points (1) and (2).

(c) Place float (C) within chamber (B). Slide it in at a shallow angle.

(d) Close the system opening and add approximately 20cc of mercury so that the top of the float member is just below the joint. Bulb (A) remains empty.

(e) Place the bushing (5) over tube (4) followed by the O-Ring and attach the tube to adapter (6) allowing the tube to be moved.

(f) Place lower half of 7666-20 Clamp on joint, grease the ball member, rotate in the socket to distribute the grease and secure with other half of clamp, but so the joint can be moved.

(Continued on other side)



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# OPERATING INSTRUCTIONS FOR 8741 VACUUM REGULATOR —Continued—

## Normal Operation

Connect ⑦ to ⑧ via 6-8" of elastomeric tubing, the tee leg to the pump, and ① to ②.

Pumping is through ④ to the system and reference bulb A .

Both sides of the regulator are at essentially the same pressure.

During pump-down close the reference bulb stopcock (place plug openings between ① and ③, and ① and ② before gage reads the correct operating pressure and adjust ④ so that the orifice closes and holds the pressure. Note that it might be necessary to move the orifice slightly off center to attain the best seal against the septum. You will observe that the septum is not placed directly against the bottom of its supporting cup. Septum flexibility is thus utilized to increase sensitivity in proportion to the control pressure.

When equilibrium is sustained, reopen the stopcock ① to ② and continue pumping until 1-2 mm above desired operating pressure, then reclose it.

## Special Operations

If an inert gas is to be used in the system, flush first connecting ① and ③. After a few minutes alternately fill and empty bulb A four times by turning the stopcock, then proceed as above.

The pump can be connected directly to ⑦ and another system at ⑧ . Now by connecting ① and ③ to a gage, where the pump formerly was connected, two systems can be controlled at a common pressure. Or if ⑧ is connected to a closed vacuum reservoir at a different fixed pressure, the single system pressure can be readily changed to the reservoir pressure plus or minus a few percent by manipulating the stopcock, i.e., use a 12 liter reservoir for systems up to 1 liter capacity.



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