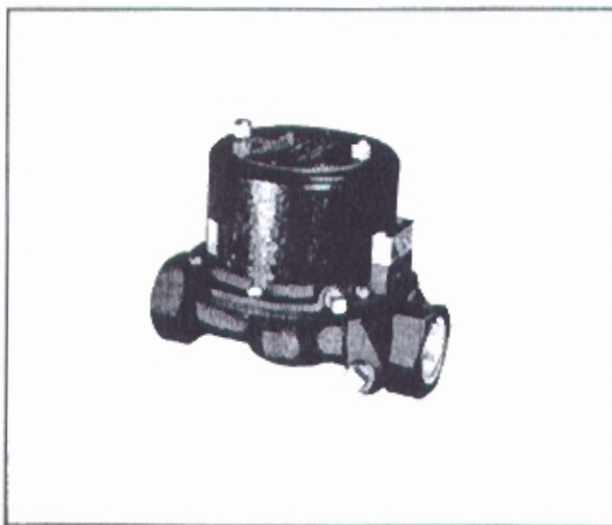


V148 (A, H, K) V149A, AND V448 (A, H, K) DIAPHRAGM GAS VALVES

These small Diaphragm Gas Valves are operated by an integrally mounted magnetic three-way control valve. The control valve is designed with a relay type armature and coil assembly to assure positive opening and closing of the valve ports. All of the control valve operating parts are "out" of the gas circuit, and, the valve bleeds gas momentarily on the opening cycle only.

All standard types can be used with gas actuated limit controls, (snap acting 3-way valve types).

These valves are suitable for use on natural, manufactured, or mixed gas applications. Valves for use on Butane, Propane, Butane air or Propane air mixtures, and also sulphur-bearing gases, are available on special order. Series 10 models are available with manual operating feature and if the valve is manually opened during power failure



period, it will automatically return to the command of the thermostat upon power resumption. The manual opening feature can be removed in the field if desired.

SPECIFICATIONS TABLE

Types	Series	DESIGNED FOR	Valve Size	Capacity in cu. ft. per hr. @ 8" p.d.	Pressure Rating (per sq. in.)	Power consumption	FEATURES	MANUAL OPERATION	VALVE BODY MATERIAL
V148A*	10	Natural, mixed or manufactured gases.	3/8" 1" 1 1/4"	350 700 850	4 ozs. 4 ozs. 4 ozs.	4 watts when open	Manual opening device. Tapped for gas-actuated Limit control.	By external Lever. Valve recycles.	Cast iron or Aluminum
V148H*	10	Sulphur bearing gases	3/8" 1" 1 1/4"	350 700 850	4 ozs. 4 ozs. 4 ozs.	4 watts when open	Manual opening device	By external lever. Valve recycles.	Cast iron
V148K*	10	Liquefied Petroleum Gases	3/8" 1" 1 1/4"	350 700 850	8 ozs. 8 ozs. 8 ozs.	4 watts when open	Manual opening device. Tapped for gas-actuated Limit control.	By external Lever. Valve recycles.	Cast iron or aluminum
V149A†	10	Natural, mixed or manufactured gas.	3/8"	450	4 ozs.	4 watts when open	Manual opening device. Tapped for gas-actuated Limit control.	By external lever. Valve recycles.	Cast iron
V448A*	40	Natural, mixed or manufactured gases.	3/8" 1" 1 1/4"	350 700 850	4 ozs. 4 ozs. 4 ozs.	5 watts when open	Tapped for gas-actuated Limit control.	—	Cast iron or aluminum
V448H*	40	Sulphur bearing gases	3/8" 1" 1 1/4"	390 700 850	4 ozs. 4 ozs. 4 ozs.	5 watts when open	—	—	Cast iron
V448K*	40	Liquefied Petroleum Gases	3/8" 1" 1 1/4"	350 700 850	8 ozs. 8 ozs. 8 ozs.	5 watts when open	Tapped for gas-actuated Limit control.	—	Cast iron or aluminum

*Straight through, non-offset pattern.

†Angle offset pattern.

VOLTAGE AND FREQUENCY—115 volts, 50 or 60 cycle standard. Other A.C. voltages and frequencies available at extra cost.

TRANSFORMERS—Power type, plate mounted standard. See Table.

VALVE ACTION—Opens on closed circuit.

PILOT TAPPINGS—Two 1/4" I.P.S. in valve body.

DIMENSIONS—See page 4.

WHEN ORDERING SPECIFY—1. Type number.

2. Size.

3. Voltage and frequency.

4. Type of gas.

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Supersedes Form 95-1196
Dated October 1, 1945

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File by Type Number in: **SECTION 8B**
DIAPHRAGM VALVES

Order This Sheet by Form Number 95-1196

INSTALLATION

LOCATION

These valves must be installed in a gas supply on the down stream side of the pressure reducing valve. The arrow on the valve body indicates the direction of flow. The assembly must be mounted in an upright position so that the diaphragm is horizontal. Be sure that condensation from pipes overhead does not drip on the valve.

NOTE: Do not install these valves in a space where the ambient temperature exceeds 120° F.

INSTALLING VALVE: (See Figs. 1 and 2).

1. New iron pipe, properly reamed and free from chips and foreign matter should be used when installing the valve. Never coat the threads of the valve body or the first and second threads on the pipe with pipe dope, since it is apt to lodge on the valve seat and cause improper seating of the valve.

2. A suitable strainer should be installed ahead of the valve to catch all foreign matter.

IMPORTANT—After the installation of V148H and V448H valves check thoroughly for leaks since sulphur-bearing gases would have an adverse effect on the relay mechanism which operates the valve.

BLEED CONNECTION:

The valve has a $\frac{1}{8}$ " piping tapping for the bleed connection.

PILOT CONNECTION:

Normally, the gas pilot supply line may be connected to one of the tappings provided in the side of the valve body. However, if the pilot light shows a pronounced decrease in height when the valve opens, it may be necessary to connect the pilot line into the main gas line.

VALVE TYPE LIMIT OR PILOT SAFETY CONTROLS:

Snap acting 3-way limit or pilot safety controls can be used with these valves. No special orifice is required for this application. A feature of this system is that gas does not bleed when the limit or pilot safety valve is open. Refer to Fig. 2.

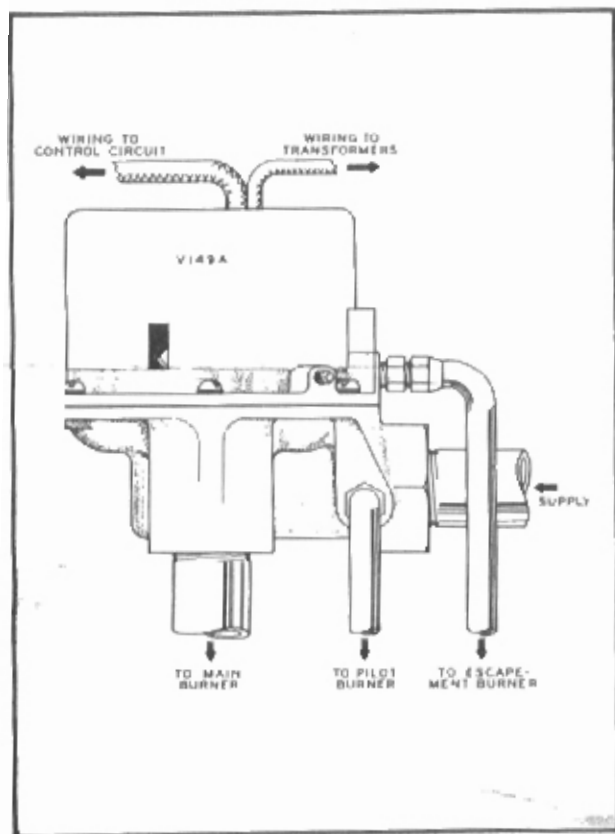


Fig. 1—Typical installation diagram for type V149A. (V148A and V448A similar except straight through valve body).

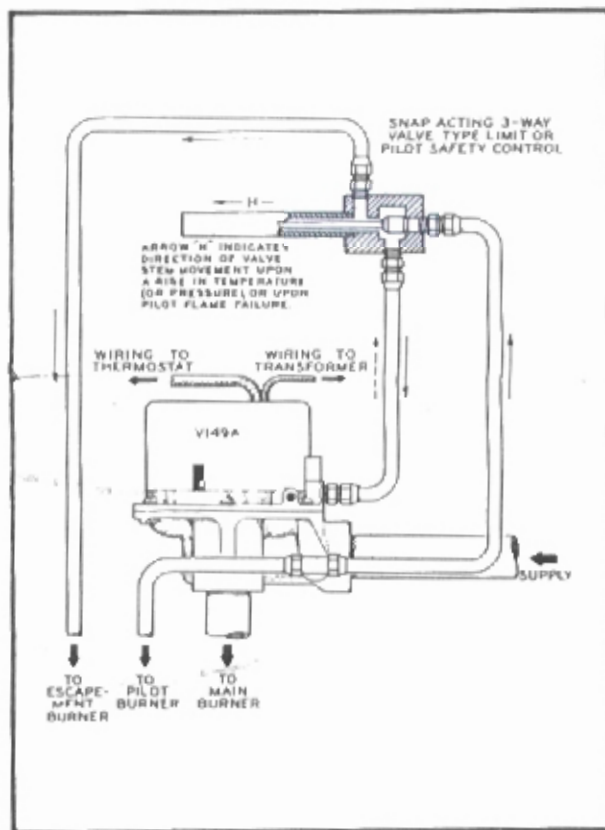


Fig. 2—Type V149A used with Snap Acting 3-Way Valve Type Limit or Pilot Safety Control. (Type V148A and V448A similar except Valve Pattern).

WIRING

IMPORTANT—All wiring must be done in accordance with electrical ordinances.

All Series 10 Diaphragm Gas Valves are low voltage and are equipped with an external transformer. Refer to Table I and make sure that the voltage and frequency stamped on the

transformer corresponds with the current supply to which it will be connected.

Fig. 3 illustrates the proper connections for Series 10 Diaphragm Gas Valves. If the two wire limit control or the pilot safety (electric switch type) are not used, be sure to install the jumper as shown.

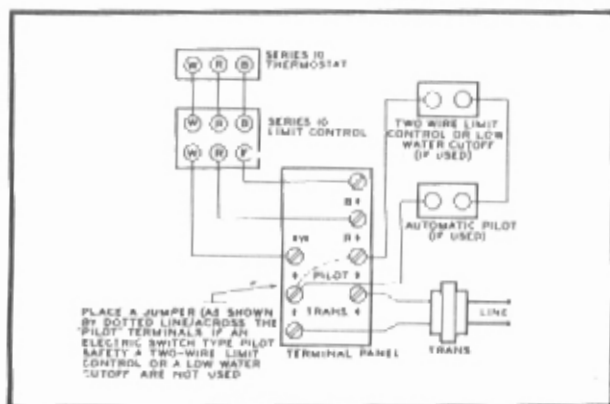


Fig. 3—Typical Connection Diagram for V148A and V149A.

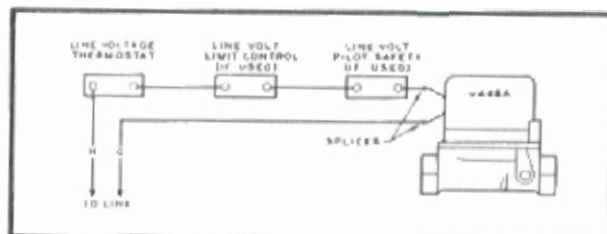


Fig. 4—Typical Connection Diagram for V448A.

Fig. 4 illustrates the proper connections for Series 40 Diaphragm Gas Valves. Since this is a line voltage valve, use No. 14 rubber covered wire in conduit or BX in wiring this valve.

Voltage	Frequency	Power Type Transformer
115 Volts	50-60 Cycles	Q70A1K
115 Volts	25 Cycles	Q71A1M
230 Volts	50-60 Cycles	Q70A1L
230 Volts	25 Cycles	Q70A1B

TABLE 1—TRANSFORMERS

MANUAL CONTROL

Types V148A and V149A are equipped with a manual control lever to permit opening the valve during current interruptions.

WARNING: If these valves are used in conjunction with a gas fired unit heater or a forced warm air furnace, the valve should NOT be manually opened during a power failure period. Serious overheating of the unit heater or furnace might occur if the gas valve were manually opened during a period when current was not available because the fan could then not operate to remove the overheated air from the furnace or unit heater.

TO MANUALLY OPEN VALVE:

IMPORTANT: Be sure pilot burner is lighted before opening valve.

To open the valve, raise the manual control lever (7-Fig. 5). The main valve will open promptly. The valve should NOT be left open indefinitely as overheating of the furnace might occur.

TO CLOSE THE VALVE:

Should the room be sufficiently heated before the electric current supply is restored, the gas valve may be closed by depressing manual control lever (7-Fig. 5). The main valve will then go to the tight closed position.

NOTE: If electric current service is restored during the time the valve is held open by the manual control device, the burner will automatically return to the control of the room thermostat and limit control.

NOTE: Should the manual opening feature not be desired, the manual opening lever (7-Fig. 5) can be removed by bending the lever back and forth a couple of times at the "break mark" (8-Fig. 5), using a pair of pliers, or similar handy tool.

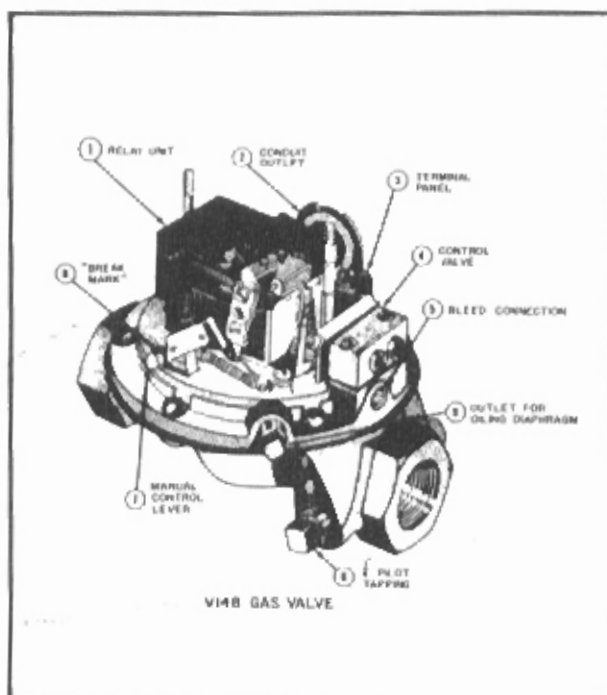


Fig. 5—View of V148A with cover removed. (V448A less manual control lever).

OPERATION

These valves are designed with the main gas supply under the seat. The gas pressure over the seat and under the main diaphragm is equal to the outlet pressure.

The magnetic control valve is equipped with three ports.

One port leads to the main gas supply, one port leads to the top of the main diaphragm and one port leads to the bleed line.

When the thermostat calls for heat, the relay unit is energized. This action closes the gas supply port and opens the

bleed port on the magnetic control valve. Gas then bleeds off the top of the main diaphragm. This relieves the pressure on the top of the diaphragm and permits the gas pressure underneath the valve disc to crack open the main valve port. As soon as gas is admitted through the main valve port its pressure against the main diaphragm helps to open the valve wide.

When the thermostat is satisfied, the electric circuit to the relay unit is opened. (Relay circuit is also opened in case of a high temperature condition or failure of pilot light—if electric switch type pilot safety and or high limit control is used). Opening of circuit releases the relay armature opening the gas supply port and closing the bleed port. Gas then flows through the supply port to the top of the diaphragm increasing the pressure on top of the diaphragm. This pressure (plus the weight of the diaphragm and swivel disc assembly) starts to overcome the pressure underneath the diaphragm and underneath the valve disc. As the valve starts to throttle closed, the pressure underneath the diaphragm decreases, and, as a result of this, the valve snaps closed. The valve is then securely held in the closed position by the line pressure on top of the main diaphragm.

NOTE: At the beginning of each heating season, remove plug (9-Fig 5) and apply approximately 50 drops of Neatsfoot oil, or a light, acid free mineral oil. Be sure to reinstall plug.

CAUTION: Do not apply oil in bleed opening. Lubricating oil is not recommended.

Do not apply any oil to valve models V148H, V148K, V448H, or V448K.

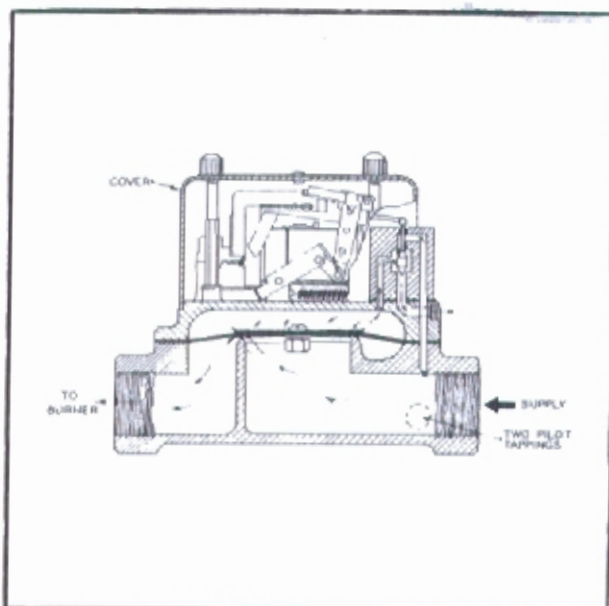


Fig. 6—Schematic Section through V148 or V448 Diaphragm Valves. V149 similar except for Angle Offset Valve Body.

INTERNAL CIRCUITS

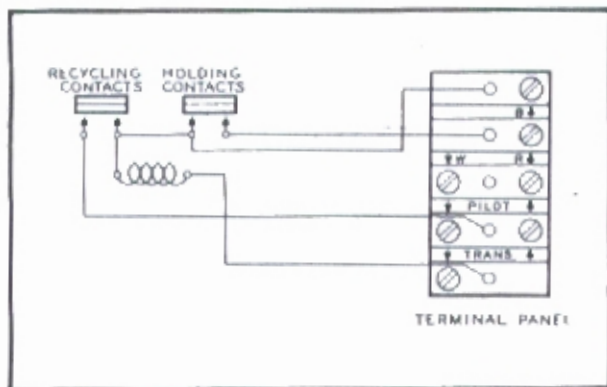


Fig. 7—Internal Circuit of V148A or V149A.

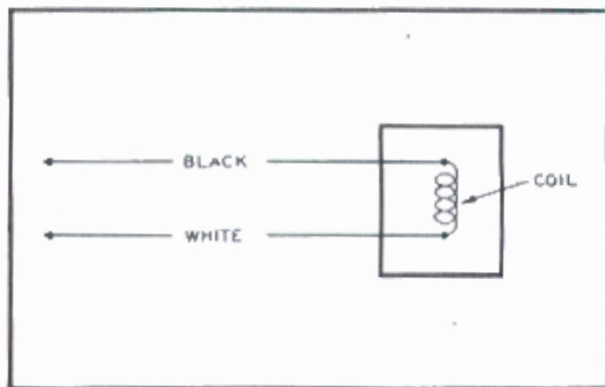


Fig. 8—Internal Circuit of V448A.

OVERALL DIMENSIONS

DIMENSIONS—(Types V148 and V448)

	$\frac{3}{4}$ " Valves	1" and 1 $\frac{1}{4}$ " Valves
Face to face	5 $\frac{3}{4}$ "	6 $\frac{3}{4}$ "
Center line of pipe to top	3 $\frac{3}{8}$ "	4 $\frac{1}{2}$ "
Center line of pipe to bottom	3 $\frac{1}{8}$ "	1 $\frac{1}{8}$ "
Overall width	4 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "

DIMENSIONS—(Type V149)

Center line of inlet to the top	3 $\frac{3}{8}$ "
Center line of inlet to the bottom	3 $\frac{1}{8}$ "
Overall width	4 $\frac{1}{2}$ "
Face of outlet to the top	4 $\frac{1}{2}$ "

Refer to Fig. 9 for bottom dimensions.

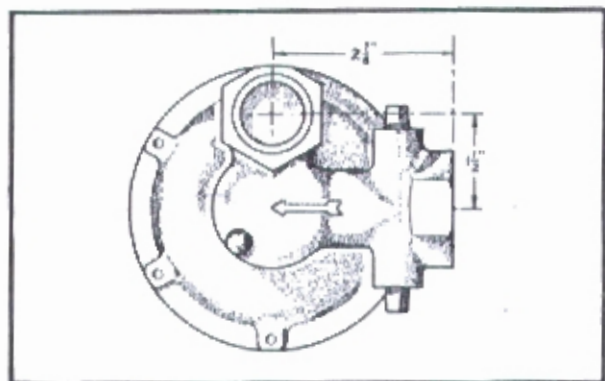


Fig. 9—Bottom Dimensional View of Types V149.