



Installation and service instructions for SOLENOID VALVES

0773150
Revision D Revised 24JAN2025

Valve Location

The valve location selected should be as clean and cool as conditions will permit. Poor locations always increase the possibility of encountering trouble, and definitely decrease the life of the valve no matter how durable the construction.

Installation

J-E valves may be installed in any line regardless of the direction in which the line runs. The only caution to be observed is that the valve should never be mounted so that the coil is lower than the valve body (see Fig. 1).

Apply a small amount of pipe dope to the male threads on screwed line connections.

Warning

REMOVE THE BONNET ASSEMBLY AND DIAPHRAGM BEFORE BRAZING SOLDER-TYPE BODIES INTO THE LINE.

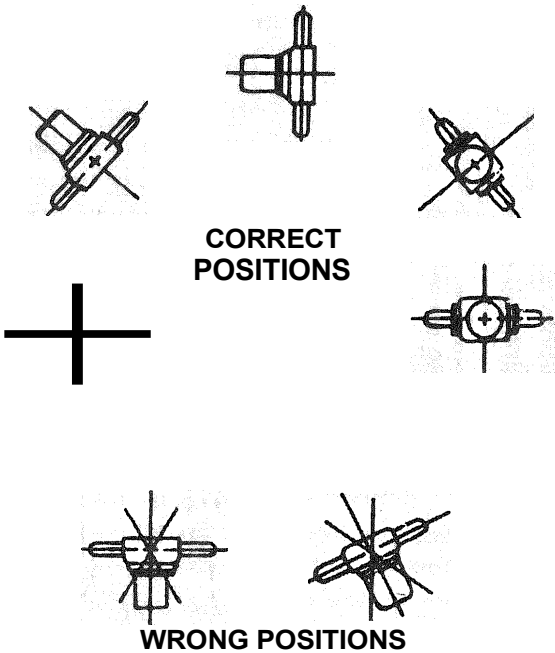


Fig. 1

Electrical Connections

The electrical data for the valve will be found on the circular plate on top of the coil housing. Make sure the voltage and frequency are correct. Many electrical codes require that each solenoid valve be protected by adequate fuses. Fuse capacities for J-E Solenoid valves should not exceed 2 amperes for voltages below 50 volts and 1 ampere for voltages above 50 volts.

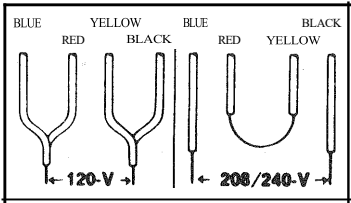
Solder all electrical connections and do not use conductors smaller than No. 18 B&S gauge.

Surge Protectors are not required for D. C. applications.

The junction box or conduit connections on the coil housing can be moved to any desired position by loosening the retaining screw at the top of the coil housing and rotating the housing to the desired position. Be sure to tighten the retaining screw after this operation.

Wiring for Multi-Voltage Coil

Electrical Data Plate supplied with all Multi-Voltage Coils has diagram (see Fig. 1 A) showing the correct hook-up for various electrical requirements



● to remove or change the coil (all valve types)

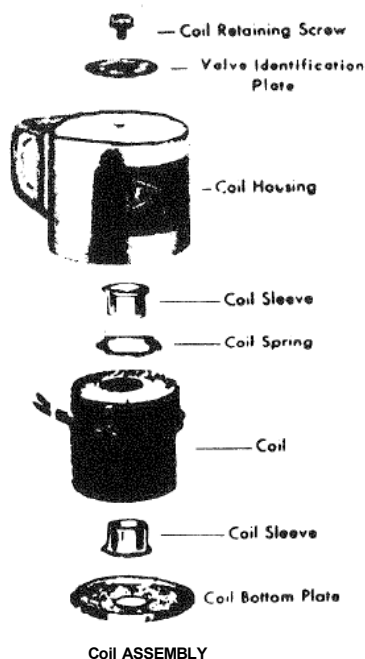


FIG. 2

To remove the solenoid coil, first take out the retaining screw at the top of the coil housing. The entire coil assembly can then be lifted off the enclosing tube.

To reassemble, make sure that the parts are placed on the enclosing tube in the following order: (see Fig. 2)

1. The coil bottom plate with the edge up
2. The lower coil sleeve with the flange at bottom
3. The coil itself (or its replacement)
4. The coil spring, with the flat edges up
5. The upper coil sleeve with the flange at top (the sleeve goes through the coil spring)
6. The coil housing. Make sure coil lead wires do not catch over or under the coil.
7. The valve identification plate.

Press parts down firmly and insert the coil retaining screw. Rotate housing to proper position and tighten screw securely.

● to take the valve apart

series "2". "B2", "D2". "B3", "B4" and "B6"

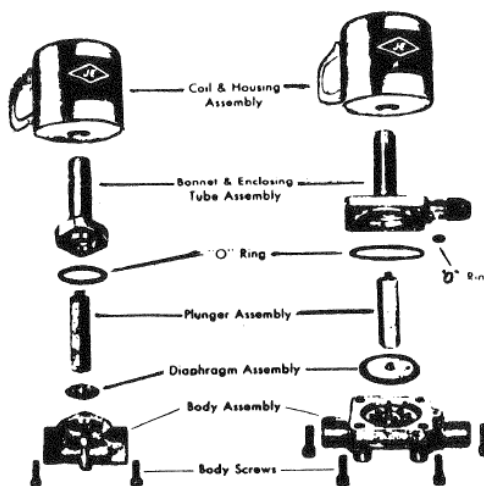
Disassembly These valves may be taken apart by removing the socket head screws which hold the body and bonnet together. See Fig. 3 and 4. After removing the screws, carefully lift off the

bonnet assembly (upper part of the valve). Don't drop the plunger. The diaphragm can now be lifted out. Be careful not to damage the machined faces while the valve is apart.

NOTE: THE ABOVE PROCEDURE MUST BE FOLLOWED BEFORE BRAZING SOLDER TYPE BODIES INTO THE LINE.

To Reassemble - Place the diaphragm in the body with the pilot port extension up. Hold the plunger with the synthetic seat against the pilot port. Make sure the bonnet "O" rings are in place, then lower the bonnet assembly over the plunger, making sure that the locating sleeve ("B" series with manual operator) in the bonnet enters the mating hole in the body. Insert body screws and tighten uniformly.

(cont'd.)



SERIES "2", "B2", "D2"
FIG. 3

SERIES "B3", "B4", "B6"
FIG. 4

series "10", "B10", "12" "B12" and "14"

These valves have the plunger and diaphragm *in separate enclosures*. The diaphragm is between the body and bonnet.

To Remove the Diaphragm - Remove the socket head body screws. (See Fig. 5). Next, carefully lift the bonnet assembly (upper part of the valve) off the body. The diaphragm assembly can then be removed. Be careful not to lose the diaphragm spring.

NOTE: THE ABOVE PROCEDURE MUST BE FOLLOWED B E F O R E BRAZING SOLDER-TYPE BODIES INTO THE LINE.

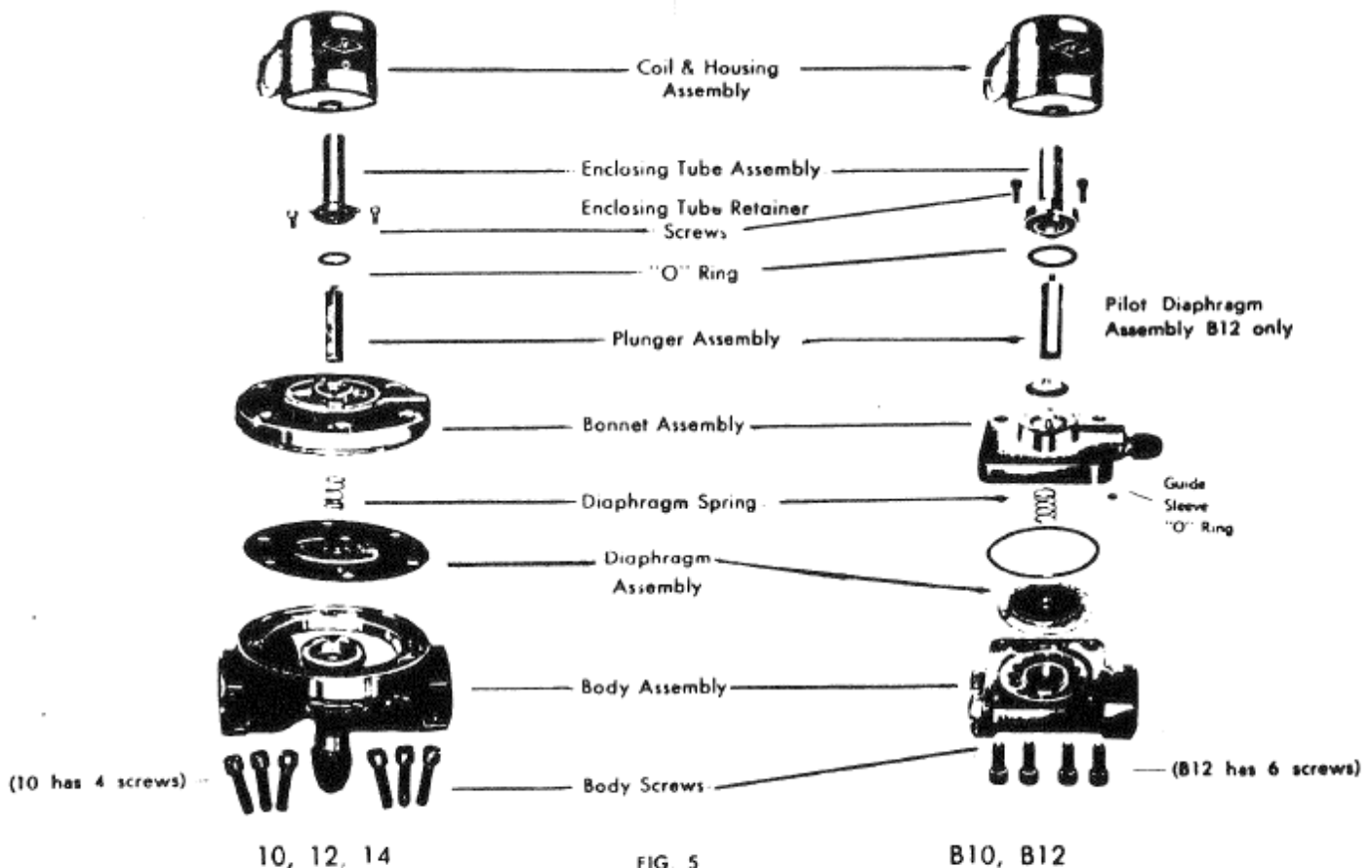
To Reassemble--Place the diaphragm in the body so that the large metal buffer plate is on top. Position diaphragm spring in the center of the buffer plate. Place the bonnet assembly in position

on the body Replace the Socket head screws and tighten uniformly.

To Remove the Plunger - First take off the coil assembly as outlined under "To Remove or Change the Coil." Remove the two small socket head screws which hold the enclosing tube to the bonnet. Then lift off enclosing tube, being careful not to drop the plunger.

To Reassemble-- Hold the plunger with its synthetic seat against the pilot port in the bonnet. Lower enclosing tube over the plunger making sure "O" ring seal is in place. Replace socket head screws and tighten uniformly. Reinstall coil assembly as outlined under "To Remove or Change the Coil."

NOTE: NORMALLY OPEN SERIES (PREFIXED "O") PLUNGERS ARE PERMANENTLY ATTACHED INSIDE ENCLOSING TUBE ASSEMBLY. TO CHANGE REPLACE ENCLOSING TUBE ASSEMBLY.



NOTE: Teflon and Buna "N" diaphragms are not interchangeable in the same valve assembly. Teflon diaphragms are used with bonnet assemblies stamped "B" on bonnet edge. All other bonnets are for use with Buna "N" diaphragms.

● to manually operate the valve

All valves having the letter "M" in the type number (examples-B3MP, 12 MS) are equipped with manual operating stems which permit the main port to be opened without the coil being energized. While coil failure in the J-E design is not common, we recognize there are times when manual operation may be desired prior to completion of control circuit wiring, or because of failure elsewhere in a control circuit.

Valves with a prefix "B" in the type number (example--B3MP) are equipped with the newest development in manual operation of any solenoid valve. Here the manual stem is located in the bonnet assembly above the outlet connection. It is a 3/16" square wrench stem under a seal cap which opens an auxiliary pilot port, allowing system pressures to actuate the diaphragm in a normal manner, identical to the action involved when the plunger is raised electrically to open the pilot port. A slight turn (approximately ½ revolution) counter-clockwise open the auxiliary port.

Tightening stem clockwise causes the port to be well sealed by pressing the stainless-steel stem against the brass seat and returns valve to automatic operation. The manual stem is sealed with an "O" ring to provide a leak-free construction. In addition to benefits mentioned above, the reduced overall height, and elimination of possible damage while soldering valve bodies into the line are outstanding advantages.

When using the manual stem located in the body of models not having a "B" prefix do not attempt to screw it in too far. Above all, do not continue to screw the stem in, if the resistance to turning increases suddenly. When this occurs, the diaphragm is up as far as it should go and any further movement will bend or distort the buffer plate. To return to automatic operation, back the manual stem out as far as it will go. Always replace the seal cap after operating the manual stem.

● GENERAL SERVICE HINTS

J-E Solenoid valves are extremely simple and trouble-free and do not require special attention on the part of the installer or service engineer. DIAPHRAGMS AND PLUNGER ASSEMBLIES WILL NOT WITHSTAND SOLDERING HEAT AND MUST BE REMOVED WHEN THE VALVE BODY IS BEING SOLDERED INTO THE LINE. When this is necessary, always follow the reassembly steps outlined previously. Do not "guess" at the manner in which the valve should be assembled. In shooting trouble, a good procedure is to first cycle the switch controlling the solenoid coil. Movement of the plunger will be audible if coil is O.K. Otherwise, check for proper voltage at coil terminals. If voltage is O.K. replace coil. Be sure manual stem is properly positioned for automatic operation. Otherwise, complaints of failure to open or failure to close tightly can involve only the plunger and diaphragm. Take the valve apart and inspect the diaphragm and the

synthetic seat on the plunger. Foreign material, interfering with the action of the plunger or diaphragm, is often responsible for the difficulty. Inspect both plunger seat and diaphragm for damage. Make sure difficulty was not caused by incorrect assembly of parts (see paragraphs titled "To Reassemble" for proper method of assembling parts). Generally, the installation of a new diaphragm, a new plunger, or both will cure such complaints. Finally, make sure that the difficulty is really being caused by the solenoid valve. Complaints regarding noise on closing, fluid "hammer" and the like are almost always caused by excessive fluid velocity through the valve. When such high velocity flow is suddenly stopped by the closing of the solenoid valve, closing noise or fluid hammer occurs in many cases. The cause of such difficulties is *not* a defect in the valve; the real culprit is the high fluid velocity. Reduction of fluid velocities to more reasonable values invariably correct the trouble.