



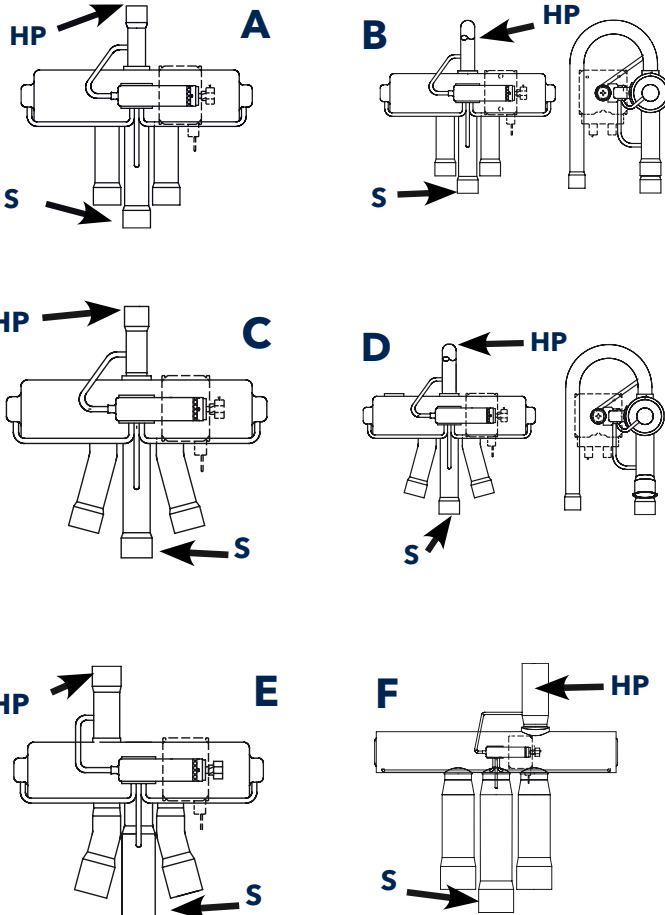
INSTALLATION DATA

REVERSING VALVES

4-WAY PILOT VALVES

DESCRIPTION / APPLICATION

The Ranco® Reversing Valves are solenoid operated, slide type, with a 4-way pilot valve and operate under the full pressure of the heat pump system. The valves are used on unitary, split system, and window-type heat pump applications. There are six different styles designed to meet your particular system need.



REVERSING VALVE 4-WAY PILOT VALVE

| Part Number | Capacity (Tons) | | Style # | Tube Size (I.D.) | | Old Valve # |
|-----------------|-----------------|-------------|---------|------------------|---------------|-------------|
| | R22 | R410A | | Suction | High Pressure | |
| V1-408060-170 | .4 to 1.0 | .5 to 1.7 | A | 1/2" | 3/8" | V1-188 |
| V1-406060-270 | .4 to 1.0 | .5 to 1.7 | B | 3/8" | 3/8" | V1-158 |
| V2-408060-170 | .75 to 2.0 | .9 to 2.2 | A | 1/2" | 3/8" | V2-128 |
| V2-408060-270 | .75 to 2.0 | .9 to 2.2 | B | 1/2" | 3/8" | V2-100 |
| V2-4100F0-370 | 1.0 to 2.5 | 1.3 to 2.5 | C | 5/8" | 3/8" O.D. | V2-179 |
| V2-410060-470 | 1.0 to 2.5 | 1.3 to 2.5 | D | 5/8" | 3/8" | V2-150 |
| V3-410080-770 | 1.0 to 2.8 | 1.3 to 3.1 | E | 5/8" | 1/2" | V3-1003 |
| V3-412080-870 | 1.0 to 3.0 | 1.3 to 3.5 | E | 3/4" | 1/2" | V3-1004 |
| V6-412080-170 | 1.0 to 5.5 | 1.3 to 6.7 | A | 3/4" | 1/2" | V6-2101 |
| V6-414080-170 | 1.0 to 5.5 | 1.3 to 6.7 | A | 7/8" | 1/2" | V6-2103 |
| V6-414120-170 | 1.0 to 5.5 | 1.3 to 6.7 | A | 7/8" | 3/4" | V6-2106 |
| V10-414080-170 | 3.0 to 8.5 | 3.8 to 10.1 | A | 7/8" | 1/2" | V10-2500 |
| V10-414120-170 | 3.0 to 8.5 | 3.8 to 10.1 | A | 7/8" | 3/4" | V10-2750 |
| V10-418140-170 | 3.0 to 9.5 | 3.8 to 11.7 | A | 1 1/8" | 7/8" | V10-2762 |
| V10-414080-270 | 4.5 to 8.5 | 5.7 to 10.1 | A | 7/8" | 1/2" | N/A |
| V10-414120-270 | 4.5 to 8.5 | 5.7 to 10.1 | A | 7/8" | 3/4" | N/A |
| V10-418140-270 | 4.5 to 9.5 | 5.7 to 11.7 | A | 1 1/8" | 7/8" | N/A |
| V10-414140-470* | 3.0 to 8.5 | 3.8 to 10.1 | A | 7/8" | 7/8" | V10-2765 |
| V12-4220T0-270 | 6.0 to 12.0 | 6.3 to 15.0 | F | 1 3/8" | 1 1/8" O.D. | V12-321 |


Solenoid Coils

| Part Number | Voltage (VAC) | Color Code | Watts | |
|----------------|---------------|------------|-------|-------|
| | | | 50 Hz | 60 Hz |
| LDK-110000-070 | 24 | Red | 5 | 4 |
| LDK-310000-070 | 120 | Black | 5 | 4 |
| LDK-410000-070 | 208/240 | Green | 5 | 4 |
| LDK-510000-070 | 277 | Blue | 5 | 4 |

CHOOSING THE CORRECT SOLENOID COIL

The Ranco LDK solenoid coils are used with the V1-4/V2-4/V3-4/ V6-4/V10-4/V12-4 Ranco Heat Pump Reversing Valves. These color coded encapsulated, continuous duty, moisture resistant magnetic coils are designed to operate the pilot valve controlling the reversing valves listed above. Included with the solenoid coil is a W29 wiring harness with 48" leads.

| Legend |
|-------------------|
| HP: High Pressure |
| S: Suction |


WARNING

V Series reversing valves can be used to replace the older version valves as indicated in the far right column of the above chart. Solenoid coils are not interchangeable. LDK Series coils must be used with the Vxx-4 Series reversing valves and the L30 Series coils used with the previous version valves listed above.

NOTE:

Heat pumps and heat/cool units – many original equipment manufacturers connect the system tubing to the Ranco reversing valve based on which mode (heat or cool) the system will operate should the solenoid coil fail. For example, solenoid coil energized for cooling (Figure 1); solenoid coil failure mode to heat cycle. Solenoid coil energized for heating (Figure 2); solenoid coil failure mode to cooling cycle. Prior to replacing the valve, confirm which mode (heat or cool) the solenoid coil controls when energized.

Solenoid coil fails, cycle goes to heating. Solenoid coil energized for cooling (de-energized for heat); solenoid fails, valve goes to heat cycle. As shown in figure 1.

Solenoid coil fails, cycle goes to cooling. Solenoid coil energized for heat (de-energized for cooling); solenoid fails, valve goes to cooling cycle. As shown in figure 2

Figure 1

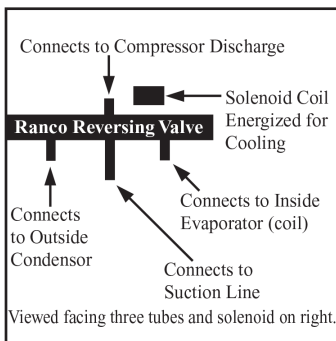
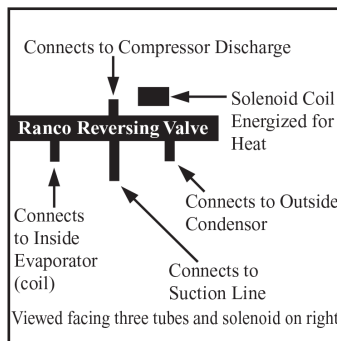


Figure 2




REPLACING VALVE ASSEMBLY

SYSTEM REPAIR - Follow the original equipment manufacturer’s recommendations for replacement of refrigerant components.

SYSTEM EVACUATION - Follow original equipment manufacturer’s recommendations and/or RSES Service Application Manuals.

COMPRESSOR MOTOR BURNOUT - Follow original equipment manufacturer’s recommendations and/or RSES Service Application Manuals.



CAUTION

To prevent possible electrical shock or equipment damage, disconnect electrical power to unit before and during installation. DO NOT restore electrical power to unit until the device is properly installed.

GENERAL INSTALLATION PROCEDURES - REMOVAL

- Use only an oxy-acetylene torch to unsolder connections. Other type torches may not have the heat capacity to do the job with minimum time and temperature.
- Protect the valve from excessive heat. Temperatures above 250°F are apt to damage internal parts. Wrapping a wet rag around the valve body while using the torch will help to dissipate heat.

- Inadequate heat is also a problem. Not only will the soldered joints be difficult to separate, but also the build up of heat over the longer period of time required will transfer to the valve body and possibly damage its internal parts.
- The joint should separate in seconds, not minutes. Use enough heat to accomplish this, while relying on the wet rag to protect the valve body. Also remember that the remelt temperature of any solder alloy is much higher than the initial soldering temperature.
- After removing the valve, inspect the lines to make sure they are round and do not have any large solder blobs, which will interfere with the mechanical fit of the new joints.

VALVE INSTALLATION

- Avoid any rough handling of the new valve during installation. This especially includes the use of vise-type pliers to manipulate the valve body while inserting the piping into the connection tubes. If the valve body or the capillaries are dented or flattened, the reversing action may be impaired or stopped completely.
- Use wet rags around the valve body and adjoining tubing to prevent overheating. Direct the flame of the torch away from the valve body. Excess heat over 250°F may distort internal parts.
- Use low temperature brazing rod as local code will permit, and use an inert gas to prevent oxide scale on the inside of the tubing.
- Preferably use a phosphorus-bearing silver solder which requires no external flux. The entrance of even a tiny bit of flux may be enough to damage a new valve.
- If you must use silver solder with externally applied flux, be sure the sections to be joined are bright and clean and that you use the flux sparingly. This will do the job, but because this kind of solder requires exceptional skill and care in its use, most valve manufacturers are reluctant to recommend it.

RANCO REVERSING VALVE OPERATING SPECIFICATIONS

| | |
|----------------------------------|---------------------|
| Min. ▲ P to Reverse | 15 psi |
| Max. ▲ P to Reverse | 440 psi |
| Max. Pressure | 680 psi |
| Min. Burst Pressure | 2500 psi |
| Max. Operating Temperature | 250°F |
| Min. Life Cycles | 135,000 |
| Min. Operating Voltage | 85% of Rated Volts |
| Max. Operating Voltage | 110% of Rated Volts |
| Max. Leakage to Suction: | |
| V1-4/V2-4/V3-4 | 2,000 cc/min. |
| V6-4 | 4,000 cc/min. |
| V10-4 | 6,000 cc/min. |
| V12-4 | 15,000 cc/min. |

NOTE: Dry Air at 150 PSI. Valve at 160°F. Air at 70°F.



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