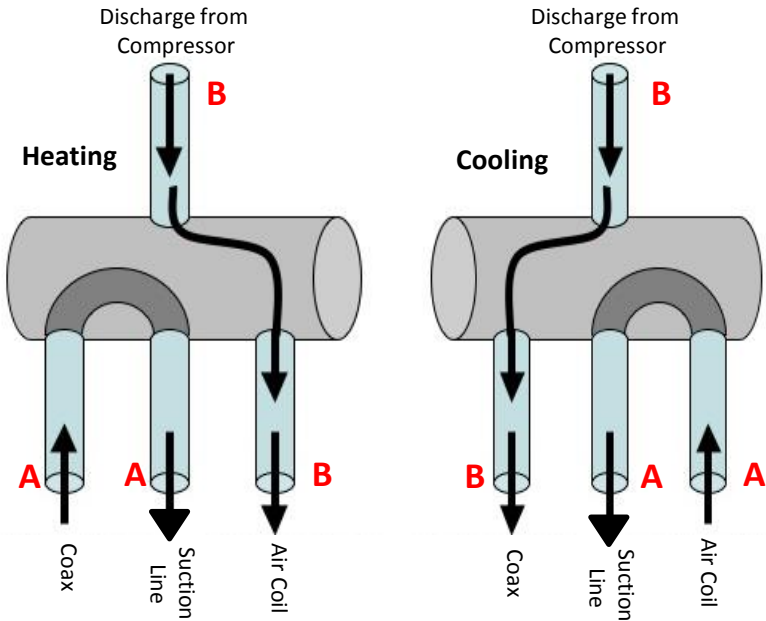


Troubleshooting a Reversing Valve



Overview:

Valve failures will generally be one of three failure modes:

1. Solenoid coil failure
2. Stuck in heat or cool
3. Stuck somewhere between heat and cool positions.

Coil failure is usually fixable. You only need to verify the absence or presence of coil voltage in the appropriate cycle. Most manufacturers*, including Enertech energize the coil in cooling mode.

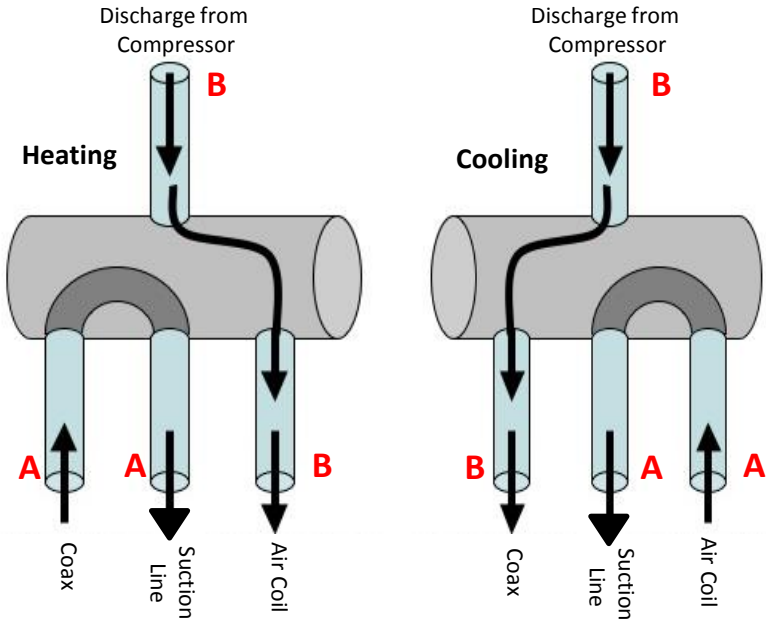
If no voltage is present on the coil, eliminate wiring or other component problems before condemning the valve. Coils can also be shorted or open. In these cases, a new coil can often be installed.

Stuck valves could be the result of a pilot or main valve problem. In either case, while it is possible to unstick the valve, the fix is almost always, temporary. If it sticks a second time, replace the valve.

The last failure mode is the valve stuck somewhere between positions, which is usually difficult to diagnose. A valve stuck mid-way results in a significant amount of leakage between low and high side pressures, producing symptoms of a faulty compressor, high suction and low head pressures.

*Most, not all manufacturers energize the coil in cooling. Check circuit to be sure.

Troubleshooting a Reversing Valve



Testing the Valve:

The easiest test method to diagnosis a stuck mid-way valve is to measure temperature / pressure drops across the valve. A pressure drop is always accompanied by a temperature drop. A valve stuck mid-way, will cause a pressure drop or mixture of warm & cool gases and a differential would be measured across refrigerant paths A to A and B to B. You will need a very good thermocouple type thermometer to complete this test.

Under normal conditions, a valve that is fully shifting should exhibit minimal temperature differential between "common" paths. A temperature variation of over 4-6 degrees indicates restricted flow or incomplete shifting.

Often a reversing valve stuck mid-way, can be broke loose. There are several ways to do this. Most manufacturers, including EnerTech energize reversing valves in cooling mode. By applying and reapplying power to the "O" terminal, the valve may move to the proper position. By re-measuring temperature differentials this can be determined. As a last resort, take a screwdriver and LIGHTLY tap the valve tube near the ends. Care must be taken not to dent the valve body.

If a reversing valve will not move because it is oil logged, a low heat flame can be moved over pilot tubes to thin oil

In either case, a freed valve will likely stick again.

Here is another technical tip for testing a valve. A very small 1/4" super strong earthen magnet can be placed on the valve body. The magnet will be drawn to steel slider through the valve body and will move with the slider confirming the movement. The throw (movement left and right, varies by valve size and manufacturer, but will be a good indicator of the slider is moving.