

Pressure Switches

A pressure switch is a device that opens or closes a set of contacts when a certain pressure is applied to the diaphragm of the switch, thus protecting the system from excessively high or low pressures. A high-pressure switch is connected to the discharge, or “high” side of the system to sense discharge pressure. A low-pressure switch is connected to the suction, or “low” side of the system to sense suction pressure.



When the pressure in the system exceeds the high pressure switch setting, the switch will open circuit the compressor clutch and the compressor will stop circulating refrigerant. The high pressure setting of the switch must correspond to the type of refrigerant in the system. Different refrigerants require different settings.

Low pressures can occur in air conditioning systems when the refrigerant has escaped. When this occurs, the contacts in the low pressure switch open and break the electrical supply to the compressor clutch, thus stopping its operation. Low pressure switches can also be used as an operating control to operate the system by a pressure setting that corresponds to a temperature setting. By properly setting the low pressure switch, the temperature can also be controlled.

Terminology

The **differential** of a pressure switch is the difference between the cut-in and cut-out pressure of the switch. The **cut-in** is the pressure of the system when the pressure switch closes. The **cut-out** is the pressure of the system when the pressure switch opens. The **range** of a control is the operating range of the system-for example: the overall pressure over which the switch can operate.

What is a “snubber”?

The higher pressures of R410a applications tend to produce temporary spikes. A “snubber” is a device that works to dampen out extreme pressure spikes that would otherwise lead to unwanted nuisance tripping. (Available on select MARS high-pressure pressure switches by Klixon/Sensata)

Problems commonly encountered when working with pressure switches are: pitting, wear, mechanical linkage faults, and sticking. The contacts should be checked to see if they are closed or open in relation to the setting of the control. The pressure connections of a pressure switch can leak and cause a faulty control or no control at all.

