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Refrigerant Migration Protection

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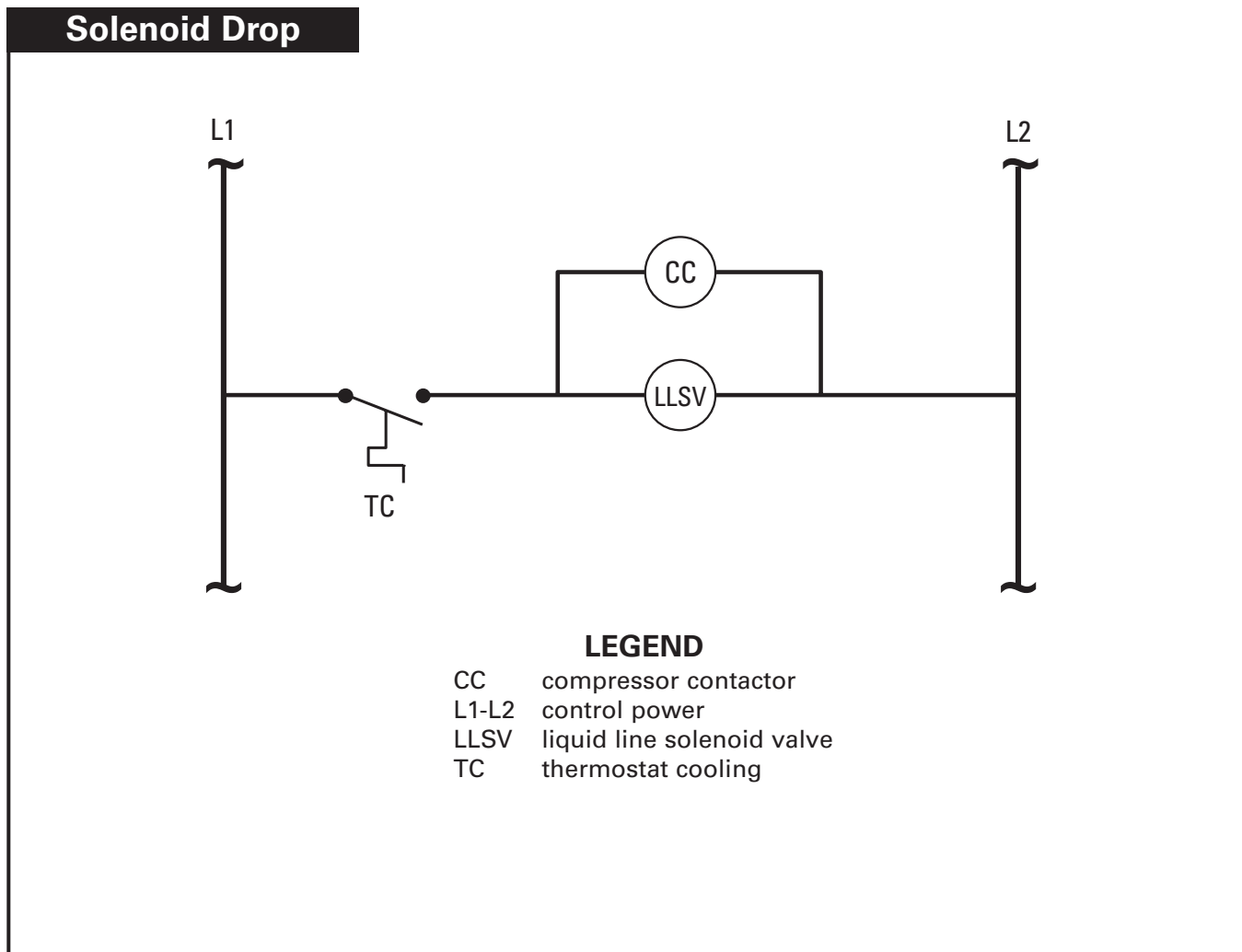
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Refrigerant Migration Protection

A description of methods, using a Liquid Line Solenoid Valve (LLSV) installed in the liquid line just before the metering device, to prevent liquid refrigerant in the evaporator from flowing into the crankcase of the compressor during the off cycle and causing a flooded compressor start.

1. Solenoid Drop (minimum protection)

When the cooling thermostat is satisfied, the LLSV is de-energized closing off the liquid line. The compressor also cycles off. The closing of the liquid line prevents any refrigerant migration to the low side of the system. Since there may be refrigerant remaining in the low side of the system which could migrate to the lubricant in the crankcase of the compressor, it is highly recommended that a crankcase heater be used with this system.

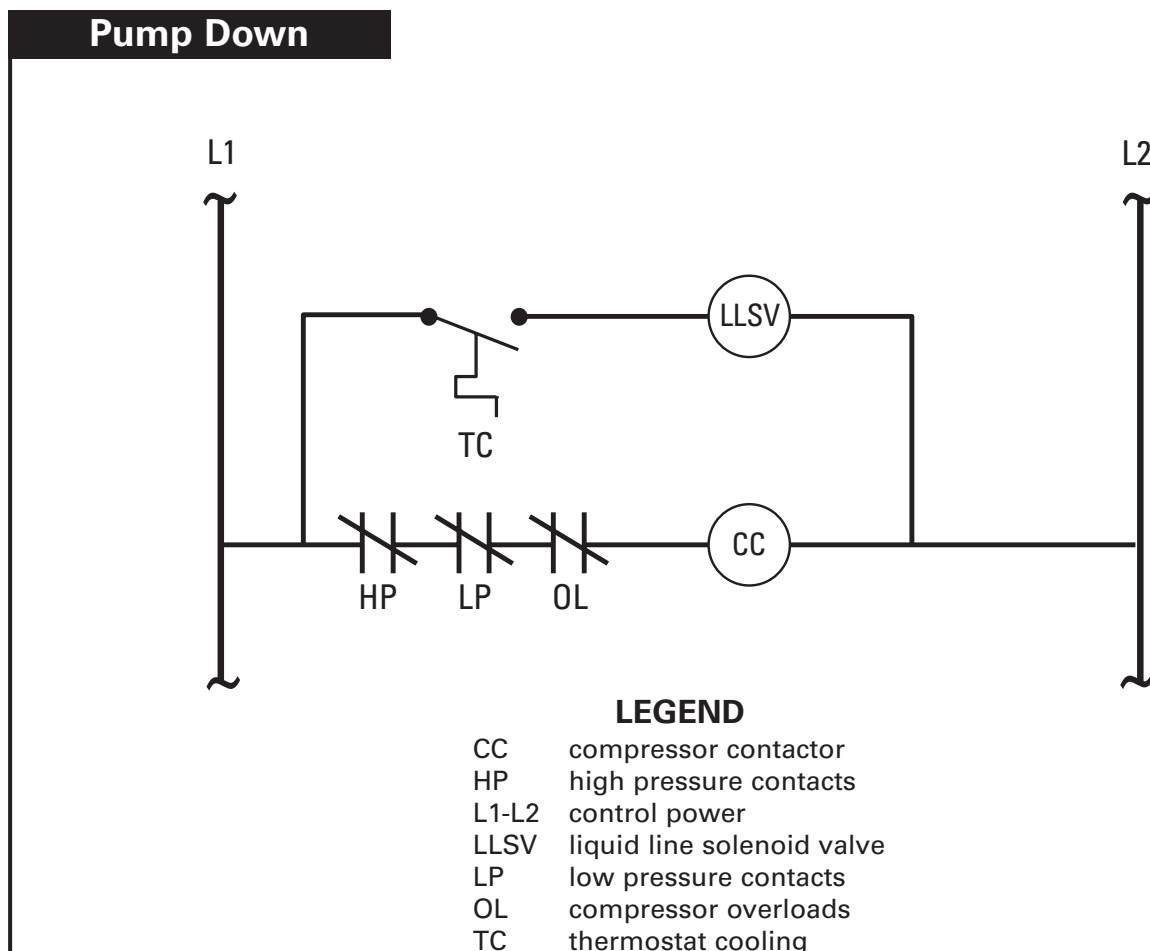


2. Pump Down Control

When the cooling thermostat is satisfied, the LLSV is de-energized closing off the liquid line. With this control, the compressor remains operating, drawing the refrigerant out of the low side of the system until the low side pressure is low enough to open the low pressure switch (LPS), stopping the compressor.

If the LLSV leaks, the low side pressure will increase to close the LPS starting the compressor. The compressor will continue to cycle as long as the LPS is closed. This repeated cycling will cause the compressor winding to overheat and lead to compressor failure.

Also, if the compressor is equipped with suction pressure unloaders, leaking through the unloader will cause the compressor to rapid cycle. Therefore it is not recommended to use a pump down control on a system with suction pressure unloaders.



3. Pump Out Control

This system operates similar to the pump down control, only with a pump out control, a compressor lock-out relay is used to prevent the compressor from cycling on the LPS. With the lock-out relay, the compressor reverts back to the cooling thermostat control and will not restart until the thermostat senses a need for cooling.

A crankcase heater should be used in conjunction with the pump out control.

