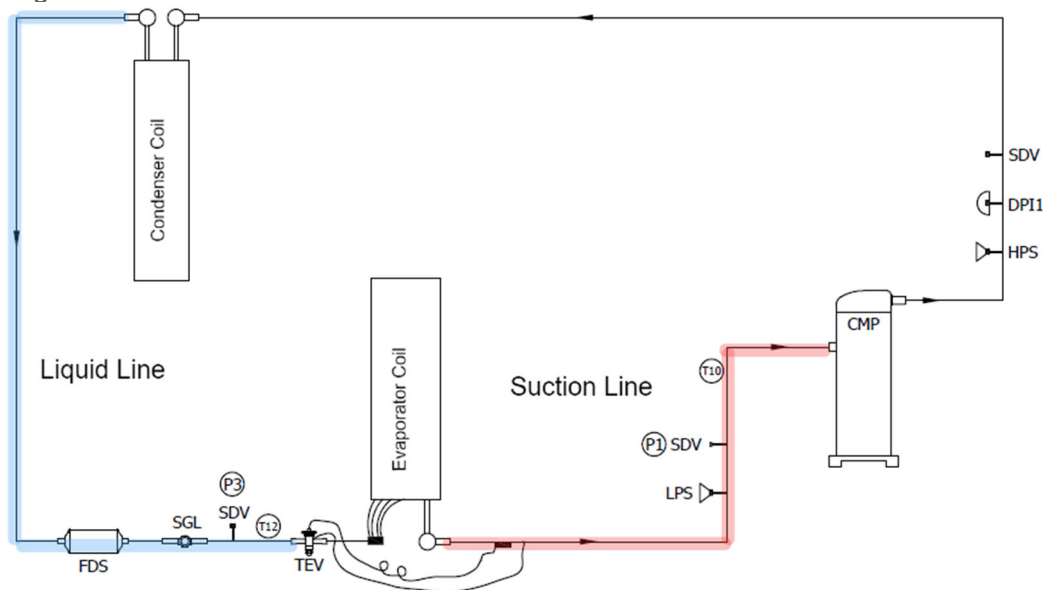


Frequently Asked Questions

Where do I measure subcool and superheat and what are their ideal values?

Identifying the Liquid and Suction Lines

1. The liquid line will run from the condenser coil to the metering device, either a TXV or EXV.
 - a. For air source heat pump (ASHP) units, see the Appendix section of this document for an example refrigeration diagram. The liquid line will change positions in the circuit depending on whether the heat pump is in a heating or a cooling mode.
2. The suction line will run from the evaporator coil to the compressor.
 - a. For ASHP units, see the Appendix section of this document for an example refrigeration diagram.

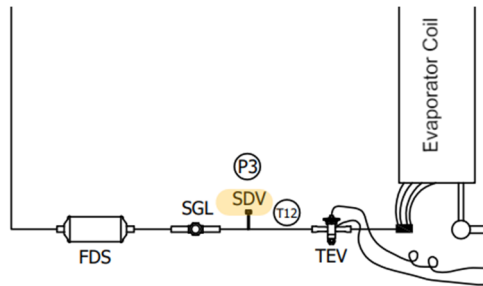


Locating Schrader Ports on the Liquid and Suction Lines

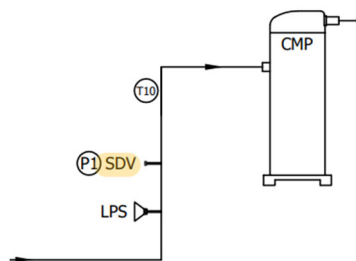
The exact location of Schrader ports will vary by unit model.

1. The liquid line Schrader port will be located near the sight glass and the filter dryer, between the condenser coil and the metering device.

- a. Note that in side-condensing units, a triangle, sheet metal panel may need to be removed by backing out sheet metal screws.



- b. For ASHP units, see the Appendix section of this document for an example refrigeration diagram. The liquid line will change positions in the circuit depending on whether the heat pump is in a heating or a cooling mode.
2. The suction line Schrader port will be located near the low-pressure switch on the suction line, between the evaporator and the compressor.
 - a. For ASHP units, see the Appendix section of this document for an example refrigeration diagram.



Attaching Refrigerant Gauges and Gathering Measurements

1. Pressure gauges should be attached to the applicable Schrader ports, and the associated temperature clamps should be secured as close to the Schrader ports as possible to properly calculate subcooling and superheat.
2. Before gathering the pressure and temperature values, run all refrigerant circuits at 100% compressor capacity and 0% hot gas reheat for 15 minutes.
 - a. For an ASHP unit in cooling mode, follow the above directions.
 - b. For an ASHP unit in heating mode, follow the above directions but override the hot gas reheat to 100% instead of 0%.
3. The pressure and temperature values should then be recorded.

Calculating Subcooling and Superheat Values

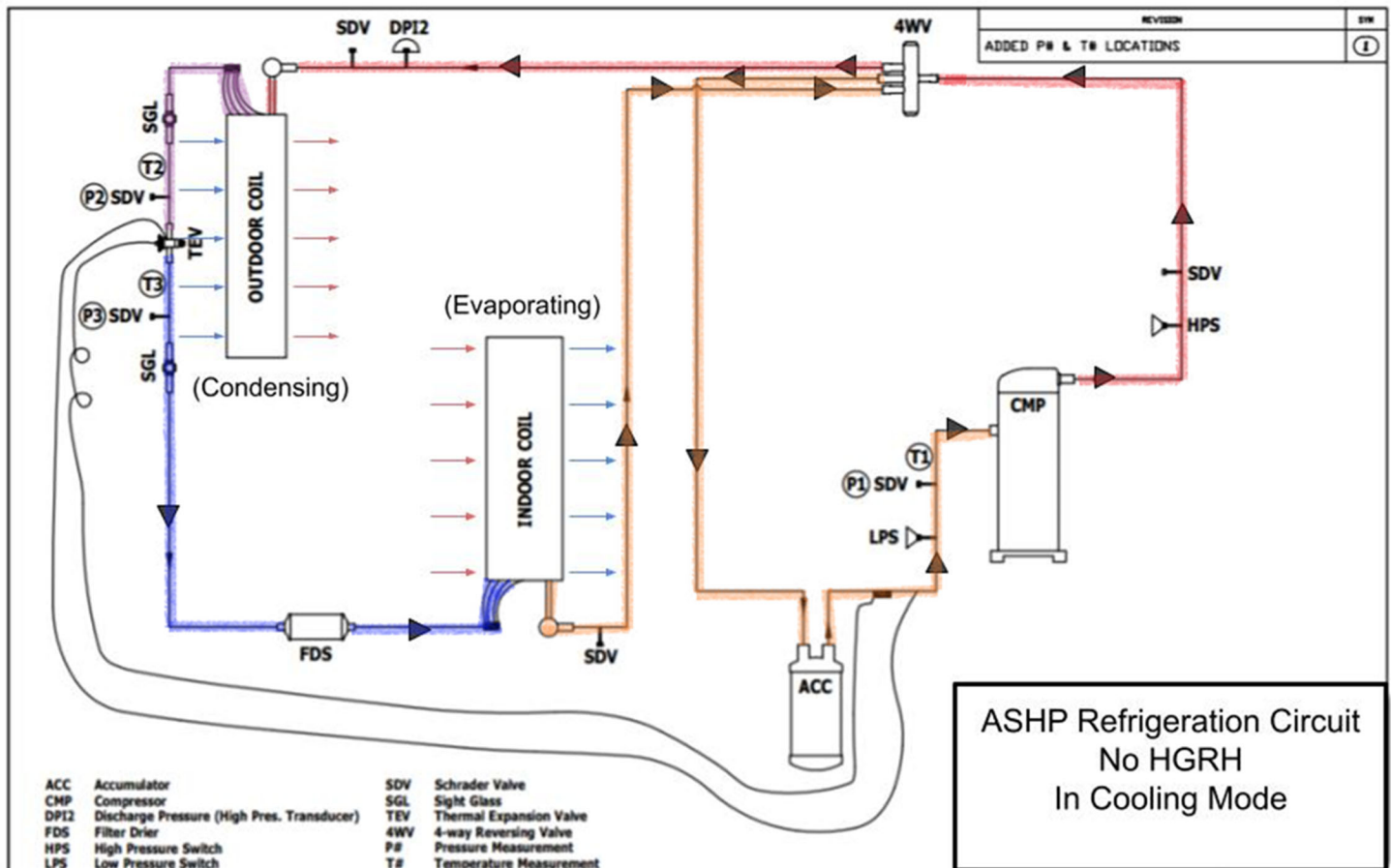
1. The pressure value should be converted to a saturated temperature value using a PT chart. Many gauges will perform this calculation automatically.
2. Calculate the difference between the saturated temperature value and the actual measured temperature from the temperature clamp at that same location. Many gauges will perform this calculation automatically.
 - a. Subcooling will result from performing Step 1 and 2 on the liquid line values.
 - b. Superheat will result from performing Step 1 and 2 on the suction line values.

Ideal Values for Subcooling and Superheat

1. Acceptable subcooling values can range from 6°F to 14°F depending on unit design and ambient conditions.
 - a. The ideal subcooling value is 10°F.
 - b. For ASHP units, acceptable subcooling values can also range from 6°F to 14°F in cooling mode.
 - i. In heating mode, the subcooling for an ASHP should be less than 20°F.
2. Acceptable superheat values can range from 6°F to 14°F depending on unit design and ambient conditions.
 - a. The ideal superheat value is 10°F.
 - b. For ASHP units, acceptable superheat values can range from 8°F to 12°F in cooling mode.
 - i. In heating mode, the superheat for an ASHP can range from 8°F to 20°F.

Appendix

1. ASHP Refrigeration Diagram with No Hot Gas Reheat in Cooling Mode:



Legend	
	Low Pressure Gas
	Low Pressure Liquid
	High Pressure Gas
	High Pressure Liquid

2. ASHP Refrigeration Diagram with No Hot Gas Reheat in Heating Mode:

