

Equipment Calibration



COMFORTABLE
HOME
REBATES

Digital Thermometers and Pressure Gauges (Temperature sensors and Pressure Transducers, Manifolds)

Required:

1. Styrofoam cup filled with distilled water and ice (from distilled water, bag ice).
2. Foam insulation tape

Caution: Not all temperature sensors support water immersion; please note the alternate procedure.

A sticker with the calibration check date shall be affixed to each instrument calibrated. This is a monthly procedure.

Thermometer and Temperature Sensor Calibration

California requires the use of Digital gauges.

Steps:

1. Fill the insulated cup (foam) with ice and distilled water. The ice needs to completely fill the cup. Fill the cup with the distilled water.
2. Insert the sensors into the center of the ice bath and attach them to the digital thermometer.
3. Let the temperatures stabilize. The temperatures shall be 32°F ($\pm 1^\circ\text{F}$). If the temperature is off by more than 1°F make corrections according to the manufacturer's instructions. Any sensors that are off by more than 2°F shall be replaced.
4. Switch the sensors and ensure that the temperatures read on both channels are still within $\pm 1^\circ\text{F}$ of 32°F.
5. Affix sticker with calibration date onto sensor.
6. Repeat the process for all sensors.



Alternate procedure

Begin with step 1, insert a $\frac{3}{4}$ " diameter copper pipe into the ice bath allowing only enough copper to extend above the water to connect the pipe clamps. Allow the temperature to stabilize and continue the above procedure.

Pipe Thermocouple Specification

Temperature measurement of refrigerant lines using pipe clamp sensors, Velcro strap-on, or an equivalent sensor meeting these specifications:

Accuracy: $\pm 2^\circ\text{F}$.

Resolution: 0.2°F.



Refrigerant Gauge Calibration Procedure

Gauges shall be checked monthly to ensure that the gauges are reading the correct pressures and corresponding temperatures.

California requires the use of Digital gauges.

Steps: This process works with both analog and digital gauges.

1. Place a refrigerant cylinder in a stable temperature environment and let it acclimate for at least 4 hours to stabilize to the ambient conditions. Any refrigerant may be used. We are using Saturation Pressure and Temperature to calibrate.
2. Attach the calibrated temperature sensor to the refrigerant cylinder using the insulation tape; assure good contact.
3. Zero the low side and high side refrigerant gauges with all ports open to atmospheric pressure (no hoses attached).
4. Re-install the hoses, attach the high side gauge to the refrigerant cylinder, and open the valves to measure the refrigerant cylinder pressure.
5. Read cylinder temperature on the calibrated Thermometer.
6. Determine corresponding pressure from P/T Chart,
7. If pressure displayed on Gauge doesn't correspond to P/T Chart, follow manufacturers procedures and adjust the manifold to match the temperature to the corresponding pressure.
8. Close the valve located on the refrigerant cylinder, and bleed off a small amount of refrigerant to lower the high side pressure to give a corresponding temperature to between 45°F and 55°F.
9. Open the valves between the high side gauge (**RED**) and low side gauge (**BLUE**).
10. If the two gauges do not read within 1°F of each other, the low side gauge is out of calibration and needs to be recalibrated.
11. Place a sticker with calibration date onto refrigerant gauge.



Manifold Specification

Refrigerant pressure measurements shall be made with digital measurement instrumentation, meeting the following specifications:

Accuracy: ± 7.0 psi liquid line pressure

Accuracy: ± 3.5 psi suction pressure