



Adjustable Sensor Simulator

## Description

The adjustable liquid line temperature Sensor Simulator has been designed to assist the service technician in calibration and/or verification of proper low ambient Controller performance. By simulating the operating range of the Controller, one has the ability to calibrate the Controller and also verify the entire operating range. It is recommended the Simulator be used only after the Controller has been installed and adjusted per 812/814/816 Series Installation & Operating Instructions.

## Calibration

### Minimum Speed Adjustment

The Sensor Simulator is used in place of the sensor to allow a service technician to manually adjust the condenser motor speed over the entire range of operation. It is not recommended that the compressor be operating while the evaluation of the condenser motor is taking place.

1. Electrically disable power to compressor during calibration, evaluation or disable control voltage to compressor contactor.
2. Disconnect the liquid line sensor from terminals on controller and install yellow leads from Simulator.

3. Set Simulator at 53°F liquid temperature. Turn on power. Motor will start at full voltage and then reduce to a minimum speed.
4. The minimum speed may be reset by adjusting minimum RPM adjustment on the Controller, while the Simulator is set for 53°F, to 400 RPM minimum for sleeve bearing motors and 200 RPM minimum for ball bearing motors.

## Performance Evaluation

The Controller may now be evaluated over the entire operating range by slowly adjusting the adjustable sensor simulator to various simulated liquid line temperatures as indicated on the dial.

## After Performance Evaluation

1. Disconnect power.
2. Reconnect power or control voltage connections to disabled compressor.
3. Reconnect liquid line sensor to Controller.

## Unit Operating Characteristics

If liquid line sensor temperature is:

1. Below 50°F, condenser fan will not start.
2. At 53°F motor will start at full synchronous speed, with full voltage for 1 to 3 seconds, and then reduce to minimum speed.

### NOTE

**At liquid temperatures of 50°F, sub-cooling of 40°F± will occur and a 90°F± condensing temperature will result.**

3. Between 53°F and 80°F, condenser fan motor will start at full speed, with full voltage for 1 to 3 seconds, and then reduce to a speed proportional to the liquid line temperature.

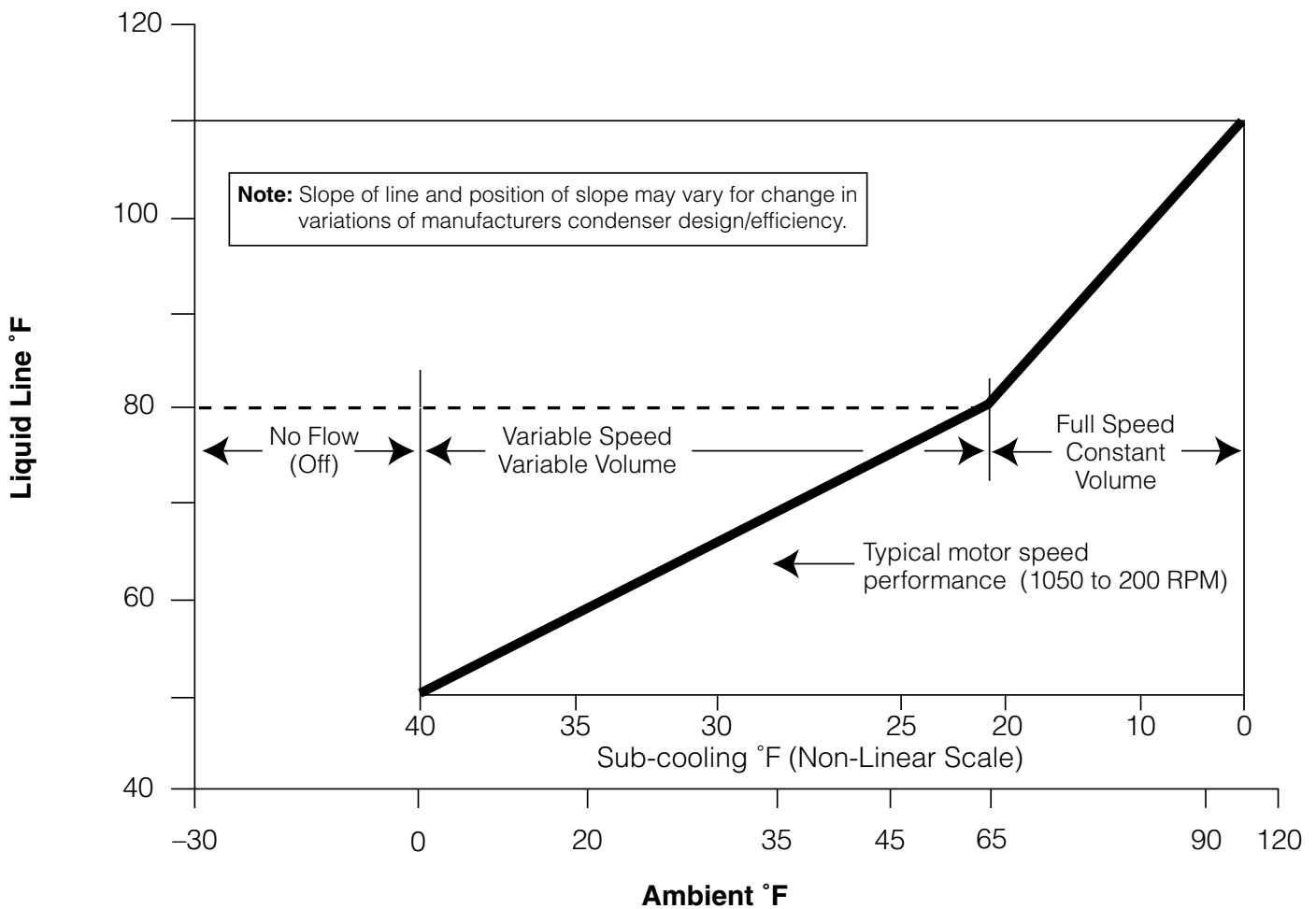
### NOTE

**When liquid temperatures approach 80°F, sub-cooling of 20°F± will occur and a 100°F± condensing temperature will result.**

4. Below 80°F, increasing to 80°F, motor speed changes from approximately 90% ± of full RPM to full synchronous RPM.
5. Above 80°F liquid temperature, the condenser fan motor remains at full synchronous RPM. The Controller internally switches directly to line voltage.

**NOTE**

**For all liquid temperatures above 80°F (65°F ± ambient) maximum condensing efficiency is obtained.**



**Typical Liquid Line °F vs. Ambient °F and Sub-cooling °F**

**Hoffman|Controls**