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Dallas, Texas, USA

COOLING UNITS KITS AND ACCESSORIES

TP Technical
Publications
Litho U.S.A.

504,793M
02/04
Supersedes 08/03

LOW AMBIENT CONTROL KIT

INSTALLATION INSTRUCTIONS FOR LOW AMBIENT CONTROL KIT LB-101123B (54M89) USED WITH SINGLE OUTDOOR FAN HEAT PUMP UNITS FOR USE WITH R410A REFRIGERANT

Shipping & Packing List

Package 1 of 1 contains the following:

- 1 - Low ambient pressure switch assembly (S11 - part #83L6001)
- 1 - Relay (K58 - part #37H9601)
- 4 - 20" Lengths of wire (c/w 3/16" Female quick connects on one end of wire)
- 4 - Wire nuts
- 2 - #10-16 X 5/8" S.D.S.T. screws
- 1 - Schrader depressor tee with seal cap

⚠ IMPORTANT

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a qualified installer or service agency.

Application

The low ambient control pressure switch (S11) cycles the outdoor fan, while allowing continuous compressor operation during a cooling demand. This intermittent outdoor fan operation maintains a minimum pressure differential across the expansion device as the ambient temperature drops, thus reducing capacity losses during low ambient conditions. This kit is designed for use in ambient temperatures no lower than 30°F (-1°C) unless otherwise noted in the Engineering Handbook. This kit is suitable only for use with single fan heat pump units in R410A refrigerant applications.

NOTE - This kit may be applied in expansion valve systems only. It is not suitable for use in systems which use capillary tube metering devices.

System must include crankcase heater and a freezestat to allow low ambient operation. Add external belly-band crankcase heater and freezestat before continuing. Refer to tables 1 and 2. See figure 1 for freezestat wiring.

Installation

- 1 - Turn off the electrical power to the unit.
- 2 - Remove compressor compartment access panel, if applicable.
- 3 - Install provided low ambient pressure switch on open port (no valve core) of provided tee fitting.
NOTE - Pressure switch must be installed before tee is installed to avoid refrigerant loss.
- 4 - Install tee fitting on heat pump liquid line service port.
- 5 - Install cap on valve core port and tighten to 6 to 8 ft.-lbs.
- 6 - Route pressure switch wires into control box and connect per applicable unit wiring diagram.
- 7 - Use the two provided screws to mount K58 relay in the control box.
- 8 - Wire in K58 relay. See figure 1.

Wire Connections

Low ambient control pressure switch (S11) and K58 N.C. (terminals 1 and 7) are wired in series with outdoor fan relay that is mounted on the defrost board. Wire K58 coil (terminals A & B) in parallel with reversing valve terminals (L1) on the defrost board.

Switch Settings

The provided low ambient pressure switch is factory set for 450 psig (3100 kPa) cut-in and 240 psig (1600 kPa) cut-out. This switch is not adjustable.



Typical Field Wiring Low Ambient Control Pressure Switch*

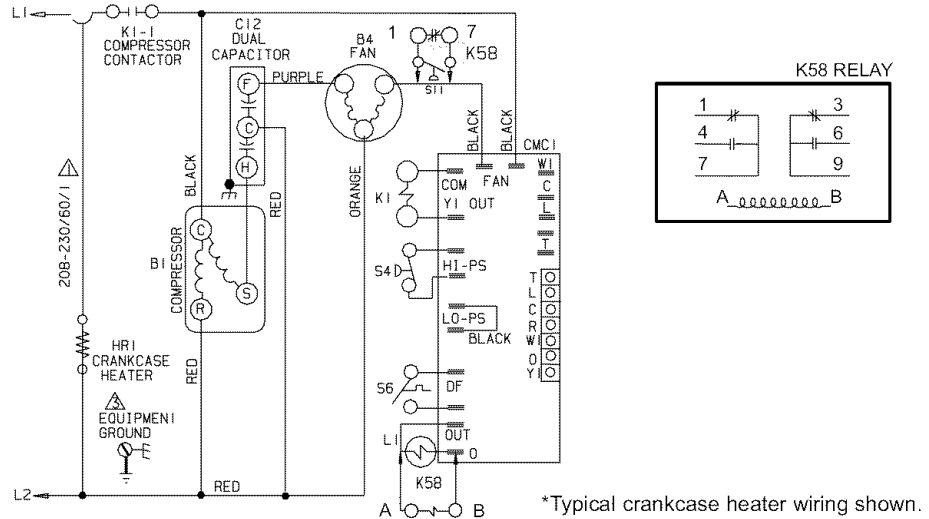


Figure 1

**Table 1
Crankcase Heaters for Units with Scroll Compressors**

Scroll Compressors	Volts	Watts	Manufacturer's Part Number	Power Leads	Dimensions	Lennox Part Number
1-1/2 to 3 ton (ZR18K-ZR42K)	240	40	018-0041-00	18ga 40"	20" to 26"	18K2001
	480	40	018-0041-01	18ga 21-1/2"	20" to 26"	49K1101
	575	40	018-0041-02	18ga 21-1/2"	20" to 26"	49K1201
4 to 7-1/2 ton (ZR46K-ZR72K)	240	70	018-0043-00	18ga 30"	21-1/8" to 30"	31J2001
	480	70	018-0043-01	18ga 30"	21-1/8" to 30"	31J2101
	575	70	018-0043-02	18ga 30"	21-1/8" to 30"	42J8501
1-1/2 to 3 ton	240	40	CH196	18ga 40"	21" to 26-1/2"	90P12

NOTE: Any 208/240 volt 40 watt heater can be substituted by Tutco 67K9001 70 watt heater. Any 480 volt 40 watt heater can be substituted by Tutco 67K8901 70 watt heater.

Install the freezestat as close as possible to the outlet of the indoor coil. The freezestat senses the line temperature and cycles the compressor off when the line temperature falls below its setpoint. The freezestat will open at 29°F (-2°C) and close at 58°F (10°C). See figure 2 for freezestat wiring.

**Table 2
Freezestat Selection**

Tubing Size	Wire Length	Wire Gauge	Lennox Part Number
3/8"	90 13/16"	18	93G35
1/2"	140 13/16"	18	39H29
5/8"	36 1/2"	18	50A93

NOTE: Use ONLY expansion valve metering devices on units with low ambient kits.

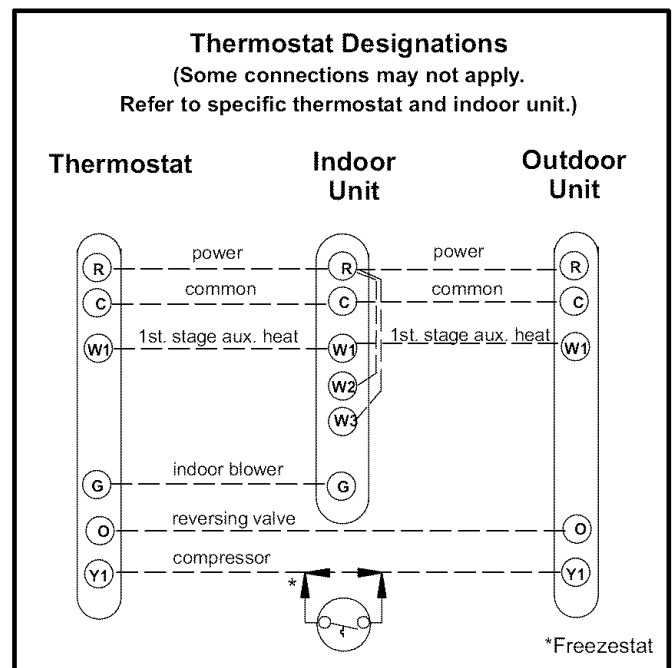


Figure 2

Operational Checkout

Cooling Mode

Set the room thermostat to call for cooling. The defrost board in unit will receive a Y and O signal from the room thermostat. The O signal will energize the reversing valve and the K58 relay coil. Contacts K58-1 will open. The Y signal will go through the freeze stat to Y1 on the defrost board. The signal will go into defrost board to the HI-PS terminals, out to the high pressure switch and back to the other HI-PS terminal. The signal will come back out of the defrost board on the Y terminal which will energize the compressor contactor coil. The compressor will cycle ON. The outdoor fan motor will be OFF until the liquid line pressure reaches the setting of the low ambient pressure switch (450 psig - 3100kPa).

NOTE - The outdoor fan motor will be cycled by the low ambient and K159 relay. During a call for cooling when the liquid line pressure rises above 450 psig (3100 kPa), the

outdoor fan will cycle ON. When the liquid line pressure falls below 240 psig (1600 kPa), the outdoor fan will cycle OFF.

Heating Mode

Set the room thermostat to call for heating. Defrost board in unit will receive a Y signal from the room thermostat. The O signal from the room thermostat is not energized, so the K58 relay coil will not be energized. Contacts K58-1 will remain closed. The Y signal will go through the freeze stat to Y1 on the defrost board.

The signal will go into defrost board to the HI-PS terminals, out to the high pressure switch and back to the other HI-PS terminal. The signal will come back out of the defrost board on the Y terminal which will energize the compressor contactor coil. The compressor will cycle ON. The K58-1 relay contacts (which are normally closed) will prevent the low ambient pressure switch from interrupting the outdoor fan motor operation during the heating mode.