

REPLACEMENT DEFROST CONTROL BOARD

INSTALLATION INSTRUCTIONS FOR REPLACEMENT DEFROST CONTROL BOARD KIT (34M63) USED WITH LENNOX HEAT PUMPS

Shipping and Packing List

Package 1 of 1 contains:

- 1 - Defrost control board (29M0101)
- 1 - Sticker

Application

Replacement defrost control board kit (34M63) includes defrost control board 29M0101. This control board may be used in Lennox heat pump units to replace an existing 68J2901, 68J8401, 29M0101 or 29M0201 control board. The 29M0101 includes features which may not be found in all of the existing boards. If the unit was originally equipped with any board other than a 29M0101, operation should be reviewed at the time of replacement.

Features of 29M0101 board:

- Five-minute compressor time delay;
- Pressure switch lockout circuit;
- Loss of charge / low pressure switch circuit;
- Field connection terminals for ambient thermistor and service light.

Installation

⚠ WARNING

These instructions must be followed exactly. This kit must be installed by a qualified service technician. Improper installation may result in personal injury, loss of life or equipment damage.

⚠ WARNING

Before attempting to perform any service or maintenance, turn the electrical power OFF to unit at disconnect switch(es).

⚠ CAUTION

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

- 1 - Disconnect all electrical power from the unit.
- 2 - Locate existing defrost control board
- 3 - Mark and disconnect wires from existing defrost control board. Remove existing control board.
- 4 - Position replacement board properly over mounting holes in unit and snap stand-offs into place.

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- 5 - Reconnect labeled wires to the proper terminals on the replacement board per the existing unit wiring diagram. Refer to figure 1 for pressure switch wiring and terminal identification.

- 6 - Review replacement defrost board operation section which follows. **Remove factory-installed jumpers, if necessary.**

NOTE - Remove the factory-installed jumper(s) to install the existing high pressure and low pressure (or loss of charge) switch(es).

- 7 - Affix provided sticker to inside of control panel.
- 8 - Restore electrical power to the unit and monitor unit function through a defrost test cycle.

Defrost System

The defrost system includes two components:

- a defrost thermostat
- a defrost control

Defrost Thermostat

The defrost thermostat is located on the liquid line between the check/expansion valve and the distributor. When the defrost thermostat senses 42°F (5.5°C) or cooler, its contacts close and send a signal to the defrost control board to start the defrost timing. It also terminates defrost when the liquid line warms up to 70°F (21°C).

Defrost Control

The defrost control board includes the combined functions of a time/temperature defrost control, defrost relay, time delay, diagnostic LEDs, and a terminal strip for field wiring connections. See figure 1. The control provides automatic switching from normal heating operation to defrost mode and back. During compressor cycle (defrost thermostat is closed, calling for defrost), the control accumulates compressor run times at 30, 60, or 90 minute field adjustable intervals. If the defrost thermostat is closed when the selected compressor run time interval ends, the defrost relay is energized and defrost begins.

Defrost Control Timing Pins

Each timing pin selection provides a different accumulated compressor run time period during one thermostat run cycle. This time period must occur before a defrost cycle is initiated. The defrost interval can be adjusted to 30 (T1), 60 (T2), or 90 (T3) minutes. See figure 1. The defrost timing jumper is factory-installed to provide a 60-minute defrost interval. If the timing selector jumper is not in place, the control defaults to a 90-minute defrost interval. The maximum defrost period is 14 minutes and cannot be adjusted.

A TEST option is provided for troubleshooting. **The TEST mode may be started any time the unit is operating in the heating mode and the defrost thermostat is**

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closed or jumpered. If the jumper is in the TEST position at power-up, the control will ignore the test pins. When the jumper is placed across the TEST pins for two seconds, the control will enter the defrost mode. If the jumper is removed before an additional 5-second period has elapsed (7 seconds total), the unit will remain in defrost mode until the defrost thermostat opens or 14 minutes have passed. If the jumper is not removed until after the additional 5-second period has elapsed, the defrost will terminate and the test option will not function again until the jumper is removed and re-applied.

Time Delay

The timed-off delay is five minutes long. The delay helps protect the compressor from short-cycling in case the power to the unit is interrupted or a pressure switch opens. The delay is bypassed by placing the timer select jumper across the TEST pins for 0.5 seconds.

Pressure Switch Circuits

The defrost control includes two pressure switch circuits. The factory-installed high pressure switch (S4) wires are connected to the board's HI PS terminals. The board also includes LO PS terminals to accommodate a field-provided low pressure or loss of charge pressure switch. See figure 1.

During a single thermostat cycle, the defrost control will lock out the unit after the third time that the circuit is interrupted by any pressure switch that is wired to the control board. In addition, the diagnostic LEDs will indicate a pressure switch lockout after the third occurrence of an open pressure switch. See table 1. The unit will remain locked out until power is broken then remade to the control or until the jumper is applied to the TEST pins for 0.5 seconds.

NOTE - The defrost control board ignores input from the

low pressure switch terminals during the TEST mode, during the defrost cycle, during the 90-second start-up period, and for the first 90 seconds each time the reversing valve switches heat/cool modes. If the TEST pins are jumpered and the 5-minute delay is being bypassed, the LO PS terminal signal is not ignored during the 90-second start-up period.

Ambient Thermistor & Service Light Connection

The defrost control board provides terminal connections for the ambient thermistor and a service light. The thermistor compensates for changes in ambient temperature which might cause thermostat droop. The service light thermostat provides a signal which activates the room thermostat service light during periods of inefficient operation.

NOTE - Properly reposition test jumper across desired timing pins after testing has been completed.

Diagnostic LEDs

The defrost board uses two LEDs for diagnostics. The LEDs flash a specific sequence according to the diagnosis.

TABLE 1

DEFROST CONTROL BOARD DIAGNOSTIC LED		
MODE	LED 1	LED 2
Normal operation / power to board	Synchronized Flash with LED 2	Synchronized Flash with LED 1
Board failure or no power	Off	Off
Board failure	On	On
High pressure switch open	Flash	On
Low pressure switch open	On	Flash
Pressure switch lockout	On	Off
Anti-short-cycle / 5-minute delay	Alternating Flash with LED 2	Alternating Flash with LED 1

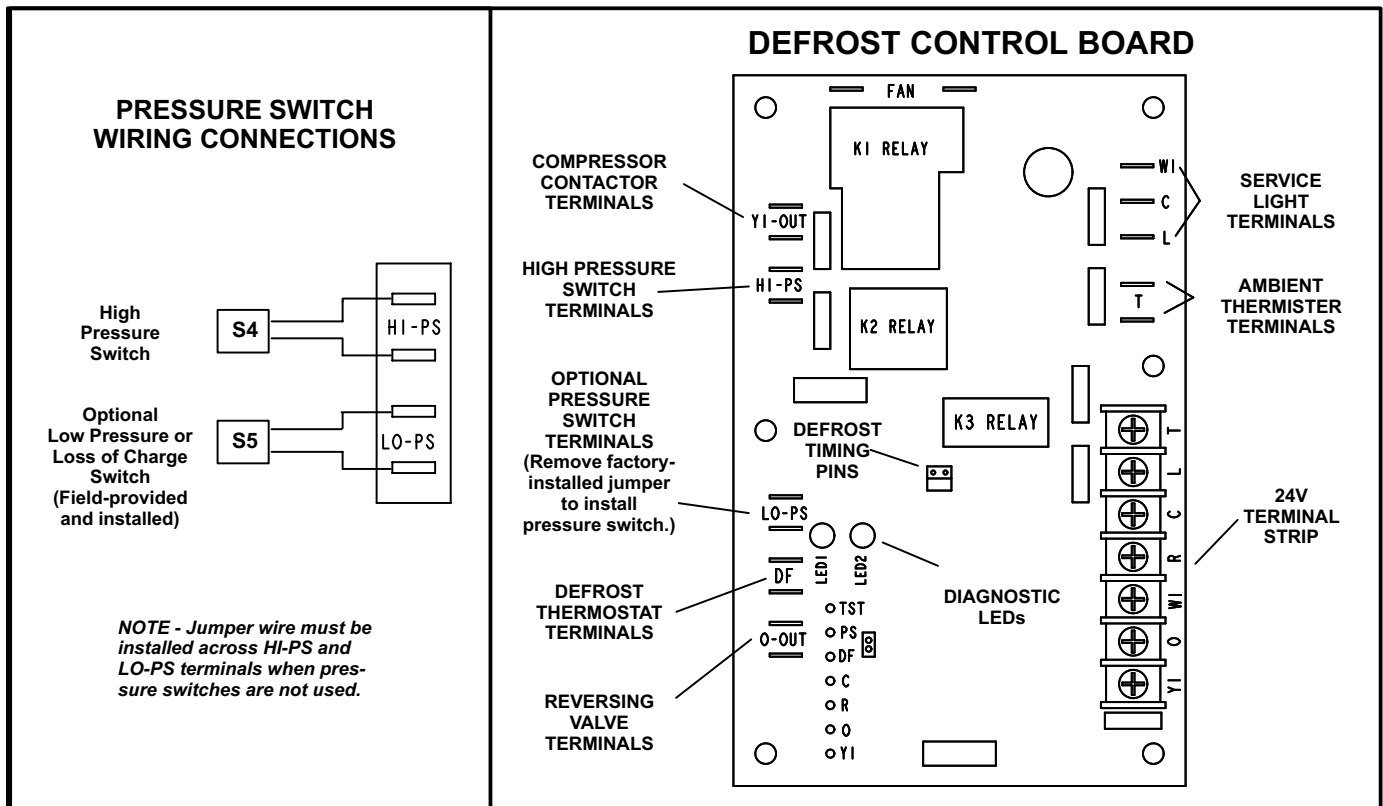


FIGURE 1