507755-01
3/2021

INSTALLATION INSTRUCTIONS FOR LOW AMBIENT KIT (16F25) (618159-03) USED WITH ELS 180-240 SERIES UNITS

Shipping and Packing List

Package 1 of 1 contains:

2 – ICM Controllers (A190/A191 - see figure 6 for reference)

2 – Pressure transducers

2 – Fan power harness

2 – Valve depressor tees with two cores

1 – Wiring diagram sticker

1 – ICM Controller harness

2 – High pressure switches

Wire ties / Self-tapping screws

⚠ WARNING

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 licensed professional HVAC installer or equivalent, service agency, or the gas supplier.

⚠ CAUTION

As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

⚠ WARNING

Electric Shock Hazard! – Disconnect all power supplies before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

Application

During low ambient conditions, the liquid line pressure will fall. If the pressure gets too low, the system will not have enough pressure drop across it to operate properly. To maintain the head pressure, the low ambient kit, instead of shutting down the condenser fan, slows down the condenser fan until the head pressure rises to the set point.

This kit is designed for use in ambient temperatures no lower than 0°F (−17.8°C) unless otherwise noted in the Engineering Handbook.

Operation

Liquid line pressure for the ELS units is set at 315 psig. During low ambient conditions, as the liquid line pressure falls, the pressure transducer converts the liquid line pressure to an analog electric signal. The ICM controller then switches the fan motor to variable speed. The condenser fan speed is reduced, thus increasing the liquid line pressure to the set point to ensure unit keeps operating properly.

Hardware Installation

1 - Disconnect all power to the outdoor unit and open panels on outdoor unit to gain access to the control box.

2 - Install the ICM333 variable speed controller at the location shown below using self-tapping screws provided.

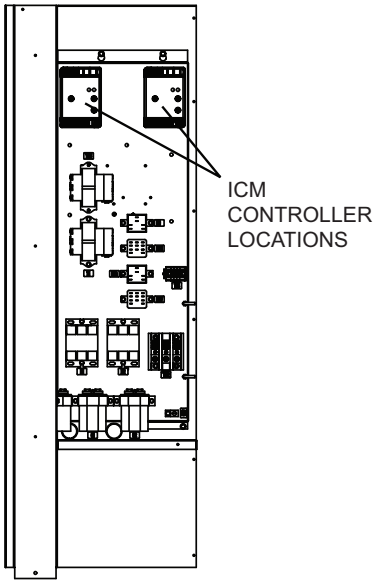


FIGURE 1. ICM Controller Location

3 - Set the variable speed controller to the following settings:

- Setpoint: 315 psig
- Hard Start: Min.
- Cut-out Speed: Set to 5th marker from minimum
- Heat Pump Pin set to: N.O.

4 - Disconnect loss of charge switches from the stage 1 and stage 2 liquid lines.

5 - Install the valve depressor tees with two cores in place of the loss of charge switches.

6 - Connect the loss of charge switches to the valve core of the valve depressor tees.

7 - Install the two pressure transducers (ICM380) to the valve core of the valve depressor tees on stage 1 and stage 2 liquid lines. Refer to figure 2.

8 - Remove the existing high pressure switches from the compressor discharge line and replace them with the switches provided in the kit.

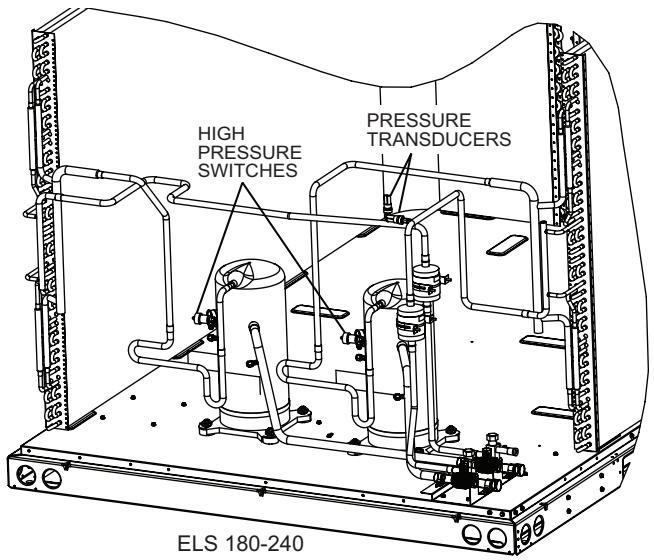


FIGURE 2. Pressure Transducer / Pressure Switch Locations

Electrical Installation

Connections for ICM333

1 - Connect the line power L2 wire to the terminal marked Line 2 on the ICM333 controller.

2 - Connect the motors for the outdoor fan to the terminal marked Motor 2 (blue wire marked A190-M and A191-M) on the ICM 333 controller (A190/A191).

3 - Check the voltage to the unit. Depending on the voltage, connect Line Power L1 to the correct terminal marked by Line1/ Motor 1.

4 - For voltages between 120 - 277, connect the L1 to the terminal second from the left. For voltages between 480 – 600, connect L1 to the left most terminal on the ICM333 controller.

Connections for Pressure Transducer

1 - Connect the black wire from one pressure transducer to P1 & P2 BLK COMM on one controller and the black wire from the other transducer to P1 & P2 BLK COMM on the other controller.

2 - Connect the red wire from one pressure transducer to P1 & P2 RED on one controller and the red wire from the other transducer to P1 & P2 RED on the other controller.

3 - Connect the green wire from stage 1 pressure transducer to P1 B, W, G on one controller.

4 - Connect the green wire from stage 2 pressure transducer to P2 B, W, G on the other controller.

⚠ IMPORTANT

It is essential that the existing fan power harness be removed and discarded as outlined in step 4 below. Continue to make the remaining connections per step 5.

Remaining Connections

1 - Install 24V Power Harness, A190/A191 Controller (ICM 333) – A190-24V/A191-24V and A190-COM/ A191-COM, to TB14-R and TB14-C.

2 - Remove wiring to K10 relay and K149 relay.

3 - Remove the wiring plugged into K10-4 and K149-4. DO NOT discard the wiring.

4 - Remove existing fan power harness and discard it. (Refer to figures 4 and 5 for the harness to be discarded.)

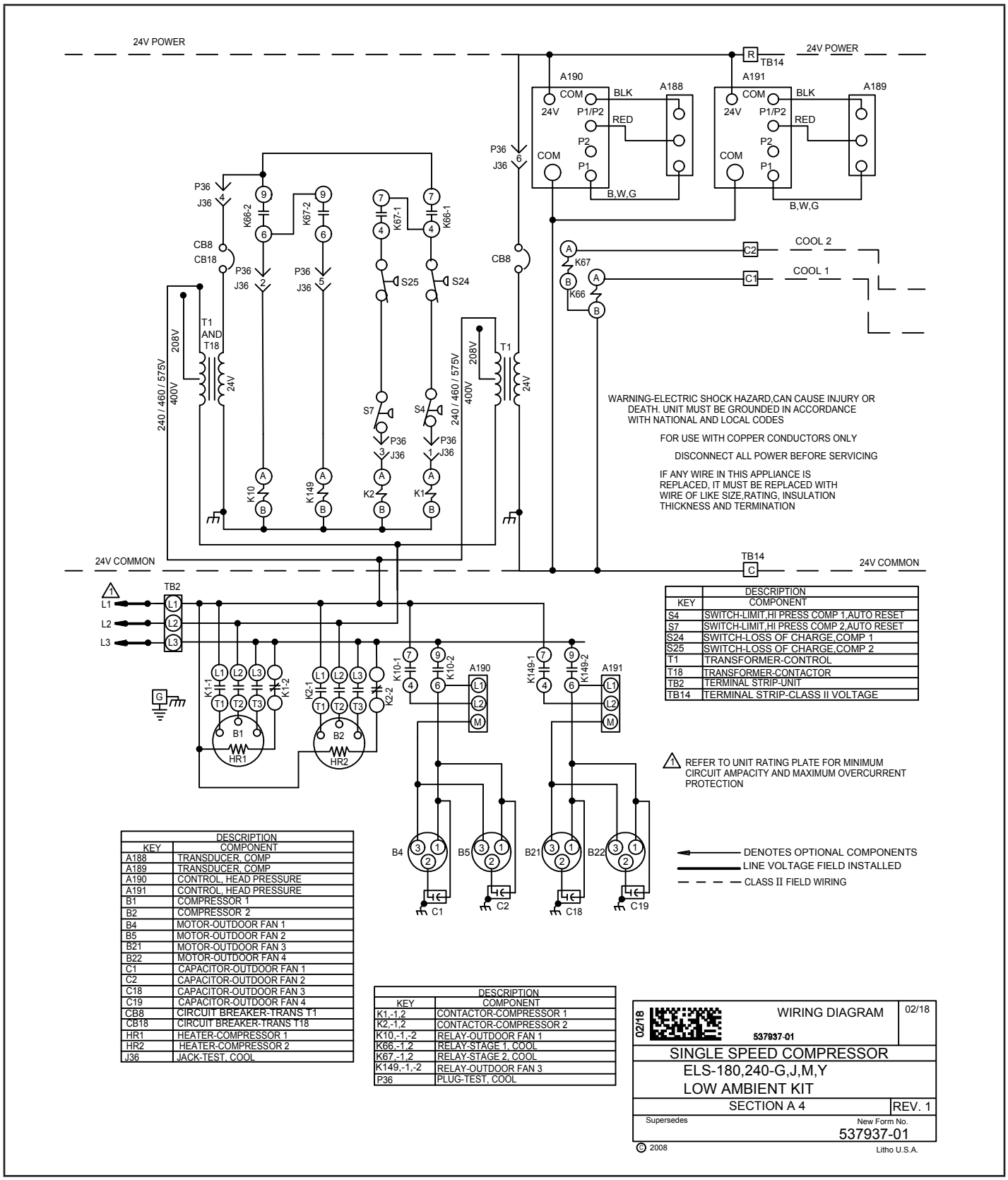
5 - After disconnecting factory wiring to K10-4 and K149-4 (blue and pink female 1/4" QC terminal) per step 3, connect the wire marked K10-4/A190-M from the harness in the kit (blue male 1/4" QC) to the K10-4 wire that was unplugged (blue female 1/4" QC terminal) and connect the wire marked K149-4/ A191-M from the harness in the kit (pink male 1/4" QC) to the K149-4 wire that was unplugged (pink female 1/4" QC terminal) Plug wire from harness in kit marked A191-L2/K149- 4 into relay K149-4. Install remaining connections of the harness provided per the wiring diagram.

6 - Make sure all connections are in place.

7 - Use wire ties to bundle wiring and keep it away from sharp edges.

8 - Place the new wiring diagram sticker provided in kit on the unit.

9 - Restore power to outdoor unit.



KEY	DESCRIPTION COMPONENT
S4	SWITCH-LIMIT,HI PRESS COMP 1,AUTO RESET
S7	SWITCH-LIMIT,HI PRESS COMP 2,AUTO RESET
S24	SWITCH-LOSS OF CHARGE,COMP 1
S25	SWITCH-LOSS OF CHARGE,COMP 2
T1	TRANSFORMER-CONTROL
T18	TRANSFORMER-CONTACTOR
TB2	TERMINAL STRIP-UNIT
TB14	TERMINAL STRIP-CLASS II VOLTAGE

KEY	DESCRIPTION COMPONENT
A188	TRANSDUCER, COMP
A189	TRANSDUCER, COMP
A190	CONTROL, HEAD PRESSURE
A191	CONTROL, HEAD PRESSURE
B1	COMPRESSOR 1
B2	COMPRESSOR 2
B4	MOTOR-OUTDOOR FAN 1
B5	MOTOR-OUTDOOR FAN 2
B21	MOTOR-OUTDOOR FAN 3
B22	MOTOR-OUTDOOR FAN 4
C1	CAPACITOR-OUTDOOR FAN 1
C2	CAPACITOR-OUTDOOR FAN 2
C18	CAPACITOR-OUTDOOR FAN 3
C19	CAPACITOR-OUTDOOR FAN 4
CB8	CIRCUIT BREAKER-TRANS T1
CB18	CIRCUIT BREAKER-TRANS T18
HR1	HEATER-COMPRESSOR 1
HR2	HEATER-COMPRESSOR 2
J36	JACK-TEST, COOL

KEY	DESCRIPTION COMPONENT
K1,-1,2	CONTACTOR-COMPRESSOR 1
K2,-1,2	CONTACTOR-COMPRESSOR 2
K10,-1,-2	RELAY-OUTDOOR FAN 1
K66,-1,2	RELAY-STAGE 1, COOL
K67,-1,2	RELAY-STAGE 2, COOL
K149,-1,-2	RELAY-OUTDOOR FAN 3
P36	PLUG-TEST, COOL

02/18 — WIRING DIAGRAM 02/18

537937-01

SINGLE SPEED COMPRESSOR
ELS-180,240-G,J,M,Y
LOW AMBIENT KIT

SECTION A 4 — REV. 1

Supersedes — New Form No. 537937-01

FIGURE 3. Wiring Diagram – ELS 180-240

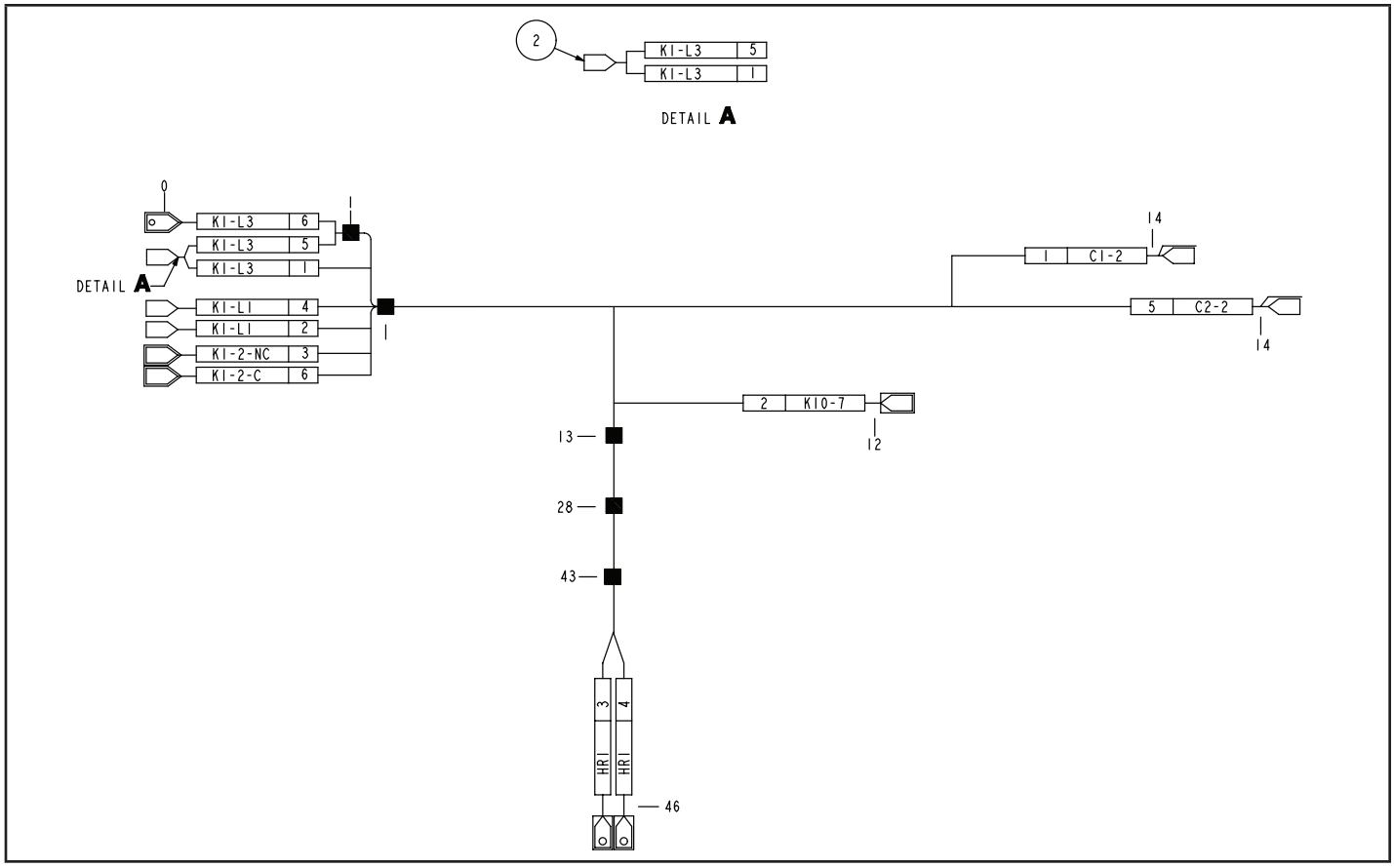


FIGURE 4. Factory-Installed Fan Power Harness (Must be Removed)

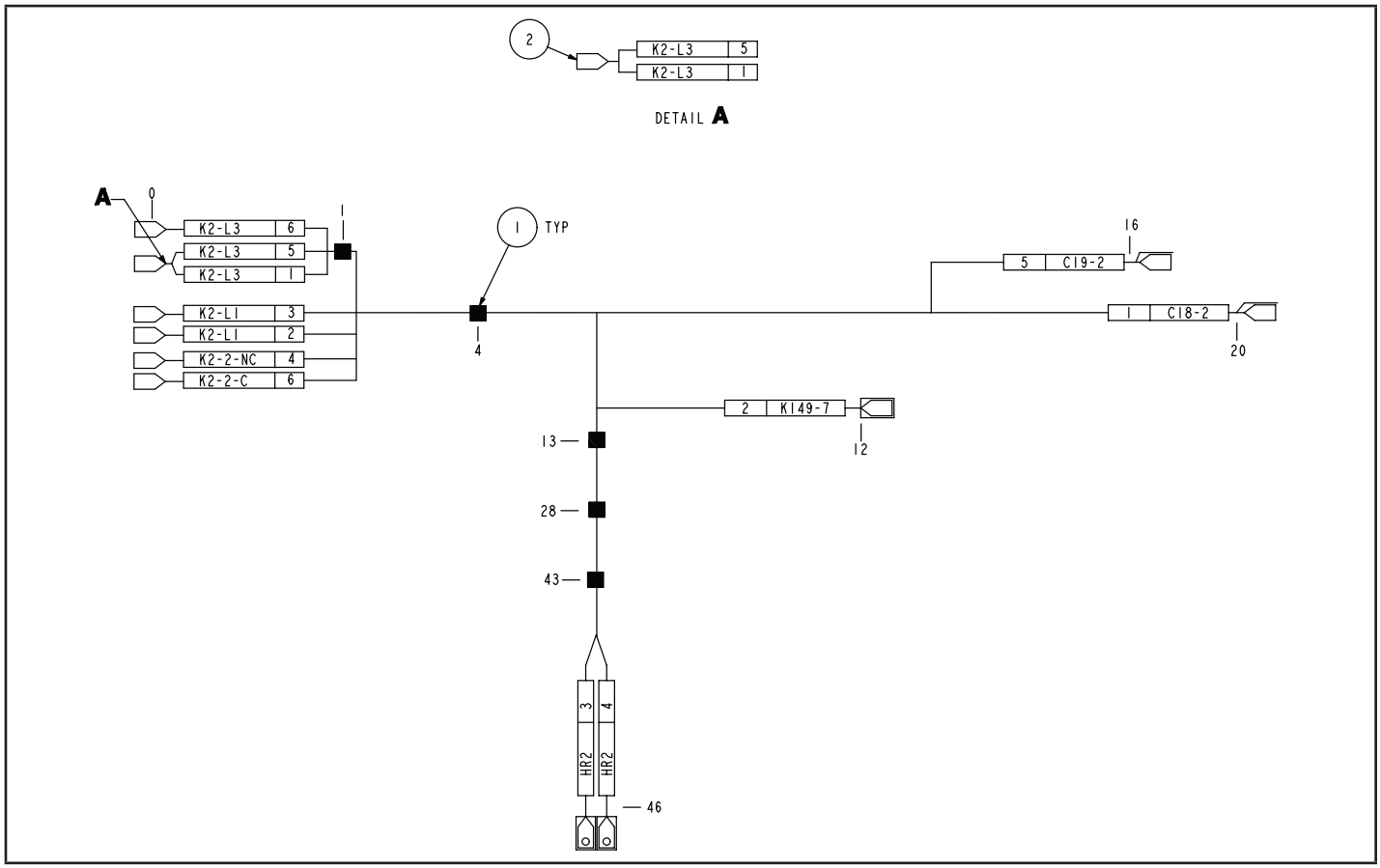


FIGURE 5. Factory-Installed Fan Power Harness (Must be Removed)

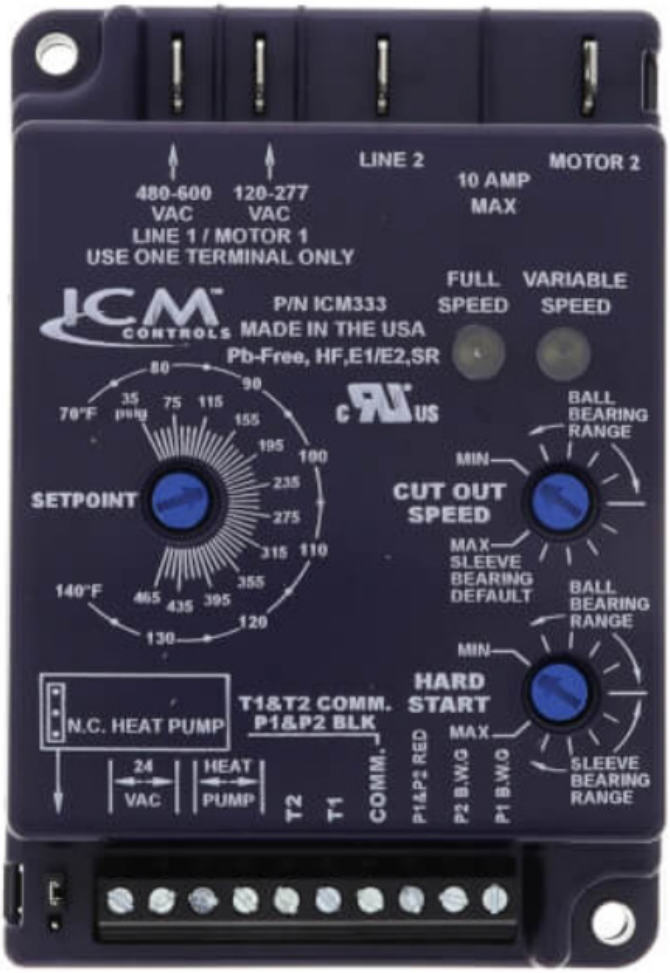


FIGURE 6. ICM Controller (A190)