LAKT 11 THROUGH 25

LOW AMBIENT KITS FOR LIGHT COMMERCIAL UNITS

3-20 TONS

INSTALLATION INSTRUCTIONS

ATTENTION INSTALLING PERSONNEL

As a professional installer you have an obligation to know the product better than the customer. This includes all safety precautions and related items.

Prior to actual installation, thoroughly familiarize yourself with this Instruction Manual. Pay special attention to all safety warnings. Often during installation or repair it is possible to place yourself in a position which is more hazardous than when the unit is in operation.

Remember, it is **your** responsibility to install the product safely and to know it well enough to be able to instruct a customer in its safe use.

Safety is a matter of common sense...a matter of thinking before acting. Most dealers have a list of specific good safety practices... follow them.

The precautions listed in this Installation Manual are intended as supplemental to existing practices. However, if there is a direct conflict between existing practices and the content of this manual, the precautions listed here take precedence.

DESCRIPTION

LAKT11 through 25 low ambient kits are designed for use with Light Commercial Packaged units intended to operate in cooling mode at ambient temperatures below 55 degrees. LAKT11-25 kits utilize a temperature sensitive fan motor speed controller designed to regulate the head pressure by varying the air volume through the outdoor coil. This is achieved by sensing the liquid temperature at the coil by means of a thermistor probe(s). The probe(s) provides an input signal to the control to change the fan motor speed in relation to changes in the liquid temperature. Ensure all parts are included before beginning. If parts are missing from the kit contact the distributor where the kit was putchased.

Keep this literature in a safe place for future reference.

Table of Contents

NOTE: SPECIFICATIONS AND PERFORMANCE DATA LISTED HEREIN ARE SUBJECT TO CHANGE WITHOUT NOTICE

Quality Makes the Difference!

All of our systems are designed and manufactured with the same high quality standards regardless of size or efficiency. We have designed these units to significantly reduce the most frequent causes of product failure. They are simple to service and forgiving to operate. We use quality materials and components. Finally, every unit is run tested before it leaves the factory. That's why we know. . .**There's No Better Quality.**

Visit our website at www.daikincomfort.com, www.goodmanmfg.com or www.amana-hac.com for information on:

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KIT CONTENTS

UNIT	VOLTAGE	REQUIRED KIT	CONTROL W/BRACKET	MOTOR	CAPACITOR	WIRES	ELECTRICAL TERMINALS & CONNECTORS	FASTENERS	WIRE TIES
3-5T DSC/G 3-4T DSH 3-4T DTC/G/H	208-230	LAKT11	0130M00058 1 Temp Probe	(1) 1/4 HP 208-230 vac	N/A	8	2	6	3
5T DTC/G/H 5T DSH 6T DCC/G/H	208-230	LAKT12	0130M00058 1 Temp Probe	(1) 1/3 HP 208-230 vac	N/A	8	2	6	3
3-5T DSC/G 3-4T DSH 3-4T DTC/G/H	460/3/60	LAKT13	0130M00058 1 Temp Probe	(1) 1/4 HP 460 vac	(1) 5 mfd	8	2	6	3
3-5T DSC/G 3-4T DSH 3-4T DTC/G/H	575/3/60	LAKT14	0130M00058 1 Temp Probe	(1) 1/4 HP 575 vac	(1) 5 mfd	8	2	6	3
5T DTC/G/H 5T DSH 6T DCC/G/H	460/3/60	LAKT 15	0130M00058 1 Temp Probe	(1) 1/3 HP 460 vac	N/A	8	2	6	3
5T DTC/G/H 5T DSH 6T DCC/G/H	575/3/60	LAKT16	0130M00058 1 Temp Probe	(1) 1/3 HP 575 vac	N/A	8	2	6	3
7.5 - 8.5T DCC/G/H	208-230/3/60	LAKT17	0130M00059 2 Temp Probes	(2) 1/4 HP 208-230 vac	N/A	10	6	6	4
7.5 - 8.5T DCC/G/H	460/3/60	LAKT18	0130M00059 2 Temp Probes	(2) 1/4 HP 460 vac	(2) 5 mfd	10	6	6	4
7.5 - 8.5T DCC/G/H	575/3/60	LAKT19	0130M00059 2 Temp Probes	(2) 1/4 HP 575 vac	(2) 5 mfd	10	6	6	4
10 - 12.5T DCC/G/H	208-230/3/60	LAKT20	0130M00059 2 Temp Probes	(2) 1/3 HP 208-230 vac	N/A	10	6	6	4
10 - 12.5T DCC/G/H	460/3/60	LAKT21	0130M00059 2 Temp Probes	(2) 1/3 HP 460 vac	N/A	10	6	6	4
10 - 12.5T DCC/G/H	575/3/60	LAKT22	0130M00059 2 Temp Probes	(2) 1/3 HP 575 vac	(2) 10 mfd	10	6	6	4
15 - 20T DCC/G	208-230/3/60	LAKT23	0130M00059 2 Temp Probes	(3) 1/3 HP 208-230 vac	N/A	4	7	6	4
15 - 20T DCC/G	460/3/60	LAKT24	0130M00059 2 Temp Probes	(3) 1/3 HP 460 vac	N/A	4	7	6	4
15 - 20T DCC/G	575/3/60	LAKT25	0130M00059 2 Temp Probes	(3) 1/3 HP 575 vac	(3) 10 mfd	4	7	6	4

KIT INSTALLATION

⚠ WARNING

HIGH VOLTAGE

DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS KIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

1. Disconnect all sources of power to the unit.
2. Remove access panels to blower compartment and control box.
3. Using the screws and speed clips provided, secure the control to the mounting bracket. (see Figure 1A). Secure the new assembly on the condenser evaporator partition panel in the blower section of the unit with two sheet metal screws.
4. Connect the electrical wiring as shown in the wiring diagrams on pages 7-9.
5. Install temperature probe(s) between the fins, at the middle to upper section of the condenser coil (see Figure 2).
6. Connect the probe leads to the terminal marked PROBE S1. For systems with multiple refrigeration circuits, attach the second probe to PROBE S2 or PROBE S3. The LAKT17-25 are shipped with two probes. See control instruction manual for multiple probe connection and operation.

   NOTE: Do not install screws where damage to refrigeration tubing or electrical wiring could occur.

   For 3 to 12.5 ton light commercial, secure 2 inches below the hole where the fan and compressor leads exit the blower section. See Figure 1B.

   For 15 to 20 ton light commercial, secure to the right of the capacitor assembly, located on the partition panel. See Figure 1C.

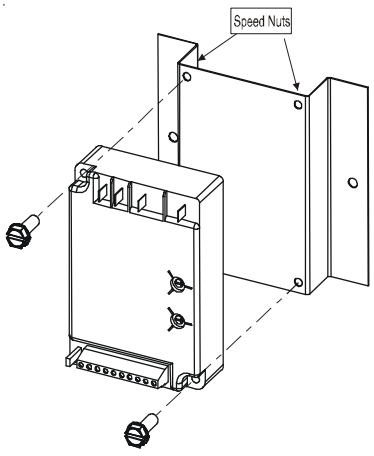


Figure 1A

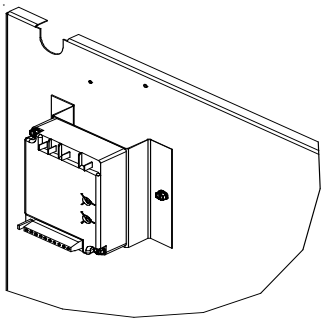


Figure 1B

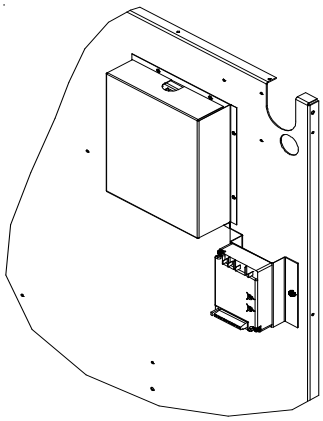


Figure 1C

WIRING DIAGRAMS AND APPLICATION

The LAKT kits are shipped with wiring diagram included. Affix the low ambient kit wiring diagram on the control box door next to the unit wiring diagram.

FAN BLADE REPLACEMENT

Low ambient motors differ slightly in the length from standard motors. Follow the guidelines below for proper placement of the fan blade on low ambient motor. Measurements are taken from the end of the shaft to fan blade hub.

3-6 TONS

For LAKT11,13,14; Set distance from end of shaft to 1 7/8 inches for 0150G00004 and B1086765 fan blades only all others set at 1 5/8 inches.

For LAKT12,15,16; Set distance from end of shaft to 1 3/4 inches for 0150G00004 and B1086765 fan blades ONLY. All others set at 1 1/2 inch.

7.5-12.5 TONS

For LAKT11 = 1 5/8”
For LAKT12 = 1 1/2”
All others = 1.25”

15-20 TON

For LAKT23 - 25 = 1.25”

LAKT11 - 16 (3 - 6 TONS)
Wiring Diagram 0140M00108 - use with AC and HP units, three phase and single phase application.

LAKT17 - 22 (7 1/2 TONS - 12 1/2 TONS)
Wiring Diagram 0140L05997 for AC and 0140L05996 for HP units, three phase application.
LAKT23-25 (15 & 20 TONS)
Wiring Diagram 0140L01008 - use with AC units.

NOTE: Wiring diagrams show the controller connection for 120/277 volts supply. For 480/600 volts application, connect the power supply leads to the 480/600 VAC terminal.

NOTE: The low ambient kit is pre-set at the factory and requires no further adjustment. Altering the setting may greatly reduce motor life.

WIRING PROCEDURE FOR LAKT11-16 (3-6 TON)

1. Disconnect all power and verify safe condition before installing kit.
2. Locate 3 condenser fan motor wires (purple, brown and black) in compressor compartment.
3. Separate the 3 quick connect terminals.
4. Pull the purple, brown and black wires up through the grommet and into the electrical compartment.
5. Remove the condenser fan motor and replace with the low ambient motor provided in the kit. Use the appropriate puller to remove the fan blade without bendng or otherwise damaging the blade.
6. See the Fan Blade Replacement section for positioning the blade on the new fan motor.
7. Route wires from the new fan motor into the compressor section through the partition panel as original wires, then into the electrical compartment through the bottom right grommet of the electrical compartment.
8. Replace the electrical terminals on the purple and brown motor wires using two insulated 1/4'' quick connect electrical terminals provided in the kit.
9. Connect the capacitor to the motor by joining the quick connect terminals of the brown motor wire and the brown capacitor wire.
10. Extend black and purple wires from the contactor (previously connected to the original fan motor) by using black and purple 30'' wires provided in the kit. The black wire has female quick connects on both ends. The purple wire has a female quick connect and piggy-back terminal.
11. Extend black and purple motor wires by using the black and purple 25'' wires with female quick connects on one end and male quick connects on the other end.
12. Route the extended motor wires and contactor wires into the blower compartment through the grommet just above the controller.
13. Connect the black wire from the contactor to Line 2 terminal on the control.
14. Connect the black from the motor to Motor 2 terminal on the control.
15. Replace fan motor capacitor if applicable.

    NOTE: Replacement capacitors are only included in kit contents when the low ambient motor requires a different capacitor than the original motor.
16. Place both purple wires on the **Line 1/ Motor 1** terminal
17. Connect YL and BL wire provided in the kit to 24 VAC connection on the controller and then to YI and C respectively, on the terminal block in the control box. Attach supplied wiring diagram adjacent to existing wiring diagram. Take note of control switch position for hear pump/cooling units.
18. For heat pump models, install the two black 18 AWG 72" wires between the control heat pump terminals and the 24 volt terminals that power the reversing valve.
19. Use provided wire ties to secure wires away from all moving parts and potentially hot refrigeration tubing.
20. Reinstall access panels. Restore power and verify system operation.

Figure 2

WIRING PROCEDURE FOR LAKT17-22 (7½ thru 12 ½ Tons):

1. Disconnect all power and verify safe condition before installing kit.
2. Disconnect the black, brown, and purple leads of condenser fan motor #2 (this is the fan motor on the control/ blower side of the unit) at the quick connect junctions where these wires pass through the partition panel just above where the controller is mounted. Remove factory condenser fan motor #2. Use appropriate puller or tool to remove the fan blade(s) to prevent bending or otherwise damaging the blade. Install one of the low ambient condenser fan motors from the kit.
3. See the Fan Blade Placement section for positioning the blade on the new fan motor.
4. Route fan motor wires as original condenser motor wires for fan motor #2, taking care to keep wires away from the condenser fan blade or sharp surfaces.

5. From the kit, install one of the **Y** push-on terminal multipliers onto the controller terminal marked **Motor 2** and another onto terminal **Line 1/Motor 1.**

   NOTE: Make sure the correct voltage tap is selected

6. Extend the purple wire originally connected to motor #2 using the 12'' purple wire extension from the kit. Connect the extended wire to one of the terminals of the push-on **Y** connector on **Line 1/ Motor 1** of the control.

7. Extend the black wire originally connected to motor #2 using the 12'' black wire extension from the kit. Connect the extended wire to the **Line 2** terminal of the control.

8. Connect condenser motor #2 black wire to the **Motor 2** terminal of the control.

9. Use an insulated splice connector from the kit to connect condenser motor #2 purple wire and the non-insulated end of the 9'' purple wire from the kit. Connect the insulated end of the 9'' purple wire to the **Line 1/Motor 1** terminal of the control.

10. Use an insulated splice connector and a 9'' brown wire from the kit to connect condenser motor #2 brown wire to the brown wire that was connected to the original fan motor.

11. Disconnect the black, brown and purple wires of condenser fan motor #1 at the quick connect terminals in the return air section. Remove and replace factory condenser fan motor #1 with the remaining low ambient condenser fan motor from the kit.

12. Route fan motor #1 wires as original motor wires. From the fan motor these wires pass from the condenser fan section into the return air compartment and finally into the blower section.

13. Insert the non insulated terminal of the purple motor wire into an insulated splice connector from the kit.

14. Extend the purple motor wire at the splice connector using the 50'' purple wire from the kit. Connect this wire to the **Line 1/Motor 1** terminal of the control.

15. Extend the black motor wire using the 50'' black wire from the kit. Connect this wire to the **Motor 2** terminal of the control.

16. Use an insulated splice connector and a 9'' brown wire from the kit to connect condenser motor #1 brown wire to the brown wire that was connected to the original fan motor.

17. Remove or tape off the unused black and purple wires originally supplying power to motor #1.

18. Replace fan motor capacitors if applicable.

    NOTE:Replacement capacitors are included only when the factory capacitors do not meet the requirements of the low ambient motors.

19. Connect **YL** and **BL** wire to 24 VAC connection on the LAKT control and then to YI and C respectively, on the terminal block in the control box.

20. For heat pump models, install the two black 84'' wires between the control heat pump terminals and the 24 volt terminals that power the reversing valve.

21. Attach the appropriate supplied wiring diagram; cooling or heat pump, adjacent to existing wiring diagram.

22. Use provided wire ties to secure wire leads away from all moving parts and warm refrigeration tubing.

23. Reinstall access panels.

24. Restore power and verify system operation.

WIRING PROCEDURE FOR LAKT23-25 (15 -20 Tons):

1. Disconnect all power and verify safe condition before installing kit.

2. Remove the cover on the capacitor assembly located next to the controller. Locate the Red and Black wires from the wiring harness running along the top of the blower compartment and entering the capacitor control box. Disconnect the red wire from the capacitor and the black wire from the terminal block.

3. From the kit, install a terminal Y multiplier onto the **Line 1/ Motor 1** control terminal.

   NOTE: Make sure the correct voltage tap is selected.

4. Connect the black wire disconnected in step 1 to the **Line 2** terminal of the control. Connect the red wire disconnected in step 1 onto the **Line 1/ Motor 1** terminal of the control.

5. From the kit, connect the red wire between the remaining **Y** terminal on **Line 1/Motor 1** and the location on the furthest right capacitor where the red wire had previously been removed.

6. From the kit, connect the black wire between the **Motor 2** terminal on the controller and the terminal block where the black wire had previously been removed.

7. Connect the blue wire and the yellow wire to the controller on the 24 VAC connection as shown on the diagram.

8. Route wires along tubing, under evaporator, and into the bottom opening of control box. Connect the yellow wire to **Y1** on the low voltage terminal strip and the blue wire to **C.**

9. Before installing low ambient motors; replace the terminals of the brown and purple motor wires with insulated terminals provided in the kit for all three motors.

10. Raising the top panels of the condenser sections individually will expose the quick connect terminals joining each condenser fan motor to its wiring harness. Replace factory condenser fan motors with low ambient motors. Use the appropriate puller to remove the fan blades without bending or otherwise damaging them.

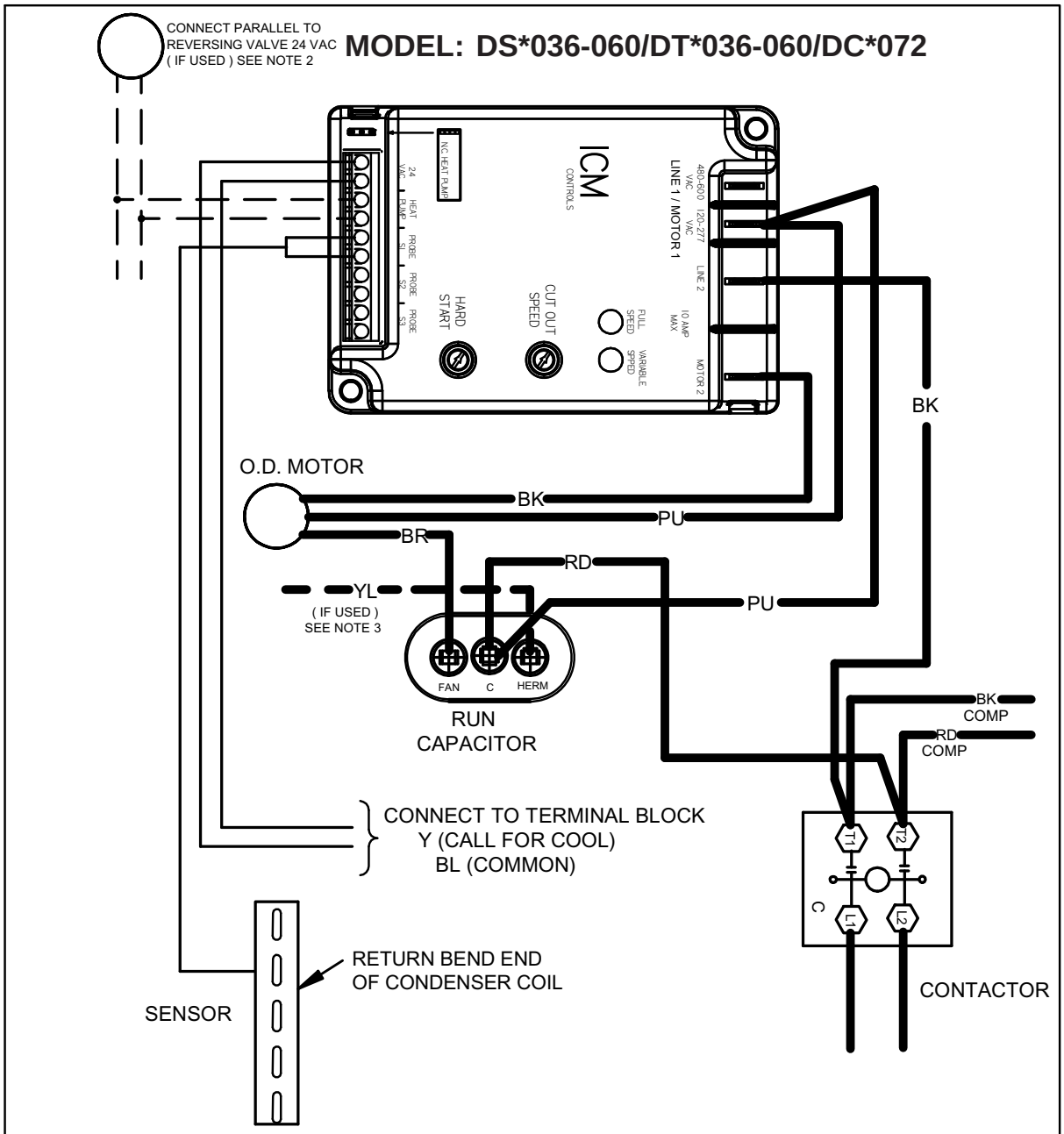
11. See the Fan Blade Placement section for positioning the blades on the new fan motors.
12. If applicable; replace factory capacitors with capacitors included with the LAKT kit.

    NOTE: Replacement capacitors are included only when the factory capacitors do not meet the requirements of the low ambient motors.
13. Attach supplied wiring diagram adjacent to existing wiring diagram.
14. Use provided wire ties to secure wire leads away from all moving parts and potentially hot refrigeration tubing.
15. Reinstall access panels.
16. Restore power and verify system operation.

WIRING DIAGRAM

WARNING

HIGH VOLTAGE
Disconnect ALL power before servicing or installing this unit. Multiple power sources may be present. Failure to do so may cause property damage, personal injury or death.



NOTES:

1. USE COPPER CONDUCTORS ONLY.
2. ALTERNATE WIRING FOR HEAT PUMP APPLICATIO,N, MAKE A PARALLEL CONNECTION FROM THE REVERSING VALVE 24 VAC POWER SUPPLY TO THE HEAT PUMP TERMINALS ON THE CONTROL. THE SELECT JUMPER MUST BE IN THE NORMALLY CLOSED POSITION FOR NON-ENERGIZED REVERSING VALVE DURING HEATING.
3. ALTERNATE WIRING FOR SINGLE PHASE APPLICATION; THREE PHASE MODELS DOES NOT REQUIRE A DUAL RUN CAPACITOR.
4. WIRING DIAGRAM SHOWS CONTROLLER CONNECTION FOR 120 TO 277 VOLTS SUPPLY; FOR 480-600 VOLT APPLICATION, CONNECT POWER SUPPLY BETWEEN LINE 2 AND THE 480-600 VAC TERMINALS.

LEGEND

RD	RED
BK	BLACK
PU	PURPLE
BR	BROWN
YL	YELLOW
BU	BLUE

0140M00108-C

Wiring is subject to change, always refer to the wiring diagram on the unit for the most up-to-date wiring.

WIRING DIAGRAM

WARNING

HIGH VOLTAGE
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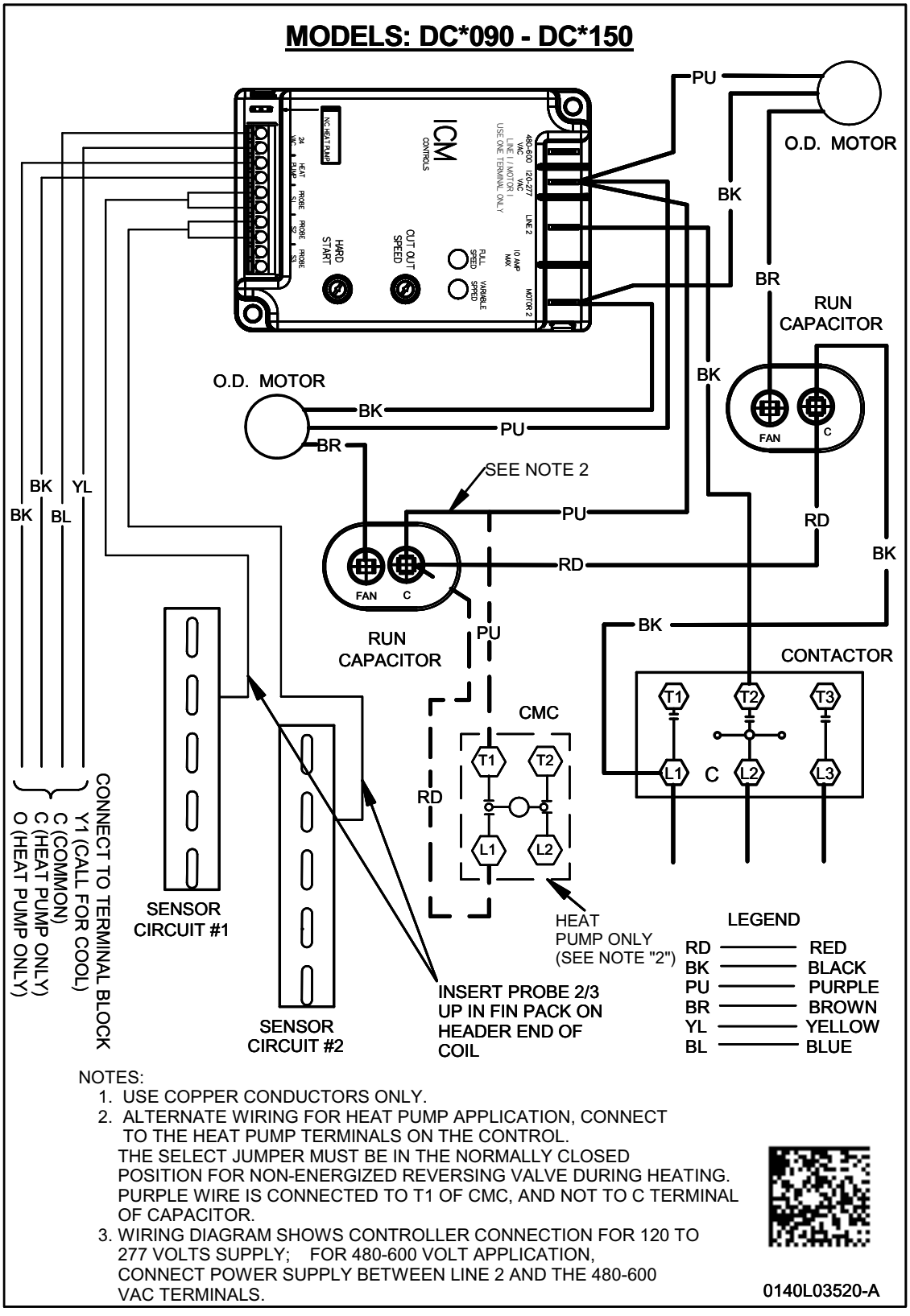


NOTES:
1. USE COPPER CONDUCTORS ONLY.
2. ALTERNATE WIRING FOR HEAT PUMP APPLICATION, CONNECT TO THE HEAT PUMP TERMINALS ON THE CONTROL. THE SELECT JUMPER MUST BE IN THE NORMALLY CLOSED POSITION FOR NON-ENERGIZED REVERSING VALVE DURING HEATING. PURPLE WIRE IS CONNECTED TO T1 OF CMC, AND NOT TO C TERMINAL OF CAPACITOR.
3. WIRING DIAGRAM SHOWS CONTROLLER CONNECTION FOR 120 TO 277 VOLTS SUPPLY; FOR 480-600 VOLT APPLICATION, CONNECT POWER SUPPLY BETWEEN LINE 2 AND THE 480-600 VAC TERMINALS.

0140L03520-A

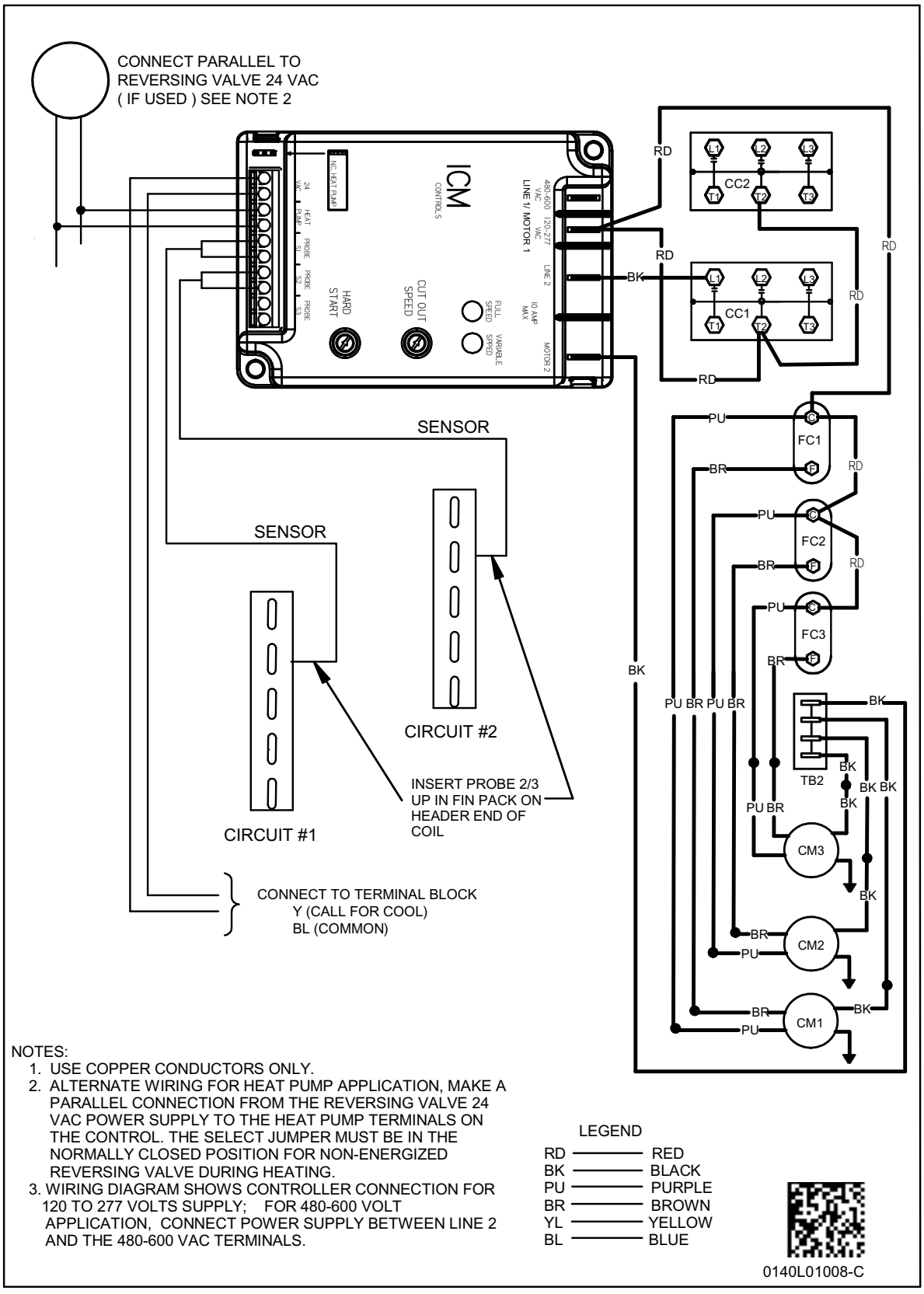
Wiring is subject to change, always refer to the wiring diagram on the unit for the most up-to-date wiring.

WIRING DIAGRAM

DCC/G180-240

WARNING

HIGH VOLTAGE
Disconnect ALL power before servicing or installing this unit. Multiple power sources may be present. Failure to do so may cause property damage, personal injury or death.



NOTES:

1. USE COPPER CONDUCTORS ONLY.
2. ALTERNATE WIRING FOR HEAT PUMP APPLICATION, MAKE A PARALLEL CONNECTION FROM THE REVERSING VALVE 24 VAC POWER SUPPLY TO THE HEAT PUMP TERMINALS ON THE CONTROL. THE SELECT JUMPER MUST BE IN THE NORMALLY CLOSED POSITION FOR NON-ENERGIZED REVERSING VALVE DURING HEATING.
3. WIRING DIAGRAM SHOWS CONTROLLER CONNECTION FOR 120 TO 277 VOLTS SUPPLY; FOR 480-600 VOLT APPLICATION, CONNECT POWER SUPPLY BETWEEN LINE 2 AND THE 480-600 VAC TERMINALS.

LEGEND

RD	RED
BK	BLACK
PU	PURPLE
BR	BROWN
YL	YELLOW
BL	BLUE

0140L01008-C

Wiring is subject to change, always refer to the wiring diagram on the unit for the most up-to-date wiring.

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