LOW AMBIENT CONTROL KIT (LACK) DRC/DRG/DRH/DBC/DBG/DBH (3-12.5 TON) INSTALLATION INSTRUCTIONS

WARNING

ONLY PERSONNEL THAT HAVE BEEN TRAINED TO INSTALL, ADJUST, SERVICE OR REPAIR(HEREINAFTER, "SERVICE") THE EQUIPMENT SPECIFIED IN THIS MANUAL SHOULD SERVICE THE EQUIPMENT. THE MANUFACTURER WILL NOT BE RESPONSIBLE FOR ANY INJURY OR PROPERTY DAMAGE ARISING FROM IMPROPER SERVICE OR SERVICE PROCEDURES. IF YOU SERVICE THIS UNIT, YOU ASSUME RESPONSIBILITY FOR ANY INJURY OR PROPERTY DAMAGE WHICH MAY RESULT. IN ADDITION, IN JURISDICTIONS THAT REQUIRE ONE OR MORE LICENSES TO SERVICE THE EQUIPMENT SPECIFIED IN THIS MANUAL, ONLY LICENSED PERSONNEL SHOULD SERVICE THE EQUIPMENT.
IMPROPER INSTALLATION, ADJUSTMENT, SERVICING OR REPAIR OF THE EQUIPMENT SPECIFIED IN THIS MANUAL, OR ATTEMPTING TO INSTALL, ADJUST, SERVICE OR REPAIR THE EQUIPMENT SPECIFIED IN THIS MANUAL WITHOUT PROPER TRAINING MAY RESULT IN PRODUCT DAMAGE, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

WARNING

DO NOT BYPASS SAFETY DEVICES.

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DESCRIPTION

A properly installed Low Ambient Control Kit (LACK) expands the working cooling operation of the equipped unit to 0 °F ambient. This is accomplished by cycling the power to the condenser fan motor(s) to regulate compressor discharge pressure.

The kits utilize a combination of pressure switch(es) (285 psi open, 435 psi close) and relay(s) to cycle the condenser fan motor(s) when needed. An ambient temperature switch (55 °F open, 65 °F close) is also included to lock out cycling at temperatures that do not require it. All supplemental mounting hardware, wiring, and fittings are included with the kits.

CONSIDERATIONS

ASHRAE 90.1-2016 requires units with a cooling capacity of 54,000 BTU/H or greater to be equipped with an economizer. A properly functioning economizer significantly reduces the annual cycle count on the LACK components. Ignoring this requirement could result in a shorter lifespan for these components.

It is recommended that units equipped with a LACK also be equipped with a crankcase heater. This can help reduce wear on the compressor specifically attributed to operation in low ambient conditions.

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For installation areas where the ambient temperature can drop below 10 °F, and cooling operation is required below 30 °F, jumper wire(s) have been included in the kit to disable the factory low-pressure switch(es). This is necessary because the low-pressure switch(es) will open if the unit is off and exposed to sub 10 °F ambient for an extended period and will not reset until 30 °F ambient. Disabling of the low-pressure switch(es) is not necessary outside of this specific application.

In installation areas where sustained winds are common during low ambient seasons, a device to deflect, check, or regulate flow through the condenser coil may be required for stable operation. The added airflow at low ambient temperatures can drive the operating conditions of the unit below the design envelope and cause malfunction, e.g., a frozen evaporator coil.

KIT APPLICATIONS

BASE EFF	LACKSM001	LACKSM002	LACKSM003	LACKSM004	LACKSM005	LACKSM006	LACKMD001	LACKMD002	LACKMD003	LACKMD004	LACKMD005	LACKMD006	LACKMD007	HIGH EFF
DBC036	B/H/D													DRC036
DBC048	B/H/D													DRC048
DBC060	B	H	D											DRC060
DBC072	B/H/D													DRC072
DBC090							B	H				D		DRC090
DBC102							B	H				D		DRC102
DBC120							B	H				D		DRC120
DBC150							B		H				D	DRC150
DBG036	B/H/D													DRG036
DBG048	B/H/D													DRG048
DBG060	B	H	D											DRG060
DBG072	B/H/D													DRG072
DBG090							B	H				D		DRG090
DBG102							B	H				D		DRG102
DBG120							B	H				D		DRG120
DBG150							B		H				D	DRG150
DBH036				B/H/D										DRH036
DBH048				B	H	D								DRH048
DBH060				B	H	D								DRH060
-				H/D										DRH072
DBH090											B			-
DBH102											B			-
DBH120											B			-
DBH150										B				-

B – Base Efficiency
H – High Efficiency without DDC
D – High Efficiency with DDC

3-6 TON KIT CONTENTS

PART	DESCRIPTION	LACKSM001	LACKSM002	LACKSM003	LACKSM004	LACKSM005	LACKSM006
0121L04533	LACK MOUNT	1	1	1	1	1	1
0121L04572	ACCESSORY MOUNT	1	1	1	1	1	1
M0221817	#10 X 1/2" SCREW	6	6	6	6	6	6
0161M00042	GUIDE CLIP	2	2	2	2	2	2
0130M00178	DPDT RELAY 24VAC	1	1	1	1	1	1
10135604	SPDT RELAY 24VAC	-	-	-	1	1	1
M0216716	#8 X 3/8" SCREW	2	2	2	4	4	4
0259L01942	WIRE HARNESS	1	-	-	1	-	-
0259L01943	WIRE HARNESS	-	1	-	-	1	-
0259L01968	WIRE HARNESS	-	-	1	-	-	1
0259L01938	WIRE HARNESS	1	1	1	-	-	-
0259L01939	WIRE HARNESS	-	-	-	1	1	-
0259L01970	WIRE HARNESS	-	-	-	-	-	1
0130L00282	TEMP SWITCH	1	1	1	1	1	1
0130L00279	PRESSURE SWITCH	1	1	1	1	1	1
W18203271271003	3" YELLOW WIRE	1	1	1	1	1	1
B1373306	1/4" SWIVEL TEE	1	1	1	1	1	1
B1096102	CABLE TIE	3	3	3	3	3	3

7.5-12.5 TON KIT CONTENTS

PART	DESCRIPTION	LACKMD001	LACKMD002	LACKMD003	LACKMD004	LACKMD005	LACKMD006	LACKMD007
0121L04534	LACK MOUNT	1	1	1	1	1	-	-
0121L04057	VOLTAGE BARRIER	1	1	1	1	1	-	-
0121L04609	DDC LACK MOUNT	-	-	-	-	-	1	1
0121L03952	ACCESSORY MOUNT	-	-	-	-	-	1	1
M0221817	#10 X 1/2" SCREW	2	2	2	2	2	4	4
0161M00042	GUIDE CLIP	2	2	2	2	2	-	-
M0104102	GUIDE CLIP	-	-	-	-	-	2	2
0130M00178	DPDT RELAY 24VAC	1	2	2	2	3	2	2
M0216716	#8 X 3/8" SCREW	2	4	4	6	6	4	4
0259L01972	WIRE HARNESS	1	1	-	1	-	1	-
0259L01979	WIRE HARNESS	-	-	1	-	1	-	1
0259L01973	WIRE HARNESS	1	-	-	1	-	-	-
0259L01976	WIRE HARNESS	-	1	-	-	-	1	-
0259L01977	WIRE HARNESS	-	1	1	-	1	1	1
0259L01978	WIRE HARNESS	-	1	1	-	-	1	1
0259L01980	WIRE HARNESS	-	-	-	1	-	-	-
0259L01981	WIRE HARNESS	-	-	-	-	1	-	-
W18204160220026	26" BLUE WIRE	1	-	-	-	-	-	-
0259L01984	WIRE HARNESS	1	-	-	1	-	-	-
0259L01985	WIRE HARNESS	-	1	1	-	1	1	1
0130L00282	TEMP SWITCH	1	2	2	1	2	2	2
0130L00279	PRESSURE SWITCH	2	2	2	2	2	2	2
W18203271271003	3" YELLOW WIRE	2	2	2	2	2	2	2
B1373306	1/4" SWIVEL TEE	2	2	2	2	2	2	2
B1096102	CABLE TIE	3	3	3	3	3	3	3
0121L04610	T-STAT MOUNT	1	1	1	1	1	1	1
0163M00097	#10 X 3/4" SCREW	2	4	4	2	4	4	4

3-6 TON INSTALLATION

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.

1. Disconnect all sources of power to the unit.
2. Remove the Control and Compressor panels.

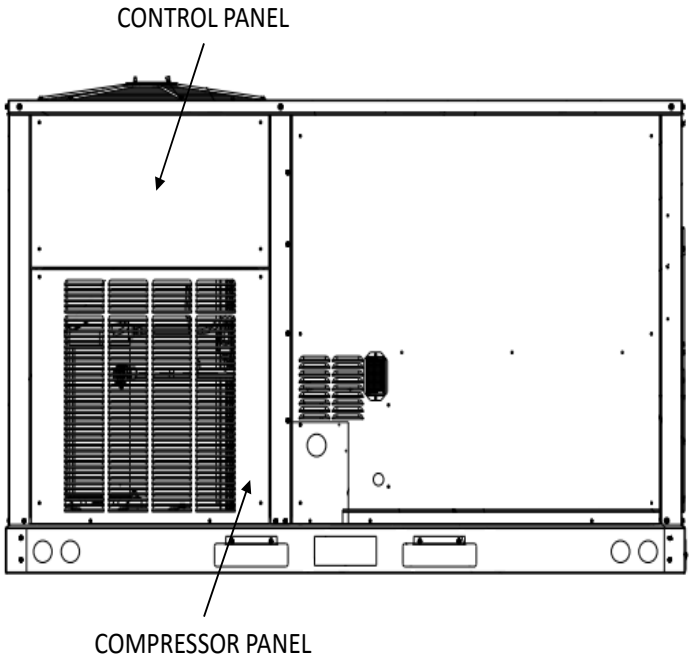


Figure 1

3. Attach the LACK Mount to the Accessory Mount using four of the #10 X 1/2” screws.
4. Attach the relay(s) to the LACK Mount using the #8 X 3/8” screws and press the Guide Clips into place.

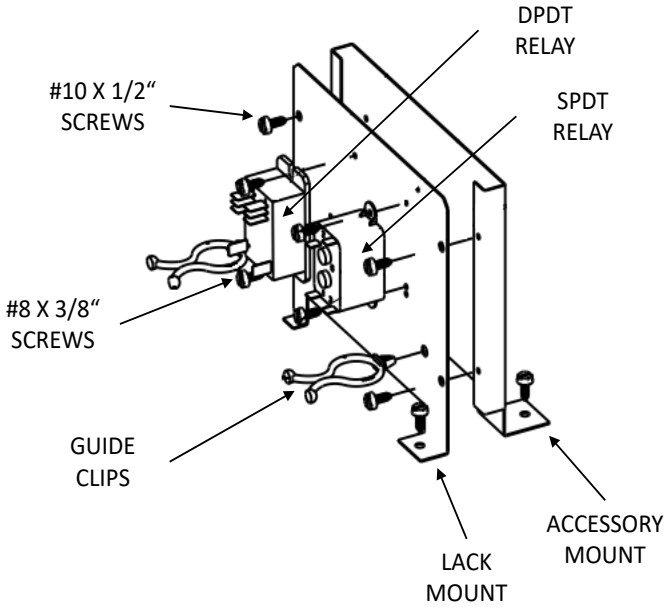


Figure 2

5. Slide the rounded tab of the Accessory Mount into the slot in the bottom of the control box. Secure the tabs on the opposite side of the Accessory Mount and LACK Mount to the control box with the two remaining #10 X 1/2” screws.

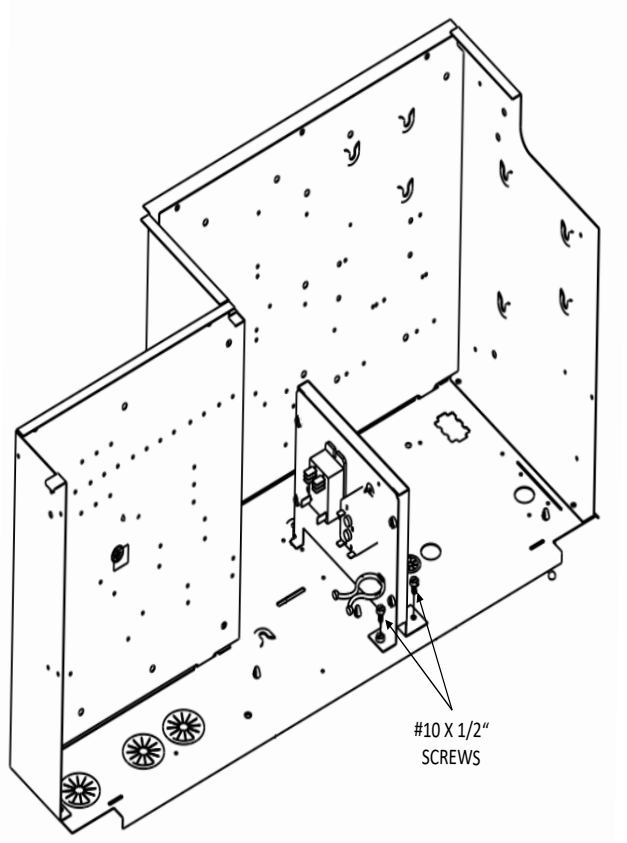


Figure 3

6. Using one of the Cable Ties, secure the Temperature Switch to the bundle of wires running beneath the control box in the compressor compartment.

Note: The Temperature Switch should not be within 6" of any refrigeration components as it will adversely affect the intended function.

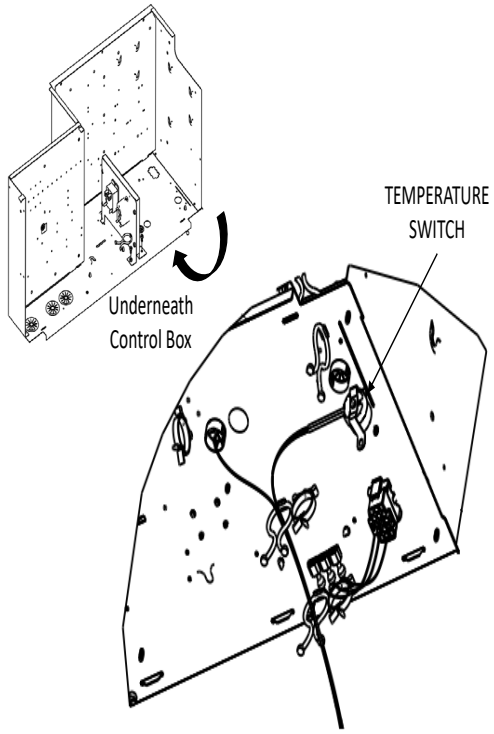


Figure 4

7. Remove the plastic cap from the liquid line access fitting.

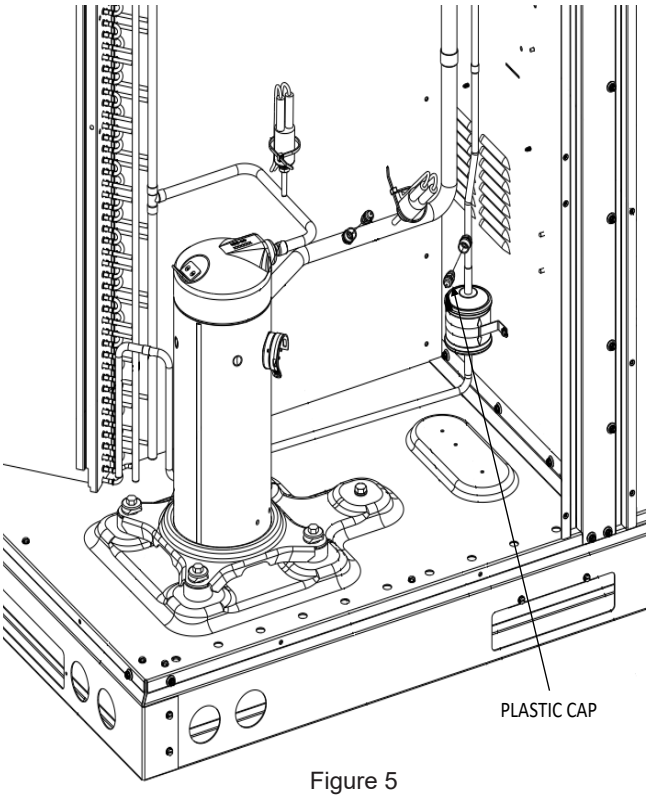


Figure 5

8. Screw the 1/4" Swivel Tee onto the liquid line access fitting. Torque to 96 ± 5 in-lbs.
9. Screw the Pressure Switch onto the branch port of the 1/4" Swivel Tee. Torque to 96 ± 5 in-lbs.

Note: Steps 10-11 are only necessary if cooling operation is required in extreme conditions. Please see Considerations, paragraph 3, for details.

10. Disconnect the wires from the factory installed low-pressure switch located on the suction line.

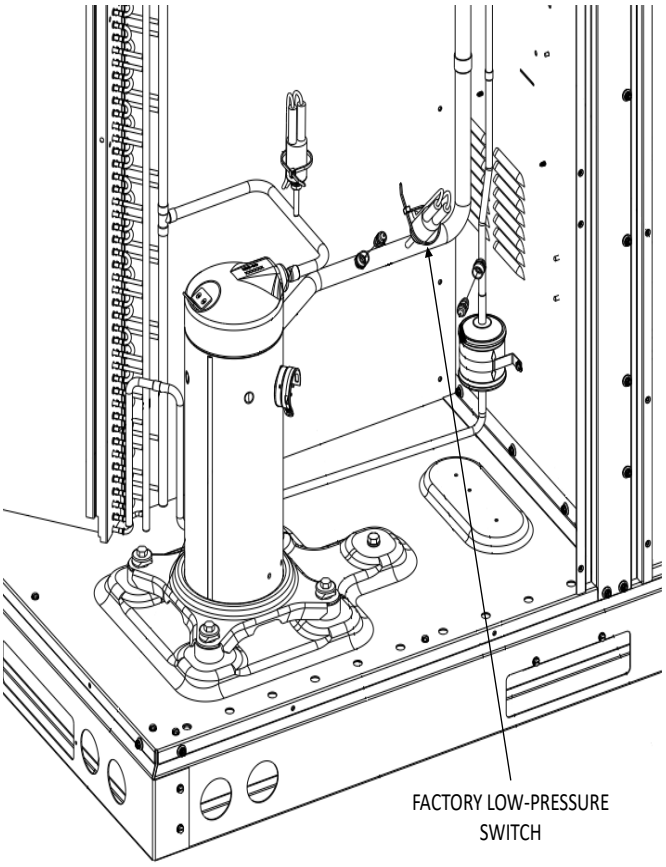


Figure 6

11. Using the 3" Yellow Wire, connect the wires together to remove the low-pressure switch from the electrical circuit. The low-pressure switch leads should not be connected to anything.

Important: Ensure refrigrant system connections are tight and no leaks are present.

12. Route the two wire harnesses and connect the wires as depicted in the routing and wiring diagrams that match the kit being installed.
13. Attach the Control and Compressor panels.
14. Restore all sources of power to the unit.
15. Test the unit for proper operation.

7.5-12.5 TON INSTALLATION

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.

1. Disconnect all sources of power to the unit.
2. Remove the Control, Blower and Compressor panels.

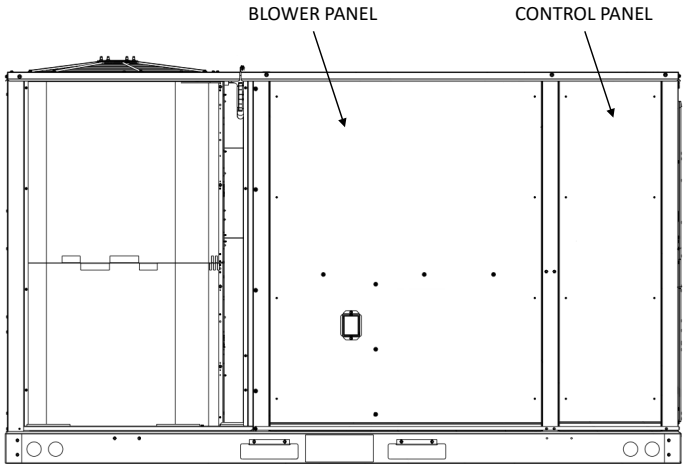


Figure 7

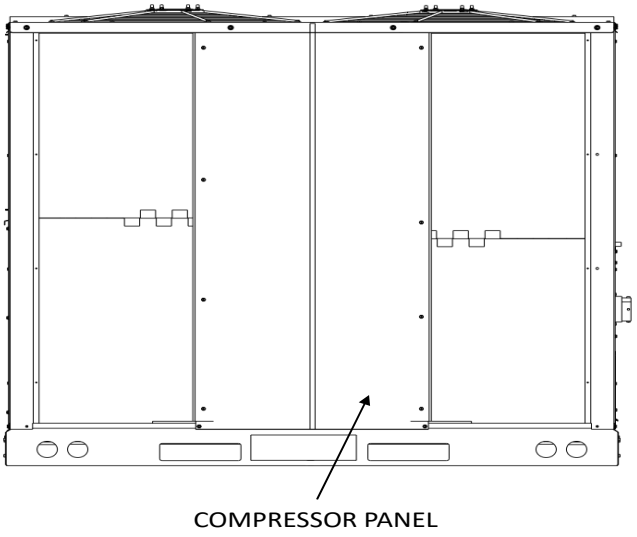


Figure 8

Note: Steps 3-6 differ depending on whether the unit utilizes DDC or electromechanical controls.

For DDC

3. Attach the DDC LACK Mount to the Accessory Mount using two of the #10 X 1/2" screws.
4. Attach the relays to the LACK Mount using the #8 X 3/8" screws.

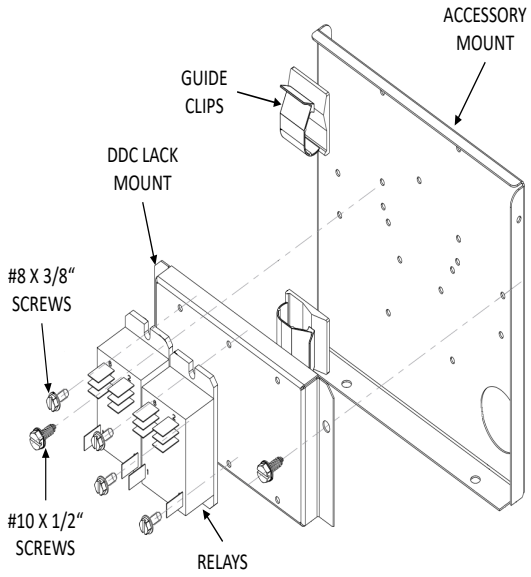


Figure 9

5. Attach Accessory Mount with the DDC LACK Mount and relays to the control box with the two remaining #10 X 1/2" screw

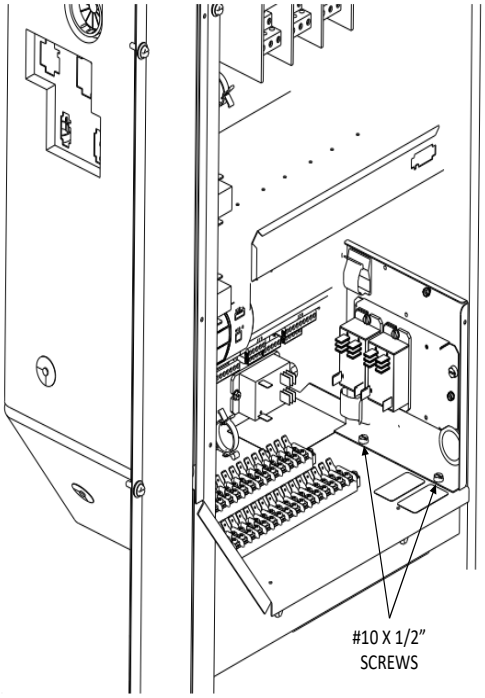


Figure 10

For Electromechanical Controls

3. Slide the two rounded tabs of the LACK Mount into slots on the new Voltage Barrier.

Secure the LACK Mount to the new Voltage Barrier using two of the #10 X 1/2" screws.

4. Attach the relay(s) to the LACK Mount using the #8 X 3/8" screws and press the Guide Clips into place.

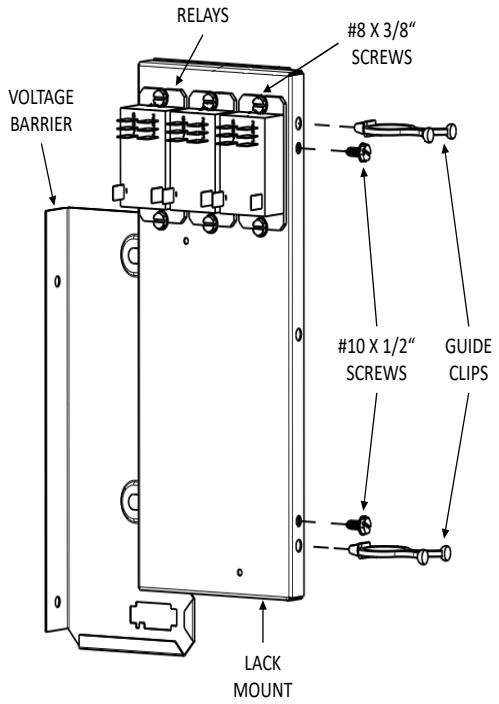


Figure 11

5. Remove the existing voltage barrier from the unit control box.

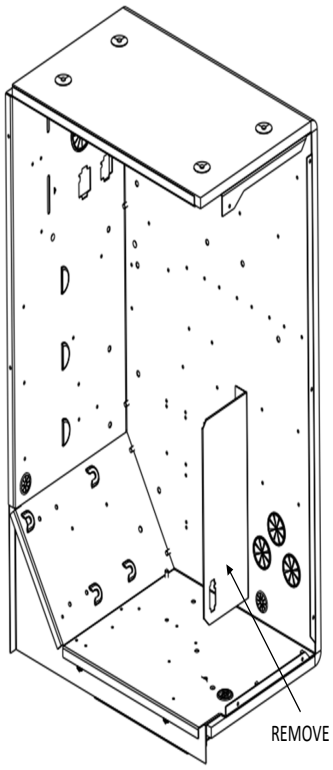


Figure 12

6. Attach the new Voltage Barrier with the LACK Mount and relays to the control box using the existing #10 X 1/2” screws.

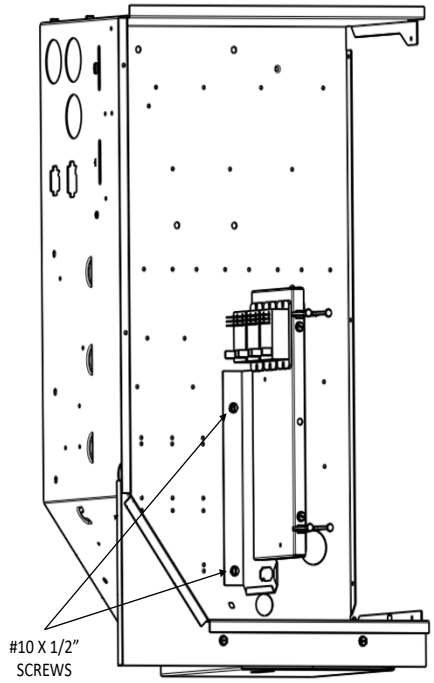


Figure 13

7. Using the T-Stat Mount as a template, pre-drill two holes (7/32”) per temperature switch in the corner post. The bottom of the T-Stat Mount should be about 12” above the floor of the control box.

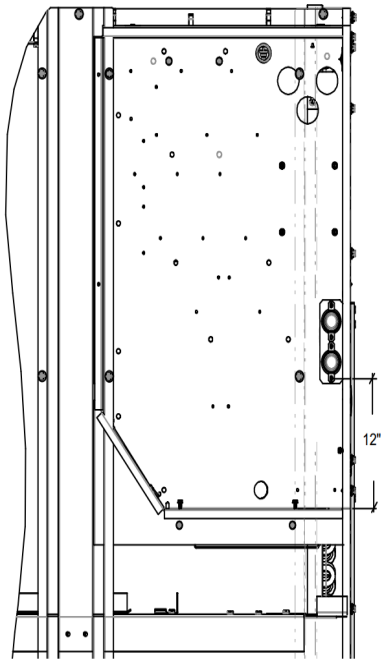


Figure 14

8. Pass the Temperature Switch wires through the T-Stat Mount and align the holes.

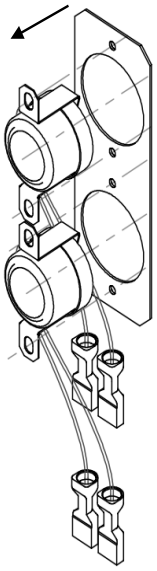


Figure 15

9. Attach the Temperature Switch(es) and the T-Stat Mount to the inside of the corner post using two #10 X 3/4” washered screws per switch.

Note: The Temperature Switch(es) should not be mounted to an insulated surface as it will adversely affect the intended function.

10. Remove the plastic caps from the two liquid line access fittings.

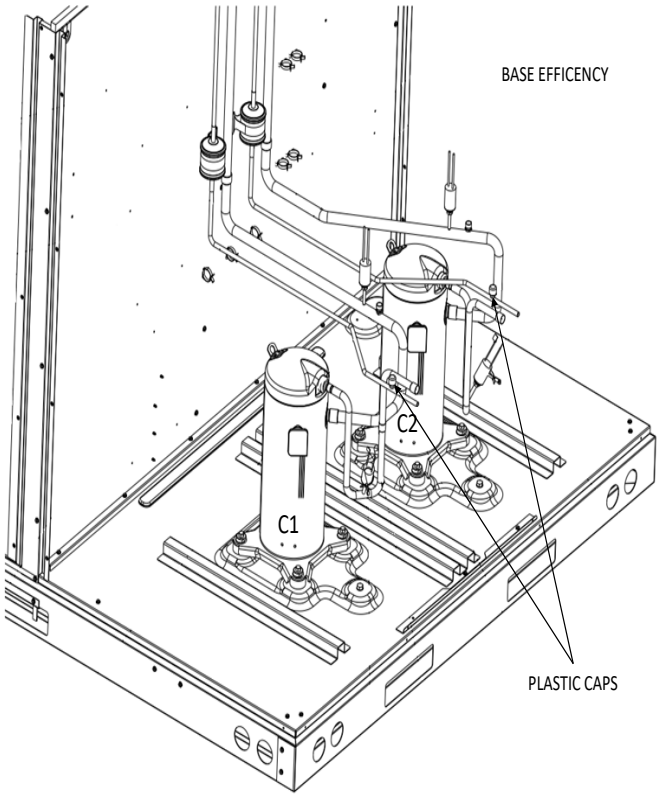


Figure 16

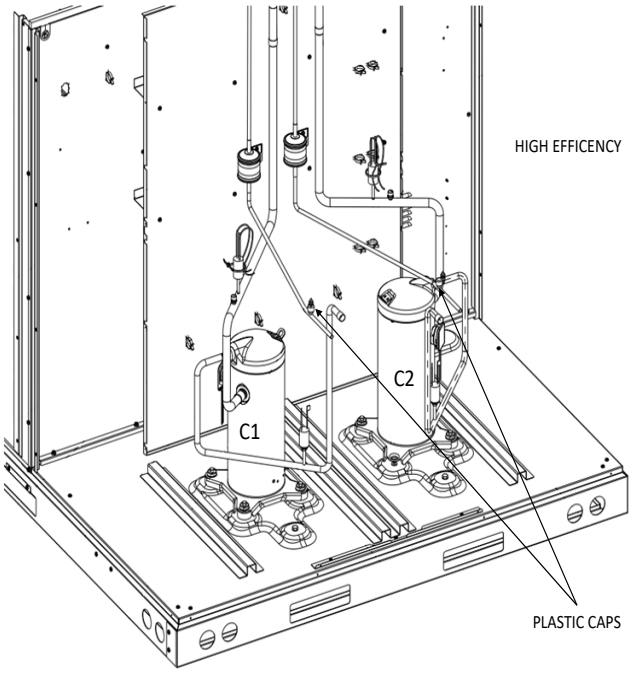


Figure 17

11. Screw a 1/4” Swivel Tee onto each of the two liquid line access fittings. Torque to 96 ± 5 in-lbs.
12. Screw a Pressure Switch onto the branch port of each of the 1/4” Swivel Tees. Torque to 96 ± 5 in-lbs.

Note: Steps 13-14 are only necessary if cooling operation is required in extreme conditions. Please see Considerations, paragraph 3, for details.

13. Disconnect the wires from the factory installed low-pressure switches located on the suction lines.

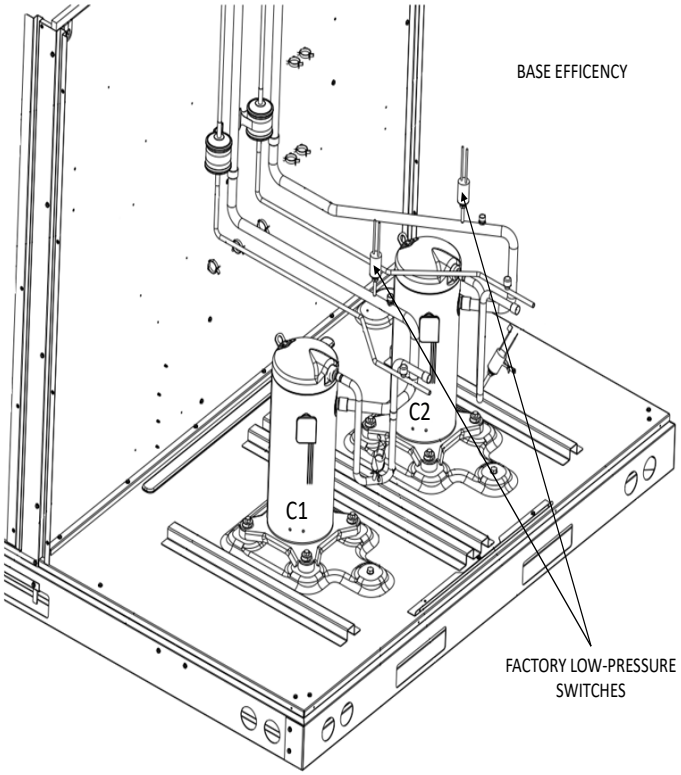


Figure 18

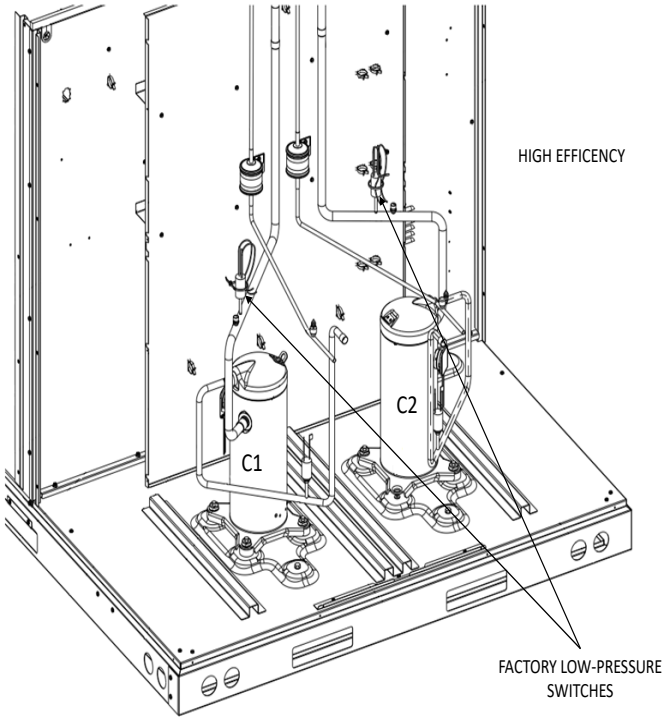


Figure 19

14. Using the 3” Yellow Wires, connect each pair of wires together to remove the low-pressure switches from the electrical circuits. The low-pressure switch leads should not be connected to anything.

Important: Ensure refrigerant system connections are tight and no leaks are present.

15. Route the wire harnesses and connect the wires as depicted in the routing and wiring diagrams that match the kit being installed.
16. Attach the Control, Blower, and Compressor panels.
17. Restore all sources of power to the unit.
18. Test the unit for proper operation.

WIRING LEGEND

Wire Code

FACTORY WIRING

FIELD WIRING

Components

CAP - CAPCITOR

CC# - COMPRESSOR CONTACTOR

COMP - COMPRESSOR

F# - FUSE

FB - FUSE BLOCK

FC - FAN CAPACITOR

GND - GROUND

LAK - LOW AMBIENT KIT

PB - POWER BLOCK

PLF - PLUG FEMALE

PLM - PLUG MALE

PS - PRESSURE SWITCH

RLY# - RELAY

TB# - TERMINAL BOARD

TS - TEMPERATURE SWITCH

Colors

BK - BLACK

BR - BROWN

BL - BLUE

GR - GREEN

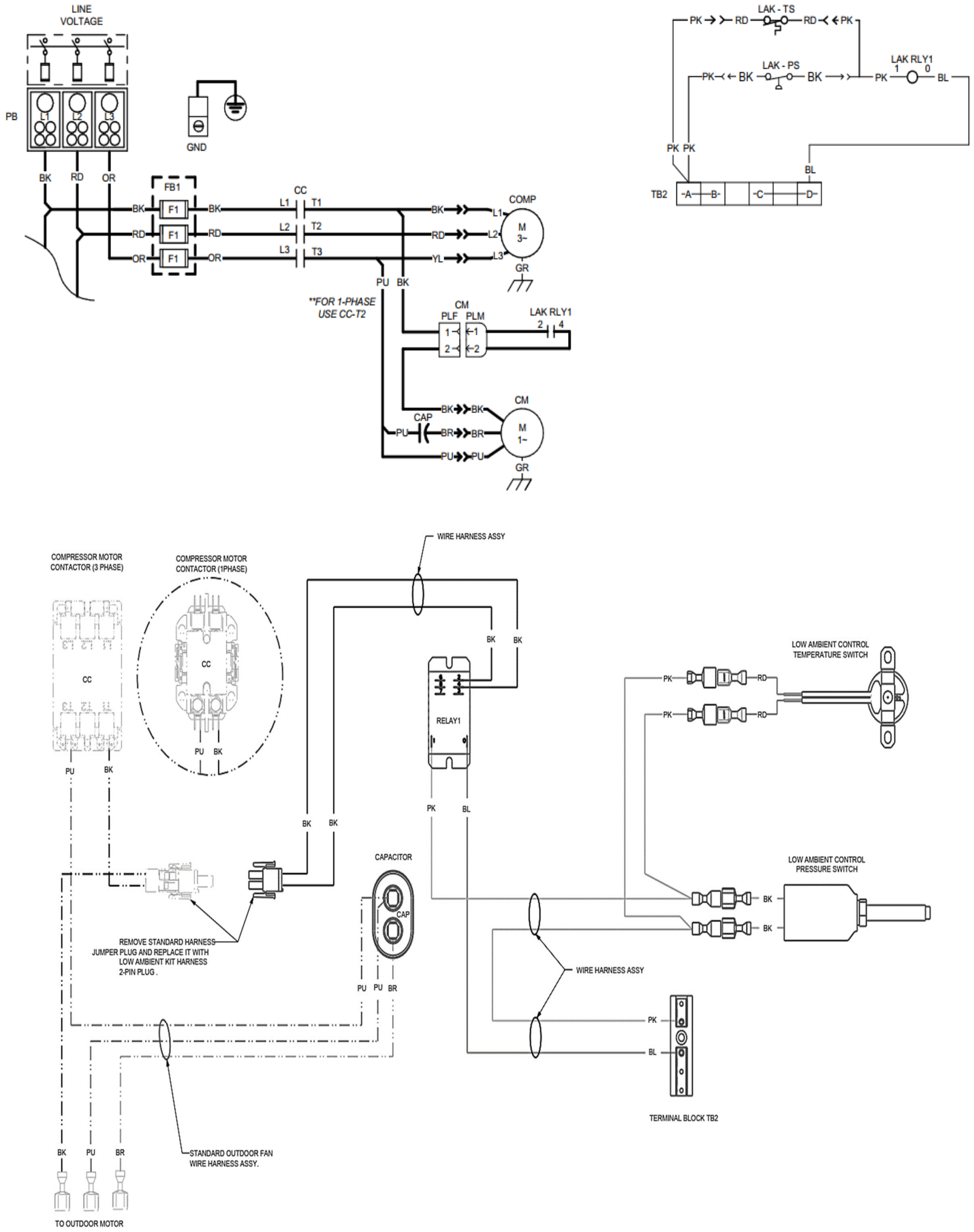
OR - ORANGE

PK - PINK

RD - RED

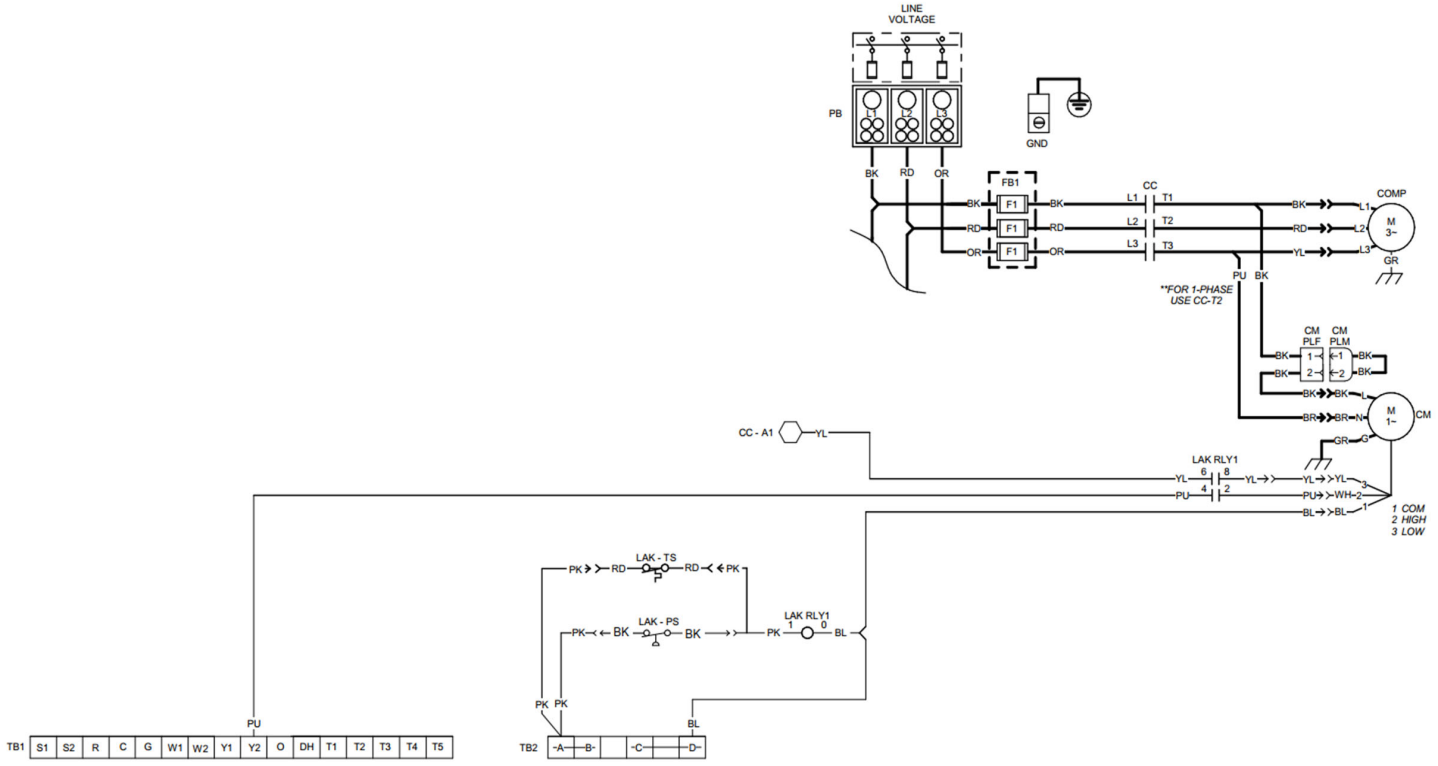
YL - YELLOW

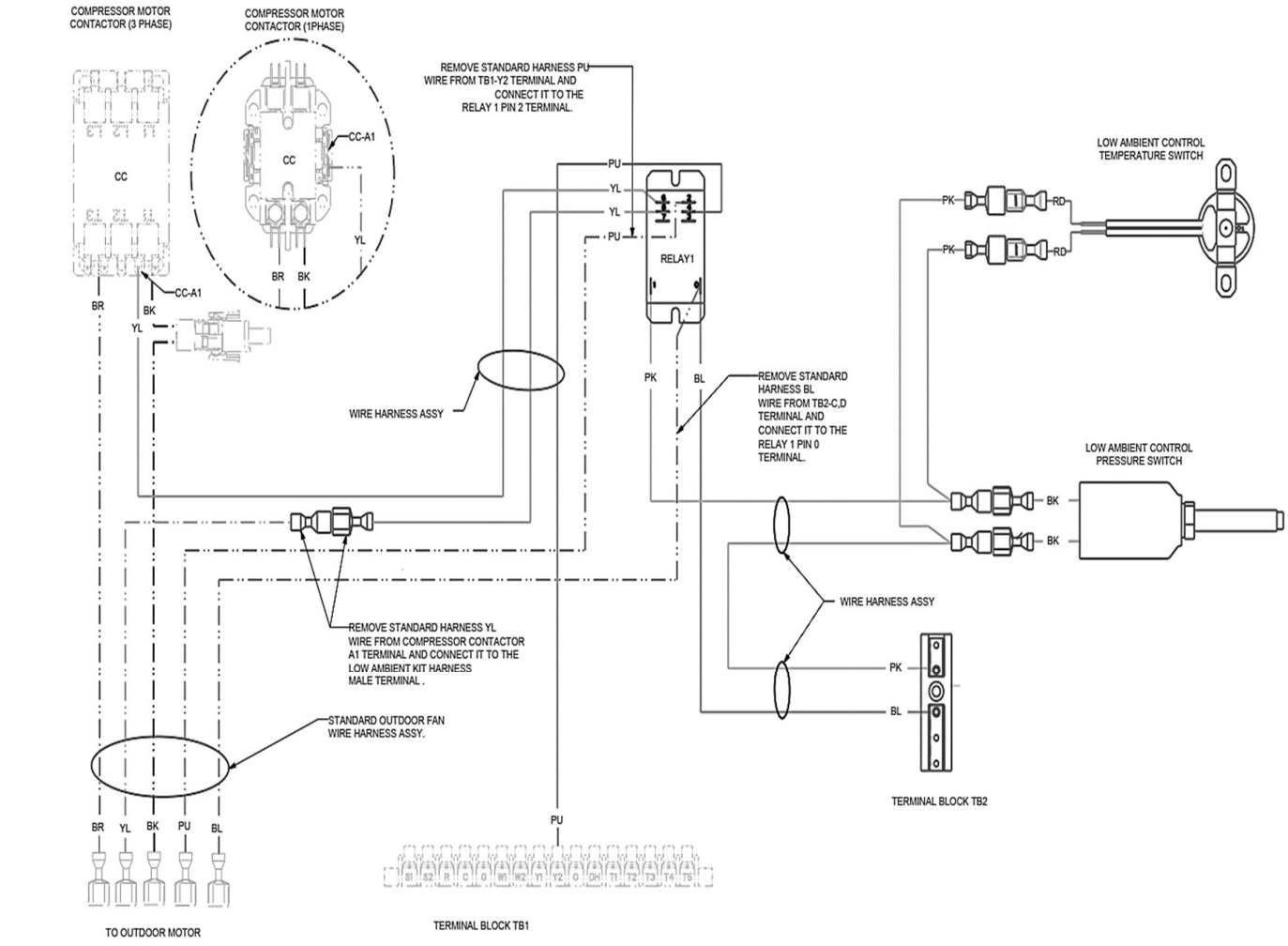
LACKSM001 WIRING DIAGRAM AND ILLUSTRATION



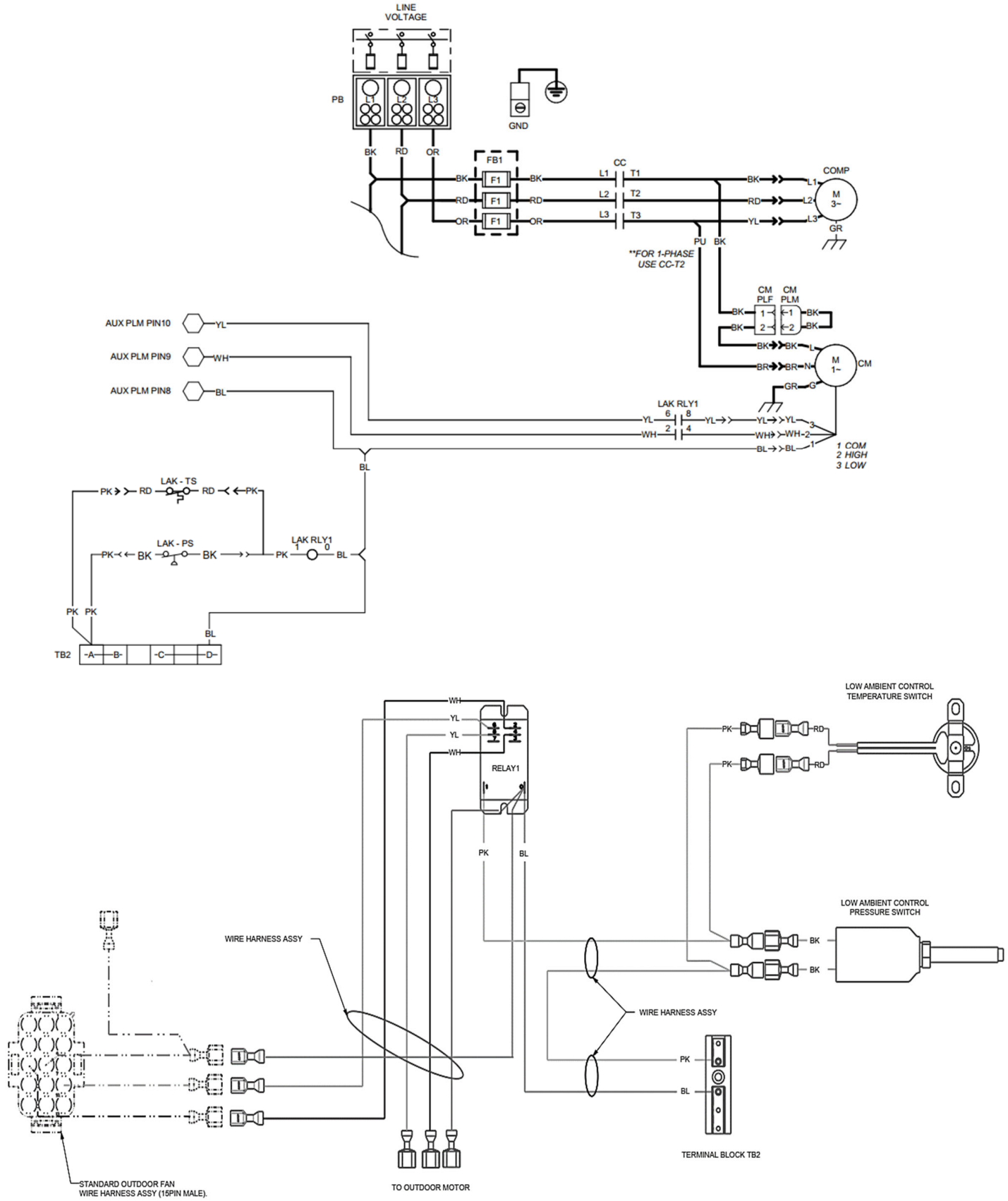
LOW AMBIENT CONTROLS WIRING- AC/GAS MODELS
(PSC OUTDOOR MOTOR)

LACKSM002 WIRING DIAGRAM AND ILLUSTRATION



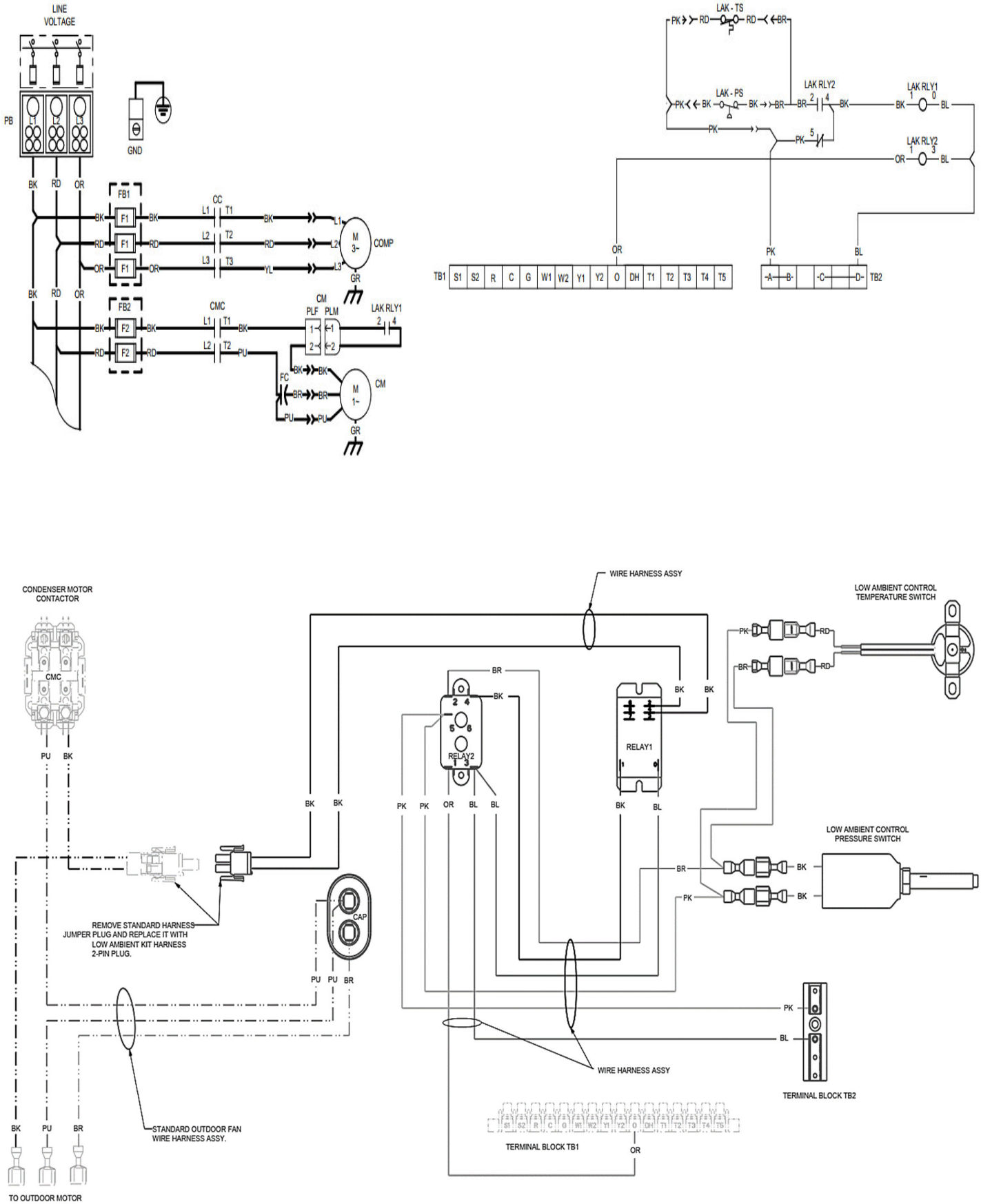


LACKSM003 WIRING DIAGRAM AND ILLUSTRATION



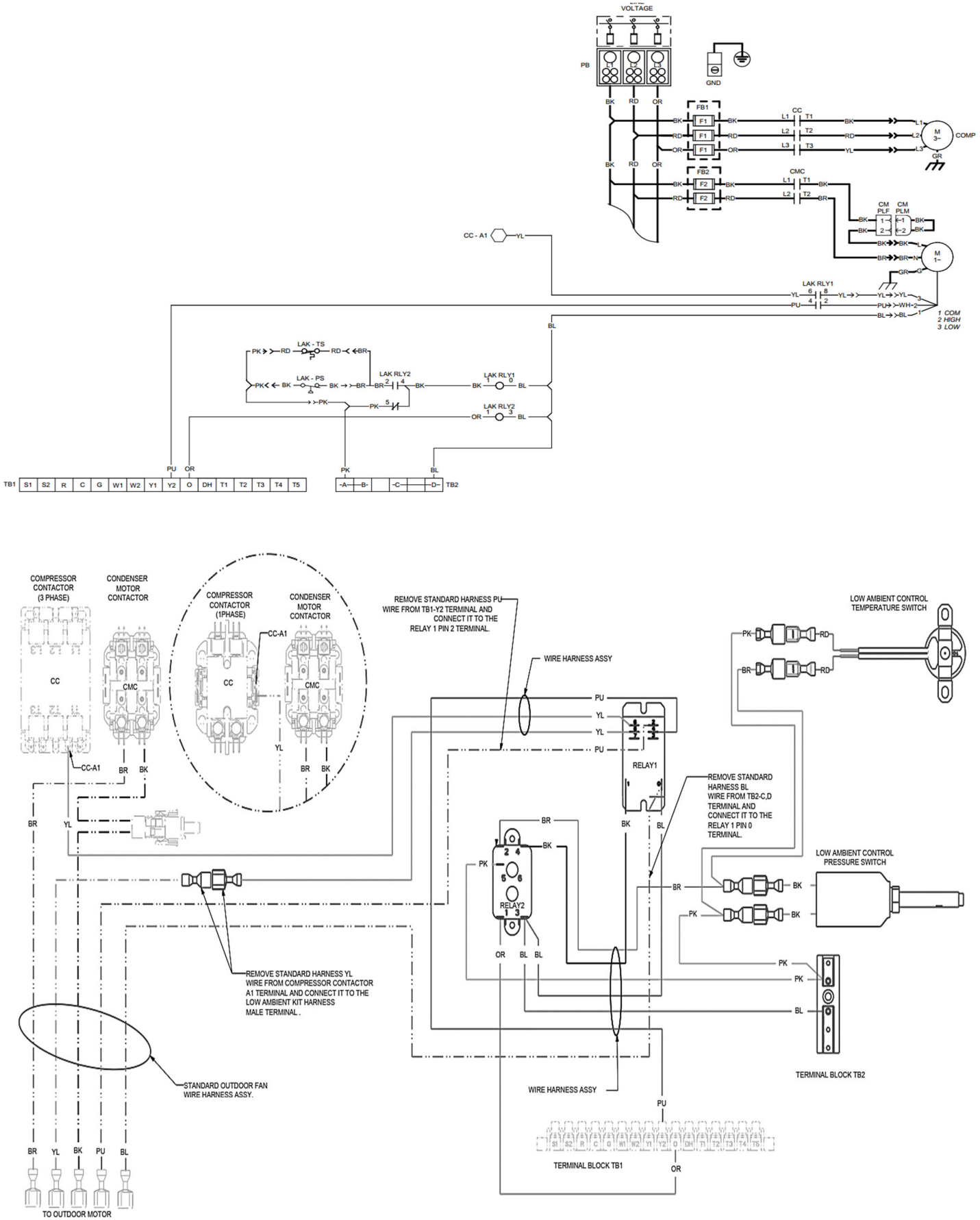
LOW AMBIENT CONTROLS WIRING - DDC AC/GAS MODELS
(ECM OUTDOOR MOTOR)

LACKSM004 WIRING DIAGRAM AND ILLUSTRATION



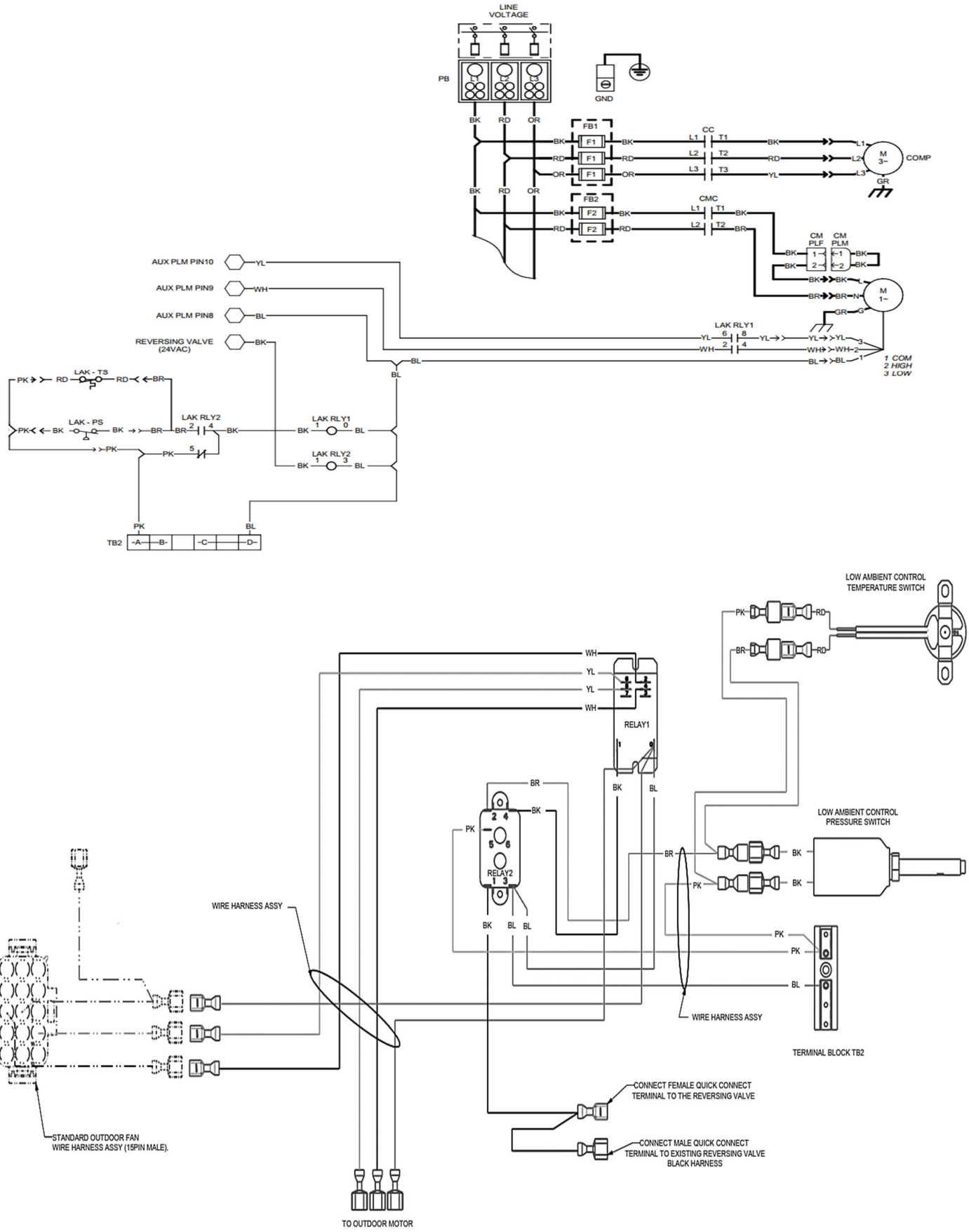
LOW AMBIENT CONTROLS WIRING HP MODELS (PSC OD MOTOR)

LACKSM005 WIRING DIAGRAM AND ILLUSTRATION



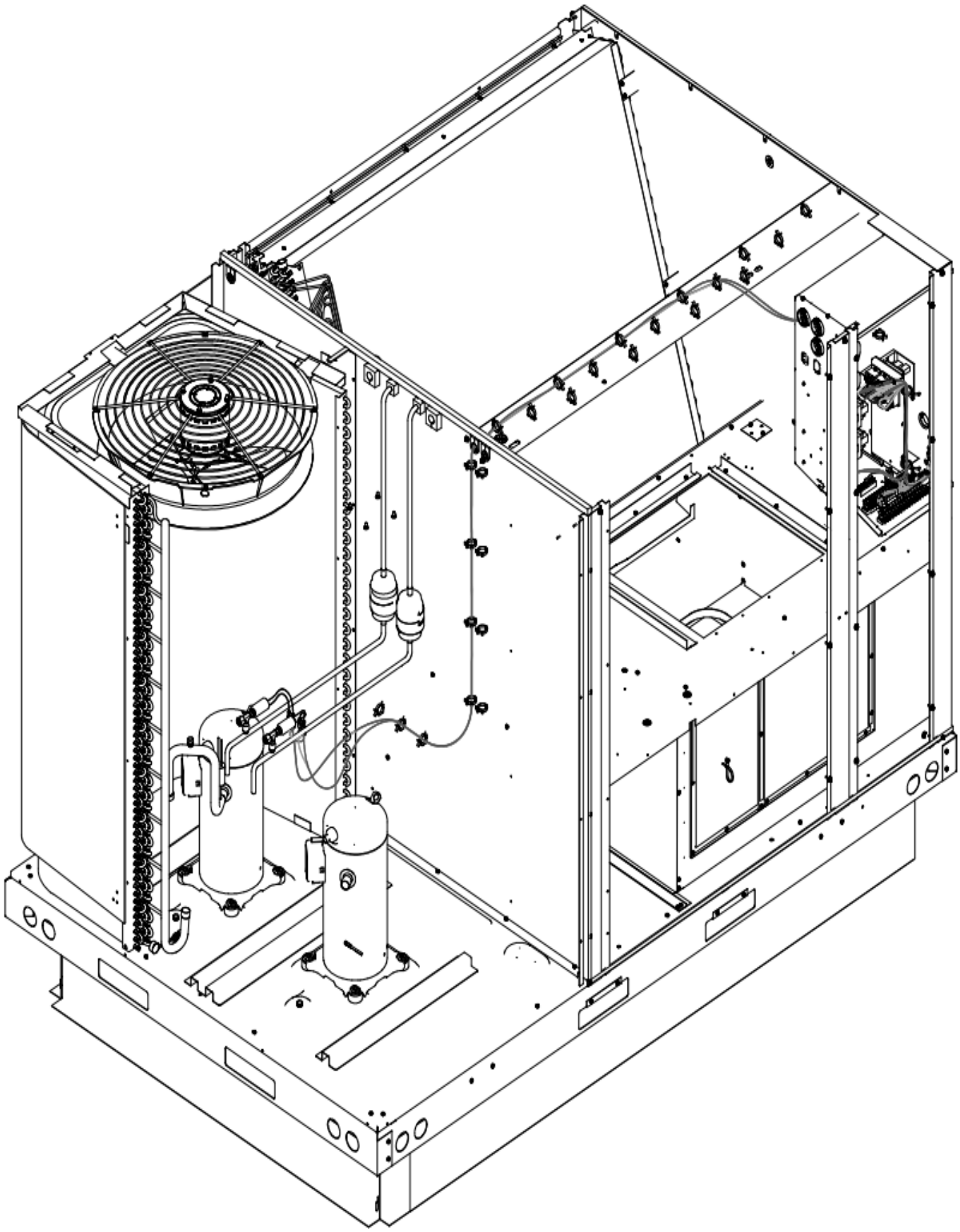
LOW AMBIENT CONTROLS WIRING HP MODELS (ECM OD MOTOR)

LACKSM006 WIRING DIAGRAM AND ILLUSTRATION

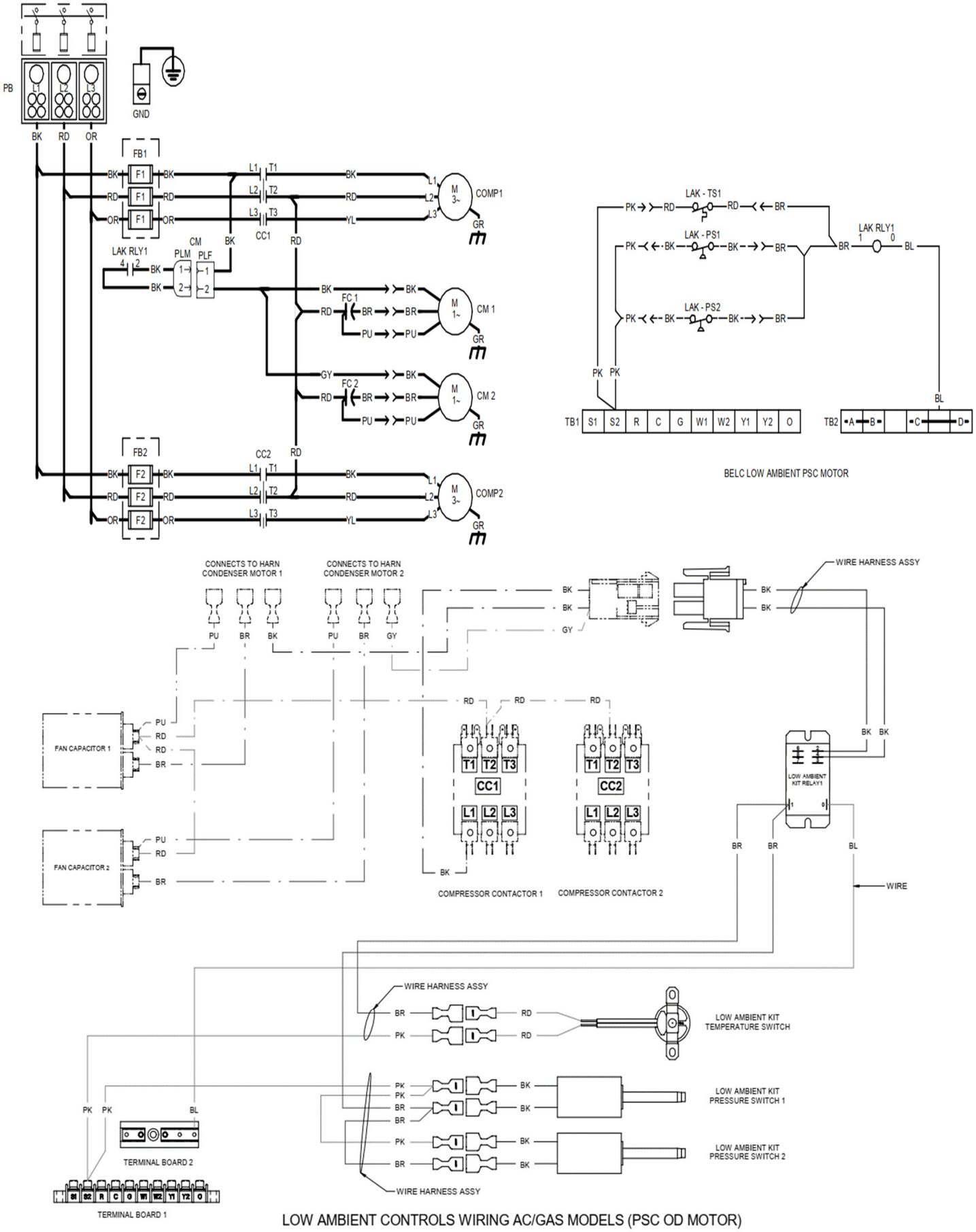


LOW AMBIENT CONTROLS WIRING HP MODELS - DDC (ECM OD MOTOR)

7.5-12.5 TON PRESSURE SWITCH ROUTING

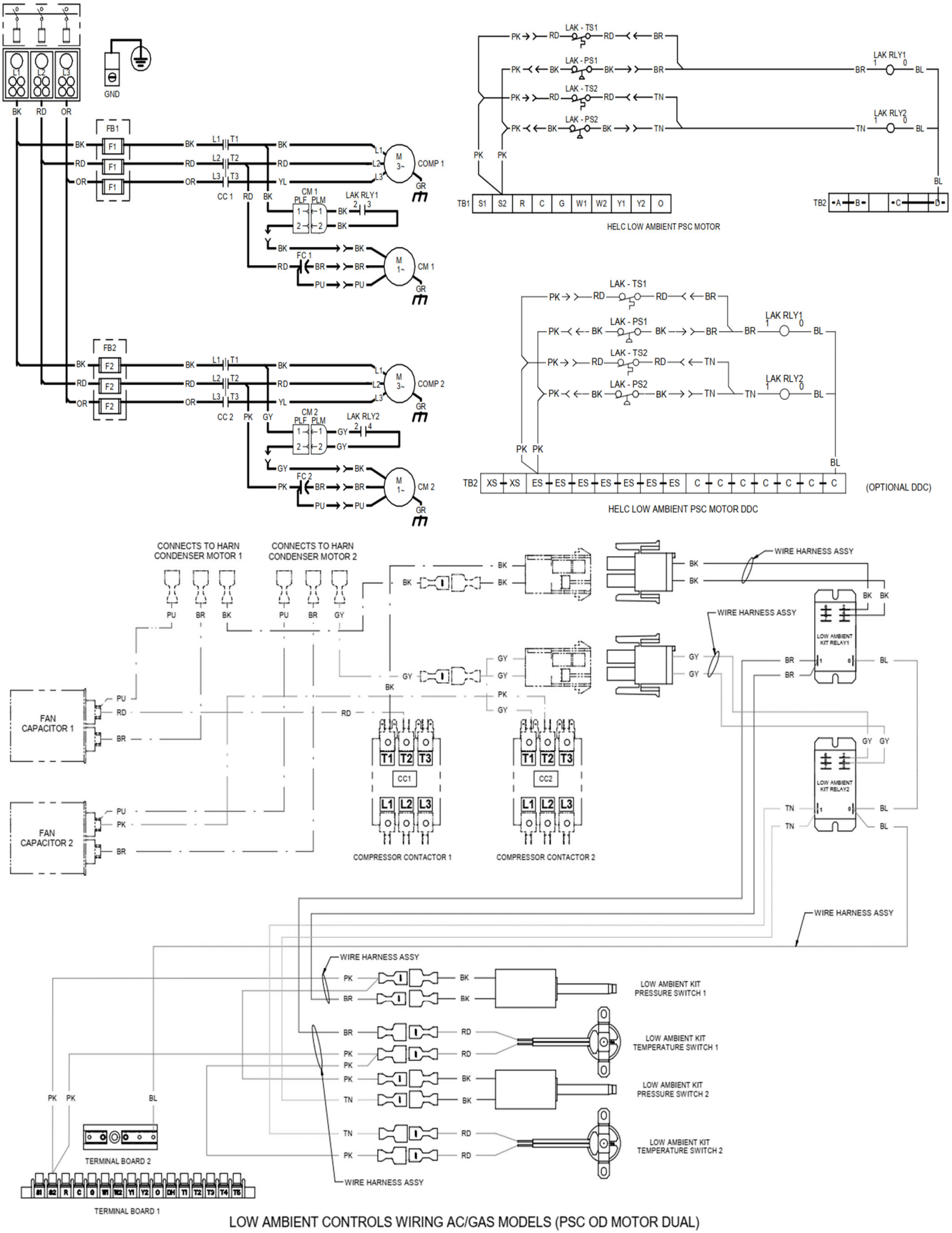


LACKMD001 WIRING DIAGRAM AND ILLUSTRATION



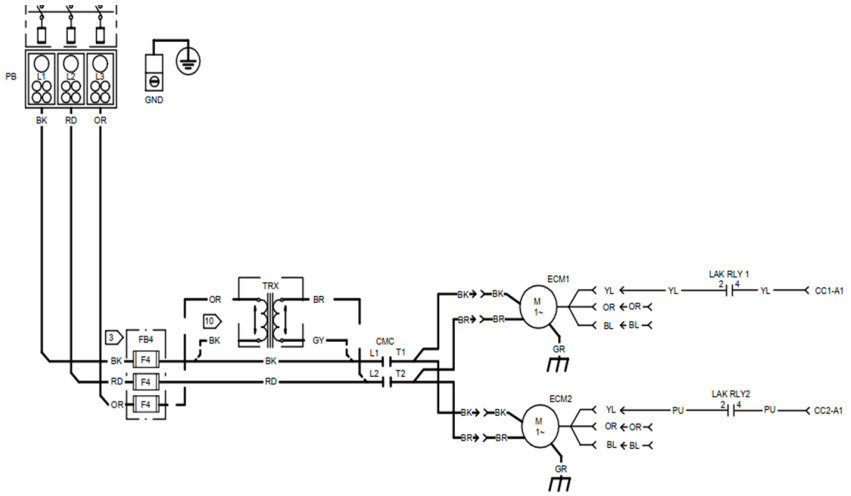
LOW AMBIENT CONTROLS WIRING AC/GAS MODELS (PSC OD MOTOR)

LACKMD002 & LACKMD006 WIRING DIAGRAM AND ILLUSTRATION



LOW AMBIENT CONTROLS WIRING AC/GAS MODELS (PSC OD MOTOR DUAL)

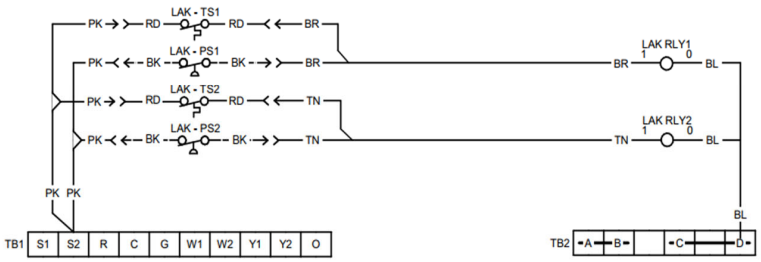
LACKMD003 & LACKMD007 WIRING DIAGRAM AND ILLUSTRATION



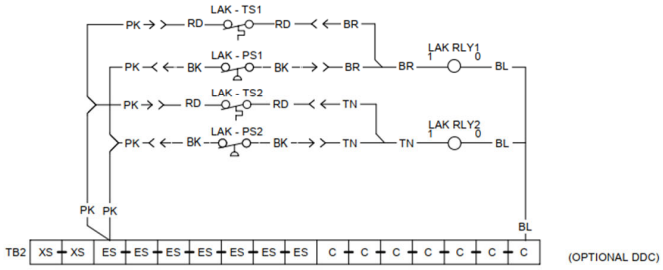
NOTE :

DISCONNECT THE YELLOW 24V SIGNAL CONDENSER MOTOR 1 WIRE FROM COMPRESSOR CONTACTOR CC1-A1 AND RECONNECT TO LAK RLY1 PIN 2. CONNECT YELLOW WIRE FROM NEW HARNESS TO LAK RLY1 PIN 4 AND COMPRESSOR CONTACTOR CC1-A1.

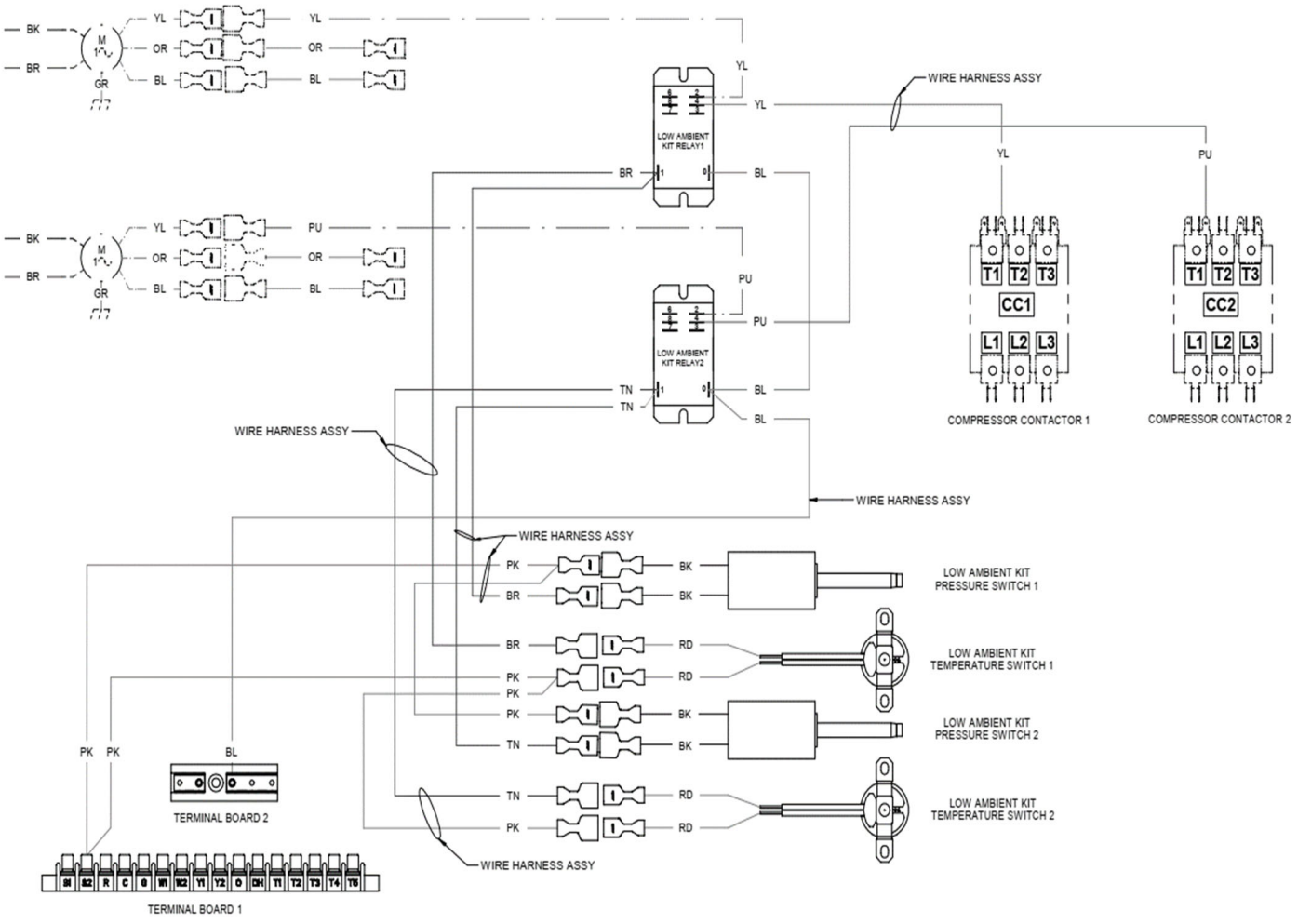
DISCONNECT THE PURPLE 24V SIGNAL CONDENSER MOTOR 2 WIRE FROM COMPRESSOR CONTACTOR CC2-A1 AND RECONNECT TO LAK RLY2 PIN 2. CONNECT PURPLE WIRE FROM NEW HARNESS TO LAK RLY2 PIN 4 AND COMPRESSOR CONTACTOR CC2-A1.



HELC LOW AMBIENT ECM MOTOR

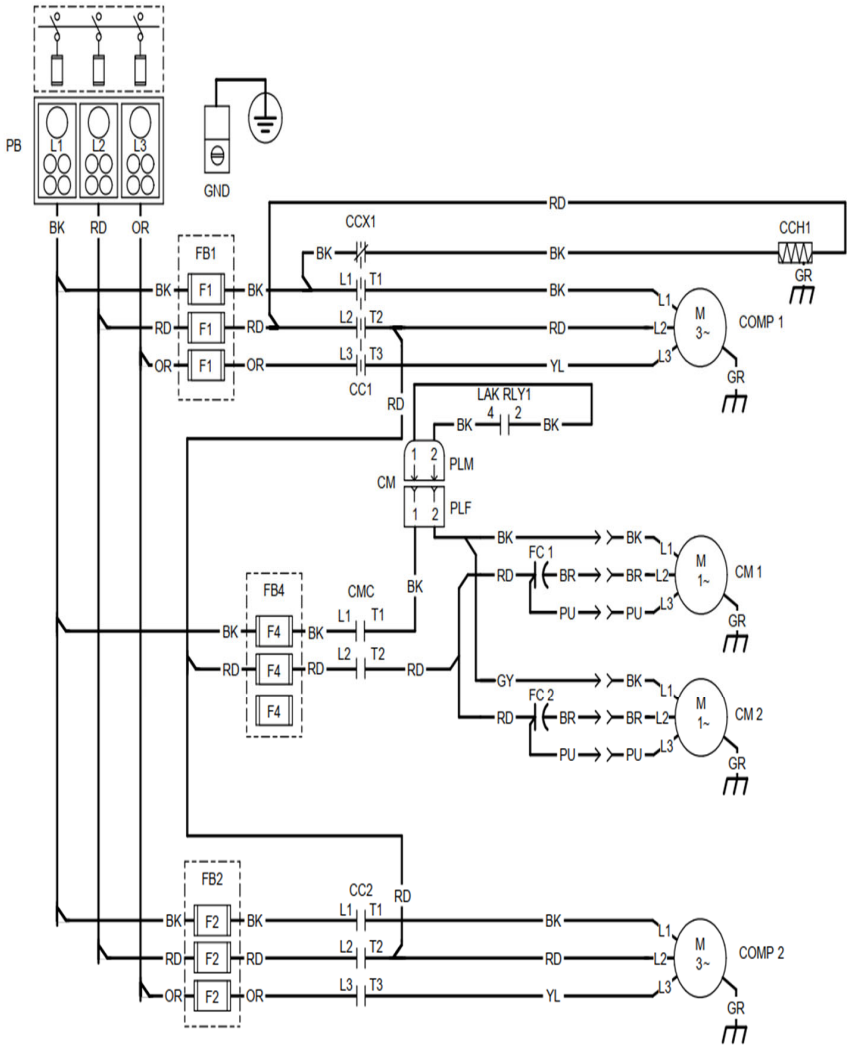


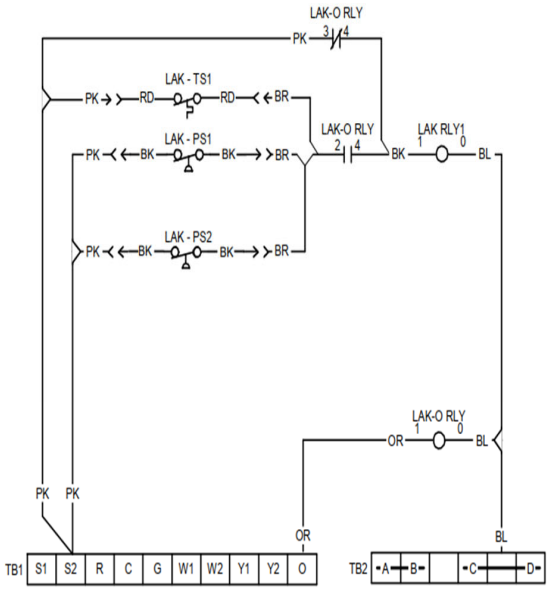
HELC LOW AMBIENT ECM MOTOR DDC (OPTIONAL DDC)



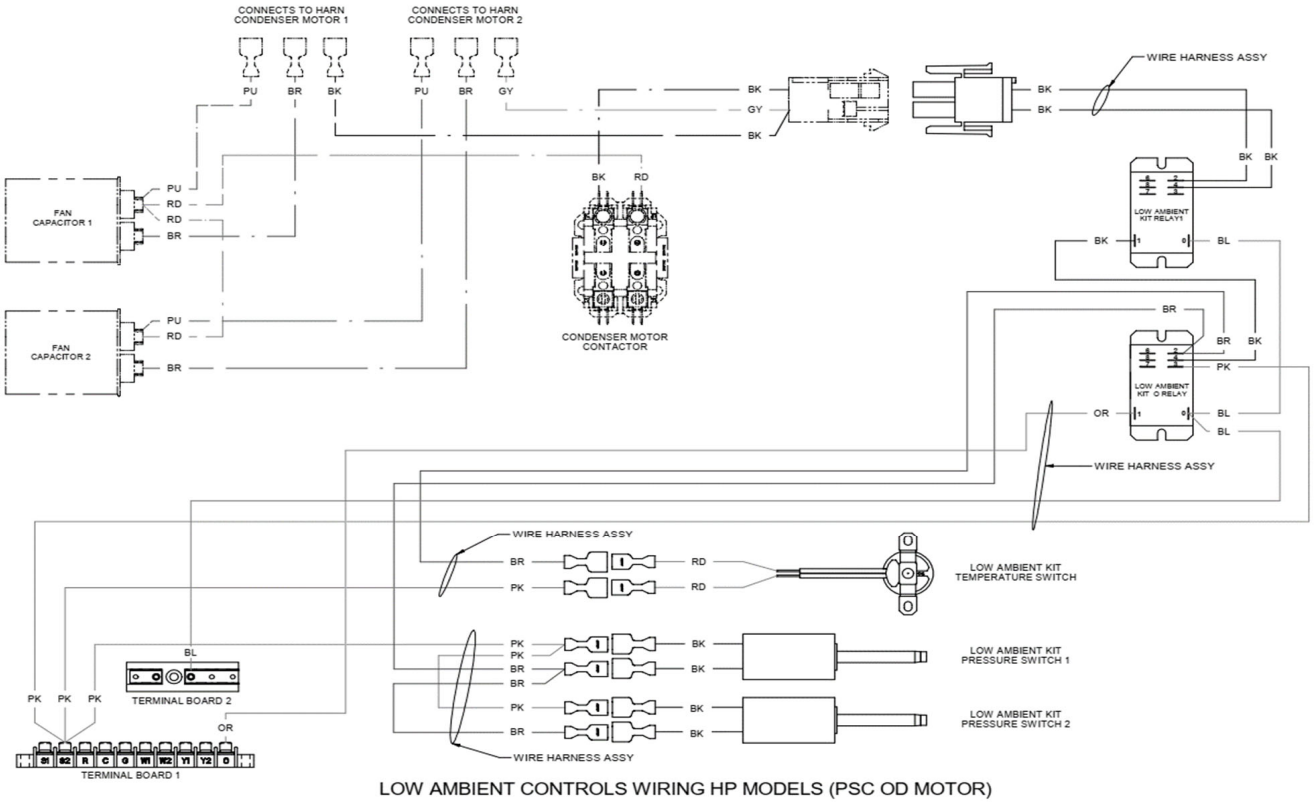
LOW AMBIENT CONTROLS WIRING AC/GAS MODELS (ECM OD MOTOR)

LACKMD004 WIRING DIAGRAM AND ILLUSTRATION



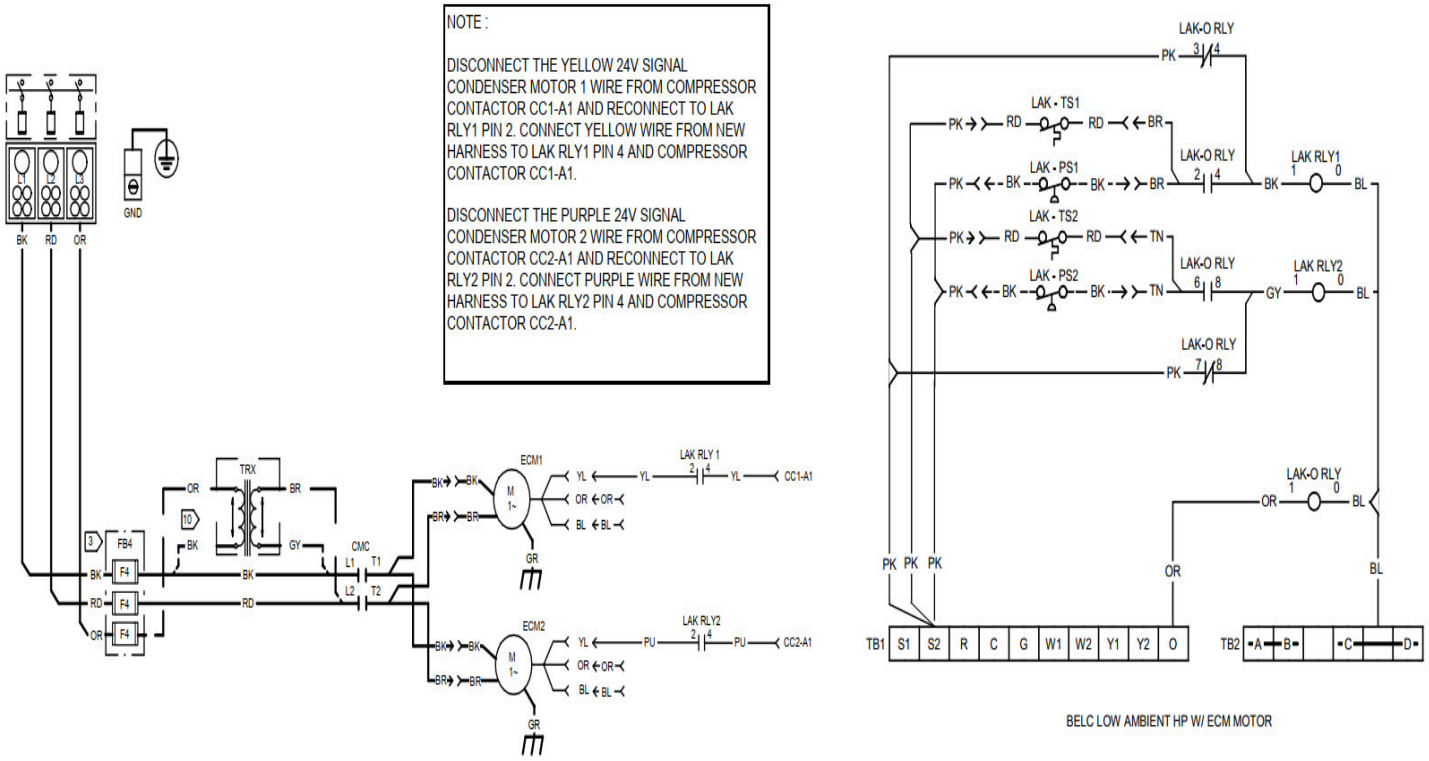


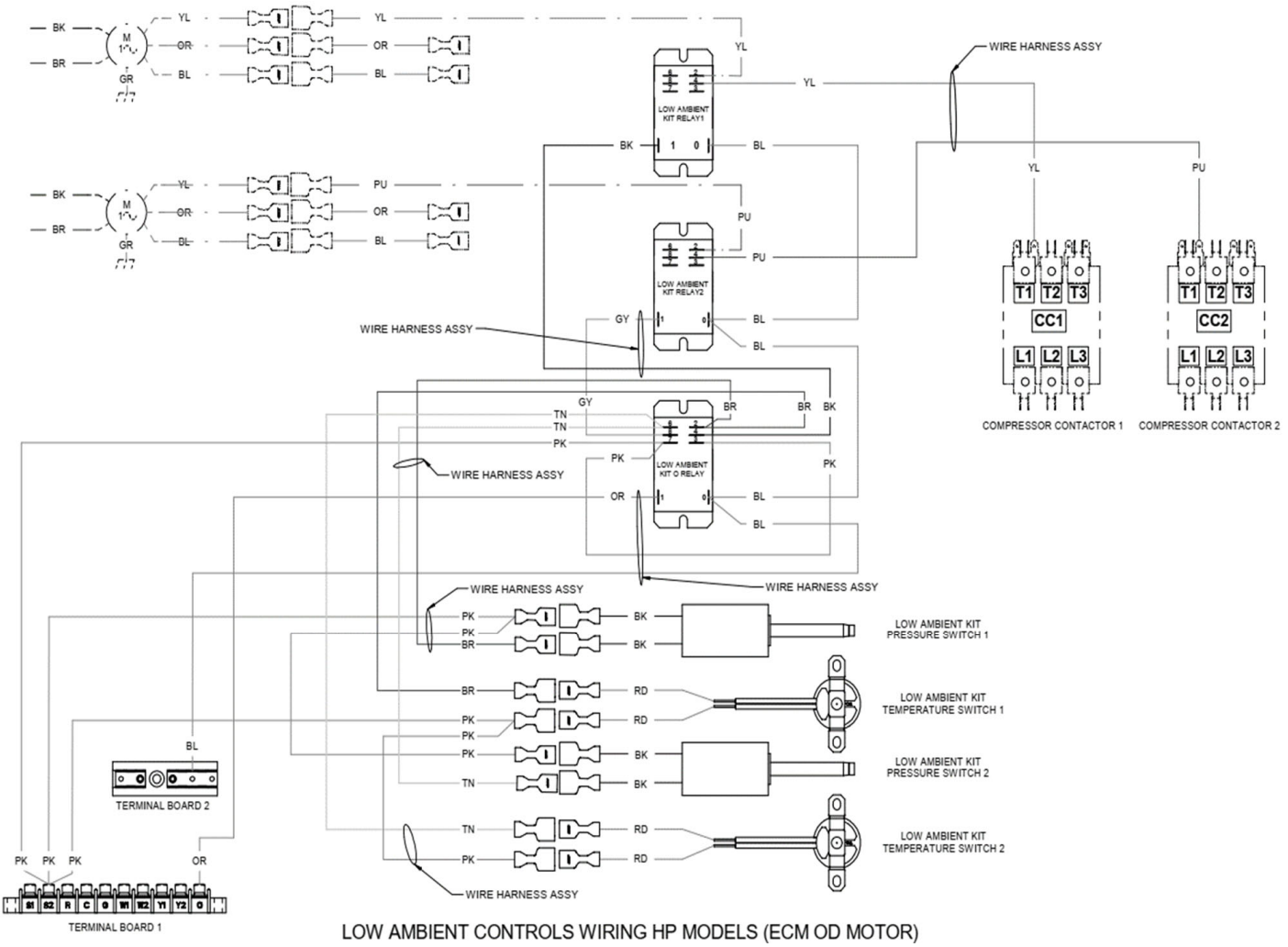
BELC LOW AMBIENT HP W/ PSC MOTOR



LOW AMBIENT CONTROLS WIRING HP MODELS (PSC OD MOTOR)

LACKMD005 WIRING DIAGRAM AND ILLUSTRATION





LOW AMBIENT CONTROLS WIRING HP MODELS (ECM OD MOTOR)

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CUSTOMER FEEDBACK
Daikin is very interested in all product comments.
Please fill out the feedback form on the following link:
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You can also scan the QR code on the right to be directed to the feedback page.

19001 Kermier Rd., Waller, TX 77484
www.daikincomfort.com