

NOVAR CONTROL KIT

INSTALLATION INSTRUCTIONS FOR NOVAR 2050 CONTROL KIT (LB-63353CT, 48K87) USED WITH "L" SERIES UNITS

SHIPPING AND PACKING LIST

Package 1 of 1 contains:

- 1- Novar 2050 Electronic Thermostat Module (ETM) with J80/P79 jack/plug connectors (A1)
- 2- ETM mounting brackets
- 1- J79/P17 Wire harness
- 1- Air flow switch (S52)
- 1- P65 connector harness
- 1- Airflow tubing
- 1- S52 mounting bracket
- 1- Return air sensor (A2) with P62 connector
- 1- Discharge air sensor (RT1) with P63 connector
- 1- Blower / filter relay assembly (with instruction)
- 1- J167 wire harness
- 1- Bag assembly containing:
 - 5-#6-32 X 3/4" screws
 - 14-#8-32 X 1/2" screws
 - 6-#10-16 X 5/8" screws
 - 1-Checkout procedure label
 - 1-Wiring diagram sticker

APPLICATION

The Novar 2050 electronic thermostat module is used with L series units.

The normally open S52 air flow (blower proving) switch closes with static pressure increase when the blower is started. If the static increase is not sensed, the ETM module will keep the heating and cooling functions locked out and also show an alarm in the system.

The A2 return air sensor monitors return air temperature and provides input to the ETM to determine unit heating or cooling function. A room air sensor may be used instead of a return air sensor. If a room air sensor is used, disconnect return air sensor jack/plug J/P62 in the filter access area. The room air sensor is wired to TB1 by the controls contractor.

The RT1 discharge air sensor monitors discharge or supply air temperature.

INSTALL NOVAR ETM MODULE

See figure 1 for location of control bracket and ETM module in A box units. See figure 2 for location of ETM bracket and module in A+, B, C, and D box units.

- 1- Disconnect all electrical power to unit.
- 2- Open compressor section access doors.

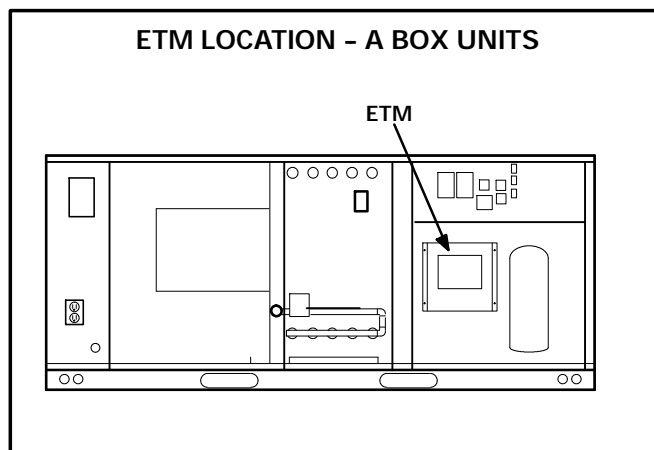


FIGURE 1

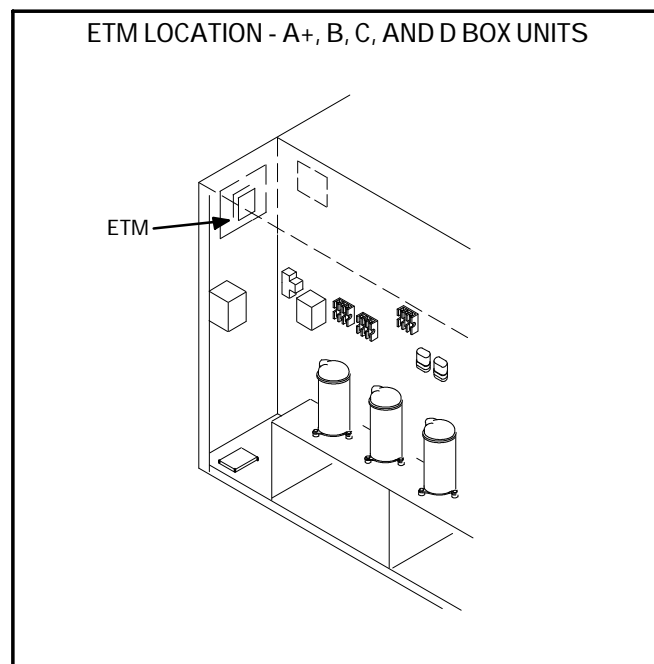


FIGURE 2

A BOX UNITS

- 1- Discard the larger ETM mounting bracket.
- 2- Position the smaller bracket on the partition behind the compressor as shown in figure 1. Align holes and secure in place with screws provided in kit.
- 3- Align holes on ETM with holes on control bracket. Secure in place with screws provided.

A+, B, C, AND D BOX UNITS

- 1- Discard the smaller ETM mounting bracket.
- 2- Remove and retain top screw securing IMC (A55) board hat section to unit. See figure 3.
- 3- Align hole on L-shaped bracket flange with top hole on hat section flange. Secure hat section and bracket to unit with retained screw. See figures 4 and 5.

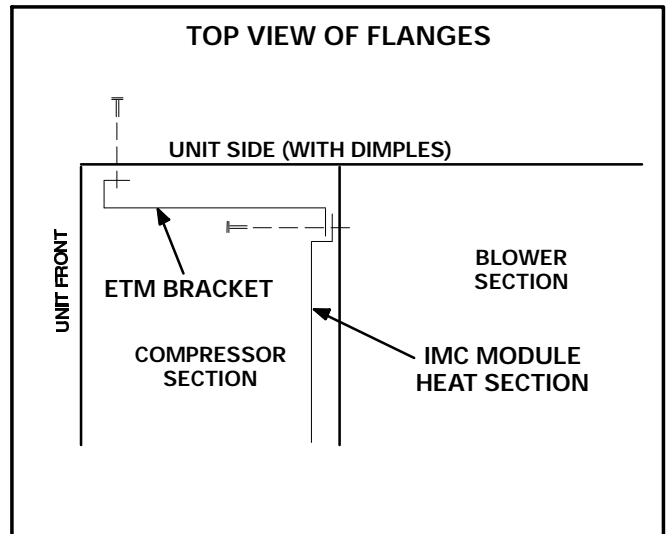


FIGURE 4

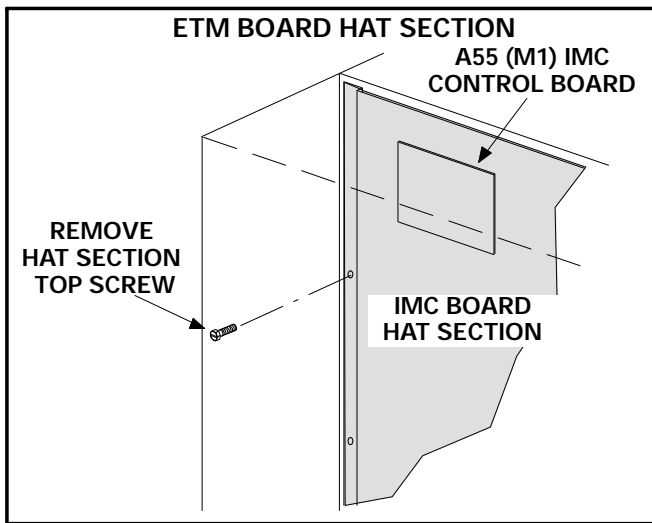


FIGURE 3

- 4- Locate two small dimples on outside of unit which line up with screw holes on U-shaped bracket flange. Drill two holes in place of dimples and secure bracket to side of unit with screws provided. See figure 5.
- 5- Align holes on ETM with holes on control bracket. Secure in place with screws provided.

NOTE - Holes on control bracket are provided for several different applications; there will be unused holes left.

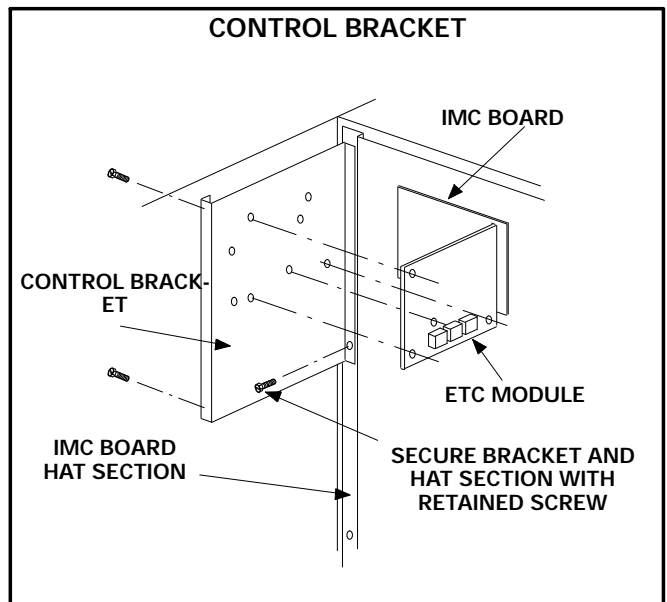


FIGURE 5

WIRING ETM MODULES

- 1- Disconnect J16/P16 unit jack/plugs located beneath IMC board. Connect unit plug P16 to ETM jack J80 and unit jack J16 to ETM plug P17. See figure 6.
- 2- Disconnect existing J66/P66 cool 1 jack/plugs. Connect module J66 cool 1 jack to P66 cool 1 plug. J66 cool 1 jack to TB1 remains disconnected.
- 3- Disconnect J125/P125 blower proving jack/plugs. Connect blower proving jumper jack J126 to blower proving plug P125. Connect P126 blower proving plug to J125 blower proving jack.

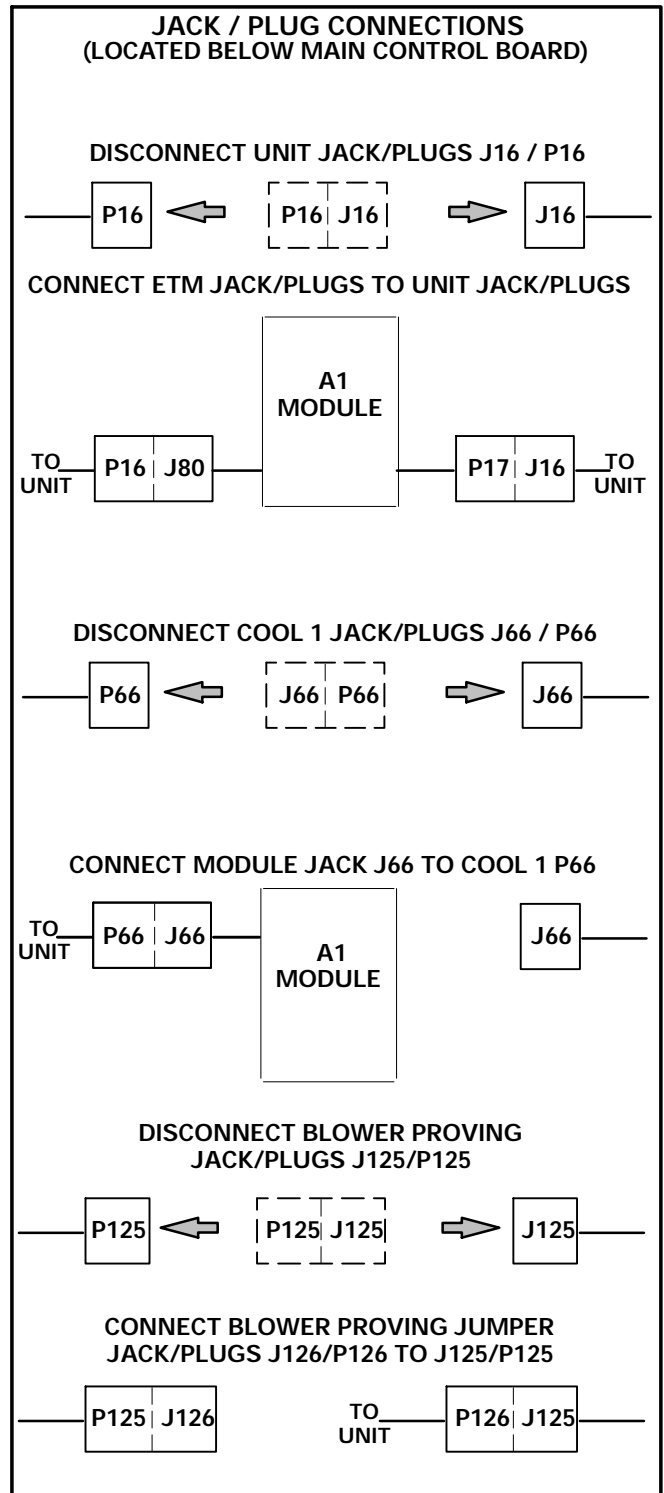


FIGURE 6

INSTALL AIR FLOW SWITCH (S52)

- 1- Open blower access doors.
- 2- Connect wire from P65 harness labeled "S52-C" to blower proving switch terminal C. Connect wire from P65 harness labeled "S52-NO" to blower proving switch terminal NO.
- 3- *A, C and D Box Units-*
Insert air flow switch air port into opening and align two screw holes with bracket holes. See figures 7 and 8. Secure with screws provided.

A+ and B Box Units -
Install air flow switch assembly in blower section. See figure 9. Secure with screws provided.
- 4- Disconnect jumper plug connected to J65 and connect S52 fan switch plug P65 to S52 fan switch jack J65.
- 5- *A+ and B Box Units Only-*
Connect one end of air tubing to port on blower proving switch. Insert other end of air tubing through hole in blower deck. See figure 8.

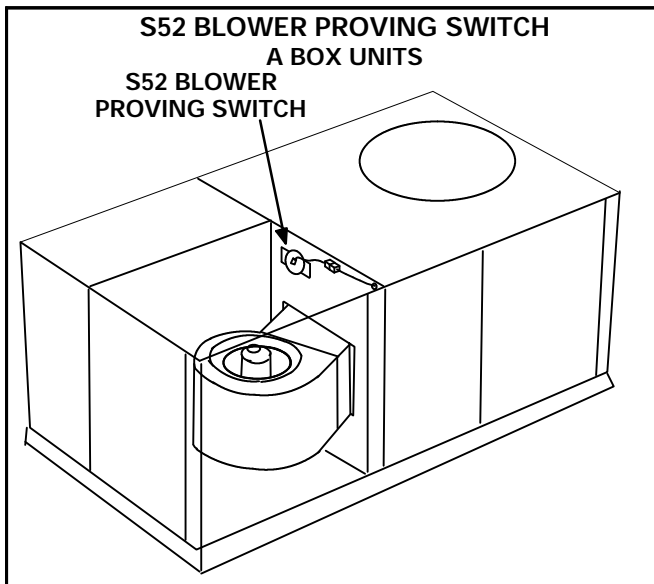


FIGURE 7

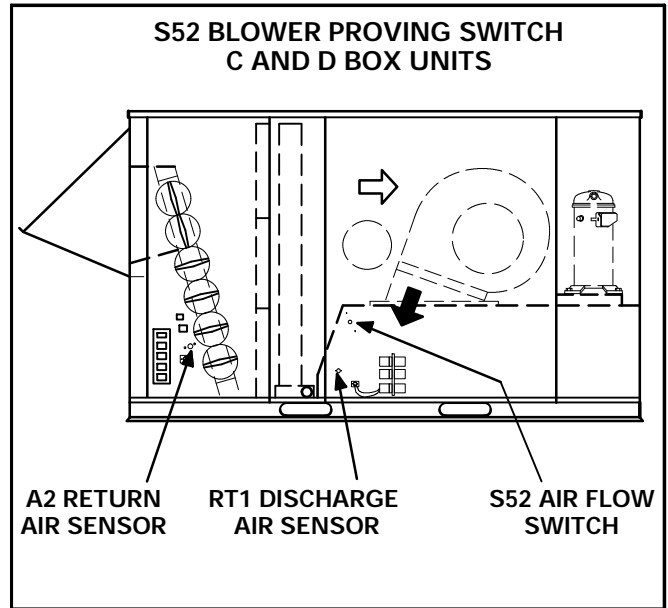


FIGURE 8

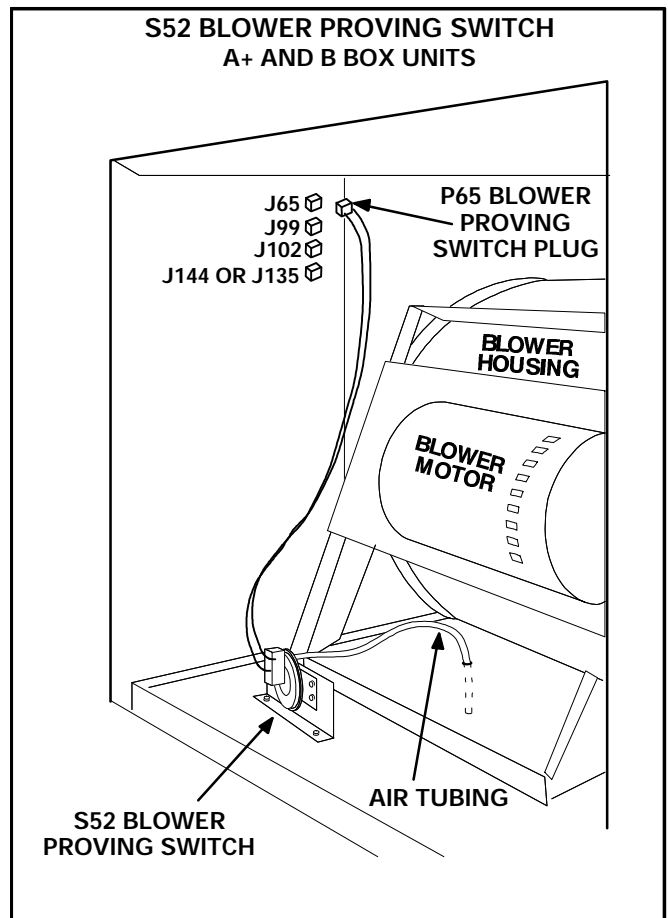


FIGURE 9

DISCHARGE AIR SENSOR (RT1)

1- Insert discharge air sensor probe into knockout as shown in figure 10 on A box units, figure 11 on A+ and B box units, and figure 12 on C and D box

units. Secure with two screws provided.

2- Connect RT1 discharge air sensor plug P63 to RT1 discharge air sensor jack J63 on supply air division panel or blower deck.

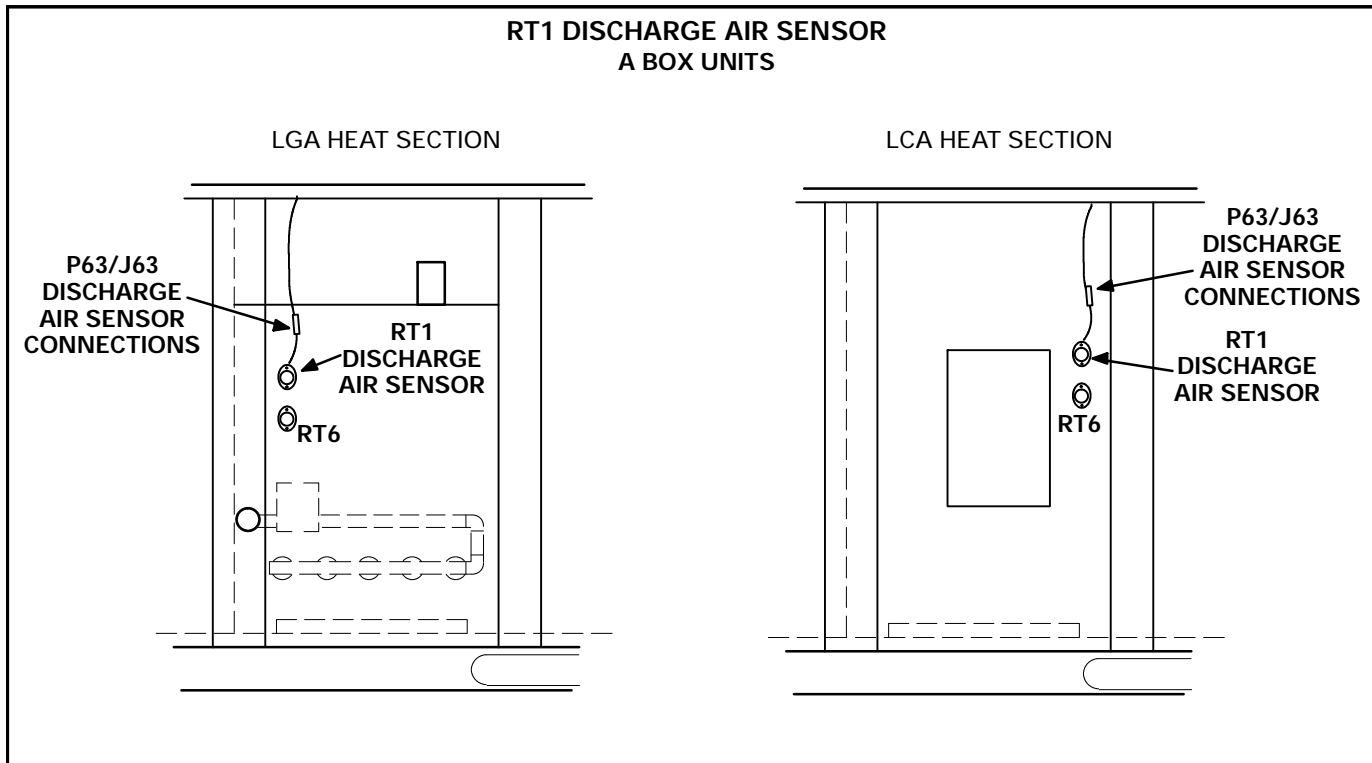


FIGURE 10

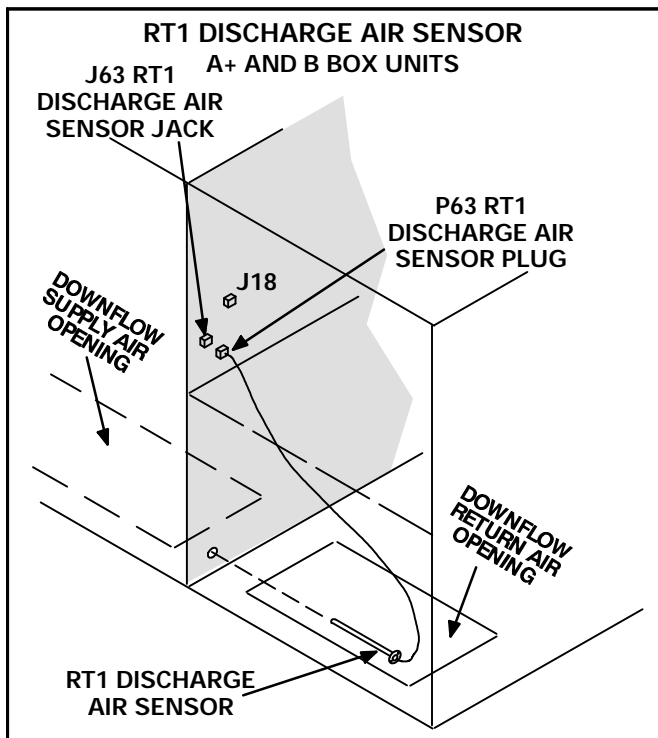


FIGURE 11

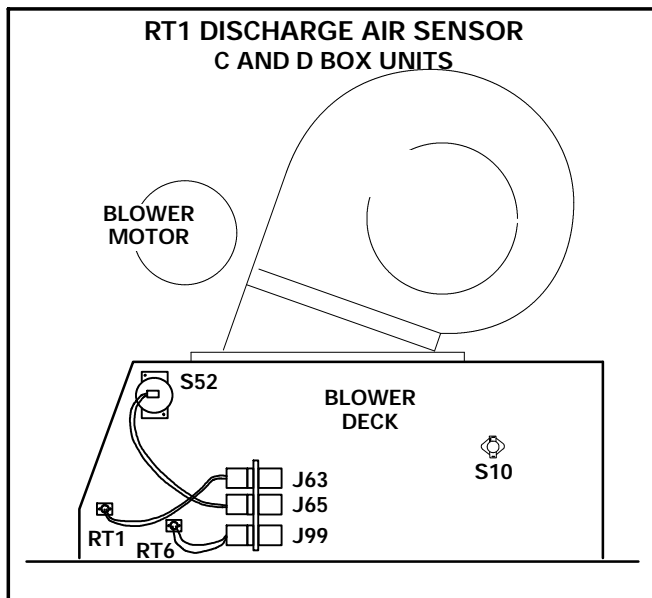


FIGURE 12

RETURN AIR SENSOR (A2)

- 1- Open filter access door.
- 2- Insert return air sensor probe into hole (location shown in figure 13). Secure with screws provided.
- 3- Connect A2 return air sensor plug P62 to A2 return air sensor jack J62.

NOTE - When an optional field-provided A2 room air sensor is installed, the controls contractor wires the sensor to TB1.

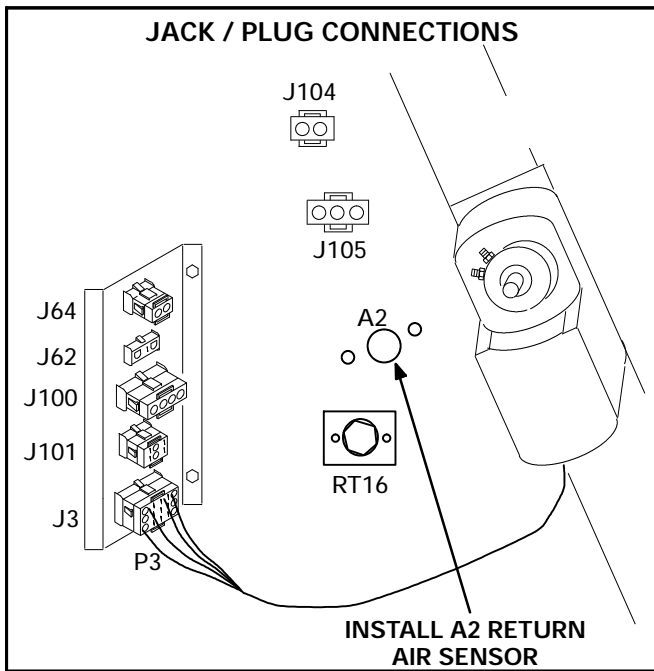


FIGURE 13

B-Wiring Diagrams

Wiring diagram sections are affixed to inside of unit panel in alpha-numeric order. Figure 14 shows an example of a complete system diagram on an installation consisting of an LGA240 unit with an electro-mechanical or electronic control system and a modulating economizer. Affix the new appropriate "B" section wiring diagram on top of the existing "B" section wiring diagram. Affix the "C3" section wiring diagram over the top of the existing "C" section wiring diagram.

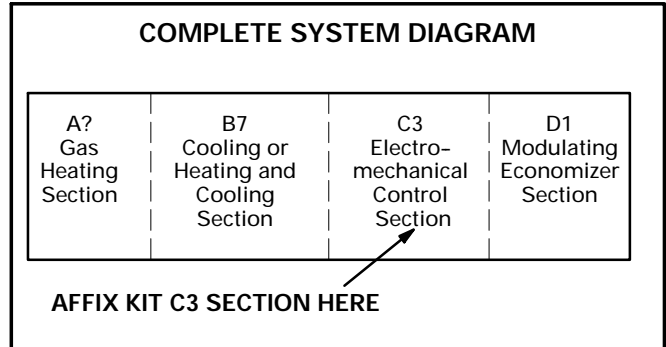
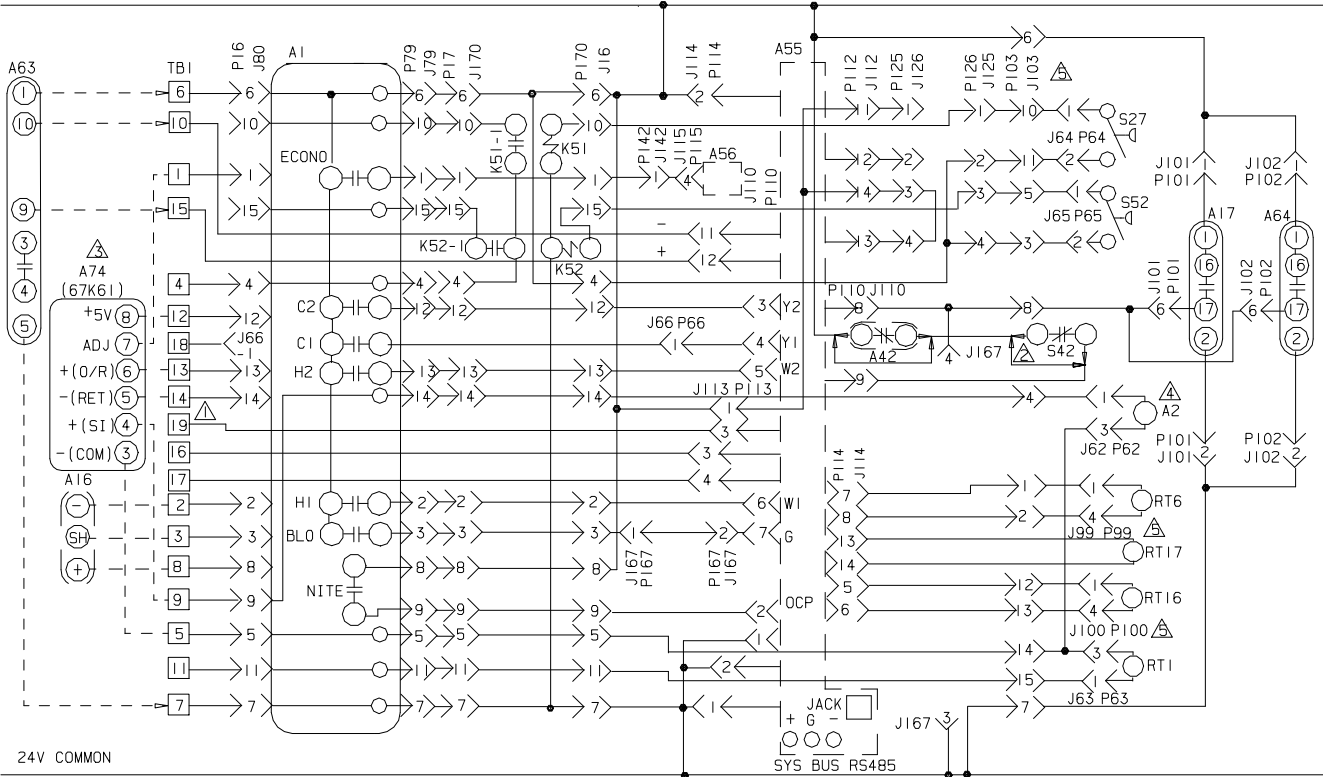


FIGURE 14

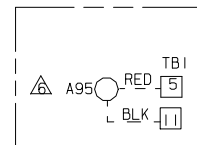
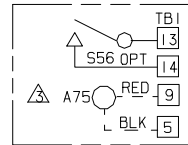
24V POWER



24V COMMON

KEY	DESCRIPTION	COMPONENT
A1	PANEL-LOGIC	
A2	SENSOR-ELECTRONIC	
A16	CONTROL-MICROPROCESSOR, EP	
A17	DETECTOR-SMOKE	
A42	MONITOR-PHASE PROTECTION	
A55	PANEL-MAIN	
A56	PANEL-ECONOMIZER	
A63	SENSOR-CO2 (IAQ) OPTIONAL	
A64	DETECTOR-SMOKE, SUPPLY AIR	
A74	SENSOR-ROOM (64K61)	
A75	SENSOR-ROOM (95H5301)	
A95	SENSOR-AVERAGING	
J16	JACK-UNIT	
J62	JACK-A2 RETURN AIR SENSOR	
J63	JACK-RT1 DISCH. AIR SENSOR	
J64	JACK-S27 FILTER SWITCH	
J65	JACK-S52 FAN SWITCH	
J66	JACK-COOL I INTERFACE	
J79	JACK-PIGTAIL TO P17	
J80	JACK-HEADER	
J99	JACK-DISCHARGE TEMP SENSOR	
J100	JACK-RETURN TEMP SENSOR	
J101	JACK-SMOKE DETECTOR, RETURN AIR	
J102	JACK-SMOKE DETECTOR, SUPPLY AIR	
J103	JACK-SENSORS, CONTROL	
J110	JACK-THERMOSTAT INPUT	
J112	JACK-COOLING SENSOR INPUT	
J113	JACK-BLOWER & COOL I CONTROL	
J114	JACK-SENSOR INPUT	
J115	JACK-ECONOMIZER OUTPUT	
J125	JACK-BLOWER PROVING	
J126	JACK-JUMPER, BLOWER PROVING	
J142	JACK-ECONOMIZER HARNESS	
J167	JACK-BLOWER OVERRIDE, STD	
J170	JACK-BLOWER/FILTER SIGNAL	

KEY	DESCRIPTION	COMPONENT
K51	RELAY-FILTER SIGNAL	
K52	RELAY-BLOWER SIGNAL	
P16	PLUG-UNIT	
P17	PLUG-LOGIC PANEL	
P62	PLUG-A2 RA SENSOR	
P63	PLUG-RT1 DA SENSOR	
P64	PLUG-S27 FILTER SWITCH	
P65	PLUG-S50 FAN SWITCH	
P66	PLUG-COOL ONE	
P79	PLUG-HEADER, NOVAR	
P99	PLUG-DISCHARGE TEMP SENSOR	
P100	PLUG-RETURN TEMP SENSOR	
P101	PLUG-SMOKE DETECTOR, RETURN AIR	
P102	PLUG-SMOKE DETECTOR, SUPPLY AIR	
P103	PLUG-SENSORS, CONTROL	
P110	PLUG-THERMOSTAT INPUT	
P112	PLUG-COOLING SENSOR INPUT	
P113	PLUG-BLOWER & COOL I CONTROL	
P114	PLUG-SENSOR INPUT	
P115	PLUG-ECONOMIZER OUTPUT	
P125	PLUG-BLOWER PROVING	
P126	PLUG-JUMPER, BLOWER PROVING	
P142	PLUG-ECONOMIZER HARNESS	
P167	PLUG-BLOWER OVERRIDE, STD	
P170	PLUG-BLOWER/FILTER SIGNAL	
RT1	SENSOR-DISCHARGE	
RT6	SENSOR-ADDER DISCHARGE CONTROL	
RT16	SENSOR-RETURN AIR TEMP	
RT17	SENSOR-OUTSIDE AIR TEMP	
S27	SWITCH-FILTER	
S42	OVERLOAD-RELAY, BLOWER MOTOR	
S52	SWITCH-AIR FLOW	
TB1	TERMINAL STRIP-24V CLASS II	



NOTE - SWITCHOVER WTS-S05 (18L3601) CANNOT BE USED WITH ETM-2050, ONLY ETM-2051.

- ⚠ A95 AVERAGING SENSOR MAY BE USED WITH A74 OR A75 ROOM SENSORS. DISCONNECT RT1 DISCHARGE AIR SENSOR (NOVAR) WHEN A95 IS USED
- ⚠ J99/P99, J100/P100 AND J103/P103 ARE NOT USED ON-036, 042, 048, 060, 072, 088 AND 100 UNITS
- ⚠ DISCONNECT A2, RETURN AIR SENSOR PLUG, P62, FROM UNIT JACK, J62, WHEN A74 OR A75 ROOM SENSOR IS USED
- ⚠ ALTERNATE A74 ROOM SENSOR, USED IN PLACE OF A75 SENSOR
- ⚠ FOR MOTORS WITH S42 EXTERNAL OVERLOAD AND WITH A55 (IMC) SOFTWARE VERSION 1.07 & NEWER
- ⚠ TB1-19 IS SERVICE RELAY OUTPUT (24VAC). IF USED CONNECT TO A INDICATOR LIGHT OR RELAY COIL (MAX 4VA)

— DESIGNATES OPTIONAL WIRING
 - - - CLASS II FIELD WIRING

WIRING DIAGRAM		11/98
ACCESSORIES		
CONTROL FOR "L" SERIES UNITS NOVAR ETM-2050		
TEMPERATURE CONTROL SECTION C3		
Supersedes Form No. 532, 811W	New Form No. 532, 977W	
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FIGURE 15

CHECK-OUT PROCEDURE

The ETM-2050 contains relay outputs. Field installed jumpers or toggle switches may be connected to the relay tabs to simulate a thermostat demand. See figure 16.

- 1- Disconnect all electrical power to unit.
- 2- Remove fuse (F1) from the ETM to disable automatic control of the ETM outputs.
- 3- Install toggle switches across the relay tabs. If using jumper wire, connect only one tab on each relay.
- 4- Restore power to unit. One relay at a time, turn on toggle switch or make jumper connection to other relay tab. The corresponding indicating light on the A55 M1 main control board should turn on. This indicates that each ETM function is operating properly.

IMPORTANT - Do not jumper cooling and heating outputs at the same time.

- 5- Turn off power.
- 6- Remove all jumpers or toggle switches.
- 7- Replace fuse (F1) on ETM.
- 8- Restore power to unit. Blinking status LED indicates normal operation.
- 9- Repeat check-out procedure if needed.

NOTE - All field installed jumpers or toggle switches should be removed after service has been completed to ensure that unit control has been switched back to the ETM.

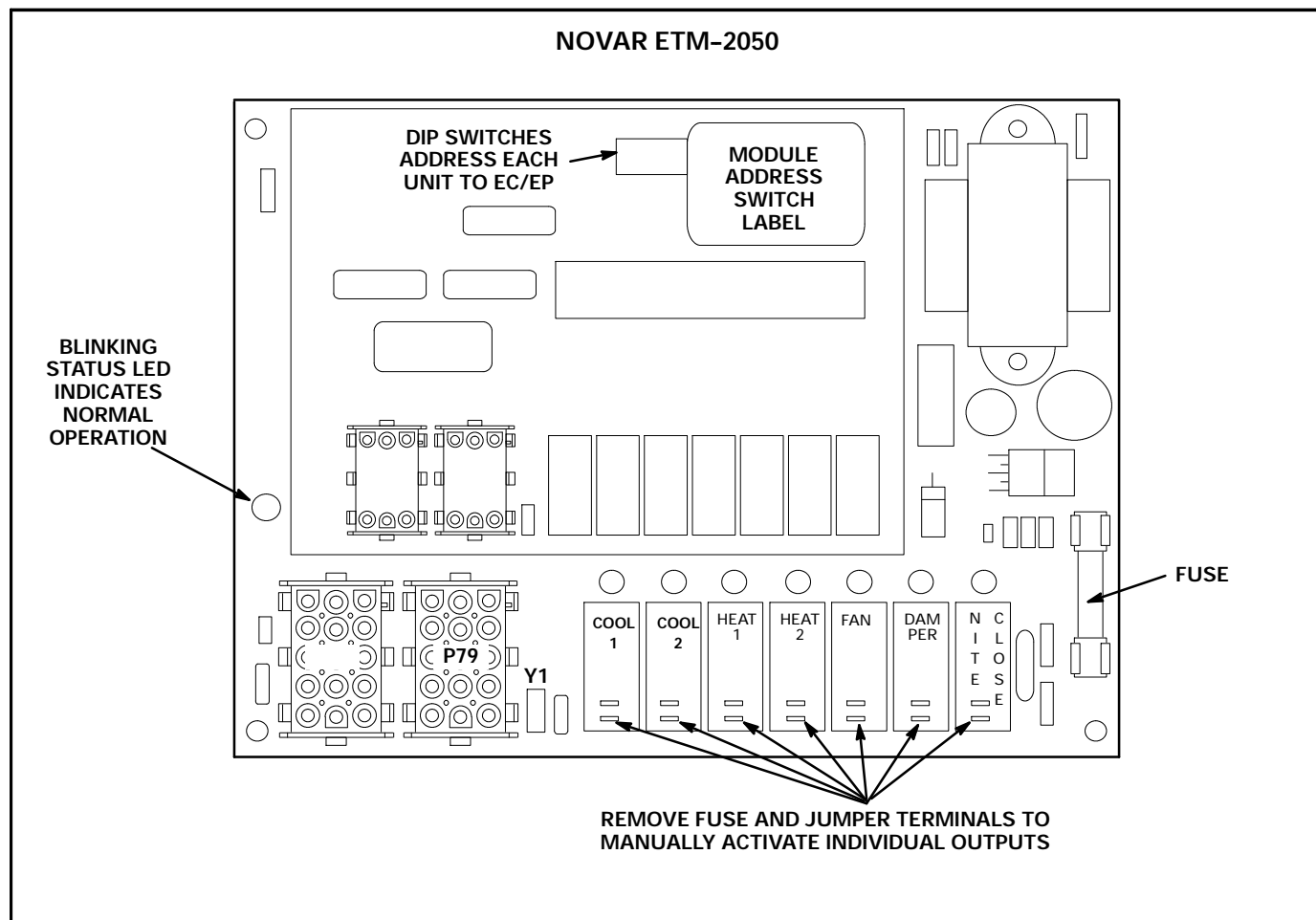


FIGURE 16