

50NE,NQ Accessory Electric Heaters

Installation Instructions

GENERAL

These instructions cover the installation of field installed electric heat packages in the Model 50NE Packaged Air Conditioner and 50NQ Packaged Heat Pump. These heaters are available from 5 kW to 25 kW. As shipped from the factory, the packages contain the following:

	Heater Assembly (With or without fuses depending upon electrical characteristics)	1
→	Watertight Connector	1
	High/Low Voltage Divider Bracket	1
	Closed Cell Rubber Grommet	1
	Rubber Grommet	2
	Plastic Grommet	1
	Wire Ties	2
	Wiring Diagrams (Shipped loose in non-fused models)	1
	Screws	
	Non-fused models	4
	Fused models	8
→	Supplemental Rating Plate	1
	Installation Instructions	1

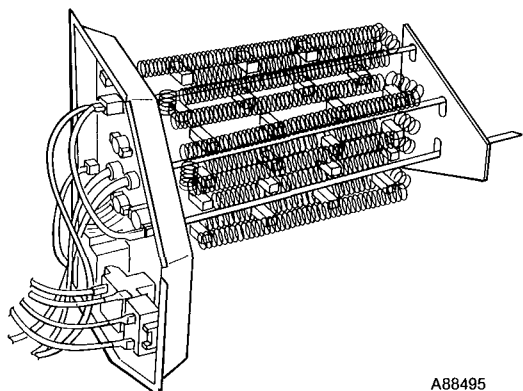
SAFETY CONSIDERATIONS

Recognize safety information. This is the safety-alert symbol, **⚠** when you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal word—DANGER, WARNING or CAUTION. These words are used with the safety-alert symbol. Danger identifies the most serious hazards which will result in severe personal injury or death. Warning, could result in personal injury or death. Caution is used to identify unsafe practices which would result in minor personal injury or product and property damage.

⚠ WARNING

Before performing service or maintenance operations, turn off the main power switches to the unit. Turn off the accessory heater power switch (if applicable). Electrical shock could cause personal injury or death.



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Fig. 1—Electric Heater

INSTALLATION

Step 1—Install ductwork. Refer to unit Installation Instructions for complete duct installation details. Size ductwork for cooling air quantity (cfm). The minimum air quantity for safe electric heater operation is shown in Table 3.

⚠ WARNING

A 1-in. clearance to combustibles must be maintained for the first 18 ins. of outlet duct. Fire may result causing equipment and property damage and personal injury if clearance is not maintained.

Step 2—Remove Blower Access Panel, Control Box Access Panel, and Side Post. See Fig. 2.

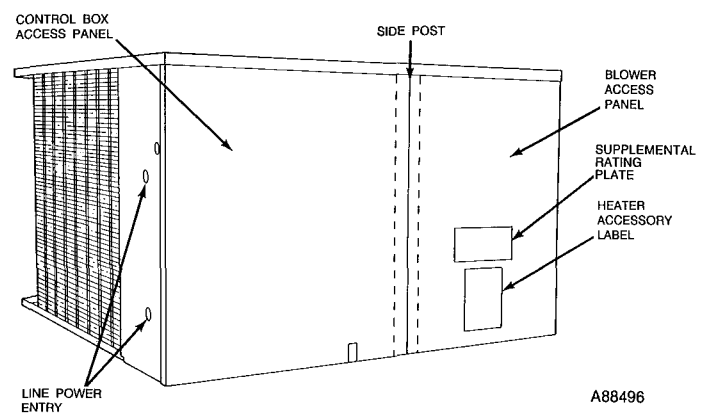
Step 3—Remove heater cover plate from heater mounting plate. Install heaters through opening in heater mounting plate. See Fig. 4.

⚠ CAUTION

Heater support bar must engage in hole in panel opposite the heater plate. See Fig. 3. Failure to do so may allow the heating elements to contact part of the base unit resulting in electrical shorting of the elements or fire.

Step 4—Secure the heater assembly to the heater mounting plate using mounting screws.

Step 5—Install heater fuse block. The heater fuses, when applicable, are to be mounted in one of two ways depending on the model used. Refer to Table 1. To install models utilizing knockout in heater mounting plate, remove knockout and mount fuse block assembly with screws provided. For flush mount models, place assembly against the heater mounting plate and attach with screws provided. Fuse block and heater mounting plate should be in solid contact and both modes of installation may be completed using pre-punched holes.



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→ Fig. 2—Panel Locations

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.

Table 1—Heater Fuse Mounting

50NQ390150000100*	KNOCKOUT REQUIRED KNOCKOUT REQUIRED FLUSH MOUNTED FLUSH MOUNTED KNOCKOUT REQUIRED KNOCKOUT REQUIRED FLUSH MOUNTED FLUSH MOUNTED
50NQ390200000100*	
50NQ390250000100*	
50NQ590250000100*	
50NQ390150000200	
50NQ390200000200	
50NQ390250000200	
50NQ590250000200	

*Models not approved for Canadian usage.

Step 6—Install branch circuit disconnect with overcurrent protection devices of adequate size to handle unit heaters. See Table 2. Locate disconnect within sight from and readily accessible to base unit in accordance with NEC Section 440-14.

Step 7—LINE POWER CONNECTIONS FOR NON FUSED HEATERS (Refer to Table 2)—Insert heater line power leads into the base unit through one of the following routes, depending upon the particular application:

1. Insert heater line power leads into heater control box area through inlet/outlet panel. See Fig. 5. A watertight termination should be made at this point.
2. Insert heater line power leads through control box post using either upper or lower knockout. All wires entering unit at this point should remain in conduit. Route wires into heater raceway through either uppermost or lowest knockout. Terminate conduit at the heater raceway using a watertight connector which is provided. Remove lower knockout in divider panel separating indoor section from outdoor section. Insert closed cell rubber grommet into space created by removing knockout. Route field supplied line voltage wires through the grommet and into heater control box area. Connect to factory supplied pig tail leads. See Fig. 8.
3. Attach wiring diagram to heater mounting plate.

FOR FUSED HEATERS (Refer to Table 2)—Insert heater line power leads into base unit through control box post using upper or lower knockout. All wires entering unit at

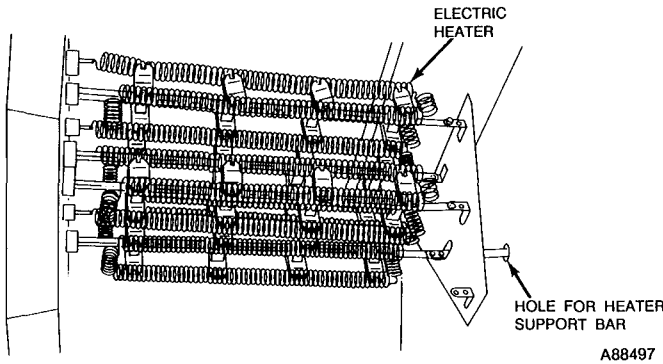


Fig. 3—Electric Heater Support

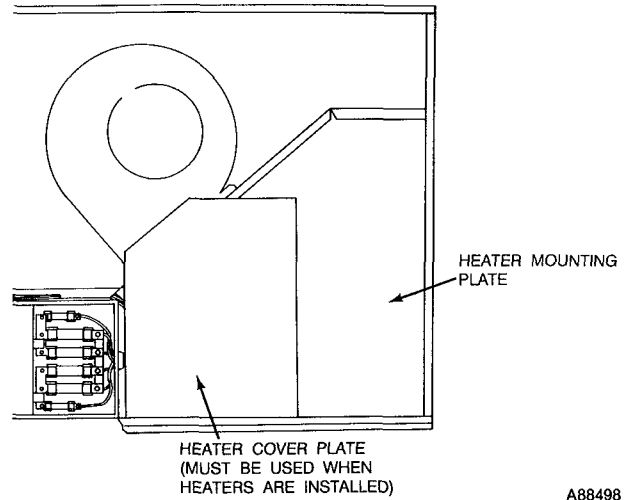


Fig. 4—Exterior View (Large Cabinet Shown)

→ **Table 2—Electric Heater Data and Usage**

HEATER MODEL 50NQ	VOLTS/PH		KW		BRANCH CIRCUIT										CAP. (1000 Btuh)		Base Unit Size Used		
					Heater Amps		MCA		MOCP Amps		Stages*	Elements	Power Wire Size†					Ground Wire Size	
					208	240	208	240	208	240			208	240				208	240
390005000100	208/1	240/1	3.8	5.0	18.0	20.8	22.5	26.0	25	30	1	1	10	10	10	10	12.8	17.1	18,24,30,36,42,48,60
390007500100			5.6	7.5	27.0	31.3	33.8	39.1	35	40	1	2	8	8	10	10	19.2	25.6	18,24,30,36,42,48,60
390010000100			7.5	10.0	36.1	41.6	45.1	52.0	50	60	1	2	6	6	10	10	25.6	34.1	18,24,30,36,42,48,60
390015000100**‡			11.3	15.0	54.1	62.5	67.6	78.1	70	80	2	3	4	3	8	8	38.5	51.2	30,36,42,48,60
390020000100**‡			15.0	20.0	72.1	83.3	90.1	104.2	100	110	2	4	3	2	8	6	51.2	68.2	36,42,48,60
390020000200**			18.8	25.0	90.1	104.0	112.6	130.0	125	150	3	5	2	1	6	6	64.0	85.4	60
590010000100	208/3	240/3	7.5	10.0	20.8	24.0	26.0	30.0	30	35	1	3	10	10	10	10	25.6	34.1	36,42,48,60
590017500100			13.1	17.5	36.4	42.1	45.5	52.6	50	60	2	3	6	6	10	10	44.8	59.8	36,42,48,60
590025000100**‡			18.75	25.0	52.0	60.1	65.1	75.2	70	80	2	6	4	3	8	8	64.0	85.4	60
590025000200**			10.0		12.0		15.0		20		1	3	14		14		34.1		36,42,48,60
690010000100			15.0		18.0		22.5		25		2	6	10		10		51.2		36,42,48,60
690020000100			20.0		24.0		30.0		35		2	6	10		10		68.2		36,42,48,60
690025000100	25.0		30.1		37.6		40		2	6	8		10		85.4		60		

MCA — Minimum Circuit Ampacity (complies with Section 430-24 of NEC)

MOCP—Maximum Overcurrent Protection (Fuses or Circuit Breaker)

* VA draw per stage is 6.2

† Wire size based on 75 C copper conductor.

‡ Indicates heaters without CSA approval

**Heaters shipped with fuses.

NOTE: Power supply electrical characteristics for unit and heater must be identical

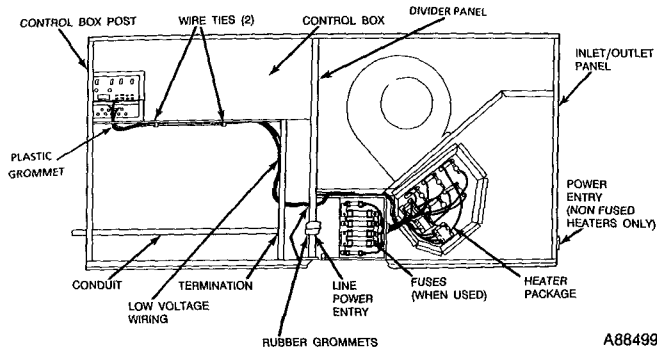
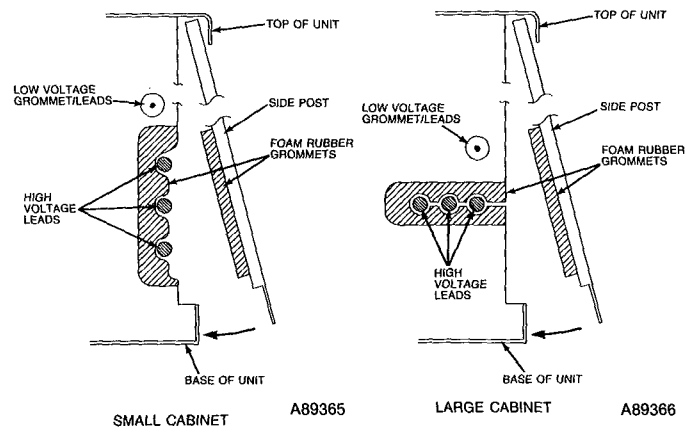


Fig. 5—Interior of Large Cabinet Unit (Typical)



→ **Fig. 6—Grommet Placement**

this point should remain in conduit. Terminate conduit at heater raceway using the watertight connector which is provided. See Fig. 5. Remove lower knockout in divider panel separating indoor section from outdoor section. Insert closed cell rubber grommet into space created by removing knockout. See Figs. 5 & 6. Route field supplied line voltage wires through the grommet and into heater control box area. Connect wires to terminal block per Fig. 9.

Step 8—Connect low voltage wiring. Remove upper knockout in divider panel separating indoor section from outdoor section and middle knockout in heater raceway. Insert appropriate grommets into spaces created by removing knockouts. Route control wires through grommets, underneath control box using wire ties provided, and into low voltage connection area. See Fig. 5 and refer to Figs. 10 thru 12 for wiring diagrams.

→ **Step 9**—Replace side post using screws previously removed. Side post should be placed under top and then moved into place. The foam rubber grommets should be trapped between the post and divider panel. See Fig. 6. Be careful to ensure that foam rubber grommet surrounds wires and forms a watertight seal. Trimming of the grommet may be required on some models. Replace heater cover plate ensuring that it fits snug between blower shelf flange and blower access panel and replace screw. Replace blower access and control box access panels using screws previously removed.

→ **NOTE:** In order to comply with UL or CSA standards, indicate which heater has been installed by marking the quantity box on the Heater Accessory Label located on the blower access panel. See Fig. 1. Attach supplemental rating plate as shown in Fig. 2.

Accessory Outdoor Thermostat provides adjustable outdoor control of accessory electric heater. This thermostat makes contact when a drop in outdoor temperature occurs. It energizes a stage of electric heat when the outdoor tem-

perature setting is reached, provided the room thermostat is on the second stage of heating. One outdoor thermostat is recommended for each stage of electric heat after the first stage. Set the outdoor thermostat(s) progressively lower for each stage. Refer to heat load of building and unit capacity to determine the correct outdoor thermostat settings.

The accessory supplemental heat relay is required only when 2 outdoor thermostats are used with 3-stage heaters. It is automatically energized by the manually operated supplemental heat switch in the indoor thermostat subbase. The thermostat locks out compressor and the relay bypasses the outdoor thermostats for electric heater operation during heat pump shutdown. When one outdoor thermostat is used, a supplemental heat relay is not required. The supplemental heat switch in the indoor thermostat subbase bypasses outdoor thermostat, locks out compressor and activates electric heater.

Step 1—Mount outdoor thermostat(s)—Locate maximum of 2 outdoor thermostats in unit control box. Holes are provided. Fasten in place with #8-32 screws provided. See Accessory Installation Instructions supplied with thermostat(s).

Step 2—Mount supplemental heat relay in control box with sheet metal screw provided.

SERVICE

Limit Switch provides overtemperature protection. Switch malfunction prevents heating element from operating. Replace switch if malfunction occurs.

STARTUP

Refer to the instructions shipped with the packaged unit.

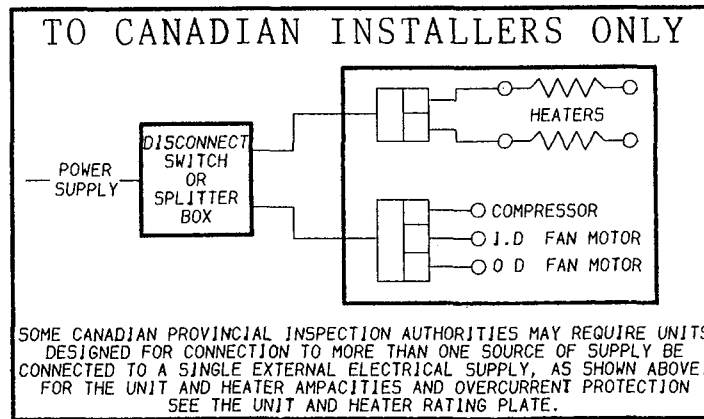
Turn on the unit and heater power. Set the thermostat to "call for heat." Check the operation of the heaters. Adjust the fan speed as described in the unit Installation Instructions as required.

Table 3—Minimum Air Quantity

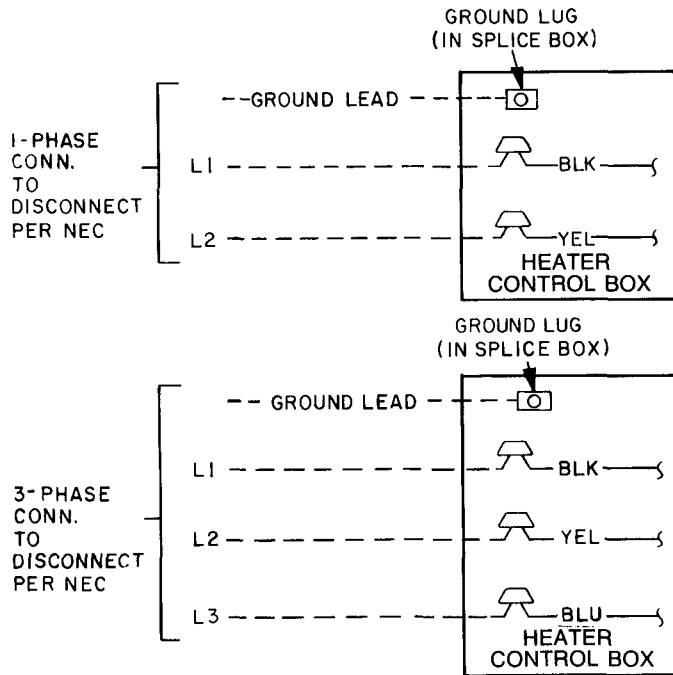
Air Conditioners	Heat Pump Units	Min CFM	Min. Blower Speed Tap
50NE018	50NQ018	600	Low
50NE024	50NQ024	800	Low
50NE030	50NQ030	1000	Med
50NE036	50NQ036	1200	Med
50NE042	50NQ042	1400	Med
50NE048	50NQ048	1600	Low
50NE060	50NQ060	2000	Med

Table 4—Electric Heat Accessory Pressure Drop (in. wc)

Heater KW	UNIT CFM						
	018/600	024/800	030/1000	036/1200	042/1400	048/1600	060/2000
Min. Size	.05	.05	.06	.06	.08	.10	.10
Max. Size	.10	.10	.12	.15	.20	.20	.25

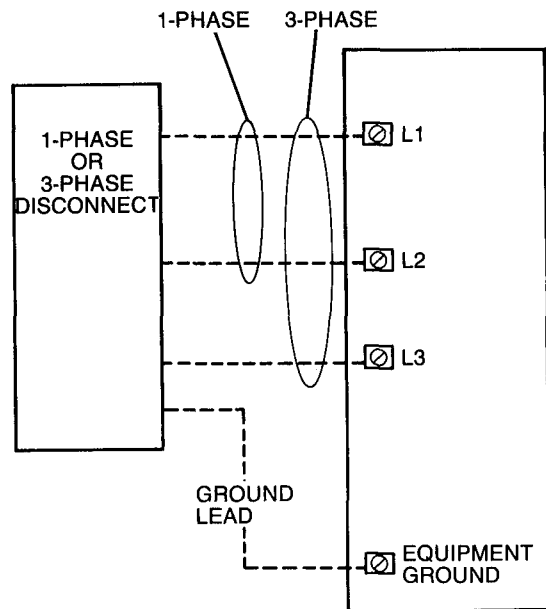


→ **Fig. 7—Wiring Diagram—Canadian Use Only**



----- FIELD WIRING
 _____ FACTORY WIRING
 NOTE: Refer to Table 1 for wire sizes

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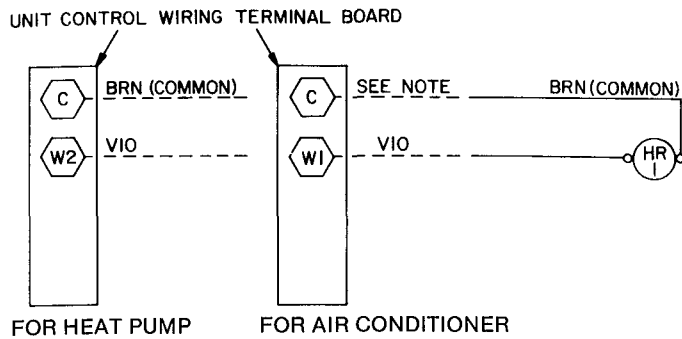


----- FIELD WIRING
 NOTE: Refer to Table 1 for wire sizes.

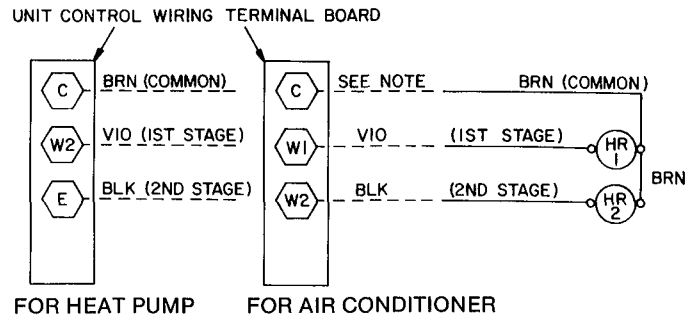
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→ **Fig. 8—Non-Fused Line Power Connections**

Fig. 9—Fused Line Power Connections



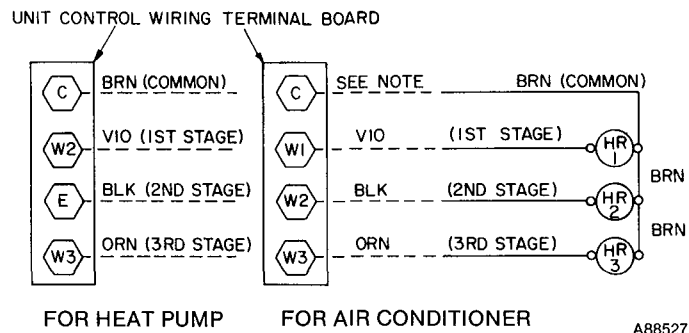
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SINGLE-STAGE HEATERS	
50NQ390005000100	50NQ590010000100
50NQ390075000100	50NQ690010000100
50NQ390010000100	

TWO-STAGE HEATERS	
50NQ390150000100	50NQ590025000100
50NQ390200000100	50NQ590025000200
50NQ390150000200	50NQ690015000100
50NQ390200000200	50NQ690020000100
50NQ590017500100	50NQ690025000100



A88527

THREE-STAGE HEATERS	
50NQ390250000100	50NQ390250000200

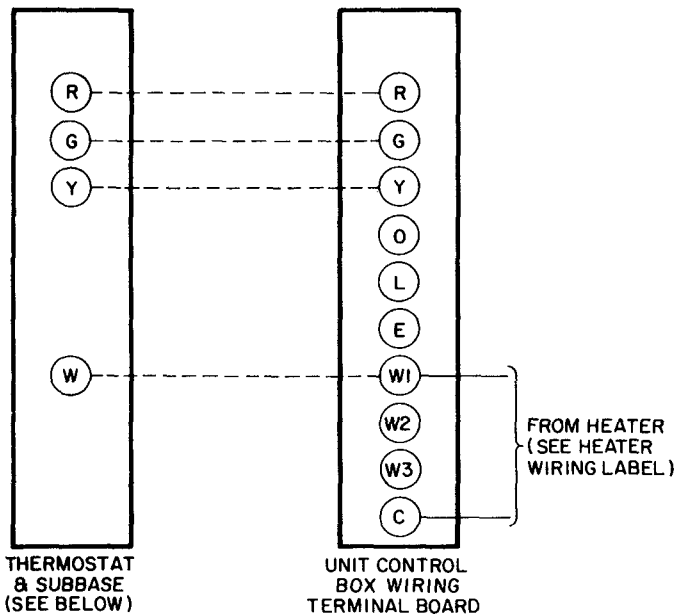
HR — Heater Relay

Marked Terminal, Control Wiring Terminal Box

----- Field Control Wiring

NOTE: Wires are factory supplied and field connected.

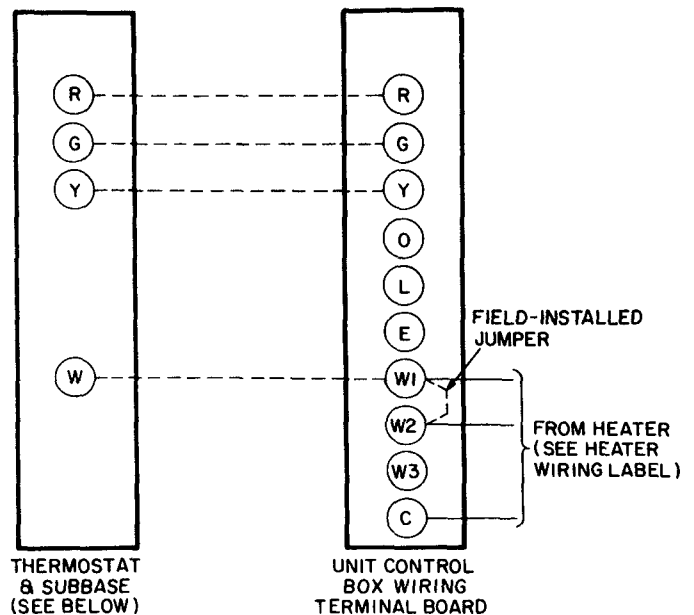
Fig. 10—Control Wiring Connections



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THERMOSTAT	SUBBASE
HH01AD042	HH93AZ044
HH01PD042	HH93PZ096
HH93AT176	HH93AZ189

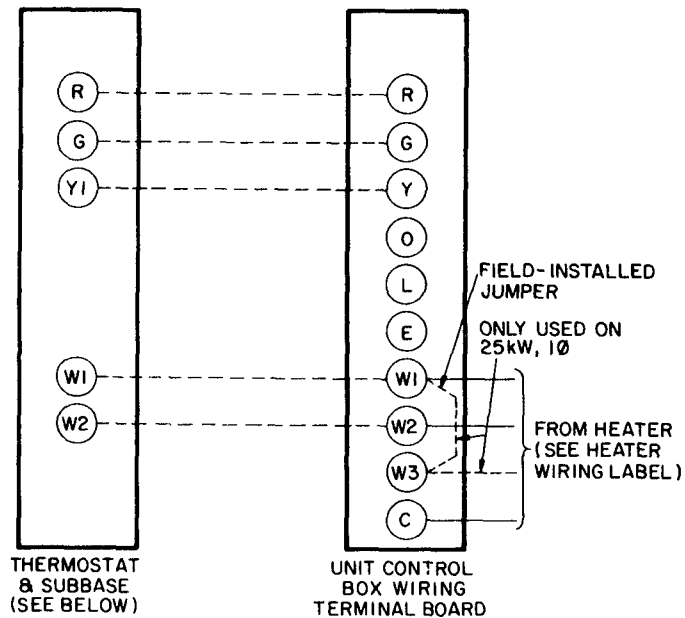
50NE one-stage heating with 5, 7½ and 10 kW heaters; one phase and 3 phase.



A88529

THERMOSTAT	SUBBASE
HH01AD042	HH93AZ044
HH01PD042	HH93PZ096
HH93AT176	HH93AZ189

50NE one-stage heating with 15 and 20 kW heaters; one phase and 17.5 kW 3 phase.

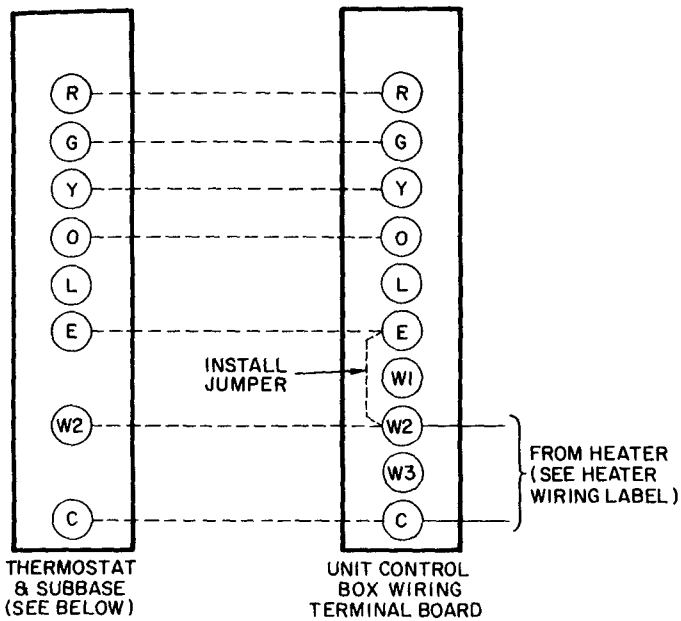


A88530

THERMOSTAT	SUBBASE
HH93AT176	HH93AZ189

50NE 2-stage heating with 15, 20 and 25 kW heaters; one phase and 17.5 and 25 kW 3 phase.

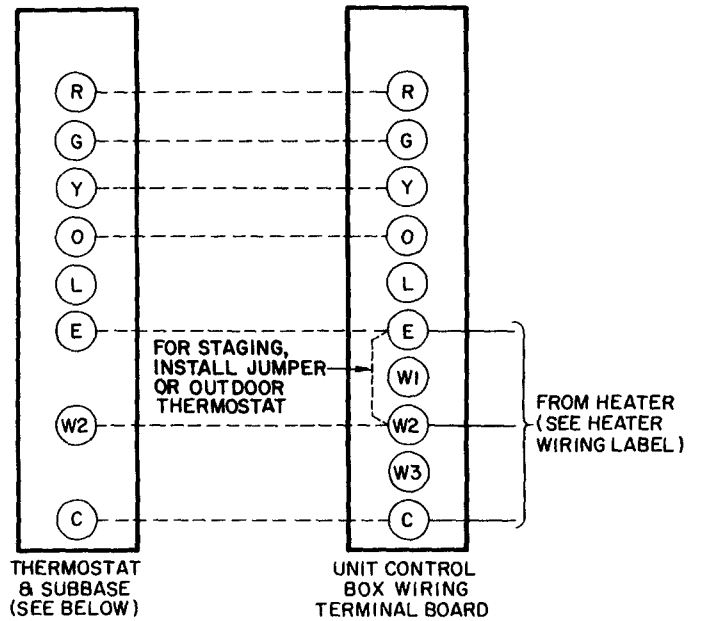
**Fig. 11—Thermostat Connection Diagrams
Cooling and One-Stage Heating**



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THERMOSTAT	SUBBASE
HH07AT171	HH93AZ188

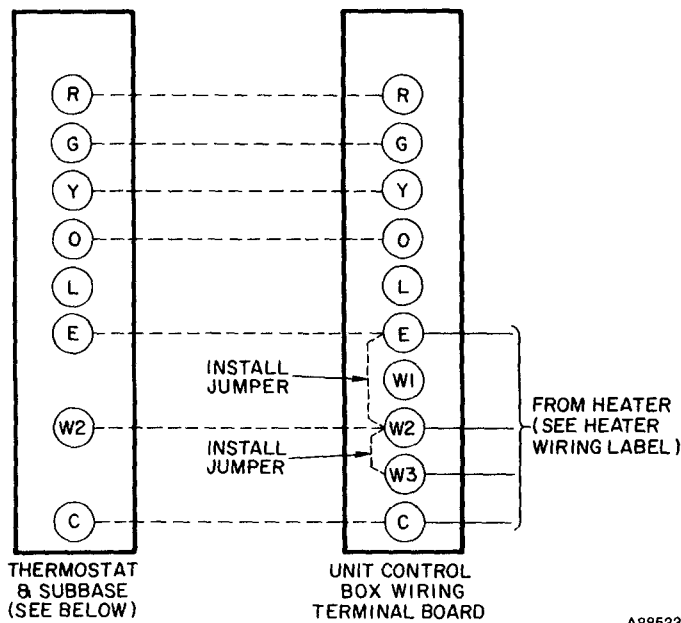
50NQ with 5, 7½ and 10 kW heaters, one phase; 10 kW heaters, 3 phase.



A88532

THERMOSTAT	SUBBASE
HH07AT171	HH93AZ188

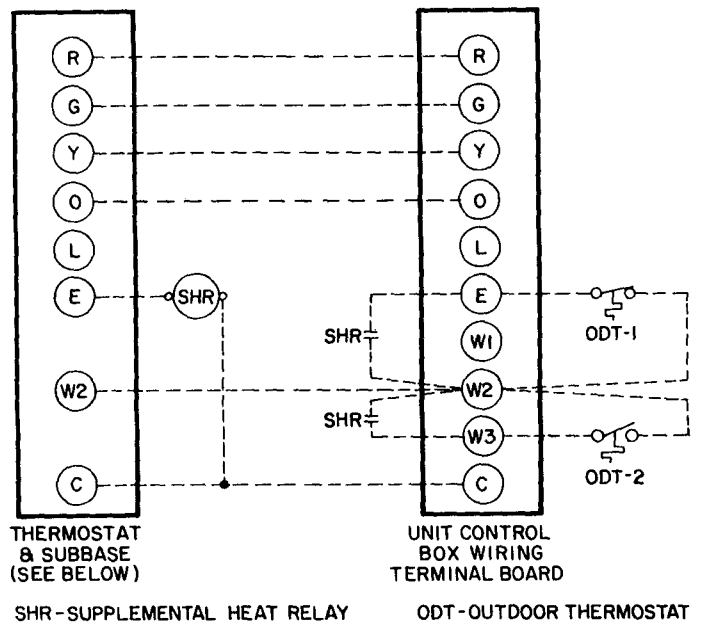
50NQ with 15 and 20 kW heaters, one phase; 17.5 and 25 kW heaters, 3 phase.



A88533

THERMOSTAT	SUBBASE
HH07AT171	HH93AZ188

50NQ with 25 kW heater, one phase.



A88534

THERMOSTAT	SUBBASE
HH07AT171	HH93AZ188

50NQ with 25 kW heater, one phase with accessory supplemental heat relay and 2 outdoor thermostats.

MODEL 50NQ ONLY

Fig. 12—Thermostat Connection Diagrams

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Tab 1b 5a 1a 5a

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