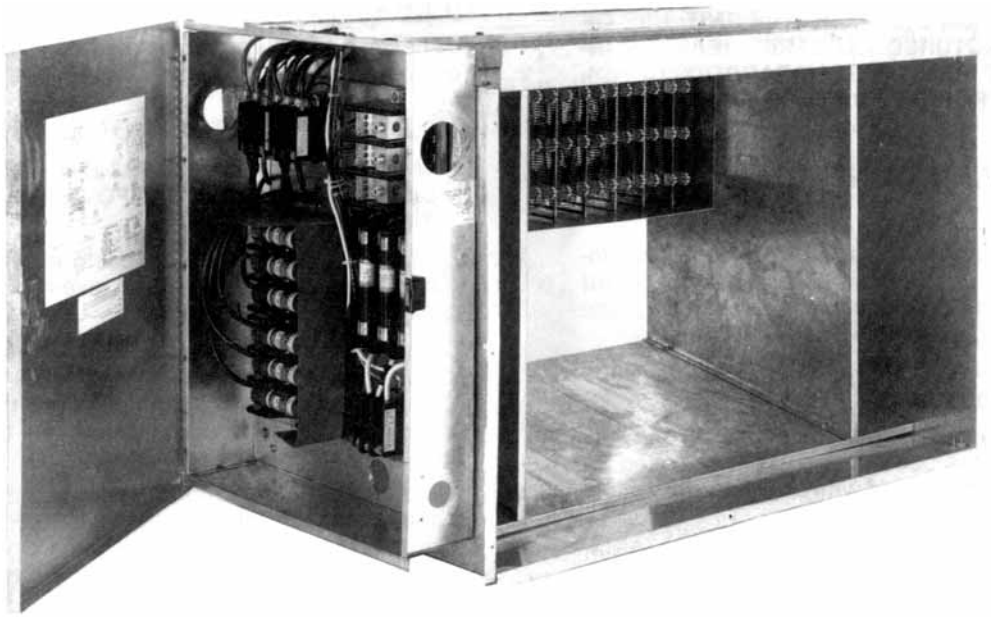
AUXILIARY ELECTRIC HEATER KITS FOR 7.5 AND 10 TON COMMERCIAL AIR HANDLERS



WARNING: *THIS ACCESSORY IS TO BE INSTALLED BY A QUALIFIED, LICENSED SERVICE PERSON. TO AVOID UNSATISFACTORY OPERATION OR DAMAGE TO THE PRODUCT AND POSSIBLE UNSAFE CONDITIONS, INCLUDING ELECTRICAL SHOCK, REFRIGERANT LEAKAGE AND FIRE, THE INSTALLATION INSTRUCTIONS PROVIDED WITH THIS ACCESSORY MUST BE STRICTLY FOLLOWED AND THE PARTS SUPPLIED USED WITHOUT SUBSTITUTION. DAMAGE TO THE PRODUCT RESULTING FROM NOT FOLLOWING THE INSTRUCTIONS OR USING UNAUTHORIZED PARTS MAY BE EXCLUDED FROM THE MANUFACTURER'S PRODUCT WARRANTY COVERAGE.*

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INTRODUCTION

The information contained in these instructions has been prepared to assist in the **proper** installation and operation of the auxiliary electric heaters. Improper installations, or installations not made in accordance with these instructions, can result in unsatisfactory operation and/or dangerous conditions, and are not covered by the unit warranty.

READ these instructions prior to installation or operation of auxiliary electric heaters.

CHECKING PRODUCT RECEIVED

Upon receiving heaters, inspect them for any damage from shipment. Claims for damage should be filed immediately with the shipping company.

CHECK heater kit model number to determine if it is the correct one for your unit and is the model desired.

WARNING: ONLY ELECTRIC HEATER KITS SUPPLIED BY THIS MANUFACTURER AS DESCRIBED IN THIS PUBLICATION HAVE BEEN DESIGNED, TESTED, AND HAVE NECESSARY APPROVALS INCLUDING UNDERWRITERS LABORATORY (U.L.) AND CSA FOR USE WITH THIS UNIT. USE OF ANY OTHER MANUFACTURED ELECTRIC HEATERS INSTALLED ON THE UNIT MAY CAUSE HAZARDOUS CONDITIONS RESULTING IN PROPERTY DAMAGE, FIRE, OR BODILY INJURY.

POWER SUPPLY AND CONTROL CIRCUITS

POWER SUPPLY

CAUTION: *When heaters are installed in a previously installed basic unit, field supply conductors, supply circuit fuses or disconnects may need replacement due to the larger load requirements.*

All wiring should conform to the National Electrical Code as well as applicable local codes.

The power supply wiring can be connected through one side of the heater control box. A conduit opening is supplied for the maximum wire size to be used with any unit. Use reducing washers for smaller conduit sizes.

See the wiring diagram and the name plate on the heater for internal or supply circuit overcurrent protection. Either fuses or HACR circuit breakers may be used in the supply circuit.

Only copper supply wiring may be used. See Table D for proper wire size.

WARNING: THE UNIT MUST BE ELECTRICALLY GROUNDED IN ACCORDANCE WITH LOCAL CODES OR THE NATIONAL ELECTRIC CODE, ANSI/NFPA 70-1987 (C.E.C. in Canada.).

CONTROL SUPPLY

The low voltage control supply is furnished from the outdoor unit low voltage terminal block or pigtails. Factory provided #18 AWG pigtail leads are provided to be interconnected with either the remote heat pump or condensing unit and thermostat. Reference heater and unit wiring diagram.

THERMOSTAT

Some thermostats, whether single or two-stage, have an adjustable heat anticipator. For proper adjustment, add the current draw in amperes of all components controlled by the particular stage. Set the anticipator to this total. See the instructions packed with the thermostat for specific information.

Heat anticipator settings for heaters in this series should be .4 amperes for each stage on heaters rated 40 KW and less.

APPLICATION

The auxiliary electric resistance heater kits are designed for installation directly on the air handler discharge flange.

All kits are installed in the blower discharge air flow. The clearance to combustible material of the heater is “1” inch and the first three (3) feet of ducts is “1” inch.

OPERATION

The heater kits have an instant on/instant off control system. For heater kit capacity and staging, see Tables A and B.

MOUNTING INSTRUCTIONS

1. **WARNING: IF AIR HANDLER UNIT IS ALREADY INSTALLED, DISCONNECT ELECTRICAL POWER BEFORE HEATER KIT INSTALLATION.**
2. Remove blower/motor access door (left hand door facing blower discharge) which gives access to the blower motor “J” box.
3. An electrical knockout is provided on the blower discharge panel approximately 2½″ to the left side of the discharge duct flange. Remove this knockout and cut out the thermal insulation on the inside of the cabinet around the opening.
4. Mount the heater kit on the air handler duct flange with the heater control compartment located on the left hand side facing the blower discharge opening. Do not attempt to orient the heater in any other position.
5. Install the 3″ long by 1½″ conduit nipple between the heater control compartment and the air handler through the hole noted in step No. 3.
6. Install two conduit lock nuts on the inside of both cabinets and the other two on the outside of both cabinets. Install the two plastic bushings on both ends of the conduit nipple.
7. Route the three blower motor leads from the blower motor contactor inside the heater kit through the conduit nipple to the blower motor “J” box inside the air handler.
8. Connect low voltage pigtail leads to appropriate thermostat terminals — reference wiring diagram.

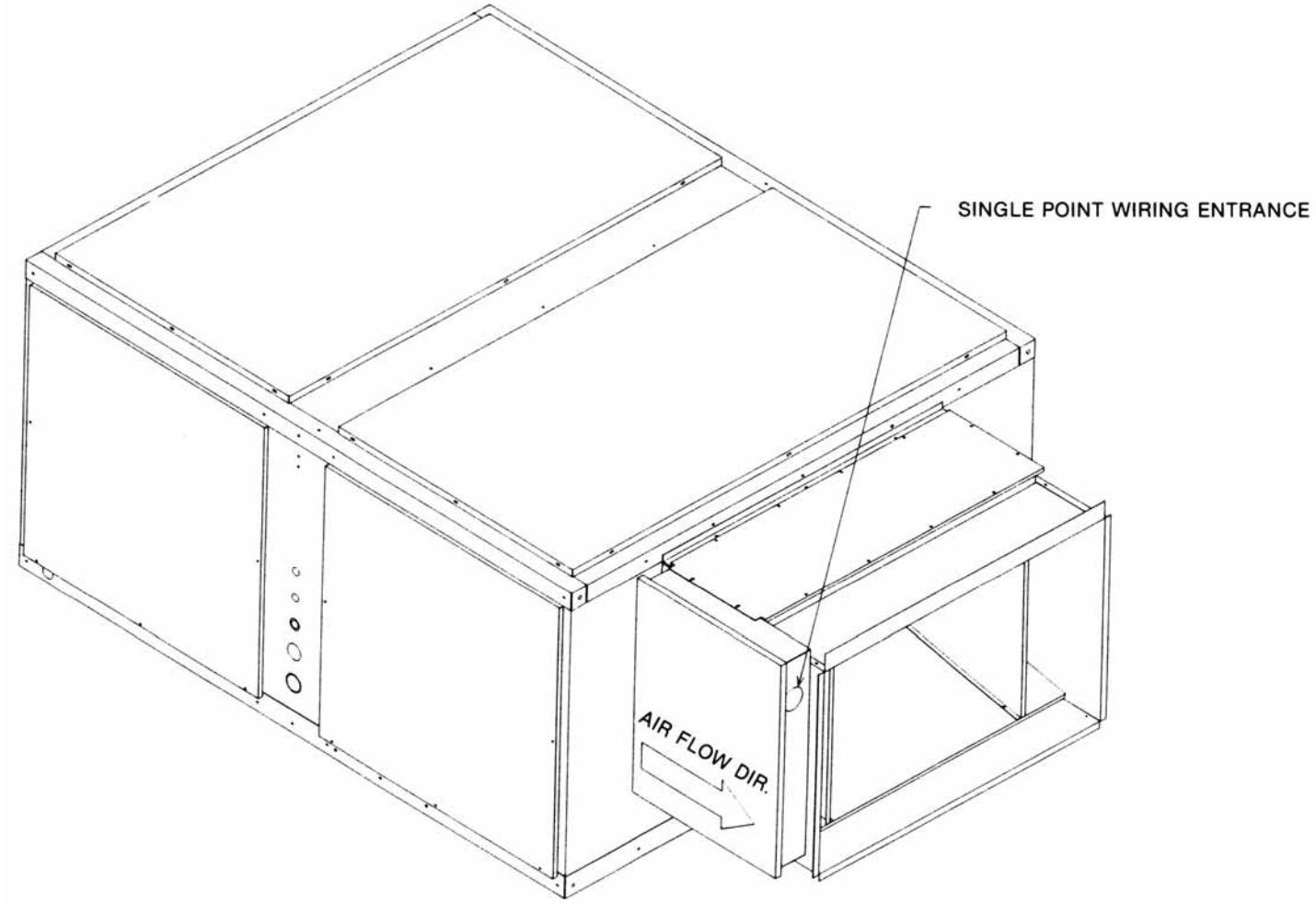

FIGURE 1. HEATER KIT INSTALLED TO AIR HANDLER

TABLE A. ELECTRICAL CHARACTERISTICS

ELECTRIC HEATER NOMINAL KW	HEATING STAGES	HEATER AMPS ONLY	HEATER KIT KW 1ST STAGE	HEATER KIT KW BOTH STAGES	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE OR HACR BRKR. SIZE
208/240 VOLT 3Ø MODELS						
20	2	42/48	7.5/10	15/20	66/72	70/80
30	2	60/70	10.8/14.4	21.6/28.8	88/100	90/100
480 VOLT 3Ø MODELS						
20	2	24	10	20	36	40
30	2	35	14.4	28.8	50	50

TABLE B. DRIVE PACKAGE DATA

NOMINAL TONS	3Ø DRIVE	SHEAVE SELECTIONS*		MOTOR	APPROXIMATE BLOWER RPM @ MOTOR SHEAVE TURNS OPEN						
		MOTOR	BLOWER	HP / Ø	0	1	2	3	4	5	6
10	J +	3.4-4.4	9.75	1½ / 3Ø	790	760	725	690	660	630	—
	K	4.0-5.0	9.75	1½ / 3Ø	885	855	825	795	760	730	—
	L	4.6-5.6	9.75	2 / 3Ø	995	960	930	895	860	825	—
	M	5.2-6.2	9.75	3 / 3Ø	1100	1060	1020	985	945	905	—
	N△	4.7-5.7	8.75	3 / 3Ø	1225	1190	1150	1110	1070	1030	—
	O□	5.7-6.7	8.75	3 / 3Ø	1280	1250	1220	1185	1150	1115	—

* Actual pitch diameter in inches. Minimum and maximum pitch diameter shown for adjustable motor sheave.
◊ Field Supplied (Motor Sheave: Browning IVP75, Blower Sheave: Browning AZ100, Belt: A-50, Motor: 2 HP, 4 Pole 3 Ø)
△ Field Supplied (Motor Sheave: Browning IVP75, Blower Sheave: Browning AZ80; Belt: A-50)
□ Field Supplied (Motor Sheave: Browning IVP75, Blower Sheave: Browning AZ90, Belt: A-54)
Field Supplied (Motor Sheave: Browning IVP65, Blower Sheave: Browning BK110, Belt: B-50)
+ Field Supplied (Motor Sheave: Browning IVP50, Blower Sheave: Browning AZ100, Belt: A-49)
□ Shaded area represents factory sheave setting.

TABLE C. INDOOR BLOWER PERFORMANCE 7.5 AND 10 TON (DRY COIL)

RHGF-100 Z

DRIVE PKG	STD CFM	E.S.P. — INCHES OF WATER																																			
		.1		.2		.3		.4		.5		.6		.7		.8		.9		1.0		1.1		1.2		1.3		1.4		1.5		1.6		1.7		1.8		1.9		2.0	
		RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W
	2400							650	510	690	570	720	610	760	670	790	755	815	805	845	860	875	940	920	1025	955	1110	990	1200	1000	1320	1040	1350	1080	1490	1100	1630	1130	1670	1150	1780
	2600					635	545	675	620	715	665	750	720	780	795	810	850	830	910	860	990	890	1070	930	1150	960	1230	995	1310	1020	1400	1060	1460	1100	1510	1120	1680	1140	1730	1160	1790
	2800			630	595	665	665	705	720	740	775	775	850	795	915	825	975	855	1075	885	1165	915	1210	950	1285	980	1370	1000	1450	1040	1530	1080	1590	1120	1650	1130	1720	1150	1800	1175	1880
J	3000	630	660	660	730	695	775	730	880	755	940	790	1005	825	1065	855	1130	885	1190	920	1290	955	1380	980	1425	1010	1500	1035	1620	1065	1690	1100	1750	1110	1800	1140	1880	1160	1920	1185	1980
K	3200	660	810	695	860	730	950	750	1005	785	1080	815	1150	850	1225	880	1285	910	1390	950	1470	975	1540	1010	1620	1030	1740	1065	1820	1095	1880	1095	1890	1125	1985	1155	2045	1175	2090	1190	2160
L	3400	690	940	725	1000	745	1090	780	1160	810	1240	845	1320	875	1390	910	1500	945	1590	970	1650	995	1725	1025	1860	1055	1940	1055	1900	1080	1975	1110	2095	1140	2185	1165	2245	1180	2270	1200	2315
M	3600	730	1100	745	1175	780	1250	810	1340	845	1435	875	1510	905	1620	945	1715	960	1780	990	1855	1020	1995	1050	2080	1080	2160	1080	2165	1105	2225	1135	2325	1155	2400	1175	2460	1195	2510	1220	2575
N	3800	745	1265	780	1350	810	1455	840	1550	875	1630	905	1740	940	1840	955	1905	990	2050	1025	2145	1045	2225	1075	2315	1075	2270	1100	2390	1130	2495	1150	2590	1170	2650	1190	2710	1220	2770	1265	2895
O	4000	780	1465	810	1575	850	1690	880	1780	910	1880	940	2010	970	2110	990	2180	1020	2300	1050	2400	1075	2490	1075	2445	1100	2570	1130	2690	1145	2785	1170	2855	1185	2920	1215	2985	1260	3090	1275	3165
	4200	825	1750	855	1840	885	1925	920	2060	940	2160	965	2260	995	2365	1025	2470	1050	2560	1080	2680	1080	2685	1100	2795	1130	2890	1150	3000	1165	3080	1190	3145								
	4400	845	1925	905	2100	925	2195	950	2320	970	2430	995	2550	1030	2650	1050	2755	1055	2760	1085	2855	1100	2985	1130	3115																
	4600	915	2225	930	2375	955	2495	980	2620	1010	2750	1030	2840	1035	2950	1055	2960	1080	3070																						
	4800	930	2555	960	2680	985	2810	1015	2940	1035	3040	1035	3045	1055	3180																										
	5000	960	2870	990	3010	1020	3135																																		

NOTES:

J = IVP50, AZ100 (Field Supplied)
K = IVP56, AZ100, 1½ HP
L = IVP62, AZ100 2 HP
M = IVP68, AZ100, 3 HP
N = IVP75, AZ90, 3 HP [Field Supplied]
O = IVP75, AZ90, 3 HP [Field Supplied]

1. Standard Air @ .075 Lbs./Ft.³
2. Operation below heavy lines require optional "L" drive.
3. Motor efficiency = .85
4. BHP = $\frac{\text{Watts x Motor Eff.}}{746}$

5. Code:
BHP = Brake Horsepower
RPM = Blower Speed

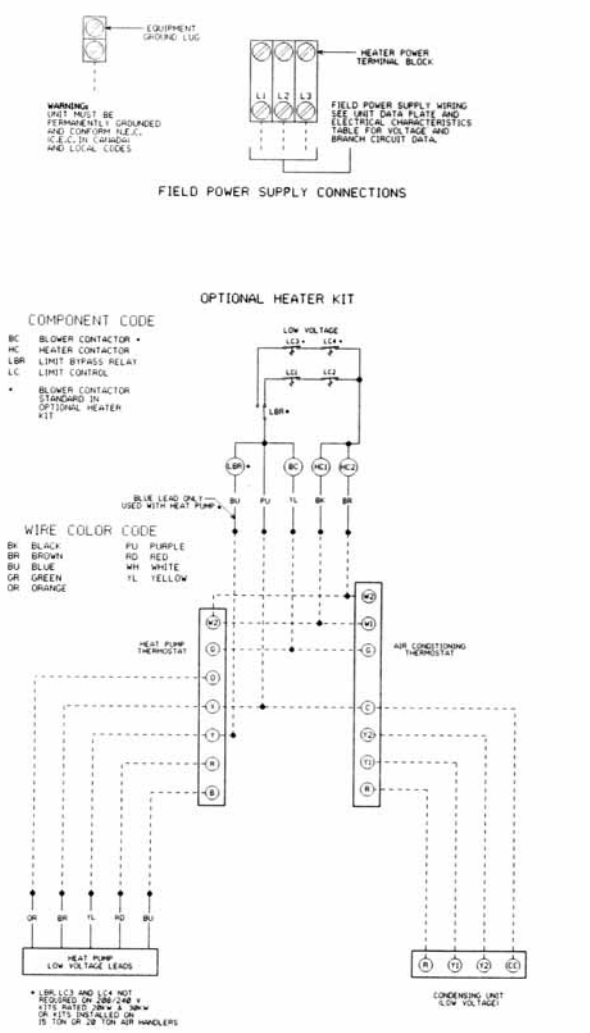

FIGURE 2

GROUNDING

- **WARNING: THE UNIT MUST BE ELECTRICALLY GROUNDED IN ACCORDANCE WITH LOCAL CODES OR THE NATIONAL ELECTRIC CODE, ANSI/NFPA 70-1987 (C.E.C. IN CANADA).**
- A grounding lug is provided near the power terminal block for a ground wire.
- Grounding may be accomplished by grounding the power line conduit to the heater kit and connecting the factory furnished conduit nipple between the heater kit and air handler. Make sure the conduit nut locking teeth have pierced the insulating paint film of the blower panel.

CONTROL WIRING (CLASS II)

- Low voltage control wiring should not be run in conduit with power wiring, unless Class 1 wire of proper voltage rating is used. Route thermostat cable or equivalent single leads of adequate size colored wire from thermostat subbase terminals through to heater kit low voltage pigtail leads.
- Do not short thermostat wires since this may blow fuse in control transformer.

TABLE D

FIELD WIRE SIZE FOR 24 VOLT THERMOSTAT CIRCUITS

Thermostat Load - Amps	SOLID COPPER WIRE - AWG.					
3.0*	16	14	12	10	10	10
2.5	16	14	12	12	10	10
2.0	18	16	14	12	12	10
1.5	18	16	14	14	12	12
	50	100	150	200	250	300
	Length of Run - Feet**					

NOTE: Load on thermostat will be 1.5 amps as unit is shipped. Installer needs to determine amps required for accessories added in the field.

*Amp capacity of control transformer in remote heat pump.

**Wire length equals twice the run distance.

THERMOSTAT

A two-stage heating thermostat with matching switching sub-base may be ordered as an accessory. Thermostats are available in either automatic or manual changeover. The thermostat should be mounted on an inside wall about five feet above the floor in a location where it will not be affected by the sun, or drafts from open doors or other sources. Install level; and after installation, check the thermostat calibration and recalibrate if necessary.

ELECTRIC HEATER

Heat anticipator settings on heaters should be .4 amps for each stage.

WARNING: AFTER COMPLETION OF WIRING, CHECK ALL ELECTRICAL CONNECTIONS, INCLUDING FACTORY WIRING WITHIN THE UNIT, AND MAKE SURE ALL CONNECTIONS ARE TIGHT. REPLACE AND SECURE ALL ELECTRICAL BOX COVER AND ACCESS DOORS BEFORE LEAVING UNIT OR TURNING ON POWER TO CIRCUIT SUPPLYING UNIT.

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SERVICE

HEATER CONTACTOR (HC)

The contactors are magnetic type. They have low voltage (24V) coils and are controlled directly by the room thermostat or outdoor thermosat accessory.

LIMIT CONTROL (LC)

Limit controls are located in the element mounting plate of the elements.

These controls are automatic reset types which prevent the unit from overheating in case of a malfunction. If replacement becomes necessary, they must be replaced with the same type and same temperature specification.

LINE LIMITS (LL)

The line limits are wired into the beginning of each element as a back up protection to a malfunction of the low voltage limit control.

The controls are non-resettable and must be replaced if they should ever function. Replacements must be the same type and temperature ratings as originally supplied by the factory.

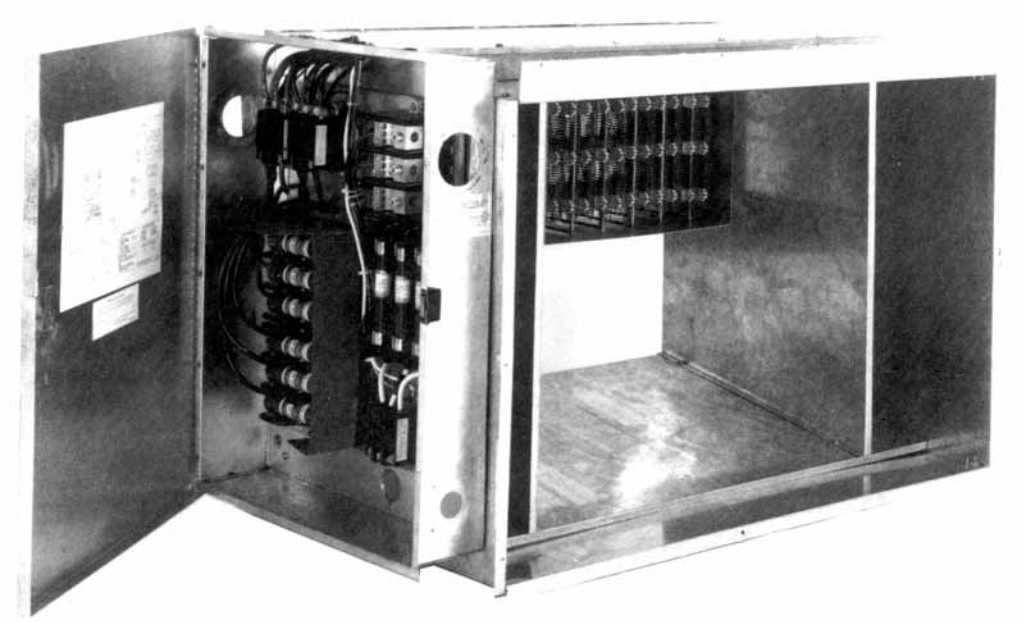

FIGURE 3. TYPICAL ELECTRIC HEAT CONTROL BOX