Installation Instructions

For use with Models 5F,H Compressor Units and Condensing Units

GENERAL

Control Panels are designed for indoor use to control compressor and condensing units, from 5 through 200 hp, in 208, 230, 460 and 575-v across-the-line starting applications. All panels operate on 120-v control circuit. Typical panel is shown in Fig. 1 and 2. For 2-contactor panels, simple conversion to part-winding starting is accomplished by adding timing relay (Carrier Part No. HN67ZA001). Single-contactor panels require the addition of another contactor of the same size and timing relay (Carrier Part No. HN67ZA001).

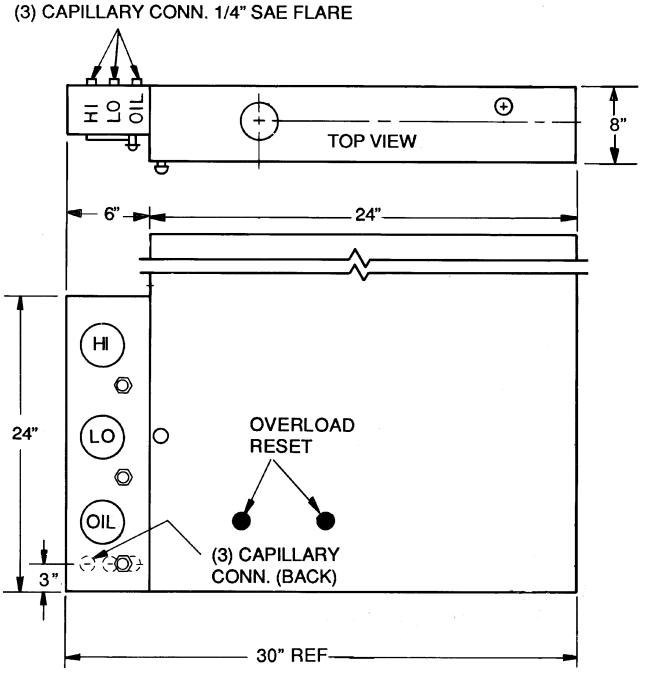
Single-Contactor Panels: Overload dial is set at a value equal to NEC (National Electrical Code) motor full load current rating and will trip at 125% of this rating. If tripping is required at 115% of NEC motor full load current rating, set the overload dial to value 0.92 times full load current value.

Two-Contactor Panels: Each overload dial is set at a value equal to ½ (one half) of NEC (National Electrical Code) motor full load current rating and will trip at 125% of the set point. If tripping is required at 115% of NEC motor full load current rating, set each overload dial to value of 0.92 times ½ (one-half) full load current value.

Control panel mounts easily on one end of the base unit. Heavy duty panel mounting base can be welded to compressor base or attached with supplied hardware.

Table 1 lists control box usage by motor horsepower and unit main power voltage.

The control box package includes a junction box, to be mounted on the compressor, with necessary hardware to complete the connections at compressor and control box. Figure 3 shows the junction box assembly. Also in the package are capillaries to connect the discharge, suction and oil pressure gages located on the control box. Capillary connections are shown in Fig. 9.



NOTE: Panel has several ½″ KO's at various locations.

Fig. 2 — Dimensions; 32C Series Control Panel

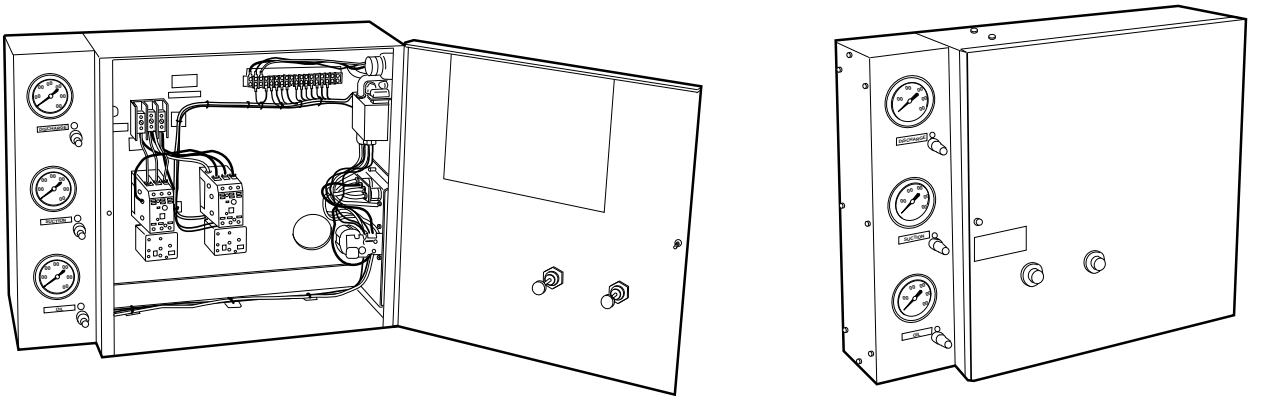
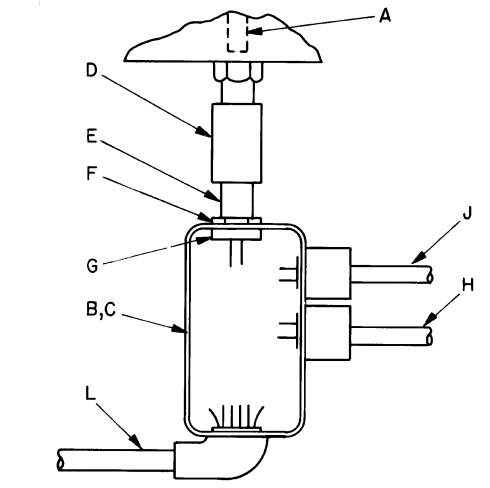
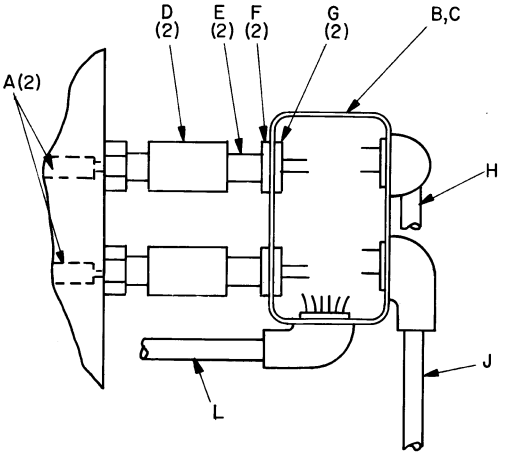


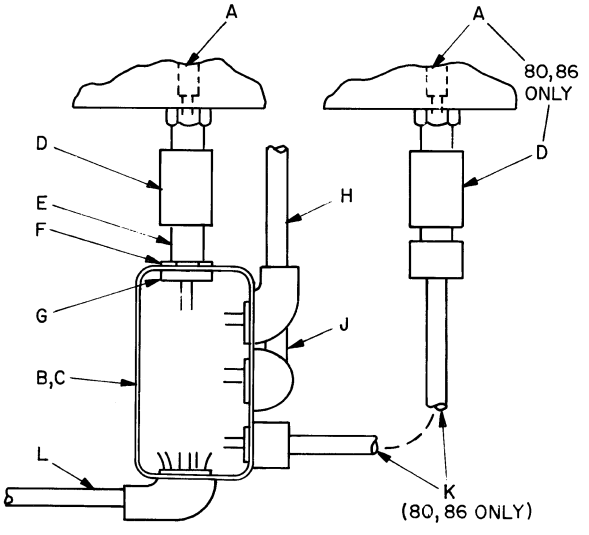
Fig. 1 — Typical Control Panel



5F40, 60



5H120, 126



5H40, 46, 60, 66, 80, 86

LEGEND

A — Crankcase Heater
B — Junction Box
C — Junction Box Cover
D — Coupling, ½-in. Pipe
E — Nipple, ½-in. Pipe
F — Locknut, Electrical
G — Bushing, Electrical
H — Conduit, High-Pressure Switch
J — Conduit, Low-Pressure Switch
K — Conduit, Heater (5H80, 86 only)
L — Conduit (To Control Panel)

Fig. 3 — Junction Box Assembly

INSTALLATION

Step 1 — Inspect the Shipment — On delivery, check the contents of package and the components in control box.

If any damage is found, file a claim immediately with the shipping company.

Step 2 — Mount Control Box — Each of the 5F and 5H units has holes in the base, at the motor end, for mounting the control box supports. Attach the supports to unit base with ½-in. bolts, washers and nuts provided and secure the box to supports with ⅜-in. bolts, washers and nuts.

Step 3 — Install Crankcase Heater(s) and Junction Box

CRANKCASE HEATER(S) (Order Separately) — Follow installation instructions furnished in crankcase heater accessory package.

JUNCTION BOX — Attach junction box to heater casing as shown in Fig. 3.

Step 4 — Make Electrical Connections (Refer to Fig. 3 and 6) —

Run conduit L from the junction box to the control panel and connect to panel at one of the ⅞-in. holes provided for control circuit wiring.

Pass the crankcase heater wires from the junction box through L and connect to terminals 11 and 17 on TB2 in control panel.

On units with 2 crankcase heaters, splice the 2 sets of wires in parallel, inside the junction box, with only one pair of wires going to control panel (Fig. 6).

Run wires from high-pressure switch (HPS) and low-pressure switch (LPS), mounted on the compressor (Fig. 9), through conduits H and J respectively, into the junction box (Fig. 3); connect each conduit at both ends. Run a wire from terminal 9 on TB2 in control box through conduit L to junction box and splice with one wire from HPS and one wire from LPS (see Fig. 6). Run the second wires from HPS and LPS through conduit L to control box and connect to terminals 12 and 10 respectively on TB2. Connect conduit L at junction box. Using conduit clamps provided in control box package, secure conduit L at several places between junction box and control box. When all electrical connections are complete, secure cover on junction box.

PART-WINDING CONVERSION (Fig. 5)

Single Contactor — Add second contactor, or starter, and time-delay relay (TDR) as shown.

Two Contactors — Disconnect from terminal C1, on contactor C1, the wire running from terminal 6 on TB2. Reconnect the same wire to terminal C1 on contactor C2. Remove wire between contactors C1 and C2 on L1 side and connect the TDR as shown.

NOTE: The second contactor or starter, where required, is the same size as the first one. For all conversions, the required TDR is Carrier Part No. HN67ZA001 and is available from Carrier Service Parts.

→ **Step 5 — Make Motor Connections —** Refer to Fig. 7 and 8 for motor wiring applicable to the particular installation. Enter control panel through selected ½-in. knockout. Fabricate opening to conduct size used.

NOTE: The terminal numbers shown in Fig. 7 and 8 represent the terminal numbers usually found on applicable motors. However, these numbers may vary with the different makes of motors. If the terminal numbers on the motor nameplate connection diagram are different from those in Fig. 7 and 8, use the connection data shown on the motor nameplate.

Step 6 — Make Capillary Connections — Run provided capillaries from compressor to discharge, suction and oil pressure gages on control box (see Fig. 2 and 9). Using clamps provided, secure the capillaries at several points between compressor and control box.

LEGEND AND NOTES TO FIG. 4, 5 AND 6

LEGEND

C1,C2	—	Contactor or Starter, Compressor
C3	—	Contactor, Evaporator Fan or Chilled Water Pump
C4	—	Contactor, Air-Cooled or Evaporative Condenser Fan or Cooling Tower Pumps
C5	—	Contactor, Cooling Tower Fan or Evaporative Condenser Pump
CH	—	Crankcase Heater
CHR	—	Crankcase Heater Relay
COMPR	—	Compressor
EQUIP	—	Equipment
ET	—	Elapsed Time Meter
FU	—	Fuse
GND	—	Ground
HPS	—	High-Pressure Switch
J	—	Jumper
LLS	—	Liquid-Line Solenoid (Valve)
LPS	—	Low-Pressure Switch
OPSS	—	Oil Pressure Safety Switch
OL	—	Overload
POR	—	Pumpout Relay
SW	—	Switch
TB	—	Terminal Block
TDR	—	Time-Delay Relay
TM	—	Timer Motor
TR	—	Timer Relay
TRAN	—	Transformer
T'STAT	—	Thermostat

Terminal Block Connection

Unmarked Terminal

Marked Terminal

Factory Wiring

Field Control Wiring

Wiring When C2 is Used

Field Power Wiring

Common Potential. Does not represent wiring.

NOTES:
1. Factory wiring is in compliance with National Electrical Code (NEC). Any field modifications or additions must be in compliance with all applicable codes.
2. Control circuit is 115-1-60. Grounded leg must be connected to terminal 17 on TB2.
   a. When control circuit power is supplied from the unit terminal block, install a field-supplied transformer as shown in Fig. 6.
   b. If control circuit power is supplied from a separate source, as an alternate to a transformer, bring 115-volt power through a field-supplied 15-amp fused disconnect in compliance with NEC Section 440-14 (disconnect must be in sight from and readily accessible from the unit).
3. Open control power disconnect only when servicing unit. Crankcase heaters must remain energized when unit is not operating.
4. Factory wiring is for single-pumpout control. Do not use automatic pumpdown control when equipment is used with DX cooler. See Fig. 6 for field connections for application with DX cooler.
5. → Second contactor (C2) is used with 20 hp and larger 208 and 230-v motors and with 30 hp and larger 460-v motors.
6. When field interlocks are used, remove factory-installed jumpers between terminals 3 and 4 on TB2 and between terminals 7 and 8 on TB2.

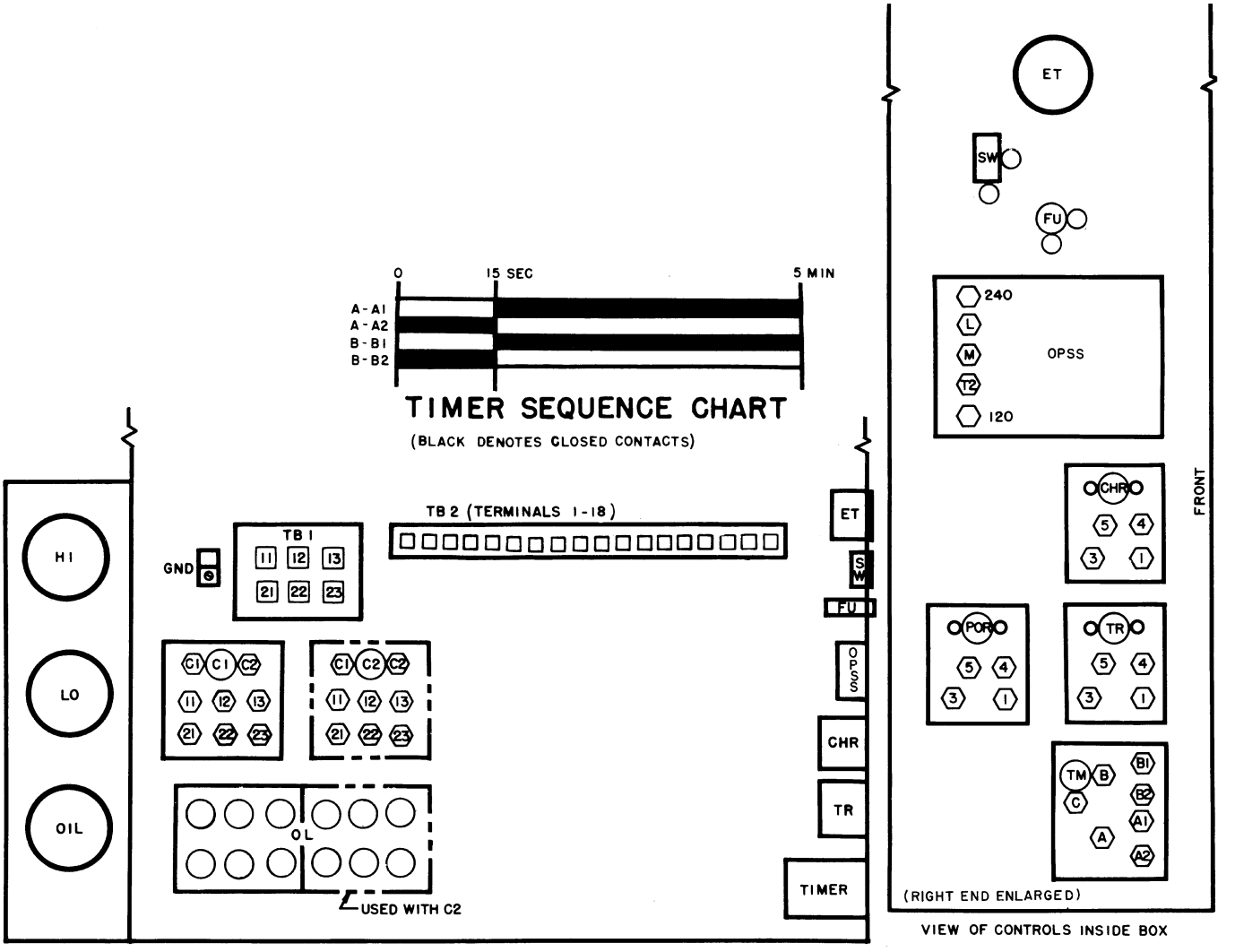
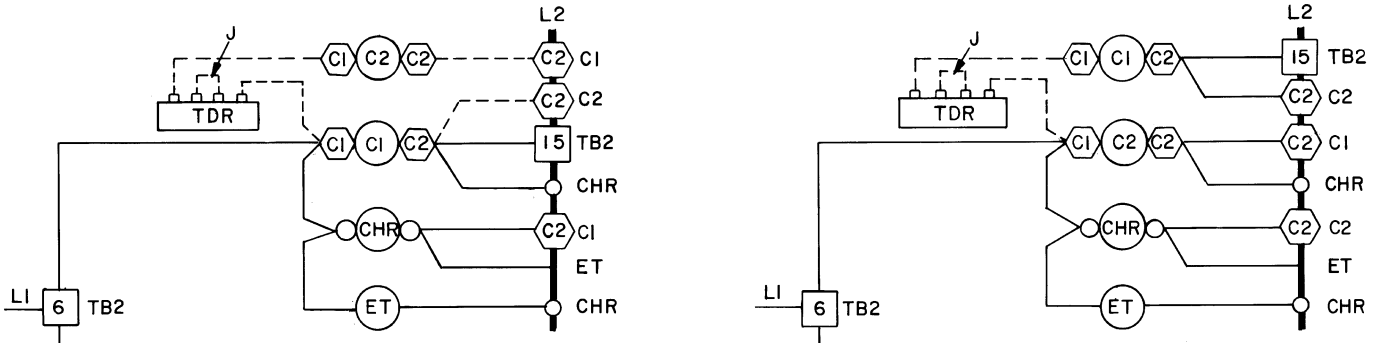
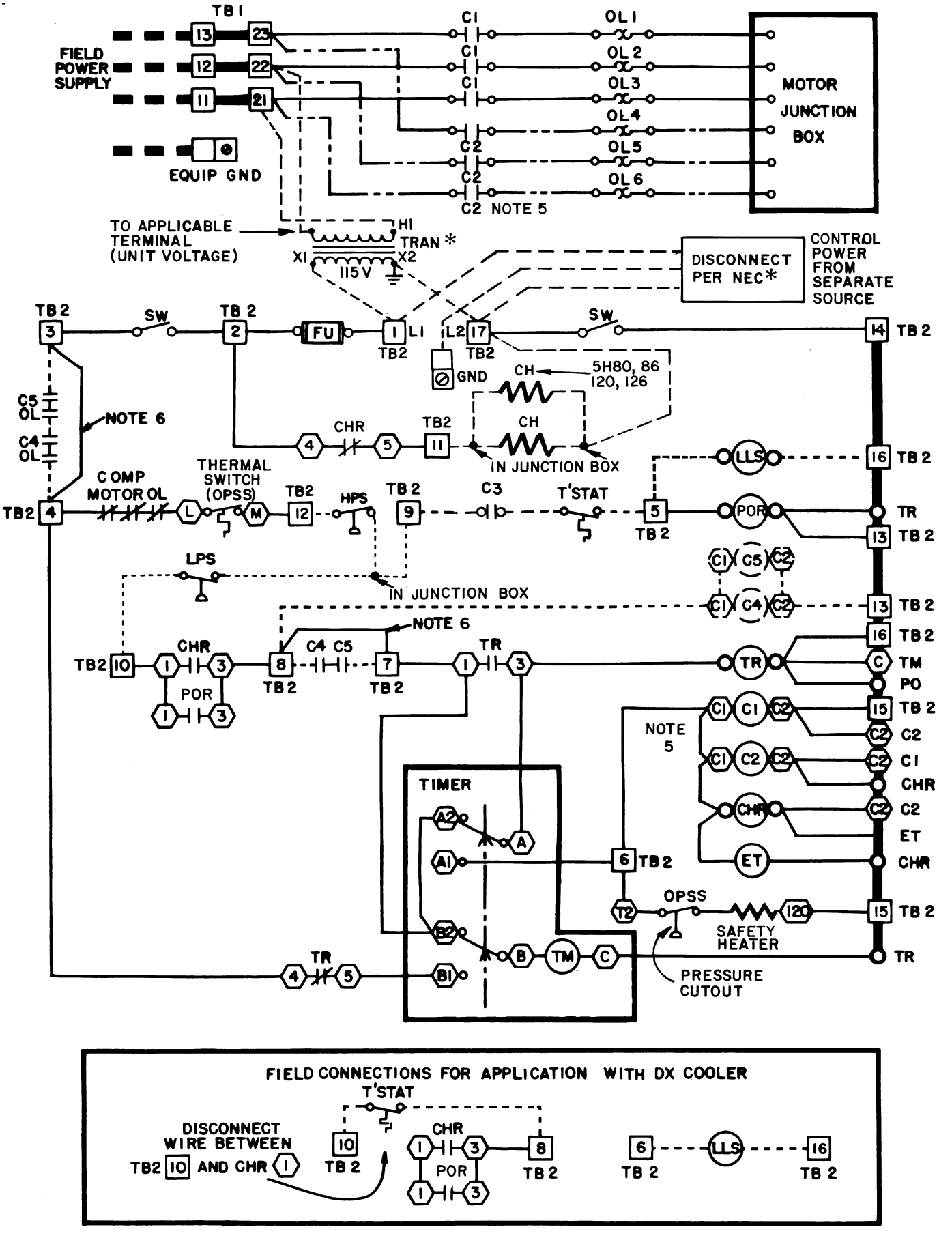


Fig. 4 — Component Arrangement



→ **Fig. 5 — Connection for Part-Winding Start**



*Transformer and disconnect are field supplied unless specified when panel is ordered.

→ **Fig. 6 — Wiring Schematic**

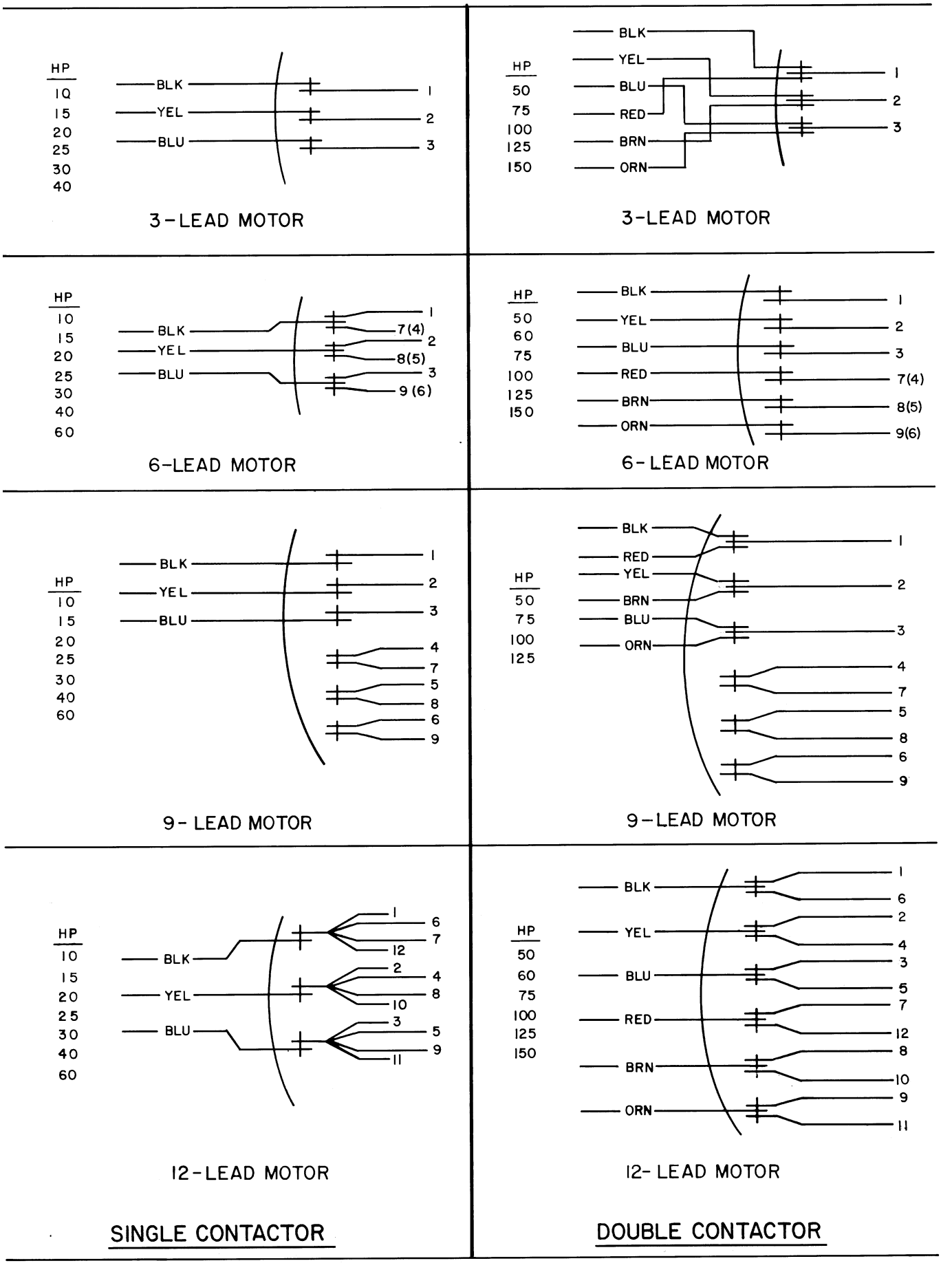


Fig. 7 — Motor Wiring; Across-the-Line Start

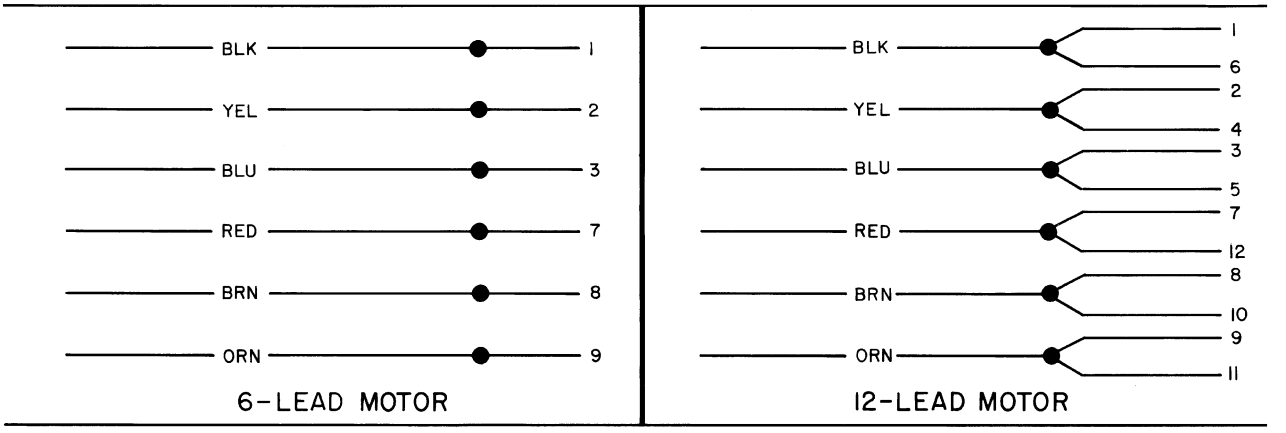
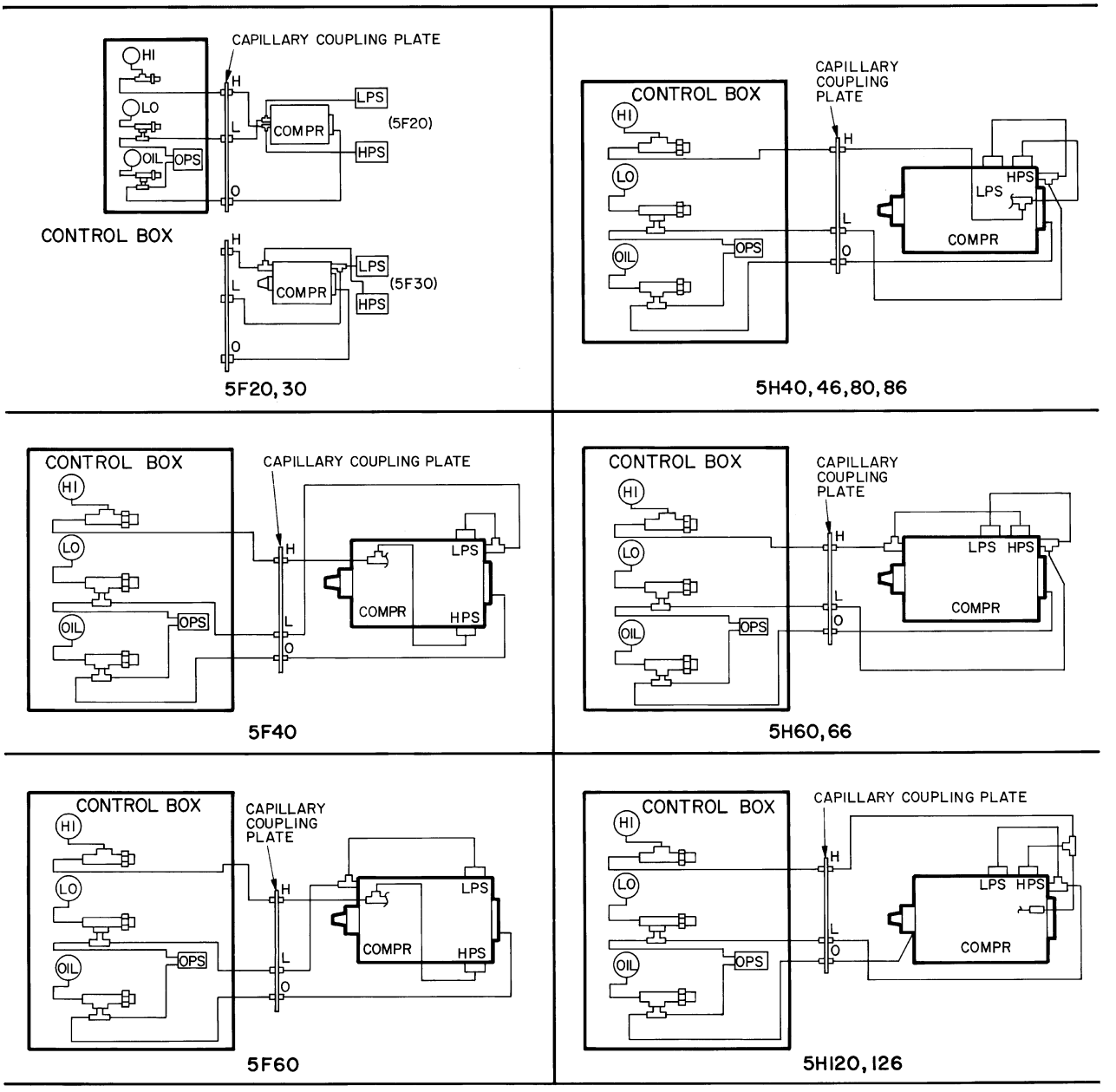


Fig. 8 — Motor Wiring — Part-Winding Start



LEGEND

COMPR — Compressor
HPS — High-Pressure Switch
LPS — Low-Pressure Switch
OPS — Oil Pressure Switch

Fig. 9 — Capillary Connections

Table 1 — 32C Series Panels — Electrical Data

USAGE							TERMINAL BLOCK WIRE RANGE	APPROX. WEIGHT (lb)	PANEL PART NO.
Motor			Contactor		Overload				
Hp	FLA*	Volts	FLA	No.	MTA†	No.			
5	16.7	208	18	1	13-19	1	14 to 2/0 AWG	115	32CF131A4
	15.2	230	18	1	13-19	1		115	32CF131A5
	7.6	460	10	1	6-8.5	1		115	32CF131A6
	6.1	575	7	1	4.5-6.5	1		115	32CF131A1
7½	24.2	208	32	1	24-32	1	14 to 2/0 AWG	115	32CF131B4
	22	230	25	1	18-24	1		115	32CF132B5
	11	460	18	1	10-14	1		115	32CF131B6
	9	575	10	1	7.5-11	1		115	32CF131B1
10	30.8	208	44	1	22-32	1	14 to 2/0 AWG	115	32CF142C4
	28	230	32	1	24-32	1		115	32CF142C5
	14	460	18	1	10-14	1		115	32CF131C6
	11	575	12	1	7.5-11	1		115	32CF131C1
15	46.2	208	60	1	36-52	1	14 to 2/0 AWG	115	32CF153D4
	42	230	44	1	36-52	1		115	32CF153D5
	21	460	25	1	18-24	1		115	32CF132D6
	17	575	18	1	13-19	1		115	32CF131D1
20	59.4	208	44	2	22-32	2	14 to 2/0 AWG	115	32CF242E4
	54	230	32	2	24-32	2		115	32CF242E5
	27	460	32	1	24-32	1		115	32CF142E6
	22	575	25	1	18-24	1		115	32CF131E1
25	74.8	208	44	2	29-42	2	14 to 2/0 AWG	130	32CF243F4
	68	230	37	2	29-42	2		130	32CF242F5
	34	460	37	1	29-42	1		115	32CF152F6
	27	575	32	1	24-32	1		115	32CF152F1
30	88	208	60	2	36-52	2	14 to 2/0 AWG	130	32CF253G4
	80	230	44	2	29-42	2		130	32CF243G5
	40	460	25	2	18-24	2		115	32CF231G6
	32	575	18	2	13-19	2		115	32CF141G1
40	114.4	208	73	2	45-63	2	14 to 2/0 AWG	130	32CF263H4
	104	230	60	2	45-63	2		130	32CF263H5
	52	460	32	2	29-32	2		115	32CF242H6
	42	575	25	2	18-24	2		115	32CF141H1
50	143	208	85	2	65-90	2	6 AWG to 250 MCM	130	32CG273J4
	130	230	73	2	60-80	2	6 AWG to 250 MCM	130	32CG273J5
	65	460	37	2	29-42	2	14 to 2/0 AWG	130	32CF242J6
	52	575	32	2	24-32	2	14 to 2/0 AWG	115	32CF242J1
60	169.4	208	105	2	65-90	2	6 AWG to 250 MCM	130	32CH295K4
	154	230	85	2	65-90	2	6 AWG to 250 MCM	130	32CH295K5
	77	460	44	2	29-42	2	14 to 2/0 AWG	130	32CF263K6
	62	575	37	2	22-32	2	14 to 2/0 AWG	130	32CF252K1
75	211.2	208	140	2	80-110	2	4/0 to 600 MCM	130	32CH205L4
	192	230	105	2	80-110	2	4/0 AWG to 600 MCM	130	32CH205L5
	96	460	60	2	36- 52	2	14 to 2/0 AWG	130	32CF263L6
	77	575	44	2	29- 42	2	14 to 2/0 AWG	130	32CF263L1
100	272.8	208	170	2	110-150	2	4/0 to 600 MCM	130	32CI216M4
	248	230	140	2	100-135	2	4/0 AWG to 600 MCM	130	32CI216M5
	124	460	73	2	45- 63	2	6 AWG to 250 MCM	130	32CH274M6
	99	575	73	2	36- 52	2	14 to 2/0 AWG	130	32CF273M1
125	156	460	105	2	85-110	2	6 AWG to 250 MCM	130	32CI205N6
	125	575	85	2	65- 90	2	6 AWG to 250 MCM	130	32CI284N1
150	180	460	105	2	85-110	2	4/0 to 600 MCM	130	32CJ205P6
	144	575	85	2	65- 90	2	4/0 AWG to 600 MCM	130	32CJ284P1
200	240	460	140	2	110-135	2	4/0 AWG to 600 MCM	130	32CJ211Q6
	192	575	105	2	80-110	2	4/0 AWG to 600 MCM	130	32CJ200Q1

LEGEND

AWG — American Wire Gage
FLA — Full Load Amps
MCM — Thousand Circular Mils
MTA — Must Trip Amps

*Motor FLA per National Electrical Code.
†Overload MTA range shown — overload trips at 125% of MTA factory set point — General section, page 1.