

Heater Selection

General Information on Heater Coil Selection

For maximum motor protection and compliance with Article 430-32 of the National Electrical Code, select heater coils from the tables in this section on the basis of motor nameplate full load current.

When the full load current is unknown, selection may be made on the basis of average full load currents as shown on **Pages V5-T2-151 and V5-T2-152. Caution—The average ratings could be high or low for a specific**

motor and therefore selection on this basis always involves risk. For fully reliable motor protection, select heater coils on the basis of full load current rating as shown on the motor nameplate.

Heater coils are rated to protect 40°C rise motors, and open and drip-proof motors having a **service factor of 1.15** where the motor and the controller are at the same ambient temperature.

For other conditions:

1. For 50°C, 55°C, 75°C rise motors and **enclosed motors having a service factor of 1.0, select one size smaller coil.**
2. Ambient temperature of controller lower than motor by 26°C (47°F), use one size smaller coil.
3. Ambient temperature of controller higher than motor by 26°C (47°F), use one size larger coil.

Ultimate tripping current of heater coils is approximately 1.25 times the minimum current rating listed in the tables.

Type A and B Overload Relays, Sizes 3 and 4

Size Starter	Ambient Compensated Enclosed Starters All Applications Full Load Current of Motor Amps	Non-Compensating Enclosed Starters	Heater (One Heater per Catalog Number) Catalog Number
For Size 4 Starters	12.8–14.1	11.9–13.0	FH68
	14.2–15.5	13.1–14.3	FH69
	15.6–17.1	14.4–15.9	FH70
	17.2–18.9	16.0–17.4	FH71
	19.0–20.8	17.5–19.1	FH72
	20.9–22.9	19.2–21.1	FH73
	23.0–25.2	21.2–23.2	FH74
	25.3–27.8	23.3–25.6	FH75
	27.9–30.6	25.7–28.1	FH76
	30.7–33.5	28.2–30.8	FH77
For Size 3 Starters	33.6–37.5	30.9–34.5	FH78
	37.6–41.5	34.6–38.2	FH79
	41.6–56.3	38.3–42.6	FH80
	46.4–50	42.7–46	FH81
	51–55	47–51	FH82
	56–61	52–56	FH83
	62–66	57–61	FH84
	67–73	62–67	FH85
	74–78	68–72	FH86
	79–84	73–77	FH87
	85–92	78–84	FH88
	93–101	85–91	FH89
	102–110	92–99	FH90
	111–122	100–110	FH91
	123–129	111–122	FH92
	130–133	123–128	FH93
	—	129–133	FH94

Type A and B Overload Relays, Sizes 5 and 6 ^①

Compensated Overload Relay Open Starter Full Load Current of Motor (Amps)	Enclosed Starter Full Load Current of Motor (Amps)	Heater (One Heater per Catalog Number) Catalog Number
Size 5 (with 300/5 Current Transformers)		
—	—	FH23
118–129	118–129	FH24
130–141	130–141	FH25
142–155	142–155	FH26
156–170	156–170	FH27
171–187	171–187	FH28
188–205	188–205	FH29
206–224	206–224	FH30
225–244	225–244	FH31
245–263	245–263	FH32
264–292	264–292	FH33
293–300	—	FH34
Size 6 (with 600/5 Current Transformers)		
—	—	FH23
236–259	236–259	FH24
260–283	260–283	FH25
284–310	284–310	FH26
311–340	311–340	FH27
341–374	341–374	FH28
375–411	375–411	FH29
412–448	412–448	FH30
449–489	449–489	FH31
490–527	490–527	FH32
528–585	528–540	FH33
586–600	—	FH34

Note

^① Size 7 and larger—advise full load current.

Heater Coils**Heater Coils for Type B Overload Relay** ^①

Open Starter Ambient Compensated Overload Relay	Heater Catalog Number ^②	Open Starter Ambient Compensated Overload Relay	Heater Catalog Number ^②
Size 4 and 160 A		Size 5 and 320 A with 300/5 Current Transformers	
12.8–14.1	FH68	107–117	FH23
14.2–15.5	FH69	118–129	FH24
15.6–17.1	FH70	130–141	FH25
17.2–18.9	FH71	142–155	FH26
19.0–20.8	FH72	156–170	FH27
20.9–22.9	FH73	171–187	FH28
23.0–25.2	FH74	188–205	FH29
25.3–27.8	FH75	206–224	FH30
27.9–30.6	FH76	225–244	FH31
30.7–33.5	FH77	245–263	FH32
33.6–37.5	FH78	264–292	FH33
37.6–41.5	FH79	293–318	FH34
41.6–46.3	FH80	319–350	FH35
46.4–50	FH81	Size 6 and 540 A with 600/5 Current Transformers	
51–55	FH82	236–259	FH24
56–61	FH83	260–283	FH25
62–66	FH84	284–310	FH26
67–73	FH85	311–340	FH27
74–78	FH86	341–374	FH28
79–84	FH87	375–411	FH29
85–92	FH88	412–448	FH30
93–101	FH89	449–489	FH31
102–110	FH90	490–527	FH32
111–122	FH91	528–585	FH33
123–129	FH92	586–600	FH34
130–133	FH93		
—	FH94		

Replacement Parts**Vacuum Contactor—Replacement Coils**

Description	Suffix	Part Number
Size 4		
110/120 Vac, 50/60 Hz	J	9085A57G01
220/240 Vac, 50/60 Hz	K	9085A57G02
380/415 Vac, 50/60 Hz	H	ID89221G07
440/480 Vac, 50/60 Hz	U	9085A57G03
Size 5		
110/120 Vac, 50/60 Hz	J	7874A09G01 ^③
220/240 Vac, 50/60 Hz	K	7874A09G04 ^④
380/415 Vac, 50/60 Hz	H	7874A09G10
440/480 Vac, 50/60 Hz	U	7874A09G05
Size 6		
110/120 Vac, 50/60 Hz	J	7874A24G01 ^③
220/240 Vac, 50/60 Hz	K	7874A24G02 ^④
380/415 Vac, 50/60 Hz	H	7874A24G07
440/480 Vac, 50/60 Hz	U	7874A24G03

Notes

^① Motor full load current in amperes for use with three heaters only.

^② Three are required per overload relay.

^③ 125 Vdc can be directly applied to the Size 5 and 6 coil rated for 120 Vac/60 Hz (cannot be applied to Size 4).

^④ 250 Vdc can be directly applied to the Size 5 and 6 coil rated for 240 Vac/60 Hz (cannot be applied to Size 4).