

Heaters for Thermal Types A and B Overload Relays

Product Description

Each heater is identified by a catalog number stamped on one terminal. The heater application table indicates the range of full load motor current to which a given heater may be applied.

Heaters should be selected on the basis of the actual full load current and service factor as shown on the motor nameplate or in the manufacturer's published literature.

When motor and overload relay are in the same ambient and the service factor of the motor is 1.15 to 1.25, select heaters from the heater application table. If the service factor of the motor is 1.0, or there is no service factor shown, or a maximum of 115% protection is desired, select one size smaller heater than indicated.

When motor and overload relay are in different ambients and when using non-compensated overload relays, select heaters from the tables on **Pages V12-T13-30** through **V12-T13-32** using adjusted motor currents as follows: decrease rated motor current 1% for each °C motor ambient exceeds controller ambient. Increase rated motor current 1% for each °C controller ambient exceeds motor ambient.

For temperature compensated overload relays, select heaters according to the tables on **Pages V12-T13-30** through **V12-T13-32** and selection information above regardless of ambient.

Protect the starter against short circuits by providing branch circuit protection per National Electrical Code® (NEC®).

Heater Selection for Types A and B Overload Relays, Sizes 00, 0, 1 and 2 Starters

Non-Compensated Open Starters and Ambient Compensated Open and Enclosed Starters		Non-Compensated Enclosed Starters		Heater Catalog Number
Block-Type Overload Using Three Heaters	Single-Pole Type Overload	Block-Type Overload Using Three Heaters	Single-Pole Type Overload	
Full Load Current of Motor (Amperes) ①②				
For Sizes 0, 1 and 2 Starters				
0.25–0.27	0.29–0.31	0.24–0.25	0.28–0.30	FH03
0.28–0.31	0.32–0.35	0.26–0.28	0.31–0.34	FH04
0.32–0.34	0.36–0.39	0.29–0.31	0.35–0.37	FH05
0.35–0.38	0.40–0.43	0.32–0.35	0.38–0.42	FH06
0.39–0.42	0.44–0.48	0.36–0.39	0.43–0.47	FH07
0.43–0.46	0.49–0.53	0.40–0.43	0.48–0.52	FH08
0.47–0.50	0.54–0.58	0.44–0.47	0.53–0.56	FH09
0.51–0.55	0.59–0.64	0.48–0.51	0.57–0.63	FH10
0.56–0.62	0.65–0.71	0.52–0.57	0.64–0.70	FH11
0.63–0.68	0.72–0.79	0.58–0.63	0.71–0.77	FH12
0.69–0.75	0.80–0.87	0.64–0.70	0.78–0.85	FH13
0.76–0.83	0.88–0.96	0.71–0.77	0.86–0.94	FH14
0.84–0.91	0.97–1.06	0.78–0.85	0.95–1.03	FH15
0.92–1.00	1.07–1.16	0.86–0.93	1.04–1.13	FH16
1.01–1.11	1.17–1.28	0.94–1.03	1.14–1.25	FH17
1.12–1.22	1.29–1.41	1.04–1.13	1.26–1.38	FH18
1.23–1.34	1.42–1.55	1.14–1.25	1.39–1.52	FH19
1.35–1.47	1.56–1.71	1.26–1.37	1.53–1.67	FH20
1.48–1.62	1.72–1.87	1.38–1.51	1.68–1.83	FH21
1.63–1.78	1.88–2.06	1.52–1.65	1.84–2.01	FH22
1.79–1.95	2.07–2.26	1.66–1.81	2.02–2.21	FH23
1.96–2.15	2.27–2.48	1.82–1.99	2.22–2.43	FH24
2.16–2.35	2.49–2.72	2.00–2.19	2.44–2.66	FH25
2.36–2.58	2.73–2.99	2.20–2.39	2.67–2.92	FH26
2.59–2.83	3.00–3.28	2.40–2.63	2.93–3.21	FH27
2.84–3.11	3.29–3.60	2.64–2.89	3.22–3.53	FH28
3.12–3.42	3.61–3.95	2.90–3.17	3.54–3.87	FH29
3.43–3.73	3.96–4.31	3.18–3.47	3.88–4.22	FH30
3.74–4.07	4.32–4.71	3.48–3.79	4.23–4.61	FH31
4.08–4.39	4.72–5.14	3.80–4.11	4.62–4.9	FH32
4.40–4.87	5.15–5.6	4.12–4.55	5.0–5.5	FH33
4.88–5.3	5.7–6.2	4.56–5.0	5.6–6.0	FH34

Notes

① Based on 60°C and 75°C wire for 30A or less.

② Based on 60°C wire for 31 to 95A.

Heaters are packaged in strips of six. Minimum ordering quantity is 12.

Heater Selection for Types A and B Overload Relays, Sizes 00, 0, 1 and 2 Starters, continued

Non-Compensated Open Starters and Ambient Compensated Open and Enclosed Starters		Non-Compensated Enclosed Starters		Heater Catalog Number
Block-Type Overload Using Three Heaters	Single-Pole Type Overload	Block-Type Overload Using Three Heaters	Single-Pole Type Overload	
Full Load Current of Motor (Amperes) ^{①②}				
For Sizes 0, 1 and 2 Starters				
5.4–5.9	6.3–6.8	5.1–5.5	6.1–6.6	FH35
6.0–6.4	6.9–7.5	5.6–5.9	6.7–7.3	FH36
6.5–7.1	7.6–8.2	6.0–6.6	7.4–8.0	FH37
7.2–7.8	8.3–9.0	6.7–7.2	8.1–8.7	FH38
7.9–8.5	9.1–9.9	7.3–7.9	8.8–9.7	FH39
8.6–9.4	10.0–10.8	8.0–8.7	9.8–10.5	FH40
9.5–10.3	10.9–11.9	8.8–9.5	10.6–11.7	FH41
10.4–11.3	12.0–13.1	9.6–10.5	11.8–12.7	FH42
11.4–12.4	13.2–14.3	10.6–11.5	12.8–14.0	FH43
12.5–13.5	14.4–15.7	11.6–12.6	14.1–15.3	FH44
13.6–14.9	15.8–17.2	12.7–13.8	15.4–16.6	FH45
15.0–16.3	—	13.9–15.1	—	FH46
16.4–18.0	—	15.2–16.7	—	FH47
For Sizes 1 and 2 Starters				
—	17.3–18.9	—	16.7–18.3	FH46
—	19.0–20.8	—	18.4–20.0	FH47
18.1–19.8	20.9–22.9	16.8–18.3	20.1–21.9	FH48
19.9–21.7	23.0–25.2	18.4–20.2	22.0–23.9	FH49
21.8–23.9	25.3–27.6	20.3–22.2	24.0–26.2	FH50
24.0–26.2	—	22.3–24.3	—	FH51
—	—	24.4–26.6	—	FH52
For Size 2 Starters				
—	27.7–30.3	—	26.3–28.8	FH51
26.3–28.7	30.4–33.3	—	28.9–31.4	FH52
28.8–31.4	33.4–36.4	26.7–29.1	31.5–34.5	FH53
31.5–34.0	36.5–39.9	29.2–32.0	34.6–37.9	FH54
34.6–37.9	42.0–43.9	32.1–35.2	38.0–41.9	FH55
38.0–41.5	—	35.3–38.5	42.0–45.0	FH56
41.6–45.0	—	38.6–42.3	—	FH57

Notes

① Based on 60°C and 75°C wire for 30A or less.

② Based on 60°C wire for 31 to 95A.

Heaters are packaged in strips of six. Minimum ordering quantity is 12.

Heater Selection for Types A and B Overload Relays, Sizes 3 and 4 Starters ^{①②③}

Ambient Compensated Enclosed Starters	Non-Compensated Enclosed Starters	Heater Catalog Number
All Applications		
Full Load Current of Motor (Amperes) ^①		
For Sizes 3 and 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
33.6–37.5	30.9–34.5	FH78
37.6–41.5	34.6–38.2	FH79
41.6–46.3	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
—	85–91	FH89
For Size 4 Starters		
93–101	—	FH89
102–110	92–99	FH90
111–122	100–110	FH91
123–129	111–122	FH92
130–133	123–128	FH93
—	129–133	FH94

Heater Selection for Types A and B Overload Relays, Sizes 5 and 6 Starters ^④

Compensated Overload Relay		Heater Catalog Number
Open Starter	Enclosed Starter	
Full Load Current of Motor (Amperes)		
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
Size 7 and Larger		
Advise full load current		

Notes

- ① Based on 60°C and 75°C wire for 30A or less.
- ② Based on 60°C wire for 31 to 95A.
- ③ Based on 75°C wire for greater than 95A.
- ④ Based on 75°C wire.

Heaters are packaged in strips of six. Minimum ordering quantity is 12.