

# Definite Purpose Controls

## Overload Relay Heater Tables

### Class 16 starters, Class 48 overloads

#### Selection of Heater Elements for Overload Relays

Overload relays do not provide protection against short circuits. To insure proper coordination with short circuit protective devices, select heaters from the information packaged with the control.

#### Selection Instructions

To select the proper heater follow the steps below:

1. Choose the proper table using the size, trip type, and number of poles ①

#### Ambient Compensated Bimetal Heater Element Tables

Class	Size		Standard Trip (Class 20)		Quick Trip (Class 10)	
	FLA	3rd Letter of Catalog No.	E Heaters Green Reset		K Heaters Green Reset	
			2 Poles	3 Poles	2 Poles	3 Poles
16	25 - 90	A - G	295	297	395	398
	120 - 150	H - I	—	299	—	393

2. If you do not know the trip amps, use the motor FLA to calculate the trip amps by multiplying the FLA by a factor of 1.15 ②
3. Match the trip amps of your starter to the trip amps value below the starter size of the appropriate table. The choice should be as close as possible but NOT greater than the selected trip amp value in the table to allow for proper protection.
4. Select the proper heater from the last column and order the appropriate number of heaters (single phase requires at least two, three phase requires at least three).

#### Examples

Starter	Size Starter	Phase	Trip	Heater Table	Motor FLA	Trip Amps	Heater Element
16CF15AF8	40	Single	Standard	295	35	40.25	E69
16EF35AF4	60	Three	Quick	398	56	64.40	K77

① 5th character in the catalog number equals 1 for single phase 2 pole or 3 for three phase 3 pole.

② For 40 degrees C motors, the maximum Trip Amps are 115% of the Motor FLA or TRIP AMPS = FLA\*1.15.

# Definite Purpose Controls Overload Relay Heater Tables

Tables 295, 297, 299  
Trip amps

Table 295

Size FLA		Heater Code
25, 30 40	50,60	
.67		E7
.73		E8
.81		E9
.88		E11
.96		E12
1.05		E13
1.11		E14
1.20		E16
1.33		E17
1.43		E18
1.54		E23
1.81		E24
2.07		E26
2.30		E27
2.59		E28
2.86		E29
3.02		E31
3.29		E32
3.48		E33
3.81		E34
4.25		E36
4.51		E37
4.85		E38
5.27		E39
5.72		E41
6.40		E42
7.15		E44
7.78		E46
8.56		E47
9.43		E48
9.93		E49
10.3		E50
11.4		E51
12.6		E52
13.8		E53
15.2		E54
16.4		E55
17.6		E56
19.1		E57
21.7		E60
25.0	25.4	E61
28.5	29.0	E62
30.0	30.6	E65
33.6	34.3	E66
39.0	39.9	E67
45.0	46.1	E69
47.6	48.8	E70
55.0	56.4	E72
	58.0	E73
	64.0	E74
	69.0	E76
	81.0	E77

Table 297

Size FLA			Heater Code
25,30 40	50,60	75,90	
.36			E3
.40			E4
.44			E5
.47			E6
.51			E7
.55			E8
.61			E9
.67			E11
.72			E12
.78			E13
.83			E14
.91			E16
1.01			E17
1.07			E18
1.16			E19
1.25			E23
1.36			E24
1.55			E26
1.72			E27
1.93			E28
2.12			E29
2.26			E31
2.43			E32
2.60			E33
2.83			E34
3.18			E36
3.37			E37
3.61			E38
3.93			E39
4.26			E41
4.77			E42
5.32			E44
5.78			E46
6.37			E47
7.02			E48
7.40			E49
7.70			E50
8.38			E51
9.43			E52
10.3			E53
11.2			E54
12.3			E55
13.1			E56
15.1			E57
17.1			E60
19.6			E61
21.4	22.5		E62
23.1	25.4		E65
24.8	27.1		E66
27.4	29.0		E67
30.6	32.0		E69
32.5	34.0		E70
36.8	38.0	48.4	E72
39.5	42.0	50.0	E73
50.0	49.0	55.0	E74
55.0	54.0	59.5	E76
	57.5	68.0	E77
	65.0	72.5	E78
		77.0	E79
	73.0	87.0	E80
	82.0		E81
		95.0	E94
		103.0	E96
		115.0	E97

Table 299

Size FLA				Heater Code
120,150 H, I	180 J	270, 360 R, K	650 M	
			215	E24
			242	E26
		110	268	E27
		123	307	E28
		136	330	E29
		143	351	E31
		154	380	E32
		164	406	E33
		176	438	E34
		195	469	E36
		207	510	E37
		222	551	E38
		242	598	E39
		262	648	E41
		292	700	E42
		326	755	E44
		354		E46
		372		E47
		409		E48
		427		E50
		470		E51
37.5				E69
42.0				E70
45.6				E71
49.6				E73
54.6				E73A
58.3				E74
64.6				E76
68.1				E77
72.6				E78
78.9				E79
84.7				E80
	68.0			E88
	71.0			E89
	78.0			E91
	84.0			E92
	89.5			E93
90.6	97.0			E94
100	106			E96
110	111			E97
115	118			E98
121	126			E99
124	135			E101
130	147			E102
138	160			E103
151	177			E104
157	193			E106
168	210			E107
180				E108

# Definite Purpose Controls

## Overload Relay Heater Tables

Tables 393, 395, 398  
Trip amps

Table 393

Size FLA				Heater Code
120, 150 H, I	180 J	270, 360 R, K	650 M	
		122	260	K21
		134	288	K22
		145	315	K23
		156	338	K24
		171	372	K26
		187	407	K27
		201	444	K28
		215	497	K29
		241	540	K31
		259	582	K32
		286	643	K33
		308	708	K34
		335	775	K36
		383	860	K37
		412		K39
		465		K41
50.1				K72
53.1				K73
58.0				K74
62.1				K75
65.5				K76
72.0				K77
80.0				K78
85.0				K83
93.0				K85
97.5	116			K86
104	130			K87
114				K88
126	142			K89
136				K90
150	160			K92
162				K93
180	180			K94
190	205			K96
200	225			K97

Table 395

Size FLA			Heater Code
25, 30 40	50,60		
		2.29	K21
		2.55	K22
		2.70	K23
		3.06	K24
		3.39	K26
		3.70	K27
		4.01	K28
		4.41	K29
		4.75	K31
		5.23	K32
		5.71	K33
		6.12	K34
		6.65	K36
		7.51	K37
		8.00	K39
		8.60	K41
		9.52	K42
		10.1	K43
		11.2	K49
		11.6	K50
		13.6	K52
		14.3	K53
		15.3	K54
		16.6	K55
		17.5	K56
		19.2	K57
		20.3	K58
	24.9	26.7	K60
		25.0	K61
		26.8	K62
		29.2	K63
		31.0	K64
		35.0	K67
		37.2	K68
		41.6	K69
		42.8	K70
		47.2	K72
		50.2	K73
		55.3	K74
			K75
			K76
			K77
			K78
			K79
			K83
			K85
			K86
			K87
			K89

Table 398

Size FLA				Heater Code
25,30 40	50,60	75,90		
			1.91	K21
			2.08	K22
			2.26	K23
			2.44	K24
			2.70	K26
			2.98	K27
			3.22	K28
			3.61	K29
			3.93	K31
			4.23	K32
			4.67	K33
			5.02	K34
			5.46	K36
			6.25	K37
			6.74	K39
			7.25	K41
			8.05	K42
			8.55	K43
			9.8	K49
			10.3	K50
			12.0	K52
			12.5	K53
			13.6	K54
			14.7	K55
			15.5	K56
			16.9	K57
			17.9	K58
			19.1	K60
			22.0	K61
	22.5			K61
			23.6	K62
			24.1	K62
			25.2	K63
			25.7	K63
			27.0	K64
			28.0	K64
			30.0	K67
			31.1	K67
			34.0	K69
			34.6	K69
			37.1	K70
			37.8	K70
			41.0	K72
			41.5	K72
			46.0	K73
			50.0	K73
			49.2	K74
			54.0	K74
			56.0	K75
			57.0	K75
			62.2	K75
			65.5	K76
			66.0	K76
			72.0	K77
			73.0	K77
			80.0	K78
				K79
				K83
				K85
				K86
				K87
				K88
				K89
				K89