

Overload Relay

General

Overload relays are provided to protect motors, motor control apparatus and motor-branch circuit conductors against excessive heating due to motor overloads and failure to start. This definition does not include: 1) motor circuits over 600 volts, 2) short-circuits, 3) ground faults and 4) fire pump control. (NEC Art. 430-31)

Time Current Characteristics

The time-current characteristics of an overload relay is an expression of performance which defines its operating time at various multiples of its current setting. Tests are run at Underwriters Laboratory (UL) in accordance with NEMA Standards and the NEC.

UL requires—

- When tested at 100 percent of its current rating, the overload relay shall trip ultimately
- When tested at 200 percent of its current rating, the overload relay shall trip in not more than 8 minutes
- When tested at 600 percent of its current rating, the overload relay shall trip in not more than 10 or 20 seconds, depending on the Class of the relay or heater packs

“Current Rating” is defined as the minimum current at which the relay will trip. Per NEC, an overload must ultimately trip at 125% of FLA (Full Load Amperes) current (heater) setting for a 1.15 service factor motor and 115% FLA for a 1.0 service

factor motor. “Current Setting” is defined as the FLA of the motor and thus the overload heater pack setting.

Example: 600% of current rating is defined as 750% (600 x 1.25) of FLA current (heater) setting for a 1.15 service factor motor. A 10 ampere heater setting must trip in 20 seconds or less at 75 amperes motor current for a Class 20 relay.

Overload Relay Setting

FLA Dial Adjustment—

For motors having a 1.15 service factor, rotate the FLA adjustment dial to correspond to the motor’s FLA rating. Estimate the dial position when the motor FLA falls between two letter values as shown in the example.

For motors having a 1.0 service factor, rotate the FLA dial single-half position counterclockwise (CCW).

Manual/Automatic Reset—

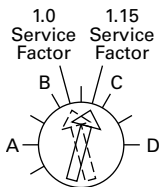
The overload relay is factory set at M for manual reset operation. For automatic reset operation, turn the reset adjustment dial to the A position as shown in the illustration.

Automatic reset is not intended for two-wire control devices.

Test for Trip Indication—

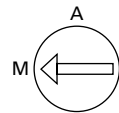
To test overload relay for trip indication when in manual reset, pull out the blue RESET button. An orange flag will appear indicating that the device has tripped. Push RESET button in to reset.

FLA Dial Adjustment



Example of 12.0 FLA setting for heater pack number H2011B showing position for 1.0 or 1.15 service factor motors.

Reset Adjustment Dial



Example of setting for manual reset.

Replacement Overload with Connectors

Starter Size	Overload Part Number
25 and 30A	10-7125
40 and 50A	10-7132
60A	10-7131

Accessories

Contactors Accessories, see **Pages V5-T4-11** and **V5-T4-12**.

Locking Cover for Overload Relay

Snap-on transparent or opaque plastic panel for covering access port to the overload relay trip setting dial—helps prevent accidental or unauthorized changes to trip and reset setting.

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Locking Cover**Locking Cover for Overload Relay**

Description	Minimum Order Quantity (Std. Pkg.)	Catalog Number
Clear cover, no accessibility	50	C320PC3
Gray cover, no accessibility, with auto only nib	50	C320PC4
Gray cover, no accessibility, with manual only nib	50	C320PC5
Gray cover with FLA dial accessibility, A, B, C, D positions and auto only nib	50	C320PC6
Gray cover with FLA dial accessibility, A, B, C, D positions and manual only nib	50	C320PC7

Separate Enclosures**Separate Enclosures—NEMA 1**

Application	Catalog Number
25 and 30A	C799B11
40, 50 and 60A	C799B13

Heater Packs**Fast Trip—Class 10 Heater Packs**

Manual or Automatic Reset

Heater packs are shipped three to a carton.

Catalog numbers listed below are for three heater packs.

Fast Trip Ratings

Motor Full Load Ampere Rating ^①				Catalog Number ^② (Includes Three Heater Packs)
Dial Position	A	B	C	
	A	B	C	D
0.26	0.313	0.367	0.42	H2101B-3
0.384	0.464	0.543	0.623	H2102B-3
0.57	0.688	0.806	0.924	H2103B-3
0.846	1.02	1.2	1.37	H2104B-3
1.28	1.55	1.83	2.1	H2105B-3
1.92	2.33	2.74	3.15	H2106B-3
2.3	2.79	3.28	3.77	H2107B-3
3.38	4.1	4.82	5.54	H2108B-3
4.96	6.03	7.09	8.16	H2109B-3
7.07	8.58	10.1	11.6	H2110B-3
9.6	11.2	12.8	14.4	H2111B-3
14.4	17.5	20.7	23.8	H2112B-3
18.7	21.8	25	28.1	H2113B-3
23.5	27.3	31	34.8	H2114B-3
28.3	32.6	37	41.3	H2115B-3
36.6	42.3	48.1	53.8	H2116B-3
53.8	60.8	67.9	74.9	H2117B-3

Trip Curves, see **Page V5-T4-28**.

Notes

- ^① For motor full load amperes between listed values, adjust dial clockwise for higher or counter-clockwise for lower motor currents. The currents listed are for 1.5 service factor motors. A position adjustment is provided for 1.0 service factor motors.
- ^② Set of three heater packs are required for both single- and three-phase applications.