DESCRIPTION • OPERATION • INSTALLATION

INSTRUCTIONS

TYPE MW-31 and MW-41 OVERLOAD RELAYS
With Normally Open Contacts
Sizes 3 and 4

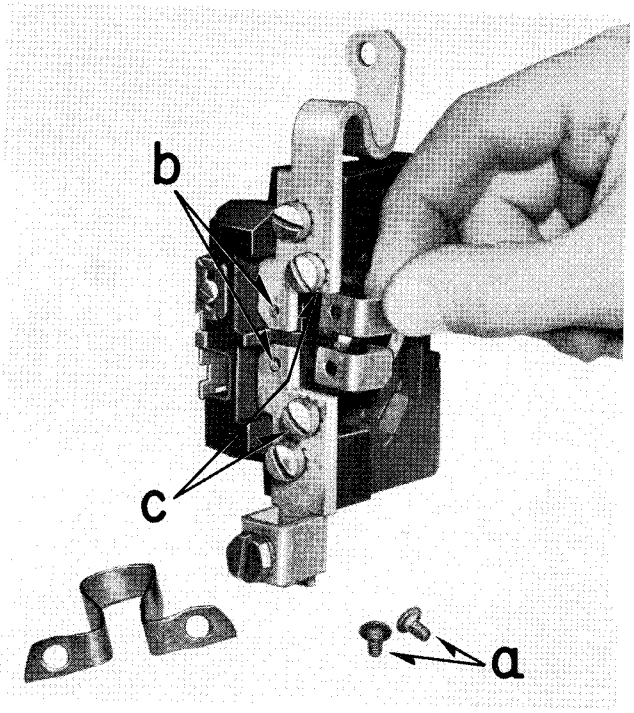

FIG. 1. Install "B" code heater in the relay, using screws "a" threaded into holes "b". The "C" code heater (shown below relay) is held by larger screws "c". Be sure the looped portion enters the recess in the relay.

THE TYPE MW-31 OVERLOAD RELAY is designed for use on Size 3 applications where the current is 100 amperes or less. The MW-41 is for Size 4 applications where the current is 150 amperes or less. These relays are designed to mount directly on the Type NR contactor mounting plate. However, they may also be mounted on other panels either insulating or non-insulating.

It is the purpose of these relays to detect and then warn of overloading currents by completing an external circuit.

The performance of the relays is such that they will allow motor starting currents to flow during the starting period, but will trip when subject to smaller but long-continued overloads. They will provide protection against abnormal load conditions to current values exceeding locked rotor current.

The MW relays feature a bi-metallic disc which insures the same accuracy and uniformity obtained in precision thermostats. This convex bi-metallic disc after heating snaps to reverse its convexity, thus insuring a quick-make action of the contacts.

In accordance with the National Electric Code the relay should be protected against short circuits by fuses rated at not more than four times the rated motor current, or by a time limit circuit breaker set at not more than four times the rated motor current.

Ratings. The MW-31 and MW-41 relays are used on circuits of not more than 600 volts, and have contacts which will carry and break a-c currents up to 2 amperes. The contacts will also handle 50 volt-amperes at a maximum of 1 ampere in a d-c circuit. With heaters properly selected from the heater application table, the relays may be used on circuits from 14.9 to 173 amperes. For special applications there are heaters available for circuits of lower and higher ratings.

The time required for the relay to trip depends upon the size of the overload, the greater the overload the shorter being the time to trip. This is indicated in the Time Characteristic Curve, Fig. 2, of a relay operating in a 40°C. (104°F.) ambient

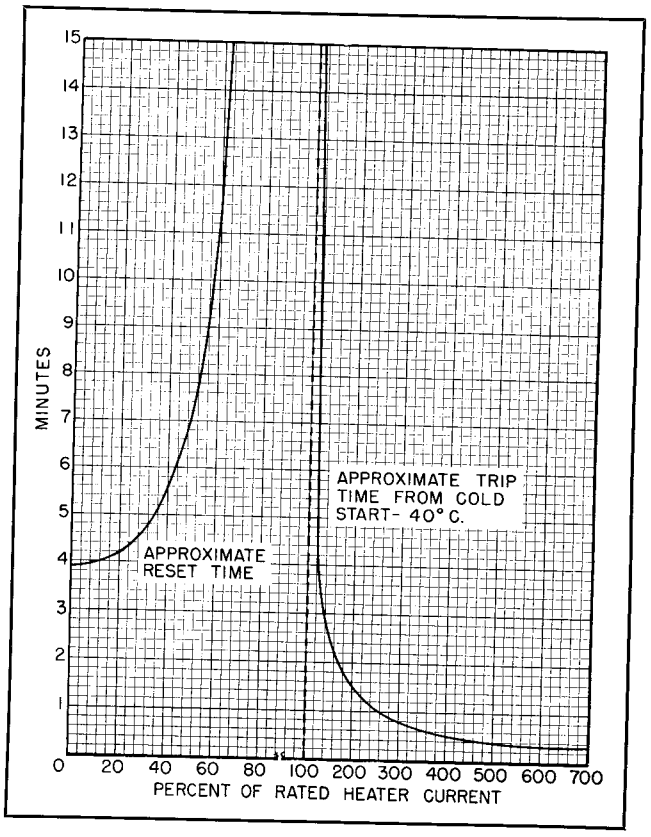

FIG. 2. Average Time Current Curve

NEW INFORMATION

JANUARY, 1955

HEATER APPLICATION TABLE

HEATERS		OPEN				LARGE ENCLOSURES				UNIT ENCLOSURES			
CODE MARKING	STYLE NUMBER	MW-31 Table 25.3 I.S. 10701	FULL LOAD CURRENT OF MOTOR 125% Overload Protection AMPERES	CURRENT RATING AT 40°C ROOM TEMP. AMPERES	MW-41 Table 25.4 I.S. 10704	MW-31 Table 26.3 I.S. 10702	FULL LOAD CURRENT OF MOTOR 125% Overload Protection AMPERES	CURRENT RATING AT 40°C ROOM TEMP. AMPERES	MW-41 Table 26.4 I.S. 10705	MW-31 Table 27.3 I.S. 10703	FULL LOAD CURRENT OF MOTOR 125% Overload Protection AMPERES	CURRENT RATING AT 40°C ROOM TEMP. AMPERES	MW-41 Table 27.4 I.S. 10706
BE 14	966 492	X	14.9 to 16.5	18.6	X	X	13.4 to 14.4	16.8	X	X	11.4 to 12.8	14.90	X
BF 16	966 493	X	16.6 to 17.3	20.7	X	X	14.5 to 15.5	18.1	X	X	12.9 to 13.8	16.10	X
BG 18	966 494	X	17.4 to 19.1	21.7	X	X	15.6 to 17.2	19.5	X	X	13.9 to 15.4	17.40	X
BH 19	966 495	X	19.2 to 20.7	24	X	X	17.3 to 18.7	21.6	X	X	15.5 to 16.8	19.25	X
BI 21	966 496	X	20.8 to 23.1	26	X	X	18.8 to 20.8	23.5	X	X	16.9 to 18.4	20.90	X
BK 23	966 497	X	23.2 to 24.7	29	X	X	20.9 to 22.1	26.7	X	X	18.5 to 19.5	23.18	X
BL 25	966 498	X	24.8 to 27.1	31	X	X	22.2 to 24.2	27.8	X	X	19.6 to 21.3	24.60	X
BM 27	966 499	X	27.2 to 29.5	34	X	X	24.3 to 26.3	30.4	X	X	21.4 to 23.3	26.70	X
BN 29	1040 588	X	29.6 to 32.7	37	X	X	26.4 to 28.7	33	X	X	23.4 to 24.9	29	X
BO 31	974 084	X	32.8 to 36.7	41	X	X	28.8 to 32.7	36	X	X	25.0 to 28.4	31	X
CR	1780 725	X	36.8 to 40.7	46	X	X	32.8 to 35.9	41	X	X	28.5 to 32.2	36	X
CS	1780 726	X	40.8 to 45.5	51	X	X	36.0 to 40.7	45	X	X	32.3 to 36.2	40	X
BT 47	1265 536	X	45.6 to 51.9	57	X	X	40.8 to 46.3	51	X	X	36.3 to 40.9	46	X
BU 54	1265 537	X	52.0 to 58.3	65	X	X	46.4 to 52.7	58	X	X	41.0 to 46.5	52	X
BX 61	1265 538	X	58.4 to 65.4	73	X	X	52.8 to 58.3	66	X	X	46.6 to 51.9	59	X
BY 65	1265 539	X	65.5 to 73.4	82	X	X	58.4 to 64.7	73	X	X	52.0 to 56.7	65	X
BZ 71	1265 540	X	73.5 to 81.5	92	X	X	64.8 to 72.7	81	X	X	56.8 to 63.9	71	X
CA	1597 771	X	81.6 to 91.1	102	X	X	72.8 to 81.9	91	X	X	64.0 to 73.4	80	X
CB	1597 772	X	91.2 to 101	114	X	X	82.0 to 90.4	103	X	X	73.5 to 79.9	92	X
CC	1597 773	X	102 to 110	127	X	X	90.5 to 98.4	113	X	X	80.0 to 86.3	100	X
CD	1597 774		111 to 120	139	X		98.5 to 106	123	X	X	86.4 to 93.5	108	X
CE	1597 775		121 to 131	152	X		107 to 115	134	X	X	93.6 to 100	117	X
CF	1597 776		132 to 144	165	X		116 to 126	145	X		101 to 108	126	X
CG	1597 777		145 to 160	181	X		127 to 137	158	X		109 to 116	136	X
CH	1597 778						138 to 150	172	X		117 to 125	146	X
CI	1597 779										126 to 137	157	X
CJ	1597 780										138 to 148	173	X

X Indicates heater is used on this relay size.

temperature. The curve applies in general when the relay is operated in any ambient temperature as long as the currents are expressed in percentages of the minimum tripping current at that ambient temperature. The minimum tripping current changes with the ambient temperature in approximately the same ratio as the change in load capacity of the motor.

OPERATION

The MW overload relay has a heater (a calibrated resistor element) placed in series with the load. During an overload the flow of heat from the heater causes an adjacent convex bi-metallic disc at a definite temperature to suddenly snap, reversing its convexity. The movement of the disc closes double-break silvered contacts connected in series with the external alarm circuit. The contacts remain closed until the load current is decreased to less than 70% of the rated heater current. The Reset Time Characteristic Curve is given in Fig. 2. When the heater and bi-metallic disc cool sufficiently the disc will snap back to its original shape. This action opens the contacts and completes a cycle of operation.

INSTALLATION

The heater is supplied separately and is to be mounted as indicated in Fig. 1.

All connections must be clean and tight, and care must be taken to avoid bending the heater.

HEATERS

Each heater is identified by a code marking stamped on one terminal near a mounting hole. The heater application table indicates the value of current at which the relay will ultimately trip. The table is based on a 40°C. ambient temperature.

The rating of a heater increases approximately 1% for each degree C. decrease in ambient temperature. Conversely the rating decreases approximately 1% for each degree C. increase in ambient temperature.

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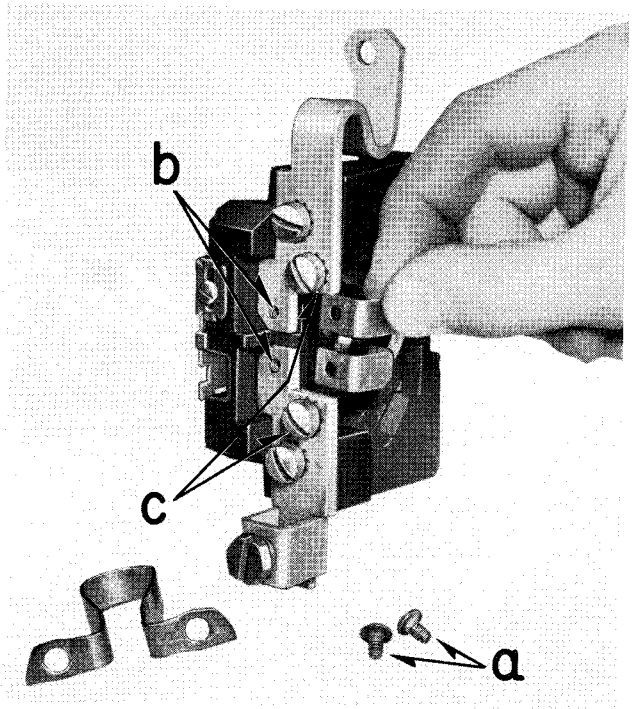

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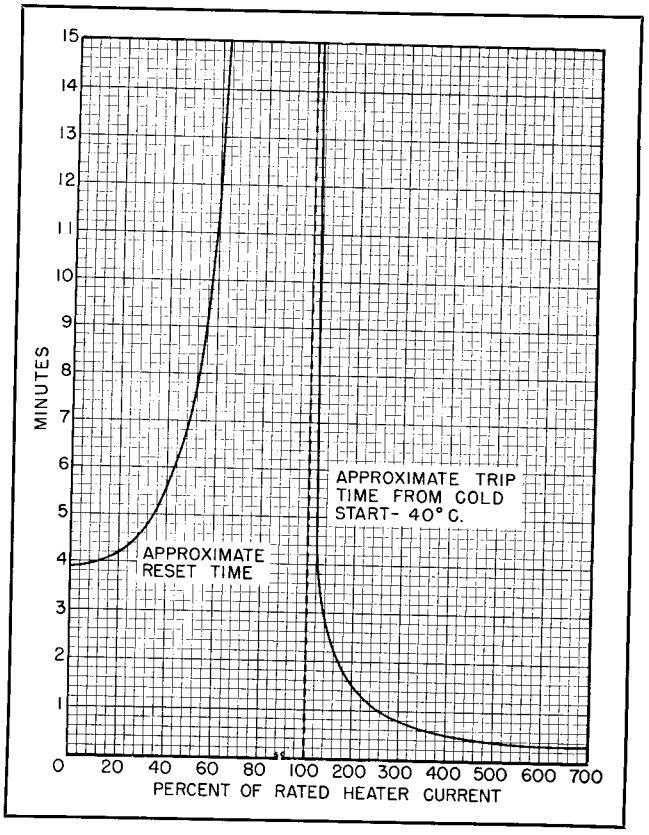

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