INSTRUCTIONS

*IC2824-34 COMPENSATED THERMAL INDUCTION OVERLOAD RELAY

**(Also identified with prefix CR instead of IC)*

The IC2824-34 single-pole, a-c temperature overload relay provides motor overload protection with compensation for changes in relay ambient temperature. For applications where variable or unusually high relay ambient temperatures are encountered, this compensation permits the motor to carry its rated load without causing unnecessary tripping of the relay.

The IC2824-34H relay has a time-current curve suitable for use with most general-purpose a-c motors, and may be used for either 50- or 60-cycle supply. The IC2824-34C has a longer tripping time (see Fig. 2) and may be used with motors having a relatively long accelerating time if the motor characteristics are such that the curve shown in Fig. 2 will provide adequate motor protection. The IC2824-34C relay should be used for 60 cycles only.

The IC2824-34L is a fast tripping relay suitable for applications where the motor heats rapidly under stalled conditions. This relay may be used for either 25- or 60-cycle supply.

DESCRIPTION

The relay has a series coil which should be connected in the motor circuit. Mounted within the coil is a steel core over which is a short-circuited bimetallic helix acting like a short-circuited secondary of a transformer. In the event of an overload, the current in the helix causes it to become heated and to rotate, thereby opening the relay contacts. The effect of a change in ambient temperature is minimized by means of a compensating strip of bimetal so arranged that temperature changes produce a deflection nearly equal to that of the bimetal helix and in the opposite direction. The relay must be reset manually after tripping. For resetting from a remote location, a solenoid-operated electric-reset relay can be supplied.

An inertia latch prevents the relay from tripping due to mechanical shock. The contacts are silver with positive snap-action opening.

The relay can be adjusted by the purchaser to trip at any value from approximately 90 to 110 per cent of the rated coil current.

The cover screws of the IC2824-34C relay can be sealed, thereby making the relay completely tamper-proof.

APPLICATION

The relay is for use in circuits of 600 volts or less. Coils are available with ampere capacities as listed below. For standard continuous-rated motors designed for use in a 40 C ambient, the coils should be selected in accordance with the following table. For intermittent-rated motors, or for motors designed for use in higher ambient temperatures, coils should be selected in accordance with the characteristics of the motor and the application. The "rated coil amperes" is the approximate value of current on which the relay will ultimately trip in a 40 C ambient temperature. If the relay is located in an enclosed controller or other location where the ambient temperature at

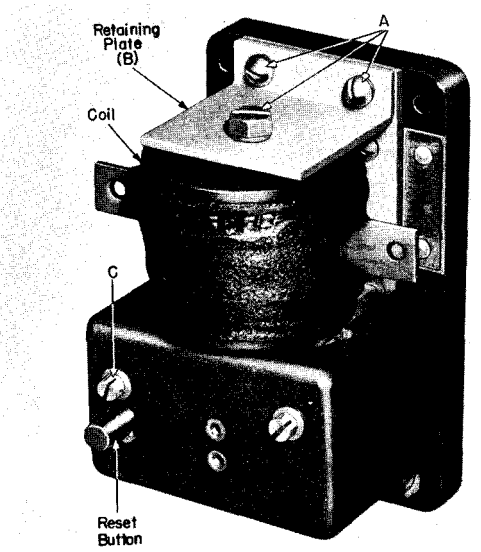

Fig. 1. IC2824-34C thermal induction overload relay

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the General Electric Company.

GENERAL ELECTRIC

the relay is considerably in excess of 40 C, the variation in tripping current is so small that it is negligible for most applications.

When the ambient temperature is unusually high, the total motor temperature may also be high, and it is essential that the motor be designed to operate under the ambient conditions that will be encountered.

To protect the relay, and the controller with which it is used, against excessive current resulting from short circuits, fuses having a rating of not more than four times the motor full-load current or other branch-circuit protective device should be provided in accordance with the National Electrical Code.

CHARACTERISTICS

The time-current characteristic, Fig. 2 and Fig. 2A, shows the current as a percentage of "rated coil amperes" rather than as motor full-load current.

For relay ambient temperatures from 20 to 80 C, the variation in ultimate tripping current from that at 40 C will be approximately 2 per cent for each 10 degrees variation in relay ambient. Thus the "rated coil amperes" will be in effect only 2 per cent lower for each 10 degrees in excess of 40 degrees, or 2 per cent higher for each 10 degrees below 40 degrees.

The contacts will carry continuously 10 amperes, make momentarily 30 amperes, and interrupt the following values of current:

A-c Volts	Amperes
110	20
220	10
450	5
550	4

INSTALLATION

The relay should be installed in the vertical position with the coil at the top as shown in Fig. 1. If the proper coil is used, no adjustment will ordinarily be required. However, if it is desirable to adjust the relay to trip at a slightly higher or lower value of current, remove the three screws (A) in Fig. 1, the retaining plate (B), the coil, the cover screws (C), and the cover. Then loosen the adjustment locking screw. The adjusting screw can be turned to provide the desired adjustment. Tighten the adjustment locking screw and carefully replace the parts removed, taking care that the coil is mounted with the two locating pins on the lower side and that the retaining plate (B) rests squarely against the end of the core.

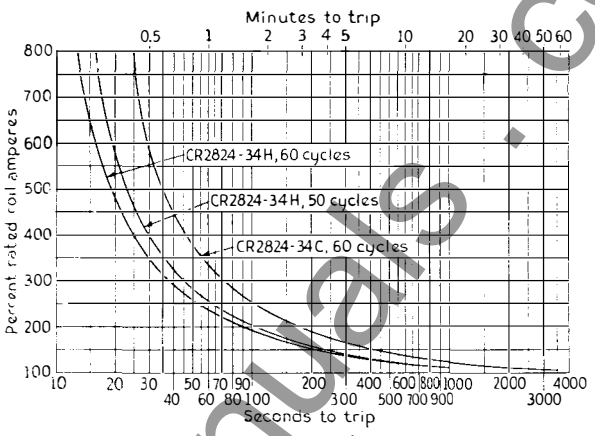

Fig. 2. Average time-current characteristic curves for IC2824-34C and -34H overload relays, 40 C ambient

DO NOT TAMPER WITH THE BIMETAL HELIX OR THE COMPENSATING BIMETAL.

No maintenance should be necessary. It is not recommended that renewal parts other than coils be supplied, since replacing contacts or other essential operating parts may destroy the accuracy of calibration. Coils should be ordered by Cat. No.

To replace the coil, remove the three screws (A), Fig. 1, and the retaining plate (B). The coil can then be removed. In replacing the coil be sure that the two locating pins on the lower side engage the corresponding holes on the relay frame, and that the retaining plate rests squarely against the end of the core.

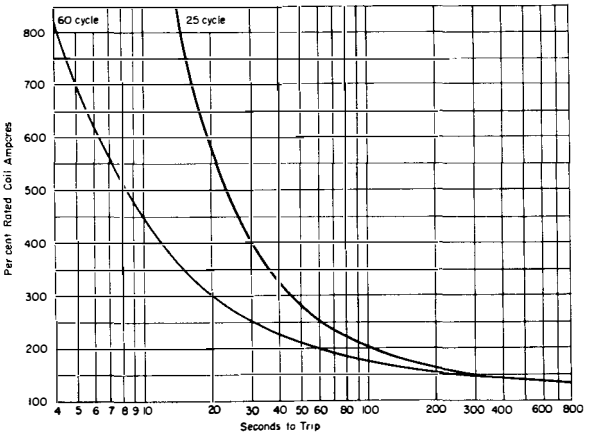

Fig. 2a. Time-current characteristic curves for IC2824-34L overload relay

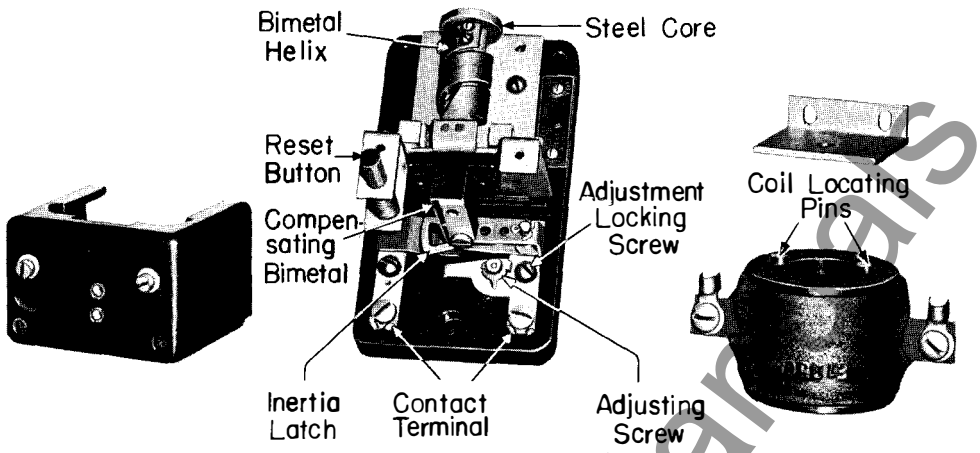

Fig. 3. Relay with cover, coil-retaining plate, and coil removed to show internal construction

TABLE FOR SELECTING COILS FOR IC2824-34C AND -34H RELAYS

60 Cycles Only for IC2824-34C, 50 or 60 Cycles for IC2824-34H

Coil Cat. No.	Rated Coil Ampere in 40 C Ambient	Full-load Amp for 40 C Rise Cont-rated Motors *	Coil Cat. No.	Rated Coil Amp in 40 C Ambient	Full-load Amp for 40 C Rise Cont-rated Motors*
F1D5G8	0.71	0.59–0.64	F1D5G35	9.10	7.56– 8.28
G9	0.78	0.65–0.70	G36	10	8.29– 9.10
G10	0.86	0.71–0.78	G37	11.1	9.11– 10
G11	0.94	0.79–0.85	G38	12.2	10.1 – 11.1
G12	1.03	0.86–0.93	G39	13.5	11.2 – 12.2
G13	1.13	0.94–1.02	G40	14.7	12.3 – 13.3
G14	1.24	1.03–1.12	G41	16.1	13.4 – 14.6
G15	1.36	1.13–1.23	G42	17.8	14.7 – 16.1
G16	1.50	1.24–1.36	G43	19.3	16.2 – 17.5
G17	1.65	1.37–1.50	G44	20.7	17.6 – 18.8
G18	1.82	1.51–1.65	G45	22.7	18.9 – 20.6
G19	2	1.66–1.81	G46	25	20.7 – 22.7
G20	2.20	1.82–2	G47	27.7	22.8 – 25.1
G21	2.42	2.01–2.20	G48	29.5	25.2 – 26.9
G22	2.65	2.21–2.40	G49	31.2	27 – 28.3
G23	2.92	2.41–2.65	G50	33.3	28.4 – 30.2
G24	3.20	2.66–2.90	G51	35.7	30.3 – 32.4
G25	3.52	2.91–3.20	G52	38.5	32.5 – 35
G26	3.87	3.21–3.51	G53	41.7	35.1 – 37.9
G27	4.25	3.52–3.86	G54	45.5	38 – 41.3
G28	4.68	3.87–4.25	G55	50	41.4 – 45.4
G29	5.15	4.26–4.68	G56	55.6	45.5 – 50.5
G30	5.60	4.69–5.09	G57	62.5	50.6 – 56.8
G31	6.22	5.10–5.65	G58	71.3	56.9 – 65
G32	6.85	5.66–6.22	G59	83.5	65.1 – 76
G33	7.55	6.23–6.87	G60	100	76.1 – 91
G34	8.30	6.88–7.55	G84	110	91.1 –100

* For 50 or 55 C rise continuous-rated motors, multiply motor full-load ampere by 0.9 and use this value to select coil.

TABLE FOR SELECTING COILS FOR IC2824-34L RELAY

Coil Data Specification No. K-8625539				60 Cycle		25 Cycle	
Coils with Terminals	Coils with 10-in. Leads	Coils with 7-in. Leads End Terminal	Coils with 24-in. Leads	40 C Rating Amp	Full-load Amp 40 C Rise* Cont-rated Motors	40 C Rating Amp	Full-load Amp 40 C Rise* Cont-rated Motors
8	100		200	.78	.66– .71	.94	.79– .85
9	101		201	.86	.72– .78	1.03	.86– .94
10	102		202	.94	.79– .85	1.13	.95– 1.03
11	103		203	1.03	.86– .94	1.24	1.04– 1.13
12	104		204	1.13	.95– 1.03	1.36	1.14– 1.24
13	105		205	1.24	1.04– 1.13	1.50	1.25– 1.36
14	106		206	1.36	1.14– 1.24	1.65	1.37– 1.50
15	107		207	1.50	1.25– 1.36	1.82	1.51– 1.65
16	108		208	1.65	1.37– 1.50	2	1.66– 1.82
17	109		209	1.80	1.51– 1.64	2.20	1.83– 2
18	110		210	2	1.65– 1.82	2.42	2.01– 2.20
19	111		211	2.20	1.83– 2	2.65	2.21– 2.41
20	112		212	2.42	2.01– 2.20	2.92	2.42– 2.65
21	113		213	2.65	2.21– 2.41	3.20	2.66– 2.91
22	114		214	2.92	2.42– 2.65	3.52	2.92– 3.20
23	115		215	3.22	2.66– 2.93	3.87	3.21– 3.52
24	116		216	3.52	2.94– 3.20	4.25	3.53– 3.86
25	117		217	3.87	3.21– 3.52	4.68	3.87– 4.25
26	118		218	4.25	3.53– 3.86	5.15	4.26– 4.68
27	119		219	4.68	3.87– 4.25	5.60	4.69– 5.09
28	120		220	5.15	4.26– 4.68	6.22	5.10– 5.65
29	121		221	5.65	4.69– 5.14	6.85	5.66– 6.23
30	122		222	6.20	5.15– 5.64	7.55	6.24– 6.86
31	123		223	6.85	5.65– 6.23	8.3	6.87– 7.55
32	124		224	7.55	6.24– 6.86	9.1	7.56– 8.28
33	125		225	8.34	6.87– 7.58	10	8.29– 9.09
34	126		226	9.16	7.59– 8.33	11	9.10– 10
35	127		227	10	8.34– 9.09	12.2	10.1 – 11.1
36	128		228	11.1	9.10– 10.1	13.5	11.2 – 12.3
37	129		229	12.2	10.2 – 11.1	14.7	12.4 – 13.4
38	130	132	230	13.5	11.2 – 12.3	16.1	13.5 – 14.6
39	131	133	231	14.9	12.4 – 13.5	17.8	14.7 – 16.2
40		134	232	16.1	13.6 – 14.6	19.3	16.3 – 17.5
41		135	233	17.8	14.7 – 16.2	20.7	17.6 – 18.8
42		136	234	19.6	16.3 – 17.8	22.7	18.9 – 20.6
43		137	235	21.7	17.9 – 19.7	25	20.7 – 22.7
44		138	236	22.9	19.8 – 20.8	27.7	22.8 – 25.2
45		139	237	25	20.9 – 22.7	29.5	25.3 – 26.8
46		140	238	27.5	22.8 – 25	33	26.9 – 30
47		141	239	30.6	25.1 – 27.8	37	30.1 – 33.6
48		142	240	32.4	27.9 – 29.5	39	33.7 – 35.5
49		143	241	34.4	29.6 – 31.3	41	35.6 – 37.3
50		144	242	36.7	31.4 – 33.4	44	37.4 – 40
51		145	243	39.3	33.5 – 35.7	47	40.1 – 42.7
52		146	244	43.3	35.8 – 39.4	51	42.8 – 46.4
53		147	245	45.8	39.5 – 41.6	55.6	46.5 – 50.5
54		148	246	50	41.7 – 45.5	60	50.6 – 54.5
55			247	55	45.6 – 50	66	54.6 – 60
56			248	61	50.1 – 55.5	73.5	60.1 – 66.8
57			249	69	55.6 – 62.7	83	66.9 – 75.5
58			250	79	62.8 – 71.8	94	75.6 – 85.5
59			251	92	71.9 – 83.6	110	85.6 –100
60			252	110	83.7 –100	132	101 –120

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