INSTRUCTIONS

CR2820-1099

A-C MOTOR-OPERATED DEFINITE-TIME RELAY

GENERAL ELECTRIC

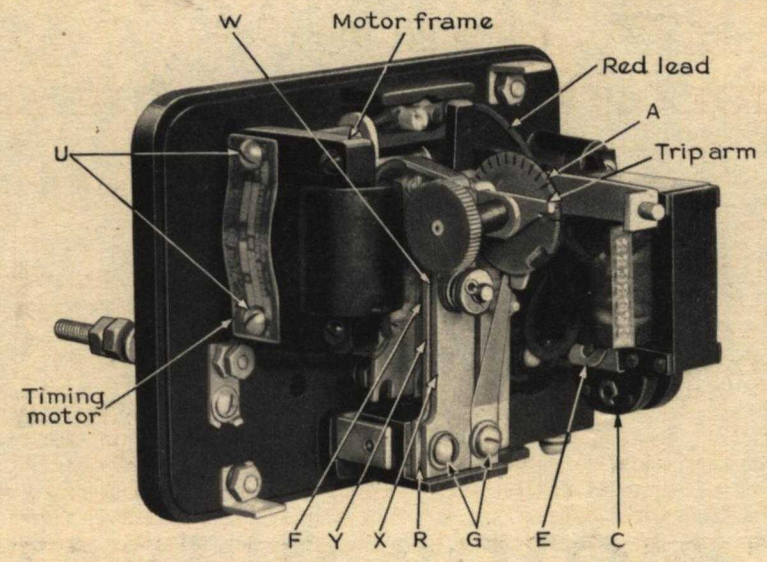

Fig. 1. CR2820-1099 Relay with Cover Removed

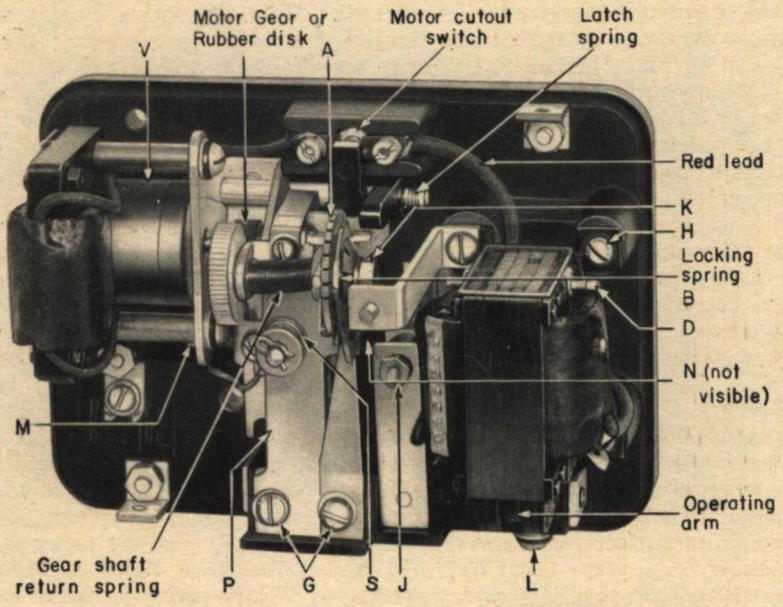

Fig. 2. Another View of Relay Shown in Fig. 1

CR2820-1099
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Operation

The CR2820-1099 time-delay relay is driven by a synchronous motor suitable for use on alternating current only. When the relay is energized, the solenoid engages the motor with the contact-operating mechanism; a tap on the solenoid provides the correct voltage for the motor. After the predetermined time interval has elapsed, the normally open contact (TC) closes, the normally closed contact (TO) opens (See Fig. 3 and 4), and the motor cutout switch (TO) disconnects the motor. The contacts remain in the timed-out position until the relay is de-energized, at which time the solenoid drops out and the contacts are reset instantly to their original position.

An interlock contact (J), Fig. 2, is provided to establish a holding circuit when the relay is energized from a momentary-contact push button as shown in Fig. 3. This contact is normally open, and closes when the solenoid is energized.

The time setting may be adjusted by releasing the locking spring (B) and turning the calibrating dial (A) until the locking spring is dropped into the slot marked with the desired time. The dial is calibrated either in seconds or in minutes, depending on the maximum time obtainable.

Certain relays (such as the CR2820-1099-P, -Q, -R, and -S) have a metal driving gear on the motor shaft, while others (including the CR2820-1099-AB, -AC, -AD, -AE, -AH, -AJ, and -AP) have a rubber disk on the motor shaft which drives by friction the metal gear on the calibrating unit assembly.

Replacing Solenoid or Coil

The solenoid consists of a frame, a plunger, a coil and two springs.

First, it is necessary to remove the four screws (H) and remove the solenoid and plunger from the base. This frees the plunger from the operating arm and the plunger (C) may then be removed. Then take out cotter pin (D) and springs (E). The coil may then be removed.

Before reassembling the solenoid the sealing surfaces should be cleaned (that is, the upper end of the plunger and the surface of the frame against which the plunger seats). The color-coded coil leads should be connected as shown in Fig. 4.

Maintenance of Relay

The silver contacts should not require any attention until the silver has worn almost completely away. To replace the interlock contacts remove screw (J). The movable contact and spring may then be removed and the stationary contact may be removed by unscrewing from the front of the base.

To replace the main contacts, first remove screws (G) and the calibrating unit assembly. The movable contacts may then be taken off by removing screw (F). To remove the stationary contacts first take off nut (M) and remove the complete movable contact assembly. The stationary contacts may then be unscrewed from their studs. On relays having a metal gear on the motor shaft, before tightening screw (M), the contact arm resetting spring must be wound up by inserting a screwdriver in the slotted end of shaft (N) and giving it three turns counter-clockwise. With the spring held in this position, tighten nut (M). In replacing the calibrating unit assembly on the relays having a rubber driving disk on the motor shaft, see that the pivoting bushings are replaced with screws (G) and that washers (R) are inserted between the two brackets of the calibrating unit assembly.

To replace the gear shaft return spring, remove the calibrating unit assembly as described in the preceding paragraph. Then remove nut (K), take off the calibrating disk, and pull out the gear shaft. Insert one end of the new spring through the hole provided in the calibrating-unit bracket on the gear side. Insert the gear shaft through the spring and slip the loose end of the spring through the hole in the trip arm. Push the gear shaft through the bearing and trip arm and assemble the calibrating disk and nut (K). Bend over at right angles the end of the spring projecting through the calibrating unit bracket. Pull out the other end of spring 1½ inches, bend at right angle, and cut off excess wire. Care must be taken in assembling the calibrating disk back on the shaft to have the forked portion over the projection on the bracket.

In replacing the latch spring, insert one end of the spring through the hole in the latch arm, tighten the spring by giving it ½-turn clockwise, and reset the other end in the slot provided in

the end of the shaft. Pinch the slotted end of the shaft together to clamp the end of the spring in place.

For relays having the rubber disk on the motor shaft, the rubber disk should be replaced if it has worn so the gap between brackets (X) and (Y) at point (W) is reduced to $\frac{1}{32}$ in.

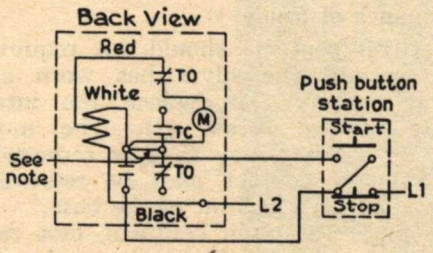

Fig. 3. Connections with Momentary-contact Push-button Station

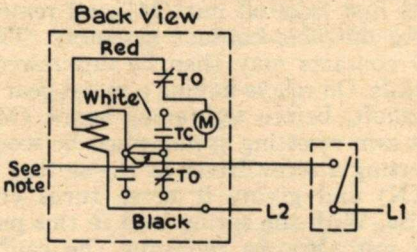

Fig. 4. Connections with Maintaining-contact Master Switch

NOTE: If the relay studs in Fig. 3 and 4 are connected by a punching, as indicated, the punching should be removed unless the wiring diagram shows these studs connected together.

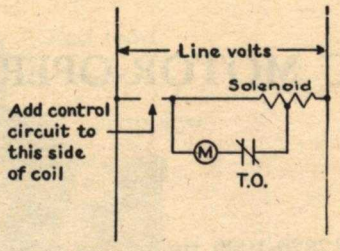

Fig. 5. Elementary Connections

Renewal Parts

Renewal parts should be ordered from the nearest Sales Office of the General Electric Company, Cat. No. as listed below:

	Cat. No.
Movable contact for interlock	3805658G8
Stationary contacts for interlock, for normally open and for normally closed contacts	3805657G1
Movable contact, normally open or normally closed	4901681G1
Torsion spring for latch arm	2413952
Compression spring for motor cut out switch contact	2412941
Spring for interlock contact	2411917
Gear shaft return spring	2413999
Torsion resetting spring for contact arm (omit for relays having rubber disk drive)	2414157
Spring (S, Fig. 2). Used only for relays having rubber disk drive	235182
Rubber disk, $\frac{15}{32}$ in. diam for 2–20 and 4–40 second relays (if used)	5181591
Rubber disk, $\frac{33}{64}$ in. diam for other relays (if used)	5352523