TYPES KU-11 AND KU-12 DEFINITE TIME RELAYS

INSTRUCTIONS

The KU-11 and KU-12 definite time relay is used to give time-delayed operation of contactors or other similar devices. The relay is suitable for use on alternating current only, since the timing motor is a small self-excited synchronous motor. The relay is operated by a solenoid. When the solenoid is energized, the correct voltage is supplied to the timing motor from a tap on the solenoid coil. The timing motor delays the operation of the main contacts for a definite interval. The time setting is obtained by turning the calibrating disc (A), Fig. 2, so that the pointer stands at the time interval required. The calibrating disc is held in position by the locking spring (B). The disc is calibrated in seconds.

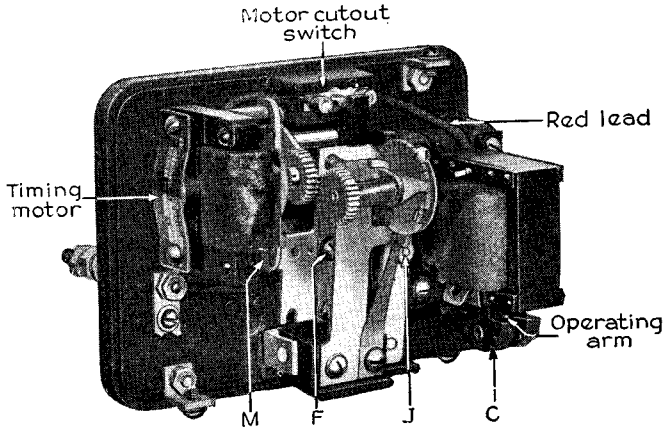


FIG. 1—ANOTHER VIEW OF RELAY SHOWN IN FIG. 2

Disassembling and Assembling the Solenoid

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

First, it is necessary to move 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), Fig. 1, may then be removed. Then take out cotter pin (D) and spring (E). The coil may then be removed.

To assemble, put the coil into the frame, insert the two springs from the bottom of the solenoid and replace the cotter pin. Then insert the plunger and assemble the solenoid back in place on the base with the operating arm in the correct position with respect to the plunger. Care should be taken in connecting the coil leads to make sure that the red lead is connected to the motor cutout switch.

Care of Solenoid

The noise level on a-c. solenoids can in many cases be improved by a periodic cleaning of the sealing surfaces (that is, the surface of the end of the plunger and the surface of the seat against which the plunger comes in contact).

Care of Relay

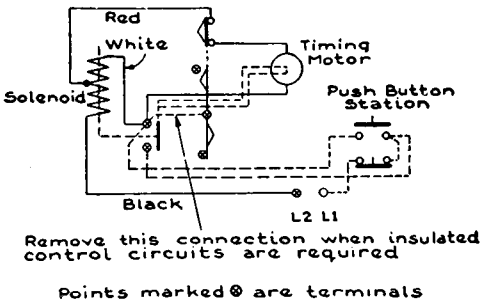
The silver contacts should require little attention, but must be replaced before they are completely worn down to their supports. To remove the interlock movable contacts take out screw (J), **Fig. 1.** Contacts and contact spring may then be replaced. To replace normally closed movable contacts remove screw (F). The stationary contacts are replaced by unscrewing from the front of the base.

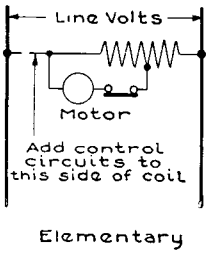
The latch spring is replaced by inserting one end of the spring through the hole in the latch arm, tightening the spring by giving it ½ turn clockwise, and inserting the other end in the slot provided in the end of the shaft. The slotted end of the shaft should then be pinched together, clamping the end of the spring.

To replace the gear-shaft-return spring it is more convenient to remove the calibrating unit and bracket first. This is done by removing screws (G). Take off the bearing nut (K), remove the calibrating disc (A), and pull out the gear and shaft. The spring may then be replaced in the following manner: Insert one end through the hole provided in the calibrating-unit bracket on the gear side. Insert the gear shaft through the spring. Tilt the shaft upward so that the loose end of the spring can be wound up 1½ turns clockwise. Before inserting the gear shaft through the opposite bearing the loose end of the spring must be attached to the calibrating disc by means of the hole provided in the trip arm. The gear shaft should then be pushed all the way through and the nut (K) tightened.

Care must be taken in assembling the calibrating disc back on the shaft to have the forked portion over the projection on the bracket.

To replace the contact operating spring it is more convenient to remove first the calibrating-unit bracket, as was described above. Then take off nut (M) and remove movable contact assembly complete. Pinch the slotted end of the shaft (N) together and slip out of the bracket. The spring may then be replaced, hooking one end over the bracket and the other into the slot at the end of the shaft. Replace the washer and spread the slotted end of the shaft to hold it in place. Then put the contact assembly back into place and replace nut (M). Before tightening nut (M) the spring should be wound up by turning clockwise three turns. This may be done by inserting a screwdriver into the slotted end of the shaft. Nut (M) should then be tightened.





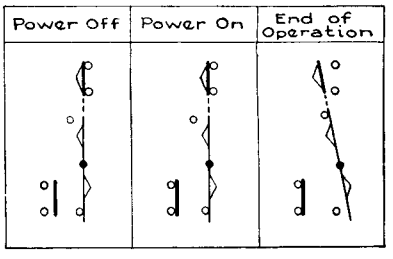


FIG. 3—INTERNAL CONNECTIONS OF RELAY.

*To be filed as an Instruction Leaflet and as Renewal Parts Data; for Renewal Parts see reverse side of this sheet.

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RENEWAL PARTS DATA

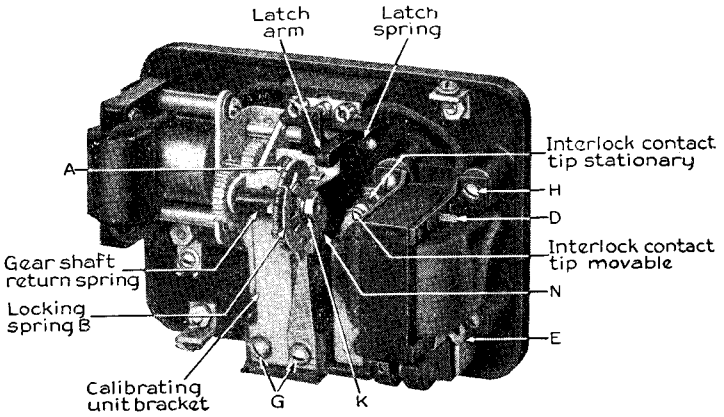

FIG. 2—RELAY WITH COVER REMOVED

RECOMMENDED STOCK OF RENEWAL PARTS

For Relays in use up to and including..... Name of Part	No. Per Relay	1 Recommended For Stock	5 Recommended For Stock	Catalog No. of Part
Interlock Contact Tip—Stationary.....	1	1	2	3805657-G-1
Interlock Contact Tip—Movable.....	1	1	2	3805658-G-1
§Contact Tip—Movable—Normally Closed.	1	1	2	4901681-G-1
§Contact Operating Spring	1	0	1	2414157
Latch Spring.....	1	0	1	2413952
Locking Spring.....	1	0	1	2411917
Gear Shaft Return Spring.....	1	0	1	2413999
§‡Solenoid Coil.....	1	1	1	‡
§‡Motor Complete	1	1	1	‡

§Not Illustrated.
‡When ordering specify identification number given on part or give Complete Nameplate reading for relay. See table for commonly used Motors and Solenoid Coils.

TABLE OF RELAYS, MOTORS AND SOLENOID COILS

Relay Complete		Volts	Cycles	Motor Complete	Solenoid Coil
Type KU-11 Style No.	Type KU-12 Style No.			Style No.	Style No.
875498	875503	110	60	844196	844189
844212	844213	220	60	844197	844190
844214	844215	440	60	844198	844191
845387	845388	550	60	844199	844192
875497	875502	110	25	844200	844193
875499	875504	220	25	844201	844194
875500	875505	440	25	844202	844195
875501	875506	550	25	.....	.....
844187	844188	...	..	Without Motor or Solenoid Coil.	

This is a list of the Renewal Parts and the quantities of each that we recommend should be stocked by the user of this apparatus to minimize service interruptions caused by breakdowns. The parts recommended are those most subject to wear in normal operation, or to damage or breakage due to possible abnormal conditions.

This list of Renewal Parts is given only as a guide. When continuous operation is a primary consideration, additional insurance against shutdowns is desirable. Under such conditions more renewal parts stock should be carried, considering the severity of service and the time required to secure replacements.

Ordering Instructions

Name the part, using the name shown in the illustration. Give the complete name plate reading. State whether shipment is desired by express, freight or by parcel post. Send all orders or correspondence to nearest Sales Office of the company. Small orders should be combined so as to amount to a value of at least $1.00 net. Where the total of the sale is less than this, the material will be invoiced at $1.00.

*To be filed as Renewal Parts Data and as an Instruction Leaflet; for instructions, see reverse side of this sheet.

Westinghouse Electric & Manufacturing Company
East Pittsburgh, Pa.

Printed in U. S. A.

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