

## MOTOR APPARATUS

Class RP 24385

## TYPE KP TIME ELEMENT ACCELERATING RELAYS

## Instructions

## APPLICATION

The Type KP Relay is used on the Type "AF" Auto Starters as a definite time limit accelerating relay to limit the time during which the starter will remain in the start position.

The relay is intended for intermittent service and should not be connected in such a way that the coil will be energized continuously. The construction is very rugged and the relay should require no attention except occasional inspection of the contacts and the oil level.

A modification of the relay shown in Fig. 1, which uses "make" contacts instead of "break" contacts is supplied for some uses. All instructions apply for the modified relay including the remarks in regard to intermittency of service.

## CONSTRUCTION

The relay is a simple solenoid type relay with a vertical plunger which is retarded by means of an oil dashpot and which opens a single circuit in the final operating position. The stationary part consists of a cast iron frame which acts as the magnetic return circuit and carries a shunt coil and tubular guide for the moving part. An oil dashpot is bolted to the bottom of the frame and makes an oil tight joint with it. The moving part consists of an iron plunger which works inside the coil and extends downward into the dashpot where it operates a piston. The piston is immersed in oil and the speed of its upward travel is limited by the amount of oil which can leak through one or two small leakage ports. When the plunger has been pulled up almost to the end of its travel, by-passes in the dashpot walls are opened and relieve the suction of the piston. The piston then completes its stroke rapidly and strikes a stem which extends from the top of the relay into the plunger space, and the stem transmits the motion of the plunger to the contact arm. The contacts are thus opened very rapidly. The contacts are of the bridging type and do not require any shunt. There are two stationary contacts of graphalloy and the moving contact is a simple piece of sheet copper which is held against them by a spring on the contact lever. The calibrating washer carried in the piston

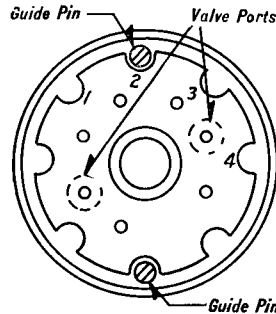


Fig. 2—Plan View of Calibrating Washer in Piston

acts also as a check valve to allow rapid return to the off piston.

## INSTALLATION

Before putting relay in operation for the first time, the dashpot should be removed to receive the special dashpot oil supplied with the relay. To avoid air pockets remove the piston and pour in one can of dashpot oil Style No. 460281. Lower piston into dashpot slowly to avoid spilling. The dashpot will be filled to a height about  $\frac{1}{8}$  inch above the piston cover, which is the correct level. Try the suction of the piston by pulling on the plunger to be sure that a reasonably large retarding force is exerted. If the suction seems too weak or unreliable, inspect the condition of the check valve surface to see whether the washer is being held away from its seat by particles of dirt. Great care should be taken to keep the interior of the dashpot perfectly clean as dirt will spoil the valve action and will change the time settings.

Replace dashpot, being sure that the gasket is in place and that the joint is clean. Tighten the screws as much as possible with a wrench or a large screw driver and no trouble will be experienced on account of oil leakage. A filling plug is provided in the dashpot so that sufficient oil to compensate for evaporation may be added without disturbing the relay adjustments.

## OPERATION

The relays are adjusted at the factory to give a time delay which is correct for the apparatus with which the relay is to be used. If it is desired to change the time adjustment it can be done as follows: Remove the piston from the dashpot and release piston cover by removing hairpin cotter. The calibrating washer in the piston cup may be lifted out of engagement with the guide pins and turned to a new position. The relative times to be expected for different positions may be determined by reference to the detail view of the piston. The relay may be used to obtain definite time delays of 4 to 15 seconds when the coil is used at its rated voltage and frequency.

The oil used with these relays is especially adapted for this purpose and will give satisfactory operation at all ordinary temperatures. If the relay is subjected to an average temperature which is higher or lower than the temperature at which it was first adjusted, it may be necessary to recalibrate the relay.

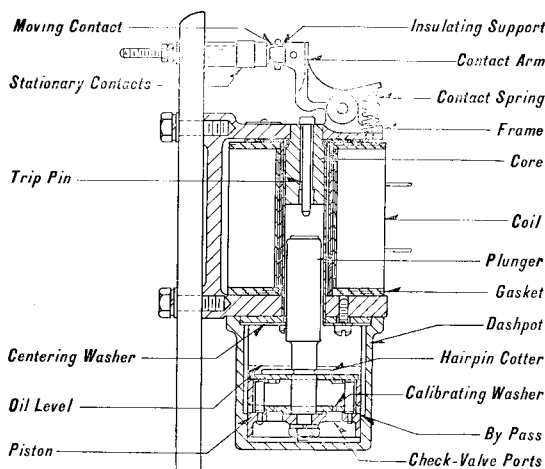


Fig. 1—Sectional View of Relay and Parts

## Renewal Parts

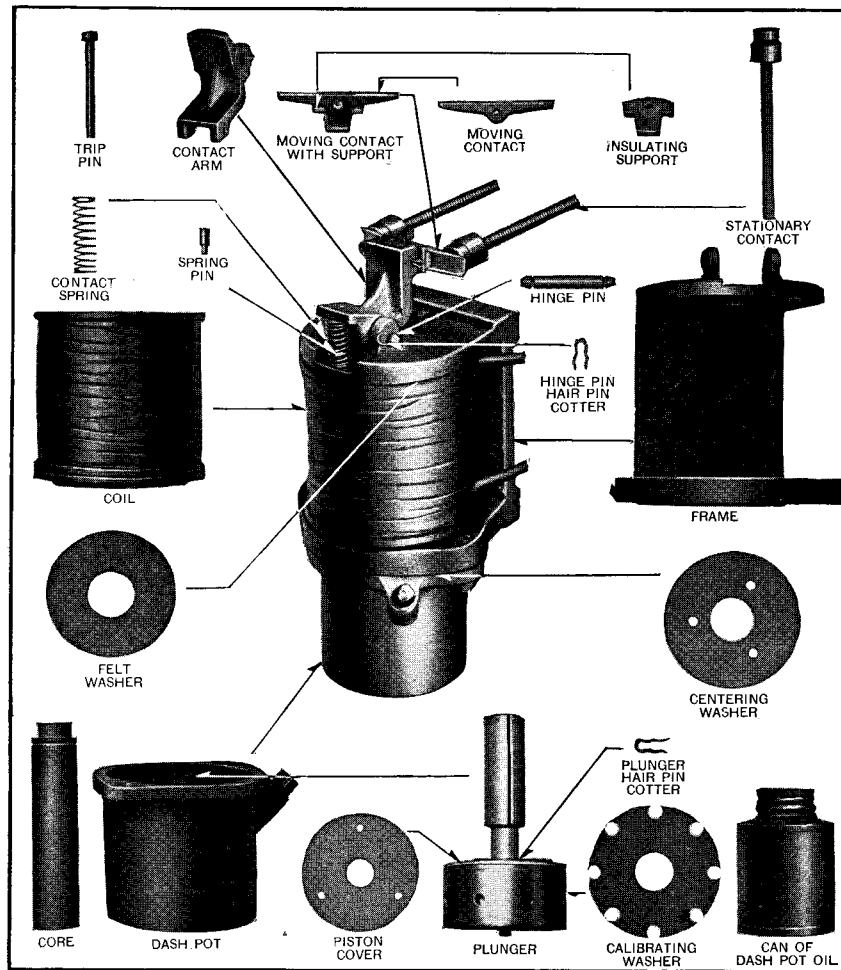


Fig. 3—Renewal Parts for Type KP Relays

### RECOMMENDED STOCK OF RENEWAL PARTS

For relays in use up to and including .....	2	5	15
	QUANTITY RECOMMENDED		
NAME OF PART			
Moving contact with support...	0	1	2
Moving contact .....	1	2	4
Insulating support .....	1	1	2
Stationary contact .....	1	2	4
Contact spring .....	1	1	2
Coil .....	0	1	2
Trip pin .....	0	1	1
Plunger .....	0	1	1
Piston cover .....	0	1	2
Calibrating washer .....	0	1	2
Hair pin cotter, for hinge pin..	4	8	16
Hair pin cotter, for plunger....	2	4	8
Can of dash pot oil .....	1	1	2

### ORDERING INSTRUCTIONS

Quick shipments from district office stock and prompt replies to inquiries without the necessity of referring to the works for information, are possible only when complete identifying information for the parts are given. Careful observance

\*To be filed as an Instruction Leaflet and as Renewal Parts Data.



Fig. 4—Name Plate

of the following points on inquiries or orders is essential for correct shipments and prompt service.

1. Name the part, using the name shown on the illustration, figure 3, and state the quantity desired.

2. Give the relay name plate reading. See illustration, figure 4.

3. State whether shipment is to be made by freight, express (name the route) or by parcel post. If by parcel post, shall we insure the shipment.

4. Send all orders or correspondence to the nearest district office of the Company.

5. Small orders should be combined, so as to amount to a value of at least one dollar, as order handling and shipping expense prevent us from billing a smaller amount.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

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