TYPE TF THERMAL ACCELERATING RELAY

INSTRUCTIONS

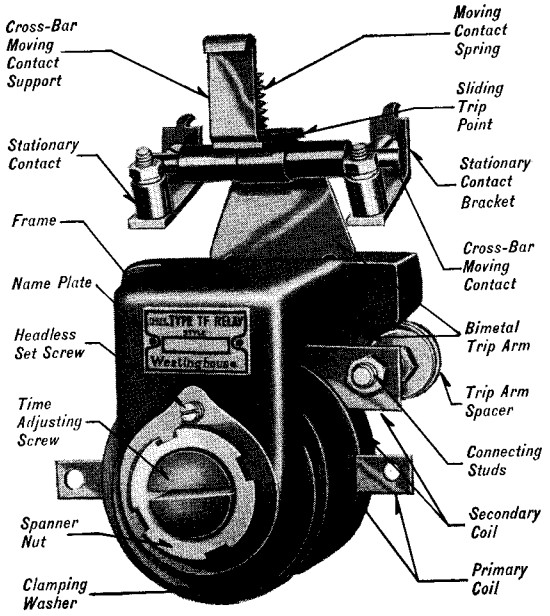

FIG. 1—RELAY PARTS

Application

This relay is used to give time delay between points of acceleration in the starting of A-C. motors. It is interlocked with a contactor so that the contactor can reset the relay. The relay is for use on A-C. circuits where operations are not too frequent. The relay may be adjusted for time delays of from 1 to 12 seconds. The frequency of operation depends on the time setting of the relay as follows:

One	12 second delay	every 4 minutes
One	6 second delay	every 2 minutes
One	3 second delay	every 1 minute
One	1 second delay	every 20 seconds.

Construction

The relay consists of a bi-metal trip arm, primary and secondary coils, cast iron frame and a time adjusting screw and spanner nut. The bi-metal trip arm is connected through studs to the secondary coil, so as to make an electric circuit through the bi-metal and the secondary coil. A cross-bar moving contact support is hinged at the center pin of the contactor. A spring tends to rotate the cross-bar moving contact and support about this center, but it is constrained from rotating by the bi-metal trip arm. There are two stationary contacts, one at each end of the crossbar moving contact. The circuit is made through these contacts when they are bridged by the crossbar moving contact, when it is released by the bi-metal trip arm. A different type of cross-bar moving contact, support spring, etc., are required for each of the contactors, with which the relay is used.

Operation

The primary coil of the relay is connected across the line through the starting switch. A voltage is induced in the secondary winding and a current flows through the bi-metal trip arm which produces heating and causes the arm to bend, thus allowing the cross bar moving contact support to fall, so that the cross-bar moving contact will bridge the contacts. This operation closes the circuit of a contactor coil which cuts out a step of resistance in the motor circuit and opens the circuit to the relay primary coil. In opening, the contactor resets the relay by raising the moving contact support sufficiently to allow the bi-metal trip arm to assume its original position preparatory for a new start. The time-adjusting screw is used to change the starting time interval. The time is adjustable for a ratio of 3 to 1. To lengthen the time, turn the screw out of the frame and vice versa. For each voltage there is a primary coil to be used for time intervals of from 1 to 3 seconds, and another coil for intervals of from 4 to 12 seconds.

When the contactor is opened, the cross-bar moving contact support must be raised clear of the bi-metal arm, so as to allow the latter to assume a straight position. When the contactor closes, the bi-metal arm should strike the cross-bar moving contact support approximately 7/64" from the end of the latter. This is the distance that the trip arm must move to trip the contacts.

In case the relay is operated at a greater number of operations per minute than that listed for the corresponding time delay, the operating time will become slightly shorter than the initial time interval.

It is important that the relay coil circuit be opened as soon as acceleration is completed.

If the circuit connections are removed for any reasons, the circuit should be checked when rewiring to make sure that the coil circuit of the relay is opened after the relay operates. This is necessary to prevent burn out since the relay is designed for intermittent duty only.

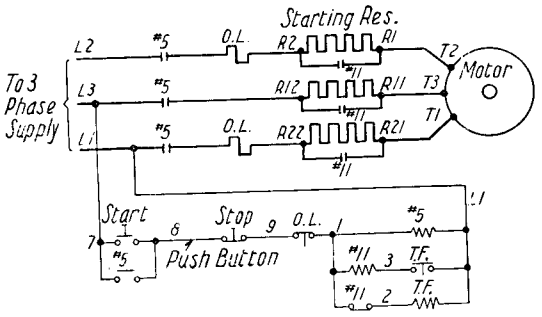

FIG. 2—DIAGRAM OF CONNECTIONS

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

TYPE TF THERMAL ACCELERATING RELAY
RENEWAL PARTS DATA

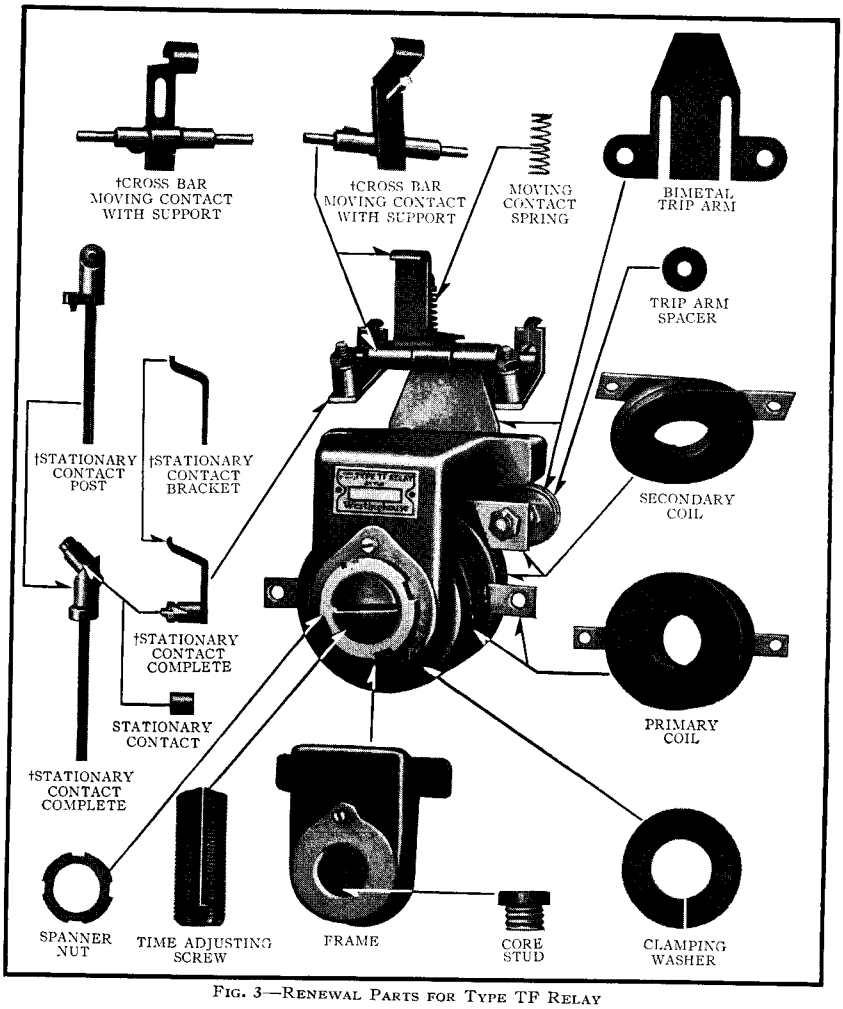

FIG. 3—RENEWAL PARTS FOR TYPE TF RELAY

RECOMMENDED STOCK OF RENEWAL PARTS

Style Number of Relay				511528 511530-D	511529 511531-D
Relay in use up to and Including		1	5		
Name of Part		Recommended For Stock		Style Number of Part	
Cross-bar Moving Contact with Support	1	0	1	512401	512405
Moving Contact Spring	1	0	1	480019	661098
Stationary Contact Complete	2	0	1	512403	.....
Stationary Contact	2	2	4	467960	.....
Stationary Contact Bracket	2	0	0	526781	.....
Stationary Contact Stud	2	0	0	361706	.....
Stationary Contact Complete—Left Hand	1	0	1	.....	509269
Stationary Contact Complete—Right Hand	1	0	1	.....	509270
Stationary Contact Pot—Left Hand	1	0	0	.....	526785
Stationary Contact Post—Right Hand	1	0	0	.....	526786
Stationary Contact	2	2	4	.....	467960
Time Adjusting Screw	1	0	0	526789	526789
Core Stud	1	0	0	526788	526788
Bi-metal Trip Arm	1	0	1	512402	512402
Trip Arm Spacer	2	0	0	109265	109265
Clamping Washer	1	0	0	526790	526790
Spanner Nut	1	0	0	203401	203401
§Headless Set Screw	1	0	0	60944	60944
Frame	1	0	0	526787	526787
§Stud for Bi-metal—Short	1	0	0	361713	361713
§Stud for Bi-metal—Long	1	0	0	386253	386253
Secondary Coil	1	1	1	526791	526791
Primary Coil	1	1	1	‡	‡

Parts indented are included in the Part under which they are indented.
§Not listed on Illustration.
‡When ordering, specify Identification stamped on Coil. See table for connecting used coils.

ORDERING INSTRUCTIONS

Name the part and give its style number. 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.

PRIMARY COILS

Style No.	Volts	Frequency
504753**	110	25-50-60
504755**	220	25-50-60
504757**	440	25-50-60
504759**	550	25-50-60
504752△	110	25-50-60
504754△	220	25-50-60
504756△	440	25-50-60
504758△	550	25-50-60

**For time delay 4 to 12 seconds.
△For time delay 1 to 3 seconds.

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