INSTRUCTIONS

VOLTS PER HERTZ PANEL 3S7932MA26[illegible]

INTRODUCTION

The Volts Per Hertz Panel 3S7932MA265 is an assembly of protective devices designed for the maximum protection of the generator step-up transformer, the generator, and the auxiliary transformers and motors, from excessive volts per hertz.

1. The panel will detect abnormal high volts per hertz with the use of a static STV relay.

2. A contact will be available to initiate an alarm and start two timers to provide preset delays in (a) starting of the manual runback circuit and (b) eventual trip of the excitation breaker, providing the generator line breaker is open.

3. The excitation control will be tripped to manual when the manual control has run back to its prescribed setting.

RECEIVING AND HANDLING

Immediately upon receipt, the equipment should be carefully unpacked to avoid damage. As soon as the equipment is unpacked, it should be examined for any damage that may have been sustained in transit. If injury or rough handling is evident, a damage claim should be filed immediately with the transportation company and the nearest General Electric Sales Office should be notified promptly.

SETTINGS AND ADJUSTMENTS

The type STV relay is a single phase static volts per hertz relay. It is adjustable from .9 to 1.25% of a nominal 120 volts, 60 hertz potential source, or 1.8 to 2.5 volts per hertz. Its settings will be determined by the voltages measured at the particular station involved, but would be set to pick up at approximately 10% above the normal high potential voltage expected. The scale on the STV relay has a range from 1.8 to 2.5, and should be calibrated to pick up at 132 volts, with the dial set at 2.2. Adjust the rheostat R14 which is in the upper right hand corner of the relay, to make the correction necessary.

The relay will drop out at 96% of the pick[illegible]. The timer in the STV relay is adjustable f[illegible]age. 15 seconds, and would normally be set at 10[illegible] before initiating the manual runback function.

A second timer (TH) is recommended to be set for 60 seconds and will trip either the exciter field or generator field breaker. If the high volts per hertz returns to a normal level, the breakers will not trip.

A target is provided with the STV relay. The circuit requires a nominal current of 6/10 amperes for proper operation.

The Panel must be ordered for use with 125 or 250 volt DC control voltage.

INSTALLATION

The panel should be connected directly to the generator potential transformers, so that it will be energized at any time the unit is operating.

The panel will be furnished on a 12" high by 36" wide base and it could be applied to most existing excitation controls. The normal assembly would be such that all of the wiring will be done on the back, with the STV relay being serviced from the front. The panel can be specified to have all the wiring and servicing on the front.

The panel will be interconnected with its associated circuits when it is furnished with new excitation controls.

A normally closed contact from the generator line breaker will be required for connection with this panel.

A position contact from the manual control must be available that is closed at the no load position, and is open above the no load position.

PRINCIPLES OF OPERATION

1. The static VC relay, as shown in the elementary drawing, will detect excessive volts per hertz and its

contacts will close, start a static timer TU, and pick up auxiliary

of VCX will pick up relay VCA that

2. The co ailable to sound an alarm. The timing has a cont start and immediately close the circuit relay T tor in the target circuit.

to the ch the generator tied to the line, there will be ther relaying except that relay 70LX will be ed up with the manual control set at the no load sition, or below.

4. With the unit removed from the system, the contacts of VCX and 70LX will prevent the regulator from being used when excessive volt per hertz is present. Relay 70L will start the manual run back to no load and after closing the timing contacts TU will initiate the target indicating a volt per hertz error has occurred. The target must be manually reset. A contact from relay 41T will trip the field breaker after a specified time delay of contacts from relay TH.

FIELD TESTS

Periodic testing of the STV relay and timing functions should be performed as follows:

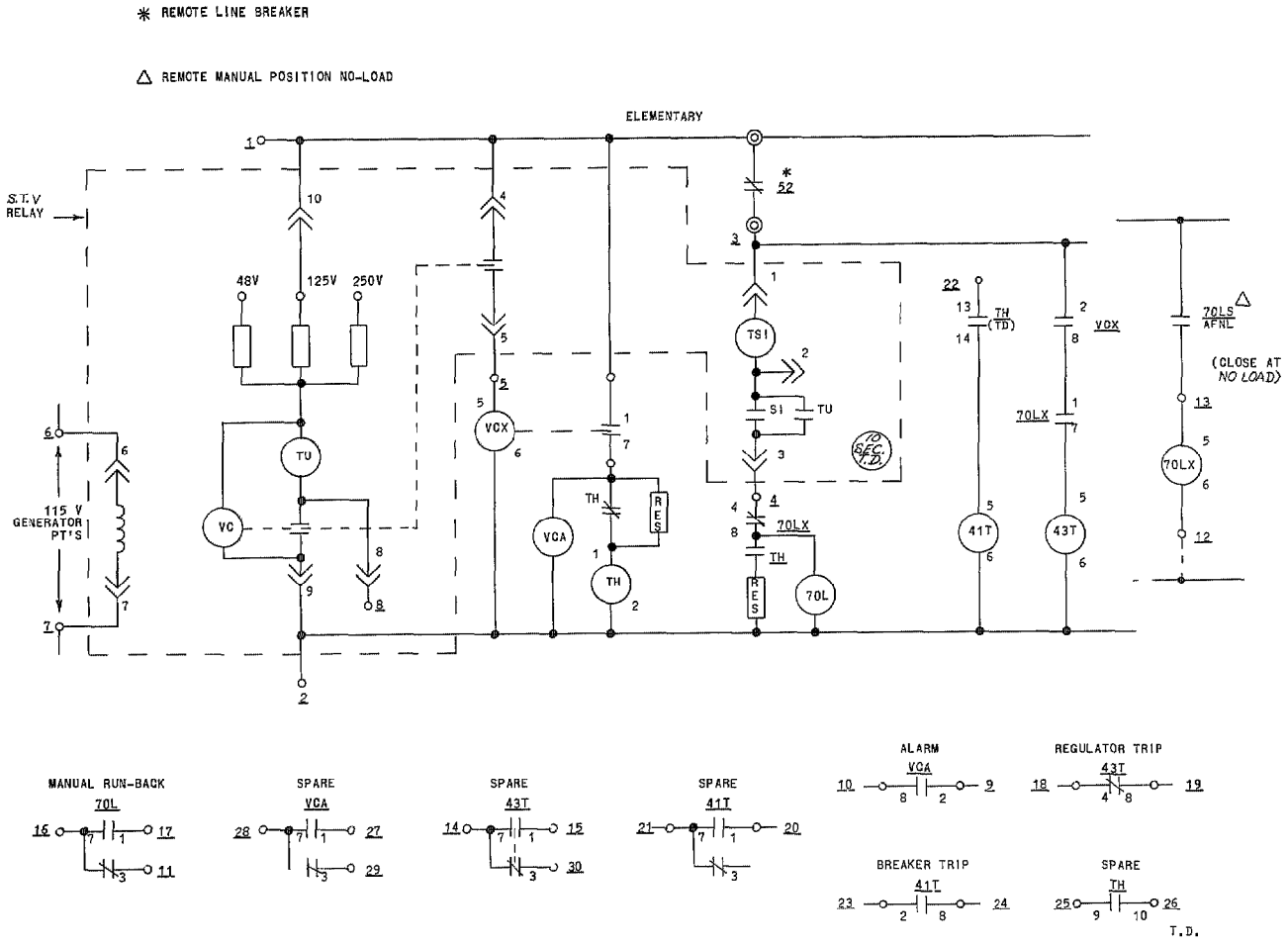
1. Connect a variable voltage to the sensing terminals of the STV relay.

2. With the range dial set at the required protection level, the relay will pick up as shown in Graph No. 1.

3. The calibration adjustment (R-14) may be used to bring the range dial into calibration.

4. A quick check may be used by turning the range dial to a lower setting and recording the voltage and dial setting at which the relay picks up. The pick up should correspond to the plot on Graph No. 1.

5. Care must be used during field test not to trip or start the run back circuits. The target will not indicate unless the circuit is complete. The timer will



ELEMENTARY DIAGRAM

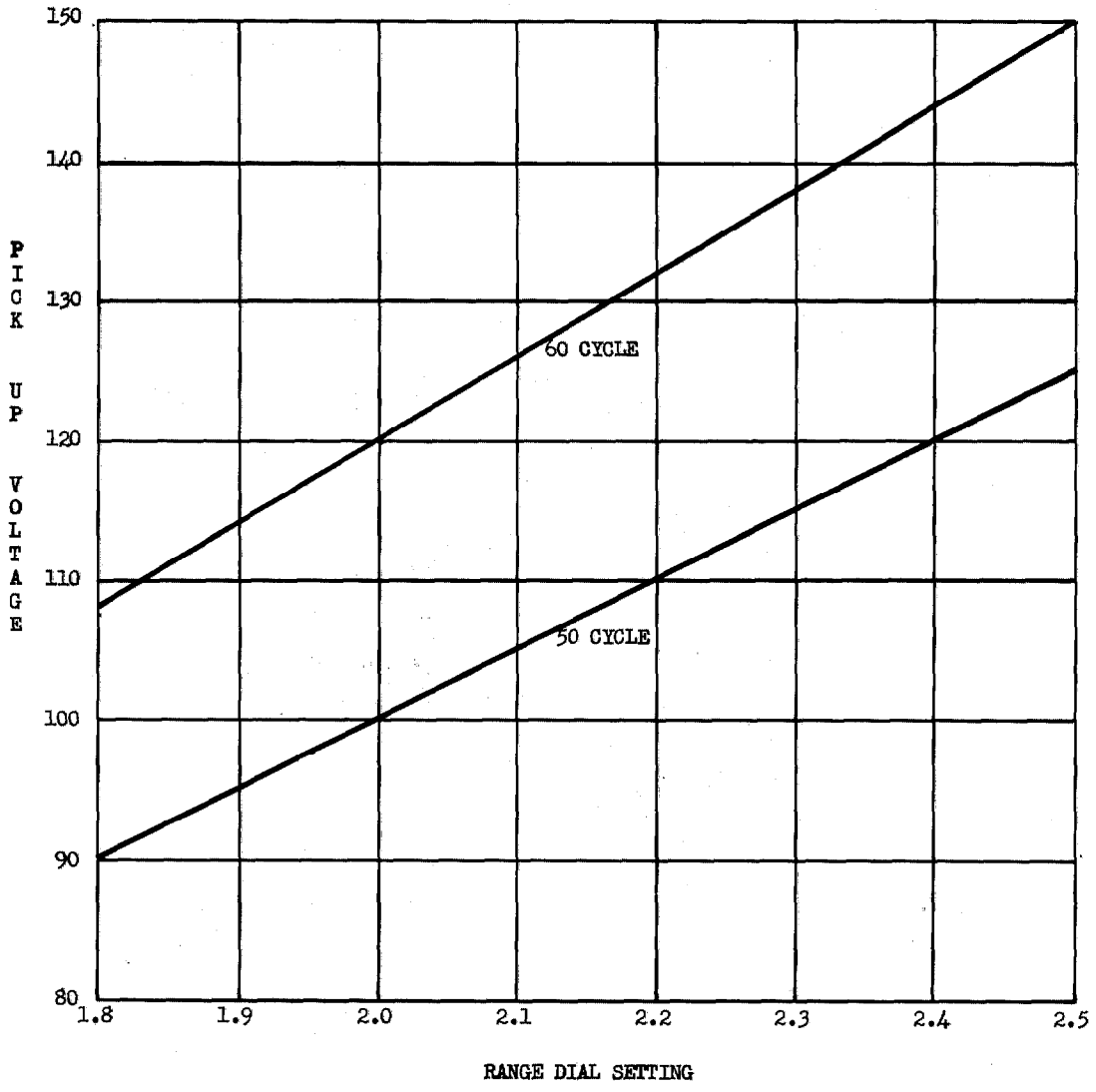
close the circuit to the target, and may be adjusted with (R2) for calibration. (Reference Dial Position - vs - Calibration on the relay.)

6. Nominal timing of relay TH would be set for 60 seconds, and may be set as indicated on the relay.

RENEWAL PARTS

When ordering renewal parts, address the nearest General Electric Sales Office, specify the quantity required and give the rating and catalog numbers or describe the required parts in detail. In addition, give the 3S number and complete nameplate data.

GRAPH NO. 1



CR5882-34J, -34K, AND -34M TEMPERATURE OVERLOAD RELAYS INDUCTION TYPE WITH AMBIENT-TEMPERATURE COMPENSATION

GENERAL DESCRIPTION

The CR5882-34 relays are so designed that while they protect the motor, they do not cause it to stop because of variations in ambient temperature. Relays that are uncompensated for ambient-temperature changes vary as much as 10 per cent for a 10 C change in ambient temperature, but the CR5882-34 compensated relays have a change in rating of 2 to 3 per cent per 10 C change in ambient temperature.

DESCRIPTION OF OPERATION (SEE FIG. 1)

These relays have a magnetic structure and a coil. The coil is in series with the motor that is being protected. A bimetallic helix, the ends of which are short-circuited, is surrounded by the coil. The helix acts like a short-circuited turn on a transformer. The motor current through the coil causes the helix to heat and deflect in one direction. Simultaneously, a bimetallic compensating strip, which is outside the coil, deflects in the opposite direction. The deflection of this compensating strip counteracts the effect of the ambient temperature, so that the motor is not stopped unnecessarily.

When the helix has deflected sufficiently, a tripping mechanism opens the relay contacts and the motor stops.

The current at which the relay is to trip is predetermined by the selection of the relay coil and by the setting of the relay tripping mechanism.

An inertia latch prevents the mechanism from tripping as a result of mechanical shock.

COIL SELECTION

Careful consideration is given to the characteristics of the motor to be protected when the relay coils are selected at the factory. The following information is given to help in the selection of a new relay coil if it is necessary to change the one in the relay.

Coil Rating for Continuous-rated Motors

The rating (in per cent of full-load motor amperes) of a coil that is suitable to use for a continuous-rated motor is determined by multiplying the service factor and the ambient-temperature correction factor.

Service Factor

The service factor to use is 115.

Ambient-temperature Correction Factor

For a controller rated 40 C or 50 C, an average of 55 C is assumed in calculating the ambient-temperature correction factor. The ambient-temperature correction factor that has been worked out on that basis is 1.03.

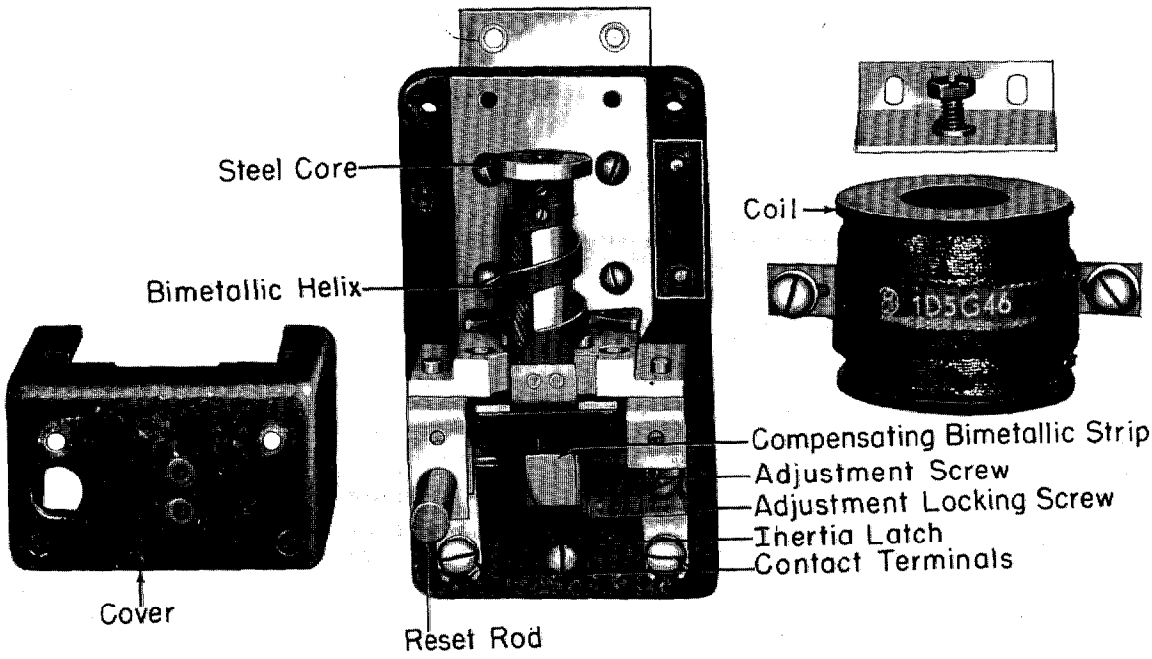


Fig. 1. Exploded view of temperature overload relay

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