

HIGH-LOW VOLTAGE RELAY AUTOMATIC ELECTRIC COMPANY REQUIREMENTS AND ADJUSTING PROCEDURES

1. GENERAL

1.1 This section covers the engineering requirements for the testing and maintenance of the Automatic Electric Company's high-low voltage relay.

1.2 Part 2 of this section gives the requirements for both operating tests and the inspection of the mechanical adjustments which shall be used to determine whether the relay is in the proper condition for delivery to the customer and for service. These are called "*Test Requirements*".

1.3 Part 3 of this section is intended for maintenance purposes only. The "*Test Requirements*" must be met not only at the time of delivery to the customer but at all times when operating in service. This part gives the approved maintenance methods and materials for use in making adjustments to meet the "*Test Requirements*" and will be called "*Adjustments*".

1.4 The following is a list of the tools, gauges and materials specified in part 3 for use in inspecting and adjusting the relay.

Tools, Gauges and Materials

4" Screwdriver

5" Duckbill Pliers

#72 Starrett Thickness Gauge, 26 leaves ranging from 0.0015" to 0.025"

Flat Wrench with 1/4" hex. opening

Offset Screwdriver 7" long, 7/64" offset, with blade 9/32" wide and 0.021" thick

Relay Contact Burnisher

35-C Test Set

Hardwood toothpicks, clean, flat at one end and pointed at the other

2. TEST REQUIREMENTS

2.1 Unless otherwise specified, the A.E.Co.'s High-Low Voltage Relay shall meet the test requirements given on Figure 1.

3. ADJUSTMENTS

3.01 *General*: It is recommended that routine tests and maintenance adjustments be made in the sequence presented in this section to prevent interference of one test or adjustment with another. Remove leads from terminals "1", "3" and "-" before making tests or adjustments and replace them when adjustments are completed.

3.02 *Screws and Nuts*: Any loose screws or nuts, except the two thumb screws used to regulate the spring tension and the two milled nuts used to regulate the armature travel, shall be tightened by turning in a clockwise direction, with a screwdriver or a wrench.

3.03 *Springs*: Contact or armature tension springs which do not meet the requirements shall be flattened with a pair of duck-bill pliers.

3.04 *Alignment*: Springs, contacts and bushings shall be aligned by loosening the two screws by which the spring assembly is fastened to the body of the relay, moving the springs into their proper positions, and again tightening the screws.

3.05 *Cleaning*: Dirty contacts shall be cleaned only when necessary and only in accordance with the following.

3.051 Clean the surfaces and sides of the contact points with a dry toothpick. To do this rub the flat end of a clean toothpick back

and forth several times between the contacts, which should at this time have a slight pressure on the sides of the toothpick, then clean the sides of the contacts with the pointed end.

3.052 Following the use of the dry toothpick, the contacts should be burnished. In burnishing normally open contacts, gently press the contacts together manually to give a slight pressure on the burnisher. In the case of normally closed contacts the tension of the springs themselves will furnish sufficient pressure on the burnisher. Usually, by rubbing the burnisher back and forth between the contacts two or three times the desired result is obtained.

3.053 Pitted contacts should be treated by inserting the burnisher between the contacts and rubbing it back and forth until the pits, if not removed, are appreciably reduced. Abrasives other than the burnisher should never be used.

3.06 Clearance: If the clearance between spring #1 and the bushing attached to spring #3 does not come within the required

limits, spring #1 shall be adjusted with the duck-bill pliers to meet this requirement.

3.07 Contact Separation: If the separation between contacts does not meet the requirements, the stationary contact arm shall be adjusted with the duck-bill pliers to secure the proper clearance.

3.08 Cores: If the coil cores do not meet the requirements, it will be necessary to replace the complete high-low relay.

3.09 Armature: The armature stroke shall be adjusted by turning the milled nut so that the required stroke, measured between the armature and the coil cores, is obtained.

3.10 Electrical Requirements: The electrical requirements shall be met by adjusting the spring tension by means of the thumb screw. The connections given in Figure 2 shall be used for testing the relay. The 35-C test set shall be used to regulate the voltage.

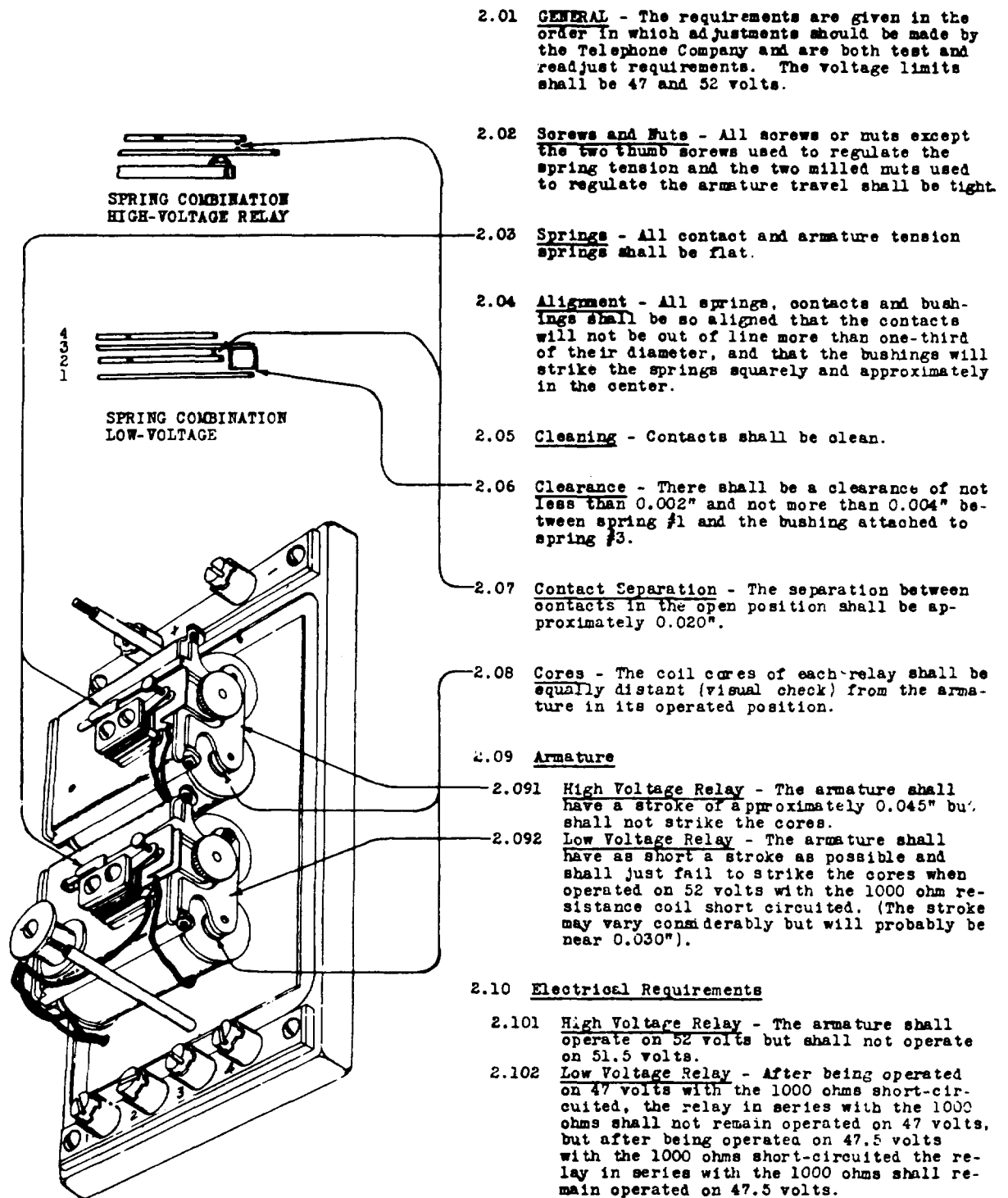


Fig. 1 - Test and Readjust Requirements for the A.E.CO's. High-Low Voltage Relay

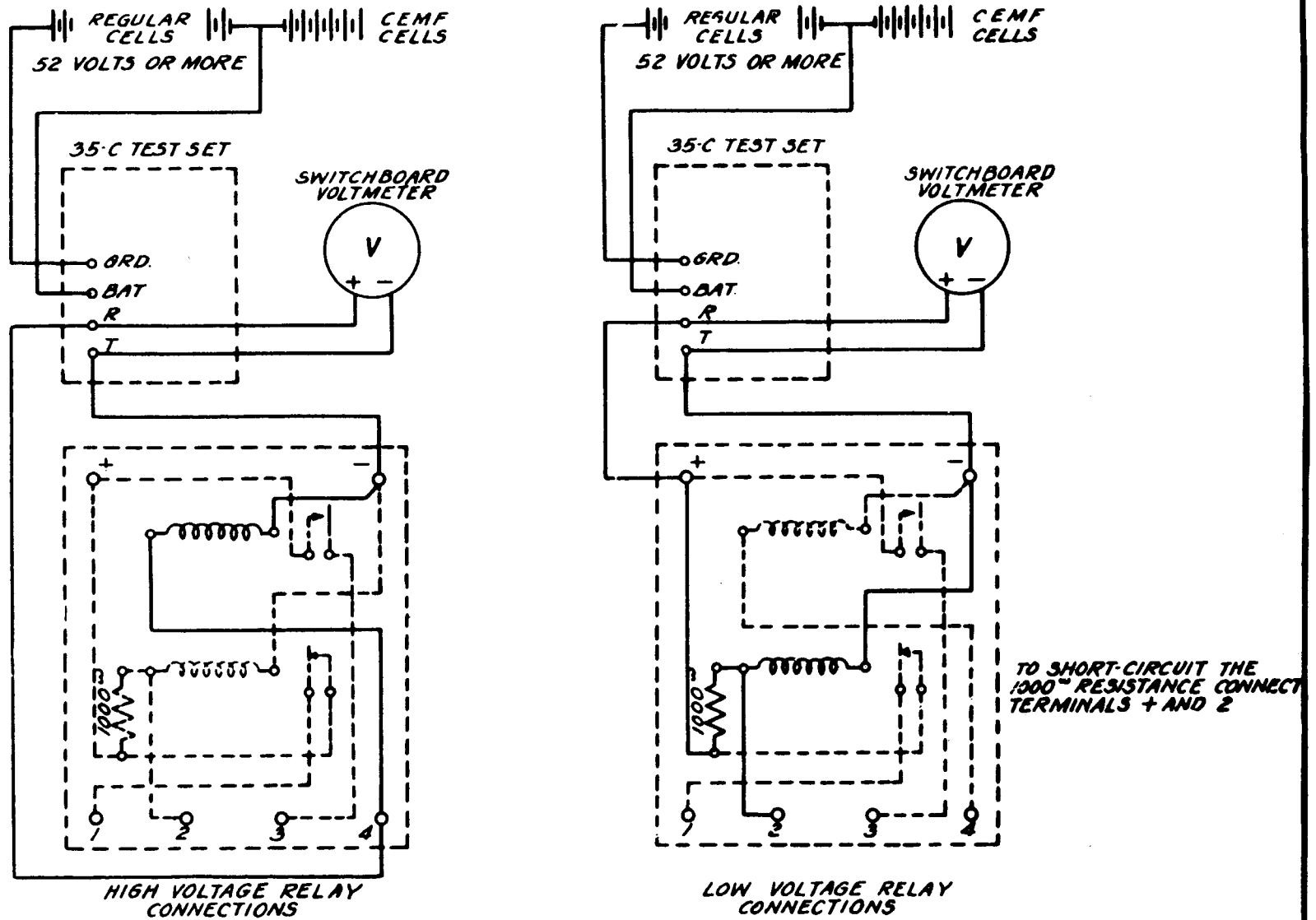


Fig. 2 - A.E.CO's. High-Low Voltage Relay Test Circuits