

## LOCAL TEST CABINET NO. 3

### OPERATING AND TESTING METHODS

#### 1. GENERAL

1.001 This addendum supplements Section 662-202-500, Issue 6.

1.002 This addendum is issued to include information on the following:

- (a) Add information on testing the cable pair supplying power to remote message repeaters.
- (b) Add new requirements for coin collector relays.
- (c) Add Fig. 14.

#### 5. METHODS OF PERFORMING TESTS

The following changes apply to Part 5 of this section:

- (a) 5.50 revised, Table I—added.
- (b) 5.69 through 5.73—added.
- (c) Fig. 14—added.

#### COIN COLLECTOR RELAY TEST

5.50 Request the employee at the station to remove the coin collector housing, trip the coin trigger, and report the type of coin relay. The older type 60-volt relays are two coil relays, while the newer type 50-volt relays have only one coil. The nonoperate and operate values are given in Table I and should be applied as described for the type of relay under test.

#### A. Nonoperate Tests—All Type Relays

- (a) Operate the rheostat key, RH, and adjust the rheostat to include maximum resistance.
- (b) Operate and hold the COIN—key while adjusting the current flow to the nonoperate value. Release and operate the COIN—key several times. The milliammeter should show a

deflection each time the key is operated. No deflection indicates that the coin relay has operated on the previous application of nonoperate current.

(c) Operate and hold the COIN+ key. A milliammeter deflection of the nonoperate value should be obtained. Release and reoperate the COIN+ key several times. The milliammeter should show a deflection each time the key is operated. No deflection indicates that the coin relay has operated on the previous application of nonoperate current.

#### *Operate tests—60-volt relays*

(d) Operate and hold the COIN+ key while adjusting the current flow to the proper operate value taking care that the operate value is not exceeded during adjustment. If the operate value should be exceeded, signal the employee and after requesting him to retrip the coin trigger, repeat the adjustment. On long loops where the operate value cannot be obtained from the test desk, restore the rheostat key and repeat the test. Release and reoperate the COIN+ key. If the relay is properly adjusted, no deflection will be obtained. Signal the employee and ascertain that the relay operated properly. If it did, request employee to trip the coin trigger again.

(e) Operate and hold the COIN— key. The milliammeter should indicate the same current flow as obtained in item (d). Release and reoperate the COIN— key. If the coin relay is properly adjusted, no deflection will be obtained on this test. Signal the employee and ascertain that the relay operated properly.

#### *Operate tests—50-volt relays*

*Note:* The 50-volt coin relay is self-restoring and will result in the station ground being removed after the operate and slow-release holding period of the relay. Due to this feature, it will not be possible to obtain a

◆ TABLE I ◆

OPERATE VALUES OF COIN RELAYS

NUMBER STAMPED ON RELAY	NUMBER OF RELAY COILS	TYPE OF COIN COLLECTOR OR COIN TELEPHONE SET	CURRENT VALUE		REMARKS
			OPERATE	NONOPERATE	
P-10C117 P-10C725	Two	Multi-Slot 155-, 166-, 174-, 176-Type, etc.	60 ma	40 ma	Relay cannot be re-adjusted to perform reliably at lower values established for single-coil relays
P-10E786 P-13E961	One	Multi-Slot 200-, 1200-Type	48 ma	40 ma	Restoral spring diameter approximately 5/32-inch
P-15E687		Single-Slot 1A-, 2A- Type			
P-10E786* P-13E961*		Multi-Slot 200-, 1200-Type	41 ma	30 ma	
1A* 1A (Note)		Single-Slot 1A-, 2A-, 1C-, 2C- Type			

**Note:** Coin relays marked 1A without the asterisk symbol have bifurcated rather than solid contact springs.

steady reading of the operate current being applied.

(f) Operate and hold the COIN+ key. Gradually increase the current flow, closely observing the milliammeter reading while this is being done. The coin relay should operate, as indicated by the meter needle returning to zero, before the operate value is exceeded. Signal the employee and ascertain that the relay operated properly. If it did, request employee to trip the coin trigger again.

(g) Reset the rheostat to include maximum resistance. Operate and hold the COIN- key. Adjust the current flow to the nonoperate value. Gradually increase the current flow,

closely observing the meter reading while this is being done. The coin relay should operate, as indicated by the meter needle returning to zero, before the operate value is exceeded. Signal the employee and ascertain that the relay operated properly.

◆ TESTING POWER PAIR TO REMOTE REPEATER (Fig. 14)

**5.69** The range of a customer loop can be extended by connecting a repeater in series with the loop. The repeater is located in a remote cabinet between the central office and the customer station and is powered from the central office over a separate cable pair. A remote cabinet has provision for two repeater panels, each panel capable of

holding six repeaters. A separate power pair must be provided for each panel. A circuit in the first repeater on each panel constantly monitors the voltage on the associated power pair to insure the voltage is adequate for repeater operation. Sufficient voltage on the power pair activates an oscillator, applying a 900 Hz tone on the power pair. If voltage drops below the required value, tone is removed from the pair, causing an alarm at the central office. When the current is unpowered, a power alarm and test circuit, associated with each repeater panel, shunts the series converters of the repeaters. This eliminates most of the loss normally added to the voice path of an unpowered E6 repeater. An unbalance detector in the power and alarm circuit monitors the power pair to detect line unbalance, which may affect circuit operation.

**5.70** A power pair can be tested by establishing a connection from the MDF appearance of the pair. Portable test cabinet connections are described in 3.01 through 3.04 and 3.07. Permanently mounted test cabinet connections are described in 3.08, 3.11, and 3.32 through 3.36. Test the pair using each one of three possible connections; **bridging to the pair without opening it, testing in** toward the central office, and **testing out** toward the station.

**5.71 Bridging tests:** Establish a bridging connection to the power pair at the MDF.

- (a) A tone (900 Hz) should be heard on the pair.

- (b) Voltage to ground on the tip and ring should be approximately +35 volts and -117 volts, respectively.

**5.72 Testing In:** Establish a testing in connection to the power pair.

- (a) Voltage readings to ground on the tip and ring should be +48 volts  $\pm$ 4 volts, and -130 volts  $\pm$ 5 volts. The test meter can measure 120 volts, therefore, the meter needle will be off-scale when -130 volts is applied.

**5.73 Testing out:** Establish a testing out connection to the power pair.

- (a) There should be no foreign potential on the line.
- (b) Leakage resistance, measured ring to ground and tip to ground, should be infinite. However, voltage at the repeater should be adequate with a 30,000 ohm leak.
- (c) Line resistance measured ring to tip should measure approximately 1000 to 1500 ohms. The resistance measured tip to ring should be approximately 100 to 400 ohms greater than when measured ring to tip depending on the number of repeaters plugged into the panel.

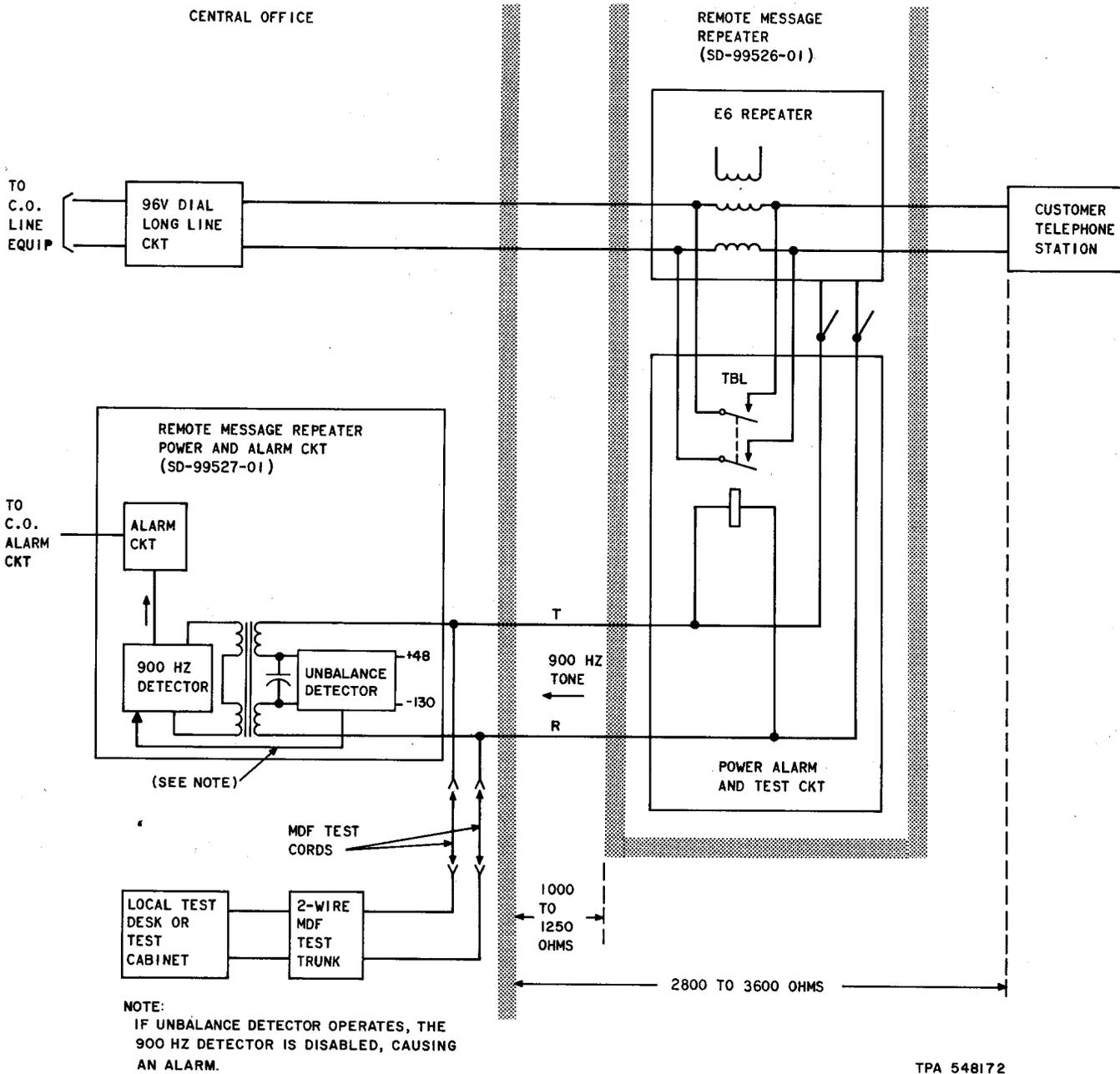


Fig. 14—Arrangement for Testing Power Pair for Remote Message Repeaters