

POLAR RELAYS
209-FA, 215-A AND 228-A
USING THE 2-A RELAY TEST TABLE
REQUIREMENTS AND ADJUSTING PROCEDURES

1. GENERAL

1.01 This section covers the electrical requirements for the 209-FA, 215-A and 228-A polar relays using the 2-A Relay Test Table.

1.02 Any adjustments due to failure to meet the requirements outlined in this section shall be made in accordance with the procedures covered in sections applicable to the relay.

1.03 Part 1 "GENERAL" and Part 2 "REQUIREMENTS" form a part of the Western Electric Installation Department Handbook.

1.04 The requirements and procedures given in this practice assume that the 209-FA relay is plugged into the right hand connecting block and that the 215-A relay and the 228-A relay with adapter per A. T. & T. Company's drawing 38-Y-2596 are plugged into the left hand connecting block.

1.05 All electrical test requirements shall be applied with the relay cover in place.

2. REQUIREMENTS

2.01 Bias

(a) 209-FA and 215-A Relays When the keys on the test panel are operated as shown in table 1, the needle of the milliammeter shall vibrate steadily and the center of vibration shall not exceed the readings given in table 1.

TABLE 1

<u>Relay Under Test</u>	<u>Operated Position of Keys</u>	<u>Test Reading</u>	<u>Readjust Reading</u>
209-FA	LINE, SEN, REV, BATT	1	Zero (Mid-scale)
215-A	LINE, SEN, REV, BATT	2	Zero (Mid-scale)

(b) 228 Type Relays When the keys on the test panel are operated to the LINE, SEN, REV and BATT positions, it shall be possible by means of the biasing screw to obtain a continuously increasing deflection of the milliammeter needle toward the left when the biasing

screw is turned toward "SPACE" and toward the right when the biasing screw is turned toward "MARK". This adjustment shall be smooth up to a reading of 6 (Test) and 7.5 (Readjust) on both sides of zero. After this test the biasing screw shall be returned to its central position so that the milliammeter needle vibrates at zero.

2.02 Sensitivity (209-FA and 215-A Relays Only)

(a) With the keys operated to the LINE, SEN, KEY and BATT positions, the switch of the pole changer key operated to the right and the pole changer key not depressed, the milliammeter shall show a deflection to the left. With the pole changer key depressed the milliammeter shall show a deflection to the right.

(b) The relay shall follow the movements of the pole changer key when the key is operated at a speed of 5 to 10 times per second. Gauge by the sounder and meter.

2.03 Vibrating (209-FA Relay Only) (Readjust Only)

With the keys operated to the VIB, SEN, REV and BATT positions, the relay shall vibrate at a frequency of approximately 20 cycles per second. The needle of the milliammeter shall vibrate steadily and the center of vibration shall be zero (mid-scale).

3. PROCEDURES FOR CHECKING TEST REQUIREMENTS

3.01 Before applying the following electrical test requirements, the relay shall have passed a visual contact inspection as covered in the sections applicable to the relay under test. All electrical test procedures shall be made with the cover in place.

3.02 The procedures covered below should be followed to determine whether the relay is satisfactory for service. The test requirement readings covered in Table 1 are associated with these procedures.

3.03 All keys on the test table should be in their normal or non-operated position before plugging the relay into the test table connecting block and starting the tests.

Bias

3.04 Plug the relay to be tested (without removing the cover) into the proper connecting block.

3.05 Operate the keys to the LINE, SEN, REV and BATT positions. The milliammeter needle should vibrate steadily and should meet the test requirements covered in requirement 2.01. The meter indicates SPACING bias when the needle is deflected to the left of zero and MARKING bias when the needle is deflected to the right of zero.

3.06 Tap the relay cover lightly with the handle of a screw-driver and note any change in the reading of the meter. If a change in reading is observed, it may be due to magnetic particles on the pole pieces or to loose assembly of the relay.

Sensitivity

3.07 209-FA and 215-A Relays Only With keys operated to LINE, SEN, KEY and BATT positions, operate the switch of the pole changer key to the right. The relay armature should follow the operation of the pole changer key. The relay should meet the requirements covered in 2.02.

NOTE There are no sensitivity test requirements for the 228-A relay.

4. PROCEDURES FOR CHECKING READJUST REQUIREMENTS

4.01 The procedures covered below should be followed only when the relay fails to meet its test requirements.

4.02 Check to see that the mechanical requirements as covered in sections applicable to the relay under adjustment are met.

4.03 All keys on the test table should be in their normal or non-operated position before checking readjust requirements.

Vibrating

4.04 209-FA Relay Only Operate the keys to VIB, SEN, REV and BATT positions, and observe that the requirements covered in 2.03 are met. The speed of vibration may be compared to the frequency of the ringing current (generally 20 cycles per second) by operating the LINE key, which causes the relay to be operated by ringing current. To determine the speed of vibration, compare the rate of vibration of the sounder when the relay is operated by the vibrating circuit to the rate of vibration when the relay is operated by the ringing current.

Bias

4.05 Operate the keys to the LINE, SEN, REV and BATT positions. The milliammeter needle should vibrate steadily and should meet the readjust requirements covered in 2.01.

Sensitivity

4.06 209-FA and 215-A Relays Only Operate the keys to the LINE, SEN, KEY and BATT positions, and observe that the requirements covered in 2.02 are met.

NOTE There are no sensitivity readjust requirements for the 228 type relay.

4.07 If adjustments have been made to meet the sensitivity requirements, repeat the check for bias as covered in 4.05 and if necessary make further adjustments. If further adjustments are made repeat the check for sensitivity as covered in 4.06.

Final Check

4.08 Upon the completion of readjustments the relay cover shall be replaced and all readjustment requirements checked.

4.09 Upon completion of the final check restore all keys to normal.