NO. 523-A TEST PANEL FOR TERMINAL AND INTERMEDIATE RINGERS DESCRIPTION AND APPLICATION

1. GENERAL

1.01 This section describes the No. 523-A test panel used for testing and adjusting the following types of terminal and intermediate ringers.

135-20 Cycle Terminal Ringers.

20-20 Cycle Intermediate Ringers.

135-20 Cycle Intermediate Ringers.

135-135 Cycle Intermediate Ringers.

1000-135 Cycle Intermediate Ringers (135 Cycle Side Only).

1.02 This section is reissued to add a description of the test lamp when testing 1000-135 cycle intermediate ringer (135 cycle side only) and to omit reference to the No. 258-A (dummy) plug under Equipment Features when testing 20 cycle branch of ringers associated with 22 type repeaters terminal or through line.

1.03 The test circuit is so arranged that a simple check test can be made before connecting to or testing ringers, to insure that the test circuit is operating satisfactorily.

1.04 When ringers are not within patching distance of the test panel, Ringer Test Trunks are provided for connections to the test panel and the terminal or intermediate ringers.

2. EQUIPMENT FEATURES

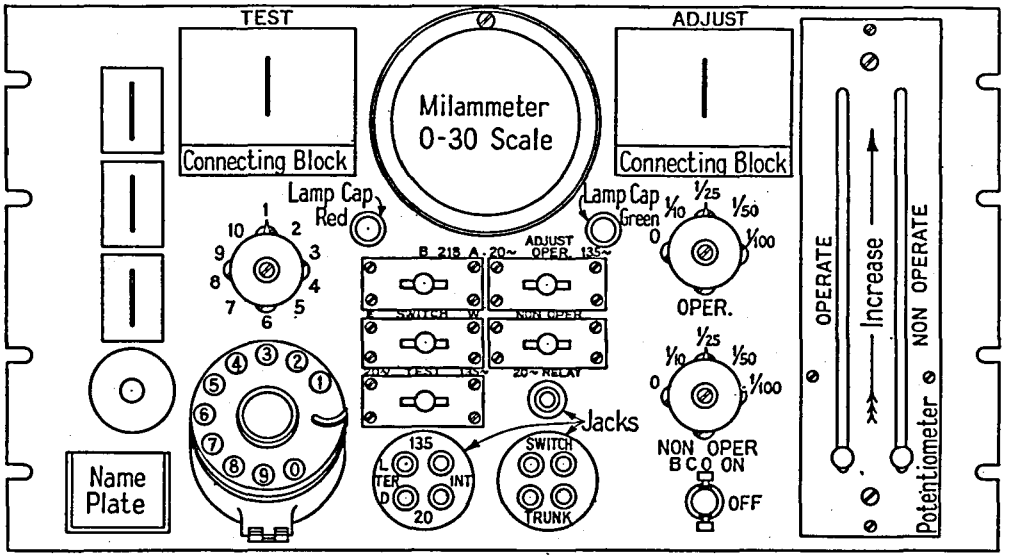
2.01 The testing equipment, consisting of patching jacks, keys, milammeter and associated potentiometer, switches, 218 type relay connecting blocks, dial, relays and lamps, is assembled on a panel arranged for relay rack mounting as shown on Fig. 1.

2.02 In general the test circuit equipment is arranged on the panel so that the left hand side is used for making tests while the right hand side is used for making relay adjustments.

3. OPERATING FEATURES

3.01 The two jacks in the left hand jack mounting designated TER L and TER D are provided principally for testing terminal ringers, while the two jacks designated INT together with the four jacks in the right hand jack mounting designated SWITCH and TRUNK are provided for testing intermediate ringers. The single jack designated 20 CYCLE RELAY is provided for connecting the ringer to the test set when adjusting the 20 cycle relays. A single jack designated 20 CYCLE, may be provided for use to apply full voltage on J type relays.

3.02 Two 218 type relay connecting blocks designated TEST and ADJUST are provided for making tests and adjustments. A 218 type relay (known to be in adjustment) must be inserted in



FRONT OF PANEL

Fig. 1—Front of Panel.

the TEST connecting block when making tests. The ADJUST connecting block is used for holding 218 type relays which are to be adjusted. When using the test panel, the 218 type relay should be removed from the connecting block that will not be in use during the tests or adjustments.

3.03 The key designated TEST, when operated to its 135 CYCLE position, sends 135 cycle ringing current out through the TER L jack to the ringer under test and when operated to its 20 CYCLE position, sends 20 cycle ringing current out through the TER D jack to the ringer under test.

3.04 The key designated SWITCH is provided for testing intermediate ringers and should be in its normal position when testing terminal ringers. When the key is operated to the E position, the test circuit is arranged to test the ringer in the E-W direction. If the key is operated to the W position, the test circuit is arranged to test the ringers in the W-E direction. The operation of this key in either direction connects a 250 ohm resistance across the 20 cycle side of the ringer to reduce the ringing voltage impressed on the ringer under test to its proper value.

3.05 The key designated 218 is provided for testing and adjusting ringers equipped with 218 type relays. When the key is operated to its A position, the test circuit is arranged for 218-A relays. When the key is in its normal position, the test circuit is arranged for other 218 type relays.

3.06 The key designated ADJUST is provided for adjusting 20 cycle and 135 cycle relays. When operated to its 20 CYCLE position, 20 cycle ringing current (the value being determined by the setting of the associated potentiometer) is supplied through the 20 CYCLE RELAY jack to the ringer for adjusting the J and 196 type relays. When operated to its 135 CYCLE position, 135 cycle ringing current (the value being determined by the setting of the associated potentiometer) is supplied to the ADJUST connecting block for adjusting the 218 type relays.

3.07 The key designated NON OPER is provided for making non-operate adjustments on the No. 218-A relay only and should be in its normal position when adjusting other 218 type relays which do not require a non-operate adjustment.

3.08 The key designated BCO is provided for opening the battery supply to the test circuit when the test panel is not in use.

3.09 A ten point switch is provided to adjust the 135 cycle ringing current being sent into the ringer under test. Experience has indicated that point 6 attenuates the ringing current to simulate the average length of line on which the ringer under test functions in service.

3.10 Two switches designated OPER and NON OPER with four contact points, designated 1/10, 1/25, 1/50 and 1/100, respectively, are provided to obtain the best results for the electrical adjustment of 218 type relays at various current values. Step 1/10 is used for current values between .003 and .001 ampere, step 1/25 for current values between .001 and .00055 ampere, step 1/50 for current values between .00055 and .00025 ampere and step 1/100 for current values between .00025 and .00005 ampere. Steps 1/10 and 1/25 are seldom, if ever, used since these current ranges are not required for the adjustment of the 218 type relay. Step 1/50 should be used where the 135 cycle ringing current is supplied by 156 type interrupters in order to minimize the current drain and voltage fluctuations on the interrupter, while step 1/100 should be used where 135 cycle current is furnished by ringing generators.

3.11 The milammeter is provided to read the adjust current values when adjusting 20 cycle and 135 cycle relays (the current value being regulated by a potentiometer). For J type (20 cycle) relays the meter reads directly the current through the relay. For 196 type (20 cycle) relays the meter reads approximately 10 times the current flowing through the relay, while for 218 type (135 cycle) relays the meter reads 10, 25, 50 or 100 times the current flowing through the relay depending upon the setting of the OPER or NON OPER switches.

3.12 The potentiometer is provided to regulate the adjust current values for the J, 196 and 218 type relays.

3.13 The dial is provided to test the time required to operate the 218 type relay in the 135 cycle branch of the ringer. For example, if the digit 6 is dialed, 135 cycle ringing current will be applied to the ringer for approximately six-tenths of a second. This is known as the "Time of Response Test."

3.14 Two lamps, one with a green lamp cap and one with a red lamp cap, are provided and are lighted when 135 cycle ringing current and 20 cycle ringing current, respectively, are being applied to the ringer by the test circuit, or when being sent from the ringer into the test circuit, indicating satisfactory operation of both.

3.15 One lamp with a white lamp cap located outside the test panel and mounted in the jack field in a spare lamp socket position is provided and is lighted when testing terminal or intermediate ringers associated with 4-WIRE terminating circuits, to indicate that the ringer has operated satisfactorily and has placed ground on the sleeve of the ringer to operate the line cutoff relay. This lamp is also lighted when testing 1000-135 cycle intermediate ringers, to indicate that the 135 cycle branch of the ringer has operated satisfactorily.

4. CIRCUIT FEATURES

4.01 Drawing ES-357254 shows the circuit arrangement of the test panel. Detailed circuit description will be found in the associated CD sheet.