

American Telephone and Telegraph Company

BELL SYSTEM PRACTICES SECTION P60.901  
Teletypewriter and Manual Telegraph Issue A, 5-15-50  
Station and PBX Installation Long Lines Department  
and Maintenance Dist. Class. 600 AC

MANUAL TAPE RELAY SYSTEMS

MAINTENANCE TESTING PROCEDURE

1. GENERAL

1.01 This section outlines procedures for maintenance tests of teletypewriter apparatus using equipment and facilities furnished with manual tape relay system installations.

1.02 In general, the maintenance testing arrangements consist of an XRT-200 table equipped with a modified TP117852 electric service unit. Certain existing installations are equipped with other work tables and testing facilities, the features of which are similar and will permit tests in accordance with this section. Trunking and patching facilities are provided to permit access from the maintenance position to apparatus and loops as required. The maintenance position may be located either in or adjacent to the operating room which may introduce variations in patching arrangements covered later in this section.

2. ELECTRIC SERVICE UNIT (MODIFIED TP117852)

2.01 The TP117852 electric service unit modified in accordance with Long Lines Drawing 22639-SD is associated with the maintenance table. This service unit provides two line jacks, a Jones plug, and the necessary AC and DC power outlets to furnish the required connections for the teletypewriter apparatus of the relay system for testing purposes.

2.02 The line jacks, RED and BLACK, of the service unit normally are wired to patching or interposition trunks for connecting 14 and 15 teletype-writers, 14 typing reperforators or 14 transmitter-distributors to the test facilities. The Jones socket provides magnet current and trunk connections for the multiple gate transmitter.

2.03 AC receptacles are provided to match the power plugs of the various units of teletype-writer apparatus. A DC receptacle is provided to supply magnet and bias current as required.

### 3. INTERPOSITION AND PATCHING TRUNKS

3.01 The line jacks and the Jones socket at the maintenance position are wired to trunks which are brought out through LINE and EQPT jacks of the patch jack circuit at the control position and are terminated in MISC jacks of the loop board.

3.02 For installations where the receiving typing reperforators are furnished without bases or line relays in order to mount in the 1A cabinet, the RED jack (T-S) at the maintenance position may be terminated in the INT jacks of the 1A cabinet interposition trunk instead of the MISC jack at the loop board or the trunk may include both INT and MISC jacks (See Fig. 1).

3.03 In some cases it may be preferred to terminate the Jones socket (T2-S2) leads for the 1A transmitter test trunk, in a SET jack of a local dummy in the loop board instead of a MISC jack. (See Fig. 3).

3.04 Because of duplicate appearance of trunks and loops in the patch jack circuit and the loop board, patches for testing may be made at either point. Patching instructions of this section will generally refer to the MISC jack of the loop board. However, the associated EQP jack of the patch jack circuit may be substituted when the equivalent patches are made at the control position.

#### 4. MAINTENANCE TESTS - TYPING REPERFORATOR

4.01 Typing Reperforator without Base and Line Relay for 1A Cabinet Installation. Connect the typing reperforator line cord (Red shell) to the RED jack of the service unit. At the 1A cabinet patch an INT interposition trunk jack to the TR jack of an available relay circuit, preferably the one with which the typing reperforator under test normally is associated. At the loop board patch the SET 1 jack of the selected relay circuit to a LPG jack of the test loop. (At patch jack circuit use EQP jack of relay circuit and LINE jack of the test loop.) Insert the typing reperforator power plug in the appropriate AC receptacle of the service unit (See Fig. 1.)

4.02 Typing Reperforator with Base and Line Relay for Table Installation. Connect the typing reperforator line cord (Red shell) to the RED jack of the service unit at the maintenance position. Connect the typing reperforator DC power cord to the DC receptacle of the service unit. Patch the MISC jack at the loop board associated with the RED jack of the service unit to a LPG jack of the test loop. (At patch jack circuit use EQP jack of RED trunk and LINE jack of test loop.) Connect the AC power cord of the typing reperforator to the appropriate AC power receptacle of the service unit. (See Fig. 2.)

4.03 With proper test signals transmitted from the central office to the maintenance position, the typing reperforator shall meet the orientation and tolerance test requirements of Section P30.002.

#### 5. MAINTENANCE TESTS - MULTIPLE GATE TRANSMITTER

5.01 It is intended that the three MXD type transmitters, mounted on the base, will be tested as an assembly, since the three sets of transmitting contacts are wired in series at the line terminals (T2-S2) of the Jones socket. Connect the line cord of the assembly to the Jones socket of the service



unit of the maintenance position. Magnet battery is furnished thru this cord. At the loop board connect the MISC jack associated with the transmitter trunk to a LPG jack of the test loop to the central office. If the transmitter trunk is terminated in a local dummy pick up the trunk at the designated SET jack. If the patch is made at the patch jack circuit use the designated transmitter test trunk EQP jack and patch to the test loop LINE jack. Connect the transmitter power cord to the appropriate AC receptacles of the service unit. (See Fig. 3.)

5.02 Transmit test tapes as required from each of the three transmitters to the central office for transmission measurement. The transmitters each shall meet the transmission requirements of Section F30.002.

## 6. MAINTENANCE TESTS - OTHER APPARATUS

6.01 Control Position Teletypewriters. These machines are arranged for full duplex operation and should be tested both transmitting and receiving. At the maintenance position connect the teletypewriter Red shell cord to the RED jack and the teletypewriter Black shell cord to the BLACK jack of the service unit. Connect the teletypewriter DC power cord to the DC receptacle of the service unit. At the loop board connect the MISC jack of the RED trunk to one LPG jack of the test loop and the MISC jack of the BLACK trunk to the other LPG jack of the test loop. Connect the teletypewriter AC power cord to the appropriate AC receptacle of the service unit. (See Fig. 4.)

6.02 When the patches are made at the patch jack circuit, only one trunk at a time may be patched to the test loop. For receiving tests connect the EQP jack of the RED trunk to the LINE jack of the test loop.

For transmitting tests, connect the EQP jack of the BLACK trunk to the line jack of the test loop. Connect the EQP jack of the RED trunk to the local

dummy jack provided, in order that the teletypewriter may run closed to prevent interference by the break-lock mechanism.

6.03 For those installations where the RED trunk is terminated in INT jacks of the interposition trunk only, the patches may be made as in 6.02 above. If the patches are made at the loop board, only the BLACK jack trunk will be available at a MISC jack. In this case the INT jack may be connected to an LP jack of the dummy circuit in the 1A cabinet to keep the receiving side closed while making transmitter tests.

6.04 Transmission tests of the control position teletypewriter may be made at the control position when desired. Connect the control teletypewriter to the spare control circuit by operating the associated SEIZE key at the control board. Normally the spare (or test) loop will be wired permanently to the jack appearances of the spare control circuit and no patches will be required. Single or duplex operation may be used by operation of the SGL-DUX key depending upon the loop facilities provided.

If the test loop is not wired to the spare control circuit, at the loop board connect the SET 2 jack of the SE leg of the spare control circuit to one LPG jack of the test loop and connect the SET 2 jack of the RE leg to the other LPG jack of the test loop. When the patch is made at the patch jack circuit, operate the SGL-DUX key of the spare control circuit to SGL and connect the EQP2 jack of the spare control circuit to the LINE jack of the test loop.

6.05 To test other teletypewriters, connect the teletypewriter line cord to the BLACK jack at the service unit. At the loop board patch the associated MISC jack to a LPG jack of the test loop. If patches are made at the patch jack circuit connect the EQP jack of the BLACK trunk to the LINE jack of the test loop. Connect AC and DC cords to appropriate receptacles as required. (See Fig. 4.)

6.06 14 Transmitter-Distributor. A transmitter-distributor base of appropriate line and power cords equipped with clips are required to test the 14 transmitter from the maintenance position. Connect the line cord to the BLACK jack and the power cords to the AC and DC receptacles at the service unit. At the loop board patch the BLACK jack trunk MISC jack to a LPG jack of the test loop. If patches are made at the control position, patch the BLACK jack trunk EQP jack to the test loop LINE jack. (See Fig. 4).

6.07 For the above mentioned types of teletypewriter apparatus, receiving elements shall meet the requirements of Section P30.002 when receiving proper test signals from the central office. Sending elements both keyboard and tape shall meet the transmission requirements of Section P30.002 when sending to the central office.

6.08 If local dummy circuits are provided, local tests may be made in all of the foregoing cases by patching the specified SET (or EQP) jacks to the LPG jacks of the local dummy instead of to the LPG (or LINE) jacks of the test loop.

1 A Cabinet

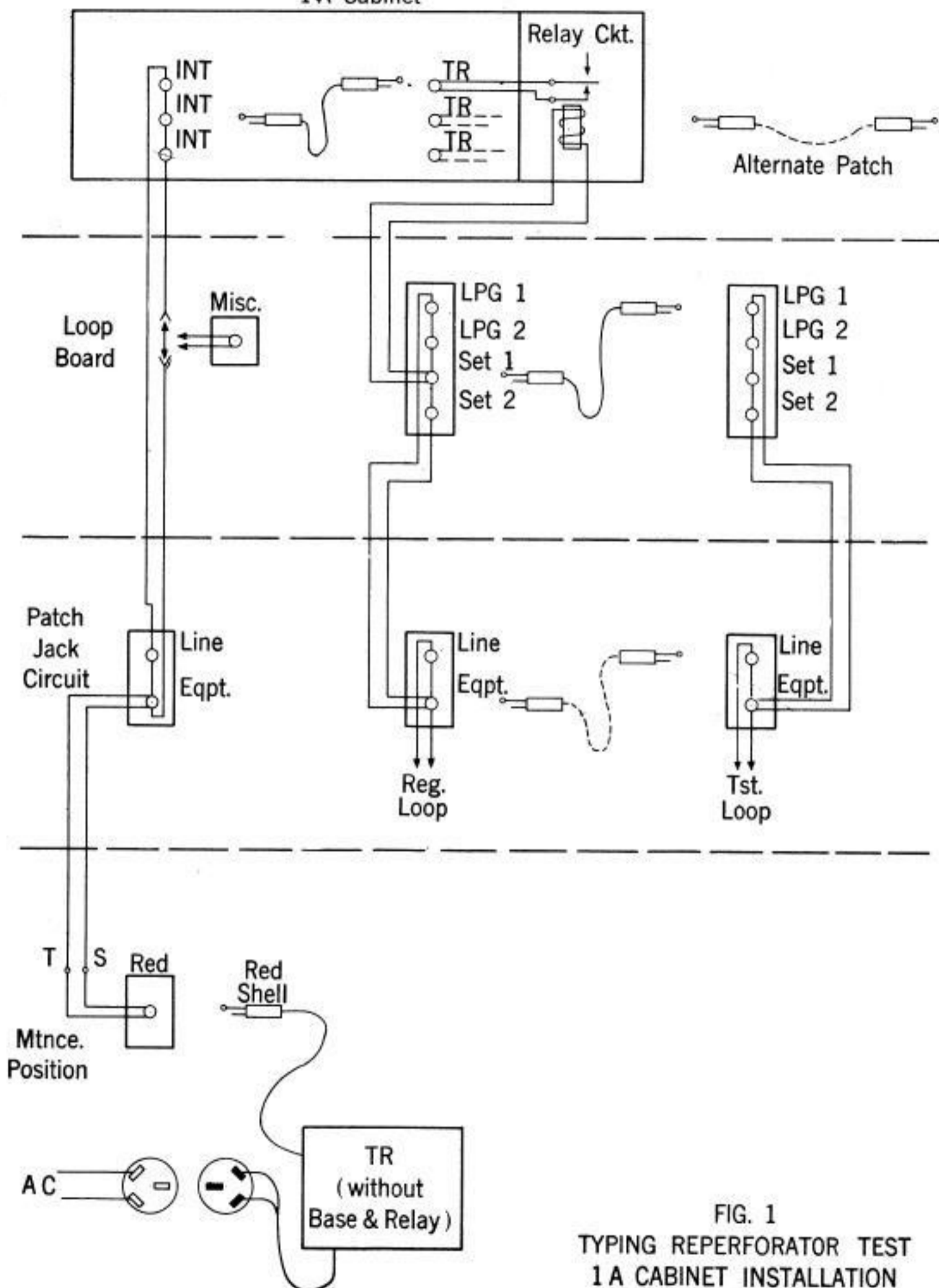


FIG. 1  
 TYPING REPERFORATOR TEST  
 1 A CABINET INSTALLATION



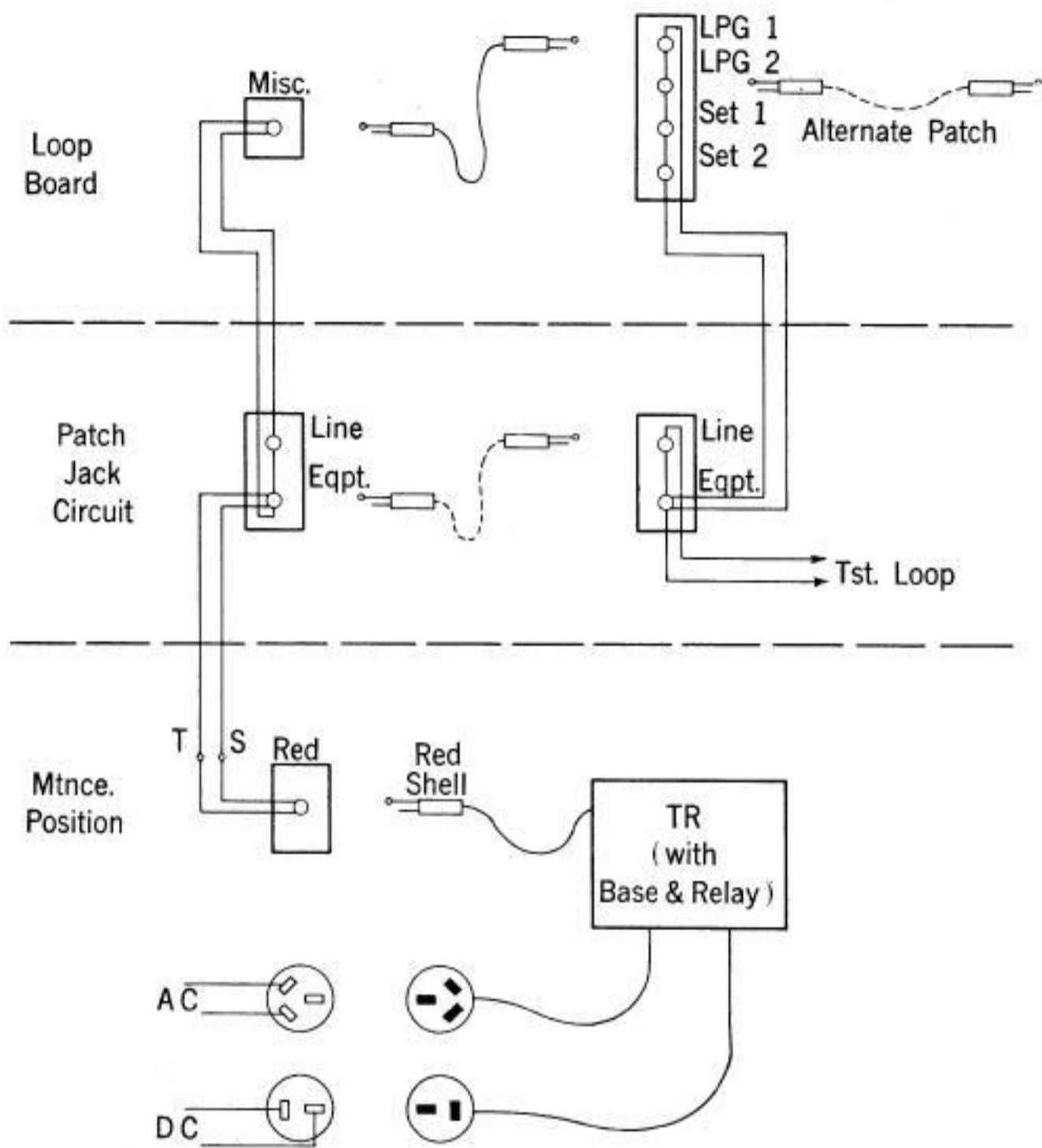


FIG. 2  
 TYPING REPERFORATOR TEST  
 (TR WITH BASE AND RELAY)



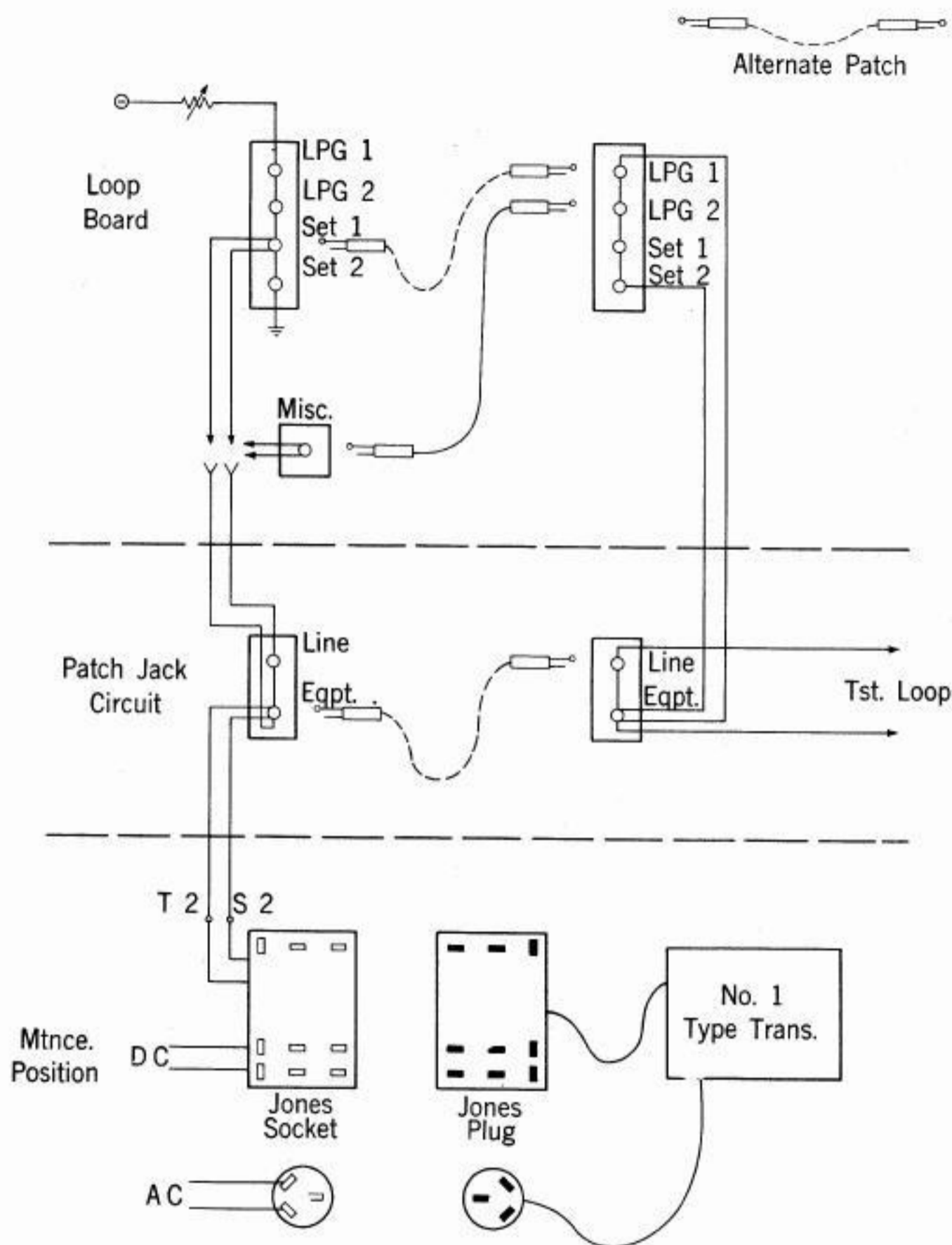


FIG. 3  
MULTIPLE GATE TRANSMITTER TEST

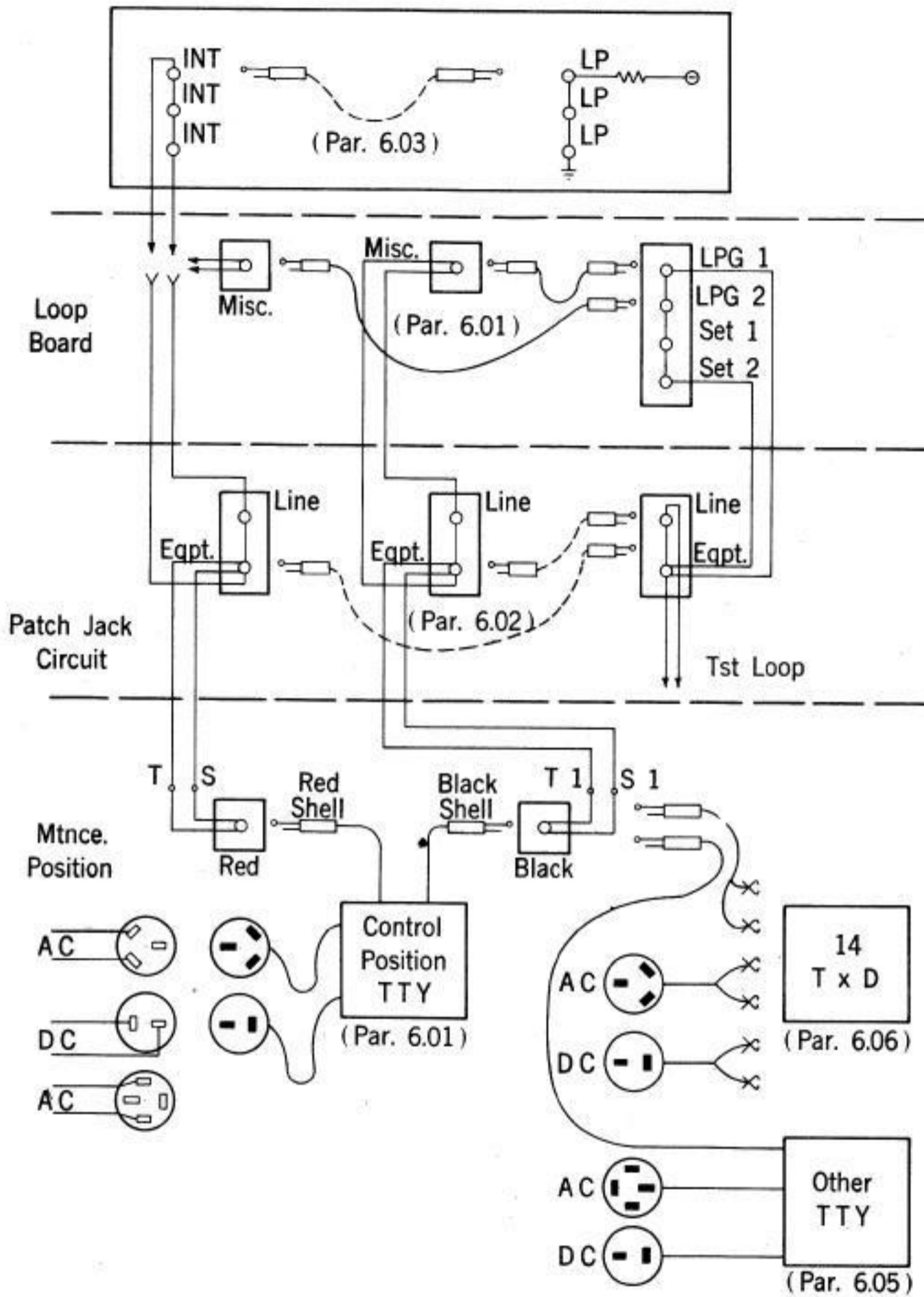


FIG. 4  
TEST OF OTHER TELETYPEWRITER APPARATUS