AUXILIARY TRANSMISSION TEST SET J94716A

1. GENERAL

1.01 This section describes the Auxiliary Transmission Test Set J94716A, which is an assembly of apparatus in portable form designed for use with transmission measuring sets to facilitate the making of transmission tests on dial central office and P.B.X. circuits.

1.02 The principal functions of the auxiliary transmission test set are to provide various holding bridges and control arrangements and to place circuits to be tested in the talking condition, either directly or in association with central office testing equipment. The test set does not, in itself, apply any test conditions.

1.03 The holding and switching facilities are provided in duplicate, one group for use in connection with the sending circuit and the other group for use with the receiving circuit of the transmission measuring set.

1.04 A telephone circuit and associated dial are provided for use in establishing the talking condition for circuits to be tested and for communicating, if necessary, with an assistant testman at a distant point while tests are in progress.

1.05 When the test set is used directly for placing the circuits to be tested in the talking condition, a busy test indication is provided but with no guarantee against interference if the testman disregards the indication.

1.06 When the central office test equipment is used to control the circuits being tested, the busy test features associated with that equipment are used in place of the busy test features in the auxiliary test set.

1.07 Standard types of patching cords are used to connect the test set to the transmission measuring set and to the central office circuits or equipment to be tested. These cords are provided as a part of the set.

1.08 The transmission loss of the holding coils (44-B retardation coils) is very small and may be disregarded in the testing work.

2. DESCRIPTION OF SET

2.01 The apparatus of the auxiliary transmission test set is mounted in a standard test set housing (Size C). The approximate overall dimensions of this set, including the tips of the key handles and the carrying strap, are 17 x 10 x 8-1/2 inches. The weight is approximately 25 pounds.

2.02 Drawing ED-90954-01 covers the details of the equipment and assembly of the test set. Drawing ED-90955-01 covers the details of the local cabling in the test set. Drawing SD-90577-01 covers the circuit and wiring of the test set. These drawings are not included as a part of this section.

2.03 Fourteen keys, two lamps, and a dial are provided on the face of the test set. Eighteen jacks and two binding posts are provided on a mounting plate in the front of the test set. The functions of this apparatus and its action on the operation of the circuit are described in Part 3 of this section.

2.04 Figure 1 shows the arrangement and designation of the apparatus mounted on the face of the test set, including the keys, lamps, and dial.

2.05 Figure 2 shows the arrangement and designation of the jacks and binding posts mounted in the front of the test set.

2.06 The following standard cords are provided as a part of the test set.

Quantity	Code	Length	Each Equipped with
2	P3F	8'-0"	1-110 Plug 1-109 "
3	P3E	6'-0"	2-110 Plugs
4	W3A	12'-0"	1-110 Plug 3-59 Cord Tips
2	P4D	19'-6"	1-152 Plug 1-234 "
2	P3C	10'-0"	1-110 Plug 1-240A "
1	L4F	6'-0"	1-137 Plug 396-A Transmitter 528 Receiver

3. OPERATION OF CIRCUIT

3.01 Figure 3 shows the circuit arrangement of the test set in simplified form with all keys normal. The circuit and control conditions setup by the operation of these keys and the purpose of the various jacks are explained for each in detail below.

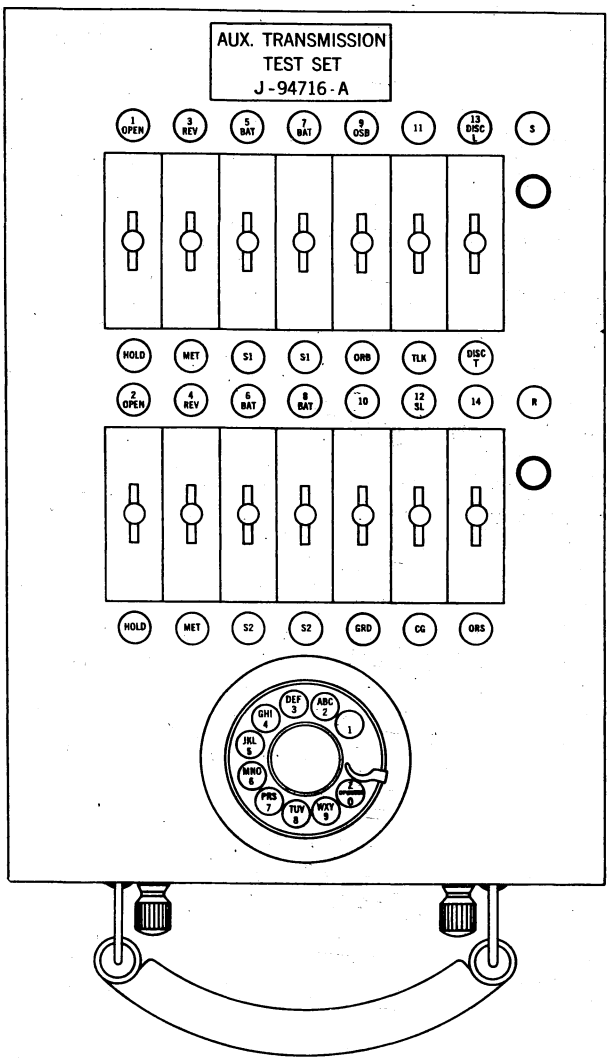

Fig. 1 - Plan View - Aux. Trans. Test Set - J94716A.

Jacks

3.02 TMS and TMR jacks are provided for connecting the test set to the sending and receiving circuits, respectively, of the transmission measuring set. These jacks are connected through the set to the LS and LR groups of jacks respectively when keys 1 and 2 are in the HOLD position.

3.03 LS1, LS2, LS3 and LS4 jacks are used to connect the test set to the input end of the circuit to be tested. The LS1 jack is arranged for use with cords having 110 type plugs, the LS2 jacks for cords with a 109 type plug, and the LS3 and LS4 jacks for cords having 152 or similar type plug.

3.04 LR1, LR2, LR3 and LR4 jacks are used to connect the test set to the output end of the circuit to be tested. These jacks are of the same type and correspond in arrangement to the LS jacks described in the previous paragraph.

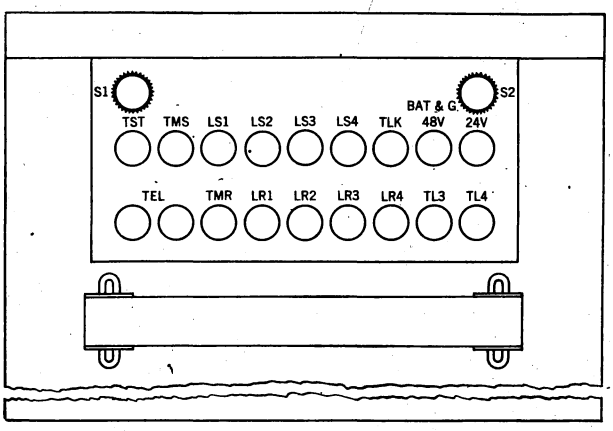

Fig. 2 - Front View - Aux. Trans. Test Set J94716A.

3.05 The TST jack is used to connect the test set to the test jack of a central office test set where the latter is required to direct the circuit to be tested to a talking condition. The TST jack is connected to the LS and LR jacks through the normal positions of keys 1 and 2 respectively. For either of the other two positions of those keys the TST jack is opened from the LS and LR jacks. The TST jack is also connected to the telephone circuit of the set through keys 13 and 11.

3.06 The TLK jack is used to connect the test set to a talking line, such as a regular exchange line, when required for communication with an assistant. It is connected to the telephone circuit of the set through keys 13 and 11.

3.07 The TL3 and TL4 jacks are used in making tests on step-by-step equipment where such tests are made using central office line jacks 3 and 4. The tip of the TL3 jack is open, the ring is wired to the ring and the sleeve is wired to the tip of the LR jacks. The tip of the TL4 jack is connected through the R lamp to battery at the BAT & G jacks.

3.08 BAT & G (48V and 24V) jacks are used for connecting the test set to 48 or 24-volt battery supply as required. Battery is connected to the tip and ground to the sleeve of the jacks.

3.09 TEL jacks are provided for connecting an operator's telephone set to the telephone circuit of the auxiliary test set.

Keys

3.10 Key 1 is in the sending branch of the circuit and is associated with the LS jacks. In the normal position, the telephone circuit and the tip, ring and sleeve of the TST jack are connected through to the LS jacks, thus providing means for using either a central office test set or the dial associated with the telephone circuit for setting up a connection. In the

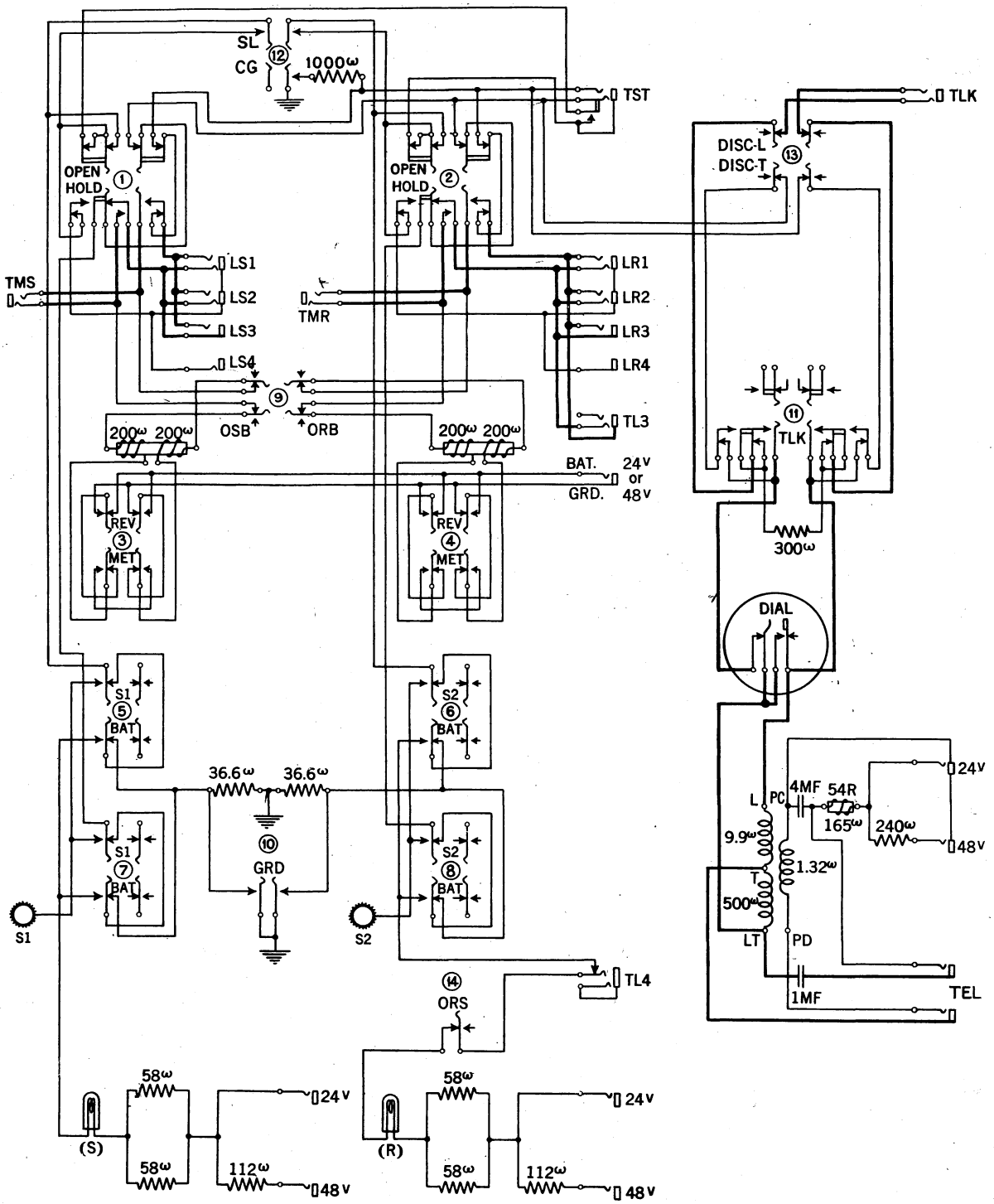

Fig. 3 - Circuit Diagram - Aux. Trans. Test Set J94716A

HOLD position, the tip and ring circuit from the LS jacks is transferred to a low loss holding coil and to the TMS jack, and the sleeve is transferred to a control circuit described under keys 5 and 7. In the OPEN position, the key opens the tip, ring and and sleeve from the LS jacks to the TST jack. In this position the sleeve may be closed by the operation of key 12.

3.11 Key 2 is in the receiving branch of the circuit and performs the same functions as key 1, except that it controls the circuit from the LR jacks to the TST jack and to the TMR jack.

3.12 Key 3 is in the sending branch of the circuit. In the normal position, battery is connected to the ring, and ground to the tip of the TMS jack through the holding coil. In the REV position, battery is connected to the tip and ground to the ring of the TMS jack through the holding coil. In the MET position, the holding coil is bridged in a dry condition across the tip and ring of the TMS jack. All of these conditions apply to the LS jacks also when key 1 is in the HOLD position.

3.13 Key 4 is in the receiving branch of the circuit and performs similar functions in that branch that key 3 performs in the sending branch of the circuit.

3.14 Key 5 is in the sending branch of the circuit. When key 1 is normal, key 5 controls the sleeve condition of the TST and LS jacks. In the normal position, ground is connected to the sleeve through 36.6 ohms. In the BAT position, battery is connected to the sleeve through a lamp and a resistance. In the S1 position, the sleeve is connected to binding post S1 where any special sleeve condition can be applied, if required.

3.15 Key 6 is in the receiving branch of the circuit and performs similar functions in that branch that key 5 performs in the sending branch of the circuit.

3.16 Key 7 is in the sending branch of the circuit and performs the same functions as key 5 when key 1 is in the HOLD position.

3.17 Key 8 is in the receiving branch of the circuit and performs the same functions as key 7 does for the sending branch of the circuit.

(The arrangement of keys 5 to 8 provides for setting up in advance different sleeve conditions, if necessary, for the normal and HOLD positions of keys 1 and 2.)

3.18 Key 9 is common to both the sending and receiving branches of the circuit and is provided for opening up the sending or receiving holding circuit in order that current supply measurements may be made. In the OSB position, the holding coil in the sending branch of the circuit is opened. In the ORB position, the holding coil in the receiving branch of the circuit is opened.

3.19 Key 10 is common to both branches of the circuit. In the GRD position, direct grounds are provided as the sleeve conditions in the two branches in place of the 36.6 ohm ground specified under keys 5 and 6.

3.20 Key 11 is in the output of the telephone circuit. In the normal position, the telephone circuit is connected toward the TST jack and a 300 ohm holding bridge is provided across the TLK jack. In the TLK position, the holding bridge is transferred from the TLK jack to the TST jack and the telephone circuit is transferred from the TST jack to the TLK jack.

3.21 Key 12 is common to both the sending and receiving branches of the circuit. In the SL position, the sleeve circuits are connected to keys 5 and 6 when keys 1 and 2 are in the OPEN position. In the CG position, a 1000-ohm ground is connected to the tip of the TST jack to simulate the condition of a coin box with a coin deposited.

3.22 Key 13 is associated with the telephone circuit. With key 11 normal and key 13 in the DISC-L position, the 300 -ohm holding bridge is opened from the TLK jack. In the DISC-T position the telephone circuit is opened from the TST jack. When key 11 is in the TLK position the operations of key, 13 are reversed.

3.23 Key 14 is provided in association with the TL4 jack. In the ORS position it controls the cut-through of the level hunting connectors in step-by-step offices when tests are made using central office test line jacks 3 and 4.

Binding Posts

3.24 Two external binding posts, designated S1 and S2, are provided for the sending and receiving branches of the circuits, respectively, to obtain any special sleeve condition which may be required as discussed under keys 5 and 6.

Lamps

3.25 Two lamps, designated S and R, are mounted on the face of the test set. They provide supervision for the sending and receiving branches of the circuit, respectively, when a battery sleeve condition is set up through the operation of keys 5 to 8.

Telephone Circuit

3.26 The telephone circuit is of the 65 type induction coil type and has associated with it a dial which is mounted on the face of the test set.