LOOP AND GROUND RESISTANCE TESTS

1. GENERAL

POTENTIOMETER METHOD—16-TYPE TEST DESK (FIG. 1)

Note: This test is for accurate measurements of resistance less than 3100 ohms.

STEP	ACTION	VERIFICATION
1	Observe that potentiometer SW1 is in the OFF position.	
2	Operate the FEMF key.	
3	Connect to line to be measured with primary test circuit.	
4	Test for FEMF or leakage.	All FEMF greater than 3 volts and leakage less than 100K ohms should be cleared before making resistance tests.
	If resistance to be measured is from tip to ground (ground resistance):	
5	Operate REV key.	VMA meter circuit connected to tip of test circuit.
	(a) Ask station technician to place a strap from tip to ground being measured.	
	(b) Proceed to Step 7.	
	If resistance to be measured is from tip to ring (loop resistance):	
6	Operate G key.	Ground connected to tip of test circuit.
	(a) Ask station technician to place strap from tip to ring.	
7	Operate 24MA key.	
	(a) Operate scale change key if required so that VMA meter deflects to nearest midscale.	

STEP	ACTION	VERIFICATION
8	Observe reading on VMA meter.	Meter indicates current in external circuit. Record this reading for use in Step 11.
9	Operate S/C key.	S/C lamp lighted.
10	Operate potentiometer SW1 to the 0, 1K, or 2K position. Adjust to proper position as described in Step 11.	VMA meter connected to test circuit in series with potentiometers R, SW1, and SW2.
11	Adjust potentiometers R, SW1, and SW2 to obtain same reading on VMA meter obtained in Step 8. ***Note:*** The resistance of the test trunk used must be subtracted from the total resistance determined in Step 11 to provide the true resistance for the line being measured.	Total accumulated readings of potentiometers equal the resistance of external circuit, including the test circuit.
12	Restore potentiometer SW1 to the OFF position.	Potentiometer circuit restored to normal.
13	Release S/C key. Recheck that VMA reading is unchanged from that found in Step 8.	S/C lamp extinguished.
Ground resistance determination:		
14	To compute actual ground resistance, subtract the tip-ground resistance previously found from one-half (1/2) of the loop resistance previously determined. This difference is the ground resistance. It must be 50 ohms or less.	
If no further testing is required:		
15	Operate DIS key for proper control group and release all operated lever keys.	

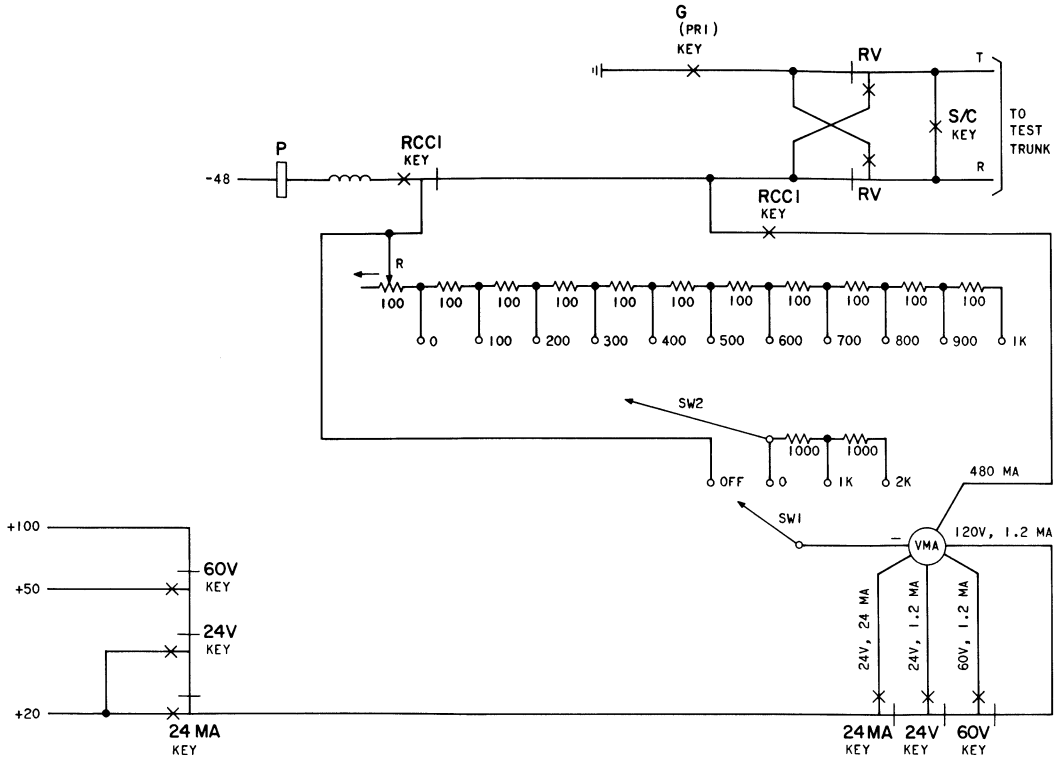

Fig. 1—Potentiometer Circuit for Determining External Circuit Resistance—16-Type Test Desk

RHOESTATE METHOD—14-TYPE TEST DESK (Fig. 2)

Note: This test is for accurate measurements of resistance of less than 3100 ohms.

STEP	ACTION	VERIFICATION
1	Operate the FEMF key.	
2	Connect to the line to be measured with primary test cord.	
3	Test for FEMF or leakage.	All FEMF greater than 3 volts and leakage less than 100K ohms should be cleared before making resistance tests
	If resistance to be measured is from tip to ground (ground resistance):	
4	Operate REV key.	VMA meter circuit connected to tip of test circuit.
	(a) Ask station technician to place a strap from tip to ground being measured.	
	(b) Proceed to Step 6.	
	If resistance to be measured is from tip to ring (loop resistance):	
5	Operate G key.	Ground connected to tip of test circuit.
	(a) Ask station technician to place strap from tip to ring.	
6	Operate 24 MA key.	
	(a) Operate scale change key if required so that VMA meter deflects to nearest midscale.	
7	Observe reading on VMA meter.	Meter indicates current in external circuit. Record this reading for use in Step 10.
8	Remove primary cord from test trunk and insert into SC jack.	Tip and ring of test circuit connected together eliminating external circuit from VMA meter path.
9	Operate RHE key.	VMA meter connected to test circuit in series with rheostats R and R1.
10	Adjust rhoestats R and R1 to obtain the same reading on VMA meter as obtained in Step 7.	Total accumulated readings of potentiometers equal the resistance of external circuit, including the test circuit.

STEP	ACTION	VERIFICATION
10	(a) For measurements in excess of 1100 ohms use 1000Ω or 2000Ω key as required. ***Note:*** The resistance of the test trunk used must be subtracted from the total resistance determined in Step 10 to provide the true resistance for the line being measured.	
11	Release the RHE key.	Rheostat circuit restored to normal.
	Ground resistance determination:	
12	To compute actual ground resistance, subtract the tip-ground resistance previously found from one-half (1/2) of the loop resistance previously determined. This difference is the ground resistance. It must be 50 ohms or less.	
	If no further test is required:	
13	Disconnect primary test cord and restore all operated lever keys.	

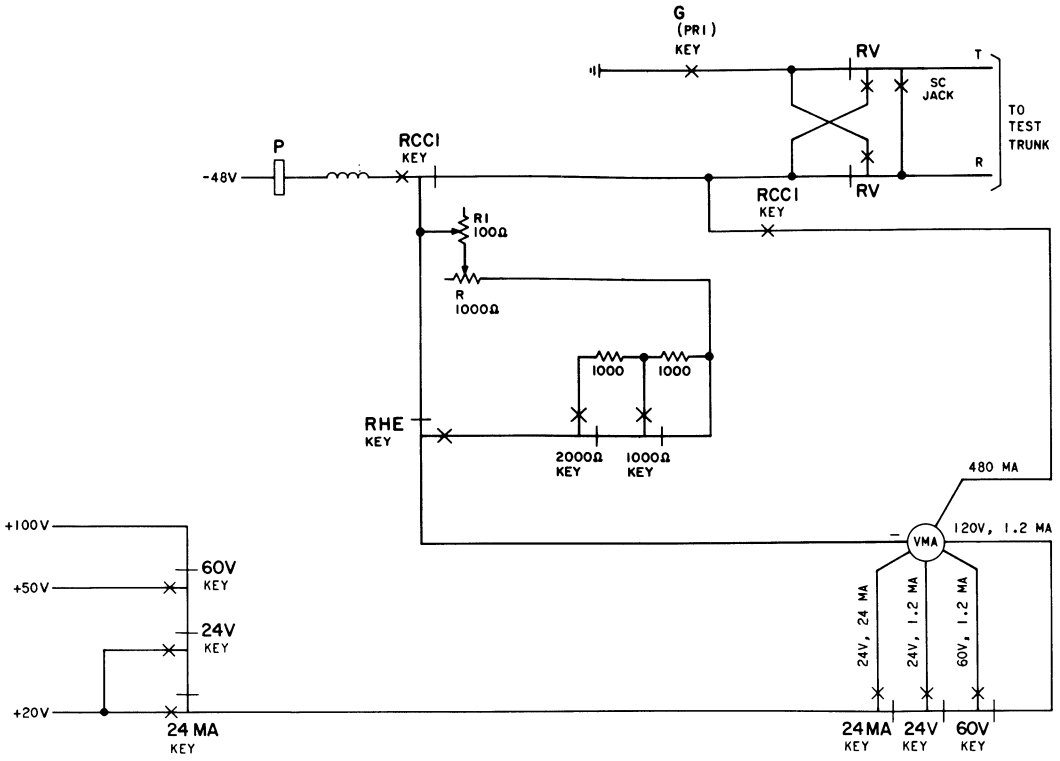

Fig. 2—Rheostat Circuit for Determining External Circuit Resistance—14-Type Test Desk