

## 150A RINGER COUNTER TEST SET

### DESCRIPTION, OPERATION, AND MAINTENANCE

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<b>2. DESCRIPTION</b> . . . . .	2	<b>1. GENERAL</b>	
<b>150A TEST SET</b> . . . . .	2	<b>1.01</b> This section provides descriptive information, testing capabilities, operating procedures, and maintenance information for the 150A ringer counter test set (RCTS).	
<b>Associated Equipment Supplied With 150A Test Set</b> . . . . .	2	<b>1.02</b> This section is reissued to:	
<b>Front Panel Assembly of 150A Test Set</b> . . . . .	3	• Revise Fig. 2, 6, 7, and 8	
<b>3. TESTS</b> . . . . .	5	• Add Fig. 11 and 12	
<b>4. OPERATION</b> . . . . .	5	• Add maintenance information (Part 5).	
<b>4.04 When Used At Main Distributing Frame</b> . . . . .	7	<b>1.03</b> The 150A RCTS is used to detect equipment on telephone lines which does not correspond to the customer billing records. The intended use of the test set is to detect unauthorized equipment which has been illegally connected to the telephone lines or equipment installed by the telephone company and not recorded properly for billing.	
<b>4.05 When Used With No. 3 Local Test Cabinet Arranged for Portable Use</b> . . . . .	11	<b>1.04</b> The 150A RCTS is a manually operated test set. The test set is portable and used as an adjunct to the local test desk (LTD) or local test cabinet (LTC). The 150A RCTS may also be used at the Main Distributing Frame (MDF) to test out on customer lines.	
<b>4.06 When Used With No. 3 Local Test Cabinet Equipped With Jack Panel Arranged With Test Distributor Jacks (Step-by-Step Offices)</b> . . . . .	12	<b>1.05</b> The 150A RCTS is used for counting ringers on telephone lines which provide 1- and 2-party service to residence and business single-line (nonkey) stations and coin telephone stations.	
<b>4.07 When Used With No. 3 Local Test Cabinet Equipped With Jack Panel Arranged With Test Selector Jacks</b> . . . . .	15		
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**NOTICE**  
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**1.06** Electrically the 150A RCTS and the 150B RCTS are identical. The 150B RCTS is used as a component of the 149A test set used to automatically make ringer counter tests. The housing on the 150A RCTS is the only physical difference between the manually operated RCTS and the 150B RCTS. The 150A RCTS may be removed from its housing and used as a component with the 149A test set, if required. A multicontact plug on the back of the 150A RCTS is provided for making an electrical connection to the other components of the 149A test set.

**CAPABILITIES AND LIMITATIONS**

**1.07** The 150A RCTS has a test range of 3000 ohms or 100K conductor feet, whichever occurs first. The combined single pair test trunk and conductor loop to the customer station determine resistance or length limitations. The combined test trunk and loop resistance of 3000 ohms are within the same test range as the local test desk.

**1.08** The 150A RCTS will not measure accurately through remote testing equipment. The RCTS must be used at the office where the customer lines are terminated when that office is served by remote testing equipment. Tests may be made through a No. 3 local test cabinet at the remote office, or the RCTS may be connected directly to the vertical side of the MDF after it is determined that the line is not busy and there is no service affecting trouble on the line.

**1.09** Certain equipment arrangements involving loop electronics on a customer line may prevent the RCTS from making accurate measurements. Some of the lines which may not be tested with the RCTS are those arranged with dial long line features, repeaters, bridge lifters, ringer isolators, subscriber carrier, etc. Tests may be made from the MDF on these lines if the outside plant does not have electronic equipment which isolates the customer station. In most instances, a line equipped with a bridge lifter will appear to have one or more ringers connected tip-to-ring. The length of the customer line beyond the bridge lifter may cause the RCTS to measure an increased number of ringers connected ring-to-ground and tip-to-ground. Certain dial long line equipment will cause the RCTS to measure a distinct pattern for the ringer arrangement and the number of ringers. Customer lines equipped with an SD-96589 dial long line circuit will measure 0 ringers connected T-R and T-G and

3 or 4 ringers connected R-G. Lines equipped with an SD-96588 dial long line circuit will measure 0 ringers connected T-R and 3 or 4 ringers connected T-G and R-G.

**1.10** This issue of the section is based on circuit and schematic drawings CD- and SD-2P015-01, Issue 1. If this section is to be used with equipment or apparatus reflecting later issues of the drawings, reference should be made to the CD and SD to determine the extent of the changes and the manner in which the section may be affected.

**2. DESCRIPTION**

**150A TEST SET**

**2.01** The 150A RCTS (Fig. 1) has the following design features:

- Overall dimensions 8-1/2 inches wide, 8-1/2 inches high, and 15 inches deep.
- Hinged 3-inch deep cover—removable.
- Hinged partition inside cover. Secured to top of cover with two captive screws.
- Instruction decal on partition inside test set cover.
- Storage compartment behind cover partition for storing test and ground cords.
- One collapsible bail on bottom of test set housing (provided to elevate front of RCTS).
- 76-inch, 3-conductor ac power cord.
- Carrying handle on top of test set housing.

***Associated Equipment Supplied With 150A Test Set:***

- One cord, 3W14B—9 feet long
- One cord, 3P7E—4 feet long
- One cord, W1BL—12 feet long

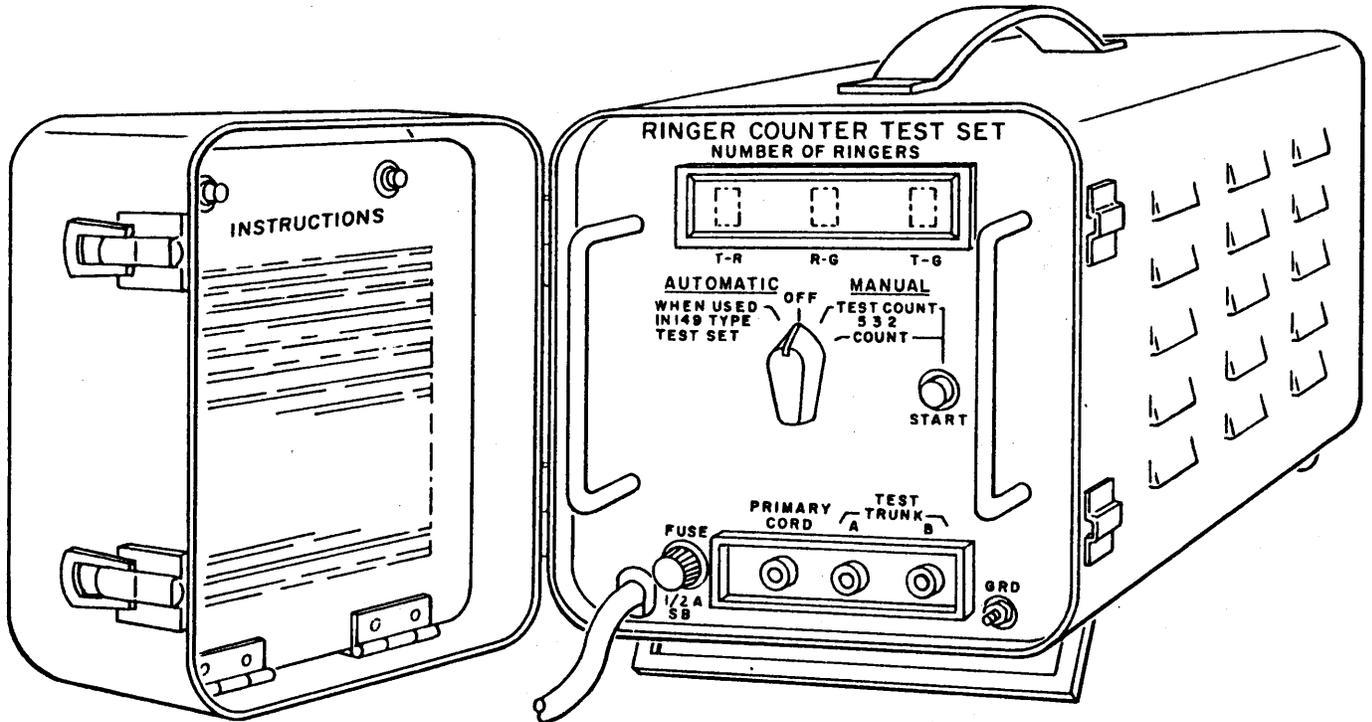


Fig. 1—150A Ringer Counter Test Set

### Front Panel Assembly of 150A Test Set

**2.02** A fuse holder is provided on the front panel (Fig. 2). The ac power circuit is fused with a one-half ampere slow blow fuse.

**2.03** The handles on the front panel provide protection to the test set controls. The power cord may be stored by coiling the length of cord around the outside radius of the two handles.

**2.04** Three numerical indicators are located at the top of the face panel. Light emitting diodes illuminate the digits displayed in each numerical indicator. The numerical indicators display the number of ringers connected to a customer line and the ringer connection arrangement. The number of ringers connected tip-to-ring (bridged) on a line will be displayed in the left (T-R) indicator. The number of ringers connected ring-to-ground will be displayed in the center (R-G) indicator. The number of ringers connected tip-to-ground will be displayed in the right (T-G) indicator.

**Note:** If the measuring capability of the test set is exceeded, alphabetical characters may

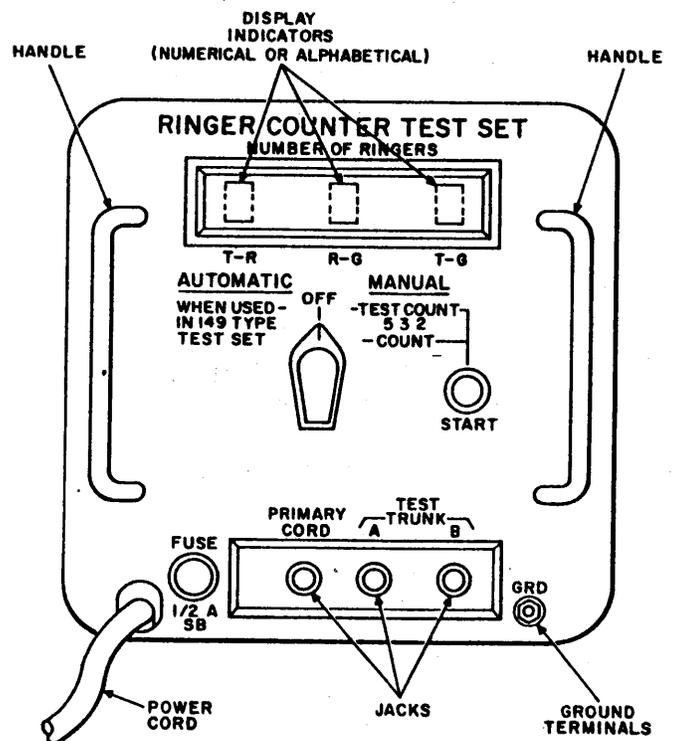


Fig. 2—Front Panel of 150A Ringer Counter Test Set

appear in one or all of the display indicators. If this occurs, either too many ringers are connected to the line, the loop is too long, or the customer line is faulty.

**2.05** The selector switch in the center of the face panel turns the test set on and provides a means of selecting between manual and automatic operation. The AUTOMATIC setting would only be used when the RCTS is used as a component of the 149A test set. The MANUAL setting has two positions. The TEST COUNT position is used as a pretest exercise to verify the RCTS is operating properly. The COUNT position will be used when actually making a ringer counter test on a customer line.

**2.06** The START button is a nonlocking push-type button located to the right of the selector switch. Momentarily depressing the START button initiates the ringer counter test.

**2.07** The ground (GRD) terminal is used to provide an external ground to the RCTS. A ground cord supplied with the test set may be used to provide the ground connection. The test set may also be grounded through the TEST TRUNK B jack. The RCTS need not be grounded through the GRD terminal or TEST TRUNK B jack when the ac service cord for the RCTS is plugged into an approved grounded power outlet. The grounded outlet should have a ground potential common to the frame ground.

**2.08** Three jacks are located on the bottom of the faceplate. The purpose of the jacks is as follows:

- **PRIMARY CORD** jack is used to connect the RCTS to the local test desk or local test cabinet. The primary test cord from the 12- or 14-type LTD is plugged into the PRIMARY CORD jack. A patch cord is used to connect the No. 3 LTC or the jack panel for the No. 3 LTC to the PRIMARY CORD jack on the RCTS. Before the START button on the RCTS is operated to measure a line, the tip, ring, and sleeve leads for the test trunk are directly connected from the TEST TRUNK A jack to the PRIMARY CORD jack. This arrangement permits using the test circuit on the LTD to test the line for trouble. When the START button is operated and the RCTS is in a test cycle to measure a line, the transfer contacts in the RCTS isolate the tip and ring leads from the test circuit of the LTD and connect the ringer measurement circuit from the RCTS to the test trunk (Fig. 3).
- **TEST TRUNK A** jack is used to connect the test set to the test trunk jack on the LTD or LTC. The 3P7E cord is used to patch from the RCTS to the LTD or LTC. TEST TRUNK A jack is connected to the test trunk jack on the 12- or 14-type LTD, No. 3 LTC, or jack panel for No. 3 LTC. When the RCTS is not activated to test a

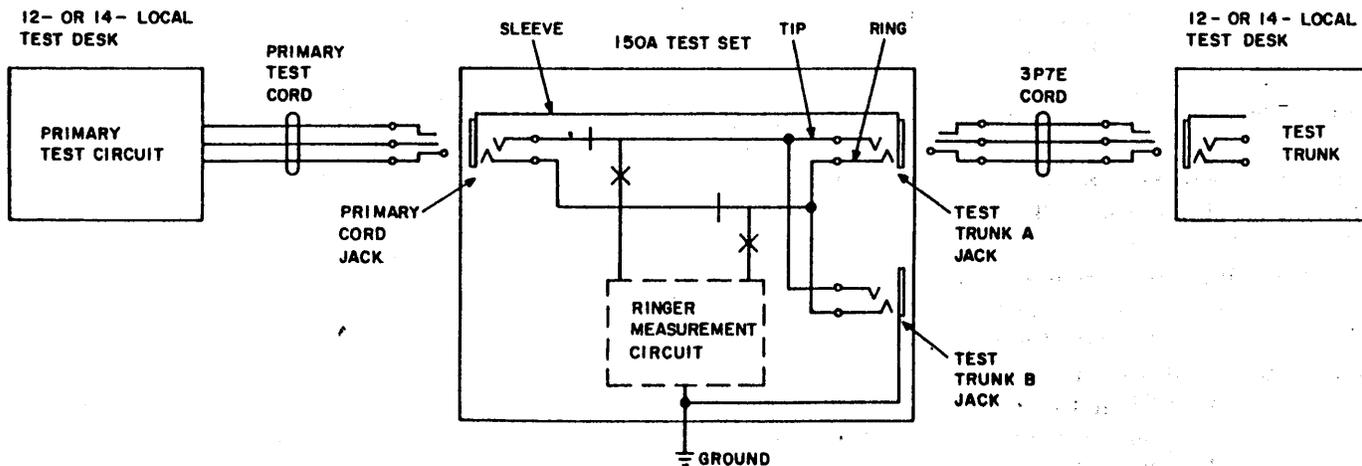


Fig. 3—Circuit Arrangement for Interfacing 150A Ringer Counter Test Set With 12- or 14-Type Local Test Desk

line, the tip, ring, and sleeve leads for the test trunk are directly connected from the TEST TRUNK A jack to the PRIMARY CORD jack. When the START button on the RCTS is operated, a set of transfer contacts in the RCTS isolates the tip and ring leads from the PRIMARY CORD jack and connects the ringer measurement circuit from the RCTS to the TEST TRUNK A jack (Fig. 3).

- **TEST TRUNK B** jack is used to connect the RCTS to the secondary jack located under the left writing shelf of the No. 16 and the modified 14-type LTDs. The 3P7E cord is used to connect the No. 16 and the modified 14-type LTDs to the TEST TRUNK B jack on the RCTS. The access jacks on the No. 16 and modified 14-type LTDs are arranged to disconnect the test keys when a cord is plugged into the jack. This feature prevents using the same test circuit on the LTD to test for faults on the line and for making the ringer counter test. The RCTS connection should be made through the secondary test circuit and the LTD testing will be made with the primary test circuit (Fig. 4). TEST TRUNK B jack is also used to connect the RCTS to a customer line at the MDF. The 3W14B cord may be used to connect the RCTS to the conductor terminations on the vertical side of the MDF. A ground may be supplied to the RCTS through TEST TRUNK B jack, if required (see 2.07). The white conductors of the 3W14B cord may be connected to the MDF ground to supply a ground to the test set. The red conductor connects to the tip side of the line, and the black conductor connects to the ring side of the line.

**2.09** The ac power cord is a 3-conductor cord and will plug into a standard 115V ac grounded receptacle.

### 3. TESTS

**3.01** There are some tests which may be made to ensure that the 150A RCTS is operating properly. The test set has built-in circuitry for verifying the test set is operating properly. This circuitry simulates an artificial line 40K feet long with five ringers connected tip-to-ring, three ringers

connected ring-to-ground, and two ringers connected tip-to-ground. Check the operation of the test set as follows:

- (1) Connect the RCTS to a 115V ac power receptacle.
- (2) Operate the selector switch to the TEST COUNT position.
- (3) Momentarily depress START button.
- (4) Observe numerical indicators. Approximately 3 seconds after the START button is depressed, the indicators will display a digit 5 in the T-R indicator, a digit 3 in R-G indicator, and a digit 2 in the T-G indicator, if the RCTS is operating properly.
- (5) Operate selector switch to COUNT position.
- (6) Momentarily operate START button.
- (7) Observe indicators. All indicators extinguish when START button is depressed.

Approximately 3 seconds after START button is released, the digit 0 should appear in all three indicators.

If the proper digits are displayed for Steps 4 and 7, the RCTS is operating properly. The test also exercises all light emitting diodes in each numerical indicator. The proper numerical displays in Steps 4 and 7 will verify all light emitting diodes are operating properly.

### 4. OPERATION

**4.01** When using the RCTS on 2-party lines associated with panel or step-by-step offices, always predetermine which side (ring or tip) of the line is being measured. The number of ringers connected to the side of the line being tested will always appear in the R-G indicator of the RCTS. The tip and ring leads for the tip party are transposed between the MDF and final selector in panel offices and the MDF and last connector in step-by-step offices. Test connectors through the office switching system are affected by the

TRUNK SWITCHING-CIRCUIT  
SD-1C381-01

PRIMARY AND SECONDARY  
TEST CIRCUIT  
SD-1C379-01

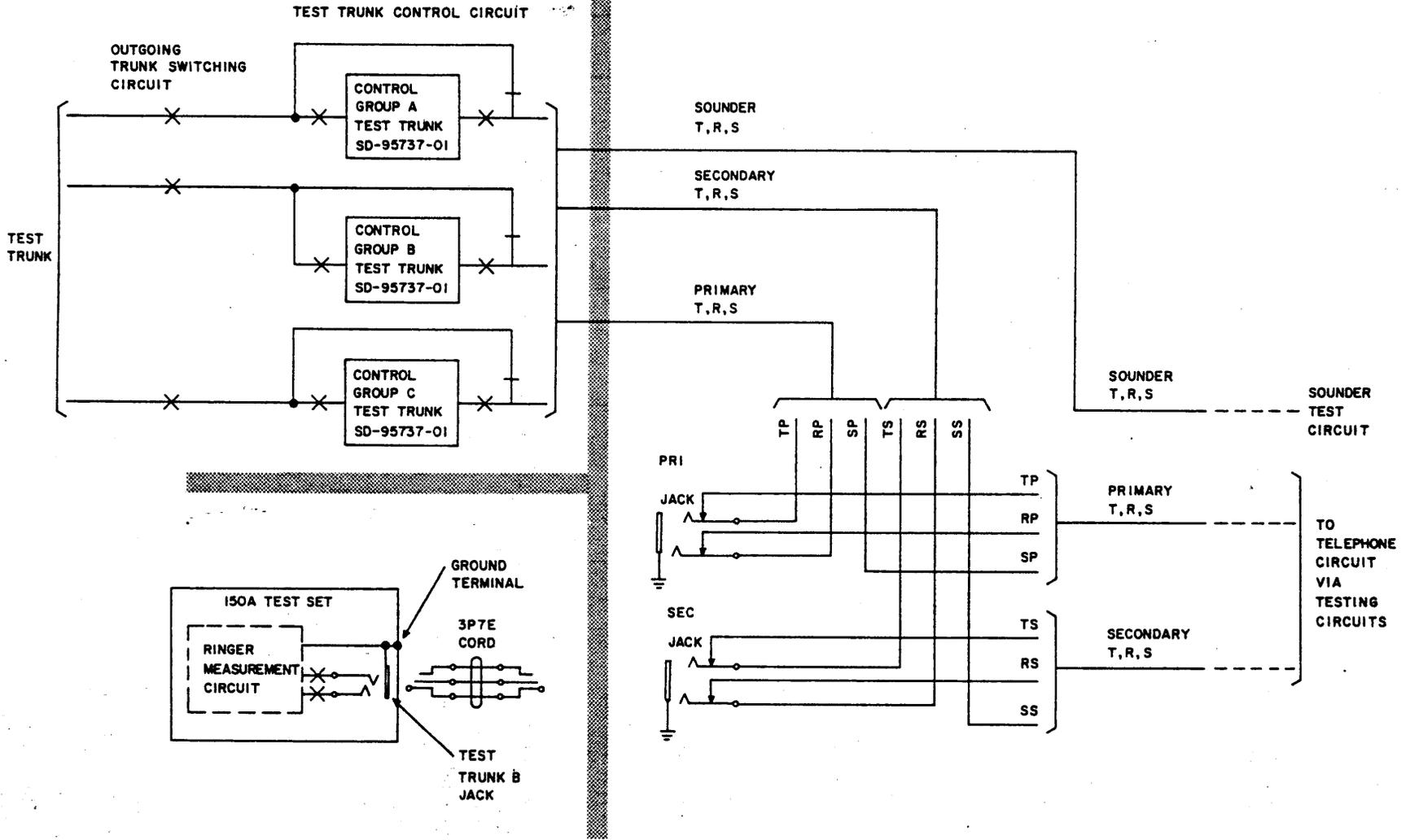


Fig. 4—Circuit Arrangement for Interfacing 150A Ringer Counter Test Set With 16-Local Test Desk

transposition of leads and will show test results on the RCTS as follows:

- Testing the tip party stations will show the number of ringers connected tip to ground in the R-G indicator, and the T-G indicator will show the number of ringers connected ring to ground.
- Testing the ring party stations will show the number of ringers connected tip to ground in the T-G indicator, and the R-G indicator will show the number of ringers connected ring to ground.

The RCTS will detect and display on the T-R indicator the number of ringers connected tip to ring on lines arranged for 2-party service. These ringers are associated with stations which are improperly wired, illegally installed, or working through bridge lifters. Lines associated with all other types of offices will display the number of ringers in the proper indicator on the RCTS.

**4.02** The numerical displays on the RCTS may flash if the ringer test is made on a faulty line. The test results should not be considered conclusive when the numerical displays flash on and off. A momentary noisy condition or fault may prevent the RCTS from providing a reliable test result on a first attempt at testing the line. If the measuring capability of the test set is exceeded, alphabetical characters may appear in one or all of the display indicators. If this occurs,

either too many ringers are connected to the line or the loop is faulty. A second attempt should be made to test any lines which fail the first test with the RCTS.

**4.03** Operation of the 150A test set includes making the proper connections to the local test desk, local test cabinet, or directly to the MDF. The LTD or LTC provides the test trunk facilities to connect to the customer line, and also the testing circuits for making routine tests on the line. *Use the LTD or LTC facilities to verify the customer line is not busy and the connection is made to a line which is free of service affecting trouble before making the ringer counter test.* The measurement results of the RCTS may not be accurate when the leakage resistance from ring to ground, tip to ground, or between conductors (short) is less than 75 KOHMS. Test results made below the 75 KOHMS resistance threshold should not be considered conclusive. The basic operation of the 150A test set will be the same for all arrangements after a connection is established to the customer line. Operating instructions for each of the typical testing arrangements are covered in the succeeding paragraphs.

**THINK** → *When the 150A RCTS uses a test trunk for connecting to a customer line, ensure a good test trunk is seized. Use the LTD or LTC facilities to verify the test trunk is free of trouble.*

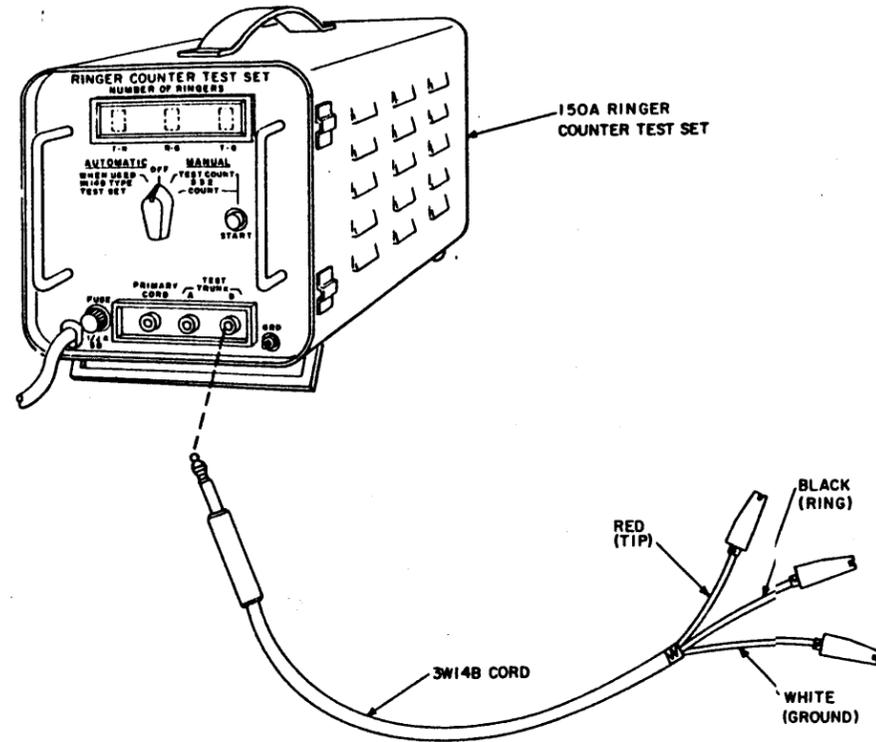
**4.04 When Used at Main Distributing Frame**

STEP	PROCEDURE
1	Verify the line to be tested is not a busy line.
2	Using a test set or meter, test for faults on the customer line (FEMF, insulation leakage, etc).
3	Open the customer line at the MDF. Remove heat coil or protector unit to open line.
4	Connect 3W14B cord from TEST TRUNK B jack on RCTS to terminals on MDF where outside plant conductors are terminated (Fig. 5 and Table A). Connect ground (white) lead to frame ground, if required.
5	Set selector switch on RCTS to COUNT position.
6	Momentarily depress START button on RCTS.

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STEP	PROCEDURE
7	Observe numerical indicators for number of ringers and ringer connection arrangement.
8	Remove the 3W14B cord from MDF connections.
9	Restore service to customer line.

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NOTE:  
RINGER COUNTER TESTS ARE MADE OUT ON THE CABLE CONDUCTORS, CIRCUIT MUST BE OPENED AT THE MDF TO INSURE THE OFFICE EQUIPMENT WILL NOT AFFECT THE MEASUREMENT RESULTS.

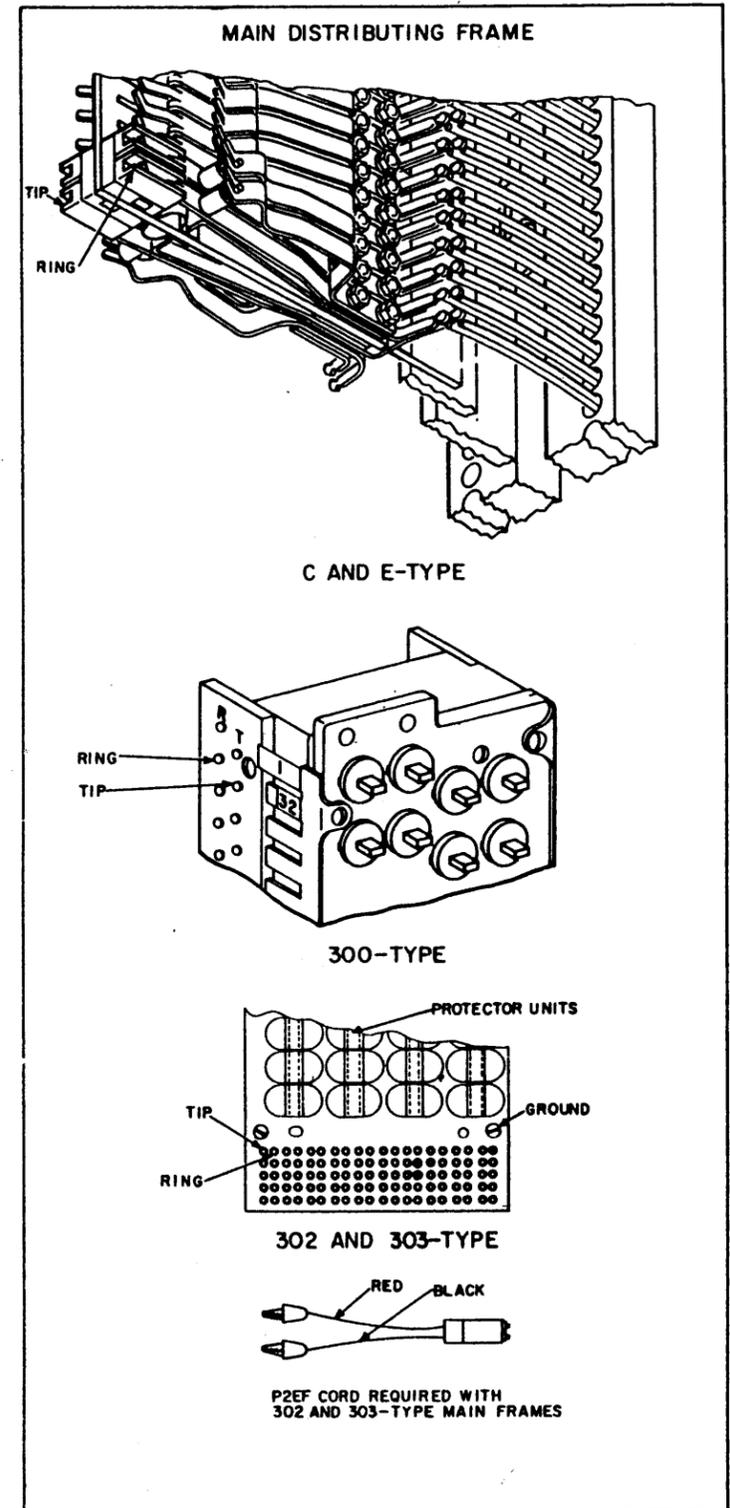


Fig. 5—Typical Connections for Using 150A Ringer Counter Test Set At Main Distributing Frame



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**4.05 When Used With No. 3 Local Test Cabinet  
Arranged for Portable Use**

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STEP	PROCEDURE
1	Connect ground cord W1BL (supplied with RCTS) from GRD terminal on RCTS to MDF ground, if required.
2	Connect 3P7E cord from PRIMARY CORD jack on the 150A RCTS to the TST jack on the bottom of the No. 3 LTC.
3	Connect a test trunk to the TEST TRUNK A jack on the RCTS (Fig. 6 and Table A).
4	Set selector switch on RCTS to COUNT position.
5	Access a customer line using the facility provided by the No. 3 LTC.
6	Test for faults on the customer line (FEMF, insulation leakage, etc) with the test circuit provided by the No. 3 LTC.
7	Restore all test keys on the No. 3 LTC to normal position.
8	Momentarily depress START button on RCTS.
9	Observe numerical indicators for number of ringers and ringer connection arrangement.
<i><b>If the connection to the test trunk is to be held and the customer line is to be released:</b></i>	
10a	Operate and restore the IN key on the No. 3 LTC.
<i><b>Note:</b></i> The test trunk is still connected through the test circuit on the No. 3 LTC. A new customer line may be accessed by using the facilities provided in the No. 3 LTC.	
<i><b>If the connections to the customer line and test trunk are to be discontinued:</b></i>	
11b	Remove the patch cord from TEST TRUNK A jack on the RCTS.

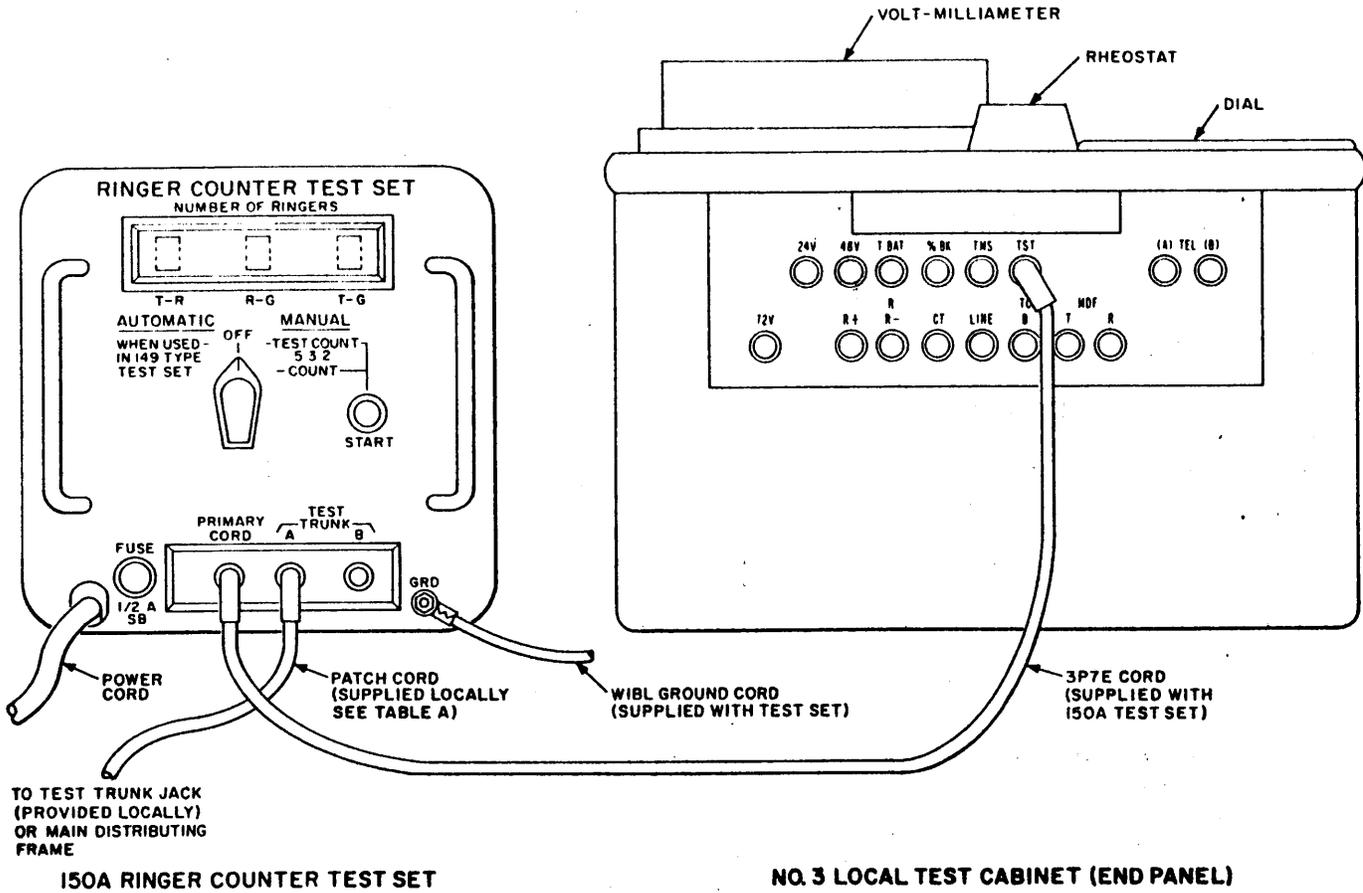


Fig. 6—Typical Connections for 150A Ringer Counter Test Set and No. 3 Local Test Cabinet Arranged for Portable Use

**4.06 When Used With No. 3 Local Test Cabinet  
Equipped With Jack Panel Arranged With Test  
Distributor Jacks (Step-by-Step Offices)**

STEP	PROCEDURE
1	Connect ground cord W1BL (supplied with RCTS) from GRD terminal on RCTS to a ground, if required.
2	Connect a 2P1B (2-conductor) cord from the selected TST DIST line (L) jack to corresponding jack of the test circuit (Fig. 7 and Table A).
3	Connect a 2P30B cord from the PRIMARY CORD jack on the RCTS to the test (T) jack of the test circuit (Fig. 7).
4	Connect a 2P30B cord from the TEST TRUNK A jack on the RCTS to the selected TST DIST test (T) jack (Fig. 7). This jack is the mate to the jack selected in Step 2.
5	Set selector switches on RCTS to COUNT position.
6	Access a customer line using the facilities provided by the No. 3 LTC.
7	Test for faults on the customer line (FEMF, insulation leakage, etc) with the test circuit provided by the No. 3 LTC.
8	Restore all test keys on the No. 3 LTC to normal position.
9	Momentarily depress START button on RCTS.
10	Observe numerical indicators for number of ringers and ringer connection arrangement.
	<i>If the connection to the test distributor is to be held and the customer line is to be released:</i>
11a	Operate the TD key on the No. 3 LTC to the "hold" position.
	<i>Note:</i> The test trunk is still connected through the jack panel to the test circuit on the No. 3 LTC. A new customer line may be accessed by using the facilities provided in the No. 3 LTC.
	<i>If the connection to the customer line and test distributor are to be disconnected:</i>
12b	Remove the patch cord from the TST DIST test (T) jack on the jack panel.

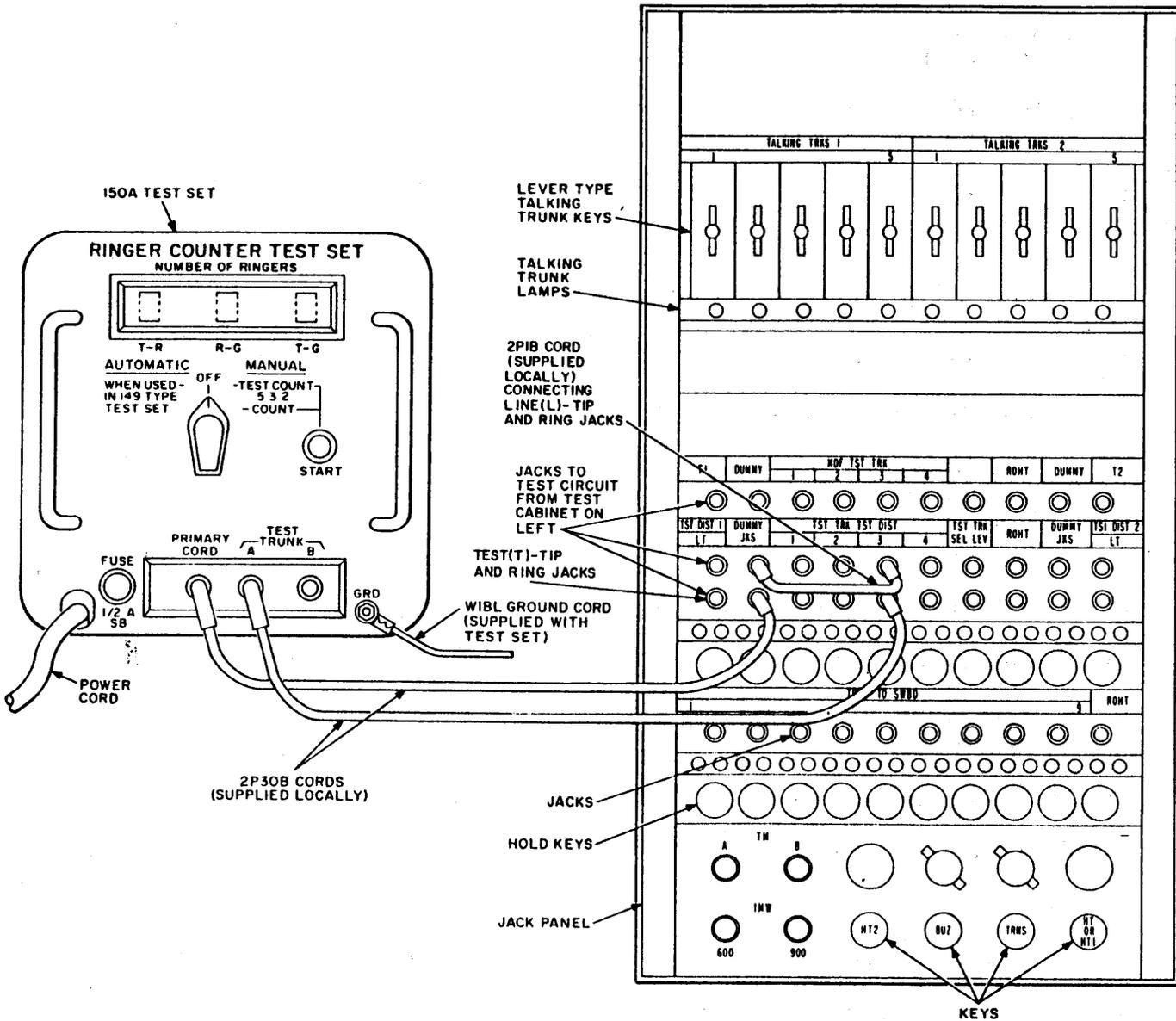


Fig. 7—Typical Connections for 150A Ringer Counter Test Set and Jack Panel for No. 3 Local Test Cabinet—Arranged for Use With Test Distributor Jacks

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**4.07 When Used With No. 3 Local Test Cabinet  
Equipped With Jack Panel Arranged With Test Selector  
Jacks**

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STEP	PROCEDURE
1	Connect ground cord W1BL (supplied with RCTS) from ground terminal on RCTS to frame ground, if required.
2	Connect a 3P7E cord from the selected test selector jack on panel to the TEST TRUNK A jack on the RCTS (Fig. 8 and Table A).
3	Connect a 3P7E cord from the test circuit jack on the jack panel to the PRIMARY CORD jack on the RCTS (Fig. 8).
4	Set selector switch on RCTS to COUNT position.
5	Access a customer line using the facilities provided by the No. 3 LTC.
6	Test for faults on the customer line (FEMF, insulation leakage, etc) with the test circuit provided by the No. 3 LTC.
7	Restore all test keys on the No. 3 LTC to normal position.
8	Momentarily depress START button on RCTS.
9	Observe numerical indicators for number of ringers and ringer connection arrangement.
	<i>If the connection to the test trunk is to be held and the customer line is to be released:</i>
10a	Operate and restore the IN key on the No. 3 LTC.
	<i>Note:</i> The test trunk is still connected through the jack panel to the test circuit on the No. 3 LTC. A new customer line may be accessed by using the facilities provided in the No. 3 LTC.
	<i>If the connections to the customer line and test trunk are to be disconnected:</i>
11b	Remove the 3P7E cord from the trunk jack on the jack panel.

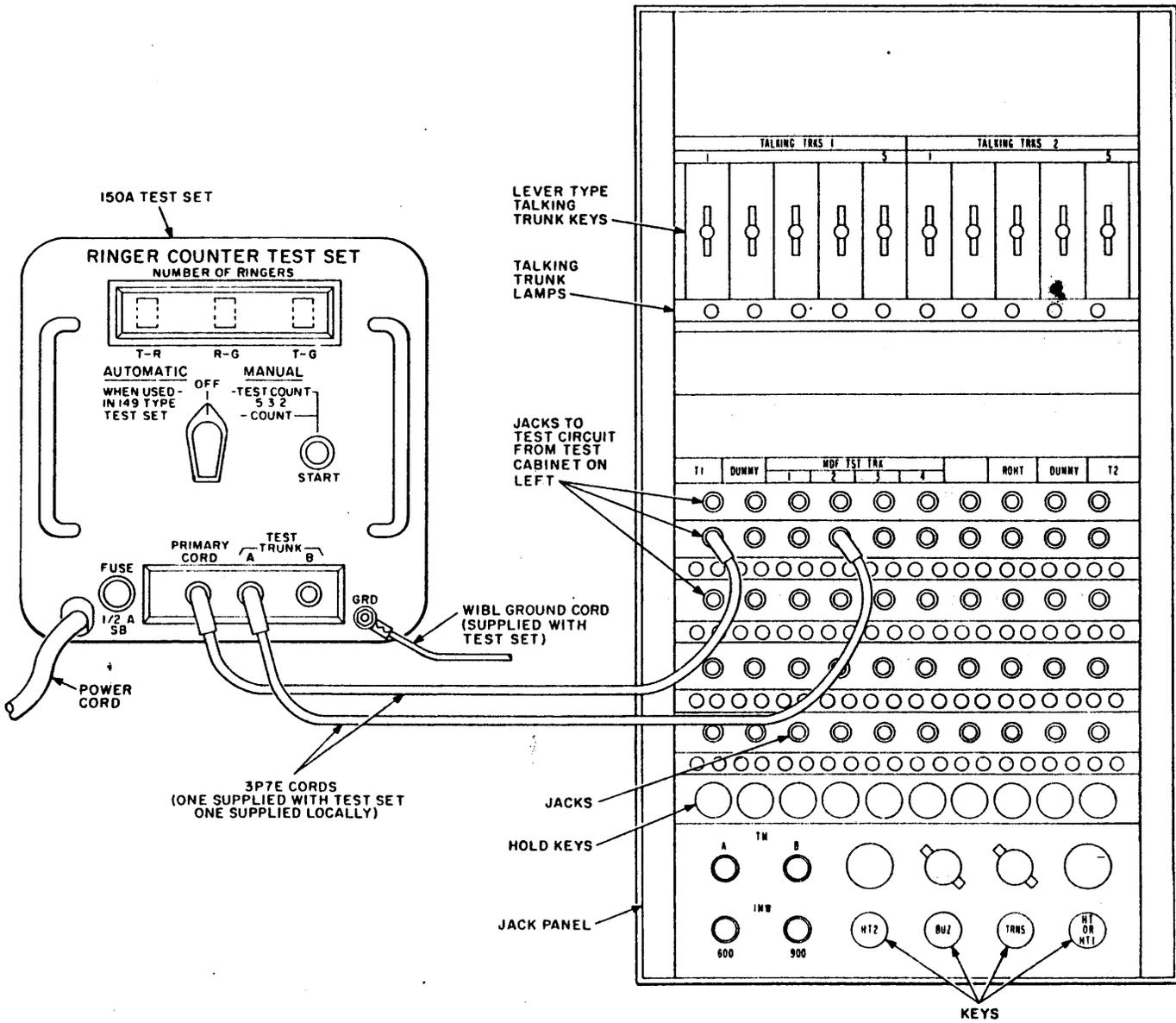


Fig. 8—Typical Connections for 150A Ringer Counter Test Set and Jack Panel for No. 3 Local Test Cabinet—Arranged for Use With Test Selector Jacks

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**4.08 When Used With 12- and 14-Type Local Test Desks**


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STEP	PROCEDURE
1	Connect ground cord W1BL (supplied with RCTS) from ground terminal on RCTS to frame ground terminal on back of LTD, if required.
2	Connect primary test circuit cord of LTD to PRIMARY CORD jack of RCTS (Fig. 9 and Table A).
3	Connect 3P7E cord (supplied with RCTS) from TEST TRUNK A jack on RCTS to test trunk jack on LTD (Fig. 9). Select test trunk jack on LTD associated with the office code for the customer to be tested.
4	Set selector switch on RCTS to COUNT position.
5	Access a customer line using the facilities provided by the LTD.
6	Test for faults on the customer line (FEMF, insulation leakage, etc) with the test circuit for the LTD.
7	Restore all test keys on the LTD to normal position.
8	Momentarily depress START button on RCTS.
9	Observe numerical indicators for number of ringers and ringer connection arrangement.
<b><i>If the connection to the test trunk is to be held and the customer line is to be released:</i></b>	
10a	Momentarily depress the disconnect key associated with the test trunk jack, or operate the IN key.
<b><i>Note:</i></b> The test trunk is still connected through to the primary test circuit and a new customer line may be connected to the test circuit.	
<b><i>If the connections to the customer line and test trunk are to be disconnected:</i></b>	
11b	Remove the 3P7E cord from the test trunk jack on the LTD.
12b	Momentarily depress the disconnect key associated with the test trunk jack.

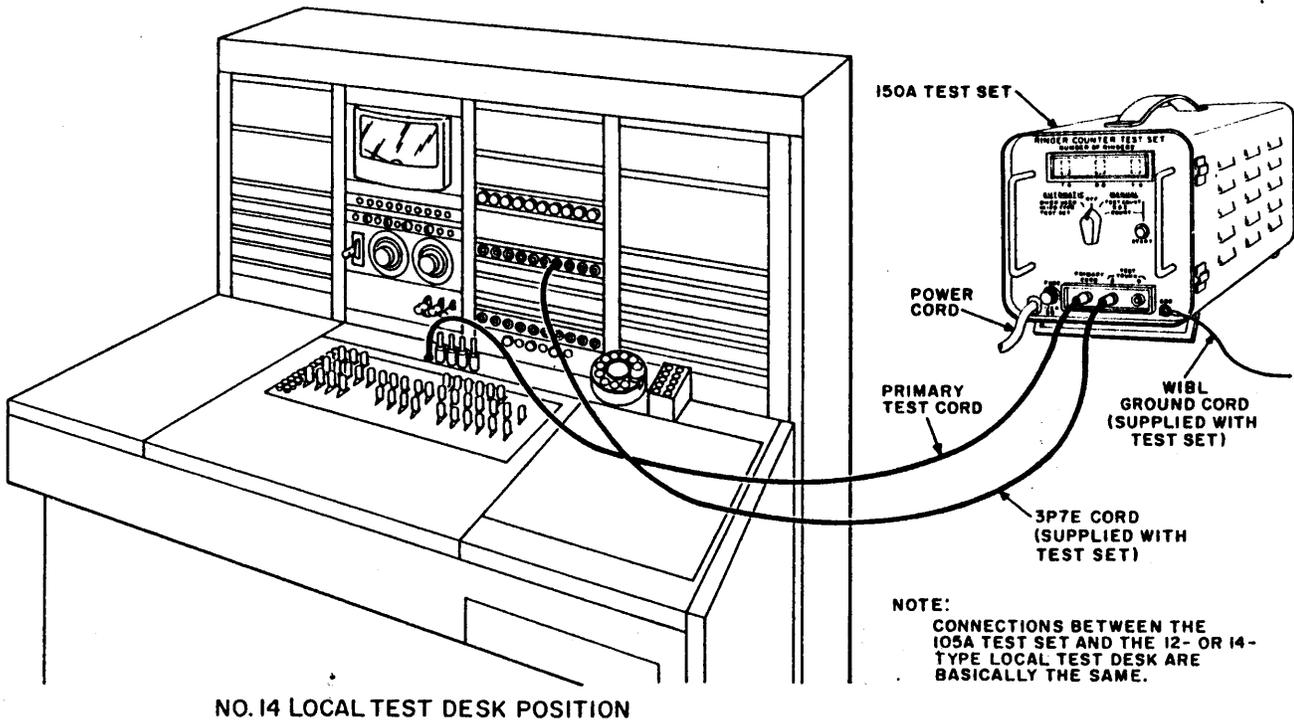


Fig. 9—Typical Connections for 150A Ringer Counter Test Set and 12- or 14-Type Local Test Desk

4.09 When Used With Modified 14-Type Local Test Desk (Console Test Position)

STEP	PROCEDURE
1	Connect 3P7E cord (supplied with RCTS) from TEST TRUNK B on RCTS to secondary (SEC) access test jack on LTD (Fig. 10 and Table A).
<i>Note:</i> A headset must be plugged into the jack on the test desk before a test connection can be established.	
2	Operate directory button (DA, DB, or DC) on the desired control group key.

## STEP

## PROCEDURE

- 3 Operate a test trunk button associated with the office code of the customer line to be tested.
- 4 Operate PRI button on the selected control group key.
- 5 Set selector switch on RCTS to COUNT position.
- 6 Access a customer line using the facilities provided by the LTD.
- 7 Test for faults on the customer line (FEMF, insulation leakage, etc) with the LTD test circuits.
- 8 Restore all test keys on LTD to normal position.
- 9 Operate RLS button on the control group key.
- 10 Operate SEC button on the control group key to transfer test trunk connection to RCTS.
- 11 Momentarily depress START button on RCTS.
- 12 Observe numerical indicators for number of ringers and ringer connection arrangement.
- 13 Momentarily depress RL button on control group key.
- 14 Operate PRI button on the control group key for further testing or connecting to a different customer line from the LTD.

***If the connection to the test trunk is to be held and the customer line is to be released:***

- 15a Operate and restore the IN key for the primary test circuit.

***Note:*** The B and D buttons on the control group key remain illuminated to indicate the test trunk is still connected through to the primary test circuit and a new customer line may be connected to the test circuit.

***If the connections to the customer line and test trunk are to be disconnected:***

- 16b Momentarily depress RL button on the control group key.
- 17b Depress D button on control group key. ***Hold D button depressed until the button lamp is extinguished.***

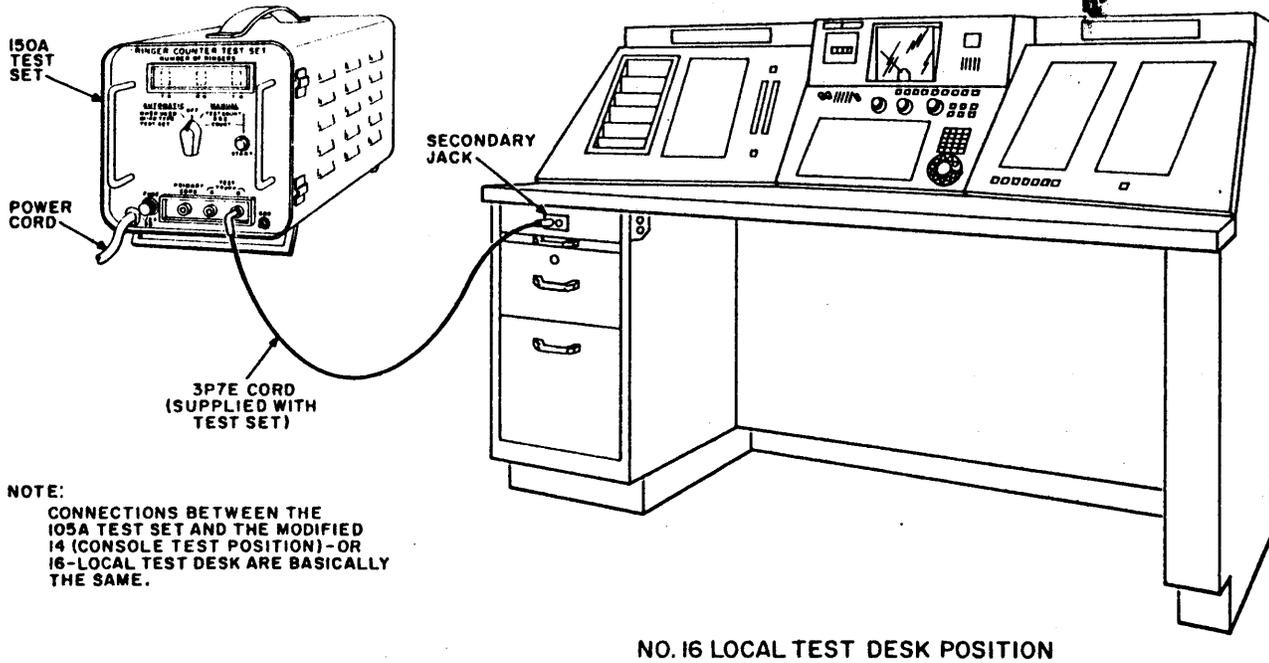


Fig. 10—Typical Connections for 150A Ringer Counter Test Set and 16- or Modified 14-Type Local Test Desk

4.10 When Used With No. 16 Local Test Desk

STEP	PROCEDURE
1	Connect 3P7E cord (supplied with RCTS) from TEST TRUNK B on RCTS to secondary (SEC) access test jack on No. 16 LTD (Fig. 10 and Table A).  <i>Note:</i> A headset must be plugged into one of the jacks before a test connection can be established.
2	Operate an outgoing test trunk button associated with the office code to be used for testing.
3	Operate PRI button on control group (A, B, or C) key with ON button illuminated.
4	Set selector switch on RCTS to COUNT position.

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STEP	PROCEDURE
5	Access a customer line using the facilities provided by the No. 16 LTD.
6	Test for faults on the customer line (FEMF, insulation leakage, etc) with the No. 16 LTD test circuit.
7	Restore all keys on LTD to normal position.
8	Operate SEC button on the control group key to transfer test trunk connection to RCTS.
9	Momentarily depress START button on RCTS.
10	Observe numerical indicators for number of ringers and ringer connection arrangement.
11	Operate PRI button on control key for further testing or connecting to a different customer line from the LTD.
	<b><i>If the connection to the test trunk is to be held and the customer line is to be released:</i></b>
12a	Momentarily operate and release IN key for primary test circuit.
13a	Observe ON button associated with control group key. An illuminated ON button indicates the test trunk is held and a connection may be made to another customer line.
	<b><i>If the connections to the customer line and test trunk are to be disconnected:</i></b>
14b	Operate DISC button on control group key used to make connections. Hold DISC button depressed until the button lamp is extinguished.

TABLE A

**CORDS REQUIRED FOR TYPICAL TESTING ARRANGEMENTS  
USING 150A RINGER COUNTER TEST SET**

TESTING ARRANGEMENTS	REFER- ENCE FIGURE	CORDS REQUIRED					
		* 3W14B 9 FT.	* 3P7E 4 FT.	* W1BL 12 FT.	† 2P30B 6 FT.	† 2P1B 2 FT.	† 3P16A 6 FT.
150A Ringer Counter Test Set Used at Main Distributing Frame	5	1 (Note 3)					
No. 3 Local Test Cabinet Arranged For Portable Use	6		1	1			1 (Note 2)
No. 3 Local Test Cabinet and Jack Panel E/W Test Distributor Jacks	7			1	2	1	
No. 3 Local Test Cabinet and Jack Panel E/W Test Selector Jacks	8		2 (Note 1)	1			
12- or 14-Type Local Test Desk	9		1	1			
16- or Modified 14-Type Local Test Desk	10		1				

\* One cord supplied with 150A ringer counter test set

† Cords must be supplied locally (standard cords)

*Notes:*

1. One 3P7E cord is supplied with the 150A test set and the second cord must be supplied locally.
2. This cord is equipped with a 309-type plug for use at the MDF test trunk jack. Different jack mountings are equipped with different jacks so the 3P16A is only a suggested cord for use with this arrangement.
3. A P2EF cord must be used in addition to the 3W14B cord for making connections to the lugs on the test panel of 302- and 303- type main frames.

## 5. ♦ MAINTENANCE

5.01 Maintenance on the 150A RCTS is limited to checking for loose or broken connections, checking 1/2 ampere slow blow fuse, and replacing circuit packs.

5.02 To remove the 150A RCTS from its housing, four screws located on the faceplate must be removed. Two of the screws are located along the left side of the facepanel, and the other two screws are located along the right side of the facepanel. Once the four screws are removed, the 150A RCTS may be slid out of the housing.

5.03 The circuit packs (Fig. 11) in the 150A RCTS may be replaced when defective. It is not recommended that any repairs be attempted on the circuit packs. Circuit packs KR1, KR2, and KR3 are aligned as a matched set of circuit packs. ***SINCE THE KR1, KR2, AND KR3 CIRCUIT PACKS MUST FUNCTION AS A SET, ALL THREE CIRCUIT PACKS MUST BE REPLACED SHOULD ANY ONE BECOME DEFECTIVE. THE SAME PROCEDURES MUST BE FOLLOWED WHEN RETURNING KR1, KR2, AND KR3 CIRCUIT PACKS FOR REPAIRS. ALWAYS RETURN ALL THREE CIRCUIT PACKS.***

5.04 Circuit packs must be handled with care and should be packaged properly when being

shipped. The KR6 circuit pack requires extra caution when being handled to prevent damaging the components and the terminals (fingers).

***CAUTION: Do not touch the gold terminals (fingers) on the circuit packs. Always handle the circuit packs by grasping them along the edge of each side or holding them by the handle provided for pulling the board from the connector.***

***WHEN THE KR6 CIRCUIT PACK IS REMOVED FROM THE 150A RCTS, ALWAYS PLACE THE BLACK SHORTING BAR (Fig. 12) OVER THE TERMINALS (FINGERS). PLACE THE CIRCUIT PACK IN A BLACK CONDUCTIVE COVER (Fig. 12).*** The KR6 circuit pack is shipped in a conductive cover and has a shorting bar in place. The cover and shorting bar from the replacement circuit board may be used when returning a defective KR6 circuit pack.

5.05 A defective 105A RCTS may be returned to the manufacturing location for repairs. The procedure for returning a defective test set is to return the test set to the supply organization which in turn will ship it to the manufacturing location.♦

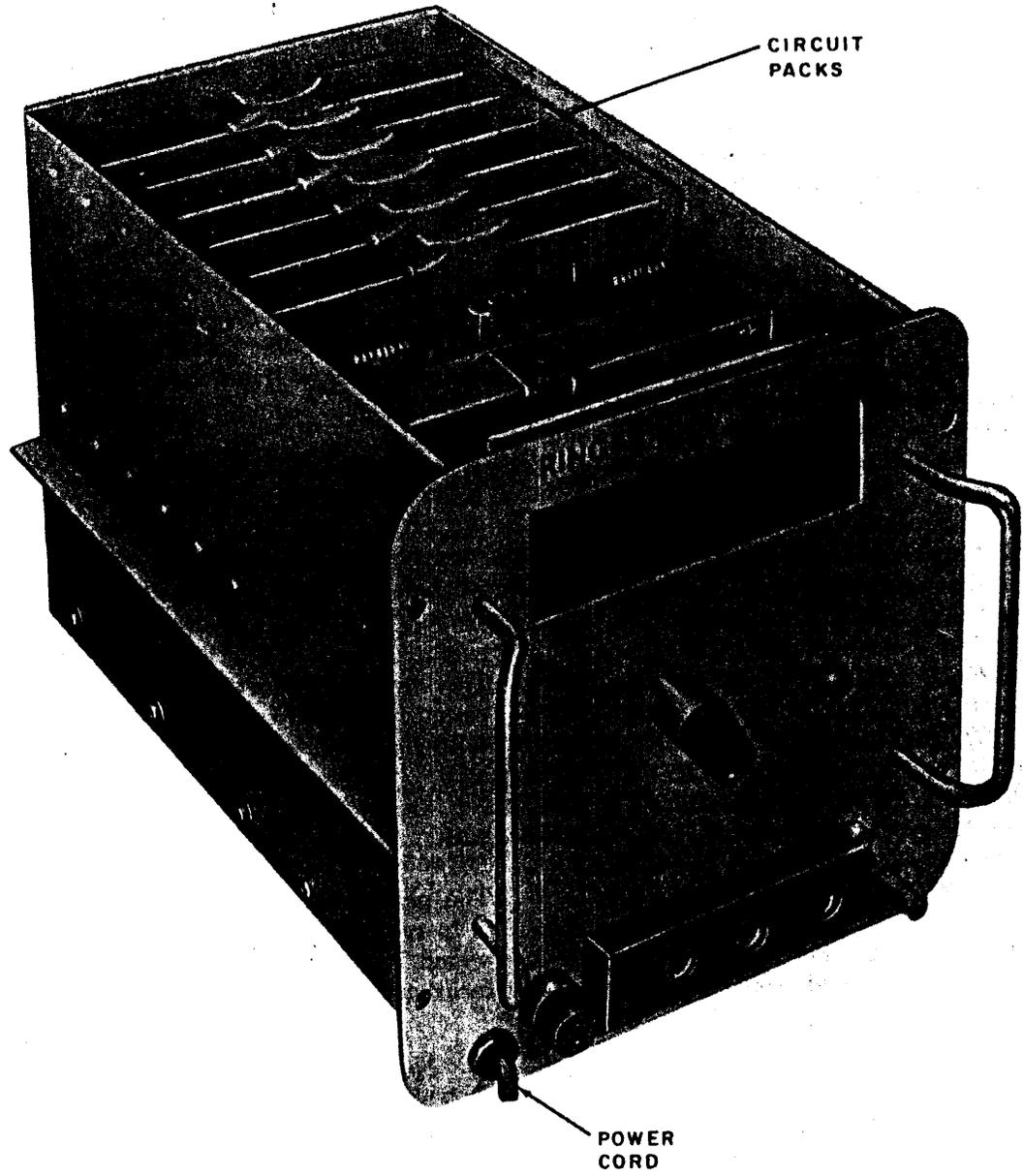


Fig. 11—150A Ringer Counter Test Set Removed From Housing

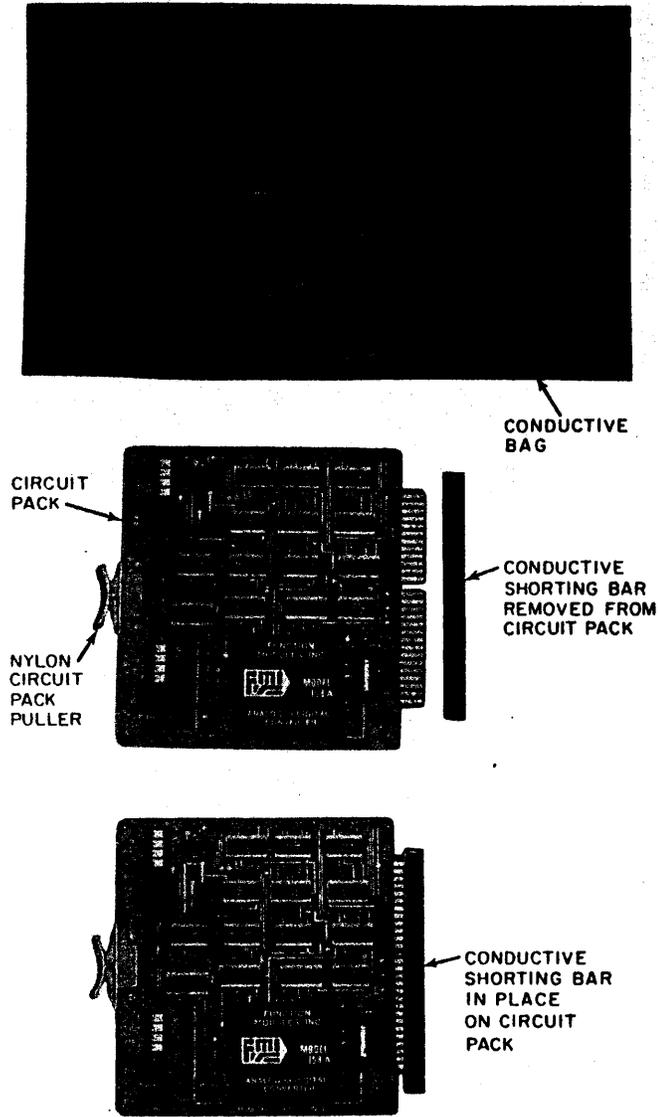


Fig. 12—Circuit Pack With Shipping Components

