C-, E-, AND SIMILAR TYPE PROTECTORS INCLUDING 444-TYPE JACKS (301-TYPE CONNECTORS) ASSOCIATED CORDS AND PLUGS

CONTENTS PAGE

1. GENERAL

1.01 This section describes plugs, cords, and B and F test connectors used with C, E, and similar type protectors associated with Main Distributing Frames.

1.02 This section is issued to update and clarify information previously contained in Section 201-203-101 pertaining to C-, E-, and similar type protectors and to include information pertaining to B and F test connectors previously contained in Section 102-110-101.

1.03 Plugs, cords, and test connectors used on other than C, E, and similar type protectors are covered in Sections 201-207-102 and 201-208-102.

1.04 Other sections which may be helpful are in the 032 Division.

1.05 Since the P100A and P100B cords are used with both the B and F test connectors, the description and installation of both connectors are written as combined information.

1.06 The B and F test connectors are used to connect apparatus rapidly to 50 consecutive pair terminations on a main frame.

1.07 The B test connector is designed for use on C50, C52, E52, and 1177 protector mountings.

1.08 The F test connector is designed for use on 444-type jacks (301-type connectors).

1.09 The P100A and P100B cords are used to connect apparatus to test connectors and to bridge test connectors.

1.10 The C test connector case is used for storing and transporting the F test connector.

1.11 The D test connector case is used for storing and transporting the B test connector.

2. CORDS, PLUGS, AND TEST CONNECTORS

A. Plug and Test Connector Used With C-Type Protectors

2.01 Table A lists the plugs and test connector used with C-type protectors.

B. Cords Used With C-Type Protectors

2.02 Table B lists the cords used with C-type protectors.

C. Plugs and Test Connector Used With 444-Type Jacks (301-Type Connector)

2.03 Table C lists plugs and test connector used with 444-type jacks (301-type connector).

D. Cords Used With 444-Type Jacks (301-Type Connector)

2.04 Table D lists cords used with 444-type jacks (301-type connector).

3. B AND F TEST CONNECTORS

A. B Test Connector

3.01 The front and back views of the B test connector are shown in Fig. 1 and 2. The connector consists of a U-shaped main support, a cam, a lever which actuates a hinged plate, and 50 pushrods that press on the arms of contact supports. The contact supports are pulled together by extension coil springs which cause the contacts to press firmly against the springs on the cable side of a protector mounting.

3.02 The B test connector is equipped with two 25-pair cable connectors for attaching a P100A or P100B cord to the test connector.

3.03 The B test connector will not contact the springs of cable pairs equipped with markers designating special services. Contact to individual pairs may be avoided by moving the pair contact openers in toward the protector and locking them in the slots provided.

B. F Test Connector

3.04 The F test connector consists of a U-shaped main support (Fig. 3 and 4) containing 50 plungers, each equipped with a pair of contacts connected through flexible printed circuitry to a common terminal strip which in turn is wired to cable connectors.

3.05 The F test connector is equipped with two 25-pair cable connectors for attaching a P100A or P100B cord to the test connector.

3.06 The F test connector will not make contact with any circuit equipped with special circuit markers. Contact with other pairs can be avoided by not releasing the associated plungers after the connector has been mounted. The central office equipment may be removed from any pair by releasing the sliding latch and pushing the plunger all the way to the ***in*** position.

3.07 When using the F test connector, the following should be preformed:

(1) The left and right slide assemblies (Fig. 3) should be in the ***down*** position when the plungers are released to contact the cable pairs.

(2) The left and right slide assemblies (Fig. 3) should be in the ***up*** position when the central office equipment is to be removed from any pair.

C. P100A and P100B Cords

3.08 The P100A and P100B cords are illustrated in Fig. 5 and 6. The cords are not supplied with the test connectors but must be ordered separately.

3.09 The P100A cord, which is 30 feet long, is required to connect test equipment to a test connector. The plugs on the Y end of the cord are engaged with mating connectors on test equipment. Plugs and connectors with similar numbers on the hoods of the cord plugs and on the test equipment should be mated. The jack screws are engaged and turned simultaneously so the plugs and connectors mate squarely. The

P100A cord is removed from the test equipment by reversing the jack screws simultaneously.

3.10 The P100B cord is a 50-foot extension cord. One or more P100B cords and a P100A cord are required to bridge between test connectors. Jack screws of the lugs on the Y end of the P100A cord mate with the connectors on the Y end of the P100B cord. Plugs on the tandem end of the P100B cord connect to a test connector or to connectors on the Y end of another P100B cord or test equipment. Turn jack screws, as described in 3.09 when mating plugs and connectors.

D. Placing B Test Connector

3.11 Before placing the B test connector, check for lubrication. The cam of the B test connector should be lubricated with KS-19139 L2 lubricant to prevent excessive wear of the cam against the cam plate.

3.12 The B test connector is readied for placing on C-50 and similar-type protectors by grasping the handle at the lower end of the connector with the left hand, and moving the cam lever fully upward with the right hand until latched. This will open the contacts. The positioning clamps are extended or rotated from the closed position shown in Fig. 2 to the open position.

3.13 The B test connector is then placed on a protector by inserting the metal guide at the top between the carbon blocks ***immediately above*** the blocks of the first pair to be contacted. The operating buttons on the positioning clamp should be squeezed with the thumb and index finger of the right hand, thus opening the clamp which is then inserted into position and then released to allow the clamp to close on the protector springs. This centers the top of the test connector about the protector.

3.14 The cam lever is then unlatched and lowered with the right hand to its original position. This closes the contacts of the test connector on the springs of the protector. Individual pair contacts may be opened by pushing and locking the opener adjacent to the pair number on the number plate of the connector.

> ***Note:*** Make a visual inspection to determine that all the contacts are properly aligned on the protector mounting springs. Any contacts riding on the ceramic blocks should be pushed onto the protector springs with a nonmetallic tool.

3.15 To ensure satisfactory connection, hold the B test connector by the handle and, with a slight upward pressure, gently rock it from right to left several times. This motion will cause the sharp rhodium-plated tips of the contacts to penetrate any oxidation on the springs.

> ***Note:*** If two B test connectors are to be installed in tandem, install the lower test connector first. This will avoid interference in placing the second connector.

3.16 After the B test connector is installed on the protector, the P100A cord is connected to the test connector and secured with the jack screws provided on the cord plugs. The plug numbered 1 through 25 and 51 through 75 should be mated with the upper connector which is associated with numbers 1 through 25 and 51 through 75 on the B test connector number plate. The plug numbered 26 through 50 and 76 through 100 is connected to the lower connector which is associated with those numbers on the number plate. Engage the jack screws, and turn the screws simultaneously so the plug will enter the connector without binding. The end of the P100A cord where one plug is in line with the other is attached to the connectors on the B test connector. The Y termination end of the P100A cord is connected to the test equipment.

3.17 The tandem ends of the P100A and P100B cords (which attach to the test connectors) are provided with a clip-about 1-1/2 feet behind the cordage breakout to the plugs. Attach the clips to a cable ring between verticals to relieve the strain on the test connectors due to the weight of the vertical portion of the cord. Adjust the portion of the cord hanging vertically to position within the space between the adjacent protector mountings. Do not allow the cord to protrude into the aisle space.

3.18 Place the remaining cordage passing between verticals on the floor behind the ladder guardrail, and neatly coil excess cordage so it does not protrude into the aisle space.

3.19 Follow the procedures in 3.16 where the P100A cord is used alone to connect the

test connectors with test equipment. Place the test equipment as close to the vertical containing the pairs under test as practicable, and allow only the minimum cordage needed to connect to the test equipment in the aisle space outside the guardrail.

3.20 Remove the cords by unscrewing the jack screws on them. Turn screws simultaneously until the plugs come away squarely from the connectors. Move the lever on the B test connector to the latched position. Grasp the lifting handle at the bottom of the connector. Open the clamps at the top of the connector, and move the test connector horizontally outward away from the protector. With the test connector standing vertically, move the lever downward again closing the contacts. The positioning clamps should then be returned to the position shown in Fig. 2.

E. Placing F Test Connector

3.21 Pull the 50 plungers out to the ***latched*** position. Place four adapters on jacks, in the 50-pair count to be tested as near to the upper and lower extremes of the 50-pair count as special service markers permit. (Fig. 7). ***The adapters (Fig. 7) used to place the F test connector should be marked with an X on the side.*** Place and lock the F test connector on the adapters by rotating the four knurled knobs so the locking plate positioning dots are aligned with the dots on the chassis. Release the latches on the plungers to make contact with the springs of the 444-type jacks. The left and right slide assemblies (Fig. 3) should be in the ***down*** position when the plungers are released to contact the cable pairs. The left and right slide assemblies should be in the ***up*** position when the central office equipment is to be removed from any pair. Special service markers prevent contact with the springs associated with special service pairs.

3.22 After the F test connector is installed on the jack, the P100A or combination of a P100A and one or more P100B cords is plugged into its mating connectors. The plug numbered 1 through 25 and 51 through 75 is connected to the upper mating connector on the F test connector, and the plug numbered 26 through 50 and 76 through 100 is connected to the lower mating connector. Engage the plugs as described in 3.16.

F. B Test Connector Conversion

3.23 Conversion kit D-180538 is used for field modification of the B test connector. The kit includes manufacturing changes made to the B test connector. Perform field modification to the B test connector with the D-180538 modification kit as followers:

(1) Remove clamp mounting screws A (Fig. 8) from both sides of the B test connector and discard entire clamp assemblies.

(2) Remove the B-58619 handle and save for reuse on the new post assemblies.

(3) Remove post mounting screws B (Fig. 8) on both sides of connector and discard the support and post assemblies.

(4) Attach two L-508527 support bracket assemblies to the frame (Fig. 9) using eight No. 6 (0.138)-32 by 1/8 inch long flat head screws B (Fig. 11). Ensure that the edges of L503812 cover (Fig. 19) fit between the bracket and frame.

(5) Attach the two new L-508525 post assemblies to the frame (Fig. 10) using four No. 6 (0.138)-32 by 1/8 inch long flat head screws C(Fig.11). Ensure that the edges of L-503812 cover (Fig. 10) fit between the post assemblies and frame.

(6) Attach the L-508320 support (Fig. 9) to the support brackets using four No. 6 (0.138)-32 by 5/16 inch long fillister head screws and No. 6 lock washers A (Fig. 9).

(7) Attach the two L508404 clamp leg assemblies to the support brackets (Fig. 9) by inserting the L508321 pins through the aligned holes in the support brackets and pivot blocks in the clamp leg assemblies.

(8) Adjust the clamp leg assemblies to clear the top of the support bracket assemblies to permit 90-degree rotation B (Fig. 11). Bend the clamp leg assemblies as necessary to obtain 1-inch clearance between the clamp legs when extended.

(9) After obtaining smooth operation of the clamp leg assemblies, upset the end of the L508321 pins to prevent withdrawal.

(10) Attach the B-586819 handle previously removed in step (2) between the L508525 post assemblies using the two No. 6 (0.138)-32 by 1/2 inch long round head screws and No. 6 lockwashers (Fig. 10).

(11) Remove and discard the two existing flat head screws A (Fig. 10). Attach the L508390 catch assembly using two No. 6 (0.138)-32 by 7/16 inch long flat head screws.

G. Main Frame Ladder Clearance

3.24 To prevent a moving ladder from causing damage to the connectors, adjust the distance of the ladder top rail guide from the main frame to provide 1-inch minimum clearance along the entire length of the frame.

3.25 Temporary clearance can be obtained by using a P-20A356 guard as shown in Section 106-310-120 (providing clearance for a 108A test set). This guard extends 7 inches out and 16 inches along the main frame guardrail. This clearance is sufficient to permit the ladder to pass the test connector.

3.26 Permanent clearance can be provided by extending the guardrail per ED-95099-70 furnished by the equipment engineer. However, temporary clearance is preferred for economic reasons.

H. C Test Connector Case

3.27 A C test connector case is supplied with each F test connector to provide protection during storage or transportation.

3.28 The C test connector case (Fig. 12) consists of a plastic carrying case with a hinged cover, a carrying handle, and two snap catches. Supports are provided for holding the connector in place. The six adapters furnished with the F test connector are supplied in a plastic bag.

I. D Test Connector Case

3.30 The D test connector case is available on separate order to house and transport a B test connector.

3.31 The D test connector case (Fig. 13) consists of a lightweight plastic box with a hinged cover, a carrying handle, a latch, and two snap catches. Supports are provided for holding the test connector in place.

3.32 There are two longitudinal ribs on both the cover and the bottom of the case which, along with the catches, permit stacking two cases and carrying them as a unit.

TABLE A

PLUGS OR TEST CONNECTOR USED WITH C-TYPE PROTECTORS

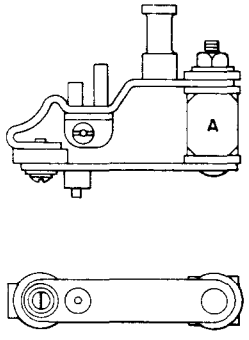
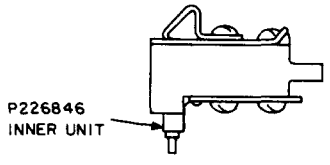
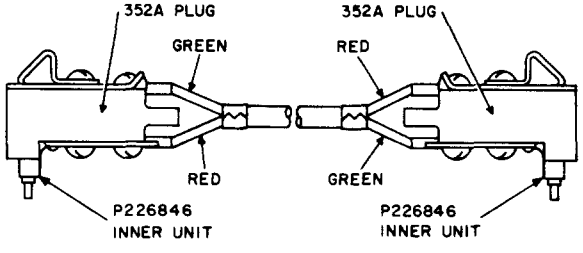
PLUG OR CONN	DESCRIPTION AND USE	ILLUSTRATION
252A 252B	Used with 4W6A cord. 252A has a "T"; 252B has an "R" stamped on both sides to indicate "Tip" and "Ring." ("A" stamped on illustration).	
352A	Forms part of 356A plug. Contains a heat coil and is arranged to make connections to protector block spring and heat coil spring of C50 and similar protector mountings.	
356A	Consists of a P2AY cord equipped with a 352A plug at each end. Used on C50 and similar type protectors to reverse a cable pair to provide temporary service when ring side of the circuit has been grounded or to temporarily correct tip and ring reverse until outside plant change can be made.	
B-Test Connectors	Used to provide access to 50 cable pairs.	See figures 1 and 2 and 3.01.

TABLE B

CORDS USED WITH C-TYPE PROTECTORS

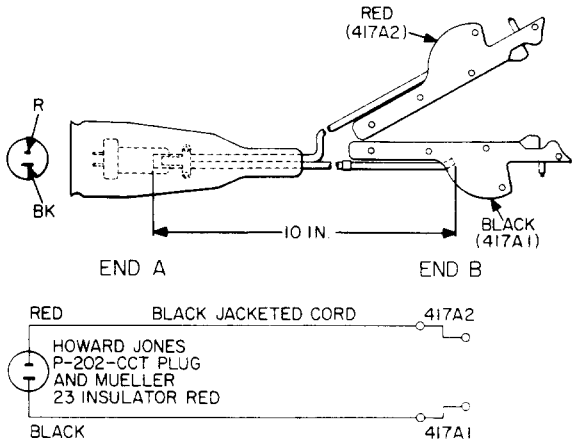
CORD	USE	ILLUSTRATION AND SCHEMATIC
P2DC	Used with P2DB cord to connect cable pairs from 1177, 1268, C50 and C52 type protectors to KS-14103 test set.	
P20F	Used to connect a group of 10 cable pairs on main distributing frames equipped with C-type protectors to 108A test set. Part of 1B cord kit.	Refer to Section 106-310-120 covering 108A test set for cable and plug arrangement.
P20G	Used to connect a group of 10 individual cable pairs on main distributing frames equipped with C-type protectors to 108A test set. Part of 1A cord kit.	Refer to Section 106-310-120 covering 108A test set for cable and plug arrangement.
P40A P40C	P40C used with two P20M cords to connect 20 cable pairs on main distributing frames equipped with C-type protectors to 108A test set. Part of 1A cord kit. P40C cord along with two P20M cords replaces P40A cord.	Refer to Section 106-310-120 covering 108A test set for cable and plug arrangement.

TABLE B (Cont)

CORDS USED WITH C-TYPE PROTECTORS

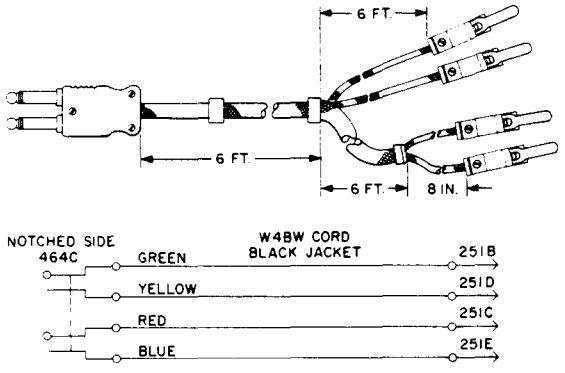
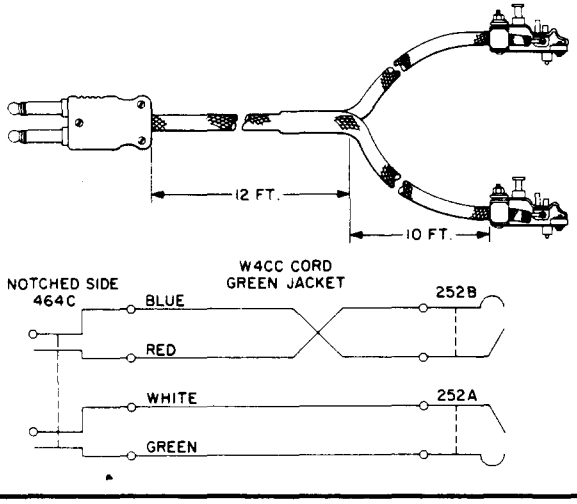
CORD	USE	ILLUSTRATION AND SCHEMATIC
4W3A	Used as a test connector for engaging block ends of tip and ring protector block springs on main frame protectors used for wheat-stone bridge tests.	
4W6A	Used as a test connector for protectors of main distributing frames of manual and dial offices.	

TABLE C

PLUGS OR TEST CONNECTOR USED WITH 444-TYPE JACKS (301-TYPE CONNECTOR)

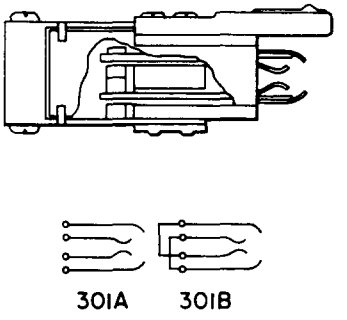
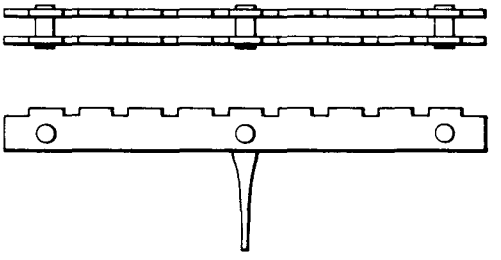
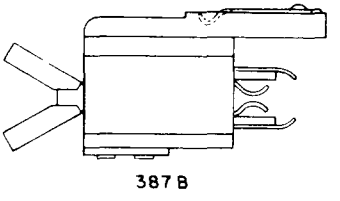
PLUG OR CONN	DESCRIPTION AND USE	ILLUSTRATION
301A 301B	301A plugs, as part of test cords, are used to make contact to cable pairs. 302B plug is the same as 301A except terminals are strapped internally to reverse tip and ring of the cable pair. Used for trouble caused by ground on ring side of cable pair or to temporarily correct tip and ring turnover until outside plant change can be made.	
318A	Used to open contacts for ten consecutive jacks on one side of a vertical. Consists of a dummy plug with two strips of insulating material and a handle.	
387A 387B	Used to facilitate connecting a handset to a cable pair. 387A plug has two lugs to solder handset leads. 387B (illustrated) has two lugs to which handset clips may be firmly attached.	

TABLE C (Cont)

PLUGS OR TEST CONNECTOR USED WITH 444-TYPE JACKS (301-TYPE CONNECTOR)

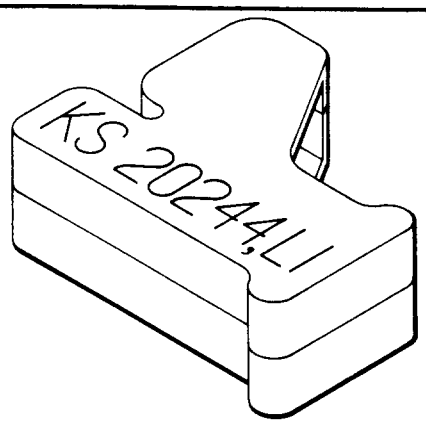
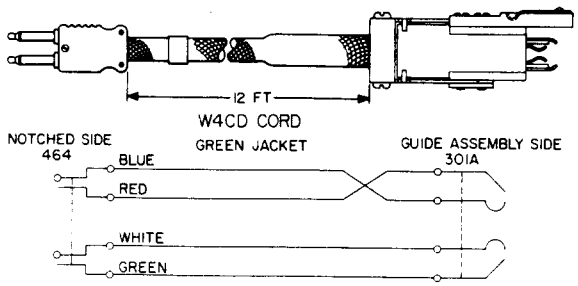
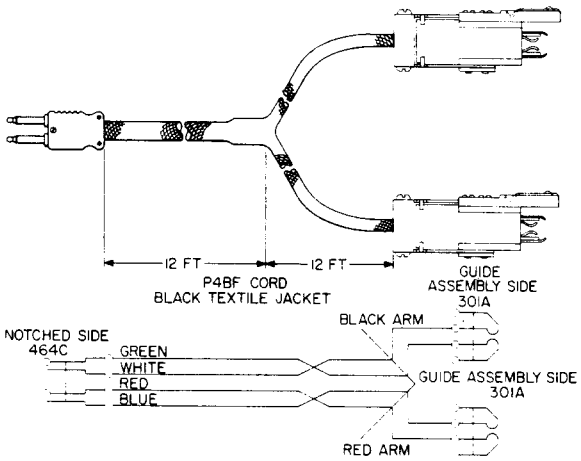
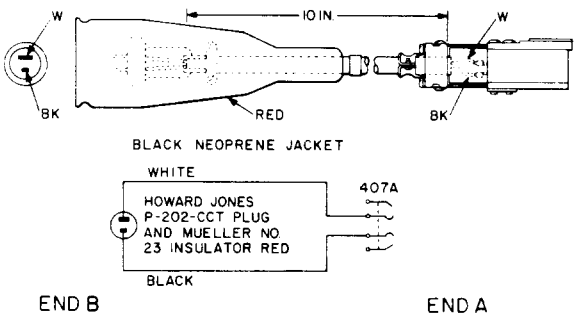
PLUG OR CONN	DESCRIPTION AND USE	ILLUSTRATION
KS-20244 List 1 (White)	Plug is a single piece of flame retardant plastic with a snap-in spring retainer. Used to open a single cable pair for testing.	 KS-20244 LI PLUG
F Test Connector	Used to provide access to 50 cable pairs.	See figures 3 and 4 and 3.04.

TABLE D

CORDS USED WITH 444-TYPE JACKS (301-TYPE CONNECTOR)

CORD	USE	ILLUSTRATION AND SCHEMATIC
4W7A	Used for plugging-up operations and routine testing.	
4P23A	Used for patching varley test trunks to conductors terminated on 301-type connectors.	
P2CY	Used with P2DB cord to connect cable pairs to KS-14103 test set when testing cable pairs connected to 301-type connectors in central offices.	

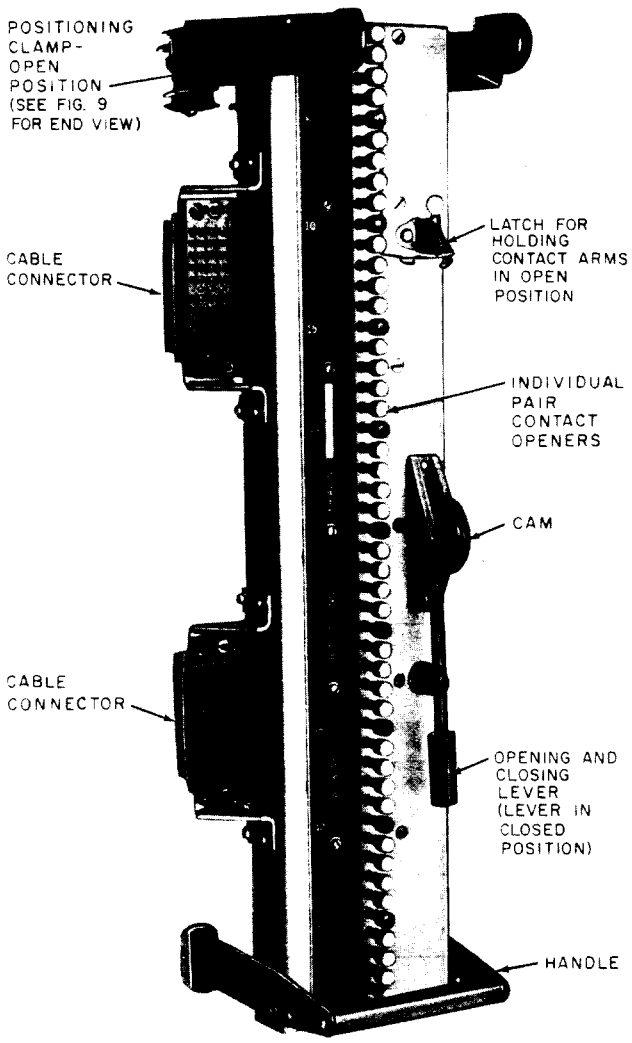


Fig. 1—B Test Connector-Front View

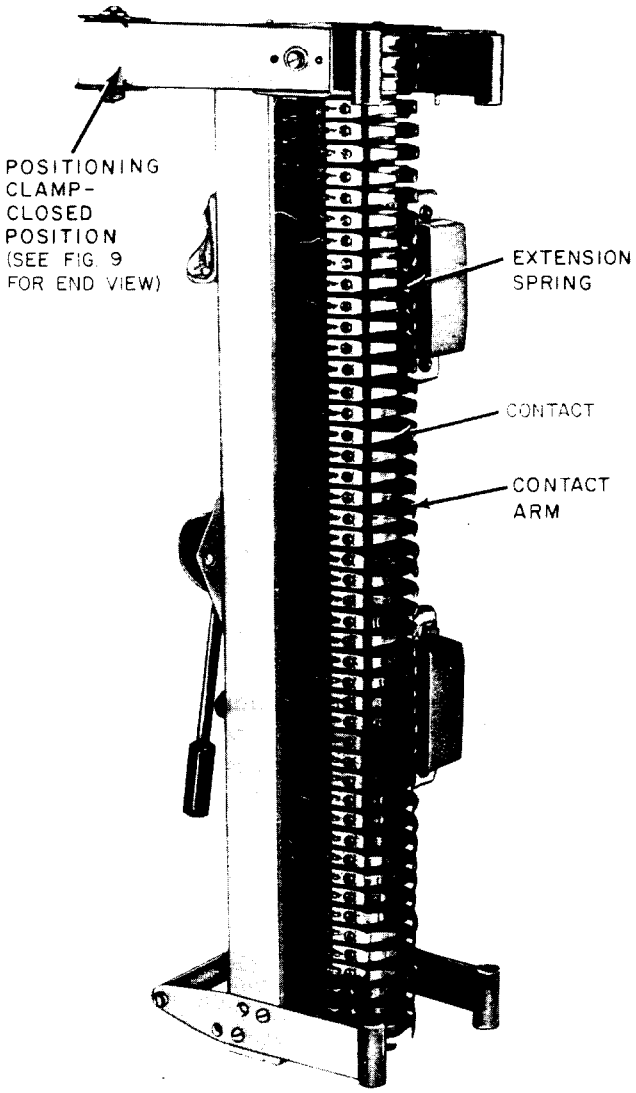


Fig. 2—B Test Connector-Rear View

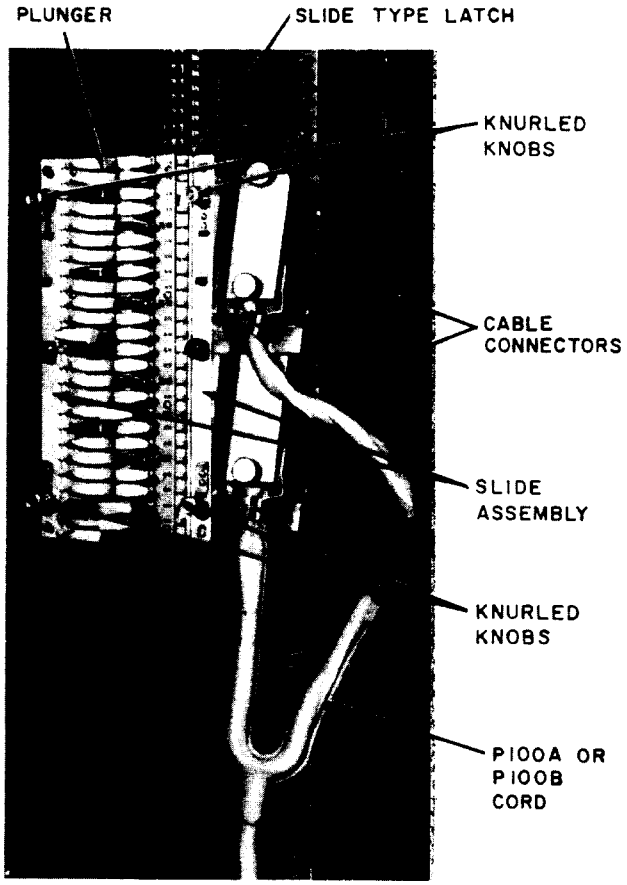


Fig. 3—F Test Connector on 444-Type Jack

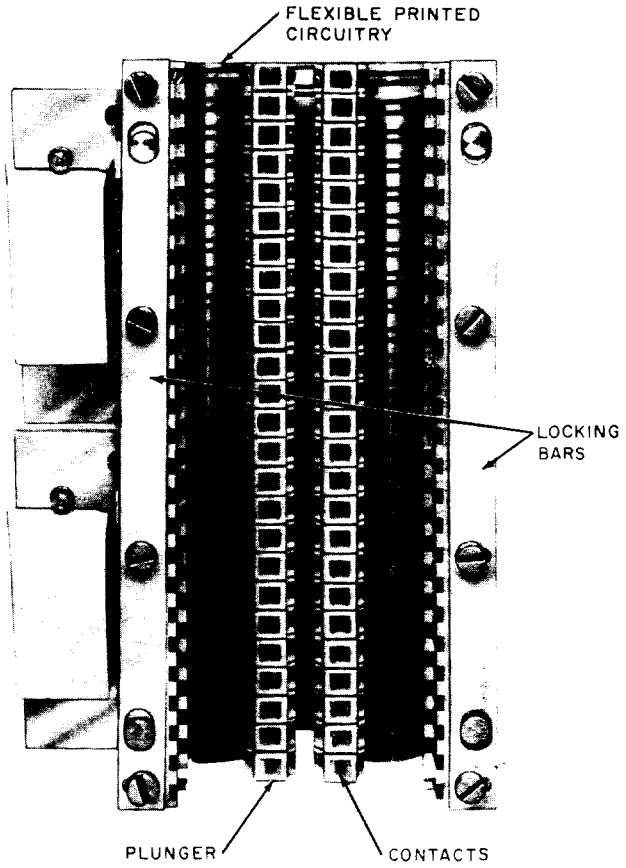


Fig. 4—F Test Connector-Rear View

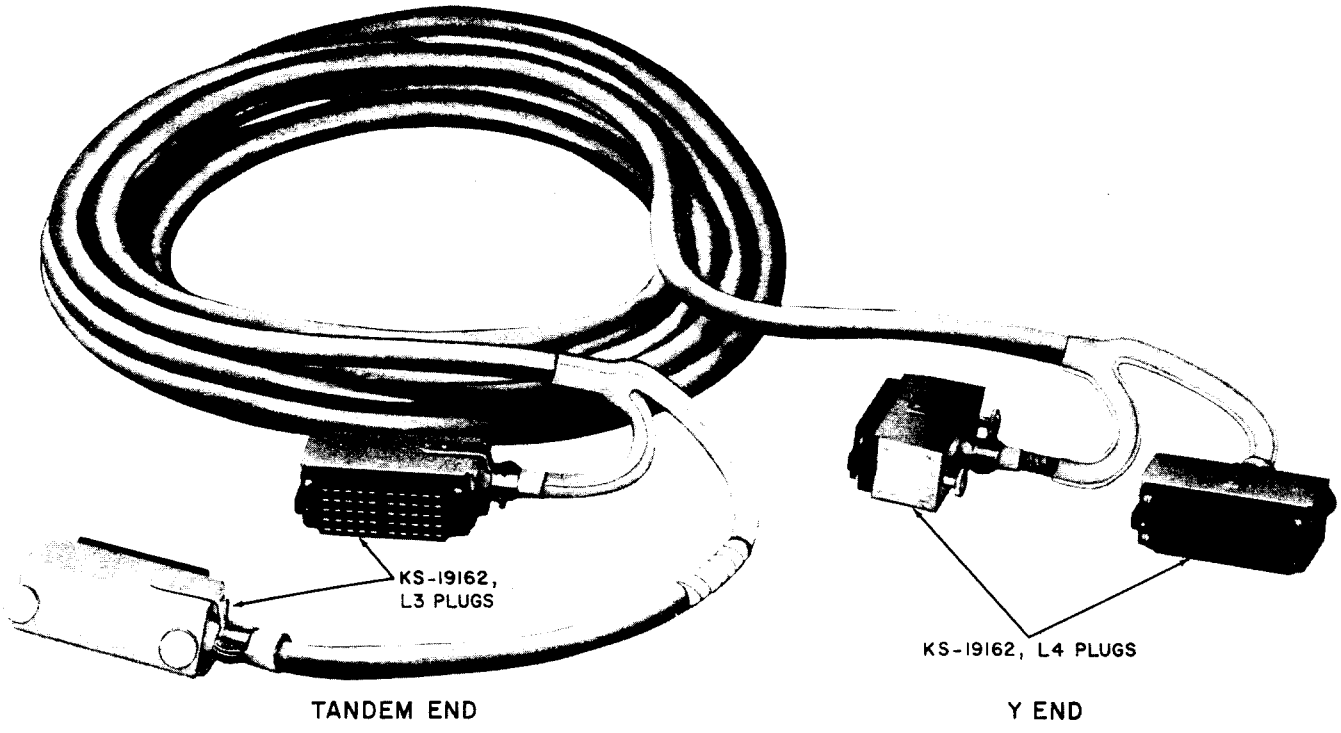


Fig. 5—P100A Cord

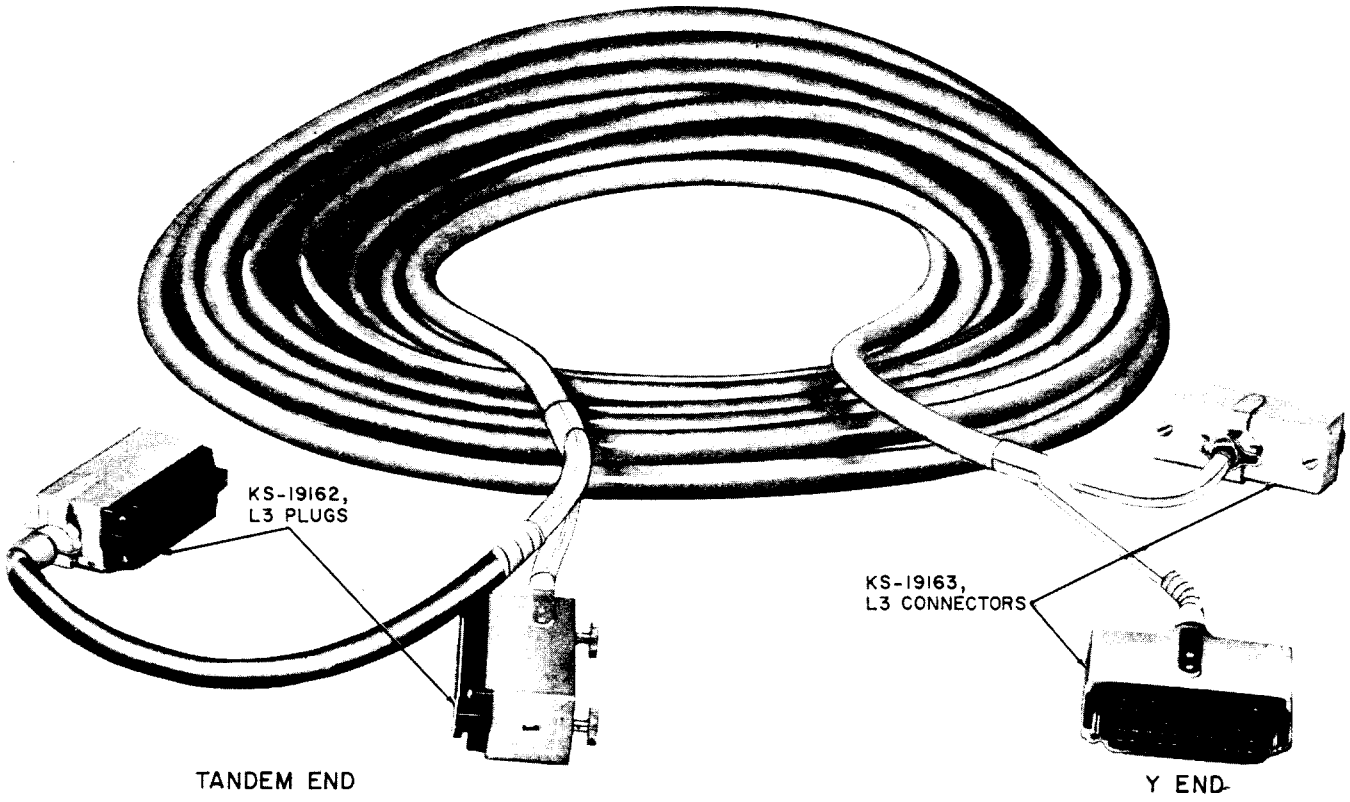


Fig. 6—P100B Cord

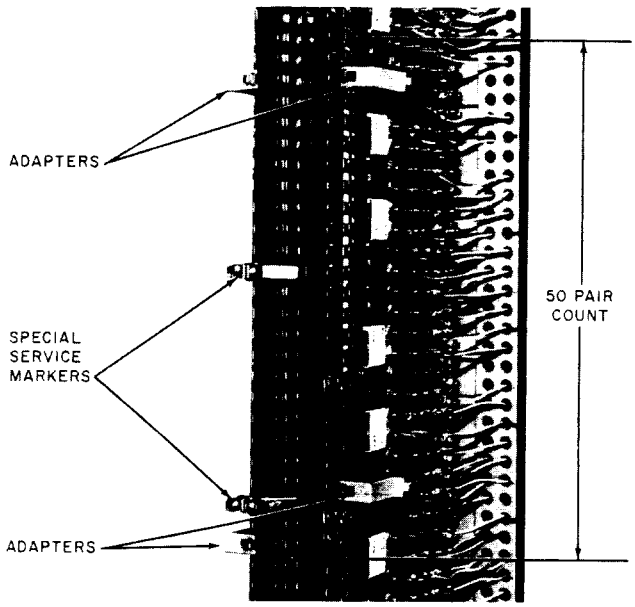


Fig. 7—Adapters Placed on 444-Type Jack

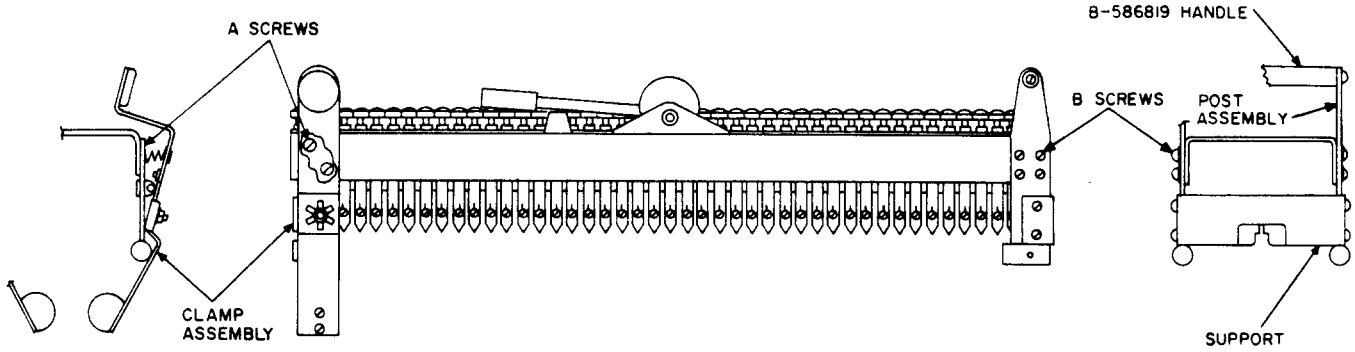


Fig. 8—B Test Connector—Preparation Before Conversion

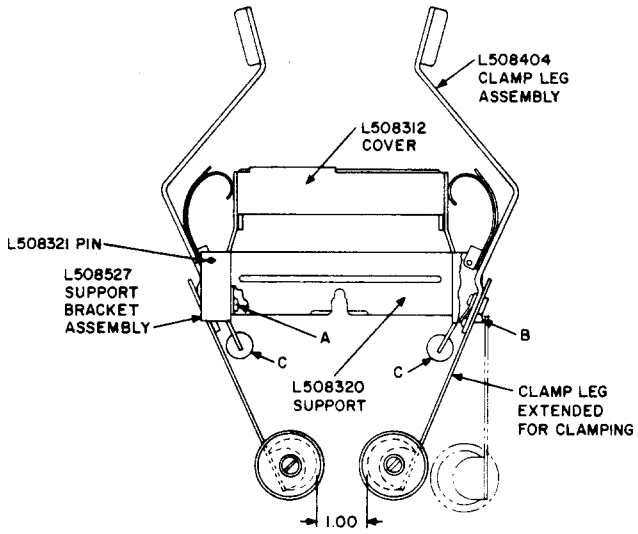


Fig. 9—B Test Connector—End View

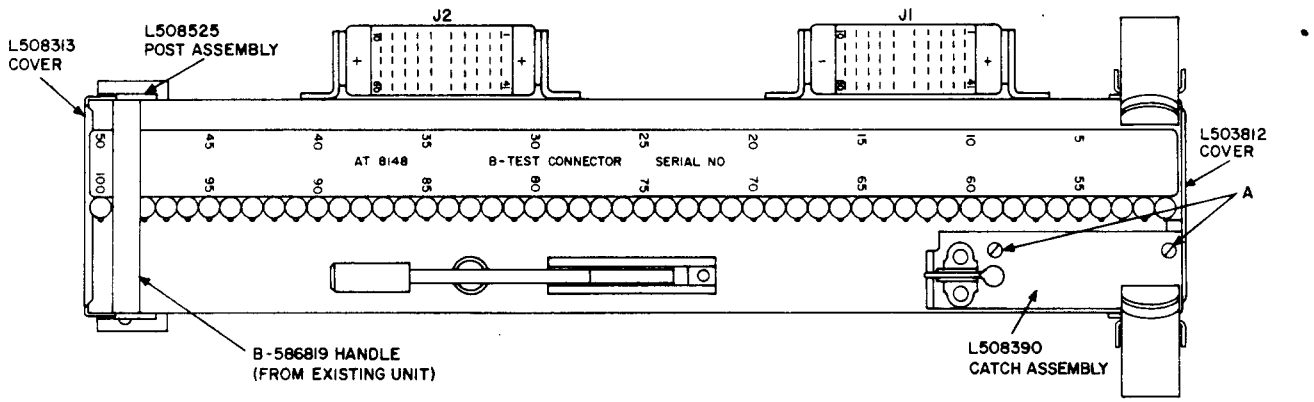


Fig. 10—B Test Connector—Top View

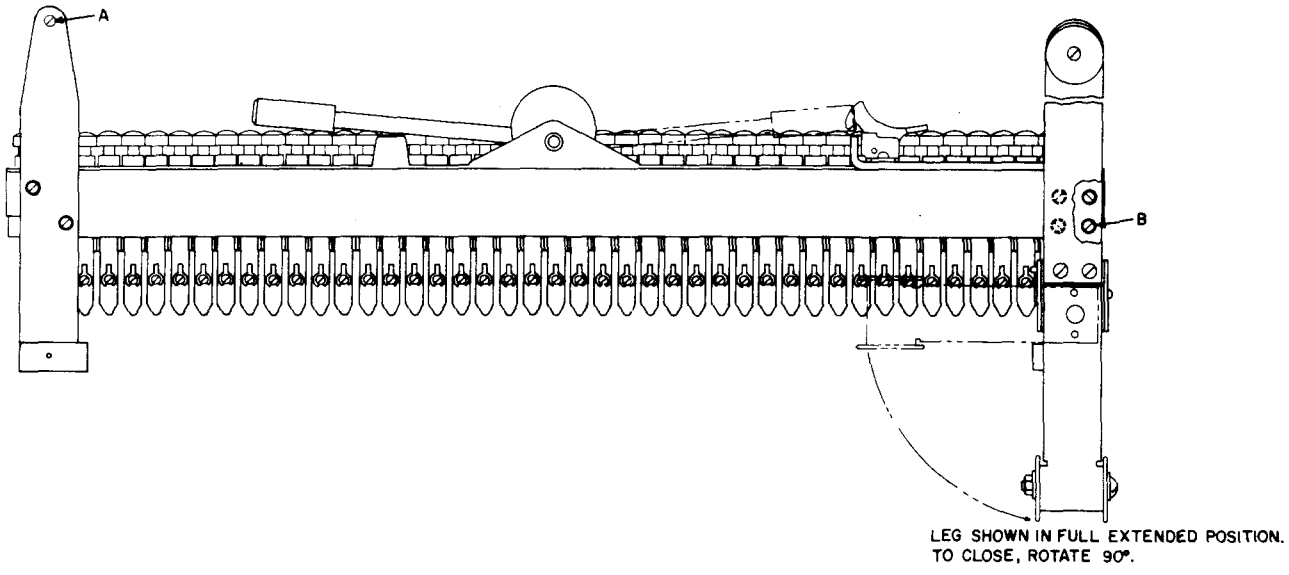


Fig. 11—B Test Connector—Side View

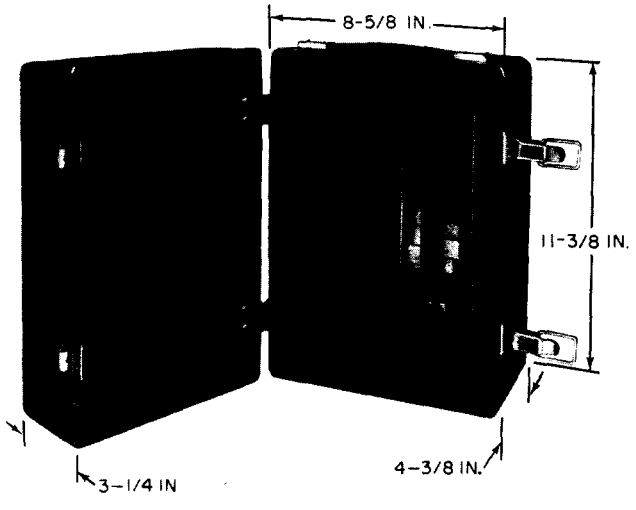


Fig. 12—C Connector Case For Storing the F Test Connector

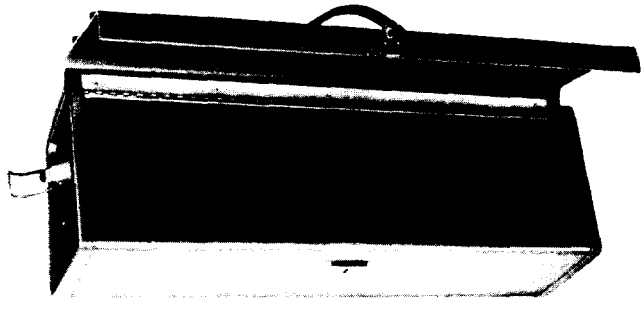


Fig. 13—D Connector Case For Storing the B Test Connector