

303-, 305-, AND 310-TYPE CONNECTORS REPAIR PROCEDURES CONVENTIONAL MAIN DISTRIBUTING FRAMES

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5. REPLACEMENT OF ASSOCIATED PARTS (303- TYPE CONNECTOR)	6	1.01 This section covers information necessary to repair the 303-, 305-, and 310-type connectors.	
6. REPLACEMENT OF ASSOCIATED PARTS (305- TYPE CONNECTOR)	6	1.02 This section is reissued for the reasons listed below. Since this is a general revision, change arrows have not been used to denote significant changes.	
7. REPLACEMENT OF ASSOCIATED PARTS (310- TYPE CONNECTOR)	7	(1) To add 310-type connectors and conventional main distributing frames to the title	
8. REPAIR OF BROKEN OR DAMAGED WIRE CONDUCTORS—305-TYPE CONNECTORS	7	(2) To change the numerical designation of Fig. 3 through 6 to Fig. 6 and 9 respectively and	

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add new Fig. 3 through 5

(3) To add repair procedures for the 310-type connectors.

1.03 Figures in this section illustrate the various piece parts in their proper relation to other parts of the apparatus. The piece-part numbers of the various parts are given together with the names of the parts.

1.04 When ordering piece parts for replacement purposes, give both the part number and name of the part, eg, P-181434 screw. Do not refer to the BSP number or to any information shown in parentheses following the piece-part numbers.

1.05 Information enclosed in parentheses is not ordering information. It may be references to notes or parts referred to in other portions of the section, not considered replaceable, or part names in general use in the field if they differ from those assigned by the manufacturer.

1.06 Before making repairs to the apparatus referred to in this section, craft personnel should be familiar with the contents of the following sections:

- 069-132-811 Punched or Wire-Type Terminals (Not Having Notches or Perforations) Method of Making and Removing Wrapped Connections
- 069-140-811 Soldered Connections—Using Soldering Coppers—Method of Making and Removing.

2. PRECAUTIONS

2.01 This section covers only those parts which can be replaced in the field. No attempt should be made to replace parts not designated.

2.02 Exercise extreme care when removing, connecting, and replacing terminals to prevent damage to adjacent connections and to avoid crosses to operating circuits.

2.03 The ends of wire previously used for a solderless wrapped connection or soldered connection shall not be reused for subsequent connections. The end of the wire must be cut off and

reconnected by solderless wrapping or soldering. Except in cross-connection fields, it will be necessary to splice the wire if there is not enough slack to provide the number of turns required for solderless wrapped connections. In cross-connection fields, the wire shall be rerun to provide sufficient length for a solderless wrapped connection. (See Section 069-132-811.)

3. TOOLS AND MATERIALS

3.01 *List of Tools and Materials:* The following is list of tools and materials used:

CODE OR SPEC NO.	DESCRIPTION
AT-7860	B long-nose pliers
658B	Terminal extractor
—	Screwdriver
—	Off-set screwdriver
—	Wrench
—	Cable ties
KS-6320	Orange stick
KS-16748	Insertor
—	Sleeving
—	Solder
KS-8740	Soldering copper
KS-16363,L3	Wire-wrap gun.

4. REPLACEMENT OF BROKEN OR DAMAGED TERMINALS

REMOVING TERMINALS

A. 303-Type Connector

4.01 *842360562 Tip or Ring Terminal (Fig. 1):* To remove broken or damaged terminals proceed as follows:

Note: The 840212476 terminal (solder-plated) and the 841634207 terminal (gold-plated) have

been rated manufacture discontinued (Mfr Disc) on all 303-type connectors, and replaced with the 842360562 terminal which has a gold-plated stripe inside the socket portion.

- (1) On the wiring side of the connector, tag and remove the leads from the broken or damaged terminal.
- (2) Using B long-nose pliers, close the tangs on the terminal or break the terminal flush with the back side of the connector panel and remove the terminal from the front side of the connector panel.

4.02 814648622 (P-46D862) Ground Terminal (Fig. 1): To remove ground terminal proceed as follows:

- (1) On the wiring side of the connector, use a soldering copper and remove all solder from the terminal to be replaced.
- (2) Using B long-nose pliers, close the tangs on the damaged or broken terminal or break the terminal flush with the back side of the connector panel. Remove the terminal from the front side of the connector panel.

4.03 842137986 Test Terminal (Fig. 1): To remove test terminal proceed as follows:

- (1) From the wiring side of the connector, tag and remove the leads from the terminal to be replaced.
- (2) Using a new terminal or a sharp instrument, such as a test probe, push the broken terminal through the connector about 1/8 inch.
- (3) From the test contact side of the connector, grasp the terminal head with the B long-nose pliers and pull the terminal from the block.

4.04 P-21E489 Cross-Connect Terminal (Fig. 1): To remove cross-connect terminal proceed as follows:

- (1) From the front and rear of the connector, tag and remove all leads from the terminal to be replaced.
- (2) If the wire is soldered, remove all solder from the terminal.

- (3) Using B long-nose pliers or the 658B terminal extractor, carefully remove the terminal from the front of the connector panel. Refer to Section 201-220-801 for use of 658B terminal extractor.

B. 305-Type Connector

Note: The 814648622 (P-46D862) terminal (ground) and 842360562 (841634207) terminal (tip or ring) are not replaceable on the 305-type connector.

4.05 842360810 (842137796) Cross-Connect Terminal (Fig. 2): To remove cross-connect terminal proceed as follows:

- (1) On the cross-connect side of the connector, tag and remove the leads from the terminal to be replaced.
- (2) If the wire-wrap portion of the terminal is not broken, straighten the terminal so that it is perpendicular to the connector panel. Push the straightened terminal through the connector panel and remove it from the protector side of the connector.
- (3) If the wire-wrap terminal is broken at the bent portion, the socket portion will stay attached to the protector unit pin. Removing the protector unit from the connector panel will remove the terminal. Any bent portion of the terminal at the rear of the panel may capture the terminal. If the terminal is captured, the bent portion must be straightened prior to removal.

4.06 842137986 Test Terminal (Fig. 2): To remove test terminal proceed as follows:

Note: Remove the test field cover prior to performing Steps (1), (2), and (3) by removing the two screws on the outer edge of the connector and sliding the cover outward to expose the test terminals (see Fig. 3).

- (1) From the wiring side of the connector, tag and remove the leads from the terminal to be replaced.
- (2) Using a new terminal or a sharp instrument, such as a test probe, push the broken terminal through the connector about 1/8 inch.
- (3) From the test contact side of the connector, grasp the terminal head with the B long-nose pliers and pull the terminal from the block.

C. 310-Type Connector

4.07 842360562 Tip or Ring Terminal (Fig. 3): To remove the tip or ring terminal proceed as follows:

Note: Remove the back cover by removing the two screws holding it to the bracket.

- (1) Tag and remove the wire(s) from the terminal to be replaced.
- (2) Using the long-nose pliers, close the tangs on the terminal or break the terminal flush with the back side of the connector panel and remove the terminal from the protector side of the connector panel.

4.08 814648622 (P46D862) Ground Terminal (Fig. 4): To remove ground terminal proceed as follows:

- (1) Use a soldering copper and remove all solder from the terminal to be replaced.
- (2) Using the long-nose pliers, close the tangs on the damaged or broken terminal or break the terminal flush with the back side of the connector panel. Remove the terminal from the protector side of the connector panel.

4.09 843267444 (Cross-Connect) and 843473380 (Test) Terminals (Fig. 5):

These terminals can not be easily replaced without unfastening the connector and moving it out from the framework vertical. If it is necessary to replace one of these terminals, or either the top or bottom insert, contact the Western Electric Manufacturing, Baltimore Works.

REPLACING TERMINALS

4.10 Prior to making connections to terminals, refer to paragraph 2.03.

A. 303-Type Connector

4.11 841634207 842360562 Tip or Ring Terminal (Fig. 1): To replace terminal proceed as follows:

Note: The 840212476 terminal (solder-plated) and the 841634207 terminal (gold-plated) have

been rated Mfr Disc on all 303-type connectors, and replaced with the 842360562 terminal which has a gold-plated stripe inside the socket portion.

- (1) Using the fingers, properly orient the new terminal and insert into the same hole from which the old terminal was removed. Push the terminal into the hole as far as possible.
- (2) Insert a protector unit into the connector to hold the terminal in place.
- (3) On the wiring side of the connector, use the B long-nose pliers and pull the terminal into its proper position. Pay attention to the orientation of the terminal. Determine that the terminal is in the correct position by observing the positions of adjacent terminals.
- (4) Using B long-nose pliers, carefully spread the tangs of the terminal to lock the terminal in place in the connector panel.
- (5) Reconnect all leads to the terminal.
- (6) Remove the protector unit.

4.12 814648622 (P-46D862) Ground Terminal (Fig. 1): To replace terminal proceed as follows:

- (1) Using the fingers, properly orient the new terminal and insert into the same hole from which the old terminal was removed. Push the terminal into the hole as far as possible.
- (2) Insert a protector unit into the connector to hold the terminal in place.
- (3) On the wiring side of the connector, use the B long-nose pliers and pull the terminal into the proper position. Pay attention to the orientation of the terminal. Determine that the terminal is in the correct position by observing the positions of adjacent ground terminals.
- (4) Using B long-nose pliers, carefully spread the tangs of the terminal to lock the terminal in place in the connector.
- (5) Remove the protector unit.
- (6) Using the soldering copper, solder the terminal to the ground bus.

4.13 842137986 Test Terminal (Fig. 1): To replace terminal proceed as follows:

- (1) From the front side of the connector, insert the new terminal into the same hole from which the old terminal was removed.
- (2) Using the fingers, push the terminal into the hole as far as possible.
- (3) Using an orange stick, push the terminal into its seated position on the connector.
- (4) From the wiring side of the connector, reconnect all leads.

4.14 P-21E489 Cross-Connect Terminal (Fig. 1): To replace terminal proceed as follows:

- (1) From the front side of the connector, insert the new terminal into the same hole from which the old terminal was removed using the B long-nose pliers or the KS-16748 inserter. Instructions for use of the KS-16748 inserter are given in Section 201-220-801.
- (2) Reconnect all leads to the P-21E489 terminal.

B. 305-Type Connector

4.15 842360810 Cross-Connect Terminal (Fig. 2): To replace terminal proceed as follows.



If a central office tip or ring terminal 842360810 or 842137796 (Mfr Disc) is found to be shorted to an outside plant tip or ring conductor, the cause may be remedied as follows: Cut a 11/16 inch long length of sleeving and slip it onto the solderless wire-wrap end of the terminal prior to performing Step (1). The sleeving will insulate the metallic terminal from the conductors. A sleeved terminal (842367005) is available with the proper length of tubing cut and assembled onto the 842360810 terminal.

- (1) Using the fingers, properly orient the new terminal and insert into the same hole from

which the old terminal was removed. Push the terminal into the hole as far as possible.

- (2) Insert the protector unit into the connector to hold the terminal in place.
- (3) On the cross-connect side of the connector, use the B long-nose pliers and pull the terminal into its proper position. Using thumb pressure, carefully bend the terminal to the proper angle. Determine the proper angle by observing the position of the adjacent terminals.

Note: This terminal has no tangs and is held in position in the connector panel by its bent position.

- (4) Reconnect all leads to the terminal.
- (5) Remove the protector unit.

4.16 842137986 Test Terminal (Fig. 2): Follow the procedures outlined in paragraph 4.13.

C. 310-Type Connector

4.17 842360562 Terminal (Fig. 3): To replace terminal proceed as follows:

- (1) From the protector side of the connector, insert the new terminal into the same hole from which the old terminal was removed.
- (2) Using the fingers or an orange stick, push the terminal into its seated position.
- (3) On the wiring side of the connector, use the B long-nose pliers and pull the terminal into its proper position. Pay attention to the orientation of the terminal. Determine that the terminal is in the correct position by observing the positions of adjacent terminals.
- (4) Using B long-nose pliers, carefully spread the tangs of the terminal to lock the terminal in place in the connector panel.
- (5) Reconnect the wire(s) to the terminal.
- (6) Replace the back cover.

4.18 814648622 (P46D862) Terminal (Fig. 4): Follow the procedures outlined in paragraph 4.12 and replace the back cover.

5. REPLACEMENT OF ASSOCIATED PARTS (303-TYPE CONNECTOR)

5.01 Older 303-type connectors (303A1 and 303B1) already in service can be updated to include the clear plastic covers and the secondary fanning strip of the 303A2 and 303B2 connectors by using the D-180450 modification kit.

5.02 *D-180450 Modification Kit (Fig. 8):*

This kit provides a secondary fanning strip with open slots, clear plastic covers for terminals, a new mounting bracket, and plastic spacers referred to as toothpicks. The additional fanning strip will facilitate identification of frame jumper wires. This kit is furnished assembled except for the clear plastic cover (840215750).

5.03 To install the D-180450 modification kit parts on a 303-type connector in service, proceed as follows:

- (1) Remove the four screws which hold the connector panel to the mounting bracket, saving the screws for reuse in Step (10).
- (2) Rotate the panel to the right approximately 80 degrees.
- (3) Support the panel and wiring with waxed lacing cord, frame wire, or other suitable ties so terminals and wiring are not damaged.

Note: The purpose of the toothpicks is to lift the insulated wire conductors away from the terminal tangs to prevent any possible shorting. If the connector has a gray plastic grid on the back face of the panel, do not use toothpicks.

- (4) Insert the wedge-tipped toothpicks at the back of the connector (see Fig. 9). The toothpicks are pushed between adjacent rows of terminals prying the backplane wiring up and off the back side of the panel. The toothpicks are just long enough to pass beneath the wiring of one row of protector units.
- (5) Remove the stub cable clamps and ground wire from the old mounting bracket on the frame, saving the self-tapping screws for reuse. It may be necessary to remove some of the cord ties on the stub cable to obtain working slack.
- (6) Remove the old mounting bracket from the frame and discard. It may be necessary to

remove both bracket mounting screws from the vertical frame even though the top bracket has a slot for easy insertion.

- (7) Work the self-tapping screws in and out of the corresponding holes on the new mounting bracket to facilitate later attachment of cable clamps and ground wire in Step (9).
- (8) Place the assembled portion of the kit in place of the old mounting bracket with the fanning strip to the right of the frame support and the jumpers to the right of the fanning strip. This step can be most conveniently accomplished by working the kit in from the left and behind the stub cable.
- (9) Attach the cable clamps and ground wire to the new mounting bracket with the two self-tapping screws.
- (10) Free the panel and rotate it back into the mounting bracket and fasten in place with the four mounting screws removed in Step (1).
- (11) Snap the left-hand plastic cover in place. The small notched tabs at the edge of the cover should fit over the ends of the ground wires just inside the ground strap tabs. The cover should be bent and snapped in place so the rear tabs at the top and bottom of the shield go under the shoulders of the screws on the mounting bracket.
- (12) Insert the frame jumper wires in the appropriate slots in the new fanning strip. If sufficient slack is not available, it may be necessary to leave them out until normal *turnover* allows new connections to utilize the secondary fanning strip.

6. REPLACEMENT OF ASSOCIATED PARTS (305-TYPE CONNECTOR)

6.01 *841635196 Test Field Cover (Fig. 6):* To replace cover proceed as follows:

- (1) Remove and retain the two flathead screws on the outer edge of the connector.
- (2) Withdraw the test field cover from the connector, being careful that the 842355604 terminal guard is not damaged.
- (3) Insert the new test field cover in place with the rear edge under the terminal guard.

- (4) Insert the two flathead screws removed in Step (1) carefully so the threads in the block are not stripped.

6.02 842355604 Terminal Guard (Fig. 7):

This guard attaches to the cross-connect side of the 305-type connector and provides protection against injury from the relatively sharp wire-wrap terminals. It also provides for an orderly arrangement of cross-connect wires in each row. Replace the guard as follows:

- (1) Remove and retain the five self-tapping screws securing the terminal guard.
- (2) Remove the terminal guard from the block, disturbing the cross-connect wires as little as possible.
- (3) Place the new terminal guard on the block, capturing the cross-connect wires within the confines of the terminal guard.
- (4) Replace the five self-tapping screws removed in Step (1) carefully so the threads in the block body are not stripped.

6.03 Older 305-type connectors, which are in service and have a sliding plastic cover assembly on the cross-connect side, can be updated to include the 842355604 terminal guard. The guard, including mounting screws and installation instructions, can be ordered as 102983350 retro-fit kit.

6.04 842137879 Insert (Fig. 2, 6 and 7): The 100-pair M test connector attaches to the 305-type connector by means of two thumbscrew fasteners which engage threaded inserts at the top and bottom of the test contact field. Replace the threaded inserts as follows:

- (1) Facing the front of the connector, remove the test field cover as directed in paragraph 6.01.
- (2) Observe the mounting of the inserts. At the left side of the connector, remove and retain the two flathead screws which secure the insert in position.
- (3) Remove the insert carefully to prevent a short in the test terminal field. See Fig. 6.

- (4) Install the insert and secure with the two screws removed in Step (2).

- (5) Replace the test field cover as directed in paragraph 6.01, Steps (3) and (4).

7. REPLACEMENT OF ASSOCIATED PARTS (310-TYPE CONNECTOR)

7.01 The 310-type connector has no repairable parts other than the terminals covered in Part 4(c).

8. REPAIR OF BROKEN OR DAMAGED WIRE CONDUCTORS—305-TYPE CONNECTORS

8.01 To repair a broken or damaged wire conductor leading from the moisture plug of the stub cable and through the mounting bracket of the 305-type connector (Fig. 6), proceed as follows:

- (1) Remove the test field cover as directed in paragraph 6.01.
- (2) Identify the wire conductor to be repaired and remove the wire-wrap connection at the corresponding test terminal.
- (3) Remove the defective wire conductor out through the back of the connector mounting bracket.
- (4) Cut the defective portion of the wire and splice a new length of wire to the remaining section.
- (5) Rerun the new length of wire through the back of the connector mounting bracket and to the test terminal.
- (6) Provide sufficient length for the solderless wrapped connection.
- (7) Reconnect the wire conductor to the corresponding test terminal.
- (8) Replace the test field cover as directed in paragraph 6.01.

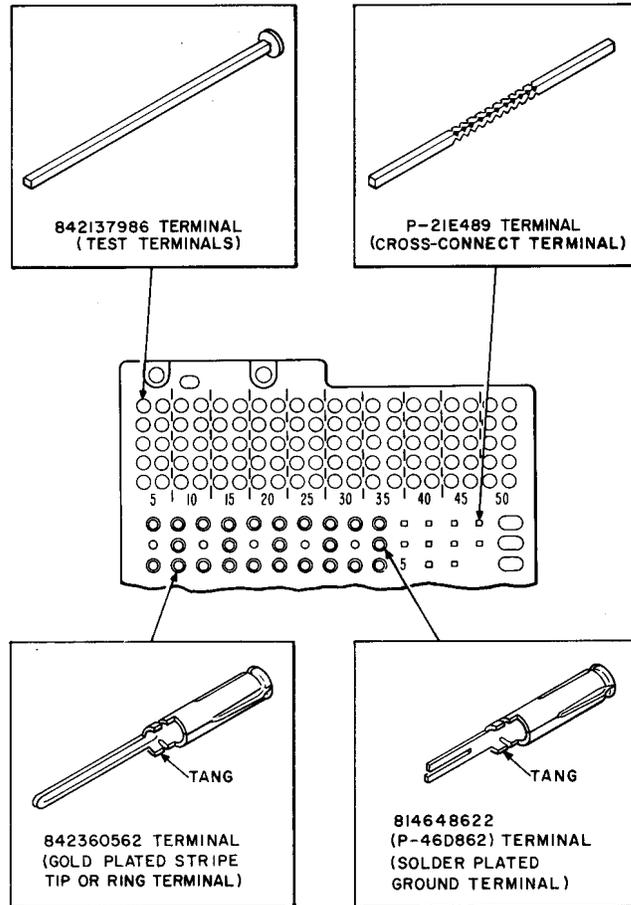


Fig. 1—303-Type Connector, Front Side

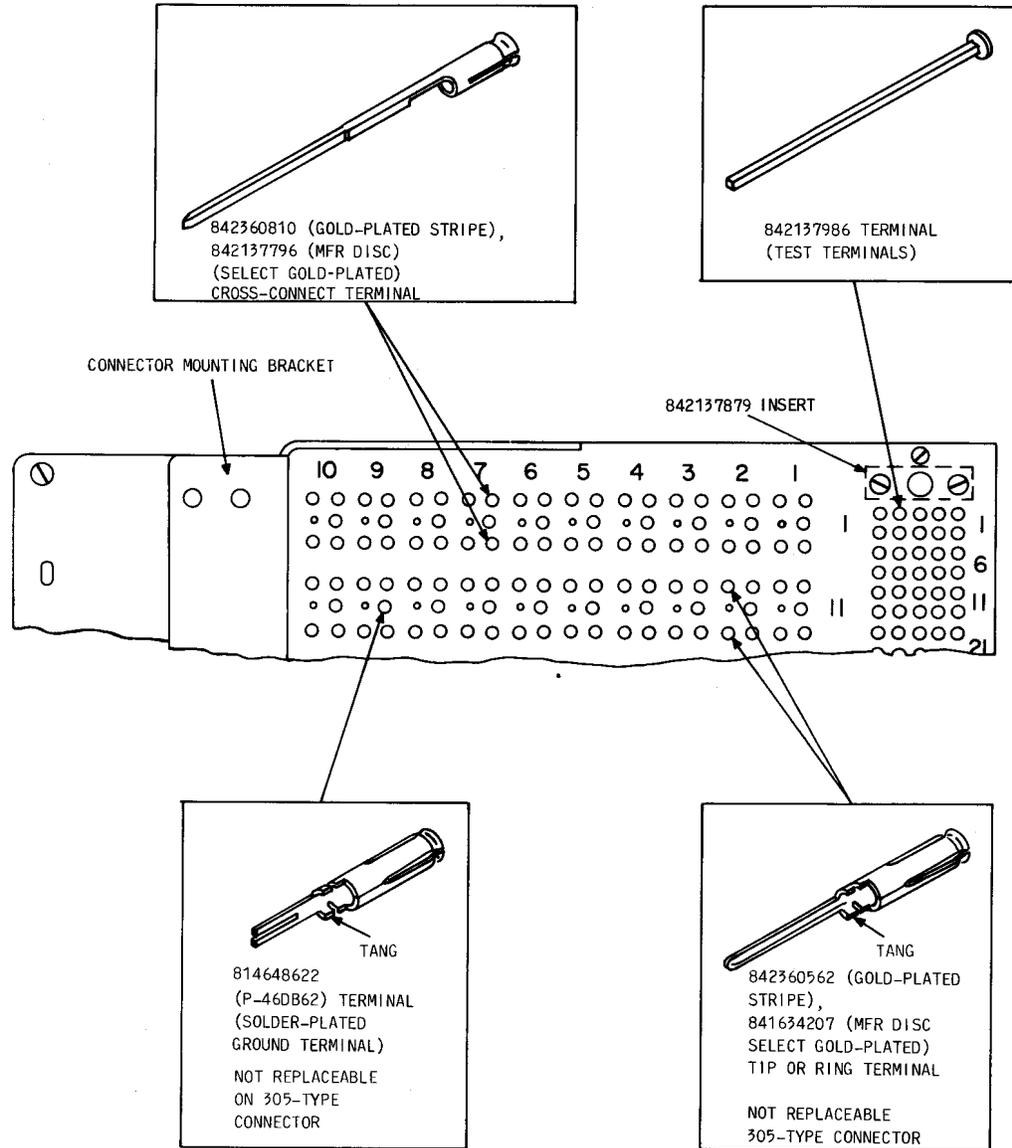


Fig. 2—305-Type Connector, Left Side

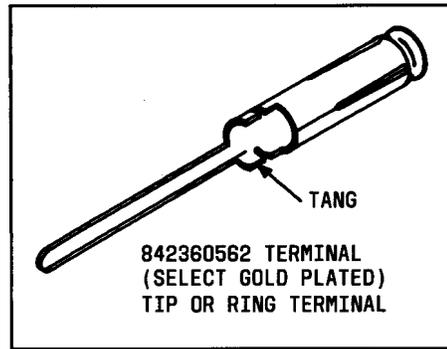


Fig. 3—Tip or Ring Terminal

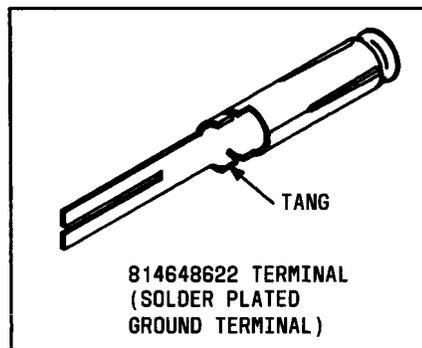


Fig. 4—Ground Terminal

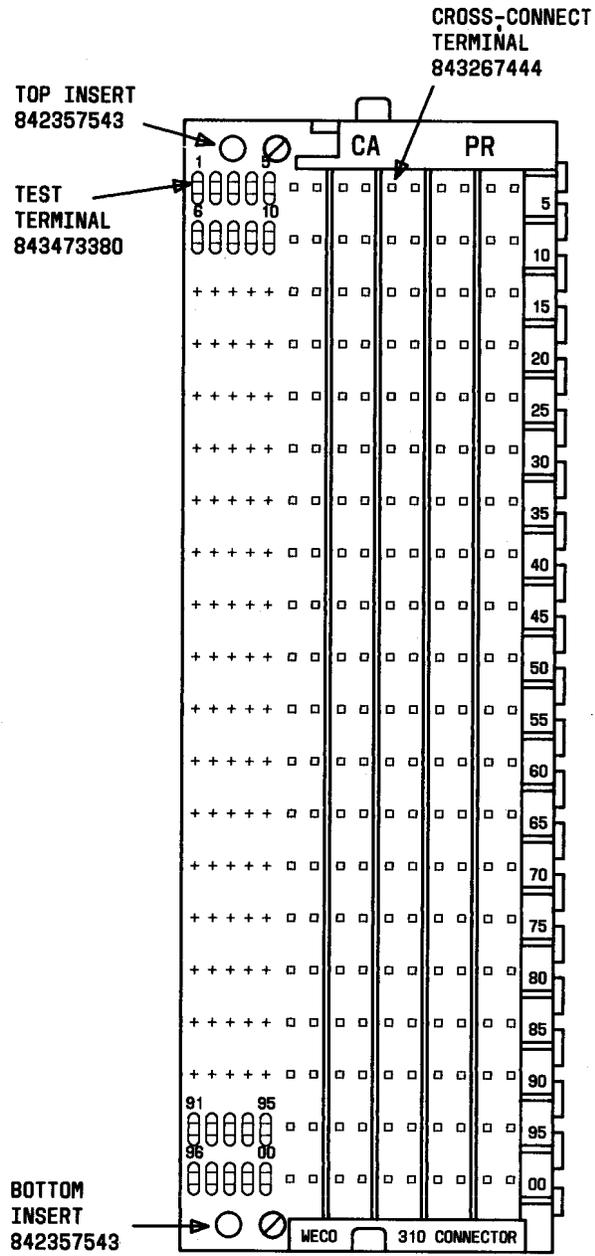


Fig. 5—310-Type Connector-Front View

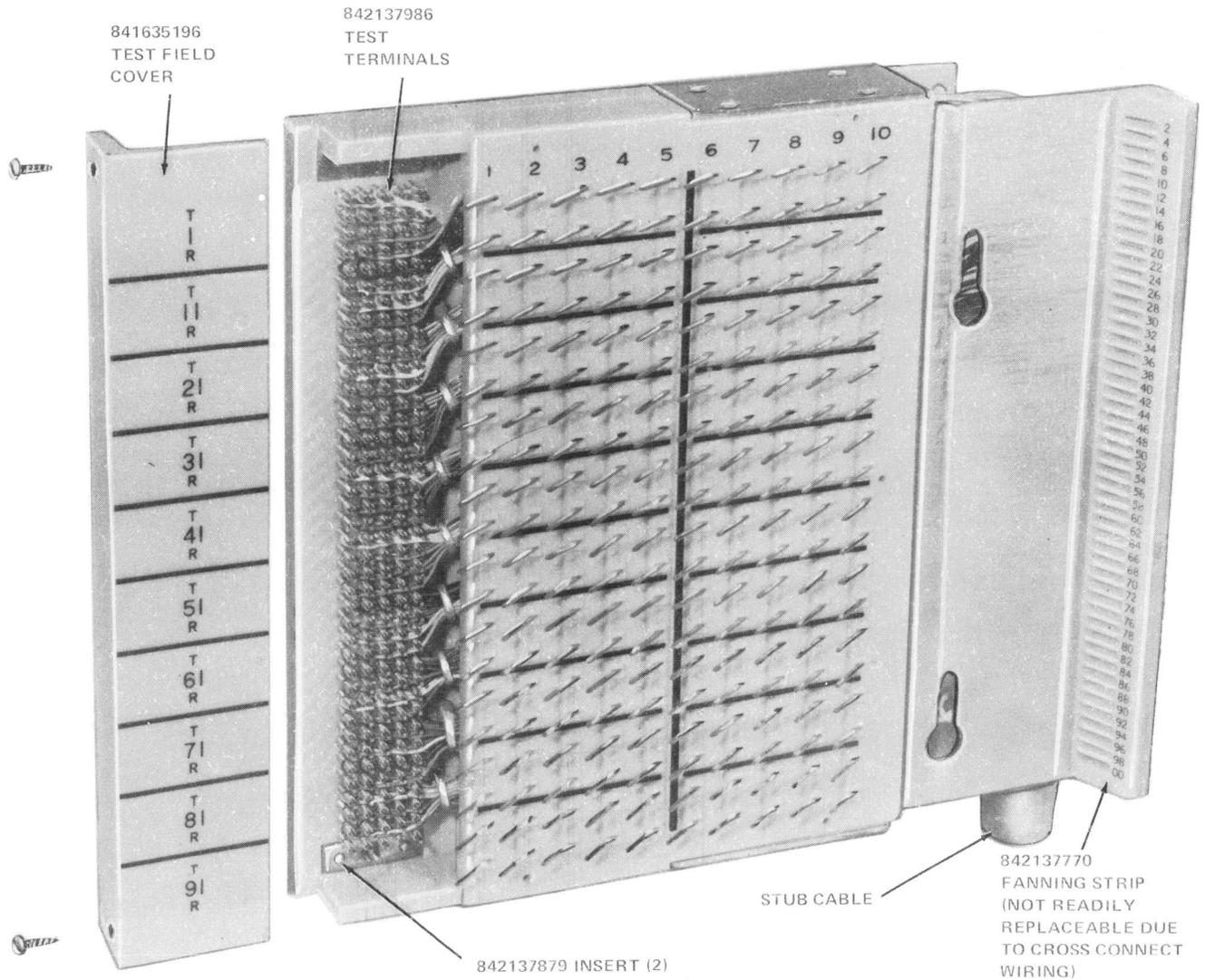


Fig. 6—305-Type Connector—Test Field Cover and Terminal Guard Removed

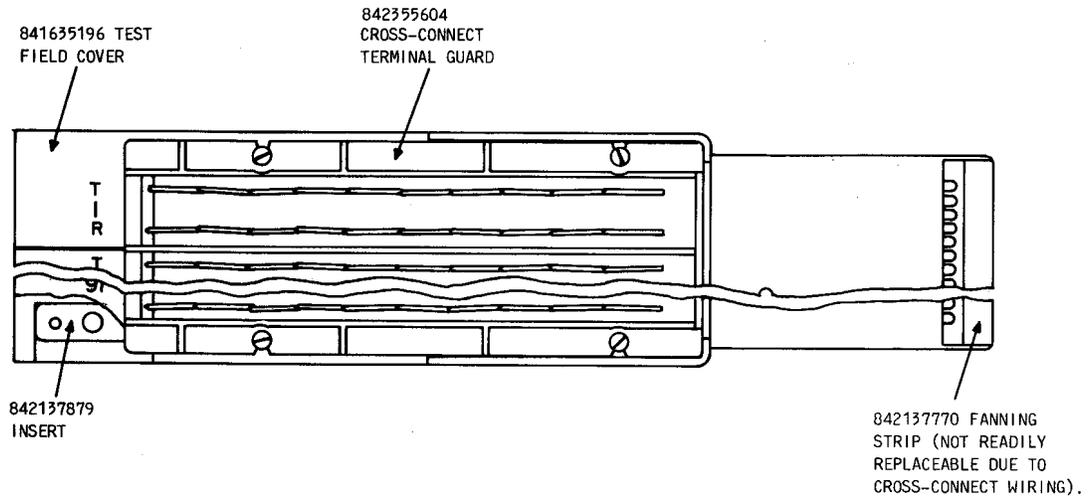


Fig. 7—305-Type Connector, Right Side

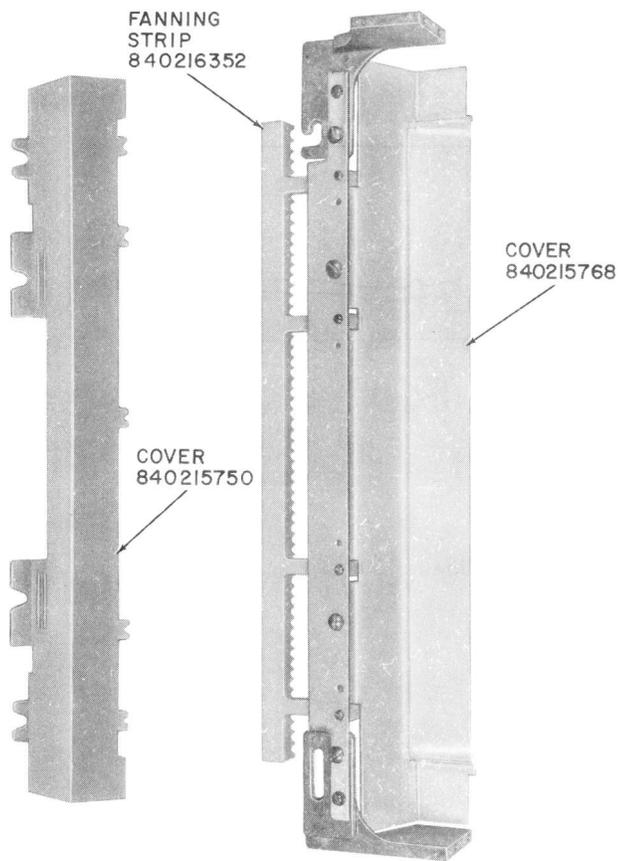


Fig. 8—D-180450 Modification Kit for 303-Type Connector

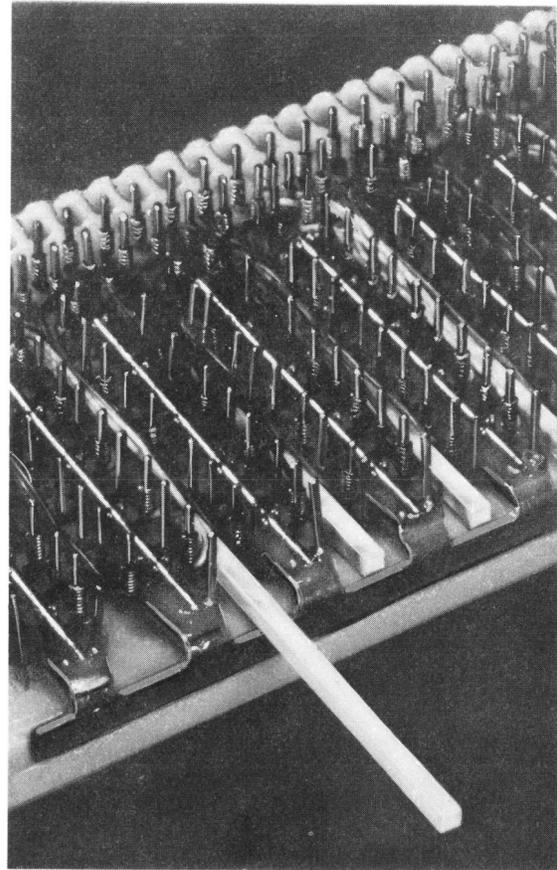


Fig. 9—Procedure for Using Toothpicks on 303-Type Connectors Supplied With D-180450 Modification Kit