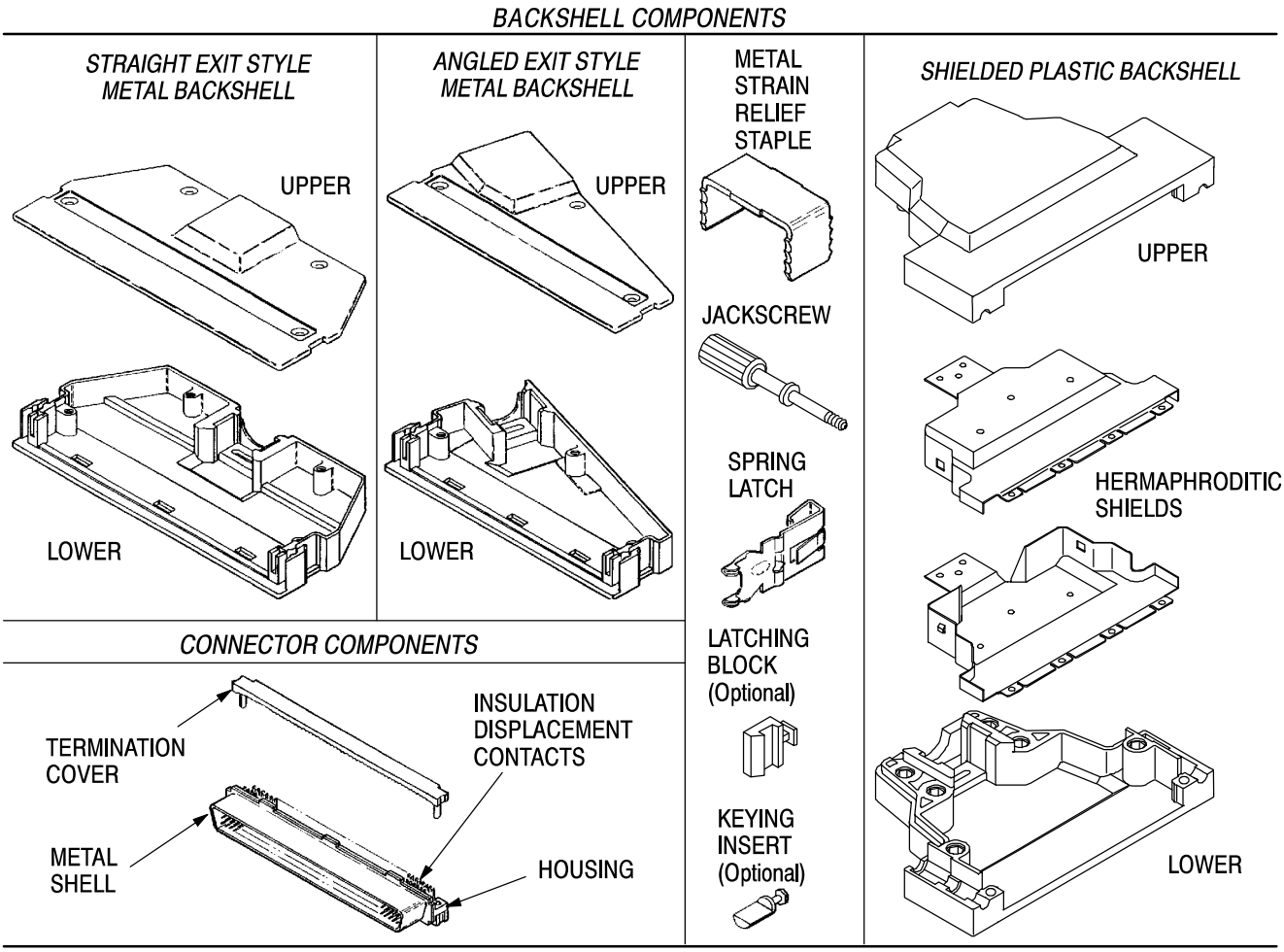


Figure 1

1. INTRODUCTION

This instruction sheet provides basic information regarding the termination and assembly of AMPLIMITE .050 Series Connectors. The connectors are terminated onto shielded, round, jacketed cable with multiple wire or twisted pair conductors. Wire sizes range from 28 to 30 AWG, solid or seven-strand with a 0.74-0.91 [.029-.036] insulation diameter. Wire must be approved by TE Connectivity Engineering. The connectors are available in both plug and receptacle configuration, in various sizes ranging from 20 to 120 positions.

NOTE

Measurements are in millimeters [followed by inches in brackets]. Figures and illustrations are for identification only and are not drawn to scale.

Reasons for reissue are provided in Section 5, REVISION SUMMARY.

2. DESCRIPTION (Figure 1)

The front of each connector assembly features a keystone-shaped shell with a housing having a dual row of pin or receptacle contacts on 1.27x2.54 [.050x.100] centerlines. The back of each connector features insulation displacement contacts which are staggered to achieve the 1.27 [.050] centerline spacing on each side. A pair of termination covers, which are ribbed on the inner surface, assist in locating the wires over the insulation displacement contacts.

A pair of metal backshells, or plastic backshells with metal hermaphroditic shields, is designed to secure the terminated connector assembly and provide EMI/RFI shielding for the finished connector assembly. The lower backshell features two slots for either of the following applications:

(1) installation of keying inserts when keying of connector assemblies is desired, or

(2) installation of latching blocks for free-hanging, cable-to-cable applications.

A metal strain relief staple, which is press-fit over the cable and into a corresponding slot in the cable exit of the lower backshell, provides strain relief for the cable as well as grounding continuity for the cable braid to the backshells or shields.

A pair of slots is provided in the lower metal backshell for installation of spring latches. The upper metal backshell is secured to the lower backshell with machine screws. These screws are not required with the plastic backshell.

Backshells designed to correspond to the various connector sizes are available in two cable exit configurations; one type has the cable exit straight out of the back and the other has the cable exit at an angle from the finished assembly.

3. TERMINATION TOOLING (Figure 2)

Termination of the connector, when using round-to-flat cable, requires Cover Closing Kit 543508-1. Staple Insertion Kit 543515-1 is used to insert metal strain relief staples into the backshells of the connector assemblies. Both kits must be mounted on an Manual Miniature Applicator Frame Assembly 91295-1.

A semi-automatic machine, CHAMPOMATOR* 2.5 Bench Terminating Machine 354786-1 is available for higher-volume operations when terminating individual conductors in connectors prior to backshell installation. The staple insertion kit is required to install metal strain relief staples in backshells after termination of connectors in the machine.

The following documentation is available for AMPLIMITE .050 Series Connector termination tooling and machines:

408-9820 Cover Closing Kits 543508-1, 543526-1 and Staple Insertion Kit 543515-1 for AMPLIMITE .050 Series Connector Assembly

409-5839 CHAMPOMATOR 2.5 Bench Terminating Machine 354786-1

Catalog 82068 AMPLIMITE and AMPLIMITE .050 Series Connectors and Terminals (Subminiature D)

Installation of latching blocks, rather than keying inserts, in the slots of the lower backshell requires an arbor frame-type tooling. The Manual Arbor Frame Assembly 58024-1 may be used for this function, provided the ram and base plate surfaces are not fitted with any tooling.

3.1. Cable Preparation and Termination Procedure

1. Cable preparation requires conductors to be laminated on 1.27 [.050] centerlines for the Cover Closing Tool 543508-1. The CHAMPOMATOR 2.5 Machine 354786-1 does not require lamination since it is designed for discrete wire termination. See Figure 3 for appropriate cable breakout lengths.

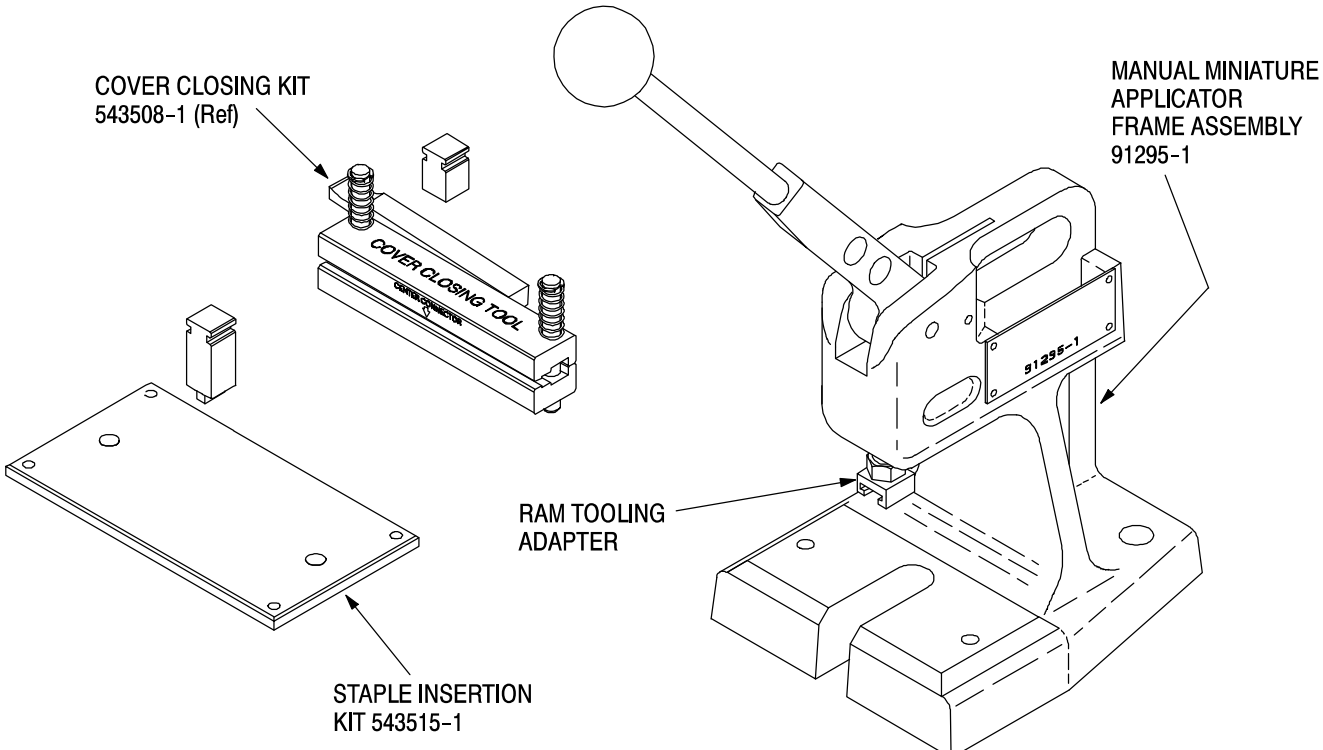
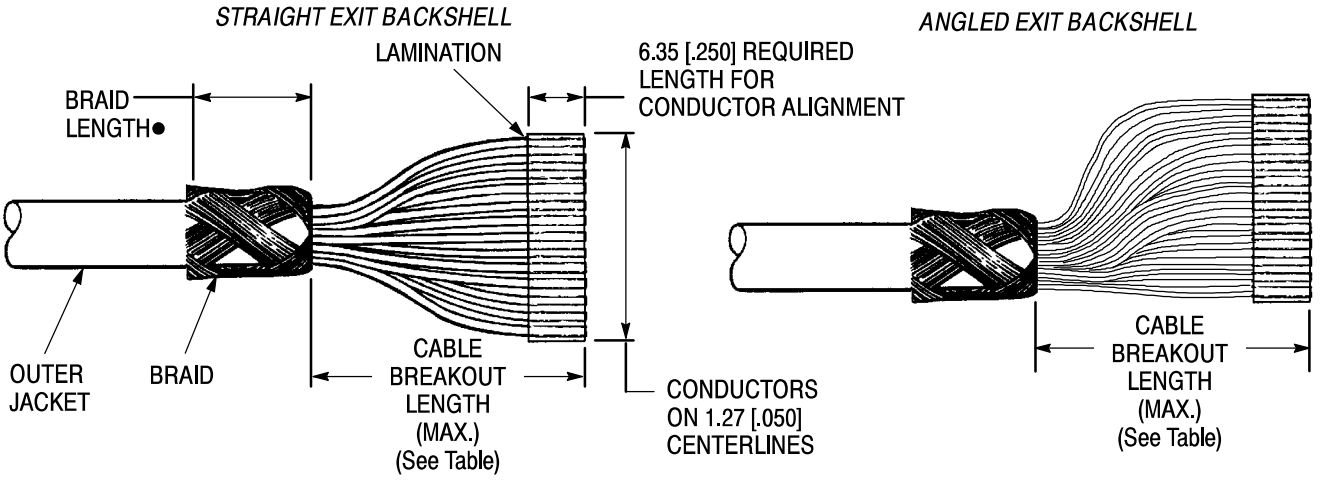


Figure 2



● Braid length will vary according to backshell style. Refer to Paragraph 3.2, Backshell Assembly.

CONNECTOR SIZE	CABLE BREAKOUT LENGTH (MAX.)	
	STRAIGHT EXIT BACKSHELL	ANGLED EXIT BACKSHELL
20 26 28	22.86 [.900]	22.86 [.900]
40	22.86 [.900]	27.94 [1.100]
50 60 68 80	27.94 [1.100]	27.94 [1.100]
100 120	27.94 [1.100]	38.10 [1.500]

Figure 3

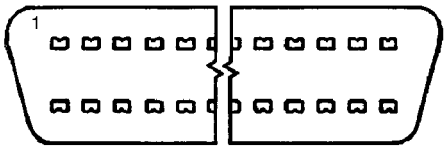
NOTE

Correct cable breakout lengths are critical to successful termination and placement of backshells. Excessive cable breakout lengths will result in too much bulk for backshell mounting.

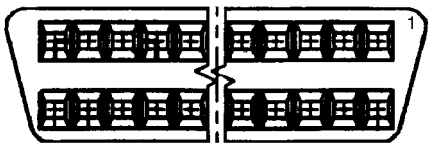
2. On cable requiring lamination, you need to determine the placement of conductors in relation to the contact pin assignments for both rows of contacts in the connector. This may be done by color code or continuity check, per customer requirements. See Figure 4.

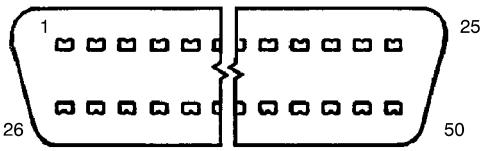
3. Fully insert prepared cable conductor ends, with the laminated sides facing termination covers, into rear of connector assembly. Simultaneously press termination covers firmly by hand to captivate conductors between insulation displacement contacts and termination covers.

PIN ASSIGNMENT



Pin No. 1 is ALWAYS indicated on the .050 Series plug and receptacle connectors. Pin assignment for plug connectors is from LEFT TO RIGHT.





Pin assignment for receptacle connectors is a mirror image of the plug connector, therefore RIGHT TO LEFT. An example of a 50-position pin assignment of each is shown.

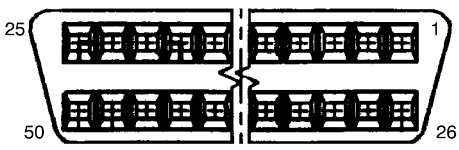


Figure 4

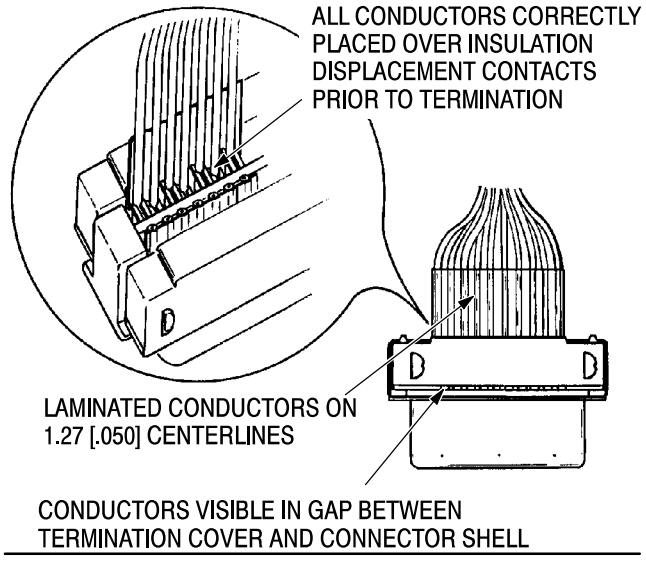


Figure 5

4. Visually examine the connector for correct placement of conductors over insulation displacement contacts by looking at the gap between each termination cover and the connector housing flange. Conductors should be visible in the gap. See Figure 5.

5. Insert the connector to be terminated into the termination tooling assembly.

6. Terminate the connector by rotating the lever of the manual applicator until termination covers bottom on connector housing, and then return the lever to the original position.

7. Remove the terminated connector from the tooling.

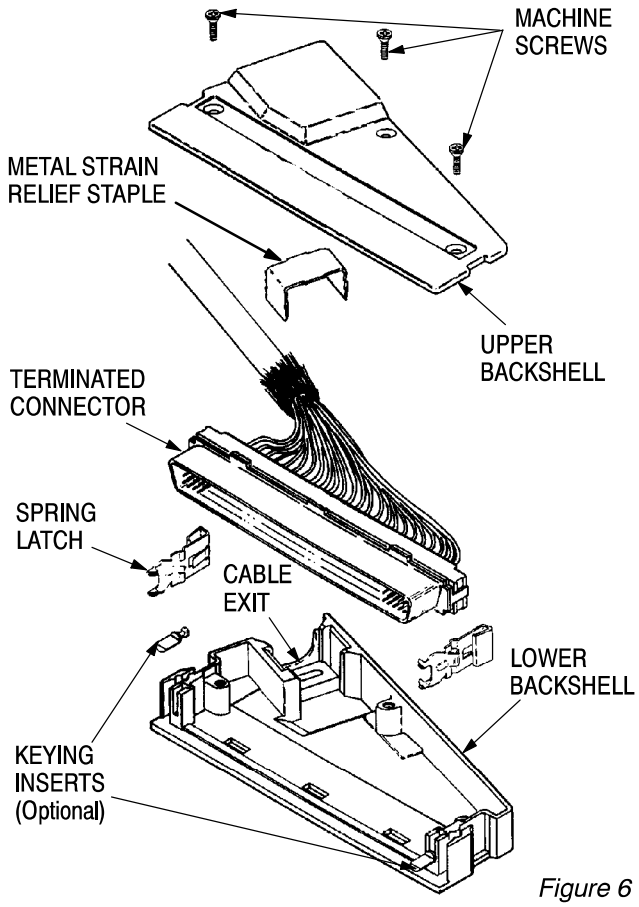
3.2. Backshell Assembly

Backshell assembly requires the correct placement of the connector within the backshell relative to your application. See Figures 6A and 6B for the two styles of cable exits. Assembly also requires placement of the metal strain relief staple, installation of jackscrews or latches, and insertion of keying inserts (if used).

NOTE

When using the angled exit style backshell, placement of the connector in the backshell is more critical due to cable exit direction in component packaging. Not only must the "D" of the connector correspond to the mating connector, but the cable exit of the backshell must be predetermined if the cable is to be routed in a specific direction for packaging. See Figure 6A.

A *ANGLED EXIT STYLE METAL BACKSHELL*



STRAIGHT EXIT STYLE METAL BACKSHELL **B**

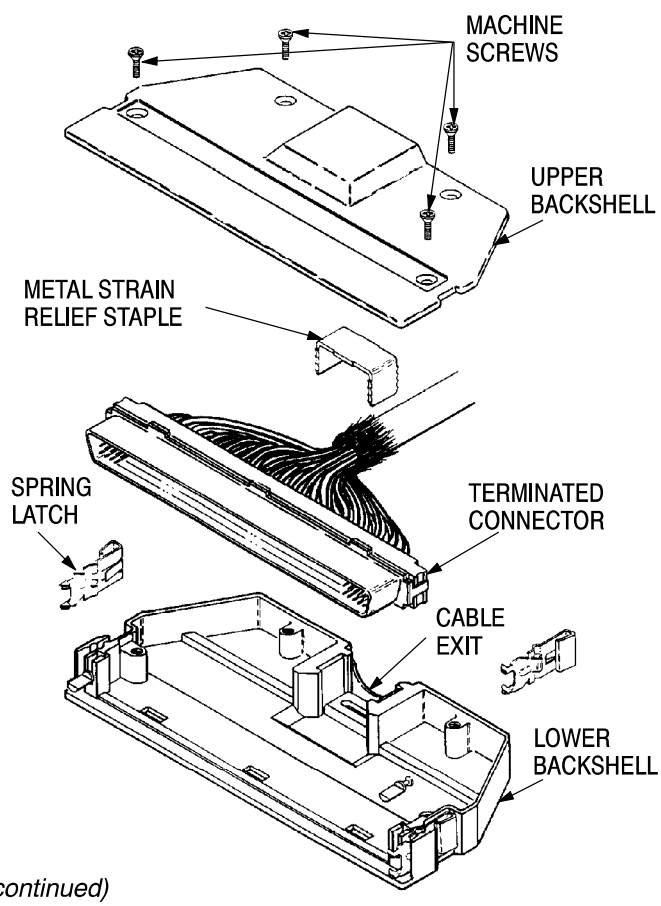


Figure 6 (continued)

C *SHIELDED PLASTIC BACKSHELL*
(Available in Straight Exit Style Only)

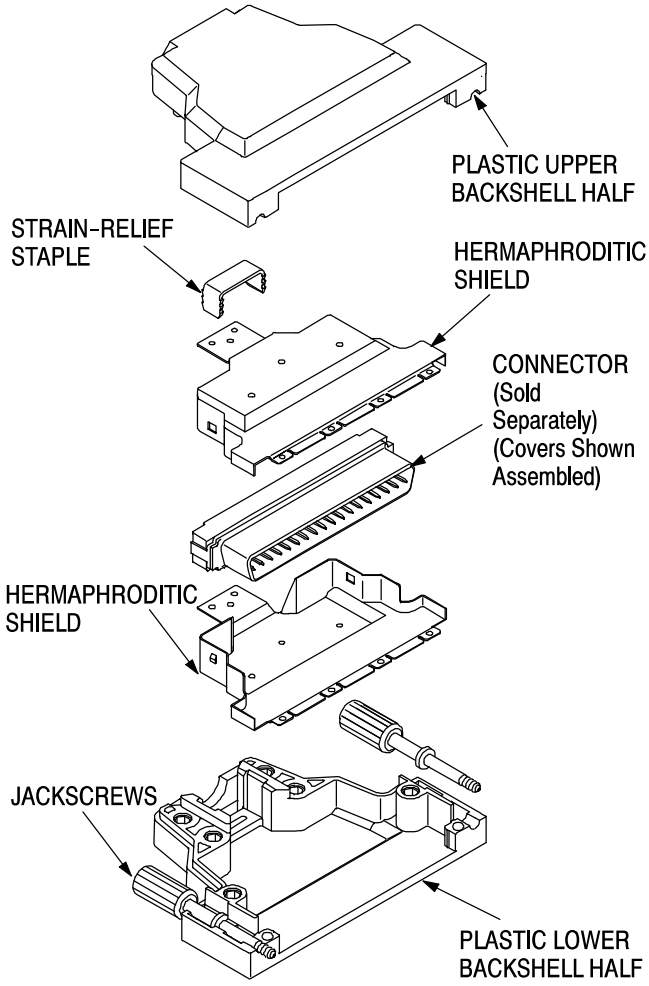


Figure 6 (end)

Assembly is as follows:

1. Lay the lower backshell on a flat surface and ensure the proper orientation of the connector "D" in relation to the cable exit. See Figure 6A and 6B.

2. If using keying inserts, install in the slots provided, making sure that placement is in a mating configuration consistent with the mating connector.

3. If using latching blocks, install as follows:

   a. Place latching block inserts in lower backshell slots, making certain that they are oriented outward as shown in Figure 7.

CAUTION

If incorrectly oriented, the latching blocks will be sheared off with the application of tooling pressure and the backshell will be rendered unusable.

   b. Lay the upper backshell over the lower backshell with the legs of the upper backshell positioned over the latching block inserts as shown in Figure 7.

   c. Place the backshell assembly on the plate of the arbor frame assembly and under the ram. Lower the ram slowly and seat the latching blocks by applying pressure to the upper backshell with the ram.

4. Insert the connector in the lower backshell until bottomed. See Figure 8.

5. After ensuring that the cable braid is folded back smoothly over the cable jacket and trimmed, place cable in the cable exit of the lower backshell. Make certain that braid and cable jacket extend beyond the front edge of the staple slot area and behind the recessed pocket of the lower backshell. Refer to Figure 8.

6. When using the plastic backshell kit, insert lower hermaphroditic shield in lower backshell. See Figure 6C. Place one hermaphroditic shield over the assembly, and insert it until it latches with the other shield. Place the metal strain relief staple in the slot and over the cable braid (and upper shield, when used). Braid should not extend out of cable exit of backshell. See Figure 8.

CAUTION

It is extremely important to ensure that all conductors extending from the strain relief area to the connector assembly are positioned within the sides of the lower backshell. Any conductors extending over the sides will be pinched, and consequently shorted, when the upper backshell is assembled to the lower backshell.

7. Position the metal strain relief staple into the backshell slot, and over the cable. Then using the Staple Insertion Kit 543515-1, press firmly into place. This will secure the cable in the cable exit of the backshell. See Figure 9. For more information on the setup and use of Staple Insertion Kit 543515-1, refer to instruction sheet 408-9820.

8. Install the spring latches (or jackscrews for shielded plastic backshell) in the slots provided. See inset of Figure 8 for detail.

9. When using metal backshells, place the upper backshell over the lower backshell and, after ensuring that no conductors are in a position to be pinched between the mating halves of the backshell, insert the machine screws and tighten them until the backshell halves are secured. See Figure 6A and 6B.

When using plastic backshells, place the upper backshell over the lower backshell, inserting the post of the upper backshell in the holes of the lower backshell until the backshell halves are secured. See Figure 6C.

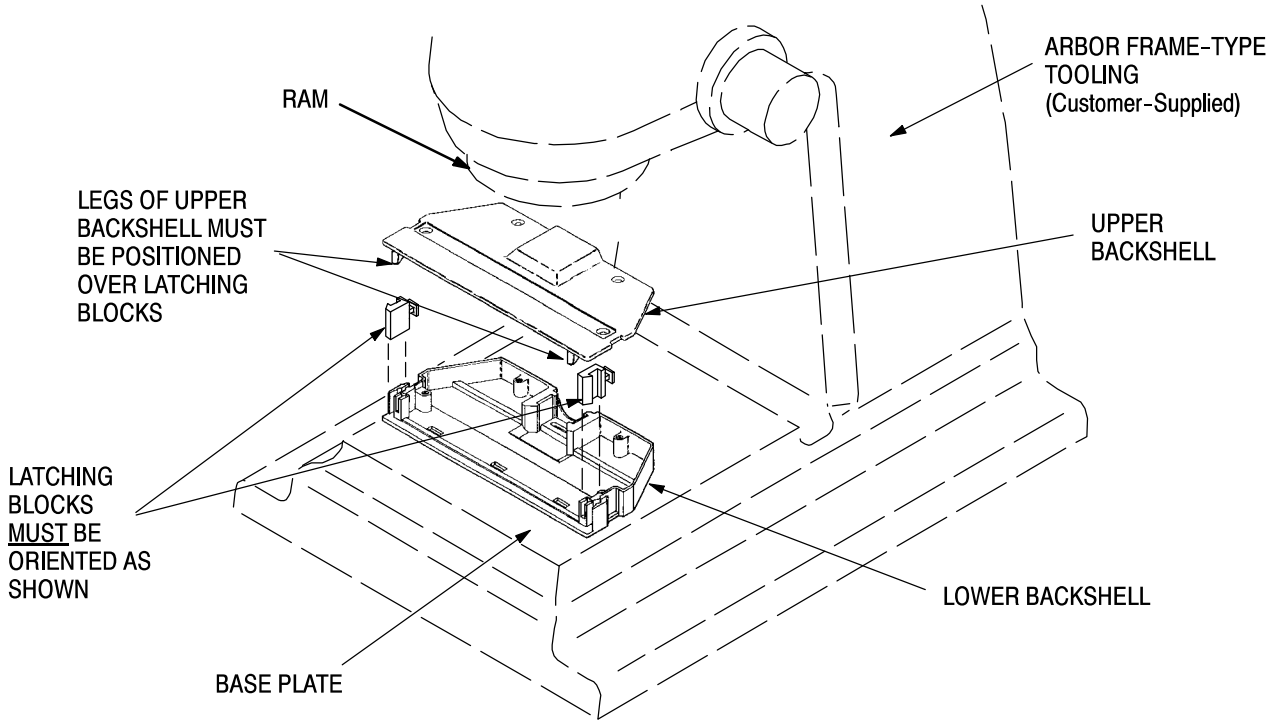


Figure 7

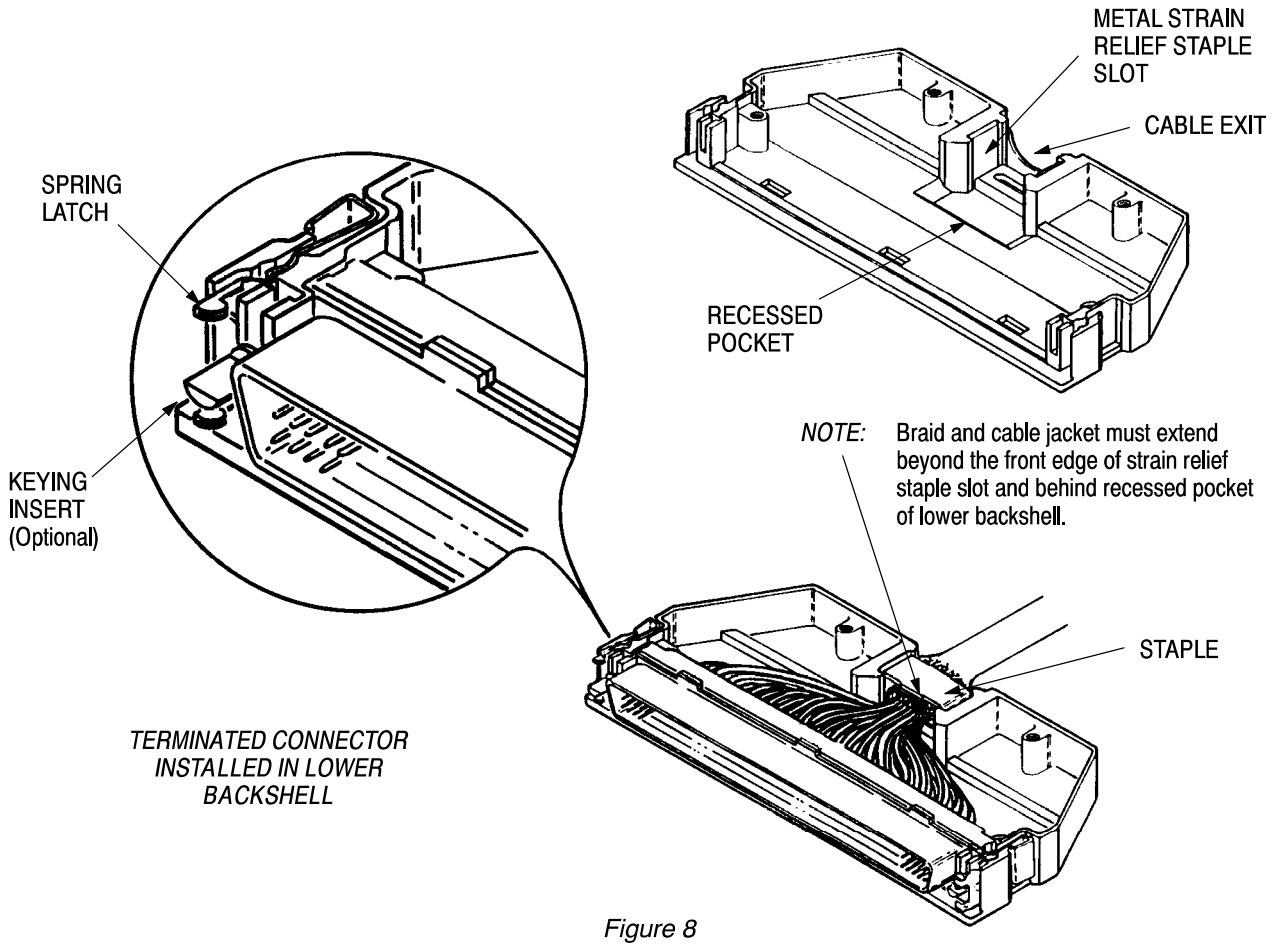


Figure 8

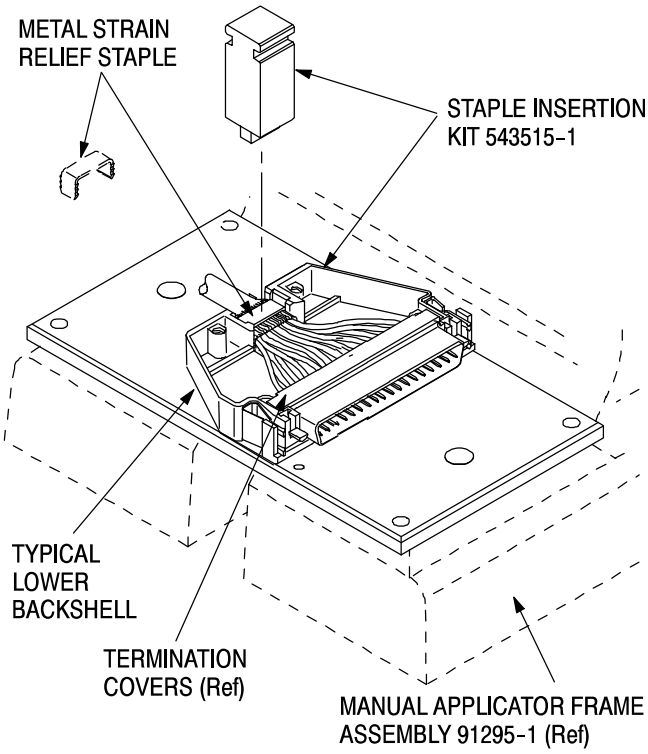
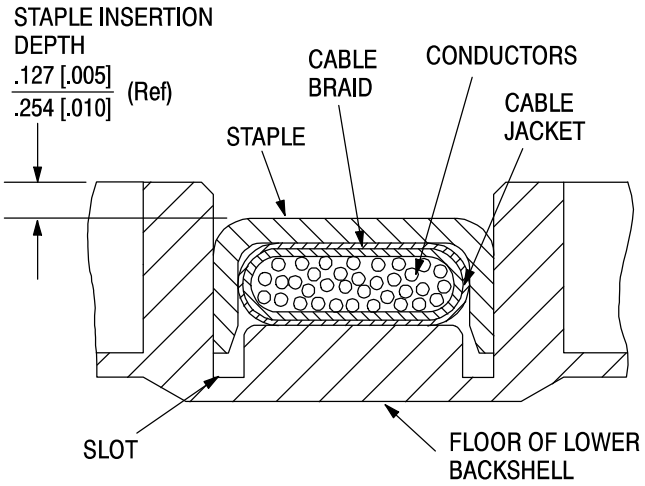


Figure 9

4. STAPLE INSERTION DEPTH

Refer to Figure 10 for the recommended staple insertion depth. For most cables, this depth is sufficient to provide adequate strain relief. Some smaller diameter cables might require the staple to be inserted deeper in order to obtain the desired strain relief. Inserting the staple too deeply will cause breakage of the cable conductors. Not inserting the staple deeply enough will result in inadequate strain relief for the cable.



CROSS-SECTION VIEW OF METAL STRAIN RELIEF STAPLE AFTER INSTALLATION IN LOWER METAL BACKSHELL

Figure 10

— Staple Inspection

Check for proper depth by grasping the cable behind the staple and moving the cable around, gently. Note whether the wires within the backshell remain stationary. If the wires within the backshell move, it will be necessary to press the staple deeper.

5. REVISION SUMMARY

Revisions to this document include:

- Updated document to corporate requirements
- New logo