APPENDIX E

Connector Assembly Procedures

Following are examples of standard and recommended assembly procedures for various electrical connectors and connecting device types. We have selected for use as examples those product lines which exemplify the latest trend to rear release designs. This section is meant to serve as a guide only.

The rear-release system was developed to combine the advantages of the most reliable and efficient methods developed in recent years. The most outstanding characteristic of this system of wire termination, contact insertion and removal, and contact retention is its simplicity: Assembly personnel need learn only one procedure for the termination and assembly of complete interconnection systems, and the tools required to make all types of connections are a simple few.

CONTACT CRIMPING

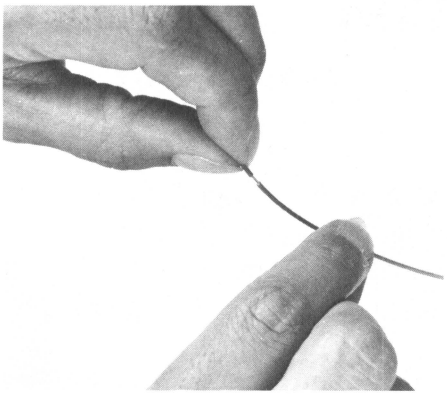
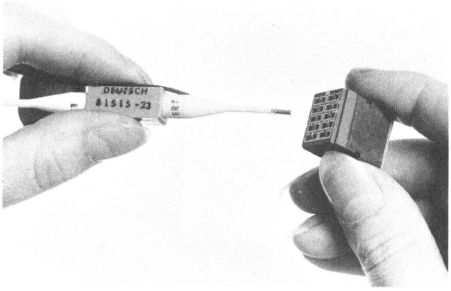


Figure E-1

1. Strip insulation from wire for a distance of .207" for size 22, 20, and 16 contacts; .225" for size 12 contacts. Leave insulation on wire until ready to insert wire into contact. This protects wire from contamination and prevents strands from splaying.
2. Insert contact into an appropriate type crimp tool with the contact crimp barrel facing up.
3. Remove the small piece of insulation from the end of the wire, taking care not to pinch the remaining insulation with the fingernails.
4. Insert the bare wire into the contact and squeeze the crimp tool. (The crimp tool will release the contact when the full crimping cycle has been performed.) Remove the crimped contact from the tool.
5. Verify a proper crimp by looking into the inspection hole. Wire should be visible.

CONTACT INSERTION, REMOVAL



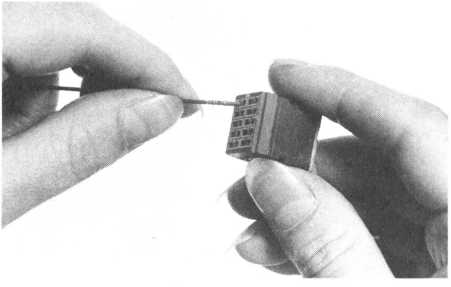


Figure E-2
Insertion
For wire size No. 22 and smaller:

1. Hold the colored half of the insertion/removal tool between the thumb and forefinger and lay the wire to be inserted along the slot, leaving about 1/2" of the wire protruding. Slide the wire into the tool.
2. Pull the wire back through the tool until the tip of the tool seats against the end of the crimp barrel.
3. Holding the junction module with the cavities facing you, slowly push the contact straight into the cavity.
4. A firm stop will be evident when the contact is locked in place.

(For wire size No. 20 and larger, no insertion tool is needed; use steps 3 and 4 only.)

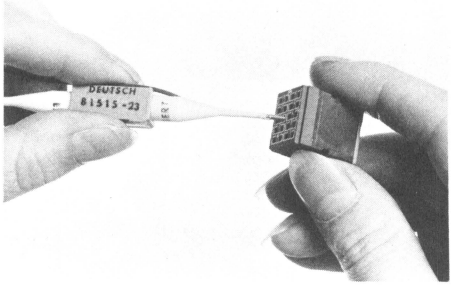


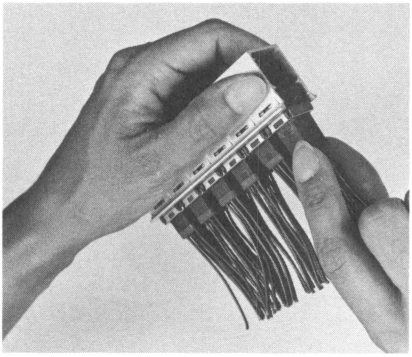
Figure E-3
Removal

1. With the module face toward you, slide the white end of the plastic tool over the wire of the contact to be removed.
2. Slowly slide the tool along the wire into the insert cavity until it engages the contact and a positive resistance is felt. The contact retaining clip is now in the unlock position.
3. Pull both the tool and the contact-wire assembly out of the junction module.

MODULE INSERTION, REMOVAL

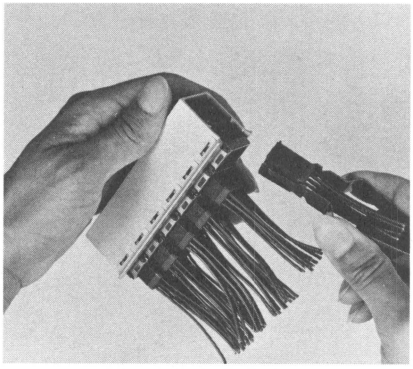
Figure E-4
Insertion

1. Press the module into the rail assembly by hand until a definite stop is felt and an audible click is heard.



Removal

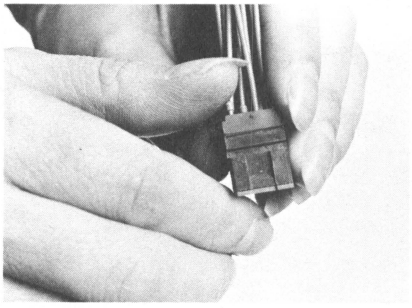
1. Slide the double-sided tool down the indents of the module to the maximum depth to unlock the retaining clips.
2. Holding tightly, remove both the tool and the module.



SEALING PLUGS

Figure E-5
Sealing Plugs

1. The sealing plug (appropriate size) is inserted in the cavity by hand.



Connector Contacts

CRIMPING

The first four steps are the same as for the MIL-C-39029/22 type contacts.

Here they are in abbreviated form:

1. **Strip insulation from wire for a distance of .207" for size 22, 20, and 16 contacts; .225" for size 12 contacts. Leave insulation on wire until ready to insert wire into contact.**

2. **Insert contact into an appropriate type crimp tool with the contact crimp barrel facing up.**

3. **Remove the small piece of insulation from the end of the wire, taking care not to pinch the remaining insulation.**

4. **Insert the bare wire into the contact and squeeze the crimp tool. Remove the crimped contact from the tool.**

5. **Two series of 4 indents grip the wire and secure the contact to the wire. Visibility of the wire in the contact inspection hole (arrow) indicates that the wire is crimped into the contact at the proper depth. Inspect to make sure there are no loose or nicked strands.**

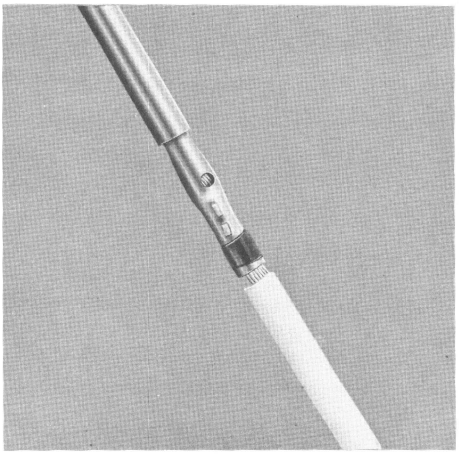


Figure E-6

INSERTION

Figure E-7
Insertion

1. Hold the insertion half of the tool between the thumb and forefinger and lay the wire against the slot of the tool, then snap the wire into the slot.

2. After the wire snaps into the tool, seat the retention shoulder against the tip of the tool.

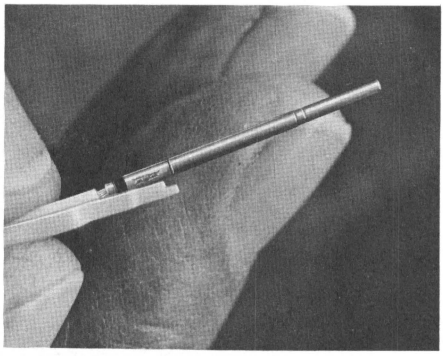


Figure E-8

3. Holding the connector with the rear grommet facing you, slowly push the contact straight into the grommet cavity. *Do not twist the tool.* Note: Some wire constructions may not require the use of an insertion tool.

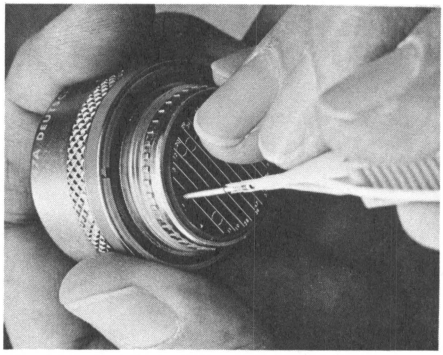
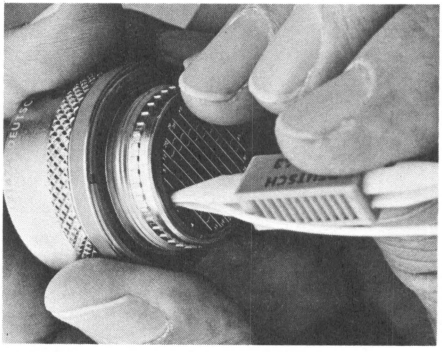


Figure E-9

4. A firm stop will be evident when the contact positively seats in the connector. Remove the tool by sliding it back on the wire. The contact will now be securely locked in place.

Caution:
When using minimum diameter wire, the tool may have a tendency to stop against the rear of the contact crimp barrel. If this should occur, careful manipulation of the tool will permit it to ride over the crimp barrel and into the proper position to unlock the contact.



CONTACT REMOVAL

REMOVAL

Refer to ITS connector Contacts for instructions on how to remove wired and unwired contacts.

Briefly, here's what to do:

To Remove Wired Contacts

1. **Remove the backshell from the connector. Holding the wire of the contact to be removed to form a slight curve, slide into the slot in the white end of the appropriate size plastic tool.**
2. **Align the tool perpendicular to the surface of the connector. Slide the tool into the cavity until a positive resistance is felt. The contact retaining clip is now in the unlocked position.**
3. **Simultaneously withdraw both the tool and the contact-wire assembly from the connector. When possible, press the wire against the serrations of the tool to simplify the process.**

Figure E-10
To remove unwired contacts use the Deutsch M15571 tool with the correct tip. Slowly slide the tip of the tool into the cavity and over the crimp barrel of the contact. Continue to press until a firm stop is felt.

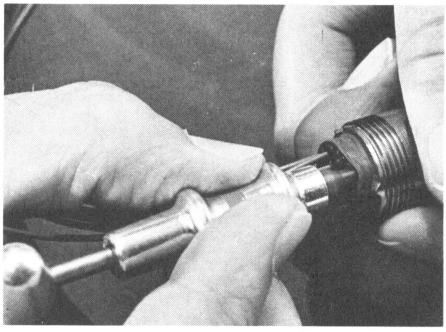
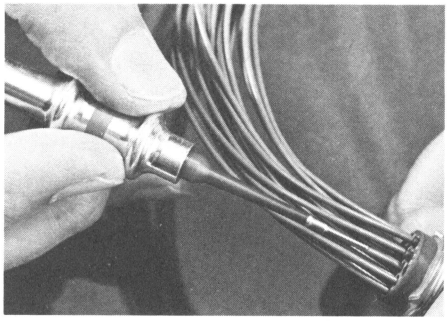


Figure E-11
Slowly pull the tool and contact from the cavity. Eject the contact by pressing the plunger forward.



ITS CONNECTOR CONTACTS

CRIMPING

Figure E-12

1. Burn through the insulation with a hot wire stripper or use other approved stripping method. Do not remove the insulation at this point. This will protect the wire strands from splaying. Wire strip length for size 20 contacts: 5/32"-1/32"; size 16 & 12 contacts: 1/4"-5/16".

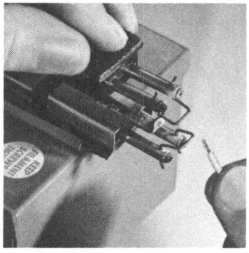


Figure E-13

2. Drop either the pin or socket contact to be crimped into the crimping tool with the contact crimp barrel facing up. This tool features a universal crimp stop which is interchangeable with pins and sockets.

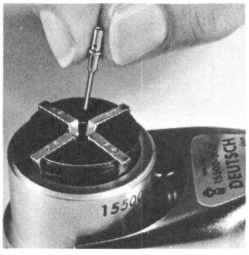


Figure E-14

3. Now remove the small piece of insulation from the wire, taking care not to pinch the insulation with the fingernails.

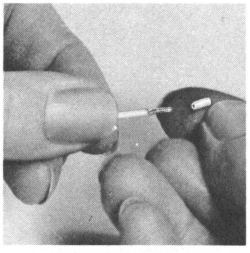


Figure E-15

4. Insert the bare wire into the open end of the contact and squeeze the crimp tool. (The crimp tool will only release the contact when the full crimping cycle has been performed.) Remove the crimped contact from the tool.

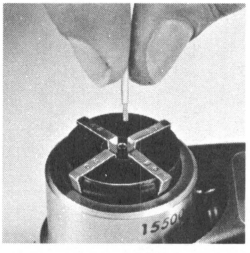
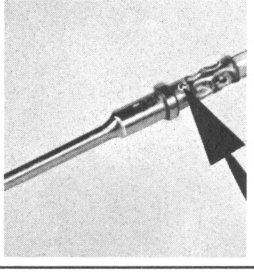


Figure E-16

5. Visibility of the wire in the contact inspection hole (arrow) indicates that the wire is crimped into the contact at the proper depth and dimension.



ITS CONTACT INSERTION

INSERTION

Figure E-17

1. Remove the backshell from the connector and feed the wire bundle through it. Holding the wire to form a slight curve, slide the wire into the slot of the colored end of the appropriate size plastic tool.

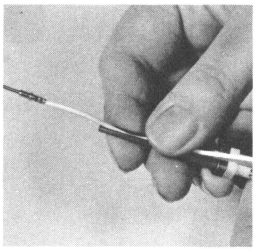


Figure E-18

2. Move the wire and tool in opposite directions so that the wire slides into the tubular area of the tool. Pull the wire back through the tool until the tip of the tool seats against the contact shoulder.

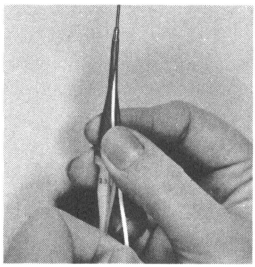


Figure E-19

3. With the contact and tool perpendicular to the insert and aligned with the appropriate cavity on the wire entry side of the connector, slowly push the contact into the cavity.

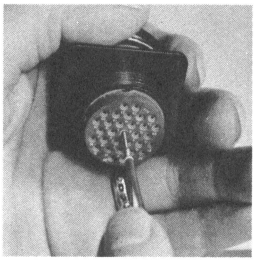
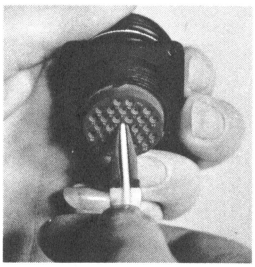


Figure E-20

4. A firm stop will be evident when the contact positively seats in the connector insert and is locked into place. Let go of the wire and pull the tool from the cavity.



ITS CONTACT REMOVAL

REMOVAL

Figure E-21

1. Remove the backshell from the connector. Holding the wire of the contact to be removed to form a slight curve, slide it into the slot in the white end of the appropriate size plastic tool.

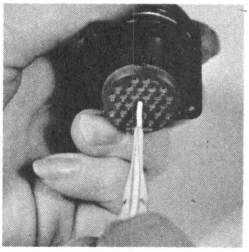


Figure E-22

2. Align the tool perpendicular to the surface of the connector. Slide the tool into the cavity until a positive resistance is felt. The contact retaining clip is now in the unlocked position.

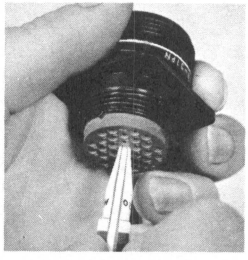
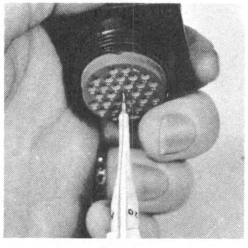


Figure E-23

2. Simultaneously withdraw both the tool and the contact-wire assembly from the connector. When possible, press the wire against the serrations of the tool to simplify the process.



UNWIRED CONTACT REMOVAL

1. To remove unwired contacts use the Deutsch M15571 tool with the correct tip. Slowly slide the tip of the tool into the cavity and over the crimp barrel of the contact. Continue to press until a firm stop is felt.

2. Slowly pull the tool and contact from the cavity. Eject the contact by pressing the plunger forward.

CRIMPING

Figure E-24
Crimping

The first four steps are the same as for ITS Connector Contacts. Here they are in abbreviated form:

1. **Burn through the insulation with a hot wire stripper or use other approved stripping method. Do not remove the insulation.**

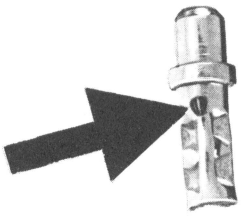
2. **Drop either the pin or socket to be crimped into the crimping tool with the contact crimp barrel facing up.**

3. **Now remove the small piece of insulation from the wire, taking care not to pinch the insulation.**

4. **Insert the bare wire into the open end of the contact and squeeze the crimp tool. Remove the crimped contact from the tool.**

Note: Size 8 contacts are crimped with a pneumatic tool; wire strip should be 5/16"-11/32" long.

5. **Visibility of the wire in the contact inspection hole (arrow) indicates that the wire is crimped into the contact at the proper depth and dimension.**



ITS JUNCTION INSERTION

INSERTION

Figure E-25

1. Holding the wire to form a slight curve, slide the wire into the slot of the colored end of the appropriate size plastic tool. (Size 8 contacts do not require a tool.)

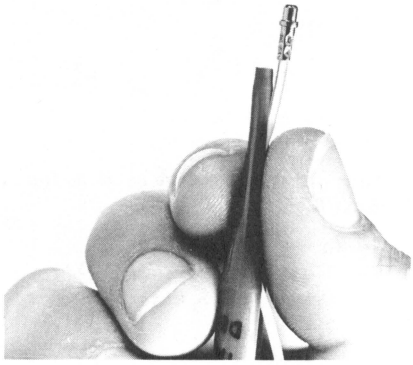


Figure E-26

2. Move the wire and tool in opposite directions so that the wire slides into the tubular area of the tool. Pull the wire back through the tool until the tip of the tool seats against the contact shoulder. (Tip of tool seats against end of crimp barrel for size 22 contacts.)

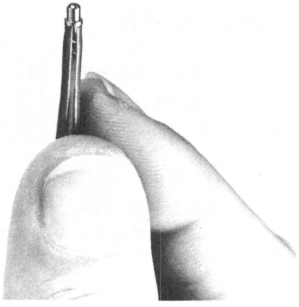
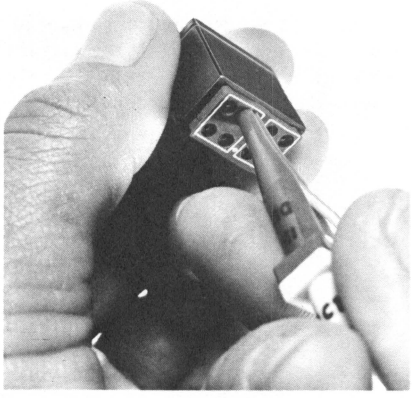


Figure E-27

3. Holding the junction module with the selected cavity facing you, push the contact straight in. A firm stop will be evident when it is locked in the junction. Then release the wire and pull out the tool.



ITS JUNCTION REMOVAL

REMOVAL

Figure E-28

1. With the module face toward you, slide the white end of the correct size tool over the wire of the contact to be removed.

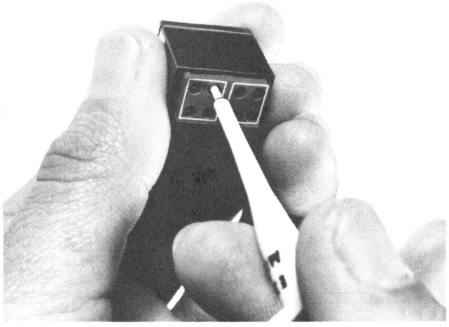


Figure E-29

2. Slide the tool along the wires into the insert cavity until it engages the contact shoulder and a positive resistance is felt. The contact retaining clip is now in the unlock position.

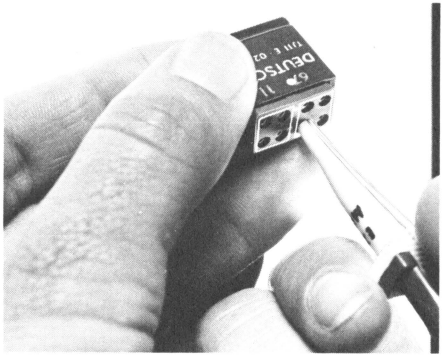


Figure E-30

Press the wire of the contact to be removed against the serrations of the tool and pull it and the contact-wire assembly out of the module. (To remove size 8 contacts repeat steps 1 through 3 using the size 8 tweezer type removal tool.)