CONNECTOR AND HARNESS REPAIR

CONNECTOR REPAIR

Several different types of connectors are used on the subject vehicle. The Deutsch heavy-duty connector is used for the engine harness to instrument harness connection and others to be discussed later are used in other applications.

Each type can be repaired by following these procedures.

DEUTSCH HEAVY-DUTY CONNECTORS

The Deutsch heavy-duty connectors used are designed to seal against moisture and contaminants. They also protect against damage from shock and vibration. The Deutsch part numbering system provides a complete description of the connector. The part number takes the form of HD 34-18-8 Part Number -XXX. A complete explanation is provided in **(Figure 6–1).**

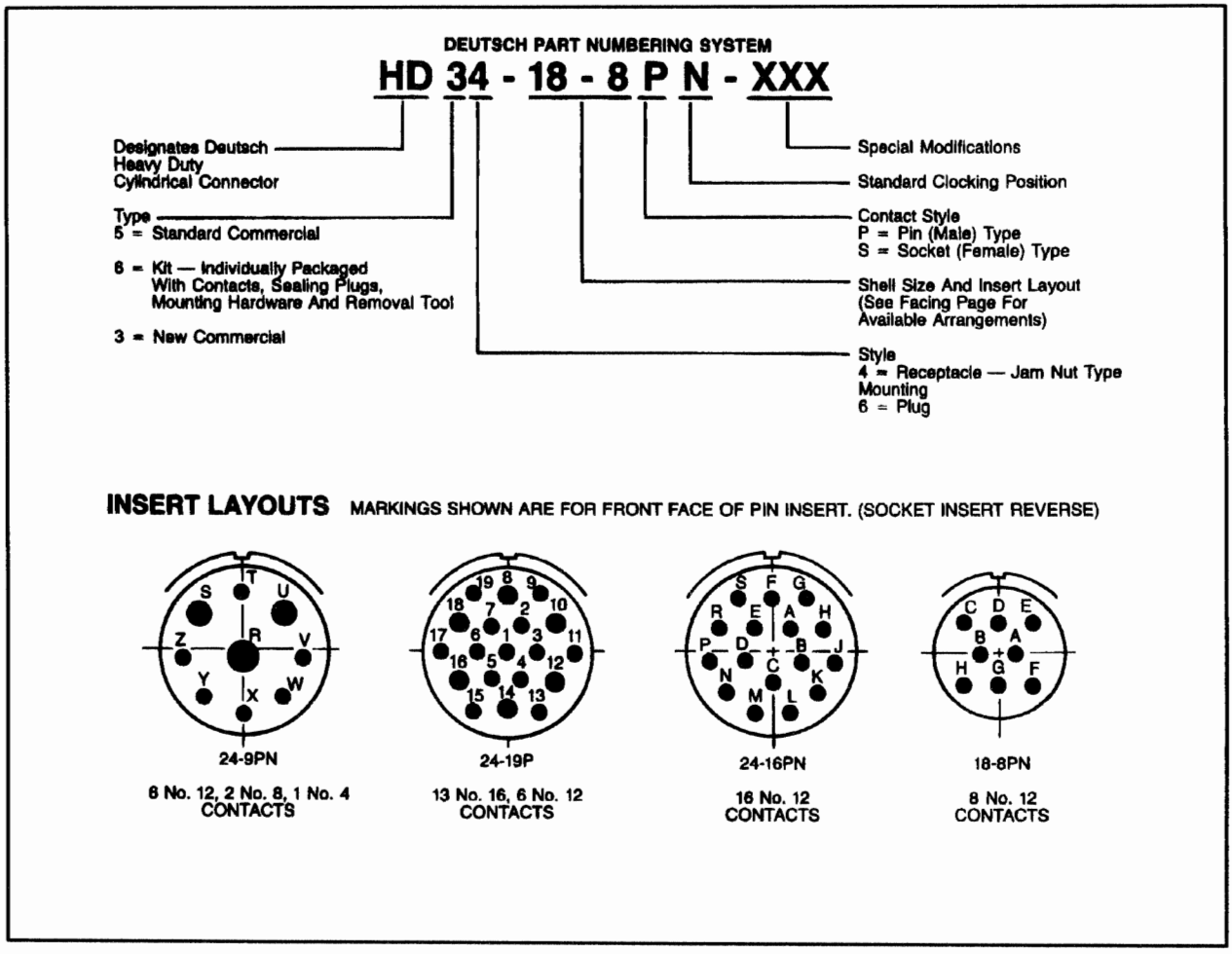

Figure 6–1 - Deutsch Connectors

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CONNECTOR AND HARNESS REPAIR

CONNECTOR REPAIR (Continued)

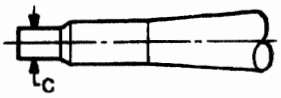
CONTACT REMOVAL

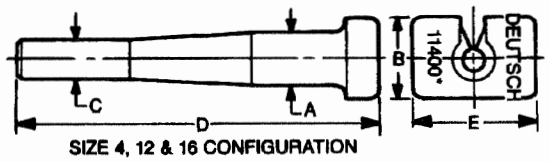
1. To remove the damaged contact, snap an appropriate size plastic contact repair tool over the wire of the contact to be removed **(Figure 6–2)**.

If the wire to the contact is broken off, insert the tool into the applicable cavity over the contact. Use a Deutsch tool or equivalent.

CONTACT REMOVAL TOOL

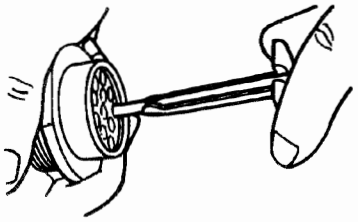
PART NO.	SIZE	±.015 A	±.031 B	REF C	MAX D	±.031 E
114008	8	.555	.875	.314	2.250	1.500
114009	4	.740	.875	.435	2.250	1.500
114010	12	.350	.625	.202	2.300	1.250
0411-204-1605	16	.286	.500	.160	2.300	1.000





SIZE 4, 12 & 16 CONFIGURATION

(USE THIS DEUTSCH TOOL, OR EQUIVALENT, FOR CONTACT REMOVAL)



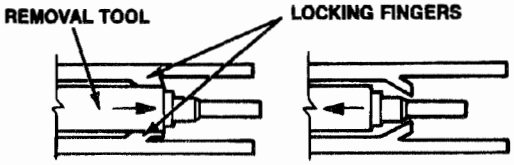


Figure 6–2 - Deutsch Connector Contact Removal

2. Slide the tool into the cavity over the contact until resistance is felt (locking fingers released) as shown in **(Figures 6–3 and 6–4.)**.

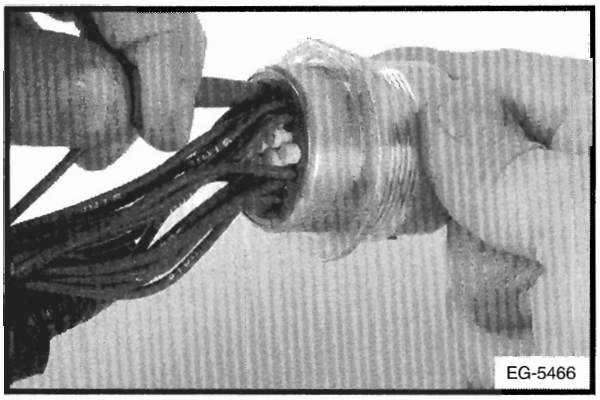


Figure 6–3 – Sliding Tool Into Cavity

3. Pull the contact/wire/tool assembly out of the connector **(Figure 6–5.)**.

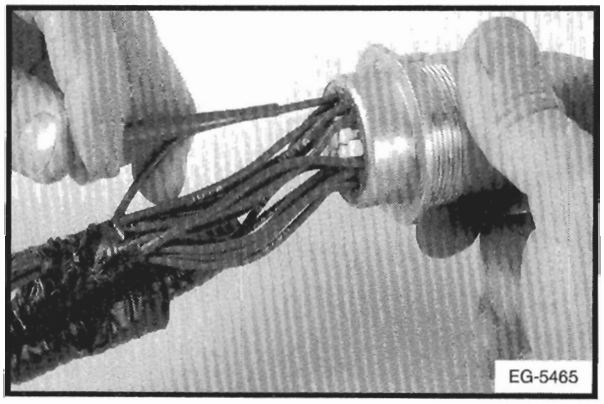


Figure 6–4. – Contact Locking Finger Released

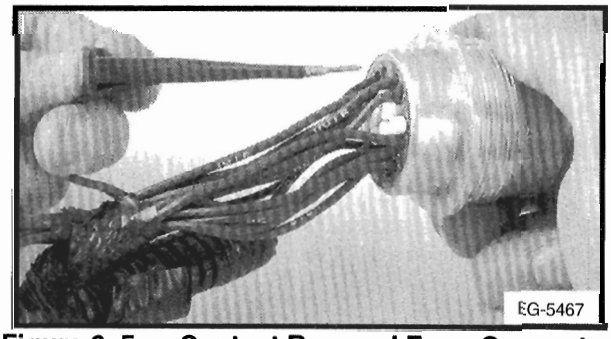


Figure 6–5. – Contact Removal From Connector

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CONTACT AND WIRE ASSEMBLY

1. Strip 0.253 +/- 0.031 inch (approximately 1/4 inch) of insulation from end of wire using suitable stripping tool.

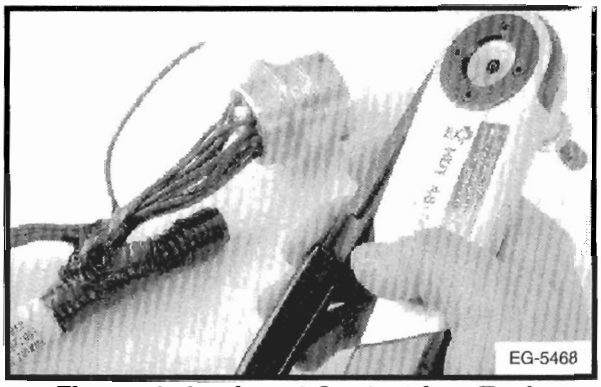

Figure 6–6. – Insert Contact Into Tool

2. Position contact into Deutsch HDT-4800 hand crimping tool (or equivalent) so that the crimp barrel is 1/32 inch above the tool indenters **(Figure 6–6.)**. Hold contact in place by hand or by lightly squeezing the tool.

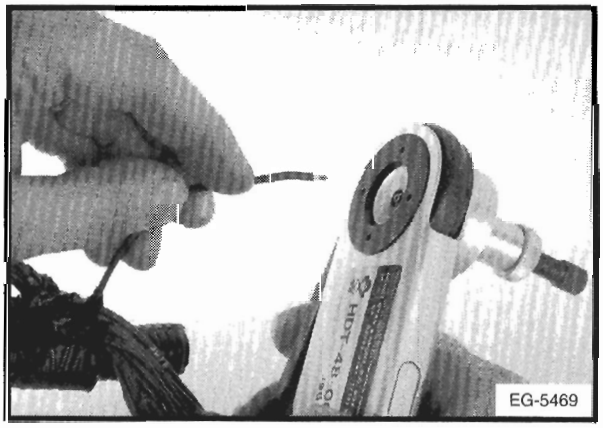

Figure 6–7. – Insert Wire Into Contact

3. Place the stripped end of the wire into the crimp barrel of the contact. Insert wire into contact. **(Figure 6–7.)** Fully depress the tool handles. Release and remove wire/contact assembly. **(Figure 6–8.)**

4. Inspect the wire/contact terminal to make sure that all wire strands are in the crimp barrel and that the crimp is secure.

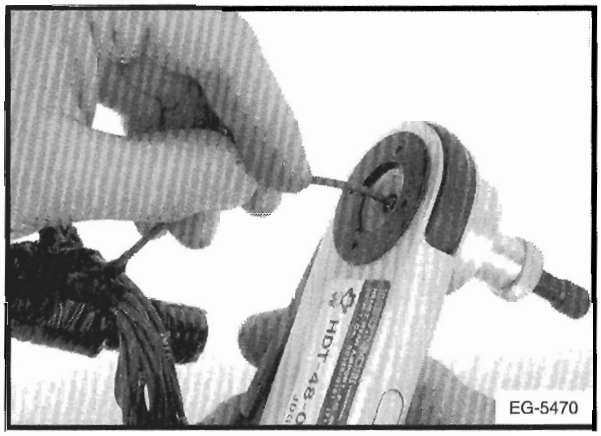

Figure 6–8.– Contact Crimping

CONTACT INSERTION

1. Grasp the contact/wire assembly, between the thumb and forefinger, on the wire approximately one inch behind the contact crimp barrel.
2. Hold the connector with the grommet facing the contact.

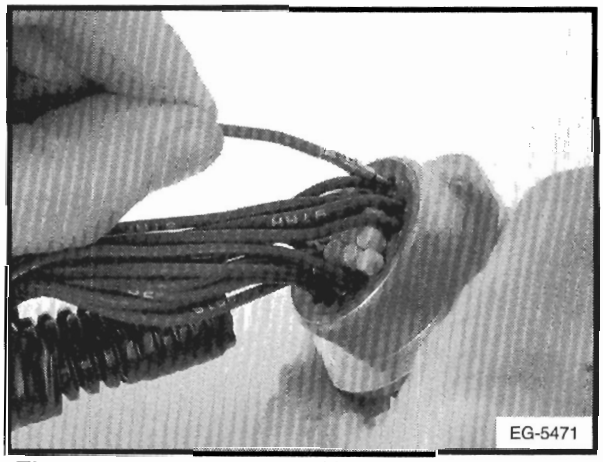

Figure 6–9. – Connector/Contact For Insertion

3. Push the contact straight into the appropriate cavity in the connector grommet, until a positive stop is felt. The retaining fingers in the connector will snap behind the shoulder of the contact and lock it in place. **(Figure 6–9.)**. A slight tug backward on the wire will verify that the contact is properly seated. **(Figure 6–10)**

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CONNECTOR AND HARNESS REPAIR

CONNECTOR REPAIR (Continued)

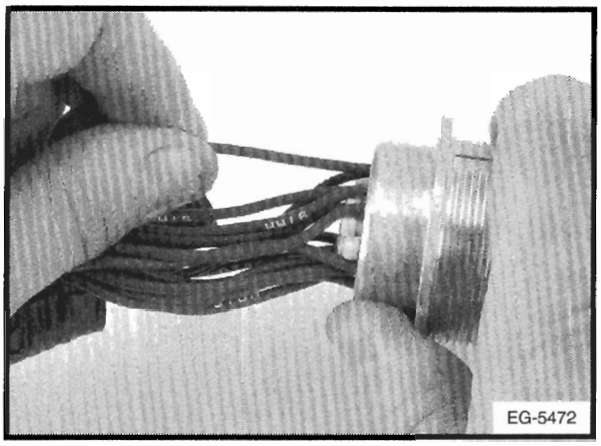

Figure 6–10. – Verification of Contact Seating

Several different types of electrical connectors are used on the subject vehicles. **Refer to Figures 6–11. through 6–14.** for additional connector illustrations.

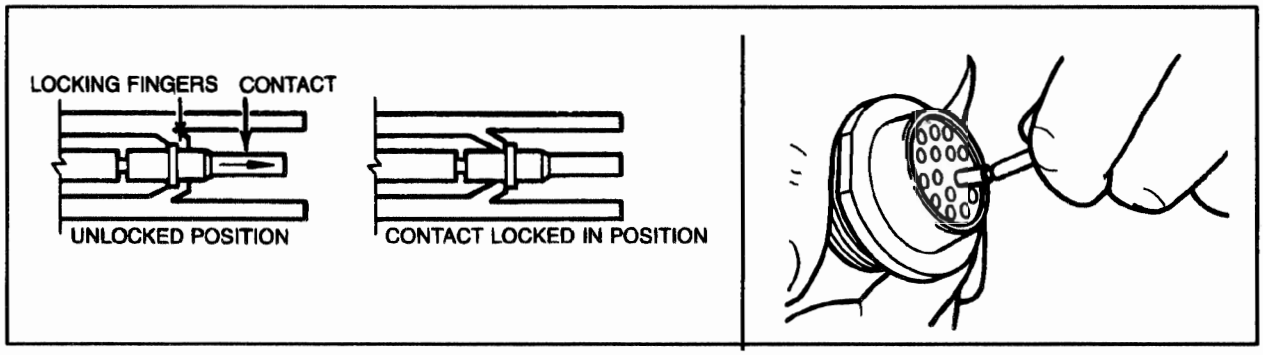

Figure 6–11. – Contact (Left) and Insertion (Right)

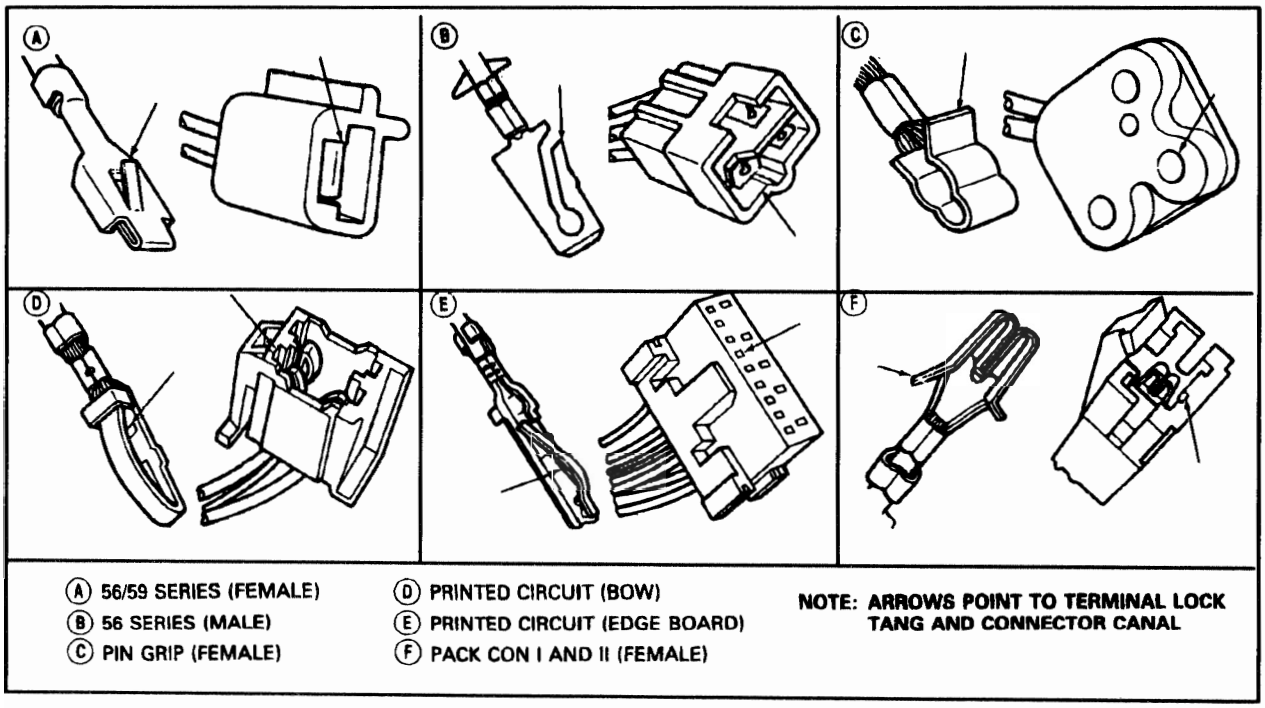

Figure 6–12. - Connector Details

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CONNECTOR REPAIR (Continued)

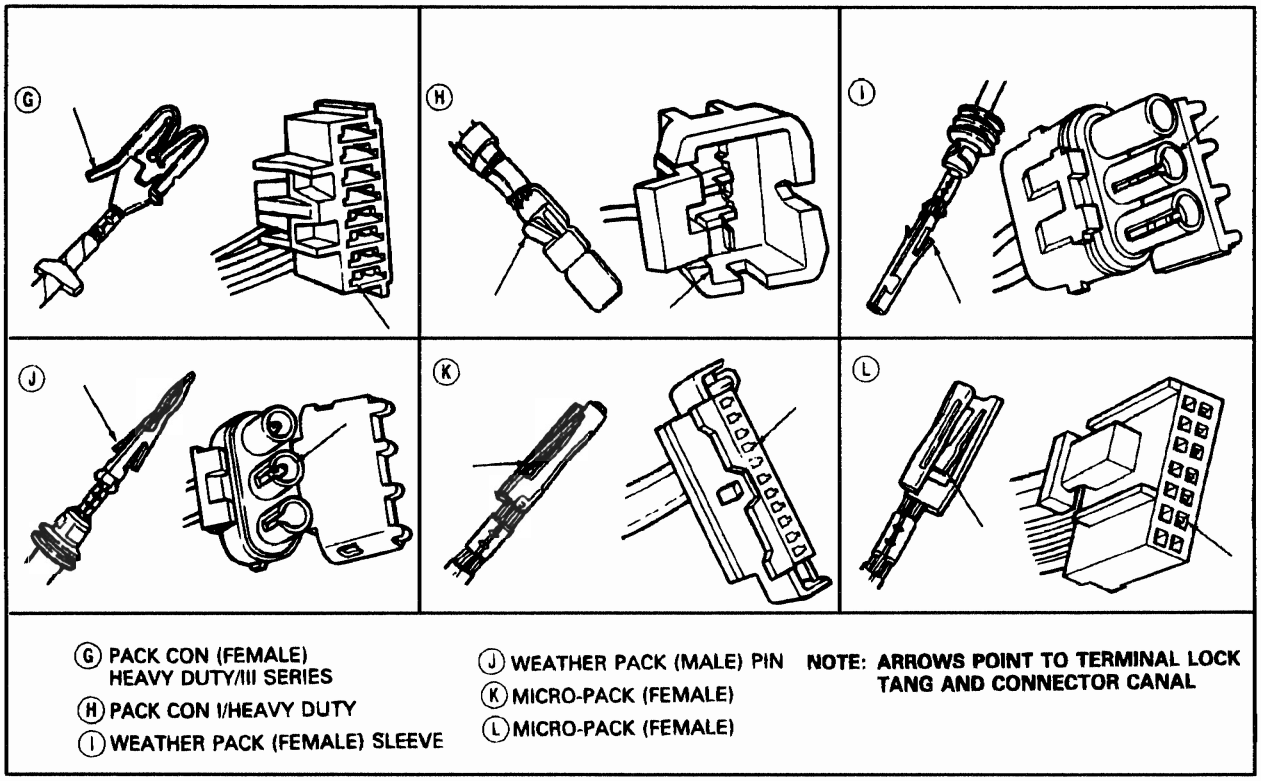

Figure 6–13. – Connector Details

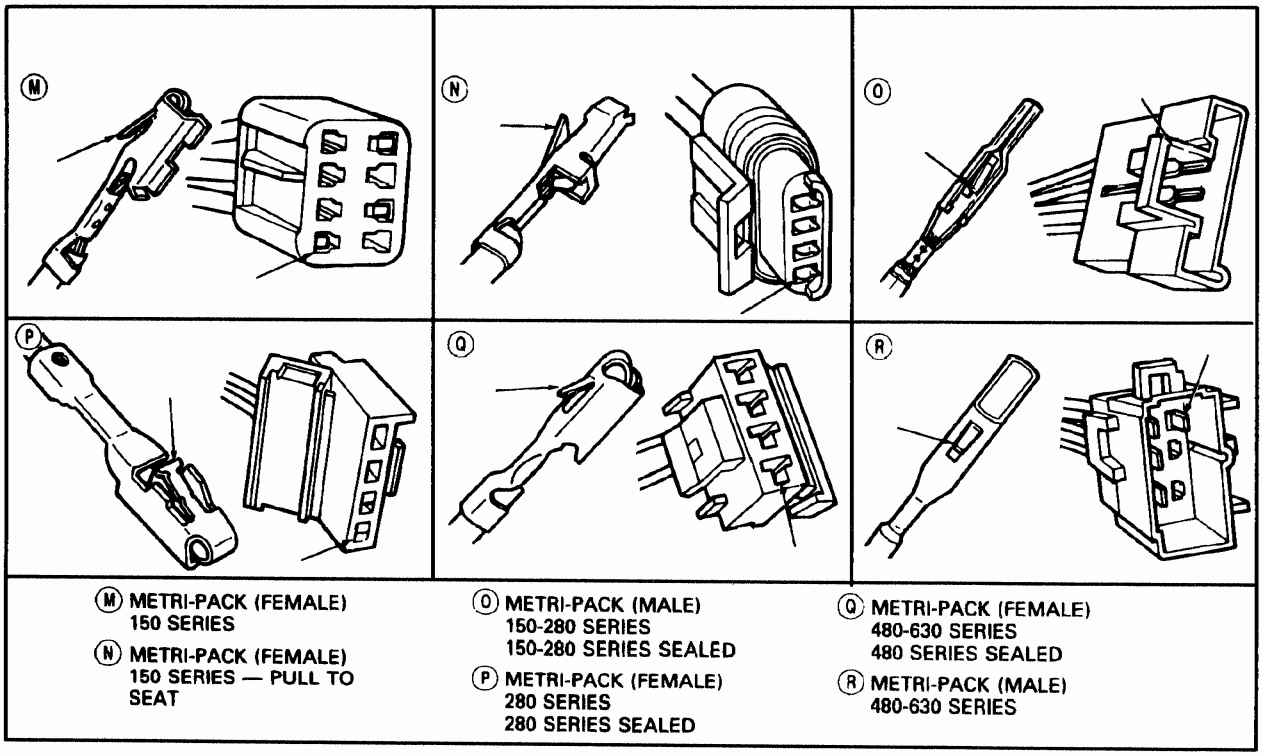

Figure 6–14. – Connector Details

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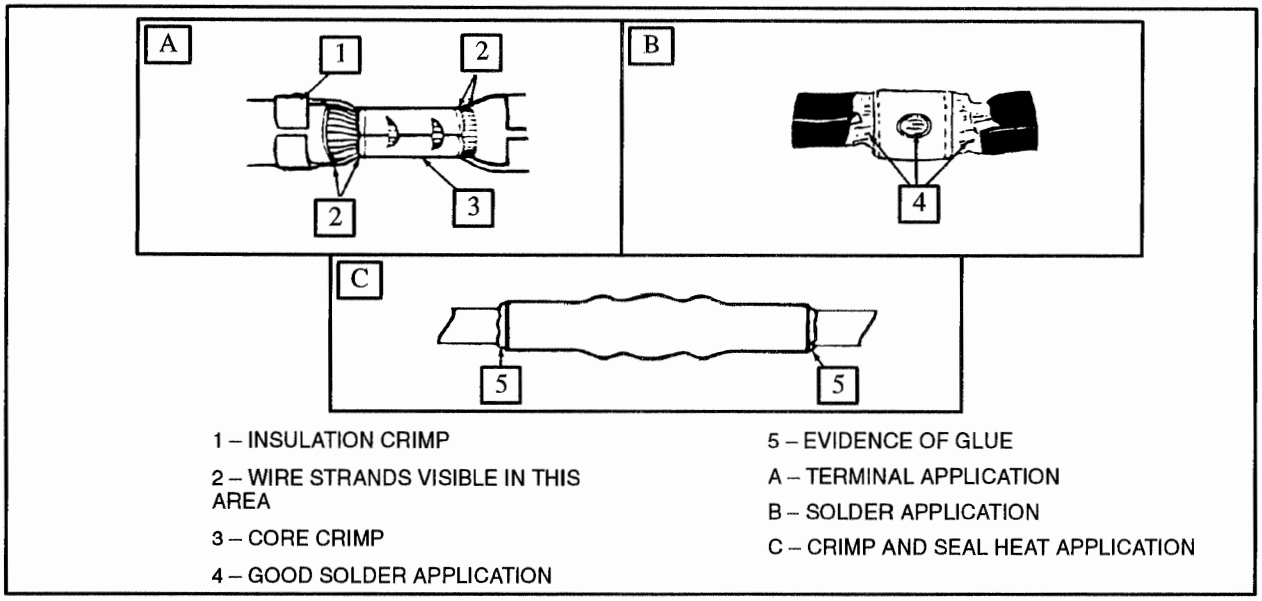
CONNECTOR AND HARNESS REPAIR

INSPECTION



1 – INSULATION CRIMP
2 – WIRE STRANDS VISIBLE IN THIS AREA
3 – CORE CRIMP
4 – GOOD SOLDER APPLICATION
5 – EVIDENCE OF GLUE
A – TERMINAL APPLICATION
B – SOLDER APPLICATION
C – CRIMP AND SEAL HEAT APPLICATION

Figure 6–15. – Inspecting Terminal, Solder, Crimp and Seal Heat Applications

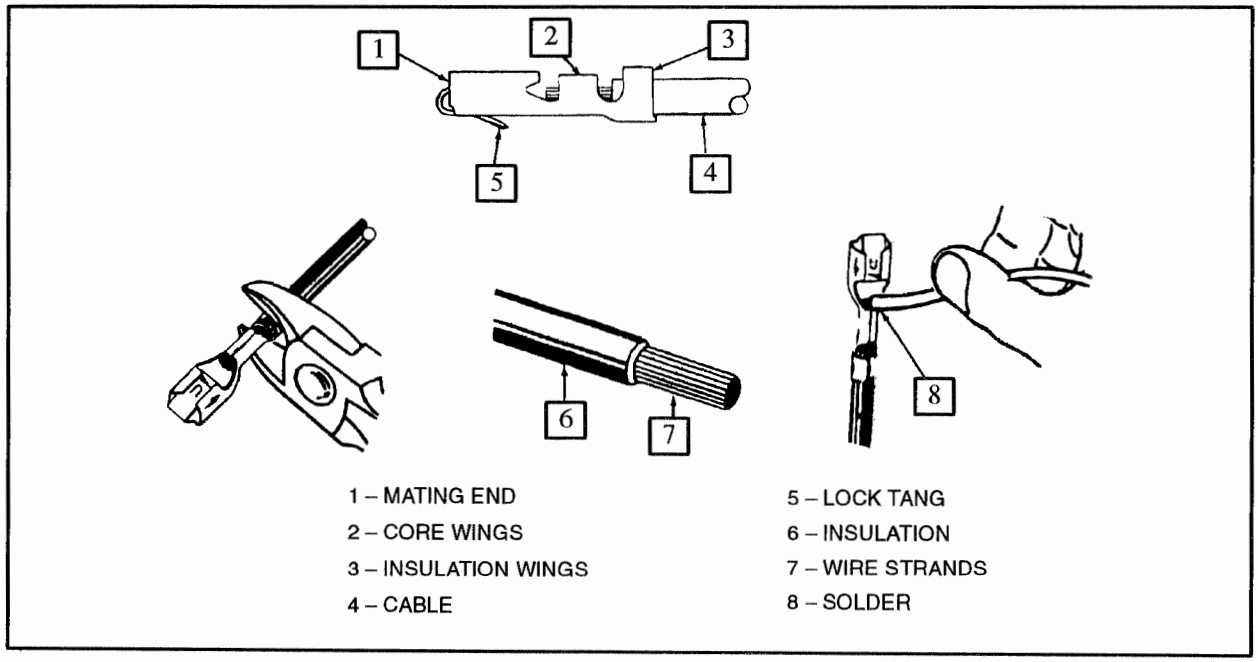
STANDARD TERMINAL REPLACEMENT

Refer to Figure 6–16

1. Cut the cable just before the insulation wings on the terminal.
2. Remove the insulation being careful not to cut any of the wire strands.
3. Position cable in the new terminal.
4. Hand crimp the core wings first, then the insulation wings.

NOTE: Always use the recommended crimp tool for each terminal. A detailed crimp chart is included in the repair kit.

5. Solder all hand crimped terminals and electrically check for continuity.



1 – MATING END
2 – CORE WINGS
3 – INSULATION WINGS
4 – CABLE
5 – LOCK TANG
6 – INSULATION
7 – WIRE STRANDS
8 – SOLDER

Figure 6–16. – Standard Terminal Replacement

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TERMINAL REPLACEMENT — SEALED WEATHER PACK AND METRI-PACK

Refer to Figure 6–17.

1. Cut the cable just before the insulation wings on the terminal.
2. Replace the seal and remove the insulation being careful not to cut any of the wire strands.
3. Align the seal with the cable insulation.
4. Position the cable in the new terminal.
5. Hand crimp the core wings first, then the insulation wings.

NOTE: Always use the recommended crimp tool for each terminal. A detailed crimp chart is included in the repair kit.

6. Solder all hand crimped terminals and electrically check for continuity.
7. Replace the terminal in correct connector cavity.

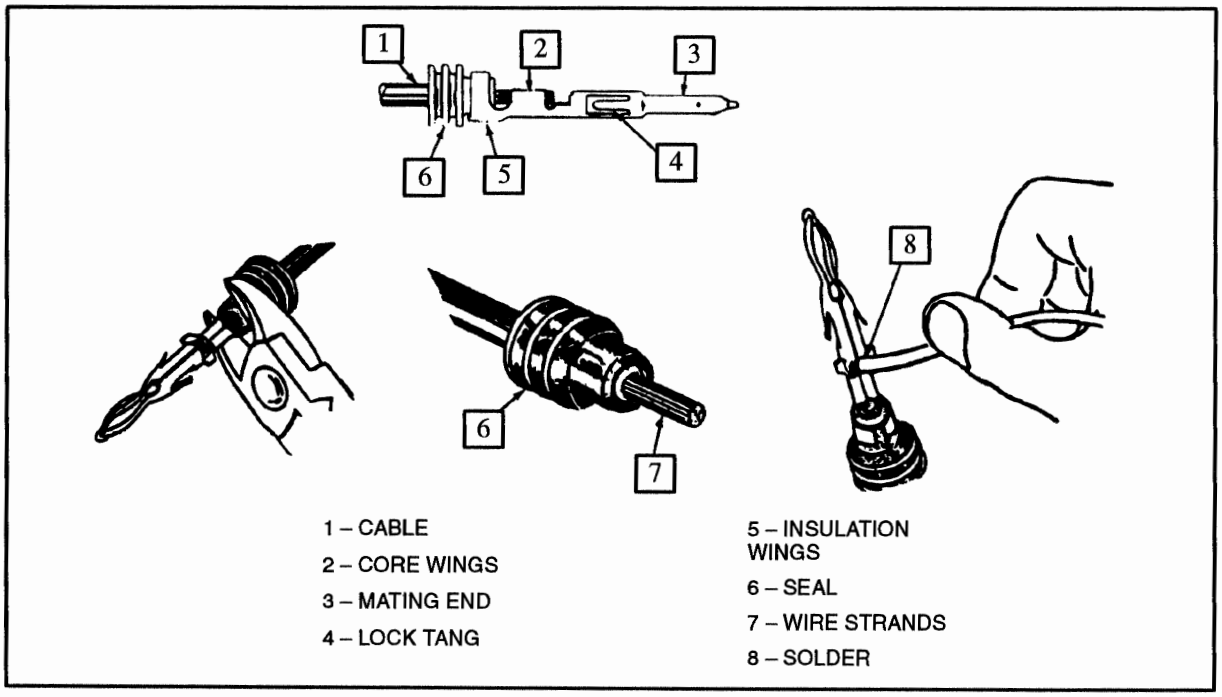


Figure 6– 17. – Sealed Weather Pack and Metri-Pack Terminal Replacement

SPLICE CLIP INSTALLATION

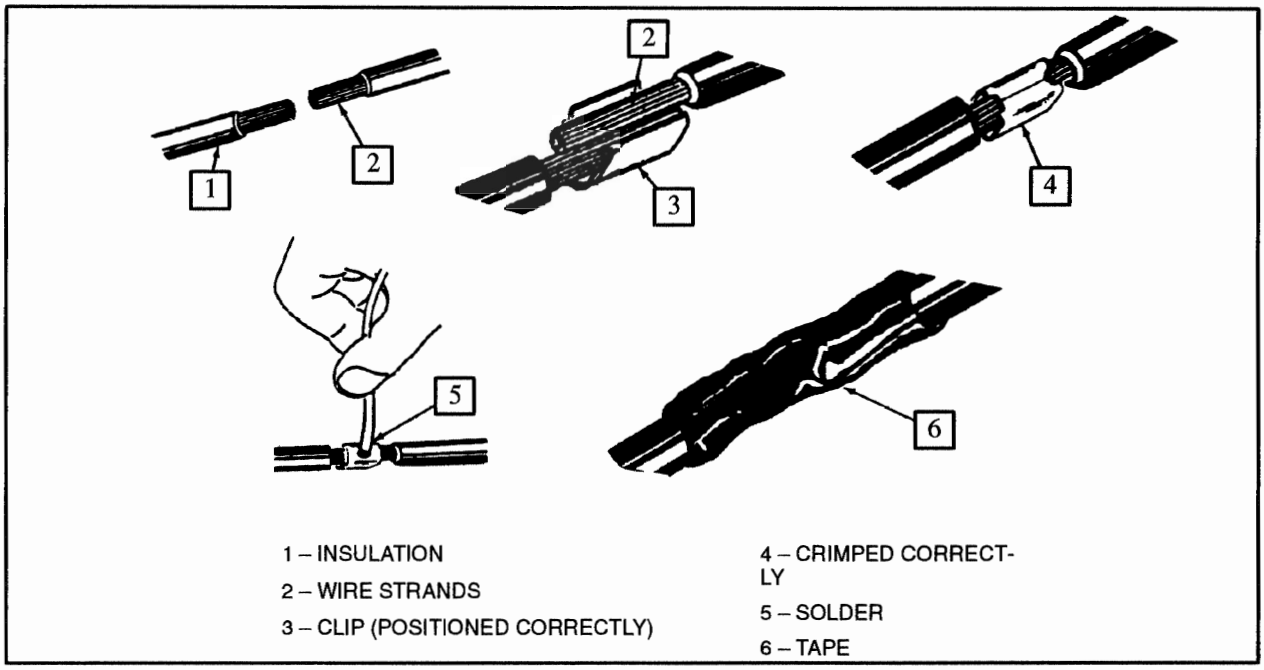
Refer to Figure 6–18.

NOTE: A new clip must be located a minimum of 1.5 inches (40 mm) from a connector, sleeve or another clip.

1. Cut off the old clip or bad section of wire.
2. Remove the insulation being careful not to cut any of the wire strands.
3. Install the proper clip on the wire strands.
4. Hand crimp the clip until securely fastened.
5. Solder the clip and electrically check for continuity.
6. Cover the entire splice with splice tape. Extend the tape onto the insulation on both sides of the splice(s).

CONNECTOR AND HARNESS REPAIR

SPLICE CLIP INSTALLATION (Continued)



1 – INSULATION
2 – WIRE STRANDS
3 – CLIP (POSITIONED CORRECTLY)
4 – CRIMPED CORRECTLY
5 – SOLDER
6 – TAPE

Figure 6–18. – Splice Clip Replacement

CRIMP AND SEAL SPLICE SLEEVE INSTALLATION
Refer to Figure 6–19.

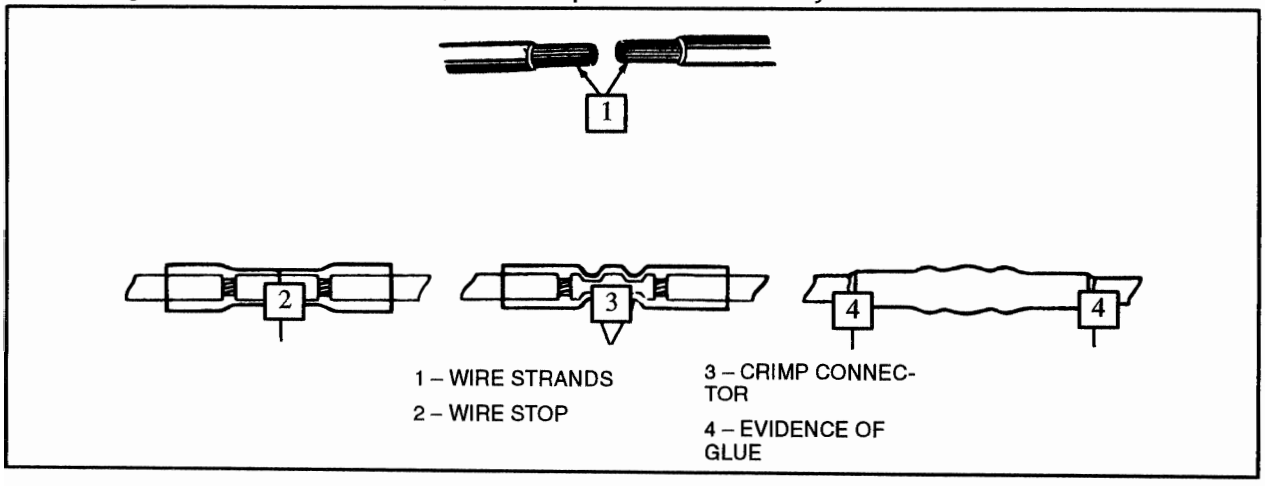
NOTE: A new sleeve must be located a minimum of 1.5 inches (40 mm) from a connector, clip or another sleeve.

1. Cut off the old sleeve or bad section of the wire.
2. Remove insulation being careful not to cut any of the wire strands.
3. Install the proper sleeve on the wire strands making sure the ends of the wire, hit the stop.
4. Hand crimp to the sleeve. Gently tug on the wire to make sure that they are secure.

NOTE: Always use the recommended crimp tool for each sleeve. A detailed crimp chart is included in the Repair Kit.

CAUTION – Do not use a match or open flame to heat the sleeve seal.

5. Electrically check the sleeve and wire cable for continuity.



1 – WIRE STRANDS
2 – WIRE STOP
3 – CRIMP CONNECTOR
4 – EVIDENCE OF GLUE

Figure 6–19. – Seal Splice Sleeve Replacement

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LOCKING WEDGE CONNECTORS

Procedure for removal of wire terminals from ECT, EOT, IAT and MAP.

The terminals are held in place by plastic retaining fingers which are part of the connector. The fingers snap into the shoulder of the terminal and are held in place by the locking wedge.

TO REMOVE THE TERMINAL FROM THE CONNECTOR:

1. Using the appropriate tool, pry the connector lock out of the connector body from the mating end and remove the lock from the connector **(Figure 6–20).**

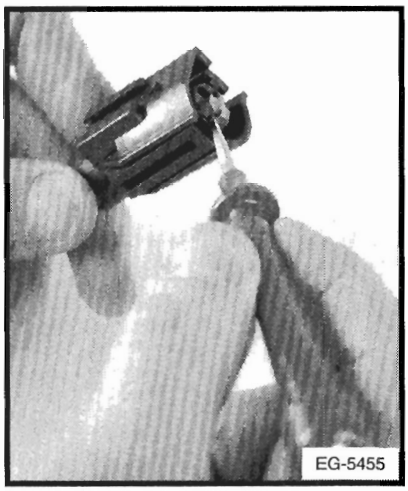

Figure 6–20. – Remove Lock Wedge

2. Insert a narrow blade into the connector to lift the retaining finger away from the terminal **(Figure 6–21.)**.

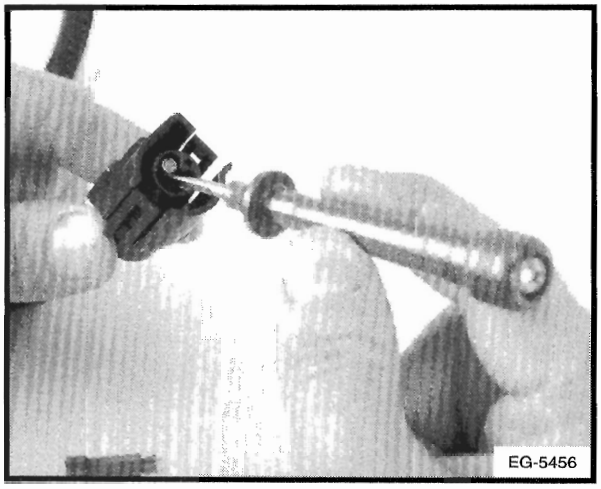

Figure 6–21. – Release Retaining Finger

3. Pull the wire and terminal out of the connector body **(Figure 6–22.).**

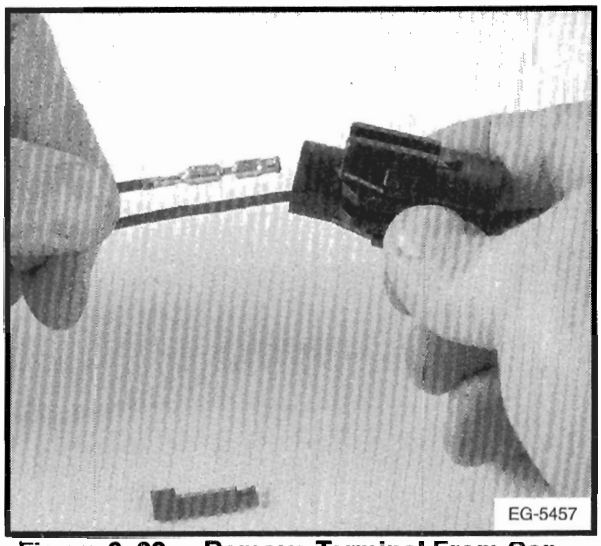

Figure 6–22. – Remove Terminal From Connector

TO REPLACE THE TERMINAL:

1. Remove the insulation, being careful not to cut any of the wire strands.
2. Position the wire in the new terminal **(Figure 6–23.).**

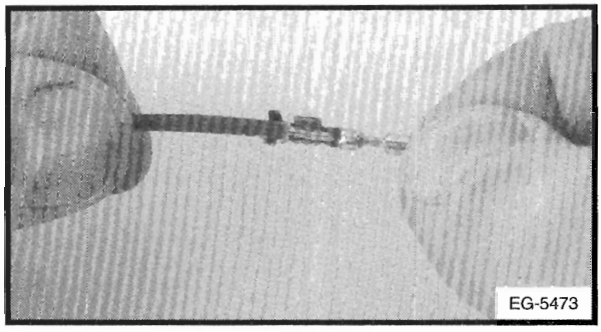

Figure 6–23. – Place Terminal Over Wire

3. Hand crimp the core wings first and then the insulation wings **(Figure 6–24.).**

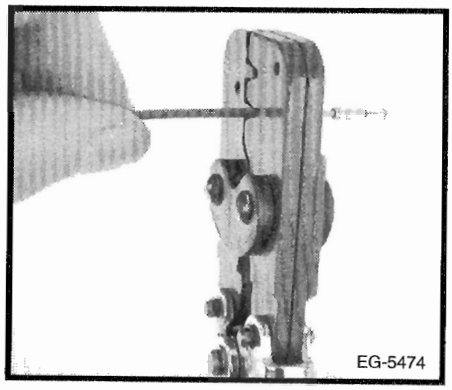

Figure 6–24. – Terminal Over Wire

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CONNECTOR AND HARNESS REPAIR

TO REPLACE THE TERMINAL: – Continued

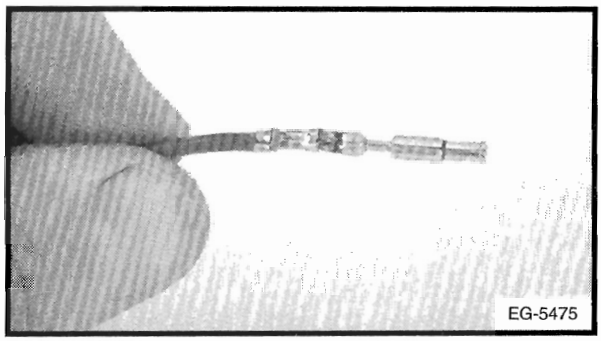

Figure 6–25. – Contact Crimping Complete

TO INSTALL THE TERMINAL IN THE CONNECTOR:

1. Push the terminal into the connector body, deep enough so that the retaining finger snaps over the terminal shoulder **(Figure 6–26.)**.

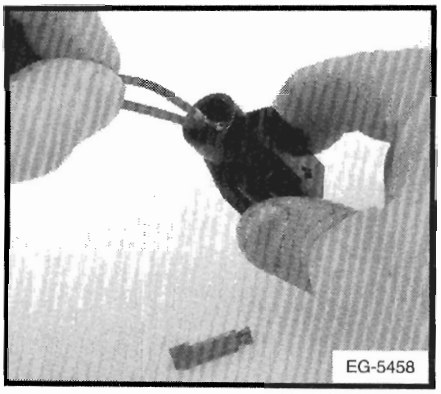

Figure 6–26. – Insert Terminal

2. Push the insulator over the wires into the connector body (if equipped) **(Figure 6–27.)**.

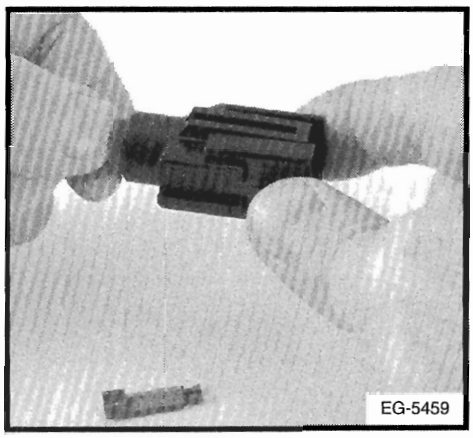

Figure 6–27. – Insert Insulation

3. Insert the locking wedge and push in until flush with the face of the connector body **(Figure 6–28.)**.

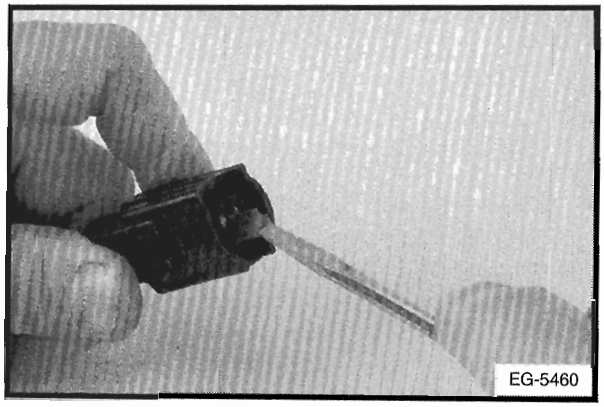

Figure 6–28. – Insert Terminal Lock

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PACKARD CONNECTORS

Procedure for removal of wire terminals from CMP, ICP, IPR, EOP and injector connectors.

The terminals are held in place by locking tabs that are part of the terminal. To remove the terminal the locking tab must be released from the wire side of the connector body and the terminal is removed toward the mating end of the connector body.

TO REMOVE THE TERMINAL FROM THE CONNECTOR:

1. Pry the insulator from the rear of the connector body **(Figure 6–29.).**

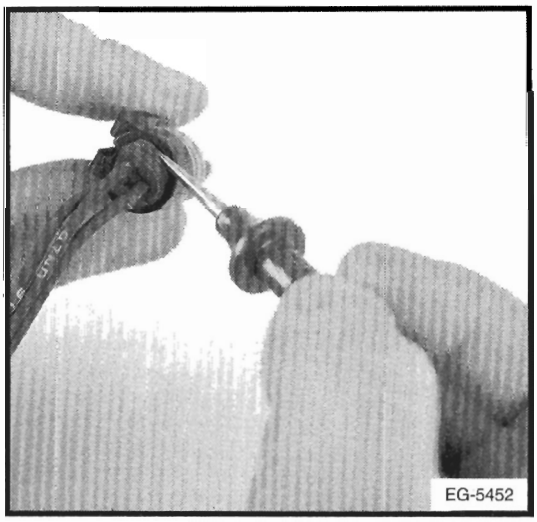

Figure 6–29. – Move The Insulation Back

2. Slide the insulator down the wires away from the connector body **(Figure 6–30.).**

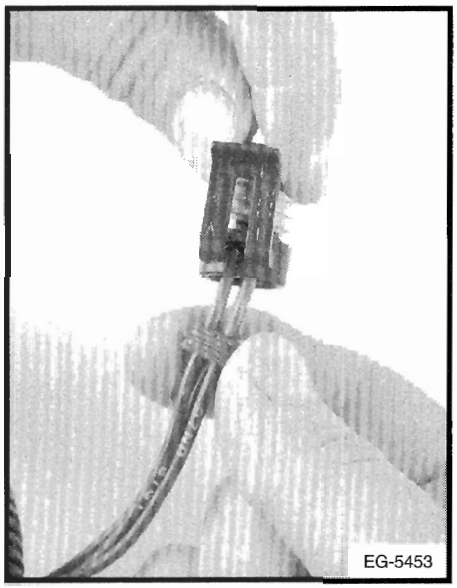

Figure 6–30. – Slide The Insulator Back

3. Insert the narrow blade tool into the rear of the connector body on the locking tab side of the wire terminal **(Figure 6–31.)**.

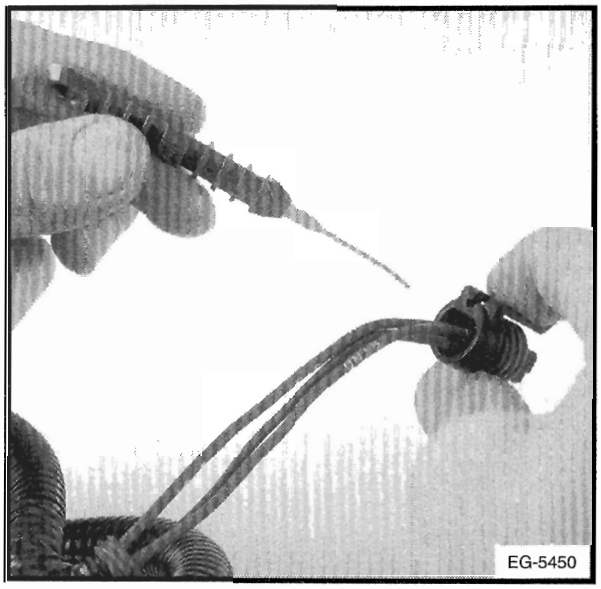

Figure 6–31. – Release Terminal Lock Tab

CONNECTOR AND HARNESS REPAIR

PACKARD CONNECTORS (Continued)

TO REPLACE THE TERMINAL: – Continued

4. Push the blade forward until the lock tab is depressed **(Figure 6–32.)**.

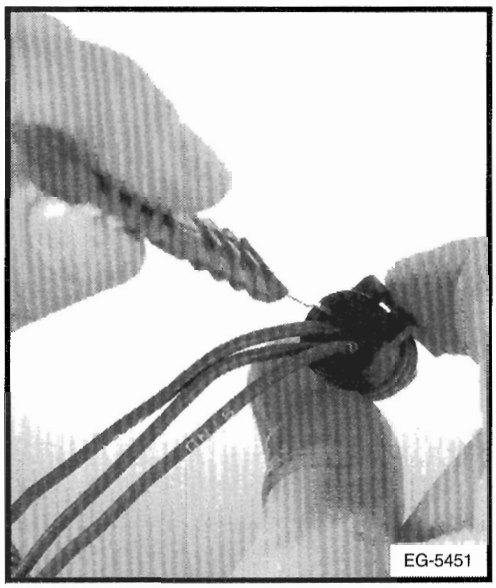

Figure 6–32. – Release Terminal

5. Additional pressure will force the wire terminal out the end of the connector body.

If the terminal is to be replaced, use the standard repair procedure (instructions above). Make certain that the wire is through the insulator and wire before the terminal is crimped onto the wire. **Figure 6–33.**

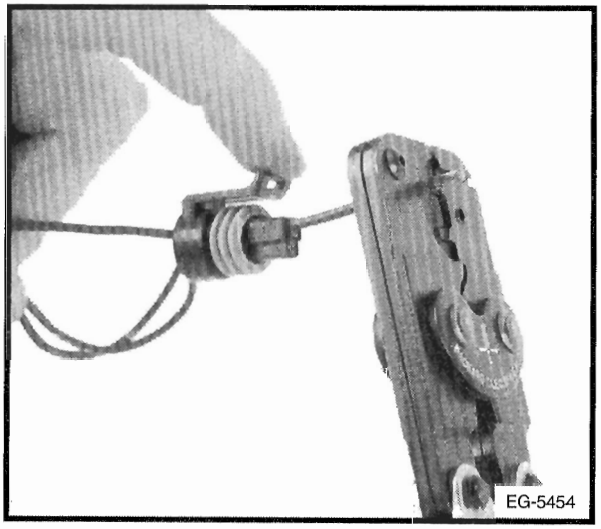

Figure 6–33.– Contact Crimping

TO INSTALL THE TERMINAL IN THE CONNECTOR:

1. Align the wing on the terminal with the slot in the connector body. Pull the wire into the connector body until the locking tab snaps into the connector.
2. Push the wire insulator into place at the rear of the connector body. **(Figure 6–34.)**
3. Make certain the connector insulator is in place to reinstall the connector.

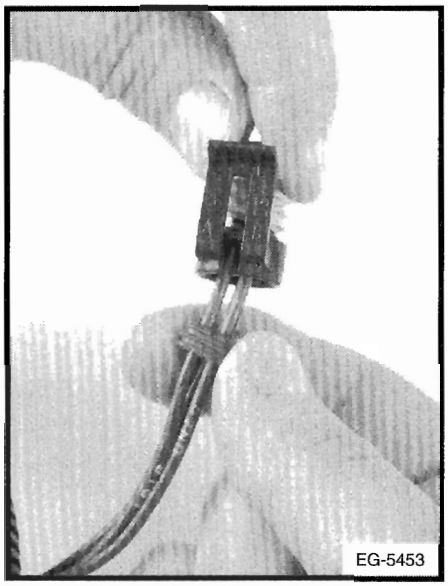

Figure 6–34. – Reinstall Insulator

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