CERTAIN 2001 THROUGH 2004 MODEL YEAR ESCAPE VEHICLES EQUIPPED WITH ABS — ABS MODULE CONNECTOR INSPECTION AND REPAIR

OVERVIEW

This program includes making sure the wiring harness connector is properly sealed against moisture/ contamination, and inspecting the ABS module for evidence of corrosion resulting from an inadequately sealed connector.

During the inspection, we expect that most of the affected vehicles will not have any evidence of corrosion in the ABS module. However, the ABS wiring harness connector still needs to be inspected for missing or improperly seated seals and/or incorrect connector number.

If the ABS module is corroded, the ABS module and connector must be replaced.

A flow chart has been developed to help direct you to the proper repair. See Figure 1.

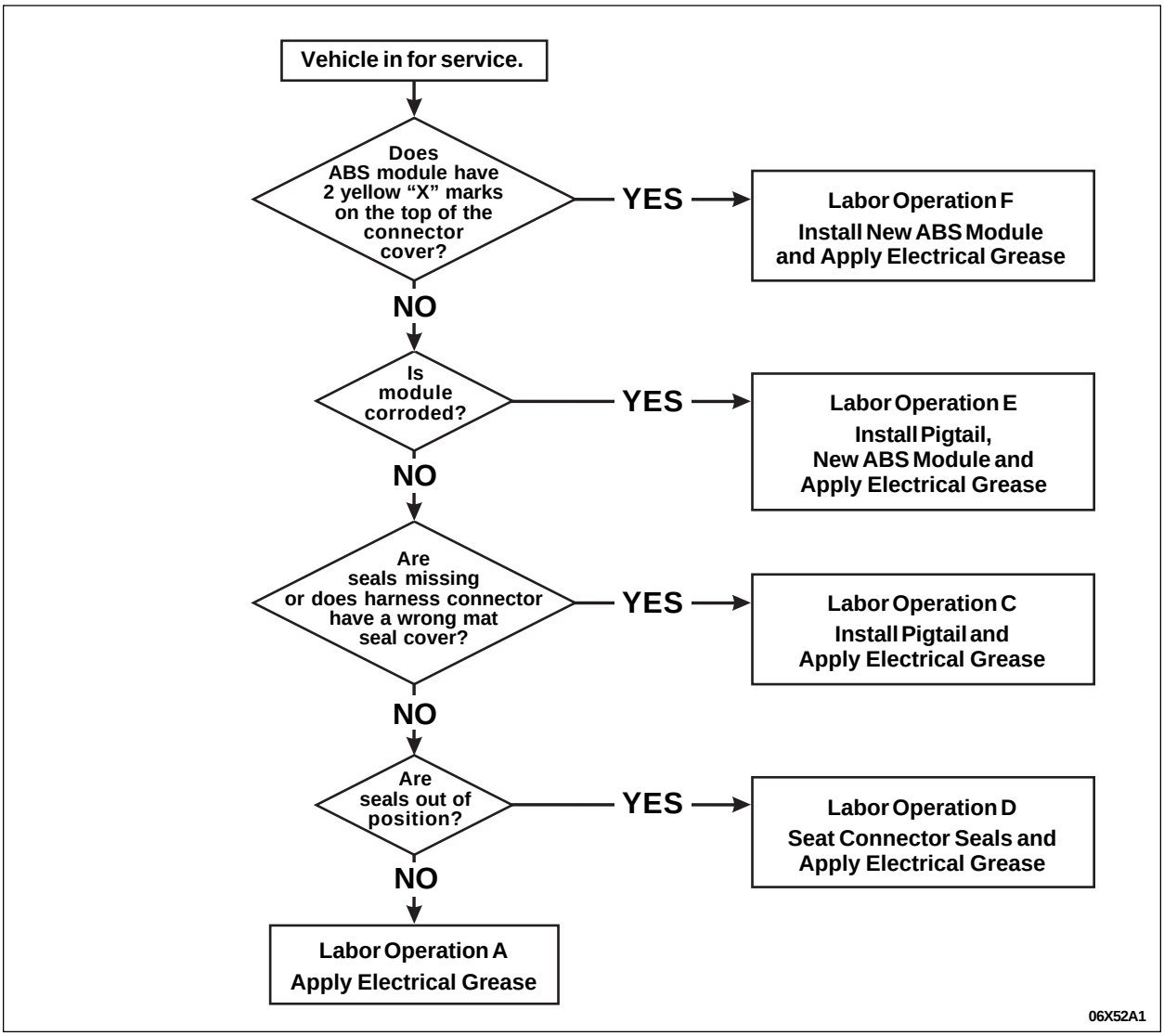

FIGURE 1

INSPECTION

1. Disconnect the battery negative terminal.
2. NOTE: When disconnecting the ABS module connector, be sure the blue connector lock stays engaged with the harness connector and does not remain in the module. Remove it from the module if necessary and make sure the white O-ring seal is properly installed.

   Disconnect the ABS module 25-pin connector by sliding the lock mechanism out (towards the passenger side of the vehicle) and pulling the connector off the module.
3. Disconnect the speed sensor harness, then remove the 2 harness retainers from the studs and position the harness above the air cleaner assembly to provide access for inspection.
4. Inspect the top of the ABS module connector cover for 2 yellow “X” marks.
   - **If 2 yellow “X” marks are present, perform Labor Operation F – Install New ABS Module and Apply Electrical Grease.**
   - **If no yellow “X” marks are present, proceed to Step 5.**
5. Inspect the ABS module connector pins for corrosion. See Figure 2.
   - **If corrosion is present, perform Labor Operation E – Install Pigtail, New ABS Module and Apply Electrical Grease.**
   - **If corrosion is not present, proceed to Step 6.**

INSPECT CONNECTOR FOR ANY SIGN OF CORROSION

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FIGURE 2

Inspect Connector Seals

6. **CAUTION: Do not cut any of the harness wires or the wire insulation when cutting off the tie strap.**

   Remove the tie strap from the connector dress cover, then slide the cover off the connector. See Figure 3.

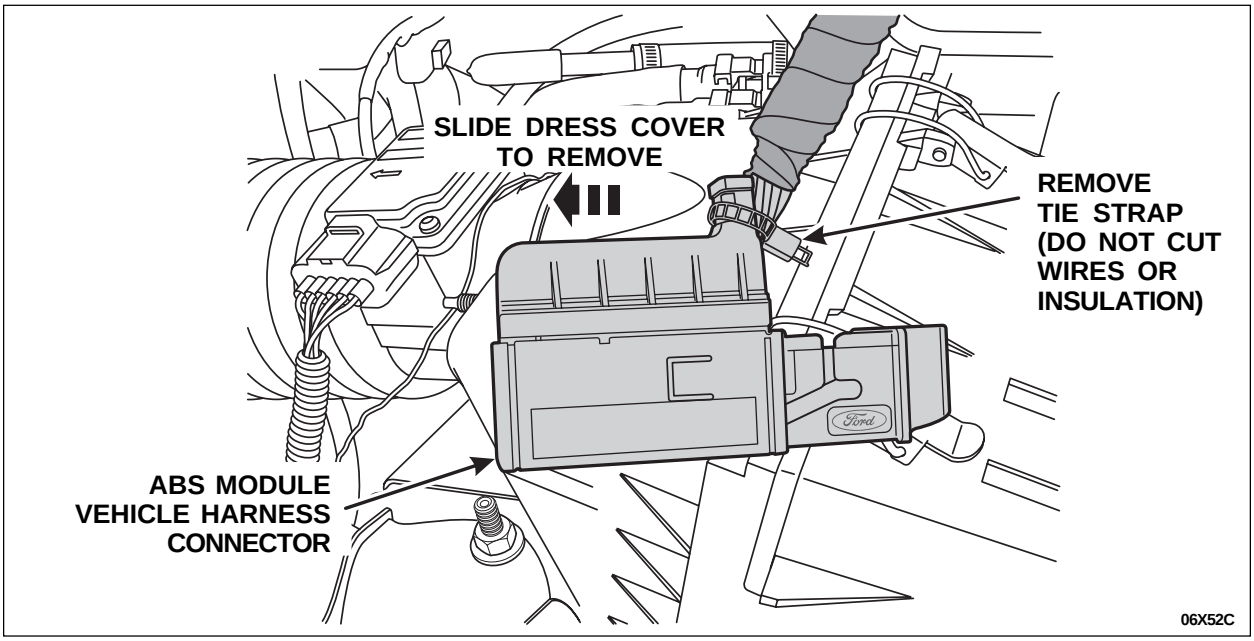


FIGURE 3

7. Verify the wire seals are present on the 4 heavier gauge wires. See Figure 4.

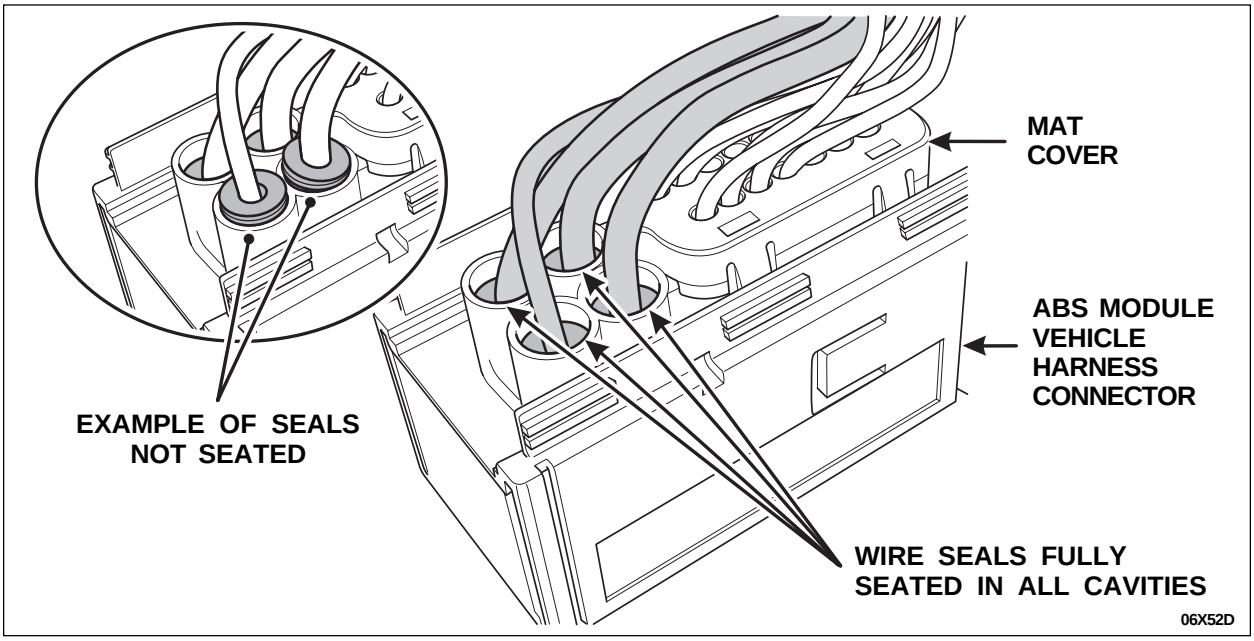


FIGURE 4

8. Verify the numbers “054” are stamped on the slide-lock end of the mat cover (wipe the mat cover clean if necessary to view). See Figure 5.

   NOTE: Mat covers with any other number will be missing plugs in the unused pin locations.

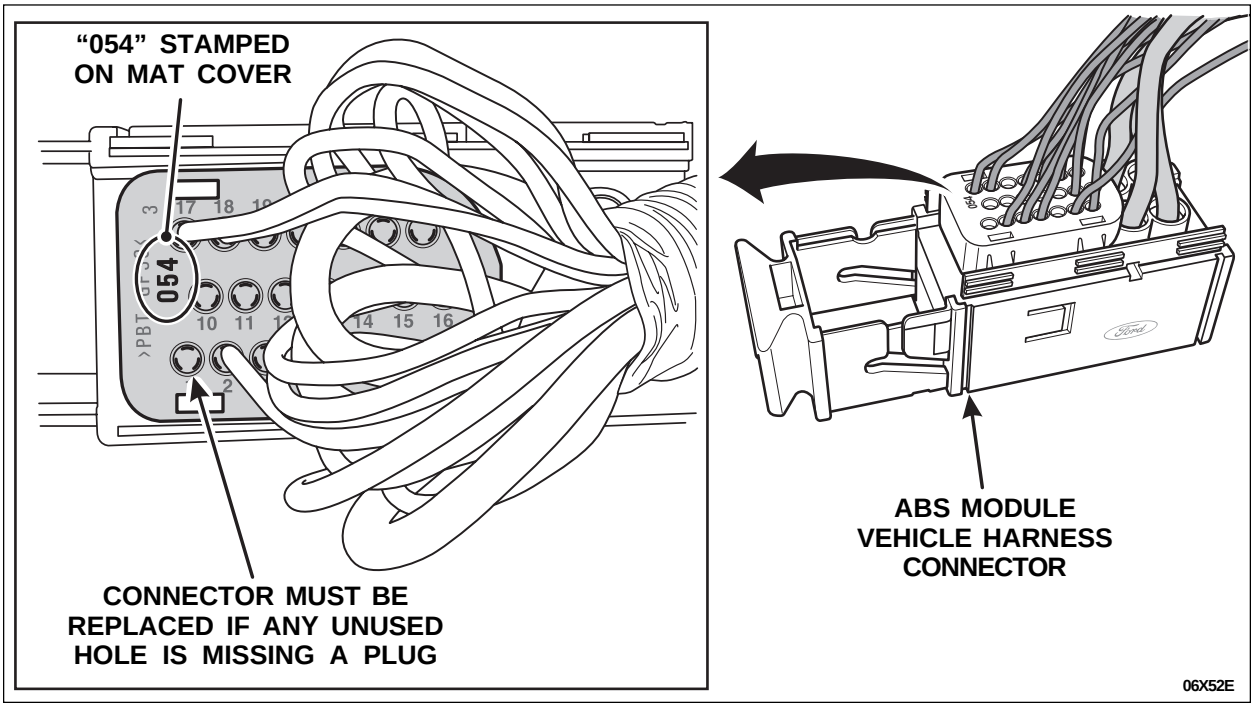


FIGURE 5

9. **Perform Labor Operation C – Install Pigtail and Apply Electrical Grease if:**
   - **any seals are missing or,**
   - **if the number on the mat cover is not “054”**.
10. **Perform Labor Operation D – Seat Connector and Apply Electrical Grease if:**
    - **Any of the 4 wire seals are not fully seated in the connector cavities.**
    - **Each seal should sit approximately 1-2 mm (1/16 in) below the top of the round cavity. See Figure 4.**
11. **Perform Labor Operation A – Apply Electrical Grease if**:
    - The module is not corroded.
      and
    - All seals are present.
      and
    - All seals are fully seated.
      and
    - The number on the mat cover is “054”.

LABOR OPERATION A – APPLY ELECTRICAL GREASE

1. Reinstall the dress cover and use electrical tape to secure the cover at the same location where the original tie strap was removed. Apply Motorcraft Electrical Grease XG-12 to the ABS module connector, position and connect the harness as follows:
   a) Reinstall the dress cover.
   b) Use ONLY Motorcraft Electrical Grease XG-12. See Figure 6.
      – With the tip of the applicator tube snipped off, position the end of the tip between the 4 large flat pins at the bottom of the ABS module connector. Squeeze out enough grease to completely cover the 4 flat pins. See Figure 6. DO NOT spread the grease around the connector. Applying an excess amount of grease into the connector cavity will cause a “hydro lock” condition in which the connector will not be able to be seated fully or locked in place.

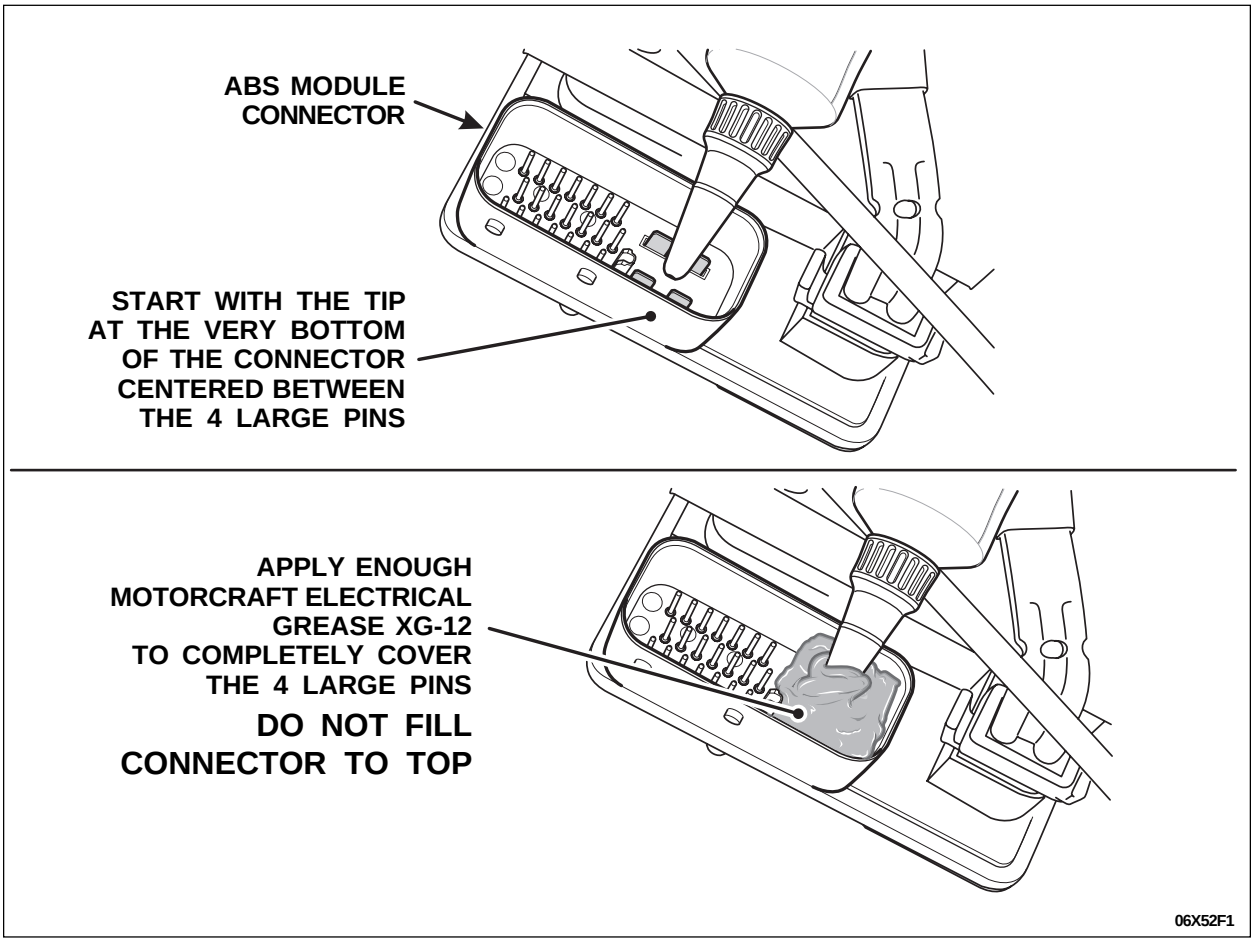


FIGURE 6

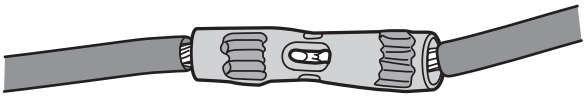
2. Reposition the harness to its original position, install the retainers to the studs to secure the harness and connect it to the ABS module.
3. Reconnect the battery negative terminal.

LABOR OPERATION C – INSTALL PIGTAIL AND APPLY ELECTRICAL GREASE

IMPORTANT SERVICE INFORMATION

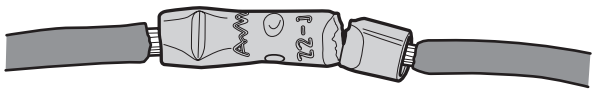
When performing the service pigtail installation, it is critical that the crimp tool and the flameless heat gun found in the Rotunda Wire Splice Tool Kit 164-R5903 be used.

USING DIFFERENT TOOLS MAY RESULT IN A POOR QUALITY REPAIR. See Figure 7.



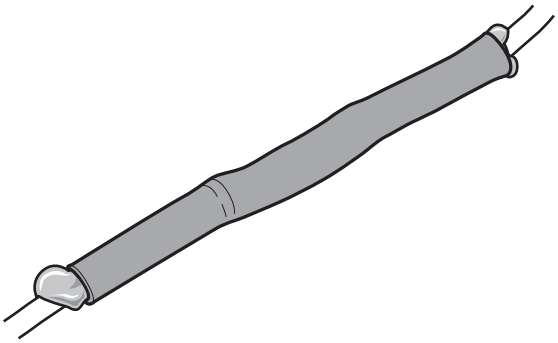
CORRECT CRIMP USING ROTUNDA CRIMP TOOL 164-R5901

- Wires crimped very securely.
- No loose or broken wires.
- Splice connector intact.



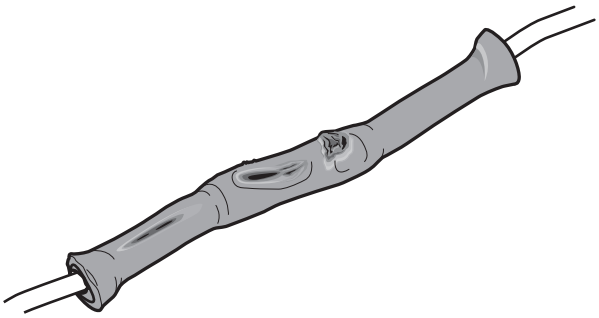
INADEQUATE CRIMP USING IMPROPER TOOL

- Broken splice connector.
- Possible loose connection.



CORRECTLY MELTED HEAT SHRINK TUBING USING ROTUNDA FLAMELESS HEAT GUN 164-R5902

- Tubing melted smooth across entire length.
- Adhesive flow at both ends providing waterproof seal.



INADEQUATELY MELTED HEATED SHRINK TUBING

- Tubing charred from overheating.
- Ends not fully melted.
- No adhesive flow at ends, not waterproof.

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FIGURE 7

1. Remove the tape and the convolute from the vehicle harness which leads up to the ABS module connector. See Figure 8.
2. Measure approximately 75 mm (3 in) from the end of the elbow towards the ABS module connector, then, using suitable wire cutters, cut the harness (all wires) to the same length. See Figure 8.

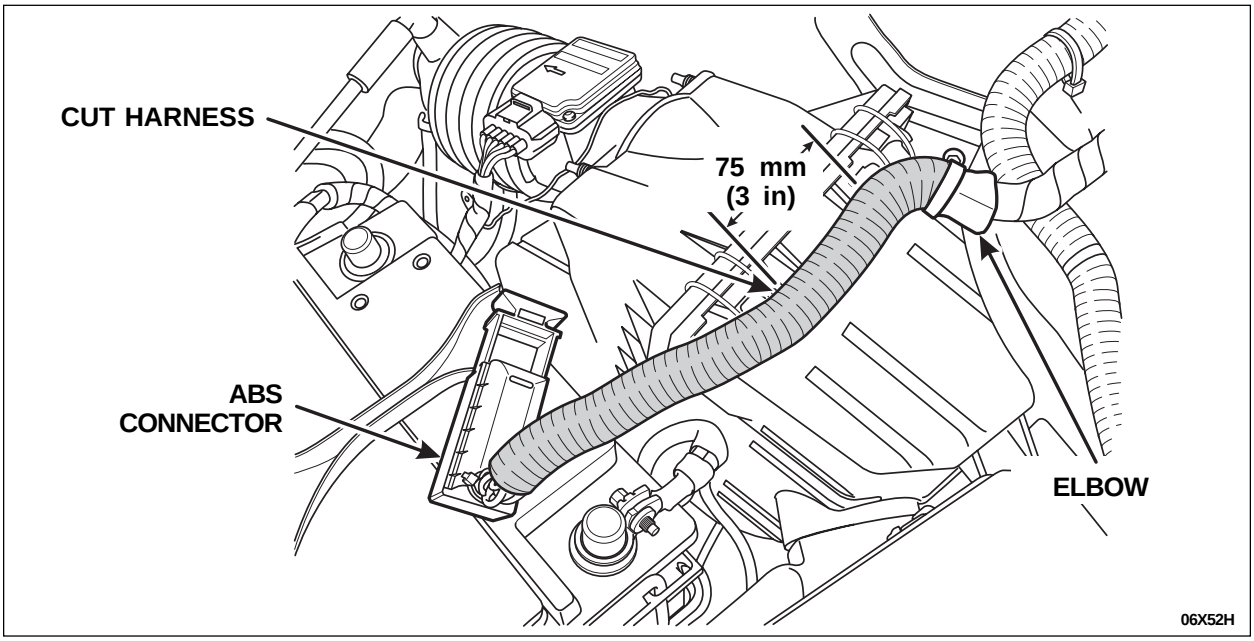


FIGURE 8

3. Strip approximately 6 mm (1/4 in) of insulation from each of the cut wires in the harness. See Figure 9.

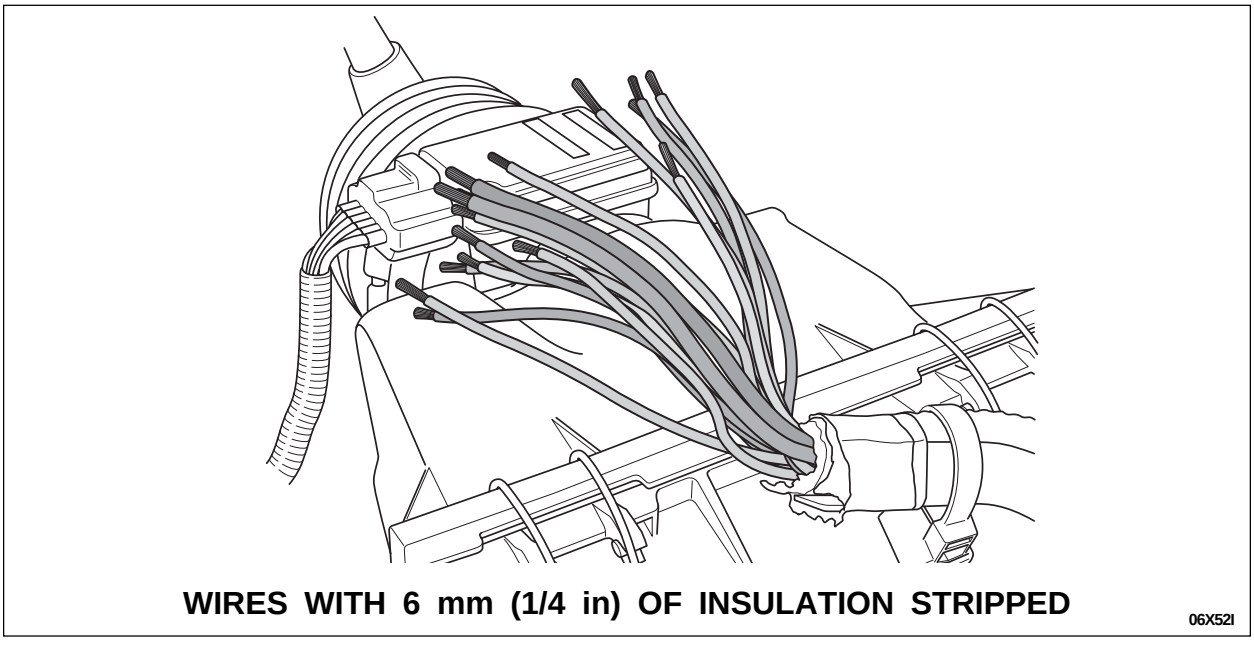


FIGURE 9

CAUTION: The harness contains a 16-gauge red wire and a 20-gauge red wire with a pink tracer. DO NOT cross these wires when splicing in the service pigtail. As an assembly aid, the 16-gauge red wire on the service pigtail is identified by a small tag.

Also, it is possible that some discoloration of the insulation may occur. Sets of wires may appear to have the same color insulation when, in fact, all wires in the ABS module harness are different except for the 2 black ground circuit wires. Be sure to carefully examine each wire to avoid crossing circuits when splicing wires.

NOTE: The harness contains 2 black wires of the same size. Both are grounds (circuit 57). Crossing these wires has no adverse effect on vehicle operation.

NOTE: The service pigtail kit contains the connector with wires matching color and size of the original vehicle harness and a piece of heat shrink tubing to cover each splice.

4. Working with one wire at a time, match the wires from the service pigtail to the vehicle harness. Insert the stripped end of each wire into the splice connector and crimp using the crimp tool provided in the Rotunda Wire Splice Tool Kit 164-R5903. See Figure 10.

5. Using rosin core solder, solder only the vehicle harness side of the wires to the butt splice connector.

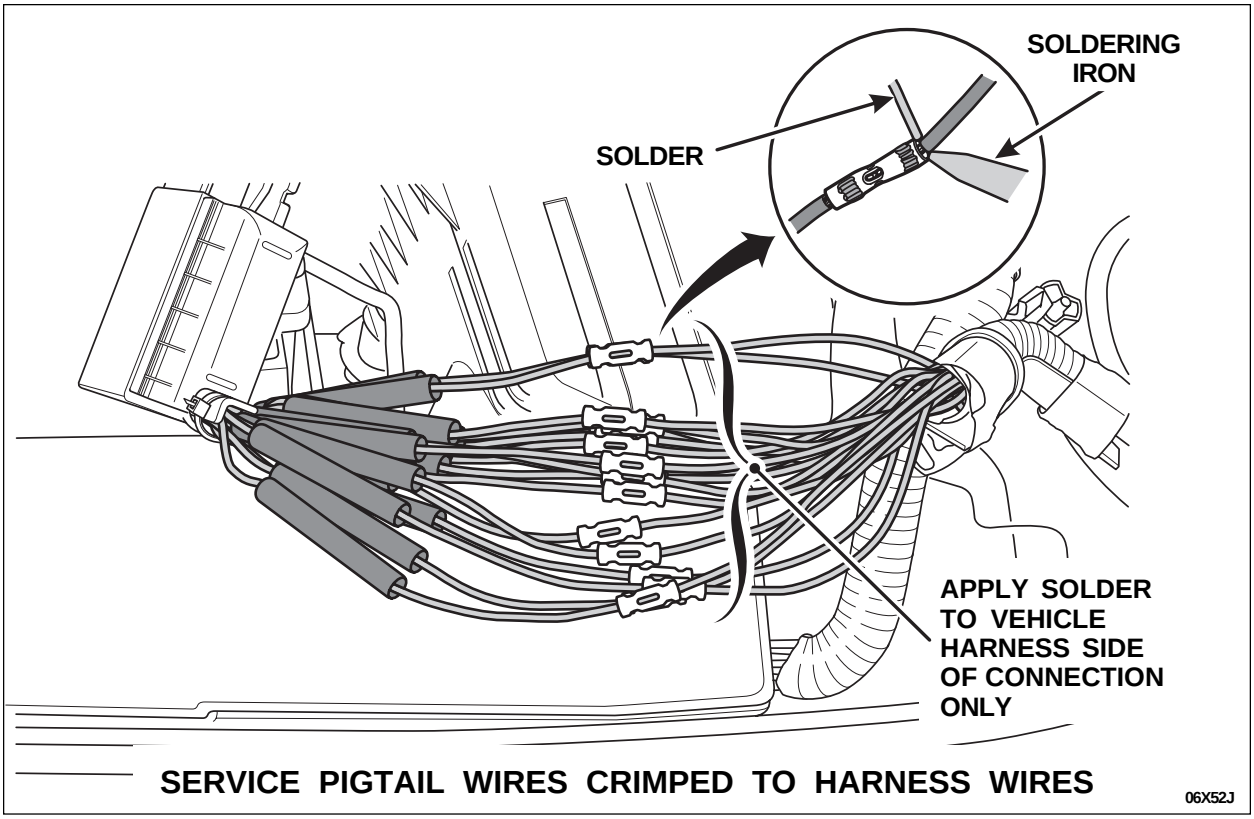
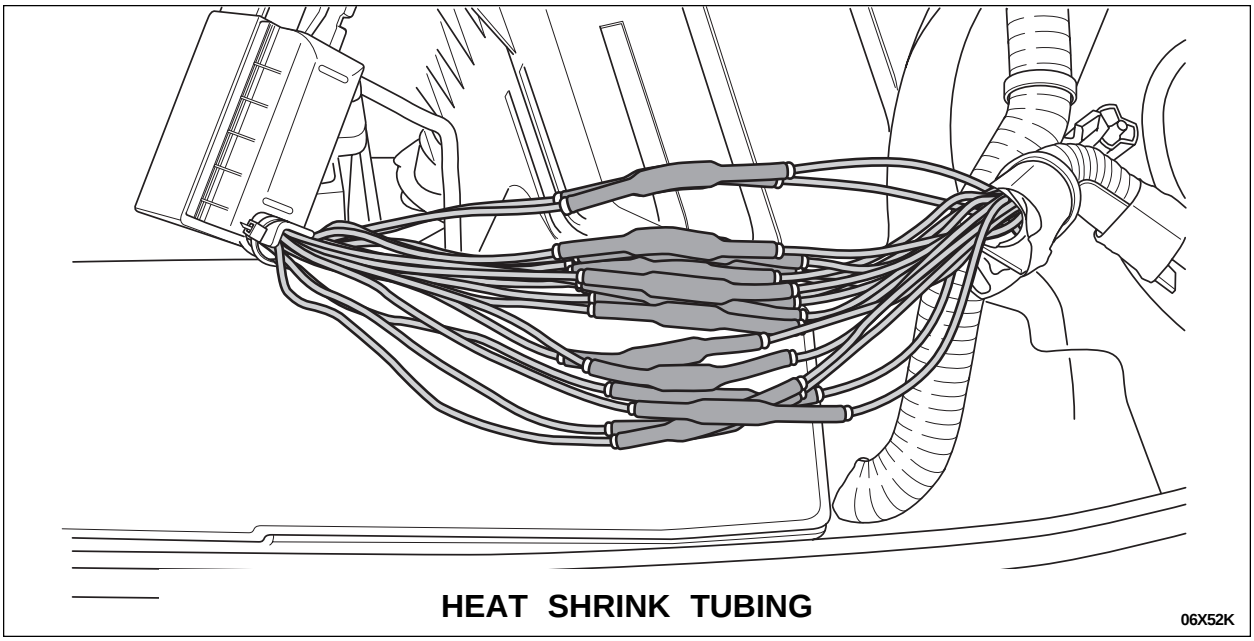


FIGURE 10

6. After soldering the wires, center each piece of heat shrink tubing over the splice. Then, using the flameless heat gun provided in the Rotunda Kit, shrink one piece of tubing at a time until the adhesive flows out of both ends. Continue until all wires are insulated. See Figure 11.

NOTE ON PROPER HEAT SHRINKING

The heat shrink tubing seals best if heat is applied to one end, allowing time (only a few seconds) to begin the shrink process until you see the adhesive flow out of the end. At this point, slowly move the heat source across the tubing, shrinking it as you move towards the other end, finally allowing adhesive to flow out from both ends, providing a waterproof seal.



HEAT SHRINK TUBING

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FIGURE 11

7. Install the supplied convolute tubing over the spliced area and secure with electrical tape. Apply tape to the entire length of the convolute and be sure to secure the convolute to the elbow at one end, and as close as possible to the ABS connector on the other. See Figure 12.

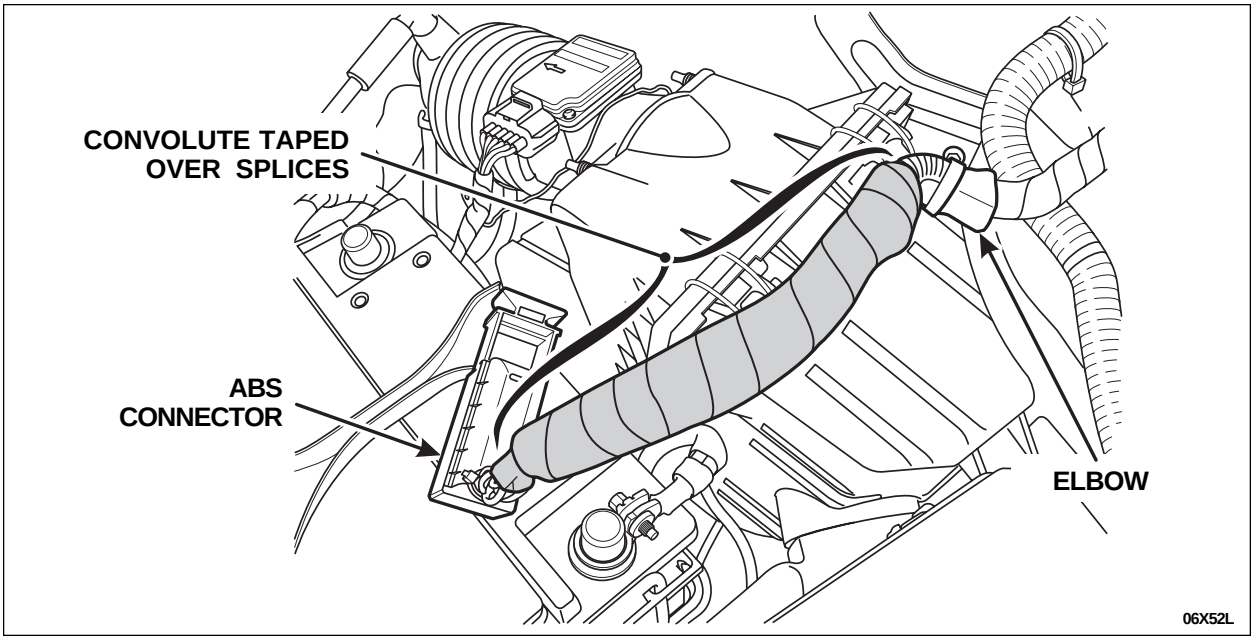


FIGURE 12

8. Reinstall the dress cover and use electrical tape to secure the cover at the same location where the original tie strap was removed. Apply Motorcraft Electrical Grease XG-12 to the ABS module connector, position and connect the harness as follows:
   a) Reinstall the dress cover.
   b) Use ONLY Motorcraft Electrical Grease XG-12. See Figure 13.
      – With the tip of the applicator tube snipped off, position the end of the tip between the 4 large flat pins at the bottom of the ABS module connector. Squeeze out enough grease to completely cover the 4 flat pins. See Figure 13. DO NOT spread the grease around the connector. Applying an excess amount of grease into the connector cavity will cause a “hydro lock” condition in which the connector will not be able to be seated fully or locked in place.

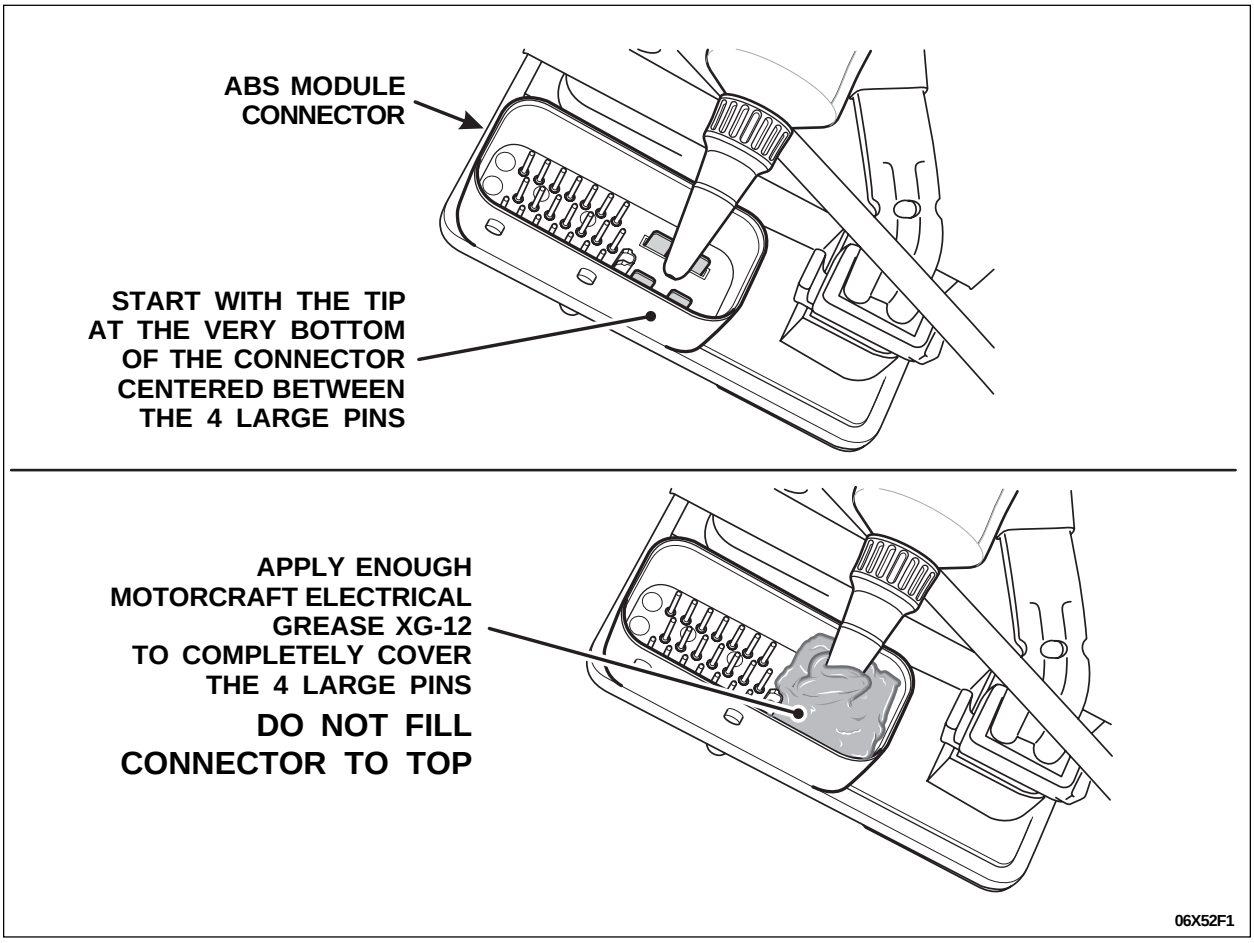


FIGURE 13

9. Reposition the harness to its original position, install the retainers to the studs to secure the harness and connect it to the ABS module.
10. Reconnect the battery negative terminal.
11. Turn the ignition key to the RUN position. Allow the ABS to carry out a self-test (indicated by illuminating the yellow ABS warning indicator in the instrument cluster for approximately 3 seconds).
    - If the yellow ABS indicator is not illuminated after 3 seconds, release the vehicle.
    - If the yellow ABS warning indicator stays illuminated after the self-test, contact the Special Support Service Center.

LABOR OPERATION D – SEAT CONNECTOR SEALS AND APPLY ELECTRICAL GREASE

1. If the seals are not fully seated, reseat any seals not fully seated with a blunt tool. DO NOT use anything sharp such as a screwdriver, awl or punch that could penetrate the seal and allow moisture to enter the terminal. See Figure 14.

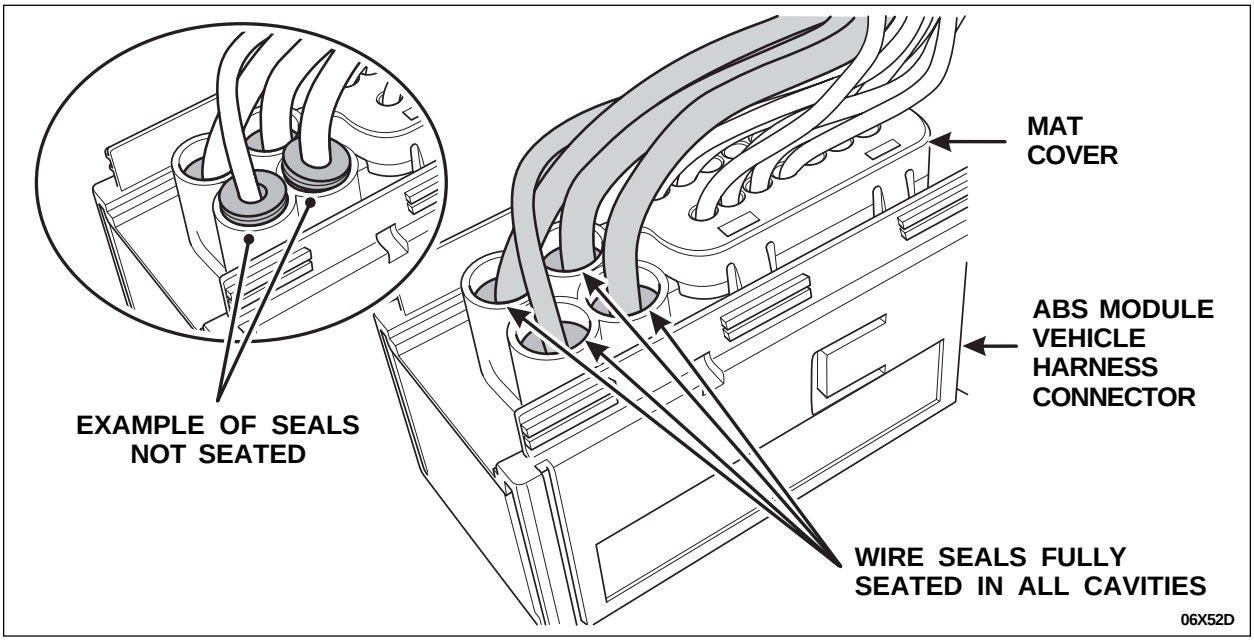


FIGURE 14

2. Reinstall the dress cover and use electrical tape to secure the cover at the same location where the original tie strap was removed. Apply Motorcraft Electrical Grease XG-12 to the ABS module connector, position and connect the harness as follows:
   a) Reinstall the dress cover.
   b) Use ONLY Motorcraft Electrical Grease XG-12. See Figure 15.
      – With the tip of the applicator tube snipped off, position the end of the tip between the 4 large flat pins at the bottom of the ABS module connector. Squeeze out enough grease to completely cover the 4 flat pins. See Figure 15. DO NOT spread the grease around the connector. Applying an excess amount of grease into the connector cavity will cause a “hydro lock” condition in which the connector will not be able to be seated fully or locked in place.

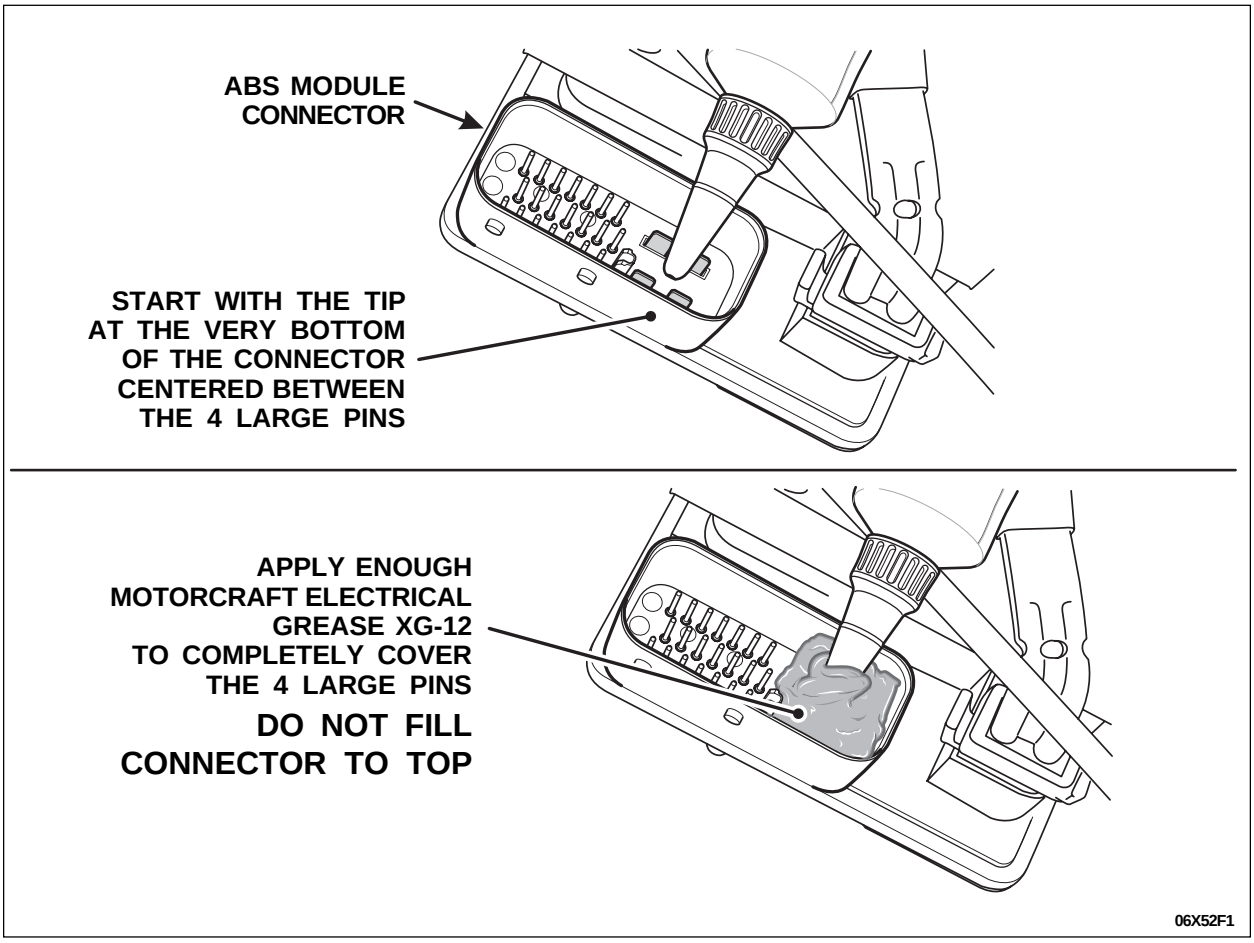


FIGURE 15

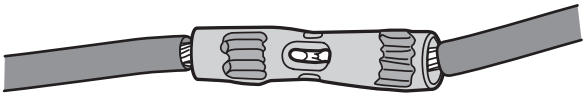
3. Reposition the harness to its original position, install the retainers to the studs to secure the harness and connect it to the ABS module.
4. Reconnect the battery negative terminal.

LABOR OPERATION E – INSTALL PIGTAIL, NEW ABS MODULE AND APPLY ELECTRICAL GREASE

IMPORTANT SERVICE INFORMATION

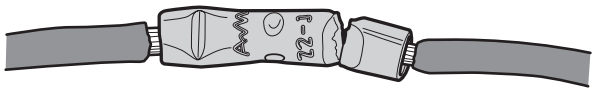
When performing the service pigtail installation, it is critical that the crimp tool and the flameless heat gun found in the Rotunda Wire Splice Tool Kit 164-R5903 be used.

USING DIFFERENT TOOLS MAY RESULT IN A POOR QUALITY REPAIR. See Figure 16.



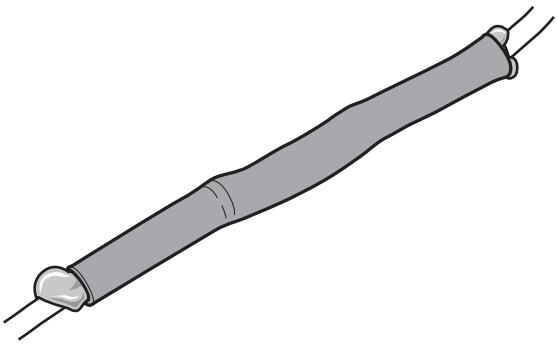
CORRECT CRIMP USING ROTUNDA CRIMP TOOL 164-R5901

- Wires crimped very securely.
- No loose or broken wires.
- Splice connector intact.



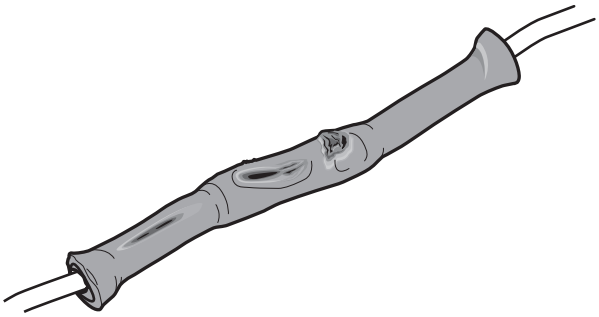
INADEQUATE CRIMP USING IMPROPER TOOL

- Broken splice connector.
- Possible loose connection.



CORRECTLY MELTED HEAT SHRINK TUBING USING ROTUNDA FLAMELESS HEAT GUN 164-R5902

- Tubing melted smooth across entire length.
- Adhesive flow at both ends providing waterproof seal.



INADEQUATELY MELTED HEATED SHRINK TUBING

- Tubing charred from overheating.
- Ends not fully melted.
- No adhesive flow at ends, not waterproof.

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FIGURE 16

PROCEDURE TO REPLACE VEHICLE HARNESS CONNECTOR

1. Remove the tape and the convolute from the vehicle harness which leads up to the ABS module connector. See Figure 17.
2. Measure approximately 75 mm (3 in) from the end of the elbow towards the ABS module connector, then, using suitable wire cutters, cut the harness (all wires) to the same length. See Figure 17.

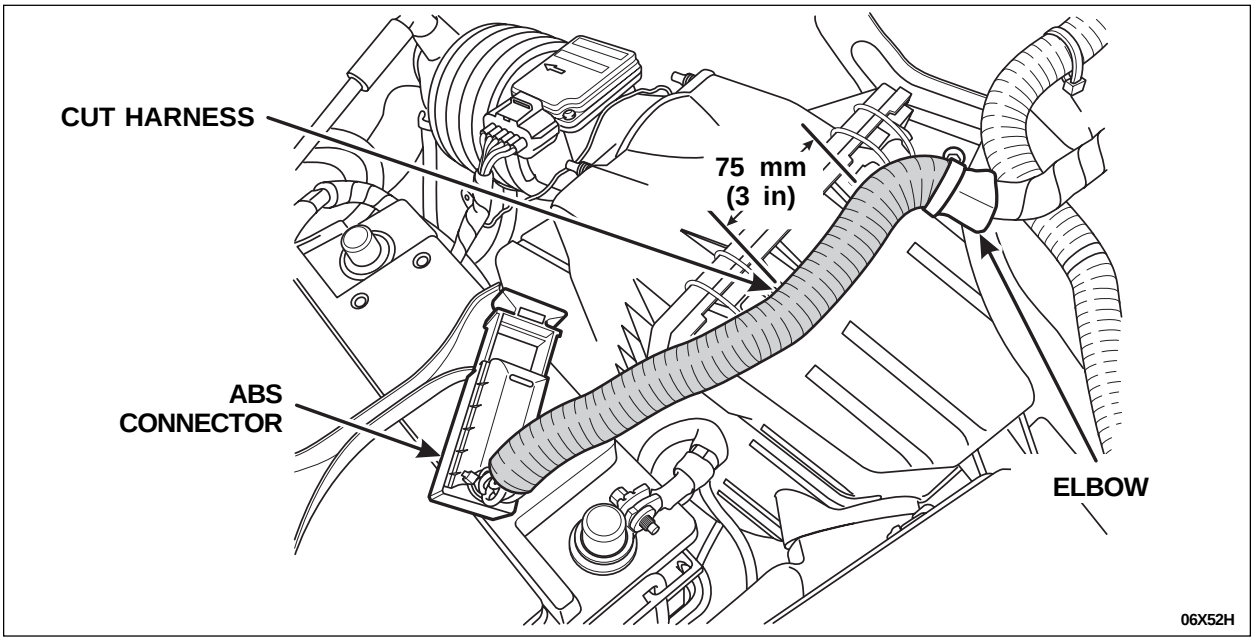


FIGURE 17

3. Strip approximately 6 mm (1/4 in) of insulation from each of the cut wires in the harness. See Figure 18.

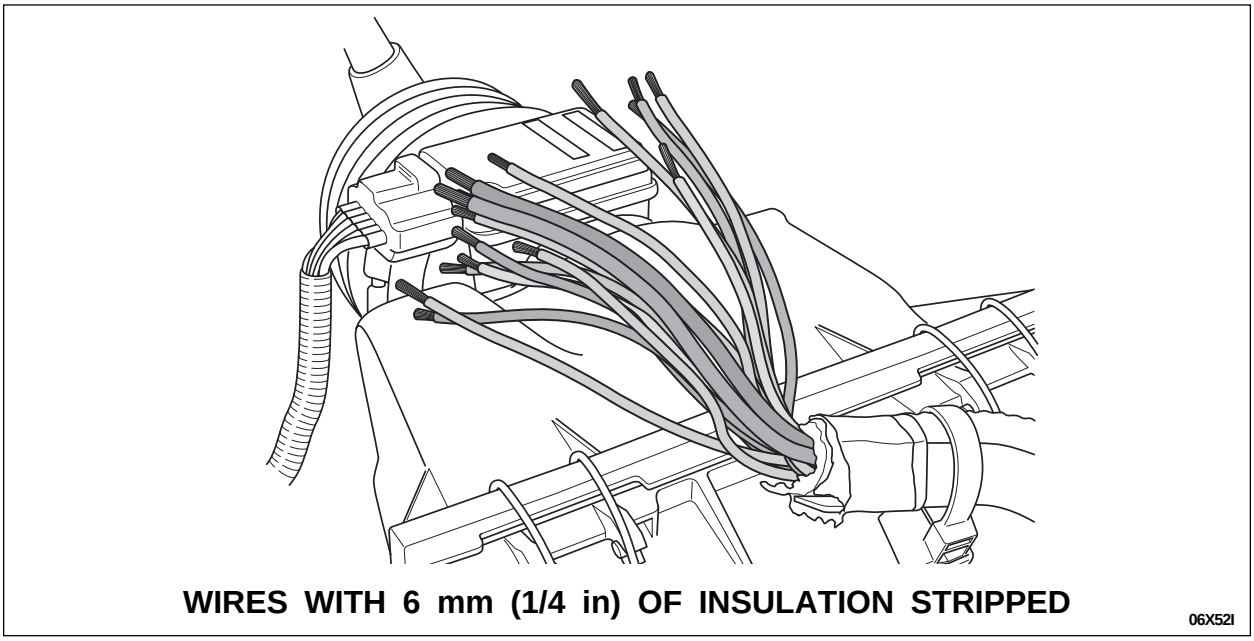


FIGURE 18

CAUTION: The harness contains a 16-gauge red wire and a 20-gauge red wire with a pink tracer. DO NOT cross these wires when splicing in the service pigtail. As an assembly aid, the 16-gauge red wire on the service pigtail is identified by a small tag.

Also, it is possible that some discoloration of the insulation may occur. Sets of wires may appear to have the same color insulation when, in fact, all wires in the ABS module harness are different except for the 2 black ground circuit wires. Be sure to carefully examine each wire to avoid crossing circuits when splicing wires.

NOTE: The harness contains 2 black wires of the same size. Both are grounds (circuit 57). Crossing these wires has no adverse effect on vehicle operation.

NOTE: The service pigtail kit contains the connector with wires matching color and size of the original vehicle harness and a piece of heat shrink tubing to cover each splice.

4. Working with one wire at a time, match the wires from the service pigtail to the vehicle harness. Insert the stripped end of each wire into the splice connector and crimp using the crimp tool provided in the Rotunda Wire Splice Tool Kit 164-R5903. See Figure 19.

5. Using rosin core solder, solder only the vehicle harness side of the wires to the butt splice connector.

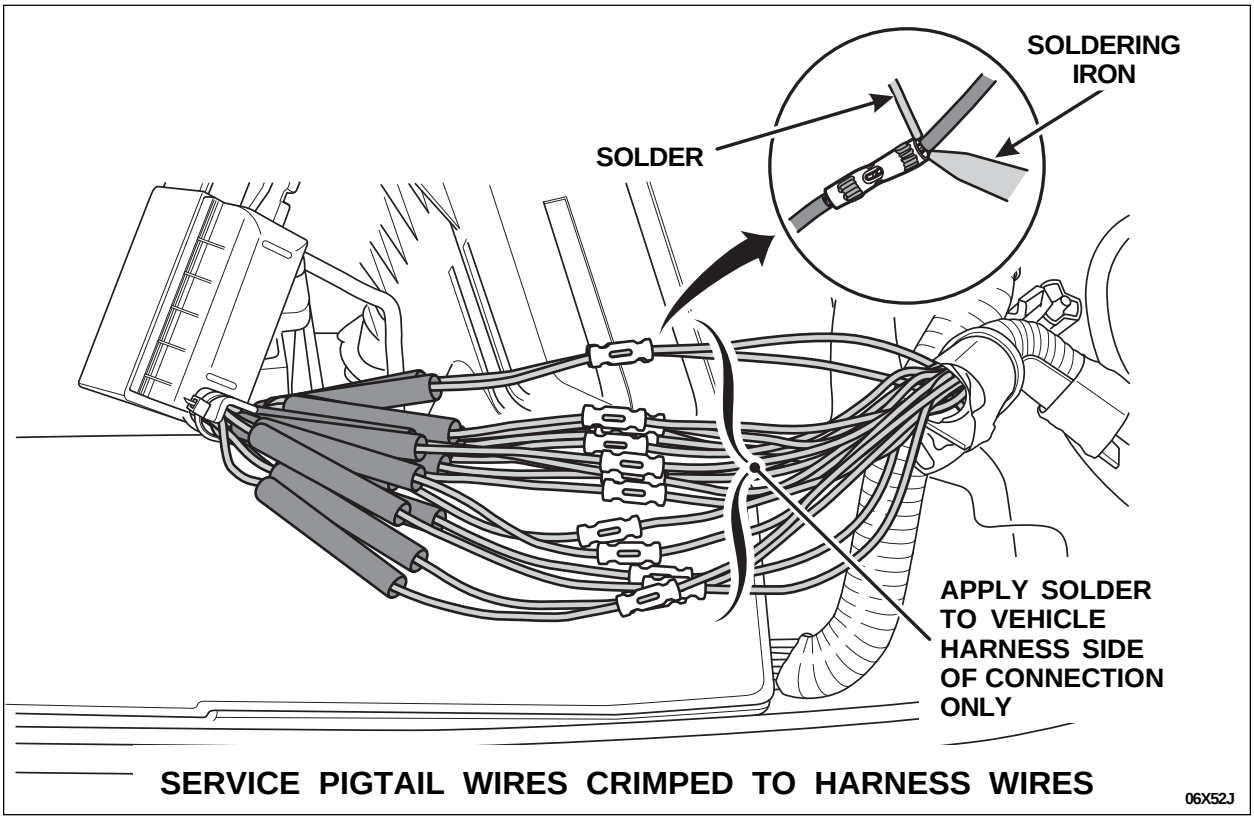
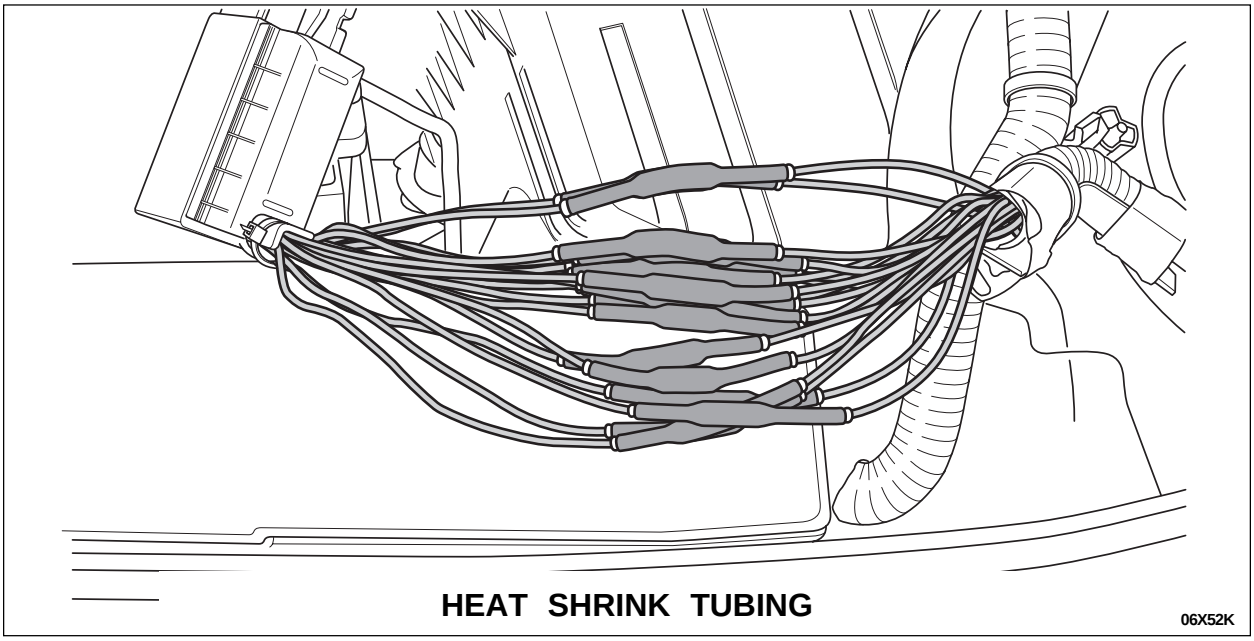


FIGURE 19

6. After soldering the wires, center each piece of heat shrink tubing over the splice. Then, using the flameless heat gun provided in the Rotunda Kit, shrink one piece of tubing at a time until the adhesive flows out of both ends. Continue until all wires are insulated. See Figure 20.

NOTE ON PROPER HEAT SHRINKING

The heat shrink tubing seals best if heat is applied to one end, allowing time (only a few seconds) to begin the shrink process until you see the adhesive flow out of the end. At this point, slowly move the heat source across the tubing, shrinking it as you move towards the other end, finally allowing adhesive to flow out from both ends, providing a waterproof seal.



HEAT SHRINK TUBING

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FIGURE 20

7. Install the supplied convolute tubing over the spliced area and secure with electrical tape. Apply tape to the entire length of the convolute and be sure to secure the convolute to the elbow at one end, and as close as possible to the ABS connector on the other. See Figure 21.

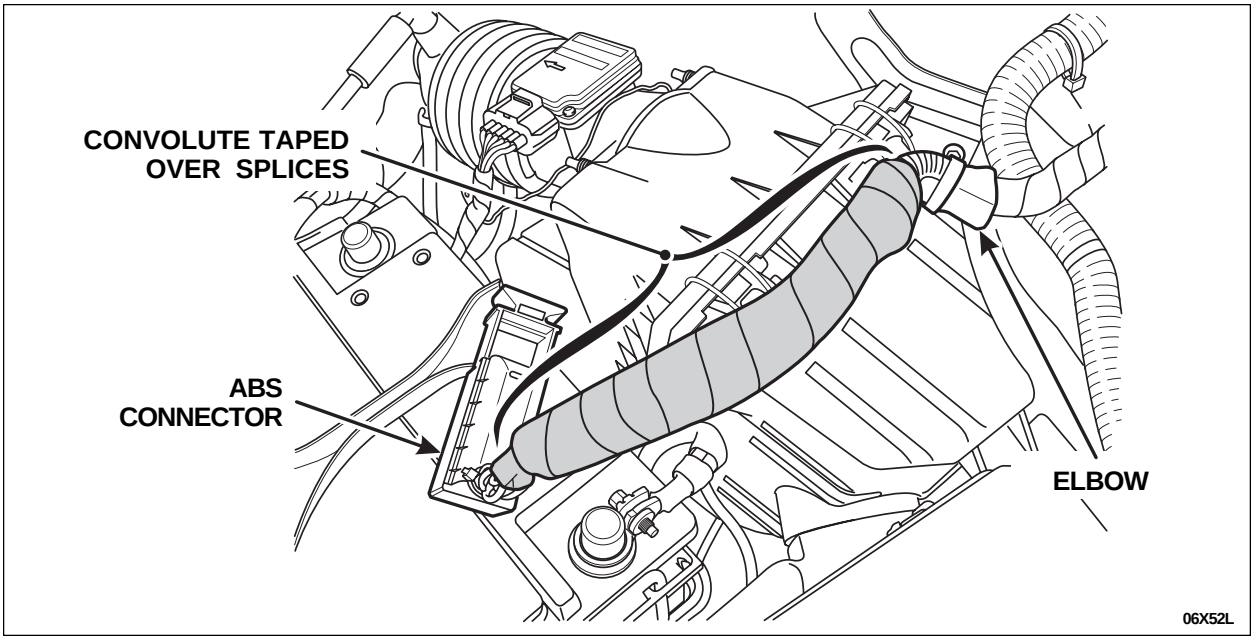

FIGURE 21

8. Install a ***new*** ABS module. **Perform Labor Operation F – Install New ABS Module and Apply Electrical Grease**.
9. Reconnect the battery negative terminal.
10. Turn the ignition key to the RUN position. Allow the ABS to carry out a self-test (indicated by illuminating the yellow ABS warning indicator in the instrument cluster for approximately 3 seconds).
    - If the yellow ABS indicator is not illuminated after 3 seconds, release the vehicle.
    - If the yellow ABS warning indicator stays illuminated after the self-test, contact the Special Support Service Center.

LABOR OPERATION F – INSTALL NEW ABS MODULE AND APPLY ELECTRICAL GREASE

NOTE: Module configuration or reprogramming is not required when installing a ***new*** ABS module.

1. Disconnect the 2-wire electrical connector at the ABS module.
2. Raise the vehicle on a hoist.
3. Remove the screws and the ABS module.
4. Position the ***new*** module and install the screws. Tighten the screws no more than 2 Nm (18 lb-in).
5. Lower the hoist.
6. Apply Motorcraft Electrical Grease XG-12 to the ABS module connector, position and connect the harness as follows:
   - Use ONLY Motorcraft Electrical Grease XG-12. See Figure 22.
     – With the tip of the applicator tube snipped off, position the end of the tip between the 4 large flat pins at the bottom of the ABS module connector. Squeeze out enough grease to completely cover the 4 flat pins. See Figure 22. DO NOT spread the grease around the connector. Applying an excess amount of grease into the connector cavity will cause a “hydro lock” condition in which the connector will not be able to be seated fully or locked in place.

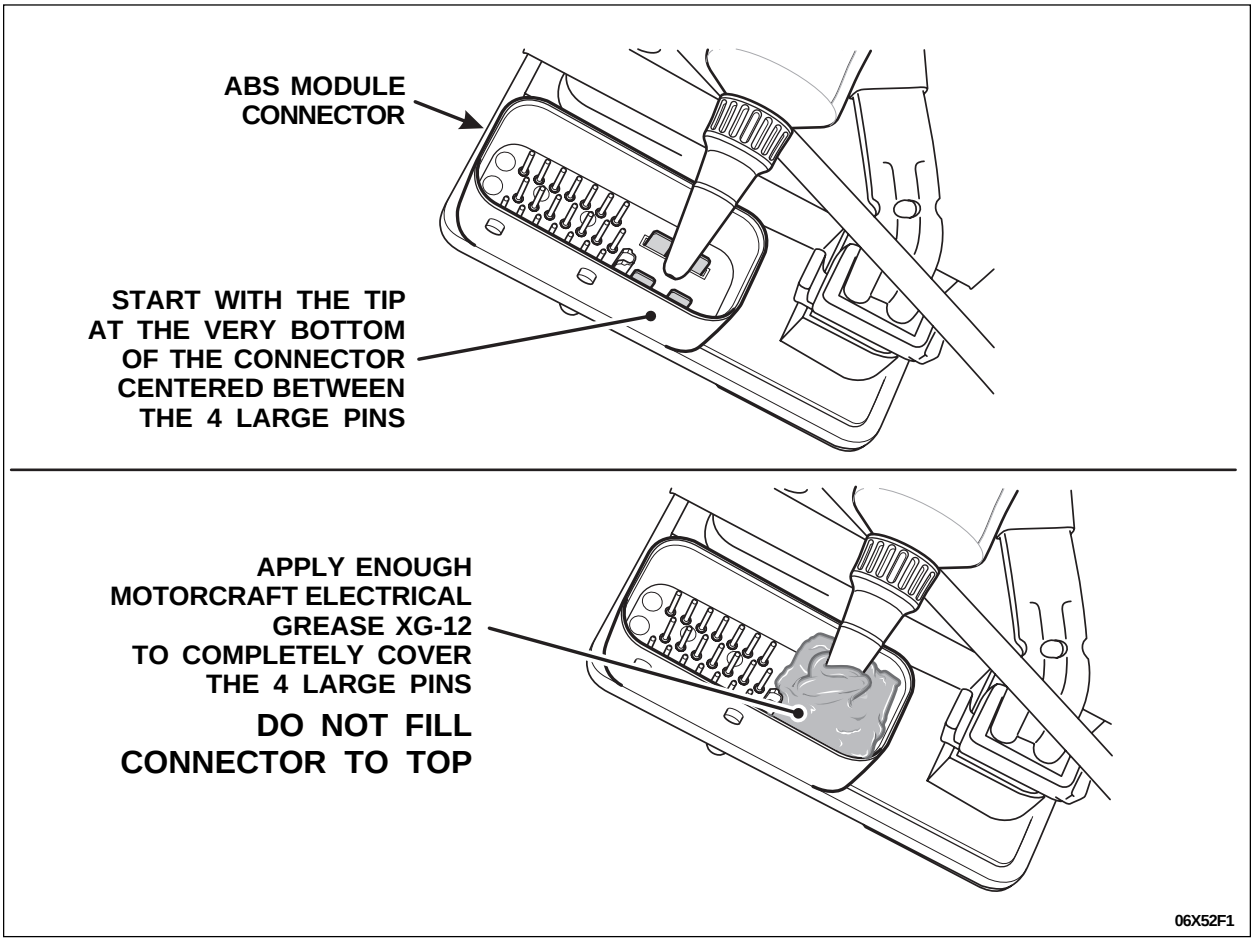

FIGURE 22

7. Reposition the harness to its original position, install the retainers to the studs to secure the harness and connect it to the ABS module.
8. Reconnect the 2-wire connector to the ABS module.