

## LACK OF RANGE—BATTERY CHARGER REPLACEMENT PROCEDURE

TSB 04-24-9

### THINK:

2002 Th!nk Neighbor

### ISSUE

Some 2002 TH!NK Neighbor vehicles may exhibit a lack of range condition. This may be due to the battery charger.

### ACTION

A new battery charger is now available for service. The new charger will provide the vehicle better range and battery life. Refer to the following Service Procedure.

### SERVICE PROCEDURE

#### PREPARE VEHICLE FOR CHARGER REPLACEMENT

1. Place vehicle on hoist.
2. Roll back both sides of the weather enclosure.
3. Remove key.
4. Remove both seat cushions.
5. Turn off the service disconnect switch (SDS), located under the drivers seat cushion. There are two styles of the service disconnect switch, see Figure 1 for each style.

### WARNING

**THE BATTERY PACK CONTAINS HIGH-VOLTAGE COMPONENTS AND WIRING. HIGH-VOLTAGE INSULATED SAFETY GLOVES AND FACE SHIELD MUST BE WORN WHEN PERFORMING POWER SHUT DOWN STEPS 6, 9 AND 10. FAILURE TO FOLLOW THIS WARNING MAY RESULT IN SEVERE PERSONAL INJURY OR DEATH.**

6. Remove the 30 AMP charger fuse (F2) and discard. See Figure 1 for (F2) location.

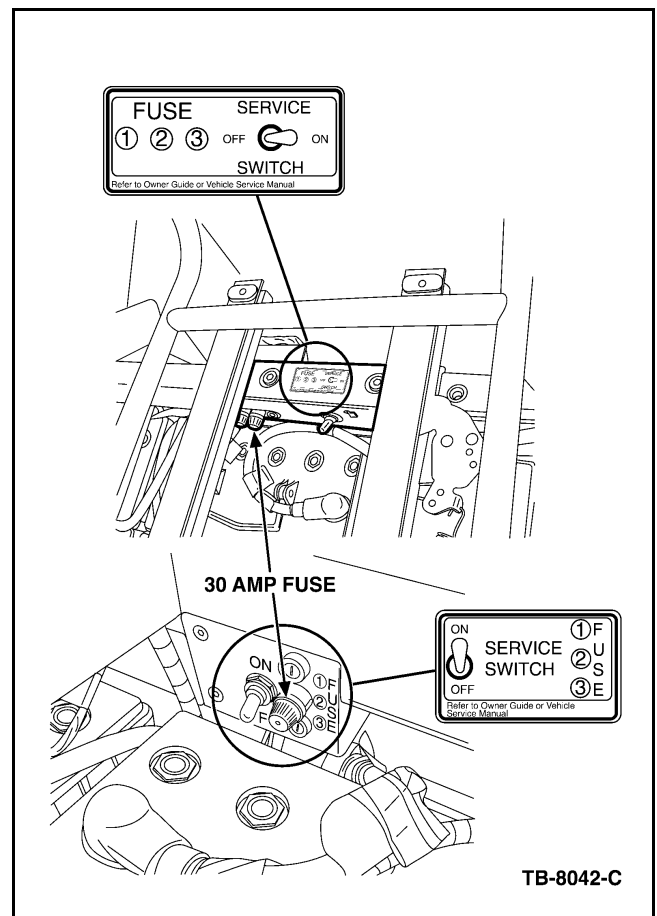


Figure 1 - Article 04-24-9

7. Remove both seat frames, do not remove seat belt assemblies from the seats.
8. Remove both stanchion covers.
9. Split the battery pack by removing the negative battery terminals first between batteries 2 & 3, and then batteries 4 & 5, (Figure 2).

**NOTE:** The information in Technical Service Bulletins is intended for use by trained, professional technicians with the knowledge, tools, and equipment to do the job properly and safely. It informs these technicians of conditions that may occur on some vehicles, or provides information that could assist in proper vehicle service. The procedures should not be performed by "do-it-yourselfers". Do not assume that a condition described affects your car or truck. Contact a Ford, Lincoln, or Mercury dealership to determine whether the Bulletin applies to your vehicle. Warranty Policy and Extended Service Plan documentation determine Warranty and/or Extended Service Plan coverage unless stated otherwise in the TSB article. The information in this Technical Service Bulletin (TSB) was current at the time of printing. Ford Motor Company reserves the right to supersede this information with updates. The most recent information is available through Ford Motor Company's on-line technical resources.

## TSB 04-24-9 (Continued)

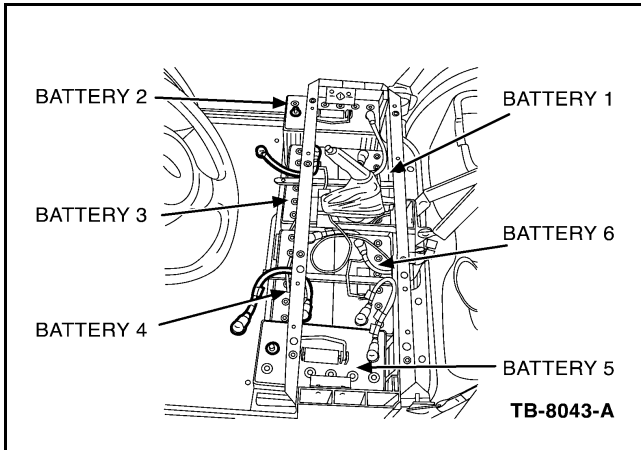


Figure 2 - Article 04-24-9

10. Wrap the ends of the battery cables with electrical tape.
11. Remove hood.
12. Remove front bumper and front cross support (Figure 3).

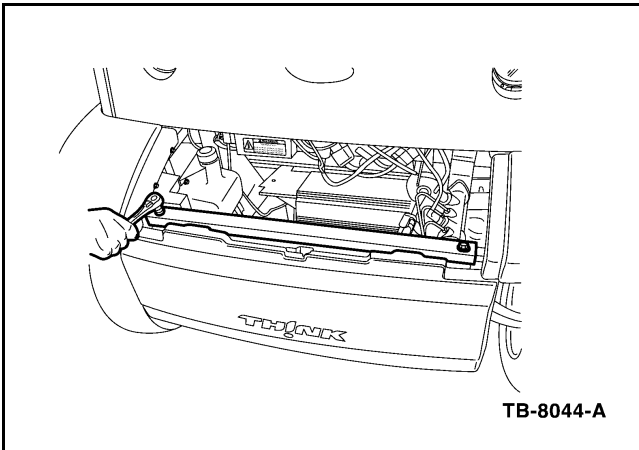


Figure 3 - Article 04-24-9

13. Remove the front driver's side wheel.

### REMOVE BATTERY CHARGER

1. Remove the driver's side inner wheel well by extracting the four (4) rivets that hold the wheel well in place.
2. Remove the charger AC cord from vehicle and the AC plug from plug housing (Figure 4).

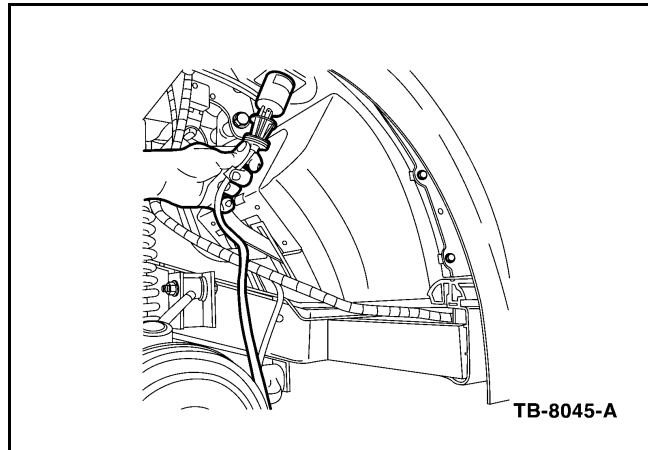


Figure 4 - Article 04-24-9

3. Remove the 9-pin DC on board battery charger connector by cutting it off 6" (15 cm) back from the connector end (Figure 5).

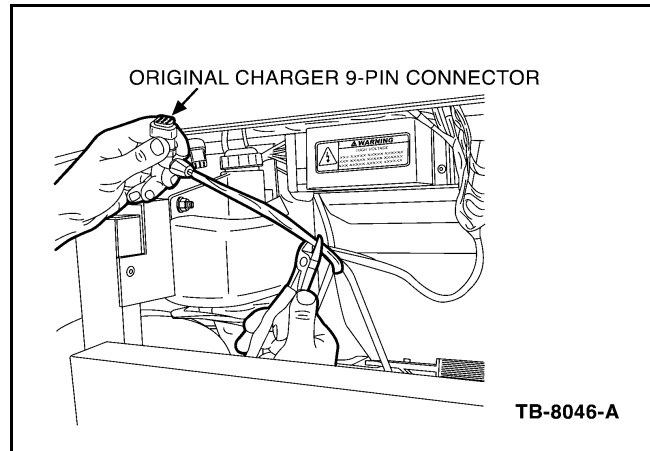


Figure 5 - Article 04-24-9

4. Remove both mounting bolts from the charger, save the bolts to install the new mounting plate.

### **NOTE**

USE PROPER LIFTING TECHNIQUES, THE CHARGER WEIGHS IN EXCESS OF 30 LBS.

5. Remove charger.

### BENCH PREP THE NEW CHARGER

### **NOTE**

AN INSTALLATION KIT IS NEEDED WHEN UPDATING THE CHARGER, THE INVENTORY DESCRIPTION IS SHOWN IN FIGURE 6.

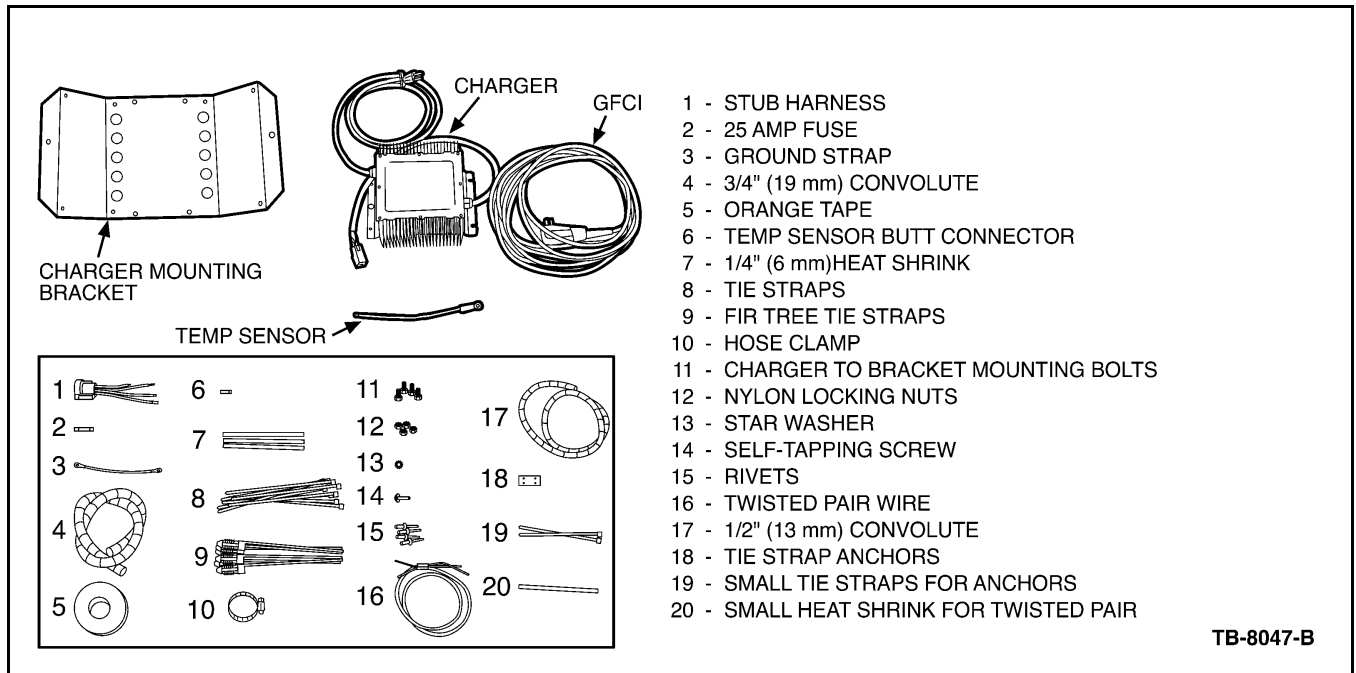


Figure 6 - Article 04-24-9

1. Install the orange 1/2" (13 mm) convolute on the DC output harness of the battery charger, both ends must be taped.
2. Line the LED display on the charger up with the "F" stamped on the mounting bracket. Mount the new charger onto the mounting bracket and secure using the supplied charger to bracket mounting bolts and nylon locking nuts. The bolts must be installed into the bracket holes from the bottom of the mounting bracket for the rear holes, and from the top of the bracket for the front holes (Figure 7). Torque to 12 lb-ft (16 N•m).

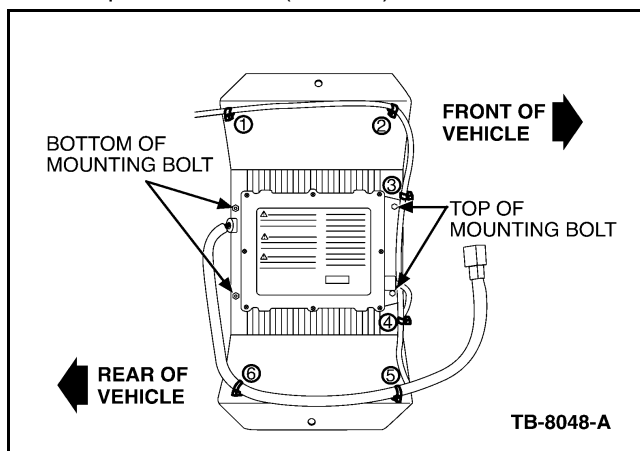


Figure 7 - Article 04-24-9

3. Install six (6) fir tree tie straps into the mounting bracket and strap down AC and DC lines (Figure 7).

### INSTALL NEW CHARGER

1. Mount the charger and bracket into the vehicle using the two (2) bolts retained from Step 4 of Battery Charger Removal. The LED display must be visible from the front of the vehicle. Torque the bolts to 18-20 lb-ft (24-27 N•m).

### NOTE

MOUNTING BRACKET ORIENTATION IS VERY IMPORTANT. THE BRACKET SHOULD NOT CONTACT OR INTERFERE WITH THE BRAKE LINE.

2. Mount the AC plug into the plug housing using a fir tree tie strap and the supplied hose clamp (Figure 8).

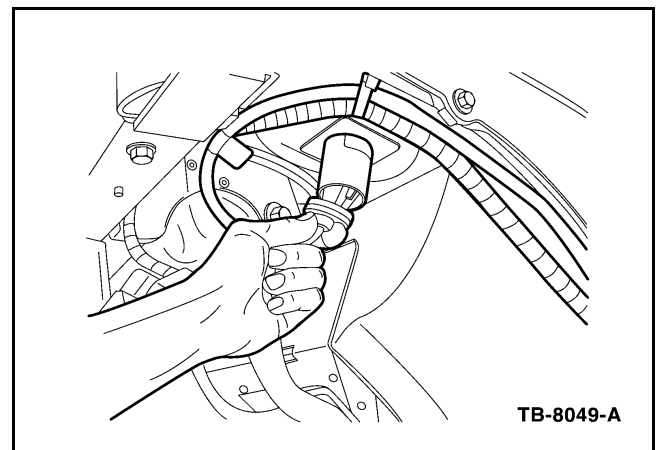


Figure 8 - Article 04-24-9

## TSB 04-24-9 (Continued)

3. Route the AC cord as illustrated and secure with two (2) large tie straps (Figure 9).

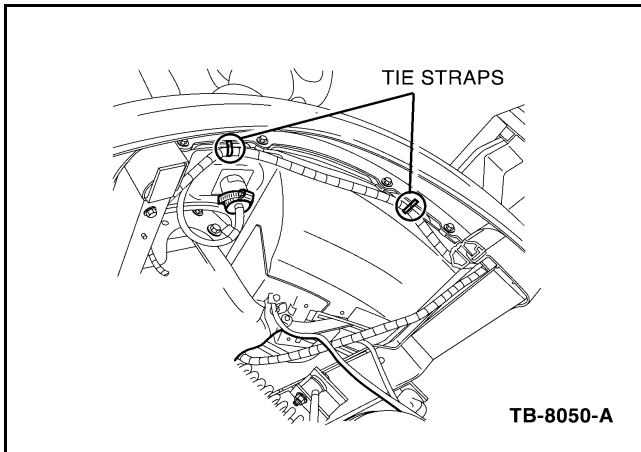


Figure 9 - Article 04-24-9

4. Remove ground stud nut from charger. Drill a 5/32" hole directly in front of the charger ground stud on the frame. Attach the 5" green ground wire to the charger with the previously removed nut. Then attach the other end of the ground wire into the drilled hole in the frame with the supplied #10 self-tapping screw and star washer (Figure 10). Torque to 8 lb-ft (11 N•m).

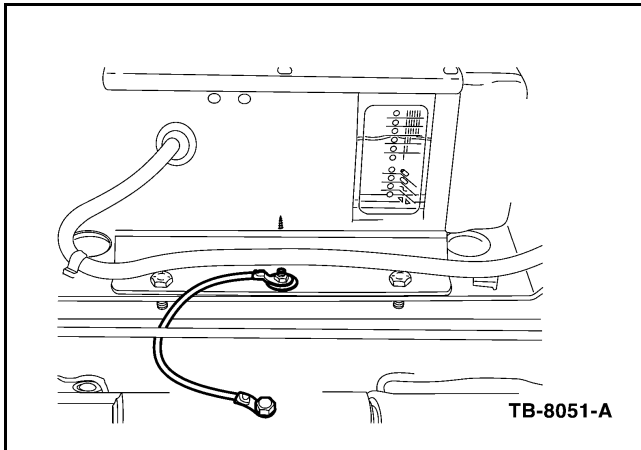


Figure 10 - Article 04-24-9

### **CAUTION**

**DO NOT SECURE ANY WIRES OR HARNESES TO THE BRAKE LINE.**

### **TERMINATE AND CONNECT OLD 9-PIN DC CONNECTOR TO THE NEW CHARGER 4 PIN CONNECTOR**

1. Strip back the orange tape approximately 8" (20 cm) from the remaining 9-pin DC connector harness (previously cut in Step 3 of Battery Charger Removal). Stagger cut the wires so the orange/grey wire extends approximately 2" (5 cm) further from main harness (Figure 11).

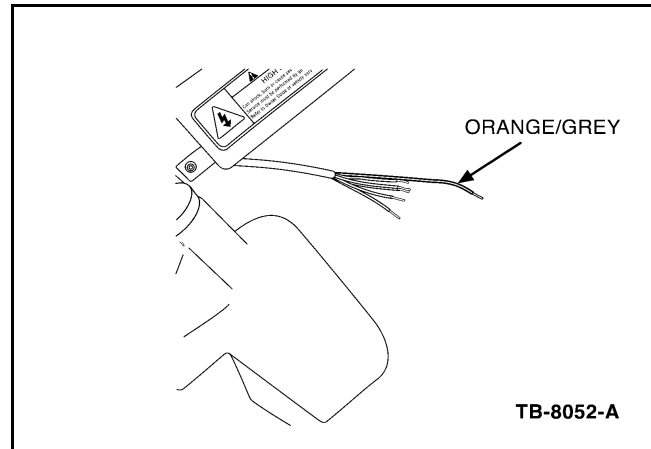


Figure 11 - Article 04-24-9

### **NOTE**

FOLLOW THE CRIMPING PROCEDURE AND USE ONLY THE CRIMP TOOL FROM THE FORD APPROVED WIRE SPLICE KIT (164-R5903). USE ONLY THE BUTT SPLICES SUPPLIED IN THE CHARGER INSTALLATION KIT. TSB 04-3-2 MAY ALSO BE REFERRED TO FOR PROPER SPLICING PROCEDURES.

### **NOTE**

BE SURE TO ADD A 2" (5 CM) PIECE OF HEAT SHRINK OVER EACH WIRE TO BE BUTT SPLICED BEFORE CRIMPING.

2. Strip back the insulation 1/8" (3 mm) from the end of the orange/grey wire that was terminated by cutting off the 9-pin charger connector. Slide over a 2" (5 cm) piece of heat shrink over the orange/grey wire, butt splice the orange/grey wire to the kit supplied stub harness wire colored orange/grey (Figure 12). This is the 72V power wire.

## TSB 04-24-9 (Continued)

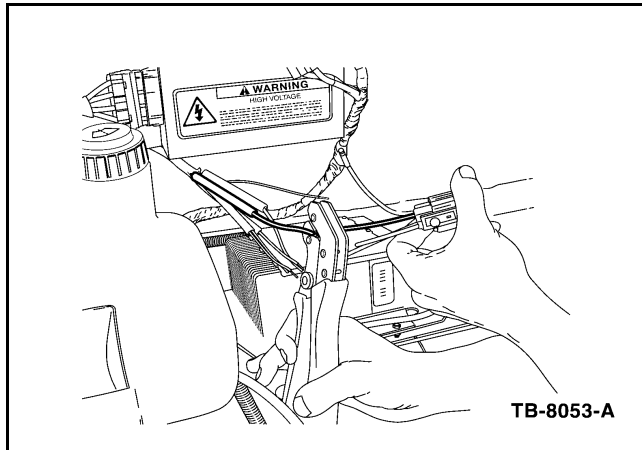


Figure 12 - Article 04-24-9

3. Strip back the insulation 1/8" (3 mm) from the ends of the grey/blue and grey/green wires that were terminated by cutting off the 9-pin charger connector. Twist both wires together, slide over a 2" (5 cm) piece of heat shrink, and crimp into the supplied butt splice on the white wire from the stub harness (Figure 13). This is the temperature sensor circuit wire.

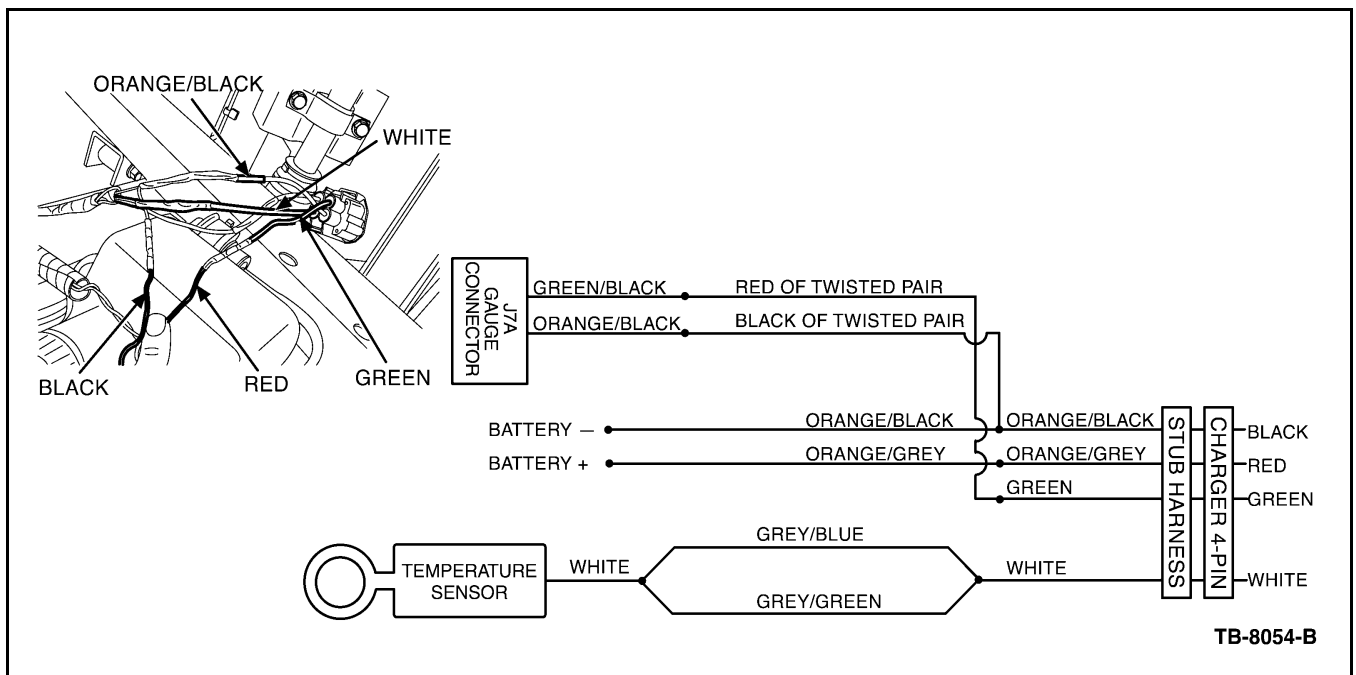


Figure 13 - Article 04-24-9

4. Connect the twisted pair wire connection to the J7A 20-Pin gauge connector.
  - a. Install the supplied 1/4" orange convolute over the twisted pair wire (both supplied in the kit), secure both ends with tape leaving 2" (5 cm) of wire exposed at each end.
  - b. Remove the passenger side cup holder and feed the non-terminated end of the twisted pair between the front cross member and kick up panel (Figure 14).

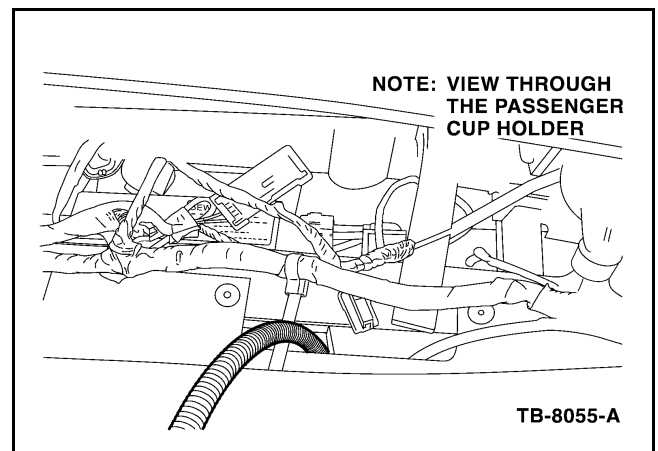


Figure 14 - Article 04-24-9

## TSB 04-24-9 (Continued)

- c. Strip the black wire of the twisted pair back 1/8" (3 mm). Twist the stripped wire from the twisted pair together with the orange/black wire from the harness end where the 9-pin was terminated. Slide a piece of 2" (5 cm) heat shrink over the orange/black wire on the stub harness side. Butt splice the wires together using the butt splice supplied on the orange/black wire from the supplied stub harness (Figure 13). This is the 72V return wire.
- d. Strip back the red wire of the twisted pair, slide a 2" (5 cm) piece of heat shrink over the wire, and crimp the red wire onto the butt splice that is supplied on the green wire of the stub harness (Figure 13). This is the gauge interlock circuit wire.
- e. Wrap tape around the harness where the new stub harness was installed. The green/black wire and the blue/orange wire of the main harness that were not used for the 4-pin stub harness are to be taped back, they are not operational (Figure 15).

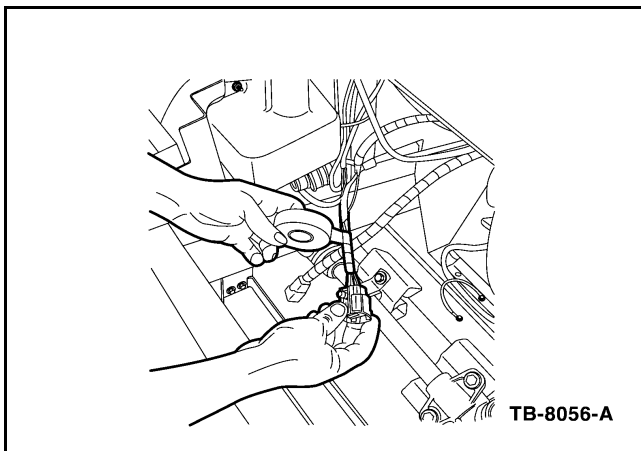


Figure 15 - Article 04-24-9

### **NOTE**

WHEN STRIPPING BACK THE WIRES FROM THE J7A 20-PIN GAUGE CONNECTOR, YOU MUST SECURE THE WIRE SO THAT THE STRIPPED WIRE WILL NOT BE PULLED OUT OF THE CONNECTOR.

- f. Unplug the J7A 20-pin connector from the back of the gauge. The orange tape must be removed 3" (7.5 cm) back to the harness tag (Figure 16).

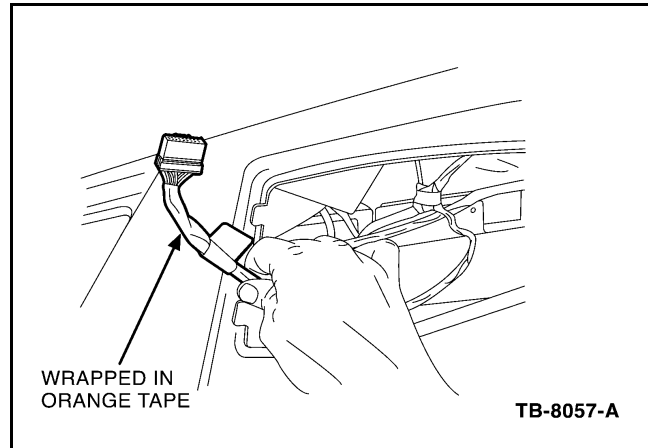


Figure 16 - Article 04-24-9

- g. Locate pin 14 with the orange/black wire and cut it 3" (7.5 cm) back from the connector. Strip back the insulation 1/8" (3 mm). Slide a 1" (2.5 cm) piece of heat shrink over the wire and butt splice black wire from the twisted pair with the orange/black wire going into the J7A 20-pin gauge connector (Figure 17).

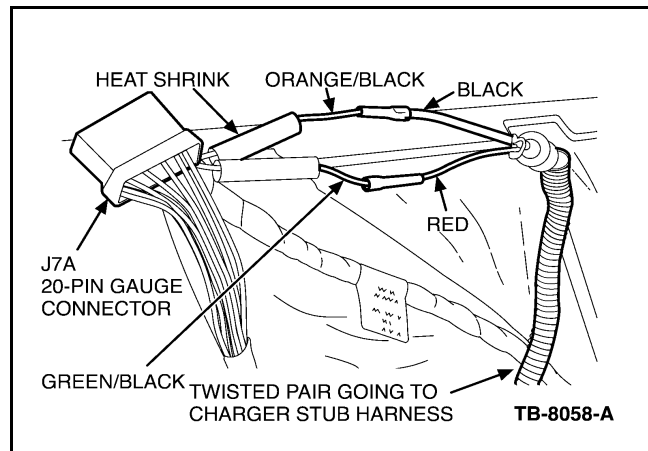


Figure 17 - Article 04-24-9

- h. Locate pin 13 that has the green/black wire and cut it 3" (7.5 cm) back from the connector. Strip back the insulation 1/8" (3 mm). Butt splice the red from the twisted pair with the green/black wire going into the J7A 20-pin gauge connector (Figure 17).
- i. Tape up connections with orange tape (Figure 18).

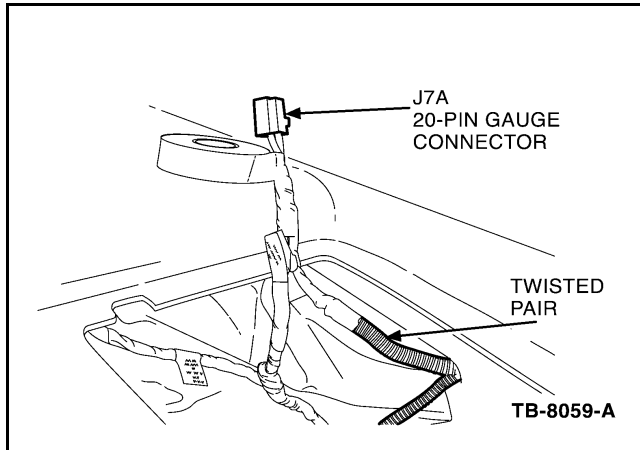


Figure 18 - Article 04-24-9

- j. Reconnect the J7A 20-pin connector to the gauge.
- k. Apply the two (2) tie strap anchors on the inside of the front cowl to hold the twisted pair. Figure 19 shows routing and location.

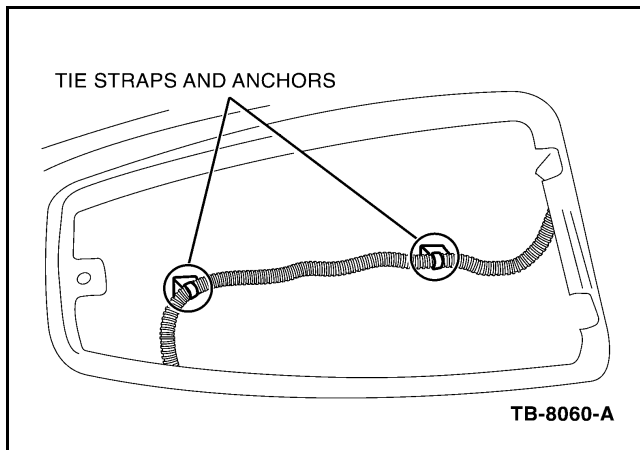


Figure 19 - Article 04-24-9

- l. Reinstall the cup holder.
5. Connect the newly installed female 4-pin connector into the 4-pin connector of the charger.
6. Drill a 1/4" hole into the side vertical frame member and secure the connector with the fire tree of the connector into the hole (Figure 20).

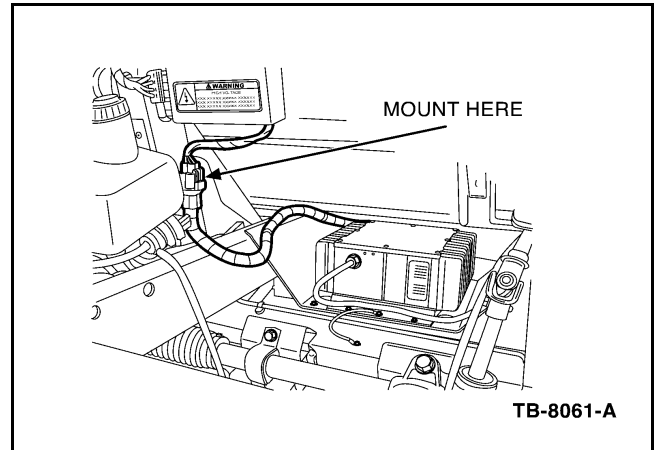


Figure 20 - Article 04-24-9

### **INSTALL NEW TEMPERATURE SENSOR**

1. Remove the existing vehicle battery temperature sensor, wire, and connector and discard (Figure 21).

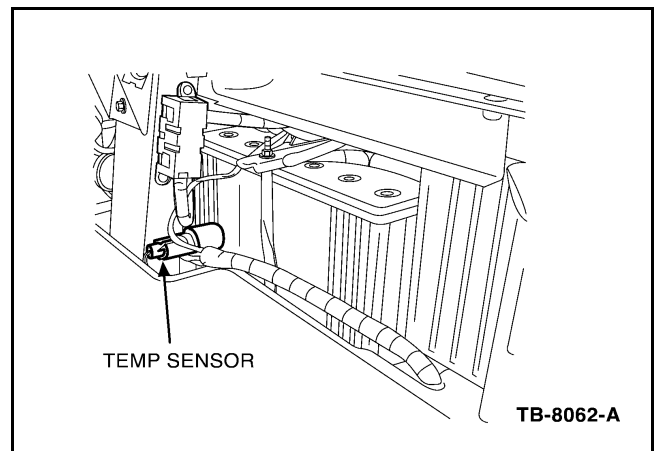


Figure 21 - Article 04-24-9

2. Strip back tape 1" (2.5 cm) and strip both grey/blue and grey/green wires 1/8" (3 mm). Slide a 2" (5 cm) piece of heat shrink over the wire.
3. Secure the supplied butt splice onto the twisted pair of temp sensor leads (Figure 22).
4. Secure the supplied temperature sensor into the other end of the twisted pair butt splice (Figure 22).

TSB 04-24-9 (Continued)

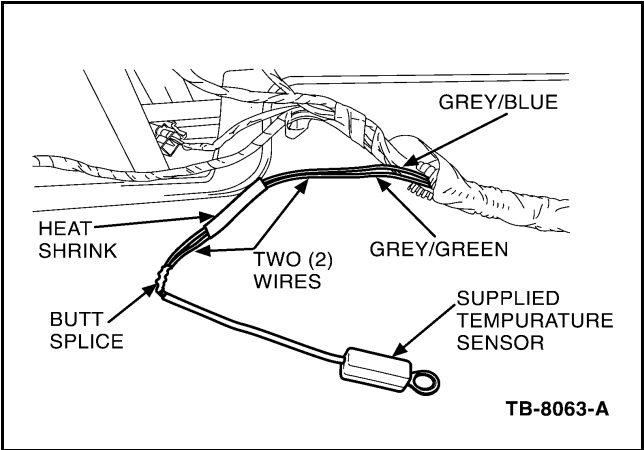


Figure 22 - Article 04-24-9

- 5. Connect the new charger battery temperature sensor to the negative side of battery number one (Figure 23).

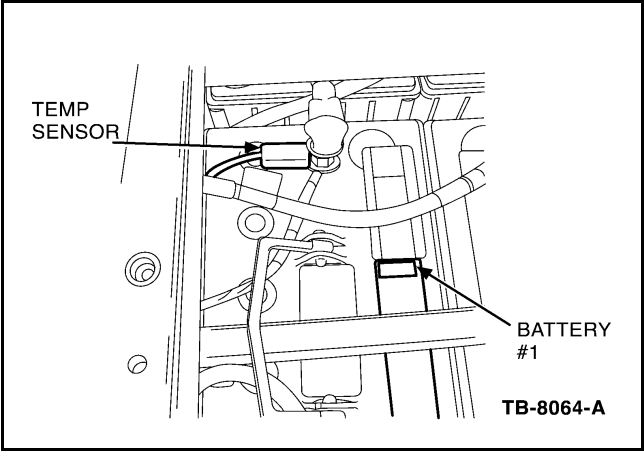


Figure 23 - Article 04-24-9

CONNECT BATTERY PACK

- 1. Reinstall battery cables for battery pack.
- 2. Install the charger 25 Amp fuse from the kit in place of the original 30 Amp charger fuse.

PERFORM SYSTEM START UP

- 1. Turn SDS on.
- 2. Turn key to the Drive position.
- 3. Press accelerator pedal and make sure wheels rotate and no vehicle faults occur.
- 4. Turn key to off.

WARNING

THE NEW SUPPLIED GFCI CORD MUST BE USED WITH THE NEW CHARGER. THE ORIGINAL GFCI CORD (YELLOW), IS NOT COMPATIBLE WITH THE NEW CHARGER AND SHOULD BE DISCARDED.

- 5. Plug the new supplied GFCI cord into the wall outlet, push the test button on the GFCI cord. Plug the cord into the charge port on the vehicle and then push the reset button. The charge icon should be present on the gauge.
- 6. Only yellow lights should be present on the charger to indicate proper operation.
- 7. Push the test button and unplug the GFCI cord from the vehicle.

REASSEMBLE VEHICLE

- 1. Reinstall stanchion covers.
- 2. Reinstall seat frames.
- 3. Reinstall seat cushions.
- 4. Reinstall the drivers side wheel well by installing the four (4) rivets.
- 5. Reinstall the front tire and torque to 74-98 lb-ft (100-133 N•m).
- 6. Reinstall front bumper and front cross support.
- 7. Reinstall front deck lid.

PART NUMBER	PART NAME
2E3Z-10A765-AA	Charger Kit

**WARRANTY STATUS:** Eligible Under Provisions Of  
New Vehicle Limited  
Warranty Coverage

OPERATION	DESCRIPTION	TIME
042409A	Replace Battery Charger (Includes Time To Install Bracket And Update Wiring)	2.5 Hrs.

DEALER CODING

BASIC PART NO.  
10B689

CONDITION  
CODE  
42