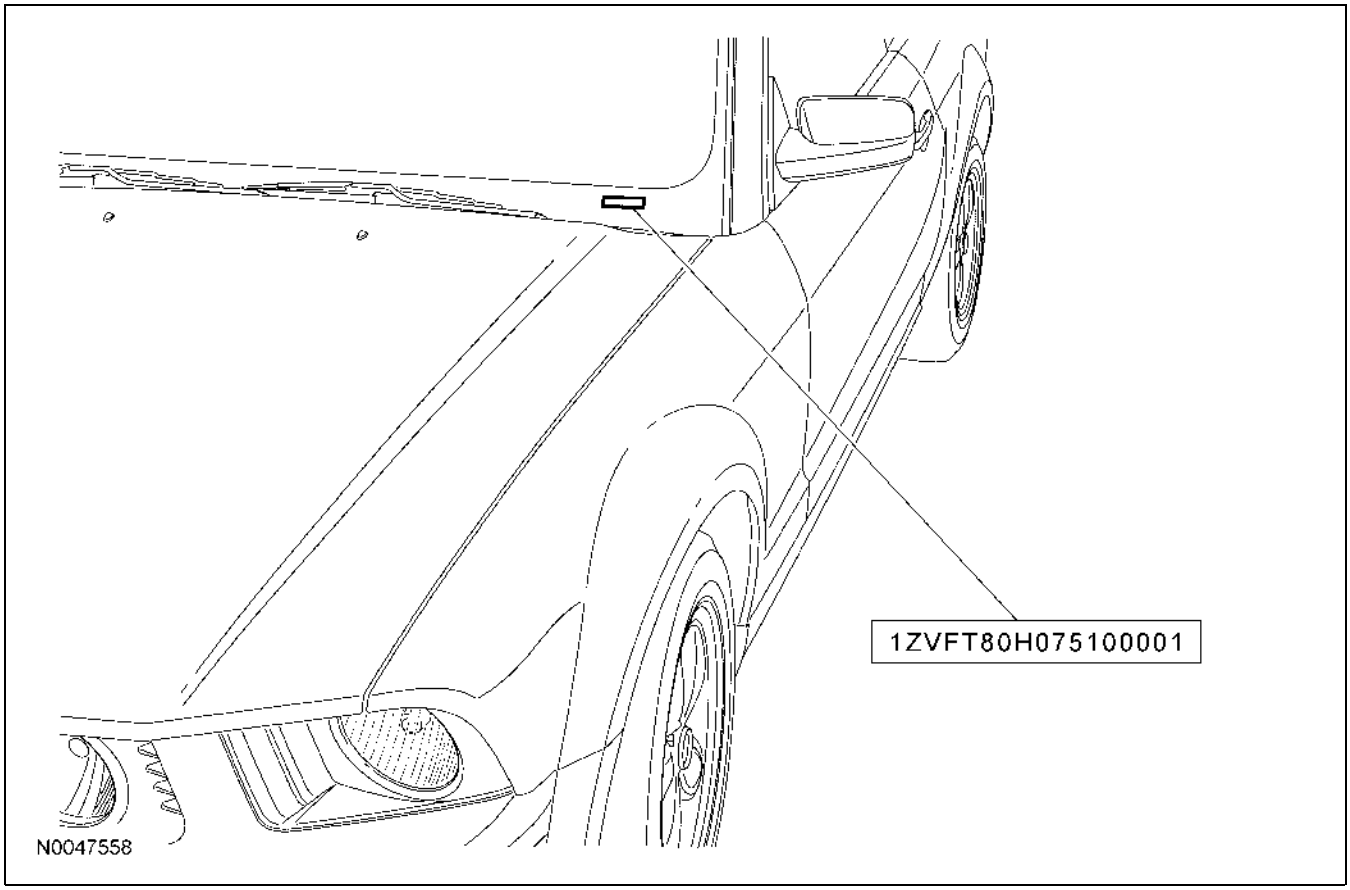
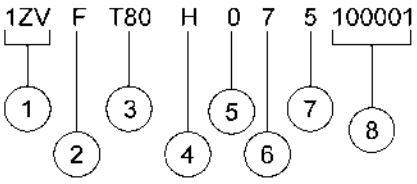
DESCRIPTION AND OPERATION

Identification Codes

Vehicle Identification Number (VIN) Locator



The vehicle identification number (VIN) is a 17-digit alphanumeric code. The VIN is stamped on a metal tab riveted to the instrument panel, top upper left of the dash. The VIN number is also found on the vehicle certification (VC) label.

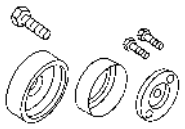
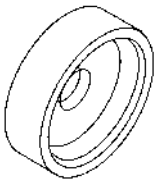


Item	Description
1	World manufacturer identifier (WMI)
2	Restraint-type code
3	Line, series, body type
4	Engine code
5	Computer-generated VIN check digit

IN-VEHICLE REPAIR

Crankshaft Rear Seal

Special Tool(s)

 ST1385-A	Remover, Oil Seal 303-409 (T92C-6700-CH)
 ST1785-A	Service Set, Crankshaft Rear Oil Seal 303-S524 (T95T-6701-AR)
 ST2132-A	Installer, Crankshaft Rear Oil Seal 303-579 (T97T-6701-A)

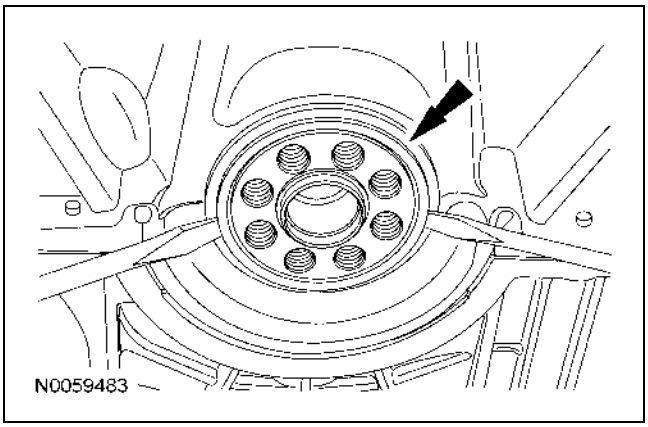
Material

Item	Specification
Motorcraft SAE 5W-30 Premium Synthetic Blend Motor Oil XO-5W30-QSP (US); Motorcraft SAE 5W-30 Super Premium Motor Oil CXO-5W30-LSP12 (Canada); or equivalent	WSS-M2C929-A
Motorcraft Metal Surface Prep ZC-31	—

Removal

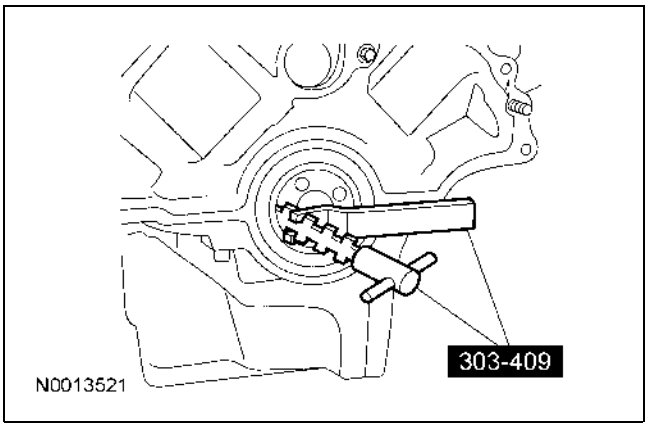
1. Remove the flexplate or flywheel. For additional information, refer to Flexplate or Flywheel in this section.
2. Remove the spacer plate.
3. **NOTE:** The crankshaft rear seal may have a metal speedy sleeve. This sleeve must be removed before attempting to remove the seal.

   If necessary, remove the speedy sleeve using 2 screwdrivers or small pry bars.



4. ⚠ **CAUTION: Avoid scratching or damaging the crankshaft rear seal running surface during removal of the crankshaft rear seal.**

   Using the special tool, remove the crankshaft rear seal.



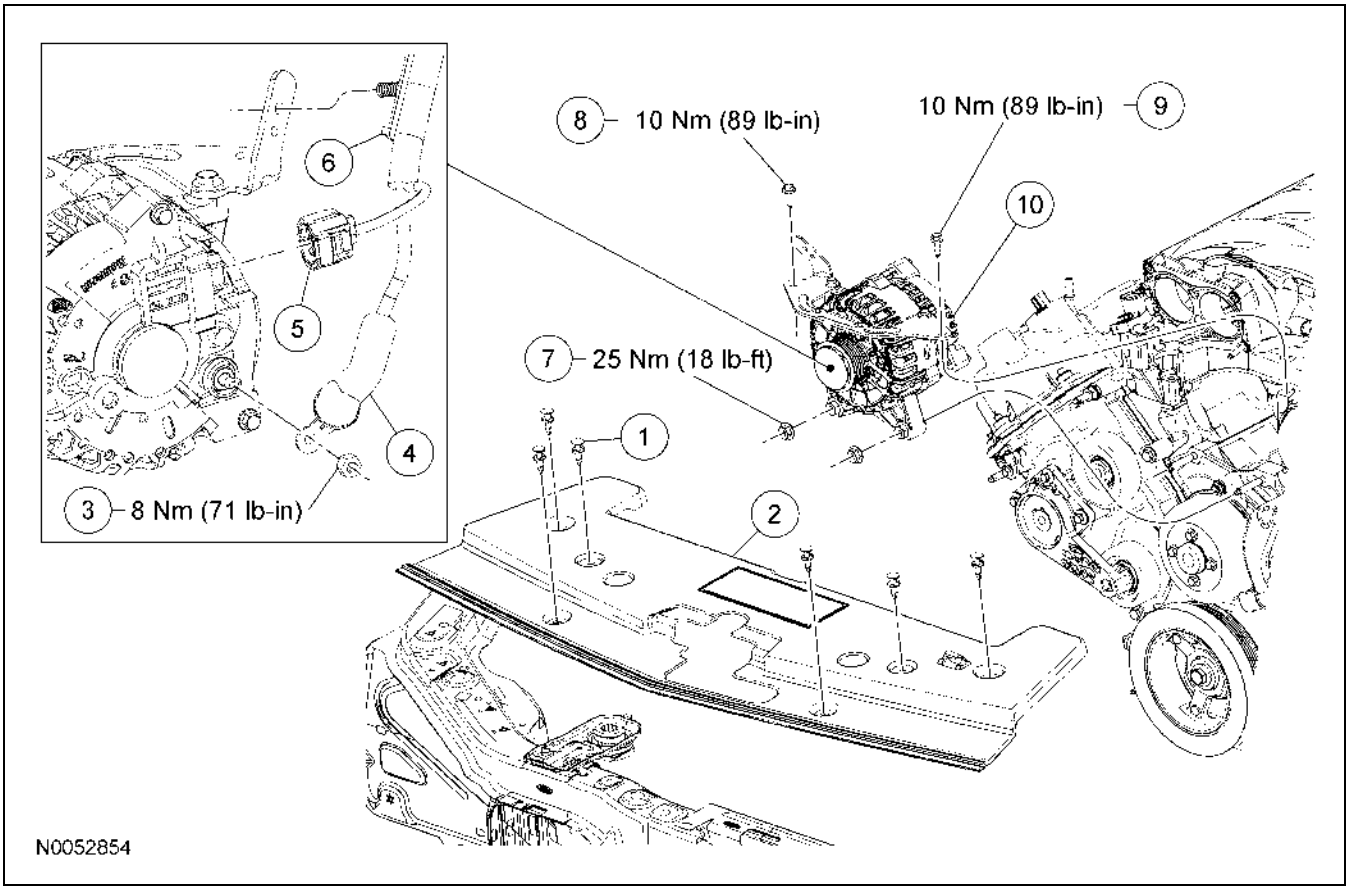
Installation

1. **NOTE:** Be sure the crankshaft rear sealing surface is clean and free from any rust or corrosion. To clean the crankshaft rear seal surface area, use extra-fine emery cloth or extra-fine 0000 steel wool with metal surface prep.

   Lubricate the crankshaft rear oil seal with clean engine oil.

IN-VEHICLE REPAIR

Engine Lubrication Components — Exploded View



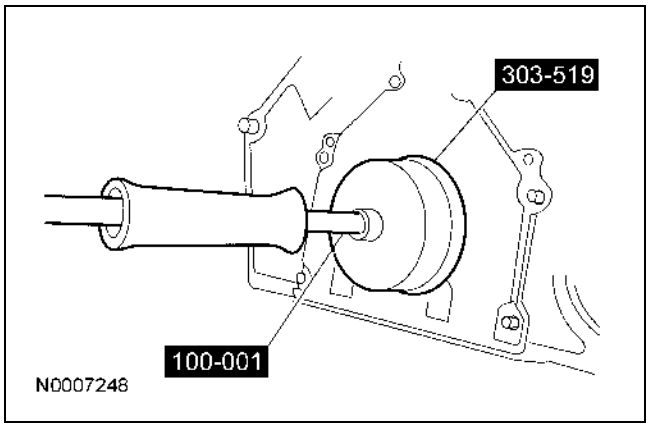
Item	Part Number	Description
1	—	Pin-type retainer
2	8C291	Radiator sight shield
3	W705790	B+ terminal nut
4	—	B+ terminal cover (part of 14305)
5	14A4644	Generator electrical connector (part of 14305)

(Continued)

Item	Part Number	Description
6	—	Wiring harness pin-type retainer (part of 14305)
7	N804758	Generator nut (2 required)
8	N807309	Generator bracket bolt
9	W704682	Generator bracket bolt
10	10300	Generator

IN-VEHICLE REPAIR (Continued)

16. Using the special tools, remove the crankshaft rear seal.



17. Remove the 6 bolts and the crankshaft rear seal retainer plate.

Installation

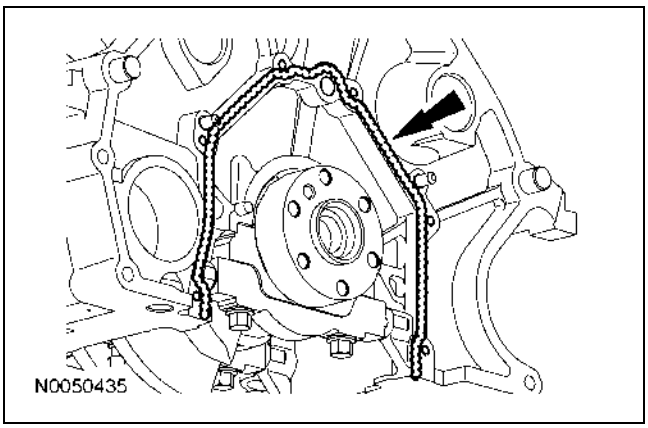
1. **CAUTION: Do not use metal scrapers, wire brushes, power abrasive discs or other abrasive means to clean the sealing surfaces. These tools cause scratches and gouges which make leak paths. Use a plastic scraping tool to remove all traces of old sealant.**

   NOTE: Clean the sealing surfaces with silicone gasket remover and metal surface prep. Follow the directions on the packaging. Failure to follow this procedure can cause future oil leakage.

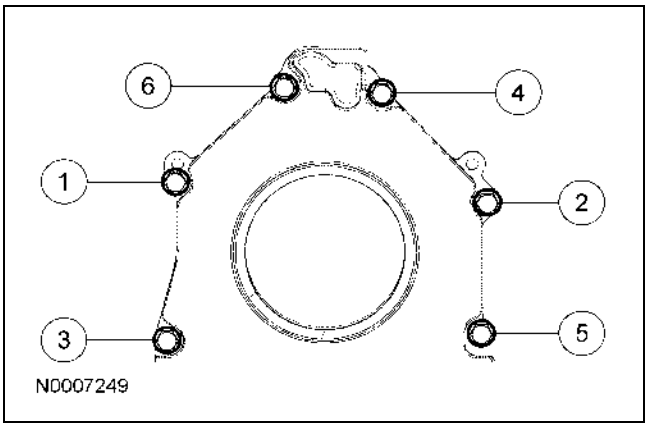
   Clean and inspect the mating surfaces of the engine block, rear seal retainer plate and oil pan.

2. **CAUTION: If not secured within 4 minutes, the sealant must be removed and the sealing area cleaned. To clean the sealing area, use silicone gasket remover and metal surface prep. Follow the directions on the packaging. Failure to follow this procedure can cause future oil leakage.**

   Apply a 4 mm (0.15 in) bead of silicone gasket and sealant to the rear crankshaft seal retainer mating surface on the engine block.

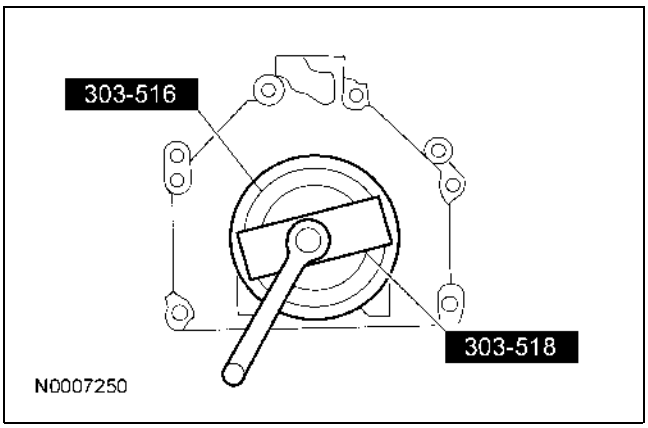


3. Install the crankshaft rear seal retainer plate and the 6 bolts.
   - Tighten in the sequence shown to 10 Nm (89 lb-in).



4. **NOTE:** Lubricate the inner lip of the crankshaft rear seal with clean engine oil.

   Using the special tools, install the crankshaft rear seal.

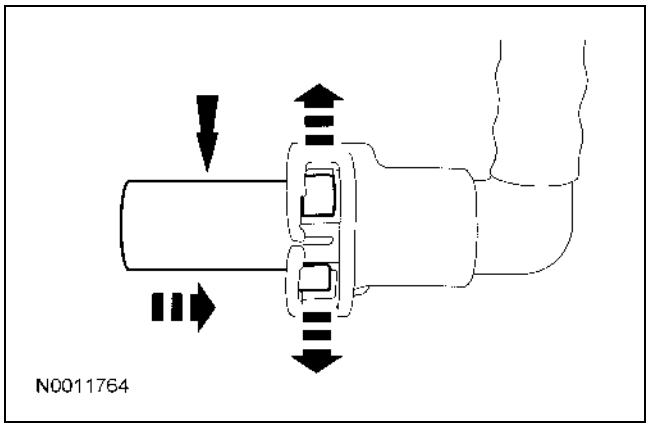


GENERAL PROCEDURES

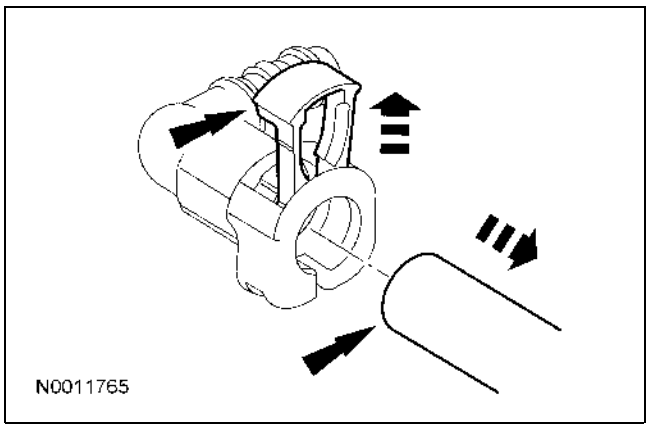
Quick Connect Coupling Retainer Clip

Removal

1. Insert the tool that is supplied with the new replacement retainer clip into the quick connect coupling body until it engages and spreads the retainer legs.



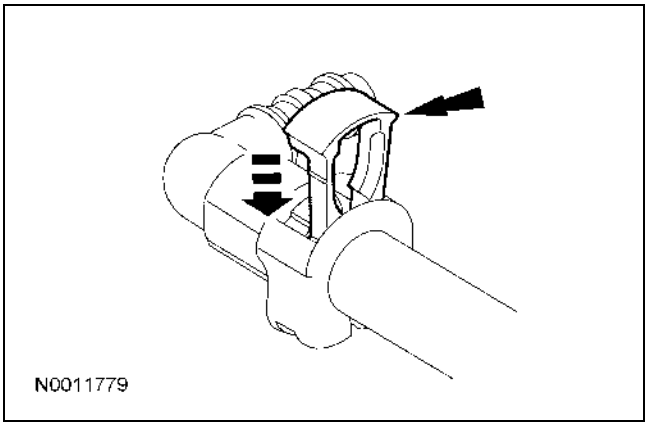
2. Grasp the retainer clip under the lip on each side, pull outward and remove while simultaneously removing the tool from the quick connect coupling body.
   - The legs of the retainer clip may catch on the quick connect coupling body just prior to removal and you may need to open the legs of the retainer clip slightly to complete removal.



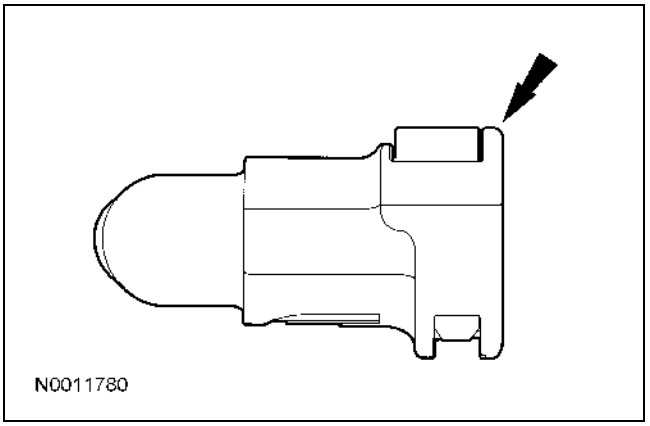
3. Discard the quick connect coupling retainer clip.

Installation

1. Install the tool into the quick connect coupling body.
2. Insert the legs of the new retainer clip into the windows on the body of the quick connect coupling body.



3. Push the retainer clip straight into the quick connect coupling body until it is flush with the top lip and the side of the connector body.

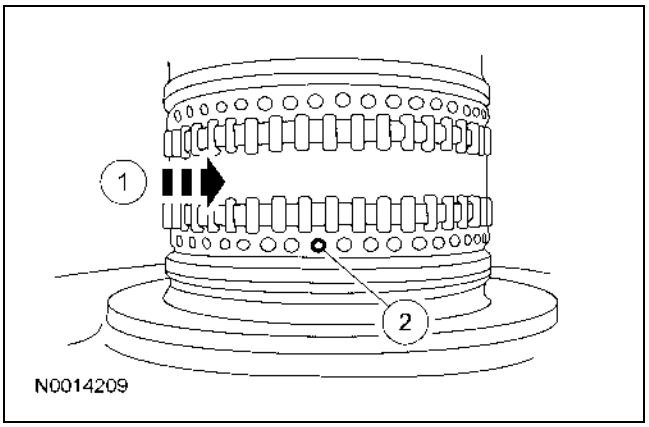


4. **NOTE:** If the retainer clip is properly installed, the tool should be locked into the quick connect coupling body and can only be removed when the center of the retaining clip is depressed.

   Push down the center of the retainer clip and remove the tool. Upon release the retainer clip should remain in the quick connect coupler body.

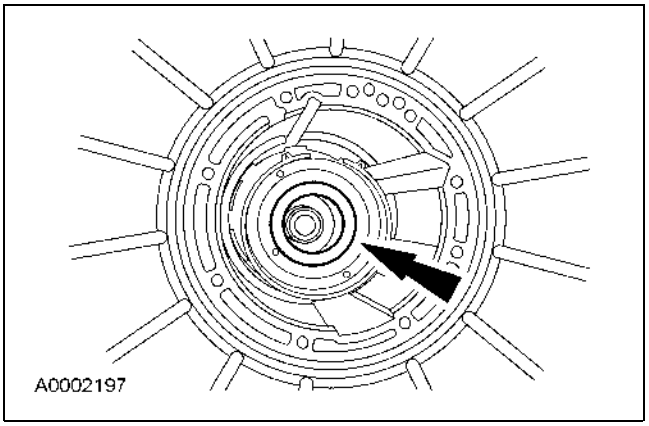
DISASSEMBLY (Continued)

46. Inspect the direct clutch feed hole for blockage or damage.
    1 Rotate the center support bearing to locate the direct clutch feed hole.
    2 Inspect the direct clutch feed hole for blockage or damage.

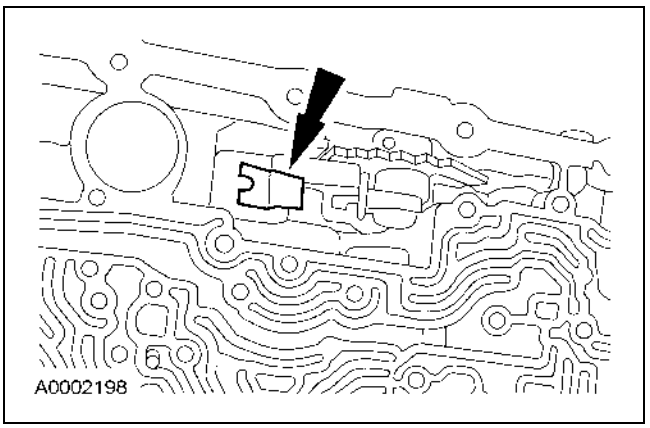


47. **NOTE:** Tag and identify the No. 4 intermediate clutch drum thrust bearing.

    Remove the intermediate brake drum thrust bearing (No. 4).



48. Remove, tag and identify the band anchor strut for assembly.

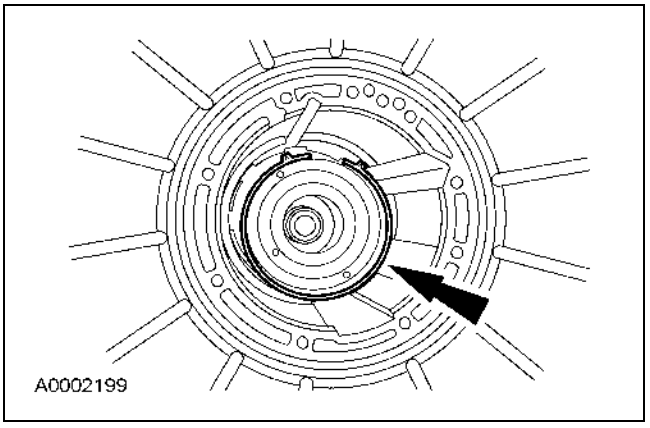


49. ⚠ **CAUTION: Identify the anchor and apply ends of the intermediate band.**

    NOTE: The new intermediate band is dark in color. This is a normal condition of the band. Hairline cracks in the band are also considered normal. Do not install a new band based solely on the color.

    Remove and inspect the intermediate band. Check the following conditions when installing a new band:

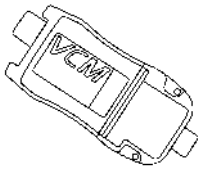
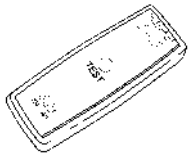
    - Inspect for glazing.
    - Inspect for missing friction material.
    - Inspect for material flaking.
    - Inspect for damage to the anchor pins.



GENERAL PROCEDURES

Tire Pressure Monitoring System (TPMS) Sensor Training

Special Tool(s)

 ST2834-A	Vehicle Communication Module (VCM) and Integrated Diagnostic System (IDS) software with appropriate hardware, or equivalent scan tool
 ST2941-A	Activation Tool, Tire Pressure Monitor 204-363

NOTE: A new tire pressure sensor is shipped in an OFF mode (or battery saver mode) and must be turned ON before it can be trained. To turn the sensor ON, deflate the tire slightly if necessary, then inflate the tire to the recommended inflation pressure and wait at least 2 minutes, then continue with the sensor training procedure.

NOTE: The tire pressure sensor training procedure must be done on a single vehicle, in an area without radio frequency (RF) noise and at least 1 meter (3 feet) away from other vehicles equipped with TPMS.

RF noise is generated by electrical motors and appliance operation, cellular telephones, remote transmitters, power inverters and portable entertainment equipment.

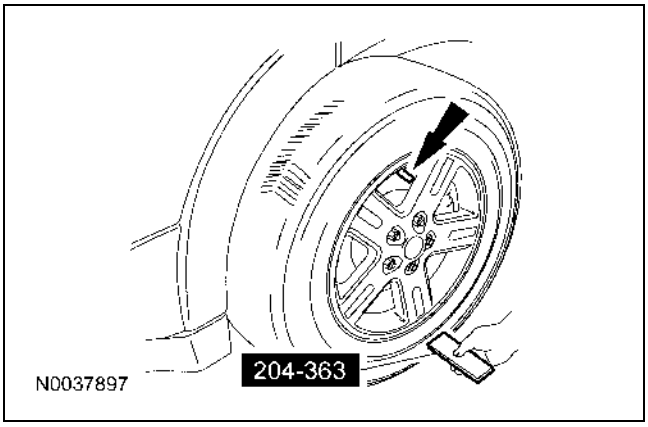
NOTE: If a sensor does not respond to the activation tool, attempt to activate the same sensor with the activation tool. If the sensor still does not respond, move the vehicle to rotate the wheels at least 1/4 of a turn and attempt to activate the same sensor again.

NOTE: If the SJB does not recognize any 1 of the 4 tire pressure sensors during the sensor training procedure, the horn will sound twice and the message center (if equipped) will display TIRE NOT TRAINED REPEAT and the procedure must be repeated.

NOTE: The tire pressure monitoring system is not affected by wheel and tire rotation.

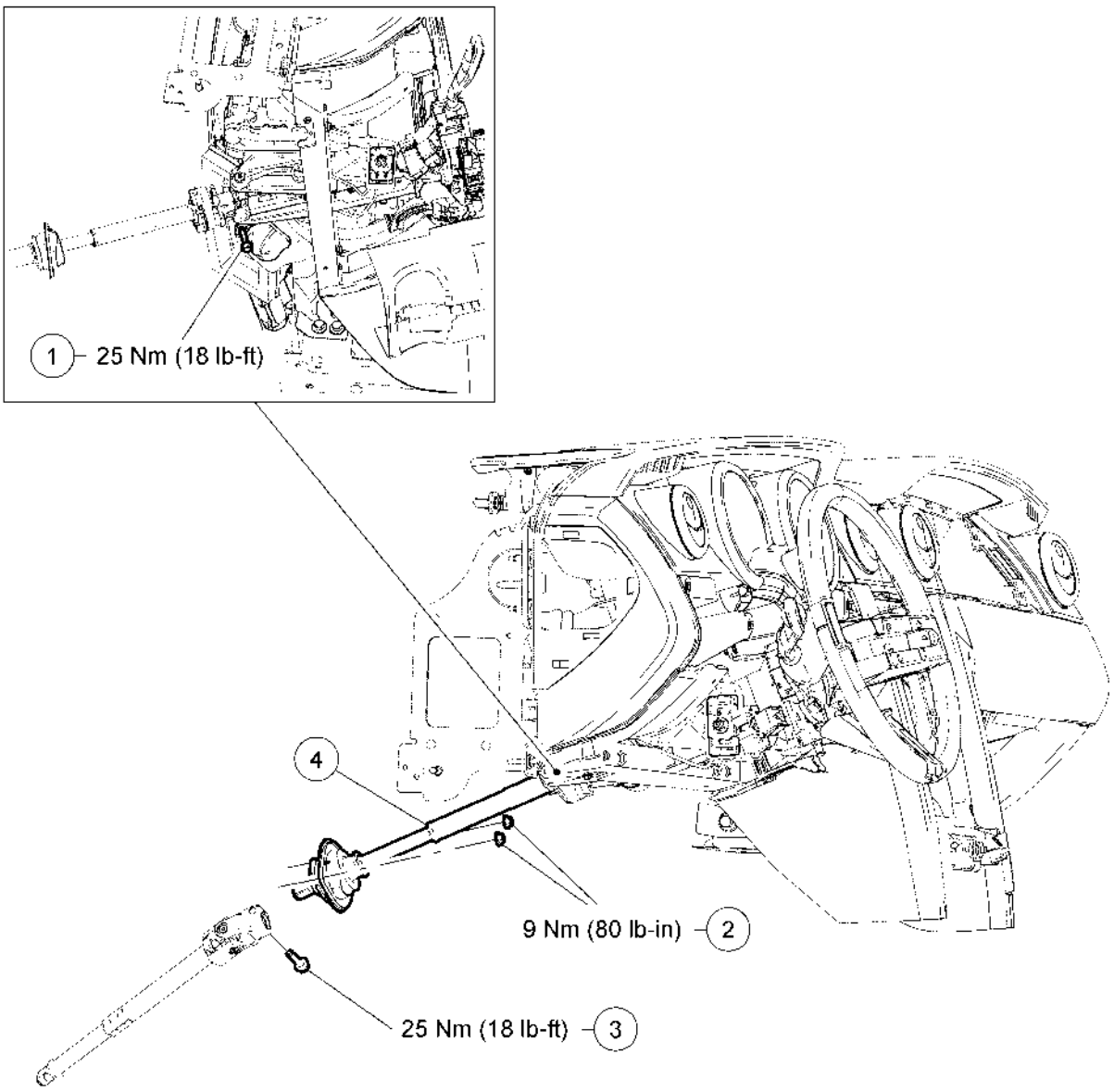
1. Turn the ignition switch to the OFF position, then press and release the brake pedal.
2. Cycle the ignition switch from the OFF position to the RUN position 3 times, ending in the RUN position. Do not wait more than one minute between each key cycle.
3. Press and release the brake pedal.
4. Turn the ignition switch to the OFF position.
5. Turn the ignition switch from the OFF position to the RUN position 3 times, ending in the RUN position. Do not wait more than one minute between each key cycle.
   - The horn will sound once and the TPMS indicator will flash if the training mode has been entered successfully. If equipped, the message center will display TRAIN LF TIRE.
6. **NOTE:** It may take up to 6 seconds to activate a tire pressure sensor. During this time, the activation tool must remain in place 180 degrees from the valve stem.

   Place the activation tool on the LF tire sidewall opposite (180 degrees) from the valve stem. The horn will sound briefly to indicate that the tire pressure sensor has been recognized by the smart junction box (SJB).



REMOVAL AND INSTALLATION

Steering Column Shaft — Upper



Item	Part Number	Description
1	W704980	Steering column shaft-to-steering column bolt
2	W707137	Dash boot bearing nuts (2 required)

Item	Part Number	Description
3	W704980	Lower steering column shaft-to-upper steering column shaft bolt
4	3E751	Steering column shaft

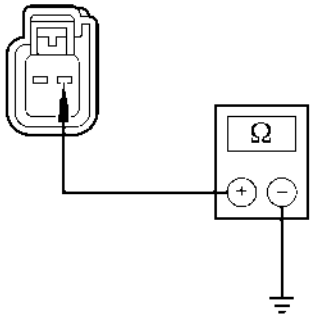
(Continued)

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST D: THE COURTESY LAMPS STAY ON CONTINUOUSLY (Continued)

Test Step		Result / Action to Take
D3	**CHECK CIRCUIT 1205 (BK) FOR AN OPEN**	
	• Key in OFF position. • Disconnect: Suspect Door Ajar Switch. • Measure the resistance between the suspect door ajar switch, harness side and ground as follows:	

DTC	Location	Connector-Pin/ Circuit
B1319	LH door	C526-1 1205 (BK)
B1327	RH door	C602-1 1205 (BK)



N0014706

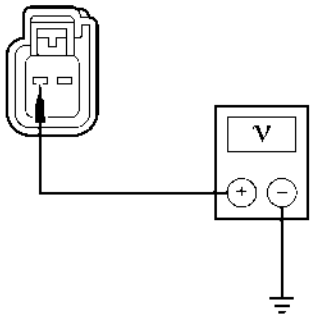
• **Is the resistance less than 5 ohms?**

Yes
GO to **D4**.

No
REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.

D4	**CHECK THE DOOR AJAR SIGNAL CIRCUIT FOR A SHORT TO VOLTAGE**	
	• Key in ON position. • Measure the voltage between the suspect door ajar switch, harness side and ground as follows:	

DTC	Location	Connector-Pin/ Circuit
B1319	LH door	C526-2 1312 (LG/BK)
B1327	RH door	C602-2 1314 (YE/LG)



N0014707

• **Is any voltage present?**

Yes
REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.

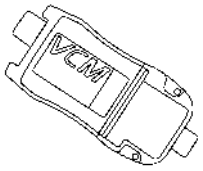
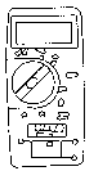
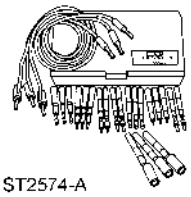
No
GO to **D5**.

(Continued)

DIAGNOSIS AND TESTING

Convertible Top

Special Tool(s)

 ST2834-A	Vehicle Communication Module (VCM) and Integrated Diagnostic System (IDS) software with appropriate hardware, or equivalent scan tool
 ST1137-A	73III Automotive Meter 105-R0057 or equivalent
 ST2574-A	Flex Probe Kit 105-R025B or equivalent

Principles of Operation

Convertible top operation is controlled by the smart junction box (SJB). When the convertible top raise/lower switch is operated, the SJB commands the front and rear windows to the full down position. Window operation is disabled while the convertible top raise/lower switch is being operated. When the SJB receives a full down input for both rear windows, it commands the appropriate relay closed to raise or lower the convertible top. If the SJB does not receive a full down input signal for both rear windows, the convertible top operation is disabled.

The convertible top assembly is a floating frame, Z-fold design. The main pivot brackets are attached to the body, and the convertible top frame side rails expand or fold when the convertible top is raised or lowered. The LH and RH stay pads are attached to the convertible top frame bows, and provide the main source of tension for the convertible top material. When the convertible top is in the full down position, it stores in the compartment behind the rear seat backrest. When the convertible top is in the full up position, the body provides a stop which the convertible top frame number 5 bow contacts to provide a weather seal for the convertible top against the body.

The convertible top hydraulic system uses a 12-volt reversible pump and motor assembly. When active, the pump uses hydraulic pressure to extend the hydraulic lift cylinders to raise the convertible top, or retract the hydraulic lift cylinders to lower the convertible top. The convertible top motor/pump assembly is equipped with a thermal circuit breaker. The circuit breaker typically resets after 5 minutes depending on the ambient temperature. The thermal circuit breaker cannot be repaired and must be installed as a unit with the motor/pump assembly. In the event of a hydraulic system failure, the convertible top cannot be operated manually.

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

REMOVAL AND INSTALLATION (Continued)

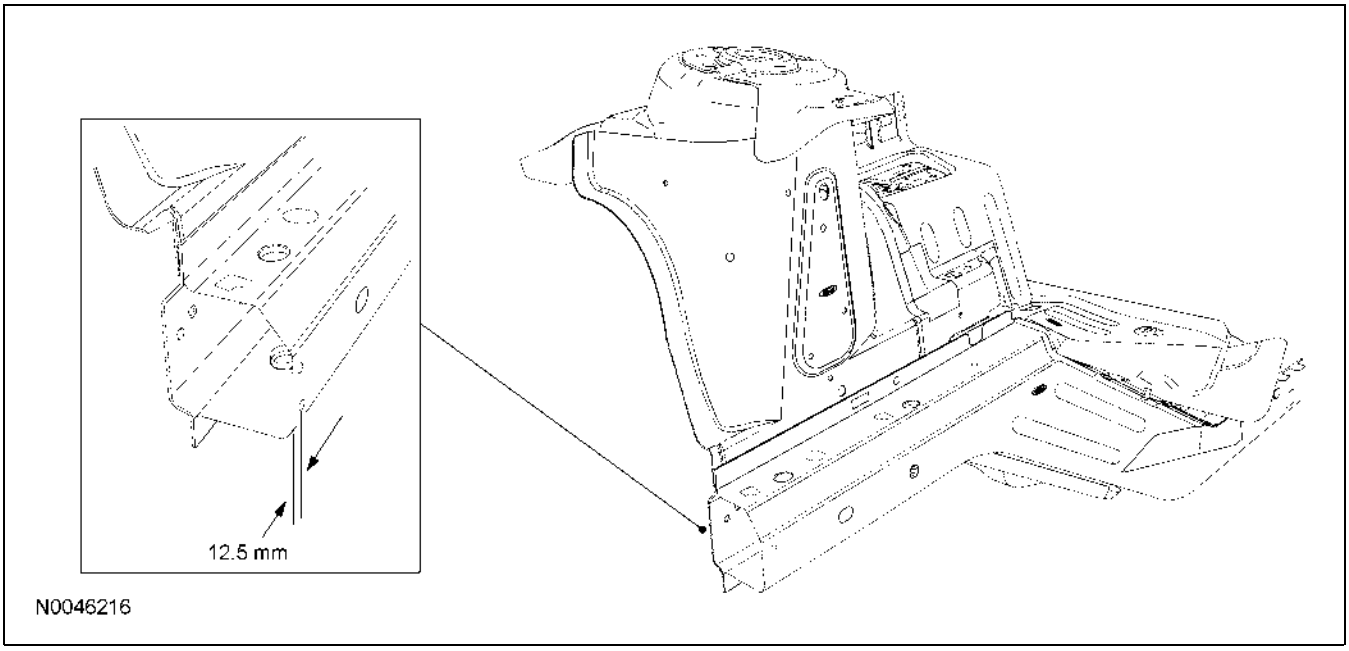
6. **NOTE:** Factory spot welds may be substituted with either resistance spot welds or MIG plug welds. Spot/plug welds should equal factory welds in both location and quantity. Do not place a new spot weld directly over an original weld location. Plug weld hole should equal 8 mm (0.31 in) diameter.

   Drill out the spot welds in the front fender apron reinforcement.

7. Drill out the spot welds attaching the shock tower to the apron panel, and the apron to the lower rail.
   - Dress all spot weld surfaces.

8. Chamfer inner and outer side member cutline surfaces to improve butt weld surfaces.

9. Measure 12.5 mm (0.49 in) rearward from the lower rail cutline. Drill seven 8 mm (0.31 in) holes in the insert overlap area flange.



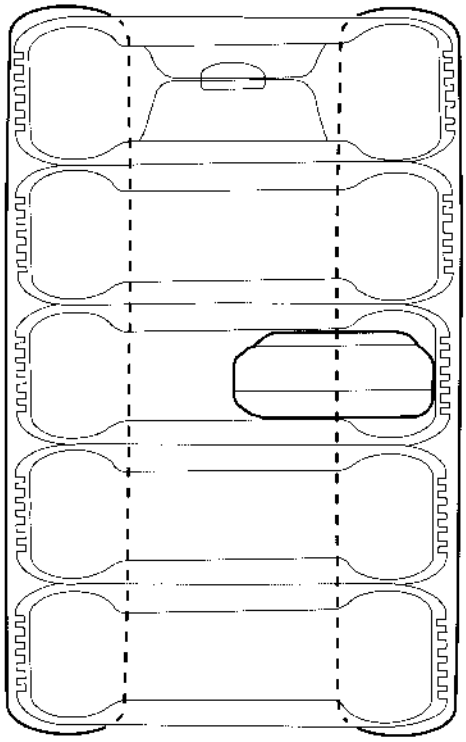
10. Transcribe the inner front side member cutline to the new lower side member, cut to length and chamfer the butt end to improve the weld surface.

GENERAL PROCEDURES (Continued)

8. **NOTE:** Make sure to maintain the connections to the safety belt buckle or retractor.

   Tip the stack of tires on its side and place the safety belt buckle or retractor inside the center tire, making sure that there are 2 tires beneath the tire containing the safety belt buckle or retractor and 2 tires (including the tire and wheel assembly) above the tire containing the safety belt buckle or retractor.

9. Place the tire stack upright, with the wheel on top.



10. Remain at least 9.14 meters (30 feet) away from the safety belt buckle or retractor.

11. From the end of the jumper harness that is not connected to the safety belt buckle or retractor, disconnect the 2 wires of the jumper harness from each other.

12. Deploy the safety belt buckle or retractor by touching the ends of the 2 wires of the jumper harness to the terminals of a 12-volt battery.

13. To allow for cooling, wait at least 10 minutes before approaching the deployed safety belt buckle or retractor.

14. Dispose of the deployed safety belt buckle or retractor in the same manner as any other part to be scrapped.

Safety Belt Buckle Pretensioners, Safety Belt Retractor Pretensioners and Load Limiting Safety Belt Retractors — In-Vehicle Deployment

⚠ WARNING: The safety belt pretensioner is a pyrotechnic device. Always wear safety glasses when repairing an air bag equipped vehicle and when handling a safety belt buckle pretensioner or safety belt retractor pretensioner. Never probe a pretensioner electrical connector. Doing so could result in pretensioner or air bag deployment and could result in personal injury.

⚠ WARNING: Deployment is to be carried out outdoors with all personnel at least 9.14 meters (30 feet) away to make sure of personal safety. Due to the loud report which occurs when the pretensioner or adaptive load limiting retractor is deployed, hearing protection is required.

NOTE: A typical safety belt buckle and retractor disposal is shown that is similar for all vehicles.

1. Depower the system. For additional information, refer to Supplemental Restraint System (SRS) Depowering and Repowering in the General Procedures portion of this section.

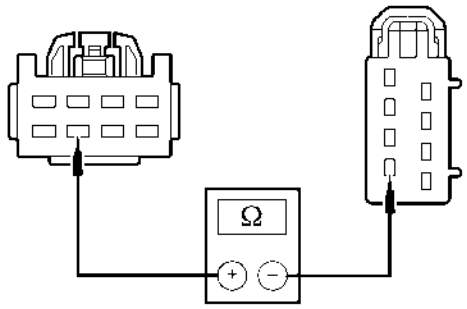
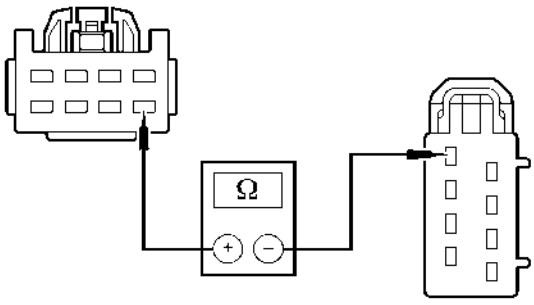
2. Access the safety belt buckle or retractor electrical connectors. For additional information, refer to Section 501-20A.

3. Cut each of the safety belt buckle or retractor wires, leaving at least 4 inches to work with.

4. Remove any sheathing (if present) and strip the insulation from the ends of the cut wires.

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST G: THE POWER SEAT DOES NOT MOVE HORIZONTALLY/VERTICALLY — PASSENGER (Continued)

Test Step		Result / Action to Take
G4	**CHECK CIRCUIT 984 (YE/LB) FOR AN OPEN (Continued)**	
	• Measure the resistance between passenger seat control switch C3190-7, circuit 984 (YE/LB), harness side and passenger power seat motor assembly C3015-8, circuit 984 (YE/LB), harness side.  N0051568 • **Is the resistance less than 5 ohms?**	**Yes** GO to **G5**. **No** REPAIR the circuit. TEST the system for normal operation. For vehicles equipped with seat side air bags, DISCONNECT the battery ground cable. DISCONNECT the restraint system diagnostic tool from passenger seat side air bag module C337. CONNECT passenger seat side air bag module C337. REPOWER the SRS. REFER to Section 501-20B.
G5	**CHECK CIRCUIT 985 (RD/LB) FOR AN OPEN**	
	• Measure the resistance between passenger seat control switch C3190-5, circuit 985 (RD/LB), harness side and passenger power seat motor assembly C3015-2, circuit 985 (RD/LB), harness side.  N0051569 • **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new passenger seat control switch. TEST the system for normal operation. For vehicles equipped with seat side air bags, DISCONNECT the battery ground cable. DISCONNECT the restraint system diagnostic tool from passenger seat side air bag module C337. CONNECT passenger seat side air bag module C337. REPOWER the SRS. REFER to Section 501-20B. **No** REPAIR the circuit. TEST the system for normal operation. For vehicles equipped with seat side air bags, DISCONNECT the battery ground cable. DISCONNECT the restraint system diagnostic tool from driver seat side air bag module C367. CONNECT driver seat side air bag module C367. REPOWER the SRS. REFER to Section 501-20B.
G6	**CHECK VOLTAGE TO THE REAR HEIGHT MOTOR**	
	• Disconnect: Passenger Power Seat Motor Assembly C3015.	

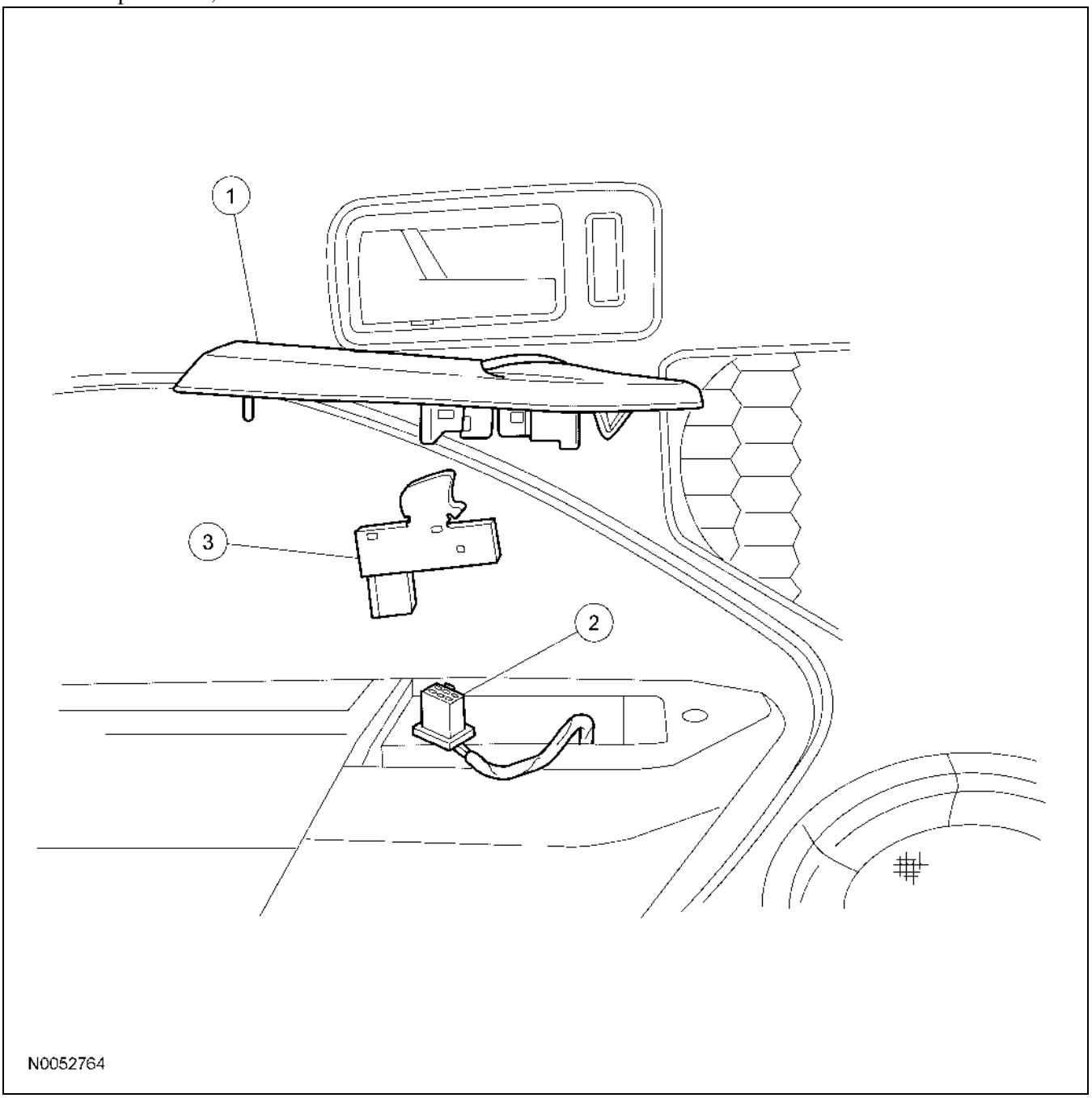
(Continued)

REMOVAL AND INSTALLATION

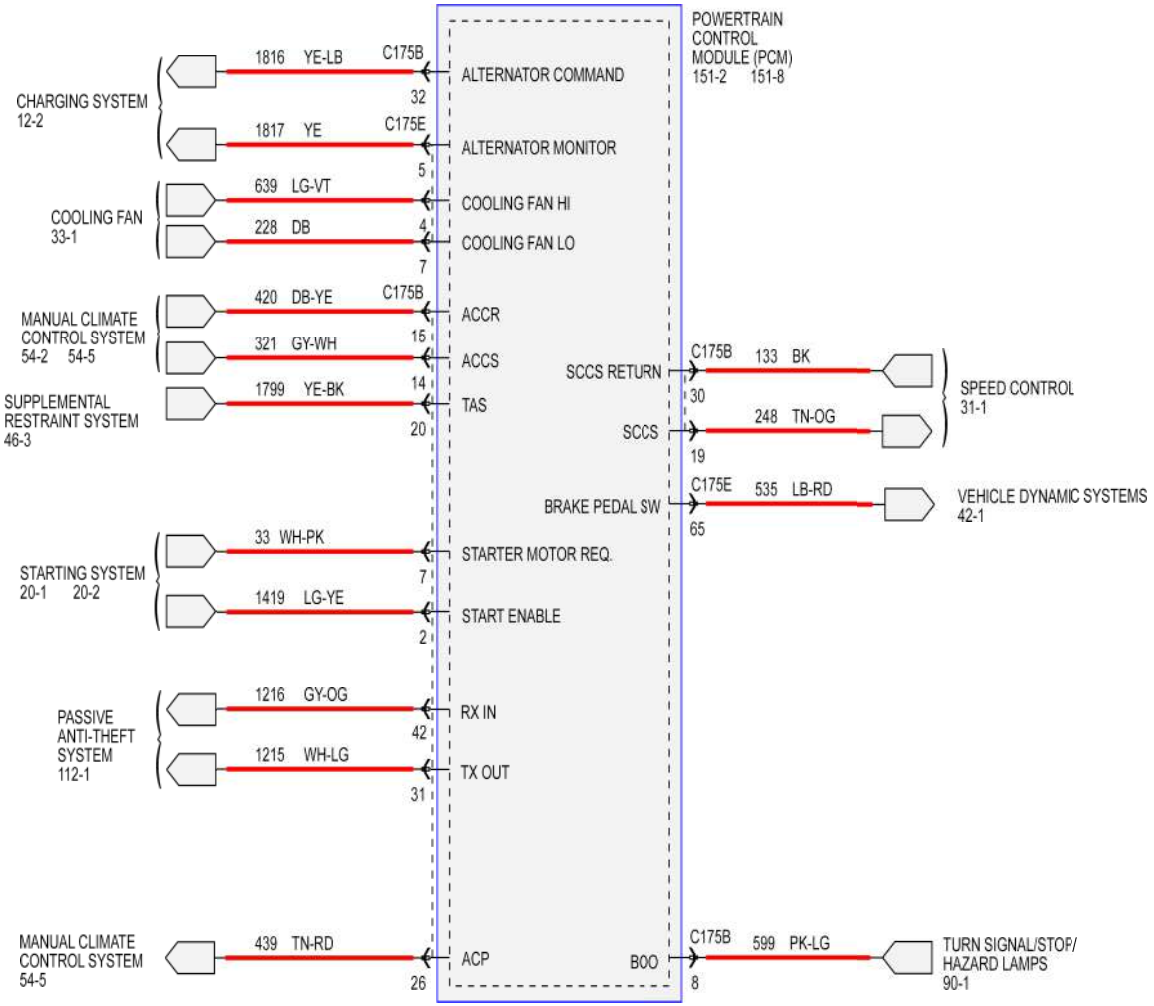
Window Control Switch

NOTE: LH side shown, RH side similar.

NOTE: Coupe shown, convertible similar.



Item	Part Number	Description
1	241A22	Door panel switch plate
2	—	Window control switch electrical connector (part of 14630/14631)
3	14529	Window control switches


POWERTRAIN CONTROL MODULE (PCM) 151-2 151-8
CHARGING SYSTEM 12-2
1816 YE-LB
C175B
32
ALTERNATOR COMMAND
1817 YE
C175E
5
ALTERNATOR MONITOR
COOLING FAN 33-1
639 LG-VT
4
COOLING FAN HI
228 DB
7
COOLING FAN LO
MANUAL CLIMATE CONTROL SYSTEM 54-2 54-5
420 DB-YE
C175B
15
ACCR
321 GY-WH
14
ACCS
SUPPLEMENTAL RESTRAINT SYSTEM 46-3
1799 YE-BK
20
TAS
SCCS RETURN
C175B
133 BK
30
SPEED CONTROL 31-1
SCCS
248 TN-OG
19
BRAKE PEDAL SW
C175E
535 LB-RD
65
VEHICLE DYNAMIC SYSTEMS 42-1
STARTING SYSTEM 20-1 20-2
33 WH-PK
7
STARTER MOTOR REQ.
1419 LG-YE
2
START ENABLE
PASSIVE ANTI-THEFT SYSTEM 112-1
1216 GY-OG
42
RX IN
1215 WH-LG
31
TX OUT
MANUAL CLIMATE CONTROL SYSTEM 54-5
439 TN-RD
26
ACP
B0O
C175B
599 PK-LG
8
TURN SIGNAL/STOP/ HAZARD LAMPS 90-1