GROUP TAB LOCATOR

FASTENER USAGE

DESCRIPTION

DESCRIPTION - FASTENER USAGE

WARNING: USE OF AN INCORRECT FASTENER MAY RESULT IN COMPONENT DAMAGE OR PERSONAL INJURY.

Fasteners and torque specifications references in this Service Manual are identified in metric and SAE format.

During any maintenance or repair procedures, it is important to salvage all fasteners (nuts, bolts, etc.) for reassembly. If the fastener is not salvageable, a fastener of equivalent specification must be used.

DESCRIPTION - THREADED HOLE REPAIR

Most stripped threaded holes can be repaired using a Helicoil®. Follow the vehicle or Helicoil® recommendations for application and repair procedures.

INTERNATIONAL SYMBOLS

DESCRIPTION

The graphic symbols illustrated in the following International Control and Display Symbols Chart (Fig. 3) are used to identify various instrument controls. The symbols correspond to the controls and displays that are located on the instrument panel.

METRIC SYSTEM

DESCRIPTION

The metric system is based on quantities of one, ten, one hundred, one thousand and one million.

The following chart will assist in converting metric units to equivalent English and SAE units, or vise versa.

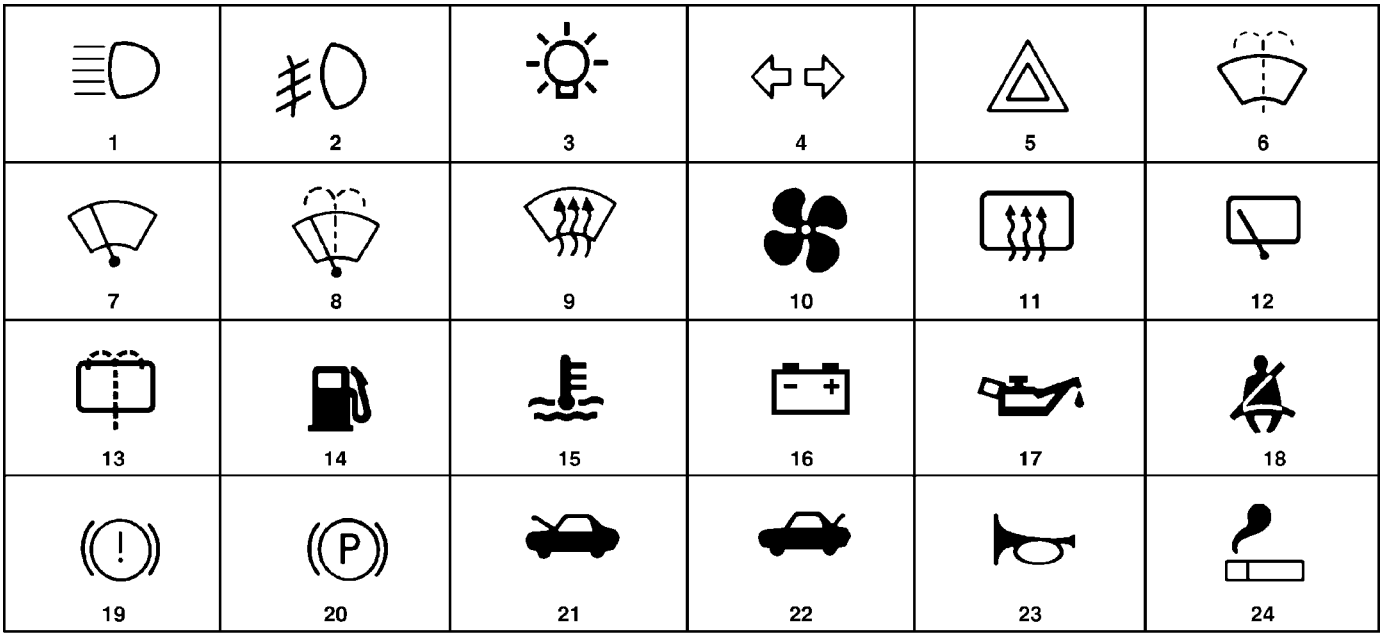

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Fig. 3 INTERNATIONAL CONTROL AND DISPLAY SYMBOLS

1	High Beam	13	Rear Window Washer
2	Fog Lamps	14	Fuel
3	Headlamp, Parking Lamps, Panel Lamps	15	Engine Coolant Temperature
4	Turn Warning	16	Battery Charging Condition
5	Hazard Warning	17	Engine Oil
6	Windshield Washer	18	Seat Belt
7	Windshield Wiper	19	Brake Failure
8	Windshield Wiper and Washer	20	Parking Brake
9	Windscreen Demisting and Defrosting	21	Front Hood
10	Ventilating Fan	22	Rear hood (Decklid)
11	Rear Window Defogger	23	Horn
12	Rear Window Wiper	24	Lighter

FRONT SUSPENSION (Continued)

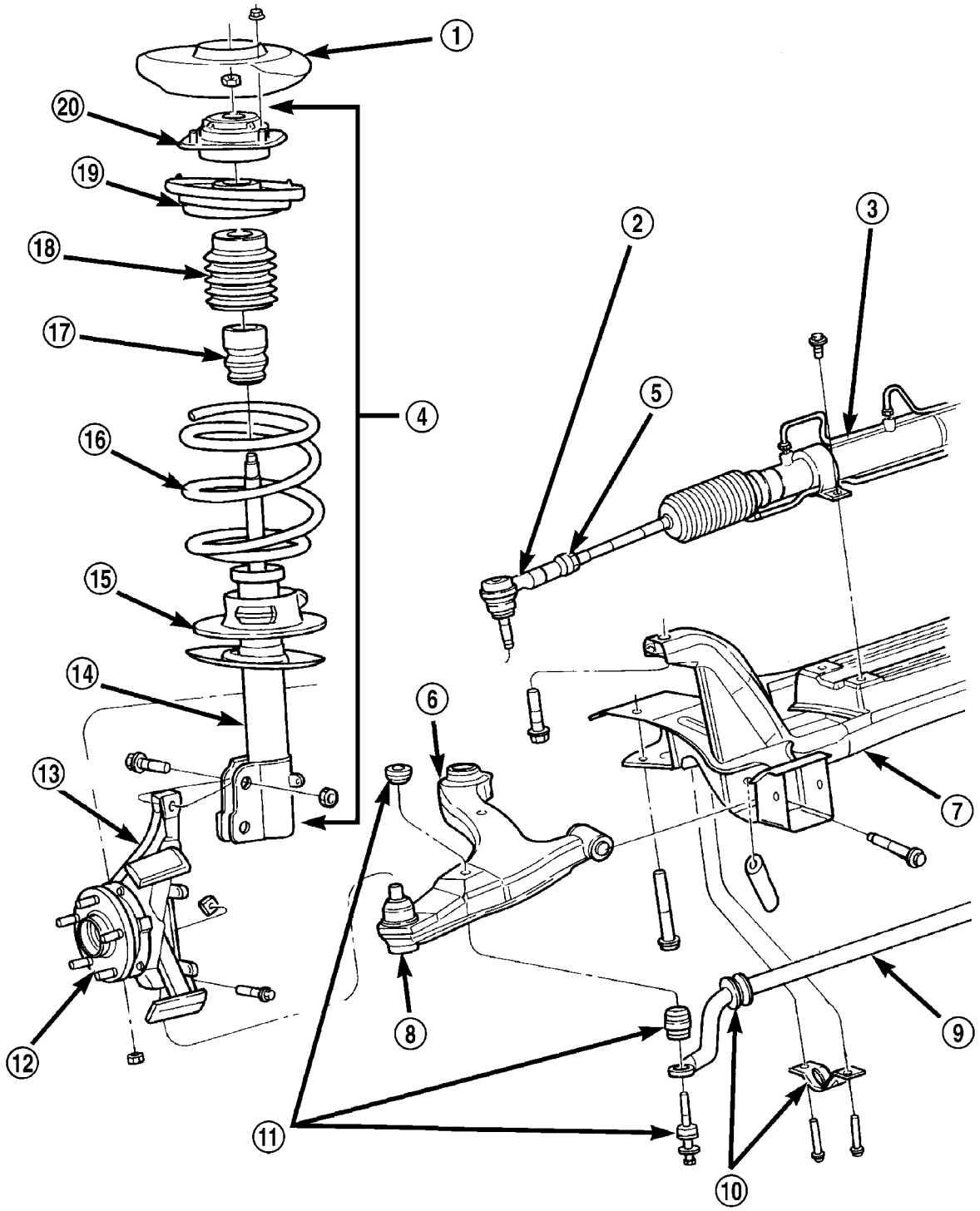

Fig. 1 Front Suspension System

1 - VEHICLE STRUT TOWER
2 - OUTER TIE ROD
3 - STEERING GEAR
4 - STRUT ASSEMBLY
5 - JAM NUT
6 - LOWER CONTROL ARM
7 - CROSSMEMBER
8 - BALL JOINT
9 - STABILIZER BAR
10 - STABILIZER BAR CUSHION AND RETAINER
11 - STABILIZER BAR LINK
12 - HUB
13 - KNUCKLE
14 - STRUT
15 - LOWER SPRING ISOLATOR
16 - COIL SPRING
17 - JOUNCE BUMPER
18 - DUST SHIELD
19 - SPRING SEAT AND BEARING
20 - UPPER MOUNT

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KNUCKLE (Continued)

remove the adapter, rotor shield, parking brake shoes and parking brake cable as an assembly from the knuckle, then hang it out of the way using a wire hanger or cord.

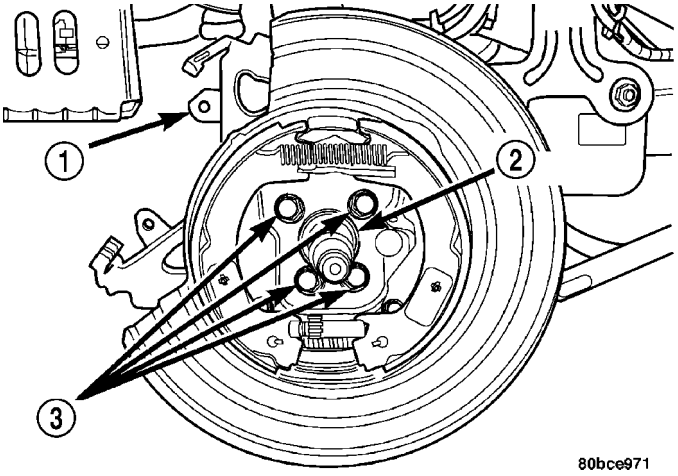


Fig. 6 Disc Brake Adapter Mounting

1 - DISC BRAKE ADAPTER
2 - KNUCKLE
3 - MOUNTING BOLTS

CAUTION: The strut-to-knuckle attaching bolts are serrated and must not be turned during removal. Hold the bolts stationary in the steering knuckle while removing the nuts, then tap the bolts out using a pin punch.

(11) Loosen , but do not completely remove the two nuts and bolts attaching the rear knuckle to the strut (Fig. 7).

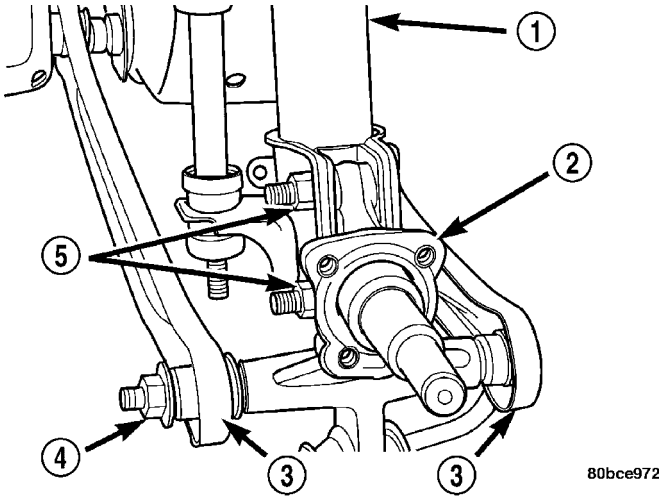


Fig. 7 Rear Knuckle Mounting

1 - STRUT ASSEMBLY
2 - KNUCKLE
3 - LATERAL ARMS
4 - NUT
5 - NUTS

(12) Remove the nuts and bolt attaching the rear knuckle to the lateral arms (Fig. 7).

(13) Disconnect the tension strut from the knuckle. To do this, first hold the tension strut from turning by using a wrench on the flat on the tension strut and then remove the nut from the rear of the tension strut (Fig. 8). Next, remove the tension strut retainer, then the rear tension strut bayonet bushing from the tension strut.

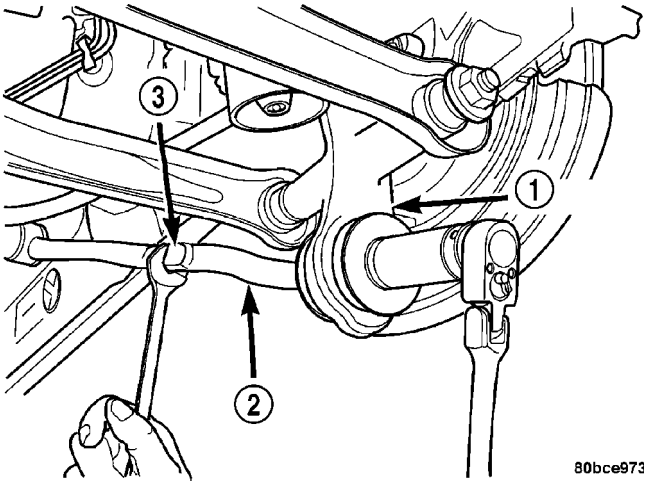


Fig. 8 Tension Strut Nut Removal/Installation

1 - KNUCKLE
2 - TENSION STRUT
3 - FLAT

(14) Remove the two nuts and bolts attaching the rear knuckle to the strut (Fig. 7). Tap the bolts from the knuckle using a pin punch.

(15) Remove the knuckle.

INSTALLATION - KNUCKLE (REAR)

NOTE: Before proceeding with this procedure, (Refer to 2 - SUSPENSION/REAR - WARNING).

(1) To install the knuckle on the vehicle, first align the hole in the lower end of the rear knuckle with the forward bayonet bushing on the tension strut. Be sure the stepped area of the bushing is squarely seated into the hole in the knuckle. Next, Rotate the knuckle until the upper mounting holes in the knuckle is aligned with the holes in the strut's clevis bracket.

CAUTION: The strut-to-knuckle attaching bolts are serrated and must not be turned during installation. Once installed, hold the bolts stationary in the steering knuckle while installing and tightening the nuts.

(2) Install the two bolts attaching the strut to the rear knuckle from the front side. Install the nuts on

INTERMEDIATE SHAFT

TABLE OF CONTENTS

INTERMEDIATE SHAFT

REMOVAL

NOTE: The intermediate shaft support bearing is not serviced separately. Bearing replacement requires shaft assembly replacement.

(1) Remove passenger side halfshaft assembly. (Refer to 3 - DIFFERENTIAL & DRIVELINE/HALF SHAFT - REMOVAL)
(2) Remove two (2) intermediate shaft bearing-to-bracket bolts (Fig. 1).
(3) Slide intermediate shaft/bearing assembly out of transaxle (Fig. 1).

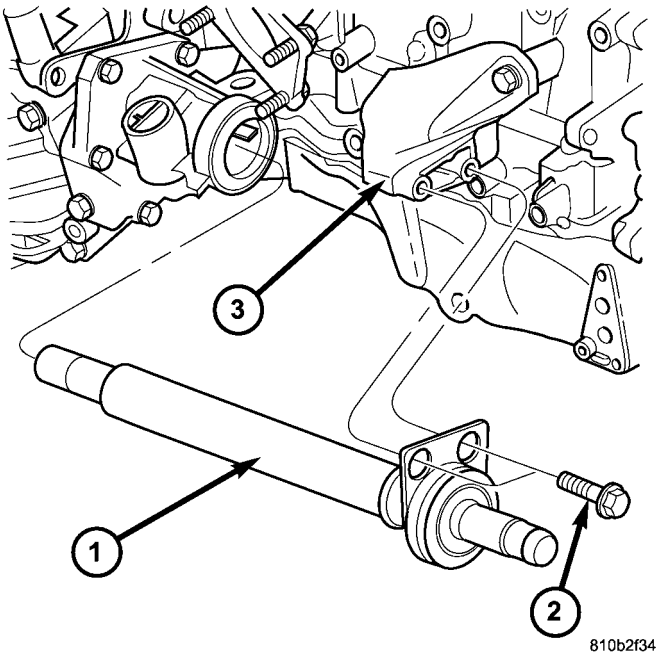


Fig. 1 Intermediate Shaft/Bearing Assembly—2.4L Turbo Models

1 - INTERMEDIATE SHAFT/BEARING ASSEMBLY
2 - BOLT (2)
3 - SUPPORT BRACKET

(4) Inspect transaxle output seal and replace as necessary.
(5) If necessary to remove support bracket, remove two (2) support bracket-to-engine block bolts and remove bracket (Fig. 2).

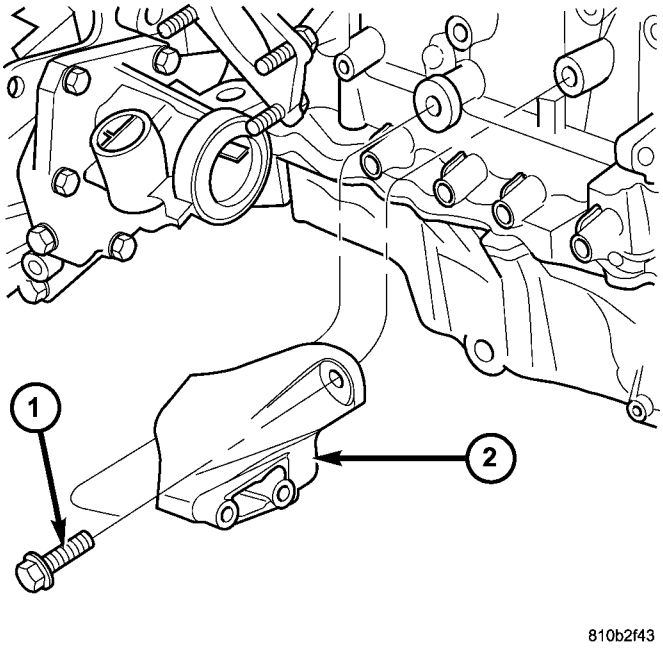


Fig. 2 Intermediate Shaft Support Bracket—2.4L Turbo Models

1 - BOLT (2)
2 - SUPPORT BRACKET

INSTALLATION

NOTE: The intermediate shaft support bearing is not serviced separately. Bearing replacement requires shaft assembly replacement.

(1) If support bracket was removed, install support bracket into position. Install two (2) support bracket-to-engine block bolts and torque to 54 N·m (40 ft. lbs.) (Fig. 2).
(2) Install intermediate shaft into position (Fig. 1). Install two (2) intermediate shaft bearing-to-support bracket bolts and torque to 28 N·m (250 in. lbs.).
(3) Install passenger side halfshaft (Refer to 3 - DIFFERENTIAL & DRIVELINE/HALF SHAFT - INSTALLATION).

DISC BRAKE CALIPERS - REAR (Continued)

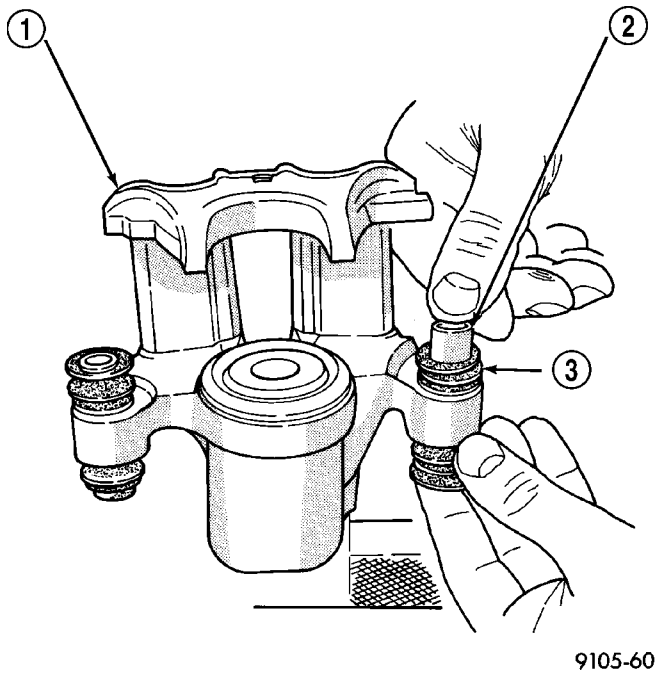


Fig. 82 Installing Sleeve In Bushing

1 - CALIPER
2 - SLEEVE
3 - BUSHING

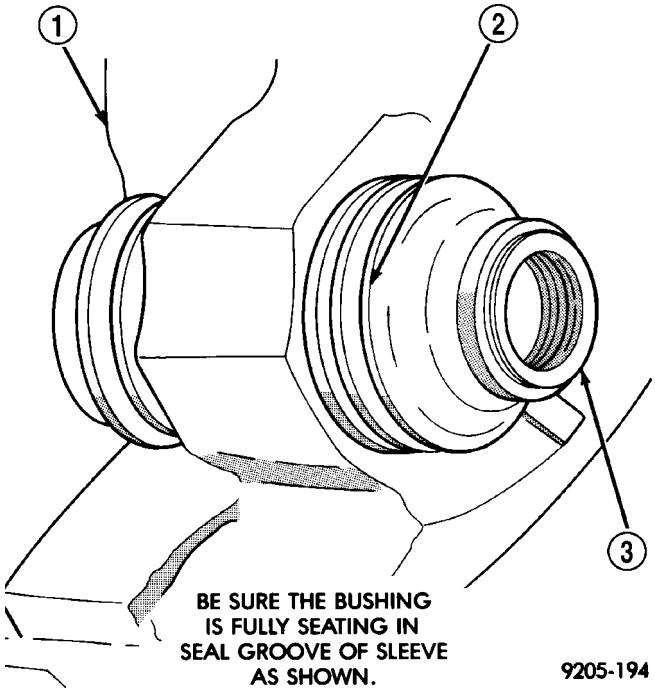


Fig. 83 Correctly Installed Guide Pin Sleeve And Bushing

1 - CALIPER
2 - BUSHING
3 - SLEEVE

ASSEMBLY (PISTON AND SEAL)

NOTE: Never use an old piston seal.

(1) Dip the new piston seal in clean brake fluid and install it in the groove of the caliper bore. The seal should be started at one area of the groove and gently worked around and into the groove (Fig. 84) using only your clean fingers to seat it.

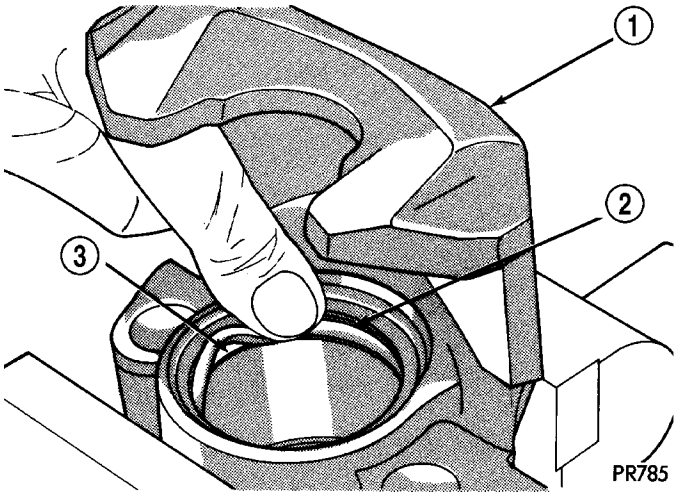


Fig. 84 Installing New Piston Seal

1 - CALIPER
2 - PISTON SEAL
3 - SEAL GROOVE

(2) Coat the new piston boot with clean brake fluid leaving a generous amount inside the boot.

(3) Position the dust boot over the piston after coating it with brake fluid.

CAUTION: Force applied to the piston to seat it in the bore must be applied uniformly to avoid cocking and binding of the piston.

(4) Install piston into caliper bore pushing it past the piston seal until it bottoms in the caliper bore (Fig. 85).

(5) Position the dust boot into the counterbore of the caliper assembly piston bore.

(6) Using a hammer and Installer, Special Tool C-4689, and Handle, Special Tool C-4171, drive the boot into the counterbore of the caliper (Fig. 86).

(7) Install the brake shoes (Refer to 5 - BRAKES/HYDRAULIC/MECHANICAL/BRAKE PADS/SHOES - INSTALLATION).

(8) Reinstall the caliper on the vehicle and bleed the brakes as necessary. (Refer to 5 - BRAKES/HYDRAULIC/MECHANICAL/DISC BRAKE CALIPERS - INSTALLATION).

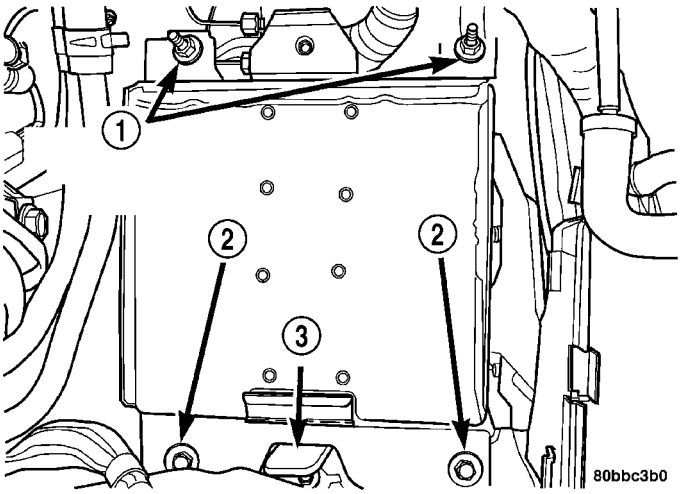


Fig. 17 Battery Tray Mounting

1 - BATTERY TRAY MOUNTING NUTS
2 - BATTERY TRAY MOUNTING BOLTS
3 - AIR CLEANER BOX POST

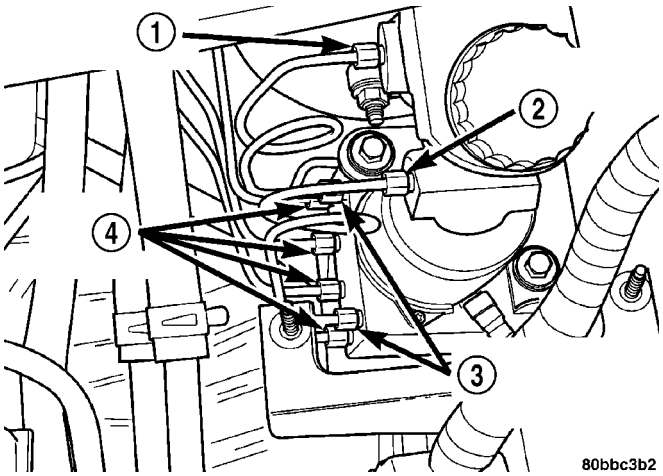


Fig. 18 Brake Tube Locations

1 - PRIMARY BRAKE TUBE
2 - SECONDARY BRAKE TUBE
3 - BRAKE TUBES FROM MASTER CYLINDER
4 - BRAKE TUBES TO BRAKES

done to avoid mix-up once the tubes are removed from the vehicle.

(10) Disconnect and remove the primary and secondary brake tubes coming from the master cylinder at the ICU hydraulic control unit (HCU) (Fig. 18).

(11) Disconnect the brake tubes going to each individual brake at the HCU (Fig. 18).

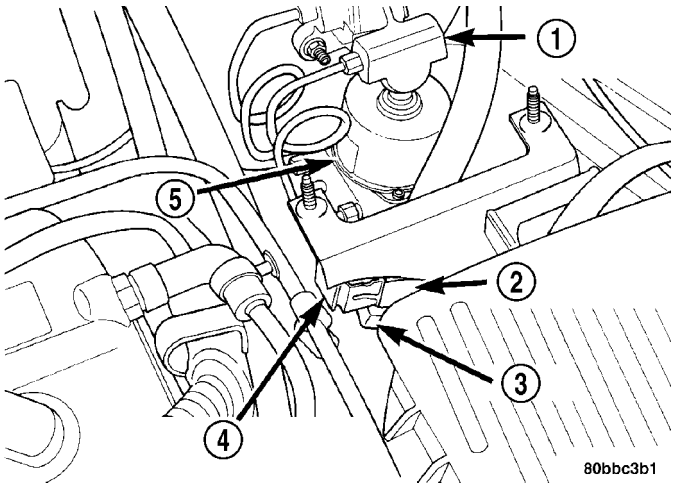


Fig. 19 Connector Lock Pulled Outward

1 - MASTER CYLINDER
2 - 24–WAY CONNECTOR
3 - CAB
4 - CONNECTOR LOCK PULLED OUTWARD
5 - ICU

(12) Remove the 3 bolts attaching the ICU to its mounting bracket. (Fig. 20).

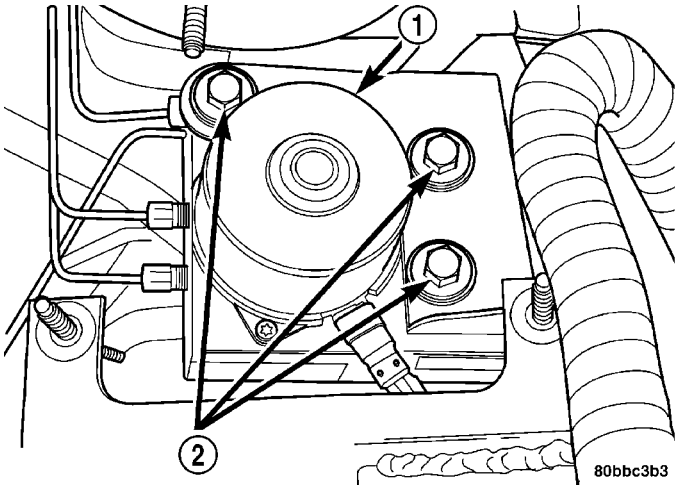


Fig. 20 ICU Mounting Bolts

1 - ICU
2 - ICU MOUNTING BOLTS

(13) Remove the ICU from the vehicle.

(14) If the CAB and HCU must be separated, (Refer to 5 - BRAKES/HYDRAULIC/MECHANICAL/ICU (INTEGRATED CONTROL UNIT) - DISASSEMBLY).

CD CHANGER (Continued)

(3) Remove two retaining screws to CD changer (Fig. 3).

(4) Pull CD changer out of instrument panel and disconnect harness connector from rear of changer (Fig. 3).

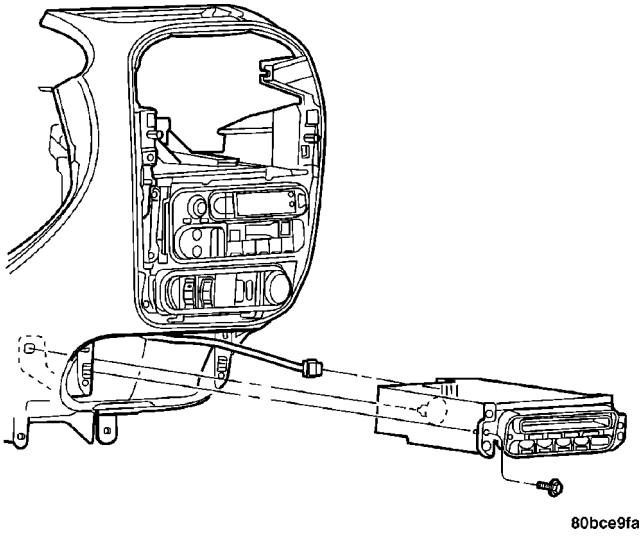


Fig. 3 CD Changer Remove/Install

(5) Remove CD changer from vehicle.

INSTALLATION

(1) Connect harness connector to CD changer.
(2) Install CD changer to vehicle.
(3) Install retaining screws.
(4) Install CD changer bezel.
(5) Connect battery negative cable.

RADIO

DESCRIPTION

Available radios for this vehicle include:

- AM/FM/cassette with CD changer control feature (RBB sales code)
- AM/FM/CD with CD changer control feature (RBK sales code)
- AM/FM/cassette/CD (RBY sales code) - export only
- AM/FM/cassette/CD with CD changer control feature (RAD sales code) - export only

OPERATION

The radio receiver operates on ignition switched battery current that is available only when the ignition switch is in the On or Accessory positions. The electronic digital clock function of the radio operates on fused battery current supplied through the IOD fuse, regardless of the ignition switch position.

For more information on the features, setting procedures, and control functions for each of the available factory-installed radio receivers, refer to the owner's manual.

REMOVAL

(1) Disconnect and isolate the battery negative cable.

(2) Remove instrument panel center bezel (Refer to 23 - BODY/INSTRUMENT PANEL/INSTRUMENT PANEL CENTER BEZEL - REMOVAL).

(3) Remove four mounting screws on the radio and pull out of instrument panel (Fig. 4).

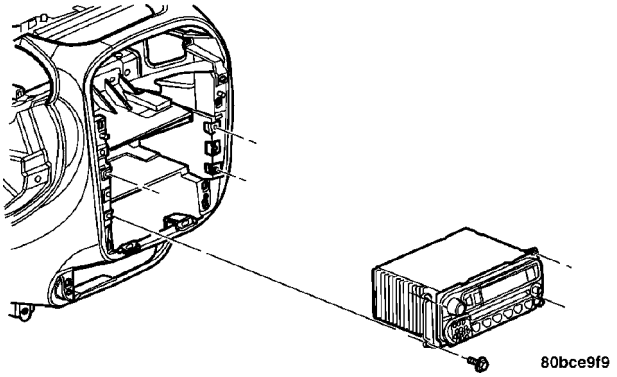


Fig. 4 Radio Remove/Install

CAUTION: Pulling the antenna cable straight out of the radio without pulling on the locking antenna connector could damage the cable or radio.

(4) Disconnect the antenna cable by pulling the locking antenna connector away from the radio (Fig. 5).

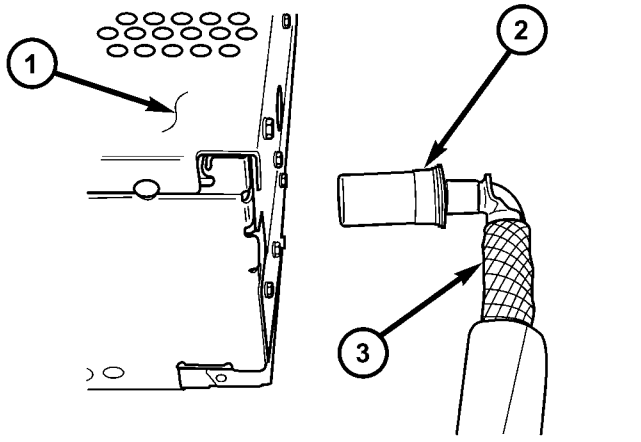


Fig. 5 ANTENNA TO RADIO

1 - RADIO
2 - LOCKING ANTENNA CONNECTOR
3 - INSTRUMENT PANEL ANTENNA CABLE

(5) Disconnect wire harness connector from radio.
(6) Remove radio from vehicle.

DEFOGGER SWITCH (Continued)

equipped). The heated grid lines heat the glass to help clear the surface of fog or frost.

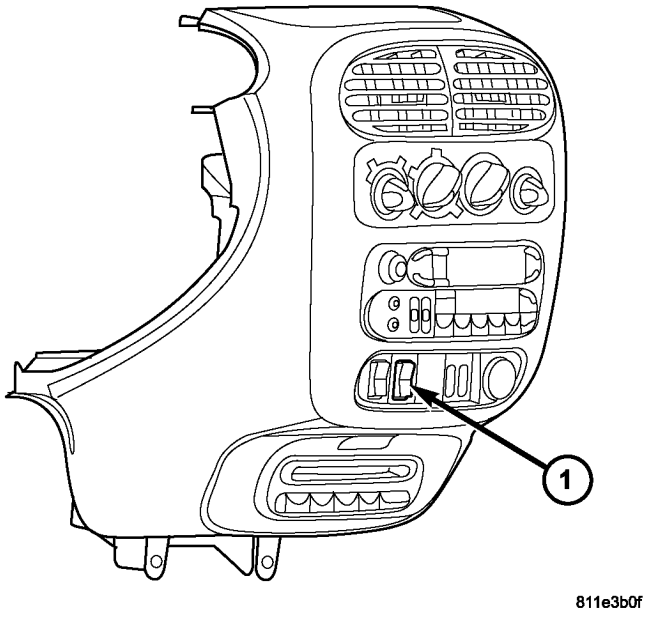


Fig. 3 Rear Window Defogger Switch - Typical

1 - ACCESSORY SWITCH BEZEL

OPERATION

Energizing the rear window defogger relay provides electrical current to the rear window defogger grid and, if the vehicle is so equipped, the outside rear view mirror heating grids. An amber indicator lamp in the defogger switch illuminates to indicate when the defogger system is On.

The rear window defogger switch and indicator lamp cannot be repaired and, if faulty or damaged, the rear window defogger switch must be replaced.

DIAGNOSIS AND TESTING - DEFOGGER SWITCH

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, DISABLE THE AIRBAG SYSTEM BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. DISCONNECT AND ISOLATE THE BATTERY NEGATIVE (GROUND) CABLE, THEN WAIT TWO MINUTES FOR THE AIRBAG SYSTEM CAPACITOR TO DISCHARGE BEFORE PERFORMING FURTHER DIAGNOSIS OR SERVICE. THIS IS THE ONLY SURE WAY TO DISABLE THE AIRBAG SYSTEM. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN AN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

NOTE: The rear window defogger switch may be tested in the vehicle or out of the vehicle, on a bench.

For rear window defogger switch circuit descriptions and diagrams, refer to Appropriate Wiring Information.

IN-VEHICLE TESTING

(1) Remove the rear window defogger switch from the instrument panel, but leave the switch connected (Refer to 23 - BODY/INSTRUMENT PANEL/ACCESSORY SWITCH BEZEL - REMOVAL).

(2) Turn the ignition switch ON.

(3) Using a voltmeter, check for battery voltage at Pin 1 and 2 of the rear window defogger switch (Fig. 4).

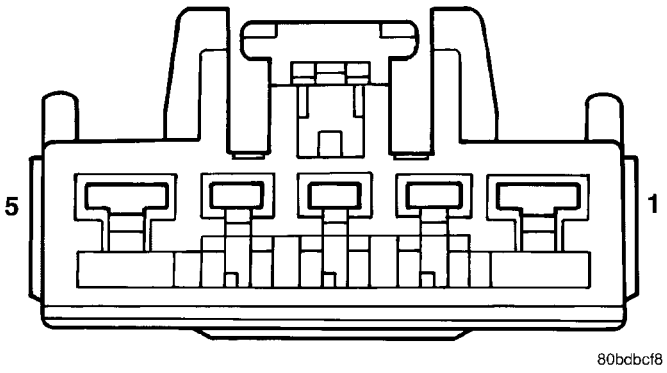


Fig. 4 Rear Window Defogger Switch Harness Connector

REAR WINDOW DEFOGGER SWITCH AND HARNESS CONNECTOR PIN CALL-OUT

PIN	FUNCTION
1	FUSED B+
2	FUSED IGNITION SWITCH OUTPUT (RUN)
3	GROUND
4	PANEL LAMPS DRIVER
5	PANEL LAMPS DRIVER

(a) If OK, go to Step 4.

(b) If NOT OK, check the 10 Amp fuse 6 in the fuse block and the 40 Amp fuse 8 in the Power Distribution Center (PDC). If fuses are OK, check wiring circuit. Refer to Wiring Diagrams.

(4) Check Pin 5, with switch in the ON position there should be battery voltage and no voltage in the OFF position.

(a) If OK, go to Step 5.

(b) If NOT OK, no voltage in the ON position or voltage in the OFF position. Replace the switch.

REAR FOG LAMP

DESCRIPTION

Therear fog lamps can be found in the rear of the vehicle, integrated into the rear tail lamp assembly. Rear fog lamps utilize a red lens and clear bulb.

OPERATION

The rear fog lamps are turned ON and OFF with the rear fog lamp switch. (Refer to 8 - ELECTRICAL/ LAMPS/LIGHTING - EXTERIOR/FOG LAMP SWITCH - OPERATION). Refer to Wiring Diagrams for a complete system schematic.

DIAGNOSIS AND TESTING - REAR FOG LAMP - EXPORT

Refer to Wiring Diagrams for a complete system schematic.

(1) Remove the rear fog lamp bulb and check for burned out condition. Replace bulb if necessary.

(2) If bulb appears OK, reinstall the bulb in its socket and rotate the ignition switch to the “ON” position. Turn the rear fog lamp “ON” and check for lamp operation. If lamp is still inoperative proceed to Step 3

(3) Remove lamp bulb and check for proper power (12v) and ground connections in lamp socket. If power and/or ground connections are not present, trace wire until open or short is found. Refer to Wiring Diagrams for a complete system schematic.

REMOVAL

REAR FOG LAMP UNIT

(1) Disconnect and isolate the battery negative cable.

(2) Remove the appropriate two rear fog lamp retaining screws.

(3) Pull the fog lamp assembly from the rear bumper fascia.

(4) Rotate and pull the lamp socket from the lamp housing.

(5) Remove lamp assembly from vehicle.

REAR FOG LAMP BULB

(1) Remove the fog lamp unit from the rear bumper fascia (Refer to 8 - ELECTRICAL/LAMPS/ LIGHTING - EXTERIOR/FOG LAMP - REMOVAL).

(2) Pull bulb out of socket and replace bulb (Fig. 24).

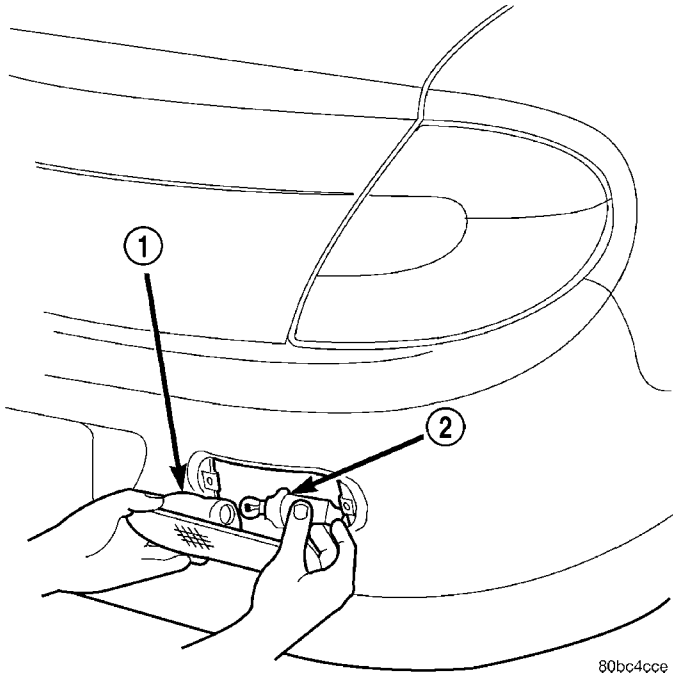


Fig. 24 REAR FOG LAMP SOCKET

1 - REAR FOG LAMP
2 - REAR FOG LAMP SOCKET

INSTALLATION

REAR FOG LAMP UNIT

(1) Install the lamp socket into the lamp housing.

(2) Install the lamp assembly into rear bumper fascia.

(3) Install the appropriate two rear fog lamp retaining screws.

(4) Connect the battery negative cable.

REAR FOG LAMP BULB

(1) Push in bulb (Fig. 24).

(2) Install the fog lamp unit into the rear bumper fascia (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR/FOG LAMP - INSTALLATION).

SEAT BELT BUCKLE - FRONT (Continued)

(1) Place seat belt buckle in position on seat anchor.
(2) Install bolt and grommet attaching seat belt buckle to seat anchor. Tighten seat belt anchor bolt to 40 N·m (30 ft. lbs.) torque.

SEAT BELT BUCKLE - REAR

REMOVAL

(1) Remove rear seat cushion.
(2) Remove rear seat belt buckle bolt.
(3) Remove rear seat belt buckle from vehicle.

INSTALLATION

(1) Install rear seat belt buckle. Tighten the seat belt nut to 57 N·m (42 ft. lbs.) torque.
(2) Install rear seat cushion.

SHOULDER BELT HEIGHT ADJUSTER

REMOVAL

CAUTION: Front seat belt assemblies must be replaced after a collision.

(1) Remove B-pillar trim (Fig. 13).
(2) Remove the two bolts attaching shoulder belt adjuster to B-pillar (Fig. 23).
(3) Remove shoulder belt adjuster from vehicle.

INSTALLATION

CAUTION: Front seat belt assemblies must be replaced after a collision.

CAUTION: Front seat belt adjuster must be in the lowest position when Installing adjuster knob.

(1) Place into position the shoulder belt adjuster.
(2) Install bolts attaching shoulder belt adjuster to B-pillar. Tighten all seat belt bolts to 40 N·m (30 ft. lbs.) torque.
(3) Install B-pillar trim.

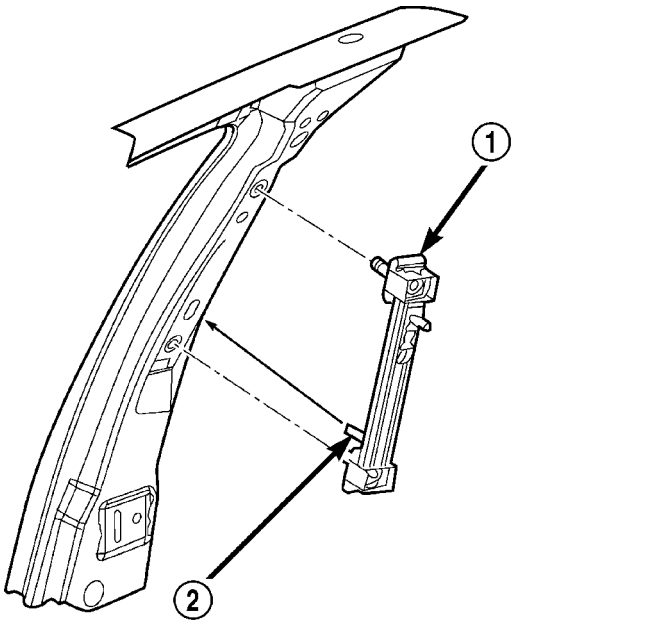


Fig. 23 FRONT SHOULDER BELT ADJUSTER

1 - FRONT SHOULDER BELT ADJUSTER
2 - TAB IS ON BOTTOM

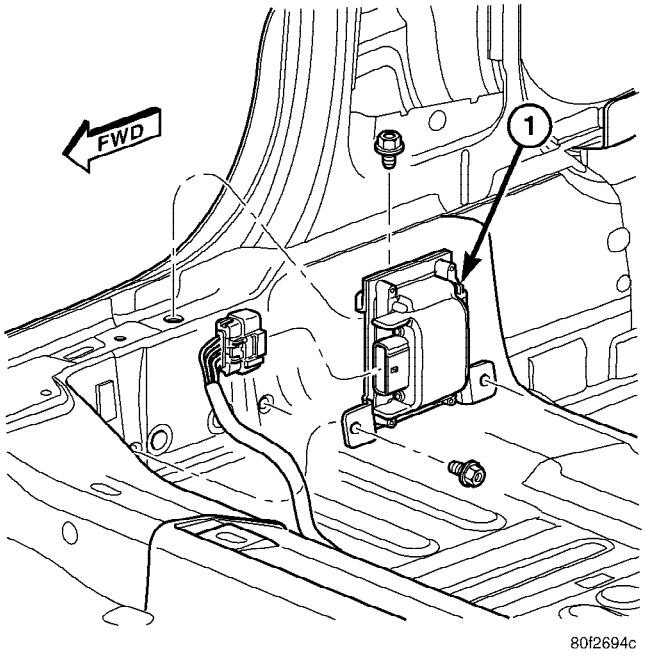


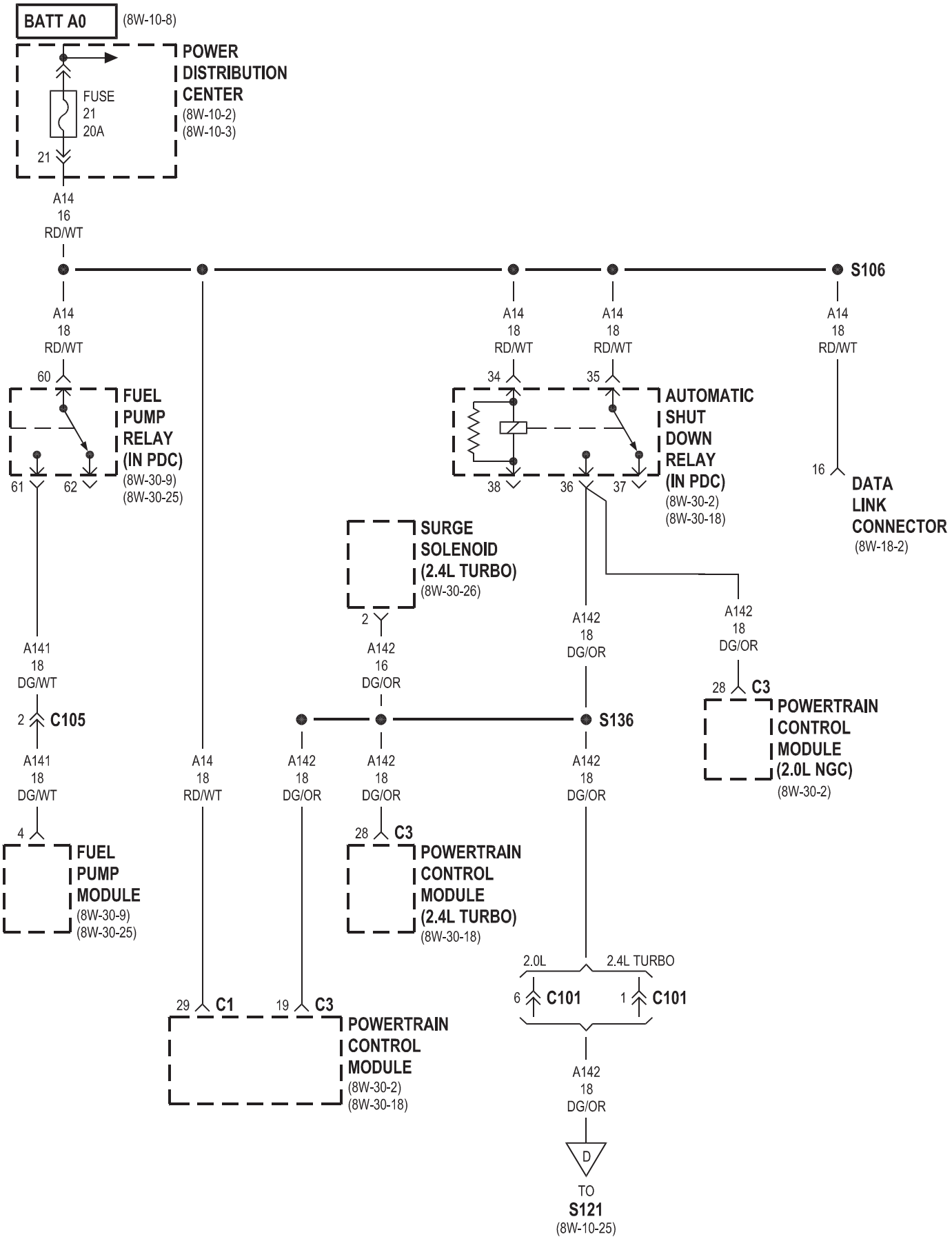
Fig. 24 SIDE IMPACT AIRBAG CONTROL MODULE (SIACM) LOCATION

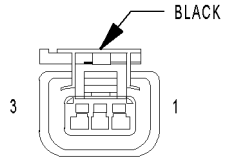
1 - SIDE IMPACT AIRBAG CONTROL MODULE (SIACM)

SIDE IMPACT AIRBAG CONTROL MODULE

DESCRIPTION

Vehicles equipped with side airbags use two Side Impact Airbag Control Modules (SIACM's). One is located on each side of the vehicle just in front of the body B-pillar (Fig. 24) inboard of the door entry sill, covered by the door sill trim.

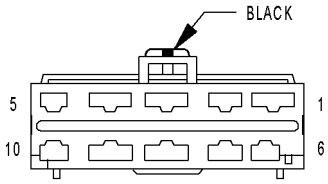

BATT A0
(8W-10-8)
POWER DISTRIBUTION CENTER
(8W-10-2)
(8W-10-3)
FUSE
21
20A
21
A14
16
RD/WT
S106
A14
18
RD/WT
60
FUEL PUMP RELAY (IN PDC)
(8W-30-9)
(8W-30-25)
61
62
34
35
AUTOMATIC SHUT DOWN RELAY (IN PDC)
(8W-30-2)
(8W-30-18)
38
36
37
16
DATA LINK CONNECTOR
(8W-18-2)
SURGE SOLENOID (2.4L TURBO)
(8W-30-26)
2
A142
16
DG/OR
A142
18
DG/OR
A141
18
DG/WT
2
C105
28
C3
POWERTRAIN CONTROL MODULE (2.0L NGC)
(8W-30-2)
S136
4
FUEL PUMP MODULE
(8W-30-9)
(8W-30-25)
28
C3
POWERTRAIN CONTROL MODULE (2.4L TURBO)
(8W-30-18)
2.0L
2.4L TURBO
6
C101
1
C101
29
C1
19
C3
POWERTRAIN CONTROL MODULE
(8W-30-2)
(8W-30-18)
D
TO
S121
(8W-10-25)



IGNITION COIL

IGNITION COIL - BLACK 3 WAY

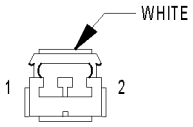
CAV	CIRCUIT	FUNCTION
1	K17 18DB/TN (2.0L)	COIL CONTROL NO. 2
1	K17 16DB/TN (2.4L TURBO)	COIL CONTROL NO. 2
2	A142 18DG/OR	AUTOMATIC SHUT DOWN RELAY OUTPUT
3	K19 18BK/GY (2.0L)	COIL CONTROL NO. 1
3	K19 16BK/GY (2.4L TURBO)	COIL CONTROL NO. 1



IGNITION SWITCH C1

IGNITION SWITCH C1 - BLACK 10 WAY

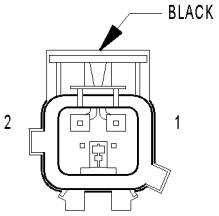
CAV	CIRCUIT	FUNCTION
1	A1 14RD	FUSED B(+)
2	A21 14DB	IGNITION SWITCH OUTPUT (RUN-START)
3	F30 16RD/BK	IGNITION SWITCH OUTPUT (RUN-ACC)
4	F1 16DB/BK	FUSED B(+)
5	G26 22LB	KEY-IN IGNITION SWITCH SENSE
6	A41 14YL	IGNITION SWITCH OUTPUT (START)
7	A31 14BK/WT	IGNITION SWITCH OUTPUT (RUN-ACC)
8	A22 12BK/OR	IGNITION SWITCH OUTPUT (RUN)
9	A2 12PK/BK	FUSED B(+)
10	-	-



IGNITION SWITCH C2

IGNITION SWITCH C2 - WHITE 2 WAY

CAV	CIRCUIT	FUNCTION
1	A81 20DG/RD	FUSED B(+)
2	F11 20RD/WT (AUTOSTICK)	IGNITION SWITCH OUTPUT (OFF-RUN-START)



INLET AIR TEMPERATURE SENSOR

INLET AIR TEMPERATURE SENSOR - BLACK 2 WAY

CAV	CIRCUIT	FUNCTION
1	K21 20BK/RD	IAT SIGNAL
2	K167 20BR/YL (2.0L)	SENSOR GROUND 2
2	K4 20BK/LB (2.4L TURBO)	SENSOR GROUND

CONNECTOR/GROUND/SPLICE LOCATION (Continued)

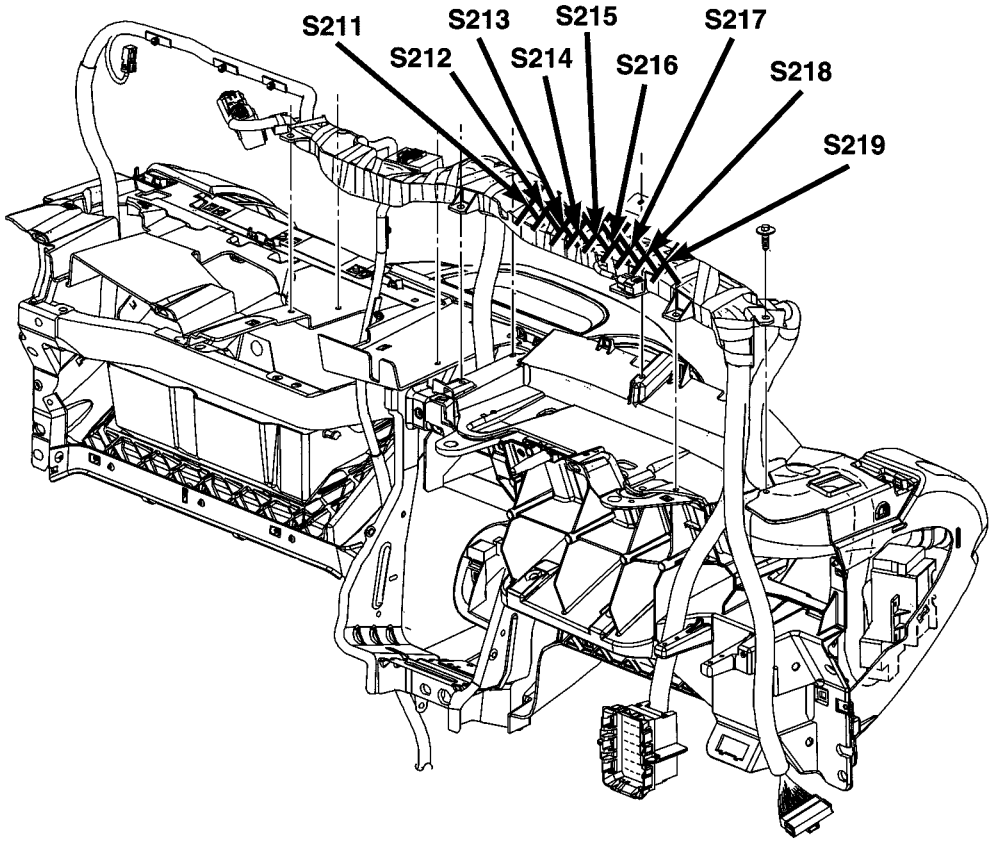


Fig. 23 INSTRUMENT PANEL SPLICES (TOP REAR) - LHD

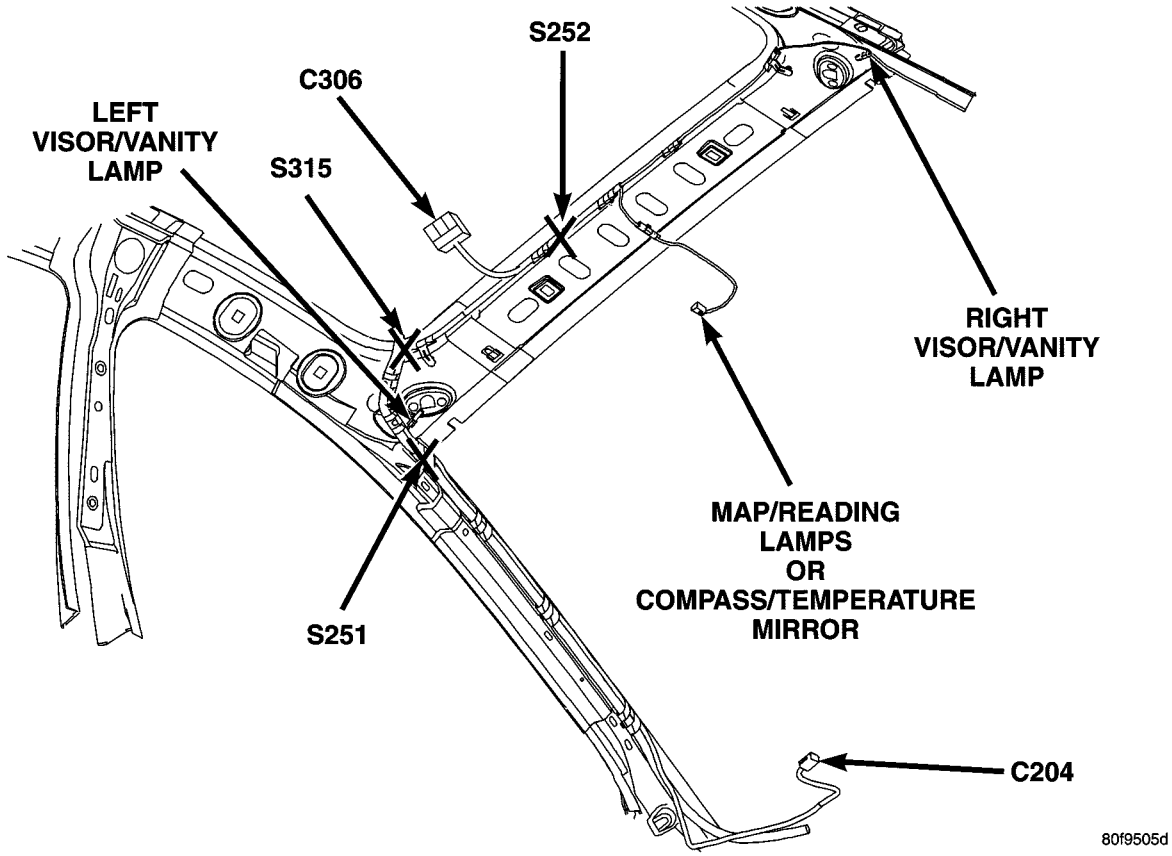


Fig. 24 ROOF - LHD

T350 MANUAL TRANSAXLE (Continued)

(5) Place two screwdrivers into the slots provided in the case halves near the dowels (Fig. 17). Separate the case halves (Fig. 18).

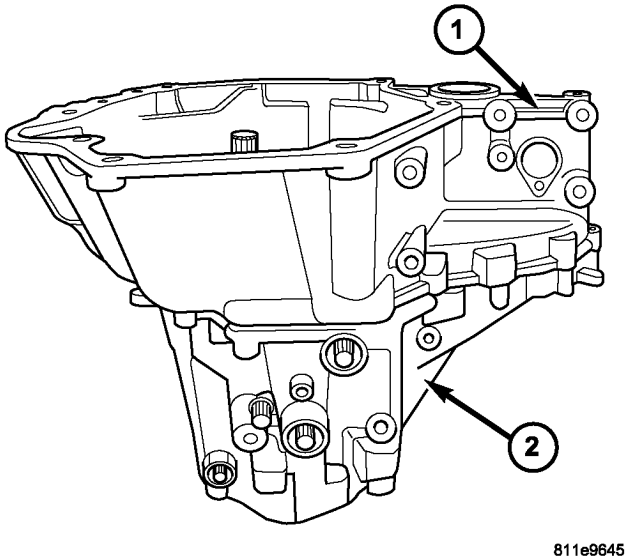


Fig. 17 Transaxle Case Halves

1 - BELLHOUSING HALF
2 - GEARTRAIN HALF

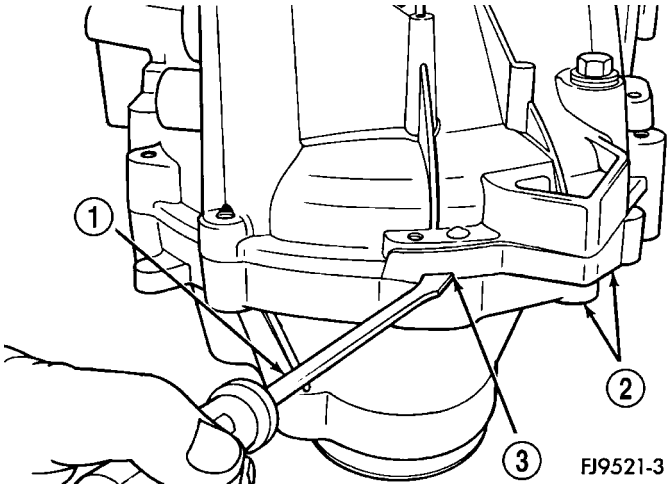


Fig. 18 Separate Case Halves

1 - PRY TOOL
2 - CASE HALVES
3 - PRY SLOT

(6) Remove bellhousing half from gear case half (Fig. 19).

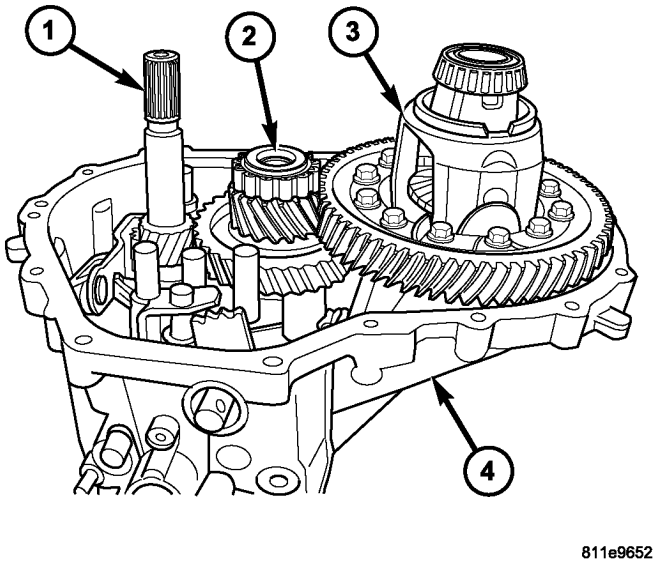


Fig. 19 Bellhousing Case Half Removed

1 - INPUT SHAFT
2 - OUTPUT SHAFT
3 - DIFFERENTIAL ASSEMBLY
4 - GEARTRAIN HOUSING

(7) Remove output shaft roller bearing from output shaft.

(8) Remove differential assembly from housing (Fig. 20).

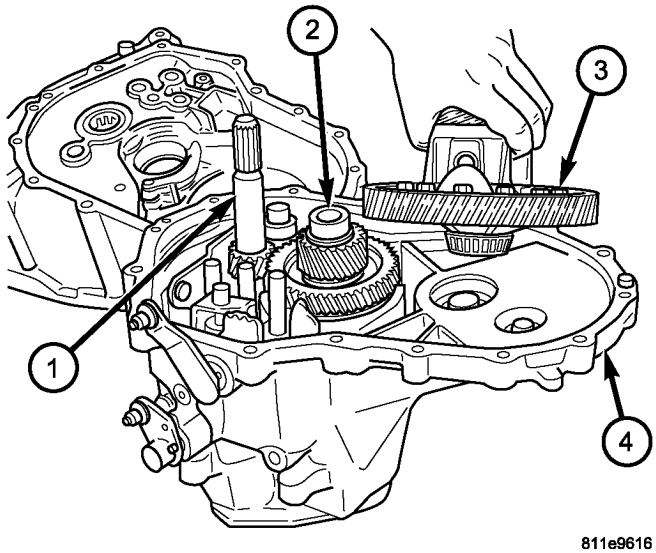


Fig. 20 Differential Removal/Installation

1 - INPUT SHAFT
2 - OUTPUT SHAFT
3 - DIFFERENTIAL ASSEMBLY
4 - GEARTRAIN HOUSING