REMOVAL AND INSTALLATION (Continued)

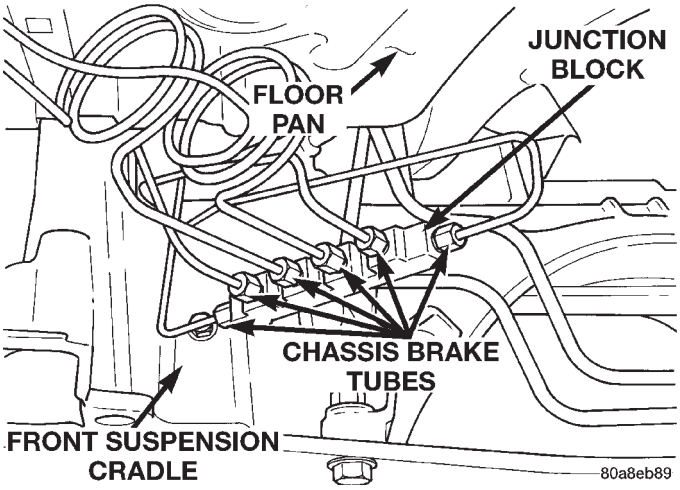


Fig. 129 Junction Block Brake Tubes

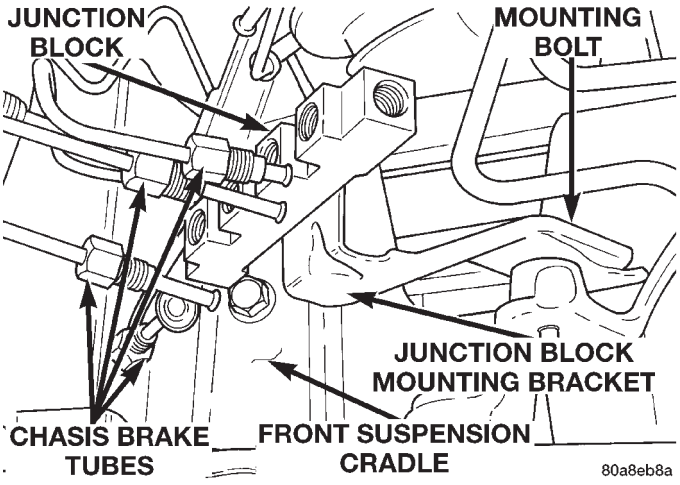


Fig. 130 Junction Block Mounting

Tighten all 6 tube nuts to a torque of 16 N·m (145 in. lbs.).

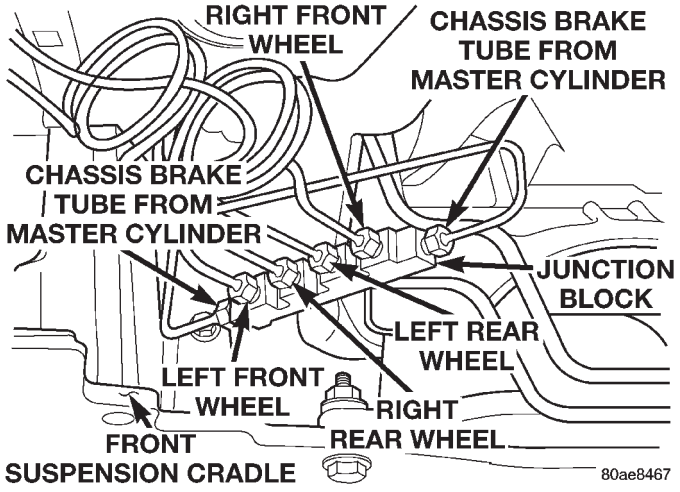


Fig. 131 Brake Tube Connections To Junction Block

(3) Bleed the brake system thoroughly to ensure that all air has been expelled from the hydraulic system. See Bleeding Brake System in the Service Adjustments section in this group of the service manual for the proper bleeding procedure.

(4) Lower the vehicle.

(5) Road test the vehicle to verify proper operation of the vehicles brake system.

PROPORTIONING VALVE (W/ABS BRAKES)

The actual proportioning valves of the proportioning valve assembly are not serviceable or replaceable. If a proportioning valve of the proportioning valve assembly is not functioning properly, the fixed proportioning valve must be replaced as an assembly.

REMOVE

(1) Using a brake pedal depressor, move and lock the brake pedal to a position past its first 1 inch of travel. This will prevent brake fluid from draining out of the master cylinder when the brake tubes are removed from the proportioning valve.

(2) Raise vehicle on jackstands or centered on a hoist. See Hoisting in the Lubrication And Maintenance Group of this service manual.

CAUTION: Before removing the brake tubes from the proportioning valve, the proportioning valve and the brake tubes must be thoroughly cleaned. This is required to prevent contamination from entering the proportioning valve or the brake tubes.

(3) Remove the 4 chassis brake lines from the inlet and outlet ports of the proportioning valve (Fig. 132).

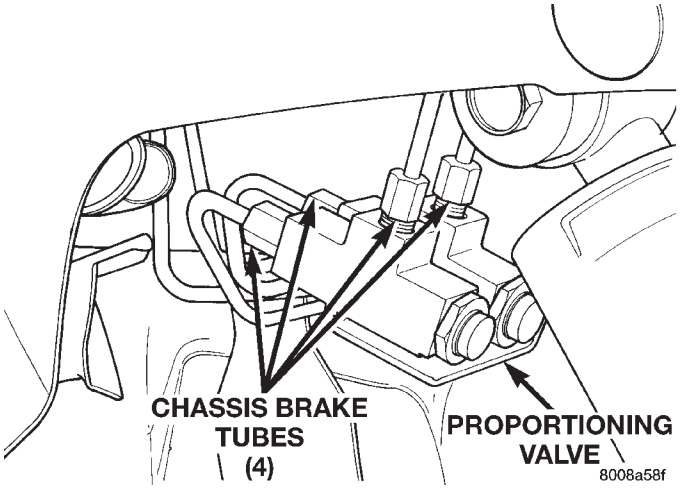


Fig. 132 Chassis Brake Tubes At Proportioning Valve

(4) Remove the bolts (Fig. 133) attaching the proportioning valve bracket to the frame rail of the vehicle. Remove the fixed proportioning valve assembly from the vehicle.

REMOVAL AND INSTALLATION (Continued)

CAUTION: When unplugging speed sensor cable from vehicle wiring harness be careful not to damage pins on the electrical connectors. Also inspect connectors for any signs of previous damage.

(3) Remove grommet from floor pan of vehicle and unplug speed sensor cable connector from vehicle wiring harness (Fig. 38).

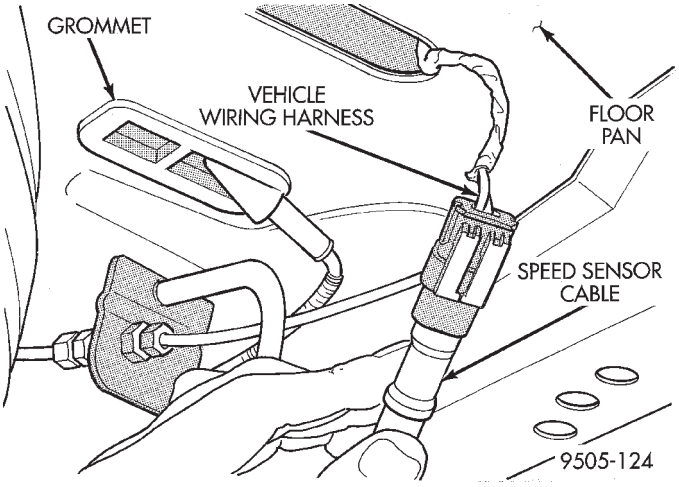


Fig. 38 Rear Speed Sensor Cable Connection To Vehicle Wiring Harness

CAUTION: When removing rear wheel speed sensor cable from routing clips on rear brake flex hose, be sure not to damage the routing clips. Routing clips are molded onto the hose and will require replacement of the brake flex hose if damaged during removal of the speed sensor cable.

(4) Carefully remove the speed sensor cable from the rear brake flex hose routing clips (Fig. 39).

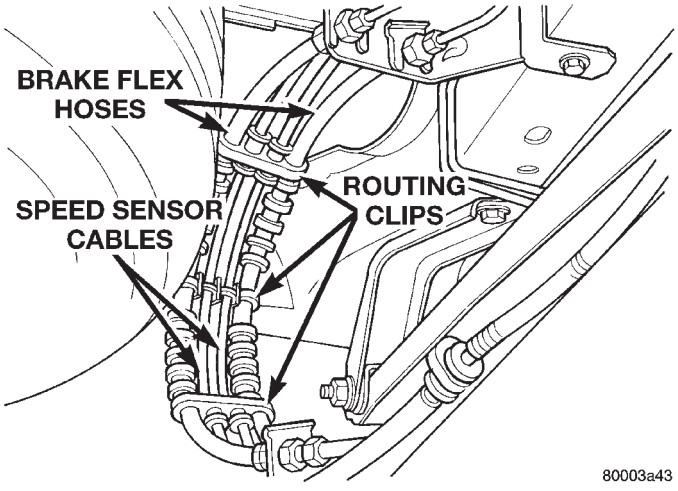


Fig. 39 Speed Sensor Cable Attachment To Brake Flex Hose

(5) If removing the right rear speed sensor cable, remove the speed sensor cable grommet from the axle flange, the brake tube clip and the routing clip from the track bar bracket on the axle (Fig. 40).

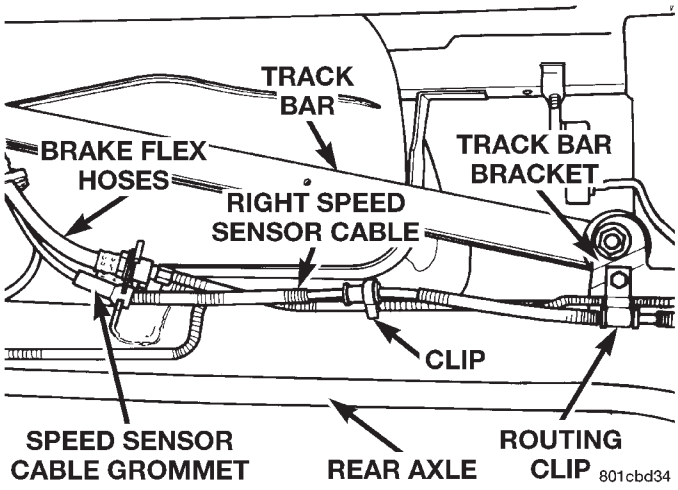


Fig. 40 Right Rear Speed Sensor Cable Routing

(6) Remove the 2 rear wheel speed sensor cable/brake tube routing clips (Fig. 41). Then un-clip the speed sensor cable from the routing clips on rear brake tube (Fig. 41).

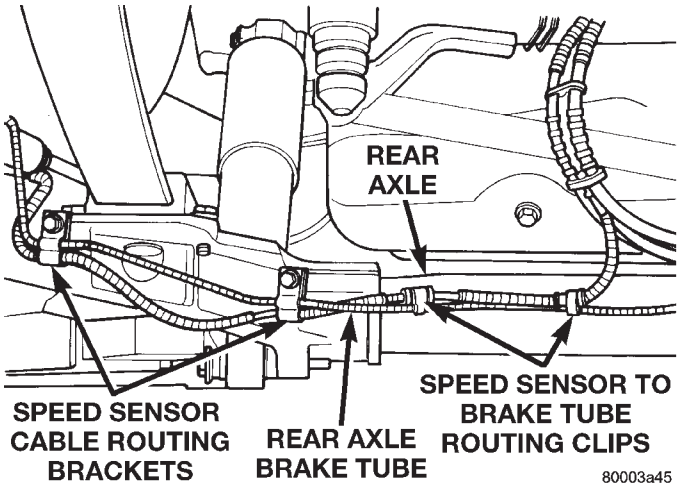


Fig. 41 Rear Speed Sensor Routing Brackets And Clips

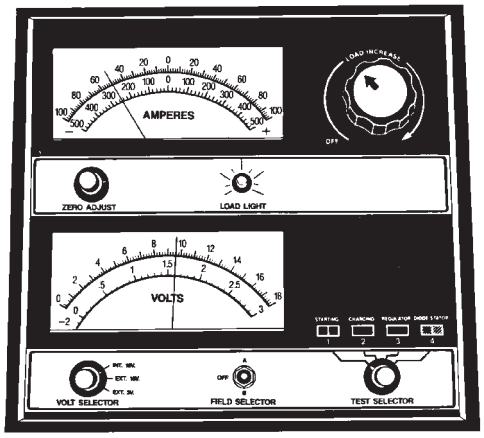
CAUTION: If the speed sensor has seized, due to corrosion, do not use pliers on speed sensor head in a attempt to remove it. Use a hammer and a punch and tap edge of sensor, rocking the sensor from side to side until free.

(7) Remove the wheel speed sensor head to rear bearing attaching bolt (Fig. 42). If sensor head does not come loose, do not use pliers. Tap with screw driver and hammer.

(8) Remove the wheel speed sensor head from the rear bearing assembly.

(9) Remove speed sensor assembly from vehicle.

DIAGNOSIS AND TESTING (Continued)



898A-11

Fig. 8 Load 50% Cold Crank Rating

Load Test Temperature		
Minimum Voltage	Temperature	
	°F	°C
9.6 volts	70° and above	21° and above
9.5 volts	60°	16°
9.4 volts	50°	10°
9.3 volts	40°	4°
9.1 volts	30°	-1°
8.9 volts	20°	-7°
8.7 volts	10°	-12°
8.5 volts	0°	-18°

(6) If battery passes load test, it is in good condition and further tests are not necessary. If it fails load test, it should be replaced.

BATTERY OPEN CIRCUIT VOLTAGE TEST

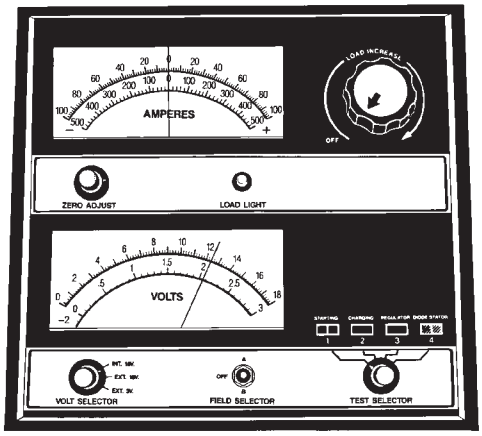
An open circuit voltage no load test shows the state of charge of a battery and whether it is ready for a load test at 50 percent of the battery's cold crank rating. Refer to Battery Load Test. If a battery has open circuit voltage reading of 12.4 volts or greater, and will not pass the load test, replace the battery because it is defective. To test open circuit voltage, perform the following operation.

(1) Remove both battery cables, negative cable first. Battery top, cables and posts should be clean. If green dot is not visible in indicator, charge the battery. Refer to Battery Charging Procedures.

(2) Connect a Volt/Ammeter/Load tester to the battery posts (Fig. 6). Rotate the load control knob of the Carbon pile rheostat to apply a 300 amp load. Apply this load for 15 seconds to remove the surface charge from the battery, and return the control knob to off (Fig. 7).

(3) Allow the battery to stabilize for 2 minutes, and then verify the open circuit voltage (Fig. 9).

(4) This voltage reading will approximate the state of charge of the battery. It will not reveal battery cranking capacity (Fig. 10).



898A-7

Fig. 9 Testing Open Circuit Voltage

Open Circuit Volts	Percent Charge
11.7 volts or less	0%
12.0	25%
12.2	50%
12.4	75%
12.6 or more	100%

928A-3

Fig. 10 Battery Open Circuit Voltage

SERVICE PROCEDURES

BATTERY CHARGING

WARNING: DO NOT CHARGE A BATTERY THAT HAS EXCESSIVELY LOW ELECTROLYTE LEVEL. BATTERY MAY SPARK INTERNALLY AND EXPLODE. EXPLOSIVE GASES FORM OVER THE BATTERY. DO NOT SMOKE, USE FLAME, OR CREATE SPARKS NEAR BATTERY. DO NOT ASSIST BOOST OR CHARGE A FROZEN BATTERY. BATTERY CASING MAY FRACTURE. BATTERY ACID IS POISON, AND MAY CAUSE SEVERE BURNS. BATTERIES CONTAIN SULFURIC ACID. AVOID CONTACT WITH SKIN, EYES, OR CLOTHING. IN THE EVENT OF CONTACT, FLUSH WITH WATER AND CALL PHYSICIAN IMMEDIATELY. KEEP OUT OF REACH OF CHILDREN.

DIAGNOSIS AND TESTING (Continued)

CALIBRATION TEST

When CHEC-1 is displayed in the odometer window, each of the cluster's gauge pointers will move sequentially through each calibration point. The Calibration Table contains the proper calibration points for each gauge. If the gauge pointers are not calibrated, a problem exists in the cluster. If any gauge is out of calibration it will have to be calibrated using a scan tool (DRB III). Refer to the proper Body Diagnostic Procedure Manual for calibration procedures.

ODOMETER SEGMENT TEST

When CHEC-2 is displayed in the odometer window, each digit of the odometer will illuminate sequentially. If a segment in the odometer does not illuminate normally, a problem exists in the display.

CONDITIONS

Refer to the following charts for possible/problems/causes and corrections.

- Instrument Cluster
- Speedometer
- Tachometer
- Fuel Gauge
- Temperature Gauge
- Odometer

INSTRUMENT CLUSTER DIAGNOSIS

CONDITION	POSSIBLE CAUSES	CORRECTION
INSTRUMENT CLUSTER INOPERATIVE - NO RESPONSE	No CCD bus messages from the body controller module (BCM).	1. Use a scan tool to check the BCM. If OK, look for another possible cause for cluster failure. If not OK, refer to the proper body diagnostic procedure manual.
	Spread terminal(s) on wiring harness cluster connector.	1. Remove cluster from instrument panel and check wiring harness connector for spread terminal. If OK, look for another possible cause for the cluster failure. If not OK, repair connector.
	Internal cluster failure.	1. Replace main cluster pc board and use a scan tool to calibrate cluster.

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REMOVAL AND INSTALLATION (Continued)

(1) Connect wire connector into fog lamp wire harness.
(2) Insert bulb into lamp so index notches on bulb engage with bosses in lamp (Fig. 5).
(3) Hinge wire retainer clip over bulb base.
(4) Engage wire clip to hold bulb into lamp.
(5) Install rear cover on fog lamp.
(6) Install fog lamp on vehicle.

FOG LAMP BULB – TOWN and COUNTRY

REMOVAL

(1) Reach behind fascia and remove bulb by rotating counterclockwise (Fig. 6).
(2) Rotate lamp bulb counterclockwise to disengage bulb.
(3) Disconnect the wire connector from fog lamp bulb base.
(4) Replace bulb.

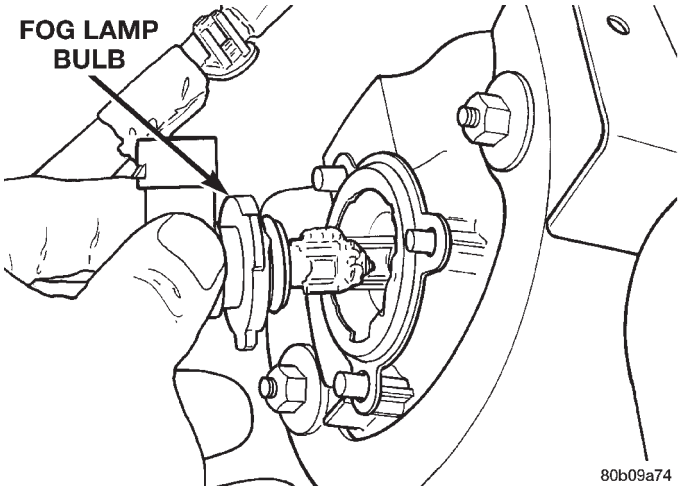


Fig. 6 Fog Lamp Bulb – T&C

INSTALLATION

CAUTION: Do not touch the glass of halogen bulbs with fingers or other oily surfaces, reduced bulb life will result.

(1) Connect wire connector into fog lamp bulb base.
(2) Insert bulb into fog lamp housing.
(3) Rotate lamp bulb clockwise to engage bulb.
(4) Verify bulb operation.
(5) Verify fog lamp alignment.

FRONT SIDE MARKER LAMP BULB TOWN and COUNTRY

REMOVAL

(1) Remove screw attaching side marker lamp to fascia.
(2) Remove housing by pulling rearward and away from fascia (Fig. 7).
(3) Rotate lamp socket counterclockwise one quarter turn.
(4) Pull bulb socket from the rear of lamp (Fig. 8).
(5) Pull bulb from socket.

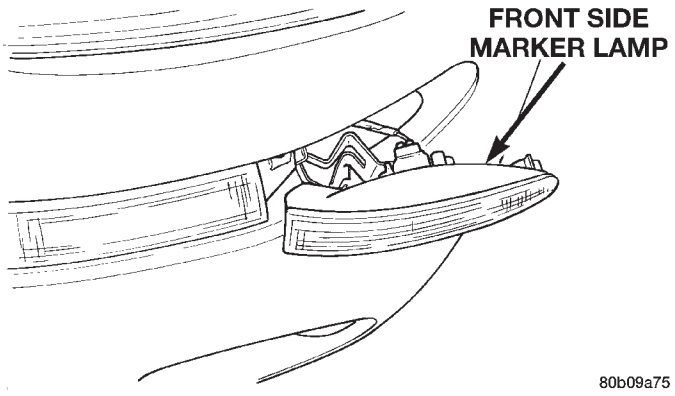


Fig. 7 Front Side Marker Lamp Bulb – T&C

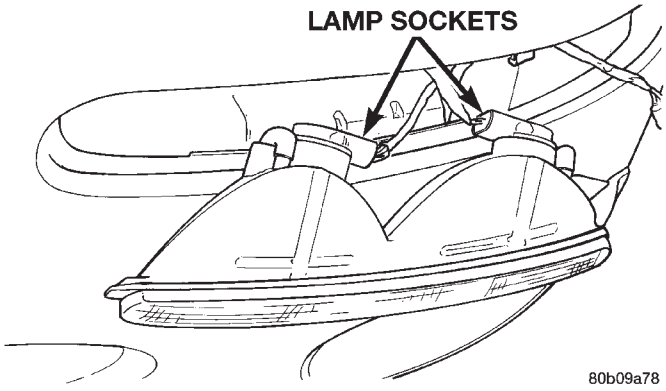


Fig. 8 Front Side Marker Lamp Sockets

INSTALLATION

(1) Insert bulb into socket.
(2) Insert bulb socket into rear of housing.
(3) Rotate park and turn signal socket clockwise one quarter turn.
(4) Verify bulb operation.
(5) Install screw attaching side marker lamp.

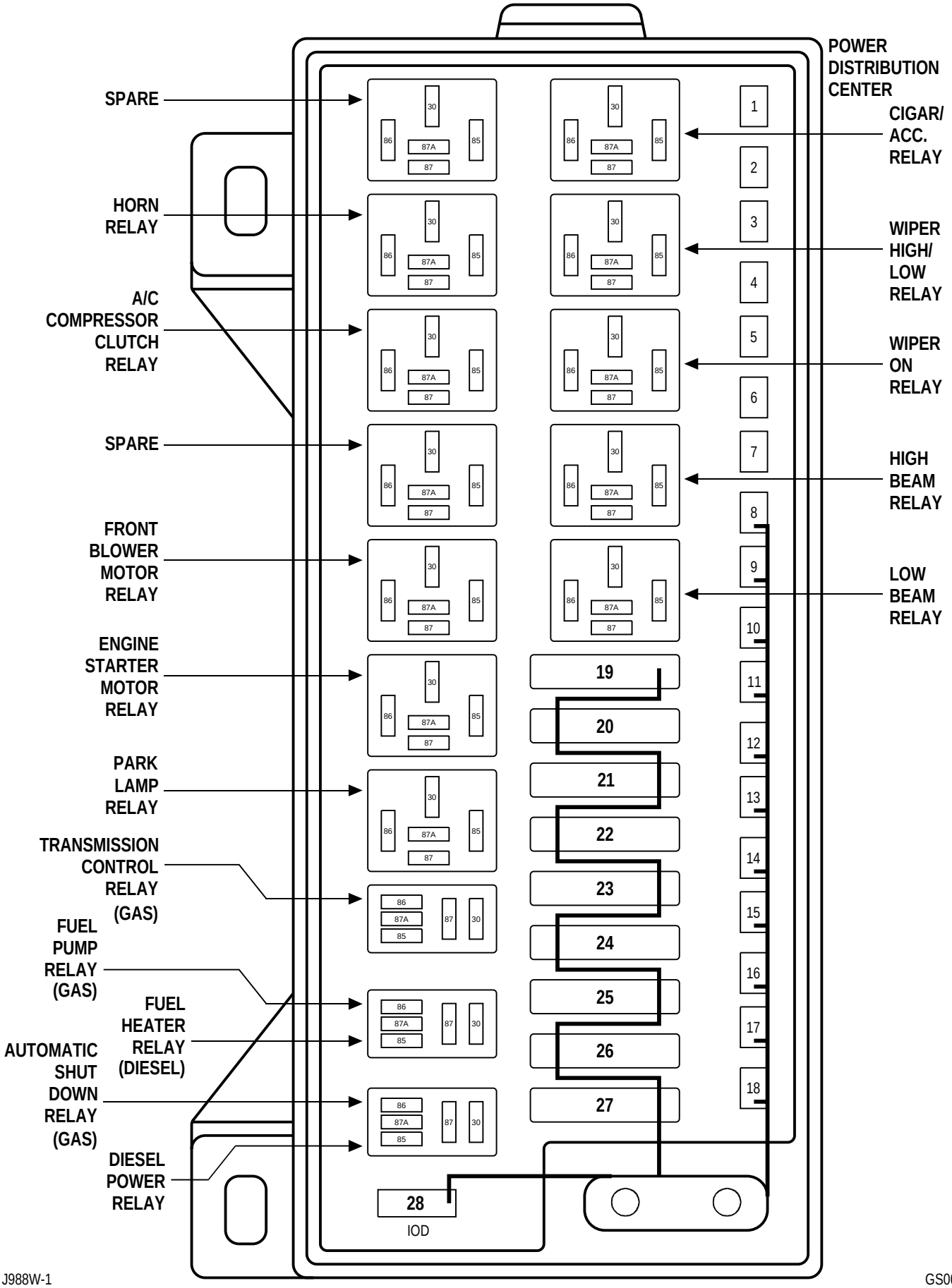
PARKING AND TURN SIGNAL BULB

REMOVAL

(1) From under front wheelhouse, remove access cover behind parking and turn signal lamp.
(2) Through access hole in wheelhouse, rotate parking and turn signal socket counterclockwise one quarter turn.
(3) Pull socket from back of lamp (Fig. 9).
(4) Pull bulb from socket.

INSTALLATION

(1) Align key on bulb base to groove in socket and insert bulb into socket.


POWER DISTRIBUTION CENTER
SPARE
HORN RELAY
A/C COMPRESSOR CLUTCH RELAY
SPARE
FRONT BLOWER MOTOR RELAY
ENGINE STARTER MOTOR RELAY
PARK LAMP RELAY
TRANSMISSION CONTROL RELAY (GAS)
FUEL PUMP RELAY (GAS)
FUEL HEATER RELAY (DIESEL)
AUTOMATIC SHUT DOWN RELAY (GAS)
DIESEL POWER RELAY
CIGAR/ ACC. RELAY
WIPER HIGH/ LOW RELAY
WIPER ON RELAY
HIGH BEAM RELAY
LOW BEAM RELAY
30
86
87A
85
87
1
2
3
4
5
6
7
8
9
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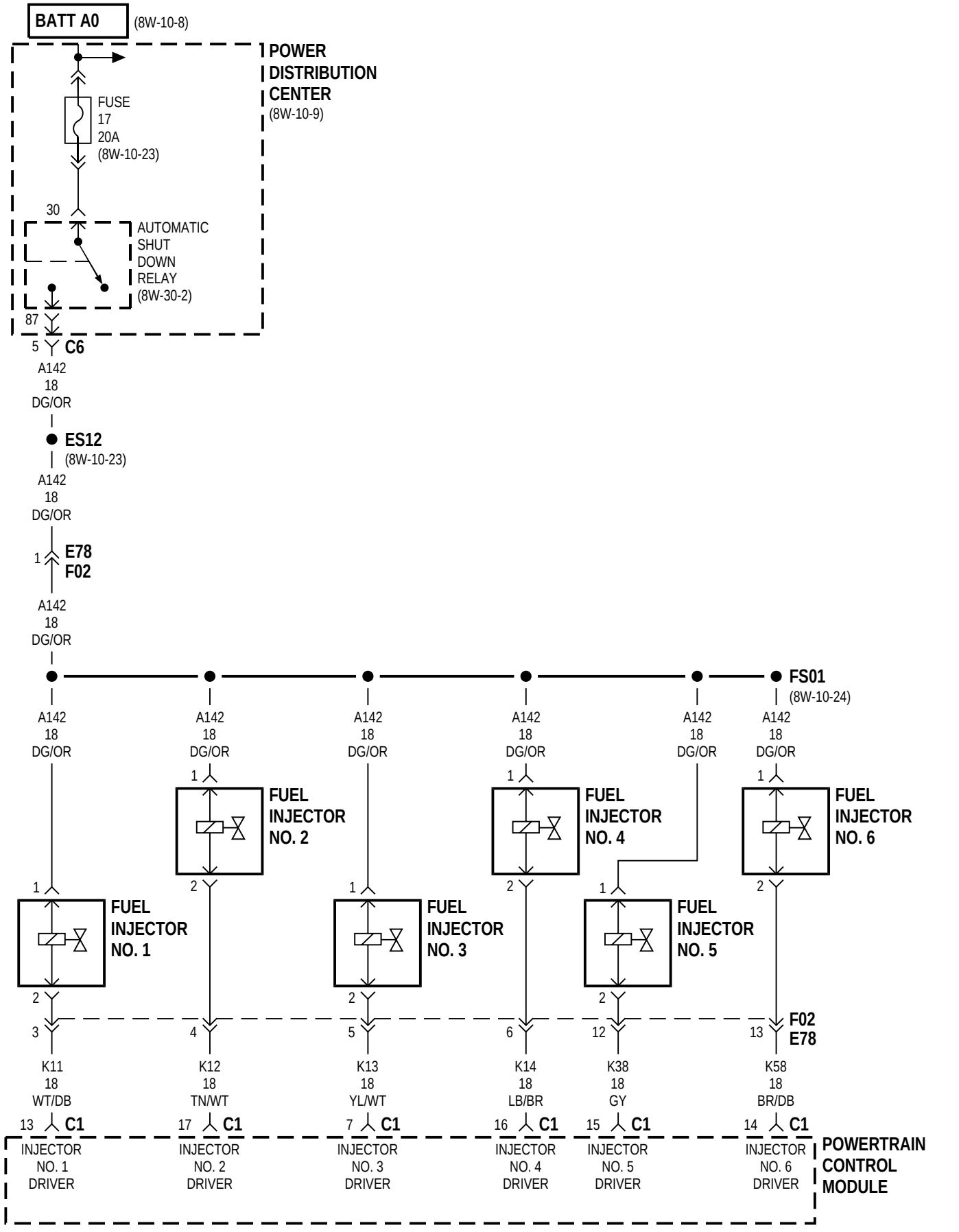
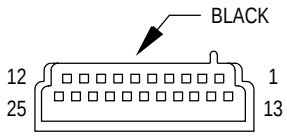
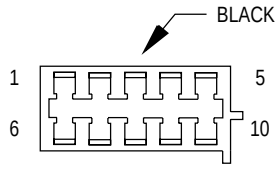
IOD


BATT A0
(8W-10-8)
POWER DISTRIBUTION CENTER
(8W-10-9)
FUSE 17 20A
(8W-10-23)
30
AUTOMATIC SHUT DOWN RELAY
(8W-30-2)
87
5
C6
A142 18 DG/OR
ES12
(8W-10-23)
A142 18 DG/OR
1
E78
F02
A142 18 DG/OR
FS01
(8W-10-24)
FUEL INJECTOR NO. 1
FUEL INJECTOR NO. 2
FUEL INJECTOR NO. 3
FUEL INJECTOR NO. 4
FUEL INJECTOR NO. 5
FUEL INJECTOR NO. 6
F02
E78
K11 18 WT/DB
K12 18 TN/WT
K13 18 YL/WT
K14 18 LB/BR
K38 18 GY
K58 18 BR/DB
13 C1
17 C1
7 C1
16 C1
15 C1
14 C1
INJECTOR NO. 1 DRIVER
INJECTOR NO. 2 DRIVER
INJECTOR NO. 3 DRIVER
INJECTOR NO. 4 DRIVER
INJECTOR NO. 5 DRIVER
INJECTOR NO. 6 DRIVER
POWERTRAIN CONTROL MODULE



MEMORY SEAT/MIRROR MODULE - C1

CAV	CIRCUIT	FUNCTION
1	P69 20WT/RD	LEFT MIRROR POSITION (GROUND)
2	P64 20YL/OR	LEFT MIRROR POSITION (VERTICAL)
3	P65 20DB/YL	LEFT MIRROR POSITION (HORIZONTAL)
4	-	-
5	-	-
6	-	-
7	-	-
8	P22 20PK/BK	MEMORY SET
9	-	-
10	P73 20YL/PK	LEFT MIRROR (COMMON)
11	P71 20YL	LEFT MIRROR (VERTICAL)
12	P75 20DB/WT	LEFT MIRROR (HORIZONTAL)
13	P66 20WT/BK	RIGHT MIRROR POSITION (GROUND)
14	P67 20YL/RD	RIGHT MIRROR POSITION (VERTICAL)
15	P68 20DG/RD	RIGHT MIRROR POSITION (HORIZONTAL)
16	M1 20PK	FUSED B (+)
17	-	-
18	-	-
19	G96 20LG/RD	RKE INTERFACE
20	P23 20PK/RD	MEMORY NO. 1
21	P24 20PK/WT	MEMORY NO. 2
22	-	-
23	P70 20WT	RIGHT MIRROR (COMMON)
24	P72 20YL/BK	RIGHT MIRROR (VERTICAL)
25	P74 20DB	RIGHT MIRROR (HORIZONTAL)



MEMORY SEAT/MIRROR MODULE - C2

CAV	CIRCUIT	FUNCTION
1	P117 14RD/LB	SEAT HORIZONTAL (REARWARD)
2	P115 14YL/LB	SEAT HORIZONTAL (FORWARD)
3	P111 14YL/WT	SEAT REAR VERTICAL (UP)
4	P43 14GY/LB	SEAT RECLINER (REARWARD)
5	P119 14YL/LG	SEAT FRONT VERTICAL (UP)
6	P113 14RD/WT	SEAT REAR VERTICAL (DOWN)
7	Z1 14BK	GROUND
8	F35 14RD	FUSED B (+)
9	P41 14GY/WT	SEAT RECLINER (FORWARD)
10	P121 14RD/LG	SEAT FRONT VERTICAL (DOWN)

REMOVAL AND INSTALLATION (Continued)

CYLINDER HEAD COVER

REMOVAL

(1) Remove upper intake manifold. Refer to Group 11, Exhaust System and Intake Manifold.

(2) Remove nuts attaching front and rear intake manifold supports from cylinder head cover attaching studs.

(3) Remove ignition coil pack and plug wires (Fig. 28). Remove ground strap.

(4) Remove the cylinder head cover fasteners.

(5) Remove cylinder head cover from cylinder head.

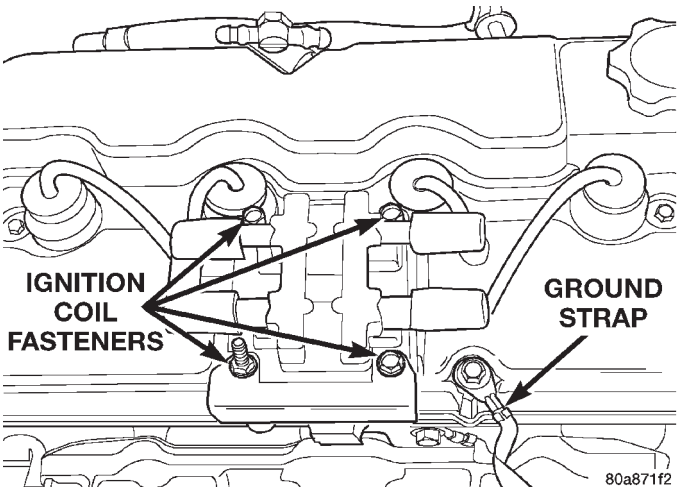


Fig. 28 Ignition Coil Pack and Ground Strap

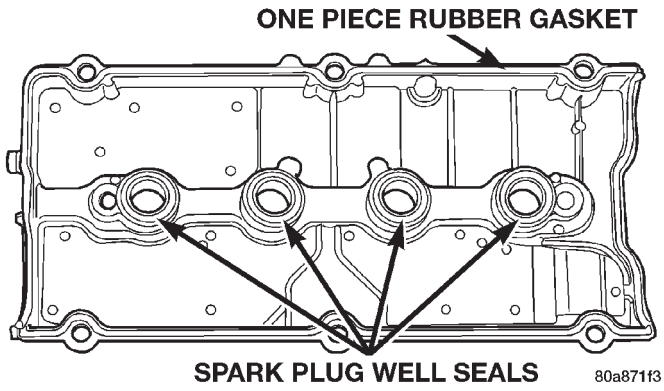


Fig. 29 Cylinder Head Cover Gasket and Spark Plug Seals

INSTALLATION

NOTE: Replace spark plug well seals when installing a new cylinder head cover gasket.

(1) Clean all sealing surfaces.

(2) Install new cylinder head cover gaskets and spark plug seals (Fig. 29).

CAUTION: Do not allow oil or solvents to contact the timing belt as they can deteriorate the rubber and cause tooth skipping.

(3) Apply Mopar® Silicone Rubber Adhesive Sealant at the camshaft cap corners and at the top edge of the 1/2 round seal.

(4) Install cylinder head cover assembly to head and tighten fasteners in sequence shown in (Fig. 30). Using the 3 step torque method:

(a) Tighten all fasteners to 4.5 N·m (40 in. lbs.)

(b) Tighten all fasteners to 9.0 N·m (80 in. lbs.)

(c) Tighten all fasteners to 12 N·m (105 in. lbs.)

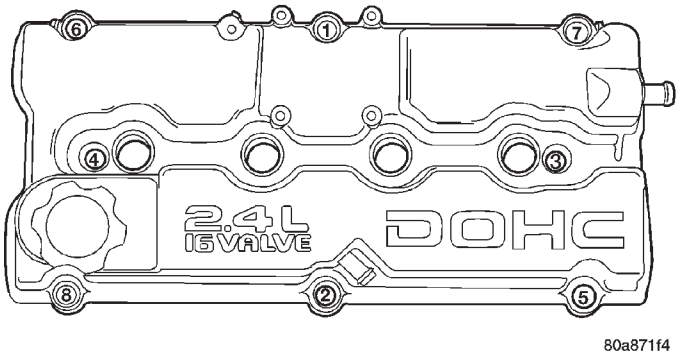


Fig. 30 Cylinder Head Cover Tightening Sequence

(5) Install ignition coil pack and plug wires. Tighten fasteners to 12 N·m (105 in. lbs.).

(6) Install ground strap.

(7) Install front and rear intake manifold support brackets and attaching nuts, but do not tighten at this time.

(8) Install upper intake manifold. Refer to Group 11, Exhaust System and Intake Manifold for procedure.

(9) Final torque intake manifold support nuts to 28 N·m (250 in. lbs.).

CAMSHAFT

REMOVAL

(1) Remove cylinder head cover using procedure outlined in this section.

(2) Remove timing belt, sprockets and covers. Refer to Timing Belt Service outlined in this section.

(3) Bearing caps are identified for location. Remove the outside bearing caps first (Fig. 31).

(4) Loosen the camshaft bearing cap attaching fasteners in sequence shown (Fig. 32) one camshaft at a time.

CAUTION: Camshafts are not interchangeable. The intake cam number 6 thrust bearing face spacing is wider.

REMOVAL AND INSTALLATION

EXHAUST PIPES, MUFFLERS AND TAILPIPES

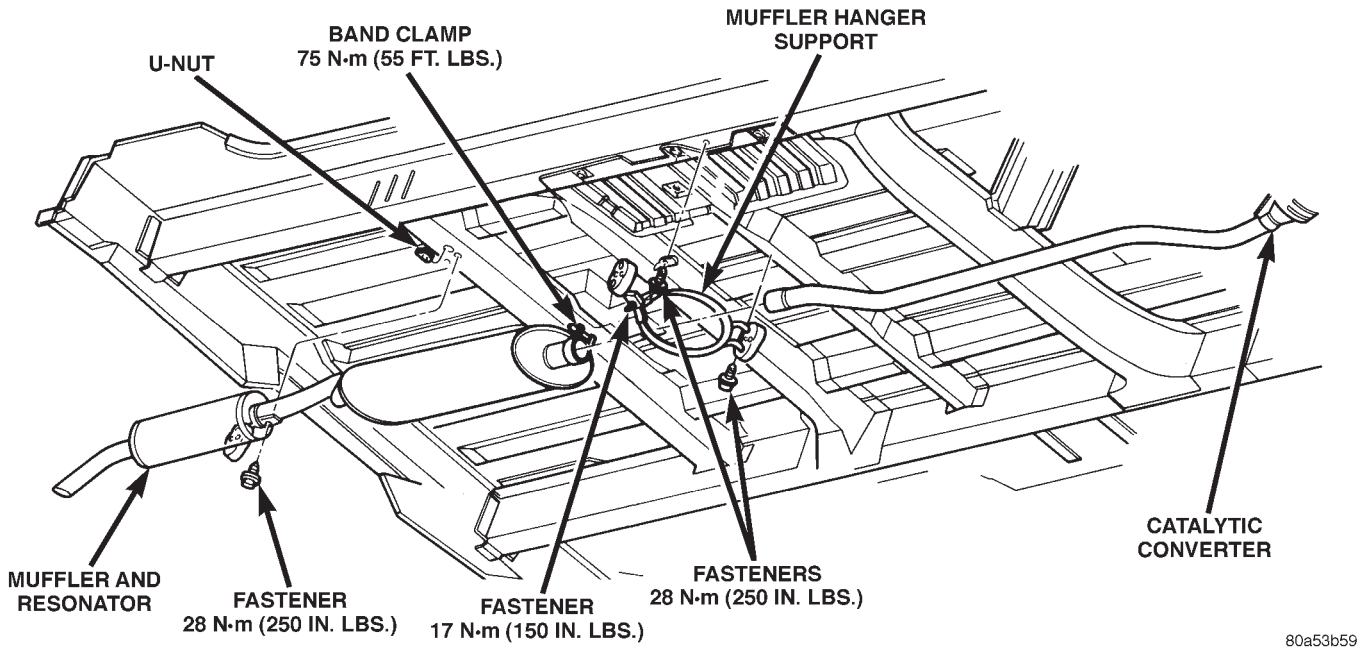


Fig. 4 Exhaust System Components

REMOVAL

(1) Raise vehicle on hoist and apply penetrating oil to clamp bolts and nuts of component being removed.

(2) Loosen clamps and supports (Fig. 5) and (Fig. 4) from exhaust system to permit alignment of parts during assembly.

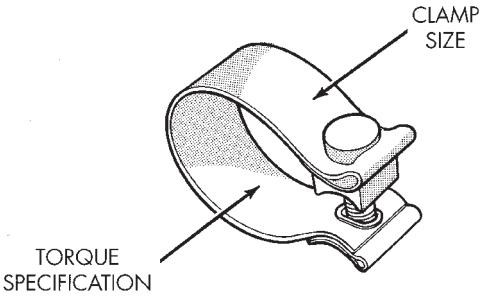


Fig. 5 Band Clamp

(3) When removing tailpipe, raise rear of vehicle to relieve body weight from rear springs to provide clearance between pipe and rear axle parts.

(4) Clean ends of pipes or muffler to assure mating of all parts. Discard broken or worn insulators, rusted clamps, supports and attaching parts. **When replacement is required on any component of the exhaust system. It is important that original equipment parts (or their equivalent) be used;**

- To insure proper alignment with other parts in the system.
- Provide acceptable exhaust noise levels and does not change exhaust system back pressure that could effect emissions and performance.

INSTALLATION

(1) Assemble pipes, muffler support and clamp loosely to permit alignment of all parts.

(2) Beginning at front of system, align and clamp each component to maintain position and proper clearance with underbody parts.

(3) Tighten the clamp and support to the proper torques and clearances (Fig. 4).

UPPER INTAKE MANIFOLD—2.4L ENGINE

REMOVAL

(1) Disconnect negative cable from battery.

(2) Disconnect air intake tube and resonator box from throttle body and remove.

(3) Remove connector from throttle position sensor (Fig. 6).

(4) Remove connector from idle air control motor (Fig. 6).

(5) Remove connector from MAP sensor (Fig. 11).

REMOVAL AND INSTALLATION (Continued)

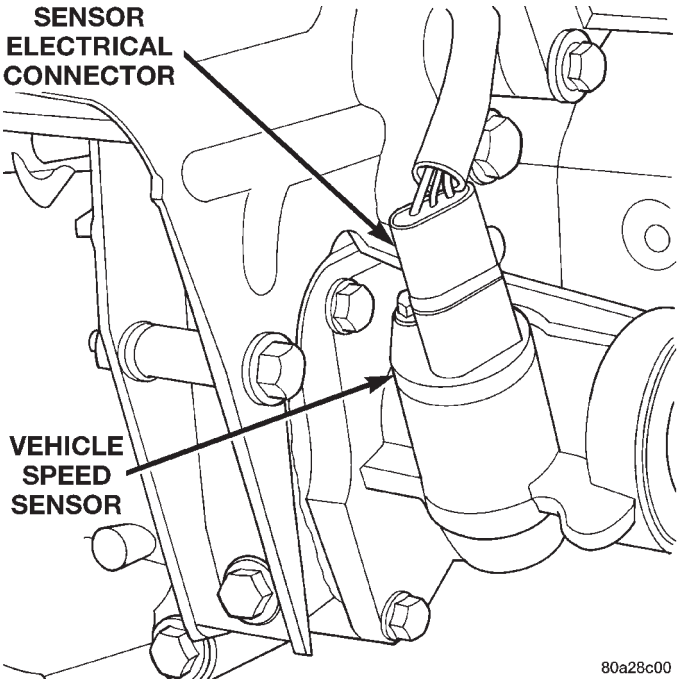


Fig. 24 Vehicle Speed Sensor Location—Typical

REMOVAL

(1) Raise and support vehicle.

(2) Clean the area around the sensor before removal.

(3) Disconnect the electrical connector from the sensor (Fig. 25).

(4) Remove the sensor mounting bolt (Fig. 25).

(5) Pull the sensor from the speedometer pinion gear adapter for removal.

INSTALLATION

(1) Install new sensor into speedometer gear adapter.

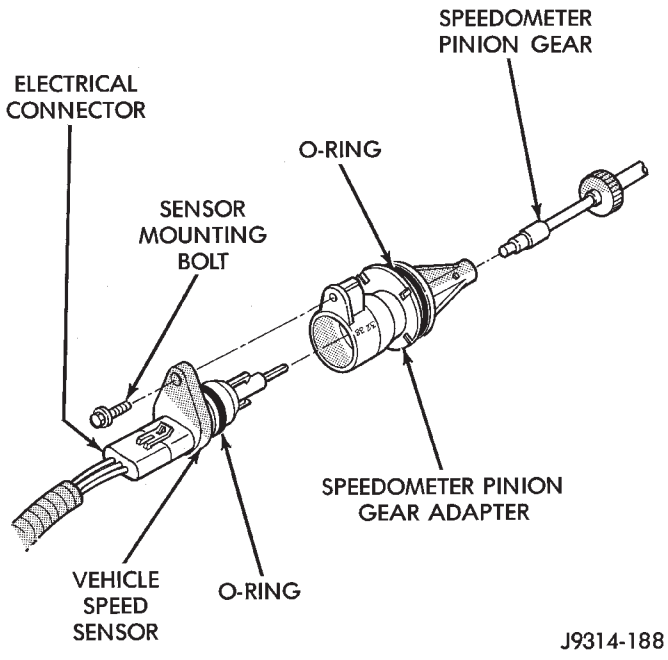


Fig. 25 Sensor Removal/Installation—Typical

(2) Tighten sensor mounting bolt. To prevent damage to sensor or speedometer adapter, be sure the sensor is mounted flush to the adapter before tightening.

(3) Connect electrical connector to sensor.

SPECIFICATIONS

GLOW PLUG CURRENT DRAW

Initial Current Draw: Approximately 22–25 amps per plug.

After 20 seconds of operation: Approximately 9–12 amps per plug.

DISASSEMBLY AND ASSEMBLY (Continued)

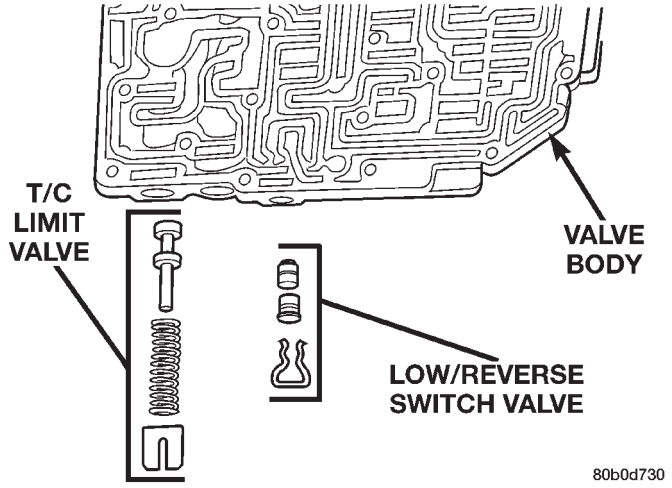


Fig. 58 Low/Reverse Switch Valve And T/C Limit Valve

TRANSAXLE DISASSEMBLE

NOTE: Tag all clutch pack assemblies, as they are removed, for reassembly identification.

CAUTION: Do not intermix clutch discs or plates as the unit might then fail.

(1) Remove input and output speed sensors.
(2) Remove transaxle solenoid pack (Fig. 59).

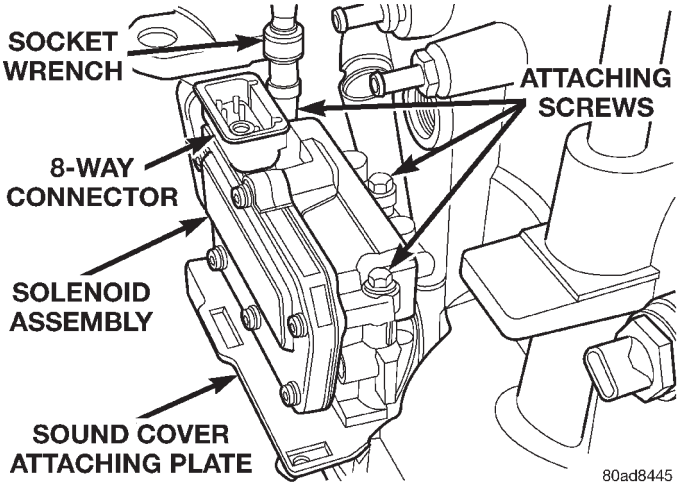


Fig. 59 Remove Solenoid Pack

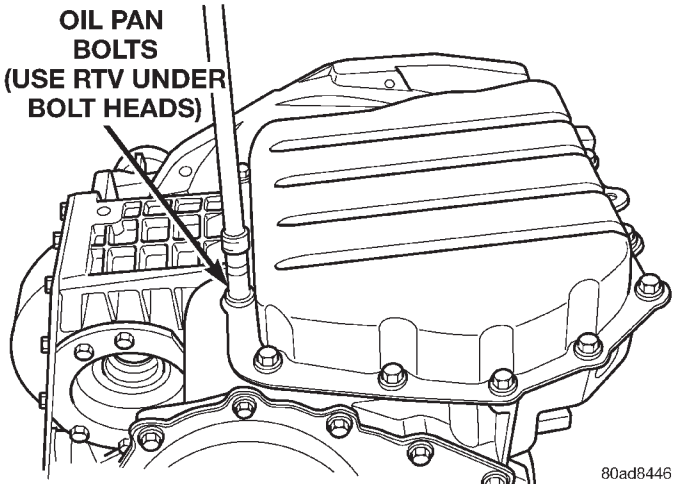


Fig. 60 Remove Oil Pan Bolts

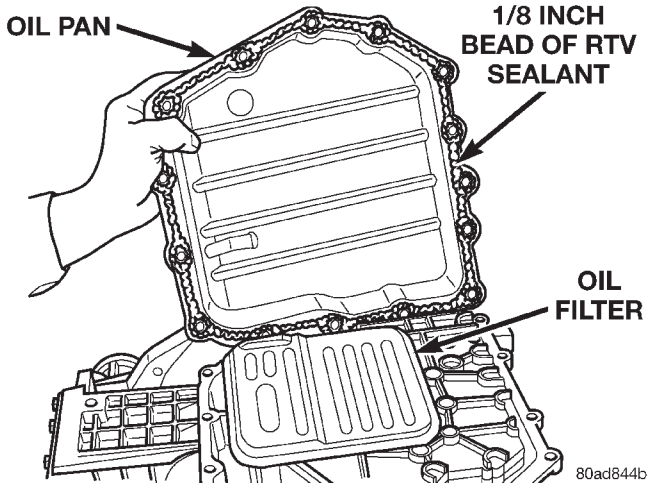


Fig. 61 Remove Oil Pan

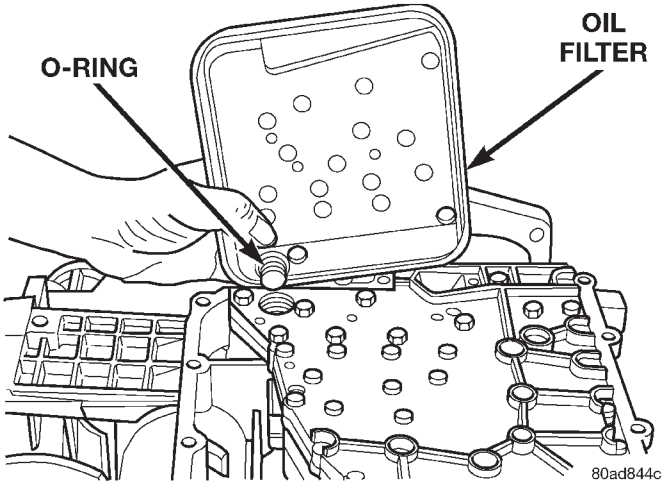
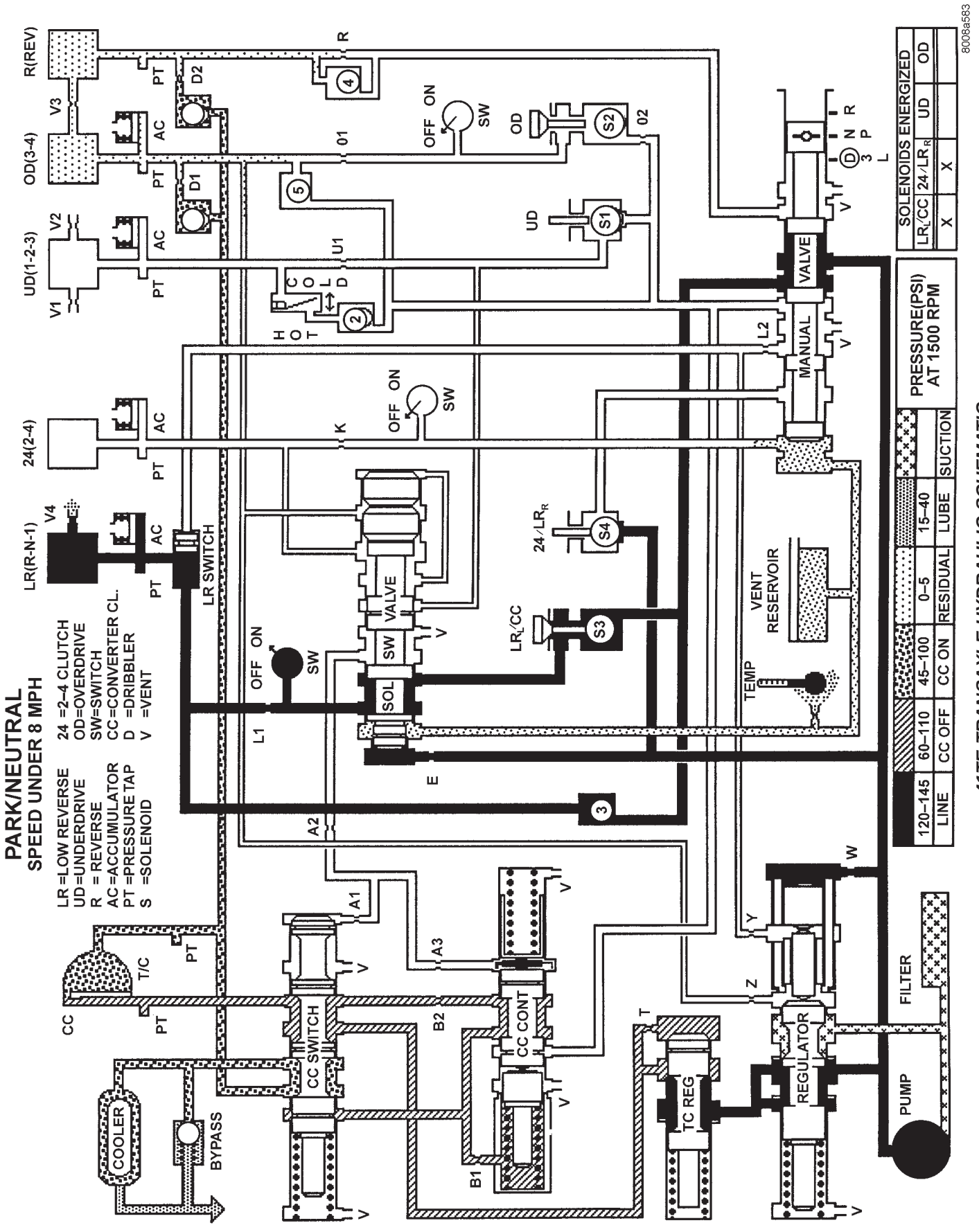


Fig. 62 Remove Oil Filter

SCHEMATICS AND DIAGRAMS

41TE TRANSAXLE HYDRAULIC SCHEMATICS



41TE TRANSAXLE HYDRAULIC SCHEMATIC

DISASSEMBLY AND ASSEMBLY (Continued)

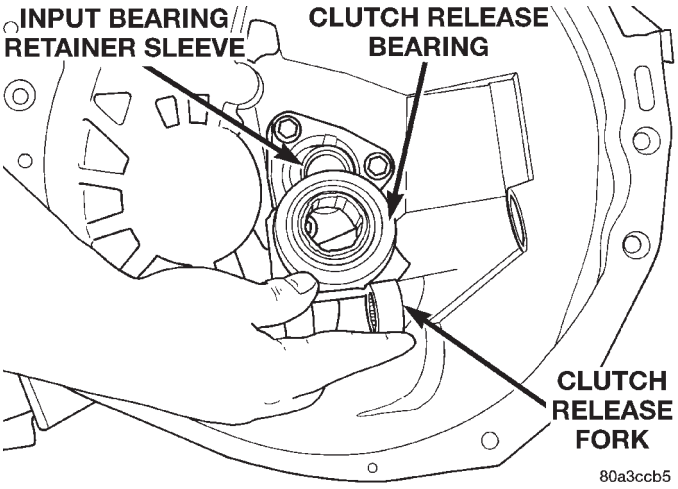


Fig. 199 Clutch Release Fork

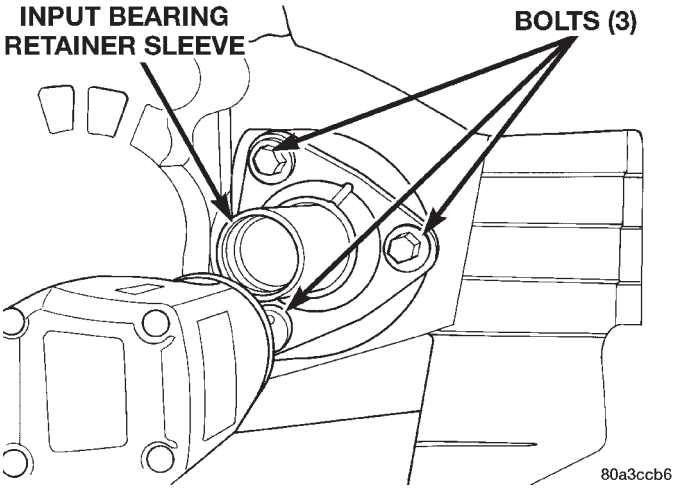


Fig. 200 Input Bearing Retainer

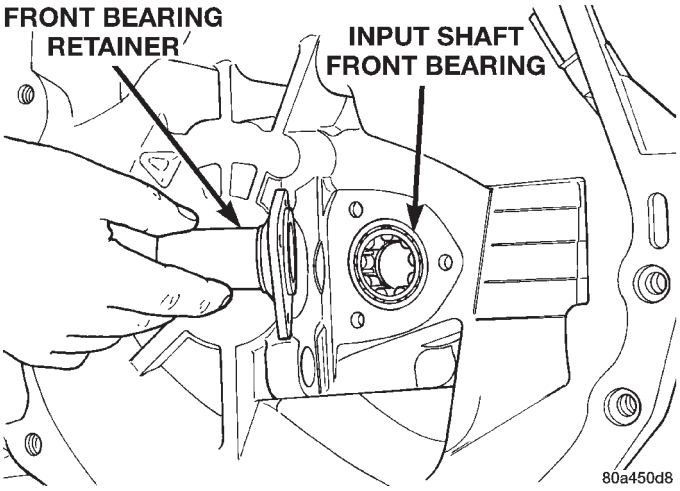


Fig. 201 Remove Input Bearing Retainer

INSTALLATION

(1) Position new input bearing into the transaxle case (Fig. 203).

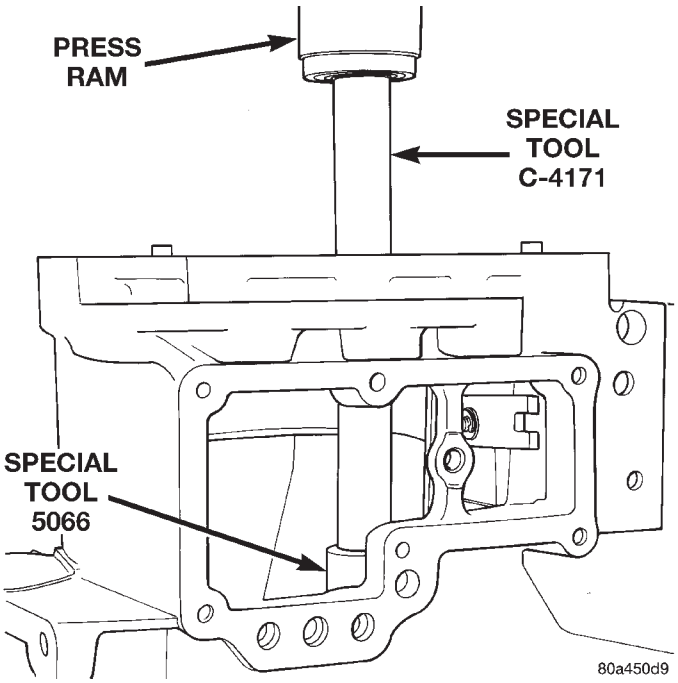


Fig. 202 Press Out Input Bearing

(2) Position transaxle case in shop press (bellhousing side up).

(3) Install Special Tool 6933 into input bearing (Fig. 204).

(4) Install Special Tool C-4171 into Special Tool 6933.

(5) Press input bearing into transaxle case (Fig. 205).

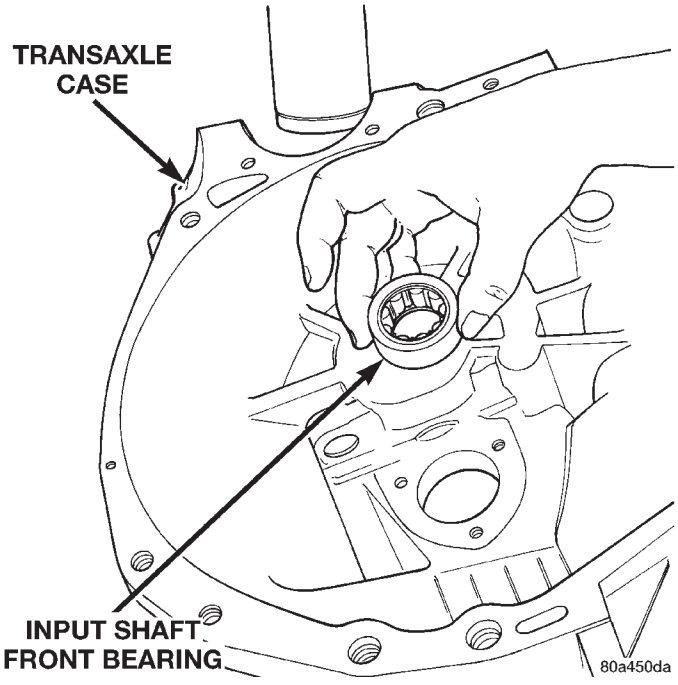


Fig. 203 Input Bearing

SERVICE PROCEDURES (Continued)

- Transaxle in Park
- Engine Idling at 700 rpm
- A/C Controls Set in 100 percent outside air
- Full Panel Mode
- Blower motor ON HIGH
- A/C in the ON position
- Front Windows Open.
- Rear Air Off (If Equipped)

CAUTION: A leak detector designed for R-12 refrigerant will not detect leaks in a R-134a refrigerant system.

(4) Shut off the vehicle and wait 2 to 7 minutes. Then use an Electronic Leak Detector that is designed to detect R-134a type refrigerant and search for leaks. Fittings, lines, or components that appear to be oily usually indicates a refrigerant leak. To inspect the evaporator core for leaks, insert the leak detector probe into the recirculating air door opening or a heat duct.

If a thorough leak check has been completed without indication of a leak, proceed to System Charge Level-Check or Fill.

REMOVAL AND INSTALLATION

A/C PRESSURE TRANSDUCER

REMOVAL

(1) Disconnect the wire connector at the pressure transducer.

(2) Using an open end wrench, remove the transducer from the liquid line (Fig. 11).

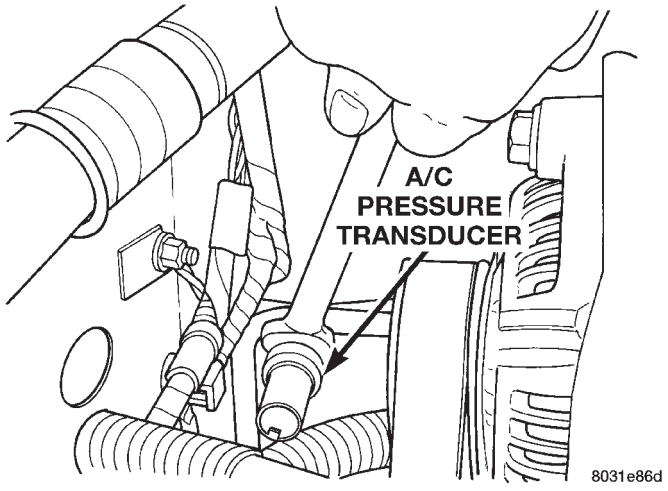


Fig. 11 A/C Pressure Transducer Removal

INSTALLATION

(1) Replace transducer O-ring.

(2) For installation, reverse the above procedures.

A/C SERVICE PORTS

WARNING: THE REFRIGERATION SYSTEM MUST BE COMPLETELY EMPTY BEFORE PROCEEDING WITH THIS OPERATION.

The High Side service port is serviceable, the Low Side is not serviceable.

REMOVAL

(1) Disconnect the battery negative cable.

(2) Recover A/C system refrigerant.

(3) Unscrew the High Side service port from the liquid line.

(4) Remove O-ring

INSTALLATION

For installation, reverse the above procedures.

- **Install new O-ring.**
- Evacuate and recharge A/C system.

BLEND-AIR DOOR ACTUATOR

REMOVAL

The air conditioning system can be equipped with either a standard, single blend-air door actuator, or it can be equipped with dual actuators. The dual system has separate blend-air controls. This allows for separate control of the driver's side air, and the passenger side air (Fig. 12).

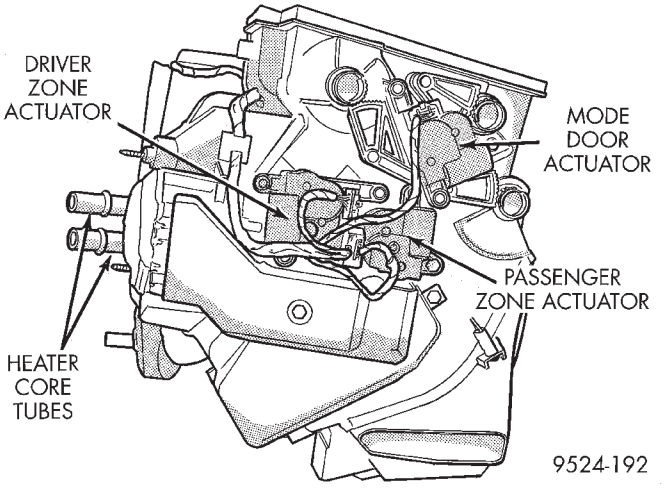


Fig. 12 Side View Of HVAC With Actuators

(1) Remove the lower left side steering column cover. Refer to Group 8E, Instrument Panel and Systems.

(2) Remove ABS control module (Fig. 13).

(3) Remove blend-air actuator connector.

(4) Remove blend-air actuator (Fig. 14).

INSTALLATION

(1) For installation, reverse the above procedures.