LUBRICATION AND MAINTENANCE

CONTENTS

GENERAL INFORMATION

INDEX

INTRODUCTION

Chrysler Corporation has compiled recommended lubrication and maintenance schedules and procedures to help reduce premature wear or failure over a broad range of operating conditions. When selecting the proper maintenance schedule, the climate and operating conditions must be considered. A vehicle subjected to severe usage requires service more frequently than a vehicle used for general transportation.

PARTS AND LUBRICANT RECOMMENDATIONS

When service is required, Chrysler Corporation recommends that only Mopar® brand parts, lubricants and chemicals be used. Mopar® provides the best engineered products for servicing Chrysler Corporation vehicles.

SEVERE SERVICE

If a vehicle is operated under any of the following conditions, it is considered severe service.

- Extremely dusty areas.
- 50% or more of vehicle operation in 32°C (90°F) or higher temperatures.
- Prolonged idling (such as, vehicle operation in stop and go traffic).
- Frequent short running periods. Not allowing engine to warm to operating temperatures.
- Police or taxi usage.

FUEL USAGE

All Chrysler Corporation engines require the use of unleaded fuel to reduce exhaust emissions. Use fuel with a minimum octane rating of 87,(R + M)/2. See Engine section of this group for Fuel Recommendations.

CLASSIFICATION OF LUBRICANTS

Only lubricants that are endorsed by the following organizations standards should be used to service a Chrysler Corporation vehicle.

- Society of Automotive Engineers (SAE)
- American Petroleum Institute (API)
- National Lubricating Grease Institute (NLGI)

ENGINE OIL

SAE GRADE RATING INDICATES ENGINE OIL VISCOSITY

- SAE 30 = single grade engine oil.
- SAE 5W-30 = multiple grade engine oil.

API QUALITY CLASSIFICATION.

- SG service engine oil is a high quality crankcase lubricant designed for use in all naturally aspirated engines.
- SG/CD service engine oil is a high quality crankcase lubricant designed for use in most naturally aspirated and turbocharged gasoline or diesel engines.

GEAR LUBRICANTS

SAE ratings also apply to multiple grade gear lubricants. In addition, API classification defines the lubricants usage.

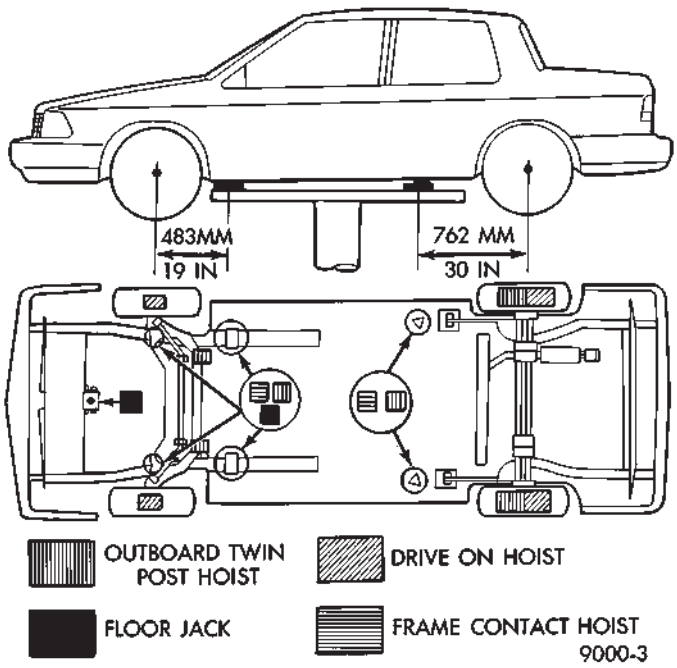


Fig. 4 Hoisting and Jacking Points—AA Body

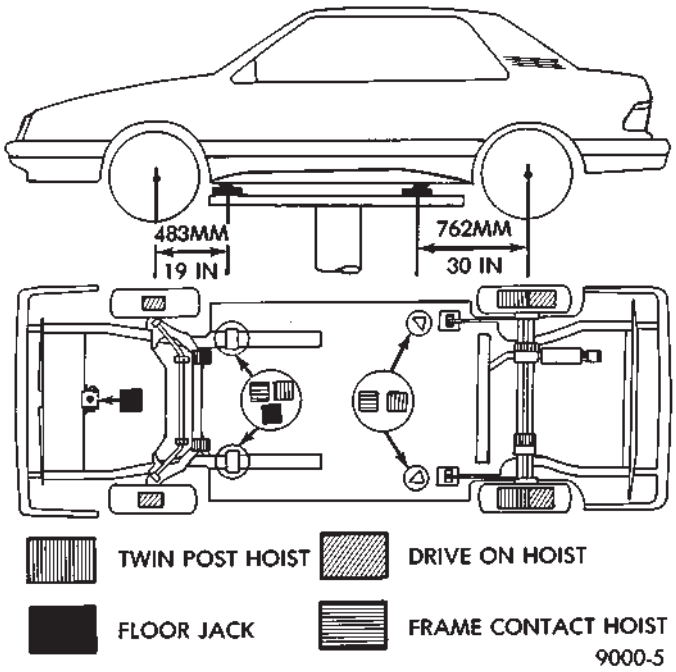


Fig. 6 Hoisting and Jacking Points—AJ Body

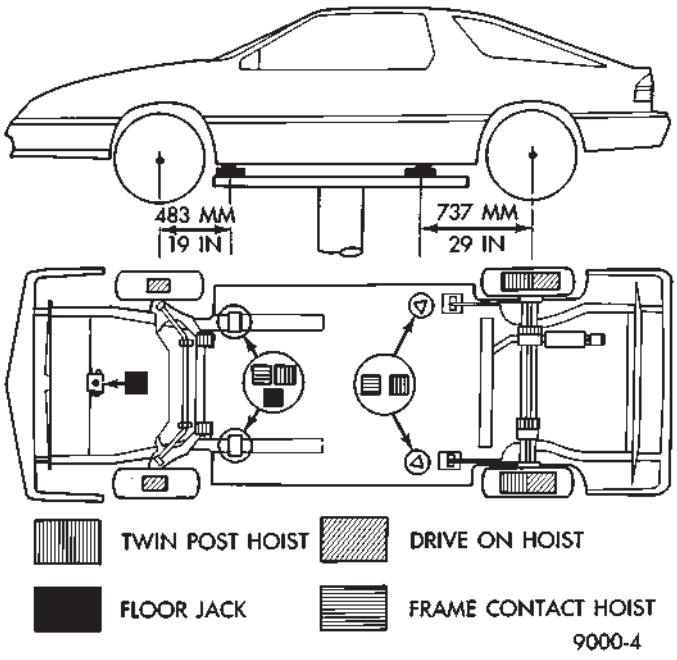


Fig. 5 Hoisting and Jacking Points—AG Body

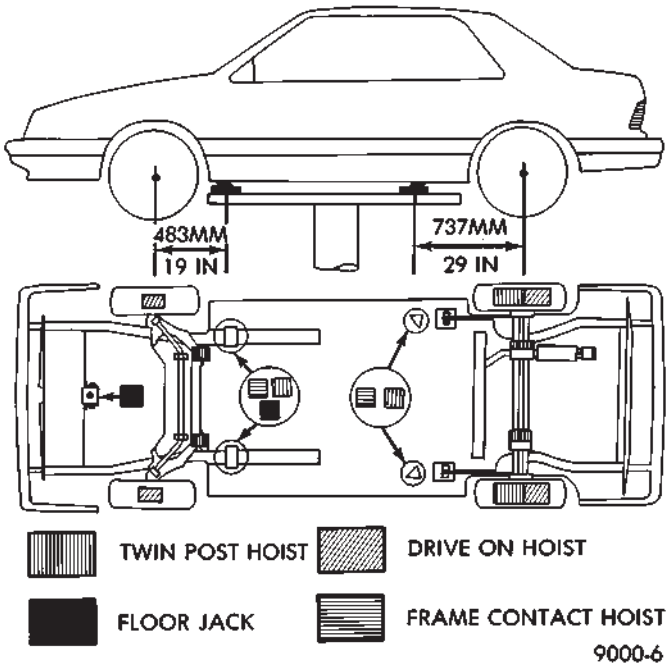


Fig. 7 Hoisting and Jacking Points—AP Body

Rubber boots must be serviced with the strap and buckle clamp. Use the Clamp Installer, Special Tool C-4653. Proceed with the boot installation as follows:

(1) Slide the small end of the boot over the shaft. Position the boot to the edge of the locating mark or groove, whichever is appropriate (Fig. 1).

(2) Install the C/V joint. See Inner or Outer C/V Joint Assemble.

(3) Slide the large diameter of the boot into the locating groove (Fig. 6).

(4) Wrap binding strap around boot **twice**, PLUS 63 mm (2-1/2 inches) (Fig. 2).

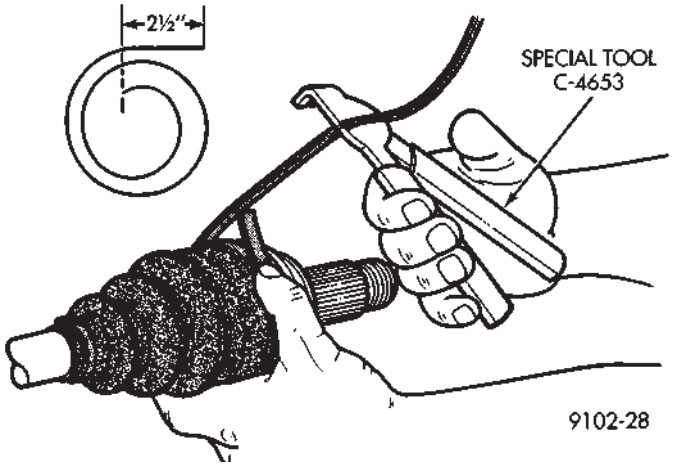


Fig. 2 Measure & Cut Binding Strap

(5) Pass the strap through the buckle and fold it back about 29 mm (1-1/8 inches) on the inside of the buckle (Fig. 3).

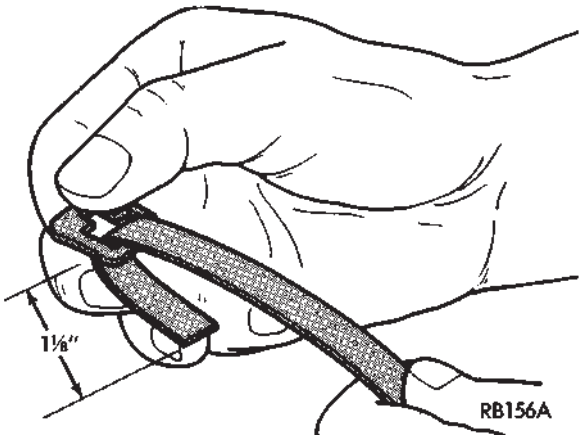


Fig. 3 Install Buckle on Strap

(6) Put the strap around the boot with the eye of the buckle toward you (Fig. 4). Wrap the strip around the boot once and pass it through the buckle, then wrap it around a second time also passing it through the buckle.

(7) Fold the strip back slightly to prevent it from slipping backwards (Fig. 5).

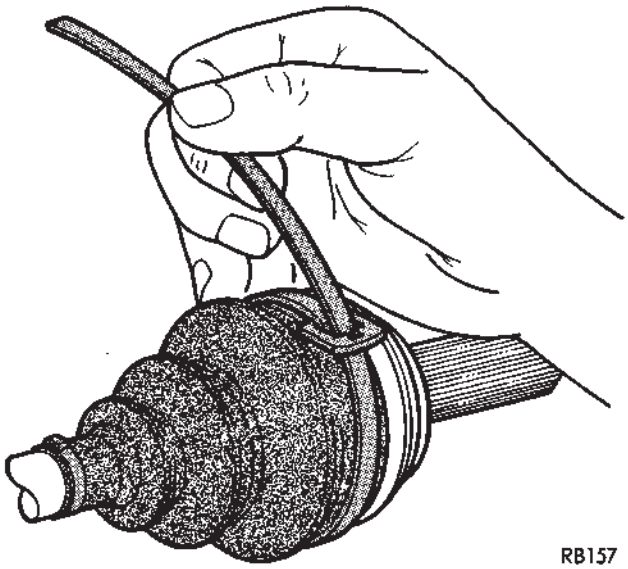


Fig. 4 Wrap Strap (through Buckle Eye) Twice

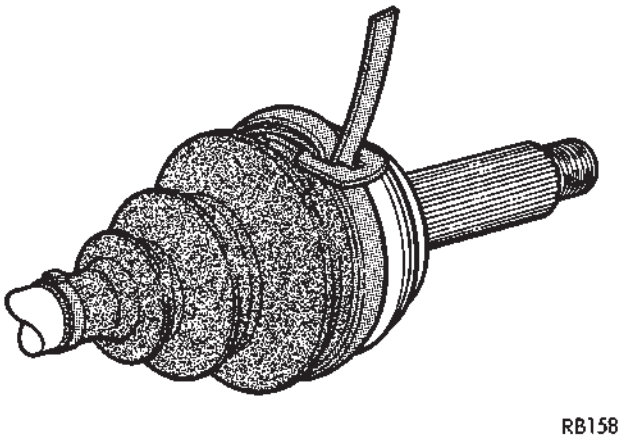


Fig. 5 Fold Strap Lightly to Keep Position

(8) Open the tool all the way and place strip in narrow slot approximately 13 mm (1/2 inch) from buckle (Fig. 6).

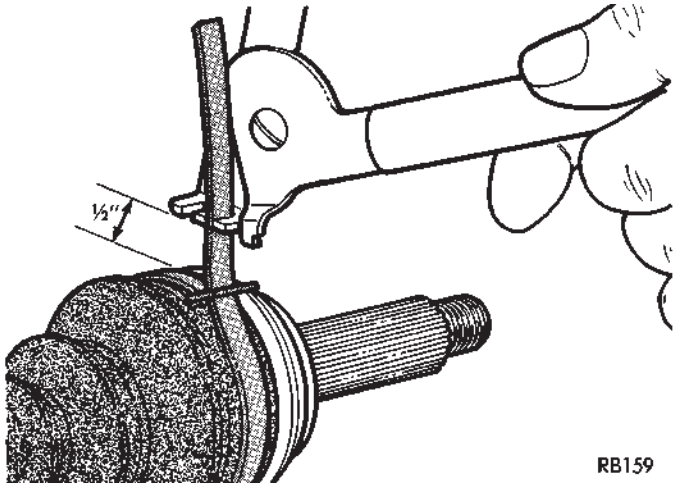


Fig. 6 Open Tool, Position Strap in Narrow Slot 1/2 Inch from Buckle

lic assembly with a blunt prying tool (Fig. 12). Use a rocking motion to help disengage reservoir from grommets while prying. **BE EXTREMELY CAREFUL TO AVOID DAMAGING OR PUNCTURING RESERVOIR DURING THIS PROCEDURE.**

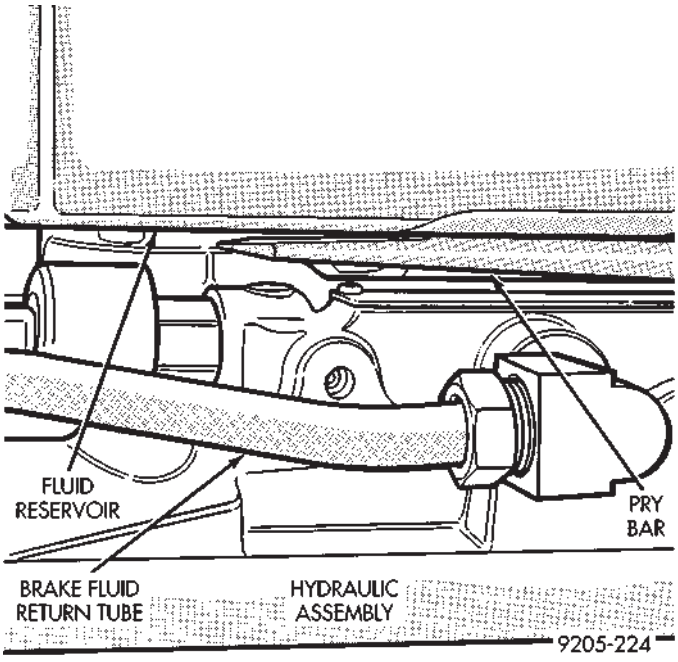


Fig. 12 Remove Reservoir From Hydraulic Assembly

(6) Remove the brake fluid level sensor switch from the reservoir. Remove switch by compressing the retaining barbs (Fig. 13) on the end of the switch and then slide switch out of the brake fluid reservoir (Fig. 14)

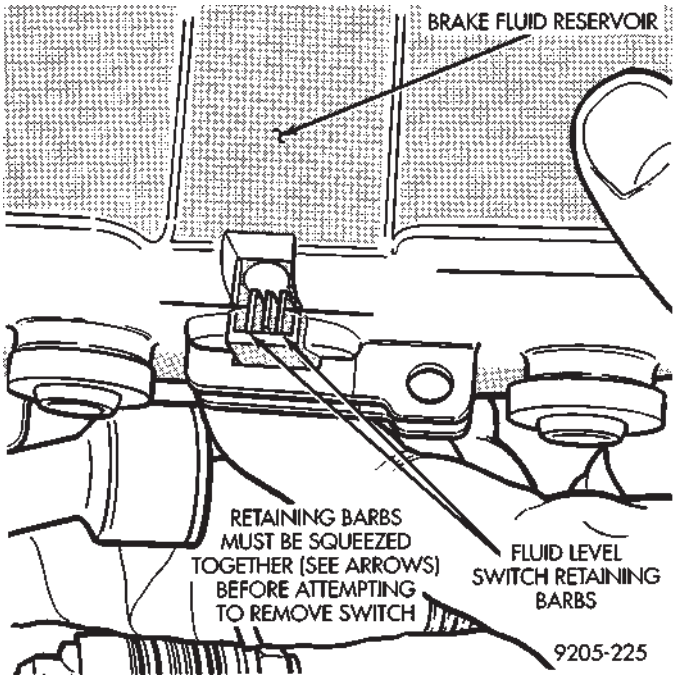


Fig. 13 Fluid Switch Retaining Barbs

(7) Using fingers, remove the 3 reservoir grommets (Fig. 14) from the hydraulic assembly or reservoir, and discard. **Grommets must not to be reused when reservoir is installed on hydraulic assembly.**

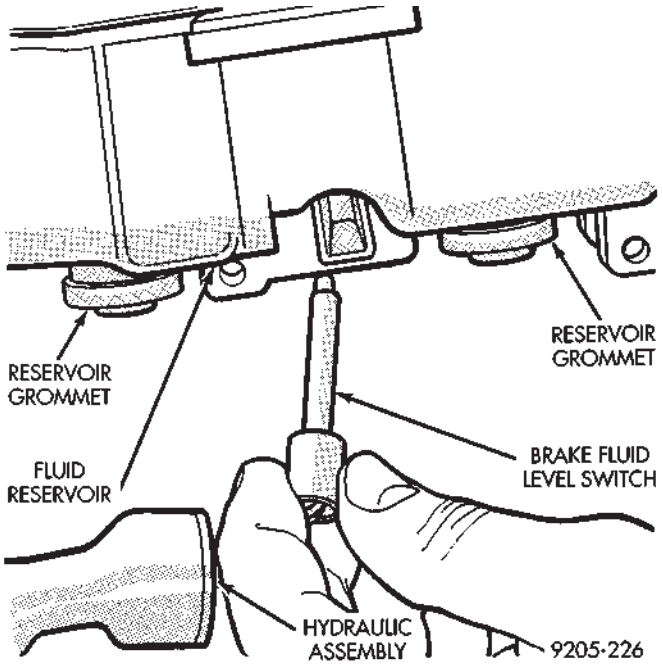


Fig. 14 Remove Brake Fluid Level Switch

INSTALL

(1) Thoroughly lubricate the new reservoir grommets with clean brake fluid and install on reservoir outlet ports (Fig. 14). **The new reservoir grommets supplied with reservoir, must ALWAYS be used.**

(2) Install brake fluid level switch into brake fluid reservoir (FIG. 14).

(3) Press reservoir into hydraulic assembly **BY HAND**, using a rocking motion to help seat reservoir into hydraulic assembly. Be sure that grommets are fully seated in the hydraulic assembly. **DO NOT ATTEMPT TO POUND RESERVOIR INTO HYDRAULIC ASSEMBLY, USING A HAMMER.**

(4) Using needle nose pliers, install the 3 brake fluid reservoir to hydraulic assembly retaining pins (Fig. 11). Make sure that pins are fully installed with barbs extending past reservoir on opposite side.

(5) Reinstall the high pressure hose, banjo fitting onto the hydraulic assembly and torque the fitting to 13 N●m (10.0 ft.lbs).

(6) Install the brake fluid spray shield and bladder accumulator onto the hydraulic assembly. Install the bladder accumulator by hand to be sure it does not bet cross threaded. **Be sure that the O-Ring on the bladder accumulator is fully seated into the hydraulic assembly.**

(7) Using Oil Filter Band Wrench, Special Tool C-4065 or equivalent, (Fig. 10) torque the bladder accumulator to 48 N●m (35 ft. lbs.)

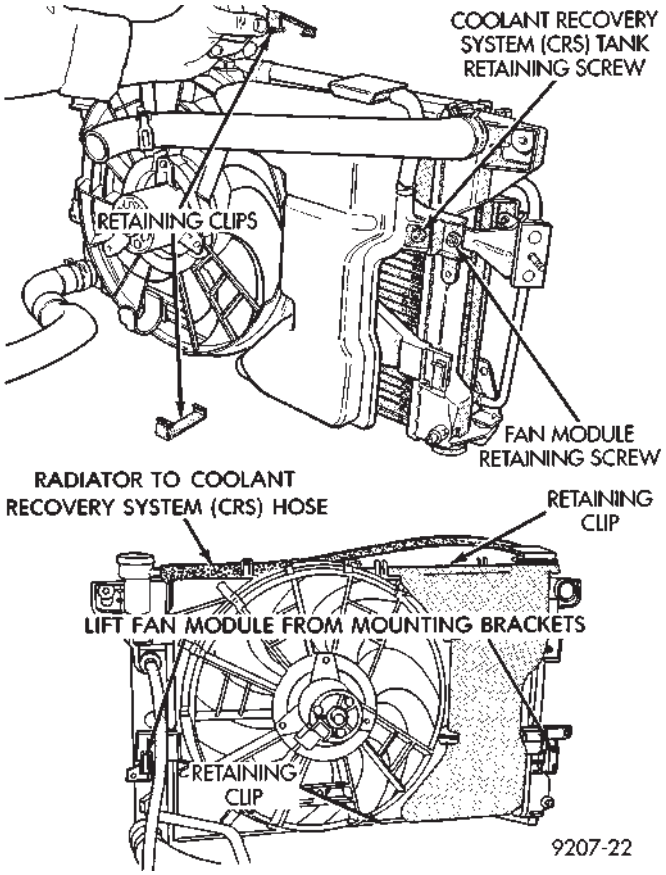


Fig. 12 Servicing Fan Module

RADIATOR HOSES

The hoses are removed using Constant Tension Clamp pliers to compress hose clamp.

A hardened, cracked, swollen or restricted hose should be replaced. Do not damage radiator inlet and outlet when loosening hoses.

Radiator hoses should be routed without any kinks and indexed as designed. The use of molded hoses is recommended.

Spring type hose clamps are used in all applications. If replacement is necessary replace with the original style spring type clamp.

FANS

All models use electric motor driven cooling system fans. The fan modules include a motor support which may (depending on model) include a shroud. The module is fastened to the radiator by screws with U-nuts and retaining clips (Fig. 12).

All fan motors are one speed. Attempts to reduce high temperature gauge reading by increasing engine speed, at the same vehicle speed, can increase high temperature.

SINGLE FAN

There are no repairs to be made to the fan. If the fan is warped, cracked, or otherwise damaged, it must be replaced with **only** the recommended part for adequate strength, performance and safety (Fig. 13).

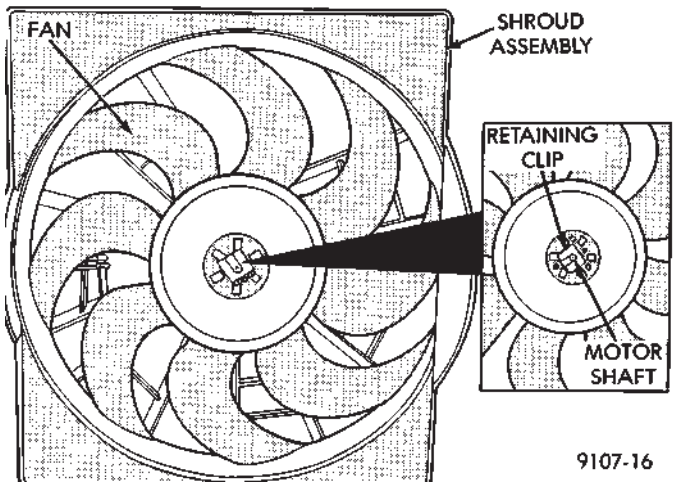


Fig. 13 Radiator Fan Retaining Clip—Typical

DUAL FAN MODULE—AC/AY BODY

The dual fan module (Fig. 11) is a combination of 2 fans mounted in a one piece shroud which are simultaneously activated. The dual fan system improves engine cooling and air conditioning performance in hot weather and severe driving conditions, while reducing fan noise and power consumption.

REMOVAL

Disconnect electric motor lead. Remove fan module to radiator fasteners and retaining clips. Remove assembly from radiator support.

To remove fan from motor shaft, bench support the motor and motor shaft, while removing the fan retaining clip, so that the shaft and motor will not be damaged by excessive force. **Surface or burr removal may be required to remove fan from motor shaft.** (Fig. 13). Do not permit the fan blades to touch the bench.

INSTALLATION

Slide the fan on motor shaft. Support motor and shaft as above while installing fan retaining clip. Install assembly into pocket on lower radiator tank. Attach retaining clips and fasteners to radiator tank. **Right side fastener is longer on A/C equipped vehicles**. Connect fan motor lead. **For wiring diagrams of fan motor systems see Wiring Diagrams Manual**

RADIATOR FAN CONTROL—ALL EXCEPT V-6 ENGINE

Fan control is accomplished two ways. The fan always runs when the air conditioning compressor clutch is engaged. In addition to this control, the fan is turned on by the temperature of the coolant which is sensed by the coolant temperature sensor which

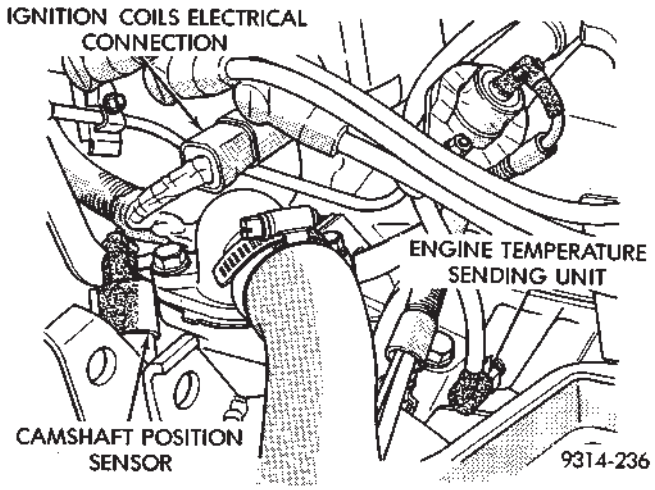


Fig. 6 Ignition Coil Electrical Connection

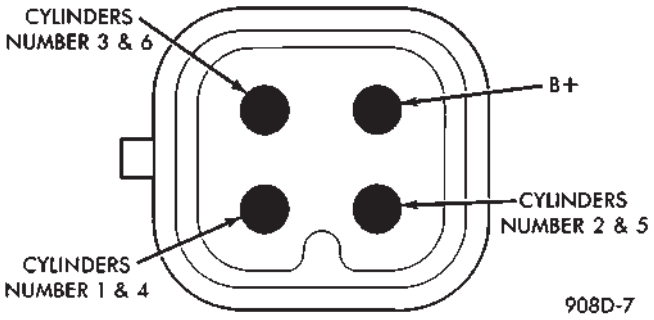


Fig. 7 Ignition Coil Terminal Identification

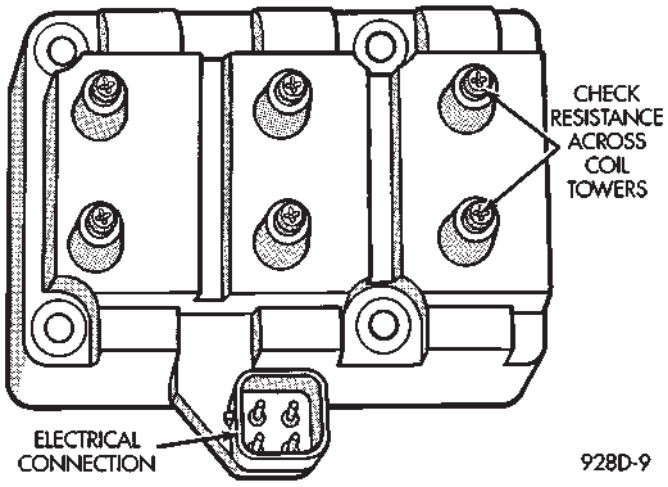


Fig. 8 Checking Ignition Coil Secondary Resistance

FAILURE TO START TEST

This no-start test checks the camshaft position sensor and crankshaft position sensor.

The powertrain control module (PCM) supplies 8.0 volts to the camshaft position sensor and crankshaft position sensor through one circuit. If the 8.0-volt supply circuit shorts to ground, neither sensor will produce a signal (output voltage to the PCM).

When the ignition key is turned and **left in the On position**, the PCM automatically energizes the auto shutdown (ASD) relay. However, the PCM de-energizes the relay within one second because it has not received a crankshaft position sensor signal indicating engine rotation.

During cranking, the ASD relay will not energize until the PCM receives a crankshaft signal. Secondly, the ASD relay remains energized only if the PCM senses a camshaft position sensor signal immediately after detecting the crankshaft position sensor signal.

(1) Check battery voltage. Voltage should approximately 12.66 volts or higher to perform failure to start test.

(2) Disconnect the harness connector from the coil pack (Fig. 2).

(3) Connect a test light to the B+ (battery voltage) terminal of the coil electrical connector and ground. The wire for the B+ terminal is dark green with a black tracer.

(4) Turn the ignition key to the **ON position.** The test light should flash On and then Off. **Do not turn the Key to off position, leave it in the On position**.

(a) If the test light flashes momentarily, the PCM grounded the auto shutdown (ASD) relay. Proceed to step 5.

(b) If the test light did not flash, the ASD relay did not energize. The cause is either the relay or one of the relay circuits. Use the DRBII scan tool to test the ASD relay and circuits. Refer to the appropriate Powertrain Diagnostics Procedure Manual. Refer to the wiring diagrams section for circuit information.

(5) Crank the engine. If the key was placed in the off position after step 4, place the key in the On position before cranking. Wait for the test light to flash once, then crank the engine.

(a) If the test light momentarily flashes during cranking, the PCM is not receiving a camshaft position sensor signal. Use the DRBII scan tool to test the camshaft position sensor and sensor circuits. Refer to the appropriate Powertrain Diagnostics Procedure Manual. Refer to the wiring diagrams section for circuit information.

(b) If the test light did not flash during cranking, unplug the camshaft position sensor connector. Turn the ignition key to the off position. Turn the key to the On position, wait for the test light to momentarily flash once, then crank the engine. If the test light momentarily flashes, the camshaft position sensor is shorted and must be replaced. If the light did not flash, the cause of the no-start is in either the crankshaft position sensor/camshaft position sensor 8.0-volt supply circuit, or the crankshaft position sensor 5-volt output or ground circuits. Use the DRBII scan tool to test the crankshaft position sensor and the sensor circuits.

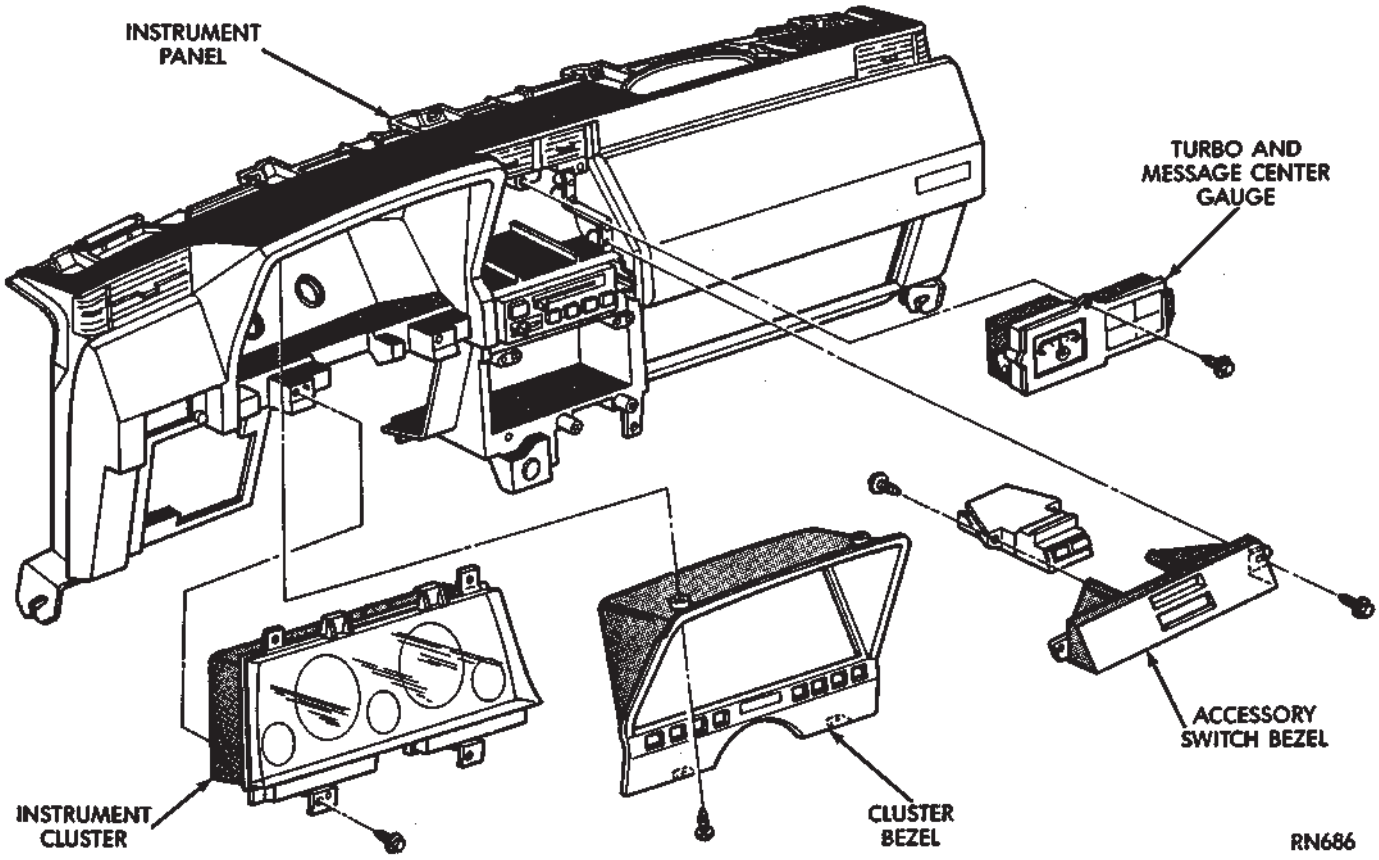


Fig. 7 Upper Instrument Panel Components

(5) Reconnect battery.

GAUGES

CAUTION: During the removal and installation watch overlays are not damage.

It is not necessary to remove instrument cluster from vehicle for gauge replacement.

When removing gauge assemblies from cluster, gauge must be pulled straight out, not twisted, or damage to gauge pins may result.

MULTIPLE GAUGE INOPERATIVE

Volt, speedometer, tachometer and other gauges appear to malfunction. Also check warning indicator lamps:

(1) Remove cluster

(2) Check for ignition voltage at pin E of the red connector. If no voltage, repair as necessary (Fig. 8).

(3) Check for ground continuity between pin C of the gray connector. If no ground, repair as necessary.

(4) If voltage and ground OK and pins or connectors are not distorted, replace printed circuit board.

(5) Install cluster.

SINGLE GAUGE INOPERATIVE (FIG. 9 AND 10)

(1) Remove gauge in question.

(2) With the ignition key ON, check for ignition voltage at ignition pin of gauge. Check for ground at ground pin of gauge.

(a) If no voltage or ground, remove cluster and check pin E red connector for ignition voltage or pin C gray connector for ground (Fig. 8).

(b) If no voltage or ground, repair as necessary. Refer to 8W, Wiring Diagrams.

(c) If there is voltage or ground, check cluster for distorted terminals. If terminals are OK, replace printed circuit board.

(3) When testing the temperature gauge, allow the engine to run until the vehicle reaches a normal operating temperature. Turn ignition OFF and remove gauge from cluster.

- When checking the temperature and oil pressure gauges, it is important to have the same engine temperature and engine speed when noting gauge position.
- The time between gauge position reading and sending unit measuring should be kept to a minimum.
- When testing oil pressure gauge, engine needs to be running.

(a) Measure and record the resistance between sending unit pin and ground pin of the gauge in question. Refer to Gauge Calibration.

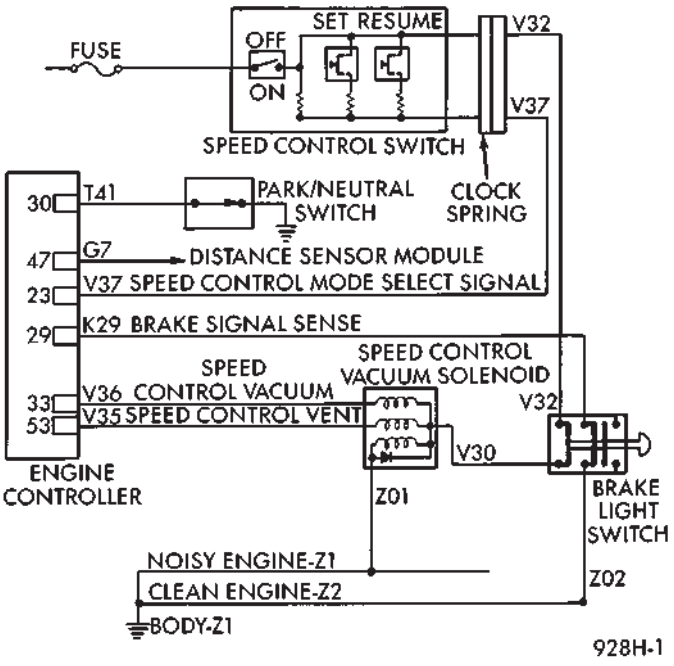


Fig. 11 Vehicle Speed Control Circuit

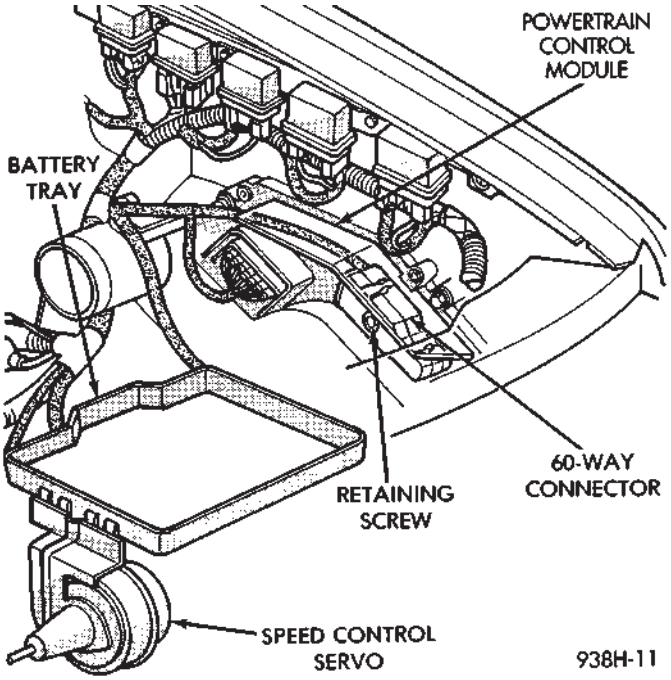


Fig. 13 Powertrain Control Module and Connector Location

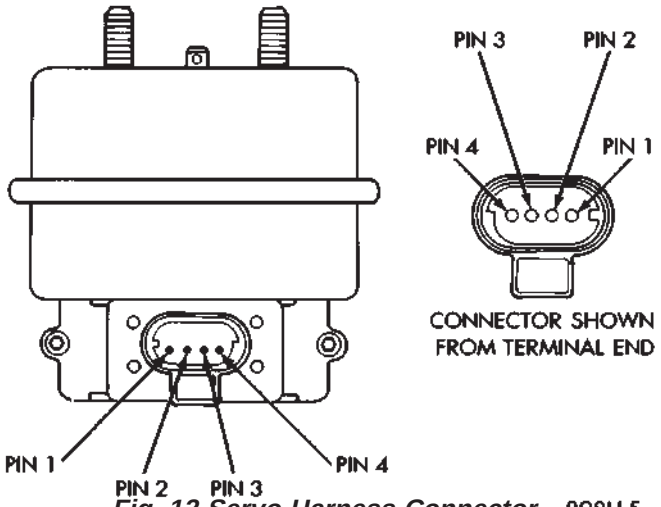


Fig. 12 Servo Harness Connector

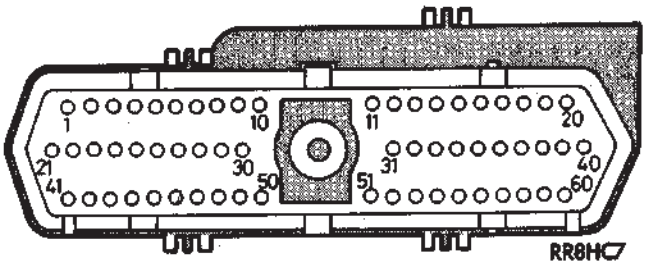


Fig. 14 Powertrain Control Module 60-Way Connector Shown from Terminal End

meter should show continuity. If no continuity perform the following test. Continuity OK, go to step 12.

(a) Using an ohmmeter test continuity between pin 29 of powertrain control module and pin 3 of the stop lamp switch connector.

(b) If no continuity, repair as necessary.

(c) If continuity, refer to Stop Lamp Switch Test.

(d) If stop lamp switch test OK, Test continuity between pin 6 of stop lamp switch and ground.

(14) Using an ohmmeter, touch one lead to a good body ground and touch the other lead to pin 30. The meter should show no continuity when transmission is in DRIVE and continuity when in PARK or NEUTRAL. If not test Neutral Start and Back-Up switch using DRB II.

VEHICLE SPEED CONTROL SWITCH TEST

WARNING: IF REMOVAL OF AIR BAG MODULE IS NECESSARY, REFER TO GROUP 8M, RESTRAINT SYSTEMS.

(1) Remove the switch and disconnect 4-way connector.

(2) Using an ohmmeter, test continuity at the four pins of the vehicle speed control switch. Refer to Vehicle Speed Control Switch Continuity (Fig. 15).

(3) If there is no continuity or incorrect continuity at any one of the switch positions, replace the switch.

STOP LAMP VEHICLE SPEED CONTROL SWITCH TEST

(1) Disconnect the six way connector at the stop lamp switch (Fig.16). Using an ohmmeter, continuity may be checked at the switch side of the connector as follows:

ity 9 and pin 7 of the control module 25-way connector. The vehicle speed sensor signal can be tested with a volt/ohmmeter at pin 7 of the control module 25-way connector. Turn on the vehicle ignition and check for a 5 volt signal as the vehicle is moved about 3 to 5 feet. If not repair open wiring, terminal push out, bad crimp, drive in vehicle speed sensor, etc., as necessary to correct condition. Ensure that the 25-way connector is plugged into the control module securely. Road test vehicle after repairs have been made to ensure that no recalls can occur while moving.

CONDITION: INSTRUMENT CLUSTER SPEEDOMETER STAYS AT 0 MPH/ (0 KM/H) WHILE VEHICLE IS MOVING, BODY COMPUTER DOES NOT LOCK DOORS AT 15 MPH (24 KM/H), AND THE SPEED CONTROL WILL NOT ACCEPT A SPEED SET.

PROCEDURE

(1) Remove driver's seat anchor bolts and nuts. Adjust the driver's seat to a safe driving position. Disconnect the 25-way connector from the memory seat control module. Replace the driver's seat anchor bolts and nuts. Road test the vehicle to complete this diagnosis. If the doors lock, the cruise control accepts a set, and the speedometer now works, replace the Memory Seat control module.

(2) After replacing the Memory Seat control module, perform the memory seat diagnostic self tests. This teaches the new module it's soft limits and now re-road test the vehicle before returning it to the customer.

CONDITION: NO SEAT MOVEMENT IN THE RECALL MODE, SEAT WILL MOVE BY MANUAL SWITCH ACTUATION IN ALL DIRECTIONS WITHOUT STALL DETECTION.

PROCEDURE

(1) Check for 5 volts at pin 10 of the control module 25-way connector. This is the 5 volt feed from the control module to the seat track position sensing potentiometer.

(2) Check for ground at pin 8 of the control module 25-way connector. To test for ground, one lead of the voltmeter must be connected to either the 5 volt supply for the control module or the battery positive. If the sense voltage and ground are NOT present at the above pins of the 21-way control module connector. When the seat switch is pressed, replace the control module. An inadvertent application of battery voltage to the circuit could damaged the control module. If the voltage and ground circuits are present then continue this procedure.

(3) Check for 5 volts at pin 5 of the natural 5-way connector plugged into the power seat adjuster motors end-bell.

(4) Check for ground at pin 4 of the natural 5-way connector plugged into the power seat adjuster motors end-bell. If the power seat adjuster still has no movement in the recall mode, then continue this procedure.

(5) Disconnect the natural 5-way connector from the power seat adjuster motors end-bell.

(6) Check with an ohmmeter for a resistance reading that may be from 2600 to 4000 ohms between pins 4 and 5 of the motors end-bell connector. If there is an open circuit reading or the reading obtained falls outside this range, then replace the seat motor package assembly. After replacement of the seat motor package, reconnect all wiring connectors and reinstall seat assembly in vehicle. Operate the switches manually to cause maximum seat movement in all directions. Perform the memory seat diagnostic self check so the control module will learn the new soft limits of the assembly.

CONDITION: NO SEAT TRACK FORWARD OR REARWARD MOVEMENT IN THE RECALL MODE, SEAT TRACK WILL MOVE FORWARD OR REARWARD BY MANUAL SWITCH ACTUATION WITHOUT STALL DETECTION.

PROCEDURE

(1) Check for a voltage at pin 12 of the control module 21-way connector. Less than 5 volts for the seat track fully forward and more than 0 volts when fully rearward. This voltage should vary corresponding to the position.

(2) Check for a voltage at pin 1 of the natural 5-way connector, Same as in step (1) above. The ground lead connected to pin 4 of the 5-way connector. If the voltage reading is at 0 volts, disconnect the 5-way natural connector and check for a short to ground in the harness. If no short is found, reconnect the connector and continue the procedure.

(3) Check for the voltage to vary as noted above, if it does not vary as the seat track is moved forward and rearward, the sensing potentiometer is defective. Replace the seat motor package assembly. After replacement of the seat motor package, reconnect all wiring connectors and reinstall seat assembly in vehicle. Operate the switches manually to cause maximum seat movement in all directions. Perform the memory seat diagnostic self check so the control module will learn the new soft limits of the assembly.

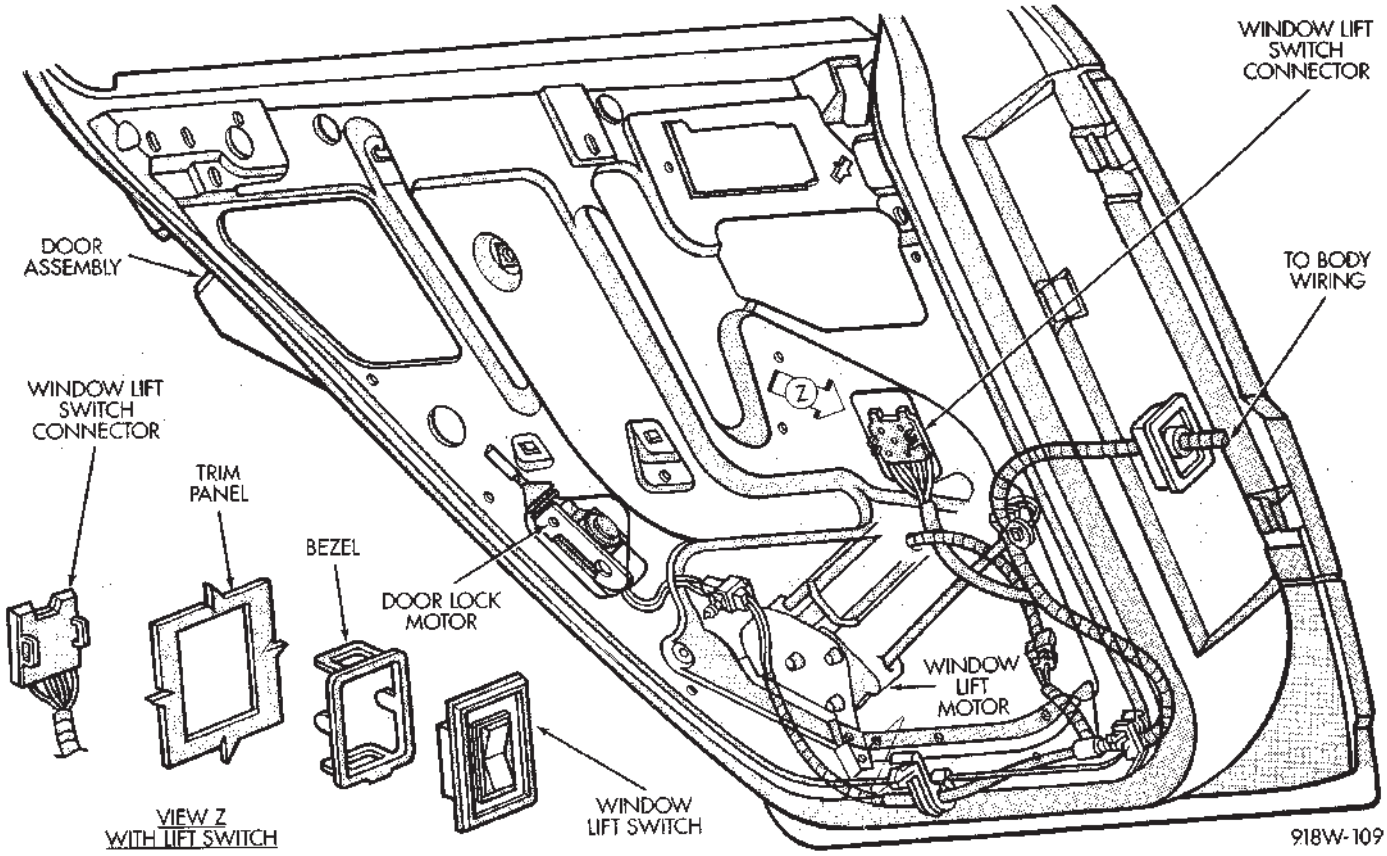


Fig. 9 Door Wiring (Rear) 4dr AP-Body

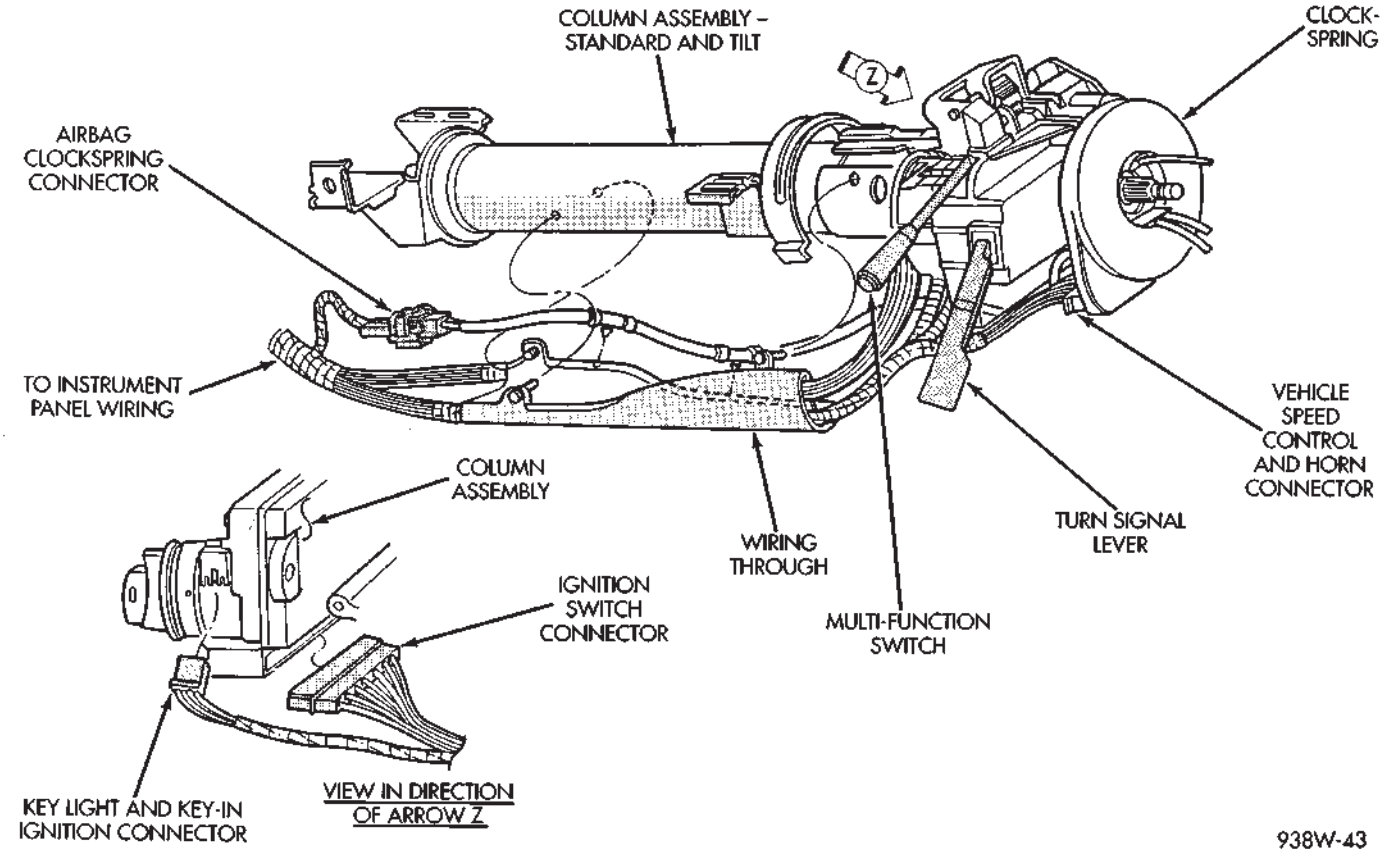
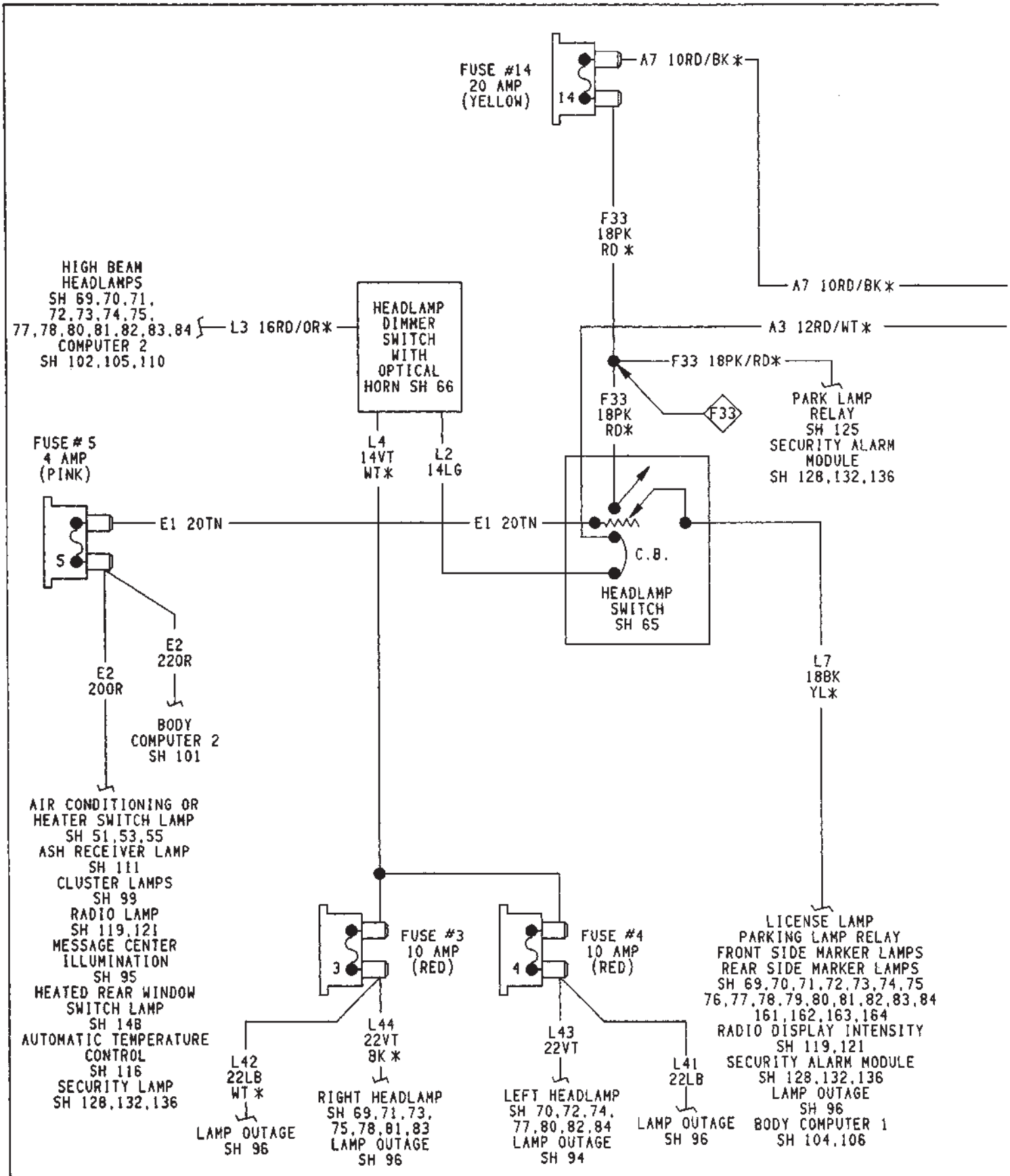
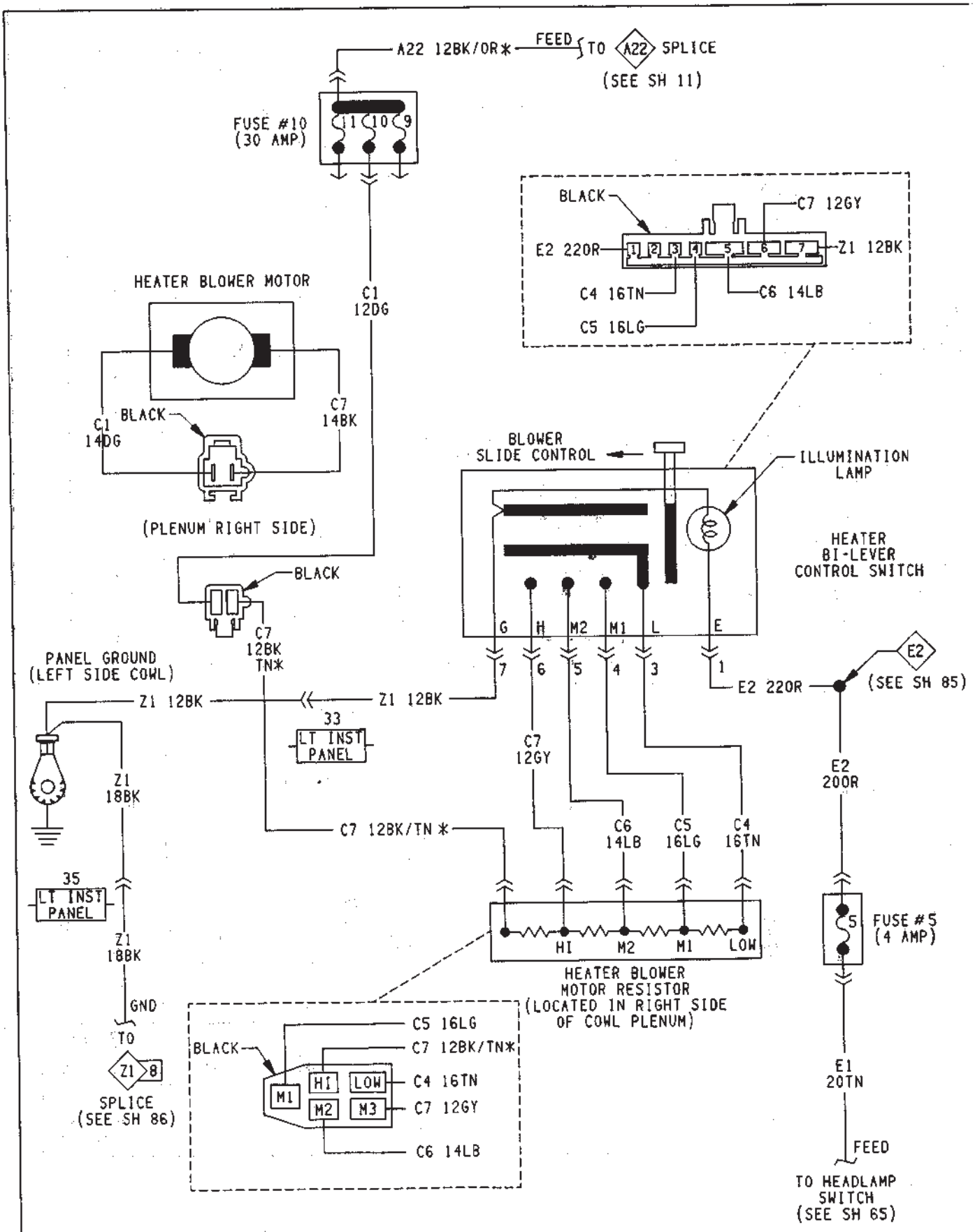


Fig. 10 Steering Column Wiring AP-Body



AC-CD,AY-C 1 FUSE APPLICATION CHART 938W-3



AC-CD,AY-C 51 HEATER SYSTEM 938W-3

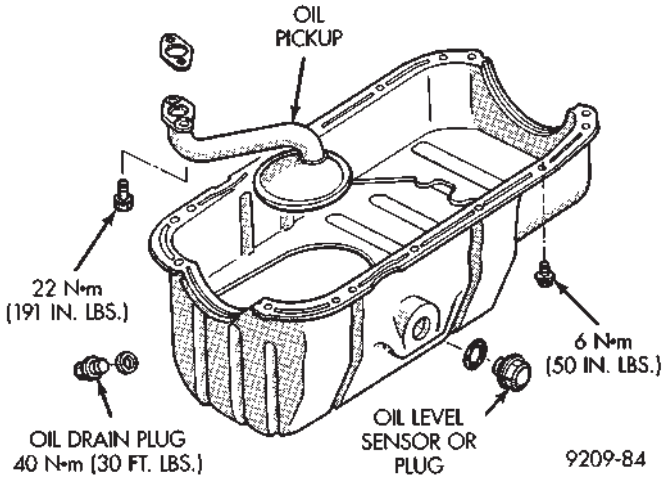


Fig. 2 Oil Pan

OIL PAN

The oil pan is made of sheet metal and is provided with a baffle-plate to prevent fluctuations in the oil level while the vehicle is running (Fig. 2).

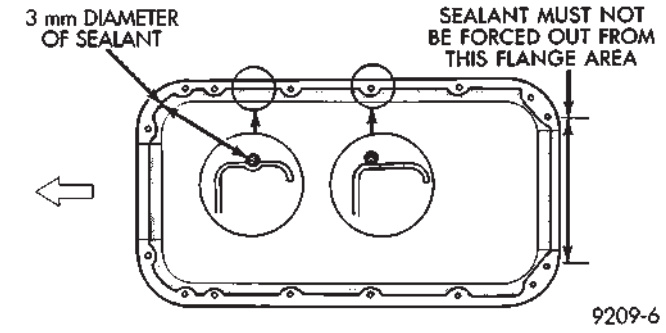


Fig. 3 Oil Pan Sealing

OIL PAN SEALING AND INSTALLATION

Oil pan to crankcase sealing is provided with Mopar Silicone Rubber Adhesive Sealant or equivalent gasket material. See Form-In-Place Gaskets in Standard Service Procedures.

(1) Apply sealant as shown in (Fig. 3).

(2) Install pan and tighten screws to 6 N●m (50 in. lbs.) in sequence shown in (Fig. 4).

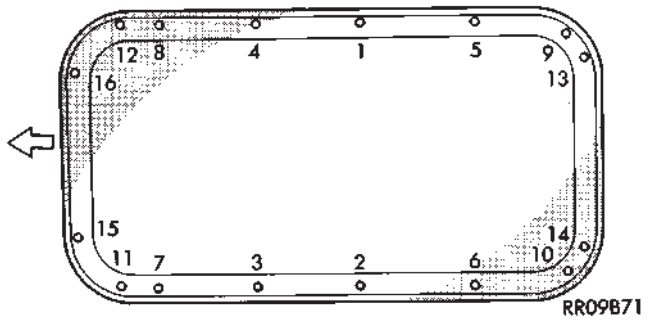


Fig. 4 Oil Pan Screw Tightening Sequence

OIL PUMP SERVICE

The oil pump assembly is mounted on the timing belt end of the cylinder block with the inner pump rotor indexed and installed on the crankshaft nose. (Fig. 5).

The oil pump case also retains the crankshaft front oil seal and provides oil pan front end closure.

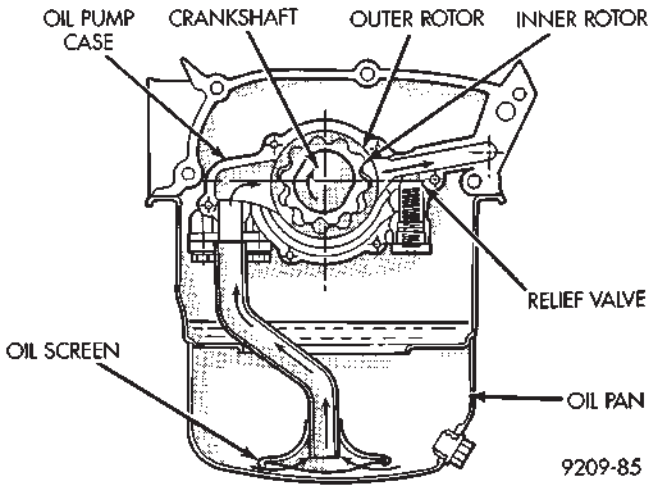


Fig. 5 Oil Pump-Installed

REMOVAL

Remove accessory drive system. Refer to Accessory Drive Service in this group.

Remove 5 bolts that attach oil pump to block (Fig. 6).

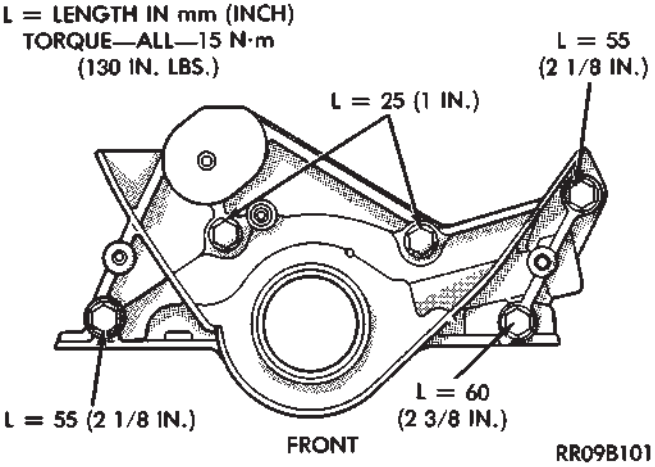


Fig. 6 Oil Pump Assembly

INSPECTION OIL PUMP

(1) Check oil pump case for damage and remove rear cover.

(2) Remove pump rotors and inspect case for excessive wear.

(3) Measure clearance between case and inner rotor (Fig. 8).

(4) Insert the rotor into the oil pump case (Figs. 9 and 10) and measure clearance with a feeler gauge as indicated.

Radiator Fan Relay
A/C Clutch Relay
Auto Shutdown Relay
Purge Solenoid
S/C Servo Solenoids
Generator Field
Tachometer Output
Torque Converter Clutch Solenoid (3 speed automatic transaxle only)
EGR Solenoid
All Solenoids/Relays
ASD Fuel System Test
Speed Control Vacuum Solenoid
Speed Control Vent Solenoid

THROTTLE BODY MINIMUM AIR FLOW CHECK PROCEDURE

(1) Connect DRBII scan tool.
(2) Remove air cleaner assembly. Plug the heated air door vacuum hose.
(3) Warm engine in Park or Neutral until the cooling fan has cycled on and off at least once.
(4) Hook-up timing check device and tachometer.
(5) Disconnect the coolant temperature sensor and set basic timing to 12°BTDC ± 2°BTDC.
(6) Shut off engine. Reconnect coolant temperature sensor.
(7) Disconnect the PCV valve hose from the intake manifold nipple.
(8) Attach Air Metering Fitting #6457 (Fig. 4) to the intake manifold PCV nipple.
(9) Restart the engine, allow engine to idle for at least one minute.
(10) Using the DRBII scan tool, Access Min Airflow Idle Spd in the sensor read test mode.
(11) The following will then occur:
- Idle air control motor will fully close.
- Idle spark advance will become fixed.
- Idle fuel will be provided at a set value.
- Engine RPM will be displayed on DRBII scan tool.

(12) Check idle RPM with tachometer. If idle RPM

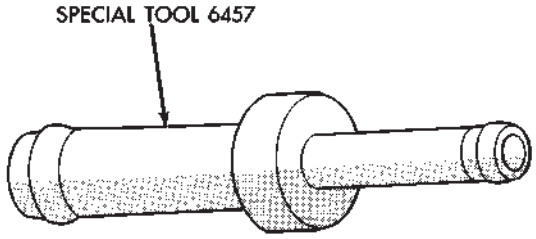


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Fig. 4 Air Metering Fitting

is within the specifications listed below, then the throttle body minimum air flow is set correctly.

IDLE SPECIFICATIONS

ODOMETER READING	IDLE RPM
Below 1000 Miles	600 - 1200 RPM
Above 1000 Miles	800 - 1200 RPM

9314-272X

If idle RPM is not within specification replace throttle body.
(13) Shut off engine.
(14) Remove Special Tool number 6457 from intake manifold PCV nipple. Reinstall the PCV valve hose.
(15) Remove DRBII scan tool.
(16) Reinstall air cleaner assembly. Reinstall heated air door vacuum hose.
(17) Disconnect timing check device and tachometer.

IGNITION TIMING PROCEDURE

Refer to Group 8D Ignition System

60-WAY PCM WIRING CONNECTOR

Refer to the powertrain control module (PCM) wiring connector descriptions for information regarding wire colors and cavity numbers (Fig. 5).

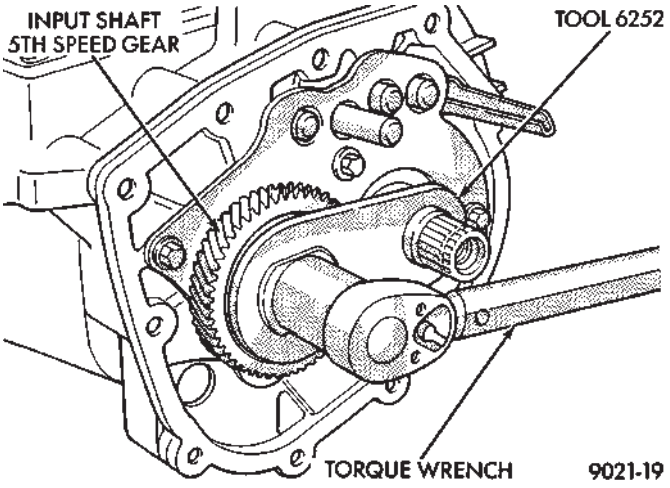

Fig. 9 Remove or Install 5th Gear Nut

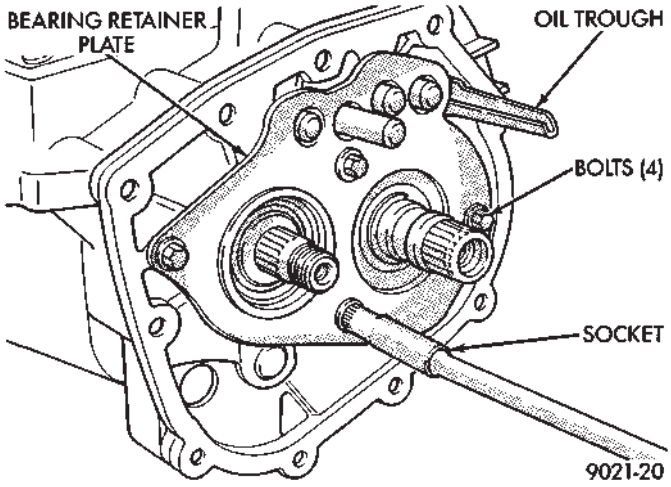

Fig. 10 Bearing Retainer Plate Bolts

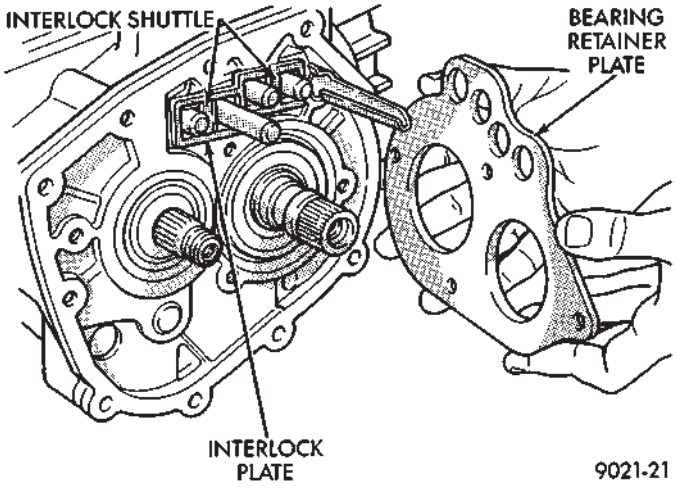

Fig. 11 Bearing Retainer Plate

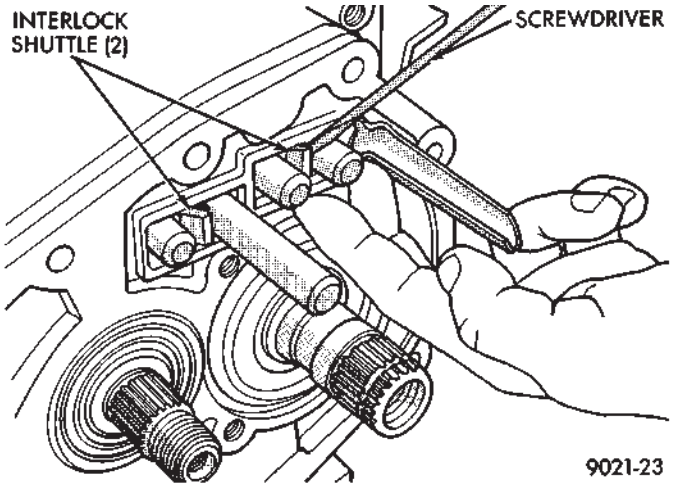

Fig. 12 Interlock Shuttles

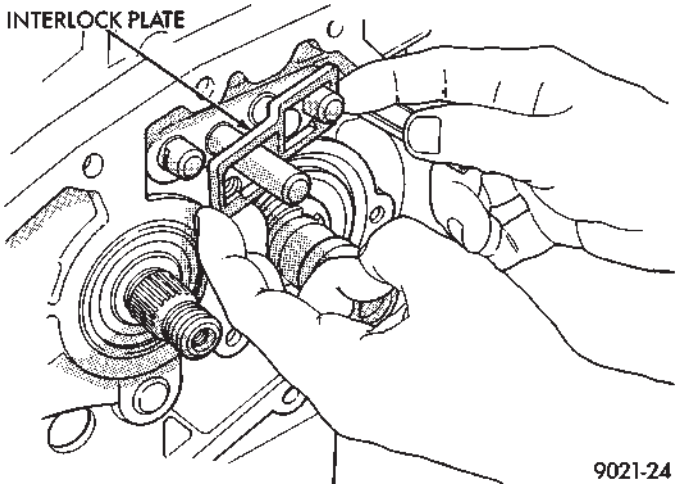

Fig. 13 Interlock Plate