**GENERAL INFORMATION**

**Jeep (Gasoline) - 1988-11**

# CHANGE OIL/OIL LIFE MONITOR

**NOTE:** **To determine the appropriate reset procedure, refer to CHANGE OIL/OIL LIFE MONITOR RESET INDEX.**

**CHANGE OIL/OIL LIFE MONITOR RESET INDEX**

| Model & Year | Reset Procedure |
|---|---|
| Commander | |
| 2008-10 | Change Oil/Oil Life Monitor Reset - Procedure 1 |
| Compass | |
| 2008-11 | Change Oil/Oil Life Monitor Reset - Procedure 1 |
| Grand Cherokee | |
| 2008-11 | Change Oil/Oil Life Monitor Reset - Procedure 1 |
| Liberty | |
| 2008-11 | Change Oil/Oil Life Monitor Reset - Procedure 1 |
| Patriot | |
| 2008-11 | Change Oil/Oil Life Monitor Reset - Procedure 1 |
| Wrangler | |
| 2008-11 | Change Oil/Oil Life Monitor Reset - Procedure 1 |

**CHANGE OIL/OIL LIFE MONITOR RESET - PROCEDURE 1**

1. Turn ignition on, with engine off.
2. Fully depress the accelerator pedal, slowly, 3 times within 10 seconds.
3. Turn ignition switch to OFF/LOCK position.

**NOTE:** **If indicator message illuminates when engine is started, repeat the reset procedure.**

# EMISS MAINT INDICATOR LIGHT

**NOTE:** **To determine the appropriate reset procedure, refer to EMISS MAINT INDICATOR LIGHT RESET INDEX.**

**EMISS MAINT INDICATOR LIGHT RESET INDEX**

| Model & Year | Reset Procedure |
|---|---|
| Cherokee | |
| 1988-90 | Emiss Maint Indicator Light Reset - Procedure 1 |

**Monitor Conditions**

### When Monitored:

Continuous monitoring.

**Set Conditions**

- **Set Condition:**

  When the Totally Integrated Power Module indicates that the Brake Fluid Level Circuit is open and greater than 4.9 volts for more then 5 seconds.

**Possible Causes**

| Possible Causes |
|---|
| (B20) BRAKE FLUID LEVEL SWITCH SIGNAL CIRCUIT OPEN |
| BRAKE FLUID LEVEL SWITCH INTERNAL FAILURE |
| (P37)/(K91) SENSOR GROUND CIRCUIT OPEN |
| TOTALLY INTEGRATED POWER MODULE |

**Diagnostic Test**

1. **BRAKE FLUID LEVEL SWITCH SIGNAL VOLTAGE ABOVE 4.9 VOLTS**

   **NOTE: This DTC must be active for the results of this test to be valid.**

   Turn the ignition on.

   With the scan tool, read Brake Fluid Level Switch Signal voltage.

   **Is the voltage above 4.9 volts?**

   **Yes**

   Go To 2.

   **No**

   Perform the ABS INTERMITTENT CONDITION diagnostic procedure.
   Refer to the **ABS INTERMITTENT CONDITION**.
2. **BRAKE FLUID LEVEL SWITCH INTERNAL FAILURE**

Go To 4.

**No**

Repair the (X201) Amplified Left I/P Speaker (+) circuit for an open.
Perform **BODY VERIFICATION TEST - VER 1** .

4. **CHECK THE (X291) AMPLIFIED LEFT I/P SPEAKER (-) CIRCUIT FOR AN OPEN**

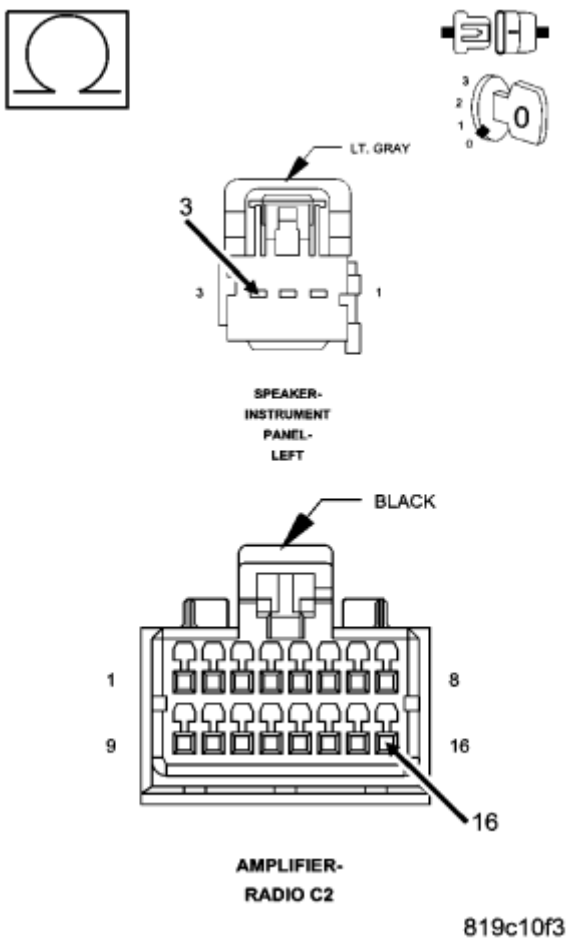



**Fig. 46: Measuring Resistance Of (X291) Amplified Left I/P Speaker (-) Circuit Between Amplifier C2 Harness Connector And Amplified Left I/P Speaker Harness Connector**
**Courtesy of CHRYSLER LLC**

Measure the resistance of the (X291) amplified Left I/P Speaker (-) circuit between the Amplifier C2 harness connector and the Amplified Left I/P Speaker harness connector.

**Is the resistance below 5.0 ohms?**

**Yes**

Replace the Amplifier in accordance with the service information.

**Fig. 538: Lift Gate Latch**
**Courtesy of CHRYSLER LLC**

1. Install the latch (3) to the lift gate (1).
2. Install the three bolts (4) to the lift gate latch (3) and tighten the bolts to 11 N.m (95 in. lbs.).
3. Connect the cable (2) to the latch (3).
4. Connect the electrical connectors (5).

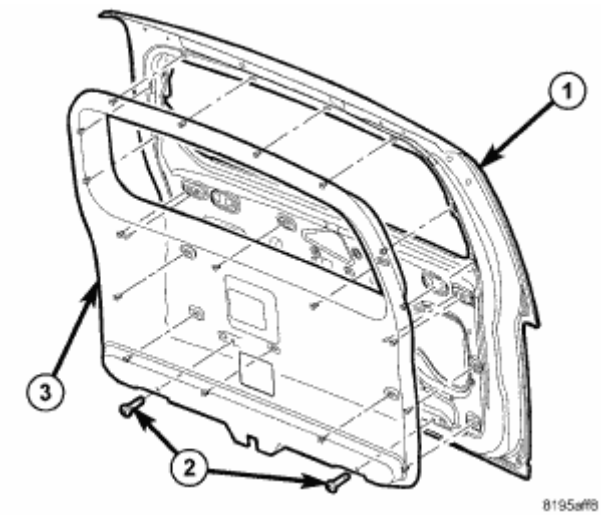



**Fig. 539: Liftgate Trim Panel**
**Courtesy of CHRYSLER LLC**

5. Align and install the trim panel (3) to the lift gate (1), use hand pressure to seat all of the fasteners around the trim panel (3).
6. Install the two bolts (2) to the lower trim panel (3) and tighten to 7 N.m (65 in. lbs.).

## LATCH - ACCESS PANEL

### DESCRIPTION

#### LATCH - ACCESS PANEL

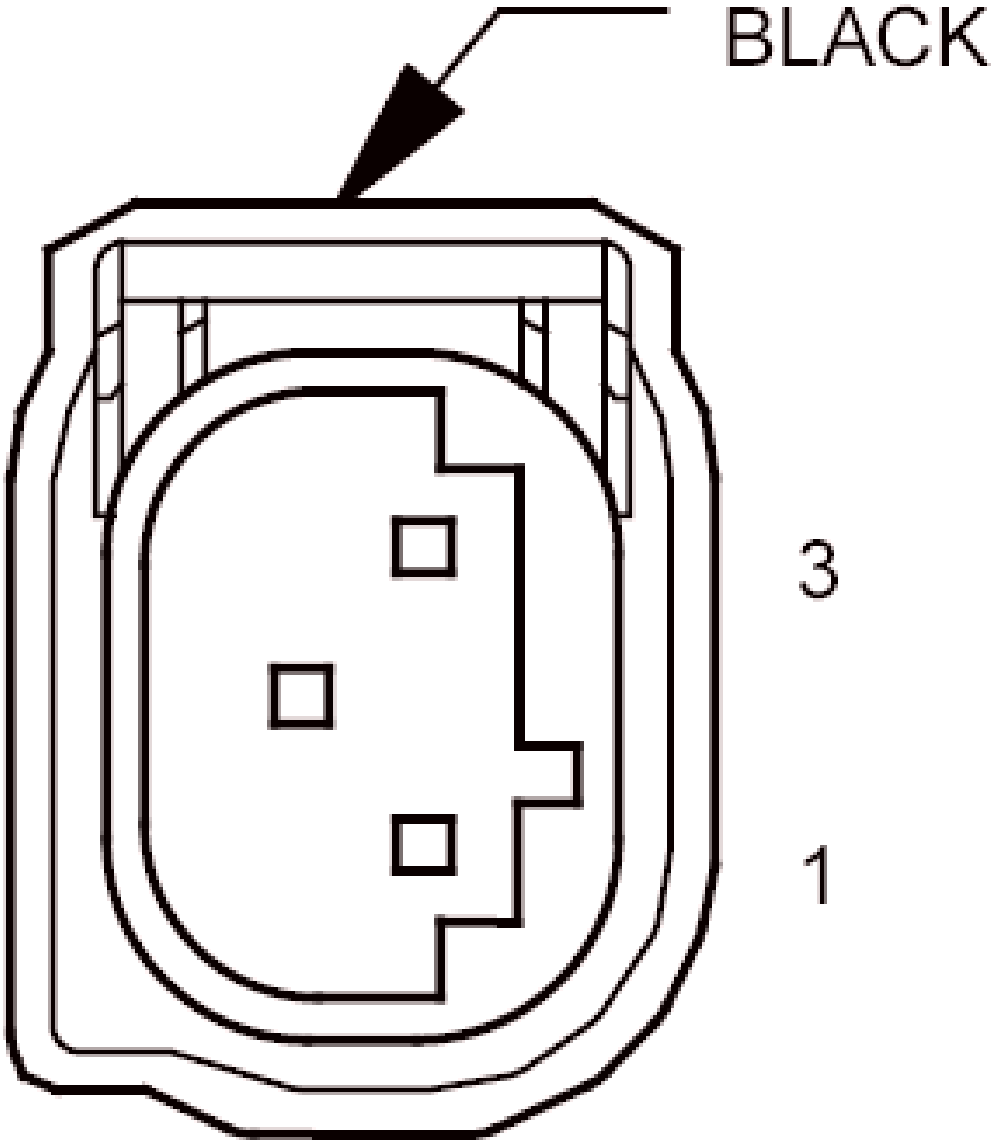
This panel provides access to the lift gate latch. If power is interrupted to the latch, then the lift gate can be opened manually by removing the access panel and pushing the latch release lever down.

### REMOVAL

#### LATCH - ACCESS PANEL

**NOTE: The latch access panel is located on the lift gate trim panel near the latch mechanism.**

1. Using a trim stick C-4755 or equivalent, remove the access panel.




# SIREN

# (EXPORT)

| CAV | CIRCUIT | FUNCTION |
|---|---|---|
| 1 | A412 18RD | FUSED B(+) |
| 2 | | |

2. **WIRE HARNESS INSPECTION**

Turn the ignition off.

Visually inspect the CKP wire harness. Look for any chafed, pierced, pinched, or partially broken wires.

Visually inspect the CKP wire harness connectors. Look for broken, bent, pushed out, or corroded terminals.

Verify that there is good pin to terminal contact in the Sensor and Powertrain Control Module connectors.

Make sure the Crankshaft Position Sensor is properly installed and the mounting bolt(s) are torqued to the proper specification.

**Were any of the above conditions present?**

**Yes**

Repair as necessary
Perform **POWERTRAIN VERIFICATION TEST** .

**No**

Go To 3.

3. **TONE WHEEL/FLEX PLATE INSPECTION**

Remove the Crankshaft Position Sensor.

Inspect the Tone Wheel/Flex Plate slots for damage, foreign material, or excessive movement.

**Were any problems found?**

**Yes**

Repair or replace the Tone Wheel/Flex Plate as necessary.
Perform **POWERTRAIN VERIFICATION TEST** .

**No**

Go To 4.

4. **CRANKSHAFT POSITION SENSOR**

**If there are no possible causes remaining, view repair.**

**Repair**

**MONITOR CONDITIONS**

**When Monitored:**

Ignition on and engine running with no MAP Sensor DTCs.

**SET CONDITIONS**

- **Set Condition:**

  PCM calculated MAP value is greater than actual MAP value plus an offset value. One trip fault and the code will set within 5 seconds. Three good trips to turn of the mil. MIL is on and the ETC light will flash.

**POSSIBLE CAUSES**

| Possible Causes |
|---|
| RESTRICTED AIR INLET SYSTEM |
| RESISTANCE IN THE (K857) 5-VOLT SUPPLY CIRCUIT |
| (K857) 5-VOLT SUPPLY CIRCUIT SHORTED TO GROUND |
| RESISTANCE IN THE (K1) MAP SIGNAL CIRCUIT |
| (K1) MAP SIGNAL CIRCUIT SHORTED TO GROUND |
| RESISTANCE IN THE (K900) SENSOR GROUND CIRCUIT |
| RESISTANCE IN THE (K855) 5-VOLT SUPPLY CIRCUIT |
| (K855) 5-VOLT SUPPLY CIRCUIT SHORTED TO GROUND |
| RESISTANCE IN THE TP SENSOR SIGNAL CIRCUIT |
| TP SENSOR SIGNAL CIRCUIT SHORTED TO GROUND |
| RESISTANCE IN THE (K922) TP SENSOR GROUND CIRCUIT |
| MAP SENSOR |
| THROTTLE BODY/TP SENSOR |
| POWERTRAIN CONTROL MODULE (PCM) |

Always perform the **PRE-DIAGNOSTIC TROUBLESHOOTING PROCEDURE** before proceeding.

**DIAGNOSTIC TEST**

1. **ACTIVE DTC**

   **NOTE: The most likely cause of this DTC is a plugged intake air system or dirty Throttle Body. Check for any TSBs before continuing.**

   **NOTE: Diagnose any 5-Volt Supply, TP Sensor, Oxygen Sensor, Fuel related or MAP Sensor DTCs before continuing.**

   **NOTE: The throttle plate should be free from binding and carbon build up.**

Replace the Passenger Seat Harness in accordance with the Service Information.

Perform ***AIRBAG SYSTEM VERIFICATION TEST - VER 1** .

**No**

Go To 7.

7. **CHECK (R262) SEAT POSITION SENSOR DATA-PASSENGER CIRCUIT FOR A SHORT TO (R264) SEAT POSITION SENSOR VOLTAGE-PASSENGER CIRCUIT**

**WARNING: To avoid serious or fatal injury, turn the ignition off, disconnect the battery and wait two minutes before proceeding.**

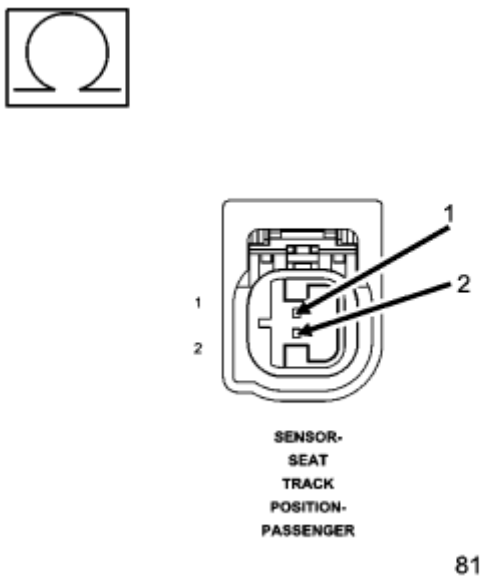



**Fig. 62: Checking Passenger Seat Position Sensor Data Circuit**
**Courtesy of CHRYSLER LLC**

Measure the resistance between the (R262) Passenger Seat Position Sensor Data circuit and the (R264) Passenger Seat Position Sensor Voltage circuit in the Passenger Seat Track Position Sensor connector.

**NOTE: Do not attempt to repair the Seat Harness. Replace the Seat Harness if any of these conditions exist**

**Is the resistance below 10k ohms?**

**Yes**

Replace the Passenger Seat Harness in accordance with the service information.

Perform ***AIRBAG SYSTEM VERIFICATION TEST - VER 1** .

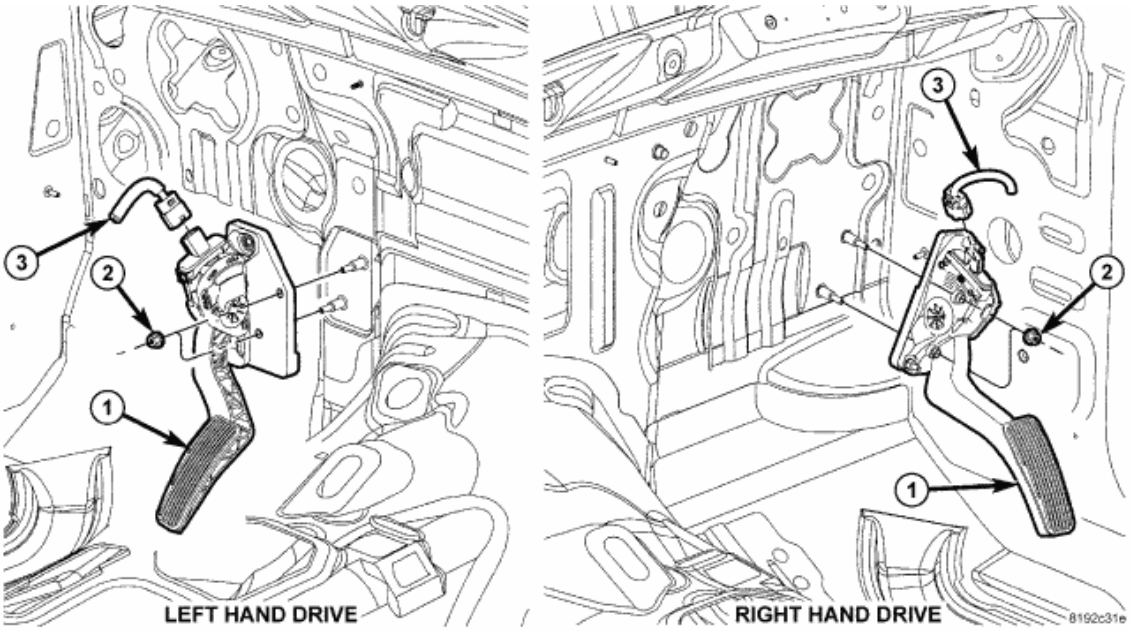



**Fig. 103: ACCELERATOR PEDAL/APPS**
**Courtesy of CHRYSLER LLC**

The accelerator pedal and APPS (Accelerator Pedal Position Sensor) are serviced as a complete assembly including the bracket.

1. Position accelerator pedal/APPS assembly over two mounting studs.
2. Install two accelerator pedal mounting bracket nuts (2).
3. Connect electrical connector (3) at APPS.
4. Before starting engine, operate accelerator pedal to check for any binding.

## INJECTOR-FUEL

### DESCRIPTION

#### FUEL INJECTOR

To control the injection valves, the new Common-Rail injectors use a rapid-action actuator made of piezo crystals, which opens and closes the injection valve. The piezo crystals expand when electrical current is applied to them, and contract when electrical current is turned off. The piezo actuator can switch up to five times faster than a standard solenoid, because the movement of the piezo crystals does not rely on mechanical components to transmit motion to the injection valve. This doubles the piezo injector's switching speed, and enables fuel to be delivered with greater precision, which leads to lower emissions and better engine performance.

### STANDARD PROCEDURE

#### INJECTOR CLASSIFICATION

Foreign material in HVAC housing
Improper blower motor mounting
Deformed or damaged blower wheel
Worn blower motor bearings or brushes

**VIBRATION**

Possible causes of a blower motor vibration include:

Improper blower motor mounting
Foreign material in blower wheel
Deformed or damaged blower wheel
Worn blower motor bearings

**REMOVAL**

**MOTOR-BLOWER**

**NOTE: The blower motor is located on the bottom of the passenger side of the HVAC housing. The blower motor can be removed from the vehicle without having to remove the HVAC housing.**

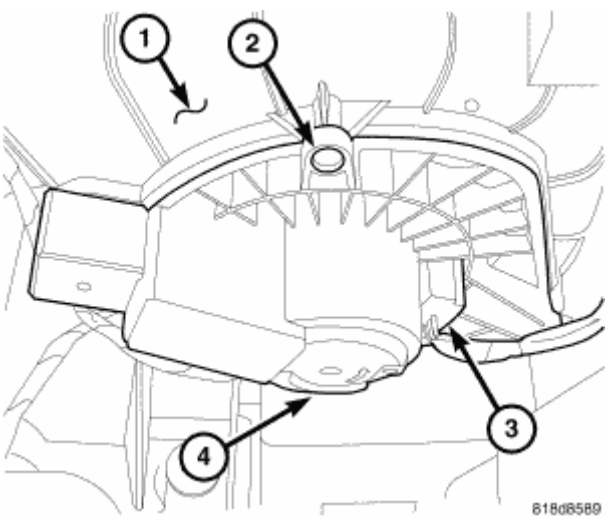



**Fig. 118: HVAC Housing, Screws, Instrument Panel Wire Harness Connector & Blower Motor**
**Courtesy of CHRYSLER LLC**

**NOTE: LHD model shown in illustration. RHD model similar.**

1. Disconnect and isolate the negative battery cable.
2. If equipped, remove the silencer from below the passenger side of the instrument panel. Refer to **REMOVAL** .

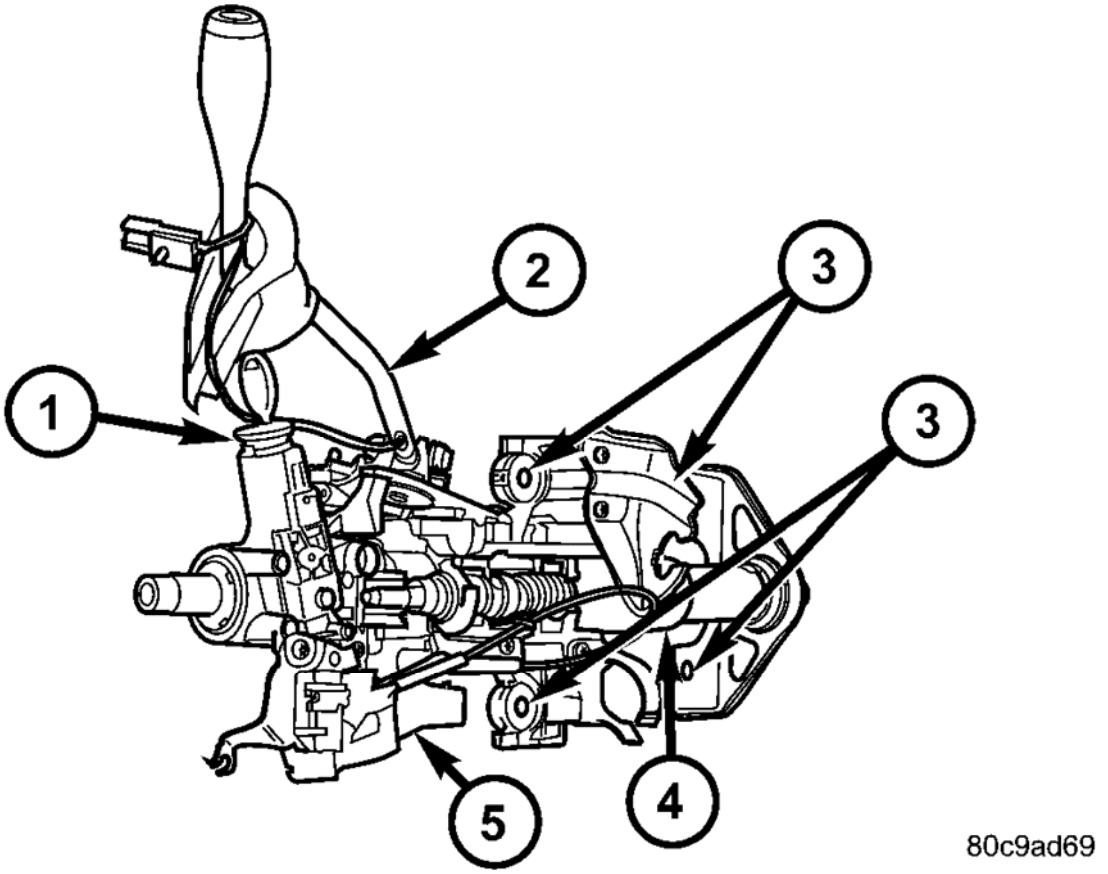



**Fig. 19: Steering Column**
**Courtesy of CHRYSLER LLC**

| |
|---|
| 1 - KEY CYLINDER |
| 2 - GEAR SHIFT LEVER |
| 3 - MOUNTING HOLES |
| 4 - STEERING COLUMN |
| 5 - IGNITION SWITCH |

6. Position the wire retainer into the tilt lever bracket.
7. Reconnect the lower clockspring connectors.
8. Install the key cylinder (1)
9. Install steering column upper and lower shrouds.
10. Enable the airbag system. Refer to **INSTALLATION** .

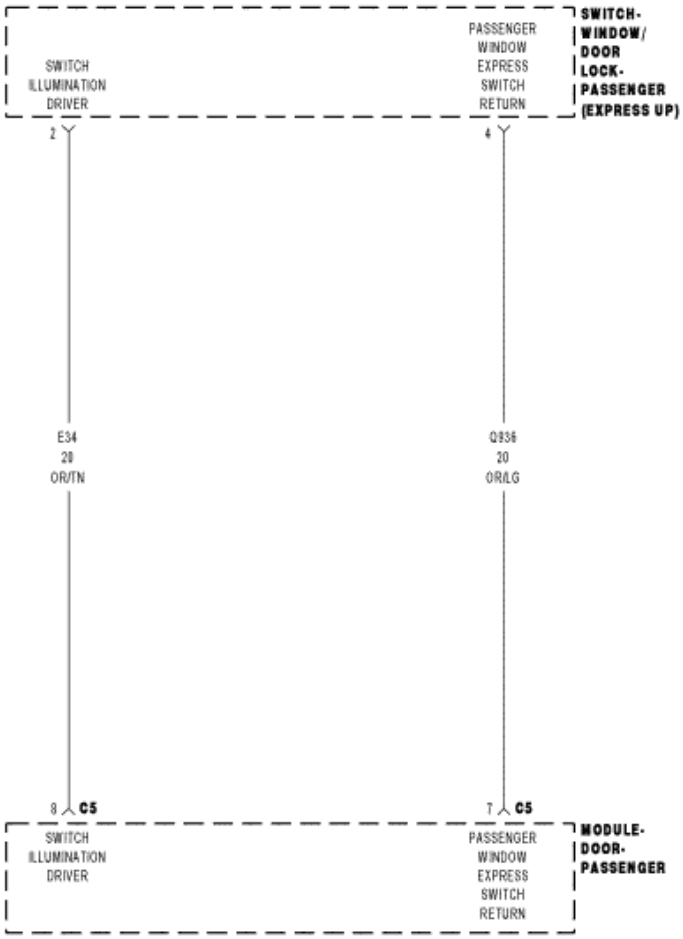
## SWITCH-KEY-IN IGNITION

### DESCRIPTION

| | | | | | |
|---|---|---|---|---|---|
| **Inspect the engine air filter element, replace if necessary.** | - | - | - | - | X |
| **Inspect the PCV Valve, and replace if necessary.<--** | - | - | - | - | X |
| **Replace the spark plugs (3.7L Only).** | - | - | - | - | X |
| Inspect the brake linings. | - | - | X | - | - |
| Inspect the manual transmission fluid, add as necessary (3.7L Only). | X | X | X | X | X |
| Drain and refill the front and rear axle fluid. | - | - | - | - | X |
| Inspect the transfer case fluid, add if necessary. | - | - | - | - | X |

| **Kilometers (Miles)** | **53 000 (33,000)** | **58 000 (36,000)** | **62 000 (39,000)** | **67 000 (42,000)** | **72 000 (45,000)** |
|---|---|---|---|---|---|
| Change the engine oil and engine oil filter, if not replaced at 3 months. | X | X | X | X | X |
| Rotate the tires. | - | X | - | X | - |
| **Inspect the engine air filter element, replace if necessary.** | - | - | - | - | X |
| Inspect the drive belt, and replace as needed. | - | - | - | - | X |
| Inspect the brake linings. | - | X | - | - | - |
| Inspect the manual transmission fluid, add as necessary (3.7L Only). | X | X | X | X | X |
| Drain and refill the front and rear axle fluid. | - | - | - | - | X |
| Inspect the transfer case fluid, add if necessary. | - | - | - | - | X |

| **Kilometers (Miles)** | **77 000 (48,000)** | **82 000 (51,000)** | **86 000 (54,000)** | **91 000 (57,000)** | **96 000 (60,000)** |
|---|---|---|---|---|---|
| Change the engine oil and engine oil filter, if not replaced at 3 months. | X | X | X | X | X |
| Rotate the tires. | X | - | X | - | X |
| **Inspect the engine air filter element, replace if necessary.** | - | - | - | - | X |
| **Inspect the PCV Valve, and replace if necessary.<--** | - | - | - | - | X |
| **Replace the spark plugs (3.7L Only).** | - | - | - | - | X |
| Inspect the drive belt, and replace as needed. Not required if belt was previously. | - | - | - | - | X |
| | | | | | |



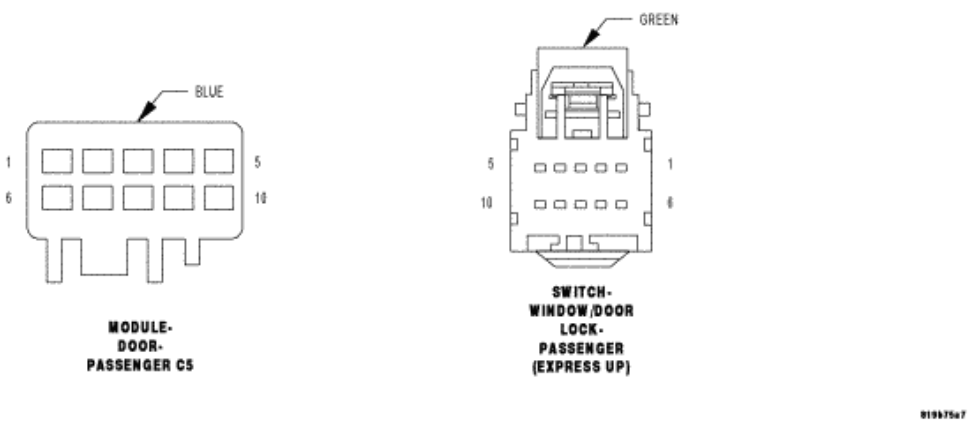




**Fig. 1: Passenger Window Switch Backlighting Circuit Schematic**
**Courtesy of CHRYSLER LLC**

**Additional Wiring**

For complete wiring diagrams refer to **SYSTEM WIRING DIAGRAMS** .

## DESCRIPTION

### RACK & PINION STEERING GEAR

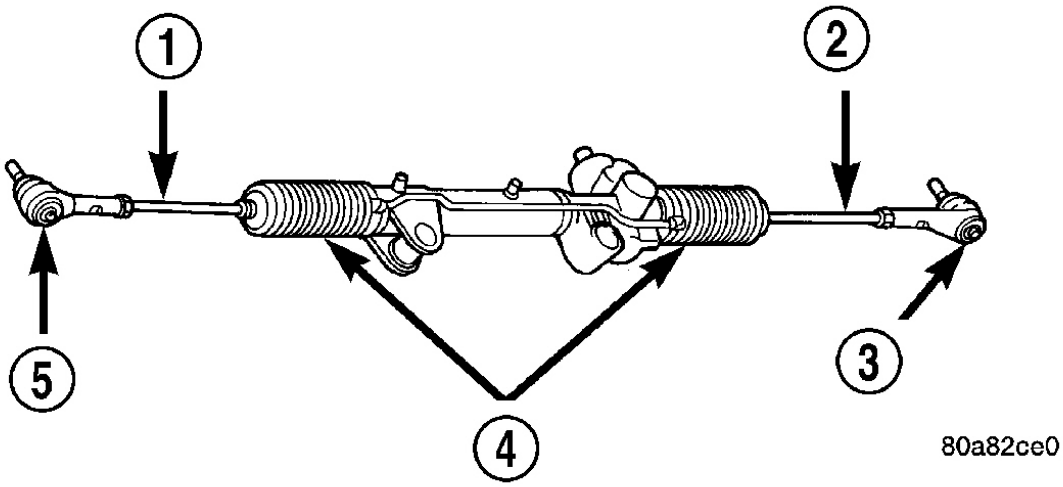



**Fig. 47: Rack & Pinion Steering Gear**
**Courtesy of CHRYSLER LLC**

| |
|---|
| 1 - TIE ROD - INNER |
| 2 - TIE ROD - INNER |
| 3 - TIE ROD END - OUTER LH |
| 4 - BOOTS |
| 5 - TIE ROD END - OUTER RH |

A rack and pinion steering gear is made up of two main components, the pinon shaft and the rack. The gear cannot be adjusted or internally serviced. If a malfunction or a fluid leak occurs, the gear must be replaced as an assembly, With the exception of the outer tie rods (3&5) which are serviced separately. See **Fig. 47**.

## OPERATION

### RACK & PINION STEERING GEAR

The steering column intermediate shaft is attached to the gear pinion. The rotation of the pinion moves the gear rack from side-to-side. This lateral action of the rack pushes and pulls the tie rods, which are connected to the steering knuckles to change the direction of the front wheels.

## DIAGNOSIS AND TESTING

### POWER STEERING GEAR

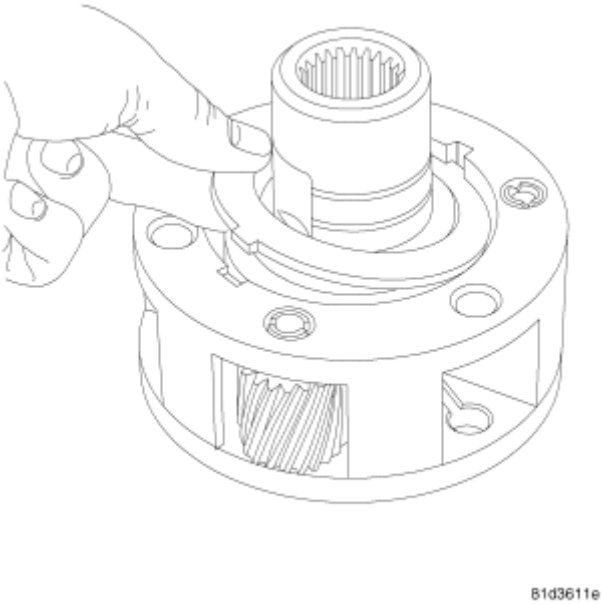



**Fig. 54: Input Gear Retainer Removal**
**Courtesy of CHRYSLER LLC**

51. Remove the lock plate from the input and planetary gear assembly.

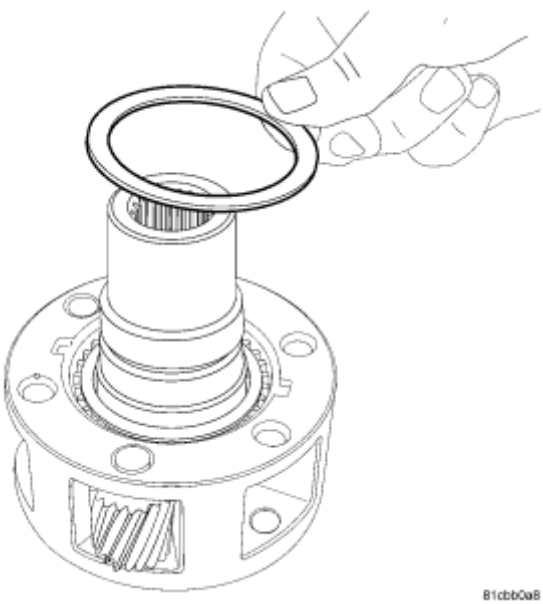



**Fig. 55: LOW GEAR LOCK PLATE**
**Courtesy of CHRYSLER LLC**

52. Remove the thrust washer from the input and planetary gear assembly.