

INSTRUMENT PANEL AND GAUGES

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AA BODY

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GENERAL INFORMATION

INSTRUMENT CLUSTERS

There are three instrument cluster assemblies available. Two mechanical clusters which incorporate magnetic type gauges. The electronic instrument cluster incorporates, a digital speedometer/odometer and electronic bar graph gauges.

The mechanical Hi-Line instrument cluster has magnetic type gauges for coolant temperature, fuel level and charging system voltage (Fig. 1).

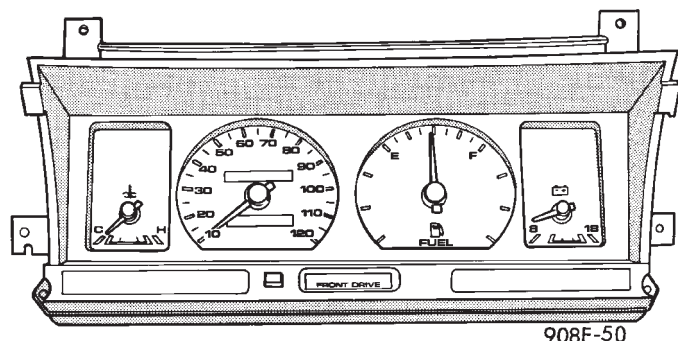


Fig. 1 Instrument Cluster

The mechanical Premium instrument cluster has magnetic type gauges for oil pressure, coolant temperature, charging system voltage and fuel level. The premium instrument cluster also has a tachometer (Fig. 2).

If the ignition switch is in the OFF position each gauge will show a reading, except for the volt gauge.

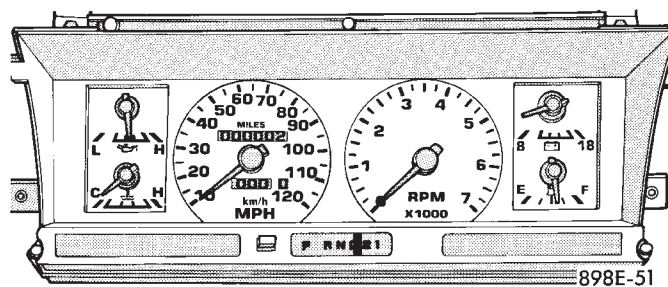


Fig. 2 Instrument Cluster With Tachometer

However the readings are only accurate when the ignition switch is in the ON position.

TACHOMETER DRIVE MODULE

The tachometer drive module is an electronic module used to drive a magnetic tachometer in a conventional instrument cluster.

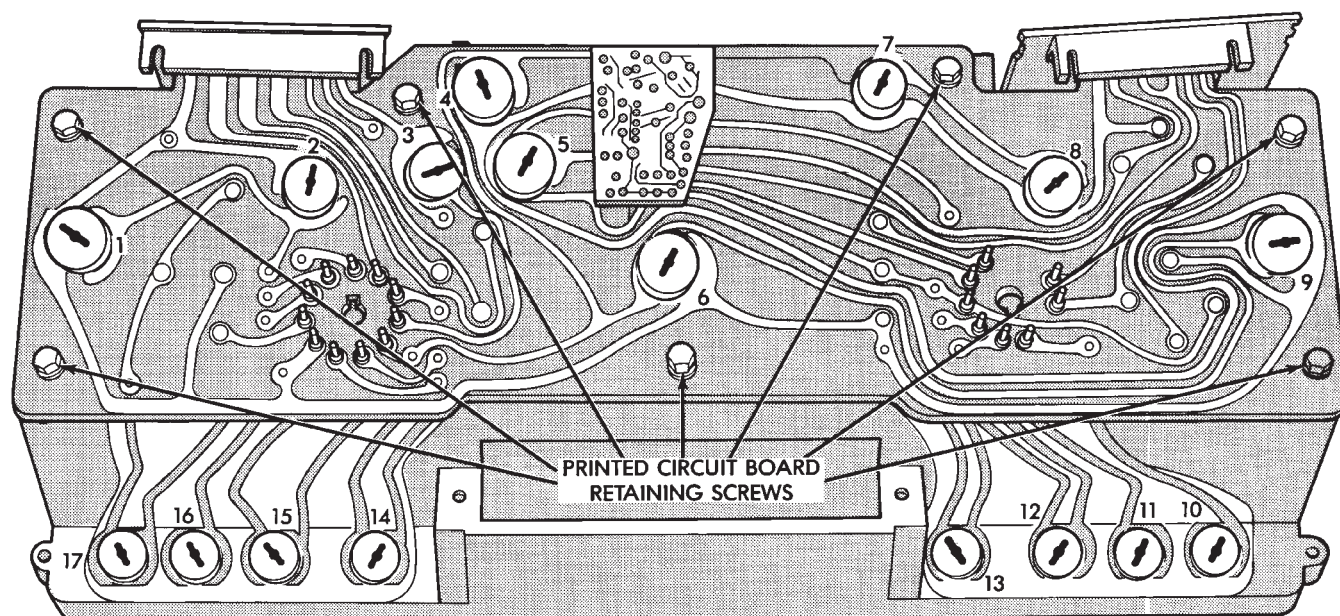
ELECTRONIC DIGITAL CLOCK

The electronic digital clock is in the radio. The clock and radio each use the display panel built into the radio. A digital readout indicates the time in hours and minutes whenever the ignition switch is in the ON or ACC position.

When the ignition switch is in the OFF position, or when the radio frequency is being displayed, time keeping is accurately maintained.

MESSAGE CENTER

The message center includes the graphic display of the car with illuminating graphics for: low wind-



- | | |
|--|-----------------------------|
| 1. Fuel and Voltmeter Illumination | 10. Fasten Seat Belt |
| 2. Tachometer-Voltmeter Illumination | 11. Left Turn Signal |
| 3. Airbag Warning | 12. Brake System Warning |
| 4. Tachometer Illumination | 13. Low Fuel Warning |
| 5. Check Gauges | 14. Anti-lock Brake Warning |
| 6. Speedometer-Tachometer Illumination | 15. High-beam Indicator |
| 7. Speedometer Illumination | 16. Right Turn Signal |
| 8. Speedometer-Oil Gauge Illumination | 17. Check Engine |
| 9. Oil Pressure-Temperature Gauge Illumination | |

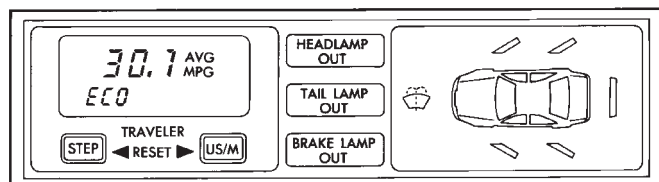
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Fig. 3 Message Center

shield washer fluid, door ajar 1 for each door, and trunk ajar. It also includes headlamp out, tail lamp out, and brake lamp out warning lights (Fig. 3), these lights are operated by a lamp outage module.

TRAVELER

The traveler is a five function trip computer. It uses vacuum fluorescent displays to display: trip miles, instantaneous fuel economy, trip elapsed time, trip average fuel economy and, estimate distance to empty. It is located in the instrument cluster with the message center (Fig. 4).



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Fig. 4 Traveler and Message Center

WARNING LAMPS AND INDICATOR LIGHTS

The mechanical instrument cluster assemblies have warning lamps and indicator lights for ten different systems. These include left and right turn signals, low fuel level, low oil pressure, high beam indicator,

seat belt reminder, brake system, check engine, check gauges, anti-lock system and air bag system indicator.

The low oil pressure indicator replaces the Check Gauges indicator in the cluster assembly without a tachometer.

In the cluster assembly with tachometer, Check Gauges indicator illuminates in a warning situation. This will notify driver to check for a problem in coolant temperature, oil pressure or electrical systems.

CLUSTER AND GAUGE SERVICE AND TESTING

CAUTION: Disconnect battery cable. Before servicing the instrument panel. Reconnect battery cable when power is required for test purposes.

Disconnect battery cable after test and before continuing service procedures.

SENDING UNIT TEST

When a problem occurs with a cluster gauge, before disassembling the cluster to check the gauge, check for a defective sending unit or wiring.

(1) Sending units and wiring can be checked by grounding the connector leads, at the sending unit, in the vehicle.

(2) With the ignition in the ON position; a grounded input will cause the oil, fuel or temperature gauge to read at or above maximum.

LOW OIL PRESSURE/CHECK GAUGES WARNING LAMP TEST

The low oil pressure/check gauges warning lamp will illuminate when the ignition key is turned to the ON position without starting the vehicle.

In the cluster assembly without tachometer, the low oil pressure lamp will illuminate if the engine oil pressure drops below a safe oil pressure level.

In the cluster assembly with tachometer, the Check Gauges warning lamp illuminates when there is a problem in oil pressure level, high engine temperature or low voltage.

To test the system turn ignition key to the ON position. If the lamp fails to light, inspect for a broken or disconnected wire at the oil pressure combination unit, which is located at the front of the engine (Figs. 5 and 6). If the wire at the connector checks good, pull connector loose from the switch terminal and with a jumper wire ground connector to the engine (Fig. 7). With the ignition key turned to the ON position check the warning lamp. If lamp still fails to light, inspect for a burned out lamp or disconnected socket in the cluster.

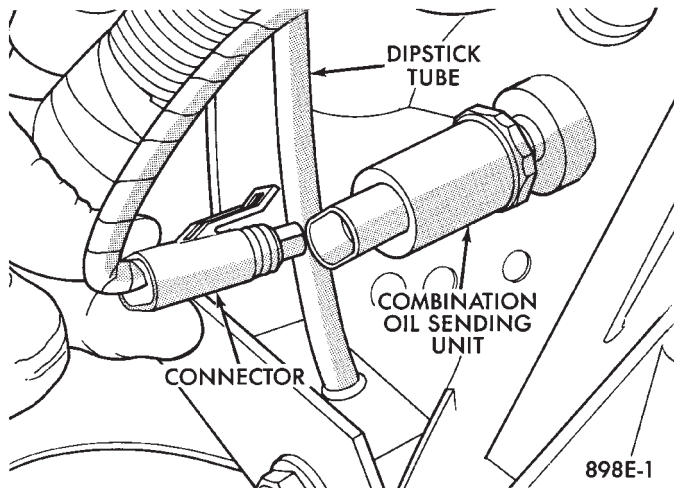


Fig. 5 Combination Oil Unit (2.5L)

COMBINATION OIL UNIT TEST

The combination oil unit has two functions:

(1) The normal closed circuit keeps the oil pressure warning/check gauges lamp on until there is oil pressure (Fig. 7).

(2) The sending unit provides a resistance that varies with oil pressure.

(3) To test the normally closed oil lamp circuit, disconnect the locking connector and measure the resistance between the switch terminal and the metal housing. The ohmmeter should read 0 ohms. Start the engine.

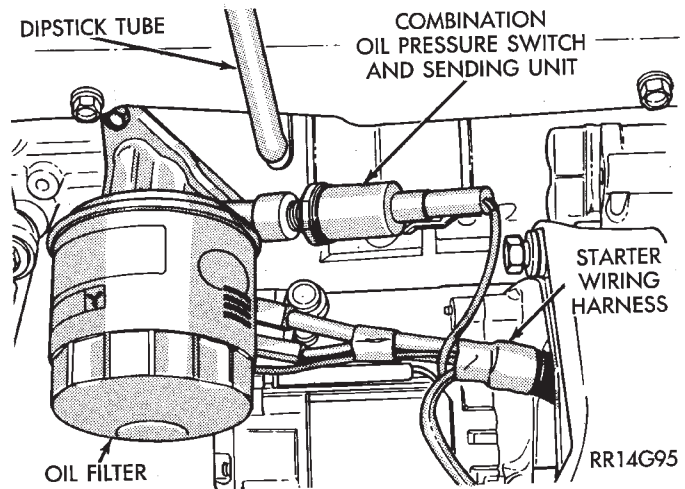
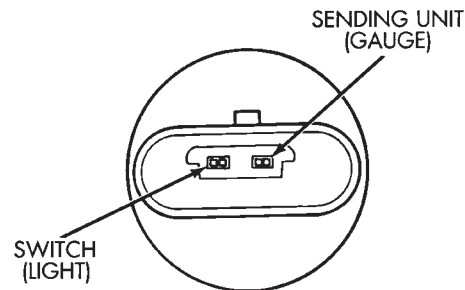


Fig. 6 Combination Oil Unit (3.0L)



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Fig. 7 Combination Oil Unit Test

(4) If there is oil pressure, the ohmmeter should read an open circuit.

(5) To test the sending unit, measure the resistance between the sending unit terminal and the metal housing. The ohmmeter should read open. Start the engine.

(6) The ohmmeter should read between 30 to 55 ohms, depending on engine speed, oil temperature, and oil viscosity.

(7) If the above results are not obtained, replace the switch.

BRAKE SYSTEM WARNING LAMP TEST

The brake warning lamp illuminates when parking brake is applied with ignition key turned ON. The same lamp will also illuminate should one of the two service brake systems fail when brake pedal is applied. To test system turn ignition key ON, and apply parking brake. If lamp fails to light, inspect for a burned out lamp, disconnected socket, a broken or disconnected wire at switch. The lamp also lights when the ignition switch is turned to START.

To test service brake warning system, raise vehicle on a hoist and open a wheel cylinder bleeder while a helper depresses brake pedal and observes warning

lamp. If lamp fails to light, inspect for a burned out lamp, disconnected socket, a broken or disconnected wire at switch.

If lamp is not burned out and wire continuity is proven, replace brake warning switch in brake line Tee fitting mounted on frame rail in engine compartment below master cylinder (Fig. 8 and 9).

CAUTION: If wheel cylinder bleeder was opened check master cylinder fluid level.

SEAT BELT WARNING SYSTEM

For testing of this system refer to Group 8M, Restraint Systems.

CHECK ENGINE SYSTEM

For testing this system refer to the Powertrain Diagnostic Test Procedures booklet.

AIR BAG WARNING SYSTEM

For testing this system refer to Group 8M, Restraint Systems.

MECHANICAL/ELECTRONIC CLUSTER REMOVAL

CLUSTER BEZEL REMOVAL

(1) On column shift vehicles, place column shifter to neutral position.

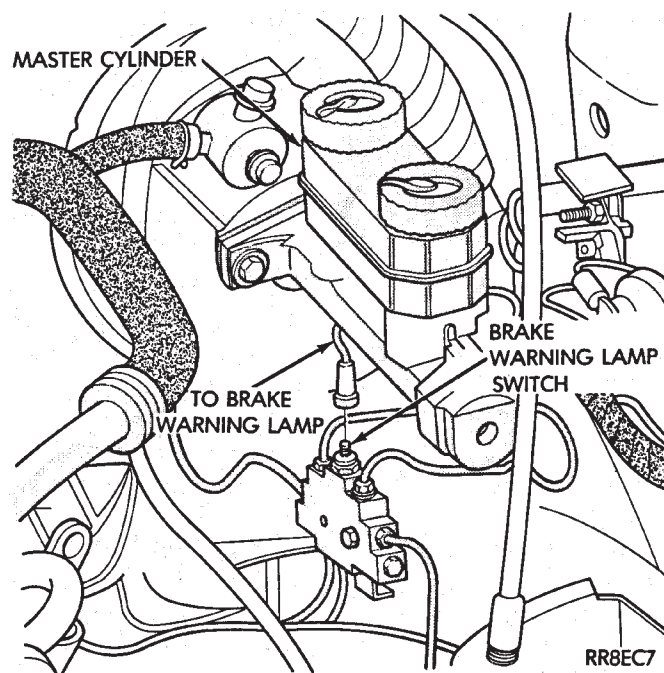


Fig. 8 Brake Warning Lamp Switch

(2) On tilt steering column vehicles, adjust tilt range to lowest position.

(3) Pull cluster bezel rearward to disengage 11 clips (Fig. 10).

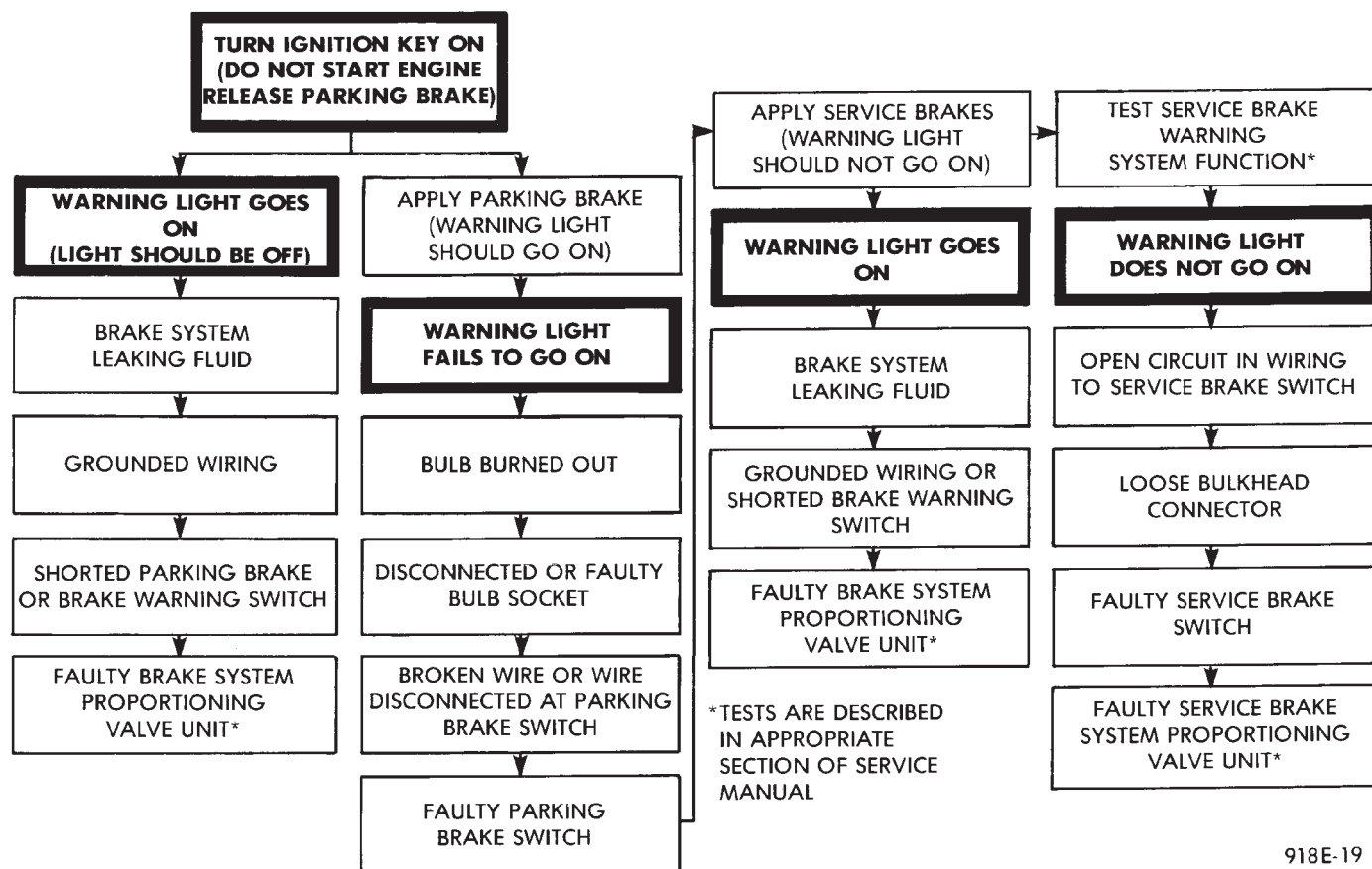


Fig. 9 Brake System Warning Lamp Diagnosis

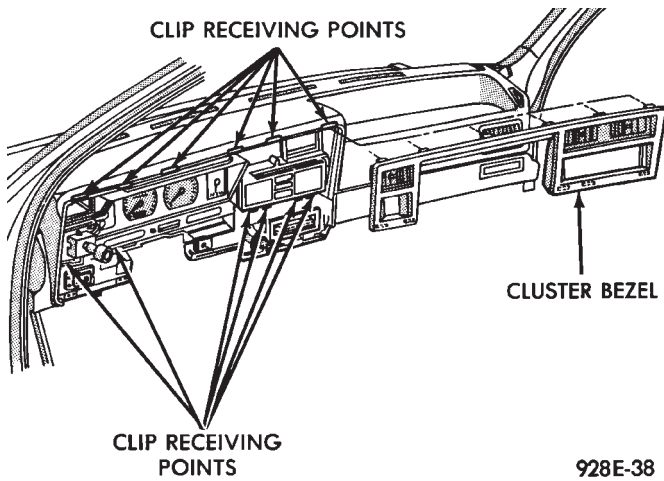


Fig. 10 Cluster Bezel

- (4) Remove cluster bezel.
- (5) For installation reverse above procedures.

CLUSTER MASK AND LENS REMOVAL

- (1) Remove cluster, radio and rear window defogger bezels (Fig. 10).
- (2) Remove four cluster to panel screws.
- (3) Pull cluster assembly rearward. Vehicles with column shift use care to not damage PRNDL guide tube.
- (4) Remove four screws holding the cluster mask to cluster housing (Fig. 11).

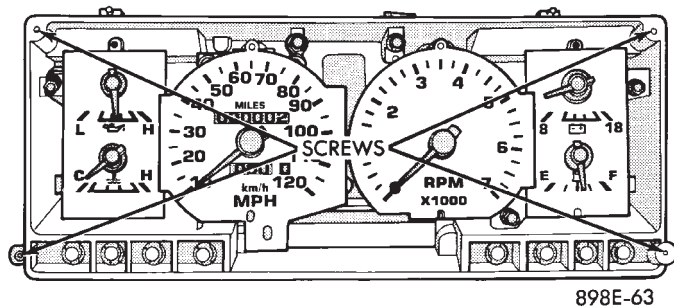


Fig. 11 Cluster Mask and Lens

- (5) Pull cluster mask and lens rearward to remove.
- (6) For installation reverse above procedures.

CLUSTER ASSEMBLY

REMOVAL—CLUSTER WITH PRNDL FROM STEERING COLUMN

- (1) Disconnect battery to assure no air bag system fault codes are stored.
- (2) Remove cluster bezel (Fig. 10).
- (3) On column shift vehicle: (Fig. 12 through 15).
 - (a) Remove lower steering column cover (Fig. 16). Release guide tube from behind fuse block.
 - (b) Place gear shift lever in neutral or park.
 - (c) Remove guide tube from behind fuse block and disconnect cable eyelet from column actuating arm.

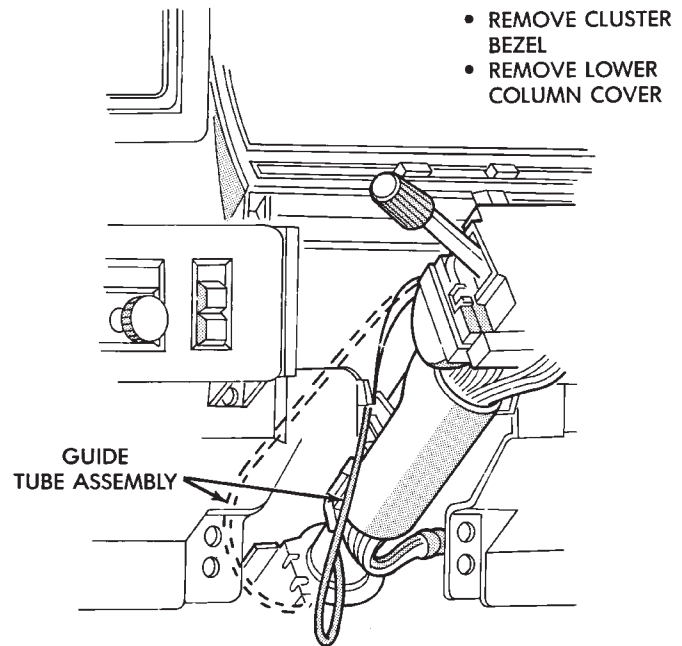
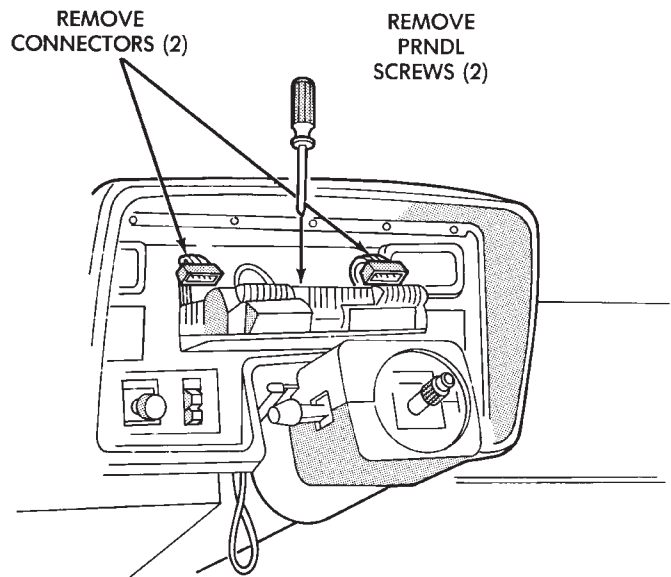


Fig. 12 PRNDL Step 1



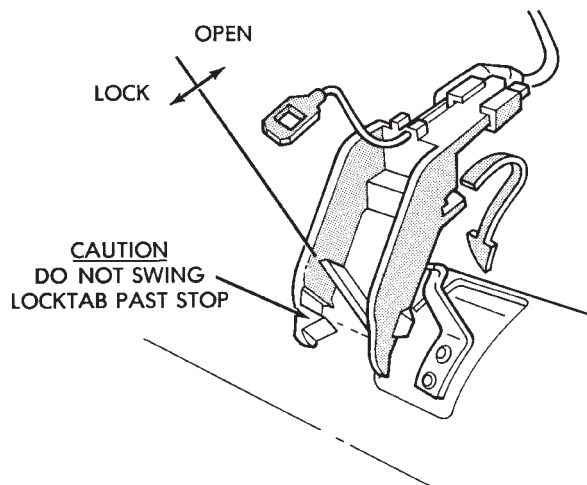
STEERING WHEEL REMOVED FOR CLARITY

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Fig. 13 PRNDL Step 2

- (d) Release lock bar on column insert, squeeze legs together and remove from column (Fig. 14).
- (e) Secure insert and cable guide out of the way.
- (4) Remove the rear window defogger bezel and radio bezel.
- (5) Remove the upper steering column cover.
- (6) Remove the four screws attaching cluster housing to the base panel.
- (7) Pull cluster rearward, reach behind cluster and disconnect the two wiring harnesses.
- (8) Remove cluster assembly.

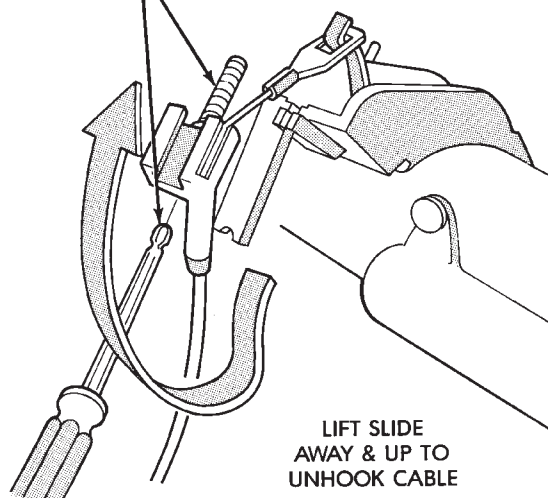
- **RELEASE LOCK TAB BEFORE REMOVING INSERT—RELOCK AFTER INSTALLATION**



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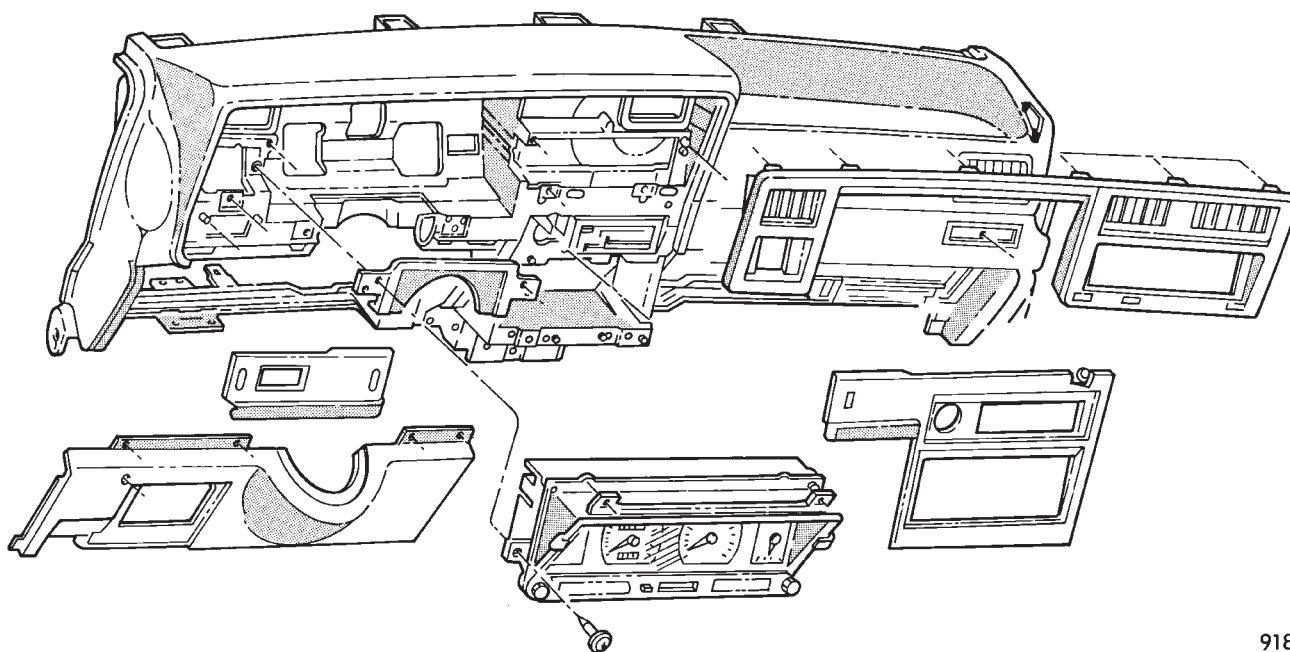
Fig. 14 PRNDL Step 3

BACK OUT PRNDL
ADJUSTING SCREW*



*9/64" ALLEN HEAD DRIVER

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Fig. 15 PRNDL Step 4

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Fig. 16 Instrument Panel Bezels**INSTALLATION**

- (1) Connect wiring harnesses.
- (2) Position cluster and secure to base panel with four screws.
- (3) On column shift vehicles (Fig. 12 through 15):
 - (a) Route PRNDL guide assembly under left steering column wing and down left side of column (Fig. 12).

(b) Insert flange of column insert into column, squeeze legs together with tabs under column jacket and engage lock bar to secure insert (Fig. 14).

(c) Hook cable eyelet to steering column actuator check pointer, should indicate neutral. Do not kink or bind PRNDL guide tube and position guide tube in original location.

(d) Adjust with tool if necessary to center pointer on N (Neutral) and check in other gears (Fig. 15).

- (4) Install upper and lower steering column cover.
- (5) Install the rear window defogger bezel and radio bezel.
- (6) Install cluster bezel.
- (7) Reconnect battery.

REMOVAL—CLUSTER WITHOUT PRNDL FROM STEERING COLUMN

- (1) Remove cluster bezel (Fig. 10).
- (2) Remove four screws attaching cluster to base panel.
- (3) Pull cluster rearward carefully, reach behind and disconnect the two harness connectors.
- (4) Carefully rotate cluster and remove the two PRNDL indicator screws.
- (5) Remove cluster assembly.
- (6) For installation reverse above procedures.
 - (a) Do not kink guide tube when installing cluster.
 - (b) Replace guide tube behind fuse block.

GAUGES

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

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

MULTIPLE GAUGE MALFUNCTION

If the fuel, voltage and tachometer gauges appear to be malfunctioning, remove the cluster assembly. Check for good pin contact between the wire harness and printed circuit board. If there is good contact, check for ignition voltage at ignition cavity C of the black connector. If there is ignition voltage, check for continuity between the wire harness ground cavity H of the black connector and ground. If there is continuity, replace printed circuit board.

If the temperature, oil pressure and speedometer gauges appear to be malfunctioning remove the cluster assembly. Check for a good contact between the wire harness and the printed circuit board. If there is good contact, check for ignition voltage at cavity J of the red connector. If there is voltage, check for continuity at cavity H of the black connector. If there is continuity, replace the printed circuit board.

If the temperature, fuel, voltage and speedometer gauges appear to be malfunctioning, remove the cluster assembly. Check for good pin contact between the wire harness and the printed circuit board. If there is good contact, check ignition voltage at cavity J of the red connector. If there is voltage, check for continuity at cavity H of the black connector. If there is continuity, replace the printed circuit board.

GAUGE INOPERATIVE (FIG. 17 THROUGH 23)

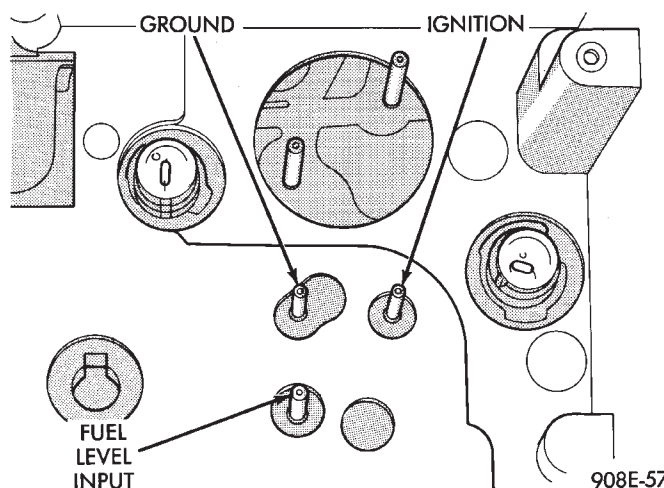


Fig. 17 Fuel Gauge Pins—With Tachometer

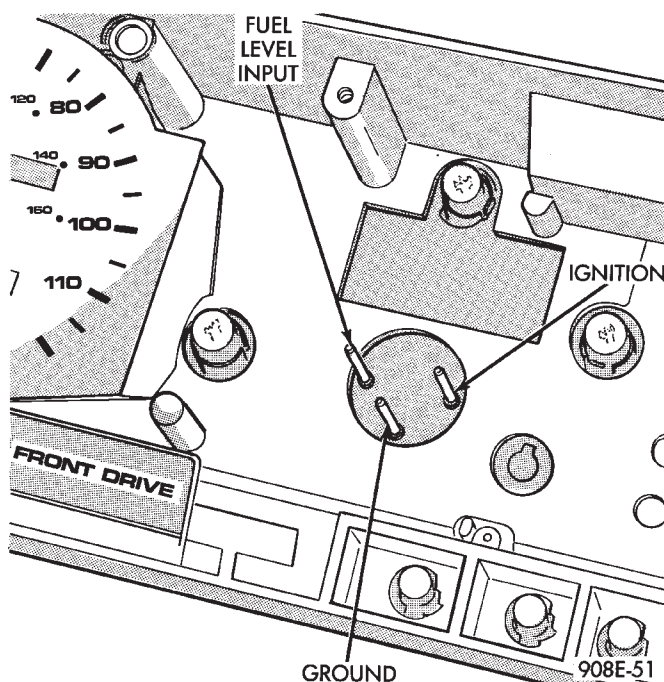


Fig. 18 Fuel Gauge Pins—Without Tachometer

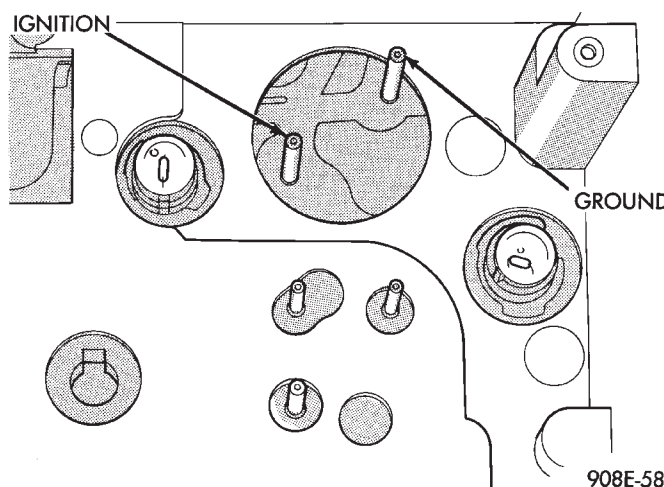


Fig. 19 Voltmeter Pins—With Tachometer

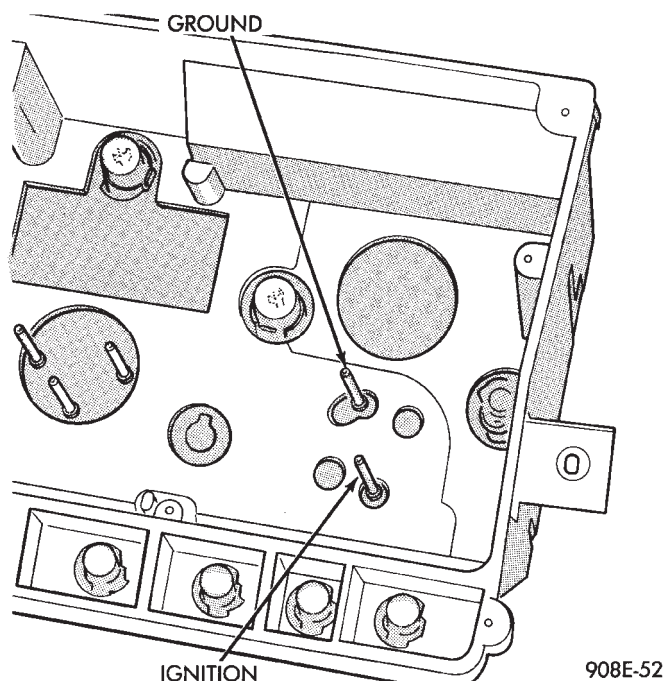


Fig. 20 Voltmeter Pins—Without Tachometer

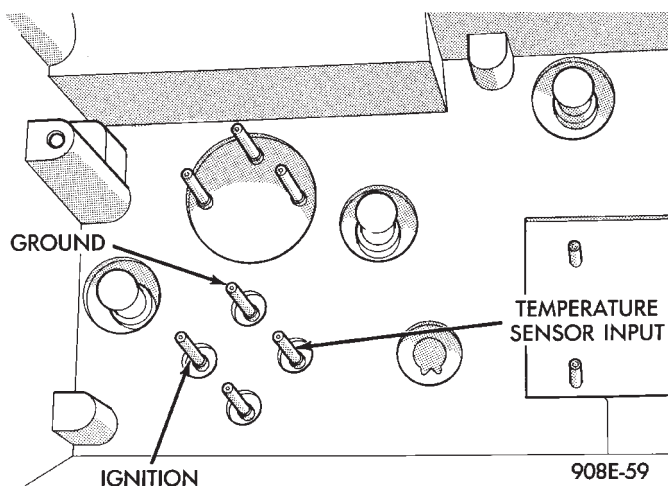


Fig. 21 Temperature Gauge Pins—With Tachometer

(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. Refer to the individual gauge circuit test for proper pin.

(a) If voltage at pin, replace gauge.

(b) If no voltage or ground at gauge pins, check for ignition voltage and ground at cluster harness connectors.

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

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

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

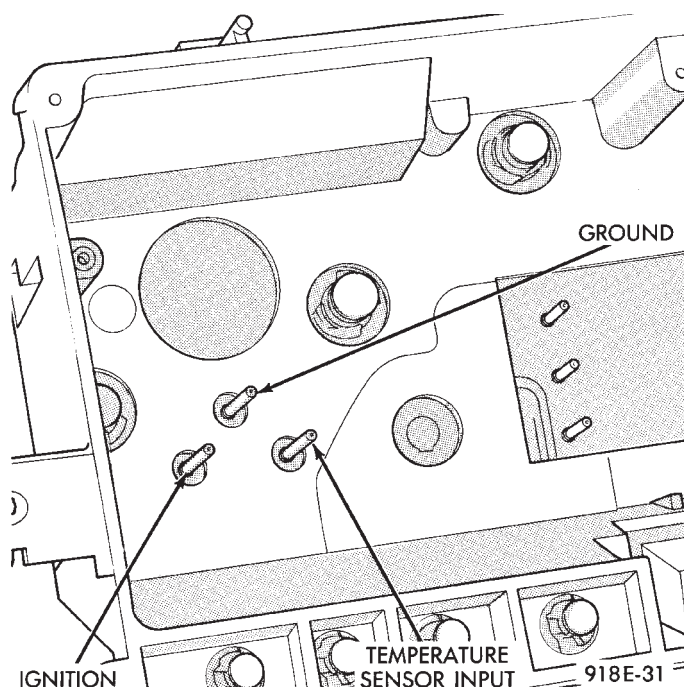


Fig. 22 Temperature Gauge Pins—Without Tachometer

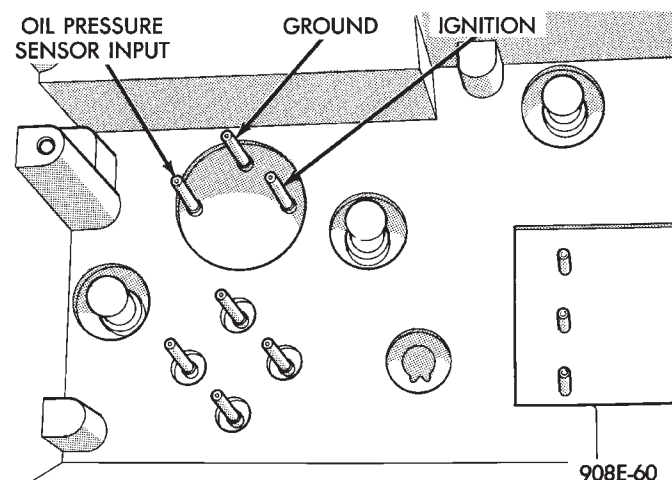


Fig. 23 Oil Pressure Gauge Pins—With Tachometer

(a) Testing oil pressure gauge, engine needs to be running.

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

(c) It is important to have the same engine temperature and engine speed when checking temperature and oil pressure gauges position. The time between gauge position reading and sending unit measuring should be kept to a minimum.

(d) If resistance and gauge position are not similar, replace gauge.

(e) If OK, test resistance from the sending unit to the cluster connector.

(f) If resistance reading is different, check printed circuit board for contact to cluster connector.

(g) If OK and contacts are not distorted, replace printed circuit board.

(h) If everything checks out OK, refer to sending unit test.

(4) If fuel gauge does not meet specifications, check following items as possible causes:

(a) Wiring and connections between gauge sending unit and multiple connector behind left cowl kick pad. (Fig. 24).

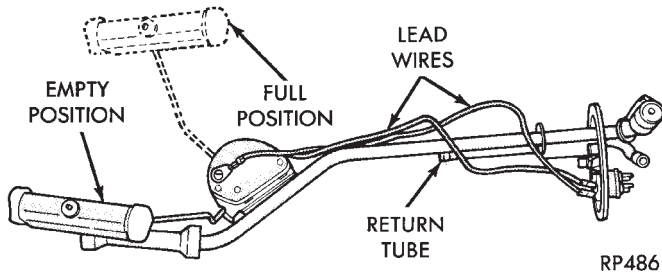


Fig. 24 Fuel Tank Sending Unit—Typical

(b) Wiring and connections between multiple connector behind left cowl kick pad and printed circuit board terminals.

(c) Circuit continuity between printed circuit board terminals and gauge terminals.

(d) If these items check okay, fuel gauge is defective and must be replaced.

(5) If fuel gauge meets specifications, check fuel tank and original fuel tank sending unit as follows:

(a) Carefully remove fuel tank sending unit from tank, refer to sending unit removal Group 14, Fuel. Connect sending unit wire and jumper wire as described in the test procedure.

(6) If fuel gauge now checks within specifications, original sending unit is electrically okay, check following as a possible cause:

(a) Check ground wire from sending unit to left side cowl for continuity.

(b) Sending unit deformed. Make sure sending unit float arm moves freely and that pick up tube is not bent upwards creating an interference with bottom of tank and inspect float.

(c) Sending unit improperly installed, install properly.

(d) Mounting flange on fuel tank for sending unit deformed. Feel for interference fit of sending unit to bottom of tank. It is permissible to bend pick up tube down a little near mounting flange to gain interference fit.

(e) Fuel tank bottom deformed, causing improper positioning of sending unit pick up tube, replace or repair tank and recheck sending unit.

GAUGE CALIBRATION

(1) Remove the gauge.

(2) Check for ignition voltage and ground to the gauge.

(3) With the ignition key in the OFF position, replace gauge. Turn the ignition key to the ON position. To test oil pressure gauge engine must be running. When testing oil or temperature gauge the engine should be at normal operating temperature. Record the gauge position.

(4) Remove gauge and record the resistance between the sending unit pin and the gauge ground pin. When checking gauges, it is important to have the same engine temperature and speed when noting gauge position. The time between gauge reading and measuring should be kept to a minimum.

(5) The Gauge Resistance Chart (Fig. 25), is general guidelines for checking the gauge position against the sending unit resistance.

Gage	Resistance	Position
Fuel	90 ohms	E
	59 ohms	1/4
	42 ohms	1/2
	28 ohms	3/4
	12 ohms	F
Oil	100 ohms	L
	63 ohms	Low Normal
	30 ohms	3/4 of Normal
Temp	Greater than 455	C or below
	288 ohms	Low Normal
	125 ohms	Mid scale
	76 ohms	High Normal
	64 ohms	H

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Fig. 25 Gauge Resistance

Because of only a few specific points of gauge position versus sending unit resistance, a good estimate is need when the resistance falls between graduations. Even when the resistance corresponds to graduations, the gauge has a tolerance of ± 4 ohms.

Volt gauge: The calibration dot on the volt gauge corresponds to 13 volts between the gauge ignition and ground pins. If voltage varies from this, estimate proper gauge position with input voltage.

TACHOMETER REPLACEMENT

(1) Remove cluster, radio and rear window defogger bezels and mask/lens assembly.

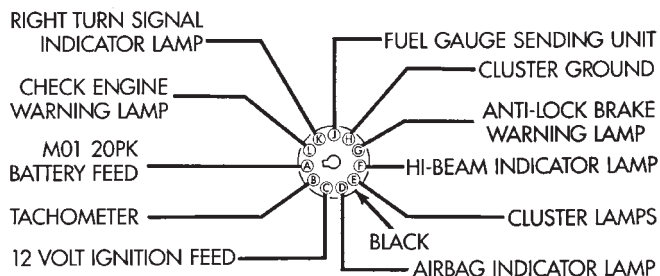
(2) Remove screws attaching tachometer to cluster housing.

(3) Pull tachometer rearward to remove.

(4) For installation reverse above procedures.

TACHOMETER CIRCUIT TESTING

- (1) Remove cluster, radio and rear window defogger bezels and mask/lens assembly.
- (2) Check for battery voltage at cavity A of the instrument cluster black connector.
- (3) With the ignition in the ON position, check for battery voltage at cavity C of the black connector (Fig. 26).



RIGHT PRINTED CIRCUIT BOARD CONNECTOR
VIEWED FROM TERMINAL SIDE

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Fig. 26 Printed Circuit Board 11-Way Connector

- (4) Check cavity H of the black connector for continuity to ground.
- (5) Check for tachometer signal from the engine controller by connecting an AC DIGITAL VOLTMETER to cavity B of the instrument cluster black connector and ground. A reading of at least 1.0 volt should be present with the engine running (Fig. 27).
- (a) If voltage is within specification, go to step 7.

(b) If voltage is NOT within specification, perform steps 6.

- (6) If there is less than 1.0 volt at cavity B, check for continuity between cavity B and pin 43 of the engine controller module connector.

(a) If continuity is OK, between cavity B and pin 43 of the engine controller connector, replace the engine controller.

(b) No continuity, check the connectors for damaged pins or terminal push outs or defective wire.

- (7) If all tests performed test good replace the tachometer drive module.

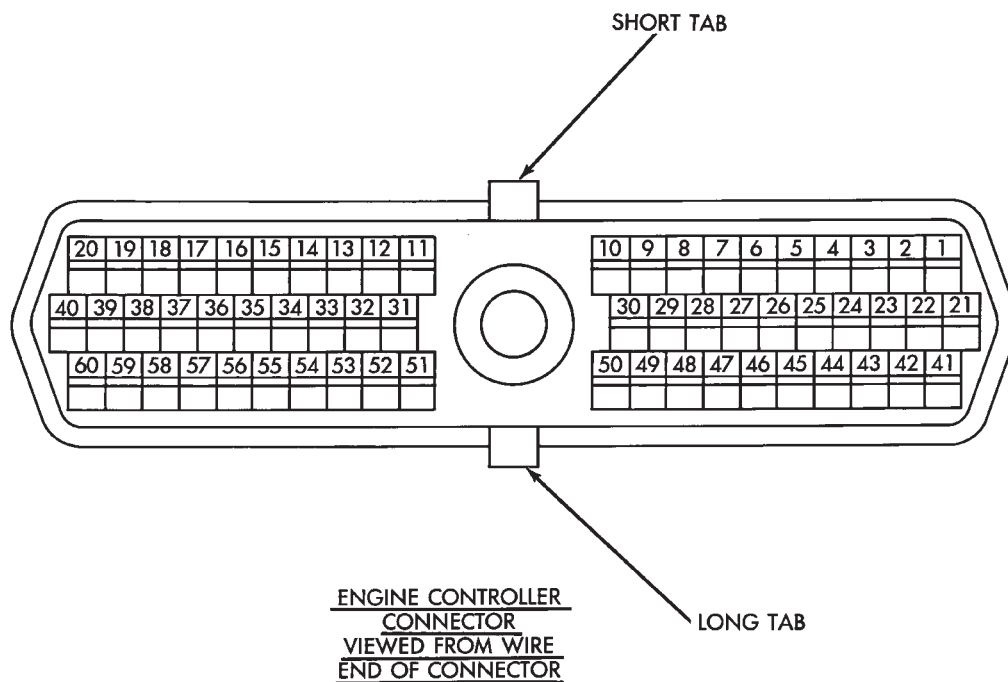
(8) If the tachometer continues to be inoperative, replace the tachometer assembly.

VOLTMETER AND FUEL GAUGE ASSEMBLY REPLACEMENT

- (1) Remove cluster, radio and rear window defogger bezels and mask/lens assembly.
- (2) Remove tachometer.
- (3) Remove screw attaching gauge assembly to cluster.
- (4) Pull rearward to remove gauge assembly.
- (5) For installation reverse above procedures.

OIL PRESSURE AND TEMPERATURE GAUGE ASSEMBLY REPLACEMENT

- (1) Remove cluster, radio and rear window defogger bezels and mask/lens.
- (2) Remove speedometer.
- (3) Remove screw attaching gauge assembly to cluster.
- (4) Pull rearward to remove gauge assembly.
- (5) For installation reverse above procedures.

**Fig. 27 Engine Controller Pin Location**

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FUEL GAUGE REPLACEMENT

- (1) Remove cluster, radio and rear window defogger bezels and mask/lens.
- (2) Remove screws attaching fuel gauge to cluster housing.
- (3) Pull fuel gauge rearward to remove.
- (4) For installation reverse above procedures.

VOLTMETER GAUGE REPLACEMENT

- (1) Remove cluster bezel and mask.
- (2) Remove fuel gauge.
- (3) Remove screws attaching voltmeter assembly to cluster.
- (4) Pull rearward to remove gauge assembly.
- (5) For installation reverse above procedures.

TEMPERATURE GAUGE ASSEMBLY REPLACEMENT

- (1) Remove cluster bezel and mask.
- (2) Remove speedometer.
- (3) Remove screws attaching gauge assembly to cluster.
- (4) Pull rearward to remove gauge assembly.
- (5) For installation reverse above procedures.

SPEEDOMETER SYSTEM

AA body vehicles are equipped with electronically driven speedometer and odometer assemblies. The unit has the same appearance as a conventional speedometer but it eliminates the cable-driven mechanical system. A signal is sent from a transmission-mounted distance sensor to the speedometer circuitry through the wiring harness. By eliminating the speed-

ometer cable, instrument cluster service and removal is improved. Refer to Fig. 28 Speedometer Diagnosis Chart.

SPEEDOMETER-ODOMETER ASSEMBLY REPLACEMENT

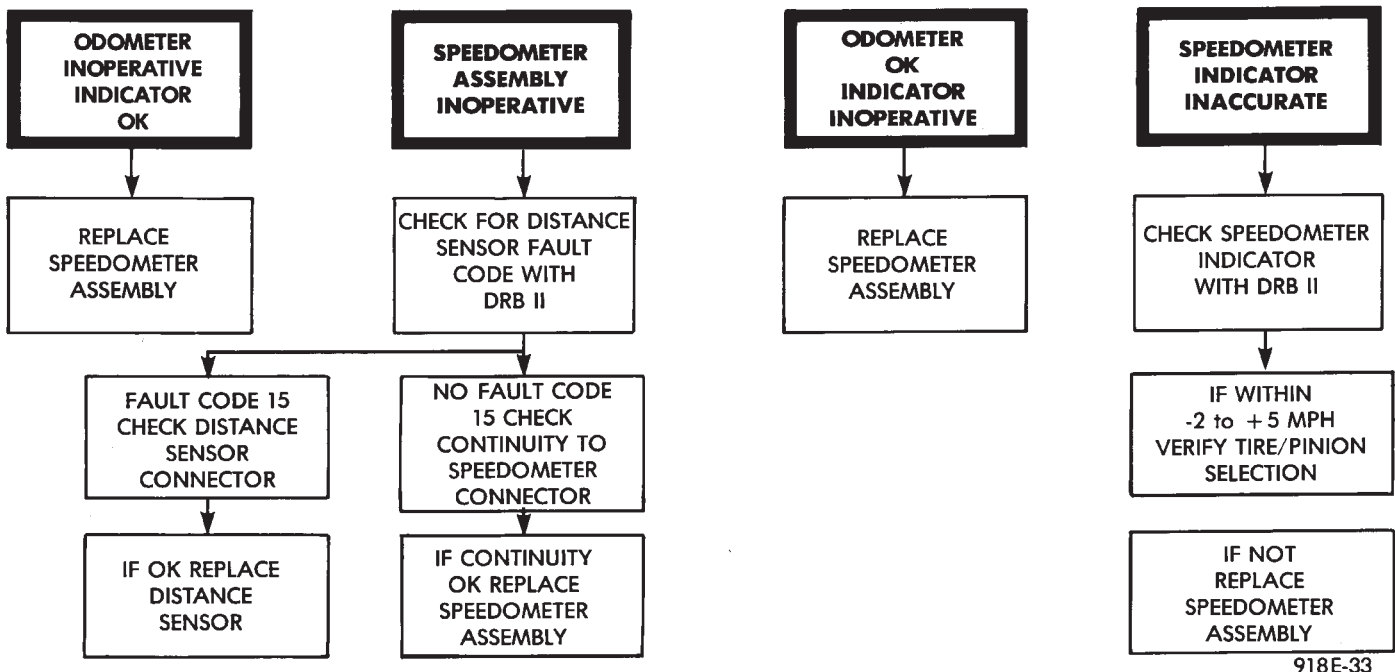
- (1) Remove cluster bezel and mask.
- (2) Remove two screws attaching the speedometer and odometer assembly to the cluster housing.
- (3) Pull speedometer rearward to disengage from gauge pins.
- (4) For installation reverse above procedures.

SPEEDOMETER CIRCUIT TESTING

- (1) Remove speedometer from cluster.
- (2) With ignition switch in the ON position, check for battery voltage across ignition and ground pins (Fig. 29).
- (3) Check continuity from distance sensor signal pin to connector at distance sensor.
- (4) Test for faulty distance sensor.
- (5) If all of these tests prove good, replace speedometer.

DISTANCE SENSOR REPLACEMENT

- (1) Remove harness connector from sensor and make sure weather seal is on harness connector (Fig. 30).
- (2) Remove sensor retaining bolt.
- (3) Pull sensor and pinion gear assembly out of transaxle. If necessary, carefully pry loose with a flat blade screwdriver (Fig. 31).
- (4) Remove pinion gear from sensor.



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Fig. 28 Speedometer Diagnosis

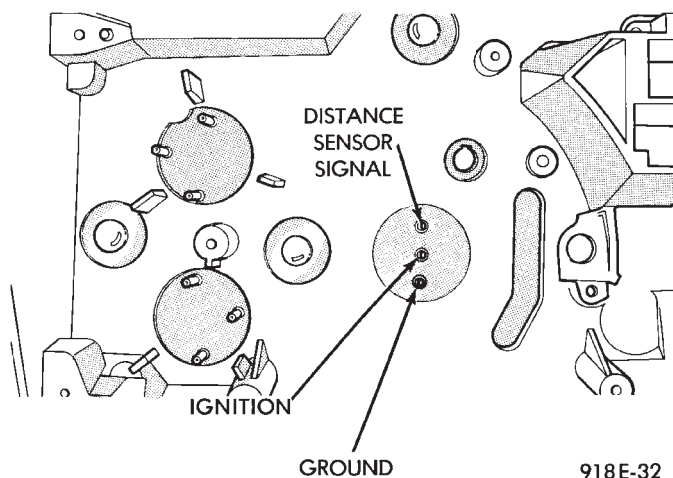


Fig. 29 Speedometer Pins

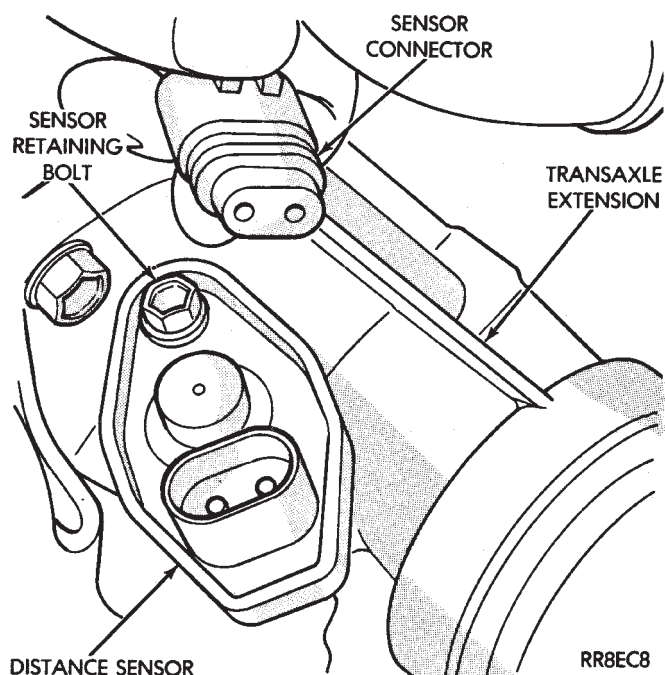


Fig. 30 Distance Sensor and Connector

(5) For installation reverse above procedures and seat sensor assembly by hand to insure proper gear engagement. Tighten retaining bolt to 7 N·m (60 in. lbs.) torque.

DISTANCE SENSOR TEST

For testing of the distance sensor and related components refer to the Powertrain Diagnostics Test Procedure Manual.

TACHOMETER DRIVE MODULE REPLACEMENT

- (1) Remove cluster assembly. Refer to Cluster Assembly Replacement.
- (2) Pull tachometer drive module from printed circuit board (Fig. 32).

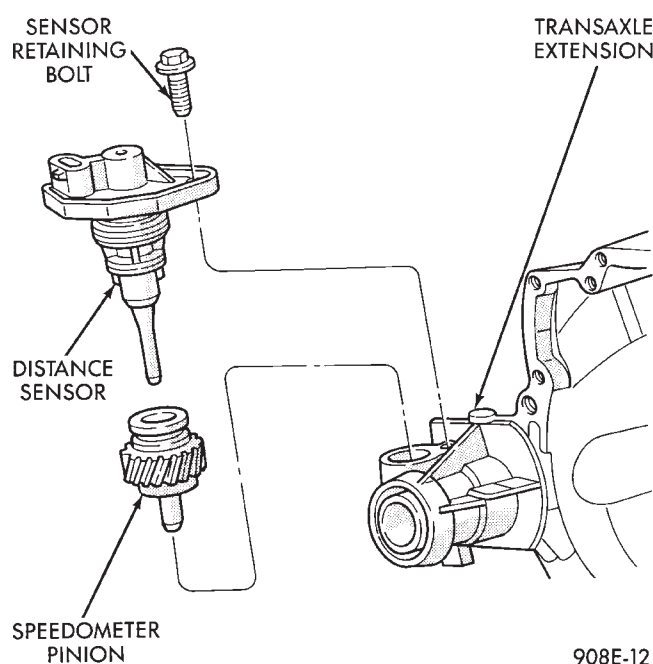


Fig. 31 Distance Sensor and Speedometer Pinion

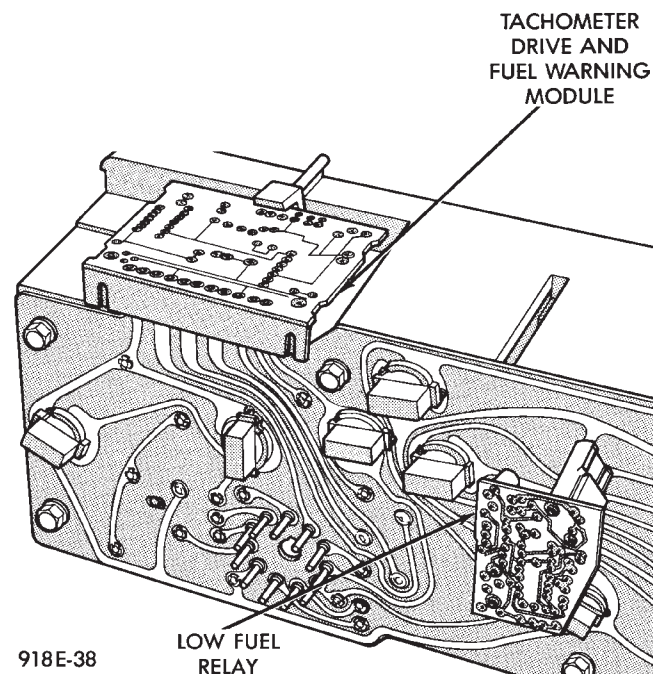


Fig. 32 Tachometer Drive and Low Fuel Warning Module

- (3) For installation reverse above procedures and use care when aligning module to printed circuit board.

LOW FUEL WARNING MODULE REPLACEMENT

- (1) Remove cluster assembly. Refer to Cluster Assembly Replacement.
- (2) Pull low fuel relay from printed circuit board (Fig. 32).

(3) For installation reverse above procedure. Use care when aligning module to printed circuit board.

GAUGE ALERT MODULE REPLACEMENT

(1) Remove cluster assembly. Refer to Cluster Assembly Replacement.

(2) Pull gauge alert module from printed circuit board (Fig. 33).

(3) For installation reverse above procedures. Use care when aligning module to printed circuit board.

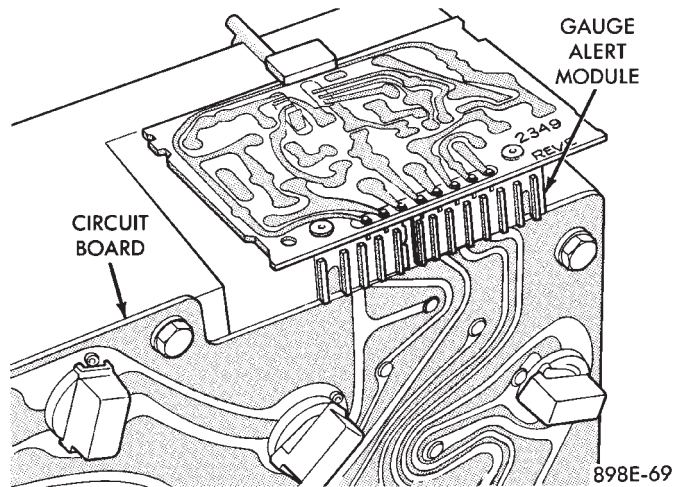


Fig. 33 Gauge Alert Module

CLUSTER LAMP REPLACEMENT

(1) Remove cluster, radio and rear window defogger bezels.

(2) Remove cluster. Refer to Cluster Assembly Replacement.

(3) Remove lamp sockets as necessary by turning them counterclockwise (Fig. 34 and 35).

PRINTED CIRCUIT BOARD REPLACEMENT

(1) Remove cluster assembly.

(2) Remove tachometer drive module, low fuel relay and gauge alert module (Fig. 32).

(3) Remove all cluster lamps.

(4) Remove mounting screws securing printed circuit board to cluster housing (Fig. 34).

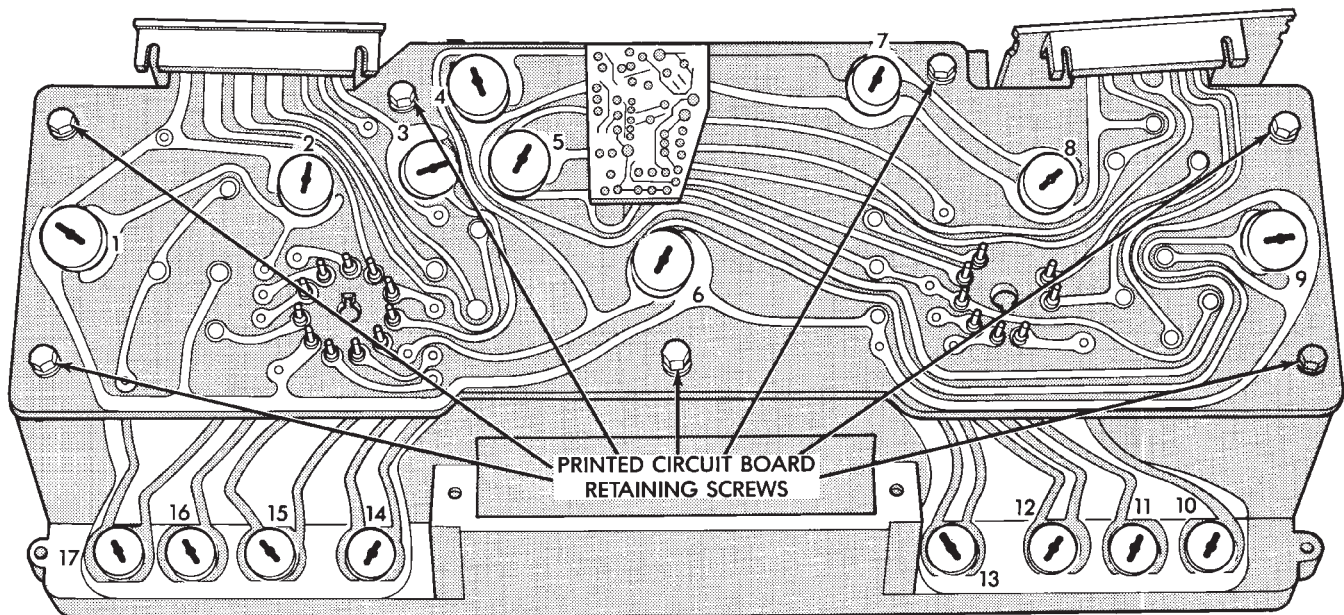
(5) For installation reverse above procedures.

ELECTRONIC CLUSTER

SELF DIAGNOSTIC SYSTEM

The electronic clusters (Fig. 36) have an internal diagnostics routing to isolate problems within the cluster or sending units (Fig. 37 and 38).

Successful completion of the SELF DIAGNOSTIC TEST indicates that the problem is in the connectors or sensors outside of the module.

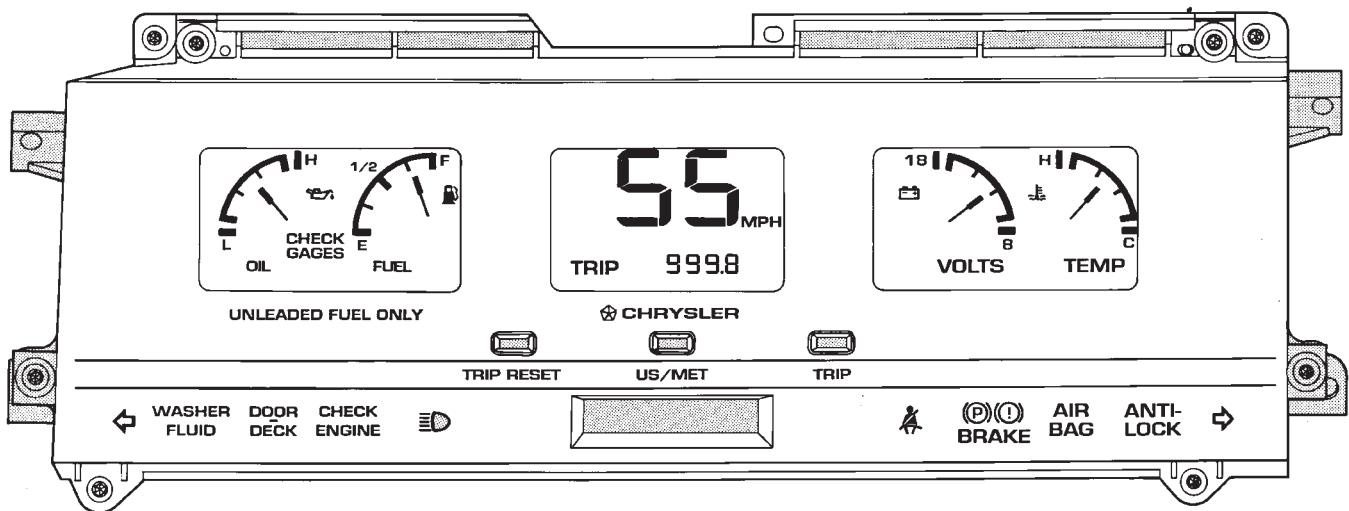
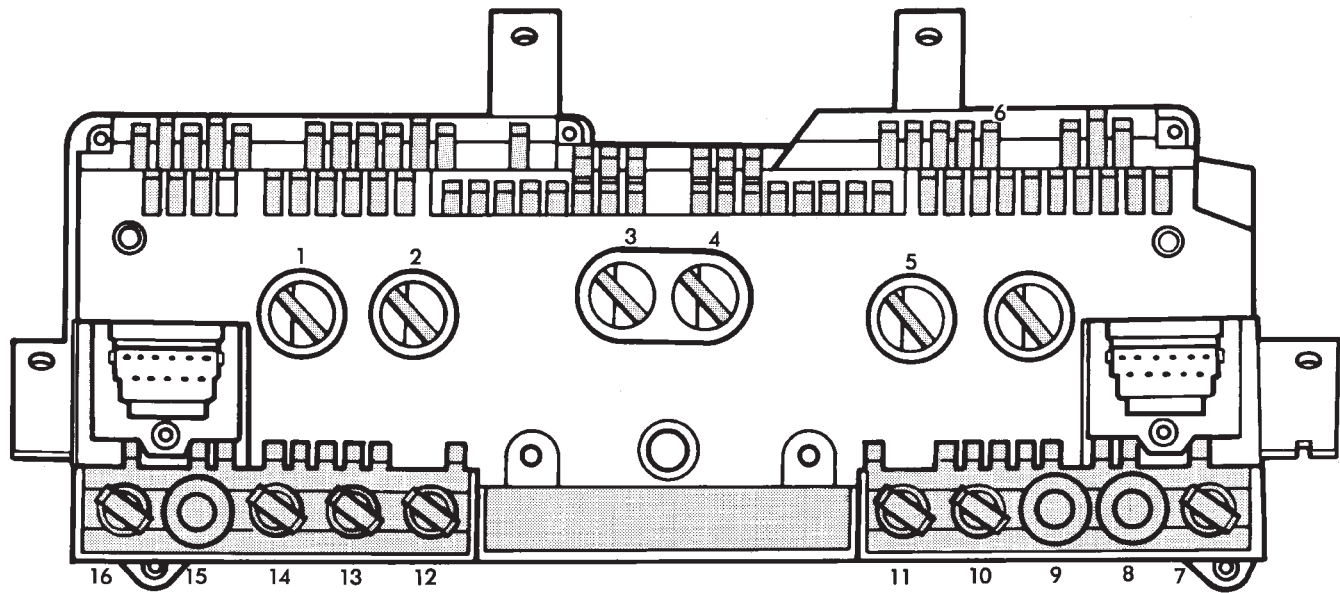


1. Fuel and Voltmeter Illumination
2. Tachometer-Voltmeter Illumination
3. Airbag Warning
4. Tachometer Illumination
5. Check Gauges
6. Speedometer-Tachometer Illumination
7. Speedometer Illumination
8. Speedometer-Oil Gauge Illumination
9. Oil Pressure-Temperature Gauge Illumination

10. Fasten Seat Belt
11. Left Turn Signal
12. Brake System Warning
13. Low Fuel Warning
14. Oil Pressure Warning
15. High-beam Indicator
16. Right Turn Signal
17. Check Engine

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Fig. 34 Mechanical Cluster Lamp Location



- | | |
|-----------------------------------|-----------------------|
| 1. VOLT GAUGE ILLUMINATION | 11. HIGH BEAM |
| 2. TEMPERATURE GAUGE ILLUMINATION | 12. SEAT BELT |
| 3. SPEEDOMETER ILLUMINATION | 13. BRAKE |
| 4. ODOMETER ILLUMINATION | 14. AIR BAG |
| 5. FUEL GAUGE ILLUMINATION | 15. BLANK |
| 6. OIL GAUGE ILLUMINATION | 16. RIGHT TURN SIGNAL |
| 7. LEFT TURN SIGNAL | 17. ILLUMINATION |
| 8. BLANK | 18. ILLUMINATION |
| 9. BLANK | 19. ILLUMINATION |
| 10. CHECK ENGINE | 20. ILLUMINATION |

928E-11

Fig. 35 Electronic Cluster Lamp Location

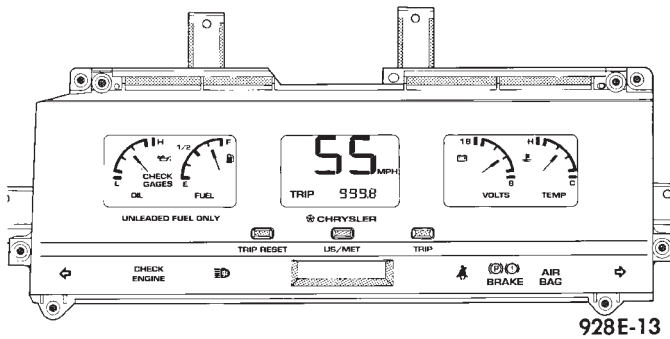


Fig. 36 Electronic Cluster

ELECTRONIC CLUSTER DIAGNOSIS

Perform cluster Self-Diagnostic Test to determine whether problem is within cluster or outside of cluster (Fig. 39).

CONDITION: CLUSTER DISPLAYS DO NOT ILLUMINATE AFTER VEHICLE IS STARTED

PROCEDURE

- (1) Check fuses and verify battery and ignition voltage at cluster connector.
- (2) Check ground from cluster connector to instrument panel ground stud.

CONDITION: SPEEDOMETER AND ODOMETER ARE INOPERATIVE OR OPERATES INTERMITTENTLY

PROCEDURE

Check for defective distance sensor or distance sensor wiring.

CONDITION: OIL GAUGE, FUEL GAUGE, TEMPERATURE GAUGE, OR VOLTAGE GAUGE INOPERATIVE

PROCEDURE

- (1) Check for defective sending unit or wiring:
 - (a) Sending units and wiring can be checked by grounding the connector leads, at the sending unit, in the vehicle.
 - (b) With the ignition in the ON position, a grounded input will cause the oil, fuel, or temperature gauge to read maximum.

CONDITION: CLUSTER DISPLAY DOES NOT DIM WHEN HEADLAMP SWITCH IS ACTIVATED AND RHEOSTAT ROTATED

PROCEDURE

- (1) Check fuses in headlamp circuit.
- (2) Check for loose connections or defective wiring from headlamp switch to the cluster.
- (3) Check for defective headlamp switch.

- (4) The electronic instrument cluster requires both a marker feed and illumination feed to operate correctly.

SWITCH AND PANEL COMPONENT SERVICE

HEADLAMP/FOGLAMP SWITCH REPLACEMENT

- (1) Remove cluster bezel (Fig. 40).
- (2) Remove three screws securing headlamp switch mounting plate to base panel (Fig. 41).
- (3) Pull headlamp/foglamp switch mounting plate rearward. Disconnect wiring connectors from headlamp switch and foglamp switch pigtail (Fig. 42).
- (4) Remove knob and stem by depressing button on switch (Fig. 43).
- (5) Snap-out escutcheon.
- (6) Remove foglamp switch from escutcheon.
- (7) Remove nut that attaches headlamp switch to mounting plate (Fig. 44).
- (8) For installation reverse above procedures.

HEADLAMP/FOGLAMP SWITCH REPLACEMENT

- (1) Remove the foglamp switch from mounting location.
- (2) Disconnect the wiring harness from the switch pigtail.
- (3) Using a Ohmmeter, test for continuity between the terminals of the switch pigtail (Fig. 45).
- (4) If not OK, replace switch.

LOWER STEERING COLUMN COVER REPLACEMENT

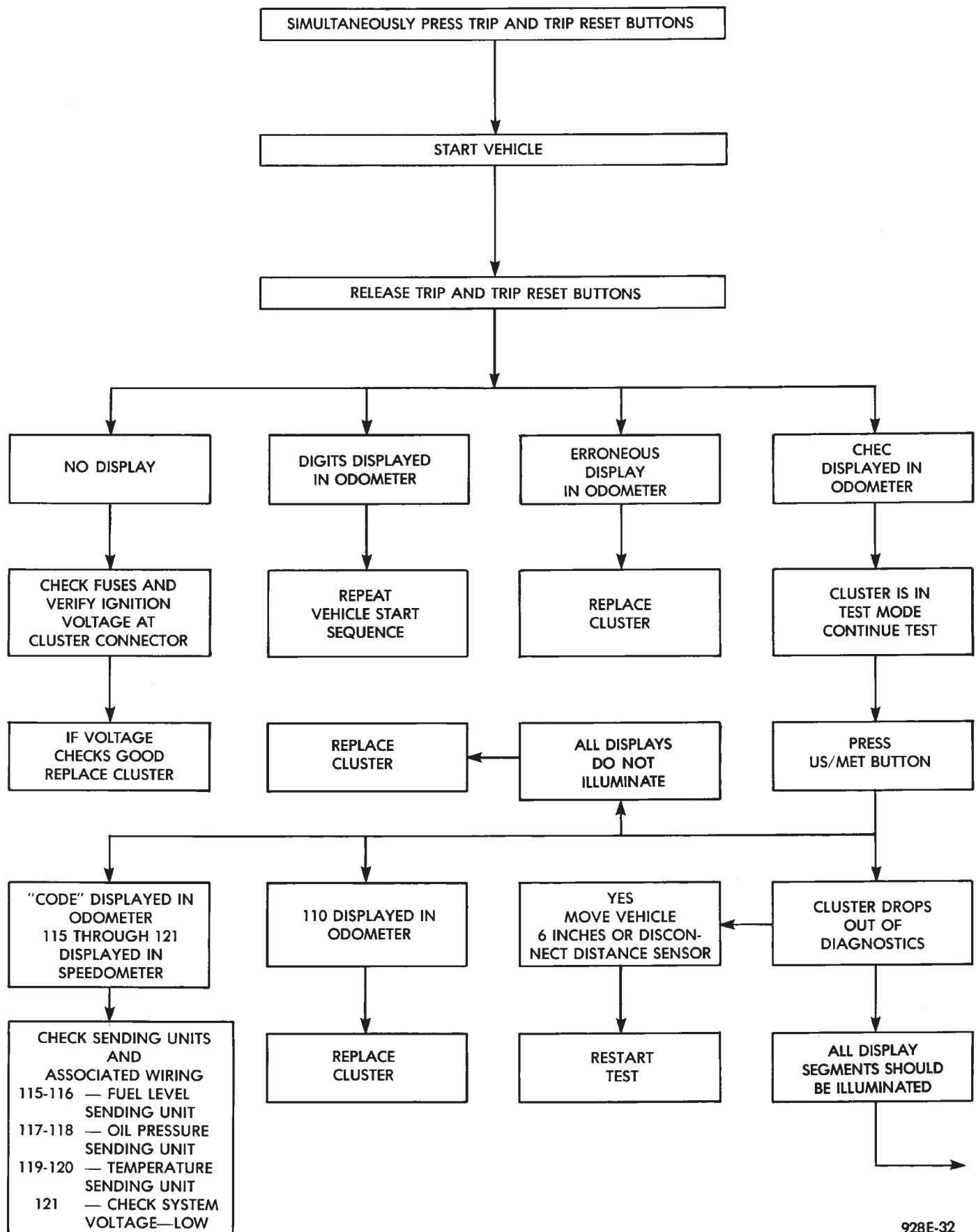
- (1) Disconnect park brake release rod from park brake.
- (2) Remove fuse box access door and remove screw from lower column cover (Fig. 46).
- (3) Remove screws from lower cover, four across the top and two on bottom.
- (4) Remove lower steering column cover.
- (5) For installation reverse above procedures.

LEFT LOWER INSTRUMENT PANEL SILENCER REPLACEMENT

- (1) Remove screws from front of silencer (Fig. 47).
- (2) Remove push nut.
- (3) Remove silencer.
- (4) For installation reverse above procedures.

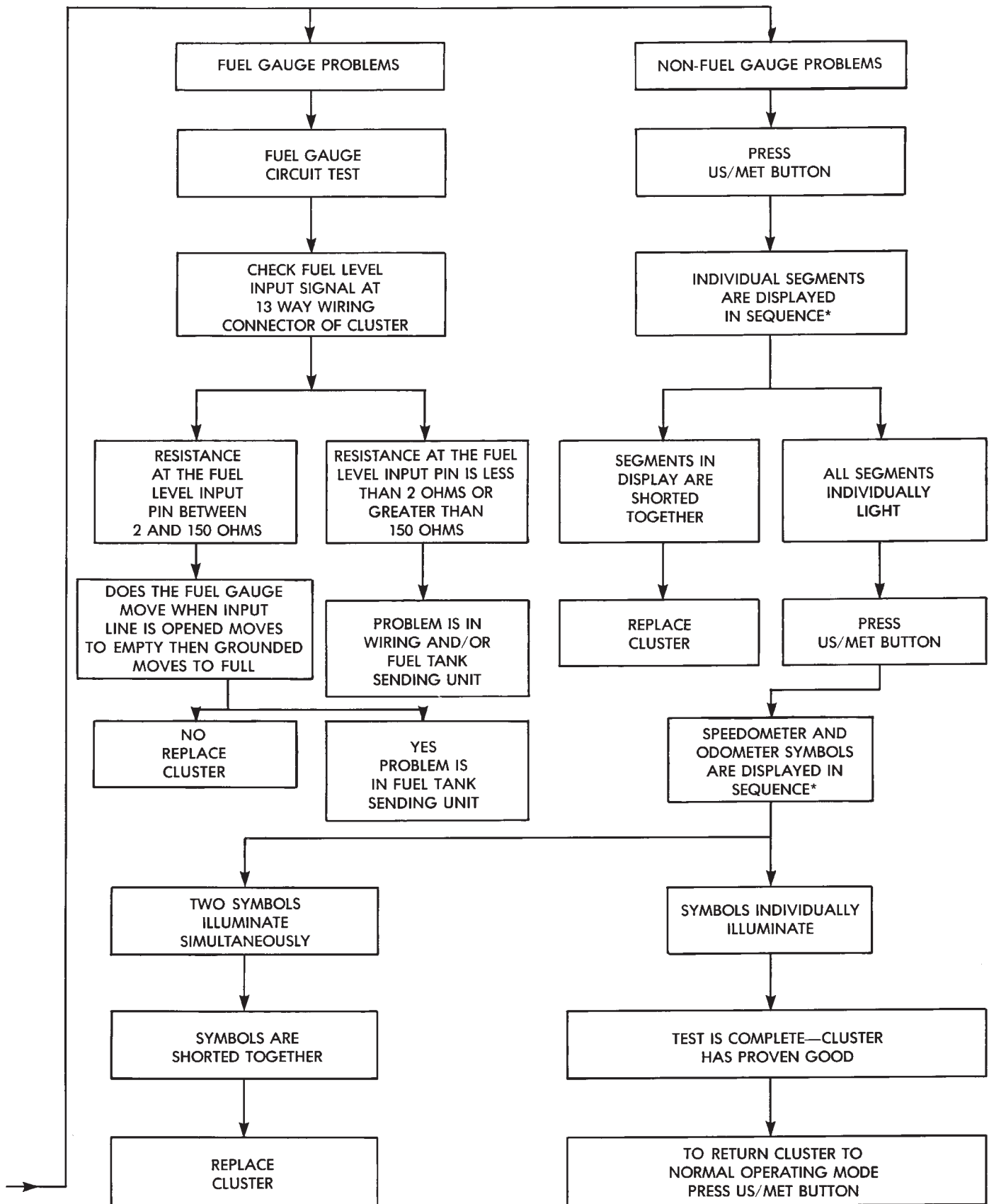
RIGHT LOWER INSTRUMENT PANEL SILENCER REPLACEMENT

- (1) On floor shift vehicles, remove console assembly and center brace bracket.
- (2) On column shift vehicles, remove center brace bracket.
- (3) Remove screws from front of silencer (Fig. 47).
- (4) Remove three push nuts from rear of silencer.



928E-32

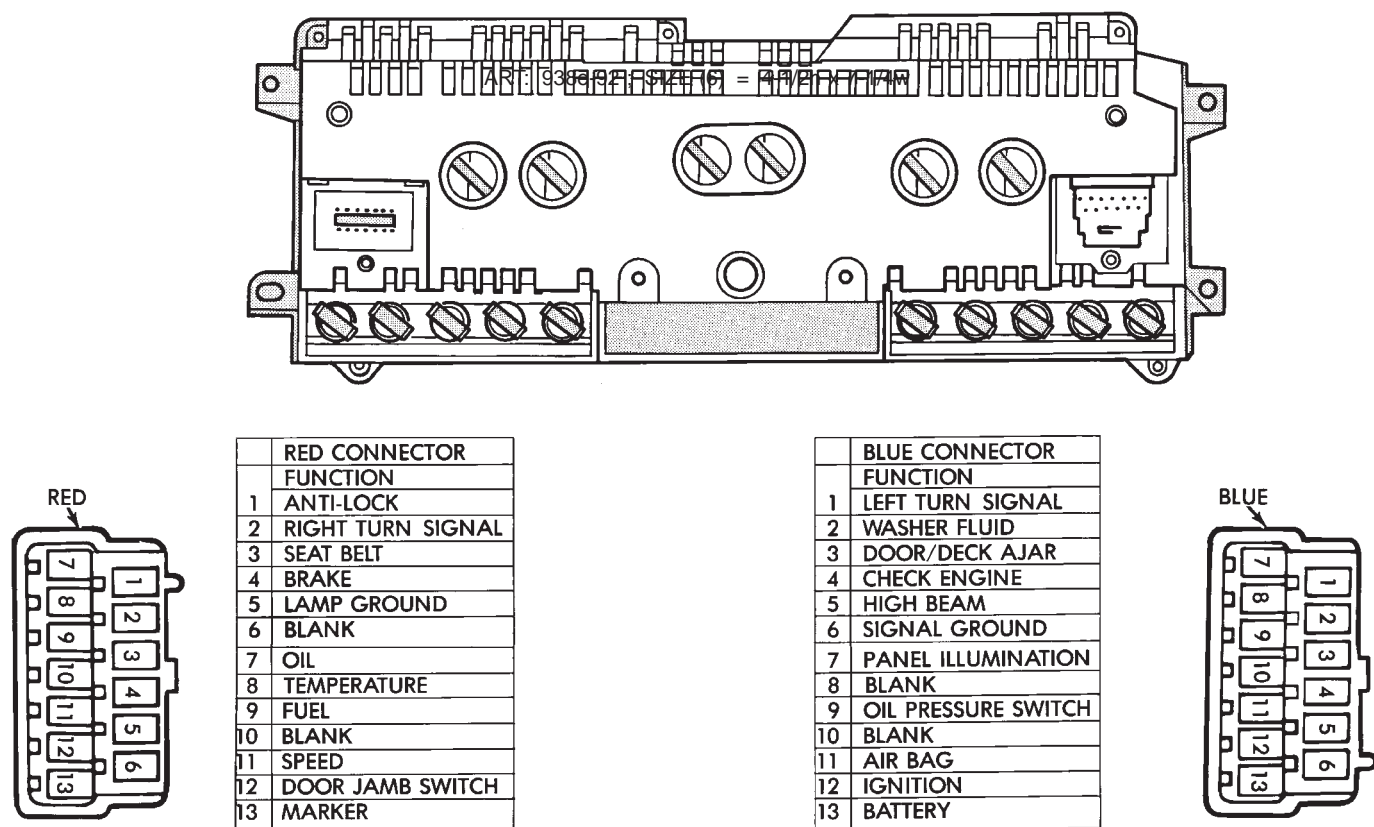
Fig. 37 Self-Diagnostic Test



*VISUAL TEST CAN BE REPEATED BY PRESSING TRIP RESET BUTTON

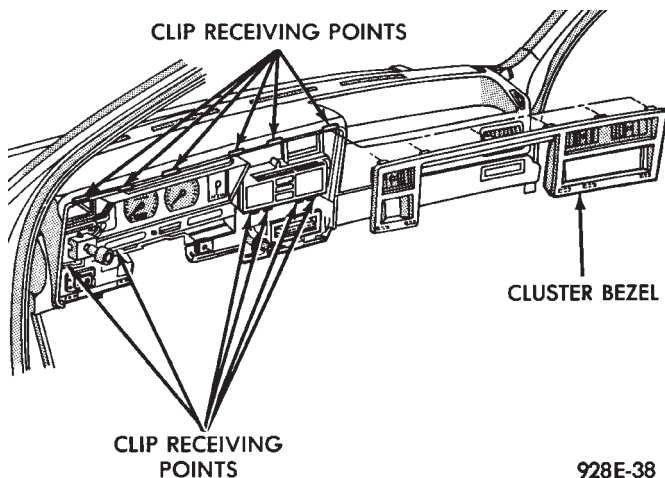
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Fig. 38 Self-Diagnostic Test Continued



928E-12

Fig. 39 Cluster Connectors



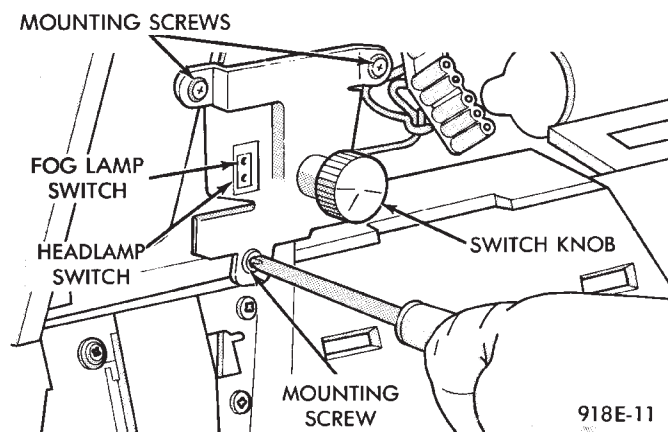
928E-38

Fig. 40 Cluster Bezel

- (5) Remove lower right silencer.
- (6) For installation reverse above procedures.

GLOVE BOX ASSEMBLY REPLACEMENT

- (1) Open glove box door and disconnect check strap.
- (2) Remove glove box light and switch by squeezing retaining tabs from behind switch mount and slide rearward. Disconnect wiring connectors.
- (3) Remove 11 screws from glove box assembly (Fig. 48).



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Fig. 41 Headlamp Switch Mounting Screws

- (4) Remove glove box assembly.
- (5) For installation reverse above procedures and check operation of glove box door and adjust latch as necessary.

GLOVE BOX LAMP AND SWITCH REPLACEMENT

- (1) Open glove box door. The lamp can be removed without removing switch.
- (2) Remove switch by squeezing retaining tabs from behind switch mount and slide rearward. Disconnect wiring connectors.
- (3) Remove lamp and switch.

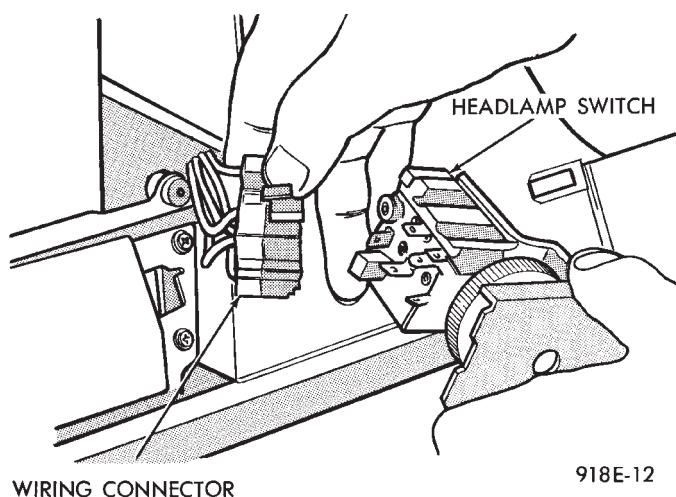


Fig. 42 Headlamp Switch Wiring Connectors

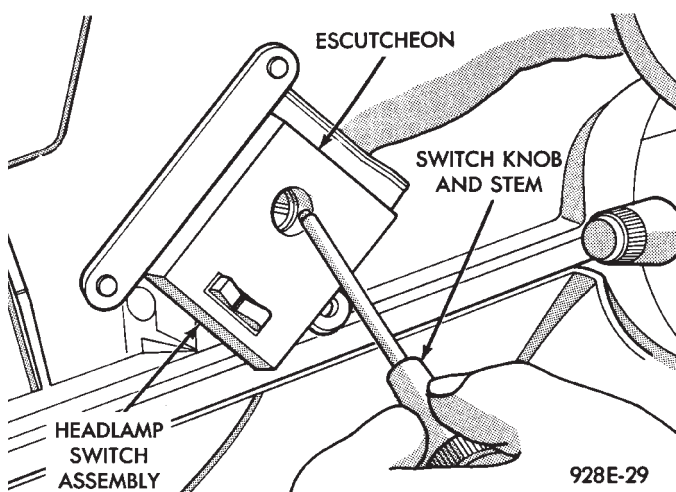


Fig. 43 Headlamp Switch Knob and Stem

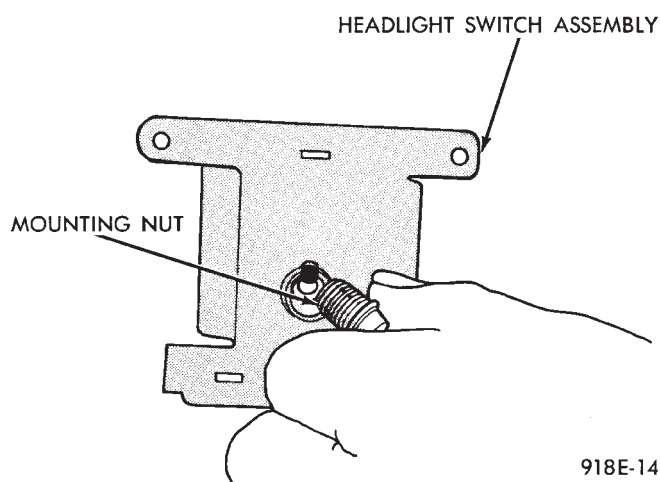


Fig. 44 Headlamp Switch Mounting Nut

(4) For installation reverse above procedures.

FOG LAMP RELAY REPLACEMENT

(1) Remove glove box assembly (Fig. 49). Refer to Glove Box Assembly Replacement.

POSITION	CONDITION	PINS
ON	CONTINUITY	1 and 2
ON	CONTINUITY	1 and 3
OFF	NO CONTINUITY	1 and 2
OFF	NO CONTINUITY	1 and 3
OFF / ON	CONTINUITY	2 and 3



Fig. 45 Headlamp Switch Mounting Nut

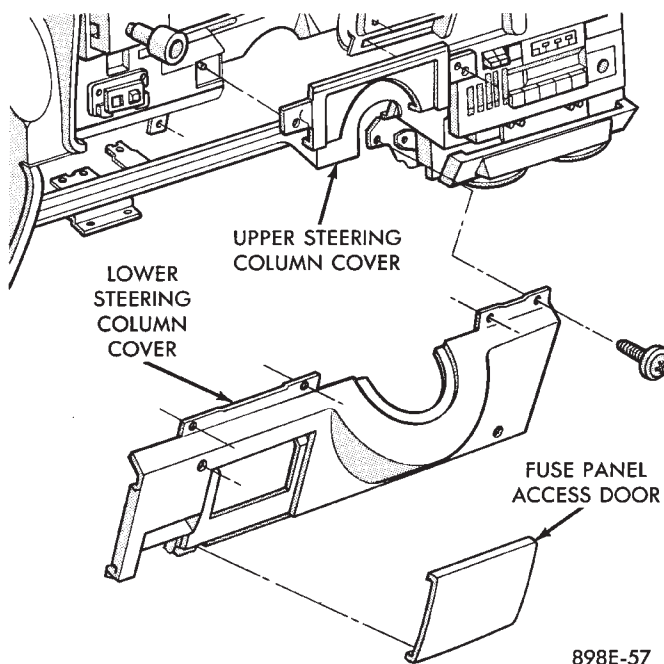


Fig. 46 Lower Steering Column Cover

- (2) Remove screw from relay.
- (3) Disconnect wiring.
- (4) Remove relay.
- (5) For installation reverse above procedures.

REAR WINDOW DEFOGGER SWITCH REPLACEMENT

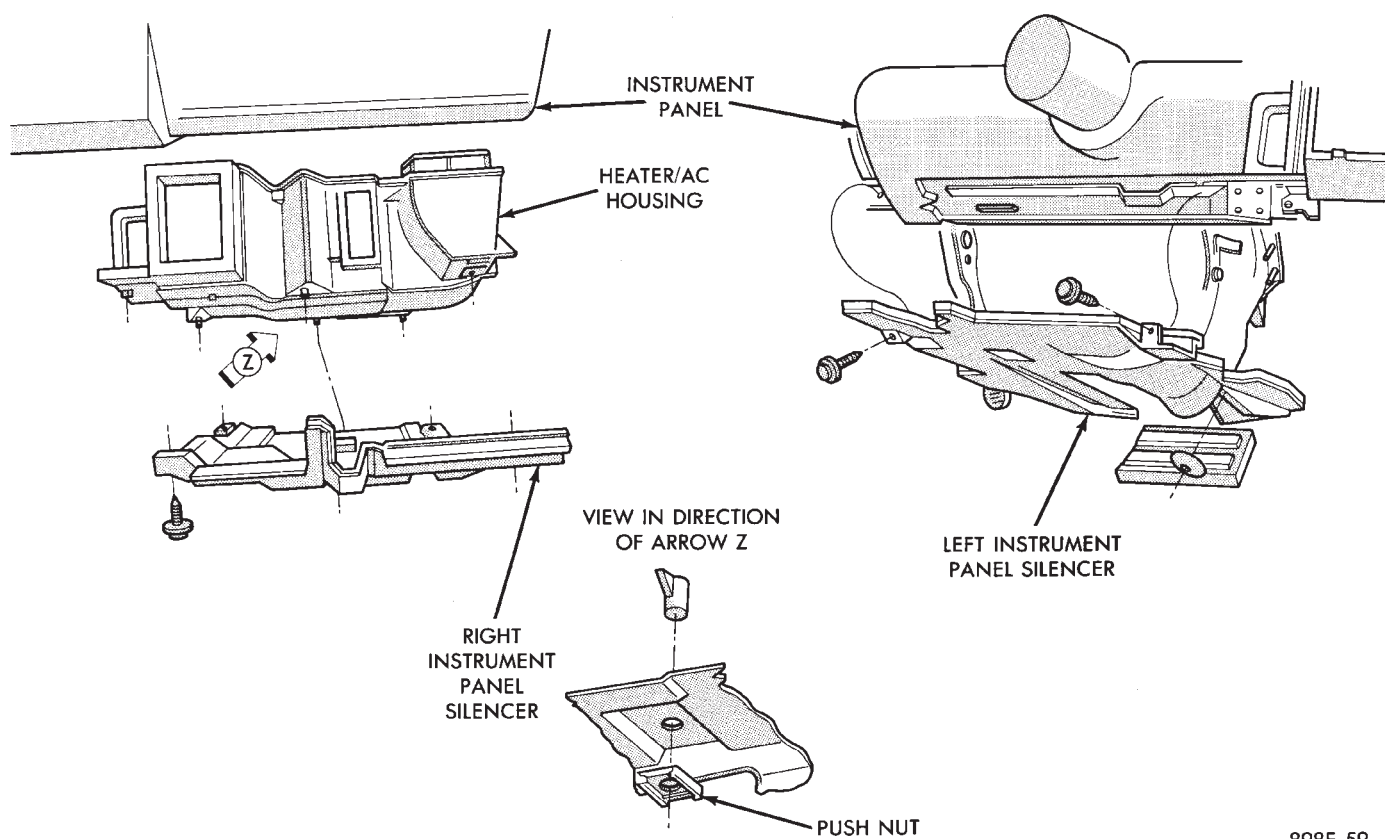
- (1) Remove left bezel by pulling straight back.
- (2) Press tabs and pull switch rearward.
- (3) Disconnect wiring and remove switch.
- (4) For installation reverse above procedures.

INSTRUMENT PANEL CENTER BEZEL REPLACEMENT

- (1) Pull bezel straight back disengaging five clips.
- (2) Disconnect ash receiver lamp and wiring from bezel.
- (3) For installation reverse above procedures.

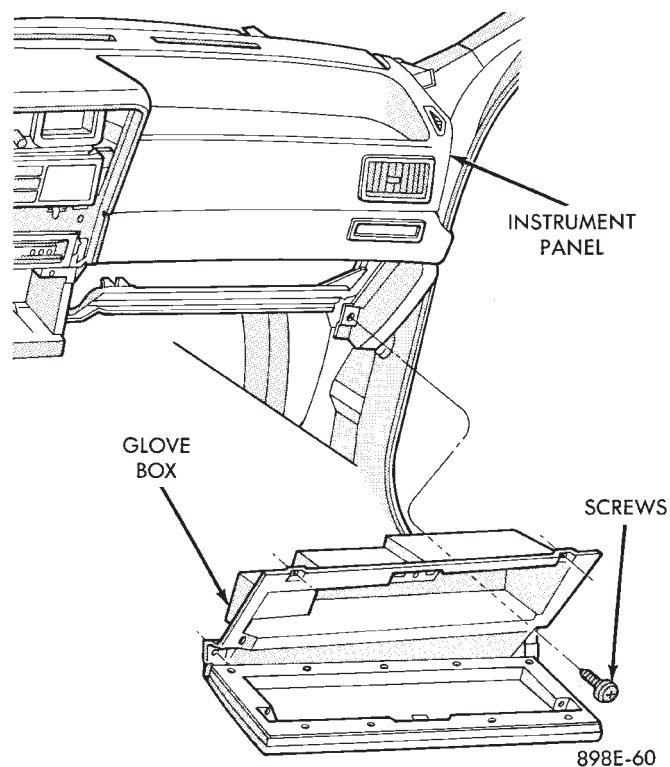
ASH RECEIVER/CUP HOLDER REPLACEMENT

- (1) Remove center bezel. Disconnect ash receiver lamp socket.



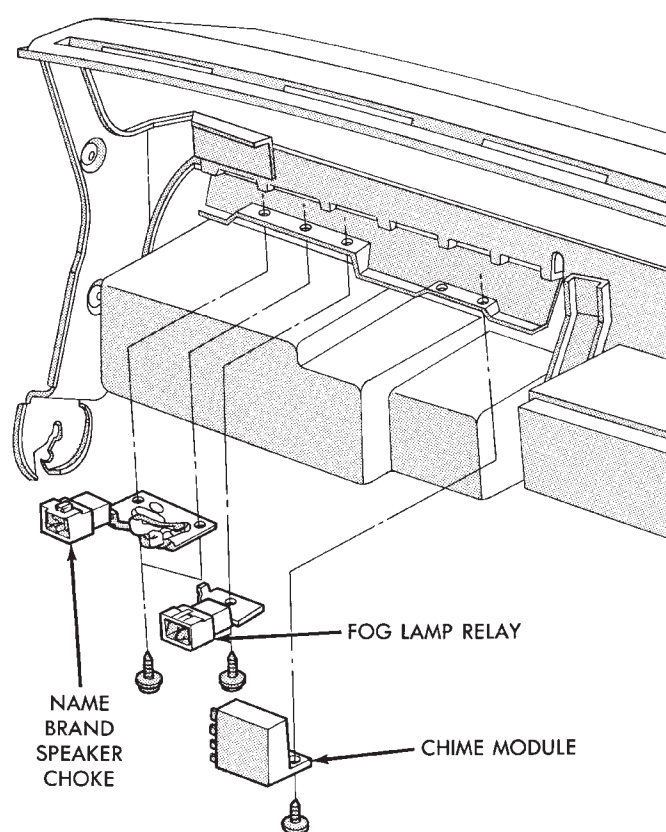
898E-59

Fig. 47 Instrument Panel Silencers



898E-60

Fig. 48 Glove Box Assembly



898E-61

Fig. 49 Fog Lamp Relay

(2) Remove four screws from center module and remove module.

(3) Remove four screws from ash receiver/cup holder housing.

(4) For installation reverse above procedures.

AIR CONDITIONING CONTROL REPLACEMENT

(1) Remove center bezel. Disconnect ash receiver lamp socket.

(2) Remove glove box assembly. Refer to Glove Box Assembly Replacement.

(3) Reach through glove box opening and disconnect vacuum lines.

(4) Remove two control mounting screws (Fig. 50).

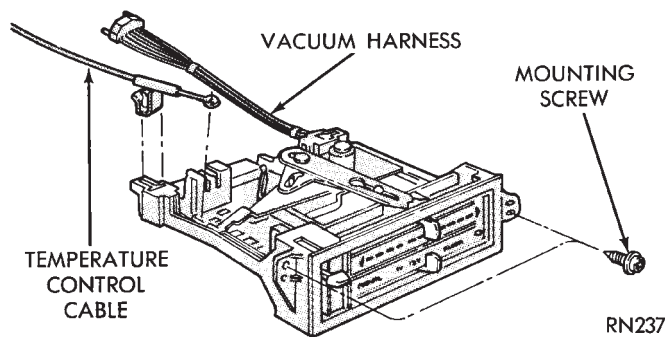


Fig. 50 A/C Control

(5) Slide control rearward, disconnect cable, and electrical wiring.

(6) Remove unit.

(7) For installation reverse above procedures.

CIGAR LIGHTER ASSEMBLY REPLACEMENT

(1) Remove center bezel. Disconnect ash receiver lamp socket.

(2) Remove two screws from bezel of the lighter assembly.

(3) Pull assembly rearward and disconnect wiring.

(4) For installation reverse above procedures.

TRAVELER/MESSAGE CENTER REPLACEMENT

(1) Remove cluster bezel.

(2) Remove four mounting screws.

(3) Pull unit rearward and disconnect wiring.

(4) For installation reverse above procedures.

INSTRUMENT PANEL

INSTRUMENT PANEL TOP COVER REPLACEMENT

(1) Lift up rearward edge of instrument panel top cover.

(2) Pull panel rearward to remove.

(3) To install: position top cover and snap into place, pull rearward for proper fit.

INSTRUMENT PANEL REPLACEMENT

CAUTION: Disconnect negative battery cable, in engine compartment, before servicing instrument panel.

(1) Remove left and right A-pillar trim.

(2) Remove left and right cowl side trim.

(3) Remove glove box assembly. Refer to Glove Box Assembly Replacement.

(4) Remove four relays above glove box assembly.

(5) Reach through glove box opening and disconnect A/C control vacuum lines, radio noise suppressor wires, and blower motor/cycling switch wires.

(6) Remove hood release handle.

(7) Remove lower steering column cover.

(8) Remove lower left instrument panel silencer and reinforcement.

(9) Remove instrument panel center bezel.

(10) Remove floor console. Refer to Group 23, Body.

(11) Remove radio, A/C control, cigar lighter, and message center/traveler.

(12) Disconnect demister hoses.

(13) Remove instrument panel top cover (Fig. 51).

(14) Disconnect battery to assure no air bag system fault codes are stored.

(15) Remove cluster refer to Cluster Assembly.

(16) Remove radio and rear window defogger bezels.

(17) Lower steering column.

(18) Loosen instrument panel pivot bolts.

(19) Remove screws which attach instrument panel to windshield fence line.

(20) Allow panel to roll down slightly and disconnect remaining electrical connections.

(21) With the aid of a helper remove panel pivot bolts and remove panel from vehicle.

(23) For installation reverse above procedures.

INTERIOR LAMP REPLACEMENT

The dome, overhead console and door lamps, if equipped operate when the doors are open or headlamp switch is placed in courtesy position. The front header reading lamp operates only when the lamp push buttons are ON.

DOMELAMP

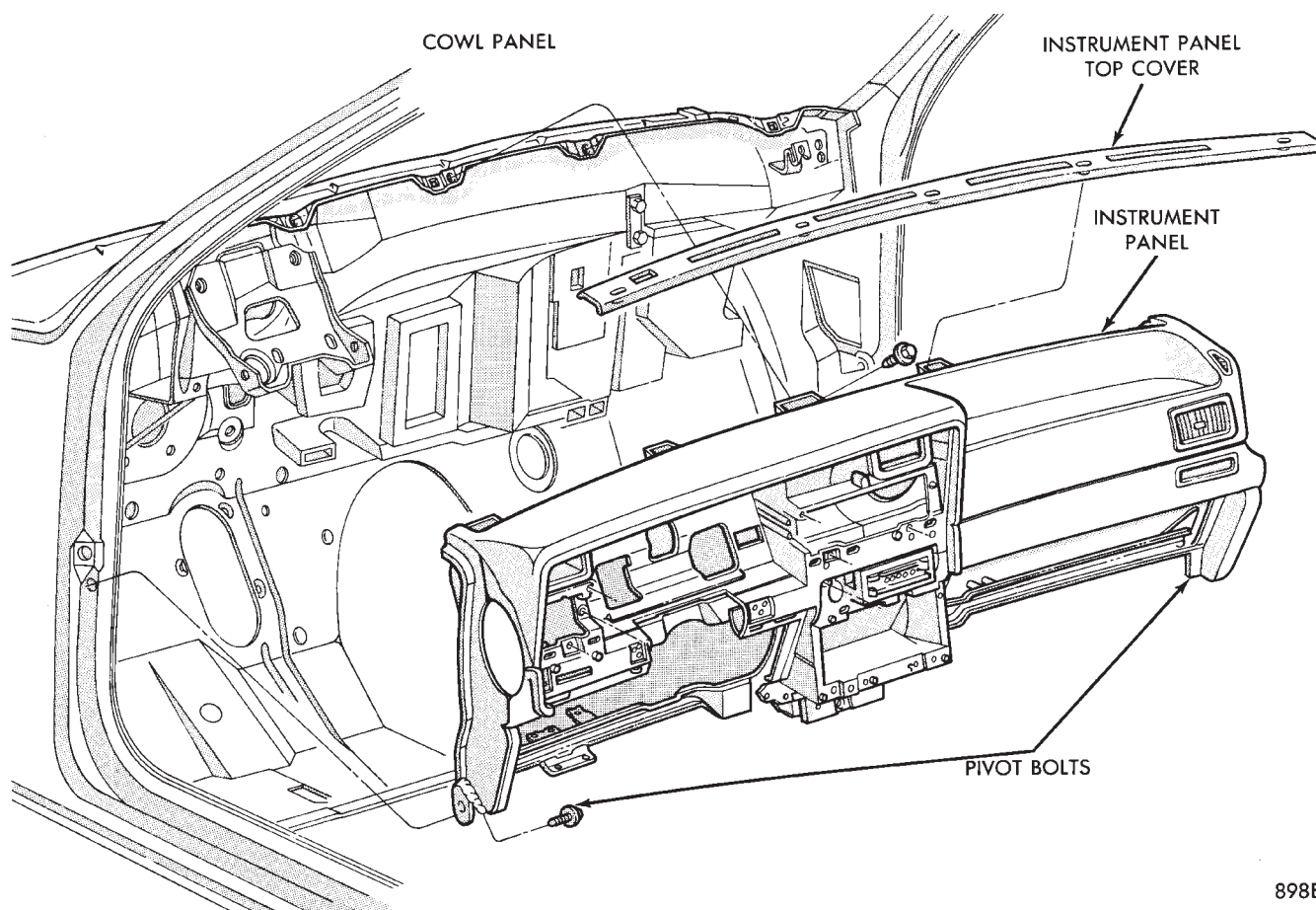
Pry either the forward or rearward edge of the lens away from the bezel and replace lamp.

FRONT HEADER READING LAMP

Pull lamp from headliner. Disconnect wiring and replace lamp.

DOOR LAMPS

Pry along top edge of lens and pivot lens out of lamp. Replace lamp. To remove lamp remove door



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Fig. 51 Instrument Panel

trim panel and disconnect all wiring. Flex the tabs of the lamp retaining bracket and remove lamp.

DOOR KEY CYLINDER LED LAMP

(1) Remove door trim panel. Refer to Group 23, Body.

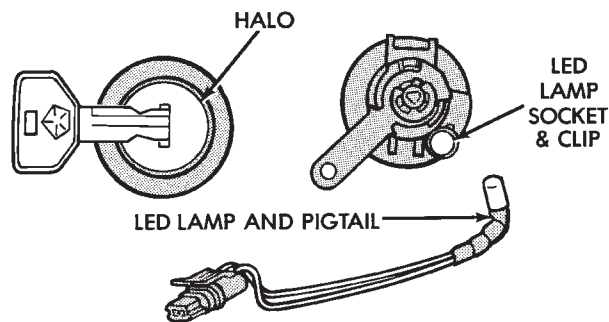
(2) Assure window is in full up position.

(3) Disconnect LED lamp wiring pig tail and note wire routing for installation. Use care when removing lamp so not to disengage lamp retaining clip from key cylinder (Fig. 52).

(4) For installation reverse above procedures.

TRUNK LAMP

The lamp is easily accessible without removing any components.



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Fig. 52 Door Key Cylinder LED Lamp

AC AND AY BODIES

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Gauges	28	Mechanical/Electronic Cluster Removal	25
General Information	23	Switch and Panel Component Service	37

GENERAL INFORMATION

MECHANICAL CLUSTER

The mechanical cluster includes a fuel, oil pressure, coolant temperature, and voltmeter gauges. All incorporate magnetic type gauges. When the ignition switch is in the OFF position, the gauges will show a reading; however, the readings are only accurate when the ignition switch is in the ON position.

The mechanical cluster also includes an electric speedometer, driven by pulses from the distance sensor (Fig. 1).

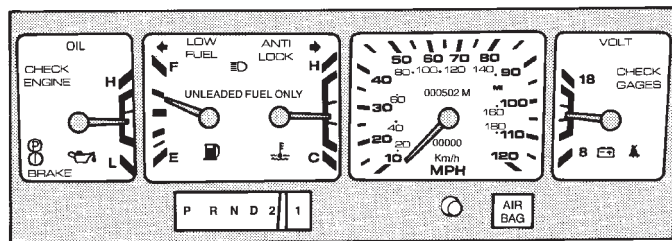


Fig. 1 Mechanical Cluster

918E-50

ELECTRONIC CLUSTER

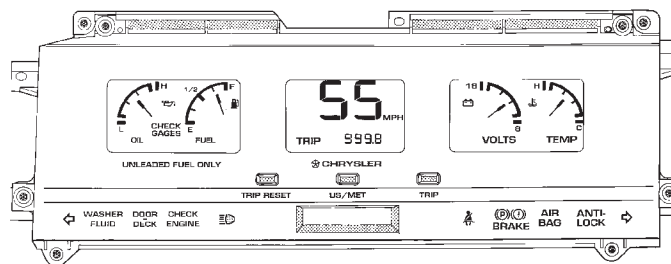
The electronic cluster is easily distinguished from the mechanical cluster by its digital and linear display. The electronic cluster includes:

- Oil pressure gauge
- Coolant temperature gauge
- Voltmeter
- Fuel gauge

The electronic cluster receives virtually all of its information to display from the body controller and engine controller via the Chrysler Collision Detection (CCD) Serial Data Bus. The odometer memory is no longer retained in the cluster. This is now retained in the body controller (Fig. 2).

ELECTRONIC CLUSTER DIMMING

The electronic cluster display is dimmed from daytime to night time intensity when the headlamp



928E-14

Fig. 2 Electronic Cluster

switch is turned on. This intensity can be controlled using the headlamp switch rheostat.

An additional detent on the headlamp switch rheostat will allow daytime intensity while driving with headlamps on during the daytime.

WARNING LAMPS

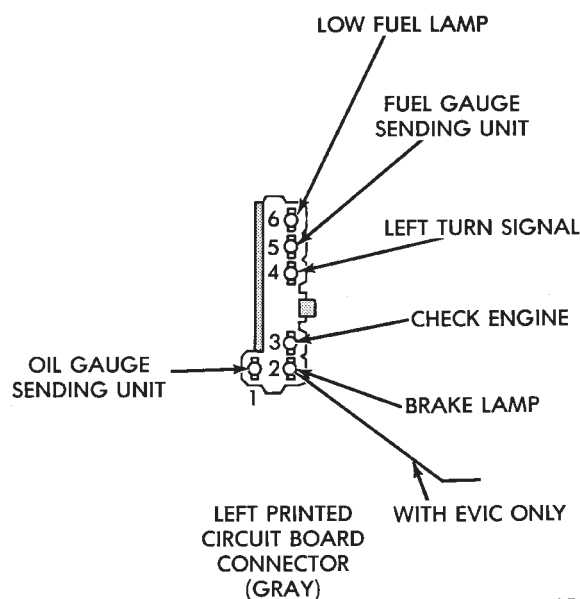
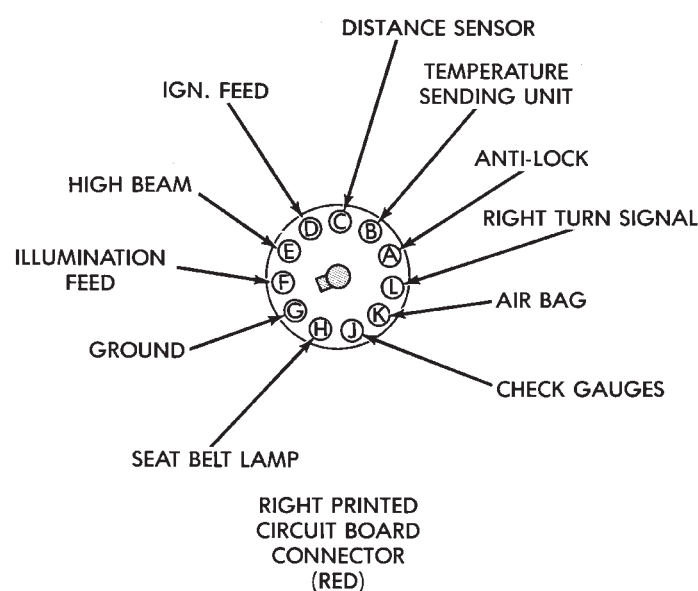
The mechanical instrument cluster will have warning lamps for six systems. These include brake system, air bag, seat belt, low fuel, anti-lock for optional anti-lock brake system, and check engine power loss. The cluster also includes check gages indicator which will illuminate in a warning situation. This will notify driver to check for a problem in coolant temperature, oil pressure, or electrical systems.

The electronic cluster will have warning indicator lamps for eight different systems. These include:

- Air Bag
- Low washer fluid
- Door/deck lid ajar
- Check engine power loss
- Brake system
- Seat belt
- Anti-lock for optional anti-lock brake system
- Check gages, monitors engine coolant, oil pressure and electrical charging system failures.

In addition, ISO symbol will flash to notify the driver in event of:

- Low fuel
- High temperature
- Low oil pressure
- Charging system failure



918E-35

Fig. 3 Mechanical Cluster Connectors**MESSAGE CENTER**

The message center is a car graphic warning lamp module. This conventional warning system and located above the headlamp switch.

ELECTRONIC DIGITAL CLOCK

The electronic digital clock is in the radio. The clock and radio each use the display panel built into the radio. A digital readout indicates the time in hours and minutes whenever the ignition switch is in the ON or ACC position.

When the ignition switch is in the OFF position, or when the radio frequency is being displayed, time keeping is accurately maintained.

The procedure for setting the clock varies slightly with each radio. The correct procedure is described under the individual radio operating instructions referred to in the Owner's Manual supplied with the vehicle.

AIR BAG WARNING SYSTEM

For testing of this system refer to Group 8M, Restraint Systems.

MECHANICAL CLUSTER AND GAUGE SERVICE

CAUTION: Disconnect negative battery cable, in engine compartment, before servicing instrument panel. When power is required for test purposes, reconnect battery cable for the test only.

Disconnect negative battery cable after test and before continuing service procedures.

SENDING UNIT TEST

When a problem occurs with a cluster gauge, before disassembling the cluster to check the gauge, check for a defective sending unit or wiring.

(1) Sending units and wiring can be checked by grounding the connector leads, at the sending unit, in the vehicle.

(2) With the ignition in the ON position; a grounded input will cause the oil, fuel or temperature gauge to read at or above maximum.

CHECK GAUGES WARNING LAMP TESTS

The check gauges warning lamp is illuminated by the low oil pressure sending unit switch or the body controller when there is high temperature or charging system failure.

To test the lamp, turn ignition key to the ON position without starting the vehicle. The low oil pressure switch is grounded and the light will be on indefinitely.

If the lamp fails to light, pull the cluster and check the following:

- Continuity between ground and check gauge pin J (Fig. 3).
- Proper contact between the gauge pins and wiring harness and printed circuit board pins.
- If there is ground and proper pin contact, replace lamp.
- If there is no continuity, check the low oil pressure sending unit switch (Fig. 4 and 5).

To test the switch disconnect the switch electrical connector. Attach positive lead of an ohmmeter to the switch terminal for the gray (GY) wire and the negative lead to an engine ground. With the engine off, there should be continuity in the system. Start the engine. With the engine running, the ohmmeter

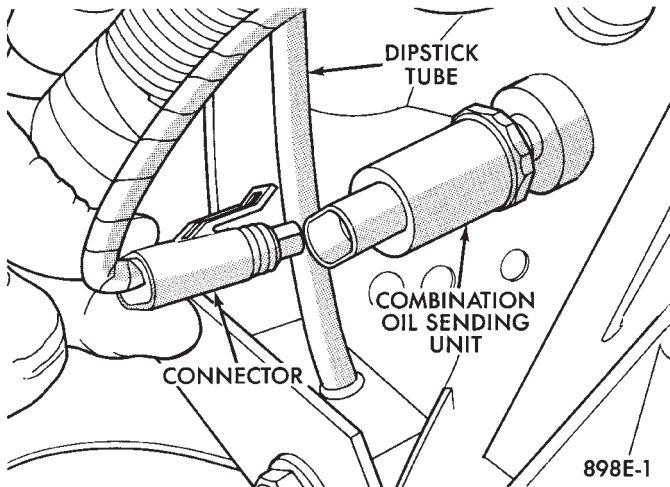


Fig. 4 Combination Oil Sending Unit

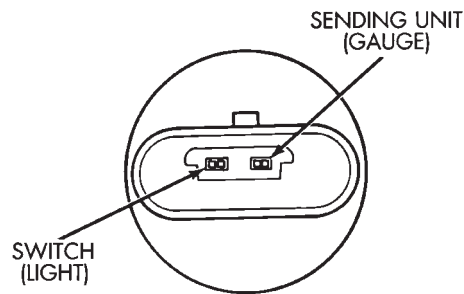


Fig. 5 Combination Oil Sending Unit Test

should show no continuity. If the above results are not obtained, replace the switch.

BRAKE SYSTEM WARNING LAMP

The brake warning lamp illuminates when parking brake is applied with ignition key turned ON. The same lamp will also illuminate should one of the two service brake systems fail when brake pedal is applied. To test system turn ignition key ON, and apply parking brake. If lamp fails to light, inspect for a burned out lamp, disconnected socket, a broken or disconnected wire at switch. The lamp also lights when the ignition switch is turned to START.

To test service brake warning system, raise vehicle on a hoist and open a wheel cylinder bleeder while a helper depresses brake pedal and observes warning light. If lamp fails to light, inspect for a burned out lamp, disconnected socket, a broken or disconnected wire at switch.

If lamp is not burned out and wire continuity is proven, replace brake warning switch in brake line Tee fitting mounted on frame rail in engine compartment below master cylinder (Fig. 6 and 7).

CAUTION: If wheel cylinder bleeder was opened check master cylinder fluid level.

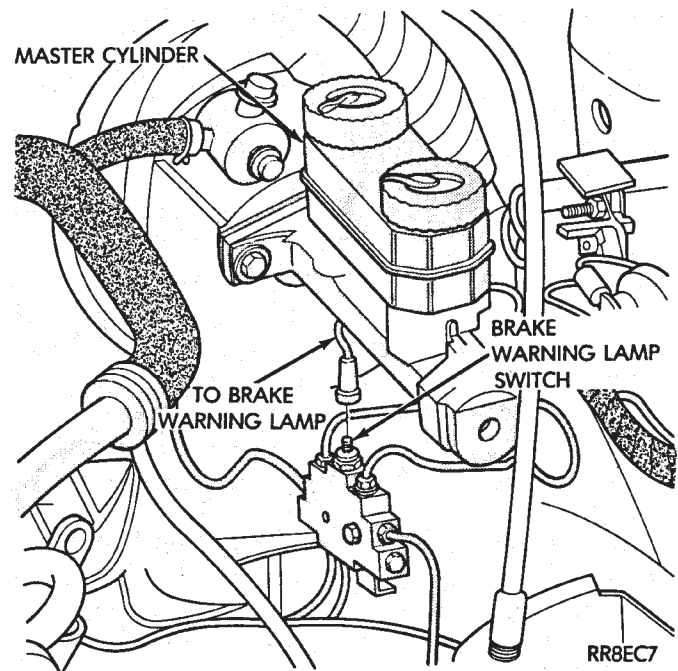


Fig. 6 Brake Warning Lamp Switch

SEAT BELT WARNING LAMP

For testing of this system, refer to Group 8M, Restraint System.

CHECK ENGINE LAMP

For testing of this system, refer to the Powertrain Diagnostic Test Procedure Manual.

MECHANICAL/ELECTRONIC CLUSTER REMOVAL

CLUSTER BEZELS REMOVAL

- (1) Move gear selector to the low position.
- (2) Remove five screws attaching upper bezel to instrument panel (Fig. 8).
- (3) Lift cluster bezel over steering wheel.
- (4) Remove four screws attaching lower bezel to instrument panel.
- (5) Lift lower cluster bezel from instrument panel.
- (6) For installation reverse above procedures.

CLUSTER MASK AND LENS REMOVAL

- (1) Remove cluster bezel.
- (2) Remove trip reset knob by pulling straight back.
- (3) Remove five screws attaching mask and lens to cluster.
- (4) For installation reverse above procedures.

CLUSTER ASSEMBLY

REMOVAL—CLUSTER WITH PRNDL FROM STEERING COLUMN

- (1) Disconnect battery to assure no air bag system fault codes are stored.
- (2) Remove cluster bezel (Fig. 9).

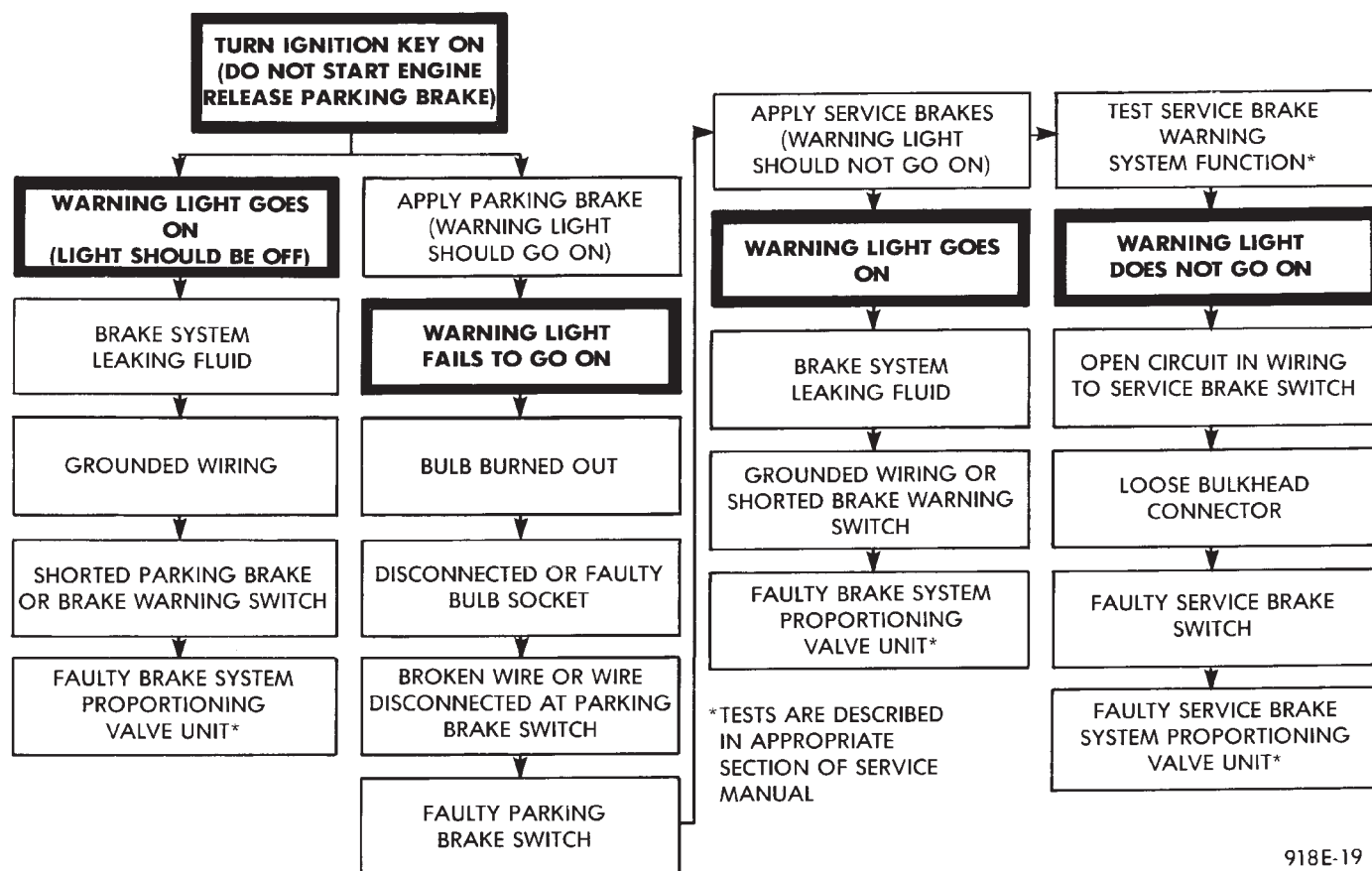


Fig. 7 Brake System Warning Lamp Diagnosis

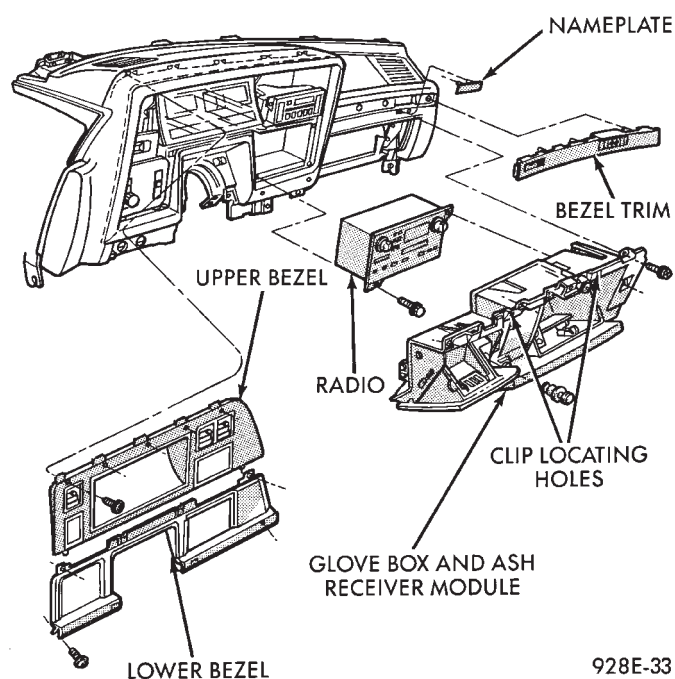


Fig. 8 Cluster Bezel

(3) Remove lower steering column cover (Fig. 10 through 14).

(4) Place gear shift lever in neutral or park.

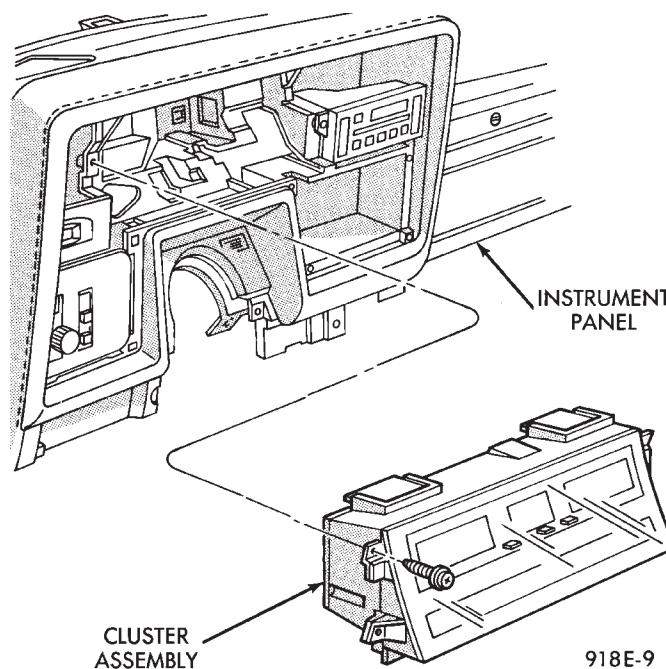


Fig. 9 Instrument panel Bezels

(5) Remove guide tube from behind fuse block and disconnect cable eyelet from column actuating arm.

(6) Release lock bar on column insert, squeeze legs together and remove from column (Fig. 13).

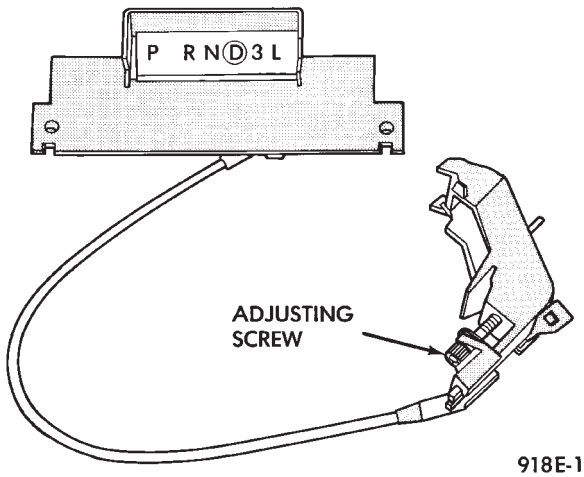
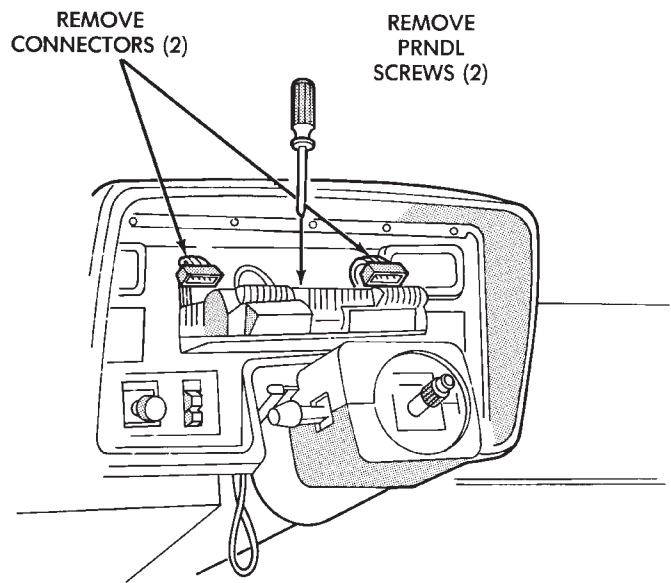


Fig. 10 PRNDL



STEERING WHEEL REMOVED FOR CLARITY

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Fig. 12 PRNDL Step 2

- RELEASE LOCK TAB BEFORE REMOVING INSERT—RELOCK AFTER INSTALLATION

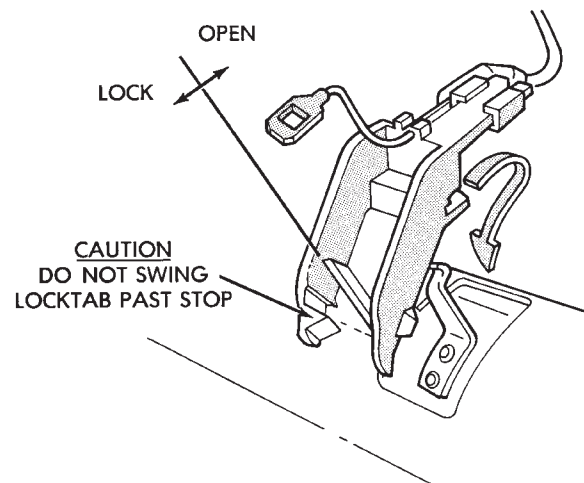


Fig. 13 PRNDL Step 3

918E-62

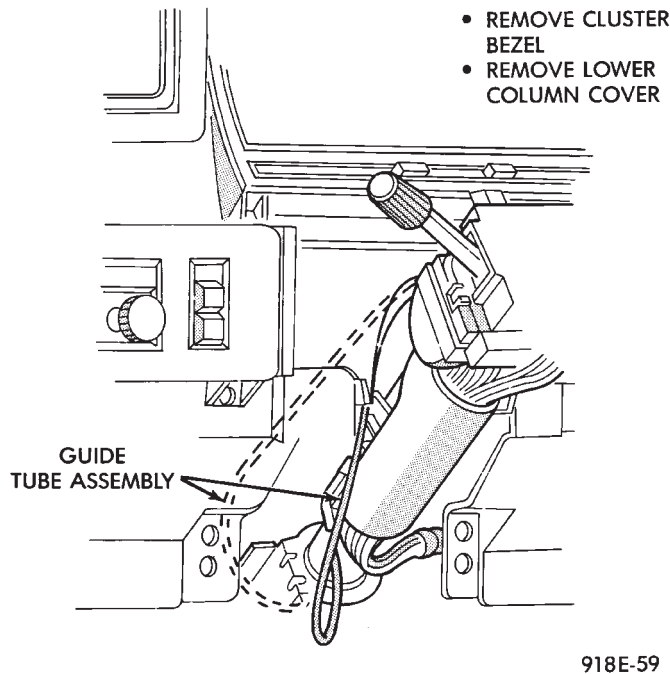


Fig. 11 PRNDL Step 1

- (7) Secure insert and cable guide out of the way.
- (8) Remove the rear window defogger bezel and radio bezel.
- (9) Remove the upper steering column cover.
- (10) Remove the four screws attaching cluster housing to the base panel (Fig. 15).
- (11) Pull cluster rearward, reach behind cluster and disconnect the two wiring harnesses.
- (12) Remove cluster assembly.

INSTALLATION

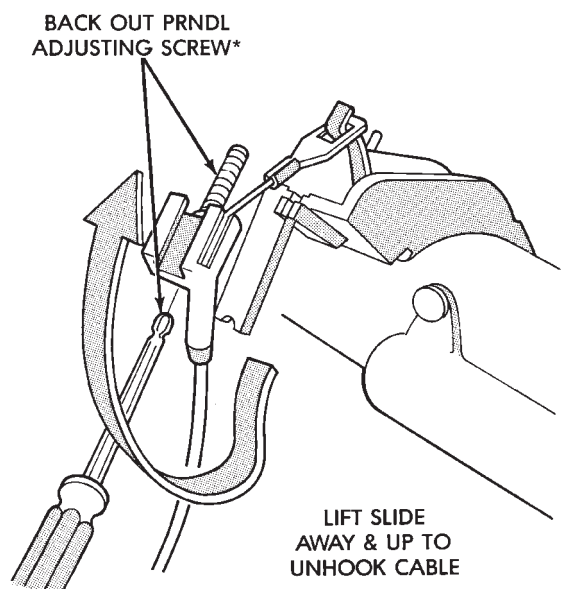
- (1) Connect wiring harnesses.
- (2) Install cluster assembly while routing PRNDL guide tube through access hole in base panel (Fig. 10 through 14). Release guide tube from behind fuse block.

- (3) Insert flange of column insert into column, squeeze legs together with tabs under column jacket and engage lock bar to secure insert (Fig. 13).

- (4) Hook cable eyelet to steering column actuator check pointer, should indicate neutral. Do not kink or bind PRNDL guide tube and position guide tube in original location.

- (5) Adjust with tool if necessary to center pointer on N (Neutral) and check in other gears (Fig. 14).

- (6) Install upper and lower steering column cover.



*9/64" ALLEN HEAD DRIVER

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Fig. 14 PRNDL Step 4

- (a) Do not kink guide tube when installing cluster.
- (b) Replace guide tube behind fuse block.

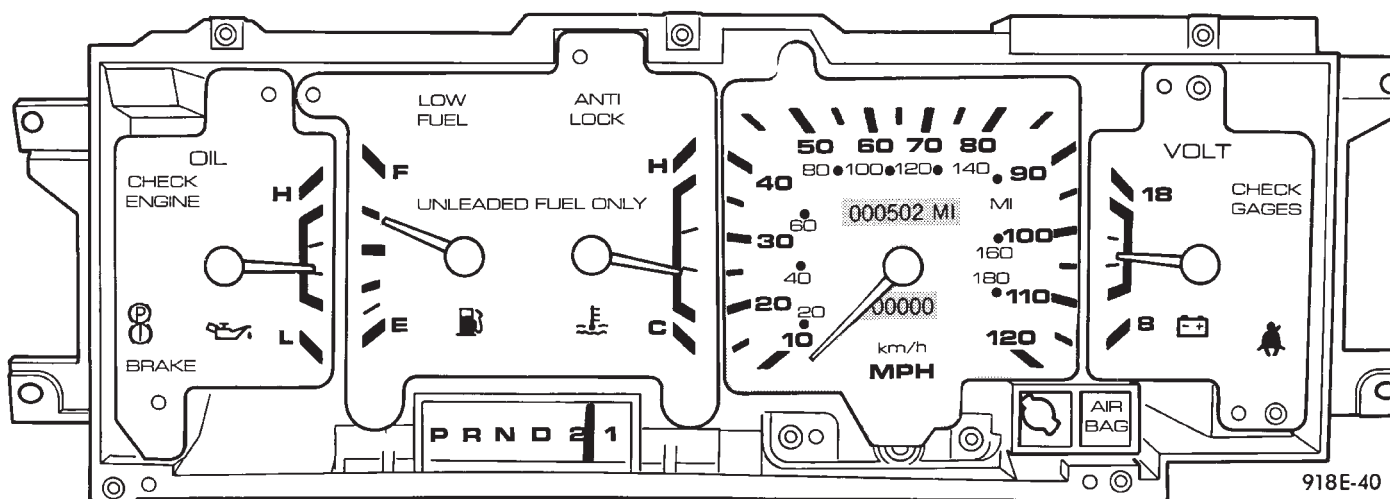
GAUGES

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 MALFUNCTION

If all the instrument cluster gauges appear to be malfunctioning, remove the cluster assembly.

- Check for good pin contact
- Check for ignition voltage between the IGN cavity D and ground.
- If there is ignition voltage
- Check for continuity between the wire harness ground cavity G and ground.
- If there is continuity, replace the print circuit board (Fig. 16).



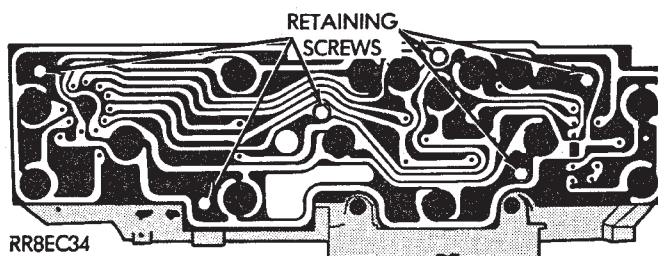
918E-40

Fig. 15 Cluster With Mask and Lens Removed

- (7) Install the rear window defogger bezel and radio bezel.
- (8) Install cluster bezel.
- (9) Reconnect battery.

REMOVAL—CLUSTER WITHOUT PRNDL FROM STEERING COLUMN

- (1) Remove cluster bezel (Fig. 10).
- (2) Remove four screws attaching cluster to base panel.
- (3) Pull cluster rearward carefully, reach behind and disconnect the two harness connectors.
- (4) Carefully rotate cluster and remove the two PRNDL indicator screws.
- (5) Remove cluster assembly.
- (6) For installation reverse above procedures.



RR8EC34

Fig. 16 Printed Circuit Board**GAUGE INOPERATIVE (FIG. 17 THROUGH 20)**

- (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. Refer to the individual gauge circuit test for proper pin.

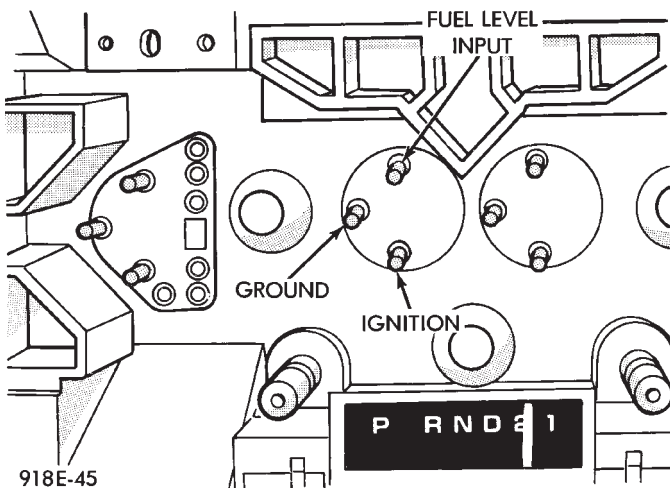


Fig. 17 Fuel Gauge Pins

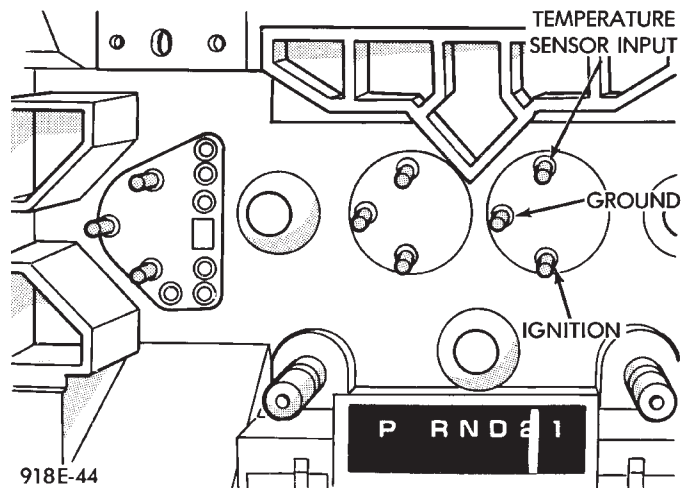


Fig. 19 Temperature Gauge Pins

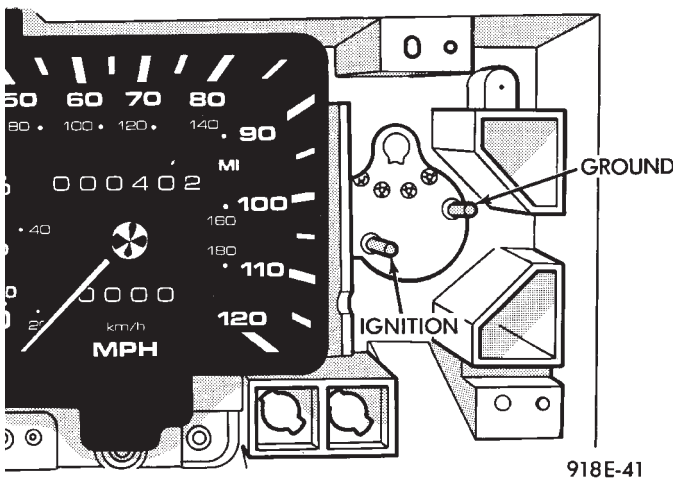


Fig. 18 Voltmeter Pins

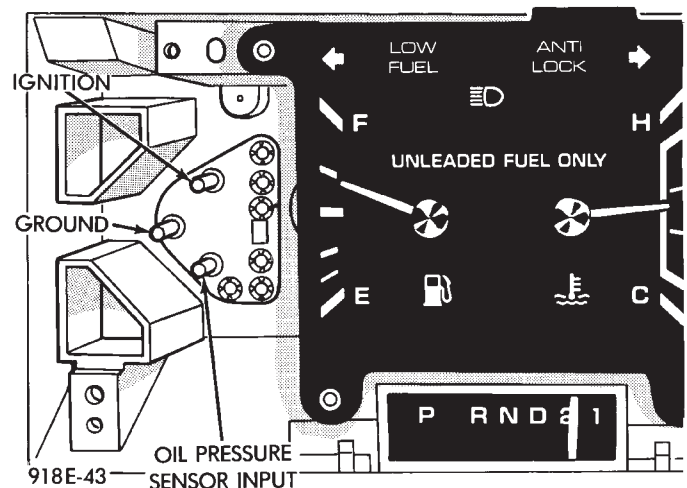


Fig. 20 Oil Pressure Gauge Pins

(a) If no voltage or ground at gauge pins. Check cavity D red cluster connector for ignition voltage or cavity G for ground.

(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 temperature and oil pressure gauges allow the engine to run until the vehicle reaches a normal operating temperature. Turn ignition OFF, and remove gauge from cluster.

(a) Testing oil pressure gauge, engine needs to be running.

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

(c) When checking temperature and oil pressure gauges, it is important to have the same engine temperature and speed when noting gauge position. The time between gauge reading and measuring should be kept to a minimum.

(d) If resistance and gauge position are not similar, replace gauge.

(e) If OK, test resistance from the sending unit to the cluster connector.

(f) If resistance reading is different, check printed circuit board for contact to cluster.

(g) If OK and contacts are not distorted, replace printed circuit board.

(h) If everything checks out OK, refer to Sending Unit Test.

(4) If fuel gauge meets specifications check fuel tank and original fuel tank sending unit as follows:

(a) Carefully remove fuel tank sending unit from tank.

(b) Refer to sending unit removal Group 14, Fuel.

(c) Connect sending unit wire and jumper wire as described in the test procedure.

(5) If fuel gauge now checks within specifications, original sending unit is electrically okay, check following as a possible cause:

(a) Ground wire from sending unit to left side cowl for continuity.

(b) Sending unit deformed. Make sure sending unit float arm moves freely and pick up tube is not bent upwards creating an interference with bottom of tank and inspect float.

(c) Sending unit improperly installed. Install properly.

(d) Mounting flange on fuel tank for sending unit deformed. Feel for interference fit of sending unit to bottom of tank. It is permissible to bend pick up tube down a little near mounting flange to gain interference fit.

(e) Fuel tank bottom deformed, causing improper positioning of sending unit pick up tube. Replace or repair tank and recheck sending unit.

GAUGE CALIBRATION

(1) Remove the gauge.

(2) Check for ignition voltage and ground to the gauge.

(3) With the ignition key in the OFF position, replace gauge. Turn the ignition key to the ON position. To test oil pressure gauge engine must be running. When testing oil or temperature gauge the engine should be at normal operating temperature. Record the gauge position.

(4) Remove gauge and record the resistance between the sending unit pin and the gauge ground pin. When checking gauges, it is important to have the same engine temperature and speed when noting gauge position. The time between gauge reading and measuring should be kept to a minimum.

(5) The resistance Chart (Fig. 21), is general guidelines for checking the gauge position against the sending unit resistance.

Gage	Resistance	Position
Fuel	90 ohms	E
	59 ohms	1/4
	42 ohms	1/2
	28 ohms	3/4
	12 ohms	F
Oil	100 ohms	L
	63 ohms	Low Normal
	30 ohms	3/4 of Normal
Temp	Greater than 455	C or below
	288 ohms	Low Normal
	125 ohms	Mid scale
	76 ohms	High Normal
	64 ohms	H

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Fig. 21 Gauge Resistance

Because of only a few specific points of gauge position versus sending unit resistance, a good estimate is need when the resistance falls between graduations. Even when the resistance corresponds to graduations, the gauge has a tolerance of ± 4 ohms.

Volt gauge: The calibration dot on the volt gauge corresponds to 13 volts between the gauge ignition and ground pins. If voltage varies from this, estimate proper gauge position with input voltage.

VOLTMETER REPLACEMENT

(1) Remove cluster bezels and mask (Fig. 22).

(2) Remove screws attaching gauge assembly to cluster.

(3) Pull rearward to disengage gauge from gauge pins.

(4) For installation reverse above procedures.

OIL PRESSURE GAUGE REPLACEMENT

(1) Remove cluster bezels and mask/lens (Fig. 22).

(2) Remove screws attaching gauge assembly to cluster.

(3) Pull rearward to disengaged gauge from gauge pins.

(4) For installation reverse above procedures.

FUEL AND TEMPERATURE GAUGE ASSEMBLY REPLACEMENT

(1) Remove cluster bezel and mask/lens (Fig. 22).

(2) Remove oil pressure gauge.

(3) Remove screws attaching gauge assembly to cluster.

(4) Pull rearward to disengage gauge from gauge pins.

(5) For installation reverse above procedures.

SPEEDOMETER SYSTEM

AC body vehicles are equipped with electronically driven speedometer and odometer assemblies. The unit has the same appearance as a conventional speedometer but it eliminates the cable-driven mechanical system. A signal is sent from a transmission-mounted distance sensor to the speedometer circuitry through the wiring harness. By eliminating the speedometer cable, instrument cluster service and removal is improved. Refer to Fig. 23 Speedometer Diagnosis Chart.

SPEEDOMETER ODOMETER ASSEMBLY REPLACEMENT

(1) Remove cluster bezel and mask/lens.

(2) Remove volt gauge.

(3) Remove screws attaching gauge assembly to cluster.

(4) Pull speedometer rearward to disengage from gauge pins.

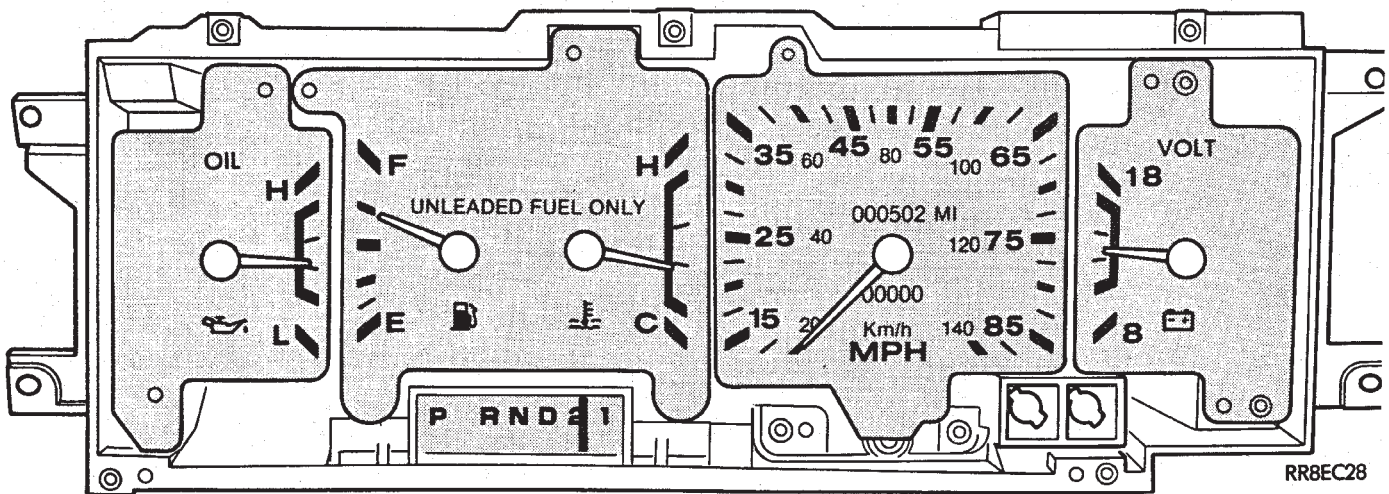


Fig. 22 Cluster with Mask and Lens Removed

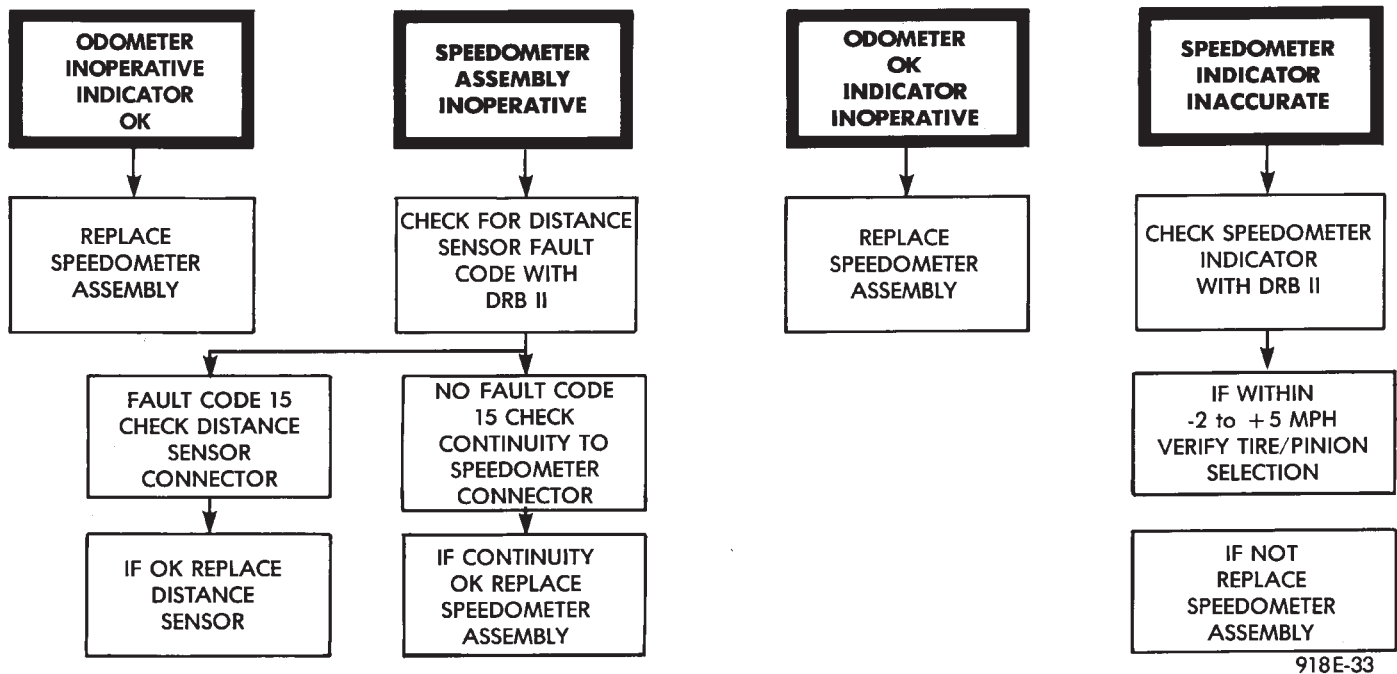


Fig. 23 Speedometer Diagnosis

(5) For installation: Position speedometer on gauge pins and push firmly until seated and reverse above procedures.

SPEEDOMETER CIRCUIT TESTING

(1) Using the DRB II, check distance sensor for distance sensor fault code and for proper speed indication. Refer to Powertrain Diagnostics Procedure Manual, Speed Control System Test.

(2) Remove speedometer from cluster.

(3) With ignition on check for battery voltage across ignition and ground pins (Fig. 24).

(4) Check for continuity from distance sensor signal pin to connector at distance sensor.

DISTANCE SENSOR REPLACEMENT

(1) Remove harness connector from sensor and make sure the weather seal is on harness connector (Figs. 25 and 26).

(2) Remove sensor retaining bolt.

(3) Pull sensor and pinion gear assembly out of transaxle. If necessary, carefully pry loose with a flat blade screwdriver.

(4) Remove pinion gear from sensor.

(5) For installation reverse above procedures. Seat sensor assembly by hand to insure proper gear engagement. Tighten retaining bolt to 7 N·m (60 in. lbs.) torque.

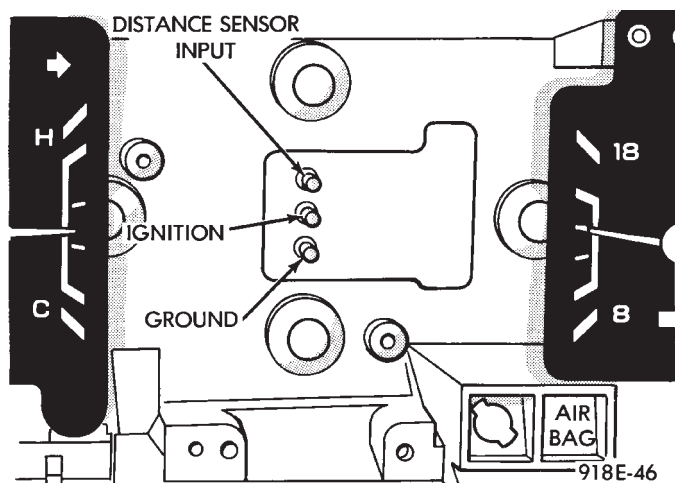


Fig. 24 Speedometer Pins

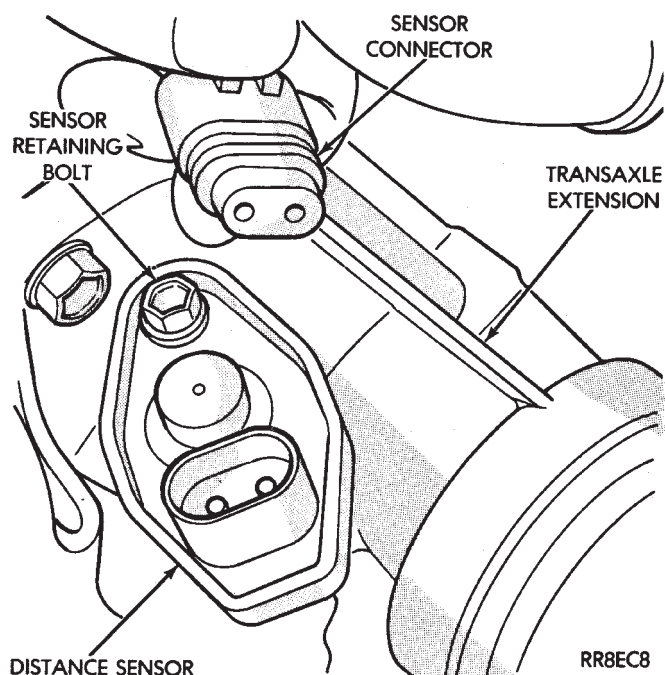


Fig. 25 Distance Sensor and Connector

DISTANCE SENSOR TEST

For testing of the distance sensor and related components, refer to the Powertrain Diagnostics Test Procedure Manual.

PRINTED CIRCUIT BOARD REPLACEMENT

- (1) Remove cluster assembly, refer to Cluster Assembly Replacement.
- (2) Twist out all lamp sockets.
- (3) Remove screws securing printed circuit board to cluster housing (Fig. 11).
- (4) Pull printed circuit board straight out and avoid bending the board.
- (5) For installation reverse above procedures. Be sure that all gauge pins are carefully aligned.

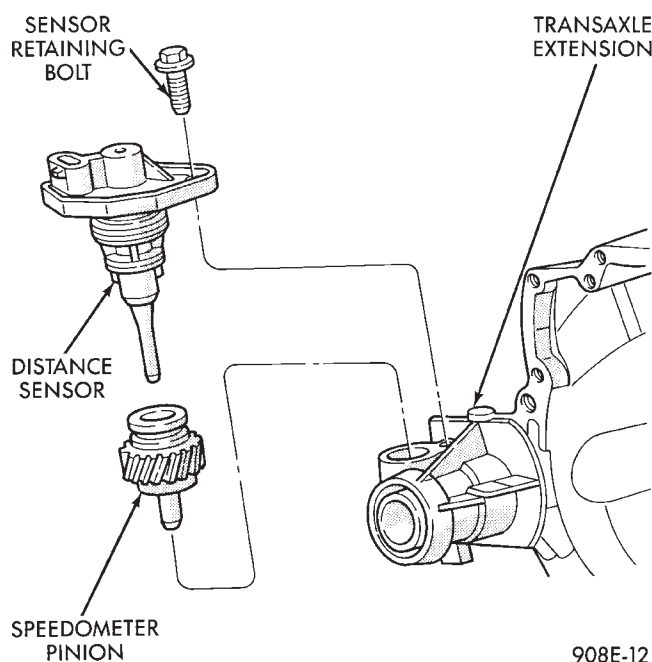


Fig. 26 Distance Sensor and Speedometer Pinion

CLUSTER LAMPS REPLACEMENT

All cluster lamps are one-piece lamp and socket assemblies. Can be replaced by removing cluster assembly from instrument panel. Replace appropriate lamp shown in rear view of cluster (Fig. 27).

ELECTRONIC CLUSTER

SELF DIAGNOSTIC SYSTEM

The electronic clusters have an internal diagnostics routing to isolate problems within the cluster or CCD Bus.

Successful completion of the Self Diagnostic Test indicates that the problem is in the CCD Bus, interfacing modules, connectors, or sensors outside of the cluster (Fig. 28 and 29).

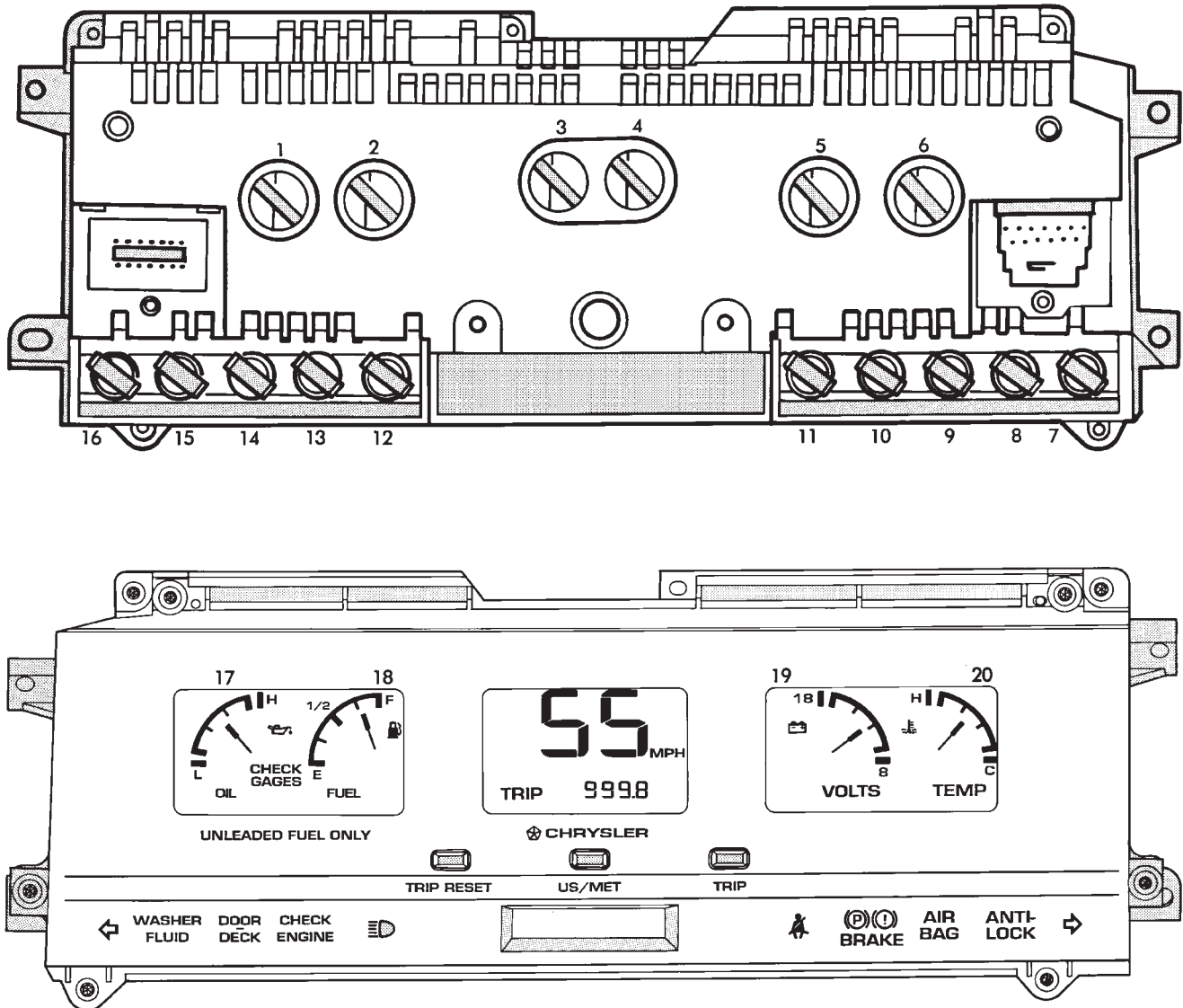
ELECTRONIC CLUSTER DIAGNOSIS

Perform cluster Self-Diagnostic Test to determine whether problem is within cluster or outside of cluster (Fig. 30).

CONDITION: CLUSTER DISPLAYS DO NOT ILLUMINATE AFTER VEHICLE IS STARTED

PROCEDURE

- (1) Check fuses and verify battery and ignition voltage at cluster connector.
- (2) Check ground from cluster connector to instrument panel ground stud.



1. VOLT GAUGE ILLUMINATION
2. TEMPERATURE GAUGE ILLUMINATION
3. SPEEDOMETER ILLUMINATION
4. ODOMETER ILLUMINATION
5. FUEL GAUGE ILLUMINATION
6. OIL GAUGE ILLUMINATION
7. LEFT TURN SIGNAL
8. LOW WASH
9. DOOR-DECK
10. CHECK ENGINE

11. HIGH BEAM
12. SEAT BELT
13. BRAKE
14. AIR BAG
15. ANTI-LOCK
16. RIGHT TURN SIGNAL
17. ILLUMINATION
18. ILLUMINATION
19. ILLUMINATION
20. ILLUMINATION

Fig. 27 Instrument Cluster Illumination Lamp

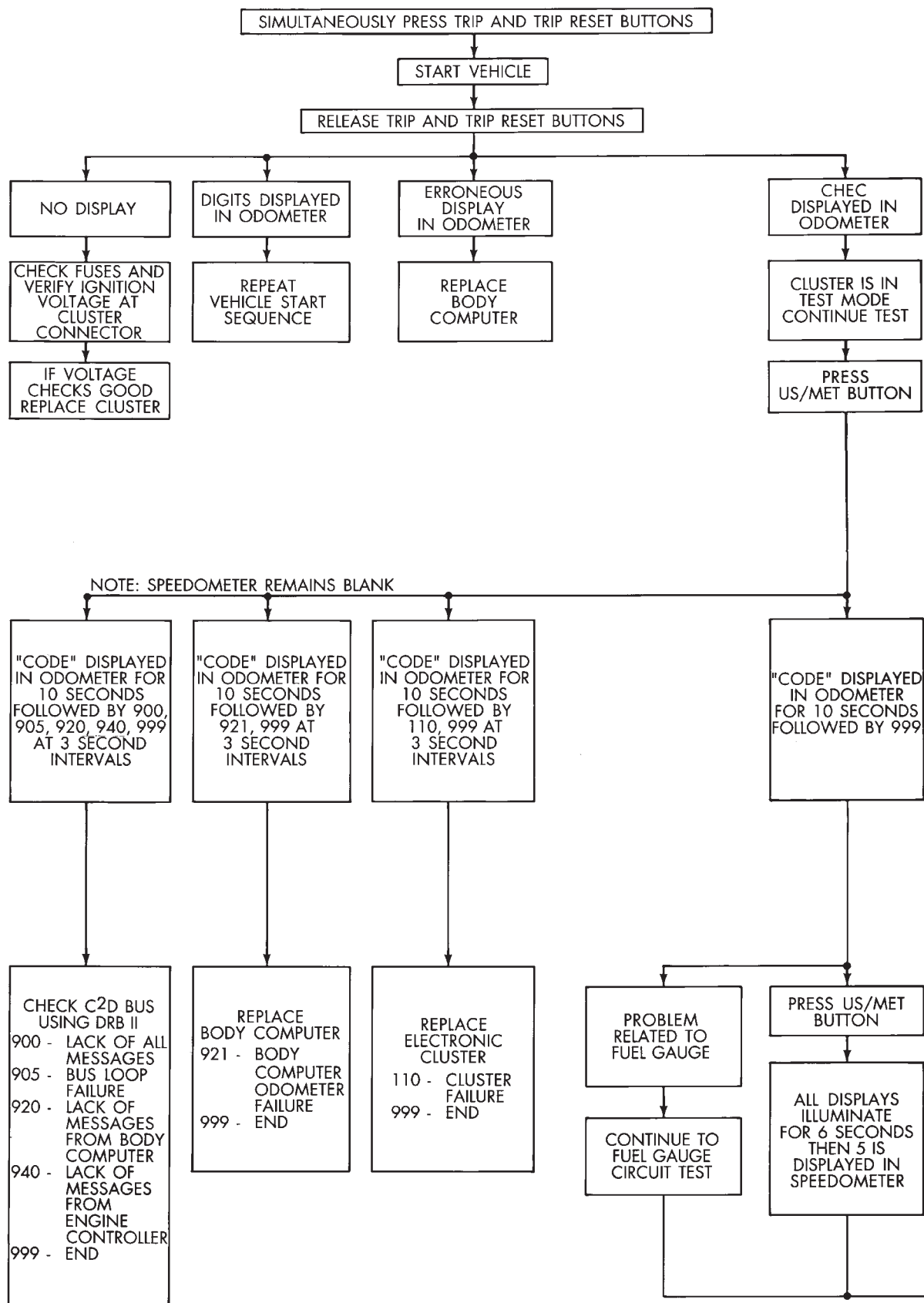
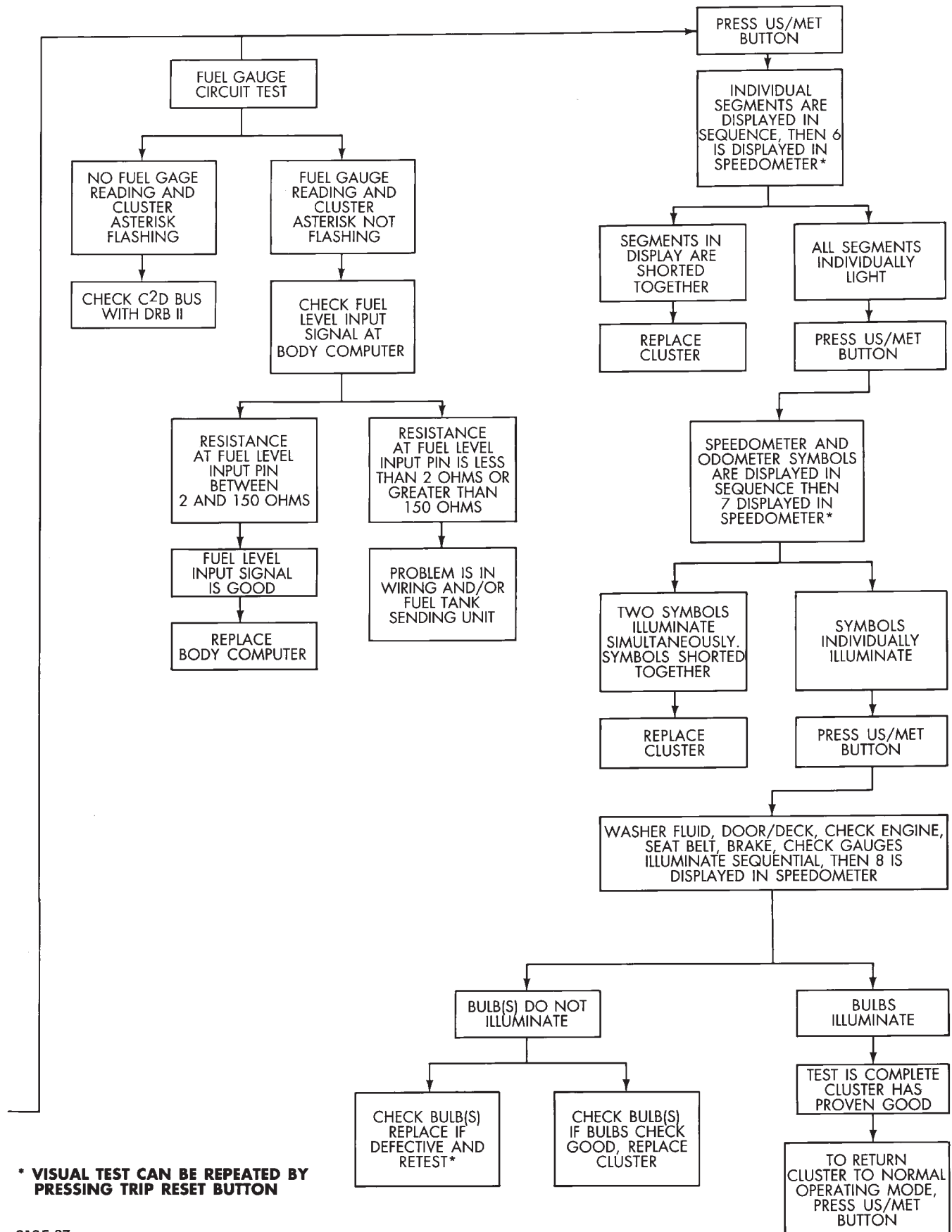
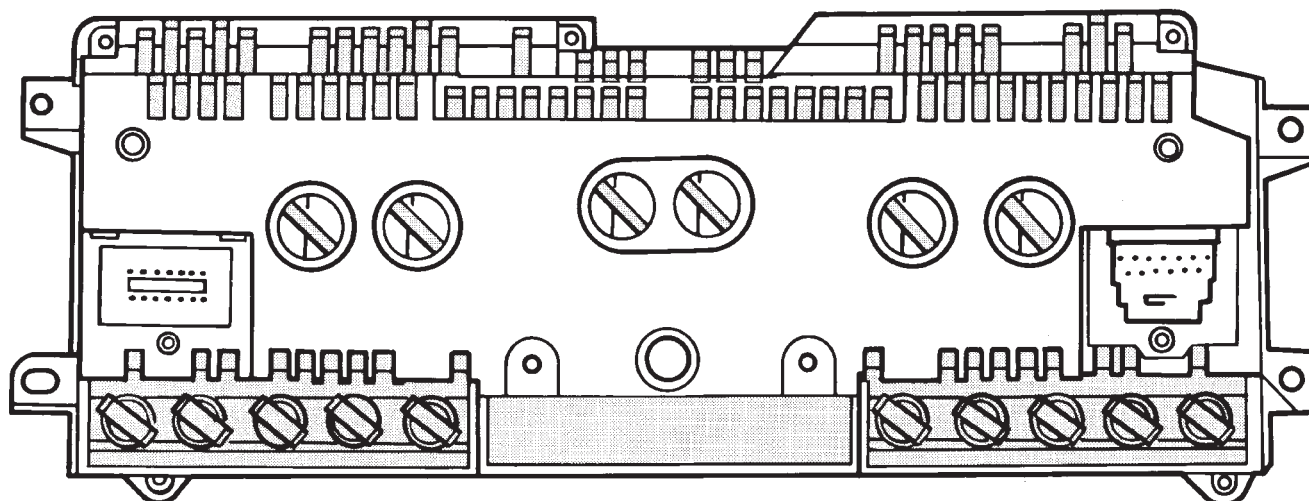


Fig. 28 Electronic Cluster Self-Diagnostic Test

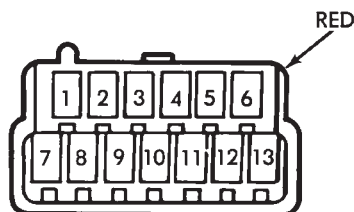


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Fig. 29 Electronic Cluster Self-Diagnostic Test Continued



CONNECTOR VIEWED FROM WIRE END



RED CONNECTOR FUNCTION	
1	ANTI-LOCK
2	BATTERY
3	HIGH BEAM
4	BRAKE FAIL
5	LEFT TURN SIGNAL
6	ILLUMINATION
7	LOGIC GROUND

8	LOW OIL SWITCH
9	BUS
10	BUS
11	IGNITION
12	AIR BAG
13	RIGHT TURN SIGNAL

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Fig. 30 Cluster Connector

CONDITION: CLUSTER ASTERISK (*) FLASHES, CLUSTER DISPLAYS NOT INDICATING CORRECT DATA.

PROCEDURE

CCD bus problem. Use the Body Chassis Diagnostic Manual to diagnose CCD Bus.

CONDITION: SPEEDOMETER AND ODOMETER ARE INOPERATIVE OR OPERATES INTERMITTENTLY

PROCEDURE

(1) If speedometer reads 0, or odometer is blank, and cluster asterisk is flashing, use the Body Chassis Diagnostic Manual to diagnose CCD Bus problem.

(2) If cluster asterisk is not flashing, check for defective distance sensor or distance sensor wiring.

CONDITION: OIL GAUGE, FUEL GAUGE, TEMPERATURE GAUGE, OR VOLTAGE GAUGE INOPERATIVE

PROCEDURE

If any gauge gives no indication and cluster asterisk is flashing, use the Body Chassis Manual to diagnose CCD Bus problem.

If cluster asterisk is not flashing:

(1) Check for defective sending unit or wiring.

(a) Sending units and wiring can be checked by grounding the connector leads, at the sending unit, in the vehicle.

(b) With the ignition in the ON position, a grounded input will cause the oil, fuel, or temperature gauge to read maximum.

(2) If the problem is with the oil, temperature, or fuel gauge, check the body controller. If the problem is with the voltage gauge, check the engine controller operation.

CONDITION: CLUSTER DISPLAY DOES NOT DIM WHEN HEADLAMP SWITCH IS ACTIVATED AND RHEOSTAT ROTATED

PROCEDURE

If the cluster asterisk is flashing, Refer to the Body Chassis Diagnostic Manual to diagnose the CCD Bus.

If the cluster asterisk is not flashing:

(1) Check fuses in headlamp circuit.

(2) Check for loose connections or defective wiring for headlamp switch to body controller.

(3) Check for defective headlamp switch. The electronic instrument cluster receives the display intensity status from the body controller via the CCD Bus.

CONDITION: SEAT BELT WARNING LAMP DOES NOT ILLUMINATE

PROCEDURE

Turn on ignition. Lamp should illuminate for six seconds. If not:

- (1) Check for burned out lamp and retest.
- (2) Replace cluster.

CONDITION: LOW WASHER, DOOR/DECK, OR CHECK ENGINE LAMPS, DO NOT ILLUMINATE

PROCEDURE

- (1) Perform cluster self-diagnostics to determine if lamp will illuminate. If lamp does not, check for burned out lamp, replace and retest.
- (2) If cluster asterisk is flashing, Refer to the Body Chassis Diagnostic Manual to diagnose CCD Bus.
- (3) If cluster asterisk is not flashing:
 - (a) For low washer fluid or door/deck, check inputs to body controller.
 - (b) For check engine indicator, check engine controller operation.

CONDITION: ODOMETER DISPLAY IS BLANK. THE ODOMETER VALUE IS NO LONGER RETAINED IN THIS ELECTRONIC CLUSTER. THIS TAKES PLACE IN THE BODY CONTROLLER

PROCEDURE

- (1) If cluster asterisk is flashing, Refer to the Body Chassis Diagnostic Manual to diagnose CCD Bus.
- (2) If cluster asterisk is not flashing, perform cluster self-diagnostics. If code 921 appears in the odometer display, replace body controller for odometer failure.

CONDITION: US/METRIC MODES WILL NOT TOGGLE OR TRIP ODOMETER WILL NOT RESET

PROCEDURE

- (1) Perform cluster self-diagnostics to determine if push buttons are operational.
- (2) Refer to the Body Chassis Diagnostic Manual to diagnose CCD Bus. The US/Metric toggle and trip odometer reset are activated over the CCD Bus.

ODOMETER ADJUSTMENT

The odometer memory is no longer retained in the cluster. This information is stored in the body controller. Therefore, there is no adjustment procedure. If the cluster is replaced odometer value will not change. If the body controller is replaced the mileage may be transferred using the DRB II. Refer to the Body Chassis Diagnostic Manual for the procedure.

SWITCH AND PANEL COMPONENT SERVICE

MESSAGE CENTER REPLACEMENT

- (1) Remove upper cluster bezel (Fig. 31).

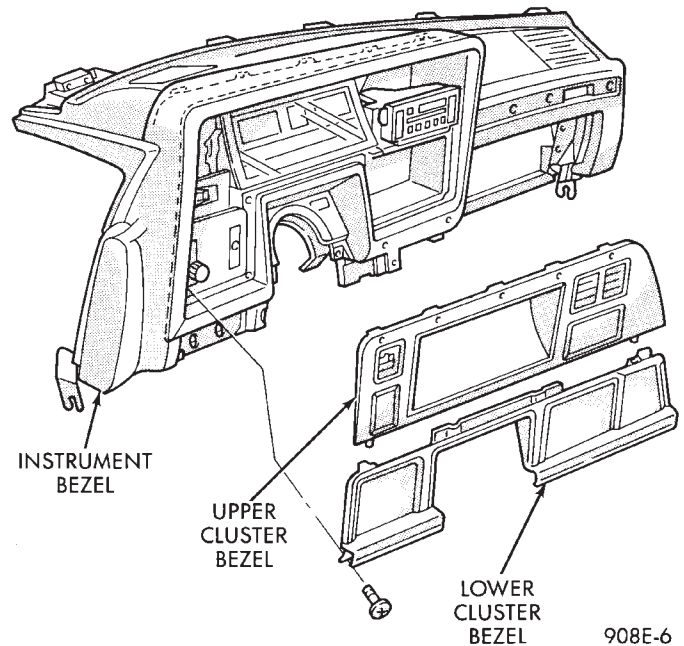


Fig. 31 Cluster Bezel

- (2) Remove two attaching screws (Fig. 32).

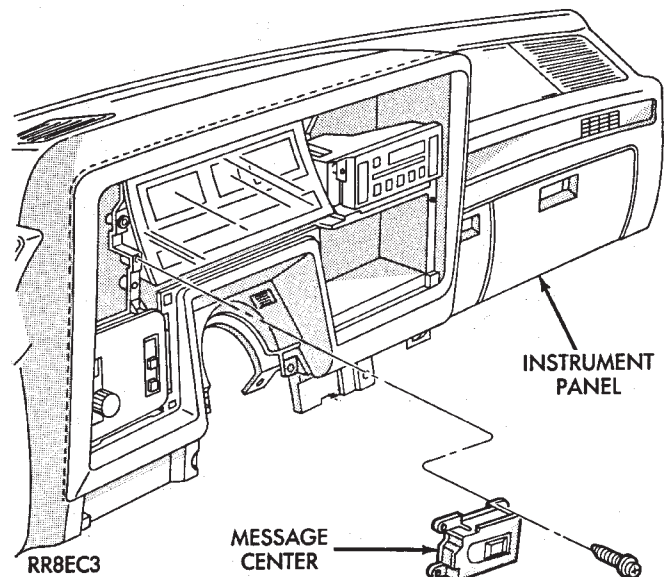


Fig. 32 Message Center

- (3) Disconnect wiring connector and remove message center.
- (4) For installation reverse above procedures.

AIR CONDITIONING CONTROL REPLACEMENT

- (1) Remove upper cluster bezel (Fig. 31).
- (2) Remove two control mounting screws.

(3) Slide control rearward, disconnect cable, vacuum harness and electrical wiring (Fig. 33).

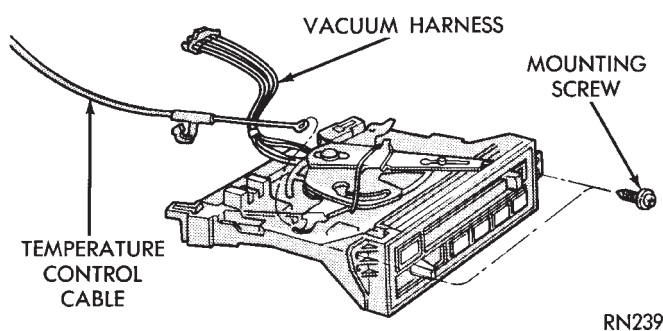


Fig. 33 A/C Control

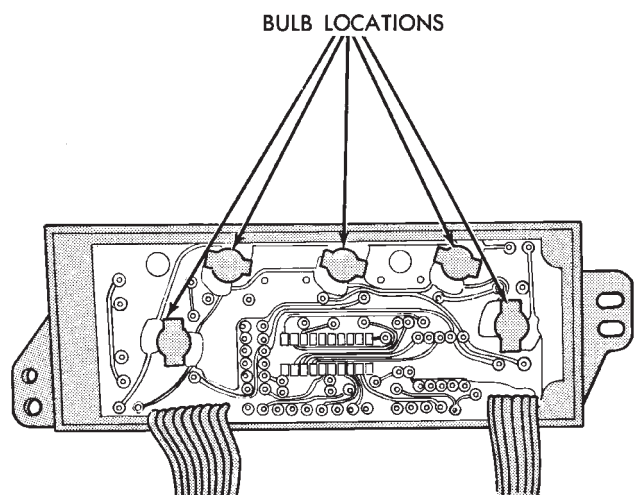
(4) Remove control.

(5) For installation reverse above procedures.

AUTOMATIC TEMPERATURE CONTROL LAMP REPLACEMENT

(1) Remove automatic temperature control from instrument panel.

(2) Remove top cover screw and unsnap cover from control (Fig. 34).



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Fig. 34 Automatic Temperature Control Lamp

(3) Remove four screws that connect computer housing to the button housing.

(4) Unsnap the button housing from the computer housing.

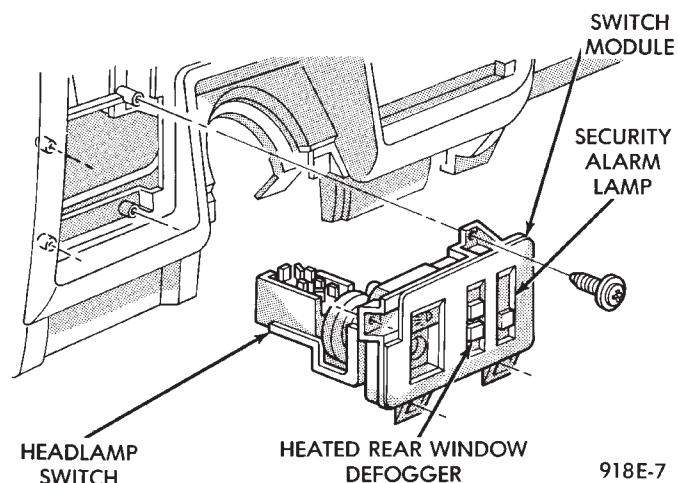
(5) Remove lamps by turning in a counter clockwise direction and install lamps by turning in a clockwise direction.

(6) For installation reverse above procedures. When finish perform ATC system function test.

HEADLAMP AND ACCESSORY SWITCH MODULE REPLACEMENT

(1) Remove cluster bezel (Fig. 31).

(2) Remove four screws attaching module to instrument panel (Fig. 35).



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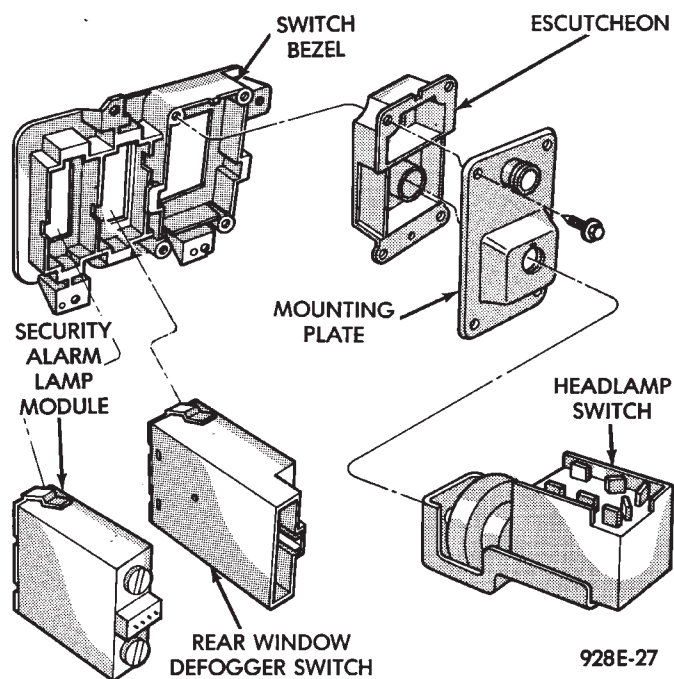
Fig. 35 Headlamp and Accessory Switch Module

(3) Disconnect all wiring connectors to remove module.

(4) For installation reverse above procedures.

HEADLAMP SWITCH REPLACEMENT

(1) Remove headlamp and accessory switch module from instrument panel (Fig. 36).



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Fig. 36 Headlamp and Accessory Switch

(2) Press button on underside of headlamp switch and pull knob and shaft to remove.

(3) Remove switch assembly and escutcheon from switch module by removing four attaching screws.

(4) Remove headlamp switch mounting plate from switch by removing retaining nut.

(5) For installation reverse above procedures.

REAR WINDOW DEFOGGER SWITCH REPLACEMENT

(1) Remove headlamp and accessory switch module from instrument panel (Fig. 36).

(2) Remove rear window defogger switch by depressing snap-in clips on top and bottom of switch.

(3) For installation reverse above procedures.

HOOD RELEASE HANDLE AND CABLE REPLACEMENT

(1) Disconnect hood release cable at hood latch.

(2) Remove two screws from underside of hood release handle.

(3) Pull mechanism assembly rearward to remove.

(4) For installation reverse above procedures.

PARK BRAKE RELEASE HANDLE AND LINK REPLACEMENT

(1) Remove left side under panel silencer.

(2) Remove park brake link from lever on park brake mechanism.

(3) Remove upper and lower cluster bezels.

(4) Pull park brake release handle and remove screw.

(5) Remove column cover/park brake release handle assembly by removing four remaining screws.

(6) For installation reverse above procedures.

LAMP OUTAGE MODULE REPLACEMENT

(1) Remove lower right instrument panel silencer.

(2) Remove glove box and ash receiver module.

(3) Remove three screws attaching the mounting bracket to instrument panel.

(4) Lower bracket and module assembly, to disconnect wire connectors.

(5) Remove two screws attaching the Lamp Outage Module to bracket.

(6) Remove two screws attaching the security module to bracket.

(7) To installation reverse above procedures.

BODY CONTROLLER REPLACEMENT

(1) Remove right side door sill and kick panel trim five screws (Fig. 37).

(2) Disconnect body controller wiring.

(3) Remove controller retaining nuts.

(4) For installation reverse above procedures.

GLOVE BOX/ASH RECEIVER ASSEMBLY REPLACEMENT

(1) Remove center support cover/floor console as necessary.

(2) Disconnect glovebox/Ash receiver wiring connectors (Fig. 38).

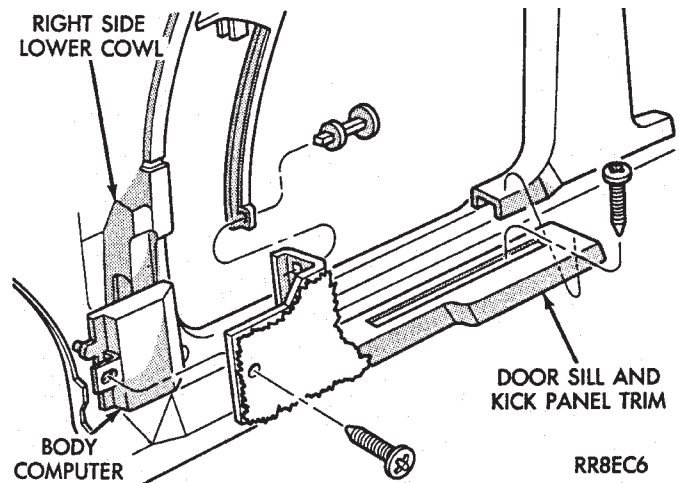


Fig. 37 Body Controller Location

(3) Remove ten screws around edge of glovebox/ash receiver assembly.

(4) Remove glovebox/ash receiver module from instrument panel.

(5) For installation reverse above procedures.

GLOVE BOX LAMP/SWITCH REPLACEMENT

(1) Open glove box door. The lamp can be removed without removing switch.

(2) Remove switch by squeezing retaining tabs from behind switch and slide rearward. Disconnect wiring connectors.

(3) Remove lamp/switch.

(4) For installation reverse above procedures.

CIGAR LIGHTER ASSEMBLY REPLACEMENT

(1) Remove four screws from ash receiver.

(2) Pull assembly rearward and disconnect wiring.

(3) Remove ash receiver and cigar lighter.

(4) For installation reverse above procedures.

FLOOR CONSOLE REPLACEMENT

(1) Open upper storage bin door (Fig. 39).

(2) Remove two screws attaching front wall of storage bin to mounting bracket.

(3) Remove console and drawer.

(4) Remove two screws attaching mounting bracket to lower instrument panel.

(5) Remove mounting bracket.

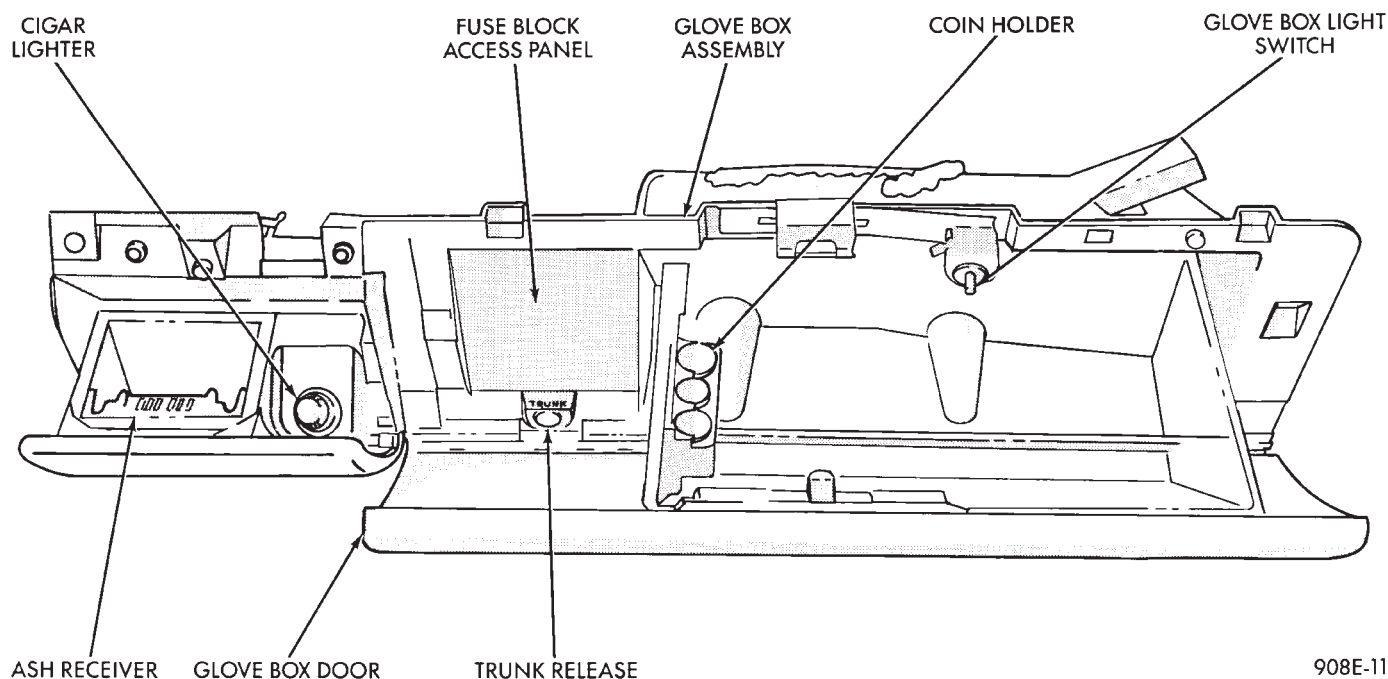
(6) For installation reverse above procedures.

INSTRUMENT PANEL TOP COVER REPLACEMENT

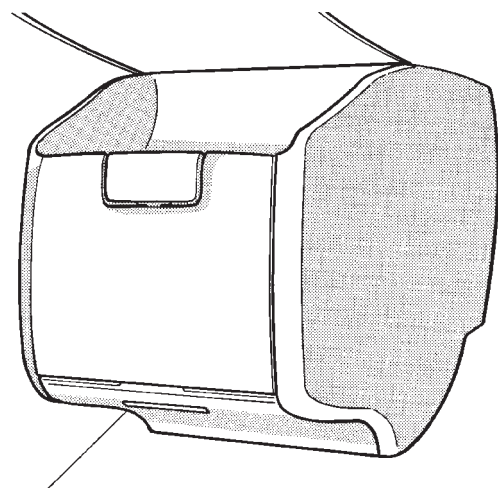
(1) Remove panel top cover by, pushing forward and prying up, using a straight edge to assist in the removal.

(2) For installation: align top cover clips and push cover into position.

(3) Pull cover rearward for good fit.



908E-11

Fig. 38 Glovebox/Ash Receiver Assembly

928E-26

Fig. 39 Floor Console**INSTRUMENT PANEL ASSEMBLY
REPLACEMENT**

CAUTION: Disconnect negative battery cable, in engine compartment, before servicing instrument panel.

- (1) Remove left instrument panel silencer.
- (2) Remove right and left cowl side and scuff plate trim molding by removing five screws per side.
- (3) Remove right and left A-pillar trim moldings by removing two push-pin fasteners per side and disengaging from clip at B-pillar trim.
- (4) Remove panel top cover by pushing forward and prying up, using a straight edge to assist in the removal.
- (5) Disconnect bulkhead connector at brace under instrument panel at left side.

(6) Remove glovebox/ash receiver module and right instrument panel silencer.

(7) Remove center panel support brace and air bag diagnostic module assembly.

(8) Disconnect wiring to airbag module.

(9) Remove upper and lower cluster bezels.

(10) Remove steering column cover.

(11) Remove steering column mounting nuts and lower steering column.

(12) Unhook shift indicator cable eyelet from steering column actuator.

(13) Unlatch lock tab in shift indicator column insert and squeeze legs together to remove from steering column.

(14) Remove cluster assembly while guiding PRNDL indicator guide tube through access hole in the base panel.

(15) Remove instrument panel steering column opening support/hood release handle assembly.

(16) Remove two steering column upper studs and loosen side cowl tie-down bolts.

(17) Remove steering column tilt lever.

(18) Remove upper and lower lock housing shroud.

(19) Remove lower fixed shroud.

(20) Remove upper fixed shroud (snaps in place).

(21) Disconnect airbag pigtail, ignition switch and halo light/key buzzer switch wiring.

(22) Disconnect Multi-function switch by loosening connector jack screw and pulling connector from switch.

(23) Disconnect airbag pigtail from wiring trough housing by pulling two push fasteners.

(24) Remove wiring trough from steering column.

(25) Remove defroster ducts.

(26) Remove five screws along fence line and roll

panel down, attach a hook to hold in position.

- (27) Open hood and remove plenum grill.
- (28) Disconnect washer bottle, resistor block and under hood lamp wiring. Washer bottle must be removed to gain access.
- (29) Remove grommet and pull plenum wiring into vehicle through plenum panel.
- (30) Disconnect right demister hose from instrument panel.
- (31) Disconnect antenna cable.
- (32) Disconnect right and left 25 way body wiring connectors.
- (33) Disconnect A/C heater control cables, wiring connectors and vacuum harness.
- (34) Remove right side panel ground wire.
- (35) Disconnect body controller wiring.
- (36) Remove instrument panel assembly from vehicle.
- (37) For installation reverse above procedures.

INTERIOR LAMP REPLACEMENT

The reading, overhead console and door lamps operate when the doors are open or headlamp switch is placed in courtesy position. Front overhead lamps refer to Group 8C, Overhead Console.

TRUNK LAMP

The lamp has easily accessible without removing components.

DOOR LAMP

Pry along the forward edge of the lens and pivot lens out of the door trim panel. Remove lamp. To remove lamp housing, remove door trim panel. Refer to Group 23, Body. Disconnect all wiring. Remove screws, if so equipped securing lamp housing to trim panel, and replace housing.

C—PILLAR READING/COURTESY LAMP

Pry along the rearward edge of the lamp and pivot lamp out from quarter trim panel. Disconnect wiring and remove lamp cover. Replace lamp.

The lamp operates when the doors are open or the headlamp switch is turned to the courtesy mode. The lamp will function as a reading lamp when the doors are closed and the button switch on the lamp is depressed.

ROOF RAIL READING

Pry along the bottom edge of the lens and pivot lens out. Replace lamp. To remove the lamp, remove the screw which retains the coat hook. Remove the garnish molding. Disconnect the wiring harness. Remove the two clips which retain the lamp to the molding. Replace lamp. The lamp operates like the C-pillar reading/courtesy lamp.

AG AND AJ BODIES

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GENERAL INFORMATION

CONVENTIONAL INSTRUMENT CLUSTER

The conventional instrument cluster incorporates magnetic type gauges (Fig. 1).

The readings are only accurate when the ignition switch is in the ON position.

TACHOMETER DRIVE MODULE

The tachometer drive module is an electronic module used to drive a magnetic tachometer in a conventional instrument cluster.

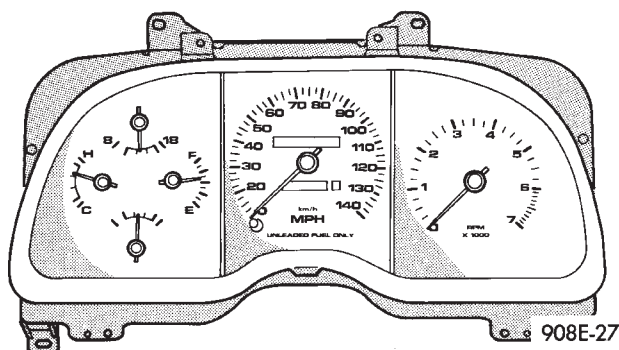


Fig. 1 Conventional Instrument Cluster

MESSAGE CENTER

The message center provides the driver with information in addition to the standard vehicle instrumentation. A bezel will light up with door ajar, washer fluid, deck ajar and alarm set information. For vehicles without message center a plain bezel is used.

ELECTRONIC INSTRUMENT CLUSTER

The electronic instrument cluster uses vacuum fluorescent displays to display:

- Oil pressure
- System voltage
- Engine temperature
- Fuel level
- Speedometer and tachometer readings as well as all warning indicators. The electronic cluster is easily distinguished from the conventional cluster by its digital and linear display (Fig. 2.)

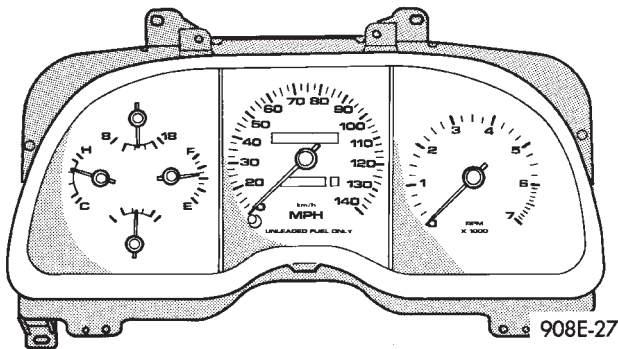


Fig. 2 Electronic Instrument Cluster

ELECTRONIC CLUSTER DIMMING

The electronic cluster display is dimmed from daytime to nighttime intensity when the headlamp switch is turned on. This intensity can be controlled using the headlamp switch sliding rheostat.

An additional detent on the headlamp switch rheostat will allow daytime intensity while driving with headlamps ON in daytime.

ELECTRONIC DIGITAL CLOCK

The electronic digital clock is in the radio. The clock and radio each use the display panel built into the radio. A digital readout indicates the time in hours and minutes whenever the ignition switch is in the ON or ACC position.

When the ignition switch is in the ON or OFF position, or when the radio frequency is being displayed, time keeping is accurately maintained.

The procedure for setting the clock varies slightly with each radio. The correct procedure is described under the individual radio operating instructions referred to in the Owner's manual supplied with the vehicle.

WARNING LAMPS

The AG & AJ Body instrument clusters have warning lamps or indicators with the electronic cluster for six different systems. These include low oil pressure, check gauges, brake system, air bag, seat belt, check engine.

CLUSTER AND GAUGE SERVICE AND TESTING

CAUTION: Disconnect negative battery cable, in engine compartment, before servicing instrument panel. When power is required for test purposes, reconnect battery cable for test only.

Disconnect negative battery cable after test and before continuing service procedures.

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

Gauges must be pulled straight out, when removing or pins may be damaged.

SWITCH POD ASSEMBLY REMOVAL

- (1) Disconnect negative battery cable.
- (2) Pry up edge of panel vent grille, using a straight flat edge tool to disengage clips, then remove grille (Fig. 3).
- (3) Remove two screws located under panel vent grille.
- (4) Remove two screws underneath switch POD assembly.
- (5) With tilt steering adjust steering wheel to the lowest setting.
- (6) Pull switch module rearward to remove module and disconnect all wire connections.
- (7) For Installation reverse above procedures. Tighten all screws to 2 N·m (20 in. lbs.) torque.

MECHANICAL/ELECTRONIC CLUSTER REMOVAL

CLUSTER MASK AND LENS REMOVAL

- (1) Remove switch pod assembly (Fig. 3).
- (2) Remove tilt column lever if equipped.
- (3) Remove six screws holding the cluster mask and lens assembly.
- (4) Pull cluster mask and lens rearward to remove (Fig. 4 and 5).
- (5) For installation reverse above procedures.

CLUSTER ASSEMBLY REMOVAL

- (1) Disconnect battery to assure no Air Bag System fault codes are stored.
- (2) Remove switch pod assembly.
- (3) Unscrew tilt column lever if equipped.
- (4) Remove attaching screws on cluster and pull cluster rearward.
- (5) Tilt cluster to disconnect wiring connections and turbo gauge hose if equipped, then remove cluster.
- (6) For installation reverse above procedures.

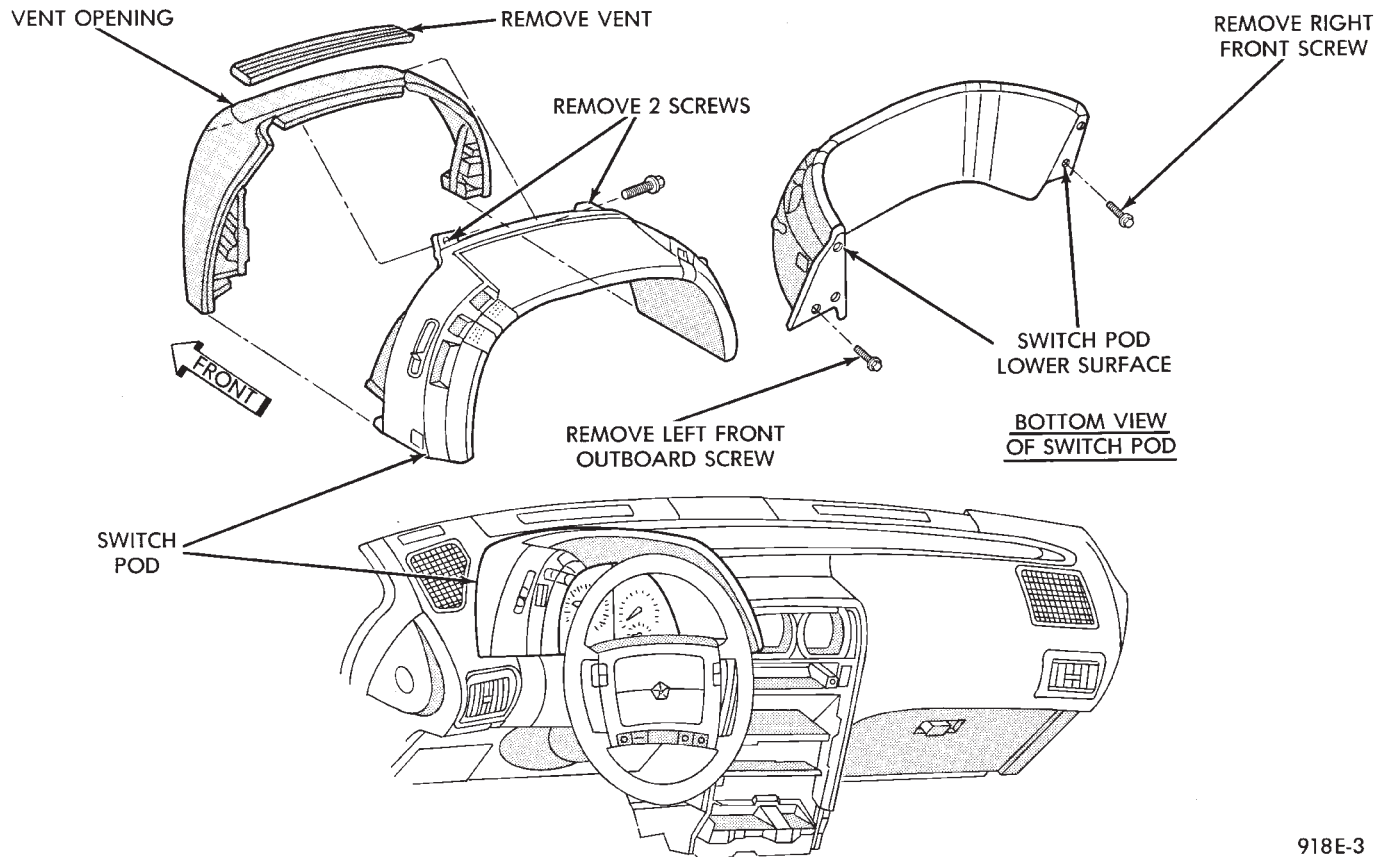


Fig. 3 Switch POD Assembly

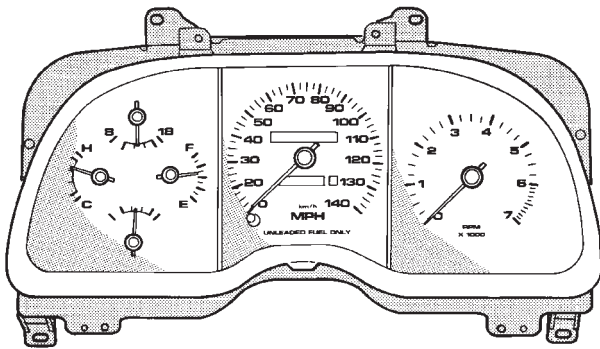


Fig. 4 Cluster Mask and Lens

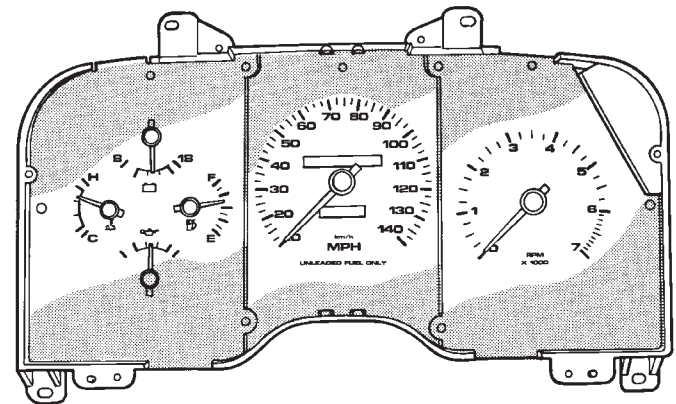


Fig. 5 Cluster with Mask Removed

GAUGES

MULTIPLE GAUGE INOPERATIVE

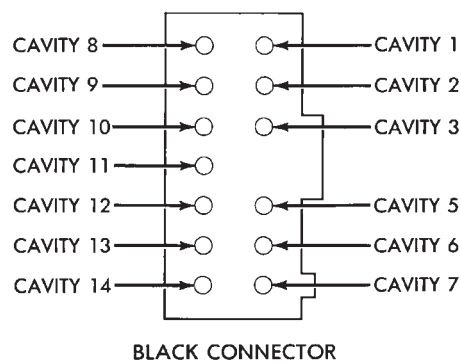
Volt, speedometer, tachometer and other gauges appear to malfunction:

- (1) Remove cluster
- (2) Check for ignition voltage at cavity 9 of the red cluster connector and ground. If no voltage, repair as necessary (Fig. 6).
- (3) Check for ground continuity between cavity 14 of the red cluster connector and ground. If no ground, repair as necessary.

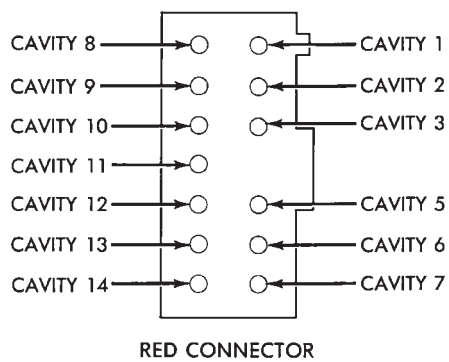
- (4) If OK and pins or connectors are not distorted, replace printed circuit board.
- (5) Install cluster.

GAUGE CALIBRATION/INOPERATIVE

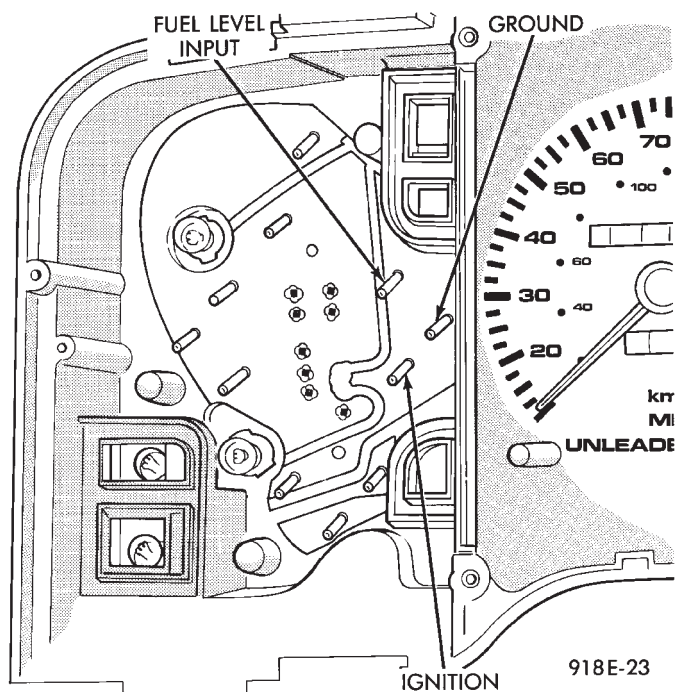
- (1) Remove gauge in question (Fig. 7 through 10).
- (2) With the ignition key ON, check for ignition voltage at ignition pin of gauge and ground. Check ground pin of gauge for continuity to ground.
 - (a) If no voltage or ground, check at cluster red connector pin 9 for ignition voltage and pin 14 for ground.



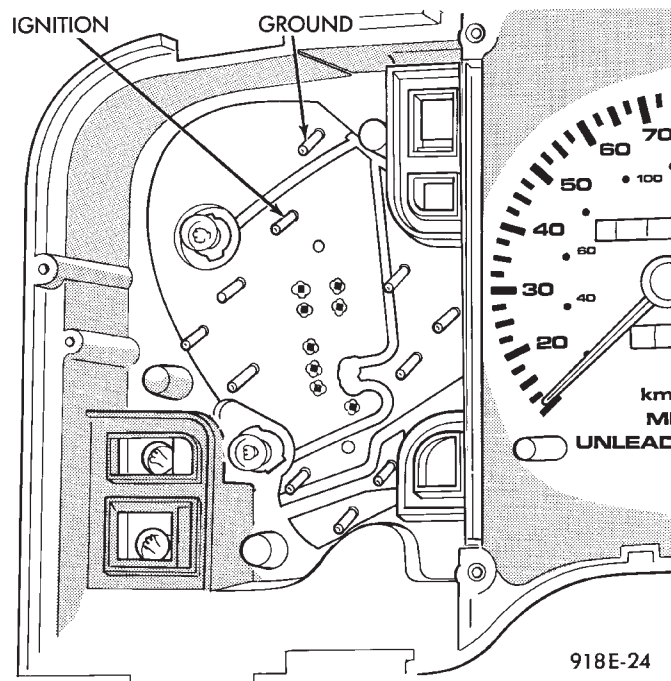
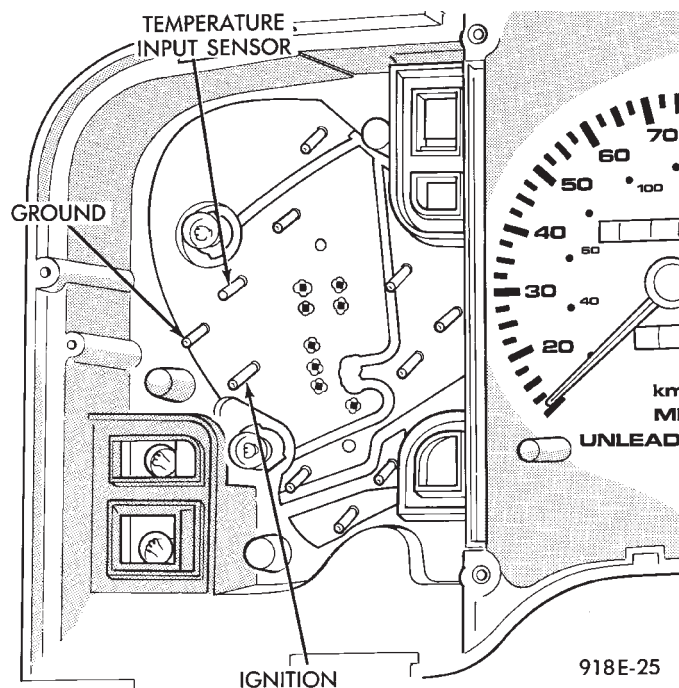
VIEW FROM CAVITY SIDE



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Fig. 6 Conventional Cluster Connectors**Fig. 7 Fuel Gauge Pins**

- (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.

**Fig. 8 Voltmeter Pins****Fig. 9 Temperature Gauge Pins**

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

(a) Testing oil pressure gauge, engine needs to be running.

(b) Measure and record the resistance between sending unit pin and ground pin of the gauge in question. Refer to Gauge Resistance (Fig. 11).

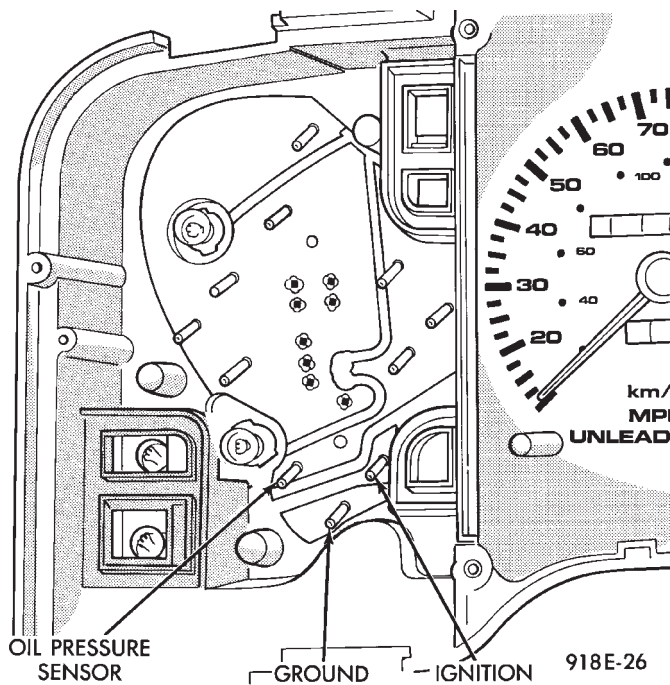


Fig. 10 Oil Pressure Gauge Pins

Gage	Resistance	Position
Fuel	90 ohms	E
	59 ohms	1/4
	42 ohms	1/2
	28 ohms	3/4
	12 ohms	F
Oil	100 ohms	L
	63 ohms	Low Normal
	30 ohms	3/4 of Normal
Temp	Greater than 455	C or below
	288 ohms	Low Normal
	125 ohms	Mid scale
	76 ohms	High Normal
	64 ohms	H

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Fig. 11 Gauge Resistance

(c) When checking temperature and oil pressure gauges, it is important to have the same engine temperature and engine speed when noting gauge position. Therefore, time between noting gauge position and sending unit measuring should be kept to a minimum.

(d) If resistance and gauge position are not similar, replace gauge.

(e) If OK, measure the resistance between the sending unit pin in question and the ground pin at the cluster wire harness connectors.

(f) If there is a difference in readings, check printed circuit board for contact to cluster connectors.

(g) If OK and contacts are not distorted, replace printed circuit board.

(h) If everything checks out OK, refer to Sending Unit Test.

(4) The Gauge Resistance Chart (Fig. 11), is general guidelines for checking the gauge position against the sending unit resistance. Because of only a few specific points of gauge position versus sending unit resistance, a good estimate is needed when the resistance falls between graduations. Even when the resistance corresponds to graduations, the gauge has a tolerance of ± 4 ohms.

Volt gauge: The calibration dot on the volt gauge corresponds to 13 volts between the gauge ignition and ground pins. If voltage varies from this, estimate proper gauge position with input voltage.

TACHOMETER AND TURBO GAUGE REMOVAL

- (1) Remove switch pod assembly.
- (2) Remove cluster mask and lens assembly.
- (3) Remove screws attaching tachometer to cluster housing.
- (4) Pull tachometer rearward to remove.
- (5) Disconnect turbo gauge hose. If turbo hose cannot be disconnected, remove cluster.
- (6) For installation reverse above procedures.

TACHOMETER CIRCUIT TESTING

- (1) Remove cluster.
- (2) Check for battery voltage at cavity 8 of the instrument cluster red connector (Fig. 6).
- (3) With the ignition in the ON position, check for battery voltage at cavity 9 of the instrument cluster red connector.
- (4) Check cavity 14 of the instrument cluster red connector for continuity to ground.
- (5) Check for tachometer signal from the engine controller by connecting an AC DIGITAL VOLTME-TER to cavity 6 of the instrument cluster black connector and ground. A reading of at least 1.0 volt should be present with the engine running (Fig. 6).

(a) If voltage is within specification, go to step 7.

(b) If voltage is NOT within specification, perform steps 6.

(6) If there is less than 1.0 volt at cavity 6, check for continuity between cavity 6 and pin 43 of the engine controller connector.

(a) If continuity is OK, between cavity 6 and pin 43 of the engine controller connector, replace the engine controller.

(b) No continuity check the connectors for damaged pins or terminal push outs or defective wire.

(7) If all tests performed test good replace the tachometer drive module.

(8) If the tachometer continues to be inoperative, replace the tachometer assembly.

VOLTMETER, TEMPERATURE GAUGE, OIL PRESSURE GAUGE AND FUEL GAUGE ASSEMBLY—REMOVAL

- (1) Remove pod switch assembly.
- (2) Remove cluster mask and lens assembly.
- (3) Remove screws attaching gauge assembly to cluster.
- (4) Pull rearward to remove gauge assembly.
- (5) For installation reverse above procedures.

SENDING UNIT TEST

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 pin may result.

When a problem occurs with a cluster gauge, before disassembling the cluster to check the gauge, check for a defective sending unit or wiring.

(1) Sending units and wiring can be checked by grounding the connector leads, at the sending unit, in the vehicle.

(2) With the ignition in the ON position; a grounded input will cause the oil, fuel or temperature gauge to read at or above maximum.

(3) With the ignition switch ON, an open (disconnected sending unit wire) causes the oil, fuel or temperature gauge to read below low, empty or cold indicators.

(4) If steps 2 and 3 check OK, refer to the individual sending unit test procedures.

FUEL TANK SENDING UNIT TEST

(1) Test fuel tank sending unit (Fig. 12) as follows:

(a) Check connector for dirty or distorted contacts.

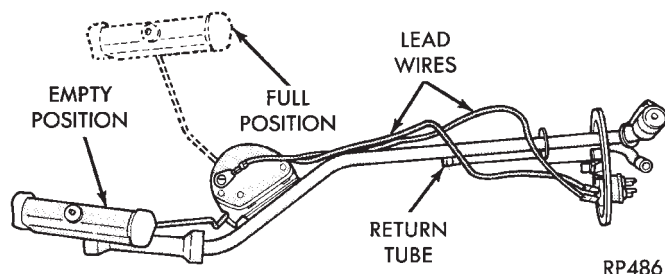


Fig. 12 Fuel Tank Sending Unit—Typical

(b) Check connector for ground.

(c) Remove fuel tank sending unit from tank, refer to Group 14, Fuel.

(d) To test fuel gauge, refer to Fuel Gauge Circuit Testing.

(2) With sending unit out of tank, connect wires to unit.

(a) Check sending unit, see if it is deformed. Make sure sending unit float arm moves freely and that pickup tube is not bent upwards creating an interference with bottom of tank and inspect float.

(b) Manually move the float arm and see if there is any change in fuel gauge reading.

(c) Sending unit improperly installed, install properly.

(d) Mounting flange on fuel tank for sending unit deformed. Fee for interference fit of sending unit to bottom of tank. It is permissible to bend pick up tube down a little near mounting flange to gain interference fit.

(e) Fuel tank bottom deformed, causing improper positioning of sending unit pick up tube, replace or repair tank and recheck sending unit.

CHECK GAUGES WARNING LAMP TESTS

The check gauges warning lamp will illuminated when the ignition key is turned to the ON position. The lamp will illuminate if the engine oil pressure drops below a safe level. The check gauge lamp will light for high engine temperature or for low voltage.

To test the system turn ignition key to the ON position. If the lamp fails to light, inspect for a broken or disconnected wire at the oil pressure combination sending unit, which is located at the front of the engine (Fig. 13). If the wire at the connector checks good pull connector loose from the switch terminal and with a jumper wire ground connector to the engine. With the ignition key turned to the ON position check the warning lamp. If lamp still fails to light, inspect for a burned lamp. If lamp still fails to light, inspect for a burned out lamp or disconnected socket in the cluster.

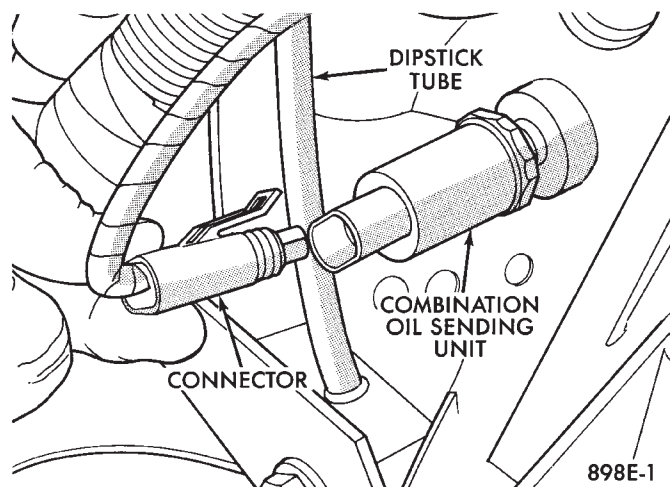


Fig. 13 Combination Oil Sending Unit

To test the switch disconnect the switch electrical connector. Attach positive lead of an ohmmeter to the switch terminal for the gray (GY) wire and the

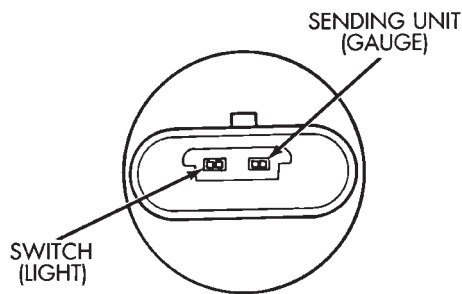
negative lead to an engine ground. With the engine off, there should be continuity in the system. Start the engine. With the engine running, the ohmmeter should show no continuity. If the above results are not obtained, replace the switch.

COMBINATION OIL SENDING UNIT TEST

The combination oil sending unit has two functions:

- (1) The normal closed circuit keeps the oil pressure warning lamp on until there is oil pressure.
- (2) The sending unit provides a resistance that varies with oil pressure.

To test the normally closed oil lamp circuit, disconnect the locking connector and measure the resistance between the switch terminal and the metal housing. The ohmmeter should read 0 ohms. Start the engine (Fig. 14).



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Fig. 14 Combination Oil Sending Unit Test

If there is oil pressure, the ohmmeter should read an open circuit.

To test the sending unit, measure the resistance between the sending unit terminal and the metal housing. The ohmmeter should read open. Start the engine.

The ohmmeter should read between 30 to 55 ohms, depending on engine speed, oil temperature, and oil viscosity.

If the above results are not obtained, replace the sending unit.

SEAT BELT WARNING SYSTEM

For testing of this system refer to Group 8U, Chime Warning/Reminder System.

CHECK ENGINE SYSTEM

For testing this system refer to the Body Diagnostic Procedures booklet.

BRAKE SYSTEM WARNING LAMP TEST

The brake warning lamp illuminates when parking brake is applied with ignition key turned ON. The same lamp will also illuminate should one of the two service brake systems fail when brake pedal is applied. To test system turn ignition key ON, and apply parking brake. If lamp fails to light, inspect for a

burned out lamp, disconnected socket, a broken or disconnected wire at switch. The lamp also lights when the ignition switch is turned to START. Refer to Brake System Warning Lamp Diagnosis Chart (Fig. 15).

To test service brake warning system, raise vehicle on a hoist and open a wheel cylinder bleeder while a helper depresses brake pedal and observes warning lamp. If lamp fails to light, inspect for a burned out lamp, disconnected socket, a broken or disconnected wire at switch.

If lamp is not burned out and wire continuity is proven, replace brake warning switch in brake line TEE fitting mounted on frame rail in engine compartment below master cylinder (Fig.16).

CAUTION: If wheel cylinder bleeder was opened check master cylinder fluid level.

SPEEDOMETER SYSTEM

The vehicles are equipped with electronically driven speedometer and odometer assemblies. The unit has the same appearance as a conventional speedometer but it eliminates the cable-driven mechanical system. A signal is sent from a transmission-mounted distance sensor to the speedometer circuitry through the wiring harness. By eliminating the speedometer cable, instrument cluster service and removal is improved. Refer to Fig. 17 Speedometer Diagnosis Chart.

SPEEDOMETER/ODOMETER ASSEMBLY REMOVAL

- (1) Remove switch pod assembly.
- (2) Remove cluster, refer to Cluster Removal.
- (3) Remove mask and lens assembly.
- (4) Remove tachometer, turbo gauge.
- (5) Remove volt, temperature, oil and fuel gauge assemblies.
- (6) Remove the speedometer/odometer assembly from the cluster housing.
- (7) Disconnect pigtail connector from the cluster printed circuit board.
- (8) For installation reverse above procedures. Listen for the pigtail connector to snap in place.

SPEEDOMETER CIRCUIT TESTING

- (1) Using DRB II, check vehicle speed sensor for distance sensor fault code and for proper speed indication. Refer to Powertrain Diagnostics Procedure Manual; Speed Control Test (Fig. 18).

- (2) Remove cluster, but do not disconnect cluster wiring.

- (3) With ignition ON check for battery voltage across the ignition pin and ground pin of speedometer connector.

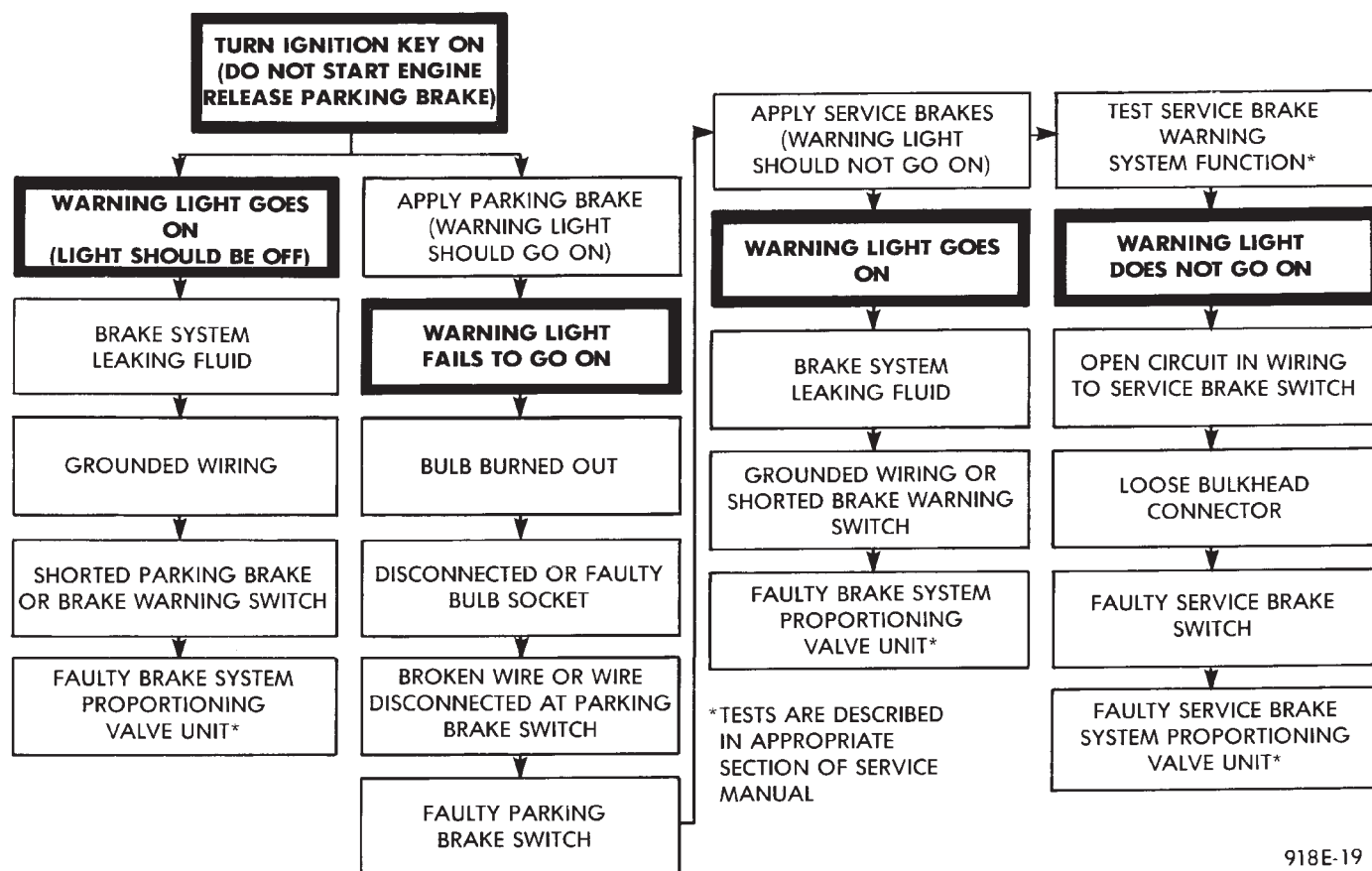


Fig. 15 Brake System Warning Lamp Diagnosis

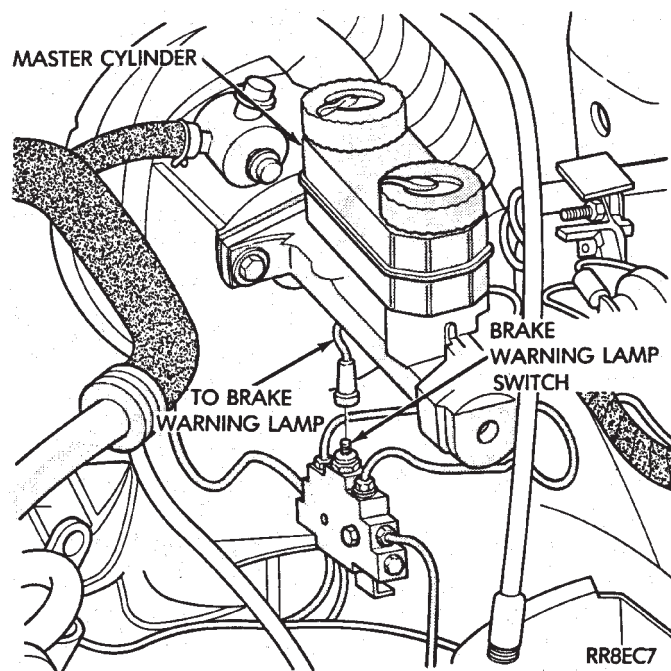


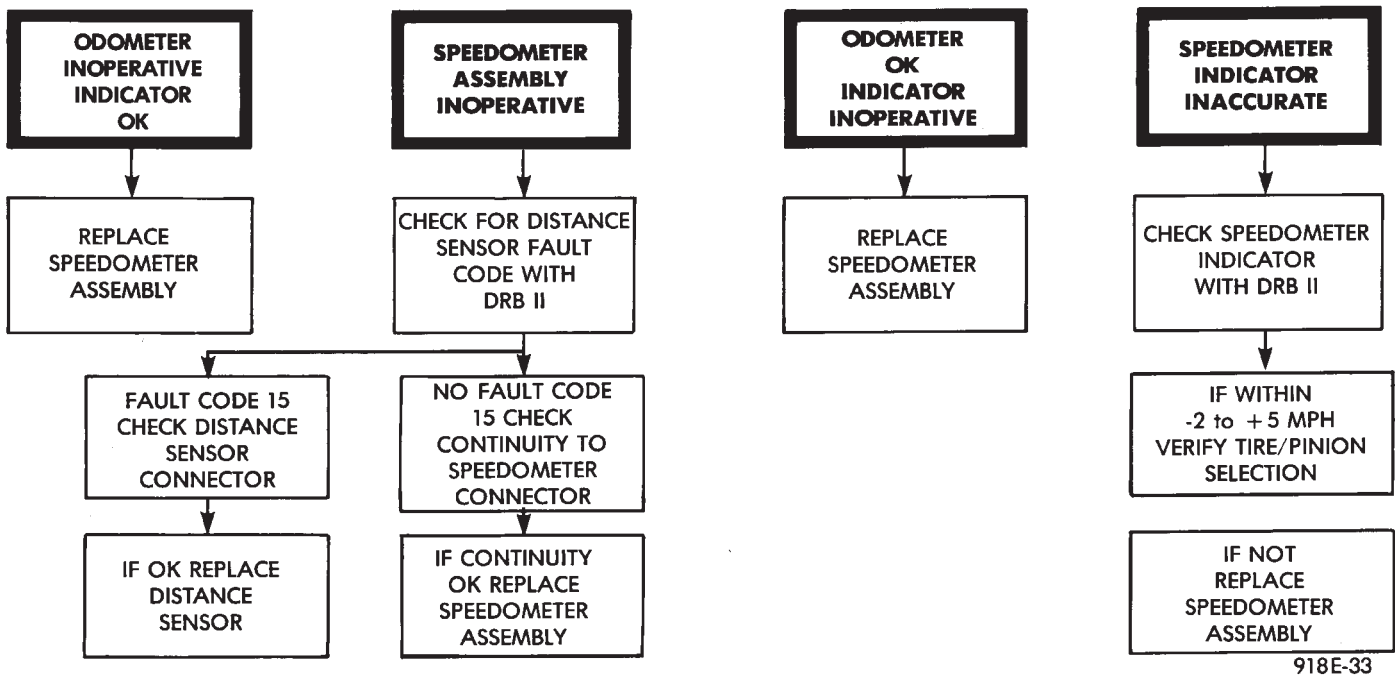
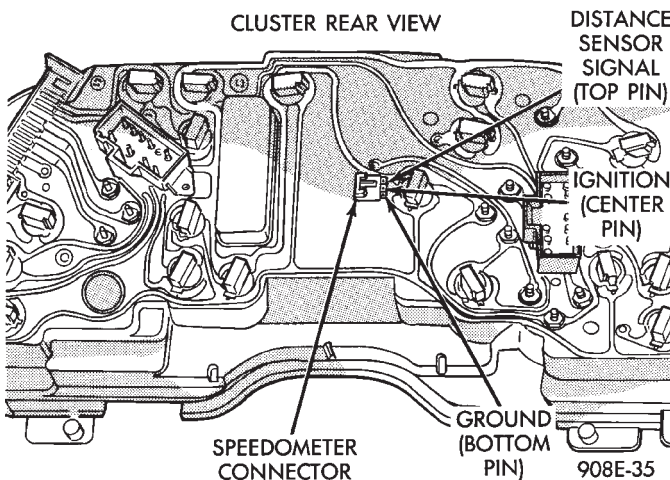
Fig. 16 Brake Warning Lamp Switch

- (4) Check for continuity from distance sensor signal pin to connector at distance sensor.
- (5) Check cluster to body for continuity to ground.

- (6) If all these tests prove good, replace speedometer.

DISTANCE SENSOR REMOVAL

- (1) Remove harness connector from sensor and make sure weather seal is on harness connector.
- (2) Remove sensor retaining bolt (Fig. 19).
- (3) Pull sensor and pinion gear assembly out of transaxle. If necessary carefully pry loose with a flat blade screwdriver (Fig. 20).
- (4) Remove pinion gear from sensor.
- (5) For installation reverse above procedures. Seat the sensor assembly by hand to ensure proper gear engagement. Tighten retaining bolt to 7 N·m (60 in. lbs.) torque.

**Fig. 17 Speedometer Diagnosis****Fig. 18 Speedometer****DISTANCE SENSOR TEST**

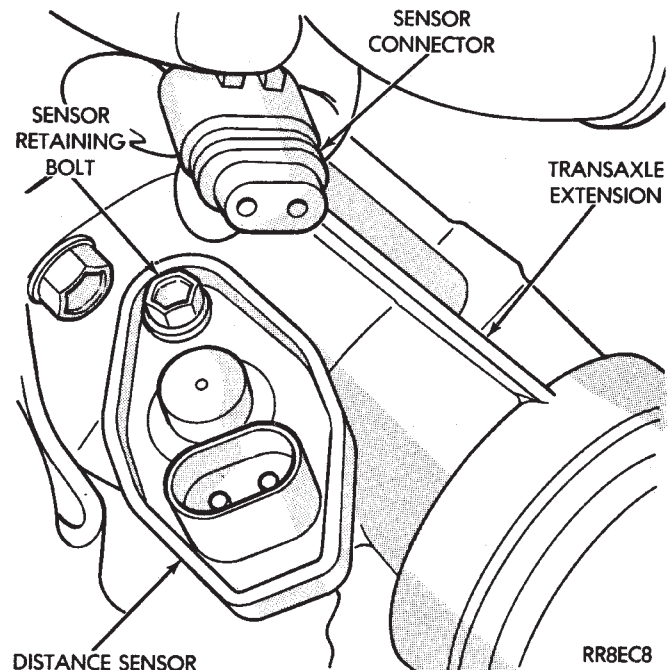
For testing of the distance sensor and related components using DRB II, refer to the appropriate Powertrain Diagnostics Test Procedure Manual.

TACHOMETER DRIVE MODULE REMOVAL

- (1) Remove cluster assembly.
- (2) Pull tachometer drive module from printed circuit board (Fig. 21).
- (3) For installation reverse above procedures. Use care when aligning module to printed circuit board.

PRINTED CIRCUIT BOARD REMOVAL

- (1) Remove cluster assembly.
- (2) Remove mounting screws securing printed circuit board to cluster housing.
- (3) Remove tachometer drive module (Fig. 21).

**Fig. 19 Distance Sensor and Connector**

- (4) Twist out all lamp sockets.
- (5) For installation reverse above procedures.

CLUSTER LAMPS REMOVAL—MECHANICAL CLUSTER ONLY

- (1) Remove cluster assembly (Fig. 22).
- (2) Remove one piece integral lamp and socket from rear of cluster.

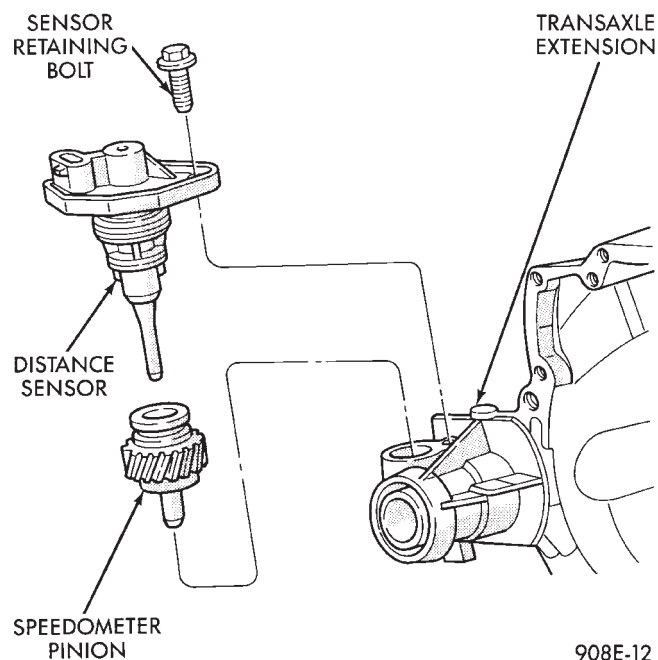
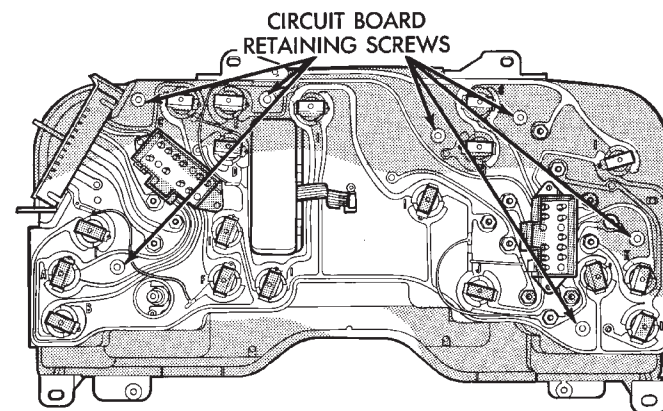


Fig. 20 Distance Sensor and Speedometer Pinion

ELECTRONIC CLUSTER

Refer to Body Diagnostic Procedures Manual when using DRB II.



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Fig. 21 Cluster Printed Circuit Board

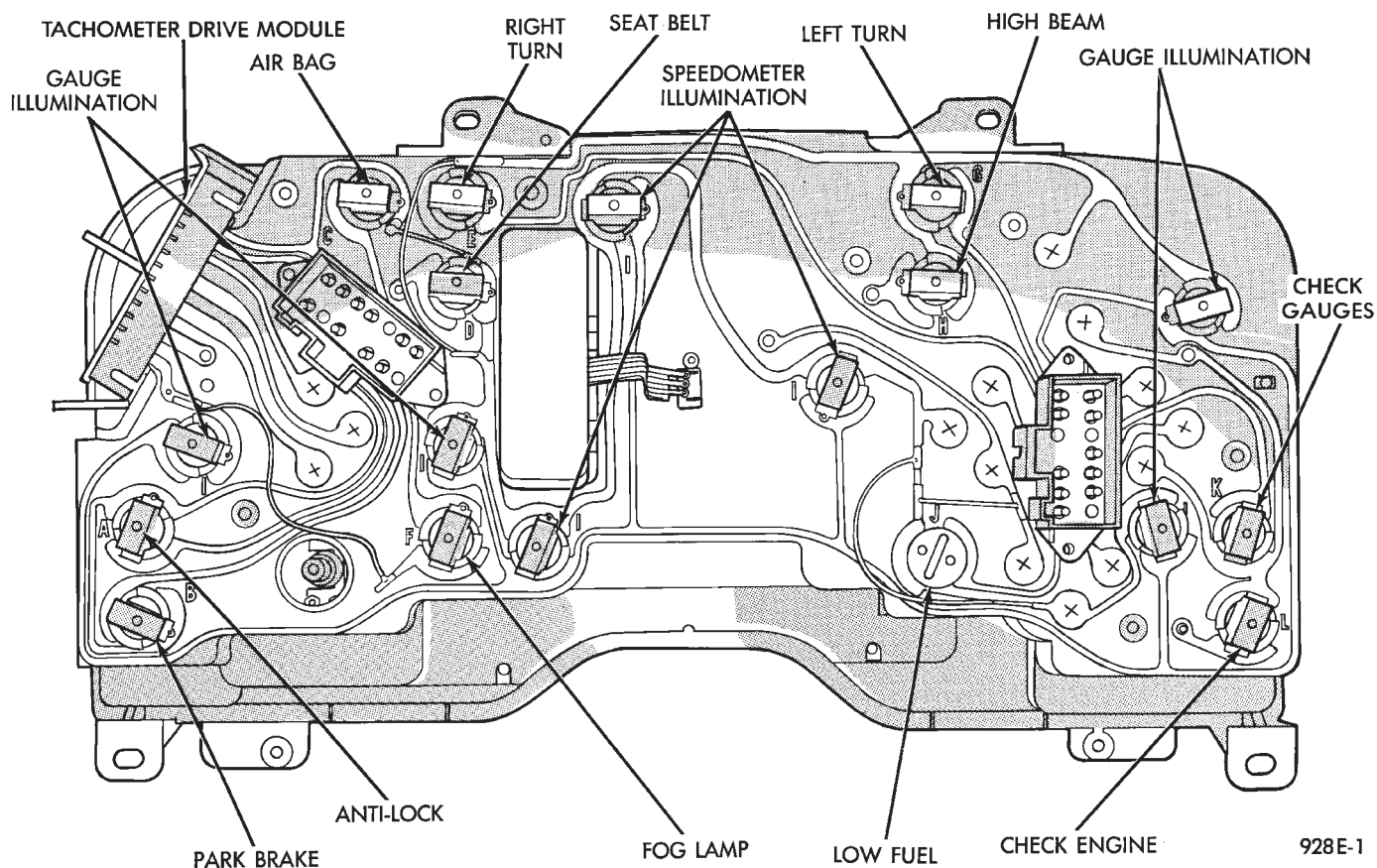
SELF DIAGNOSTIC SYSTEM

The electronic clusters have an internal diagnostic routing to isolate problems within the cluster.

Perform cluster Self Diagnostic Test to determine whether problem is within cluster or outside of cluster.

Refer to Fig. 23 and 24.

Successful completion of the SELF DIAGNOSTIC TEST indicates that the problem is in the wiring, connectors or sensors out side of the cluster.



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Fig. 22 Mechanical Cluster Lamp Location

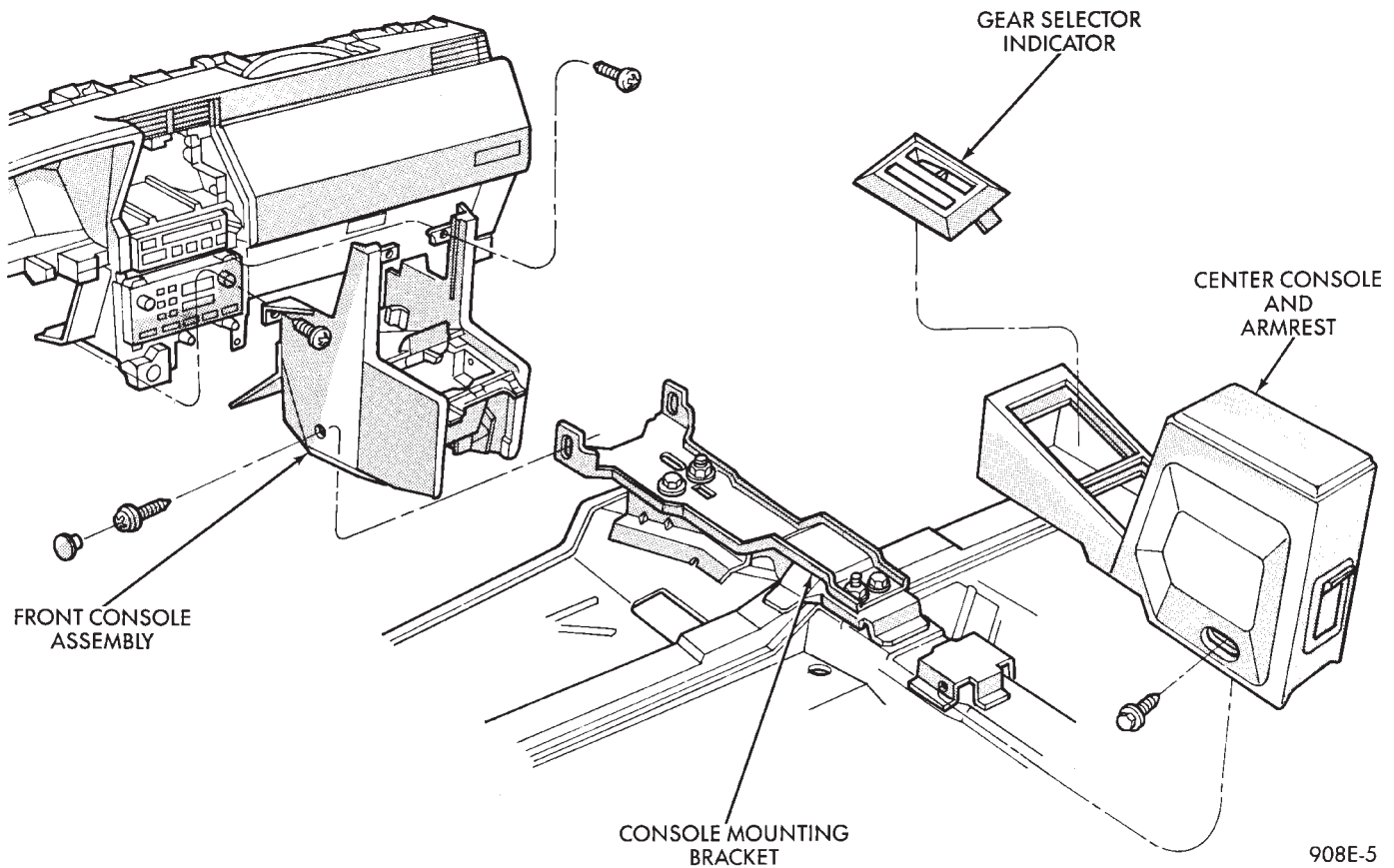


Fig. 23 Electronic Cluster Self-Diagnostic Test

CONDITION: CLUSTER DISPLAYS DO NOT ILLUMINATE AFTER VEHICLE IS STARTED

- (1) Check fuses and verify battery and ignition voltage at cluster connector.
- (2) Check ground from cluster connector to instrument panel ground stud.

SWITCH AND PANEL COMPONENT SERVICE

HEADLAMP SWITCH

The headlamp switch is located on the left side of the switch pod. The switch controls the headlamps, parking lamps, fog lamps and instrument light dimming. If any of the switches require replacement the entire headlamp switch assembly must be replaced (Fig. 25 and 26).

REMOVAL

- (1) Remove switch pod assembly from the instrument panel. DO NOT attempt to remove instrument cluster dimmer switch or wiper delay switch knob, they are not removable.
- (2) Remove turn signal switch lever by pulling straight out of switch pod.
- (3) Remove screws from bottom of switch pod.
- (4) Separate inner and outer switch pod halves and remove turn signal switch to gain access to screw.

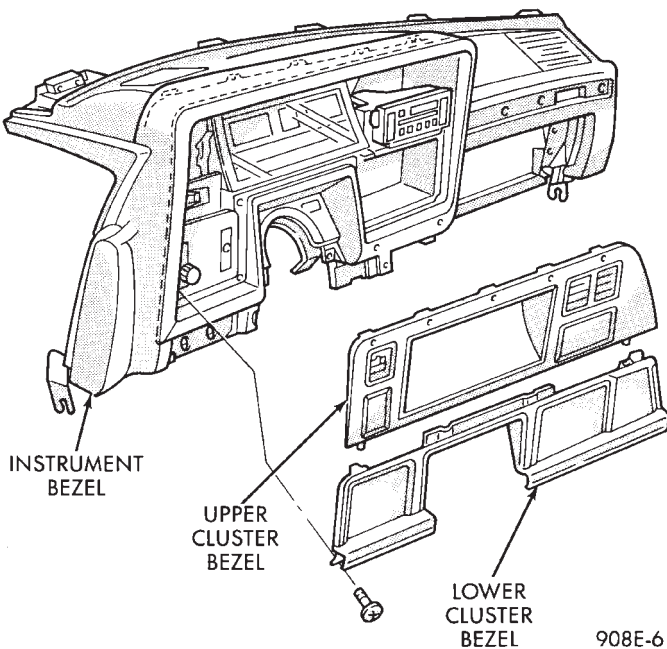


Fig. 24 Electronic Cluster Self-Diagnostic Test—Continued

CLUSTER ASSEMBLY REMOVAL

The electronic cluster which is serviced as an assembly is removed with the same procedure as the conventional cluster.

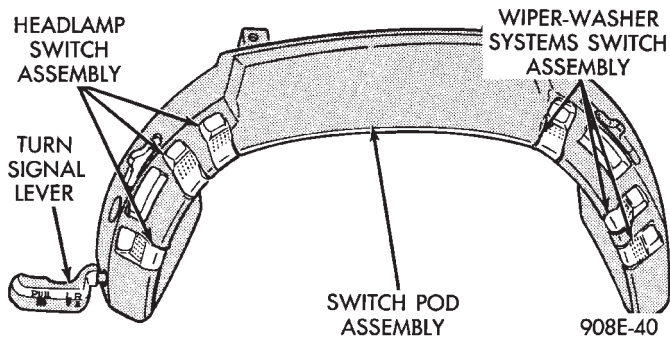


Fig. 25 Switch Pod Assembly

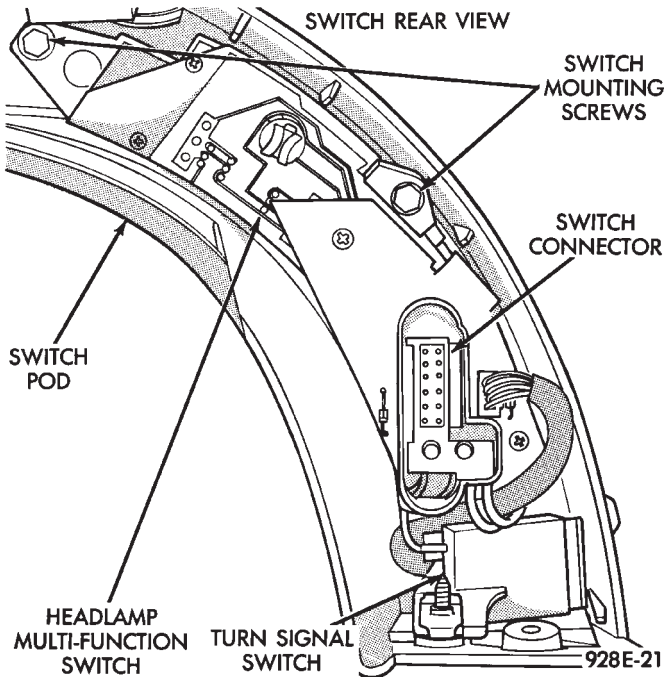


Fig. 26 Headlamp Multi-Function Switch

(5) Remove five inner switch pod panel screws and 3 screws from underneath the switch pod. Separate the inner bezel from the outer bezel.

(6) Remove switch mounting screws before disconnecting linkage.

(7) Disconnect switch linkage from buttons. Pull the linkage straight up from the switch/button to disengage it and remove switch.

INSTALLATION

- (1) Latch switch linkage in the up position.
- (2) Insert dimmer shaft into dimmer knob while aligning switch in to switch pod assembly.
- (3) Install switch attaching screws.
- (4) Unlatch linkage and install onto push buttons.
- (5) Operate all switch modes for correct operation.
- (6) Install turn signal switch.
- (7) Reconnect wiring for turn signal switch, making sure wire is properly clipped into position.

(8) Place together the inner and outer bezels. Install five inner switch pod panel screws and three screws from underneath the switch pod.

(9) Install turn signal lever by pushing straight into switch assembly.

(10) Install switch pod assembly.

LOWER STEERING COLUMN COVER REMOVAL

- (1) Remove screws along top edge of cover.
- (2) Remove screw at each lower corner of cover.
- (3) Remove cover from underneath over column cover.
- (4) For installation reverse above procedures.

GLOVEBOX MODULE REMOVAL

- (1) Remove cowl side trim panel.
- (2) Remove screws at right end of glovebox and lower corners.
- (3) Open glovebox, remove light and disconnect wiring.
- (4) Remove five screws along top of glovebox frame and screw at each lower corner.
- (5) Remove glovebox assembly.
- (6) For installation reverse above procedures.

CONCEALED HEADLAMP MODULE REMOVAL

- (1) Remove left under panel silencer.
- (2) Slide module off bayonet bracket while disengaging spring retainer.
- (3) Disconnect wiring terminal.
- (4) For installation reverse above procedures.

HOOD RELEASE REMOVE

- (1) Remove lower column cover.
- (2) Remove screws on fuse block and move aside.
- (3) Remove screws on hood release assembly to remove.
- (4) For installation reverse above procedures.

AIR CONDITIONING CONTROL REMOVE

- (1) Remove center stack bezel.
- (2) Remove two control mounting screws (Fig. 27 and 28).

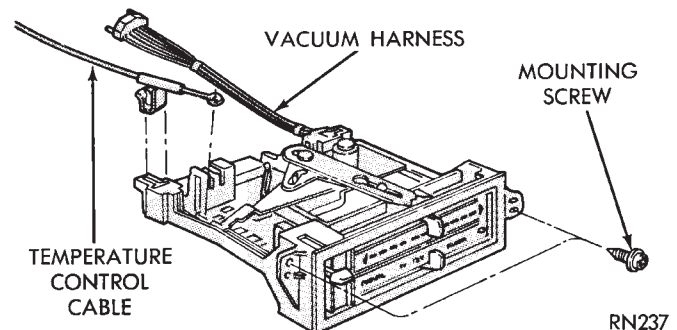


Fig. 27 A/C Control

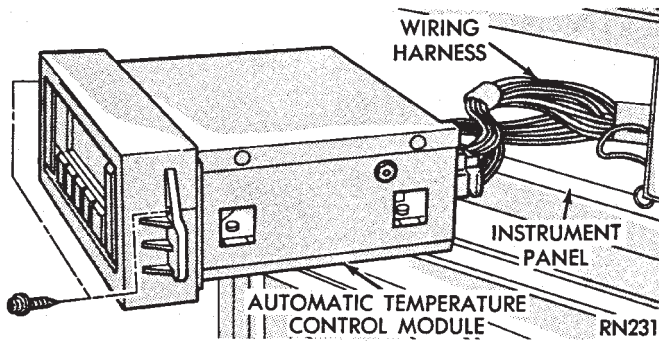


Fig. 28 Automatic Temperature Control

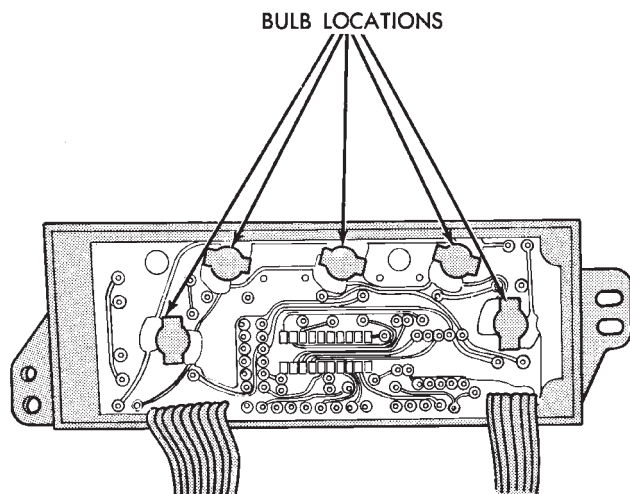
(3) Slide control rearward, disconnect cable, vacuum harness, and electrical wiring. With automatic temperature control, disconnect wiring connector; being careful not to break off locking tab.

(4) For installation reverse above procedures.

AUTOMATIC TEMPERATURE CONTROL LAMP REMOVAL

(1) Remove automatic temperature control from instrument panel.

(2) Remove top cover screw and unsnap cover from control (Fig. 29).



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Fig. 29 Automatic Temperature Control Lamp

(3) Remove four screws that connect computer housing to the button housing.

(4) Unsnap the button housing from the computer housing.

(5) Remove lamps by turning in a counter clockwise direction and install lamps by turning in a clockwise direction.

(6) For installation reverse above procedures. When finish perform ATC system function test.

GLOVE BOX LAMP AND SWITCH REMOVAL

(1) Open glove box door.

(2) Remove lamp and test. If bad replace lamp. If OK proceed to step 3.

(3) Carefully pry switch from its mounting surface with tip of a small pry bar.

(4) Remove switch from glove box and disconnect electrical leads and test for battery voltage and ground.

(5) If OK test switch for continuity. If bad replace switch.

(6) For installation reverse above procedures.

ENGINE COMPARTMENT NODE

The Engine Compartment Node is a microcomputer controlled unit which informs the EVIC overhead console via the CCD bus of outside temperature, compass direction and the following warning messages:

- Brake Fluid
- Low Coolant Level
- Low Engine Oil Level

The Engine Compartment Node is located behind the front bumper reinforcement.

For complete diagnostic procedures for the Engine Compartment Node, refer to the AG and AJ Body Diagnostic Procedures Manual.

TRAVELER/EVIC REMOVAL

To test Traveler/EVIC, refer to AG, AJ Body Diagnostic Procedure.

(1) Remove cluster stack bezel.

(2) Remove three screws and disconnect wiring connector.

(3) For installation reverse above procedures.

BEZEL WITH/WITHOUT MESSAGE CENTER REMOVAL

(1) Use a straight edge tool to pry out one end of the message center and continue to disengage six clips along the length of the message center.

(2) Remove the message center and disconnect the wiring.

(3) For installation reverse the above procedures.

CONSOLE SWITCH PLATE/CUBBY BOX REMOVAL

(1) Pry up edge of switch plate or cubby box.

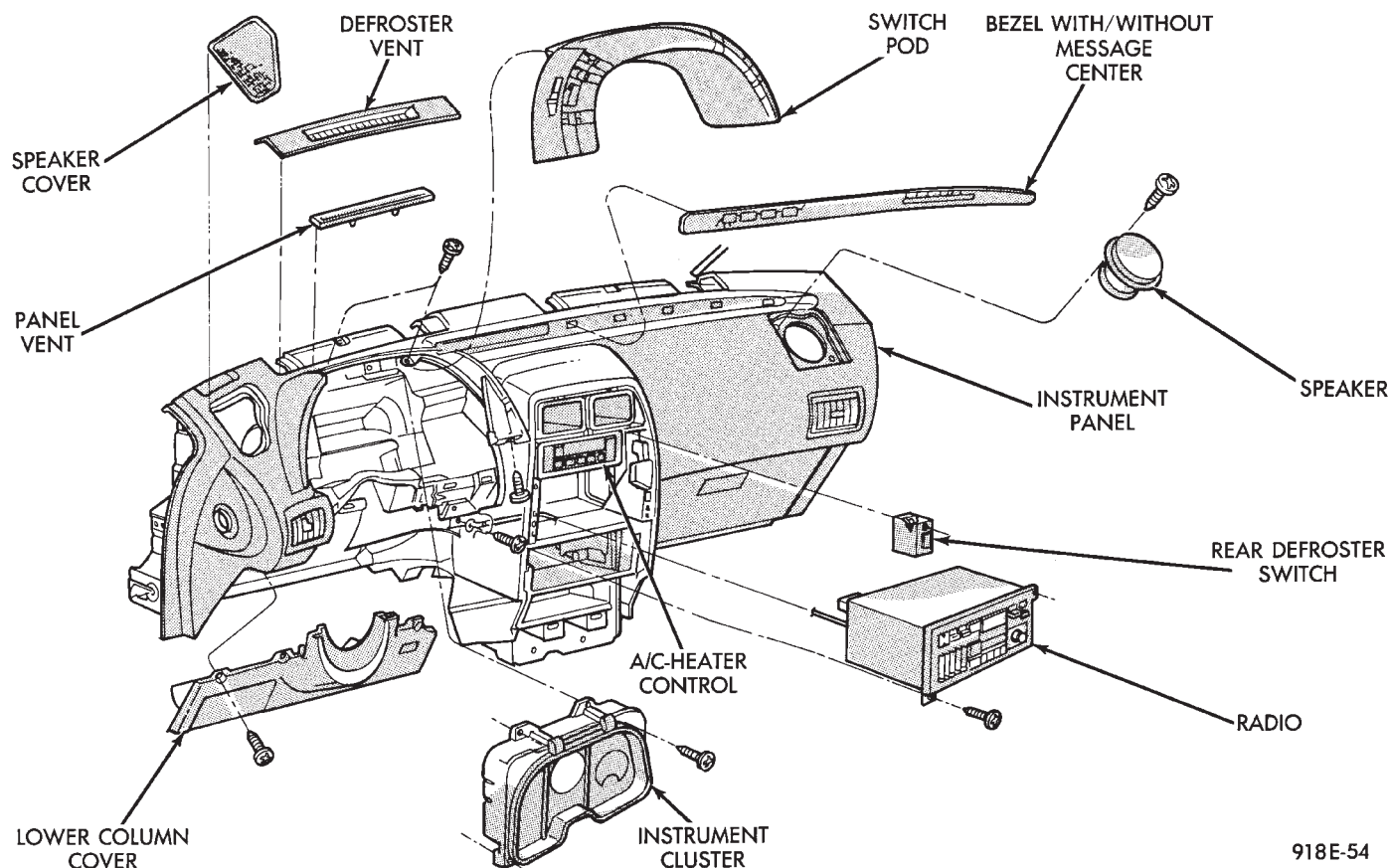
(2) Disconnect wiring terminal to switch plate if so equipped.

(3) For installation reverse above procedures.

INSTRUMENT PANEL ROLL DOWN PROCEDURE

CAUTION: Disconnect negative battery cable, in engine compartment, before servicing instrument panel.

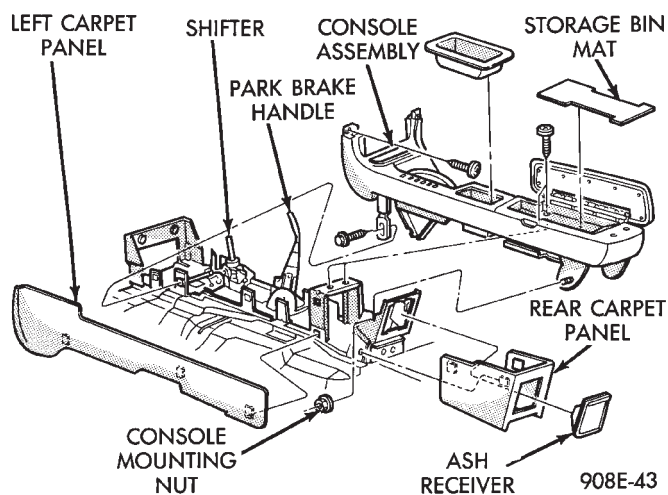
(1) Remove instrument panel center bezel (Fig. 30).



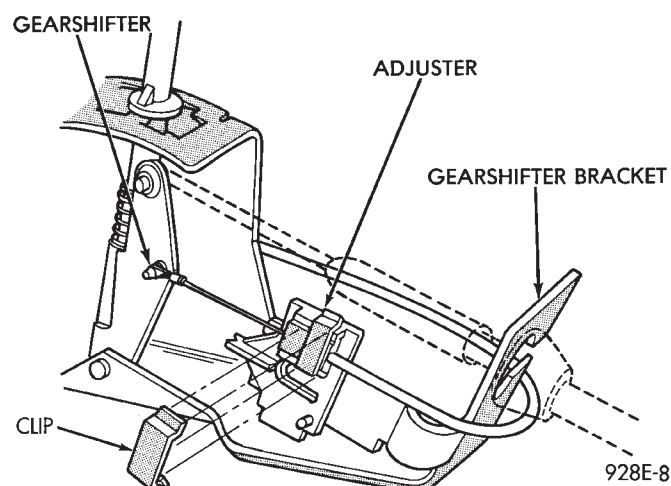
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Fig. 30 Instrument Panel Components

- (2) Remove upper and lower steering column covers.
- (3) Remove the left under panel silencer.
- (4) Set parking brake.
- (5) Remove console side carpet panels (Fig. 31).

**Fig. 31 Center Console**

- (6) Remove console, refer to Group 23, Body.
- (7) Remove PRNDL clip and cable loop end from post on gear shifter (Fig. 32 and 33).

**Fig. 32 PRNDL Cable**

- (6) Remove adjuster from tab on gear shifter bracket. By pushing in locking knob on adjuster, and sliding the adjuster off the tab on the gear shifter bracket.

(a) For installation: insert PRNDL cable into adjuster and line up with the end of the adjuster.

(b) The PRNDL must be adjusted with the gear shifter in low position.

(c) Check the gear selector indicator for proper alignment.

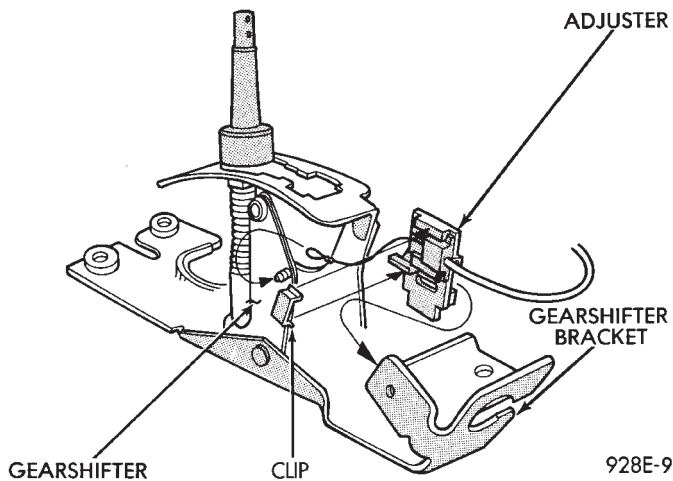


Fig. 33 PRNDL Cable

- (d) Attach PRNDL clip to the adjuster to secure cable.
- (7) Remove two screws and slide Air Bag Diagnostic Module out of right side of instrument panel center stack area, then disconnect wiring.
- (8) Remove screw from instrument panel dimmer module at left of steering column and lower module.
- (9) Remove two screws from fuse block and lower fuse block.
- (10) Remove three screws from hood release and lower hood release handle.
- (11) Remove flasher relay from bracket on center distribution duct.
- (12) Remove screw from ATC sensor motor assembly and unhook from bracket if equipped.
- (13) Remove the radio ground screw above flasher relay mount.
- (14) Remove center distribution duct screw from left instrument panel lower brace, then remove four screws to remove left lower brace.
- (15) Remove five nuts on steering column and drop column, then remove two upper column attaching studs.
- (16) Remove two screws and pull out compact disc player or cubby box, disconnect Co-Axial cable from compact disc player.
- (17) Remove Electronic Vehicle Information Center (E.V.I.C.) or Traveler from vehicle.
- (18) Remove radio.
- (19) Remove A.T.C., A/C or heater controls.
- (20) Squeeze latches on side of Rear Window defogger switch and remove.
- (21) Snap off cluster lower trim bezel, switch pod vent grille, speaker grilles and defroster grilles.
- (27) Remove switch pod assembly.
- (28) Remove cluster assembly.
- (29) Remove dash speakers.

(30) Snap out bezel with or without message center and disconnect wiring.

(31) Open glovebox door, squeeze sides and roll glovebox completely open. Remove glovebox light switch, and disconnect wires.

(32) Loosen right cowl side pivot bolt through glovebox opening then close glovebox.

(33) Loosen left cowl side pivot.

(34) Remove four screw attachments at top of instrument panel and roll panel out.

(35) Pull wiring, antenna cable, A/C cable and vacuum lines out of instrument panel. Disconnect demister hose and remove instrument panel with ducts attached.

(36) Transfer ducts and brackets onto new panel.

(37) For instrument panel roll up, reverse above procedures.

INTERIOR LAMP REMOVAL

The Dome, Floor Console and Door Lamps operate when the doors are open or headlamp switch is placed in courtesy position.

DOMELAMP

Pry either the forward or rearward edge of the lens away from the bezel and replace lamp.

FRONT HEADER READING LAMP

Pull lamp from headliner. Disconnect wiring and replace lamp.

FLOOR CONSOLE LAMP

Pry along top edge of lamp and pivot lamp out of floor console, the lens does not remove. Remove lamp and twist out lamp socket. Replace lamp.

DOOR LAMPS

Pry along bottom edge of lamp and pivot lamp out of door trim panel, the lens does not remove. Remove lamp and twist out lamp socket. Replace lamp.

DOOR REFLECTORS

Pry reflector away from the door trim panel, and replace.

C—PILLAR COURTESY LAMPS

Pry along rearward edge of lamp and pivot lamp out of quarter trim panel. Remove lamp and disconnect wiring. Replace lamp.

TRUNK LAMP

Remove lens by prying lens out of lamp housing. Remove two screws securing lamp to retaining bracket and trunk trim panel. Remove lamp and disconnect wiring harness. Replace trunk lamp. The lamp can be replaced after removing lens.

AP BODY

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GENERAL INFORMATION

INSTRUMENT CLUSTER

There are two conventional instrument cluster assemblies available. The clusters incorporate magnetic type gauges and an electronically driven speedometer and odometer assembly (Fig. 1 and 2).

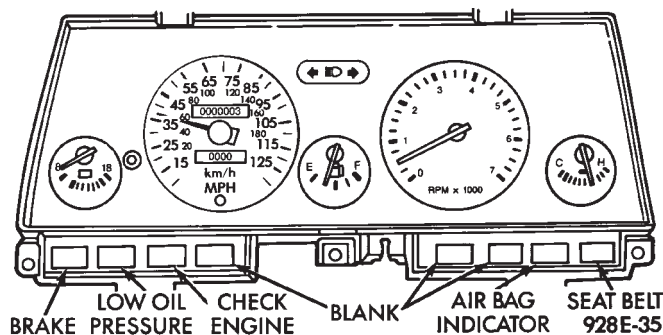


Fig. 1 Instrument Cluster With Tachometer

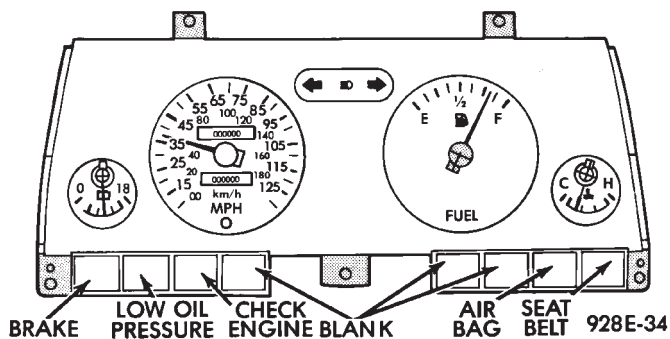


Fig. 2 Instrument Cluster Without Tachometer

MAGNETIC GAUGES

All gauges on the AP Body clusters are the magnetic type gauges. When the ignition switch is in the OFF position each gauge, except for the voltmeter and tachometer will show a reading. However, the readings are only accurate when the ignition switch is in the ON position.

TACHOMETER DRIVE MODULE

The tachometer drive module is an electronic module used to drive the magnetic tachometer in the high line cluster.

This module is located on top of the instrument cluster.

MESSAGE CENTER WITH TURBO GAUGE

The message center, which is located in the center of the instrument panel above the radio, will indicate door ajar, liftgate ajar, low washer fluid and low fuel. A turbocharger gauge is included with the message center. This gauge indicates both engine manifold vacuum and turbocharger boost pressure.

ELECTRONIC DIGITAL CLOCK

The electronic digital clock is in the radio. The clock and radio each use the display panel built into the radio. A digital readout indicates the time in hours and minutes whenever the ignition switch is in the ON or ACC position.

When the ignition switch is in the OFF position, or when the radio frequency is being displayed, time keeping is accurately maintained.

The procedure for setting the clock varies slightly with each radio. The correct procedure is described under the individual radio operating instructions refer to the Sound Systems Manual supplied with the vehicle.

WARNING LAMPS AND INDICATOR LIGHTS

The instrument cluster has warning and indicators lamps for seven different systems:

- Low oil pressure
- Brake warning
- Seat belt warning
- Check engine
- Air Bag
- High beam indicator
- Right and left turn signals.

CLUSTER AND GAUGE SERVICE AND TESTING

CAUTION: Disconnect the negative battery cable before servicing the instrument panel. When power is required for test purposes, reconnect battery cable for test only. Disconnect the negative battery cable after test and before continuing service procedures.

SENDING UNIT TEST

Check for a defective sending unit or wiring, when a problem occurs with a cluster gauge. Do this before disassembling the cluster.

(1) Sending units and wiring can be checked by grounding the connector leads, at the sending unit, in the vehicle.

(2) With the ignition in the ON position, a grounded input will cause the fuel or temperature gauge to read at or above maximum.

FUEL TANK SENDING UNIT TEST

- (1) Disconnect wiring from fuel tank sending unit.
- (2) Connect wiring to a known good sending unit (Fig. 3).

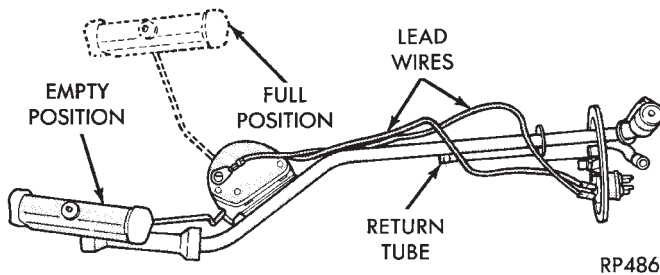


Fig. 3 Fuel Tank Sending Unit (Typical)

(3) Connect a jumper wire between known good sending unit fuel pick up tube and a good ground.

(4) Check fuel gauge as described in the following steps. Allow at least two minutes at each test point for gauge to settle.

(a) Clip float arm of sending unit to its empty stop and turn ignition key to ON position. The gauge should read Empty or below.

(b) Move and clip sending unit float arm to full stop. The gauge should read Full or above.

(5) If fuel gauge does not meet specifications, check following items as possible causes:

(a) Wiring and connections between gauge sending unit and multiple connector behind left cowl kick pad.

(b) Wiring and connections between multiple connector behind left cowl kick pad and printed circuit board terminals.

(c) Circuit continuity between printed circuit board terminals and gauge terminals.

(6) If the items check okay, fuel gauge is defective and must be replaced.

(7) If fuel gauge meets specifications check fuel tank and original fuel tank sending unit as follows:

(a) Carefully remove fuel tank sending unit from tank. Refer to Group 14, Fuel. Connect sending unit wire and jumper wire as described in the test procedure.

(8) If fuel gauge now checks within specifications, original sending unit is electrically okay, check following as possible cause:

(a) Ground wire from sending unit to left side cowl for continuity.

(b) Sending unit deformed. Make sure sending unit float arm moves freely, pick up tube is not bent upwards creating an interference with bottom of tank and inspect float.

(c) Sending unit improperly installed, install properly.

(d) Mounting flange on fuel tank for sending unit deformed, feel for interference fit of sending unit to bottom of tank. It is permissible to bend pick up tube down a little near mounting flange to gain interference fit.

(e) Fuel tank bottom deformed, causing improper positioning of sending unit pick up tube, replace or repair tank and recheck sending unit.

LOW OIL PRESSURE WARNING LAMP TEST

The low oil pressure warning lamp will illuminate when the ignition key is turned to the ON position without engine running. The lamp also illuminates should the engine oil pressure drop below a safe oil pressure level.

To test the system turn ignition key to the ON position. If the lamp fails to light, inspect for a broken or disconnected wire at the oil pressure combination unit, located at the front of the engine (Fig. 4). If the wire at the connector checks good, pull connector loose from the switch and with a jumper wire ground connector to the engine. With the ignition key turned to the ON position check the warning lamp. If lamp still fails to light, inspect for a burned out lamp or disconnected socket in the cluster.

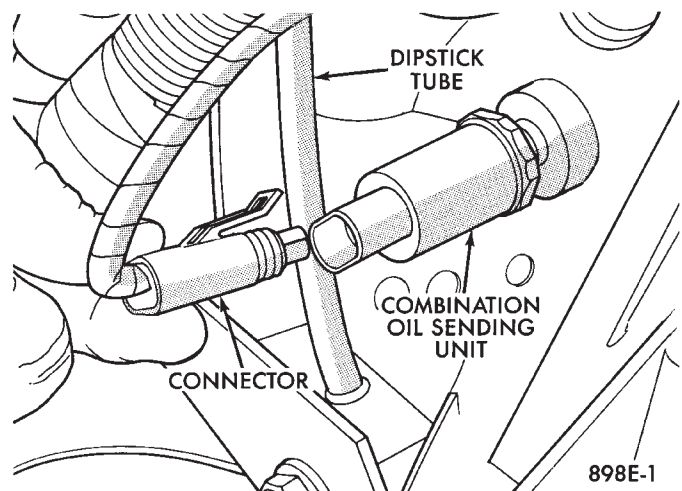


Fig. 4 Combination Oil Sending Unit

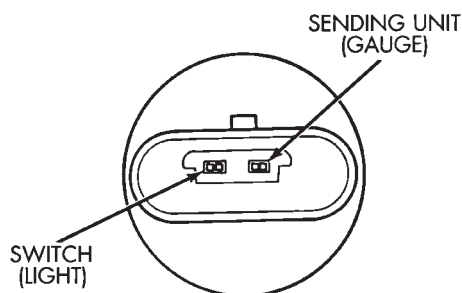
COMBINATION OIL SENDING UNIT TEST

The combination oil sending unit has two functions:

(1) The normal closed circuit keeps the oil pressure warning lamp on until there is oil pressure (Fig. 5).

(2) The sending unit provides a resistance that varies with oil pressure.

To test the normally closed oil lamp circuit, disconnect the locking connector and measure the resis-



898E-2

Fig. 5 Combination Oil Sending Unit Test

tance between the switch terminal and the metal housing. The ohmmeter should read continuity. Start the engine.

If there is oil pressure, the ohmmeter should read an open circuit.

To test the sending unit, measure the resistance between the sending unit terminal and the metal housing. The ohmmeter should no continuity. Start the engine.

The ohmmeter should read between 30 to 55 ohms, depending on engine speed, oil temperature and oil viscosity.

If the above results are not obtained, replace the sending unit.

SEAT BELT WARNING SYSTEM

For testing of this system refer to Group 8M, Restraint Systems.

AIR BAG WARNING SYSTEM

For testing of this system refer to Group 8M, Restraint Systems.

CHECK ENGINE SYSTEM

For testing of this system using DRB II, refer to the Body Powertrain Diagnostic Procedures.

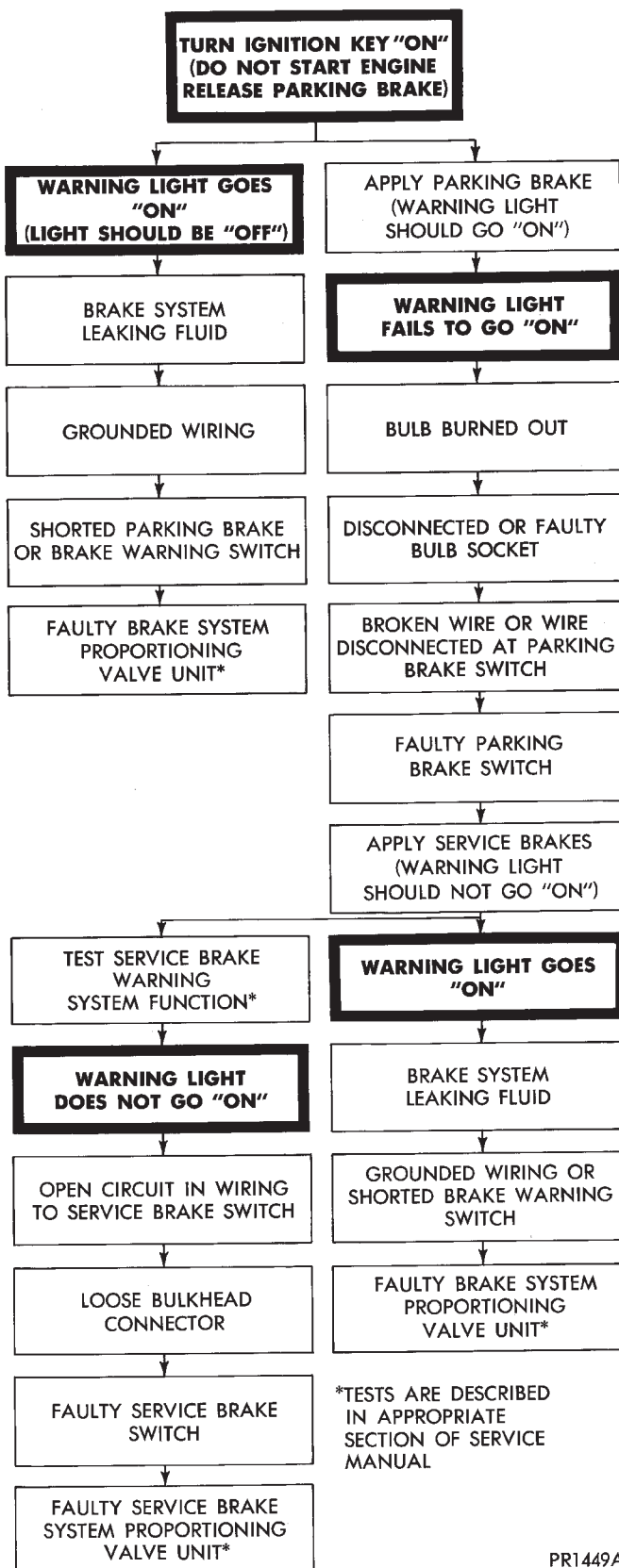
BRAKE SYSTEM WARNING LAMP TEST

The brake warning lamp illuminates when parking brake is applied with ignition key turned ON. The same lamp will also illuminate should one of the two service brake systems fail when brake pedal is applied. Refer to Brake system warning Lamp Diagnosis (Fig. 6).

To test system turn ignition key ON, and apply parking brake. If lamp fails to light, inspect for a burned out lamp, disconnected socket, a broken or disconnected wire at switch. The lamp also lights when the ignition switch is turned to start.

To test service brake warning system, raise vehicle on a hoist and open a wheel cylinder bleeder while a helper depresses brake pedal and observes warning lamp. If lamp fails to light, inspect for a burned out lamp, disconnected socket, a broken or disconnected wire at switch.

BRAKE SYSTEM WARNING LAMP DIAGNOSIS



PR1449A

Fig. 6 Brake System Warning Lamp

If lamp is not burned out and wire continuity is proven, replace brake warning switch in brake line Tee fitting mounted on frame rail in engine compartment below master cylinder (Fig. 7).

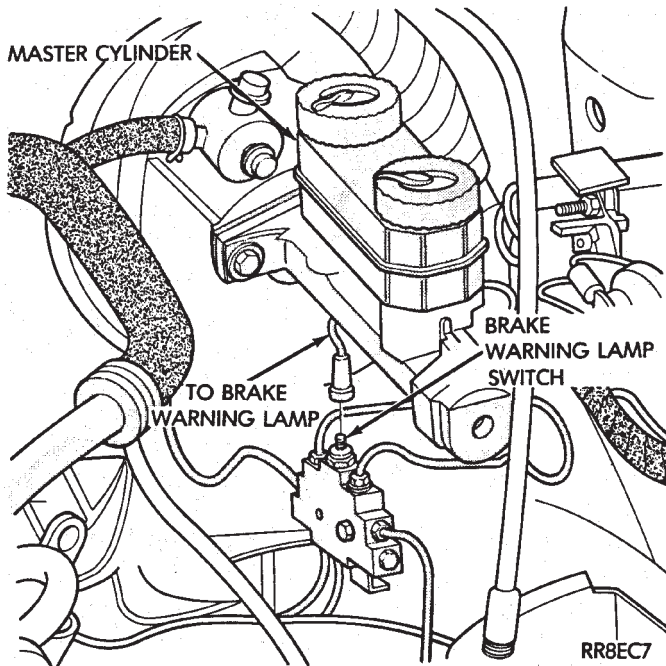


Fig. 7 Brake Warning Lamp Switch

CAUTION: If wheel cylinder bleeder was opened check master cylinder fluid level.

CLUSTER BEZEL REPLACEMENT

- (1) Remove four screws holding bezel to instrument panel (Fig. 8).
- (2) Remove bezel over steering wheel.
- (3) For installation reverse above procedures.

CLUSTER MASK AND LENS

REMOVAL

- (1) Remove instrument cluster bezel.
- (2) Remove five screws holding mask and lens to cluster.
- (3) Remove mask and lens.
- (4) For installation reverse above procedures.

CLUSTER ASSEMBLY REPLACEMENT

- (1) Disconnect battery to assure no Air Bag System fault codes are stored.
- (2) Remove cluster bezel (Fig. 8).
- (3) Remove the upper steering column cover.
- (4) Remove the four screws attaching cluster housing to the base panel.
- (5) Pull cluster rearward, reach behind cluster and disconnect the two wiring harnesses.

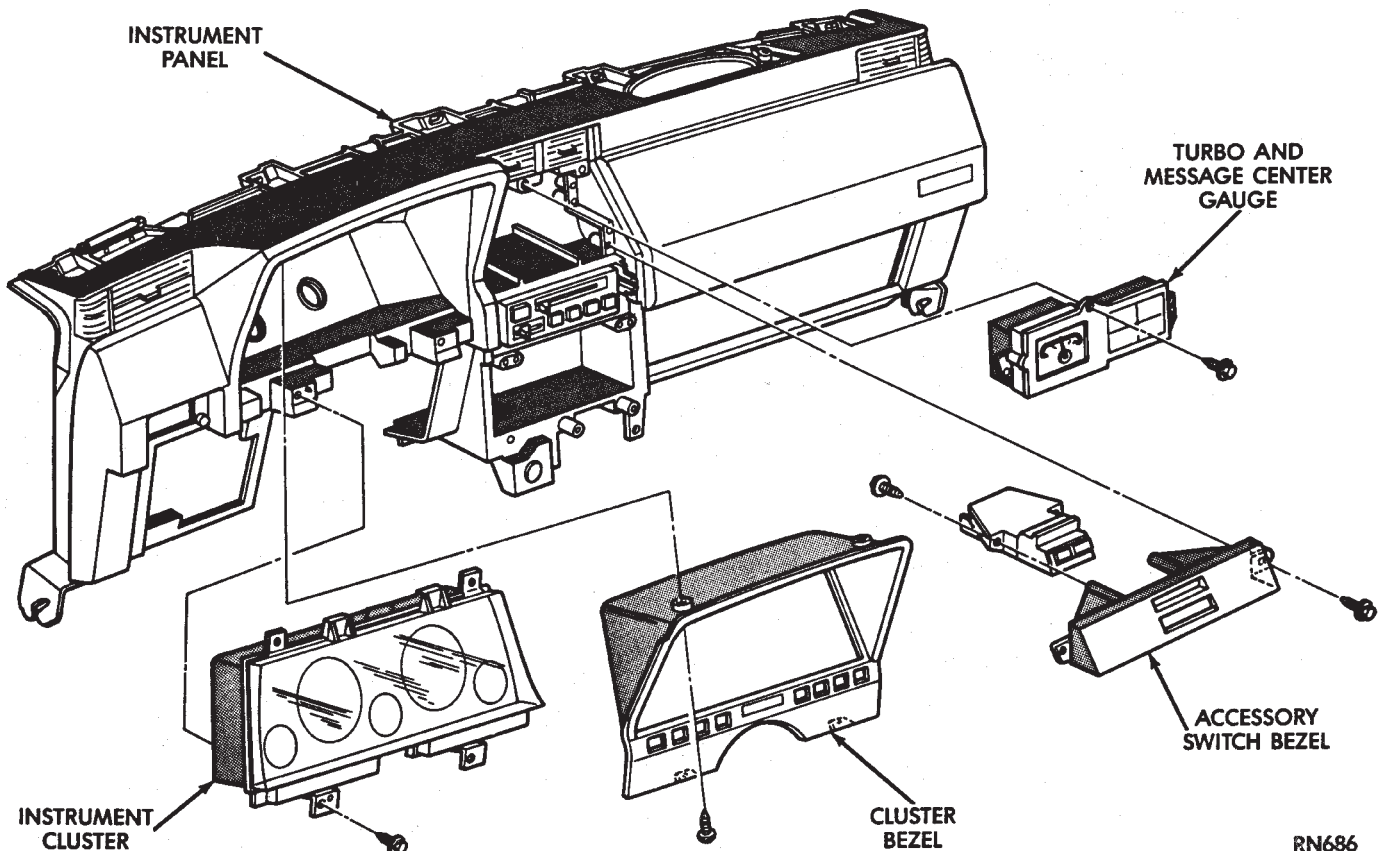


Fig. 8 Upper Instrument Panel Components

- (6) Remove cluster assembly.

INSTALLATION

- (1) Connect wiring harnesses.
- (2) Position cluster and secure to base panel with four screws.
- (3) Install upper and lower steering column cover.
- (4) Install cluster bezel.
- (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. 9).
- (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. 10 AND 11)

- (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. 9).

- (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.

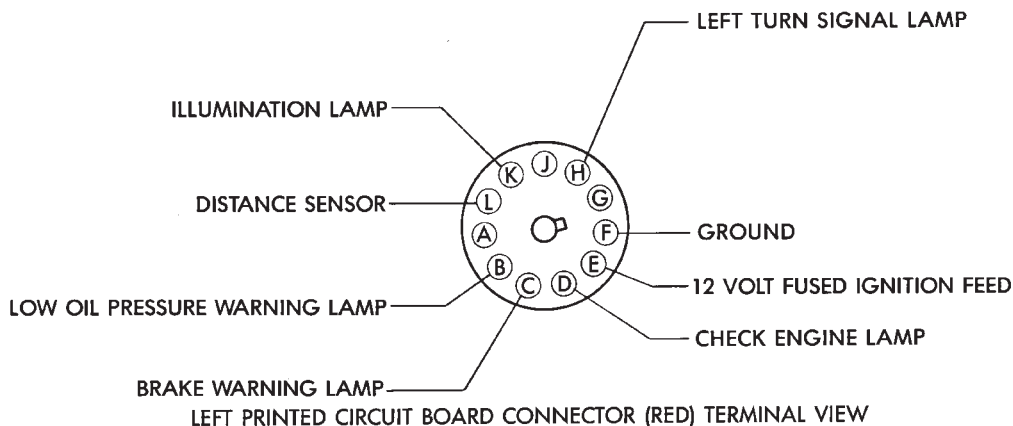
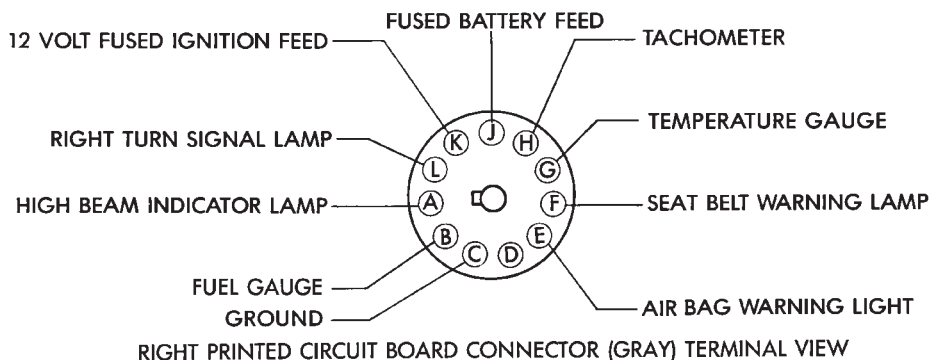
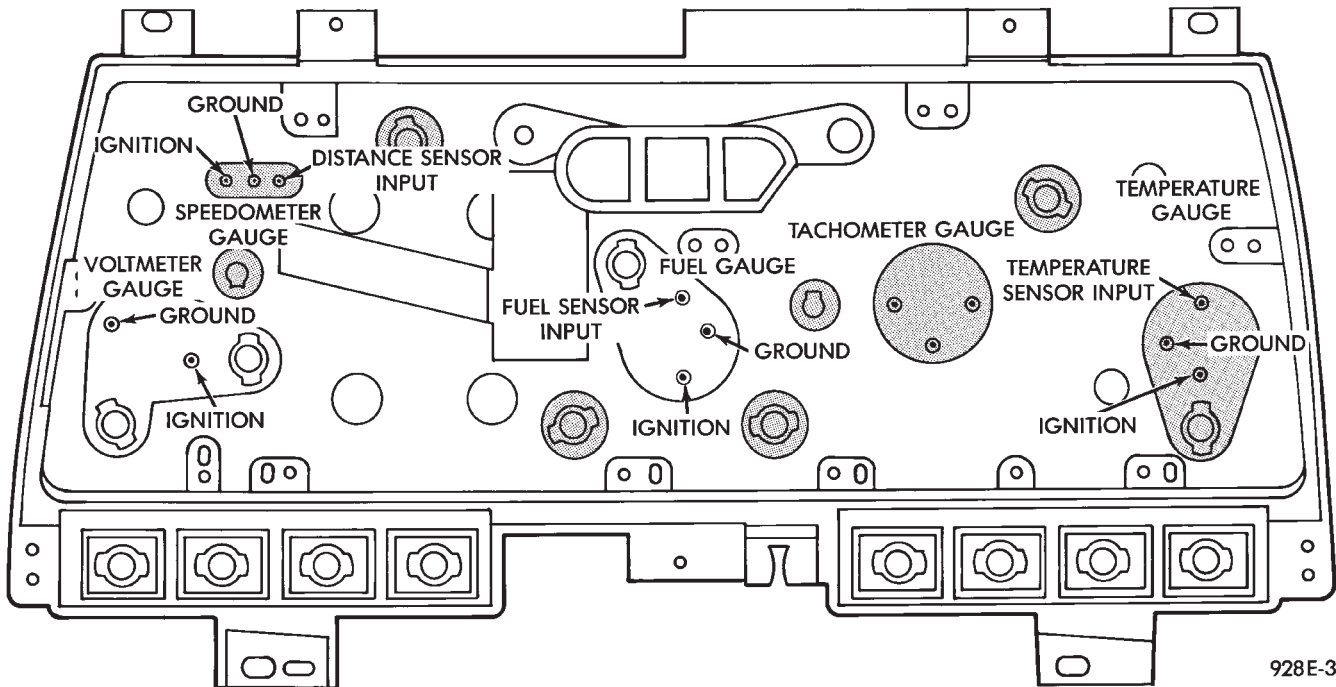
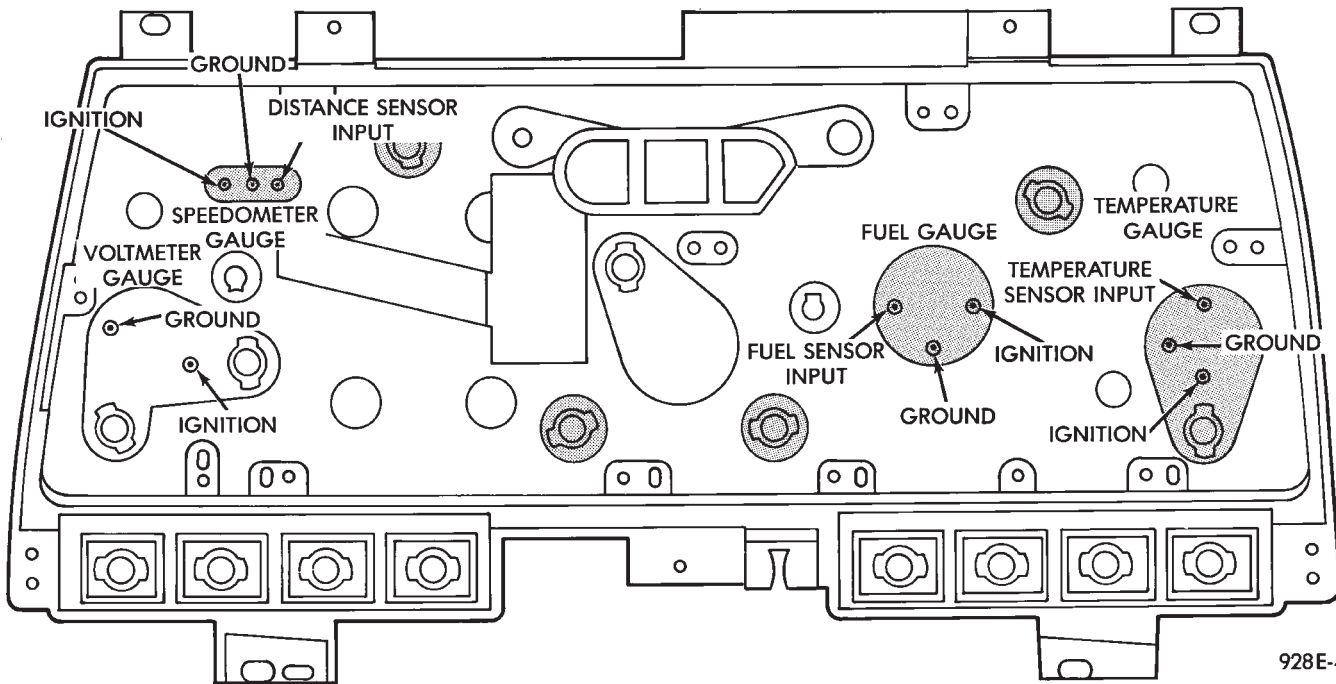


Fig. 9 Printed Circuit Board Connector



928E-3

Fig. 10 Instrument Cluster With Tachometer



928E-4

Fig. 11 Instrument Cluster Without Tachometer

- 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.

(b) If resistance and gauge position are not similar, replace gauge.

(c) If OK, test resistance from the sending unit to the cluster connector.

(d) If reading is different from the first resistance measured, check printed circuit board for contact to cluster connector.

(e) If OK and contacts are not distorted, replace printed circuit board.

(f) If everything checks out OK, refer to Sending Unit Test.

(4) With the ignition switch in the ON position, check for battery voltage across the ignition pin and the ground pin.

(5) If fuel gauge meets specifications check fuel tank and original fuel tank sending unit as follows:

(a) Carefully remove fuel tank sending unit from tank.

(b) Refer to sending unit removal Group 14, Fuel.

(c) Connect sending unit wire and jumper wire as described in the test procedure.

(6) If fuel gauge now checks within specifications, original sending unit is electrically okay, check following as a possible cause:

(a) Ground wire from sending unit to left side cowl for continuity.

(b) Sending unit deformed. Make sure sending unit float arm moves freely and pick up tube is not bent upwards creating an interference with bottom of tank and inspect float.

(c) Sending unit improperly installed. Install properly.

(d) Mounting flange on fuel tank for sending unit deformed. Feel for interference fit of sending unit to bottom of tank. It is permissible to bend pick up tube down a little near mounting flange to gain interference fit.

(e) Fuel tank bottom deformed, causing improper positioning of sending unit pick up tube. Replace or repair tank and recheck sending unit.

GAUGE CALIBRATION

(1) Remove the gauge.

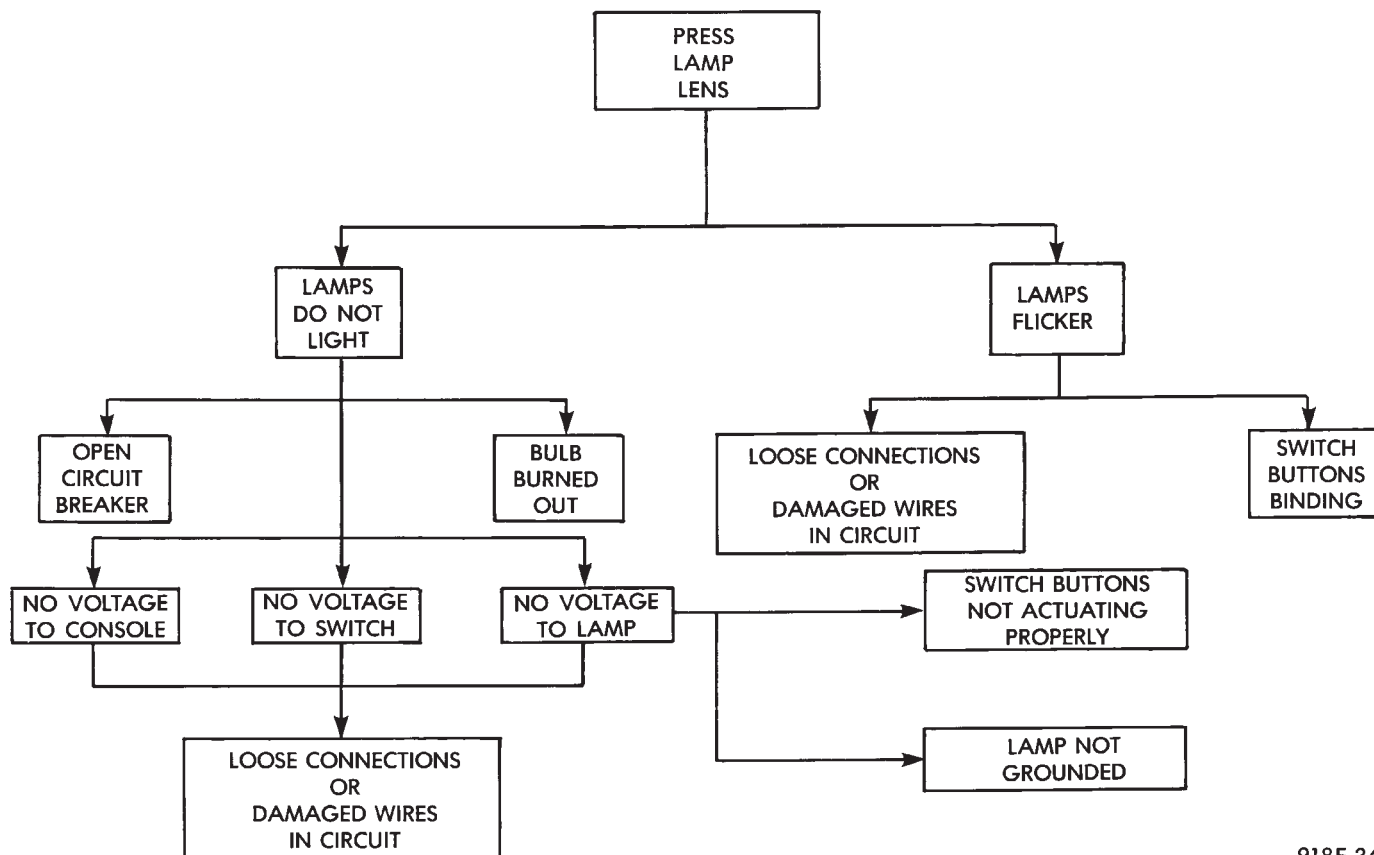
(2) Check for ignition voltage and ground to the gauge.

(3) With the ignition key in the OFF position, replace gauge. Turn the ignition key to the ON position. To test oil pressure gauge engine must be running. When testing oil or temperature gauge the engine should be at normal operating temperature. Record the gauge position.

(4) Remove gauge and record the resistance between the sending unit pin and the gauge ground pin. When checking gauges, it is important to have the same engine temperature and speed when noting gauge position. The time between gauge reading and measuring should be kept to a minimum.

(5) Resistance Chart (Fig. 12), is general guidelines for checking the gauge position against the sending unit resistance.

Because of only a few specific points of gauge position versus sending unit resistance, a good estimate is needed when the resistance falls between graduations. Even when the resistance corresponds to graduations, the gauge has a tolerance of ± 4 ohms.



918E-34

Fig. 12 Gauge Resistance

Volt gauge: The calibration dot on the volt gauge corresponds to 13 volts between the gauge ignition and ground pins. If voltage varies from this, estimate proper gauge position with input voltage.

FUEL GAUGE REPLACEMENT

- (1) Remove instrument cluster bezel.
- (2) Remove mask and lens.
- (3) If equipped with tachometer, remove three retaining screws and pull the tach straight back.
- (4) Remove two retaining screws and pull fuel gauge straight back.
- (5) For installation reverse above procedures.

TEMPERATURE GAUGE REPLACEMENT

- (1) Remove instrument cluster bezel (Fig. 8).
- (2) Remove mask and lens.
- (3) Remove two retaining screws and pull temperature gauge straight back.
- (4) For installation reverse above procedures.

VOLTMETER REPLACEMENT

- (1) Remove instrument cluster bezel (Fig. 8).
- (2) Remove mask and lens.
- (3) Remove three speedometer retaining screws and pull the speedometer straight back and set aside.
- (4) Remove two voltmeter retaining screws and pull voltmeter straight back.
- (5) For installation, place voltmeter on gauge pins and push until gauge is securely seated in cluster and reverse above procedures.

TACHOMETER REPLACEMENT

- (1) Remove instrument cluster bezel.
- (2) Remove mask and lens.

(3) Remove three retaining screws and pull tachometer straight back.

(4) For installation, place tachometer on gauge pins and push until gauge is securely seated in cluster and reverse above procedures.

TACHOMETER CIRCUIT TESTING

- (1) Remove cluster.
- (2) Check for battery voltage at cavity J if instrument cluster gray connector.
- (3) With the ignition in the ON position, check for battery voltage at cavity K of the instrument cluster gray connector (Fig. 9).
- (4) Check cavity F of the instrument cluster red connector for continuity to ground (Fig. 9).
- (5) Check for tachometer signal from the engine controller by connecting an AC DIGITAL VOLTMETER to cavity H of the instrument cluster gray connector and ground. A reading of at least 1.0 volts should be present with the engine running.
 - (a) If voltage is within specification, go to step 7.
 - (b) If voltage is NOT within specification, perform steps 5 and 6.
- (6) If there is less than 1.0 volts at cavity H check for continuity between cavity H of the instrument cluster and pin 43 of the engine controller connector (Fig. 13). Also, check the connector at the engine controller for damaged pins or terminal push outs.
- (7) If voltage is less than 1.0 volts at cavity H and there is continuity between cavity H of the instrument cluster and pin 43 of the engine controller connector, replace the engine controller.
- (8) If all tests performed test good replace the tachometer drive module.

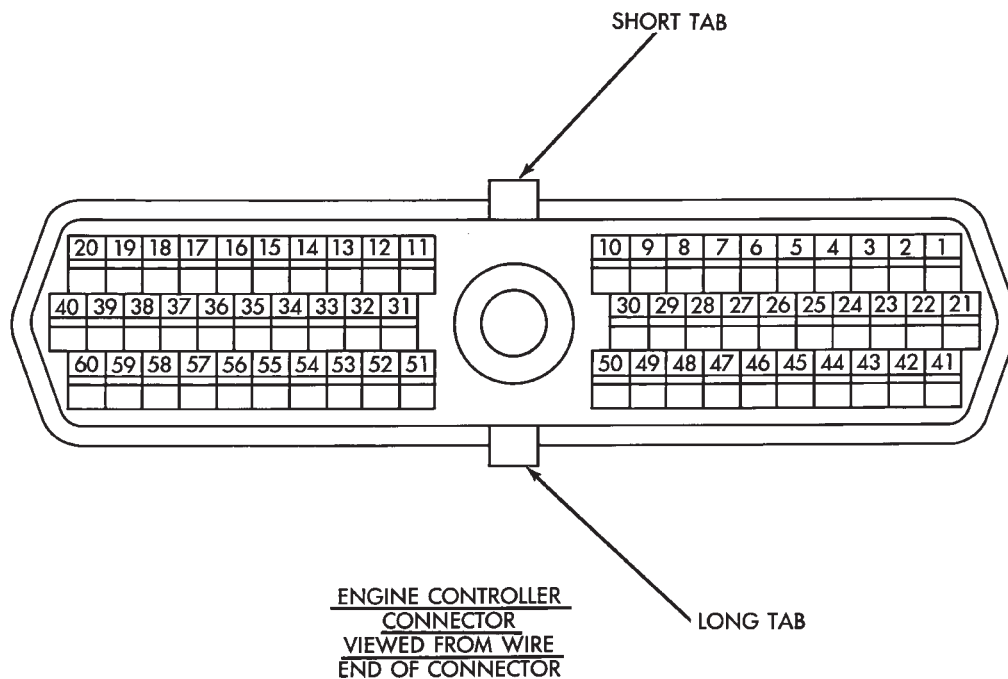
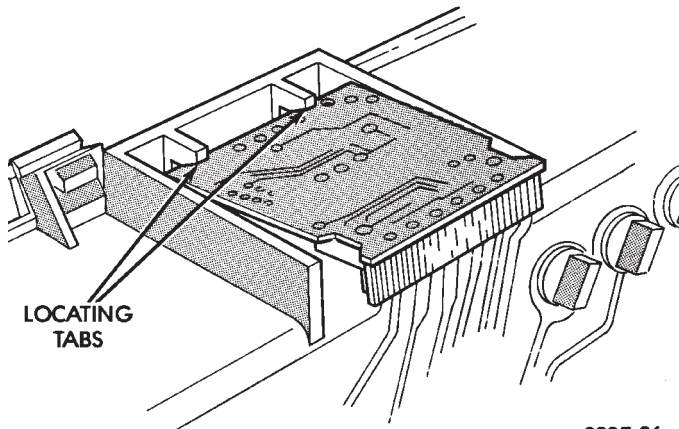


Fig. 13 Engine Controller Pin Location

(9) If the tachometer continues to be inoperative, replace the tachometer assembly.

TACHOMETER DRIVE MODULE REPLACEMENT

- (1) Remove instrument cluster (Fig. 14).



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Fig. 14 Tachometer Drive Module

(2) Remove drive module by pivoting upward from printed circuit board and pulling away from locating notches.

(3) For installation, position module on locating notches and push down securely over printed circuit board and reverse above procedures.

SPEEDOMETER SYSTEM

AP-body vehicles are equipped with electronically driven speedometer and odometer assemblies. The unit has the same appearance as a conventional speedometer but it eliminates the cable-driven me-

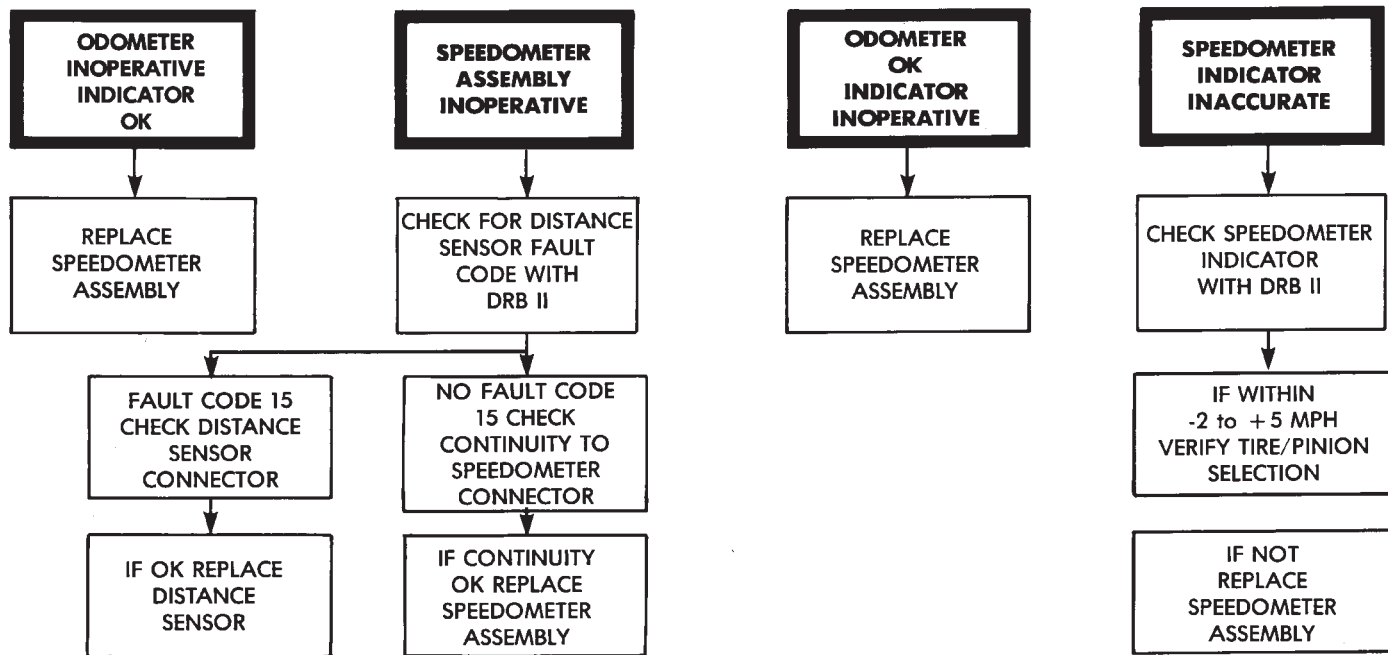
chanical system. A signal is sent from a transmission-mounted speed sensor to the speedometer circuitry through the wiring harness. By eliminating the speedometer cable, instrument cluster service and removal is improved. Refer to Fig. 15 Speedometer Diagnosis.

SPEEDOMETER/ODOMETER ASSEMBLY REPLACEMENT

- (1) Remove cluster bezel.
- (2) Remove cluster mask and lens.
- (3) Remove tachometer. If equipped.
- (4) Remove fuel gauge.
- (5) Remove three screws attaching speedometer/odometer assembly to the cluster housing.
- (6) Pull speedometer rearward to remove from cluster housing.
- (7) For installation reverse above procedures.

DISTANCE SENSOR REPLACEMENT

- (1) Remove harness connector from sensor and make sure weather seal is on harness connector.
- (2) Remove sensor retaining bolt.
- (3) Pull sensor and pinion gear assembly out of transaxle. If necessary, carefully pry loose with a flat blade screwdriver (Fig. 16 and 17).
- (4) For installation reverse above procedures and seat sensor assembly by hand to insure proper gear engagement. Tighten retaining bolt to 7 N·m (60 in. lbs.) torque.



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Fig. 15 Speedometer System Diagnosis

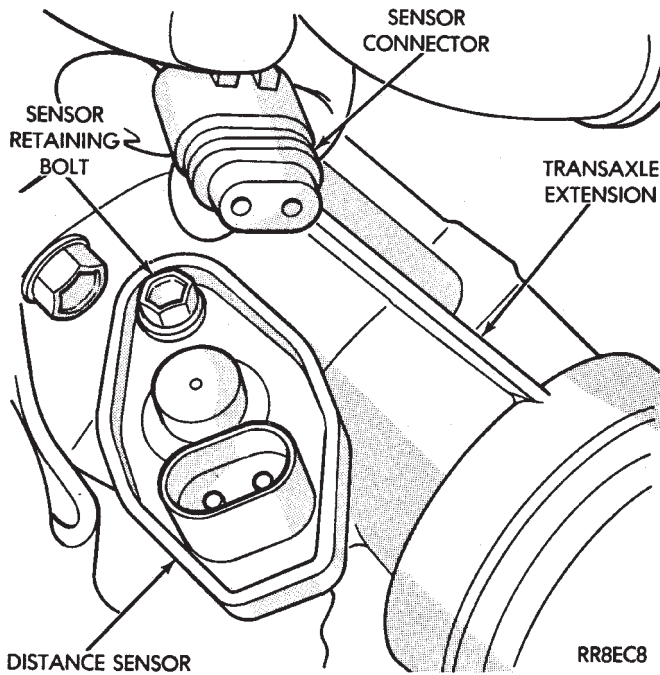


Fig. 16 Distance Sensor and Connector

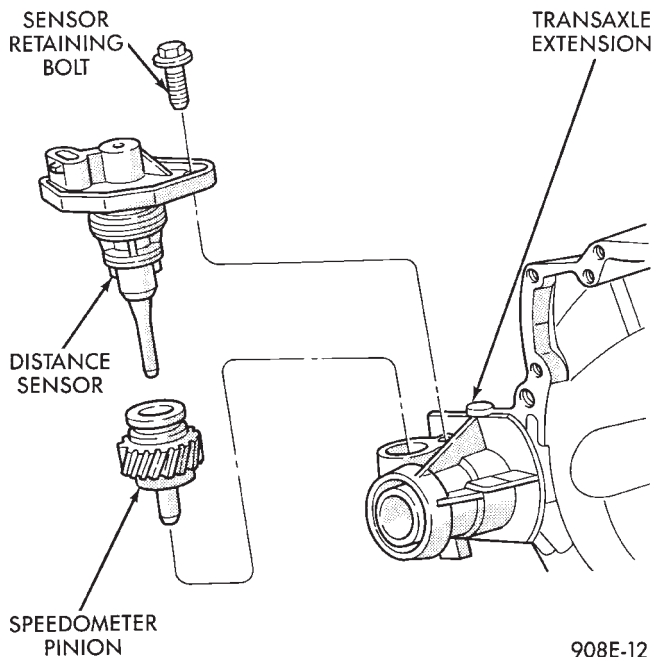


Fig. 17 Distance Sensor and Speedometer

DISTANCE SENSOR TEST

For testing of the distance sensor and related components using DRB II, refer to the appropriate Powertrain Diagnostics Test Procedure Manual.

PRINTED CIRCUIT BOARD REPLACEMENT

- (1) Remove cluster bezel.
- (2) Remove instrument cluster.
- (3) Remove tachometer drive module, if equipped.
- (4) Remove six retaining screws (Fig. 18).

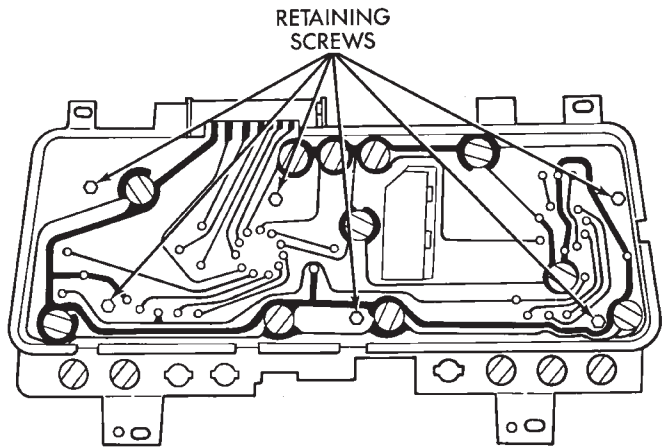


Fig. 18 Printed Circuit Board

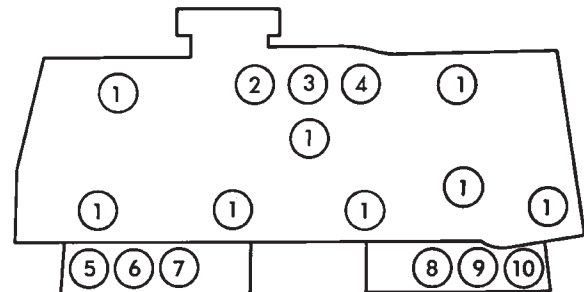
(5) Twist out all illumination and warning lamp sockets.

(6) Pull printed circuit board from cluster housing.

(7) For installation reverse above procedures. Position printed circuit board on cluster housing, being certain that all gauge pins are inserted correctly.

CLUSTER LAMP REPLACEMENT

Illumination Lamp Chart shows cluster as viewed from rear. However, all lamps must be replaced by removing cluster from instrument panel (Fig. 19).



- | | |
|-------------------------|-------------------------------|
| 1. CLUSTER ILLUMINATION | 6. AIR BAG WARNING |
| 2. RIGHT TURN SIGNAL | 7. BLANK |
| 3. HIGH BEAM INDICATOR | 8. CHECK ENGINE |
| 4. LEFT TURN SIGNAL | 9. LOW OIL PRESSURE INDICATOR |
| 5. SEAT BELT WARNING | 10. BRAKE SYSTEM WARNING |

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Fig. 19 Instrument Cluster Illumination Lamps

MESSAGE CENTER WITH TURBO GAUGE MODULE REPLACEMENT

- (1) Remove center bezel assembly.
- (2) Remove three screws retaining Turbo Gauge/Message Center to instrument panel (Fig. 20).
- (3) Pull module rearward, disconnect wiring and vacuum connectors and remove from vehicle.
- (4) For installation reverse above procedures.

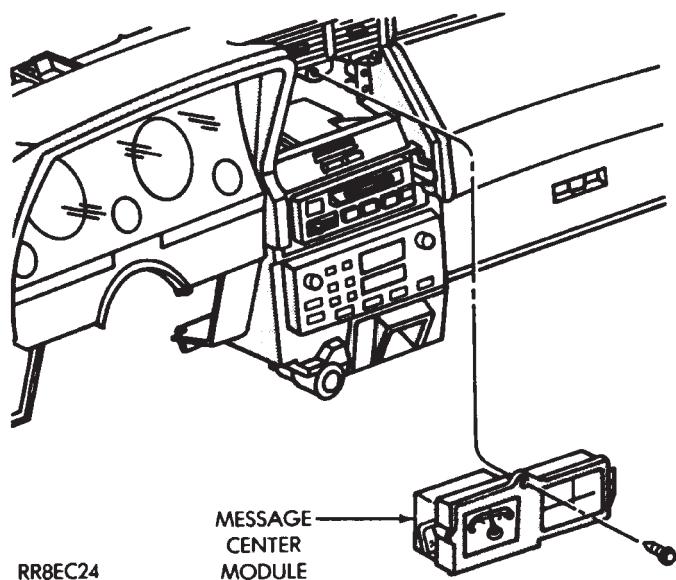


Fig. 20 Turbo Gauge and Message Center Module
SWITCH AND PANEL COMPONENT SERVICE

LOWER STEERING COLUMN COVER REPLACEMENT

- (1) Disconnect park brake release rod from the park brake handle.
- (2) Remove two screws attaching hood release (Fig. 21).

(3) Remove fuse access door and remove steering column cover attaching screw located directly above the fuse block.

(4) Remove six screws around outside of steering column cover.

(5) Remove steering column cover.

(6) For installation reverse above procedures.

CENTER MODULE LOWER COVER REPLACEMENT

(1) Open ash receiver and remove center module bezel.

(2) Remove module cover to instrument panel retaining screws (Fig. 21).

(3) Remove module cover from vehicle.

(4) For installation reverse above procedures.

CENTER MODULE BEZEL REPLACEMENT

(1) Open ash receiver.

(2) Grip module bezel around outer edges and pull rearward to release six spring-type retaining clips (Fig. 21).

(3) For installation position spring clips to instrument panel and push firmly until seated.

(4) Close ash receiver.

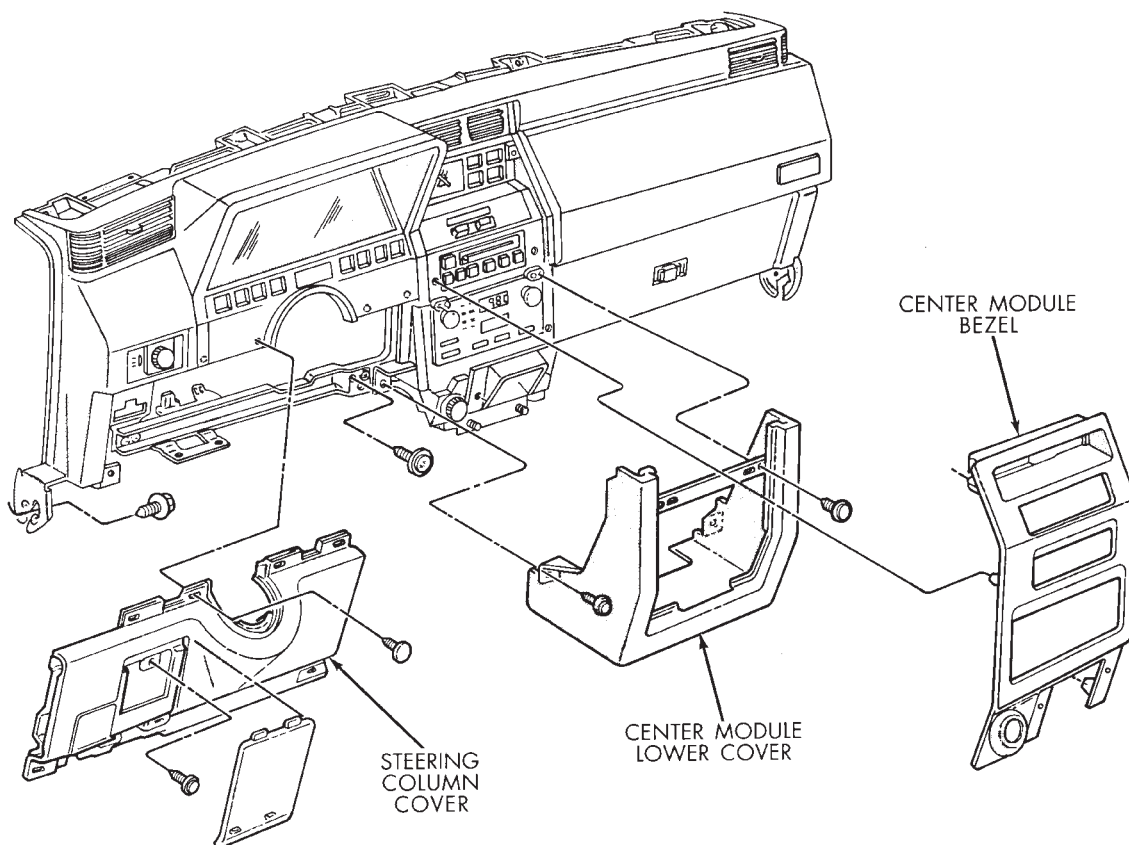


Fig. 21 Lower Instrument Panel

HEADLAMP SWITCH REPLACEMENT

(1) Snap headlamp switch bezel out of instrument panel pad (Fig. 22).

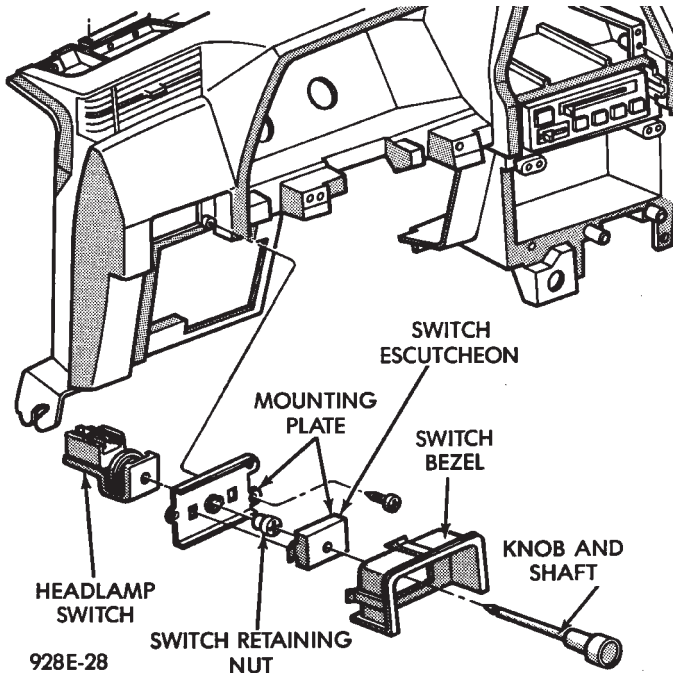


Fig. 22 Headlamp Switch Assembly

- (2) Remove three screws securing headlamp switch mounting plate to instrument panel.
- (3) Pull headlamp switch and mounting plate rearward from instrument panel opening.
- (4) Disconnect wiring connector from switch.
- (5) Remove switch knob by depressing release button on switch and pulling knob out from switch.
- (6) Snap headlamp switch escutcheon out of mounting plate to gain access to mounting plate retaining nut.
- (7) Remove headlamp switch to mounting plate retaining nut and separate switch from mounting plate.
- (8) For installation reverse above procedures.

A/C HEATER CONTROL REPLACEMENT

- (1) Remove center bezel assembly.
- (2) Remove A/C control to instrument panel retaining screws (Fig. 23).
- (3) Pull control rearward and disconnect temperature control cable and electrical and vacuum connectors.
- (4) Remove control from vehicle.
- (5) For installation reverse above procedures.

HEATER CONTROL LAMP REPLACEMENT

- (1) Remove heater control. Refer to A/C Heater Control for removal.
- (2) Pull control far enough to gain access to the lamp socket.

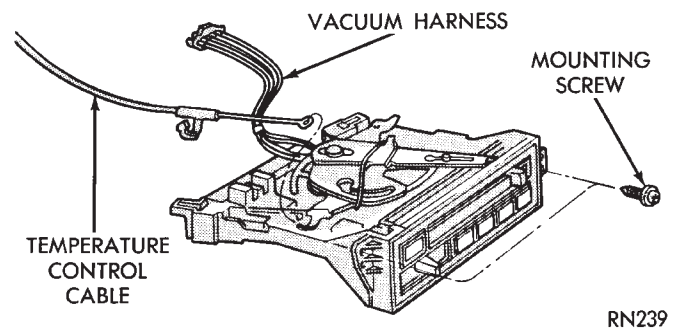


Fig. 23 A/C Heater Control

- (3) Replace lamp. To remove lamp rotate socket counter clockwise. To install rotate clockwise.
- (4) For installation reverse above procedures.

A/C CONTROL LAMP REPLACEMENT

- (1) Remove heater control. Refer to A/C Heater Control for removal.
- (2) Pry temperature and blower switch knobs off with flat blade tool. To protect cosmetic face place cardboard or similar material on the face plate while prying.
- (3) Remove face plate by lifting on the six tabs. Three on top and three on bottom of the face plate.
- (4) Replace lamp.
- (5) For installation reverse above procedures.

HEATER CONTROL BLOWER SWITCH REPLACEMENT

- (1) Remove heater control. Refer to A/C Heater Control for removal.
- (2) Pry temperature and blower switch knobs off with flat blade tool. To protect cosmetic face place cardboard or similar material on the face plate while prying.
- (3) Remove face plate by lifting on the six tabs. Three on top and three on bottom of the face plate.
- (4) Pry blower switch off with flat blade tool. To protect cosmetic face, place cardboard or similar material on the face plate while prying.
- (5) To replace, line up blower switch terminals and press firmly until the it bottoms out on the housing.
- (6) For installation reverse above procedures.

A/C CONTROL BLOWER SWITCH REPLACEMENT

- (1) Remove heater control. Refer to A/C Heater Control for removal.
- (2) Position the temperature knob at the maximum heat position to gain screw access.
- (3) Remove two screws holding the blower switch located on top of the control.
- (4) Pry the blower switch off with a flat blade tool.
- (5) To replace, line up blower switch terminals and press firmly until the it bottoms out on the housing.
- (6) For installation reverse above procedures.

GLOVE BOX MODULE REPLACEMENT

- (1) Open glove box door (Fig. 24).

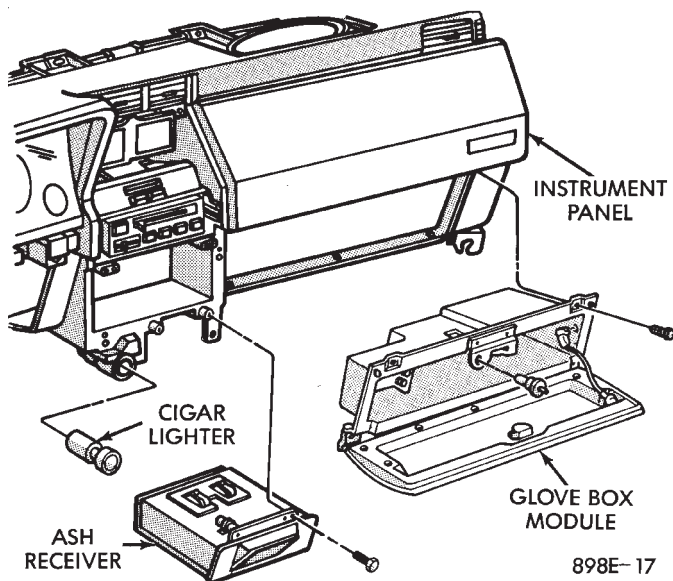


Fig. 24 Glove Box, Ash Receiver and Cigar Lighter

- (2) Remove check strap screws to allow full downward movement of the glove box door.
- (3) Remove six screws attaching glove box module to instrument panel.
- (4) Pull glove box module rearward and disconnect wiring from lamp and switch.
- (5) Remove glove box from vehicle.
- (6) For installation reverse above procedures. When installing glove box module, be sure that left edge of module is pressed against foam bead on trim pad. This will assure that there will be an adequate gap between right edge of glove box door and trim pad.

ASH RECEIVER ASSEMBLY REPLACEMENT

- (1) Open ash receiver and remove center module bezel.
- (2) Remove ash receiver bracket to instrument panel retaining screws (Fig. 24).
- (3) Pull assembly rearward off of locating pins and disconnect wiring for lamp.
- (4) Remove ash receiver from vehicle.
- (5) For installation reverse above procedures.

CIGAR LIGHTER REPLACEMENT

- (1) Remove center bezel assembly (Fig. 24).
- (2) Remove center module lower cover or open forward console lid.
- (3) Unscrew lighter receptacle shell from receptacle and remove from base instrument panel.
- (4) Disconnect wiring connectors from lighter receptacle and remove from vehicle.
- (5) For installation reverse above procedures.

REAR WINDOW DEFOGGER AND FOG LAMP SWITCH REPLACEMENT

- (1) Remove center bezel assembly (Fig. 25).

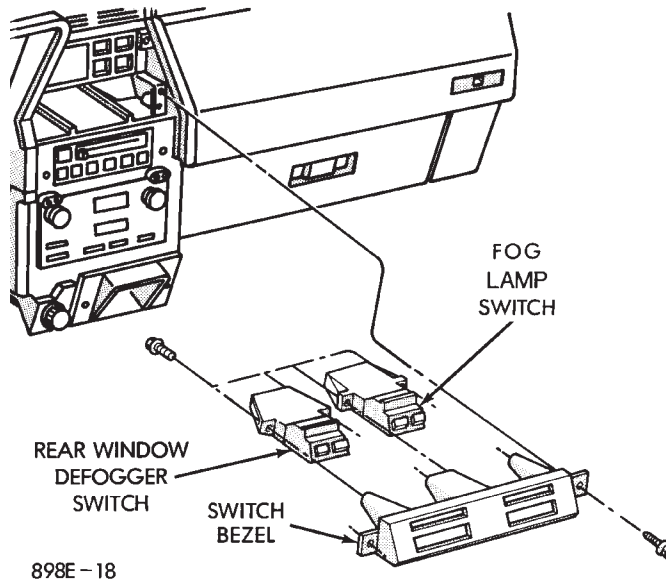


Fig. 25 Rear Window Defogger and Fog Lamp Switch

- (2) Remove two defogger switch bezel screws.
- (3) Pull switch and bezel rearward and disconnect wiring connector.
- (4) Remove two defogger switch retaining screws.
- (5) Remove switch from bezel.
- (6) For installation reverse above procedures.

INTERMITTENT WIPE MODULE REPLACEMENT

- (1) Remove lower steering column cover.
- (2) Slide intermittent wipe module off of bracket located on steering column reinforcement (Fig. 26).
- (3) Disconnect wiring connector from module and remove module from vehicle.
- (4) For installation reverse above procedures.

GLOVE BOX LAMP AND SWITCH REPLACEMENT

- (1) Open glove box door (Fig. 27).
- (2) Carefully pry lamp from its mounting surface with tip of a small screwdriver.
- (3) Pull lamp from box and disconnect electrical leads.
- (4) Remove lamp.
- (5) For installation reverse above procedures.

CONSOLETTA ASSEMBLY REPLACEMENT

- (1) Remove shifter handle.
- (2) Unsnap PRNDL bezel or shift boot bezel from consolette, disconnect wiring and remove bezel assembly (Fig. 28).
- (3) Remove two screws from side of armrest.

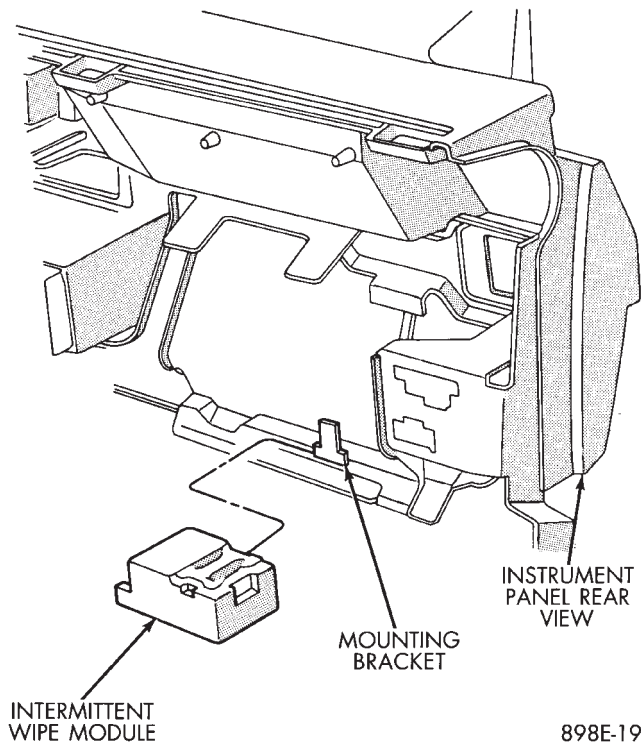


Fig. 26 Intermittent Wipe Module

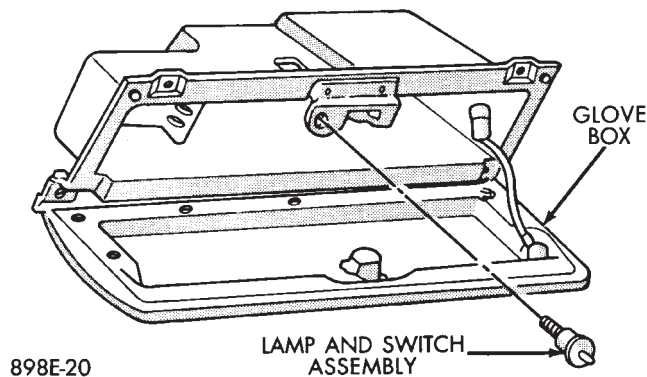


Fig. 27 Glove Box Lamp and Switch

- (4) Remove four caps which cover attaching screws.
- (5) Remove four attaching screws.
- (6) Lift consolette up and over shift mechanism to remove.
- (7) For installation reverse above procedures.

CENTER CONSOLE ASSEMBLY REPLACEMENT

- (1) Place transmission in neutral and remove shifter handle.
- (2) Unsnap PRNDL bezel or shift boot bezel from console, disconnect wiring and remove bezel assembly (Fig. 28).
- (3) Unsnap power window/mirror switch bezel, when so equipped and disconnect switch wiring.
- (4) Remove two screws from side of armrest.

- (5) Remove arm rest and center console section as a unit by lifting from the front and unsnapping from front console section.

- (6) For installation reverse above procedures.

CONSOLE GEAR SELECTOR INDICATOR LAMP REPLACEMENT

- (1) Place shifter handle in Neutral position.
- (2) Remove handle from shifter.
- (3) Unsnap gear selector bezel and pull upward (Fig. 28).
- (4) Remove indicator lamp socket from bezel to replace lamp.
- (5) For installation reverse above procedures.

FRONT CONSOLE ASSEMBLY REPLACEMENT

- (1) Remove shifter handle.
- (2) Unsnap PRNDL bezel or shift boot bezel from console assembly, disconnect wiring and remove bezel assembly (Fig. 28).
- (3) Unsnap power mirror/window switch bezel, when so equipped and disconnect switch wiring.
- (4) Open arm rest and remove three screws holding arm rest to center console retractor bracket.
- (5) Remove armrest and center console section as a unit by lifting and unsnapping from forward console section.
- (6) Remove center module bezel.
- (7) Remove forward console and side walls as complete unit by removing six sidewall attaching screws to instrument panel and console bracket. Slide unit rearward and lift to remove.
- (8) For installation reverse above procedures.
 - (a) For adjustment move gearshift lever with force into park position.
 - (b) Check gear selector indicator for proper alignment.

INSTRUMENT PANEL TOP COVER REPLACEMENT

- (1) Place trim-stick tool in groove between the panel top cover and pad surface (FIG. 29).
- (2) Pry cover up and forward until released from instrument panel pad.
- (3) Lift top cover upward and rearward to remove from vehicle.
- (4) For installation place top cover on panel opening. Be certain that blades of top cover are located in the retaining spring clips.
- (5) Push forward and down to engage in pad.

INSTRUMENT PANEL REPLACEMENT

CAUTION: Disconnect negative battery cable, in engine compartment, before servicing instrument panel.

- (1) Remove windshield wiper arms.

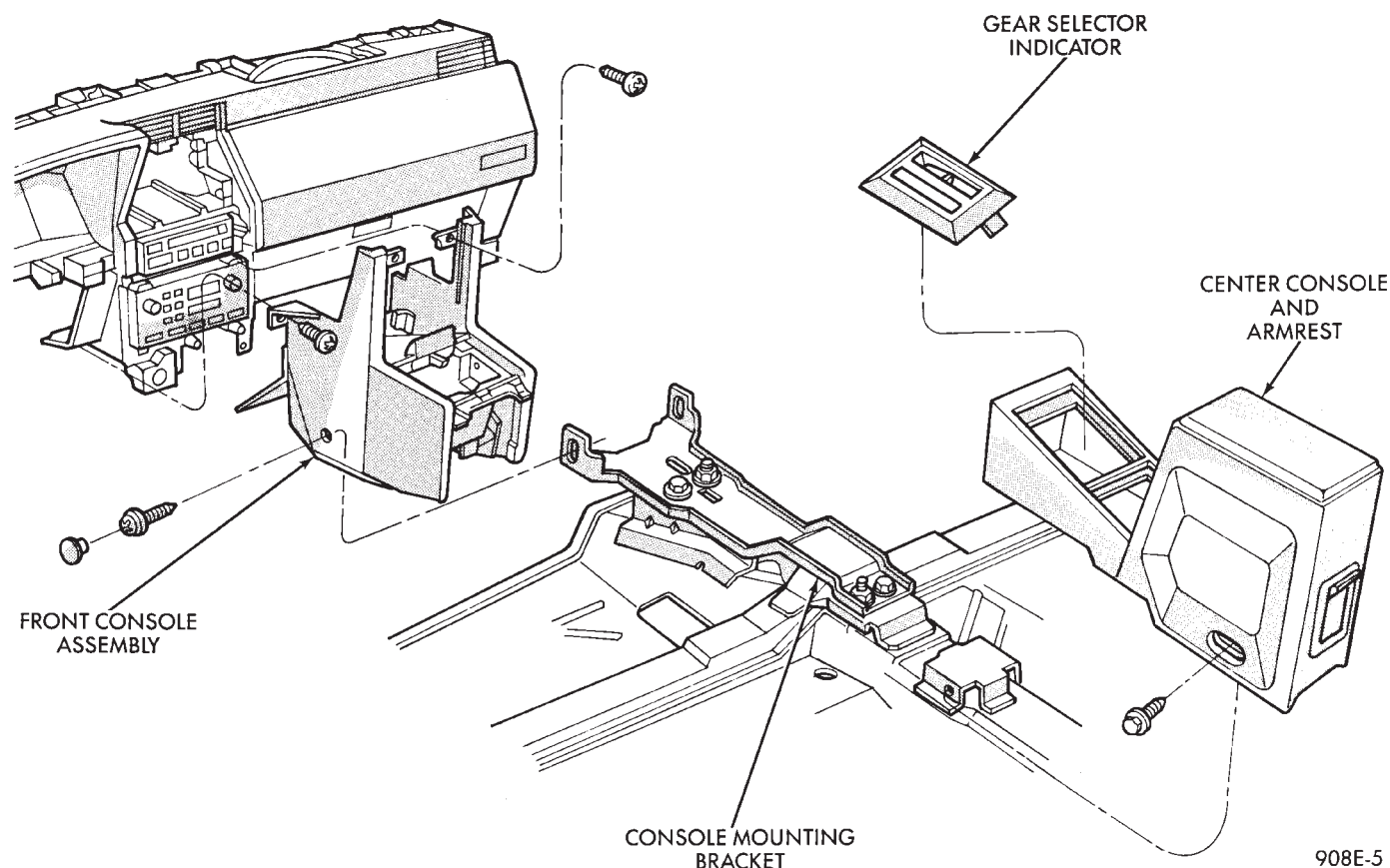


Fig. 28 Front and Center Console with Gear Selector Indicator

- (2) Open hood and remove cowl top plastic cover.
- (3) Remove windshield washer reservoir.
- (4) Pull connector loose from the A/C resistor block, and push wiring and grommet through bulkhead into passenger compartment.
- (5) Remove the console/consolette assembly.
- (6) Remove the passive restraint seat belt logic control module wiring.
- (7) Remove six attaching nuts securing the instrument panel to console support brace.
- (8) Remove the instrument panel to console support brace with the Air Bag System Diagnostic Module attached.
- (9) Remove right and left cowl side and scuff plate trim moldings.
- (10) Remove left and right A-pillar trim moldings.
- (11) Remove instrument panel top cover (Fig. 29).
- (12) Remove lower steering column cover.
- (13) Disconnect the steering column wiring at the 25-way connector.
- (14) Disconnect park brake, stop lamp, and speed control wiring.
- (15) Remove five steering column support nuts and lower steering column. Then remove two steering column attaching studs.
- (16) Disconnect engine harness wiring at 18-way and 16-way connectors located on the left side panel support bracket.

- (17) Remove glove box assembly.
- (18) Remove the panel top cover assembly.
- (19) Loosen the panel roll-down pivot bolts.
- (20) Remove the defroster duct adapter from defroster duct.
- (21) Remove screws which attach instrument panel to windshield fence line. Roll panel down, attach heavy wire to hold in position and remove defroster duct retaining screws.
- (22) Disconnect body wiring at the right side 18-way connector and left side 25-way connector.
- (23) Disconnect temperature mode cable at in-line connector. Disconnect resistor block and blower motor wiring connectors.
- (24) Disconnect antenna cable.
- (25) Disconnect left and right demister hoses from demister outlets on the panel.
- (26) Remove instrument panel from vehicle.
- (27) For installation reverse above procedures.

INTERIOR LAMP REPLACEMENT

The Dome Lamp operates when the doors are open or headlamp switch is placed in courtesy position.

DOME LAMP

- (1) Pry the forward or rearward edge of the dome lamp to free it from the retaining bracket.

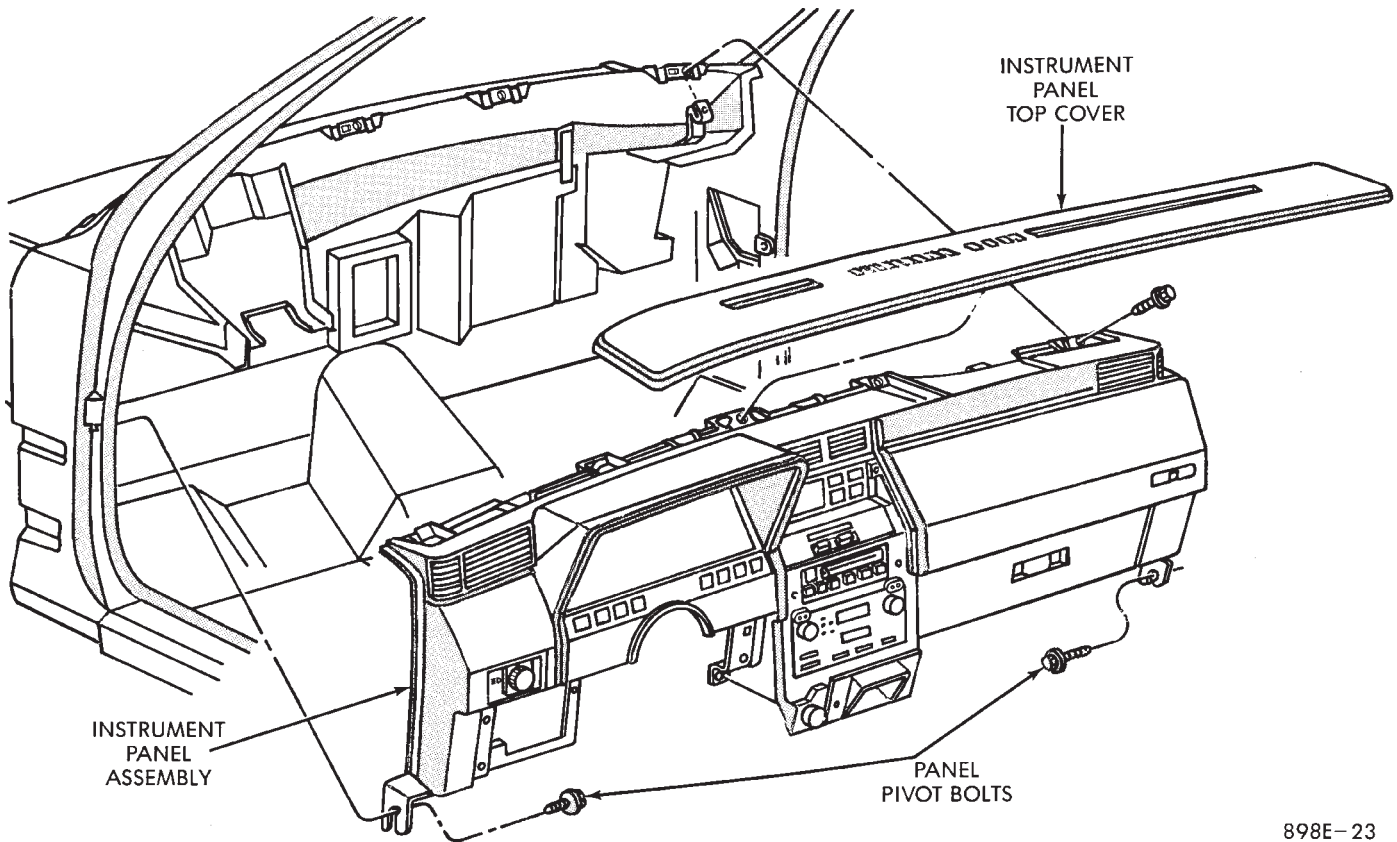


Fig. 29 Instrument Panel and Top Cover

(2) Pry either the forward or rearward edge of the lens away from the bezel and replace lamp.

(3) For installation, snap lens into bezel and then bezel into bracket.

TRUNK LAMP

Pry along rearward portion of lens and pivot out of trunk trim panel. Remove lens and replace lamp.

For installation, snap lens into trunk trim panel.

