

## DIAGNOSIS

### TESTING SEQUENCE

**CAUTION:** When battery is disconnected and reconnected, abnormal drive symptoms may occur while Powertrain Control Module (PCM) relearns its adaptive strategy. Vehicle may need to be driven more than 10 miles to relearn strategy.

When trouble shooting ABS system, use test procedures in the order they are presented. Using other than recommended procedure could result in wasted time and/or unnecessary replacement of parts. Recommended sequence for diagnosing system is:

- **SYSTEM PRECHECKS.**
- ABS QUICK CHECK CHART. See **Fig. 1.**
- DRIVE TEST. See **Fig. 2** & 3.
- INTERMITTENT DIAGNOSIS PROCEDURE. See **Fig. 4.**
- PINPOINT TESTS using **TROUBLE CODE DIRECTORY** table.
- SYMPTOM TESTS using SYMPTOM DIAGNOSTIC CHART. See **Fig. 42.**

### SYSTEM PRECHECKS

**NOTE:** Performing pretest checks will identify relatively simple repairs and prepare vehicle for further diagnosis. Warning light faults are also identified and repaired using pretest checks. Perform pretest checks in order given unless specified otherwise.

#### Electrical System Precheck

1. Verify following connectors are properly connected and free from contaminants and corrosion:
  - 24-pin Anti-Lock Brake Control Module (ABCM) connector
  - 2-pin power and ground connector
  - 2-pin motor connector
  - 2-pin speed sensor connectors (check 4 connectors)
2. Open power distribution box and verify 60-amp fuse is seated and okay. Open central fuse panel under drivers side dash and verify Red brake light relay is seated and okay. Verify system ground eyelet located behind left headlight is firmly attached and no corrosion is present. Repair or replace components as necessary. If all components are okay or after repairing components, perform **CHECKING RED BRAKE AND YELLOW ABS WARNING LIGHT SEQUENCE.**

#### Checking Red Brake And Yellow ABS Warning Light Sequence

1. Turn ignition off. Ensure parking brake is off. Verify 24-pin and 2-pin ABCM connectors are fully seated. Turn ignition on. If both warning lights illuminate, then go out, perform **CODE RETRIEVAL**

**EQUIPMENT HOOK-UP.**

2. If one or both warning lights stay on, perform **CODE RETRIEVAL EQUIPMENT HOOK-UP.** If Yellow ABS warning light never illuminates, perform **CHECKING YELLOW ABS LIGHT.** If Red BRAKE warning light never illuminates, perform **RETRIEVE ABS DIAGNOSTIC TROUBLE CODES.** If neither warning light illuminates, replace fuse No. 14 in fuse panel.

**Code Retrieval Equipment Hook-Up**

1. Turn ignition off. Connect New Generation Star (NGS) tester or equivalent to 16-pin Data Link Connector (DLC) located under steering column. Verify equipment is properly connected.
2. If equipment is properly connected, perform **RETRIEVE ABS DIAGNOSTIC TROUBLE CODES.** If equipment is not properly connected, correct as necessary, then perform **RETRIEVE ABS DIAGNOSTIC TROUBLE CODES.**

**Retrieve ABS Diagnostic Trouble Codes**

1. With New Generation Star (NGS) or equivalent connected, turn ignition on. Read and record all ABS Diagnostic Trouble Codes (DTC). If any codes are present, see **TROUBLE CODE DIRECTORY** table. SYSTEM PASS indicates system if functioning properly.
2. If SYSTEM PASS is present and system is not functioning properly with Yellow ABS warning light on, go to **SYMPTOM TESTS.** If Red BRAKE warning light is on, further diagnosis is necessary. If no trouble codes are present (no response), go to **VERIFY IGNITION POWER TO ANTI-LOCK BRAKE CONTROL MODULE GROUND IS INTACT.**

**Verify Ignition Power To ABCM Ground Is Intact**

1. A blown fuse may be an indication of some other wiring or component problem with ignition circuit. Check fuse No. 33 in main fuse box.
2. If fuse is blown, replace blown fuse and perform **RETRIEVE ABS DIAGNOSTIC TROUBLE CODES.** If fuse is not blown, perform **VERIFY ANTI-LOCK BRAKE CONTROL MODULE GROUND IS INTACT.**

**Verify ABCM Ground Is Intact**

1. Verify system ground eyelet located behind left headlight is firmly attached and no corrosion is present. Clean and tighten as necessary. Disconnect negative battery cable. Using an ohmmeter, measure resistance between negative battery cable and ground eyelet located behind left headlight.
2. If resistance is more than 2 ohms, repair source of high resistance, then perform **RETRIEVE ABS DIAGNOSTIC TROUBLE CODES.** If resistance is less than 2 ohms, ground is okay. Further diagnosis is required.

**Check Yellow ABS Light**

1. Install Breakout Box (014-00322), ABS Adapter Harness and Overlay (007-00108). Jumper breakout box pins No. 1 and 2. Turn ignition on. Observe Yellow ABS warning light. Turn ignition off.
2. If ABS warning light illuminates, replace ABCM, then perform **CHECK RED BRAKE AND YELLOW ABS WARNING LIGHT SEQUENCE.** If ABS warning light does not illuminate, perform

**VERIFY ABS WARNING LIGHT FEED.****Verify ABS Warning Light Feed**

1. Turn ignition off. Check voltage at breakout box pin No. 1. Turn ignition on. If voltage is less than 10 volts, high resistance in ABS warning light circuit (White/Light Blue wire) is indicated.
2. Repair wiring or ABS warning light as necessary, then perform **CHECK RED BRAKE AND YELLOW ABS WARNING LIGHT SEQUENCE.** If voltage is more than 10 volts, replace ABCM, then perform **RETRIEVE ABS DIAGNOSTIC TROUBLE CODES.**