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Checking For Trouble Codes - XL 1200 Sport

Check Engine Lamp

To diagnose system problems, start by observing the behavior of the Check Engine Lamp.

When the Ignition Switch is turned ON (Key ON) after being off for 10 seconds or more, the Check Engine Lamp will illuminate for approximately four seconds and then turn off.

**NOTE**

- "Key ON" means only that the Ignition Key Switch is turned to ON and the handlebar Engine Stop Switch is in the RUN position (although the engine is NOT running).

- If the Check Engine Lamp is not illuminated at Key ON or if it fails to go OFF after the initial four second ON period, then a problem exists in the lamp circuit. See DIAGNOSTIC FLOW CHARTS in this section.

When the lamp turns off after being illuminated for the first four second period, it will remain off if there are no fault conditions or trouble codes currently detected by the ignition module.

However, if the Check Engine Lamp stays off for only 4 seconds and then comes back on for an 8 second period, then a functional error is stored (although no current trouble code exists).

If the Check Engine Lamp remains on beyond the 8 second period, then a current trouble code exists.

**NOTE**

Trouble codes relating to the ignition coil can only be fully diagnosed during actuation. For example, a problem with an ignition coil will be considered a current fault even after the problem is corrected, since the ignition module will not know of its resolution until after the coil is exercised by a vehicle start sequence. In this manner, there may sometimes be a false indication of a current trouble code.

If a particular problem happens to resolve itself, the active status is dropped and it becomes a "historic," rather than a "current" fault. Historic trouble codes are stored for a length of time to assist in the diagnosis of intermittent faults. The Check Engine Lamp will not indicate the existence of only historic trouble codes.

While the trouble codes are stored (whether current, historic or functional), they can be read by either the Scanalyzer or the Check Engine Lamp. All trouble codes reside in the memory of the ignition module until the code is cleared by use of the Scanalyzer or a total of 50 trips has elapsed. A "trip" consists of a start and run cycle, the run cycle lasting at least 30 seconds. After the 50 trip retention period, the trouble code is automatically erased from memory (that is, assuming no subsequent faults of the same type are detected in that period).

**IMPORTANT NOTE**

It is important to note that historic trouble codes may also be present whenever the system indicates the existence of a CURRENT fault.

Retrieving Trouble Codes

Data Link Connector

The behavior of the Check Engine Lamp as described under CHECKING FOR TROUBLE CODES indicates the existence of a fault condition. Turn the Ignition/Light Key Switch to OFF and proceed as follows:

Diagnostic Modes

The XL 1200S Ignition System provides two levels of system diagnostics.

In the more sophisticated mode, a portable Scan Tool called a "Scanalyzer" (HD-41325) plugs into the Data Link Connector and facilitates the diagnosis of system problems through a direct interface with the ignition module. Using a special programmable application cartridge, the Scanalyzer offers data displays and menu selections that allow for quick and easy retrieval of data and enables the user to perform a variety of diagnostic tests while monitoring inputs and outputs.

![Figure B-1. Scanalyzer (HD-41325)](image_url)

At the second level, the Check Engine Lamp is observed by the user after being placed in the diagnostic mode. The lamp blinks a code which correlates to a particular problem area.
Scanalyzer

1. Gently pull left side cover from frame downtubes (no tools required).
2. See Figure B-2. Note the Data Link connector (pin side of 4-place Deutsch) on the side cover.
3. Remove rubber protective plug from open end of Data Link connector.

4. Plug the Scanalyzer (HD-41325) into the Data Link Connector.

5. Turn the Ignition/Light Key Switch to IGNITION. Turn the handlebar mounted Engine Stop Switch to the RUN position (but do not start the engine).

6. Insert the diagnostic application cartridge HD-41325-95A, into the Scanalyzer. During the next few seconds, the Scanalyzer sequences through a series of screens that reflect a power-on self test, the system copyright, and then an attempt at communications with the ignition module. Once communications is established with the ignition module, the Diagnostic Menu appears. See Figure B-3.

7. The Diagnostic Menu, which consists of seven items, is the primary system menu (main menu) through which all other secondary menus and displays are accessed. Since the screen may not be large enough to display all line items at any given time, use the up and down arrow keys to scroll through the list.

8. From the Diagnostic Menu, press the number “2” to access the Trouble Codes Menu. At this point, the unit allows the operator to display current trouble codes (by pressing the number “1”), display historic codes (number “2”) or clear trouble codes (number “3”). Unlike the Check Engine Lamp Diagnostics, note that the Scanalyzer does allow the operator to clear trouble codes from memory as well as differentiate between current and historic codes.

9. After reading trouble codes, simply press the Mode key to return to the Trouble Codes Menu. Press the Mode key again to return to the Diagnostic Menu. In this manner, regardless of where the operator is in the program, the Mode key need only be pressed once or twice to return to the main menu.

   **NOTE**
   For more detailed instructions, refer to the literature provided with the Scanalyzer.

10. Write down all trouble codes on a piece of paper. If a current trouble code exists, place it at the top of the list.

11. If trouble codes are present, refer to the applicable flow chart. A Scanalyzer icon appears at those points in the flow chart where use of the Scanalyzer would be most convenient or desirable.

12. If trouble codes are NOT present, but starting or driveability problems are evident, see the Symptoms Chart under DIAGNOSTIC CHECK.

13. After correcting system problems, clear trouble codes using the Trouble Codes Menu of the Scanalyzer.

   **NOTE**
   Trouble codes cannot be cleared while the engine is running. Turn the engine off, but leave the Ignition/Light Key Switch in the IGNITION position and return the handlebar Engine Stop Switch to RUN.

14. Turn the Ignition/Light Key Switch to OFF. Turn the handlebar mounted Engine Stop Switch to the OFF position.

15. Unplug the Scanalyzer from the Data Link Connector. Install protective plug over pin side of Data Link Connector.

16. Place Data Link Connector in clip on left side cover.

17. Align barbed studs in side cover with grommets in frame downtubes and push firmly into place (no tools required).

18. Road test the vehicle and observe the Check Engine Lamp to confirm proper operation without the reoccurrence of trouble codes.

---

### Diagnostic Codes for XL 1200S

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>MAP Sensor</td>
<td>B-22</td>
</tr>
<tr>
<td>16</td>
<td>Battery Voltage</td>
<td>B-24</td>
</tr>
<tr>
<td>24</td>
<td>Front Coil</td>
<td>B-26</td>
</tr>
<tr>
<td>25</td>
<td>Rear Coil</td>
<td>B-26</td>
</tr>
<tr>
<td>35</td>
<td>Tachometer</td>
<td>B-29</td>
</tr>
<tr>
<td>41</td>
<td>Cam Sync Failure</td>
<td>B-30</td>
</tr>
<tr>
<td>44</td>
<td>Bank Angle Sensor</td>
<td>B-31</td>
</tr>
<tr>
<td>52</td>
<td>RAM/ROM Failure</td>
<td>B-33</td>
</tr>
<tr>
<td>54</td>
<td>EEPROM Failure</td>
<td>B-33</td>
</tr>
<tr>
<td>55</td>
<td>Module Failure</td>
<td>B-33</td>
</tr>
</tbody>
</table>
Figure B-3. Scanalyzer Menu Selections
Check Engine Lamp Diagnostics

NOTE

Use of the Check Engine Lamp Diagnostics assumes that the Scanalyzer (HD-41325) is not available.

1. To activate the diagnostic feature of the Check Engine Lamp, proceed as follows:
   A. Install diagnostic test wire across pins 1 and 2 on Data Link connector [91A].
   B. Turn the Ignition/Light Key Switch to IGNITION and wait approximately eight seconds for the Check Engine Lamp to start flashing.

![Figure B-4. Diagnostic Test Wire](image)

2. All trouble codes are sent out as a series of flashes.
   The transmission of a trouble code is always preceded by a series of rapid flashes (about 3 per second). This "intermission" is followed by a 2 second pause in which the lamp is off. The lamp will then flash one or more times to indicate the first digit of the trouble code. The length of time the lamp is illuminated and the length of time in which it is off are each about 1 second in duration. Simply count the number of times the lamp flashes in order to retrieve the first digit of the trouble code.

3. Following transmission of the first digit, there is another 2 second pause in which the lamp is off. The lamp will then flash one or more times to indicate the second digit of the trouble code. Count the number of times the lamp flashes to retrieve the second digit.

   Following transmission of the second digit, there is a third 2 second pause in which the lamp is off. After the pause comes the intermission, which is followed by transmission of the next recorded trouble code. All subsequent codes are sent in the same manner, each separated from the next by the intermission.

4. Write down the trouble codes on a piece of paper. Once all codes have been sent, the data string is repeated. When you have recorded the same trouble code twice, it is an indication that the transmission has been restarted and that all trouble codes have been retrieved.

NOTE

If the lamp flashes at a rate faster than normal, then you are observing the "intermission" only, which means that no trouble codes are present.

5. If trouble codes are present, refer to the applicable flow chart in the XLH Service Manual.

   If trouble codes are NOT present, but starting or driveability problems are evident, see DIAGNOSTIC CHECK for help in diagnosing system problems.

6. Turn the Ignition/Light Key Switch to OFF. Remove diagnostic test wire from Data Link Connector.

   IMPORTANT NOTE

   If Diagnostic Test Wire is installed across Pins 1 and 2 on connector [91A] in lieu of Scanalyzer, the Ignition Module is placed in a Diagnostics Mode and engine will start. The test wire must be removed from the Data Link Connector and the Ignition Switch turned to OFF or the Check Engine lamp will continue to flash codes.

7. After correcting system problems, clear trouble codes. If the Scanalyzer is not available, perform 50 start and run cycles. To execute one run cycle, start the vehicle, let it run for at least 30 seconds and then turn the engine off for a minimum of 10 seconds.

8. Road test the vehicle and observe the Check Engine Lamp to confirm proper operation without the reoccurrence of trouble codes.

B-6
Breakout Box (HD-42682) Installation

General

The breakout box splices into the main harness of the Sportster. Used in conjunction with a DVOM, it allows circuit diagnosis of the wiring harness and connections without having to probe with sharp objects.

The unit connects at the ignition module and allows the vehicle to run during testing.

The Breakout Box may be connected directly to the 1200S ignition module. On all other models, connector adapters (HD-42962) must be installed to connect the Breakout Box.

Installation


3. On all other models separate six pin connector [10], under engine on left frame tube.

4. On all except 1200S Sport, connect Harness Adapters (HD-42962) to connector [10].

5. See Figure B-5 and B-6. On 1200S models, connect the Black male connector from the Breakout Box to Ignition module connector [10B] and connector [10A] from the harness to the black female connector on the breakout box.

6. On all other models except 1200S, connect Black connectors from breakout box to Harness Adapters installed in step 4.

7. On 1200S models, connect the gray male connector from the Breakout Box to Ignition module connector [11B] and connector [11A] from the harness to the gray female connector on the breakout box.

Circuit Diagnostics may now be performed.
DIAGNOSTIC CHECK - 1200 Sport

GENERAL
The diagnostic check is an organized approach to identifying a problem caused by an electronic control system malfunction. If no problems are found after completion of the Diagnostic Check, a comparison of Scanalyzer parameters may be used to help locate intermittent and out-of-specification sensors. See TYPICAL SCAN VALUES table.

If the Scanalyzer is not working properly, check operation on another vehicle. If OK, check Data Link Connector for 12 volts and proper ground. If Scanalyzer reads “No Response” with the Ignition Switch turned to ON (Engine Stop Switch at RUN with the engine off), check serial data wire for an open or short to ground between Data Link terminal “11” and Ignition Module. Also check for an open diagnostic test terminal between Data Link terminal “3” and Ignition Module. With Ignition Switch turned to ON, Transmit Data and Receive Data line should have 5 volts.

NOTE
If Diagnostic Test Wire (see below) is installed across Pins 1 and 2 on connector [91A] in lieu of Scanalyzer, the Ignition Module is placed in a Diagnostics Mode and engine will start. The test wire must be removed from the Data Link Connector and the Ignition Switch turned to OFF or the Check Engine lamp will still flash codes.

Figure B-9. Diagnostic Test Wire

Figure B-10. Data Link Connector [91A]
DIAGNOSTIC NOTES

The reference numbers below correlate with those on the diagnostic flow chart.

1. See Retrieving Trouble Codes page B-3.
2. See Typical Scan Values Chart Below.

### SCAN VALUES

<table>
<thead>
<tr>
<th>Component</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Hot Idle</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAP Sensor</td>
<td>0.1 V</td>
<td>4.96 V</td>
<td>1.5-3 V</td>
</tr>
<tr>
<td>Spark Advance (While Running)</td>
<td>0'</td>
<td>36'</td>
<td>20'</td>
</tr>
<tr>
<td>RPM</td>
<td>0</td>
<td>5500</td>
<td>1000</td>
</tr>
<tr>
<td>Bank Angle Sensor</td>
<td>Run Mode</td>
<td>Disable</td>
<td>Run Mode</td>
</tr>
<tr>
<td>Dwell</td>
<td>0.96 mSec</td>
<td>8.1 mSec</td>
<td>1.6-2 mSec</td>
</tr>
</tbody>
</table>

3. Wiggle Test. Shake or wiggle harness with DVOM or Scanalyzer connected. Radical voltage changes on the DVOM will indicate the presence of intermittents, while the Scanalyzer (in Wiggle Test Mode) will beep, light the four corner LEDs and display a minus sign when a current trouble code is detected. (If a current trouble code is present when the wiggle test is entered, the Scanalyzer will respond as described immediately upon entering the wiggle test mode. With Key On and engine off, clear trouble codes and then perform wiggle test with vehicle running.)

4. See Symptoms Chart Below.

### SYMPTOMS (Cont'd)

<table>
<thead>
<tr>
<th>HESITATES, STUMBLES, SURGES, MISFIRES AND/OR SLUGGISH PERFORMANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manifold Leak. Spray Water Around Intake manifold Seals While Idling Engine. If RPM Changes, Replace Seals.</td>
</tr>
<tr>
<td>MAP Sensor or Hose Plugged or Not Operating Properly. See TROUBLE CODE 12.</td>
</tr>
<tr>
<td>Water or Dirt in Fuel System. Drain and Refill With Fresh Fuel.</td>
</tr>
<tr>
<td>Spark Plugs. See CHART C.</td>
</tr>
<tr>
<td>EVAP Hose Disconnected From Carburetor (Calif. Models) Connect.</td>
</tr>
</tbody>
</table>

### ENGINE EXHAUST EMITS BLACK SMOKE OR FOULS PLUGS

<table>
<thead>
<tr>
<th>Clogged Air Filter. See Air Cleaner.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAP Sensor or Hose Plugged or Not Operating Properly. See TROUBLE CODE 12.</td>
</tr>
</tbody>
</table>

5. Use Harness Connector Test Kit (HD-41404), black socket probes and patch cord.

### Diagnostic Codes for XL 1200S

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Ref. Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>MAP Sensor</td>
<td>B-22</td>
</tr>
<tr>
<td>16</td>
<td>Battery Voltage</td>
<td>B-24</td>
</tr>
<tr>
<td>24</td>
<td>Front Coil</td>
<td>B-26</td>
</tr>
<tr>
<td>25</td>
<td>Rear Coil</td>
<td>B-26</td>
</tr>
<tr>
<td>35</td>
<td>Tachometer</td>
<td>B-29</td>
</tr>
<tr>
<td>41</td>
<td>Cam Sync Failure</td>
<td>B-30</td>
</tr>
<tr>
<td>44</td>
<td>Bank Angle Sensor</td>
<td>B-31</td>
</tr>
<tr>
<td>52</td>
<td>RAM/ROM Failure</td>
<td>B-33</td>
</tr>
<tr>
<td>54</td>
<td>EEPROM Failure</td>
<td>B-33</td>
</tr>
<tr>
<td>55</td>
<td>Module Failure</td>
<td>B-33</td>
</tr>
</tbody>
</table>
CHART A-1, CHECK ENGINE LAMP NOT ILLUMINATED at KEY ON

GENERAL
When the Ignition Switch is turned to ON (Engine Stop Switch at RUN with the engine off), the Check Engine Lamp should illuminate for 4 seconds. Battery voltage is supplied to the lamp bulb. The lamp bulb is grounded by the Ignition Module through the BK/Y wire. A lack of power to the Ignition Module will cause the Check Engine Lamp to be inoperative and also create a no start situation.

DIAGNOSTIC TIPS
• Check for open in BK/Y wire.
• Check for blown Accessory fuse.

DIAGNOSTIC NOTES
The reference numbers correlate with those on the diagnostic flow chart.

1. Use Harness Connector Test Kit (HD-41404), black pin probe and patch cord.
2. Inspect Connector [10] (BK) for contamination or corrosion. If connection is good, Ignition Module requires replacement, see Ignition Module, Removal/Installation, in the 1998 XLH Service Manual.
3. Use special pick (Snap-On Tool TT600-3) as described under Amp Multilock Electrical Connectors in Section 7 of this Service Manual.
4. Use Harness Connector Test Kit (HD-41404), gray socket probe and patch cord.
5. Check continuity. If continuity present, then most likely short to voltage; if no continuity, then open.
6. LED failure requires tachometer replacement.

Check Engine Lamp Circuit Diagram
Chart A-1, No Check Engine Lamp at Key On

1. Turn Ignition Switch ON, Turn Engine Stop Switch to RUN, Does the Engine Start?
   - Yes
   - No
   - Turn Ignition Switch OFF.
   - Disconnect Ignition Module Connector [10B] (BK) and Connect Breakout Box.
   - Turn Ignition Switch ON.
   - Jumper Breakout Box (BK) Pin 4 to Ground.
   - Check Engine Lamp Should be ON, Is it?
     - Yes
     - No
     - Replace Faulty Ignition Module.

2. Did No Check Engine Lamp and No Start Conditions Occur Simultaneously?
   - Yes
   - No
   - Refer to CHART A-3 for No Start Condition and then Return to CHART A-1 to Resolve No Check Engine Lamp.

3. Disconnect Connector [20].
   - Remove BK/Y Wire from Connector [20B] and ground it, Reconnect Connector [20B].
   - Check Engine Lamp ON?
     - Yes
     - No

4. Repair Open or Short to Voltage on BK/Y Wire Between Connector [20A] and Connector [10B].

5. Is there an Open on O/W Wire that Feeds Bulb or Open on Wire From Bulb to Connector [20B]?
   - Yes
   - No
   - Repair.

6. Replace Faulty Tachometer. (Lamp not replaceable)

Figure B-11. 1200S Ignition Module

Figure B-12. Breakout Box (HD-42682)

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>[20] Main Harness to Instruments</td>
<td>14 - Place Multilock</td>
<td>Under Headlamp bracket</td>
<td></td>
</tr>
<tr>
<td>[10] Ignition Module</td>
<td>12 - Place Deutsch (BK)</td>
<td>Under seat</td>
<td></td>
</tr>
</tbody>
</table>
The Check Engine Lamp should illuminate for 4 seconds when the Ignition Switch is turned to ON (with the Engine Stop Switch at RUN and the engine off). Following the initial period of illumination, the lamp should go off for 4 seconds. It may then come back on for an 8 second period (for a stored functional error) or remain on continuously (current error).

Battery voltage is supplied to the lamp bulb. The lamp bulb is grounded by the Ignition Module through the BK/Y wire. A steady light may indicate a short to ground on the BK/Y wire.

**DIAGNOSTIC NOTES**

The reference numbers below correlate with those on the diagnostic flow chart.

1. If the lamp goes off when Ignition Module connector is unplugged, BK/Y wire is not shorted to ground.

2. See Retrieving Trouble Codes.


4. Use special pick (Snap-On Tool TT600-3) as described under Amp Multilock Electrical Connectors in Section 7 of the 1998 XLH Service Manual.

---

**Check Engine Lamp Circuit Diagram**
Chart A-2, Check Engine Lamp On Continuously

1. Ignition Switch OFF. Disconnect Ignition Module Connector [10][BK]. Ignition Switch ON. Check Engine Lamp Should be OFF. Is it?

   YES
   
   With Ignition Switch OFF, Reconnect Ignition Module. With Ignition Switch ON, Verify That There is NOT a 4 Second Lamp OFF Period. Is There a Lamp OFF Period?

   YES
   
   Check Engine Lamp Function OK. Check for Trouble Codes.

   2

   NO
   
   Replace Ignition Module.

   3  7150

   NO

   Disconnect Connector [20]. Remove BK/Y Wire from Connector [20B]. Reconnect [20B]. Check Engine Lamp ON?

   YES

   Repair Short to Ground on BK/Y Wire Between Connector [20B] and Lamp in Speedometer.

   7160  7155

   NO

   Repair Short to Ground on BK/Y Wire Between Connector [20A] and Connector [10][BK].

Wire Harness Connectors

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>[20]</td>
<td>Main Harness to Instruments</td>
<td>12 - Place Multilock</td>
<td>Under Headlamp Bracket</td>
</tr>
<tr>
<td>[10]</td>
<td>Ignition Module</td>
<td>12 - Place Deutsch</td>
<td>Under Seat</td>
</tr>
</tbody>
</table>
CHART A-3, ENGINE CRANKS BUT WILL NOT START

GENERAL

NOTE
If starter will not crank engine, the problem is not ignition related. Refer to Section 5 of this Service Manual, Electric Starter.

NOTE
Engine can be started with Diagnostics Test wire installed or if Receive Data Line is grounded. Ignition/Light Key Switch must be turned to OFF after test wire is removed or check engine lamp will continue to flash stored codes.

DIAGNOSTIC NOTES
The reference numbers below correlate with those on the diagnostic flow chart.

1. See Retrieving Trouble Codes, page B-3.
2. Check the condition of the battery. Perform a voltage test and recharge if below 12.80. Check battery connections and perform load test. Replace the battery if necessary. See Section 7 of the 1998 XLH Service Manual for detailed information.

---

Ignition Circuit Diagram
Chart A-3, Engine Cranks But Will Not Start (1 of 3)

1. Check for Trouble Codes, Codes Found?
   - YES
     - Refer to Applicable Trouble Code Chart. Start With Lowest Code.
   - NO
     - Check Battery Connections, Check Voltage. Is Voltage Above 12.80?
       - YES
         - Does Battery Pass Load Test?
           - YES
             - Check Spark Plug Condition, Replace, If Fouled. Check Spark at Both Plugs While Cranking. Spark Present?
               - YES
                 - Check compression. See Troubleshooting in Section 3 of the service manual. If Compression is good, Check fuel system.
               - NO
                 - Turn Ignition ON and Engine Stop Switch to RUN, Check Engine Lamp Should Illuminate for 4 seconds. Does it?
                   - YES
                     - Check for Battery Voltage at Terminal B of Coil Connector (83B) using DVOM. Battery Voltage Present?
                       - YES
                         - To CHART A-3, 2 of 3.
                       - NO
                         - Open in W/BK. Wire to coil, Repair Open.
                   - NO
                     - See Chart A-4

2. Check Battery Connections, Check Voltage. Is Voltage Above 12.80?
   - NO
     - Recharge Battery.

3. Check Spark Plug Condition, Replace, If Fouled. Check Spark at Both Plugs While Cranking. Spark Present?
   - NO
     - Replace Battery.

4. Turn Ignition ON and Engine Stop Switch to RUN, Check Engine Lamp Should Illuminate for 4 seconds. Does it?
   - NO
     - See Chart A-4


Use Harness Connector test Kit (HD-41404) gray pin probes and patch cords.
Chart A-3, Engine Cranks But Will Not Start (2 of 3)

1. Use Test lamp as shown in Figure B-16.

2. Connect Breakout Box (HD-42682) between harness and Ignition Module. See Breakout Box Installation, page B-7.

3. Use Harness Connector Test Kit (HD-41404), gray pin probe and patch cord.

---

Wire Harness Connectors

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>CMP Sensor</td>
<td>3 - Place Deutsch</td>
<td>Bottom Frame Cross Member (Right Side)</td>
</tr>
<tr>
<td>10</td>
<td>Ignition Module</td>
<td>12 - Place Deutsch (BK)</td>
<td>Under Seat</td>
</tr>
<tr>
<td>11</td>
<td>Ignition Module</td>
<td>12 - Place Deutsch (GY)</td>
<td>Under Seat</td>
</tr>
<tr>
<td>83</td>
<td>Ignition Coil</td>
<td>3 - Place Packard</td>
<td>Below Fuel Tank</td>
</tr>
</tbody>
</table>

---

Figure B-15. Breakout Box (HD-42682)

---

Figure B-16. XL1200S Ignition Coil Test
Chart A-3, Engine Cranks But Will Not Start (3 of 3)

1. Use Harness Connector Test Kit (HD-41404), black pin probe and patch cord.

From CHART A-3, 2 of 3.

**YES**

**DISCONNECT Cam Position**
Sensor Connector [14].
With Ignition On, Measure
Voltage Between Terminal
A and Terminal C of Con-
nect [14B].
Is 5VDC Present?

**YES**

Reconnect CMP Sensor
Connector [14]. Measure
Voltage Between Pin 3 and
Pin 8 of Breakout Box (GY).
Voltage Should Alternate
Between 0 and 5 VDC
While Cranking. Does It?

**YES**

Problem May Be Intermittent.
Verify that Connectors [10],
Remove Breakout Box and Try to
Start Vehicle. Will Vehicle Start?

**YES**

With Engine Running,
Wiggle CMP
Sensor and Wires
To Identify Any
Loose Con-
nections (Engine
Mistakes or Stalls). Any
Found?

**YES**

Crankshaft and Camshaft
May be Out of Phase.
Check for Proper Cam Tim-
ing, Pinion Gear Key Fail-
ure, Loose Rotor Cup or
Other Mechanical Failure.

**YES**

Repair
Open Connection.

**YES**

Remove Cam Timer
Cover Using 1/8 Inch
Drill Bit. Crank
Starter. Does Rotor
Cup Rotate?

**YES**

Replace Cam
Position Sensor.

**NO**

Replace Cam
Position Sensor.

**NO**

Repair Ignition
Module.

**NO**

Repair.

**NO**

Repair.

**NO**

Check Continuity
Between Terminal A,
Connector [14B] and
Ground. Continuity Present?

**YES**

Repair.

**NO**

Repair Ignition
Module.
The Ignition Module turns on when power is applied to Pin 1 of [10], the black connector. The Ignition Module goes through an initialization sequence every time power is removed and re-applied to Pin 1. The only visible part of this sequence is the Check Engine Lamp. Upon starting, the Check Engine Lamp will illuminate for 4 seconds and then (if parameters are normal) go out.

**DIAGNOSTIC NOTES**

The reference numbers which follow correlate with those on the diagnostic flow chart.

2. Use Harness Connector Test Kit (HD-41404), black pin probe and patch cord.

---

**Ignition Module Power Circuit Diagram**

---

**Wire Harness Connectors**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>[10]</td>
<td>Ignition Module</td>
<td>12 - Place Deutsch (BK)</td>
<td>Under Seat</td>
</tr>
<tr>
<td>[22]</td>
<td>RT Handlebar Switch</td>
<td>6 - Place Deutsch (BK)</td>
<td>In Headlight</td>
</tr>
</tbody>
</table>
Chart A-4, No Spark, No Check Engine Lamp at Key On

NOTE
With one exception (noted in flow chart), always turn Key ON prior to probing terminals with test lamp.

1. Check Ignition Fuse. Is Fuse OK?
   - NO: Replace - Find Source of Fault. 7270
   - YES: Disconnect Connector [10](BK) and Connect Breakout Box. With ignition ON, Multimeter Red Wire to Pin 1 terminal on [10]. Multimeter Black wire to Pin 2 on [10B]. Is Voltage 12V± 1.0V?
     - YES: Replace Ignition Module. 7305
     - NO: Check continuity between Breakout Box Pin 2 connector [10] (BK) and ground. Continuity present?
       - NO: Repair Open in BK wire (Pin 2) to ground. 7310
       - YES: Check Continuity between Breakout Box Pin 1 (W/BK) Connector [10] (BK) and Right Handlebar Connector [22B] Pin 4 (W/BK). Continuity Present?
           - NO: Repair Open in GY Wire Between [22A] and Fuse Block 7290
           - YES: Repair Open in W/BK Wire. 7285
         - YES: Replace Engine Stop Switch. 7285
   - NO: Repair Open in W/BK Wire. 7285
# CHART C, MISFIRE

## GENERAL

Battery condition and connections may also cause misfires. See Battery in Section 7 of the 1998 XLH Service Manual for more information.

### DIAGNOSTIC NOTES

The reference numbers below correlate with those on the diagnostic flow chart.

### WARNING

Any open spark around gasoline or other combustibles may result in fire or explosion causing personal injury and/or property damage. Thoroughly wipe up any spilt fuel and dispose of rags in a suitable manner.

A Spark Tester (HD-26792) must be used to verify adequate available secondary voltage at the spark plug (25,000 volts). Remove spark plug cable from spark plug. Visually check condition of plug. Attach cable to Spark Tester (HD-26792). Clip tester to cylinder head bolt. While cranking engine, look for spark. Repeat procedure on other spark plug cable.

### SPARK PLUG CABLE RESISTANCE TEST:

Remove spark plug cable from spark plug and ignition coil. Using an ohmmeter, touch probes to terminals on each end of plug wire. Resistance must be within values shown in Table below. Reinstall and repeat on other cable. For best results, use a needle nose pliers for removal and installation on coil. Gently grasp cable as close to terminals as possible.

If carbon tracking is evident, replace the ignition coil and be sure spark plug wire to that coil is clean and tight. Excessive wire resistance or faulty connections can cause coil damage. See Ignition Coil, Removal/Installation in the 1998 XLH Service Manual.

See Ignition Coil, Removal/Installation. This test can also be performed by substituting a known good coil for the one causing the no spark condition. The coil does not require full installation to be functional. Verify faulty coil by performing resistance test (see Troubleshooting).

Use Harness Connector Test Kit (HD-41404), GY pin probe and patch cord to the coil connector [83B].

Inspect for corrosion at battery terminals, main circuit breakers, ignition fuse terminals (GY and R/BK), right handlebar connector [22] and coil connector.

### NOTE

Fuel system problems may also cause misfires. Refer to SYMPTOMS chart.

### Spark Plug Cables Length / Resistance

<table>
<thead>
<tr>
<th>No.</th>
<th>Position</th>
<th>Length In. (mm)</th>
<th>Resistance (ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Front Left</td>
<td>20.2 (512)</td>
<td>5039-11758</td>
</tr>
<tr>
<td>2</td>
<td>Rear Center</td>
<td>18.7 (474)</td>
<td>4665-10886</td>
</tr>
<tr>
<td>3</td>
<td>Rear Left</td>
<td>23.1 (588)</td>
<td>5787-13504</td>
</tr>
<tr>
<td>4</td>
<td>Front Center</td>
<td>19.5 (496)</td>
<td>4882-11392</td>
</tr>
</tbody>
</table>

---

Figure B-17. Spark Tester (HD-26792)
Chart C, Misfire At Idle Or Under Load (2 of 2)

From CHART C-2, 1 of 2.

5

Disconnect Negative Battery Cable. Measure Resistance Between Battery Positive and Coil Connector [83B] Terminal B (W/BK), Wiggle Harness. Resistance Should Be Less Than 1.0 Ohm Continuously. Is It?

NO

YES

Replace Cam Sensor with known good Cam Sensor. Static time engine and retest. Problem still exist?

7540

NO

Find Source of Intermittent and Repair.

YES

Replace Ignition Module.

7541

Wire Harness Connectors

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Ignition Module</td>
<td>12 - Place Deutsch (BK)</td>
<td>Under Seat</td>
</tr>
<tr>
<td>22</td>
<td>RT Handlebar Switch</td>
<td>6 - Place Deutsch (BK)</td>
<td>In Headlight</td>
</tr>
<tr>
<td>83</td>
<td>Coil</td>
<td>3 - Place Packard</td>
<td>Undr Fuel Tank</td>
</tr>
</tbody>
</table>

Ignition Coil Circuit Diagram

[10B][ 10A] BK

[22B][22A]

15 Amp Ignition Fuse

R/BK To Ignition Switch

Ignition Module Connector

Key ON Power

Front Coil

Rear Coil

B-21
TROUBLE CODE 12, MAP SENSOR

The Manifold Absolute Pressure Sensor (MAP Sensor) is supplied 5 volts from the Ignition Module and sends a signal back to the Ignition Module which varies in accordance with engine vacuum and atmospheric barometric pressure. Changes in barometric pressure are influenced by weather and altitude.

Figure B-18. MAP Sensor

DIAGNOSTIC TIPS

- Code 12 will set if the MAP Sensor signal is out of range or fluctuates faster than normal operation.
- With the MAP Sensor disconnected, the Ignition Module and Scanalyzer should recognize a low voltage. If low voltage is observed, the Ignition Module and harness are not at fault.
- Gently place a jumper wire across MAP Sensor connector [80B] terminals 1 and 2 using Harness Connector Test Kit (HD-41404), purple male probes and patch cord. With the MAP Sensor connector jumper in place, the Ignition Module and Scanalyzer should recognize a high voltage. MAP Sensor Output Check. Using the vacuum pump (HD-23738A), apply a vacuum to the pressure port of the MAP Sensor. The signal voltage should lower as the vacuum is applied.

DIAGNOSTIC NOTES

The reference numbers below correlate with those on the diagnostic flow chart.

1. Connect Breakout Box (HD-42682) between wire harness and Ignition Module. See Breakout Box Installation page B-7.

   NOTE

   Engine must be running for scanalyzer to work properly.

2. Shake or wiggle harness with DVOM or Scanalyzer connected. Radical voltage changes on the DVOM will indicate the presence of intermittents, while the Scanalyzer (in Wiggle Test Mode) will beep, light the four corner LEDs and display a minus sign when a current trouble code is detected. (If a current trouble code is present when the wiggle test is entered, the Scanalyzer will respond as described immediately upon entering the wiggle test mode. With Key On and engine off, clear trouble codes and then perform wiggle test with vehicle running.)

MAP Sensor Circuit Diagram
Code 12, MAP Sensor

NOTE
The Scanalyzer icon appears at those points in the flow chart where the Scanalyzer may be used.

1. Connect Breakout Box. With the Ignition ON, Measure the Voltage Between Pin 2 on Breakout Box and Pin 8. Is the Voltage Between 4.2 and 4.95 VDC?
   YES
   NO

2. With DVOM or Scanalyzer (Wiggle Test Mode) Still Connected, Check for Intermittents by Performing "Wiggle" Test. Radical Voltage Changes or Trouble Code Set While Wiggling Harness Will Indicate the Presence of Intermittents. Intermittent Present?
   YES
   NO

3. To Identify the Source of Intermittents, Start at Box Marked by Bold Asterisk on Right Side of Flow Chart and Wiggle Harness While Monitoring DVOM.
   7620

4. Replace MAP Sensor. Clear Codes if Scanalyzer is Available and Road Test. Did Check Engine Lamp Come On and Set CODE 12?
   YES
   NO

5. Install Original MAP Sensor, Replace Ignition Module and Road Test Again to Verify.
   7625

6. System Now OK.
   7630

7. Connect Breakout Box. Disconnect Ignition Module from Breakout Box. OPEN CHECK: Measure Resistance Between MAP Connector (80B) Terminal 2 and Breakout Box Connector (11)(GY) Pin 2. Is Resistance Less Than 1 Ohm?
   YES
   NO

8. SHORT (to Ground) CHECK: Measure Resistance Between MAP Connector Terminal 1 and Chassis Ground. Is Resistance Greater Than 1 Megohm?
   YES
   NO

   7650

10. Locate and Repair Grounded V/W Wire.
    7655

* At some point in the flow chart you may be instructed to jump directly to the box marked by an asterisk. Disregard the asterisk (but not the instruction box) if your normal progression through the chart brings you to this location.

Wire Harness Connectors

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>[80]</td>
<td>MAP Sensor</td>
<td>3 - Place Amp</td>
<td>Under Fuel Tank</td>
</tr>
<tr>
<td>[10]</td>
<td>Ign. Module</td>
<td>12 - Place Deutsch (BK)</td>
<td>Under Seat</td>
</tr>
</tbody>
</table>


Use Harness Connector Test Kit (HD-41404), purple pin probes and patch cords.

Clear Codes and Confirm Proper Operation with No Check Engine Lamp.
TROUBLE CODE 16, BATTERY VOLTAGE

A Code 16 is set if the Ignition Module sees battery positive voltage less than 8 or greater than 16 volts. Low voltage generally indicates loose wire and/or corroded connections or a charging system problem. A high voltage condition may be caused by a faulty voltage regulator.

DIAGNOSTIC NOTES

The reference numbers below correlate with those on the diagnostic flow chart.


2. Connect Breakout Box (HD-42682) between wire harness and Ignition Module. See Breakout Box Installation, page B-7.

3. The Ignition Module is monitoring voltage at Ignition Module connector [10][BK] Pin1.

4. This checks for voltage drops in the Ignition Module power circuit.

5. Perform Wiggle Test. Shake or wiggle harness with DVOM or Scanalyzer connected. Radical voltage changes on the DVOM will indicate the presence of intermittents, while the Scanalyzer (in Wiggle Test Mode) will beep, light the four corner LEDs and display a minus sign when a current trouble code is detected. (If a current trouble code is present when the wiggle test is entered, the Scanalyzer will respond as described immediately upon entering the wiggle test mode. With Key On and engine off, clear trouble codes and then perform wiggle test with vehicle running.)


Battery Voltage Circuit Diagram
NOTE
The Scanalyzer icon appears at those points in the flow chart where the Scanalyzer may be used.

1. Perform Charging System Tests. Charging System OK?
   - YES
   - NO
     - Repair Charging System.

2. System OK.
   - YES
     - With Ignition On, Measure Voltage Drop Between Battery Positive Terminal and Breakout Box connector [10](BK) Pin 1, Is Voltage Drop Greater than 0.5 Volt?
   - NO
     - With Ignition On, Measure Voltage Drop Between Battery Positive Terminal (+) and R/BK Terminal on 15 Amp Ignition Module Fuse (-). Is Voltage Drop Greater than 0.5 Volt?
       - NO
         - Replace Fuse or Fuse Terminals.
       - YES
         - Replace W/BK Wire or Terminals.

3. With Ignition On, Measure Voltage Drop Between Battery Positive Terminal (+) and Connector [22A], Pin 4, Is Voltage Drop Greater than 0.5 Volt?
   - YES
     - Check for Voltage Drop between Battery Negative Terminal (-) and Breakout Box connector [10](BK) Pin 2 (+). Is Voltage Drop Greater than 0.5 VDC?
       - NO
         - Locate and Repair Bad Connection.
       - YES
         - Problem is Intermittent. Perform Wiggie Test.

4. With Ignition On, Measure Voltage Drop Between Battery Positive Terminal (+) and Silver Post on Main Circuit Breaker (-), Is Voltage Drop Greater than 0.5 Volt?
   - NO
     - With Ignition On, Measure Voltage Drop Between Battery Positive Terminal (+) and Copper Post on Main Circuit Breaker (-), Is Voltage Drop Greater than 0.5 Volt?
       - NO
         - Replace Ignition Switch or Terminals.
       - YES
         - Inspect [22] for Corrosion or loose wires. If not present replace Right hand Run/Start Switches.

5. With Ignition On, Measure Voltage Drop Between Battery Positive Terminal (+) and GY Terminal on 15 Amp Fuse (-), Is Voltage Drop Greater than 0.5 Volt?
   - Yes
     - Replace GY Wire or Terminals.
   - NO
     - Replace Circuit Breaker.

Clear Codes and Confirm Proper Operation with No Check Engine Lamp.
TROUBLE CODE 24 and 25, IGNITION COIL

Code 24 = Front Coil  Code 25 = Rear Coil

A Code 24 or 25 will set if the ignition coil voltage is out of range. This could occur if there is an open coil or loss of power to the coil. The coil receives power from the Run/Stop Switch.

The Ignition Module is responsible for turning the coils on by providing the ground to activate the coils, which in turn powers the coils. If both codes are set, it is likely a coil power failure or a coil failure.

Ignition Coil Circuit Diagram
Diagnostic Notes

The reference numbers below correlate with those on the diagnostic flow chart.

1. Use Test Lamp as shown in Figure B-19.
3. Use Harness Connector Test Kit (HD-41404), gray pin probe and patch cord.
4. Connect Breakout Box (HD-42682) between wire harness and Ignition Module. See Breakout Box Installation.
5. Shake or wiggle harness with DVOM or Scanalyzer (Engine running) connected. Radical voltage changes on the DVOM will indicate the presence of intermittents, while the Scanalyzer (in Wiggle Test Mode) will beep, light the four corner LEDs and display a minus sign when a current trouble code is detected. (If a current trouble code is present when the wiggle test is entered, the Scanalyzer will respond as described immediately upon entering the wiggle test mode. With Key On and engine off, clear trouble codes and then perform wiggle test with vehicle running.)


Scanalyzer Notes

The Scanalyzer Icon appears at those points in the flow chart where the Scanalyzer may be used. If a number is printed next to the icon, then refer to the Scanalyzer Notes which follow.

With the engine off, Scanalyzer (Active Diagnostic Test Mode) can be used to energize either the front or rear coil once each second for a total of 5 seconds.

Wire Harness Connectors

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>[83]</td>
<td>Ignition Coil</td>
<td>3-Pin Amp</td>
<td>Below Fuel Tank</td>
</tr>
<tr>
<td>[22]</td>
<td>Rt. Handlebar Switch</td>
<td>6-Pin Deutsch (BK)</td>
<td>Inside Headlamp Housing</td>
</tr>
</tbody>
</table>

Using Breakout Box, measure Resistance Between Ignition Module and Coil Terminals as follows:

- **Trouble Code**
- **Coil Terminal**
- **Breakout Box (BK)**

<table>
<thead>
<tr>
<th>Trouble Code</th>
<th>Coil Terminal</th>
<th>Breakout Box (BK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>A (BE/O)</td>
<td>Pin 6</td>
</tr>
<tr>
<td>25</td>
<td>C (Y/BE)</td>
<td>Pin 7</td>
</tr>
</tbody>
</table>

Resistance Should be Less Than 0.5 Ohms. Is It?

- **YES**
- **NO**

7875

Figure B-19. Ignition Coil Test Lamp

Clear Codes and Confirm Proper Operation with No Check Engine Lamp.
GENERAL

The ignition coil is a pulse type transformer that transforms or steps up low battery voltage to the high voltage necessary to jump the electrode at the spark plug in the cylinder head. Internally the coil consists of primary and secondary windings with a laminated iron core and sealed in waterproof insulating compound. The ignition coil cannot be taken apart or repaired. If the ignition coil is faulty it must be replaced.

Troubleshooting

When the engine will not start or when hard starting or missing indicates a faulty ignition system, see CHART C in this section. If the condition persists, check primary and secondary resistance of ignition coil with an ohmmeter. See Wiring Diagram below.

 Resistances should be within the following limits: primary resistance 0.4-0.6 ohms, secondary resistance 11.7-12.7K ohms. Check ignition coil with a coil tester.

If a coil tester is not available, temporarily substitute a new ignition coil by attaching it at any convenient point near the old coil (coil will function without being secured). Transfer terminal wires to new coil.

Attach new spark plug cables to coil and plugs. If ignition trouble is eliminated by the temporary installation of new coil, carefully inspect old coil for damaged cables and insulation. The insulation on cables may be cracked or otherwise damaged allowing high tension current to short to metal parts. This is most noticeable in wet weather or after motorcycle has been washed.

Figure B-20. Ignition Coil Wiring Diagram
TROUBLE CODE 35, TACHOMETER

Code 35 will set if the PK wire is shorted to power or ground.

DIAGNOSTIC NOTES
The reference numbers which follow correlate with those on the diagnostic flow chart.

1. See page B-7. Install Breakout Box HD-42682
2. Shake or wiggle harness with DVM or Scanalyzer (Engine running) connected. Radical voltage changes on the DVM will indicate the presence of intermittent, while the Scanalyzer (in Wiggle Test Mode) will beep, light the four corner LEDs and display a minus sign when a current trouble code is detected. (If a current trouble code is present when the wiggle test is entered, the Scanalyzer will respond as described immediately upon entering the wiggle test mode. With Key On and engine off, clear trouble codes and then perform wiggle test with vehicle running).

Wire Harness Connectors

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>[10]</td>
<td>Ignition Module</td>
<td>12 - Place Deutsch (BK)</td>
<td>Below Fuel Tank</td>
</tr>
<tr>
<td>[20]</td>
<td>Instruments</td>
<td>14 - Place Multitool</td>
<td>Under Headlamp Bracket</td>
</tr>
</tbody>
</table>

Tachometer Circuit Diagram
TROUBLE CODE 41, CAM SYNC FAILURE

GENERAL

This code occurs only when the engine is running if the ignition module either does not receive a signal from the timing plate or receives an unexpected signal. The motorcycle may continue to run, run poorly, or stop running altogether.

1. Install Breakout Box HD-42682
2. Perform Wiggle Test (Engine Running).
3. Refer to appropriate section of Service Manual and job time code for operation.

Install Breakout Box. Disconnect Connector [14].

Ignition ON.
Connect Voltmeter across Terminal A, R/W, and Terminal C BK/W wires of connector [14B].
Is voltage 5 ± 0.25 VDC?

YES

Reconnect the Cam Position Sensor, connector [14]. Using Breakout Box (GY) Measure voltage between Pin 3 and Pin 8 while cranking the engine. Is voltage 2-3 VDC?

NO

NO

YES

Check for continuity on GN/W wire or short in BK/W, W/BK or R/W. Repair intermittent.

Intermittent Open in GN/W wire or short in BK/W, W/BK or R/W. Repair intermittent.

Using Breakout Box (GY) Measure the voltage between Pin 1 and Pin 8. Is voltage 5 ± 0.25 VDC?

YES

Disconnect [11] (GY) from Breakout Box. Measure voltage between Pin 1 and Pin 8 of Ignition Module [11A]. Is 5VDC present?

NO

Repair Open in R/W wire or BK/W between connectors [11] and [14].

7950

7950

7945

7965

7970

7955

7940

Replace Cam Position Sensor Plate and Clear Code. Retest. Problem still exist?

YES

 Replace Ignition Module.

NO

Replace Rotor and Retest.

Replace Rotor and Retest.

NO

Replace Ignition Module.

YES

Repair

Repair

Repair

Replace Ignition Module.

Replace Ignition Module.

Replace Ignition Module.

Replace Ignition Module.

Replace Ignition Module.

Replace Ignition Module.
TROUBLE CODE 44, Bank Angle Sensor

GENERAL

This code occurs when the Bank Angle Sensor voltage is outside of the normal operating range. This may be caused by a short to ground, or voltage in the harness between the ignition module and the Bank Angle Sensor, or a failed Bank Angle Sensor. If this code occurs, the engine may stop running. The engine may still be restarted and ridden to the dealership for repair.

Is Bank angle sensor connected?

[Diagram of Bank Angle Sensor Circuit]

Disconnect connector [134].
Measure voltage on [134B] between Socket A, (LT GN/GY) and Socket B, (BK)

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0-3.5 VDC</td>
<td>No continuity present</td>
</tr>
<tr>
<td>11-13 VDC</td>
<td>Repair Short to Voltage on LT GN/GY wire.</td>
</tr>
<tr>
<td>0 V</td>
<td>Next Page</td>
</tr>
</tbody>
</table>

Repair open in LT GN/GY wire.

Check continuity to ground on BK wire, socket B, connector [134B].
Is continuity present?

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check continuity to ground on LT GN/GY wire, socket A, and connector [134B].</td>
</tr>
</tbody>
</table>

Is continuity present?

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repair open ground wire.</td>
</tr>
</tbody>
</table>

Replace Ignition Module and Recheck for Codes

See page B-7. Install Breakout Box HD-42682

Wire Harness Connectors

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>[14]</td>
<td>Cam Position Sensor</td>
<td>6 - Place Deutsch (BK)</td>
<td>Under Crankcase</td>
</tr>
</tbody>
</table>
Code 44, Bank Angle Sensor

3.0-3.5 VDC

Measure Voltage Between Socket C, GY, and Socket B, BK. Is Voltage 11-13 VDC?

YES

Is Bank Angle Sensor Correctly Installed?

NO

Repair Open in GY wire Between [134] and Harness

7972

YES

NO

Are Ferrous Metals Located Within 1/4" of Sides, Face, or Top of Bank Angle Sensor?

YES

NO

Install Properly

Return to Original Configuration.

Replace Bank Angle Sensor.

7976
TROUBLE CODES 52, 54 and 55, IGNITION MODULE FAILURE

GENERAL

All of the following codes indicate an internal failure which requires replacement of the Ignition Module.

- Code 52 - RAM/ROM Failure
- Code 54 - EE PROM Failure
- Code 55 - Module Microprocessor Malfunction
