

## ENGINE PROTECTION SYSTEM '05

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# TROUBLE SHOOTING GUIDE

## Diagnostic and Test Information



### CAUTION

**DURING INSTALLATION OR REPLACEMENT OF MODULE, IGNITION MUST BE OFF AND KEY REMOVED.**

**ENGINE WILL NOT START OR RUNS ONLY 10 SECONDS THEN SHUTDOWN, OR WILL NOT SHUTDOWN.**

Disconnect the EPS 05 connector from the ECM J-212 (Shutdown connector) near the vehicle ECM (Reference Isuzu Service Manual) for location. Start the engine, if the engine starts, then follow all the steps below to diagnose and repair appropriately. If the engine doesn't start, or doesn't run more than 10 seconds, refer to the Isuzu Service Manual.

**NOTE: For connector pin location and identification see diagrams on pages 6 and 7.**

- **Make sure all connectors are fully mated between;**
- The EPS 05 Module and mating EPS 05 harness connector located near the original Transmission Control Module (TCM) bracket under the left side of the dash panel.
- The engine protection interconnection harness and the power feed connector harness (B-67) located at the bottom left of the steering column. See diagram on page 7.
- The start reset relay connector located approximately 4" from the module connector near the fuse on the PES cab harness.
- The EPS 05 cab harness and chassis harness connectors located near the floor and the left kick panel.
- The EPS 05 harness connector and the engine shutdown switch connector (J-212) located near the rear of the ECM and the left frame rail.

### **Features of the J-212 Engine shutdown connector:**

**Pin A:** Supplying ground to the EPS 05 module.

**Pin B:** EPS 05 module sends a ground signal to the shutdown connector J-212, Pin A. Then the vehicle ECM, derates and shuts down the engine with 8 seconds.

Refer to Isuzu Service Manual Section 8-52

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- Disconnect the EPS 05 harness connector from the original Engine Shutdown Switch connector (J212) (Two way connector) located near the rear of the ECM and the left frame rail.

- If the engine doesn't start or stop with the ignition key refer to the Isuzu Service Manual for Engine Control Module (ECM).
- If the engine starts and stops with the ignition key. Then follow the next procedures to determine the problem and solution.
- Check for blown fuses - The EPS 05 system has two (2) fuses (7.5A) located approximately 6 inches from the module connector under the left side of the dash panel, near the TCM bracket.

Using a Voltmeter, check the voltage of the RED/white strip wire (Pin 9 of the EPS 05 harness connector) must have +12 volts constant at all times.

- If there is no voltage, check the connector B-67 wire WHITE/black stripe located on the bottom left of the steering column. Make sure both sides of the interconnections are connected properly. If the connectors are connected properly and if there is still no voltage, refer to the Isuzu Service Manual in the vehicle power distribution regarding troubleshooting.

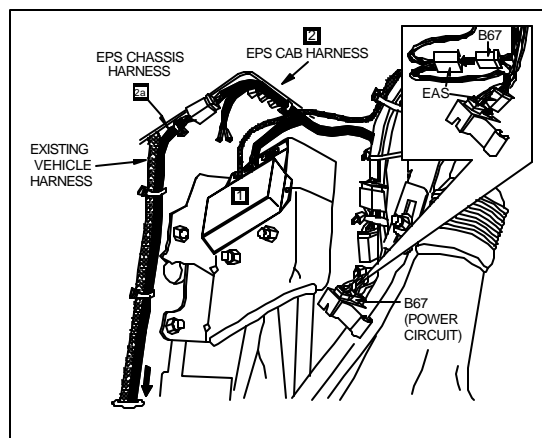


Figure 1

- Turn the ignition to the ON position, the RED wire (Pin 7 of the EPS 05 harness connector) must have +12 volts.

- If there is no voltage, check the connector B-67 wire BLACK/yellow stripe located on the bottom left of the steering column to make sure both sides of the interconnections are connected properly. If the connectors are connected properly and if there is still no voltage, refer to the Isuzu Service Manual for the vehicle power distribution regarding troubleshooting.

- Ensure that the EPS 05 cab and engine harness junction connectors are fully connected. The connectors are located approximately 18" from the EPS 05 module

- near the lower left side of the dash and the left side kick panel.

Verify the Black wire (Pin 10) of the EPS 05 harness has a reliable ground.

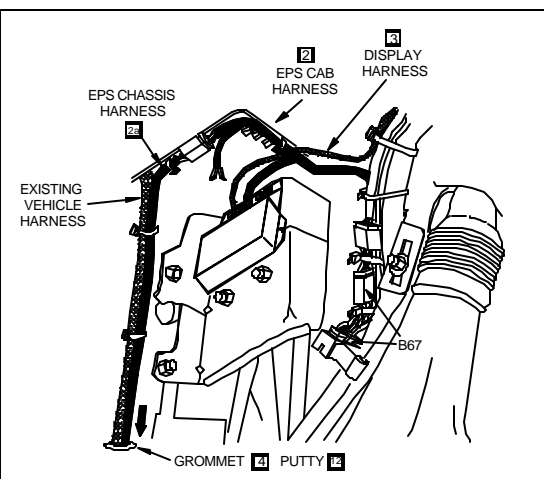


Figure 2

# TROUBLE SHOOTING GUIDE

- The ground is supplied from the original Engine Shutdown Switch connector (J-212, Pin A) located near the rear of the ECM and the left frame rail to the PES 05 module located near the lower left side of the dash and the left side kick panel.

Disconnect the EPS 05 harness shutdown connector at the (J-212) location and at the EPS 05 module harness connector.

- Using a continuity meter, check the BLACK wire for continuity from the EPS 05 module connector (Pin 10) through the harness to the start relay pin 86.
- Then from Pin 86 to the junction of the cab harness (Pin E).
- Then from (Pin E) to the EPS 05 harness side shutdown connector (Pin A).
- If the circuit is open (no continuity) repair the Black wire appropriately.
- If the circuit is closed (continuity) continue the Diagnostic and Test Procedure.

**Test of the (J-212, Pin A) of the vehicle Engine Shutdown Switch connector. With the ignition key turned to the OFF position:**

- Using a continuity meter, check continuity to the ground on the vehicle Engine Shutdown Switch connector (J-212, Pin A).
- If the circuit is grounded (Continuity), refer to the vehicle service manual.
- If the circuit is not grounded (no continuity) and all previous tests are good, continue the diagnostic and test procedure.

**Test of the (J-212, Pin A) of the vehicle Engine Shutdown Switch connector. With the ignition key turned to the ON position:**

- Using a continuity meter, check continuity to the ground on the vehicle Engine Shutdown Switch Connector (J-212, Pin A).
- If the circuit is grounded (continuity), refer to the vehicle service manual.
- If the circuit is not grounded (no continuity) and all previous tests are good, continue the diagnostic and test procedure.

Ensure that the EPS 05 cab and engine harness junction connector is fully connected. The connector is located approximately 18" from the EPS 05 module near the lower left side of the dash and the left side kick panel.

# TROUBLE SHOOTING GUIDE

- With the ignition key to the OFF position, verify that the DARK BLUE wire (Pin 18) of the EPS 05 harness has no ground with a continuity meter.
- Turn the ignition key to the ON position. Quickly check that the DARK BLUE wire (Pin 18) of the EPS 05 harness has no ground with a continuity meter. NOTE: If the ignition is turned to the ON position for more than 30 seconds, the system will be into a shutdown mode. The ignition key must be cycled, OFF then ON to reset the system and proceed quickly to the previous diagnostic and test procedure above.

The ground to shutdown the engine is supplied to the existing Engine Shutdown Switch connector (J-212, Pin B) located near the ECM and the left side of the transmission for only 30 seconds. NOTE: After the initial EPS 05 system time delay of 30 seconds caused by a faulty parameter, the ground is supplied to the Pin J-212 B for an additional 30 seconds, however as soon as the vehicle ECM received a ground signal, the ECM goes into a derated mode and the engine is shutdown within 10 seconds.

• **IMPORTANT:** Ground is supplied to the Engine Shutdown Switch (J0212, Pin B) for 30 seconds when the EPS 05 module goes into a shutdown mode after the 30 seconds time delay caused by a faulty parameter(s). If the ground (negative ) is present at all times on the connector (J-212, Pin B), the engine can be started but will run only approximately 10 seconds.

Disconnect the EPS 05 harness shutdown connector from the (J-212) shutdown connector. For location refer to the Isuzu Service Manual.

With the ignition key turned to the OFF position:

- Using a continuity meter, check the BLUE wire on the EPS 05 shutdown connector side (Pin B) for continuity to ground.
- If the circuit is open (no continuity), then turn the ignition key to the ON position, from the EPS 05 module connector (Pin 18) through the harness junction (Pin D) to the harness side shutdown connector (Pin B).
- If the circuit test is grounded (continuity), check for ground with a continuity meter, on the EPS harness side (Pin B). If the ground is present and constant at all times (negative ground), replace the defective EPS module located under the left side dash panel, next to the transmission control module. (TCM).
- Turn the ignition key to the ON position. If no ground is present on the blue wire, disconnect any one of the following parameters to cause a fault low coolant sensor, oil pressure or high temperature switch. Keeping the ignition to the ON position will activate the low oil pressure warning alarm. This will cause a fault parameter and the audio alarm will sound

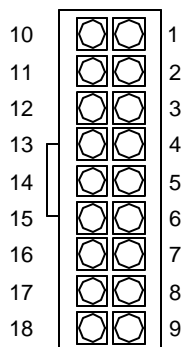
# TROUBLE SHOOTING GUIDE

and warning display will illuminate showing the faulty parameter. After the initial time delay of (30 seconds), the EPS 05 module will send a negative signal (Ground) to the EPS 05 harness shutdown connector side (Pin B) for 30 seconds, after which the ground supply stops. The only time you can verify the ground is after the initial 30 seconds warning time delay. If this test is good, refer to Isuzu Service Manual on the ECM section.

- If no ground is supplied after the initial 30 seconds time delay from the EPS 05 to the (J-212) Engine Shutdown Switch, replace the defective EPS 05 module located under the left side dash panel, next to the Transmission Control Module (TCM)

To reset the system, simply restart the engine or cycle the ignition key to OFF then ON.

ENGINE PROTECTION  
WIRE INSERTION VIEW



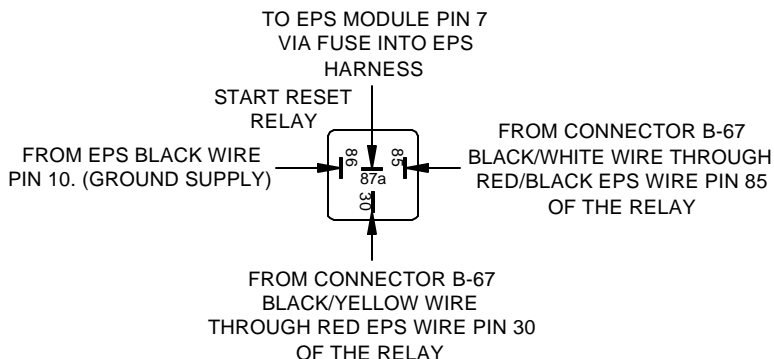
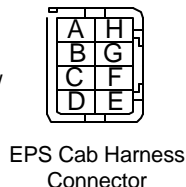
PIN	IDENTIFICATION	COLOR
1	N/A	N/A
2	N/A	N/A
3	GRD TO TRANS. TEMP. SW.	VIOLET/WHITE
4	GRD TO ENGINE TEMP. SW.	BLK/WHT
5	GRD TO OIL PRESS. SW.	BLK
6	GRD OUTPUT TO HOUR METER	BRN
7	IGNITION (IN)	RED
8	N/A	N/A
9	CONSTANT POWER (IN)	RED/WHITE
10	GRD FOR MODULE (IN)	BLK
11	COOLANT LEVEL SENSOR	YEL
12	OPT. INPUT SW. (IN)	GRY
13	TRANS. TEMP. SW. (IN)	VIO/WHT
14	ENGINE TEMP. SW. (IN)	VIO
15	OIL PRESS. SW. (IN)	GRN
16	N/A	N/A
17	N/A	N/A
18	(STOP MOTOR SIDE)	DARK BLUE

## EPS Cab and Engine Harness Junction

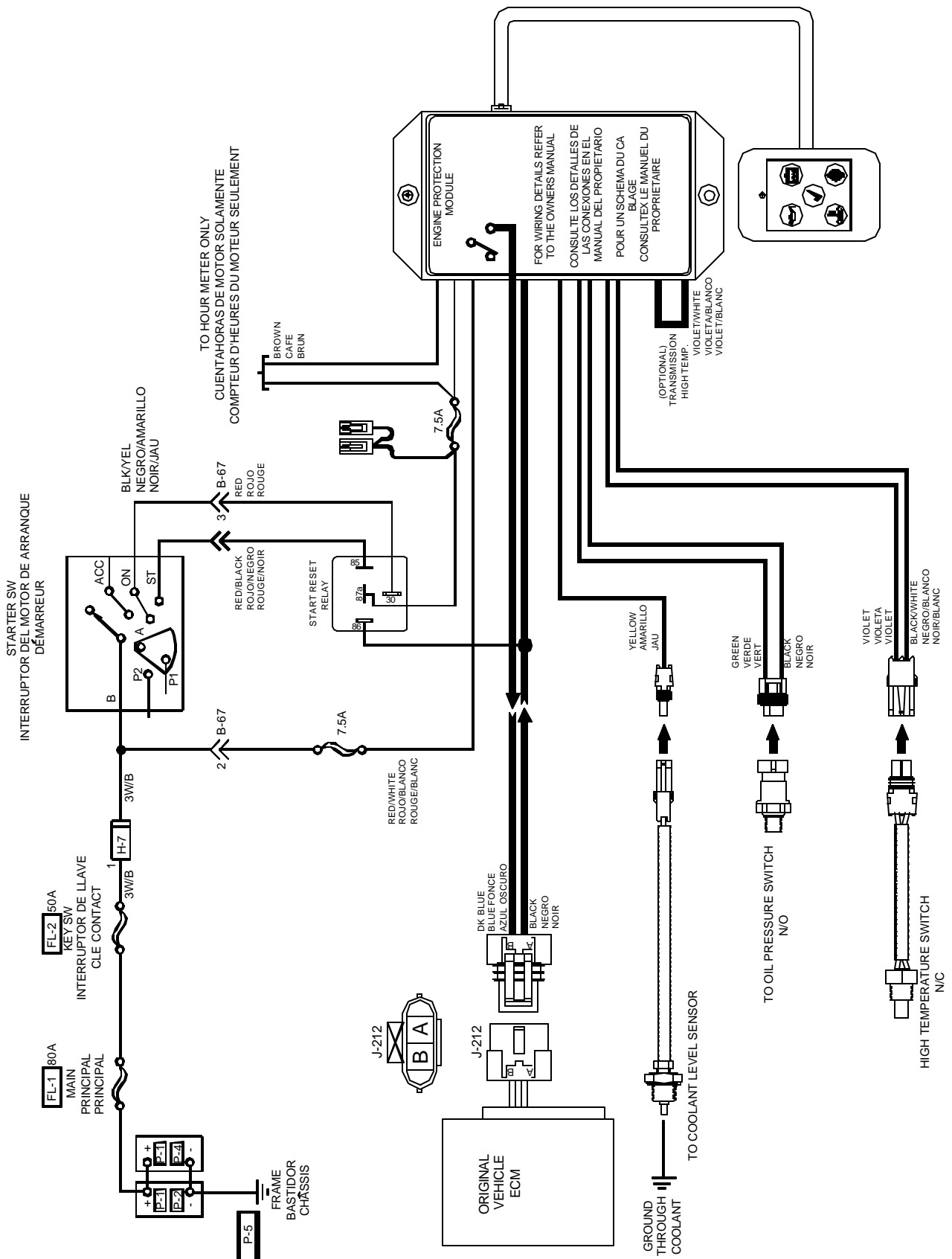
- A. GREEN
- B. VIOLET
- C. YELLOW
- D. DARK BLUE
- E. BLACK
- F. NOT USED
- G. BLACK/WHITE
- H. BLACK



Wire Insertion View



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## Diagnostic and Test Information

### CONSTANT ALARM ON LOW OIL PRESSURE



#### CAUTION

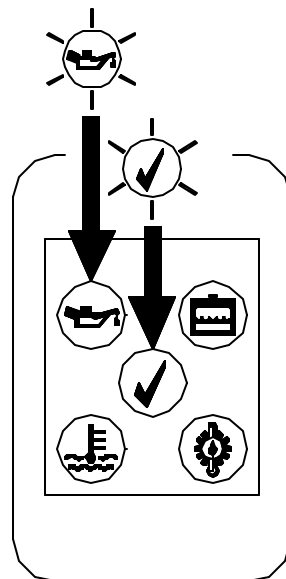
If engine is hot use extreme caution when checking oil pressure sensor.

#### ***Verify proper oil level***

- Ensure correct oil level.
- Ensure that the EPS Cab and Engine harness junction connector is fully mated. Connector is located approximately 18" from the EPS module near the lower left side of the dash and the left side kick panel. See diagram on page 7.

#### ***Verify continuity of EPS harness and oil pressure sensor***

- Disconnect the connector from the oil pressure sensor located at the right rear of the engine. On harness side of the sensor connector, using a continuity meter, verify that the BLACK wire is supplying a reliable ground. If not grounded, repair BLACK wire on Cab and/or Engine harness



from the harness side of the sensor connector through the harness junction (Pin H) to the EPS module connector (Pin 5). If BLACK wire is grounded or continuity to the ground tests good, go to the next step. See diagram on page 11.

- Using a jumper wire, connect the GREEN wire on the harness side of the sensor connector to the vehicle ground. Turn the ignition key to the ON position. After system self tests, if the alarm cancels, the oil pressure sensor is defective. Replace the oil pressure sensor.
- If the alarm persists, using a continuity meter, check the GREEN wire for continuity from the EPS module connector (Pin 15) through the harness junction (Pin A) to the harness side of the sensor connector. See diagram on pages 7 and 11. If the circuit is open (no continuity), repair the GREEN wire appropriately.

If the circuit test is good (continuity), EPS Module is defective. Replace the Module located under the left side dash panel, next to the TCM module.



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## Diagnostic and Test Information

### CONSTANT ALARM ON HIGH TEMPERATURE



#### CAUTION

If engine is hot use extreme caution when checking coolant sensor.

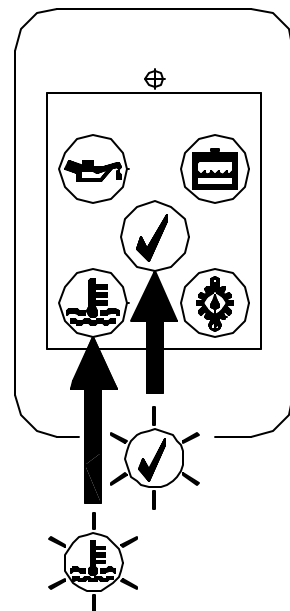
#### ***Verify proper coolant level.***

- Ensure correct levels in the radiator and the coolant overflow tank/reservoir.
- Ensure that the EPS Cab and Engine harness junction connector is fully mated. The connector is located approximately 18" from the EPS module near the lower left side of the dash and the left side kick panel. See diagram on page 7.

#### ***Verify continuity of EPS harness and high temperature sensor.***

- Disconnect the connector from the high temperature sensor located at the top left front of the engine. On harness side of the sensor connector, using a continuity meter, verify that the BLACK/WHITE wire is supplying a reliable ground. If not grounded, repair BLACK/WHITE wire on Cab and/or Engine harness from the harness side of the sensor connector through the harness junction (Pin G) to the EPS module connector (Pin 4). If BLACK/WHITE wire is grounded or continuity to the ground tests good, go to the next step. See diagram of page 11.
- Using a jumper wire, connect the VIOLET wire on the harness side of the sensor connector to the vehicle ground. Start the Engine. After system self tests, if the alarm cancels, the high temperature sensor is defective. Stop the engine and replace the high temperature sensor.
- If the alarm persists, using a continuity meter, check the VIOLET wire for continuity from the EPS module connector (Pin 14) through the harness junction (Pin B) to the harness side of the sensor connector. See diagram on page 7 and 11. If the circuit is open (no continuity), repair the VIOLET wire appropriately.

If the circuit test is good (continuity), EPS Module is defective. Replace the Module located under the left side dash panel, next to the TCM module.



# TROUBLE SHOOTING GUIDE

## Diagnostic and Test Information

### CONSTANT ALARM ON LOW COOLANT LEVEL:



#### CAUTION

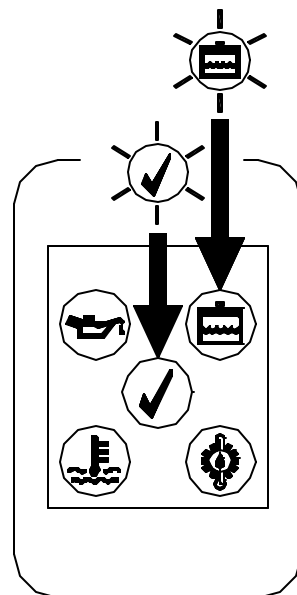
If engine is hot use extreme caution when checking coolant level sensor.

#### ***Verify proper coolant level***

- Ensure correct levels in the radiator and the coolant overflow tank/reservoir, fluid must cover sensor completely
- Ensure that the EPS Cab and Engine harness junction connector is fully mated. The connector is located approximately 18" from the EPS module near the lower left side of the dash and the left side kick panel. See diagram on page 7.

#### ***Verify continuity of EPS harness and low coolant level sensor.***

- Disconnect the connector from the coolant level sensor located in the middle of the radiator top tank/reservoir. On the harness side of the coolant sensor, using a jumper wire, connect the terminal to the vehicle ground. Start the engine. If, after the system self tests if the alarm cancels, the coolant level sensor is defective. Stop the engine and verify the coolant level sensor as follows. See Diagram on page 11.



- Remove the coolant level sensor and clean the internal probe of any residue. Using a continuity meter, check for continuity between the internal probe and the terminal of the coolant level sensor connector. If the circuit test good (continuity), reinstall the coolant sensor. If the circuit is open (NO continuity) change the coolant level sensor.
- If the alarm persists, using a continuity meter, check the YELLOW wire for continuity from the EPS module connector (Pin 11) through the harness junction (Pin C) to the harness side of the sensor connector. See diagram on page 7 and 11. If the circuit is open (no continuity), repair the YELLOW wire appropriately.

If the circuit test is good (continuity), EPS Module is defective. Replace the Module located under the left side dash panel, next to the TCM module.

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