

42 FLASH CODE 42 – TOO FEW SRS

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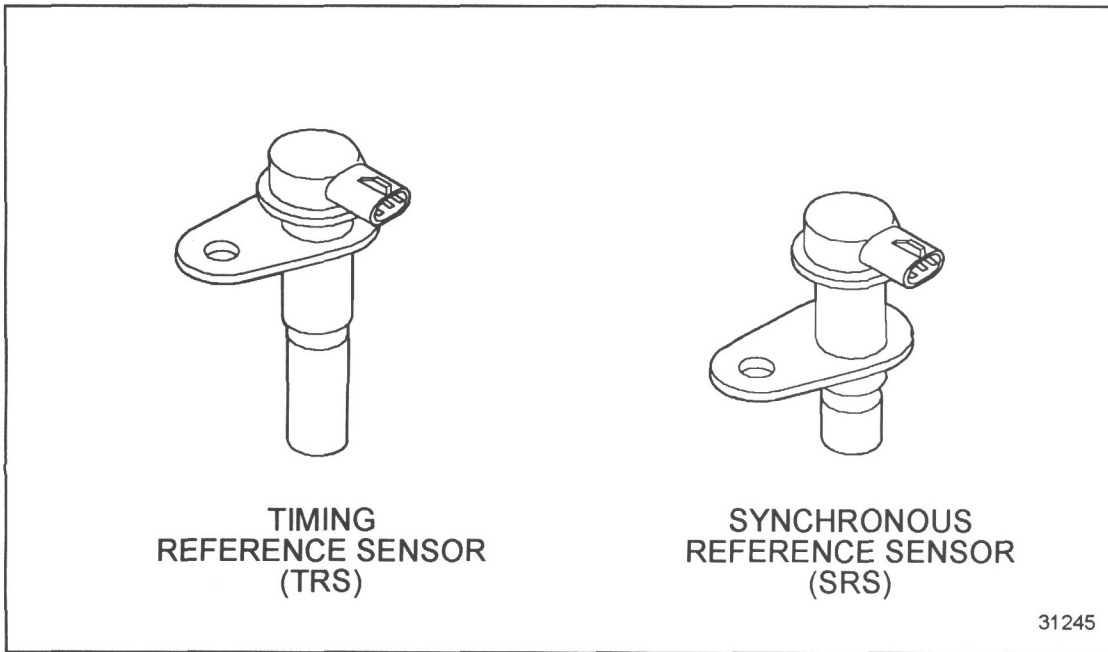


Figure 42-1 Synchronous Reference Sensor and Timing Reference Sensor

42.1 DESCRIPTION OF FLASH CODE 42

Flash Code 42 indicates that the ECM has detected missing Synchronous Reference Sensor (SRS) pulses, or the ECM has detected extra Timing Reference Sensor (TRS) pulses, see Figure 42-1.

42.2 SAE J1587 EQUIVALENT CODE FOR FLASH CODE 42

The SAE J1587 equivalent code for Flash Code 42 is s 021 1.

42.3 TROUBLESHOOTING FLASH CODE 42

The following procedure will troubleshoot Flash Code 42.

42.3.1 Resistance Check

Perform the following steps to check resistance.

1. Turn vehicle ignition OFF.
2. Disconnect engine harness connector at ECM.
3. Measure resistance between sockets S1 and S2 on the engine harness connector. See Figure 42-2.
 - [a] If the resistance measurement is less than or equal to 200 Ω , refer to section 42.3.2.
 - [b] If the resistance measurement is greater than 200 Ω or open, refer to section 42.3.3.

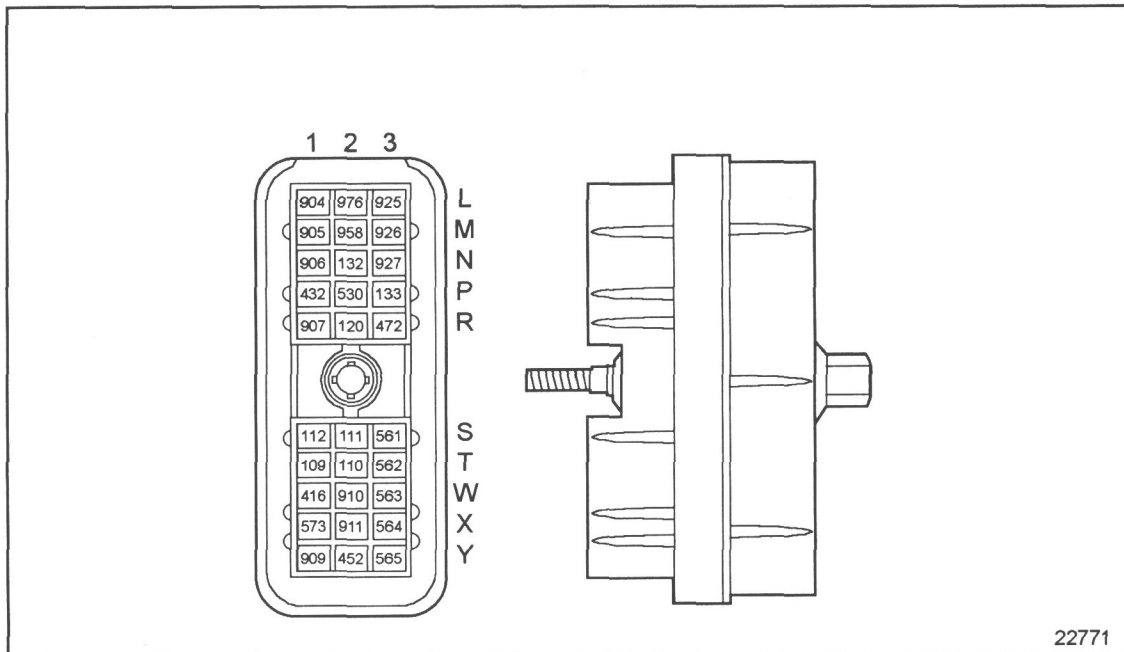


Figure 42-2 ECM Engine Harness Connector

42.3.2 Check for Short

Perform the following steps to check for a short.

1. Disconnect the SRS Connector.
2. Measure resistance between sockets S1 and S2 on the engine harness connector. See Figure 42-3.
3. Measure resistance between socket S1 and ground, and between socket S2 and ground.
 - [a] If the resistance measurement is less than or equal to 10,000 Ω , a short exists. Repair the short. Refer to section 42.3.16.
 - [b] If the resistance measurement is greater than 10,000 Ω , or open, refer to section 42.3.4.

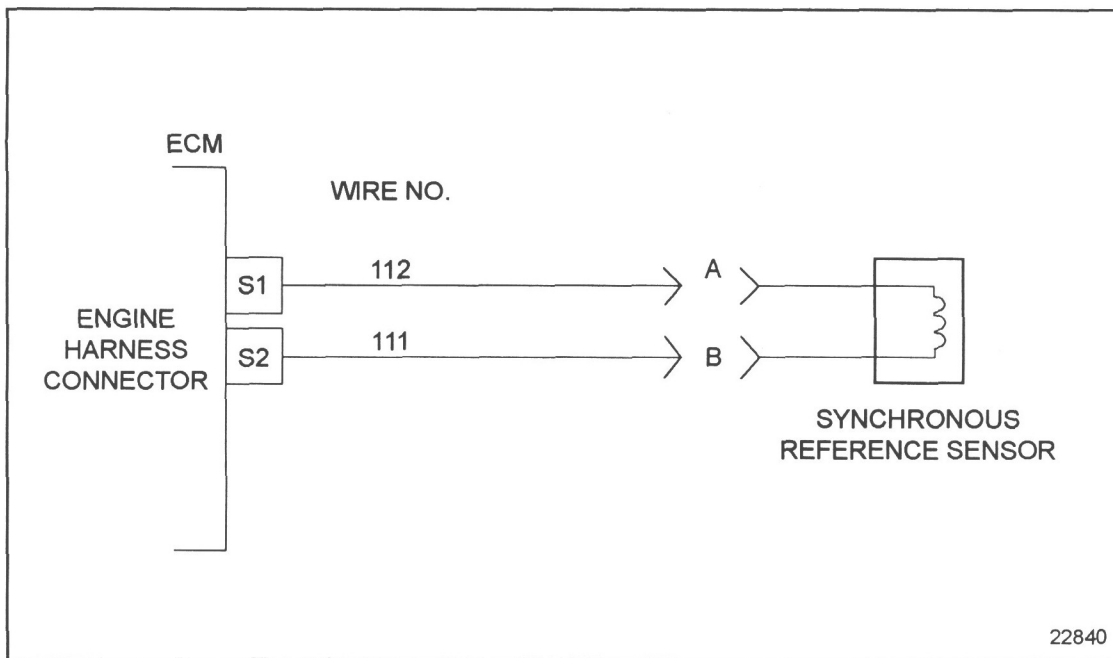


Figure 42-3 Engine Harness Connector to Synchronous Reference Sensor

42.3.3 Open Synchronous Reference Sensor Line Check

Perform the following steps to check for an open SRS line.

1. Disconnect the SRS connector.
2. Install a jumper wire between sockets A and B of the SRS harness connector. See Figure 42-4.
3. Measure resistance between sockets S1 and S2 on the engine harness connector.
 - [a] If the resistance measurement is less than or equal to 5 Ω , refer to section 42.3.4.
 - [b] If the resistance measurement is greater than 5 Ω or open, the signal line (#111) or return line (#112) is open. Repair the open. Refer to section 42.3.16.

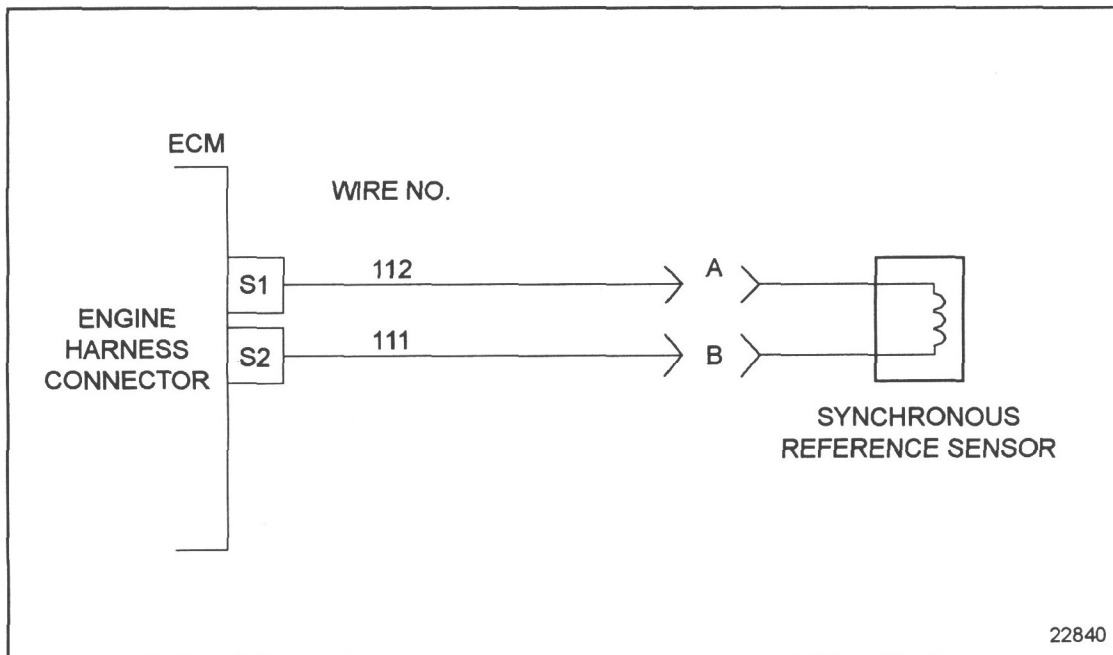


Figure 42-4 Engine Harness Connector to Synchronous Sensor

42.3.4 Synchronous Reference Sensor Test

Perform the following steps to test the SRS.

1. Measure resistance of SRS across the sensor connector pins A and B.
 - [a] If the resistance measurement is less than or equal to 100 Ω , refer to section 42.3.12.
 - [b] If the resistance measurement is greater than 200 Ω , refer to section 42.3.12.
 - [c] If the resistance measurement is between 100 and 200 Ω , refer to section 42.3.5.

42.3.5 Check Synchronous Reference Sensor Gap

Perform the following steps to check the SRS gap.

1. Bar engine until SRS is over the SRS pin.
2. Check the gap between SRS and the pin.
 - [a] If the gap setting is correct (0.020 – 0.040 in.), refer to section 42.3.6. A depth micrometer can be used.
 - [b] If the gap setting is not correct, adjust the SRS until the gap setting is correct. If the problem returns, the pulse wheel may be loose or bad. Refer to section 42.3.16.

42.3.6 Check for Timing Reference Sensor Code

Perform the following steps to check for TRS code.

1. Check for TRS code.
 - [a] If code 21/0 is not logged, refer to section 42.3.7.
 - [b] If code 21/0 is logged, refer to section 42.3.8.

42.3.7 Check ECM Connectors

Perform the following steps to check the ECM connectors.

1. Check terminals at the ECM engine harness connectors (both the ECM and harness side) for damage: bent, corroded, and unseated pins or sockets. See Figure 42-5.
 - [a] If terminals and connectors are damaged, repair them. Refer to section 42.3.16.
 - [b] If terminals and connectors are not damaged, refer to section 42.3.15.

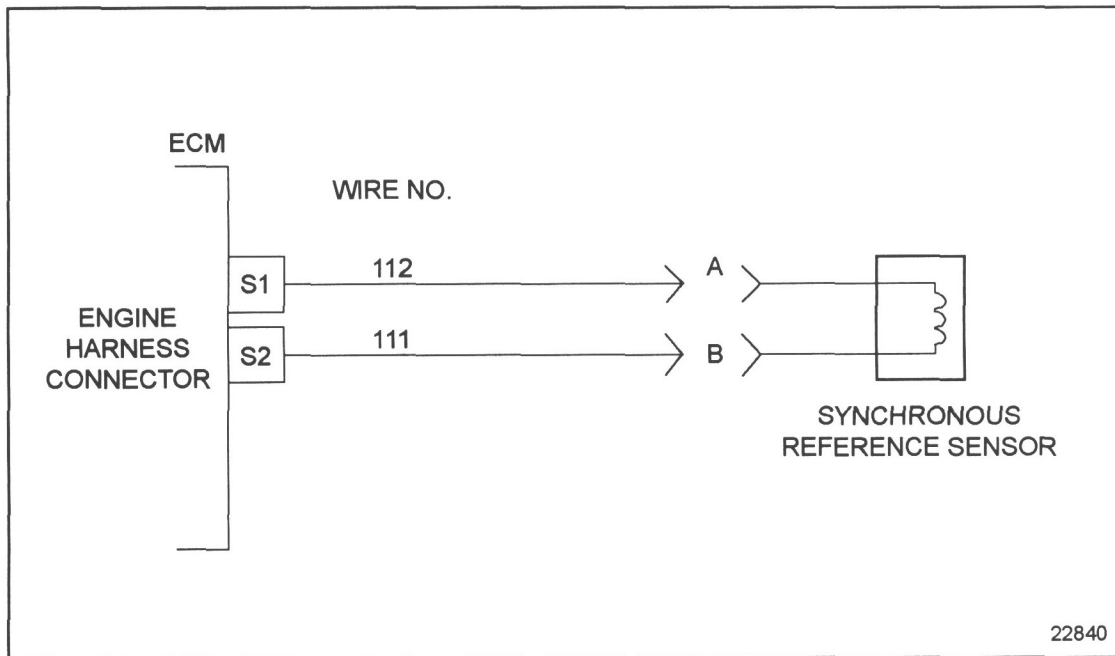


Figure 42-5 Engine Harness Connector to Synchronous Sensor

42.3.8 Timing Reference Sensor Resistance Check

Perform the following steps to check TRS resistance.

1. Remove the engine harness connector.
2. Measure resistance between sockets T1 and T2 on the engine harness connector. See Figure 42-6.
 - [a] If the resistance measurement is greater than 200 Ω , refer to section 42.3.10.
 - [b] If the resistance measurement is less than or equal to 200 Ω , refer to section 42.3.9.

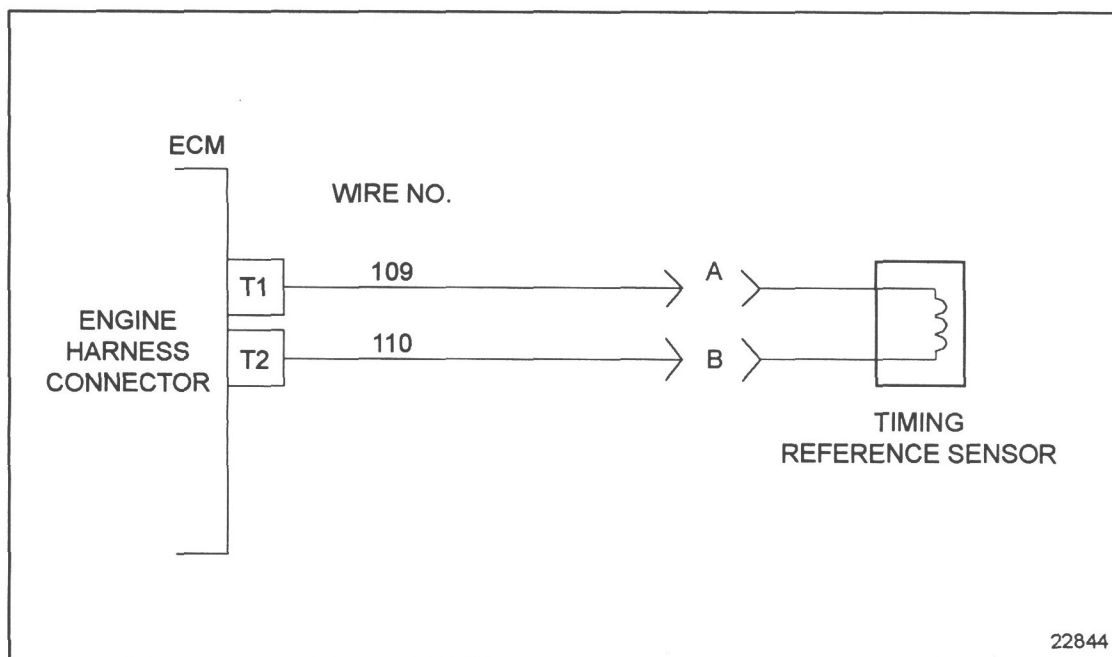


Figure 42-6 Engine Harness Connector to Timing Reference Sensor

42.3.9 Check for Short

Perform the following steps to check for a short.

1. Disconnect the TRS connector.
2. Measure resistance between sockets T1 and T2 on the engine harness connector.
 - [a] If measured resistance is greater than 10,000 Ω , or open, refer to section 42.3.11.
 - [b] If measured resistance is less than or equal to 10,000 Ω , the signal line (#110) is shorted to the return line (#109). Repair the short. Refer to section 42.3.16.

42.3.10 Open Timing Reference Sensor Line Check

Perform the following steps to check for an open TRS line.

1. Disconnect the TRS connector.
2. Install a jumper wire between sockets A and B of the TRS harness connector. See Figure 42-7.
3. Measure resistance between sockets T1 and T2 on the engine harness connector.
 - [a] If the resistance measurement is less than or equal to 5 Ω , refer to section 42.3.11.
 - [b] If the resistance measurement is greater than 5 Ω , or open, the signal line (#110) or return line (#109) is open. Repair the open. Refer to section 42.3.16.

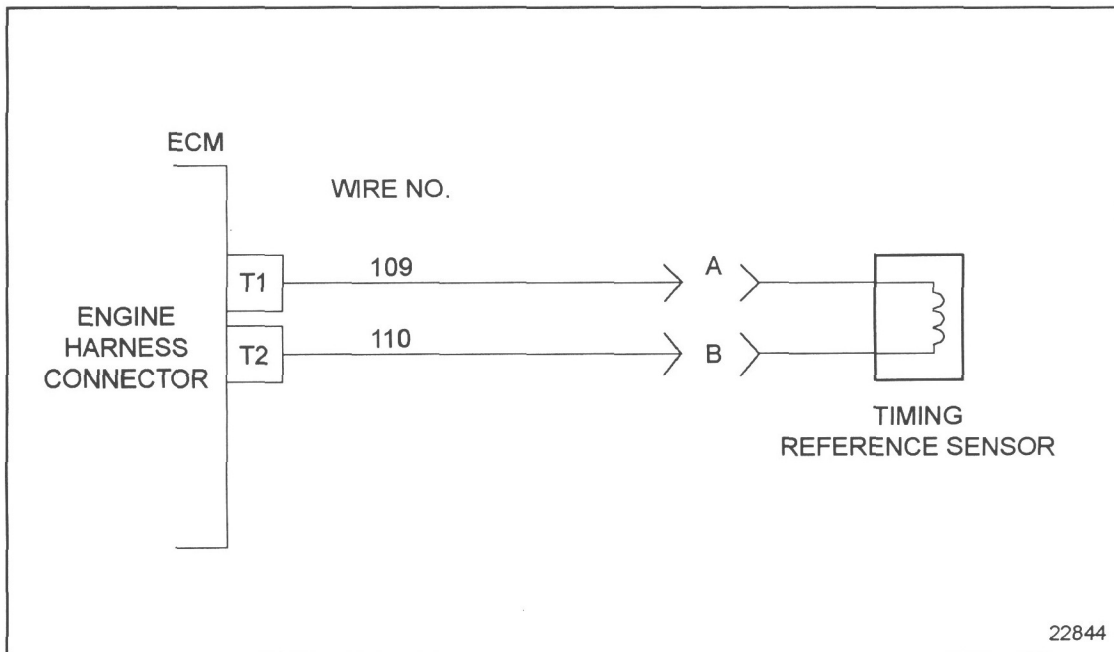


Figure 42-7 Engine Harness Connector to Timing Reference Sensor

42.3.11 Timing Reference Sensor Test

Perform the following steps to test the TRS.

1. Measure resistance of TRS across the sensor connector pins A and B.
 - [a] If the resistance measurement is greater than 200 Ω , refer to section 42.3.13.
 - [b] If the resistance measurement is less than 100 Ω , refer to section 42.3.13.
 - [c] If the resistance measurement is between 100 and 200 Ω , refer to section 42.3.7.

42.3.12 Check Synchronous Reference Sensor Connectors

Perform the following steps to check the SRS connectors.

1. Check terminals at the SRS (both the SRS and harness side) for damage: bent, corroded, and unseated pins or sockets, or a bad contact. See Figure 42-8.
 - [a] If terminals and connectors are damaged, repair them. Refer to section 42.3.16.
 - [b] If terminals and connectors are not damaged, replace the SRS. Refer to section 42.3.14.

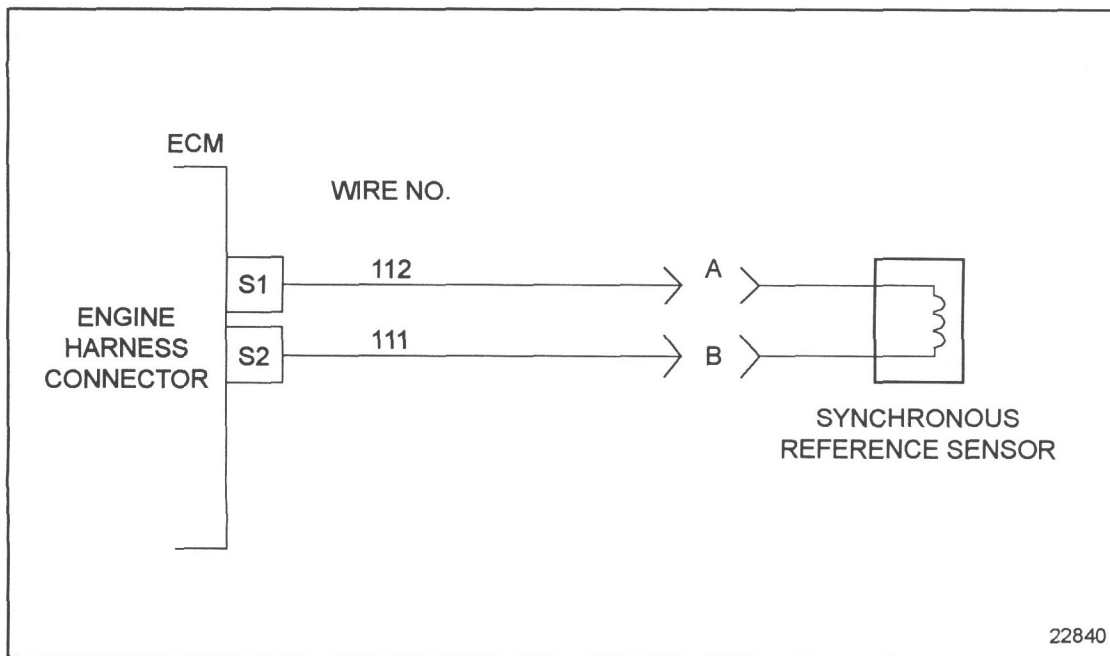


Figure 42-8 Engine Harness Connector to Synchronous Reference Sensor

42.3.13 Check Timing Reference Sensor Connectors

Perform the following steps to check the TRS connectors.

1. Check terminals at the TRS (both the TRS and harness end) for damage: bent, corroded, and unseated pins or sockets or bad contacts. See Figure 42-9.
 - [a] If terminals and connectors are damaged, repair them. Refer to section 42.3.16.
 - [b] If terminals and connectors are not damaged, replace the TRS. Refer to section 42.3.14.

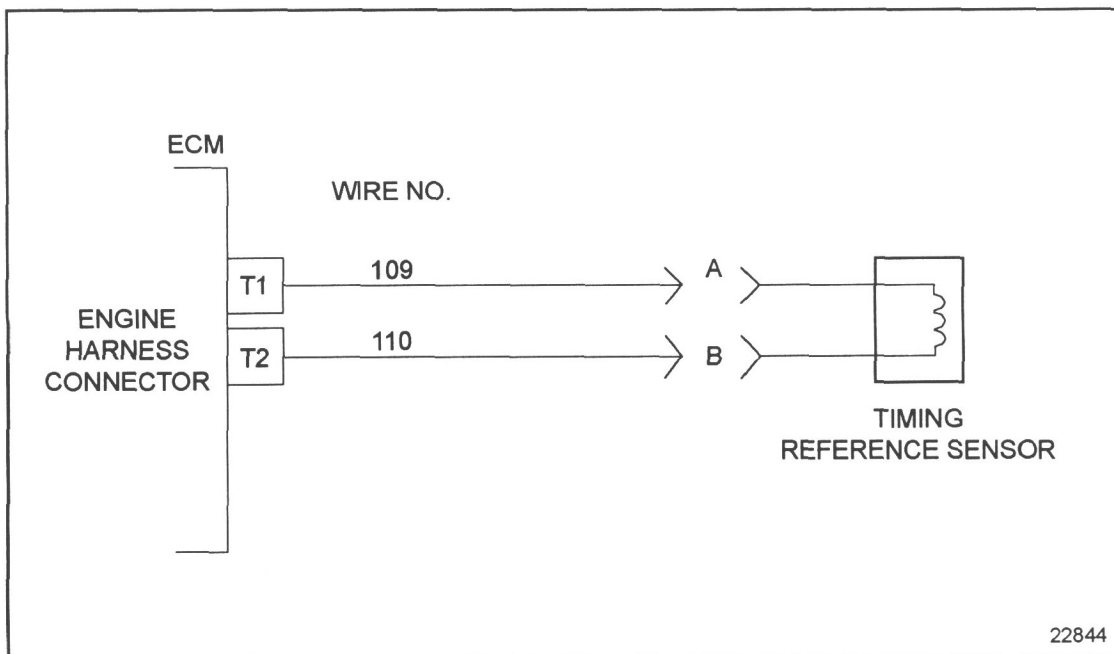


Figure 42-9 Engine Harness Connector to Timing Reference Sensor

42.3.14 Verify Synchronous Reference Sensor / Timing Reference Sensor

Perform the following steps to verify operation of the SRS/TRS.

1. Turn vehicle ignition OFF.
2. Reconnect all connectors.
3. Clear codes.
4. Start and run the engine for one minute.
5. Stop engine.

6. Check DDR for codes.
 - [a] If no codes are logged, troubleshooting is complete.
 - [b] If any codes except code 21/1 are logged, refer to section 9.1.
 - [c] If code 21/1 and any other codes are logged, and the TRS was not replaced, refer to section 42.3.6.
 - [d] If code 21/1 and any other codes are logged, and the TRS was replaced, refer to section 42.3.15.

42.3.15 Verify Cranking Voltage

Perform the following steps to verify cranking voltage.

1. Turn vehicle ignition OFF.
2. Connect all connectors.
3. Connect 12 volt from a fully charged battery to the 5-pin power connector. See Figure 42-10.
4. Connect to ECM.
5. Start engine.
 - [a] If engine starts, check the battery. If a voltage equalizer is installed, check the operation of the equalizer. If the equalizer is not working, refer to section 42.3.16.
 - [b] If the engine does not start, replace the ECM. Refer to section 42.3.16.

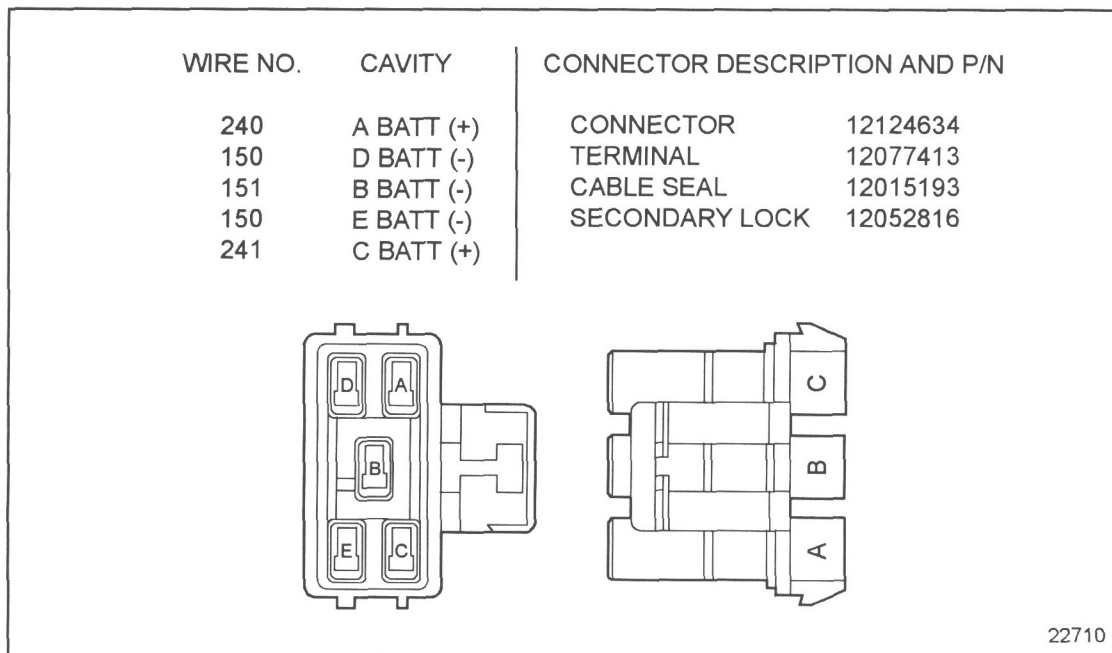


Figure 42-10 5-Way ECM Engine Power Connector

42.3.16 Verify Repairs

Perform the following steps to verify repairs.

1. Turn vehicle ignition OFF.
2. Reconnect all connectors.
3. Turn vehicle ignition ON.
4. Clear codes.
5. Start and run the engine for one minute.
6. Stop engine.
7. Check DDR for codes.
 - [a] If no codes are logged, troubleshooting is complete.
 - [b] If code 21/1 and any other codes are logged, all system diagnostics are complete. Review this section to find the error. Refer to section 42.3.1.
 - [c] If any codes except code 21/1 are logged, refer to section 9.1.

