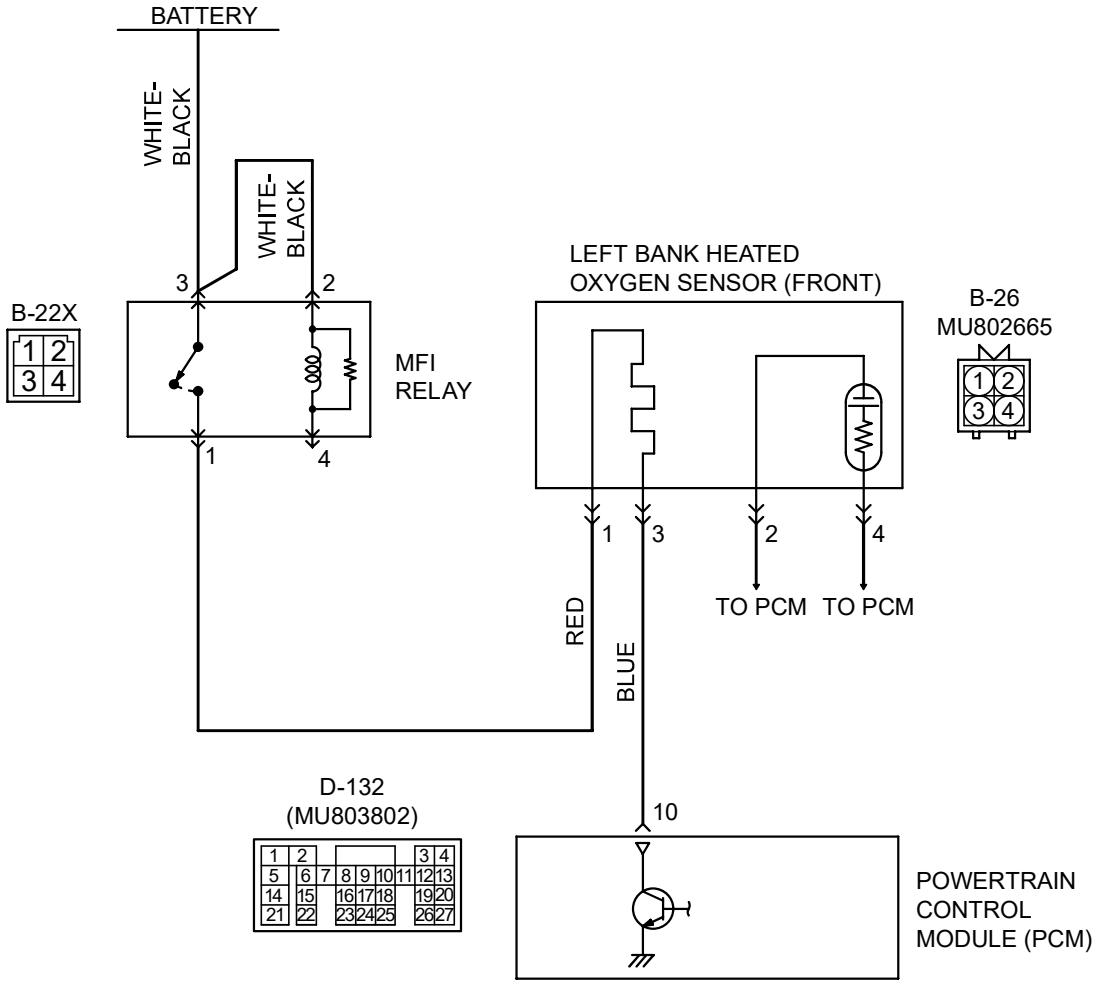
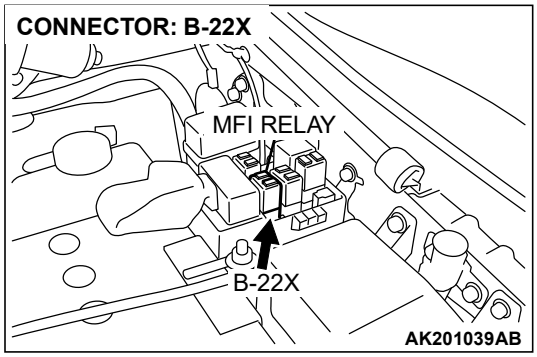
DTC P0155: Heated Oxygen Sensor Heater Circuit (bank 2, sensor 1)

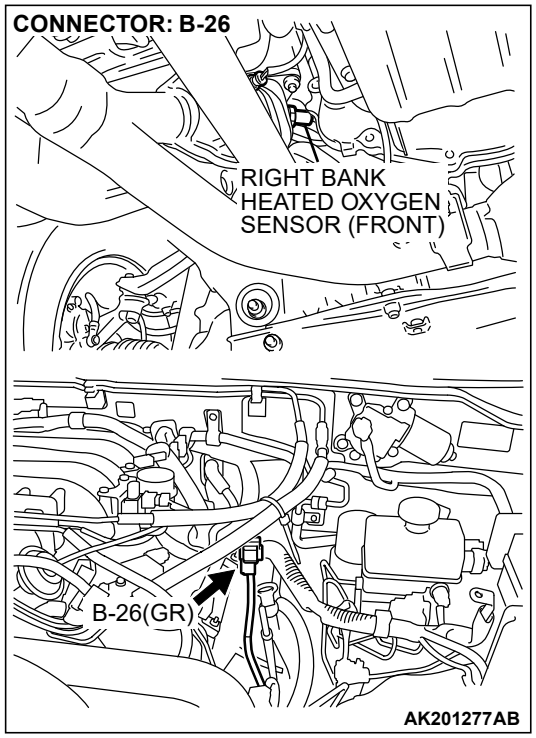
Left Bank Heated Oxygen Sensor (front) Heater Circuit

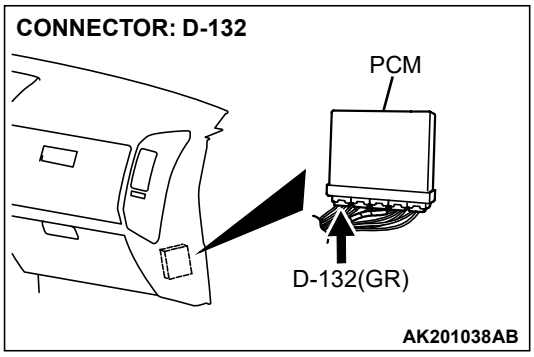


AK201136



TSB Revision





CIRCUIT OPERATION

- Power is supplied from the MFI relay (terminal No. 1) to the left bank heated oxygen sensor (front) heater.
- The PCM (terminal No. 10) controls continuity to the left bank heated oxygen sensor (front) heater by turning the power transistor in the PCM "ON" and "OFF".

TECHNICAL DESCRIPTION

- The PCM checks whether the heater current is within a specified range when the heater is energized.

DTC SET CONDITIONS

Check Conditions

- 60 seconds have elapsed from the start of the previous monitoring.
- Engine coolant temperature is higher than 20°C (68°F).
- While the left bank heated oxygen sensor (front) heater is on.
- Battery positive voltage is at between 11 and 16 volts.

Judgment Criteria

- Heater current of the left bank heated oxygen sensor (front) heater has continued to be lower than 0.6 ampere or higher than 7.5 ampere for 4 seconds.

TROUBLESHOOTING HINTS (The most likely causes for this code to be set are:)

- Open or shorted left bank heated oxygen sensor (front) heater circuit.
- Open circuit in left bank heated oxygen sensor (front) heater.
- PCM failed.

DIAGNOSIS

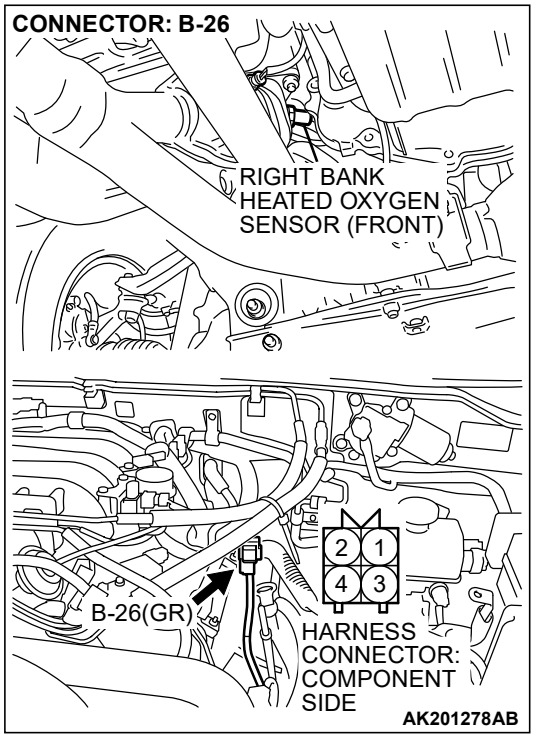
Required Special Tool:
- MB991316: Test Harness Set

STEP 1. Check harness connector B-26 at the left bank heated oxygen sensor (front) for damage.

Q: Is the harness connector in good condition?

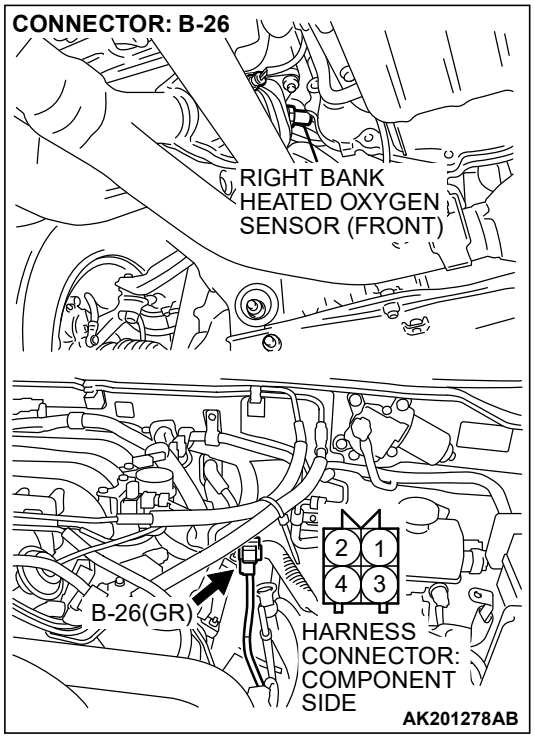
YES : Go to Step 2.

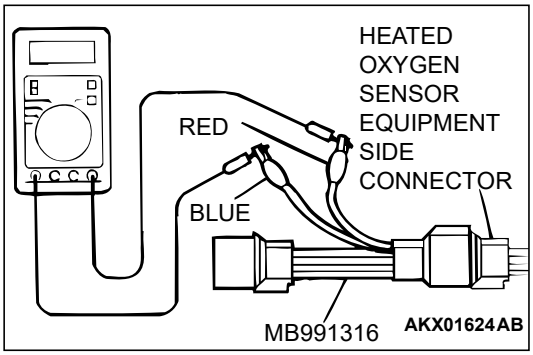
NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Then go to Step 12.



STEP 2. Check the left bank heated oxygen sensor (front).

(1) Disconnect left bank heated oxygen sensor (front) connector B-26 and connect test harness special tool, MB991316, to the connector on the left bank heated oxygen (front) sensor side.





(2) Measure the resistance between heated oxygen sensor connector terminal No. 1 (red clip) and terminal No. 3 (blue clip).

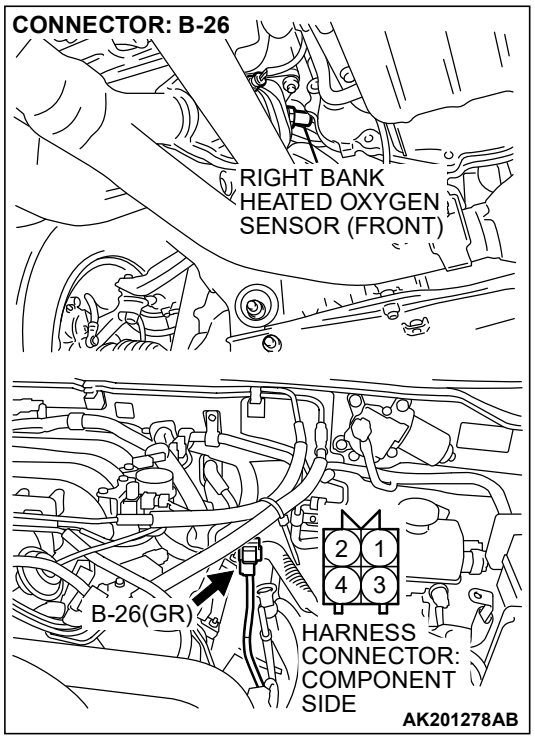
Standard value: 4.5 – 8.0 ohms [at 20°C (68°F)]

Q: Is the measured resistance between 4.5 and 8.0 ohms [at 20°C (68°F)]?

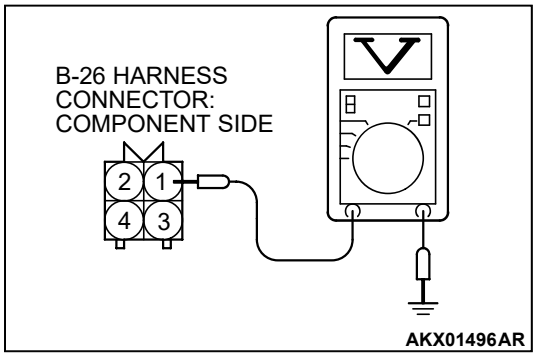
YES : Go to Step 3.

NO : Replace the left bank heated oxygen sensor (front). Then go to Step 12.

STEP 3. Measure the power supply voltage at left bank heated oxygen sensor (front) harness side connector B-26.



(1) Disconnect the connector B-26 and measure at the harness side.
(2) Turn the ignition switch to the "ON" position.



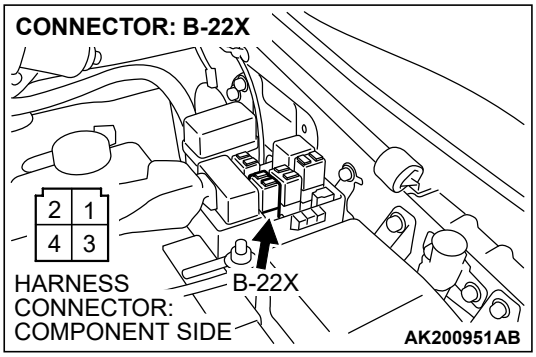
(3) Measure the voltage between terminal No. 1 and ground.
- Voltage should be battery positive voltage.

(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 5.
NO : Go to Step 4.

STEP 4. Check harness connector B-22X at the MFI relay for damage.

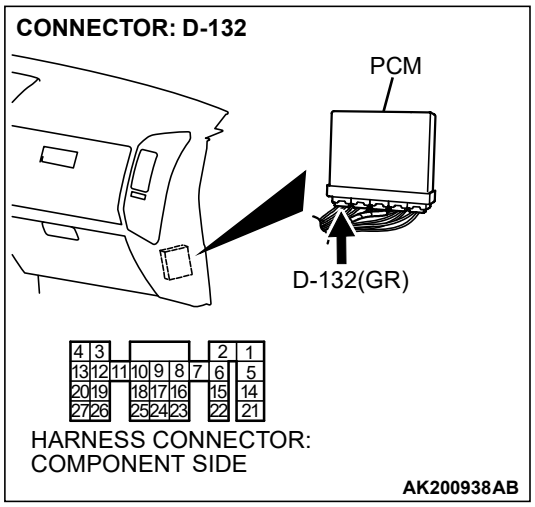


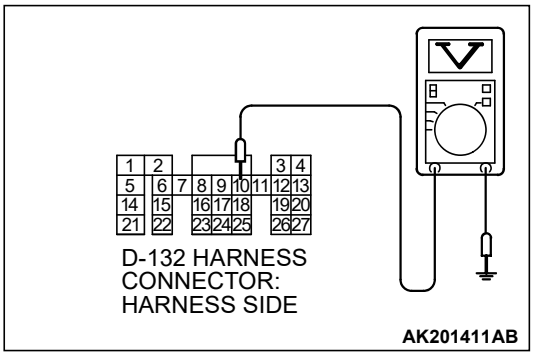
Q: Is the harness connector in good condition?

YES : Repair harness wire between MFI relay connector B-22X (terminal No. 1) and left bank heated oxygen sensor (front) connector B-26 (terminal No. 1) because of open circuit or short circuit to ground. Then go to Step 12.
NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Then go to Step 12.

STEP 5. Meaure the power supply voltage at PCM connector D-132 by backprobing.

(1) Do not disconnect the connector D-132.
(2) Turn the ignition switch to the "ON" position.





(3) Measure the voltage between terminal No. 10 and ground by backprobing.
- Voltage should be battery positive voltage.

(4) Turn the ignition switch to the "LOCK" (OFF) position.

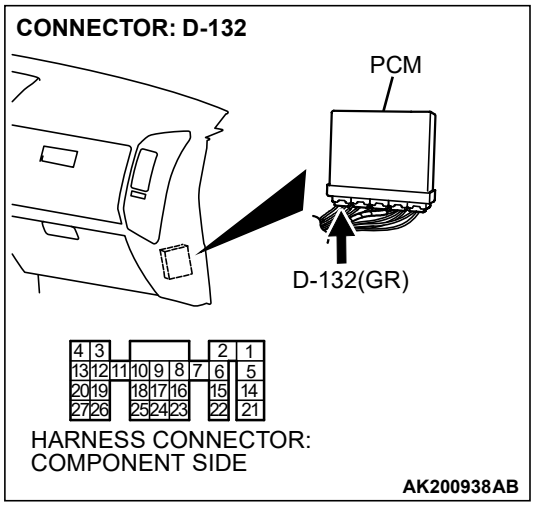
Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 8.
NO : Go to Step 6.

STEP 6. Check harness connector D-132 at PCM for damage.

Q: Is the harness connector in good condition?

YES : Go to Step 7.
NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Then go to Step 12.

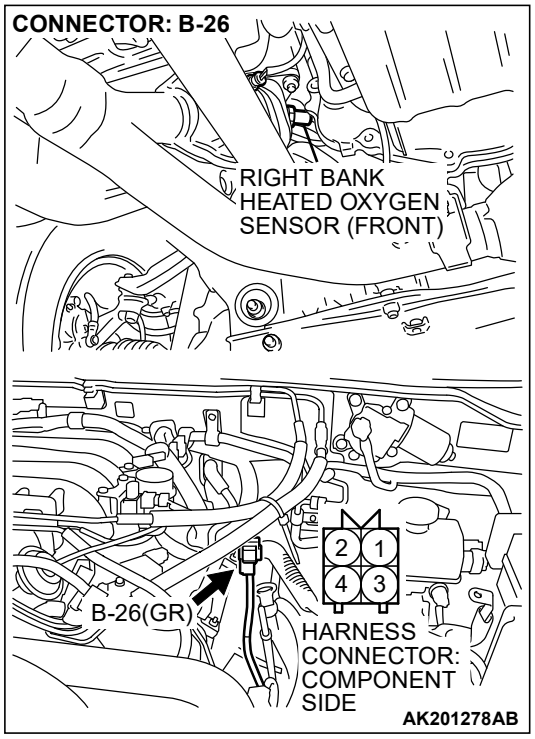


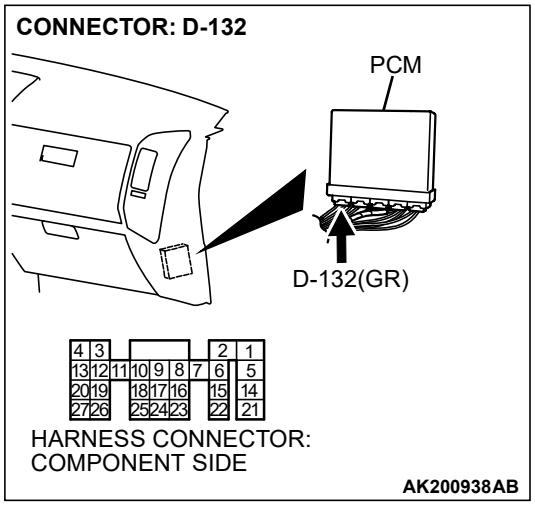
STEP 7. Check for open circuit or short circuit to ground between left bank heated oxygen sensor (front) connector B-26 (terminal No. 3) and PCM connector D-132 (terminal No. 27).

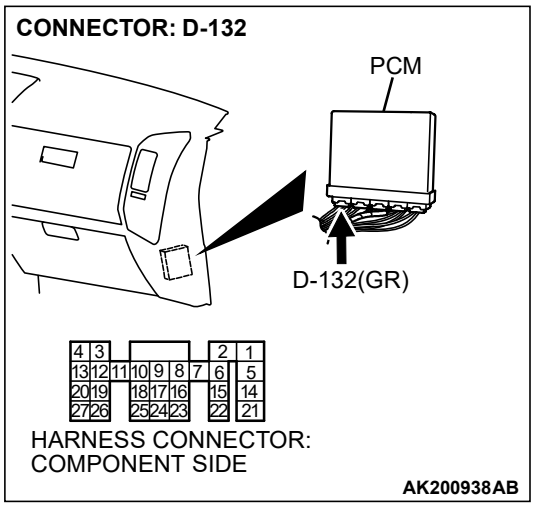
Q: Is the harness wire in good condition?

YES : Replace the PCM. Then go to Step 12.

NO : Repair it. Then go to Step 12.





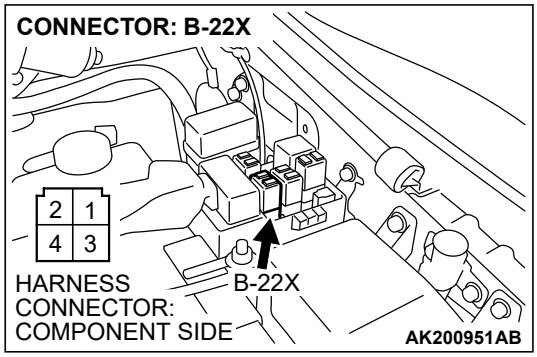


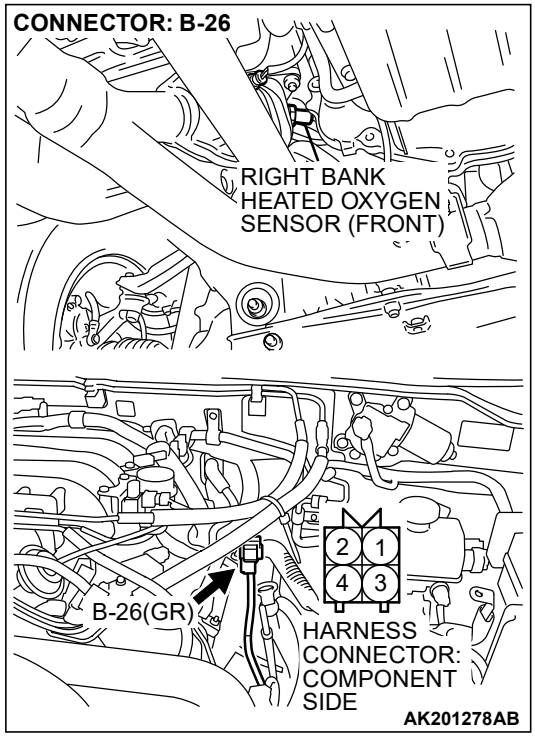
STEP 8. Check harness connector D-132 at PCM for damage.

Q: Is the harness connector in good condition?

YES : Go to Step 9.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Then go to Step 12.



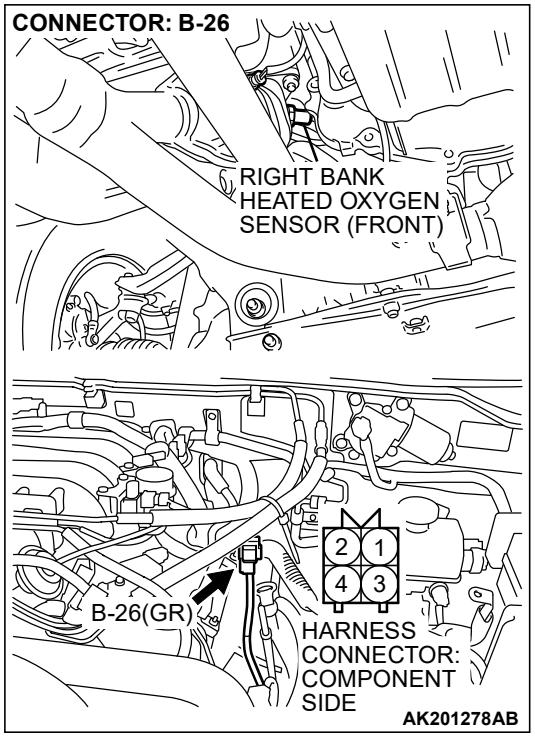


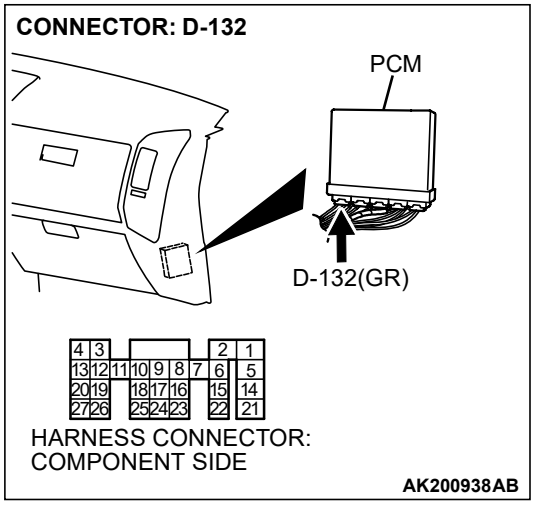
STEP 9. Check for harness damage between MFI relay connector B-22X (terminal No. 1) and left bank heated oxygen sensor (front) connector B-26 (terminal No. 1).

Q: Is the harness wire in good condition?

YES : Go to Step 10.

NO : Repair it. Then go to Step 12.





STEP 10. Check for harness damage between left bank heated oxygen sensor (front) connector B-26 (terminal No. 3) and PCM connector D-132 (terminal No. 10).

Q: Is the harness wire in good condition?

YES : Go to Step 11.

NO : Repair it. Then go to Step 12.

STEP 11. Check the trouble symptoms.

(1) Carry out a test drive with the drive cycle pattern. Refer to GROUP 13A, Procedure 6 – Other Monitor P.13Ab-2.

(2) Read in the diagnostic trouble code (DTC).

Q: Is DTC P0155 set?

YES : Replace the PCM. Then go to Step 12.

NO : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/ Inspection Service Points P.00-6 .