

CHECK AT THE ENGINE CONTROL MODULE (ECM)

TERMINAL VOLTAGE CHECK CHART

CAUTION: Connecting the positive (+) probe between a connector terminal and ground could damage the vehicle wiring, sensor, ECM, or all three. Use care to prevent this!

- (1) Connect a needle-nosed wire probe (paper clip etc.) to a voltmeter probe.

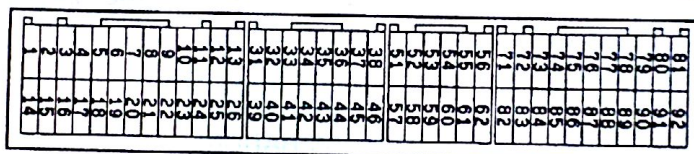
NOTE: Measure voltage with the ECM connectors connected.

NOTE: You may find it convenient to pull out the ECM to make it easier to reach the connector terminals.

NOTE: Checks don't have to be carried out in the order given in the chart.

- (2) Insert the needle-nosed wire probe into each of the ECM connector terminals from the wire side, and measure the voltage while referring to the check chart.
- (3) If voltmeter shows deviation from standard value, check the corresponding sensor, actuator and related electrical wiring, then repair or replace.
- (4) Then recheck with the voltmeter to confirm that the repair has corrected the problem.

Engine Control Module (ECM) Connector Terminal Arrangement



9FU0393

| TERMI- NAL NO. | CHECK ITEM | CHECK CONDITION (ENGINE CONDITION) | NORMAL CONDITION |
|-------------------|----------------------------|--|--|
| 1 | NO.1 INJECTOR | <ul style="list-style-type: none"> ENGINE: WARM, IDLE SUDDENLY DEPRESS THE ACCELERATOR PEDAL | FROM 11 - 14 V MOMENTARILY DROPS SLIGHTLY |
| 14 | NO.2 INJECTOR | | |
| 2 | NO.3 INJECTOR | | |
| 15 | NO.4 INJECTOR | | |
| 3 | NO.5 INJECTOR | | |
| 16 | NO.6 INJECTOR | | |
| 4 | STEPPER MOTOR COIL <A1> | <ul style="list-style-type: none"> ENGINE: WARM, IDLE CHECK IMMEDIATELY AFTER HOT RESTART | B + ↔ 0 - 3 V (CHANGES REPEATEDLY) |
| 17 | STEPPER MOTOR COIL <A2> | | |
| 5 | STEPPER MOTOR COIL <B1> | | |
| 18 | STEPPER MOTOR COIL <B2> | | |

| TERMI- NAL NO. | CHECK ITEM | CHECK CONDITION (ENGINE CONDITION) | NORMAL CONDITION |
|-------------------|--|--|---|
| 6 | EGR SOLENOID <FEDERAL> | IGNITION SWITCH: "ON" | B + |
| | | <ul style="list-style-type: none"> ENGINE: IDLE SUDDENLY DEPRESS THE ACCELERATOR PEDAL. | FROM B + , DROPS MOMENTARILY |
| 8 | FUEL PUMP RELAY MODULE | IGNITION SWITCH: "ON" | 0 - 0.5 V |
| | | ENGINE: CRANKING | 4 - 6 V |
| | | ENGINE: IDLE, WARM (TWO MINUTES AFTER STARTING ENGINE) | 0.7 - 2.8 V |
| 10 | IGNITION POWER TRANSISTOR UNIT A | ENGINE: 3,000 r/min | 0.3 - 3.0 V |
| 23 | IGNITION POWER TRANSISTOR UNIT B | | |
| 11 | IGNITION POWER TRANSISTOR UNIT C | | |
| 12 | POWER SUPPLY | IGNITION SWITCH: "ON" | B + |
| 25 | | | |
| 19 | VOLUME AIR FLOW SENSOR RESET SIGNAL | ENGINE: IDLE | 0 - 1 V |
| | | ENGINE: 3,000 r/min | 6 - 9 V |
| 22 | A/C COMPRESSOR CLUTCH RELAY | <ul style="list-style-type: none"> ENGINE: IDLE A/C SWITCH: "OFF" → "ON" (A/C COMPRESSOR IS OPERATING) | B + OR MO- MENTARILY 6 V OR MORE → 0 - 3 V AS A/C CLUTCH CYCLES |
| 32 | EVAPORATIVE EMISSION PURGE SOLENOID | IGNITION SWITCH: "ON" | B + |
| | | ENGINE: WARM, 3,000 r/min | 0 - 3 V |
| 34 | HEATED OXYGEN SENSOR HEATER (FRONT) <FEDERAL> LEFT BANK HEATED OXYGEN SENSOR HEATER (FRONT) <CALIFORNIA> | ENGINE: WARM, IDLE | 0 - 3 V |
| | | ENGINE: 5,000 r/min | B + |
| 35 | RIGHT BANK HEATED OXYGEN SENSOR HEATER (FRONT) <CALIFORNIA> | ENGINE: WARM, IDLE | 0 - 3 V |
| | | ENGINE: 5,000 r/min | B + |
| 36 | CHECK ENGINE/ MALFUNCTION INDICATOR LAMP | IGNITION SWITCH: "OFF" → "ON" | 0 - 3 V → 9 - 13 V (AFTER SEVERAL SECONDS HAVE ELAPSED) |
| 37 | POWER STEERING PRESSURE SWITCH | ENGINE: WARM, IDLE | B + |
| | | | 0 - 3 V |

| TERMI- NAL NO. | CHECK ITEM | CHECK CONDITION (ENGINE CONDITION) | | NORMAL CONDITION |
|-------------------|--|---|--|--|
| 38 | MFI RELAY (POWER SUPPLY) | IGNITION SWITCH: "OFF" | | B + |
| | | IGNITION SWITCH: "ON" | | 0 - 3 V |
| 41 | EVAPORATIVE EMISSION VENTILATION SOLENOID | IGNITION SWITCH: "ON" | | B+ |
| | | AFTER THE ENGINE HAS WARMED UP, DRIVE THE VEHICLE AT A CONSTANT SPEED OF 88 km/h (55 mph). (OBD-II MONITORING CONDITIONS) | | MOMENTARILY 0 - 3 V |
| 42 | HEATED OXYGEN SENSOR HEATER (REAR) <FEDERAL> LEFT BANK HEATED OXYGEN SENSOR HEATER (REAR) <CALIFORNIA> | ENGINE: WARM, IDLE | | 0 - 3 V |
| | | ENGINE: 5,000 r/min | | B+ |
| 43 | RIGHT BANK HEATED OXYGEN SENSOR HEATER (REAR) <CALIFORNIA> | ENGINE: WARM, IDLE | | 0 - 3 V |
| | | ENGINE: 5,000 r/min | | B+ |
| 44 | ANTI-LOCK BRAKE SIGNAL <M/T> | ENGINE: IDLE | | B + |
| | | <ul style="list-style-type: none"> ENGINE START FIRST TIME FROM ENGINE START VEHICLE SPEED: 0 → 10 km/h (0 → 0.6 mph) | | CHANGES B + TO 0 - 3 V (TEMPORARILY) |
| 45 | A/C SWITCH | ENGINE: IDLE | TURN THE A/C SWITCH "OFF" | 0 - 3 V |
| | | | TURN THE A/C SWITCH "ON" (A/C COMPRESSOR IS OPERATING) | B + |
| 51 | SPARK CHECK SIGNAL | ENGINE: 3,000 r/min | | 0.3 - 3.0 V |
| 71 | IGNITION SWITCH-ST | ENGINE: CRANKING | | 8 V OR MORE |
| 72 | INTAKE AIR TEMPERATURE SENSOR | IGNITION SWITCH: "ON" | WHEN INTAKE AIR TEMPERATURE IS 0°C (32°F) | 3.2 - 3.8 V |
| | | | WHEN INTAKE AIR TEMPERATURE IS 20°C (68°F) | 2.3 - 2.9 V |
| | | | WHEN INTAKE AIR TEMPERATURE IS 40°C (104°F) | 1.5 - 2.1 V |
| | | | WHEN INTAKE AIR TEMPERATURE IS 80°C (176°F) | 0.4 - 1.0 V |
| 73 | RIGHT BANK HEATED OXYGEN SENSOR (REAR) <CALIFORNIA> | <ul style="list-style-type: none"> TRANSMISSION: 2ND GEAR <M/T>, "L" RANGE <A/T> DRIVE AT WIDE OPEN THROTTLE ENGINE: 3,500 r/min OR MORE | | 0.6 - 1.0 V |
| 74 | MANIFOLD DIFFERENTIAL PRESSURE SENSOR <FEDERAL> | ENGINE: IDLE | | 0.8 - 2.4 V |
| | | <ul style="list-style-type: none"> ENGINE: IDLE SUDDENLY DEPRESS THE ACCELERATOR PEDAL. | | RISES FROM 0.8 - 2.4 V SUDDENLY |

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|-------------------|--|---|---|--------------------------------------|
| 75 | RIGHT BANK HEATED OXYGEN SENSOR (FRONT) <CALIFORNIA> | <ul style="list-style-type: none"> ENGINE: WARM, 2,500 r/min (CHECK USING A DIGITAL VOLTMETER) | | 0 ↔ 0.8 V (CHANGES REPEATEDLY) |
| 76 | HEATED OXYGEN SENSOR (FRONT) <FEDERAL> LEFT BANK HEATED OXYGEN SENSOR (FRONT) <CALIFORNIA> | <ul style="list-style-type: none"> ENGINE: WARM, 2,500 r/min (CHECK USING A DIGITAL VOLTMETER) | | 0 ↔ 0.8 V (CHANGES REPEATEDLY) |
| 77 | FUEL TANK DIFFER- ENTIAL PRESSURE SENSOR | ENGINE: IDLE | | 1.2 – 3.8 V |
| 79 | HEATED OXYGEN SENSOR (REAR) <CALIFORNIA> LEFT BANK HEATED OXYGEN SENSOR (REAR) <CALIFORNIA> | <ul style="list-style-type: none"> TRANSMISSION: 2ND GEAR <M/T>, "L" RANGE <A/T> DRIVING WITH THE THROTTLE WIDELY OPEN ENGINE: 3,500 r/min or more | | 0.6 – 1.0 V |
| 80 | BACKUP POWER SUPPLY | IGNITION SWITCH: "OFF" | | B + |
| 81 | SENSOR SUPPLIED VOLTAGE | IGNITION SWITCH: "ON" | | 4.5 – 5.5 V |
| 82 | IGNITION SWITCH-IG | IGNITION SWITCH: "ON" | | B + |
| 83 | ENGINE COOLANT TEMPERATURE SENSOR | IGNITION SWITCH: "ON" | WHEN ENGINE COOLANT TEMPERATURE IS 0°C (32°F) | 3.2 – 3.8 V |
| | | | WHEN ENGINE COOLANT TEMPERATURE IS 20°C (68°F) | 2.3 – 2.9 V |
| | | | WHEN ENGINE COOLANT TEMPERATURE IS 40°C (104°F) | 1.3 – 1.9 V |
| | | | WHEN ENGINE COOLANT TEMPERATURE IS 80°C (176°F) | 0.3 – 0.9 V |
| 84 | THROTTLE POSITION SENSOR | IGNITION SWITCH: "ON" (CHECK FOR SMOOTH VOLTAGE INCREASE AS THROTTLE IS MOVED FROM IDLE POSITION TO WIDE OPEN THROTTLE) | IDLE | 0.3 – 1.0 V |
| | | | WIDE OPEN THROTTLE | 4.5 – 5.5 V |
| 85 | BAROMETRIC PRESSURE SENSOR | IGNITION SWITCH: "ON" | WHEN ALTITUDE IS 0 m (0 ft) | 3.7 – 4.3 V |
| | | | WHEN ALTITUDE IS 1,200 m (3,937 ft) | 3.2 – 3.8 V |

| TERMI- NAL NO. | CHECK ITEM | CHECK CONDITION (ENGINE CONDITION) | | NORMAL CONDITION |
|-------------------|---|--|---|------------------------------------|
| 86 | VEHICLE SPEED SENSOR | <ul style="list-style-type: none"> IGNITION SWITCH: "ON" MOVE THE VEHICLE SLOWLY FORWARD | | 0 ↔ 5 V (CHANGES REPEATEDLY) |
| 87 | CLOSED THROTTLE POSITION SWITCH | IGNITION SWITCH: "ON" | SET THROTTLE VALVE TO IDLE POSITION | 0 - 1 V |
| | | | OPEN THROTTLE SLIGHTLY | 4 V OR MORE |
| 88 | CAMSHAFT POSITION SENSOR | ENGINE: CRANKING | | 0.4 - 3.0 V |
| | | ENGINE: IDLE | | 0.5 - 2.0 V |
| 89 | CRANKSHAFT POSITION SENSOR | ENGINE: CRANKING | | 0.4 - 4.0 V |
| | | ENGINE: IDLE | | 1.5 - 2.5 V |
| 90 | VOLUME AIR FLOW SENSOR | ENGINE: IDLE | | 2.2 - 3.2 V |
| | | ENGINE: 2,500 r/min | | |
| 91 | PARK/NEUTRAL POSITION SWITCH <AT> | IGNITION SWITCH: "ON" | MOVE THE SELECTOR LEVER TO "P" OR "N." | 0 - 3 V |
| | | | MOVE THE SELECTOR LEVER TO "D", "2", "L" OR "R." | 8 - 14 V |