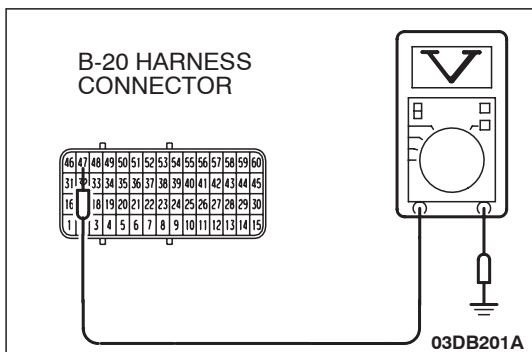
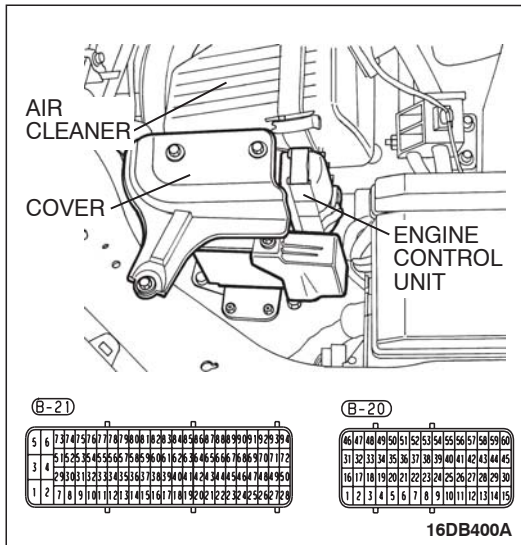


STEP 5. Measure the power supply voltage at ENGINE-ECU connector B-20 by using ENGINE-ECU check harness special tool MB992044.

- (1) Disconnect the all ENGINE-ECU connectors and connect ENGINE-ECU check harness special tool MB992044 between the separated connectors.
- (2) Turn the ignition switch to the "ON" position.



- (3) Measure the voltage between terminal No. 47 and ground.
 - Voltage should be battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

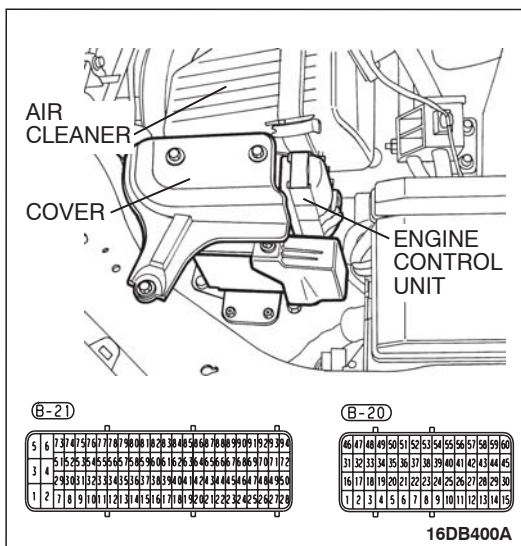
Q: Is battery positive voltage (approximately 12 volts) present?

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

STEP 6. Check harness connector B-20 at ENGINE-ECU 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 11.



HOW TO USE THIS MANUAL

M1001000100897

MAINTENANCE, REPAIR AND SERVICING EXPLANATIONS

This manual provides explanations, etc. concerning procedures for the inspection, maintenance, repair and servicing of the subject model. Unless otherwise specified, each service procedure covers all models. Procedures covering specific models are identified by the model codes, or similar designation (engine type, transaxle type, etc). A description of these designations is covered in this manual under "VEHICLE IDENTIFICATION."

ON-VEHICLE SERVICE

The "ON-VEHICLE SERVICE" section has procedures for performing inspections and adjustments of particularly important components. These procedures are done with regard to maintenance and servicing, but other inspections (looseness, play, cracking, damage, etc.) must also be performed.

SERVICE PROCEDURES

The service steps are arranged in numerical order. Attention to be paid in performing vehicle service are described in detail in SERVICE POINTS.

DEFINITION OF TERMS

STANDARD VALUE

Indicates the value used as the standard for judging whether or not a part or adjustment is correct.

LIMIT

Shows the maximum or minimum value for judging whether or not a part or adjustment is acceptable.

REFERENCE VALUE

Indicates the adjustment value prior to starting the work (presented in order to facilitate assembly and adjustment procedures, and so they can be completed in a shorter time).

DANGER, WARNING, AND CAUTION

DANGER, WARNING, and CAUTION call special attention to a necessary action or to an action that must be avoided. The differences among DANGER, WARNING, and CAUTION are as follows:

- If a DANGER is not followed, the result is severe bodily harm or even death.
- If a WARNING is not followed, the result could be bodily injury.
- If a CAUTION is not followed, the result could be damage to the vehicle, vehicle components or service equipment.

TIGHTENING TORQUE INDICATION

The tightening torque indicates a median and its tolerance by a unit of N·m (in·lb.) or N·m (ft·lb.). For fasteners with no assigned torque value, refer to [P.00-32](#).

SPECIAL TOOL NOTE

Only MMC special tool part numbers are called out in the repair sections of this manual. Please refer to the special tool cross-reference chart located at the beginning of each group, for the special tool number that is available in your market.

ABBREVIATIONS

The following abbreviations are used in this manual for classification of model types:

A/T: Automatic transaxle, or models equipped with automatic transaxle.

MPI: Multipoint fuel injection, or engines equipped with multiport fuel injection.

A/C: Air conditioning.

3.8L engine: 3.8 litre <6G75> engine, or a model equipped with such an engine.

ABS: Anti-lock Braking System

TCL: Traction Control System

ECU: Electronic Control Unit

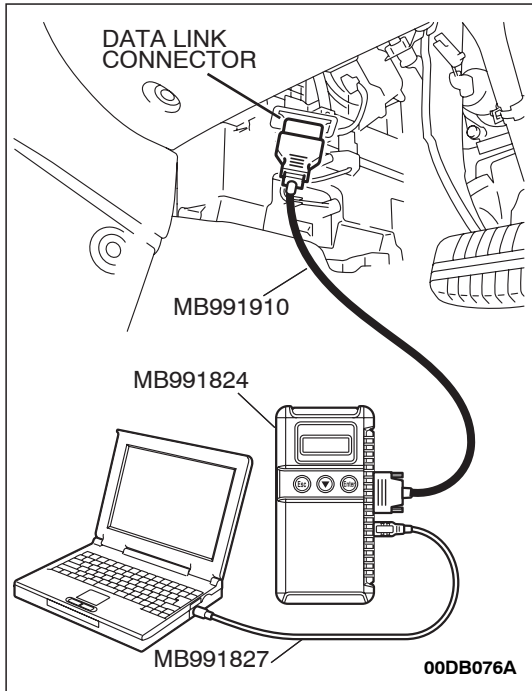
V.C.I.: Vehicle Communication Interface

SWS: Simplified Wiring System

CAN: Controller Area Network

M/T: Manual Transmission

SRS: Supplemental Restraint System



STEP 5. Using diagnostic tool, check data list item AE: Heated Oxygen Sensor Bank 2, Sensor 1 (left front).

⚠ CAUTION

To prevent damage to diagnostic tool, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting diagnostic tool .

- (1) Connect diagnostic tool to the data link connector.
- (2) Start the engine and run at idle.
- (3) Ensure engine is at running temperature (80° C or higher).
- (4) Set diagnostic tool to the data reading mode for item AE, Heated Oxygen Sensor Bank 2, Sensor 1 (left front).
 - Warm engine. When the engine is revved up and down, the output voltage should cycle between 0.1 to 0.8 volt.
 - Warm engine. When the engine is idling, the output voltage should alternate between 0.1 to 0.6 - 1.0 volt.
- (5) Turn the ignition switch to the "LOCK" (OFF) position.

NOTE: If data list readings are low or appear slow to cycle during check the sensor is likely to be malfunctioning. Ensure wiring and connector checks are performed prior to replacing sensor.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-14](#).

NO : Replace the faulty oxygen sensor. Then go to Step 6.

STEP 6. Test the EOBD drive cycle.

- (1) Carry out a test drive with the drive cycle pattern. Refer to Diagnostic Function – EOBD Drive Cycle – [P.13A-11](#).
- (2) Check the diagnostic trouble code (DTC).

Q: Is DTC P0151 set?

YES : Retry the troubleshooting.

NO : The inspection is complete.

DTC P0303: Cylinder 3 Misfire Detected

TECHNICAL DESCRIPTION

- If a misfire occurs while the engine is running, the engine speed changes for an instant.
- The ECU checks for such changes in engine speed.

DTC SET CONDITIONS

Check Conditions

- Engine speed is between idle and 6200 r/min.
- Engine torque is above 0.
- Engine speed during start is above 530 r/min.
- Ignition counter (starts when engine speed 530 r/min is exceeded) is above 6.
- Torque intervention by traction control is not active.
- Safety fuel cut off is not active.
- A/C compressor switching is not active. <M/T>
- Clutch pedal is not pressed. <M/T>.

Judgement Criteria (change in the angular acceleration of the crankshaft is used for misfire detection).

- MIL activated after 2 drive cycles.
- No Limp home.
- If MIL "blinks" in 1 Hz frequency, then there has been possible catalyst damage caused by the misfire.

EOBD DRIVE CYCLE PATTERN

Refer to Diagnostic Function – EOBD Drive Cycle – [P.13A-11](#).

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

- Ignition system related part(s) failed.
- Low compression pressure.
- Refer to component locations [GROUP-70](#)
- Refer to configuration diagrams [GROUP-80](#)
- Refer to circuit diagrams [GROUP-90](#)

DIAGNOSIS

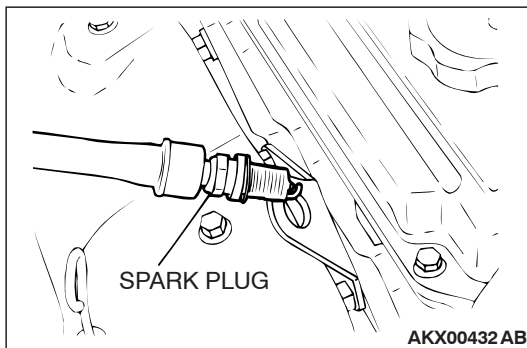
STEP 1. Check the No.3 cylinder ignition coil spark.

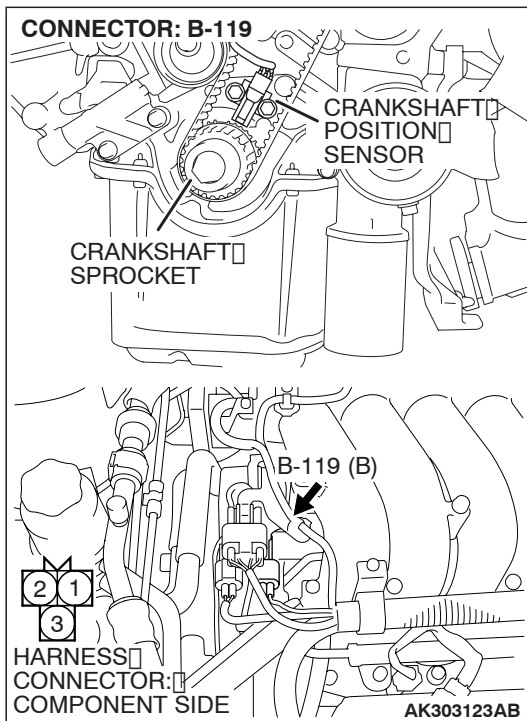
- (1) Remove the No.3 cylinder ignition coil.
- (2) Remove the No.3 cylinder spark plug and connect to the ignition coil.
- (3) Ground the No.3 cylinder spark plug side electrode securely.
 - When the engine is cranked, the spark plug should spark.

Q: Did it spark?

YES : Go to Step 3.

NO : Go to Step 2.



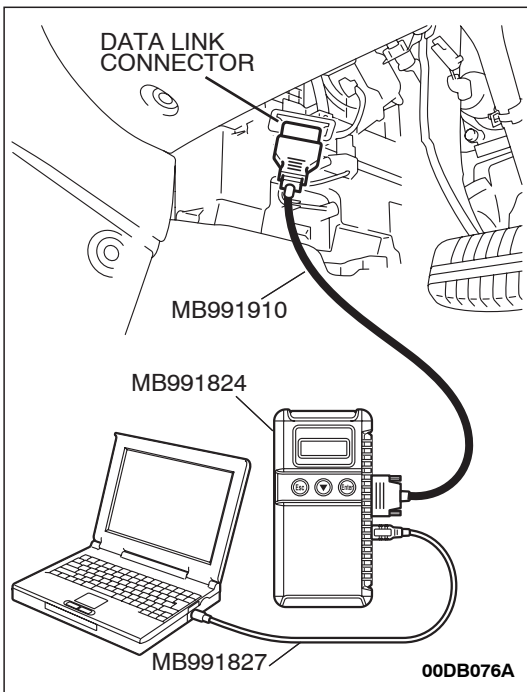


STEP 3. Check harness connector B-119 at the crankshaft position sensor for damage.

Q: Is the harness connector in good condition?

YES : Go to Step 4.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then go to Step 18.



STEP 4. Using diagnostic tool , check data list item 02: Crankshaft Position Sensor.

CAUTION

To prevent damage to diagnostic tool , always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting diagnostic tool .

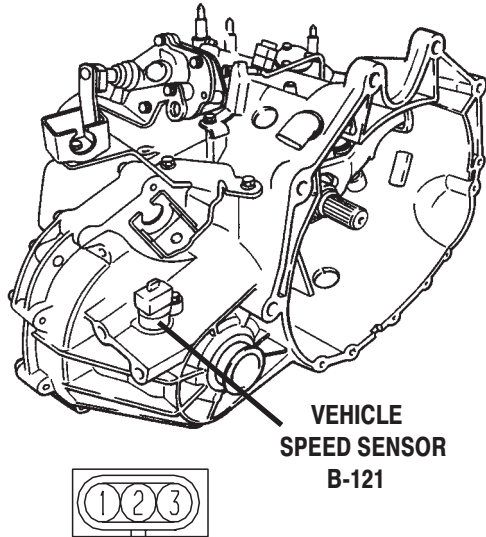
- (1) Connect diagnostic tool to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set diagnostic tool to the data reading mode for item 02, Crankshaft Position Sensor.
 - The tachometer and engine speed indicated on the diagnostic tool should match.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-14](#).

NO : Then go to Step 5.

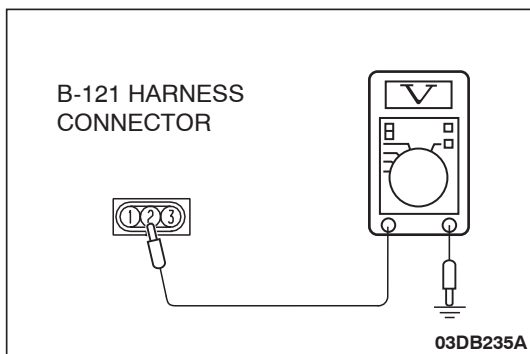
CONNECTOR: B-121



03DB234A

STEP 7. Measure the ENGINE-ECU to speed sensor, output voltage at the vehicle speed sensor connector B-121.

- (1) Disconnect connector B-121 from the speed sensor and measure voltage at the harness side.
- (2) Turn the ignition switch to the "ON" position.



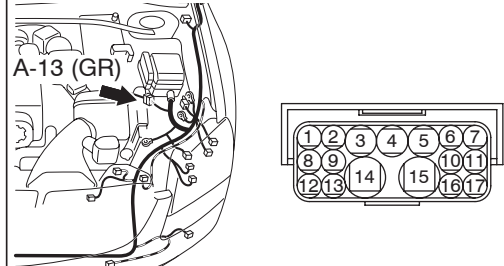
03DB235A

- (3) Measure the voltage between terminal 3 and ground.
 - The voltage should measure between 4.5 and 4.9 volts.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage between 4.5 and 4.9 volts?

- YES :** Go to Step 9.
NO : Go to Step 8.

CONNECTOR: A-13



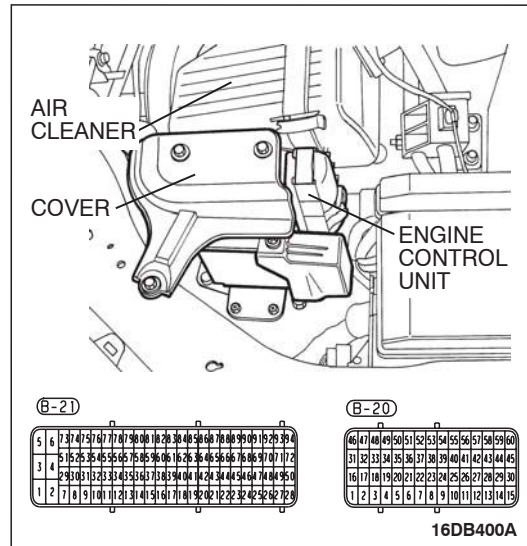
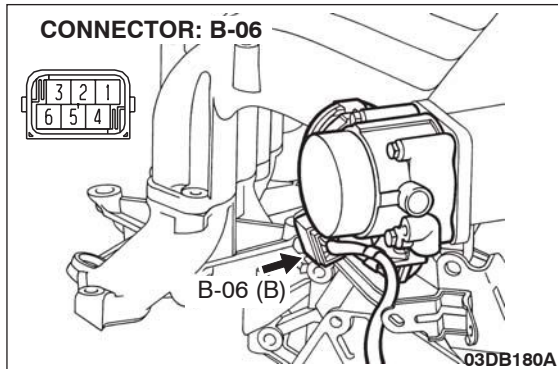
10DB083A

STEP 8. Check intermediate connector A-13 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is the connector and terminals in good condition?

- YES :** Go to Step 9.
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

DTC P2102: Throttle Actuator Control Motor Circuit (Shorted Low).



CIRCUIT OPERATION

- Controls the current that is applied from the ENGINE-ECU (terminals No. 49, No. 50) to the throttle actuator control motor (terminals No. 1, No. 4).

TECHNICAL DESCRIPTION

- ENGINE-ECU varies the direction and the amperage of the current that is applied to the throttle actuator control motor in order to control the opening of the throttle valve.

DTC SET CONDITIONS

Check Condition

- Battery positive voltage is higher than 6.5 volts.

Judgement Criteria

- Maximum permissible PWM pulse duty factor is above 80% for 0.6 sec.gement Criteria.
- MIL activated immediately.
- Fuel cut and engine speed limited.

EOBD DRIVE CYCLE PATTERN

None.

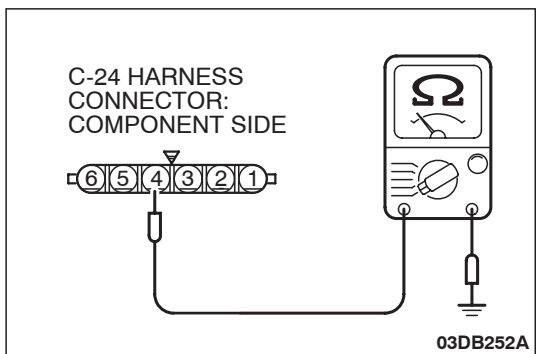
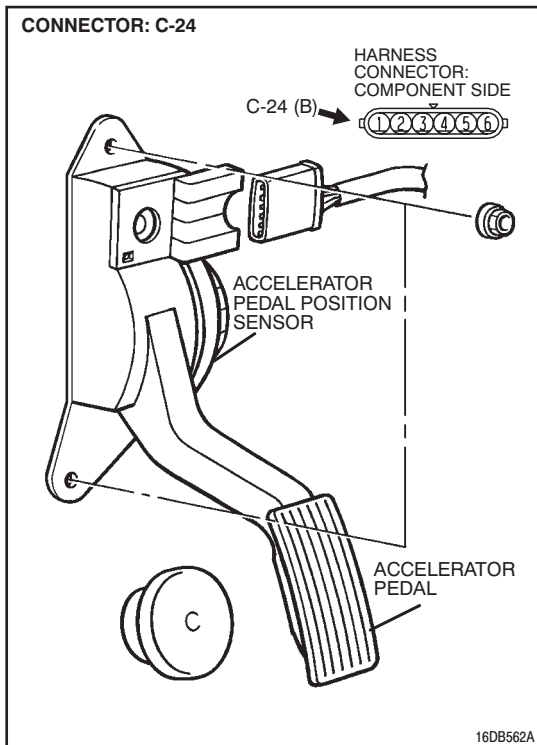
TROUBLESHOOTING HINTS (The most likely causes for this code to be set are:)

- Throttle actuator control motor failed.
- Shorted throttle actuator control motor circuit, harness damage or connector damage.
- Refer to component locations GROUP-70
- Refer to configuration diagrams GROUP-80
- Refer to circuit diagrams GROUP-90

DIAGNOSIS

Required Special Tools:

- : Diagnostic tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991910: Main Harness A



STEP 2. Check the continuity at accelerator pedal position sensor harness side connector C-24.

(1) Disconnect the connector C-24 and measure at the harness side.

(2) Measure the continuity between terminal No. 4 and ground.
• Should be less than 2 ohms.

Q: Does continuity exist?

YES : Go to Step 5.

NO : Go to Step 3.

STEP 5. Using diagnostic tool, check actuator test items 01, 02, 03, 04, 05, 06: Injector.

⚠ CAUTION

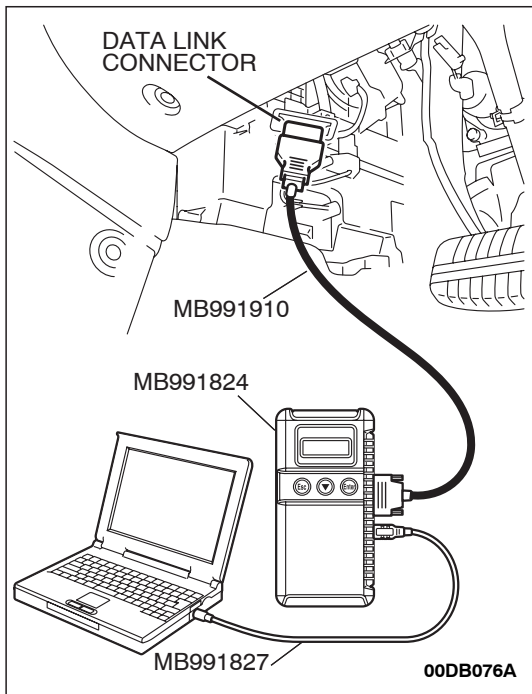
To prevent damage to diagnostic tool, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting diagnostic tool.

- (1) Connect diagnostic tool to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check following items in the actuator test. Refer to Actuator Test Reference Table P.13A-644.
 - a. Item 01, 02, 03, 04, 05, 06: Injector.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are they operating properly?

YES : Go to Step 6.

NO : Refer to DTC P0201P.13A-272, P0202P.13A-280, P0203P.13A-287, DTC P0204P.13A-295, P0205P.13A-302, P0206P.13A-310 – Injector Circuit.



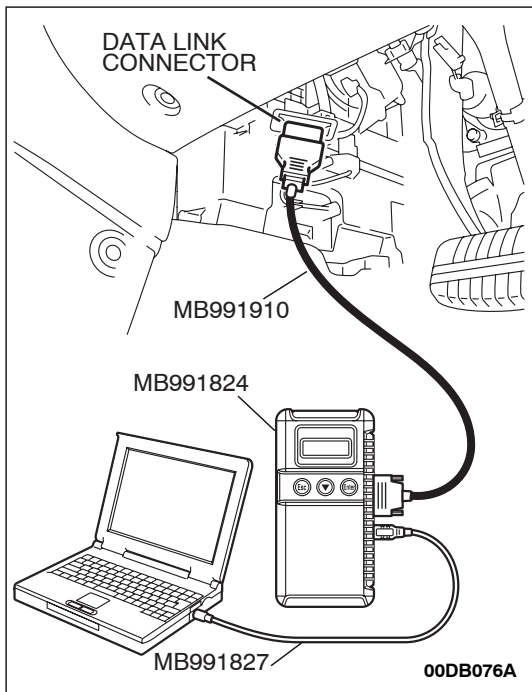
STEP 6. Using diagnostic tool, check data list.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items in the data list. Refer to Data List Reference Table P.13A-637.
 - a. Item 06: Engine Coolant Temperature Sensor.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : Go to Step 7.

NO : Repair or replace it. Then confirm that the malfunction symptom is eliminated.

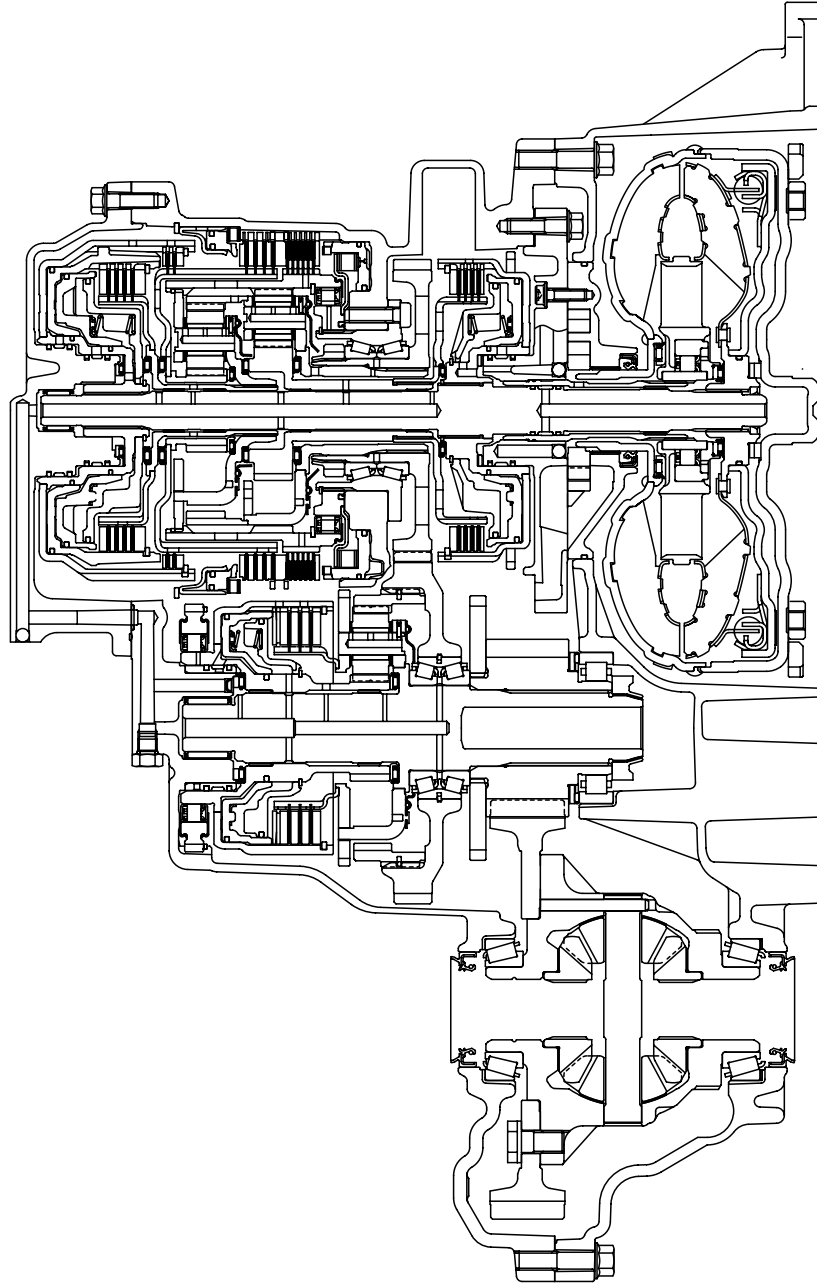


GENERAL INFORMATION

M1233000100715

Transmission model	Combined engine	Vehicle model
F5A5A-4-C2Z	6G75-S4-MPI	DL1A

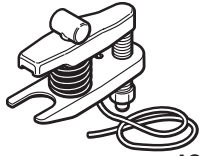
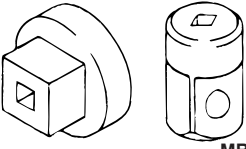
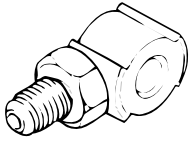
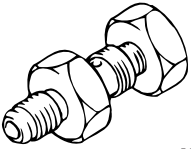
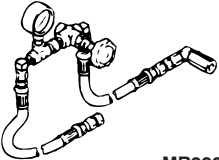
SECTIONAL VIEW



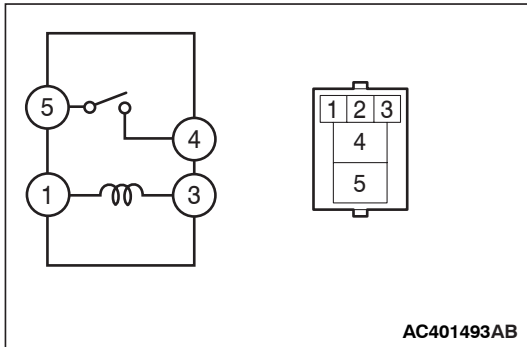
AK403256

SPECIAL TOOLS

M1372000600387

TOOL	TOOL NUMBER AND NAME	SUPERSESSON	APPLICATION
 <p>AC106827</p>	<p>MB991897 Ball joint remover</p>	<p>MB991113-01, MB990635-01 or General service tool</p>	<p>Knuckle and tie rod end ball joint disconnection <i>NOTE: Steering linkage puller (MB990635 or MB991113) is also available to disconnect knuckle and tie rod end ball joint.</i></p>
 <p>MB990326</p>	<p>MB990326 Preload socket</p>	<p>General service tool</p>	<p>Tie rod end ball joint breakaway torque check</p>
 <p>MB991548</p>	<p>MB991548 Power steering oil pressure gauge adapter (Pump side)</p>	<p>MB991548-01</p>	<p>Oil pump pressure test</p>
 <p>MB991549</p>	<p>MB991549 Power steering oil pressure gauge adapter (Hose side)</p>	<p>MB991549-01</p>	
 <p>MB990662</p>	<p>MB990662 Power steering oil pressure gauge</p>	<p>MB990662-01</p>	

STEP 4. Check the power window relay.



BATTERY CONNECTION	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	4 – 5	Open circuit
<ul style="list-style-type: none"> Connect terminal 1 to the positive battery terminal Connect terminal 3 to the negative battery terminal 	4 – 5	Less than 2 ohms

Q: Is the power window relay normal?

YES : Go to Step 5.

NO : Replace the power window relay. Verify that the power windows work normally.

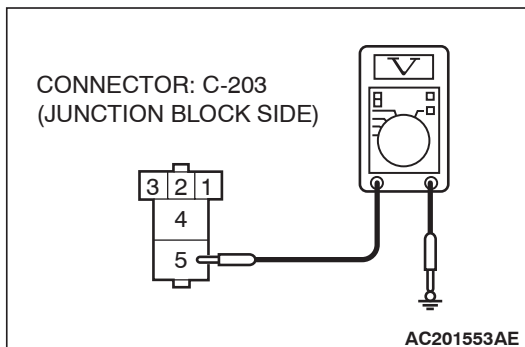
STEP 5. Check the battery power supply circuit to the power window relay. Measure the voltage at power window relay connector C-203.

- (1) Disconnect power window relay connector C-203 and measure the voltage available at the junction block side of the connector.
- (2) Measure the voltage between terminal 5 and ground.
 - The voltage should measure approximately 12 volts (battery positive voltage).

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

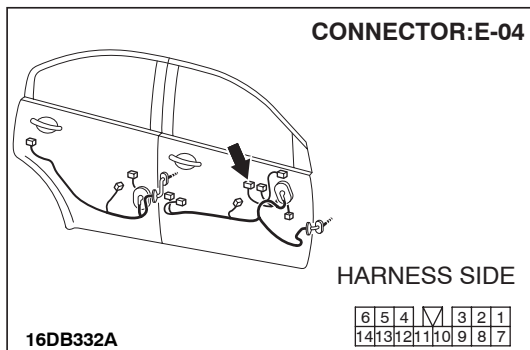
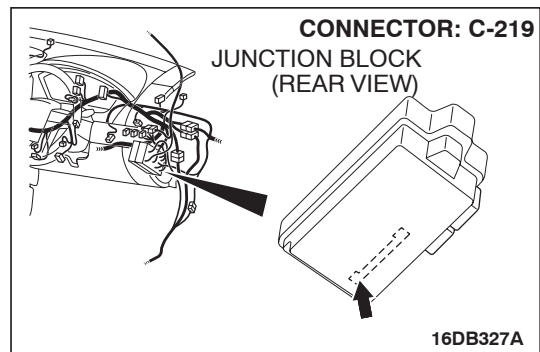
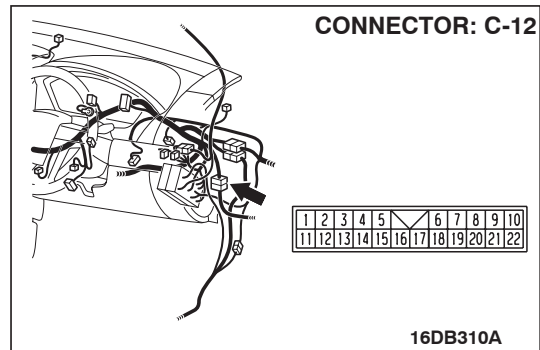
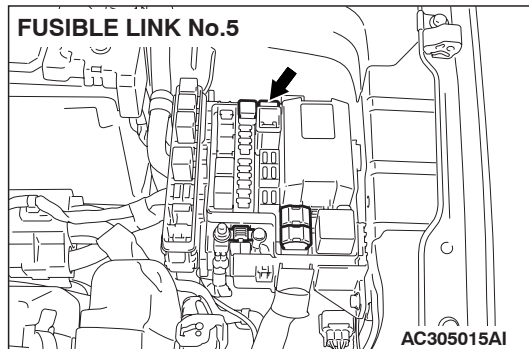
YES : Go to Step 7.

NO : Go to Step 6.



INSPECTION PROCEDURE D-1: Power Windows: Power windows do not work at all.

NOTE: This troubleshooting procedure requires use of diagnostic tool MB991958 and SWS monitor kit MB991813. For details on how to use the SWS monitor, refer to "How to connect SWS monitor P.54B-13."

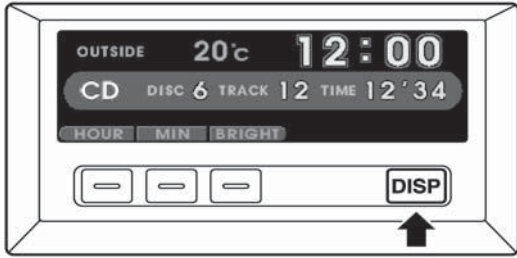


CIRCUIT OPERATION

The ETACS-ECU turns on the power window relay (installed on the junction block) to activate the power windows when the ignition switch (IG1) is turned to the "ON" position.

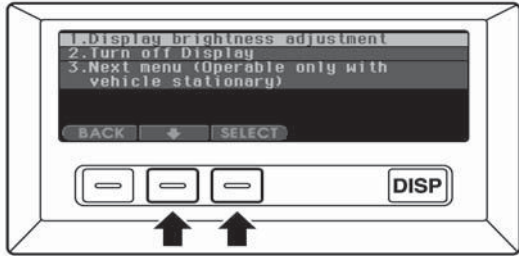
TROUBLESHOOTING HINTS

- Refer to circuit diagrams GROUP-90
- Refer to configuration diagrams GROUP-80
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The power window relay may be defective
- The power window main switch may be defective
- The ETACS-ECU may be defective



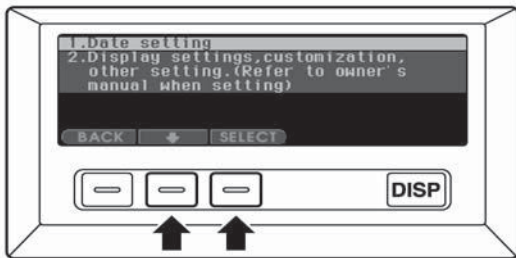
PRESS AND HOLD THE "DISP" BUTTON FOR AT LEAST 2 SECONDS TO CHANGE THE DISPLAY

(for more information on display settings refer to owner's manual).

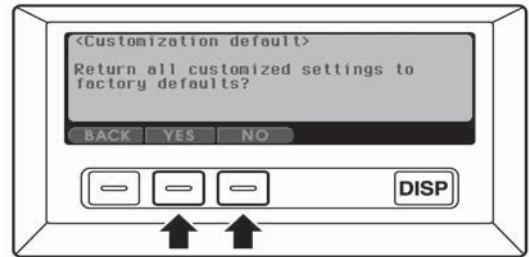


PRESS THE FUNCTION BUTTON AND SCROLL DOWN CURSOR WITH DESIRED SETTING AND PRESS THE "SELECT" BUTTON

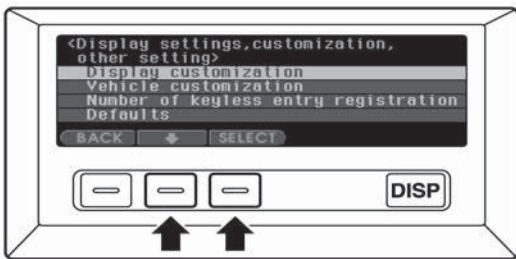
SELECT : "3. NEXT MENU (Operable only with vehicle stationary)



SELECT : "2. DISPLAY SETTINGS, CUSTOMIZATION, OTHER SETTINGS. (refer to owner's manual when setting)

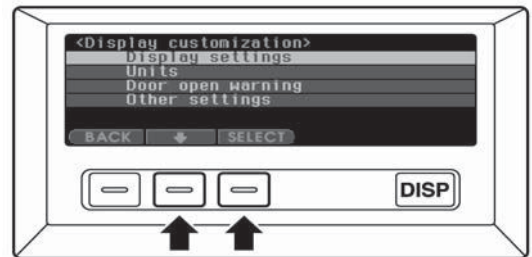


To return all customized settings to their initial conditions, press the "YES" function button. If you press the "NO" button, the monitor will return to the "DEFAULTS" display.



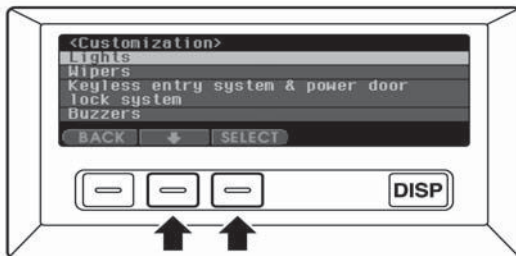
SELECT : DEFAULTS

SELECT : DISPLAY CUSTOMIZATION

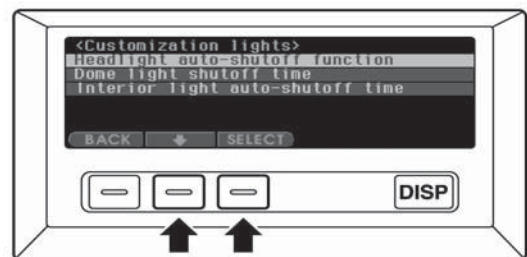


select function you wish to change.

SELECT : VEHICLE CUSTOMIZATION



SELECT : LIGHTS



select function you wish to change.

STEP 8. Check the front wiring harness side CAN bus lines (communication line including the ENGINE-ECU, A/T-ECU and the ABS-ECU). Measure the resistance at intermediate connector C-29.

NOTE: when diagnosing CAN-BUS on vehicles with manual transmission (M/T), disregard A/T-ECU and it's wiring circuits and check between ABS-ECU and ENGINE-ECU only.

CAUTION

A digital multimeter should be used. For details refer to P.54C-4.

CAUTION

The test wiring harness should be used. For details refer to P.54C-4.

- (1) Disconnect intermediate connector C-29, and measure the resistance at the male side (at front wiring harness side).
- (2) Turn the ignition switch to the "LOCK" (OFF) position.

CAUTION

Disconnect the negative battery terminal. For details refer to P.54C-4.

- (3) Disconnect the negative battery terminal.

- (4) Measure the resistance between intermediate connector terminals 11 and 12.

OK: $120 \pm 20 \Omega$

Q: Does the resistance measure $120 \pm 20 \Omega$?

YES : If the resistance measures $120 \pm 20 \Omega$, go to Step 15.

NO : If the resistance does not measure $120 \pm 20 \Omega$, go to Step 9 .

