

HOW TO USE THIS MANUAL

M1001000100660

SCOPE OF MAINTENANCE, REPAIR AND SERVICING EXPLANATIONS

This manual provides explanations, etc. concerning procedures for the inspection, maintenance, repair and servicing of the subject model. Note, however, that for engine and transmission-related component parts, this manual covers only on-vehicle inspections, adjustments, and the removal and installation procedures for major components. For detailed information concerning the inspection, checking, adjustment, disassembly and reassembly of the engine, transmission and major components after they have been removed from the vehicle, please refer to separate manuals covering the engine and the transmission.

ON-VEHICLE SERVICE

"On-vehicle Service" is procedures for performing inspections and adjustments of particularly important locations with regard to the construction and for maintenance and servicing, but other inspection (for looseness, play, cracking, damage, etc.) must also be performed.

INSPECTION

Under this title are presented inspection and checking procedures to be performed by using special tools and measuring instruments and by feeling, but, for actual maintenance and servicing procedures, visual inspections should always be performed as well.

DEFINITION OF TERMS

STANDARD VALUE

Indicates the value used as the standard for judging the quality of a part or assembly on inspection or the value to which the part or assembly is corrected and adjusted. It is given by tolerance.

LIMIT

Shows the standard for judging the quality of a part or assembly on inspection and means the maximum or minimum value within which the part or assembly must be kept functionally or in strength. It is a value established outside the range of standard value.

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.

INDICATION OF TIGHTENING TORQUE

Tightening torques (units: N·m) are set to take into account the central value and the allowable tolerance. The central value is the target value, and the allowable tolerance provides the checking range for tightening torques. If bolts and nuts are not provided with tightening torques, refer to [P.00-33](#).

MODEL INDICATIONS

The following abbreviations are used in this manual for identification of model types.

MPI::Indicates the multipoint injection.

SOHC::Indicates an engine with the single overhead camshaft.

DOHC::Indicates an engine with the double overhead camshaft.

2000:: Indicates models equipped with the 2,000 mL <4G63> petrol engine.

2400::Indicates models equipped with the 2,400 mL <4G69> petrol engine.

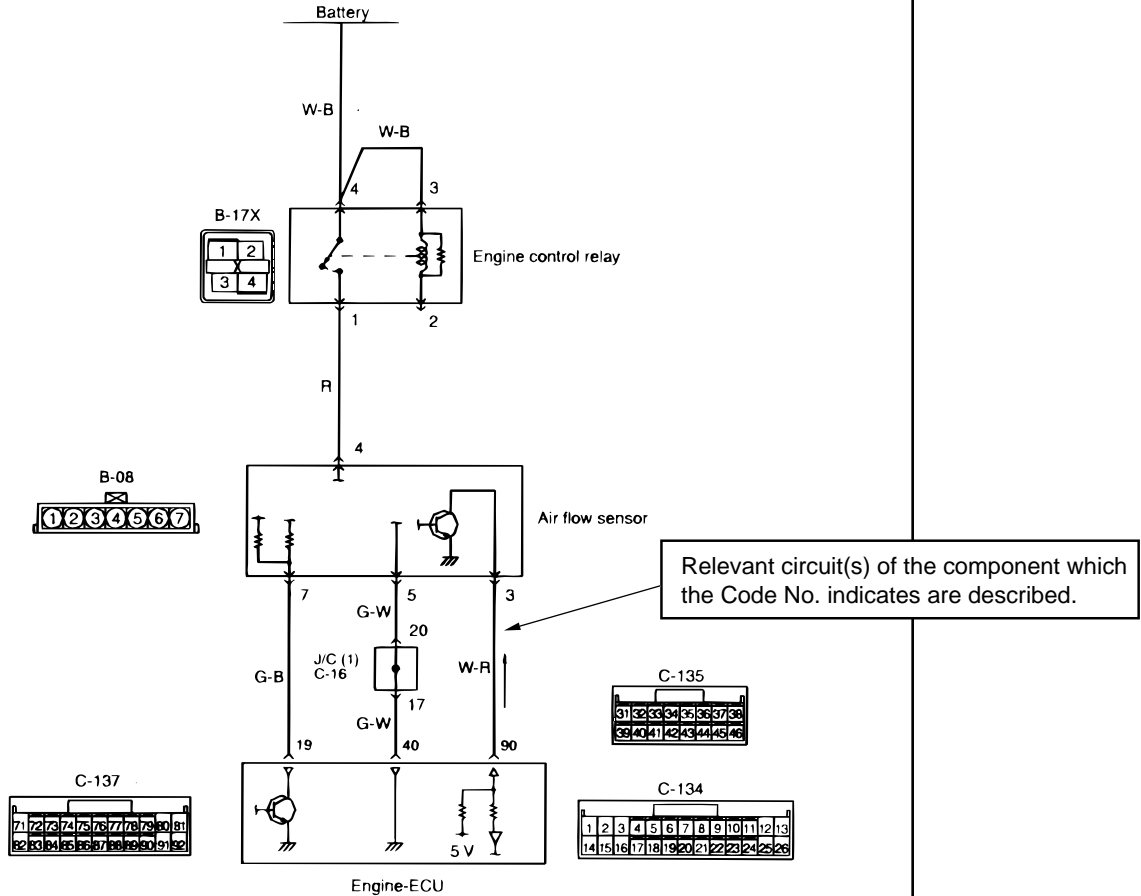
M/T:: Indicates the manual transmission.

A/T:: Indicates the automatic transmission.

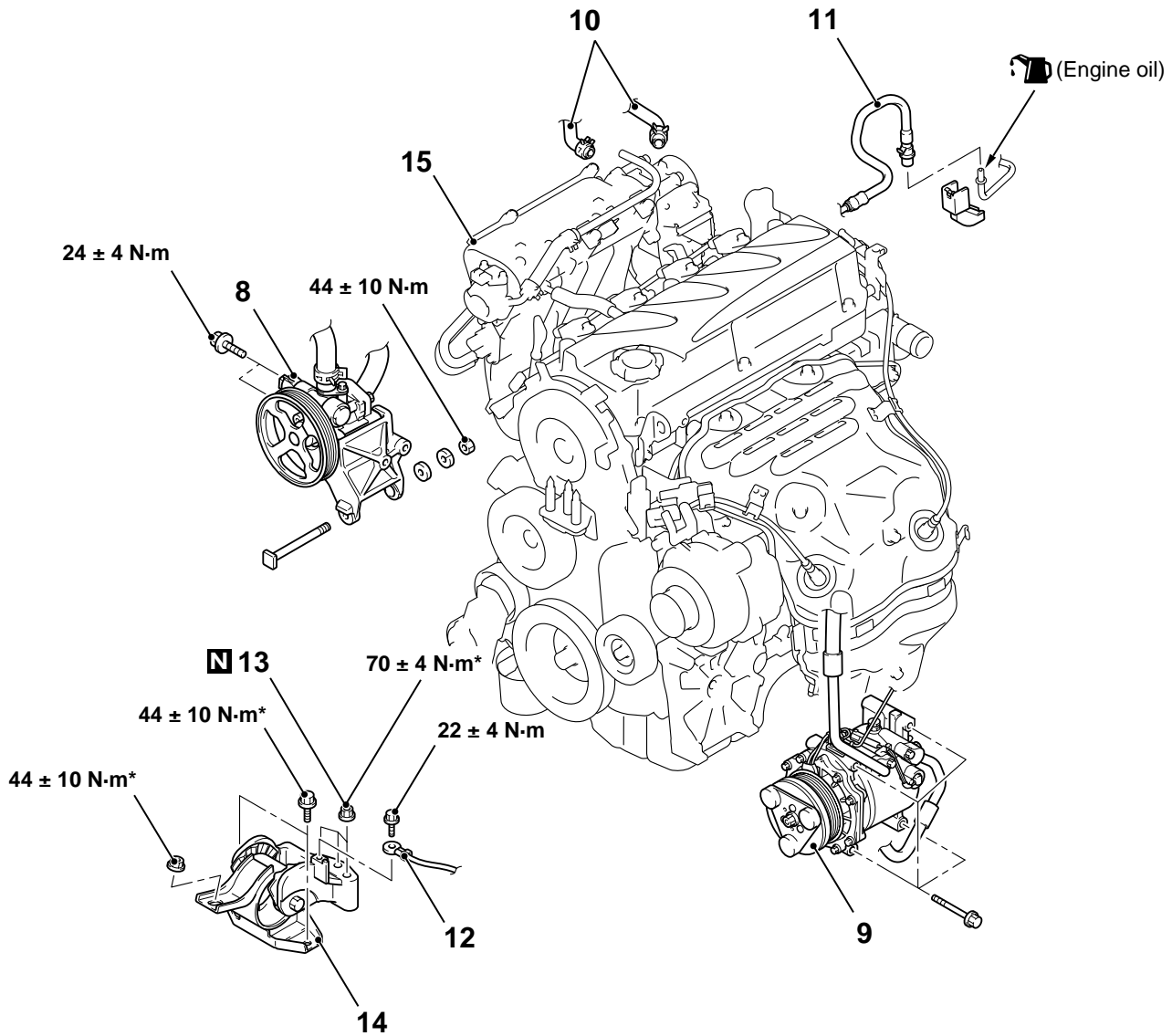
A/C:: Indicates the air conditioner.

Code No. P0100 Air Flow Sensor System

Air flow sensor circuit



Wire colour code
 B: Black LG: Light green G: Green L: Blue W: White Y: Yellow SB: Sky blue BR: Brown O: Orange GR: Gray
 R: Red P: Pink V: Violet



AC308984AB

Removal steps

Removal steps (Continued)

- <> 8. Power steering oil pump and bracket assembly
- <<C>> 9. A/C compressor and clutch assembly
- <<D>> >>E<< 10. Heater water hoses connection
- >>E<< 11. Fuel high-pressure hose connection

- <<E>> >>D<< • Transmission assembly
- <<F>> >>B<< 12. Earth cable connection
- <<G>> >>A<< 13. Self-locking nuts
- >>A<< 14. Engine front mounting bracket
- >>B<< 15. Engine assembly

GENERAL INFORMATION

- The fuel tank is located under the floor of the rear seats to provide increased protection and a more luggage space.
- A fuel tank safety valve assembly has been adopted to prevent fuel from leaking out in case of a collision.
- A fuel pump assembly <2WD>, fuel pump and gauge assembly <4WD> including fuel pump, fuel filter, reservoir and fuel gauge unit, has been adopted to lighten weight and improve serviceability.

M113500100350

SEALANT

M1135005200017

Item	Specified sealant
Service hole cover and floor pan <2WD>	3M™ 8513 Grommets windshield sealer (Black)

ON-VEHICLE SERVICE

FUEL PUMP OPERATION CHECK

M1135001000118

Refer to GROUP 13A – On-vehicle Service, Fuel Pump Operation Check [P.13A-310](#).

FUEL GAUGE UNIT CHECK

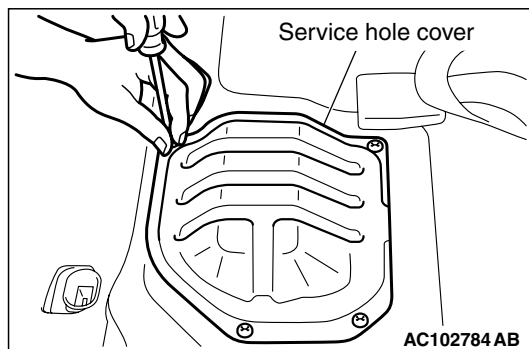
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Refer to GROUP 54A – Combination Meter, On-vehicle Service, Fuel Gauge Unit Check [P.54A-44](#) <2WD>, [P.54A-45](#) <4WD>.

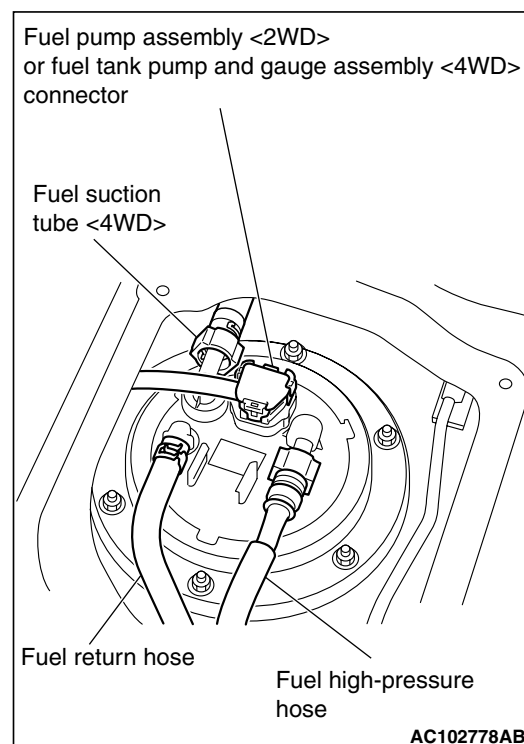
FUEL PUMP ASSEMBLY <2WD>, FUEL TANK PUMP AND GAUGE ASSEMBLY <4WD> REPLACEMENT

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1. Remove the rear seat cushion assembly (Refer to GROUP 52A – Rear seat assembly [P.52A-25](#)).



2. Remove the service hole cover mounting screws and remove the service hole cover.

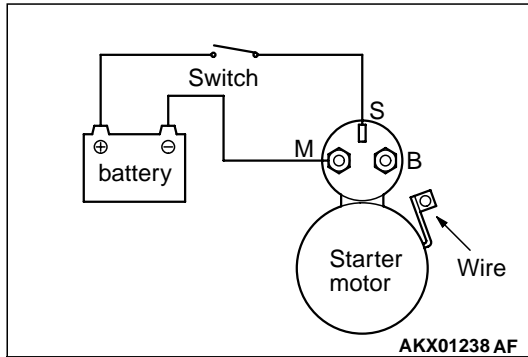


3. Disconnect the fuel pump assembly <2WD> or fuel tank pump and gauge assembly <4WD> connector, fuel return hose, fuel high-pressure hose and fuel suction tube <4WD>.

STARTER MOTOR ASSEMBLY INSPECTION

M1162001100227

PINION GAP ADJUSTMENT

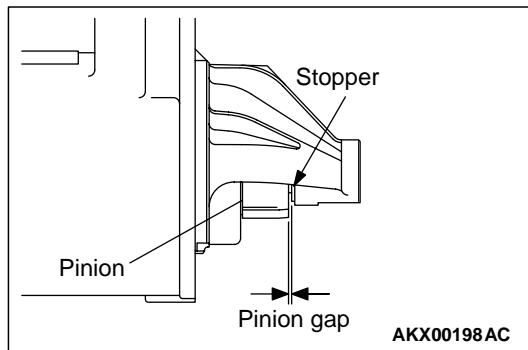


1. Disconnect the field coil wire from the M-terminal of the magnetic switch.
2. Connect a 12-volt battery between the S-terminal and M-terminal.

CAUTION

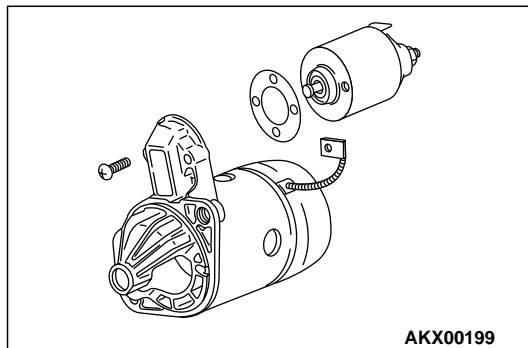
This test must be performed quickly (in less than 10 seconds) to prevent the coil from burning.

3. Set the switch to "ON", and the pinion will move out.



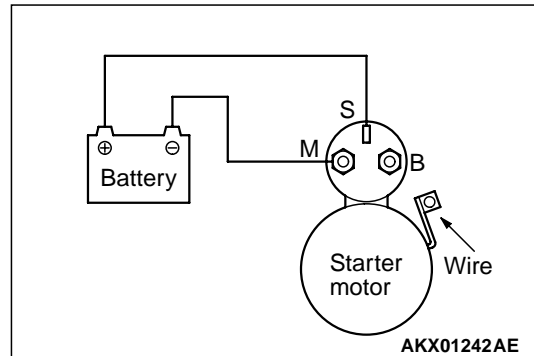
4. Check the pinion-to-stopper clearance (pinion gap) with a feeler gauge.

Standard value: 0.5 – 2.0 mm



5. If the pinion gap is out of specification, adjust by adding or removing gasket(s) between the magnetic switch and front bracket.

MAGNETIC SWITCH PULL-IN TEST



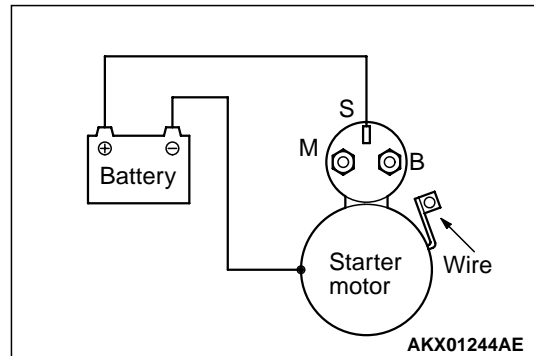
1. Disconnect the field coil wire from the M-terminal of the magnetic switch.

CAUTION

This test must be performed quickly (in less than 10 seconds) to prevent the coil from burning.

2. Connect a 12-volt battery between the S-terminal and M-terminal.
3. If the pinion moves out, the pull-in coil is good. If it doesn't, replace the magnetic switch.

MAGNETIC SWITCH HOLD-IN TEST



1. Disconnect the field coil wire from the M-terminal of the magnetic switch.

CAUTION

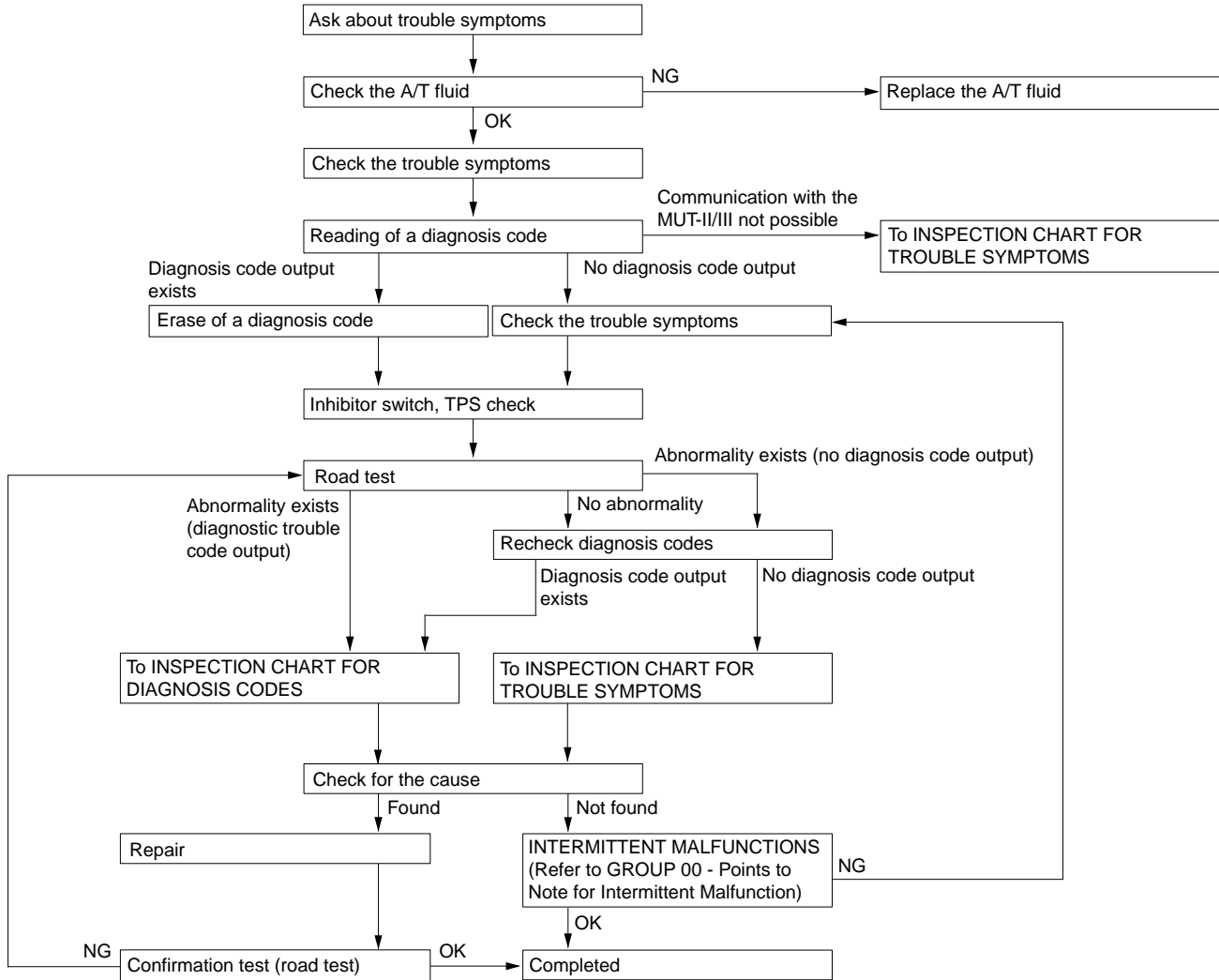
This test must be performed quickly (in less than 10 seconds) to prevent the coil from burning.

2. Connect a 12-volt battery between the S-terminal and body.
3. Manually pull out the pinion as far as the pinion stopper position.
4. If the pinion remains out, everything is in order. If the pinion moves in, the hold-in circuit is open. Replace the magnetic switch.

TROUBLESHOOTING <A/T>

STANDARD FLOW OF DIAGNOSIS TROUBLESHOOTING

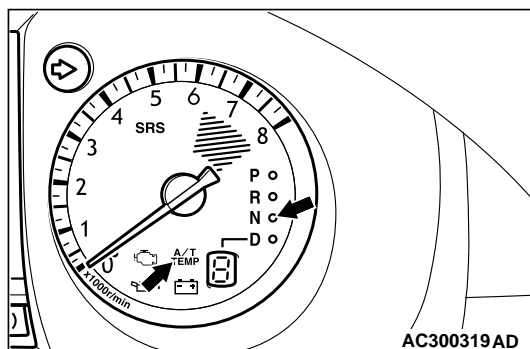
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DIAGNOSIS FUNCTION N RANGE LAMP SYSTEM

M1231019000215



If there is a problem with any of the A/T system, the N range lamp will flash at a rate of approximately 1Hz.

If the N range lamp is flashing at a rate of approximately 1 Hz, check the diagnosis output.

N range lamp flashing item

- Input shaft speed sensor system
- Output shaft speed sensor system
- Solenoid valve system
- Non-synchronization at various shift ranges
- A/T control relay system

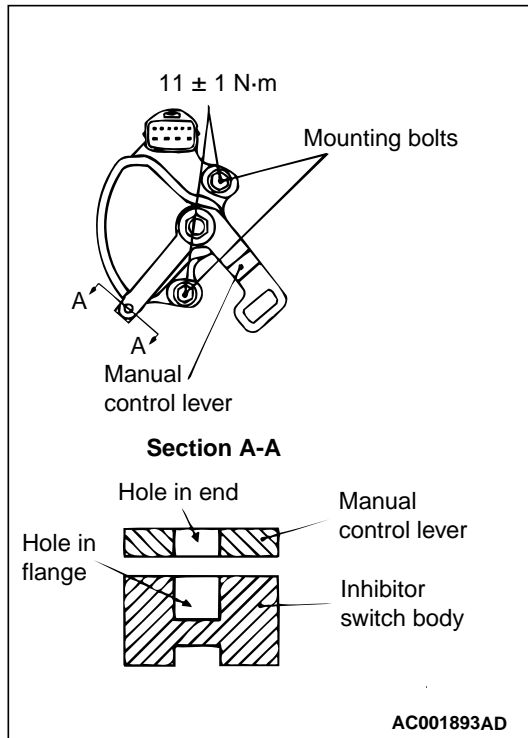
Item	Terminal No.	Resistance
P	3 – 8, 9 – 10	Less than 2 Ω
R	7 – 8	
N	4 – 8, 9 – 10	
D	1 – 8	

NOTE: The inhibitor switch has 7 positions, but only four positions [P, R, N and D] are used.

INHIBITOR SWITCH AND CONTROL CABLE ADJUSTMENT

M1231010300316

1. Move the selector lever to the N position.
2. Loosen the adjusting nut, and set the manual control lever upper and lower to the free condition.
3. Move the manual control lever lower to the neutral position.



4. Loosen the inhibitor switch body mounting bolt, and then turn the inhibitor switch to adjust so that the hole at the end of the manual control lever and the hole in the inhibitor switch body flange (section A – A in the illustration at left) are aligned.

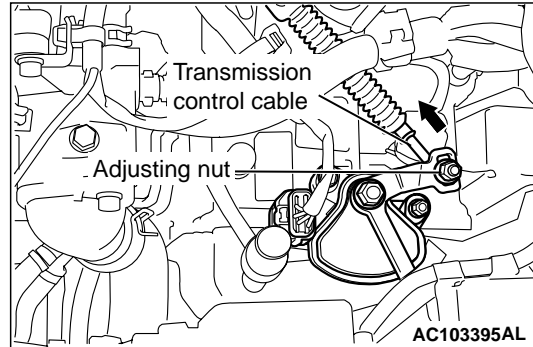
NOTE: The inhibitor switch body can be aligned by hand, because the manual control lever end is as wide as the switch body flange. Alternatively, the inhibitor switch can also be aligned by inserting a 5-mm bar in the holes of the manual control lever end and the inhibitor switch body flange.

CAUTION

Be careful not let the inhibitor switch body slip out of place.

5. Tighten the inhibitor switch body mounting bolt to the specified torque.

Tightening torque: 11 ± 1 N·m



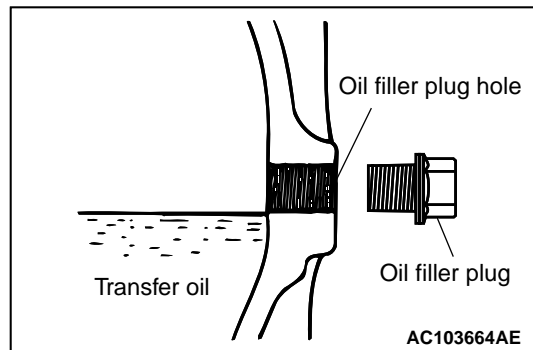
6. Gently push the transmission control cable in the direction as shown in the illustration at left, and tighten the adjusting nut the specified torque.

Tightening torque: 12 ± 2 N·m

7. Check that the selector lever is at the N position.
8. Check that the transmission shifts to the correct range corresponding to the position of the selector lever, and that it functions correctly in that range.

TRANSFER OIL LEVEL CHECK

M1231001100132

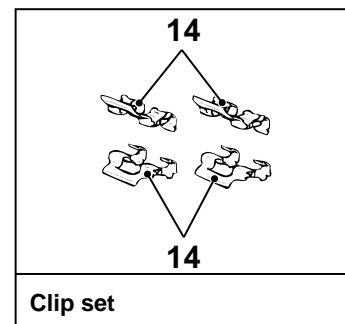
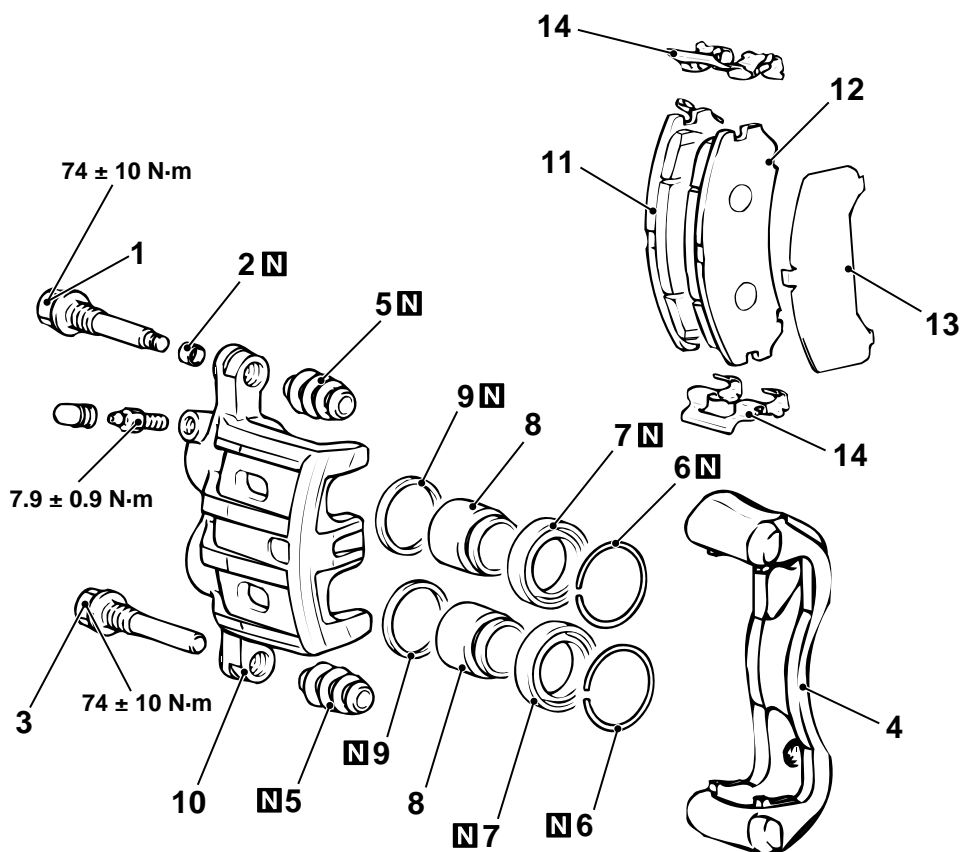


1. Remove the filler plug.
2. Check that the oil level is up to the lower edge of the filler plug hole.
3. Check that the oil is not noticeably dirty.
4. Tighten the filler plug to the specified torque.

Tightening torque: 32 ± 2 N·m

DISASSEMBLY AND REASSEMBLY

M1351006200423



AC202238 AD

<p>Caliper kit</p>	<p>Pad set</p>	<p>Shim set</p>	<p>Caliper seal kit</p>

Disassembly steps

1. Lock pin
2. Bushing
3. Guide pin
4. Caliper support (including pad, clip, and shim)
5. Pin boot
6. Boot ring
7. Piston boot
8. Piston

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Disassembly steps (Continued)

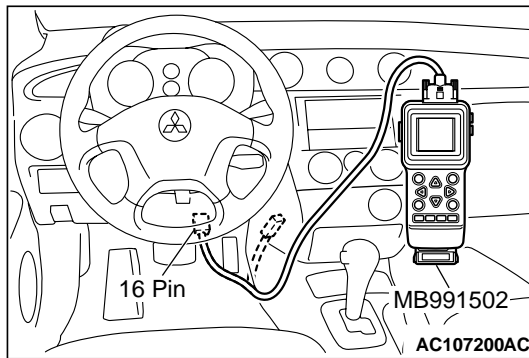
9. Piston seal
10. Caliper body
11. Pad and wear indicator assembly
12. Pad assembly
13. Outer shim
14. Clip

<When the transmitter is used after connecting MUT-II to the diagnosis connector>

1. Enter the hazard answerback customize mode by performing one of the following steps. If the ETACS-ECU enters the customize mode, its buzzer will sound once.
 - (1) Turn the ignition switch to "LOCK"(OFF) position.
 - (2) Turn off the hazard warning lamp switch.

⚠ CAUTION

Before connecting or disconnecting the MUT-II, turn the ignition switch to the "LOCK" (OFF) position.



- (3) Connect the MUT-II to the diagnosis connector.
- (4) Close the driver's side door.
- (5) Keep the windshield washer switch on for at least ten seconds. Then the ETACS-ECU buzzer will sound once.

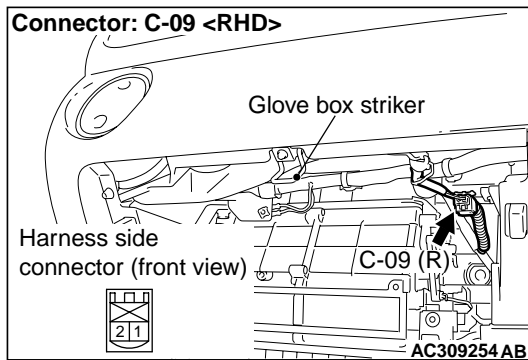
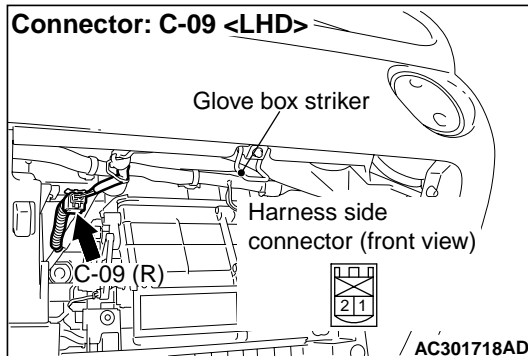
2. If the transmitter "LOCK" button is pushed consecutively twice (within two seconds), the ETACS-ECU buzzer will sound, indicating that the hazard answerback function can be enabled or disabled when the doors are locked.
 - **Enable the hazard answerback function when the doors are locked: The ETACS-ECU buzzer will sound once.**
 - **Disable the hazard answerback function when the doors are locked: The ETACS-ECU buzzer will sound twice.**
3. If the transmitter "UNLOCK" button is pushed consecutively twice (within two seconds), the ETACS-ECU buzzer will sound, indicating that the hazard answerback function can be enabled or disabled when the doors are unlocked.
 - **Enable the hazard answerback function when the doors are unlocked: The ETACS-ECU buzzer will sound once.**
 - **Disable the hazard answerback function when the doors are unlocked: The ETACS-ECU buzzer will sound twice.**
4. Exit the hazard answerback customize mode by observing one of the following steps.
 - (1) Disconnect MUT-II from the diagnosis connector.
 - (2) Turn the ignition switch to position other than "LOCK"(OFF), or remove the ignition key.
 - (3) Open the driver's side door,
 - (4) Any other warning buzzer output occurs.

NOTE: If any operation is not done for at least three minutes after the ETACS-ECU has entered the customize mode, the hazard answerback customize mode will be canceled automatically.

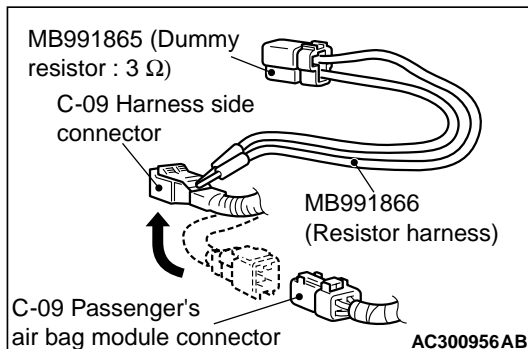
DIAGNOSIS PROCEDURE

**STEP 1. Check the passenger's air bag module.
(Check whether the diagnosis code is reset.)**

(1) Disconnect the negative battery terminal.



(2) Unclip passenger's air bag module connector C-09.

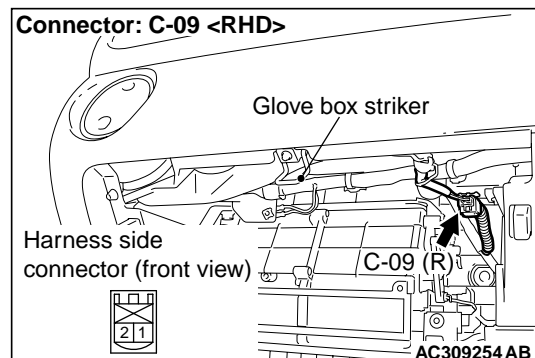
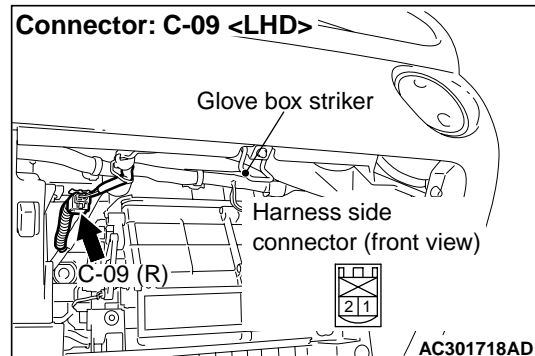


(3) Connect special tool dummy resistor (MB991865)

to special tool resistor harness (MB991866).

CAUTION**Do not insert a test probe into the terminal from its front side directly as the connector contact pressure may be weakened.**

- (4) Disconnect the passenger's air bag module connector C-09, and insert special tool (MB991866) into the harness side connector by backprobing.
- (5) Connect the negative battery terminal.
- (6) Erase the diagnosis code memory, and check the diagnosis code.

Q: Is diagnosis code 25 set?**YES :** Go to Step 2.**NO :** Replace the passenger's air bag module (Refer to P.52B-179). Then go to Step 3.**STEP 2. Measure the resistance between SRS-ECU connector C-115 (terminal No.9 and 10) and the passenger's air bag module connector C-09 (terminal No.1 and 2).**

(1) Unclip passenger's air bag module connector C-09.

BATTERY TEST**BATTERY TESTING PROCEDURE**

M1541001200562

STEP 1. Check the battery cables.

Remove the negative cable, then the positive cable.
Check for dirty or corroded connections.

Q: Are the battery cables dirty or have corroded connections?

YES : Clean the battery cables. Then go to Step 2.
NO : Go to Step 2.

STEP 2. Check the battery post.

Check for loose battery post.

Q: Are the battery post faulty?

YES : Replace the battery. Then go to Step 4.
NO : Go to Step 3.

STEP 3. Check the battery case and cover.

- (1) Remove the hold-downs and shields.
- (2) Check for broken/cracked case or cover.

Q: Is the battery case or cover faulty?

YES : Replace the battery. Then go to Step 4.
NO : Go to Step 4.

STEP 4. Check the open circuit voltage.

- (1) Turn headlamps on for 15 seconds.
- (2) Turn headlamps off for two minutes to allow battery positive voltage to stabilize.
- (3) Disconnect the battery cables.
- (4) Read open circuit voltage.

Q: Is open circuit voltage 12.4 volts or more?

YES : Go to Step 5.
NO : Charge the battery at 5 amps for 10.4 hours.
Then re-test.

STEP 5. Check the load test.

- (1) Connect a load tester to the battery.
- (2) Load the battery at the recommended discharge rate (See LOAD TEST RATE CHART) for 15 seconds.
- (3) Read voltage after 15 seconds, then remove load.
- (4) Compare the measured value with the minimum voltage. (See LOAD TEST CHART.)

Q: Is the voltage higher than minimum voltage?

YES : The battery is normal.
NO : Replace the battery. Then go to Step 4.

LOAD TEST CHART

Temperature °C	21 and above	16	10	4	-1	-7	-12	-18
Minimum voltage	9.6	9.5	9.4	9.3	9.1	8.9	8.7	8.5

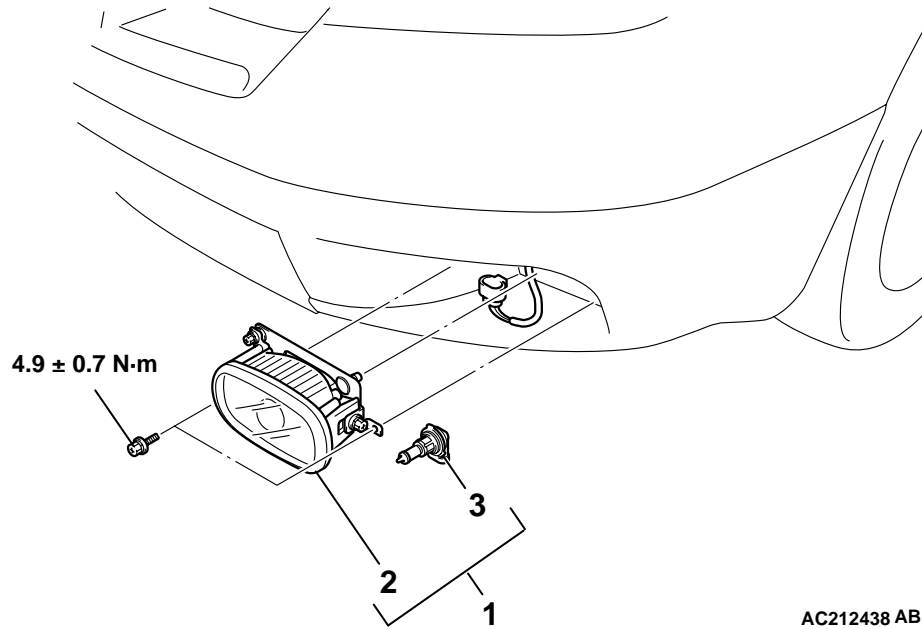
LOAD TEST RATE CHART

Battery type	75D23L
Charging time when fully discharged h (5-amp. rated current charging)	11
Load test (Amps)	275

FOG LAMP

REMOVAL AND INSTALLATION

M1542001500511



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Removal steps

1. Fog lamp assembly
2. Fog lamp
3. Fog lamp bulb

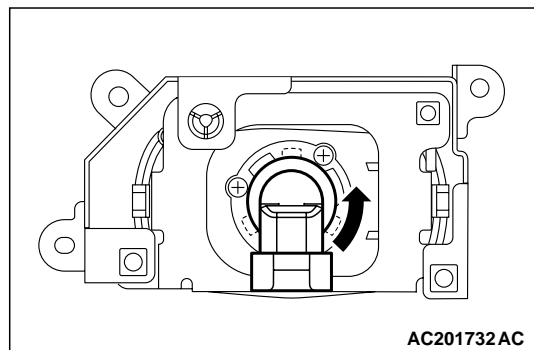
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REMOVAL SERVICE POINT

<<A>> FOG LAMP BULB REMOVAL

CAUTION

- Use the specified genuine part when replacing the bulb.
- Do not touch the glass portion of bulb with bare hand or dirty gloves. Should the glass portion be spoiled, remove the soil as soon as possible using alcohol or thinner and let it dry before mounting.



AC201732 AC

Turn the fog lamp bulb left to remove it.

DIAGNOSIS PROCEDURE

Step 1. Pulse check

Check the input signal from the ignition switch.

System switch	Check condition
Ignition switch (IG1)	When turned from ACC to ON

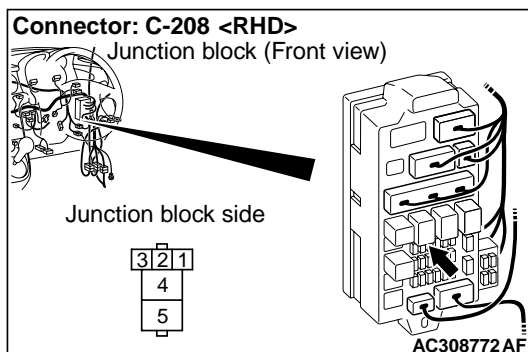
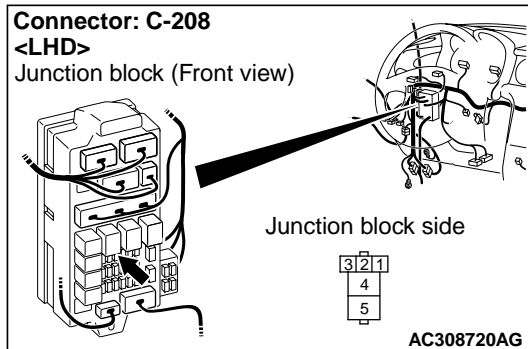
OK: The MUT-II/III sounds or the voltmeter needle fluctuates.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Refer to inspection procedure N-2 "The ignition switch (IG1) signal is not received P.54B-301."

Step 2. Connector check: C-208 power window relay connector



Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the connector.

Step 3. Check the power window relay.

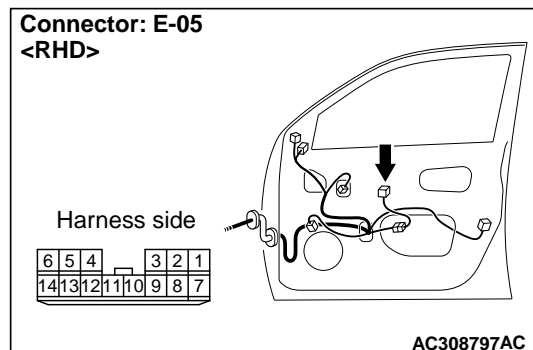
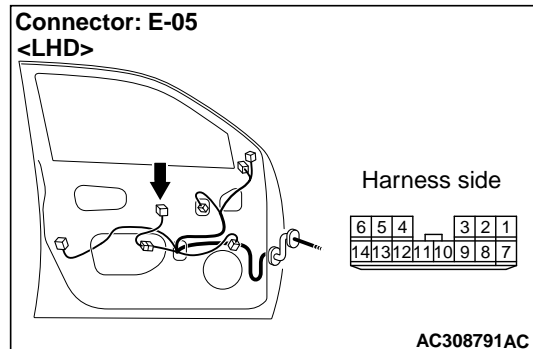
Refer to GROUP 42 – Door – On-vehicle Service P.42-27.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the power window relay.

Step 4. Connector check: E-05 power window main switch connector

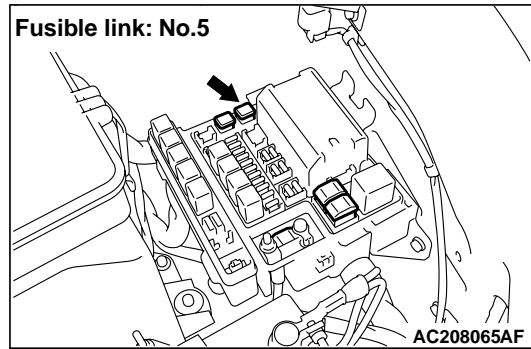
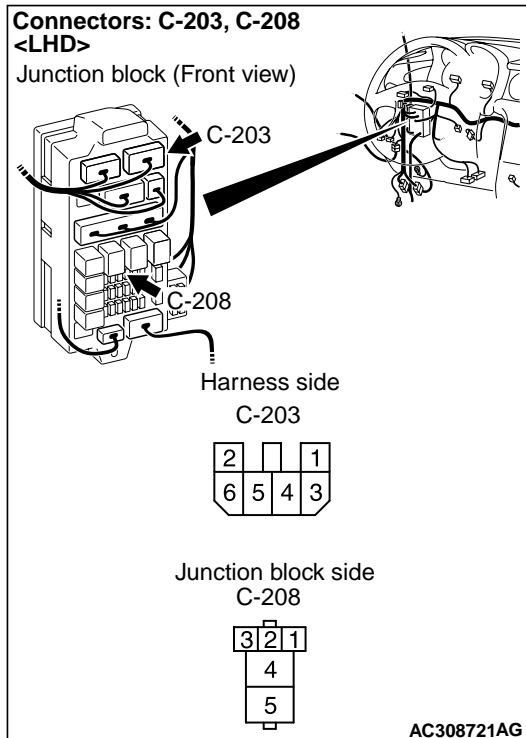


Q: Is the check result normal?

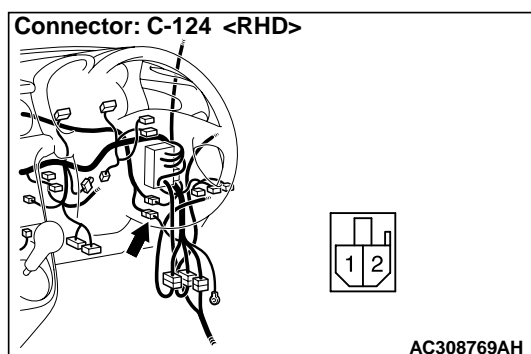
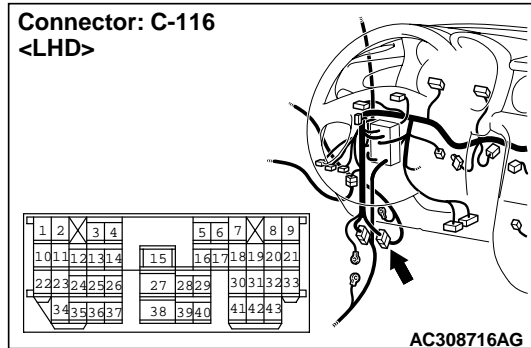
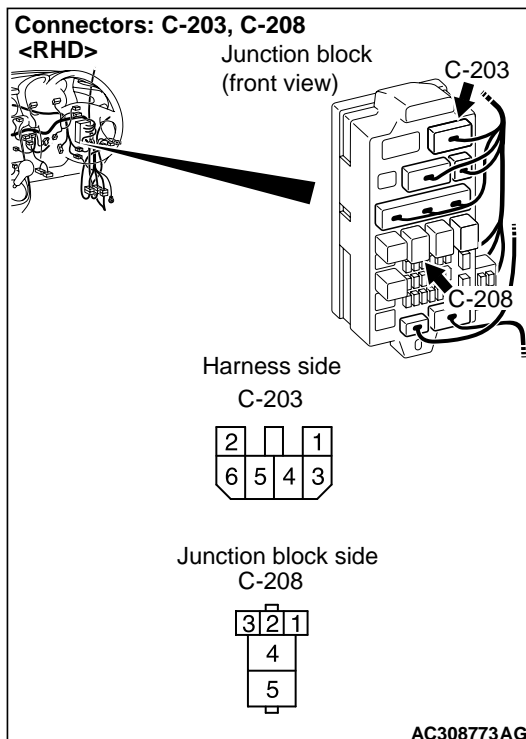
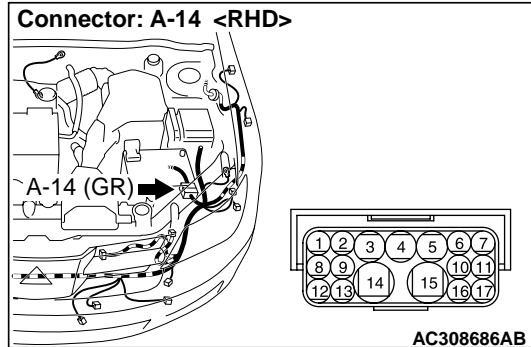
YES : Go to Step 5.

NO : Repair the connector.

Step 8. Check the wiring harness between C-208 power window relay connector terminal No.5 and fusible link (5).



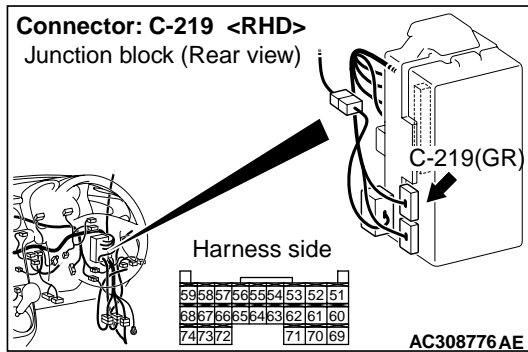
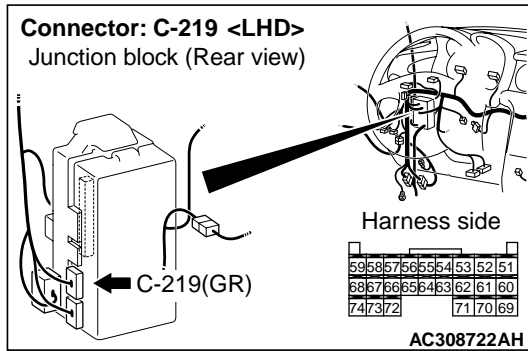
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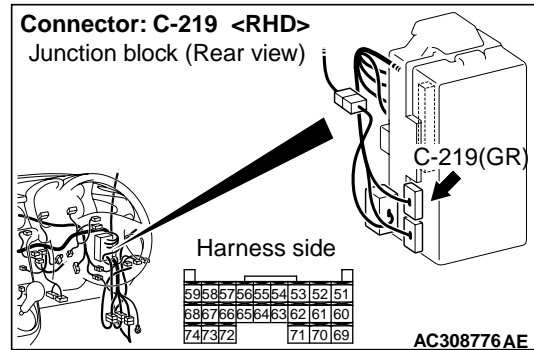
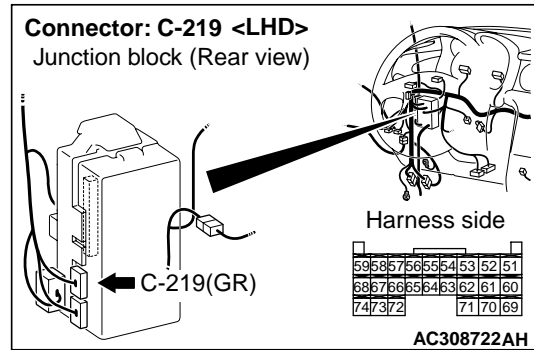
Prior to the wiring harness inspection, check intermediate connectors A-14 <R.H. drive vehicles>, C-116 <L.H. drive vehicles>, C-124 <R.H. drive vehicles> and junction block connector C-203, and repair if necessary.

- Check the power supply line for open circuit.

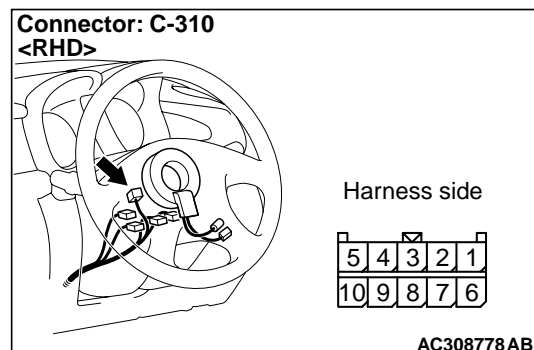
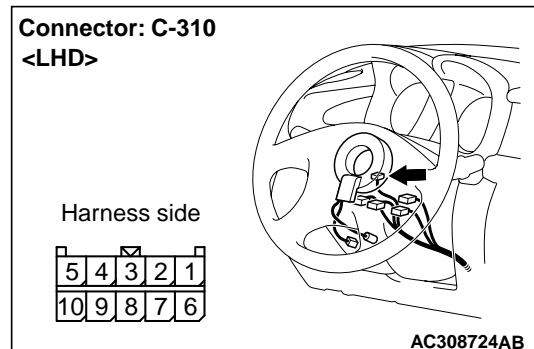
Step 3. Connector check: C-219 ETACS-ECU connector



Step 4. Check the wiring harness between C-310 column switch connector terminal No.6 and C-219 ETACS-ECU connector terminal No.66.



Q: Is the check result normal?
YES : Go to Step 4.
NO : Repair the defective connector.



- Check the input line for open circuit.

Q: Is the check result normal?
YES : Go to Step 5.
NO : Repair the wiring harness.