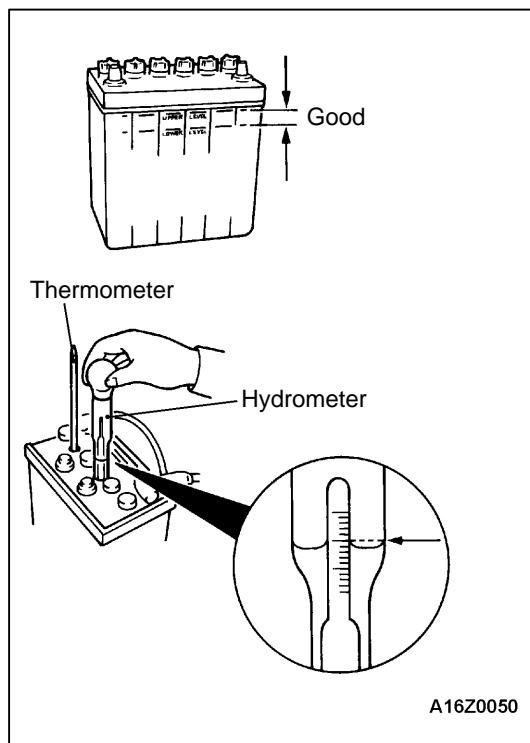


BATTERY

SERVICE SPECIFICATION

| Item | Specification |
|---------------------------------------|----------------------|
| Specific gravity of the battery fluid | 1.220 – 1.290 [20°C] |



ON-VEHICLE SERVICE

FLUID LEVEL AND SPECIFIC GRAVITY CHECK

1. Inspect whether or not the battery fluid is between the UPPER LEVEL and LOWER LEVEL marks.

Caution

- (1) If the battery fluid is below the LOWER LEVEL, the battery could explode in using.
 - (2) If the battery fluid is over the UPPER LEVEL, leakage could result.
2. Use a hydrometer and thermometer to check the specific gravity of the battery fluid.

Standard value: 1.220 – 1.290 [20°C]

The specific gravity of the battery fluid varies with the temperature, so use the following formula to calculate the specific gravity for 20°C. Use the calculated value to determine whether or not the specific gravity is satisfactory.

$$D20 = (t - 20) \times 0.0007 + Dt$$

D20: Specific gravity of the battery fluid calculated for 20°C.

Dt: Actually measured specific gravity

t: Actually measured temperature

CHARGING

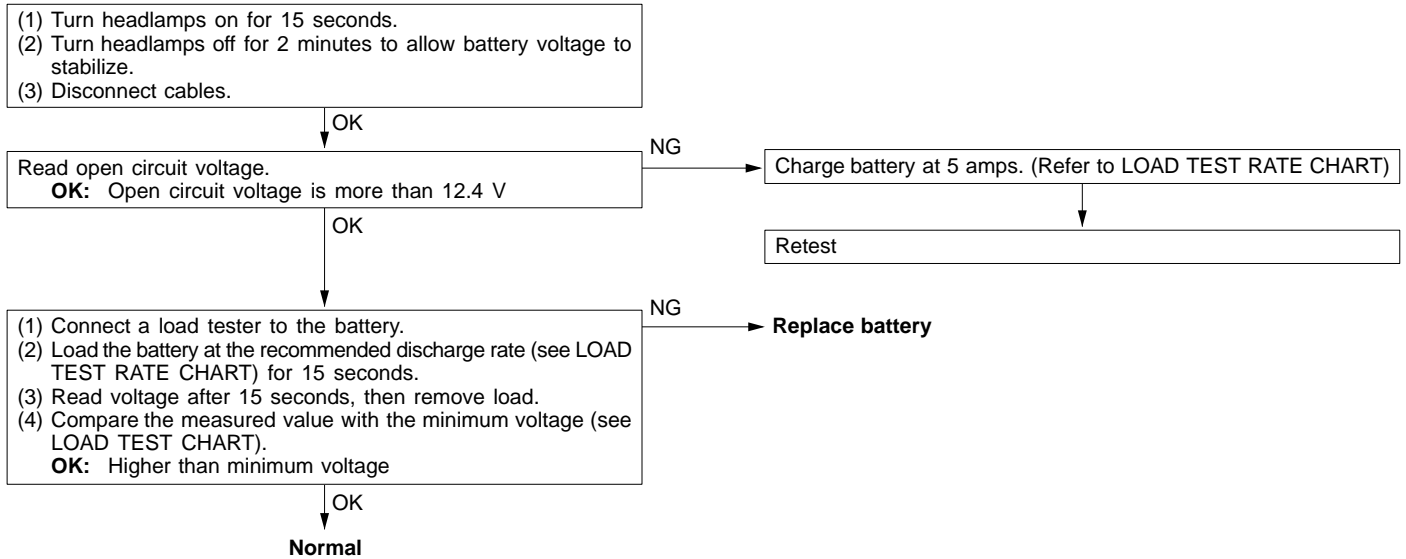
1. Remove the battery from the vehicle.
2. The normal charging current is a value in amperes which is 1/10th of the battery capacity. If the battery needs to be charged rapidly because of reasons such as time limitations, the maximum charging current for rapid charging is the battery capacity expressed as an ampere value.

| Battery type | Capacity (5-hour rate) | Normal charging current | Rapid charging current |
|--------------|------------------------|-------------------------|------------------------|
| 75D23 | 54 A | 5.4 A | 54 A |
| 80D26 | 58 A | 5.8 A | 58 A |
| 95D31 | 70 A | 7.0 A | 70 A |

3. Determine when charging is finished.
 - When the specific gravity of the battery electrolyte is constantly within 1.250 – 1.290 for a continuous period of one hour or more
 - When the voltage per cell during charging is 2.5 – 2.8 V constantly for a continuous period of one hour or more

Caution

1. The battery plugs should be removed during charging.
2. The battery electrolyte level may rise and overflow from the battery during charging.
3. Explosions may occur if the battery is brought close to naked flames during charging.
4. Be careful to avoid tasks that might produce sparks or other danger while the battery is charging.
5. After charging is complete, replace the battery plugs, pour water over the battery to rinse away any sulphuric acid, and let the battery stand to dry.
6. Charge the battery in a well-ventilated location.
7. Do not let the battery electrolyte temperature rise above approximately 45°C (approximately 55°C during rapid charging).

BATTERY TESTING PROCEDURE**TEST STEP****(Table 1)**

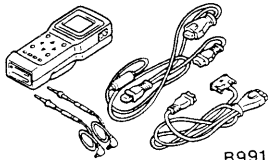
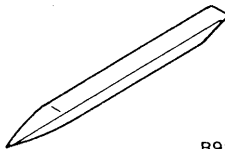
| | | |
|--|--------|--------|
| Battery type | 34B19L | 65D23L |
| Charging time when fully discharged h [5-amp rated current charging] | 6 | 10 |
| Load test (Amps) | 136 | 178 |

(Table 2)

| | | | | | | | | |
|-------------------|--------------|---------|---------|-------|--------|---------|---------|-----------|
| Temperature °C | 21 and above | 16 – 20 | 10 – 15 | 4 – 9 | –1 – 3 | –7 – –2 | –12 – 8 | –18 – –13 |
| Minimum voltage V | 9.6 | 9.5 | 9.4 | 9.3 | 9.1 | 8.9 | 8.7 | 8.5 |

IGNITION SWITCH AND IMMOBILIZER SYSTEM

SPECIAL TOOLS

| Tool | Number | Name | Use |
|--|----------|---------------------|---|
|  B991502 | MB991502 | MUT-II Sub assembly | Checking the ETACS-ECU input signals |
|  B990784 | MB990784 | Ornament remover | Instrument panel under cover and column cover removal |

TROUBLESHOOTING

IGNITION SWITCH

The ignition switch is controlled by the Smart Wiring System (SWS). Refer to [troubleshooting](#) procedures for more information.

IMMOBILIZER

STANDARD FLOW OF DIAGNOSIS TROUBLESHOOTING

Refer to [How to Use Troubleshooting/Inspection Service Points](#).

DIAGNOSIS FUNCTION

READING DIAGNOSIS CODES

The diagnosis codes can be read using the MUT-II or by using the Simple Check Diagnosis mode. (Refer to [How to Use Troubleshooting/Inspection Service Points](#).)

NOTE

Connect the MUT-II to the 16-pin diagnosis connector (black).

DIAGNOSIS CODE MEMORY ERASING PROCEDURE

Refer to [How to Use Troubleshooting/Inspection Service Points](#).

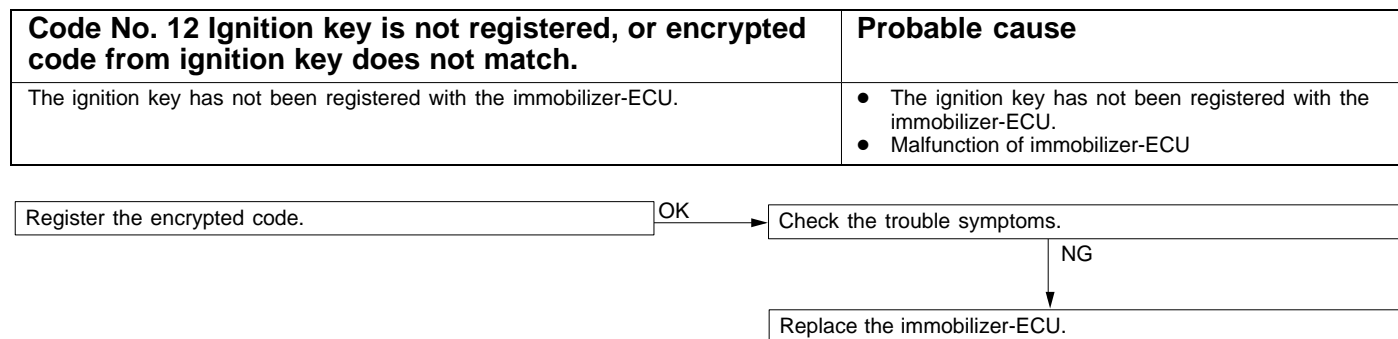
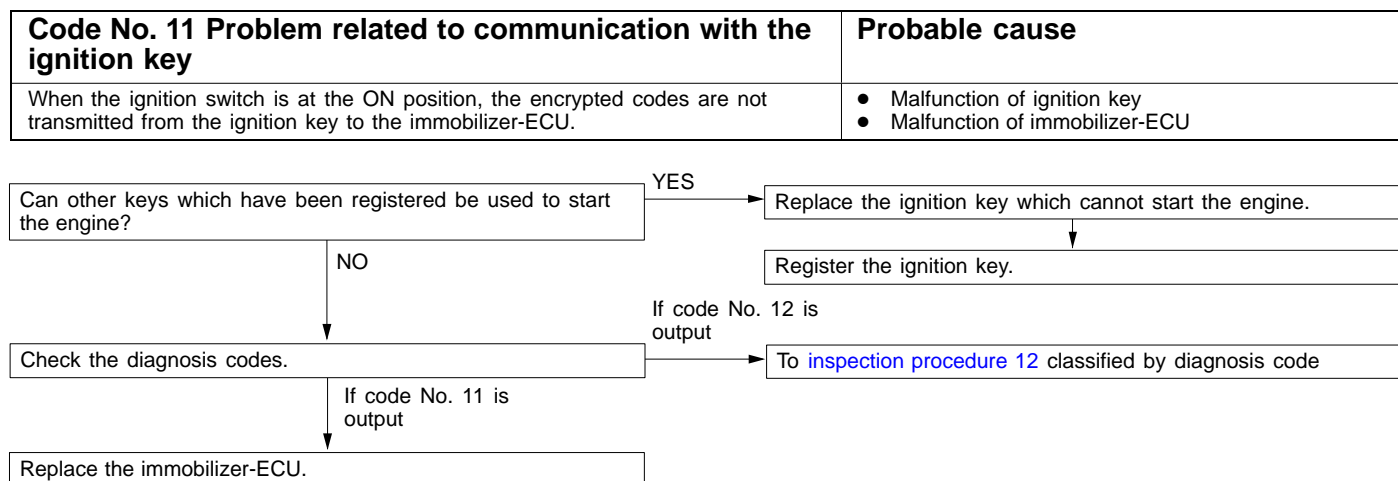
INSPECTION USING SIMPLE CHECK DIAGNOSIS MODE

1. Change to Simple Check Diagnosis mode and activate switch diagnosis mode. (Refer to [How to Use Troubleshooting/Inspection Service Points](#).)
2. In this condition, the input signals for the following switches can be checked.

CHART CLASSIFIED BY DIAGNOSIS CODES

| Code No. | Diagnosis contents |
|----------|---|
| 11 | Problem related to communication with the ignition key |
| 12 | Ignition key is not registered, or encrypted code from ignition key does not match. |

INSPECTION PROCEDURES FOR EACH DIAGNOSIS CODE



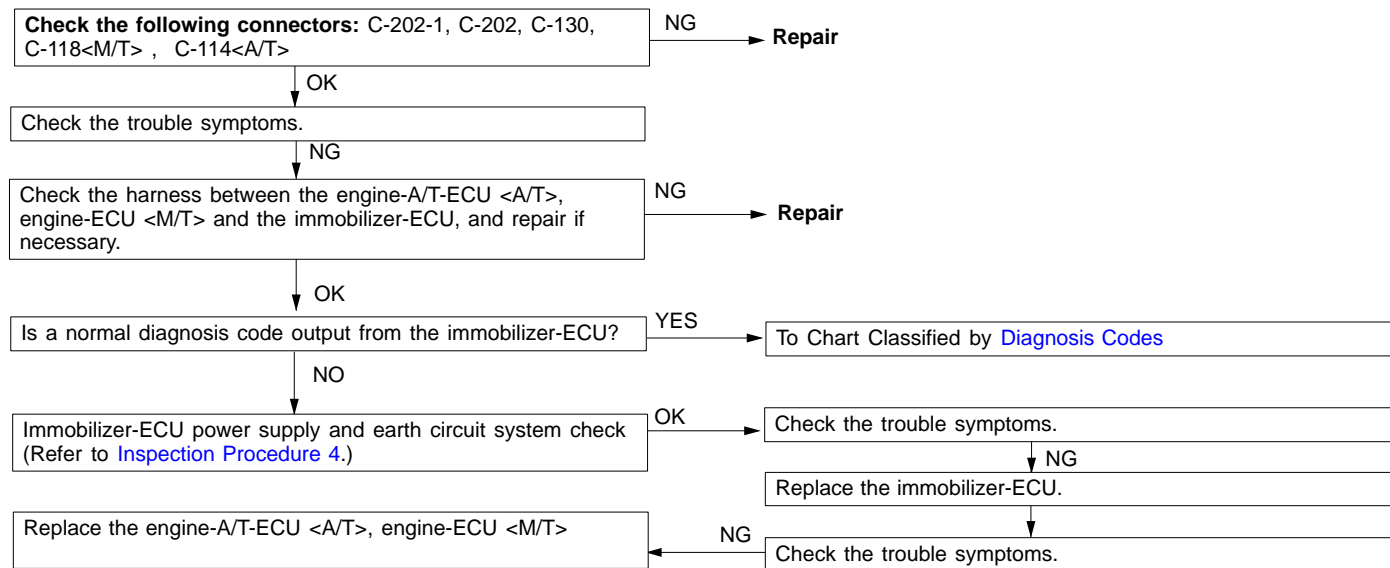
INSPECTION PROCEDURES FOR EACH TROUBLE SYMPTOM

| Trouble symptom | Inspection procedure No. |
|---|--------------------------|
| Communication with MUT-II is not possible. | – |
| Diagnosis code No. P1610 is generated by the engine-ECU <M/T>, engine-A/T-ECU <A/T> | 1 |
| The ignition keys cannot be registered using the MUT-II. | 2 |
| The engine does not start.(The engine cranks but does not fire.) | 3 |
| Immobilizer-ECU power supply and earth circuit system check | 4 |

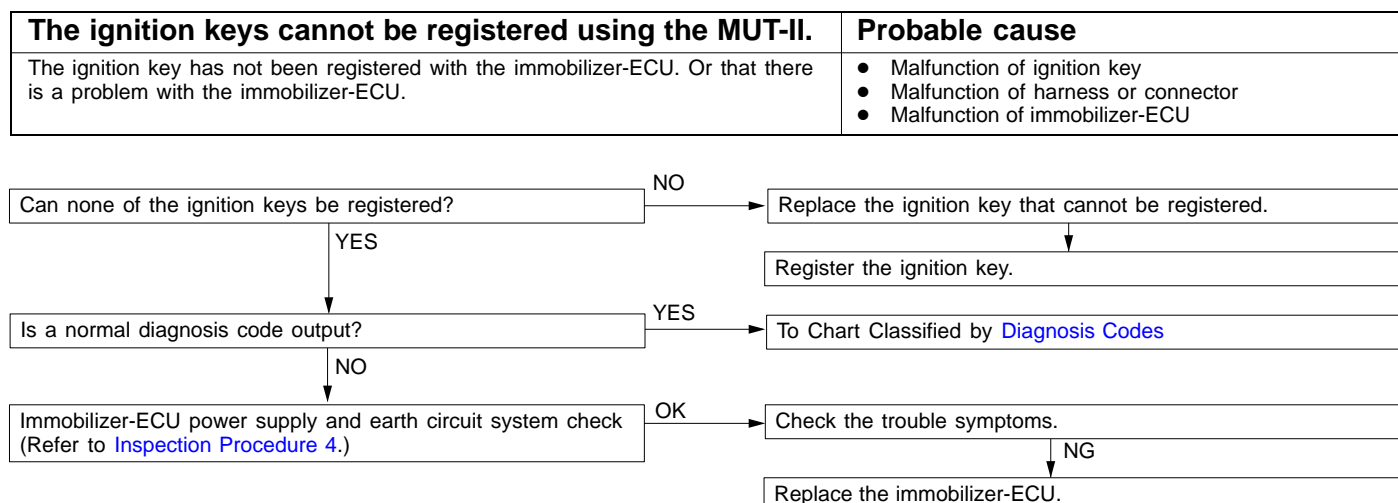
INSPECTION PROCEDURES FOR EACH TROUBLE SYMPTOM

Inspection procedure 1

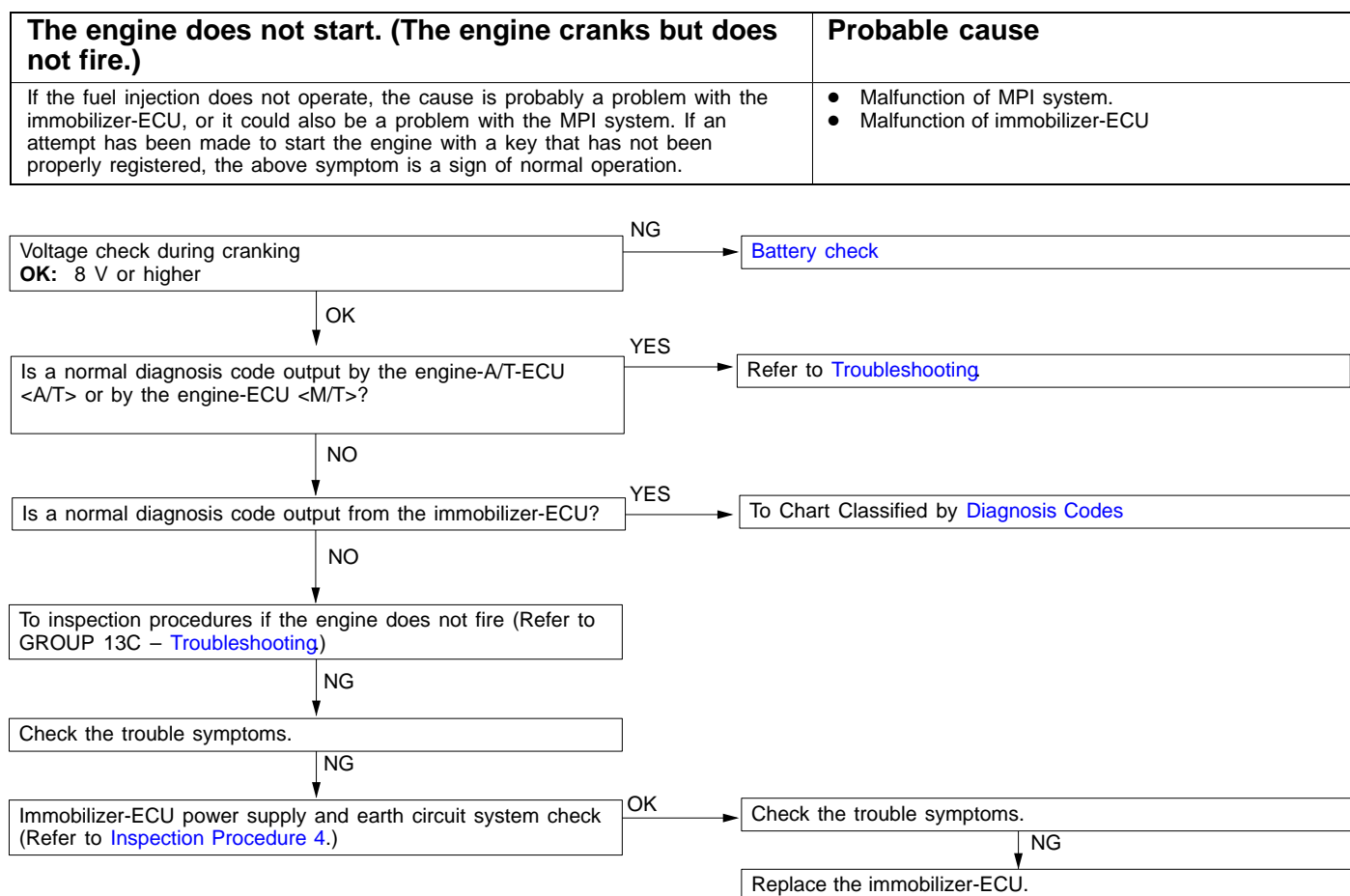
| Diagnosis code No.1610 is generated by the engine-ECU <M/T>, by the engine-A/T-ECU <A/T> | Probable cause |
|--|---|
| The cause is probably a problem with communication between the engine-ECU <M/T>, engine-A/T-ECU <A/T> and the immobilizer-ECU. | <ul style="list-style-type: none"> • Malfunction of harness or connector • Malfunction of engine-ECU <M/T>, engine-A/T-ECU <A/T> • Malfunction of immobilizer-ECU • Malfunction of ignition key • The ignition key has not been registered with the immobilizer-ECU. |



Inspection procedure 2

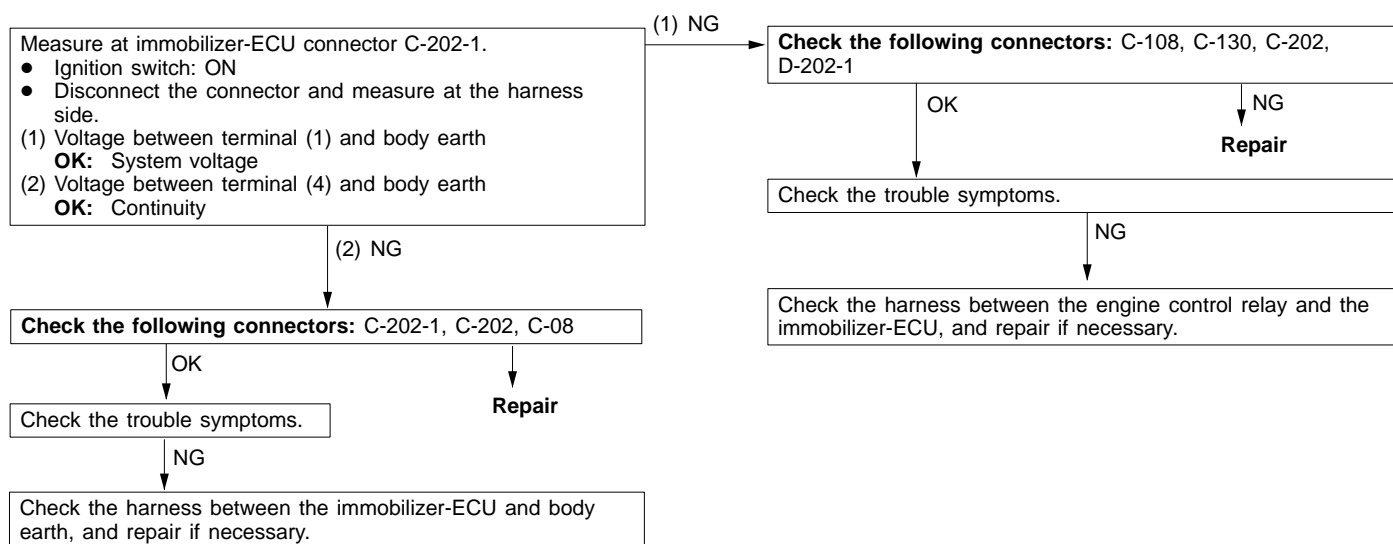


Inspection procedure 3



Inspection procedure 4

Immobilizer-ECU power supply and earth circuit system check



IMMOBILIZER-ECU CHECK

TERMINAL VOLTAGE CHECK TABLE

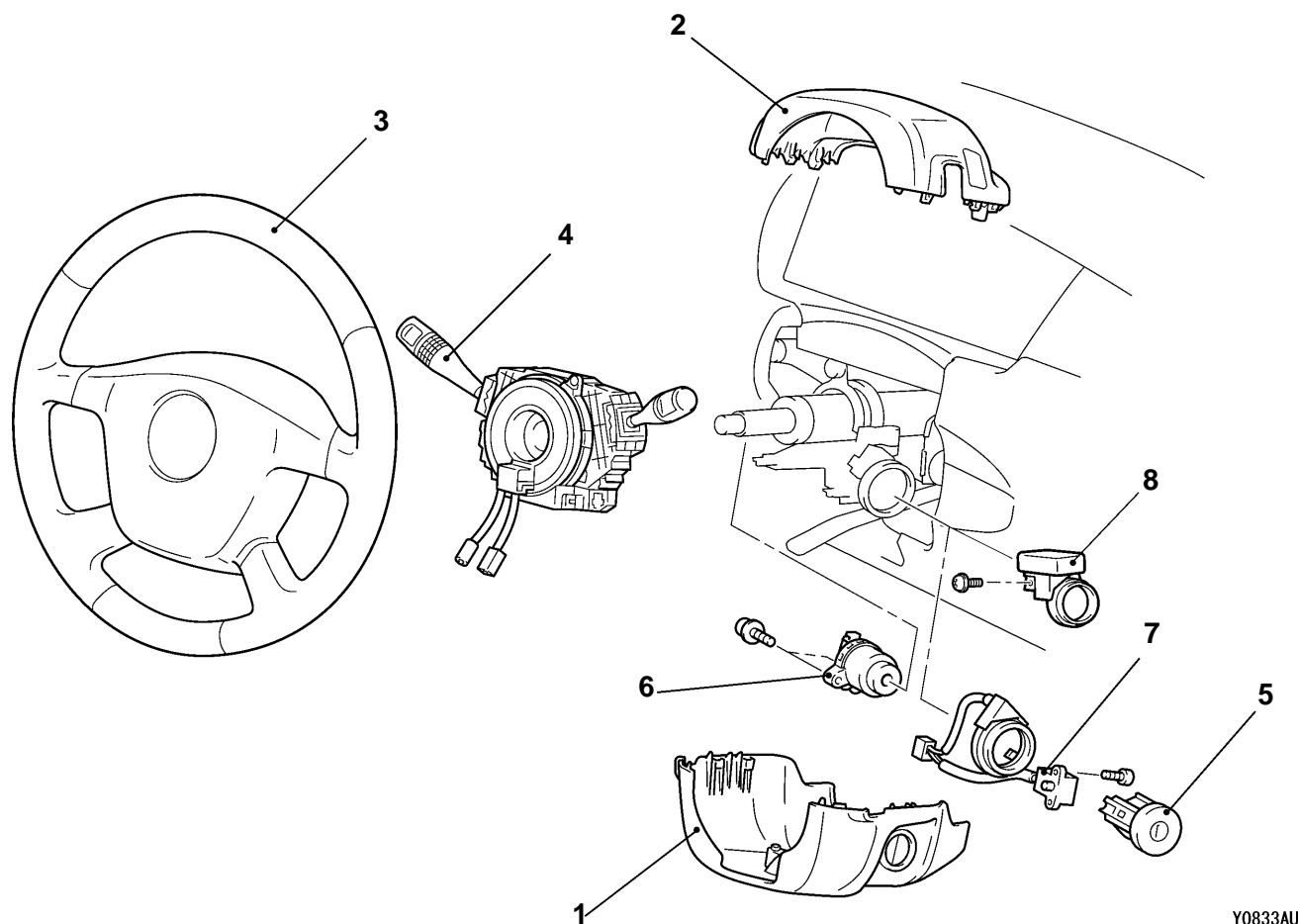
| | | | |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
|---|---|---|---|

X1185CA

| Terminal No. | Signal | Inspection conditions | Terminal voltage |
|--------------|--|-----------------------|------------------|
| 1 | Immobilizer-ECU power supply | Ignition switch: ON | System voltage |
| 2 | - | - | - |
| 3 | Engine-ECU <M/T> Engine-A/T-ECU <A/T> | - | - |
| 4 | Immobilizer-ECU earth | At all times | 0V |

IGNITION SWITCH

REMOVAL AND INSTALLATION



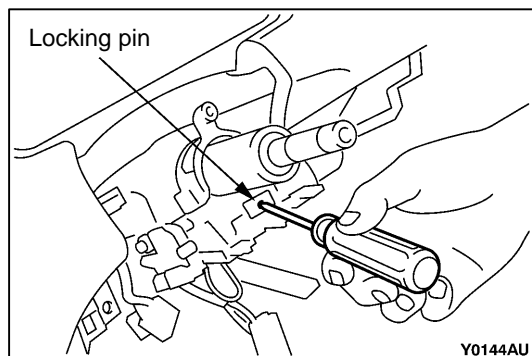
Y0833AU

Removal steps

1. Lower column cover
(Refer to [Instrument Panel](#).)
2. Upper column cover
(Refer to [Instrument Panel](#).)
3. Steering Wheel



4. Clock spring column switch assembly
5. Steering lock cylinder
6. Ignition switch
7. Key reminder switch
8. Immobilizer-ECU

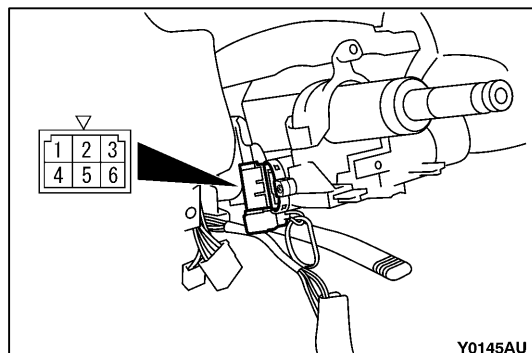


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REMOVAL SERVICE POINT

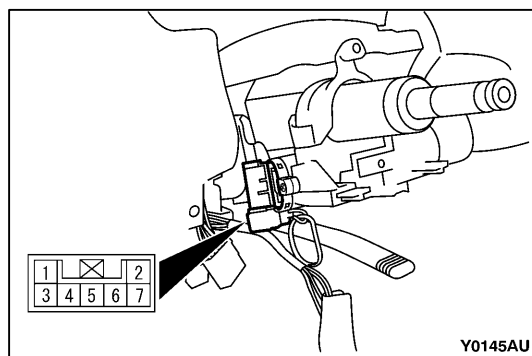
◀A▶ STEERING LOCK CYLINDER REMOVAL

1. Insert key into steering lock cylinder to turn ignition key to "ACC" position.
2. Insert locking pin with small plus screwdriver, etc., and remove steering lock cylinder.

**INSPECTION****IGNITION SWITCH CONTINUITY CHECK**

With ignition switch installed on the vehicle, disconnect ignition switch connector for inspection.

| Ignition key position | Terminal No. | | | | |
|-----------------------|--------------|---|---|---|---|
| | 1 | 2 | 4 | 5 | 6 |
| LOCK | | | | | |
| ACC | | ○ | | | ○ |
| ON | | ○ | ○ | ○ | ○ |
| START | | ○ | ○ | ○ | |

**KEY REMINDER SWITCH CONTINUITY CHECK**

With key reminder switch installed on the vehicle, disconnect key reminder switch connector for inspection.

| Ignition key status | Terminal No. | |
|---------------------|--------------|---|
| | 4 | 6 |
| Remove | ○ | ○ |
| Insert | | |

ENCRYPTED CODE REGISTRATION METHOD AND RESETTING THE CODE TO THE FACTORY SETTING

Register the encrypted code in the immobilizer-ECU and then reset the code to the factory setting after parts have been replaced.

| Replacement part | Encrypted code |
|----------------------|----------------|
| Ignition key | Necessary |
| Immobilizer-ECU | Necessary |
| Engine-ECU<M/T>* | Necessary |
| Engine-A/T-ECU<M/T>* | |

NOTE

*: If the engine-ECU <M/T>, engine-A/T-ECU <A/T> is replaced, the immobilizer-ECU should be replaced. Each engine-ECU has an individual information for immobilizer-ECU, and the individual information is registered in the immobilizer-ECU.

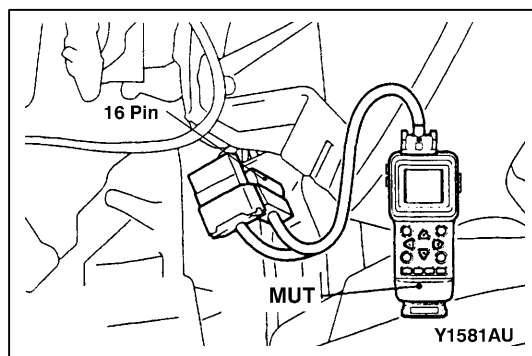
ENCRYPTED CODE REGISTRATION METHOD

If using an ignition key that has just been newly purchased, or if the immobilizer-ECU has been replaced, you will need to register the encrypted codes for each ignition key being used into the immobilizer-ECU. (A maximum of eight different encrypted codes can be registered.)

Moreover, when the immobilizer-ECU has been replaced, you will need to use the MUT-II to register the password that the user specifies into the immobilizer-ECU. (Refer to the MUT-II instruction manual for instructions on using the MUT-II.)

Caution

Because registering of the encrypted codes is carried out after all previously-registered codes have been erased, you should have ready all of the ignition keys that have already been registered.



1. Connect the MUT-II to the diagnosis connector.

Caution

Turn the ignition switch to LOCK (OFF) position before connecting or disconnecting the MUT-II.

2. Check that diagnosis code No. P1160 is not being generated by the each engine-ECU. If it is being generated check according to the Troubleshooting Procedures. (Refer to [Troubleshooting](#).)
3. Use the ignition key that is to be registered to turn on the ignition switch.
4. Use the MUT-II to register the encrypted code. If you are registering two or more codes, use the next key to the registered to turn on the ignition switch without disconnecting the MUT-II.
5. Turn off the ignition switch.
6. Check that the engine can be started with each of the ignition keys.
7. Check the diagnosis output from the each engine-ECU, and erase code No. P1610 if it appears. (Refer to [Troubleshooting](#).)
8. Disconnect the MUT-II. This completes the registration operation.

COMBINATION METER

Caution

Never remove pointer of combination meter. This may cause damage of combination meter.

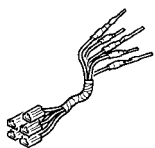
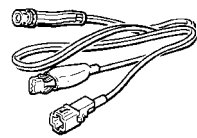
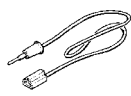

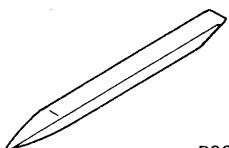
SERVICE SPECIFICATIONS

| Item | | Standard value | Limit value |
|--|-------------------------|----------------|-------------|
| Indication range of speedometer km/h | At 40 km/h | 37 – 45 | – |
| | At 80 km/h | 75 – 88 | – |
| | At 120 km/h | 113 – 132 | – |
| | At 160 km/h | 150 – 176 | – |
| Deflection of speedometer pointer (Vehicle speed: 35 km/h or more) | | – | ±3 |
| Indication allowance of tachometer rpm | Engine Speed: 700 rpm | ±120 | – |
| | Engine Speed: 2,000 rpm | –175 +225 | – |
| | Engine Speed: 3,000 rpm | –175 +300 | – |
| | Engine Speed: 4,000 rpm | –225 +375 | – |
| | Engine Speed: 5,000 rpm | –225 +425 | – |
| | Engine Speed: 6,000 rpm | –225 +475 | – |
| Basic resistance of fuel gauge unit Ω | Position F | 3 ± 1 | – |
| | Position E | 110 ± 1 | – |
| Float height of fuel gauge unit mm | Position F | 24.1 | – |
| | Position E | 151.6 | – |
| Basic resistance of water temperature gauge unit Ω | 70°C | 104 ± 13.5 | – |
| Internal resistance of combination meter Ω | Terminal No. 1 - 50 | 233 ± 3 | – |
| | Terminal No. 1 - 51 | 181 ± 2 | – |

SEALANT

| Item | Specified sealant | Remark |
|------------------------------|-------------------|---------------------|
| Water temperature gauge unit | | Semi-drying sealant |

SPECIAL TOOLS

| Tools | Number | Name | Use |
|--|---|---|--|
| <p>A</p>  <p>B</p>  <p>C</p>  <p>D</p>  <p>C991223</p> | <p>MB991223</p> <p>A: MB991219</p> <p>B: MB991220</p> <p>C: MB991221</p> <p>D: MB991222</p> | <p>Harness set</p> <p>A: Inspection harness</p> <p>B: LED Harness</p> <p>C: LED Harness Adapter</p> <p>D: Probe</p> | <p>Brief test for fuel gauge and water temperature gauge</p> <p>A: For inspection of connector pin contact pressure</p> <p>B: For inspection of power circuit</p> <p>C: For inspection of power circuit</p> <p>D: For connecting commercially available tester</p> |
|  <p>B990784</p> | MB990784 | Ornament remover | Meter bezel removal |

TROUBLESHOOTING

DIAGNOSIS FUNCTION

INPUT SIGNAL INSPECTION PROCEDURE

Connect MUT-II or voltmeter to diagnostic connector to perform input inspection. (Refer to [How to Use Troubleshooting and Inspection Procedure.](#))

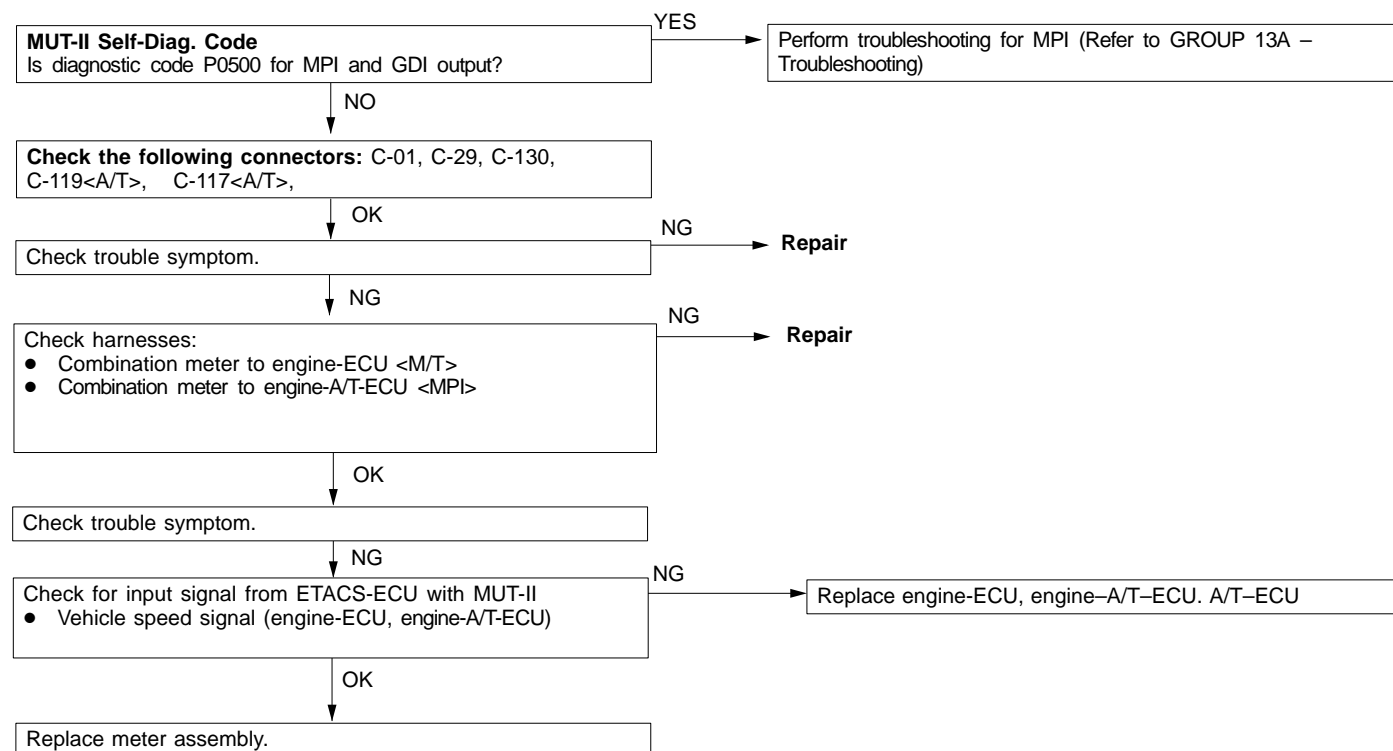
INSPECTION CHART FOR DIAGNOSIS CODES

| Trouble symptom | Inspection procedure No. |
|---|--------------------------|
| Speedometer inoperative (other meters are operated) | 1 |
| Tachometer inoperative (other meters are operated) | 2 |
| Fuel gauge inoperative (other meters are operated) | 3 |
| Water temperature gauge inoperative (other meters are operated) | 4 |
| All meters inoperative | 5 |

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

Inspection procedure 1

| Speedometer inoperative (other meters are operated) | Probable cause |
|--|---|
| Failure may occur on engine-ECU<M/T>, engine-A/T-ECU<MPI>, A/T-ECU<carburettor> system, harnesses, connectors, meter assembly. | <ul style="list-style-type: none"> Engine-ECU, engine-A/T-ECU, A/T-ECU fault Harness or connector fault Meter assembly fault |

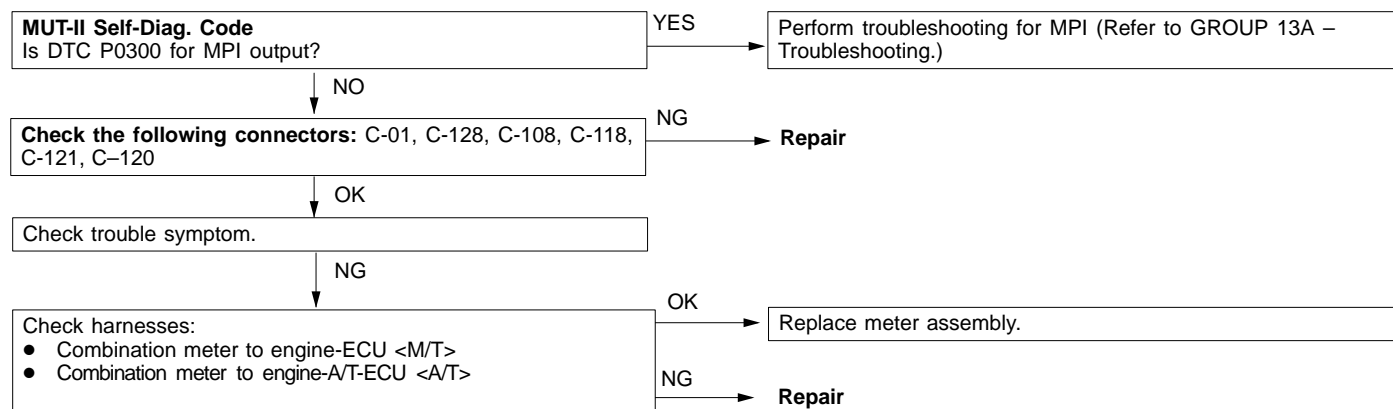


NOTE

When vehicle speed signal is checked with MUT-II in the ETACS-ECU input signal test, drive the vehicle with MUT-II connected to diagnostic connector. When the buzzer sounds, this test is evaluated OK.

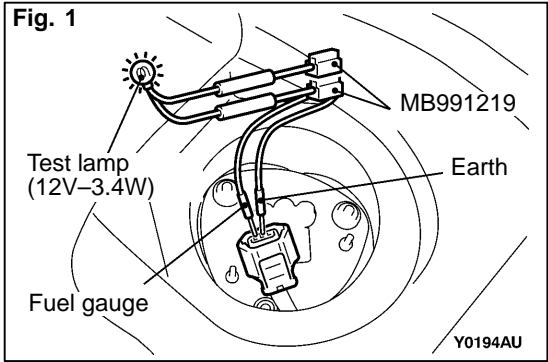
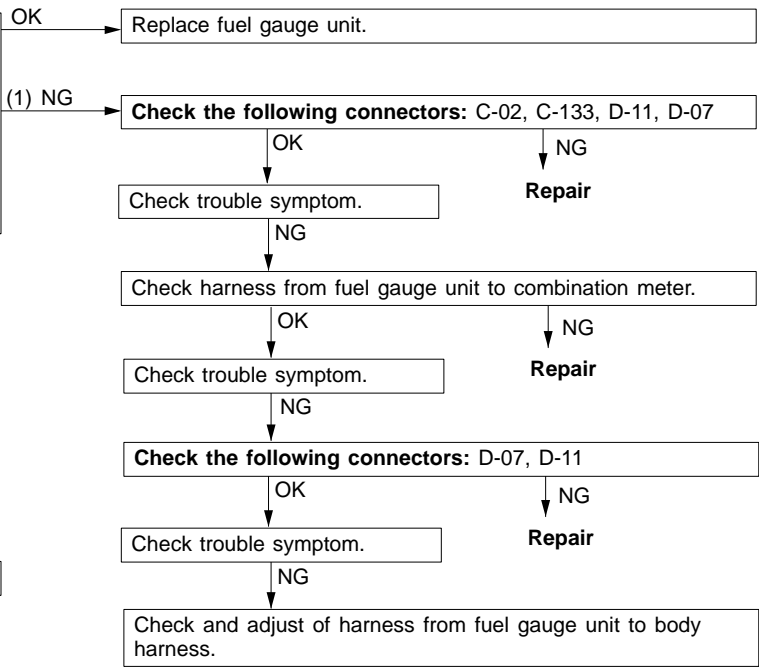
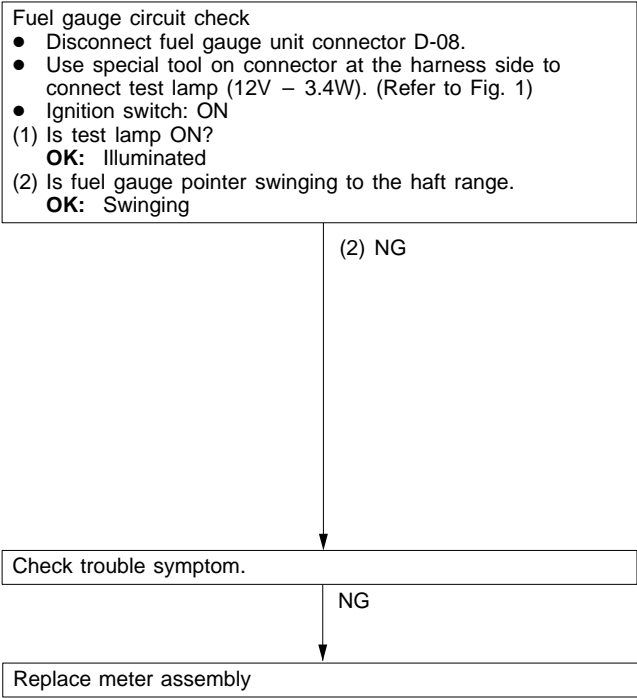
Inspection procedure 2

| Tachometer inoperative (other meters are operated) | Probable cause |
|---|--|
| No input of ignition signal from engine, or failure may occur on power and earth circuits of meter. | <ul style="list-style-type: none"> Harness or connector fault Meter assembly fault |



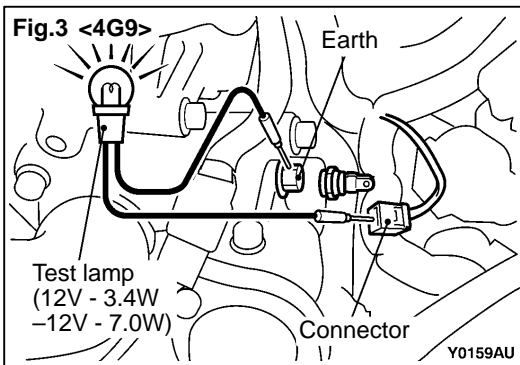
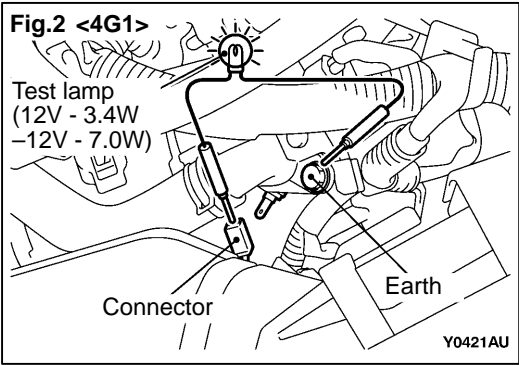
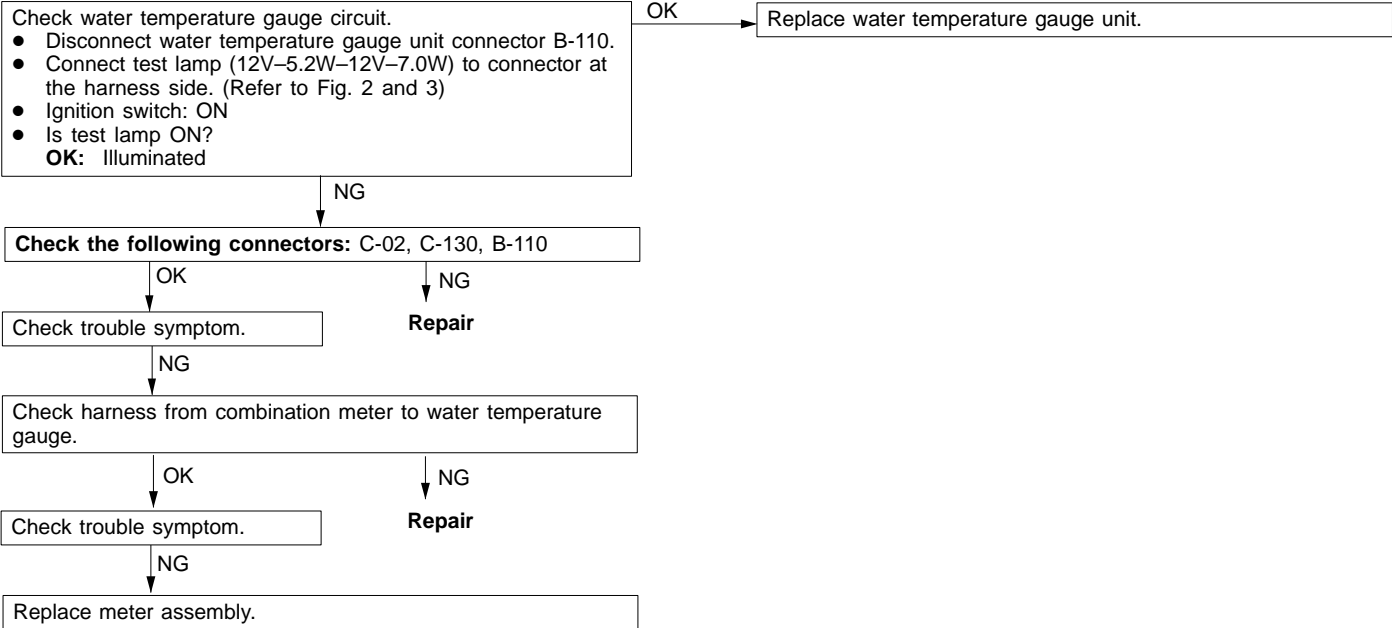
Inspection procedure 3

| Fuel gauge inoperative (other meters are operated) | Probable cause |
|--|---|
| When speedometer and tachometer are properly operated, harness from power source to combination meter is normal. | <ul style="list-style-type: none">Fuel gauge unit faultHarness or connector faultMeter assembly fault |



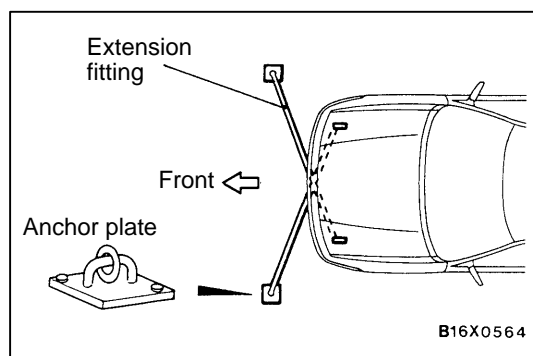
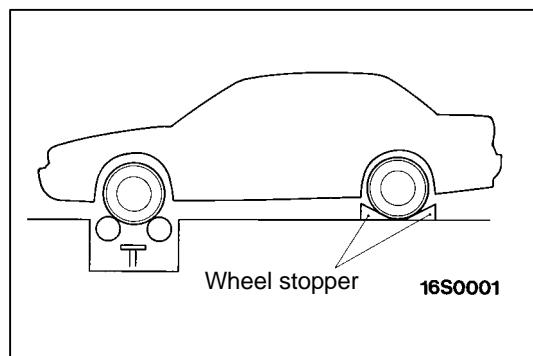
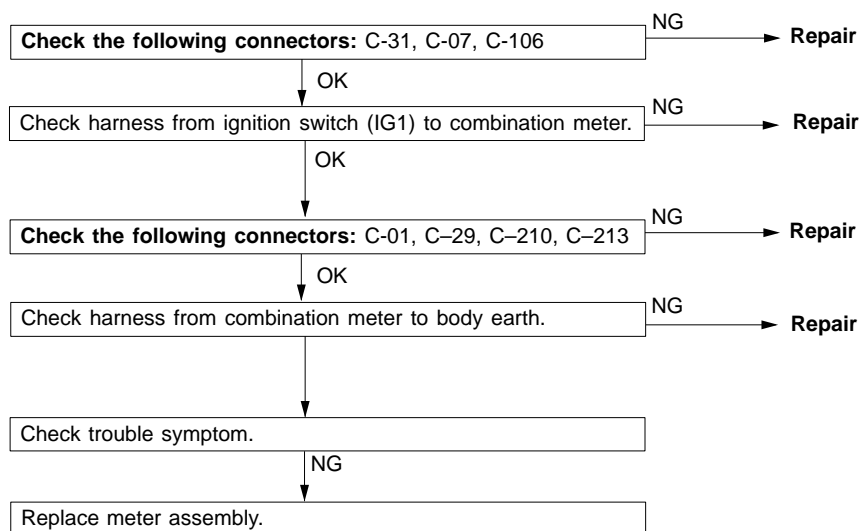
Inspection procedure 4

| Water temperature gauge inoperative (other meters are operated) | Probable cause |
|--|--|
| When speedometer and tachometer are properly operated, harness from power source to combination meter is normal. | <ul style="list-style-type: none">• Water temperature gauge unit fault• Harness or connector fault• Meter assembly fault |



Inspection procedure 5

| All meters inoperative | Probable cause |
|---|--|
| When individual indicators and warning lamps are properly operated, harness from power source (IG1) to combination meter is normal. | <ul style="list-style-type: none"> • Meter assembly fault • Harness or connector fault |



ON-VEHICLE SERVICE

SPEEDOMETER CHECK

- (1) Ensure that tire pressure indicates the value of tire pressure label.
- (2) Place the vehicle on speedometer tester.
- (3) Place stoppers at rear wheels, and properly engage parking brake.
- (4) For prevention of front wheel lateral runout, install extension fittings on front towing eye and tie down hook, and install both ends on anchor plate.
- (5) For prevention of vehicle from starting out, install chain or wire (the other end of which is tightly fixed on rear towing eye) on the vehicle.
- (6) Ensure that speedometer indication range is within standard value, or pointer deflection is within limit value.

Caution

During operation, avoid excessive acceleration and deceleration.

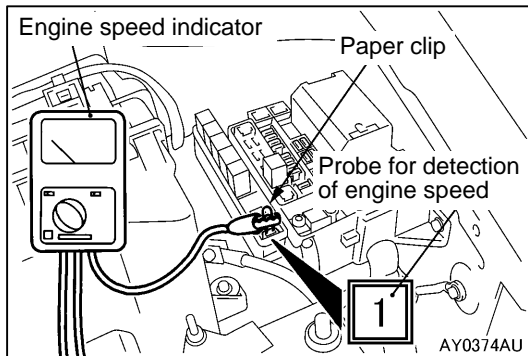
Standard value:

| Vehicle speed km/h | 40 | 80 | 120 | 160 |
|--------------------------------------|---------|---------|-----------|-----------|
| Indication range of speedometer km/h | 37 – 45 | 75 – 88 | 113 – 132 | 150 – 176 |

Limit:

Pointer deflection

(vehicle speed: 35 km/h or more): ± 3 km/h

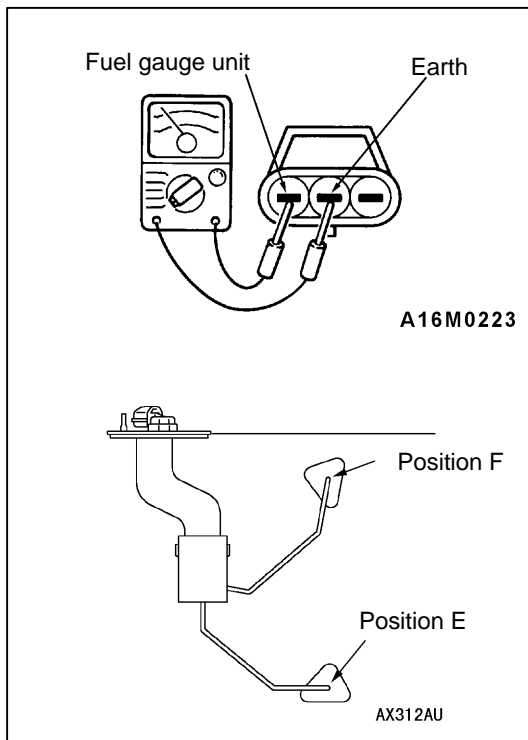


TACHOMETER CHECK

1. Insert paper clip (Zem clip) from harness side of the probe for detection of engine speed to connect engine speed indicator.
2. Compare measured values of individual engine speed with tachometer values, and ensure that indication allowance is within standard value.

Standard value:

| Engine speed (rpm) | Indication allowance of tachometer rpm |
|--------------------|--|
| 700 | ± 120 |
| 2,000 | $-175 + 225$ |
| 3,000 | $-175 + 300$ |
| 4,000 | $-225 + 375$ |
| 5,000 | $-225 + 425$ |
| 6,000 | $-225 + 475$ |



FUEL GAUGE UNIT CHECK

Remove fuel gauge unit from fuel tank.

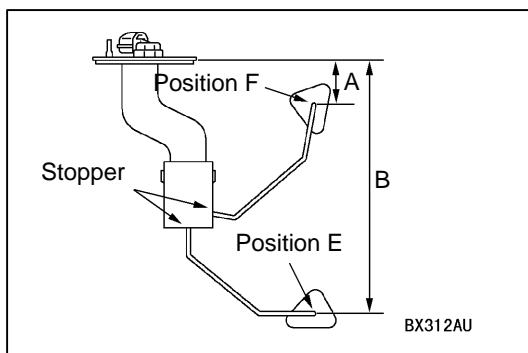
BASIC RESISTANCE OF FUEL GAUGE UNIT

1. When float of fuel gauge unit is in Position F and E, ensure that resistance between fuel gauge unit terminal and earth terminal is within standard value.

Standard Value:

| Float Position | Resistance of Gauge |
|----------------|---------------------|
| Position F | $3 \pm 1 \Omega$ |
| Position E | $110 \pm 1 \Omega$ |

2. When float is moved slowly between Position F and E, also ensure that resistance is smoothly changing.

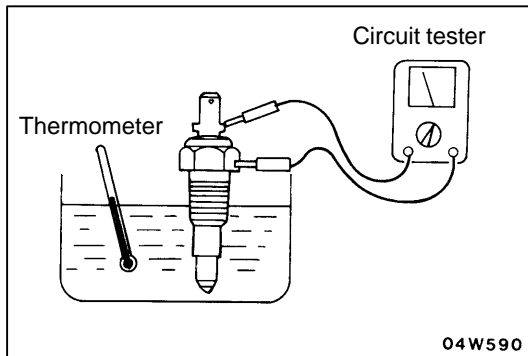


FLOAT HEIGHT OF FUEL GAUGE UNIT

When float is moved to contact float arm on stopper, ensure that Position F (A) and E (B) are within standard value.

Standard Value:

| Float Position | Float Center Height |
|----------------|--------------------------|
| Position F (A) | $24.1 \pm 2 \text{ mm}$ |
| Position E (B) | $151.6 \pm 2 \text{ mm}$ |



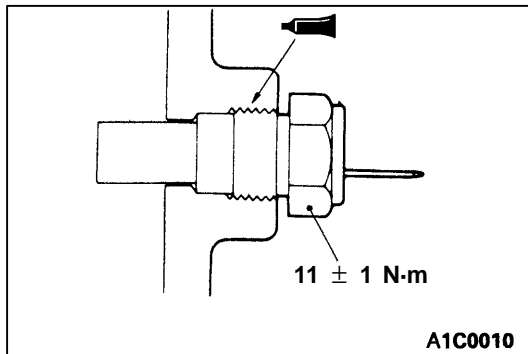
ENGINE COOLANT TEMPERATURE GAUGE UNIT CHECK

1. Drain coolant. (Refer to [On-vehicle Service](#))
2. Remove water temperature gauge unit.
3. Put water temperature gauge unit into the hot water in specified temperature, and ensure that basic resistance is within standard value.

Standard value: 70°C 104 ± 13.5 Ω

Reference value:

| Temperature | Resistance |
|-------------|------------|
| 50°C | 230 Ω |
| 60°C | 155 Ω |
| 80°C | 73 Ω |



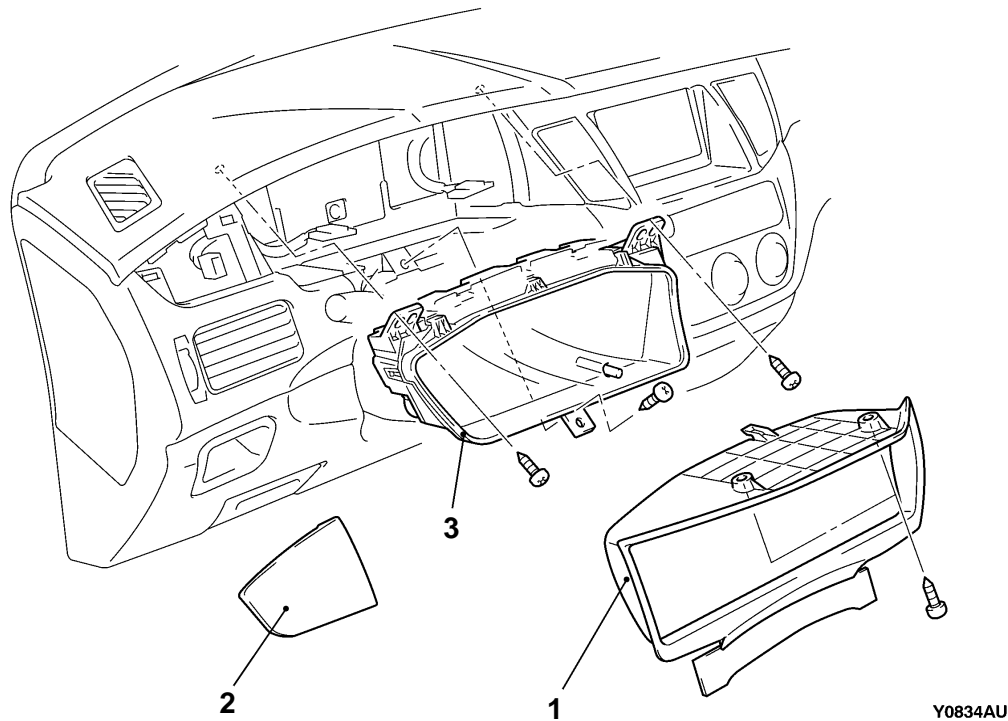
4. After inspection, apply specified sealant at threads of water temperature gauge unit, and tighten to the specified torque.

Semi-drying sealant: 3M 1215 or equivalent

5. Refill coolant. (Refer to [On-vehicle Service](#).)

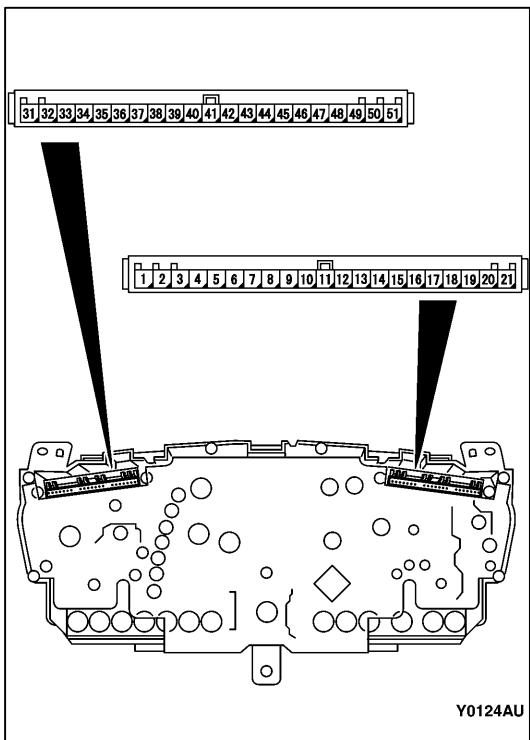
COMBINATION METER

REMOVAL AND INSTALLATION



Removal steps

1. Meter bezel
2. Instrument panel ornament
3. Combination meter



INSPECTION

COMBINATION METER INTERNAL RESISTANCE CHECK

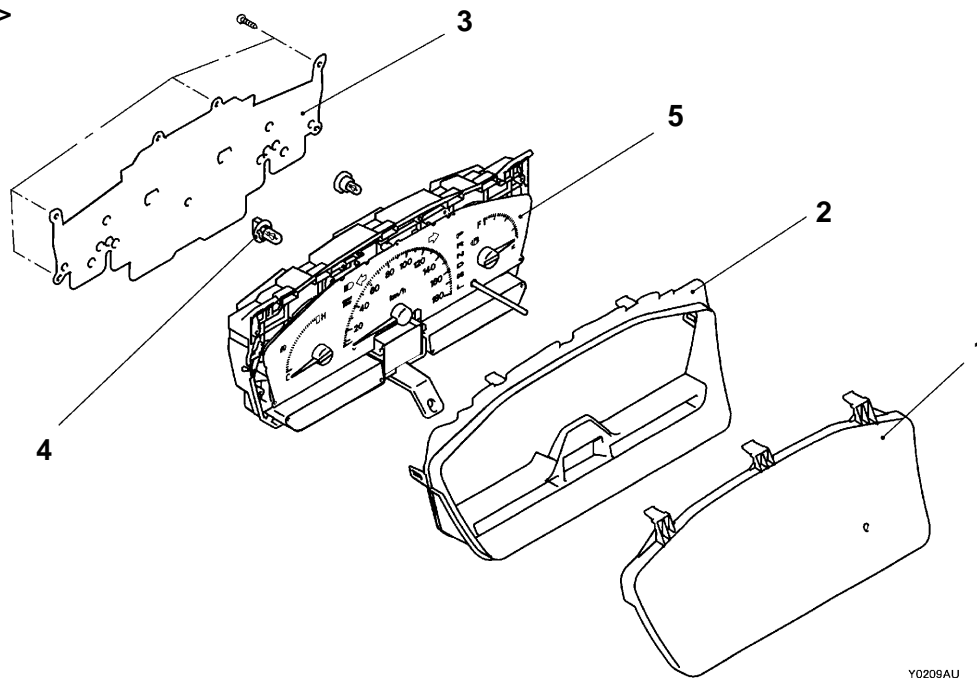
Use circuit tester to measure combination meter internal resistance.

Standard Value:

| Measuring terminal No. | Terminal name | Standard value (Ω) |
|------------------------|----------------------------------|-----------------------------|
| 1-50 | Water temperature gauge to earth | 233 ± 3 |
| 1-51 | Fuel gauge to earth | 181 ± 2 |

DISASSEMBLY AND REASSEMBLY

<Without tachometer>



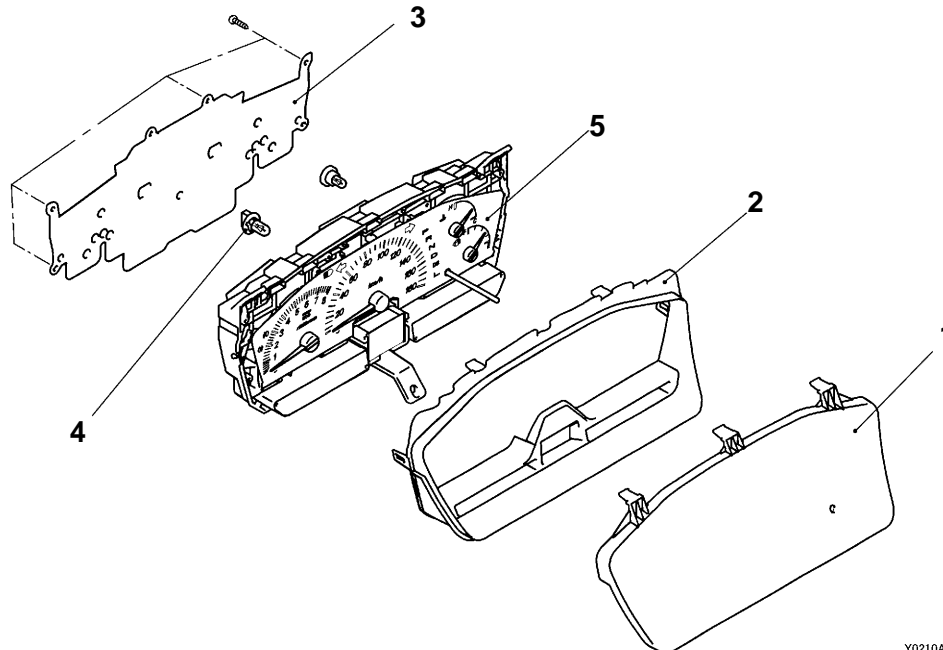
Y0209AU

Disassembly step

1. Glass
2. Window plate
3. Circuit board cover

4. Bulb
5. Meter assembly

<With tachometer>



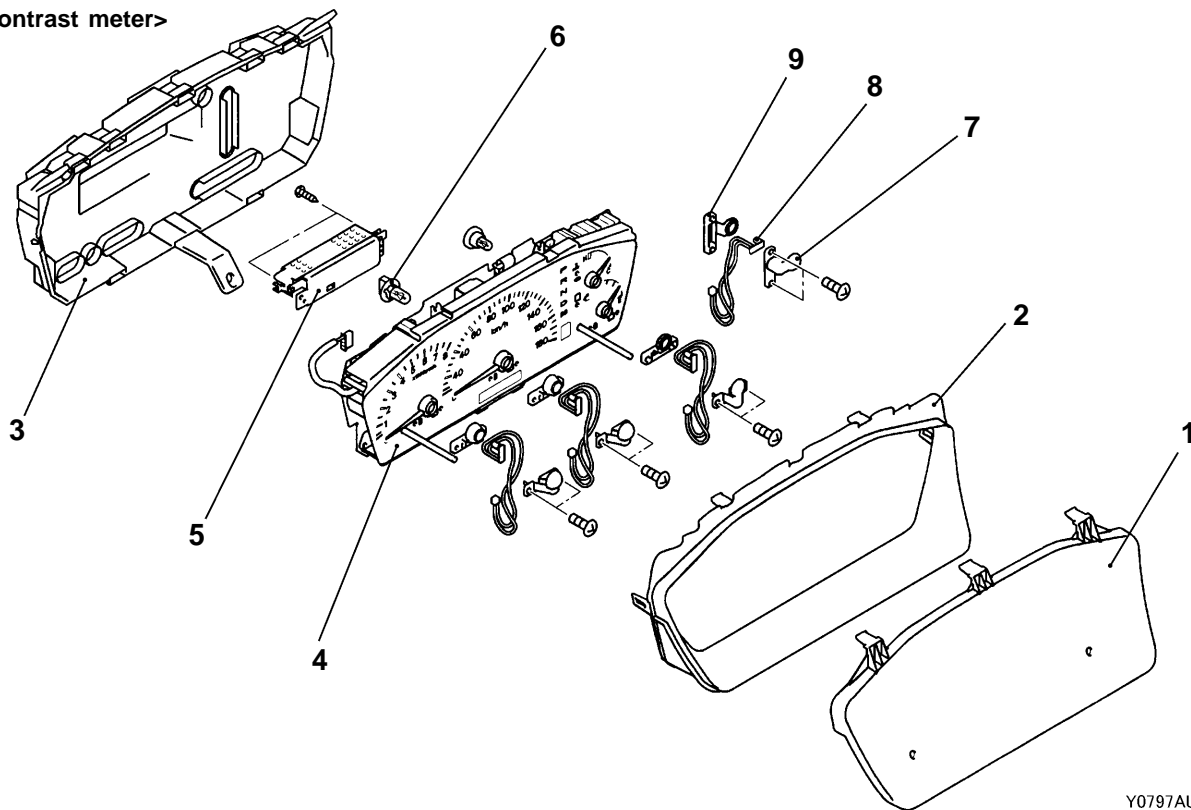
Y0210AU

Disassembly step

1. Glass
2. Window plate
3. Circuit board cover

4. Bulb
5. Meter assembly

<High contrast meter>



Y0797AU

Disassembly step

- | | |
|-------------------|------------------------|
| 1. Glass | 6. Bulb |
| 2. Window plate | 7. Pointer cover upper |
| 3. Meter case | 8. Point bulb |
| 4. Meter assembly | 9. Pointer cover lower |
| 5. Inverter | |

MAIN

Group
54

54A

HEADLAMP ASSEMBLY

SERVICE SPECIFICATIONS

| Item | | | Standard value | Limit |
|---|----------|----------------------|--|------------------------------------|
| Headlamp aiming | Low beam | Vertical direction | 0.40° (120 mm) lower than horizontal line H | ± 0.29° |
| | | Horizontal direction | Position at which the startup point of 15° is crossed with vertical line V | ± 0.5° |
| Measurement of headlamp illuminous intensity cd | | | — | 30,000 cd or more per one headlamp |

NOTES ON HEADLAMP ASSEMBLY:

Plastic outer lens are equipped with headlamp assembly. For handling, care should be taken for the following items:

- Headlamps should not be illuminated for more than 3 minutes with scratch preventive protectors, etc. covered on them.
- Masking such as taping should not be attached on outer lens.
- Outer lens surface should not be rubbed with a sharp-edged tool, etc.
- Specified wax remover should be used for insisently washing.
- Authorized Mitsubishi Genuine bulbs should be used.

TROUBLESHOOTING

Headlamps are controlled smart wiring system (SWS). Refer [troubleshooting](#).

NOTE

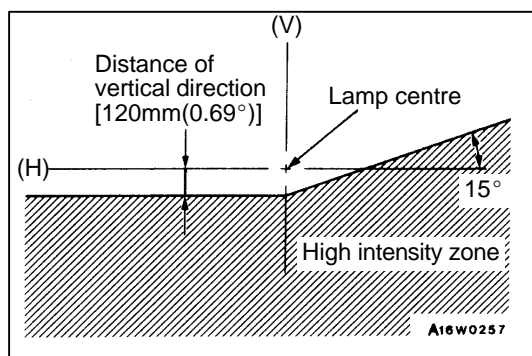
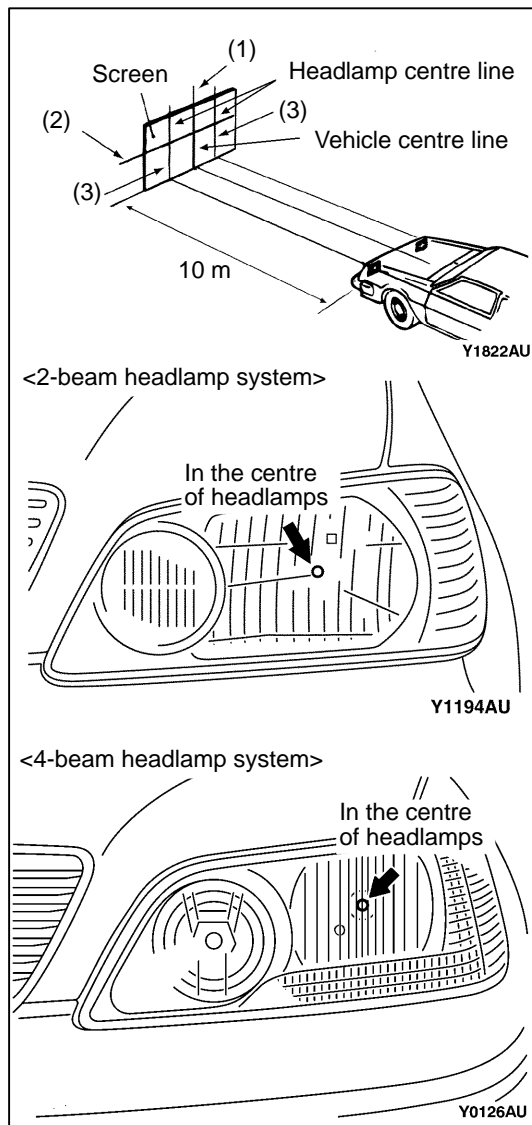
When ETACS-ECU is defective, headlamps can be illuminated only in a low beam mode as fail-safe function.

ON-VEHICLE SERVICE

HEADLAMP AIMING

PRE-AIMING INSTRUCTION

1. Inspect for badly rusted or faulty headlamp assemblies.
2. These conditions must be corrected before a satisfactory adjustment can be made.
3. Inspect tyres inflation, and adjust if necessary.
4. If the fuel tank is not full, place a weight in luggage room of vehicle to simulate weight of a full tank 0.8 kg per litre.
5. There should be no other load in the vehicle other than driver or substituted weight of approximately 75 kg placed in driver's position.
6. Thoroughly clean headlamp lenses.
7. Place the vehicle on a level floor, perpendicular to a flat screen 10m away from the bulb center-marks on the headlamp lens.
8. Rock vehicle sideways to allow vehicle to assume its normal position.
9. Bounce the front suspension through three (3) oscillations by applying the body weight to hood or bumper.



- Check if the low beam shining onto the screen is at the standard value.

Standard value:

(Vertical direction)

120 mm (0.69°) below horizontal (H)

(Horizontal direction)

Position at which the startup point of 15° is crossed with vertical line (V)

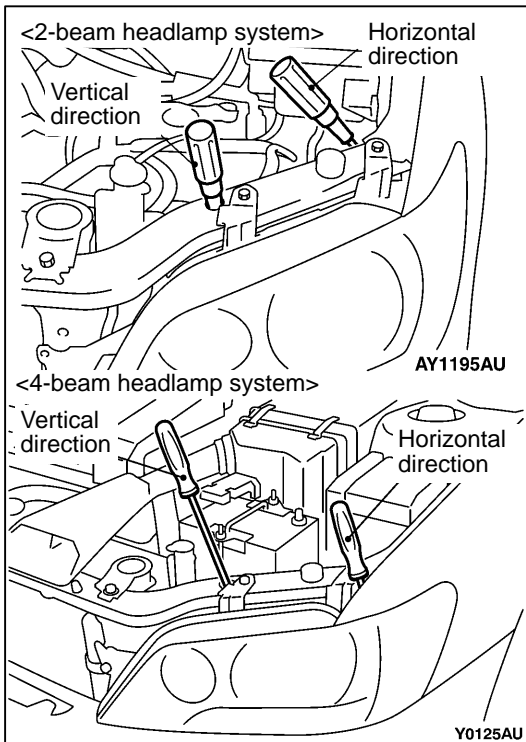
Limit:

(Vertical direction) $\pm 0.29^\circ$

(Horizontal direction) $\pm 0.5^\circ$

NOTE

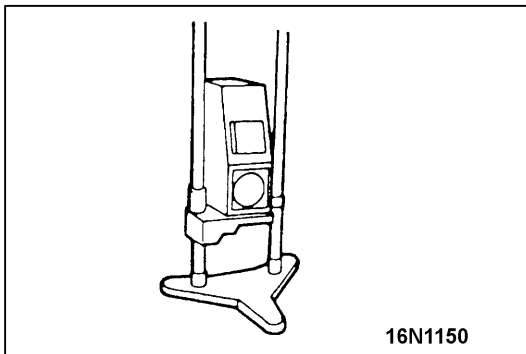
The illustration shows L.H. drive vehicles. For R.H. drive vehicles, it is symmetrical.



- Alternately turn the adjusting screw to adjust the headlamp aiming.

Caution

Be sure to adjust the aiming adjustment screw in the tightening direction.



<USING BEAM SETTING EQUIPMENT>

- The headlamps should be aimed with the proper beam setting equipment, and in accordance with the equipment manufacture's instructions.

NOTE

If there are any regulations pertinent to the aiming of headlamps in the area where the vehicle is to be used, adjust so as to meet those requirements.

- Alternately turn the adjusting screw to adjust the [headlamp aiming](#).

HEADLAMP INTENSITY MEASUREMENT

- Using a photometer, and following its manufacture's instruction manual.
- Maintain an engine speed of 2,000 r/min, with the battery in the charging condition
- Set the headlamps to high beam
- Measure the headlamp centre intensity (a point of H line and V line) and check to be sure that the limit value is satisfied.

Limit: 30,000 cd or more per one headlamp

NOTE

- There may be special local regulations pertaining to headlamp intensity, be sure to make any adjustments necessary to satisfy such regulations.
- If an illuminometer is used to make the measurements, convert its values to photometer values by using the following formula.

$I = E r^2$ Where:

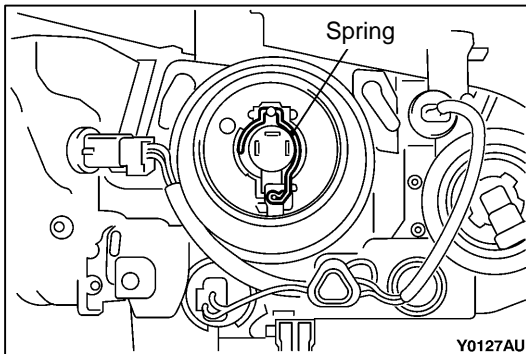
I=intensity (cd)

E=illumination (lux)

r=distance (m) from headlamps to illuminometer

Caution

1. On the headlamp not yet adjusted, perform aiming with connector removed and the lamps switched off, if applicable. In addition, care should be taken to prevent a change of optical axis when connector is reconnected.
2. Plastic outer lens are equipped with headlamps. When lens surface is covered with materials for not penetrating light, headlamp operation time should be within 3 minutes. In addition, masking such as taping should not be performed.



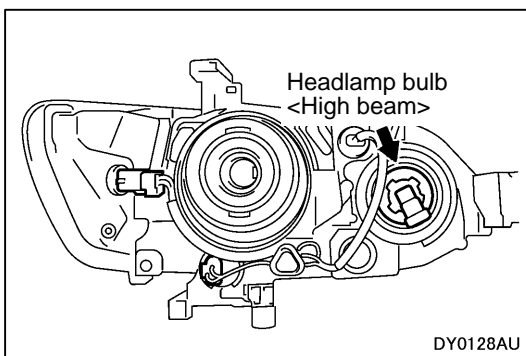
HEADLAMP BULB REPLACEMENT

<Low Beam for 2-beam and 4-beam Headlamps>

1. Disconnect battery.
2. Disconnect connector.
3. Remove socket cover.
4. Remove bulb mounting spring to pull out bulb.
5. After bulb is replaced, properly reconnect connector.

Caution

Do not touch bulb surface bare-handed or with dirty gloves. If dirt is attached on glass surface of the bulb, immediately use alcohol or thinner to remove dirt, and install the bulb after well dried.



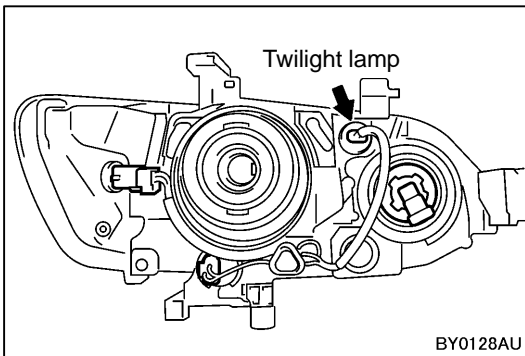
HEADLAMP BULB REPLACEMENT

<High Beam for 4-beam Headlamps>

- (1) Disconnect battery.
- (2) Disconnect connector.
- (3) Screw out socket to pull out bulb.
- (4) After bulb is replaced, properly reconnect connector.

Caution

Do not touch bulb surface bare-handed or with dirty gloves. If dirt is attached on glass surface of the bulb, immediately use alcohol or thinner to remove dirt, and install the bulb after well dried.

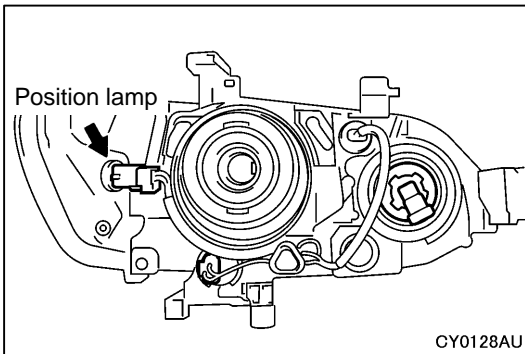


TWILIGHT LAMP BULB REPLACEMENT <4-beam Headlamp System>

Screw out twilight lamp socket.

Caution

Do not touch bulb surface bare-handed or with dirty gloves. If dirt is attached on glass surface of the bulb, immediately use alcohol or thinner to remove dirt, and install the bulb after well dried.

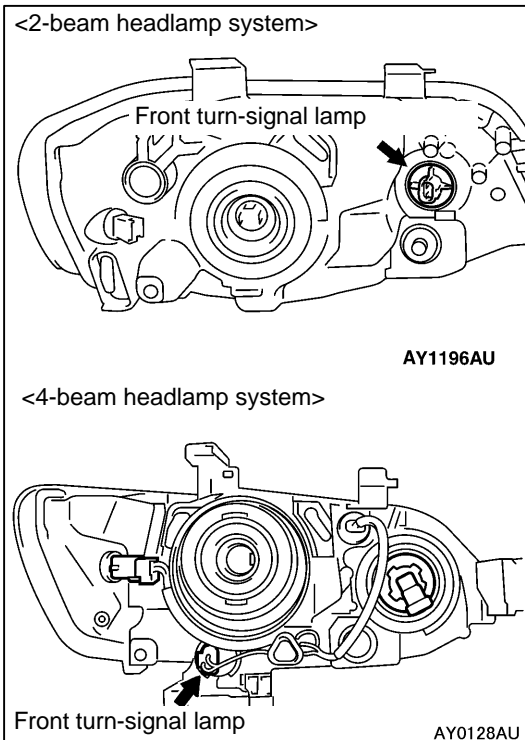


POSITION LAMP BULB REPLACEMENT

Disconnect connector, and screw out position lamp socket.

Caution

Do not touch bulb surface bare-handed or with dirty gloves. If dirt is attached on glass surface of the bulb, immediately use alcohol or thinner to remove dirt, and install the bulb after well dried.



FRONT TURN-SIGNAL LAMP BULB REPLACEMENT

Disconnect connector, and screw out front turn-signal lamp socket.

Caution

Do not touch bulb surface bare-handed or with dirty gloves. If dirt is attached on glass surface of the bulb, immediately use alcohol or thinner to remove dirt, and install the bulb after well dried.

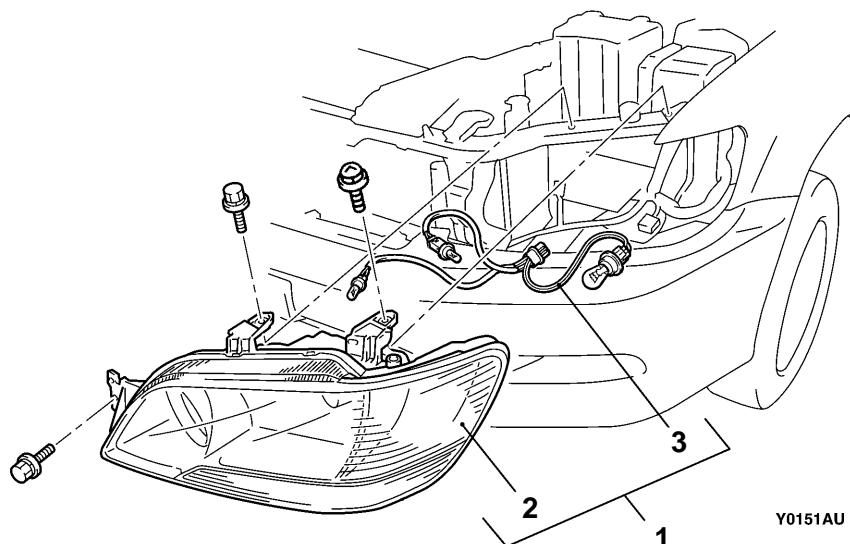
HEADLAMP

REMOVAL AND INSTALLATION

MAIN

Group
54

54A



Headlamp removal steps

1. Headlamp assembly
2. Headlamp body

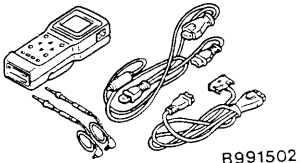
3. Socket assembly (4-beam headlamp system)

FRONT FOG LAMPS

SERVICE SPECIFICATION

| Item | Standard value |
|---------------------------------|---------------------------------|
| Front fog lamp light axis check | Illuminates to within 40 metres |

SPECIAL TOOL

| Tools | Number | Name | Use |
|---|----------|---------------------|--------------------------------------|
|  | MB991502 | MUT-II sub assembly | Checking the ETACS-ECU input signals |

TROUBLESHOOTING

The front fog lamp are controlled by the Smart Wiring System (SWS). Refer [Troubleshooting](#).

ON-VEHICLE SERVICE

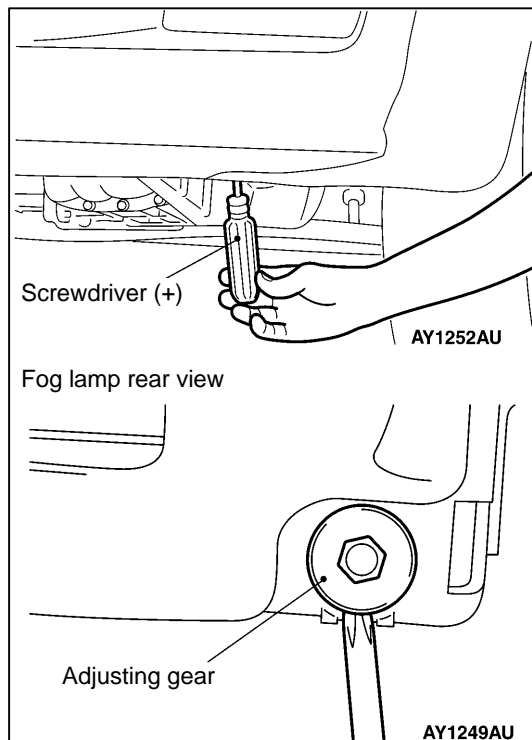
FRONT FOG LAMP AIMING CHECK

After setting the vehicle to the following condition, adjust the front fog lamp aiming.

- Check that the tyre inflation pressure is at the value indicated on the tyre pressure labels.
- Set the vehicle to the unladen condition and park it on a level surface.
- Have a single person (approximately 75 kg) sit in the driver's seat.
- Run the engine at a speed of 2000 r/min to fully charge the battery.

Turn on the front fog lamps and check that the illumination is within the standard value range.

Standard value: Illuminates to within 40 metres



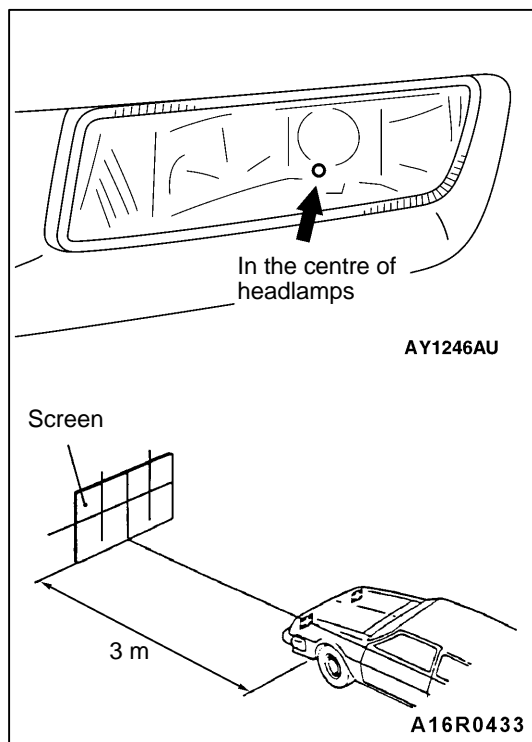
If the value is out of the standard value, insert the screwdriver (+) through the aiming hole on the side under cover to adjust by turning the adjusting gear for fog lamp aiming.

NOTE

Horizontal adjustment is not possible.

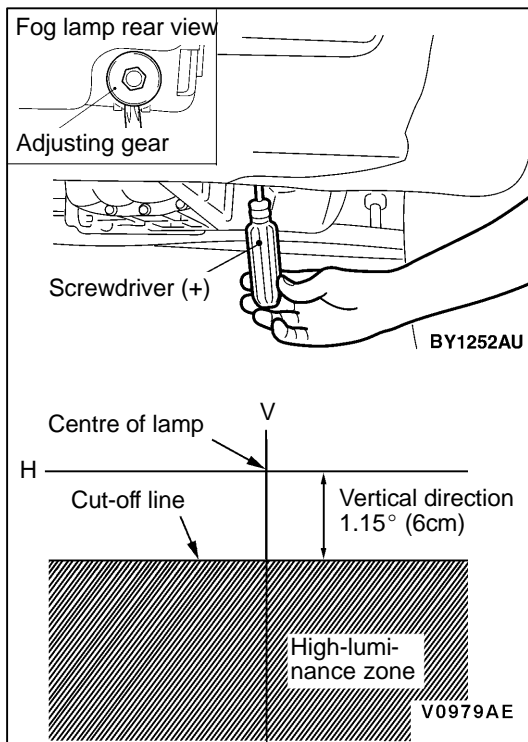
Caution

For the fog lamp which is not being measured, disconnect that fog lamp's connector if possible so that it does not illuminate while carrying out the adjustment. Furthermore, make sure that the light axis does not get shifted when re-connecting the connector.



In addition, the method of checking the light axis on a screen (simple check) is given below.

1. Place the screen so that it is directly opposite the centre of the fog lamp at a distance of 3 metres, and turn on the fog lamps.



2. Insert the screwdriver (+) through the aiming hole on the side under cover. By turning the adjusting gear for fog lamp aiming, align the cutoff line (border line of shadow temperature) with the specified position in the figure.

NOTE

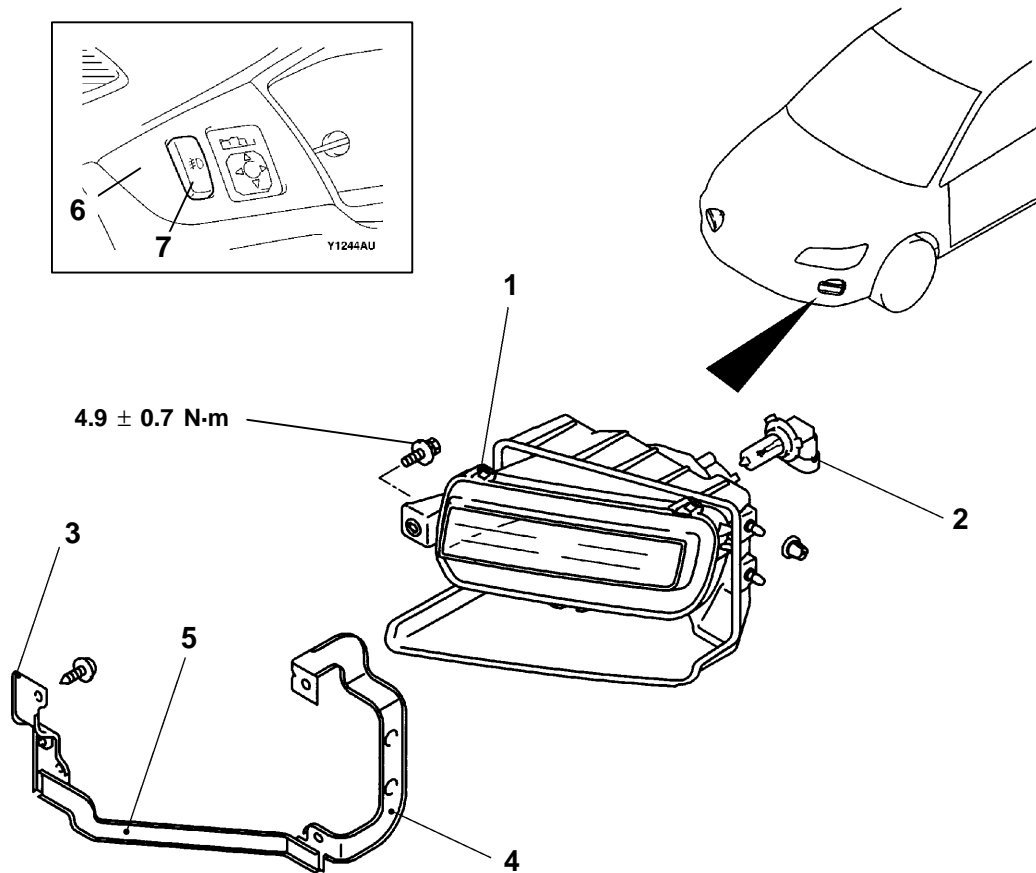
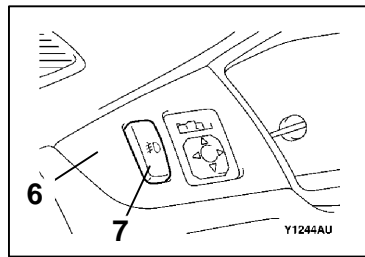
Horizontal adjustment is not possible.

Caution

For the front fog lamp which is not being measured, disconnect that fog lamp's connector if possible so that it does not illuminate while carrying out the adjustment. Furthermore, make sure that the light axis does not get shifted when re-connecting the connector.

FRONT FOG LAMPS

REMOVAL AND INSTALLATION

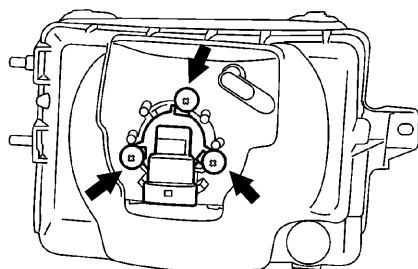


Front fog lamp removal steps

- Side under cover
- 1. Front fog lamp assembly
- 2. Front fog lamp bulb
- 3. Front fog lamp bracket A
- 4. Front fog lamp bracket B
- 5. Front fog lamp bracket C

Fog lamp switch removal steps

- 6. Instrument panel ornament (Refer to [Instrument Panel.](#))
- 7. Front fog lamp switch



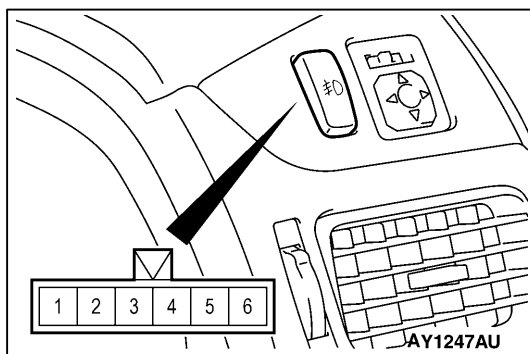
REMOVAL SERVICE POINT

◀A▶ FRONT FOG LAMP BULB REMOVAL

Remove the screw and remove the bulb by turning the socket anticlockwise.

Caution

1. Only the specified genuine bulbs should be used.
2. Do not touch the surface of the bulb with bare hands or with dirty gloves. If the surface (glass section) should become dirty, clean it immediately with alcohol or thinner, and let it dry thoroughly before installing it.



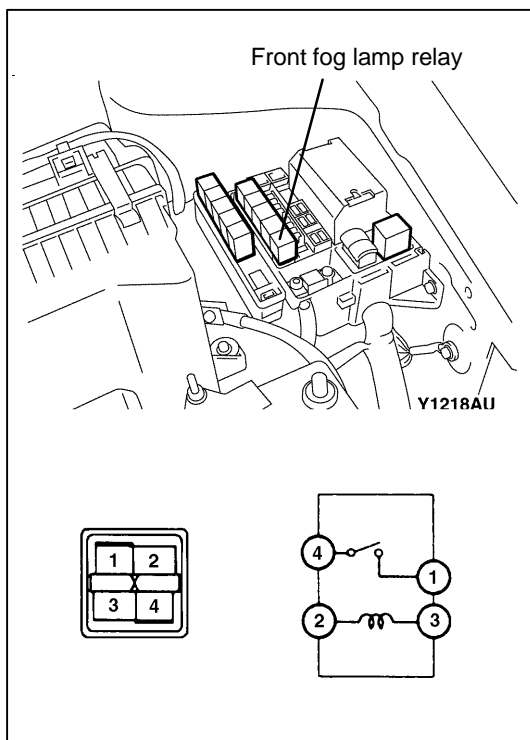
INSPECTION

FRONT FOG LAMP SWITCH CONTINUITY CHECK

| Switch position | Terminal No. | | | | | | |
|-----------------|--------------|---|---|-----|---|---|---|
| | 1 | 2 | 3 | ILL | 4 | 5 | 6 |
| ON | ○ | ○ | ○ | ○ | ○ | | |
| OFF | | | ○ | ○ | ○ | | |

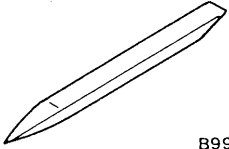
FRONT FOG LAMP RELAY CONTINUITY CHECK

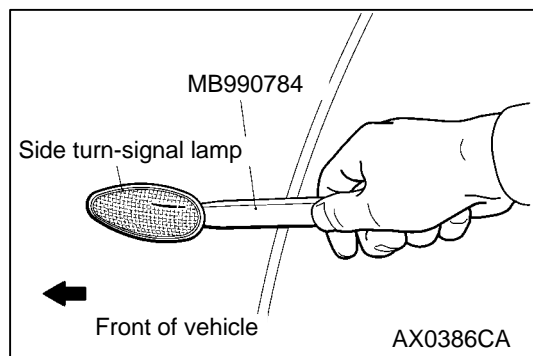
| Battery voltage | Terminal No. | | | |
|-----------------|--------------|---|---|---|
| | 2 | 3 | 1 | 4 |
| De-energized | ○ | ○ | | |
| Energized | + | - | ○ | ○ |



SIDE TURN-SIGNAL LAMP

SPECIAL TOOL

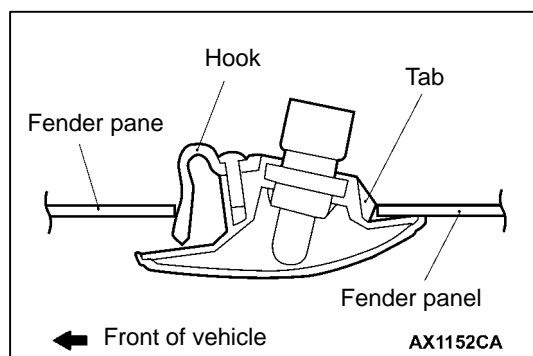
| Tools | Number | Name | Use |
|--|----------|------------------|-------------------------------|
|  B990784 | MB990784 | Ornament remover | Side turn-signal lamp removal |



SIDE TURN-SIGNAL LAMP

REMOVAL SERVICE POINT

Use special tool, etc. to press and deflect hook to vehicle front from fender, and unhook the pawls to remove side turn-signal lamp.



INSTALLATION SERVICE POINT

Insert pawls into fender panel and install side turn-signal lamp.

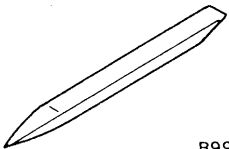
ROOM LAMP

TROUBLESHOOTING

Refer to [troubleshooting](#) of room lamp.

REAR COMBINATION LAMP

SPECIAL TOOL

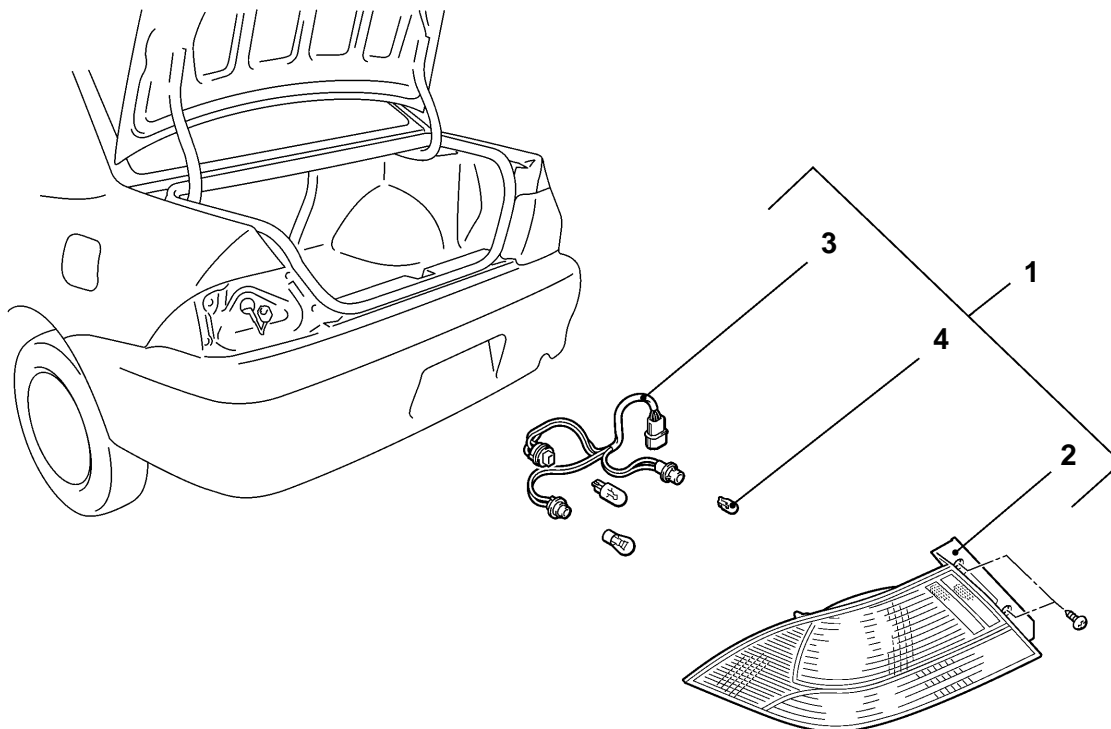
| Tool | Number | Name | Use |
|--|----------|------------------|-------------------------------|
|  B990784 | MB990784 | Ornament remover | Rear combination lamp removal |

TROUBLESHOOTING

Refer to [troubleshooting](#) on rear combination lamps.

REAR COMBINATION LAMP

REMOVAL AND INSTALLATION

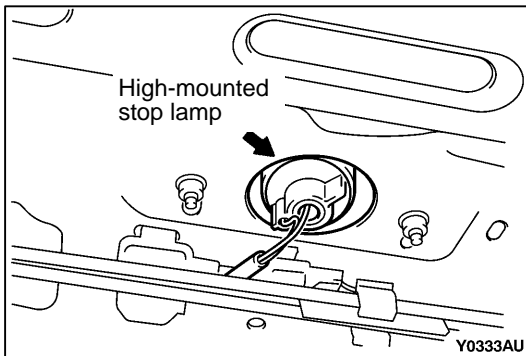


Y0249AU

Removal steps

1. Rear combination lamp assembly
2. Rear combination lamp body

3. Socket assembly
4. Bulb



HIGH-MOUNTED STOP LAMP

ON-VEHICLE SERVICE

HIGH-MOUNTED STOP LAMP BULB REPLACEMENT <WITH REAR SHELF>

Remove socket from trunk compartment, and replace bulb.

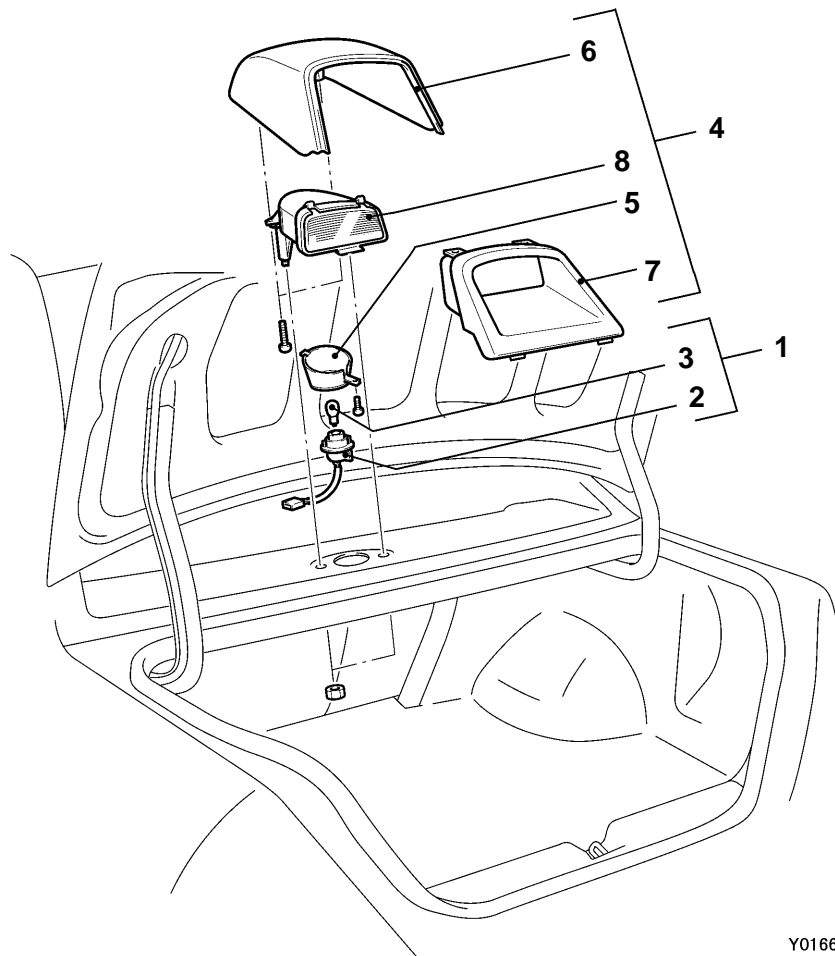
Caution

Do not touch bulb surface bare-handed or with dirty gloves. If dirt is attached on glass surface of the bulb, immediately use alcohol or thinner to remove dirt, and install the bulb after well dried.

HIGH-MOUNTED STOP LAMP

REMOVAL AND INSTALLATION

With rear shelf



Y0166AU

Removal steps

1. Socket assembly
2. Socket
3. Bulb
4. High-mounted stop lamp assembly

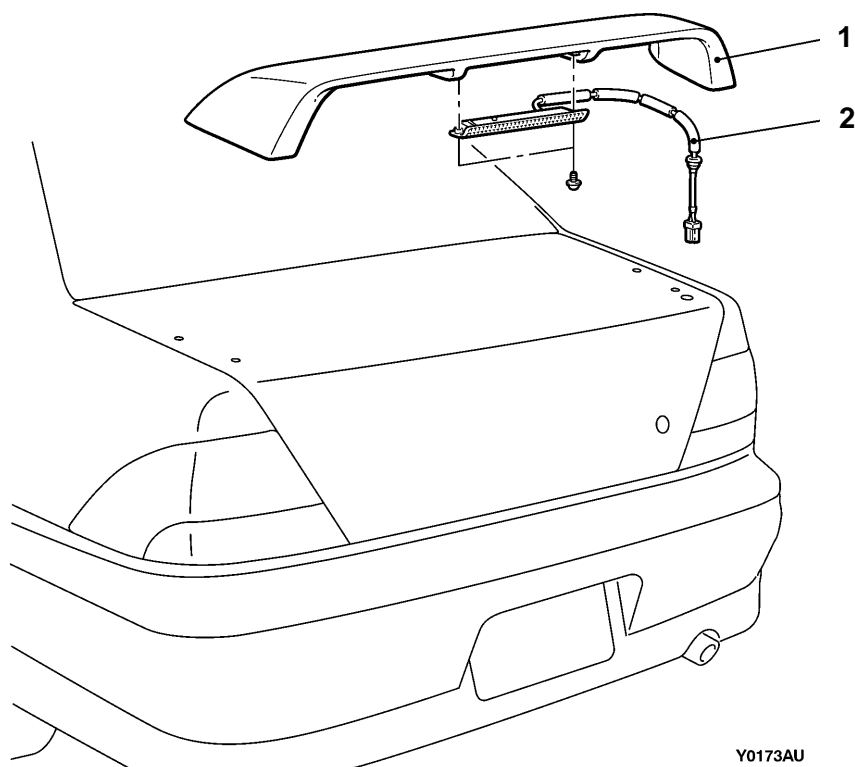
5. Socket holder
6. High-mounted stop lamp cover (front)
7. High-mounted stop lamp cover (rear)
8. High-mounted stop lamp body

With rear spoiler

MAIN

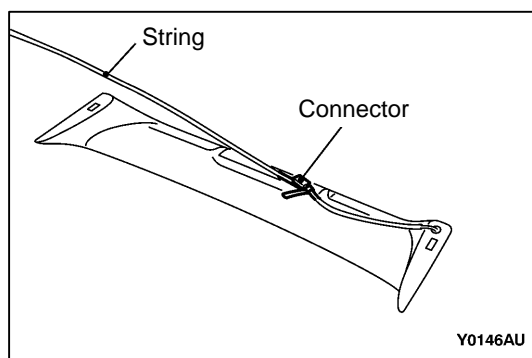
Group
54

54A



Removal steps

1. Rear spoiler
2. High-mounted stop lamp



REMOVAL SERVICE POINT

◀A▶ HIGH-MOUNTED STOP LAMP REMOVAL <WITH REAR SPOILER>

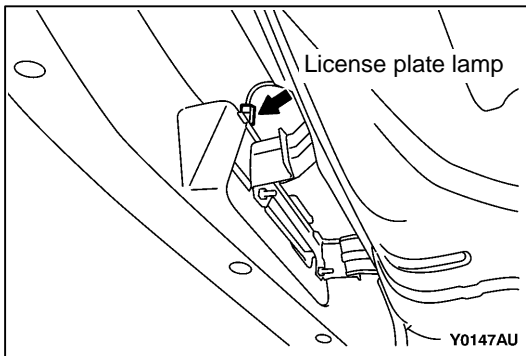
Use the following steps to easily route high-mounted stop lamp harness in the event of installation:

1. Tie string on high-mounted stop lamp harness (at connector side).

Caution

Ensure that the string is tightly tied.

2. Carefully pull out high-mounted stop lamp.



LICENSE PLATE LAMP

ON-VEHICLE SERVICE

LICENSE PLATE LAMP REPLACEMENT

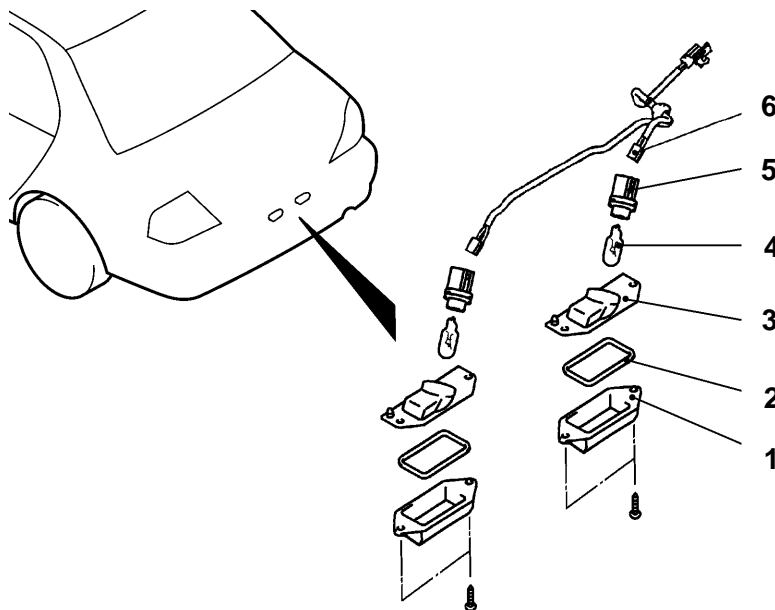
Remove socket between rear bumper and body, and remove bulb.

Caution

Do not touch bulb surface bare-handed or with dirty gloves. If dirt is attached on glass surface of the bulb, immediately use alcohol or thinner to remove dirt, and install the bulb after well dried.

LICENSE PLATE LAMP

REMOVAL AND INSTALLATION



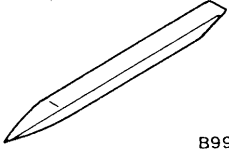
X0261AU

Removal steps

1. License plate lamp lens
2. Packing
3. License plate lamp body
4. Bulb
5. Socket
6. Harness

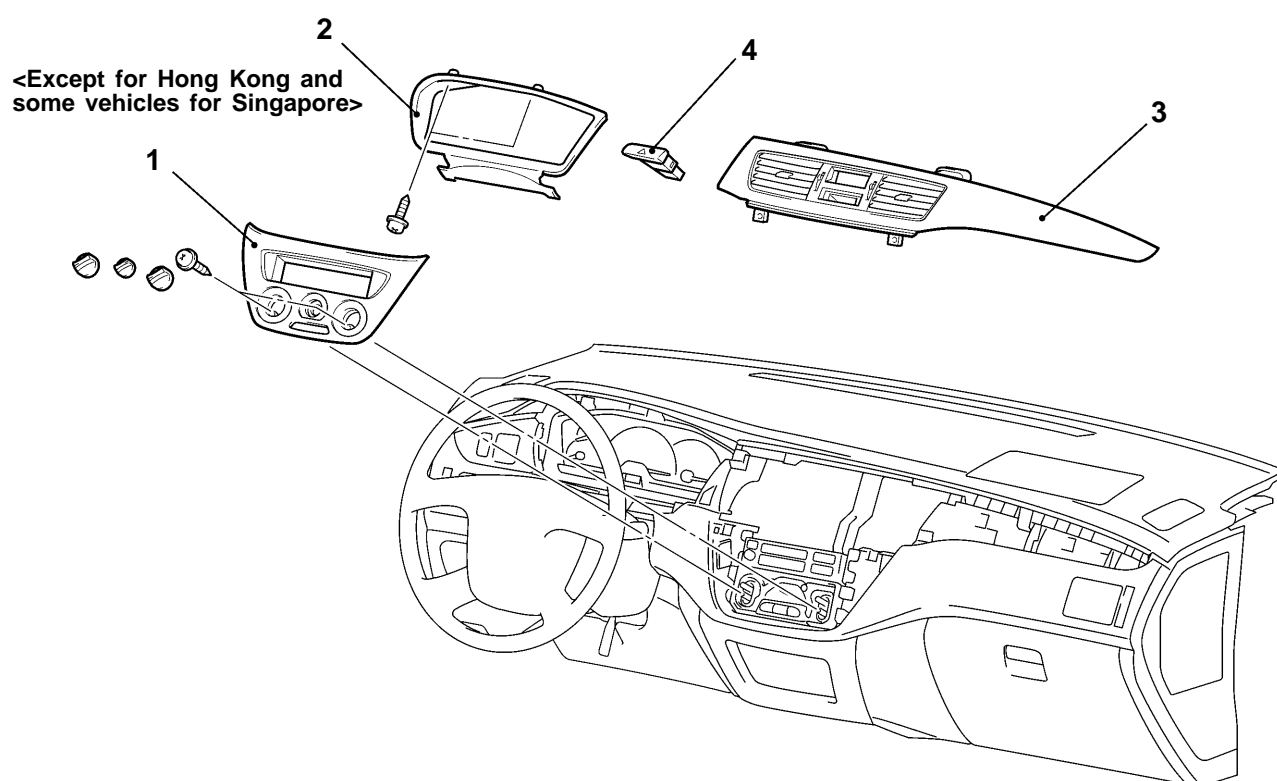
HAZARD WARNING LAMP SWITCH

SPECIAL TOOL

| Tool | Number | Name | Use |
|--|----------|------------------|-------------------------------|
|  B990784 | MB990784 | Ornament remover | Center panel assembly removal |

HAZARD WARNING LAMP SWITCH

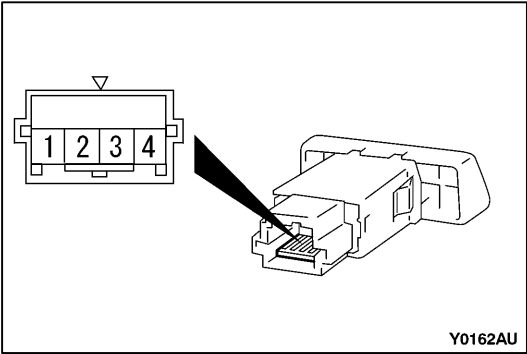
REMOVAL AND INSTALLATION



Y0835AU

Removal steps

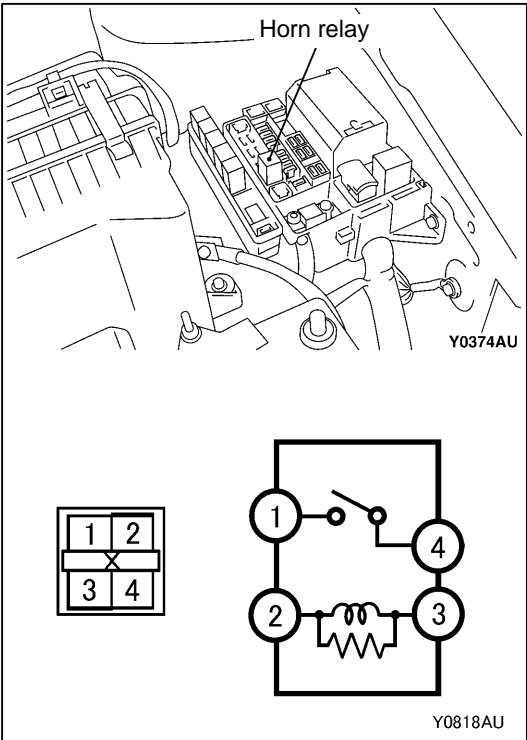
1. Center panel assembly
(Refer to [Instrument Panel.](#))
2. Meter bezel (Refer to P.54A-22.)
3. Center air outlet panel
(Refer to [Instrument Panel.](#))
4. Hazard warning lamp switch



INSPECTION

HAZARD WARNING LAMP SWITCH CONTINUITY CHECK

| Switch Position | Terminal No. | | | | |
|-----------------|--------------|---|---|-----|---|
| | 1 | 2 | 3 | | 4 |
| OFF | | | | ILL | |
| ON | | | | ILL | |

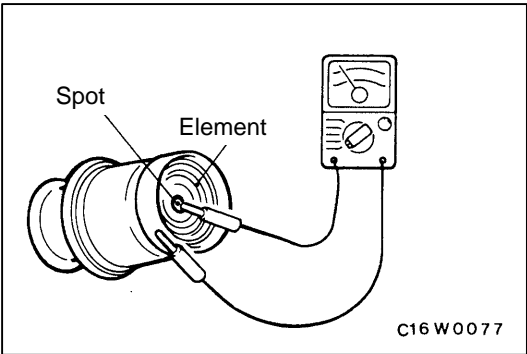


HORN

INSPECTION

HORN RELAY CONTINUITY CHECK

| Switch Position | Terminal No. | | | |
|-----------------|--------------|---|---|---|
| | 1 | 4 | 3 | 2 |
| De-energized | | | | |
| Energized | | | | |



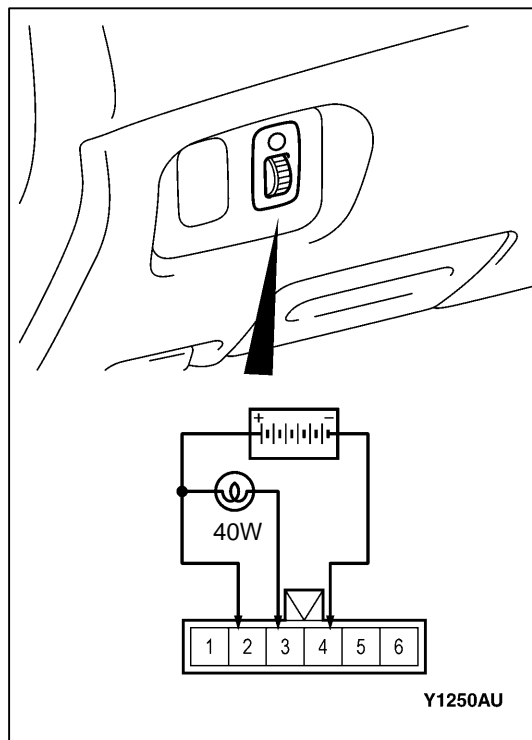
CIGARETTE LIGHTER

- INSPECTION
- Remove plug and check for wear on spot.
 - Check for residual cigarette or foreign object on element.
 - With circuit tester, check for element continuity.

RHEOSTAT

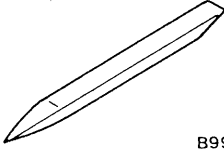
INSPECTION

1. Connect a test lamp (40 W) to the battery as shown in the illustration.
2. Operate the rheostat. If the luminance of the lamp changes steadily with no flashing, the rheostat is functioning normally.

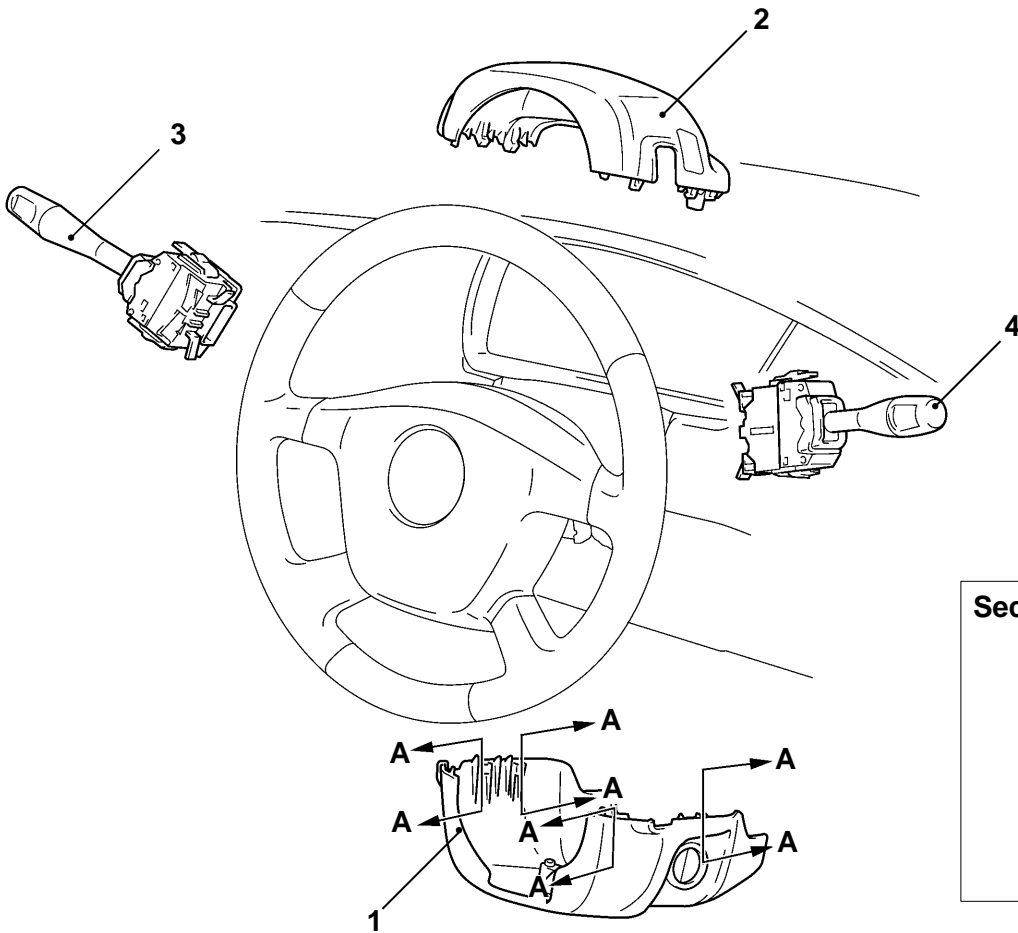


COLUMN SWITCH

SPECIAL TOOL

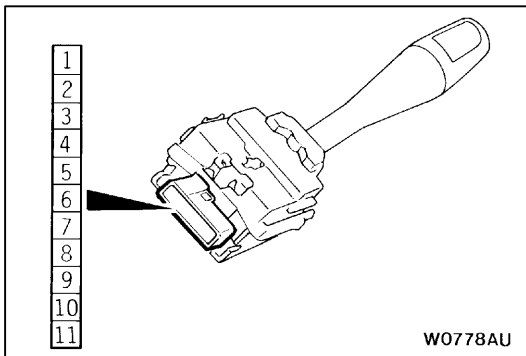
| Tool | Number | Name | Use |
|--|----------|------------------|----------------------|
|  B990784 | MB990784 | Ornament remover | Column cover removal |

COLUMN SWITCH REMOVAL AND INSTALLATION



Removal steps

1. Lower column cover
2. Upper column cover
3. Lighting switch
4. Wiper/Washer switch



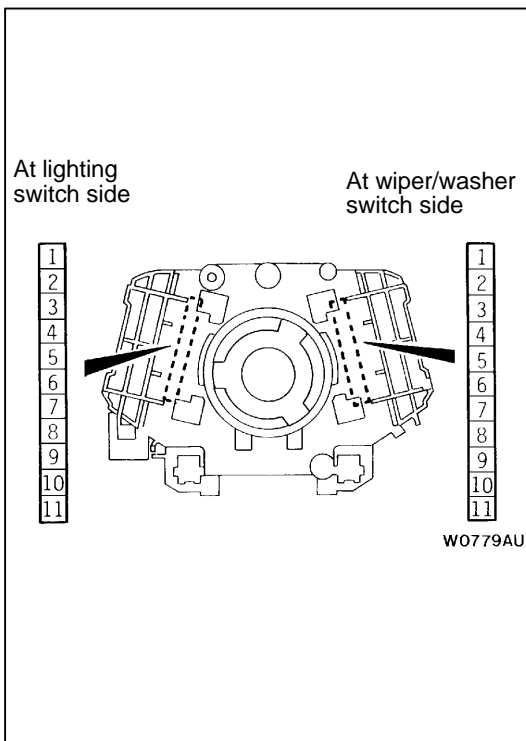
INSPECTION

LIGHTING SWITCH CONTINUITY CHECK <FOR R.H. DRIVE>

| Switch Position | Terminal No. | | | | | | | |
|---------------------|--------------|---|---|---|---|---|----|----|
| | 3 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| OFF | | | | | | | | |
| Auto light | ○ | ○ | | | | | | |
| Headlamp | ○ | | ○ | | | | | |
| Tail lamp | ○ | | | ○ | | | | |
| Passing | ○ | | | | ○ | | | |
| Dimmer | ○ | | | | | ○ | | |
| Turn signal lamp RH | ○ | | | | | | ○ | |
| Turn signal lamp LH | ○ | | | | | | | ○ |

NOTE

On L.H. drive vehicles, integrated column ECU does not allow lighting switch continuity test.



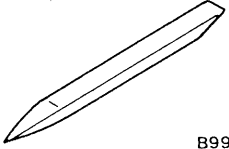
COLUMN SWITCH CONTINUITY CHECK (AT SWITCH BODY)

1. Remove lighting switch and wiper/washer switch.
2. Among individual connectors of column switch body remaining in steering column, check for continuity between same number terminals (No. 3–11).

[illegible]

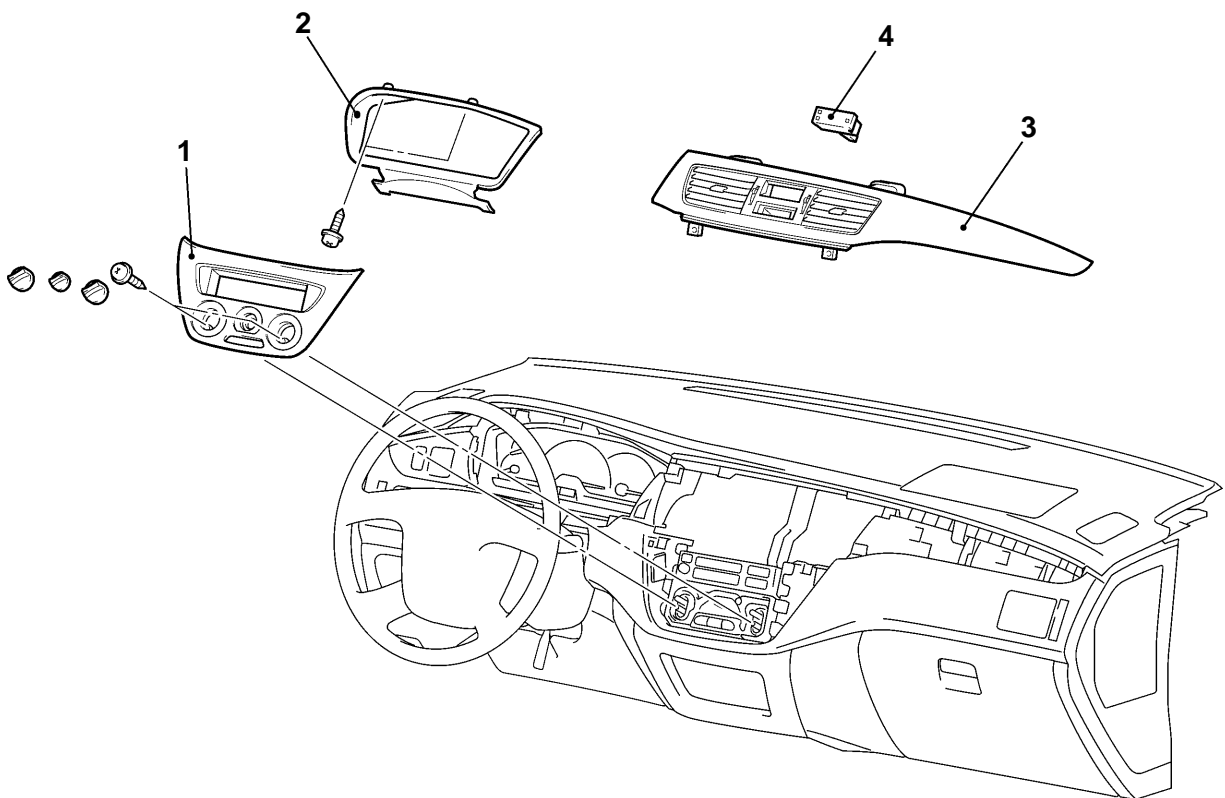
CLOCK

SPECIAL TOOL

| Tool | Number | Name | Use |
|--|----------|------------------|------------------------------------|
|  B990784 | MB990784 | Ornament remover | Hood panel and center hood removal |

CLOCK

REMOVAL AND INSTALLATION



Y0835AU

Removal steps

1. Center panel assembly
(Refer to [Instrument Panel.](#))
2. [Meter bezel](#)
3. Center air outlet panel
(Refer to [Instrument Panel.](#))
4. Clock

RADIO/TAPE PLAYER AND CD AUTO CHANGER

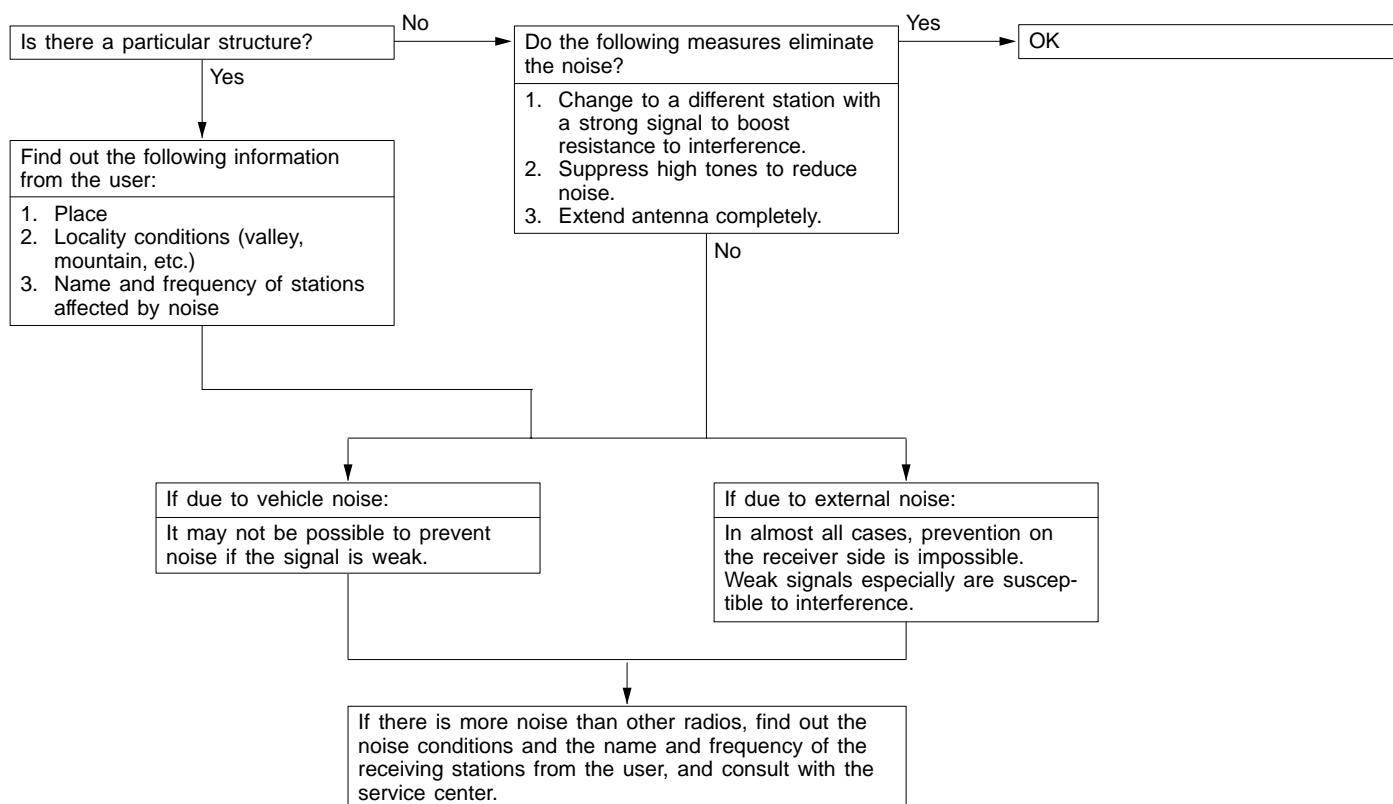
TROUBLESHOOTING

QUICK-REFERENCE TROUBLESHOOTING CHART

| Items | Fault symptom | Relevant chart |
|-------------|---|----------------|
| Noise | Noise appears at certain places when traveling. | A-1 |
| | Mixed with noise, only at night. | A-2 |
| | Broadcasts can be heard but UKW/MW/LW has a lot of noise. | A-3 |
| | There is noise when starting the engine. | A-4 |
| | Some noise appears when there is vibration or shocks during traveling. | A-5 |
| | Ever-present noise. | A-6 |
| Radio | When switch is set to ON, no power is available. | B-1 |
| | No sound from one speaker. | B-2 |
| | There is noise but no reception for UKW/MW/LW or no sound from UKW/MW/LW. | B-3 |
| | Insufficient sensitivity. | B-4 |
| | Distortion on UKW/MW/LW. | B-5 |
| | Too few automatic select stations. | B-6 |
| | Insufficient memory (preset stations are erased). | B-7 |
| Tape player | Cassette tape will not be inserted. | C-1 |
| | No sound. | C-2 |
| | No sound from one speaker. | C-3 |
| | Sound quality is poor, or sound is weak. | C-4 |
| | Cassette tape will not be ejected. | C-5 |
| | Uneven revolution. Tape speed is fast or slow. | C-6 |
| | Faulty auto reverse. | C-7 |
| | Tape gets caught in mechanism. | C-8 |
| CD Player | CD will not be accepted. | D-1 |
| | No sound. | D-2 |
| | CD sound skips. | D-3 |
| | Sound quality is poor. | D-4 |
| | CD will not be ejected. | D-5 |
| | No sound from one speaker. | D-6 |

CHART

A. NOISE

A-1 Noise appears at certain places when traveling.

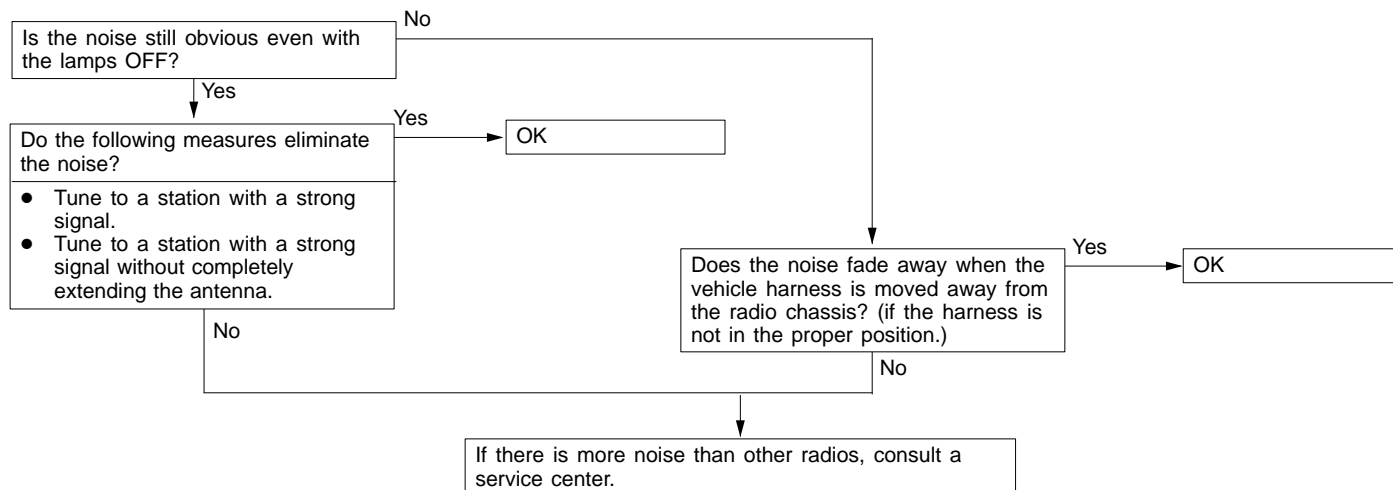
A-2 Mixed with noise, only at night.

The following factors can be considered as possible causes of noise appearing at night.

- Factors due to signal conditions: Due to the fact that long-distance signals are more easily received at night, even stations that are received without problem during the day may experience interference in a general worsening of reception conditions. The weaker a station is the more susceptible it is to interference,

and a change to a different station or the appearance of a beating sound* may occur. Beat sound*: Two signals close in frequency interfere with each other, creating a repetitious high-pitched sound. This sound is generated not only by sound signals but by electrical waves as well.

- Factors due to vehicle noise: Alternator noise may be a cause.



A-3 Broadcasts can be heard but UKW/MW/LW has a lot of noise.

(1)

Noise occurs when the engine is stopped.

Do the following measures eliminate the noise?

- Tune to a station with a strong signal.
- Extend the antenna completely.
- Adjust the sound quality to suppress high tones.

Is the radio body earth mounted securely?

Is the antenna plug properly connected to the radio?

Is the antenna itself in good condition or is it properly mounted?

Yes

No

No

No

No

Yes

No

OK

Securely tighten the nuts for the body earth.

Correctly attach the antenna plug.

Clean the antenna plug and earth wire mounting area. Mount the antenna securely.

Is the noise eliminated?

Yes

OK

If there is more noise than other radios, consult a service center.

(2)

Noise occurs when the engine is running.

Inspect the vehicle's noise suppresser. (Refer [A-4.](#))

A-4 There is noise when starting the engine.

| Noise type Sounds are in parentheses (). | Conditions | Cause | Remedy |
|--|---|--|--|
| UKW/MW/LW: Ignition noise (Popping, snapping, cracking, buzzing) | <ul style="list-style-type: none"> Increasing the engine speed causing the popping sound to speed up, and volume decreases. Disappears when the ignition switch is turned to ACC. | <ul style="list-style-type: none"> Mainly due to the spark plugs. Due to the engine noise. | <ul style="list-style-type: none"> Check or replace the earth cable. (Refer to Fig. 1, 2 and 3. Check or replace the noise capacitor. |
| Other electrical components | – | Noise may appear as electrical components become older. | Repair or replace electrical components. |
| Static electricity (Cracking, crinkling) | <ul style="list-style-type: none"> Disappears when the vehicle is completely stopped. Severe when the clutch is engaged. | Occurs when parts or wiring move for some reason and contact metal parts of the body. | Return parts or wiring to their proper position. |
| | <ul style="list-style-type: none"> Various noises are produced depending on the body part of the vehicle. | Due to detachment from the body of the front hood, bumpers, exhaust pipe and muffler, suspension, etc. | Tighten the mounting bolts securely. Cases where the problem is not eliminated by a single response to one area are common, due to several body parts being imperfectly earthed. |

Caution

1. Connecting a high tension cable to the noise filter may destroy the noise filter and should never be done.
2. Check that there is no external noise. Since failure caused by this may result in misdiagnosis due to inability to identify the noise source, this operation must be performed.
3. Noise prevention should be performed by suppressing strong sources of noise step by step.

NOTE

1. Capacitor: The capacitor does not pass D.C. current, but as the number of waves increases when it passes A.C. current, impedance

(resistance against A.C.) decreases, and current flow is facilitated. A noise suppressing condenser which takes advantage of this property is inserted between the power line for the noise source and the earth. This suppresses noise by earthing the noise component (A.C. or pulse signal) to the body of the vehicle.

2. Coil: The coil passes D.C. current, but impedance rises as the number of waves increases relative to the A.C. current. A noise suppressing coil which takes advantage of this property is inserted into the power line for the noise source, and works by preventing the noise component from flowing or radiating out of the line.

Fig. 1 <4G13, 4G18>

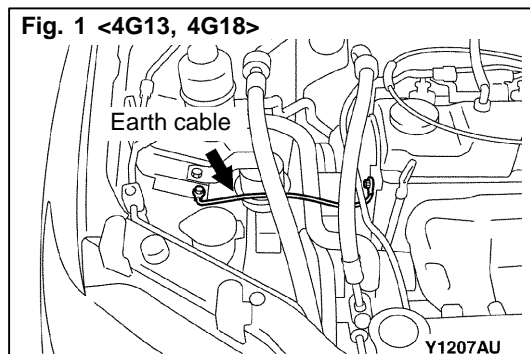
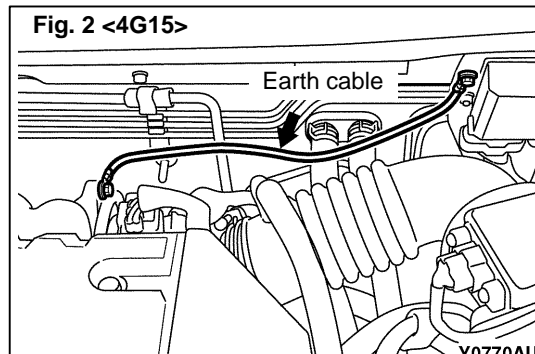
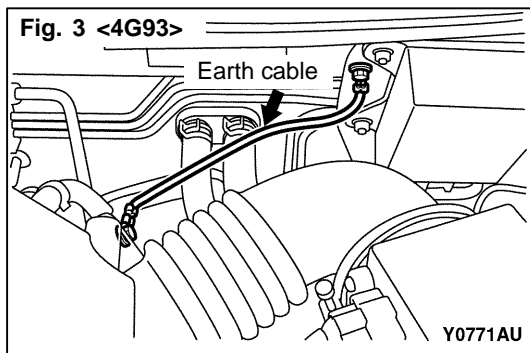
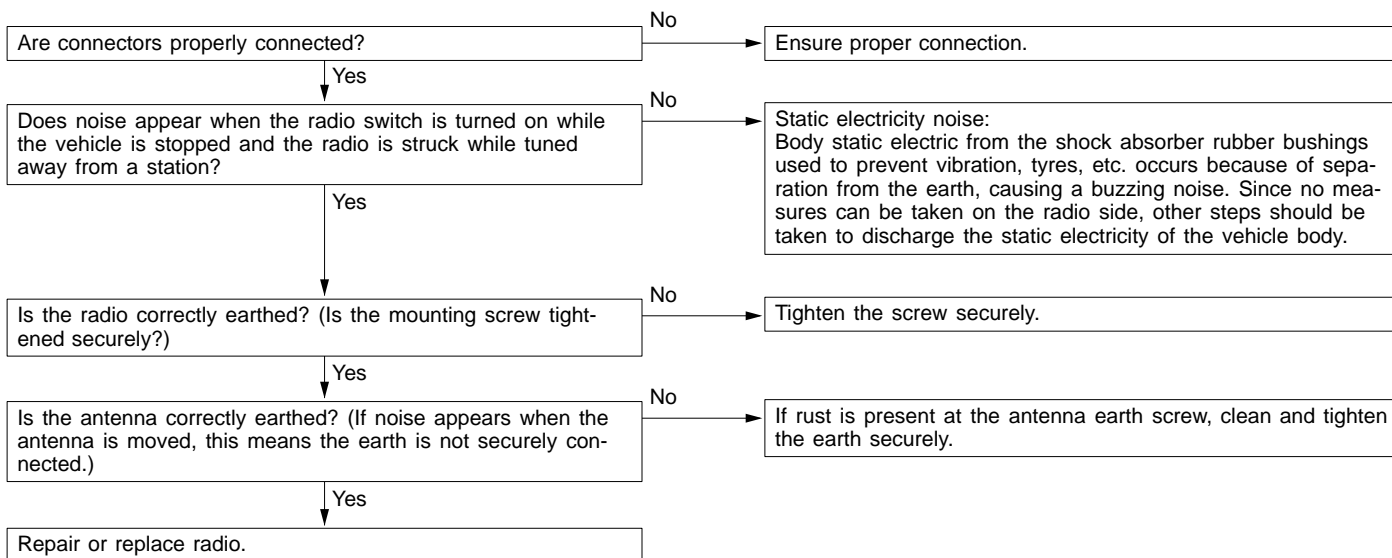


Fig. 2 <4G15>





A-5 Some noise appears when there is vibration or shocks during traveling.



A-6 Ever-present noise.

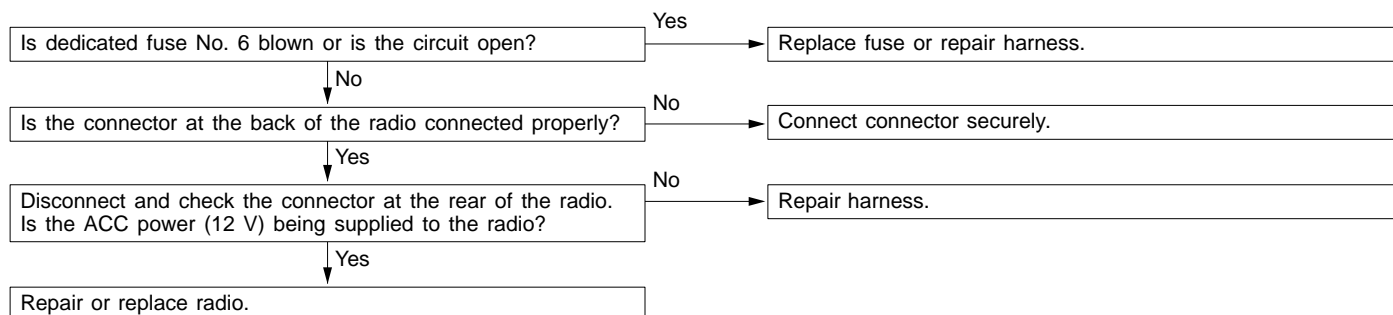
Noise is often created by the following factors, and often the radio is OK when it is checked individually.

- Traveling conditions of the vehicle
- Terrain of area traveled through
- Surrounding buildings
- Signal conditions
- Time period

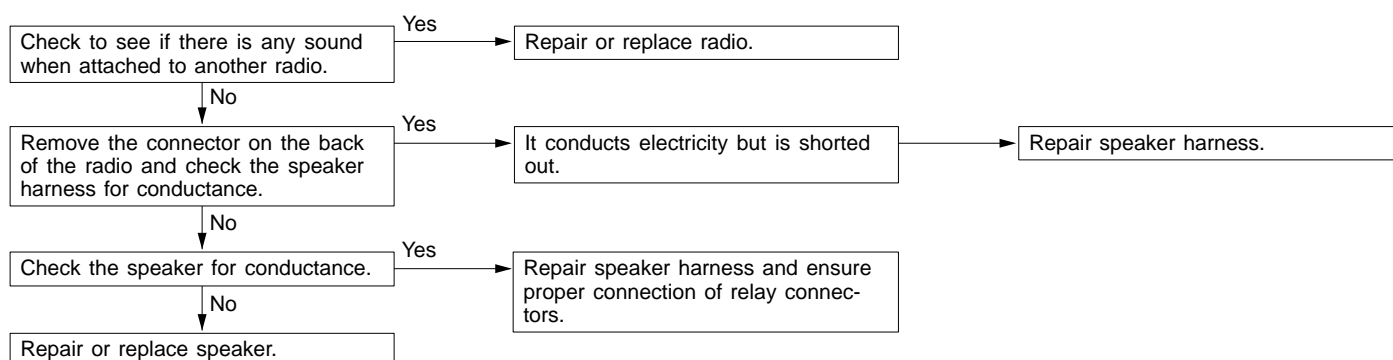
For this reason, if there are still problems with noise even after the measures described in steps A-1 to A-8 have been taken, get information on the factors listed above as well as determining whether the problem occurs with UKW/MW/LW, the station names, frequencies, etc., and contact a service centre.

B. RADIO

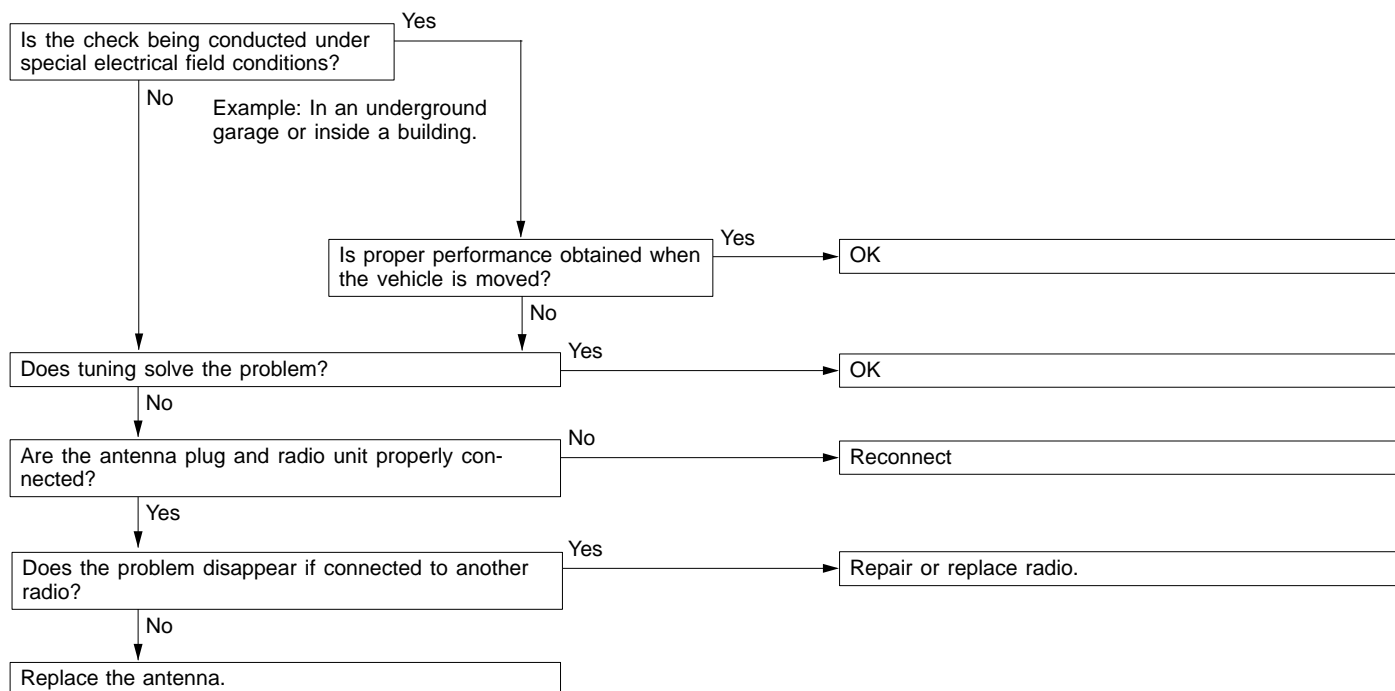
B-1 No power is supplied when the switch is set to ON.



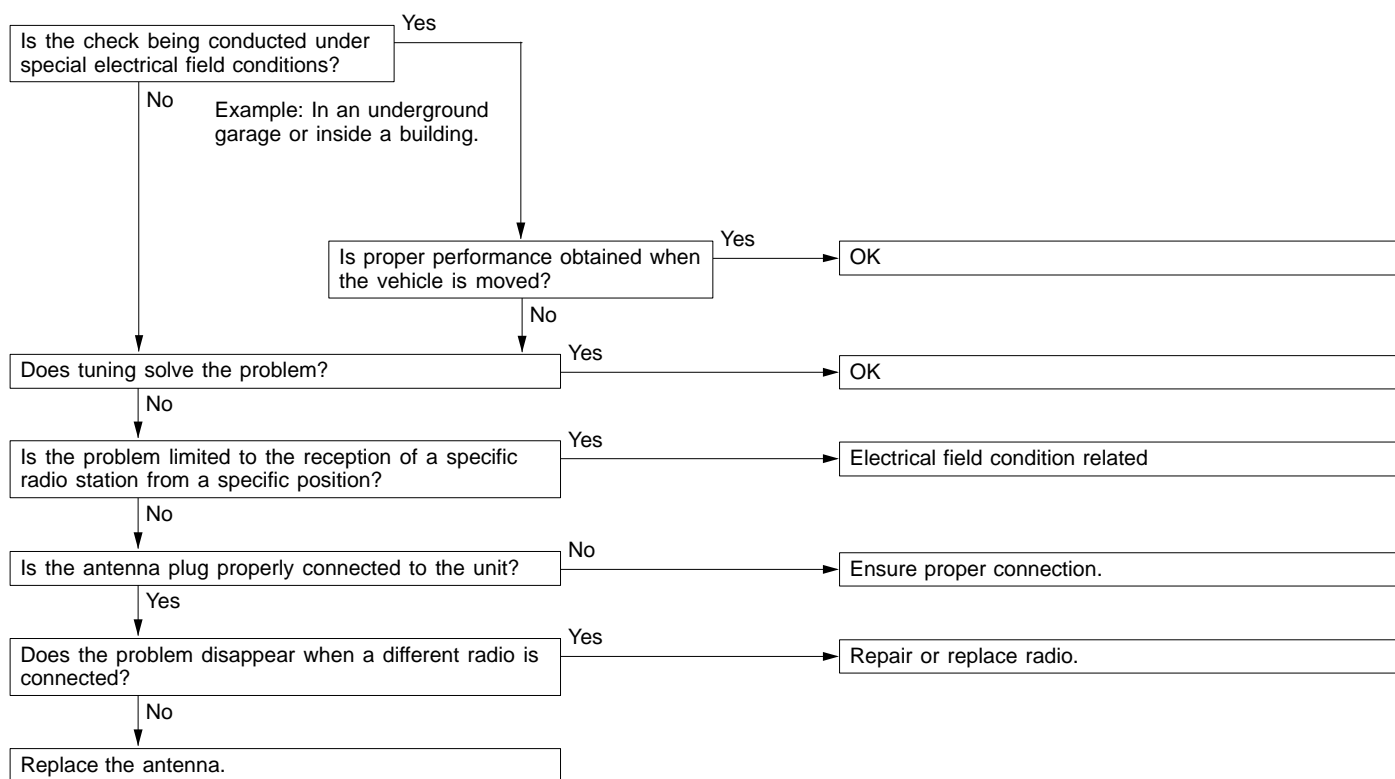
B-2 No sound from one speaker.



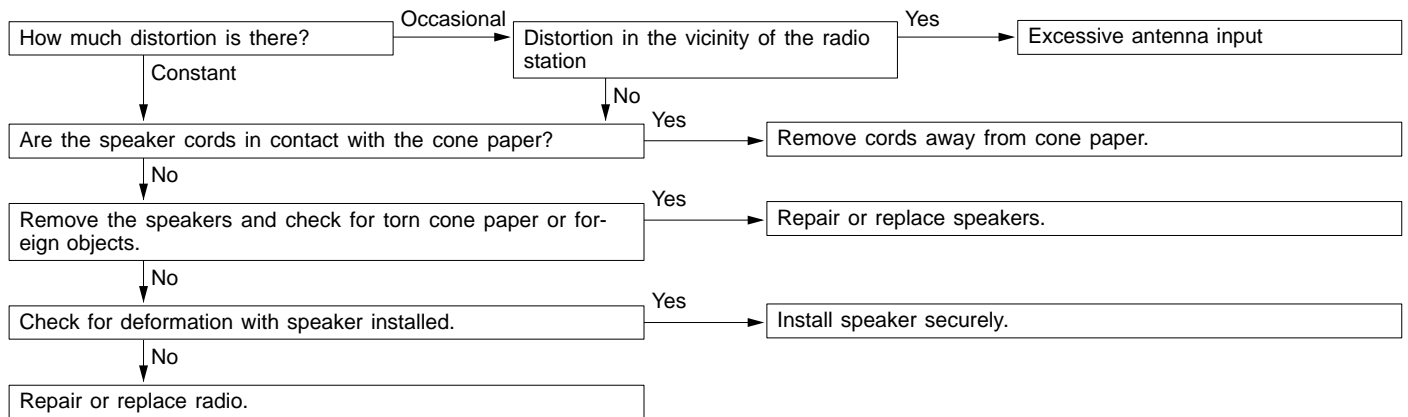
B-3 There is noise but no reception for UKW/MW/LW or no sound from UKW/MW/LW.



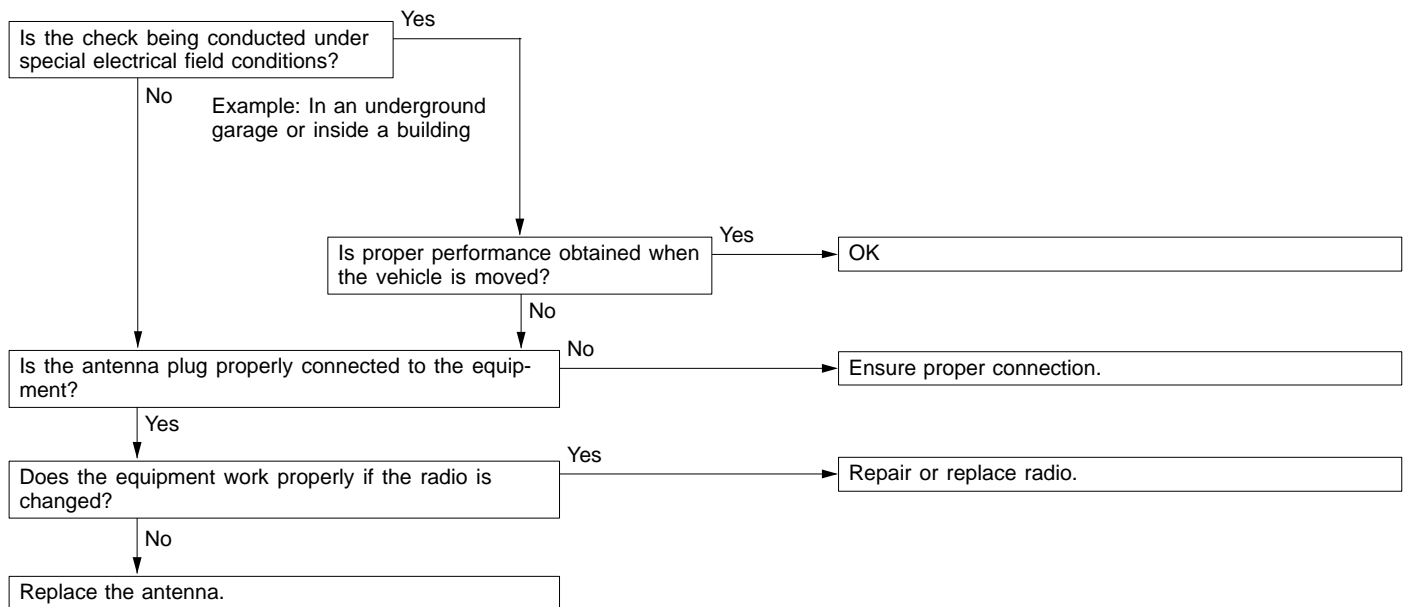
B-4 Insufficient sensitivity.



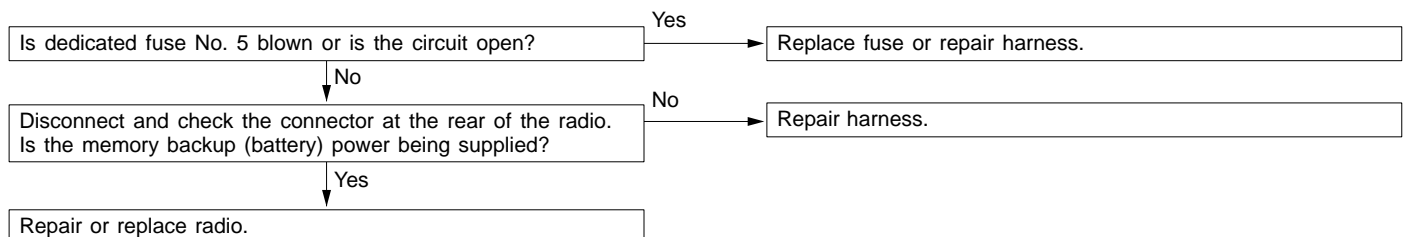
B-5 Distortion on UKW/MW/LW.



B-6 Too few automatic select stations.

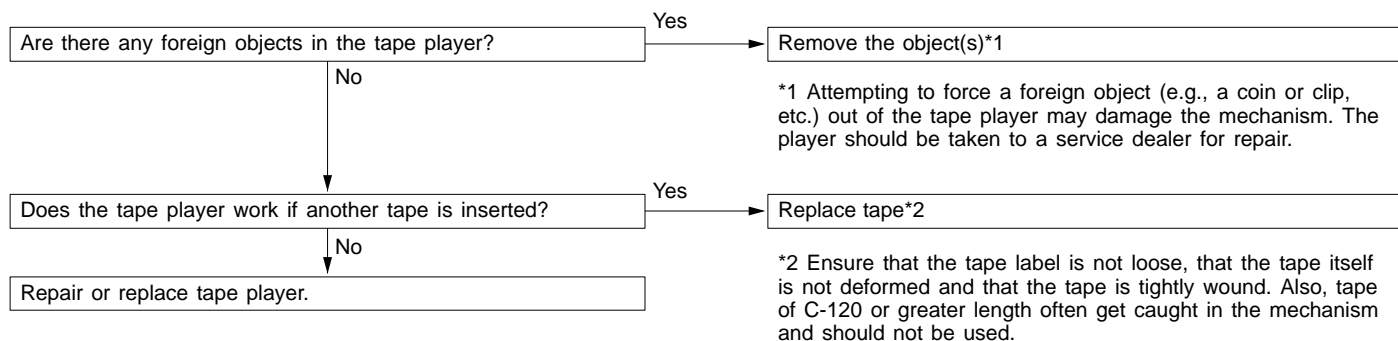


B-7 Insufficient memory (preset stations are erased).

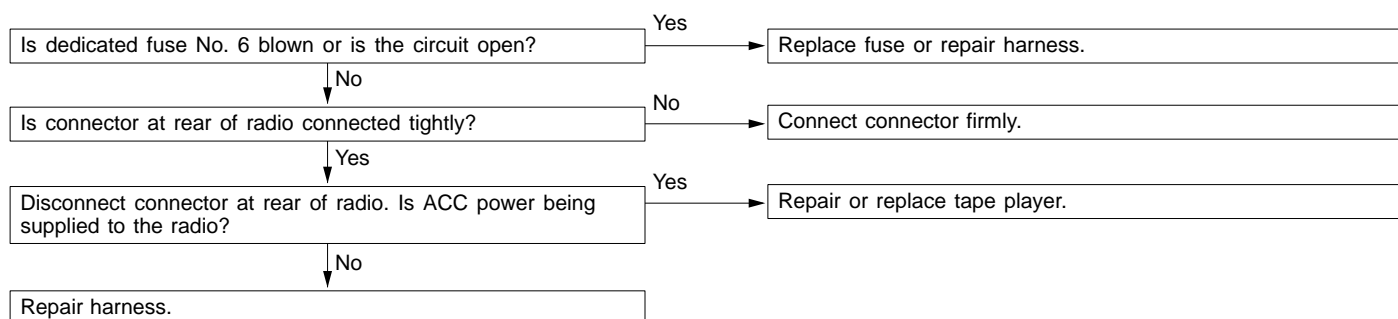


C. TAPE PLAYER

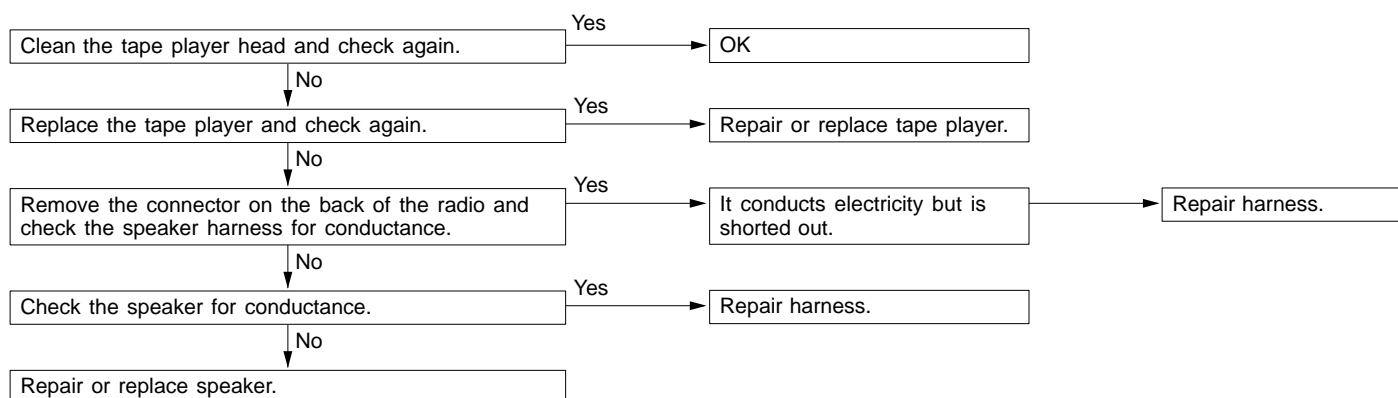
C-1 Cassette tape will not be inserted.



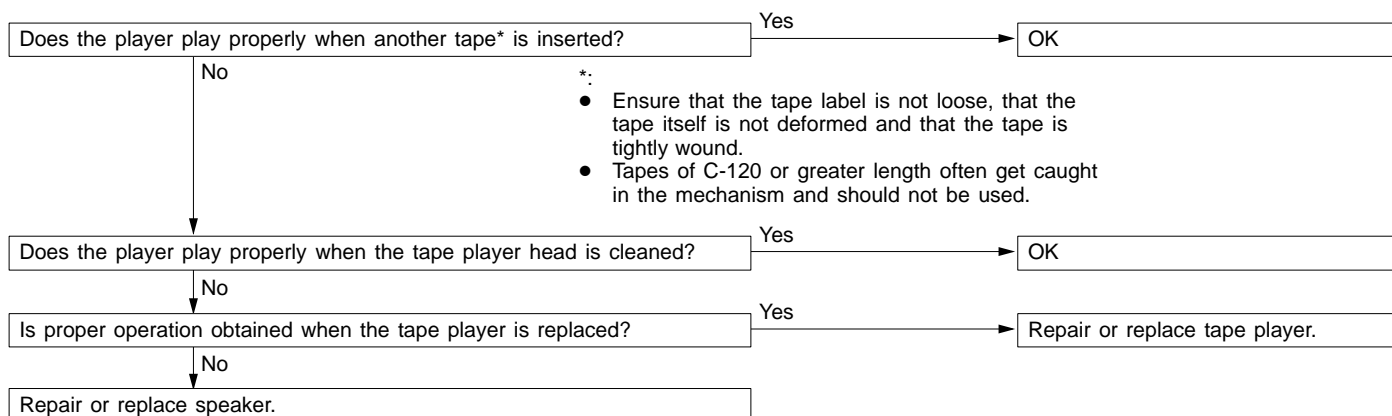
C-2 No sound (even after a tape has been inserted).



C-3 No sound from one speaker.



C-4 Sound quality is poor, or sound is weak.

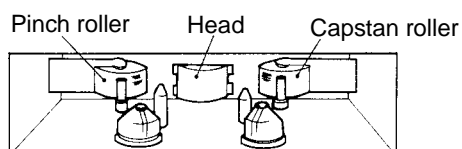
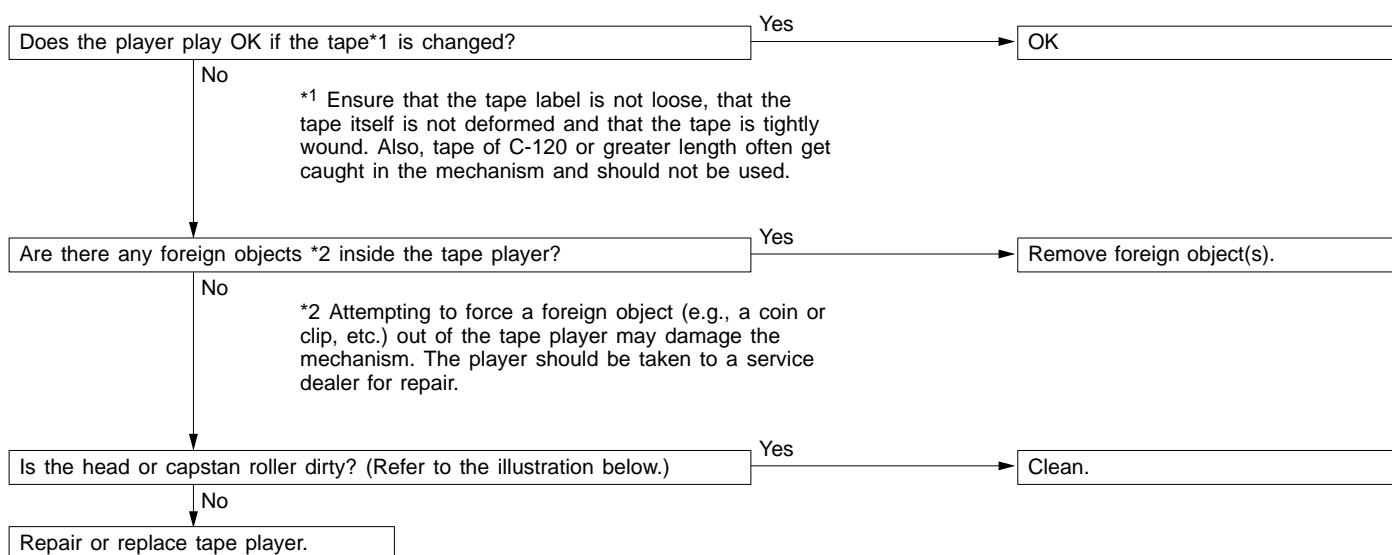


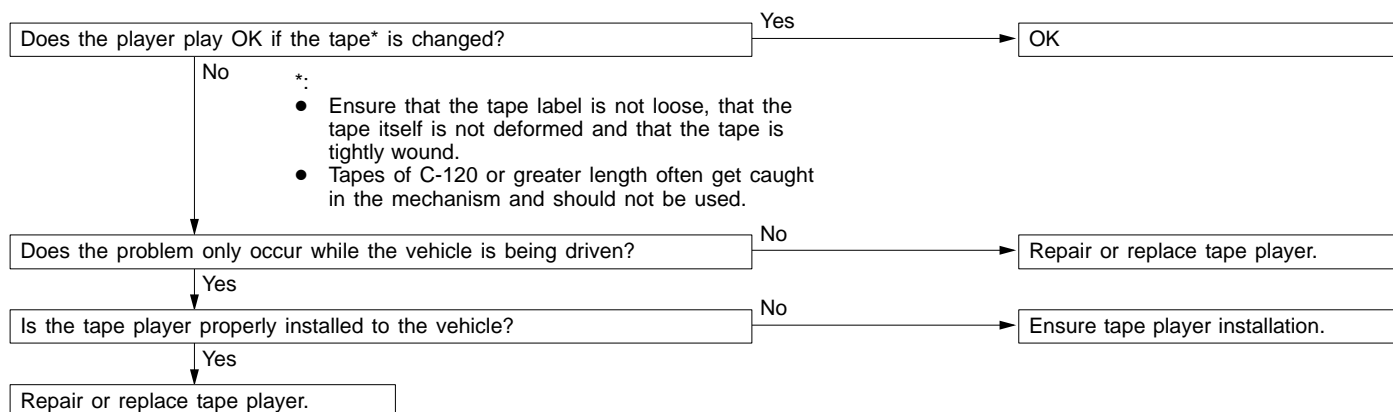
C-5 Cassette tape will not be ejected.

The problems covered here are all the result of the use of a bad tape (deformed or not properly tightened) or of a malfunction of the tape player itself. Malfunctions involving the tape becoming caught in the mechanism and ruining the case are

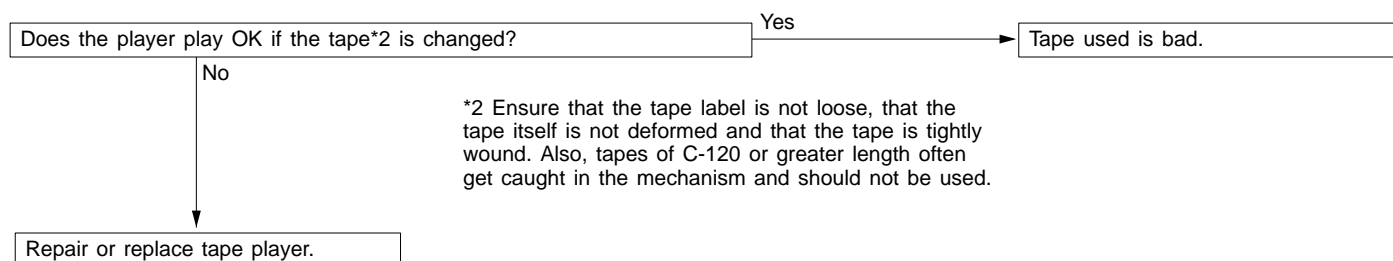
also possible, and attempting to force the tape out of the player can cause damage to the mechanism. The player should be taken to a service dealer for repair.

C-6 Uneven revolution. Tape speed is fast or slow.



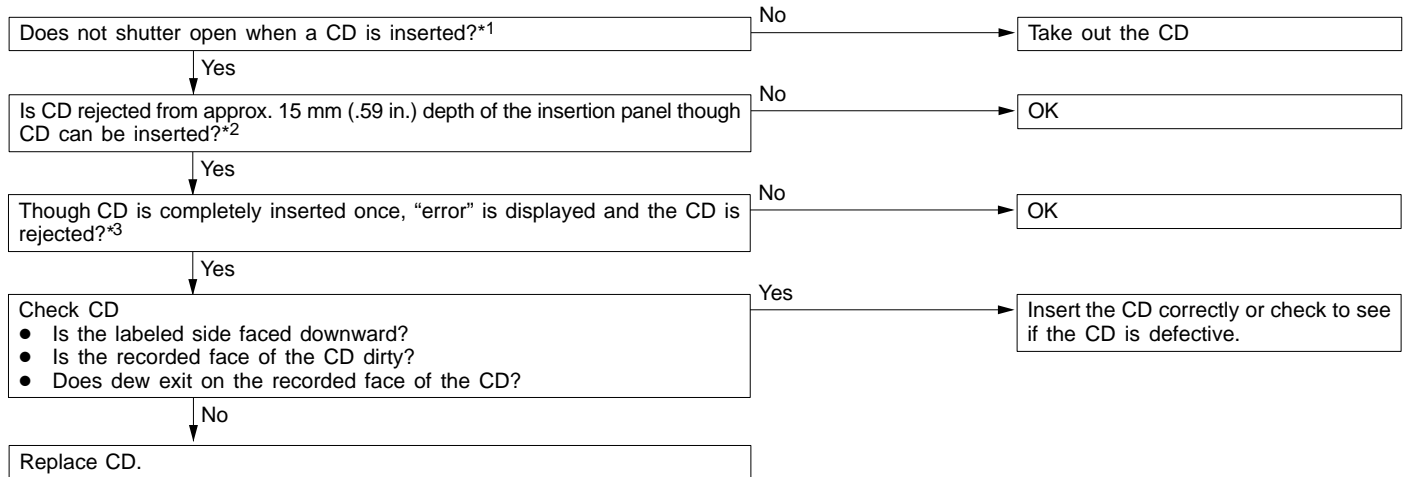
C-7 Faulty auto reverse.**C-8 Tape gets caught in mechanism*1.**

*1 When the tape is caught in the mechanism, the case may not eject. When this occurs, do not try to force the tape out as this may damage the tape player mechanism. Take the cassette to a service dealer for repair.



D. CD PLAYER

D-1 CD will not be inserted.

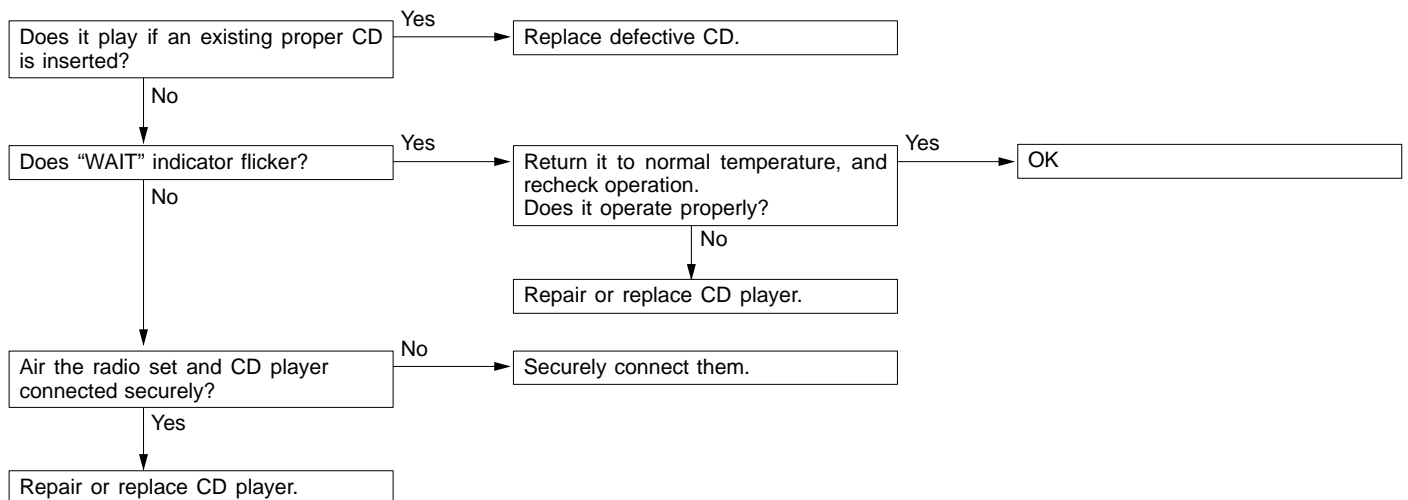


*1 If the CD is already loaded, doesn't the shutter open to allow insertion when another CD is inserted?

*2 If the sky switch is not at ACC or ON, the CD stops at depth of 15 mm (.59 in.) below the panel surface even when it is inserted, and it will be rejected when pushed farther?

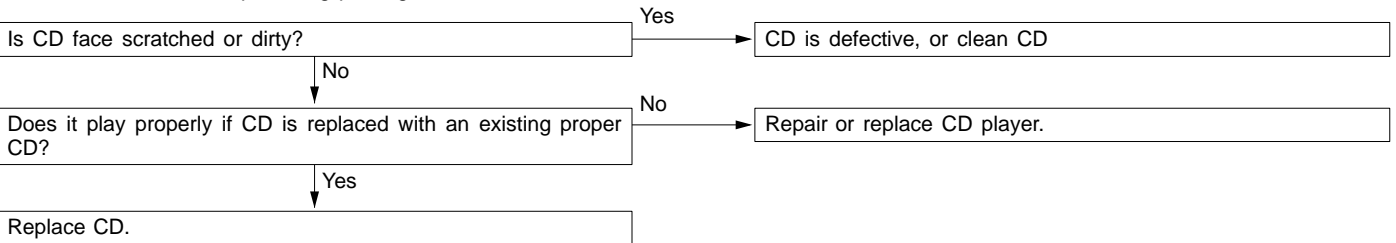
*3 Even though the CD is loaded, E (error) is sometimes displayed with the CD rejected because of vibration/shock or dew on the CD face or optical lens.

D-2 No sound.



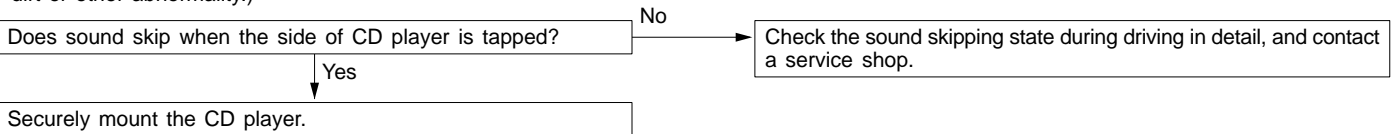
D-3 CD sound skips.

1. Sound sometimes skips during parking.

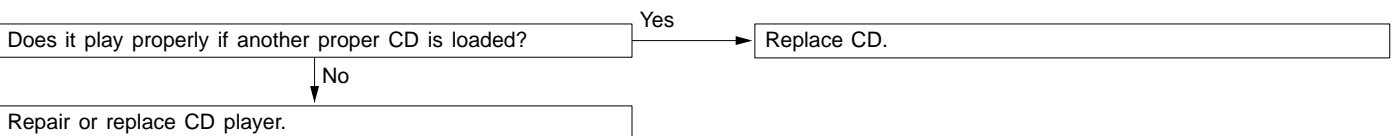


2. Sound sometimes skips during driving.

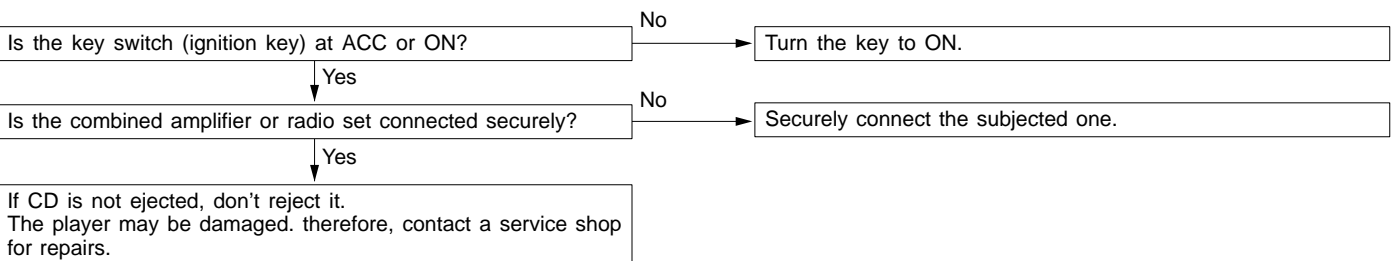
(Stop vehicle, and check it.)
(Check it by using a proper CD which is free of scratch, dirt or other abnormality.)



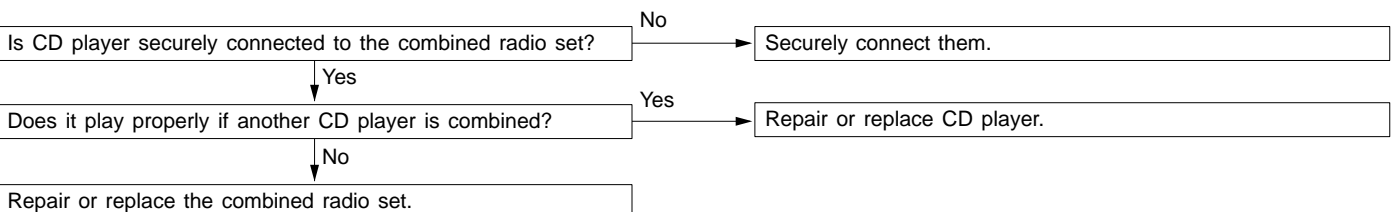
D-4 Sound quality is poor.



D-5 CD will not be ejected.



D-6 No sound from one speaker.

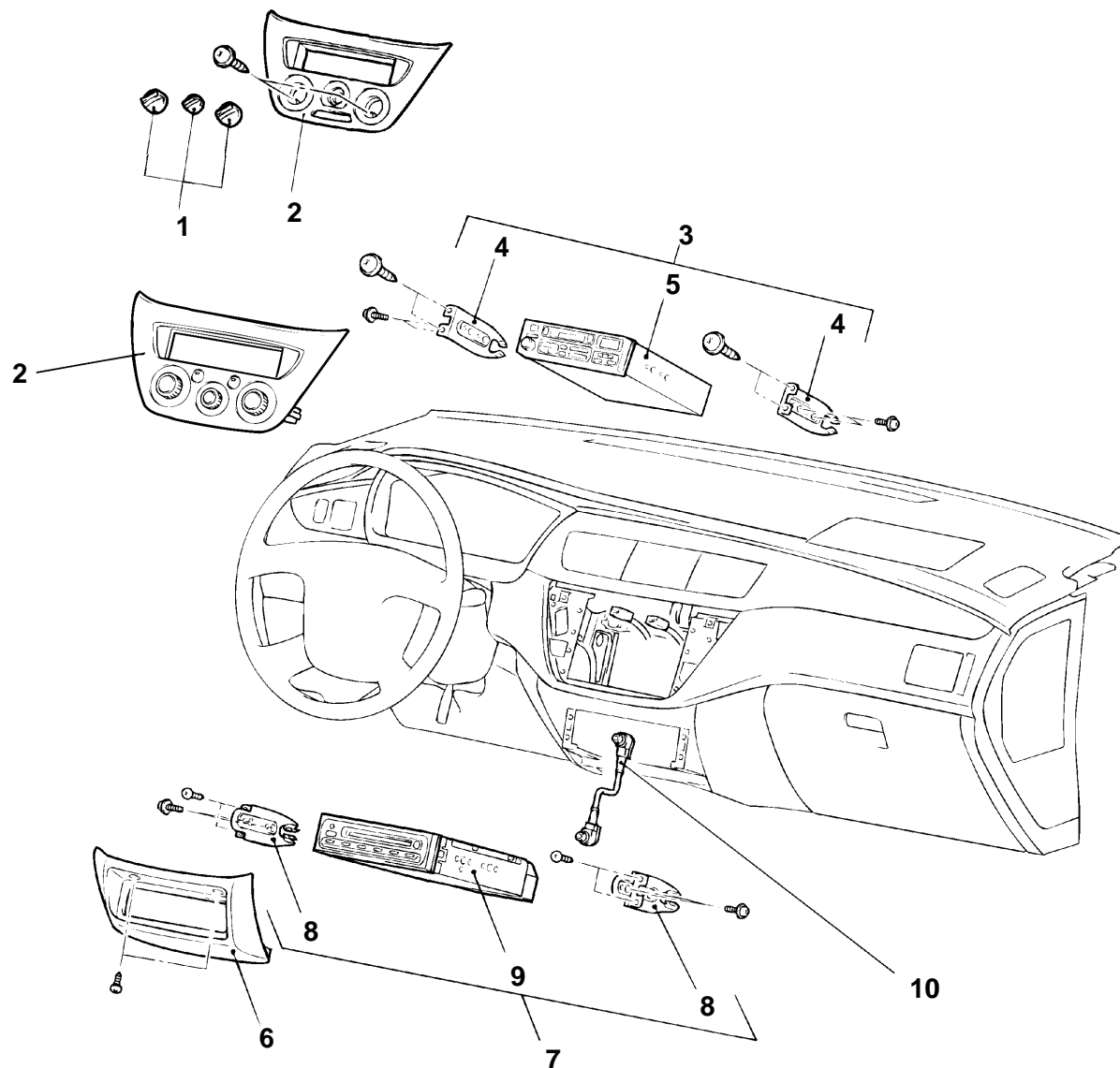


REMOVAL AND INSTALLATION

MAIN

Group
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Y0839AU

Radio/Tape player and CD auto changer removal steps

1. Knob assembly (Refer to [Heater Control Assembly, A/C Switch.](#))
2. Center panel assembly (Refer to [Instrument Panel.](#))
3. Radio/Tape player and CD auto changer assembly
4. Radio bracket
5. Radio/Tape player and CD auto changer

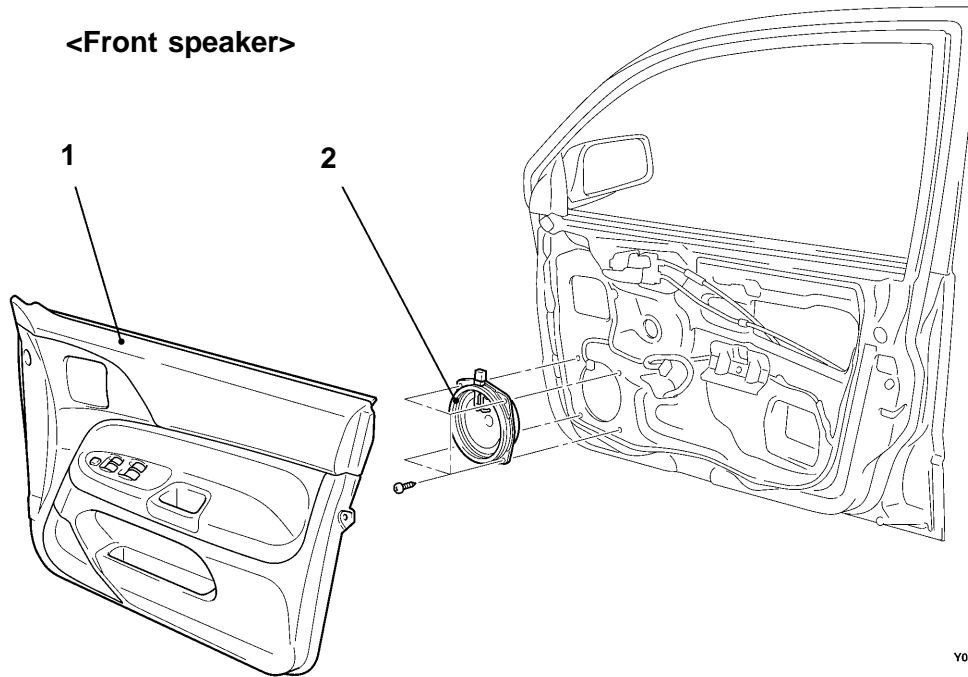
CD auto changer removal steps

6. Center lower case (Refer to [Instrument Panel.](#))
7. CD auto changer assembly
8. CD auto changer bracket
9. CD auto changer
10. DIN cable

SPEAKERS

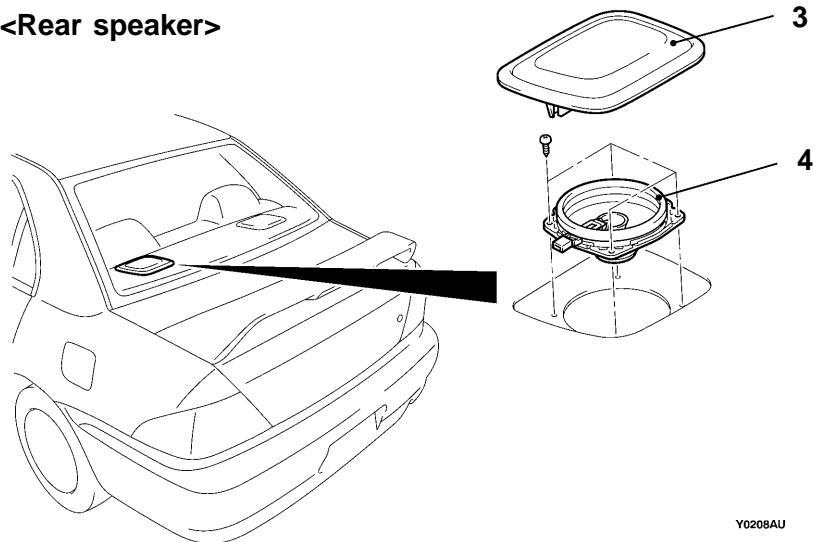
REMOVAL AND INSTALLATION

<Front speaker>



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<Rear speaker>



Y0208AU

Front speaker removal steps

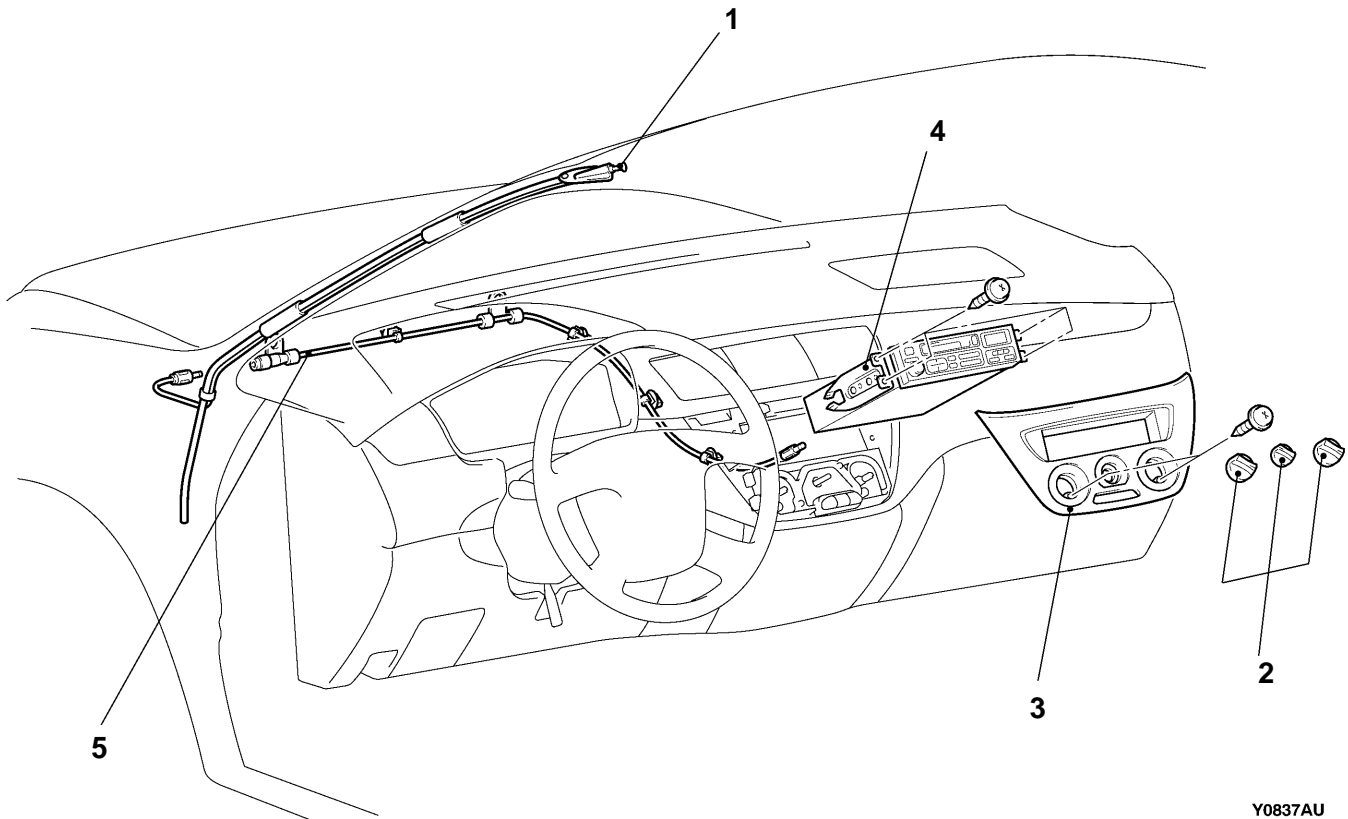
1. Door trim
(Refer to [Door Trim/Waterproof Film.](#))
2. Front door speaker

Rear speaker removal steps

3. Rear speaker garnish
4. Rear speaker

POLE ANTENNA

REMOVAL AND INSTALLATION



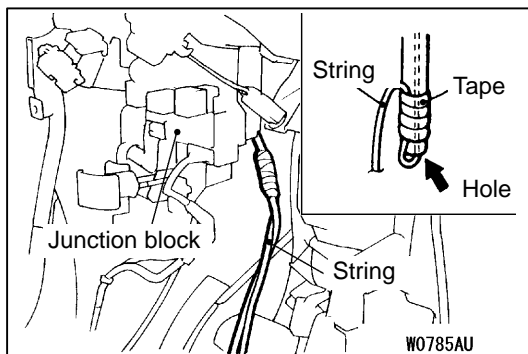
Y0837AU

Removal steps



1. Antenna base
2. Knob assembly
3. Center panel assembly
(Refer to [Instrument Panel.](#))
4. [Radio/tape player and CD auto changer](#)

- Instrument under cover
(Refer to [Instrument Panel.](#))
- [Instrument Panel](#)
- 5. Antenna feeder cable



REMOVAL SERVICE POINT

◀A▶ ANTENNA BASE REMOVAL

Use the following steps to easily route antenna feeder cable in the event of installation:

1. Tie string at the top end of feeder cable.
2. Pull out feeder cable until pipe end of antenna base is visible.
3. Insert string into the hole at pipe end of antenna base, and wrap vinyl tape on the string.

Caution

Tape should be wrapped so that the string cannot be removed.

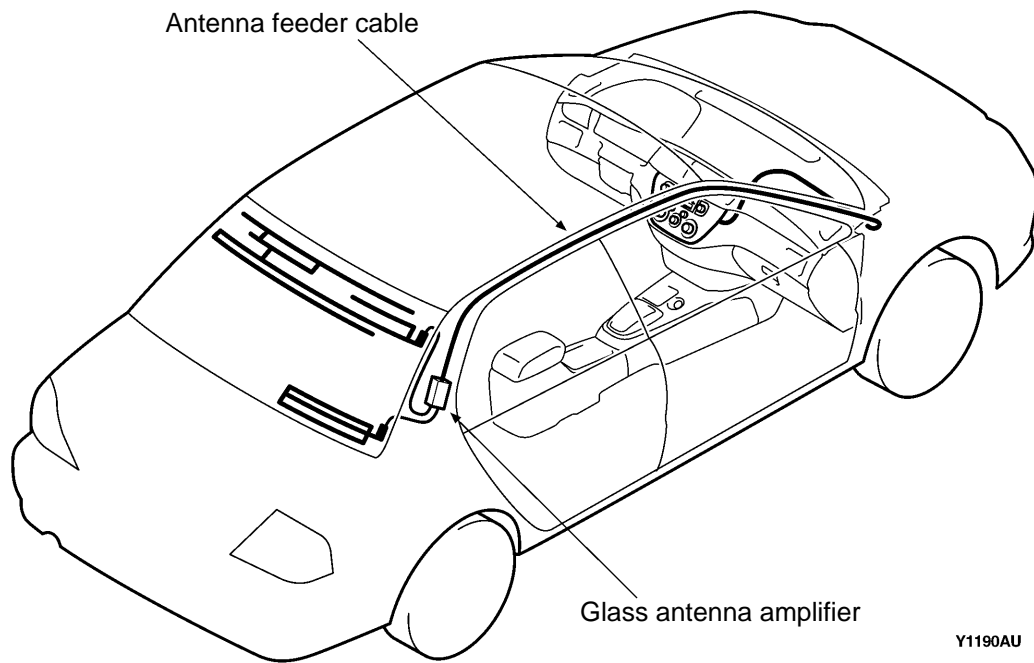
4. Gradually pull out remove antenna base.

GLASS ANTENNA

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operations

- Instrument Panel Removal and Installation (Refer to [Instrument Panel.](#))
- Front Pillar Trim, Rear Pillar Trim and Lower/Upper Center Pillar Trim Removal and Installation (Refer to [Trims.](#))
- Assist Strap Removal and Installation (Refer to [Head Lining.](#))
- Front Room Lamp and Rear Room Lamp Removal and Installation
- Head Lining Removal and Installation (Refer to [Head Lining.](#))



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DEFOGGER

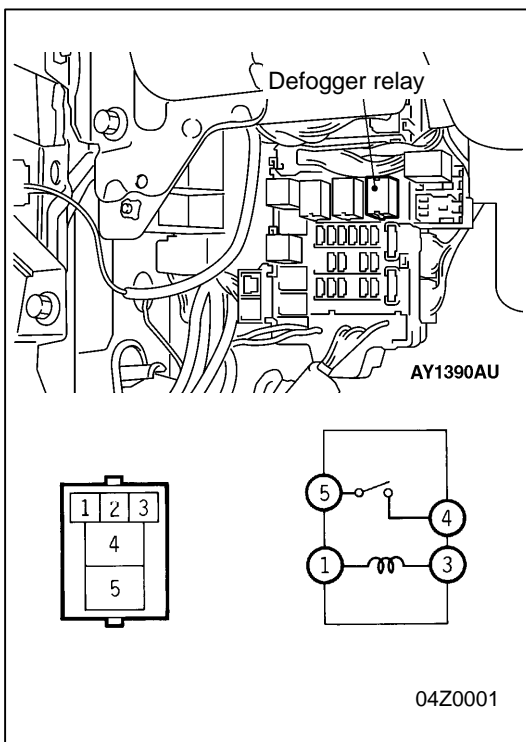
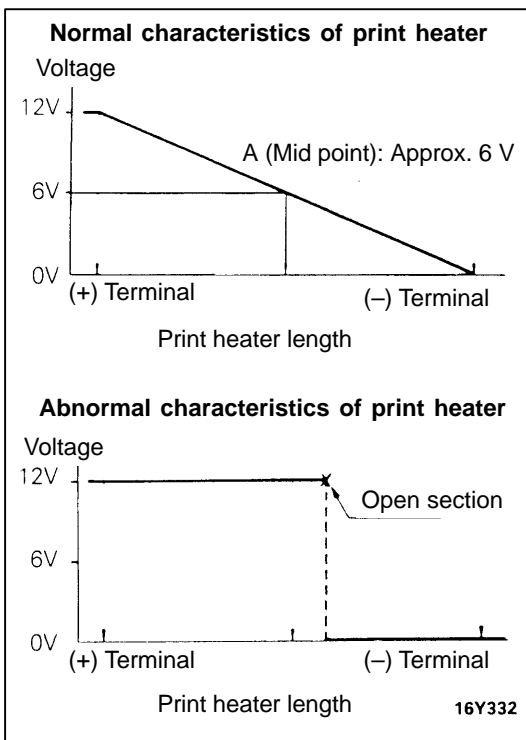
TROUBLESHOOTING

<WITH MANUAL AIR CONDITIONER>

ON-VEHICLE SERVICE

PRINTED HEATER CHECK

- (1) With engine running at 2,000 rpm and battery in charging mode, check print heater for normal operation.
- (2) With defogger switch in "ON" position, use circuit tester to measure voltage of individual print heaters at the center point A of rear window glass. When the tester indicates approx. 6V, the print heater is evaluated normal.
- (3) When the measured value at Position A is 12V, open circuit occurs between Position A and minus terminal. In this case, carefully move test bar to minus terminal side to detect a rapid voltage drop point (0V). This voltage drop point indicates open circuit section.
- (4) When voltage at Position A is 0V, open circuit occurs between Position A and plus terminal. According to the previous step, detect a rapid voltage increase point (12V).



DEFOGGER RELAY CONTINUITY CHECK

| Battery voltage | Terminal No. | | | |
|-----------------|--------------|---|---|---|
| | 1 | 3 | 4 | 5 |
| De-energized | ○ | ○ | | |
| Energized | ⊕ | ⊖ | ○ | ○ |

DEFOGGER SWITCH

REMOVAL, INSTALLATION AND CHECK <WITH MANUAL AIR CONDITIONER>

Refer to [Heater Control Assembly](#), [A/C Switch](#) and [Fresh/Recirculated Air Switch](#).

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