CHASSIS ELECTRICAL

CONTENTS

110003620

CONTINUED ON NEXT PAGE

WARNINGS REGARDING SERVICING OF SUPPLEMENTAL RESTRAINT SYSTEM (SRS) EQUIPPED VEHICLES

WARNING!

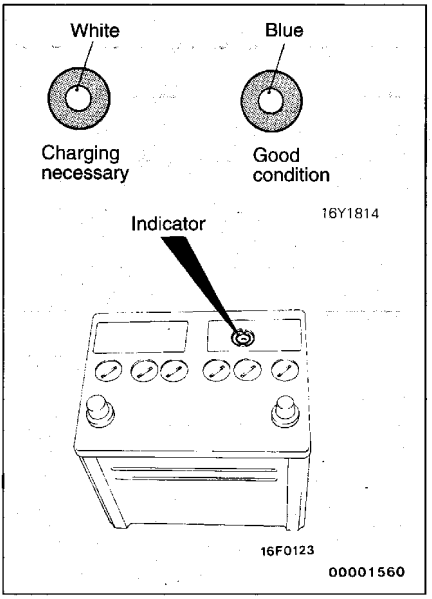
(1) Improper service or maintenance of any component of the SRS, or any SRS-related component, can lead to personal injury or death to service personnel (from inadvertent firing of the air bag) or to the driver and passenger (from rendering the SRS inoperative).

(2) Service or maintenance of any SRS component or SRS-related component must be performed only at an authorized MITSUBISHI dealer.

(3) MITSUBISHI dealer personnel must thoroughly review this manual, and especially its GROUP 52B – Supplemental Restraint System (SRS) and GROUP 00 – Maintenance Service, before beginning any service or maintenance of any component of the SRS or any SRS-related component.

NOTE

The SRS includes the following components: SRS air bag control unit, SRS warning light, air bag module, clock spring and interconnecting wiring. Other SRS-related components (that may have to be removed/installed in connection with SRS service or maintenance) are indicated in the table of contents by an asterisk (*).



BATTERY

110003621

SERVICE ADJUSTMENT PROCEDURES

BATTERY INSPECTION

BATTERY VISUAL INSPECTION (1)

The battery contains a visual test indicator which gives blue signal when an adequate charge level exists, and white signal when charging is required.

BATTERY VISUAL INSPECTION (2)

Make sure ignition switch is in OFF position and all battery feed accessories are OFF.

1. Disconnect ground cable from battery before disconnecting (+) cable.
2. Remove battery from vehicle.

Caution
Care should be taken in the event battery case is cracked or leaking to protect hands from the electrolyte. A suitable pair of rubber gloves (not the household type) should be worn when removing battery by hand.

3. Inspect battery carrier for damage caused by loss of acid from battery. If acid damage is present, it will be necessary to clean area with a solution of clean warm water and baking soda. Scrub area with a stiff bristle brush and wipe off with a cloth moistened with ammonia or baking soda in water.
4. Clean top of battery with same solutions as described in step 3.
5. Inspect battery case and cover for cracks. If cracks are present, battery must be replaced.
6. Clean the battery post with a suitable battery post cleaning tool.
7. Clean the inside surfaces of the terminal clamps with a suitable battery terminal cleaning tool. Replace damaged or frayed cables and broken terminal clamps.
8. Install the battery in vehicle.
9. Connect (+) and (–) cables to battery in the order of mention.
10. Tighten the clamp nut securely.

BATTERY CHARGING

110003622

Caution
When batteries are being charged, an explosive gas forms beneath the cover of each cell. Do not smoke near batteries on charge or which have recently been charged.
Do not break live circuits at the terminals of the batteries on charge. A spark will occur where the live circuit is broken.
Keep all open flames away from the battery.

Battery electrolyte temperature may temporarily be allowed to rise to 55°C (131°F). Increase of electrolyte temperature above 55°C (131°F) is harmful to the battery, causing deformation of battery cell, decrease in life of battery, etc.

CHARGE RATE

If the test indicator is white, the battery should be charged as outlined below.

When the dot appears or when maximum charge shown below is reached, charging should be stopped.

NOTE
If the indicator does not turn to blue even after the battery is charged, the battery should be replaced; do not overcharge.

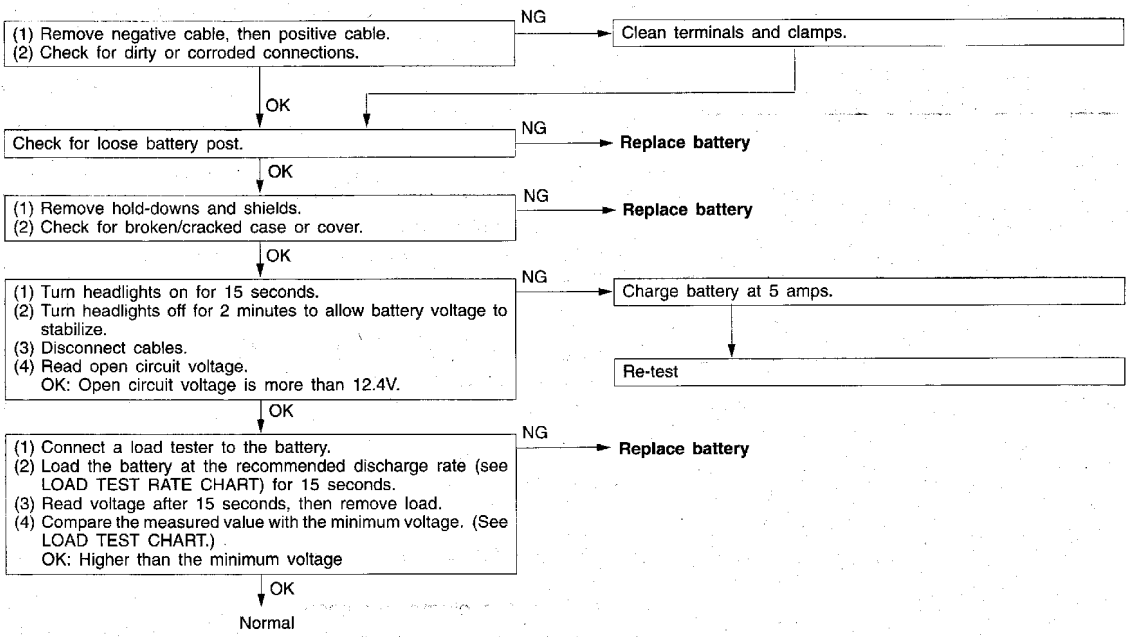
Charge Rate Chart

Battery	55B24R (433 amps)	Battery	55B24R (433 amps)
Slow charging	5 amps 10 hrs.	Fast charging	20 amps 2.5 hrs.
	10 amps 5 hrs.		30 amps 1.5 hrs.

BATTERY TESTING PROCEDURE

110003623

TEST STEP



LOAD TEST CHART

Temperature °C (°F)	21 (70) and above	16 (60)	10 (50)	4 (40)	–1 (30)	–7 (20)	–12 (10)	–18 (0)
Minimum voltage	9.6	9.5	9.4	9.3	9.1	8.9	8.7	8.5

LOAD TEST RATE CHART

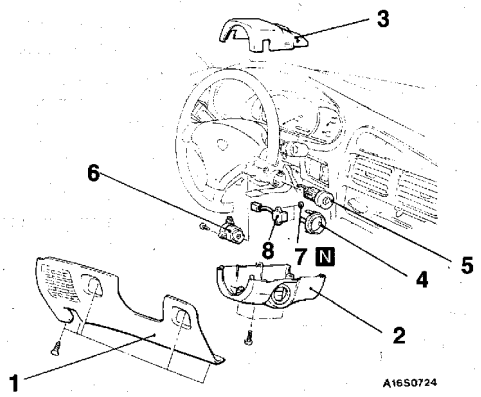
Load test (AMPS)	210 amps
Cranking rating (0°F)	433 amps
Reserve capacity	79 minutes
Application	55B24R

TSB Revision

IGNITION SWITCH

REMOVAL AND INSTALLATION

110003624



Steering lock cylinder removal steps

1. Knee protector
2. Column cover lower
3. Column cover upper
4. Ignition key ring
5. Steering lock cylinder

◀A▶

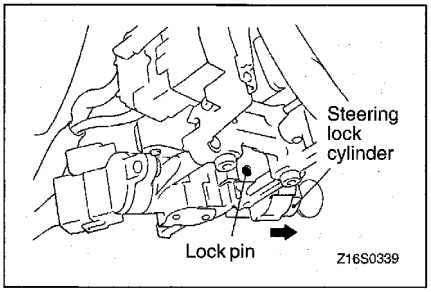
Ignition switch segment removal steps

1. Knee protector
2. Column cover lower
3. Column cover upper
6. Ignition switch

Key reminder switch removal steps

1. Knee protector
2. Column cover lower
3. Column cover upper
7. Push nut
8. Key reminder switch

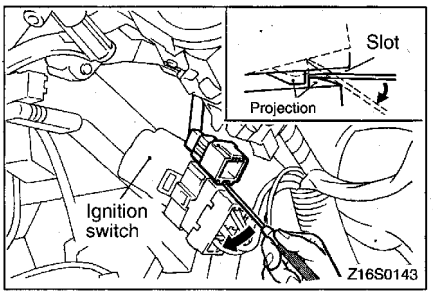
◀B▶



REMOVAL SERVICE POINTS

◀A▶ STEERING LOCK CYLINDER REMOVAL

(1) Insert the key in the steering lock cylinder and turn it to the "ACC" position.
(2) Using a cross-tip (+) screwdriver (small) or a similar tool, push the lock pin of the steering lock cylinder inward and then pull the steering lock cylinder toward you.



◀B▶ KEY REMINDER SWITCH REMOVAL

Insert a flat-tipped screwdriver or similar tool in the slot and pry out the projection as indicated by an arrow to remove the connector.

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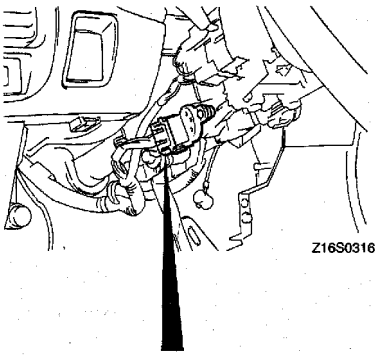

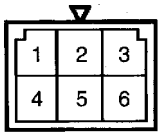

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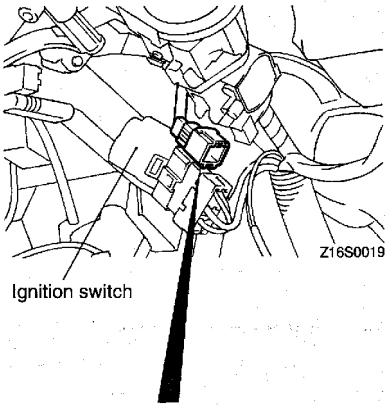
INSPECTION

IGNITION SWITCH

(1) Remove the knee protector, and the column cover.
(2) Disconnect the wiring connector from the ignition switch, and connect an ohmmeter to the switch side connector.
(3) Operate the switch, and check the continuity between the terminals.

Ignition key position	Terminal No.					
	1	2	3	4	5	6
LOCK						
ACC		○			○	
ON	○	○	○		○	
START		○	○	○		○



KEY REMINDER SWITCH

(1) Remove the knee protector, and the column cover.
(2) Remove the ignition switch mounting screws and pull out the ignition switch.
(3) Disconnect the connector of the key cylinder switch.
(4) Insert the key into and remove it from the steering lock cylinder to check for continuity between the terminals.

Ignition key position	Terminal No.						
	1	2	3	4	5	6	7
Pull out			○			○	
Insert <Up to 1994 models>		○					○

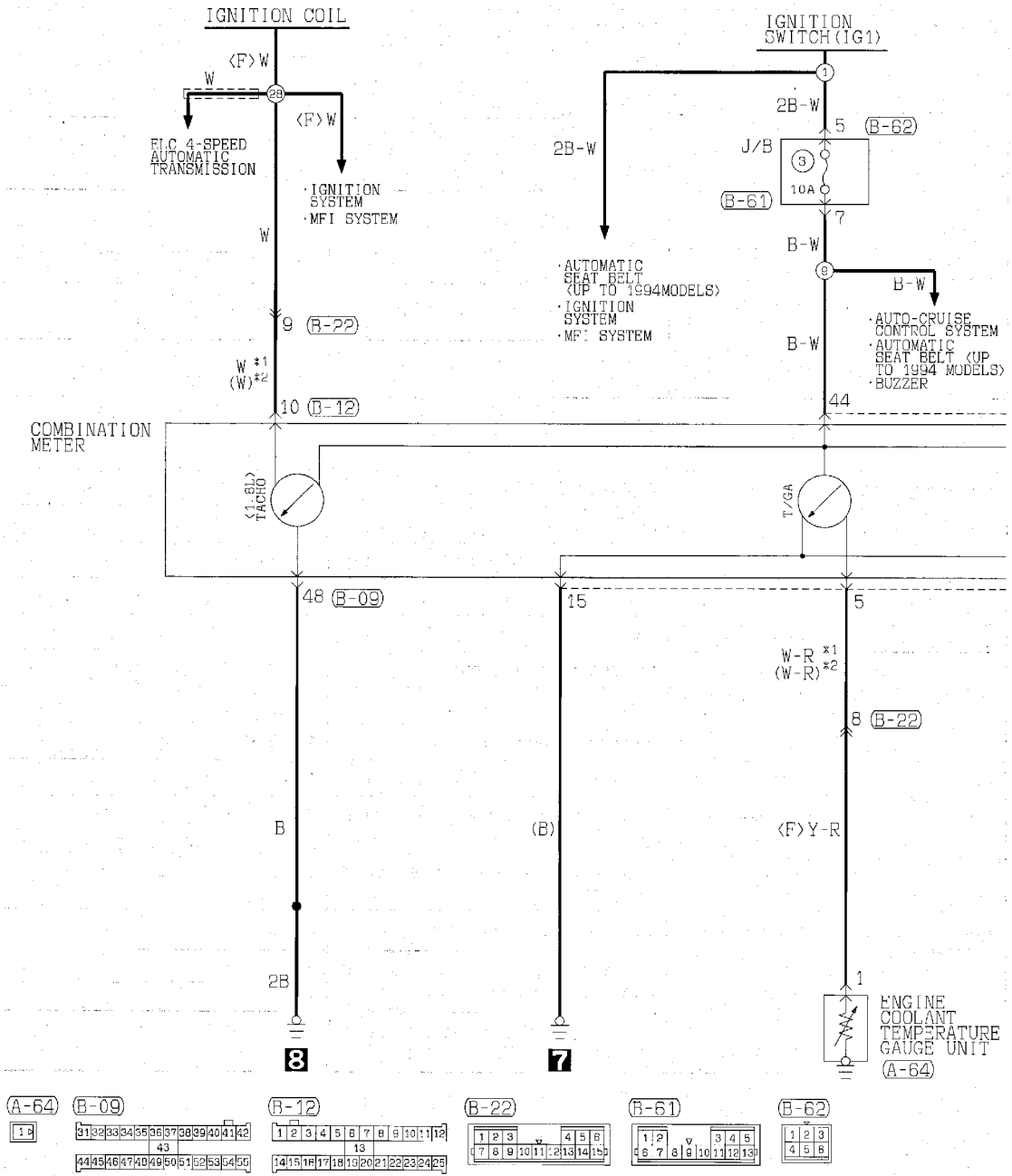
METERS AND GAUGES

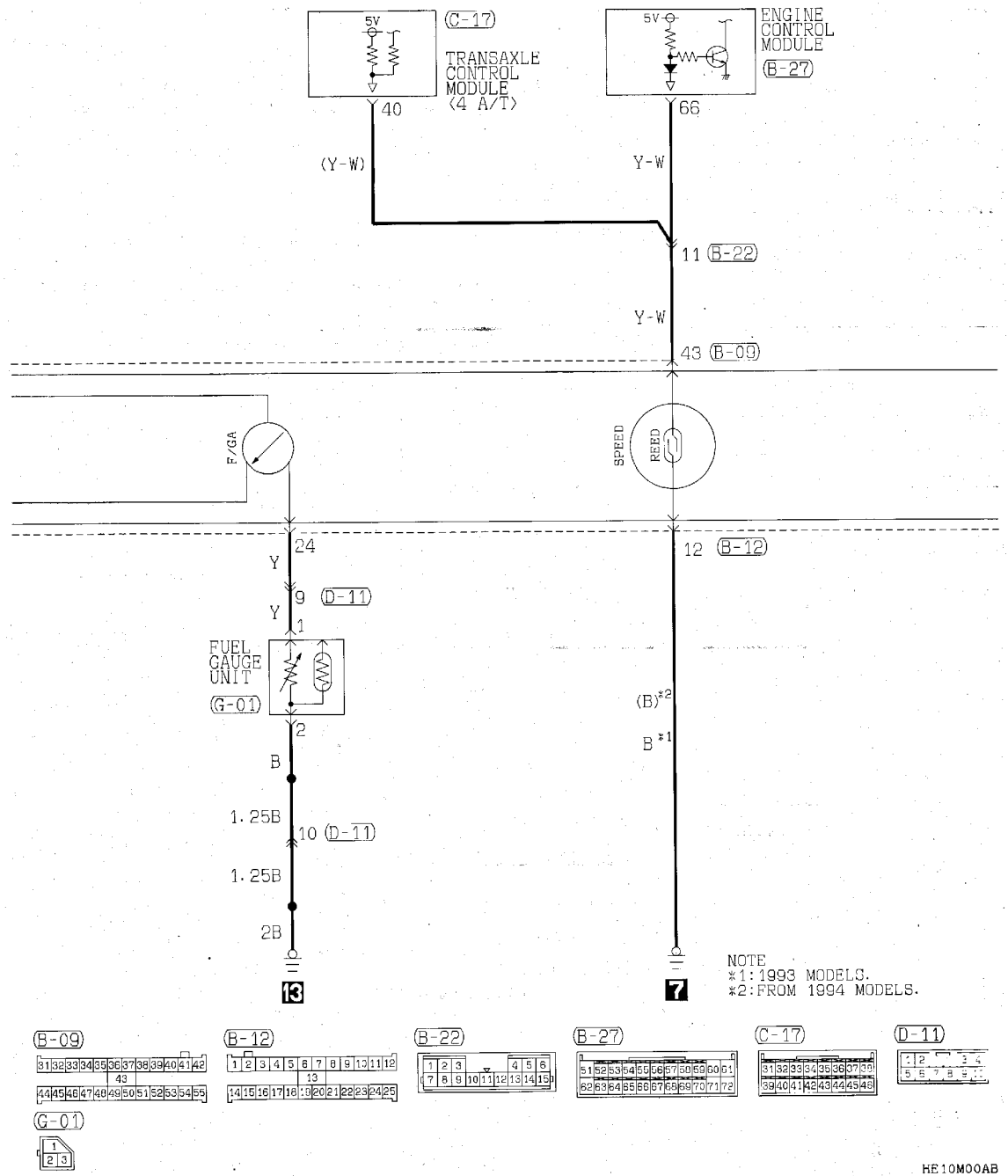
SERVICE SPECIFICATIONS

110003625

Items		Standard values
Speedometer indication error	20 mph	19–22
	40 mph	38–44
	60 mph	57–66
	80 mph	76–88
	100 mph	94 –110
Tachometer indication error rpm	1,000	±100
	3,000	+100 –200
	5,000	+100 –375
	6,000	+100 –450
Fuel gauge unit resistance Ω	Float point "F"	0.9–5.1
	Float point "E"	102.3–117.7
Fuel gauge unit float height mm (in.)	A (Float point "F")	17.4 (0.69)
	B (Float point "E")	130.2 (5.13)
Fuel gauge resistance Ω <Vehicles without tachometer>	power supply and ground	218.7–267.3
	power supply and fuel gauge	74.3–91.3
	fuel gauge and ground	144.0–176.0
Fuel gauge resistance Ω <Vehicles with tachometer>	power supply and ground	210.6–257.4
	power supply and fuel gauge	78.3–95.7
	fuel gauge and ground	132.3–161.7
Engine coolant temperature gauge resistance Ω <Vehicles without tachometer>	power supply and ground	133.2–162.8
	power supply and engine coolant temperature gauge	71.3–78.8
	engine coolant temperature gauge and ground	200.7–245.3
Engine coolant temperature gauge resistance Ω <Vehicles with tachometer>	power supply and ground	210.6–257.4
	power supply and engine coolant temperature gauge	71.3–78.8
	engine coolant temperature gauge and ground	278.1–340.0

CIRCUIT DIAGRAM





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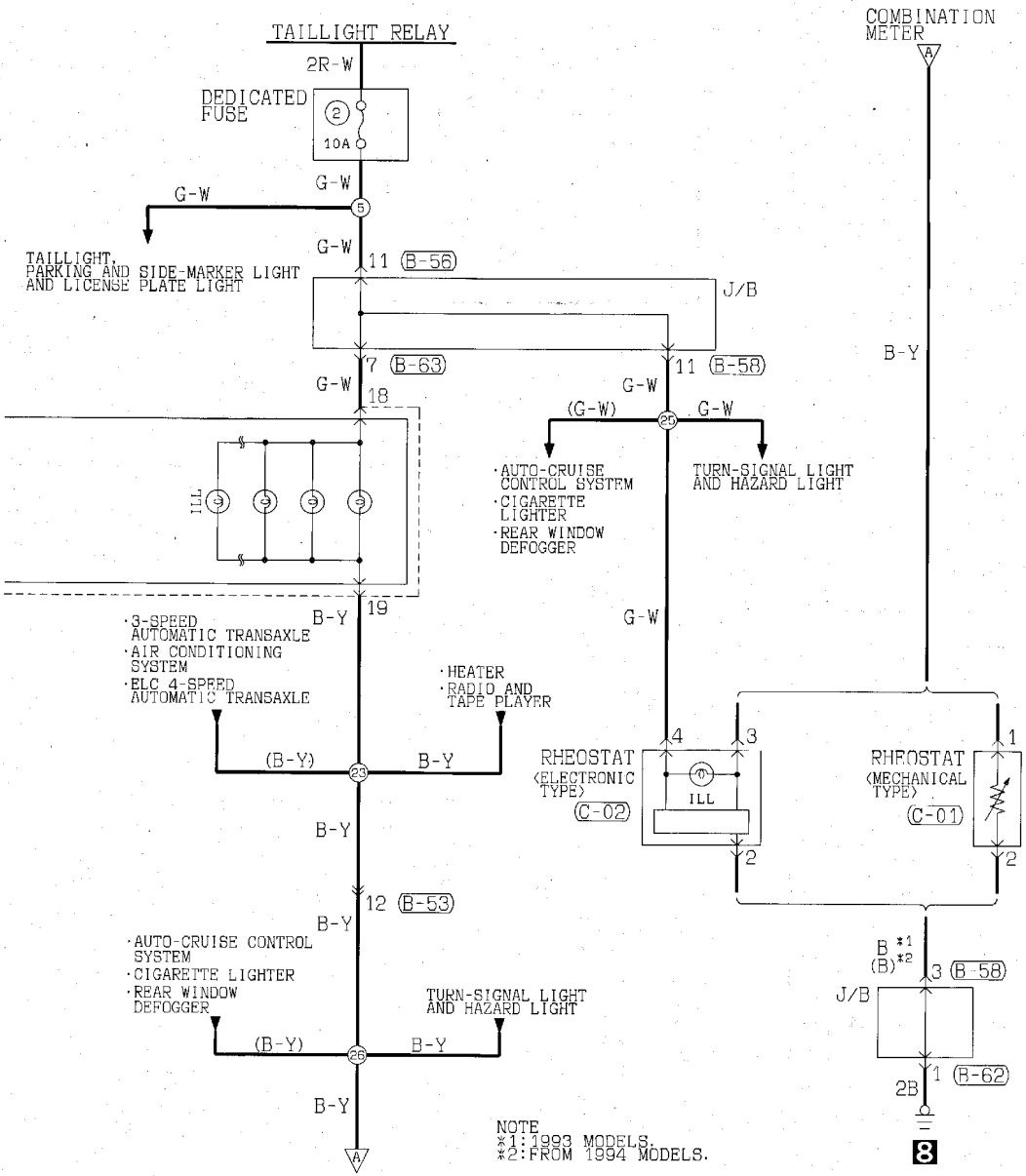
CIRCUIT DIAGRAM (CONTINUED)



SEALANTS

110003626

Items	Specified sealants
Engine coolant temperature gauge unit threaded portion	3M Adhesive nut locking No. 4171 or equivalent

TROUBLESHOOTING

110003627

OPERATION

<Fuel gauge>

- When the ignition key is at the "ON" position, the fuel gauge is activated.
- When there is much fuel, the unit's resistance is small and the current flowing in the circuit is great, so the gauge's indicator indicates in the "F" area.
- When there is little fuel, the unit's resistance is high and the current flowing in the circuit is small, so the gauge's indicator indicates in the "E" area.

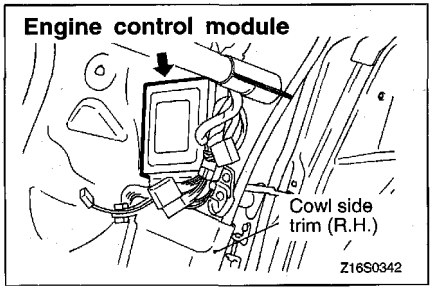
<Engine coolant temperature gauge>

- When the ignition key is at the "ON" position, the engine coolant temperature gauge is activated.
- When the engine coolant temperature is high, the unit's resistance is low and there is a great flow of current in the circuit, so the gauge's indicator indicates in the "H" area.
- When the engine coolant temperature is low, the unit's resistance is high and there is a small flow of current in the circuit, so the gauge's indicator indicates in the "C" area.

<Reed switch>

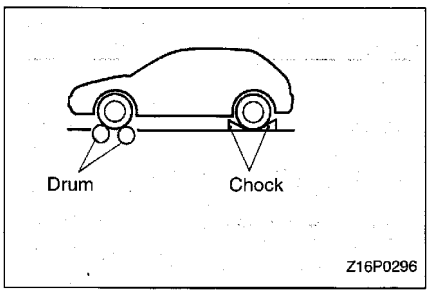
- Pulses are produced in accordance with the vehicle speed, and vehicle-speed signals are input to systems (the transaxle-control system, etc.) that regulate according to the vehicle speed.

COMPONENT LOCATION



TROUBLESHOOTING HINTS

1. The fuel gauge doesn't function, or shows the incorrect indication.
   1) Disconnect the connector of the fuel gauge unit; the "F" side is indicated when terminal 1 is then grounded.
      - Check the fuel gauge.
2. The engine coolant temperature gauge doesn't function, or shows the incorrect indication.
   1) The "H" side is indicated when the connector of the engine coolant temperature gauge unit is disconnected and then grounded.
      - Check the engine coolant temperature gauge unit.
3. Systems dependent upon control according to the vehicle speed do not function correctly.
   - Check the reed switch (located within the speedometer).
4. The meter illumination light does not illuminate.
   1) The tail lights illuminate.
      - Check the rheostat.



SERVICE ADJUSTMENT PROCEDURES

SPEEDOMETER INSPECTION

110003628

Take note of the following before inspection:

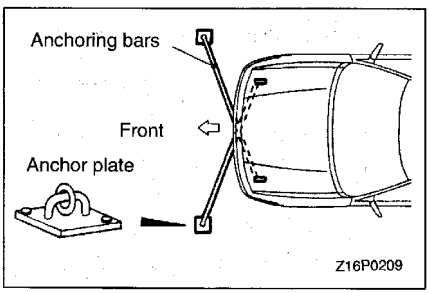
(1) Assure tire pressure at standard value. (Refer to GROUP 31 – Service Specifications.)

(2) When placing the vehicle on a speedometer tester drum, make sure the center line of the vehicle is at right angles to the center line of the drum. Also, make sure the drum is positioned so as to center between the front tires.

Rear wheel safety procedures

(1) Be sure to chock both rear wheels to prevent the vehicle from moving. Secure the stoppers to the floor, or take measures to prevent the stoppers from slipping.

(2) Make sure the parking brake has been set.



Front wheel sway prevention procedure

(1) Attach anchoring bars on the tie-down brackets and secure their ends to the anchor plates.

(2) Make sure the tension on the right and left bars is the same. Also be sure there is enough tension on each bar.

Accident prevention procedures

(1) Attach a chain or wire to the rear towing hook. Make sure the end of the wire or chain is secured firmly.

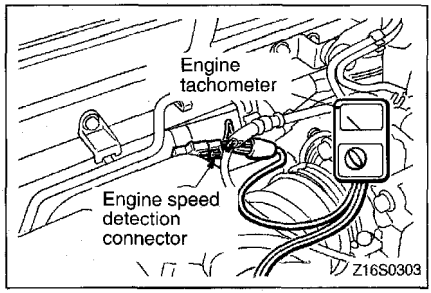
(2) Take all other necessary precautions.

Use a speedometer tester to measure the speedometer's indication error.

Caution
Do not operate the clutch or accelerator abruptly or decelerate during the operations.

Standard values:

Standard indication mph	20	40	60	80	100
Allowable range mph	19–22	38–44	57–66	76–88	94–110



TACHOMETER INSPECTION

110003629

(1) Insert paper clip into the engine revolution speed detection terminal provided in the engine compartment, and connect the engine tachometer to the inserted paper clip.

Caution
As the tachometer is negative grounded, do not connect battery conversely to prevent damaging transistor and diode.

NOTE
For tachometer inspection, use of a fluxmeter-type engine tachometer is recommended. (Because a fluxmeter only needs to be clipped to the high tension cable.)

(2) Connect the engine tachometer and compare the engine tachometer and tachometer readings. Replace tachometer if difference is excessive.

Standard value:

Engine speed r/min	1,000	3,000	5,000	6,000
Indicated variation r/min	±100	+100 −200	+100 −375	+100 −450

FUEL GAUGE SIMPLE INSPECTION

110003630

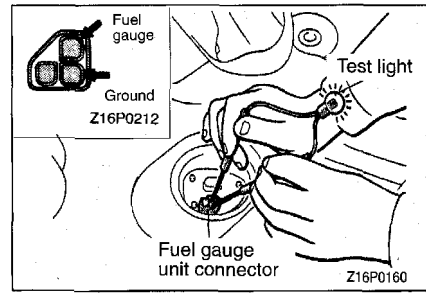
Remove the fuel gauge unit coupling connector.

↓

Connect a test light to the harness connector.

↓

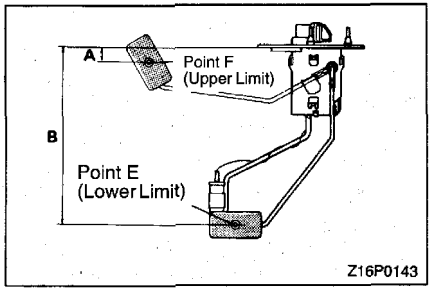
Place the ignition switch in the ON position.

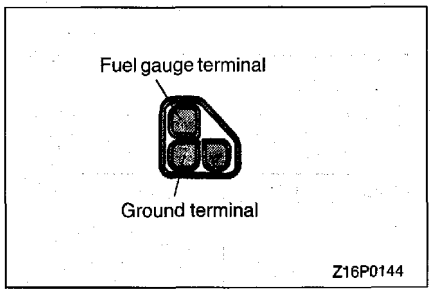


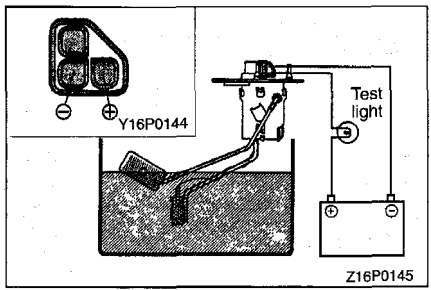
↓

Check the test light and gauge conditions.

1. Test light lights. (Pointer of gauge does not swing.)	→ Replace fuel gauge.
2. Test light lights. (Pointer of gauge swings.)	→ Replace fuel gauge unit.
3. Test light does not light. (Pointer of gauge does not swing.)	→ Correct harness.







FUEL GAUGE UNIT INSPECTION

110003631

To check, remove fuel gauge unit from fuel tank. (Refer to GROUP 13F – Fuel Tank.)

Float Height of Fuel Gauge Unit

Move float and measure the height at point F (highest) and point E (lowest) with float arm touching stopper.

Standard value: Point F: 17.4 mm (.69 in.)

Point E: 130.2 mm (5.13 in.)

Standard Resistance of Fuel Gauge Unit

(1) Check that resistance value between the fuel gauge terminal and ground terminal is at standard value when fuel gauge unit float is at point F (highest) and point E (lowest).

Standard value: Point F: 9–5.1 Ω

Point E: 102.3–117.7 Ω

(2) Check that resistance value changes smoothly when float moves slowly between point F (highest) and point E (lowest).

FUEL SENSOR

Connect fuel gauge unit to battery via test light (12V–3.4W). Immerse in water. Condition good if light goes off when unit thermistor is in water and lights when unit is removed from water.

Caution

After completing this test, wipe the unit dry and install it in the fuel tank.

ENGINE COOLANT TEMPERATURE GAUGE SIMPLE INSPECTION

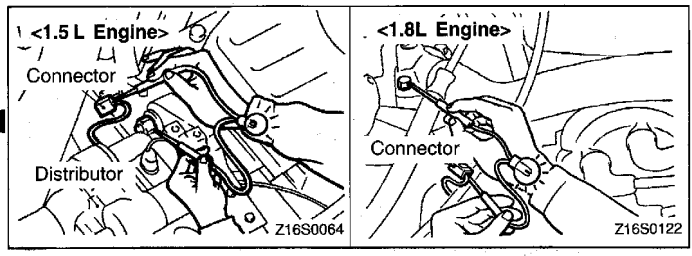
110003632

Remove the engine coolant temperature gauge unit coupling connector.

↓

Connect the harness connector via a test light to the ground.

◀



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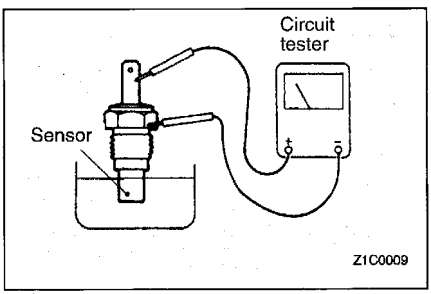
Place the ignition switch in the ON position.

↓

Check the test light and gauge conditions.

1. Test light lights. (Pointer of gauge does not swing.)	→ Replace water temperature gauge.
2. Test light lights. (Pointer of gauge swings.)	→ Replace water temperature gauge unit.
3. Test light does not light. (Pointer of gauge does not swing.)	→ Correct harness.



ENGINE COOLANT TEMPERATURE GAUGE UNIT INSPECTION

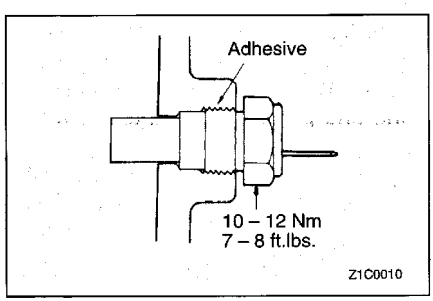
110003633

To check, remove engine coolant temperature gauge unit from intake manifold.

Standard Resistance of Engine Coolant Temperature Gauge Unit

(1) Immerse unit in 70°C (158°F) water to measure resistance.

Standard value: 104±13.5 Ω



(2) After checking, apply the specified adhesive around the thread of engine coolant temperature gauge unit and install on the intake manifold.

Specified sealant: 3M Adhesive nut locking No. 4171

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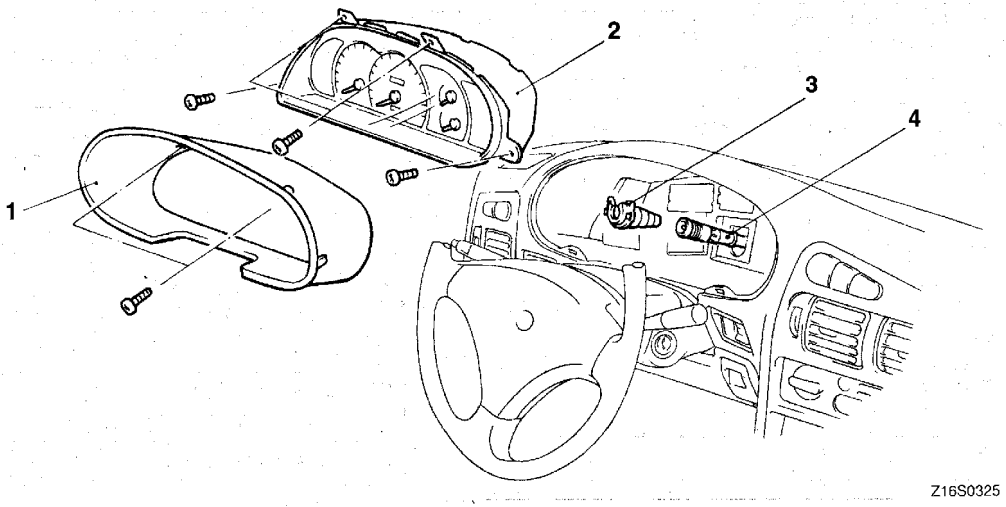
METERS AND GAUGES

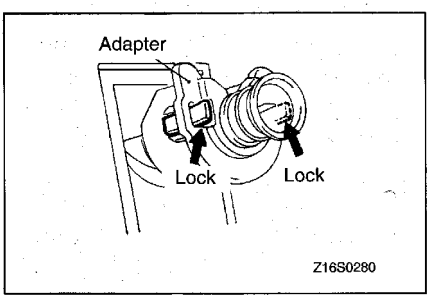
REMOVAL AND INSTALLATION

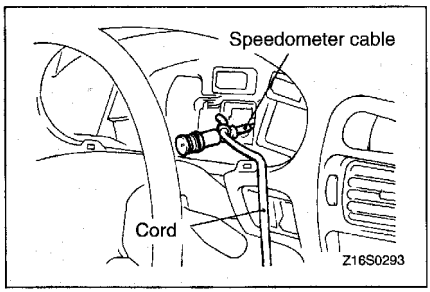
110003634



Removal steps

1. Meter bezel
2. Combination meter
◀A▶ 3. Adapter
◀B▶ 4. Speedometer cable





REMOVAL SERVICE POINTS

◀A▶ ADAPTER REMOVAL

(1) Remove the adapter lock.
(2) Pull the speedometer cable slightly into the passenger compartment, and remove the rear side of the adapter from the cable.
(3) After turning the adapter so that the notched section is aligned with the tab on the cable side, remove the adapter by sliding it backwards.

◀B▶ SPEEDOMETER REMOVAL

Tie a cord to the end of the speedometer cable that is in the passenger compartment. Then remove the grommet inside the engine compartment, and pull the cable into the engine compartment.

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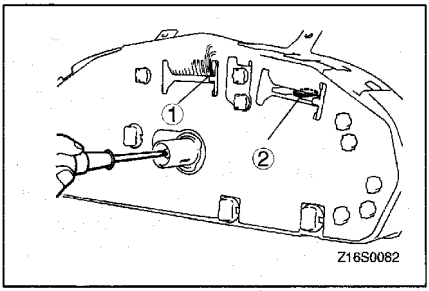
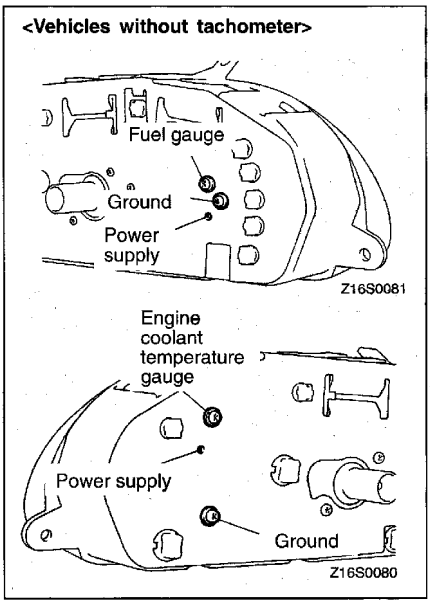
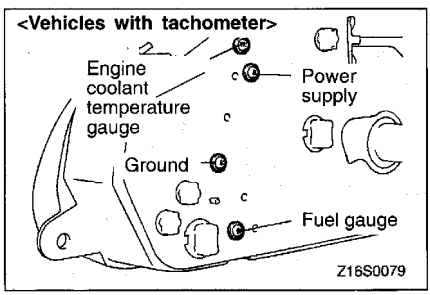


INSPECTION

REED SWITCH

Using an ohmmeter, check that continuity and discontinuity alternates between terminals 1 and 2 four times at every rotation of the shaft of the speedometer cable connection.





FUEL GAUGE RESISTANCE AND ENGINE COOLANT TEMPERATURE GAUGE RESISTANCE

<Vehicles without tachometer>

(1) Remove the power supply tightening screw.
(2) Use an ohmmeter to measure the resistance value between the terminals.

Caution
When inserting the testing probe into the power supply terminal, be careful not to touch the printed board.

Standard value:

Fuel gauge resistance

Power supply–Ground: 218.7–267.3 Ω

Power supply–Fuel gauge: 74.7–91.3 Ω

Fuel gauge–Ground: 144.0–176.0 Ω

Engine coolant temperature gauge resistance

Power supply–Ground: 133.2–162.8 Ω

Power supply–Engine coolant temperature gauge: 71.3–78.8 Ω

Engine coolant temperature gauge–Ground: 200.7–245.3 Ω

<Vehicles with tachometer>

Use an ohmmeter to measure the resistance value between the terminals.

Standard value:

Fuel gauge resistance

Power supply–Ground: 210.6–257.4 Ω

Power supply–Fuel gauge: 78.3–95.7 Ω

Fuel gauge–Ground: 132.3–161.7 Ω

Engine coolant temperature gauge resistance

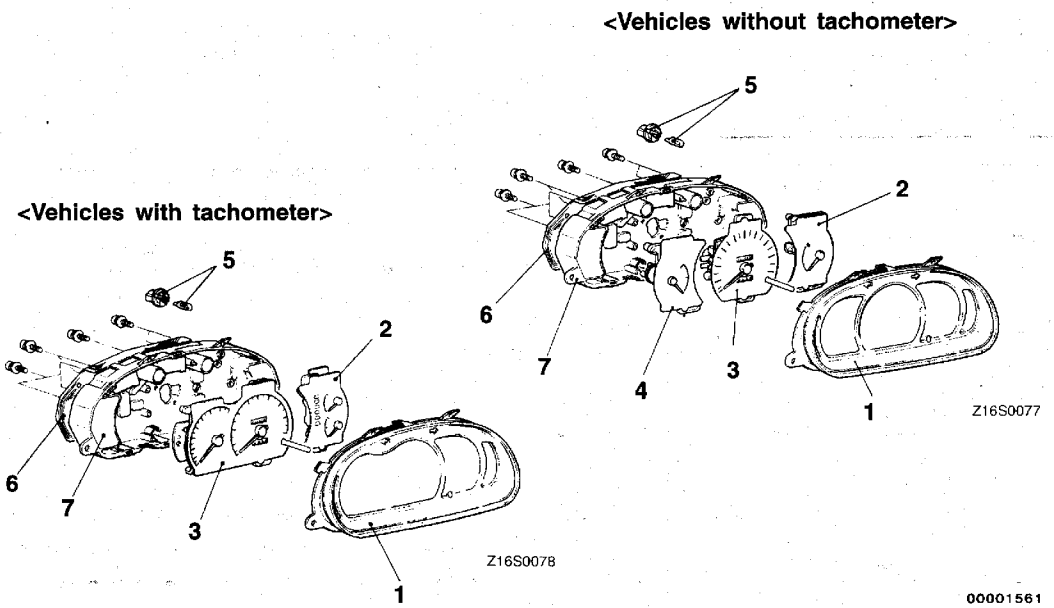
Power supply–Ground: 210.6–257.4 Ω

Power supply –Engine coolant temperature gauge: 71.3–78.8 Ω

Engine coolant temperature gauge–Ground: 278.1–340.0 Ω

DISASSEMBLY AND REASSEMBLY

110003635



Disassembly steps

1. Meter glass, window plate
2. Engine coolant temperature gauge
   <Vehicles without tachometer>
   Fuel gauge, engine coolant temperature gauge
   <Vehicles with tachometer>
3. Speedometer
   <Vehicles without tachometer>
   Speedometer, tachometer
   <Vehicles with tachometer>
4. Fuel gauge
   <Vehicles without tachometer>
5. Bulb, socket
6. Printed-circuit board
7. Meter case

HEADLIGHT

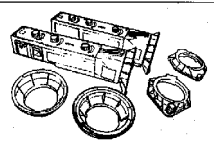
SERVICE SPECIFICATIONS

110003636

Items	Limit
Headlight intensity	20,000 cd or more

SPECIAL TOOL

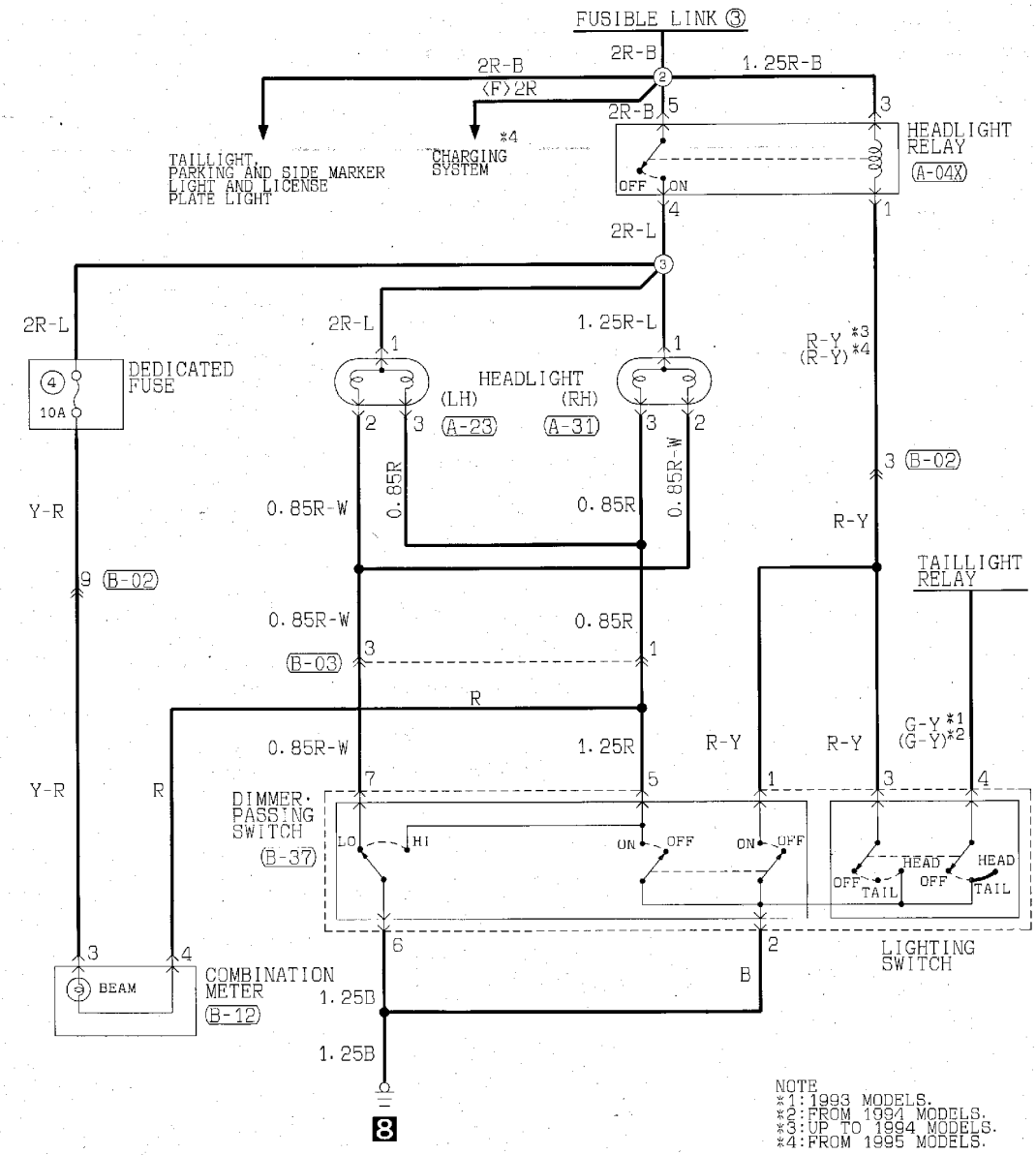
110003637

Tool	Tool number and name	Supersession	Application
	Headlight aimer	General service tool	Headlight aiming

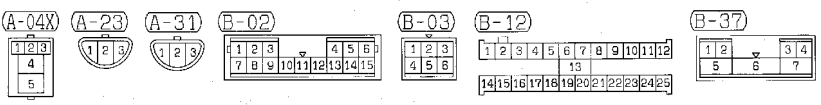
TROUBLESHOOTING

110003638

CIRCUIT DIAGRAM



NOTE
*1: 1993 MODELS.
*2: FROM 1994 MODELS.
*3: UP TO 1994 MODELS.
*4: FROM 1995 MODELS.



OPERATION

Conditions for switch-ON of headlight relay

See the fig.1.

<Low-beam operation>

- The headlight relay is switched ON when the lighting switch is set to the "HEAD" position.
- The low beam of the headlights will illuminate when, in this condition, the dimmer/passing switch is set to the "LO" position.

<Upper-beam operation>

- The headlight relay is switched ON when the lighting switch is set to the "HEAD" position.
- The high beam of the headlights will illuminate when, in this condition, the dimmer/passing switch is set to the "HI" position.

<Upper-beam indicator light>

- This indicator illuminates during use of the high beam of the headlights, and when the passing signal (high beam) is activated, thus indicating that the headlights' high beam is illuminated.

<Passing operation>

- When the dimmer/passing switch is set to the "ON" position, the headlight relay is switched ON and the upper beam of the headlight illuminates.

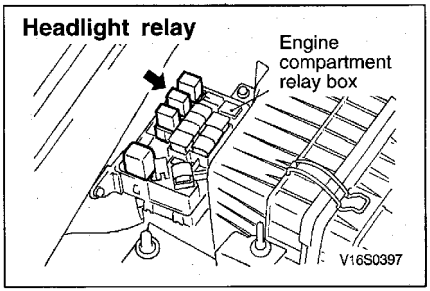
TROUBLESHOOTING HINTS

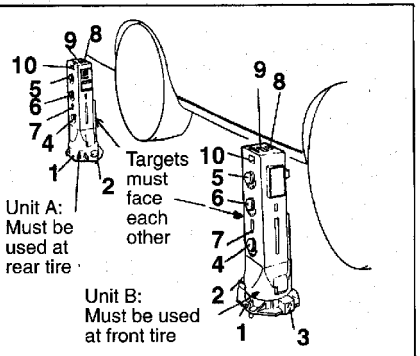
1. Headlights don't come on.
   1) But the tail lights do illuminate.
      - Check the headlight relay.
      - Check the lighting switch.
   2) The tail lights also don't illuminate.
      - Check the fusible link No. 3.
2. The low beam at both sides doesn't illuminate.
   - Check the "LO" contacts of the dimmer switch.
3. The upper beam at both sides doesn't illuminate.
   1) The passing signal functions OK.
      - Check the "HI" contacts of the dimmer switch.
   2) The passing signal doesn't function.
      - Check the dimmer switch.
4. One headlight doesn't illuminate.
   - Check the bulb.
5. Can't switch from low to high beam or vice-versa.
   - Check the dimmer switch.
6. The high beam indicator light doesn't illuminate.
   1) The high beam of the headlights is normal.
      - Check dedicated fuse No. 4.
      - Check the bulb.

<Fig.1>

Lighting switch	Dimmer/passing switch	Headlight relay
"HEAD"	–	ON
–	"PASS"	ON

COMPONENT LOCATION





1. Calibration fixture
2. Thumb adjusting screws
3. Level vial
4. Floor level offset dial
5. Horizontal dial knob
6. Vertical dial knob
7. Aimer level vial
8. Level vial bubble
9. Top port hole
10. Viewing port

Z16B0245

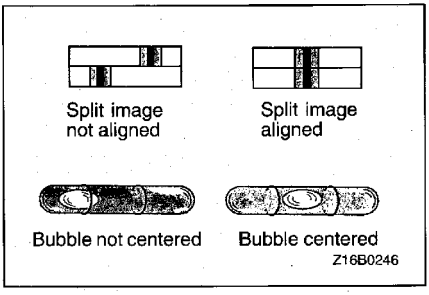
SERVICE ADJUSTMENT PROCEDURES

HEADLIGHTS AIMING

110003639

PRE-AIMING INSTRUCTIONS

1. Test dimmer switch operation.
2. Observe operation of high beam light mounted in instrument cluster.
3. Inspect for badly rusted or faulty headlight assemblies. These conditions must be corrected before a satisfactory adjustment can be made.
4. Place vehicle on a level floor.
5. Bounce front suspension through three (3) oscillations by applying body weight to hood or bumper.
6. Inspect tire inflation.
7. Rock vehicle sideways to allow vehicle to assume its normal position.
8. If fuel tank is not full, place a weight in trunk of vehicle to simulate weight of a full tank [3 kg (6.5 lbs.) per gallon].
9. There should be no other load in the vehicle other than driver or substituted weight of approximately 70 kg (150 lbs.) placed in driver's position.
10. Thoroughly clean headlight lenses.

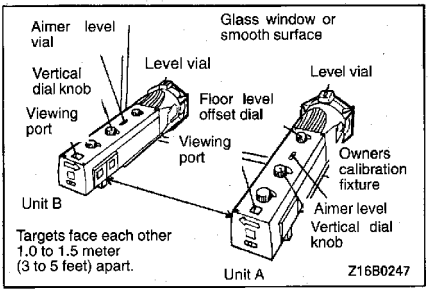


Z16B0246

COMPENSATING THE AIMERS FOR FLOOR SLOPE

The floor level offset dial must coincide with the floor slope for accurate aiming. Calibration fixtures are included with the aimers.

1. Attach one calibration fixture to each aimer. Fixtures will easily snap into position on aimer when properly positioned.
2. Place aimers at center line of each wheel on one side of vehicle. Unit A must be placed at rear wheel with target facing forward. Unit B must be placed at front wheel with target facing rearward.
3. Adjust thumb adjusting screw on each calibration fixture by turning either clockwise or counterclockwise until level vial bubble registers in a centered, level position.
4. Look into top port hole of Unit A. Turn horizontal knob until split image is aligned.
5. Transfer plus or minus reading indicated on horizontal dial to floor level offset dial on each aimer. Press floor level dial inward to set reading.
6. Remove calibration fixtures from both units.



Z16B0247

TESTING AIMER CALIBRATION

The aimer calibration may be off due to extended use. Calibration fixtures used in conjunction with aimers can be used to check and adjust aimers.

1. Turn thumb adjusting screw on each calibration fixture until it is approximately the same distance as the supporting posts.
2. Attach calibration fixtures to each unit with level vials on top.

3. Locate a true vertical plate glass window or smooth surface and secure aimers three to five feet apart so split image targets can be located in viewing ports.
4. Set floor level dial at zero.
5. Rotate thumb adjusting screws on each calibration fixture until level vials on fixtures are centered.
6. With both calibration level vials centered, turn vertical dial knobs on each aimer until aimer level vials are centered. If aimer vertical dial pointers read between 1/2 up and 1/2 down, aimers are within allowable vertical tolerance. Recalibrate units if beyond these limits.

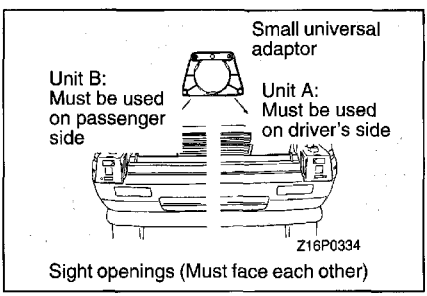
   Vertical dial pointer reading (on each aimer): 1/2 up to 1/2 down

7. Adjust horizontal dial knob on each aimer until split image targets align. If aimer horizontal dial pointers read between 1 left and 1 right, the aimers are within allowable tolerance limits. Recalibrate units if beyond these limits.

   Horizontal dial pointer reading (on each aimer): 1 left to 1 right

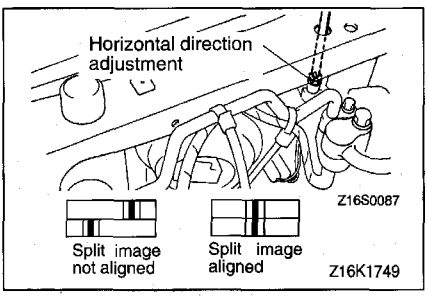
MOUNTING AIMERS

1. If necessary to expose adjusting screws, remove headlight trim rings.
2. Snap proper adaptor into position on each aimer making full contact with aimer mounting flange.



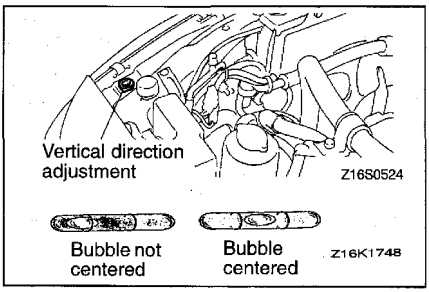
3. Position aimers on headlights by pushing piston handle forward, engaging rubber suction cup. Immediately pull back piston handle until it locks in place.

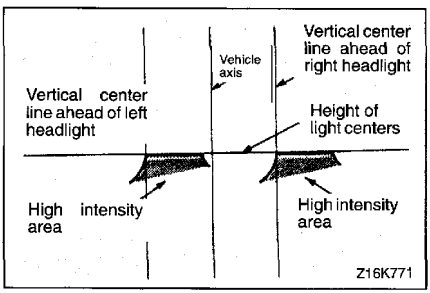
NOTE
Steel inserts are molded into position on the adaptor to insure accuracy. These inserts must be in contact with the three guide points on the lights when the aimers are properly positioned.



HORIZONTAL ADJUSTMENT

1. Set horizontal dial to zero.
2. Check to see that the split image target lines are visible in the viewing port. If necessary, rotate each aimer slightly to locate the target.
3. Turn horizontal screw on side of headlight until split image of target line appears in mirrors as one solid line. To remove "backlash", make final adjustment by turning adjusting screw in a clockwise direction.
4. Repeat the last three steps on opposite headlight.





VERTICAL ADJUSTMENT

1. The vertical dial should be set at zero. (For passenger vehicles an "O" setting is generally required. For special settings, consult local state laws.)
2. Turn vertical adjusting screw until the level bubble is centered between the lines.
3. Repeat the last two steps on the opposite headlight.
4. Re-check target alignment on both aimers and readjust horizontal aim if necessary.
5. Remove aimers by pressing "vacuum release" button located on piston handle.

AIMING WITH SCREEN

HEADLIGHT AIM PREPARATION

Place vehicle on a known level floor 7.6 m (25 feet) from aiming screen or light colored wall. Four lines of adhesive tape or like are required on screen or wall:

1. Position a vertical tape so that it is aligned with the vehicle center line.
2. Position a horizontal tape with reference to center line of headlight.
3. Position a vertical tape on the screen with reference to the center line of each of headlights.

VISUAL HEADLIGHT ADJUSTMENT

1. A properly aimed lower beam will appear on the aiming screen 7.6 m (25 feet) in front of the vehicle. The shaded area as shown in the illustration indicates high intensity zone.
2. Adjust low beam of headlights to match the low beam pattern of the right and left headlights.

Caution

When adjusting one headlight, the other headlight should be turned off if possible. If this is not possible, do not cover the other headlight for more than three minutes while it is turned on. Otherwise, heat from the bulb may warp the headlight lens.

NOTE

Once the headlight low beams have been visually adjusted, high beam adjustment is unnecessary.

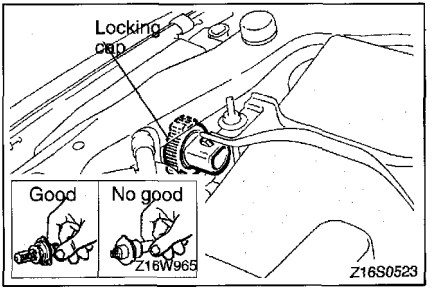
LUMINOUS INTENSITY MEASUREMENT

Measure the luminous intensity of headlights with a photometer in accordance with the instruction manual prepared by the manufacturer of the photometer and make sure that the luminous intensity is within the following limit.

Limit: 20,000 cd or more

NOTE

(1) When measuring the luminous intensity of headlight, keep the engine at 2,000 r/min and have the battery changed.
(2) If there are specific regulations for luminous intensity of headlights in the region where the vehicle is operated, make sure that the intensity conforms to the requirements of such regulations.



BULB REPLACEMENT

110003640

1. Disconnect the connector.
2. Turn and remove the locking cap.
3. Pull out the bulb.

Caution
Do not touch the surface of the headlight bulb with hands or dirty gloves. If the surface dies become dirty, clean it with alcohol or thinner, and let it dry thoroughly before installing

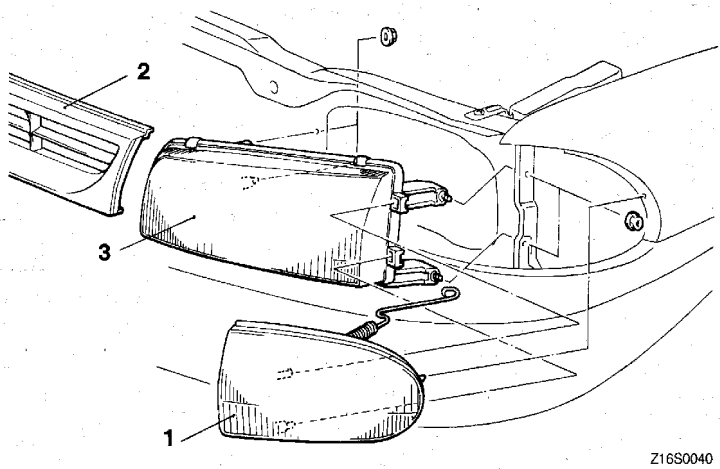
4. Push the locking cap toward the front of the vehicle while it is turned and installed.

NOTE
If the locking cap is not securely installed, the lens will be out of focus, or water will get inside the light unit, so the cap should be securely installed.

HEADLIGHT

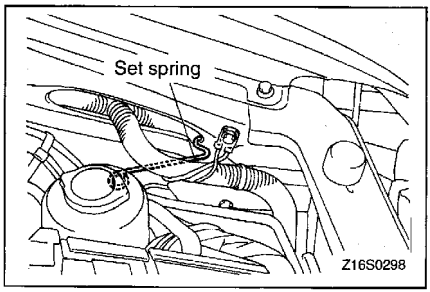
REMOVAL AND INSTALLATION

110003641



Removal steps

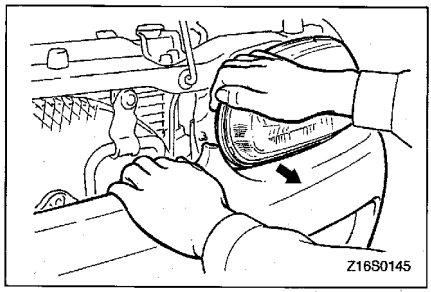
◀A▶ ▶B◀ 1. Front turn-signal light
2. Radiator grille
(Refer to GROUP 51 – Radiator Grille)
◀B▶ ▶A◀ 3. Headlight



REMOVAL SERVICE POINTS

◀A▶ FRONT TURN SIGNAL LIGHT REMOVAL

Remove the set spring, and pull the front turn signal light forward to remove it.

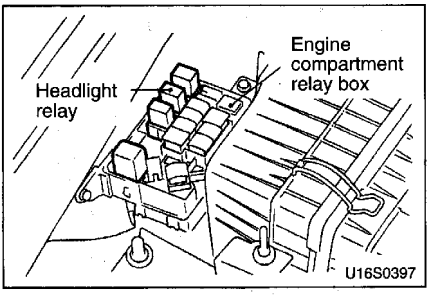


◀B▶ HEADLIGHT REMOVAL

After removing the inside of the headlight while pulling the bumper towards you as shown in the illustration, remove the outside, and then remove the headlight.

NOTE
Remove the reservoir tank before removing the right side headlight (Refer to GROUP 14 – Radiator)

TSB Revision

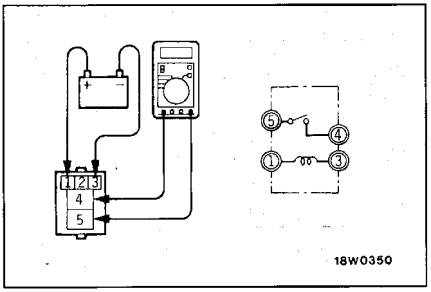


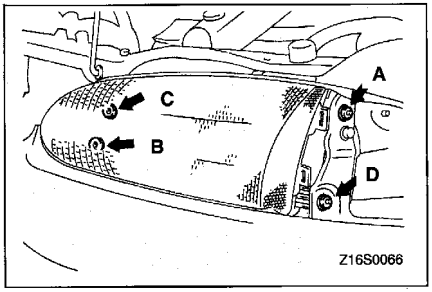
INSPECTION

HEADLIGHT RELAY

(1) Take out the headlight relay from the engine compartment relay box.
(2) Connect battery to terminal 1 and check continuity between terminals with terminal 3 grounded.

Power is supplied	4–5 terminals	Continuity
Power is not supplied	4–5 terminals	No continuity
	1–3 terminals	Continuity

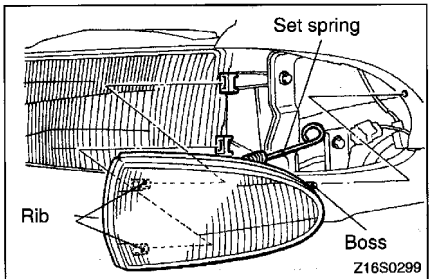




INSTALLATION SERVICE POINTS

▶A◀ HEADLIGHT INSTALLATION

Tighten the mounting nuts in the order A, B, C and D.



▶B◀ FRONT TURN SIGNAL LIGHT INSTALLATION

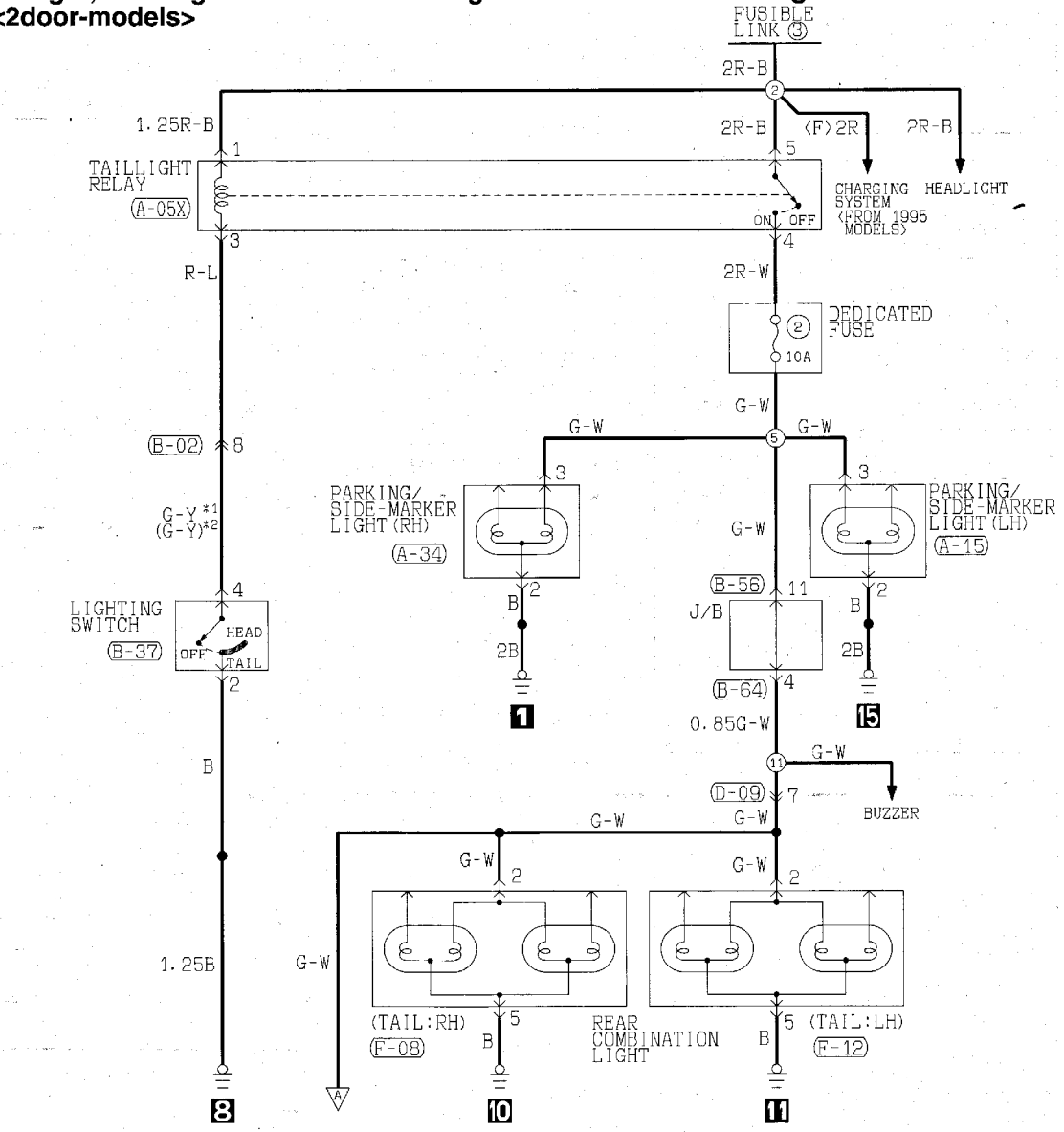
(1) After aligning the positioning boss of the front turn signal light with the fender insertion hole, align the ribs with the headlight insertion holes.
(2) While pressing in the front turn signal light towards the rear of the vehicle, hook the set spring to the fender shield inner to secure the front turn signal light to the vehicle body.

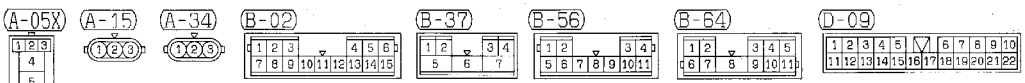
PARKING AND SIDE-MARKER LIGHT, HAZARD LIGHT

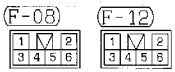
110003642

TROUBLESHOOTING

Taillight, Parking and Side-marker Light and License Plate Light Circuit <2door-models>







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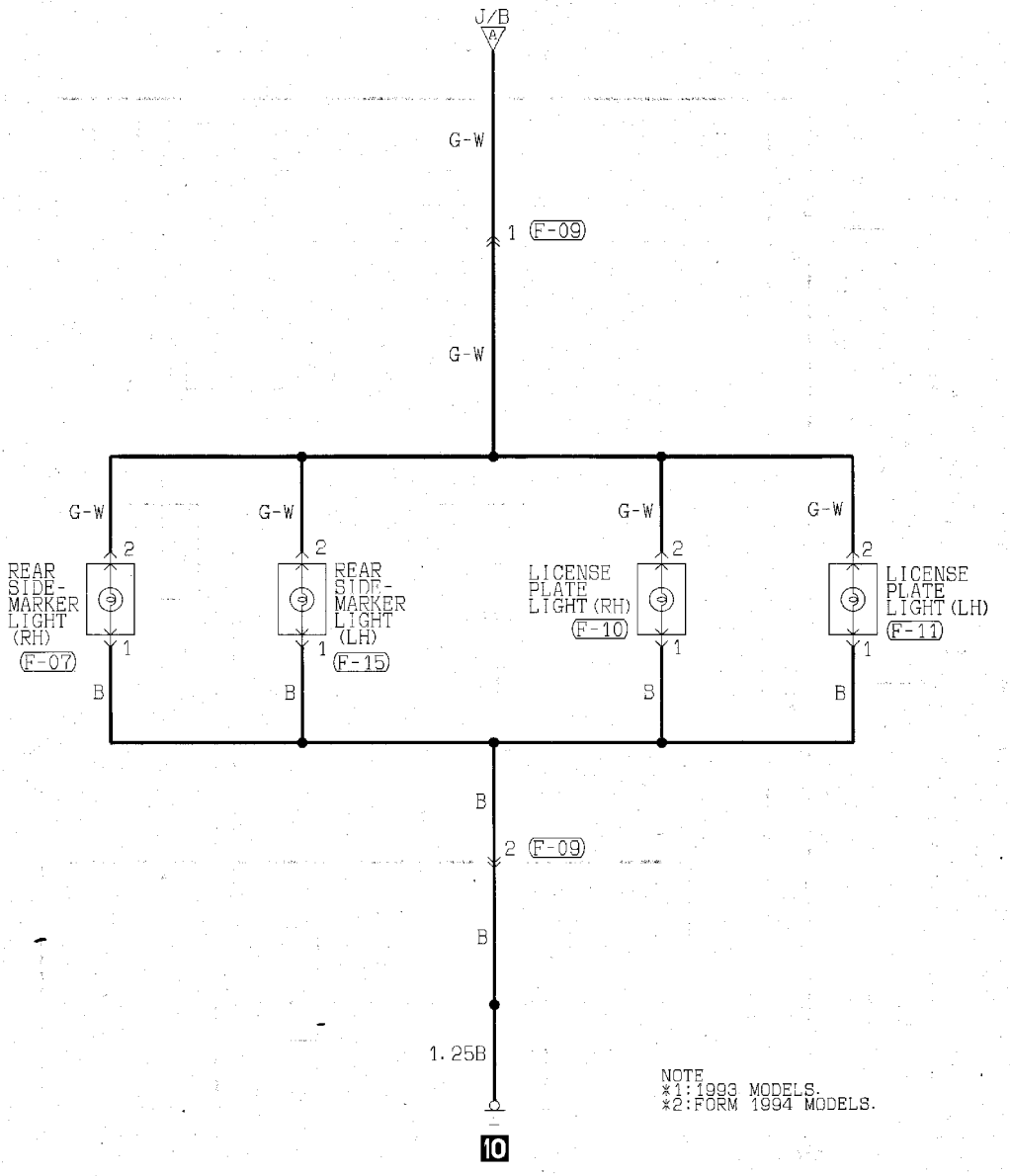
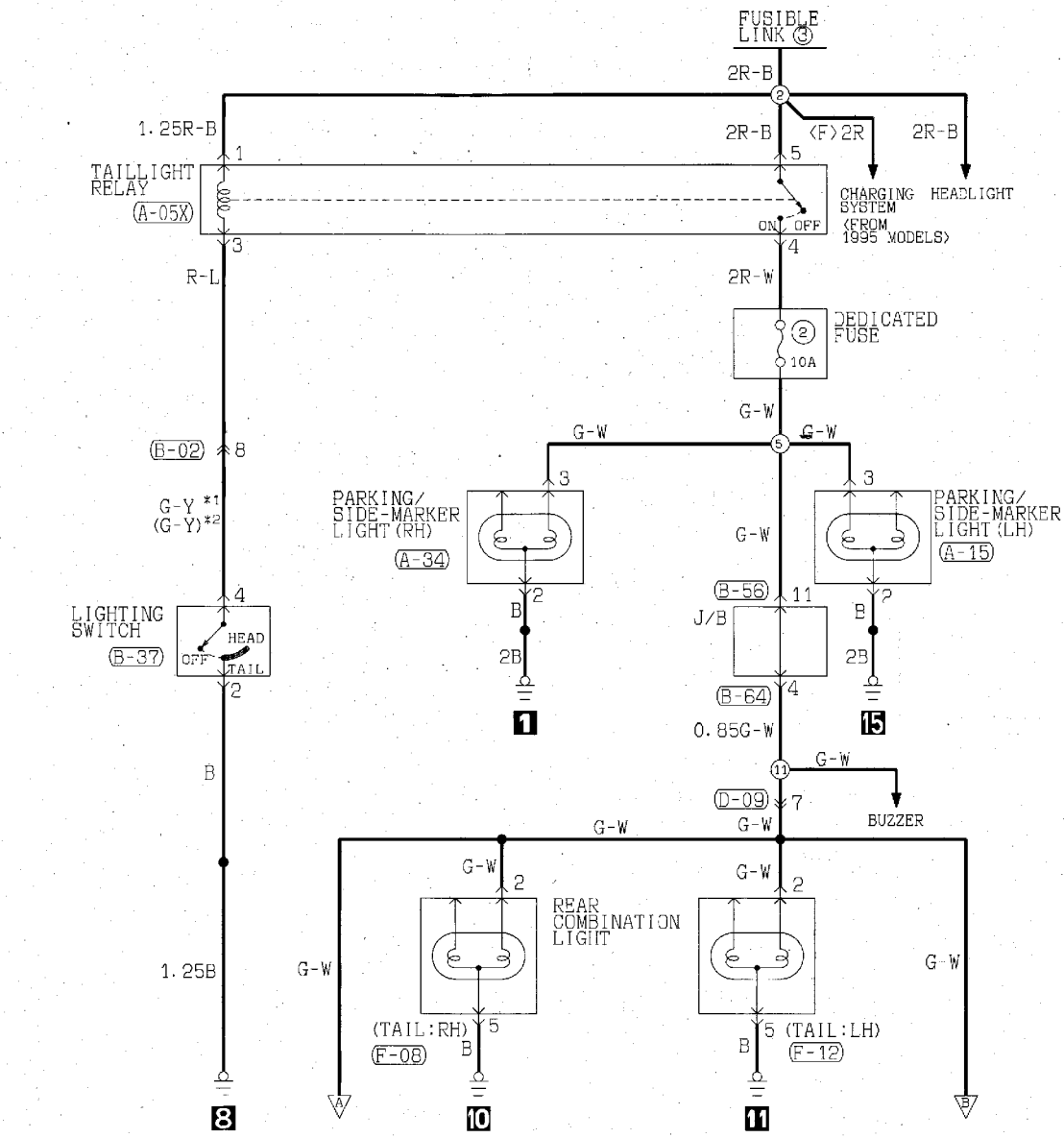
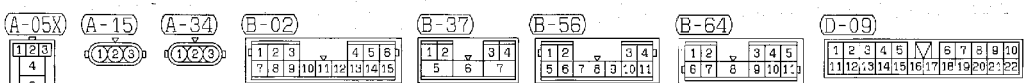
TSB Revision

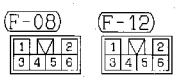


F-07 F-09 F-10 F-11 F-15

<4-door models>







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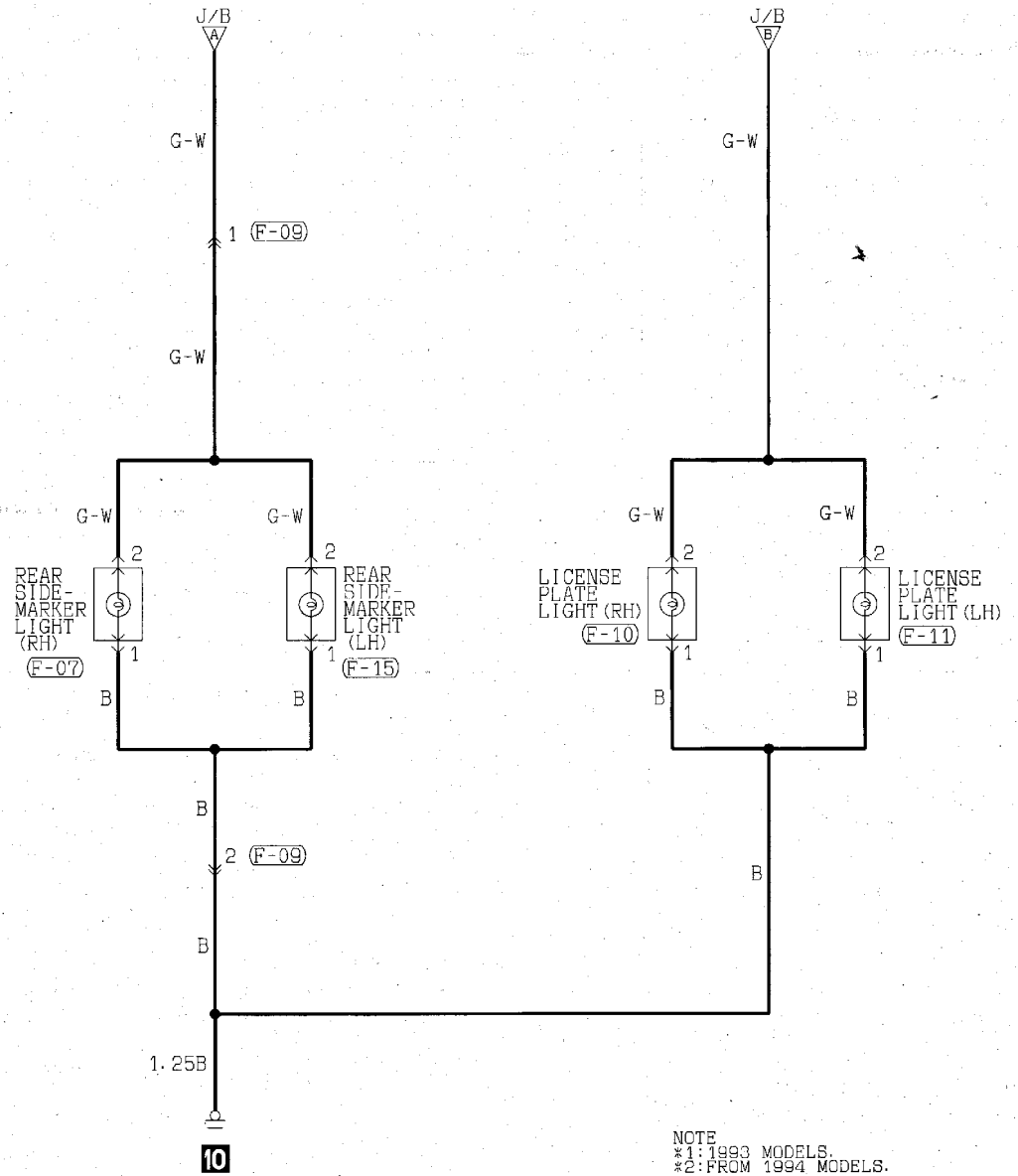
TSB Revision



NOTE
*1: 1993 MODELS.
*2: FROM 1994 MODELS.

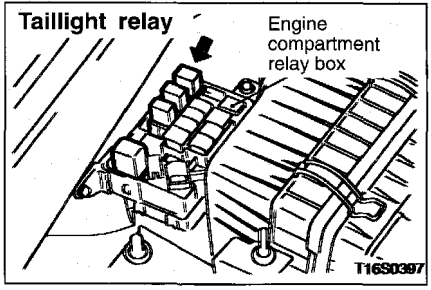
F-07 F-09 F-10 F-11 F-15

OPERATION

<Taillight, Parking / Side-marker light, License plate light operation>

- When the lighting switch is set to the "TAIL" or "HEAD" position, electricity flows via dedicated fuse No. 2 to each light, and each light illuminates.

COMPONENT LOCATION



TROUBLESHOOTING HINTS

1. All lights do not illuminate.
   1) The headlights also do not illuminate.
      - Check fusible link No. 3
   2) The headlights illuminate.
      - Check dedicated fuse No. 2

OPERATION

<Turn-signal light>

1. In normal operating condition

- When the ignition switch is placed in the ON position, battery voltage is applied through the hazard switch to the turn-signal and hazard flasher unit.
- When the turn signal switch is turned to the "LH" or "RH" position, the relay contact turns "ON" and "OFF" repeatedly due to the switching operation of the condenser and transistor inside the flasher unit, and the turn signal light and the "LH" and "RH" of the turn signal indicator light flash.

2. When one bulb is burnt

- When either one of the turn signal lights is burnt, the resistance of the entire light circuit increases, so that the time required for charging and discharging of the condenser is shortened, causing the "ON" "OFF" cycle of the relay to become faster than normal and the number of flashes to increase.

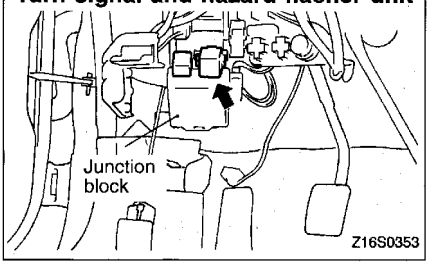
<Hazard-warning lights>

- When the hazard-warning switch is switched to the "ON" position, the relay contact of the flasher unit is switched ON and OFF repeatedly, in the same manner as for the operation of the turn-signal lights, and the left and right turn-signal lights and turn-signal indicator lights simultaneously flash repeatedly.

NOTE
The number of flashes of the hazard-warning lights does not change if there is damaged or disconnected wiring of one light.

COMPONENT LOCATION

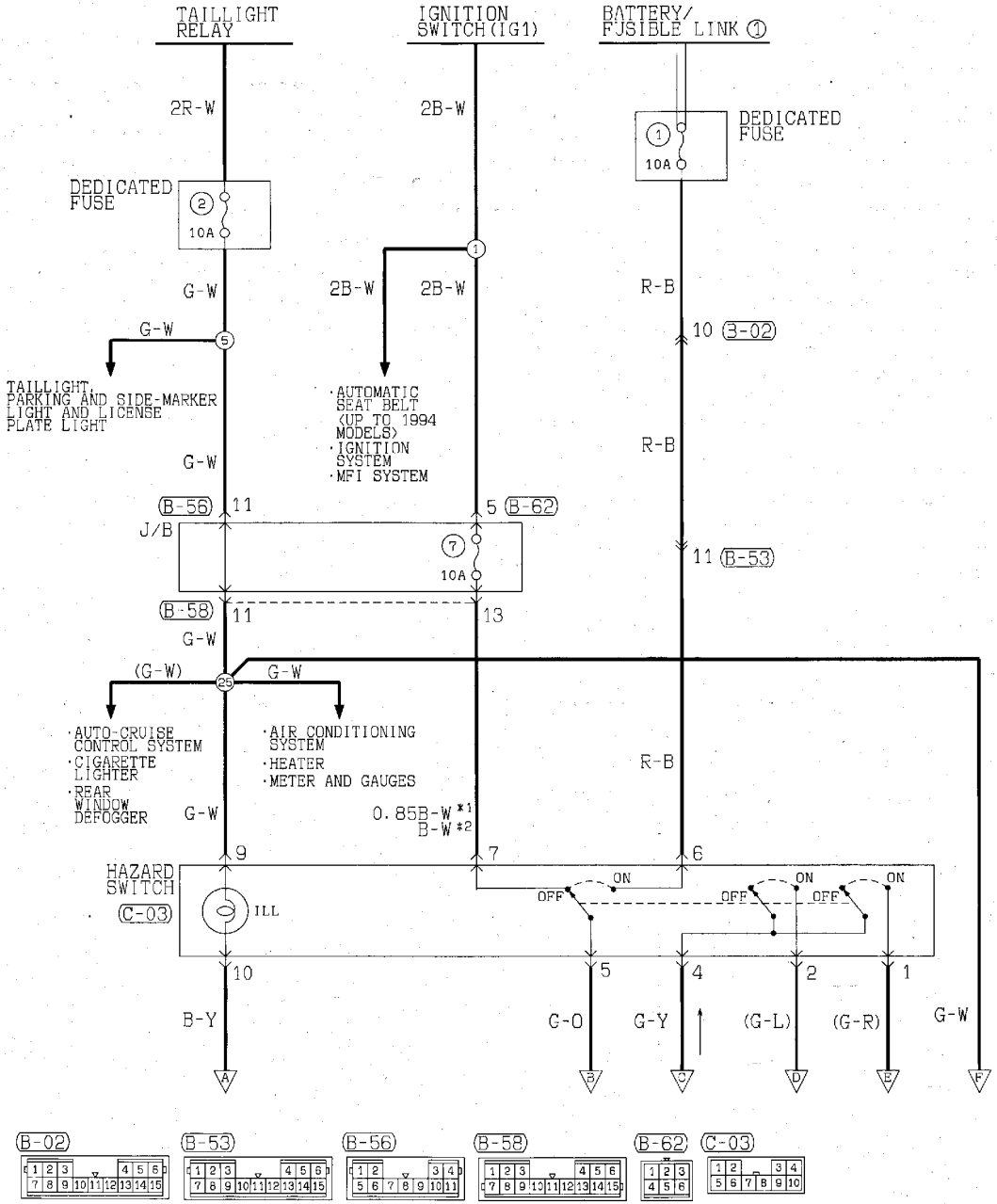
Turn signal and hazard flasher unit

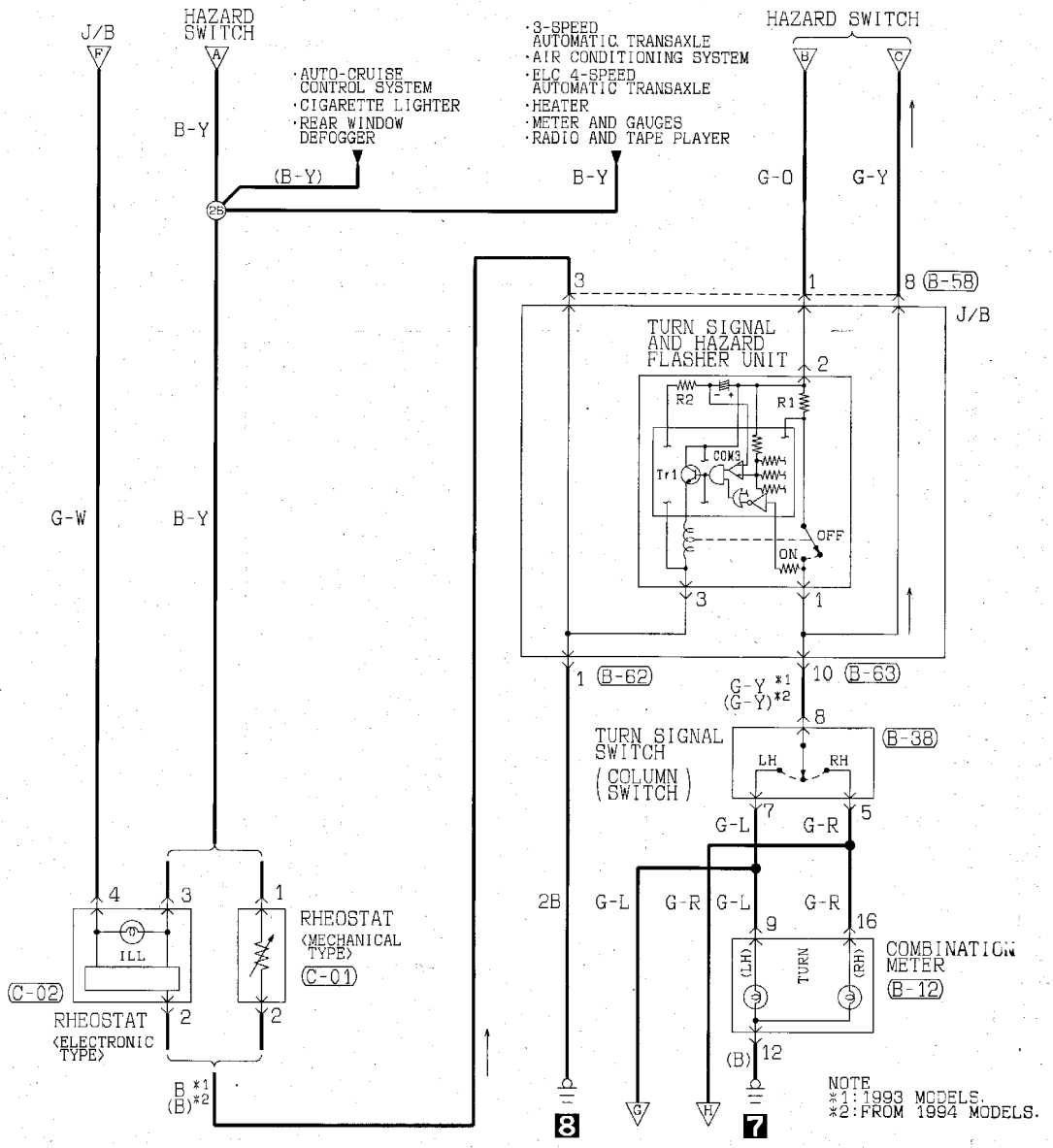


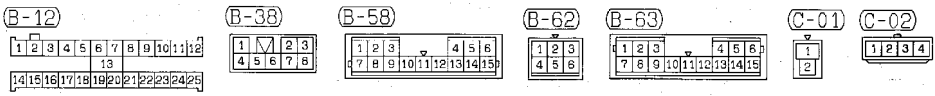
TROUBLESHOOTING HINTS

1. The turn-signal lights and hazard-warning lights do not operate at all.
   - Check the hazard-warning switch contact (power supply side).
   - Check the flasher unit.
2. All turn-signal lights at the left (or right) side do not function.
   1) The hazard-warning lights function normally.
      - Check the hazard-warning switch contact (turn-signal side).
      - Check the turn-signal switch.
3. Turn-signal lights continue to illuminate.
   - Check the bulbs.
4. The hazard-warning lights do not function.
   1) The turn-signal lights function normally.
      - Check the hazard-warning switch contact (hazard-warning light side).

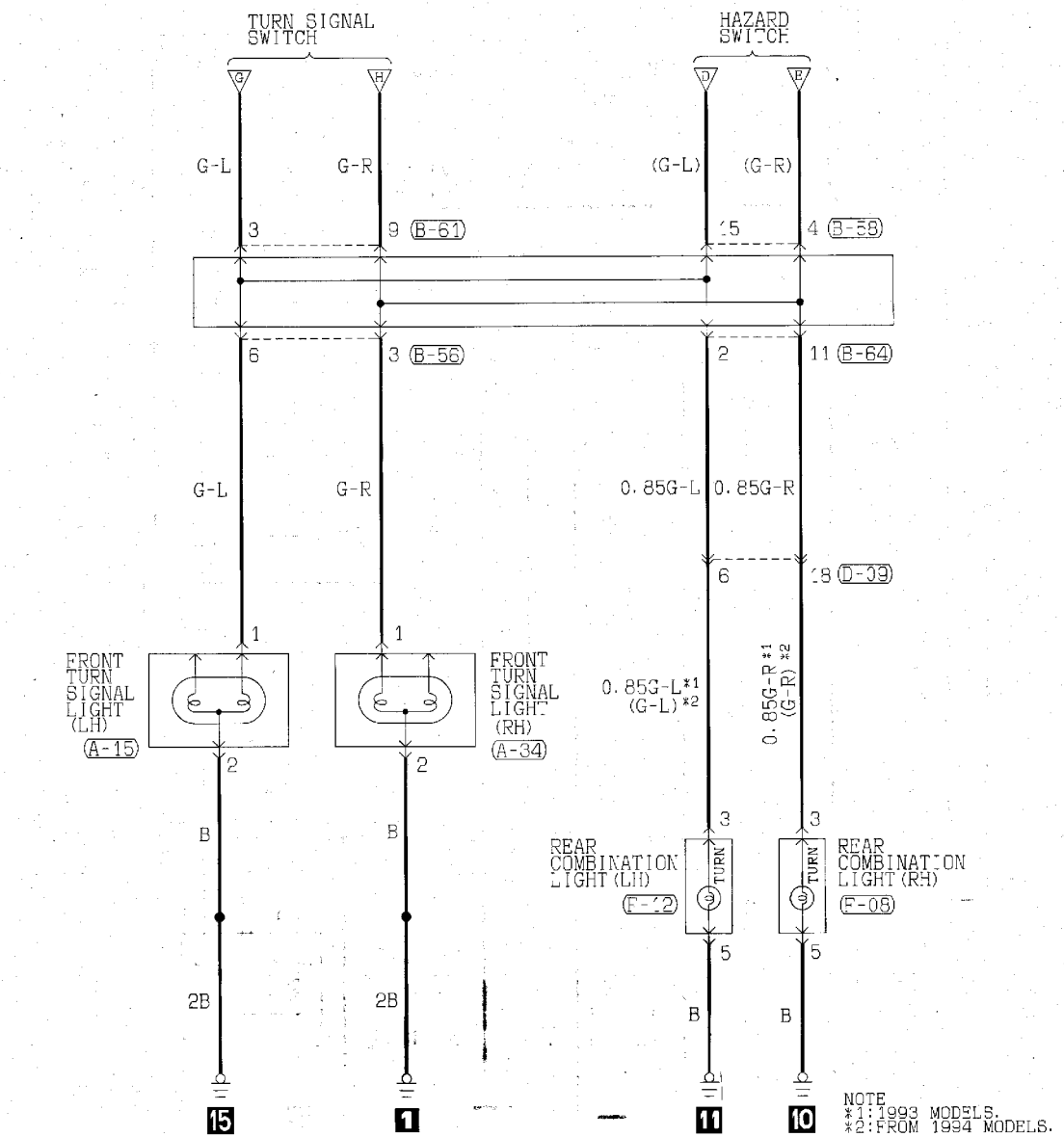
Turn-signal Light and Hazard Light Circuit




J/B
F
HAZARD SWITCH
A
B-Y
·AUTO-CRUISE CONTROL SYSTEM
·CIGARETTE LIGHTER
·REAR WINDOW DEFOGGER
(B-Y)
·3-SPEED AUTOMATIC TRANSAXLE
·AIR CONDITIONING SYSTEM
·ELC 4-SPEED AUTOMATIC TRANSAXLE
·HEATER
·METER AND GAUGES
·RADIO AND TAPE PLAYER
B-Y
25
HAZARD SWITCH
B
C
G-O
G-Y
3
1
8 (B-58)
J/B
TURN SIGNAL AND HAZARD FLASHER UNIT
2
R2
R1
COM3
Tr1
OFF
ON
3
1
G-W
B-Y
1 (B-62)
G-Y *1
(G-Y)*2
10 (B-63)
8
TURN SIGNAL SWITCH
(COLUMN SWITCH)
LH
RH
(B-38)
G-L
G-R
7
5
4
3
1
ILL
RHEOSTAT
<MECHANICAL TYPE>
(C-01)
(C-02)
RHEOSTAT
<ELECTRONIC TYPE>
2
2
2B
G-L
G-R
G-L
G-R
9
16
COMBINATION METER
(B-12)
(LH)
TURN
(RH)
(B)
12
B *1
(B)*2
8
7
G
H
NOTE
*1:1993 MODELS.
*2:FROM 1994 MODELS.


(B-12)
(B-38)
(B-58)
(B-62)
(B-63)
(C-01)
(C-02)

Turn-signal Light and Hazard Light Circuit (Continued)



HE09M00BA

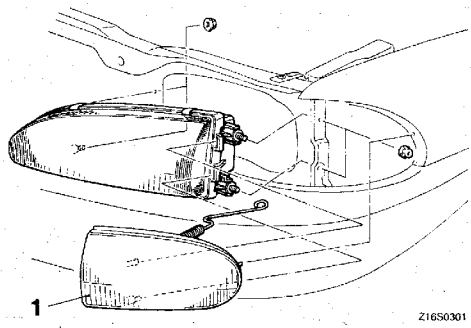
TSB Revision

PARKING AND SIDE-MARKER LIGHT, HAZARD LIGHT

REMOVAL AND INSTALLATION

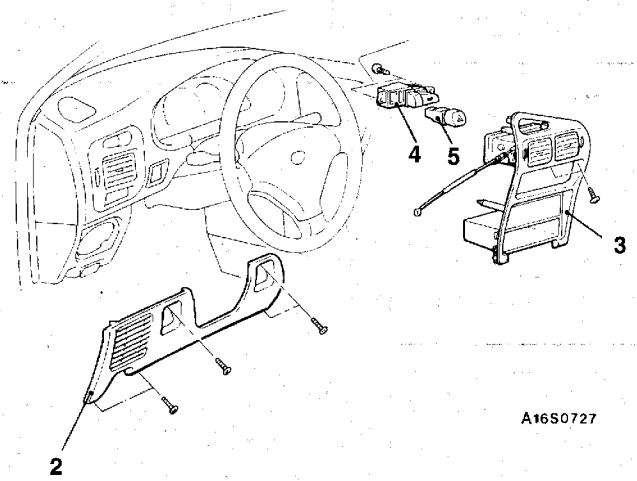
110003643

<Front Turn-signal Light>



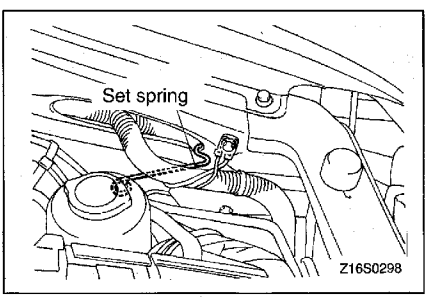
◀A▶ ▶B◀ 1. Front turn-signal light

<Hazard Light Switch>



Removal steps

◀B▶ ▶A◀ 2. Knee protector
3. Air outlet center panel assembly
4. Switch holder
5. Hazard light switch

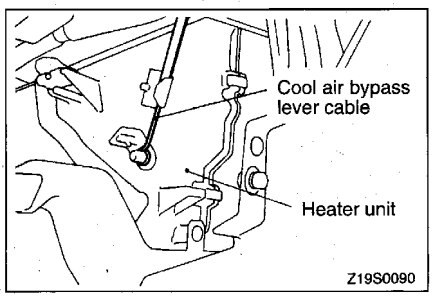


REMOVAL SERVICE POINTS

◀A▶ FRONT TURN SIGNAL LIGHT REMOVAL

Remove the set spring, and pull the front turn signal light forward to remove it.

TSB Revision



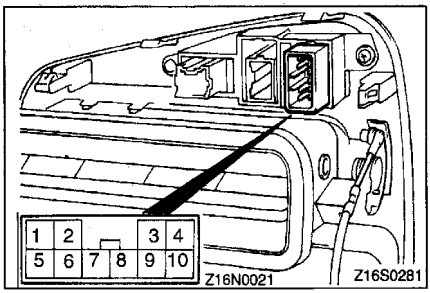
◀B▶ AIR OUTLET CENTER PANEL ASSEMBLY REMOVAL

(1) Remove the cool air bypass lever cable of the air outlet center panel assembly at the heater unit side.
(2) Remove the air outlet center panel assembly mounting screws, and remove the air outlet center panel assembly.

INSPECTION

Hazard Light Switch

Operate the switch and check for continuity between the terminals.

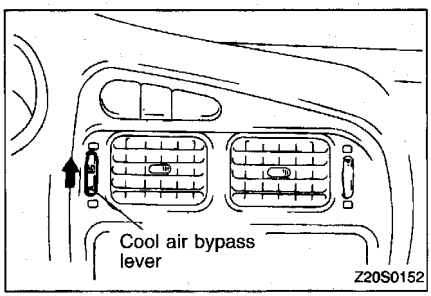


Switch position	Terminal No.									
	1	2	3	4	5	6	7	8	9	10
OFF					○		○	○	○	○
ON	○	○	○	○	○	○			Illumination light	

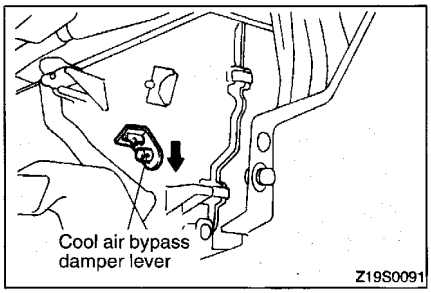
INSTALLATION SERVICE POINTS

▶A◀ AIR OUTLET CENTER PANEL ASSEMBLY INSTALLATION

(1) Install the air outlet center panel assembly to the instrument panel.
(2) Turn the cool air bypass lever of the air outlet center panel assembly fully upward (in the direction of the arrow).

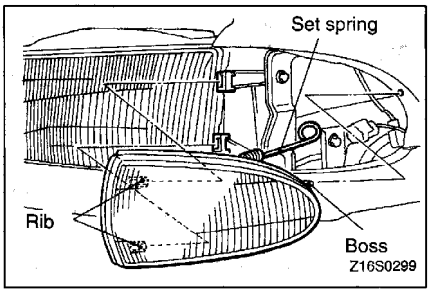


(3) Turn the cool air bypass damper lever at the heater unit side fully downward (in the direction of the arrow), and install the cool air bypass lever cable.



▶B◀ FRONT TURN SIGNAL LIGHT INSTALLATION

(1) After aligning the positioning boss of the front turn signal light with the fender insertion hole, align the ribs with the headlight insertion holes.
(2) While pressing in the front turn signal light towards the rear of the vehicle, hook the set spring to the fender shield inner to secure the front turn signal light to the vehicle body.



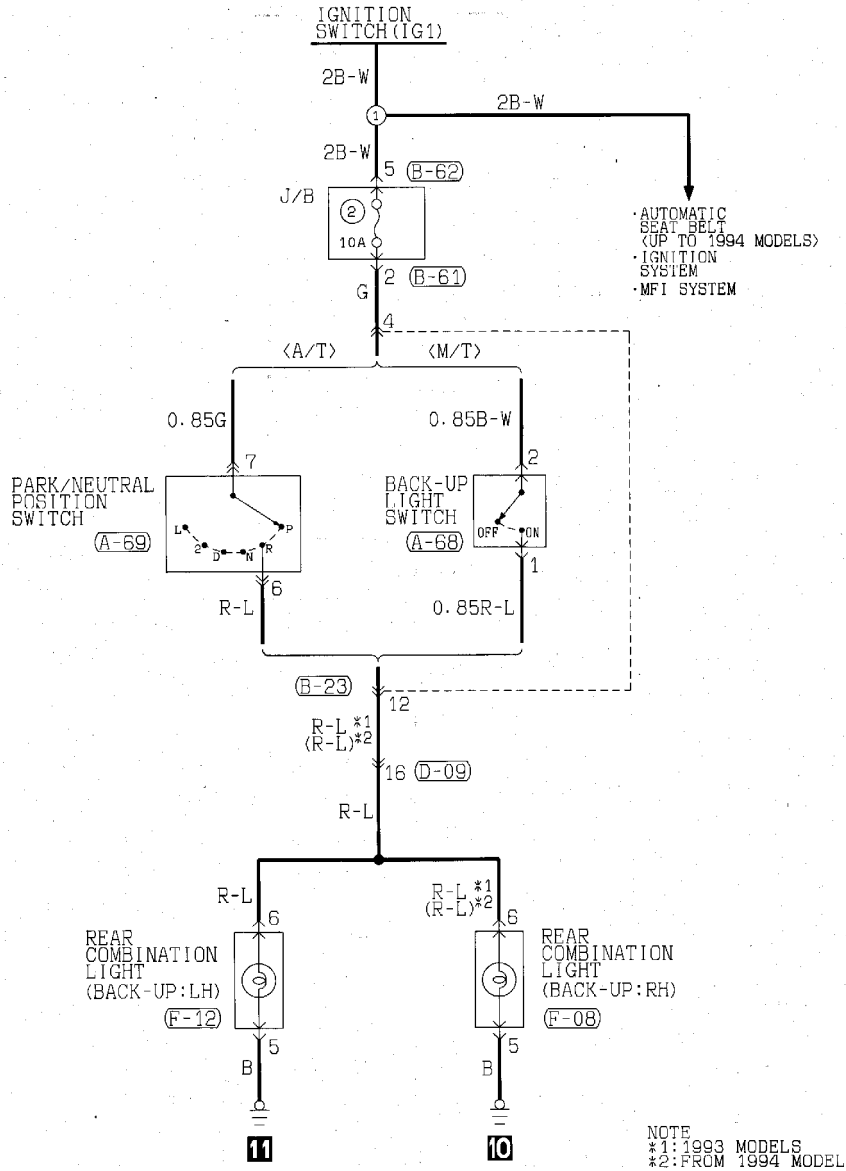
TSB Revision

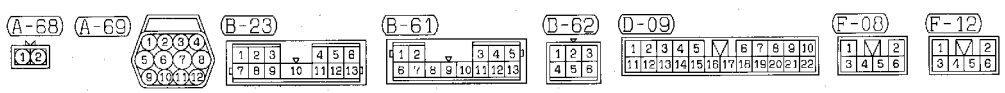
REAR COMBINATION LIGHT

TROUBLESHOOTING

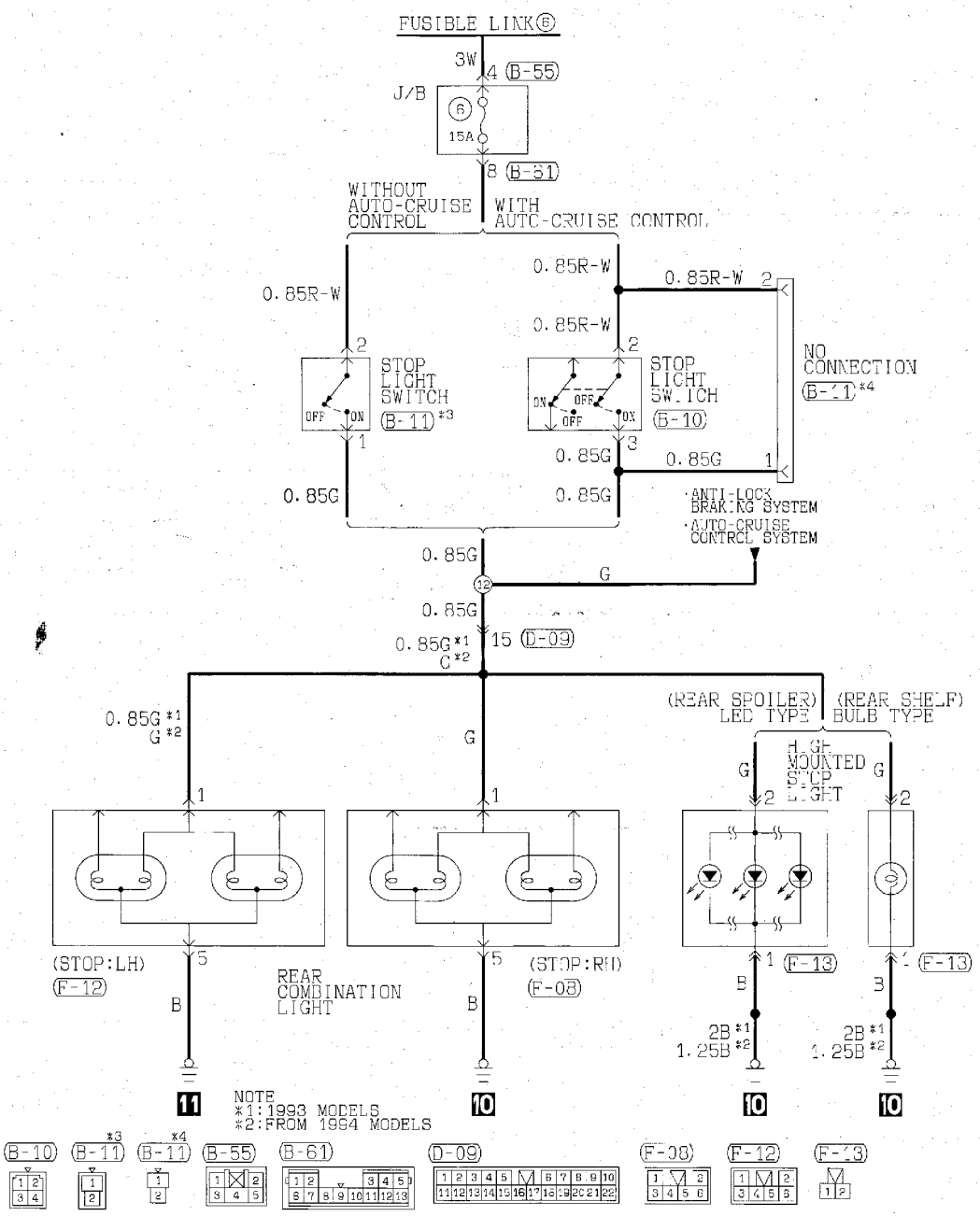
Back-up Light Circuit

110003644

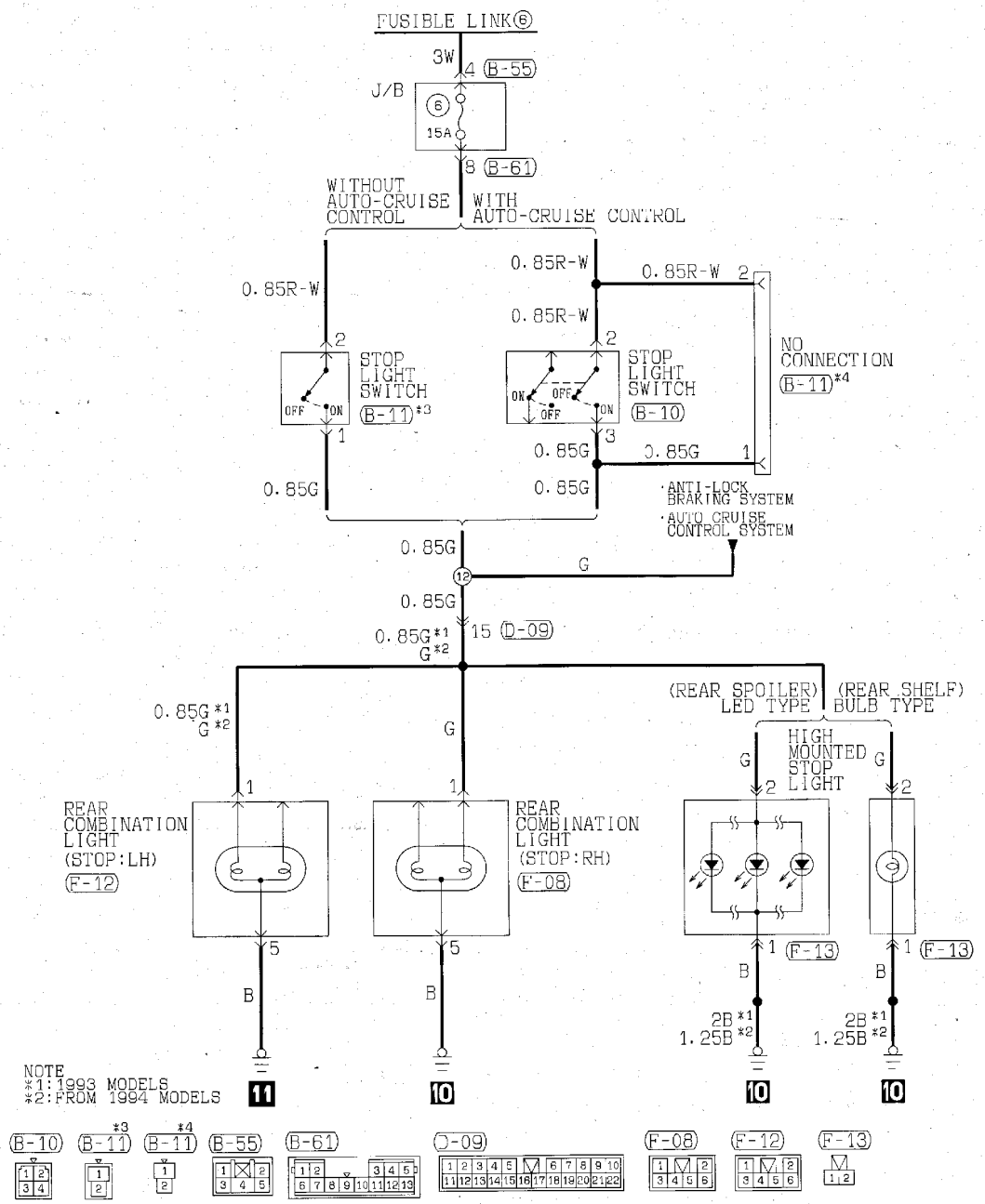




Stop Light Circuit <2-door models>



Stop Light Circuit <4-door models>

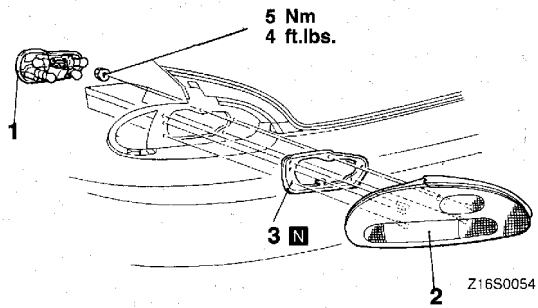


REAR COMBINATION LIGHT

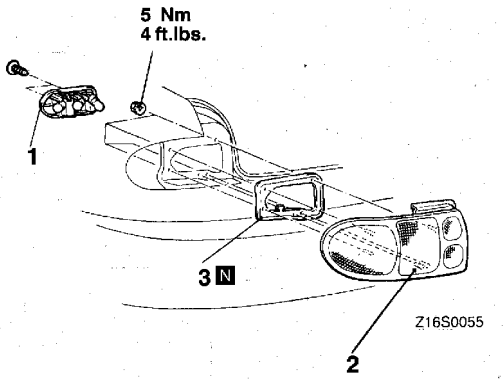
REMOVAL AND INSTALLATION

110003645

<Type 1>



<Type 2>

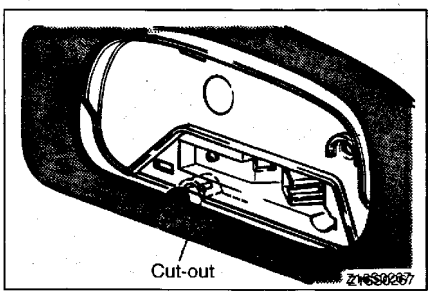


00001563

Removal steps

1. Socket and bulb assembly
2. Rear combination light

▶A◀ 3. Gasket



INSTALLATION SERVICE POINT

▶A◀ GASKET INSTALLATION

Securely insert the gasket onto the lamp unit cut-out.

HIGH MOUNTED STOP LIGHT

TROUBLESHOOTING

110003646

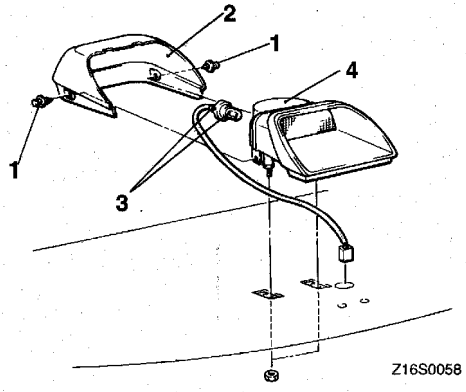
Refer to the paragraph "Rear Combination Light".

HIGH MOUNTED STOP LIGHT

REMOVAL AND INSTALLATION

110003647

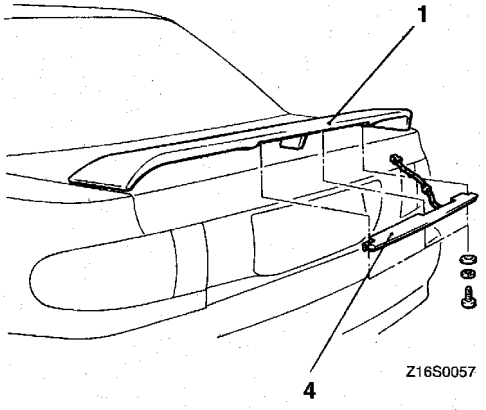
<Vehicles with rear shelf>



Removal steps

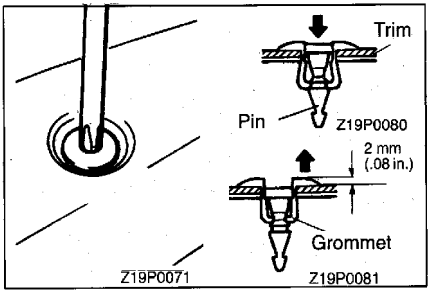
◀A▶ ▶A◀ 1. Clip
2. Cover
3. Socket and bulb assembly
4. High mounted stop light

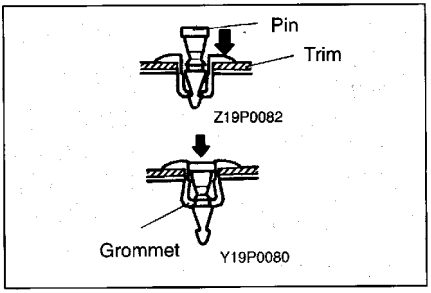
<Vehicles with rear spoiler>



Removal steps

1. Rear spoiler
   (Refer to GROUP 51 – Aero Parts)
4. High mounted stop light





REMOVAL SERVICE POINT

◀A▶ CLIP REMOVAL

(1) Use a cross-tip (+) screwdriver to push inward the pin (at the center of the clip) to a depth of about 2 mm (.08 in.)
(2) Pull the clip outward to remove it.

Caution
Do not push the pin inward more than necessary because it may damage the grommet, or the pin may fall in, if pushed too far.

INSTALLATION SERVICE POINT

▶A◀ CLIP INSTALLATION

(1) With the pin pulled out, insert the clip into the hole in the trim.
(2) Push the pin inward until the pin's head is flush with the grommet.
(3) Check whether the trim is secure.

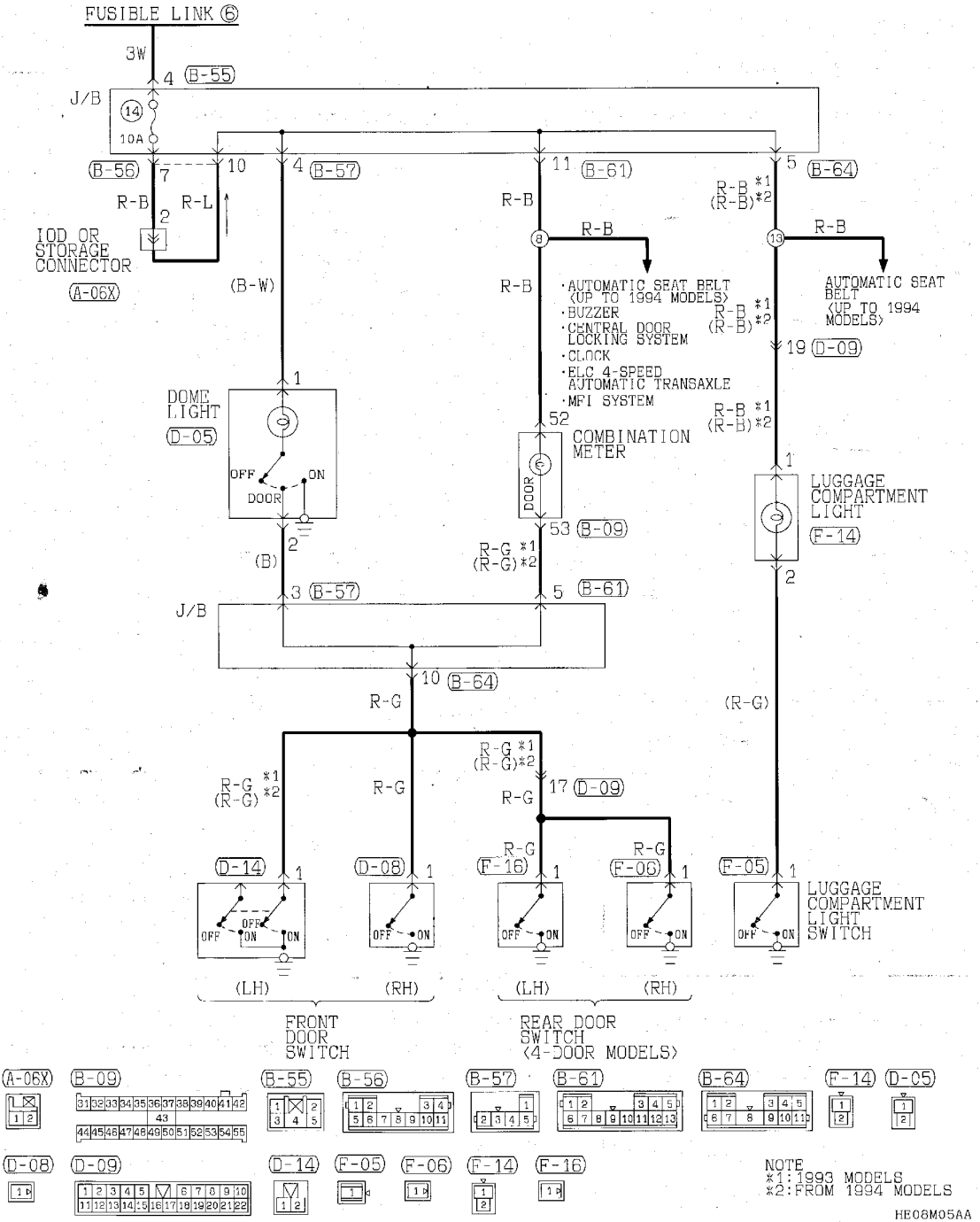
TSB Revision

INTERIOR LIGHT

TROUBLESHOOTING

110003648

Dome Light and Luggage Compartment Light Circuit



NOTE
*1: 1993 MODELS
*2: FROM 1994 MODELS

HE08M05AA

TSB Revision

OPERATION

<Dome light>

- The dome light is always illuminated when the dome light switch is at the "ON" position.
- The dome light illuminates when any door is opened while the dome light switch is at the "DOOR" position.
- The dome light switches OFF when all doors are closed.

<Luggage compartment light>

- Battery voltage is always applied (via fusible link No. 6 and multipurpose fuse No. 14) to the luggage compartment light.
- When the trunk lid is opened, the luggage compartment light switch is switched ON and the luggage compartment light illuminates.

TROUBLESHOOTING HINTS

1. The dome light does not illuminate.
   1) The clock is stopped also.
      - Check multipurpose fuse No. 14.
   2) The dome light does not illuminate when, with the dome light switch at the "DOOR" position, any door is opened.
      - Check the bulb.
      - Check the dome light switch.
   3) The dome light does not illuminate when, with the dome light switch at the "DOOR" position, a certain door or doors is/are opened.
      - Check the door switch [the door switch(es) for the door(s) that does not activate the dome light when opened].
2. The luggage compartment light does not illuminate.
   1) The dome light is normal.
      - Check the bulb.
      - Check the luggage compartment light switch.

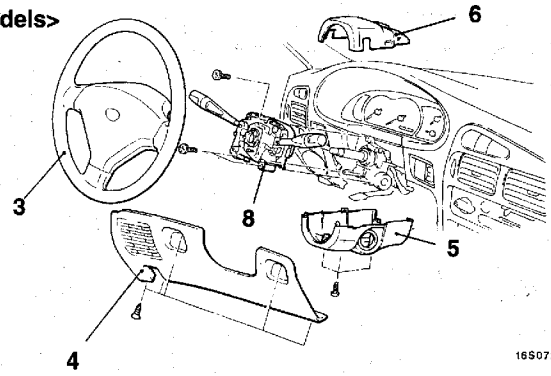
COLUMN SWITCH

REMOVAL AND INSTALLATION

110003649

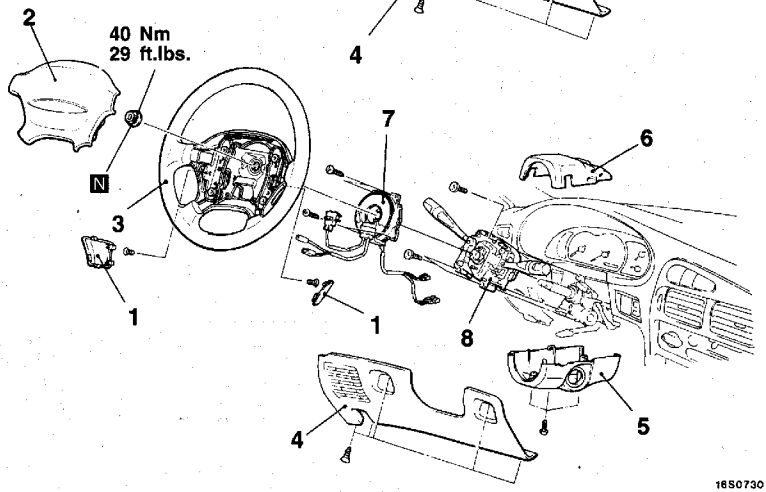
CAUTION: SRS <From 1994 models>
Before removal of air bag module, refer to GROUP 52B – SRS Service Precautions and Air Bag Module and Clock Spring.

<1993 models>



16S0729

<From 1994 models>



16S0730

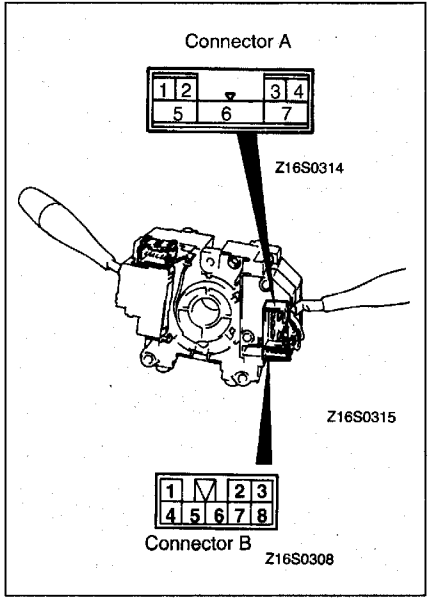
00001564

Removal steps <1993 models>

3. Steering wheel (Refer to GROUP 37A – Steering Wheel)
4. Knee protector
5. Column cover lower
6. Column cover upper
8. Column switch

Removal steps <From 1994 models>

1. Cover
2. Air bag module (Refer to GROUP 52B – Air Bag Module and Clock Spring.)
3. Steering wheel (Refer to GROUP 37A – Steering Wheel)
4. Knee protector
5. Column cover lower
6. Column cover upper
7. Clock spring (Refer to GROUP 52B – Air Bag Module and Clock Spring.)
8. Column switch



INSPECTION

Operate the switch and check for continuity between the terminals.

Switch position		Terminal No.									
		Connector A							Connector B		
		1	2	3	4	5	6	7	5	7	8
LIGHTING	OFF										
	TAIL		○		○						
	HEAD		○	○	○						
DIMMER/ PASSING	LOWER						○	○			
	UPPER					○	○				
	PASS-ING	○	○			○					
TURN SIGNAL	RH								○		○
	OFF										
	LH									○	○

WIPER AND WASHER SWITCH

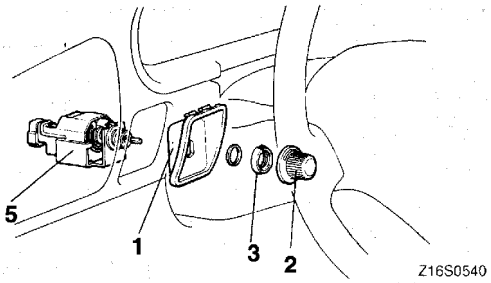
Refer to GROUP 51 – Windshield Wiper and Washer.

RHEOSTAT

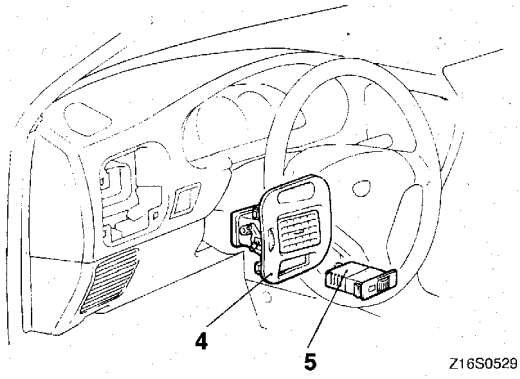
REMOVAL AND INSTALLATION

110003650

<Mechanical type>



<Electronic type>



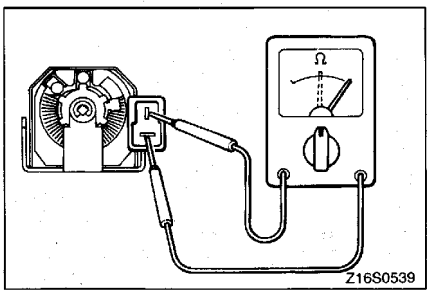
00001565

Removal steps <Mechanical type>

1. Garnish
2. Knob
3. Ring nut
5. Rheostat

Removal steps <Electronic type>

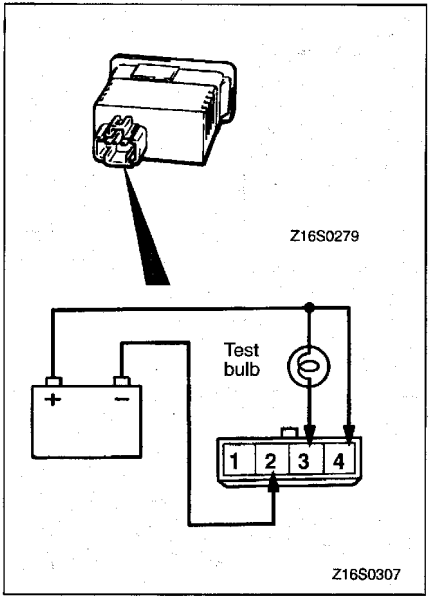
4. Air outlet panel assembly
5. Rheostat



INSPECTION

<Mechanical type>

(1) With the connector disconnected, measure the continuity between the rheostat terminals with an ohmmeter.
(2) If the resistance value varies smoothly between 0 and 10 ohms throughout the entire operation range, the rheostat is functioning properly.



<Electronic type>

(1) Connect the battery and the test bulb (40W) as shown in the illustration.
(2) Operate the rheostat, and if the brightness changes smoothly without switching off, then the rheostat function is normal.

BUZZER

TROUBLESHOOTING

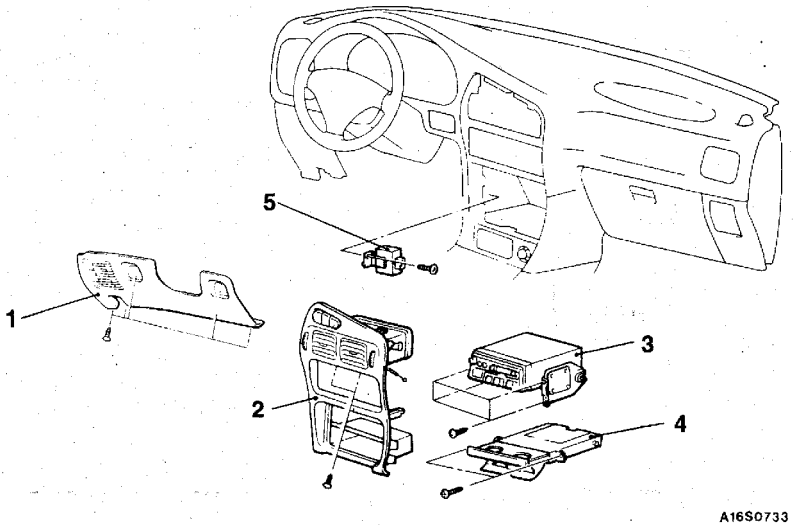
110003651

Refer to the paragraph "Parking and side-marker light, hazard light".

BUZZER

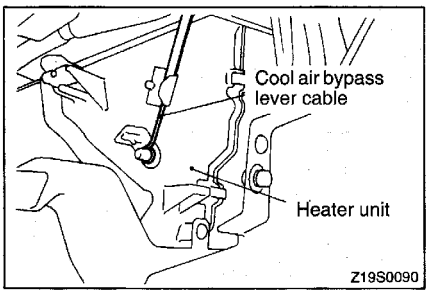
REMOVAL AND INSTALLATION

110003652



Removal steps

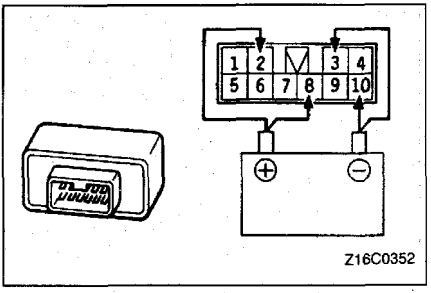
◀A▶ ▶A◀ 1. Knee protector
2. Air outlet center panel assembly
3. Radio and tape player
4. Cup holder
5. Buzzer



REMOVAL SERVICE POINT

◀A▶ AIR OUTLET CENTER PANEL ASSEMBLY REMOVAL

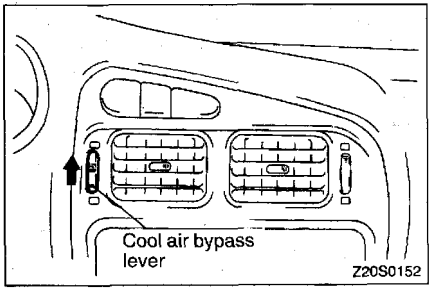
(1) Remove the cool air bypass lever cable of the air outlet center panel assembly at the heater unit side.
(2) Remove the air outlet center panel assembly mounting screws, and remove the air outlet center panel assembly.



INSPECTION

LIGHTING MONITOR BUZZER

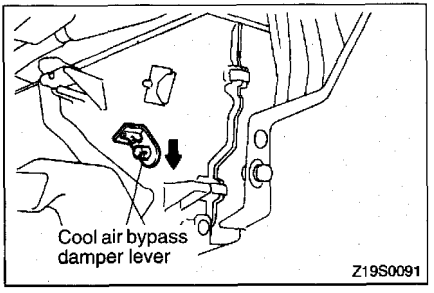
(1) Apply battery voltage between the terminals 2, 8 and 10.
(2) Check to be sure that the buzzer sounds when terminal 3 is grounded.



INSTALLATION SERVICE POINT

▶A◀ AIR OUTLET CENTER PANEL ASSEMBLY INSTALLATION

(1) Install the air outlet center panel assembly to the instrument panel.
(2) Turn the cool air bypass lever of the air outlet center panel assembly fully upward (in the direction of the arrow).



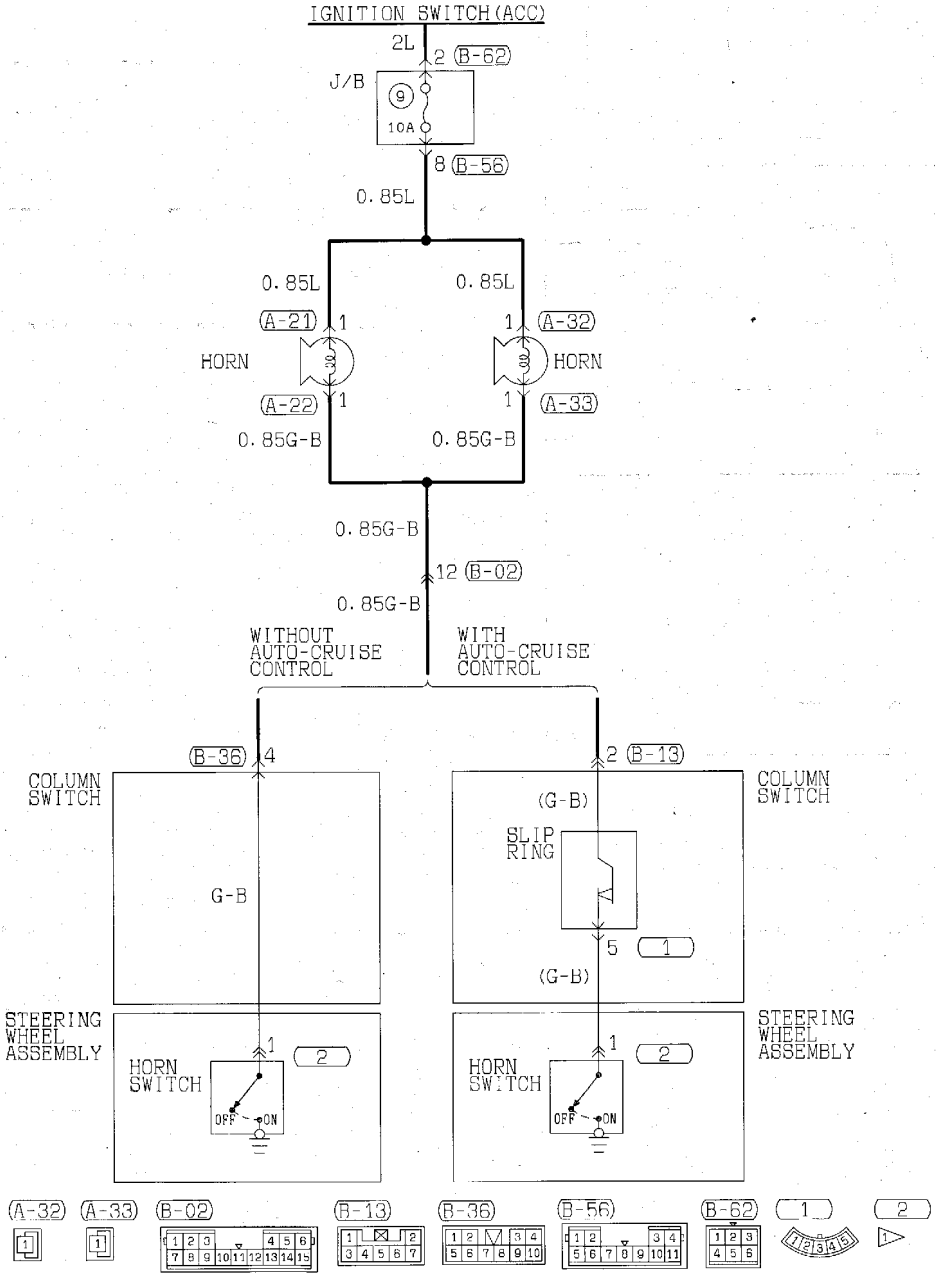
(3) Turn the cool air bypass damper lever at the heater unit side fully downward (in the direction of the arrow), and install the cool air bypass lever cable.

HORN

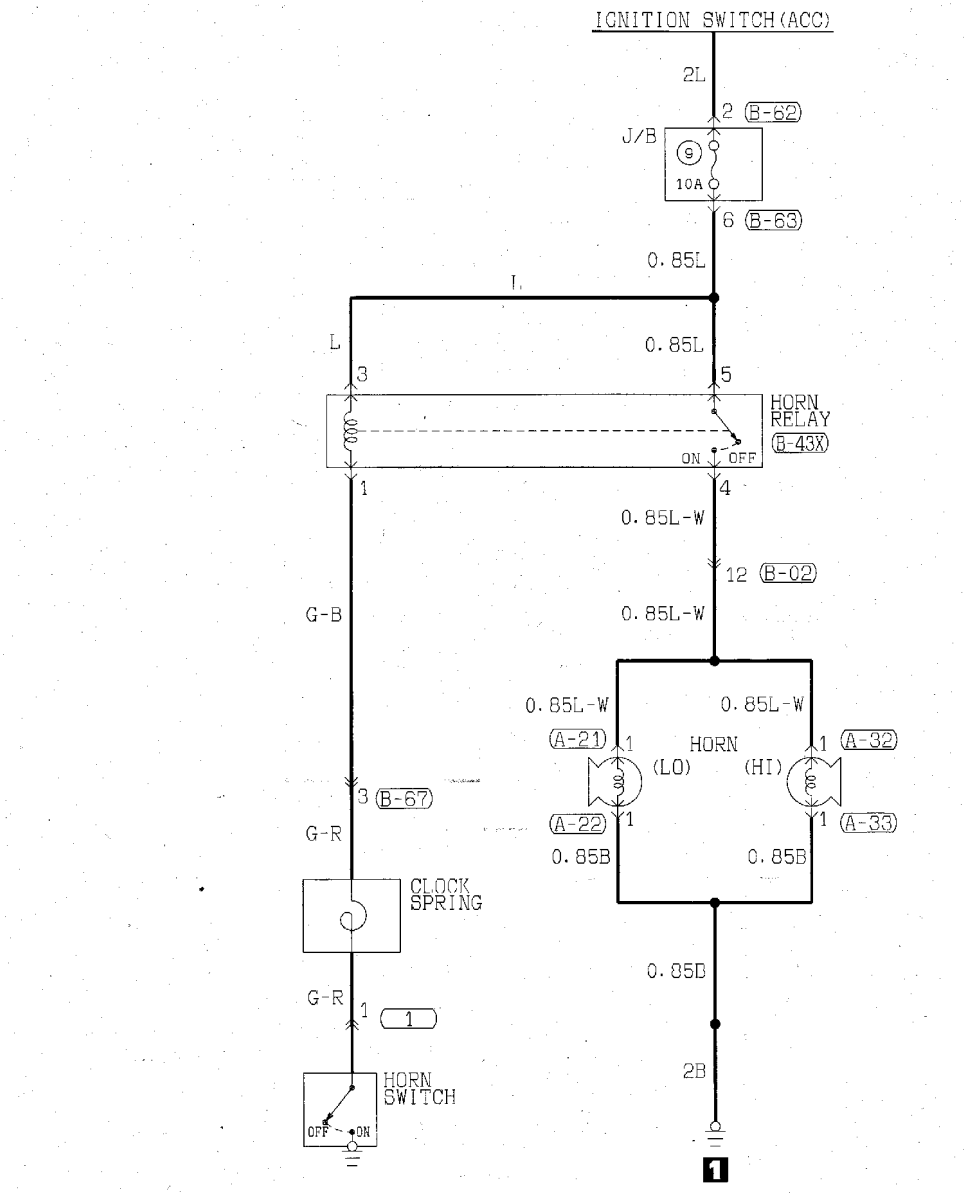
TROUBLESHOOTING

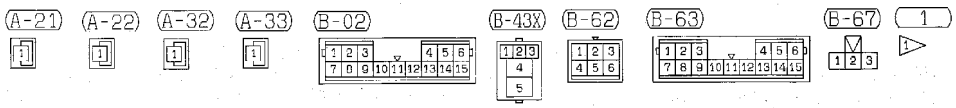
110003653

CIRCUIT DIAGRAM <1993 models>

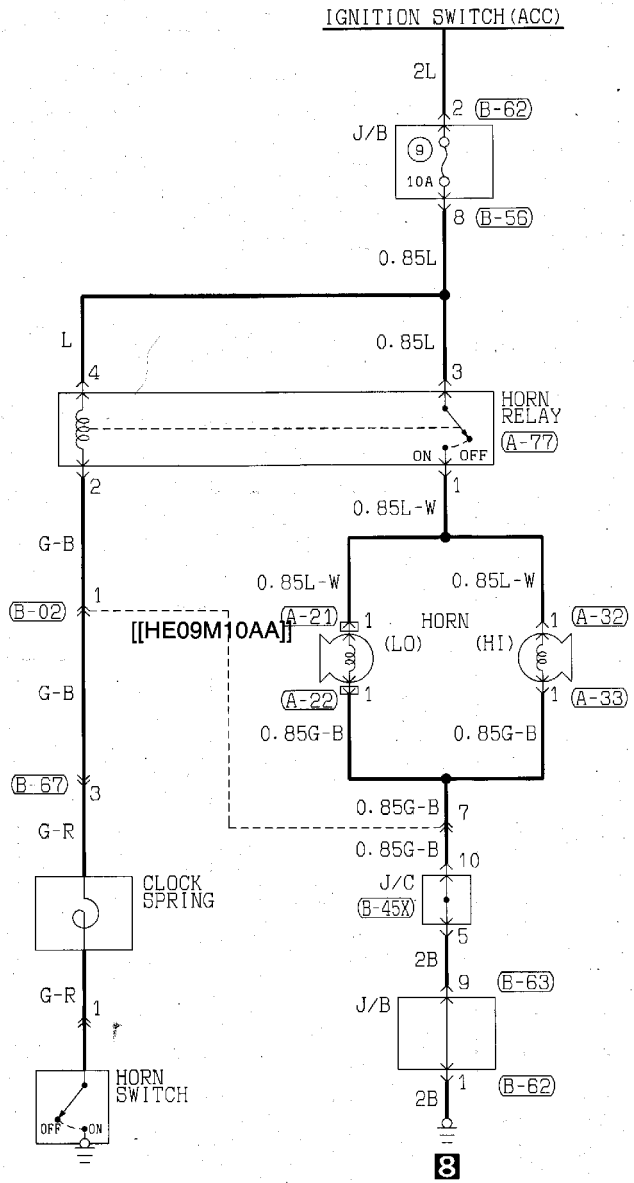


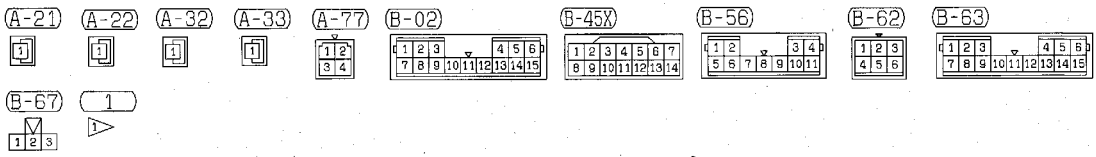
CIRCUIT DIAGRAM <1994 models>





CIRCUIT DIAGRAM <From 1995 models>





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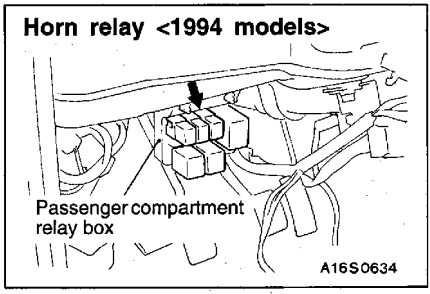
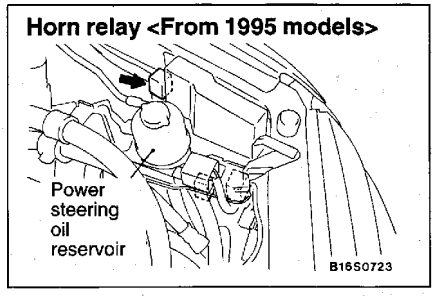
COMPONENT LOCATION

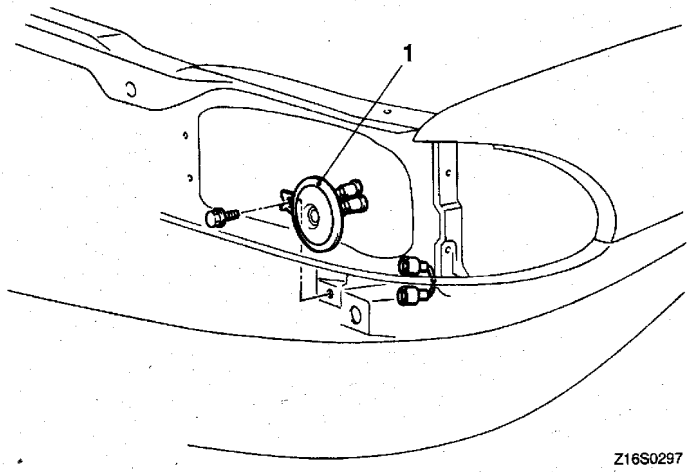




HORN

REMOVAL AND INSTALLATION

110003654



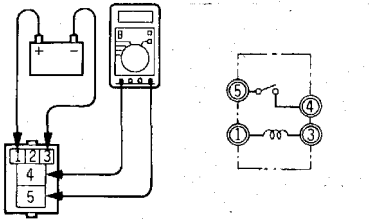
Removal steps

- Headlight (Refer to P.54-26.)

1. Horn

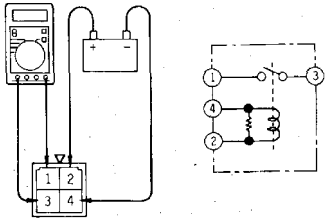
NOTE
Remove the horn at the L.H. side by the same procedure.

<1994 models>



18W0350

<From 1995 models>



20W0206
00001566

INSPECTION

HORN RELAY

(1) Remove the horn relay.
(2) Check for continuity between the terminals.

<1994 models>

Battery voltage	Terminal No.			
	1	2	3	4
Not applied	○	○		
Applied	⊕	⊖	○	○

<From 1995 models>

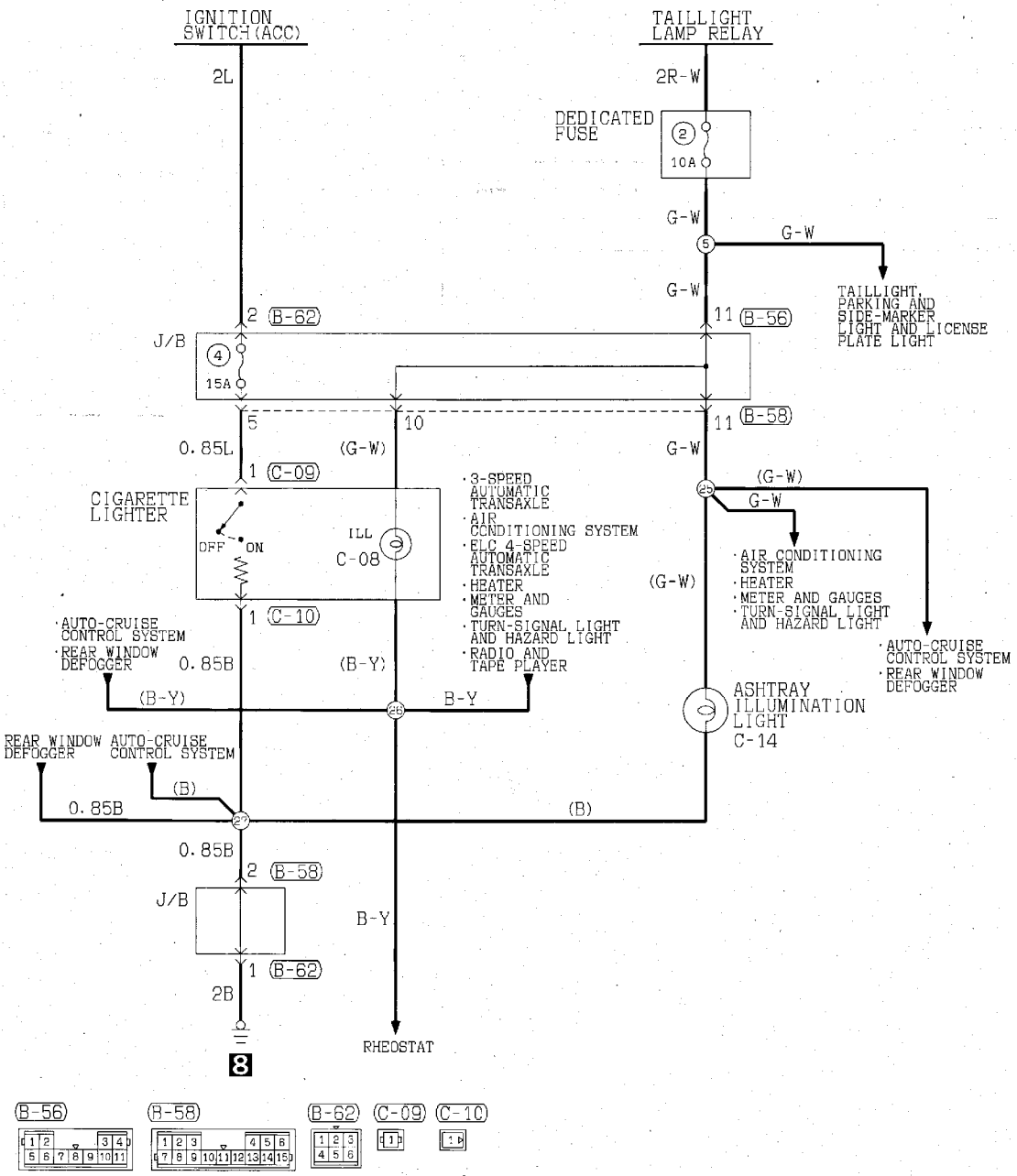
Battery voltage	Terminal No.			
	1	2	3	4
Not applied		○		○
Applied	○	⊕	○	⊖

CIGARETTE LIGHTER

TROUBLESHOOTING

110003655

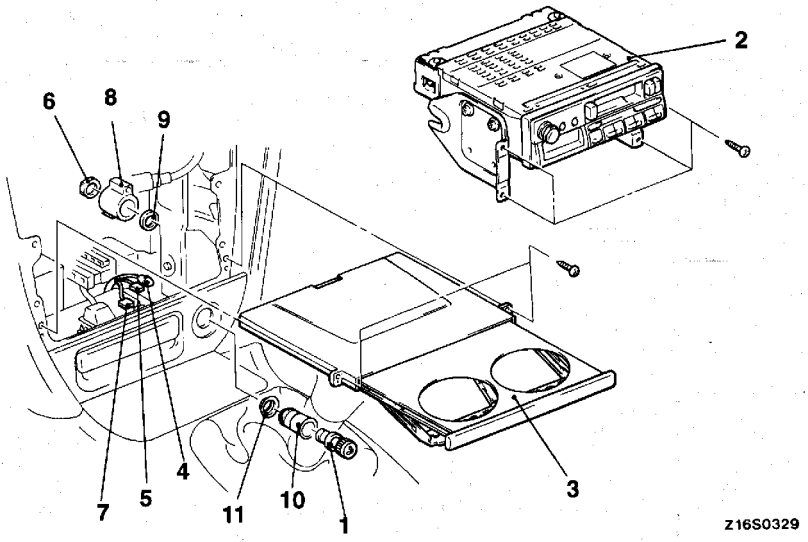
CIRCUIT DIAGRAM



CIGARETTE LIGHTER

REMOVAL AND INSTALLATION

110003656



Removal steps

1. Plug
2. Radio and Tape player
3. Cup holder
4. Cigarette lighter illumination light
5. Cigarette lighter power supply connector
6. Fixing ring
7. Ground connector
8. Socket case
9. Plate
10. Socket
11. Protector

INSPECTION

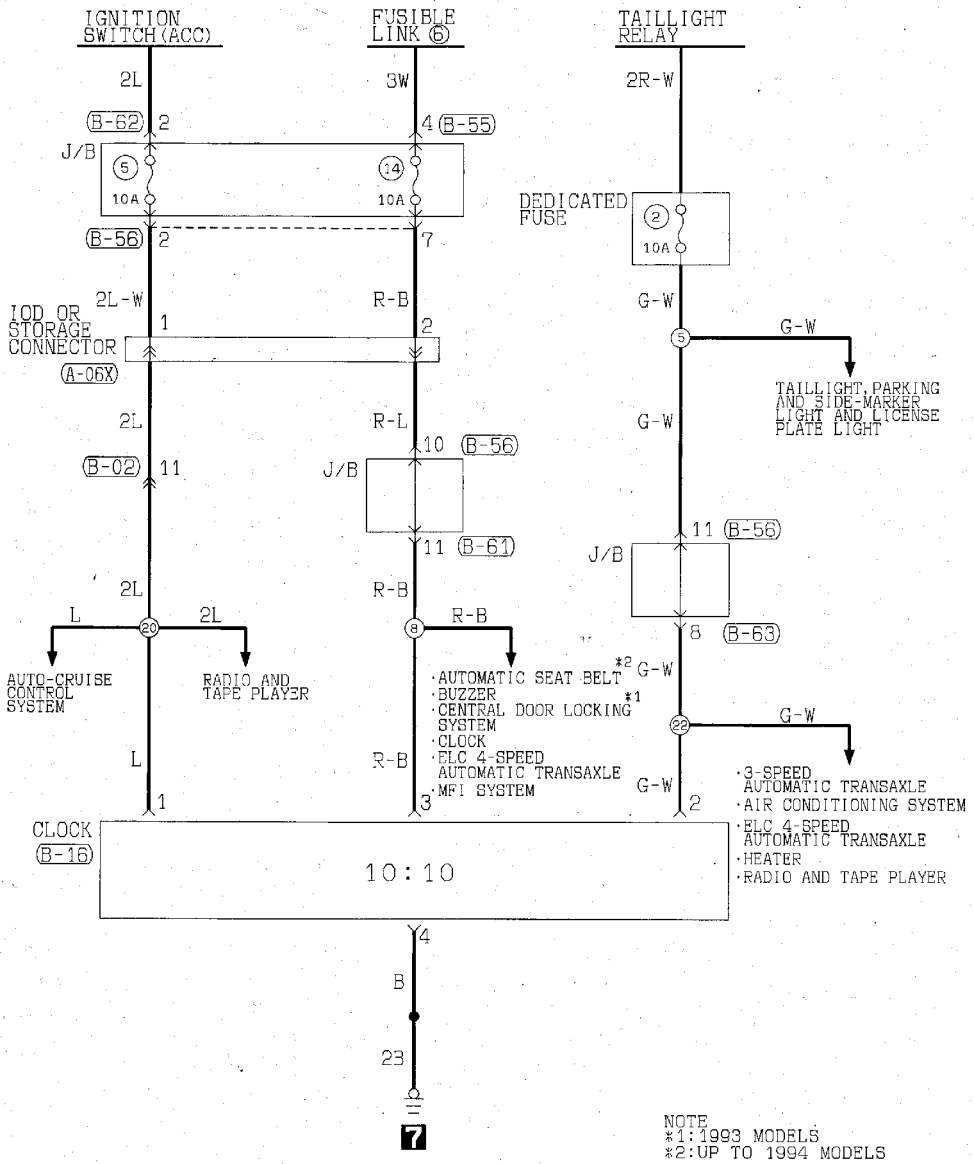
- Take out the plug, and check for a worn edge on the element spot connection, and for shreds of tobacco or other material on the element.
- Using an ohmmeter, check the continuity of the element.

CLOCK

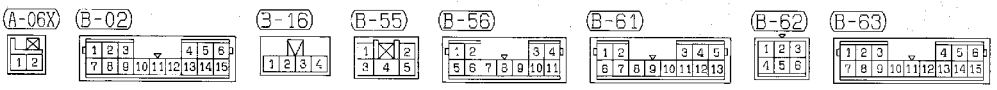
TROUBLESHOOTING

110003657

CIRCUIT DIAGRAM



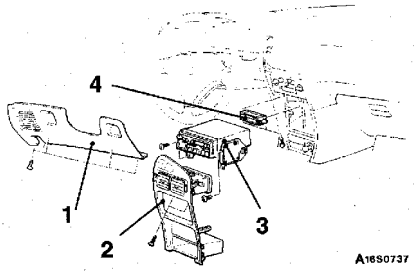
NOTE
*1: 1993 MODELS
*2: UP TO 1994 MODELS



CLOCK

REMOVAL AND INSTALLATION

110003658

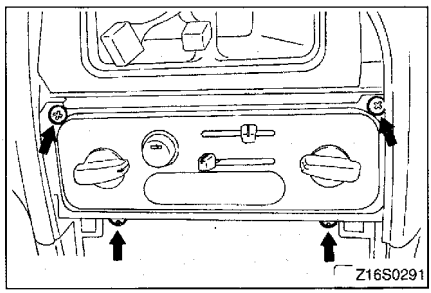


Removal steps

1. Knee protector
2. Air outlet center panel assembly (Refer to P.54-38.)

◀A▶

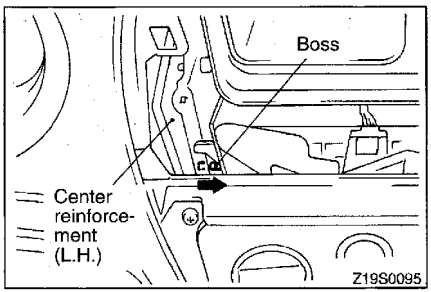
3. Radio and tape player
4. Clock



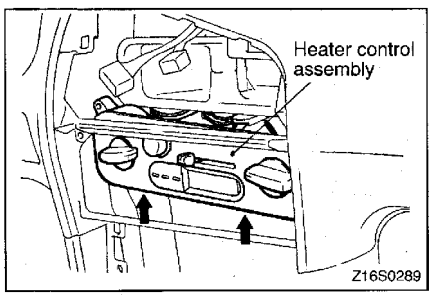
REMOVAL SERVICE POINT

◀A▶ CLOCK REMOVAL

(1) Remove the heater control assembly mounting screws.



(2) Remove the heater control assembly boss from center reinforcement (L.H.).



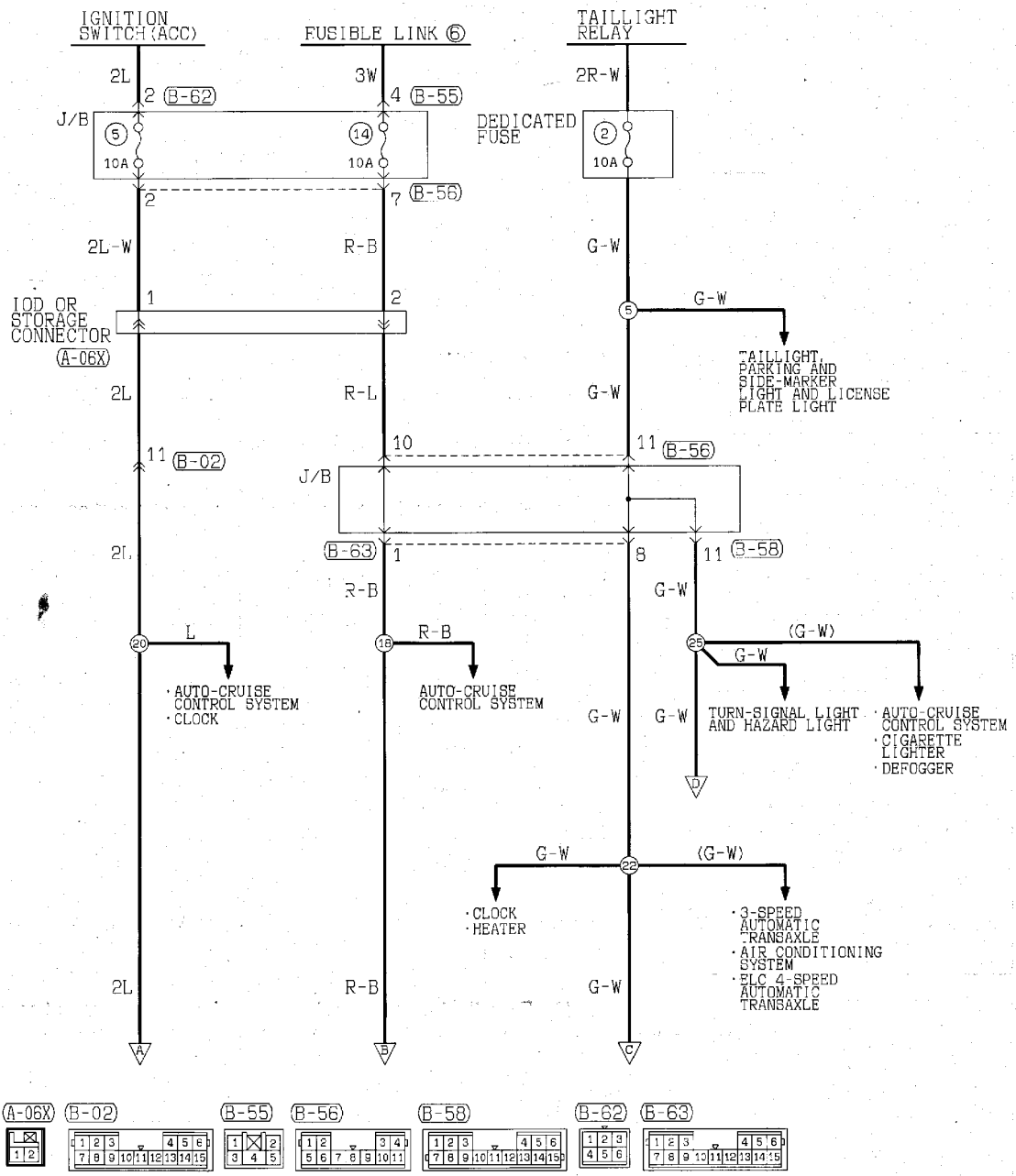
(3) Push the heater control assembly into the instrument panel, remove the clock mounting screws, and remove the clock.

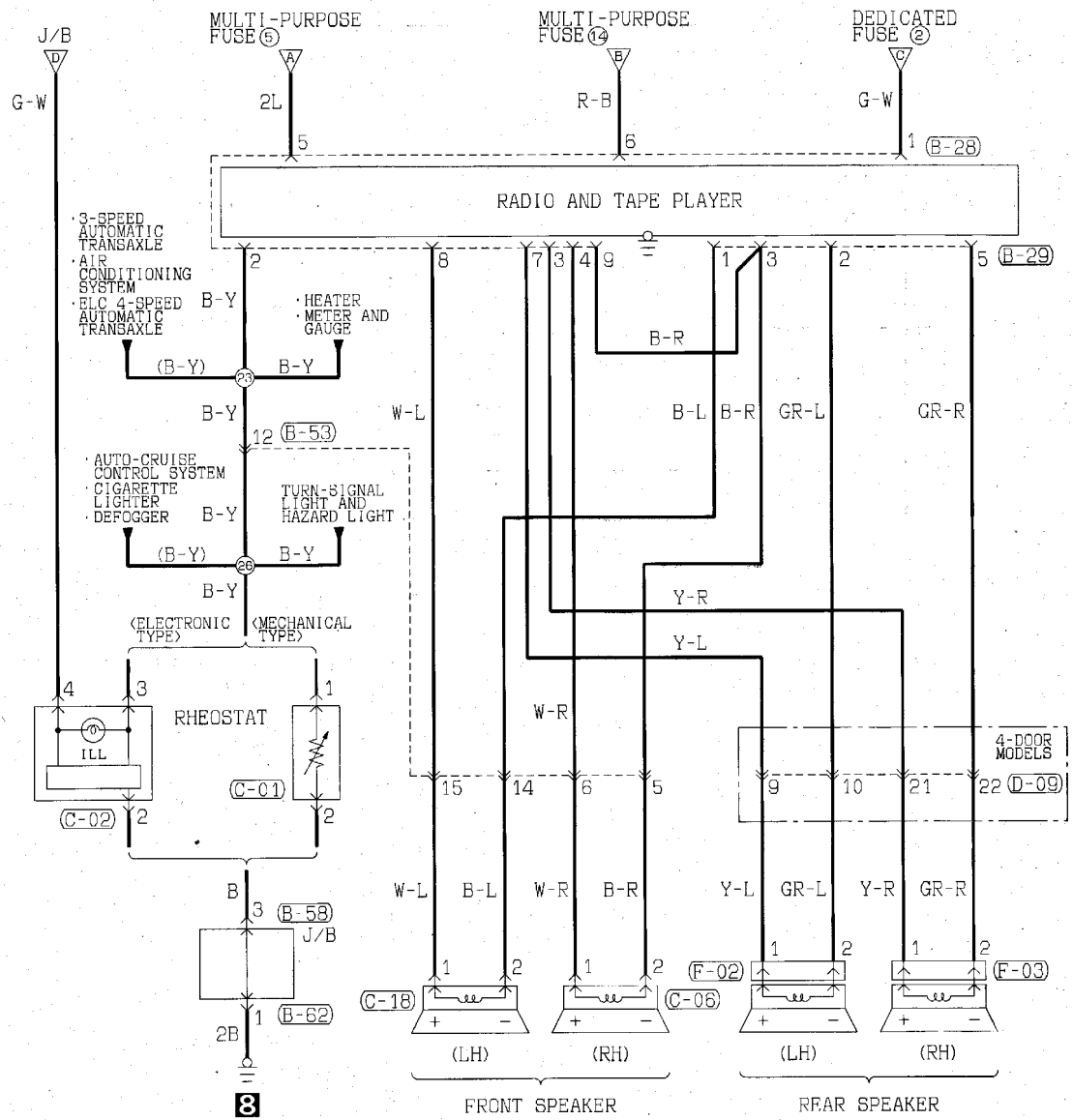
RADIO AND TAPE PLAYER

TROUBLESHOOTING

110003659

CIRCUIT DIAGRAM <1993 MODELS>





8

B-28 B-29 B-53 B-58 B-62 C-01 C-02 C-06 C-18 D-09

F-02 F-03

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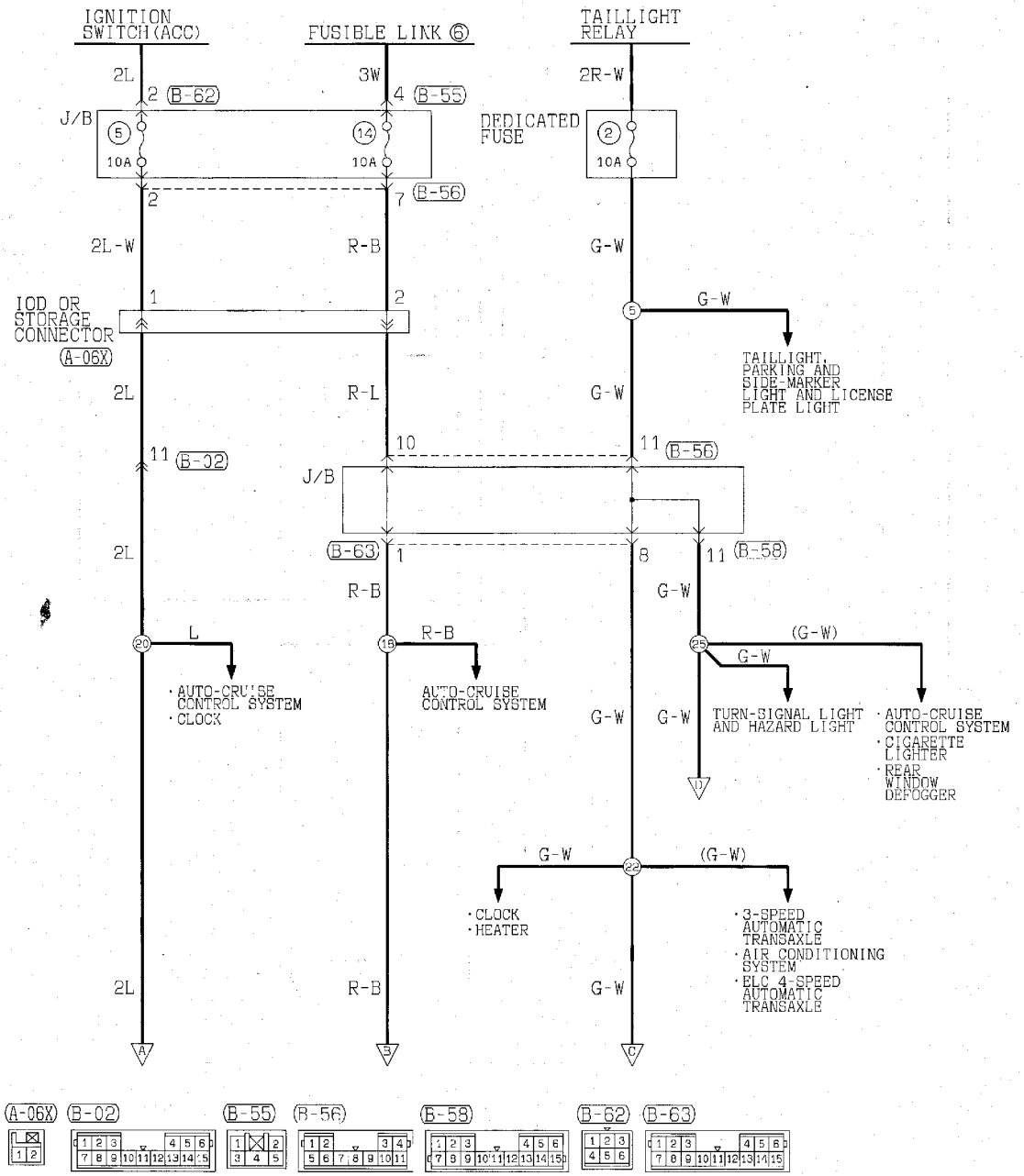
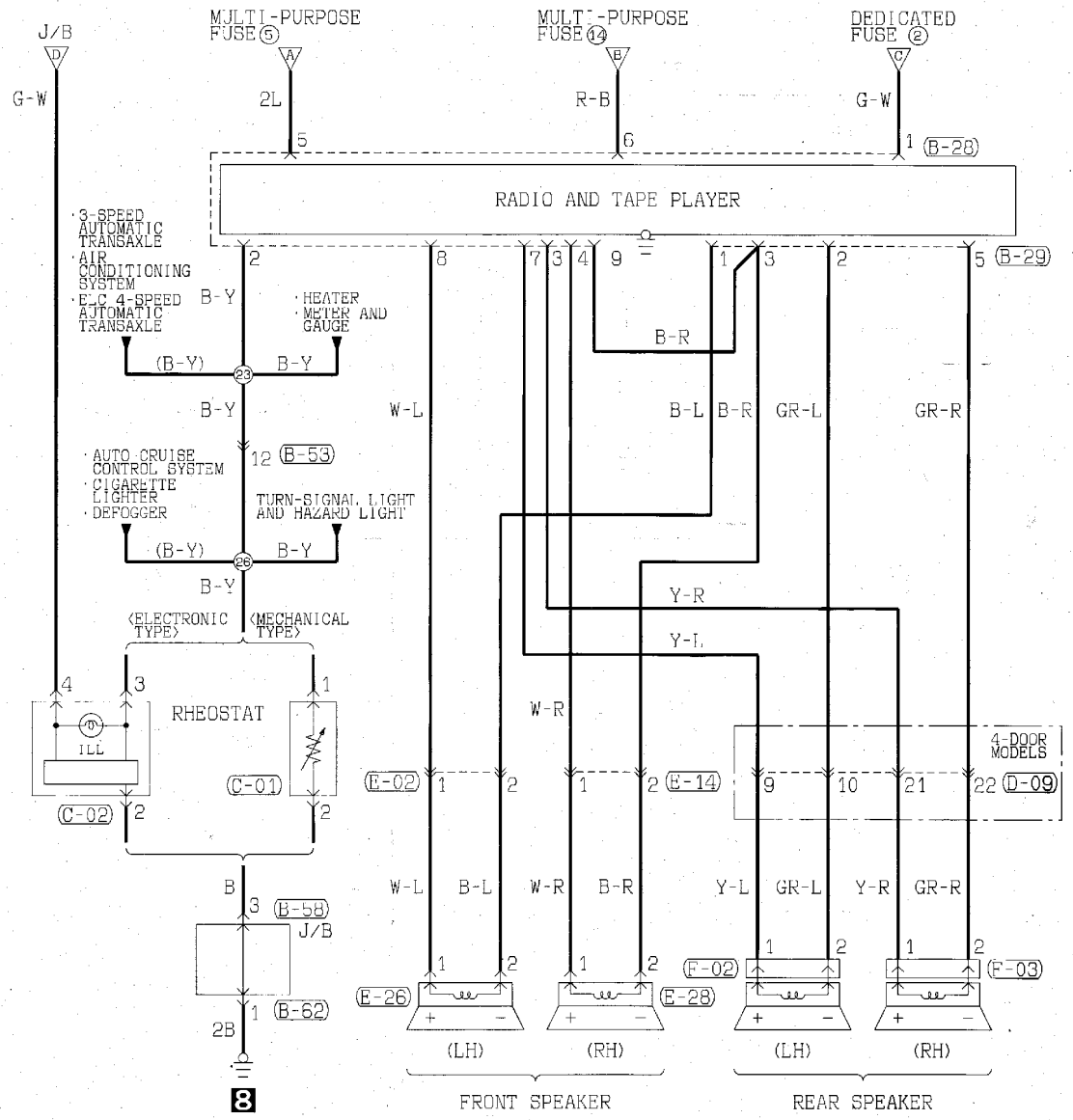
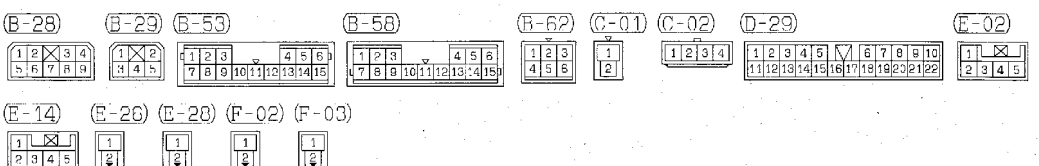
CIRCUIT DIAGRAM <1994 MODELS>







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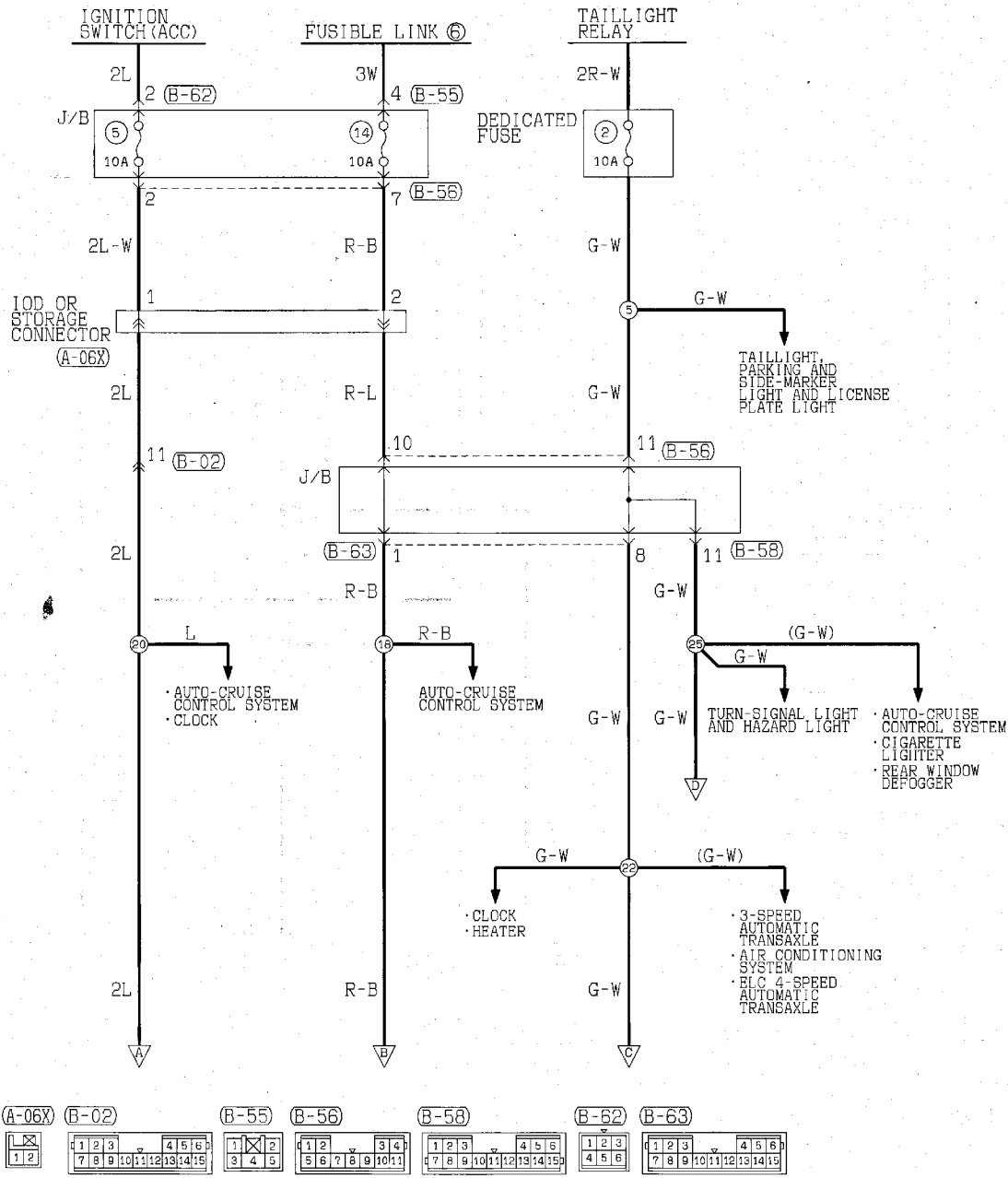
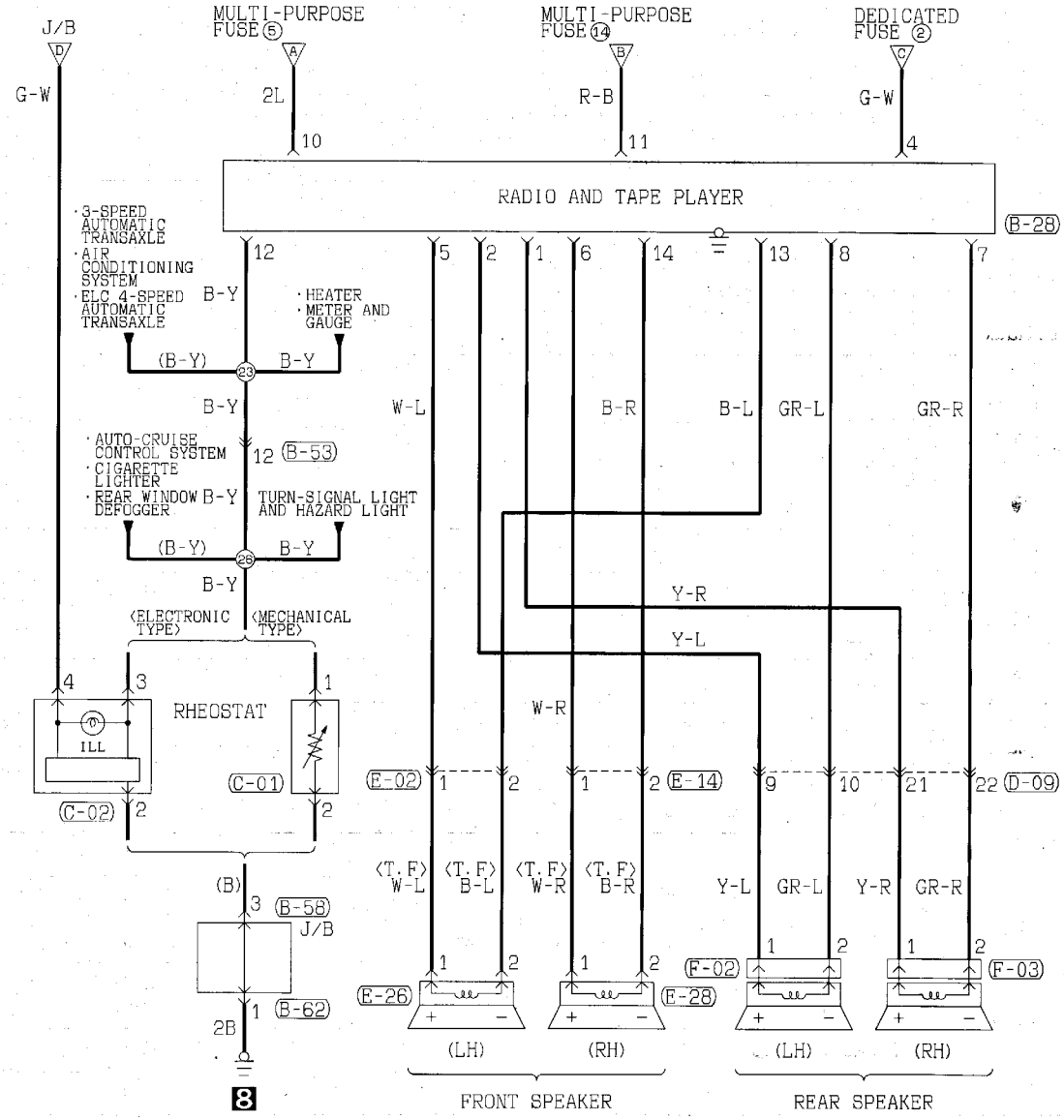
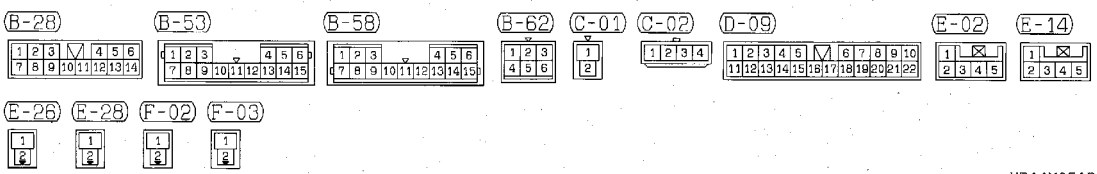
CIRCUIT DIAGRAM <FROM 1995 MODELS>







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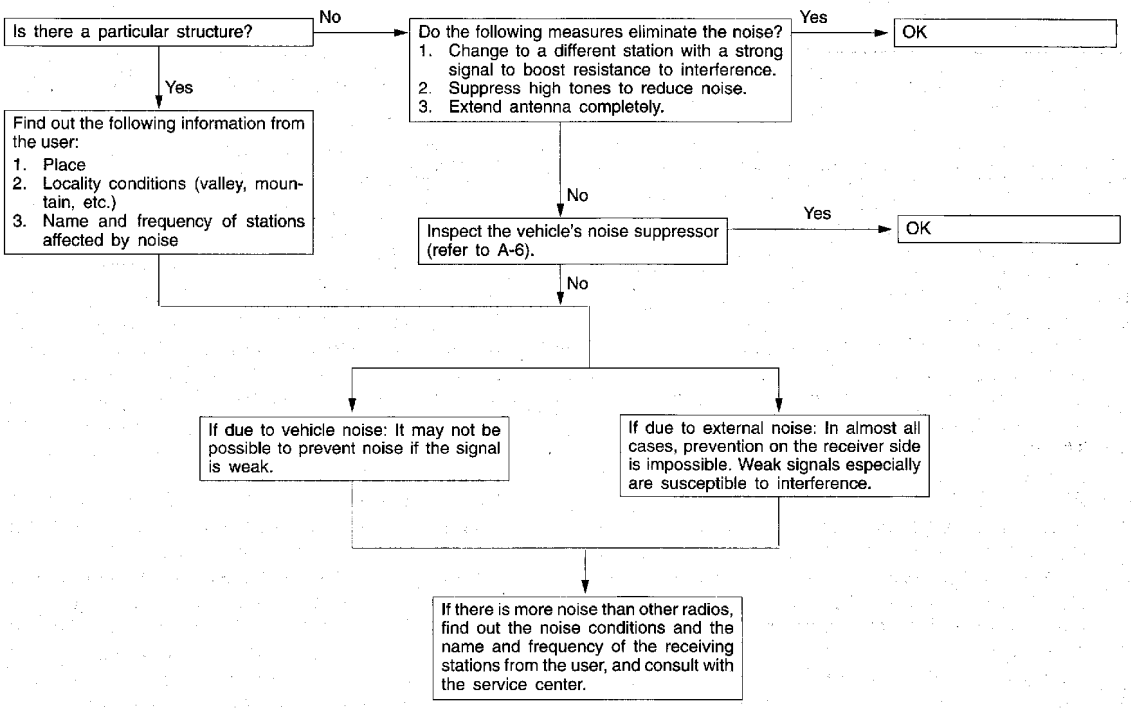
TROUBLESHOOTING CHART

Item	Problem symptom	Relevant chart
A. Noise	1. Noise appears at certain places when traveling (AM).	A-1
	2. Noise appears at certain places when traveling (FM).	A-2
	3. Mixed with noise, only at night (AM).	A-3
	4. Broadcasts can be heard but both AM and FM have a lot of noise.	A-4
	5. There is more noise either on AM or on FM.	A-5
	6. There is noise when starting the engine.	A-6
	7. Some noise appears when there is vibration or shocks during traveling.	A-7
	8. Noise sometimes appears on FM during traveling.	A-8
	9. Ever-present noise.	A-9
B. Radio	1. No sound.	B-1
	2. No sound from one speaker.	B-2
	3. There is noise but no reception for both AM and FM.	B-3
	4. No sound from AM, or no sound from FM.	B-4
	5. Insufficient sensitivity.	B-5
	6. Distortion on AM or on both AM and FM.	B-6
	7. Distortion on FM only.	B-7
	8. Too few automatic select stations.	B-8
	9. Insufficient memory (preset stations are erased).	B-9
C. Cassette player	1. Cassette tape will not insert.	C-1
	2. No sound.	C-2
	3. No sound from one speaker.	C-3
	4. Sound quality is poor, or sound is weak.	C-4
	5. Cassette tape will not eject.	C-5
	6. Uneven revolution. Tape speed is fast or slow.	C-6
	7. Automatic search does not work (only for models with automatic search function).	C-7
	8. Faulty auto reverse.	C-8
	9. Tape gets caught in mechanism.	C-9

CHART

A. NOISE

A-1 Noise appears at certain places when traveling (AM).



A–2 Noise appears at certain places when traveling (FM).

Do the following measures eliminate the noise?
- Change to a different station with a strong signal to boost resistance to interference.
- Suppress high tones to reduce noise.
- Extend antenna completely.

Yes → OK

No

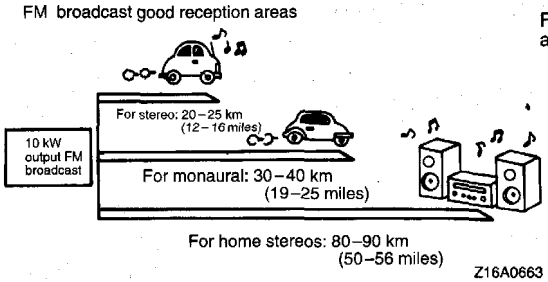
On radios with an FM stereo switch, is noise still present when switched to monaural? No → OK

Yes

If there is more noise than other radios, find out the noise conditions and the name and frequency of the receiving stations from the user, and consult with the service center.

NOTE
- About FM waves:
  FM waves have the same properties as light, and can be deflected and blocked. Wave reception is not possible in the shadow of obstructions such as buildings or mountains.

1. The signal becomes weak as the distance from the station's transmission antenna increases. Although this may vary according to the signal strength of the transmitting station and intervening geographical formations or buildings, the area of good reception is approx. 20–25 km (12-16 miles) for stereo reception, and 30–40 km (19-25 miles) for monaural reception.
2. The signal becomes weak when an area of shadow from the transmitting antenna (places where there are obstructions such as mountains or buildings between the antenna and the car), and noise will appear. <This is called first fading, and gives a steady buzzing noise>.
3. If a direct signal hits the antenna at the same time as a signal reflected by obstructions such as mountains or buildings, interference of the two signals will generate noise. During traveling, noise will appear each time the vehicle's antenna passes through this kind of obstructed area. The strength and interval of the noise varies according to the signal strength and the conditions of deflection. <This is called multipath noise, and is a repetitious buzzing>.
4. Since FM stereo transmission and reception has a weaker field than monaural, it is often accompanied by a hissing noise.
5. Ordinary vehicles are more susceptible to these types of interference than vehicles equipped with an FM diversity antenna system. If the problem vehicle is identical to a vehicle (radio) of the same type, the variation may be due to different antenna systems. FM diversity antenna system: Two types of antennas (whip or motor antenna and glass antenna) are used. This system allows selection of the antenna that gives the best reception.



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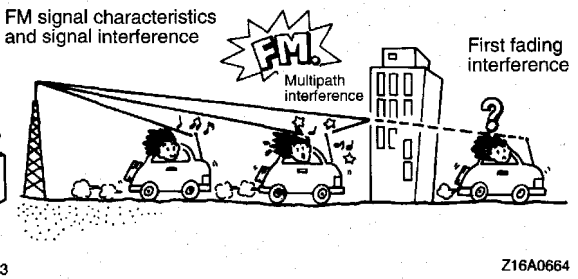

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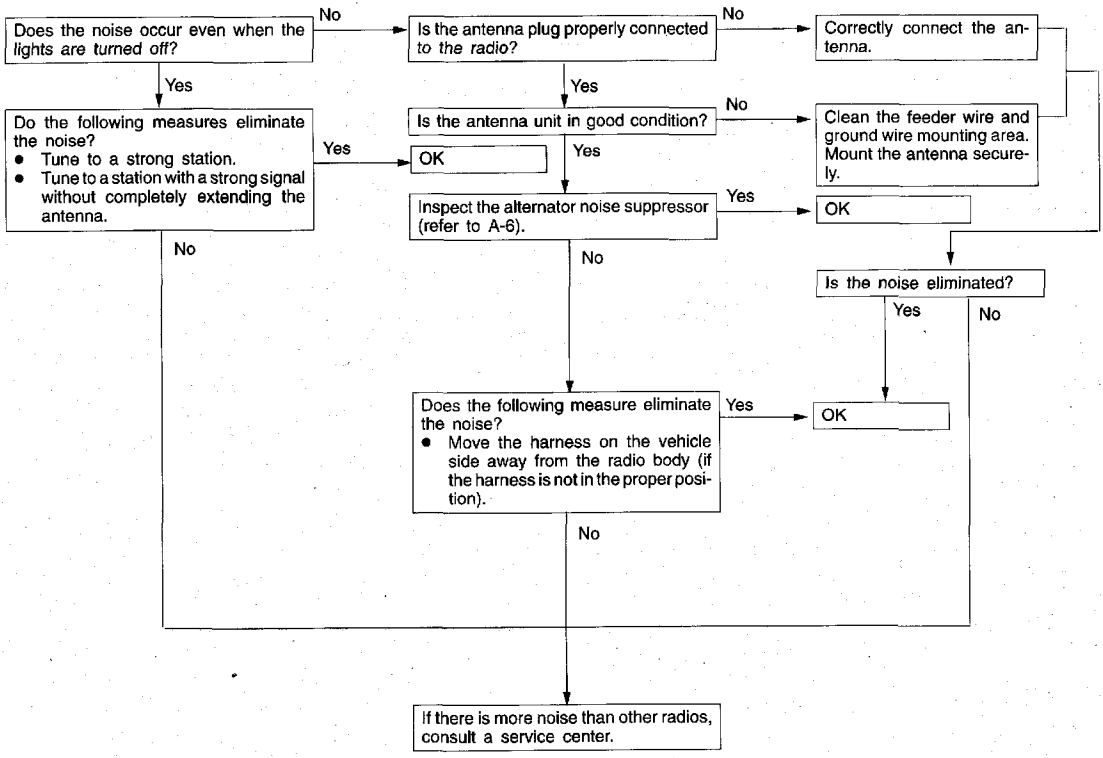
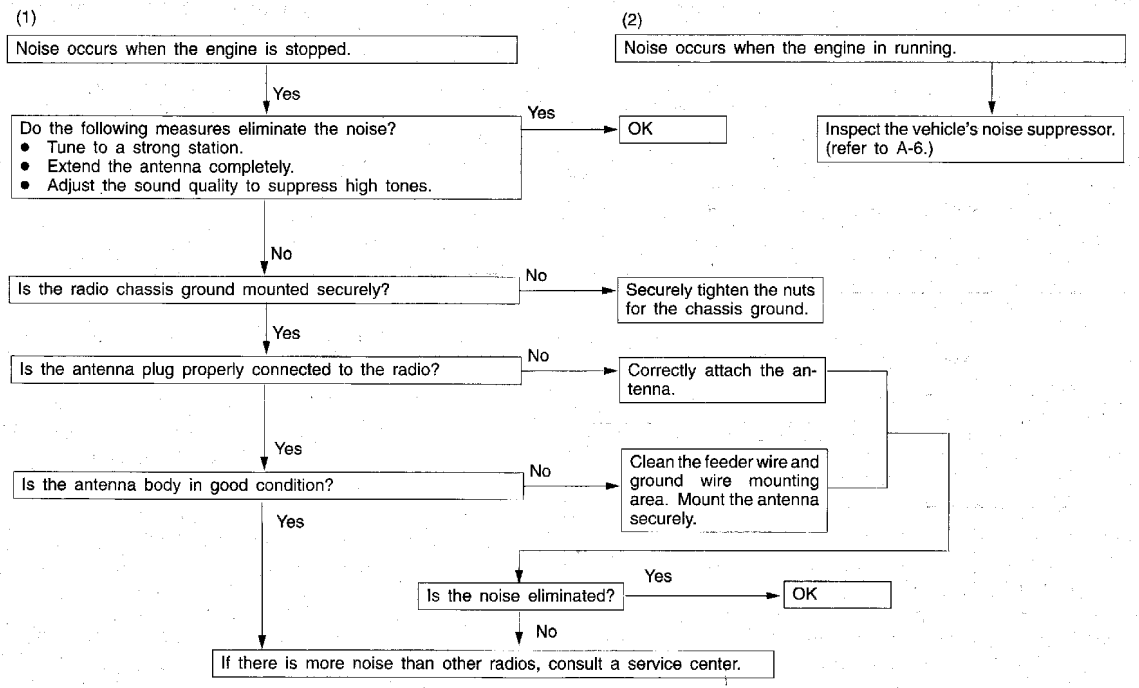
A-3 Mixed with noise, only at night (AM).

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

1. 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.
2. Factors due to vehicle noise: Alternator noise may be a cause.

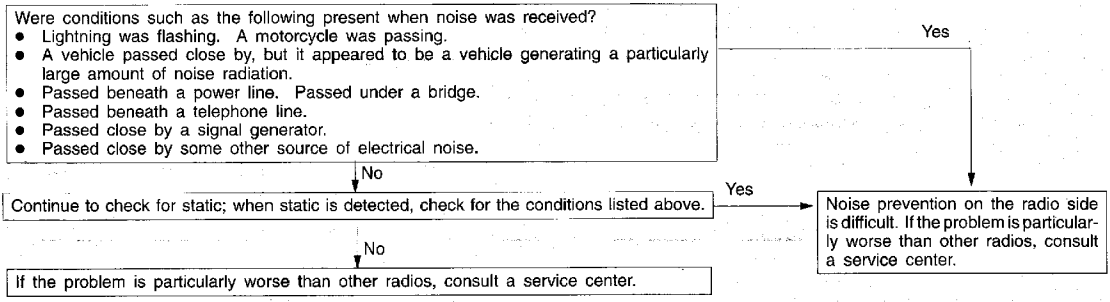


A-4 Broadcasts can be heard but both AM and FM have a lot of noise.



A-5 There is more noise either on AM or on FM.

1. There is much noise only on AM
Due to differences in AM and FM systems, AM is more susceptible to noise interference.



2. There is much noise only on FM

a) Due to differences in FM and AM systems, FM is not as susceptible as AM to interference from engines, power lines, lightning, etc. On the other hand, there are cases due to the characteristics of FM waves of noise or distortion generated by typical noise interference (first fading and multipath). (Refer to A-2) <Noise (hissing) occurs in weak signal areas such as mountainous regions, but this is not due to a problem with the radio.>

b) Ordinary vehicles are more susceptible to these types of interference than vehicles equipped with an FM diversity antenna system. If the problem vehicle is identical to a vehicle (radio) of the same type, the variation may be due to different antenna systems.

A-6 There is noise when starting the engine.

Noise type Sounds are in parentheses ( ).	Conditions	Cause	Response
AM, FM: Ignition noise (Popping Snapping Cracking Buzzing)	• Increasing the engine speed causing the popping sound to speed up, and volume decreases. • Disappears when the ignition switch is turned to ACC.	• Mainly due to the spark plugs. • Due to the engine noise.	• Noise filter • Noise condense • Ground cable
AM, FM: Alternator noise (AM, FM) (Swishing)	• Noise becomes higher as engine speed increase, and in many cases is not present at idle speed.	• Due to ripples* contained in the voltage produced by the alternator. • The amount of fluctuation in voltage during full wave rectification of the three phase A.C. current of the alternator is called a ripple.	• Noise condenser
AM, FM: wiper motor noise (Low-pitched buzzing Electrical buzzing)	• Appears with wiper operation and increases with wiper speed. Disappears when the wipers are stopped.	• Due to the wiper brushes.	• Noise filter
Other electrical components	–	Noise may appear as electrical components become older.	Repair or replace
Static electricity (Crackling Crinkling)	• 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.
	• 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.	Ground parts by bonding. Cases where the problem is not eliminated by a single response to one area are common, due to several body parts being imperfectly grounded.

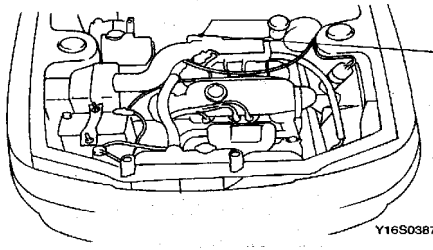
Caution

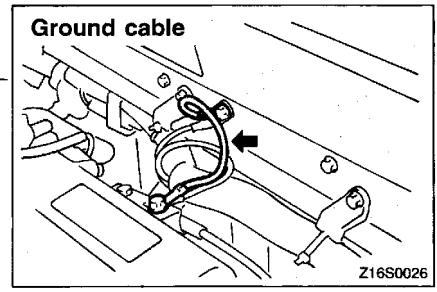
1. **Connecting a high tension cable to the noise filter may destroy the noise filter and should never be done.**
2. **Check that there is no external noise. Since failure due this may result in misdiagnosis due to inability to identify the noise source, this operation must be performed.**
3. **Noise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

NOTE

1. Condenser
   The condenser 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 ground. This suppresses noise by grounding 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.

NOISE SUPPRESSOR MOUNTING LOCATION





A–7 Some noise appears when there is vibration or shocks during traveling.

Are connectors properly connected?
- No → Ensure proper connection
- Yes ↓

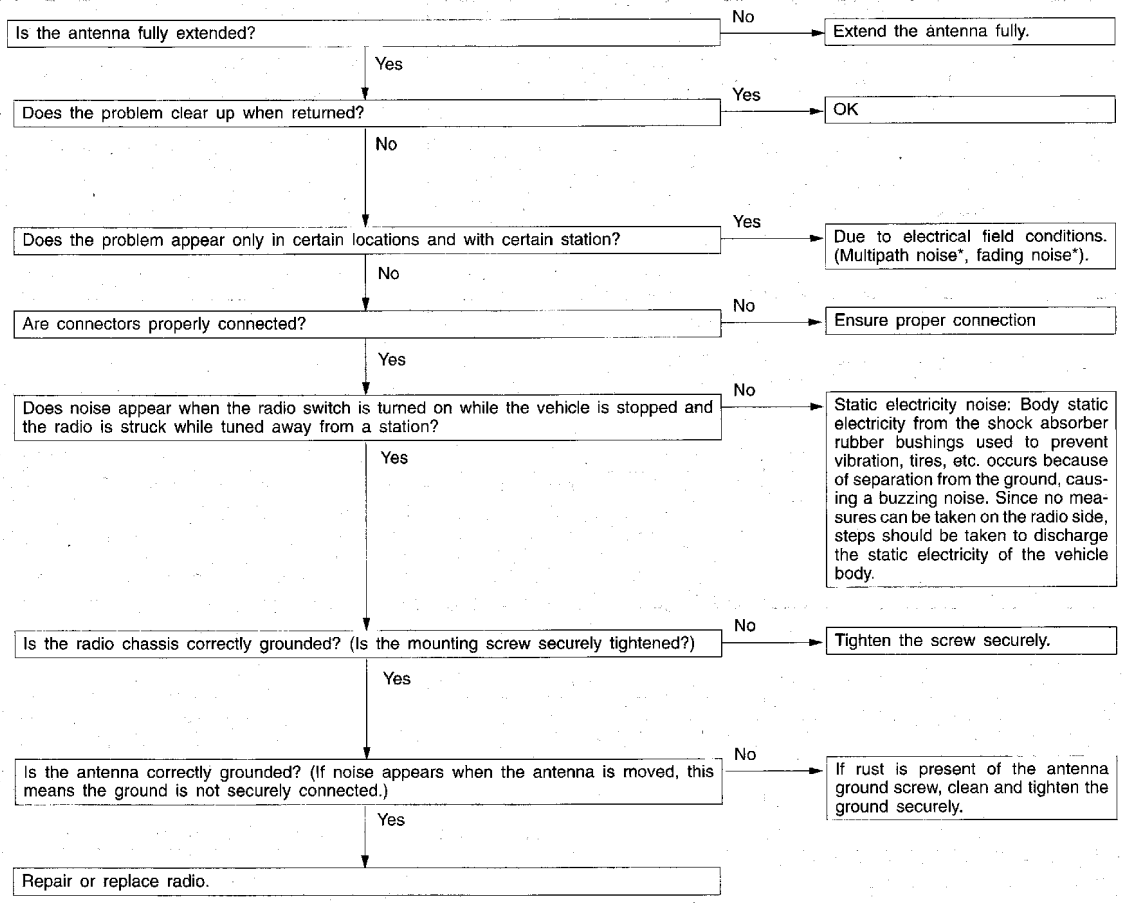
Does noise appear when the radio switch is turned on while the vehicle is stopped and the radio is struck while tuned away from a station?
- No → Static electricity noise: Body static electricity from the shock absorber rubber bushings used to prevent vibration, tires, etc. occurs because of separation from the ground, causing a buzzing noise. Since no measures can be taken on the radio side, steps should be taken to discharge the static electricity of the vehicle body.
- Yes ↓

Is the radio correctly grounded? (Is the mounting screw securely tightened?)
- No → Tighten the screw securely.
- Yes ↓

Is the antenna correctly grounded? (If noise appears when the antenna is moved, this means the ground is not securely connected.)
- No → If rust is present of the antenna ground screw, clean and tighten the ground securely.
- Yes ↓

Repair or replace radio.

A-8 Noise sometimes appears on FM during traveling.



* About multipath noise and fading noise
Because the frequency of FM waves is extremely high, it is highly susceptible to effects from geological formations and buildings. These effects disrupt the broadcast signal and obstruct reception in several ways.

- Multipath noise
  This describes the echo that occurs when the broadcast signal is reflected by a large obstruction and enters the receiver with a slight time delay relative to the direct signal. (repetitious buzzing)
- Fading noise
  This is a buzzing noise that occurs when the broadcast beam is disrupted by obstructing objects and the signal strength fluctuates intricately within a narrow range.

A-9 Noise.

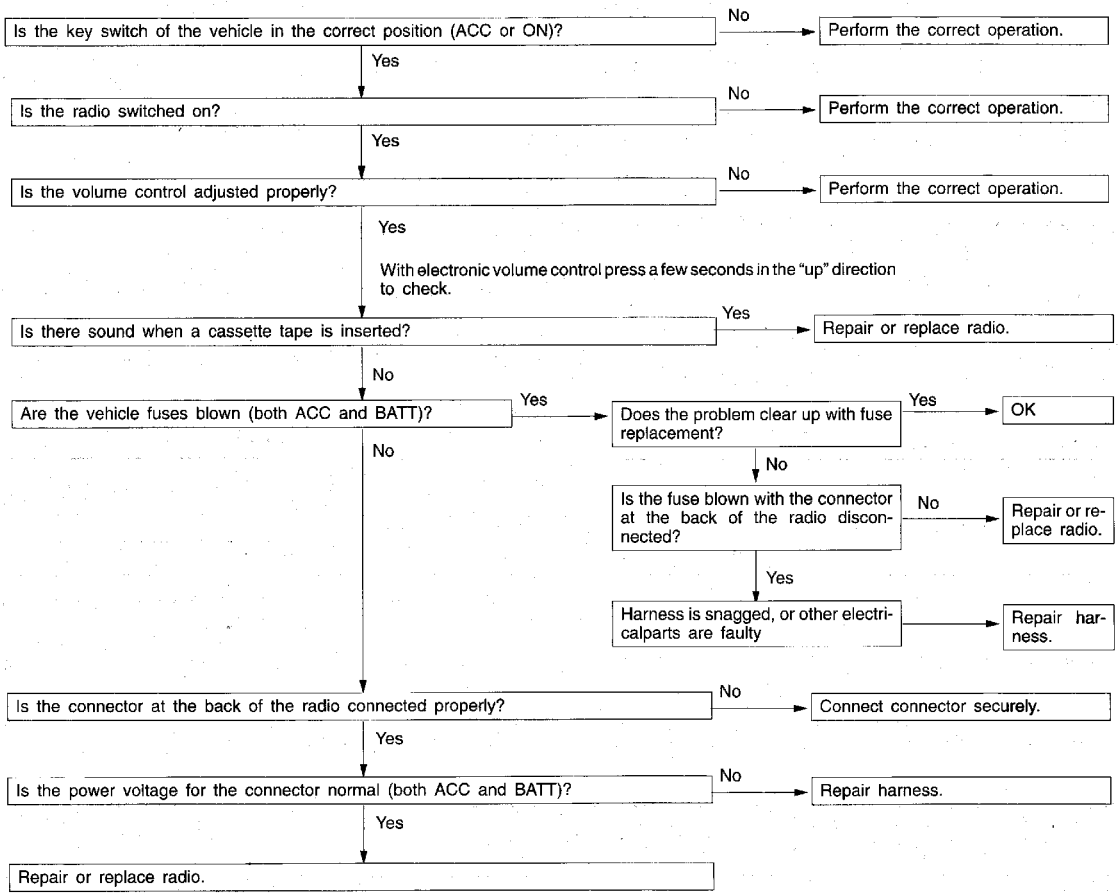
Noise is often created by the following factors, and often the radio is OK when it is checked individually.

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

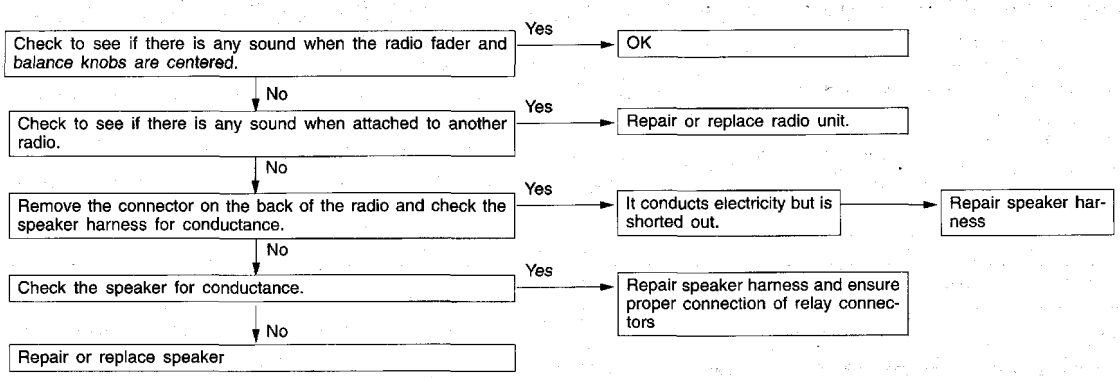
For this reason, if there are still problems with noise even after the measures described in steps A-1 to A-8 have been taken, get information on the factors listed at left as well as determining whether the problem occurs with AM or FM, the station names, frequencies, etc., and contact a service center.

B. RADIO

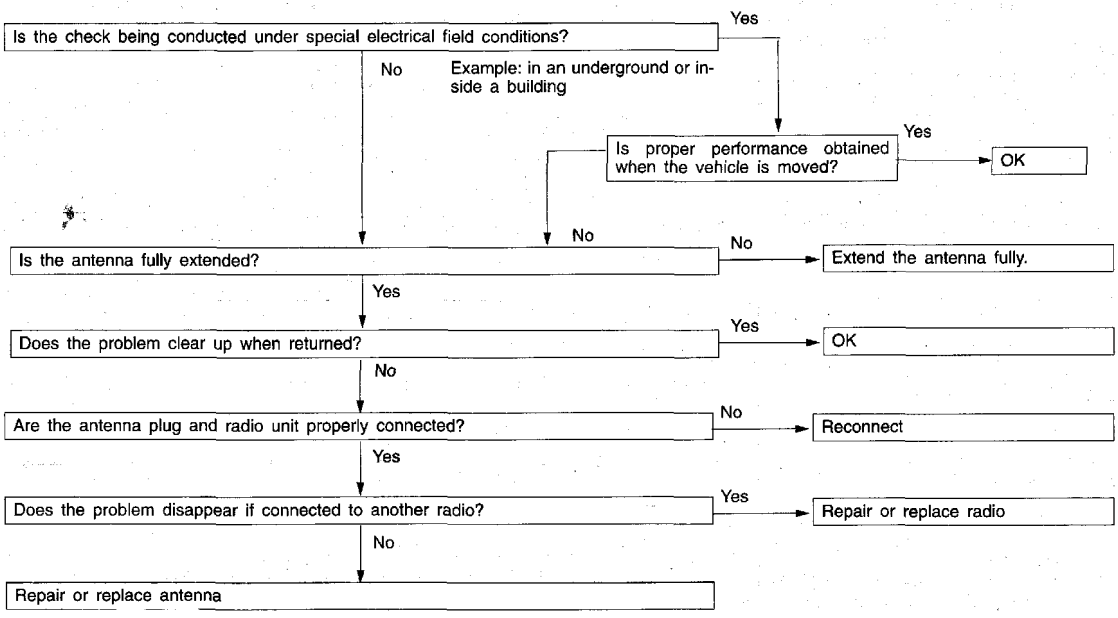
B–1 No sound.



B–2 No sound from one speaker.



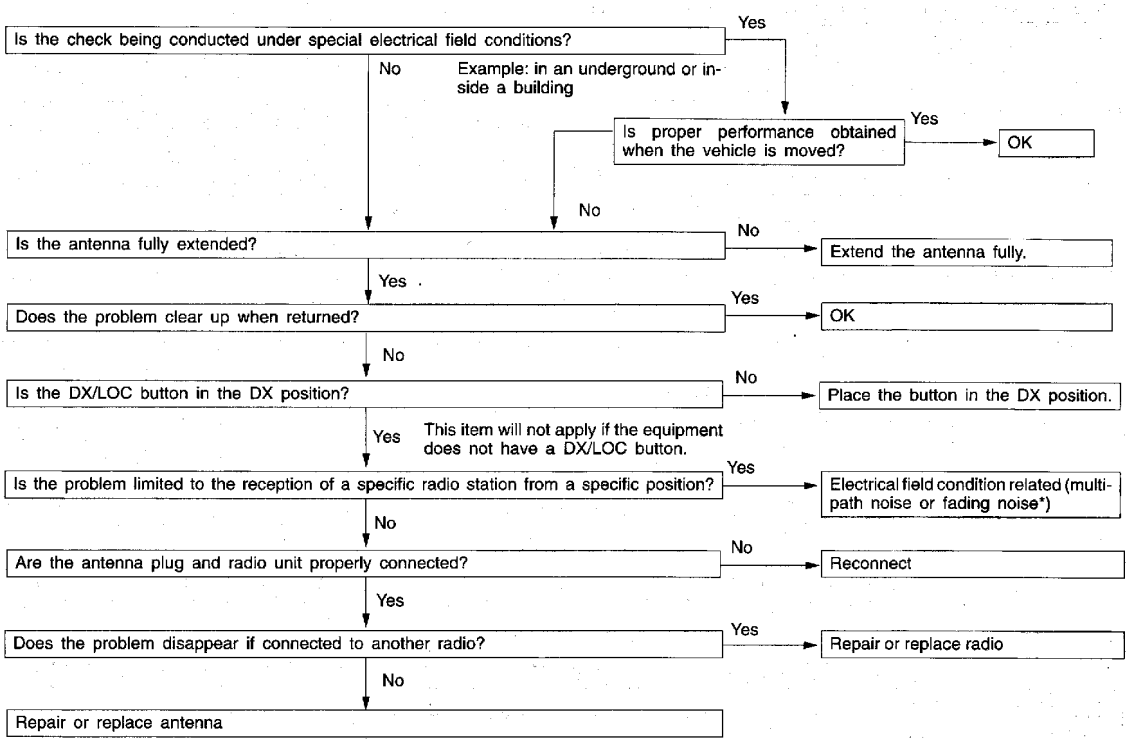
B–3 *There is noise but no reception for both AM and FM.*



B–4 No sound from AM, or no sound from FM.

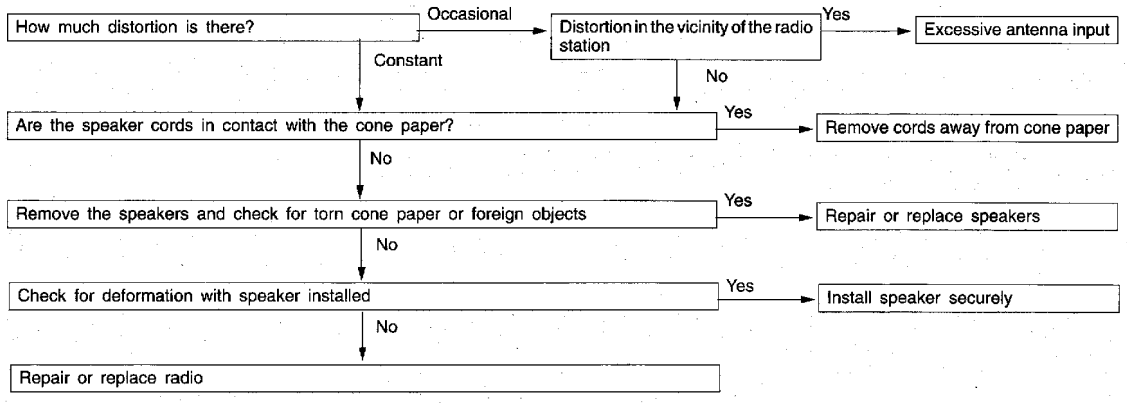
Refer to B-3.

B-5 Insufficient sensitivity

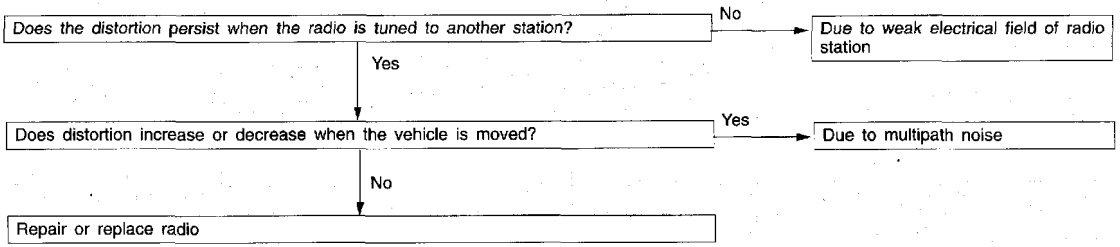


* For multipath noise and fading noise problems, refer to page 54-76.

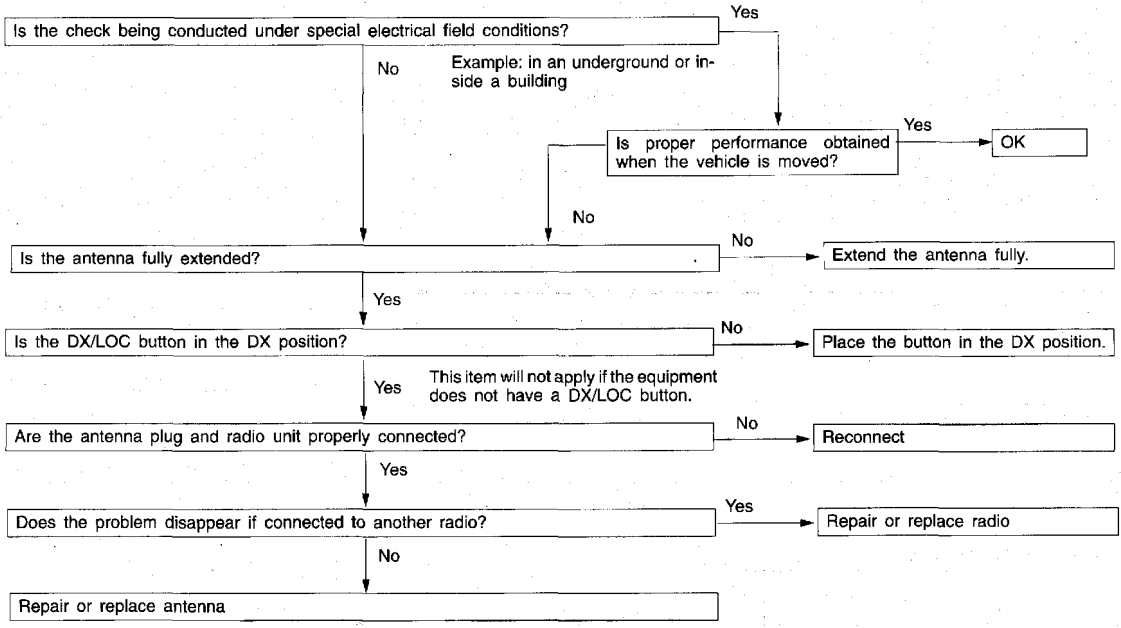
B-6 Distortion on AM or on both AM and FM



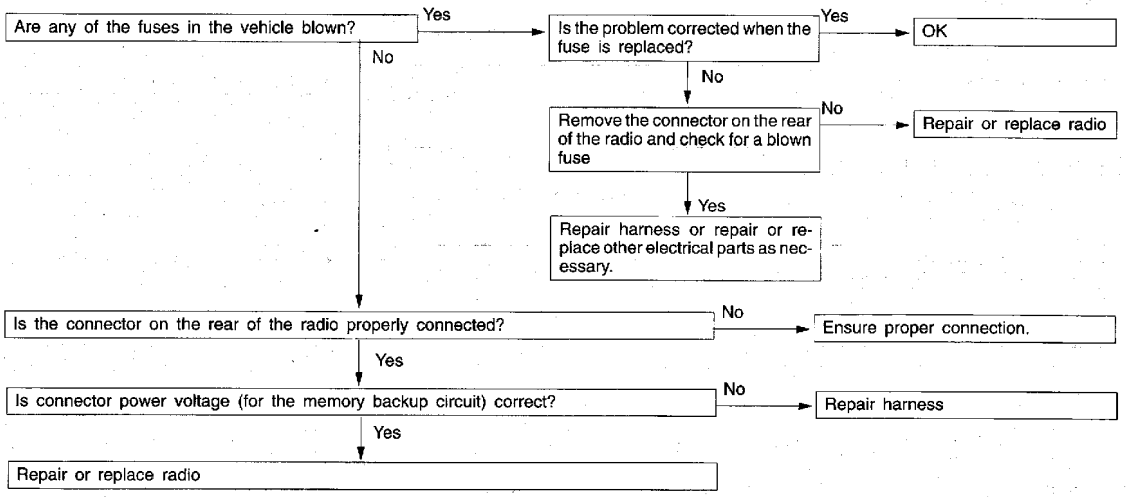
B–7 Distortion on FM only



B–8 Too few automatic select stations.

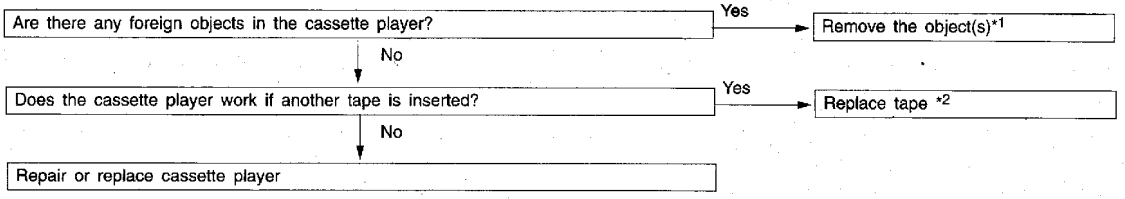


B-9 Insufficient memory (preset stations are erased)



C. CASSETTE PLAYER

C-1 Cassette tape will not insert.



NOTE

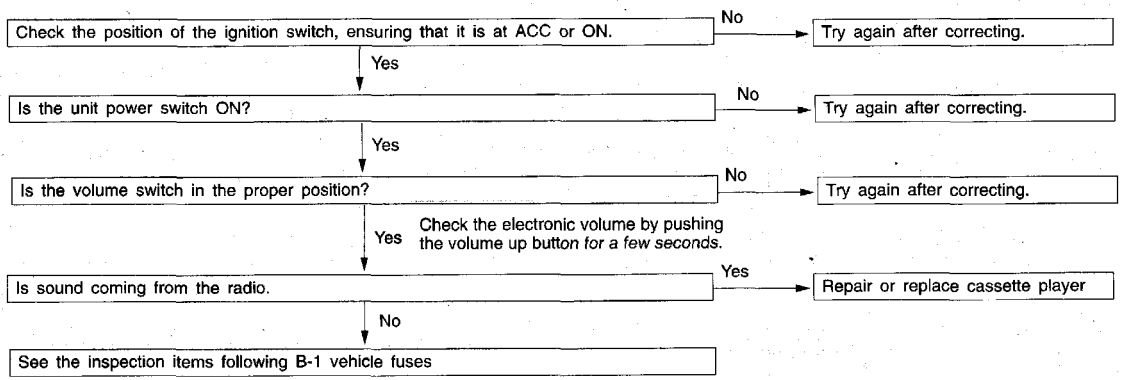
*1

Attempting to force a foreign object (e.g., a coin or clip, etc.) out of the cassette player may damage the mechanism. The player should be taken to a service dealer for repair.

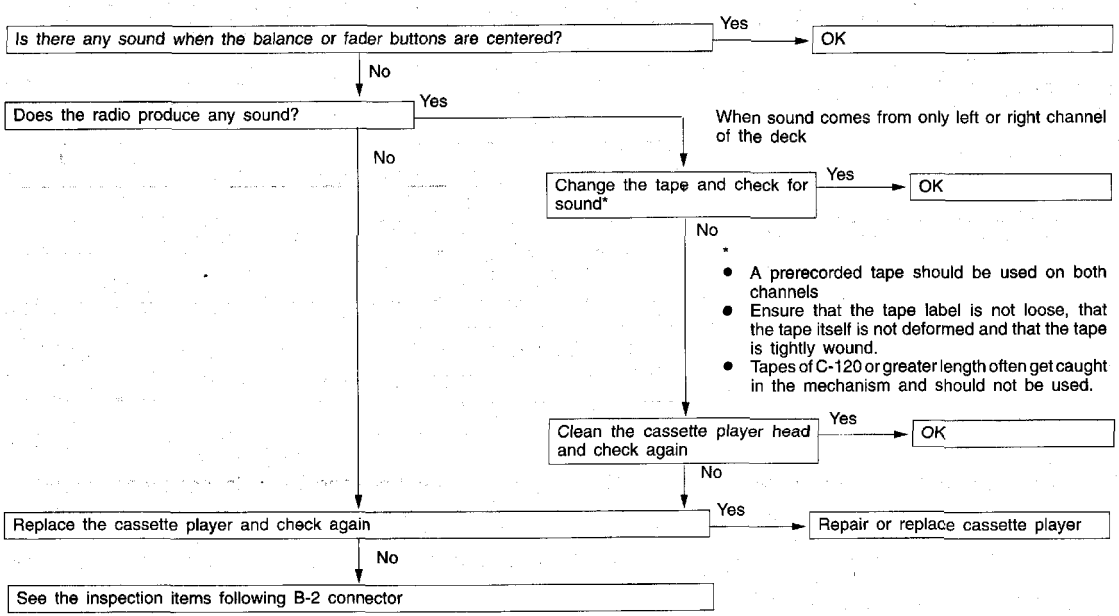
*2

Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound. Also, tapes of C-120 or greater length often get caught in the mechanism and should not be used.

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.

Does the player play properly when another tape* is inserted?
- Yes → OK
- No

*
- Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound.
- Tapes of C-120 or greater length often get caught in the mechanism and should not be used.

Does the player play properly when the tape player head is cleaned?
- Yes → OK
- No

Is proper operation obtained when the cassette player is replaced?
- Yes → Repair or replace cassette player
- No

Repair or replace speaker

C–5 Cassette tape will not eject

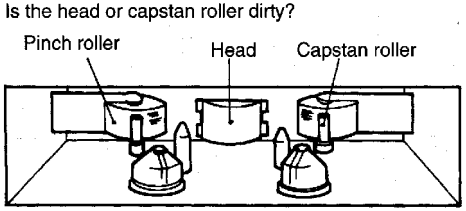
The problems covered here are all the result of the use of a bad tape (deformed or not properly tightened) or of a malfunction of the cassette player itself. Malfunctions involving the tape becoming caught in the mechanism and ruining the case are also possible, and attempting to force the tape out of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

Does the player play OK if the tape is changed?
- Yes → OK
- No

Are there any foreign objects inside the cassette player?
- Yes → Remove foreign object(s)
- No

Is the head or capstan roller dirty?



- Yes → Clean
- No

Cassette player

C–7 Automatic search does not work (only for models with the automatic search function).

Does the MSS (automatic search) button depress properly?
- No → Button improperly operated
- Yes ↓

Does the player play OK if the tape* is changed?
- Yes → Tape used is bad
- No ↓

*
- When the time between songs on a tape is less than three seconds, or when there is a three second period in the middle of a song in which the volume level is extremely low, the automatic search function may not work properly.
- Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound. Also, tapes of C-120 or greater length often get caught in the mechanism and should not be used.

Malfunction of the cassette player unit

C-8 Faulty auto reverse.

Does the player play OK if the tape* is changed?
- Yes → OK
- No ↓

*
- Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound.
- Tapes of C-120 or greater length often get caught in the mechanism and should not be used.

Does the problem only occur while the vehicle is being driven?
- No → Repair or replace cassette player
- Yes ↓

Is the cassette player properly installed to the vehicle?
- No → Ensure cassette player installation
- Yes ↓

Repair or replace cassette player

C–9 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.

Does the player play OK if the tape*2 is changed?
- No → Tape used is bad
- No ↓

*2
Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound. Also, tapes of C-120 or greater length often get caught in the mechanism and should not be used.

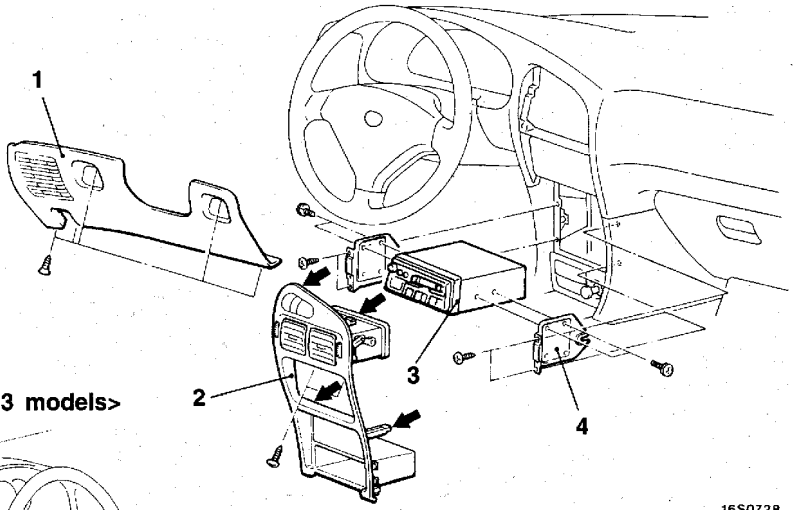
Cassette player unit is bad

RADIO AND TAPE PLAYER

REMOVAL AND INSTALLATION

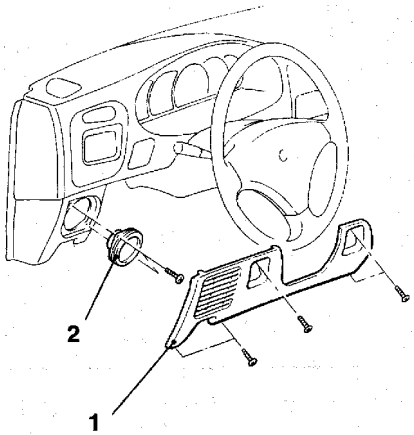
110003660

<Radio and tape player>

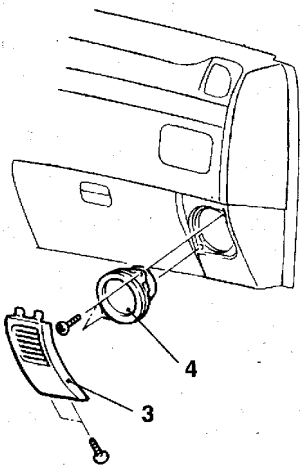


16S0728

<Front speaker, 1993 models>



16S0528



16S0290

00001567

Radio and tape player removal steps

1. Knee protector
2. Air outlet center panel assembly (Refer to P.54-38)
3. Radio and tape player
4. Bracket

Front speaker (driver's side) removal steps <1993 models>

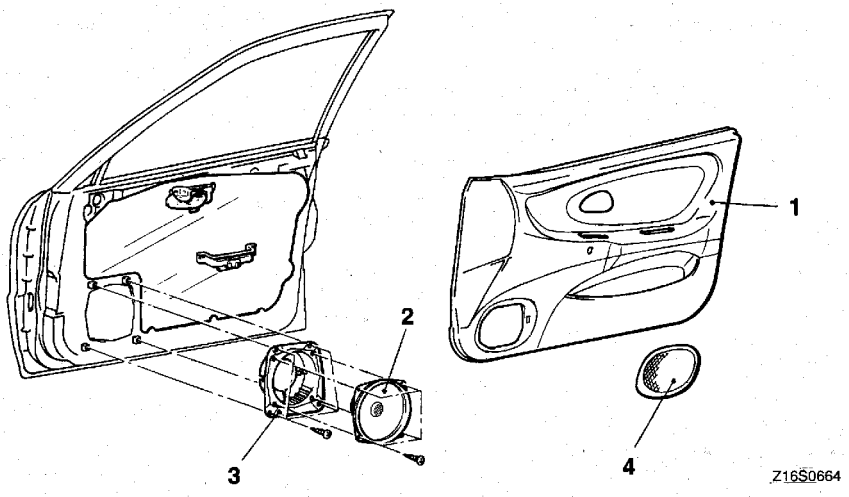
1. Knee protector
2. Front speaker

Front speaker (passenger's side) removal steps <1993 models>

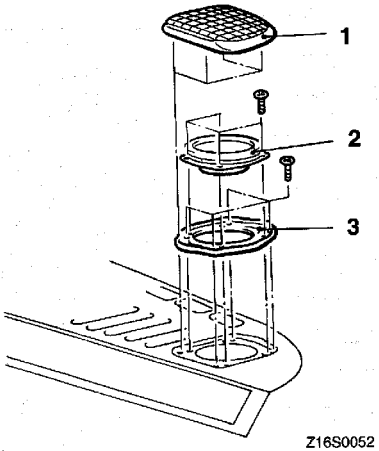
3. Corner panel
4. Front speaker

TSB Revision

<Front speaker, From 1994 models>



<Rear speaker>



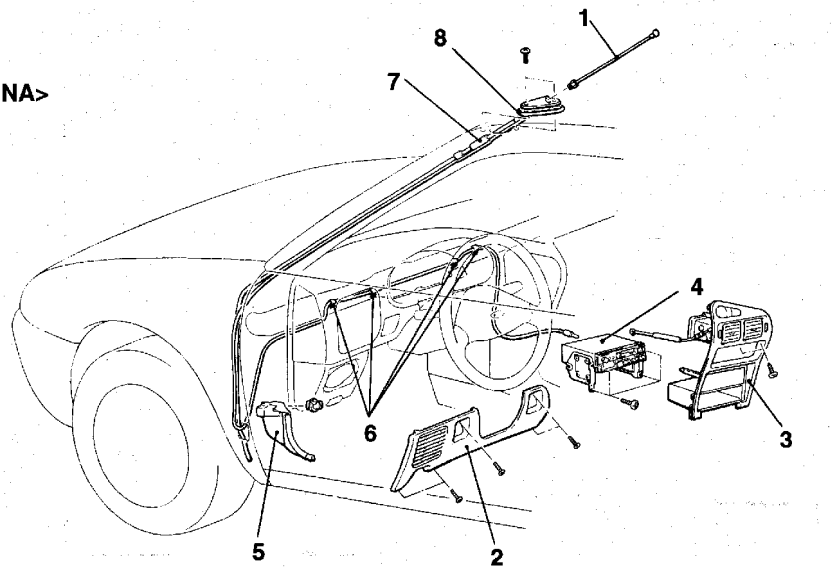
Front speaker removal steps
<From 1994 Models>

▶A◀ 1. Door trim (Refer to GROUP 42 – Door Trim and Waterproof Film.)
2. Front speaker
3. Speaker cover
4. Front speaker garnish <2-door models>

Rear speaker removal steps

1. Rear speaker garnish
▶A◀ 2. Rear speaker
3. Speaker bracket

<ANTENNA>

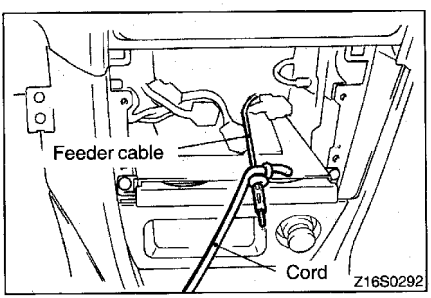


A16S0736

Removal steps

1. Pole
2. Knee protector
3. Air outlet center panel assembly (Refer to P.54-38.)
4. Radio and tape player
5. Cowl side trim (driver's side)
6. Clip
7. Antenna base
8. Base

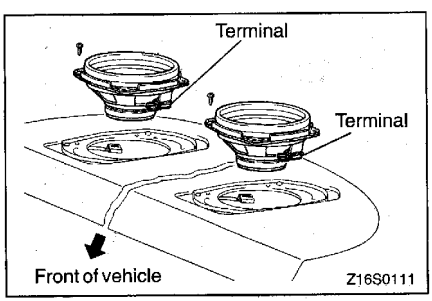
◀A▶



REMOVAL SERVICE POINT

◀A▶ ANTENNA ASSEMBLY REMOVAL

To make wiring easier when installing, tie a cord to the feeder cable terminal, and then pull out the feeder cable to the antenna side.



INSTALLATION SERVICE POINT

▶A◀ SPEAKER INSTALLATION

(1) Install the front speaker on the driver's side with the terminal directed forward and that on the passenger's side with the terminal rearward (Vehicles from 1994 model).
(2) Install both right rear and left rear speakers with their terminals directed towards driver's side.

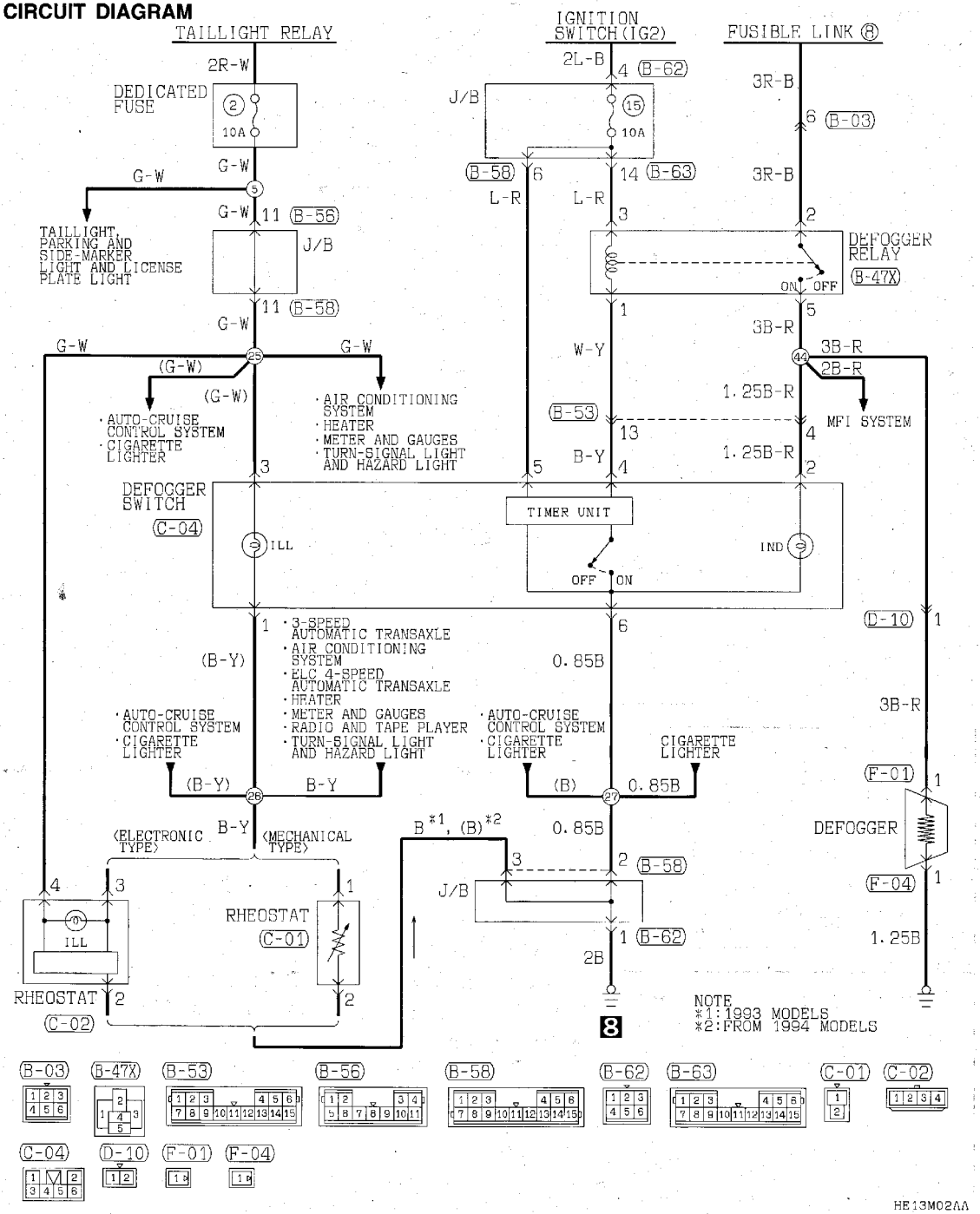
TSB Revision

REAR WINDOW DEFOGGER

TROUBLESHOOTING

110003661

CIRCUIT DIAGRAM



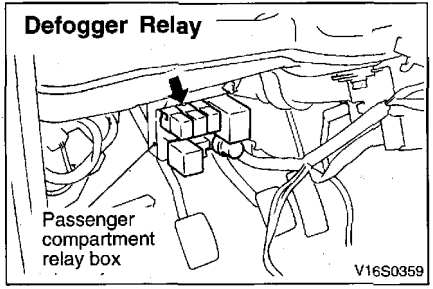
HE13M02AA

TSB Revision

OPERATION

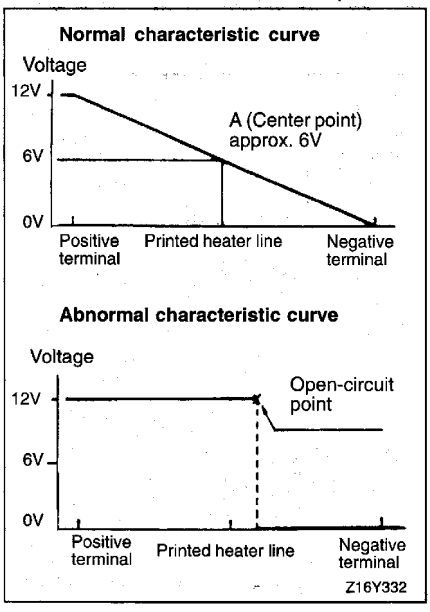
- When the defogger switch is turned ON with the ignition switch in ON position, the defogger relay is energized causing defogger to operate.
- At the same time, the defogger indicator light lights up indicating that the defogger is in operation.

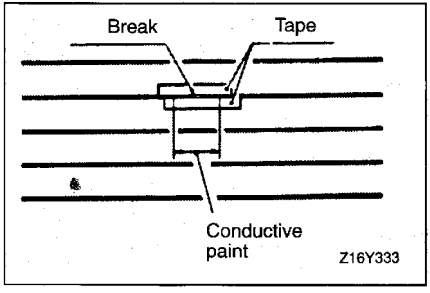
COMPONENT LOCATION



TROUBLESHOOTING HINTS

1. Defogger is inoperative.
   1) Indicator does not come on, either.
      - Check multi-purpose fuse No. 15.
      - Check defogger relay.
   2) Indicator comes on.
      - Check defogger.





SERVICE ADJUSTMENT PROCEDURES

PRINTED-HEATER LINE CHECK 110000765

(1) Run engine at 2,000 r/min. Check heater element with battery at full.
(2) Turn ON rear window defogger switch. Measure heater element voltage with circuit tester at rear window glass center A. Condition good if indicating about 6 V.
(3) If 12 V is indicated at A, there is a break in the negative terminals from A. Move test bar slowly to negative terminal to detect where voltage changes suddenly (0 V).
(4) If 0 V is indicated at A, there is a break in the positive terminals from A. Detect where the voltage changes suddenly (12 V) with the same method described.

PRINTED-HEATER LINE REPAIR 110000766

REQUIRED MATERIALS

- Thinner
- Lead-free gasoline
- Tape
- Fine brush
- Conductive paint

(1) Clean disconnected area with lead-free gasoline. Tape along both sides of heater element.
(2) Mix conductive paint thoroughly. Thin the required amount of paint in a separate container with a small amount of thinner and paint break three times at 15 minutes intervals.
(3) Remove tape and leave for a while before use (circuit complete).
(4) When completely dry (after 24 hours) finish exterior with a knife.

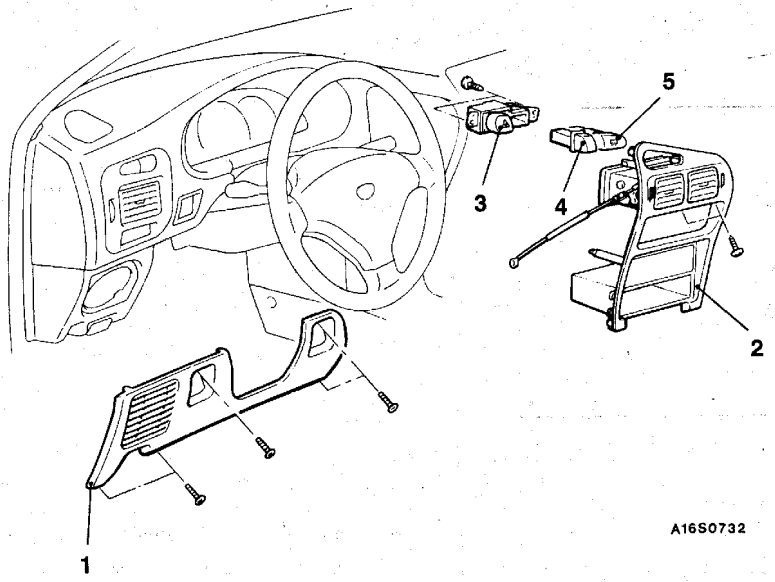
Caution
Clean glass with a soft cloth (dry or damp) along defogger heater element.

REAR WINDOW DEFOGGER

REMOVAL AND INSTALLATION

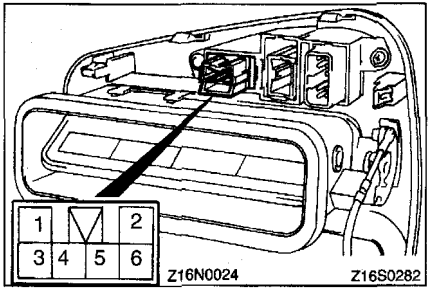
110003662

<Rear Window Defogger Switch>



Removal steps

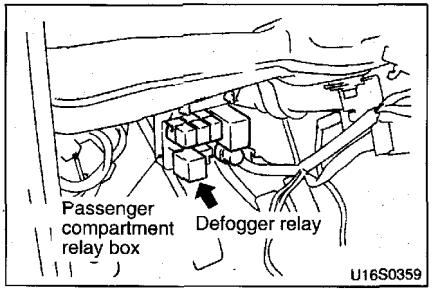
1. Knee protector
2. Air outlet center panel assembly (Refer to P.54-38.)
3. Switch holder
4. Switch plug
5. Defogger switch



INSPECTION

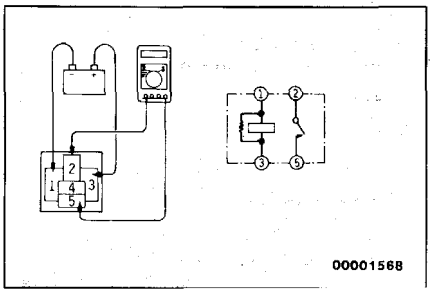
Defogger switch

Switch position	Terminal No.				
	2	4	6	1	3
OFF					
ON		Indicator light		Illumination light	



Defogger relay

(1) Remove the defogger relay from the passenger compartment relay box.



(2) Apply voltage to terminal 3, and check the continuity between the terminals when terminal 1 is grounded.

Power is supplied	2–5 terminals	Continuity
Power is not supplied	2–5 terminals	No continuity
	1–3 terminals	Continuity