

1. Engine Electrical

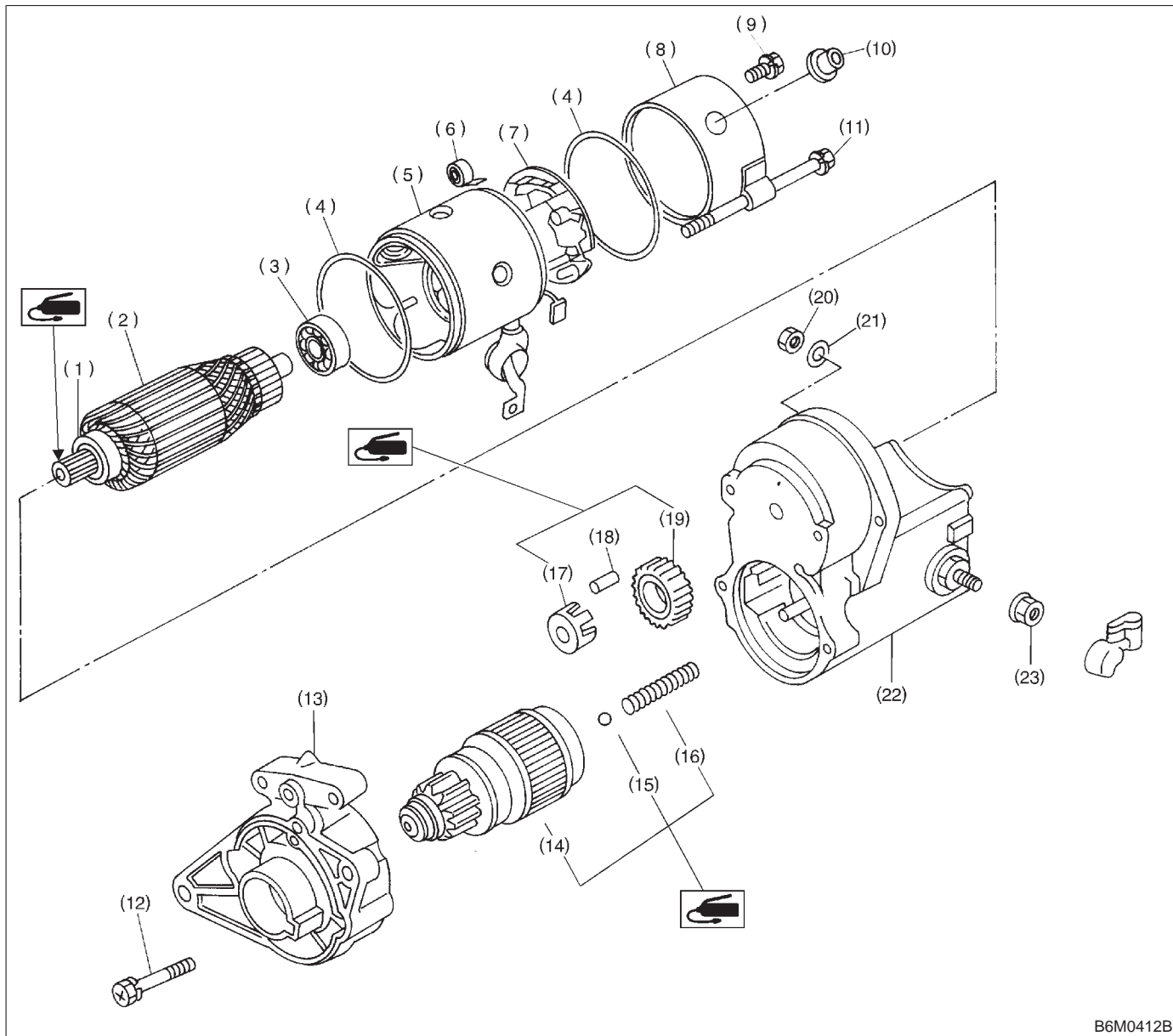
A: SPECIFICATIONS

Item		Designation		
		MT	AT	
Starter	Type	Reduction type		
	Model	TN128000-8311	TN128000-8321	
	Manufacturer	NIPPONDENSO TENNESSEE		
	Voltage and output	12 V — 1.0 kW	12 V — 1.4 kW	
	Direction of rotation	Counterclockwise (when observed from pinion)		
	Number of pinion teeth	8	9	
	No-load characteristics	Voltage	11 V	
		Current	90 A or less	
		Rotating speed	3,000 rpm or more	2,900 rpm or more
	Load characteristics	Voltage	8 V	
		Current	280 A or less	370 A or less
		Torque	9.8 N·m (1.0 kg-m, 7.2 ft-lb)	13.7 N·m (1.4 kg-m, 10.1 ft-lb)
		Rotating speed	900 rpm or more	880 rpm or more
	Lock characteristics	Voltage	5 V	
Current		800 A or less	1,050 A or less	
Torque		27.5 N·m (2.8 kg-m, 20.3 ft-lb) or more		
Generator	Type	Rotating-field three-phase type, Voltage regulator built-in type		
	Model	A2TB2891ZC	LR190-742	
	Manufacturer	MITUBISHI ELECTRIC CORPORATION	HITACHI AUTOMOTIVE PRODUCTS	
	Voltage and output	12 V — 90 A	12 V — 90 A	
	Polarity on ground side	Negative		
	Rotating direction	Clockwise (when observed from pulley side.)		
	Armature connection	3-phase Y-type		
	Output current	1,500 rpm — 36 A or more	1,500 rpm — 39 A or more	
		2,500 rpm — 65 A or more	2,500 rpm — 66 A or more	
5,000 rpm — 86 A or more		5,000 rpm — 85 A or more		
Regulated voltage	14.5 ^{+0.3} / _{-0.4} V [20°C (68°F)]			
Ignition coil and ignitor assembly	Model	FH0137-01R		
	Manufacturer	DEMCO		
	Primary coil resistance	0.73 Ω±10%		
	Secondary coil resistance	12.8 kΩ±15%		
	Insulation resistance between primary terminal and case	More than 10 MΩ		
Spark plug	Type and manufacturer	RC10YC4 CHAMPION		
		Alternate	RC8YC4 CHAMPION	
			BKR6E-11 NGK	
	K20PR-U11 NIPPONDENSO			
Thread size	mm	14, P = 1.25		
Spark gap	mm (in)	1.0 — 1.1 (0.039 — 0.043)		

1. Starter

A: MT VEHICLES

1. MODEL: TN128000-8311



B6M0412B

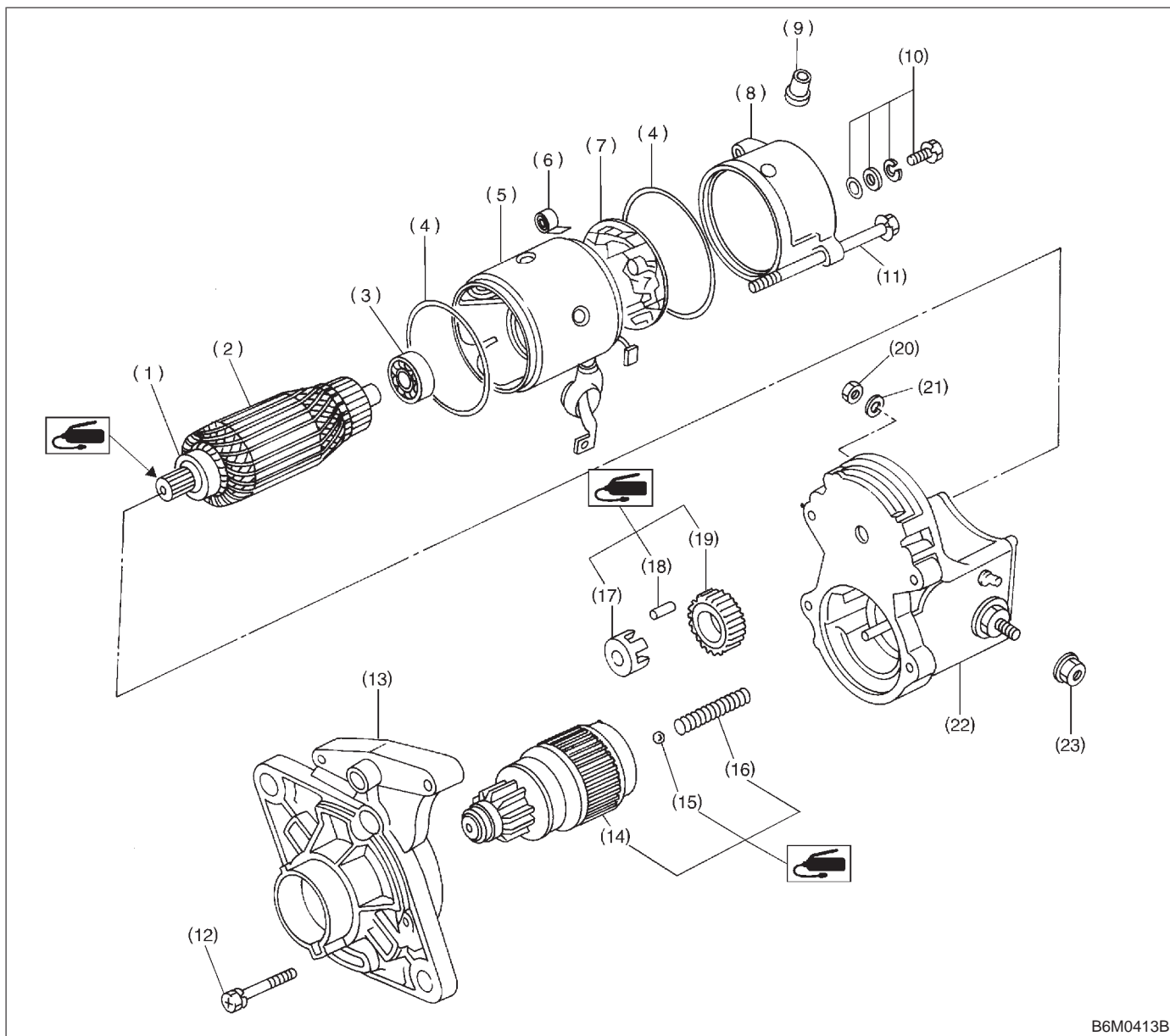
- (1) Front ball bearing
- (2) Armature
- (3) Rear ball bearing
- (4) O-ring
- (5) Yoke
- (6) Brush spring
- (7) Brush holder
- (8) End frame

- (9) Screw & washer
- (10) Cover
- (11) Through bolt
- (12) Screw & washer
- (13) Starter housing
- (14) Overrunning clutch
- (15) Steel ball
- (16) Spring

- (17) Retainer
- (18) Roller
- (19) Idle gear
- (20) Nut
- (21) Spring washer
- (22) Magnet switch
- (23) Nut

B: AT VEHICLES

1. MODEL: TN128000-8321



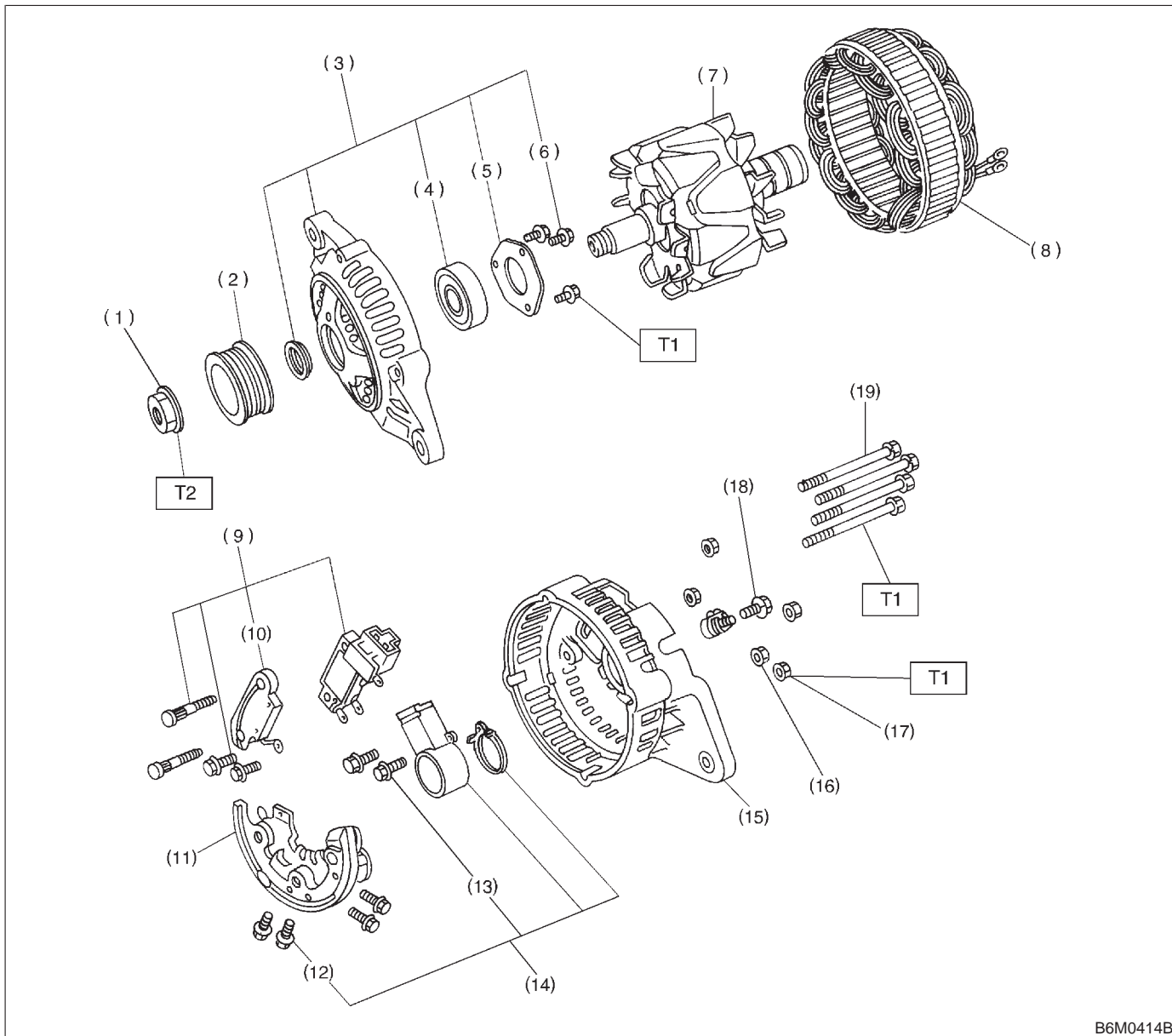
B6M0413B

- (1) Front ball bearing
- (2) Armature
- (3) Rear ball bearing
- (4) O-ring
- (5) Yoke
- (6) Brush spring
- (7) Brush holder
- (8) End frame

- (9) Cover
- (10) Screw & washer
- (11) Through bolt
- (12) Screw & washer
- (13) Starter housing
- (14) Overrunning clutch
- (15) Steel ball
- (16) Spring

- (17) Retainer
- (18) Roller
- (19) Idle gear
- (20) Nut
- (21) Spring washer
- (22) Magnet switch
- (23) Nut

2. Generator



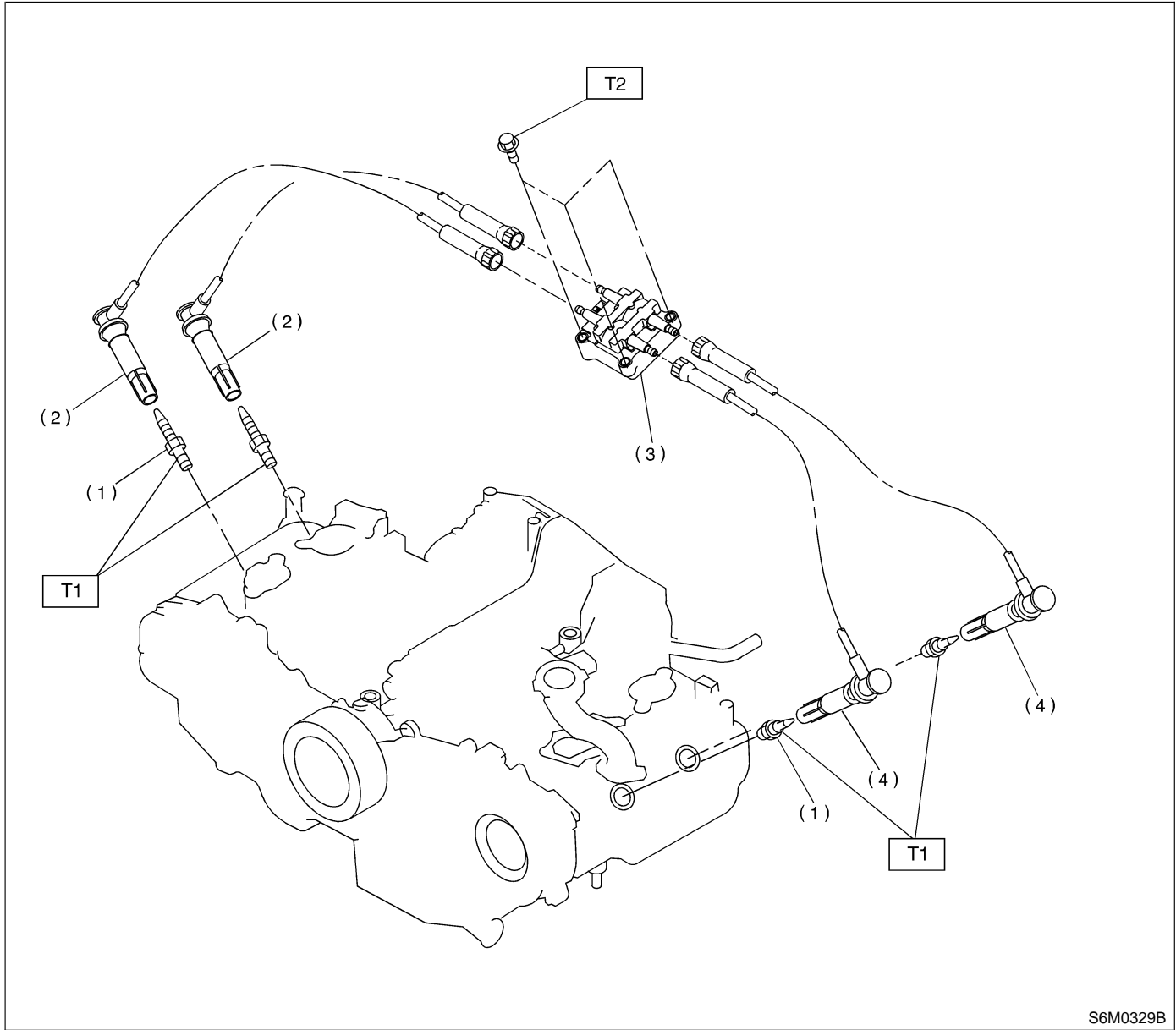
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- (1) Pulley nut
- (2) Pulley
- (3) Front cover ASSY
- (4) Ball bearing
- (5) Bearing retainer
- (6) Screw
- (7) Rotor
- (8) Stator coil
- (9) IC regulator ASSY
- (10) Condenser
- (11) Diode ASSY
- (12) Bolt
- (13) Bolt
- (14) Brush holder ASSY
- (15) Rear cover
- (16) BAT. terminal
- (17) Nut
- (18) Bolt

- (19) Through bolt

Tightening torque: N·m (kg·m, ft·lb)
T1: 3.1 — 4.4 (0.32 — 0.45, 2.3 — 3.3)
T2: 63.7 — 83.4 (6.5 — 8.5, 47.0 — 61.5)

3. Ignition System



- (1) Spark plug
- (2) Spark plug cord (#1, #3)
- (3) Ignition coil and ignitor ASSY

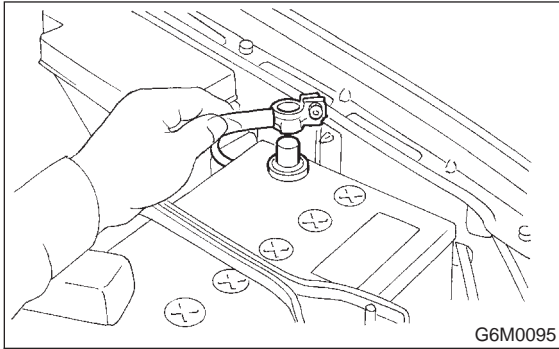
- (4) Spark plug cord (#2, #4)

Tightening torque: N-m (kg-m, ft-lb)
T1: 20.6±2.9 (2.10±0.30, 15.2±2.2)
T2: 6.4±0.5 (0.65±0.05, 4.7±0.4)

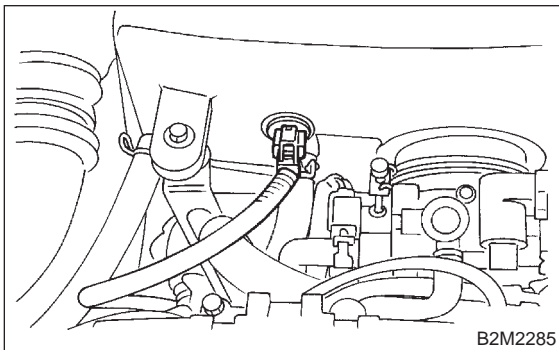
1. Starter

A: REMOVAL AND INSTALLATION

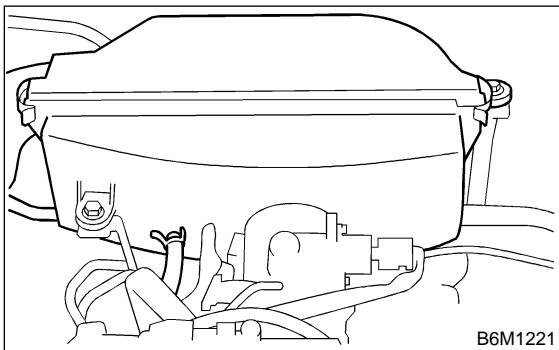
- 1) Disconnect battery ground cable.



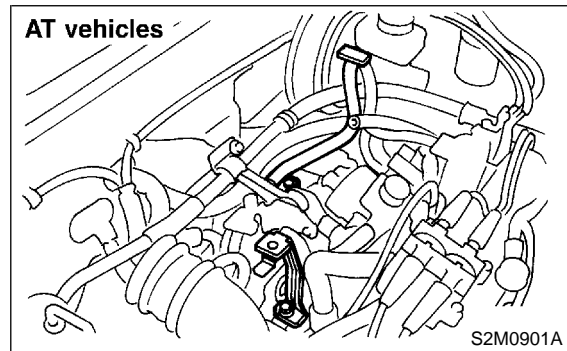
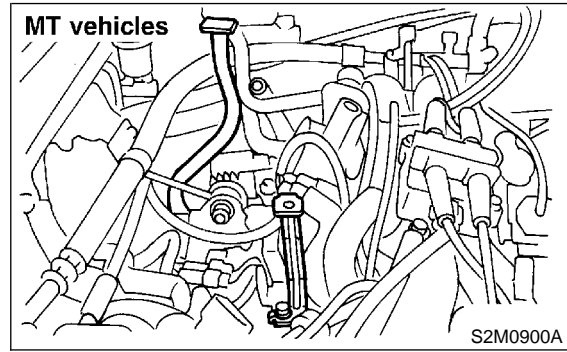
- 2) Disconnect connector from intake air temperature sensor. (MT vehicles)



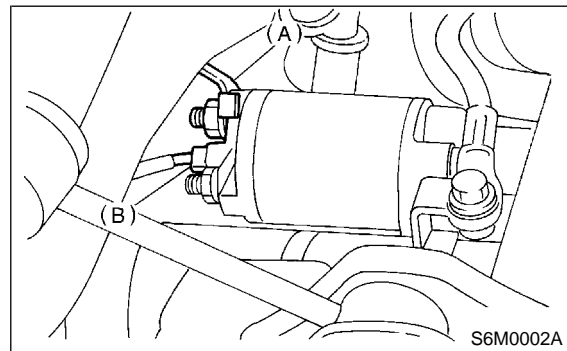
- 3) Remove air cleaner case.



- 4) Remove air cleaner case stay.

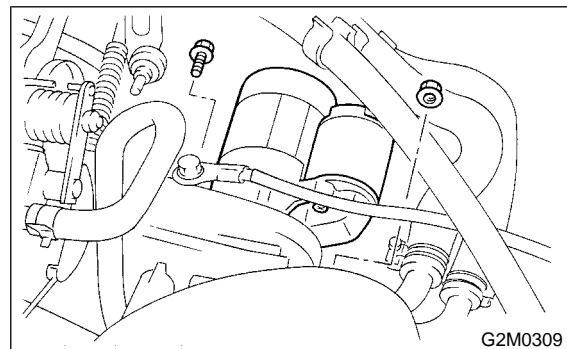


- 5) Disconnect connector and terminal from starter.



- (A) Terminal
(B) Connector

- 6) Remove starter from transmission.

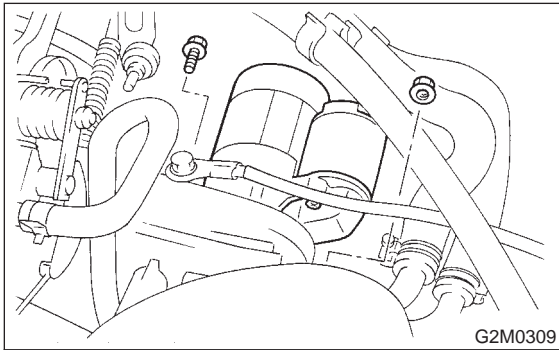


1. Starter

7) Installation is in the reverse order of removal.

Tightening torque:

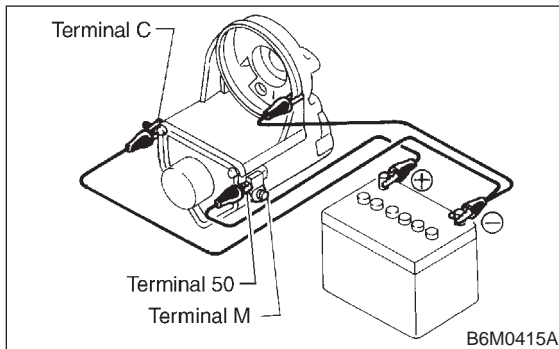
$50 \pm 4 \text{ N}\cdot\text{m}$ ($5.1 \pm 0.4 \text{ kg}\cdot\text{m}$, $37 \pm 2.9 \text{ ft}\cdot\text{lb}$)

**B: TEST****1. MAGNETIC SWITCH****CAUTION:**

- The following magnetic switch tests should be performed with specified voltage applied.
- Each test should be conducted within 3 to 5 seconds. Power to be furnished should be one-half the rated voltage.

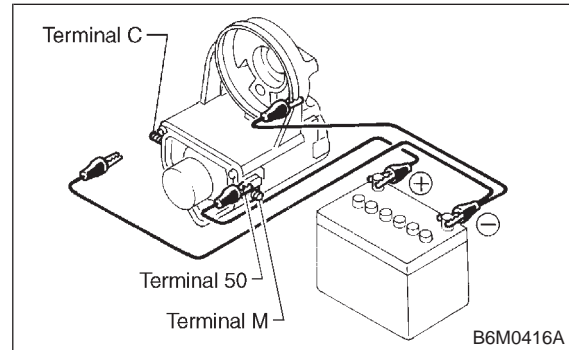
1) Pull-in test

Connect two battery negative leads onto magnetic switch body and terminal C respectively. Then connect battery positive lead onto terminal 50. Pinion should extend when lead connections are made.



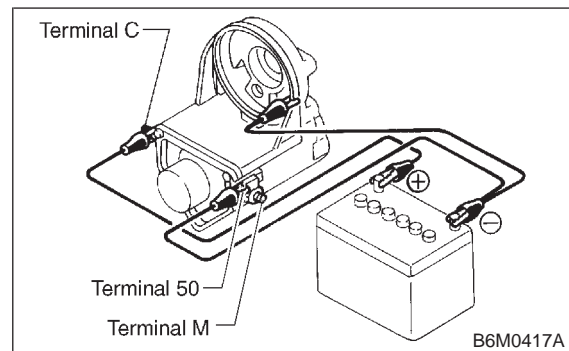
2) Holding-in test

Disconnect lead from terminal C with pinion extended. Pinion should be held in the extended position.



3) Return test

Connect two battery negative leads onto terminal 50 and onto switch body respectively. Then connect battery positive lead onto terminal C. Next, disconnect lead from terminal 50. Pinion should return immediately.

**2. PERFORMANCE TEST**

The starter is required to produce a large torque and high rotating speed, but these starter characteristics vary with the capacity of the battery. It is therefore important to use a battery with the specified capacity whenever testing the starter.

The starter should be checked for the following three items:

● No-load test

Measure the maximum rotating speed and current under a no-load state.

● Load test

Measure the magnitude of current needed to generate the specified torque and rotating speed.

● Stall test

Measure the torque and current when the armature is locked.

1) No-load test

Run single starter under no-load state, and measure its rotating speed, voltage, and current, using the specified battery. Measured values must meet the following standards:

No-load test (Standard):

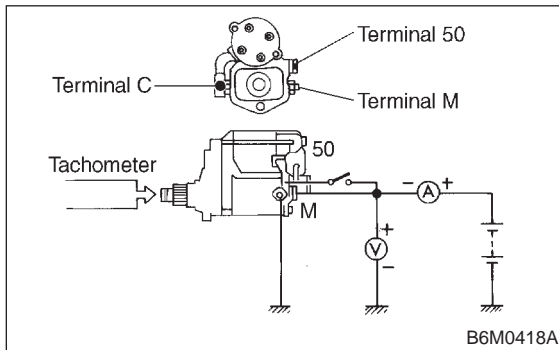
Voltage/Current

11 V/90 A, or more

Rotating speed

TN128000-8311: 3,000 rpm, or more

TN128000-8321: 3,350 rpm, or more



2) Load test (For reference)

Perform this test to check maximum output of starter. Use test bench which is able to apply load (brake) to starter. Measure torque value and rotating speed under the specified voltage and current conditions while controlling braking force applied to starter.

CAUTION:

Change engagement position of overrunning clutch and make sure it is not slipping.

Load test (Standard):

TN128000-8311

Voltage/Load

8 V/9.8 N·m (1.0 kg·m, 7.2 ft·lb)

Current/Speed

280 A max./900 rpm min.

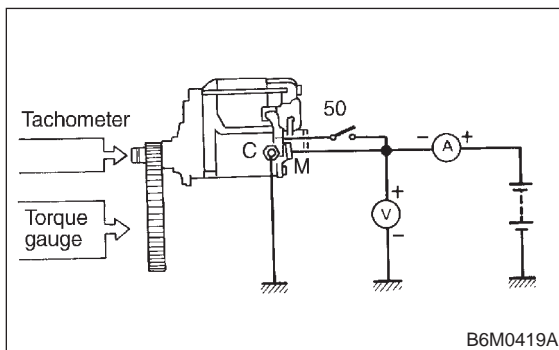
TN128000-8321

Voltage/Load

8 V/13.7 N·m (1.4 kg·m, 10.1 ft·lb)

Current/Speed

370 A, or less/880 rpm, or more



3) Stall test

Using the same test equipment used for load test, apply brake to lock starter armature. Then measure voltage, current, and torque values. Measured values must meet the following standard.

Stall test (Standard):

TN128000-8311

Voltage/Current

5 V/800 A, or less

Torque

27.5 N·m (2.8 kg·m, 20.3 ft·lb) min.

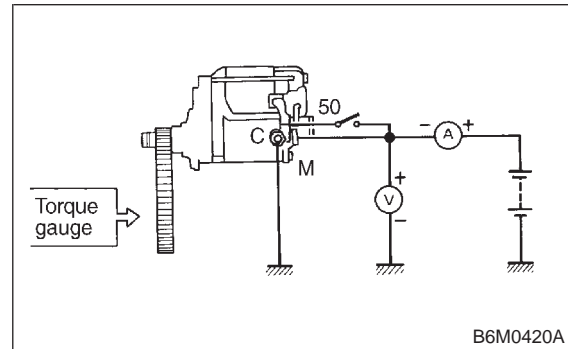
TN128000-8321

Voltage/Current

5 V/1,050 A, or less

Torque

27.5 N·m (2.8 kg·m, 20.3 ft·lb) min.

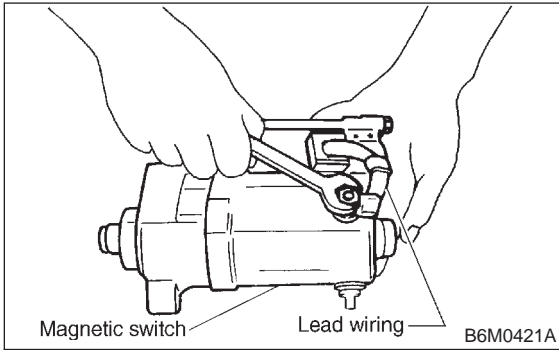


NOTE:

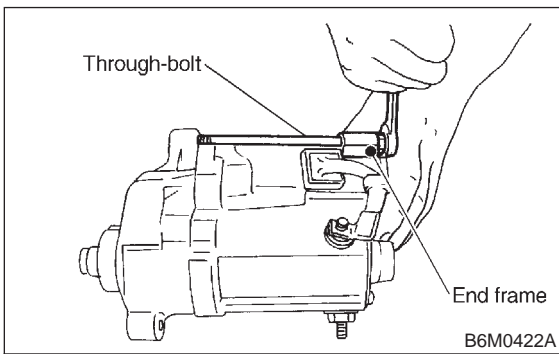
Low rotating speed or excessive current during no-load test may be attributable to high rotating resistance of starter due to improper assembling. Small current and no torque during stall test may be attributable to excessive contact resistance between brush and commutator; whereas, normal current and insufficient torque may be attributable to shorted commutator or poor insulation. Starter can be considered normal if it passes no-load and stall tests; therefore, load test may be omitted.

C: DISASSEMBLY

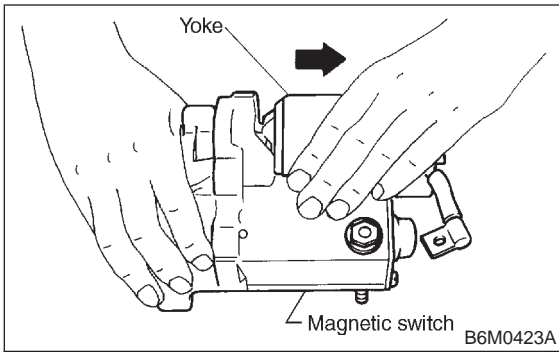
1) Disconnect lead wire from magnetic switch.



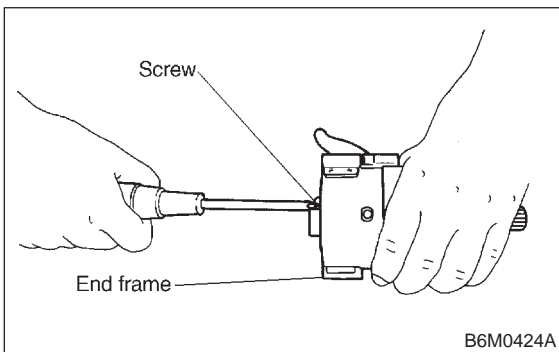
2) Remove through-bolts from end frame.



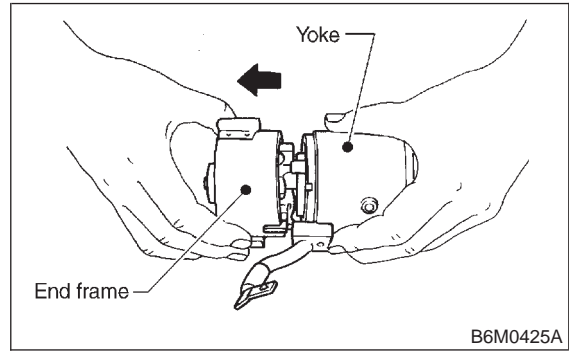
3) Remove yoke from magnetic switch.



4) Remove screws securing end frame to brush holder.

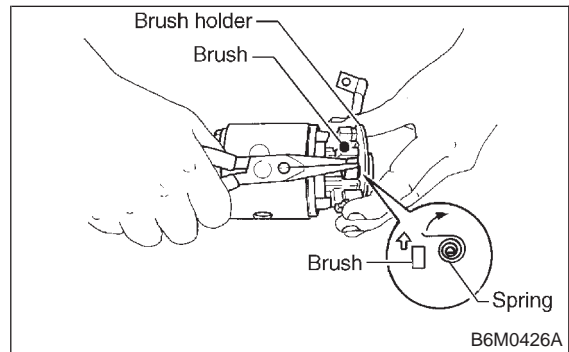


5) Separate yoke from end frame.



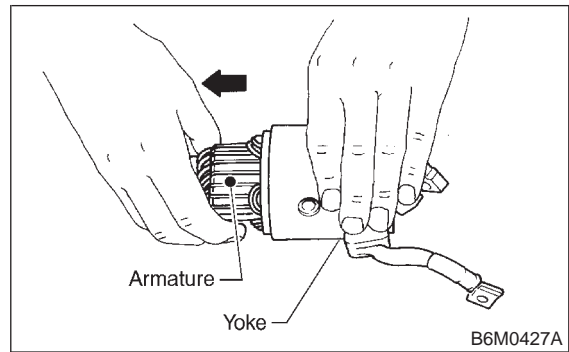
6) Remove brush by lifting up positive (+) side brush spring using long-nose pliers.

CAUTION:
Be careful not to damage brush and commutator.

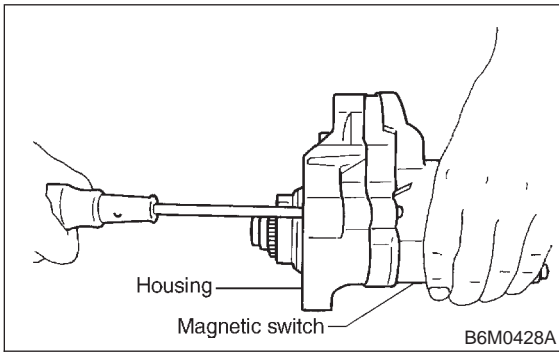


7) Remove armature from yoke.

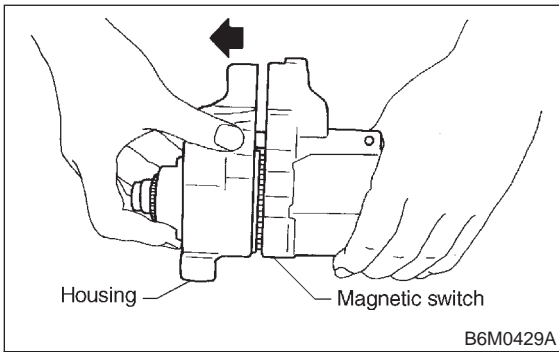
CAUTION:
Be careful not to drop armature.



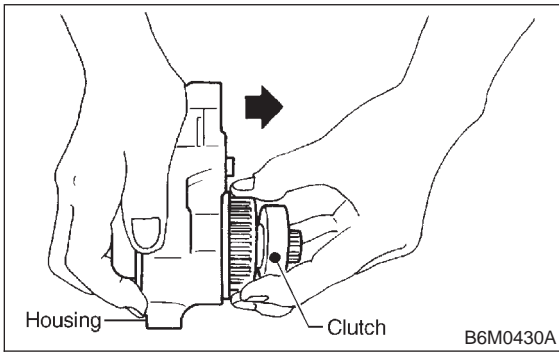
8) Remove screws securing magnetic switch to housing.



9) Remove housing from magnetic switch.

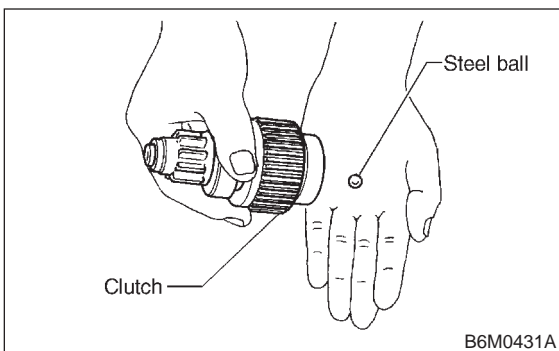


10) Remove clutch from housing.

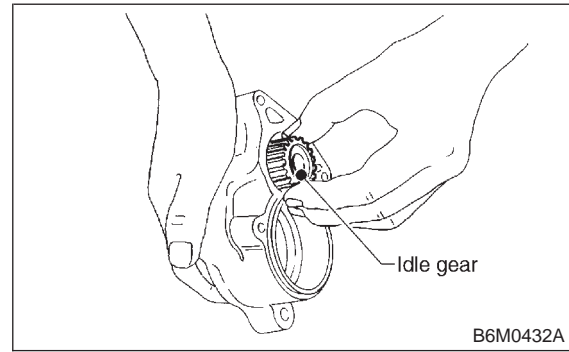


11) Take out steel ball from clutch.

CAUTION:
Be careful not to lose steel ball.

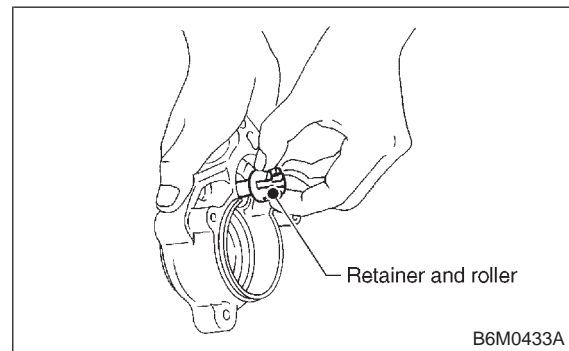


12) Remove idle gear from housing.

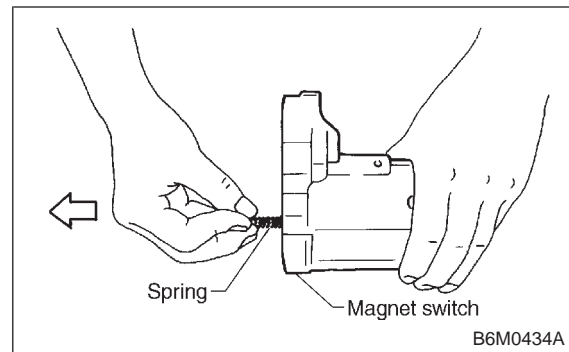


13) Remove retainer and roller from housing.

CAUTION:
Be careful not to drop retainer and roller.



14) Remove coil spring from magnetic switch.



D: INSPECTION**1. ARMATURE**

1) Check commutator for any sign of burns or rough surfaces or stepped wear. If wear is of a minor nature, correct it by using sand paper.

2) Run-out test

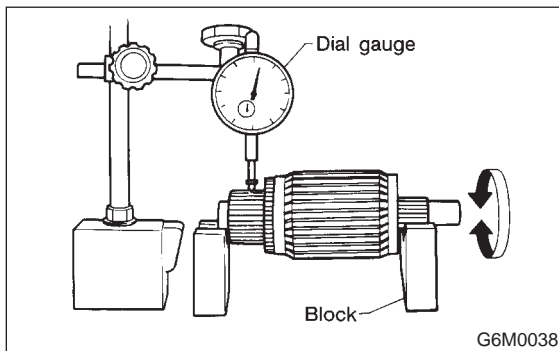
Check the commutator run-out and replace if it exceeds the limit.

Commutator run-out:**Standard**

0.02 mm (0.0008 in), or less

Service limit

Less than 0.05 mm (0.0020 in)

**3) Depth of segment mold**

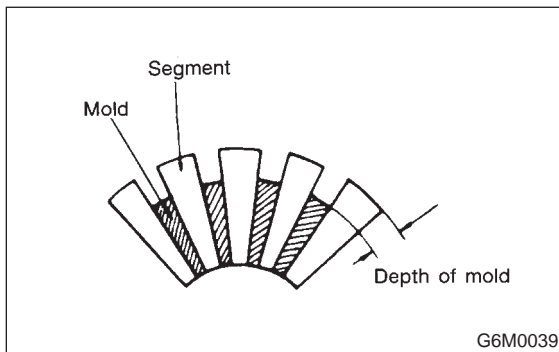
Check the depth of segment mold.

Depth of segment mold:

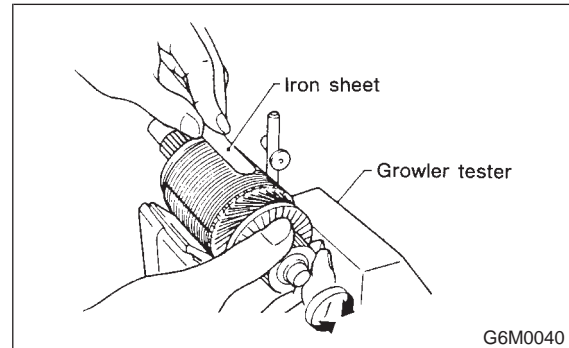
0.6 mm (0.024 in)

Limit

0.2 mm (0.008 in)

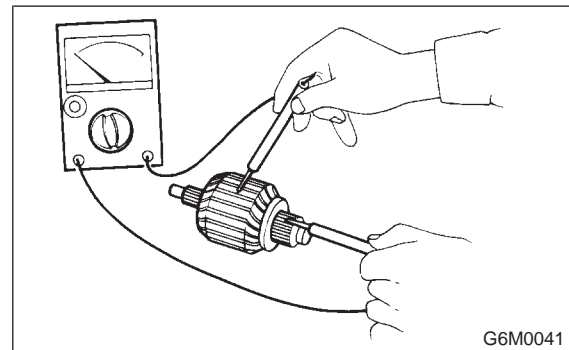
**4) Armature short-circuit test**

Check armature for short-circuit by placing it on growler tester. Hold a hacksaw blade against armature core while slowly rotating armature. A short-circuited armature will cause the blade to vibrate and to be attracted to core. If the hacksaw blade is attracted or vibrates, the armature, which is short-circuited, must be replaced or repaired.

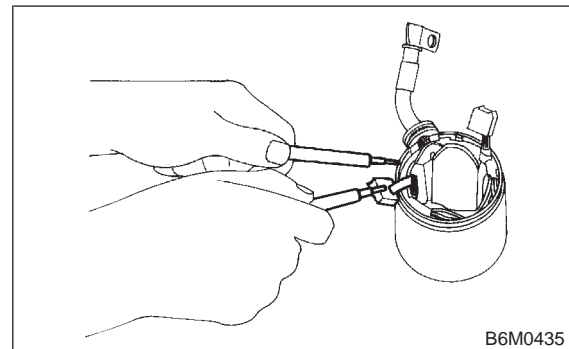
**5) Armature ground test**

Using circuit tester, touch one probe to the commutator segment and the other to shaft. There should be no continuity. If there is a continuity, armature is grounded.

Replace armature if it is grounded.

**2. YOKE**

Make sure pole is set in position.

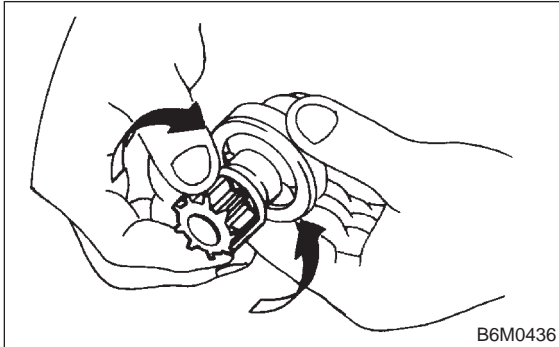


3. OVERRUNNING CLUTCH

Inspect teeth of pinion for wear and damage. Replace if it is damaged. Rotate pinion in direction of rotation (clockwise). It should rotate smoothly. But in opposite direction, it should be locked.

CAUTION:

Do not clean overrunning clutch with oil to prevent grease from flowing out.



B6M0436

4. BRUSH AND BRUSH HOLDER

1) Brush length

Measure the brush length and replace if it exceeds the service limit.

Replace if abnormal wear or cracks are noticed.

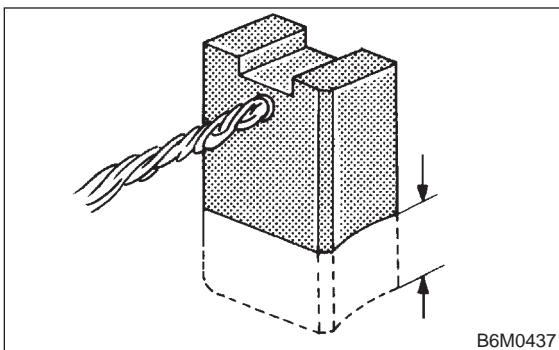
Brush length:

Standard

15 mm (0.59 in)

Service limit

10 mm (0.39 in)



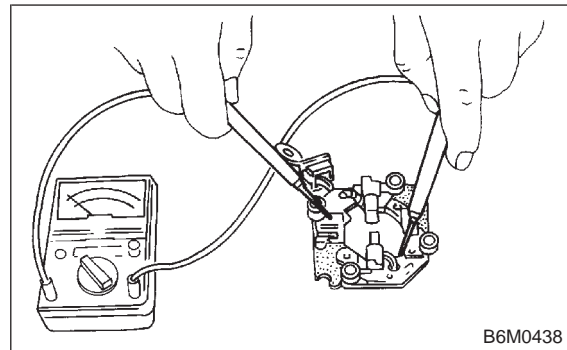
B6M0437

2) Brush movement

Be sure brush moves smoothly inside brush holder.

3) Insulation resistance of brush holder

Be sure there is no continuity between brush holder and its plate.



B6M0438

4) Brush spring force

Measure brush spring force with a spring scale. If it is less than the service limit, replace brush spring.

Brush spring force:

Standard

18.6 N (1.9 kg, 4.2 lb) (when new)

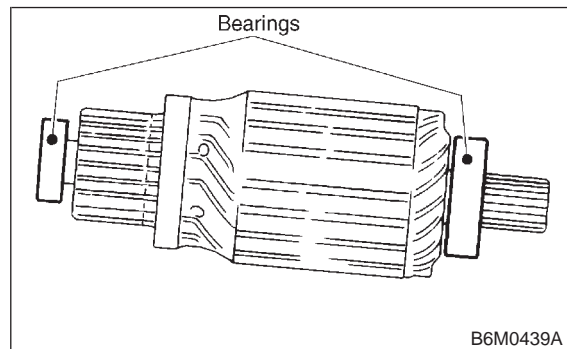
Service limit

6.9 N (0.7 kg, 1.5 lb)

5. BEARING

1) Rotate bearing by hand; no binding should exist.

2) Rotate bearing rapidly; no abnormal noise should be heard.



B6M0439A

E: ASSEMBLY

Assembly is in the reverse order of disassembly procedures. Observe the following:

1) Before assembling, lubricate disassembled parts at the points shown in "COMPONENT PARTS [C1A1] and [C1B1]". <Ref. to 6-1 [C100].>

Grease:

ESSO BEACON 325

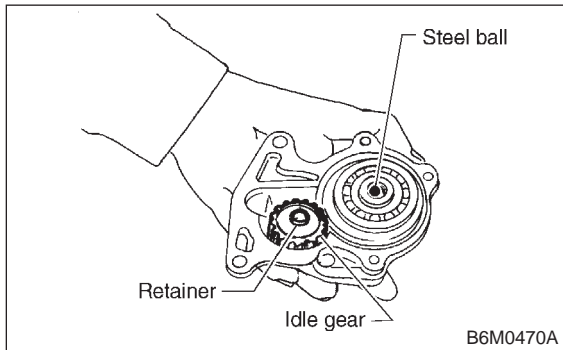
SHELL ALVANIA GREASE RA or equivalent

2) Assembling magnetic switch, clutch, and housing

To assemble, first install clutch to magnetic switch, then install idle gear, and finally install clutch.

CAUTION:

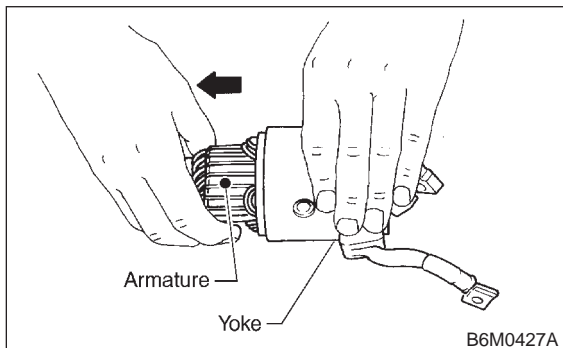
- Do not forget to install steel ball and coil spring to clutch.
- Attach bearing to idle gear beforehand.



3) Installing armature to yoke

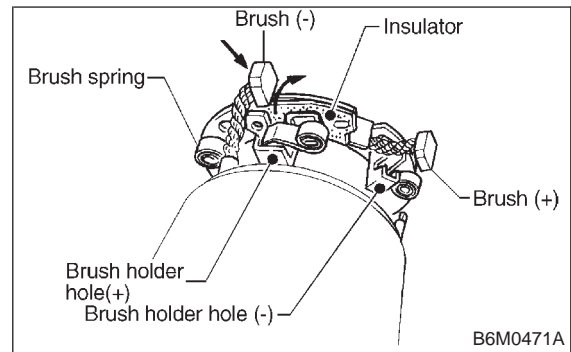
CAUTION:

Do not forget to put felt washer on armature shaft bearing.



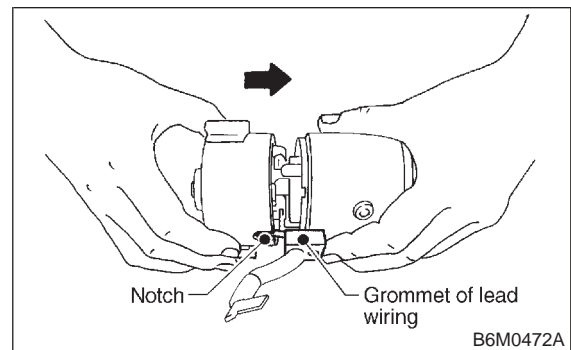
4) Installing brushes

Assemble brush holder to yoke as shown, then assemble two yoke-side brushes to brush holder.



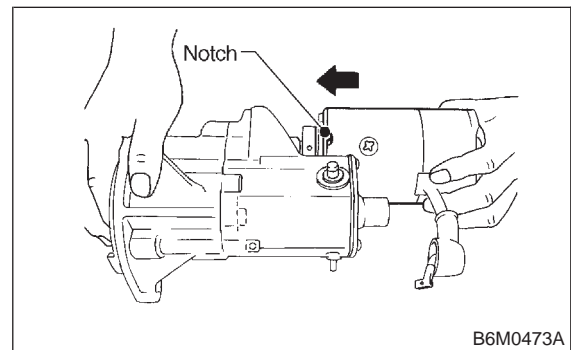
5) Installing end frame

When assembling end frame to yoke, align notched portion of end frame with lead wire grommet.



6) Installing yoke

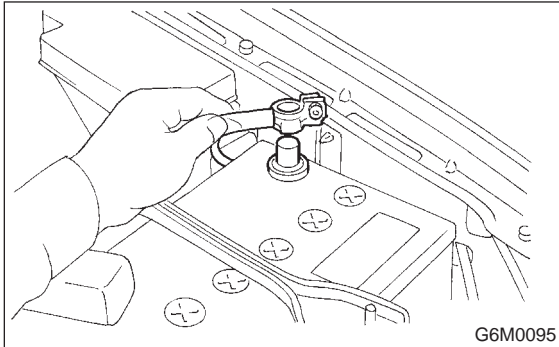
When installing yoke to magnetic switch, align notch of yoke with protrusion of magnetic switch.



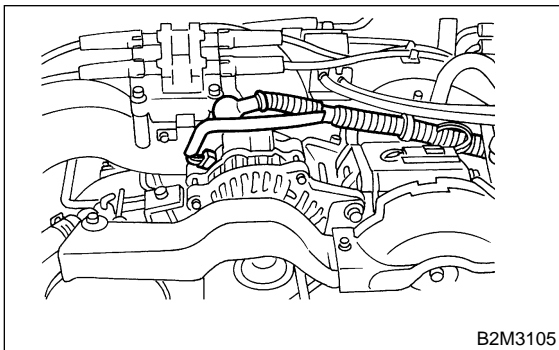
2. Generator

A: REMOVAL AND INSTALLATION

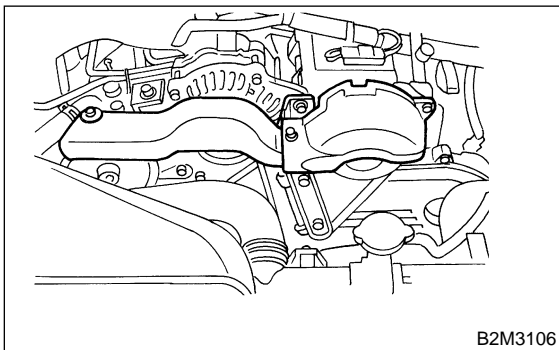
- 1) Disconnect battery ground cable.



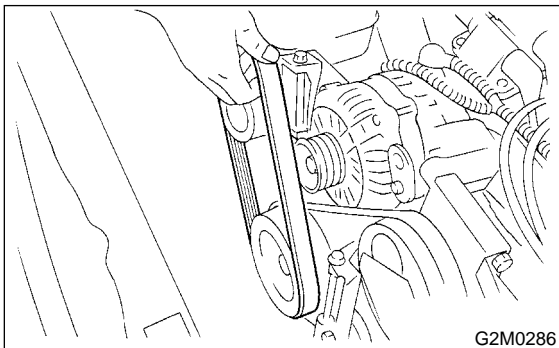
- 2) Disconnect connector and terminal from generator.



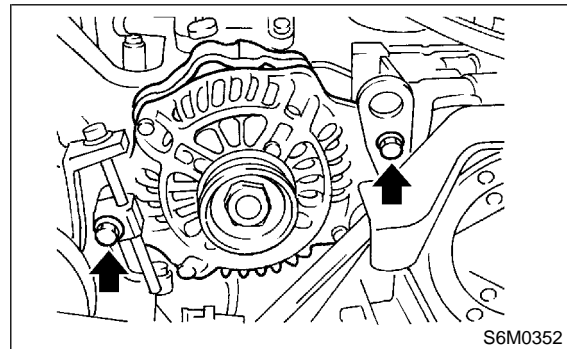
- 3) Remove V-belt cover.



- 4) Remove front side V-belt.

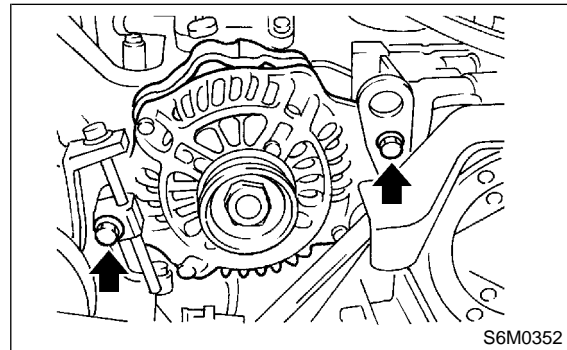


- 5) Remove bolts which install generator onto bracket.



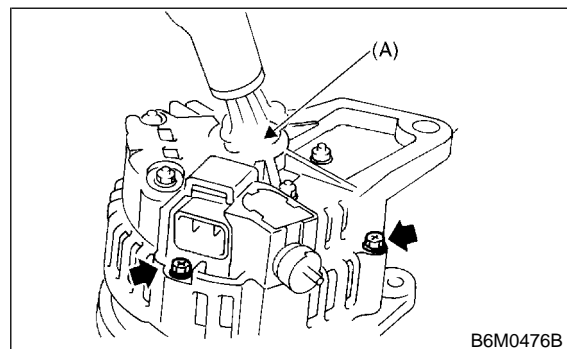
- 6) Installation is in the reverse order of removal.

CAUTION:
Check and adjust V-belt tension. <Ref. to 1-5 [G200].>

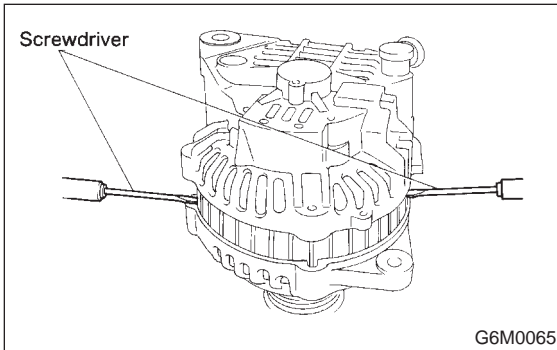


B: DISASSEMBLY

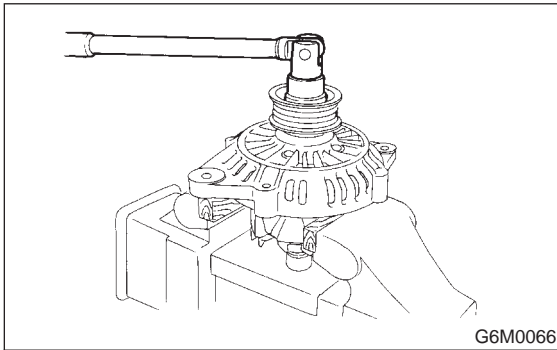
- 1) Heat the portion (A) of rear cover to 50°C (122°F) with heater drier.



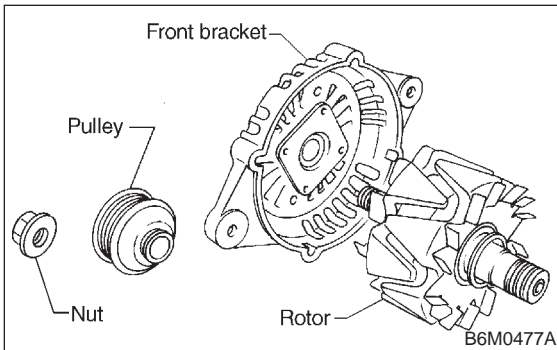
2) Remove the four through bolts. Then insert the tip of a flat-head screwdriver into the gap between the stator core and front bracket. Pry then apart to disassemble.



3) Hold rotor with a vise and remove pulley nut.

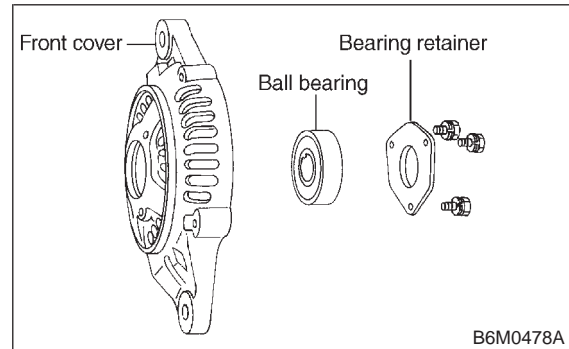


CAUTION:
When holding rotor with vise, insert aluminum plates or wood pieces on the contact surfaces of the vise to prevent rotor from damage.

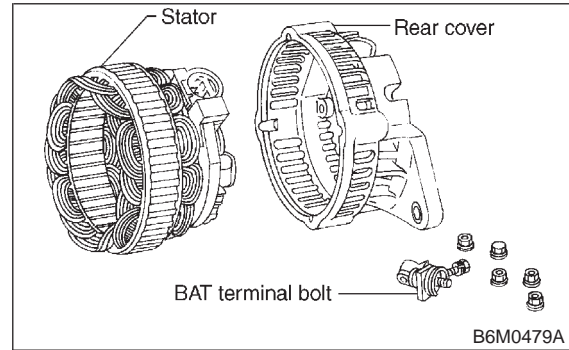


4) Remove rotor from front cover.

5) Remove three screws from front cover and then bearing retainer and ball bearing.



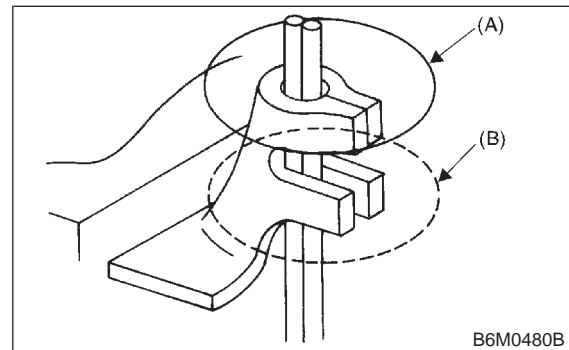
6) Remove bolt which secure battery terminal bolt, and remove rear cover. Remove nuts which secure diode plate, and remove stator and rear cover.



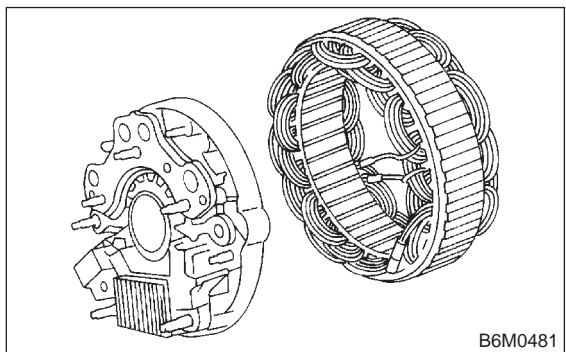
7) Separate diode plate from stator coil.

(1) Cut the connecting position (A) of stator coil to diode.

(2) Unsolder connection (B) and throughout the lead wire of stator coil.



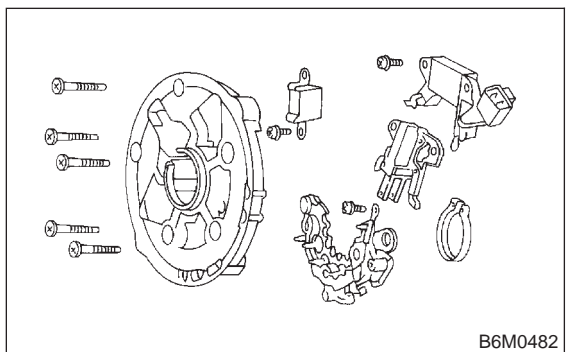
(3) Remove stator coil from diode plate.



B6M0481

8) Remove bolts which secure IC regulator, diode and brush holder.

CAUTION:
Do not apply a shock or load to IC regulator cooling fins.

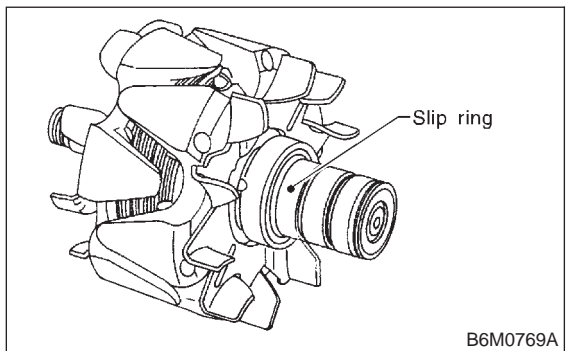


B6M0482

C: INSPECTION

1. ROTOR

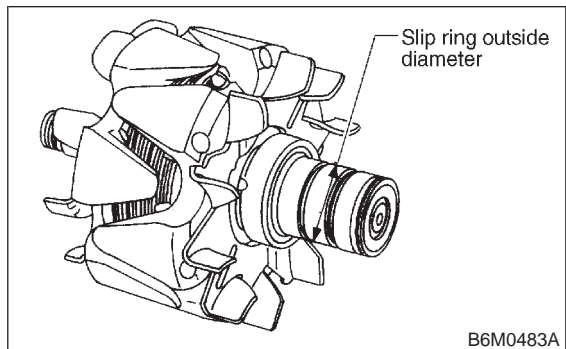
1) Slip ring surface
Inspect slip rings for contamination or any roughness of the sliding surface.
Clean or polish with #500 to #600 emery paper if defective.



B6M0769A

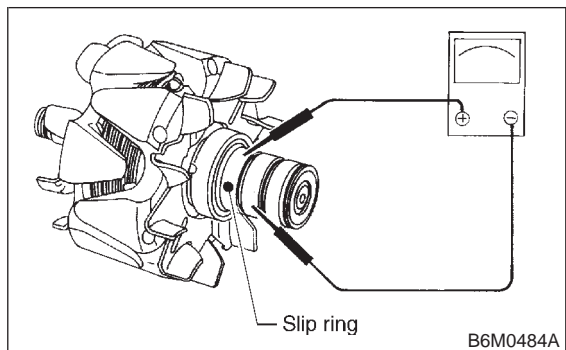
2) Slip ring outside diameter
Measure slip ring outside diameter. If slip ring is worn, replace rotor.

Slip ring outside diameter:
Standard
27 mm (1.06 in)
Limit
26 mm (1.02 in)



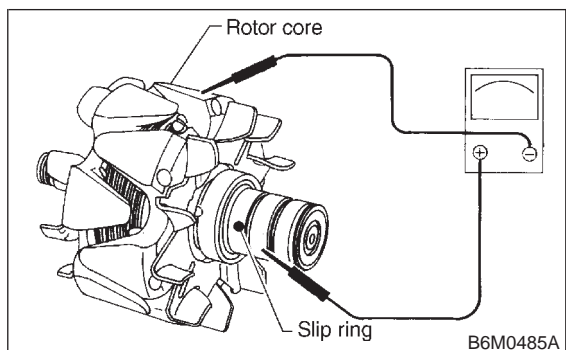
B6M0483A

3) Continuity test
Check continuity between slip rings. If continuity does not exist, replace rotor.



B6M0484A

4) Insulation test
Check continuity between slip ring and rotor core or shaft. If continuity exists, replace rotor.

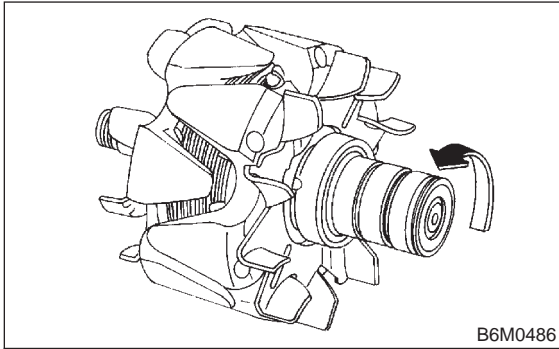


B6M0485A

2. Generator

5) Ball bearing

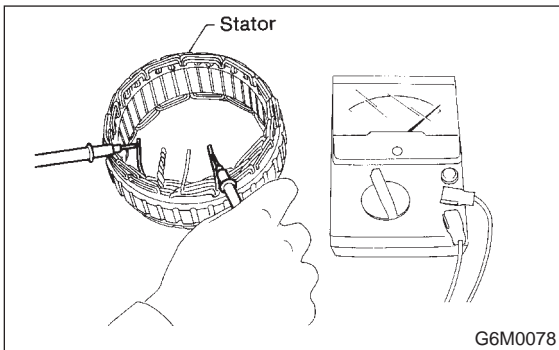
Check rear ball bearing. Replace it if it is noisy or if rotor does not turn smoothly.



2. STATOR

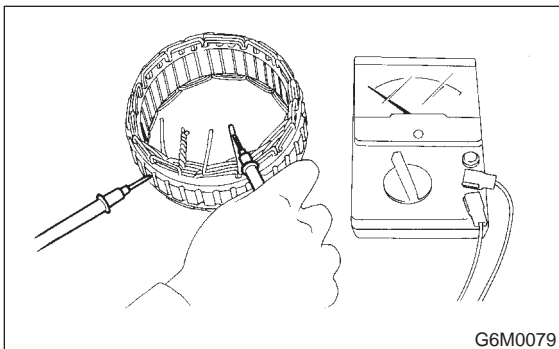
1) Continuity test

Inspect stator coil for continuity between its terminals. When there is no continuity between individual terminals, cable is broken. Replace stator coil.



2) Insulation test

Inspect stator coil for continuity between stator core and each terminal. If there is continuity, replace stator coil.



3. BRUSH

Measure brush length. If brush is worn, replace brush holder assembly.

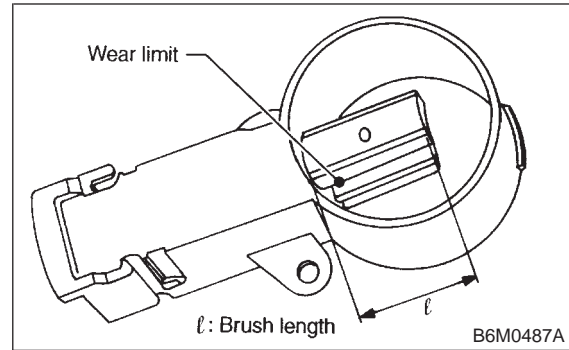
Brush length (ℓ):

Standard

20.5 mm (0.807 in)

Limit

1.5 mm (0.059 in)



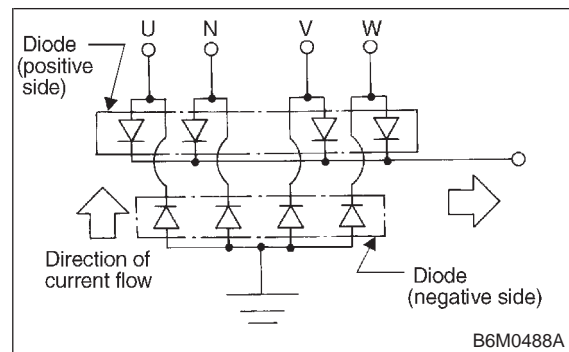
4. DIODE ASSEMBLY

CAUTION:

Never use a high tension insulation tester, such as a meggar as it will damage diodes with its high tension.

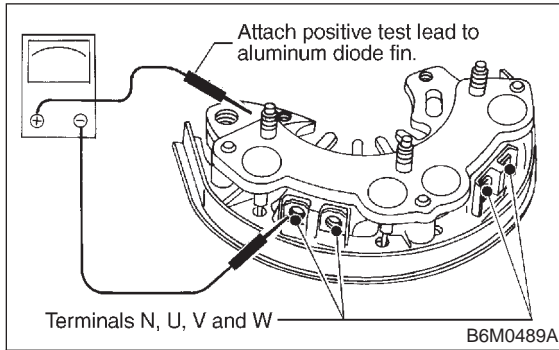
The diode consists of eight diodes, four each being located on the positive and negative sides. The diode is necessary to restrict current flow to one direction.

Check all diodes, for continuity. If any diode is faulty, replace diode assembly.



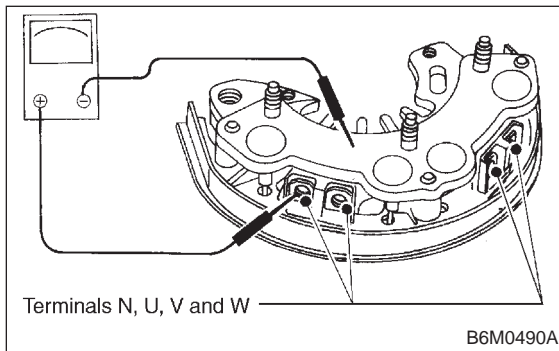
1) Diodes on “+” side
Continuity of proper diodes on “+” side

Terminal N, U, V and W	BAT side	
	(+)	(-)
(+)	—	Continuity must not exist.
(-)	Continuity must exist.	—



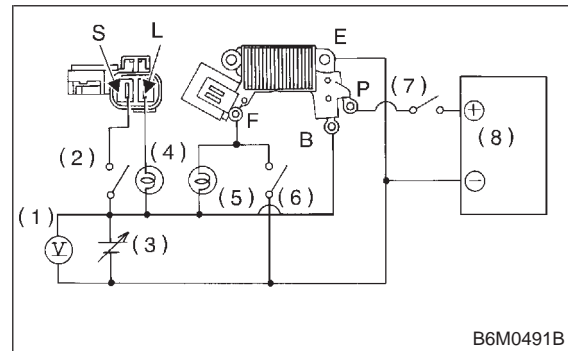
2) Diodes on “-” side
Continuity of proper diodes on “-” side

Terminal N, U, V and W	“E” side	
	(+)	(-)
(+)	—	Continuity must exist.
(-)	Continuity must not exist.	—



5. IC REGULATOR

1) Compose a circuit diagram as shown in figure.



- (1) Voltage meter: 0 to 30 V
- (2) Switch 1
- (3) Variable DC power supply: Variable 0 to 20 V, 1 A or more
- (4) Lamp 2
- (5) Lamp 1
- (6) Switch 3
- (7) Switch 2
- (8) Plus generator: Power supply 5 to 30 V, 1 kHz

2) Check operation as shown in chart below.

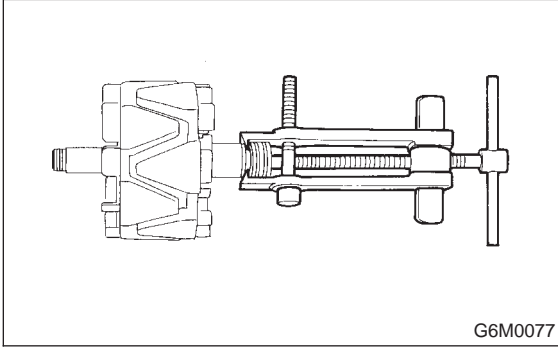
No.	Switch operation			Value of voltage meter	Lamp operation		Remarks
	1	2	3		1	2	
1	ON	OFF	OFF	12 V	DIM	ON	Check initial excitation.
2	ON	ON	OFF	12 V	ON or BLINK	OFF	Check total excitation.
3	ON	ON	OFF	16 V	OFF or DIM-BLINK	OFF	When value of voltage meter is between 12 V and 16 V.
4	OFF	ON	OFF	12 V	ON or BLINK	ON	Check connection for S and B terminals.
5	OFF	ON	ON	18 V	ON	ON	Check for over loading of voltage.

D: ASSEMBLY

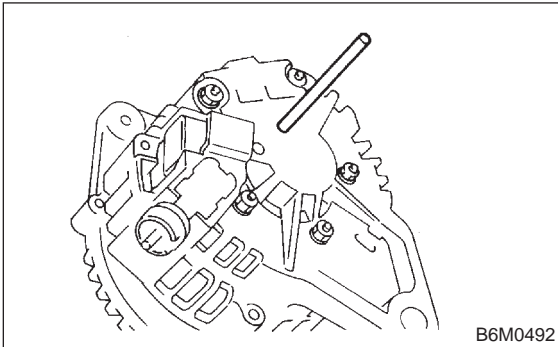
Assembly is in the reverse order of disassembly procedures.

CAUTION:

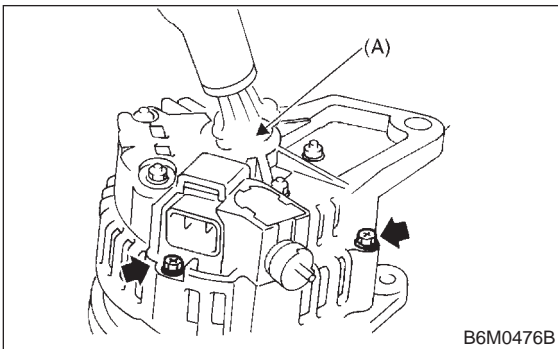
- When disassembling generator, replace rear ball bearing.



- When soldering starter coil to diode, do not touch lead wire with solder for more than 5 seconds.
- Before installing rear cover, insert pin from outside of rear cover so that holds brush. After installing rear cover, remove pin.



- When installing rear cover, heat portion (A) to 50°C (122°F) with heater drier.



3. Spark Plug

A: REMOVAL AND INSTALLATION

CAUTION:

All spark plugs installed on an engine, must be of the same heat range.

Spark plug:

CHAMPION: RC10YC4

(Alternate)

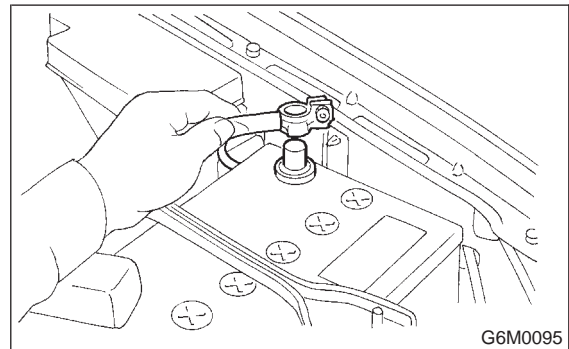
CHAMPION: RC8YC4

NGK: BKR6E-11

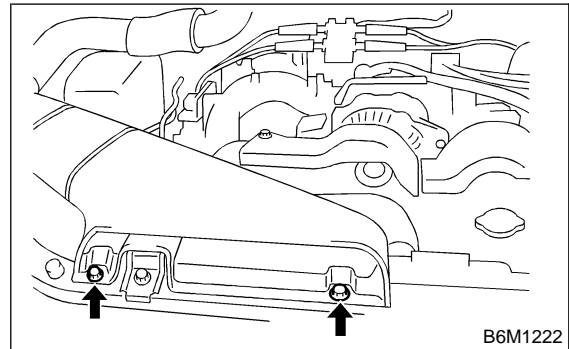
NIPPONDENSO: K20PR-U11

1. #1 SPARK PLUG

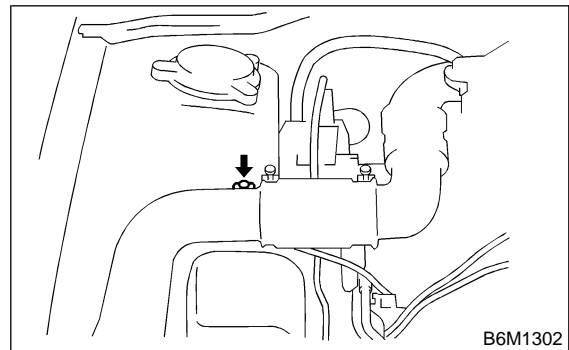
- 1) Disconnect battery ground cable.



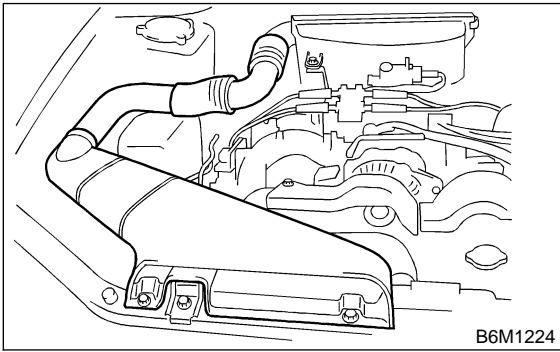
- 2) Remove air intake duct and resonator chamber.
 - (1) Remove bolt which installs air intake duct on the front side of body.



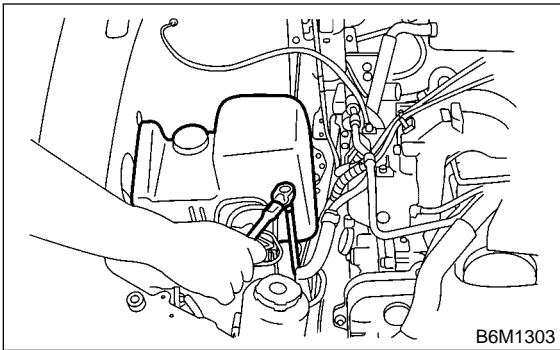
- (2) Remove bolt which installs air intake duct on body.



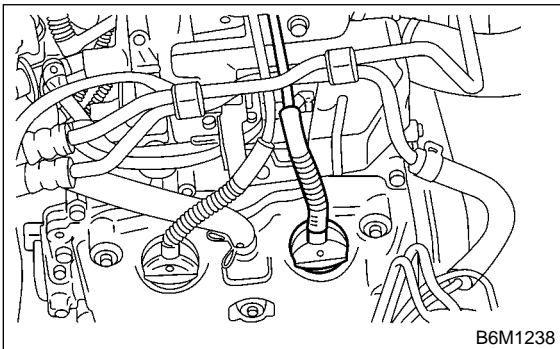
(3) Remove air intake duct as a unit.



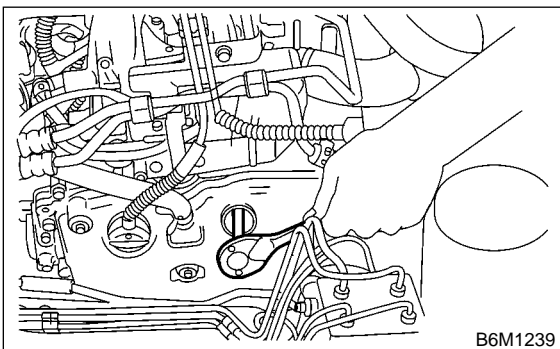
(4) Remove resonator chamber.



3) Remove #1 spark plug cord by pulling boot, not cord itself.



4) Remove spark plug with the spark plug socket.



5) Installation is in the reverse order of removal.

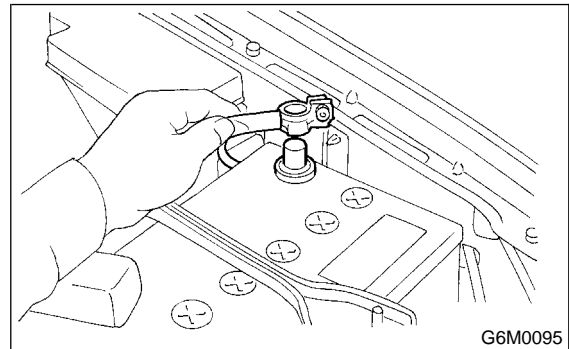
Tightening torque (Spark plug):
 20.6 ± 2.9 N-m (2.10 ± 0.30 kg-m, 15.2 ± 2.2 ft-lb)

CAUTION:

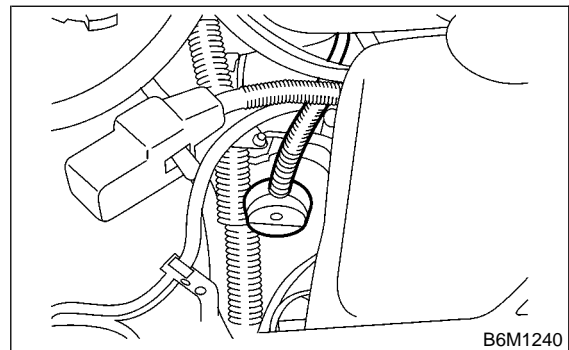
The above torque should be only applied to new spark plugs without oil on their threads. In case their threads are lubricated, the torque should be reduced by approximately 1/3 of the specified torque in order to avoid over-stressing.

2. #2 SPARK PLUG

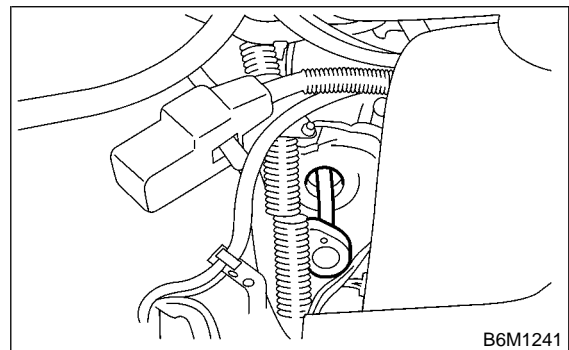
1) Disconnect battery ground cable.



2) Remove #2 spark plug cord by pulling boot, not cord itself.



3) Remove spark plug with the spark plug socket.



4) Installation is in the reverse order of removal.

Tightening torque (Spark plug):

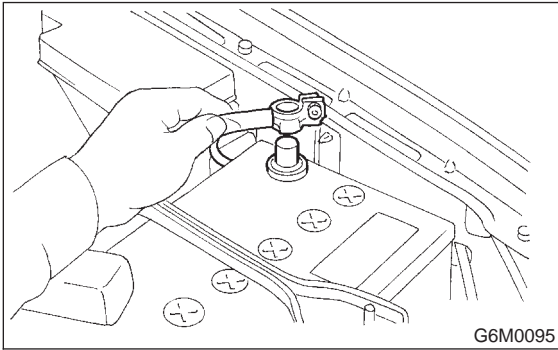
20.6±2.9 N-m (2.10±0.30 kg-m, 15.2±2.2 ft-lb)

CAUTION:

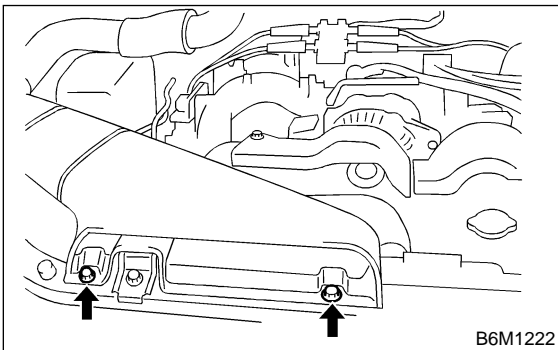
The above torque should be only applied to new spark plugs without oil on their threads. In case their threads are lubricated, the torque should be reduced by approximately 1/3 of the specified torque in order to avoid over-stressing.

3. #3 SPARK PLUG

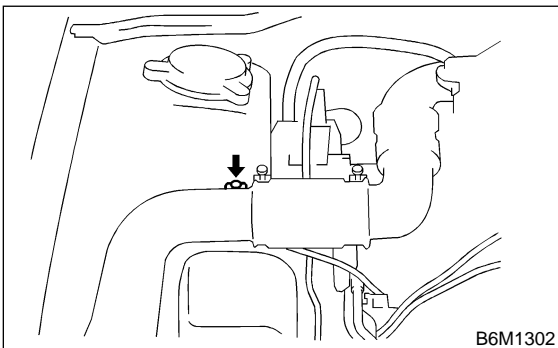
1) Disconnect battery ground cable.



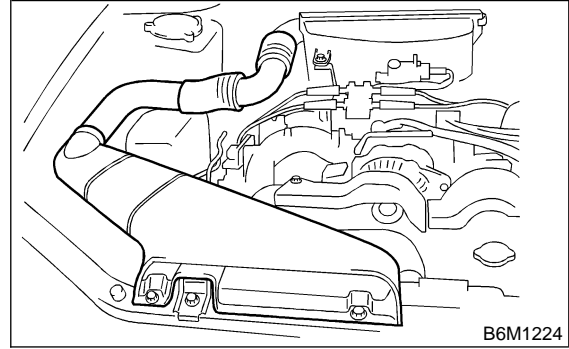
2) Remove air intake duct and air chamber.
(1) Remove bolt which installs air intake duct on the front side of body.



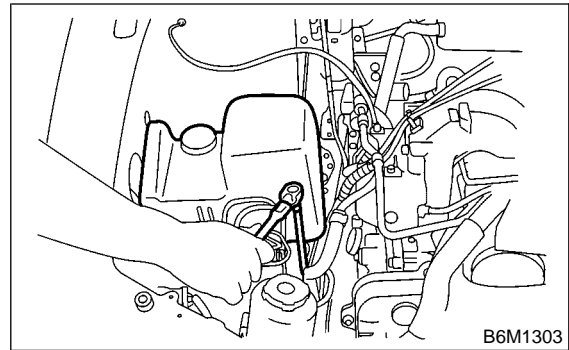
(2) Remove bolt which installs air intake duct on body.



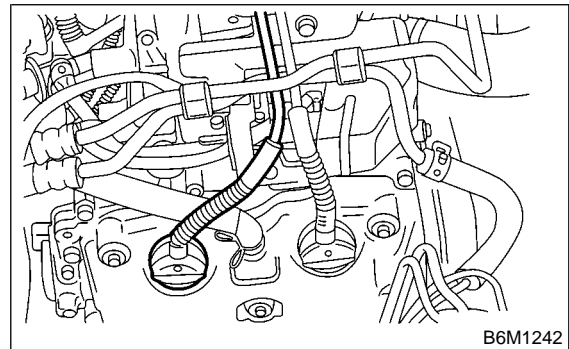
(3) Remove air intake duct as a unit.



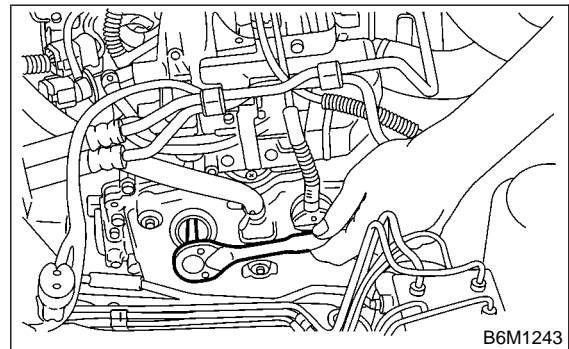
(4) Remove resonator chamber.



3) Remove #3 spark plug cord by pulling boot, not cord itself.



4) Remove spark plug with the spark plug socket.



5) Installation is in the reverse order of removal.

Tightening torque (Spark plug):

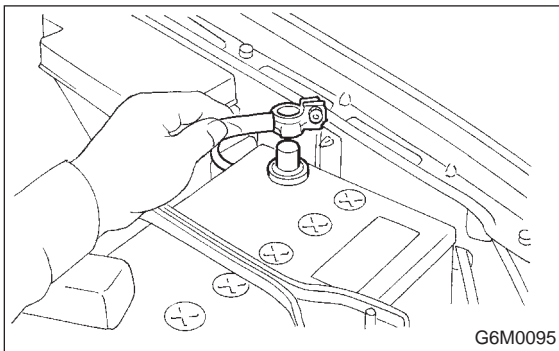
20.6±2.9 N·m (2.10±0.30 kg·m, 15.2±2.2 ft·lb)

CAUTION:

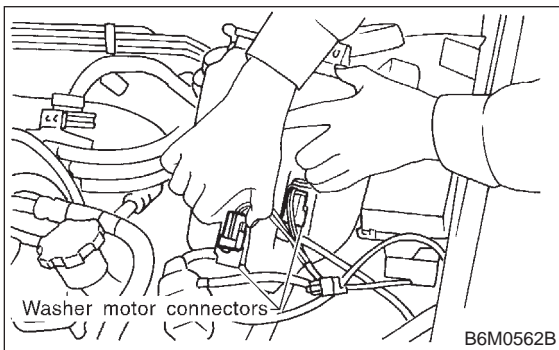
The above torque should be only applied to new spark plugs without oil on their threads. In case their threads are lubricated, the torque should be reduced by approximately 1/3 of the specified torque in order to avoid over-stressing.

4. #4 SPARK PLUG

1) Disconnect battery ground cable.

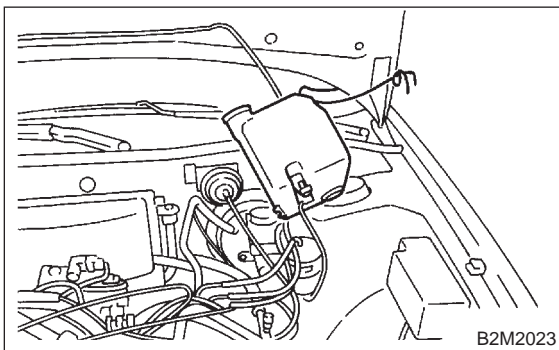


2) Disconnect washer motor connector.

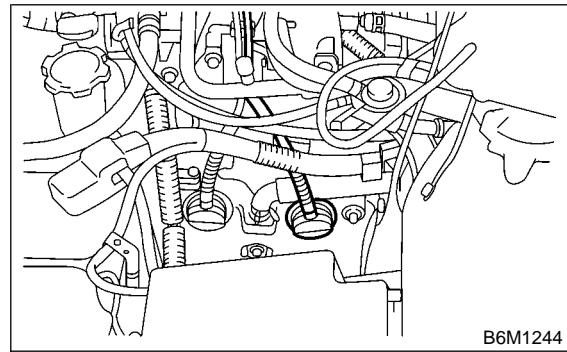


3) Disconnect rear window glass washer hose from washer motor, then plug connection with a suitable cap.

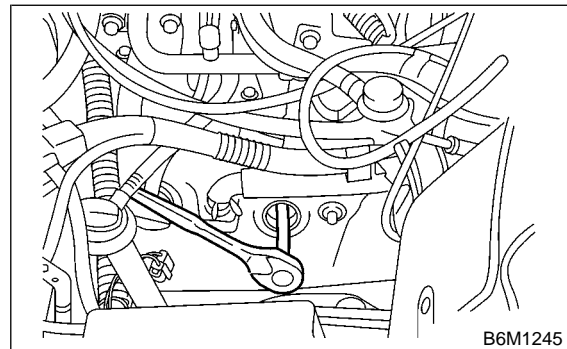
4) Remove the two bolts which hold the washer tank, then take the tank away from the working area.



5) Remove #4 spark plug cord by pulling boot, not cord itself.



6) Remove spark plug with the spark plug socket.



7) Installation is in the reverse order of removal.

Tightening torque (Spark plug):

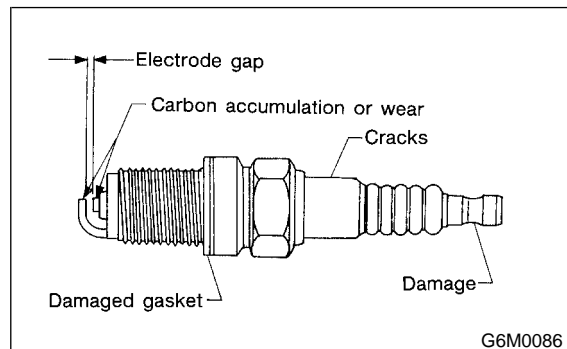
20.6±2.9 N·m (2.10±0.30 kg·m, 15.2±2.2 ft·lb)

CAUTION:

The above torque should be only applied to new spark plugs without oil on their threads. In case their threads are lubricated, the torque should be reduced by approximately 1/3 of the specified torque in order to avoid over-stressing.

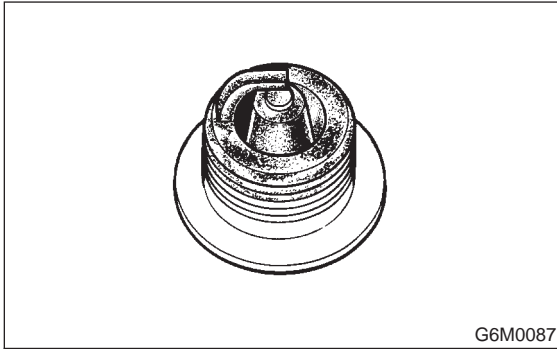
B: INSPECTION

Check electrodes and inner and outer porcelain of plugs, noting the type of deposits and the degree of electrode erosion.



1) Normal

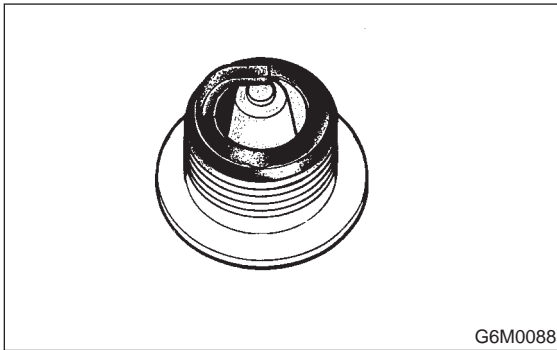
Brown to grayish-tan deposits and slight electrode wear indicate correct spark plug heat range.



2) Carbon fouled

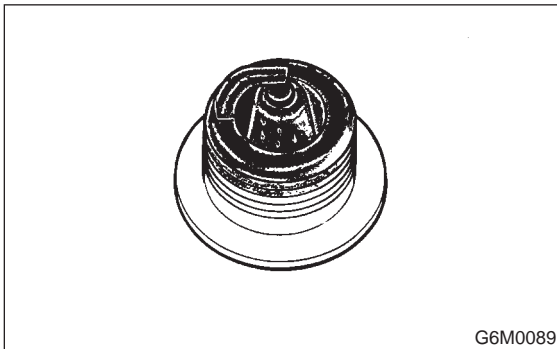
Dry fluffy carbon deposits on insulator and electrode are mostly caused by slow speed driving in city, weak ignition, too rich fuel mixture, dirty air cleaner, etc.

It is advisable to replace with plugs having hotter heat range.



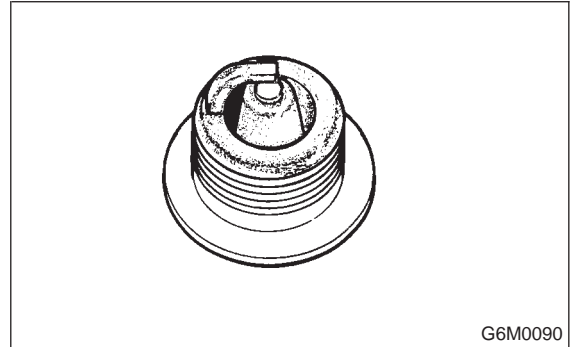
3) Oil fouled

Wet black deposits show excessive oil entrance into combustion chamber through worn rings and pistons or excessive clearance between valve guides and stems. If same condition remains after repair, use a hotter plug.



4) Overheating

White or light gray insulator with black or gray brown spots and bluish burnt electrodes indicate engine overheating. Moreover, the appearance results from incorrect ignition timing, loose spark plugs, wrong selection of fuel, hotter range plug, etc. It is advisable to replace with plugs having colder heat range.



C: CLEANING AND REGAPPING

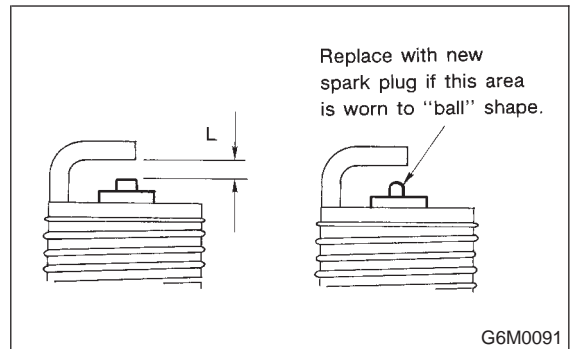
Clean spark plugs in a sand blast type cleaner. Avoid excessive blasting. Clean and remove carbon or oxide deposits, but do not wear away porcelain.

If deposits are too stubborn, discard plugs.

After cleaning spark plugs, recondition firing surface of electrodes with file. Then correct the spark plug gap using a gap gauge.

Spark plug gap: L

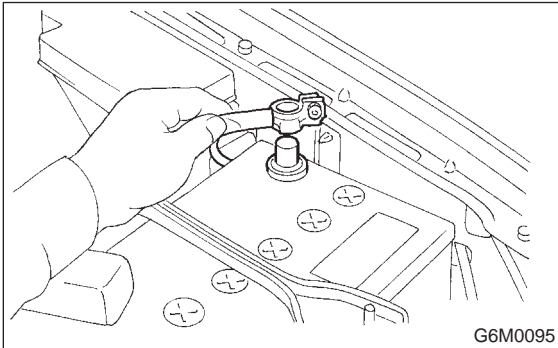
1.0 — 1.1 mm (0.039 — 0.043 in)



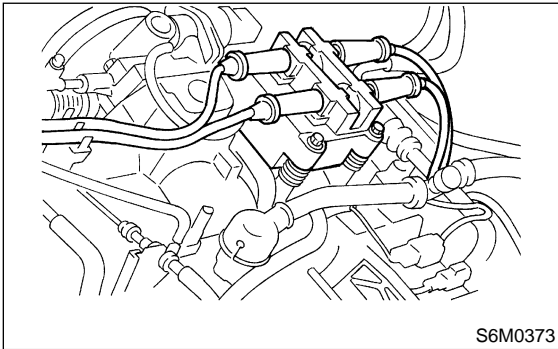
4. Ignition Coil and Ignitor Assembly

A: REMOVAL AND INSTALLATION

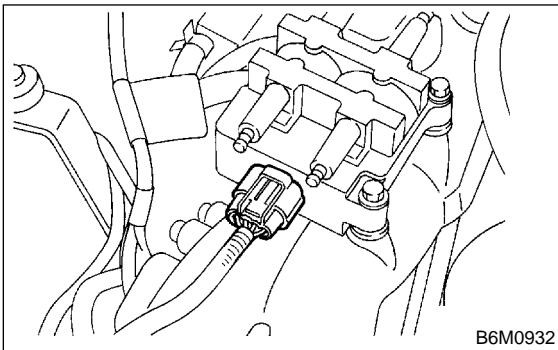
- 1) Disconnect battery ground cable.



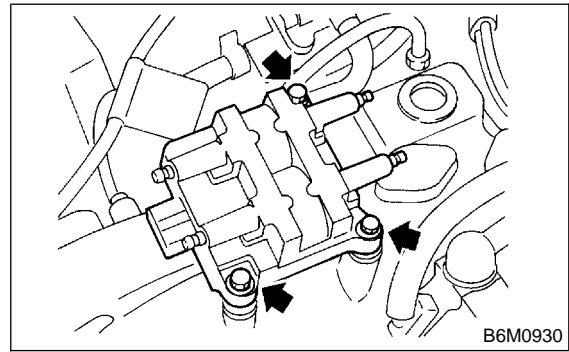
- 2) Disconnect spark plug cords from ignition coil and ignitor assembly.



- 3) Disconnect connector from ignition coil and ignitor assembly.



- 4) Remove ignition coil and ignitor assembly.



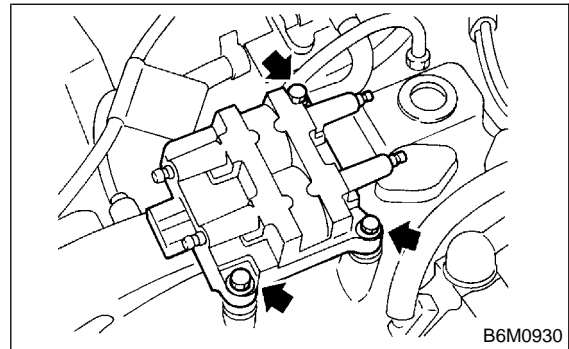
- 5) Installation is in the reverse order of removal.

Tightening torque:

$6.4 \pm 0.5 \text{ N}\cdot\text{m}$ ($0.65 \pm 0.05 \text{ kg}\cdot\text{m}$, $4.7 \pm 0.4 \text{ ft}\cdot\text{lb}$)

CAUTION:

Be sure to connect wires to their proper positions. Failure to do so will damage unit.



B: INSPECTION

Using accurate tester, inspect the following items, and replace if defective.

- 1) Primary resistance
- 2) Secondary coil resistance

CAUTION:

If the resistance is extremely low, this indicates the presence of a short-circuit.

Specified resistance:

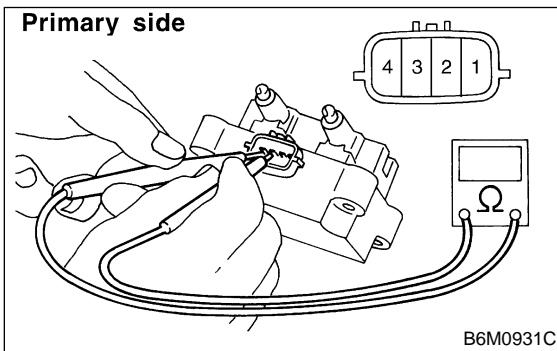
[Primary side]

Between terminal No. 1 and No. 2

$0.73 \Omega \pm 10\%$

Between terminal No. 2 and No. 4

$0.73 \Omega \pm 10\%$



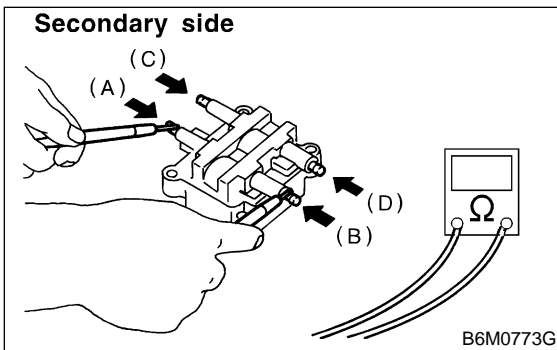
[Secondary side]

Between (A) and (B)

$12.8 \text{ k}\Omega \pm 15\%$

Between (C) and (D)

$12.8 \text{ k}\Omega \pm 15\%$



- 3) Insulation between primary terminal and case:
10 M Ω or more.

5. Spark Plug Cord

A: INSPECTION

Check for:

- 1) Damage to cords, deformation, burning or rust formation of terminals
- 2) Resistance values of cords

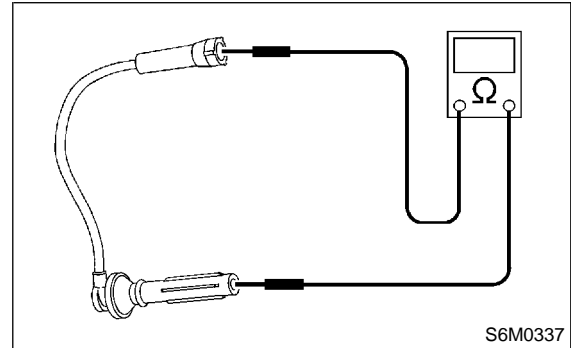
Resistance value:

#1 cord: 7.40 — 17.27

#2 cord: 6.24 — 14.56

#3 cord: 6.54 — 15.25

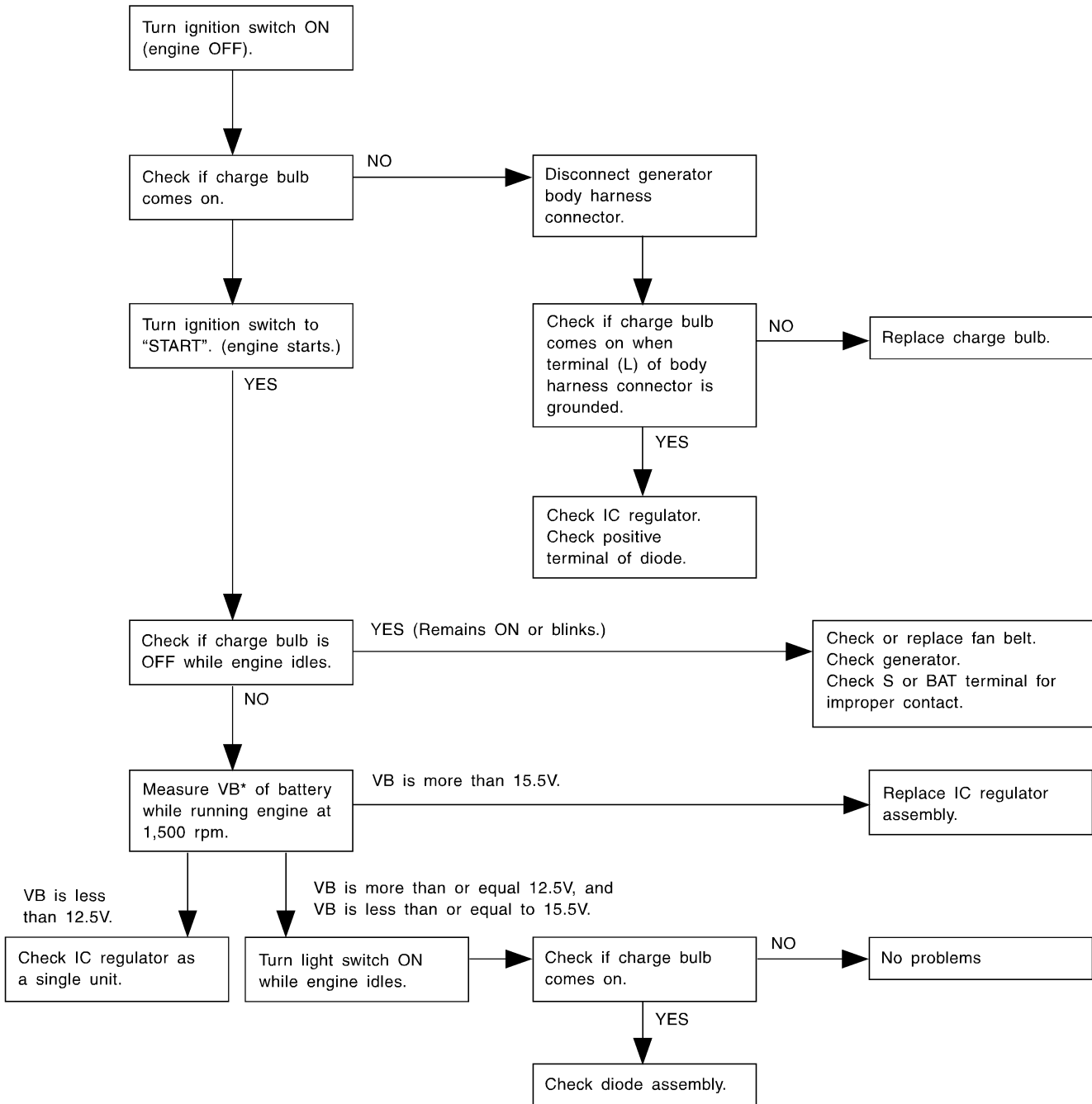
#4 cord: 6.59 — 15.37



1. Starter

Trouble		Probable cause
Starter does not start.	Magnet switch does not operate. (no clicks are heard.)	Magnet switch poor contact or discontinuity of pull-in coil circuit
		Improper sliding of magnet switch plunger
	Magnet switch operates. (clicks are issued.)	Poor contact of magnet switch's main contact point
		Layer short of armature
		Contaminants on armature commutator
		High armature mica
		Improper grounding of yoke field coil
		Insufficient carbon brush length
Starter starts but does not crank engine.	Failure of pinion gear to engage ring gear	Insufficient brush spring pressure
		Worn pinion teeth
		Improper sliding of overrunning clutch
	Clutch slippage	Improper adjustment of stud bolt
Starter starts but engine cranks too slowly.		Faulty clutch roller spring
		Poor contact of magnet switch's main contact point
		Layer short of armature
		Discontinuity, burning or wear of armature commutator
		Poor grounding of yoke field coil
		Insufficient brush length
Starter overruns.		Insufficient brush spring pressure
		Abnormal brush wear
		Magnet switch coil is a layer short.

2. Generator



*: Terminal voltage

1. Body Electrical

1. Body Electrical

Battery	Capacity	Reserve capacity	90 minutes (MT), 110 minutes (AT)
		Cold cranking ampere	430 amperes (MT), 490 amperes (AT)
Combination meter	Speedometer		Electric pulse type
	Temperature gauge		Thermistor cross coil type
	Fuel gauge		Resistance cross coil type
	Tachometer		Electric impulse type
	Turn signal indicator light		12 V — 1.4 W
	Charge indicator light		12 V — 1.4 W
	Oil pressure indicator light		12 V — 1.4 W
	ABS warning light		12 V — 1.4 W
	CHECK ENGINE warning light (Malfunction indicator light)		12 V — 1.4 W
	HI-beam indicator light		12 V — 1.4 W
	Door open warning light		LED
	Seat belt warning light		LED
	Brake fluid and parking brake warning light		12 V — 1.4 W
	FWD indicator light		12 V — 1.4 W
	AIRBAG warning light		12 V — 1.4 W
	Meter illumination light		12 V — 3.4 W
	AT OIL TEMP. warning light		12 V — 1.4 W
	Security indicator light		LED
Low fuel warning light		12 V — 3 W	
AT select lever position indicator light		12 V — 80 mA	
Headlight			12 V — 65 W/55 W (Except GT, OUTBACK) 12 V — 60 W/55 W (GT, OUTBACK)
Front turn signal light			12 V — 27 W (2 pieces)
Side marker, parking light			12 V — 5 W
Front fog light			12 V — 55 W (Except OUTBACK), 12 V — 51 W (OUTBACK)
Rear combination light	Tail/Stop light		12 V — 8/27 W
	Turn signal light		12 V — 21 W
	Back-up light		12 V — 27 W
License plate light			12 V — 5 W
High-mounted stop light	Sedan		12 V — 16 W
	Wagon		12 V — 13 W (4 pieces)
Room light			12 V — 8 W
Spot light			12 V — 8 W
Step light			12 V — 3.4 W
Luggage room light			12 V — 13 W
Front wiper motor	Input		12 V — 72 W or less
Rear wiper motor	Input		12 V — 42 W or less
Front washer motor	Pump type		Centrifugal
	Input		12 V — 36 W or less
Rear washer motor	Pump type		Centrifugal
	Input		12 V — 36 W or less
Horn			12 V — 350 Hz/420 Hz
Cigarette lighter	Input		12 V — 120 W
Rear window defogger	Input		12 V — 160 W
	Indicator light		12 V — 50 mA
Cargo socket	Input		12 V — 120 W

1. Precautions

- Before disassembling or reassembling parts, always disconnect battery ground cable. When repairing radio, control module, etc. which are provided with memory functions, record memory contents before disconnecting battery ground cable. Otherwise, these contents are cancelled upon disconnection.
- Reassemble parts in reverse order of disassembly procedure unless otherwise indicated.
- Adjust parts to specifications contained in this manual if so designated.
- Connect connectors and hoses securely during reassembly.
- After reassembly, ensure functional parts operate smoothly.

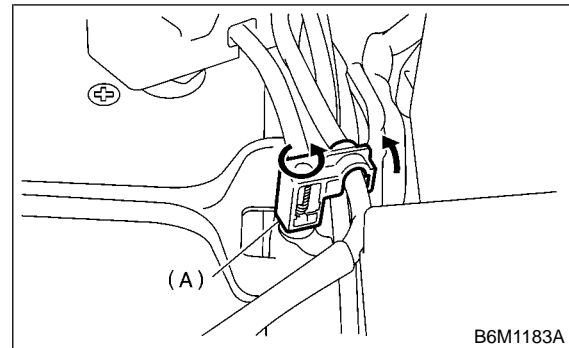
CAUTION:

- Airbag system wiring harness is routed near the electrical parts and switch.
- All airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuits.
- Be careful not to damage Airbag system wiring harness when servicing the ignition key cylinder.

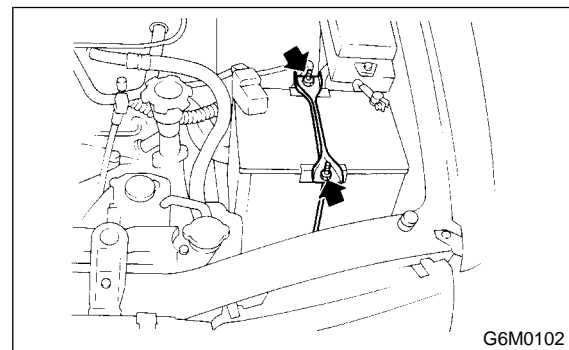
2. Battery

A: REMOVAL AND INSTALLATION

- 1) Remove battery cable holder (A) from battery rod.



- 2) Disconnect the positive (+) terminal after disconnecting the negative (-) terminal of battery.
- 3) Remove flange nuts from battery rods and take off battery holder.



- 4) Remove battery.
- 5) Installation is in the reverse order of removal.

Tightening torque:

$3.4 \pm 1.0 \text{ N}\cdot\text{m}$ ($0.35 \pm 0.1 \text{ kg}\cdot\text{m}$, $2.5 \pm 0.7 \text{ ft}\cdot\text{lb}$)

NOTE:

- Clean battery cable terminals and apply grease to retard the formation of corrosion.
- Connect the positive (+) terminal of battery and then the negative (-) terminal of the battery.

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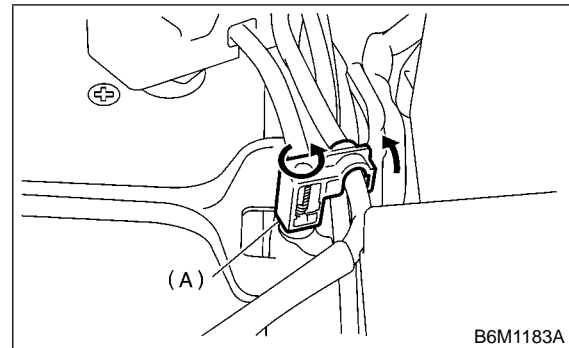
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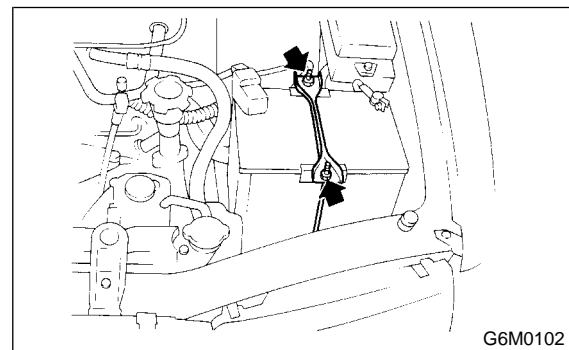
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NOTE:

- Clean battery cable terminals and apply grease to retard the formation of corrosion.
- Connect the positive (+) terminal of battery and then the negative (-) terminal of the battery.

B: INSPECTION

WARNING:

- Electrolyte has toxicity; be careful handling the fluid.
- Avoid contact with skin, eyes or clothing. Especially at contact with eyes, blush with water for 15 minutes and get prompt medical attention.
- Batteries produce explosive gasses. Keep sparks, flame, cigarettes away.
- Ventilate when charging or using in enclosed space.
- For safety, in case an explosion does occur, wear eye protection or shield your eyes when working near any battery. Never lean over a battery.
- Do not let battery fluid contact eyes, skin, fabrics, or paint-work because battery fluid is corrosive acid.
- To lessen the risk of sparks, remove rings, metal watch-bands, and other metal jewelry. Never allow metal tools to contact the positive battery terminal and anything connected to it while you are at the same time in contact with any other metallic portion of the vehicle because a short circuit will be caused.

1. BATTERY

1) External parts:

Check for the existence of dirt or cracks on the battery case, top cover, vent plugs, and terminal posts. If necessary, clean with water and wipe with a dry cloth.

Apply a thin coat of grease on the terminal posts to prevent corrosion.

2) Electrolyte level:

Check the electrolyte level in each cell. If the level is below MIN LEVEL, bring the level to MAX LEVEL by pouring distilled water into the battery cell. Do not fill beyond MAX LEVEL.

- 3) Specific gravity of electrolyte:
 - (1) Measure specific gravity of electrolyte using a hydrometer and a thermometer. Specific gravity varies with temperature of electrolyte so that it must be corrected at 20°C (68°F) using the following equation:

$$S_{20} = St + 0.0007 \times (t - 20)$$

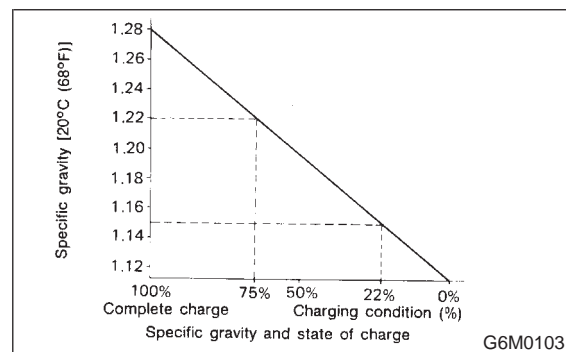
S₂₀: Specific gravity corrected at electrolyte temperature of 20°C

St: Measured specific gravity

t: Measured temperature (°C)

Determine whether or not battery must be charged, according to corrected specific gravity.

Standard specific gravity: 1.220 — 1.290 [at 20°C (68°F)]



- (2) Measuring the specific gravity of the electrolyte in the battery will disclose the state of charge of the battery. The relation between the specific gravity and the state of charge is as shown in figure.

C: CHARGING

WARNING:

- Do not bring an open flame close to the battery at this time.

CAUTION:

- Prior to charging, corroded terminals should be cleaned with a brush and common baking soda solution.
- Be careful since battery electrolyte overflows while charging the battery.
- Observe instructions when handling battery charger.
- Before charging the battery on vehicle, disconnect battery ground terminal. Failure to follow this rule may damage alternator's diodes or other electrical units.

1. NORMAL CHARGING

Charge the battery at current value specified by manufacturer or at approximately 1/10 of battery's ampere-hour rating.

2. QUICK CHARGING

Quick charging is a method in which the battery is charged in a short period of time with a relatively large current by using a quick charger. Since a large current flow raises electrolyte temperature, the battery is subject to damage if the large current is used for prolonged time. For this reason, the quick charging must be carried out within a current range that will not increase the electrolyte temperature above 40°C (104°F). It should be also remembered that the quick charging is a temporary means to bring battery voltage up to a fair value and, as a rule, a battery should be charged slowly with a low current.

CAUTION:

- Observe the items in 1. NORMAL CHARGING.
- Never use more than 10 amperes when charging the battery because that will shorten battery life.

3. JUDGMENT OF BATTERY IN CHARGED CONDITION

- 1) Specific gravity of electrolyte is held at a specific value in a range from 1.250 to 1.290 for more than one hour.
- 2) Voltage per battery cell is held at a specific value in a range from 2.5 to 2.8 volts for more than one hour.

4. CHECK HYDROMETER FOR STATE OF CHARGE

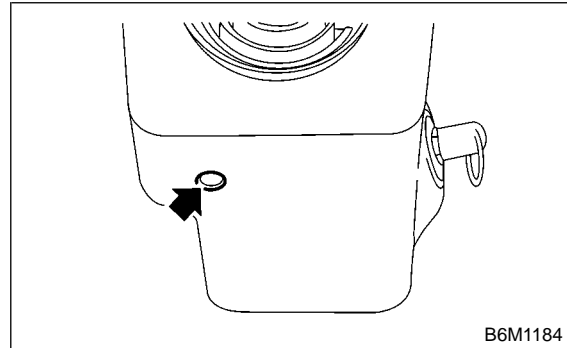
Hydrometer indicator	State of charge	Required action
Green dot	Above 65%	Load test
Dark dot	Below 65%	Charge battery
Clear dot	Low electrolyte	Replace battery* (If cranking complaint)

*: Check electrical system before replacement.

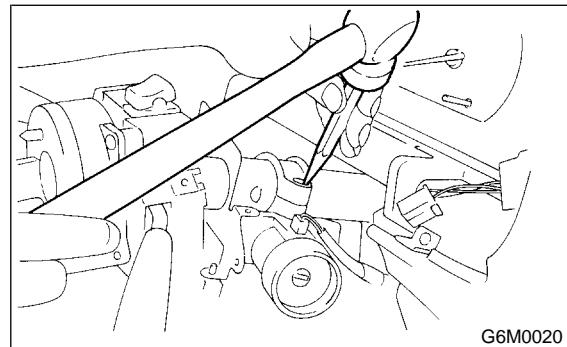
3. Ignition Switch

A: REMOVAL AND INSTALLATION

- 1) Remove instrument panel lower cover. <Ref. to 5-4 [W1A0].>
- 2) Remove screw, then separate upper column cover and lower column cover.



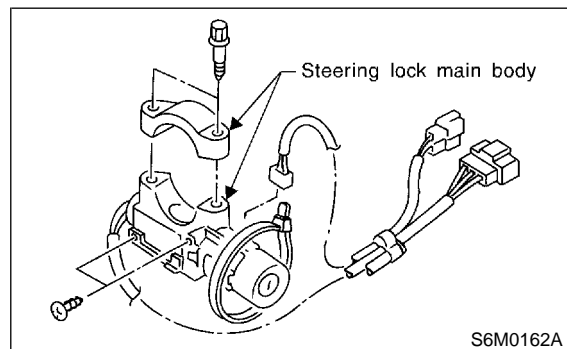
- 3) Remove meter visor.
- 4) Disconnect ignition switch connector from body harness.
- 5) Using a drift and hammer, hit the torn bolt head to loosen and remove the ignition switch.



- 6) Installation is in the reverse order of removal.

NOTE:

When installing, tighten the connecting bolt until its head twists off.



4. Lighting

A: ADJUSTMENT

1. HEADLIGHT AIMING

NOTE:

As this headlight is the "VISUAL AIMING TYPE", it is possible to adjust aiming only in the vertical direction. It cannot be adjusted in the horizontal direction.

CAUTION:

Turn off the light before adjusting headlight aiming. If the light is necessary to check aiming, do not turn on for more than two minutes.

NOTE:

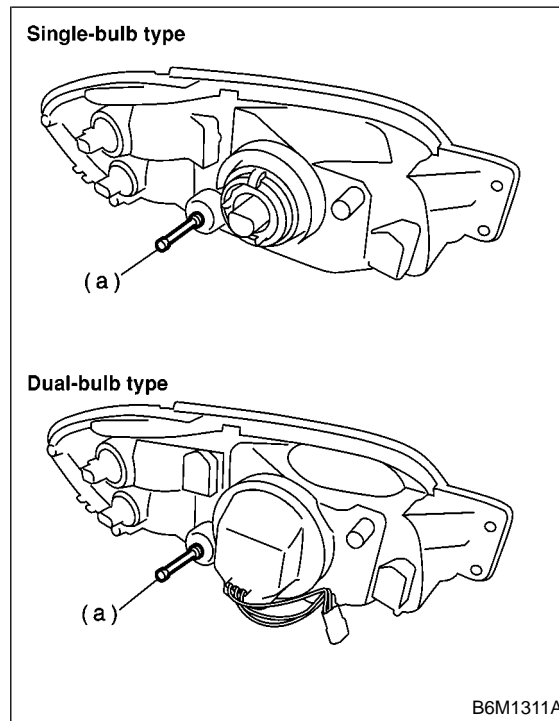
Before checking the headlight aiming, be sure of the following:

- The area around the headlight has not sustained any accident, damage or other type of deformation.
- Vehicle is parked on level ground.
- The inflation pressure of tires is correct.
- Vehicle's gas tank is fully charged.
- Bounce the vehicle several times to normalize the suspension.
- Make certain that someone is seated in the driver's seat.

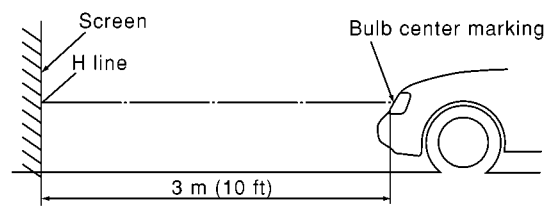
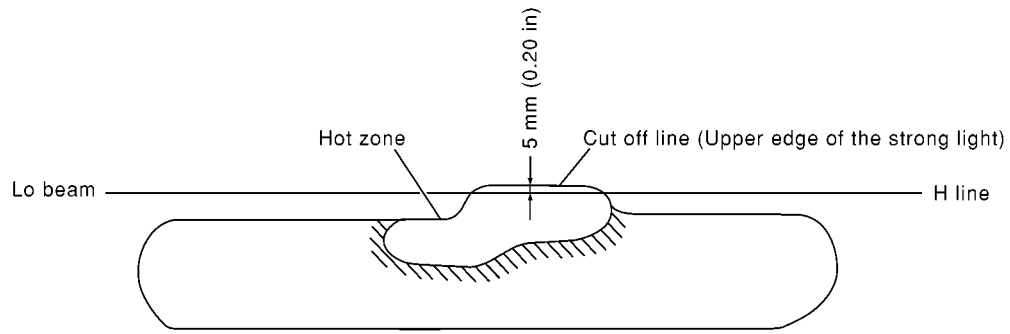
Turn the headlight on and then adjust the low beam pattern to the following positions on the screen.

NOTE:

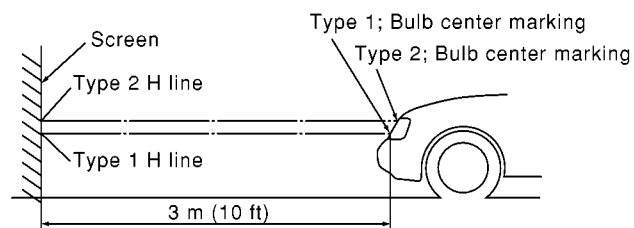
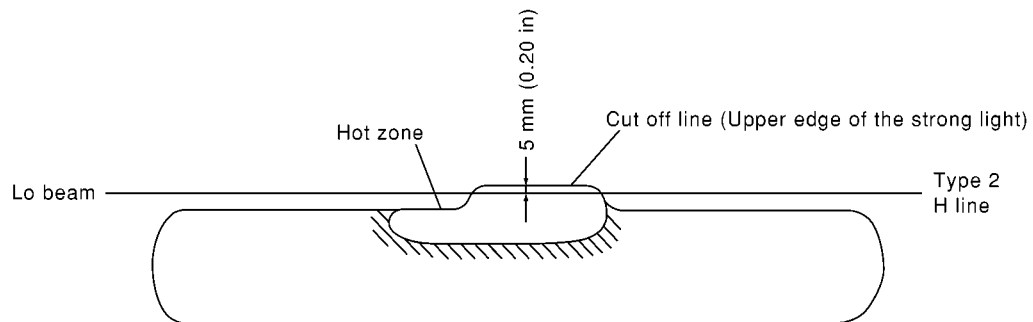
Adjust the headlight aiming by turning the adjusting screw (a).



Single-bulb headlight



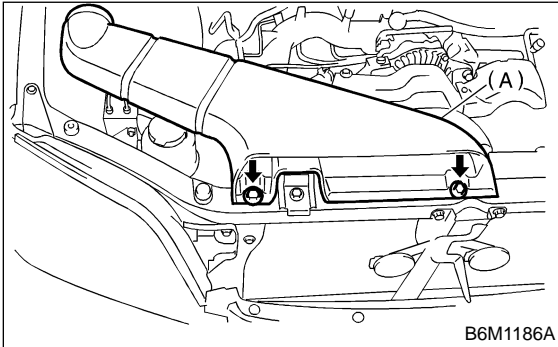
Dual-bulb headlight



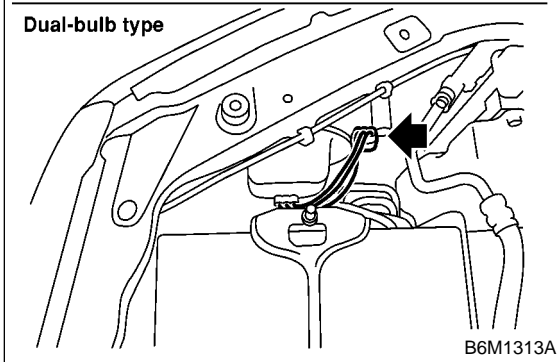
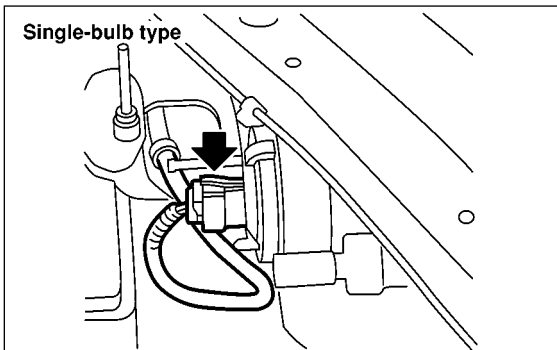
B6M1312A

B: REMOVAL AND INSTALLATION**1. HEADLIGHT**

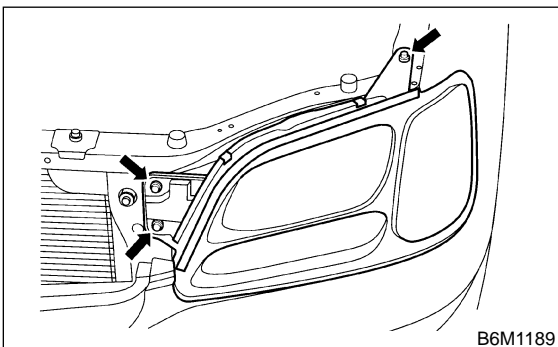
1) Remove duct (A). (When right side headlight is removed.)



2) Disconnect headlight bulb connector.



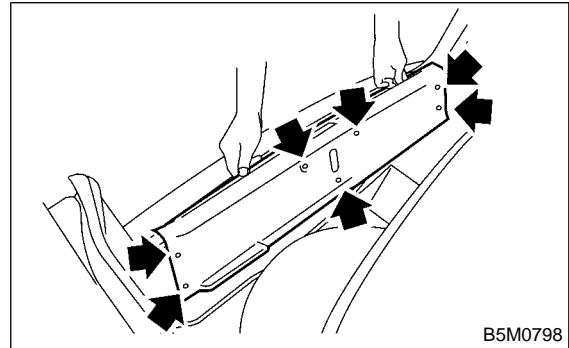
3) Remove three bolts then remove headlight while disconnecting connector.



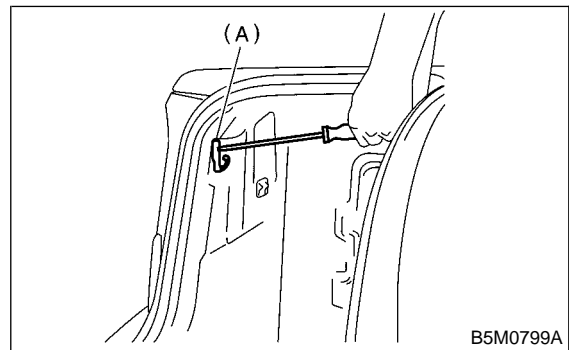
4) Installation is in the reverse order of removal.

2. REAR COMBINATION LIGHT (SEDAN BODY)

1) Remove clips and then detach trunk rear trim.

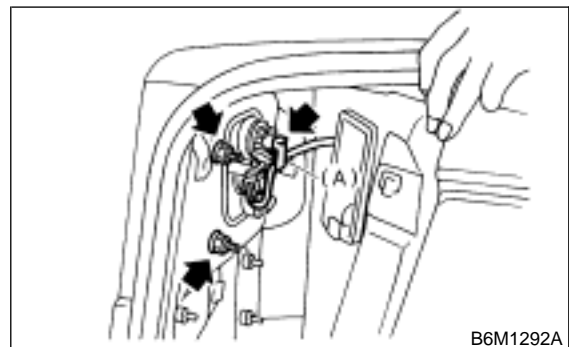


2) Remove hook (A) and then turn over the trunk side trim of rear portion.



3) Remove harness clip (A).

4) Remove three nuts and then detach rear combination light while disconnecting connector.



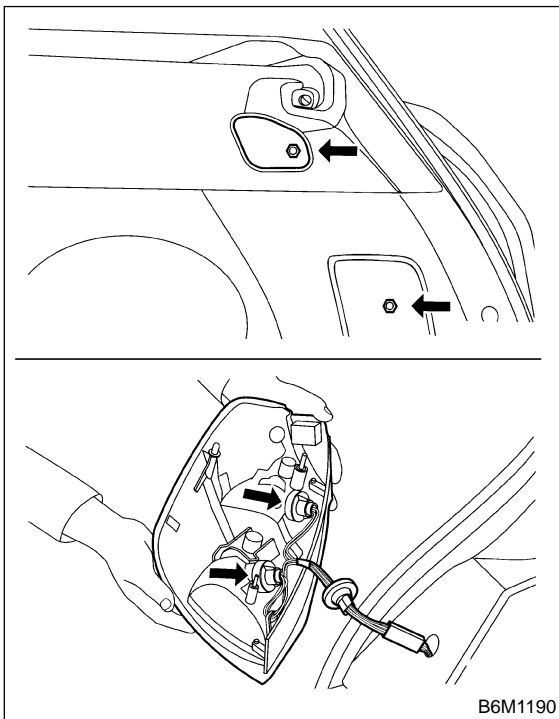
5) Installation is in the reverse order of removal.

3. REAR COMBINATION LIGHT (WAGON BODY)

- 1) Remove two rear quarter trim covers.
- 2) Remove two nuts and then remove rear combination light while disconnecting connector.

NOTE:

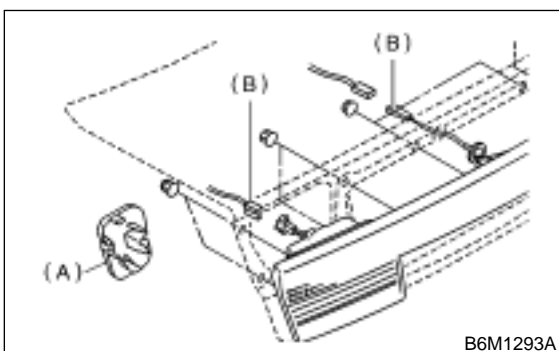
Before removing the nuts, apply a few turns of butyl tape to the tip of the service tool. This prevents the nuts from falling during removal.



- 3) Installation is in the reverse order of removal.

4. REAR FINISHER LIGHT (SEDAN BODY)

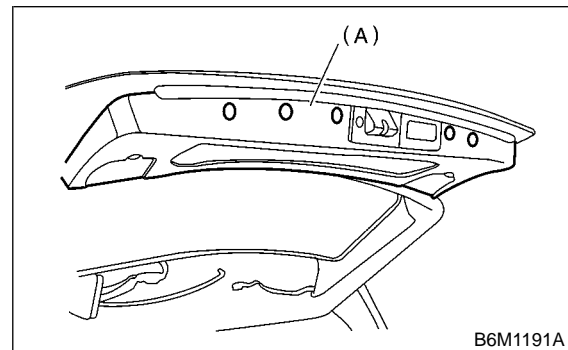
- 1) Open the trunk lid.
- 2) Remove cover (A).
- 3) Disconnect connector (B) from rear finisher light.
- 4) Remove ten nuts and then detach rear finisher light from trunk lid.



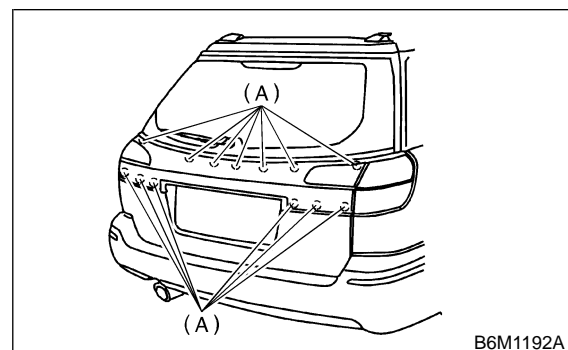
- 5) Installation is in the reverse order of removal.

5. REAR FINISHER LIGHT (WAGON BODY)

- 1) Remove rear gate trim lower (A).



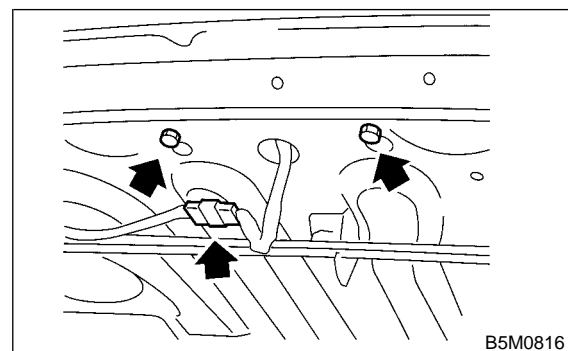
- 2) Disconnect connector from rear finisher light.
- 3) Remove bolts (A) and then remove rear finisher light from rear gate.



- 4) Installation is in the reverse order of removal.

6. HIGH-MOUNTED STOP LIGHT (SEDAN BODY WITHOUT REAR SPOILER)

- 1) Disconnect connector of high-mounted stop light from body harness.
- 2) Remove bolts, then detach high-mounted stop light assembly.

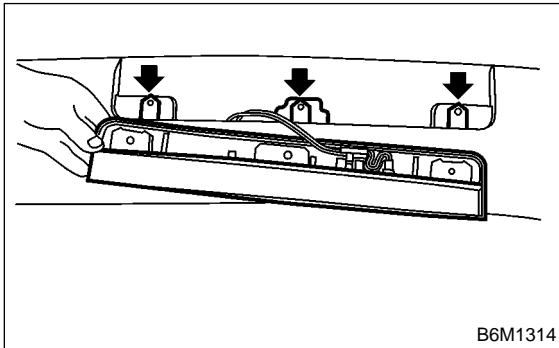


- 3) Installation is in the reverse order of removal.

4. Lighting

7. HIGH-MOUNTED STOP LIGHT (SEDAN BODY WITH REAR SPOILER)

1) Remove three screws and then detach high-mounted stop light assembly while disconnecting connector.



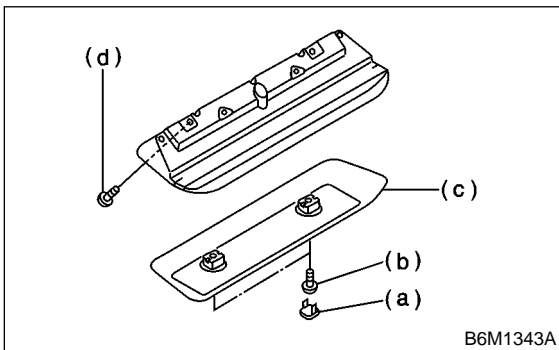
2) Installation is in the reverse order of removal.

8. HIGH-MOUNTED STOP LIGHT (WAGON BODY)

1) Remove cap (a) by prying on the edge with a screwdriver.

2) Remove screws (b) and then detach cover (c).

3) Remove screws (d) and then detach high-mounted stop light while disconnecting connector.

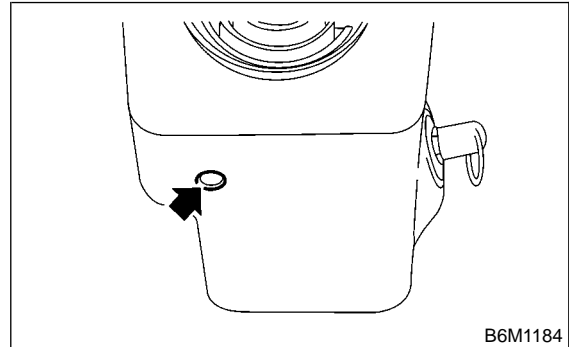


4) Installation is in the reverse order of removal.

9. COMBINATION SWITCH

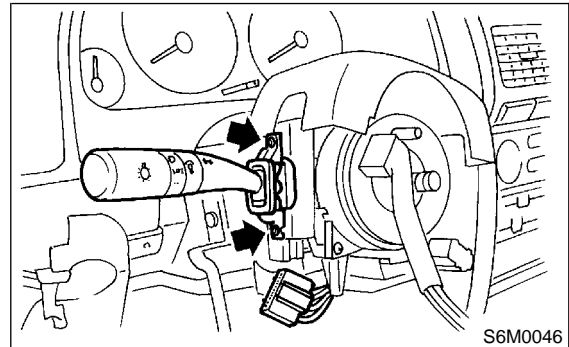
1) Remove instrument panel lower cover. <Ref. to 5-4 [W1A0].>

2) Remove screws which secure upper column cover to lower column cover.



3) Disconnect connector from combination switch.

4) Remove screws which secure switch and remove switch.



5) Installation is in the reverse order of removal.

C: INSPECTION

1. COMBINATION SWITCH (LIGHTING)

Move combination switch to respective positions and check continuity between terminals.

• **LIGHTING SWITCH**

Terminal Switch position	16	14	13
OFF			
Tail	○	○	
Head	○	○	○

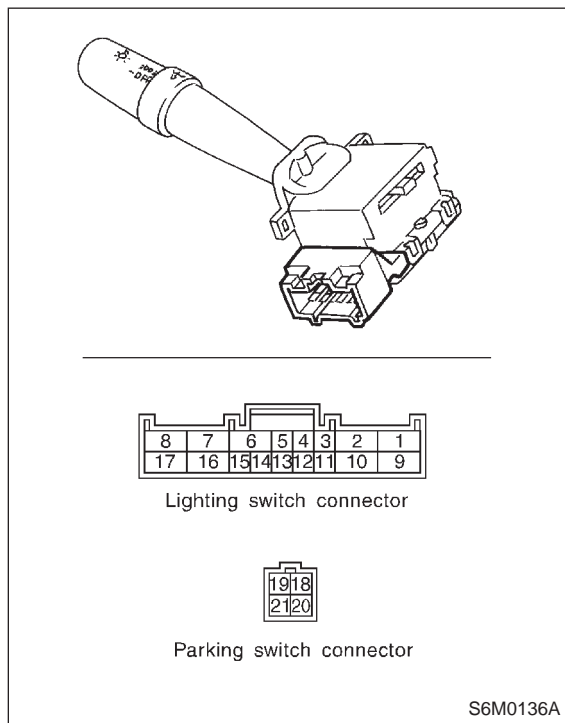
• **PARKING SWITCH**

Terminal Switch position	19	21	18
OFF	○	○	
ON		○	○

• **DIMMER AND PASSING SWITCH**

Terminal Switch position	16	17	7	8
Flash	○		○	○
Low beam	○	○		
HI-beam	○		○	

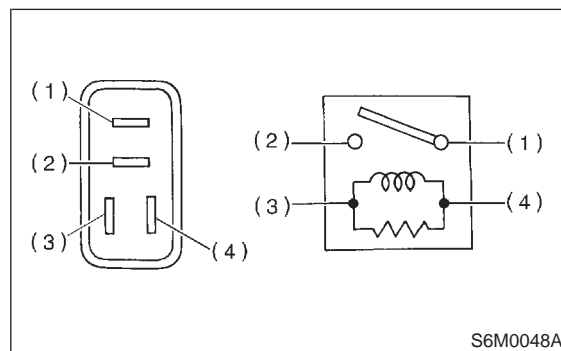
H6M0500B



2. HEADLIGHT RELAY

Check continuity between terminals when terminal No. 4 is connected to battery and terminal No. 3 is grounded.

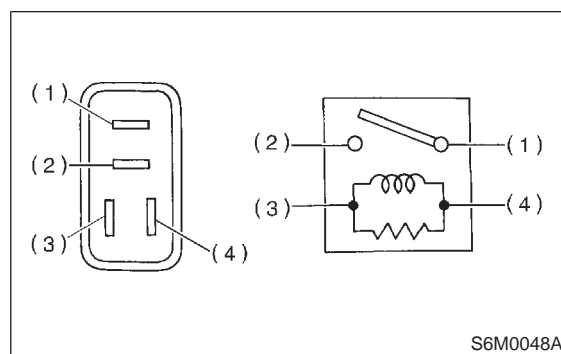
When current flows.	Between terminals No. 1 and No. 2	Continuity exists.
When current does not flow.	Between terminals No. 1 and No. 2	Continuity does not exist.
	Between terminals No. 3 and No. 4	Continuity exists.



3. TAIL AND ILLUMINATION RELAY

Check continuity between terminals (indicated in table below) when terminal No. 4 is connected to battery and terminal No. 3 is grounded.

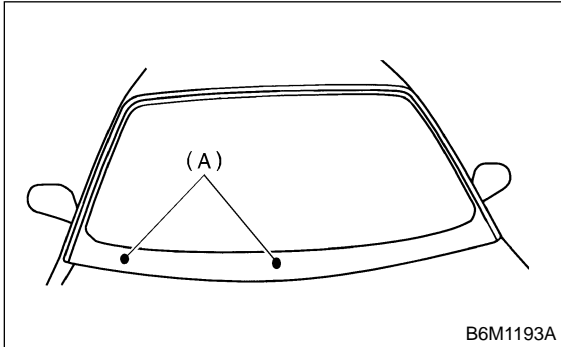
When current flows.	Between terminals No. 1 and No. 2	Continuity exists.
When current does not flow.	Between terminals No. 1 and No. 2	Continuity does not exist.
	Between terminals No. 3 and No. 4	Continuity exists.



5. Front Wiper and Washer

A: ADJUSTMENT

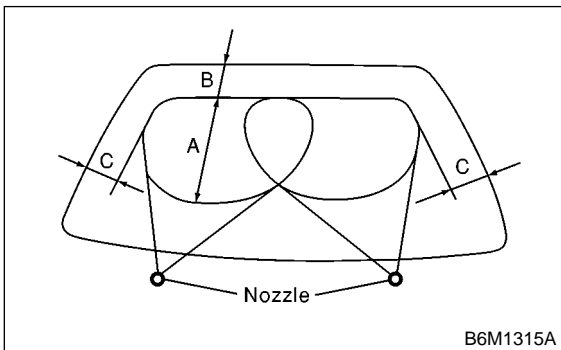
- 1) Turn the wiper switch to OFF position.
- 2) Adjust so that the blades meet the ceramic print point mark (A).



- 3) Adjust washer ejecting point on windshield glass as shown in figure when vehicle stops.

Ejecting point:

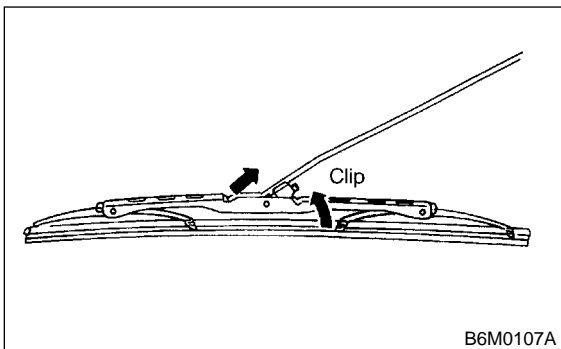
- A: 350 mm (13.78 in)
- B: 100 mm (3.94 in)
- C: 200 mm (7.87 in)



B: REMOVAL AND INSTALLATION

1. BLADE

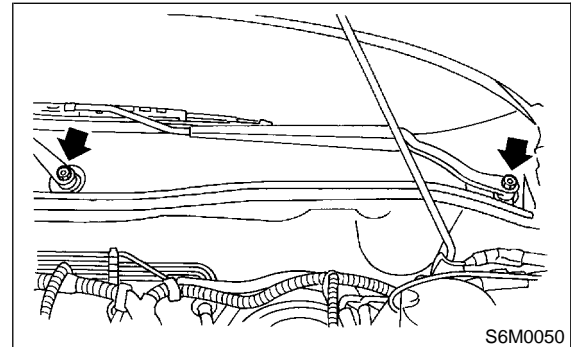
- 1) Pull out blade following the arrow direction, from arm while pushing up locking clip.



- 2) Installation is in the reverse order of removal.

2. WIPER ARM

- 1) Open front hood.
- 2) Remove cap. Remove the nut which secure wiper arm, and remove wiper arm.



- 3) Installation is in the reverse order of removal.

NOTE:

Remove metal sludge from the wiper arm fixture before installing it.

Tightening torque:

20 ± 3 N·m (2.0 ± 0.3 kg·m, 14.5 ± 2.2 ft·lb)

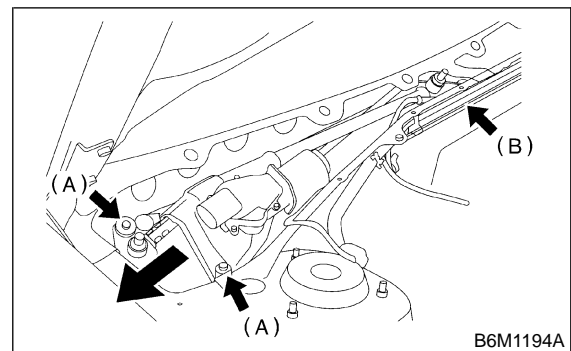
3. WIPER MOTOR AND LINK

- 1) Detach cowl panel. <Ref. to 5-1 [W10A0].>

NOTE:

Apply silicone oil or soap water to both sides of cowl net to facilitate removal.

- 2) Disconnect electric connector, and remove motor attaching bolts (A) and nut (B).
- 3) Remove wiper module from service hole in front panel.



- 4) Installation is in the reverse order of removal.

C: INSPECTION

1. COMBINATION SWITCH (FRONT WIPER)

Set wiper switch to each position and check continuity between terminals.

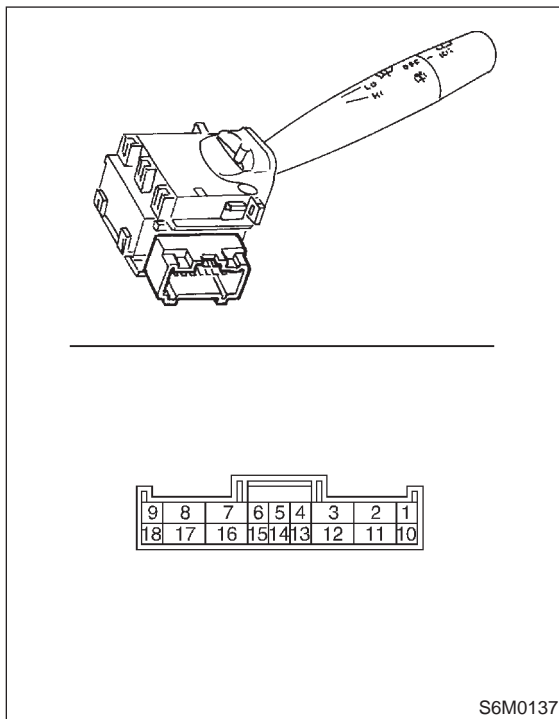
• Wiper switch

Terminal Switch position		16	7	17	8	INT1	INT2
OFF	OFF	○—○					
	MIST	×	×	×			
INT	OFF	○—○				○—○	
	MIST	×	○—○	×		○—○	
LO	OFF	×	○—○	×			
	MIST		○—○				
HI	OFF			○—○			
	MIST		○—○	○—○			

• Washer switch

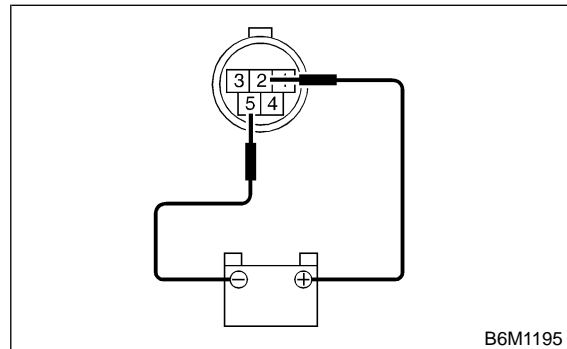
Terminal Switch position	11	2
OFF		
ON	○—○	○—○

H6M0501B

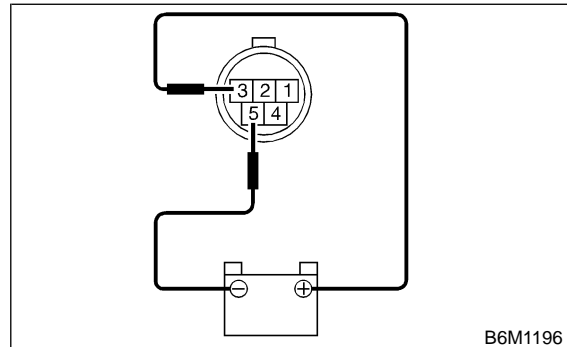


2. WIPER MOTOR

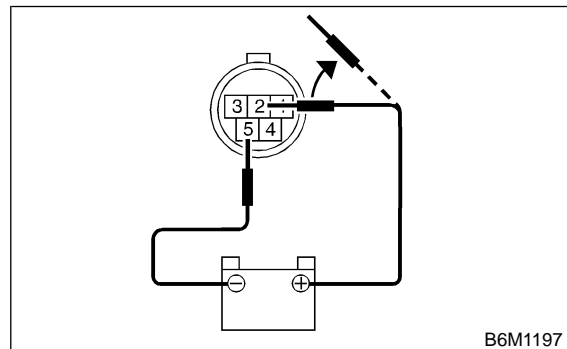
1) Check wiper motor operation at low speed: Connect battery to wiper motor. Check wiper motor for proper operation at low speed.



2) Check wiper motor operation at high speed: Connect battery wiper motor. Check wiper motor for proper operation at high speed.

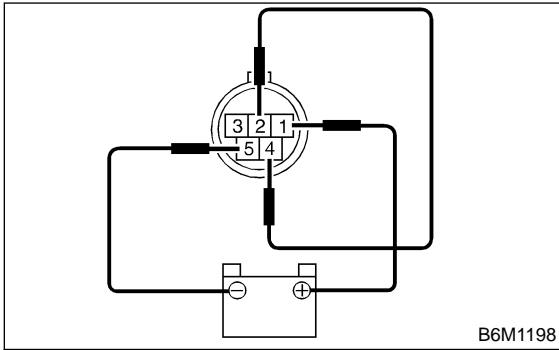


3) Check wiper motor for proper stoppage: Connect battery to wiper motor. After operating wiper motor at low speed, disconnect battery to stop it.



6. Rear Wiper and Washer

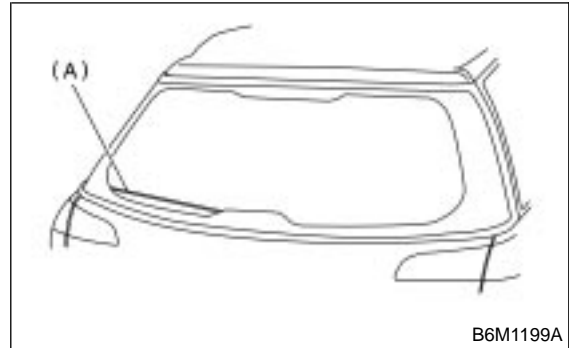
4) Reconnect battery and ensure that wiper motor stops at "AUTO STOP" after operating at low speed.



6. Rear Wiper and Washer

A: ADJUSTMENT

1) Adjust so that the blades meet the rear defogger heat wire (A).

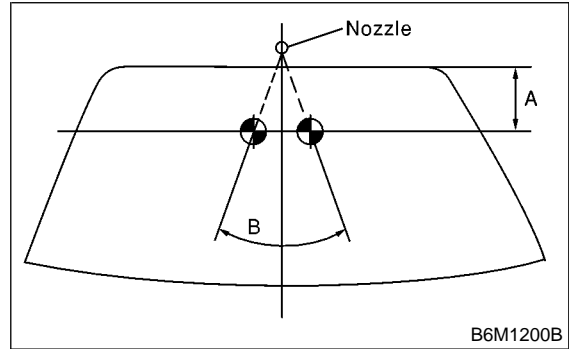


2) Adjust washer ejecting point on rear gate window as shown in figure when the vehicle stops.

Ejecting point:

A: 60 mm (2.36 in)

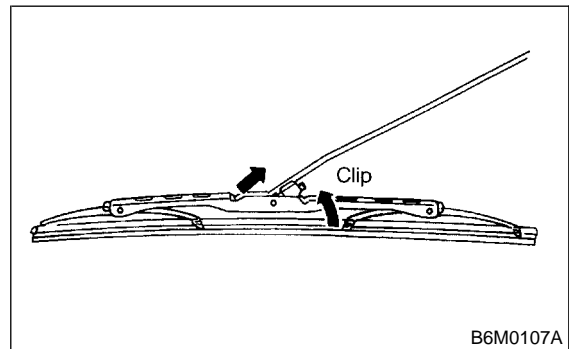
B: 42°



B: REMOVAL AND INSTALLATION

1. BLADE

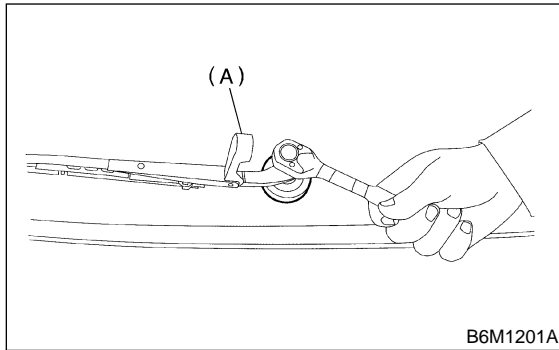
1) Pull out blade following the arrow direction, from arm while pushing up locking clip.



2) Installation is in the reverse order of removal.

2. WIPER ARM

- 1) Tilt up the head cover (A).
- 2) Remove nut and wiper arm.



- 3) Installation is in the reverse order of removal.

NOTE:

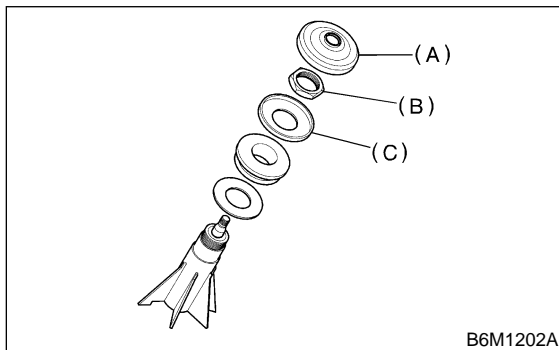
Remove metal sludge from the wiper arm fixture before installing it.

Tightening torque:

$5.9 \pm 1.5 \text{ N}\cdot\text{m}$ ($0.6 \pm 0.15 \text{ kg}\cdot\text{m}$, $4.3 \pm 1.1 \text{ ft}\cdot\text{lb}$)

3. WIPER MOTOR

- 1) Remove wiper arm. <Ref. to 6-2 [W6B2].>
- 2) Remove cap (A), nut (B) and spacer (C) from rear wiper shaft.

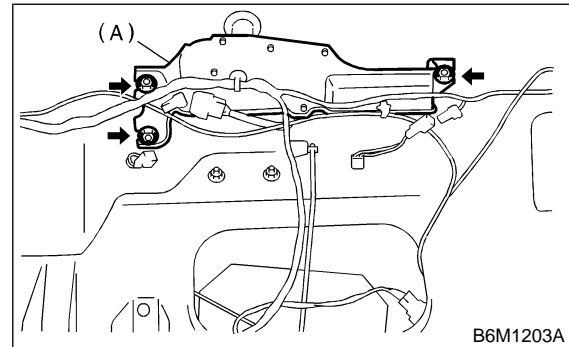


- 3) Remove rear gate trim.
- 4) Undo clips which secure harness, and disconnect connector of wiper motor.

- 5) Remove attaching screws and take out wiper motor assembly (A).

CAUTION:

Be careful not to damage O-ring when removing wiper motor assembly.



- 6) Installation is in the reverse order of removal.

Tightening torque:

$5.9 \pm 1.5 \text{ N}\cdot\text{m}$ ($0.6 \pm 0.15 \text{ kg}\cdot\text{m}$, $4.3 \pm 1.1 \text{ ft}\cdot\text{lb}$)

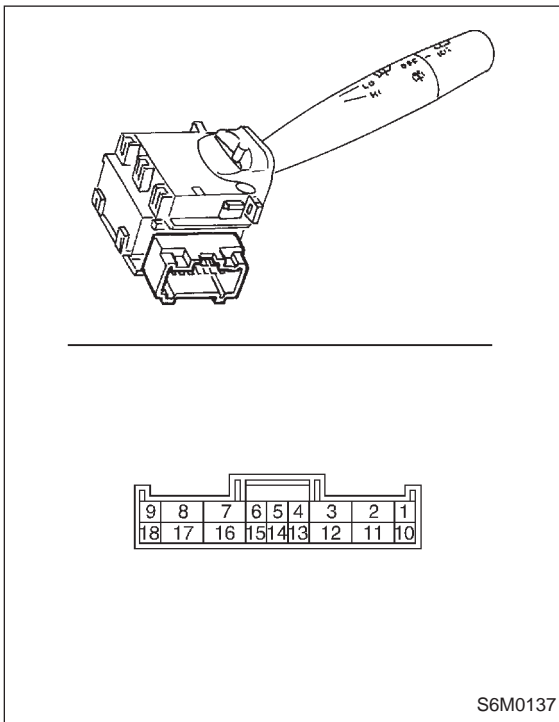
C: INSPECTION

1. COMBINATION SWITCH (REAR WIPER)

Set rear wiper and washer switch to each position and check continuity between terminals.

Terminal Switch position	10	12		2
WASH	○	○	—	○
OFF				
ON	○			○
WASH	○	○	—	○

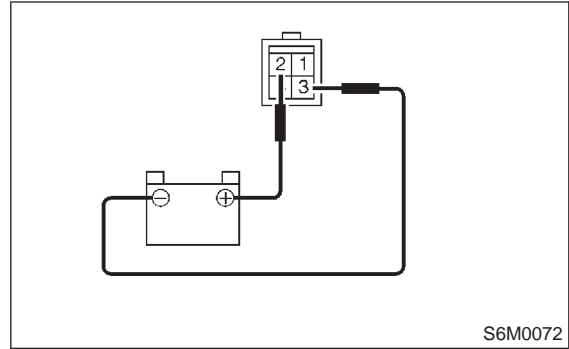
H6M0502C



S6M0137

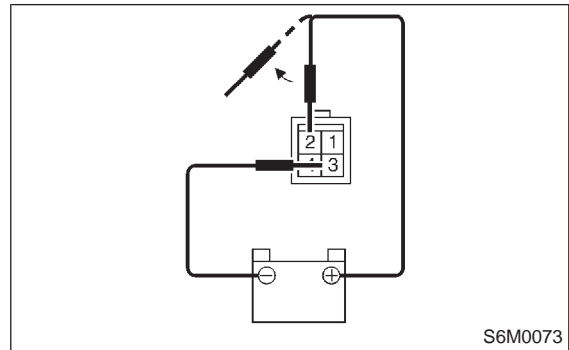
2. WIPER MOTOR

1) Operational check:
Connect battery to wiper motor and check operation of wiper motor.



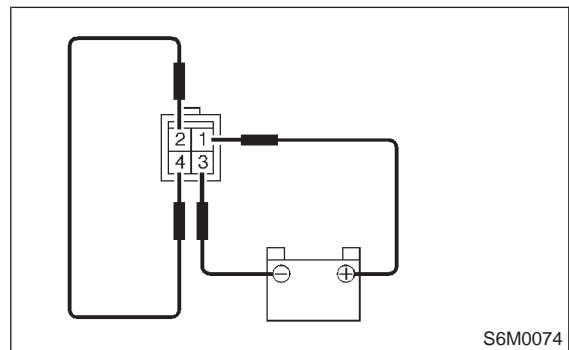
S6M0072

2) Check wiper motor for proper stoppage:
After operating wiper motor, disconnect battery from wiper motor.



S6M0073

3) Reconnect battery and ensure that wiper motor stops at "AUTO STOP" after it has been operated.



S6M0074

7. Rear Window Defogger

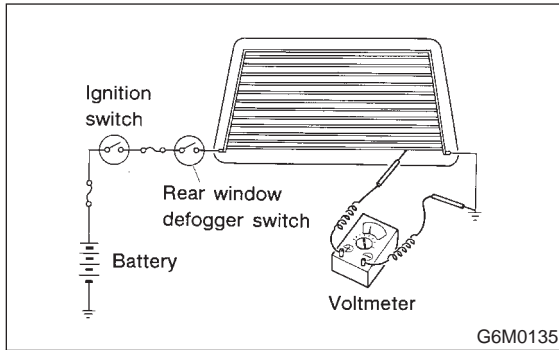
A: INSPECTION

1. HEAT WIRES

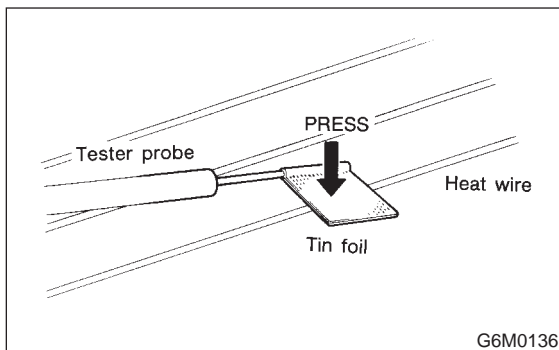
- 1) Start the engine so that battery is being charged.
- 2) Turn defogger switch ON.
- 3) Check each heat wire at its center position for discontinuity by setting direct current voltmeter.

NOTE:

- Normal indication is about 6 volts.

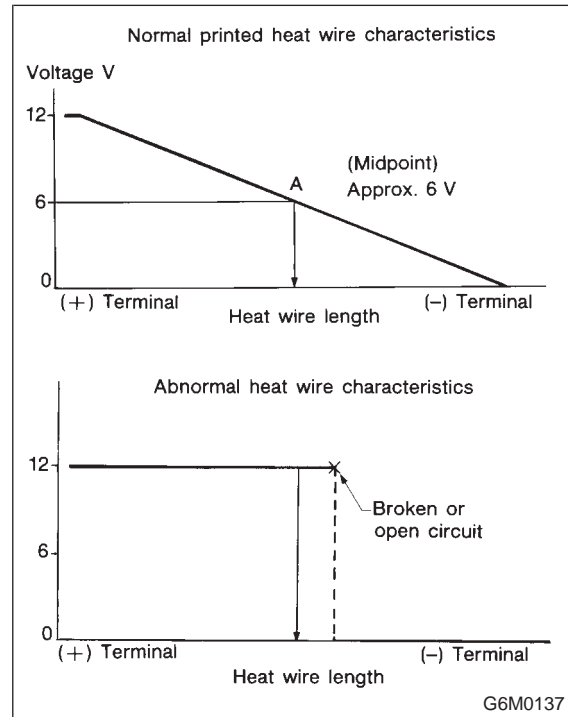


- When measuring voltage, wind a piece of tin foil around the tip of the tester probe and press the foil against the wire with your finger.



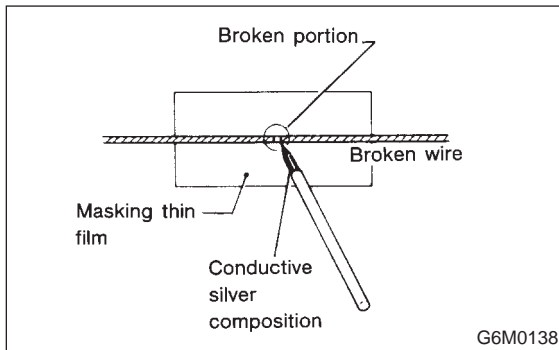
- 4) When tester indicates 12 volts when its probe reaches point "A", a broken circuit occurs between point "A" and the negative terminal. Slowly move tester probe toward the negative terminal while contacting it on heat wire to locate point where tester indication changes abruptly (0 volts). This is the point where a broken circuit occurs.

When tester indicates 0 volts when its probe reaches point "A", a broken circuit occurs between point "A" and the positive terminal. Locate a point where tester indication changes abruptly (12 volts) while slowly moving tester probe toward the positive terminal.



B: REPAIR

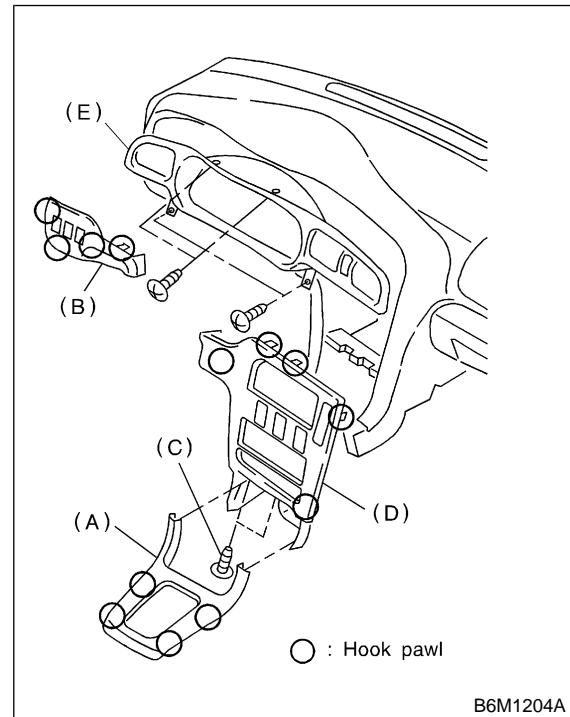
- 1) Clean broken wire and its surrounding area.
- 2) Cut off slit on (used) thin film by 0.5 mm (0.020 in) width and 10 mm (0.39 in) length.
- 3) Place the slit on glass along the broken wire, and deposit conductive silver composition (DUPONT No. 4817) on the broken portion.



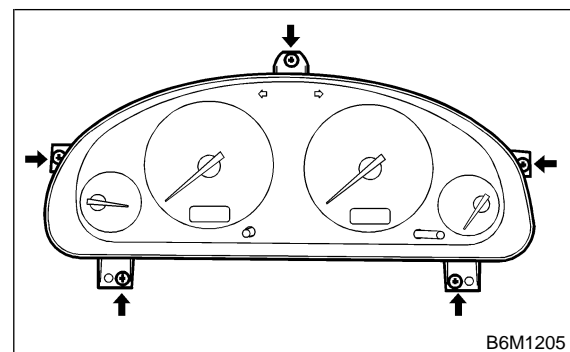
- 4) Dry out the deposited portion.
- 5) Inspect the repaired wire for continuity.

8. Combination Meter**A: REMOVAL AND INSTALLATION**

- 1) Move steering wheel to most down position.
- 2) Remove front cover (A) and switch panel (B) while disconnecting connector.
- 3) Remove two screws (C) and then remove center panel (D) while disconnecting connector.
- 4) Remove screws which secure visor and remove visor (E) while disconnecting connector.



- 5) Remove screws which secure combination meter, and pull combination meter out.

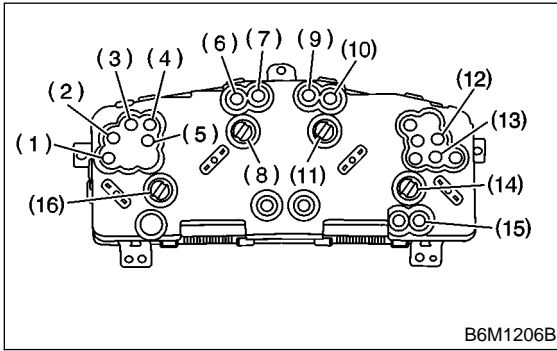


- 6) Disconnect connector from top of combination meter.
- 7) Installation is in the reverse order of removal.

CAUTION:

When installing combination meter, be sure to connect connectors to top of combination meter.

B: BULB REPLACEMENT



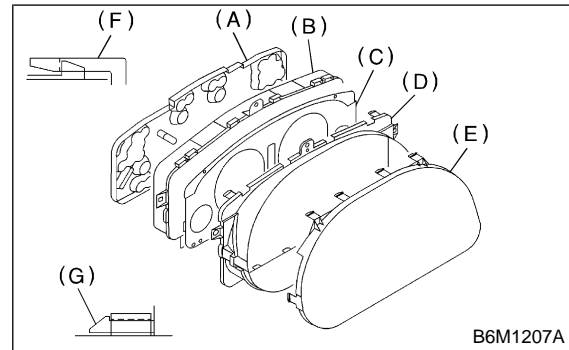
- (1) FWD
- (2) AT oil temp.
- (3) Oil pressure
- (4) Check engine
- (5) Charge
- (6) HI-beam
- (7) Turn RH
- (8) Tachometer
- (9) Turn LH
- (10) Brake
- (11) Speedometer
- (12) Airbag
- (13) ABS
- (14) Speedometer and fuel gauge
- (15) Low fuel
- (16) Tachometer and temperature gauge

C: DISASSEMBLY AND ASSEMBLY

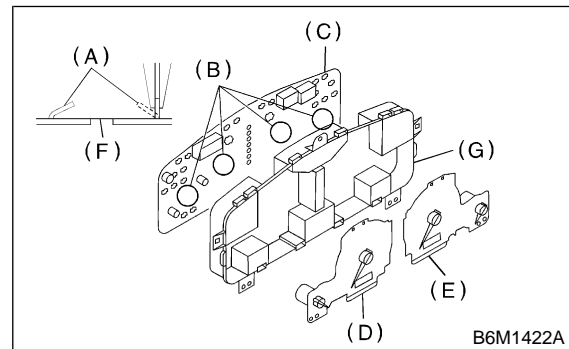
CAUTION:

- Do not touch the printed circuit elements with your bare hand. Use a suitable tool.
- Do not touch the indicator plate and pointer with your bare hand.

- 1) Disengage pawls (F) and then remove back panel (A) from case (B).
- 2) Disengage pawls (G) and then remove lens mask (E), reflector (D) and window plate (C) from case (B).



- 3) Pry up pawl (A) at portion (B) of printed circuit (C) using radioman's pliers. Push speedometer assembly (D) and tachometer assembly (E) out of hole (F) with a punch.
- 4) Pry up the pawl in the center of printed circuit (C) and remove the printed circuit board from case (G).



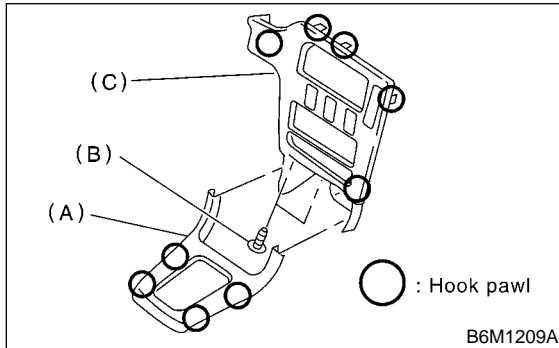
- 5) Assembly is in the reverse order of disassembly.

9. Radio, Speaker and Antenna

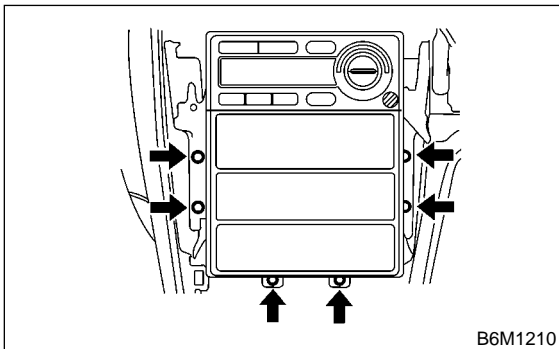
A: REMOVAL AND INSTALLATION

1. RADIO BODY

- 1) Remove front cover (A).
- 2) Remove two screws (B) and then remove center panel (C) while disconnecting connector.



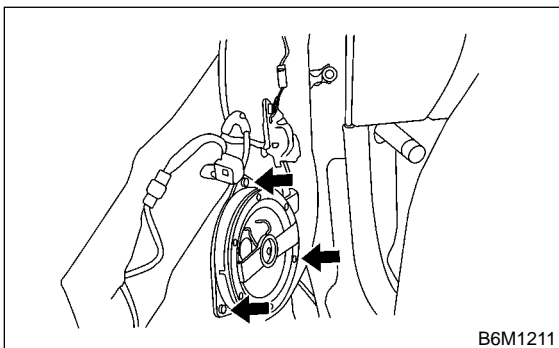
- 3) Remove fitting screws, and slightly pull radio out from center console.



- 4) Disconnect electric connectors and antenna feeder cord and then disconnect heater control unit.
- 5) Installation is in the reverse order of removal.

2. FRONT SPEAKER

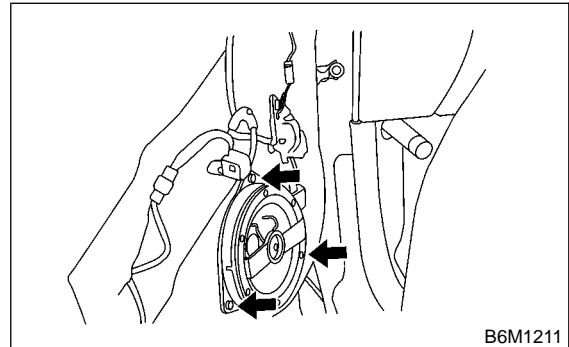
- 1) Remove front door trim and disconnect connector. <Ref. to 5-2 [W2A2].>
- 2) Remove screws which secure front speaker.



- 3) Remove speaker and disconnect connector.
- 4) Installation is in the reverse order of removal.

3. REAR SPEAKER

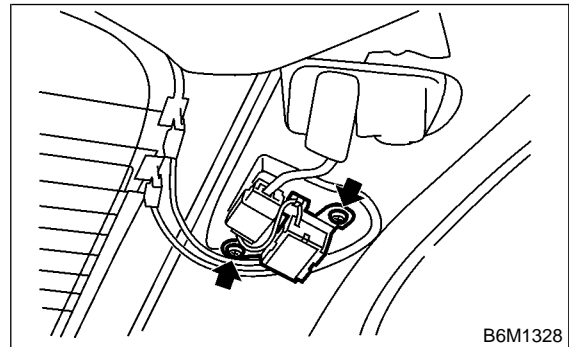
- 1) Remove rear door trim and disconnect connector. <Ref. to 5-2 [W2A2].>
- 2) Remove screws which secure rear speaker.



- 3) Remove speaker and disconnect connector.
- 4) Installation is in the reverse order of removal.

4. ANTENNA AMPLIFIER (SEDAN BODY)

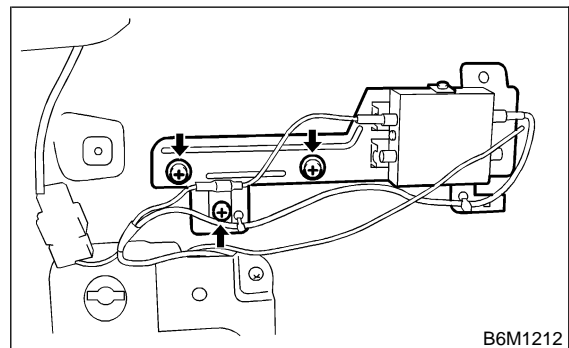
- 1) Remove rear pillar upper trim. <Ref. to 5-3 [W5A2].>
- 2) Disconnect connector and terminal from antenna amplifier.
- 3) Remove antenna amplifier.



- 4) Installation is in the reverse order of removal.

5. ANTENNA AMPLIFIER (WAGON BODY)

- 1) Remove rear quarter lower trim. <Ref. to 5-3 [W500].>
- 2) Disconnect connector and terminal from antenna amplifier.
- 3) Remove antenna amplifier.



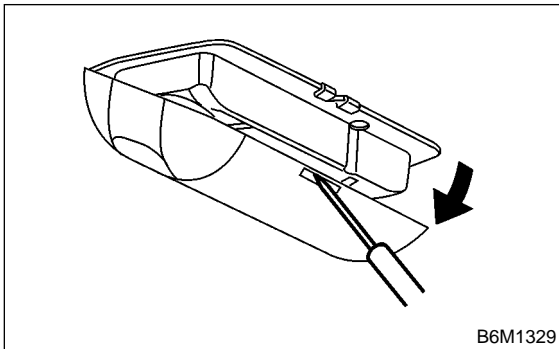
10. Dome/Rear Reading Lights

A: REMOVAL AND INSTALLATION

NOTE:

While sitting in the vehicle, be sure to touch the metal frame of the vehicle to allow all static electricity to be discharged prior to handling the dome light and the replacement dome light.

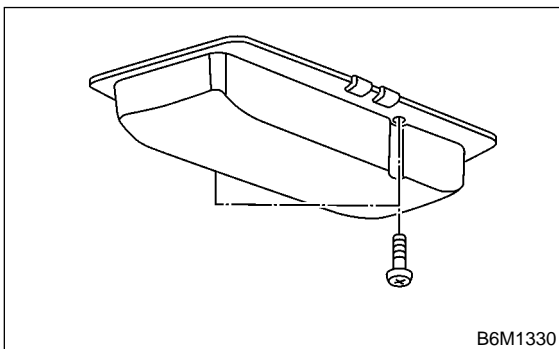
- 1) Disconnect GND cable from battery.
- 2) Remove dome light lens by inserting a small flat tipped screwdriver into center slot of the front face of the lens and press downward, causing the lens to bow and disengage from the mounting tabs.



- 3) Remove screws and then detach dome light while disconnecting connectors.

NOTE:

Take care not to touch the circuit board.



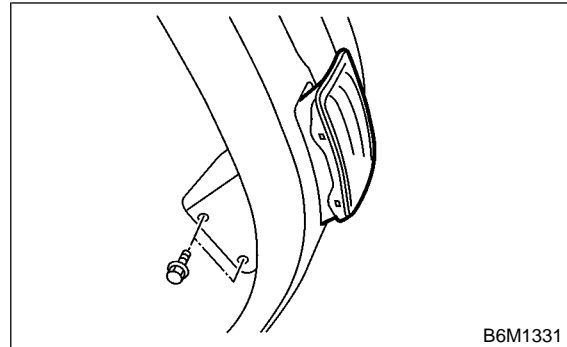
- 4) Installation is in the reverse order of removal.

11. Front Fog Light

A: REMOVAL AND INSTALLATION

1. EXCEPT OUTBACK

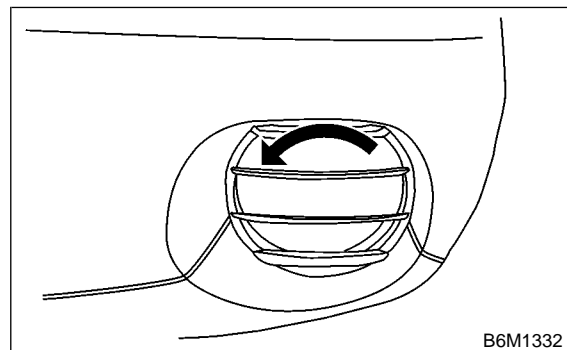
- 1) Lower the front of the mudguard just enough to facilitate subsequent procedures.
- 2) Disconnect connector.
- 3) Remove bolts and then remove front fog light.



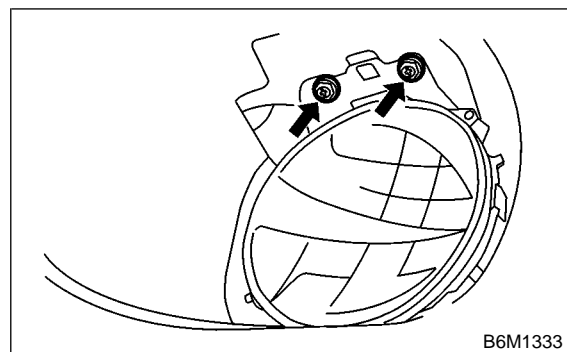
- 4) Installation is in the reverse order of removal.

2. OUTBACK

- 1) Turn stone guard counterclockwise and then remove stone guard.



- 2) Remove bolts.



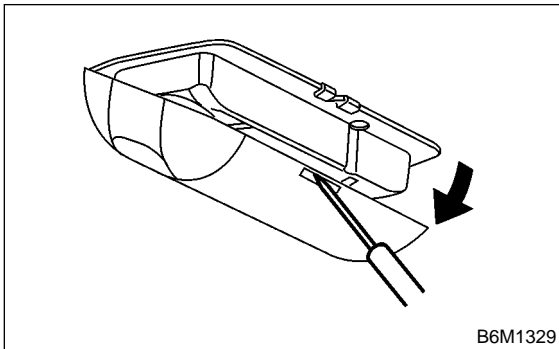
10. Dome/Rear Reading Lights

A: REMOVAL AND INSTALLATION

NOTE:

While sitting in the vehicle, be sure to touch the metal frame of the vehicle to allow all static electricity to be discharged prior to handling the dome light and the replacement dome light.

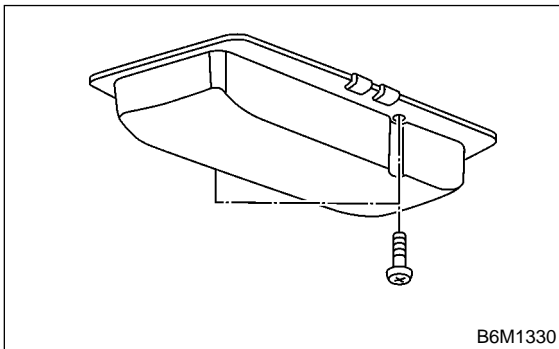
- 1) Disconnect GND cable from battery.
- 2) Remove dome light lens by inserting a small flat tipped screwdriver into center slot of the front face of the lens and press downward, causing the lens to bow and disengage from the mounting tabs.



- 3) Remove screws and then detach dome light while disconnecting connectors.

NOTE:

Take care not to touch the circuit board.



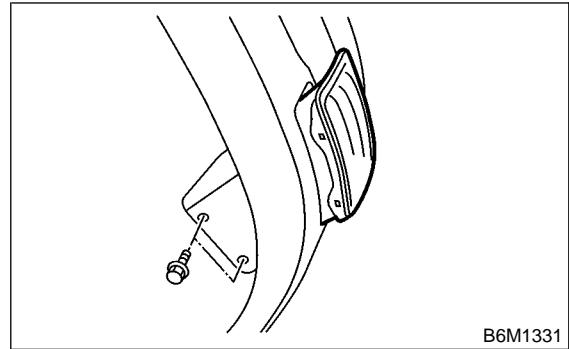
- 4) Installation is in the reverse order of removal.

11. Front Fog Light

A: REMOVAL AND INSTALLATION

1. EXCEPT OUTBACK

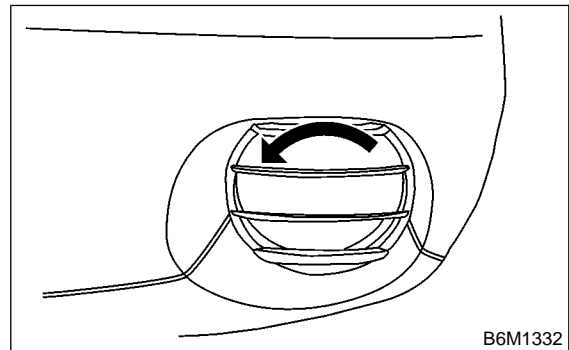
- 1) Lower the front of the mudguard just enough to facilitate subsequent procedures.
- 2) Disconnect connector.
- 3) Remove bolts and then remove front fog light.



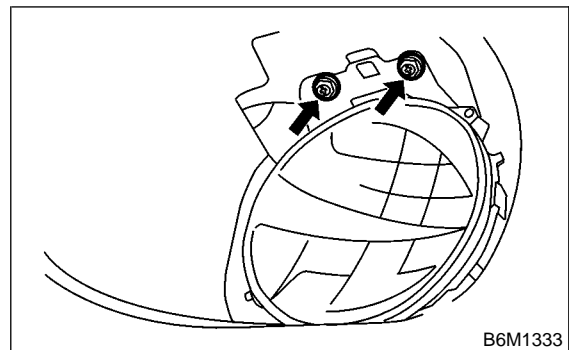
- 4) Installation is in the reverse order of removal.

2. OUTBACK

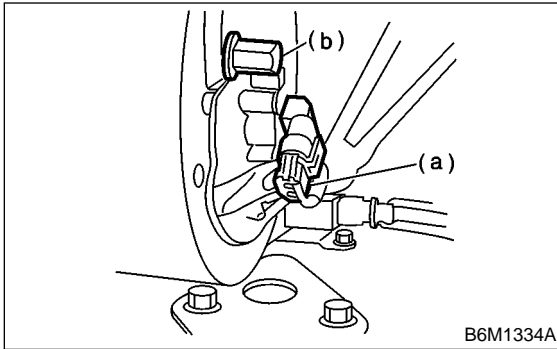
- 1) Turn stone guard counterclockwise and then remove stone guard.



- 2) Remove bolts.



- 3) Lower the front of the mudguard just enough to facilitate subsequent procedures.
- 4) Disconnect connector (a).
- 5) Remove nut (b) and then remove front fog light.



- 6) Installation is in the reverse order of removal.

12. Cruise Control System

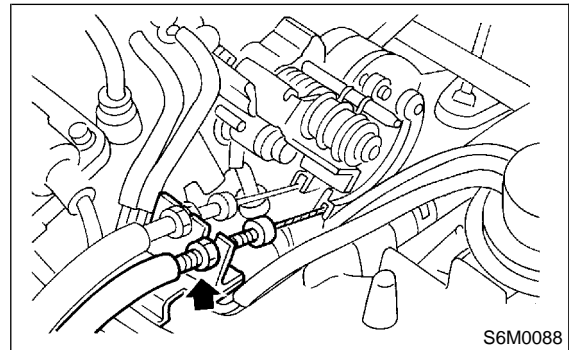
A: REMOVAL AND INSTALLATION

1. ACTUATOR

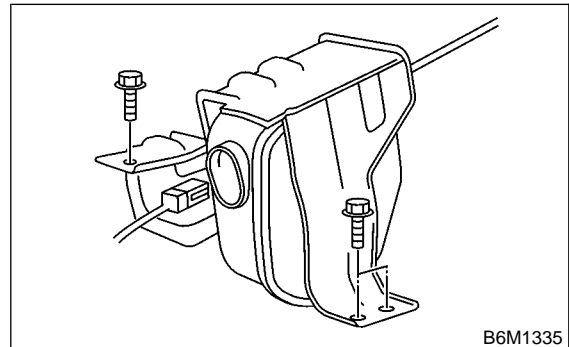
CAUTION:

- Be careful not to apply excessive load to the wire cable when adjusting and/or installing; otherwise, the actuator may be deformed or damaged.
- Do not bend cable sharply with a radius less than 100 mm (3.94 in); otherwise, cable may bend permanently, resulting in poor performance.
- When installing cable, be careful not to sharply bend or pinch the inner cable; otherwise, the cable may break.

- 1) Remove clip bands from cruise control cable.
- 2) Loosen nut which secures cruise control cable end to throttle cam and then remove cable from throttle cam.



- 3) Remove actuator attaching bolts.
- 4) Remove actuator while disconnecting connector.



- 5) Installation is in the reverse order of removal.

Tightening torque:

7.4 ± 2.0 N·m (0.75 ± 0.2 kg·m, 5.4 ± 1.4 ft·lb)

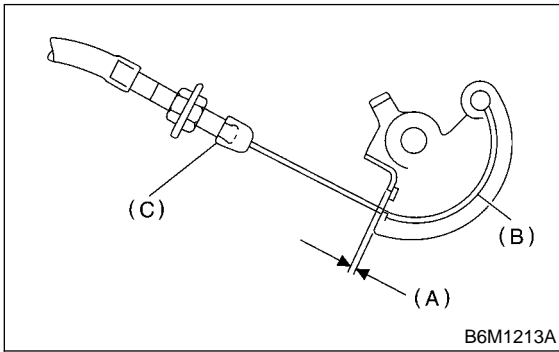
NOTE:

(A): Must be adjusted when cable end outer is fixed in place, so that gap between throttle cam and lever is 0 — 1 mm (0 — 0.04 in).

(Must be attached while throttle cam is being pulled by wire cable.)

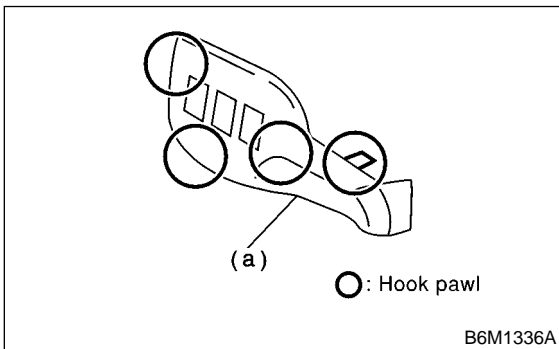
(B): Must be coated evenly on cam end inner connection.

(C): Cover must be inserted securely, until tip of cable touches cover stopper.

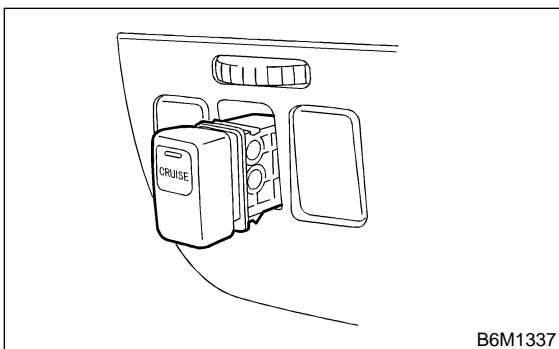


2. CRUISE CONTROL MAIN SWITCH

1) Remove switch panel (A) while disconnecting connector.



2) Remove main switch by pushing it outward.



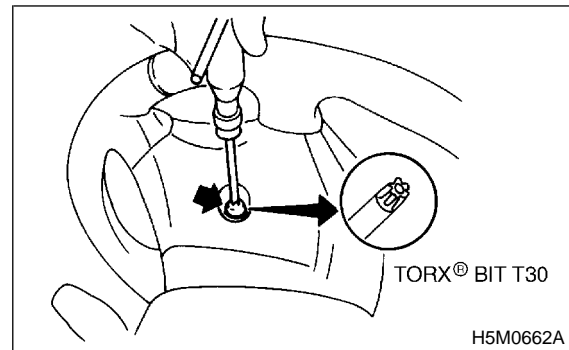
3) Installation is in the reverse order of removal.

3. CRUISE CONTROL COMMAND SWITCH

CAUTION:

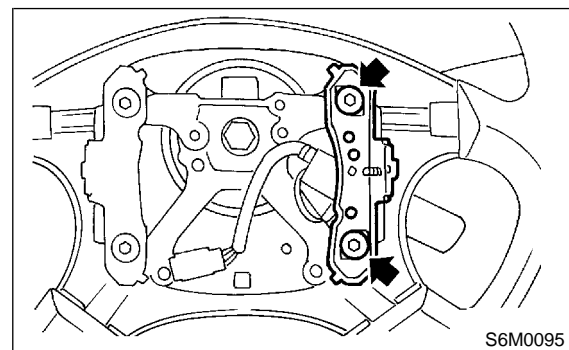
Before starting operation carefully read the notes given in Chapter 5-5 for proper handling of the airbag module. <Ref. to 5-5 [W3A0].>

- 1) Set front wheels in straight ahead position.
- 2) Turn ignition switch OFF.
- 3) Disconnect battery ground cable from battery and wait for at least 20 seconds before starting work.
- 4) Using TORX® BIT T30 (Tamper resistant type), loosen two TORX® bolts which secure driver's airbag module.

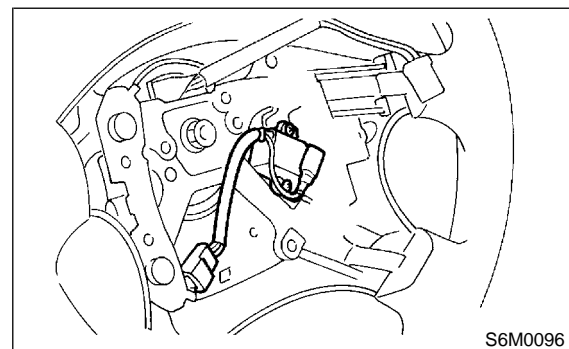


5) Disconnect airbag module connector on back of airbag module.

6) Remove horn switch from steering wheel as shown.



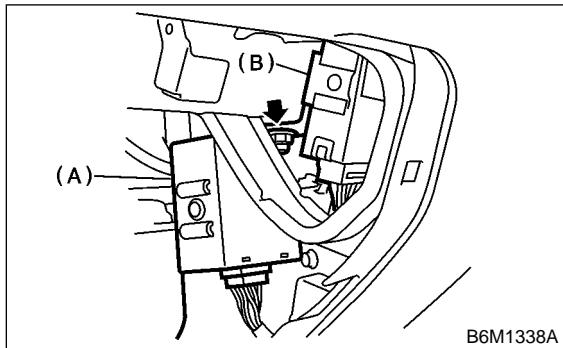
7) Disconnect horn and cruise control command switch connector, then remove cruise control command switch.



8) Installation is in the reverse order of removal.

4. CRUISE CONTROL MODULE

- 1) Remove glove box. <Ref. to 5-4 [W1A0].>
- 2) Remove nut, then remove cruise control module (A) and the other electrical control module (B) while disconnecting connector.



- 3) Disconnect cruise control module and the other electrical control module.
- 4) Installation is in the reverse order of removal.

5. STOP AND BRAKE SWITCH

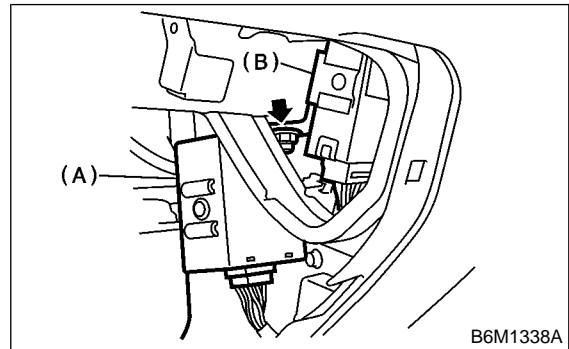
Disconnect connector from switch, then remove the switch. <Ref. to 4-5 [C100].>

6. CLUTCH SWITCH

Disconnect connector from switch, then remove the switch. <Ref. to 4-5 [C100].>

13. Keyless Entry System**A: REMOVAL AND INSTALLATION****1. KEYLESS ENTRY CONTROL MODULE**

- 1) Disconnect battery ground cable.
- 2) Remove glove box. <Ref. to 5-4 [W1A0].>
- 3) Remove nut, then remove keyless entry control module (B) and the other electrical control module (A) while disconnecting connector.



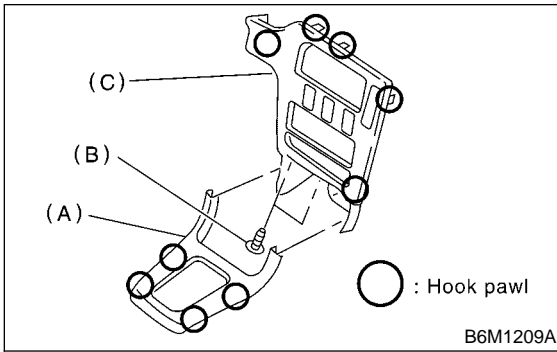
- 4) Disconnect keyless entry control module and the other electrical control module.
- 5) Installation is in the reverse order of removal.

14. Security System

A: REMOVAL AND INSTALLATION

1. SECURITY CONTROL MODULE

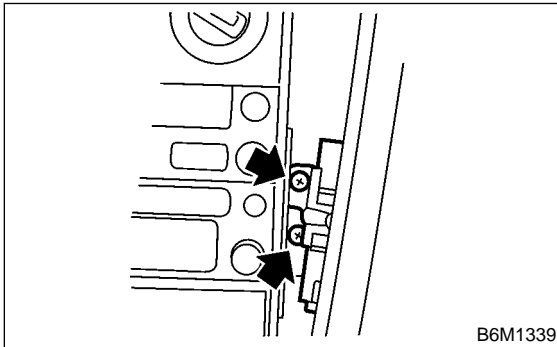
- 1) Disconnect battery ground cable.
- 2) Remove front cover (A).
- 3) Remove screws (B) and then detach center panel (C) while disconnecting connector.



- 4) Remove two screws.

NOTE:

Before removing the screw, apply a few turns of butyl tape to the tip of the service tool. This prevents the screw from falling during removal.



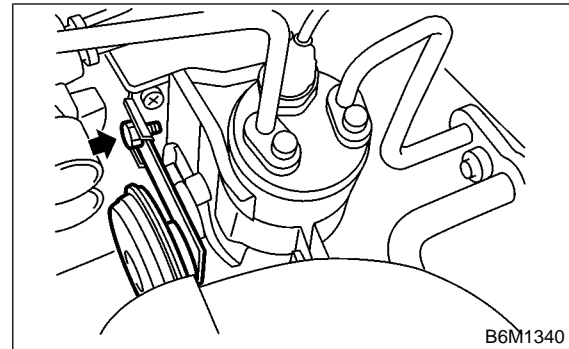
- 5) Remove radio and security control module together while disconnecting connector. <Ref. to 6-2 [W9A1].>
- 6) Installation is in the reverse order of removal.

NOTE:

To install the security control module, tighten screws securely so that the screws do not come loose.

2. SECURITY HORN

- 1) Disconnect battery ground cable.
- 2) Remove bolt and then detach security horn while disconnecting connector.



- 3) Installation is in the reverse order of removal.

B: INSPECTION

1. IMPACT SENSOR

Perform impact sensitivity test.
<Ref. to 6-2c [T6A18].>

1. Combination Meter

A: DIAGNOSTICS PROCEDURE

If speedometer does not operate, or operates abnormally, check combination meter circuit.

CAUTION:

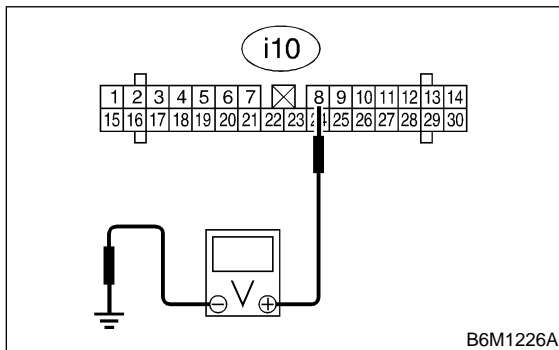
Make sure that trouble code of vehicle speed sensor system appears in electrical system on-board diagnosis.

1A1 : CHECK POWER SUPPLY FOR COMBINATION METER.

- 1) Remove combination meter.
- 2) Turn ignition switch to ON.
- 3) Measure voltage between combination meter connector and chassis ground.

Connector & terminal

(i10) No. 8 (+) — Chassis ground (-):



CHECK : Is the voltage more than 10 V?

YES : Go to step 1A2.

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

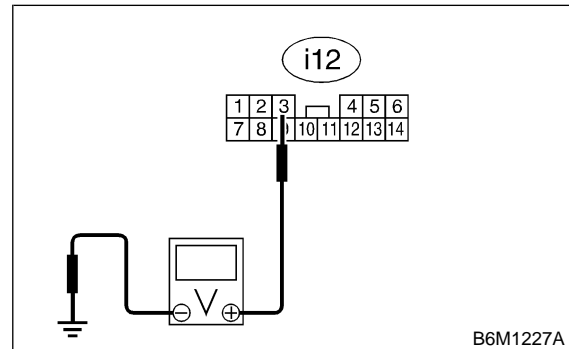
- Open circuit in harness between combination meter and battery.
- Poor contact in coupling connectors (i10) and combination meter connector. <Ref. to FOREWORD [W3C0].>

1A2 : CHECK POWER SUPPLY FOR COMBINATION METER.

Measure voltage between combination meter connector and chassis ground.

Connector & terminal

(i12) No. 3 (+) — Chassis ground (-):



CHECK : Is the voltage more than 10 V?

YES : Go to step 1A3.

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

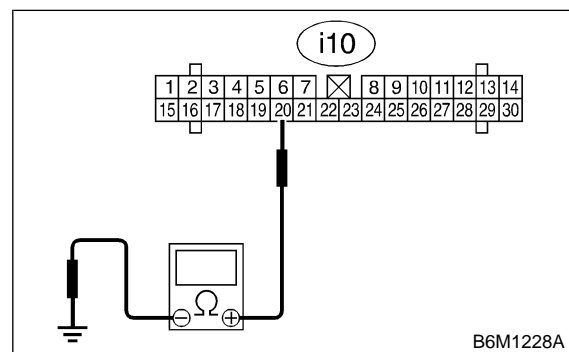
- Open circuit in harness between combination meter and battery.
- Poor contact in coupling connectors (i12) and combination meter connector. <Ref. to FOREWORD [W3C0].>

1A3 : CHECK GROUND CIRCUIT OF COMBINATION METER.

- 1) Turn ignition switch to OFF.
- 2) Measure resistance of harness between combination meter connector and chassis ground.

Connector & terminal

(i10) No. 20 (+) — Chassis ground (-):



CHECK : Is the resistance less than 10 Ω?

YES : Go to step 1A4.

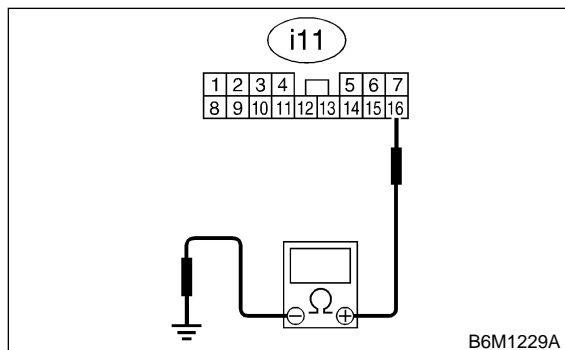
NO : Repair harness and connector.

1A4 : CHECK GROUND CIRCUIT OF COMBINATION METER.

Measure resistance of harness between combination meter connector and chassis ground.

Connector & terminal

(i11) No. 16 (+) — Chassis ground (-):



- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Go to step 1A5.
- NO** : Repair harness and connector.

1A5 : CHECK TRANSMISSION TYPE.

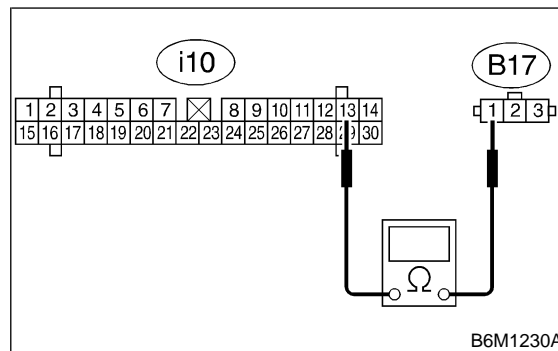
- CHECK** : *Is the transmission type MT?*
- YES** : Go to step 1A6.
- NO** : Go to step 1A10.

1A6 : CHECK HARNESS CONNECTOR BETWEEN COMBINATION METER AND VEHICLE SPEED SENSOR.

- 1) Disconnect connector from vehicle speed sensor.
- 2) Measure resistance of harness connector between vehicle speed sensor and combination meter.

Connector & terminal

(B17) No. 1 — (i10) No. 13:



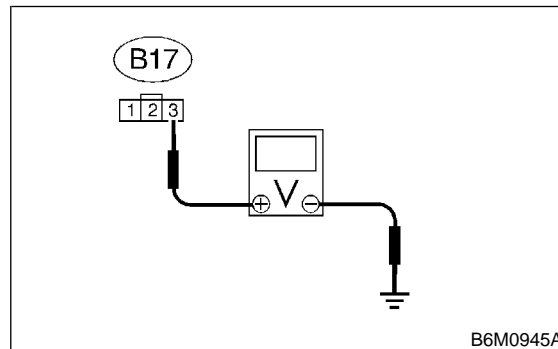
- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Go to step 1A7.
- NO** : Repair wiring harness.

1A7 : CHECK HARNESS CONNECTOR BETWEEN BATTERY AND VEHICLE SPEED SENSOR.

- 1) Turn ignition switch to ON.
- 2) Measure voltage between vehicle speed sensor connector (B17) and chassis ground.

Connector & terminal

(B17) No. 3 (+) — Chassis ground (-):



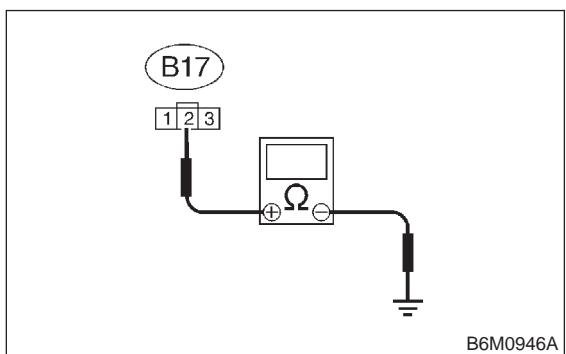
- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step 1A8.
- NO** : Repair harness connector between battery and vehicle speed sensor.

1A8 : CHECK HARNESS CONNECTOR BETWEEN VEHICLE SPEED SENSOR AND ENGINE GROUND.

- 1) Turn ignition switch to OFF.
- 2) Measure resistance between vehicle speed sensor connector (B17) and engine ground.

Connector & terminal

(B17) No. 2 (+) — Engine ground (-):



CHECK : *Is the resistance less than 10 Ω?*

YES : Go to step **1A9**.

NO : Repair harness connector between vehicle speed sensor and engine ground.

1A9 : CHECK VEHICLE SPEED SENSOR.

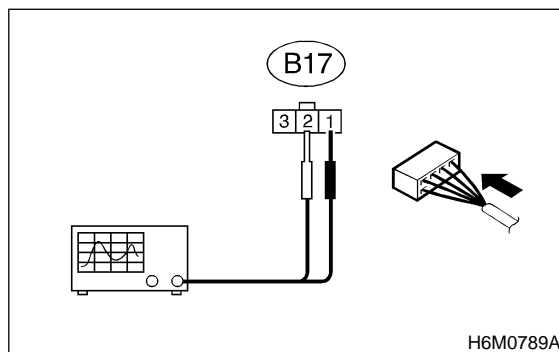
- 1) Connect connector to vehicle speed sensor.
- 2) Set the vehicle on free roller, or lift-up the vehicle and support with safety stands.

WARNING:

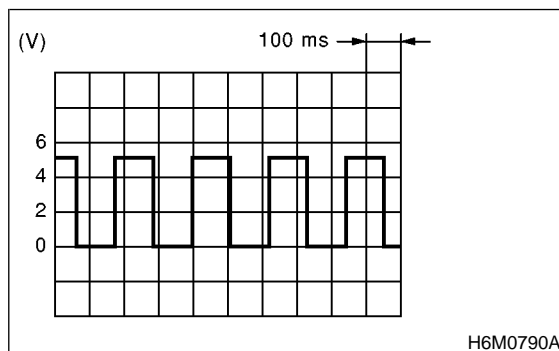
Be careful not to be caught up by the running wheels.

- 3) Set oscilloscope to vehicle speed sensor connector terminals.

Positive probe; (B17) No. 1
Earth lead; (B17) No. 2



- 4) Drive the vehicle at speed greater than 20 km/h (12 MPH).
- 5) Measure signal voltage indicated on oscilloscope.



CHECK : *Is the voltage more than 5 V?*

YES : Go to step **1A12**.

NO : Replace vehicle speed sensor.

1A10 : CHECK HARNESS CONNECTOR BETWEEN COMBINATION METER AND AUTOMATIC TRANSMISSION CONTROL MODULE.

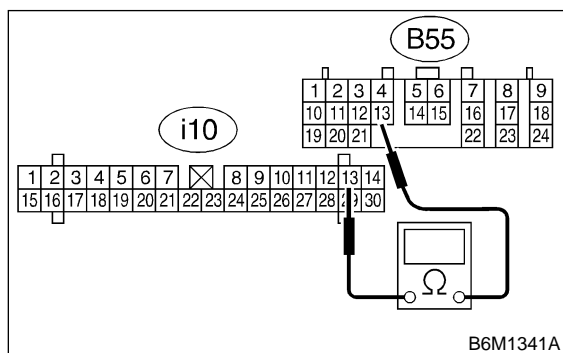
- 1) Disconnect connector from automatic transmission control module.
- 2) Measure resistance between combination meter connector (i10) and automatic transmission control module connector (B55).

CAUTION:

To measure the voltage and/or resistance, use a tapered pin with a diameter of less than 0.64 mm (0.025 in). Do not insert the pin more than 5 mm (0.20 in).

Connector & terminal

(i10) No. 13 — (B55) No. 13:



CHECK : Is the resistance less than 10 Ω?

YES : Go to step 1A11.

NO : Repair harness connector between combination meter and automatic transmission control module.

1A11 : CHECK AUTOMATIC TRANSMISSION CONTROL MODULE.

- 1) Connect connector to automatic transmission control module.
- 2) Set the vehicle on free roller, or lift-up the vehicle and support with safety stands.

WARNING:

Be careful not to be caught by the running wheels.

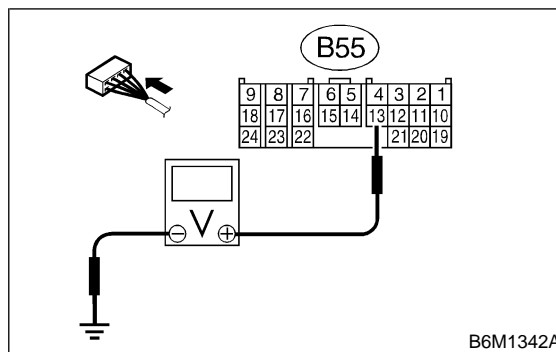
- 3) Drive the vehicle faster than 10 km/h (6MPH).
- 4) Measure voltage between automatic transmission control module connector (B55) and chassis ground.

CAUTION:

To measure the voltage and/or resistance, use a tapered pin with a diameter of less than 0.64 mm (0.025 in). Do not insert the pin more than 5 mm (0.20 in).

Connector & terminal

(B55) No. 13 (+) — Chassis ground (-):



CHECK : Is the voltage less than 1 V ←→ more than 4 V?

YES : Go to step 1A12.

NO : Replace automatic transmission control module. <Ref. to 3-2 [W2300].>

1A12 : APPEARANCE INSPECTION

Conduct appearance inspection on combination meter.

NOTE:

Check to see if the needle catches.

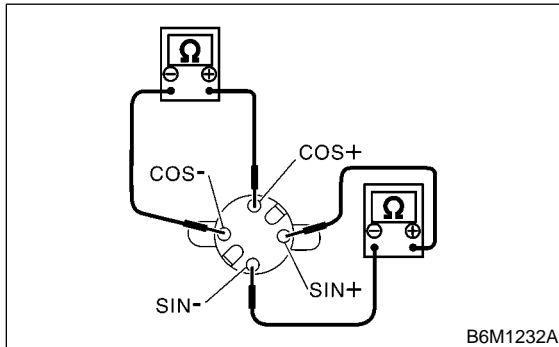
CHECK : Is there anything unusual about the appearance of combination meter?

YES : Replace combination meter. <Ref. to 6-2 [W8A0].>

NO : Go to step 1A13.

1A13 : SPEEDOMETER INSPECTION

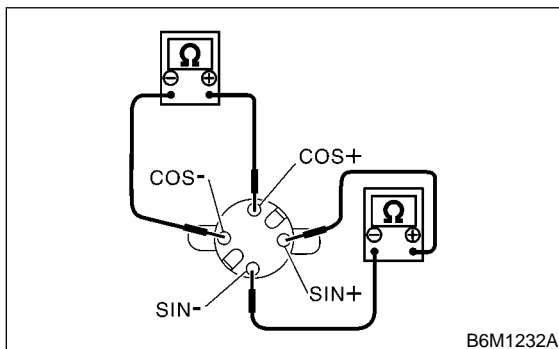
- 1) Disassemble combination meter and then remove speedometer and fuel meter assembly. <Ref. to 6-2 [W8C0].>
- 2) Measure resistance between speedometer terminals.

Terminals**SIN+ — SIN-:**

- CHECK** : **Is the resistance $200 \pm 8 \Omega$?**
- YES** : Replace printed circuit. <Ref. to 6-2 [W8C0].>
- NO** : Go to step **1A14**.

1A14 : SPEEDOMETER INSPECTION

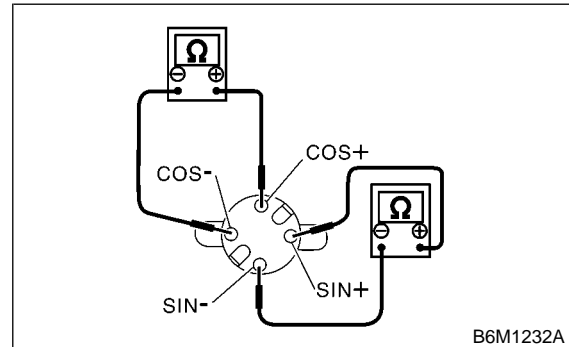
Measure resistance between speedometer terminals.

Terminals**COS+ — COS-:**

- CHECK** : **Is the resistance $200 \pm 8 \Omega$?**
- YES** : Replace printed circuit. <Ref. to 6-2 [W8C0].> Go to step **1A15**.
- NO** : Replace speedometer and fuel meter assembly. <Ref. to 6-2 [W8C0].> Go to step **1A15**.

1A15 : TACHOMETER INSPECTION

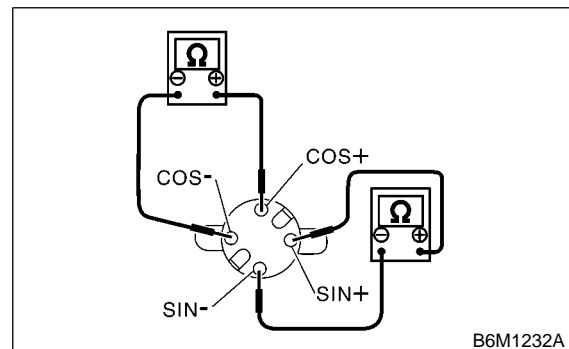
- 1) Remove tachometer and water temperature meter assembly from combination meter. <Ref. to 6-2 [W8C0].>
- 2) Measure resistance between tachometer terminals.

Terminals**SIN+ — SIN-:**

- CHECK** : **Is the resistance $200 \pm 8 \Omega$?**
- YES** : Replace printed circuit. <Ref. to 6-2 [W8C0].>
- NO** : Go to step **1A16**.

1A16 : TACHOMETER INSPECTION

Measure resistance between tachometer terminals.

Terminals**COS+ — COS-:**

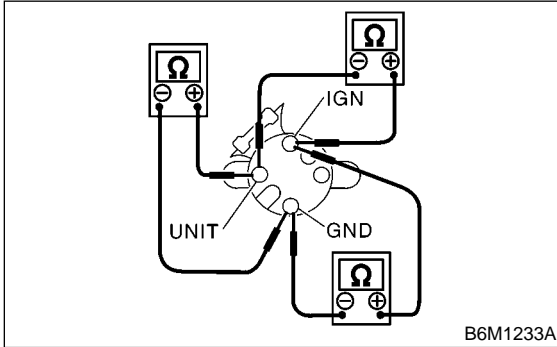
- CHECK** : **Is the resistance $200 \pm 8 \Omega$?**
- YES** : Replace printed circuit. <Ref. to 6-2 [W8C0].> Go to step **1A17**.
- NO** : Replace tachometer and water temperature meter assembly. <Ref. to 6-2 [W8C0].> Go to step **1A17**.

1A17 : FUEL METER INSPECTION

Measure resistance between fuel meter terminals.

Terminals

IGN — GND:



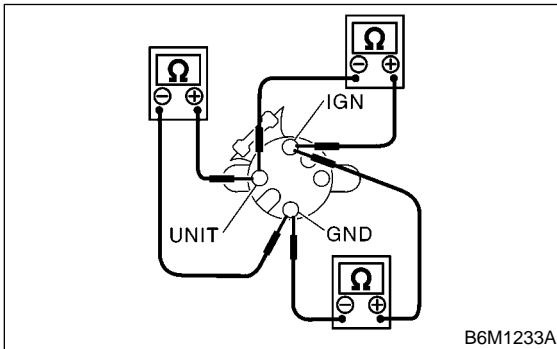
- CHECK** : **Is the resistance $170 \pm 10 \Omega$?**
- YES** : Replace printed circuit. <Ref. to 6-2 [W8C0].>
- NO** : Go to step **1A18**.

1A18 : FUEL METER INSPECTION

Measure resistance between fuel meter terminals.

Terminals

IGN — UNIT:



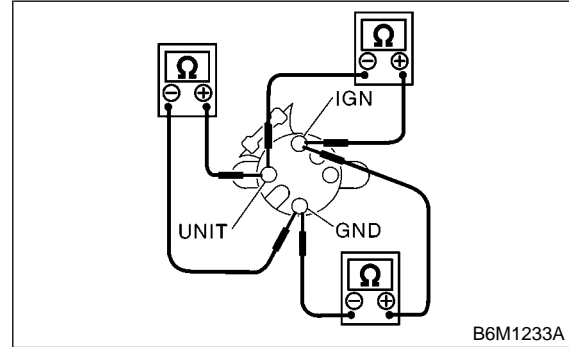
- CHECK** : **Is the resistance $35 \pm 10 \Omega$?**
- YES** : Replace printed circuit. <Ref. to 6-2 [W8C0].>
- NO** : Go to step **1A19**.

1A19 : FUEL METER INSPECTION

Measure resistance between fuel meter terminals.

Terminals

UNIT — GND:



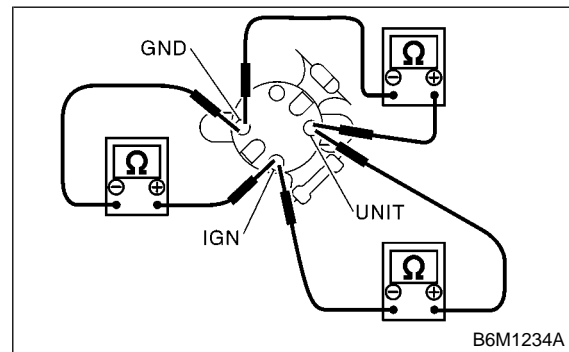
- CHECK** : **Is the resistance $136 \pm 10 \Omega$?**
- YES** : Replace printed circuit. <Ref. to 6-2 [W8C0].> Go to step **1A20**.
- NO** : Replace speedometer and fuel meter assembly. <Ref. to 6-2 [W8C0].> Go to step **1A20**.

1A20 : WATER TEMPERATURE METER INSPECTION

Measure resistance between water temperature meter terminals.

Terminals

IGN — GND:



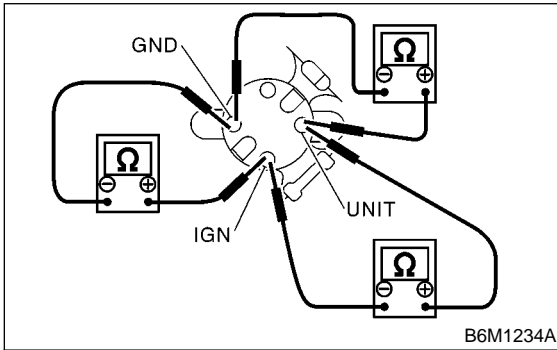
- CHECK** : **Is the resistance $208 \pm 10 \Omega$?**
- YES** : Replace printed circuit. <Ref. to 6-2 [W8C0].>
- NO** : Go to step **1A21**.

1A21 : WATER TEMPERATURE METER INSPECTION

Measure resistance between water temperature meter terminals.

Terminals

IGN — UNIT:



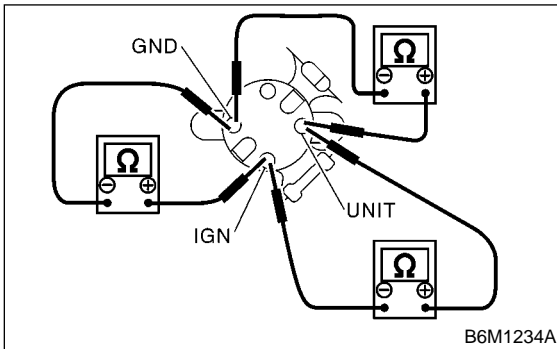
- CHECK** : **Is the resistance $56 \pm 10 \Omega$?**
- YES** : Replace printed circuit. <Ref. to 6-2 [W8C0].>
- NO** : Go to step **1A22**.

1A22 : WATER TEMPERATURE METER INSPECTION

Measure resistance between water temperature meter terminals.

Terminals

UNIT — GND:



- CHECK** : **Is the resistance $264 \pm 10 \Omega$?**
- YES** : Replace printed circuit. <Ref. to 6-2 [W8C0].>
- NO** : Replace tachometer and water temperature meter assembly. <Ref. to 6-2 [W8C0].>

MEMO:

1. Precaution

A: SUPPLEMENTAL RESTRAINT SYSTEM “AIRBAG”

Airbag system wiring harness is routed near the cruise control module and cruise control command switch.

CAUTION:

- All Airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuits.
- Be careful not to damage Airbag system wiring harness when servicing the cruise control module and cruise control command switch.

2. Pre-inspection

A: FUNCTION TESTS

Conduct road tests by selecting a smooth, flat road or use free rollers for road test simulation.

1. CRUISE CONTROL MAIN SWITCH

- 1) Turn ignition switch to ON.
- 2) Check that cruise control main switch indicator light comes on when main switch is pressed (ON).
- 3) Check that main switch indicator light goes out when main switch is pressed again (OFF).
- 4) Turn ignition switch to OFF with main switch ON (indicated by illumination). Turn ignition switch ON again to ensure that main switch indicator light remains OFF.

2. CRUISE CONTROL COMMAND SWITCH

- 1) Check that cruise control command switch is properly set in “SET/COAST”, “RESUME/ACCEL”, or “CANCEL” mode.
- 2) Also check that command switch returns to the original position when released.

3. CONSTANT SPEED TEST

- 1) Turn cruise control main switch to ON.
- 2) Drive the vehicle at a speed greater than 40 km/h (25 MPH).
- 3) Press command switch to set in “SET/COAST” mode.
- 4) Ensure that vehicle is maintained at the speed set when command switch was pressed.

4. ACCELERATION TEST

- 1) Set vehicle speed at a speed greater than 40 km/h (25 MPH).
- 2) Ensure that vehicle continues to accelerate while holding command switch in “RESUME/ACCEL” mode, and that vehicle maintains that optional speed when command switch is released.

5. DECELERATION TEST

- 1) Set vehicle speed at an optional speed greater than 40 km/h (25 MPH).
- 2) Ensure that vehicle continues to decelerate while holding command switch in “SET/COAST” mode, and that it maintains that optional speed when command switch is released.

NOTE:

When vehicle speed reaches the lower speed limit of 30 km/h (19 MPH) during deceleration, cruise control will be released.

1. Precaution

A: SUPPLEMENTAL RESTRAINT SYSTEM “AIRBAG”

Airbag system wiring harness is routed near the cruise control module and cruise control command switch.

CAUTION:

- All Airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuits.
- Be careful not to damage Airbag system wiring harness when servicing the cruise control module and cruise control command switch.

2. Pre-inspection

A: FUNCTION TESTS

Conduct road tests by selecting a smooth, flat road or use free rollers for road test simulation.

1. CRUISE CONTROL MAIN SWITCH

- 1) Turn ignition switch to ON.
- 2) Check that cruise control main switch indicator light comes on when main switch is pressed (ON).
- 3) Check that main switch indicator light goes out when main switch is pressed again (OFF).
- 4) Turn ignition switch to OFF with main switch ON (indicated by illumination). Turn ignition switch ON again to ensure that main switch indicator light remains OFF.

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5. DECELERATION TEST

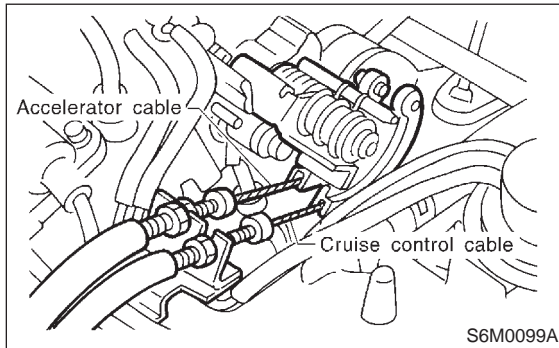
- 1) Set vehicle speed at an optional speed greater than 40 km/h (25 MPH).
- 2) Ensure that vehicle continues to decelerate while holding command switch in “SET/COAST” mode, and that it maintains that optional speed when command switch is released.

NOTE:

When vehicle speed reaches the lower speed limit of 30 km/h (19 MPH) during deceleration, cruise control will be released.

B: CRUISE CONTROL CABLE**2B1 : CHECK CRUISE CONTROL CABLE.**

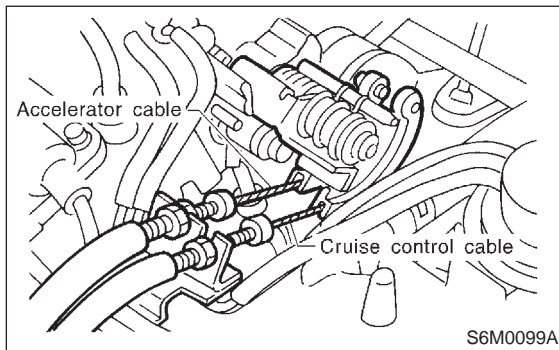
Check cruise control cable installation.



- CHECK** : *Is the cruise control cable securely installed to the left of the accelerator cable?*
- YES** : Go to step **2B2**.
- NO** : Install cruise control cable securely. Go to step **2B2**.

2B2 : CHECK ACCELERATOR CABLE.

Check function of accelerator cable.



- CHECK** : *Does the accelerator cable throttle cam move when the cruise control throttle is moved by hand?*
- YES** : Repair accelerator cable throttle cam. Go to step **2B3**.
- NO** : Go to step **2B3**.

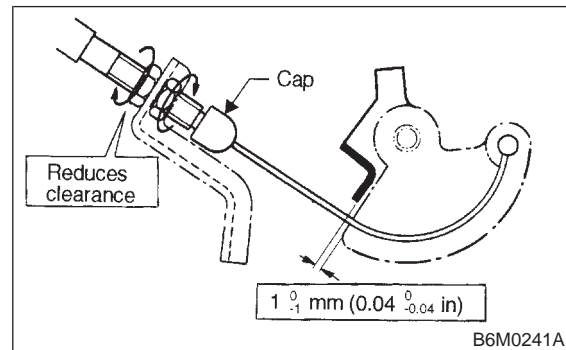
2B3 : CHECK THROTTLE CAM.

Check function of throttle cam.

- CHECK** : *Does the throttle cam move smoothly?*
- YES** : Go to step **2B4**.
- NO** : Repair throttle cam. Go to step **2B4**.

2B4 : CHECK CABLE FREE PLAY.

Ensure that throttle cam-to-lever clearance is within specifications.



- CHECK** : *Is throttle cam-to-lever clearance between 0 and 1 mm (0 and 0.04 in)?*
- YES** : Go to step **2C1**.
- NO** : Adjust cable end by adjusting nuts. Go to step **2C1**.

NOTE:

Ensure that cap is positioned in groove.

C: POWER SUPPLY**2C1 : CHECK BATTERY.**

Measure battery specific gravity of electrolyte.

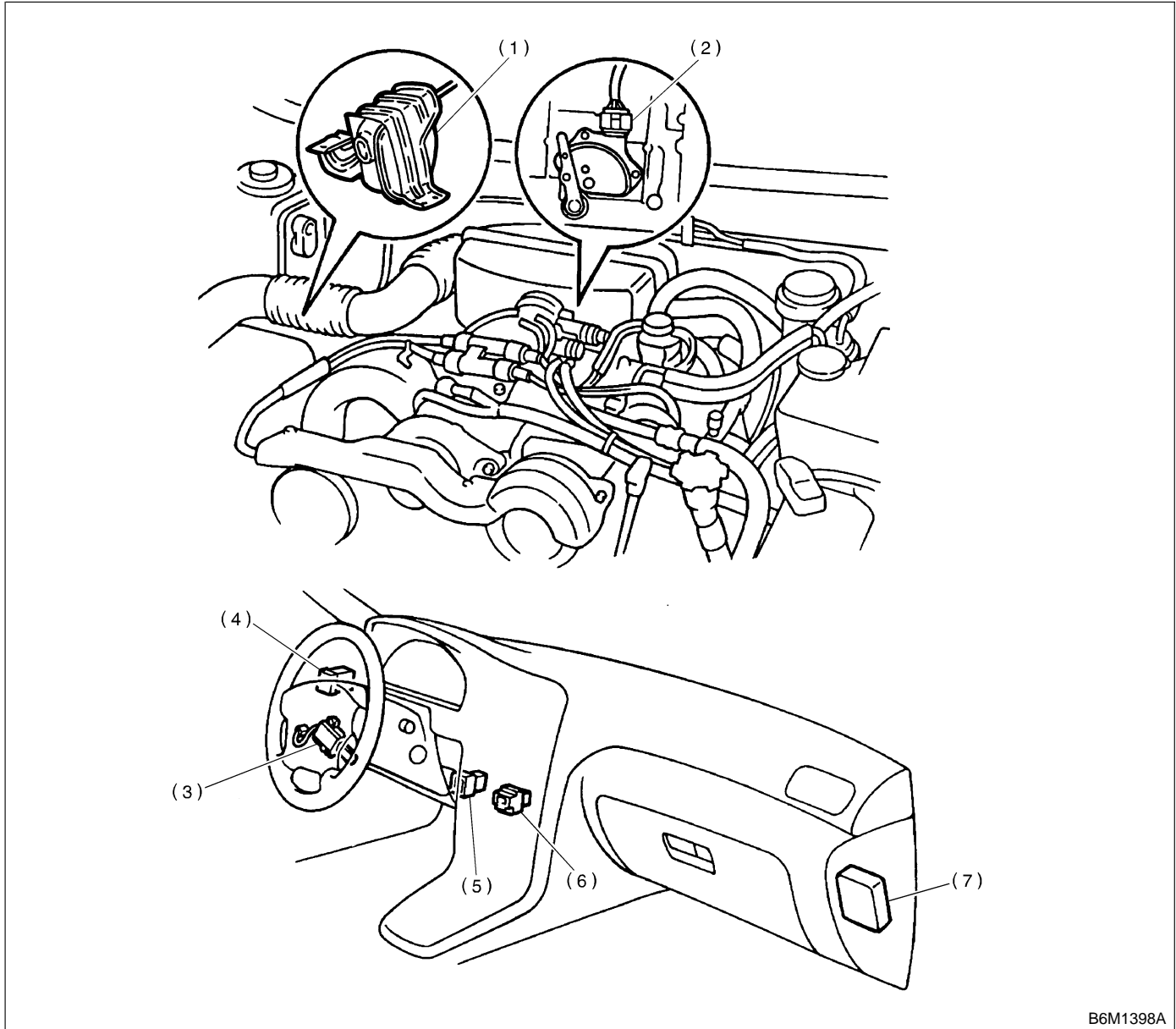
- CHECK** : *Is battery specific gravity more than 1.250?*
- YES** : Go to step **2C2**.
- NO** : Charge or replace battery. <Ref. to 6-2 [W200].> Go to step **2C2**.

2C2 : CHECK FUSES, CONNECTORS AND HARNESSSES.

Check the condition of the main and other fuses, and harnesses and connectors. Also check for proper grounding.

- CHECK** : *Is there anything unusual about the appearance of main fuse, fuse, harness, connector and grounding?*
- YES** : Repair or replace faulty parts. End of pre-inspection.
- NO** : End of pre-inspection.

3. Electrical Components Location



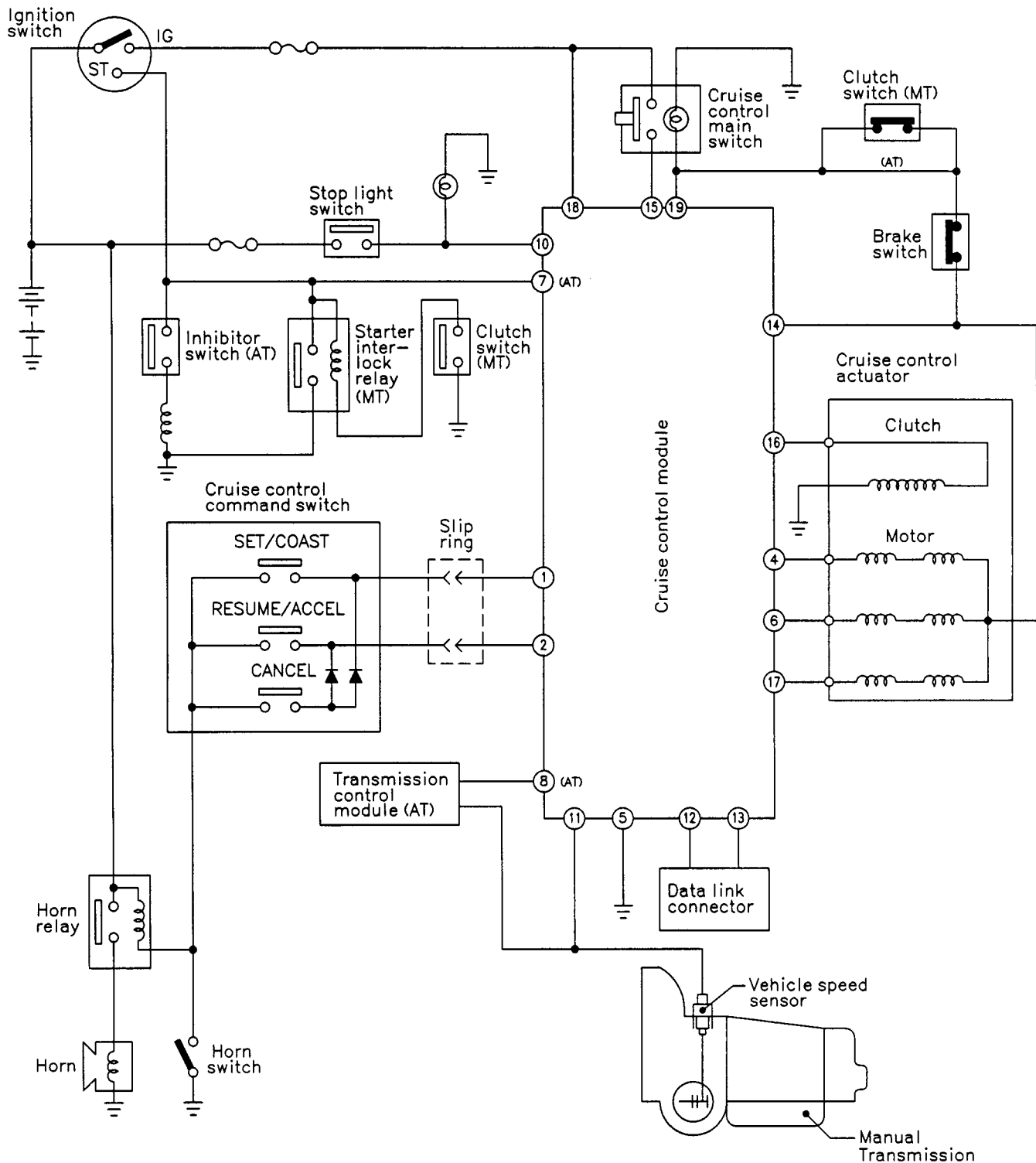
B6M1398A

- (1) Cruise control actuator
- (2) Inhibitor switch (AT)
- (3) Command switch

- (4) Main switch
- (5) Clutch switch (MT)
- (6) Stop and brake switch

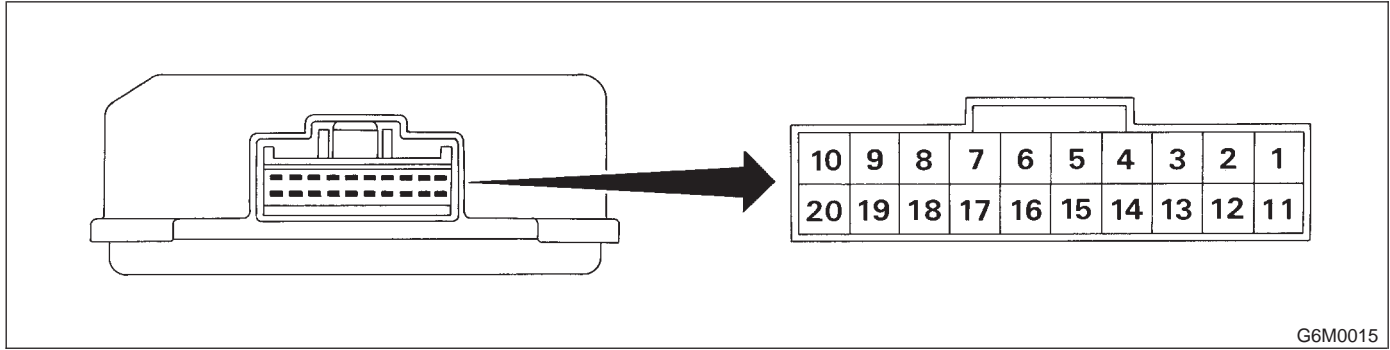
- (7) Cruise control module

4. Schematic



B6M1399

5. Control Module I/O Signal



G6M0015

Content	Terminal No.	Measuring conditions and I/O signals (ignition switch ON and engine idling)
Main light	1	<ul style="list-style-type: none"> Battery voltage is present when main switch is turned OFF. "0" volt is present when main switch is turned ON.
Inhibitor switch (AT)	4	<ul style="list-style-type: none"> Battery voltage is present when selector lever is other than "P" or "N" position. "0" volt is present when selector lever is set to "P" or "N" position.
Motor B	5	<ul style="list-style-type: none"> ON-and-OFF ("0"-and-battery voltage) operation is alternately repeated while cruise control is operating. "0" volt is present when main switch is turned OFF.
Ground	6	—
Motor A	7	<ul style="list-style-type: none"> ON-and-OFF ("0"-and-battery voltage) operation is alternately repeated while cruise control is operating. "0" volt is present when main switch is turned OFF.
RESUME/ACCEL switch	9	<ul style="list-style-type: none"> Battery voltage is present when command switch is turned to RESUME/ACCEL position. "0" volt is present when command switch is released.
SET/COAST switch	10	<ul style="list-style-type: none"> Battery voltage is present when command switch is turned to SET/COAST position. "0" volt is present when command switch is released.
Main power supply	11	<ul style="list-style-type: none"> Battery voltage is present when main power is turned ON. "0" volt is present when main power is turned OFF.
Ignition switch	12	<ul style="list-style-type: none"> Battery voltage is present when ignition switch is turned ON. "0" volt is present when ignition switch is turned OFF.
Motor C	13	<ul style="list-style-type: none"> ON-and-OFF ("0"-and-battery voltage) operation is alternately repeated while cruise control is operating. "0" volt is present when main switch is turned OFF.
Motor clutch	14	<ul style="list-style-type: none"> ON-and-OFF ("0"-and-battery voltage) operation is alternately repeated while cruise control is operating. "0" volt is present when vehicle is stopped.
Cruise control main switch	15	<ul style="list-style-type: none"> Battery voltage is present during pressing the cruise control main switch, and then battery voltage is present while main switch is turned ON. "0" volt is present when main switch is turned OFF.
Brake switch	16	<p>Leave clutch pedal released (MT), while cruise control main switch is turned ON.</p> <p>Then check that;</p> <ul style="list-style-type: none"> Battery voltage is present when brake pedal is released. "0" volt is present when brake pedal is depressed. <p>Additionally only in MT vehicle, keep the cruise control main switch to ON and leave brake pedal released.</p> <p>Then check that;</p> <ul style="list-style-type: none"> Battery voltage is present when clutch pedal is released. "0" volt is present when clutch pedal is depressed.
Data link connector	17	—
Data link connector	18	—

Content	Terminal No.	Measuring conditions and I/O signals (ignition switch ON and engine idling)
Vehicle speed sensor (MT) TCM (AT)	19	Lift-up the vehicle until all four wheels are raised off ground, and then rotate any wheel manually. Approx. "5" and "0" volt pulse signals are alternately input to cruise control module.
Stop light switch	20	Turn ignition switch to OFF. Then check that; <ul style="list-style-type: none">● Battery voltage is present when brake pedal is depressed.● "0" volt is present when brake pedal is released.
NOTE: Voltage at terminals 5, 7, 13 and 14 cannot be checked unless vehicle is driving by cruise control operation.		

6. Diagnostics Chart for On-board Diagnosis System

A: BASIC DIAGNOSTIC PROCEDURE

6A1 : CHECK CRUISE CONTROL MAIN SWITCH.

- 1) Trouble occurs.
- 2) Perform pre-inspection. <Ref. to 6-2a [T200].>
- 3) Check cruise control main switch.

CHECK : *Does cruise control main switch turn ON?*

YES : Go to step **6A2**.

NO : Go to "Diagnostics Chart for Power Line". <Ref. to 6-2a [T700].>

6A2 : CHECK CRUISE SPEED IS SET.

CHECK : *Does cruise speed properly set while driving at minimum of 40 km/h (25 MPH)?*

YES : Go to step **6A3**.

NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2a [T800].>

6A3 : CHECK CRUISE CONTROL IS RELEASED.

CHECK : *Does cruise control properly release during operation?*

YES : Go to step **6A4**.

NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2a [T800].>

6A4 : CHECK CRUISE SPEED IS HELD WITHIN SET SPEED.

CHECK : *Does cruise speed hold within set speed ± 3 km/h (2 MPH)?*

YES : Go to step **6A5**.

NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2a [T800].>

6A5 : CHECK RESUME/ACCEL SWITCH.

CHECK : *Does RESUME/ACCEL switch function properly?*

YES : Go to step **6A6**.

NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2a [T800].>

6A6 : CHECK SET/COAST SWITCH.

CHECK : *Does SET/COAST switch function properly?*

YES : Go to step **6A7**.

NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2a [T800].>

6A7 : CHECK CANCEL SWITCH.

CHECK : *Does CANCEL switch function properly?*

YES : Go to step **6A8**.

NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2a [T800].>

6A8 : CHECK CRUISE SPEED IS RELEASED.

CHECK : *Does cruise speed release when brake pedal is depressed?*

YES : Go to step **6A9**.

NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2a [T800].>

6A9 : CHECK CRUISE SPEED IS RELEASED.

CHECK : *Does cruise speed release when clutch pedal is depressed?*

YES : Cruise control system is in correct order.

NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2a [T800].>

B: ON-BOARD DIAGNOSIS WITH SELECT MONITOR

1. GENERAL

The on-board diagnosis function of the cruise control system uses an external select monitor.

The on-board diagnosis function operates in two categories, which are used depending on the type of problems;

NOTE:

Select monitor cartridge:

No. 24082AA130

1) Cruise cancel conditions diagnosis

(1) This category of diagnosis requires actual vehicle driving in order to determine the cause, (as when cruise speed is cancelled during driving although cruise cancel condition is not entered).

(2) Cruise control module memory stores the cancel condition (Code No.) which occurred during driving. When there are plural cancel conditions (Code No.), they are shown on the select monitor.

CAUTION:

● **The cruise control memory stores not only the cruise “cancel” which occurred (although “cancel” operation is not entered by the driver), but also the “cancel” condition input by the driver.**

● **The content of memory is cleared when ignition switch or cruise main switch is turned OFF.**

2) Real-time diagnosis

The real-time diagnosis function is used to determine whether or not the input signal system is in good order, according to signal emitted from switches, sensors, etc.

(1) Vehicle cannot be driven at cruise speed because problem occurs in the cruise control system or its associated circuits.

(2) Monitor the signal conditions from switches and sensors.

2. CRUISE CANCEL CONDITIONS DIAGNOSIS

1) Connect select monitor.

2) Start the engine and turn cruise control main switch to ON.

3) Set select monitor in “All System Diagnosis” mode.

NOTE:

The diagnostic trouble code is also shown in the “Each System Check” mode. This mode is called up on the “Cruise Control Diagnosis” screen by selecting the item “Cancel Code(s) Display”.

4) Drive vehicle at least 30 km/h (19 MPH) with cruise speed set.

5) If cruise speed is canceled itself (without doing any cancel operations), a diagnostic trouble code will appear on select monitor display.

CAUTION:

● **A diagnostic trouble code will also appear when cruise cancel is effected by driver. Do not confuse.**

● **Have a co-worker ride in vehicle to assist in diagnosis during driving.**

NOTE:

Diagnostic trouble code will be cleared by turning ignition switch or cruise control main switch to OFF.

3. REAL-TIME DIAGNOSIS

1) Connect select monitor.

2) Turn ignition switch and cruise control main switch to ON.

3) Select the “Current Data Display & Save” mode on the select monitor “Cruise Control Diagnosis” screen.

4) Ensure that normal indication is displayed when controls are operated as indicated below:

● Depress/release the brake pedal. (Stop light switch and brake switch turn ON.)

● Turn ON the “SET/COAST” switch.

● Turn ON the “RESUME/ACCEL” switch.

● Depress/release the clutch pedal. (MT)

● Set the selector lever to P or N. (AT)

7. Diagnostics Chart for Power Line

A: BASIC DIAGNOSTICS PROCEDURE

7A1 : DRIVE AT CRUISE SPEED.

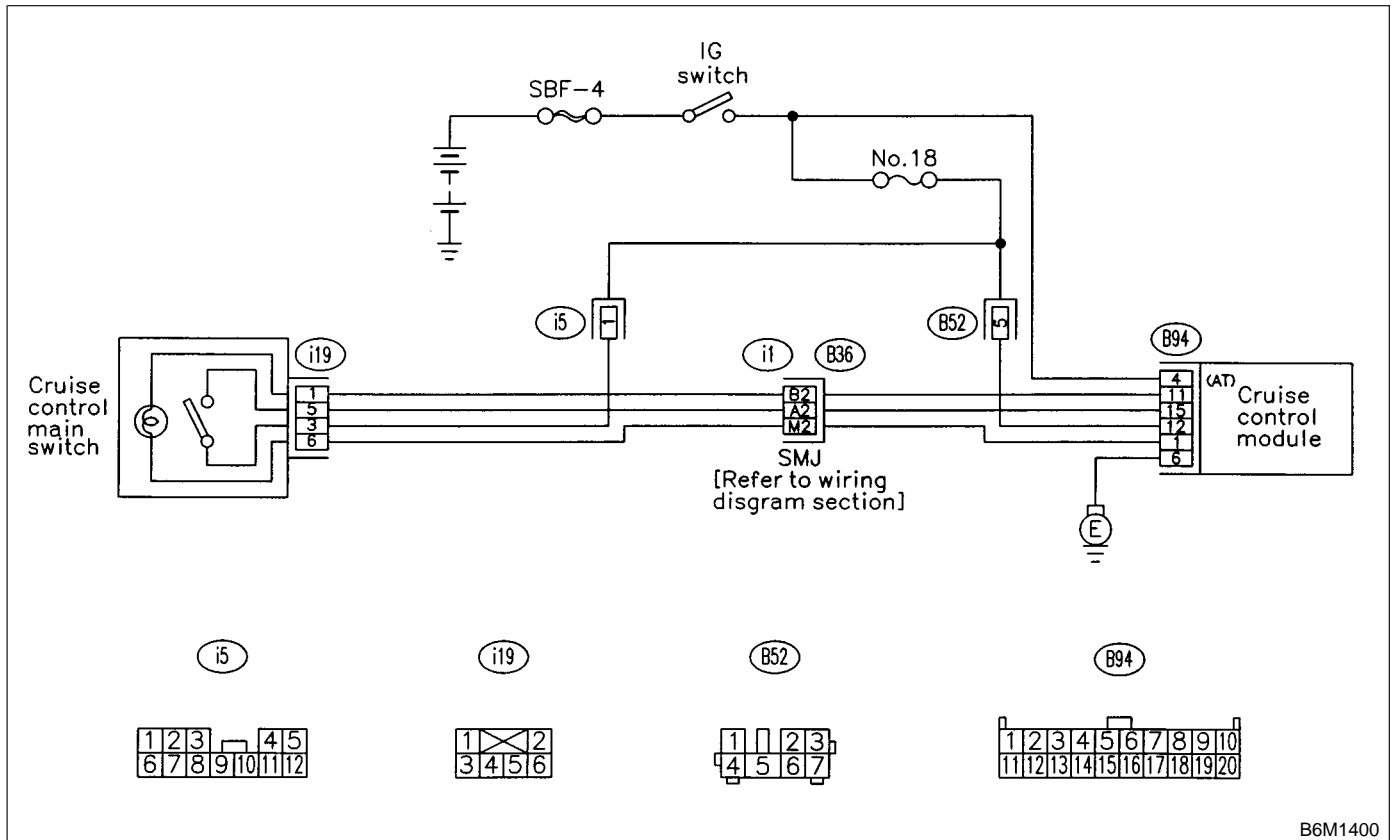
- CHECK** : *Can cruise speed be set?*
- YES** : Go to "CHECK INDICATOR AND CIRCUIT IN CRUISE CONTROL MAIN SWITCH". <Ref. to 6-2a [T7B0].>
- NO** : Go to "CHECK CRUISE CONTROL MAIN SWITCH". <Ref. to 6-2a [T7C0].>

B: CHECK INDICATOR AND CIRCUIT IN CRUISE CONTROL MAIN SWITCH

DIAGNOSIS:

Bulb failure or open harness of the indicator circuit in the cruise control main switch.

WIRING DIAGRAM:



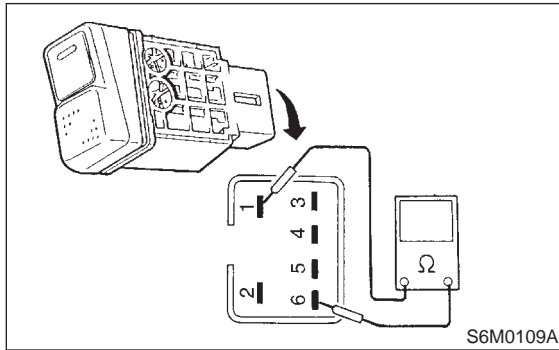
B6M1400

7B1 : CHECK CRUISE CONTROL MAIN SWITCH.

- 1) Remove cruise control main switch.
- 2) Measure resistance between cruise control main switch terminals.

Terminals

No. 1 — No. 6:



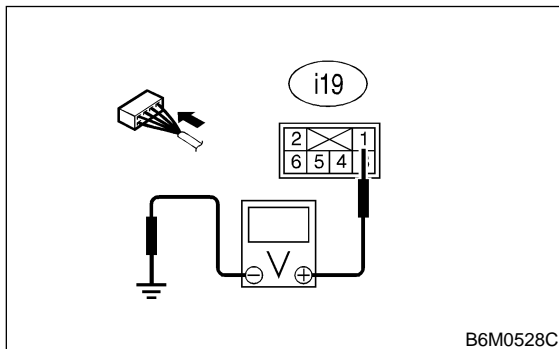
- CHECK** : *Is resistance between 10 and 80 Ω?*
- YES** : Go to step **7B2**.
- NO** : Replace switch illumination bulb. <Ref. to 6-2 [W12A2].>

7B2 : CHECK CIRCUIT BETWEEN CRUISE CONTROL MODULE AND CRUISE CONTROL MAIN SWITCH INDICATOR LIGHT.

- 1) Turn the ignition switch to ON.
- 2) Turn cruise control main switch to ON.
- 3) Measure voltage between cruise control main switch connector and the chassis ground.

Connector & terminal

(i19) No. 1 (+) — Chassis ground (-):



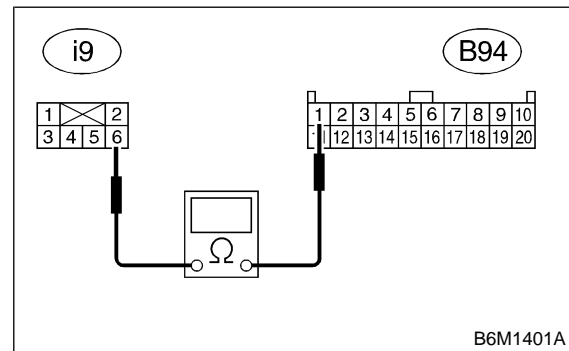
- CHECK** : *Is voltage more than 10 V?*
- YES** : Go to step **7B3**.
- NO** : Repair or replace wiring harness.

7B3 : CHECK CIRCUIT BETWEEN CRUISE CONTROL MODULE AND CRUISE CONTROL MAIN SWITCH INDICATOR LIGHT.

- 1) Turn the ignition switch and cruise control main switch to OFF.
- 2) Remove the connector from the cruise control main switch.
- 3) Measure resistance of ground circuit between the cruise control main switch connector and cruise control module connector.

Connector & terminal

(i19) No. 6 — (B94) No. 1:



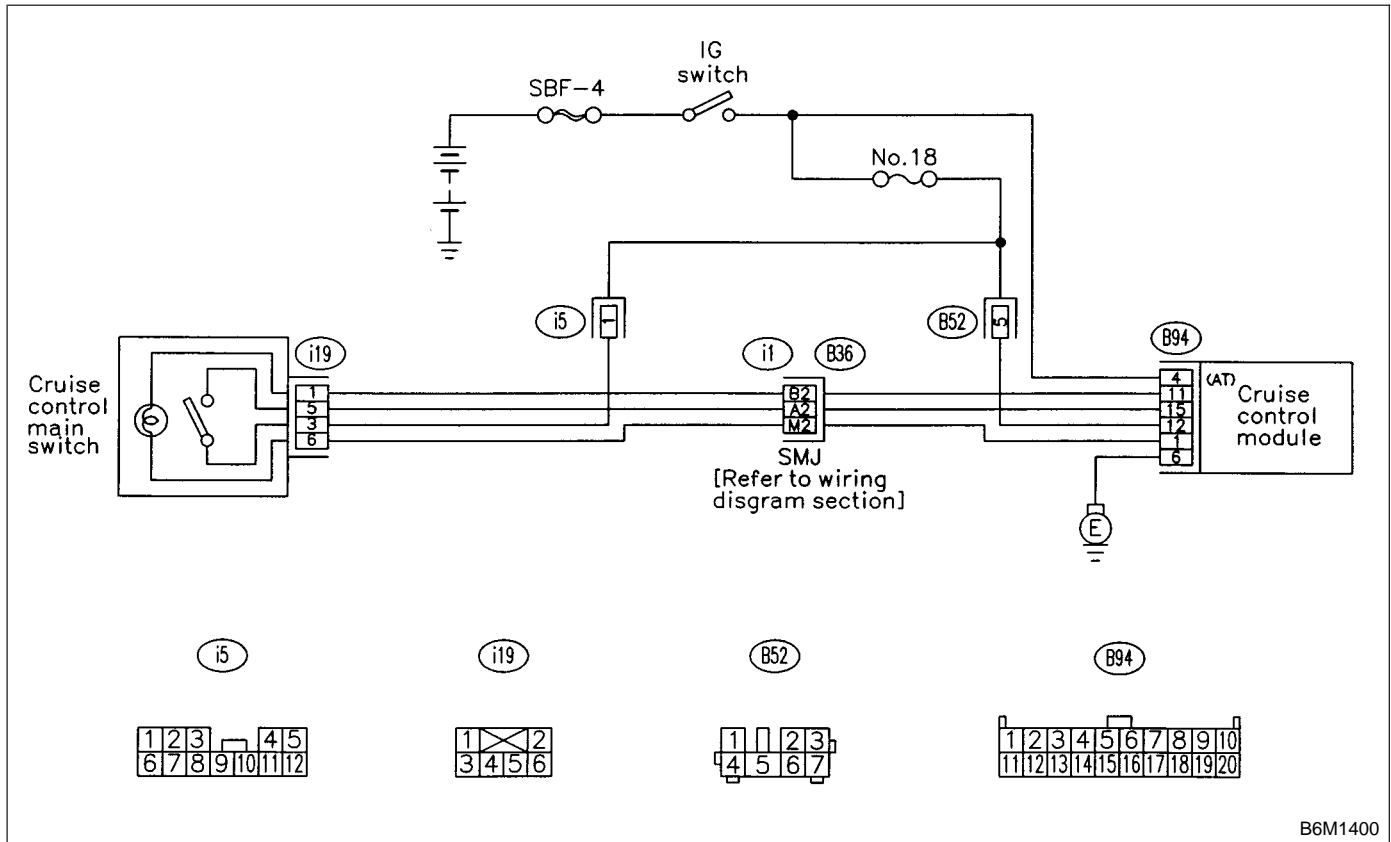
- CHECK** : *Is resistance less than 10 Ω?*
- YES** : Replace cruise control module. <Ref. to 6-2 [W12A4].>
- NO** : Repair or replace wiring harness.

C: CHECK CRUISE CONTROL MAIN SWITCH

DIAGNOSIS:

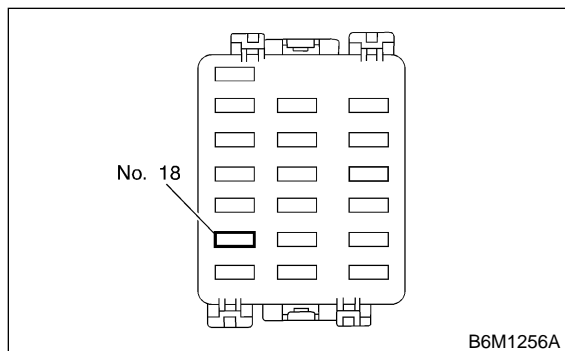
Faulty cruise control main switch, or open harness.

WIRING DIAGRAM:



7C1 : CHECK FUSE.

Check fuse No. 18.

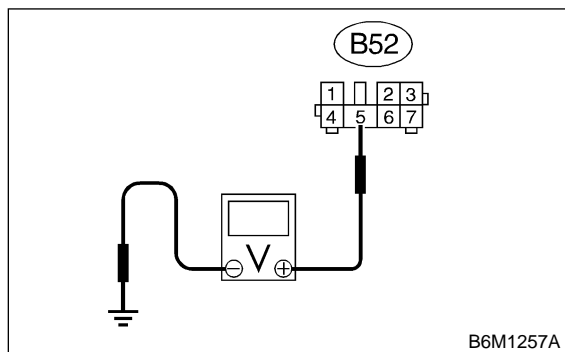


- CHECK** : *Is fuse No. 18 blown?*
- YES** : Replace fuse No. 18. Go to step **7C2**.
- NO** : Go to step **7C2**.

7C2 : CHECK POWER SUPPLY.

- 1) Turn ignition switch to ON.
- 2) Measure voltage between fuse & relay box connector and chassis ground.

Connector & terminal
(B52) No. 5 (+) — Chassis ground (-):

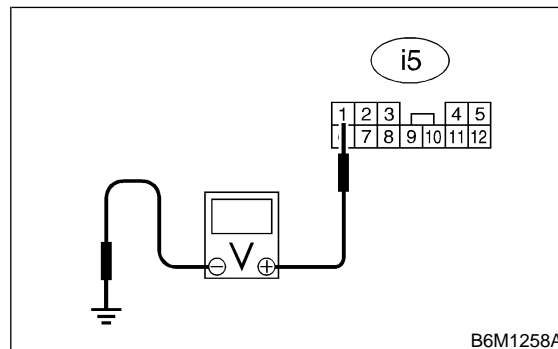


- CHECK** : *Is voltage more than 10 V?*
- YES** : Go to step **7C3**.
- NO** : Replace fuse No. 18. When fuse No. 18 is blown again, repair shorted parts of circuit.

7C3 : CHECK POWER SUPPLY.

Measure voltage between fuse & relay box connector and chassis ground.

Connector & terminal
(i5) No. 1 (+) — Chassis ground (-):

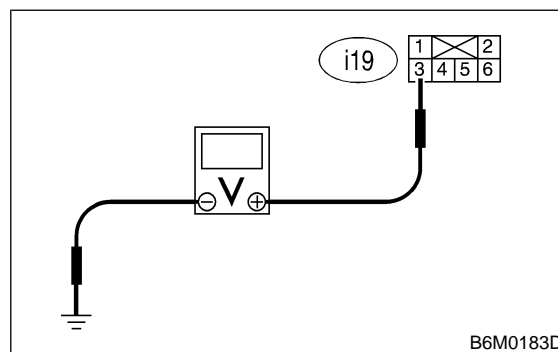


- CHECK** : *Is voltage more than 10 V?*
- YES** : Go to step **7C4**.
- NO** : Replace fuse No. 18. When No. 18 is blown again, repair shorted parts of circuit.

7C4 : CHECK CRUISE CONTROL MAIN SWITCH.

- 1) Turn ignition switch to OFF.
- 2) Remove cruise control main switch and disconnect connector.
- 3) Turn ignition switch to ON.
- 4) Measure voltage between cruise control main switch connector and chassis ground.

Connector & terminal
(i19) No. 3 (+) — Chassis ground (-):



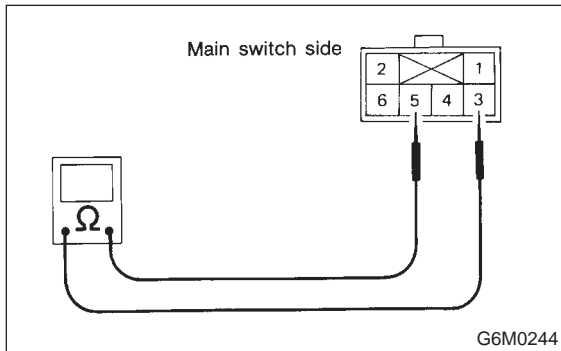
- CHECK** : *Is voltage more than 10 V?*
- YES** : Go to step **7C5**.
- NO** : Replace cruise control main switch. <Ref. to 6-2 [W12A2].>

7C5 : CHECK CRUISE CONTROL MAIN SWITCH.

Measure resistance between cruise control main switch terminals.

Terminals

No. 3 — No. 5:



CHECK : *Is resistance less than 10 Ω? (When switch is ON.)*

YES : Go to step 7C6.

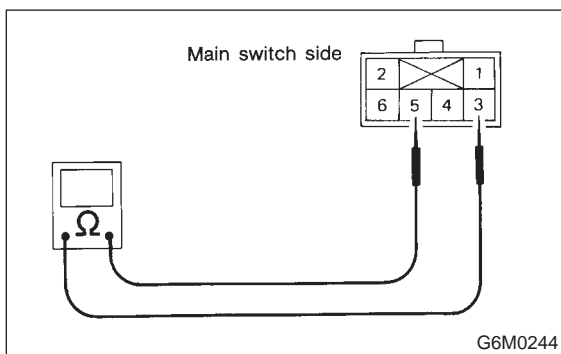
NO : Replace cruise control main switch.
<Ref. to 6-2 [W12A2].>

7C6 : CHECK CRUISE CONTROL MAIN SWITCH.

Measure resistance between cruise control main switch terminals.

Terminals

No. 3 — No. 5:



CHECK : *Is resistance less than 1 MΩ? (When switch is OFF.)*

YES : Go to step 7C7.

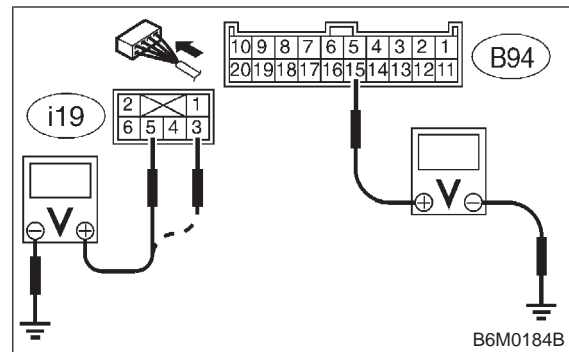
NO : Replace cruise control main switch.
<Ref. to 6-2 [W12A2].>

7C7 : CHECK HARNESS BETWEEN CRUISE CONTROL MAIN SWITCH CONNECTOR AND CHASSIS GROUND.

- 1) Connect connector.
- 2) Turn ignition switch to ON.
- 3) Turn cruise control main switch to ON.
- 4) Measure voltage between terminal of cruise control main switch and chassis ground.

Connector & terminal

(i19) No. 3 (+) — Chassis ground (-):



CHECK : *Is voltage more than 10 V?*

YES : Go to step 7C8.

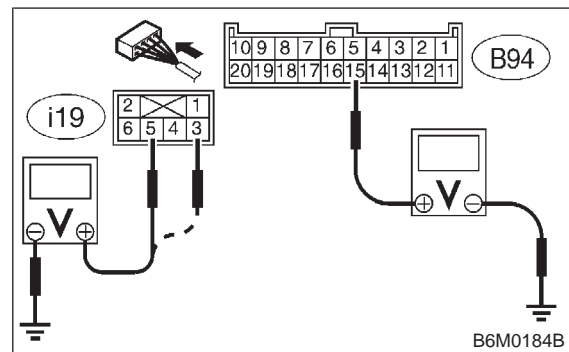
NO : Repair or replace wiring harness.

7C8 : CHECK HARNESS BETWEEN CRUISE CONTROL MAIN SWITCH CONNECTOR AND CHASSIS GROUND.

Measure voltage between terminal of cruise control main switch chassis ground.

Connector & terminal

(i19) No. 5 (+) — Chassis ground (-):



CHECK : *Is voltage more than 10 V?*

YES : Go to step 7C9.

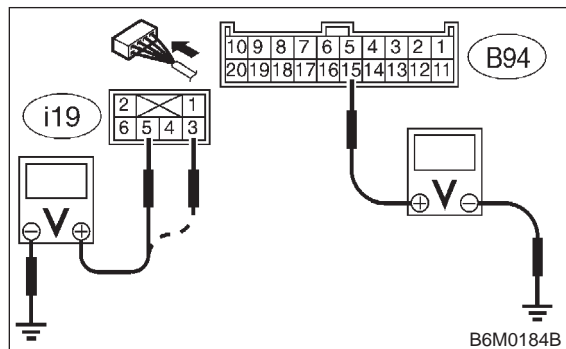
NO : Repair or replace wiring harness.

**7C9 : CHECK HARNESS BETWEEN
CRUISE CONTROL MODULE CON-
NECTOR AND CHASSIS GROUND.**

Measure voltage between terminal of cruise control module and chassis ground.

Connector & terminal

(B94) No. 15 (+) — Chassis ground (-):



CHECK : **Is voltage more than 10 V?**

YES : Replace cruise control module. <Ref. to 6-2 [W12A4].>

NO : Repair or replace wiring harness.

NOTE:

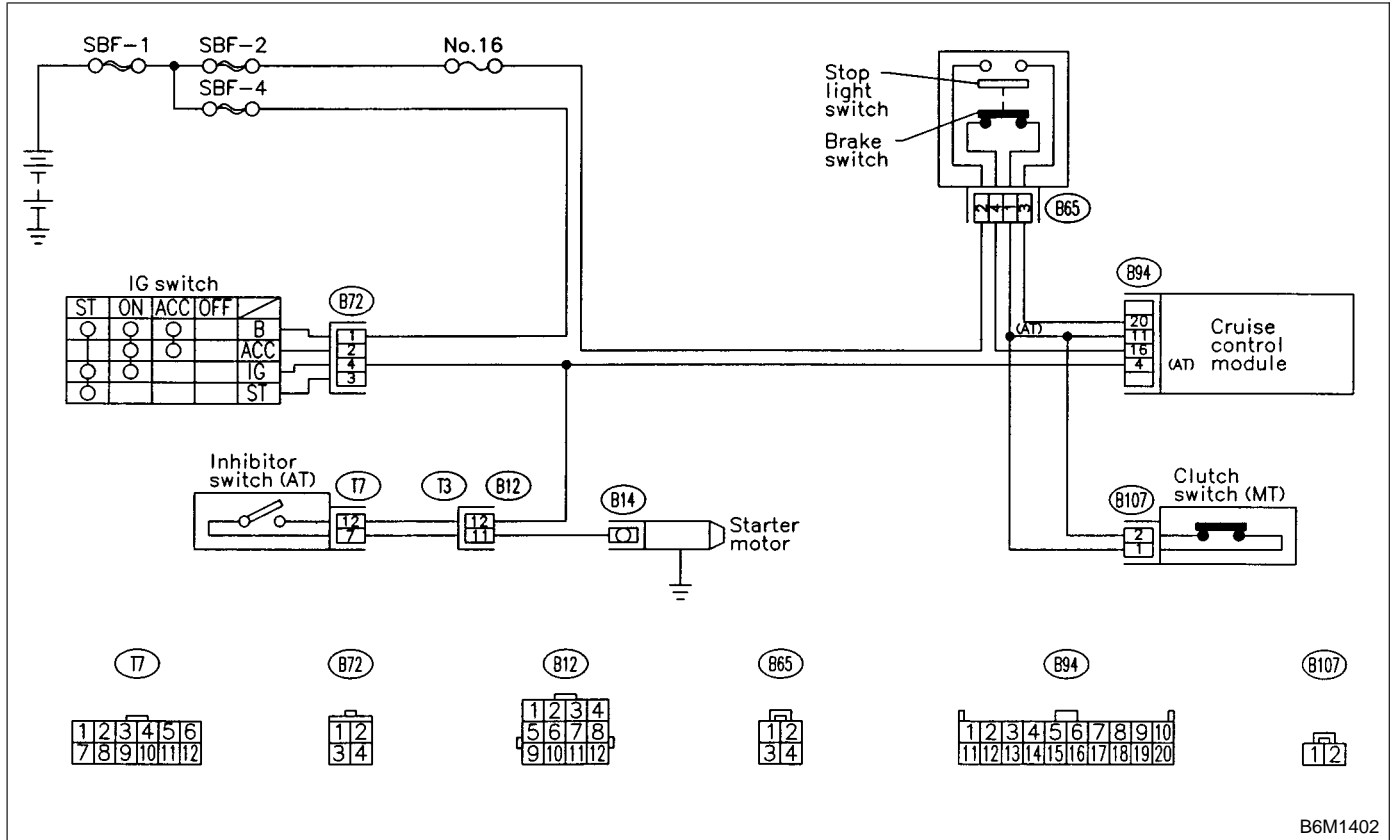
Depress cruise control main switch with fingers while measuring voltage between (i19) No. 5 and chassis ground.

D: BRAKE SWITCH, STOP LIGHT SWITCH, CLUTCH SWITCH (MT), INHIBITOR SWITCH (AT)

DIAGNOSIS:

- Failure or disconnection of the stop light switch and brake switch.
- Failure or disconnection of the clutch switch (MT).
- Failure or disconnection of the inhibitor switch (AT).

WIRING DIAGRAM:



B6M1402

7D1 : CHECK BRAKE SWITCH.

- 1) Turn ignition switch to ON.
- 2) Turn cruise control main switch to ON.
- 3) Apply parking brake securely.
- 4) Set select monitor in "Current Data Display & Save" mode.
- 5) Depress the brake pedal and check signals for proper operation.

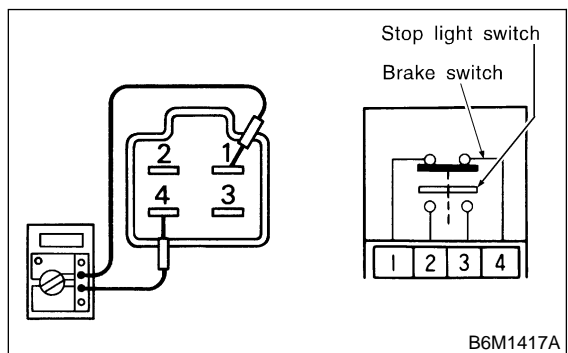
(1) The Stop Lamp Switch shown on the display turns from "OFF" to "ON".

(2) The Brake Switch shown on the display turns from "OFF" to "ON".

- 6) Release the brake pedal.
- 7) Remove connector of stop and brake switch.
- 8) Check circuit between brake switch terminal.

Terminals

No. 1 — No. 4: (Brake switch)



CHECK : *Is resistance less than 1 Ω? (When brake pedal is released.)*

YES : Go to step 7D2.

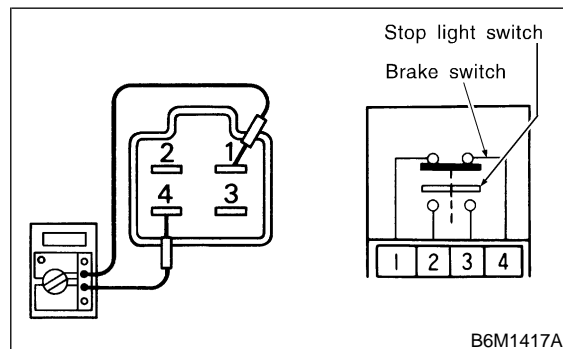
NO : Replace brake and stop light switch. <Ref. to 6-2 [W12A5].>

7D2 : CHECK BRAKE SWITCH.

Check circuit between brake switch terminal.

Terminals

No. 1 — No. 4: (Brake switch)



CHECK : *Is resistance more than 1 MΩ? (When brake pedal is depressed.)*

YES : Go to step 7D3.

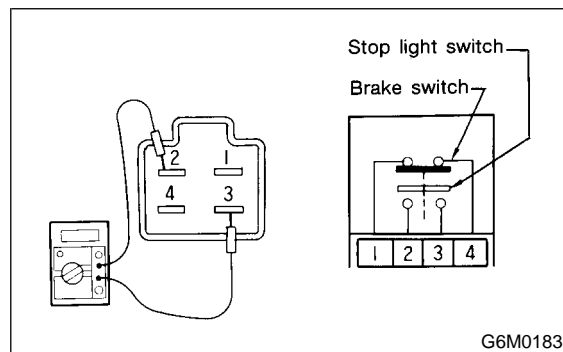
NO : Replace brake and stop light switch. <Ref. to 6-2 [W12A5].>

7D3 : CHECK STOP LIGHT SWITCH.

Check circuit between stop light switch terminal.

Terminals

No. 2 — No. 3: (Stop light switch)



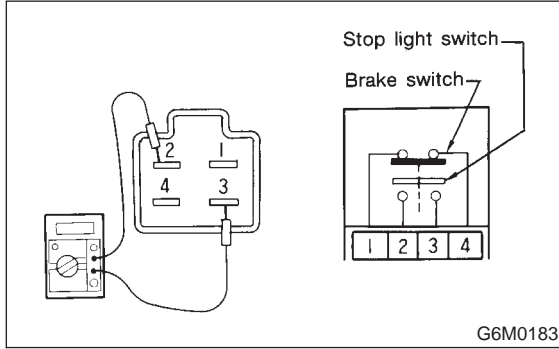
CHECK : *Is resistance more than 1 MΩ? (When brake pedal is released.)*

YES : Go to step 7D4.

NO : Replace brake and stop light switch. <Ref. to 6-2 [W12A5].>

7D4 : CHECK STOP LIGHT SWITCH.

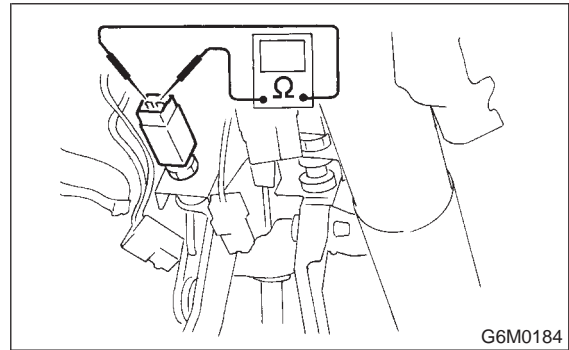
Check circuit between stop light switch terminal.

Terminals**No. 2 — No. 3: (Stop light switch)**

- CHECK** : *Is resistance less than 1 Ω ? (When brake pedal is depressed.)*
- YES** : (MT) Go to step **7D5**. (AT) Go to step **7D7**.
- NO** : Replace brake and stop light switch. <Ref. to 6-2 [W12A5].>

7D5 : CHECK CLUTCH SWITCH. (MT)

- 1) Turn ignition switch to ON.
- 2) Turn cruise control main switch to ON.
- 3) Apply parking brake securely.
- 4) Set select monitor in "Current Data Display & Save" mode.
- 5) Depress the clutch pedal and check signal for proper operation.
The Clutch/Inhibitor Switch shown on the display turns from "ON" to "OFF".
- 6) Disconnect connector of clutch switch.
- 7) Check continuity of the clutch switch.

Terminals**No. 1 — No. 2:**

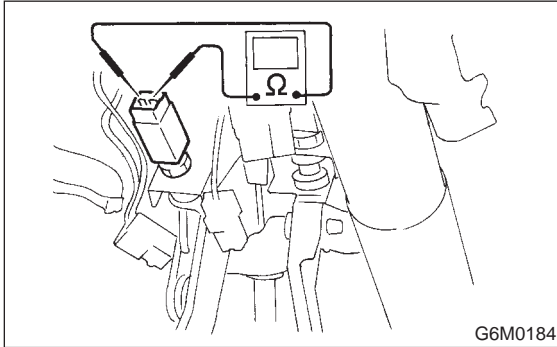
- CHECK** : *Is resistance less than 10 Ω ? (When clutch pedal is released.)*
- YES** : Go to step **7D6**.
- NO** : Replace clutch switch. <Ref. to 6-2 [W12A6].>

7D6 : CHECK CLUTCH SWITCH. (MT)

Check continuity of the clutch switch.

Terminals

No. 1 — No. 2:



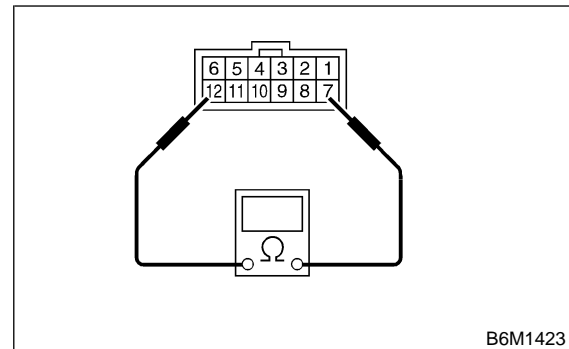
- CHECK** : **Is resistance more than 1 M Ω ? (When clutch pedal is depressed.)**
- YES** : Replace cruise control module. <Ref. to 6-2 [W12A4].>
- NO** : Replace clutch switch. <Ref. to 6-2 [W12A6].>

7D7 : CHECK INHIBITOR SWITCH. (AT)

- 1) Turn ignition switch to ON.
- 2) Turn cruise control main switch to ON.
- 3) Apply parking brake securely.
- 4) Set select monitor in "Current Data Display & Save" mode.
- 5) Set the selector lever from P or N position to D position and check signal for proper operation. The Clutch/Inhibitor Switch shown on the display turns from "ON" to "OFF".
- 6) Set the selector lever to P or N position.
- 7) Disconnect connector of inhibitor switch.
- 8) Check continuity of the inhibitor switch.

Terminals

No. 7 — No. 12:



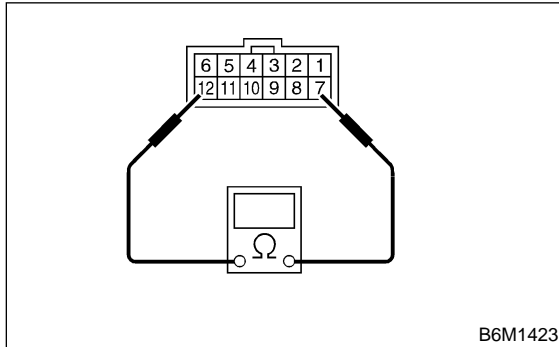
- CHECK** : **Is resistance less than 10 Ω ? (When selector lever is in P or N.)**
- YES** : Go to step 7D8.
- NO** : Replace inhibitor switch. <Ref. to 3-2 [W200].> Repair inhibitor switch wiring harness.

7D8 : CHECK INHIBITOR SWITCH. (AT)

Check continuity of the inhibitor switch.

Terminals

No. 7 — No. 12:



- CHECK** : ***Is resistance more than 1 M Ω ? (When selector lever is not in P or N.)***
- YES** : Replace cruise control module. <Ref. to 6-2 [W12A4].>
- NO** : Replace inhibitor switch. <Ref. to 3-2 [W200].> Repair inhibitor switch wiring harness.

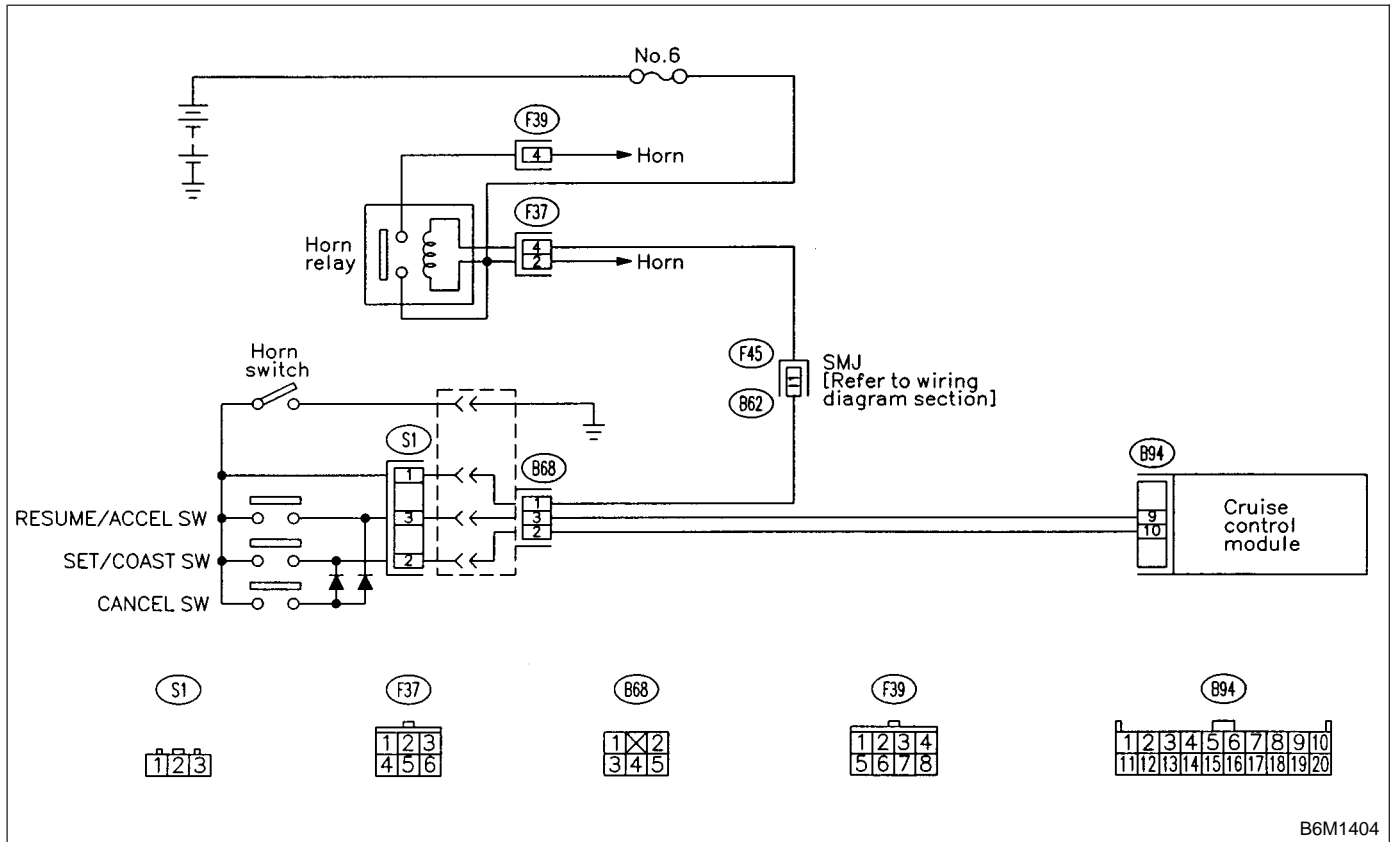
MEMO:

E: SET/COAST SWITCH, RESUME/ACCEL SWITCH, CANCEL SWITCH

DIAGNOSIS:

Short circuit inside the SET/COAST SW and RESUME/ACCEL SW.

WIRING DIAGRAM:



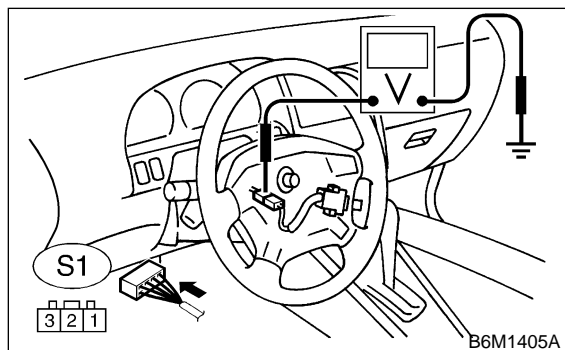
B6M1404

7E1 : CHECK CRUISE CONTROL COMMAND SWITCH.

Measure voltage between cruise control command switch connector and chassis ground.

Terminals

(S1) No. 2 (+) — Chassis ground (-):



CHECK : **Is voltage more than 10 V? (When CANCEL switch is ON.)**

YES : Go to step 7E2.

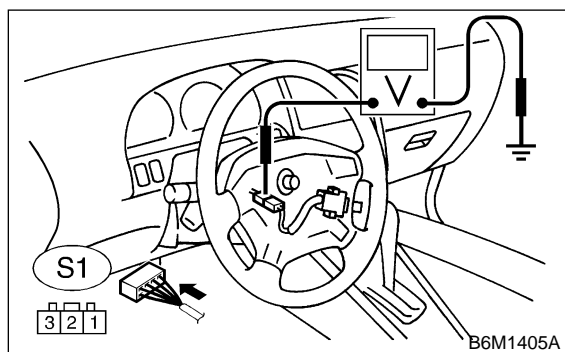
NO : Replace cruise control command switch. <Ref. to 6-2 [W12A3].>

7E2 : CHECK CRUISE CONTROL COMMAND SWITCH.

Measure voltage between cruise control command switch connector and chassis ground.

Terminals

(S1) No. 3 (+) — Chassis ground (-):



CHECK : **Is voltage more than 10 V? (When CANCEL switch is ON.)**

YES : Go to step 7E3.

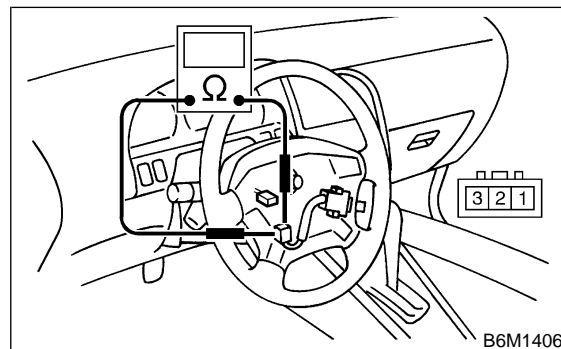
NO : Replace cruise control command switch. <Ref. to 6-2 [W12A3].>

7E3 : CHECK CRUISE CONTROL COMMAND SWITCH.

- 1) Turn ignition switch to OFF.
- 2) Disconnect connector from cruise control command switch.
- 3) Measure resistance between terminals of cruise control command switch connector (switch side) to check the switch operation.

Terminals

No. 1 — No. 2:



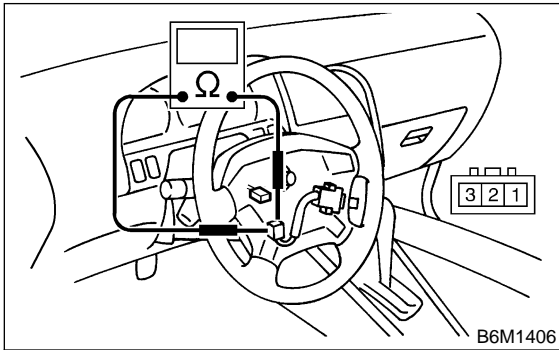
CHECK : **Is resistance less than 10 Ω? (When SET/COAST switch is ON.)**

YES : Go to step 7E4.

NO : Replace cruise control command switch. <Ref. to 6-2 [W12A3].>

7E4 : CHECK CRUISE CONTROL COMMAND SWITCH.

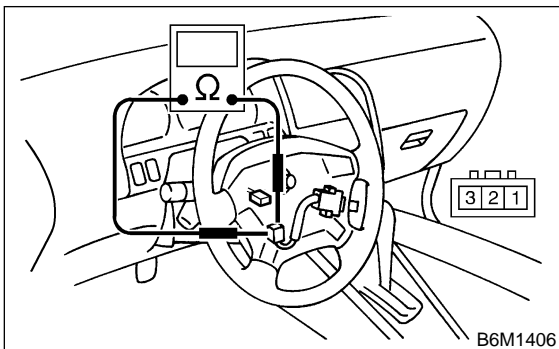
Measure resistance between terminals of cruise control command switch connector (switch side) to check the switch operation.

Terminals**No. 1 — No. 2:**

- CHECK** : *Is resistance more than 1 M Ω ? (When SET/COAST switch is OFF.)*
- YES** : Go to step 7E5.
- NO** : Replace cruise control command switch. <Ref. to 6-2 [W12A3].>

7E5 : CHECK CRUISE CONTROL COMMAND SWITCH.

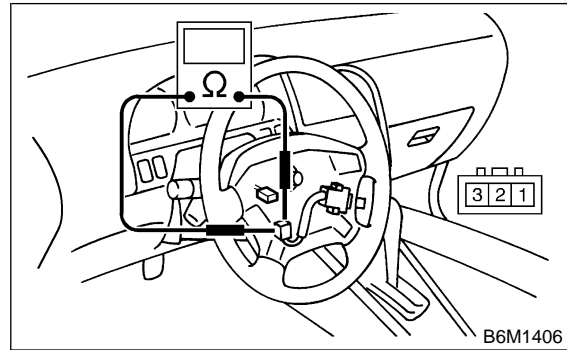
Measure resistance between terminals of cruise control command switch connector (switch side) to check the switch operation.

Terminals**No. 1 — No. 3:**

- CHECK** : *Is resistance less than 10 Ω ? (When RESUME/ACCEL switch is ON.)*
- YES** : Go to step 7E6.
- NO** : Replace cruise control command switch. <Ref. to 6-2 [W12A3].>

7E6 : CHECK CRUISE CONTROL COMMAND SWITCH.

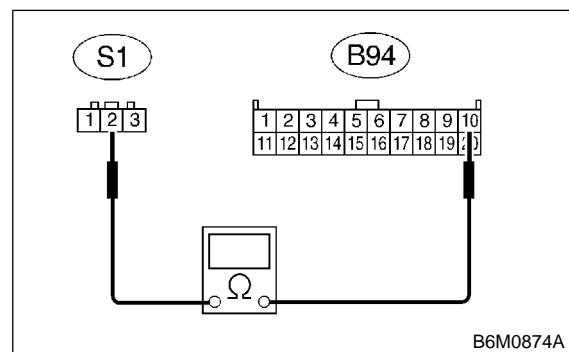
Measure resistance between terminals of cruise control command switch connector (switch side) to check the switch operation.

Terminals**No. 1 — No. 3:**

- CHECK** : *Is resistance more than 1 M Ω ? (When RESUME/ACCEL switch is OFF.)*
- YES** : Go to step 7E7.
- NO** : Replace cruise control command switch. <Ref. to 6-2 [W12A3].>

7E7 : CHECK HARNESS CONNECTOR BETWEEN CRUISE CONTROL COMMAND SWITCH AND CRUISE CONTROL MODULE.

- 1) Disconnect connector from cruise control module.
- 2) Measure resistance of harness connector between cruise control command switch and cruise control module.

Connector & terminal**(S1) No. 2 — (B94) No. 10:**

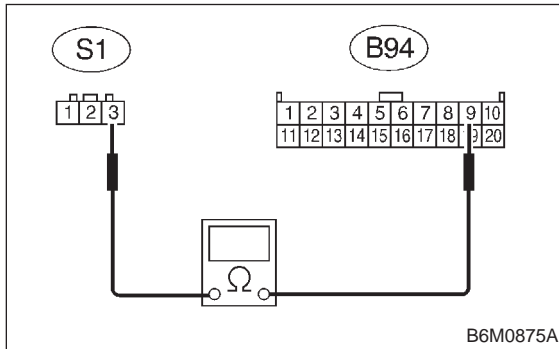
- CHECK** : *Is resistance less than 10 Ω ?*
- YES** : Go to step 7E8.
- NO** : Repair or replace wiring harness.

7E8 : CHECK HARNESS CONNECTOR BETWEEN CRUISE CONTROL COMMAND SWITCH AND CRUISE CONTROL MODULE.

Measure resistance of harness connector between cruise control command switch and cruise control module.

Connector & terminal

(S1) No. 3 — (B94) No. 9:



- CHECK** : **Is resistance less than 10 Ω?**
- YES** : Replace cruise control module. <Ref. to 6-2 [W12A4].>
- NO** : Repair or replace wiring harness.

MEMO:

8. Diagnostics Chart with Trouble Code

A: DIAGNOSTIC TROUBLE CODE LIST

Diagnostic trouble code	Item	Contents of diagnosis	Index No.
21	Inner relay is seized.	Cruise control module inner relay is seized when main switch is OFF.	<Ref. to 6-2a [T8B0].>
22	Vehicle speed sensor	Vehicle speed signal changes more than 10 km/h (6 MPH) within 350 ms.	<Ref. to 6-2a [T8C0].>
24	Cruise control module is abnormal.	Two vehicle speed values stored in cruise control module memory are not the same.	<Ref. to 6-2a [T8B0].>
25	Cruise control module is abnormal.	Two output values stored in cruise control module memory are not the same.	<Ref. to 6-2a [T8B0].>
28	Wiring harness opened.	Open wiring harness circuit is detected via control module relay when main switch is ON.	<Ref. to 6-2a [T8D0].>
35	Motor drive system is abnormal.	<ul style="list-style-type: none"> ● Motor output circuit is open or shorted. ● Motor drive circuit is open or shorted. 	<Ref. to 6-2a [T8E0].>
37	Motor clutch drive system is abnormal.	<ul style="list-style-type: none"> ● Motor clutch output circuit is open or shorted. ● Motor clutch drive circuit is open or shorted. 	<Ref. to 6-2a [T8F0].>
38	Motor drive shaft does not engage properly.	Motor drive gear engagement is not properly adjusted.	<Ref. to 6-2a [T8G0].>
39	Motor is overloaded.	Current flows through motor more frequently than under normal conditions.	<Ref. to 6-2a [T8H0].>
2A	Cruise control module is abnormal.	Cruise control module self-diagnosis function senses abnormality.	<Ref. to 6-2a [T8B0].>

B: DIAGNOSTIC TROUBLE CODE 21, 24, 25 AND 2A (CRUISE CONTROL MODULE BUILT-IN RELAY, CPU RAM)

DIAGNOSIS:

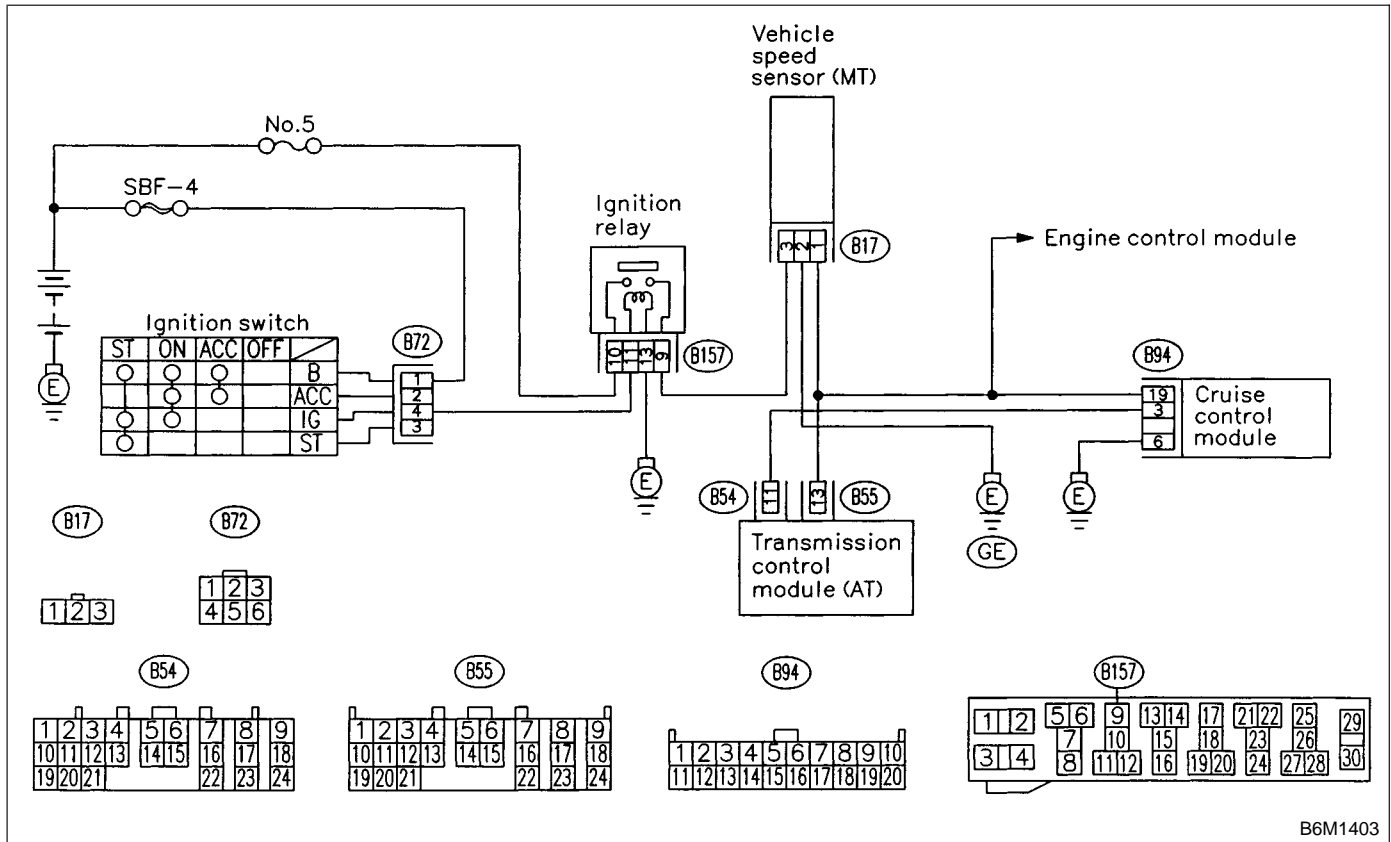
- Poor welding of built-in relay of cruise control module.
- Failure of built-in CPU RAM of cruise control module.

C: DIAGNOSTIC TROUBLE CODE 22 (VEHICLE SPEED SENSOR)

DIAGNOSIS:

Disconnection or short circuit of vehicle speed sensor system.

WIRING DIAGRAM:



B6M1403

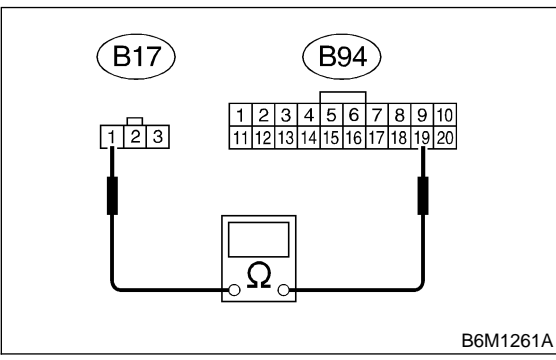
8C1 : CHECK TRANSMISSION TYPE.

- CHECK** : *Is the transmission type MT?*
- YES** : Go to step **8C2**.
- NO** : Go to step **8C6**.

8C2 : CHECK HARNESS CONNECTOR BETWEEN CRUISE CONTROL MODULE AND VEHICLE SPEED SENSOR.

- 1) Disconnect connector from vehicle speed sensor and cruise control module.
- 2) Measure resistance of harness connector between vehicle speed sensor and cruise control module.

Connector & terminal
(B17) No. 1 — (B94) No. 19:

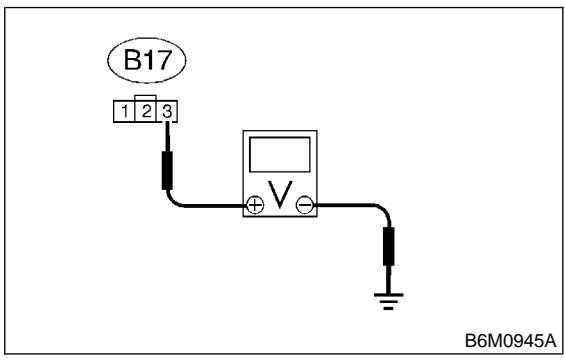


- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Go to step **8C3**.
- NO** : Repair wiring harness.

8C3 : CHECK HARNESS CONNECTOR BETWEEN BATTERY AND VEHICLE SPEED SENSOR.

- 1) Turn ignition switch to ON.
- 2) Measure voltage between vehicle speed sensor connector (B17) and chassis ground.

Connector & terminal
(B17) No. 3 (+) — Chassis ground (-):

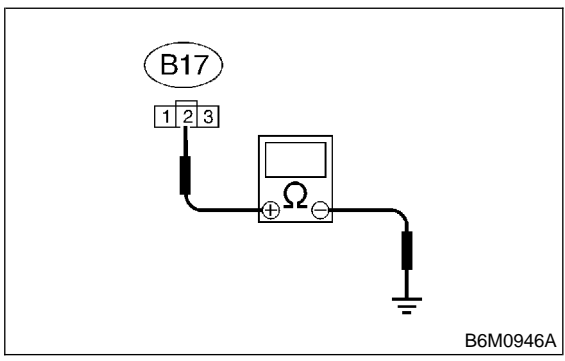


- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **8C4**.
- NO** : Repair harness connector between battery and vehicle speed sensor.

8C4 : CHECK HARNESS CONNECTOR BETWEEN VEHICLE SPEED SENSOR AND ENGINE GROUND.

- 1) Turn ignition switch to OFF.
- 2) Measure resistance between vehicle speed sensor connector (B17) and engine ground.

Connector & terminal
(B17) No. 2 (+) — Engine ground (-):



- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Go to step **8C5**.
- NO** : Repair harness connector between vehicle speed sensor and engine ground.

8C5 : CHECK VEHICLE SPEED SENSOR.

- 1) Connect connector to vehicle speed sensor.
- 2) Set the vehicle on free roller, or lift-up the vehicle and support with safety stands.

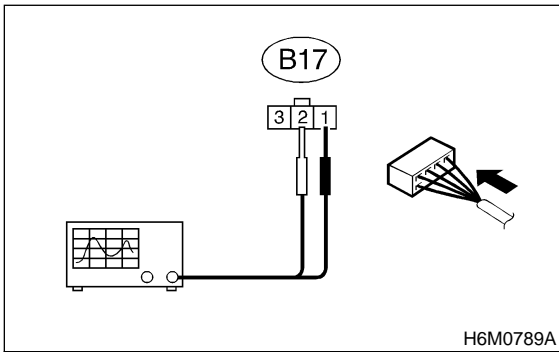
WARNING:

Be careful not to be caught up by the running wheels.

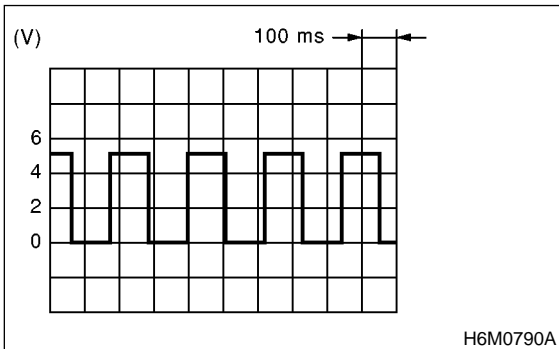
- 3) Set oscilloscope to vehicle speed sensor connector terminals.

Positive probe; (B17) No. 1

Earth lead; (B17) No. 2



- 4) Drive the vehicle at speed greater than 20 km/h (12 MPH).
- 5) Measure signal voltage indicated on oscilloscope.



CHECK : *Is the voltage more than 5 V?*

YES : Replace cruise control module. <Ref. to 6-2 [W12A4].>

NO : Replace vehicle speed sensor.

8C6 : CHECK HARNESS CONNECTOR BETWEEN CRUISE CONTROL MODULE AND AUTOMATIC TRANSMISSION CONTROL MODULE.

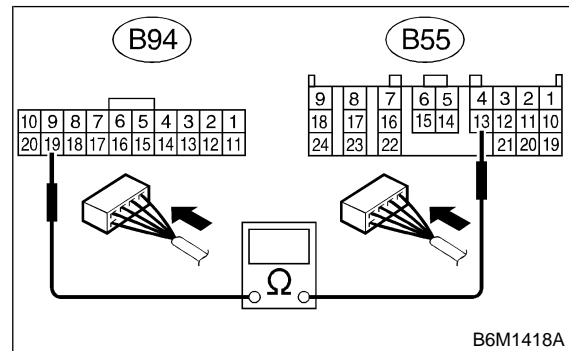
- 1) Disconnect connector from automatic transmission control module and cruise control module.
- 2) Measure resistance between cruise control module connector and automatic transmission control module connector.

CAUTION:

To measure the voltage and/or resistance, use a tapered pin with a diameter of less than 0.64 mm (0.025 in). Do not insert the pin more than 5 mm (0.20 in).

Connector & terminal

(B94) No. 19 — (B55) No. 13:



CHECK : *Is the resistance less than 10 Ω?*

YES : Go to step 8C7.

NO : Repair harness connector between cruise control module and automatic transmission control module.

8C7 : CHECK AUTOMATIC TRANSMISSION CONTROL MODULE.

- 1) Connect connector to automatic transmission control module.
- 2) Set the vehicle on free roller, or lift-up the vehicle and support with safety stands.

WARNING:

Be careful not to be caught by the running wheels.

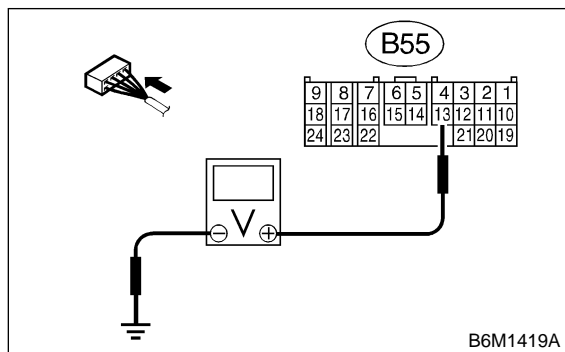
- 3) Drive the vehicle faster than 10 km/h (6 MPH).
- 4) Measure voltage between automatic transmission control module connector (B55) and chassis ground.

CAUTION:

To measure the voltage and/or resistance, use a tapered pin with a diameter of less than 0.64 mm (0.025 in). Do not insert the pin more than 5 mm (0.20 in).

Connector & terminal

(B55) No. 13 (+) — Chassis ground (-):



- CHECK** : **Is the voltage less than 1 V ←→ more than 4 V?**
- YES** : Replace cruise control module. <Ref. to 6-2 [W12A4].>
- NO** : Replace automatic transmission control module. <Ref. to 3-2 [W2300].>

D: DIAGNOSTIC TROUBLE CODE 28 (WIRING HARNESS OPENED.)

8D1 : CHECK BATTERY.

Measure battery specific gravity of electrolyte.

- CHECK** : **Is battery specific gravity more than 1.250?**
- YES** : Go to step **8D2**.
- NO** : Charge or replace battery. <Ref. to 6-2 [W200].> Go to step **8D2**.

8D2 : CHECK FUSES, CONNECTORS AND HARNESSES.

Check the condition of the main and other fuses, and harnesses and connectors. Also check for proper grounding.

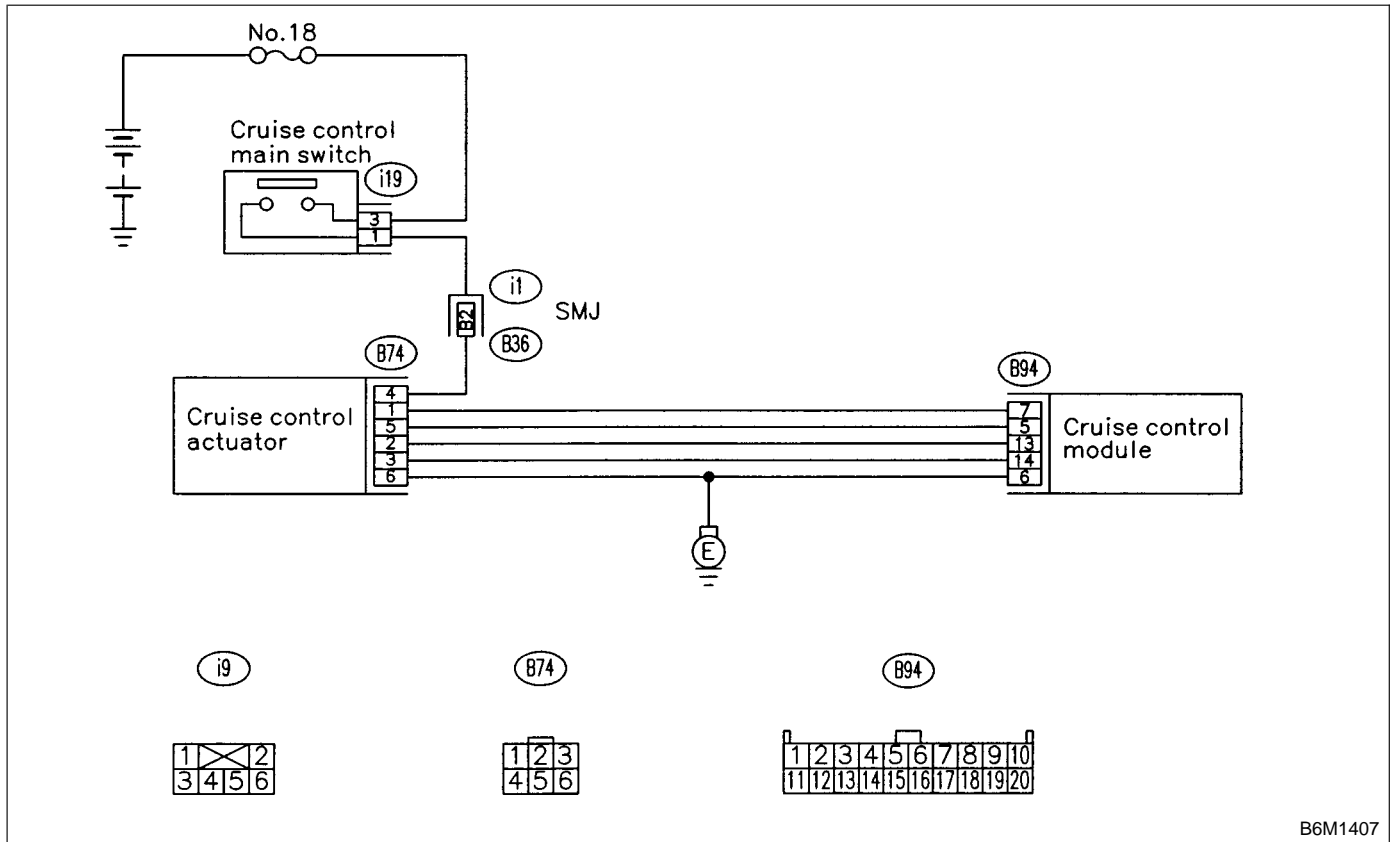
- CHECK** : **Is there anything unusual about the appearance of main fuse, fuse, harness, connector and grounding?**
- YES** : Repair or replace faulty parts.
- NO** : End of inspection.

E: DIAGNOSTIC TROUBLE CODE 35 (ACTUATOR MOTOR)

DIAGNOSIS:

Open or poor contact of cruise control actuator motor.

WIRING DIAGRAM:



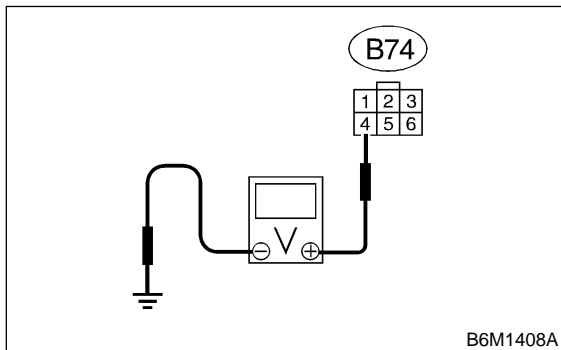
B6M1407

8E1 : CHECK POWER SUPPLY.

- 1) Turn ignition switch to OFF.
- 2) Disconnect connector from cruise control actuator.
- 3) Turn ignition switch to ON.
- 4) Measure voltage between cruise control actuator connector and chassis ground.

Terminals

(B74) No. 4 (+) — Chassis ground (-):



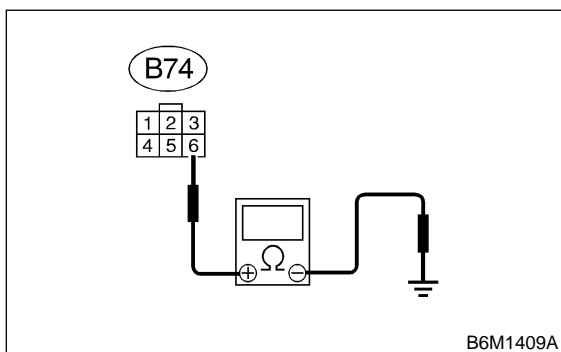
- CHECK** : Is the voltage more than 10 V?
- YES** : Go to step 8E2.
- NO** : Repair or replace wiring harness between fuse and relay box and cruise control actuator.

8E2 : CHECK GROUND LINE OF ACTUATOR.

Measure resistance between cruise control actuator connector and chassis ground.

Terminals

(B74) No. 6 (+) — Chassis ground (-):



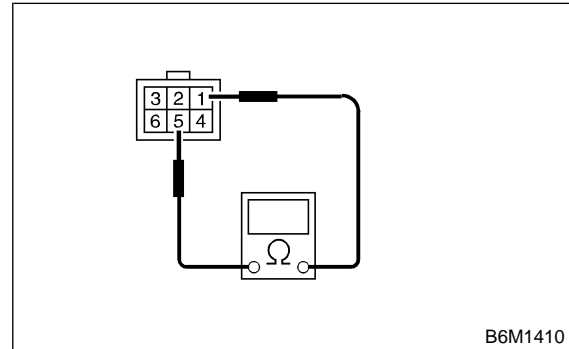
- CHECK** : Is resistance less than 10 Ω?
- YES** : Go to step 8E3.
- NO** : Repair or replace wiring harness between cruise control actuator and chassis ground.

8E3 : MEASURE RESISTANCE OF ACTUATOR.

Measure resistance of cruise control actuator motor.

Terminals

No. 1 — No. 5:



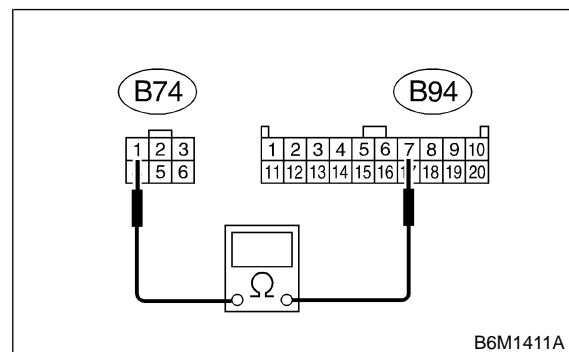
- CHECK** : Is resistance approximately 46 Ω?
- YES** : Go to step 8E4.
- NO** : Replace cruise control actuator. <Ref. to 6-2 [W12A1].>

8E4 : PERFORM A CIRCUIT TEST IN HARNESS BETWEEN ACTUATOR AND CRUISE CONTROL MODULE.

- 1) Disconnect connector from cruise control module.
- 2) Measure resistance of harness connector between cruise control module and cruise control actuator.

Connector & terminal

(B74) No. 1 — (B94) No. 7:



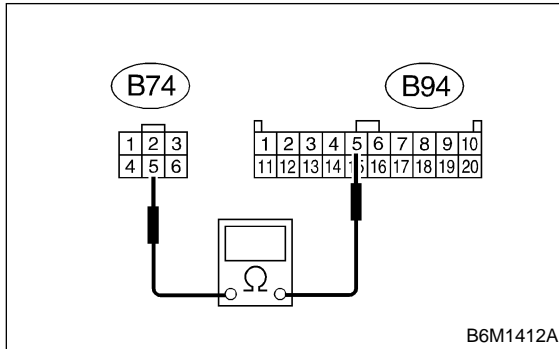
- CHECK** : Is resistance less than 10 Ω?
- YES** : Go to step 8E5.
- NO** : Repair or replace wiring harness between cruise control actuator and cruise control module.

8E5 : PERFORM A CIRCUIT TEST IN HARNESS BETWEEN ACTUATOR AND CRUISE CONTROL MODULE.

Measure resistance of harness connector between cruise control module and cruise control actuator.

Connector & terminal

(B74) No. 5 — (B94) No. 5:



- CHECK** : **Is resistance less than 10 Ω?**
- YES** : Replace cruise control module. <Ref. to 6-2 [W12A4].>
- NO** : Repair or replace wiring harness between cruise control actuator and cruise control module.

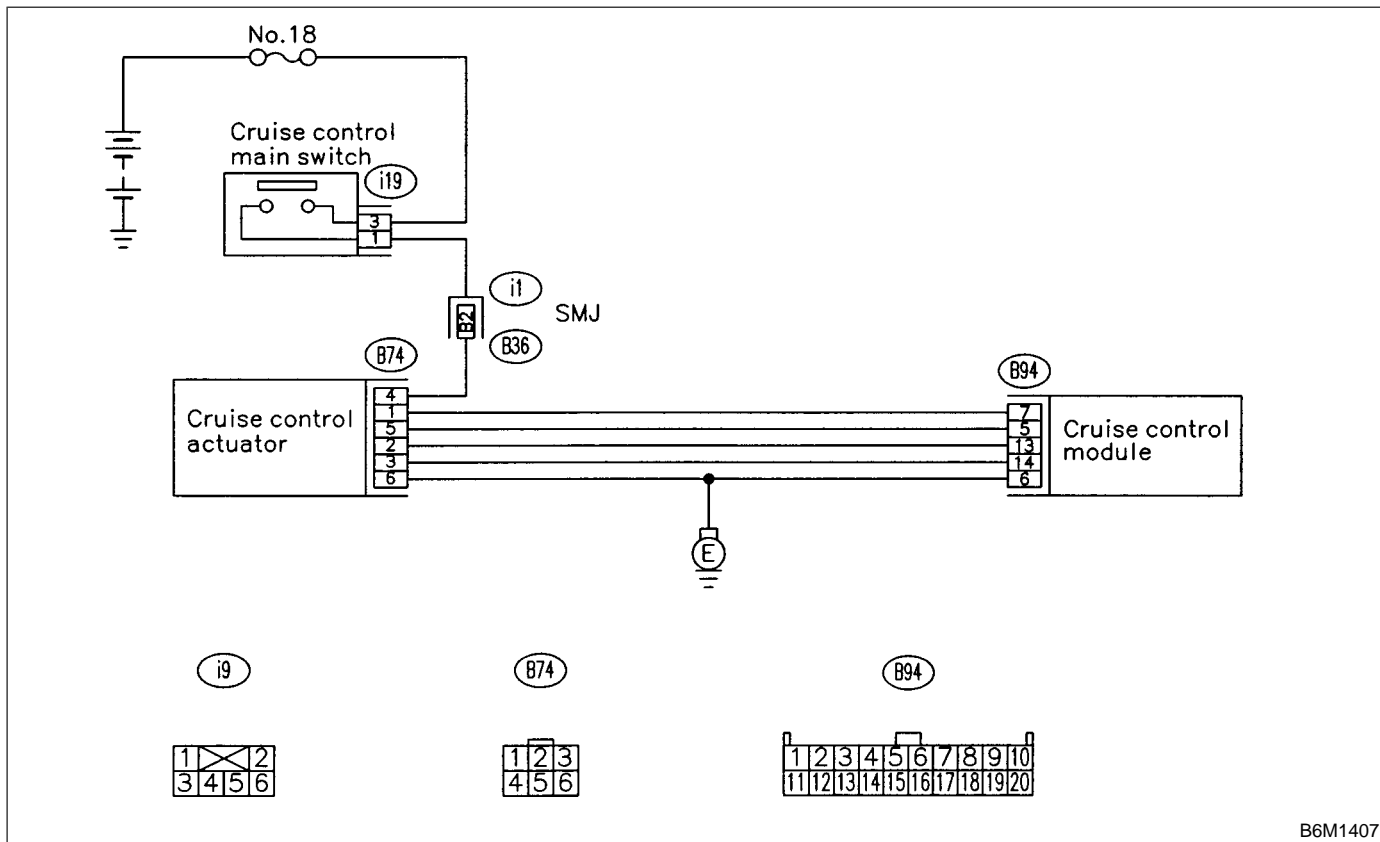
MEMO:

F: DIAGNOSTIC TROUBLE CODE 37 (ACTUATOR MOTOR CLUTCH)

DIAGNOSIS:

Open or poor contact of cruise control actuator motor clutch.

WIRING DIAGRAM:



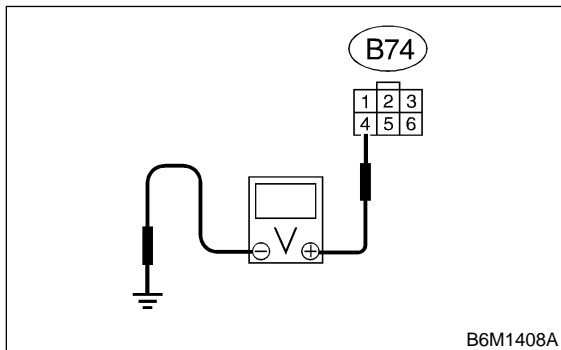
B6M1407

8F1 : CHECK POWER SUPPLY.

- 1) Turn ignition switch to OFF.
- 2) Disconnect connector from cruise control actuator.
- 3) Turn ignition switch to ON.
- 4) Measure voltage between cruise control actuator and chassis ground.

Terminals

(B74) No. 4 (+) — Chassis ground (-):



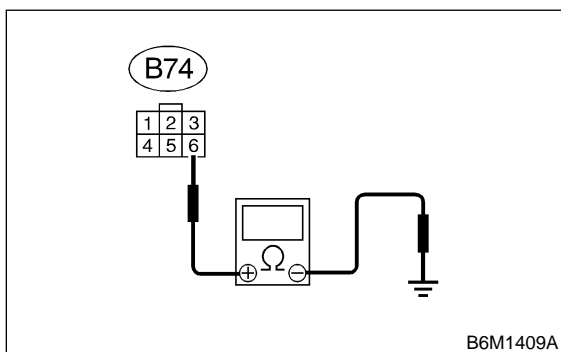
- CHECK** : Is the voltage more than 10 V?
- YES** : Go to step 8F2.
- NO** : Repair or replace wiring harness between fuse and relay box and cruise control actuator.

8F2 : CHECK GROUND LINE OF ACTUATOR.

Measure resistance between cruise control actuator and chassis ground.

Terminals

(B74) No. 6 — Chassis ground:



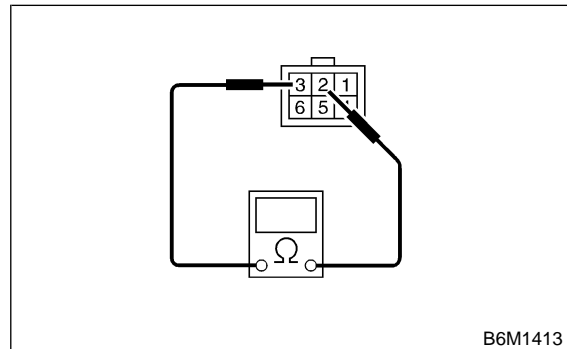
- CHECK** : Is resistance less than 10 Ω?
- YES** : Go to step 8F3.
- NO** : Repair or replace wiring harness between cruise control actuator and chassis ground.

8F3 : MEASURE RESISTANCE OF ACTUATOR CLUTCH.

Measure resistance of cruise control actuator clutch.

Terminals

No. 2 — No. 3:



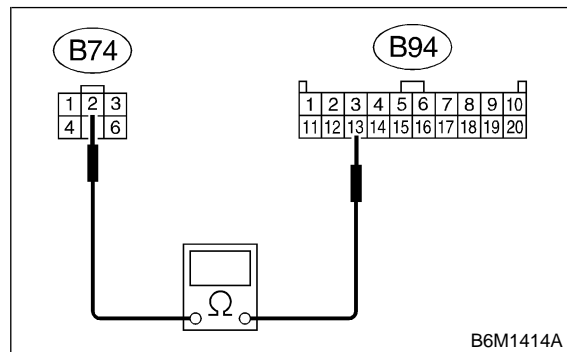
- CHECK** : Is resistance approximately 46 Ω?
- YES** : Go to step 8F4.
- NO** : Replace cruise control actuator. <Ref. to 6-2 [W12A1].>

8F4 : PERFORM A CIRCUIT TEST IN HARNESS BETWEEN ACTUATOR AND CRUISE CONTROL MODULE.

- 1) Disconnect connector from cruise control module.
- 2) Measure resistance of harness connector between cruise control module and cruise control actuator.

Connector & terminal

(B74) No. 2 — (B94) No. 13:



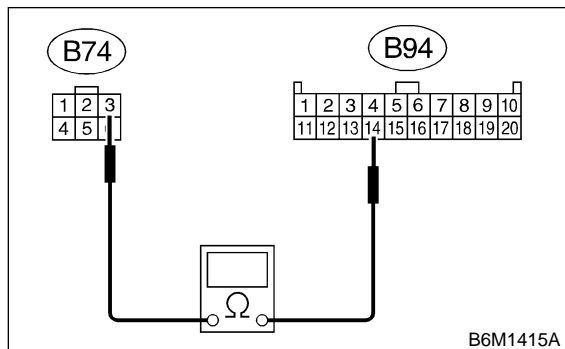
- CHECK** : Is resistance less than 10 Ω?
- YES** : Go to step 8F5.
- NO** : Repair or replace wiring harness between cruise control actuator and cruise control module.

8F5 : PERFORM A CIRCUIT TEST IN HARNESS BETWEEN ACTUATOR AND CRUISE CONTROL MODULE.

Measure resistance of harness connector between cruise control module and cruise control actuator.

Connector & terminal

(B74) No. 3 — (B94) No. 14:

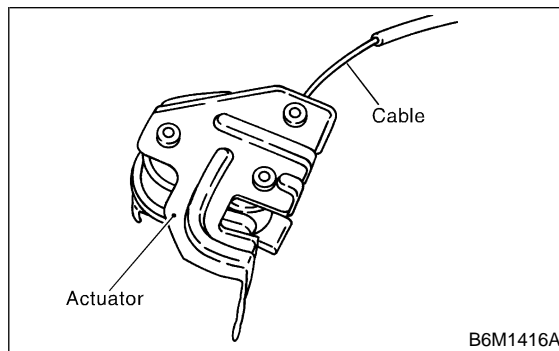


- CHECK** : **Is resistance less than 10 Ω?**
- YES** : Replace cruise control module. <Ref. to 6-2 [W12A4].>
- NO** : Repair or replace wiring harness between cruise control actuator and cruise control module.

G: DIAGNOSTIC TROUBLE CODE 38 (MOTOR DRIVE SHAFT DOES NOT ENGAGE PROPERLY.)

8G1 : CHECK ACTUATOR MOTOR.

- 1) Disconnect connector from cruise control actuator.
- 2) Remove cruise control actuator from mounting bracket.
- 3) Pull cable by hand to check for looseness or status of inner gear engagement.



- CHECK** : **Are foreign particles caught in inner gear or does inner gear engage and disengage improperly?**
- YES** : Replace cruise control actuator. <Ref. to 6-2 [W12A1].>
- NO** : Check the cruise control cable adjustment. <Ref. to 6-2a [T2B1].>

H: DIAGNOSTIC TROUBLE CODE 39 (MOTOR IS OVERLOADED.)

**8H1 : CHECK THE OPERATING CURRENT
TO ACTUATOR MOTOR.**

- 1) Connect Subaru Select Monitor to data link connector.
- 2) Try to drive the vehicle while operating the cruise control system.
- 3) Check the operation current to the cruise control actuator motor.

- CHECK** : ***Is current flow abnormally larger than under normal conditions?***
- YES** : Replace cruise control module. <Ref. to 6-2 [W12A4].>
- NO** : Check the power supply circuit. <Ref. to 6-2a [T2C1].>

9. Diagnostics Chart with Select Monitor

A: FUNCTION MODE

NOTE:

Applicable select monitor cartridge:
No. 24082AA130

Select the "Cruise Control" system using the select monitor and set the "Current Data Display & Save" mode. The following parameters will then appear on the display.

- Vehicle Speed

The current vehicle speed is shown on the display.

- Stop Lamp Switch

When the brake pedal is depressed, the stop lamp switch shown on the display turns from "OFF" to "ON".

- Brake Switch

When the brake pedal is depressed, the brake switch shown on the display turns from "OFF" to "ON".

- "SET/COAST" Switch

When the cruise control command switch is placed in the "SET/COAST" position, the SET/COAST switch shown on the display turns from "OFF" to "ON".

- "RESUME/ACCEL" Switch

When the cruise control command switch is placed in the "RESUME/ACCEL" position, the RESUME/ACCEL switch shown on the display turns from "OFF" to "ON".

- Clutch/Inhibitor Switch

When the clutch pedal is depressed, the clutch/inhibitor switch shown on the display turns from "ON" to "OFF". (MT model)

When the selector lever is moved from the "N" or "P" position to any other position, the clutch/inhibitor switch shown on the display turns from "ON" to "OFF". (AT model)

MEMO:

1. Precaution

A: SUPPLEMENTAL RESTRAINT SYSTEM "AIRBAG"

Airbag system wiring harness is routed near the keyless entry control module.

CAUTION:

- All airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuits.
- Be careful not to damage airbag system wiring harness when servicing the keyless entry control module.

2. Pre-inspection

A: POWER DOOR LOCK

2A1 : CHECK POWER DOOR LOCK.

Perform lock and unlock with door lock switch.

CHECK : *Does the power door lock function normally?*

YES : Go to step 2B1.

NO : Repair power door lock.

1. Precaution

A: SUPPLEMENTAL RESTRAINT SYSTEM "AIRBAG"

Airbag system wiring harness is routed near the keyless entry control module.

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2. Pre-inspection

A: POWER DOOR LOCK

2A1 : CHECK POWER DOOR LOCK.

Perform lock and unlock with door lock switch.

CHECK : *Does the power door lock function normally?*

YES : Go to step 2B1.

NO : Repair power door lock.

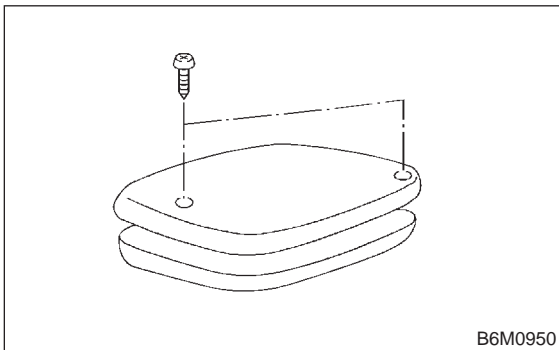
B: TRANSMITTER

2B1 : CHECK TRANSMITTER BATTERY.

1) Remove battery from transmitter.

NOTE:

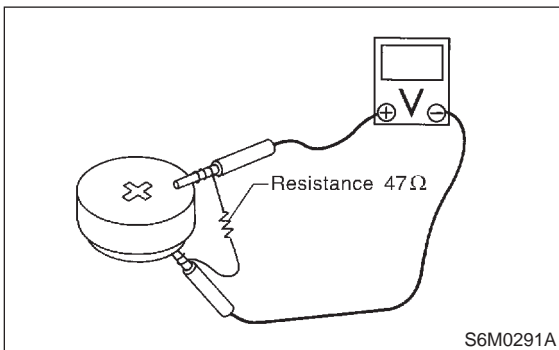
To prevent static electricity damage to transmitter printed circuit board, touch steel area of building with hand to discharge static electricity carried on body or clothes before disassembling transmitter.



2) Measure voltage battery.

NOTE:

- Battery discharge occurs during measurement. Complete measurement within 5 seconds.
- During battery voltage measurement, voltage falls more than 1.8 volts during 3 seconds period. Weak battery is indicated. Replace battery.



- CHECK : **Is the voltage more than 2 V?**
- YES : Go to step **2B2**.
- NO : Replace transmitter battery. (Use CR2032 or equivalent.)

2B2 : CHECK LED OF TRANSMITTER.

- 1) Press either the LOCK/ARM or UNLOCK/DISARM button six times to synchronize with the keyless entry control module.
- 2) Press the LOCK/ARM button.

- CHECK : **Does the LED blink one time?**
- YES : Go to step **2B3**.
- NO : Replace transmitter.

2B3 : CHECK LED OF TRANSMITTER.

Keep the LOCK/ARM button pressed.

- CHECK : **Does the LED blink one time and then turn on?**
- YES : Go to step **2B4**.
- NO : Replace transmitter.

2B4 : CHECK LED OF TRANSMITTER.

Press the UNLOCK/DISARM button.

- CHECK : **Does the LED blink one time?**
- YES : Go to step **2B5**.
- NO : Replace transmitter.

2B5 : CHECK LED OF TRANSMITTER.

Keep the UNLOCK/DISARM button pressed.

- CHECK : **Does the LED blink two times?**
- YES : Go to step **2B6**.
- NO : Replace transmitter.

2B6 : CHECK POWER DOOR LOCK FUNCTION.

Perform lock and unlock function of power door lock with transmitter.

- CHECK : **Does it function normally?**
- YES : Go to step **2B7**.
- NO : Replace transmitter.

2B7 : CHECK ON/OFF SELECT HORN SIGNAL.

Press the LOCK/ARM or UNLOCK/DISARM button.

- CHECK** : *Does the horn signal chirp?*
- YES** : Go to step **2B8**.
- NO** : Keep both LOCK/ARM and UNLOCK/DISARM buttons pressed for more than 1.5 seconds. Go to step **2B8**.

2B8 : CHECK ON/OFF SELECT HORN SIGNAL.

Keep both LOCK/ARM and UNLOCK/DISARM buttons pressed for more than 1.5 seconds.

- CHECK** : *Does the horn signal chirp two times?*
- YES** : Go to step **2B9**.
- NO** : Replace transmitter.

2B9 : CHECK ON/OFF SELECT HORN SIGNAL.

Press LOCK/ARM or UNLOCK/DISARM button.

- CHECK** : *Does the horn signal chirp?*
- YES** : Replace transmitter.
- NO** : Go to step **2B10**.

2B10 : CHECK ON/OFF SELECT HORN SIGNAL.

Keep both LOCK/ARM and UNLOCK/DISARM buttons pressed for more than 1.5 seconds.

- CHECK** : *Does the horn signal chirp one time?*
- YES** : Go to step **2B11**.
- NO** : Replace transmitter.

2B11 : CHECK ON/OFF SELECT HORN SIGNAL.

Press LOCK/ARM and UNLOCK/DISARM button.

- CHECK** : *Does the horn signal chirp?*
- YES** : Go to step **2B12**.
- NO** : Replace transmitter.

2B12 : CHECK FOR UNCHECKED TRANSMITTER.

Check for an unchecked transmitter.

- CHECK** : *Does an unchecked transmitter exist?*
- YES** : Check for an unchecked transmitter. Go to step **2B1**.
- NO** : Go to step **2C1**.

C: FUSE**2C1 : CHECK FUSE.**

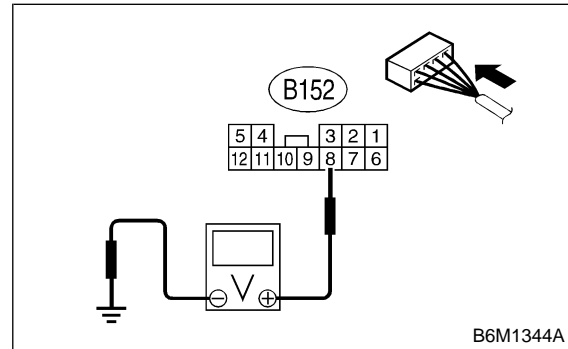
Remove and visually check the fuse No. 11 (in fuse box).

- CHECK** : *Is fuse No. 11 blown?*
YES : Replace fuse (20 A).
NO : Go to step **2D1**.

D: POWER SUPPLY CIRCUIT**2D1 : CHECK POWER SUPPLY CIRCUIT.**

Measure voltage between fuse box connector (B152) and chassis ground.

Connector & terminal
(B152) No. 8 (+) — Chassis ground (-):

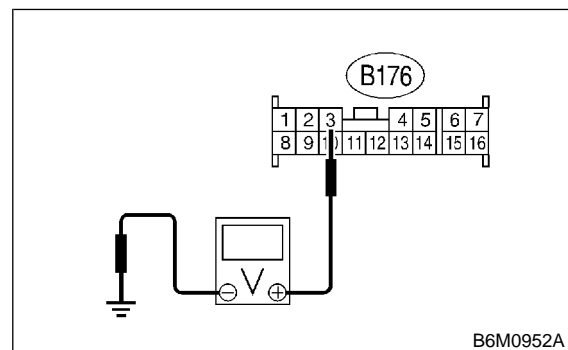


- CHECK** : *Is the voltage more than 10 V?*
YES : Go to step **2D2**.
NO : Repair wiring harness between fuse box and battery.

2D2 : CHECK POWER SUPPLY CIRCUIT.

- 1) Disconnect connector from keyless entry control module.
- 2) Measure voltage between keyless entry control module connector (B176) and chassis ground.

Connector & terminal
(B176) No. 3 (+) — Chassis ground (-):



- CHECK** : *Is the voltage more than 10 V?*
YES : Go to step **2E1**.
NO : Repair wiring harness between keyless entry control module and fuse box.

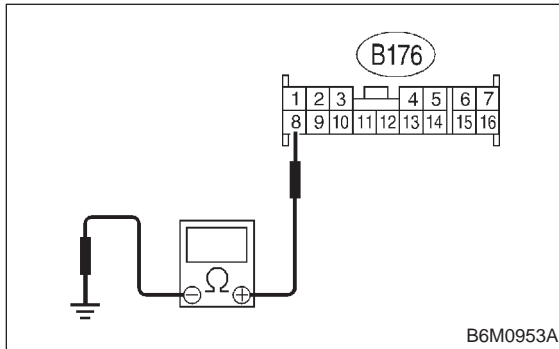
E: GROUND CIRCUIT

2E1 : CHECK GROUND CIRCUIT.

Measure resistance between keyless entry control module connector (B176) and chassis ground.

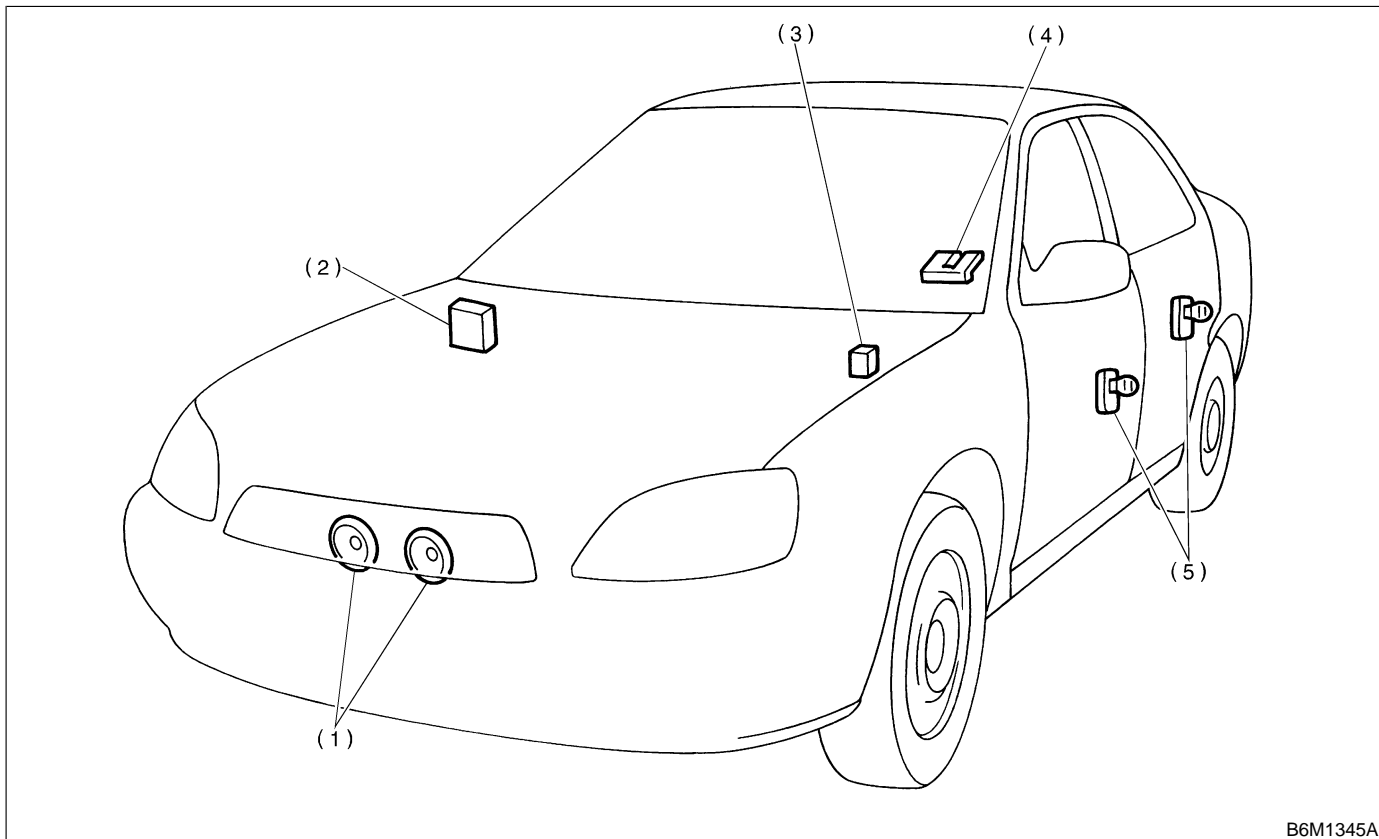
Connector & terminal

(B176) No. 8 (+) — Chassis ground (-):



- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Go to step **6A1**.
- NO** : Repair wiring harness between keyless entry control module and chassis ground.

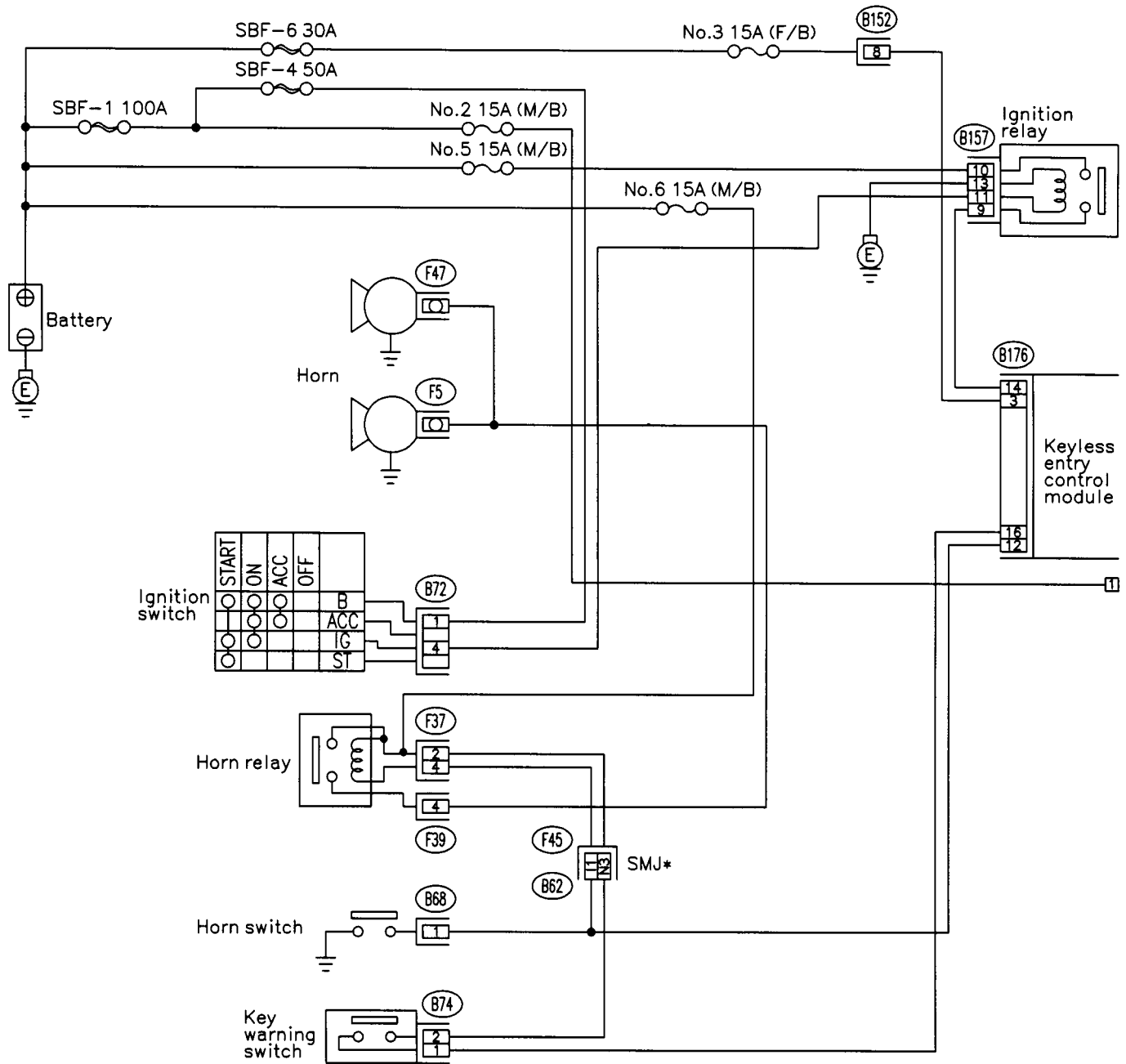
3. Electrical Components Location



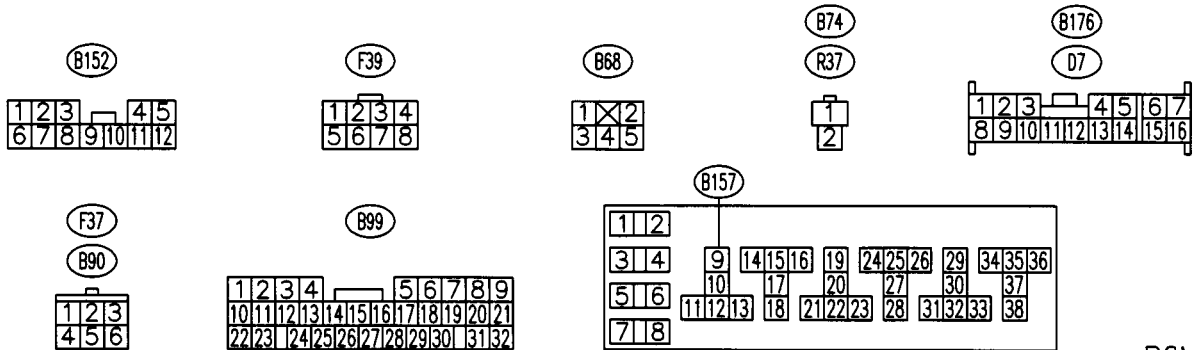
B6M1345A

- | | | |
|----------------------------------|-----------------------------------|--|
| (1) Horn | (3) Horn relay (in main fuse box) | (4) Trunk room light switch (Sedan),
rear gate latch switch (Wagon) |
| (2) Keyless entry control module | | (5) Door switch |

4. Schematic

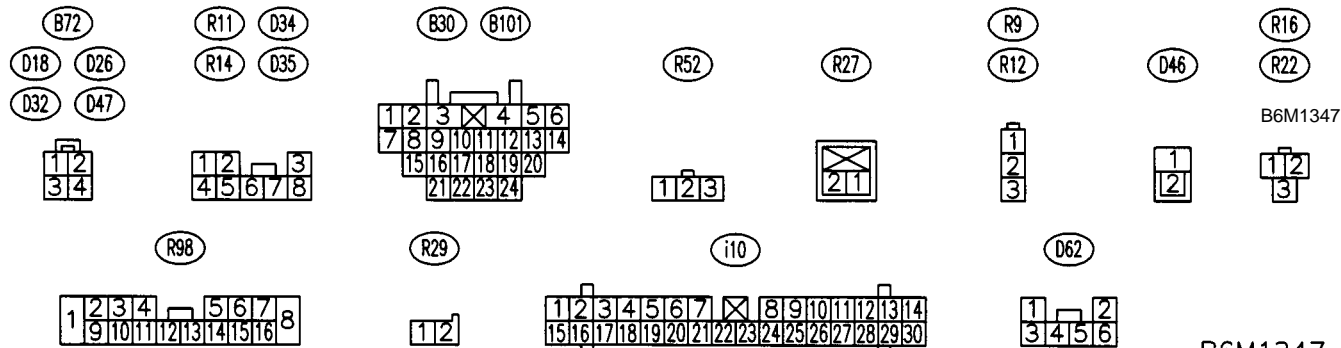
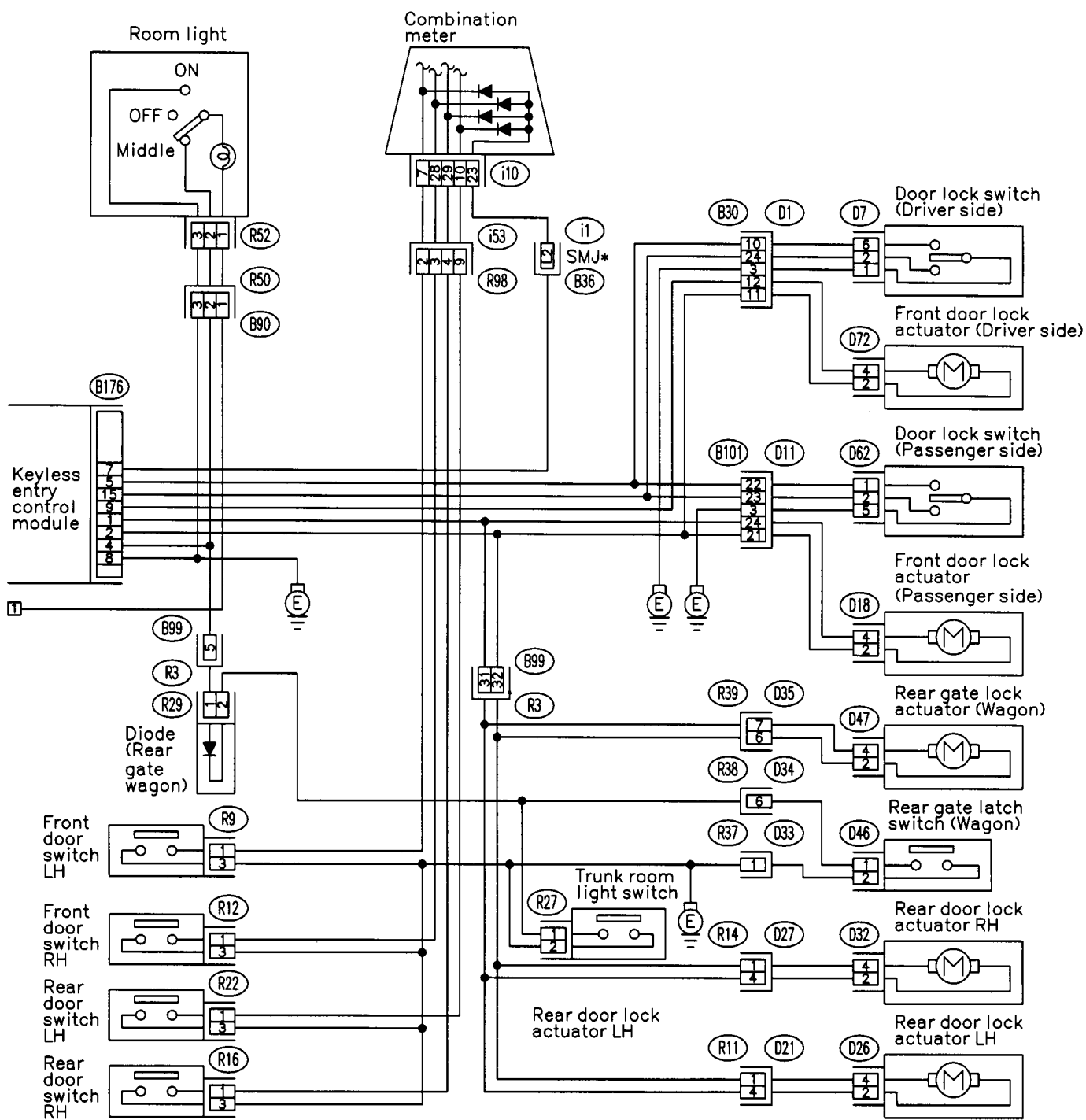


*: Refer to WIRING DIAGRAM SECTION.

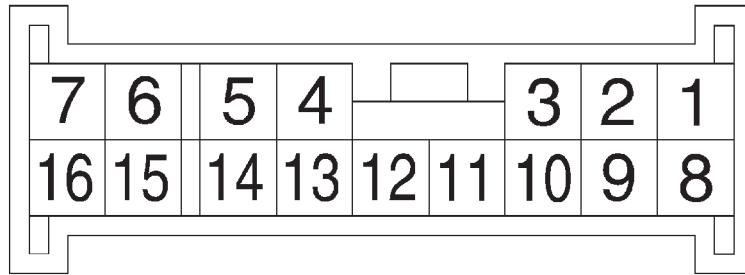


B6M1346

B6M1346



5. Control Module I/O Signal



B6M0957

Content	Terminal No.	Measuring condition
Door and rear gate lock actuator (Except driver side)	1 (OUTPUT)	Battery voltage is present when pressing the transmitter UNLOCK/DISARM button two times.
Door and rear gate lock actuator	2 (OUTPUT)	Battery voltage is present when pressing the transmitter LOCK/ARM button one time.
Power supply (Back-up)	3	Battery voltage is constantly present.
<ul style="list-style-type: none"> ● Room light ● Trunk room light switch (Sedan), rear gate latch switch (Wagon) 	4 (OUTPUT)	<ul style="list-style-type: none"> ● 0 V is present when pressing the transmitter UNLOCK/DISARM button one time. ● Battery voltage is present when opening the trunk lid or rear gate.
Door lock switch	5 (INPUT)	0 V is present when operating the door lock switch.
Door switch	7 (INPUT)	Battery voltage is present when any door is open.
Ground	8	—
Door lock actuator (Driver side)	9 (OUTPUT)	Battery voltage is present when pressing the transmitter UNLOCK/DISARM button one time.
Security control module	10	—
Security control module	11	—
Horn relay	12 (OUTPUT)	0 V is present when pressing the transmitter UNLOCK/DISARM or LOCK/ARM button.
Security control module	13	—
Ignition switch (ON)	14 (INPUT)	Battery voltage is present when ignition switch is turned ON.
Door unlock switch	15 (INPUT)	0 V is present when operating the door lock switch.
Key warning switch	16 (INPUT)	Battery voltage is present when inserting the key into the ignition switch.

6. Diagnostics Procedure

A: BASIC DIAGNOSTICS PROCEDURE

6A1 : CHECK KEYLESS ENTRY FUNCTION.

- 1) Perform pre-inspection.
<Ref. to 6-2b [T200].>
- 2) Remove ignition key from ignition switch.
- 3) Set the room light switch in the middle position.
- 4) Close all doors, rear gate and trunk lid.
- 5) Press the LOCK/ARM button one time.

CHECK : *Do all doors and rear gate lock normally?*

YES : Go to step **6A2**.

NO : Replace keyless entry control module.
<Ref. to 6-2 [W13A1].>

6A2 : CHECK KEYLESS ENTRY FUNCTION.

Check if the horn signal chirps.

CHECK : *Does the horn chirp one time?*

YES : Go to step **6A3**.

NO : Go to step **6B1**.

6A3 : CHECK KEYLESS ENTRY FUNCTION.

Press the UNLOCK/DISARM button one time.

CHECK : *Does the driver's door unlock normally?*

YES : Go to step **6A4**.

NO : Replace keyless entry control module.
<Ref. to 6-2 [W13A1].>

6A4 : CHECK KEYLESS ENTRY FUNCTION.

Check if the horn signal chirps.

CHECK : *Does the horn chirp two times?*

YES : Go to step **6A5**.

NO : Replace keyless entry control module.
<Ref. to 6-2 [W13A1].>

6A5 : CHECK KEYLESS ENTRY FUNCTION.

Check if the room light is turned on.

CHECK : *Does the room light turn on for 30 seconds, and then turn off?*

YES : Go to step **6A6**.

NO : Go to step **6C1**.

6A6 : CHECK KEYLESS ENTRY FUNCTION.

- 1) Press the LOCK/ARM button one time.
- 2) Press the UNLOCK/DISARM button two times.

CHECK : *Do all doors and rear gate unlock normally?*

YES : Go to step **6A7**.

NO : Replace keyless entry control module.
<Ref. to 6-2 [W13A1].>

6A7 : CHECK KEYLESS ENTRY FUNCTION.

Keep the LOCK/ARM button pressed for more than 1.5 seconds.

CHECK : *Does the horn sound for 30 seconds, and then turns off?*

YES : Go to step **6A8**.

NO : Replace keyless entry control module.
<Ref. to 6-2 [W13A1].>

6A8 : CHECK KEYLESS ENTRY FUNCTION.

- 1) Keep the LOCK/ARM button pressed for more than 1.5 seconds.
- 2) Horn will sound, and then press the LOCK/ARM button.

CHECK : *Does the horn turn off?*

YES : Go to step **6A9**.

NO : Replace keyless entry control module.
<Ref. to 6-2 [W13A1].>

6A9 : CHECK KEYLESS ENTRY FUNCTION.

- 1) Keep the LOCK/ARM button pressed for more than 1.5 seconds.
- 2) Horn will sound, and then press the UNLOCK/DISARM button.

CHECK : *Does the horn turn off?*

YES : Go to step **6A10**.

NO : Replace keyless entry control module.
<Ref. to 6-2 [W13A1].>

6A10 : CHECK DOOR SWITCH FUNCTION.

Open the front left door.

- CHECK** : *Does the room light turn on?*
- YES** : Go to step **6A11**.
- NO** : Go to step **6D1**.

6A11 : CHECK DOOR SWITCH FUNCTION.

- 1) Close the front left door.
- 2) Open the front right door.

- CHECK** : *Does the room light turn on?*
- YES** : Go to step **6A12**.
- NO** : Go to step **6D1**.

6A12 : CHECK DOOR SWITCH FUNCTION.

- 1) Close the front right door.
- 2) Open the rear left door.

- CHECK** : *Does the room light turn on?*
- YES** : Go to step **6A13**.
- NO** : Go to step **6D1**.

6A13 : CHECK DOOR SWITCH FUNCTION.

- 1) Close the rear left door.
- 2) Open the rear right door.

- CHECK** : *Does the room light turn on?*
- YES** : Go to step **6A14**.
- NO** : Go to step **6D1**.

6A14 : PERFORM PROGRAMMING.

NOTE:

Finish operation from step 1) through 4) within 45 seconds.

- 1) Sit on the driver's seat and close all doors, rear gate and trunk lid.
- 2) Open the driver's door.
- 3) Close the driver's door.
- 4) Turn the ignition switch from ON to LOCK ten times in rapid succession (within 15 seconds).

NOTE:

Do not start the engine at this time.

- 5) The horn chirps one time to indicate that the system has been in the programming mode.
- 6) Open the driver's door.
- 7) Close the driver's door.
- 8) Press any button on the transmitter that you wish to program into the system.
- 9) Horn will chirp two times to indicate that the transmitter has been programmed.

NOTE:

Any additional transmitter can also be programmed at this time. Repeat steps 6) through 9) for an additional transmitter.

10) Remove the ignition key from the ignition switch.

11) The horn will chirp three times to indicate that the system has exited the programming mode.

12) Check the keyless entry system properly operates by operating each transmitter.

- CHECK** : *Does the transmitter operate normally?*

- YES** : Go to step **6A15**.
- NO** : Go to step **6E1**.

6A15 : CHECK IGNITION KEY SWITCH.

- 1) Insert the ignition key to the ignition switch (at LOCK position).
- 2) Perform lock and unlock with transmitter.

- CHECK** : *Does the power door lock function normally?*

- YES** : Go to step **6F1**.
- NO** : End of basic diagnostics procedure.

B: DIAGNOSTICS ITEM 1

6B1 : SELECT HORN SIGNAL OPERATION.

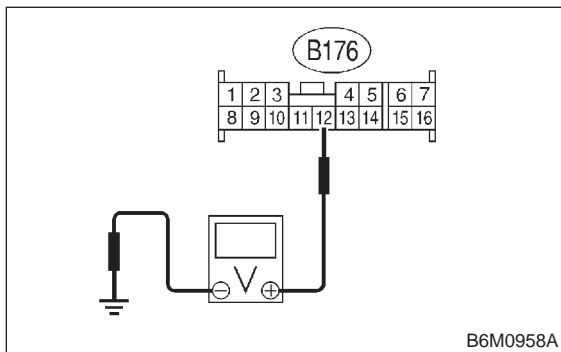
Keep both LOCK/ARM and UNLOCK/DISARM buttons pressed for more than 1.5 seconds.

- CHECK** : *Does the horn chirp one time?*
- YES** : Go to step **6B2**.
- NO** : Replace keyless entry control module.
<Ref. to 6-2 [W13A1].>

6B2 : CHECK HORN SIGNAL OUTPUT SIGNAL.

- 1) Disconnect connector from keyless entry control module.
- 2) Measure voltage between keyless entry control module connector (B176) and chassis ground.

Connector & terminal
(B176) No. 12 (+) — Chassis ground (-):

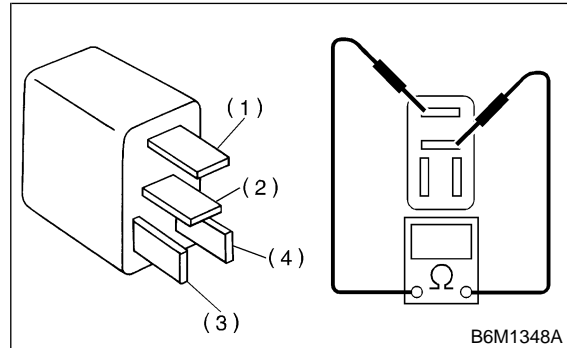


- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **6B3**.
- NO** : Go to step **6B6**.

6B3 : CHECK HORN RELAY.

- 1) Remove horn relay from main fuse box.
- 2) Check continuity between horn relay terminals.

Terminals
No. 1 — No. 2:

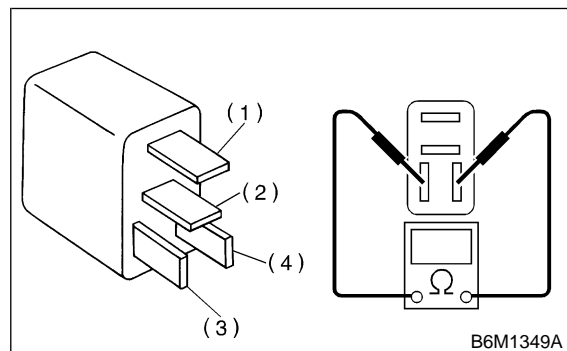


- CHECK** : *Does continuity exist?*
- YES** : Replace horn relay.
- NO** : Go to step **6B4**.

6B4 : CHECK HORN RELAY.

Check continuity between horn relay terminals.

Terminals
No. 3 — No. 4:



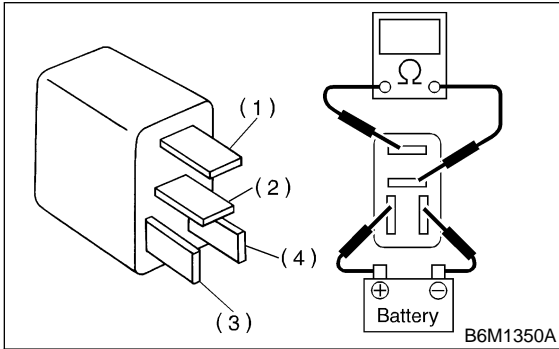
- CHECK** : *Does continuity exist?*
- YES** : Go to step **6B5**.
- NO** : Replace horn relay.

6B5 : CHECK HORN RELAY.

- 1) Connect the battery to horn relay terminals No. 3 and No. 4.
- 2) Check continuity between horn relay terminals.

Terminals

No. 1 — No. 2:



- CHECK** : **Does continuity exist?**
- YES** : Repair wiring harness of horn circuit.
- NO** : Replace horn relay.

6B6 : CHECK FUSE.

Remove and visually check the fuse No. 6 (in main fuse box).

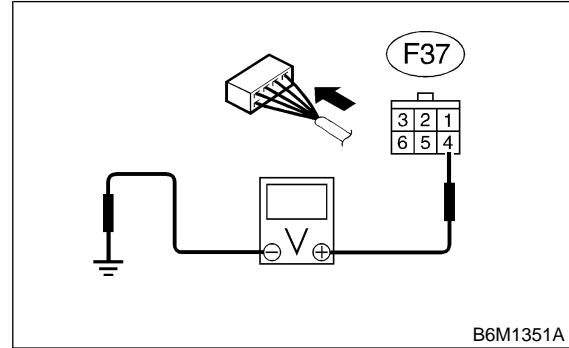
- CHECK** : **Is the fuse No. 6 blown?**
- YES** : Replace fuse (15 A).
- NO** : Go to step **6B7**.

6B7 : CHECK POWER SUPPLY FOR HORN RELAY.

- 1) Install horn relay to main fuse box.
- 2) Measure voltage between main fuse box connector (F37) and chassis ground.

Connector & terminal

(F37) No. 4 (+) — Chassis ground (-):



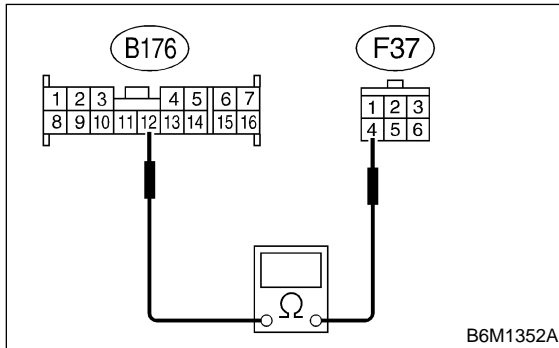
- CHECK** : **Is the voltage more than 10 V?**
- YES** : Go to step **6B8**.
- NO** : Repair wiring harness between main fuse box and battery.

6B8 : CHECK RESISTANCE BETWEEN HORN RELAY AND KEYLESS ENTRY CONTROL MODULE.

- 1) Disconnect connector from main fuse box and keyless entry control module.
- 2) Measure resistance between keyless entry control module connector (B176) and main fuse box connector (F37).

Connector & terminal

(B176) No. 12 — (F37) No. 4:



- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Replace keyless entry control module. <Ref. to 6-2 [W13A1].>
- NO** : Repair wiring harness between main fuse box and keyless entry control module.

C: DIAGNOSTICS ITEM 2

6C1 : CHECK FUSE.

Remove and visually check the fuse No. 2 (in main fuse box).

- CHECK** : **Is fuse No. 2 blown?**
- YES** : Replace fuse (15 A).
- NO** : Go to step **6C2**.

6C2 : CHECK ROOM LIGHT BULB.

Remove and visually check the room light bulb.

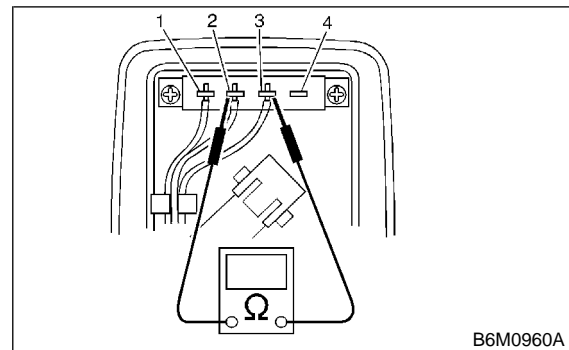
- CHECK** : **Is the bulb blown?**
- YES** : Replace bulb.
- NO** : Go to step **6C3**.

6C3 : CHECK ROOM LIGHT SWITCH.

- 1) Remove room light.
- 2) Measure resistance of room light switch terminal at the middle position.

Terminals

No. 2 — No. 3:



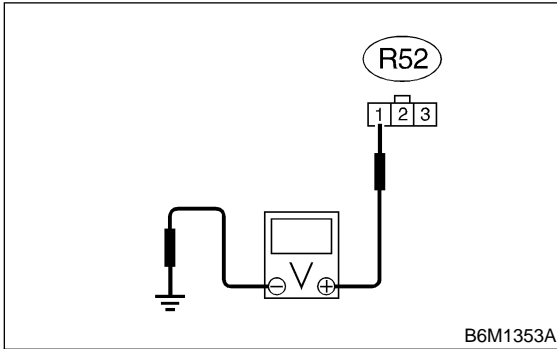
- CHECK** : **Is the resistance less than 1 Ω?**
- YES** : Repair or replace room light.
- NO** : Go to step **6C4**.

6C4 : CHECK POWER SUPPLY FOR ROOM LIGHT.

- 1) Disconnect connector from room light.
- 2) Open any door.
- 3) Measure voltage between room light connector (R52) and chassis ground.

Connector & terminal

(R52) No. 1 (+) — Chassis ground (-):



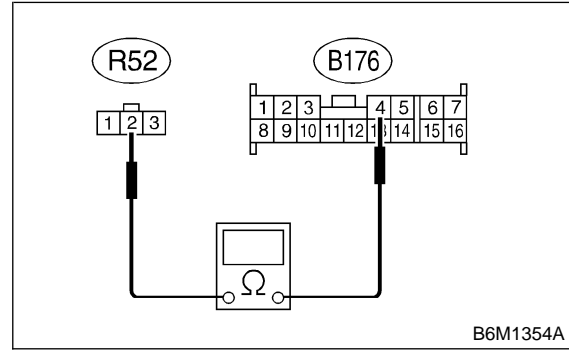
- CHECK** : **Is the voltage more than 10 V?**
- YES** : Go to step **6C5**.
- NO** : Repair wiring harness between room light and battery.

6C5 : CHECK HARNESS CONNECTOR BETWEEN ROOM LIGHT AND KEYLESS ENTRY CONTROL MODULE.

- 1) Disconnect connector from keyless entry control module.
- 2) Measure resistance between room light connector (R52) and keyless entry module connector (B176).

Connector & terminal

(R52) No. 2 — (B176) No.4:

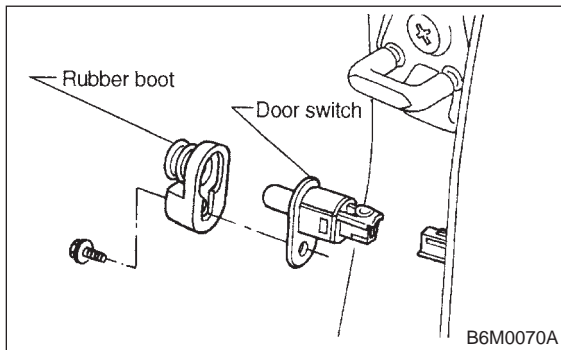


- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Replace keyless entry control module. <Ref. to 6-2 [W13A1].>
- NO** : Repair wiring harness between room light and keyless entry control module.

D: DIAGNOSTICS ITEM 3

6D1 : CHECK DOOR SWITCH.

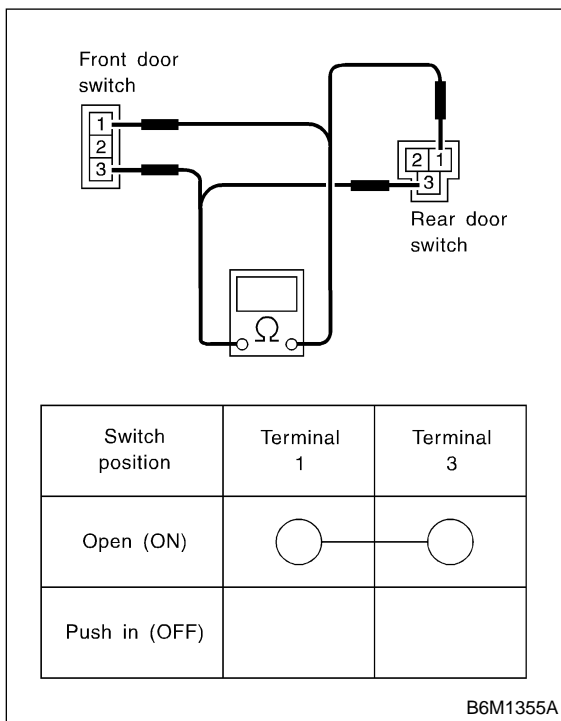
1) Remove door switch.



2) Move switch and check continuity between terminals of door switch.

Terminals

No. 1 — No. 3



CHECK : Does any fault exist in the door switch?

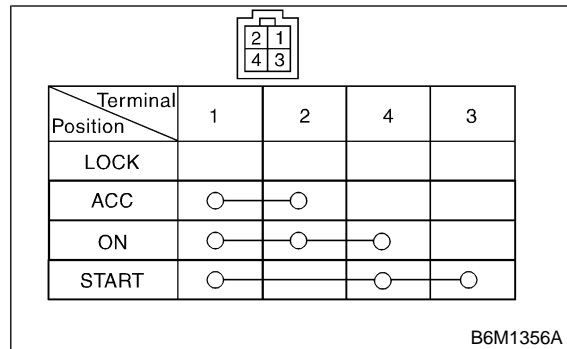
YES : Replace door switch.

NO : Replace keyless entry control module. <Ref. to 6-2 [W13A1].>

E: DIAGNOSTICS ITEM 4

6E1 : CHECK IGNITION SWITCH.

1) Remove ignition switch. <Ref. to 6-2 [W3A1].>
2) Turn ignition key to each position and check continuity between terminals of ignition switch connector.



CHECK : Is the ignition switch faulty?

YES : Replace ignition switch. <Ref. to 6-2 [W3A1].>

NO : Replace keyless entry control module. <Ref. to 6-2 [W13A1].>

F: DIAGNOSTICS ITEM 5

6F1 : CHECK FUSE.

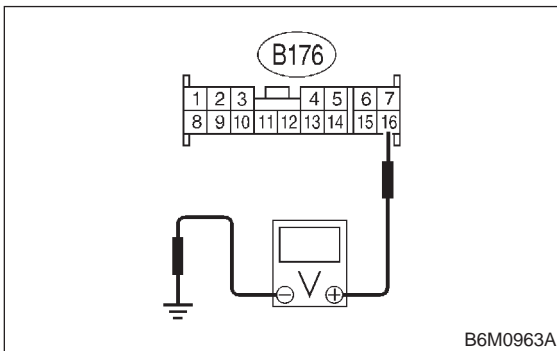
Remove and visually check the fuse No. 6 (in main fuse box).

- CHECK** : *Is fuse No. 6 blown?*
- YES** : Replace fuse (15 A).
- NO** : Go to step **6F2**.

6F2 : CHECK KEYLESS ENTRY CONTROL MODULE.

- 1) Disconnect connector from keyless entry control module.
- 2) Insert the key to ignition switch (LOCK position).
- 3) Measure voltage between keyless entry control module connector (B176) and chassis ground.

Connector & terminal
(B176) No. 16 (+) — Chassis ground (-):

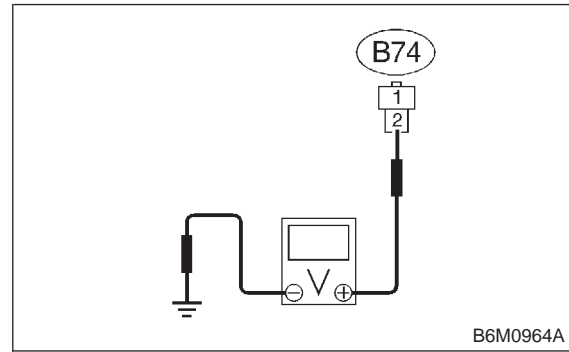


- CHECK** : *Is the voltage more than 10 V?*
- YES** : Replace keyless entry control module.
<Ref. to 6-2 [W13A0].>
- NO** : Go to step **6F3**.

6F3 : CHECK HARNESS CONNECTOR BETWEEN BATTERY AND KEY WARNING SWITCH.

- 1) Disconnect connector from key warning switch.
- 2) Measure voltage between key warning switch connector (B74) and chassis ground.

Connector & terminal
(B74) No. 2 (+) — Chassis ground (-):

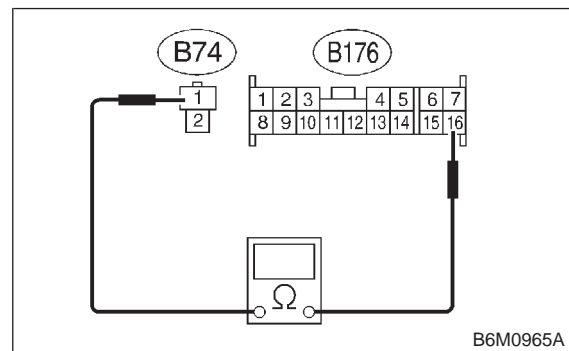


- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **6F4**.
- NO** : Repair wiring harness between battery and key warning switch.

6F4 : CHECK HARNESS CONNECTOR BETWEEN KEY WARNING SWITCH AND KEYLESS ENTRY CONTROL MODULE.

Measure resistance between key warning switch connector (B74) and keyless entry control module connector (B176).

Connector & terminal
(B74) No. 1 — (B176) No. 16:



- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Replace key warning switch.
- NO** : Repair wiring harness between key warning switch and keyless entry control module.

MEMO:

1. Precaution

A: SUPPLEMENTAL RESTRAINT SYSTEM "AIRBAG"

Airbag system wiring harness is routed near the security control module.

CAUTION:

- All airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuits.
- Be careful not to damage airbag system wiring harness when servicing the security control module.

2. Pre-inspection

A: FUSE

2A1 : CHECK FUSE.

Remove and visually check the fuse No. 7 (in main fuse box).

- CHECK** : *Is fuse No. 7 blown?*
- YES** : Replace fuse (20 A).
- NO** : Go to step **2A2**.

2A2 : CHECK FUSE.

Remove and visually check the fuse No. 2 (in main fuse box).

- CHECK** : *Is fuse No. 2 blown?*
- YES** : Replace fuse (15 A).
- NO** : Go to step **2B1**.

1. Precaution

A: SUPPLEMENTAL RESTRAINT SYSTEM "AIRBAG"

Airbag system wiring harness is routed near the security control module.

CAUTION:

- All airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuits.
- Be careful not to damage airbag system wiring harness when servicing the security control module.

2. Pre-inspection

A: FUSE

2A1 : CHECK FUSE.

Remove and visually check the fuse No. 7 (in main fuse box).

CHECK : *Is fuse No. 7 blown?*

YES : Replace fuse (20 A).

NO : Go to step **2A2**.

2A2 : CHECK FUSE.

Remove and visually check the fuse No. 2 (in main fuse box).

CHECK : *Is fuse No. 2 blown?*

YES : Replace fuse (15 A).

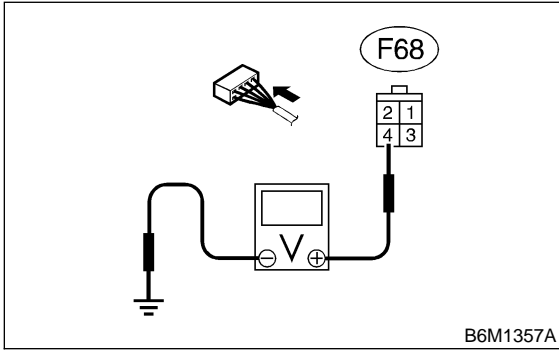
NO : Go to step **2B1**.

B: POWER SUPPLY CIRCUIT

2B1 : CHECK POWER SUPPLY CIRCUIT.

Measure voltage between main fuse box connector (F68) and chassis ground.

Connector & terminal
(F68) No. 4 (+) — Chassis ground (-):

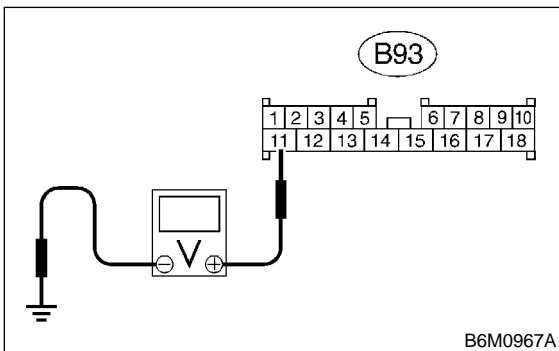


- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **2B2**.
- NO** : Repair wiring harness between main fuse box and battery.

2B2 : CHECK POWER SUPPLY CIRCUIT.

- 1) Disconnect connector from security control module.
- 2) Measure voltage between security control module connector (B93) and chassis ground.

Connector & terminal
(B93) No. 11 (+) — Chassis ground (-):

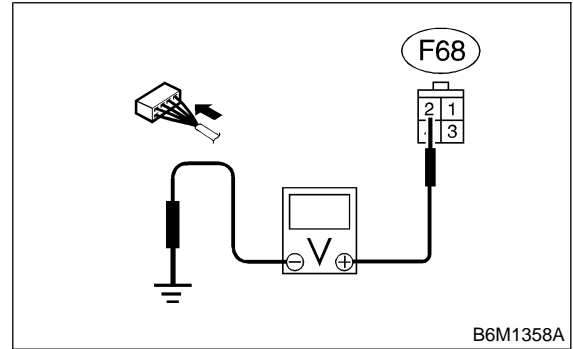


- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **2B3**.
- NO** : Repair wiring harness between security control module and main fuse box.

2B3 : CHECK POWER SUPPLY CIRCUIT.

Measure voltage between main fuse box connector (F68) and chassis ground.

Connector & terminal
(F68) No. 2 (+) — Chassis ground (-):

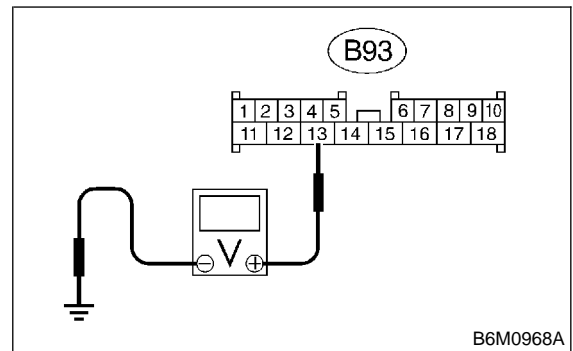


- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **2B4**.
- NO** : Repair wiring harness between main fuse box and battery.

2B4 : CHECK POWER SUPPLY CIRCUIT.

Measure voltage between security control module connector (B93) and chassis ground.

Connector & terminal
(B93) No. 13 (+) — Chassis ground (-):



- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **2C1**.
- NO** : Repair wiring harness between security control module and main fuse box.

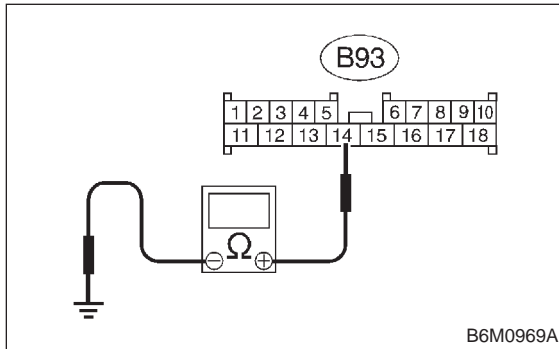
C: GROUND CIRCUIT

2C1 : CHECK GROUND CIRCUIT.

Measure resistance between security control module connector (B93) and chassis ground.

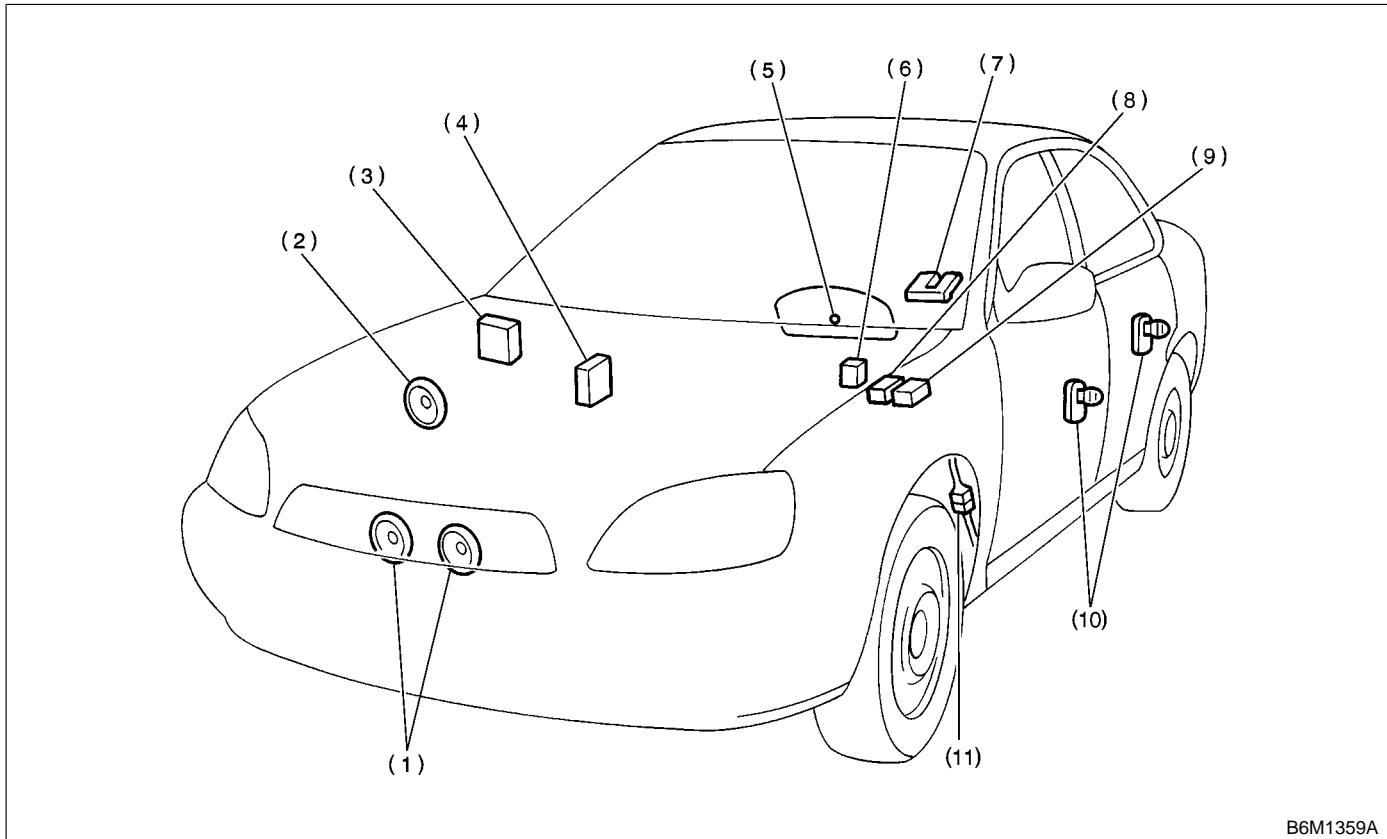
Connector & terminal

(B93) No. 14 (+) — Chassis ground:



- CHECK** : **Is the resistance less than 10 Ω ?**
- YES** : Go to step **6A1**.
- NO** : Repair wiring harness between security control module and chassis ground.

3. Electrical Components Location

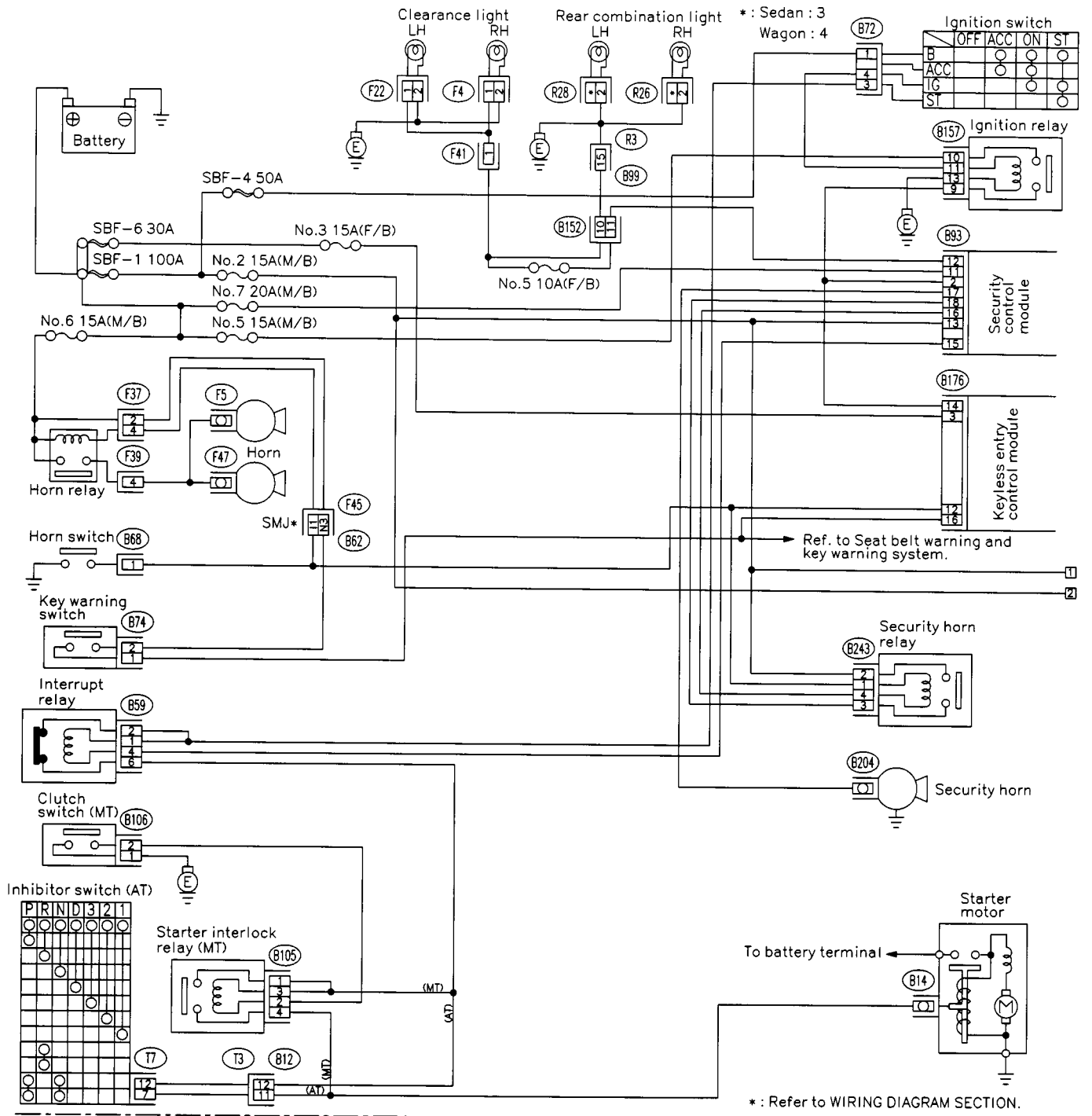


B6M1359A

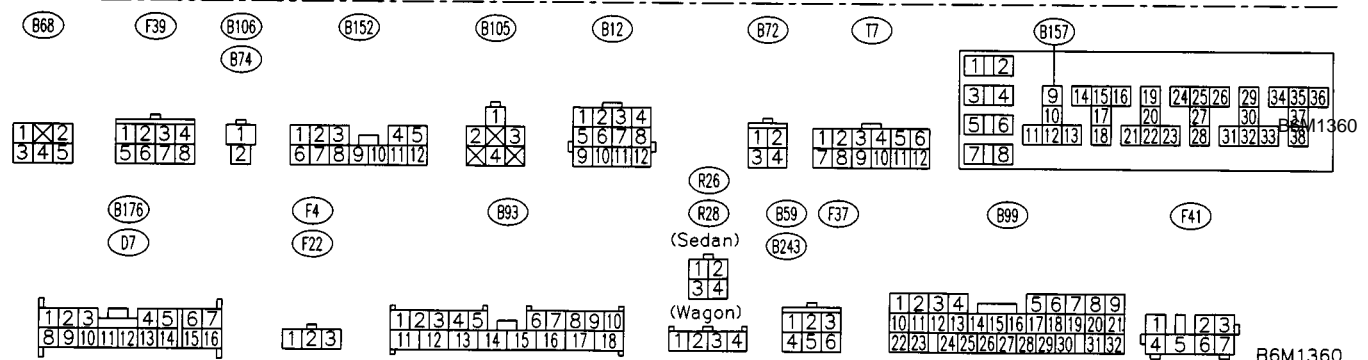
- | | | |
|---|--|----------------------------|
| (1) Horn | (6) Horn relay (in main fuse box) | (11) Passive arm connector |
| (2) Security horn | (7) Trunk room light switch (Sedan),
rear gate latch switch (Wagon) | |
| (3) Keyless entry control module | (8) Interrupt relay | |
| (4) Security control module | (9) Security horn relay | |
| (5) Security indicator light (in combination meter) | (10) Door switch | |

4. Schematic

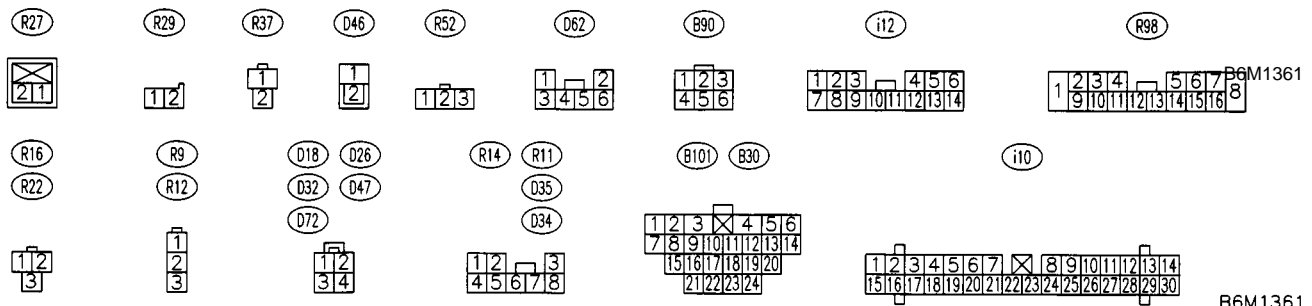
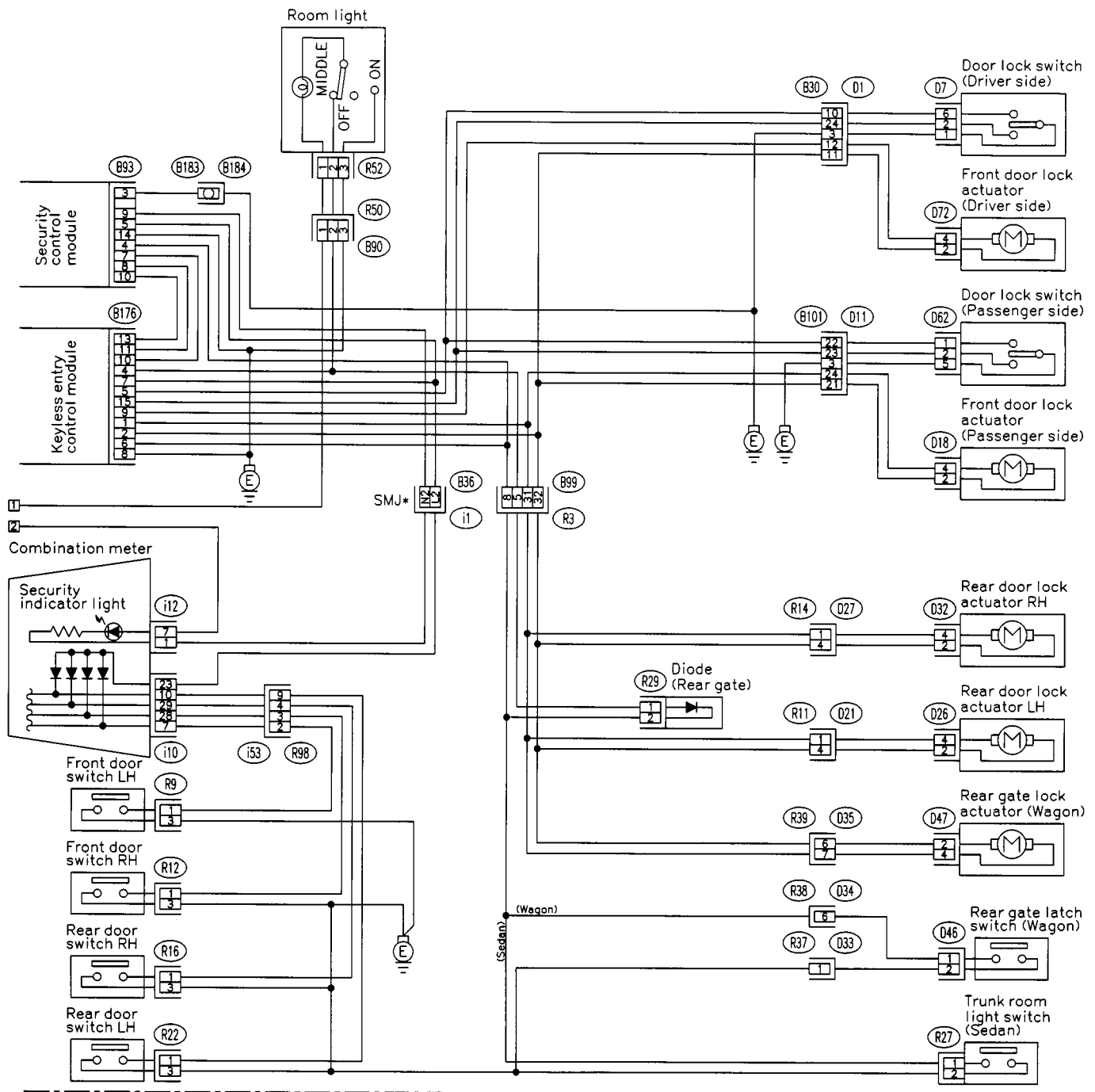
4. Schematic



* : Refer to WIRING DIAGRAM SECTION.

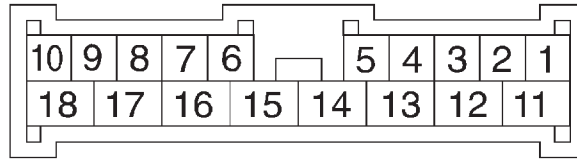


B6M1360



B6M1361

5. Control Module I/O Signal



B6M0972

Content	Terminal No.	Measuring condition
Empty	1	—
Ignition switch (ON)	2 (INPUT)	Battery voltage is present when ignition switch is turned ON.
Passive arm	3	—
Trunk room light switch (Sedan), rear gate latch switch (Wagon)	4 (INPUT)	0 V is present when trunk room light switch or rear gate latch switch is turned ON.
Door switch	5 (INPUT)	0 V is present when any door is open.
Empty	6	—
Keyless entry control module	7	—
Keyless entry control module	8	—
Security indicator light	9 (OUTPUT)	0 V is present when activating the alarm operation.
Keyless entry control module	10	—
Power supply for clearance light (Back-up)	11	Battery voltage is constantly present.
Clearance light	12 (OUTPUT)	Battery voltage is present when activating the alarm operation.
Power supply (Back-up)	13	Battery voltage is constantly present.
Ground	14	—
Interrupt relay	15 (OUTPUT)	0 V is present when activating the alarm operation.
Security horn relay	16 (INPUT)	0 V is present when activating the alarm operation.
Security horn	17 (OUTPUT)	0 V is present when activating the alarm operation.
Security horn relay	18 (INPUT)	0 V is present when activating the alarm operation.

6. Diagnostics Procedure

A: BASIC DIAGNOSTICS PROCEDURE

6A1 : CHECK SECURITY SYSTEM FUNCTION.

- 1) Perform basic diagnostics procedure of keyless entry system. <Ref. to 6-2b [T6A0].>
- 2) Perform pre-inspection. <Ref. to 6-2c [T200].>
- 3) Open all windows.
- 4) Remove ignition key from ignition switch.
- 5) Set the room light switch in the middle position.
- 6) Close all doors, rear gate and trunk lid.
- 7) Press the LOCK/ARM button one time.

CHECK : *Does the clearance light blink one time?*

YES : Go to step 6A2.

NO : Go to step 6B1.

6A2 : CHECK SECURITY SYSTEM FUNCTION.

Check if the security indicator light blinks.

CHECK : *Does the security indicator light blink every 2 seconds?*

YES : Go to step 6A3.

NO : Go to step 6C1.

6A3 : CHECK SECURITY SYSTEM FUNCTION.

Press the UNLOCK/DISARM button one time.

CHECK : *Does the clearance light blink two times?*

YES : Go to step 6A4.

NO : Replace security control module. <Ref. to 6-2 [W14A1].>

6A4 : CHECK SECURITY SYSTEM FUNCTION.

Check if the room light activates.

CHECK : *Does the room light turn on for 30 seconds, and then turn off?*

YES : Go to step 6A5.

NO : Replace security control module. <Ref. to 6-2 [W14A1].>

6A5 : CHECK SECURITY SYSTEM FUNCTION.

1) Unlock all doors with door locking switch in the front door.

2) Open the front left door.

CHECK : *Does the security indicator light blink every 1/8 seconds?*

YES : Go to step 6A6.

NO : Go to step 6D1.

6A6 : CHECK SECURITY SYSTEM FUNCTION.

Check if the clearance light activates.

CHECK : *Does the clearance light blinking remain?*

YES : Go to step 6A7.

NO : Replace security control module. <Ref. to 6-2 [W14A1].>

6A7 : CHECK SECURITY SYSTEM FUNCTION.

Check if the horn activates.

CHECK : *Does the horn sound remain?*

YES : Go to step 6A8.

NO : Go to step 6M1.

6A8 : CHECK SECURITY SYSTEM FUNCTION.

Turn on starter.

CHECK : *Does the starter motor activate?*

YES : Go to step 6E1.

NO : Go to step 6A9.

6A9 : CHECK SECURITY SYSTEM FUNCTION.

Close the front left door.

CHECK : *Does the horn sound and clearance light blinking deactivate, and starter motor activate after approximately 30 seconds?*

YES : Go to step 6A10.

NO : Replace security control module. <Ref. to 6-2 [W14A1].>

6A10 : CHECK SECURITY SYSTEM FUNCTION.

Check if the security indicator light activates.

CHECK : *Does the security indicator light blink every 2 seconds?*

YES : Go to step **6A11**.

NO : Replace security control module. <Ref. to 6-2 [W14A1].>

6A11 : CHECK SECURITY SYSTEM FUNCTION.

Open the front right door.

CHECK : *Does the security indicator light blink every 1/8 seconds, the horn sound, the clearance light blink, and the starter motor deactivate?*

YES : Go to step **6A12**.

NO : Go to step **6F1**.

6A12 : CHECK SECURITY SYSTEM FUNCTION.

Press the UNLOCK/DISARM button.

CHECK : *Does the security indicator light blink, the horn and clearance light deactivate, and the starter motor activate?*

YES : Go to step **6A13**.

NO : Replace security control module. <Ref. to 6-2 [W14A1].>

6A13 : CHECK SECURITY SYSTEM FUNCTION.

- 1) Close the front right door.
- 2) Press the LOCK/ARM button.
- 3) Open the rear left door.

CHECK : *Does the security indicator light blink every 1/8 seconds, the horn sound, the clearance light blink, and the starter motor deactivate?*

YES : Go to step **6A14**.

NO : Go to step **6G1**.

6A14 : CHECK SECURITY SYSTEM FUNCTION.

- 1) Close the rear left door.
- 2) Open the rear right door.

CHECK : *Does the security indicator light blink every 1/8 seconds, the horn sound, the clearance light blink, and the starter motor deactivate?*

YES : Go to step **6A15**.

NO : Go to step **6H1**.

6A15 : CHECK SECURITY SYSTEM FUNCTION.

Close the rear right door.

CHECK : *Is the vehicle type wagon?*

YES : Go to step **6A16**.

NO : Go to step **6A17**.

6A16 : CHECK SECURITY SYSTEM FUNCTION.

Open the rear gate.

CHECK : *Does the security indicator light blink every 1/8 seconds, the horn sound, the clearance light blink, and the starter motor deactivate?*

YES : Go to step **6A18**.

NO : Go to step **6I1**.

6A17 : CHECK SECURITY SYSTEM FUNCTION.

Open the trunk lid.

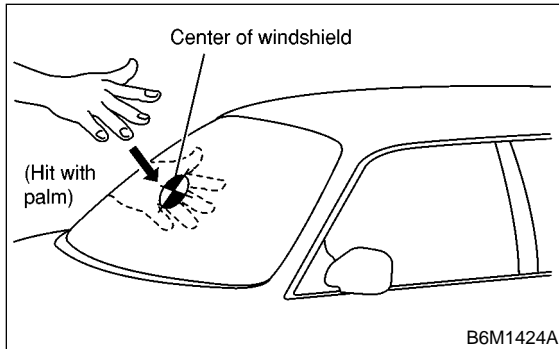
CHECK : *Does the security indicator light blink every 1/8 seconds, the horn sound, the clearance light blink, and the starter motor deactivate?*

YES : Go to step **6A18**.

NO : Go to step **6J1**.

6A18 : PERFORM IMPACT SENSITIVITY TEST.

- 1) Close the rear gate or trunk lid.
- 2) Close all windows.
- 3) Cover the hood with a blanket.
- 4) Perform arming.
- 5) Perform impact sensitivity test.



- CHECK** : **Does the horn chirp?**
YES : Go to step **6A19**.
NO : Go to step **6K1**.

6A19 : CHECK PASSIVE ARM.

- 1) Remove the driver's side sill cover. <Ref. to 6-2 [W5A0].>
- 2) Connect the white connector (1-pin) at front pillar lower.
- 3) Close all doors, rear gate or trunk lid.

- CHECK** : **Does the arming automatically function after 1 minute?**
YES : Go to step **6A20**.
NO : Go to step **6L1**.

6A20 : CHECK BATTERY DISCONNECT PROTECTION.

- 1) Press the UNLOCK/DISARM button.
- 2) Connect the white connector (1-pin) at front pillar lower.
- 3) Install the driver's side sill cover. <Ref. to 6-2 [W5A0].>
- 4) Open the front hood.
- 5) Press the LOCK/ARM button.
- 6) Disconnect the ground cable from battery.
- 7) Connect the ground cable to battery.

- CHECK** : **Does re-arming function automatically?**
YES : End of basic diagnostics procedure. Press the UNLOCK/DISARM button, and then close all doors, rear gate or trunk lid. Perform ignition switch position turned LOCK to ON to LOCK.
NO : Replace security control module. <Ref. to 6-2 [W14A1].>

B: DIAGNOSTICS ITEM 1

6B1 : CHECK FUSE.

Remove and visually check fuse No. 7 (in main fuse box).

- CHECK** : *Is fuse No. 7 blown?*
- YES** : Replace fuse (20 A).
- NO** : Go to step **6B2**.

6B2 : CHECK FUSE.

Remove and visually check fuse No. 5 (in main fuse box).

- CHECK** : *Is fuse No. 5 blown?*
- YES** : Replace fuse (10 A).
- NO** : Go to step **6B3**.

6B3 : CHECK CLEARANCE LIGHT BULB.

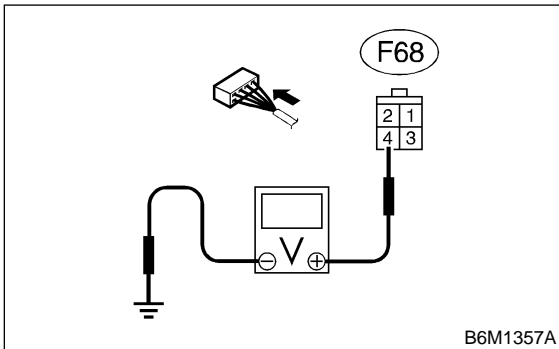
Remove and visually check each clearance light bulb.

- CHECK** : *Is the bulb blown?*
- YES** : Replace clearance light bulb.
- NO** : Go to step **6B4**.

6B4 : CHECK POWER SUPPLY FOR CLEARANCE LIGHT.

Measure voltage between main fuse box connector (F68) and chassis ground.

Connector & terminal
(F68) No. 4 (+) — Chassis ground (-):

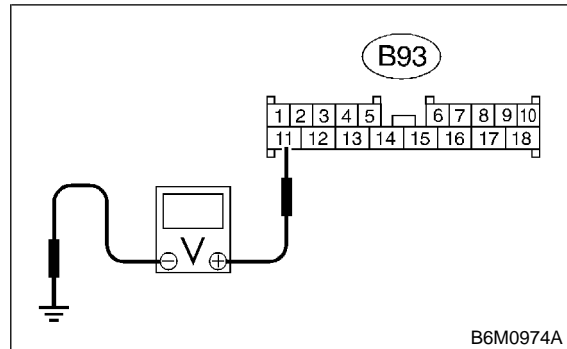


- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **6B5**.
- NO** : Repair wiring harness between main fuse box and battery.

6B5 : CHECK POWER SUPPLY FOR CLEARANCE LIGHT.

- 1) Disconnect connector from security control module.
- 2) Measure voltage between security control module connector (B93) and chassis ground.

Connector & terminal
(B93) No. 11 (+) — Chassis ground (-):

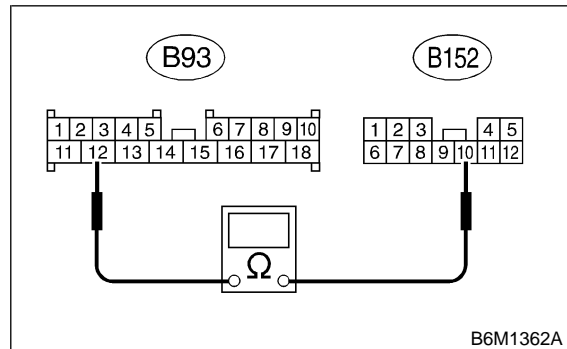


- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **6B6**.
- NO** : Repair wiring harness between security control module and main fuse box.

6B6 : CHECK HARNESS CONNECTOR BETWEEN SECURITY CONTROL MODULE AND FUSE BOX.

- 1) Disconnect connector (B152) from fuse box.
- 2) Measure resistance between security control module connector (B93) and fuse box connector (B152).

Connector & terminal
(B93) No. 12 — (B152) No. 10:



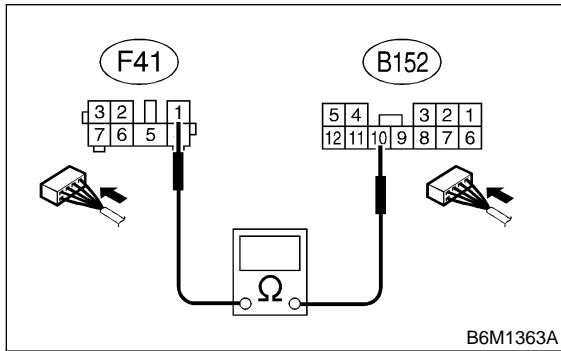
- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Go to step **6B7**.
- NO** : Repair wiring harness between security control module and fuse box.

6B7 : CHECK FUSE BOX CIRCUIT.

- 1) Connect connector (B152) to fuse box.
- 2) Measure resistance between fuse box connector (B152) and (F41).

Connector & terminal

(B152) No. 10 — (F41) No. 1:



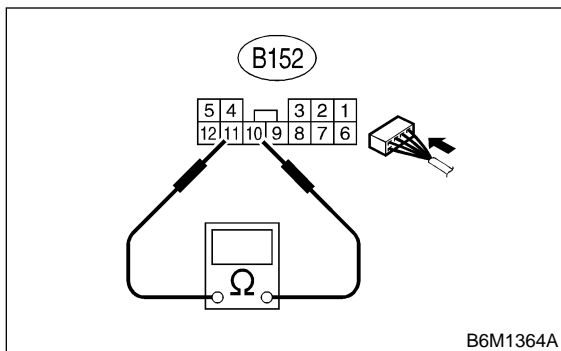
- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Go to step **6B8**.
- NO** : Repair or replace fuse box.

6B8 : CHECK FUSE BOX CIRCUIT.

Measure resistance between fuse box connector (B152).

Connector & terminal

(B152) No. 10 — No. 11:



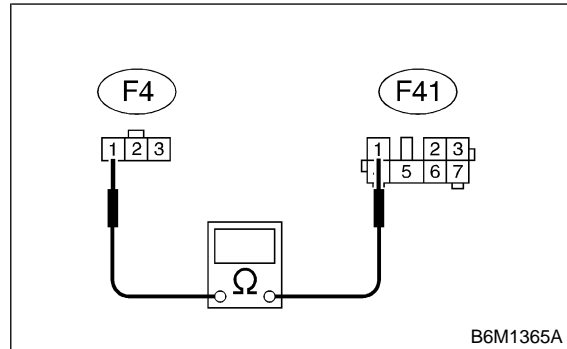
- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Go to step **6B9**.
- NO** : Repair or replace fuse box.

6B9 : CHECK HARNESS CONNECTOR BETWEEN FRONT CLEARANCE LIGHT AND FUSE BOX.

- 1) Disconnect connector from front clearance light RH and fuse box.
- 2) Measure resistance between front clearance light RH connector (F4) and fuse box connector (F41).

Connector & terminal

(F4) No. 1 — (F41) No. 1:

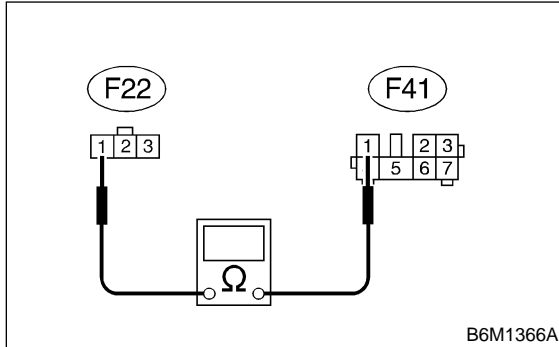


- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Go to step **6B10**.
- NO** : Repair wiring harness between front clearance light RH and fuse box.

6B10 : CHECK HARNESS CONNECTOR BETWEEN FRONT CLEARANCE LIGHT AND FUSE BOX.

- 1) Disconnect connector from front clearance light LH.
- 2) Measure resistance between front clearance light LH connector (F22) and fuse box connector (F41).

Connector & terminal
(F22) No. 1 — (F41) No. 1:

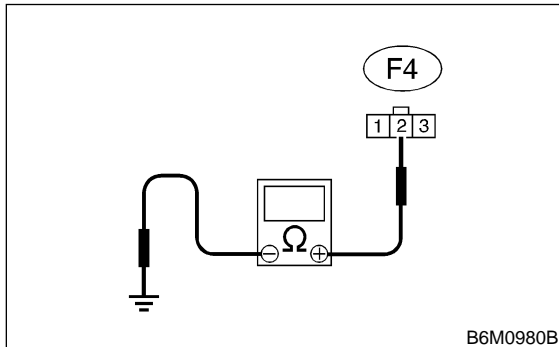


- CHECK** : *Is the resistance less than 10 Ω?*
YES : Go to step **6B11**.
NO : Repair wiring harness between front clearance light LH and fuse box.

6B11 : CHECK HARNESS CONNECTOR BETWEEN FRONT CLEARANCE LIGHT AND CHASSIS GROUND.

Measure resistance between front clearance light RH connector (F4) and chassis ground.

Connector & terminal
(F4) No. 2 (+) — Chassis ground (-):

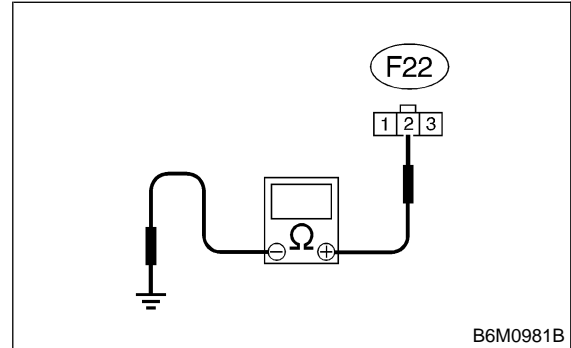


- CHECK** : *Is the resistance less than 10 Ω?*
YES : Go to step **6B12**.
NO : Repair wiring harness between front clearance light RH and chassis ground.

6B12 : CHECK HARNESS CONNECTOR BETWEEN FRONT CLEARANCE LIGHT AND CHASSIS GROUND.

Measure resistance between front clearance light LH connector (F22) and chassis ground.

Connector & terminal
(F22) No. 2 (+) — Chassis ground (-):

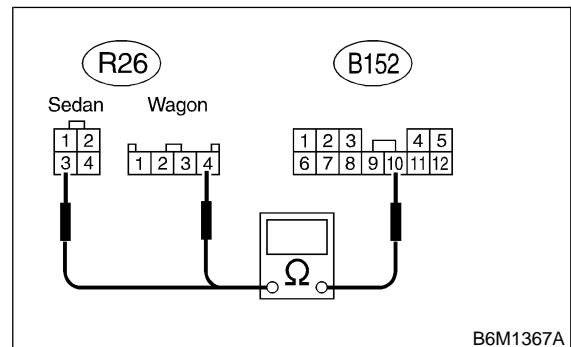


- CHECK** : *Is the resistance less than 10 Ω?*
YES : Go to step **6B13**.
NO : Repair wiring harness between front clearance light LH and chassis ground.

6B13 : CHECK HARNESS CONNECTOR BETWEEN REAR CLEARANCE LIGHT AND FUSE BOX.

- 1) Disconnect connector from rear clearance light RH and fuse box.
- 2) Measure resistance between rear clearance light RH connector (R26) and fuse box connector (B152).

Connector & terminal
(R26) No. 3 (sedan), No. 4 (wagon) — (B152) No. 10:

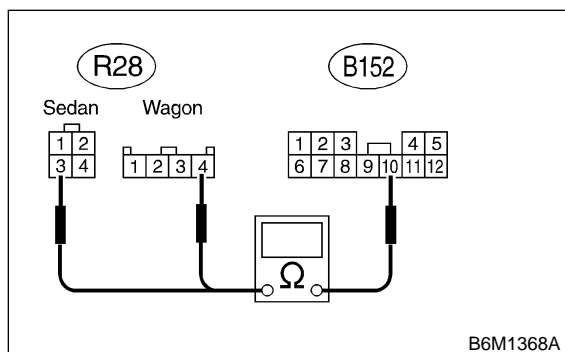


- CHECK** : *Is the resistance less than 10 Ω?*
YES : Go to step **6B14**.
NO : Repair wiring harness between rear clearance light RH and fuse box.

6B14 : CHECK HARNESS CONNECTOR BETWEEN REAR CLEARANCE LIGHT AND FUSE BOX.

- 1) Disconnect connector from rear clearance light LH.
- 2) Measure resistance between rear clearance light LH connector (R28) and fuse box connector (B152).

Connector & terminal
(R28) No. 3 (sedan), No. 4 (wagon) — (B152) No. 10:

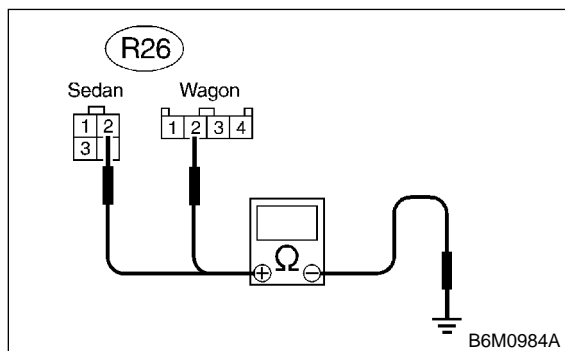


- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Go to step **6B15**.
- NO** : Repair wiring harness between rear clearance light LH and fuse box.

6B15 : CHECK HARNESS CONNECTOR BETWEEN REAR CLEARANCE LIGHT AND CHASSIS GROUND.

Measure resistance between rear clearance light RH connector (R26) and chassis ground.

Connector & terminal
(R26) No. 2 (+) — Chassis ground (-):

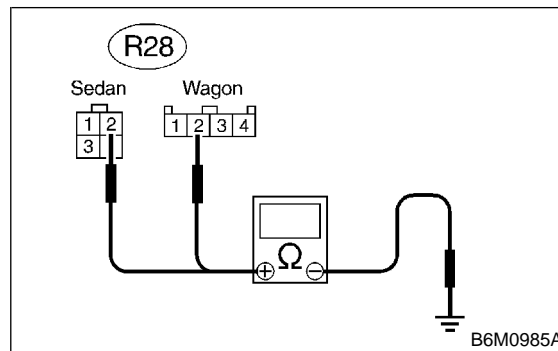


- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Go to step **6B16**.
- NO** : Repair wiring harness between rear clearance light RH and chassis ground.

6B16 : CHECK HARNESS CONNECTOR BETWEEN REAR CLEARANCE LIGHT AND CHASSIS GROUND.

Measure resistance between rear clearance light LH connector (R28) and chassis ground.

Connector & terminal
(R28) No. 2 (+) — Chassis ground (-):



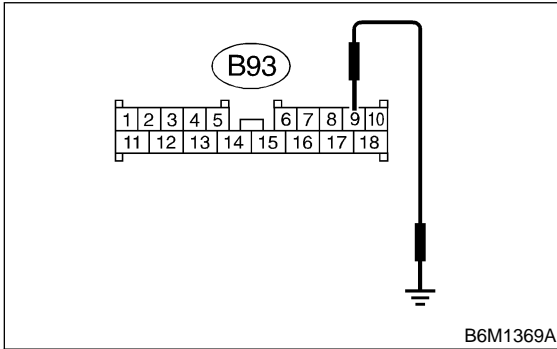
- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Replace security control module. <Ref. to 6-2 [W14A1].>
- NO** : Repair wiring harness between rear clearance light LH and chassis ground.

C: DIAGNOSTICS ITEM 2

6C1 : CHECK SECURITY INDICATOR LIGHT COMES ON.

- 1) Disconnect connector from security control module.
- 2) Measure resistance between security control module connector (B93) and chassis ground.

Connector & terminal
(B93) No. 9 (+) — Chassis ground (-):

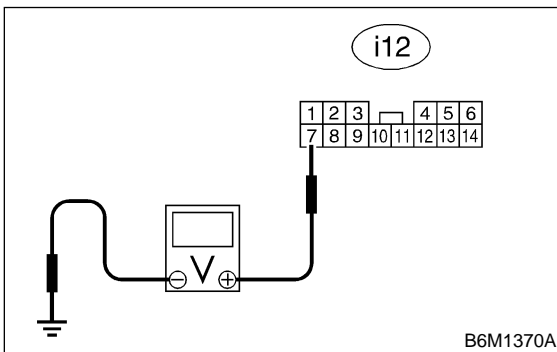


- CHECK** : Does the indicator light come on?
YES : Replace security control module. <Ref. to 6-2 [W14A1].>
NO : Go to step **6C2**.

6C2 : CHECK POWER SUPPLY FOR SECURITY INDICATOR LIGHT.

- 1) Disconnect connector from combination meter.
- 2) Measure voltage between combination meter connector (i12) and chassis ground.

Connector & terminal
(i12) No. 7 (+) — Chassis ground (-):

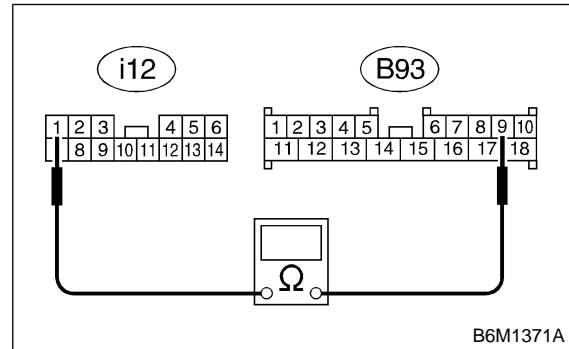


- CHECK** : Is the voltage more than 10 V?
YES : Go to step **6C3**.
NO : Repair wiring harness between security indicator light and main fuse box.

6C3 : CHECK HARNESS CONNECTOR BETWEEN SECURITY INDICATOR LIGHT AND SECURITY CONTROL MODULE.

Measure resistance between combination meter connector (i12) and security control module connector (B93).

Connector & terminal
(i12) No. 1 — (B93) No. 9:



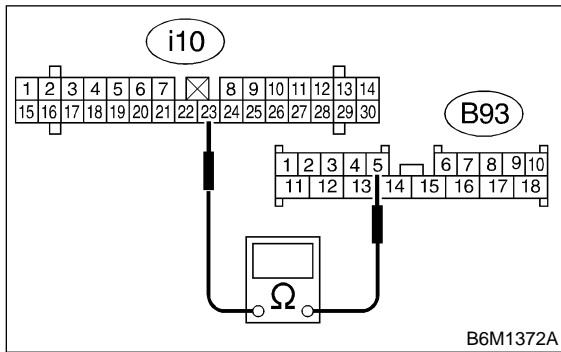
- CHECK** : Is the resistance less than 10 Ω?
YES : Replace security indicator light bulb. <Ref. to 6-2 [W8B0].>
NO : Repair wiring harness between security indicator light and security control module.

D: DIAGNOSTICS ITEM 3

6D1 : CHECK HARNESS CONNECTOR BETWEEN SECURITY CONTROL MODULE AND COMBINATION METER.

- 1) Disconnect connector from security control module and combination meter.
- 2) Measure resistance between security control module connector (B93) and combination meter connector (i10).

Connector & terminal
(B93) No. 5 — (i10) No. 23:

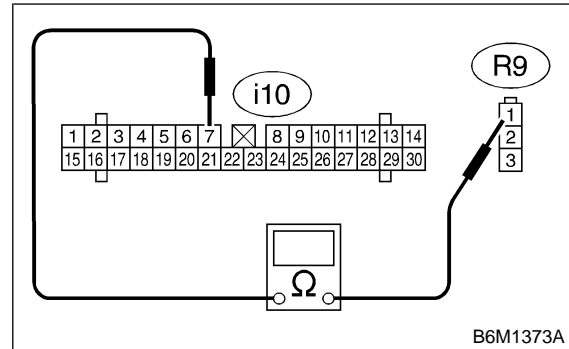


- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Go to step **6D2**.
- NO** : Repair wiring harness between security control module and combination meter.

6D2 : CHECK HARNESS CONNECTOR BETWEEN FRONT DOOR SWITCH LH AND COMBINATION METER.

- 1) Disconnect connector from front door switch LH.
- 2) Measure resistance between front door switch LH connector (R9) and combination meter connector (i10).

Connector & terminal
(R9) No. 1 — (i10) No. 7:

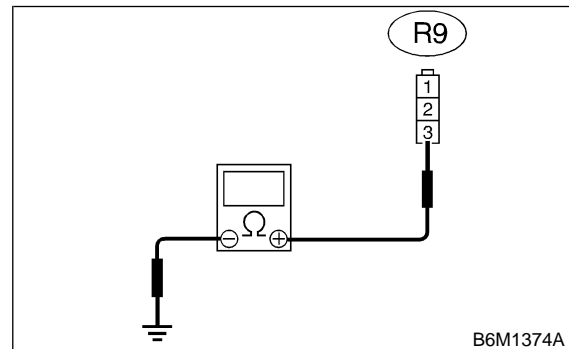


- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Go to step **6D3**.
- NO** : Repair wiring harness between front door switch LH and combination meter.

6D3 : CHECK HARNESS CONNECTOR BETWEEN FRONT DOOR SWITCH LH AND CHASSIS GROUND.

Measure resistance between front door switch LH (R9) and chassis ground.

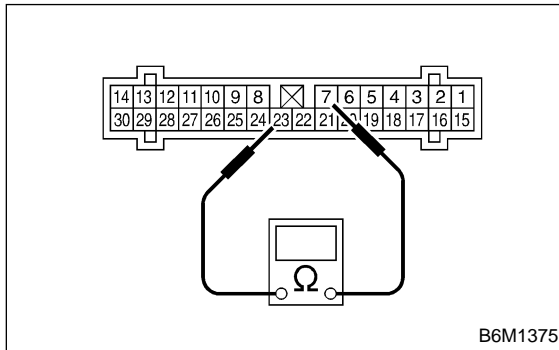
Connector & terminal
(R9) No. 3 (+) — Chassis ground (-):



- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Go to step **6D4**.
- NO** : Repair wiring harness between front door switch LH and chassis ground.

6D4 : CHECK COMBINATION METER CIRCUIT.

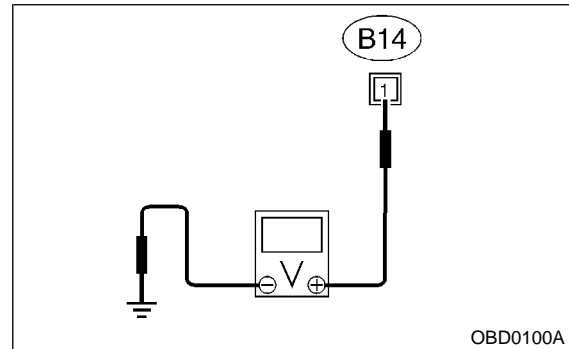
- 1) Remove combination meter. <Ref. to 6-2 [W8A0].>
- 2) Measure resistance between combination meter terminals.

Terminals**No. 23 — No. 7:**

- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Replace security control module. <Ref. to 6-2 [W14A1].>
- NO** : Repair or replace combination meter. <Ref. to 6-2 [W800].>

E: DIAGNOSTICS ITEM 4**6E1 : CHECK INPUT SIGNAL FOR STARTER MOTOR.**

- 1) Disconnect connector from starter motor.
- 2) Turn ignition switch to START.
- 3) Measure voltage between starter motor connector (B14) and engine ground.

Connector & terminal**(B14) No. 1 (+) — Engine ground (-):****NOTE:**

- On AT vehicles, place the selector lever in the P or N position.
- On MT vehicles, depress the clutch pedal.

- CHECK** : **Is the voltage more than 10 V?**
- YES** : Go to step **6E2**.
- NO** : Go to step **6E3**.

6E2 : CHECK GROUND CIRCUIT OF STARTER MOTOR.

- 1) Turn ignition switch to OFF.
- 2) Disconnect terminal from starter motor.
- 3) Measure resistance between ground cable terminal and engine ground.

- CHECK** : **Is the resistance less than 5 Ω?**
- YES** : Check starter motor. <Ref. to 6-1 [W100].>
- NO** : Repair or replace ground cable.

6E3 : CHECK FUSE.

Remove and visually check the fuse SBF-1 (in main fuse box).

- CHECK** : **Is fuse SBF-1 blown?**
- YES** : Replace SBF fuse (100 A).
- NO** : Go to step **6E4**.

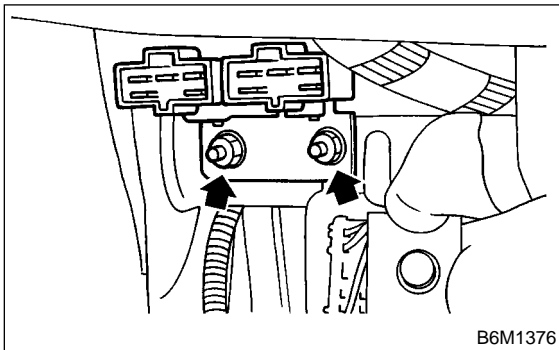
6E4 : CHECK FUSE.

Remove and visually check the fuse SBF-4 (in main fuse box).

- CHECK** : *Is fuse SBF-4 blown?*
- YES** : Replace SBF fuse (50 A).
- NO** : Go to step 6E5.

6E5 : CHECK INTERRUPT RELAY.

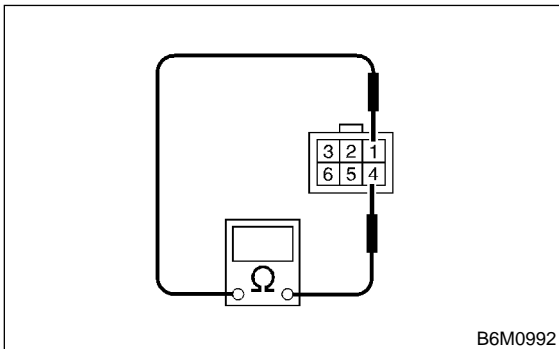
- 1) Turn ignition switch to OFF.
- 2) Remove interrupt relay (Near the fuse box).



- 3) Check continuity between interrupt relay terminals.

Terminals

No. 1 — No. 4:



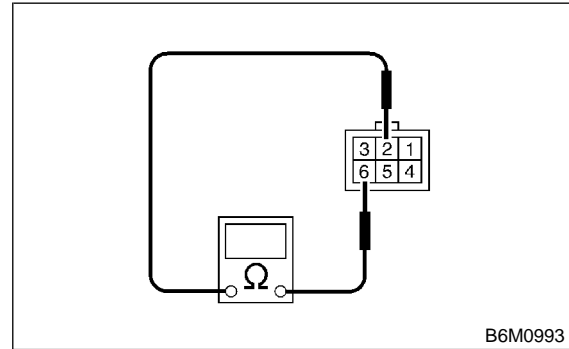
- CHECK** : *Does continuity exist?*
- YES** : Go to step 6E6.
- NO** : Replace interrupt relay.

6E6 : CHECK INTERRUPT RELAY.

Check continuity between interrupt relay terminals.

Terminals

No. 2 — No. 6:



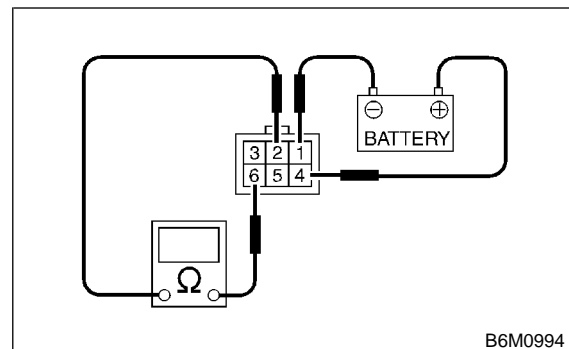
- CHECK** : *Does continuity exist?*
- YES** : Go to step 6E7.
- NO** : Replace interrupt relay.

6E7 : CHECK INTERRUPT RELAY.

- 1) Connect the battery to interrupt relay terminals No. 1 and No. 4.
- 2) Check continuity between interrupt relay terminals.

Terminals

No. 2 — No. 6:



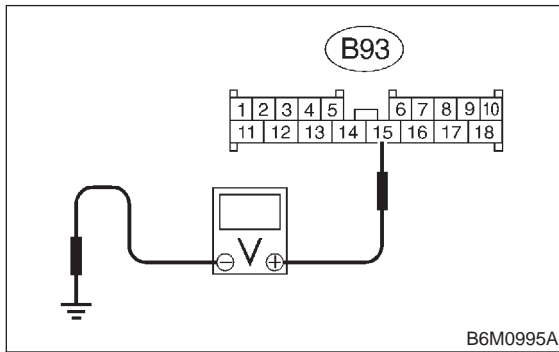
- CHECK** : *Does continuity exist?*
- YES** : Replace interrupt relay.
- NO** : Go to step 6E8.

6E8 : CHECK HARNESS CONNECTOR BETWEEN BATTERY AND SECURITY CONTROL MODULE.

- 1) Install the SBF-4 to main fuse box.
- 2) Install the interrupt relay.
- 3) Disconnect connector from security control module.
- 4) Turn ignition switch to START.
- 5) Measure voltage between security control module connector (B93) and chassis ground.

Connector & terminal

(B93) No. 15 (+) — Chassis ground (-):



- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **6E9**.
- NO** : Repair wiring harness between security control module and battery.

6E9 : CHECK TRANSMISSION TYPE.

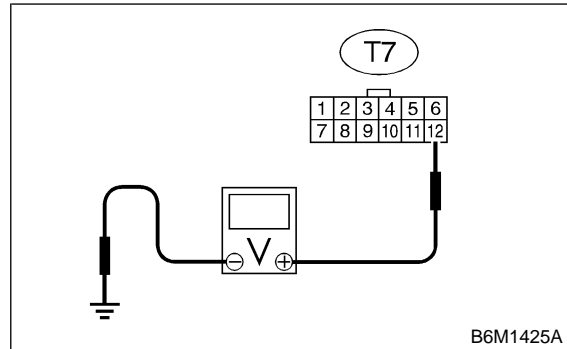
- CHECK** : *Is the transmission type AT?*
- YES** : Go to step **6E10**.
- NO** : Go to step **6E13**.

6E10 : CHECK HARNESS CONNECTOR BETWEEN INTERRUPT RELAY AND INHIBITOR SWITCH.

- 1) Turn ignition switch to OFF.
- 2) Disconnect connector from inhibitor switch.
- 3) Turn ignition switch to START.
- 4) Measure voltage between inhibitor switch connector (T7) and chassis ground.

Connector & terminal

(T7) No. 12 (+) — Chassis ground (-):



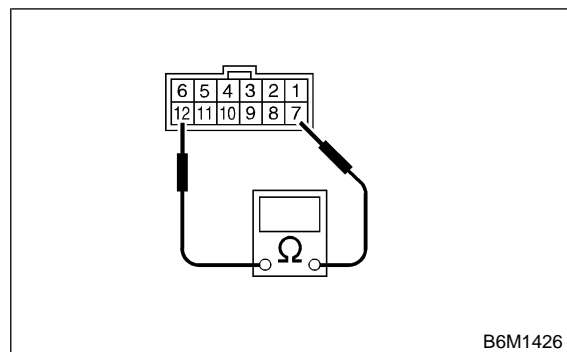
- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **6E11**.
- NO** : Repair wiring harness between interrupt relay and inhibitor switch.

6E11 : CHECK INHIBITOR SWITCH.

- 1) Place the selector lever in the P or N position.
- 2) Measure resistance between inhibitor switch terminals.

Terminals

No. 7 — No. 12:



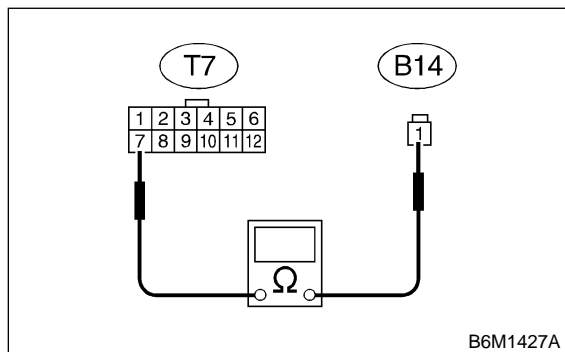
- CHECK** : *Is the resistance less than 1 Ω?*
- YES** : Go to step **6E12**.
- NO** : Replace inhibitor switch. <Ref. to 3-2 [W200].>

6E12 : CHECK HARNESS BETWEEN INHIBITOR SWITCH AND STARTER MOTOR.

Measure resistance between inhibitor switch connector (T7) and starter motor connector (B14).

Connector & terminal

(T7) No. 7 — (B14) No. 1:



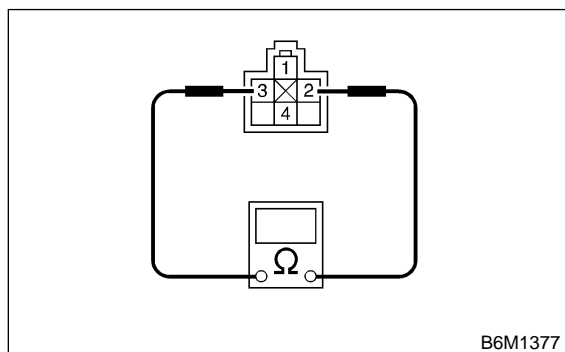
- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Replace security control module. <Ref. to 6-2 [W14A1].>
- NO** : Repair wiring harness between inhibitor switch and starter motor.

6E13 : CHECK STARTER INTERLOCK RELAY.

- 1) Turn ignition switch to OFF.
- 2) Remove starter interlock relay.
- 3) Check continuity between starter interlock relay terminals.

Terminals

No. 3 — No. 2:



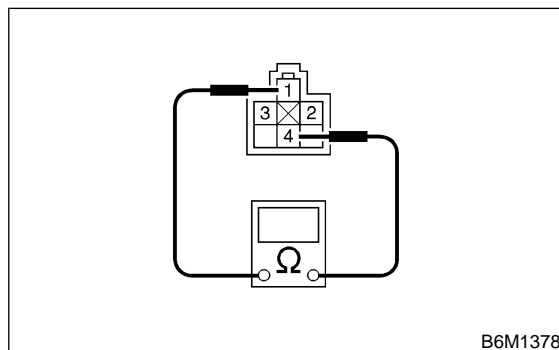
- CHECK** : **Does continuity exist?**
- YES** : Go to step **6E14**.
- NO** : Replace starter interlock relay.

6E14 : CHECK STARTER INTERLOCK RELAY.

Check continuity between starter interlock relay terminals.

Terminals

No. 1 — No. 4:



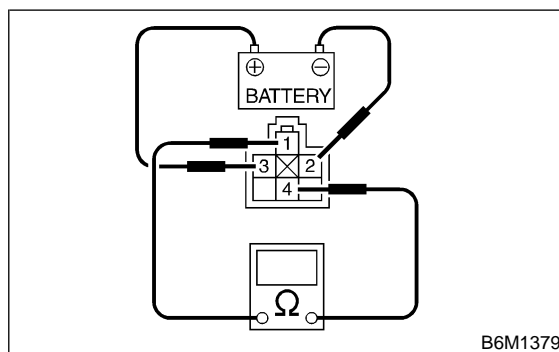
- CHECK** : **Does continuity exist?**
- YES** : Replace starter interlock relay.
- NO** : Go to step **6E15**.

6E15 : CHECK STARTER INTERLOCK RELAY.

- 1) Connect the battery to starter interlock relay terminals No. 3 and No. 2.
- 2) Check continuity between starter interlock relay terminals.

Terminals

No. 1 — No. 4:



- CHECK** : **Does continuity exist?**
- YES** : Go to step **6E16**.
- NO** : Replace starter interlock relay.

6E16 : CHECK CLUTCH SWITCH.

- 1) Install starter interlock relay.
- 2) Measure resistance between clutch switch connector (B106), (B107) terminals while depressing the clutch pedal.

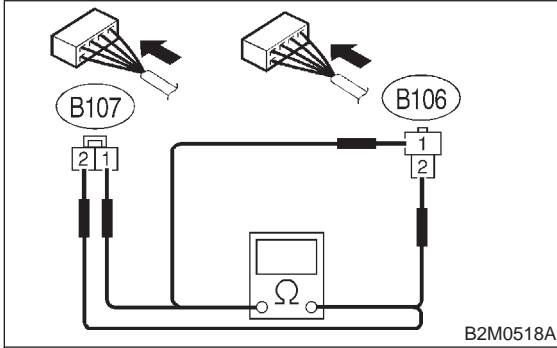
Connector & terminal

With cruise control

(B107) No. 1 — No. 2:

Without cruise control

(B106) No. 1 — No. 2:



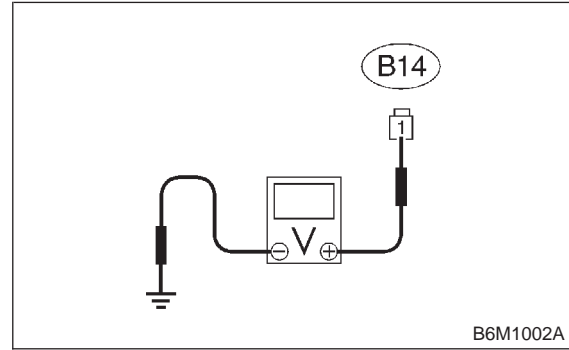
- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Go to step **6E17**.
- NO** : Replace clutch switch.

6E17 : CHECK HARNESS BETWEEN INTERRUPT RELAY AND STARTER MOTOR.

- 1) Disconnect connector from starter motor.
- 2) Turn ignition switch to START.
- 3) Measure voltage between starter motor connector (B14) and chassis ground while depressing the clutch pedal.

Connector & terminal

(B14) No. 1 (+) — Chassis ground (-):



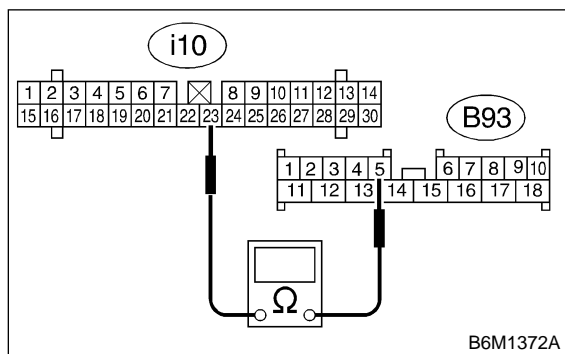
- CHECK** : **Is the voltage more than 10 V?**
- YES** : Replace security control module. <Ref. to 6-2 [W14A1].>
- NO** : Repair wiring harness between interrupt relay and starter motor.

F: DIAGNOSTICS ITEM 5

6F1 : CHECK HARNESS CONNECTOR BETWEEN SECURITY CONTROL MODULE AND COMBINATION METER.

- 1) Disconnect connector from security control module and combination meter.
- 2) Measure resistance between security control module connector (B93) and combination meter connector (i10).

Connector & terminal
(B93) No. 5 — (i10) No. 23:

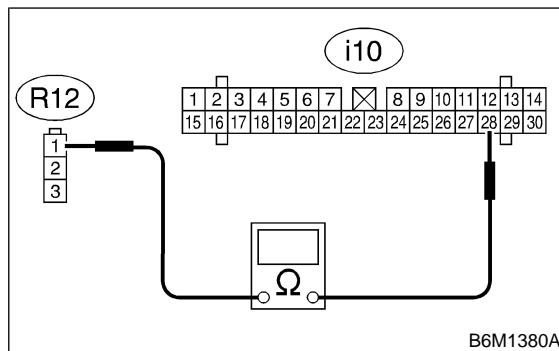


- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Go to step **6F2**.
- NO** : Repair wiring harness between security control module and combination meter.

6F2 : CHECK HARNESS CONNECTOR BETWEEN FRONT DOOR SWITCH RH AND COMBINATION METER.

- 1) Disconnect connector from front door switch RH.
- 2) Measure resistance between front door switch RH connector (R12) and combination meter connector (i10).

Connector & terminal
(R12) No. 1 — (i10) No. 28:



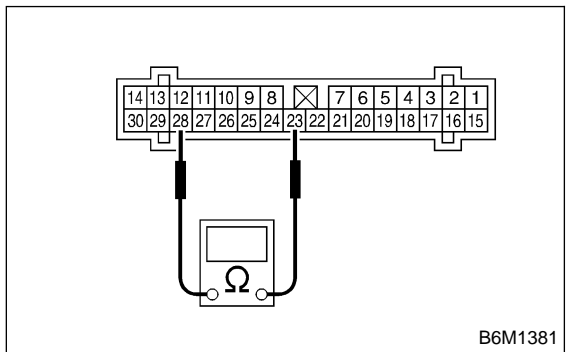
- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Go to step **6F3**.
- NO** : Repair wiring harness between front door switch RH and combination meter.

6F3 : CHECK COMBINATION METER CIRCUIT.

- 1) Remove combination meter.
<Ref. to 6-2 [W8A0].>
- 2) Measure resistance between combination meter terminals.

Terminals

No. 28 — No. 23:



- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Replace security control module. <Ref. to 6-2 [W14A1].>
- NO** : Repair or replace combination meter. <Ref. to 6-2 [W800].>

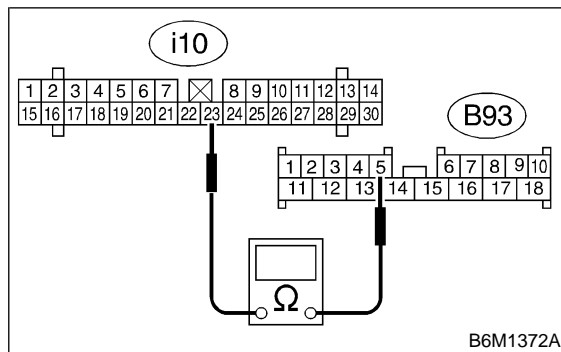
G: DIAGNOSTIC ITEM 6

6G1 : CHECK HARNESS CONNECTOR BETWEEN SECURITY CONTROL MODULE AND COMBINATION METER.

- 1) Disconnect connector from security control module and combination meter.
- 2) Measure resistance between security control module connector (B93) and combination meter connector (i10).

Connector & terminal

(B93) No. 5 — (i10) No. 23:



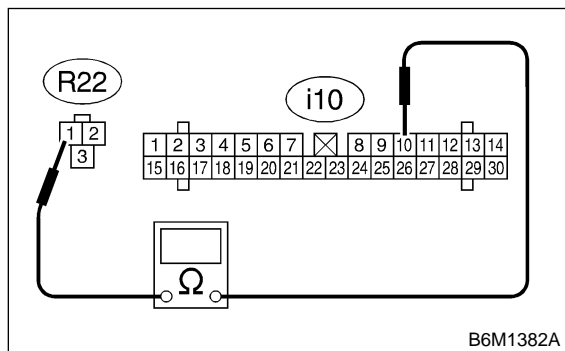
- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Go to step **6G2**.
- NO** : Repair wiring harness between security control module and combination meter.

6G2 : CHECK HARNESS CONNECTOR BETWEEN REAR DOOR SWITCH LH AND COMBINATION METER.

- 1) Disconnect connector from rear door switch LH.
- 2) Measure resistance between rear door switch LH connector (R22) and combination meter connector (i10).

Connector & terminal

(R22) No. 1 — (i10) No. 10:



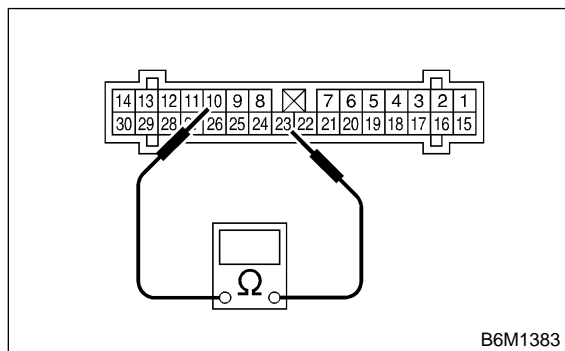
- CHECK** : **Is the resistance less than 10 Ω?**
YES : Go to step 6G3.
NO : Repair wiring harness between rear door switch LH and combination meter.

6G3 : CHECK COMBINATION METER CIRCUIT.

- 1) Remove combination meter. <Ref. to 6-2 [W8A0].>
- 2) Measure resistance between combination meter terminals.

Terminals

No. 10 — No. 23:



- CHECK** : **Is the resistance less than 10 Ω?**
YES : Replace security control module. <Ref. to 6-2 [W14A1].>
NO : Repair or replace combination meter. <Ref. to 6-2 [W800].>

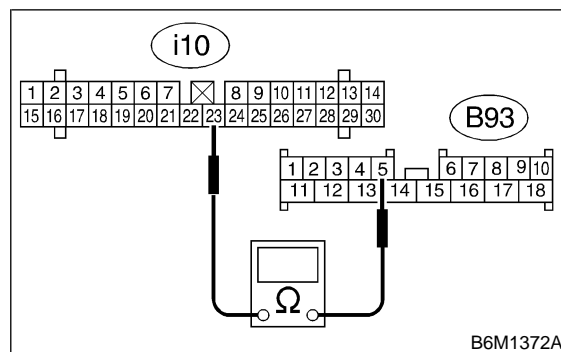
H: DIAGNOSTIC ITEM 7

6H1 : CHECK HARNESS CONNECTOR BETWEEN SECURITY CONTROL MODULE AND COMBINATION METER.

- 1) Disconnect connector from security control module and combination meter.
- 2) Measure resistance between security control module connector (B93) and combination meter connector (i10).

Connector & terminal

(B93) No. 5 — (i10) No. 23:



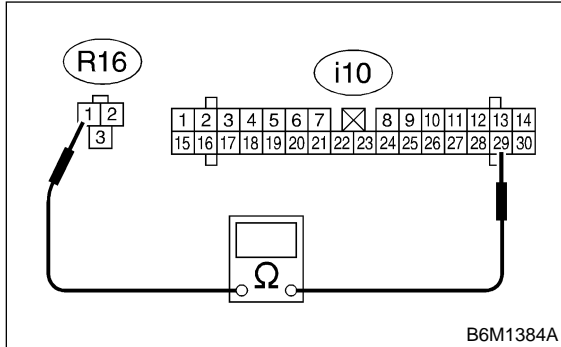
- CHECK** : **Is the resistance less than 10 Ω?**
YES : Go to step 6H2.
NO : Repair wiring harness between security control module and combination meter.

6H2 : CHECK HARNESS CONNECTOR BETWEEN REAR DOOR SWITCH RH AND COMBINATION METER.

- 1) Disconnect connector from rear door switch RH.
- 2) Measure resistance between rear door switch RH connector (R16) and combination meter connector (i10).

Connector & terminal

(R16) No. 1 — (i10) No. 29:



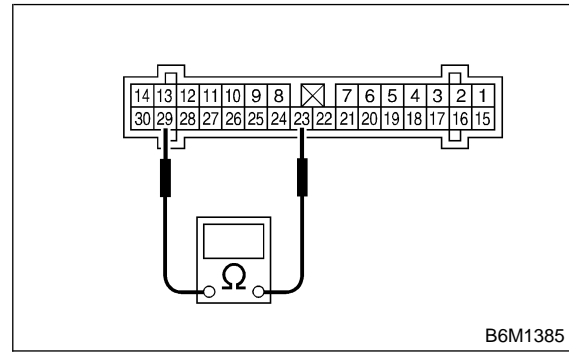
- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Go to step **6H3**.
- NO** : Repair wiring harness between rear door switch RH and combination meter.

6H3 : CHECK COMBINATION METER CIRCUIT.

- 1) Remove combination meter. <Ref. to 6-2 [W8A0].>
- 2) Measure resistance between combination meter terminals.

Terminals

No. 29 — No. 23:



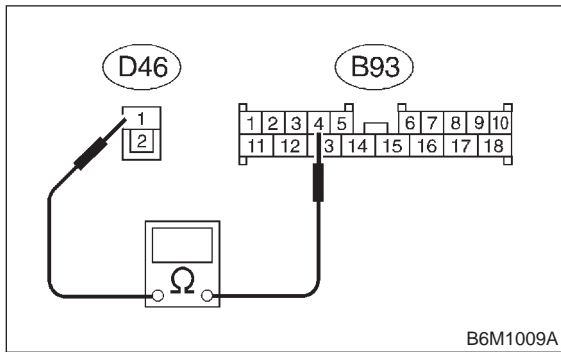
- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Replace security control module. <Ref. to 6-2 [W14A1].>
- NO** : Repair or replace combination meter. <Ref. to 6-2 [W800].>

I: DIAGNOSTIC ITEM 8

6I1 : CHECK HARNESS CONNECTOR BETWEEN REAR GATE LATCH SWITCH AND SECURITY CONTROL MODULE.

- 1) Disconnect connector from rear gate latch switch and security control module.
- 2) Measure resistance between rear gate latch switch connector (D46) and security control module connector (B93).

Connector & terminal
(D46) No. 1 — (B93) No. 4:

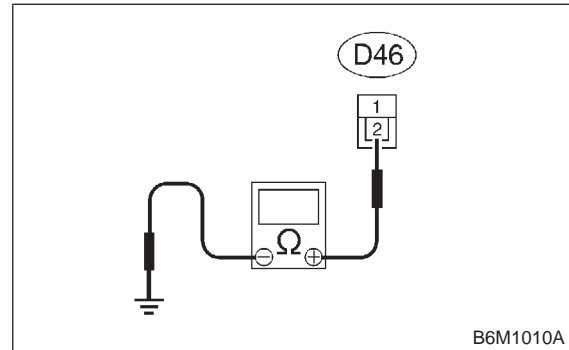


- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Go to step 6I2.
- NO** : Repair wiring harness between rear gate latch switch and security control module.

6I2 : CHECK HARNESS CONNECTOR BETWEEN REAR GATE LATCH SWITCH AND CHASSIS GROUND.

Measure resistance between rear gate latch switch connector (D46) and chassis ground.

Connector & terminal
(D46) No. 2 (+) — Chassis ground (-):

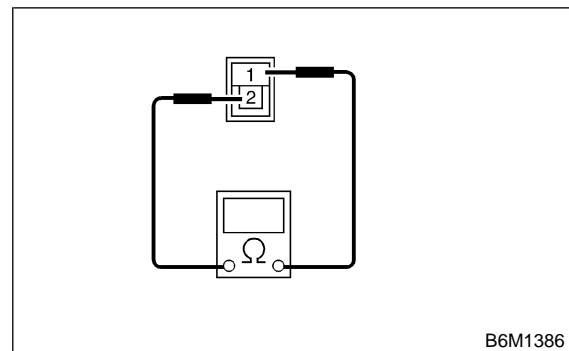


- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Go to step 6I3.
- NO** : Repair wiring harness between rear gate latch switch and chassis ground.

6I3 : CHECK REAR GATE LATCH SWITCH.

Measure resistance between rear gate latch switch terminals.

Terminals
No. 1 — No. 2:



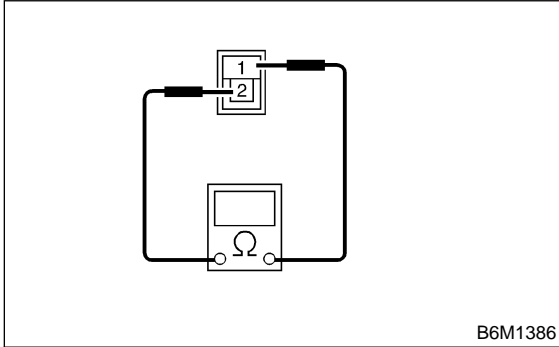
- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Go to step 6I4.
- NO** : Replace rear gate latch switch.

6I4 : CHECK REAR GATE LATCH SWITCH.

Measure resistance between rear gate latch switch terminals while pushing the switch.

Terminals

No. 1 — No. 2:



- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Replace rear gate latch switch.
- NO** : Replace security control module. <Ref. to 6-2 [W14A1].>

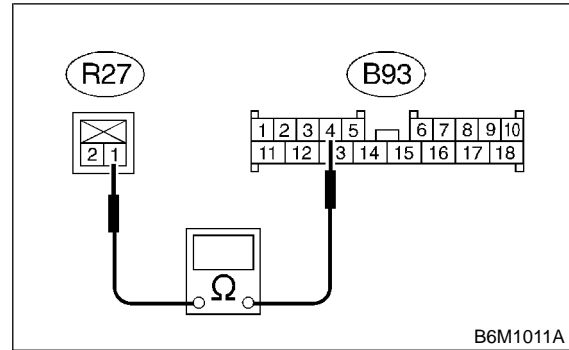
J: DIAGNOSTIC ITEM 9

6J1 : CHECK HARNESS CONNECTOR BETWEEN TRUNK ROOM LIGHT SWITCH AND SECURITY CONTROL MODULE.

- 1) Disconnect connector from trunk room light switch and security control module.
- 2) Measure resistance between trunk room light switch connector (R27) and security control module connector (B93).

Connector & terminal

(R27) No. 1 — (B93) No. 4:



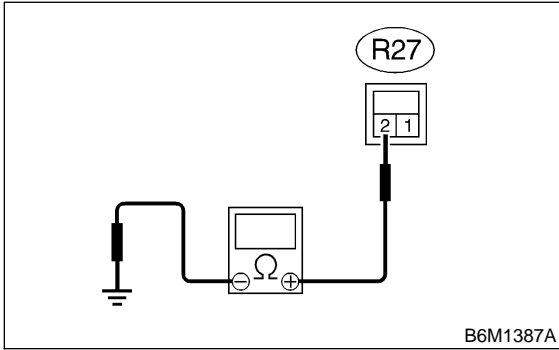
- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Go to step **6J2**.
- NO** : Repair wiring harness between trunk room light switch and security control module.

6J2 : CHECK HARNESS CONNECTOR BETWEEN TRUNK ROOM LIGHT SWITCH AND CHASSIS GROUND.

Measure resistance between trunk room light switch connector (R27) and chassis ground.

Connector & terminal

(R27) No. 2 (+) — Chassis ground (-):



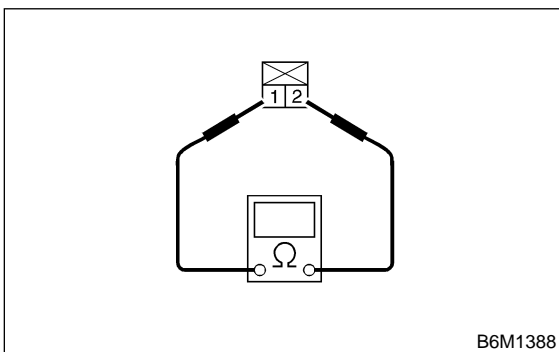
- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Go to step **6J3**.
- NO** : Repair wiring harness between trunk room light switch and chassis ground.

6J3 : CHECK TRUNK ROOM LIGHT SWITCH.

Measure resistance between trunk room light switch terminals.

Terminals

No. 1 — No. 2:



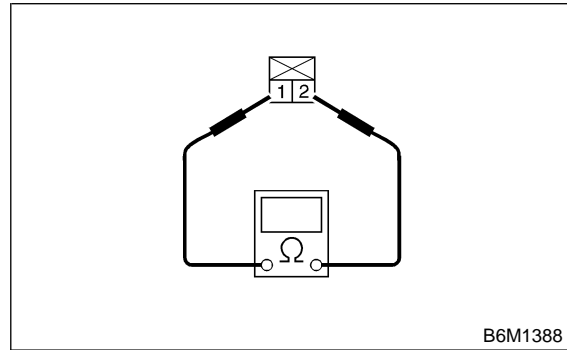
- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Go to step **6J4**.
- NO** : Replace trunk room light switch.

6J4 : CHECK TRUNK ROOM LIGHT SWITCH.

Measure resistance between trunk room light switch terminals while pushing the switch.

Terminals

No. 1 — No. 2:



- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Replace trunk room light switch.
- NO** : Replace security control module. <Ref. to 6-2 [W14A1].>

K: DIAGNOSTIC ITEM 10

6K1 : CHECK SECURITY CONTROL MODULE.

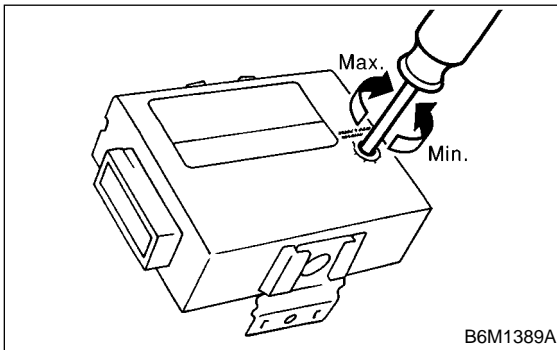
Check and ensure that security control module is installed on the bracket. <Ref. to 6-2 [W14A1].>

- CHECK** : *Is the security control module securely installed?*
- YES** : Go to step **6K2**.
- NO** : Securely install security control module. <Ref. to 6-2 [W14A1].>

6K2 : ADJUST SENSITIVITY.

- 1) Remove security control module. <Ref. to 6-2 [W14A1].>
- 2) Adjust the sensitivity adjust screw in security control module.

NOTE:
After adjusting, be sure to plug the adjust screw hole.



- 3) Install security control module. <Ref. to 6-2 [W14A1].>
- 4) Perform impact sensitivity test. <Ref. to 6-2c [T6A18].>

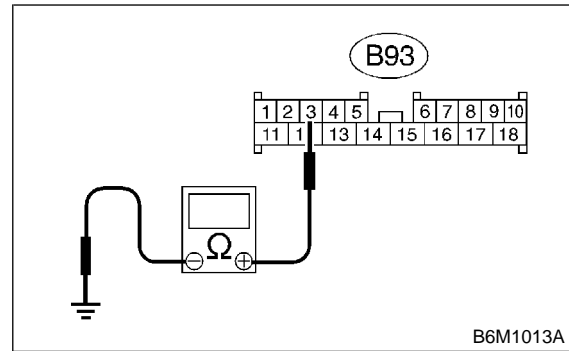
- CHECK** : *Is the sensitivity adjustment possible?*
- YES** : Impact sensitivity is normal.
- NO** : Replace security control module. <Ref. to 6-2 [W14A1].>

L: DIAGNOSTIC ITEM 11

6L1 : CHECK PASSIVE ARM CIRCUIT.

- 1) Connect connector (B183) and (B184) at front pillar lower.
- 2) Disconnect connector from security control module.
- 3) Measure resistance between security control module (B93) and chassis ground.

Connector & terminal
(B93) No. 3 (+) — Chassis ground (-):

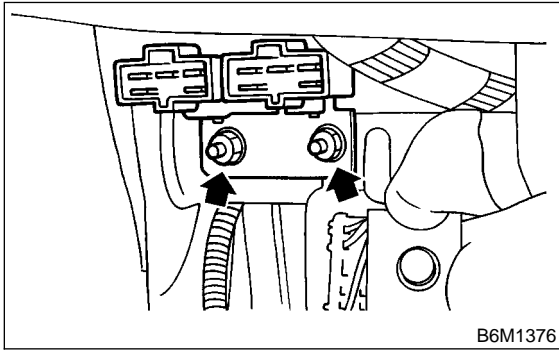


- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Replace security control module. <Ref. to 6-2 [W14A1].>
- NO** : Repair wiring harness between security control module and chassis ground.

M: DIAGNOSTIC ITEM 12

6M1 : CHECK SECURITY HORN RELAY.

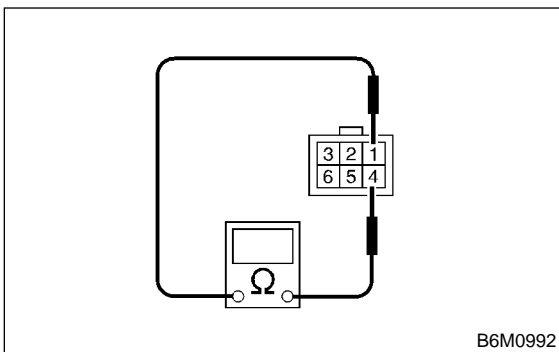
1) Remove security horn relay. (Near the fuse box).



2) Check continuity between security horn relay terminals.

Terminals

No. 1 — No. 4:



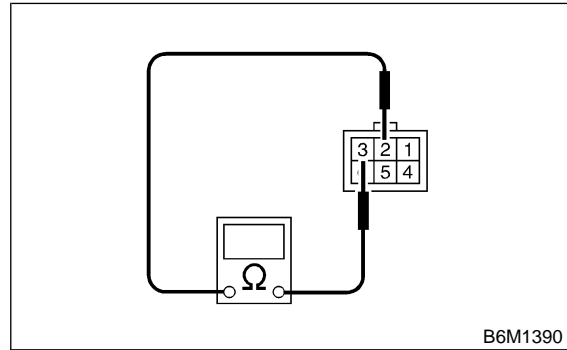
- CHECK** : Does continuity exist?
- YES** : Go to step 6M2.
- NO** : Replace security horn relay.

6M2 : CHECK SECURITY HORN RELAY.

Check continuity between security horn relay terminals.

Terminals

No. 2 — No. 3:



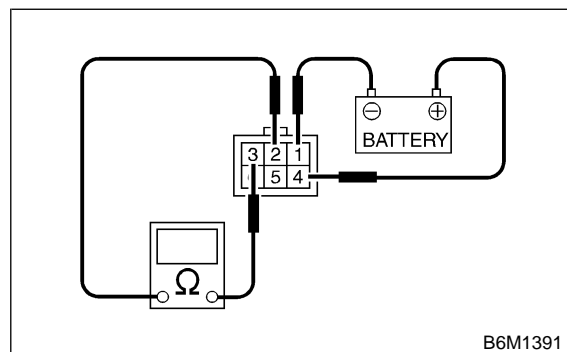
- CHECK** : Does continuity exist?
- YES** : Replace security horn relay.
- NO** : Go to step 6M3.

6M3 : CHECK SECURITY HORN RELAY.

1) Connect the battery to security horn relay terminals No. 1 and No. 4.
2) Check continuity between security horn relay terminals.

Terminals

No. 2 — No. 3:



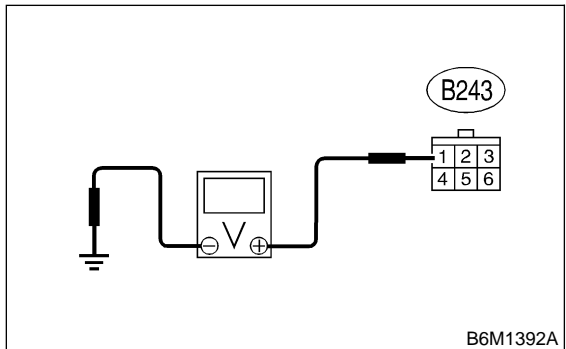
- CHECK** : Does continuity exist?
- YES** : Go to step 6M4.
- NO** : Replace security horn relay.

6M4 : CHECK POWER SUPPLY FOR SECURITY HORN RELAY.

Measure voltage between security horn relay connector (B243) and chassis ground.

Connector & terminal

(B243) No. 1 (+) — Chassis ground (-):



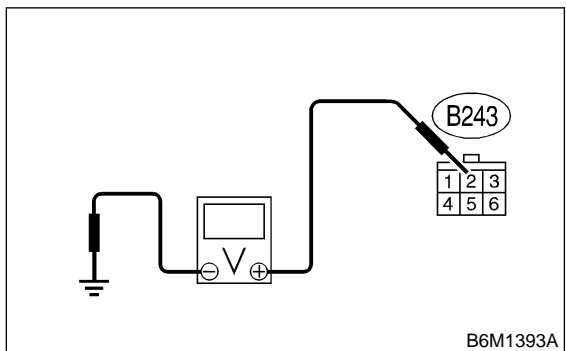
- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **6M5**.
- NO** : Repair wiring harness between security horn relay and battery.

6M5 : CHECK POWER SUPPLY FOR SECURITY HORN RELAY.

Measure voltage between security horn relay connector (B243) and chassis ground.

Connector & terminal

(B243) No. 2 (+) — Chassis ground (-):



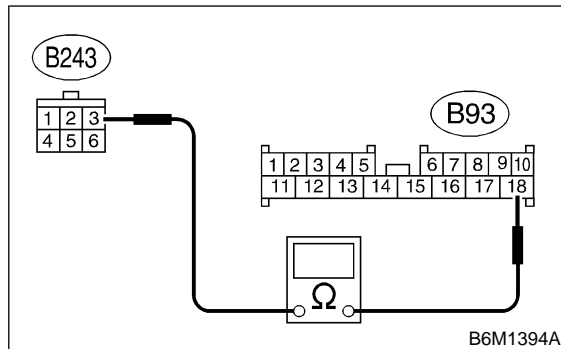
- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **6M6**.
- NO** : Repair wiring harness between security horn relay and battery.

6M6 : CHECK HARNESS BETWEEN SECURITY HORN RELAY AND SECURITY CONTROL MODULE.

- 1) Disconnect connector from security control module.
- 2) Measure resistance between security horn relay connector (B243) and security control module connector (B93).

Connector & terminal

(B243) No. 3 — (B93) No. 18:



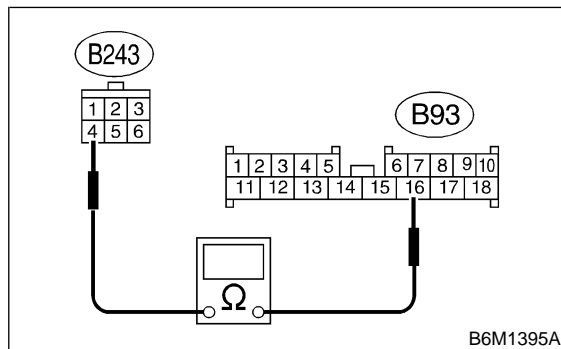
- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Go to step **6M7**.
- NO** : Repair wiring harness between security horn relay and security control module.

6M7 : CHECK HARNESS BETWEEN SECURITY HORN RELAY AND SECURITY CONTROL MODULE.

Measure resistance between security horn relay connector (B243) and security control module connector (B93).

Connector & terminal

(B243) No. 4 — (B93) No. 16:



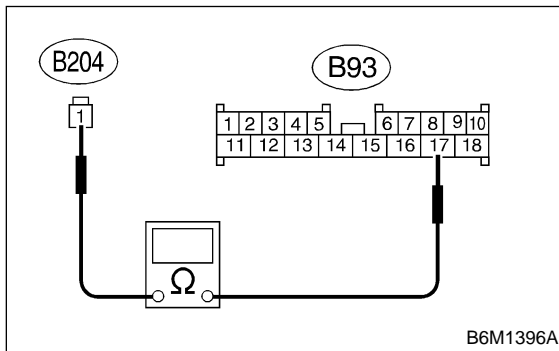
- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Go to step **6M8**.
- NO** : Repair wiring harness between security horn relay and security control module.

6M8 : CHECK HARNESS BETWEEN SECURITY HORN RELAY AND SECURITY CONTROL MODULE.

- 1) Disconnect connector from security horn.
- 2) Measure resistance between security horn connector (B204) and security control module connector (B93).

Connector & terminal

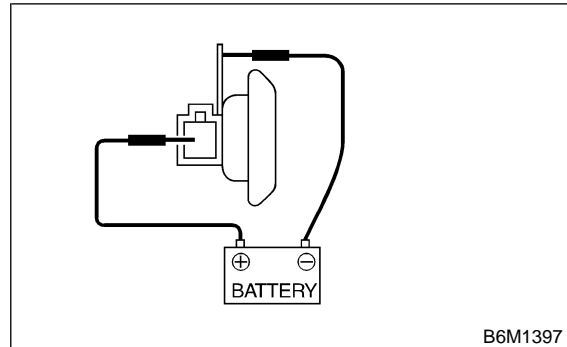
(B204) No. 1 — (B93) No. 17:



- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Go to step **6M9**.
- NO** : Repair wiring harness between security horn and security control module.

6M9 : CHECK SECURITY HORN.

- 1) Remove security horn. <Ref. to 6-2 [W14A2].>
- 2) Connect battery to security horn and check sound of security horn.



- CHECK** : **Does the security horn sound?**
- YES** : Replace security control module. <Ref. to 6-2 [W14A1].>
- NO** : Repair security horn. <Ref. to 6-2 [W14A2].>

MEMO: