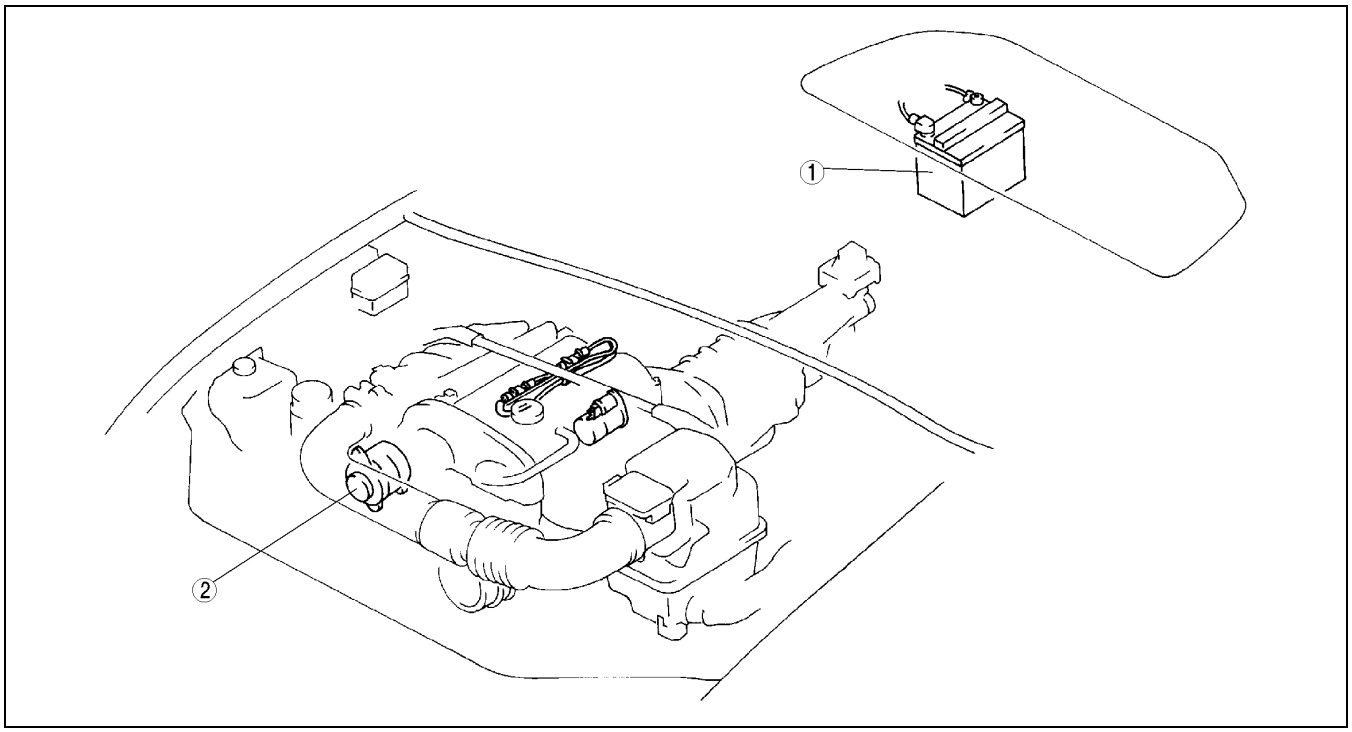
01–17 CHARGING SYSTEM

CHARGING SYSTEM LOCATION INDEX

A5U011701008W01



Z5U0117WA0

1	Battery (See 01–17–2 BATTERY REMOVAL/ INSTALLATION) (See 01–17–2 BATTERY INSPECTION) (See 01–17–3 BATTERY RECHARGING)

2	Generator (See 01–17–3 GENERATOR REMOVAL/ INSTALLATION) (See 01–17–4 GENERATOR INSPECTION)

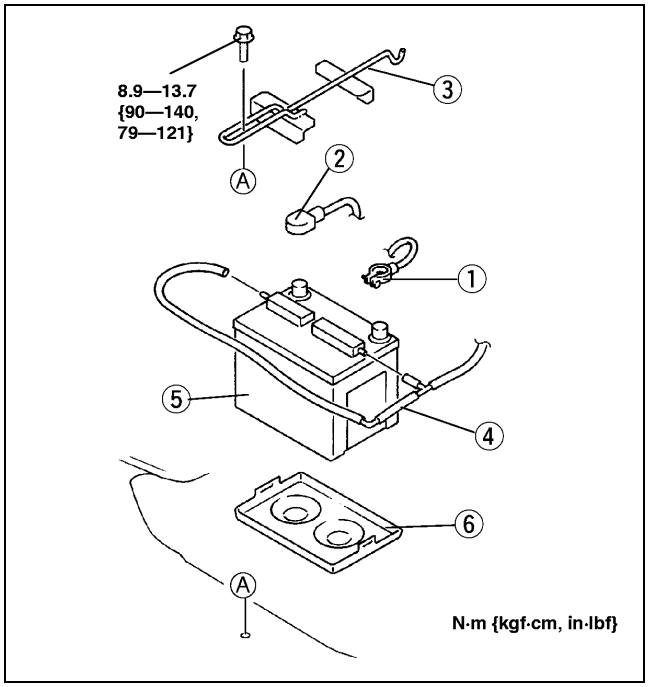
BATTERY REMOVAL/INSTALLATION

A5U011718520W01

1. Remove in the order indicated in the table.

1	Negative battery cable
2	Positive battery cable
3	Battery clamp
4	Battery vent hose
5	Battery
6	Battery tray

2. Install in the reverse order of removal.



X5U117WA0

BATTERY INSPECTION

A5U011718520W02

Battery

1. Check the battery in the following procedure.

Step	Inspection	Result	Action
1	Measure open circuit voltage of battery.	12.4 V or more	Go to step 3.
		less than 12.4 V	Go to next step.
2	Quick charge for 30 min and reinspect voltage.	12.4 V or more	Go to next step.
		less than 12.4 V	Replace battery.
3	Apply test load (see test load chart) to battery using a battery load tester and record battery voltage after 15 s. Is voltage more than specification?	Yes	Battery is okay.
		No	Replace battery.

Load test chart

Battery	Load (A)
S46A24L(S)	105

Battery positive voltage with load

Approximate battery temp.	Minimum voltage (V)
21°C {70°F}	9.6
15°C {59°F}	9.5
10°C {50°F}	9.4
4°C {39°F}	9.3
–1°C {30°F}	9.1
–7°C {19°F}	8.9
–12°C {10°F}	8.7
–18°C { 0°F}	8.5

Back-up Current

1. Verify that the ignition switch is at the OFF position and that the ignition key has been removed.
2. Disconnect the negative battery cable.

Caution

- **Operating electrical loads while measuring the back-up current can damage the circuit tester.**

3. Measure the back-up current between the negative battery terminal and the negative battery cable.
   (1) If the current exceeds the maximum, remove the fuse in the main fuse block and the fuse block one by one while measuring the back-up current.
   (2) Inspect and repair harnesses and connectors of the fuse at which the current reduces.

Back-up current
20 mA max.

BATTERY RECHARGING

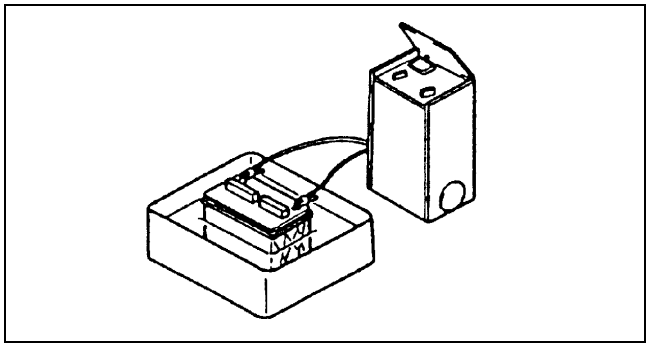
A5U011718520W03

Warning
- **Hydrogen gas is produced during normal battery operation. A battery-related explosion can cause serious injury. Keep all flames (including cigarettes), heat, and sparks away from the top and surrounding area of open battery cells.**

Caution
- **When disconnecting the battery, remove the negative cable first and install it last to prevent damage to electrical components or the battery.**
- **To prevent damage to electrical components or the battery, turn all accessories off and stop the engine before performing maintenance or recharging the battery.**
- **Do not quick charge for over 30 min as it will damage the battery.**

1. Place a battery in a pan of water to prevent it from overheating. The water level should come up about halfway on the battery. Keep water off the top of the battery.
2. Connect a battery charger to the battery.
3. Adjust the charging current as follows.

Battery type (5-hour rate)	Slow charge (A)	Quick charge (A)/(30 min)
S46A24L(S)(32)	3.0—4.0	20



X5U117WA1

4. After the battery has been recharged, measure the battery positive voltage and verify that the battery keeps specified voltage for more than 1 hour.
   - If not as specified, replace the battery.

Specification
Above 12.4 V

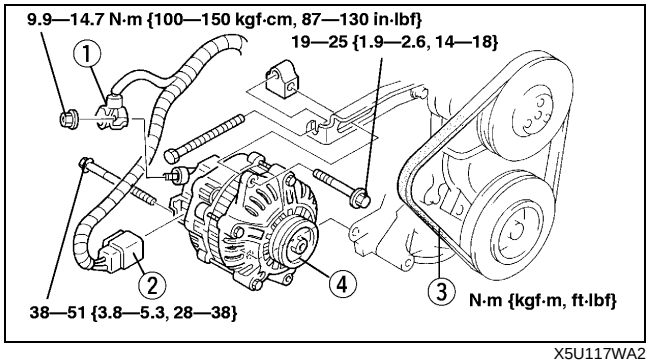
GENERATOR REMOVAL/INSTALLATION

A5U011718300W01

Warning
- **When the battery cables are connected, touching the vehicle body with generator terminal B will generate sparks. This can cause personal injury, fire, and damage to the electrical components. Always disconnect the battery before performing the following operation.**

1. Disconnect the negative battery cable.
2. Remove the intake manifold bracket.
3. Remove in the order indicated in the table.

1	Terminal B wire
2	Connector
3	Drive belt
4	Generator



X5U117WA2

4. Install in the reverse order of removal.
5. Inspect the drive belt deflection/tension. (See 01–10–3 DRIVE BELT INSPECTION.)

GENERATOR INSPECTION

A5U011718300W02

Generator Warning Light

1. Verify that the battery is fully charged.
   - Charge if necessary.
2. Verify that the drive belt deflection/tension is within the specification. (See 01–10–3 DRIVE BELT INSPECTION.)
   - Adjust if necessary.
3. Turn the ignition switch on and verify that the generator warning light comes on.
   - If the warning light does not illuminate, inspect the harness from ignition switch to generator warning light and from generator warning light to 3U terminal of PCM. If the generator warning light and harnesses are normal, replace the PCM.
4. Confirm that the generator warning light goes off after starting the engine.
   - If the generator warning light does not go off, inspect the on-board diagnostic system service code. (See 01–03–56 ENGINE CONTROL SYSTEM OPERATION INSPECTION.)

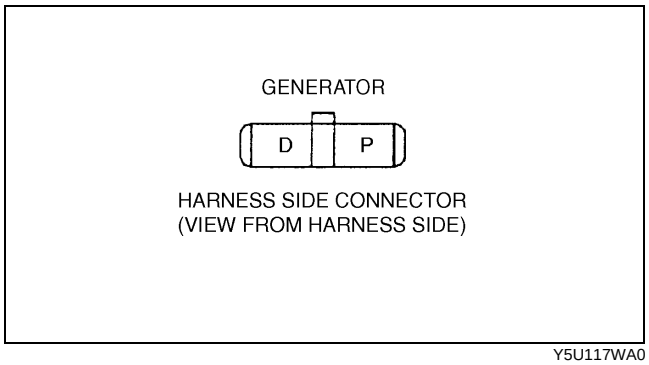
Generator

Voltage

1. Verify that the battery is fully charged.
   - Charge if necessary.
2. Verify that the drive belt deflection/tension is within the specification. (See 01–10–3 DRIVE BELT INSPECTION.)
   - Adjust if necessary.
3. Turn off all electrical loads.
4. Turn the ignition switch to START and verify that the generator turns smoothly without any noise while the engine is running.
5. Measure the voltage at the terminals shown in the table.
   - If not as specified, disassemble and inspect the generator.

Standard voltage

Terminal	Ignition switch ON (V)	Idle (V) [20°C {68°F}]
	BP	BP
B	B+	13—15
P	Below 1	3—8
D	Approx. 0	*



Y5U117WA0

* : Turn the following electrical loads on and verify that the voltage reading increases.

- Headlights
- Blower motor
- Rear window defroster

Current

1. Verify that the battery is fully charged.
   - Charge if necessary.
2. Verify that the drive belt deflection/tension is within the specification. (See 01–10–3 DRIVE BELT INSPECTION.)
   - Adjust if necessary.
3. Disconnect the negative battery cable.
4. Connect a circuit tester, capable of reading **120 A** or over, between generator terminal B and the wiring harness.
5. Connect the negative battery cable.
6. Turn off all electrical loads.
7. Start the engine and increase the engine speed to **2,000—2,500 rpm**.
8. Turn the following electrical loads on and verify that the current reading increases.
   (1) Headlights
   (2) Blower motor
   (3) Rear window defroster
   - If generator terminal B current will not increase, disassemble and inspect the generator.

Note
- Current required for generating power varies with electrical loads applied.

Standard current (Reference)

Measuring conditions
Room temperature: 20°C {68°F}
Voltage: 13.5 V
Engine hot

Engine speed (rpm)	Terminal B current (A)
	BP
1,000	0—65 (must not be 0)
2,000	0—77 (must not be 0)