

SECTION **CHG**
CHARGING SYSTEM

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

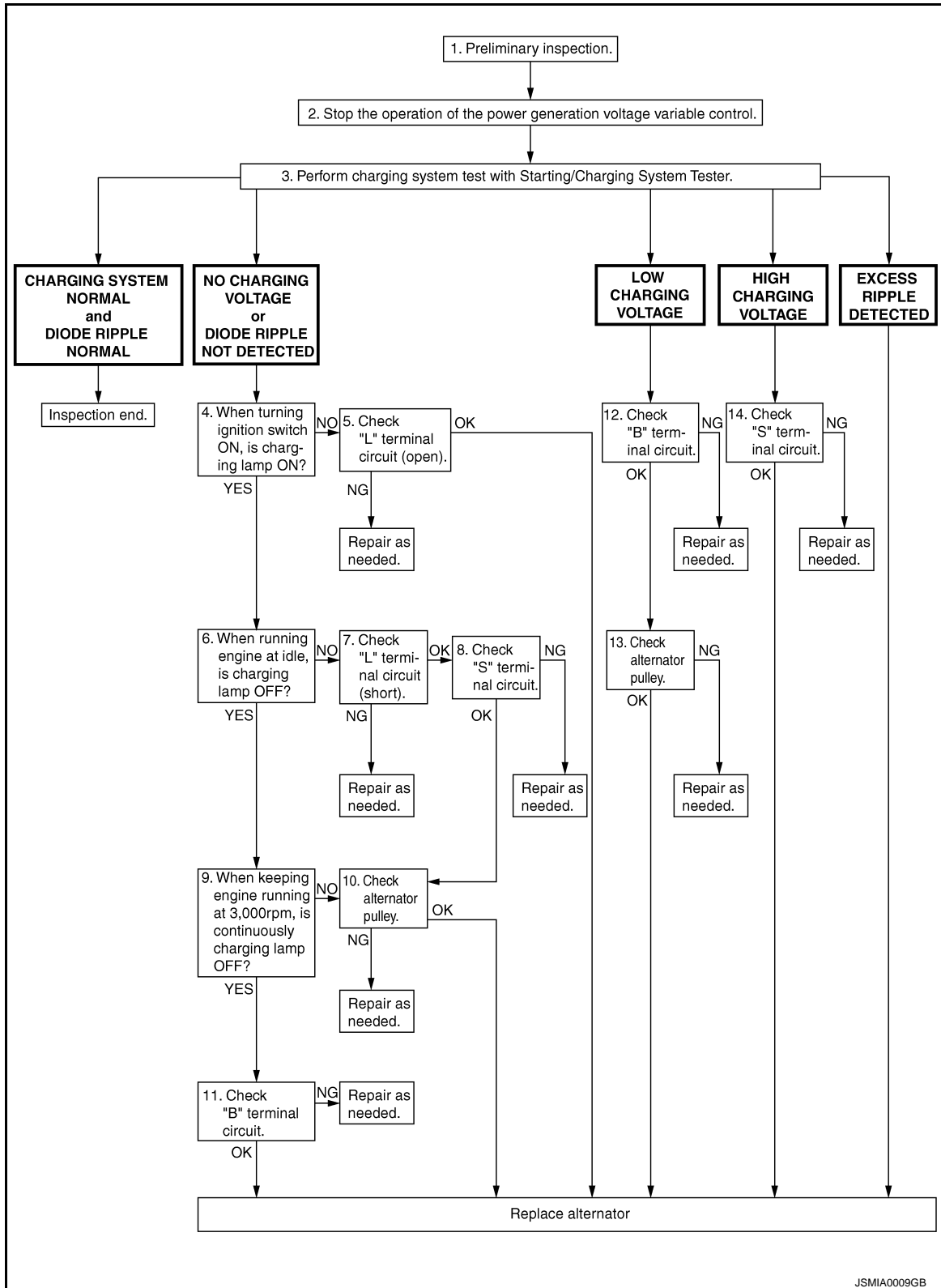
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000005044633

OVERALL SEQUENCE



DETAILED FLOW

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

NOTE:

To ensure a complete and thorough diagnosis, the battery, starter and alternator test segments must be done as a set from start to finish.

1. PRELIMINARY INSPECTION

Perform the preliminary inspection. Refer to [CHG-20. "Inspection Procedure"](#).

>> GO TO 2.

2. STOP POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM

Stop the operation of the power generation voltage variable control in either of the following procedures.

- After selecting "ENGINE" of "SELECT SYSTEM" using CONSULT-III, set the DUTY value of "ALTERNATOR DUTY" to 0 % by selecting "ALTERNATOR DUTY" of "Active Test". Continue "Active Test" until the end of inspection. (When the DUTY value is 0 or 100 %, the normal power generation is performed according to the characteristic of the IC voltage regulator of the alternator.)
- Turn the ignition switch OFF, and disconnect the battery current sensor connector. [However, DTC (P1550 - P1554) of the engine might remain. After finishing the inspection, connect the battery current sensor connector and erase the self-diagnosis results history of the engine using CONSULT-III.]

>> GO TO 3.

3. DIAGNOSIS WITH STARTING/CHARGING SYSTEM TESTER

Perform the charging system test using Starting/Charging System Tester (SST: J-44373). For details and operating instructions, refer to Technical Service Bulletin.

Test result

CHARGING SYSTEM NORMAL>>Charging system is normal and will also show "DIODE RIPPLE" test result.

NO CHARGING VOLTAGE>>GO TO 4.

LOW CHARGING VOLTAGE>>GO TO 12.

HIGH CHARGING VOLTAGE>>GO TO 14.

DIODE RIPPLE NORMAL>>Diode ripple is OK and will also show "CHARGING VOLTAGE" test result.

EXCESS RIPPLE DETECTED>>Replace the alternator. Perform "DIODE RIPPLE" test again using Starting/Charging System Tester (SST: J-44373) to confirm repair.

DIODE RIPPLE NOT DETECTED>>GO TO 4.

4. INSPECTION WITH CHARGE WARNING LAMP (IGNITION SWITCH IS ON)

Turn the ignition switch ON.

Does the charge warning lamp illuminate?

YES >> GO TO 6.

NO >> GO TO 5.

5. "L" TERMINAL CIRCUIT (OPEN) INSPECTION

Check "L" terminal circuit (open). Refer to [CHG-10. "Diagnosis Procedure"](#).

Is the "L" terminal circuit normal?

YES >> Replace alternator.

NO >> Repair as needed.

6. INSPECTION WITH CHARGE WARNING LAMP (IDLING)

Start the engine and run it at idle.

Does the charge warning lamp turn OFF?

YES >> GO TO 9.

NO >> GO TO 7.

7. "L" TERMINAL CIRCUIT (SHORT) INSPECTION

Check "L" terminal circuit (short). Refer to [CHG-12. "Diagnosis Procedure"](#).

Is the "L" terminal circuit normal?

YES >> GO TO 8.

NO >> Repair as needed.

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

8. "S" TERMINAL CIRCUIT INSPECTION

Check "S" terminal circuit. Refer to [CHG-13, "Diagnosis Procedure"](#).

Is the "S" terminal circuit normal?

YES >> GO TO 10.

NO >> Repair as needed.

9. INSPECTION WITH CHARGE WARNING LAMP (ENGINE AT 3,000 RPM)

Increase and maintain the engine speed at 3,000 rpm.

Does the charge warning lamp remain off?

YES >> GO TO 11.

NO >> GO TO 10.

10. INSPECTION OF ALTERNATOR PULLEY

Check alternator pulley. Refer to [CHG-24, "Inspection"](#).

Is alternator pulley normal?

YES >> Replace alternator.

NO >> Repair as needed.

11. "B" TERMINAL CIRCUIT INSPECTION

Check "B" terminal circuit. Refer to [CHG-9, "Diagnosis Procedure"](#).

Is "B" terminal circuit normal?

YES >> Replace alternator.

NO >> Repair as needed.

12. "B" TERMINAL CIRCUIT INSPECTION

Check "B" terminal circuit. Refer to [CHG-9, "Diagnosis Procedure"](#).

Is "B" terminal circuit normal?

YES >> GO TO 13.

NO >> Repair as needed.

13. INSPECTION OF ALTERNATOR PULLEY

Check alternator pulley. Refer to [CHG-24, "Inspection"](#).

Is alternator pulley normal?

YES >> Replace alternator.

NO >> Repair as needed.

14. "S" TERMINAL CIRCUIT INSPECTION

Check "S" terminal circuit. Refer to [CHG-13, "Diagnosis Procedure"](#).

Is the "S" terminal circuit normal?

YES >> Replace alternator.

NO >> Repair as needed.

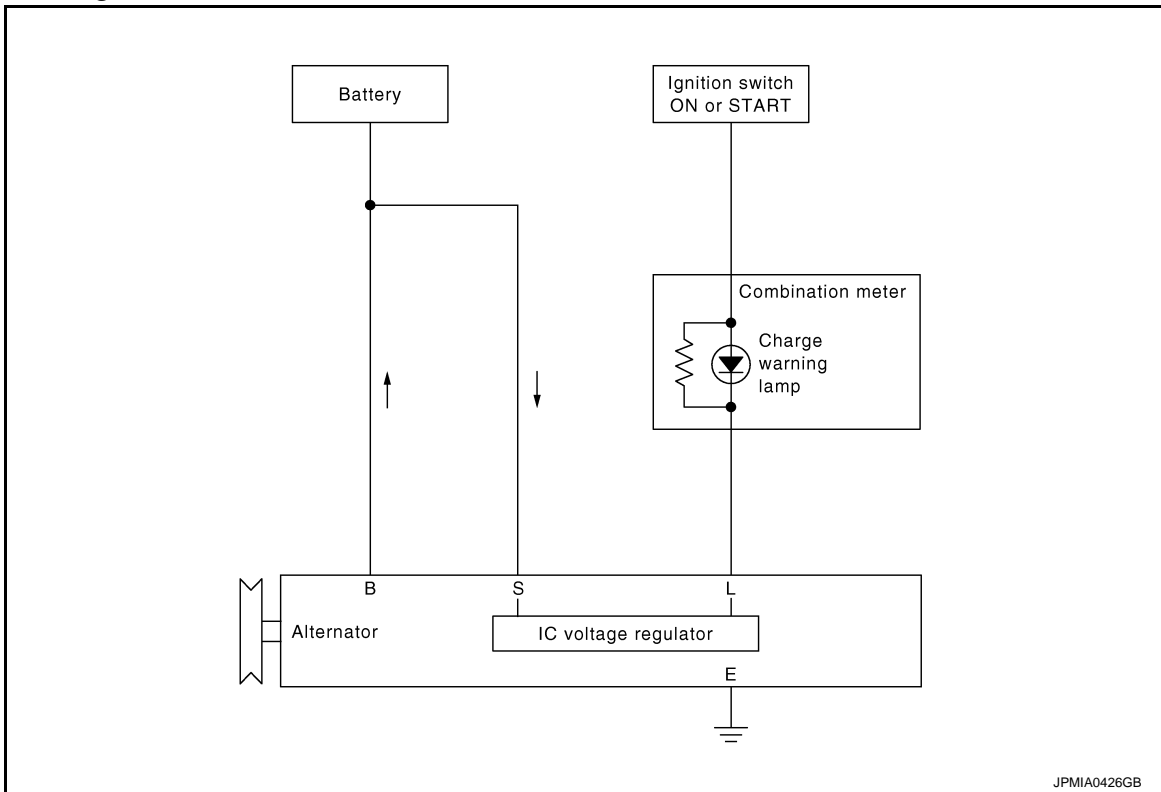
CHARGING SYSTEM

< SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION

CHARGING SYSTEM

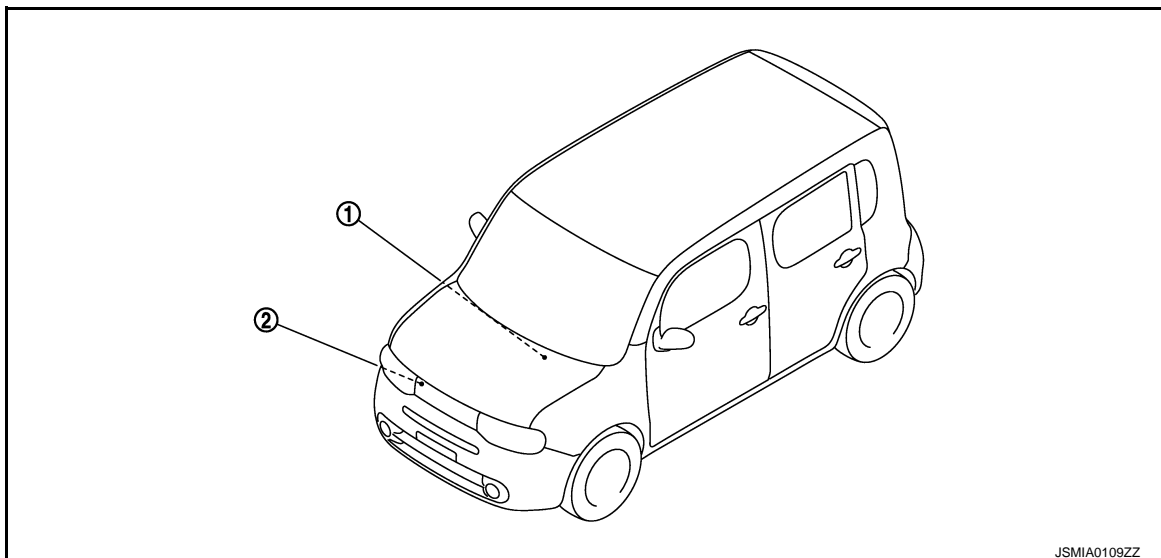
System Diagram



System Description

The alternator provides DC voltage to operate the vehicle's electrical system and to keep the battery charged. The voltage output is controlled by the IC voltage regulator.

Component Parts Location



1. Charge warning lamp (On the combination meter)
2. Alternator

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CHARGING SYSTEM

< SYSTEM DESCRIPTION >

Component Description

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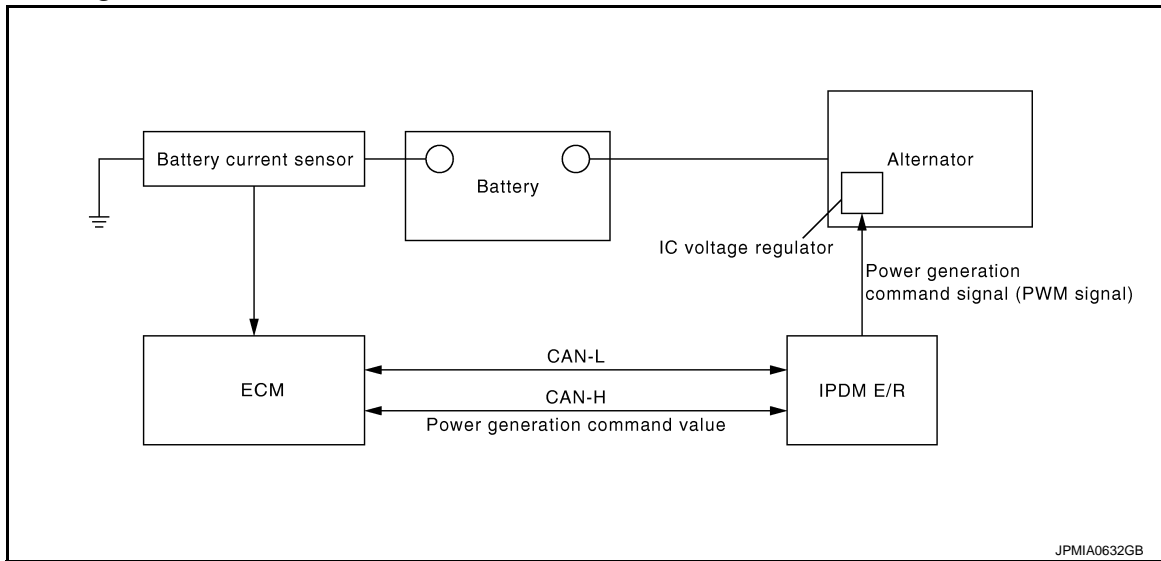
Component part	Description
Alternator	The alternator provides DC voltage to operate the vehicle electrical system and to keep the battery charged.
Combination meter (Charge warning lamp)	The IC voltage regulator warning function activates to illuminate the charge warning lamp, if any of the following symptoms occur while alternator is operating: <ul style="list-style-type: none">• Excessive voltage is produced.• No voltage is produced.

POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM

< SYSTEM DESCRIPTION >

POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM

System Diagram



System Description

INFOID:000000005044639

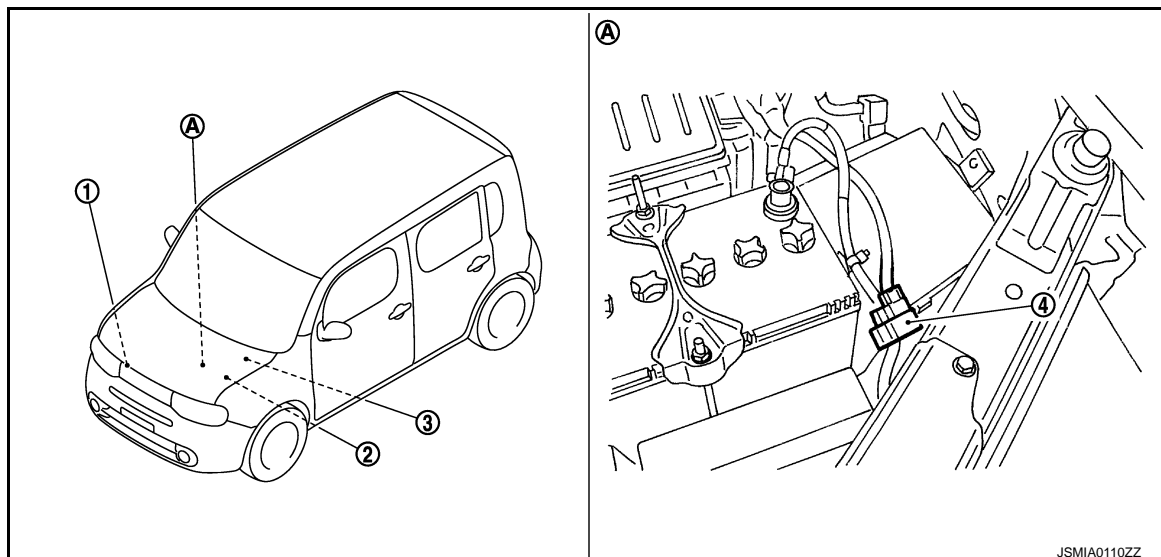
By performing the power generation voltage variable control, the engine load due to the power generation of the alternator is reduced and fuel consumption is decreased.

NOTE:

When any malfunction is detected in the power generation voltage variable control system, the power generation is performed according to the characteristic of the IC voltage regulator of the alternator.

Component Parts Location

INFOID:000000005044640



1. Alternator
2. IPDM E/R
Refer to [PCS-6, "Component Parts Location"](#).(WITH I-KEY)
Refer to [PCS-37, "Component Parts Location"](#).(WITHOUT I-KEY)
3. ECM
Refer to [EC-22, "Component Parts Location"](#).
4. Battery current sensor
- A. Engine room dash panel (LH)

POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM

< SYSTEM DESCRIPTION >

Component Description

INFOID:000000005044641

Component part	Description
Battery current sensor	Battery current sensor is installed to the battery cable at the negative terminal, and it detects the charging/discharging current of the battery and sends the voltage signal to ECM according to the current value.
ECM	Battery current sensor detects the charging/discharging current of the battery. ECM judges the battery condition based on this signal. ECM judges whether to perform the power generation voltage variable control according to the battery condition. When performing the power generation voltage variable control, ECM calculates the target power generation voltage according to the battery condition and sends the calculated value as the power generation command value to IPDM E/R.
IPDM E/R	IPDM E/R converts the received power generation command value into the power generation command signal (PWM signal) and sends it to the IC voltage regulator.
Alternator (IC voltage regulator)	IC voltage regulator controls the power generation voltage by the target power generation voltage based on the received power generation command signal. When there is no power generation command signal, the alternator performs the normal power generation according to the characteristic of the IC voltage regulator.

B TERMINAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

DTC/CIRCUIT DIAGNOSIS

B TERMINAL CIRCUIT

Description

INFOID:000000005044642

“B” terminal circuit supplies power to charge the battery and to operate the vehicle’s electrical system.

Diagnosis Procedure

INFOID:000000005044643

1.CHECK “B” TERMINAL CONNECTION

1. Turn ignition switch OFF.
2. Check if “B” terminal is clean and tight.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair “B” terminal connection. Confirm repair by performing complete Starting/Charging system test. Refer to Technical Service Bulletin.

2.CHECK “B” TERMINAL CIRCUIT

Check voltage between alternator “B” terminal and ground.

Terminals			Voltage (Approx.)
(+)	(-)		
Alternator “B” terminal	Terminal		Battery voltage
F14	1	Ground	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Check harness for open between alternator and fusible link.

3.CHECK “B” TERMINAL CONNECTION (VOLTAGE DROP TEST)

1. Start engine, then engine running at idle and warm.
2. Check voltage between battery positive terminal and alternator “B” terminal.

Terminals			Voltage (Approx.)
(+)	(-)		
Battery positive terminal	Alternator “B” terminal	Terminal	Less than 0.2 V
	F14	1	

Is the inspection result normal?

YES >> “B” terminal circuit is normal. Refer to [CHG-2, "Work Flow"](#).

NO >> Check harness between battery and alternator for poor continuity.

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L TERMINAL CIRCUIT (OPEN)

< DTC/CIRCUIT DIAGNOSIS >

L TERMINAL CIRCUIT (OPEN)

Description

INFOID:000000005044644

The "L" terminal circuit controls the charge warning lamp. The charge warning lamp illuminates when the ignition switch is set to ON or START. When the alternator is providing sufficient voltage with the engine running, the charge warning lamp will go off. If the charge warning lamp illuminates with the engine running, a malfunction is indicated.

Diagnosis Procedure

INFOID:000000005044645

1. CHECK "L" TERMINAL CONNECTION

1. Turn ignition switch OFF.
2. Check if "L" terminal is clean and tight.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair "L" terminal connection. Confirm repair by performing complete Starting/Charging system test. Refer to Technical Service Bulletin.

2. CHECK "L" TERMINAL CIRCUIT (OPEN)

1. Disconnect alternator connector.
2. Apply ground to alternator harness connector terminal.
3. Check condition of the charge warning lamp with the ignition switch in the ON position.

Alternator harness connector	Terminal	Ground	Condition	
			Ignition switch position	Charge warning lamp
F15	3		ON	Illuminate

Does it illuminate?

YES >> "L" terminal circuit is normal. Refer to [CHG-2. "Work Flow"](#).

NO >> GO TO 3.

3. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the battery cable from the negative terminal.
2. Disconnect the combination meter connector.
3. Check continuity between alternator harness connector and combination meter harness connector.

Alternator harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F15	3	M34	38	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the harness or connector.

4. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check continuity between combination meter harness connector M34 terminal 28 and 10A fuse [No.3, located in the fuse block(J/B)].

Does continuity exist?

YES >> GO TO 5.

NO >> Repair the harness.

5. CHECK POWER SUPPLY CIRCUIT

1. Connect the battery cable to the negative terminal.
2. Check voltage between combination meter harness connector and ground.

L TERMINAL CIRCUIT (OPEN)

< DTC/CIRCUIT DIAGNOSIS >

Terminals		(-)	Condition	Voltage (Approx.)
(+)				
Combination meter harness connector	Terminal			
M34	28	Ground	When the ignition switch is in ON position	Battery voltage

Is the inspection result normal?

YES >> Replace combination meter.

NO >> Inspect the power supply circuit. Refer to [PG-38, "Wiring Diagram - IGNITION POWER SUPPLY - "](#)

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L TERMINAL CIRCUIT (SHORT)

< DTC/CIRCUIT DIAGNOSIS >

L TERMINAL CIRCUIT (SHORT)

Description

INFOID:000000005044646

The "L" terminal circuit controls the charge warning lamp. The charge warning lamp illuminates when the ignition switch is set to ON or START. When the alternator is providing sufficient voltage with the engine running, the charge warning lamp will go off. If the charge warning lamp illuminates with the engine running, a malfunction is indicated.

Diagnosis Procedure

INFOID:000000005044647

1. CHECK "L" TERMINAL CIRCUIT (SHORT)

1. Turn ignition switch OFF.
2. Disconnect alternator connector.
3. Turn ignition switch ON.

Does charge warning lamp illuminate?

YES >> GO TO 2.

NO >> Refer to [CHG-2. "Work Flow"](#).

2. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect combination meter connector.
4. Check continuity between combination meter harness connector and ground.

Combination meter harness connector		Ground	Continuity
Connector No.	Terminal No.		
M34	38		Not existed

Is the inspection result normal?

YES >> Replace combination meter.

NO >> Repair the harness.

S TERMINAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

S TERMINAL CIRCUIT

Description

INFOID:000000005044648

The output voltage of the alternator is controlled by the IC voltage regulator at the "S" terminal detecting the input voltage.

The "S" terminal circuit detects the battery voltage to adjust the alternator output voltage with the IC voltage regulator.

Diagnosis Procedure

INFOID:000000005044649

1. CHECK "S" TERMINAL CONNECTION

1. Turn ignition switch OFF.
2. Check if "S" terminal is clean and tight.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair "S" terminal connection. Confirm repair by performing complete Starting/Charging system test. Refer to Technical Service Bulletin.

2. CHECK "S" TERMINAL CIRCUIT

Check voltage between alternator harness connector and ground.

Terminals		Voltage (Approx.)
(+)	(-)	
Alternator harness connector	Terminal	Battery voltage
F15	4	

Is the inspection result normal?

YES >> Refer to [CHG-2. "Work Flow"](#).

NO >> Check harness for open between alternator and fuse.

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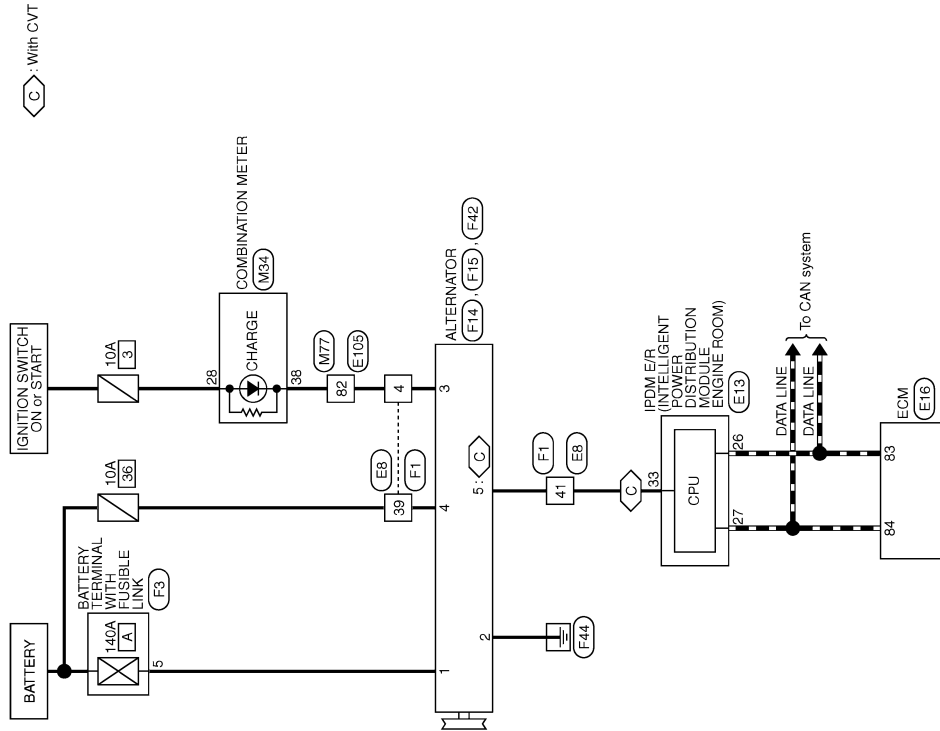
CHARGING SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

CHARGING SYSTEM

Wiring Diagram - CHARGING SYSTEM -

INFOID:000000005044650



CHARGING SYSTEM

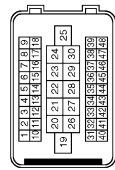
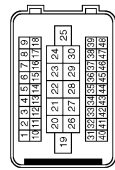


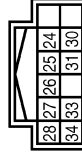
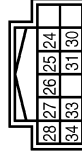


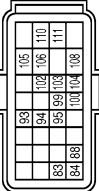
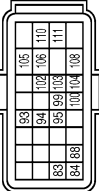






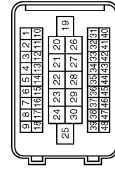
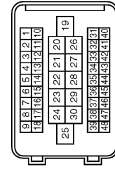














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CHARGING SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

CHARGING SYSTEM

Connector No. EB	WIRE TO WIRE	SAA338B-RS10-SJZZ	Terminal No. 4	Color of Wire W	Signal Name [Specification]	Terminal No. 82	Color of Wire W	Signal Name [Specification]
Connector Name			39	SB		82	W	
Connector Type			41	O				
								
								
Connector No. E13	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	TR12FV-HH	Terminal No. 26	Color of Wire P	Signal Name [Specification]	Terminal No. 83	Color of Wire L	Signal Name [Specification]
Connector Name			27	L		84	P	
Connector Type			33	O				
								
								
Connector No. E16	ECM	RR24FB-RZP-L-RH	Terminal No. 83	Color of Wire L	Signal Name [Specification]	Terminal No. 84	Color of Wire P	Signal Name [Specification]
Connector Name					CAN-L			CAN-H
Connector Type								
								
								
Connector No. E105	WIRE TO WIRE	TR80MMF-CS16-TM4	Terminal No. 82	Color of Wire W	Signal Name [Specification]	Terminal No. 82	Color of Wire W	Signal Name [Specification]
Connector Name								
Connector Type								
								
								
Connector No. F1	WIRE TO WIRE	SAA338FE-RS10-SJZZ	Terminal No. 4	Color of Wire Y	Signal Name [Specification]	Terminal No. 3	Color of Wire LG	Signal Name [Specification]
Connector Name			39	G		4	G	
Connector Type			41	O		5	O	
								
								
Connector No. F3	BATTERY TERMINAL WITH FUSIBLE LINK		Terminal No. 5	Color of Wire B/R	Signal Name [Specification]	Terminal No. 1	Color of Wire B/R	Signal Name [Specification]
Connector Name								
Connector Type								
								
								
Connector No. F14	ALTERNATOR		Terminal No. 1	Color of Wire B/R	Signal Name [Specification]	Terminal No. 3	Color of Wire LG	Signal Name [Specification]
Connector Name						4	G	
Connector Type						5	O	
								
								
Connector No. F15	ALTERNATOR	HS03FB	Terminal No. 3	Color of Wire LG	Signal Name [Specification]	Terminal No. 4	Color of Wire G	Signal Name [Specification]
Connector Name						5	O	
Connector Type								
								
								

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< DTC/CIRCUIT DIAGNOSIS >

CHARGING SYSTEM

Connector No.	F42
Connector Name	ALTERNATOR
Connector Type	-



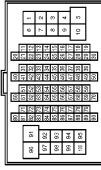
Terminal No.	2	Color of Wire	B/Y	Signal Name [Specification]	-
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Connector No.	M34
Connector Name	COMBINATION METER
Connector Type	T140FW-NH



Terminal No.	28	Color of Wire	GR	Signal Name [Specification]	IGNITION SIGNAL
	38	GR		ALTERNATOR SIGNAL	

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	T140FW-S16-TM4



Terminal No.	82	Color of Wire	GR	Signal Name [Specification]	-
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JCMWM4096GB

CHARGING SYSTEM

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

CHARGING SYSTEM

Symptom Table

INFOID:000000005044651

Symptom	Reference
Discharged battery	Refer to CHG-2, "Work Flow" .
The charge warning lamp does not illuminate when the ignition switch is set to ON.	
The charge warning lamp does not turn OFF after the engine starts.	
The charging warning lamp turns ON when increasing the engine speed.	

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PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:000000005188242

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the "SRS AIR BAG".
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

Precaution for Power Generation Voltage Variable Control System

INFOID:000000005044654

CAUTION:

For this model, the battery current sensor that is installed to the battery cable at the negative terminal measures the charging/discharging current of the battery, and performs various controls. If the electrical component or the ground wire is connected directly to the battery terminal, the current other than that being measured with the battery current sensor is charging to or discharging from the battery. This condition causes the malfunction of the control, and then the battery discharge may occur. Do not connect the electrical component or the ground wire directly to the battery terminal.

PREPARATION

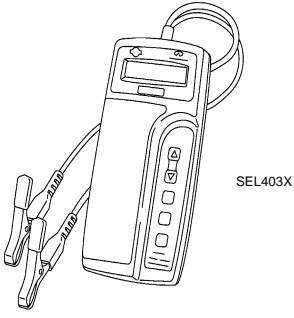
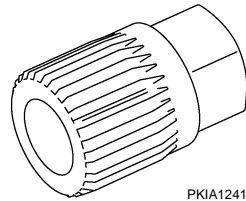
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PREPARATION

PREPARATION


Special Service Tools

INFOID:000000005044655

Tool number (Kent-Moore No.) Tool name	Description
<p>— (J-44373 Model MCR620) Starting/Charging System Tester</p>  <p>SEL403X</p>	<p>Tests starting and charging systems. For operating instructions, refer to Technical Service Bulletin.</p>
<p>KV10118200 (included in the adapter kit: Mot. 1732) Alternator pulley adapter</p>  <p>PKIA1241E</p>	<p>Removing and installing alternator pulley</p>

Commercial Service Tools

INFOID:000000005044656

Tool name	Description
<p>Power tool</p>  <p>PIIB1407E</p>	<p>Loosening bolts, nuts and screws</p>

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CHG

CHARGING SYSTEM PRELIMINARY INSPECTION

< PERIODIC MAINTENANCE >

PERIODIC MAINTENANCE

CHARGING SYSTEM PRELIMINARY INSPECTION

Inspection Procedure

INFOID:000000005044657

1. CHECK BATTERY TERMINALS CONNECTION

Check if battery terminals are clean and tight.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair battery terminals connection.

2. CHECK FUSE

Check for blown fuse and fusible link.

Unit	Power source (Power supply terminals)	Fuse No.
Alternator	Battery ("S" terminal)	36
Combination meter	Ignition switch ON ("L" terminal)	3

Is the inspection result normal?

YES >> GO TO 3.

NO >> Be sure to eliminate the cause of malfunction before installing new fuse.

3. CHECK "E" TERMINAL CONNECTION (ALTERNATOR GROUND)

Check if "E" terminal (alternator ground) is clean and tight.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair "E" terminal (alternator ground) connection.

4. CHECK DRIVE BELT TENSION

Check drive belt tension. Refer to [EM-13. "Checking"](#)

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair as needed.

POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM OPERATION INSPECTION

< PERIODIC MAINTENANCE >

POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM OPERATION INSPECTION

Inspection Procedure

INFOID:000000005044658

CAUTION:

When performing this inspection, always use a charged battery that has completed the battery inspection. (When the charging rate of the battery is low, the response speed of the voltage change will become slow. This can cause an incorrect inspection.)

1. CHECK ECM (CONSULT-III)

Perform ECM self-diagnosis with CONSULT-III. Refer to [EC-98. "CONSULT-III Function"](#).

Self-diagnostic results content

No malfunction detected>> GO TO 2.

Malfunction detected>> Check applicable parts, and repair or replace corresponding parts.

2. CHECK OPERATION OF POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM

1. Connect CONSULT-III and start the engine.
2. The selector lever is in "P" or "N" position and all of the electric loads and A/C, etc. are turned OFF.
3. Select "ALTERNATOR DUTY" at "Active Test" of "ENGINE", and then check the value of "BATTERY VOLT" monitor when DUTY value of "ALTERNATOR DUTY" is set to 40.0%.

"BATTERY VOLT"

2 seconds after setting the DUTY value of "ALTERNATOR DUTY" to 40.0% : 12 - 13.6 V

4. Check the value of "BATTERY VOLT" monitor when DUTY value of "ALTERNATOR DUTY" is set to 80.0%.

"BATTERY VOLT"

20 seconds after setting the DUTY value of "ALTERNATOR DUTY" to 80.0% : +0.5 V or more against the value of "BATTERY VOLT" monitor when DUTY value is 40.0%

Is the measurement value within the specification?

YES >> INSPECTION END

NO >> GO TO 3.

3. CHECK IPDM E/R (CONSULT-III)

Perform IPDM E/R self-diagnosis with CONSULT-III. Refer to [PCS-13. "CONSULT-III Function \(IPDM E/R\)"](#).

Self-diagnostic results content

No malfunction detected>> GO TO 4.

Malfunction detected>> Check applicable parts, and repair or replace corresponding parts.

4. CHECK HARNESS BETWEEN ALTERNATOR AND IPDM E/R

1. Turn ignition switch OFF.
2. Disconnect alternator connector and IPDM E/R connector.
3. Check continuity between alternator harness connector and IPDM E/R harness connector.

Alternator harness connector		IPDM E/R harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F15	5	E13	33	Existed

4. Check continuity between alternator harness connector and ground.

POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM OPERATION INSPECTION

< PERIODIC MAINTENANCE >

Alternator harness connector		Ground	Continuity
Connector	Terminal		
F15	5		Not existed

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair harness or connector between IPDM E/R and alternator.

ALTERNATOR

< REMOVAL AND INSTALLATION >

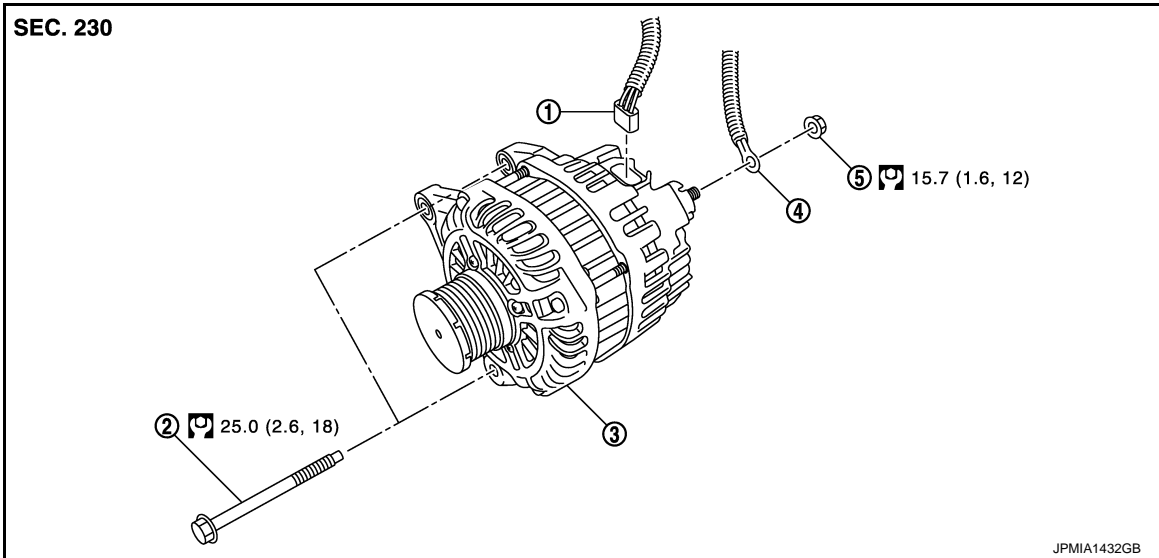
REMOVAL AND INSTALLATION

ALTERNATOR

Exploded View

INFOID:000000005044659

REMOVAL

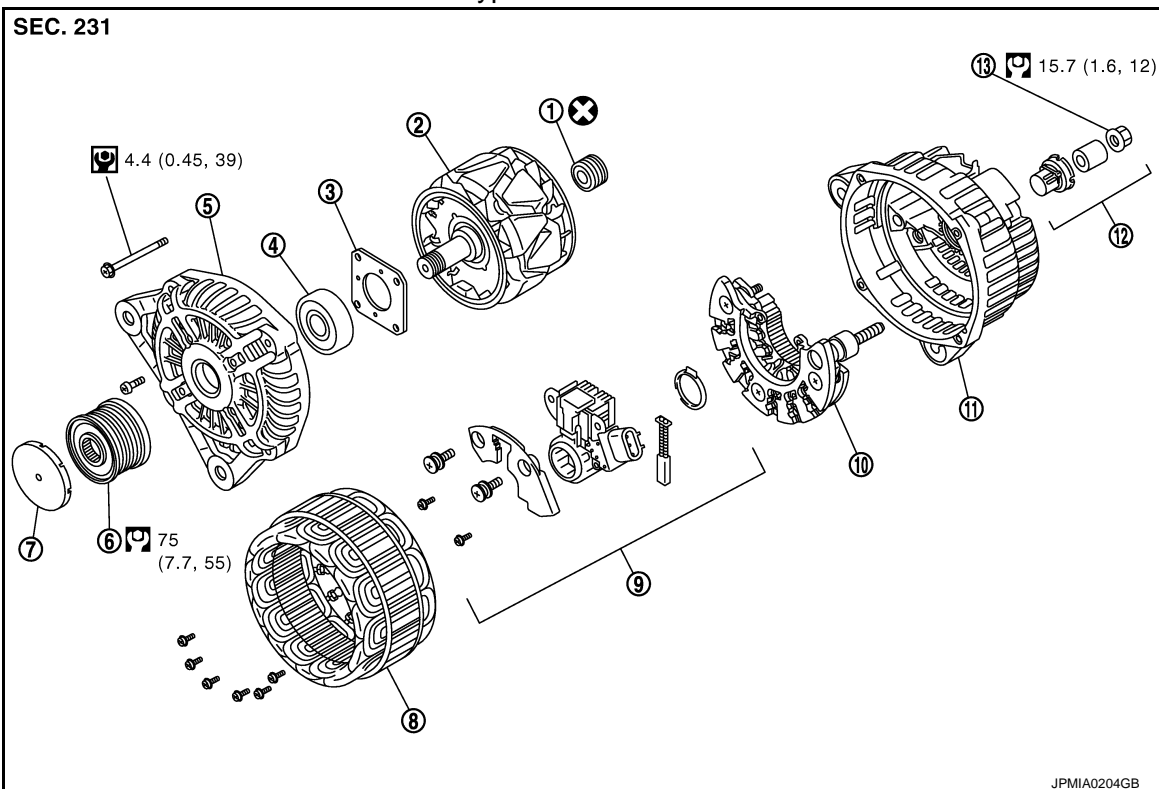


1. Alternator connector
2. Alternator mounting bolt
3. Alternator
4. "B" terminal harness
5. "B" terminal nut

Refer to [GI-4, "Components"](#) for symbols in the figure.

DISASSEMBLY

Type: A002TJ0581



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ALTERNATOR

< REMOVAL AND INSTALLATION >

- | | | |
|----------------------|---------------------------|----------------------------------|
| 1. Rear bearing | 2. Rotor assembly | 3. Retainer |
| 4. Front bearing | 5. Front bracket assembly | 6. Pulley |
| 7. Pulley cap | 8. Stator assembly | 9. IC voltage regulator assembly |
| 10. Diode assembly | 11. Rear bracket assembly | 12. Terminal set |
| 13. "B" terminal nut | | |

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

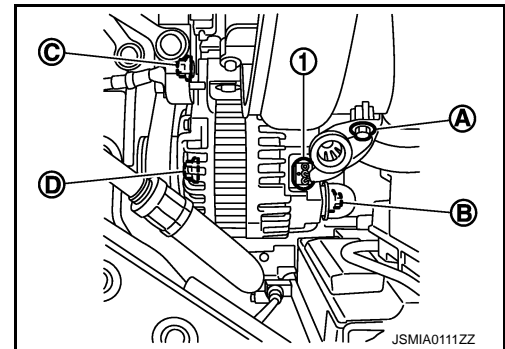
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REMOVAL

1. Disconnect the battery cable from the negative terminal.
2. Remove drive belt. Refer to [EM-13, "Removal and Installation"](#).
3. Remove radiator reservoir tank.
4. Remove engine cover.
5. Remove engine cover clamp bolt (A), and engine cover clamp.
6. Remove "B" terminal nut (B) and "B" terminal harness.
7. Disconnect alternator connector (1).
8. Remove upper alternator mounting bolt (C).
9. Completely loosen lower alternator mounting bolt (D), and pull it out until the bolt head is in contact with the side member. And then, remove the alternator by pulling it forward.

NOTE:

The alternator can be removed together with the bolts by pulling it forward and using the alternator bracket bolt hole cutout.



10. Remove alternator upward from the vehicle.

INSTALLATION

Install in the reverse order of removal.

CAUTION:

Be sure to tighten "B" terminal nut carefully.

- Temporarily tighten the alternator bolts in order from the lower to the upper, and then tighten them in order from the upper to the lower.

CAUTION:

For the alternator, the front side (pulley side) surface is the reference surface. Fit the reference surface to the alternator mounting part, and then tighten the bolts.

- Install alternator, and check tension of belt. Refer to [EM-13, "Checking"](#).

Inspection

INFOID:000000005044661

ALTERNATOR PULLEY INSPECTION

Perform the following.

- One-way clutch pulley check.

CAUTION:

Be careful not to damage rotor

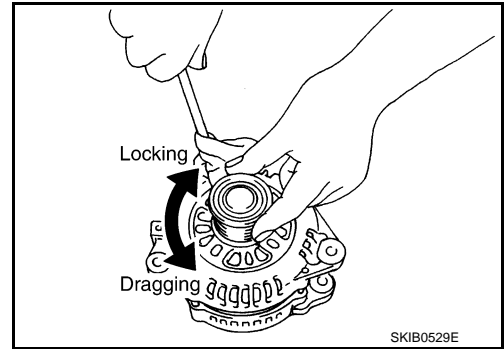
NOTE:

Secure rotor using suitable tool and a rolled shop towel.

ALTERNATOR

< REMOVAL AND INSTALLATION >

1. Check for locking; (Outer ring is turned clockwise when viewed from front.)
 - If it rotates in both directions, replace pulley.
2. Check for dragging. (Outer ring is turned counterclockwise when viewed from front.)
 - If it locks or unusual resistance is felt, replace pulley.



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SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Alternator

INFOID:000000005044662

Type		A002TJ0581
		MITSUBISHI make
Nominal rating	[V - A]	12 -110
Ground polarity		Negative
Minimum revolution under no-load (When 13.5 V is applied)	[rpm]	Less than 1,300
Hot output current (When 13.5 V is applied)	[A/rpm]	More than 27/1,300 More than 95/2,500 More than 116/5,000
Regulated output voltage	[V]	14.1 - 14.7*
Minimum length of brush	[mm (in)]	More than 5.00 (0.197)
Brush spring pressure	[N (g, oz)]	4.1 - 5.3 (418 - 541, 14.7 - 19.1)
Slip ring minimum outer diameter	[mm (in)]	More than 22.1 (0.870)
Rotor (Field coil) resistance	[Ω]	1.8 - 2.2

*: Adjustment range of power generation voltage variable control is 11.4 - 15.6 V.