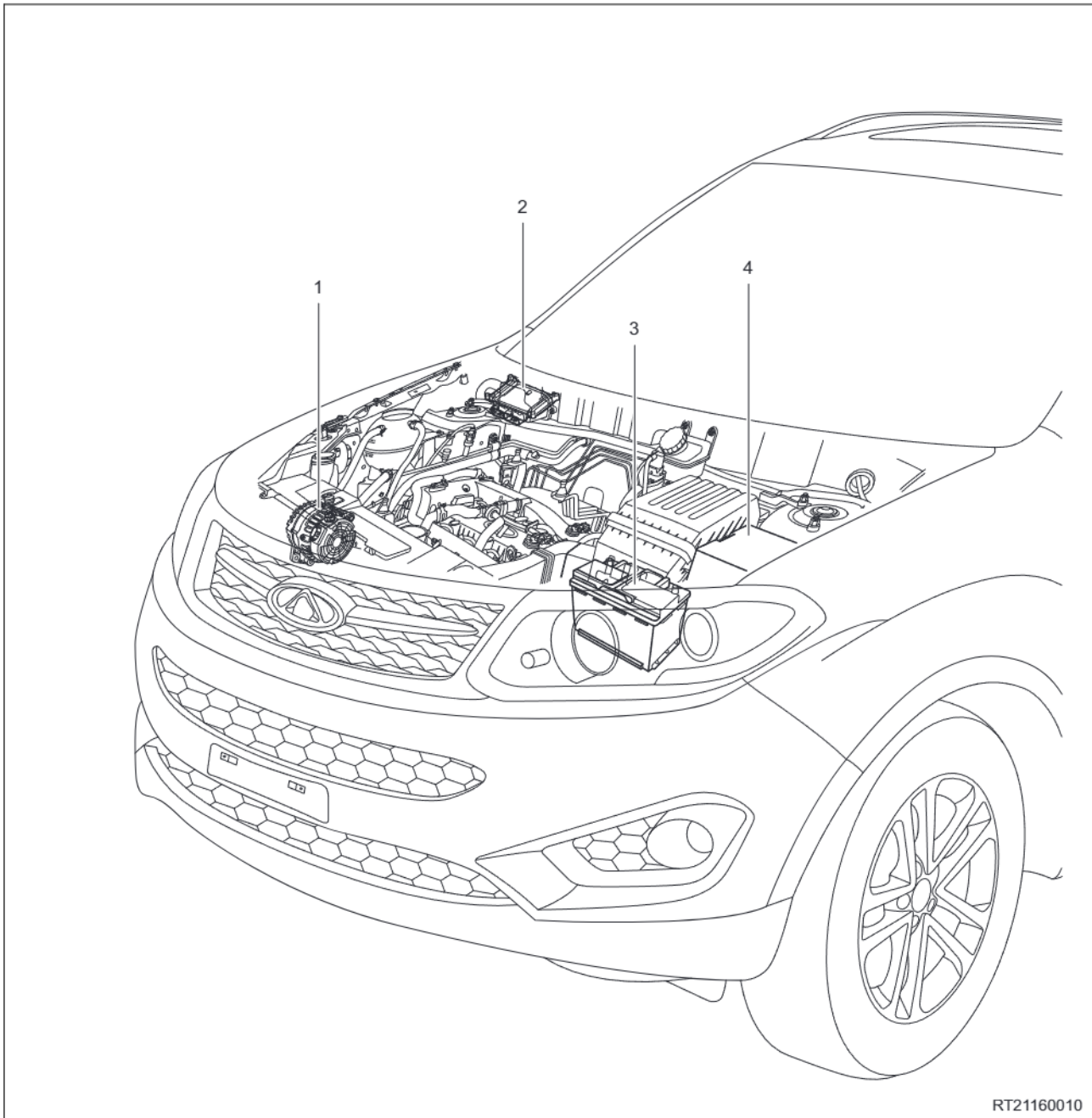

SQR484F CHARGING SYSTEM

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GENERAL INFORMATION

Description



RT21160010

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1 - Alternator	2 - ECM
3 - Battery	4 - Fuse and Relay Box

Alternator is a key component of the charging system. It is a device that converts mechanical energy into electrical energy and generates DC voltage through a rectifying circuit, as one of main power sources of the vehicle. The alternator operates as a complete assembly. If alternator fails for any reason, the entire unit must be replaced.

Alternator Operation

Alternator is a silicon rectifying alternator, which mainly consists of rotor, stator and rectifier.

When direct current flows to the rotor winding, rotor claw establishes magnetic field to produce alternating induced electromotive force. The stator is installed on the outside of the rotor, and it is secured together with the front and rear end covers of alternator. When the alternator rotor is rotated by drive belt, magnetic pole lines cut the stator winding, causing a change in the magnetic flux of the stator winding; thus, the stator winding generates alternating induced electromotive force, producing alternating current. The three-phase alternating current generated by alternator is converted to direct current from alternating current by rectifier, and the direct current is transmitted to the vehicle electrical system and battery.

Specifications

Torque Specifications

Description	Torque (N·m)
Battery Pressure Plate Fixing Nut	7 ± 1
Coupling Bolt Between Battery Pressure Plate and Tank Upper Crossmember	7 ± 1
Coupling Bolt Between Battery Tray and Air Filter Bracket	7 ± 1.5
Battery Tray Fixing Bolt	20 ± 2
Battery Tray Bracket Fixing Bolt	20 ± 2
Alternator Output Cable Fixing Nut	18 - 22
Alternator Fixing Bolt	$20 + 5$

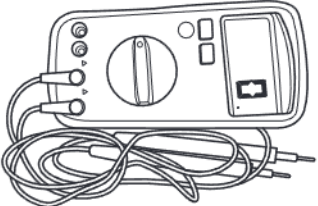
Battery Specification

Engine Type	Battery Type	Specification
SQR484F	6-QW-70QR	12 V, 70 Ah, CCA (SAE) 560 A

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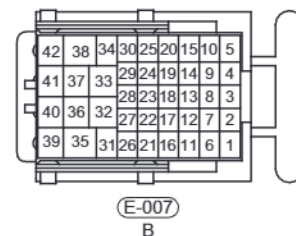
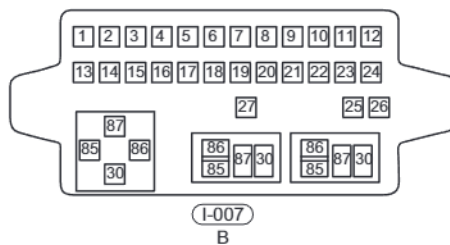
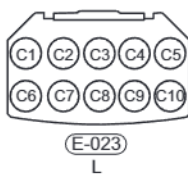
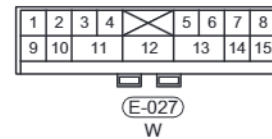
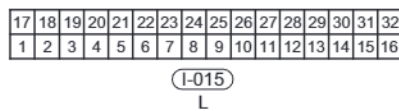
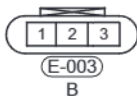
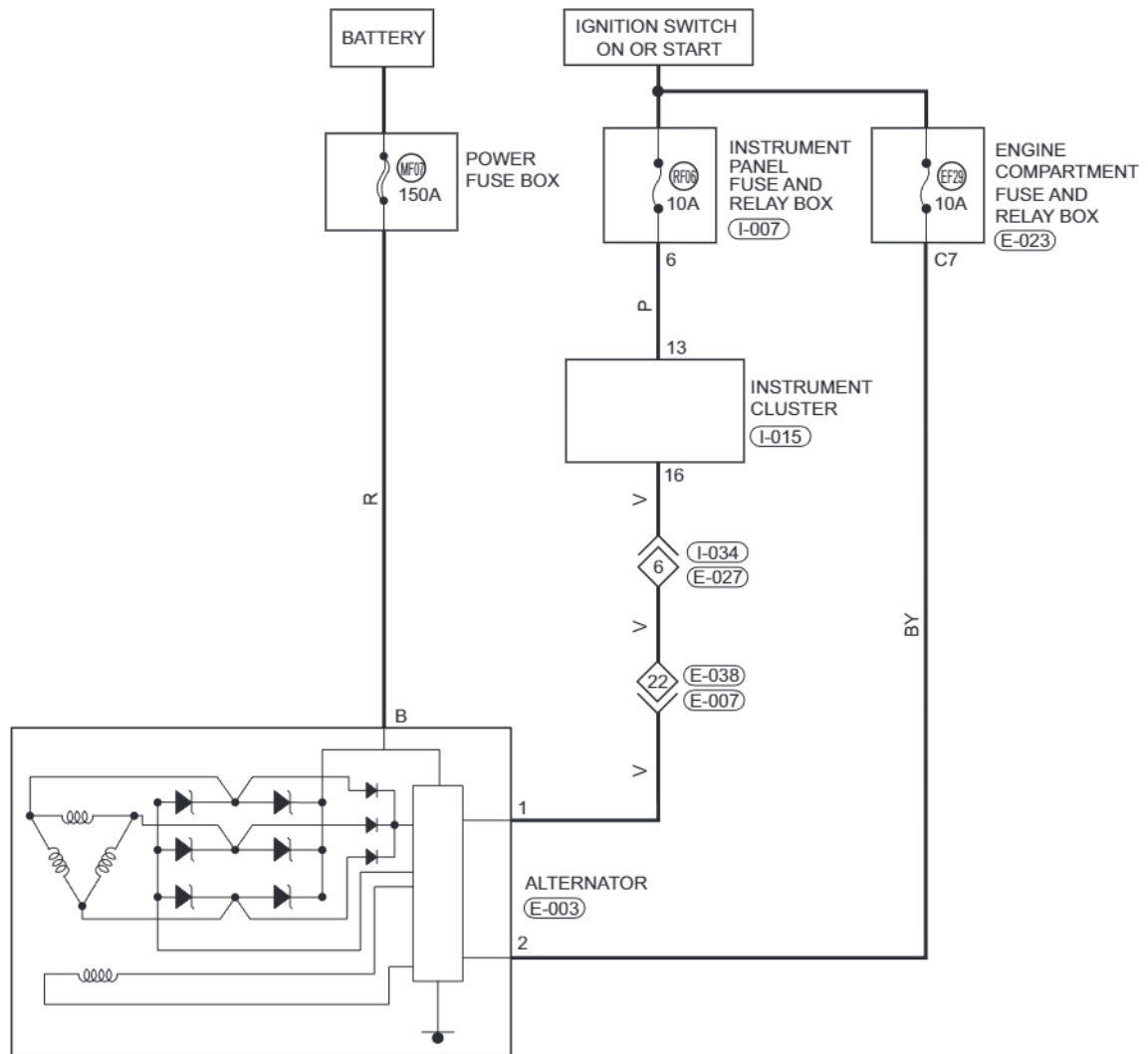
Tool

General Tool

Digital Multimeter	 RCH0000002
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Circuit Diagram

Charging System



ET21160010

DIAGNOSIS & TESTING

Problem Symptoms Table

Symptom	Suspected Area	See page
Charging system warning light comes on after engine starts	Alternator	16-10
	Instrument cluster	38-42
	Wire harness	-
Noises are heard from alternator after engine starts	Fixing bolt (loose)	16-4
	Accessory drive belt (misaligned, loose or fault)	07-23
	Alternator	16-10

Charging System Charging Voltage Inspection

1. Leave vehicle under no load test condition and idle the engine. Measure battery voltage with digital multimeter.

Standard voltage: 14.1 - 14.7 V

If result is not as specified, replace alternator ([See page 16-10](#)).

2. Leave vehicle under load test condition and idle the engine. Measure battery voltage with digital multimeter.

Load test condition:

- Set headlight to high beam;
- Turn on blower and adjust blower speed to the highest;
- Turn on "A/C" switch;
- Turn cold and hot switch to adjust temperature of outlet to the highest.

Standard voltage: 14.1 - 14.7 V

If result is not as specified, replace alternator ([See page 16-10](#)).

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CAUTION

- If charging system warning light comes on, the charging system may have a malfunction.
- If noises are heard from alternator or generating capacity is extremely high or low, repair or replace the alternator.

ON-VEHICLE SERVICE

Battery

Inspection

1. Check that battery terminals are not loose or corroded.
If battery terminals are corroded, clean them.
2. Check the battery for damage, deformation or leakage. If serious damage, deformation or leakage is found, replace the battery.
3. Check the battery voltage.
Turn ignition switch to ON, and turn it off 20 to 30 seconds after turning on the headlights. This will eliminate the surface charge on the battery. Measure battery voltage with digital multimeter.

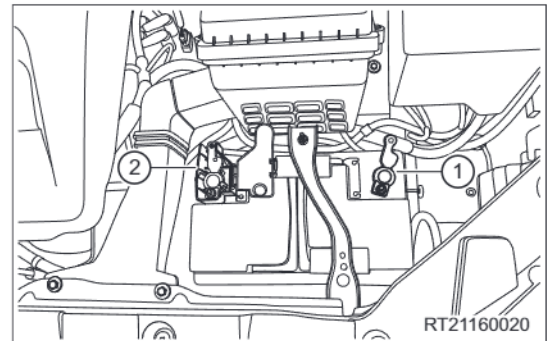
Testing Temperature	Specification
20°C	12 - 13 V

Removal

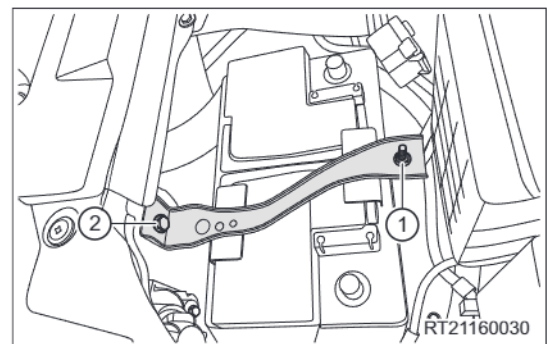
CAUTION

- Be sure to wear necessary safety equipment to prevent accidents when repairing.
- Try to prevent body paint surface from being scratched during removal and installation.

1. Turn off all the electrical equipment and ignition switch.
2. Remove the battery.
 - a. Loosen the negative battery cable locking nut, and remove the negative (-) battery cable (1).
 - b. Open the battery positive terminal cover, loosen the positive battery cable locking nut, and remove the positive (+) battery cable (2).



- c. Remove the battery pressure plate fixing nut (1).
(Tightening torque: 7 ± 1 N·m)
- d. Remove the coupling bolt (2) between battery pressure plate and tank upper crossmember.
(Tightening torque: 7 ± 1 N·m)



 CAUTION

- Please be careful to prevent metal tools from contacting both electrodes of battery at the same time or accidentally touching the positive electrode and vehicle body.

e. Remove the battery.

Installation

Installation is in the reverse order of removal.

 CAUTION

- Replace battery with a new one which conforms to the specifications.
- Used battery contains sulfuric acid and lead, so never discard it at will. Please dispose of it at a qualified local waste treatment station.

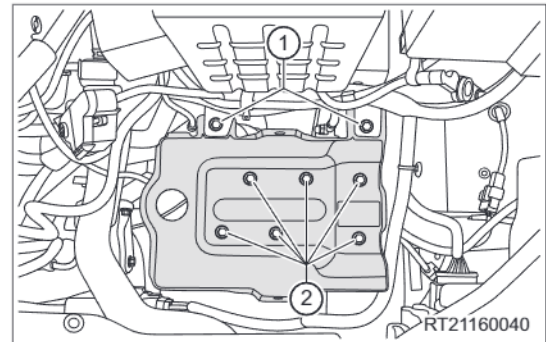
Battery Tray and Tray Bracket

Removal

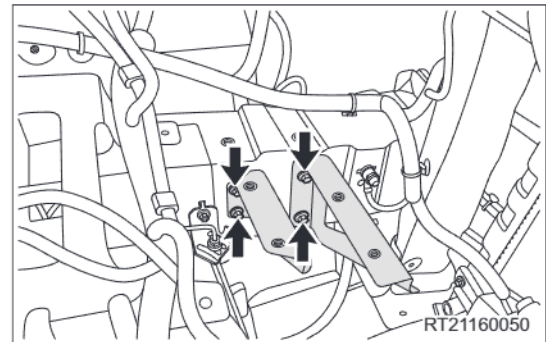
CAUTION

- Be sure to wear necessary safety equipment to prevent accidents when repairing.
- Try to prevent body paint surface from being scratched during removal and installation.

1. Turn off all the electrical equipment and ignition switch.
2. Remove the battery (See page 16-7).
3. Remove the battery tray.
 - a. Remove 2 coupling bolts (1) between battery tray and air filter bracket.
(Tightening torque: $7 \pm 1 \text{ N}\cdot\text{m}$)
 - b. Remove 6 fixing bolts (2) from the battery tray.
(Tightening torque: $20 \pm 2 \text{ N}\cdot\text{m}$)



- c. Remove the battery tray.
4. Remove the battery tray bracket.
 - a. Remove 4 fixing bolts (arrow) from the battery tray bracket.
(Tightening torque: $20 \pm 2 \text{ N}\cdot\text{m}$)



- b. Remove 2 battery tray brackets.

Installation

Installation is in the reverse order of removal.

Alternator

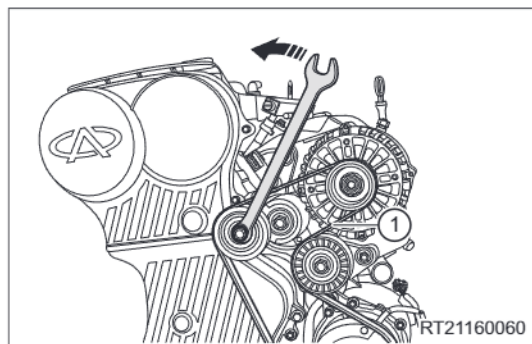
Removal

CAUTION

- Be sure to wear necessary safety equipment to prevent accidents when repairing.
- Try to prevent body paint surface from being scratched during removal and installation.

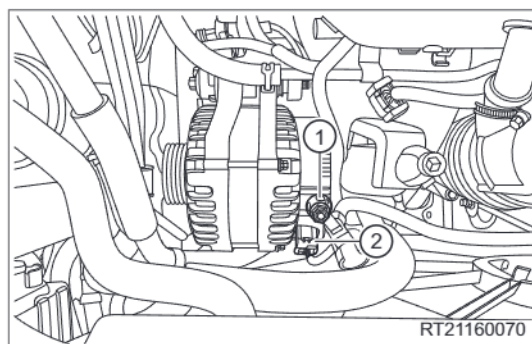
1. Turn off all the electrical equipment and ignition switch.
2. Disconnect the negative battery cable.
3. Remove the engine trim cover assembly (See page 10-10).
4. Remove the engine lower right protector assembly (See page 48-29).
5. Loosen the accessory drive belt.

- a. Put 15# open wrench (or socket) between engine and right side-member, and tighten the tensioner pulley bolt.
- b. Rotate open wrench counterclockwise firmly indicated by the arrow shown in the illustration. Loosen the accessory drive belt (1) after it is slack.

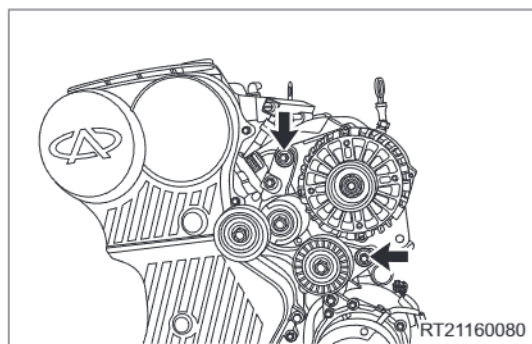


6. Remove the alternator.

- a. Move away the terminal cap, remove the fixing nut (1) from alternator output cable, and move away the alternator output cable. (Tightening torque: 18 - 22 N·m)
- b. Disconnect the alternator connector (2).



- c. Remove 2 fixing bolts (arrow) from the alternator. (Tightening torque: 20 + 5 N·m)



- d. Remove the alternator from alternator bracket.

Installation

Installation is in the reverse order of removal.

