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**NOTE**

This Service Manual excludes information for engine.
As for the total servicing information as a generator set, please refer in conjunction with the Subaru EX35/40 OHC Engine Service Manual.
## 1. SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>RGX6500</th>
<th>RGX7500</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>Brush, self-exciting, 2-poles, single phase</td>
<td>AVR type</td>
</tr>
<tr>
<td><strong>Voltage regulating system</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AC Output</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated voltage V Hz</td>
<td>220, 240-50, 220, 120/240-60</td>
<td></td>
</tr>
<tr>
<td>Rated current A 50Hz</td>
<td>20.9, 19.1</td>
<td>31.5, 25.0</td>
</tr>
<tr>
<td>60Hz</td>
<td>27.1, 20.8</td>
<td>50.25</td>
</tr>
<tr>
<td>Rated output VA (W) 50Hz</td>
<td>48000</td>
<td>5500</td>
</tr>
<tr>
<td>60Hz</td>
<td>5000</td>
<td>6000</td>
</tr>
<tr>
<td>Maximum output VA (W) 50Hz</td>
<td>4800</td>
<td>5500</td>
</tr>
<tr>
<td>60Hz</td>
<td>5000</td>
<td>6000</td>
</tr>
<tr>
<td>Rated power factor</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td><strong>Safety device type</strong></td>
<td>Fuse-less circuit breaker</td>
<td></td>
</tr>
<tr>
<td><strong>DC Output</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated voltage V</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Rated current A</td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td><strong>Model</strong></td>
<td>EX35D</td>
<td>EX40D</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>SUBARU, Air-cooled, 4-stroke, CHC, Gasoline Engine</td>
<td></td>
</tr>
<tr>
<td><strong>Displacement</strong> mL</td>
<td>404</td>
<td></td>
</tr>
<tr>
<td><strong>Fuel</strong></td>
<td>Automotive Unleaded Gasoline</td>
<td></td>
</tr>
<tr>
<td><strong>Fuel tank capacity</strong> L</td>
<td>27*3</td>
<td></td>
</tr>
<tr>
<td><strong>Rated continuous operation</strong> H</td>
<td>3.31</td>
<td>3.87</td>
</tr>
<tr>
<td><strong>Engine oil capacity</strong> L</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td><strong>Spark plug</strong></td>
<td>BR-8HS NGK</td>
<td></td>
</tr>
<tr>
<td><strong>Starting system</strong></td>
<td>Electric starter / Recoil</td>
<td></td>
</tr>
<tr>
<td><strong>Direction of rotation</strong></td>
<td>Counter-clockwise</td>
<td></td>
</tr>
<tr>
<td><strong>Maximum ambient air temperature</strong></td>
<td>50</td>
<td></td>
</tr>
<tr>
<td><strong>Dimension</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length (mm)</td>
<td>25&quot; (635)*3</td>
<td></td>
</tr>
<tr>
<td>Width (mm)</td>
<td>22&quot; (530)</td>
<td></td>
</tr>
<tr>
<td>Height (mm)</td>
<td>24&quot; (580)</td>
<td></td>
</tr>
<tr>
<td><strong>Dry weight</strong> (kg)</td>
<td>187/207(87.4)*3</td>
<td>183/215(86.5)*3</td>
</tr>
</tbody>
</table>

Specifications are subject to change without notice.

*1: ( ) shows dimensions with Battery frame
*2: ( ) shows dry weight with Electric starter.
*3: ( ) fuel tank capacity measured at a 20% incline is as follows:
  RGX6500/RGX7500 22.0 liters
2. PERFORMANCE CURVES

RGX6500
60Hz 240V

RGX7500
60Hz 240V
3. GENERAL DESCRIPTION

RGX6500, RGX7500

Fuel tank
Control panel
Engine switch
Oil gauge (oil filler)
Oil drain plug
Recoil starter
Recoil starter handle
Fuel strainer (Fuel Valve)
Fuel gauge
Tank cap
Choke lever
Spark plug cap
Air cleaner
Muffler cover
Exhaust outlet

Canister??
CONTROL PANEL

50Hz-220V, 240V, 60Hz-220V, 240V,

60Hz-110V, 220V
SERIAL NUMBER

CONSTRUCTION
RGX6500 / RGX7500

Isolator  Slip Ring  Through Bolt
4. RANGE OF APPLICATIONS

Generally, the power rating of an electrical appliance indicates the amount of work that can be done by it. The electric power required for operating an electrical appliance is not always equal to the output wattage of the appliance. The electrical appliances generally have a label showing their rated voltage, frequency, and power consumption (input wattage). The power consumption of an electrical appliance is the power necessary for using it. When using a generator for operating an electrical appliance, the power factor and starting wattage must be taken into consideration.

In order to determine the right size generator, it is necessary to add the total wattage of all appliances to be connected to the unit.

Refer to the followings to calculate the power consumption of each appliance or equipment by its type.

(1) Incandescent lamp, heater, etc. with a power factor of 1.0

   Total power consumption must be equal to or less than the rated output of the generator.

   Example: A rated 3000W generator can turn thirty 100W incandescent lamps on.

(2) Fluorescent lamps, motor driven tools, light electrical appliances, etc. with a smaller power factor

   Select a generator with a rated output equivalent to 1.2 to 2 times of the power consumption of the load. Generally the starting wattage of motor driven tools and light electrical appliances are 1.2 to 3 times larger than their running wattage.

   Example: A rated 250 W electric drill requires a 400 W generator to start it.

   NOTE 1: If a power factor correction capacitor is not applied to the fluorescent lamp, the more power shall be required to drive the lamps.

   NOTE 2: Nominal wattage of the fluorescent lamp generally indicates the output wattage of the lamp. Therefore, if the fluorescent lamp has no special indication as to the power consumption, efficiency should be taken into account as explained in item (5) on the following page.

(3) Mercury lamps with a smaller power factor

   Loads for mercury lamps require 2 to 3 times the indicated wattage during start-up.

   Example: A 400 W mercury lamp requires 800 W to 1200 W power source to be turned on. A rated 3000 W generator can power two or three 400 W mercury lamps.

(4) Initially loaded motor driven appliances such as water pumps, compressors, etc.

   These appliances require large starting wattage which is 3 to 5 times of running wattage.

   Example: A rated 900 W compressor requires a 4500 W generator to drive it.

   NOTE 1: Motor-driven appliances require the aforementioned generator output only at the starting. Once their motors are started, the appliances consume about 1.2 to 2 times their rated power consumption so that the excess power generated by the generator can be used for other electrical appliances.

   NOTE 2: Motor-driven appliances mentioned in items (3) and (4) vary in their required motor starting power depending on the kind of motor and start-up load. If it is difficult to determine the optimum generator capacity, select a generator with a larger capacity.
(5) Appliances without any indication as to power consumption

Some appliances have no indication as to power consumption; but instead the work load (output) is indicated. In such a case, power consumption is to be worked out according to the numerical formula mentioned below.

\[
\frac{\text{(Output of electrical appliance)}}{\text{(Efficiency)}} = \text{(Power consumption)}
\]

Efficiencies of some electrical appliances are as follows:

- Single-phase motor .... 0.6 to 0.75
- Fluorescent lamp ........ 0.7 to 0.8 (The smaller the motor, the lower the efficiency.)

Example 1: A 40W fluorescent lamp means that its luminous output is 40W. Its efficiency is 0.7 and accordingly, power consumption will be \(40 \div 0.7 = 57\) W. As explained in Item (2), multiply this power consumption value of 57 W by 1.2 to 2 and you will get the figure of the necessary capacity of a generator. In other words, a generator with a rated output of 1000W capacity can light nine to fourteen 40 W fluorescent lamps.

Example 2: Generally speaking, a 400 W motor means that its work load is 400 W. Efficiency of this motor is 0.7 and power consumption will be \(400 \div 0.7 = 570\) W. When this motor is used for a motor-driven tool, the capacity of the generator should be multiple of 570 W by 1.2 to 3 as explained in the item (3). 570 (W) \(\times\) 1.2 to 3 = 684 (W) to 1710 (W)

<table>
<thead>
<tr>
<th>Applications</th>
<th>Applicable Wattage(W)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50Hz</td>
</tr>
<tr>
<td>Incandescent lamp, Heater</td>
<td>4600</td>
</tr>
<tr>
<td>Fluorescent lamp, Electric tool</td>
<td>2550</td>
</tr>
<tr>
<td>Mercury lamp</td>
<td>1850</td>
</tr>
<tr>
<td>Pump, Compressor</td>
<td>1150</td>
</tr>
</tbody>
</table>

Table 4-1
NOTES: Wiring between generator and electrical appliances

1. Allowable current of cable

   Use a cable with an allowable current that is higher than the rated input current of the load (electrical appliance). If the input current is higher than the allowable current of the cable used, the cable will become excessively heated and deteriorate the insulation, possibly burning it out. Table 4-2 shows cables and their allowable currents for your reference.

2. Cable length

   If a long cable is used, a voltage drop occurs due to the increased resistance in the conductors decreasing the input voltage to the load (electrical product). As a result, the load can be damaged. Table 4-2 shows voltage drops per 100 meters of cable.

<table>
<thead>
<tr>
<th>Nominal cross section</th>
<th>A.W.G.</th>
<th>Allowable current</th>
<th>No. of strands/strands dia.</th>
<th>Resistance Ω/100m</th>
<th>Current Amp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm²</td>
<td>No.</td>
<td>A</td>
<td>No. mm</td>
<td>1A</td>
<td>3A 5A 8A 10A 12A 15A</td>
</tr>
<tr>
<td>0.75</td>
<td>18</td>
<td>7</td>
<td>30/0.18</td>
<td>2.477</td>
<td>2.5V 7.5V 12.5V - - -</td>
</tr>
<tr>
<td>1.25</td>
<td>16</td>
<td>12</td>
<td>50/0.16</td>
<td>1.486</td>
<td>1.5V 4.5V 7.5V 12V 15V 18V -</td>
</tr>
<tr>
<td>2.0</td>
<td>14</td>
<td>17</td>
<td>370/2.6</td>
<td>0.952</td>
<td>1V 3V 5V 8V 10V 12V 15V</td>
</tr>
<tr>
<td>3.5</td>
<td>12 to 10</td>
<td>23</td>
<td>45/0.32</td>
<td>0.517</td>
<td>- 1.5V 2.5V 4V 5V 6.5V 7.5V</td>
</tr>
<tr>
<td>5.5</td>
<td>10 to 8</td>
<td>35</td>
<td>70/0.32</td>
<td>0.332</td>
<td>- 1V 2V 2.5V 3.5V 4V 5V</td>
</tr>
</tbody>
</table>

Voltage drop indicates as

\[ V = \frac{1}{100} \times R \times I \times L \]

R means resistance (Ω/100 m) on the above table.
I means electric current through the wire (A).
L means the length of the wire (m).

The length of wire indicates round length, it means twice the length from generator to electrical tools.
5. MEASURING PROCEDURES

5-1 MEASURING INSTRUMENTS

(1) VOLTmeter
AC voltmeter is necessary.
The approximate AC voltage ranges of the
voltmeters to be used for various types of
generators are as follows:
0 to 150 V : Type with an output voltage of
110 or 120 V
0 to 300 V : Type with an output voltage of
220, 230 or 240 V
0 to 150 V, 0 to 330 V : Dual voltage type

(2) AMMETER
AC ammeter is necessary.
An AC ammeter with a range that can be
changed according to the current rating of
a given generator is most desirable.
(About 10 A, 20 A, 100 A)

(3) FREQUENCY METER
Frequency range : About 45 to 65Hz

NOTE : Be careful of the frequency meter's
input voltage range.
(4) CIRCUIT TESTER
Used for measuring resistance, etc.

(5) MEGGER TESTER
Used for measuring generator insulation resistance.
Select one with testing voltage range of 500V.

(6) TACHOMETER
Use the contactless type tacho meter.
5-2 AC OUTPUT MEASURING

Use a circuit above for measuring AC output. A hot plate or lamp with a power factor of 1.0 may be used as a load. Adjust the load and rpm, and check that the voltage range is as specified in the following table at the rated amperage and rated rpm.

<table>
<thead>
<tr>
<th>Model</th>
<th>Hz</th>
<th>120V</th>
<th>220V</th>
<th>240V</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGX6500</td>
<td>50</td>
<td>-</td>
<td>219 - 228</td>
<td>239 - 248</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>118 - 127</td>
<td>219 - 228</td>
<td>239 - 248</td>
</tr>
<tr>
<td>RGX7500</td>
<td>50</td>
<td>-</td>
<td>219 - 228</td>
<td>239 - 248</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>118 - 127</td>
<td>219 - 228</td>
<td>239 - 248</td>
</tr>
</tbody>
</table>

5-3 DC OUTPUT MEASURING

Measurement of DC output is executed with the switch turned ON while the current is regulated at 8.3A by adjusting the load to the generator. If the voltage is within the range from 10V, the voltage output is normal.

NOTE: If a battery is connected as a load to the generator, the DC output voltage will increase by approximately 1 to 2 V. Therefore, carefully observe the electrolyte level and do not overcharge the battery.

5-4 MEASURING INSULATION RESISTANCE

Use a megger tester to check the insulation resistance. Remove the control panel, and disconnect the connector of GREEN lead for ground. Connect a megger tester to one of receptacle output terminals and the ground terminal, then measure the insulation resistance.
An insulation resistance of 1 megohm or more is normal. (The original insulation resistance at the time of shipment from the factory is 10 megohm or more.) If it is less than 1 megohm, disassemble the generator and measure the insulation resistance of the stator, rotor and control panel individually.

(1) STATOR
Measure the insulation resistance between each lead wire and the core.

(2) ROTOR
Measure the insulation resistance between the slip ring and the core.

(3) CONTROL PANEL
Measure the insulation resistance between the live parts and the grounded parts.

Any part where the insulation resistance is less than 1MΩ has faulty insulation, and may cause electric leakage and electric shock. Replace the faulty part.
6. CHECKING FUNCTIONAL MEMBERS

6-1 RECEPTACLES
Using a circuit tester, check continuity between the two terminals at the rear of the receptacles while the receptacle is mounted on the control panel. When continuity is found between the output terminals of the receptacle with a wire connected across these terminals, the receptacle is normal. When the wire is removed and no continuity is found between these terminals, the receptacles are also normal.

6-2 CIRCUIT BREAKER
Check continuity between each of two terminals at the rear of the circuit breaker while it is mounted on the control panel. Normally, there is continuity between each of the two when the circuit breaker is on while there is no continuity when the circuit breaker is off.
6-3 STATOR
Disengage connectors on the wires from stator and check the resistance between wires with a circuit tester referring to the following table.

NOTE: If the circuit tester is not sufficiently accurate, it may not show the values given and may give erroneous readings. Erroneous readings will also occur when there is a wide variation of resistance among coil windings or when measurement is performed at ambient temperatures different from 20 °C (68 °F).

<table>
<thead>
<tr>
<th>Hz-Voltage</th>
<th>Stator coil</th>
<th>DC coil</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Red-White</td>
<td>Black-Blue</td>
</tr>
<tr>
<td>50-110 ~ 240</td>
<td>0.22 Ω</td>
<td>0.21 Ω</td>
</tr>
<tr>
<td>60-120 / 240</td>
<td>0.16 Ω</td>
<td>0.16 Ω</td>
</tr>
</tbody>
</table>

6-4 ROTOR ASSEMBLY
1) Field coil
Remove the brush holder and measure resistance between the slip rings.

NOTE: If the circuit tester is not sufficiently accurate, it may not show the values given and may give erroneous readings. Erroneous readings will also occur when there is a wide variation of resistance among coil windings or when measurement is performed at ambient temperatures different from 20 °C (68 °F).
2) Cleaning Slip rings
The slip ring surfaces must be uniformly bright. Slip rings showing black spots, excessive wear, or uneven wear must be repaired. A stained slip ring lowers generator efficiency and output voltage. Polish the slip rings with fine sandpaper while turning the rotor until rough spots disappear. Care should be taken not to touch the rotor coils with the sandpaper.

6-5 BRUSH
The brushes must be smooth where they Contact the slip rings. If not, polish smooth the brushes with sandpaper. A brush that is not smooth produces arcs between the brush and slip ring leading to possible damage. Usable brush lengths are from 5 mm to 15 mm [0.2” to 0.6”]. A brush shorter than 5 mm must be replaced because decreased contact pressure between the brush and slip ring lowers generator efficiency and output voltage.

6-6 A.V.R (AUTOMATIC VOLTAGE REGULATOR)
1) Features
This AVR operates to control the field current in order to maintain the output voltage for the AC current, which generated by the magnetic flux by the field coil.

2) A.V.R. trouble may be identified by simply looking at the A.V.R., or by the inter-lead resistance with a tester, or actually mounting it in the generator and operating it.
(a) A.V.R. TROUBLE IDENTIFICATION by APPEARANCE
   If an A.V.R. electronic part is burnt dark, or the surface epoxy resin melted, it often indicates
   A.V.R. trouble.

(b) IDENTIFYING A.V.R. TROUBLE by CHECKING INTER-LEAD RESISTANCE
   Check the inter-lead resistance of the A.V.R. with a tester, referring to the following table.
   If the tester readings very greatly from the values specified in the table on next page, the A.V.R.
   is faulty.

   NOTE: Take tester inaccuracy into account in reading the tester.

*Checking table for analogue circuit tester

<table>
<thead>
<tr>
<th>Analogue circuit tester</th>
<th>Apply black (minus) needle of the circuit tester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yellow</td>
</tr>
<tr>
<td>Apply red (plus)</td>
<td></td>
</tr>
<tr>
<td>needle of the circuit</td>
<td></td>
</tr>
<tr>
<td>tester</td>
<td></td>
</tr>
<tr>
<td>Yellow</td>
<td>———</td>
</tr>
<tr>
<td>Red</td>
<td>∞</td>
</tr>
<tr>
<td>White</td>
<td>∞</td>
</tr>
<tr>
<td>Light green</td>
<td>7.5 kΩ</td>
</tr>
<tr>
<td>Brown or Yellow</td>
<td>∞</td>
</tr>
</tbody>
</table>

(c) IDENTIFYING A.V.R. TROUBLE by MOUNTING and OPERATING in THE GENERATOR
   SCR or transistor damage cannot be detected by simply looking at the A.V.R. or checking the
   lead resistance. Check it by mounting the suspected faulty A.V.R. in a normal generator, or
   mount a normal A.V.R. in a generator which fails to generate voltage.
6-7 DIODE STACK

Circuit inside of the diode stack is as shown in Table 6-7a. Check continuity between each terminal by using a circuit tester as shown in Table 6-7b. The diode stack is normal when continuity is as follows:

* Checking table for analogue circuit tester.

<table>
<thead>
<tr>
<th>Analogue circuit tester</th>
<th>Apply red + needle of the circuit tester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Brown</td>
</tr>
<tr>
<td>Apply red + needle of the circuit tester</td>
<td>Brown</td>
</tr>
<tr>
<td>Brown</td>
<td>—</td>
</tr>
<tr>
<td>Brown</td>
<td>No continuity</td>
</tr>
<tr>
<td>White</td>
<td>No continuity</td>
</tr>
<tr>
<td>Black</td>
<td>Continuity</td>
</tr>
</tbody>
</table>

* Checking table for digital circuit tester.

<table>
<thead>
<tr>
<th>Digital circuit tester</th>
<th>Apply red + needle of the circuit tester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Brown</td>
</tr>
<tr>
<td>Apply black — needle of the circuit tester</td>
<td>Brown</td>
</tr>
<tr>
<td>Brown</td>
<td>—</td>
</tr>
<tr>
<td>Brown</td>
<td>No continuity</td>
</tr>
<tr>
<td>White</td>
<td>No continuity</td>
</tr>
<tr>
<td>Black</td>
<td>Continuity</td>
</tr>
</tbody>
</table>

NOTE 1: In checking the diode, direction of connection is contrary to the ordinary case because of characteristics of the diode and battery incorporated in the tester.

NOTE 2: "Continuity" means forward direction characteristics of the diode, and different from short circuit condition (in which a pointer of the tester goes out of its normal scale), shows resistance to some extent. When results of the checking indicate failure even in one
6-8 OIL SENSORS
(1) Disconnect wires coming from the sensor at the connection.
(2) Loosen the sensor to remove it from the engine.
(3) Plug the opening of oil filler hole (created after sensor is removed) with suitable means such as oil gauge.
(4) Connect the removed wires again with the oil sensor.
(5) Start the engine with the oil sensor removed and confirm if
   a. Engine stops after 5 seconds which is normal, or
   b. Engine does not stop after more than 10 seconds which is unusual.

NOTE: The sensor will not operate properly when wire is broken or poorly connected.
Check the wires for correct connection. If it fails to stop within 5 seconds after the wirings have been checked, the sensor is defective. Replace the sensor with new one.

6-8-1 SPECIFICATIONS

<table>
<thead>
<tr>
<th>Type</th>
<th>Float type (with lead switch incorporated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance (at FULL oil level)</td>
<td>100 M ohms or over</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-30 to +180 degree Celsius</td>
</tr>
</tbody>
</table>

6-8-2 CONSTRUCTION AND OPERATION
Disconnect wires coming from the sensor. The oil sensor is composed of the float, permanent magnet incorporated into the float and the oil sensor.
In accordance with the oil level, the float moves up and down.
When the oil level is high, the float moves up.

When the oil level is low, the float moves down.
The permanent magnet is close to the lead switch, and the lead switch is activated by the magnetic force.

NOTE: With regards to the wiring diagram, please refer to the section 9 (page46).
6-9 IDLE CONTROL (OPTIONAL EQUIPMENT)

(1) ENGINE SPEED IS NOT INCREASED WHEN A LOAD IS APPLIED.

1) Check the wattage of load applied to the generator. If the generator is loaded over the rated wattage, the engine speed can not be increased. Most induction loads such as electric motor or electric tools or welding machine require three to five times large wattage of their ratings at starting. This starting wattage must not exceed the rated output of the generator.

2) Check the slow set rpm.
   The normal idling speed by the IDLE CONTROL is as follows:
   2200 to 2400 rpm.
   The above speed setting is for cold engine condition. If the engine speed is out of adjusting range, move the solenoid backward.

3) Check the wiring through ZCT on the IDLE CONTROL UNIT.
   Make sure that an output wire from main coil is passing through the ZCT on the IDLE CONTROL UNIT.

4) Checking the IDLE CONTROL UNIT Check the resistance between five leads of IDLE CONTROL UNIT with circuit tester.
NOTE: The resistance readings vary depending on the types of circuit testers. The above table shows an example of the resistance readings measured by an ordinary analogue circuit tester with 1.5 volt battery power source. It is advisable for you to check the resistance readings using your standard circuit tester and revise the checking table.

(2) ENGINE SPEED IS NOT REDUCED WHEN LOAD IS OFF.

1) Check the wiring of SOLENOID.
   Check that the two leads from the SOLENOID are securely connected.

2) Check the wiring of IDLE CONTROL UNIT.
   Check all the leads from the IDLE CONTROL UNIT are securely and correctly connected.

3) Checking the SOLENOID.
   Measure the resistance between two leads from SOLENOID.

<table>
<thead>
<tr>
<th>Normal Resistance (Ω)</th>
<th>25 - 31</th>
</tr>
</thead>
</table>

   If the resistance is larger or smaller than this range, SOLENOID is defective, and is to be replaced.
7. DISASSEMBLY AND ASSEMBLY

7-1 PREPARATION and PRECAUTIONS
(1) Be sure to memorize the location of individual parts when disassembling the generator so that the generator can be reassembled correctly. Tag the disassembled part with the necessary information to facilitate easier and smoother reassembly.
(2) For more convenience, divide the parts into several groups and store them in boxes.
(3) To prevent bolts and nuts from being misplaced or installed incorrectly, replace them temporarily to their original position.
(4) Handle disassembled parts with care; clean them before reassembly using a neutral cleaning product.
(5) Remove the battery before disassembling the generator. (Electric start models)
(6) Use all disassembly/assembly tools properly, and use the proper tool for each specific job.
(7) Be sure to attach the foam rubber linings inside the covers on their original position when reassembling the generator. When deformation or damage or falling-off of foam rubber lining is found, replace it with new parts. Failure to do so will result in poor performance and durability of the generator.
(8) Bind the wires and fuel pipes using wire bands as they have been done in original configuration.

NOTE: As to detailed information for servicing procedures on the engine portion, please refer to Subaru engine service manual for "EX35/40".

7-2 DISASSEMBLY PROCEDURES

7-2-1 FUEL TANK
(1) Shut the fuel strainer and discharge fuel from carburetor.

(2) Disconnect rubber pipe from the strainer.

(3) Remove the fuel tank.
   M6 flange bolt . . . 4 pcs.
   Rubber (tank) . . . 4 pcs.
7-2-2 CONTROL PANEL and CONTROL BOX
(1) Remove the control panel.
   M6 flange bolt . . . 4 pcs.
   M4 bolt & washer . . . 4 pcs.

(2) Disconnect the connectors on the wiring from the control panel to the alternator.

(3) Remove the control box.

7-2-3 MUFFLER
(1) Remove the Muffler Cover (Front).
   M6 flange bolt . . . 5 pcs.

(2) Loose the bolt for Muffler Cover (Rear).
   M6 flange bolt . . . 5 pcs.
(3) Remove the two bolts which fix the muffler from the generator cover. Loosen the two bolts on the muffler flange and remove the muffler from the exhaust pipe.

M8 bolt and washer . . . 2 pcs.
M8 spring washer ... 2 pcs.
Muffler Gasket … 1 pce.

(4) Loosen Nut and Washer for Exhaust Pipe. Remove the exhaust pipe from Cylinder Head.

M8 nut and washer . . . 2 pcs.
(Exhaust Pipe)
7-2-4 ALTERNATOR
(1) Remove the brush holder.

(2) Remove the four bolts which fasten the rear cover to the front cover.

M6 flange bolt . . . 4 pcs.

(3) Remove the rear cover by hitting on the legs of rear cover with a plastic hammer to loosen.

NOTE: Do not give a strong hit on the base or legs.
(4) Remove the stator cover.
(5) Take off the through bolt of the rotor. Apply a box wrench on the head of through bolt. Hit the wrench handle with a hammer counter-clockwise to loosen.

(6) Put the engine on the work table recoil starter side down.

(7) Use a bolt and oil as a tool for pulling out the rotor in the following procedures:
   1. Pour engine oil into the center hole of rotor shaft.
      Fill with oil to the shaft end.
   2. Prepare a bolt with the following thread size: M12 x P 1.5
   3. Apply a few turns of seal tape around the tip of the bolt.
4. Screw the bolt into the thread of the rotor shaft.

5. Torque the bolt using a socket wrench until the rotor comes off loose.

* The hydraulic pressure inside the rotor shaft takes apart the rotor from the engine shaft.

(8) Wipe off oil thoroughly from rotor shaft and engine PTO shaft.

(9) Remove the front cover.
Loosen the four bolts and remove the front cover.

M8 x 20mm bolt and washer AY . . . 4 pcs.
7-3 ASSEMBLY PROCEDURES

7-3-1 ENGINE and FRAME

(1) Attach the mount rubbers to the frame. Insert the setting tongue of Isolator into the hole on the frame and tighten the nut from the bottom of the frame.

   M8 flange nut . . . 4 pcs.

   

   \begin{center}
   \begin{tabular}{|c|}
   \hline
   \textbf{Tightening torque} \tabularnewline
   \hline
   11.8 - 13.7 N-m \tabularnewline
   120 - 140 kg-cm \tabularnewline
   8.7 - 10.8 ft-lb \tabularnewline
   \hline
   \end{tabular}
   \end{center}

   \textit{NOTE: The Isolators are selected to reduce vibration most effectively by model. Be sure to use the correct Isolators for your generator. Although Isolators have the same appearance, their characteristics are different.}

(2) Install the engine into the frame from the side of it. Tighten the nuts over the mount rubber bolts to fix.

   M8 nuts . . . 2 pcs.

   

   \begin{center}
   \begin{tabular}{|c|}
   \hline
   \textbf{Tightening torque} \tabularnewline
   \hline
   11.8 - 13.7 N-m \tabularnewline
   120 - 140 kg-cm \tabularnewline
   8.7 - 10.8 ft-lb \tabularnewline
   \hline
   \end{tabular}
   \end{center}

   \textit{NOTE: Remove the air cleaner cover for easier installation.}

\textit{NOTE: When tightening the nuts, slightly lift the engine so that the weight is not applied to the Isolators.}
7-3-2 FRONT COVER
Attach the front cover to the engine main bearing cover. Match the faucet joint and tighten the bolts.

M8 x 20 mm bolt . . . 4 pcs.
M8 spring washer . . . 4 pcs.

<table>
<thead>
<tr>
<th>Tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.8 - 13.7 N-m</td>
</tr>
<tr>
<td>120 - 140 kg-cm</td>
</tr>
<tr>
<td>8.7 - 10.1 ft-lb</td>
</tr>
</tbody>
</table>

7-3-3 ROTOR
(1) Wipe off oil, grease and dust from the tapered portion of engine shaft and matching tapered hole of rotor shaft.

(2) Mount the rotor to the engine shaft. Tighten the through bolt. Apply a wrench on the through bolt and hit wrench handle clockwise with a hammer to tighten. If an impact wrench is available, use it.

Tightening torque:

<table>
<thead>
<tr>
<th>Tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.5 - 24.5 N-m</td>
</tr>
<tr>
<td>230 - 250 kg-cm</td>
</tr>
<tr>
<td>16.6 - 18.5 ft-lb</td>
</tr>
</tbody>
</table>
7-3-4 STATOR
(1) Put the stator in the rear cover setting the four grooves on the side of stator with thread holes of the rear cover.

(2) Attach the stator cover around the stator.

7-3-5 REAR COVER
(1) Put the rear cover with stator over the rotor. Tap on the rear cover evenly with a plastic hammer to press the rotor bearing into the rear cover.

(2) Fix the rear cover to the adaptor with four bolts, spring washers, and washers.

M6 x 160 mm bolt . . . 4 pcs.
M6 spring washer . . . 4 pcs.
M6 washer . . . 4 pcs.

<table>
<thead>
<tr>
<th>Tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5 - 5.9 N-m</td>
</tr>
<tr>
<td>50 - 60 kg-cm</td>
</tr>
<tr>
<td>3.6 - 4.3 ft-lb</td>
</tr>
</tbody>
</table>
(3) Attach the bushing over the lead wire drawn out from the rear cover. Press the smaller end of the bushing into the window of the rear cover.

(4) Attach the 5 mm terminal of the grounding wires (green / yellow) to the unpainted thread hole of the frame base plate using a 5 mm brass screw.

(5) Install the alternator assembly into the frame tighten the nuts over the Isolator bolts to fix.

   M8 nuts . . . 2 pcs.

<table>
<thead>
<tr>
<th>Tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.8 - 13.7 N·m</td>
</tr>
<tr>
<td>120 - 140 kg·cm</td>
</tr>
<tr>
<td>8.7 - 10.8 ft·lb</td>
</tr>
</tbody>
</table>

**NOTE:** When tightening the nuts, slightly lift the alternator assembly so that the weight is not applied to the Isolator.

(6) Fasten the other earth cable with 5 mm terminal to the unpainted bolt hole on the frame.
7-3-6 BRUSH / BRUSH HOLDER

(1) Install the brush holders in the rear cover. Pass the mounting screws through the brush holders, push the brush holders so that the brushes will be perpendicular to the slip rings, and tighten the screws.

*NOTE: There are two kinds of brush holders.
If a brush is installed oblique to the slip ring, the brush holder can break when the screw is tightened, or the brush may break when the generator of started. After installing the brush holders, measure the resistances across the brushes and terminals with a tester if they are from 5 ohms to 7.5 ohms. If so, the brush holders are correctly mounted.*

(2) Attach the connectors to the brush holders. Connect the green wire to the stator end and the brown wire to the bearing end.

(3) Install the brush cover with two bolt and washer.
7-3-7 MUFFLER and MUFFLER COVER

(1) Assemble the exhaust pipe to engine.
   M8 nuts . . . 2 pcs.

(2) Assemble the muffler bracket to the muffler.
   M8 flange nuts . . . 4 pcs.

(3) Assemble the muffler cover (Rear) to the frame.
   M6 flange bolt . . . 5 pcs.

<table>
<thead>
<tr>
<th>Tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.5 - 26.5 N·m</td>
</tr>
<tr>
<td>230 - 270 kg·cm</td>
</tr>
<tr>
<td>16.6 - 19.5 ft·lb</td>
</tr>
</tbody>
</table>
(4) Attach the muffler to the exhaust pipe and generator rear cover without tightening.

(5) Tighten the muffler to the exhaust pipe.
   M8 x 20 mm bolts . . . 2 pcs.

   ![Image](image1.png)

<table>
<thead>
<tr>
<th>Tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.5 - 26.5 N-m</td>
</tr>
<tr>
<td>230 - 270 kg-cm</td>
</tr>
<tr>
<td>16.6 - 19.5 ft-lb</td>
</tr>
</tbody>
</table>

(6) Tighten the muffler bracket to the generator cover.
   M8 x 20 mm bolt and washer AY . . . 2 pcs.

   ![Image](image2.png)

(7) Assemble the muffler cover (Front).
   M6 x 12 mm flange bolt . . . 5 pcs.

   ![Image](image3.png)

<table>
<thead>
<tr>
<th>Tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5 - 5.9 N-m</td>
</tr>
<tr>
<td>50 - 60 kg-cm</td>
</tr>
<tr>
<td>3.6 - 4.3 ft-lb</td>
</tr>
</tbody>
</table>
7-3-8 FUEL TANK

(1) Hand tighten the strainer screw as far as it will go, loosen it again by one or two rotations (fuel outlet faces down), then tighten the lock nut.

<table>
<thead>
<tr>
<th>Tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5 - 6.9 N·m</td>
</tr>
<tr>
<td>50 - 70 kg·cm</td>
</tr>
<tr>
<td>3.6 - 5.1 ft·lb</td>
</tr>
</tbody>
</table>

(2) Mount the fuel tank on the frame with rubber washers between the tank flange and the frame.

M6 x 20 mm bolt (black) . . . 4 pcs.
Rubber washer . . . 4 pcs.

NOTE: For easy tank assembly, glue the rubber washers over the mounting holes of the frame.

(3) Connect the rubber pipe.
First, fit the hose clamps on the rubber pipe and connect it to the strainer and the carburetor. Then fasten it with the hose clamps.

NOTE: Apply a drop of oil to the rubber pipe for easier connection.
7-3-9 CONTROL PANEL
Mount the control panel assembly to the control box.
Refer to Section 8-4 for disassembly, checking and reassembly procedures of the control panel.
(1) Connect the wires from the control panel and the engine.
(2) Connect the wires drawn out from the stator to the wires from the control panel.

NOTE: Connect the wires of the same color.

(3) Press the upper end of the bushing into the bottom window of the control panel.
(4) Mount the control panel to the control box.

7-4 CHECKING, DISASSEMBLY and REASSEMBLY of the CONTROL PANEL

7-4-1 CHECKING OF THE CONTROL PANEL
Remove the control panel from frame, Check each components and wiring. Refer to Section 8 for the detail of checking procedure for the components in the front panel.

7-4-2 DISASSEMBLY
(1) Remove the control panel from the control box.

   M6 flange bolt . . . 4 pcs.
   M4 flange bolt . . . 4 pcs.

(2) Disconnect the connectors on the wires to detach the control panel.

(3) After disconnecting individual wires, remove the control panel components.

NOTE: Full power switch and pilot lamp have their wires soldered. Un solder them to remove those parts if necessary.
7-4-3 REASSEMBLY

(1) Install the receptacles, AC circuit breaker, terminals, switches, etc. on the control panel and wire them.

**NOTE:** Circuit diagrams are shown in Section 11. Colored wires are used for easy identification, and are of the correct capacity and size. Use heat-resistant type wires (permissible temperature range 75°C or over) in the specified gauge shown in the circuit diagrams.

(2) Connect the wires of control panel components.

(3) Attach the control panel to the control box.

M6 flange bolt . . . 4 pcs.
M4 flange bolt . . . 4 pcs.

![Tightening torque table]

<table>
<thead>
<tr>
<th>Torque</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-m</td>
<td>1.2 - 1.5</td>
</tr>
<tr>
<td>kg-cm</td>
<td>12 - 15</td>
</tr>
<tr>
<td>ft-lb</td>
<td>8.7 - 10.9</td>
</tr>
</tbody>
</table>

8. TROUBLESHOOTING
8-1 NO AC OUTPUT

8-1-1 CHECKING STATOR
(1) Remove control panel and disconnect stator wires at the connectors.

(2) Measure the resistance between terminals on stator leads.
Refer to Table of Section 6-3 STATOR for normal resistance.
If stator is faulty, replace it with a new one.

(3) Check the insulation resistance between stator core and each stator lead using a megger tester.
If insulation is bad, replace stator with a new one.

8-1-2 CHECKING ROTOR
1) Field coil
Remove the brush holder and measure resistance between the slip rings.
Refer to Section 6-4 ROTOR ASSEMBLY for normal resistance.

NOTE: If the circuit tester is not sufficiently accurate, it may not show the values given and may give erroneous readings. Erroneous reading will also occur when there is a wide variation of resistance among coil windings or when measurement is performed at ambient temperatures different from 20° C (68° F).
2) Cleaning Slip rings

   The slip ring surfaces must be uniformly bright. Slip rings showing black spots, excessive wear, or uneven wear must be repaired. A stained slip ring lowers generator efficiency and output voltage. Polish the slip rings with fine sandpaper while turning the rotor until rough spots disappear. Care should be taken not to touch the rotor coils with the sandpaper.

8-2 AC VOLTAGE IS TOO HIGH OR TOO LOW

8-2-1 CHECKING ENGINE SPEED

If the engine speed is too high or too low, adjust it to the rated r.p.m.

[How to adjust engine r.p.m.]

* Loosen the lock nut on the adjusting screw.
* Turn the adjusting screw clockwise to decrease engine speed or counterclockwise to increase engine speed.

8-2-2 CHECKING STATOR

Check stator referring to Step 8-1-1.

8-2-3 CHECKING ROTOR

Check rotor referring to Step 8-1-2.
8-3 AC VOLTAGE IS NORMAL AT NO-LOAD, BUT THE LOAD CANNOT BE APPLIED.

8-3-1 CHECK THE ENGINE SPEED.
If the engine speed is low, adjust it to the rated r.p.m.
*Refer to Step 8-2-1 for engine speed adjustment.

8-3-2 CHECK THE TOTAL WATTAGE OF APPLIANCES CONNECTED TO THE GENERATOR.
Refer to Section 4 "RANGE OF APPLICATIONS" for the wattage of the appliances.
If the generator is overloaded, reduce the load to the rated output of the generator.

8-3-3 CHECK THE APPLIANCE FOR TROUBLE.
If the appliance is faulty, repair it.

8-3-4 CHECK IF THE ENGINE IS OVERHEATED.
If the cooling air inlet and/or cooling air outlet is clogged with dirt, grass, chaff or other debris, remove it.

8-3-5 CHECK THE INSULATION OF THE GENERATOR.
(1) Stop the engine. Remove the control panel, and disconnect the connector of GREEN lead for ground.

(2) Measure the insulation resistance between the live terminal of the receptacle and the ground terminal.
If the insulation resistance is less than 1MΩ, disassemble the generator and check the insulation resistance of the stator, rotor and the live parts in the control box.
(Refer to Section 5-4.)
Any part where the insulation resistance is less than 1MΩ, the insulation is faulty and may cause electric leakage.
Replace the faulty part.
8-4 NO DC OUTPUT

8-4-1 CHECK THE AC OUTPUT.
Check the generator by following Step 8-1-1 through Step 8-1-2.

8-4-2 CHECK THE DC BREAKER.
If the DC breaker turned off while charging a battery, check the cables for short-circuit or connection in reverse polarity before resetting it.

NOTE: If the DC output is used to charge a large capacity battery or an over discharged battery, an excessive current may flow causing.

8-4-3 CHECK THE WIRING.
Check all the wires to be connected correctly.

8-4-4 CHECK THE DIODE STACK.
Remove the end cover and check the diode stack with a circuit tester.
Refer to Section 6-7 “DIODE STACK” for the checking procedure.

8-4-5 CHECK THE DC COIL
Check the resistance between two Brown leads from stator with a circuit tester.
If the resistance reading is much larger or smaller than the specified value, the DC coil of the stator is faulty. Replace stator.

<table>
<thead>
<tr>
<th>Hz-Voltage</th>
<th>DC coil</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-110~240</td>
<td>0.79 Ω</td>
</tr>
<tr>
<td>60-120 / 240</td>
<td>0.61 Ω</td>
</tr>
</tbody>
</table>

9. WIRING DIAGRAM

RGX6500, 7500
RGX6500, 7500
RGX6500, 7500 [Electric starter model]