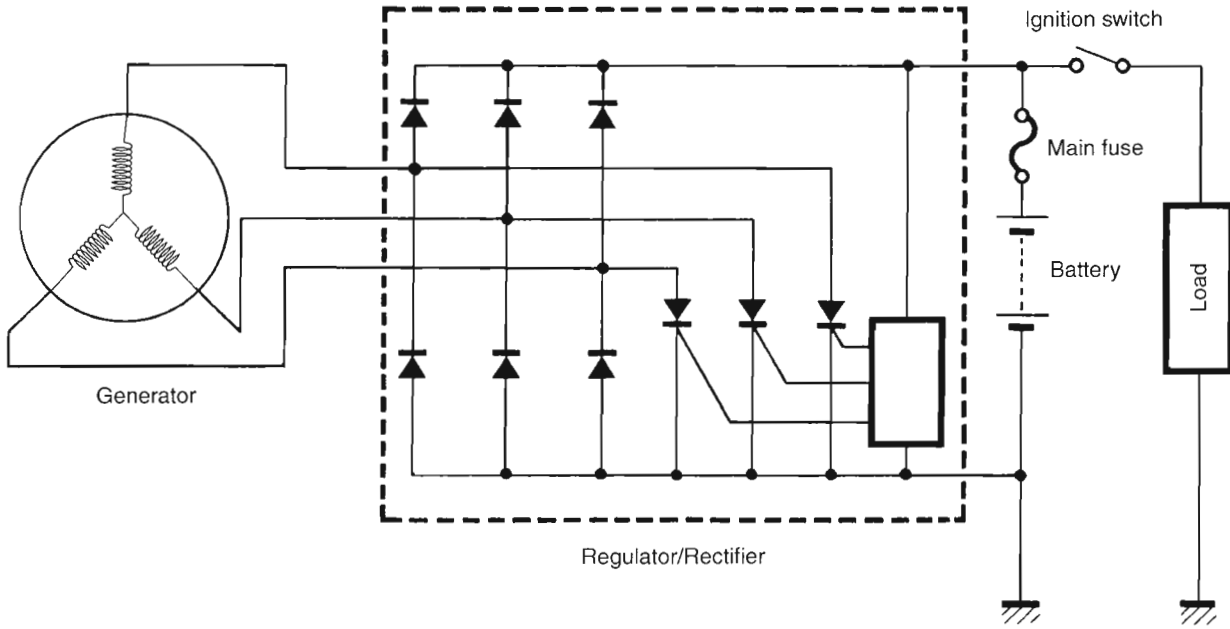


Charging System

Schematic and Routing Diagram

Charging System Diagram

B705H21A02001



I705H11A0001-02

Component Location

Charging System Components Location

Refer to "Electrical Components Location in Section 0A (Page0A-7)".

B705H21A03001

Diagnostic Information and Procedures

Charging System Symptom Diagnosis

B705H21A04001

Condition	Possible cause	Correction / Reference Item
Generator does not charge	Open- or short-circuited lead wires, or loose lead connections.	<i>Repair or replace or retighten.</i>
	Short-circuited, grounded or open generator coils.	<i>Replace.</i>
	Short-circuited or punctured regulator/rectifiers.	<i>Replace.</i>
Generator does charge, but charging rate is below the specification	Lead wires tend to get short- or open-circuited or loosely connected at terminals.	<i>Repair or retighten.</i>
	Grounded or open-circuited stator coils or generator.	<i>Replace.</i>
	Defective regulator/rectifier.	<i>Replace.</i>
	Defective cell plates in the battery.	<i>Replace the battery.</i>
Generator overcharges	Internal short-circuit in the battery.	<i>Replace the battery.</i>
	Damaged or defective resistor element in the regulator/rectifier.	<i>Replace.</i>
	Poorly grounded regulator/rectifier.	<i>Clean and tighten ground connection.</i>
Unstable charging	Lead wire insulation frayed due to vibration, resulting in intermittent short-circuiting.	<i>Repair or replace.</i>
	Internally short-circuited generator.	<i>Replace.</i>
	Defective regulator/rectifier.	<i>Replace.</i>
"Sulfation", acidic white powdery substance or spots on surfaces of cell plates	Cracked battery case.	<i>Replace the battery.</i>
	Battery has been left in a run-down condition for a long time.	<i>Replace the battery.</i>
Battery runs down quickly	Trouble in charging system.	<i>Check the generator, regulator/rectifier and circuit connections and make necessary adjustments to obtain specified charging operation.</i>
	Cell plates have lost much of their active material as a result of overcharging.	<i>Replace the battery, and correct the charging system.</i>
	Internal short-circuit in the battery.	<i>Replace the battery.</i>
	Too low battery voltage.	<i>Recharge the battery fully.</i>
	Too old battery.	<i>Replace the battery.</i>
Battery "sulfation"	Incorrect charging rate. (When not in use battery should be checked at least once a month to avoid sulfation.)	<i>Replace the battery.</i>
	The battery was left unused in a cold climate for too long.	<i>Replace the battery if badly sulfated.</i>

1J-3 Charging System:

Battery Runs Down Quickly

B705H21A04002

Troubleshooting

Step	Action	Yes	No
1	1) Check accessories which use excessive amounts of electricity. <i>Are accessories being installed?</i>	Remove accessories.	Go to step 2.
2	1) Check the battery for current leaks. (Refer to "Battery Current Leakage Inspection (Page1J-4)".) <i>Is the battery for current leaks OK?</i>	Go to step 3.	<ul style="list-style-type: none">• Short circuit of wire harness.• Faulty electrical equipment.
3	1) Measure the charging voltage between the battery terminals. (Refer to "Regulated Voltage Inspection (Page1J-4)".) <i>Is the battery charging of voltage OK?</i>	<ul style="list-style-type: none">• Faulty battery.• Abnormal driving condition.	Go to step 4.
4	1) Measure the resistance of the generator coil. (Refer to "Generator Coil Resistance Inspection (Page1J-5)".) <i>Is the resistance of generator coil OK?</i>	Go to step 5.	Faulty generator coil or disconnected lead wires.
5	1) Measure the generator no-load voltage. (Refer to "Generator No-load Performance Inspection (Page1J-5)".) <i>Is the generator no-load performance OK?</i>	Go to step 6.	Faulty generator.
6	1) Inspect the regulator/rectifier. Refer to "Regulator/Rectifier Inspection (Page1J-5)". <i>Is the regulator/rectifier OK?</i>	Go to step 7.	Faulty regulator/rectifier.
7	1) Inspect the wires. <i>Is the wire harness OK?</i>	Faulty battery.	<ul style="list-style-type: none">• Short circuit of wire harness.• Poor contact of coupler.

Battery overcharges

- Faulty regulator/rectifier.
- Faulty battery.
- Poor contact of generator lead wire coupler.

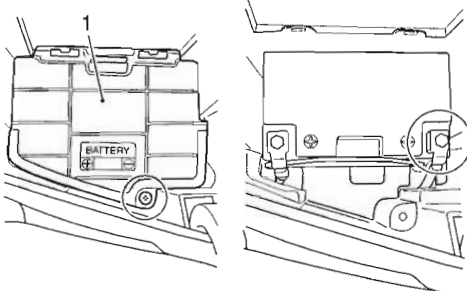
Repair Instructions

Battery Current Leakage Inspection

B705H21A06001

Inspect the battery current leakage in the following procedures:

- 1) Turn the ignition switch to the OFF position.
- 2) Remove the battery cover (1).
- 3) Disconnect the (-) battery lead wire.



I705H11A0002-01

- 4) Measure the current between (-) battery terminal and the (-) battery lead wire using the multi-circuit tester. If the reading exceeds the specified value, leakage is evident.

Special tool

TOOL : 09900-25008 (Multi-circuit tester set)

Battery current (leak)

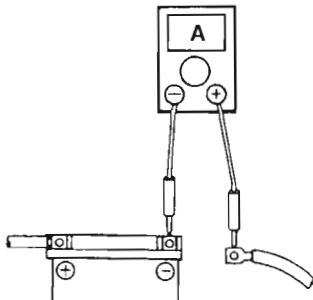
Under 3 mA

Tester knob indication

Current (--- , 20 mA)

⚠ CAUTION

- In case of a large current leak, turn the tester to high range first to avoid tester damage.
- Do not turn the ignition switch to the "ON" position when measuring current.



I705H11A0003-01

- 5) Reinstall the removed parts.

Regulated Voltage Inspection

B705H21A06002

Inspect the regulated voltage in the following procedures:

- 1) Remove the battery cover (1).
- 2) Start the engine and keep it running at 5 000 r/min with the dimmer switch turned HI position.
- 3) Measure the DC voltage between the (+) and (-) battery terminals using the multi-circuit tester. If the voltage is not within the specified value, inspect the generator and regulator/rectifier.

NOTE

When making this test, be sure that the battery is in fully charged condition.

Special tool

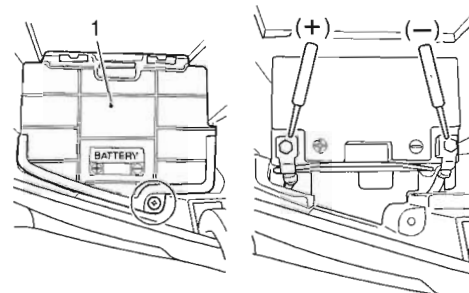
TOOL : 09900-25008 (Multi-circuit tester set)

Tester knob indication

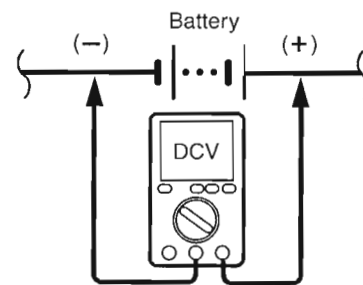
Voltage (---)

Regulated voltage

14.0 – 15.5 V at 5 000 r/min



I705H11A0004-01



I705H11A0005-01

- 4) Reinstall the removed parts.

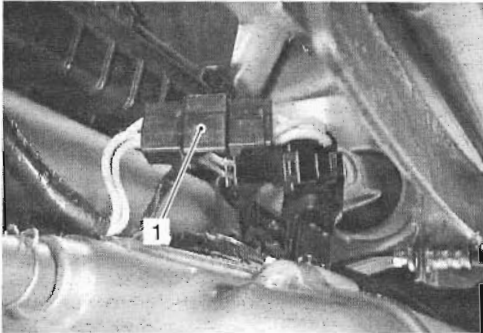
1J-5 Charging System:

Generator Coil Resistance Inspection

B705H21A06003

Inspect the generator coil resistance in the following procedures:

- 1) Disconnect the generator coupler (1).



I705H11A0006-02

- 2) Measure the resistance between the three lead wires.

If the resistance is out of specified value, replace the stator with a new one. Also, check that the generator core is insulated properly.

Special tool

 : 09900-25008 (Multi-circuit tester set)

Tester knob indication

Resistance (Ω)

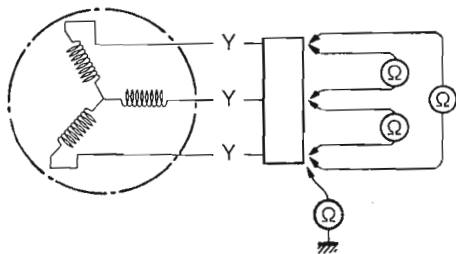
Generator coil resistance

0.1 – 1.0 Ω (Y – Y)

$\infty\Omega$ (Y – Ground)

NOTE

When making this test, be sure that the battery is in fully charged condition.



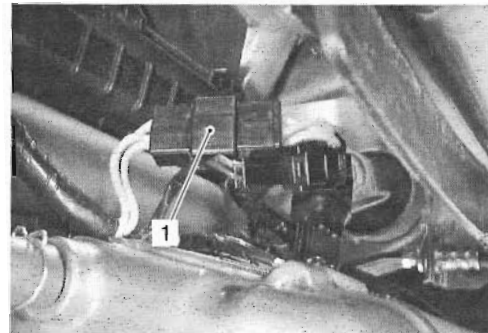
I705H11A0008-02

Generator No-load Performance Inspection

B705H21A06004

Inspect the generator no-load performance in the following procedures:

- 1) Disconnect the generator coupler (1).



I705H11A0006-02

- 2) Start the engine and run it at 5 000 r/min.
- 3) Using the multi-circuit tester, measure the voltage between three lead wires.
If the tester reads under the specified value, replace the generator with a new one.

Special tool

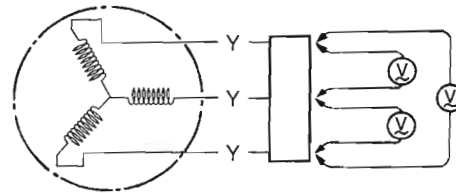
 : 09900-25008 (Multi-circuit tester set)

Tester knob indication

Voltage (~)

Generator no-load performance (When engine is cold)

More than 55 V (AC) at 5 000 r/min



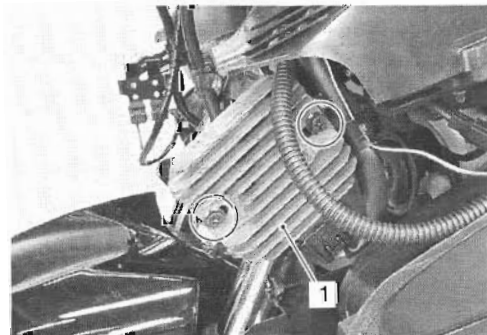
I705H11A0007-02

Regulator/Rectifier Inspection

B705H21A06005

Inspect the regulator/rectifier in the following procedures:

- 1) Remove the front leg shield. Refer to "Front Leg Shield Removal and Installation in Section 9D (Page9D-14)".
- 2) Remove the regulator/rectifier (1).



I705H11A0028-01

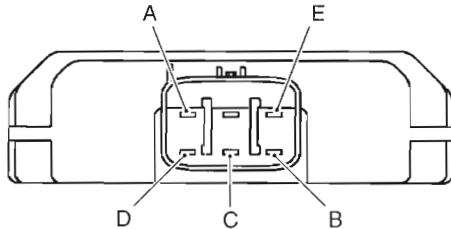
- 3) Measure the voltage between the terminals using the multi circuit tester as indicated in the following table. If the voltage is not within the specified value, replace the regulator/rectifier with a new one.

Special tool

TOOL : 09900-25008 (Multi-circuit tester set)

Tester knob indication

Diode test (←)



I705H11A0009-02

Unit: V

		(+) tester probe				
		A	B	C	D	E
(-) tester probe	A	—	0.4 - 0.7	0.4 - 0.7	0.4 - 0.7	0.5 - 1.2
	B	*	—	*	*	0.4 - 0.7
	C	*	*	—	*	0.4 - 0.7
	D	*	*	*	—	0.4 - 0.7
	E	*	*	*	*	—

*1.4 V and more (tester's battery voltage)

NOTE

If the tester reads 1.4 V and below when the tester probes are not connected, replace its battery.

- 4) Install the regulator/rectifier.
- 5) Install the front leg shield. Refer to "Front Leg Shield Removal and Installation in Section 9D (Page9D-14)".

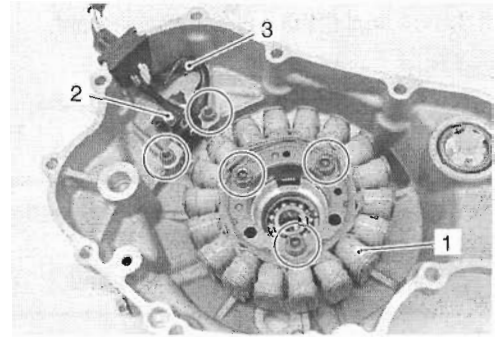
Generator Removal and Installation

B705H21A06006

Removal

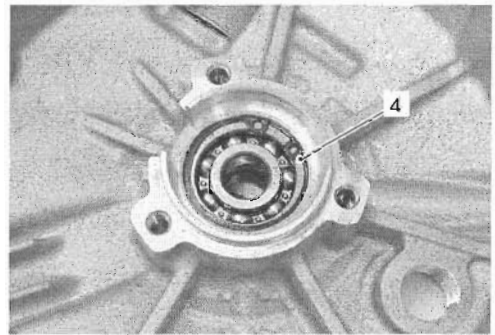
- 1) Drain engine oil.
- 2) Remove the side leg shield. Refer to "Side Leg Shield Removal and Installation in Section 9D (Page9D-15)".
- 3) Remove the generator cover. Refer to "CKP Sensor Removal and Installation in Section 1C (Page1C-1)".

- 4) Remove the generator stator (1), CKP sensor (2) and lead wire guide (3).



I705H11A0010-03

- 5) Remove the snap ring (4).

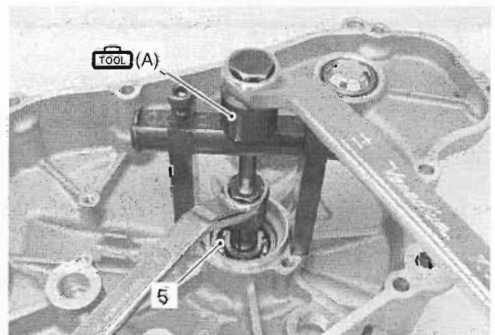


I705H11A0011-03

- 6) Remove the bearing (5) using the special tool.

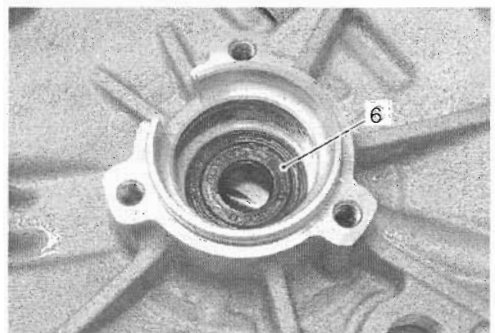
Special tool

TOOL (A): 09921-20240 (Bearing remover set)



I705H11A0013-03

- 7) Remove the oil seal (6).



I705H11A0014-03


1J-7 Charging System:

Installation

Install the generator in the reverse order of removal. Pay attention to the following points:

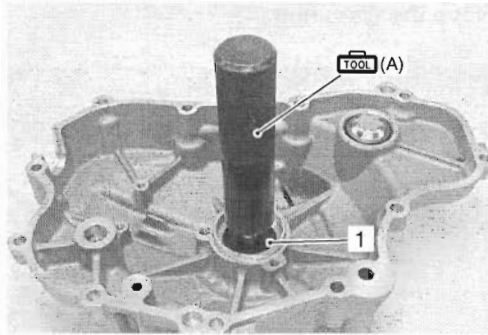
- Install the oil seal (1) using the special tool.

Special tool

 (A): 09913-75821 (Bearing installer)

CAUTION


- Install the oil seal with the marked code toward outside.
- Replace the oil seal with a new one.



I705H11A0015-01

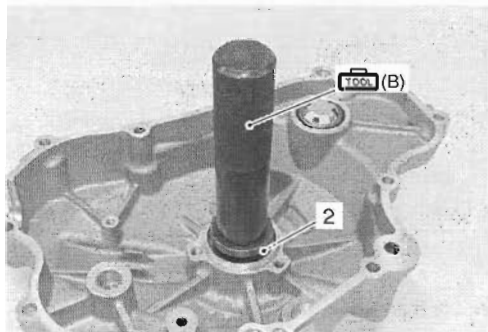
- Install the bearing (2) using the special tool.

Special tool

 (B): 09913-70210 (Bearing installer set)

CAUTION

Replace the bearing with a new one.

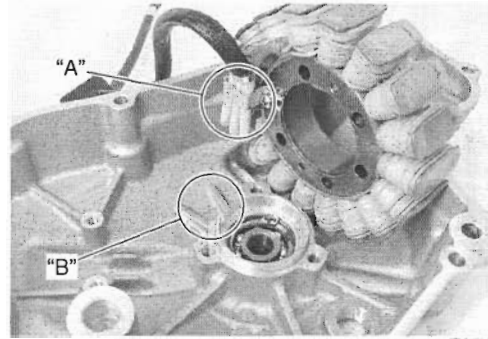


I705H11A0016-01

- Install the snap ring.
- Install the generator stator into the generator cover.

CAUTION

Engage the convex part "A" on the starter into the notch "B" on the generator cover.



I705H11A0018-02

- Tighten the generator stator bolts (3) to the specified torque.

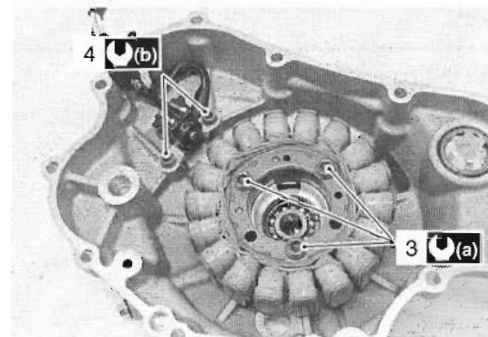
Tightening torque

Generator stator bolt (a): 11 N·m (1.1 kgf-m, 8.0 lb-ft)

- Tighten the CKP sensor bolts (4) to the specified torque.

Tightening torque

CKP sensor bolt (b): 6 N·m (0.6 kgf-m, 4.5 lb-ft)



I705H11A0019-05

- Install the generator cover.

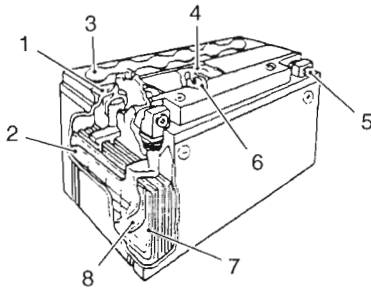
CAUTION

Replace the gasket with a new one.

- Install the muffler. Refer to "Exhaust Pipe / Muffler Removal and Installation in Section 1K (Page1K-2)".
- Install the side leg shield. Refer to "Side Leg Shield Removal and Installation in Section 9D (Page9D-15)".

Battery Components

B705H21A06007



I705H11A0020-01

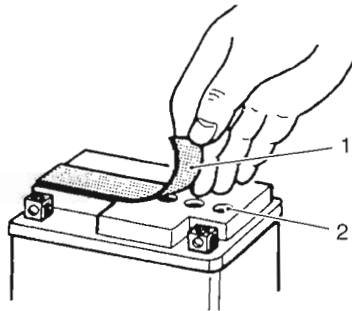
1. Upper cover breather	5. Terminal
2. Cathode plates	6. Safety valve
3. Stopper	7. Anode plates
4. Filter	8. Separator (Fiberglass)

Battery Initial Charging

B705H21A06008

Filling Electrolyte

- 1) Remove the aluminum tape (1) which seals the battery filler holes (2).

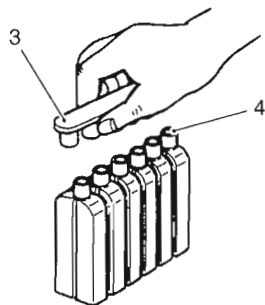


I705H11A0021-01

- 2) Remove the caps (3) from the electrolyte container.

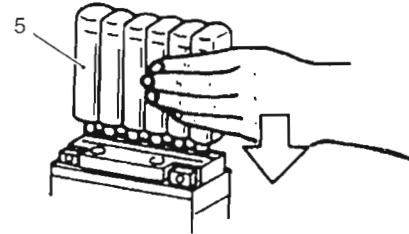
NOTE

- Do not remove or pierce the sealed areas (4) of the electrolyte container.
- After completely filling the battery with electrolyte, use the caps (3) from the electrolyte container to seal the battery filler holes.



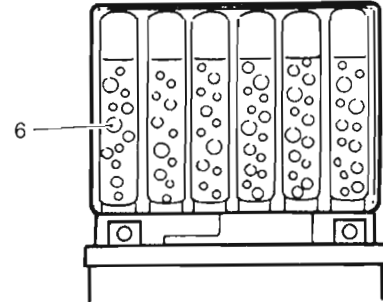
I705H11A0022-01

- 3) Insert the nozzles of the electrolyte container (5) into the electrolyte filler holes of the battery.
- 4) Hold the electrolyte container firmly so that it does not fall.
- 5) Do not allow any of the electrolyte to spill.



I705H11A0023-01

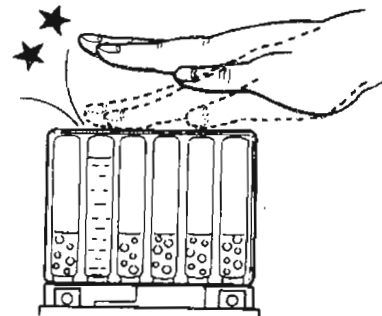
- 6) Make sure the air bubbles (6) rise to the top of each electrolyte container and leave the electrolyte container in this position for more than 20 minutes.



I705H11A0024-04

NOTE

If air bubbles do not rise from any one of the filler ports, tap the bottom of the electrolyte container two or three times. Never remove the electrolyte container from the battery while there is still electrolyte in the container.



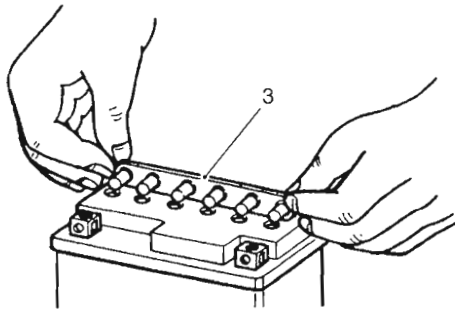
I310G11A0024-01

1J-9 Charging System:

- After the electrolyte container is completely empty, remove it from the battery and wait about 20 minutes.
- Insert the caps (3) firmly into the filler holes, so that the top of the caps do not protrude above the upper surface of the top cover of the battery.

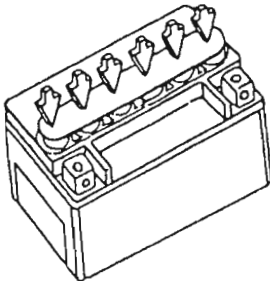
⚠ CAUTION

- Never use anything except the specified battery.
- Once install the caps to the battery, do not remove the caps.
- Do not tap the caps with a hammer when installing them.



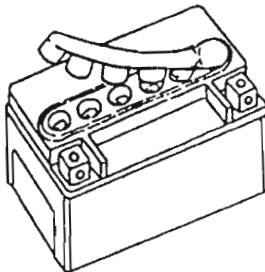
I705H11A0025-03

CORRECT



I310G11A0026-01

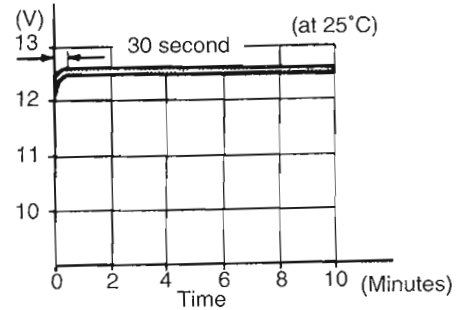
INCORRECT



I310G11A0027-01

Initial Charging

- Measure the battery voltage using multi circuit tester.
- The tester should indicate more than 12.5 – 12.6 V (DC) as shown in the figure.
- If the battery voltage is lower than the specification, charge the battery with a battery charger. Refer to "Battery Recharging (Page1J-10)".



I310G11A0028-01

⚠ CAUTION

Do not remove the caps on the battery top while charging.

NOTE

Initial charging for a new battery is recommended if two years have elapsed since the date of manufacture.

Battery Visual Inspection

B705H21A06009

Inspect the battery visual in the following procedures:

- Visually inspect the surface of the battery container.
- If any signs of cracking or electrolyte leakage from the sides of the battery have occurred, replace the battery with a new one.
- If the battery terminals are found to be coated with rust or an acidic white powdery substance, clean the battery terminals with sandpaper.

Battery Recharging

B705H21A06010

⚠ CAUTION

When recharging the battery, remove the battery from the motorcycle.

NOTE

While recharging, do not remove the caps on the top of the battery.

- 1) Measure the battery voltage using the multi circuit tester.
- 2) If the voltage reading is less than the 12 V (DC), recharge the battery with a battery charger.

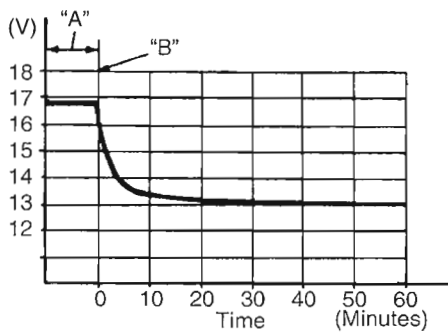
Recharging time

0.9 A for 5 to 10 hours or 4 A for 1 hour

⚠ CAUTION

Be careful not to permit the charging current to exceed 6 A at any time.

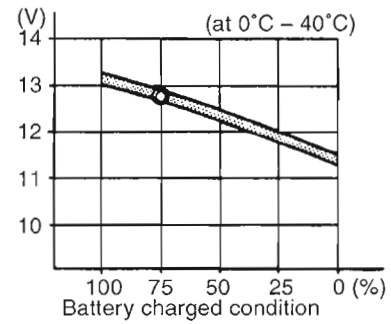
- 3) After recharging, wait at least 30 minutes and then measure the battery voltage using the multi circuit tester.
- 4) If the battery voltage is less than 12.5 V, recharge the battery again.
- 5) If the battery voltage is still less than 12.5 V after recharging, replace the battery with a new one.
- 6) When a battery is left unused for a long time, its voltage needs to be regularly measured.
- 7) When the motorcycle is not used for more than one month (especially during the winter season), measure the battery voltage at least once a month.



I649G11A0045-01

"A": Charging period

"B": Stop charging



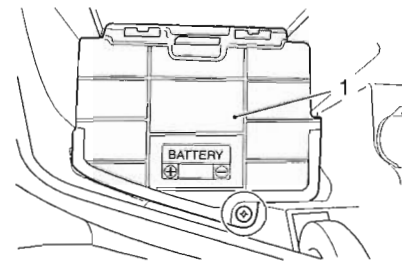
I705H11A0029-02

Battery Removal and Installation

B705H21A06011

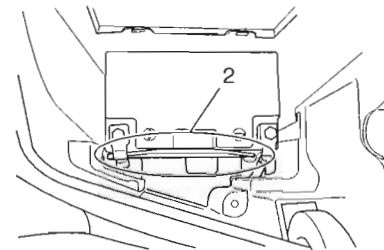
Removal

- 1) Open the front box and remove the battery cover (1).



I705H11A0026-01

- 2) Disconnect the (-) cable first, then (+) cable.
- 3) Take out the battery by pulling the slider (2).



I705H11A0027-01

Installation

Install the battery in the reverse order of removal. Pay attention to the following point:

- Connect the (+) cable first, then (-) cable.

⚠ CAUTION

Never use anything except the specified battery.

Specifications

Service Data

B705H21A07001

Electrical

Unit: mm (in)

Item	Standard / specification		Note
Generator coil resistance	Charging	0.1 – 1.0 Ω	Y – Y
Generator no-load voltage (When engine is cold)	55 V and more at 5 000 r/min		
Generator Max. output	Approx. 400 W at 5 000 r/min		
Starter motor bursh length	Standard	7 (0.28)	
	Limit	3.5 (0.14)	
Regulated voltage	14.0 – 15.5 V at 5 000 r/min		
Battery	Type designation	FTZ9-BS	
	Capacity	12 V 32.4 kC (9 Ah)/10 HR	

Tightening Torque Specifications

B705H21A07002

Fastening part	Tightening torque			Note
	N·m	kgf·m	lb·ft	
Generator stator bolt	11	1.1	8.0	☞(Page1J-7)
CKP sensor bolt	6	0.6	4.5	☞(Page1J-7)


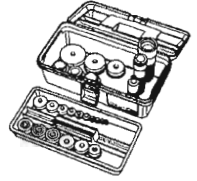

Reference:

For the tightening torque of fastener not specified in this section, refer to "Tightening Torque Specifications in Section 0C (Page0C-7)".

Special Tools and Equipment

Special Tool

B705H21A08001

<p>09900-25008 Multi-circuit tester set ☞(Page1J-4) / ☞(Page1J-4) / ☞(Page1J-5) / ☞(Page1J-5) / ☞(Page1J-6)</p> 	<p>09913-70210 Bearing installer set ☞(Page1J-7)</p> 
<p>09913-75821 Bearing installer ☞(Page1J-7)</p> 	<p>09921-20240 Bearing remover set ☞(Page1J-6)</p> 