# **TROUBLESHOOTING**

### Wobble or vibration in motorcycle

Tire pressure incorrect Faulty tire

Bent rim

Loose wheel bearing

Swing arm bushing worn

Wheel out of balance

#### **Soft suspension**

Weak springs

Rear damper improperly adjusted, oil leakage

#### Hard suspension

Rear damper improperly adjusted Bent shock absorber rod

# Suspension noise Loose fasteners

Worn shock



# U-NUT





# REAR WHEEL REMOVAL

Support the motor cycle on the main stand. Loosen the rear brake adjuster, and remove the brake

Remove the brake arm joint B.

Remove the muffler. (⇒3-7)
Remove the rear wheel mud guard.
Loosen the rear wheel U nut.
Remove the washer.
Remove the rear wheel.

#### **INSPECTION**

Turn the wheel, and check the rim for wobbles.

SERVICE LIMIT : Radical 2.0mm Axial 2.0mm

### **INSTALLATION**

Insert the rear wheel over the final shaft.



Insert the washer, and tighten with the U nut.

TORQUE VALUE: 6.0~8.0kgf ⋅ m



Install the brake arm joint B.
Install the rear brake cable.
Install the rear brake rod adjusting nut.
Install the rear wheel mud guard.
Install the muffler.

# 

• Check the free play of the brake after the rear wheel assemblying



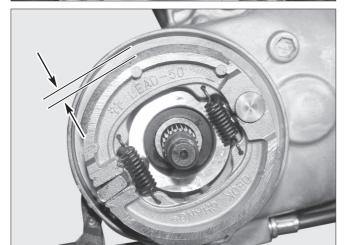
# **REAR BRAKE**

Remove the rear wheel. (⇒11-3)

#### **INSPECTION**

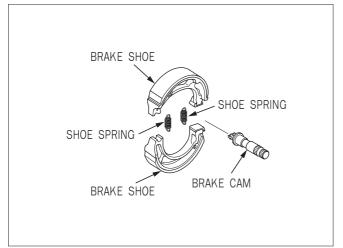
Measure the brake drum of inner diameter

**SERVICE LIMIT: 111mm** 



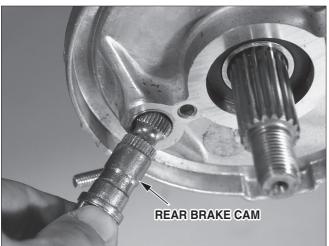
Measure the thickness of the brake lining.

**SERVICE LIMIT: 2.0mm** 



#### REAR BRAKE DISASSEMBLY

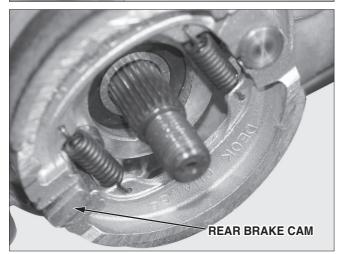
Manually open the brake shoe and remove it. Remove the shoe spring from the brake shoe.



Loosen the rear brake arm fixing bolt.

Remove the rear brake arm, rear brake indicator, brake cam, dust seal.

Remove the rear brake cam.



### REAR BRAKE ASSEMBLY/INSTALLATION

Apply small amount of grease to the brake cam. Install the brake cam.

Install the rear brake dust seal, indicator, rear brake arm.



- Align the punch marks of the brake arm and the brake cam before assembly.
- · Remove the excessive grease after assembling the shoe.

Install the brake shoe and spring.

Install the rear brake shoe to the rear brake cam.

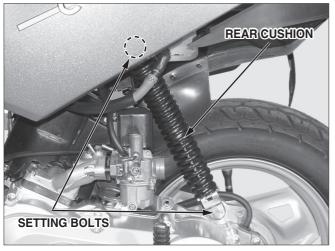
Install the rear wheel.

Install the washer and U nut.



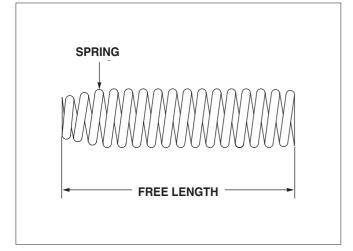
### /!\ NOTE

· Check the brake for smooth operation.









# **REAR CUSHION**

#### **REMOVAL**

Remove the luggage box. ( ⇒3-3)

Loosen the top and bottom rear cushion setting bolts.



· Support the frame firmly prior to working.

#### **DISASSEMBLY**

Install the compressor attachment as shown in the figure.

Install the cushion on the cushion compressor, and compress the spring.

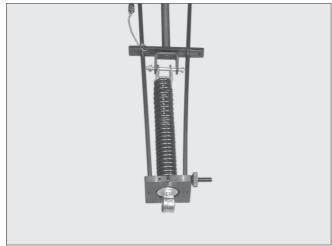
TOOLS: COMPRESSOR ATTACHMENT REAR COMPRESSOR

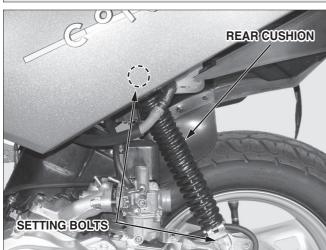
Fix the bottom metal, and loosen the lock nut. Remove the bottom metal.

Remove the stopper rubber, spring from the damper component.

#### **INSPECTION**

Measure the rear cushion spring free length. Check the damper rod for deflection or damage.





#### REAR CUSHION ASSEMBLY/INSTALLATION

Assemble the spring, spring guide, and stopper rubber.

Apply thread locking agent to the lock nut, and install the rear cushion compressor attachment on the damper rod.

Fix the upper joint, and tighten the lock nut.

TORQUE VALUE: 4.0kgf · m

**TOOLS: REAR CUSHION COMPRESSOR** 

**REAR CUSHION COMPRESSOR ATTACHMENT** 

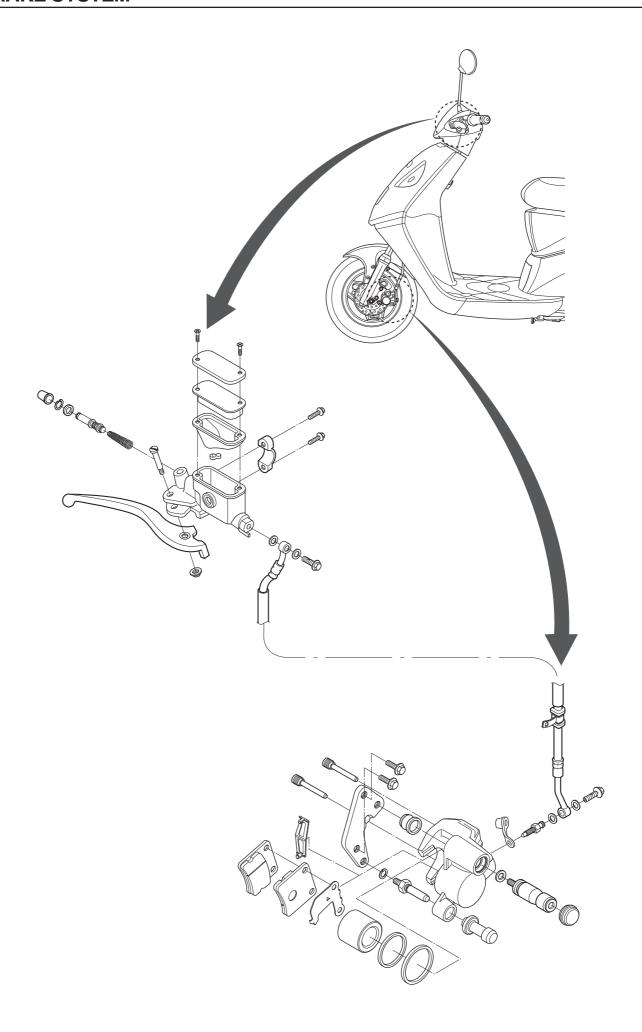
#### **INSTALLATION**

Install the rear cushion.

Tighten the top and bottom of the cushion with bolt.

TORQUE VALUE : UPPER SIDE 3.5kgf · m

LOWER SIDE 3.5kgf · m



# 12. BRAKE SYSTEM

SERVICE INFORMATION · · ·	12-1	BRAKE DISK INSPECTION · ·	12-6
TROUBLESHOOTING	12-1	BRAKE CALIPER · · · · · · ·	12-7
BRAKE FLUID/BLEEDING	12-3	MASTER CYLINDER · · · · · ·	12-9
BRAKE PAD REPLACEMENT	12-4		

# **SERVICE INFORMATION**

#### **GENERAL SAFETY**

Do not allow foreign material to enter the system when replenishing brake fluid.

To prevent chemical changes, do not mix different types of brake fluid.

Do not use the old brake fluid again.

Brake fluid can cause damage to painted, plastic, and rubber surfaces. Take precaution not to allow parts to be contaminated by the brake fluid.

Do not reuse sealing washers.

Clean the disassembled parts with brake fluid, and check for any clogged passage with compressed air.

Bleed the brake hose after removing it.

#### **TROUBLESHOOTING**

#### HYDRAULIC DISK BRAKE

#### **Braking power unsatisfactory**

Air in the brake system.

Moisture in brake fluid

Brake pad and disk contaminated.

Caliper piston seal worn

Master cylinder piston seal worn

Brake pad worn

Caliper inside contaminated

Unsatisfactory caliper sliding part operation

Lopsided wear of brake pad and disk

Low brake fluid level

Clogged brake fluid line

Disk bent or distorted

Caliper piston seized or worn

Master cylinder piston seized or worn

Disk worn

Master cylinder inside contaminated

Brake lever bent

# Hard brake lever movement or unsatisfactory return

Brake system clogged

Caliper piston seized or worn

Unsatisfactory caliper sliding part operation

Brake fluid line clogged

Caliper piston seal worn

Master cylinder piston seized or worn

Brake lever bent

#### **Brake drag**

Brake pad and disk contaminated

Improper wheel alignment

Lopsided wear of brake pad and disk

Disk bent or distorted

Unsatisfactory caliper sliding part operation

Hydraulic system contaminated with dust.

#### **MECHANICAL DRUM BRAKE**

#### Poor brake performance

Improperly adjusted brake

Worn brake linings

Worn brake drum

Worn brake cam

Improperly installed brake linings

Brake cable sticking/needs lubrication

Contaminated brake linings

Contaminated brake drum

Worn brake shoes at cam contact areas

Improper engagement between brake arm and camshaft serrations

#### Brake lever hard or slow to return

Worn/broken return spring

Improperly adjusted brake

Sticking brake drum due to contamination

Worn brake shoes at cam contact areas

Brake cable sticking/needs lubrication

Worn brake cam

Improperly installed brake linings

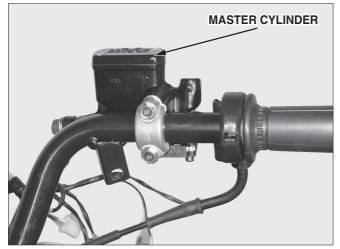
#### **Brake squeaks**

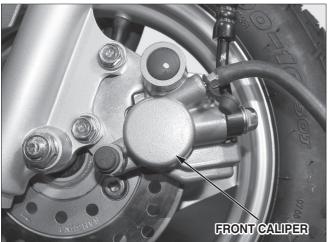
Worn brake linings

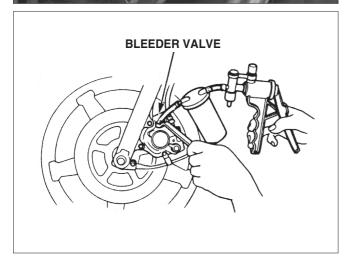
Worn brake drum

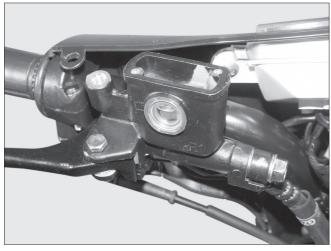
Contaminated brake linings

Contaminated brake drum









# **BRAKE FLUID/BLEEDING**

#### **BRAKE FLUID CHANGE**

## 

- A contaminate disk or pad reduces braking power.
   Do not allow the disk or pad to be contaminated by oil.
- Replace contaminated pads, and remove pollutants from the disk completely.

#### /NOTE

• Check the brake fluid level often, and replenish new fluid as required. Do not spill fluid on painted, plastic or rubber parts.

Remove the front handle cover. ( $\Rightarrow$ 3-6)

Remove the master cylinder cap, master cylinder holder, and diaphragm from the master cylinder.

Connect the bleeder hose to the bleeder valve. Loosen the bleeder valve, and pump the brake lever repeatedly. When there is no more fluid flowing out of the bleeder valve, stop pumping the brake lever.

#### **AIR BLEEDING**

Fill the reservoir with DOT 3 or 4 brake fluid up to the upper level.

# **!** CAUTION

• To prevent chemical changed, do not use different types of brake fluid.

Connect the recommended brake bleeder to the bleeder valve.

Loosen the bleeder valve while pumping the brake lever

Repeat this operation until the brake fluid flows out of the brake bleeder.

# <u></u> NOTE

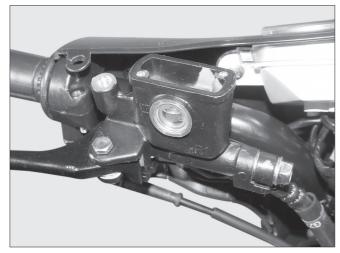
- Check fluid level often, and replenish fluid if the amount of fluid is reduced to the lower level.
- Read the user's manual carefully prior to disassembling or using the brake bleeder.
- Protect the bleeder valve with tape to prevent air from entering the bleeder valve.

Repeat the above operation until there is no air flowing out of the bleeder hose.

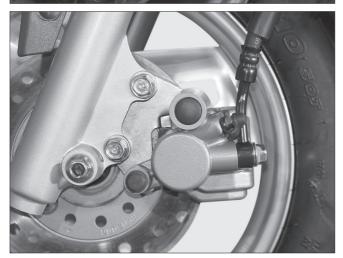
Squeeze the bleeder valve and operate the brake lever to check the ingress of air.

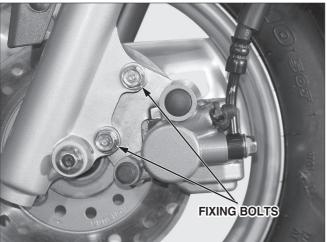
Add brake fluid.

#### **BRAKE SYSTEM**









If the brake bleeder is not used, do the following, First, fill the brake fluid up to the upper limit line. Connect the hose to the bleeder valve to receive brake fluid.

Squeeze the brake lever completely loosen the bleeder valve 1/2 turn, and tighten it again.

#### 

• Do not release the brake lever unitl the bleeder valve is tightened.

Release the brake lever slowly to its fullest extent, and leave it unattended for a few seconds.

Repeat the process specified in item and until there is no more air bubbles coming out of the bleeder valve.

Check the fluid level often, and add fluid if the fluid level is near the lower level.

If no air leaks out of the bleeder hose, operate the brake lever to check the presence of air.

Assemble the bleeder valve.

TORQUE: 0.6kgf · m

Add brake fluid up to upper level. Install diaphragm and mater cylinder cap.

TORQUE VALUE: 1.0kgf · m

# **BRAKE PAD REPLACEMENT**

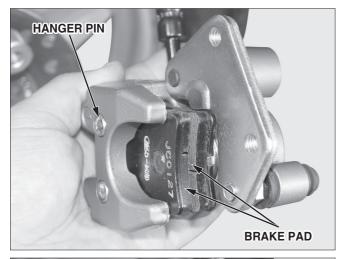
# / NOTE

- · When replacing brake pads, replace whole set.
- Do not remove the brake hose when replacing brake pads.

Loosen the hanger pin.

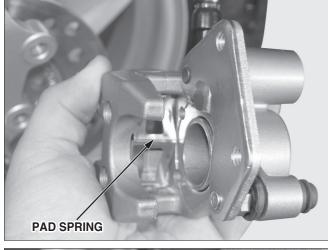
Loosen the 2 front brake caliper fixing bolts from the front fork.

Remove the front caliper.

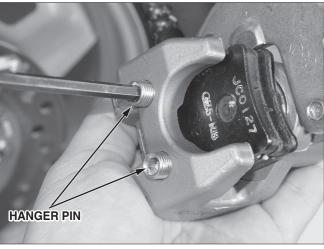


To install a new brake pad into the brake, press the piston to return to the original position.

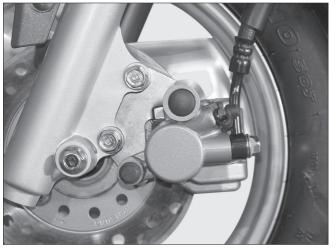
Remove the hanger pin, pad shim, and brake pad.



Verify that the pad spring is installed in specific position.



Install a new brake pad, pad shim, and hanger pin.



Install the brake caliper into the left front fork.

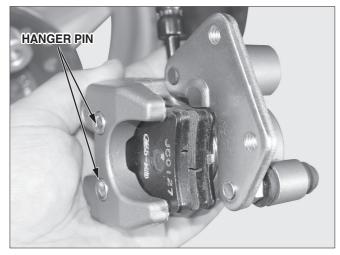
# 

• Be careful not to damage the brake pad.

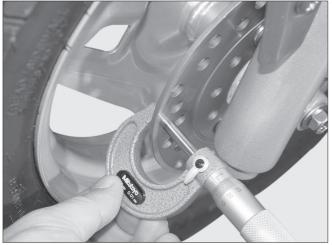
Tighten the caliper braket bolt.

TORQUE: 2.7kgf⋅m

# **BRAKE SYSTEM**



Tighten the hanger pin.



# **BRAKE DISK INSPECTION**

Measure the thickness of the disk.

**SERVICE LIMIT: 3.0mm** 



• Measure the brake disk thickness at the several points and replace if the smallest measurement is less then the specified service limit.



**SERVICE LIMIT: 0.4mm** 



• Replace the brake disk if the disk for damage or cracks.



# **BRAKE CALIPER**

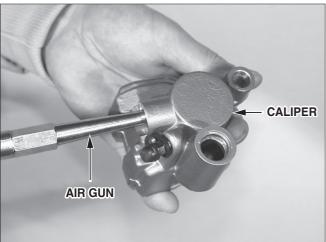
#### **REMOVAL**

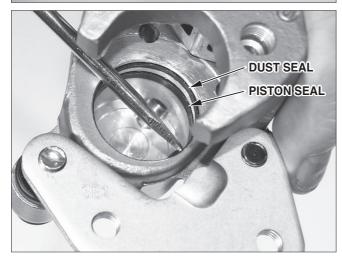
Remove the brake oil bolts and the brake hose from the brake caliper.

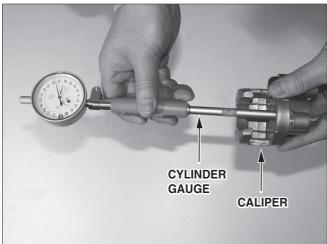
Remove the caliper from the L. front fork and remove the pad spring, hanger pin and brake pad.











## **⚠** CAUTION

- Pay attention not to let the brake fluid adhere to the parts because it can damage the painted surface.
- Wind the hose joint with cloth to prevent the brake fluid from leaking.
- Clean the removed parts with the brake fluid and make sure that the each port isn't clogged with the compressed air.
- Keep the removed parts in order to avoid dust from adhering.

#### **DISASSEMBLY**

Remove the slide pin, the L. bracket, the pin bush, the boot and the pin boot, and the pin bolt from the caliper. If there is any wear or damage in the boot, replace it with the new one.

Wind the caliper with cloth to prevent the piston or brake fluid from leaking.

Remove the piston from the caliper while blowing the low-pressure air in the opening of the brake hose.

# **A** CAUTION

- Never use the high-pressure air or bring the air gun too close.
- · Never touch the inside of the caliper

Disassemble the piston seal and the dust seal

# <u> </u>NOTE

• Pay attention not to damage the inner surface of the caliper.

Clean the piston and the inside of the caliper and remove the oil from the seal groove.

#### **BRAKE CALIPER INSPECTION**

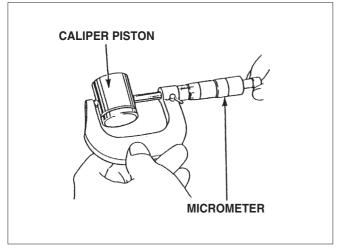
#### Caliper Cylinder

Check the caliper cylinder bore for scoring, scratches or other damage.

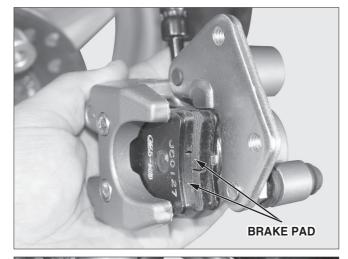
Measure the caliper cylinder I.D. in X and Y axis at serveral points.

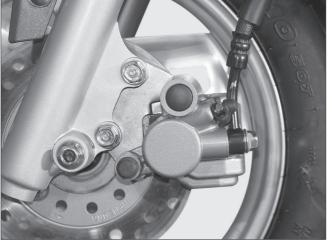
Replace the caliper cylinder if the largest measurement is beyond the specified service limit.

SERVICE LIMIT: 27.10 mm



# PAD SPRING PSTON SEAL PIN BUSH DUST SEAL SLIDE PIN





#### **Caliper Piston**

Measure the caliper piston O.D. in X and Y axis at several points.

Replace the caliper piston of the smallest measurement is less than the specified service limit.

SERVICE LIMIT: 26.84 mm

#### BRAKE CALIPER ASSEMBLY/INSTALLATION

Clean the piston seal and the dust seal with the brake fluid and install them in the caliper. Install the piston in the caliper with the groove side of the piston facing the pad.



- Make sure that each part is free from dust or dirt before reassembly.
- Replace the dust seals and piston seals as a set whenever they are removed.
- When cleaning with the brake fluid, use the specified brake fluid.

Apply the silicone grease to the pin bush.

Connect the pin bush to the portion of the caliper.

Install the pad spring in the caliper.

Install the caliper pin bolt and the slide pin in the caliper

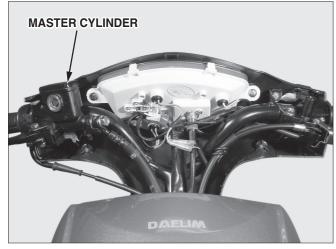
Install the brake pad and the hanger pin in the caliper.

Connect the brake hose to the caliper, and install 2 sealing washers and the brake hose bolt.

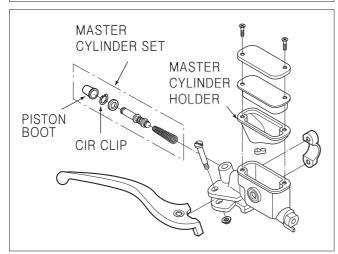
TORQUE: 3.5kgf ⋅ m

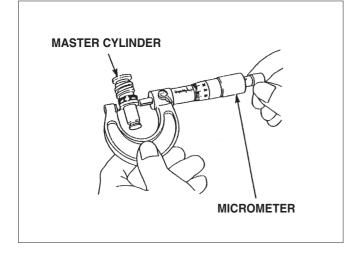
Install the slide pin cap.

Fill the brake fluid, and bleed air.



# MASTER CYLINDER FRONT STOP SWITCH





# **MASTER CYLINDER**

#### **REMOVAL**

Remove the back mirror.

Remove the front handle cover. ( $\Rightarrow$ 3-6)

Remove the rear handle cover. (⇒3-6)

Disconnect the front brake switch wire.

Drain the brake fluid.

Remove the brake hose from the master cylinder.

#### **CAUTION**

- Brake fluid causes damage to the painted, plastic or rubber parts. Do not spill fluid on these parts.
- If contaminated, gently wipe off the fluid with a piece of cloth or wash in water. Close hose joints properly to prevent leakage of brake fluid.
- Clean the disassembled parts with brake fluid, and use compressed air to verify each passage is not clogged.
- Do not allow the disassembled parts to be contaminated by waste material or dust.

Remove the master cylinder holder, and lift out the master cylinder.

#### **DISASSEMBLY**

Remove the front stop switch.

Remove the piston boot, cir clip from the master cylinder.

#### **TOOL: SNAP RING PLIERS**

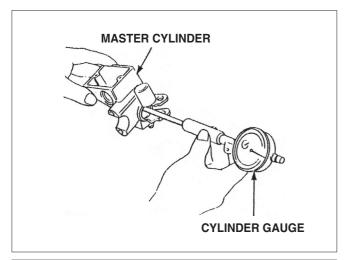
Remove the washer, piston, spring from the master cylinder.

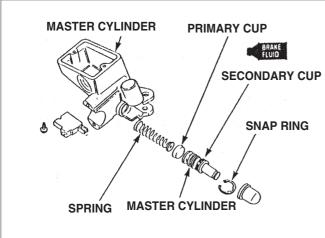
Clean the master cylinder, reserve, master piston with the recommended brake fluid.

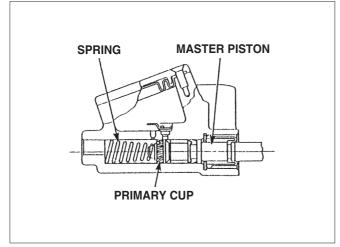
#### MASTER CYLINDER INSPECTION

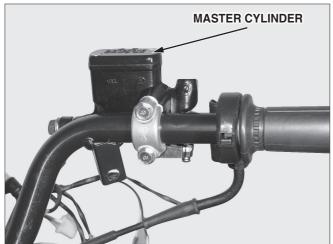
Check the piston periphery for kink or scratch. Check the primary and secondary cups for wear. Measure the O.D of the master pin

SERVICE LIMIT: 10.90 mm









#### NOTE .

• If there is any leak of fluid when installing new piston, it may indicate the side wear of the cylinder by the direction of the piston contacting face. In this case, the master cylinder must be replaced also.

Check the master cylinder for scores, scratches or nicks and replace if necessary.

Measure the master cylinder I.D. in X and Y axis at several points.

**SERVICE LIMIT: 11.08 mm** 

#### MASTER CYLINDER ASSEMBLY/INSTALLATION

## **!** CAUTION

- · Replace the piston, spring, cups and snap ring as a set.
- Be sure that each part is free from dust or dirt before reassembly.
- When cleaning with the brake fluid, use the specified brake fluid.

Coat the piston cup with the fresh brake fluid and install it on the piston. Install the spring with its larger diameter end toward the master cylinder.

## **A** CAUTION

- When installing the cups, do not allow the lips to turn inside out. (Refer to the drawing.)
- · Note the installation direction of the snap ring.
- Be certain that the snap ring is seated firmly in the groove.

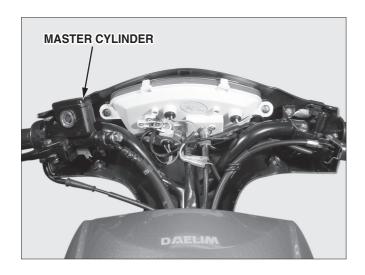
Install the rubber boot in the groove properly.

**TOOL: SNAP RING PLIERS** 

Install the master cylinder to the handle bar.

# <u></u> NOTE

- Install the holder with its "UP" mark facing upwards, and align the holder joint with the punch mark on the handle bar.
- · Tighten the holder upper bolt first.



Install the brake hose to the master cylinder with 2 new sealing washers and the hose bolt.

TORQUE VALUE : 3.5kgf ⋅ m

Connect the brake stop swtich wire. Fill the brake fluid, and bleed air. Install the rear handle cover. (⇒3-6) Install the front handle cover. (⇒3-6) Install the back mirror.

# **MEMO**

# 13. BATTERY/CHARGING SYSTEM

SERVICE INFORMATION	13-1	CHARGING SYSTEM INSPECTION.	13-4
CHARGING DEVICES LOCATION .	13-2	<b>HEADLIGHT VOLTAGE INSPECTION</b> .	13-6
TROUBLESHOOTING	13-3	REGULATOR/RECTIFIER INSPECTION .	13-6
BATTERY REMOVAL/INSTALLATION .	13-4	A.C. GENERATOR	13-7
BATTERY INSPECTION	13-4	RESISTER INSPECTION	13-9

# SERVICE INFORMATION

#### **⚠** WARNING

- Do not place flammable materials near battery when charging. This can be a fire hazard as hydrogen gas is created during charging battery.
- Do not allow battery acid to come into contact with clothes, skin or eyes. Battery acid contact can cause burns or loss of eye sight. If contact occurs, thoroughly clean with water, and if acid enters eyes, flush with water and see a doctor.
- If battery acid gets on clothing, as it can seep through or make a hole through the clothing and make its way to the skin, make sure to change clothing that has come into contact with battery acid and wash the battery acid from the clothes.

#### **⚠** CAUTION

- This vehicle has a maintenance-free(MF) battery. Because MF batteries use different charging equipment, take special care when performing maintenance and especially when replacing parts. Not all regular battery equipment is compatible with MF batteries.
- $\cdot$  When charging the battery, remove the battery from the frame and do not open stopper.
- There is the possibility of damaging the regulator/rectifier, etc. if the terminal or coupler is separated/connected when electricity is over flowing through the electrical devices. Make sure to turn the main switch OFF when performing maintenance to the charging equipment.

If the battery is allowed to repeatedly lose all its charge, is repeatedly over-charged, or if it is left in an un-charged state, the battery can be damaged, its life can be reduced, or it can lose some of its strength. It is important to note here that the battery will naturally last 2-3 years of noromal use, and although it will re-charge, its load is reduced, leading to a loss in battery strength.

It is possible for the battery to become overcharged from battery body load. If a battery cell becomes short-circuited and if a state develops where voltage is not created between the terminals, the regulator will not operate and excessive voltage will develops where voltage is not created between the terminals, the regulator will not operate and excessive voltage will develop in the battery and normal cell electrolytes will decrease.

If the vehicle is not used for a long period, make sure to chage the battery every three months. If not so, the battery ability to store electricity is reduced.

A new MF battery will not necessarily be ready for use in the vehicle with only the adding of battery acid. Make sure to charge battery after the adding of battery water in the following instances :

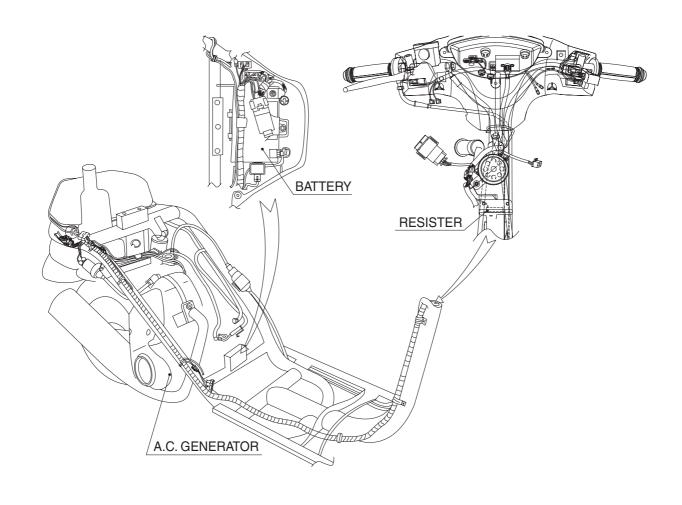
- -When open voltage (voltage between terminals) does not reach 12.4V after the adding of battery water : charge until open voltage reaches at least 12.8V.
- -When battery acid temperature is under  $0^{\circ}$ C: charge normally for 2-3 hours.

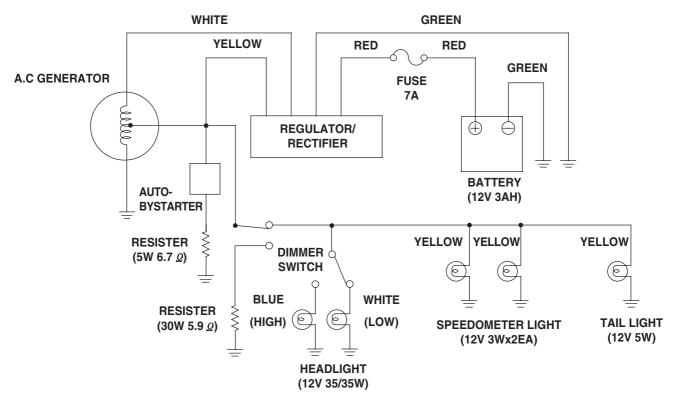
See the part location drawing for the location of charging system parts. ( $\Rightarrow$ 13-2)

Follow the trouble shooting for charging equipment inspection. ( $\Rightarrow$ 13-3)

The charging equipment may ofter appear to be malfunctioning if the couplers or connectors are incorrectly attached. Make sure to check these connections before starting maintenance work on the charging equipment.

# **CHARGING DEVICE LOCATION**





# TROUBLESHOOTING

#### **Battery is Overcharged**

Headlight bulb is out.

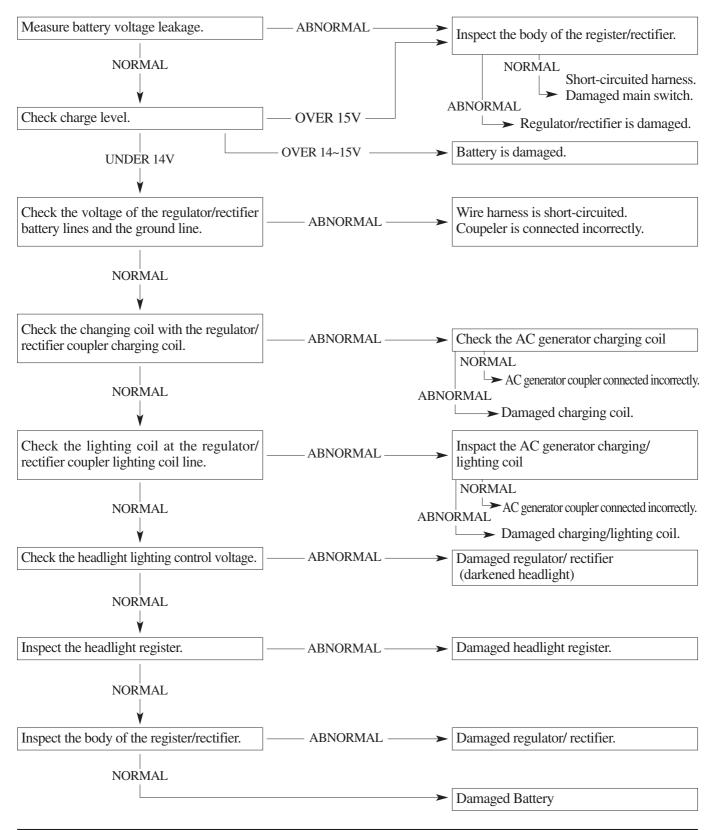
No headlight beam wire.

Headlight register is damaged (disconnected).

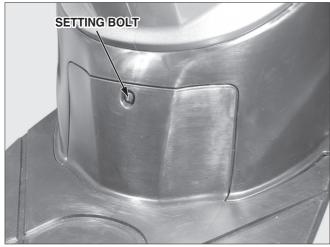
Lighting switch is connected incorrectly.

Regulator/rectifier is not grounded or connected incorrectly.

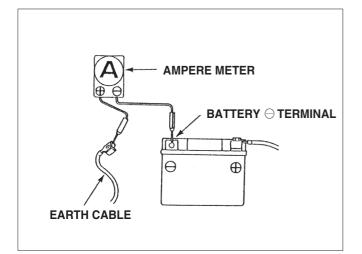
#### **Problems with the Charging System**



#### CHARGING SYSTEM / AC GENERATOR







# BATTERY REMOVAL/INSTALLATION

Loosen the battery cover setting bolt.

Remove the battery cover.

After removing the negative " "terminal of battery firstly, must remove the positive " "terminal of battery.

Install in the reverse order of removal.

# BATTERY INSPECTION CHARGE LEVEL (OPEN-CIRCUIT VOLTAGE) INSPECTION

Remove the battery cover and disconnect the battery terminals.

Measure the voltage between the battery terminals.

- FULLY CHARGED: 13.0-13.2V

- INSUFFICIENTLY CHARGED: Under 12.3V



• Use a digital voltmeter when measuring charge level.

Measure 30minutes later.

**TOOL: DIGITAL CIRCUIT TESTER** 

# CHARGING SYSTEM INSPECTION LEAK TEST

Trun off the main switch, and remove the earth cable from the battery. Connect an ampere meter between the battery terminal and the earth cable, and check current when the main switch is turned off.

# **A** CAUTION

- Use an ampere meter while sequentially changing its measuring range from large to small. If the current level greater than the measuring limit is measured, the ampere meter fuse may be cut.
- Do not turn on the main switch while current is being measured.

**LEAK CURRENT: Not to exceed 1mA** 

#### BATTERY ADJUSTMENT VOLTAGE CHECK

Connect the voltmeter between the battery terminals. Connect the amperemeter between the main fuse termanals.

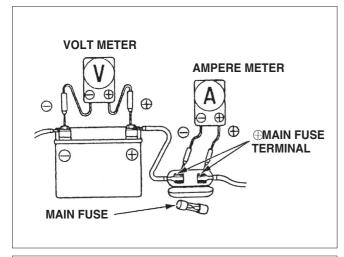
Start the engine and measure the charging voltage and ampere while incresae the rpm gradually.

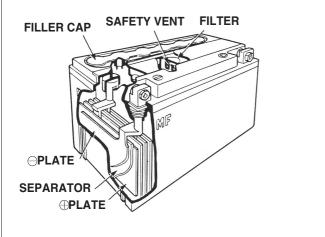
CONTROL VOLTAGE (CHARGING SIDE) :  $14.5 \pm 0.5$ V/5,000rpm (LAMP SIDE) :  $13.1 \sim \pm 0.5$ V/5,000rpm

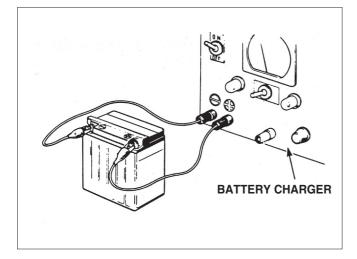
# 

- Check with fully charge the battery which has the voltage between terminal of 12.8~13.0V.
- In case that the engine is started by the starter motor, measurement must be performed after accelating (charging) for 10 seconds.

#### **CHARGING SYSTEM / AC GENERATOR**







#### CHARGING VOLTAGE CHECK

Use the full change battery (12.8~13.2V)

In case that charging the voltage is not controled properly, the battery cannot be used due to the battery solution dried up by over charging and the deformation caused by the damage of the plates.

Battery control voltage :  $14.5 \pm 0.5 \text{V}(5,000 \text{rpm})$ 

# 

· If you have 1EA of tester, measure current first.

#### **CHARGING CURRENT CHECK**

Check the charging current passed through the generator assy, regulator comp is normal with the discharged battery.

CHARGING CURRENT : 1.5~2.4A/5,000rpm TOOL : DIGITAL CIRCUIT TESTER

#### **BATTERY CHARGING**

Remove the battery from the frame, and connect it to the battery charger.

- -Connect the charger positive (+) cable to the battery positive (+) terminal.
- -Connect the charger negative (-) cable to the battery negative (-) terminal.

# **⚠ NOTE**

· Do not connect the charger to the battery coupler terminals.

Never open the sealed filler cap.

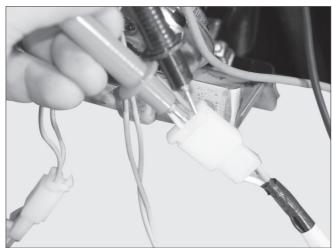
#### **▲** WARNING

- The battery generates hydrogen gas which can be highly explosive. Do not smoke or allow flames or sparks near the battery, easpecially while charging it.
- Turn power ON/OFF at the charger, not at the battery terminals. If the cable is disconnected or connected at the battery terminal during charging, spark may jump and ignite the flammable gas.
- Always remove the battery from the frame when charging it. If the battery is charged while installed in the frame, the electrolyte may spill and corrode the frame components.

CHARGING CURRENT : 0.3A CHARGING TIME : 8~10h

# **▲** WARNING

- Do not let the electrolyte temperature rise above 45  $^{\circ}$ C (113 ). If the electrolyte temperature becomes too high, lower the charging current.
- Quick-charging will shorten the battery life and cause battery damage. It chould only be done in emergency; slow-charging is prefered.





# **HEADLIGHT VOLTAGE INSPECTION**

Remove the front cover. ( $\Rightarrow$ 3-5)

## 

 $\boldsymbol{\cdot}$  Check voltage with the headlight coupler connected.

After starting the engine, place the dimmer switch to HI and check the voltage between the blue (+) and green (-) wires of the headlight coupler.

# / CAUTION

· Measurement is performed in AC area.

CONTROL VOLTAGE: 12.6~13.6V/5,000rpm

If voltage is incorrect, check the regulator/rectifier.

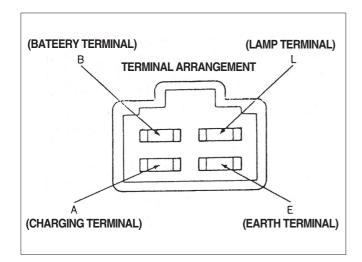
# REGULATOR/RECTIFIER INSPECTION HARNESS CIRCUIT INSPECTION

Remove the front cover. ( $\Rightarrow$ 3-5)

Remove the 4P coupler of the regulator/rectifier and inspect the wiring circuit in the main harness side terminal.

ITEM	MEASUREMENT LOCATION	LEVEL	AREAS OF INSPECTION IF INCORRECT
BATTERY WIRE	Voltage between red " " and green " ".	There must be battery voltage.	Damaged, disconnected main fuse/harness.
CHARGING	Resistance between white wire and	0.4~1.0 (20°C)	
COIL	earth wires. Disconnect the starter.		AC generator (charging, lighting coil
LIGHTING	Resistance between yellow wire and		coupler connection damage) resister(6.7
COIL	earth wires. Disconnect dimmer	0.2~0.8 (20°C)	5W) headlight lighting circuit.
COIL	switch connection		

Inspect part after at least 10 minutes later.

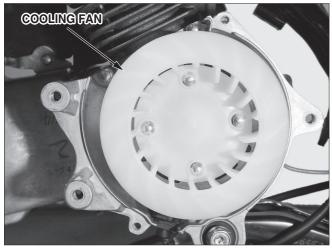


#### REGULATOR/RECTIFIER INSPECTION

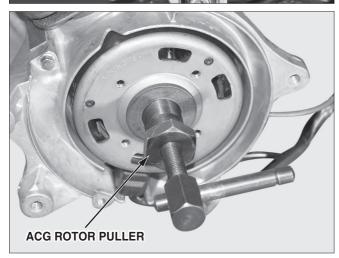
If the inspection of the harness side proves to be satisfactory, check the regulator/rectifier coupler for faulty connection, and measure the resistance between the terminals of the regulator/rectifier.

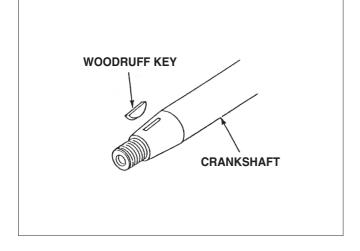
#### **RESISTANCE VALUE**

Tester Tester	A	L	В	Е
A			3-50	
L				5-100
В				
Е		5-100		



# NUT





# **A.C. GENERATOR**

#### **REMOVAL**

Remove the luggage box. ( $\Rightarrow$ 3-3)

Remove the plug maintenance cover. (⇒3-3)

Remove the center cover. ( $\Rightarrow$ 3-3)

Remove the floor side cover. ( $\Rightarrow$ 3-4)

Remove the floor panel. ( $\Rightarrow$ 3-4)

Remove the engine hanger side RH. cover. (⇒3-5)

Remove the plug cap.

Loosen the 3 washer screws, remove the fan cover and the fan cover element A,B.

Remove the fan cover rubber.

Loosen the 2 flange bolts, remove the fan cover.

Loosen the 4 cooling fan fixing flange bolts, remove the cooling fan.

Hold the flywheel with a universal holder.

#### **TOOL: UNIVERSAL HOLDER**

Remove the flywheel with a ACG rotor puller.

#### **TOOL: ACG ROTOR PULLER 0750-00004**

Remove the connector/coupler on the wire harness or starter motor. Remove the ground wires.

Loosen the 2 pulse generator fixing flange bolts, remove the pulse generator.

Loosen the 2 stator fixing flange bolts.

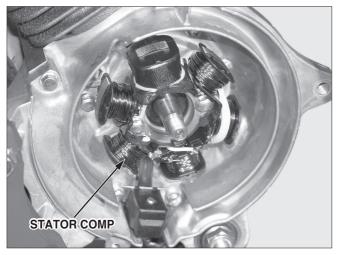
Remove the grommet from the crankcase cover.

Remove the stator.

# **⚠ NOTE**

- Insert the puller shaft and remove the flywheel after inserting the ACG rotor puller and securing it with spanner
- The flywheel may easily removed if you rotate the puller while tapping the roller shaft with metal hammer
- Always use a holder and a puller to remove the flywheel. Do not try to remove the flywheel by hammering directly on it. The crankshaft or components could be damaged.
- · Remove the woodruff key with care not to lose it.

#### **CHARGING SYSTEM / AC GENERATOR**



# FLYWHEEL INSTALLATION

STATOR INSTALLATION

crankcase.

ground wire.

Clean the tapered portion of the crankshaft.

If the flywheel is installed with dust or dirt on the taper, the taper will not make secure contact with the flywheel and there will be excessive force on the woodruff key.

Note the direction of stator, and install the stator on the

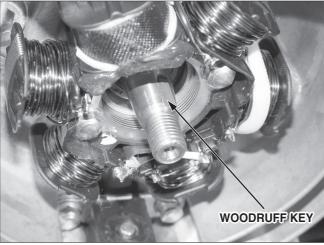
Install the grommet to R. crankcase cover.

Install AC generator wire coupler to wire harness.

Install the connector to starter motor, then install the

Insert the woodruff key into the key groove in the crankshaft.

Set the flywheel groove to the woodruff key and install the flywheel on the crankshaft.

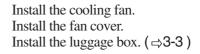


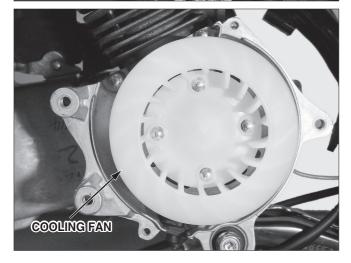
#### **A** CAUTION

• Before installing the flywheel, check that no nuts or bolts are magnetically attached to the flywheel. Installing the flywheel with anything attached to it could damage the stator coil.

Hold the flywheel rotor with a holder and tighten the bolt (nut) to the specified torque.











# A.C. GENERATOR(CHARGING COIL) INSPECTION

**⚠ NOTE** 

• This test is done with the starter mounted to the engine.

Remove the center cover.

Disconnect the AC generator coupler. ( $\Rightarrow$ 3-3)

Measure the resistance of the charging coil (between the white wire and ground) and the lighting coil (between the yellow wire and ground).

STANDARD RESISTANCE (20℃)

BETWEEN WHITE WIRE AND GROUND : 0.4~1.0  $\it Q$  BETWEEN YELLOW WIRE AND GROUND : 0.2~0.8  $\it Q$ 

# **RESISTER INSPECTION**

Remove the front cover. ( $\Rightarrow$ 3-5)

Measure the resistance between the register lead wire and ground.

STANDARD VALUE (20°C)

RESISTER (6.7  $\mathcal Q$  5W) GREEN/BLACK/BODY GROUND : 6.3~7.1  $\mathcal Q$  RESISTER (5.9  $\mathcal Q$  30W)PINK/BODY GROUND : 5.6~6.5  $\mathcal Q$ 



• Problems with the resister are caused by operational problems of the starter.

# **MEMO**

# 14. IGNITION SYSTEM

SERVICE INFORMATION	14-1	EXCITE COIL INSPECTION	14-6
<b>IGNITION DEVICES LOCATION</b> .	14-2	PULSE GENERATOR INSPECTION .	14-6
TROUBLESHOOTING	14-3	IGNITION TIMING INSPECTION .	14-7
IGNITION SYSTEM INSPECTION		CDI UNIT	14-7
(PEAK VOLTAGE MEASUREMENT) .	14-4	SIDE STAND IGNITION	
IGNITION COIL · · · · · · · · ·	14-5	CUT-OFF SWITCH · · · · · · ·	14-8

# SERVICE INFORMATION

#### **GENERAL SAFETY**

Refer to the malfunction diagnosis when inspecting ignition devices.

Because the ignition devices have installed electrical advancer devices, it is impossible to adjust ignition timing.

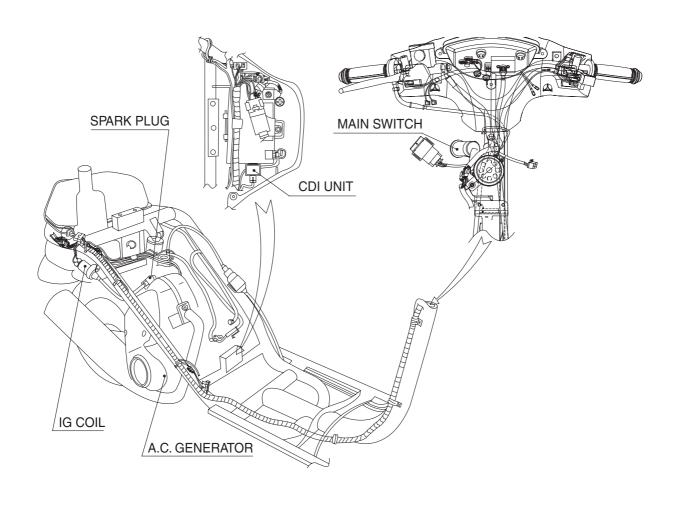
Be careful when handling the ignition devices as they can become easily damaged if dropped or bumped. Also, do not disconnect or connect the connectors and couplers when the main swtich is turned ON as excessive electric current can cause damage in the unit. Always perform maintenance work on the ignition devices with the main switch turned OFF. Ignition devices can often appear to be malfuctioning when the couplers or connectors are disconnected. Check these connections before working on.

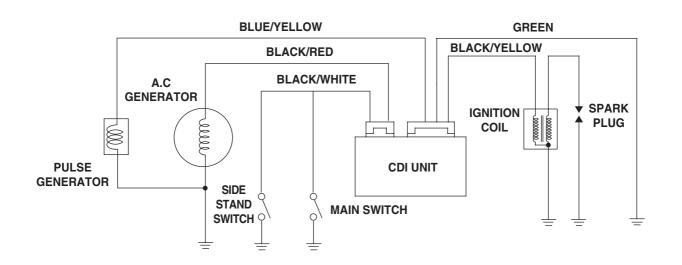
Use recommended spark plug. Using incorrect spark plug may make the engine run badly or damage the engine.

This manual gives explanations on inspections to receive peak voltage. As inspections for coil resistance values are also included, it may be difficult to make a correct determination.

Conduct inspection on the main swtich by referring to the wiring diagram continuity chart. (⇒chapter 16)

# **IGNITION DEVICES LOCATION**

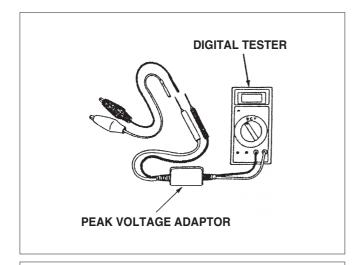


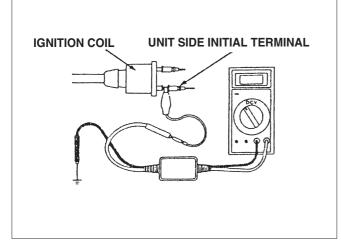


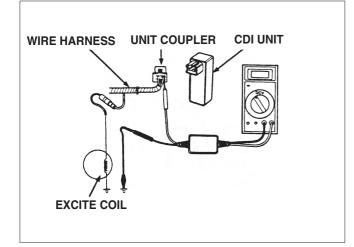
# **TROUBLESHOOTING**

Spark plug does not emit sparks.

	ABNORMAL STATE	POSSIBLE CAUSES (START FROM 1 AND GO THROUGH LIST IN ORDER)
IGNITION COLLEGE IS low.		<ol> <li>Using a tester with a low internal resistance.</li> <li>Cranking speed is low.         Battery is low or kick power is weak.     </li> <li>Influence of tester sampling time (normal state if measured a number of times and shows over the set voltage).</li> <li>Problem in ignition system wiring (disconnected, damaged).</li> <li>Ignition coil is damaged.</li> <li>Excite coil is damaged (measure peak voltage).</li> <li>CDI unit is damaged (when no porblems in 1~6 and spark plug does not emit sparks)</li> </ol>
IGNITION COIL PRIMARY VOLTAGE	No, or almost no peak voltage.	<ol> <li>Adaptor is connected incorrectly.</li> <li>Main switch damaged.</li> <li>CDI unit coupler is connected incorrectly.</li> <li>CDI unit ground wire disconnection.</li> <li>Damage to excite coil (measure peak voltage).</li> <li>Pulse generator is damaged (measure peak voltage).</li> <li>Peak voltage adaptor is damaged.</li> <li>CDI unit is damaged (when no problems in 1~7 and no sparks emitted from spark plug).</li> </ol>
	Spark plug peak voltage is normal but spark plug does not emit sparks.	<ol> <li>Damage to spark plug or leakage of ignition coil secondary current.</li> <li>Damaged ignition coil.</li> </ol>
EXCITE COIL	Peak voltage is low.	<ol> <li>Using a tester with a low internal resistance.</li> <li>Cranking speed is too low.         Battery is insufficiently charged or kick power is weak.     </li> <li>Influence of tester sampling time (normal state if measured a number of times and shows over the set voltage)</li> <li>Excite coil is damaged (when 1~3 is okay).</li> </ol>
E	No, or almost no peak voltage.	<ol> <li>Peak voltage adaptor is damaged.</li> <li>Excite coil is damaged.</li> </ol>
PULSE GENERATOR	Maximum voltage is low.	<ol> <li>Using a tester with a low internal resistance.</li> <li>Cranking speed is too low.         Battery is insufficiently charged or kick power is weak.     </li> <li>Influence of tester sampling time (normal state if measured a number of times and shows over the set voltage).</li> <li>Pulse generator is damaged (when 1~3 is okay).</li> </ol>
ATOR	No, or almost no maximum voltage.	<ol> <li>Maximum voltage adaptor is damaged.</li> <li>Pulse generator is damaged.</li> </ol>







# IGNITION SYSTEM INSPECTION (PEAK VOLTAGE MEASUREMENT)

## **⚠** NOTE

 When sparks are not emitted from spark plug, after checking for disconnection in wires and looseness, measure peak voltage for each wire.

Connect the peak voltage adaptor to the digital tester.

#### **DAELIM PVA MULTI TESTER**

#### **IGNITION COIL PRIMARY VOLTAGE**

# 

- Make sure each wire is correctly connected to ensure correct measurement.
- Inspect when there is cylinder compression pressure and with the spark plug cap securely connected to the spark plug.

Remove the luggage box. ( $\Rightarrow$ 3-3)

With the ignition coil wire connected, contact the peak voltage adaptor to the initial wire adaptor terminal (black/yellow) and ground (on vehicle body.). Turn the main swtich ON, operate the starter motor, and measure the ignition coil initial side peak voltage.

CONTACT POINTS: BLACK/YELLOW TERMINAL " "-BODY EARTH " " PEAK VOLTAGE: OVER 120V

# **<u>A</u>** CAUTION

 When measuring voltage, do not touch the metal part of the handle rod as there is the danger of receiving an electric shock.

#### **EXCITE COIL**



• Assemble the spark pug to the cylinder head, inspect in a state having compression pressure.

Remove the luggage box. ( $\Rightarrow$ 3-3)

Remove the CDI unit. (⇒14-7)

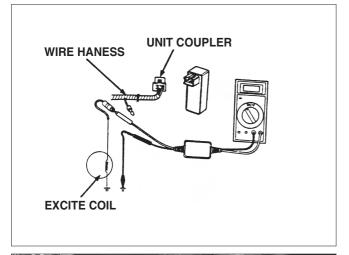
Remove the coupler from the CDI unit contact the peak voltage adaptor to the excite coil wire (black/red and green) of the harness side coupler.

Operate the starter motor and measure the excite coil peak voltage.

CONTACT POINTS: BLACK/RED TERMINAL "-BODY EARTH " "PEAK VOLTAGE: OVER 120V

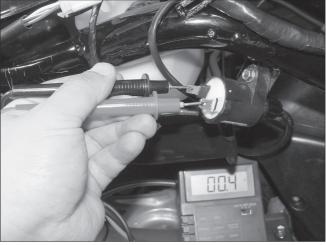


 When measuring voltage, do not touch the metal part of the handle rod as there is the danger of recieving an electric shock.









#### **PULSE GENERATOR**

# <u></u> NOTE

• Inspect with the spark plug assembled and while there is compression pressure.

Remove the CDI unit. (⇒14-7)

Remove the coupler from the CDI unit and connect the peak voltage adaptor to the pulse generator wire (blue/ yellow and green) of harness coupler.

Operate the starter motor and measure the peak voltage of the pulse generator coil.

CONTACT POINTS: BLUE/YELLOW TERMINAL "".-BODY EARTH" "PEAK VOLTAGE: OVER 1.5V

#### () CAUTION

 When measuring voltage, do not touch the metal part of the handle rod as there is the danger of receiving an electric shock.

Perform the following inspections if measured peak voltage in the CDI unit coupler portion is abnormal.

Disconnect the AC generator cord coupler and connect the adaptor.

In the same manner as with the unit coupler side, measure peak voltage and compare with the first peak voltage.

When the measured value in the unit side is abnormal and normal in the pulse generator side, the problem is either incorrect coupler connection or disconnection of the wire harness.

When both measurements are abnormal, this indicates a problem with the pulse generator. Refer to the malfunction diagnosis are go through each step.

# **IGNITION COIL**

#### **REMOVAL/INSTALLATION**

Remove the luggage box. (⇒3-3)
Remove the plug maintenance cover.
Remove the spark plug cap.
Loosen the ignition coil fixing bolt.
Disconnect the ignition coil wire.
Remove the ignition coil.
Install in the reverse order of removal.

# ⚠ CAUTION

· Arrange the cords in the right place.

# **INSPECTION (RESISTANCE MEASUREMENT)**

Remove the luggage box. ( $\Rightarrow$ 3-3)

Measure primary coil resistance between the green and black/yellow terminals.

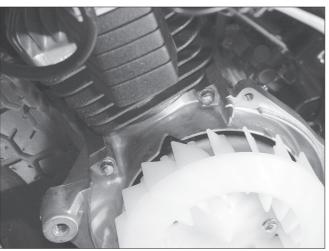
**STANDARD VALUE**: 0.1~0.5 **②** (20°C)

#### **IGNITION SYSTEM**









Measure the secondary coil resistance between the plug cap and green wire terminals.

#### RESISTANCE VALUE (SPARK PLUG CAP CONNECTION): 6.5~9.5 kg (20°C)

The coil which the resistance value indicate " "(disconnection) remove the plugcap, and measure the resistance of secondary coil.

Measure the resistance between the high tension code and green code terminals.

RESISTANCE VALUE:  $2.6 \pm 1.25 \,\text{kg}$  (20°C).

# **EXCITE COIL INSPECTION**

#### 

• Assembly the spark plug to the cylinder head, and inspect in an state having compression pressure.

Remove the luggage box. ( $\Rightarrow$ 3-3)

Remove the connection of the AC Generator wire connector (black/red), measure the resistance between the terminal of AC generator and body earth.

**STANDARD VALUE**: 500 **2** ±20% (20°C)

# PULSE GENERATOR INSPECTION

/!\ NOTE

• The inspection of pulse generator is performed in a state assembling to the engine.

Remove the luggage box. ( $\Rightarrow$ 3-3)

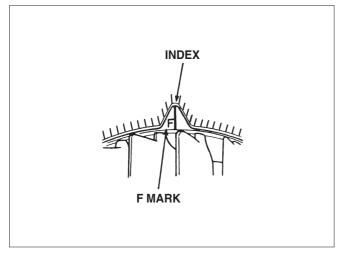
Remove the connection of the AC generator 6P coupler, and measure the resistance between the blue/ yellow of starter and green code.

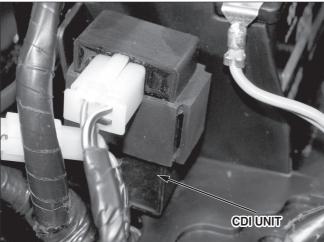
**STANDARD VALUE**: 100 **2** ±20 % (20°C)

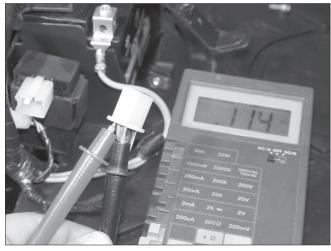
# **IGNITION TIMING INSPECTION**

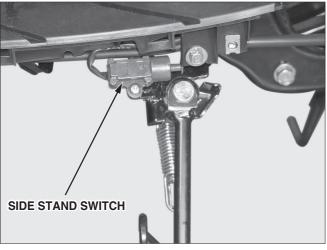
<u></u> NOTE

- · As a CDI device is used in this vehicle, there is no need for adjusting ignition timing. If ignition timing problems occur, inspect the CDI unit and the AC generator and replace if any malfunctions are found in the devices.
- Ignition timing inspection well read the instruction manual of timing light or revolution-indicator, and handle it exactly.









Warm up the engine.

Remove the center cover.

Remove the floor panel.

Remove the fan cover.

Connect timing light to the high-tension cord.

When engine rpms are at 1,800, ignition timing is correct if the "F" mark and crank case index mark are aligned.

IGNITION TIMING: 17 DEGREES ±2 BTDC/1,800 rpms

**⚠ NOTE** 

· Index mark must face the spark plug.

### **CDI UNIT**

#### REMOVAL/INSTALLATION

Remove the luggage box. ( $\Rightarrow$ 3-3)

Disconnect the coupler from the CDI unit and remove CDI Unit.

Install in the reverse order of removal.

#### **CIRCUIT INSPECTION**

Remove the coupler from the CDI unit, and check the ignition system circuits from the wiring coupler side.

INSPECTION ITEM	CHECK POINT	STANDARD VALUE
PULSE GENERATOR	BLUE/YELLOW AND GREEN	50~200 <b>Q</b> (20°C)
IGNITION COIL		
-PRIMARYCOIL	BLACK/YELLOW AND GREEN	0.1~0.5 <b>Q</b> (20°C)
-SECONDARY COIL	GREEN AND HIGH-TENSION CORD	
	(ATTACH THE PLUG CAP)	6.3~10.3K <b>Q</b> (20°C)
	(DETACH THE PLUG-CAP)	3.3± , K <b>Q</b> (20°C)

#### **TESTING BY CDI TESTER**

Check the CDI unit spark performance by using a CDI tester.

· Read tester manual carefully prior to using the tester.

# SIDE STAND IGNITION CUT-OFF SWITCH

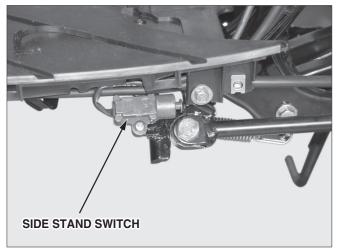
#### **INSPECTION**

Remove the plug maintenance cover/ center cover. ( $\Rightarrow$ 3-3)

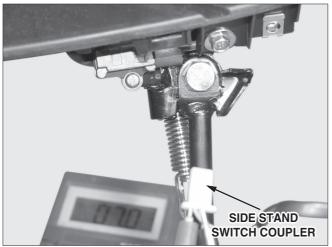
Remove the coupler of the side stand switch.

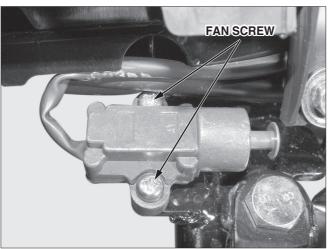
Check for continuity between the terminal as shown below:

### **IGNITION SYSTEM**



ITEM	TERMINAL	SPECIFICATION
ON (Side stand is Retracted)	BLACK/WHITE AND GREEN	NO CONTINUITY
OFF (Side stand is Lowered)	BLACK/WHITE AND GREEN	CONTINUITY





### **REMOVAL**

Remove the floor side cover. (⇒3-4) Remove the plug maintenance cover/ center cover.

Remove the plug maintenance cover/ center cover  $(\Rightarrow 3-3)$ 

Remove the side stand switch mounting 2 bolts.

Release the wire clamps and remove the side stand switch.

### **INSTALLATION**

Install in the reverse order of removal.

# 15. STARTING SYSTEM

SERVICE INFORMATION	15-1	STARTER MOTOR	15-4
STARTING DEVICES LOCATION $\cdot$	15-2	STARTER RELAY INSPECTION $\ \cdot \ \cdot$	15-7
TROUBLESHOOTING · · · · · · ·	15-3	STARTER PINION GEAR INSPECTION $\cdot$ $\cdot$	15-7

# **SERVICE INFORMATION**

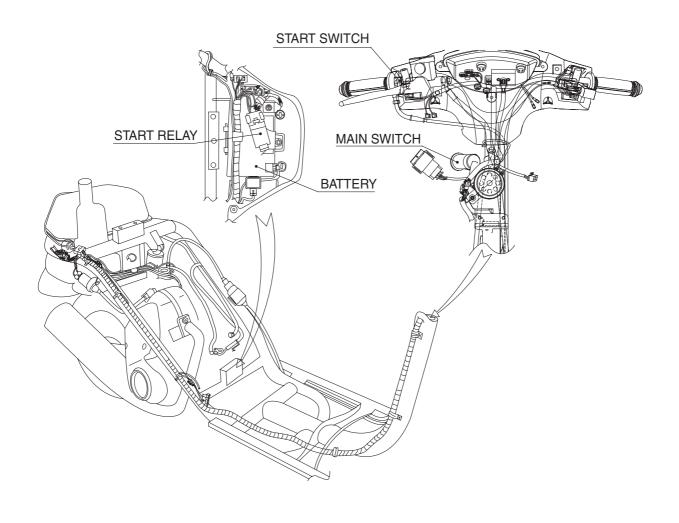
### **GENERAL SAFETY**

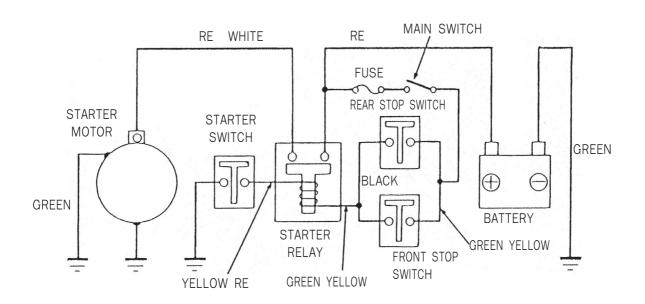
### **▲** WARNING

• When performing maintenance on the starter motor and related parts, turn the main switch to OFF. There is the danger of the starter motor unexpectedly operating if the main switch is not turned to OFF.

First check connection with battery and battery charge level before beginning maintenance on the starter motor. It is possible for the starter motor coil to become damaged if the starter is operated when the engine does not turn over.

# STARTING DEVICES LOCATION



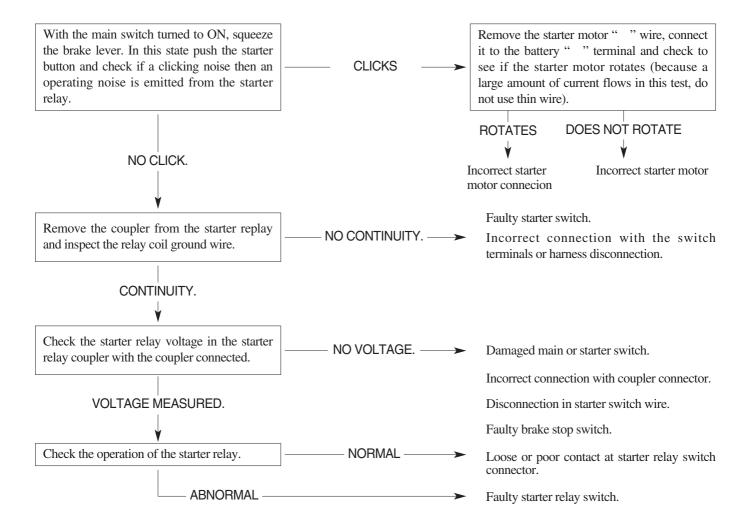


### **TROUBLESHOOTING**

### Starter motor does not rotate (No response from starter motor).

Check to see if the fuse is burned out.

Check to turn on the lamp of stop switch.



### Starter motor rotates but crank shaft does't

Incorrect starting clutch. Incorrect starter gear. Starting clutch slip

### Starter motor operates in free-wheel

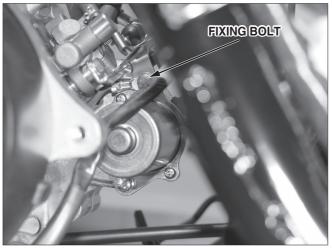
Internal fault of starter motor Driven gear slips.

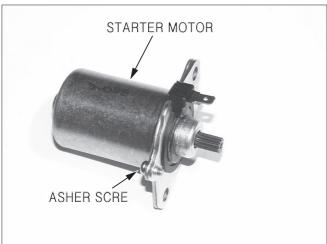
### Weak rotational power in starter motor

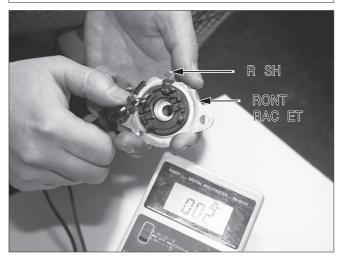
Battery is insufficiently charged.
Incorrect connection of battery terminal cord.
Damaged starter motor.
Ground wire is connected incorrectly
Brush is damaged or worn.

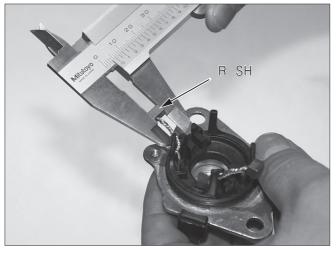
# Starter motor and crank shaft rotate but does not turn engine over.

Incorrect starting system. Faulty engine.









### STARTER MOTOR

### REMOVAL/INSTALLATION

Remove the luggage box. ( $\Rightarrow$ 3-3)

Remove the center cover. ( $\Rightarrow$ 3-3)

Remove the floor side RH. cover. ( $\Rightarrow$ 3-4)

Disconnect the starter wire connector, remove the wire from the wire fixing clamp.

Loosen the 2 starter motor fixing bolts.

Remove the starter motor.

Install in the reverse order of removal.

### NOTE

- · Accurately tighten the earth wire.
- Turn off the main switch prior to servicing the starter motor. If power is connected, the starter motor may be activated and damaged.

### DISASSEMBLY

Remove the starter motor screws and remove the motor cover.

### NOTE!

• Record the order so the parts can be installed correctly later.

### INSPECTION

- Check for continuity of the starter motor case.
  -Between cord terminal" " and bracket" ": normal if no continuity.
- -Between cord terminal and brush (black wire): normal if there is continuity.

If abnormal, replace with a new one.

Measure the brush length. Replace the brush if it is worn beyond the service limit.

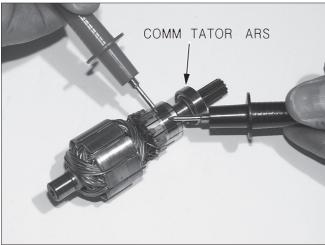
**SERVICE LIMIT: 3mm** 

### **STARTING SYSTEM**



Check the commutator for:

- -Damage or abnormal wear. Replace with a new one.
- -Discoloration of the commutator bar. Replace with a new one.
- -Metallic debris between commutator bars. Clean it off.



Check for continuity between pairs of commutator bars.

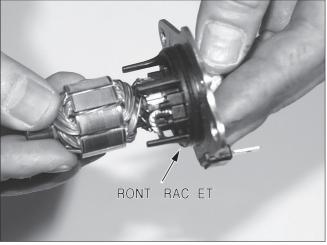
Make a continuity check between individual commutator bars and the armature shaft.

There should be no continuity.



Check the bearings.

- -Do not rotate smoothly. Replace with a new one.
- -Loose bearing. Replace with a new one.



### STARTER MOTOR ASSEMBLY

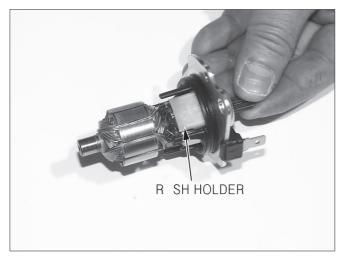
Carefully insert the armature shaft into the front bracket.

Align the front bracket notch with the brush.

### / CAUTION

• The sliding surcfaces of the brushes can be damaged if they are not installed properly.

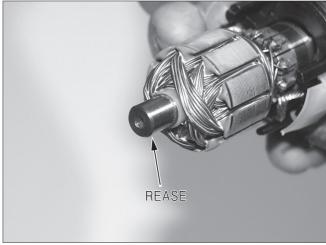
### **STARTING SYSTEM**



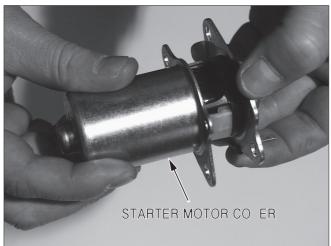
Insert the brush spring into the brush holder and install the front bracket.

### 

• Insert the brush spring with care so that it does not lean in the holder.



Apply grease to both ends of the armature shaft.



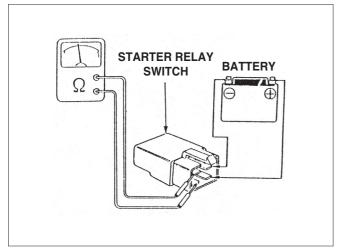
Install the starter motor cover.

# <u></u> NOTE

• The coil may be damaged if the magnet pulls the armature against the case.



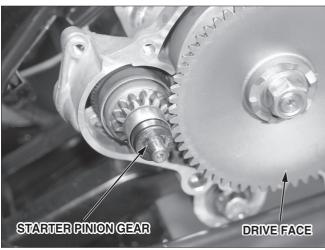
Align the front bracket with the cover. Tighten the washer screw.



### STARTER RELAY INSPECTION

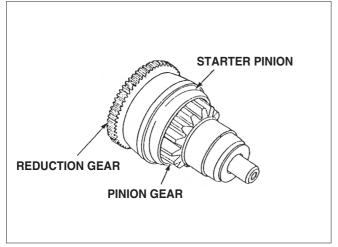
Remove the luggage box. ( $\Rightarrow$ 3-3)

When battery voltage is applied between the starter relay green/yellow wire and yellow/red terminals, there should be continuity between the red and red/white terminals. The terminals are distinguished by the corresponding wire color of the wire harness connector.



### STARTER PINION GEAR INSPECTION

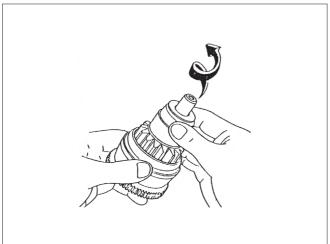
Remove the L. side cover. (⇒7-2) Remove the drive face. (⇒7-6) Remove the starter pinion gear. Install in the reverse order of removal.



### **INSPECTION**

Wear or damage to the pinion, reduction gears. Replace with a new one.

Worn journals. Replace with a new one.



Check if the pinion gear moves smoothly along the

Pinion gear does not move smoothly. Replace with a new one.



### 16

# 16. LIGHTS/METER/SWITCHES

SERVICE INFORMATION $\cdots$	16-1	HANDLE SWITCH INSPECTION .	16-4
TROUBLESHOOTING · · · · · ·	16-1	FRONT STOP SWITCH INSPECTION ·	16-4
FUEL UNIT · · · · · · · · · · · · · · · · · · ·	16-2	BULBS REPLACEMENT · · · · ·	16-5
OIL LEVEL SWITCH	16-3	METER REPLACEMENT · · · · ·	16-6
MAIN SWITCH · · · · · · · · ·	16-3	HORN INSPECTION · · · · · · ·	16-7

### **SERVICE INFORMATION**

### **GENERAL SAFETY**

Refer to tester owner's manuals when performing continuity inspections.

Refer to wiring diagram (chapter 17) for switch continuity.

After inspecting and/or performing maintenance work make sure the wires and cables are properly placed and connected.

### **TROUBLESHOOTING**

### Fuel meter indicator malfunctioning

Coupler separated.

Harness disconnected.

Float operation malfuction.

Fuel unit damaged.

Meter damaged.

### Fuel meter needle unstable

Coupler loose.

Fuel unit damaged.

Meter damaged.

### Headlight hi-lo not operating

Bulb malfunction.

Dimmer switch damaged.

# Oil indicator light not operating (when there is oil).

Burned out fuse.

Battery insufficiently charged.

Main swtich damaged.

Meter damaged.

Oil level switch damaged.

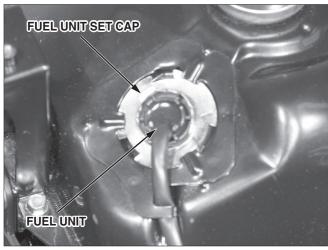
Loose connector.

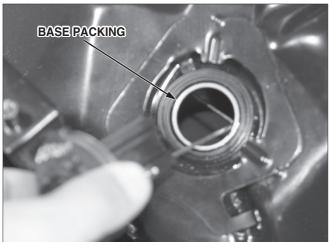
Harness disconnection.

### Oil indicator does not turn off (when oil is out)

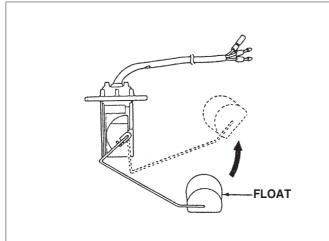
Oil level switch damaged.

Green/red wire joined.









# **FUEL UNIT**

### **REMOVAL**

Remove the luggage box. ( $\Rightarrow$ 3-3)

Remove the fuel unit wire from the wire harness.

Turn the fuel unit fixing unit set cap comp to the left, and remove it.

Remove the fuel unit from the fuel tank.

### <u></u> NOTE

- Be careful of prevention the fuel unit wire from damaging.
- When disassembling, be careful of prevention the float arm from damaging.

Remove the base packing.



· Check for damage.

### **INSTALLATION**

Install the base packing to the fuel tank. Install the fuel unit.



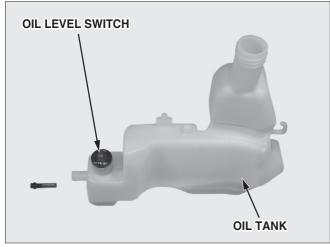
- Install it aligning the loop part of fuel tank. part of the fuel unit with the
- · Check the fuel leakage.

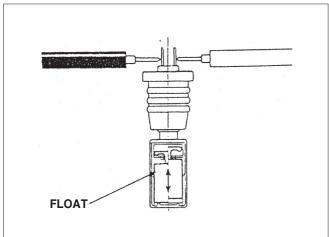
### **INSPECTION**

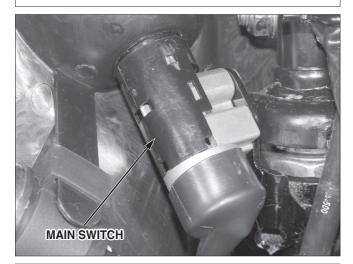
Move the float upward and downward, and measure the resistance between the terminals.

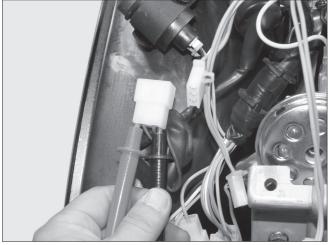
WIRE TERMINAL	FLOAT UPPER LINE	FLOAT LOWER LINE
GREEN AND YELLOW/WHITE	33	400~750
GREEN AND BLUE/WHITE	400~750	33
BLUE/WHITE AND BLUE/WHITE	450~750	450~750

When the measured value differs greatly from the standard value, replace the fuel unit.









# OIL LEVEL SWITCH REMOVAL/INSTALLATION

Remove the luggage box. (⇒3-3)
Remove the body cover.
Loosen the bolt jointed with the fuel tank.
Remove the wire of oil level switch.
Remove the oil level switch from the oil tank.
Install in the reverse order of removal.



· Disassemble after adjusting the oil level.

### **INSPECTION**

Move the float to farthest extreme up and down and check the continuity of the terminals.

It's normal state if there is no continuity when the float is up, but continuity when it is down.

# MAIN SWITCH REMOVAL/ INSTALLATION

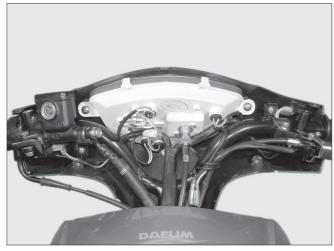
Remove the front cover. (⇒3-5)
Remove the inner box. (⇒3-5)
Disconnect the main switch coupler.
Remove the seat lock cable.
Loosen the 2 screws and remove the main switch.
Install in the reverse order of removal.

### **INSPECTION**

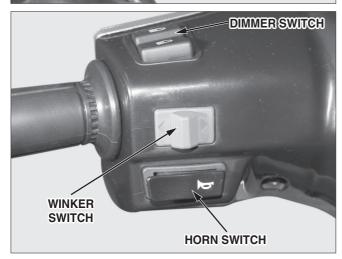
Inspect continuity of each terminal.

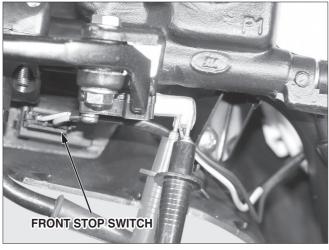
TERMINAL	IG	E	BA1	BA2
ON			<u> </u>	—
OFF	0-	—		
LOCK	0—	—		
COLOR	BLACK/WHITE	GREEN	RED	BLACK

### LIGHTS/METER/SWITCHES



# LIGHTING SWITCH STARTER SWITCH





# HANDLE SWITCH INSPECTION

Remove the front handle cover. ( ⇒3-6 ) Remove the handle switch coupler, connector, and inspect continuity of each terminal. If abnormal, inspect the switch.

### LIGHTING SWITCH

	HL	C1	TL	RE
OFF		0-		$\Theta$
(N)		0-	9	
РО		0-	9	
(N)	$\bigcirc$	-0-	9	
Н	$\bigcirc$	-0-	9	
COLOR	BROWN /WHITE	BROWN	YELLOW	PINK

### STARTER SWITCH

	ST	Е
FREE		
PUSH	0—	—O
COLOR	YELLOW/RED	GREEN

### **DIMMER SWITCH**

	HI	LO	HL
LO		<u> </u>	$\bigcirc$
N	<u> </u>	<del>-</del> 0-	$\overline{}$
HI	0-		$\overline{}$
COLOR	BROWN	WHITE	BLUE

### WINKER SWITCH

	R	L	WR
L		0	
N			
R	0-		$\bigcirc$
COLOR	SKY BLUE	ORANGE	GRAY

### HORN SWITCH

	НО	BAT
FREE		
PUSH	0—	— <u> </u>
COLOR	LIGHT GREEN	BLACK

# FRONT STOP SWITCH INSPECTION

Remove the front handle cover. ( $\Rightarrow$ 3-6)

Remove the black wire and green/yellow wire terminals inside the speedometer assembly, and check the following.

- -When the brake lever is pulled continuity.
- -When the brake lever is released no continuity.



### **BULBS REPLACEMENT**

### **HEADLIGHT BULB**

Remove the front cover. ( ⇒3-5 )
Remove the headlight rubber cover.
Push down on the socket and turn to the left.
Replace with new bulb.



### NOTE

• Before replacing the bulb, be sure to check the swtiches for loose connection of the connectors.

Install in the reverse order of removal.



### **M** WARNING

- Headlight bulbs become very hot while the headlight is ON, and remain hot for a while after they are turned OFF
- Be sure to turn the ignition switch OFF and let the bulb cool down before replacement.



- If you touch the bulb with your bare hands, clean it with a cloth moistened with denatured alcohol to prevent early bulb failure.
- Be sure to install the dust cover after replacing the bulb.

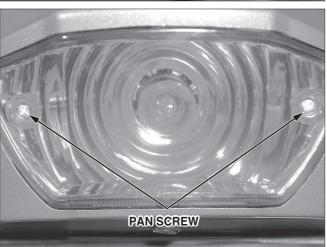


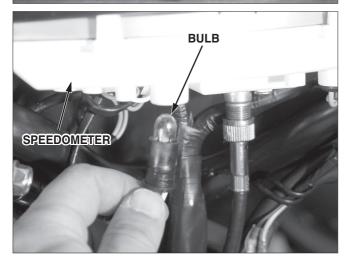
### FRONT WINKER BULB

Remove the front cover. ( ⇒3-5 ) Remove the bulb from the socket, replace with new bulb. Install in the reverse order of removal.

### LIGHTS/METER/SWITCHES









### REAR WINKER BULB REPLACEMENT

Press the winker lens groove and open the winker lens using plain screwdriver.

Remove the bulb from the socket, replace with new bulb. Install in the reverse order of removal.



- Pay attention not to damage the lens.
- Do not apply excessive force when removing the lens.

### TAILLIGHT BULB REPLACEMENT

Loosen the 2 pan screws, remove the tail light lens. Replace the tail stop light bulb with the new one.



• Pay attention not to damage the tail light lens when removing it.

### METER BULB REPLACEMENT

Remove the front handle cover. ( ⇒3-6 ) Remove the bulb socket, replace with new bulb.

### METERS REPLACEMENT

Remove the front cover. ( $\Rightarrow$ 3-5)

Remove the front handle cover. ( ⇒3-6)

Remove the front/rear stop swtich wire.

Remove the speedometer cable from the meter.

Loosen the 4 steering handle tapping screws.

Remove the speedometer coupler connected to the wire harness

Remove the speedometer wiring from the steering handle cable guide.

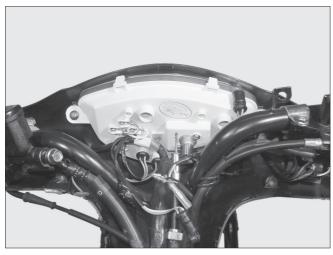
Remove the speedometer and the gear handle cover assemblied from the steering handle.

Roose the 3 tapping screws securing the speedometer and the rear handle cover.

Disconnect the R/L wiring.

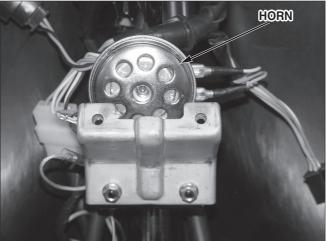
Remove the speedometer assembly.

Install in the reverse order of removal.





- Check the each switch for proper operation.
- The wire and cable must be connected accurately.



# **HORN INSPECTION**

Remove the front cover. (⇒3-5)
Remove the horn wiring, and connect a fully charged 12V battery. Check the sound quality for any abnormalities.



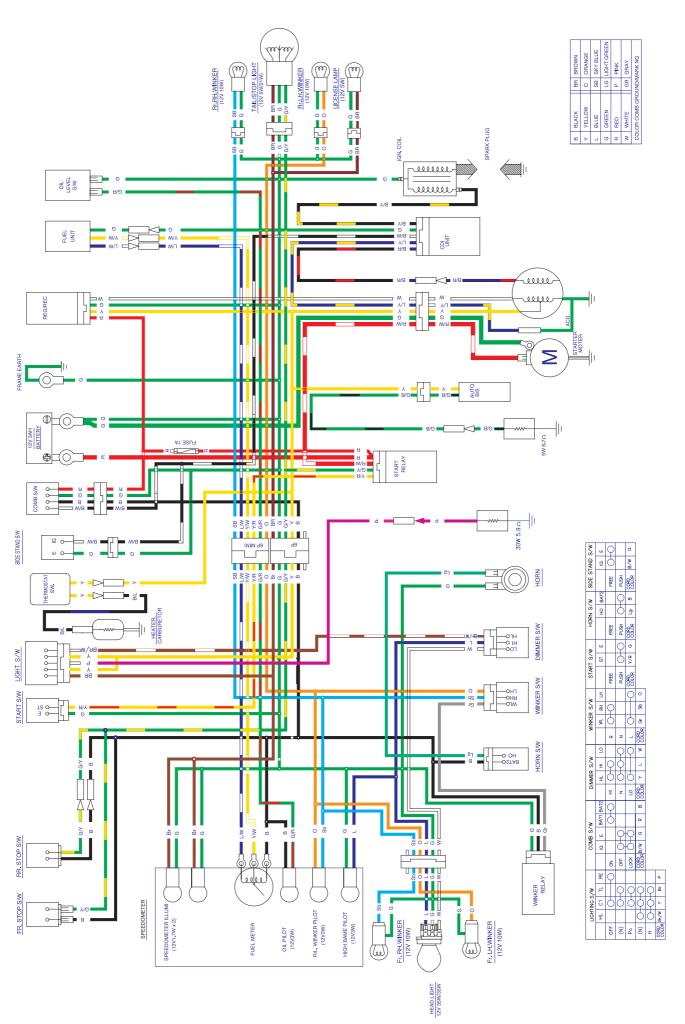
### **LICENCE LAMP**

Loosen 2 screws. Remove the lamp cover. Replace the lamp (12V 4W) Install in the reverse order of removal.



# **MEMO**

# 17. WIRING DIAGRAM



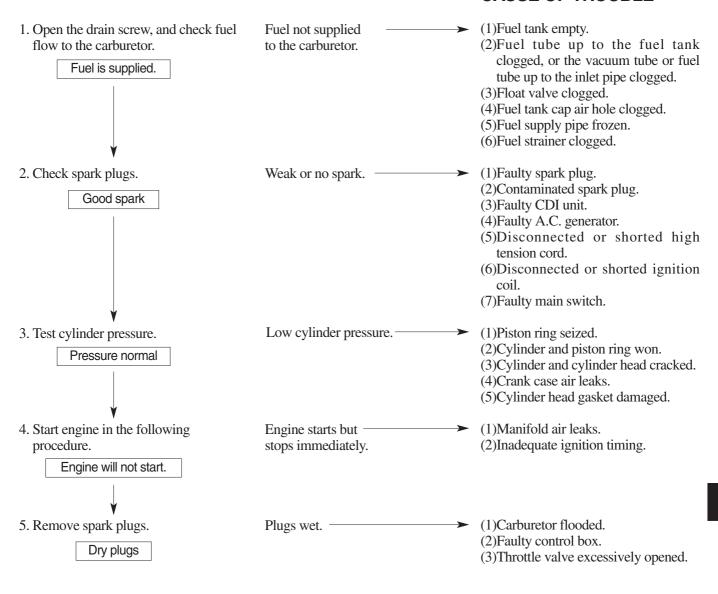
### 4

# 18. TROUBLESHOOTING

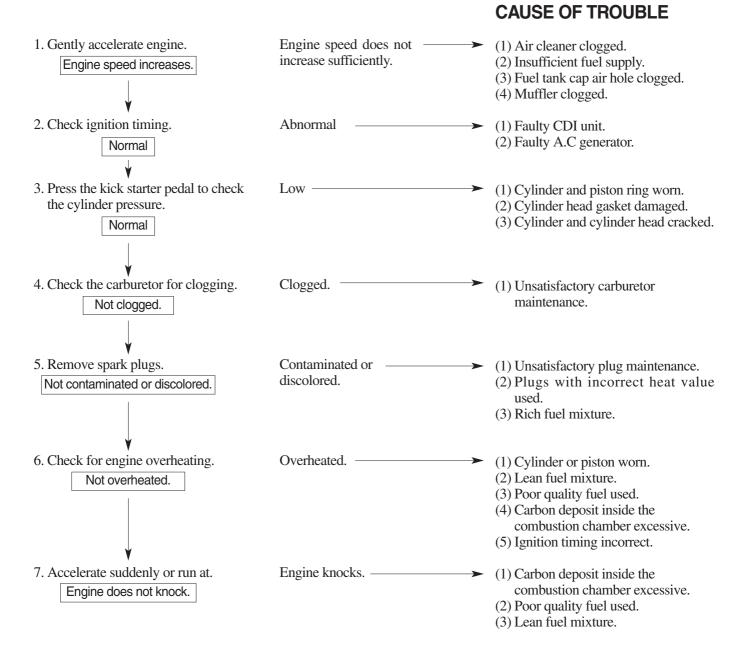
ENGINE DOES NOT START OR IS HARD TO START	18-1
ENGINE OUTPUT INSUFFICIENT	18-2
POOR PERFORMANCE AT LOW SPEED AND IDLING	18-3
POOR PERFORMANCE AT HIGH SPEED	18-3
UNSATISFACTORY OPERATION	18-4
FUEL GAUGE	18-6
STARTER MOTOR	18-7

### **ENGINE DOES NOT START OR IS HARD TO START**

### **CAUSE OF TROUBLE**

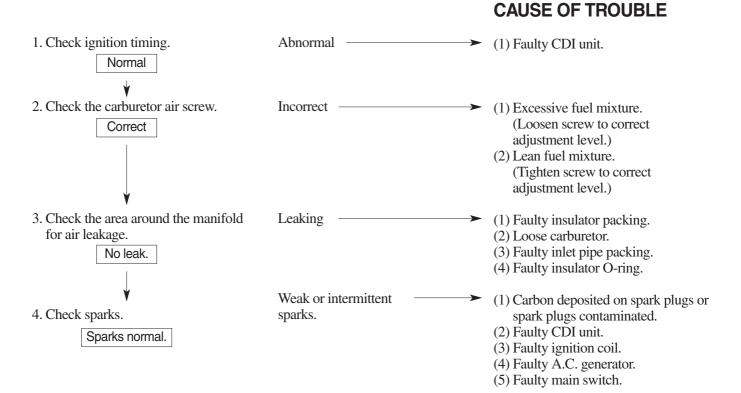


# **ENGINE OUTPUT INSUFFICIENT**



CAUSE OF TROUBLE

# POOR PERFORMANCE AT LOW SPEED AND IDLING



### POOR PERFORMANCE AT HIGH SPEED

### 1. Check ignition timing. Incorrect (1) Faulty CDI unit. (2) Faulty A.C. generator. Correct 2. Remove the fuel tube from the fuel Insufficient fuel supply. (1) Fuel tank empty. valve. (2) Fuel tube or fuel filter clogged. (3) Fuel tank cap air hole clogged. Fuel flows. 3. Remove the carburetor, and check Clogged. (1) Clean. for clogged jets. Not clogged.

### **UNSATISFACTORY OPERATION**

### **CLUTCH DRIVE/DRIVEN PULLEY CAUSE OF TROUBLE** 1. Engine starts but motorcycle does not move. (1) Drive belt worn or slips. (2) Ramp plate damaged. (3) Drive face spring damaged. (4) Clutch lining came off. (5) Driven pulley shaft spline damaged. (6) Faulty transmission. (7) Transmission seized. 2. Vehicle moves slow, engine starts but stops (1) Shoe spring damaged. (2) Clutch outer and weight seized. immediately. (3) Pivot seized. 3. Engine weak at start. (1) Drive belt worn or slips. (2) Weight roller worn. (3) Drive pulley bearing seized. (4) Weak drive face spring. (5) Drive pulley bearing worn or seized. 4. Engine weak at high speed. (1) Drive belt worn or slips. (2) Weight roller worn. (3) Drive pulley bearing worn. 5. Abnormal noise or odor. (1) Oil or grease spilled on the drive belt and inside pulley. (2) Drive belt worn. (3) Weak drive face spring. (4) Driven pulley bearing worn or seized. POOR MECHANICAL PERFORMANCE Check tire pressure. **CAUSE OF TROUBLE** (1) Steering head adjuster excessively tightened. 1. Steering is heavy. (2) Steering cone race or steel ball damaged. 2. Wheels wobbling. ➤ (1) Excessive wheel bearing play. (2) Rim bent. (3) Axle nut loose. 3. Motorcycle pulls to one side. ➤ (1) Front wheel and rear wheel not aligned. (2) Front fork bent.

### POOR FRONT/REAR SUSPENSION PERFORMANCE

Check tire pressure.

### **CAUSE OF TROUBLE**

1. Suspension excessively soft.

(1) Cushion spring weak.

(2) Overloaded.

(3) Damper oil leaks.

2. Suspension excessively hard. —

→ (1) Fork pipe or cushion rod bent.

3. Noise from the suspension.

➤ (1) Sliders stuck.

(2) Cushion stopper rubber damaged.

### POOR BRAKE PERFORMANCE

Check brake adjustment.

### **CAUSE OF TROUBLE**

1. If the arrow were mark and the brake panel mark match with each other.

(1) Brake shoe worn.

(2) Brake cam worn.

(3) Shoe and cam contact surface worn.

(4) Brake drum worn.

(1) Brake shoe worn.

(2) Foreign matter in the brake lining.

(3) Brake drum and shoe contact surface curved.

(1) Brake wire defective or expanded.

(2) Only part of the brake shoe makes contact with the brake drum.

(3) Clay or moisture inside the brake drum.

(4) Brake lining contaminated by grease or oil.

2. Brake noise.

3. Poor braking.

### **FUEL GAUGE**

#### **GAUGE READING INACCURATE (IGNITION SWTICH ON) CAUSE OF TROUBLE** 1. Operate the turn signal to check the Signal continuously (1) Fuse cut. battery circuit. operates dim or does not (2) Battery weak or totally discharged. (3) Faulty ignition swtich. operate at all. Signal operates satisfactorily. (4) Faulty terminal connection. (5) Wire harness damaged. 2. Remove the fuel level sensor, and Needle moves. (1) Faulty float. move float to check the status of operation. Float up: Full position Float down: Empty position Needle not moving. 3. Short-circuit the tank unit terminal Needle not moving. (1) Balance coil damaged or shorted. on the wire harness side. Needle not moving. 4. Terminal joints loose or faulty Unsatisfactory -(1) Terminal loose. connection. (2) Faulty terminal connection. Check -(1) Balance coil/lead shorted or damaged. GAUGE NEEDLE SHAKES OR VERTICALLY WOBBLES. (IGNITION SWTICH ON) CAUSE OF TROUBLE (1) Fuse cut. 1. Operate the turn signal to check the Signal continuously (2) Battery weak or totally discharged. operates dim or does not battery circuit. (3) Ignition switch damaged or shorted. operate at all. Signal operates satisfactorily. (4) Terminal loose of faulty connection. (5) Wire harness damaged. (1) Faulty fuel level sensor connection. 2. Remove the tank and operate the Needle not moving. float. Needle moving. ➤ (1) Damper oil inside the meter 3. Move the float rapidly. One up/down Needle not moving. insufficient. motion per second. Needle moving. (1) Faulty connection between the 4. Start the engine, and measure the Resistance changed sliding arm and the resistance. significantly. fuel level sensor resistance. Resistance not changed. → (1) Terminal connection loose or faulty 5. Check each joint. Unsatisfactory connection. Satisfactory (1) Balance coil/lead shorted or damaged.

### STARTER MOTOR

### STARTING MOTOR WILL NOT TURN CAUSE OF TROUBLE (1) Fuse cut. 1. Apply the brake and check the brake Light not activated. stop light for operation. (2) Battery weak or totally discharged. (3) Faulty stop switch. Light is activated. (4) Faulty terminal connection. (5) Ignition swtich damaged or shorted. 2. Operate the turn signal to check the Signal continuously (1) Battery totally discharged. battery circuit. operates dim or does not operate at all. Signal operates satisfactorily. (60~120 signaling/second) 3. Press the starter switch to check the Unsatisfactory (1) Faulty starter switch connection. (2) Starter magnetic damaged or starter magnetic. shorted. Satisfactory (3) Connector and terminals loose. 4. Connect the starter to battery and Starter does not turn. (1) Worn brush worn. check operation. Light not activated. (2) Faulty connection between the rotor and brush. Starter turns. (3) Faulty the starter motor subwire connection. (4) Terminal loose. (1) Wire harness damaged. STARTER MOTOR TURNS SLOW OR FAILS TO CRANK MOTOR CAUSE OF TROUBLE 1. Operate the turn signal to check the Signal continuously (1) Battery totally discharged. battery circuit. operates dim or does not operate at all. Signal operates satisfactorily. 2. Connect the starter subwire to the (1) Connector/terminal loose. Operates sitisfactory. (2) Faulty starter relay connector. battery. Turns slowly. (with speed not changing) 3. Operate the kick starter. (1) Engine seized. Operates heavy. Operates light. (1) Faulty connection between the rotor and brush. STARTER ROTATE WITHOUT STOPPING CAUSE OF TROUBLE 1. Turn off the ignition switch. (1) Pinion seized. Will not stop Starter relay connection seized.

# **MEMO**