

SERVICE MANUAL



history

HOW TO USE THIS MANUAL

This manual describes effective maintenance procedure for the SL125 manufactured by DAELIM Motor Co., Ltd. To ensure safety and optimal operating conditions of the vehicle, carry out regular inspections according to the maintenance schedule (Section 3).

Sections 1 through 3 provide information on overall vehicle; section 4, assembly and disassembly procedures for external components, and section 5 describes maintenance procedure for the engine, frame and electrical systems.

To facilitate use of this manual, each page starts with disassembly and system diagrams, service information, and troubleshooting guide. If you cannot find the cause of trouble, refer to Section 20: Troubleshooting.

- Contents of this manual and specifications are subject to change without prior notice for improvement of vehicle quality.
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1. SERVICE INFORMATION

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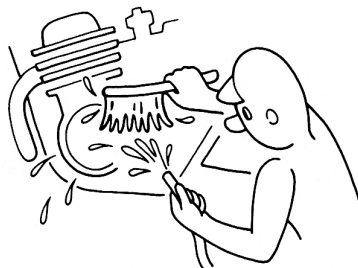
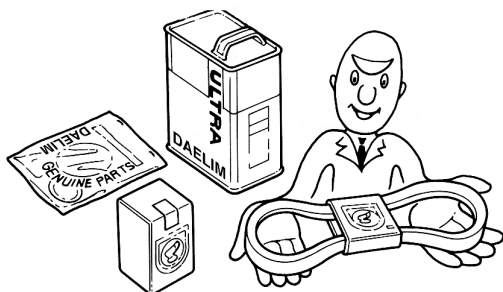
GENERAL SAFETY

WARNING

1. Do not run the engine for a long time in closed or not well-ventilated area because the exhaust gas contains toxic substances such as carbon monoxide, hydrocarbon, nitric oxide.
2. The battery fluid(lean sulfuric acid) is extremely toxic. It is dangerous if skin is exposed to it or if it enters into the eye. Be careful in handling. When exposed to the battery fluid, wash it with water and get a medical check up.(store the battery fluid in a safe place to avoid touching by the children)
3. Pay attention not to be burned and always put on the protection gears because the engine or the muffler is hot right after engine stops.
4. Gasoline is extremely flammable. Maintenance must performed in the place free of the open fire or electric spark.
5. When more than two person are working, always pay attention to other worker's action and alway have safety in mind.
6. The skin exposed to used engine oil can be a major reason of the skin cancer. Pay attention not to exposed and wash carefully with soap and water after handling.
7. If compressed air is used to clean the brake, dust scattered in the air can be breathed in by workers. Please take action not to scatter dust in the brake cleaner, etc.
8. Flammable nitrogen gas is generated during charging the battery so charging must be performed in well-ventilated area and free of the open fire and spark.

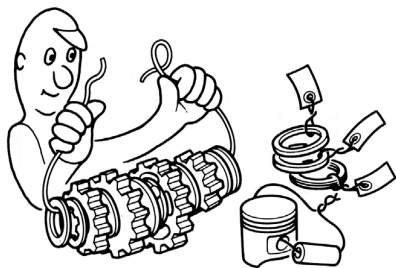
SERVICE RULES

1. Parts and lubrication oil must be DAELIM genuine or recommended parts.
2. Before maintenance, remove deposit or dust from the chasis.



SERVICE INFORMATION

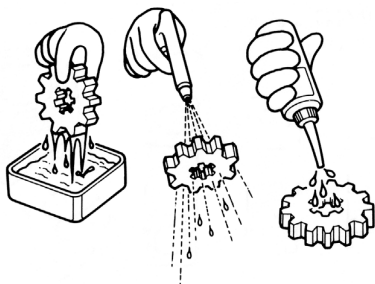
3. Store the parts of each system discriminatively to install each part in the right place.



4. After removing gasket, O-ring, piston pin clip and cotter pin, always replace them with the new one. When removing the snap ring, it can be easily missed after transformation or installation.



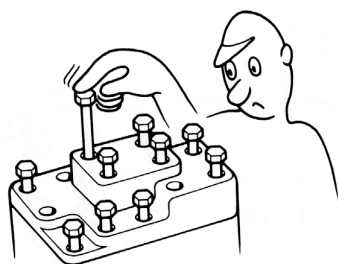
5. Clean the parts after the overhaul and before the test and remove the cleaning oil with compressed air. Apply oil to seal face during installation.



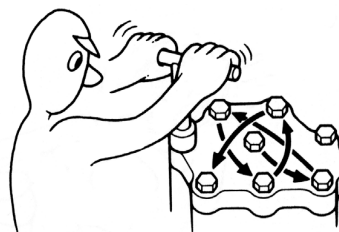
6. Check necessary place and measure necessary data during installation. When installing, return to the state before removing.



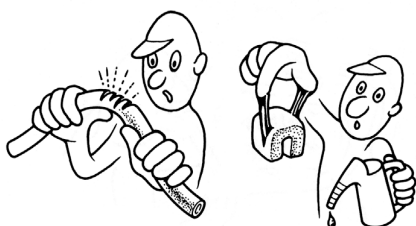
7. Align the bolts to uniform the tightening points before tightening them when you don't know the bolt length.



8. Bolts, nuts and pieces must be tightened from the bigger diameter to the smaller one, from inside to outside and diagonally with the specified torque.



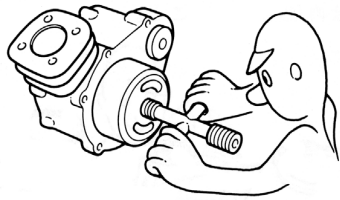
9. Check to see if the rubber part is worn out when removing it and replace it if necessary. Some rubber part is weak to gasoline and kerosene, so pay attention not to soak with gasoline or oils.



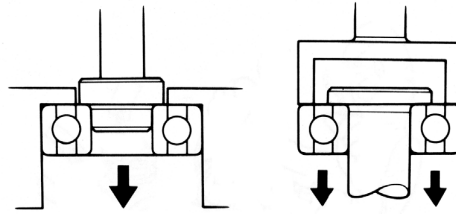
10. Recommended grease must be applied to or filled in the specified place.



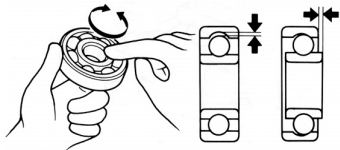
11. Maintenance needed to use the specialized tools must be performed with the right tool.



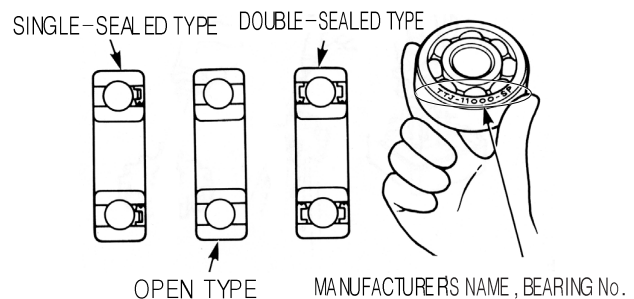
12. Never reuse the ball bearing removed with the ball applied pressure when removing press-fitted the bearing.



13. Check the smooth rotation of inner or outer race of the ball bearing by rotating it manually.
- Replace the ball bearing having excessive axial/longitudinal hanging.
 - Wipe the ball bearing likely to have hanging with cleaning oil.(except double-sided sealed type ball bearing)
 - Replace the ball bearing of which press-fitted part is slacked at the case or shaft.



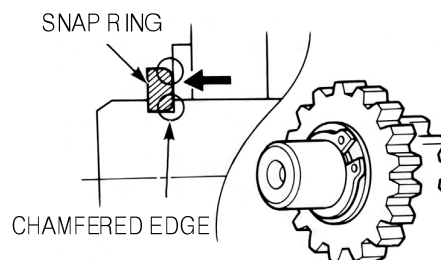
14. Pay attention to installation direction in case of the single-sided sealed ball bearing. Install the open-direction or double-sided sealed bearing in the way that the face marked with manufacturer and size should direct to the outer axle.



15. When blowing the ball bearing with compressed air after cleaning, keep the race from rotating. High speed rotation of the race may damage the bearing. Prior to installation, apply oil or grease to the bearing.



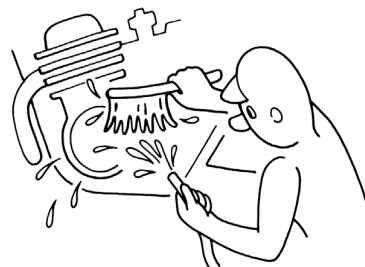
16. Install the snap ring so that chamfered side directs to the load-applied side. After installation, check the proper installation by rotating the snap ring.



17. Check each part for proper tightening and operation after installation.



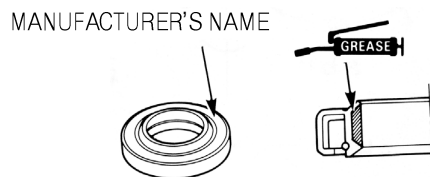
18. The brake fluid and coolant can damage the painted plastic or rubber parts. Keep these parts from contacting with them and wash these parts with water in case of contact.



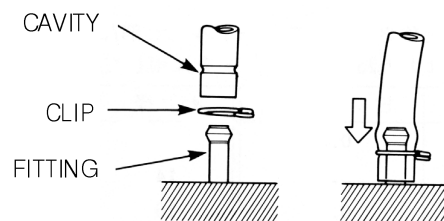
SERVICE INFORMATION

19. Install the oil seal so that the manufacturer marked surface directs outer surface.(direction not covered with oil)

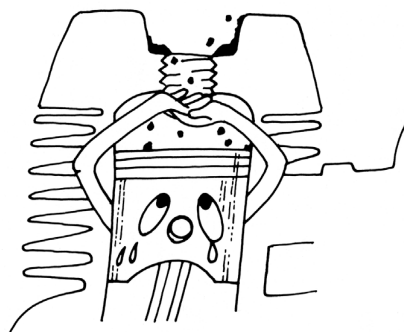
- Pay attention not to bend or damage the lip
- Apply the grease to the lip



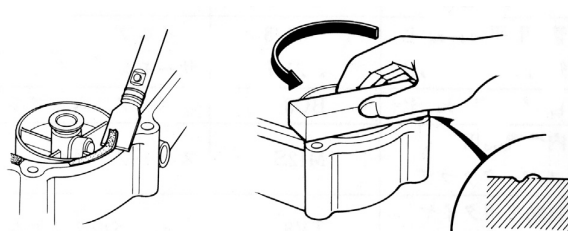
20. Connect the tube until the tube fully inserted in the joint. Install the clip if it is supplied. Replace the tube having slacked end.



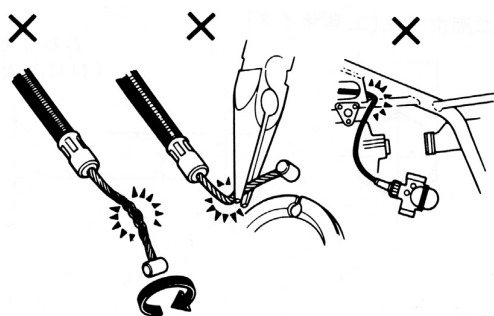
21. Keep the pneumatic system interior or the engine interior from the infiltration of dust.



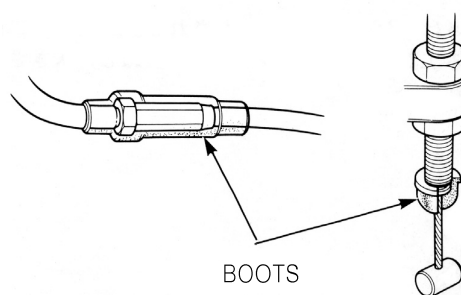
22. Install the gasket mounted in the contact surface of each case of the engine while removing gasket material completely. Remove damaged contact surface by wiping with the oil stone equally.



23. Pay attention not to bend the cable excessively. Transformed or damaged cable may cause malfunction or damage.

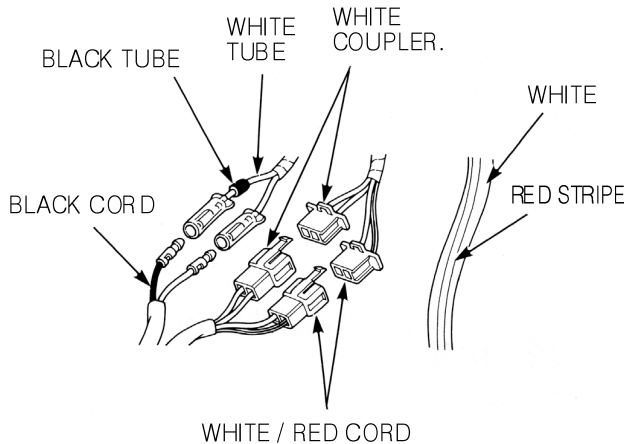


24. Install the boots with the installing groove by inserting the boots into the groove.

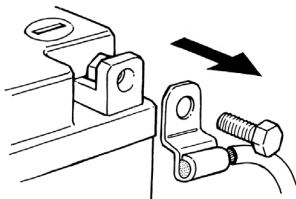


CAUTION WHEN WIRING

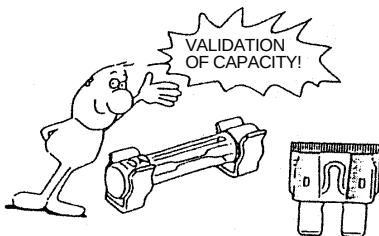
- Each cord must be connected depending on its color. When connecting different cord, attach color tube around the connector. Connect the coupler to the connector with same color and same pin number.
- Identify the two-colored cord by main color first and then striped color.



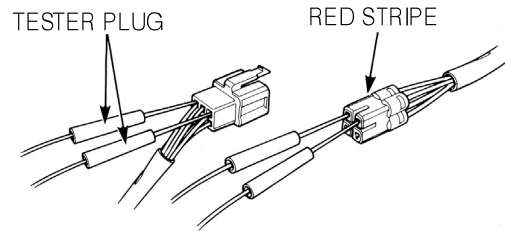
- When disconnecting the battery, the minus terminal must be disconnected first.
- Make sure that the tool such as spanner do not contact with the frame.



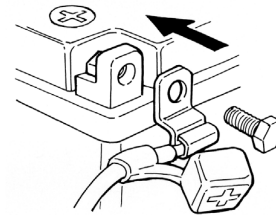
- If the fuse is short-circuited, find out the cause and repair. Replace with the fuse having the specified capacity.



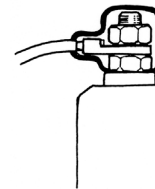
- When measuring voltage or resistance of the cord terminal using tester, contact the tester plug behind of the coupler. Pay attention not to open the cord terminal and contact the tester plug from the front of the coupler in case of water-proof coupler.



- Recheck the condition of contact, securing and continuity of each part after maintenance.
- When connecting the battery, the plus terminal must be connected first.
- After connecting the terminal, apply the grease to the terminal.



- Connect covers to the terminal after maintenance.

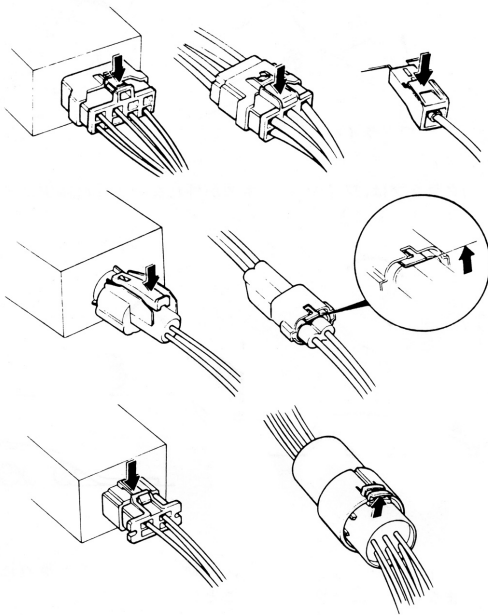


- If there is rust in the terminal, remove the rust with sand paper prior to connecting.

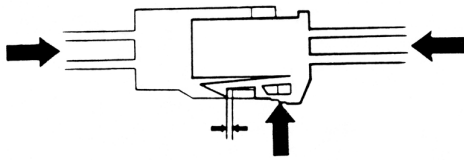


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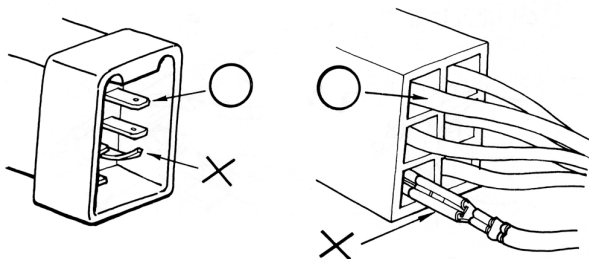
- Turn off the main switch before connecting/disconnecting.
- Release the lock to disconnect the lock of the coupler.
- The lock of the coupler has two types according to releasing method (press type and pull type) so release it properly according to the shape.
- Typical releasing method of the coupler is illustrated in the following.



- Release the lock by inserting the coupler slightly and then narrowing connection to remove the coupler.



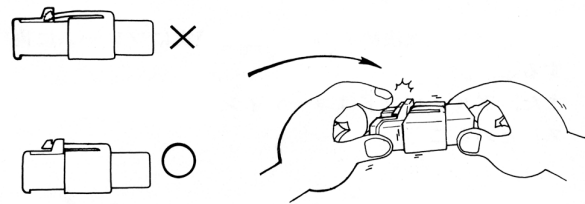
- Check to see if there is bended terminal and secure it to avoid disconnecting.



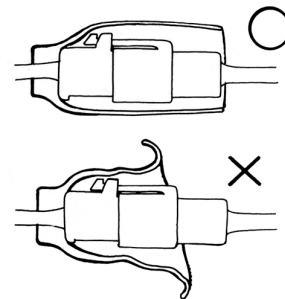
- When disconnecting the coupler, disconnect it while holding the coupler body. Pull while holding the wire harness cord and do not remove the coupler connection.



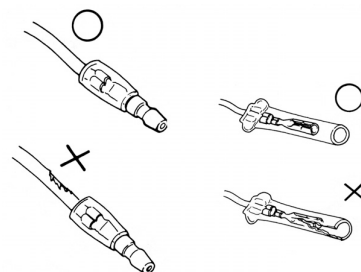
- Insert the lock of the coupler until the lock is fully secured.



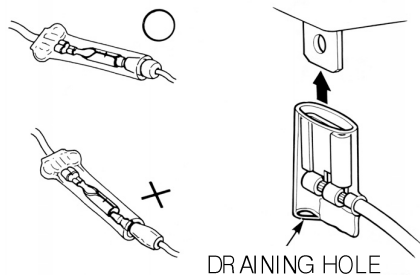
- Pay attention not to damage the vinyl cover of the coupler.



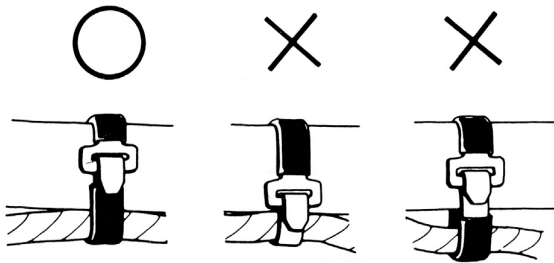
- If the wire harness coating is damaged, repair by winding vinyl tape or replace it.
- Prior to connecting the connector, make sure that the cover is not damaged and the mess terminal is not opened.



- Insert the connector until the vinyl cover is fully inserted into the terminal.
- The opening of the vinyl cover must face at the ground direction but in case of the plain connector, the draining opening must face at the sky direction.



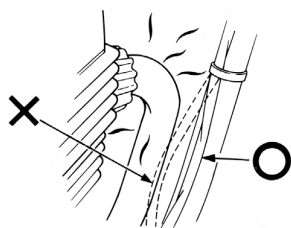
- Wire band must be secured firmly in the specified location of the frame. In case of aluminium band, secure the wire harness to the coated part.



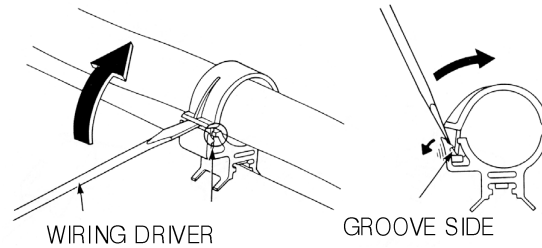
- In case of the weld clamp, do not clamp in the welded part.



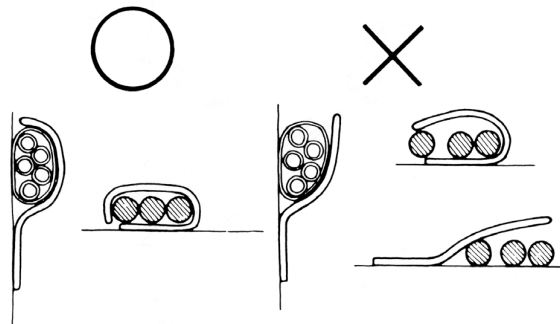
- When clamping the wire, pay attention not to contact with hot part.



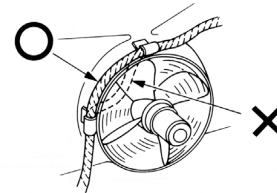
- When removing T-start, broaden the groove of T-start using the wiring driver and release the torque.
- Connect the harness and the hose to T-start and then insert until the groove is locked.
- When removing T-start from the frame, replace it with the new one.



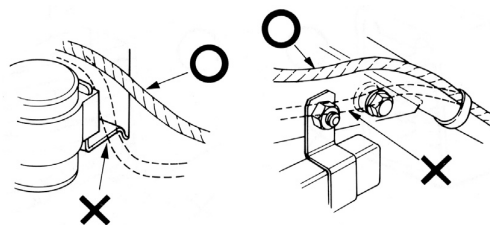
- Secure the wire harness firmly using the clamp.



- When clamping the wire harness, make sure that the harness is not contacted with the shaft or rotating part.

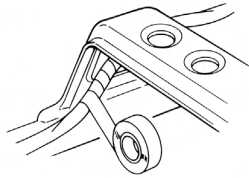


- The wire harness must be routed without contacting with the end of the lamp or any sharp edge.
- The wire harness must be routed without contacting with the end of the bolt or the piece.

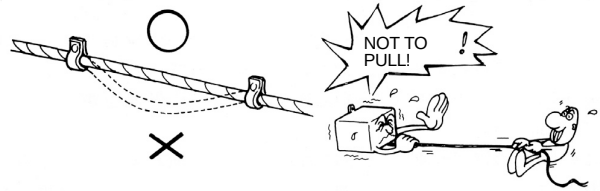


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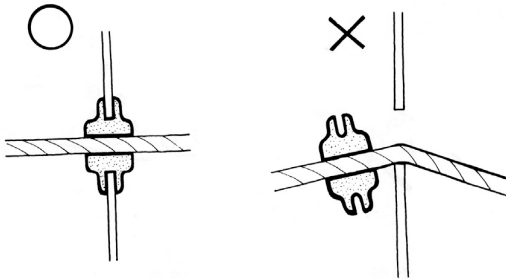
- In case that the wire harness is contacted with the end or the sharp edge, protect both parts with tube or tape.



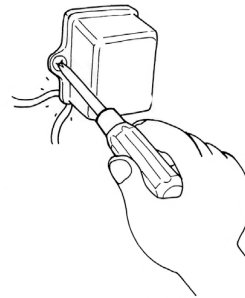
- The wire must not hang down or be pulled excessively.



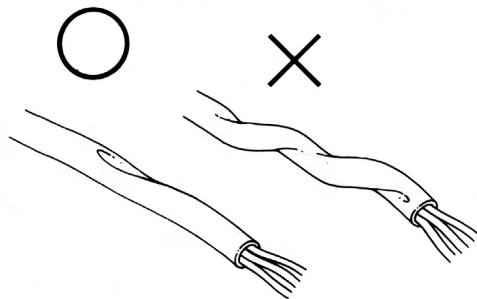
- If necessary, lock the wire harness properly.



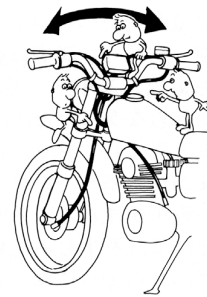
- When mounting parts, make sure that the wire harness is not pressed by the parts.



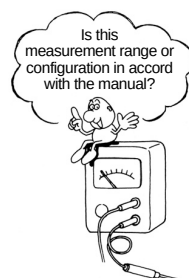
- Do not twist the wire harness.



- Wire the wire harness not to be pulled or expanded when the handle is turned to the right or the left completely. Avoid excessive bending or chewing and interference with the engine.



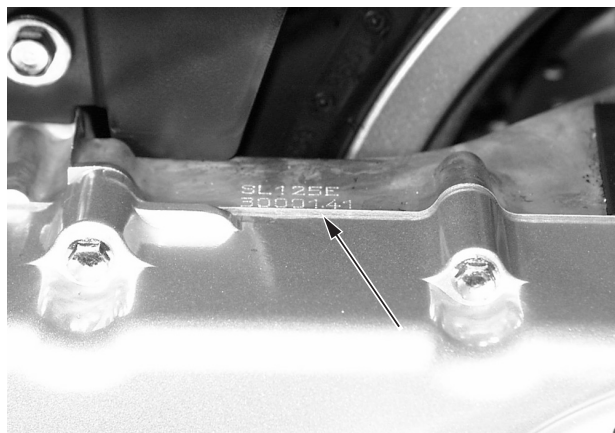
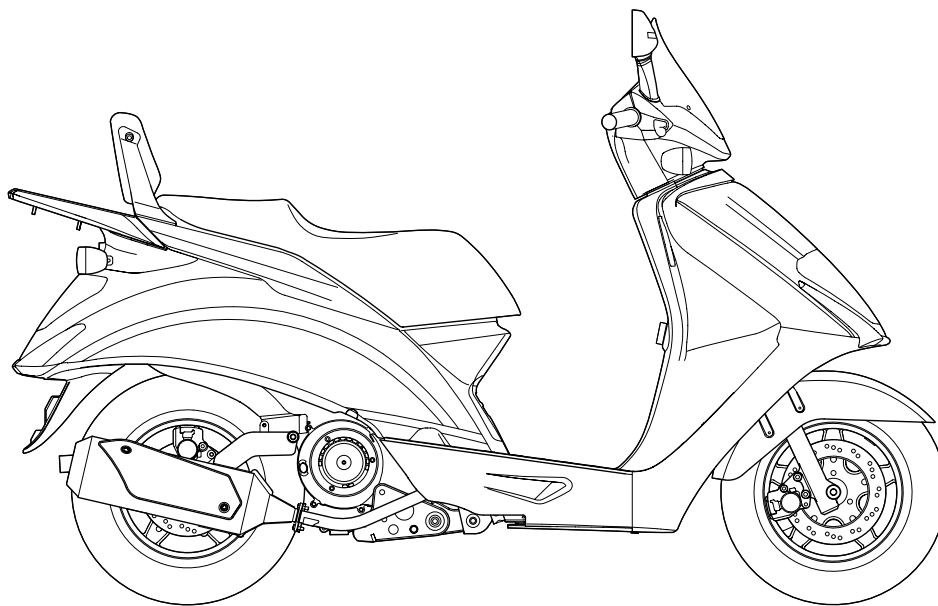
- Prior to using the tester, please read the manual carefully and understand the contents.
- When testing the resistance of the tester, the zero adjustment must be performed before testing.



- Do not drop or throw the parts especially semiconductor contained parts because these parts may be damaged by the impact of the drop.



SERIAL NUMBER LOCATION



ENGINE SERIAL NUMBER LOCATION



FRAME SERIAL NUMBER LOCATION

SPECIFICATIONS

ITEM		SPECIFICATIONS
DIMENSIONS	OVERALL LENGTH	1,965 mm
	OVERALL WIDTH	690 mm
	OVERALL HEIGHT	1,230 mm
	WHEEL BASE	1,350 mm
	SEAT HEIGHT	780 mm
	GROUND CLEARANCE	120 mm
	DRY WEIGHT	125 kg
	GROSS WEIGHT	255 kg
FRAME	TYPE	Underbone
	FRONT SUSPENSION / STROKE	Telescopic / 77mm
	REAR SUSPENSION / STROKE	Swing arm / 66mm
	FRONT TIRE SIZE / TYPE	120 / 70 - 12 53k / Tubeless
	REAR TIRE SIZE / TYPE	130 / 70 - 12 62k / Tubeless
	TIRE PRESSURE	2.00 Kg / cm ² (200 kPa)
	1 PERSON FRONT	2.00 Kg / cm ² (200 kPa)
	2 PERSON FRONT	2.00 Kg / cm ² (200 kPa)
	REAR	2.25 Kg / cm ² (225 kPa)
	FRONT / REAR BRAKE	Hydraulic disk
	PARKING BRAKE	Drum brake
	FUEL TANK CAPACITY	8.0 l
	FULL CAPACITY	1.7 l
	RESERVE CAPACITY	25°
ENGINE	CASTER ANGLE	86 mm
	TRAIL	90 cm
	FRONT FORK OIL CAPACITY	
	TYPE	Oil cooled / air cooled 4 cycle SOHC engine
	CYLINDERS / ARRANGEMENT	1(Single cylinder), front angle 80°
	BORE AND STROKE	56 × 50.7 mm
	DISPLACEMENT	124.9 cc
	COMPRESSION RATIO	10.8 : 1
	VALVE TRAIN	SOHC chain drive
	OIL CAPACITY	1.1 l After disassembly
		0.75 l After Oil change
		0.8 l After Oil filter change
		0.9 l After Oil change with Oil in the Oil hose removed
	LUBRICATION SYSTEM	Forced pressure splash type
	AIR CLEANER TYPE	Wet sump
	CYLINDER COMPRESSION	14.0 kgf / cm ² (550 rpm)
	INTAKE VALVE	5° BTDC
	OPEN	14° ABDC
	CLOSED	18° BBDC
	EXHAUST VALVE	1° BTDC
	CLOSED	
	VALVE CLEARANCE (COOLING-OFF PERIOD)	
	INTAKE	0.12 ± 0.12 mm
	EXHAUST	0.12 ± 0.12 mm

ITEM		SPECIFICATIONS
CARBURETOR	TYPE / VENTURI BORE	CV type (vacuum) 24.2 mm
	MODEL MARK	BDS 26 - 112
	CHOKE TYPE	Auto-bystarter
	MAIN JET	# 95
	PILOT SCREW INITIAL SETTING	1 and $\frac{1}{2}$ trust out
	FLOAT LEVEL	13 mm
	IDLE SPEED	1.800 $\pm$ 100 (rpm)
DRIVE TRAIN	CLUTCH TYPE	Automatic Transmission
	PRIMARY REDUCTION	3.231 (42/13)
	SECONDARY REDUCTION	2.786 (39/14)
ELECTRICAL SYSTEM	IGNITION SYSTEM	C.D.I Ignition
	IGNITION TIMING F MARK	15° BTDC / 1.800 (rpm)
	AC GENERATOR CAPACITY	12V 10A / 5,000 (rpm)
	BATTERY TYPE / CAPACITY	Closed type (MF) 12V 8AH
	SPARK PLUG	CR8EH - 9 (NGK)
	SPARK PLUG GAP	0.8 - 0.9 mm
	FUSE CAPACITY	15A
	STARTING SYSTEM	Kick / starter motor
	HEADLIGHT (HIGH / LOW)	12V 60 / 55W
	POSITION LIGHT	12V 5W
	WINKER LIGHTS (FR / RR)	12V 10W $\times$ 4
	TAIL / STOP LIGHT	12V 21 / 5W
	HIGH-BEAM PILOT	14V 3W
	WINKER PILOT	14V 3W $\times$ 2
	METER LIGHTS	12V 1.7W $\times$ 2
	TRUNK LAMP	14V 1.4W
	LICENSE LAMP	12V 5W
	PARKING BRAKE PILOT	14V 3W

TORQUE VALUES

ENGINE

ITEM	Q'TY	THREAD DIA (mm)	TORQUE VALUE	REFERENCE
OIL FILTER CAP	1	20	1.1 kgf · m	Apply engine oil
OIL DRAIN PLUG BOLT	1	12	2.5 kgf · m	
VALVE ADJUST SCREW LOCK NUT	4	5	0.8 kgf · m	
CYLINDER HEAD BOLT	2	6	1.0 kgf · m	
FLYWHEEL BOLT	1	12	5.5 kgf · m	
DRIVE FACE NUT	1	12	7.5 kgf · m	
CLUTCH OUTER BOLT	1	12	5.5 kgf · m	
CAM CHAIN TENSIONER PIVOT BOLT	1	8	1.0 kgf · m	
SPARK PLUG	1	12	1.2 kgf · m	
DRIVE PLATE	1	30	5.5 kgf · m	
CAM SHAFT HOLDER NUT	4	8	2.0 kgf · m	
CAM CHAIN TENSIONER FLANGE BOLT	2	6	1.0 kgf · m	
CAM CHAIN TENSIONER PAN SCREW	1	6	0.4 kgf · m	
CYLINDER HEAD COVER BOLT	4	6	0.9 kgf · m	
MISSION COVER BOLT	8	6	1.2 kgf · m	
MISSION COVER DRAIN BOLT	1	8	1.0 kgf · m	
MISSION COVER CHECK BOLT	1	8	0.9 kgf · m	
COOLING FAN BOLT	3	6	1.0 kgf · m	
STARTING CLUTCH NUT	1	22	9.5 kgf · m	
STARTER MOTOR FLANGE BOLT	2	6	0.9 kgf · m	
RADIATOR OIL BOLT	4	12	3.2 kgf · m	
OIL PUMP FLAT SCREW	3	6	1.0 kgf · m	
OIL PUMP DRIVEN GEAR NUT	1	6	1.0 kgf · m	

FRAME

ITEM	Q'TY	THREAD DIA (mm)	TORQUE VALUE	REFERENCE
STEERING STEM NUT	1	26	7.0 kgf · m	Initial torque
STEERING TOP THREAD NUT	1	26	0.20 kgf · m	
HANDLE POST NUT	1	10	6.0 kgf · m	Apply locking agent
FRONT FORK BOTTOM BRIDGE BOLT	4	10	7.5 kgf · m	
FRONT FORK SOCKET BOLT	2	8	2.0 kgf · m	
FRONT AXLE NUT	1	12	5.0~7.0 kgf · m	
FRONT BRAKE DISK BOLT	3	8	4.0~4.5 kgf · m	
REAR BRAKE DISK BOLT	3	8	4.0~4.5 kgf · m	
REAR AXLE NUT	1	14	6.0~8.0 kgf · m	
ENGINE HANGER NUT	2	10	4.5 kgf · m	
MAIN STAND BOLT	2	10	4.0 kgf · m	
SIDE STAND PIVOT BOLT	1	10	1.5 kgf · m	

ITEM	Q'TY	THREAD DIA (mm)	TORQUE VALUE	REFERENCE
SIDE STAND PIVOT NUT	1	10	4.5 kgf · m	Apply locking agent
FRONT / REAR BRAKE CALIPER BRACKET BOLT	2/2	8	2.7 kgf · m	
FRONT / REAR BRAKE CALIPER BLEEDER VALVE	1/1	8	0.6 kgf · m	
FRONT / REAR BRAKE CALIPER SLIDE PIN	1/1	8	2.3 kgf · m	
FRONT / REAR BRAKE CALIPER BRACKET PIN BOLT	1/1	8	1.8 kgf · m	
FRONT / REAR BRAKE HANGER PIN	2/2	8	1.8 kgf · m	
FRONT / REAR MASTER CYLINDER RESERVOIR CAP SCREW	2/2	4	0.15 kgf · m	
FRONT / REAR BRAKE HOSE OIL BOLT	2/2	10	3.0 kgf · m	
FRONT / REAR MASTER CYLINDER LEVER PIVOT BOLT	1/1	6	1.0 kgf · m	
FRONT / REAR MASTER CYLINDER LEVER PIVOT LOCK NUT	1/1	6	1.0 kgf · m	
REAR BRAKE ARM FLANGE BOLT	1	6	10 kgf · m	Apply locking agent
SPEEDOMETER GEAR BOX OVAL SCREW	1	5	0.4 kgf · m	
REAR CUSHION UPPER BOLT	1	10	4.0 kgf · m	
REAR CUSHION LOWER BOLT	1	10	4.0 kgf · m	
REAR CUSHION DAMPER ROD LOCK NUT	1	10	4.0 kgf · m	

Torque values listed above are for specific tightening points. Torque values for other items are listed in the following table.

SH (Small Head) : Indicates 6mm bolt of 8mm flange head.

ITEM	TORQUE VALUE	ITEM	TORQUE VALUE
5mm BOLT, NUT	0.5 kgf · m	5mm SCREW	0.4 kgf · m
6mm BOLT, NUT	1.0 kgf · m	6mm SCREW	0.9 kgf · m
8mm BOLT, NUT	2.2 kgf · m	6mm FLANGE BOLT, NUT	1.2 kgf · m
10mm BOLT, NUT	3.5 kgf · m	8mm FLANGE BOLT, NUT	2.7 kgf · m
12mm BOLT, NUT	5.5 kgf · m	10mm FLANGE BOLT, NUT	4.0 kgf · m

SYMBOLS / ABBREVIATIONS

The following symbols are used in this manual to represent job-related warnings or cautions.

SYMBOL	MEANING	SYMBOL	MEANING
WARNING	Indicates dangerous area. Serious accident may result if instructions are not followed.	CAUTION	Indicates important work. Minor injury or vehicle part damage may result if instruction are not followed.
		NOTE	Indicates general safety matters. Provides safety and appropriate handling procedures.

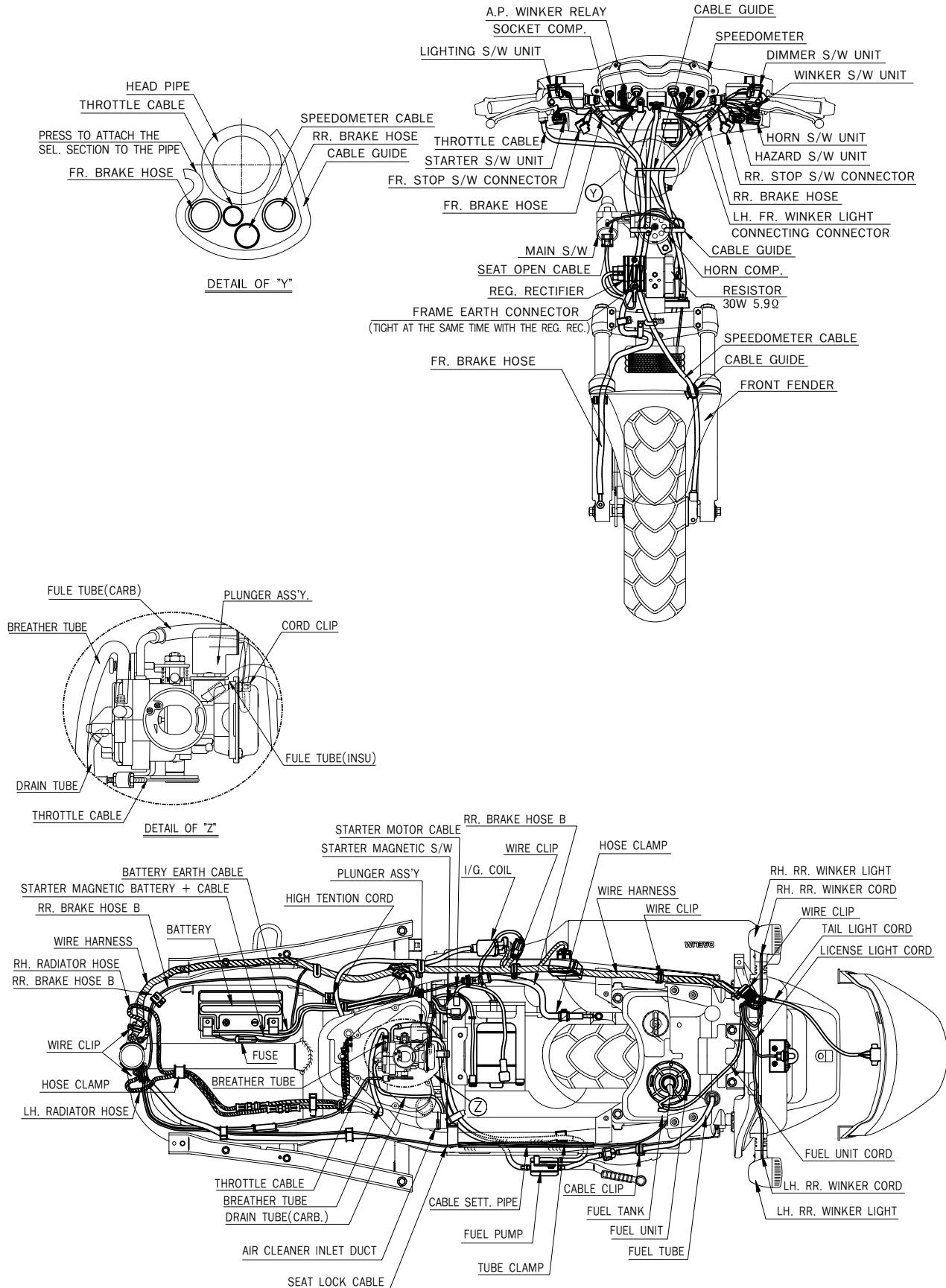
The following symbols indicate oil adding, oil change, or parts.

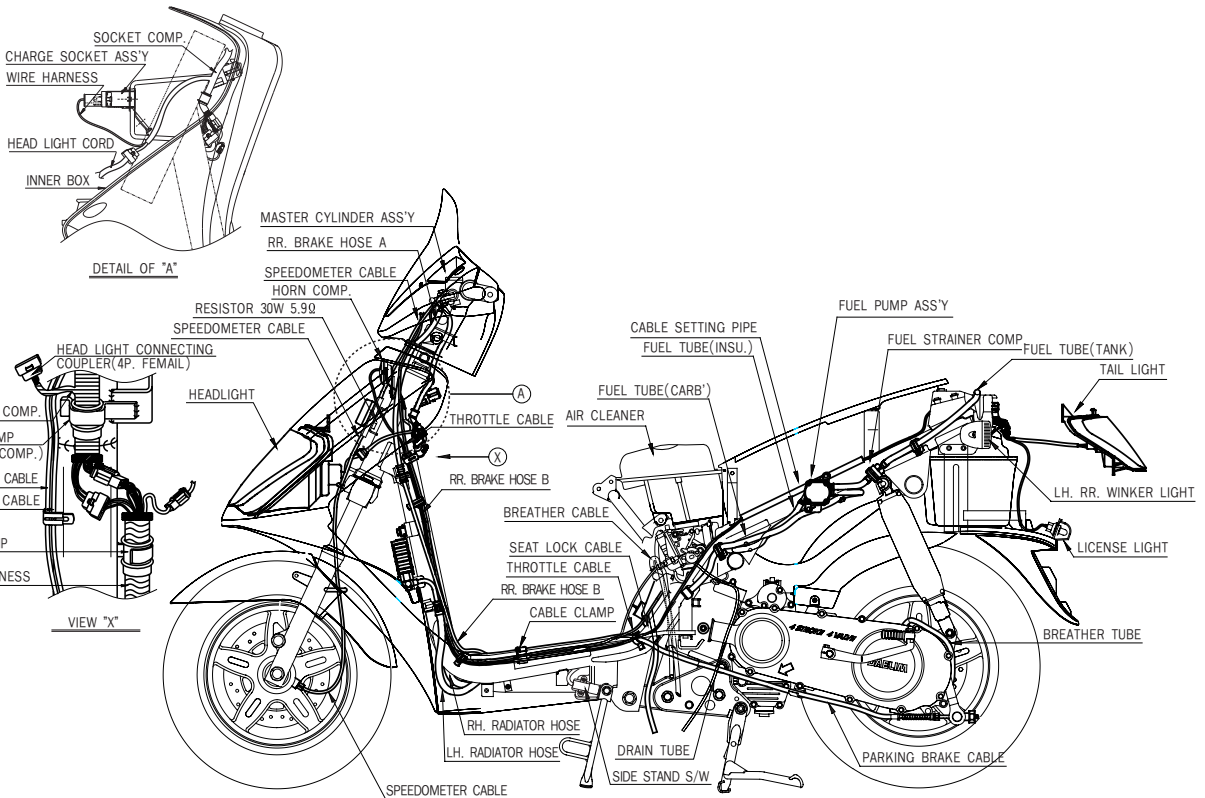
SYMBOL	MEANING
	Add oil. If there is no specific oil indicated, use the designated or recommended engine oil.
	Apply grease
	Indicates reference page. (example : Refer to page 3-1)

The following abbreviations are used in this manual.

ASS'Y	ASSEMBLY
LH.	Left
RH.	Right

WIRING DIAGRAM





2. LUBRICATION

SERVICE INFORMATION . . .	2-1
TROUBLESHOOTING	2-2
ENGINE OIL LEVEL INSPECTION .	2-3
ENGINE OIL CHANGE	2-3
OIL FILTER ELEMENT CHANGE .	2-4

OIL PUMP	2-4
RADIATOR	2-7
TRANSMISSION OIL INSPECTION .	2-8
LUBRICATION POINTS . . .	2-9

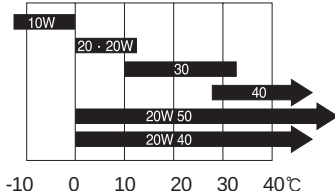
SERVICE INFORMATION

GENERAL SAFETY

WARNING

1. The exhaust gas contains poisonous substance. Do not keep engine idling in a closed or poorly ventilated place for a long period of time.
2. Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. It is desirable not to handle used oil frequently; however, wash your hands thoroughly with soap and water immediately after handling the used oil.
3. The oil pump can be serviced without removing the engine from the frame.

ENGINE OIL

OIL CAPACITY	1.1 l (After disassembly) 0.9 l (After Oil change with Oil in the Oil hose removed) 0.8 l (After Oil filter change) 0.75 l (After Oil change)
RECOMMENDED OIL	API service classification : SE, SF, SH grade Viscosity : SAE10W-30 (Use appropriate type of oil with viscosity satisfying the atmospheric temperature In your riding area based on the table shown on the right side.) 

TRANSMISSION OIL

OIL CAPACITY	0.15 l (Full capacity) 0.14 l (After oil change)
RECOMMENDED OIL	DMC Pure mission oil or SAE 80W/90

TORQUE VALUES

OIL FILTER SCREEN CAP	1.5kgf · m
OIL FILTER COVER BOLT	1.1kgf · m
OIL PUMP MOUNTING BOLT	1.1kgf · m
OIL DRAIN PLUG BOLT	2.5kgf · m

TROUBLESHOOTING

Oil level low

- Oil consumption.
- External oil leaks.
- Worn piston ring or incorrect piston ring installation.
- Worn valve guide or seal.

Oil contamination

- Oil or filter not changed often enough.
- Faulty head gasket.
- Worn piston rings.

Low or no oil pressure

- Clogged oil orifice.
- Incorrect oil being used.

ENGINE OIL LEVEL INSPECTION

- Erect the motorcycle on the main stand.
- Warm up the engine to heat the engine oil to an appropriate level.
- Stop the engine, and check the oil level line on the sight-glass installed on the LH. crank case cover.
- If the oil level is between the lower and higher sight-glass oil level line, oil level is satisfactory. If the oil level is below or near the lower level mark, add the recommended engine oil.



ENGINE OIL CHANGE

NOTE

- To completely and rapidly drain engine oil, warm up engine and erect the motorcycle on its side stand.

- Loosen the oil drain plug bolt and drain engine oil.
- Operate the kick starter arm several times to remove the remaining oil from the engine.
- Tighten the oil drain plug bolt.

TORQUE VALUE : 2.0-3.0 kgf · m

CAUTION

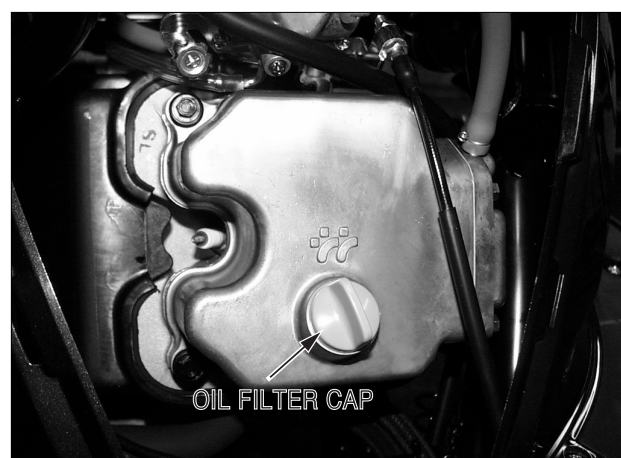
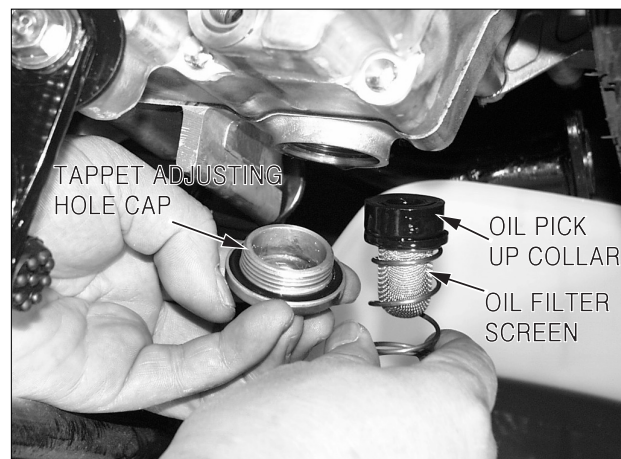
- It is extremely important to replace oil filter or clean the oil filter screen at the first maintenance interval (after 1,000Km).
- Clean the oil filter screen every 4,000Km.
- Clean the filter screen with fresh cleaning oil.
- Check the hole cap O-ring for satisfactory condition.
- Tighten the hole cap with specified tightening torque.

TORQUE VALUE : 1.5 kgf · m

- Loosen the special screw, remove the plug maintenance cover.
- Fill the recommended oil after opening oil filter cap of cylinder head cover.

**OIL CAPACITY : 1.1 l (After disassembly)
0.9 l (After Oil change with Oil in the Oil hose removed)
0.8 l (After Oil filter change)
0.75 l (After Oil change)**

- API service classification : SE, SF, SH grade.
- Start the engine and keep it idle for a few minutes.
- Stop the engine and check the oil level. If the oil level is low, add the recommended engine oil.
- Check on oil leaks.



OIL FILTER ELEMENT CHANGE

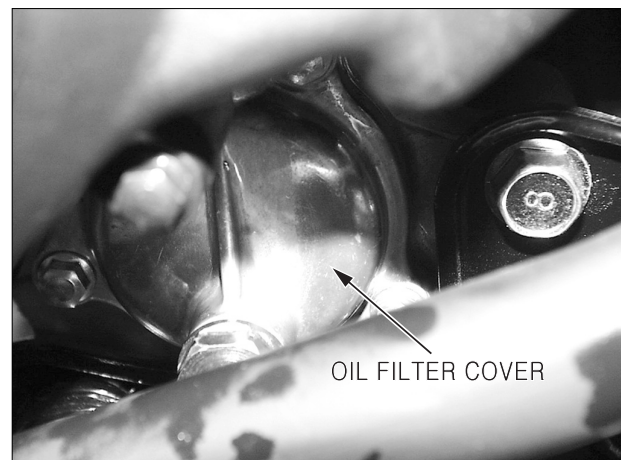
- Drain engine oil. (⇒2-3)
- Loosen the 3 flange bolts securing the oil filter cover, remove the oil filter cover.
- Remove the oil filter element and oil filter spring.

- Change the oil filter element with a new one.
- Check if the oil filter seal is in good condition.
- Assemble the filter element spring and filter cover, and tighten bolts.

TORQUE VALUE : OIL FILTER COVER 1.1kgf · m

NOTE

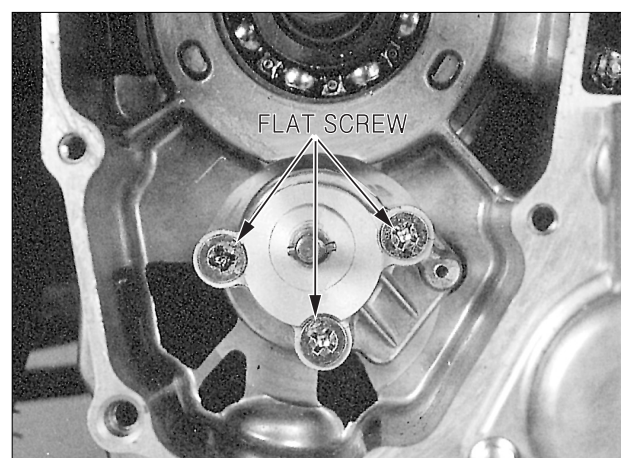
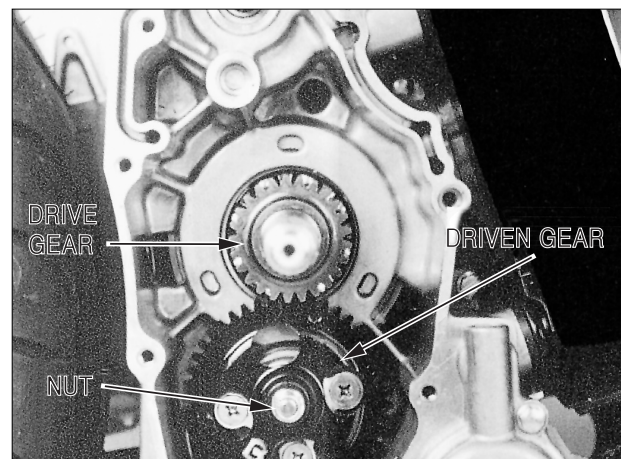
- Always use a genuine oil filter element.
- Be sure to replace the oil filter seal when removing oil filter element.
- Be careful not to lose the oil filter spring when assembling the oil filter element.



OIL PUMP

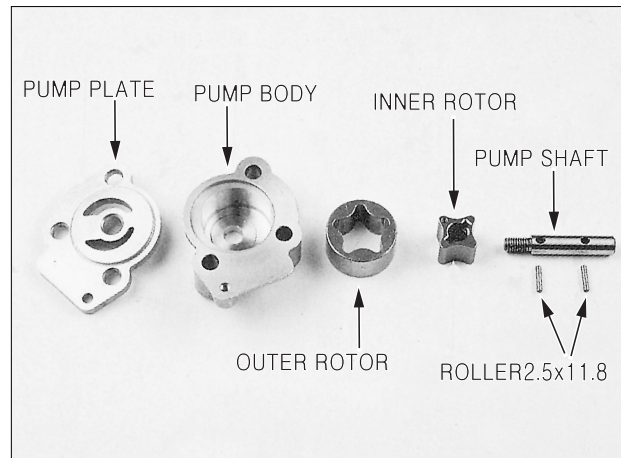
REMOVAL

- Remove the following parts :
 - Rear cushion lower bolt (⇒13-7)
 - Muffler (⇒4-12)
 - Rear swing arm (⇒13-8)
 - Rear caliper (⇒14-6)
 - Shroud (⇒8-2)
 - Cooling fan (⇒8-2)
 - A.C. generator (⇒8-2)
 - RH. crankcase cover (⇒8-4)
 - Starter driven gear (⇒8-6)
 - Reduction gear (⇒8-5)
 - Starting clutch assembly (⇒8-6)
- Loosen the oil pump driven gear setting nut.
- Remove the oil pump driven gear.
- Remove the oil pump drive gear.
- Loosen the 3 flat screws securing the oil pump.
- Remove the oil pump.



OIL PUMP DISASSEMBLY

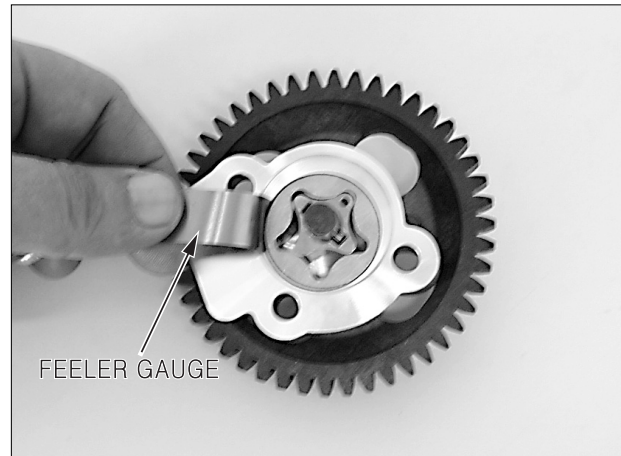
- Loosen the screw securing the oil pump plate.
- Remove the oil pump body and the oil pump plate.
- Clean the oil pump body, inner and outer rotors with fresh cleaning oil.



OIL PUMP INSPECTION

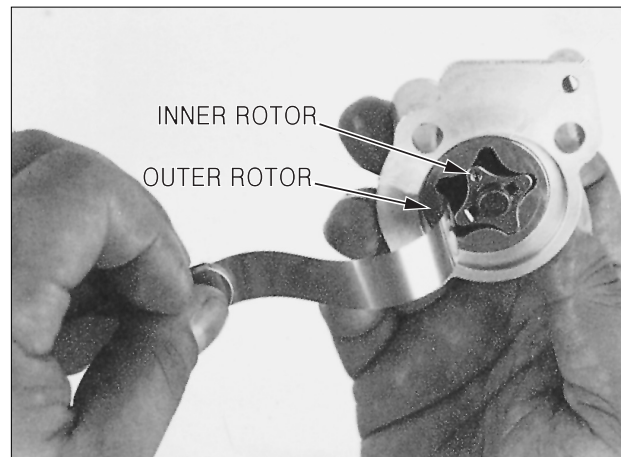
- Assemble the inner and outer rotors to the oil pump body.
- Measure the pump body clearance.

SERVICE LIMIT : 0.23mm
TOOL : FEELER GAUGE



- Measure the rotor tip clearance.

SERVICE LIMIT : 0.18mm



- Measure the pump side clearance

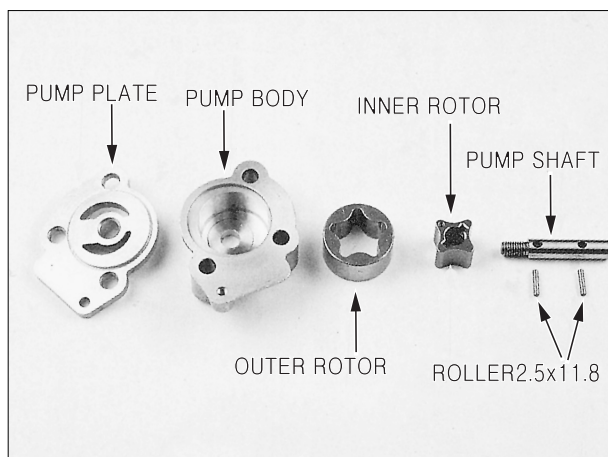
SERVICE LIMIT : 0.12mm



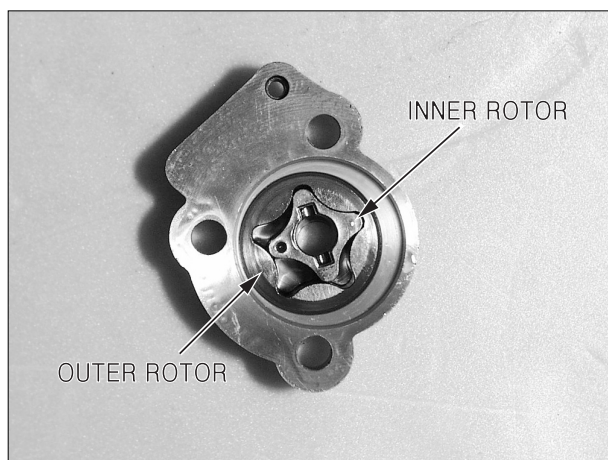
LUBRICATION

OIL PUMP ASSEMBLY

- Clean all parts with fresh cleaning oil.



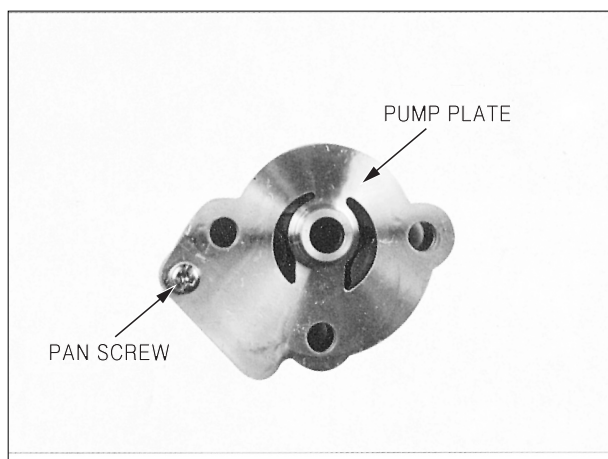
- Install the inner and outer rotors to the pump body.
- Assemble the pump shaft with setting pin.



- Install the oil pump plate to the pump body.
- Tighten the pan screw.

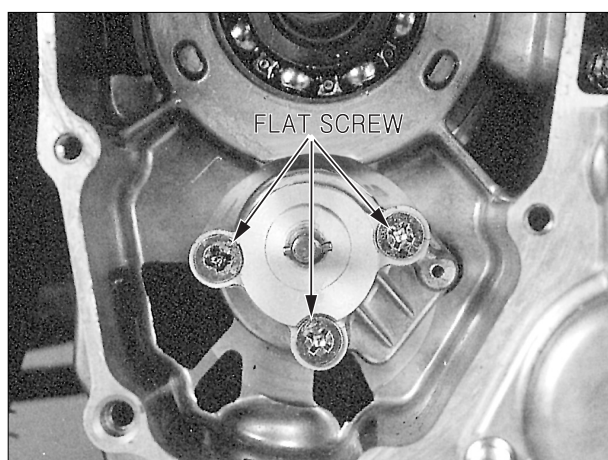
NOTE

- After installing, check the oil pump to operate smoothly.



OIL PUMP INSTALLATION

- Install the oil pump to the RH. crankcase.
- Install the following parts.
 - Oil pump drive gear and driven gear.
 - Starting clutch assembly. (⇒8-8)
 - Starter driven gear and reduction gear (⇒8-6)
 - A.C. generator (⇒8-2)
 - RH. crank case cover (⇒8-6)
 - Shroud and cooling fan (⇒8-2)
 - Rear swing arm (⇒13-8)
 - Rear caliper (⇒14-6)
 - Muffler (⇒4-12)



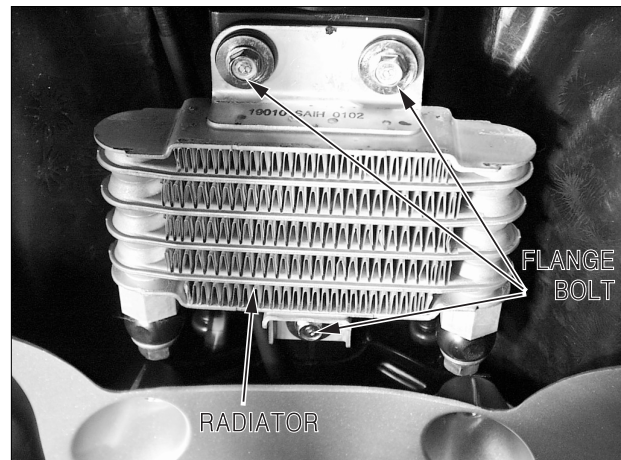
RADIATOR

REMOVAL

- Remove the front cover. (⇒4-3)
- Remove the front wheel. (⇒12-5)
- Loosen the 2 oil bolts and the 4 drain cock packings from the main pipe bracket.
- Loosen the 3 flange bolts securing the radiator.
- Remove the radiator.

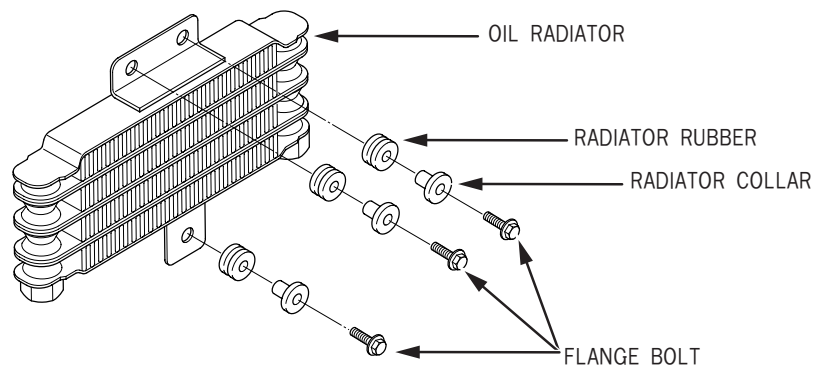
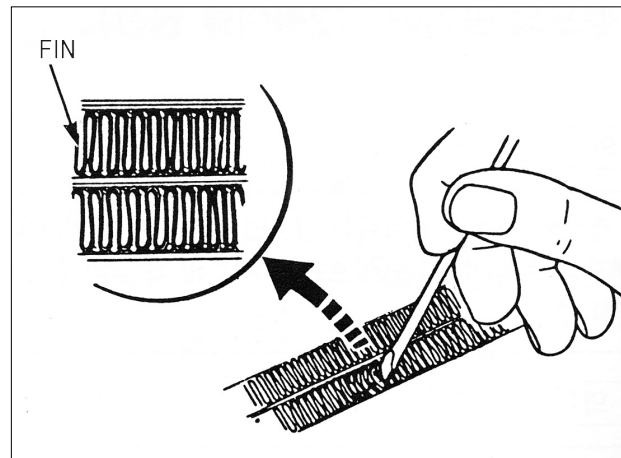
CAUTION

- Be careful not to damage the radiator when removing it.
- Pay attention not to turn over the vehicle.



INSPECTION

- Check the oil line connections for leaks.
- Check the oil cooler for bent or collapsed fins. Straighten the bent or collapsed fins with a suitable, small, blade-type screw driver if necessary.
- Check the air passages for clogging or restriction. Blow dirt out from between core fins with compressed air or wash off dirt with water.
- After installing, start the engine and check for leak. Stop the engine and check the oil level.



LUBRICATION

RADIATOR INSTALLATION

- Tighten the 3 radiator setting flange bolts to the main pipe bracket.

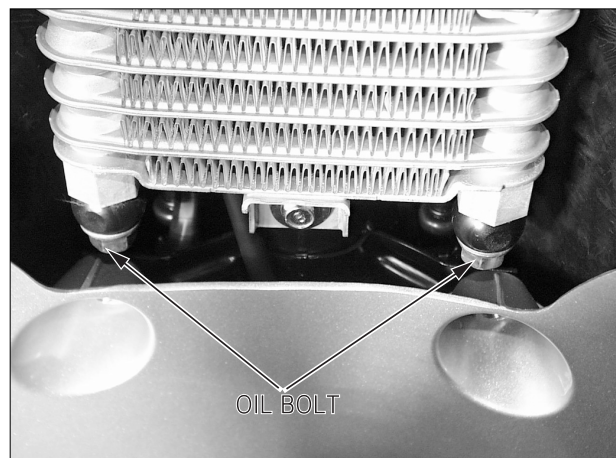
- Tighten the drain cock packings and oil bolts.

TORQUE VALUE : 3.2kgf · m

- Install the front wheel. (⇒12-9)
- Install the front cover. (⇒4-3)

CAUTION

- Pay attention not to turn over the vehicle.
- When installing the radiator, tighten the oil bolts with specified tightening torque.



TRANSMISSION OIL INSPECTION

- Remove the LH. crankcase cover. (⇒7-2)
- Check the body and the connection of each engine component for any leak.
- Remove the oil check bolt and check to see if the oil overflows from the oil check hole.
- If only the small amount of oil overflows, fill the recommended transmission oil through the oil filler hole gradually.

NOTE

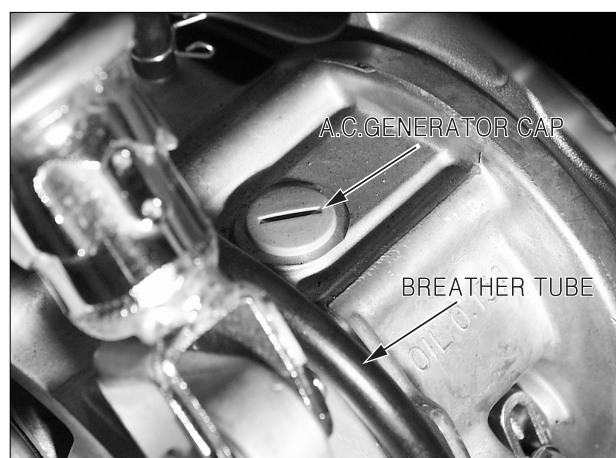
- Oil level inspection must be performed in the flat ground with the vehicle being straight by raising the main stand.

RECOMMENDED OIL : SAE 80W/90

- Tighten the oil check bolt.

TORQUE VALUE : 0.9 kgf · m

- Start the engine and check for leak.
- Install the LH. crankcase cover. (⇒7-2)

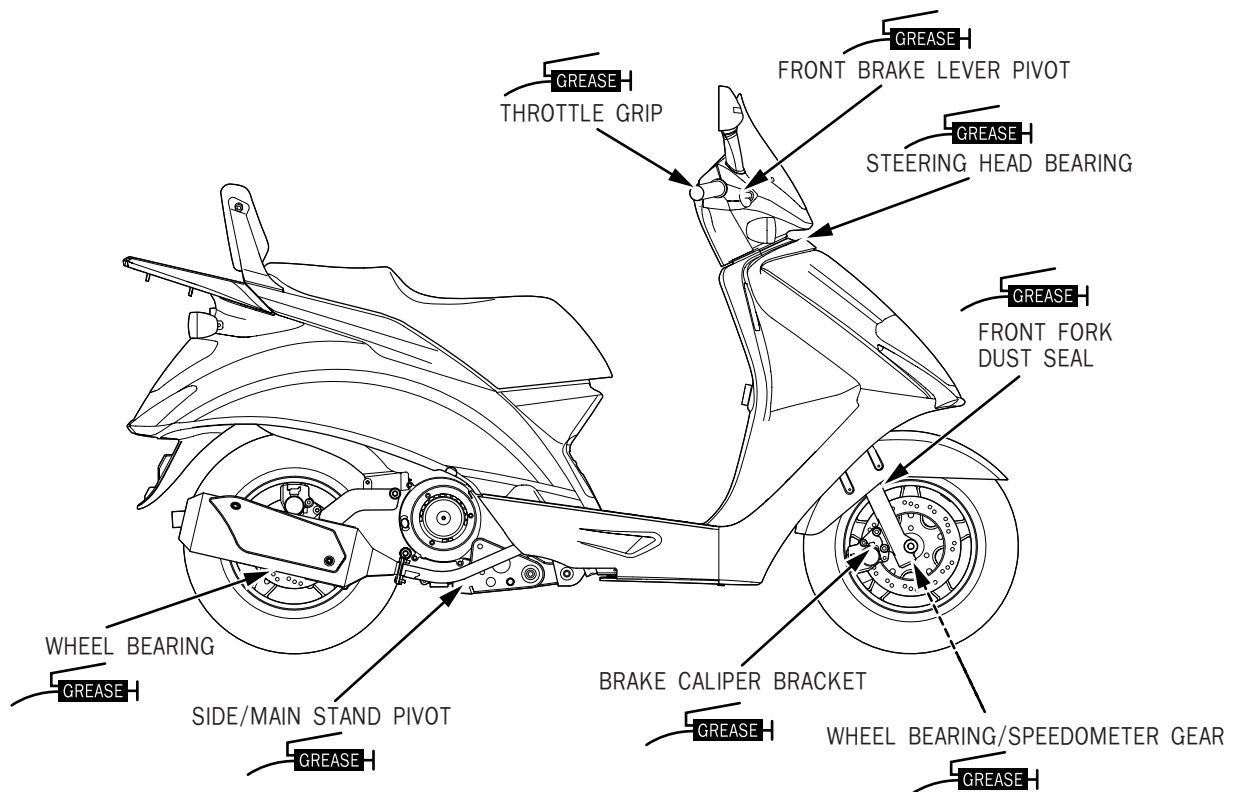


LUBRICATION POINTS

Unless specifically designated, use general grease to lubricate the lubrication points. For sliding parts not shown here, add oil or grease.

CONTROL CABLE LUBRICATION

Remove and clean the upper assembly of the throttle cable, and apply oil. If the cable has expanded, replace it.



MEMO

3. INSPECTIONS/ADJUSTMENTS

SERVICE INFORMATION	3-1	BRAKE PAD/SHOE	3-7
MAINTENANCE SCHEDULE	3-3	BRAKE SYSTEM	3-7
FUEL LINE (FUEL TUBE)	3-4	BRAKE LEVER FREE PLAY	3-8
THROTTLE GRIP OPERATION	3-4	HEADLIGHT AIM	3-8
AIR CLEANER	3-4	SIDE STAND	3-8
SPARK PLUG	3-5	SUSPENSION	3-9
VALVE CLEARANCE	3-5	BOLTS, NUTS, FASTENERS	3-9
CYLINDER COMPRESSION PRESSURE	3-6	WHEELS/TIRES	3-10
CARBURETOR IDLE SPEED	3-6	STEERING HEAD BEARING	3-10
BRAKE FLUID	3-7		

SERVICE INFORMATION

WARNING

- The exhaust gas contains poisonous substance. Do not keep engine idling in a closed or poorly ventilated place for a long period of time.

NOTE

- For information on engine oil and oil filter, refer to sections 2-3 and 2-4
- Stand the main stand prior to beginning work.

SPECIFICATIONS

THROTTLE GRIP PLAY		2- 6mm
SPARK PLUG		CR8EH-9
SPARK PLUG GAP		0.8-0.9mm
VALVE CLEARANCE	IN	0.12±0.02mm
	EX	0.12±0.02mm
CARBURETOR IDLE SPEED		1,800±100rpm
CYLINDER COMPRESSION PRESSURE		14±2kgf/cm ² (550rpm)

TIRES

COLD TIRE PRESSURE	DRIVER ONLY	FRONT TIRE	200kPa (2.00kgf/cm ²)
		REAR TIRE	200kPa (2.00kgf/cm ²)
	DRIVER AND A PASSENGER	FRONT TIRE	200kPa (2.00kgf/cm ²)
		REAR TIRE	225kPa (2.25kgf/cm ²)
TIRE SIZE	FRONT TIRE		120/70 - 12 53k(Tubeless)
	REAR TIRE		130/70 - 12 62k(Tubeless)
MIN, TREAD DEPTH “ㄣ”	FRONT TIRE		0.5mm
	REAR TIRE		0.5mm

INSPECTIONS / ADJUSTMENTS

TORQUE VALUES

SPARK PLUG	1.1kgf · m
CYLINDER HEAD COVER BOLTS	1.0kgf · m
VALVE ADJUSTING NUTS	1.1kgf · m
TIMING HOLE CAP	0.6kgf · m

TOOLS

WRENCH 8X9mm
ADJUST WRENCH
COMPRESSION GAUGE

MAINTENANCE SCHEDULE

- Carry out pre-operation check at each scheduled maintenance period based on the information described in the owner's manual.

I : INSPECT AND CLEAN, ADJUST, LUBRICATE OR REPLACE IF NECESSARY.

R : REPLACE L : LUBRICATE C : CLEAN

- These instructions are based on the assumption that the motorcycle will be used exclusively for its designed purpose. Sustained high speed operation, or operation in unusually wet or dusty conditions, will require more frequent service than specified in the following chart.

ITEM	FREQUENCY	ODOMETER READING(NOTE 1)					REMARK
		x 1000Km	1	4	8	12	
		MONTH		6	12	18	
*	FUEL LINE(FUEL TUBE)		I	I	I	I	
*	FUEL FILTER		R	R	R	R	
*	THROTTLE GRIP OPERATION		I	I	I	I	
	AIR CLEANER		Every 1,000km : C				NOTE 2
	SPARK PLUG		I	I	I	I	
*	VALVE CLEARANCE		I	I	I	I	
	TRANSMISSION OIL					R	NOTE 3
	ENGINE OIL		R	R	R	R	
**	ENGINE OIL FILTER		R	R	R	R	
*	CARBURETOR IDLE SPEED		I	I	I	I	
	BRAKE FLUID			I	I	I	NOTE 3
	BRAKE SHOE/PAD WEAR		I	I	I	I	
	BRAKE SYSTEM		I	I	I	I	
*	BRAKE STOP SWITCH			I	I	I	
*	HEADLIGHT ADJUSTMENT		I	I	I	I	
	SIDE STAND			I	I	I	
*	SUSPENSION			I	I	I	
*	BOLTS, NUTS, FASTENERS		I		I		
**	WHEELS/TIRES			I	I	I	
**	STEERING HEAD BEARING		I	I	I	I	
*	DRIVE BELT			I	I	I	
*	WEIGHT ROLLER			I	I	I	
*	SLIDE PIECE			I	I	I	
*	OIL FILTER SCREEN			C	C	C	
**	MOVABLE DRIVE FACE INNER PART			L	L	L	

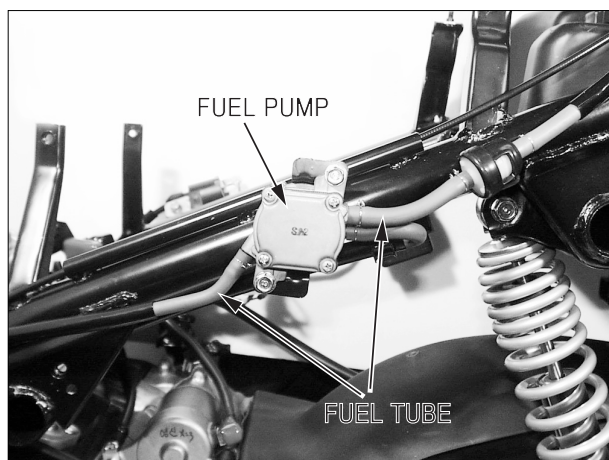
- * If there are no appropriate type of tools and maintenance data available, or if you do not have mechanical technology contact authorized maintenance shops, dealers or other designated repair shops for maintenance and inspections.
- ** To ensure safety, inspections and maintenance of these parts must be carried out by authorized maintenance shops, dealers or other designated repair shops.

NOTE

1. After the odometer reading exceeds 12,000km, repeat maintenance service at intervals indicated in the table.
2. After riding in areas with high humidity or pollution, carry out maintenance service more frequently.
3. Replace every 2 years. Proper technology is required for this job.

FUEL LINE(FUEL TUBE)

- Remove the luggage box.(⇒4-4)
- Check the fuel tube of the fuel pump connected to the fuel tank and carburetor. If the fuel tube is cracked, damaged or leaks, replace it.



THROTTLE GRIP OPERATION

- Check if the throttle grip operates smoothly in any steering position.
- If the throttle grip does not operate properly, lubricate the throttle cable.
- If the throttle grip does not operate properly, check the throttle cable for aging, damage or kinking.
- Check the throttle grip free play.

FREE PLAY : 2~6mm

- For adjustment, loosen the lock nut and turn adjuster.
- After adjusting, tighten lock nut. After adjustment is completed, recheck the throttle grip free play.



AIR CLEANER

- Release the seat lock by turning the main switch key to open the seat.
- Loosen the 6 screws securing the air cleaner case cover, remove it.
- Loosen the 2 screws securing the air cleaner element holder, remove it.
- Remove the air cleaner element.
- Remove the air cleaner trap comp.
- Wash away any accumulated dust or dirt, by gently squeezing it in non flammable or high flash point solvent.



WARNING

- Using gasoline or low flash point solvents for cleaning parts may result in a fire or explosion.

CAUTION

- Cleaning the element with gasoline or any acid, alkaline, or organic, volatile type oil may cause improper ignition, deterioration of the element, or a loosening of the element adhesive.



- Be sure to allow the element to dry thoroughly before applying oil. Otherwise, the oil will be diluted by the and the filtering ability of the filter will be much less effective.
- Spread clean #80~90 gear oil on the element, rubbing inthoroughly over the surface with both hands, and then squeeze out any excess oil.

CAUTION

- Using air filter oil when riding in extremely dusty conditions prevents premature engine wear due to dust/dirt drawn into the engine. Apply air filter oil to the entire surface of the element and rub it with both hands to saturate the element with oil. Squeeze out excess oil.

SPARK PLUG

- Remove the plug maintenance cover.
- Remove the spark plug cap and disassemble the plug.
- Check the plug for damage, contamination or deposits.
- If the spark plug is severely contaminated or damaged, raplace with a new one. If the plug can be reused after removing only the carbon, use plug cleaner and wire brush to clean the plug.
- Always use a feeler gauge to check the gap.

GENUINE PLUG : CR8EH-9

SPARK PLUG GAP : 0.8~0.9mm

TORQUE VALUE : 1.1 kgf · m

CAUTION

- Make sure there is no dirt or debris on the seat of the spark plug hole before inserting the spark plug.
- To prevent damage to the cylinder head, hand-tighten the spark plug before using a wrench to tighten to the specified torque.(torque : 14kgf · m)
- Do not overtighten the spark plug.

VALVE CLEARANCE

- Remove the following parts.
 - Luggage box. (⇒4-4)
 - Center cover. (⇒4-5)
- Loosen the 4 cylinder head bolts.

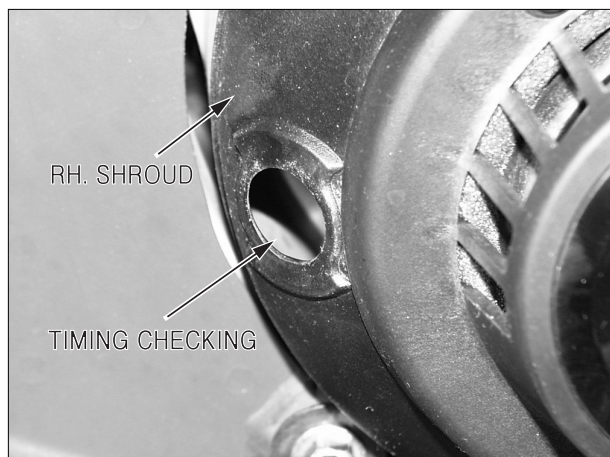
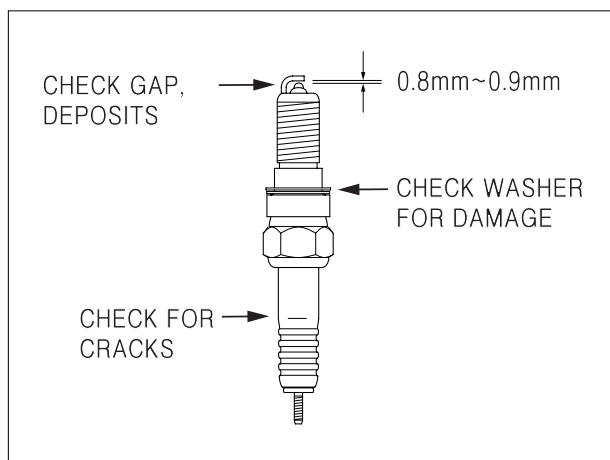
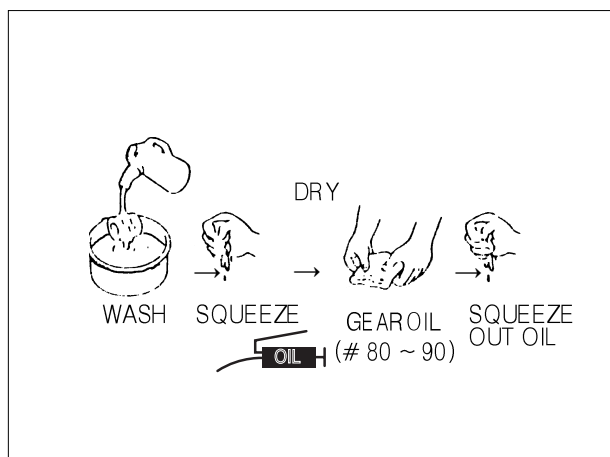
NOTE

- Inspect and adjust the valve clearance when the engine is cool. (under 35 °C / 95 °F)
- Remove the cylinder head cover.
- Turn the flywheel counterclockwise, and align the "T" mark on the flywheel with the index mark on the RH. crank case cover.
- The piston at this time must be at the top dead center of the compression stroke.

- Measure valve clearance with a feeler gauge.

VALVE CLEARANCE : Intake : 0.12±0.02mm

Exhaust : 0.12±0.02mm



INSPECTIONS / ADJUSTMENTS

- Loosen the lock nut with a valve wrench, and set valve clearance to a prescribed level by turning the adjusting screw with a valve adjusting wrench.
- After setting clearance to the prescribed level, hold the adjuster screw with a valve adjusting wrench, and tighten the lock nut.

TORQUE VALUES : 1.1kgf · m

**TOOLS : WRENCH 8X9mm
ADJUSTING WRENCH B
FEELER GAUGE**

- Measure the valve clearance again.
- Install the cylinder head cover and tighten the bolts.

TORQUE VALUES : 1.0 kgf · m

CYLINDER COMPRESSION PRESSURE

- Start and warm up the engine.
- Remove the plug maintenance cover.
- Stop engine, and remove the spark plug cap and spark plug.
- Install a compression gauge.
- Open the throttle completely, and crank the engine with the starter motor until the gauge reading rising.

TOOL : COMPRESSION GAUGE

NOTE

- The maximum reading is usually reached within 4~7 seconds.

COMPRESSION PRESSURE : 13.8 kg/cm²

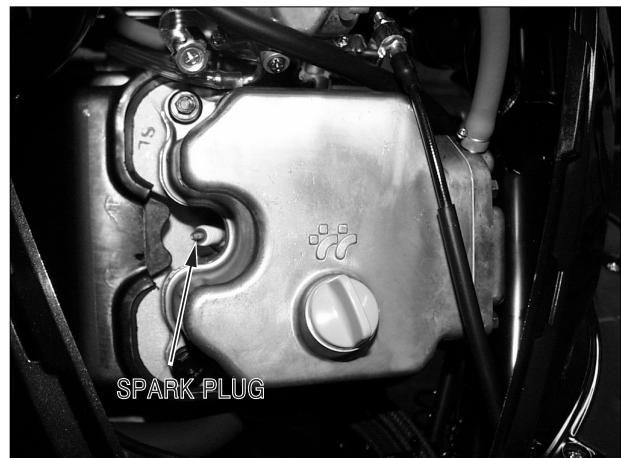
- If the pressure is low, check the following:
 - Inadequate valve clearance adjustment
 - Valve leakage
 - Leakage from the cylinder head gasket
 - Piston/cylinder worn
- If pressure is high, check the following:
 - Carbon deposits on the piston head, and cylinder head.

CARBURETOR IDLE SPEED

- Remove the plug maintenance cover. (⇒4-5)
- Check the idle speed and adjust if necessary by turning the throttle stop screw.

NOTE

- Verify all engine adjustments satisfy specifications. Make adjustments, if necessary.
- Heat the engine to make accurate idling inspection and adjustment. Stand the vehicle on the main stand.
- Turn the throttle stop screw and make adjustments to prescribed idling speed.

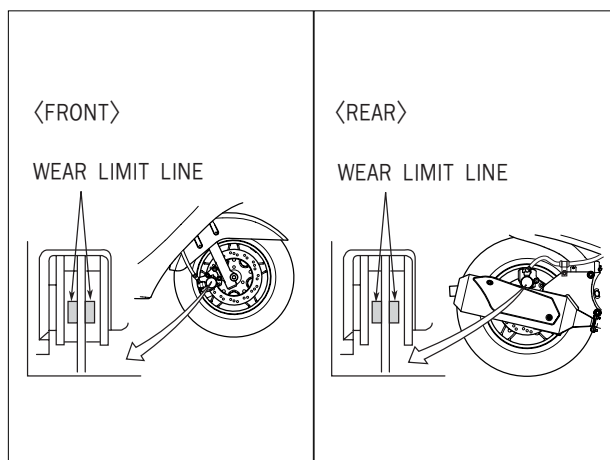
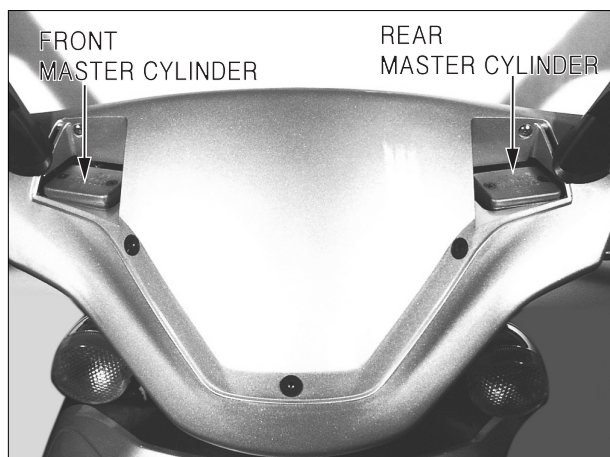


BRAKE FLUID

- Loosen the 3 screen setting screws securing the wind screen.
- Remove the oil cup cap covers.
- Check the oil level inside the front/rear brake reservoirs. If the oil level is near the lower limit line, remove the reservoir diaphragms and fill DOT 3 and DOT 4 brake fluid to the top limit line.
- If the brake fluid reaches the lower limit line, check the entire brake system for leaks.

CAUTION

- Brake fluid will damage painted, plastic or rubber parts.
- Mixing incompatible fluids can impair braking efficiency.
- Foreign materials can clog the system, causing a reduction or complete loss of braking ability.
- A leak in the brake system can lead to reduced braking efficiency and possible loss of braking ability.



BRAKE PAD/SHOE

BRAKE PAD REPLACEMENT

- Check the brake pads for wear.
- If the red mark on the pad reaches the brake disk, replace the pads.

NOTE

- Replace the brake pads in sets.

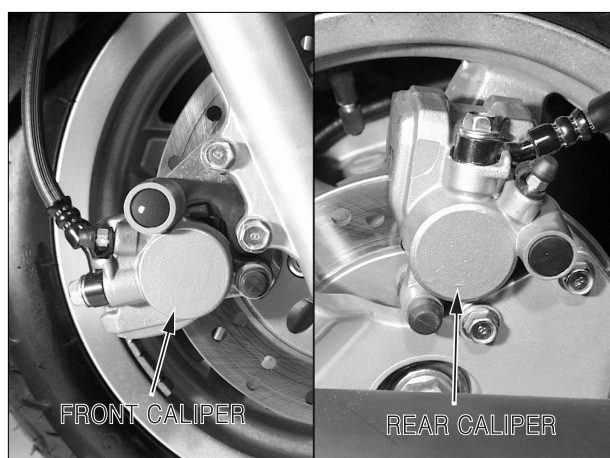
PARKING BRAKE SHOE REPLACEMENT

- If the arrow mark of the wear limit aligns with the '△' mark when the parking brake lever is tightly depressed, it indicates the brake lining has reached the service limit. Replace the brake shoes.



BRAKE SYSTEM

- Check the front brake hose for cracks or damage. If any leaks are found, replace immediately.
- Check the brake rod for looseness or damage, and replace it if necessary.



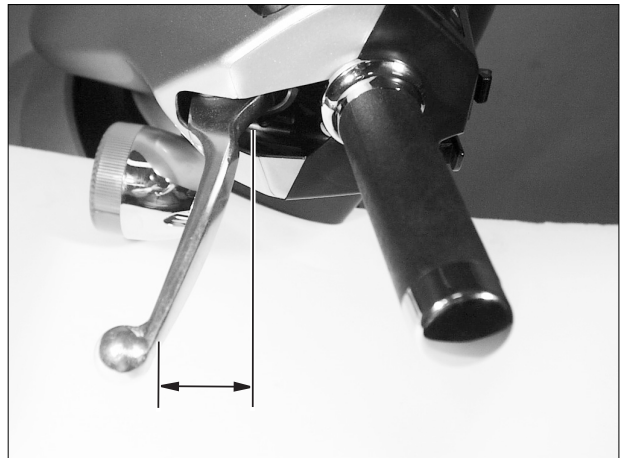
INSPECTIONS / ADJUSTMENTS

BRAKE LEVER FREE PLAY

- Check the free play after pulling the lever.

FRONT : 10~20mm

REAR : 10~20mm



PARKING BRAKE FREE PLAY ADJUSTMENT

- Turn the adjuster nut to adjust the free play.
- After initial adjustment, check the operation of the parking brake light switch. Make additional adjustments, if necessary.

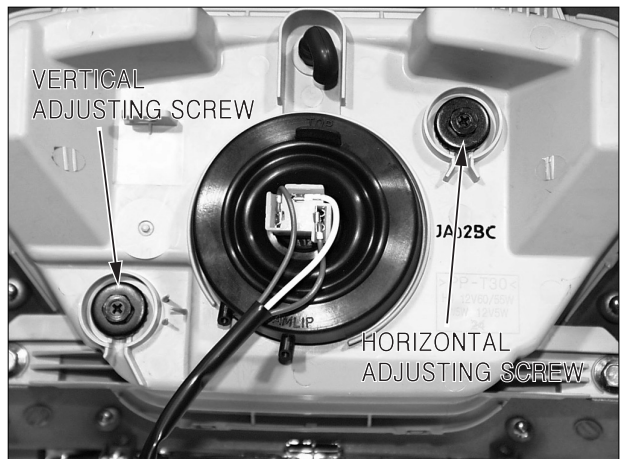


HEADLIGHT AIM

- Adjust the headlight beam level by operating the adjusting screw located on the upper side of the front fender.

NOTE

- Adjust the beam level according to local laws and regulations.
- Improper beam level adjustment may blind oncoming drivers, or may incorrectly light the road ahead.

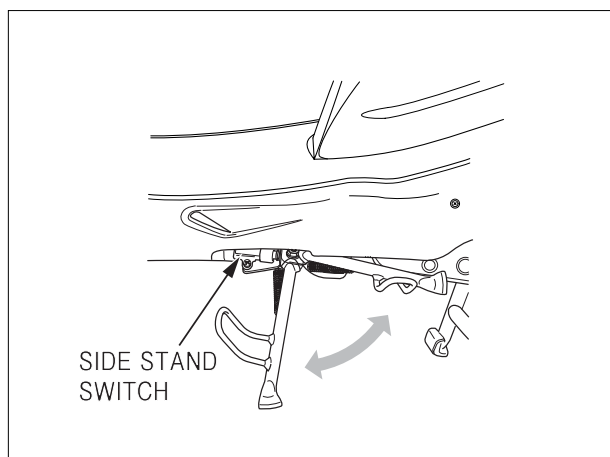


SIDE STAND

- Erect the main stand.
- Pull the lower end of the side stand, and see if it moves freely.
- If the side stand does not move smoothly, apply grease to the pivot area.
- If the side stand moves too freely, check the side stand spring.
- Check the axial movement of the side stand.



- Check the side stand ignition cut-off switch :
 - Put the side stand up.
 - Start the engine.
 - Lower the side stand. The engine should stop as you put the side stand down.
- If there is a problem with the system, check the side stand switch.



SUSPENSION

NOTE

- Do not ride motorcycle with an unsatisfactory suspension. Loose or worn suspension parts will lead to deterioration in the vehicle's safety and operation efficiency.

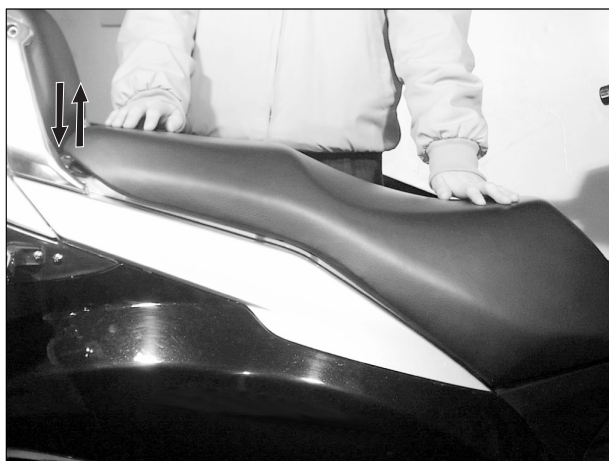
FRONT WHEEL

- Hold the brake lever, and compress the front cushion up and down several times to check the operating conditions.
- Check the front fork for oil leakage, parts damage or looseness.



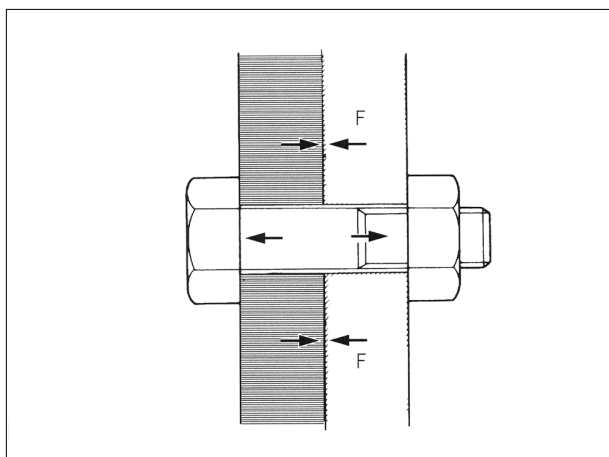
REAR WHEEL

- Compress the rear cushion up and down several times to check the operating conditions.
- Check the rear fork for oil leakage, parts damage or looseness.



BOLTS, NUTS, FASTENERS

- Check all nuts and bolts of the frame during the regular maintenance to check if they meet the prescribed torque value.
- Check all pins, clips, hose clamps and cable stays.



WHEELS/TIRES

NOTE

- Check the tire pressure when the tires have been cooled off. Check the tread (the part making contact with the road surface) and side for wear, cracks or damage. Replace damaged tires.

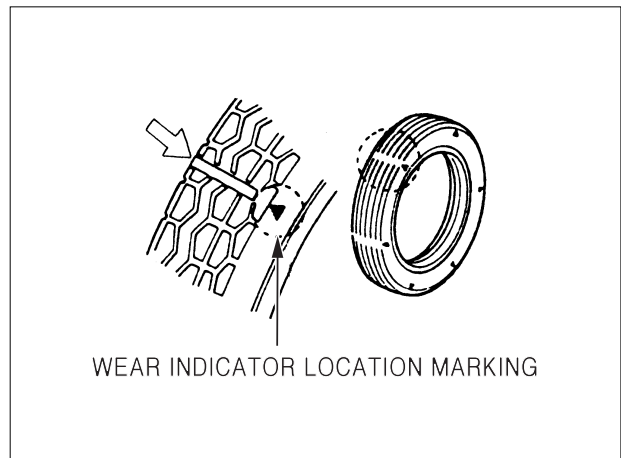
STANDARD PRESSURE

kgf/cm² (kpa)

ITEM	FRONT WHEEL	REAR WHEEL
DRIVER ONLY	2.00(200)	2.00(200)
DRIVER AND A PASSENGER	2.00(200)	2.25(225)

- Check the tread depth at the tire center.
- If the tread depth has reached the service limit, replace the tire.

SERVICE LIMIT : 0.5mm



STEERING HEAD BEARING

NOTE

- Check the cable if it interferes with the handle operation.
- Lift the front wheel and check if the handle moves right and left smoothly. If the handles move heavily, check if the cable or electric cord interferes with the handle. If the handle moves satisfactorily, adjust the steering head bearing.



4. EXTERNAL PARTS

SERVICE INFORMATION . . . 4-1	EXTERNAL PARTS
MAINTENANCE PRECEDURE . . . 4-2	REMOVAL / INSTALLATION . 4-3
	MUFFLER 4-12

SERVICE INFORMATION

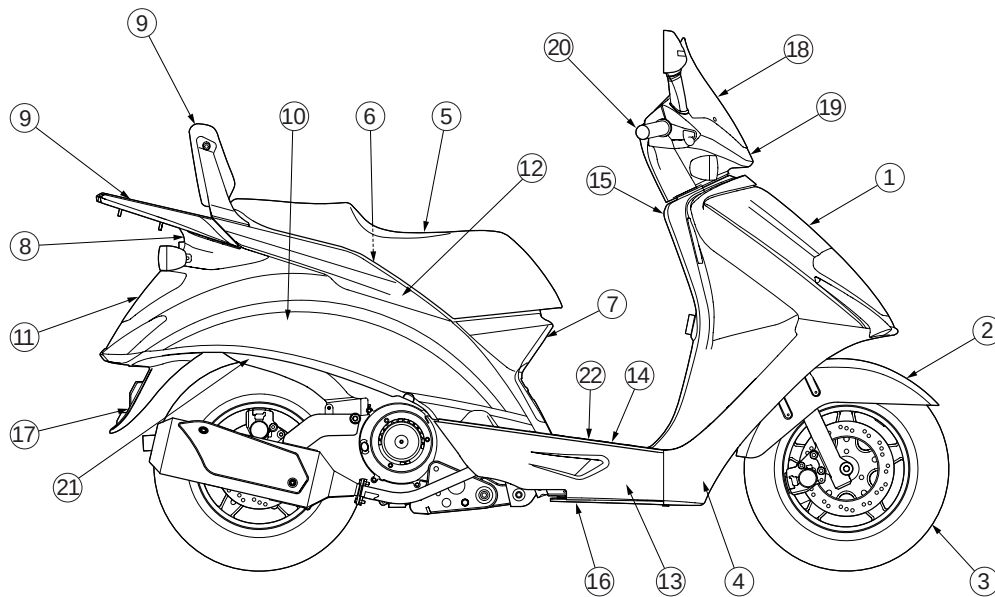
4

NOTE

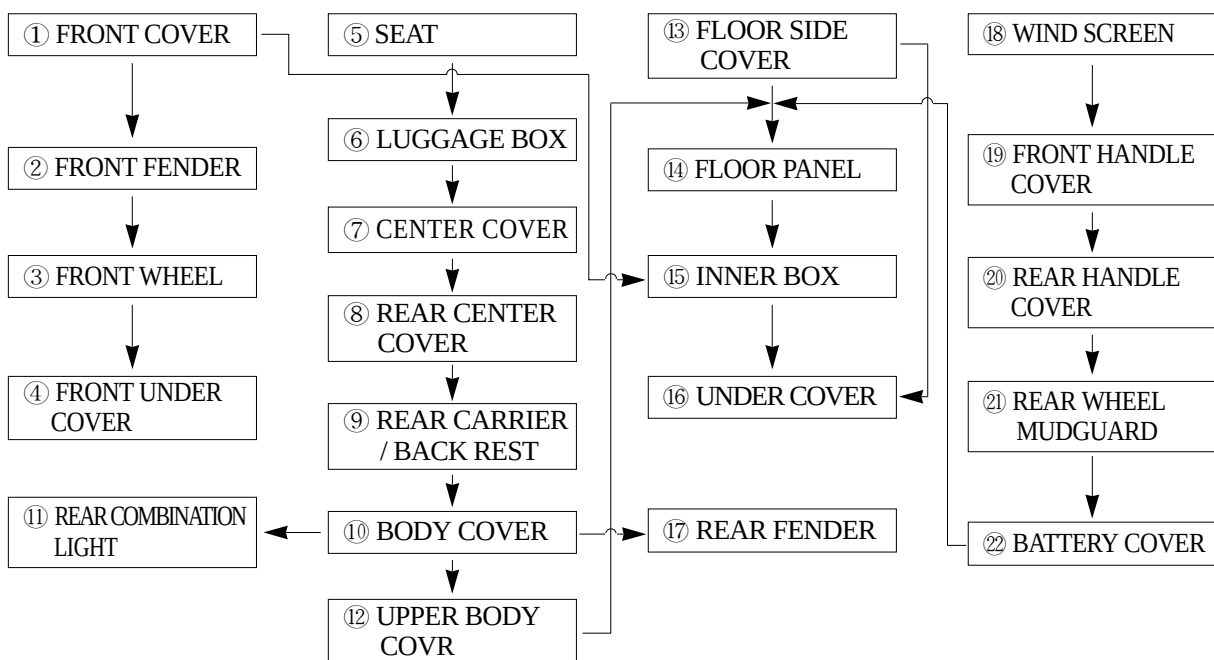
- This section describes external parts removal/installation.
- Do not apply unreasonable force when disassembling covers, to prevent possible damage.
- A muffler is hot. Do not service it immediately after the engine is stopped.

MAINTENANCE PROCEDURE

NAMES OF FRAME COVERS

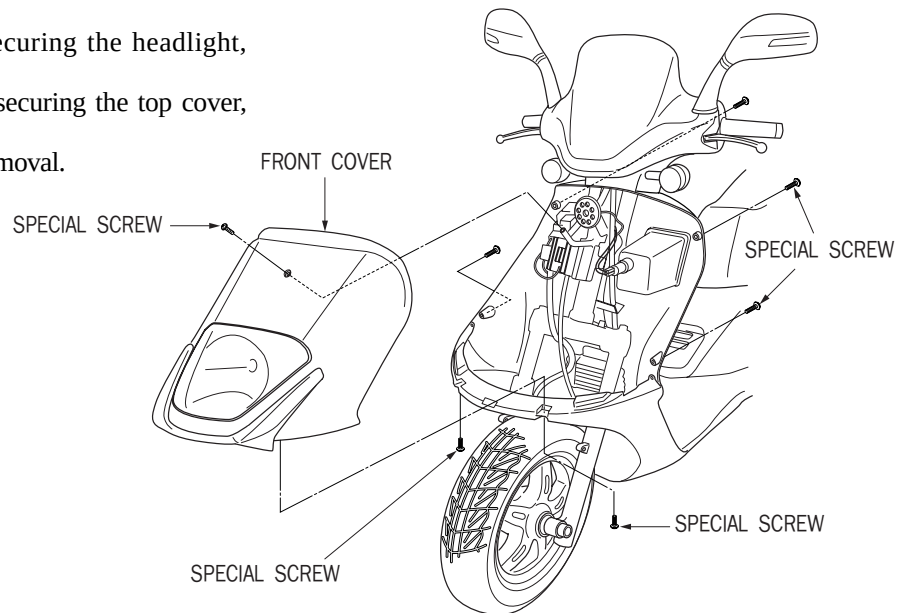


- This chart shows arrows connected in the order of disassembling covers.



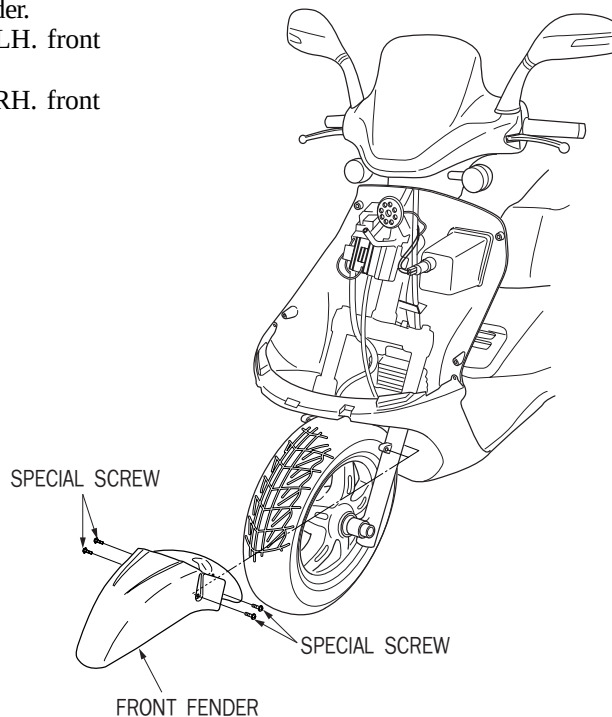
FRONT COVER

- Loosen the 4 special screws securing the inner box.
- Loosen the special screw securing the front of the front cover.
- Loosen the 2 special screws securing the front under cover.
- Draw the upper part of the front cover to remove it.
- Disconnect the headlight wiring and remove the front cover.
- Loosen the 4 flange bolts securing the headlight, remove the headlight.
- Loosen the 4 tapping screws securing the top cover, remove the front protector.
- Install in the reverse order of removal.



FRONT FENDER

- Loosen the oval screw securing the speedometer gear box, remove the speedometer cable.
- Remove the wire grommet from the front fender.
- Loosen the 2 special screws securing the LH. front cushion.
- Loosen the 2 special screws securing the RH. front cushion.
- Install in the reverse order of removal.

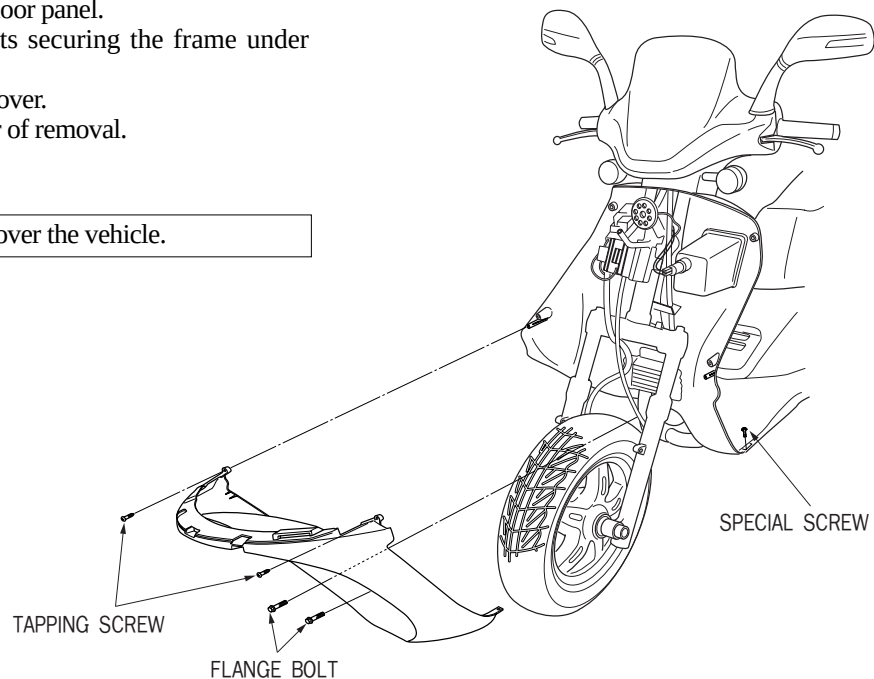


FRONT UNDER COVER

- Remove the front fender. (⇒4-3)
- Remove the front wheel. (⇒12-5)
- Loosen the 4 tapping screws securing the inner box.
- Remove the floor mat, and loosen the 2 special screws securing the front of the floor panel.
- Loosen the 2 flange bolts securing the frame under cover bracket.
- Remove the front under cover.
- Install in the reverse order of removal.

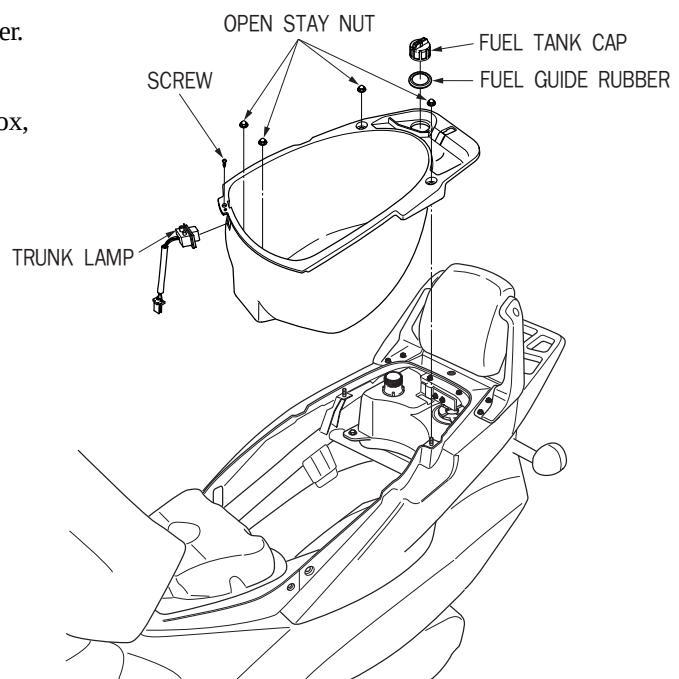
NOTE

- Pay attention not to turn over the vehicle.



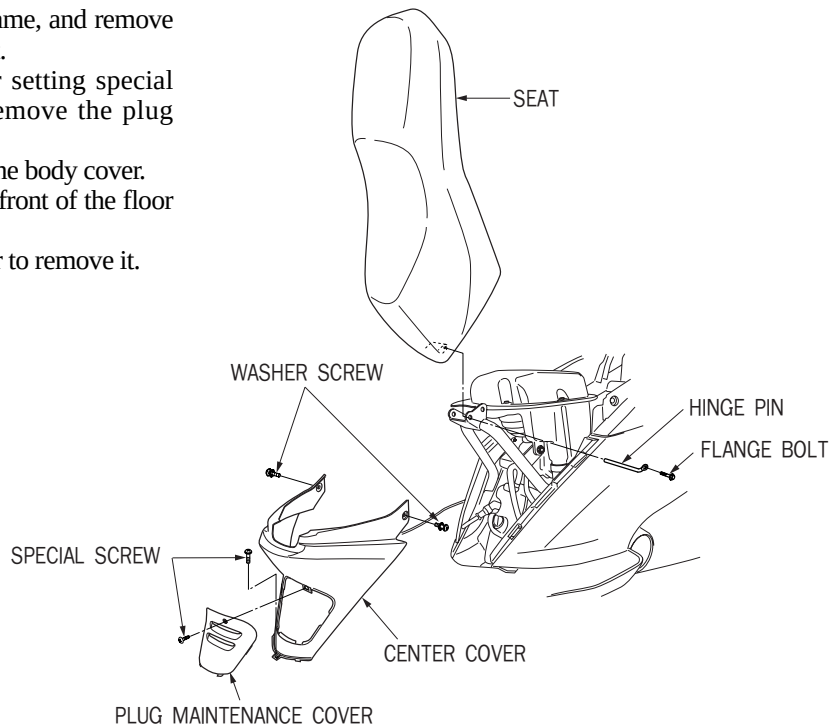
LUGGAGE BOX

- Release the seat lock by turning the main switch key to open the seat.
- Loosen the 4 open stay nuts.
- Loosen the fuel tank cap, remove the fuel guide rubber.
- Disconnect the trunk lamp wiring.
- Remove the luggage box.
- Loosen the tapping screw securing the luggage box, remove the trunk lamp.
- Install in the reverse order of removal.



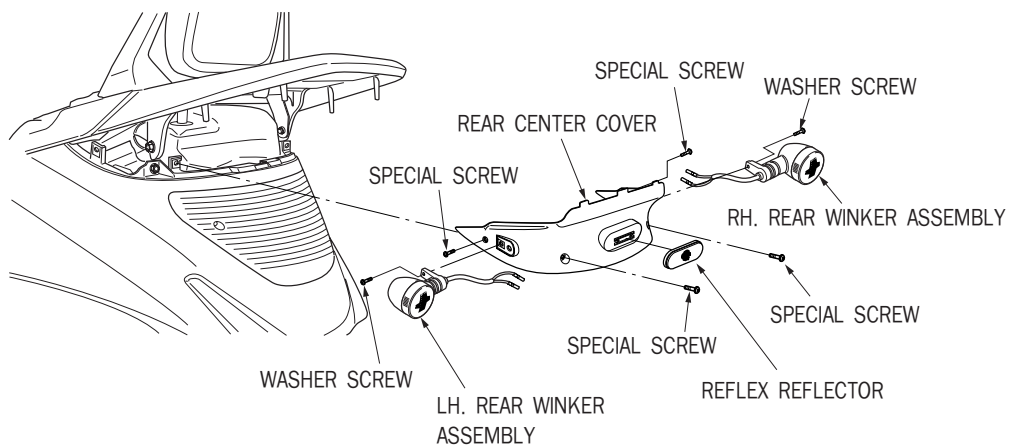
CENTER COVER

- Release the seat lock by turning the main switch key to open the seat.
- Loosen the flange bolt securing the frame, and remove the hinge pin, and then remove the seat.
- Loosen the plug maintenance cover setting special screw securing the center cover, remove the plug maintenance cover.
- Loosen the 2 washer screws securing the body cover.
- Loosen the special screw securing the front of the floor panel.
- Draw the upper part of the center cover to remove it.
- Install in the reverse order of removal.



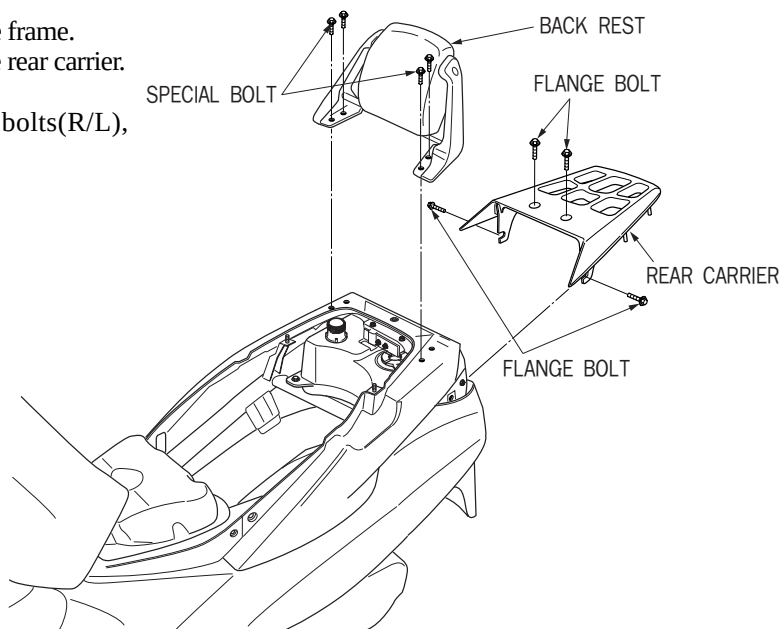
REAR CENTER COVER

- Loosen the 4 special screws securing the body cover.
- Remove the rear center cover, disconnect the RH./LH. winker wiring.
- Loosen the RH./LH. winker setting washer screws securing the rear center cover, remove the RH./LH. winker.
- Remove the rear reflex reflector securing the rear center cover.
- Install in the reverse order of removal.



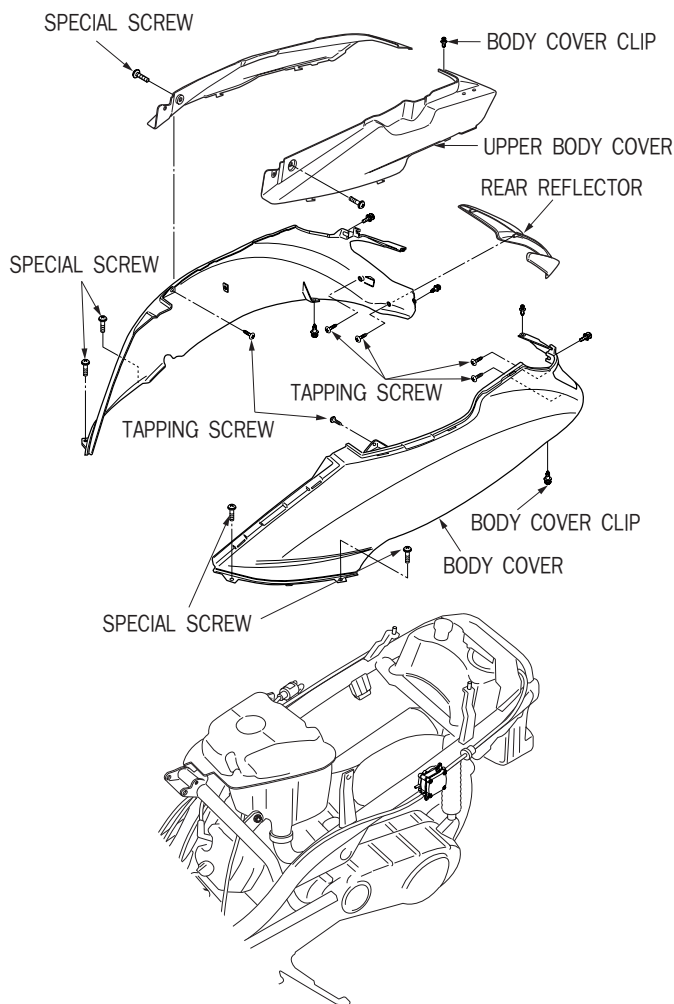
REAR CARRIER/BACK REST

- Remove the rear center cover. (⇒4-5)
- Loosen the 2 flange bolts(R/L) securing the frame.
- Loosen the 2 flange bolts(R/L) securing the rear carrier.
- Remove the rear carrier.
- Loosen the 4 back rest setting special bolts(R/L), Remove the back rest.
- Install in the reverse order of removal.



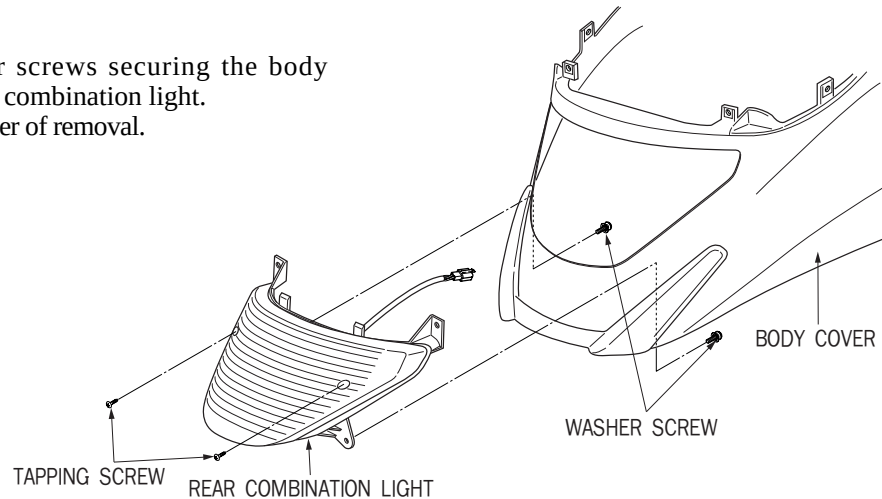
BODY COVER/UPPER BODY COVER

- Release the seat lock by turning the main switch key to open the seat.
- Remove the following parts.
 - Luggage box (⇒4-4)
 - Center cover (⇒4-5)
 - Rear center cover (⇒4-5)
 - Rear carrier (⇒4-6)
 - Back rest (⇒4-6)
- Loosen the 4 special screw (R/L) securing the floor panel.
- Loosen the 2 special screw (R/L) securing the frame, disconnect the rear combination light wiring.
- Loosen the 2 body cover clips (R/L) securing the rear fender.
- Draw the upper part of the body cover to remove it.
- Loosen the 2 washer screws securing the body cover, remove the rear combination light.
- Loosen the 4 tapping screws securing the body cover, remove the rear reflector.
- Loosen the 2 tapping screws (R/L) and 2 body cover clips securing the body cover, remove the upper body cover.
- Loosen the 2 body cover clips (R/L) securing the body cover, remove the RH./LH. body cover.
- Install in the reverse order of removal.



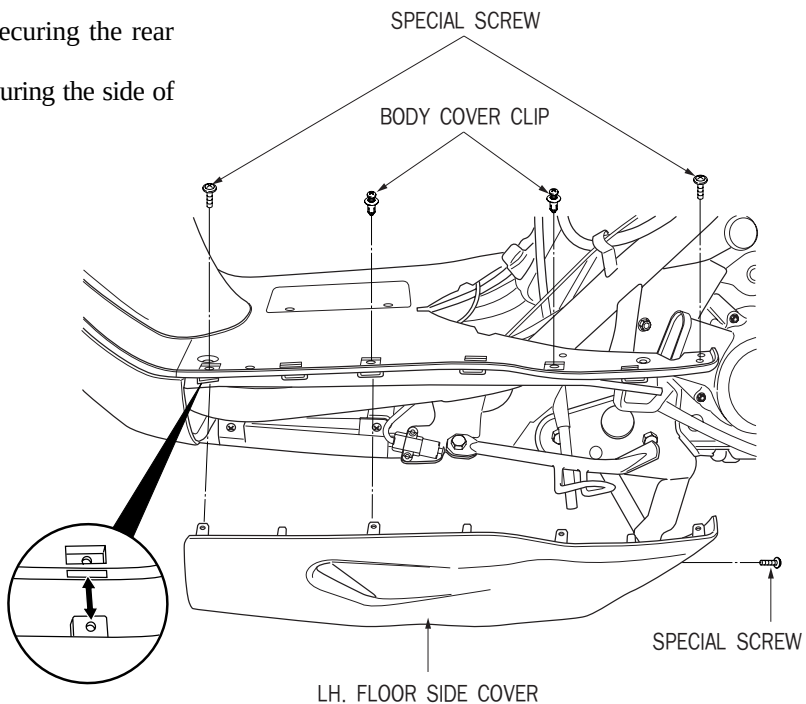
REAR COMBINATION LIGHT

- Release the seat lock by turning the main switch key to open the seat.
- Remove the seat.
- Remove the following parts.
 - Luggage box (⇒4-4)
 - Center cover (⇒4-5)
 - Rear center cover (⇒4-5)
 - Rear carrier (⇒4-6)
 - Back rest (⇒4-6)
 - Body cover (⇒4-6)
- Loosen the 2 washer screws securing the body cover, remove the rear combination light.
- Install in the reverse order of removal.



FLOOR SIDE COVER

- Remove the floor mat.
- Loosen the 2 special screws (R/L) securing the front part of the front under cover.
- Remove the 4 body cover clips (R/L) securing the floor panel
- Loosen the 2 special screws (R/L) securing the rear part of the floor panel.
- Loosen the 2 special screws (R/L) securing the side of the floor panel.
- Remove the RH./LH. floor side cover.
- Install in the reverse order of removal.



FLOOR PANEL

- Release the seat lock by turning the main switch key to open the seat.
- Remove the following parts.
 - Seat and center cover (⇒4-5)
 - Rear carrier and back rest (⇒4-6)
 - Floor mat
 - Body cover (⇒4-6)
 - RH./LH. floor side cover (⇒4-7)
- Loosen the 2 tapping screws securing the floor panel, remove the battery cover.
- Disconnect the battery wiring to remove the battery.

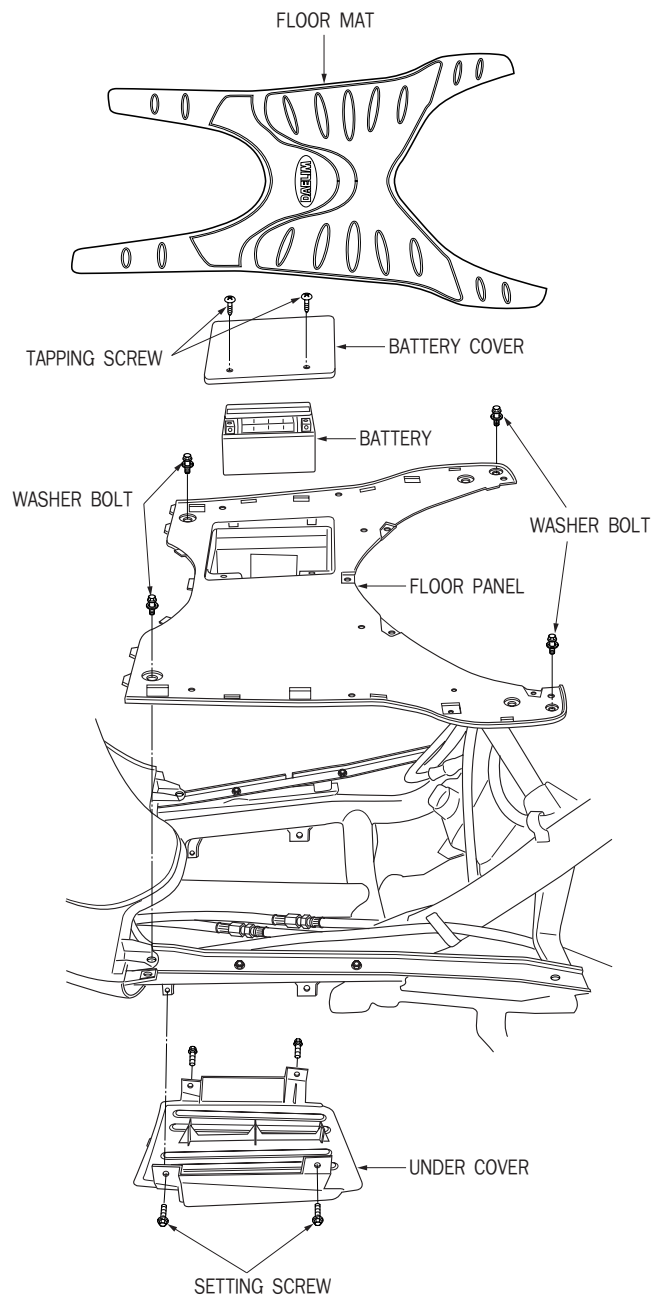
CAUTION

- Be sure to remove the negative pole $\ominus$ side cord first and the position pole $\oplus$ side cord next.
 - Make sure that terminals do not contact with other adjacent parts when handling $\oplus$ / $\ominus$ terminal.
- Contact with other parts may cause spark resulting in electrical equipment malfunction, fire and electric shock.

- Loosen the 4 washer bolts (R/L) securing the floor panel.
- Remove the floor panel from the connecting groove of the inner box by lifting the rear part of the panel slightly.
- Install in the reverse order of removal.

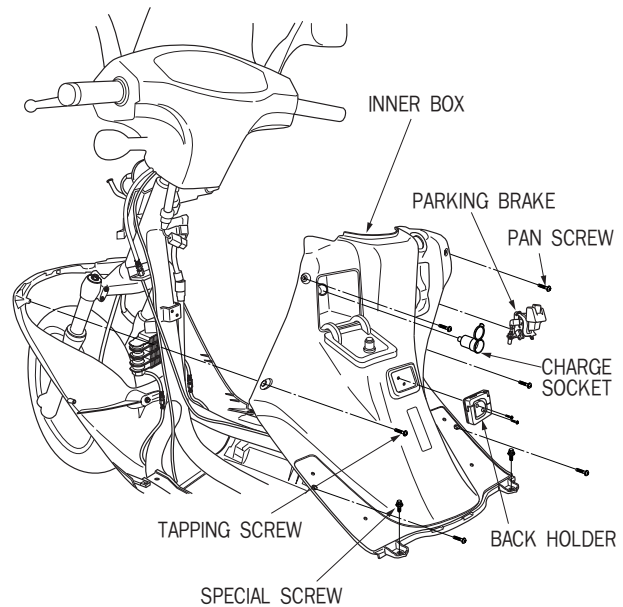
UNDER COVER

- Remove the floor side cover. (⇒4-7)
- Loosen the 2 upper cover setting screws (R/L) securing the frame.
- Remove the under cover.
- Install in the reverse order of removal.



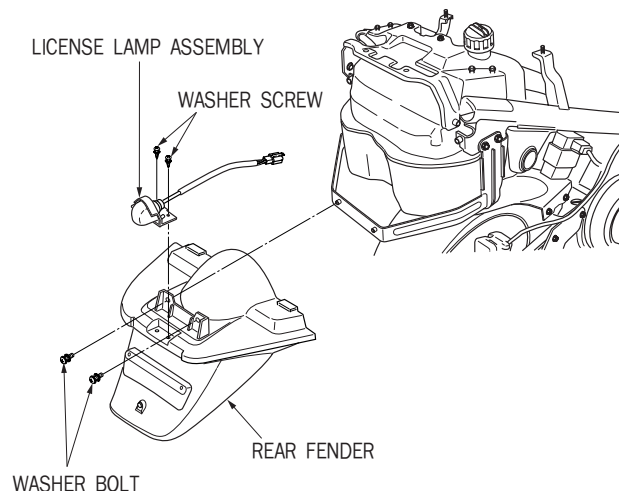
INNER BOX / INNER BOX LID

- Remove the following parts.
 - Front cover (⇒4-3)
 - Luggage box (⇒4-4)
 - Center cover (⇒4-5)
 - Rear center cover (⇒4-5)
 - Rear carrier and back rest (⇒4-6)
 - Body cover (⇒4-6)
 - Floor side cover (⇒4-7)
 - Floor panel (⇒4-8)
- Loosen the 2 tapping screws securing the front under cover.
- Loosen the 2 special screws (R/L) securing the rear part of the front under cover.
- Loosen the 2 pan screws securing the bag holder, remove the bag holder.
- Turn the main key cover slightly to release the locking and remove the main key cover.
- Loosen the pan screw securing the parking brake lever, remove the parking brake grip.
- Disconnect the coupler of the charge socket, remove the charge socket from the inner box.
- Remove the inner box.
- Loosen the 2 tapping screws, remove the parking brake lever seal.
- Remove the inner box lid from the inner box.
- Remove the lock key setting spring, and remove the inner box lid key.
- Install in the reverse order of removal.



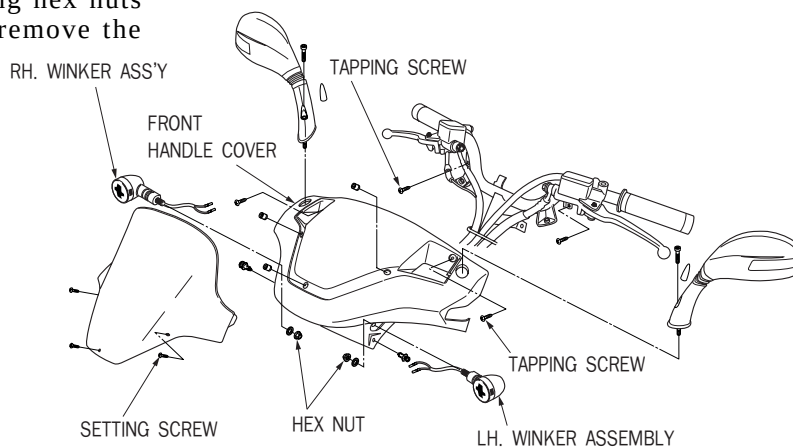
REAR FENDER

- Release the seat lock by turning the main switch key to open the seat.
- Remove the seat.
- Remove the following parts.
 - Luggage box (⇒4-4)
 - Center cover (⇒4-5)
 - Rear center cover (⇒4-5)
 - Rear carrier (⇒4-6)
 - Back rest (⇒4-6)
 - Body cover (⇒4-6)
- Disconnect the license lamp wiring, loosen the washer screw securing the rear fender, and remove the license lamp assembly.
- Loosen the 2 washer bolts securing the fuel tank support stay.
- Remove the rear fender.
- Install in the reverse order of removal.



WIND SCREEN / FRONT HANDLE COVER

- Loosen the 3 screen setting screws securing the front handle cover.
- Pulling the cover to the under slightly and remove the wind screen from the front handle cover groove.
- Loosen the 4 tapping screws (FR./RR.) securing the rear handle cover.
- Loosen the front handle cover LH./RH. setting pan screws (2EA) securing the steering handle.
- Remove the handle cover, disconnect the RH./LH. winker wiring.
- Remove the 3 wind screen setting nuts securing the front handle cover.
- Loosen the RH./LH. winker setting hex nuts securing the front handle cover, remove the RH./LH. winker.
- Install in the reverse order of removal.

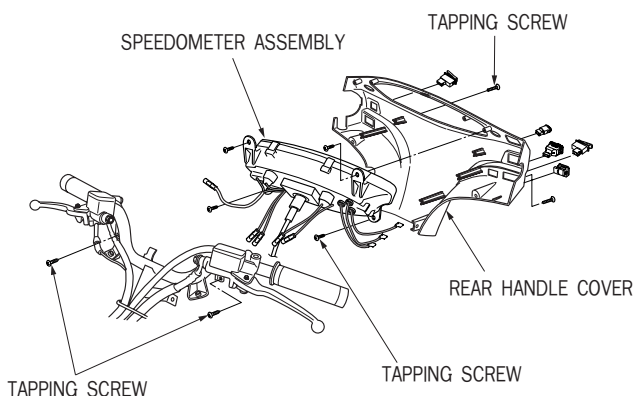


REAR HANDLE COVER

- Remove the front handle cover. (⇒ 4-10)
- Loosen the 2 tapping screws securing the steering handle.
- Remove the speedometer cable from the meter.
- Disconnect the stop switch wiring of the RH./LH. master cylinder assembly.
- Disconnect the winker relay wiring securing the winker relay.
- Remove the rear handle cover from the steering handle.
- Disconnect the right and left switch wiring, remove the switches.
- Loosen the 4 speedometer setting tapping screws securing the rear handle cover.
- Remove the rear handle cover.
- Install in the reverse order of removal.

NOTE

- Check each switch for proper operation after installation.
- Wires and cables must be connected properly.

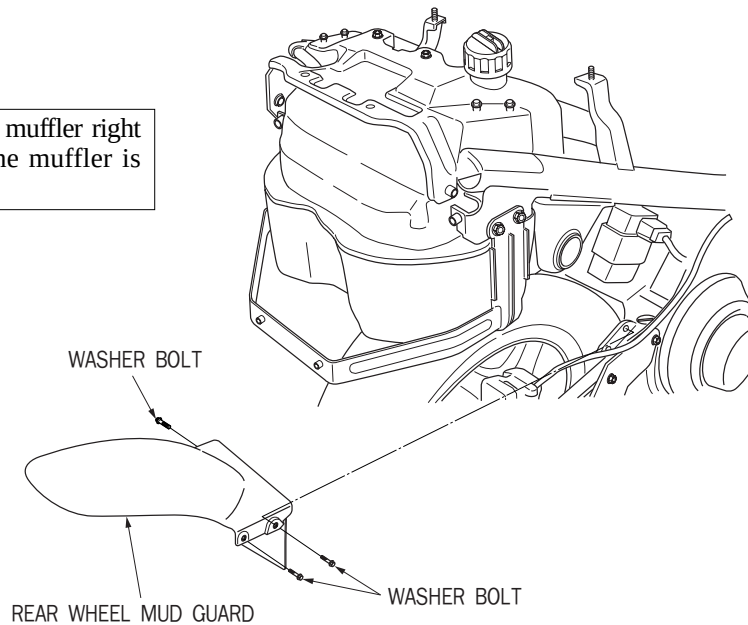


REAR WHEEL MUD GUARD

- Loosen the washer bolt securing the LH. crankcase.
- Loosen the washer bolt securing the RH. crankcase.
- Loosen the washer bolt securing EX. muffler bracket.
- Remove the rear wheel mud guard.
- Install in the reverse order of removal.

NOTE

- Never perform the maintenance of the muffler right after stopping the vehicle because the muffler is extremely hot.



MUFFLER

REMOVAL

- Loosen the 3 cap nuts securing the EX. pipe comp.
- Loosen the flange bolt securing the upper part of the RH. crankcase cover.
- Loosen the rear brake hose setting bolt.
- Loosen the flange bolt securing the rear wheel mud guard.
- Loosen the 2 flange bolts securing the lower part of the rear swing arm.
- Remove the EX. muffler comp.

WARNING

- Never perform the maintenance of the muffler right after stopping the vehicle because the muffler is extremely hot.

EX. PIPE REMOVAL

- Remove the plug maintenance cover.
- Loosen the 2 flange bolts securing the cylinder comp.
- Remove the EX. pipe by drawing it to the ground direction.

INSTALLATION

- Insert the EX. pipe gasket to the EX. pipe.
- Insert the EX. pipe to the cylinder comp, and tighten the 2 flange nuts with specified torque.
- Install the plug maintenance cover.

NOTE

- Tighten the flange nuts diagonally and alternately and tighten with specified torque in the end.

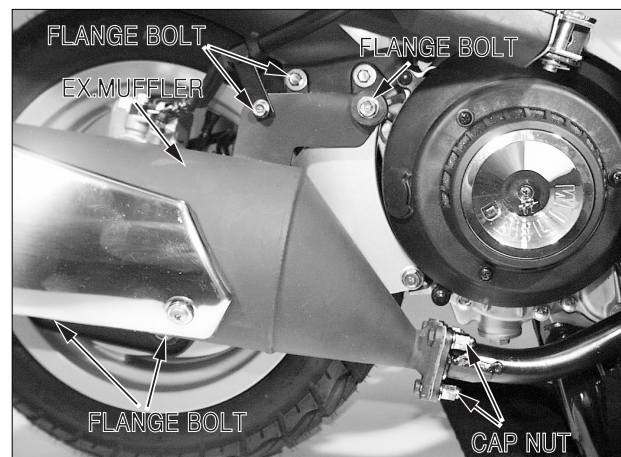
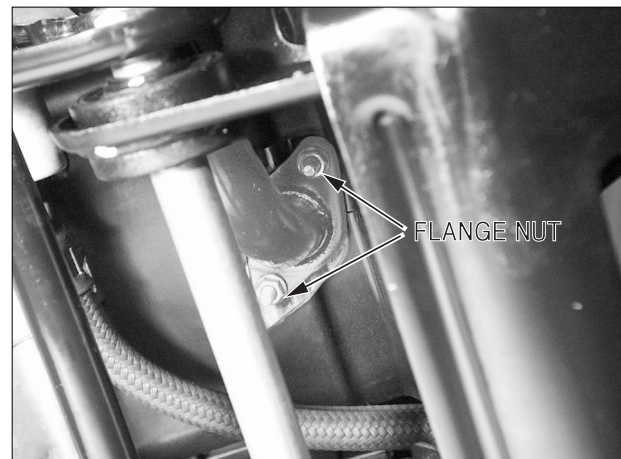
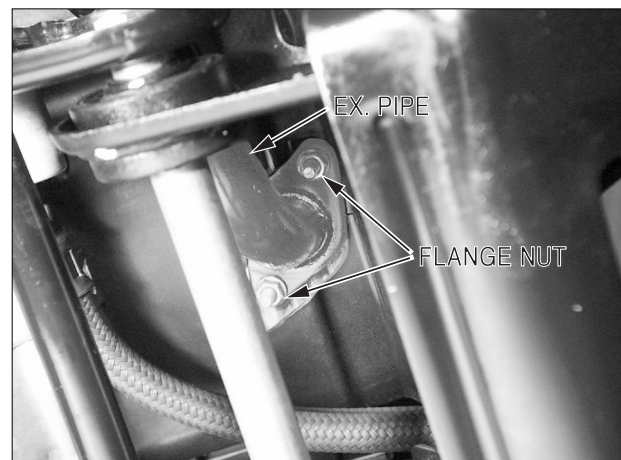
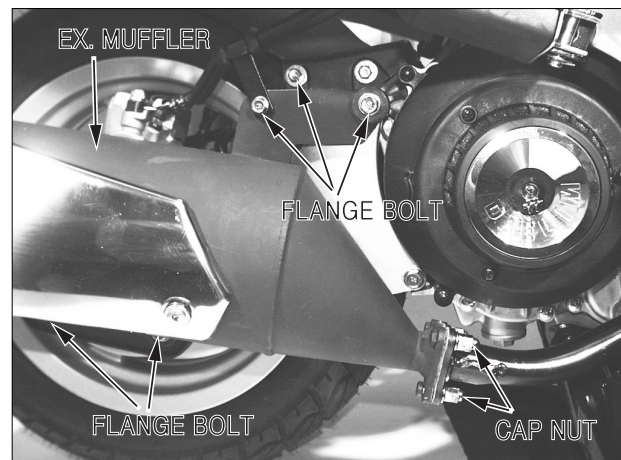
- Insert the flange gasket to the EX. muffler comp.
- Tighten the flange bolt securing the RH. crankcase cover.
- Tighten the 2 flange bolts securing the swing arm.

TORQUE VALUE : 5.5 kgf · m

- Tighten the 3 cap nuts securing the EX. pipe comp.
- Tighten the rear brake hose setting nut.
- Tighten the flange bolt securing the rear wheel mud guard.

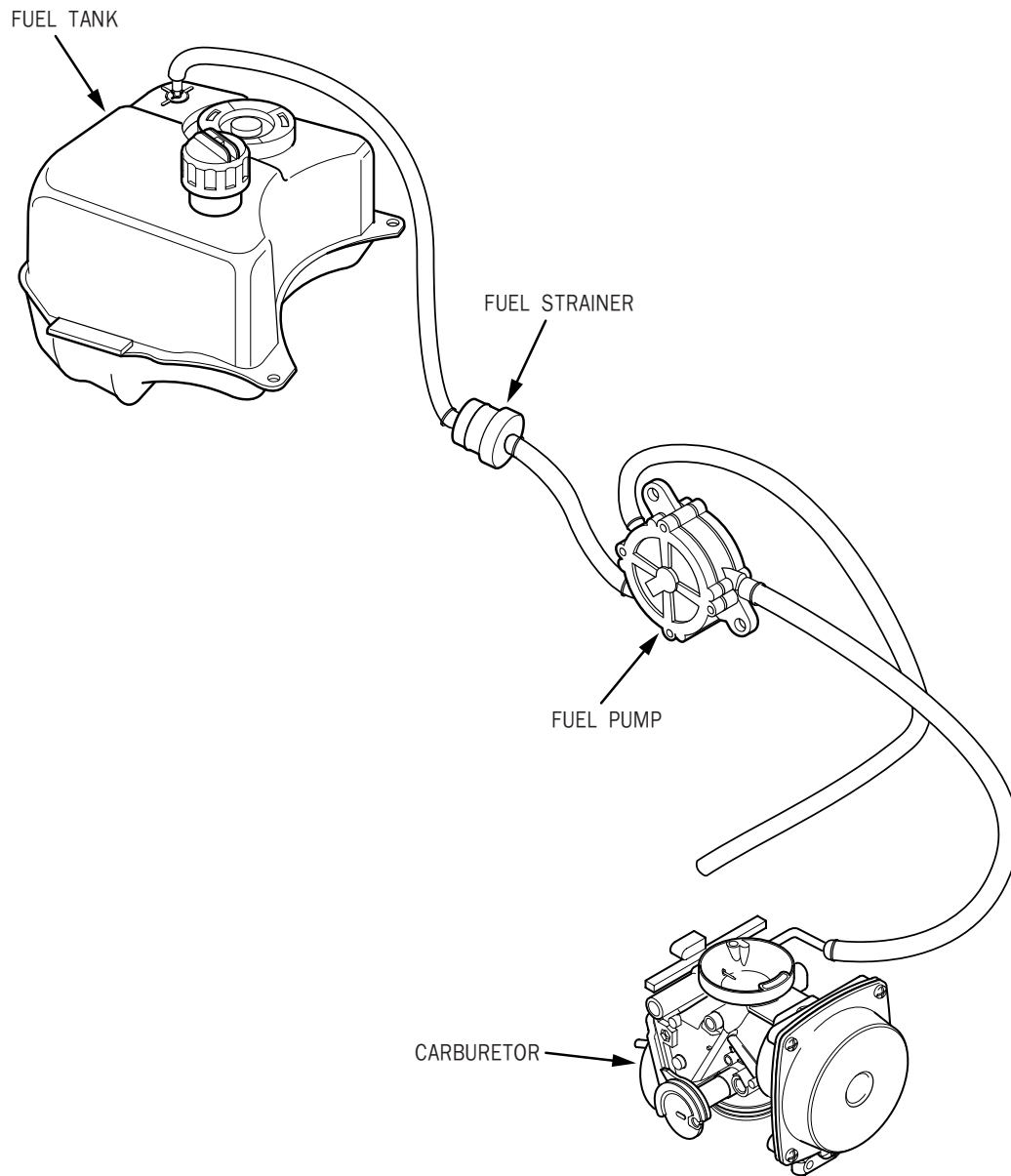
NOTE

- When installing the gasket, replace it with the new one.
- Check to see if there is any evacuation after installing the muffler.



MEMO

FUEL SYSTEM



5. FUEL SYSTEM

SERVICE INFORMATION . . . 5-1

TROUBLESHOOTING 5-2

FUEL TANK 5-3

AIR CLEANER 5-4

CARBURETOR 5-4

PILOT SCREW ADJUSTMENT • 5-10

SERVICE INFORMATION

GENERAL SAFETY

5

WARNING

- Gasoline is extremely flammable. Avoid fire in the work place, also paying particular attention to sparks. Furthermore, the evaporated (gasified) gasoline is highly explosive. Work in a well-ventilated areas.
- Exhaust gas contains poisonous substance. Do not keep engine running for a long period of time in a closed, or poorly ventilated area.

CAUTION

- Do not excessively bend or twist cable. Distorted or damaged cable may lead to mechanical malfunctions.
- Pay particular attention to the position of O-ring. Replace with new ones when disassembled.
- If it is desired to store a vehicle for a period longer than 1 month, drain gasoline out of the carburetor float chamber. Gasoline left in the float chamber will be deteriorated causing the slow jet to be clogged with deposits, and idling may become unstable.

SPECIFICATIONS

FUEL TANK CAPACITY : 8 l

RESERVE FUEL CAPACITY: 2 l

CARBURETOR

ITEM	STANDARD
TYPE/THROTTLE BORE	CV TYPE (VACUUM)/24.2mm
MODEL MARK	BDS26 - 112
MAIN JET No.	#95
PILOT SCREW OPENING	1 ½ RETURNS
FLOAT LEVEL	13.0mm
IDLING SPEED	1,800 ± 100rpm
THROTTLE GRIP FREE PLAY	2-6mm

TOOL

FLOAT LEVEL GAUGE

TROUBLESHOOTING

The vehicle does not start.

- No gasoline in fuel tank.
- Fuel is not coming out of carburetor.
- Too much fuel is flowing into cylinder.
- No spark emitted from spark plug.
- Air cleaner is blocked.
- Suction system is experiencing secondary intake of air.
- Using low quality gasoline.
- Starter is damaged.
- Throttle cable is working improperly.
- Fuel tank is functioning improperly.

Idle is unstable and engine turns off after starting.

- Starter is damaged.
- Ignition system is damaged.
- Using low quality gasoline.
- Suction system is experiencing secondary intake of air.
- Idle is adjusted improperly.
- Air screw is adjusted improperly.
- Compression pressure is low.
- Air/Fuel mixture is either too lean or rich.
- Carburetor is blocked.

Mis-firing occurs when driving at high speeds.

- Ignition system is damaged.
- Mixture is too lean.

Back firing

- Ignition system is damaged.
- Mixture is too lean.

Insufficient power and high fuel consumption.

- Air cleaner is blocked.
- Ignition system is damaged.
- Mixture is too rich.

Air/Fuel mixture is extremely lean

- Fuel jet is blocked.
- Float valve is damaged.
- Oil level is low.
- Bad ventilation of air in tank cap.
- Fuel strainer screen is blocked.
- Fuel tube is bent, creased or blocked.
- Suction system is receiving secondary suction of air.

Air/Fuel mixture is extremely rich.

- Air jet is blocked.
- Float valve is damaged.
- Oil level is too high.
- Starter is damaged.
- Air cleaner is blocked.

FUEL TANK

REMOVAL

WARNING

- Gasoline is extremely flammable. Avoid fire during work, and pay particular attention to electric sparks. Furthermore, the evaporated (gasified) gasoline is highly explosive. Work in a well-ventilated areas.

- Release the seat lock by turning the main switch key to open the seat.
- Remove the following parts.
 - Luggage box. (⇒4-4)
 - Plug maintenance cover. (⇒4-5)
 - Center cover. (⇒4-5)
 - Rear center cover. (⇒4-5)
 - Rear carrier/Back rest. (⇒4-6)
 - Body cover. (⇒4-6)
- Remove the fuel tube from the fuel tank.

NOTE

- Use the tube clip or the cap to prevent the gasoline from leaking.

- Remove the fuel unit wire coupler.
- Remove the license lamp wire coupler.
- Loosen the 4 flange bolts securing the fuel tank support stay, remove the fuel tank with the fuel tank support stay and rear fender from the frame.
- Loosen the 2 flange bolts securing the fuel tank, remove the fuel tank by drawing down it slightly.

NOTE

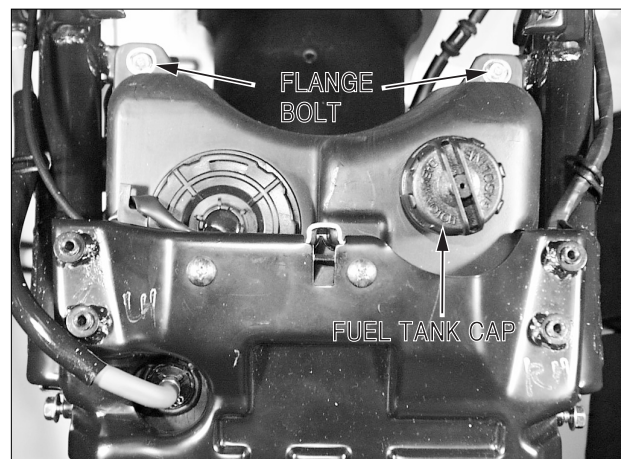
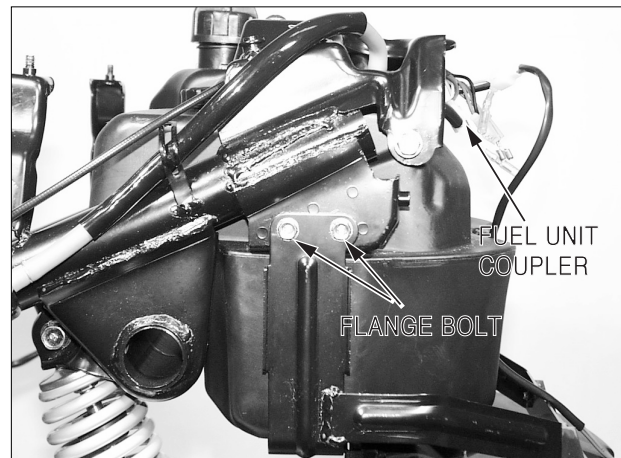
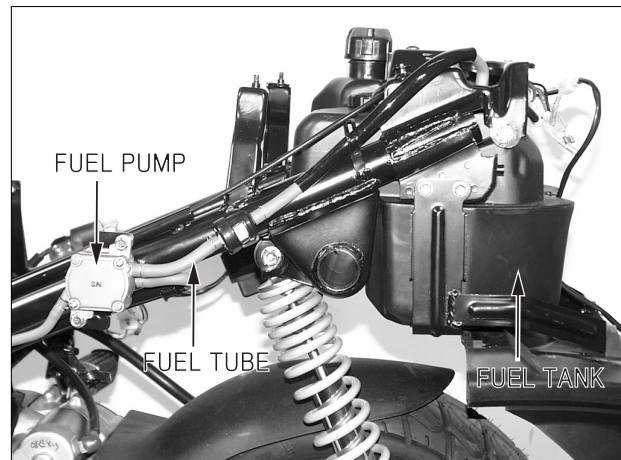
- After removing the fuel tank, be sure to close the fuel tank cap.

INSTALLATION

- Install in the reverse order of removal.

NOTE

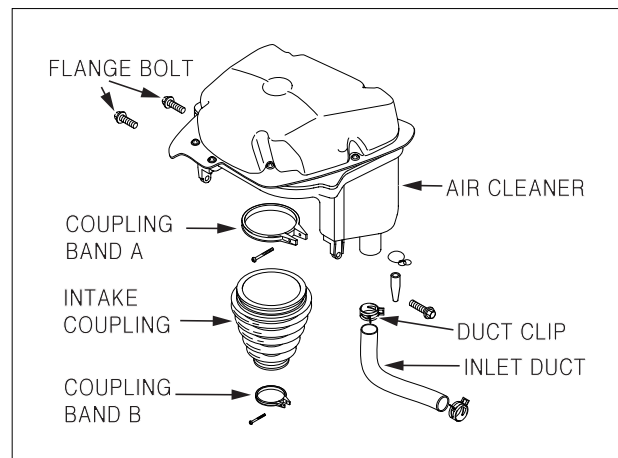
- Check for gasoline leakage.
- “Gasoline” mark is on the fuel tank cap.
- Check this mark when filling gasoline.



AIR CLEANER

REMOVAL

- Remove the luggage box. (⇒4-4)
- Remove the center cover. (⇒4-5)
- Loosen the intake coupling band B securing the carburetor, remove the air cleaner from the carburetor.
- Remove the air band hose securing the air cleaner.
- After pressing the duct clip securing the air cleaner, remove the air cleaner inlet duct.



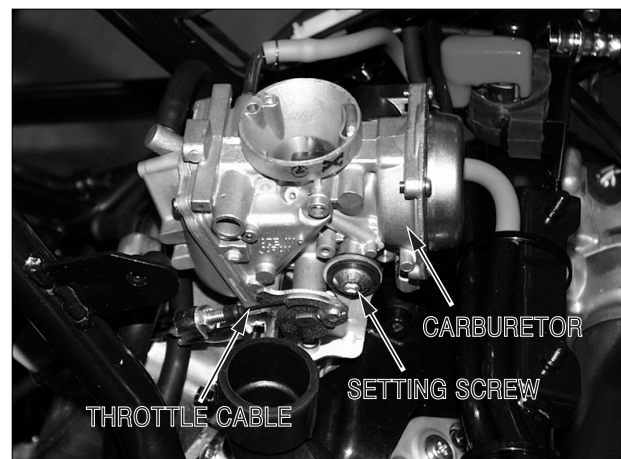
- Loosen the 3 flange bolts (left 1, right 2) securing the frame body.
- Remove the air cleaner.
- Install in the reverse order of removal.



CARBURETOR

REMOVAL

- Remove the luggage box. (⇒4-4)
- Remove the center cover. (⇒4-5)
- Remove the air cleaner. (⇒5-4)
- Loosen the throttle cable lock nut, and remove the throttle cable from the carburetor.
- Remove the fuel tube from the carburetor.

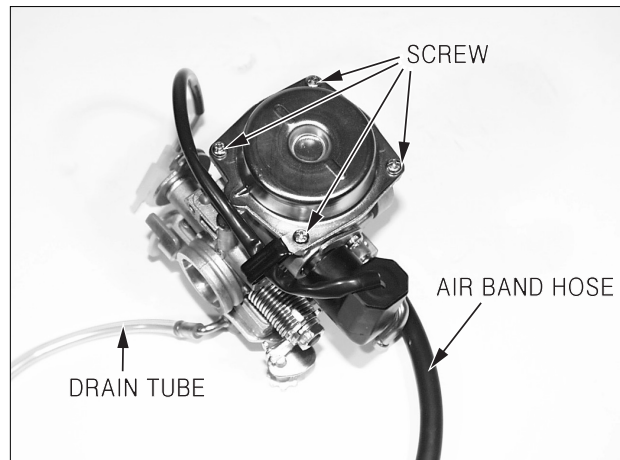


- Remove the wiring coupler of the auto bystarter.
- Loosen the set plate setting screw.
- Loosen the screw of the carburetor insulator band 46.
- Remove the carburetor.

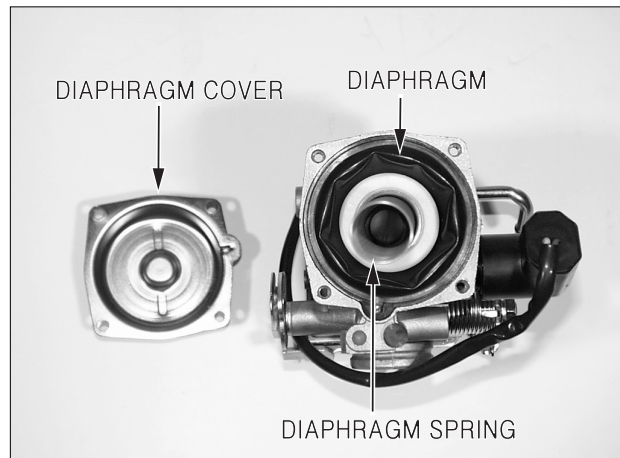


CARBURETOR DISASSEMBLY

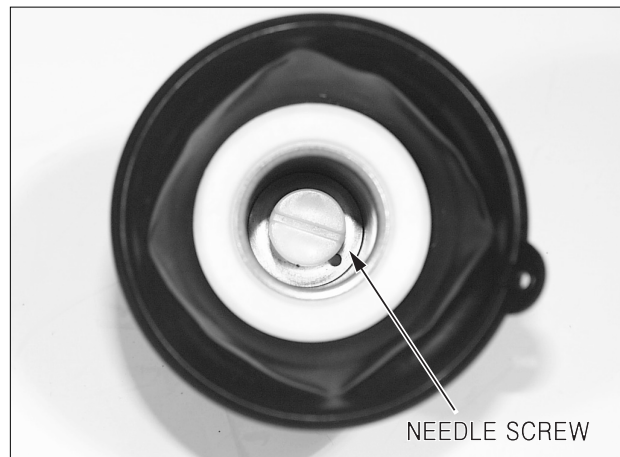
- Remove the drain tube and air band hose.
- Loosen the 4 diaphragm cover setting screws.



- Remove the diaphragm cover.
- Remove the diaphragm spring, diaphragm assembly.



- Turn the jet needle with a $\ominus$ screwdriver, and remove the needle spring, spring holder, and jet needle from the vacuum piston.

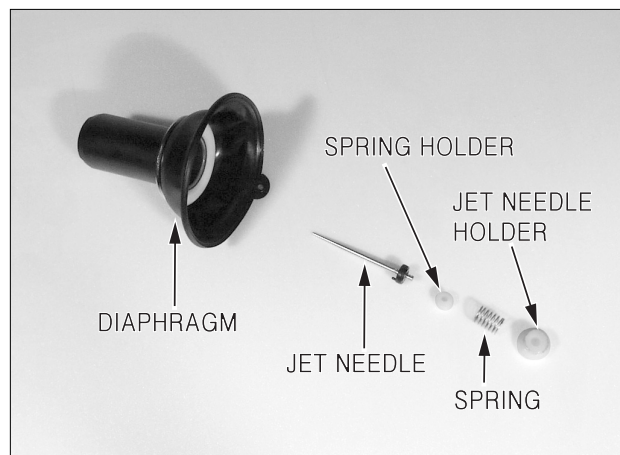


CARBURETOR INSPECTION

- Check the jet needle for stepped wear and replace if necessary.
- Check the vacuum piston for damage and replace if necessary.
- Check the diaphragm for damage, pin holes, wrinkles and bends and replace if necessary.

NOTE

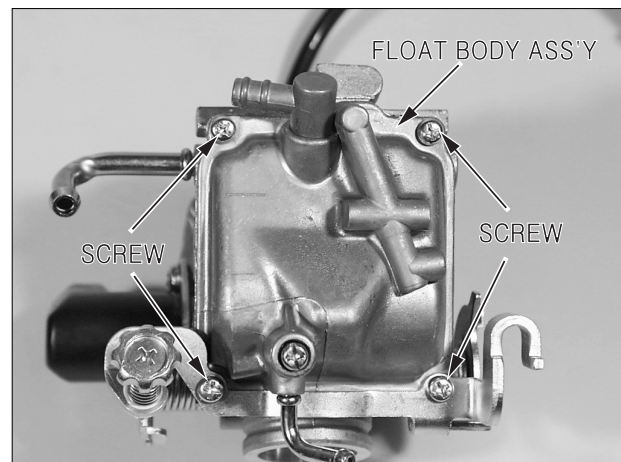
- Air leaks out of the vacuum chamber if the diaphragm is damaged in any way-even a pin hole.



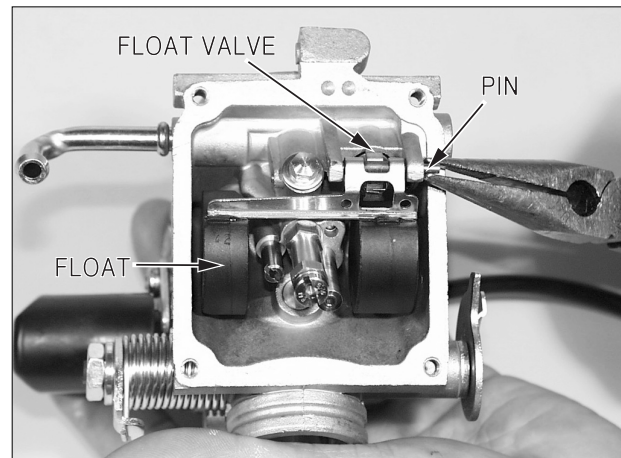
FUEL SYSTEM

FLOAT CHAMBER/FLOAT/JET DISASSEMBLY

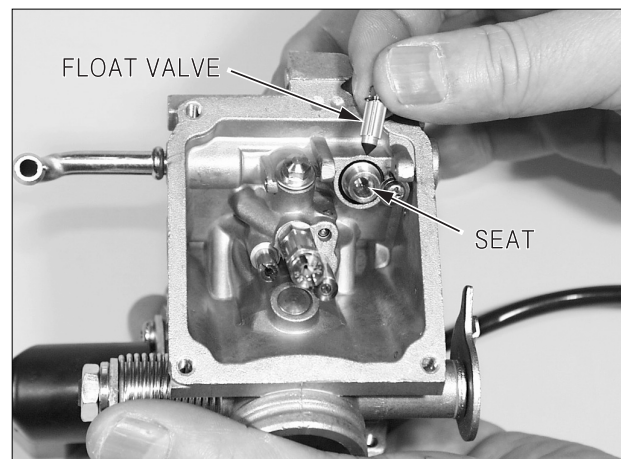
- Loosen the 4 screws securing the float body.



- Remove the float pin, float, and float valve.



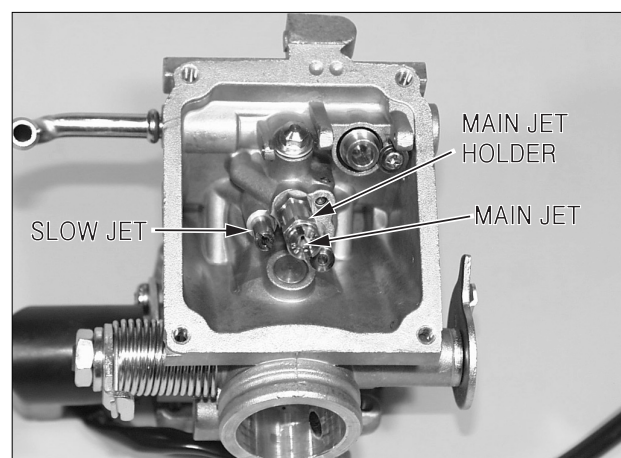
- Check the float valve and valve seat for scores, scratches, clogging and damage. Replace if necessary.
- Check the float valve operation.



- Remove the main jet, main jet holder, holder washer, jet screw, jet washer, needle jet, slow jet, pilot jet, washer and O-ring.

NOTE

- Turn in the pilot jet and record the number of turns it takes before it seats lightly.
- Do not force the pilot screw against its seat ; the seat will be damaged.

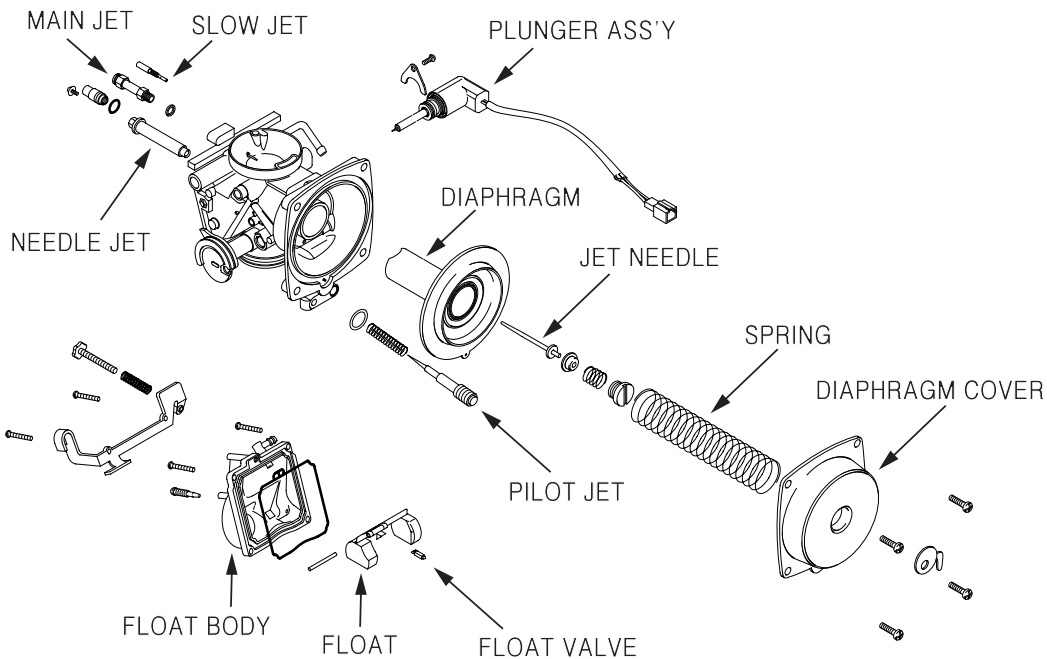
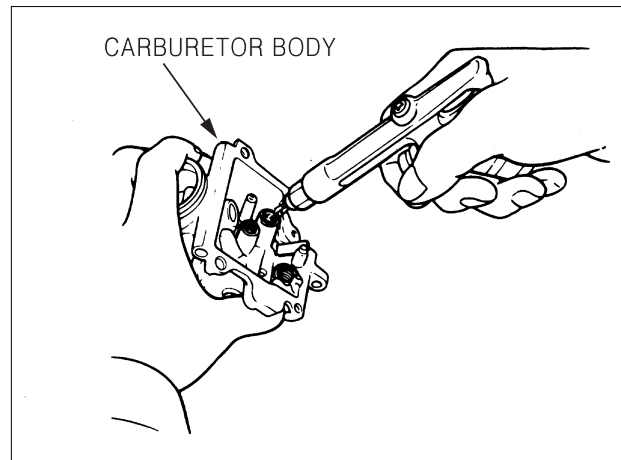


CARBURETOR CLEANING

- After removing all parts, blow open air and fuel passages in the carburetor body with compressed air.

CAUTION

- Cleaning the air and fuel passages with a piece of wire will damage the carburetor body or fuel pump.



FLOAT CHAMBER/FLOAT/JET ASSEMBLY

- Install the needle jet, needle jet holder, main jet and slow jet.
- Tighten the pilot jet until it seats lightly, then turn it out as much as the number recorded during removal.
- Install the pilot jet rubber.



FUEL SYSTEM

FLOAT LEVEL INSPECTION

- Install the float valve, float, float pin.
- Measure the float level with the float level gauge.

FLOAT LEVEL : 13 mm

TOOL : FLOAT LEVEL GAUGE

- If the level is out of specification and the float arm lip can be bent, adjust the float level by bending the lip. Non-adjustable floats must be replaced.

NOTE

- Be sure to keep the float level at the specified height. If the float level is low / high, fuel mixture becomes lean / rich.

- Install the float body assembly, install the bracket and 4 pan screws.

NOTE

- Be sure to replace the float chamber body O-ring with the new one.

- Insert the jet needle, needle spring holder, needle spring, diaphragm assembly, and install the needle screw.

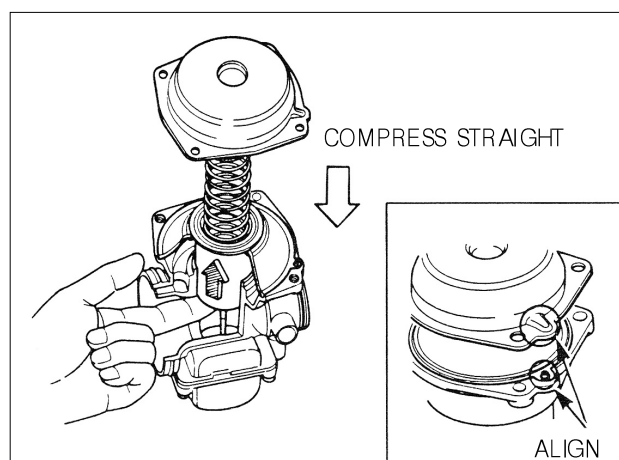
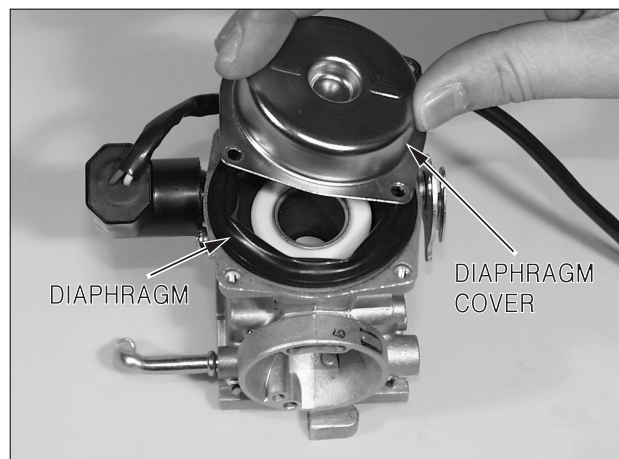
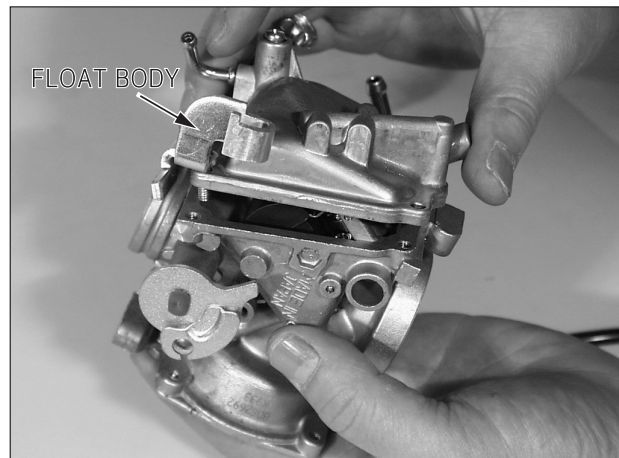
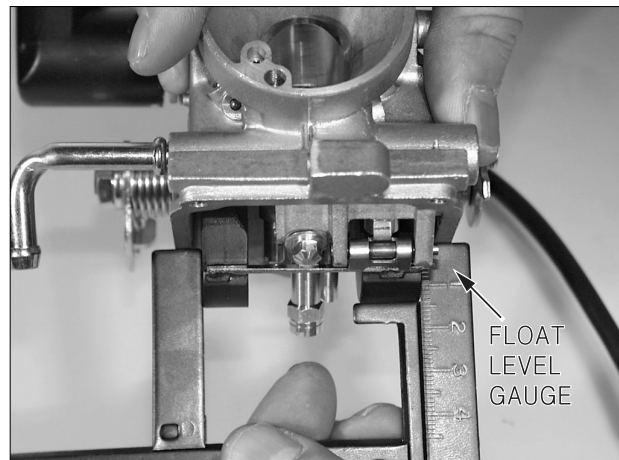
NOTE

- Install the jet needle aligned with the grooves in the diaphragm.

- Install the diaphragm assembly on the carburetor body.
- Install the diaphragm spring.
- Install the diaphragm cover with its cutout aligned with the hole in the tab of diaphragm.

NOTE

- Be careful not to pinch the diaphragm, and to keep the spring straight.
- Install the auto bystarter wiring plate to the diaphragm, and tighten the 4 pan screws.
- Install the drain tube and air-hose.

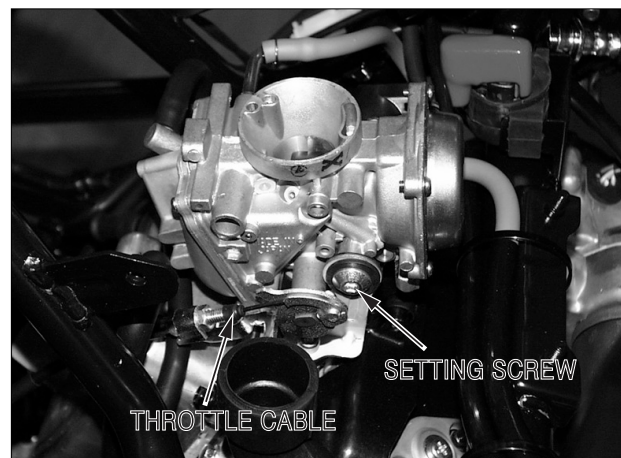


CABURETOR INSTALLATION

- Install the carburetor to the carburetor insulator.
- Tighten the carburetor insulator band screw.
- Tighten the setting screw securing the carburetor and set plate.
- Install the fuel tube to the carburetor.
- Install the wiring coupler of the auto bystarter.
- Install the throttle cable to the carburetor.
- Install the air cleaner.(⇒5-4)
- Install the center cover.(⇒4-5)
- Install the luggage box.(⇒4-4)

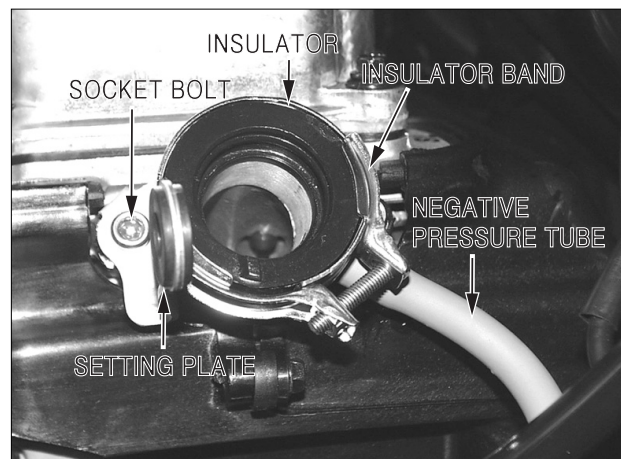
NOTE

- After adjusting the carburetor, check the throttle grip free play.



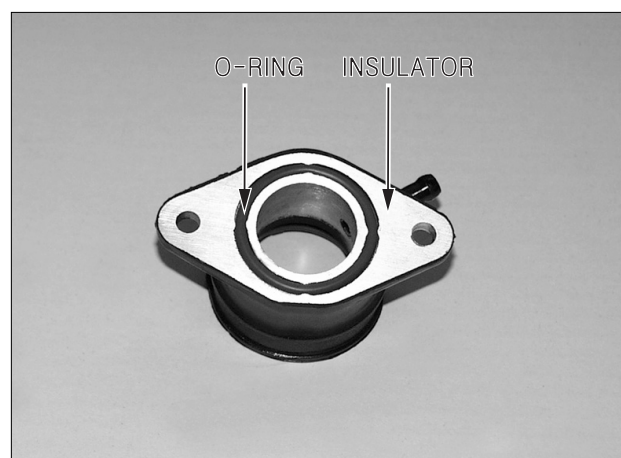
CABURETOR INSULATOR REMOVAL

- Remove the luggage box. (⇒4-4)
- Remove the center cover. (⇒4-5)
- Remove the air cleaner. (⇒5-4)
- Remove the carburetor. (⇒5-4)
- Remove the fuel pump negative pressure tube.
- Loosen the carburetor insulator RH. socket bolt, and remove the carburetor setting plate and socket bolt.
- Loosen the carburetor insulator LH. socket bolt, and remove the carburetor insulator.
- Remove the carburetor insulator band.
- Install in the reverse order of removal.



INSPECTION

- Check the carburetor insulator O-ring for wear or damage.



PILOT SCREW ADJUSTMENT

- Remove the luggage box. (⇒4-4)
 - Remove the pilot jet rubber.
 - Remove the plug maintenance cover. (⇒4-5)
- ① Turn the pilot screw clockwise until it seats lightly, then back it out to the specification given ($1\frac{1}{2}$).
 - ② Warm up the engine to operating temperature (60°C).
 - ③ Adjust the idle speed with the throttle stop screw.

IDLE SPEED : $1,800 \pm 100$ rpm

NOTE

- The pilot screw is factory pre-set. Adjustment is not necessary unless the carburetor is overhauled or a new pilot screw is installed.
- Before adjusting the pilot screw, check the following items.
 - Fuel system, electrical system for troubleshooting.
 - Spark plug for cleaning and gap adjusting.
 - Valve clearance for adjusting.

CAUTION

- Tightening the pilot screw against its seat will damage the seat.

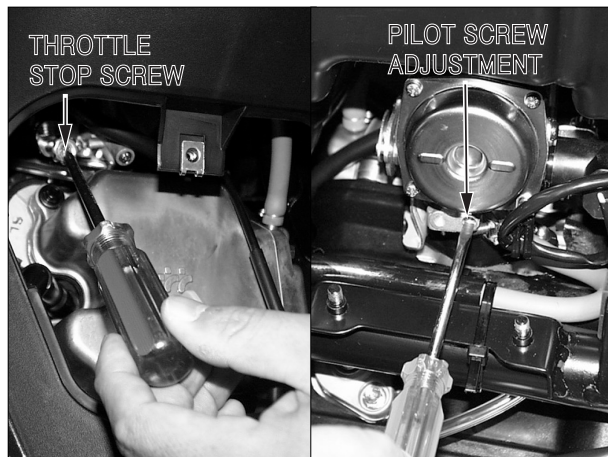
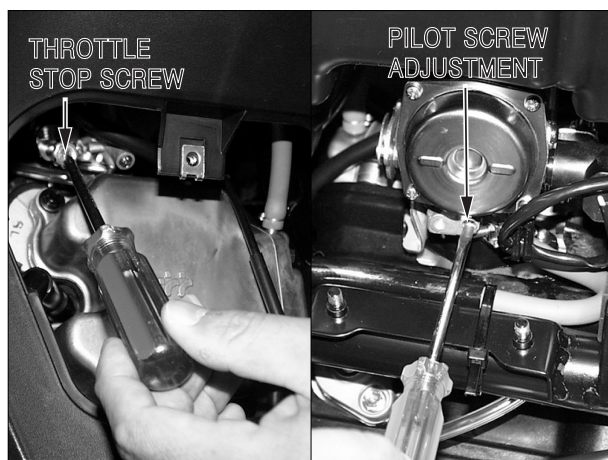
- ④ Rev the engine up slightly from the idle speed and make sure that engine speed rises and returns smoothly.
- ⑤ When turning the throttle stop screw in gradually until the engine speed drops 1,000rpm, make sure that the engine does not run.
Adjust by turning the pilot screw with a $\frac{1}{8}$ turn and repeat steps ④ and ⑤

CAUTION

- If the engine cannot be adjusted by turning the pilot screw within a $\frac{1}{4}$ turn, check for other engine problems.

- ⑥ Readjust the idle speed with the throttle stop screw.

- Install the plug maintenance cover. (⇒4-5)
- Install the pilot jet rubber.
- Install the luggage box. (⇒4-4)



6. ENGINE REMOVAL

SERVICE INFORMATION	6-1
ENGINE REMOVAL	6-2

SERVICE INFORMATION

GENERAL SAFETY

NOTE

- | |
|--|
| <ul style="list-style-type: none">• Use a jack to remove or install the engine. Support the motorcycle with a jack firmly, taking precautions not to damage the frame, engine, cable or harness.• Attach tape to the frame to protect it during the engine removal or installation. |
|--|

6

- The following works can be carried out without removing the engine from the vehicle body.

- TRANSMISSION (⇒SECTION 11)
- STARTING CLUTCH (⇒SECTION 8)
- OIL PUMP (⇒SECTION 2)
- A.C. GENERATOR (⇒SECTION 8)
- STARTER MOTOR (⇒SECTION 17)
- KICK STARTER/ CONTINUOUSLY VARIABLE TRANSMISSION (⇒SECTION 7)
- CYLINDER HEAD/ CYLINDER/ PISTON (⇒SECTION 9,10)
- EX. MUFFLER (⇒SECTION 4)
- CARBURETOR (⇒SECTION 5)
- REAR SWING ARM (⇒SECTION 13)

- Items to be worked after removing engine.
 - CRANKSHAFT, CRANKSHAFT BEARING, CRANK CASE BEARING

- Engine oil capacity : 1.1 l - when disassembled.

TORQUE VALUES :

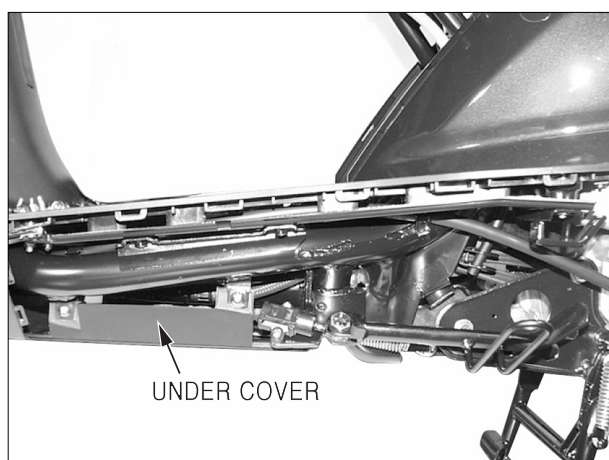
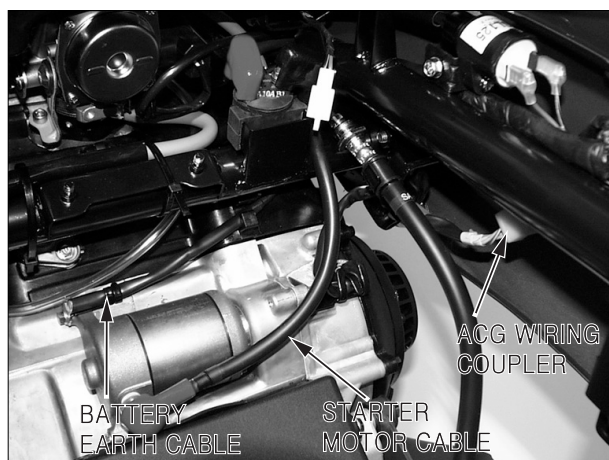
ENGINE HANGER BOLT (FRONT) : 2.7kgf · m
(REAR) : 3.5kgf · m

ENGINE REMOVAL

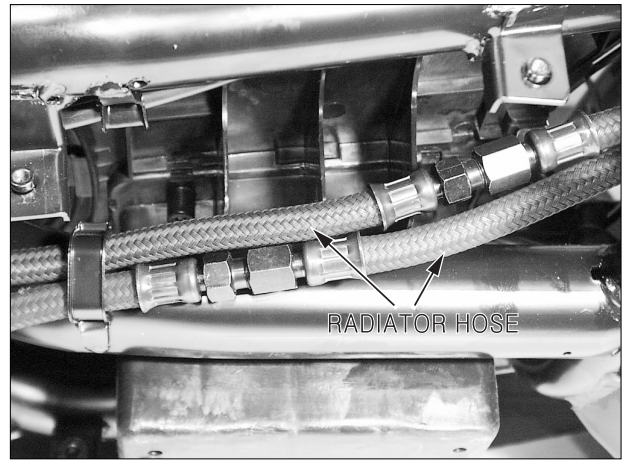
- Drain the engine oil.
- Release the seat lock by turning the main switch key to open the seat.
- Remove the following parts.
 - Luggage box (⇒4-4)
 - Center cover (⇒4-5)
 - Air cleaner (⇒5-4)
 - Carburetor (⇒5-4)
- Disconnect the A.C generator coupler and connector wiring connected to the A.C generator; disconnect the starter motor wiring cable.
- Remove the battery earth cable from the RH. shroud groove.
- Disconnect the high-tension cord from the engine.
- Remove the bleeder tube from the cylinder head cover.
- Loosen the parking brake rod adjuster nut B, remove the parking brake cable.
- Remove the negative pressure tube from the carburetor insulator.

- Remove the EX. muffler. (⇒4-12)
- Remove the rear brake caliper. (⇒14-6)

- Remove the RH./LH. floor side cover. (⇒4-7)
- Remove the under cover (⇒4-8)

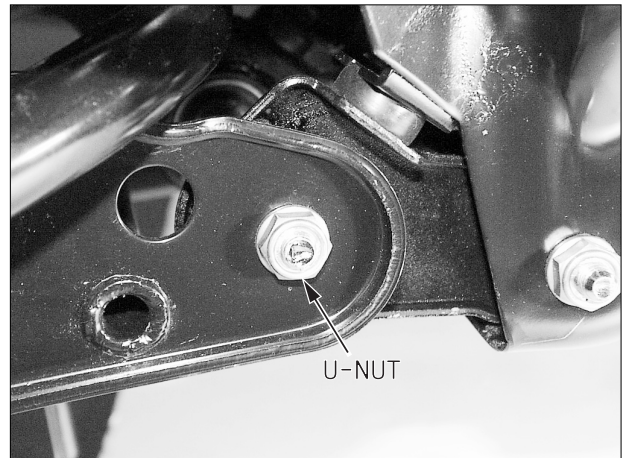


- Remove the RH./LH. radiator hose, remove the RH./LH. radiator hose from the frame setting clamp.



- Loosen the U-nut securing the engine hanger.
- Loosen the rear cushion lower bolt.

- Remove the engine. (with the rear swing arm and rear wheel attached)
- Remove the rear swing arm. (⇒13-8)
- Remove the rear wheel. (⇒13-3)
- Remove the rear wheel mud guard. (⇒4-11)



ENGINE INSTALLATION

- Install in the reverse order of removal.

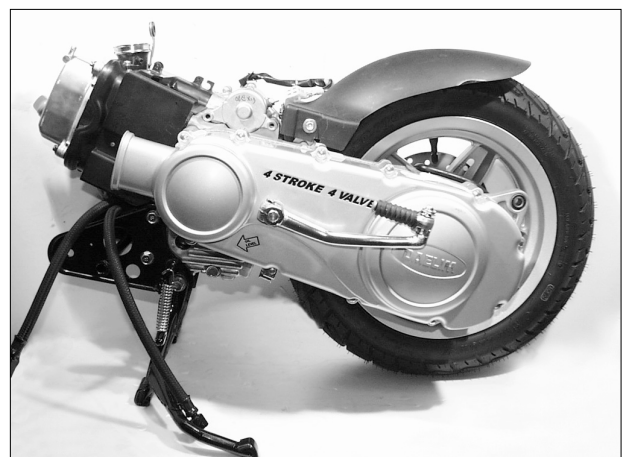
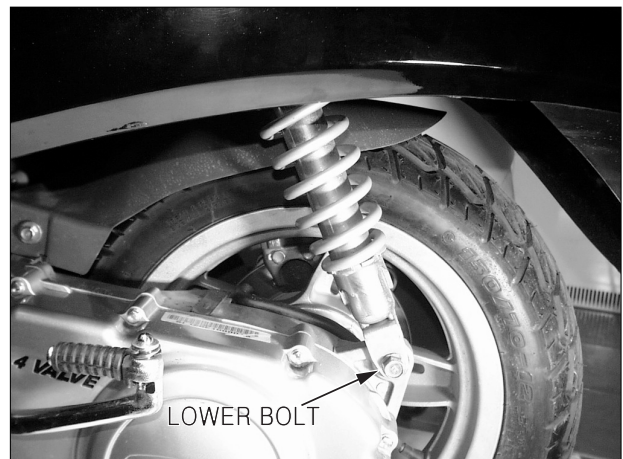
NOTE

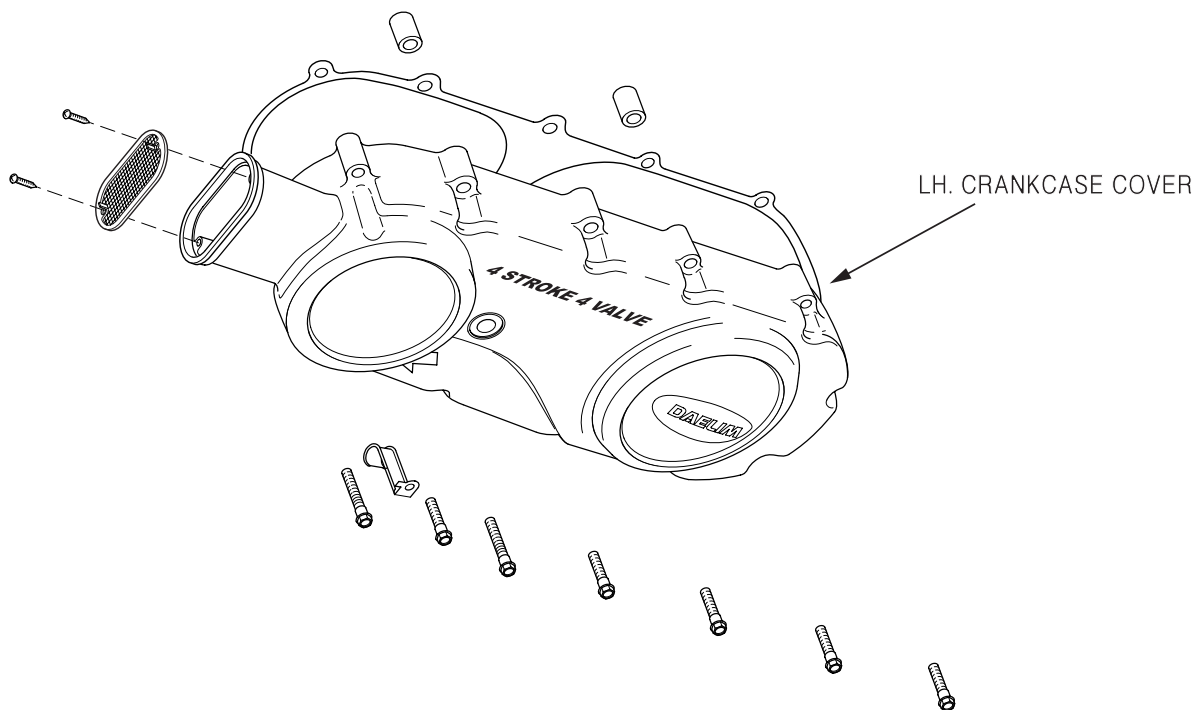
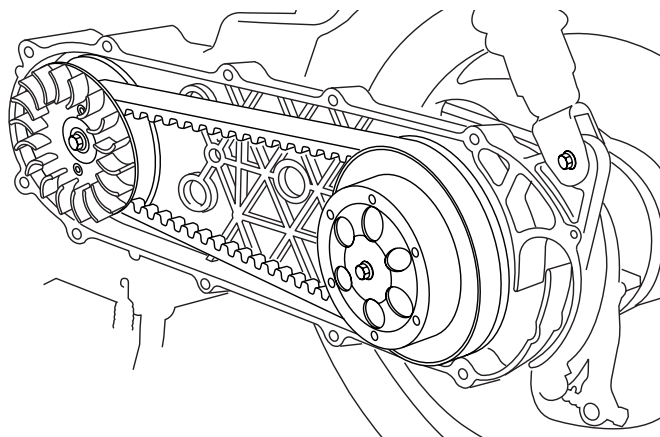
- Take precautions not to damage wiring and cable.
- Take precautions not to damage the threaded part of bolts.
- Arrange the cable, tubes and wiring in the right positions.

TORQUE VALUE

ENGINE HANGER BOLT (FRONT) : 4.5kgf · m
(REAR) : 4.5kgf · m

- Check the following after the engine is installed.
 - Engine oil
 - Electric systems.
 - Adjust of the parking brake free play.
 - Inspection of the throttle cable operation.





7. LH. CRANKCASE COVER/KICK STARTER /CONTINUOUSLY VARIABLE TRANSMISSION

SERVICE INFORMATION . . . 7-1
TROUBLESHOOTING . . . 7-1
LH. CRANKCASE COVER . . 7-2
KICK STARTER 7-3

DRIVE BELT 7-6
MOVABLE DRIVE FACE . . . 7-8
CLUTCH/DRIVEN PULLEY . . 7-11

SERVICE INFORMATION

GENERAL SAFETY

- Do not allow oil to contact the drive belt or the pulley face. The transmission rate of driving force is reduced with oil contact.
- Do not operate starter motor while the LH. crank case cover is removed.

NOTE

- Take precautions not to apply the grease oil to the movable drive face or weight roller.

7

SPECIFICATIONS

ITEM	STANDARD	SERVICE LIMIT
MOVABLE DRIVE FACE BUSHING INNER DIAMETER	24.000-24.013mm	24.05mm
DRIVE FACE BOSS OUTER DIAMETER	23.980-23.993mm	23.96mm
DRIVE BELT WIDTH	22mm	20.50mm
WEIGHT ROLLER OUTER DIAMETER	19.95-20.02mm	19.50mm
CLUTCH OUTER INNER DIAMETER	120.0-120.2mm	120.50mm
DRIVEN FACE SPRING PLAY	97.85mm	90.00mm
DRIVEN FACE OUTER DIAMETER	37.965-37.985mm	37.94mm
DRIVEN FACE INNER DIAMETER	38.000-38.025mm	38.06mm

TROUBLESHOOTING

Engine starts but motorcycle does not work.

- Drive belt worn.
- Ramp plate damaged.
- Clutch shoe worn or damaged.
- Movable driven face spring cut.

Engine stops, or the vehicle runs suddenly, after starting.

- Clutch shoe spring cut.

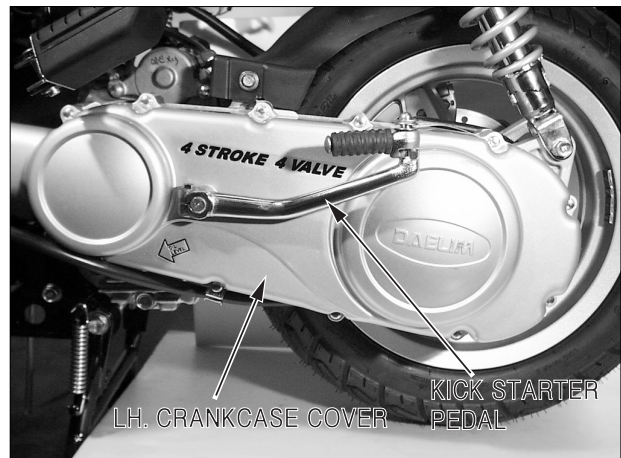
Vehicle unable to run at the maximum speed, or lack of output

- Drive belt worn.
- Defective movable driven face spring.
- Weight roller worn.
- Pulley face contaminated.

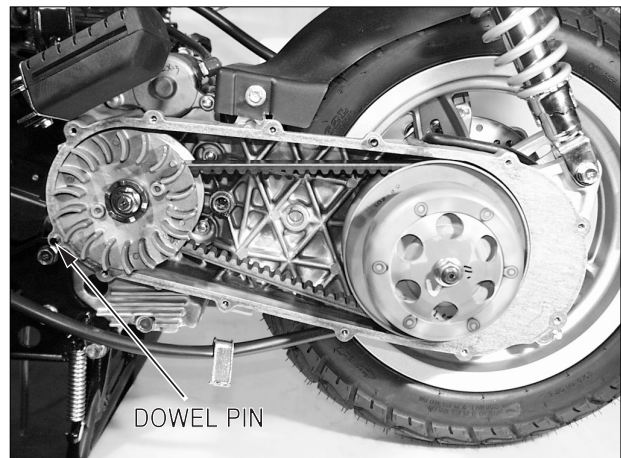
LH. CRANKCASE COVER

REMOVAL

- Remove the 12 flange bolts securing LH. crankcase.



- Remove the LH. crankcase cover.
- Remove the gasket and dowel pin.

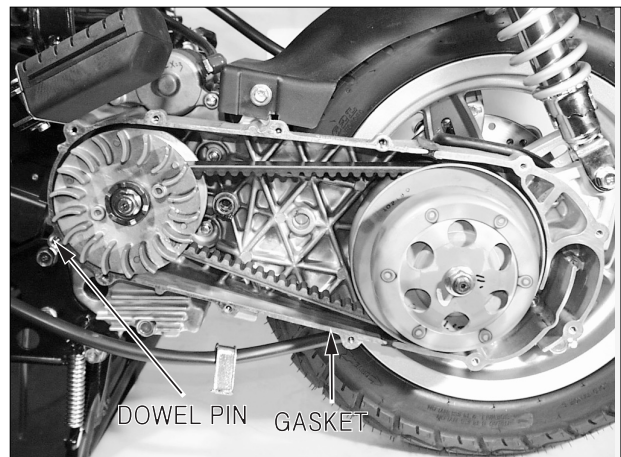


INSTALLATION

- Install the new gasket and dowel pin after removing the gasket of the crankcase surface.

NOTE

- Align the bolts to uniform the tightening location before tightening then when you don't know the bolt length.
- Tighten the bolts diagonally with specified tightening torque.
- Be sure to replace a new gasket and dowel pin



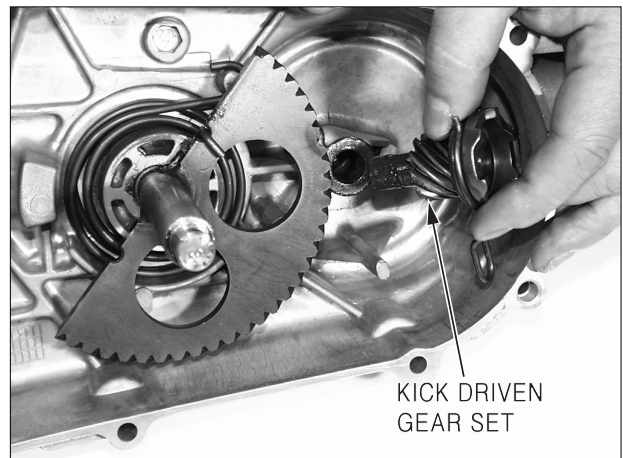
- Tighten the LH. crankcase cover bolts.



KICK STARTER

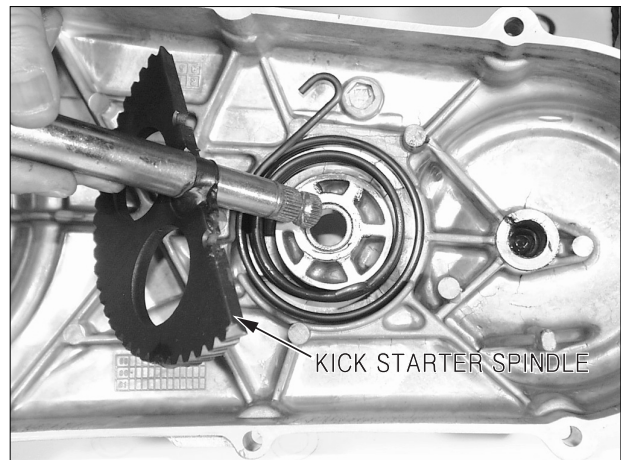
REMOVAL

- Remove the LH. crankcase cover. (⇒7-2)
- Rotate the kick starter spindle using the kick starter pedal, remove the kick driven gear and 13mm thrust washer.
- Loosen the kick starter pedal bolt.
- Remove the kick starter pedal.
- Remove the 14mm external circlip.
- Remove the kick spindle washer.

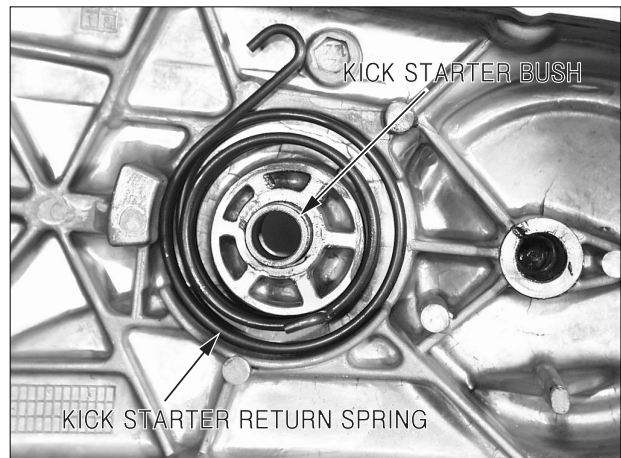


LH. CRANKCASE COVER/KICK STARTER/CONTINUOUSLY VARIABLE TRANSMISSION

- After removing the kick starter spindle from the return spring, remove the kick starter spindle from the LH. crankcase cover.

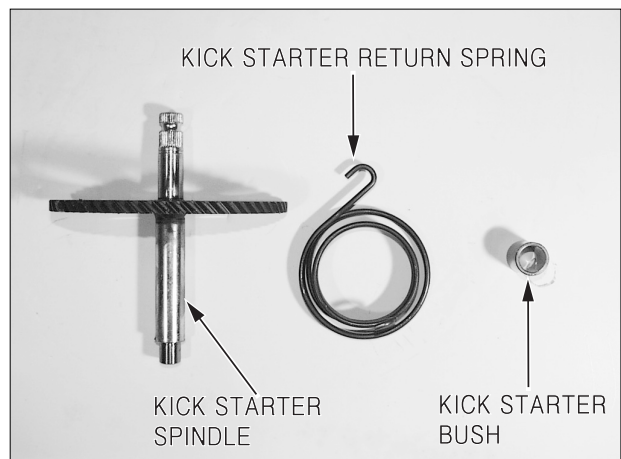


- Remove the kick starter return spring, kick starter bush from the LH. crankcase cover.

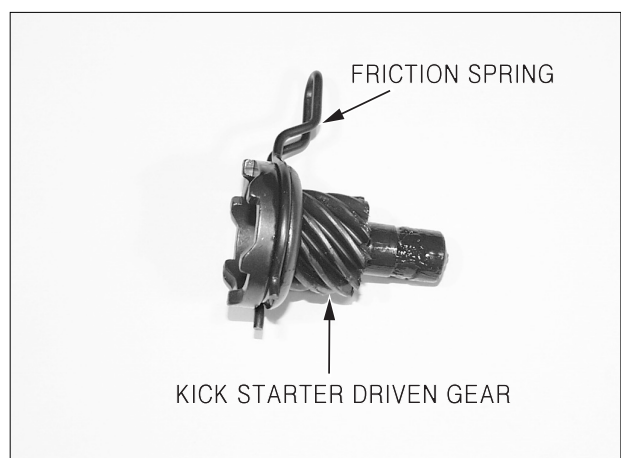


KICK STARTER INSPECTION

- Check the kick starter spindle for wear or damage.
- Check the return spring for defects or damage.
- Check the kick starter bush for damage.

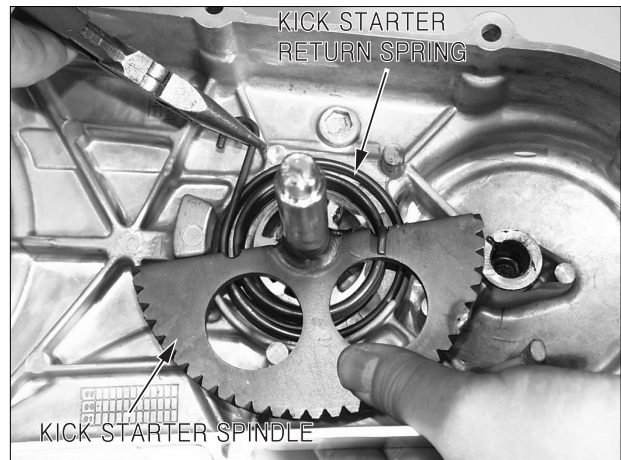


- Check the kick starter driven gear for wear and damage.
- Check the friction spring for defects and damage.



KICK STARTER INSTALLATION

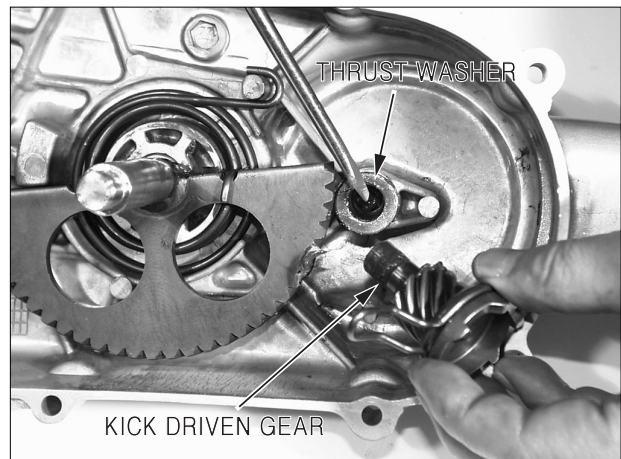
- Install the kick spindle bush, spring in the LH. crankcase cover.
- Install the kick starter spindle, then install the return spring to the kick starter spindle.



- Install the kick starter spindle washer and 14mm external cir-clip.

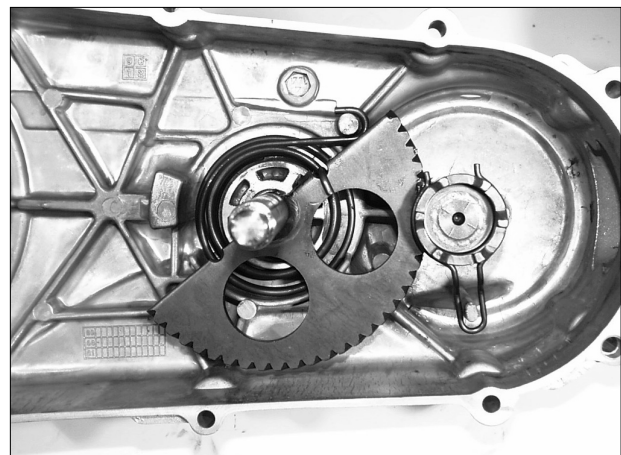


- Install the kick starter pedal to the spindle, and tighten the flange bolt.
- Rotate the kick starter spindle using the kick starter pedal, install the kick driven gear and 13mm thrust washer.
- Install the LH. crankcase cover. (⇒7-2)



NOTE

- When installing the 14mm external circlip, keep holding the spindle manually and install the circlip in the groove correctly.
- Apply the grease to the kick driven gear groove and gear.
- Check the kick driven gear and the kick starter spindle for smooth operation after installation.



DRIVE BELT

REMOVAL

- Remove the LH. crankcase cover. (⇒ 7-2)
- Hold the clutch outer using the universal holder and remove the nut.
- Remove the clutch outer.

TOOL: UNIVERSAL HOLDER

CAUTION

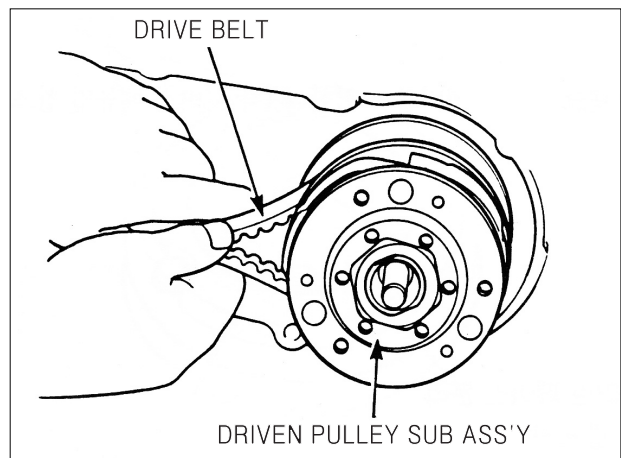
- Use the special tool when loosening the lock nut. Holding the rear wheel or rear brake will damage the final reduction system.

- Squeeze the drive belt into the pulley groove as shown so that it slackens enough to remove the driven pulley from the drive shaft.

- Loosen the drive face setting nut 12mm with the clutch center holder.
- Remove the kick starter ratchet and drive face.

TOOL : DRIVE FACE HOLDER

- Remove the driven pulley sub assembly with the drive belt in place.
- Remove the drive belt from the driven pulley groove and drive pulley groove.



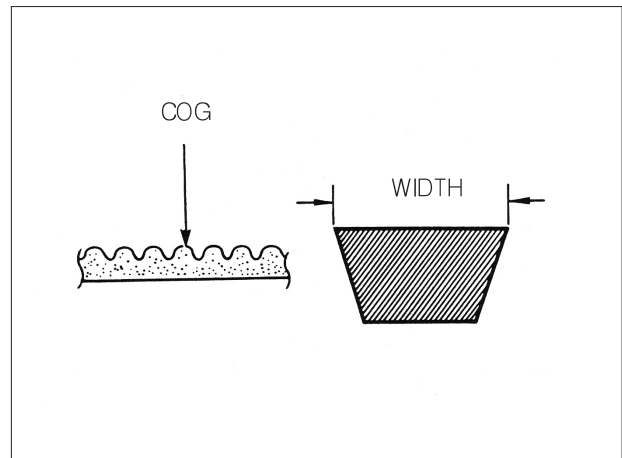
DRIVE BELT INSPECTION

- Check the drive belt for cracks, pry separation and wear; replace as necessary.
- Measure the width of the drive belt as shown.
- Replace the belt if the service limit is exceeded.

SERVICE LIMIT : 20.5mm

NOTE

- Use only a genuine DAELIM replacement drive belt.
- Do not get oil or grease on the drive belt or pulley faces. Clean off any grease or oil before reinstalling.

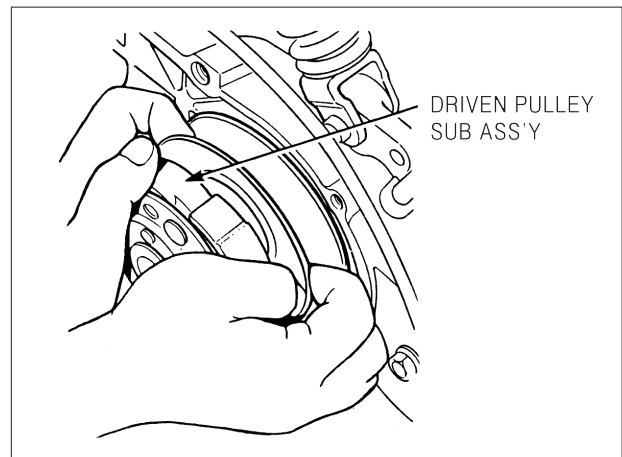


DRIVE BELT INSTALLATION

- Temporarily install the driven pulley sub assembly on the drive shaft.



- Turn the pulley clockwise and spread the faces apart while installing the drive belt.
- Remove the pulley assembly once with the drive belt installed.



- Put the drive belt over the movable drive face.
- Install the drive face to the LH. crank shaft, and install the kick starter ratchet.
- Hold the drive face using the drive face holder and tighten the nut to the specified torque.

TORQUE VALUE : 7.0-8.0 kgf · m

TOOL : DRIVE FACE HOLDER

NOTE

- Hold the faces apart preventing them from closing.

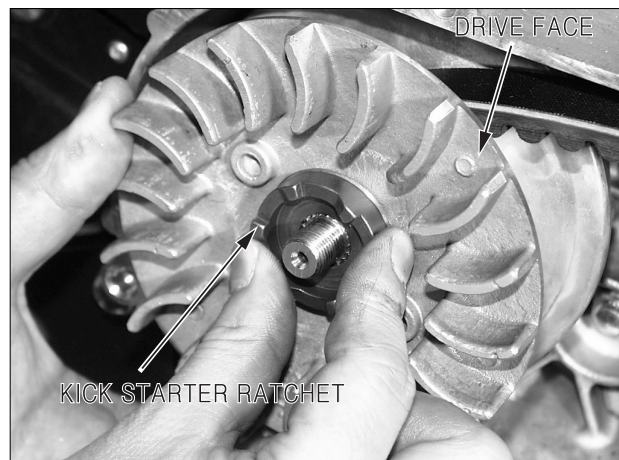


LH. CRANKCASE COVER/KICK STARTER/CONTINUOUSLY VARIABLE TRANSMISSION

- Reinstall the driven pulley on the drive shaft with the drive belt attached.
- Hold the clutch outer using the universal holder. Tighten the nut to the specified torque.

TORQUE VALUE : 5.0-6.0 kgf · m
TOOL : UNIVERSAL HOLDER

- Reinstall the LH. crankcase cover. (⇨7-2)



MOVABLE DRIVE FACE

REMOVAL

- Remove the LH. crankcase cover. (⇨7-2)
- Hold the drive face using the drive face holder and remove the nut.

TOOL : DRIVE FACE HOLDER

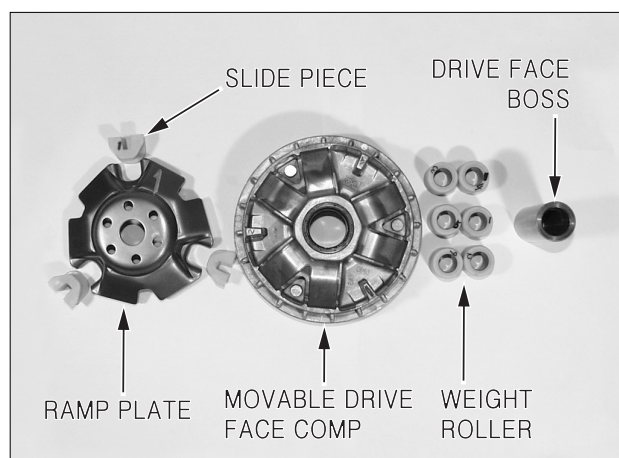
- Remove the kick starter ratchet and drive face.
- If the drive face holder cannot be used, remove the cooling fan at the right side of the crankshaft, and hold the flywheel with the universal holder.

TOOL : UNIVERSAL HOLDER

- Remove the drive belt. (⇨7-6)
- Remove the movable drive face and drive face boss.



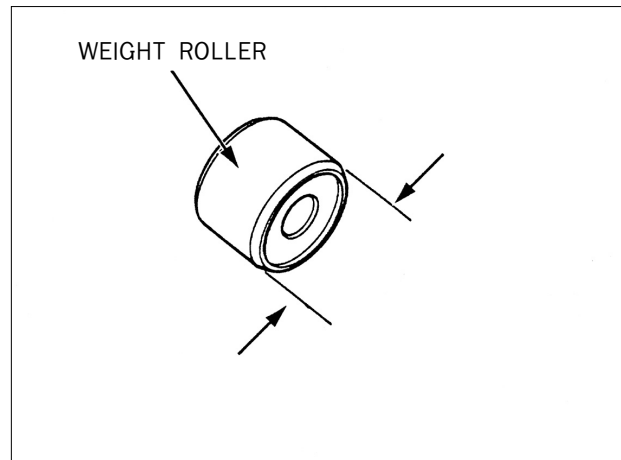
- Remove the ramp plate, weight rollers and oil seal from the movable drive face.



MOVABLE DRIVE FACE INSPECTION

- The weight rollers push on the movable drive face (by centrifugal force); worn or damaged weight rollers will interfere with this force.
- Check the rollers for wear or damage and replace as necessary.
- Measure the O.D. of each roller, replace if the service limit is exceeded.

SERVICE LIMIT : 19.5mm

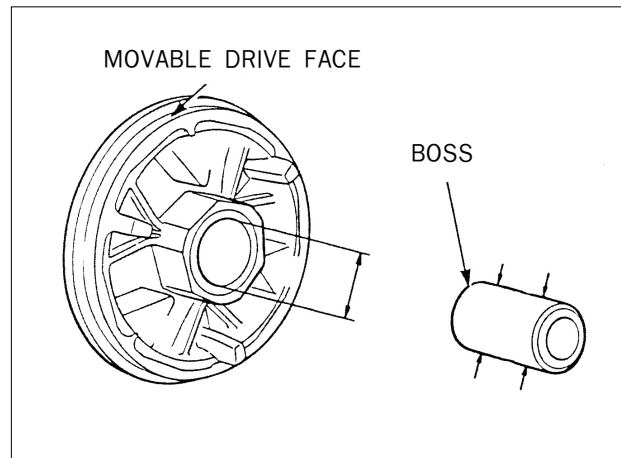


- Check the drive face boss for wear or damage and replace as necessary.
- Measure the O.D of the drive face boss. Replace the boss if the service limit is exceeded.
- Measure the I.D. of the drive face. Replace it if the service limit is exceeded.
- Movable drive face boss outer diameter.

SERVICE LIMIT : 23.960mm

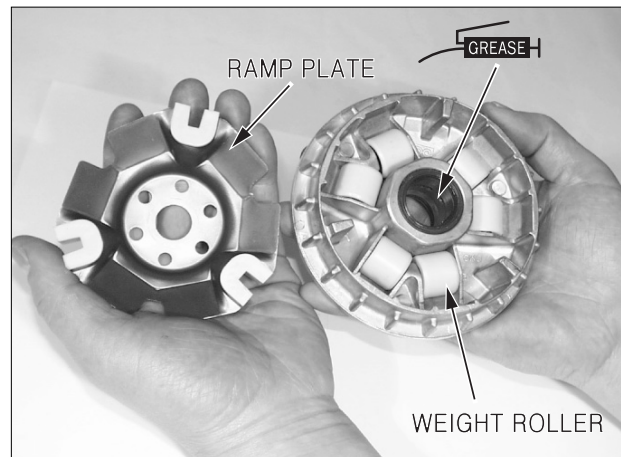
- Movable drive face inner diameter.

SERVICE LIMIT : 24.025mm



MOVABLE DRIVE FACE INSTALLATION

- Install the weight roller on the movable drive face.
- Install the ramp plate.



- Apply the inside of the movable drive face with the specified amount of grease.

SPECIFIED GREASE : ALVANIA EP2

GREASE APPLICATION : 0.5-1.5 g

- Install the movable drive face boss.

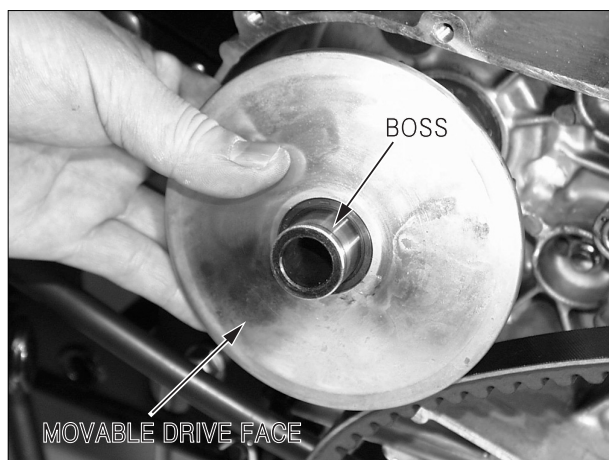
NOTE

- Do not get the grease on the drive face. Remove any misplaced grease with a degreasing agent.
- Use only the specified grease in the specified amount.



LH. CRANKCASE COVER/KICK STARTER/CONTINUOUSLY VARIABLE TRANSMISSION

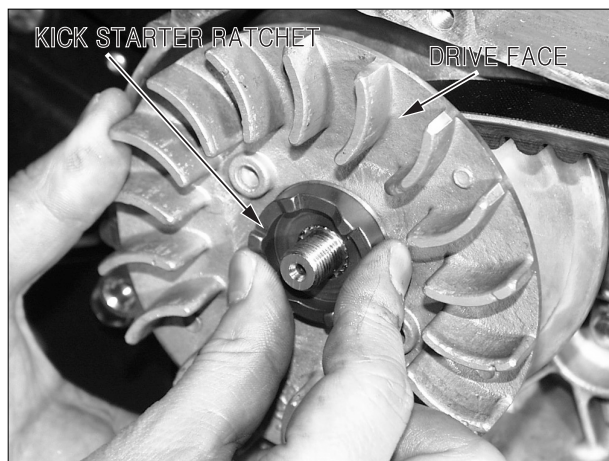
- Install the movable drive face on the crank shaft.



- Squeeze the drive belt into the drive face groove and pull the drive belt over the drive face shaft.



- Install the drive face and kick starter ratchet, temporarily tighten the drive face nut.



- Hold the drive face using the drive face holder and tighten the nut to the specified torque.

TORQUE VALUE : 7.0-8.0 kgf · m

TOOL : DRIVE FACE HOLDER

NOTE

- Tighten the drive face nut to the specified torque.
- Correctly match the drive face and crank shaft serration when assembling.
- If the drive face holder cannot be used, remove the cooling fan and hold the flywheel with the universal holder.

- Install the LH. crankcase cover. (⇒7-2)



CLUTCH/DRIVEN PULLEY

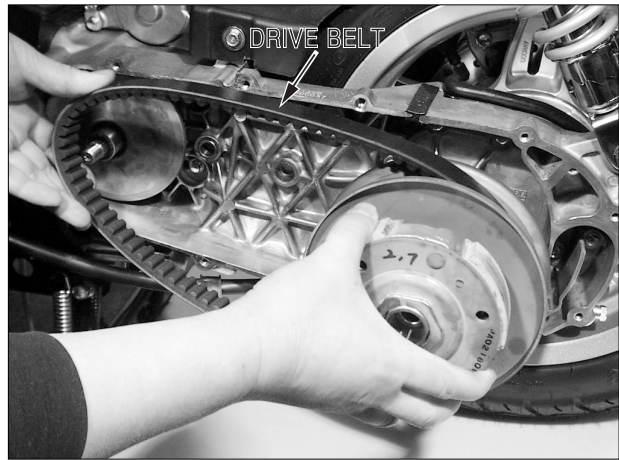
REMOVAL

- Remove the LH. crankcase cover. (⇨7-2)
- Remove the drive face. (⇨7-8)
- Hold the clutch outer using the universal holder and remove the flange nut, then remove the clutch outer.

**TOOLS : UNIVERSAL HOLDER
DRIVE FACE HOLDER**



- Remove the driven pulley sub assembly from the drive shaft.
- Remove the drive belt.



DISASSEMBLY

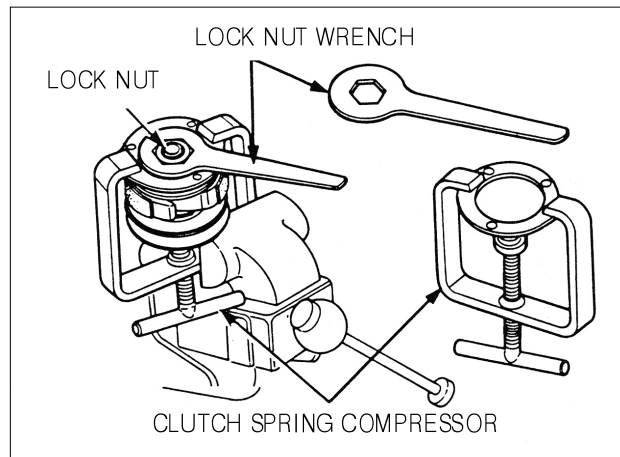
- Install a clutch spring compressor on the pulley assembly and tighten the tool to gain access to the nut.

NOTE

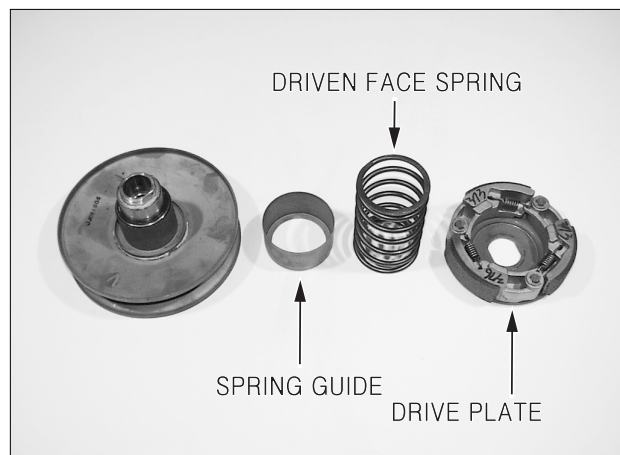
- Do not overtighten the compressor.

- Hold the clutch spring compressor in a vise as shown and remove the lock nut using the lock nut wrench.
- Loosen the clutch spring compressor and disassembly the clutch and spring from the driven pulley.

**TOOLS : CLUTCH SPRING COMPRESSOR
LOCK NUT WRENCH**

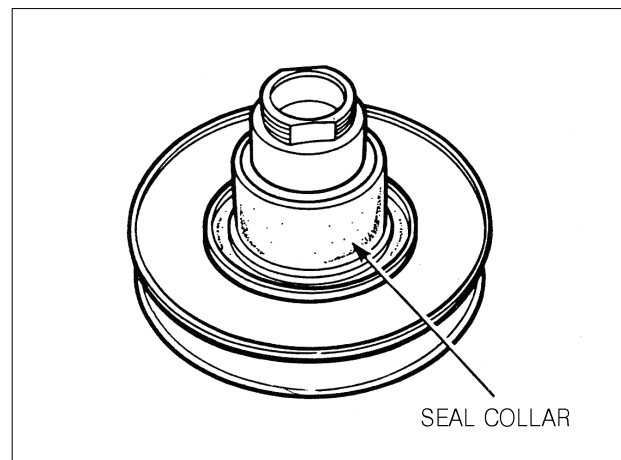


- Remove the drive plate, driven face spring and driven face spring guide.

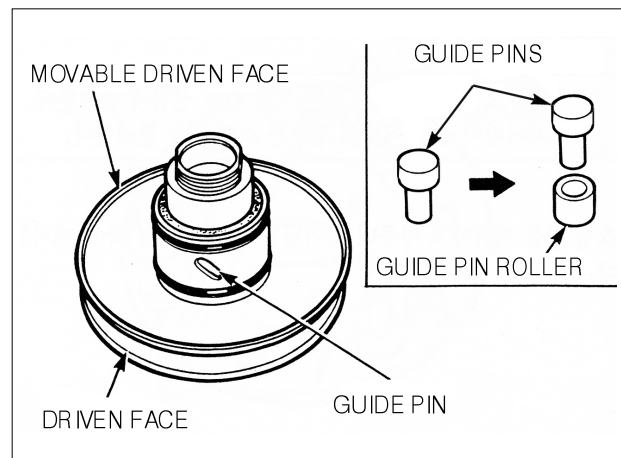


LH. CRANKCASE COVER/KICK STARTER/CONTINUOUSLY VARIABLE TRANSMISSION

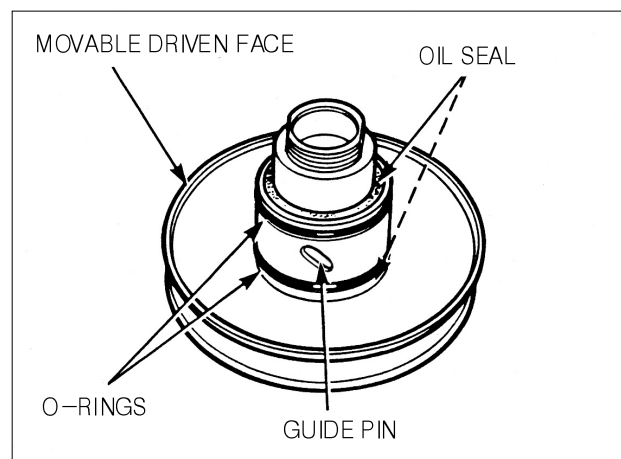
- Remove the seal collar from the driven pulley.



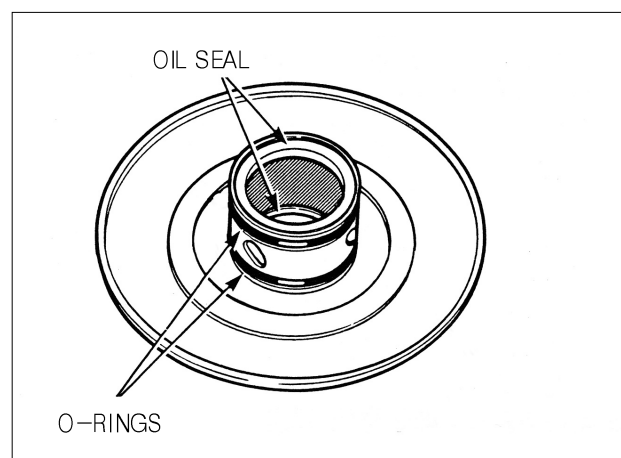
- Remove the guide pins and guide pin rollers and the movable driven face.



- Remove the O-ring and oil seals from the movable driven face



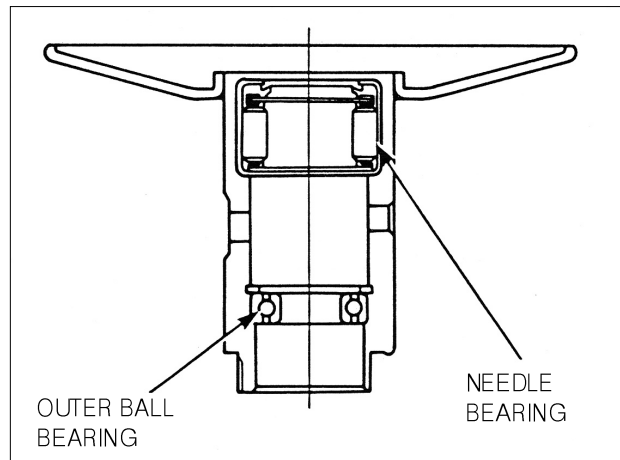
- Remove the movable driven face.



CLUTCH / DRIVEN PULLEY INSPECTION

Driven Face Bearing Inspection

- Check the inner bearing oil seal (if installed) for damage; replace as necessary.
- Check the needle bearing for damage or excessive play and replace as necessary.
- Turn the inner race of the outer bearing with your finger. Check that the bearing turns smoothly and quietly, and that the bearing outer race fits securely. Replace the bearing if necessary.

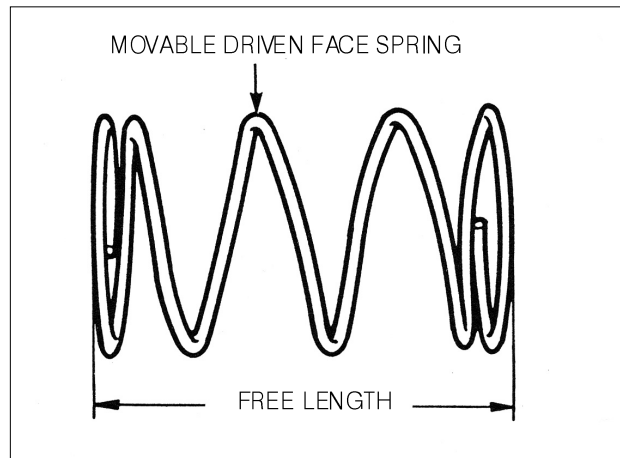


Movable Driven Face Spring Inspection

- Measure the free length of the driven pulley spring and replace if the service limit is exceeded.

SERVICE LIMIT : 97.23mm

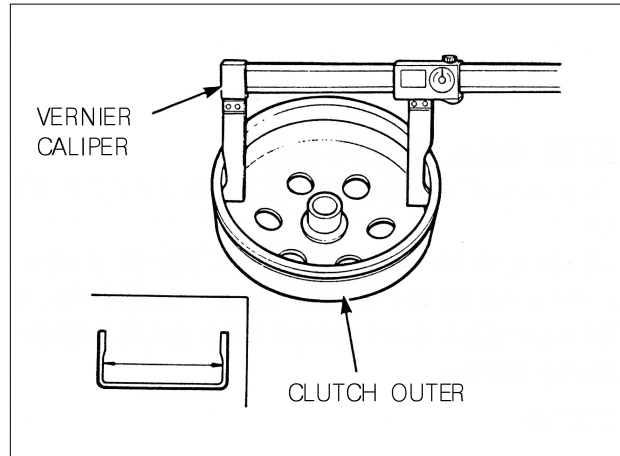
TOOL : VERNIER CALIPER



Clutch Outer

- Measure the I.D. at shoe contact surface of the clutch outer. Replace the outer if the service limit is exceeded.

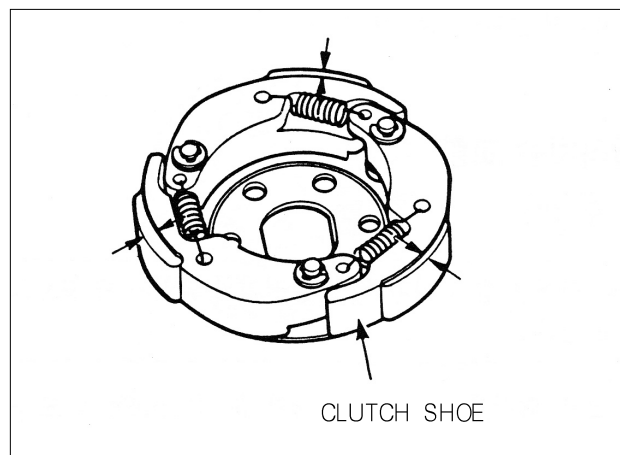
SERVICE LIMIT : 120.5mm



Clutch Shoe Inspection

- Measure the thickness of each shoe ; replace if the service limit is exceeded.

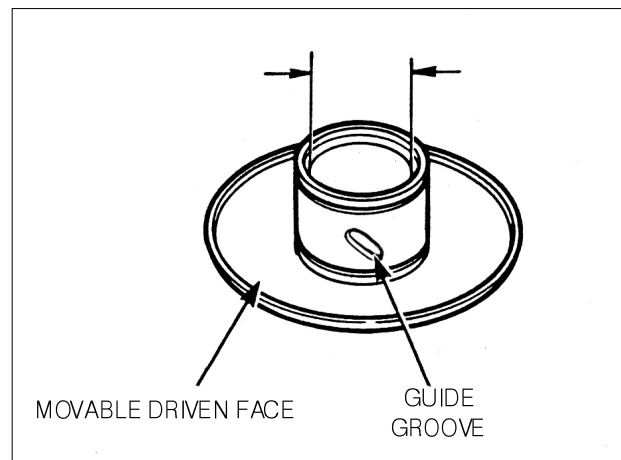
SERVICE LIMIT : 2.0mm



LH. CRANKCASE COVER/KICK STARTER/CONTINUOUSLY VARIABLE TRANSMISSION

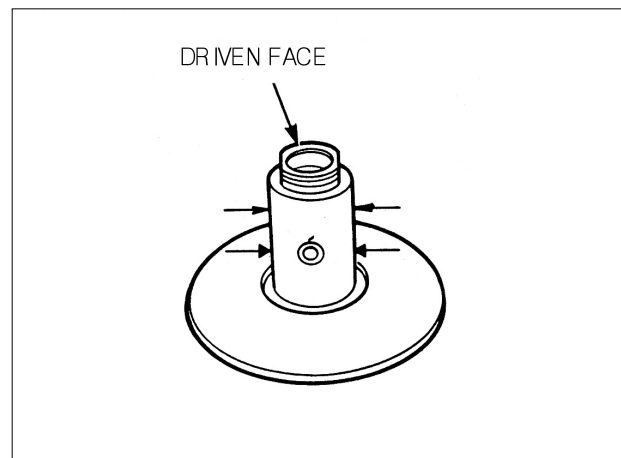
- Check the following;
 - Movable driven face for damage or excessive wear.
 - Guide pin groove for damage or deformation.
- Replace damaged or worn parts as necessary.
- Measure the I.D. of the movable driven face; replace if the service limit is exceeded.

SERVICE LIMIT : 38.060 mm



- Check the driven face for damage or excessive wear; replace as necessary
- Measure the O.D. of the driven face; replace if the service limit is exceeded.

SERVICE LIMIT : 33.94 mm



DRIVEN FACE BEARING REPLACEMENT

- Remove the inner bearing.

NOTE

- If the driven face has an oil seal at inner bearing side, remove the oil seal first.
- If a ball bearing is used on the inside, remove the snap ring first then remove the bearing.

- Remove the snap ring then drive out the outer bearing toward the inner bearing side.
- Drive a new outer bearing into place with the sealed end toward the outside. Install the snap ring securely.

NOTE

- Apply the specified amount of specified grease as shown.

GREASE APPLICATION : 9.0-9.5 g

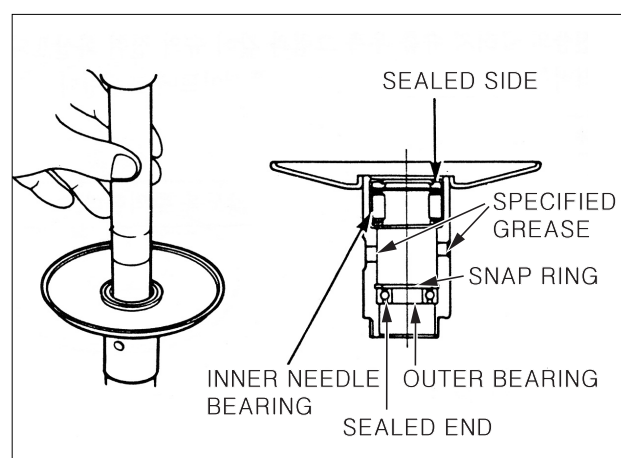
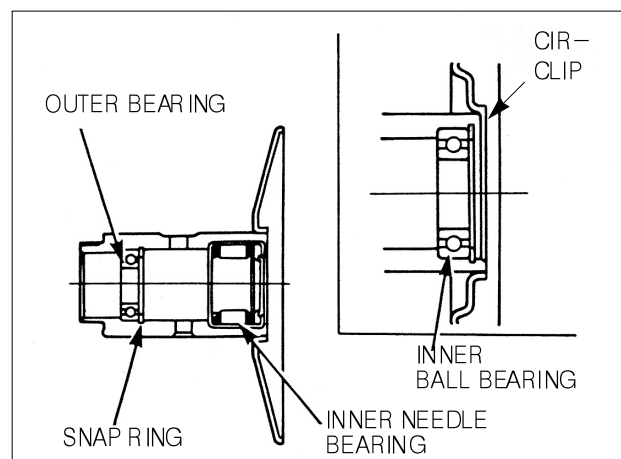
- Install in a new inner bearing.

NOTE

- Install the bearing with the sealed side facing out.
- Install the needle bearing using a hydraulic press.
- Install the ball bearing by driving it in or using a hydraulic press.

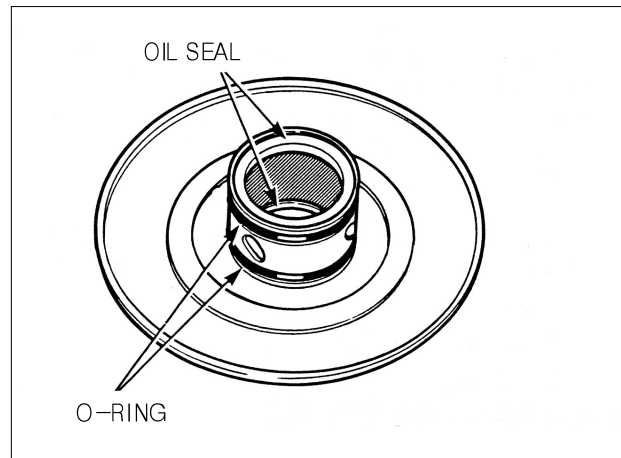
- Install the snap ring into the groove in the driven face.
- Install a new oil seal with the lip toward the bearing (if required).

**TOOLS : BEARING DRIVER ATTACHMENT
DRIVE PILOT**

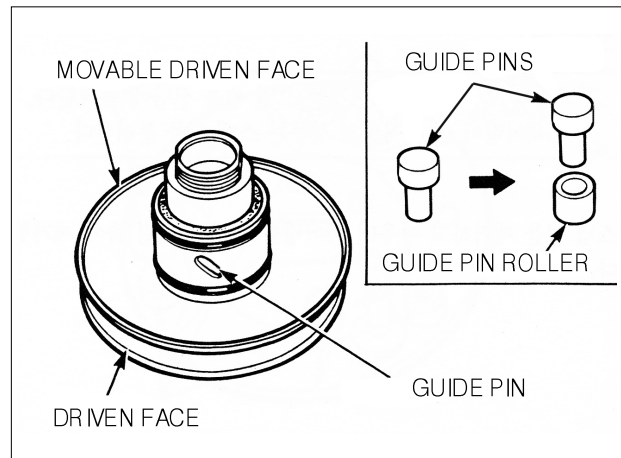


CLUTCH / DRIVEN PULLEY ASSEMBLY

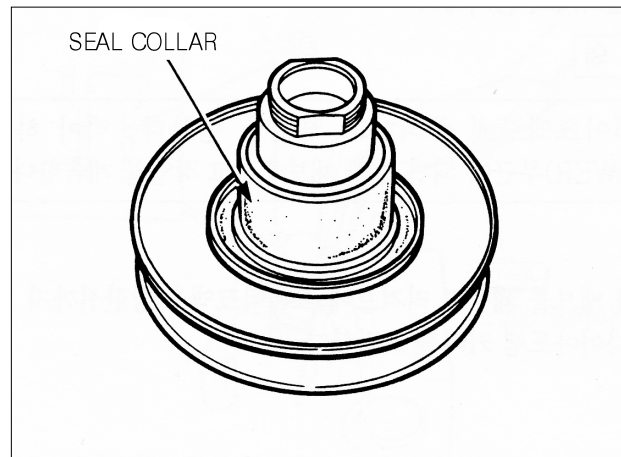
- Install new oil seals and O-rings on the movable driven pulley face.



- Install the movable face on the driven pulley face.
- Install the guide pins, or guide pins and guide pin rollers.



- Install the seal collar.

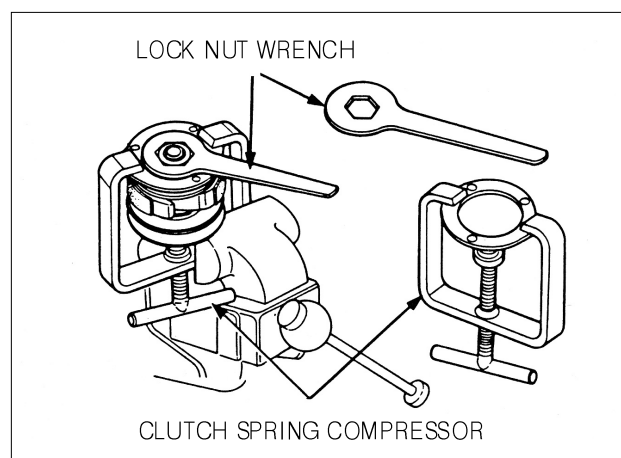


- Assemble the driven pulley, spring and clutch in the clutch spring compressor. Compress the assembly by turning the tool handle until the lock nut can be installed.
- Clamp the clutch spring compressor in a vise and tighten the lock nut to the specified torque using the lock nut wrench.

TORQUE VALUE : 5.0 kgf · m

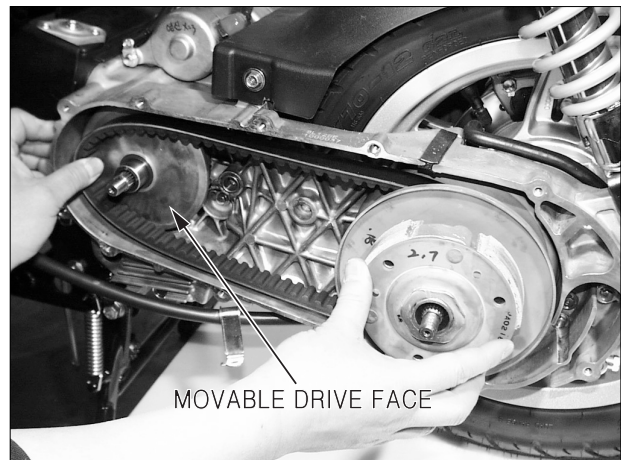
- Remove the spring compressor.

**TOOLS : CLUTCH SPRING COMPRESSOR
LOCK NUT WRENCH**

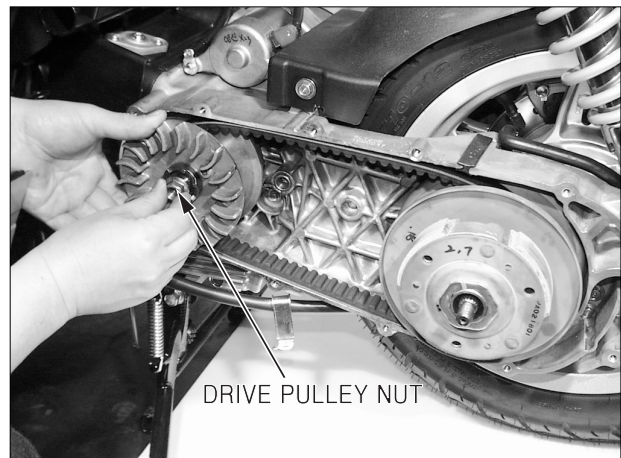


CLUTCH/DRIVEN PULLEY INSTALLATION

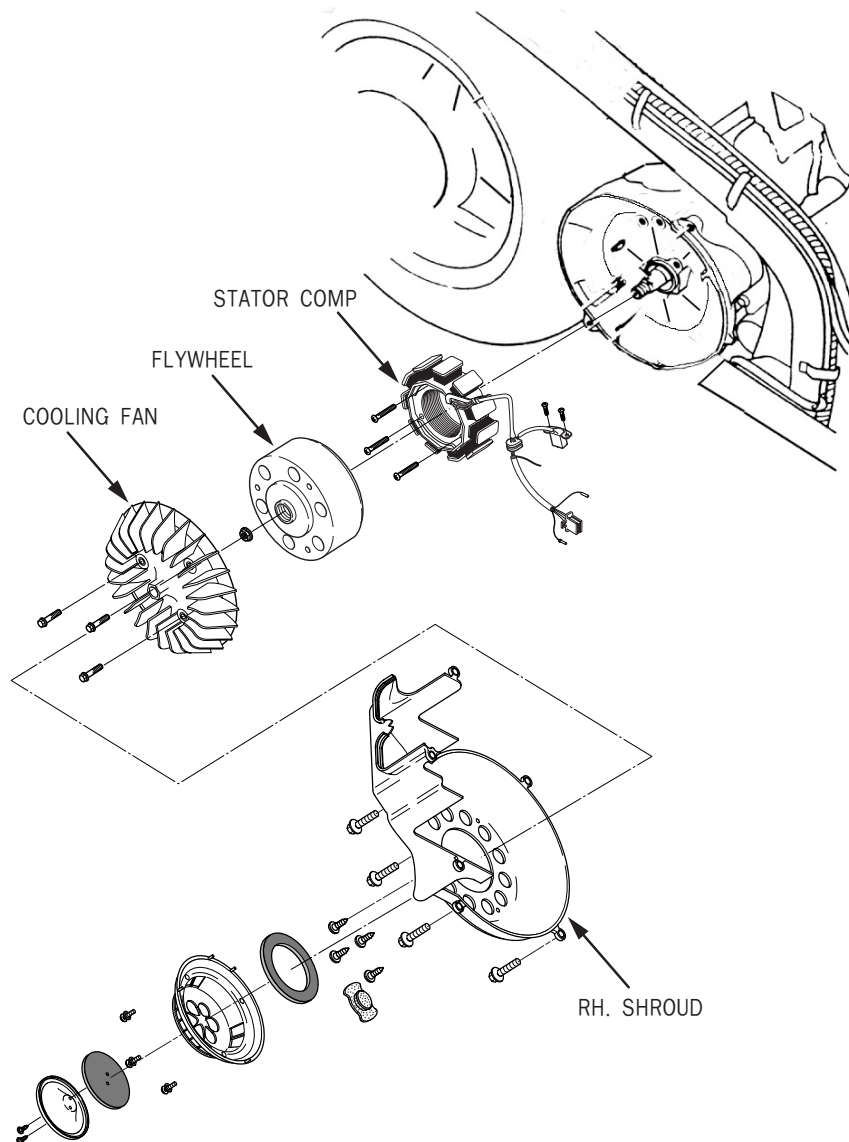
- Install the clutch / driven pulley and drive belt onto the drive shaft.
- Install the drive belt. (⇒7-6)



- Install the drive face. (⇒7-8)
- Install the LH. crankcase cover. (⇒7-2)



MEMO



8. A.C GENERATOR / STARTER CLUTCH

SERVICE INFORMATION	8-1	RH. CRANKCASE COVER	8-4
SHROUD	8-2	STARTER REDUCTION GEAR	8-5
A.C GENERATOR	8-2	STARTER CLUTCH	8-6

SERVICE INFORMATION

GENERAL SAFETY

- This section describes the removal and assembling of the A.C generator.
- For information on A.C generator inspection, refer to the section 15.
- The charging system can be maintained without removing the engine.

SPECIFICATIONS

Unit : mm

ITEM	STANDARD VALUE		SERVICE LIMIT
STARTER DRIVEN GEAR	O.D	39.622 - 39.635	39.53
	I.D	32.000 - 32.025	32.10
REDUCTION GEAR	I.D	12.016 - 12.034	12.10
REDUCTION GEAR SHAFT	O.D	11.966 - 11.984	11.97

8

TORQUE VALUES

FLY WHEEL BOLT	5.5 kgf · m
STARTER CLUTCH LOCK NUT	9.5 kgf · m
RH. CRANKCASE COVER BOLT	1.1 kgf · m

TOOLS

SPECIAL SOCKET (12.7 x 28 x 120)
A.C.G ROTOR PULLER

SHROUD

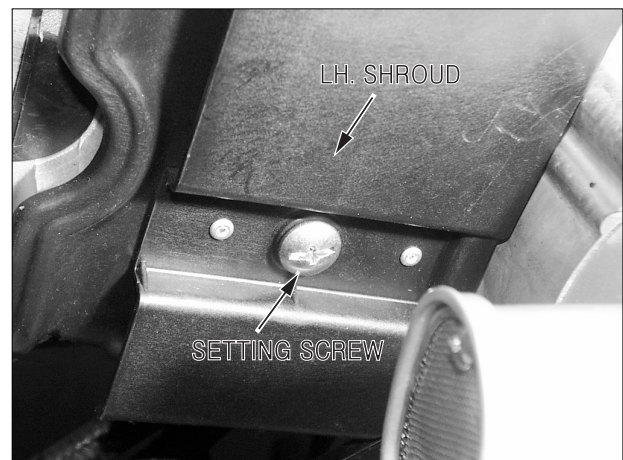
REMOVAL

- Remove the following parts.
 - Luggage box (⇒4-5)
 - Center cover (⇒4-5)
 - Engine (⇒6-2)

- Loosen the RH. shroud 4 flange bolts and 4 tapping screws.
- Remove the RH. shroud.
- Loosen the LH. shroud setting screw.
- Remove the LH. shroud.
- Install in the reverse order of removal.

NOTE

- Before removing the RH. shroud, be sure to remove the RH. floor side cover and rear cushion upper bolt.



A.C GENERATOR

REMOVAL

- Loosen the rear cushion under bolt.
- Remove the following parts.
 - Luggage box (⇒4-4)
 - Body cover (⇒4-6)
 - Center cover (⇒4-5)
 - Engine (⇒6-2)
 - RH. shroud comp (⇒8-2)
- Remove the A.C.G wiring coupler and connector connected to the wire harness.
- Remove the A.C.G wiring from the A.C.G wiring setting clamp securing the engine and frame.
- Loosen the 3 cooling fan bolts.



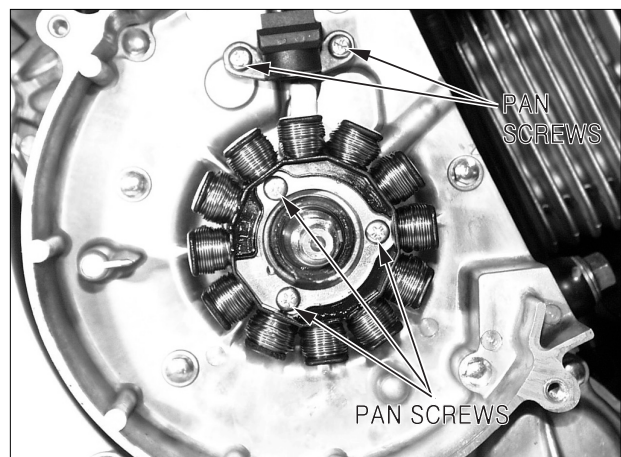
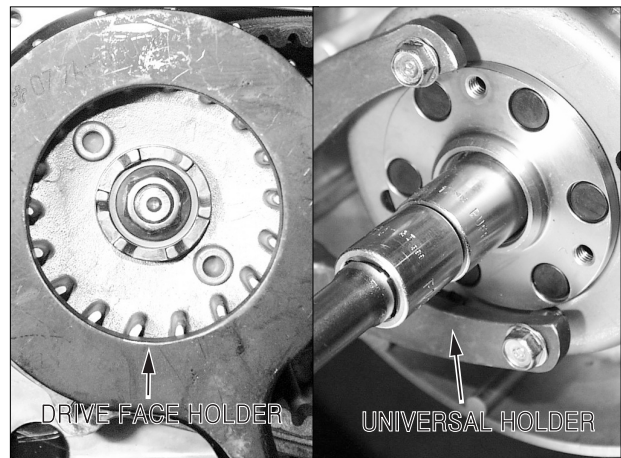
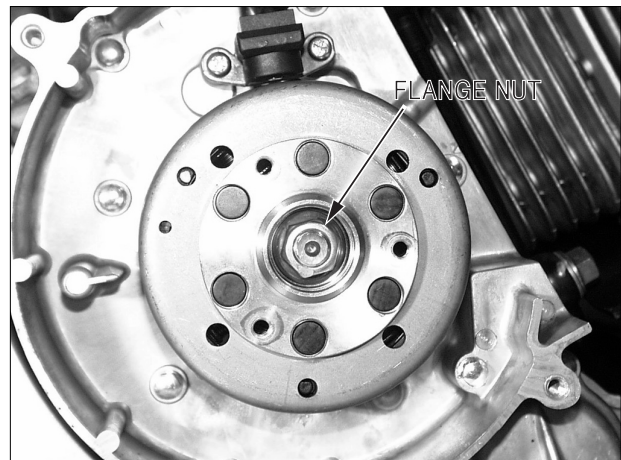
- Install the universal holder on the flywheel.
- If the universal holder cannot be used, remove the LH. crankcase cover at the left side of the crankshaft, and hold the drive face with the drive face holder.
- Loosen the flange nut securing the fly wheel, and remove the flywheel using the A.C.G rotor puller.

CAUTION

- Insert the puller shaft and remove the flywheel after inserting the A.C.G 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.
- After removing the flywheel, check the woodruff key for damage and wear.

**TOOLS : A.C.G ROTOR PULLER
UNIVERSAL HOLDER
DRIVE FACE HOLDER**

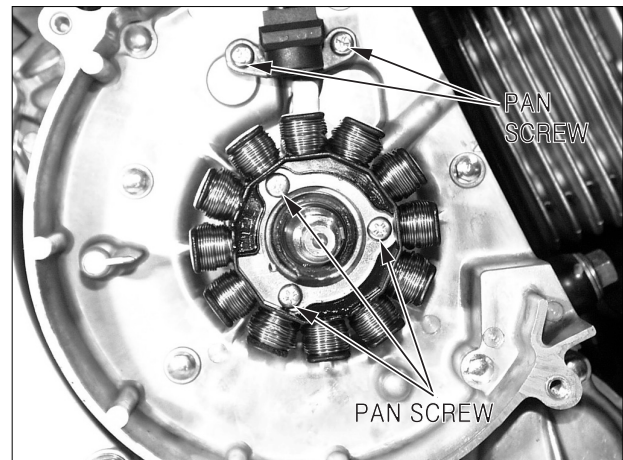
- Loosen the 2 pan screws securing the pulse generator, and remove it.
- Loosen the 3 starter setting pan screws, remove the stator.



A.C GENERATOR / STARTER CLUTCH

A.C GENERATOR INSTALLTION

- Install the stator to the RH. crankcase cover.
- Clean the tapered portion of the crankshaft.
- Clean the inside part of the flywheel.
- Check the woodruff key, install the flywheel by aligning the groove with the woodruff key.



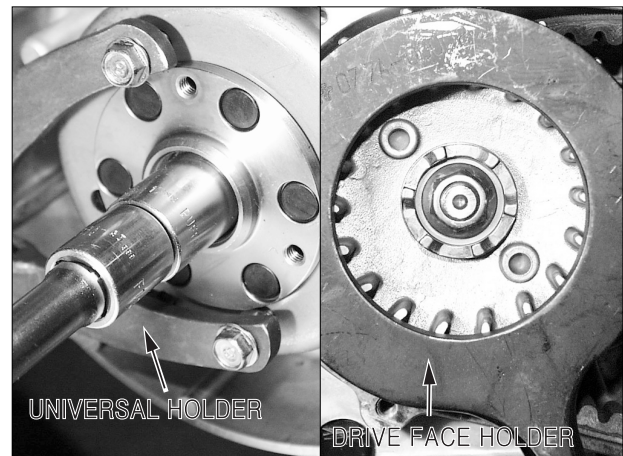
- Temporarily install the flywheel nut, hold the flywheel with the universal holder, and tighten the flywheel nut with the specified torque.

TORQUE VALUE : 5.0 - 6.0 kgf · m
TOOL : UNIVERSAL HOLDER

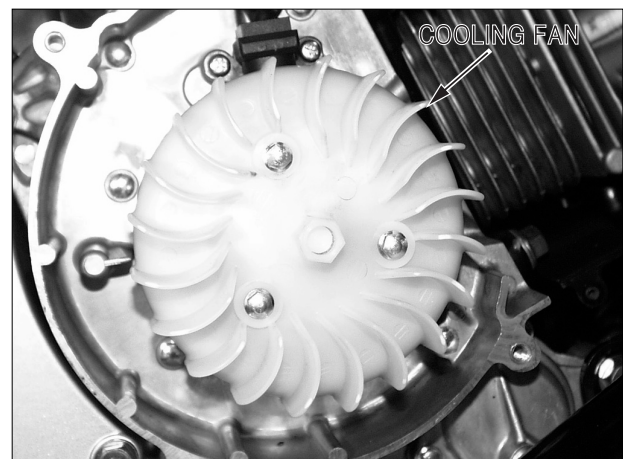
NOTE

- If the universal holder cannot be used, remove the LH. crankcase cover and hold the drive face with the drive face holder.

TORQUE VALUE : 0.8 - 1.2 kgf · m
TOOL : DRIVE FACE HOLDER



- Install the RH. shroud. (⇒8-2)
- Connect the A.C.G wiring coupler and connector to the wire harness, and install the wiring with the clamp.
- Insert the battery earth cable to the shroud groove.
- Install the rear cushion under bolt.
- Install the RH. floor side cover. (⇒4-7)
- Install the center cover. (⇒4-5)
- Install the luggage box. (⇒4-4)



RH. CRANKCASE COVER

REMOVAL

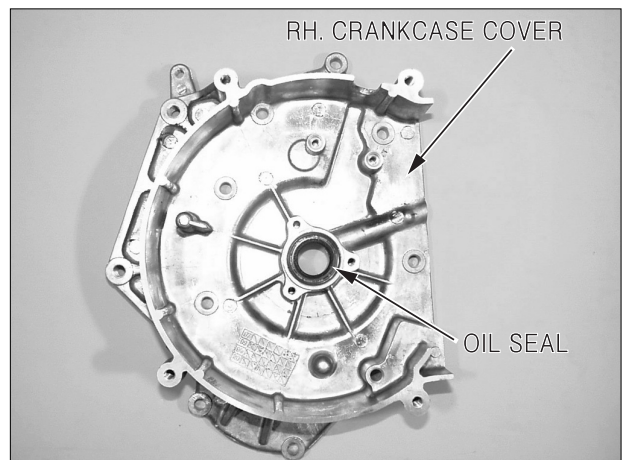
- Loosen the rear cushion under bolt.
- Remove the following parts.
 - Luggage box (⇒4-4)
 - Center cover (⇒4-5)
 - RH. floor side cover (⇒4-7)
 - RH. shroud (⇒8-2)
 - EX. muffler (⇒4-12)
 - Rear caliper (⇒14-6)
 - Rear swing arm (⇒13-8)
 - Cooling fan (⇒8-2)
 - A.C Generator (⇒8-2)



- Loosen the 9 RH. crankcase cover setting bolts.
- Remove the RH. crankcase cover.
- Remove the gasket and dowel pin.

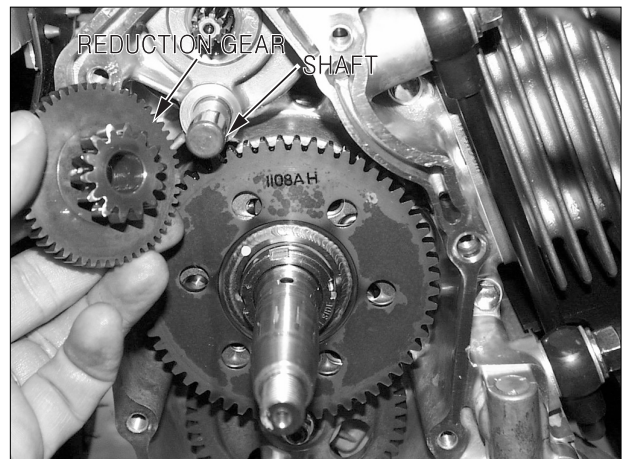


- Remove the RH. crankcase cover oil seal.
- Check the oil seal for wear or damage and replace with a new one as necessary.



STARTER REDUCTION GEAR REMOVAL

- Remove the starter reduction gear and shaft.



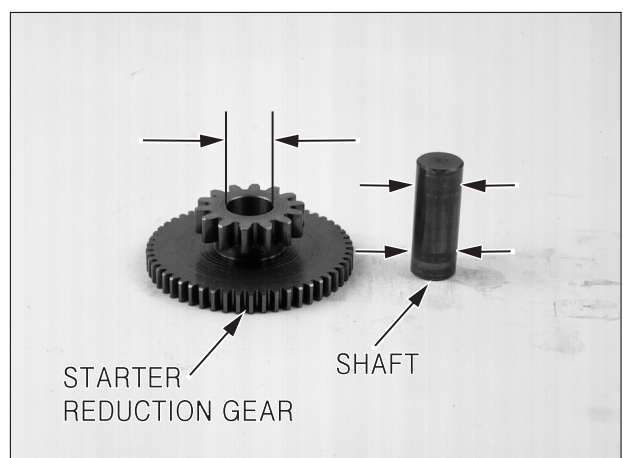
INSPECTION

- Check the reduction gear for wear or damage.
- Measure the inner diameter of the gear.

SERVICE LIMIT : 12.10 mm

- Measure the outer diameter of the gear shaft.

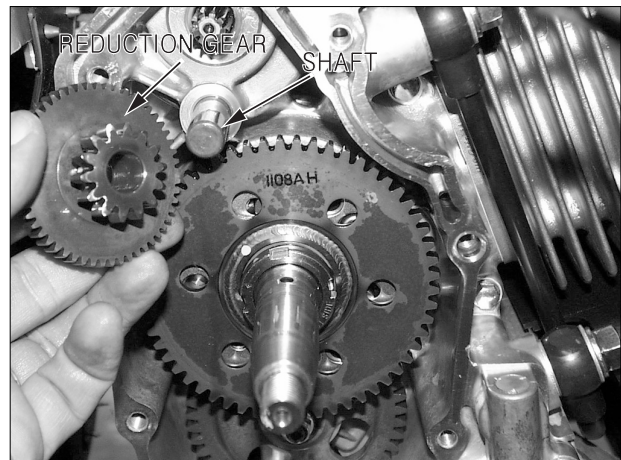
SERVICE LIMIT : 11.97 mm



A.C GENERATOR / STARTER CLUTCH

STARTER REDUCTION GEAR INSTALLATION

- Install the starter reduction gear and shaft.
- Remove the gasket residues from the RH. crankcase.
- Install a new gasket and dowel pin.
- Tighten the RH. crankcase cover with setting bolts.
- Install the following parts.
 - A.C. Generator (⇒8-2)
 - Cooling fan (⇒8-2)
 - RH. shroud (⇒8-2)
 - Rear swing arm (⇒13-8)
 - Rear caliper (⇒14-6)
 - EX. muffler (⇒4-12)
 - RH. floor side cover (⇒4-7)
 - Luggage box (⇒4-4)
- Tighten the rear cushion under bolt.



STARTER CLUTCH

REMOVAL

- Loosen the rear cushion under bolt.
- Remove the following parts.
 - RH. floor side cover (⇒4-7)
 - RH. shroud (⇒8-2)
 - Cooling fan (⇒8-2)
 - A.C Generator (⇒8-2)
 - EX. muffler (⇒4-12)
 - Rear caliper (⇒14-6)
 - Rear swing arm (⇒13-8)
 - RH. crankcase cover (⇒8-4)
- Remove the LH. crankcase cover and hold the drive face with the drive face holder.
- Loosen the starter clutch lock nut with a special socket.

TORQUE VALUE : 9.5 kgf · m
TOOLS : SPECIAL SOCKET (12.7x28x120)
DRIVE FACE HOLDER



- Remove the washer.
- Remove the starter driven gear and starter clutch.

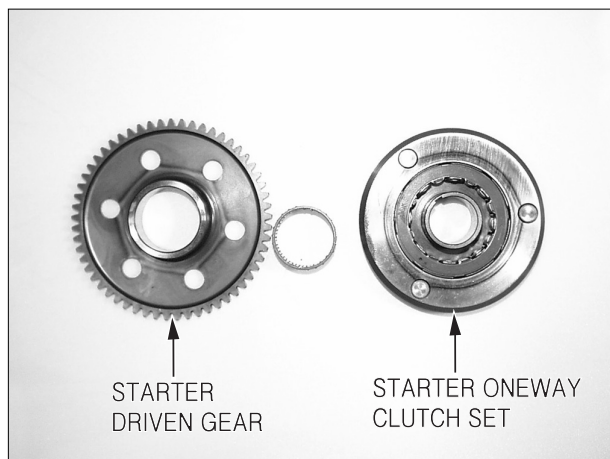


- Check the starter driven gear and starter clutch for proper operation.
- Remove the starter clutch.



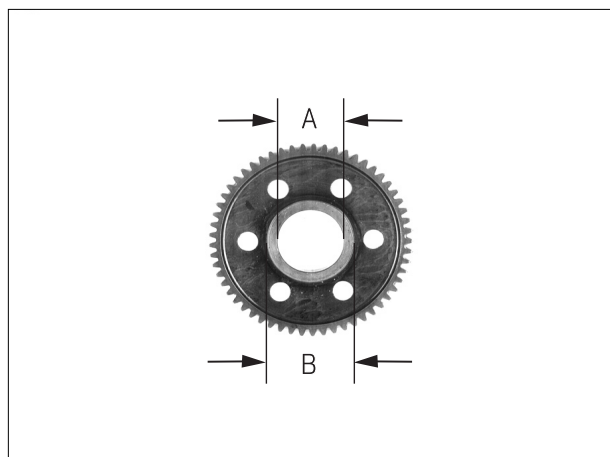
STARTER CLUTCH INSPECTION

- Remove the starter driven gear, needle bearing and starter oneway clutch set from the starter clutch assembly.



- Check the starter driven gear for wear or damage.
- Measure the inner diameter of the starter driven gear.

SERVICE LIMIT : A : 32.10 mm
B : 39.53 mm



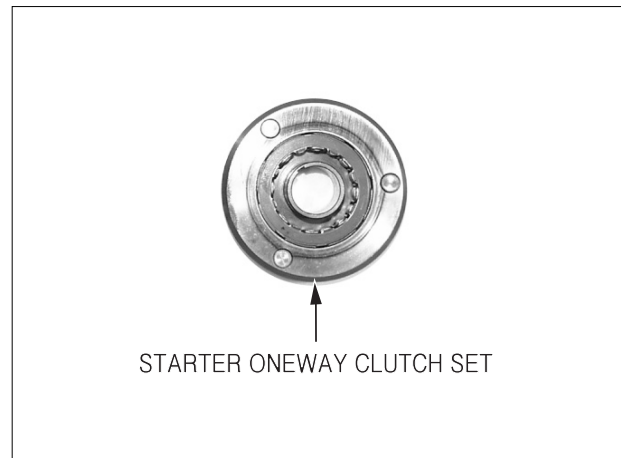
A.C GENERATOR / STARTER CLUTCH

STARTER CLUTCH INSTALLATION

- Install the starter oneway clutch set, starter driven gear and needle bearing to the starter clutch assembly.
- Install the starter clutch to the RH. crankshaft.

NOTE

- When installing the starter clutch, match it with the groove accurately



- Install the thrust washer.
- Temporarily install the starter clutch lock nut.



- Hold the drive face with the drive face holder.
- Tighten the starter clutch lock nut with a special socket.

NOTE

- Tighten the lock nut with specified torque.

TORQUE VALUE : 9.5 kgf · m

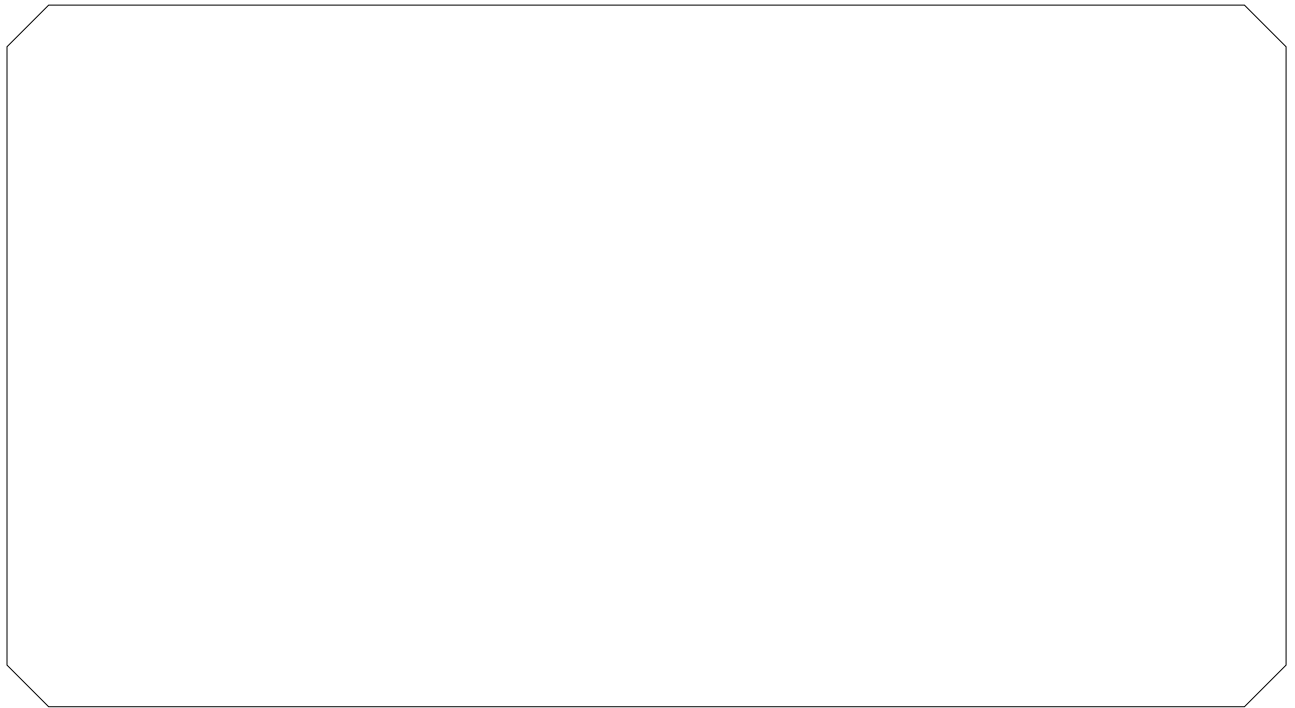
**TOOLS : SPECIAL SOCKET (12.7x28x120)
DRIVE FACE HOLDER**

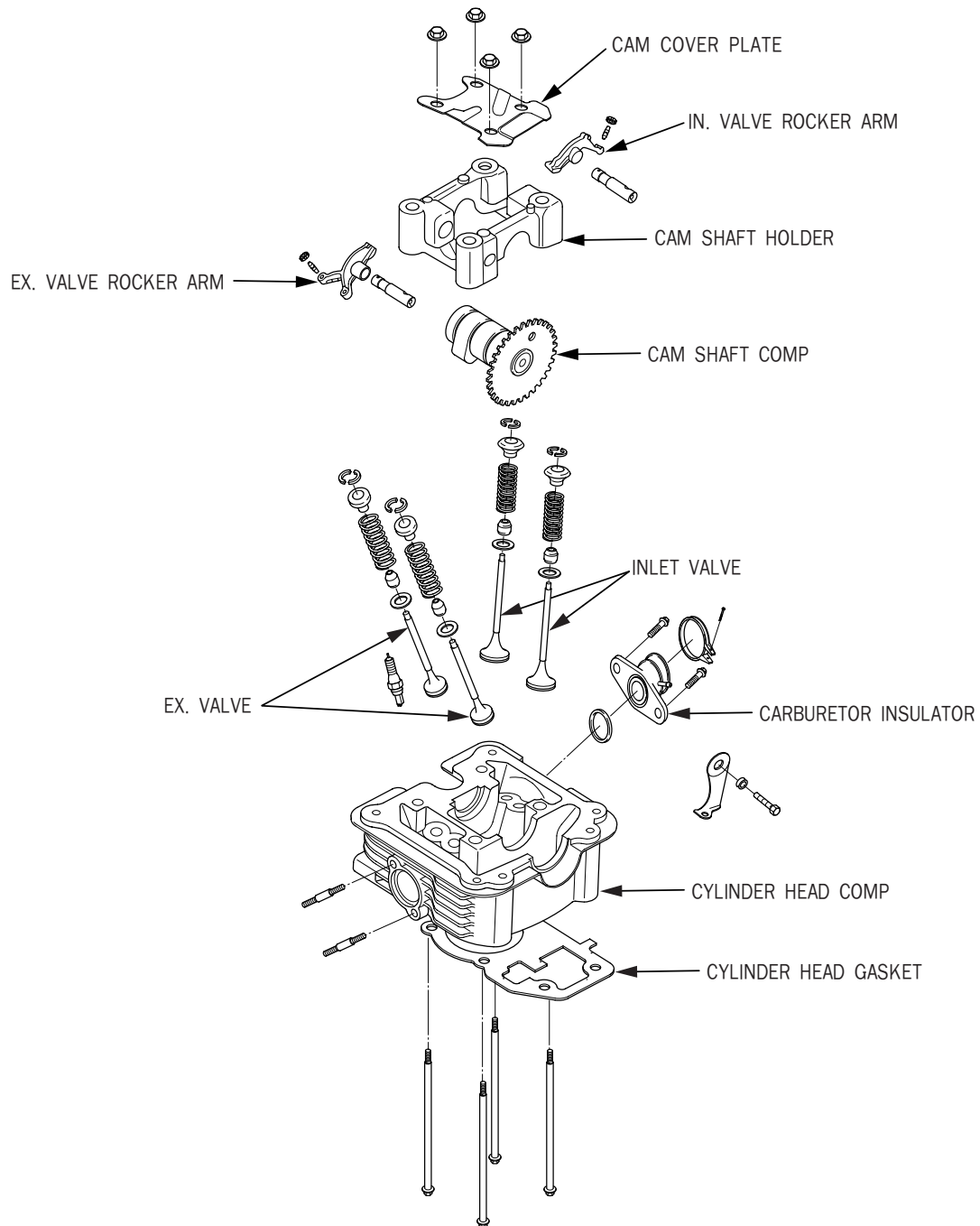


- Install the following parts.
 - RH. crankcase cover (⇒7-2)
 - A.C Generator (⇒8-2)
 - Cooling fan (⇒8-2)
 - RH. shroud (⇒8-2)
 - Rear swing arm (⇒13-8)
 - Rear caliper (⇒14-6)
 - EX. muffler (⇒4-12)
 - RH. floor side cover (⇒4-7)
 - LH. crankcase cover (⇒7-2)
- Tighten the rear cushion upper bolt.



MEMO





9. CYLINDER HEAD / VALVES

SERVICE INFORMATION	9-1	VALVES	9-6
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CAMSHAFT	9-3	VALVE SEATS	9-8
CYLINDER HEAD	9-5	CYLINDER HEAD ASSEMBLY .	9-11
VALVE SPRINGS	9-6	CAMSHAFT ASSEMBLY . . .	9-13

SERVICE INFORMATION

GENERAL SAFETY

- The rocker arm and the camshaft can be serviced without removing the engine. However, the engine must be removed from the frame to maintain the cylinder head.
- The oil of camshaft oil is supplied through the cylinder head oil hole. Clean the oil hole prior to assembling the cylinder head.

SPECIFICATIONS

Unit : mm

9

ITEM			STANDARD VALUE	SERVICE LIMIT
ROCKER ARM	ROCKER ARM INNER DIAMETER		12.016 - 12.034	39.05
	ROCKER ARM SHAFT OUTER DIAMETER		11.982 - 12.000	11.950
CAMSHAFT	CAM HEIGHT	IN	33.835 - 33.995	33.625
		EX	33.984 - 34.144	33.765
	CAMSHAFT OUTER DIAMETER		15.005 - 15.018	15.040
CYLINDER HEAD WARPAGE			-	-
VALVE VALVE GUIDE	VALVE SPRING FREE LENGTH	IN,EX	37.21	36.90
	VALVE STEM OUTER DIAMETER	IN	4.972 - 4.984	4.920
		EX	4.952 - 4.964	4.900
	VALVE GUIDE INNER DIAMETER	IN,EX	5.000 - 5.012	5.030
	CLEARANCE BETWEEN STEM AND GUIDE	IN	0.016 - 0.040	0.090
		EX	0.036 - 0.060	0.120
	VALVE SEAT WIDTH		0.8 - 1.0	1.4

TORQUE VALUES

CAM CHAIN TENSIONER PIVOT BOLT	1.0 kgf · m
SPARK PLUG	1.2 kgf · m
CAMSHAFT HOLDER 8mm NUT	2.0 kgf · m
CAM CHAIN TENSIONER MOUNTING BOLT	1.2 kgf · m
CAM CHAIN TENSIONER SEALING SCREW	0.4 kgf · m
CYLINDER HEAD COVER BOLT	0.9 kgf · m
CYLINDER HEAD BOLT	1.1 kgf · m
TAPPET ADJUST NUT	0.8 kgf · m

TOOLS

VALVE GUIDE REAMER
VALVE GUIDE DRIVER
VALVE SPRING COMPRESSOR
VALVE SEAT CUTTER
SEAT CUTTER IN 37° (21.5mm)
EX 37° (18.5mm)
IN 45° (22.0mm)
EX 45° (22.0mm)
IN 55° (20.0mm)
EX 55° (20.0mm)

TROUBLESHOOTING

Enging top-end problems useally affect engine performance. These can be diagnosed by a compression or leak down test, or by tracing noises to the top-end with a sounding rod or stethoscope.

Low comperssion

- Valves
 - Incorrect valve adjustment (see section 3)
 - Burned or bent valves
 - Incorrect valve timing
 - Broken valve spring
 - Uneven valve seating
- Cylinder head
 - Leaking or damage head gasket
 - Warped or cracked cylinder head
- Cylinder, piston (see section 10)

Excessive white smoke

- Worn valve guide or valve stem
- Damaged valve stem seal
- Worn or damaged piston ring

Rough idle

- Low cylinder compression

Compression too high

- Excessive carbon build-up on piston or combustion chamber

Excessive noise

- Incorrect valve adjustment
- Sticking valve or broken valve spring
- Damaged or worn camshaft
- Worn rocker arm and / or shaft
- Loose or worn cam chain
- Worn or damaged cam chain tensioner
- Damaged cylinder head gasket
- Incorrect spark plug installation

CAMSHAFT

REMOVAL

- Remove the luggage box. (⇒4-4)
- Remove the center cover. (⇒4-5)
- Loosen the cylinder head cover bolts, remove the cover.
- Remove the shroud grommet B of the fan cover.

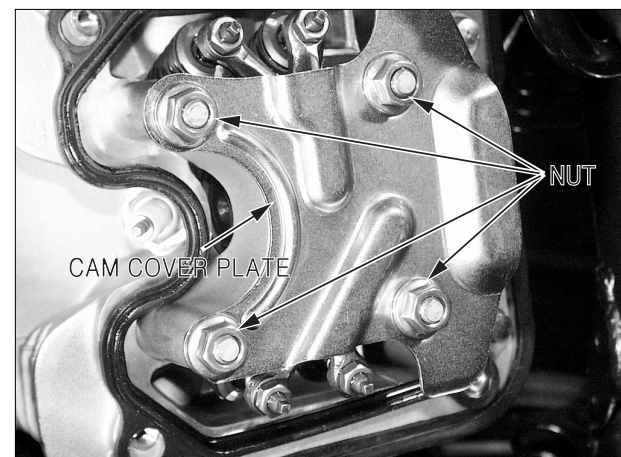
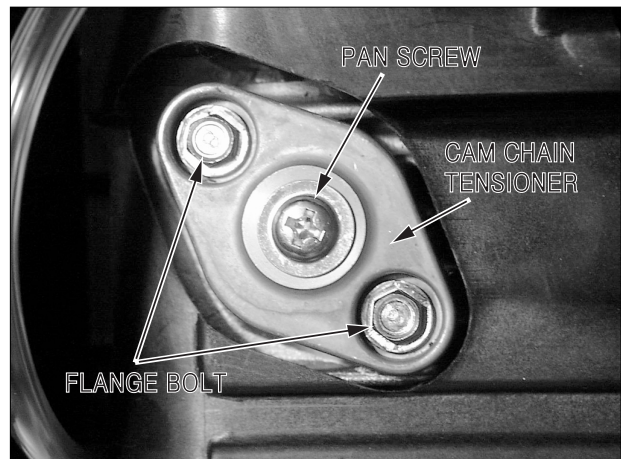
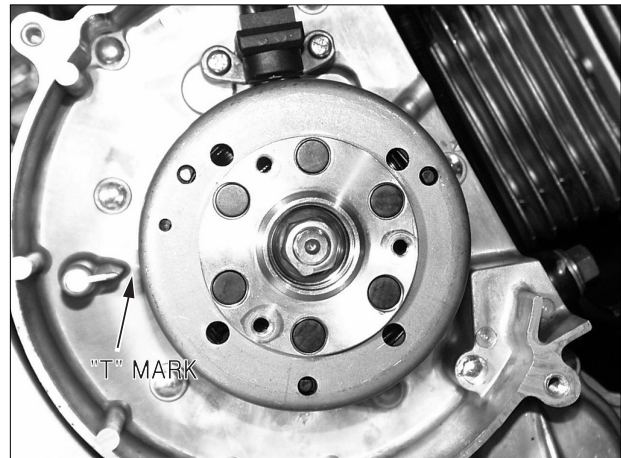
NOTE

- The camshaft can be maintained without removing the engine.

- Turn the crankshaft to the left, and align the "T" mark of the flywheel with the index mark of the RH. crankcase cover.
- Verify that the piston is located at the top dead center. (Make all camshaft lobes face downward.)
- If all camshaft lobes face upward, rotate the crankshaft to the left for 1 turn (360°), and align the "T" mark with the index mark once again.

- Loosen the pan screw of the cam chain, remove the tensioner flange bolts and tensioner lifter.

- Loosen the 4 camshaft holder 8mm nuts.
- Remove the cam cover plate.
- Remove the camshaft holder from the cylinder head.



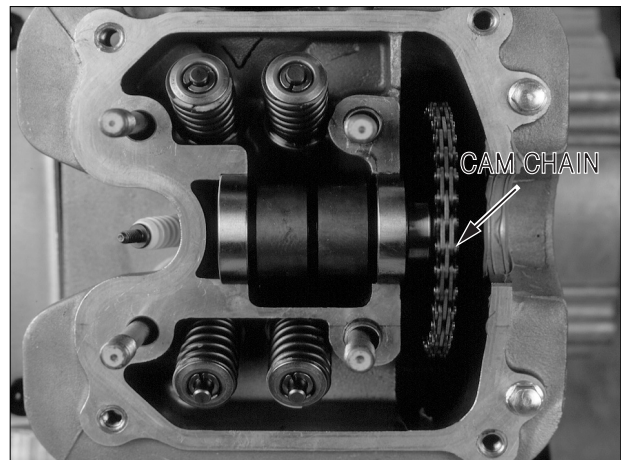
CYLINDER HEAD / VALVES

- Remove the cam chain from the camshaft.

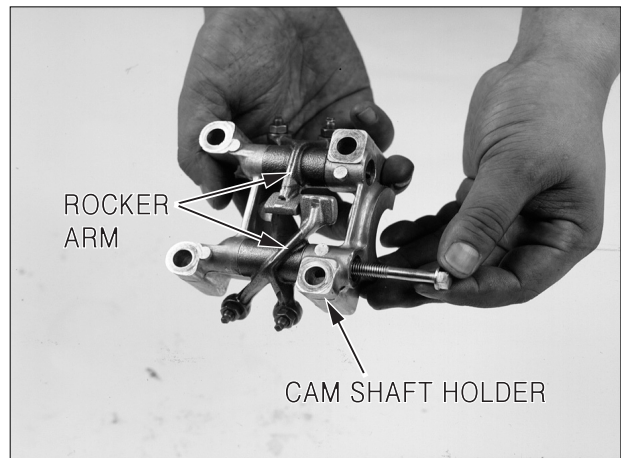
NOTE

- Take precautions not to allow the cam chain to drop into the crankcase.

- Remove the camshaft.



- Insert the 6mm bolt into the rocker arm shaft, and pulling bolts to remove the rocker arm shaft.
- Remove the rocker arm.
- Remove the other side rocker arm shaft and rocker arm in the same sequence.



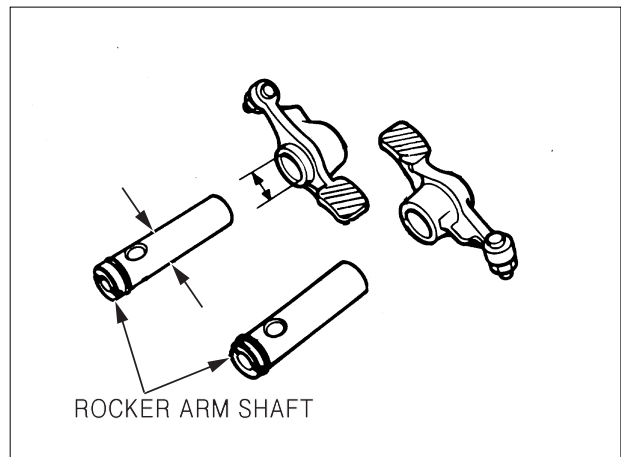
CAMSHAFT INSPECTION

- Check the rocker arm and rocker arm shaft for wear or damage.
- Measure the inner diameter of the rocker arm.

SERVICE LIMIT : 12.060 mm

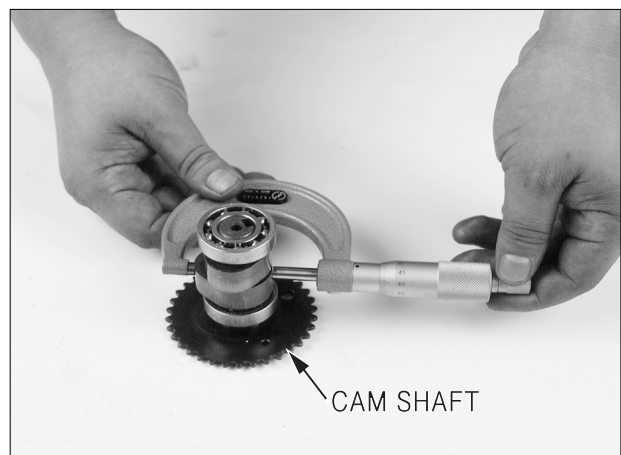
- Measure the outer diameter of the rocker arm shaft.

SERVICE LIMIT : 11.950 mm



- Check the cam lobes of the camshaft for wear or damage.
- Measure the height of the cam lobe.

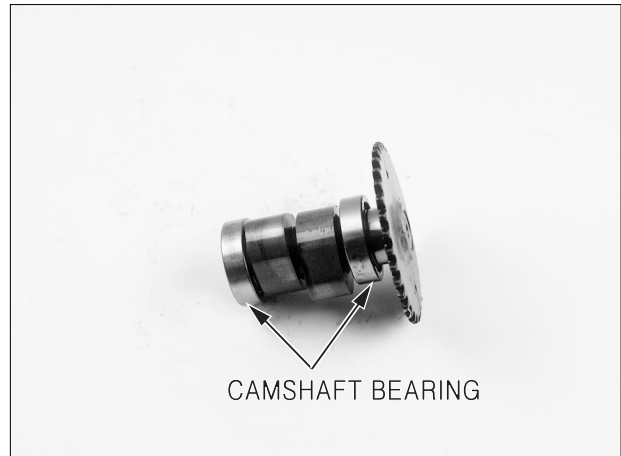
SERVICE LIMIT : IN : 33.625 mm
EX: 33.765 mm



- Manually turn the camshaft bearing outer race, and check if it turns smoothly.
- Check the bearing for wear or damage.

CAUTION

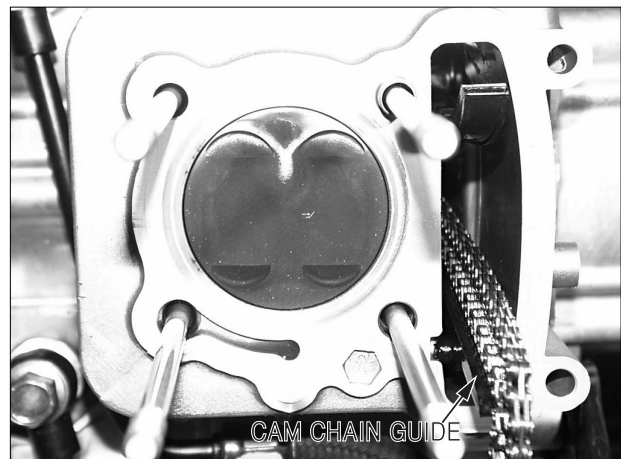
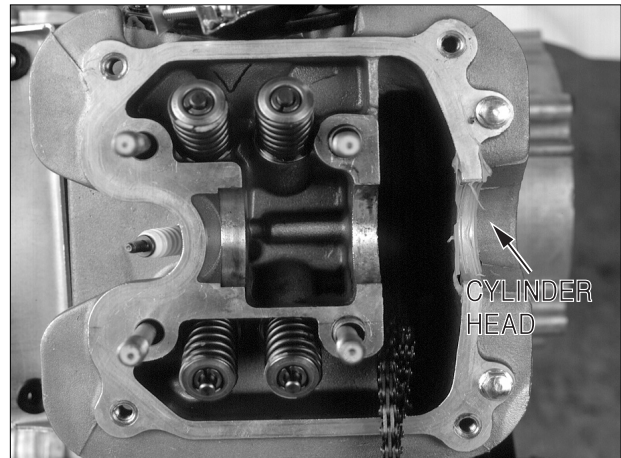
- Be sure to check the valve clearance.



CYLINDER HEAD

REMOVAL

- Remove the engine from the frame. (⇒6-2)
 - Remove the cylinder head cover.
 - Remove the RH. LH. shroud. (⇒8-2)
 - Remove the camshaft. (⇒9-3)
 - Remove the EX. pipe. (⇒4-12)
 - Remove the cylinder head.
-
- Remove the cylinder head gasket, dowel pin and cam chain guide from the cylinder.



DISASSEMBLY

- Remove the carburetor insulator.
- Remove the spark plug from the cylinder head.



CYLINDER HEAD / VALVES

- Remove the valve spring, valve cotter, retainer, spring and valve. Using the valve spring compressor.

TOOL : VALVE SPRING COMPRESSOR

NOTE

- To prevent the loss of tension, do not compress the valve spring more than necessary.
- Mark the disassembled parts so that they can be reassembled into the original position later.

- Remove the valve spring seat and valve stem seal. Remove carbon deposits from the inside of the combustion chamber.

CYLINDER HEAD INSPECTION

- Remove gasket marks from the cylinder head gasket.

NOTE

- Take precautions not to damage the cylinder head gasket attachment.
- Check the spark plug assembling hole and the valve seat for cracks.
- Using a square and a feeler gauge, check the cylinder head distortion.

SERVICE LIMIT : 0.1 mm

VALVE SPRINGS

- Measure the free length of the inner and outer valve springs.

SERVICE LIMIT : 36.90 mm

NOTE

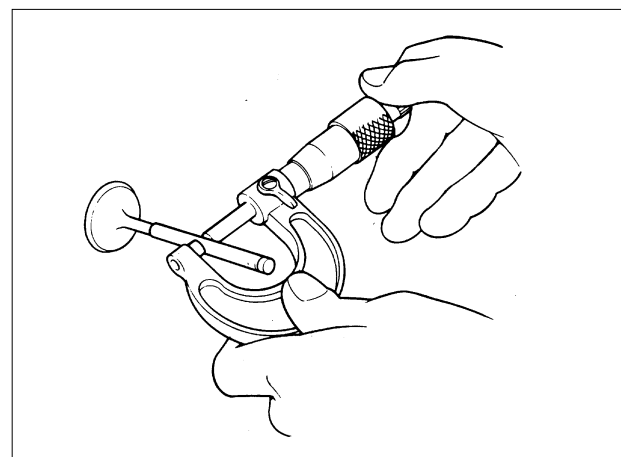
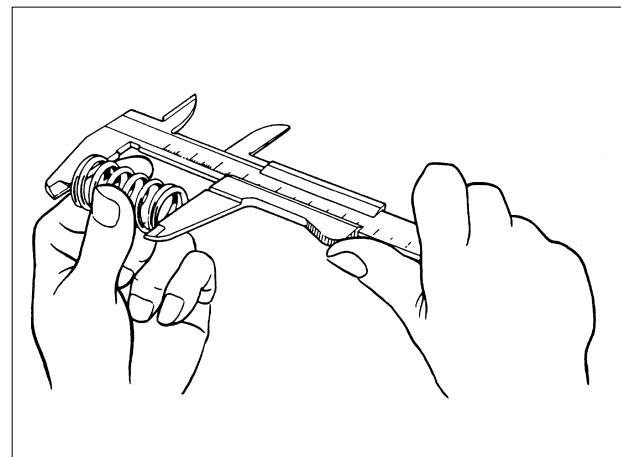
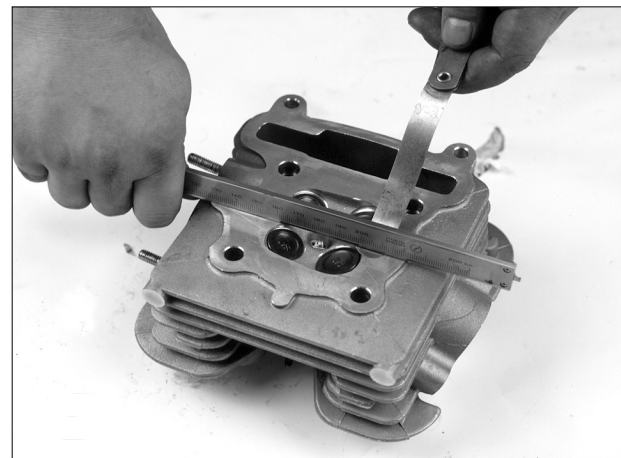
- Replace the valve spring with new one if the length of any one is less than the service limit.

VALVES

- Inspect each valve for bending, burning, scratches or abnormal wear.
- Insert the valves in their original positions in the cylinder head. Check that each valve moves up and down smoothly, without binding.
- Measure and record the valve stem outer diameter in three places along the valve guide sliding area.

**SERVICE LIMIT : IN : 4.920 mm
EX: 4.900 mm**

- Replace the valve with a new one if the service limit is exceeded.



VALVE GUIDES

INSPECTION

- Insert the valve guide reamer from the combustion chamber side and ream the guide to remove any carbon build-up before measuring the guide.

NOTE

- Take care not to tilt or lean the reamer in the guide while reaming. Otherwise, the valve is installed slanted, that causes oil leaks from the stem seal and improper valve seat contact and results in the valve seat refacing not able to be performed.
- Rotate the reamer clockwise, never counterclockwise when inserting and removing.

TOOL : VALVE GUIDE REAMER

- Measure and record each valve guide inner diameter.

SERVICE LIMIT : 5.030 mm

- Measure the guide-to-stem clearance with a dial indicator while rocking the stem in the direction of normal thrust.

**SERVICE LIMIT : IN : 0.090 mm
EX: 0.120 mm**

- Measure the inner diameter of the new valve guide. If the clearance is not within the service limit, replace the valve.

REPLACEMENT

NOTE

- Refinish the valve seats whenever the valve guides are replaced to prevent uneven seating.

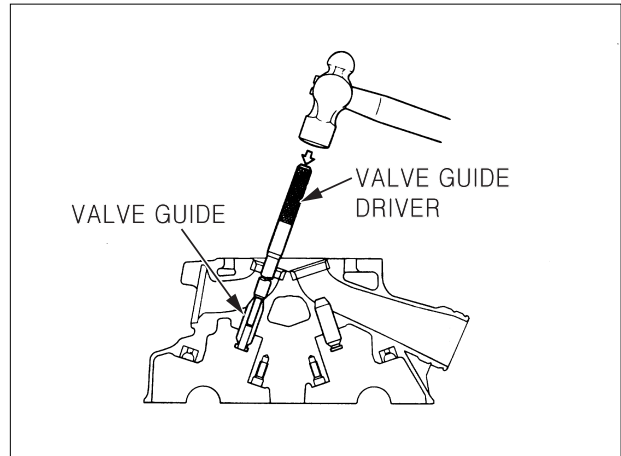
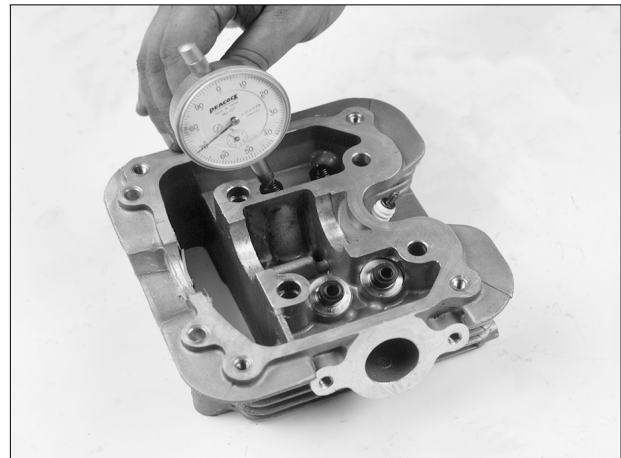
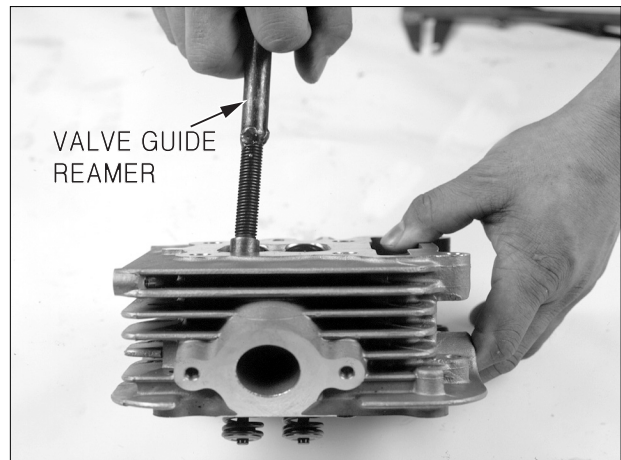
- Heat the cylinder head to 130° C - 140° C (275° F - 290° F).
- Do not heat the cylinder head beyond 150° C (300° F).
- Use temperature indicator sticks, available from welding supply stores, to be sure the cylinder head is heated to the proper temperature.

CAUTION

- Using a torch to heat the cylinder head may cause warping.

WARNING

- Wear insulated gloves to avoid burns when handling the heated cylinder head.



CYLINDER HEAD / VALVES

- Support the cylinder head and drive the old guides out of the combustion chamber side of the cylinder head.

TOOL : VALVE GUIDE DRIVER

CAUTION

- Avoid damaging the head when driving the valve guide out.

- Apply oil to a new O-ring and install it onto a new valve guide.
- Drive the new guide in from the camshaft side of the cylinder head while the cylinder head is still heated.

TOOL : VALVE GUIDE DRIVER

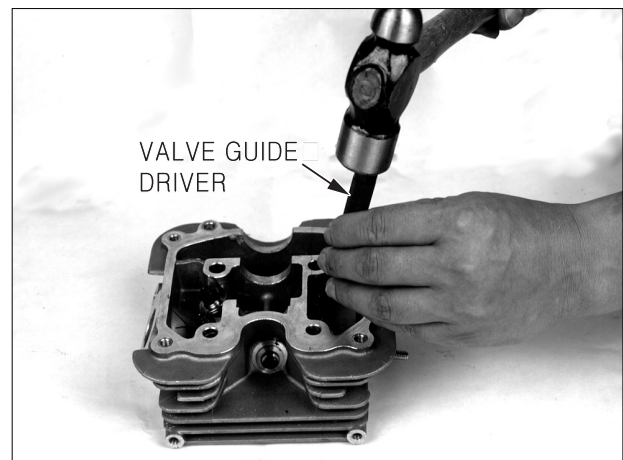
- When reaming new valve guides, insert the valve guide reamer from the combustion chamber side.

NOTE

- Take care not to tilt or lean the reamer in the guide while reaming. Otherwise, the valve is installed slanted, that causes oil leaks from the stem seal and improper valve seat contact and results in the valve seat refacing not able to be performed.
- Use cutting oil on the reamer during this operation
- Rotate the reamer clockwise, never counterclockwise when inserting and removing.

TOOL : VALVE GUIDE DRIVER

- Reface the valve seats and clean the cylinder head thoroughly to remove any metal particles.



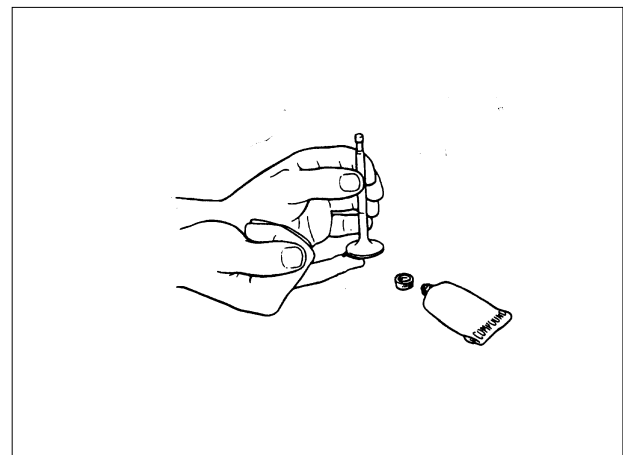
VALVE SEATS

INSPECTION

- Clean all intake and exhaust valves thoroughly to remove carbon deposits.
- Apply a light coating of Prussian Blue to each valve face.

NOTE

- Tap the valve against the valve seat several times with the valve guide reamer, without rotating the valve, to check for proper valve seat contact.



- Remove the valve and inspect the valve seat face.
- The valve seat contact should be within the specified width and evenly all around the circumference.
If the valve seat width is not within specification, reface the valve seat.

NOTE

- Valve faces and stem tips cannot be ground. If a valve face or stem tip is rough, worn unevenly, or contacts the seat improperly, the valve must be replaced.

- Measure the valve seat width.

STANDARD VALUE : 0.8 -1.0 mm

SERVICE LIMIT : 1.4 mm

VALVE SEAT REFACING

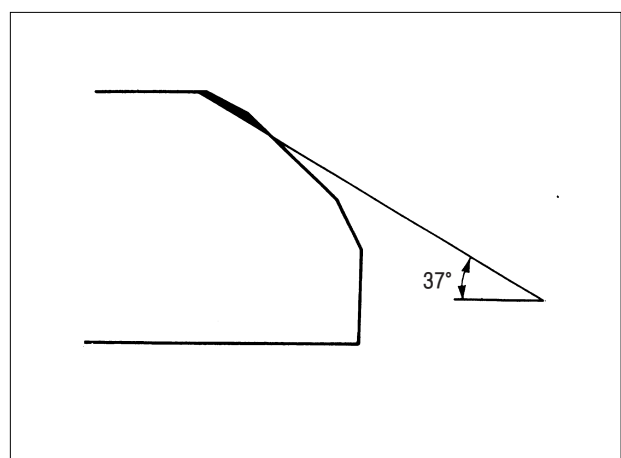
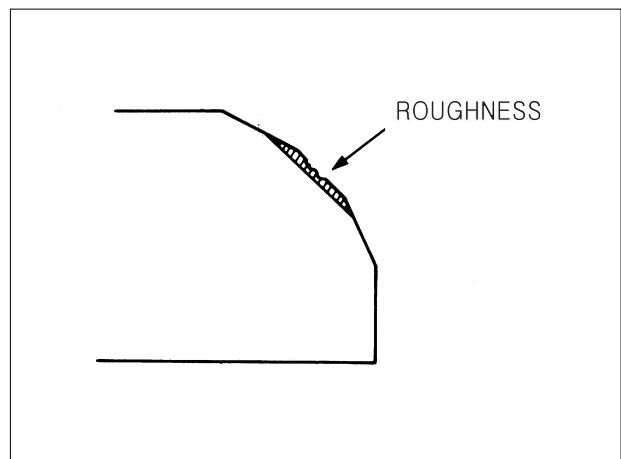
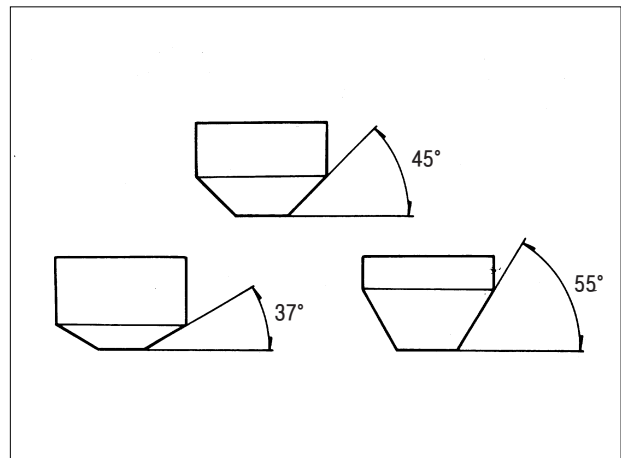
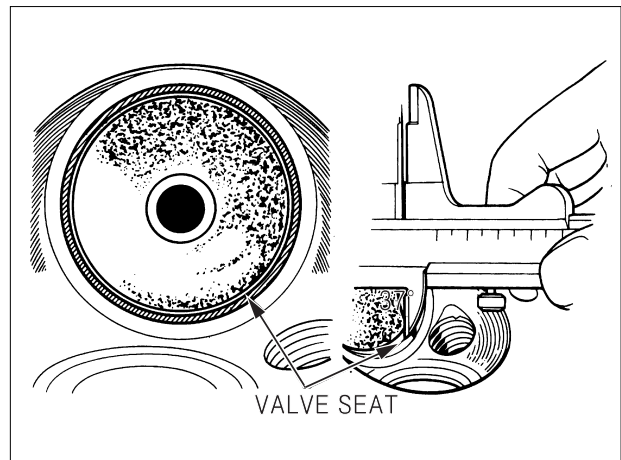
- Reface the worn valve seat by using valve seat cutters and grinders.

NOTE

- Follow the refacer manufacturer's operating instructions.
- Reface the valve seat whenever the valve guide has been replaced.
- Be careful not to grind the seat more than necessary.

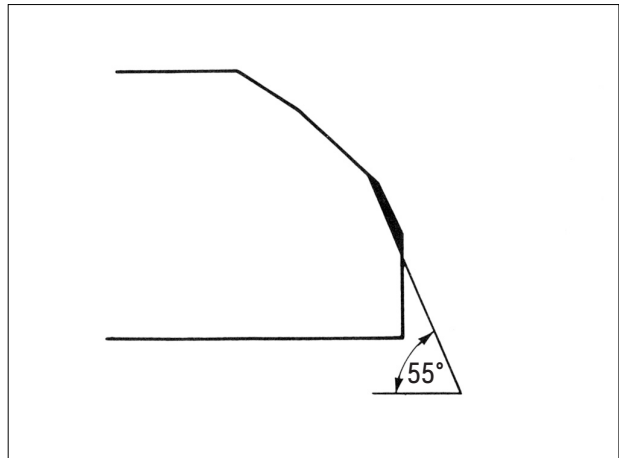
- Using a 45 degree cutter, remove any roughness or irregularities from the seat.

- Using a 37 degree cutter, remove $\frac{1}{4}$ of the existing valve seat material.

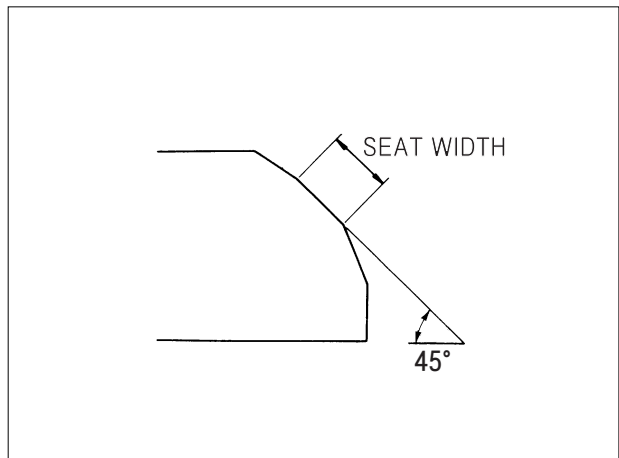


CYLINDER HEAD / VALVES

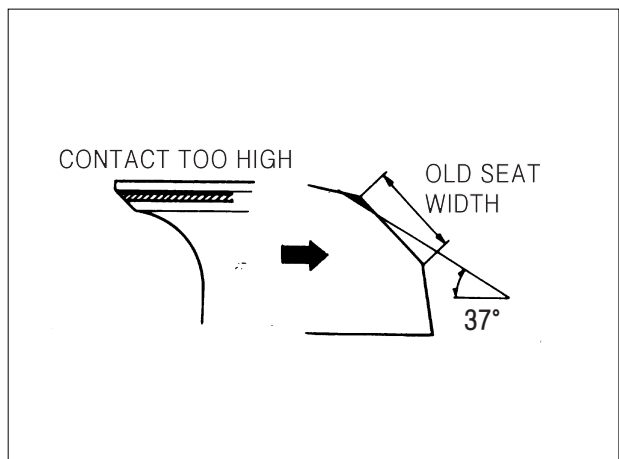
- Using a 55 degree cutter, remove the bottom $\frac{1}{4}$ of the old seat.



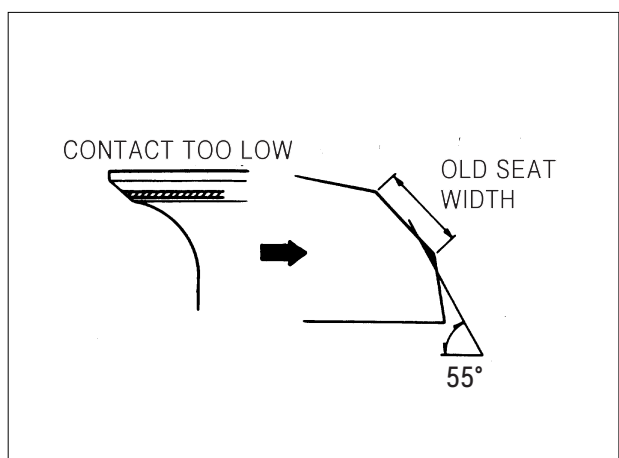
- Using a 45 degree cutter, cut the seat to the proper width.



- If the contact area is too high on the valve, the seat must be lowered using a 37 degree flat cutter. Refinish the seat to specifications, using a 45 degree finish cutter.



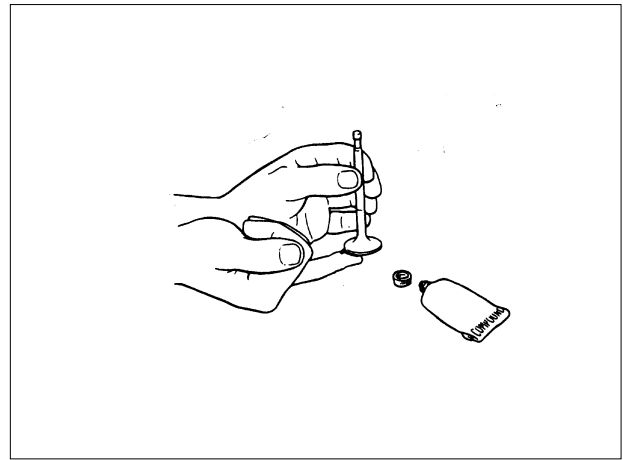
- If the contact area is too low on the valve, the seat must be raised using a 55 degree inner cutter. Refinish the seat to specifications, using a 45 degree finish cutter.



- After cutting the valve seat, apply lapping compound to the valve face, and insert the valve with a valve guide reamer.

NOTE

- Do not excessively press and turn the valve to set it as it may cause damage. Gently strike and set the valve.
- The seat surface may become worn on one side if the valve is set in the same position. Turn the valve slightly when setting it.
- Take precautions not to allow compound to get into the clearance between the stem and guide while the valve is being set.



CYLINDER HEAD ASSEMBLY

- Install new stem seals.

NOTE

- Replace the stem seals with new ones whenever a stem seal is removed.

- Lubricate each valve stem with molybdenum disulfide grease and insert the valve into the valve guide.

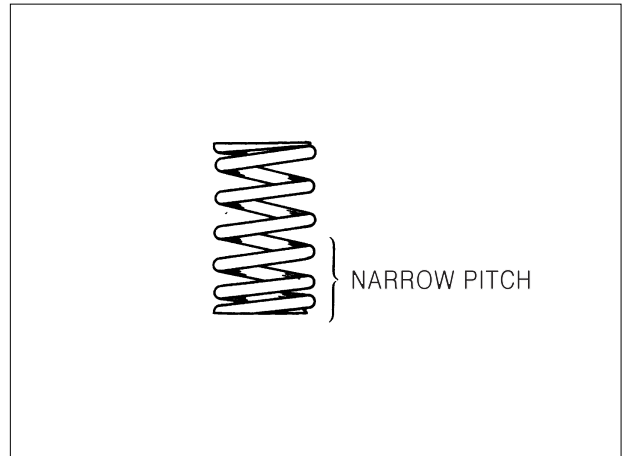
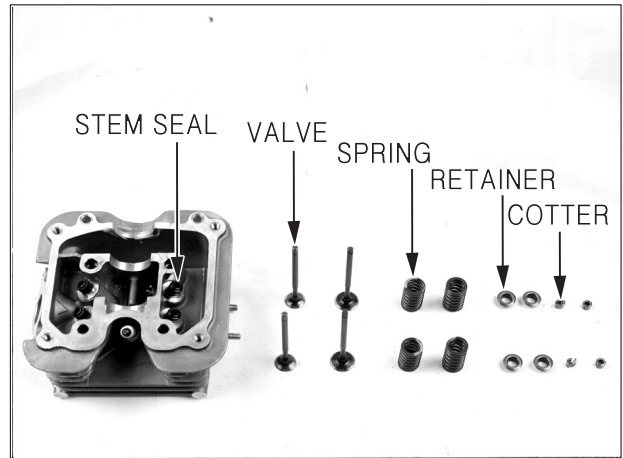
CAUTION

- Turning a valve too fast can damage the stem seals.

- Install the spring seats, valve springs and retainers.

NOTE

- For valve spring with varying pitch, install the valve springs with the narrow pitch end facing down.



- Compress the valve springs with the valve spring compressor and install the valve cotters.

CAUTION

- Compressing the valve spring more than necessary when installing the valve cotters may cause loss of valve spring tension.

TOOL : VALVE SPRING COMPRESSOR



CYLINDER HEAD / VALVES

- Tap the valve stems gently with a soft hammer to firmly seat the cotteners.

CAUTION

- Take necessary precautions not to damage the valve.

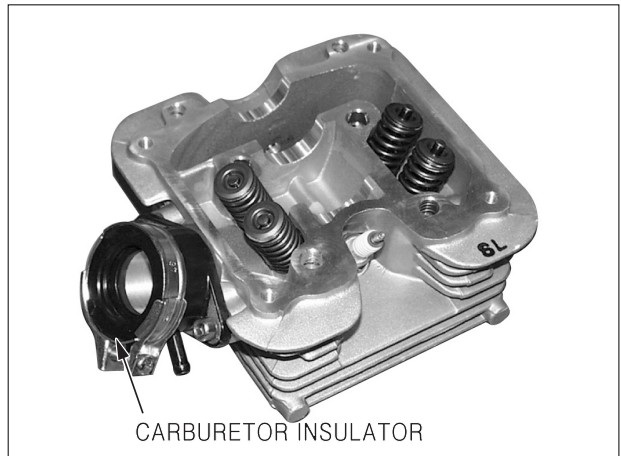


- Apply engine oil to the new O-ring, and assemble it to the carburetor insulator groove.
- Tighten the carburetor insulator with mounting bolts.
- Install the cam chain tensioner, and assemble pivot bolts.

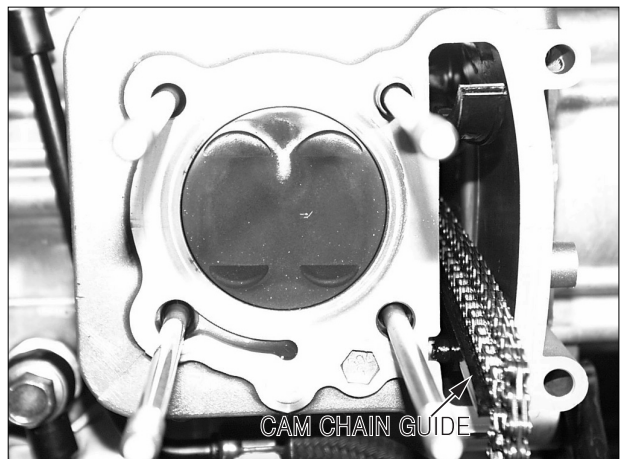
TORQUE : 1.0 kgf · m

- Install the spark plug.

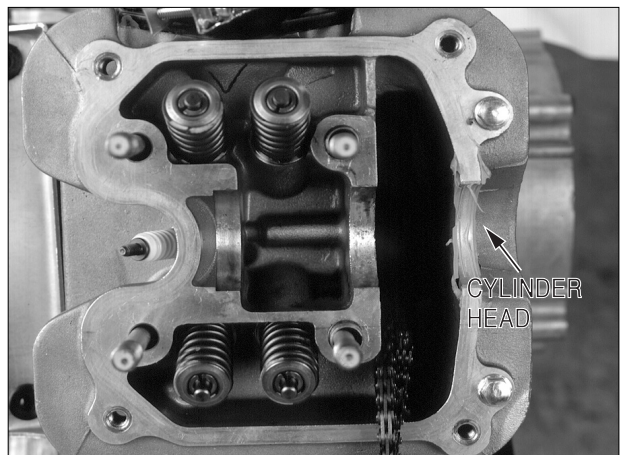
TORQUE : 1.2 kgf · m



- Clean any gasket material from the cylinder mating surface.
- Install the cam chain guide to the cylinder.
- Install the dowel pins and new gasket.

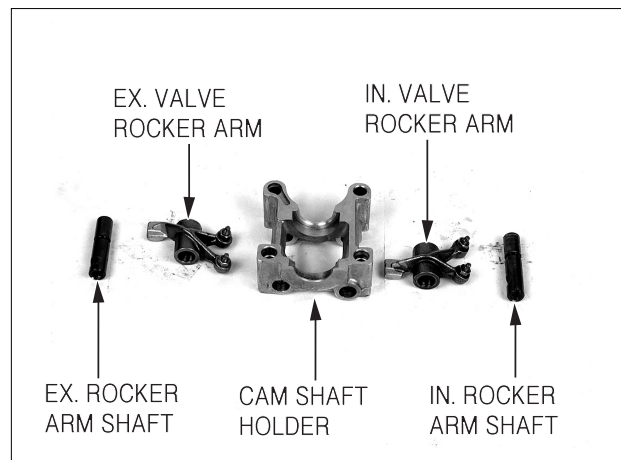


- Install the cylinder head.

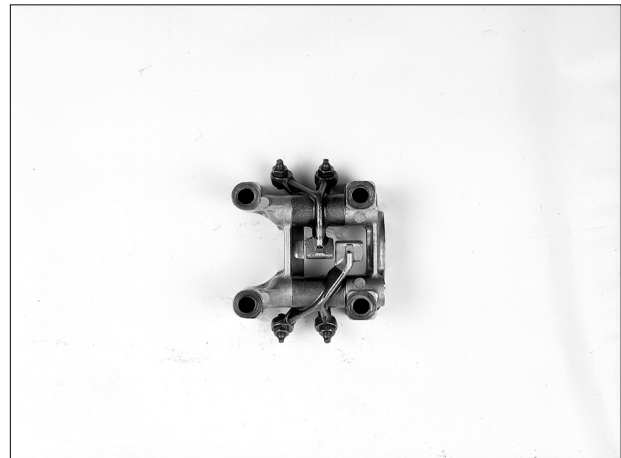


CAMSHAFT ASSEMBLY

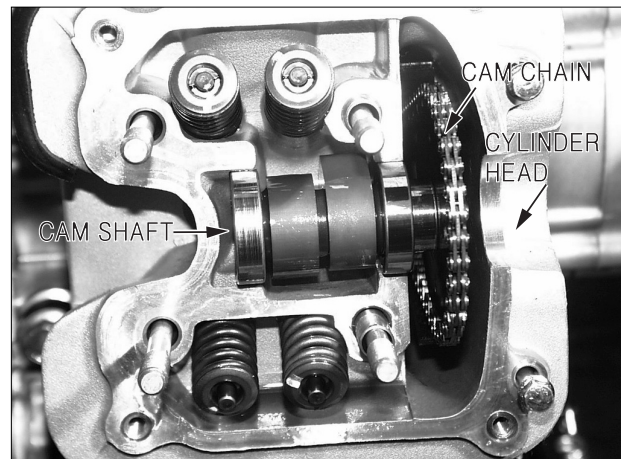
- Apply engine oil to the rocker arm shaft, and assemble the rocker arm to the camshaft holder.



- Tighten the rocker arm shaft with 6mm bolts, and align the bolt hole of the camshaft holder with the fitting side of the rocker arm shaft.



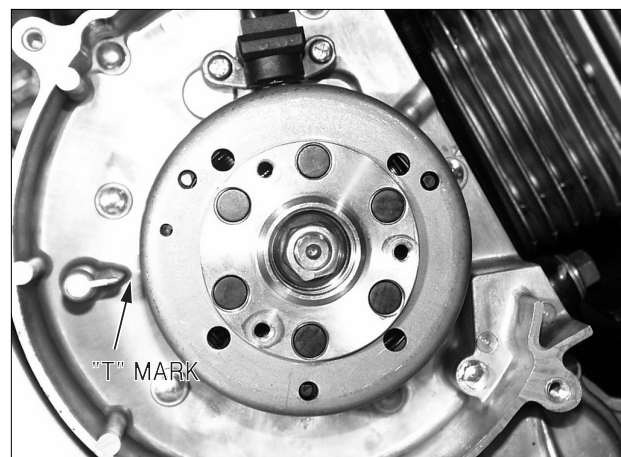
- Check the camshaft assembly for abnormal condition, and place it on the cylinder head.
- Put the cam chain on the cam sprocket.



- Slowly rotate the crankshaft counterclockwise, and align the "T" mark of the flywheel with the index mark of the RH. crank case cover.

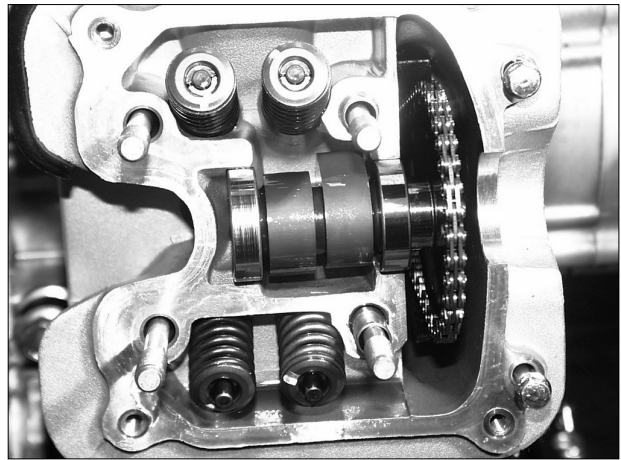
CAUTION

- Take precautions not to allow the cam chain to come off the camshaft timing gear while turning the camshaft.



CYLINDER HEAD / VALVES

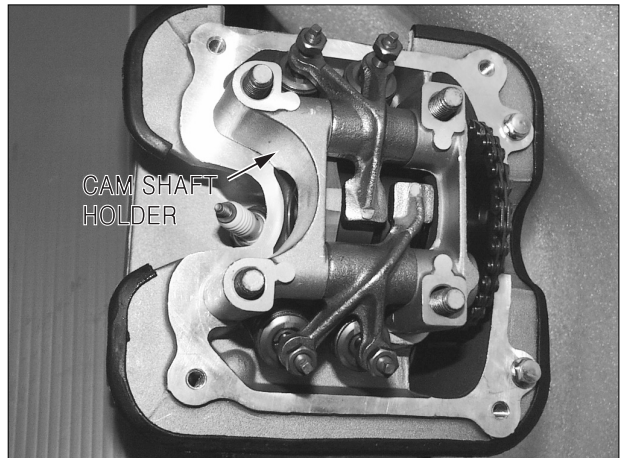
- Apply engine oil to the camshaft, and install it on the cylinder head with the cam thread facing downward.
- Assemble the cam chain and cam sprocket after matching the cam sprocket timing mark in parallel with the top of the cylinder head.



- Install the dowel pins on the cylinder head.
- Install the camshaft holder.

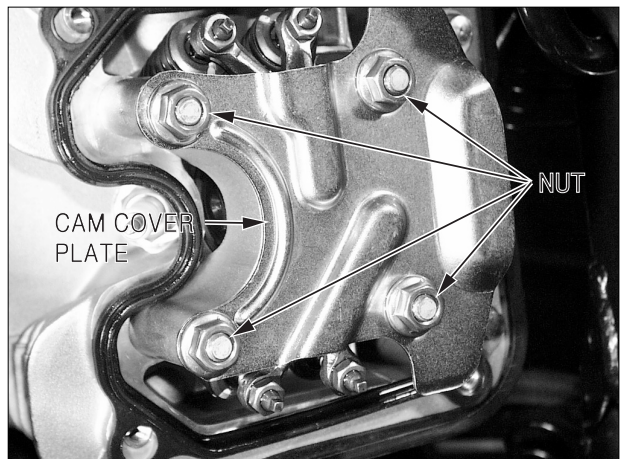
CAUTION

- The hole of the camshaft holder and the fitting section of the rocker arm shaft fit section must be in alignment.
- Of IN and EX, the shorter rocker arm should be installed on the IN side.



- Install the cam cover plate.
- Apply engine oil to the threaded part; install the camshaft holder nut and bolts, and tighten them driving with 2 - 3 times.

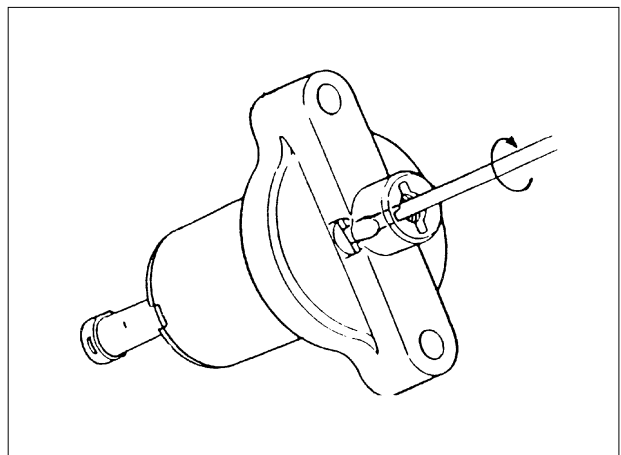
TORQUE VALUE : 2.0 kgf · m



- Remove the pan screws and seals from the cam chain tensioner lifter.
- Rotate the tensioner shaft clockwise with a small driver, and insert the shaft into the body completely.

CAUTION

- If the cam chain tensioner lifter is dropped, the shaft will advance by the spring force.



- Fix the tensioner shaft with a hard clip.
- Assemble a new gasket to the tensioner lifter, and install the tensioner lifter on the cylinder.
- Tighten the tensioner mounting bolts.

TORQUE VALUE : 1.2 kgf · m

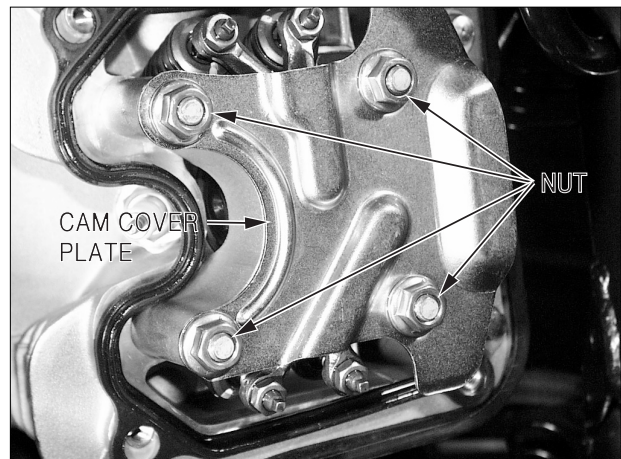


- Remove the tensioner shaft clip from the tensioner lifter. Assemble the O-ring and pan screws to the tensioner lifter.

TORQUE VALUE : 0.4 kgf · m



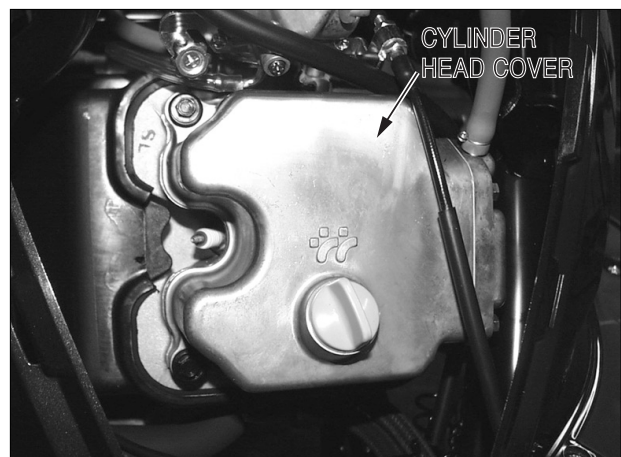
- Fill clean engine oil into the operating parts of the cylinder head.
- Adjust the valve clearance. (⇒3-5)
- Remove oil from the cylinder head cover grooves, and accurately assemble the gasket to the cover.

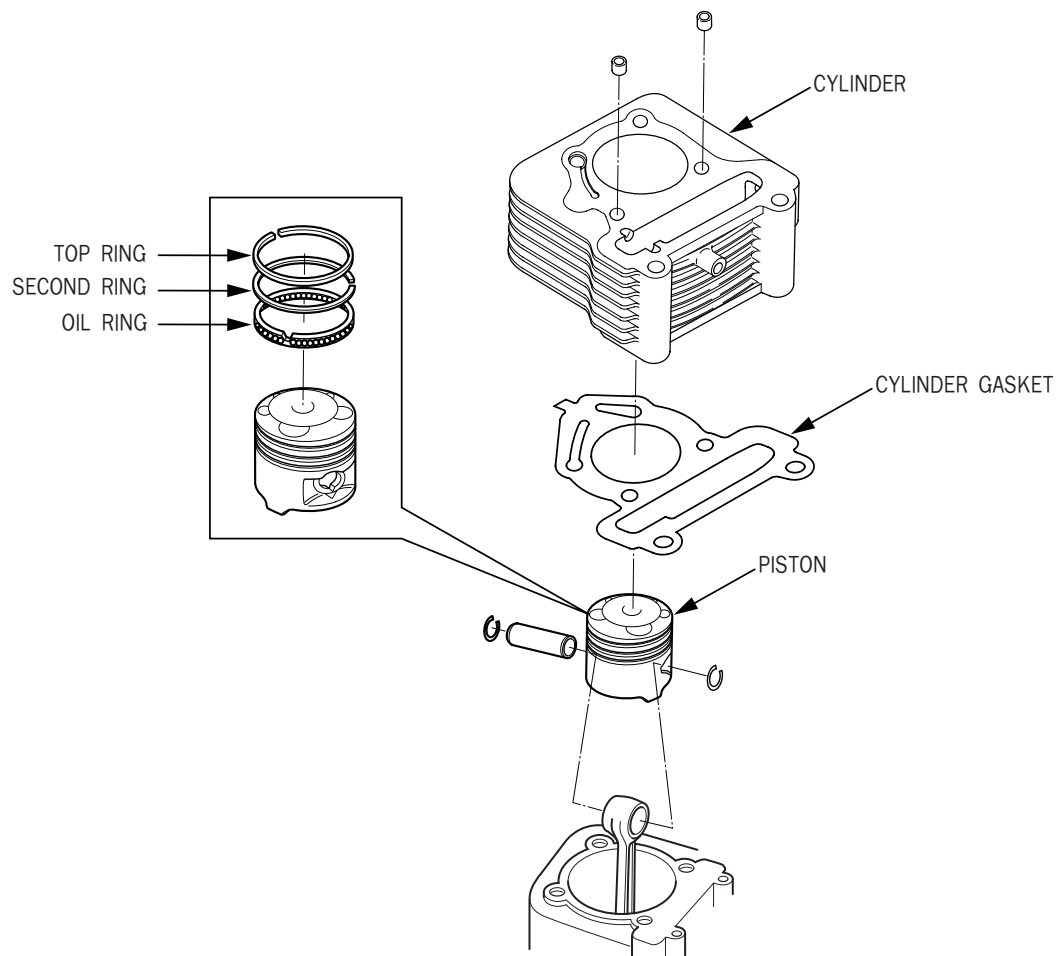


- Install the cylinder head cover.
- Tighten the cylinder head cover bolts.

TORQUE VALUE : 0.9 kgf · m

- Install the carburetor insulator.
- Install the EX. pipe. (⇒4-12)
- Install the RH. / LH. shroud. (⇒8-12)
- Install the engine to the frame. (⇒6-2)





10. CYLINDER / PISTON

SERVICE INFORMATION · · · **10-1**
TROUBLESHOOTING · · · · **10-1**
CYLINDER · · · · · · · · **10-2**

PISTON / PISTON RING · · **10-3**
CYLINDER INSTALLATION · **10-5**

SERVICE INFORMATION

GENERAL SAFETY

- Be careful not to damage the mating surfaces by using a screwdriver when disassembling the cylinder. Do not strike the cylinder too hard during disassembly, even with a rubber or plastic mallet, to prevent the possibility of damage to the cylinder fins.
- Take care not to damage the cylinder wall and piston.
- Check parts after disassembling, and clean and dry with an air hose prior to taking measurements.

SPECIFICATIONS

Unit : mm

ITEM			STANDARD VALUE	SERVICE LIMIT
CYLINDER	INNER DIAMETER		56.000-56.010 mm	56.100 mm
	TAPER		-	0.050 mm
	OUT-OF-ROUND		-	0.005 mm
	HEAD CONTACT WARPAGE		-	0.020 mm
PISTON, PISTON PIN, PISTON RING	PISTON SKIRT OUTER DIAMETER		55.925-55.945 mm	58.825 mm
	PISTON PIN HOLE INNER DIAMETER		15.002-15.008 mm	15.040 mm
	PISTON PIN OUTER DIAMETER		14.994-15.000 mm	14.960 mm
	PISTON-TO-PISTON PIN CLEARANCE		0.002-0.014 mm	0.020 mm
	PISTON RING-TO-GROOVE CLEARANCE	TOP	0.040-0.067 mm	0.110 mm
		SECOND	0.025-0.052 mm	0.080 mm
	PISTON RING JOINT GAP	TOP / SECOND	0.10-0.25 mm	0.50 mm
OIL RING (SIDE RAIL)		0.20-0.70 mm	1.10 mm	
CYLINDER-TO-PISTON CLEARANCE			0.055-0.090 mm	0.200 mm
CONNECTING ROD SMALL END INNER DIAMETER			15.010-15.028 mm	15.060 mm
GAP BETWEEN CONNECTING ROD SMALL END AND PISTON PIN			0.010-0.034 mm	0.040 mm

10

TROUBLESHOOTING

ComperSSION too low

- Worn piston
- Worn, damaged piston ring
- Worn cylinder

Excessive smoke

- Worn cylinder, piston or piston rings
- Improper installation of piston ring
- Scored or scratched piston or cylinder wall

Overheating

- Excessive carbon build-up on top of piston

Abnormal noise

- Worn cylinder and piston
- Worn connecting rod small end bearing or piston pin
- Damaged piston ring
- Excessive carbon build-up on top of piston

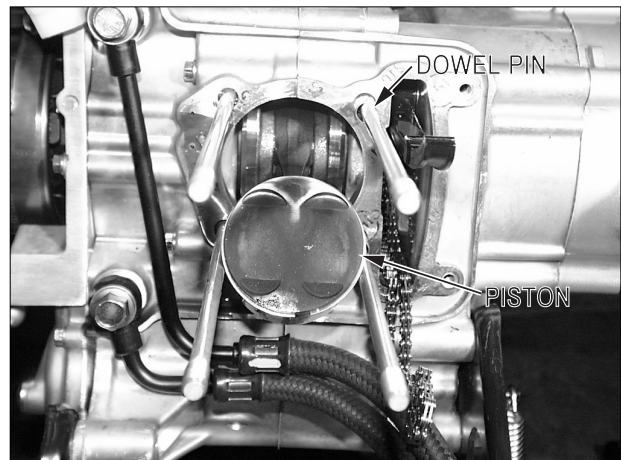
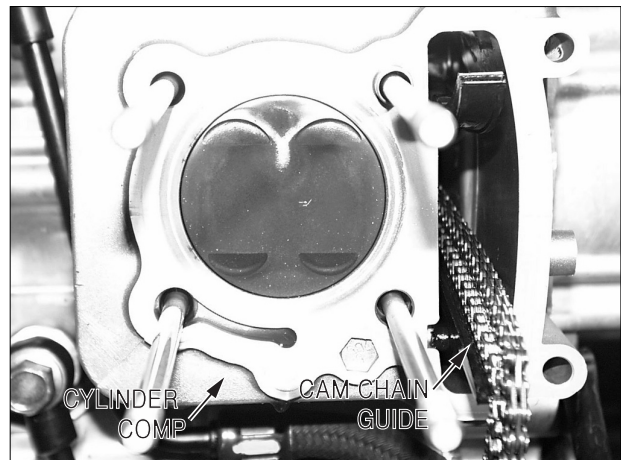
CYLINDER

REMOVAL

- Remove the engine from the frame. (⇒6-2)
- Remove the EX. pipe. (⇒4-12)
- Remove the camshaft. (⇒9-3)
- Remove the cylinder head. (⇒9-5)
- Remove the cam chain guide from the cylinder.
- Remove the cylinder.
- Remove the gasket and dowel pin. Carefully remove any adhering gasket material from the cylinder / head mating surface. Do not scratch the surface.

NOTE

- Take care not to damage the cylinder mating surface.



WEAR INSPECTION

- Inspect the cylinder wall for scratches and wear.
- Measure and record the cylinder inner diameter at three levels in both an X and Y axis.
- Take the maximum reading to determine the cylinder wear.

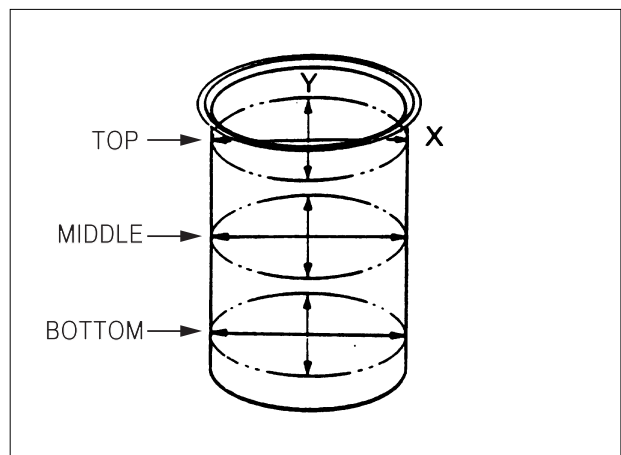
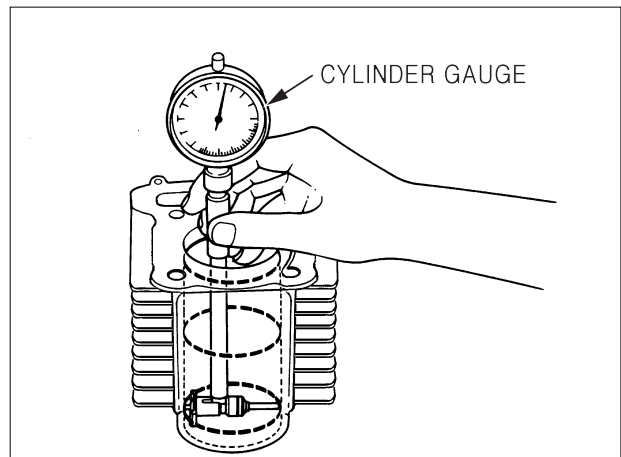
SERVICE LIMIT : 56.100 mm

- Measure the piston outer diameter.
- Calculate the piston-to-cylinder clearance. Take the maximum reading to determine the clearance.

SERVICE LIMIT : 0.2 mm

- Calculate the cylinder for out-of-round at three levels in an X and Y axis. Take the maximum reading to determine the out-of-round.
- Calculate the cylinder for taper at three levels in an X and Y axis. Take the maximum reading to determine the taper.
- If any of the cylinder measurements exceed the service limits, replace the cylinder.

**SERVICE LIMIT : OUT-OF-ROUND : 0.005 mm
TAPER : 0.05 mm**



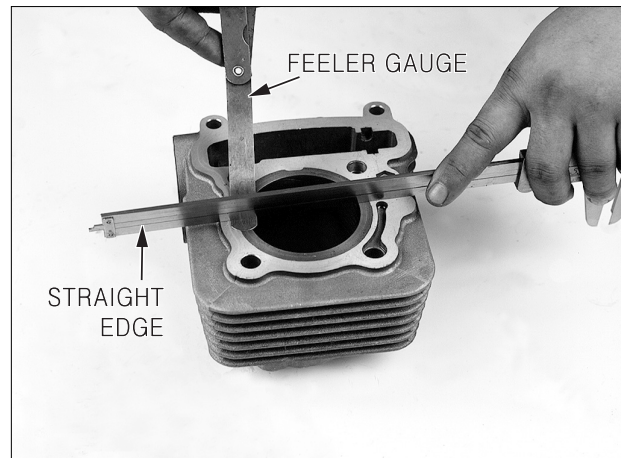
WARPAGE INSPECTION

- Check the cylinder for warpage by placing a straight edge and feeler gauge across the stud holes. Replace the cylinder if the service limit is exceeded.

SERVICE LIMIT : 0.02 mm

NOTE

- Any clearance between the cylinder and head due to damage or warpage will result in compression leaks and reduced performance.



PISTON / PISTON RING

REMOVAL

NOTE

- Place a clean shop towel over the crankcase to prevent the possibility of the clip falling into the crankcase.

- Remove the piston pin clip using a pair of pliers.
- Press the piston pin out of the piston.

NOTE

- Do not damage or scratch the piston.
- Do not apply side force to the connecting rod.
- Do not let the clip fall into the crankcase.



INSPECTION

- Clean carbon deposits from the piston.
- Inspect the piston rings for movement by pressing the rings. The rings should be able to move in its groove without catching.
- Spread each piston ring and remove it by lifting it up at a point just opposite the gap.

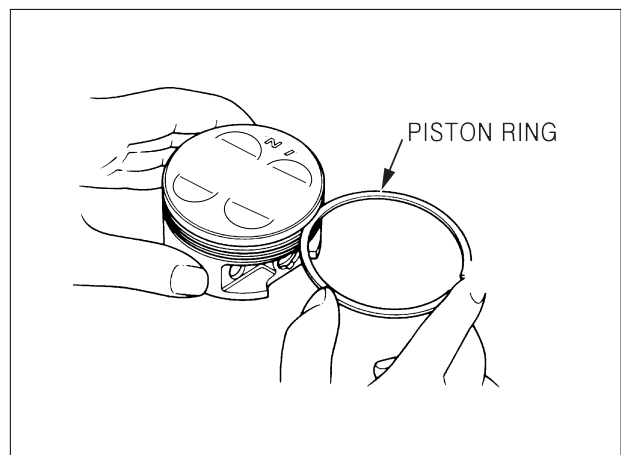
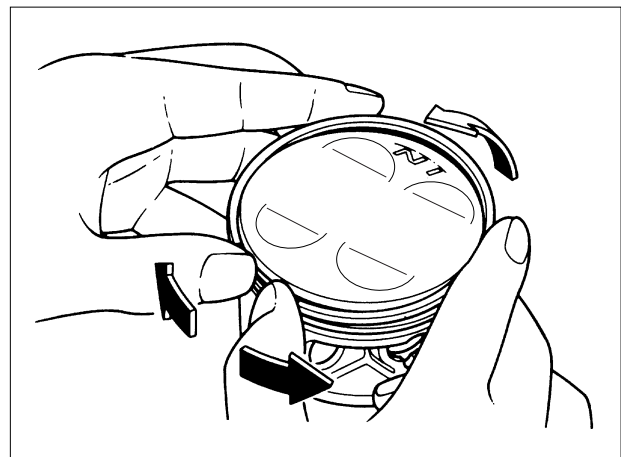
CAUTION

- Do not damage the piston ring by spreading the ends too far.

- Measure the clearance between the piston ring and piston grooves.

SERVICE LIMIT : TOP : 0.110 mm
SECOND : 0.080 mm
OIL RING : 0.280 mm

- Inspect the piston for wear or damage.



CYLINDER / PISTON

- Insert the piston ring into the bottom of the cylinder squarely, using the piston.
- Measure the end gap using a feeler gauge. Replace the ring if the service limit is exceeded.

NOTE

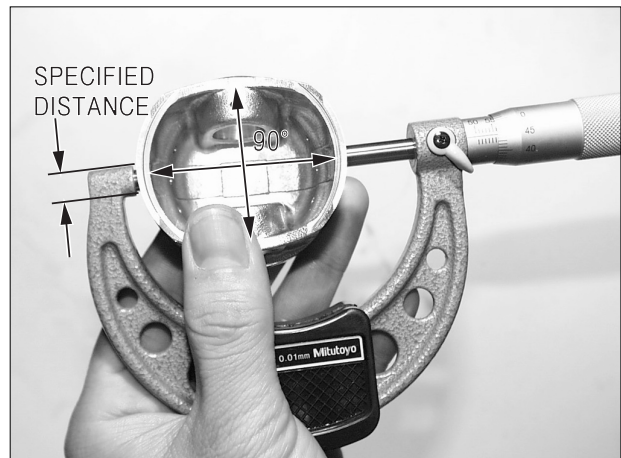
- Always replace piston ring as a set.

SERVICE LIMIT : TOP / SECOND : 0.50 mm
OIL RING (SIDE RAIL) : 1.10 mm
TOOL : FEELER GAUGE



- Measure and record the piston outer diameter 90° to the piston pin bore and at the point specified (10mm), near the bottom of the piston skirt.
- Replace the piston if the service limit is exceeded.

SERVICE LIMIT : 55.825 mm



PISTON PIN INSPECTION

- Measure the piston pin bore inner diameter in an X and Y axis. Take the maximum reading to determine the inner diameter.
- Replace the piston if the inner diameter is over the service limit.

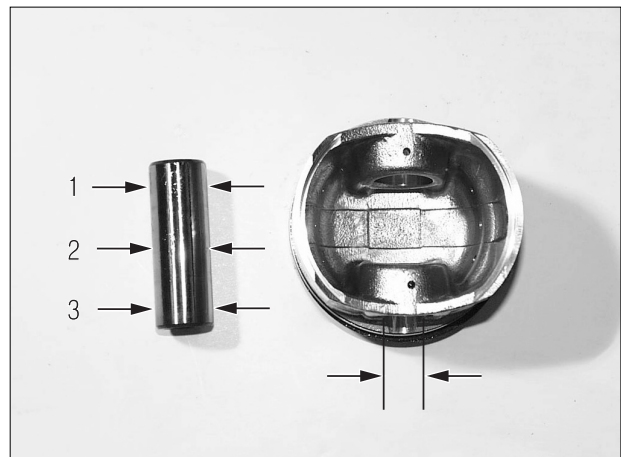
SERVICE LIMIT : 15.04 mm

- Measure the piston pin outer diameter at three points.
- Replace the piston pin if the service limit is exceeded.

SERVICE LIMIT : 14.960 mm

- Calculate the piston pin-to-pin bore clearance by subtracting the piston pin outer diameter from the pin bore inner diameter.

SERVICE LIMIT : 0.020 mm



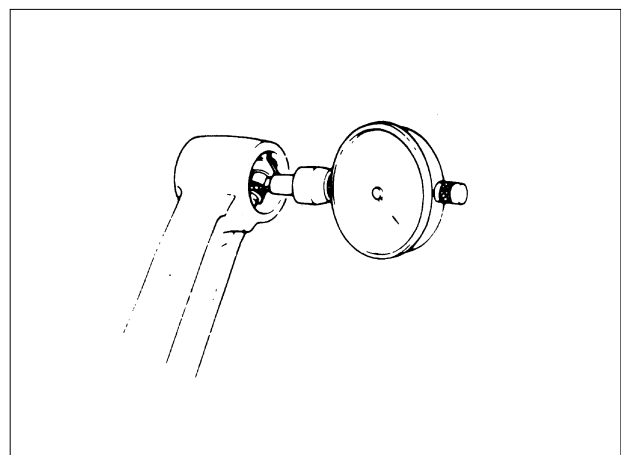
SMALL END BEARING SURFACE INSPECTION

- Measure the inner diameter of the connecting rod small end.

SERVICE LIMIT : 15.060 mm

- Calculate the connecting rod small end-to-piston pin clearance.

SERVICE LIMIT : 0.040 mm

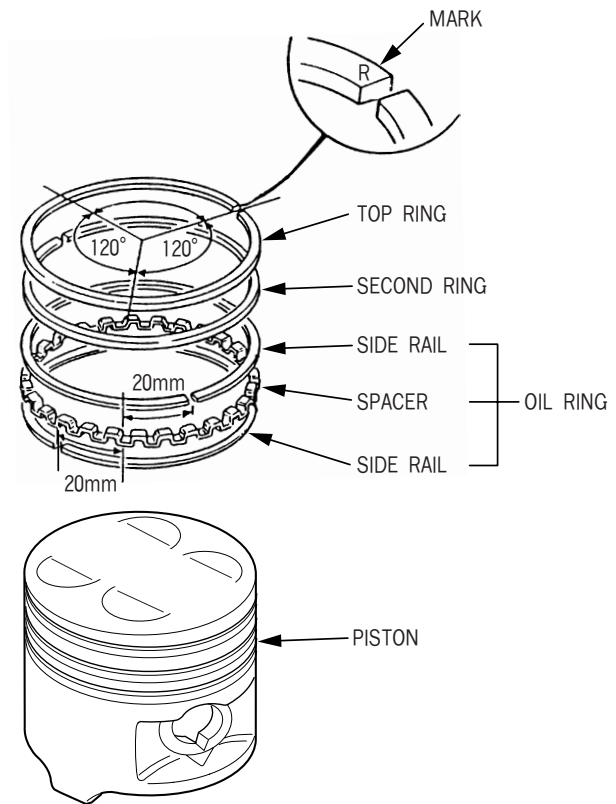


PISTON / PISTON RING INSTALLATION

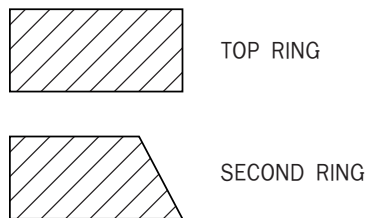
- Clean the piston heads, ring lands and skirts.
- Carefully install the piston rings onto the piston with the markings facing up.

NOTE

- Be careful not to damage the piston and rings during assembly.
- Do not confuse the top and second rings.
- Space the ring end gaps 120 degrees apart.
- Space the side rail gaps 40mm or more apart as shown.



- After installing the rings they should rotate freely, without sticking.



PISTON INSTALLATION

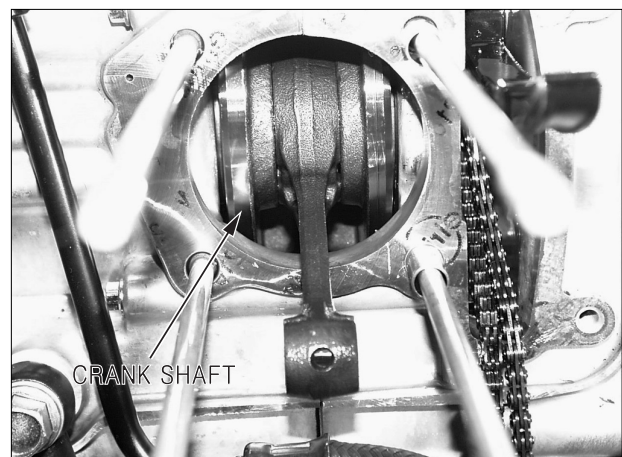
NOTE

- Place a clean shop towel over the crankcase to prevent the clip from falling into the crankcase.

- Install the piston and insert the piston pin.

NOTE

- The mark that is stamped on the piston head should be facing the correct direction.
 "IN" MARK : TO INTAKE SIDE
 "EX" MARK : TO EXHAUST SIDE



CYLINDER / PISTON

- Install new piston pin clips.

CAUTION

- Always use new piston pin clips. Reinstalling used piston pin clips may lead to serious engine damage.

NOTE

- Take care not to drop the piston pin clip into the crankcase.
- Set the piston pin clip in the groove properly.
- Do not align the clip's end gap with the piston cutout.

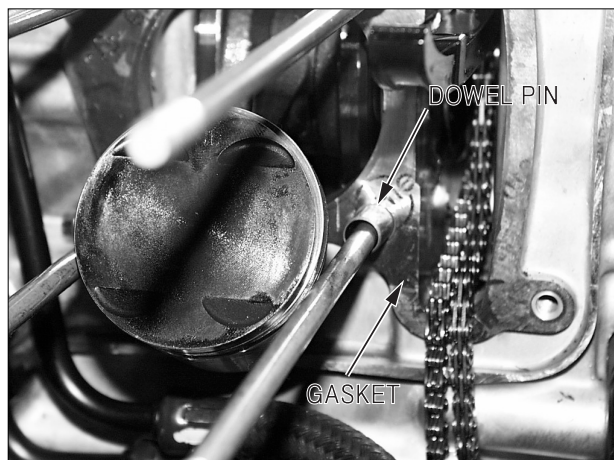


CYLINDER INSTALLATION

- Make sure that the piston ring end gap is correct.
- Carefully remove any adhering gasket material from the cylinder / head mating surface. Do not scratch the surface.
- Install a new cylinder gasket and dowel pins.

NOTE

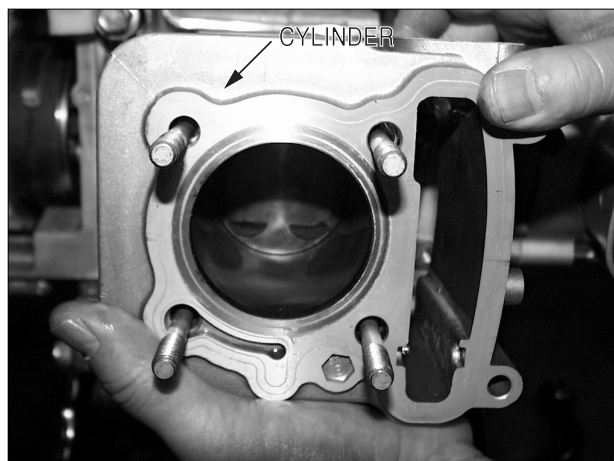
- Take care not to damage the cylinder mating surface.



- Coat the cylinder wall with clean engine oil and lubricate the piston rings and install the cylinder.

NOTE

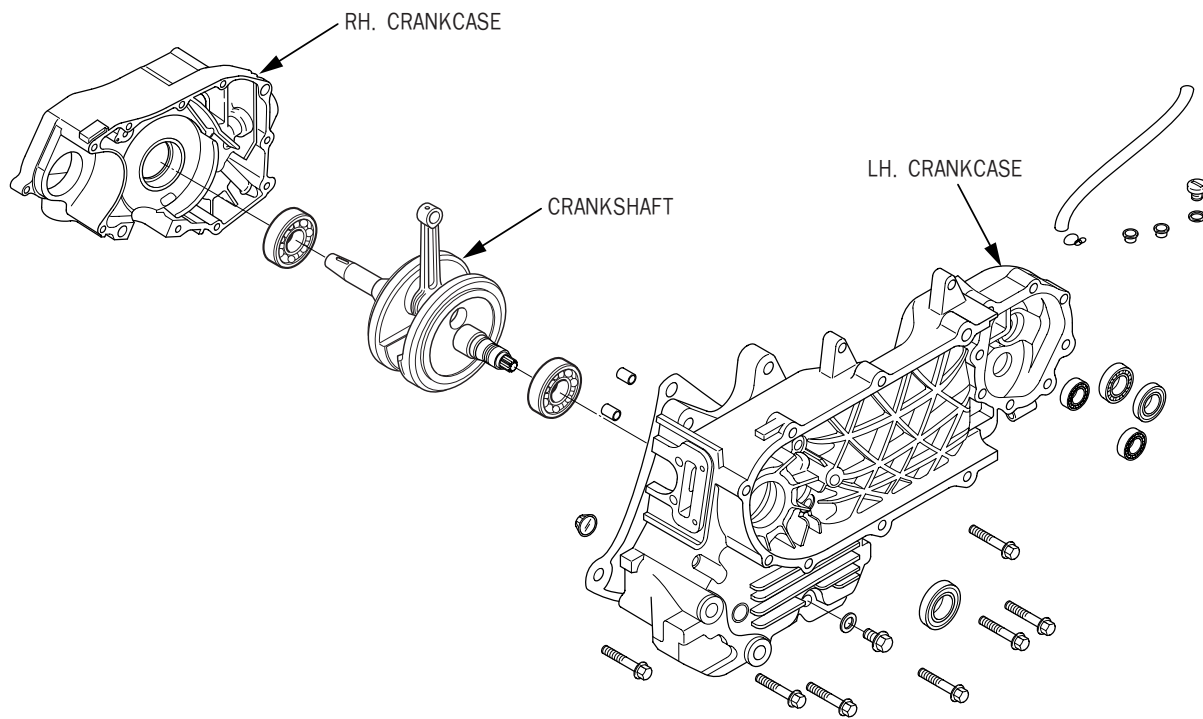
- Be careful not to damage the piston rings.
- Be careful not to drop the cam chain into the crankcase.



- Install the lower part of the cam chain guide to the “ㄣ” part of the crankcase, and install the cam chain guide by aligning the projection part with the “ㄣ” part of cylinder.
- Install the cylinder head. (⇒9-12)
- Install the camshaft. (⇒9-13)
- Install the cylinder head cover.
- Install the EX. pipe. (⇒4-12)
- Install the engine to the frame. (⇒6-2)



MEMO



11. TRANSMISSION/CRANKSHAFT/CRANKCASE

SERVICE INFORMATION 11-1

TROUBLESHOOTING 11-2

TRANSMISSION 11-3

CRANK CASE REMOVAL 11-6

CRANKSHAFT REMOVAL . . . 11-7

TRANSMISSION BEARING . . . 11-8

CRANKSHAFT INSTALLATION . 11-9

CRANK CASE INSTALLATION . 11-10

SERVICE INFORMATION

GENERAL SAFETY

- This section describes how to remove the crank case and to maintain the transmission and the crankshaft.
- Service transmission without removing the engine from the vehicle. However, to prevent damage to the LH. crank case, remove the engine and disassemble the rear brake prior to changing the LH. crank case bearing.
- Always use special tools to change the drive shaft. Fix the bearing inner race, and install the shaft.
- The following parts must be removed prior to removing the crank case. Follow the removal procedure specified in each section.
 - OIL PUMP (⇒SECTION 2)
 - CARBURETOR (⇒SECTION 5)
 - ENGINE (⇒SECTION 6)
 - CYLINDER HEAD/ CYLINDER/ PISTON (⇒SECTION 9 AND 10)
 - AC GENERATOR (⇒SECTION 8)
 - DRIVE PULLEY (⇒SECTION 7)
 - CLUTCH/DRIVEN PULLEY (⇒SECTION 7)
- The following parts must be removed prior to changing the LH. crank case. Follow the removal procedure specified in each section.
 - TRANSMISSION (⇒SECTION 11)
 - PARKING BRAKE (⇒SECTION 14)
- To assemble the crank case and crankshaft, set the special tool to the inner race of the crankshaft bearing, and push and assemble. Remove the bearing from the crankshaft during disassembling work, and insert a new bearing in the case. Install the oil seal after the case is assembled.

11

SPECIFICATIONS

ITEM		STANDARD VALUE	SERVICE LIMIT
CRANK SHAFT	CONNECTING ROD	0.15 ~ 0.60 mm	0.60 mm
	LARGE END SIDE CLEARANCE	0.1 ~ 0.35 mm	
	CONNECTING ROD BIG END	0 ~ 0.008 mm	0.05 mm
	CRANKSHAFT SHAKING	RIGHT	0.1 mm
		LEFT	0.1 mm

TRANSMISSION OIL

OIL CAPACITY	0.15 l (Full capacity) 0.14 l (After oil change)
RECOMMENDED OIL	DMC Pure mission oil or SAE 80W/90

TORQUE VALUE

CRANK CASE BOLT 1.0kg-m

TOOLS

- UNIVERSAL BEARING PULLER
- BEARING REMOVER SET
- REMOVER ASSEMBLY
- REMOVER SHAFT
- REMOVER HEAD
- SLIDING WEIGHT
- ASSEMBLY SHAFT

TROUBLESHOOTING

Engine Noise

- Connecting rod big and small ends loose.
- Crank pin bearing loose.

Engine started but unable to move out

- Transmission damage.
- Transmission seized.

Noise during operation

- Gear worn, overheated, or cranked.
- Bearing worn.

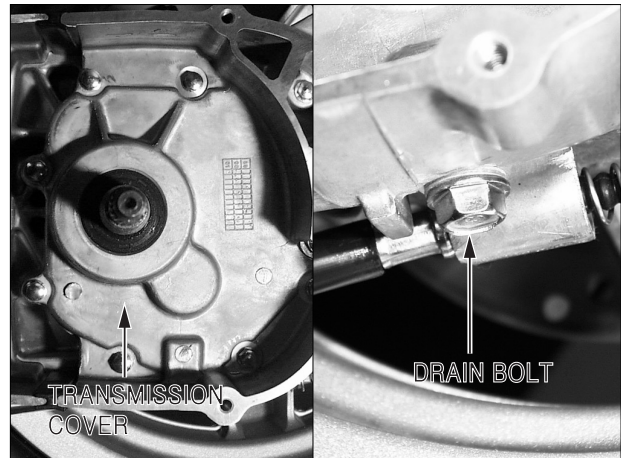
Oil leaks

- Excessive oil level.
- Oil seal worn or damaged.

TRANSMISSION

DISASSEMBLY

- Loosen the drain bolt, drain the mission oil.
- Remove the L.H. crankcase cover. (⇒7-2)
- Remove the continuously variable transmission. (⇒SECTION 7)
- Remove the EX. muffler. (⇒4-12)
- Remove the rear swing arm. (⇒13-8)
- Remove the rear brake caliper. (⇒14-6)
- Remove the rear wheel. (⇒13-3)
- Loosen the rear cushion upper bolt.
- Remove the transmission bleeder tube from the mission cover groove.
- Loosen the 8 transmission cover bolts.
- Remove the transmission cover.
- Remove the gasket and dowel pin.



- Remove the drive shaft from the transmission cover by using a hydraulic press.

NOTE

- Take precautions not to damage the cover joints.

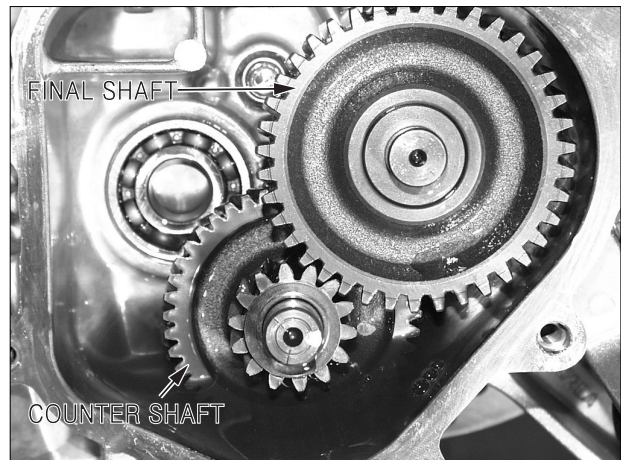


- Remove the oil seal of the drive shaft.



TRANSMISSION/CRANKSHAFT/CRANK CASE

- Remove the final shaft and the counter shaft comp.

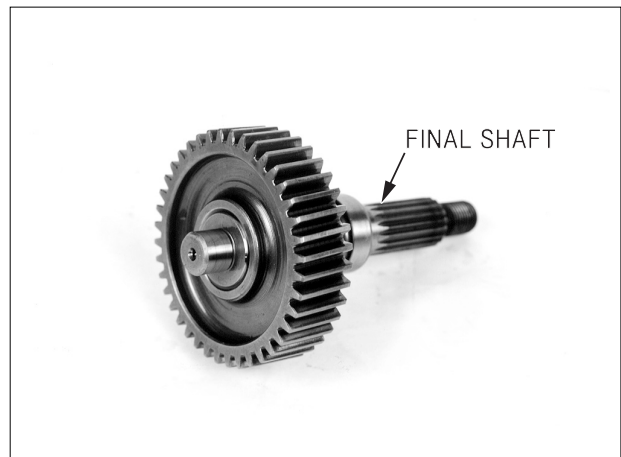


TRANSMISSION INSPECTION

- Check the drive shaft for wear or damage.



- Check the final shaft for wear or damage.

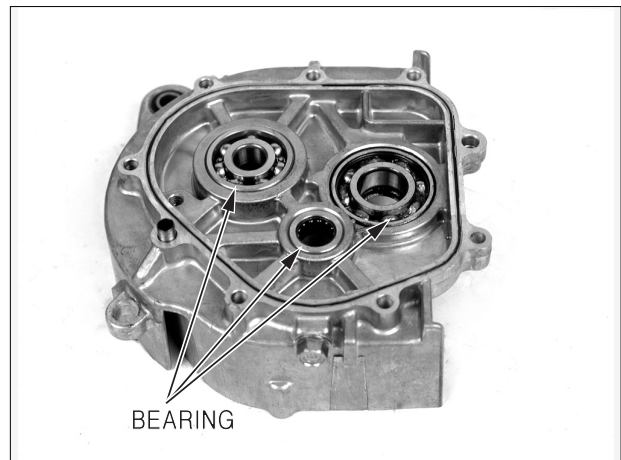


- Check the counter shaft for wear or damage.



TRANSMISSION BEARING INSPECTION

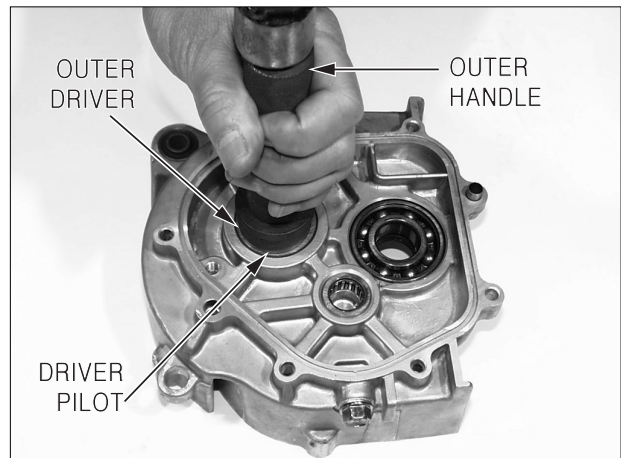
- Check that the bearing outer race fits the case tightly without play.
- Turn the inner race and check that the bearing turns smoothly and quietly.
- Replace the bearings if necessary.



- Install the bearing to the case with special tools.

**TOOLS : DRIVE HANDLE A
OUTER DRIVER
DRIVER PILOT**

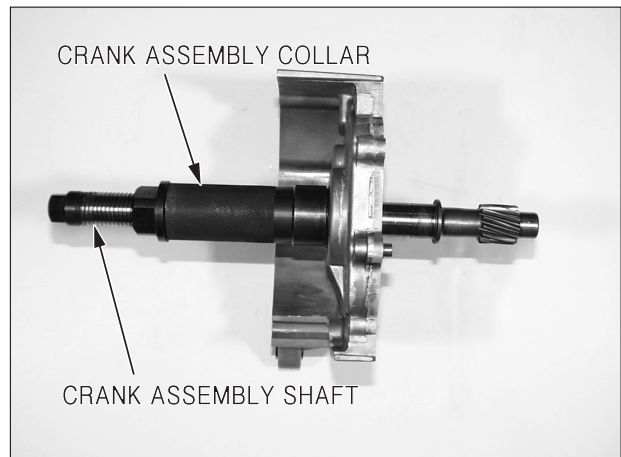
- Check the LH. crankcase oil seal for wear or damage.



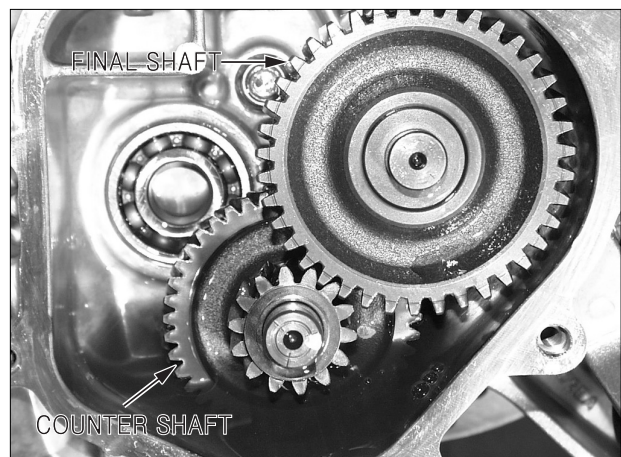
TRANSMISSION ASSEMBLY

- Install the drive shaft on the transmission cover.
- Install a new drive shaft oil seal.

**TOOLS : CRANK ASSEMBLY SHAFT
CRANK ASSEMBLY COLLAR**



- Install the final shaft and counter shaft on the LH. crank case.



TRANSMISSION/CRANKSHAFT/CRANK CASE

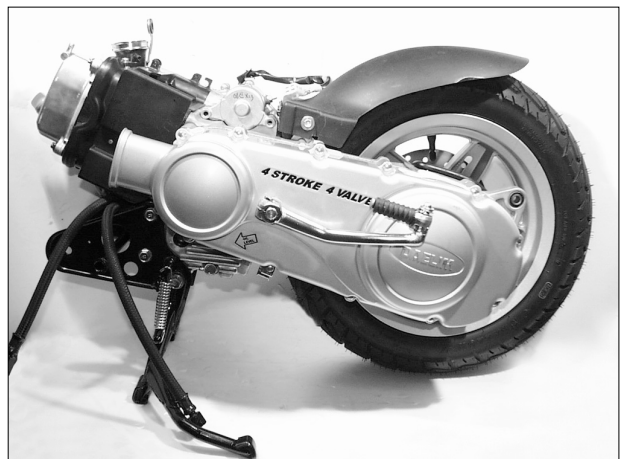
- Install a new gasket and dowel pin.
- Tighten the transmission cover with the setting bolts.
- Install the following parts.
 - Rear wheel (⇒13-3)
 - Rear swing arm (⇒13-8)
 - Rear brake caliper (⇒14-6)
 - EX. muffler (⇒ 4-12)
 - Continuously variable transmission (⇒SECTION 7)
 - RH. crank case cover (⇒7-2)
- Install the rear cushion upper bolt.
- Install the transmission bleeder tube.
- Remove the oil check bolt, release the transmission oil filler ACG cap or the LH. crankcase until the oil overflow through oil hole and fill the recommended oil slowly.
- Install the oil check bolt and the cap.

RECOMMENDED OIL : SAE 80W- 90
TRANSMISSION OIL AMOUNT : 0.15 l

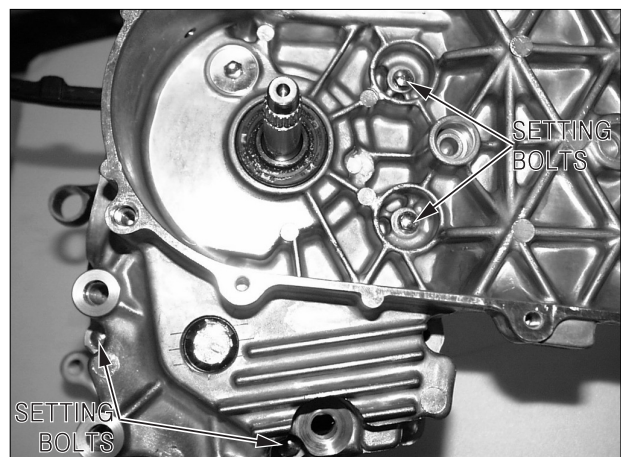


CRANK CASE REMOVAL

- Remove the engine from the frame. (⇒6-2)
- Remove the RH./LH. crankcase cover.(⇒8-4,7-2)
- Remove the transmission cover. (⇒13-3)
- Remove the parts to disassemble crankcase.



- Loosen the 8 RH./LH. crankcase setting bolts.



- Remove the transmission bleeder tube.
- Remove the RH./LH. radiator hose from the RH. crankcase.
- Face the LH. crankcase downward, and remove the RH. crankcase from the LH. crankcase while tapping a few places on the LH. crankcase with a plastic hammer.

NOTE

- Be careful not to distort the mating surface of the crank case during removal.

- Remove the dowel pin and gasket.



CRANKSHAFT REMOVAL

- Remove the crankshaft from the RH. crankcase by using a crankshaft remover.
- If the bearing is left on the RH. crankcase, use the driver handle and the outer driver to remove it.

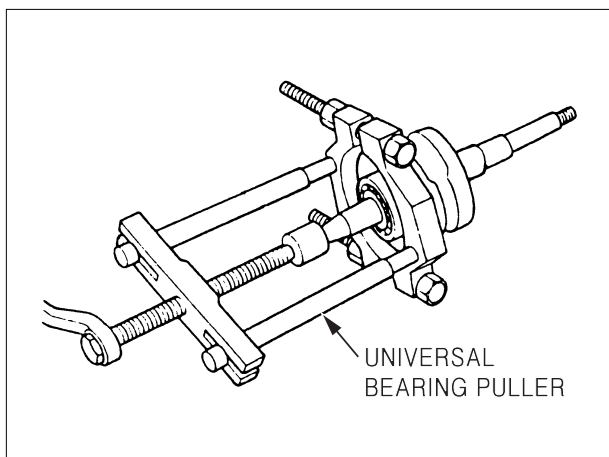
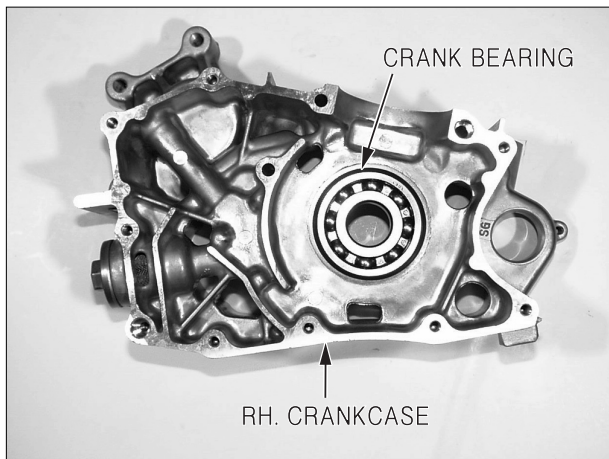
**TOOLS : DRIVER
ATTACHMENT, 42 X 47 mm**

- If the bearing is left on the crankshaft, use a bearing puller to remove it.

TOOL : UNIVERSAL BEARING PULLER

NOTE

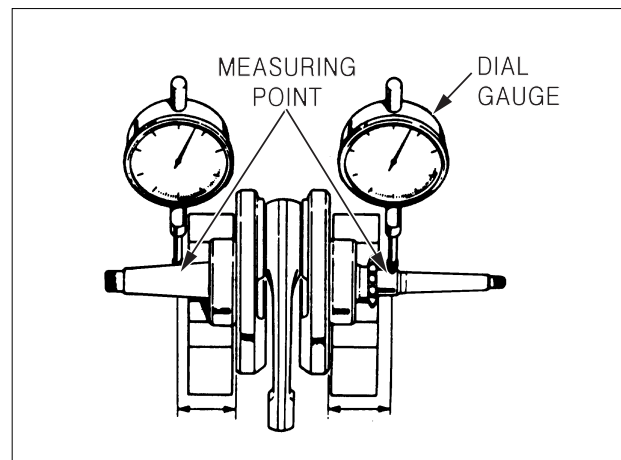
- After removing the crankshaft from the RH. crankcase, replace the RH. crankshaft bearing with a new one.



CRANKSHAFT INSPECTION

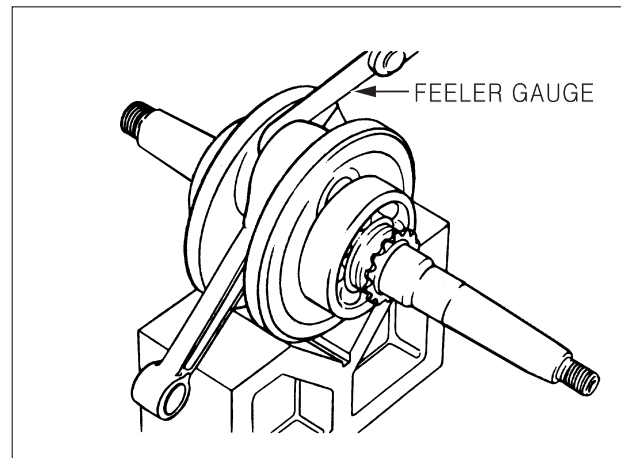
- Place the crankshaft on a stand or V-block, and measure the crankshaft runout using dial gauge.

SERVICE LIMIT : RIGHT : 0.1 mm
LEFT : 0.1 mm



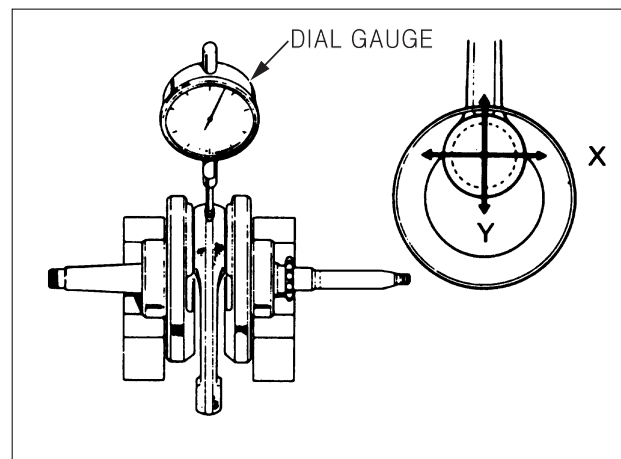
- Measure the side clearance by inserting the feeler gauge between the crankshaft and connecting rod big end as shown.

TOOL : FEELER GAUGE



- Measure the connecting rod radial clearance in both X and Y directions.
- Replace the crankshaft if the service limit is exceeded.

SERVICE LIMIT : 0.05 mm

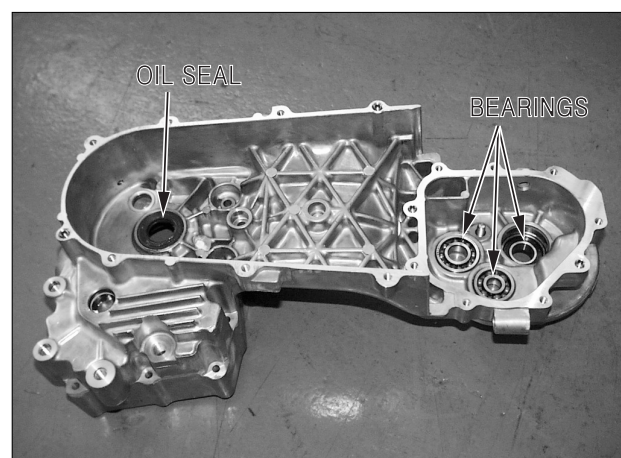


TRANSMISSION BEARING

- Remove the transmission and crankshaft.

INSPECTION

- Check that the bearing outer race fits the case tightly without play.
- Turn the inner race and check that the bearing turns smoothly and quietly.
- Replace the bearing if necessary.



TRANSMISSION BEARING REPLACEMENT

LH. crankcase

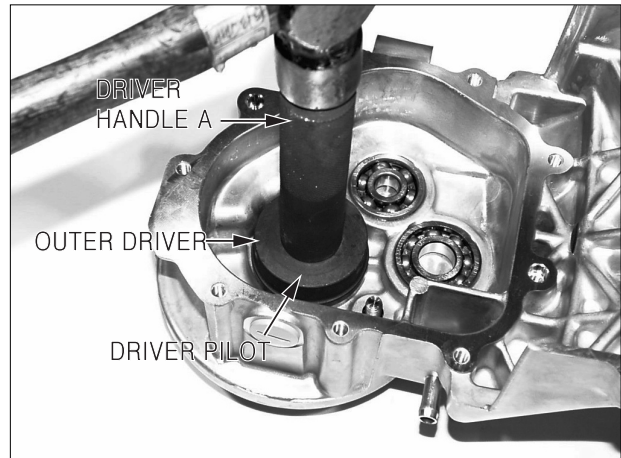
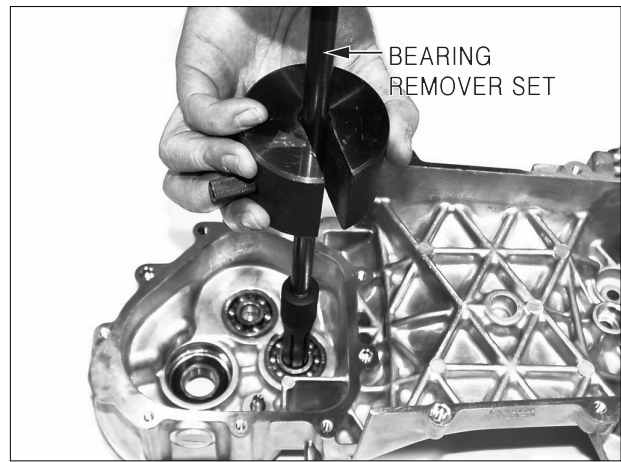
- Use special tools to remove the drive shaft bearing.

**TOOLS : BEARING REMOVER SET
REMOVER SHAFT
REMOVER HEAD**

- Remove the final shaft bearing and oil seal.
- Remove the countergear bearing.
- Apply clean engine oil to a new bearing, and assemble it to the crankcase.

**TOOLS : DRIVER HANDLE A
DRIVER PILOT
OUTER DRIVER**

- Install a new final shaft oil seal.



CRANKSHAFT INSTALLATION

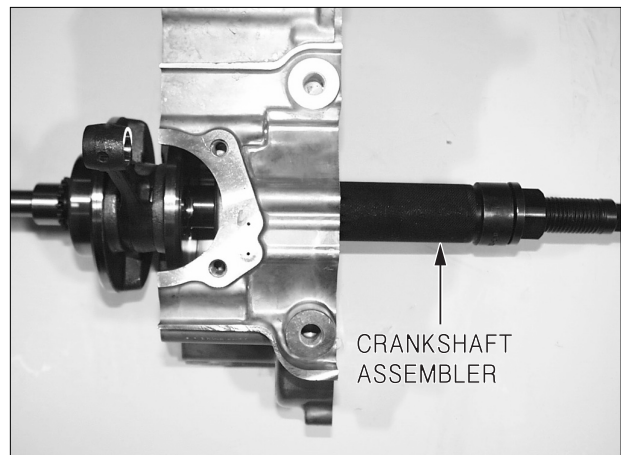
- Apply clean engine oil to the new RH. crankshaft bearing, and press in the bearing into the RH. crankcase.

**TOOLS : DRIVER HANDLE A
OUTER DRIVER
DRIVER PILOT**



- Use special tools to assemble the crankshaft bearing to the RH. crankcase.

**TOOLS : DRIVER HANDLE A
OUTER DRIVER
DRIVER PILOT**



CRANKCASE INSTALLATION

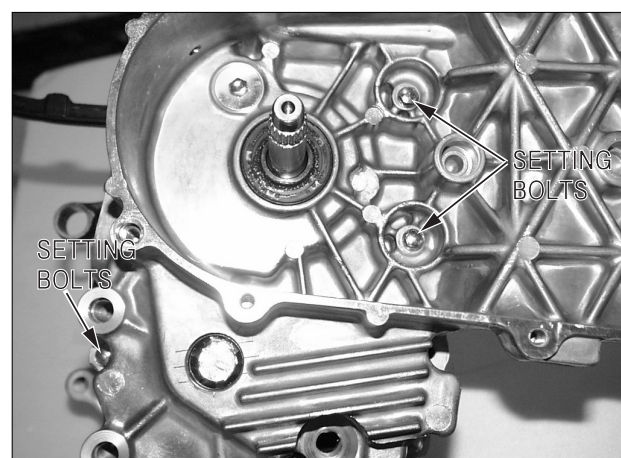
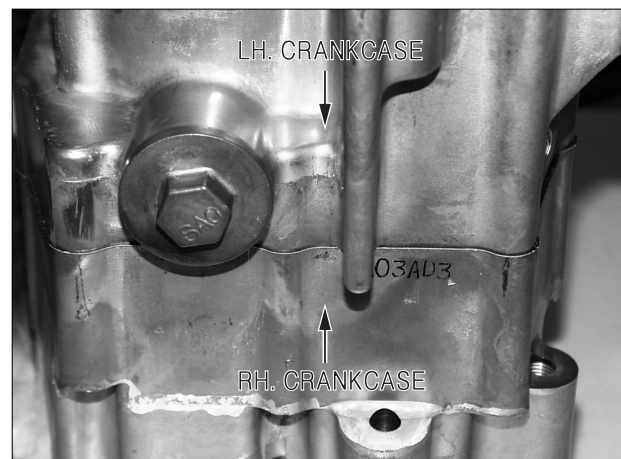
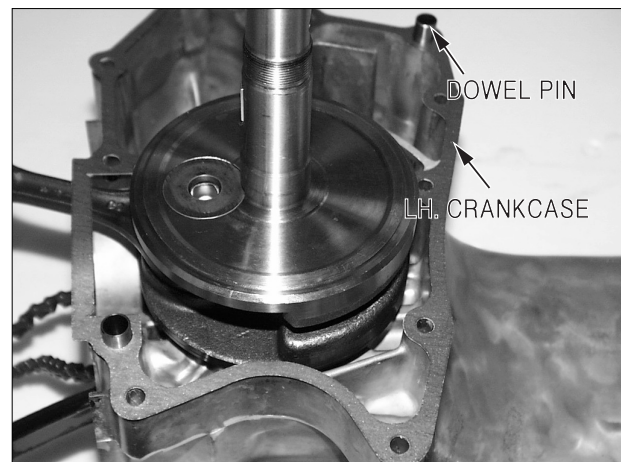
- Install the dowel pins and a new gasket.
- Install the cam chain to the LH. crankcase.

- Install the RH. crankcase to the LH. crankcase.

NOTE

- Make sure that the gasket is completely attached without any clearance.

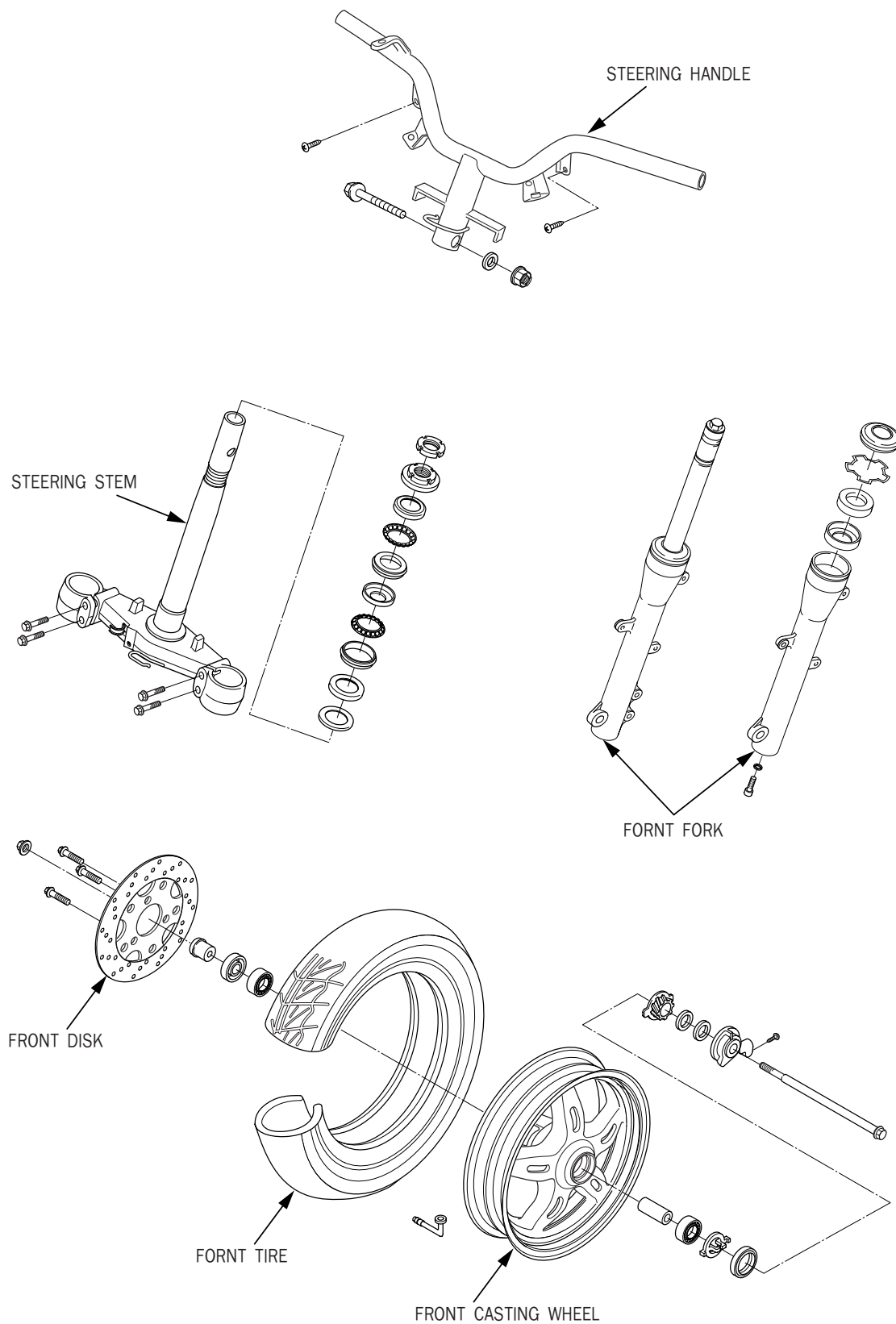
- Install the RH./LH. radiator hose.
- Install the bleeder tube to the LH. crankcase.
- Install the removed parts.
- Install the engine on the frame.(⇒6-2)



MEMO



FRONT WHEEL/FRONT FORK/STEERING



12. FRONT WHEEL/FRONT FORK/STEERING

SERVICE INFORMATION 12-1	FRONT WHEEL 12-5
TROUBLESHOOTING 12-2	FRONT FORK 12-10
STEERING HANDLE 12-3	STEERING STEM 12-15

SERVICE INFORMATION

GENERAL SAFETY

CAUTION

- Keep oil or brake fluid off the brake disk and pad because the contaminated brake disk and pad reduces the braking performance. If contaminated, replace the pad with a new one, and clean the disk.
- Use special tire levers and rim protectors to remove or assemble tires to protect the rim from being damaged.
- This section describes how to remove and maintain front wheels, front fork and steering system. For information on the front brake system, refer to section 10.
- Place a jack underneath the engine to support the 2-wheeled vehicle.

SPECIFICATIONS

ITEM		STANDARD VALUE	SERVICE LIMIT
FRONT AXLE DEFLECTION		-	0.2mm
FRONT WHEEL WOBBLES	RADICAL	-	2.0mm
	AXIAL	-	2.0mm
FRONT FORK PIPE DEFLECTION		-	0.2mm
FRONT FORK OIL LEVEL		85cc	-
FORK SPRING FREE LENGTH		266.3mm	258.3mm
REBOUND SPRING FREE LENGTH		21.2mm	20.6mm

12

TORQUE VALUES

STEERING STEM NUT	6~8kgf · m
STEERING TOP THREAD	0.15~0.25kgf · m
BOTTOM BRIDE	7.0~8.0kgf · m
FRONT BRAKE DISK BOLT	4.0~4.5kgf · m
REAR BRAKE DISK BOLT	4.0~4.5kgf · m
FRONT AXLE NUT	5.0~7.0kgf · m
REAR AXLE NUT	5.0~7.0kgf · m
FORK SETTING BOLT	1.5~2.5kgf · m
FORK TUBE CAP BOLT	1.5~3.0kgf · m

TROUBLESHOOTING

Hard steering

- Steering bearing adjustment nut too tight.
- Faulty steering stem bearings.
- Damaged steering stem bearings.
- Insufficient tire pressure.

Steers to one side or does not track straight

- Unevenly adjusted right and left shock absorbers.
- Bent front forks.
- Bent front axle : wheel installed incorrectly.

Front wheel wobbling

- Bent rim.
- Worn front wheel bearings.
- Faulty tire.
- Axle nut not tightened properly.
- Wheel out of balance.

Soft suspension

- Weak fork springs.
- Insufficient fluid in front forks.

Hard suspension

- Incorrect fluid weight in front forks.
- Front fork air pressure incorrect.
- Bent fork tubes.
- Clogged fluid passage.
- Clogged anti-dive orifice.

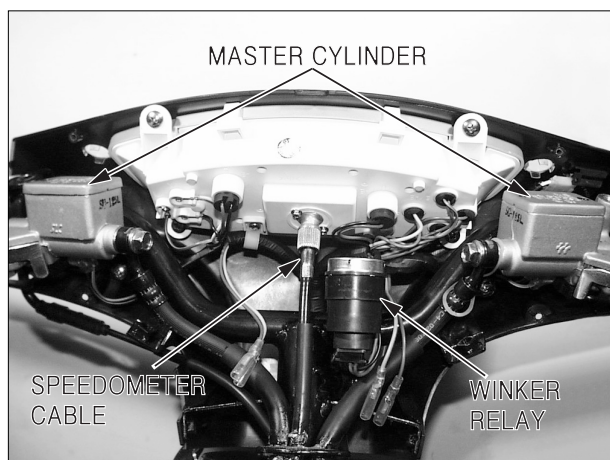
Front suspension noise

- Worn slider or guide bushings.
- Insufficient fluid in forks.
- Loose front fork fasteners.
- Lack of grease in speedometer gear box.

STEERING HANDLE

REMOVAL

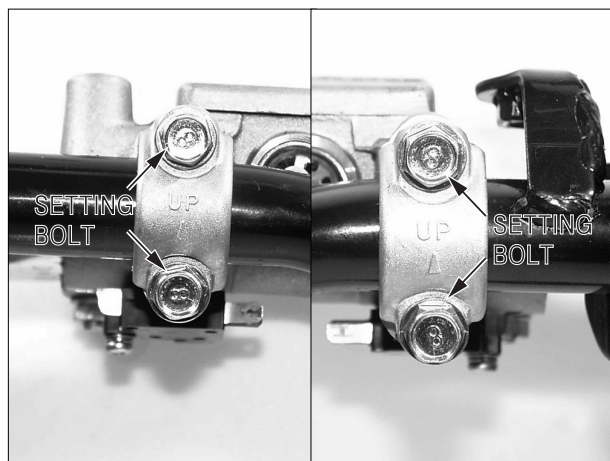
- Remove the following parts.
 - Back mirror
 - Front cover (⇒4-3)
 - Wind screen (⇒4-10)
 - Front handle cover (⇒4-10)
 - Remove the speedometer cable from the speedometer.
 - Rear handle cover (⇒4-10)
- Loosen the front master cylinder holder bolts, remove the front master cylinder.
- Loosen the rear master cylinder holder bolts, remove the rear master cylinder.
- Loosen the throttle housing fixing screw, remove the upper / under housing.
- Remove the throttle cable from the RH. grip, and remove the RH. grip from the handlebar.
- Remove the winker relay from the steering handle.



- Remove the front top cover.
- Remove the front / rear brake hose, speedometer cable, throttle cable from the handle cable guide.
- Loosen the handle setting U-nut, remove the handle setting collar and flange bolt.
- Remove the steering handle from the steering stem.

CAUTION

- When removing the rear handle cover, removal must be performed with the rear handle cover and the speedometer installed.
- Support master cylinder properly to prevent brake fluid from leaking.
- If the master cylinder is dropped upside down, air may enter the hydraulic system. Fix it to the vehicle while maintaining the correct assembled location.



INSTALLATION

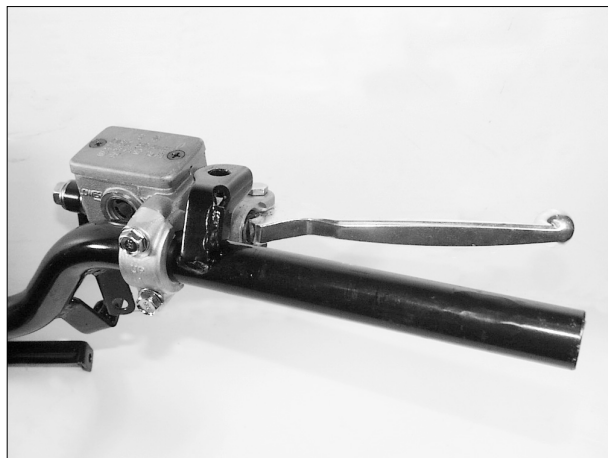
- Install the steering handle to the steering stem.
- Install the handle setting flange bolt, U-nut, handle setting collar.

TORQUE VALUE : 5.5-6.5 kgf · m



FRONT WHEEL/FRONT FORK/STEERING

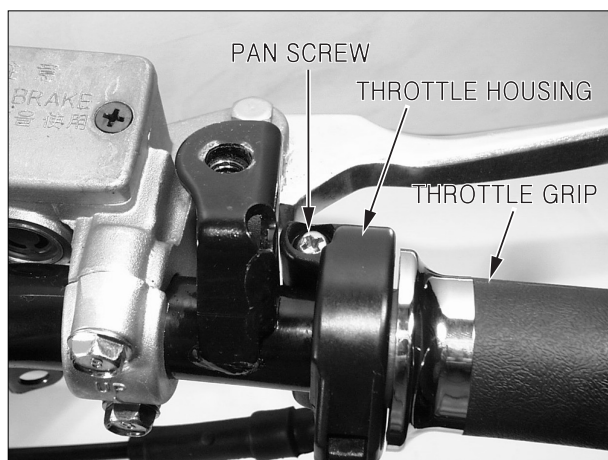
- Clean the throttle grip sliding surface.
- Apply grease to the throttle grip sliding surface and install the throttle grip.



- Apply grease to the throttle cable ends and connect the throttle cable to the groove of the grip.
- Tighten the pan screw after assembling the under and upper throttle housings.

NOTE

- Check that the throttle grip moves smoothly.
- Adjust the throttle grip free play. (⇒3-4)

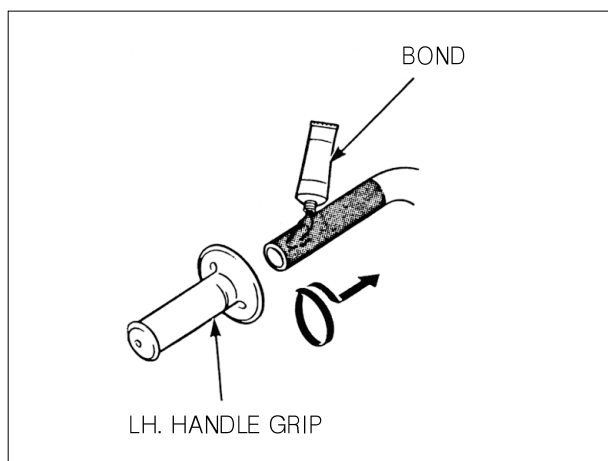


- Apply DAELIM Bond A to the inside surface of the grip and to the clean surface of the left handle bar. Wait 3~6 minutes and install the grip.

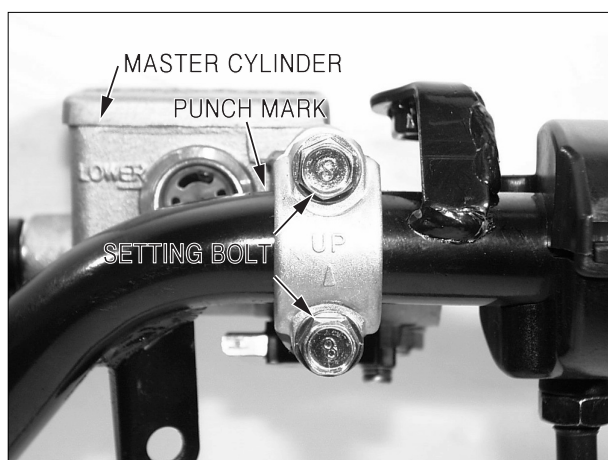
(Bond A :ROYAL BOND 1300)

NOTE

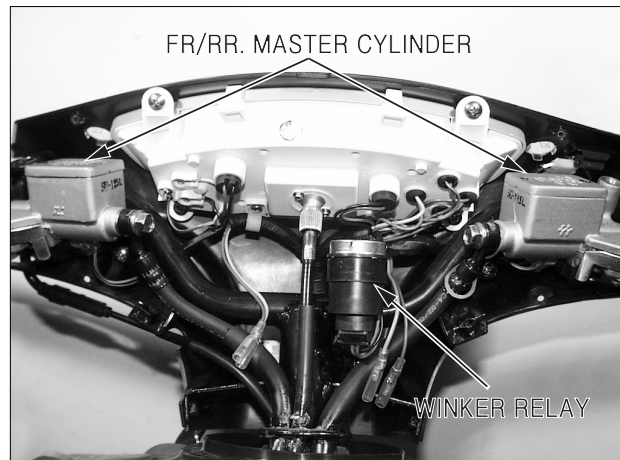
- Clean the bonding surface to avoid oil, grease or gasoline from attaching.
- Leave it for minimum 1 hour until the bond is dried.
- Use the bond according to the bond manual enclosed and install the grip while rotating it before the bond is dried completely.



- Install the front / rear brake master cylinders by aligning the punch mark on the handlebar with the master cylinder and set the master cylinder holder with the "UP" mark facing up or punch mark facing forward or up.



- Install the winker relay.
- Install the front / rear brake hose, speedometer cable, throttle cable to the handle cable guide.
- Install the rear handle cover. (⇒4-10)
- Install the front top cover.
- Install the speedometer cable and winker relay stop switch wiring



- Connect the RH. / LH. winker wiring.

NOTE

- Check to see if the cylinder is passing each cable and wire harness directly and make sure that there is any interference by rotating the handle to the right and left.



- Install the front cover. (⇒4-3)
- Install the back mirror.



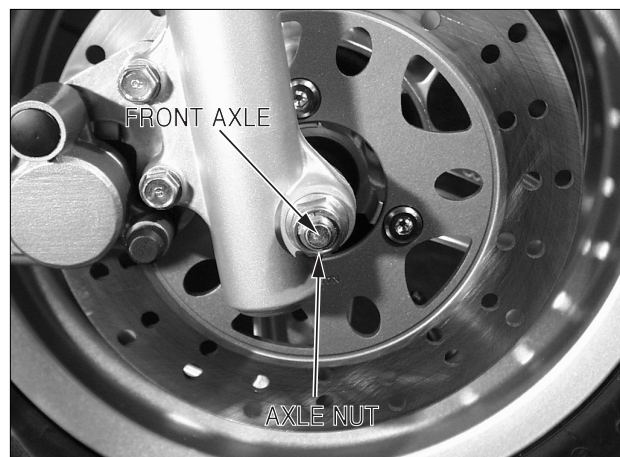
FRONT WHEEL

REMOVAL

- Loosen the axle nut. Support the vehicle securely under the engine to raise the front wheel.
- Loosen the oval screw securing the speedometer gear box, remove the speedometer cable.
- Remove the axle nut, front axle, front wheel.

NOTE

- Do not operate brake lever after the front wheel is removed.



FRONT WHEEL/Front FORK/STEERING

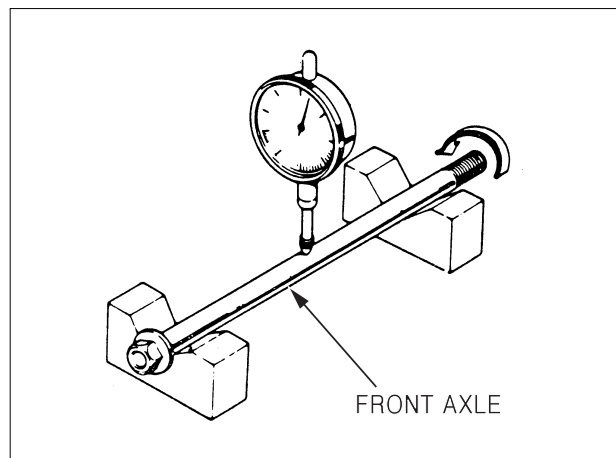
FRONT WHEEL INSPECTION

- Check the front axle for deflection. Place the front axle on a V-block, and measure deflection with a dial gauge.

SERVICE LIMIT : 0.2mm

- Place the front wheel on an inspection stand. Slowly turn the wheel, and check the rim for wobbles with a dial gauge.

**SERVICE LIMIT : Radial 2.0mm
Axial 2.0mm**

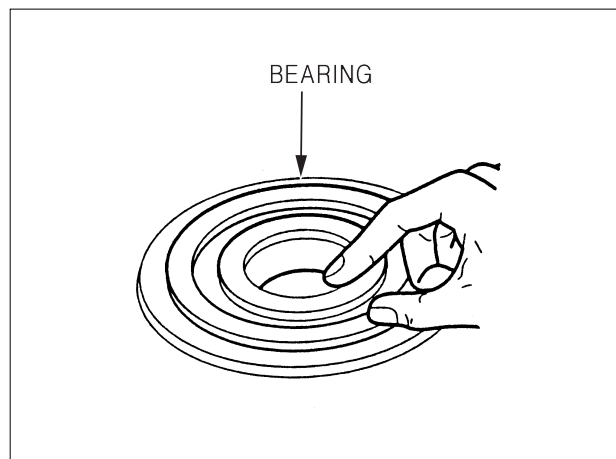


Bearing Inspection

- Manually turn the bearing inner race, and replace if it makes noise or is worn. Check if the bearing outer race is accurately fitted into the wheel hub, and replace worn ones.

NOTE

- Replace bearings in pairs (left and right set).



FRONT WHEEL DISASSEMBLY

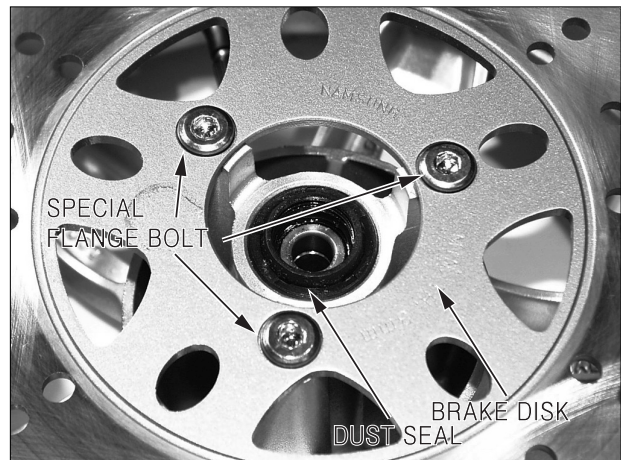
- Remove the speedometer gear box, dust seal, and speedometer gear retainer.



- Remove the front brake collar A.



- Remove the dust seal and brake disk.
- Check the disk for defects. (⇒14-11)



WHEEL BEARING REPLACEMENT

- Install the bearing remover head and the remover shaft on the wheel, and remove the bearing and distance collar.

NOTE

- Always replace bearings in pairs, and never use old bearings.

TOOLS : BEARING REMOVER HEAD BEARING REMOVER

- Apply sufficient amount of grease to the bearing.
- Insert the right bearing with its seal surface facing outside.
- Do not tilt the bearing. Insert accurately.
- Upon assembling the distance collar, insert the left bearing with its seal surface facing outside.

TOOLS : DRIVER HANDLE A DRIVER PILOT OUTER DRIVER

CAUTION

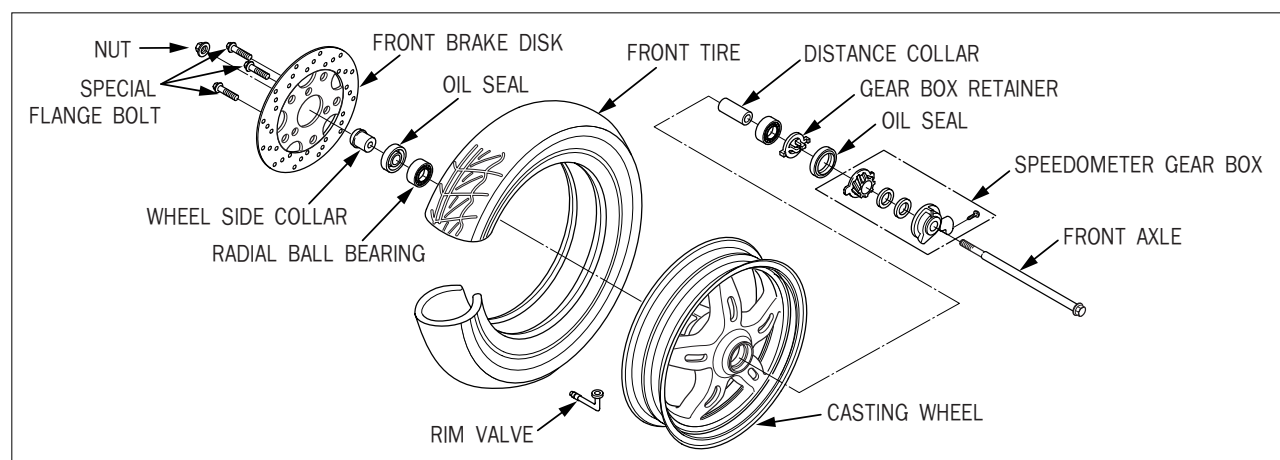
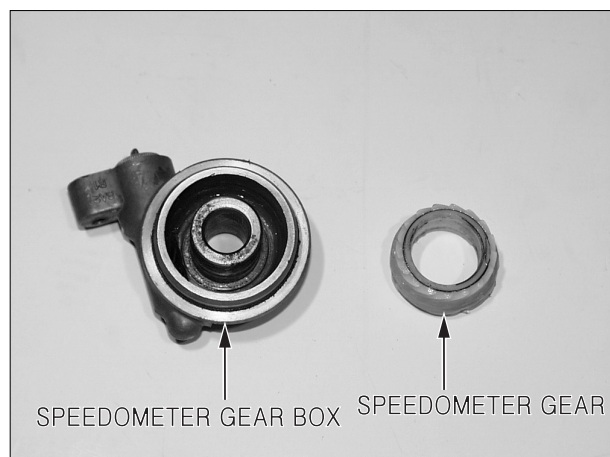
- The bearing inserted in the last must be inserted until it contacts with the distance collar.
- Excessively inserted bearing can cause damage the opposite side bearing.



FRONT WHEEL/FRONT FORK/STEERING

SPEEDOMETER GEAR REPLACEMENT

- Remove the speedometer gear and washer from the speedometer gear box.
- Check the gear for wear or damage.
- Install the washer.
- Apply grease to the speedometer gear prior to assembling.



FRONT WHEEL ASSEMBLY

- Apply grease to the right side dust seal rim.
- Install the right side dust seal.
- Install the brake disk.
- Install disk bolts.

TORQUE VALUE : 4.0~4.5kgf · m



- Install the RH. side collar.



- Align the wheel hub tangs with the slots of the speedometer gear retainer, and assemble the speedometer gear box seal.



- Apply grease to the dust seal rim.
- Install the dust seal, and align the tangs of the speedometer gear retainer with the gear groove to assemble the speedometer gear box.



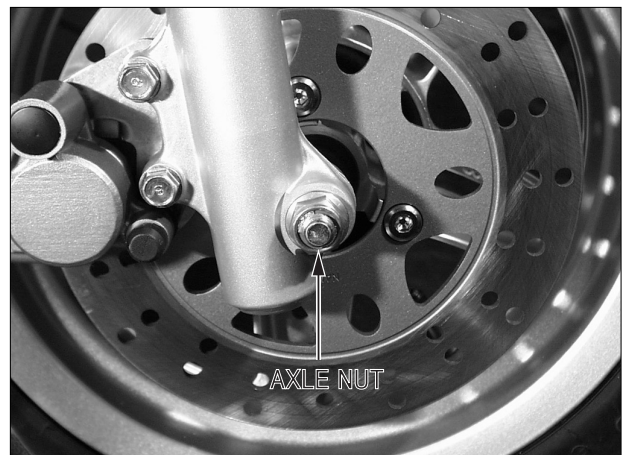
FRONT WHEEL INSTALLATION

- Insert the front wheel between the front forks.
- Insert the disk, taking precautions not to damage the pad, and assemble the wheel.
- Align the slots of the speedometer gear with the tangs of the left fork slider.
- Insert the front axle into the speedometer gear box and the wheel hub.



- Install the axle nut.
- Install the speedometer cable, and tighten with screws.
- Place the front wheel on the ground, and tighten the axle nut to the specified torque.

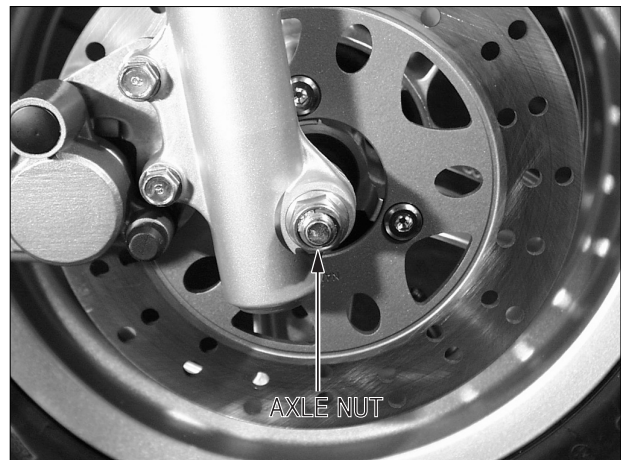
TORQUE VALUE : 5.0-7.0 kgf · m



FRONT FORK

REMOVAL

- Remove the following parts.
 - Front cover (⇒4-3)
 - Front brake caliper (⇒14-6)
 - Front fender (⇒4-3)
 - Front wheel (⇒12-5)

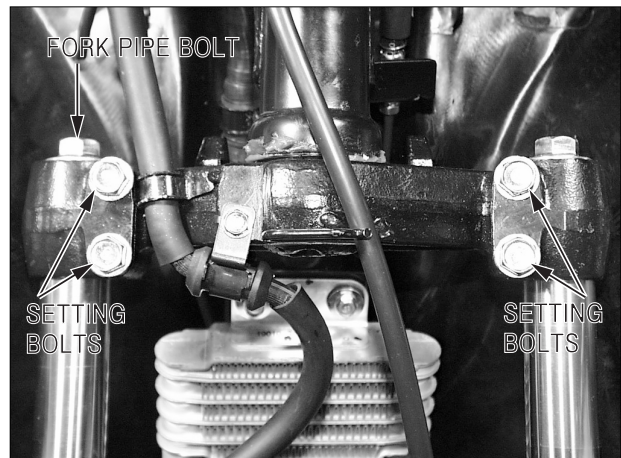


- When removing the front fork, loosen the fork pipe bolt lightly.

NOTE

- Support the vehicle securely under the engine not to turn over it.
- Loosen the fork pipe bolt, but do not remove it.

- Loosen the 4 setting bolts securing the RH./LH. front fork, remove the RH./LH. front fork.
- Loosen the washer bolt securing the RH. front fork.

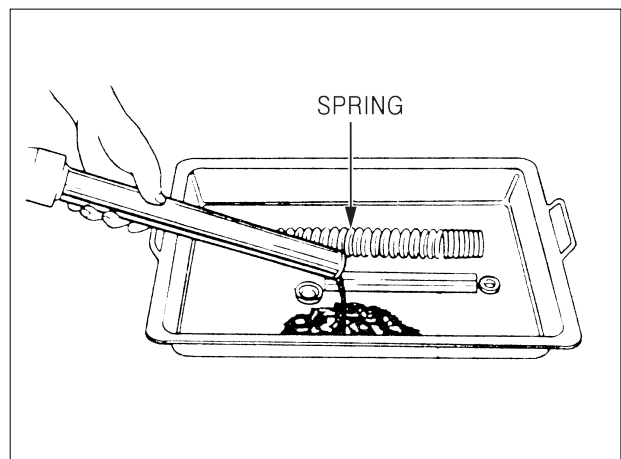


DISASSEMBLY

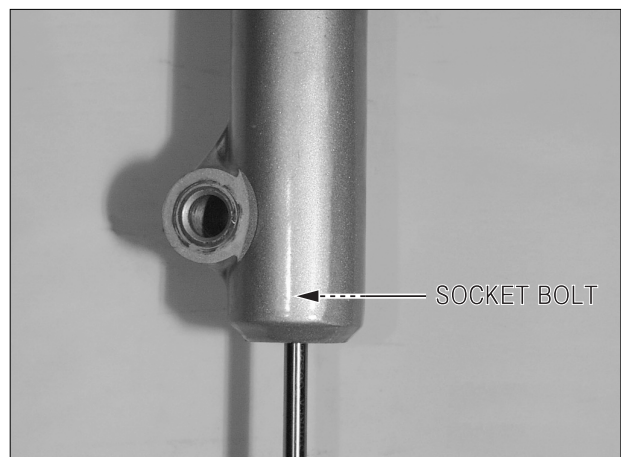
- Remove the fork pipe bolt.

NOTE

- If the screw is completely loosened, the fork pipe bolt may spring out by the force of the spring. Take due precautions.
- Remove the fork spring, and expand and release the fork pipe several times to drain fork oil.

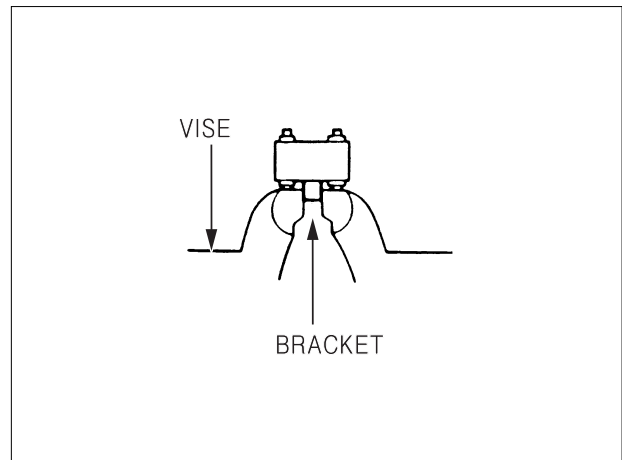


- Wrap the bottom case with a piece of cloth, and remove the socket bolt.

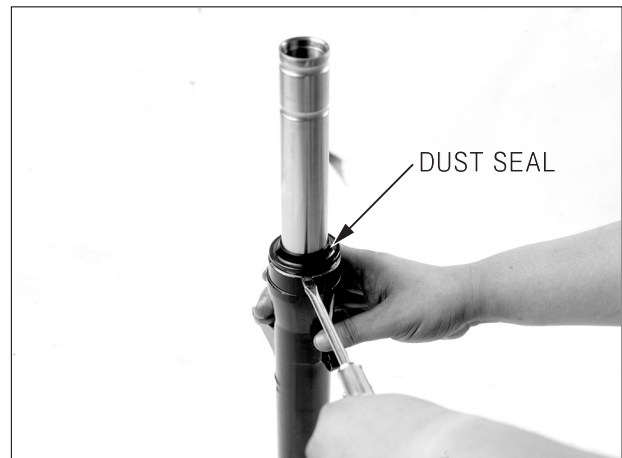


NOTE

- If the socket bolt turns idle but cannot be removed, temporarily assemble the spring and the fork tube cap bolt first.
- Hold the bottom case firmly with a vise, taking precautions not to distort or damage it.



- Remove the dust seal.



- Remove the oil seal stop ring.



- Remove the oil seal.

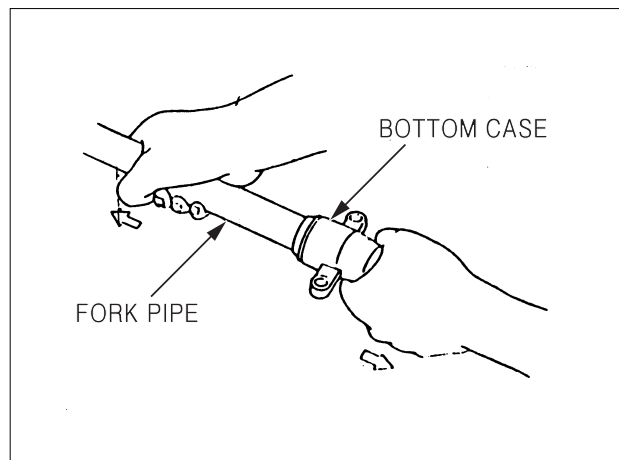
NOTE

- Take precautions not to damage the interior and exterior rim of the bottom case.



FRONT WHEEL/FRONT FORK/STEERING

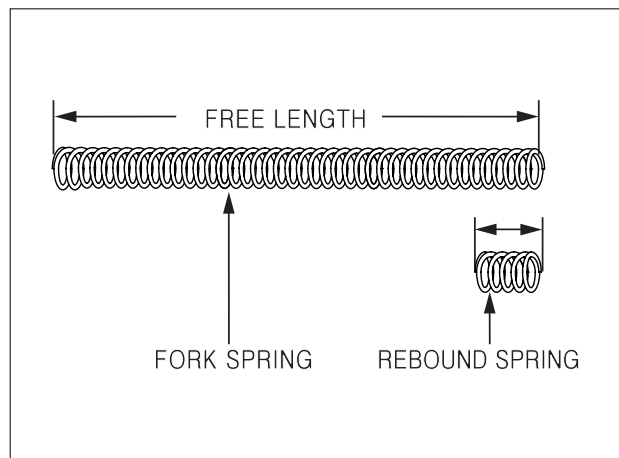
- Remove the fork pipe from the bottom case.
- Remove the piston and rebound spring from the fork pipe.



FRONT FORK INSPECTION

- Place the fork spring on a level place, and measure the free length.
- If the free length deviates from the service limit, replace the springs with new ones.
- Check components for damage or abnormal wear. Replace defective parts with new ones.

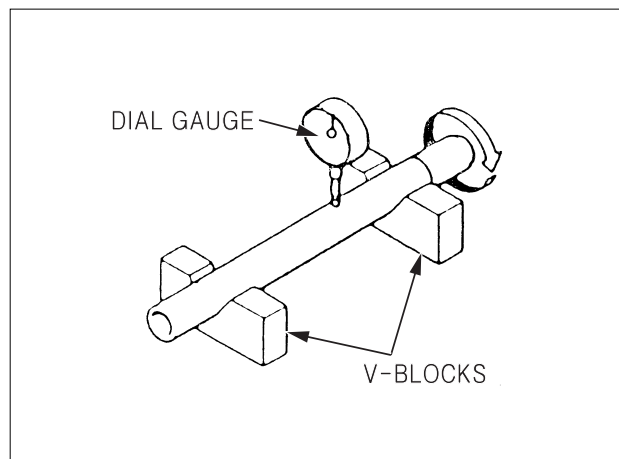
SERVICE LIMIT : FORK SPRING : 258.3mm
REBOUND SPRING : 21.2mm



- Set the fork pipe on a V-blocks, and measure fork pipe deflection by rotating with a dial gauge.

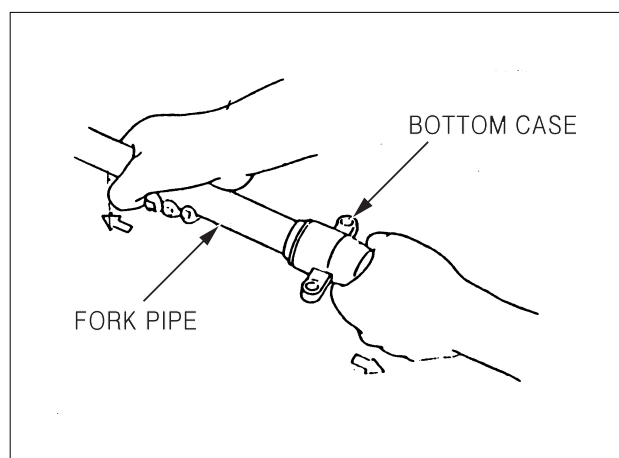
SERVICE LIMIT : Replace if the deflection is greater than 0.2mm

- Check the slider bush contact face.
- If the slider bush is extensively damaged, replace the bottom case.



FRONT FORK ASSEMBLY

- Wash parts with clean oil prior to assembling.
- Assemble the rebound spring and the fork piston to the fork pipe.
- Assemble the fork pipe to the bottom case.

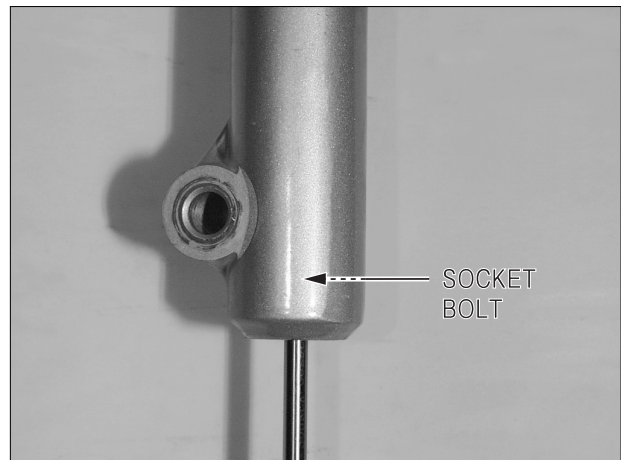


- Wrap the bottom case with a piece of cloth, and fix it to the vise.
- Apply screw locking agent to the socket bolt thread, and assemble the socket bolt to the fork piston.

TORQUE VALUE : 2.0kgf · m

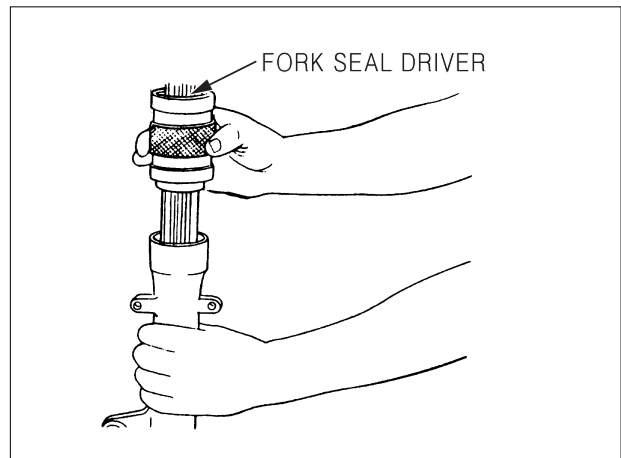
NOTE

- When a vise is used to hold the bottom case, do not insert the case itself but insert the bracket.



- Apply ATF to a new oil seal.
- Assemble the oil seal to the bottom case.
- Insert the oil seal with special tools until the attachment groove of the bottom case set ring is exposed.

**TOOLS : FORK SEAL DRIVER
FORK SEAL DRIVER BODY**



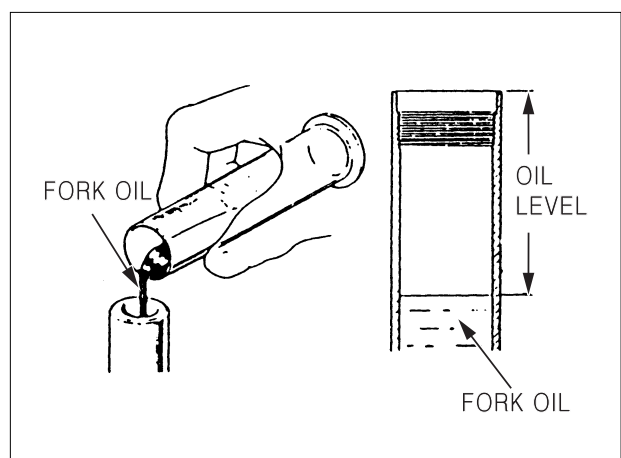
- Install the oil seal stop ring.
- Accurately assemble the oil seal stop ring to the bottom case.



- Install the dust seal.
- Fill a prescribed amount of automatic transmission fluid(ATF) into the fork pipe.

CAPACITY : 85cc

- Slowly press the fork tube 2-3 times to discharge air.

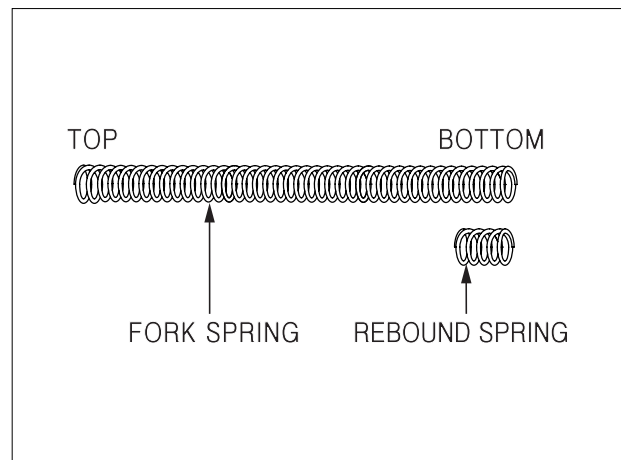


FRONT WHEEL/Front FORK/STEERING

- Assemble the springs to the fork pipe.

NOTE

- Install the spring with the smaller pitch side facing downward.



- Assemble the fork bolt to the fork pipe.

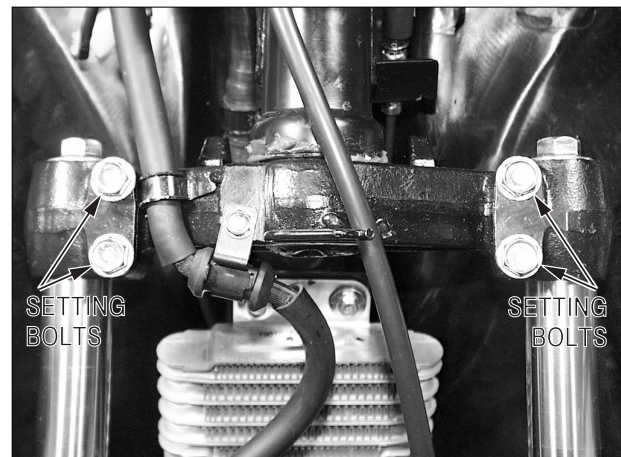


FRONT FORK INSTALLATION

- Install the front fork to the steering stem.
- Install the front fork setting bolts.

TORQUE VALUE : 7.5 kgf · m

- Install the brake hose clip A to the RH. front fork.



- Install the following parts.
 - Front wheel (⇒12-5)
 - Front brake caliper (⇒14-6)
 - Front fender (⇒4-3)
 - Front cover (⇒4-3)

STEERING STEM

REMOVAL

- Remove the following parts.
 - Back mirror
 - Front cover (⇒4-3)
 - Wind screen (⇒4-10)
 - Front handle cover (⇒4-10)
 - Rear handle cover (⇒4-10)
 - Steering handle (⇒12-3)
 - Front caliper (⇒14-6)
 - Front fender (⇒12-3)
 - Front wheel (⇒12-5)
 - Front fork (⇒12-10)
- Loosen the front brake hose clamp setting bolt securing the steering stem, remove the front brake hose from the brake hose guide on the steering stem.
- Remove the speedometer cable from the steering stem setting guide.

NOTE

- Be careful not to turn over the vehicle.



- Remove the steering stem nut using the steering stem nut socket.

TOOL : STEERING STEM NUT SOCKET

- Remove the steering top thread nut using the steering stem socket.

TOOL : STEERING STEM SOCKET



FRONT WHEEL/FRONT FORK/STEERING

- Remove the top cone race, upper ball assembly, steering stem.

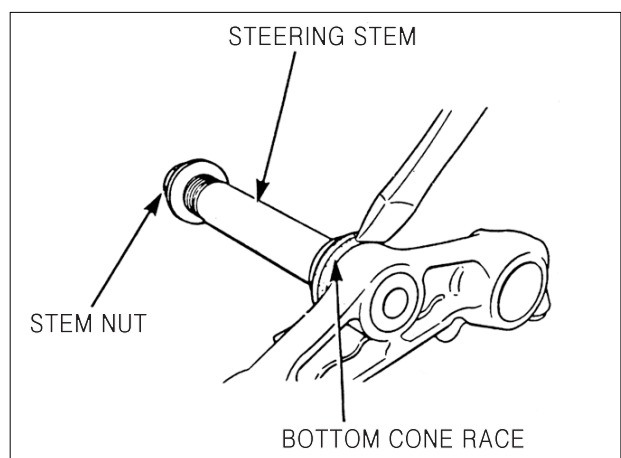
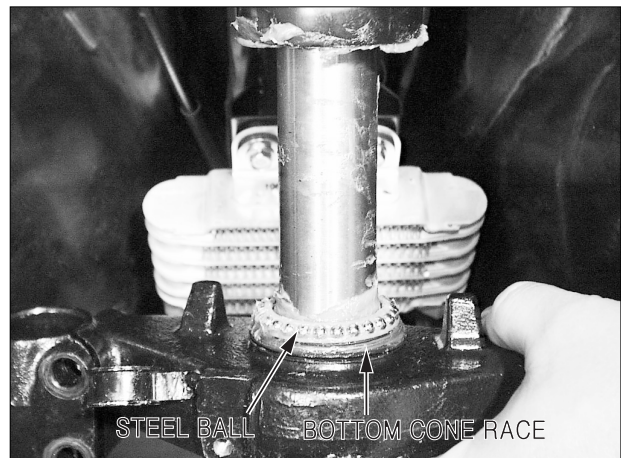
NOTE

- Place a shop towel under the steering stem to catch the steel balls.

- Check the upper ball assembly, top cone race for damage or abnormal wear and replace as necessary.

- Remove the under ball assembly from the steering stem.

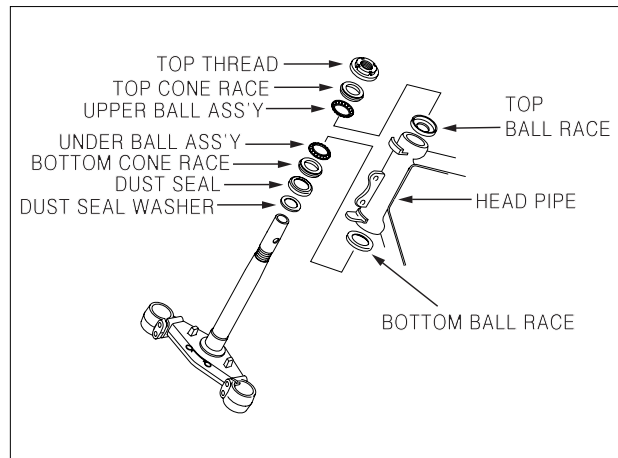
- Temporarily install the steering stem nut onto the steering stem to prevent damage to the threads.
- Remove the steering bottom cone race.
- Remove the steering head dust seal.
- Remove the steering head dust seal washer.



- Remove the steering top ball race from the head pipe.
- Remove the steering bottom ball race from the steering stem.

NOTE

- Check all of the races and balls for damage or abnormal wear and replace as necessary.
- If the vehicle has been involved in an accident, examine the area around the steering head for crack.



STEERING STEM INSTALLATION

- Install the steering head dust seal washer and dust seal onto the steering stem.
- Press in the steering bottom cone race using the steering stem driver.
- Apply grease to the bottom cone race. Install the under ball assembly onto the bottom cone race making sure you have the correct amount.

TOOL : STEERING STEM DRIVER

- Install the steering bottom and top ball races into the head pipe.
- Insert the steering stem into the head pipe.
- Install the steering upper ball assembly.
- Hold the steering stem in the place and install the top cone race and steering top thread.
- Tighten the top thread to the proper torque.
- Move the steering stem right and left, lock-to-lock.
- Make sure that the steering stem moves smoothly, without play or binding; then loosen the top thread.



- Retighten the top thread to specified torque, then loosen the top thread $\frac{1}{8}$ turn.

TORQUE VALUE : 0.15~0.25 kgf · m

- Recheck that the steering stem moves smoothly without play or binding.
- Tighten the steering stem lock nut temporarily.

TOOLS : STEERING STEM LOCK NUT SOCKET STEERING STEM SOCKET



FRONT WHEEL/Front FORK/STEERING

- Temporarily install the RH./LH. front fork, and tighten the steering stem lock nut to the specified torque.

TORQUE VALUE : 6~8 kgf · m

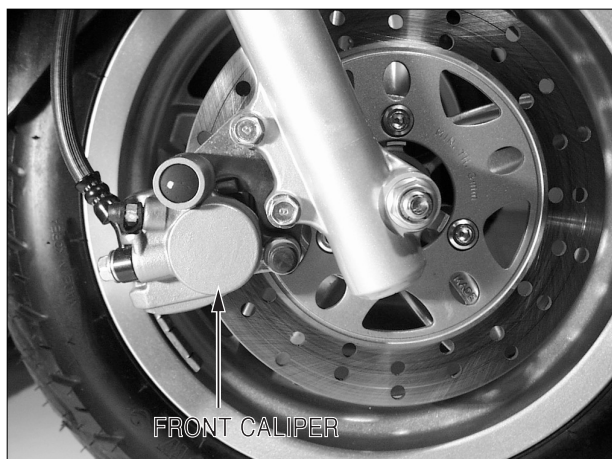
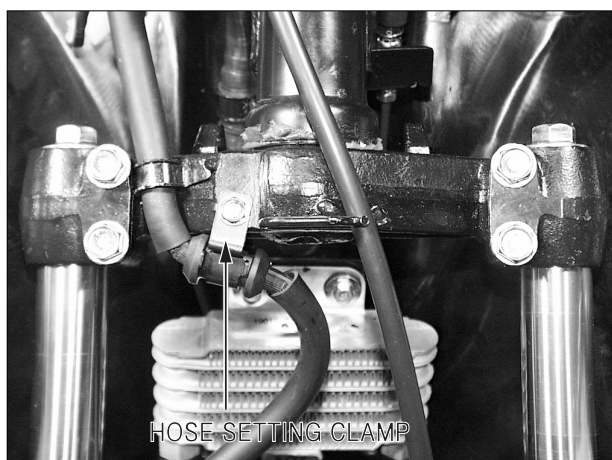
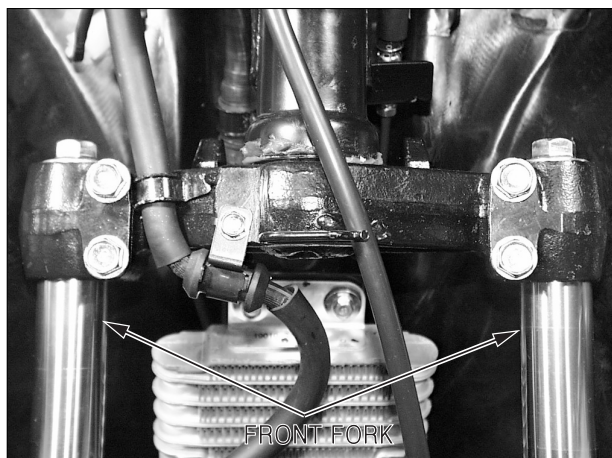
- Install the brake hose clamp to the steering stem, and clamp the brake hose.
- Install the front fork.

TORQUE VALUE : 7.0 kgf · m

- Install the following parts.
 - Front wheel (⇒12-9)
 - Front fender (⇒4-3)
 - Front caliper (⇒14-6)
 - Steering handle (⇒12-3)
 - Rear handle cover (⇒4-10)
 - Front handle cover (⇒4-10)
 - Wind screen (⇒4-10)
 - Front cover (⇒4-3)
 - Back mirror

NOTE

- Check the cables and wiring for interference.



13. REAR WHEEL/BRAKE/SUSPENSION/REAR SWING ARM

SERVICE INFORMATION . . .	13-1	PARKING BRAKE	13-5
TROUBLESHOOTING	13-2	REAR CUSHION	13-7
REAR WHEEL	13-3	REAR SWING ARM	13-8

SERVICE INFORMATION

GENERAL SAFETY

- If the brake drum or lining is contaminated with oil, braking power will be lost. If contaminated with oil, clean the brake drum, and replace the brake shoe.
- Inhaled asbestos fibers have been found to cause respiratory disease and cancer. Never use an air hose or dry brush to clean brake assemblies. Use a brake cleaner, designed to minimize the hazard caused by airborne asbestos fibers.

SPECIFICATIONS

ITEM		STANDARD VALUE	SERVICE LIMIT
AXLE SHAFT DEFLECTION		-	0.2 mm
REAR WHEEL RIM WOBBLES	RADICAL	-	2.0 mm
	AXIAL	-	2.0 mm
REAR BRAKE DRUM INNER DIAMETER		110.0 mm	111.0 mm
REAR BRAKE LINING THICKNESS		4.0 mm	2.0 mm
REAR CUSHION SPRING FREE LENGTH		250.8 mm	243.3 mm

TORQUE VALUES :

REAR CUSHION UPPER BOLT	3.5~4.5kgf · m
REAR CUSHION LOWER BOLT	3.5~4.5kgf · m
REAR CUSHION ROD LOCK NUT	3.0~4.5kgf · m
REAR AXLE NUT	6.0~8.0kgf · m

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

REAR WHEEL

REMOVAL

- Support the motorcycle on the main stand.
- Loosen the parking brake rod adjust nut B, and remove the parking brake cable.
- Remove the brake arm joint B from the rear parking brake arm.
- Remove the muffler. (⇒4-12)
- Remove the rear brake caliper assembly from the rear swing arm.



- Loosen the rear axle nut.



- Remove the rear swing arm. (⇒13-8)
- Remove the rear wheel inside collar.
- Remove the rear wheel mudguard. (⇒4-11)
- Remove the rear wheel.



- Loosen the 3 rear brake disk bolts, remove the rear brake disk from the rear wheel.



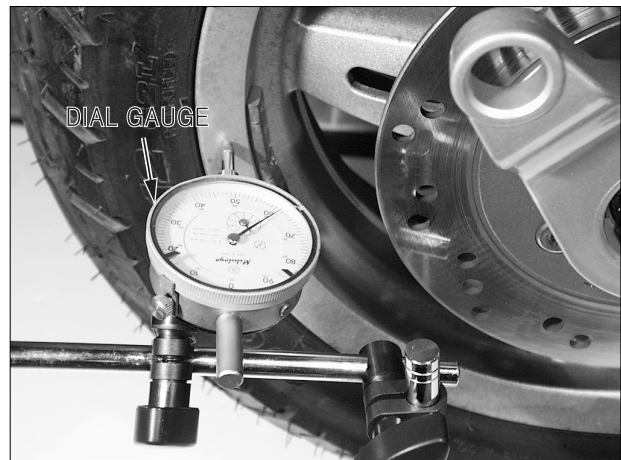
REAR WHEEL INSPECTION

- Check the rim for wobbles by rotating the wheel.

SERVICE LIMIT : Radical 2.0mm

Axial 2.0mm

TOOL : DIAL GAUGE



REAR WHEEL INSTALLATION

- Install the rear brake disk.
- Insert the rear wheel over the final shaft.



- Install the rear wheel inside collar.
- Install the rear swing arm. (⇒13-8)
- Tighten the rear axle U-nut to the specified torque.

TORQUE VALUE : 6.0-8.0 kgf · m

- Install the rear brake caliper assembly to the rear swing arm.
- Install the EX. muffler. (⇒4-12)
- Install the rear wheel mudguard. (⇒4-11)



- Insert the brake arm joint B into the rear parking brake arm, and connect the brake arm joint B to the parking brake cable and tighten the adjust nut B.

NOTE

- After installing the parking brake, be sure to adjust the parking brake free play.



PARKING BRAKE

REMOVAL

- Remove the EX. muffler. (⇒4-12)
- Remove the rear caliper assembly. (⇒14-6)
- Remove the rear swing arm. (⇒13-8)



- Remove the rear wheel. (⇒13-3)



INSPECTION

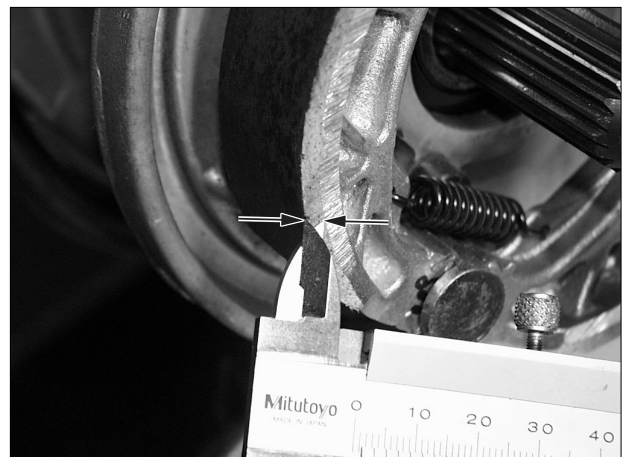
- Measure the brake drum for inner diameter

SERVICE LIMIT : 111mm



- Measure the brake lining for thickness.

SERVICE LIMIT : 2.0mm



REAR WHEEL/BRAKE/SUSPENSION/REAR SWING ARM

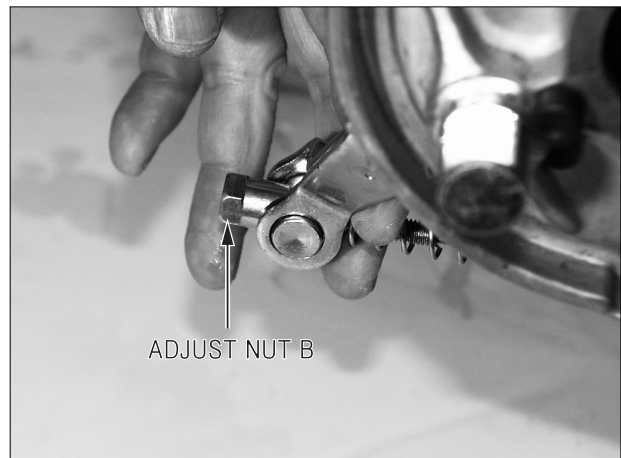
BRAKE SHOE DISASSEMBLY

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



BRAKE CAM DISASSEMBLY

- Loosen the adjust nut B, remove the brake arm joint B.
- After removing the brake arm spring, loosen the brake arm fixing bolt.
- Remove the rear brake arm, rear brake indicator, dust seal.
- Remove the rear brake cam.



PARKING 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.

NOTE

- 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 wheel. (⇒13-3)

NOTE

- Check the brake for smooth operation.
- After installing the parking brake, be sure to adjust the parking brake free play.

- Install the adjust nut B and brake arm joint B.



REAR CUSHION

REMOVAL

- Remove the luggage box. (⇒4-4)
- Loosen the top and bottom rear cushion setting bolts.

NOTE

- 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.

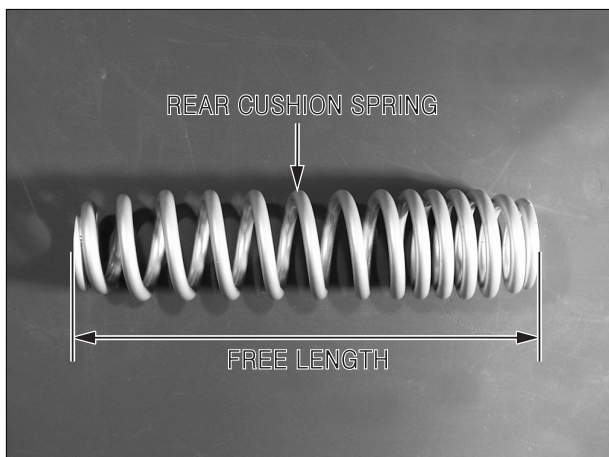
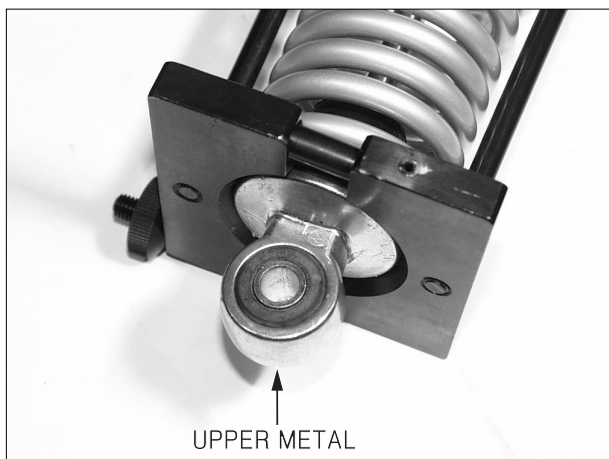
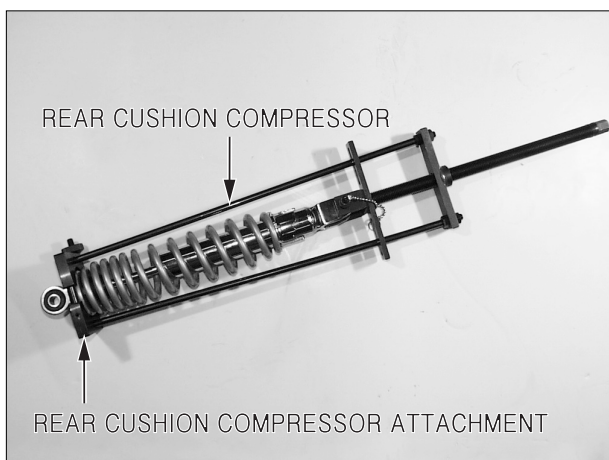
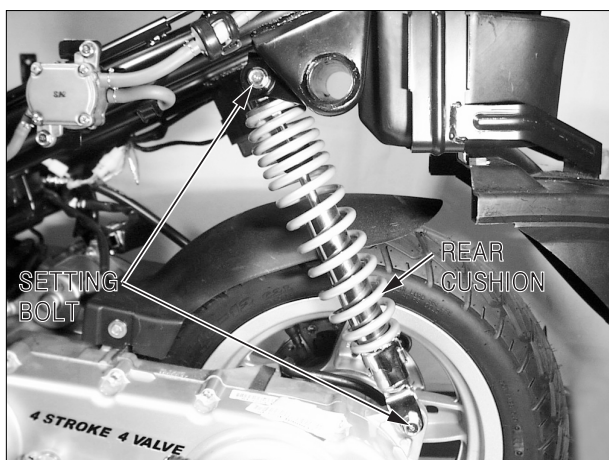
**TOOLS : REAR CHUSION COMPRESSOR ATTACHMENT
REAR CHUSION COMPRESSOR**

- Fix the upper metal, and loosen the hex nut.
- Remove the upper metal.
- Remove the hex nut, stopper rubber, spring from the rear damper component.

INSPECTION

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

SERVICE LIMIT : 243.3mm



REAR WHEEL/BRAKE/SUSPENSION/REAR SWING ARM

REAR CUSHION INSTALLATION

- Install the spring, stopper rubber to the damper component.

NOTE

- Install the spring with its narrow pitch side facing upward.

- Apply thread locking agent to the hex nut, and install the rear cushion compressor attachment on the damper rod.
- Fix the upper metal, and tighten the hex nut.

TORQUE VALUE : 3.0~4.5kgf · m

TOOLS : REAR CUSHION COMPRESSOR

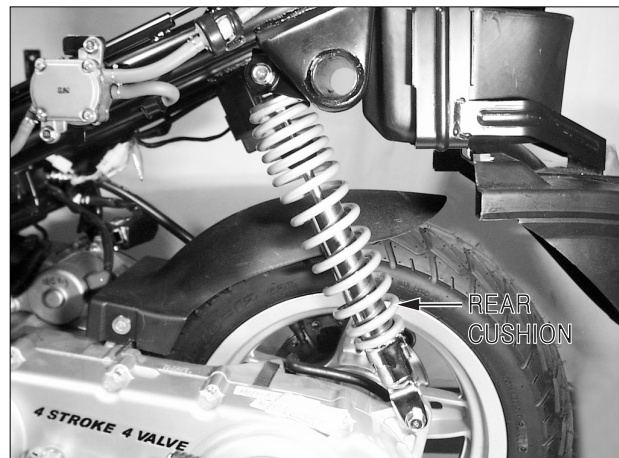
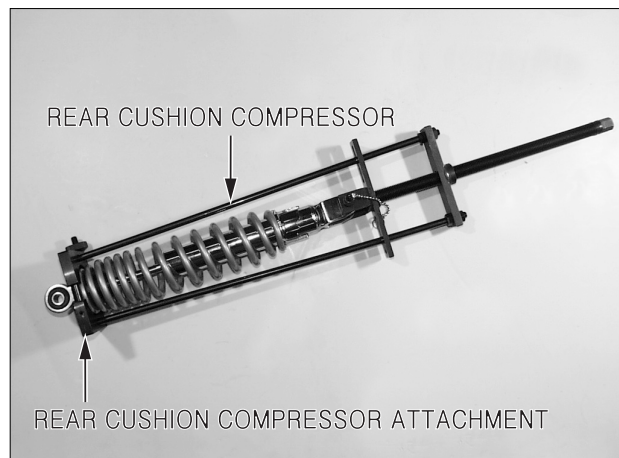
REAR CUSHION COMPRESSOR ATTACHMENT

- Install the rear cushion.
- Tighten the top and bottom of the cushion with bolts.

TORQUE VALUE : UPPER SIDE 3.5~4.5kgf · m

LOWER SIDE 3.5~4.5kgf · m

- Install the luggage box. (⇒4-4)



REAR SWING ARM

REMOVAL

- Remove the EX. muffler. (⇒4-12)
- Remove the rear brake caliper. (⇒14-6)
- Loosen the flange bolt securing the RH. crank case cover.
- Loosen the rear axle U-nut.
- Remove the rear swing arm.



DISASSEMBLY

- Disassemble the rear wheel outside collar from the rear swing arm.
- Disassemble the oil seal (28 × 42 × 7) and radial ball bearing (6302UU).
- Install in the reverse order of removal.

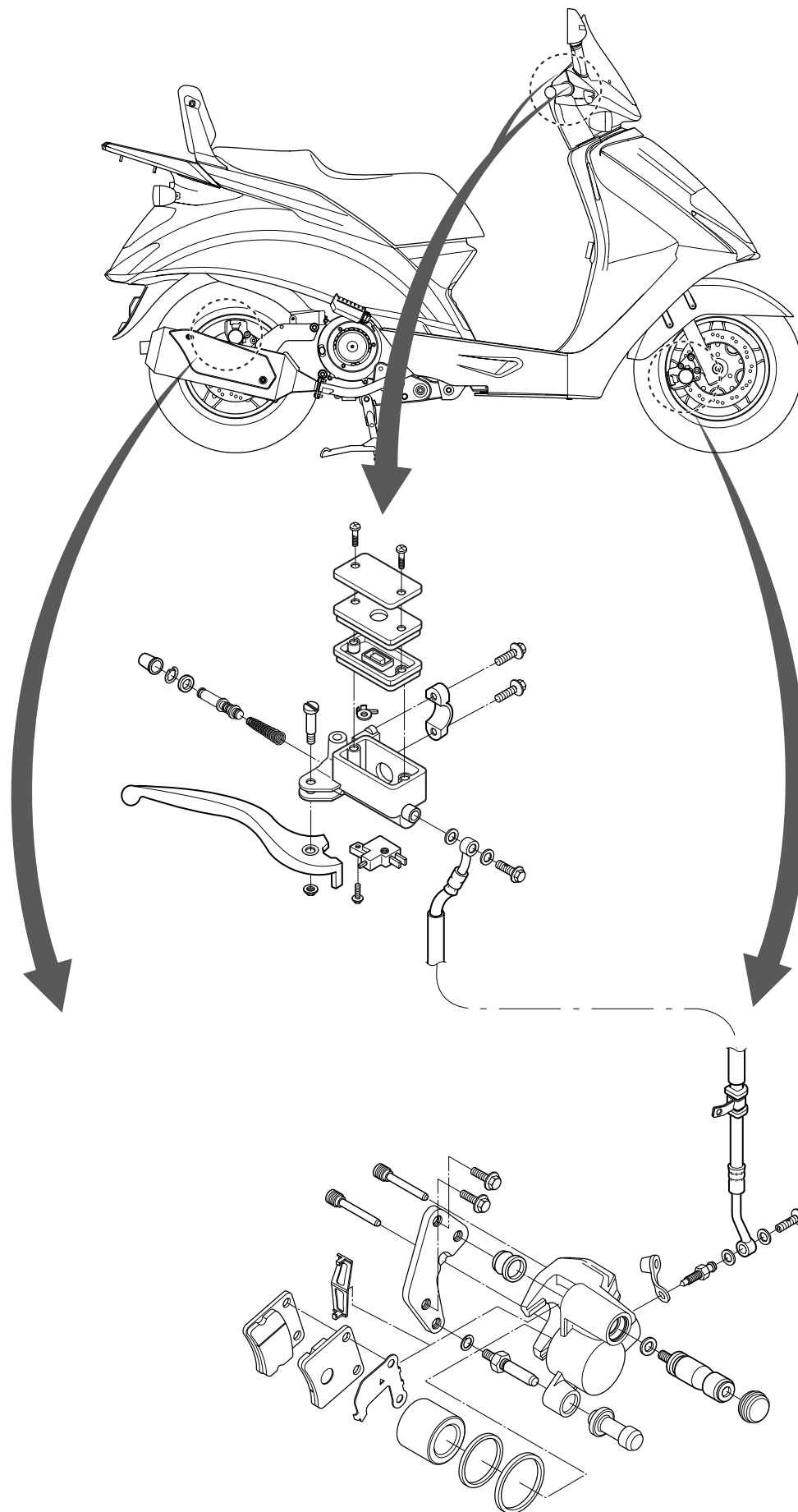
TORQUE VALUE

- REAR WHEEL AXLE NUT : 6.0~8.0 kgf · m



MEMO

BRAKE SYSTEM



14. BRAKE SYSTEM

SERVICE INFORMATION . . . 14-1

TROUBLESHOOTING . . . 14-1

BRAKE FLUID/BLEEDING . . 14-2

BRAKE PAD REPLACEMENT . 14-4

BRAKE CALIPER 14-6

MASTER CYLINDER 14-8

BRAKE DISK INSPECTION . . 14-11

PARKING BRAKE 14-11

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

Brake lever / pedal soft or spongy

- Air bubbles in the hydraulic system.
- Leaking hydraulic system.
- Contaminated brake pad / disk .
- Worn caliper piston seal.
- Worn master cylinder piston seal.
- Worn brake pad.
- Contaminated caliper.
- Caliper not sliding properly.
- Worn brake pad / disk.
- Low fluid level.
- Clogged fluid passage.
- Warped / deformed brake disk.
- Sticking / worn caliper piston.
- Sticking / worn master cylinder piston.
- Worn brake disk.
- Contaminated master cylinder.
- Bent brake lever / pedal.

Brake lever / pedal hard

- Clogged / restricted brake system.
- Sticking / worn caliper piston.
- Caliper not sliding properly.
- Clogged / restricted fluid passage.
- Worn caliper piston seal.
- Sticking / worn master cylinder piston.
- Bent brake lever / pedal.

Brakes grab or pull to one side

- Contaminated brake pad / disk.
- Misaligned wheel.
- Clogged / restricted brake hose.
- Warped / deformed brake disk.
- Caliper not sliding properly.
- Clogged / restricted brake hose joint.

Brakes drag

- Contaminated brake pad / disk.
- Misaligned wheel.
- Worn brake pad / disk
- Warped / deformed brake disk.
- Caliper not sliding properly.
- Hydraulic system contaminated with dust.

BRAKE SYSTEM

BRAKE FLUID/BLEEDING

BRAKE FLUID CHANGE

CAUTION

- 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 wind screen. (⇒4-10)
- Remove the oil cup cap, diaphragm plate 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

<When the brake bleeder is available>

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

CAUTION

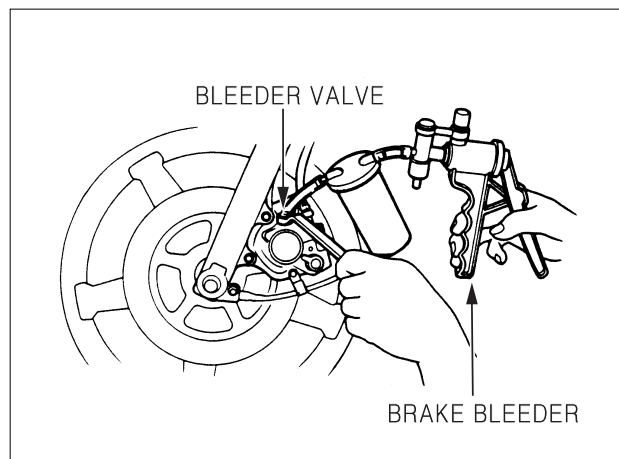
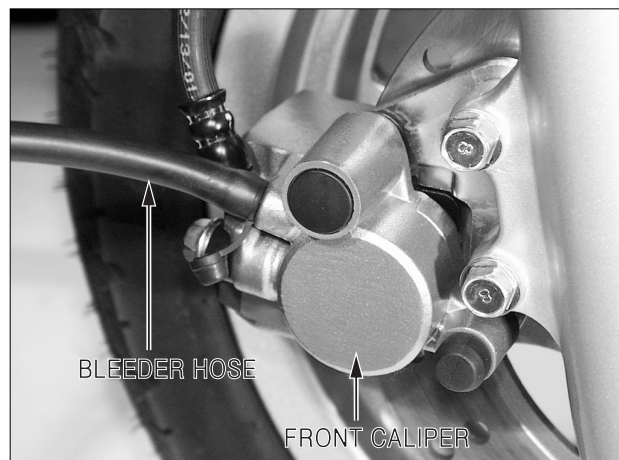
- To prevent chemical changed, do not use different types of brake fluid.

- 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.
- Add brake fluid.

NOTE

- Check the 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 procedures until no air bubbles appear in the bleeder hose.
- Squeeze the bleeder valve and operate the brake lever to check the ingress of air.



<When the brake bleeder is not available>

- Fill the brake fluid up to the upper limit line.
- Connect the transparent bleeder hose to the bleeder valve and place the other end of the hose in a container.

- ① Squeeze the brake lever, then open the bleeder valve 1/2 turn, and close the valve.

NOTE

- Do not release the brake lever until the bleeder valve has been closed.
- Check the brake fluid level often while bleeding the system to prevent air from being pumped into the system.

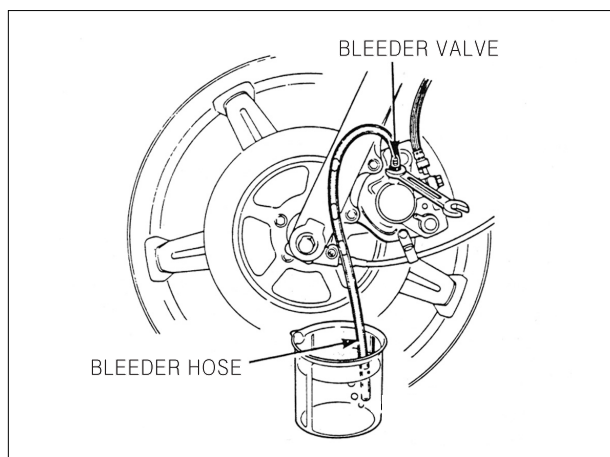
- ② Release the brake lever slowly and wait several seconds after it reaches the end of its travel.
- ③ Repeat the above steps ① and ② until bubbles cease to appear in the fluid at the end of the hose.

- 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.
- Tighten the bleeder valve.

TORQUE VALUE : 0.4–0.7 kgf · m

- Be sure that the brake fluid is up to the upper level of the master cylinder and refill if necessary
- Reinstall the diaphragm, diaphragm plate and oil cup cap.

TORQUE VALUE : 1.0 kgf · m



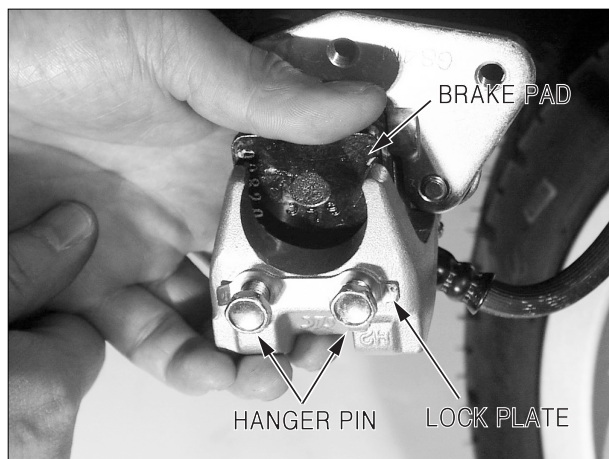
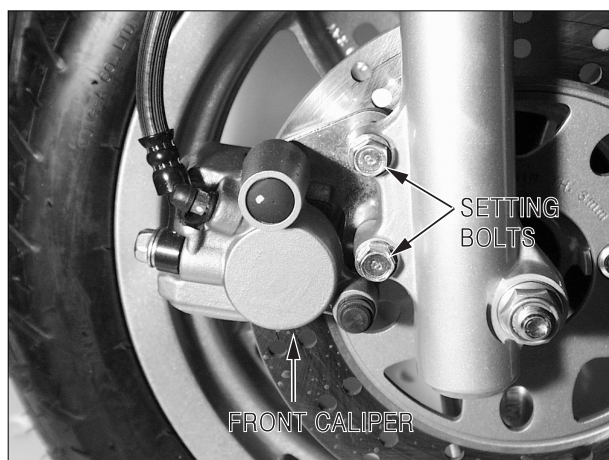
BRAKE PAD REPLACEMENT

FRONT BRAKE PAD

NOTE

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

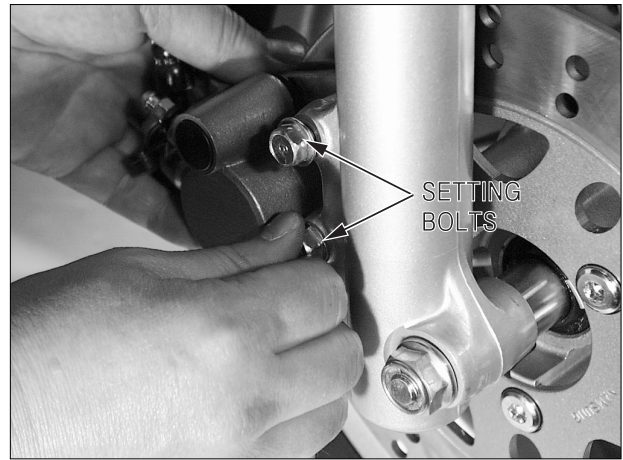
- Open the lock plate tangs, and loosen the hanger pin.
- Loosen the 2 front brake caliper setting bolts from the front fork.
- Remove the front caliper from the RH. front fork.
- To install a new brake pad into the brake, press the piston to return to the original position.
- Remove the hanger pin, lock plate, and brake pad.
- Verify that the pad spring is installed in specific position.



- Install a new brake pad, lock plate, and hanger pin.
- Bend the lock plate tangs, and fix the hanger pin.
- Install the brake caliper into the RH. front fork.

NOTE

- Be careful not to damage the brake pad.



REAR BRAKE PAD

NOTE

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

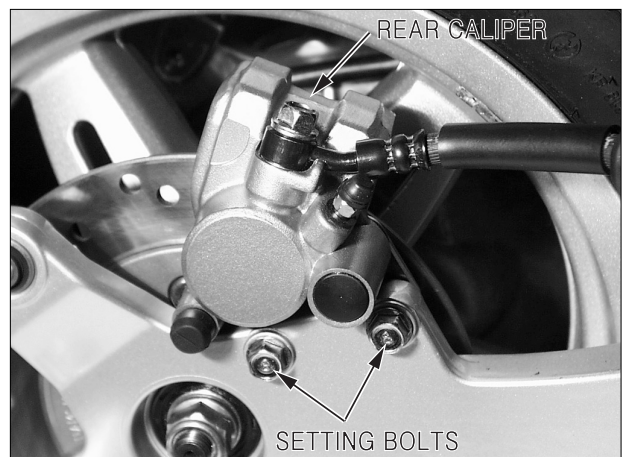
- Open the lock plate tangs, and loosen the pad pin bolt.



- Loosen the rear brake hose setting clamp bolt securing the EX. muffler.
- Remove the EX. muffler. (⇒4-12)
- Remove the rear brake caliper from the rear swing arm.
- To install a new brake pad into the brake, press the piston to return to the original position.
- Remove the hanger pin, lock plate, and brake pad.



- Verify that the pad spring is installed in specific position.
- Install a new brake pad, lock plate, and hanger pin.
- Install in the reverse order of removal.



BRAKE SYSTEM

BRAKE CALIPER

REMOVAL

Front brake caliper

- Remove the brake oil bolt, the brake hose and oil bolt washer from the brake caliper.
- Remove the caliper from the RH. front fork and remove the pad spring, hanger pin and brake pad.

Rear brake caliper

- Remove the brake oil bolt and the brake hose from the brake caliper.
- Remove the EX. muffler. (⇒4-12)
- Remove the brake caliper from the rear swing arm 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 LH. 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 a 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.

CAUTION

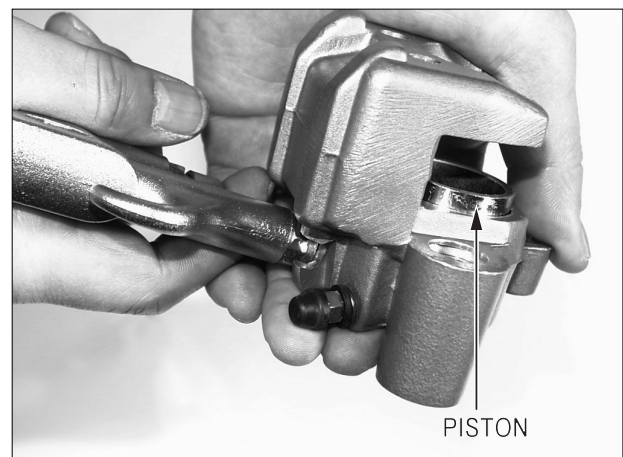
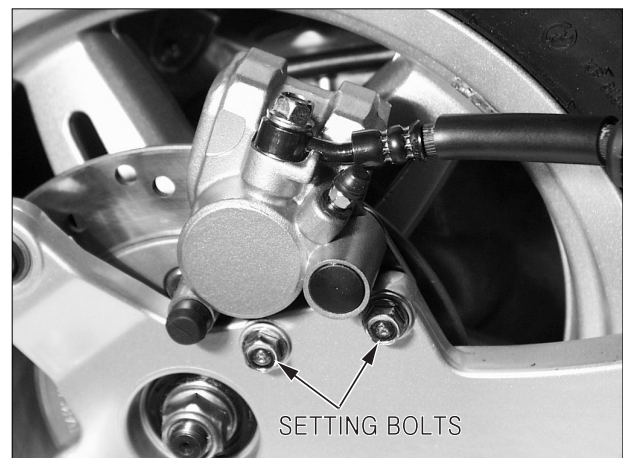
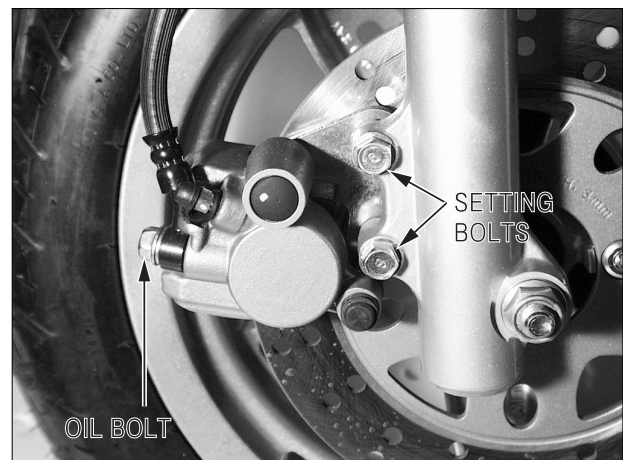
- Never use the high-pressure air or bring the air gun too close.
- Never touch the inside of the caliper

- Disassemble the piston seal and the dust seal

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

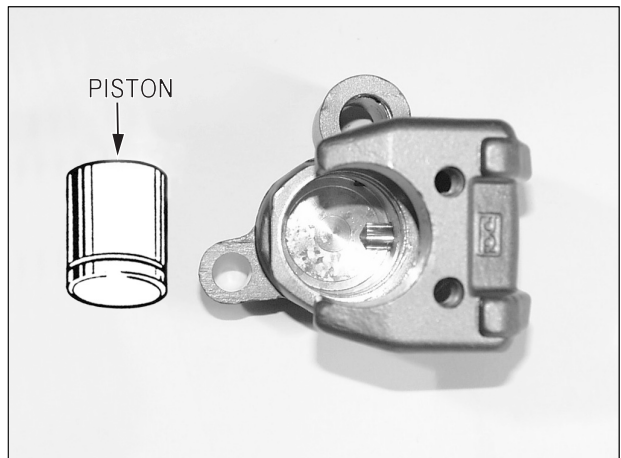
Caliper Cylinder

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



Caliper Piston

- Check the caliper piston outer diameter part for scratches or other damage.

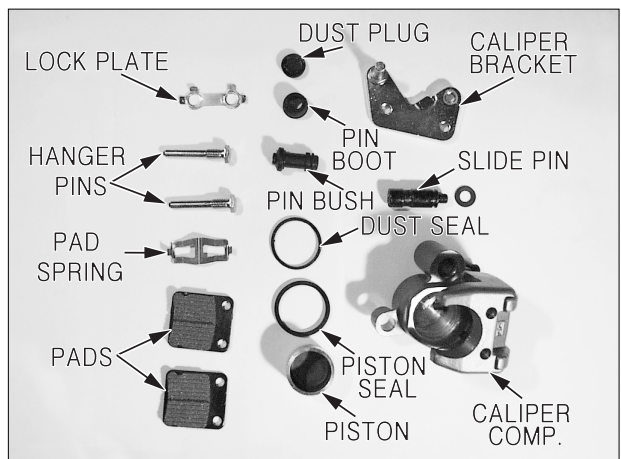


BRAKE CALIPER ASSEMBLY

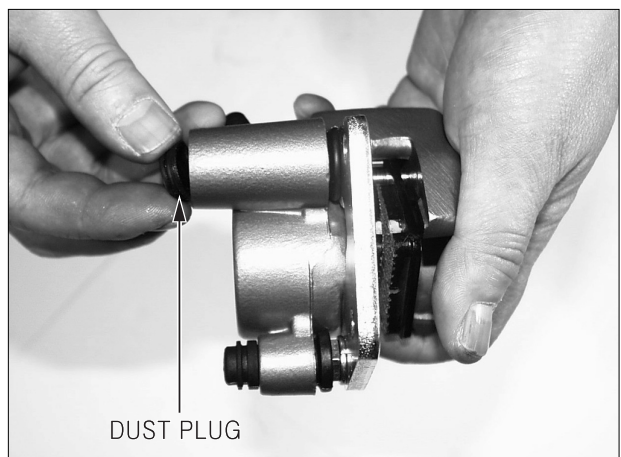
- Clean the piston seal and the dust seal with the brake fluid and install them in the caliper. Install the piston in the caliper with the groove side of the piston facing the pad.

NOTE

- 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.
- Install the dust plug in the slide pin.



BRAKE SYSTEM

BRAKE CALIPER INSTALLATION

Front brake caliper

- Install the brake caliper to the front fork, and connect the brake hose to the caliper, and install 2 sealing washers and the brake hose bolt.

TORQUE VALUE : 3.5 kgf · m

- Fill the brake fluid, and bleed air. (⇒14-2)

Rear brake caliper installation

- Install the brake caliper to the rear swing arm, and connect the brake hose to the caliper, and install 2 sealing washers and the brake hose bolt.

TORQUE VALUE: 3.5 kgf · m

- Install the EX. muffler. (⇒4-12)
- Fill the brake fluid, and bleed air. (⇒14-2)

MASTER CYLINDER

REMOVAL

- Remove the back mirrors.
- Remove the wind screen. (⇒4-10)
- Remove the front handle cover. (⇒4-10)
- Remove the rear handle cover. (⇒4-10)
- Disconnect the front brake switch wire.
- Drain the brake fluid.
- Remove the front / rear brake hoses from the master cylinder.

CAUTION

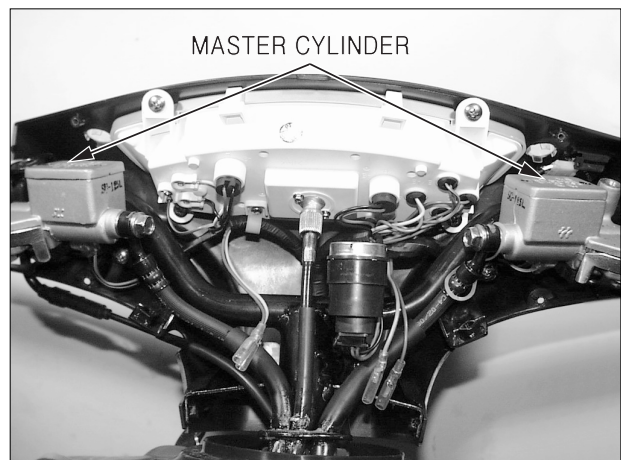
- Brake fluid causes damage to the painted, plastic or rubber parts. Do not spill fluid on these parts.
- If contaminated, gently wipe off the fluid with a piece of cloth or wash in water. Close hose joints properly to prevent leakage of brake fluid.
- Clean the disassembled parts with brake fluid, and 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 front / rear master cylinder holders, and lift out the master cylinder.

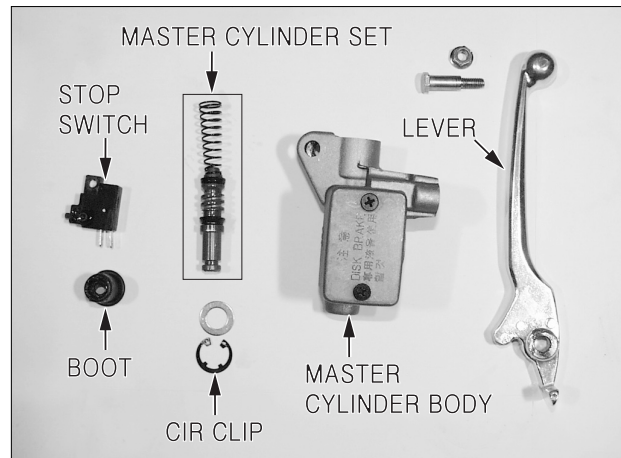
DISASSEMBLY

- Remove the front / rear stop switches.
- Remove the piston boot, cir clip from the master cylinder.

TOOL : SNAP RING PLIERS

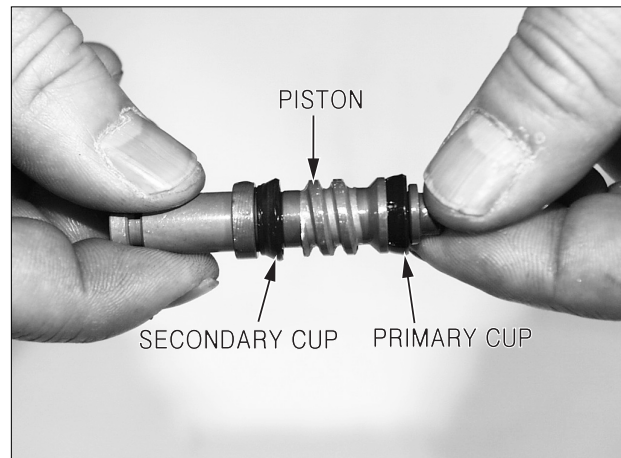


- Remove the washer, piston, spring from the master cylinder.
- Clean the master cylinder, reserve, master piston with the recommended brake fluid.



MASTER CYLINDER INSPECTION

- Check the piston periphery for scores, scratches or nicks and replace if necessary.
- Check the primary and secondary cups for wear.



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.

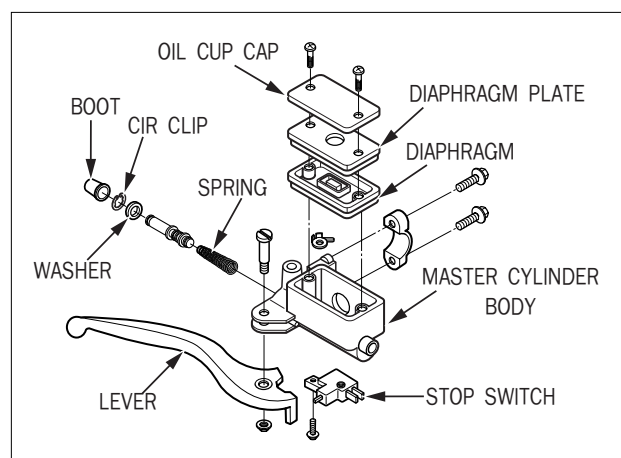


MASTER CYLINDER ASSEMBLY

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.



BRAKE SYSTEM

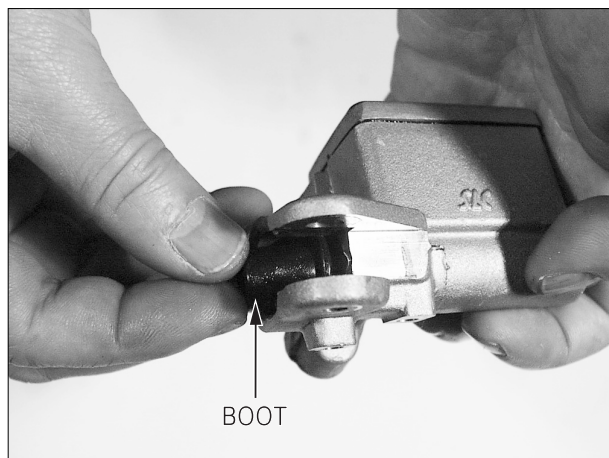
- Install the primary cup with its concaved side toward the inner side of the master cylinder.
- Install the snap ring.

TOOL : SNAP RING PLIERS

CAUTION

- When installing the cups, do not allow the lips to turn inside out.
- 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.

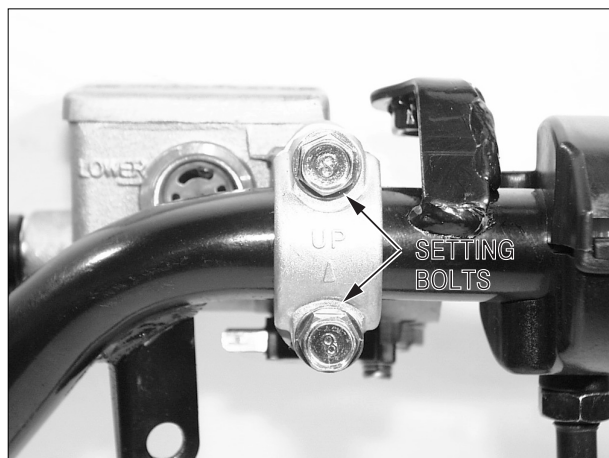


MASTER CYLINDER INSTALLATION

- Install the front / rear master cylinder to the handle bar.

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.

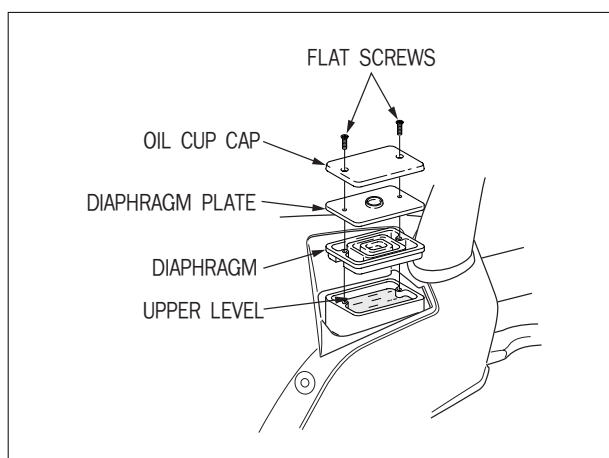


- Install the brake hose to the master cylinder with 2 new sealing washers and the hose bolt.

TORQUE VALUE : 2.5~3.5 kgf · m



- Loosen the 2 flat screws, remove the oil cup cap, diaphragm plate and diaphragm.
- Fill the brake fluid, and bleed air. (⇒4-12)
- Install the diaphragm, diaphragm plate and the oil cup cap, tighten the 2 flat screws.
- Connect the brake stop switch wire.
- Install the rear handle cover. (⇒4-10)
- Install the front handle cover. (⇒4-10)
- Install the wind screen. (⇒4-10)
- Install the back mirrors.



BRAKE DISK INSPECTION

- Measure the thickness of the disk.

SERVICE LIMIT : 3.0 mm

NOTE

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

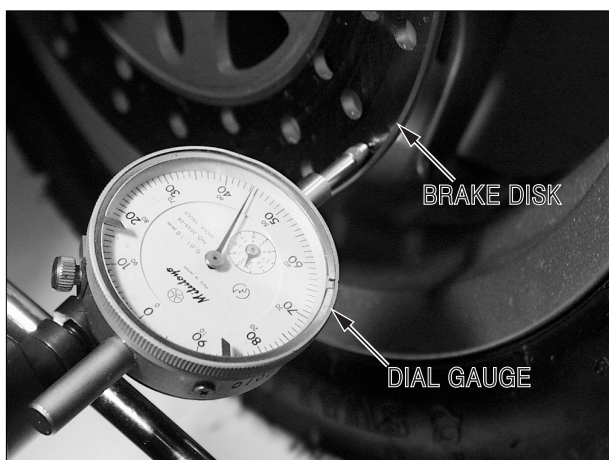
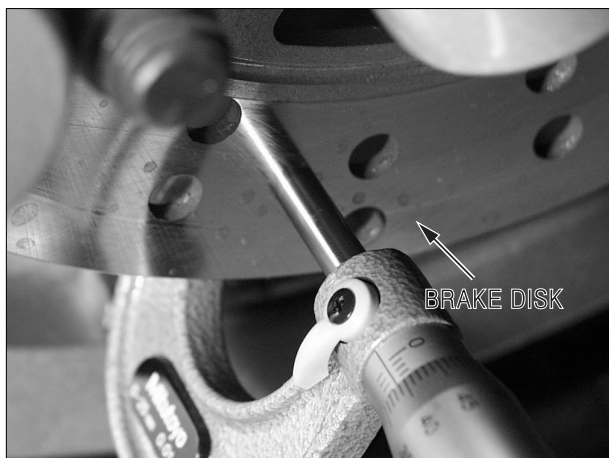
- Check the brake disk for bent and twist.

SERVICE LIMIT : 0.02 mm

TOOL : DIAL GAUGE

NOTE

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



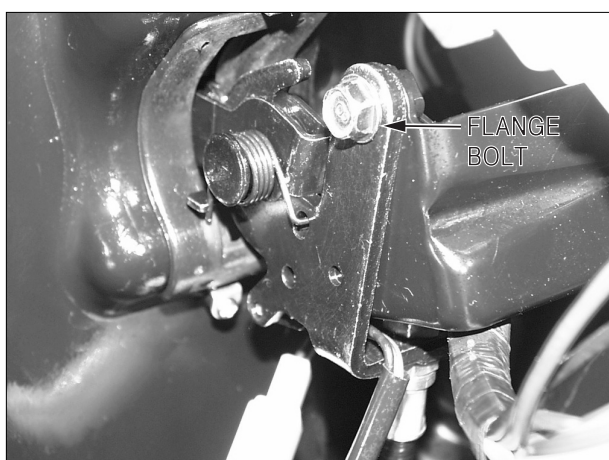
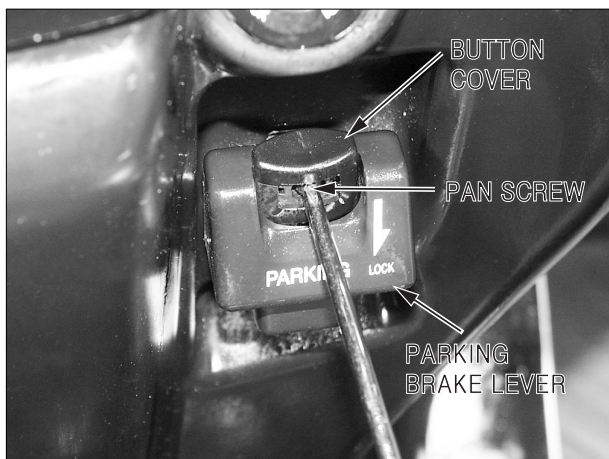
PARKING BRAKE

REMOVAL

- Remove the button cover.
- Loosen the pan screw, remove the parking brake button.
- Loosen the pan screw securing the parking brake lever, remove the parking brake grip.
- Remove the front cover. (⇒4-3)
- Loosen the parking brake rod adjust nut B, remove the parking brake cable.
- After releasing the lock by rotating the main key cover, remove it.
- Loosen the RH. screw securing the inner box and front under cover.
- Loosen the parking brake setting flange bolt, remove the parking brake from the frame bracket.
- Disconnect the parking brake switch wiring.
- Slightly pulling the upper side of the inner box, remove the parking brake.
- Loosen the washer screw securing the parking brake, remove the parking brake switch.
- Loosen the brake cable setting nut, remove it from the parking brake.
- Install in the reverse order of removal.

NOTE

- Check the parking brake free play after removing the parking brake. (⇒3-7)



MEMO

15. BATTERY/CHARGING SYSTEM

SERVICE INFORMATION	15-1	HEADLIGHT VOLTAGE INSPECTION .	15-6
CHARGING DEVICES LOCATION .	15-2	REGULATOR/RECTIFIER INSPECTION .	15-6
TROUBLESHOOTING	15-3	A.C. GENERATOR CHARGING COIL	
BATTERY	15-4	INSPECTION	15-7
CHARGING SYSTEM INSPECTION .	15-4		

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.
- 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 normal 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 develop in the battery and normal cell electrolytes will decrease.
- If the vehicle is not used for a long period, make sure to charge the battery every three months. If not so, the battery ability to store electricity is reduced.
- For information on generator disassembly, refer to section 8.

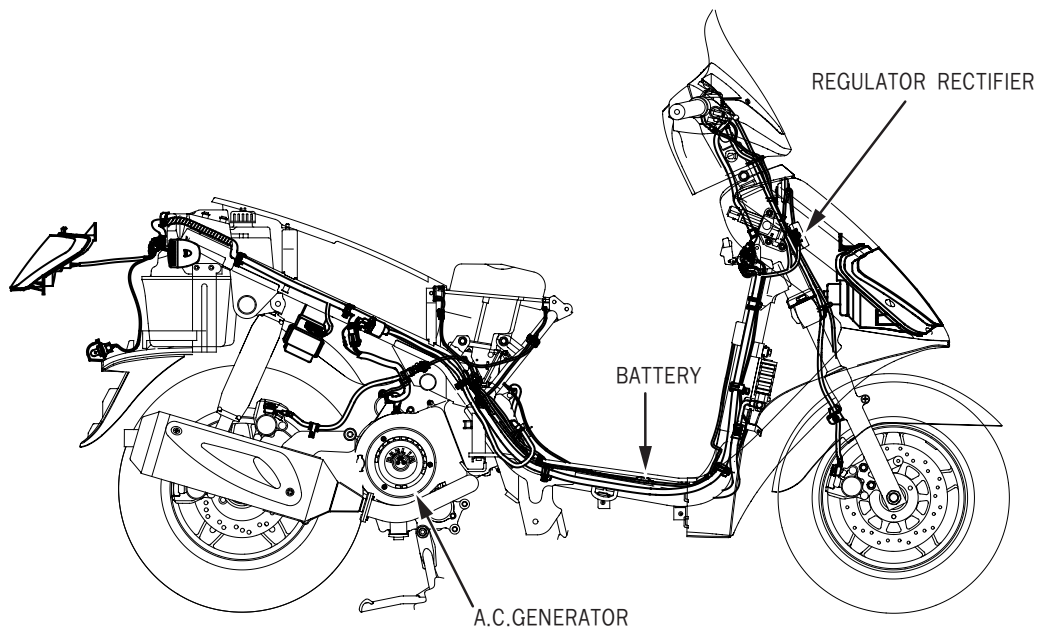
SPECIFICATIONS

ITEM		STANDARD VALUES
BATTERY	Capacity	12V - 8AH (MF)
	Terminal-to-terminal voltage (When fully charged)	13.0 - 13.2V
	Charging current	0.8A
	Leakage current	Not to exceed 1mA
A.C.GENERATOR	Charging coil resistance value (20° C)	0.1 - 1.0 Ω (20° C)
	rpm at charging start	1,800rpm (night load)
REGULATOR / RECTIFIER	Type	Thyristor system
	Regulator voltage	14.5 $\pm$ 0.5V / 5,000rpm

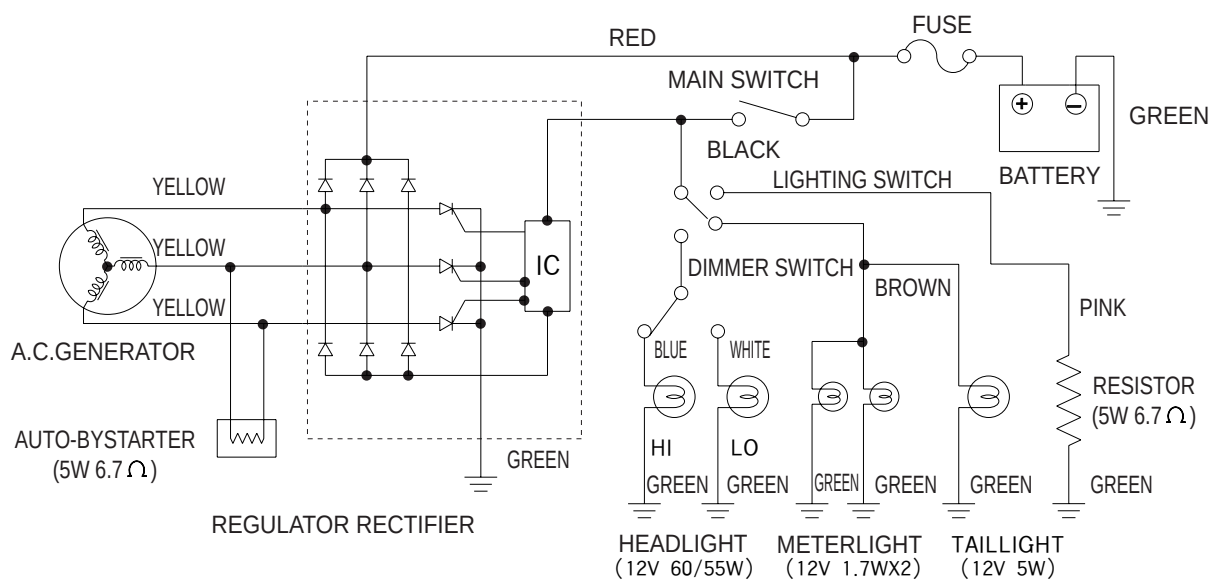
TOOLS

DIGITAL TESTER, PVA MULTI-TESTER, RPM TESTER, BATTERY TESTER

CHARGING DEVICE LOCATION



TRIPLE PHASE FULL WAVE RECTIFICATION METHOD



TROUBLESHOOTING

No power (Key turned on)

- Dead battery.
 - Low fluid level.
 - Low specific gravity.
 - Charging system failure.
- Disconnected battery cable.
- Main fuse burned out.
- Faulty ignition switch.

Low power (Key turned on)

- Battery undercharged.
 - Low fluid level.
 - Low specific gravity.
- Charging system failure.
- Loose battery connection.

Low power (Engine running)

- Battery undercharged.
- Battery is failing.
- Charging system failure.

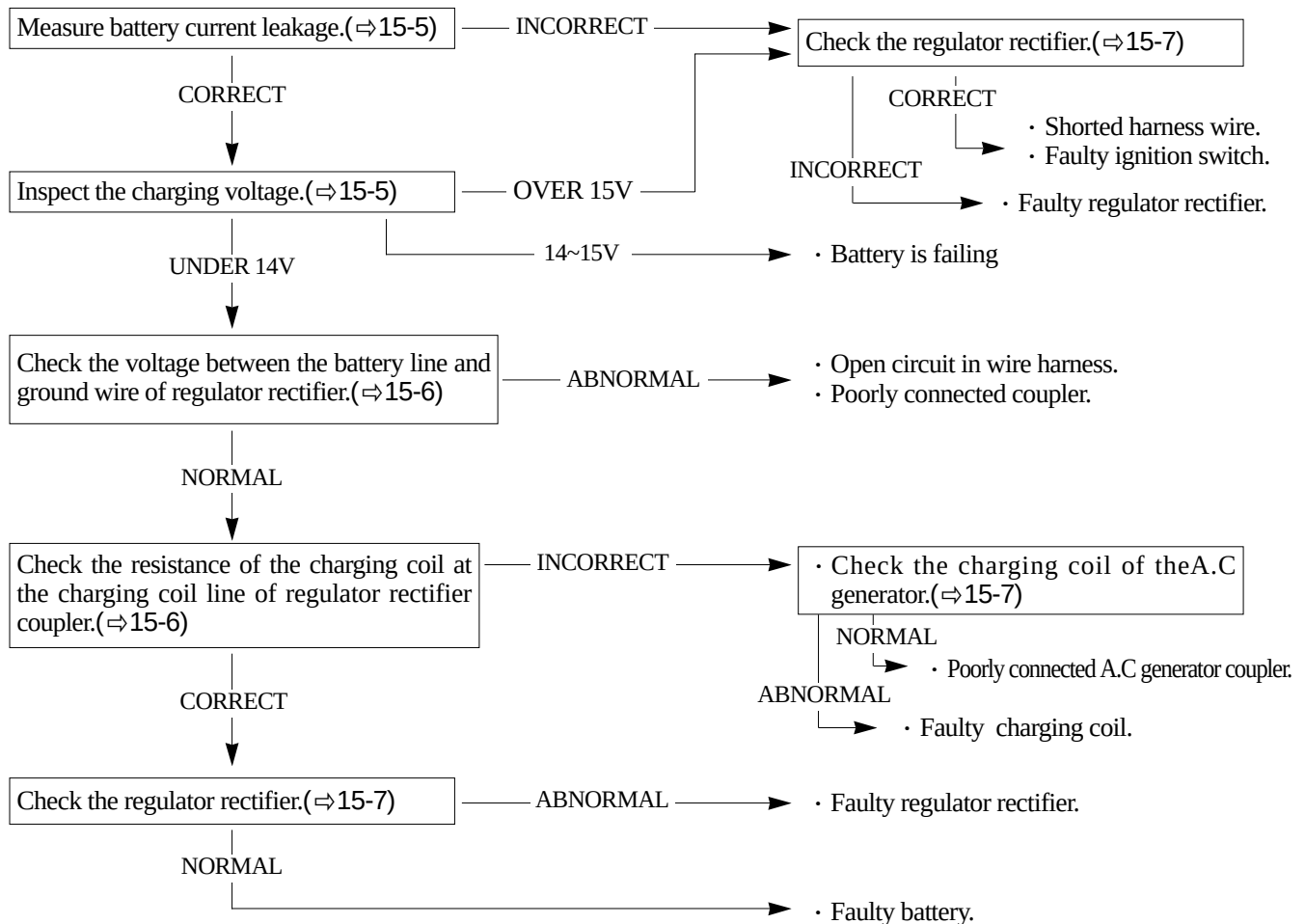
Intermittent power

- Loose battery connection.
- Loose charging system connection.
- Loose starting system connection.
- Loose connection or short circuit in ignition system.
- Loose connection or short circuit in lighting system.

Charging system failure

- Loose, broken or shorted wire or connection.
- Faulty regulator rectifier.
- Faulty A.C generator.

CHARGING SYSTEM



BATTERY

REMOVAL

- Turn off the ignition switch.
- Remove the floor panel mat.
- Loosen the 2 battery cover setting screws, remove the battery cover.



- Disconnect the negative “⊖” battery cable first, and then disconnect the positive “⊕” cable.
- Install in the reverse order of removal.

WARNING

- Disconnecting the positive “⊕” cable first could cause an accidental direct short between the two terminals when the tool disconnecting the terminal contacts the frame. The spark could ignite or damage the battery.
- To prevent shorting, always connect the positive “⊕” cable first.



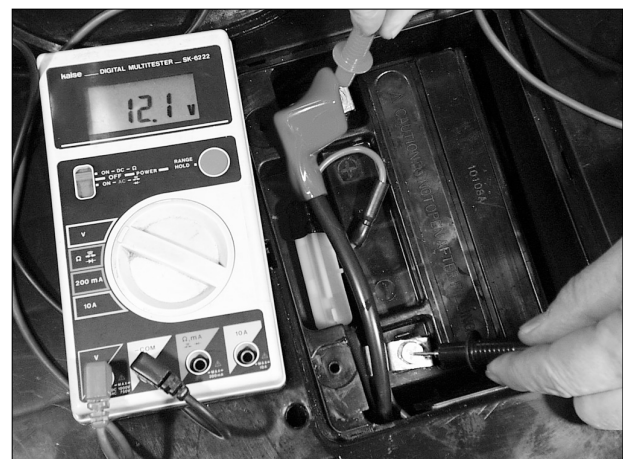
BATTERY (OPEN-CIRCUIT VOLTAGE) INSPECTION

- Remove the battery cover.
- Disconnect the battery terminals from the battery.
- Measure the voltage between the battery terminals.

- FULLY CHARGED : 13.0-13.2V

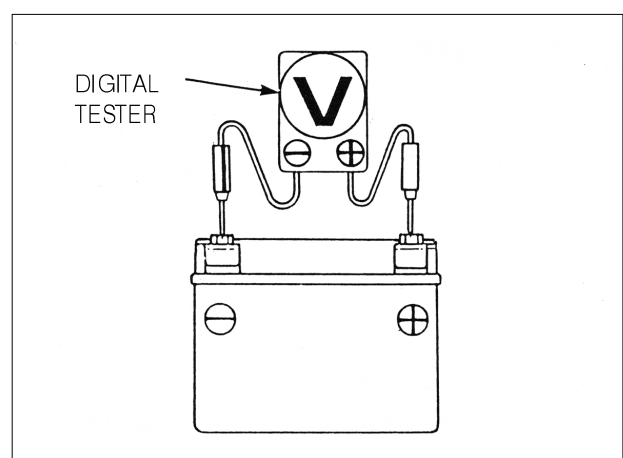
- INSUFFICIENTLY CHARGED : UNDER 12.3V

TOOL : DIGITAL TESTER



NOTE

- Use a voltmeter that will accurately indicate 0.1V difference.
- Never open the sealed filler cap.
- When measuring the battery voltage after charging, leave it for at least 30 minutes, or the accurate results cannot be obtained because the battery voltage fluctuates just after charging.



CHARGING SYSTEM INSPECTION

LEAK TEST

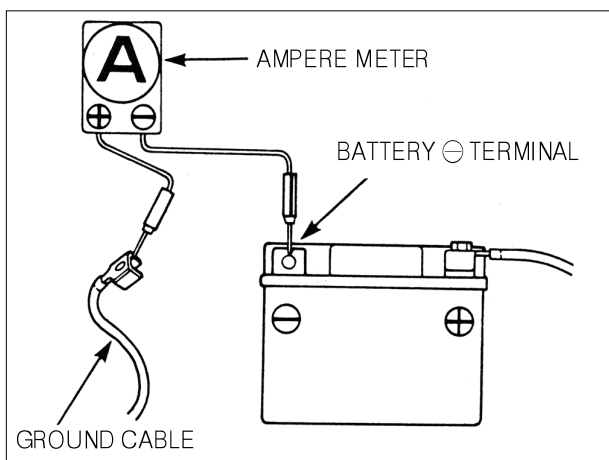
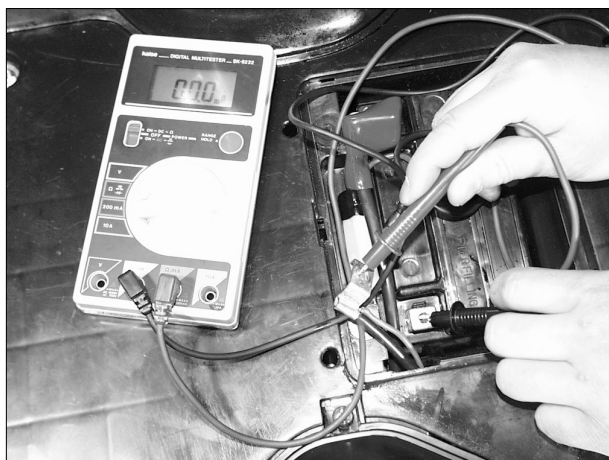
- Turn off the ignition switch, and disconnect the ground (-) cable from the battery.
- Connect an ampere meter between negative (-) terminal and ground cable.
- With the ignition switch off, measure the leakage current.

LEAK CURRENT : Not to exceed 1mA

TOOL : DIGITAL TESTER

NOTE

- When measuring current using a tester, set it to a large range, and then bring it down the range to an appropriate level.
- Current flow larger than the range selected may blow out the fuse in the tester.
- While measuring current, do not turn the ignition on. A sudden surge of current may blow out the fuse in the tester.



CHARGING VOLTAGE INSPECTION

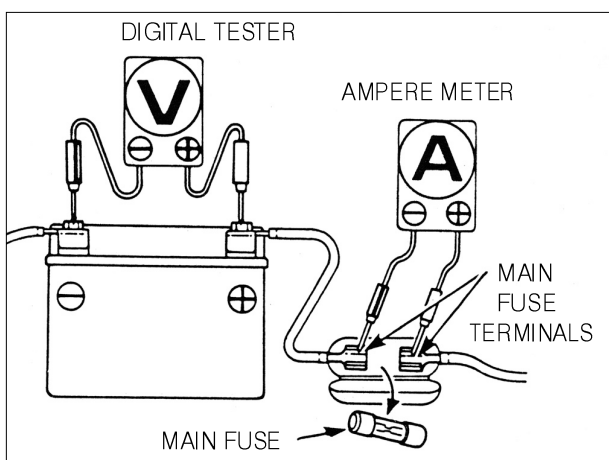
NOTE

- Be sure that the battery is fully charged before performing this test. The amount of current flow may change abruptly if not sufficiently charged. Use a battery whose voltage between its terminals is 13.0~13.2V
- When the engine is started using the starter motor, a large amount of current may flow from the battery temporarily. Use the kick starter to start the engine.

- After warming up the engine, replace the battery with a fully charged battery.
- Connect a tester between the battery terminals.
- Connect an ampere meter between the terminals of the main fuse.

NOTE

- If the probes are connected in reverse order, the registered current flow direction when charging and discharging the battery will be reversed as well.



- Connect a RPM tester to the high-tension cord.
- Start the engine.
- Gradually increase the engine speed and measure the charging voltage and charging current.

CHARGING CURRENT : 0~0.5A / 5,000rpm

CONTROL VOLTAGE : $14.5 \pm 0.5V$ / 5,000rpm

TOOLS : RPM TESTER

DIGITAL TESTER

- Install in the reverse order of removal.

HEADLIGHT VOLTAGE INSPECTION

- Remove the front cover. (⇒4-3)

NOTE

- Check voltage with the headlight coupler connected.

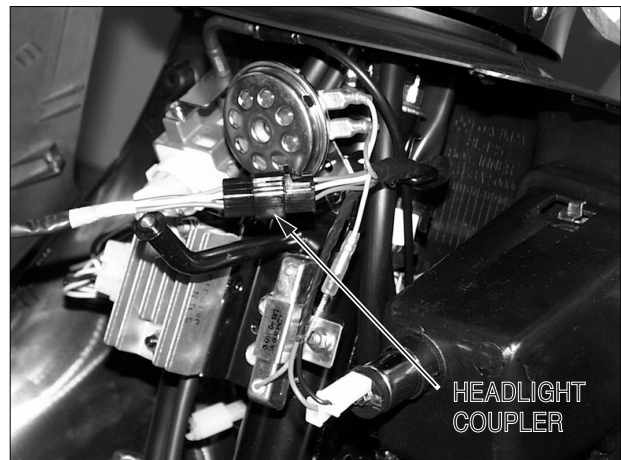
- After starting the engine, place the dimmer switch to HI and measure the headlight lighting voltage between the terminals connected to blue (+) and green (-) wires.
- Gradually increase the engine speed and read the voltage at the specified rpm.

CONTROL VOLTAGE : $14.5 \pm 0.5V$ / 5,000rpm

TOOL : DIGITAL TESTER

NOTE

- Measurement is performed in AC range.



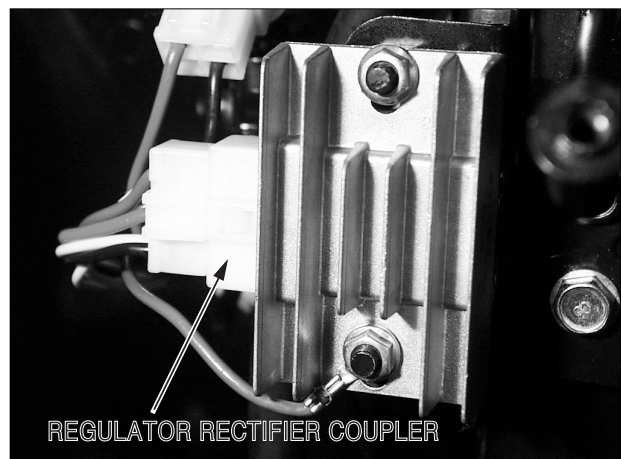
REGULATOR/RECTIFIER INSPECTION

HARNESS SIDE CIRCUIT INSPECTION

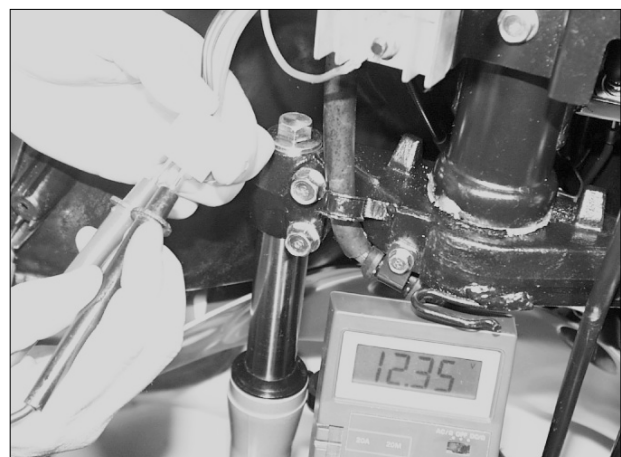
- Remove the front cover. (⇒4-3)
- Remove the coupler of the regulator/rectifier and inspect the wiring circuits at each terminal of the main harness coupler.

Inspection Items

ITEM	INSPECTION
BATTERY WIRE(RED)	Check that there is voltage between battery line (+) and ground line.
GROUND WIRE(GREEN)	Check continuity between ground and frame.
CHARGING COIL WIRE (YELLOW)	Check that the resistance of the coil is within the specified range. (1.0~1.5 Ω) Check not continuity between coil and frame.
VOLTAGE DETECTION LINE(BLACK)	Check that there is battery voltage between voltage detection line (+) and ground wire when the ignition is ON.



- If there is an abnormality in the diagnosis above, check the following :
 - Battery wire →Broken wire harness (repair or replace)
 - Ground wire →Broken wire harness (repair or replace)
 - Charging coil wire →Check the charging coil of the A.C generator.
- If the resistance value of the A.C generator is normal, check for a broken or shorted wire harness between the regulator rectifier and A.C generator or for poor connection at A.C generator coupler.



REGULATOR RECTIFIER UNIT INSPECTION

- Provided that all inspections on the wire harness side are normal and there are no loose connections at the regulator rectifier coupler, inspect the regulator rectifier unit by measuring the resistance between the terminals.

NOTE

- Resistance value will not be accurate if the probes touch your fingers.
- Use the following recommended tester.
- Using another manufacturer's equipment may not allow you to obtain the specified values.

RESISTANCE VALUE

Unit : Ω , (20°C)

Tester $\oplus$ Tester $\ominus$	R	B	Y	Y	Y	G
R		0-5	1-3	1-3	1-3	1-4
B	∞		∞	∞	∞	25-40K
Y	∞	1-4		∞	∞	1-4
Y	∞	1-4	∞		∞	1-4
Y	∞	1-4	∞	∞		1-4
G	∞	25-40K	∞	∞	∞	

- Replace the regulator rectifier unit if the resistance value between the terminals is abnormal.

TOOL : DIGITAL TESTER

REPLACEMENT

- Remove the front cover. ($\Rightarrow$ 4-3)
- Disconnect the regulator rectifier coupler.
- Loosen the 2 regulator rectifier setting nut securing the horn stay, remove the regulator rectifier.
- Install in the reverse order of removal.

A.C GENERATOR CHARGING COIL INSPECTION

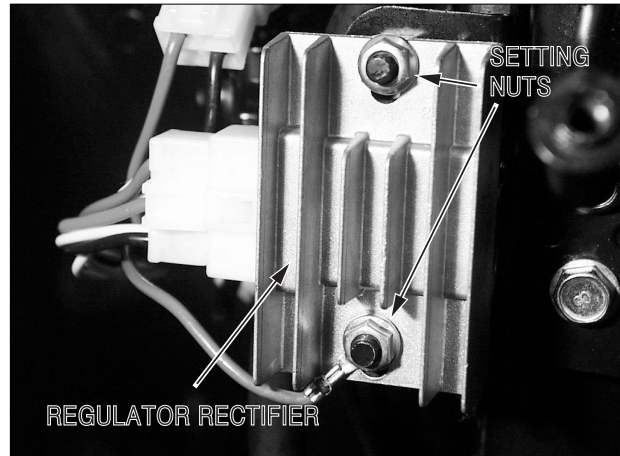
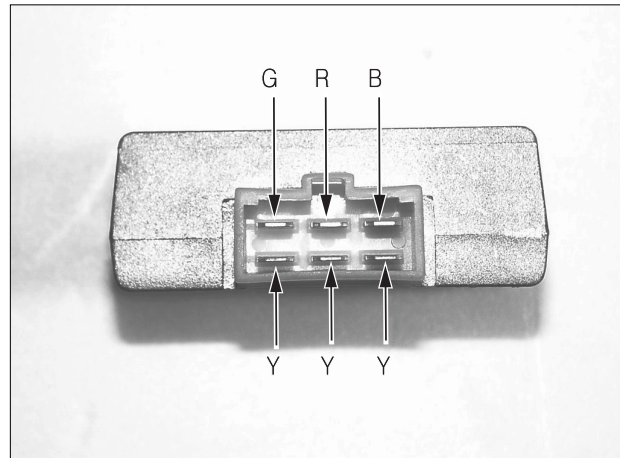
NOTE

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

- Release the seat lock with the main key.
- Remove the luggage box. ($\Rightarrow$ 4-4)
- Disconnect the coupler of the A.C generator cord.
- Measure the resistance between the yellow leads.

RESISTANCE VALUE : 1.0~1.5 Ω (20°C)

- If the resistance values are much larger than the specified value, or if there is continuity between terminals and earth terminals, replace the stator with a new one.
- Install in the reverse order of removal.



MEMO

16. IGNITION SYSTEM

SERVICE INFORMATION 16-1

IGNITION DEVICES LOCATION . 16-2

TROUBLESHOOTING 16-3

CDI UNIT INSPECTION 16-7

PULSE GENERATOR INSPECTION . 16-4

IGNITION COIL INSPECTION . . 16-5

IGNITION TIMING INSPECTION . 16-6

SIDE STAND IGNITION
CUT-OFF SWITCH 16-6

SERVICE INFORMATION

GENERAL SAFETY

- Follow the steps described in the troubleshooting flow chart when servicing the ignition system.
- The CDI unit may be damaged if dropped. Also, if the connector is disconnected when current is flowing, the excessive voltage may damage the unit. Always turn off the ignition switch before servicing.
- The CDI unit uses an electrically controlled ignition timing system. No adjustments can be made to the ignition timing.
- Use spark plug of the correct heat range. Using spark plug with an incorrect heat range can damage the engine.
- Connect the same color cords. Pay particular attention to colors prior to removing wiring. Connect the same color couplers.
- A faulty ignition system is often related to poorly connected connectors. Check those connections before proceeding.
- 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 switch by referring to the wiring diagram continuity chart. (⇒chapter 19)

SPECIFICATIONS

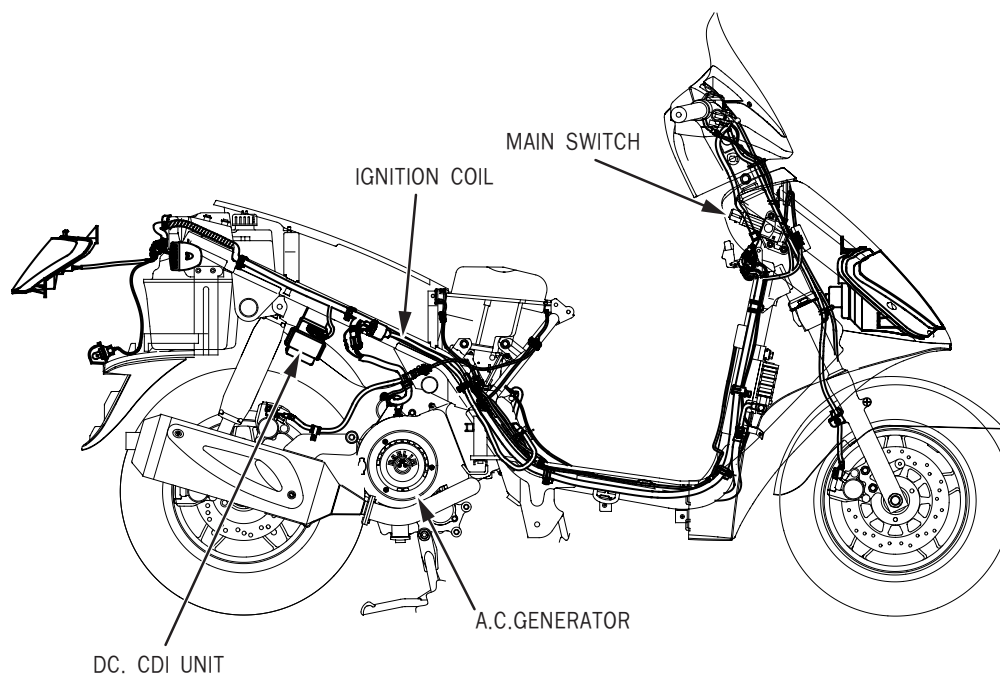
ITEM			STANDARD VALUE
IGNITION COIL RESISTANCE VALUE 20℃	PRIMARY COIL		0.1 ~ 0.2 Ω
	SECONDARY COIL	WITH PLUG CAP	7.3 ~ 11 kΩ
		WITHOUT PLUG CAP	3.6 ~ 4.6 kΩ
PULSE GENERATOR COIL RESISTANCE VALUE 20℃			90 ~ 150 Ω

TOOLS

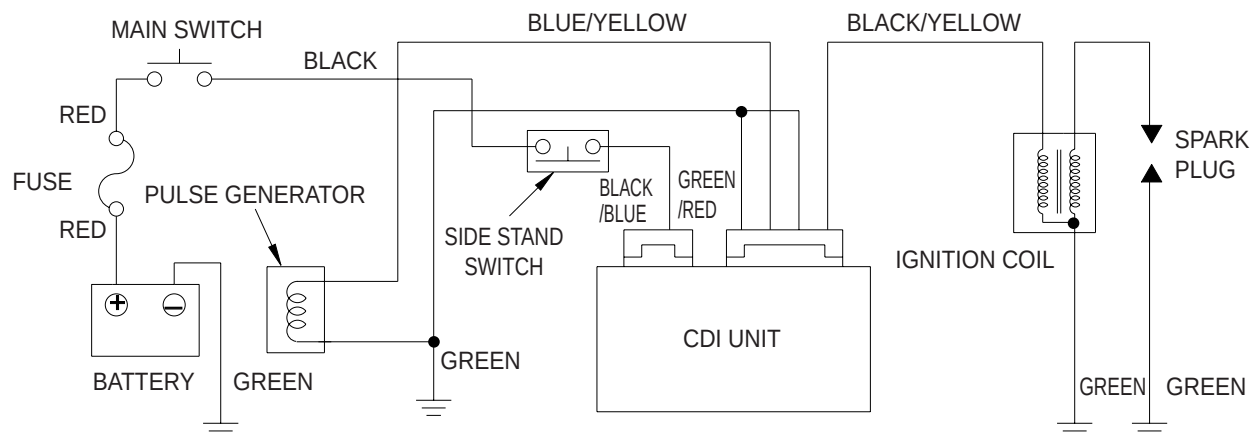
DIGITAL TESTER
PVA MULTI-TESTER
CDI TESTER

IGNITION SYSTEM

IGNITION DEVICES LOCATION



IGNITION SYSTEM



TROUBLESHOOTING

No spark at plug.

UNUSUAL CONDITION		PROBABLE CAUSE (CHECK IN NUMERICAL ORDER)
IGNITION COIL PRIMARY VOLTAGE	Low peak voltage.	1. The multimeter impedance is too low. 2. Cranking speed is too slow. - Battery is undercharged (or operating force of the kick starter is weak). 3. The sample timing of the tester and measured pulse were not synchronized. (System is normal if measured voltage is over the standard voltage at least once.) 4. Poorly connected connectors or an open circuit in ignition system. 5. Faulty ignition system control circuit such as side stand switch. 6. Faulty ignition coil. 7. Faulty CDI unit (in case when above No. 1~6 are normal).
	No peak voltage.	1. Incorrect peak voltage adaptor connections. 2. Faulty ignition switch. 3. Loose or poorly connected CDI unit connector. 4. Open circuit or poor connection in ground cord of the CDI unit. 5. Faulty ignition system control circuit such as side stand switch. 6. Faulty peak voltage adaptor. 7. Faulty CDI unit (in case when above No. 1~6 are normal).
	Peak voltage is normal, but no spark jumps at plug.	1. Faulty spark plug or leaking ignition coil secondary current ampere. 2. Faulty ignition coil.
PULSE GENERATOR	Low peak voltage.	1. The multimeter impedance is too low. 2. Cranking speed is too slow. - Battery is undercharged (or operating force of the kick starter is weak). 3. The sample timing of the tester and measured pulse were not synchronized.(System is normal if measured voltage is over the standard voltage at least once.) 4. Faulty pulse generator (in case when above No. 1~3 are normal).
	No peak voltage.	1. Faulty peak voltage adaptor. 2. Faulty pulse generator.

CDI UNIT INSPECTION

CDI IGNITION CIRCUIT INSPECTION

NOTE

- Follow the steps described in the troubleshooting flow chart when servicing the ignition system.

- Release the seat lock with the main key.
- Remove the luggage box. (⇒4-4)
- Disconnect the coupler from the CDI unit, and check the ignition system circuits from the wiring coupler side.

Inspection Items

ITEM	INSPECTION
MAIN SWITCH	Check that there is battery voltage between main switch wire (black) and ground wire when the ignition is ON
PULSE GENERATOR	Check that the resistance of coil (between blue / yellow and green) is within the specified range. (90~150 Ω , 20°C)
IGNITION COIL (PRIMARY COIL)	Check that the resistance of coil (between black / yellow and green) is within the specified range. (0.1~0.2 Ω , 20°C)
GROUND WIRE	Check continuity between ground and frame.

- If there are a normality in the diagnosis above, and if there is no spark at plug, check the CDI unit and ignition coil by using a CDI tester.

**TOOLS : CDI TESTER
DIGITAL TESTER**

NOTE

- Read tester manual carefully prior to using the tester.

- Replace the CDI unit if faulty.
- Install in the reverse order of removal.

PULSE GENERATOR INSPECTION

RESISTANCE MEASUREMENT

- Release the seat lock with the main key.
- Remove the luggage box. (⇒4-4)
- Disconnect the A.C generator 4P coupler and the blue / yellow wire connector.
- Measure the resistance between the green and blue / yellow.

STANDARD VALUE : 90~150 Ω (20°C)

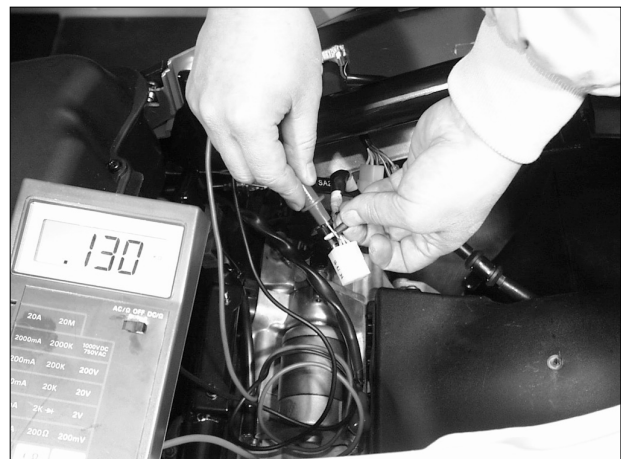
PVA MEASUREMENT

- Disconnect the A.C generator blue / yellow wire connector.
- Connect the peak voltage adaptor probes to the pulse generator wire terminal of the wire harness side connector and ground.
- Crank the engine with the kick starter or starter motor and measure the peak voltage of pulse generator.

PEAK VOLTAGE : OVER 1.5V

TOOL : PVA MULTI TESTER

- Install in the reverse order of removal.



IGNITION COIL INSPECTION

- Release the seat lock with the main key.
- Remove the luggage box. (⇒4-4)
- Remove the center cover. (⇒4-5)
- Remove the primary wire.

NOTE

- Measure the peak voltage of the ignition coil primary side first.
- Since the resistance value of the primary coil is inherently very small, it is difficult to distinguish it from a shorted wire.

PRIMARY COIL INSPECTION

- Measure the resistance between the two terminals of the ignition primary coil.
- If the resistance value is within the specified range the coil is good.
- If resistance is ∞ (infinite), replace the coil with a new one.

STANDARD VALUE : 0.1~0.2 Ω

SECONDARY COIL INSPECTION

- With the spark plug cap on, measure the resistance between the primary coil terminal and the spark plug cap.
- If the resistance value is within the specified range, then the coil is good.
- If the resistance is ∞ (open wire), disconnect the spark plug cap and measure the secondary coil resistance.

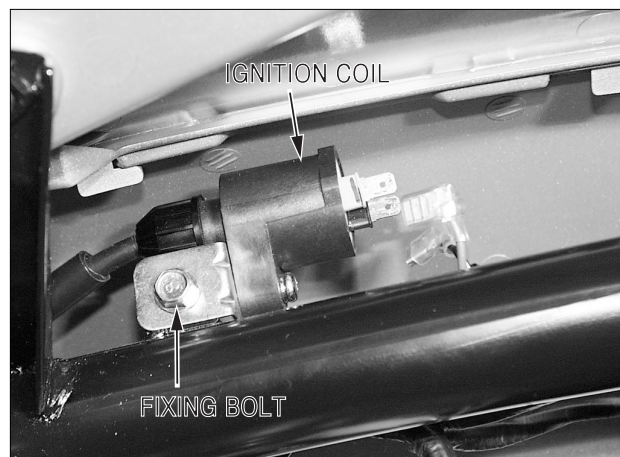
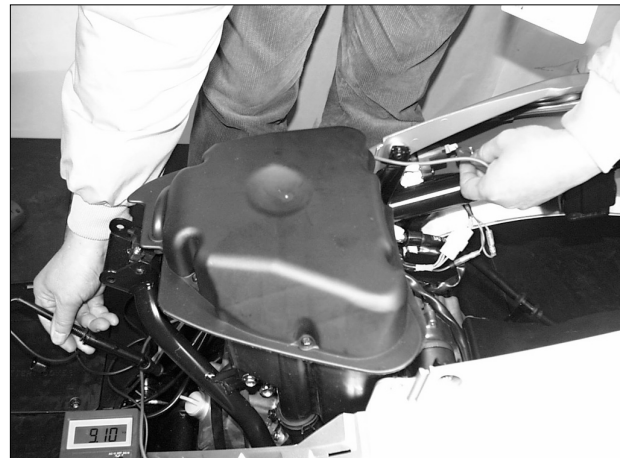
STANDARD VALUE : 7.3~11 Ω

- Measure resistance between the primary coil terminal and high-tension cord.
- If the resistance value is within the specified range, then the coil is good.
- If the resistance is ∞ (open wire), replace the coil with a new one.

STANDARD VALUE : 3.6~4.6 Ω

REPLACEMENT

- Remove the high-tension cord from the plug, remove the plug cap.
- Remove the wire from the ignition coil.
- Remove the primary wire from the ignition coil.
- Loosen the ignition coil fixing bolt securing the frame, Remove the ignition coil.
- Install in the reverse order of removal.



IGNITION SYSTEM

IGNITION TIMING INSPECTION

NOTE

- As the system uses the CDI unit, the ignition timing need not be adjusted. Check the ignition system if the ignition timing is incorrect.

- Start and warm up the engine.
- Remove the plug maintenance cover.
- Connect the timing light to the high-tension cord.

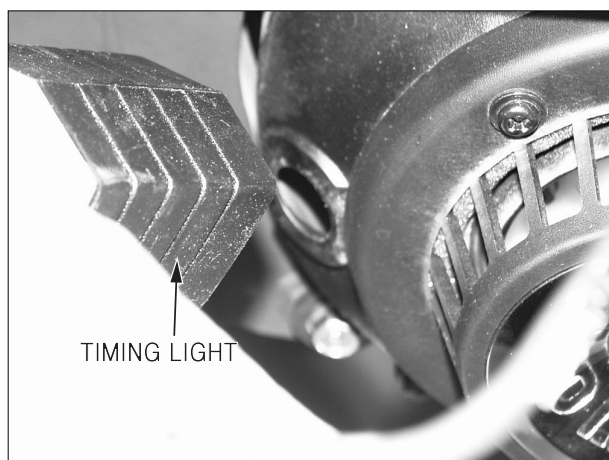
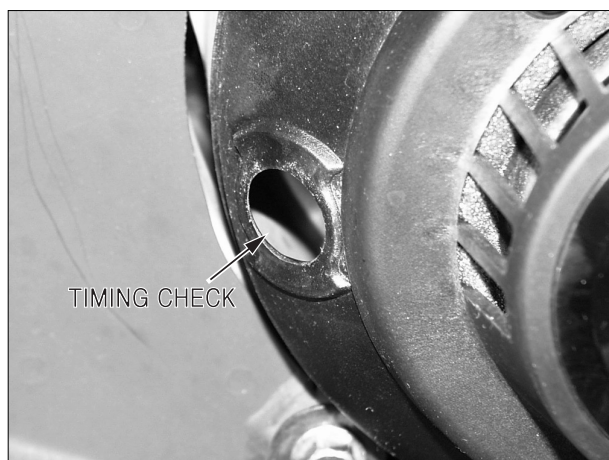
NOTE

- Read the timing light manual prior to using it.

- Remove the timing hole cap from the RH. shroud, and start the engine.
- If the F mark on the rotor is aligned with the index mark on the case at the correct idling speed, then the timing is correct.

IDLING SPEED : 15 ° BTDC 1, 800 rpm

- Increase engine speed by rotating the stop screw on the carburetor. At the engine speed greater than 4,000rpm, the ignition timing is correct if the index mark is set within the advance mark.
- Install in the reverse order of removal.



SIDE STAND IGNITION CUT-OFF SWITCH

INSPECTION

- Remove the floor mat.
- Remove the RH. floor side cover. (⇒4-7)
- Remove the coupler of the side stand switch.



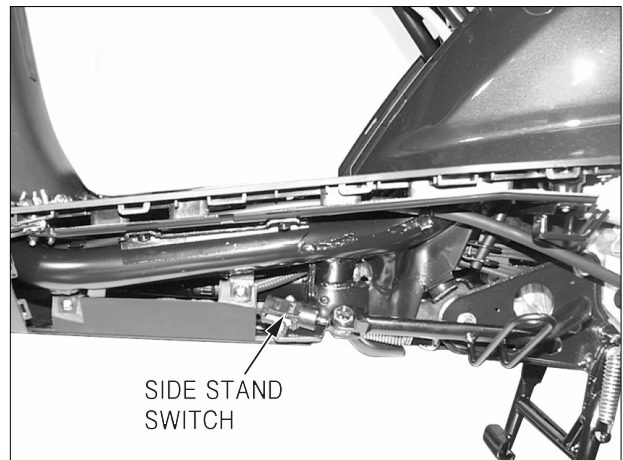
- Check for continuity between the terminal as shown below ;

ITEM	TERMINAL	SPECIFICATION
ON (Side stand is lowered)	BLACK AND BLACK/BLUE	NO CONTINUITY
OFF (Side stand is retracted)	BLACK AND BLACK/BLUE	CONTINUITY



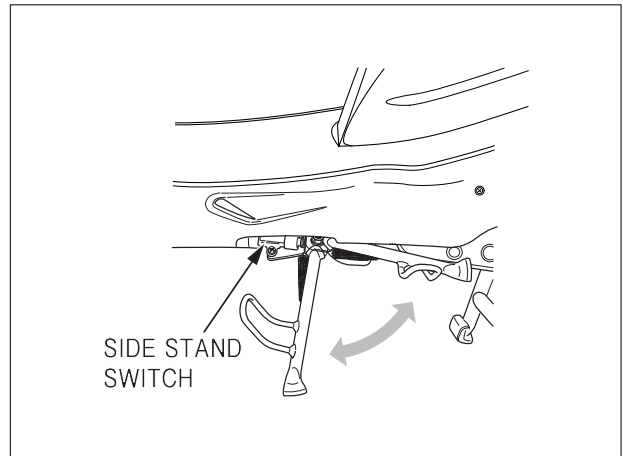
REMOVAL

- Remove the floor mat.
- Remove the center cover. (⇒4-5)
- Remove the RH. floor side cover. (⇒4-7)
- Remove the coupler of the side stand switch.
- Remove the LH. floor side cover. (⇒4-7)
- Loosen 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.
- Check the side stand ignition cut-off switch.
 - Put the side stand up.
 - Start the engine.
 - Lower the side stand. The engine should stop as you put the side stand down.



MEMO

17. STARTER SYSTEM

SERVICE INFORMATION 17-1

STARTER DEVICES LOCATION . 17-2

TROUBLESHOOTING 17-3

STARTER MOTOR 17-4

STARTER MAGNETIC SWITCH . 17-7

SERVICE INFORMATION

GENERAL SAFETY

WARNING

• Always turn the ignition switch OFF before servicing the starter motor. The motor could suddenly start, causing serious injury.

- The starter motor can be maintained without removing the engine from the vehicle.
- A weak battery may be unable to turn the starter motor quickly enough, or, supply adequate ignition current.
- The starter motor may be damaged if current is allowed to flow to it when the engine cannot turn over.
- The engine may not be turned over if the stop switch is faulty.

SPECIFICATION

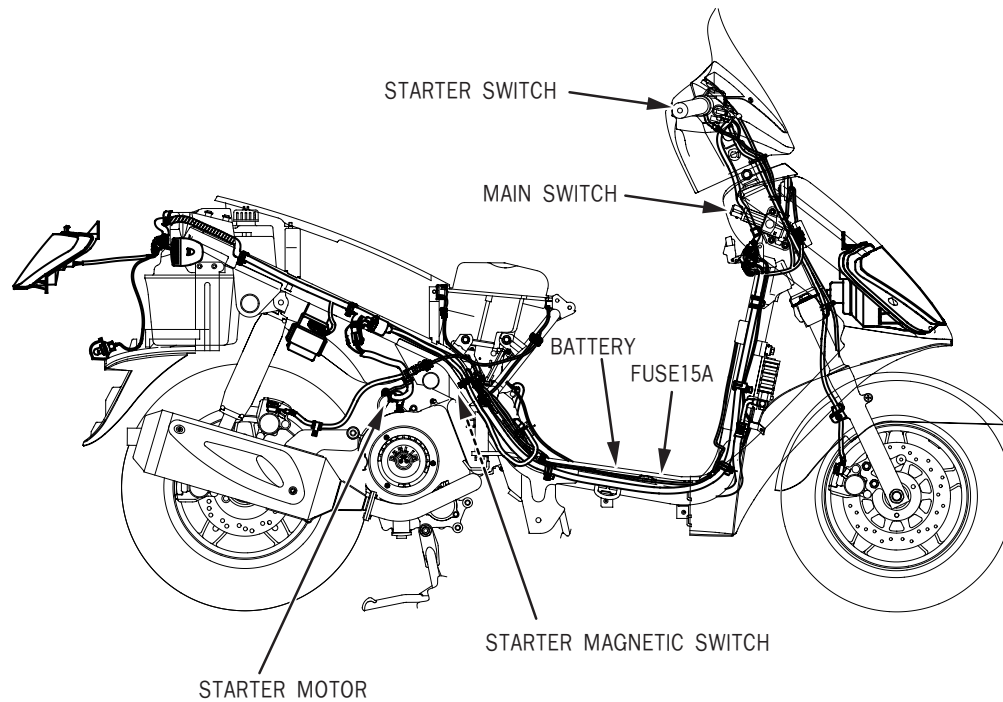
ITEM	STANDARD VALUE	SERVICE LIMIT
STARTER MOTOR BRUSH LENGTH	10.2 mm	5 mm

TOOLS

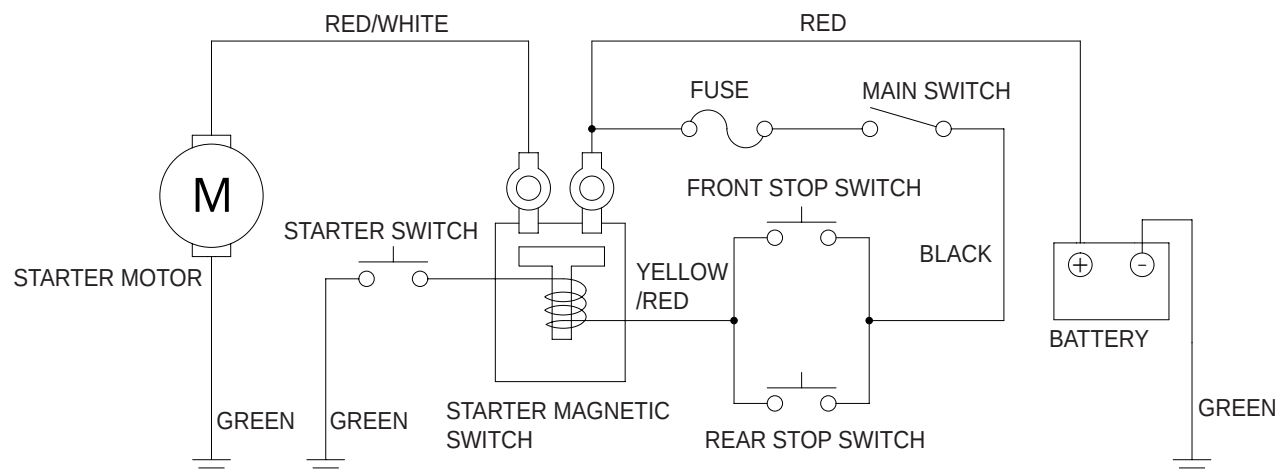
DIGITAL TESTER
VERNIER CALIPER

STARTER SYSTEM

STARTER DEVICES LOCATION



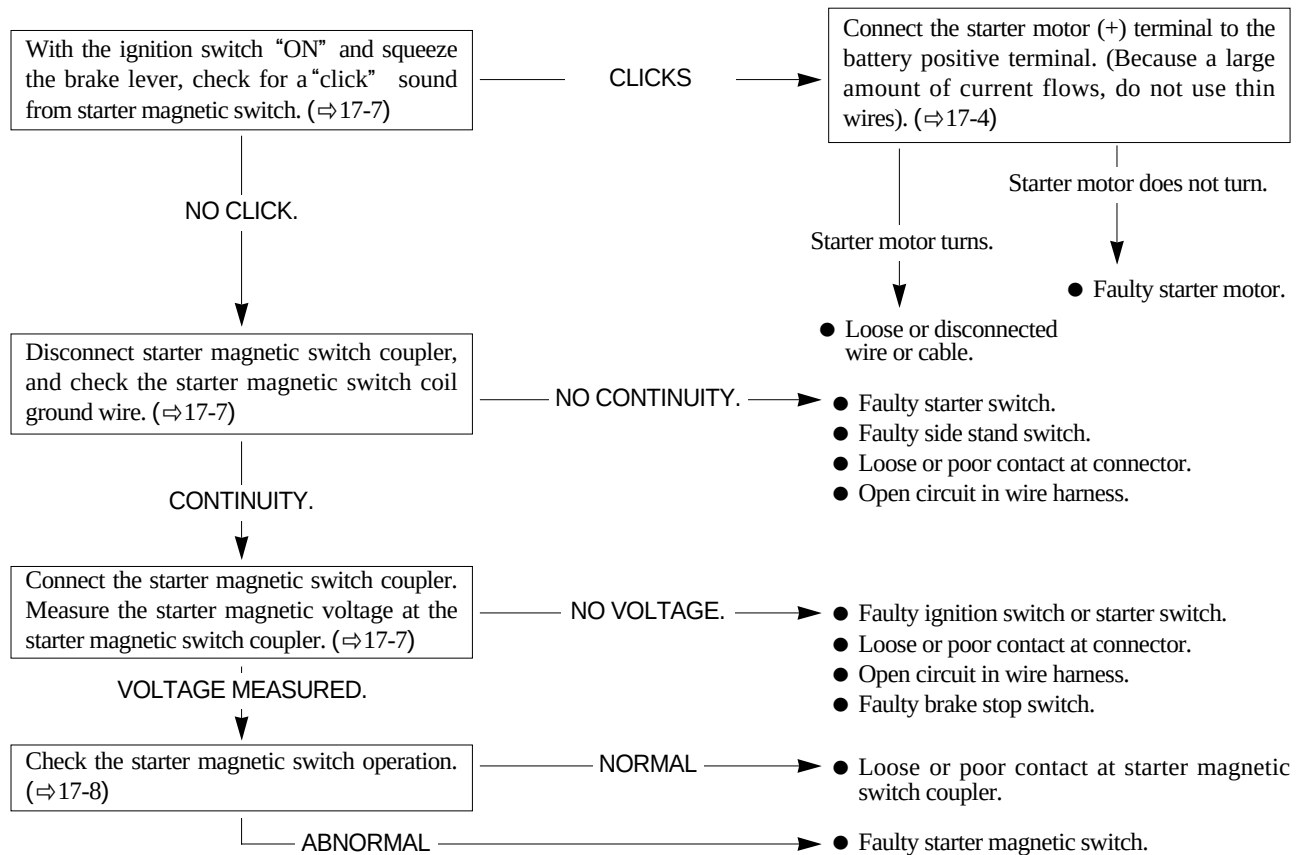
STARTER SYSTEM CIRCUIT



TROUBLESHOOTING

Starter motor will not turn.

- Check for a blown main fuse before servicing.
- Check that the stop light is correctly adjusted.
- Check that the side stand is positioned in the condition under which the engine can be started.



Starter motor turns slowly.

- Low specific gravity in battery. (or dead battery)
- Poorly connected battery terminal cable.
- Poorly connected starter motor cable.
- Faulty starter motor.
- Poorly connected battery ground cable.
- Damaged or worn brush.

Starter motor and engine turns, but engine does not start.

- Faulty ignition system.
- Engine problems.

Starter motor turns, but engine does not turn over.

- Starter motor is running backwards.
 - Brushes assembled improperly.
 - Case assembled improperly.
 - Terminals connected improperly.
- Faulty starter clutch.
- Damaged starter gear.

STARTER SYSTEM

STARTER MOTOR

REMOVAL

- Release the seat lock with the main key.
- Remove the luggage box. (⇒4-4)
- Remove the starter motor cable from the starter magnetic switch.
- Loosen the 2 flange bolts securing the engine case, remove the battery earth cable and starter motor.
- Install in the reverse order of removal.

NOTE

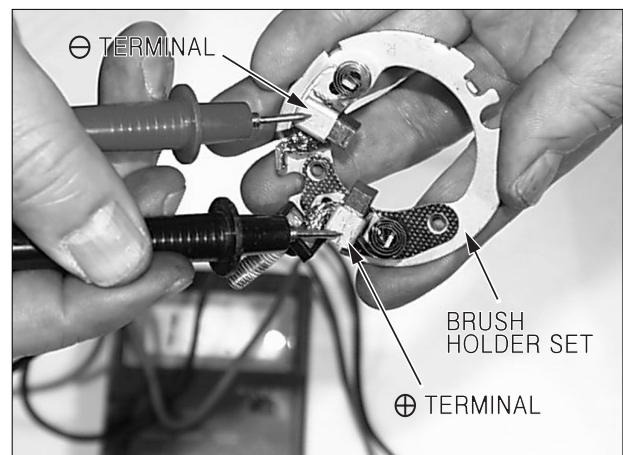
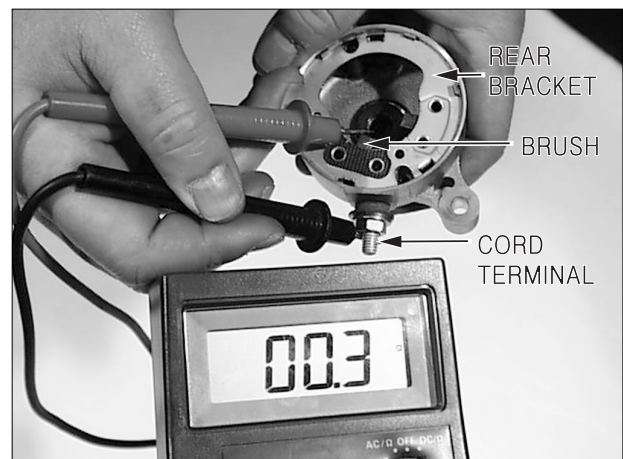
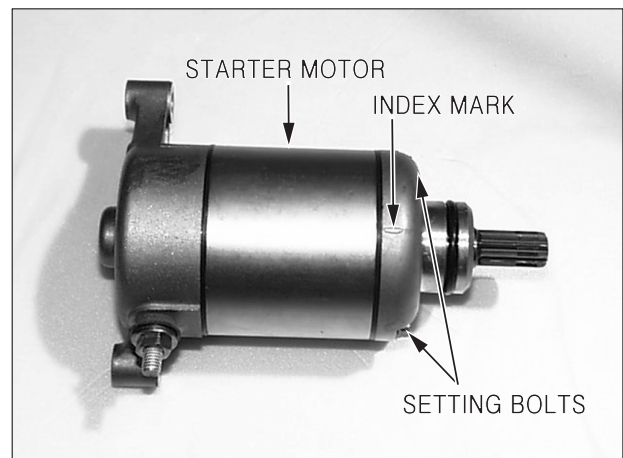
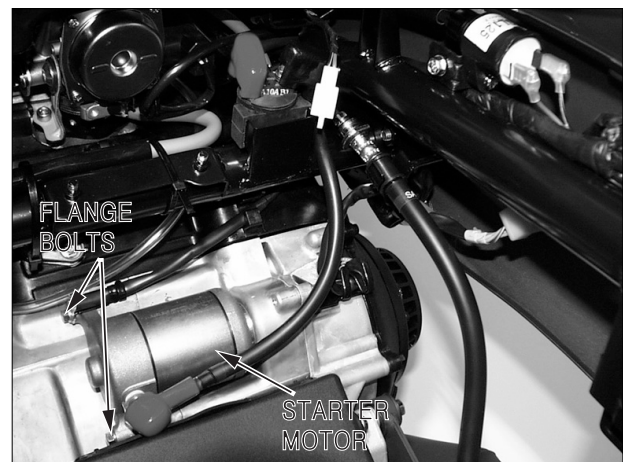
- Always turn the ignition switch OFF before servicing the starter motor. The motor could suddenly start, causing serious injury.
- Accurately tighten the battery earth cable.

DISASSEMBLY

- Remove the starter motor cable.
- Before disassembling the starter motor mark the position of the case and cover so the starter can be assembled correctly later.
- Loosen the starter motor case bolts and remove the motor cover.

INSPECTION

- Check for continuity of the starter motor case.
 - Between cord terminal“⊕” and bracket“⊖”: normal if no continuity.
 - Between cord terminal and brush : normal if there is continuity.
- If abnormal, replace with a new one.
- Loosen the brush terminal setting nut, remove the brush holder set.
- Check for continuity between “⊕” and “⊖” terminals of the brush holder.
- If there is continuity, replace with a new one.



- Remove the brush spring, and then remove the brush.
- Measure the brush length. Replace the brush if it is worn beyond the service limit.

SERVICE LIMIT : 5 mm

TOOL : VERNIER CALIPER

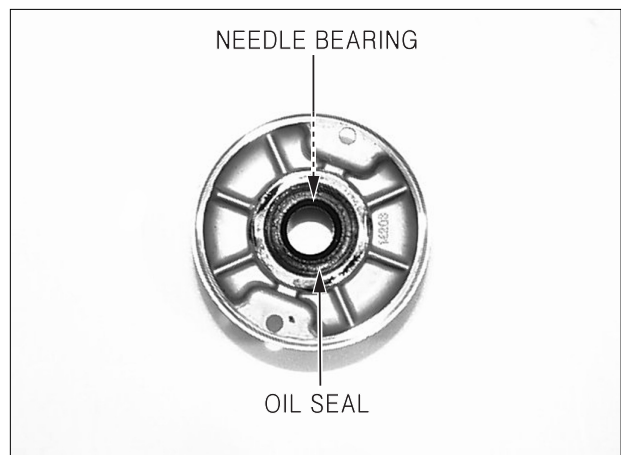
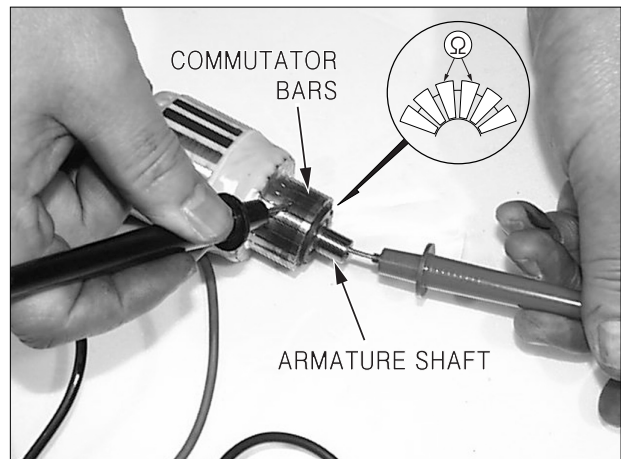
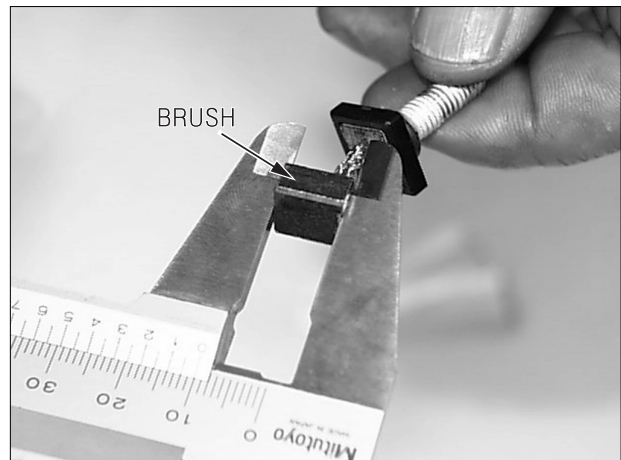
NOTE

- If replacement, replace with a brush holder set.

- 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.

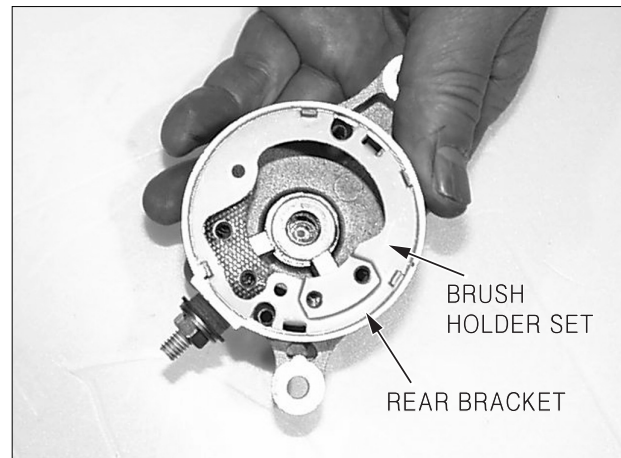
- Check the needle bearing and oil seal.
 - Do not rotate smoothly. → Replace with a new one.
 - Damage oil seal. → Replace with a new one.



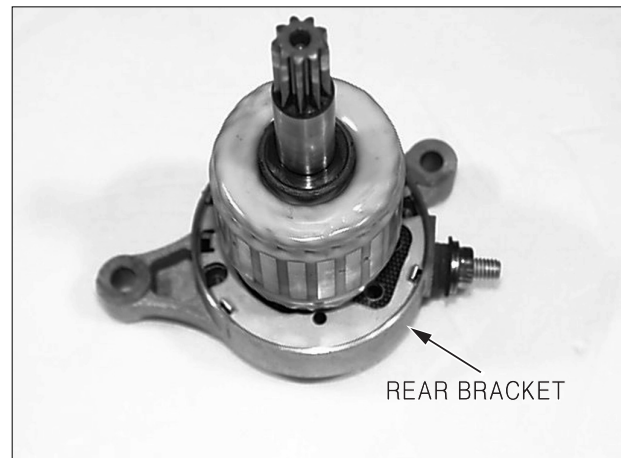
STARTER SYSTEM

STARTER MOTOR ASSEMBLY

- Install the brush and brush spring to the brush hold set.
- Insert the brush terminal into the rear bracket, and install the terminal set and flange nut.
- Align the brush holder set with the rear bracket groove, and install the brush holder set.
- Apply grease to both ends of the armature shaft, and install the 2 washers.



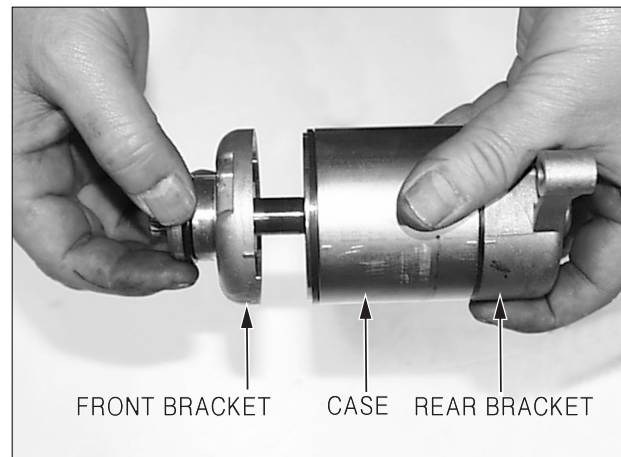
- Push and hold the brush inside the rear bracket, and insert the armature into the rear bracket groove.
- Align the case mark with the rear bracket mark, and install the case.
- Insert the thrust washer (0.5t), thrust washer (0.2t), slip washer and thrust support.



CAUTION

- The sliding surfaces of the brushes can be damaged if they are not installed properly.
- When inserting the armature into the case, hold the armature tightly to keep the magnet from pulling the armature against the case.

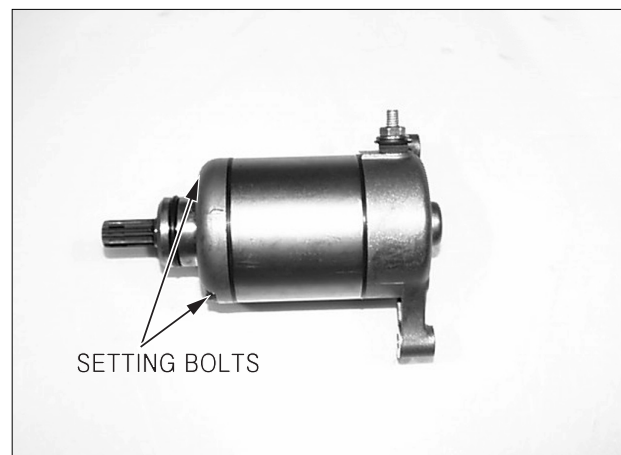
- Align the front bracket with the case mark, and install the front bracket.



- Tighten the motor cover bolts.

CAUTION

- When installing the cover, take care to prevent damaging the oil seal lip with the shaft.
- Overtightening the starter motor cable terminal nuts may cause the inside the starter motor, resulting in serious damage to the inner connectors.



STARTER MAGNETIC SWITCH

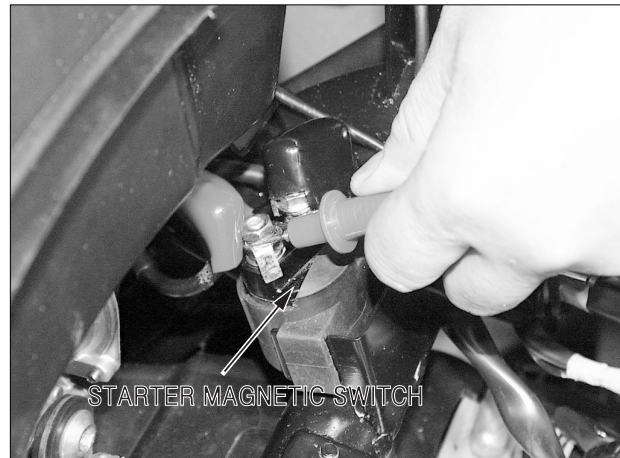
REMOVAL

- Release the seat lock with the main key.
- Remove the luggage box. (⇒4-4)
- Remove the center cover. (⇒4-5)
- Remove the battery (+) cable from the starter magnetic switch terminal.
- Remove the starter motor cable from the starter magnetic switch terminal.
- Disconnect the yellow / red connector and green / yellow connector from the wire harness.
- Remove the starter magnetic switch from the switch setting bracket securing the frame.
- Install in the reverse order of removal.



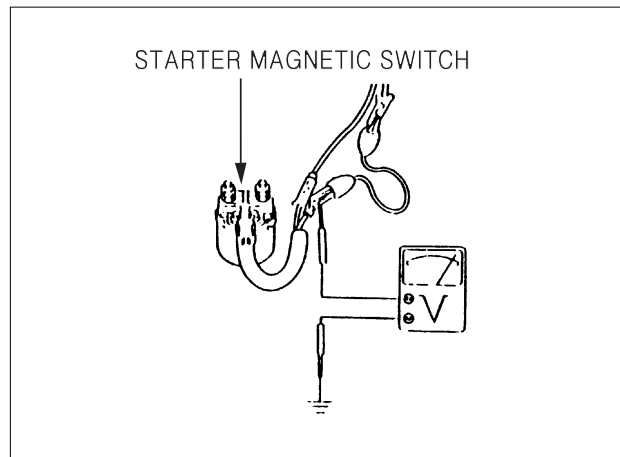
INSPECTION

- Check if the starter magnetic switch “clicks” when it is turned ON.
 - Clicks → · Poorly connected battery terminal and motor terminal of the switch. (Check the starter magnetic switch)
 - No clicks → · No starter magnetic switch input voltage. (Faulty relay ground line and starter magnetic switch)



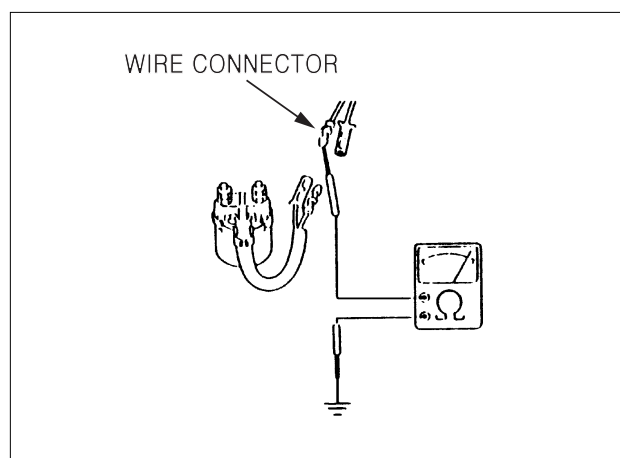
Starter magnetic switch voltage

- Measure the voltage between the yellow / red wire (+) and ground at the starter magnetic switch connector.
- If battery voltage appears only when the starter switch is pressed, it is normal.



Starter magnetic switch ground line

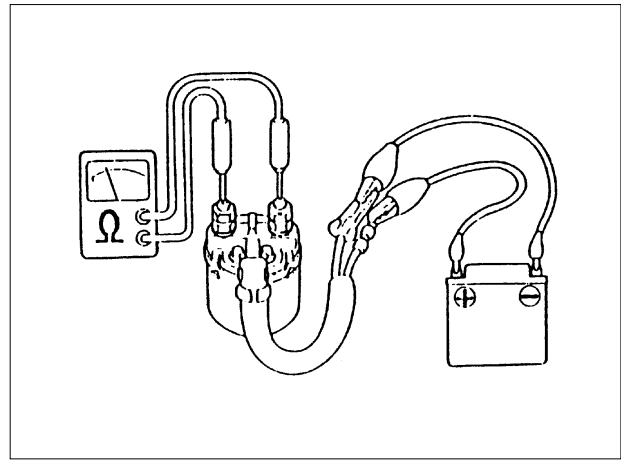
- Disconnect the wire connector from the starter magnetic switch and check for continuity between the ground wire (green / yellow) and ground.



STARTER SYSTEM

OPERATION CHECK

- Disconnect the magnetic switch wire connector.
- Apply battery voltage between terminals, when the yellow / red wire is connected to the positive (+) battery terminal and the green / yellow wire to the negative (-) battery terminal.
- If there is continuity between battery and motor terminal, it is normal.



18. LIGHTS/METER/SWITCHES

SERVICE INFORMATION · · · · 18-1	HORN INSPECTION · · · · · 18-4
TROUBLESHOOTING · · · · · 18-1	MAIN SWITCH · · · · · 18-4
HEADLIGHT · · · · · 18-2	HANDLE BAR SWITCH · · · · 18-4
FRONT/REAR WINKER · · · · 18-2	TRUNK LAMP SWITCH · · · · 18-5
REAR COMBINATION LIGHT · · 18-3	FRONT/REAR STOP SWITCH · · 18-5
METER · · · · · 18-3	PARKING BRAKE SWITCH · · · 18-6
SPEEDOMETER · · · · · 18-3	FUEL UNIT · · · · · 18-6

SERVICE INFORMATION

GENERAL SAFETY

- Connect the same color wires together. Connect couplers carrying the same color and the same number of pins together.
- All couplers are equipped with tabs which can be locked. Remove these locks prior to disassembling ; and insert these tabs all the way until locked when assembling.
- Carry out continuity test on circuits or parts to diagnose electric systems. The continuity test on normal parts can be carried out without removing the parts from the vehicle. Simply disconnect the wires and connect a continuity tester or an ohmmeter to the coupler terminals or connectors.
- The continuity test is conducted to check if electric power is connected between 2 terminals. If there is coil resistance within circuits, or to check the large resistance resulting from the connector corrosion, an ohmmeter is required to check the circuit resistance value.

TROUBLESHOOTING

Light not turned on when the main switch is ON

- Faulty light bulb
- Faulty switch
- Faulty or disconnected wiring
- Fuse cut
- Battery discharged

Dim headlight

- Battery discharged
- Wiring and switch resistance high

Headlight Hi-Low beam cannot be changed

- Faulty light bulb
- Faulty dimmer switch

Fuel meter indicator malfunctioning

- Coupler separated.
- Harness disconnected.
- Float operation malfunction.
- Fuel unit damaged.

Fuel meter needle unstable

- Coupler loose.
- Fuel unit damaged.
- Meter damaged.

HEADLIGHT

REMOVAL

- Remove the front cover. (⇒4-3)
- Disconnect the headlight wiring.
- Loosen the 4 setting bolts securing the front cover.
- Remove the headlight assembly.
- Install in the reverse order of removal.

BULB REPLACEMENT

NOTE

- Before replacing the bulb, be sure to check the switches for loose connection of the connectors.

- Pull off the headlight socket without turning.
- Remove the rubber cover A.
- Release the steel wire and remove the headlight bulb.
- Replace with a new bulb.
- Install in the reverse order of removal.

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.

CAUTION

- If you touch the bulb with your bare hands, clean it with a cloth moistened with denatured alcohol to prevent early bulb failure.
- Avoid touching Halogen headlight bulb. Finger prints can create hot spots that cause a bulb to break.
- Be sure to install the dust cover after replacing the bulb.



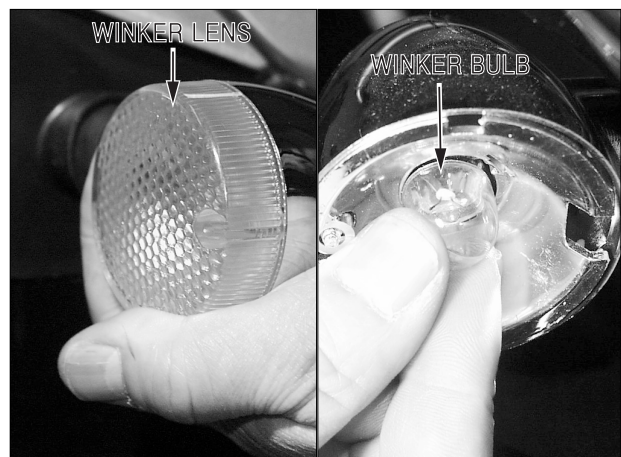
FRONT/REAR WINKER

BULBS REPLACEMENT

- Loosen the tapping screw and remove the winker lens.
- Remove the bulb from the socket.
- Replace with a new bulb.
- Install in the reverse order of removal.

NOTE

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



REAR COMBINATION LIGHT

BULB REPLACEMENT

- Loosen the 2 screws and remove the tail light lens.
- Remove the bulb from the tail light socket.
- Replace with a new bulb.
- Install in the reverse order of removal.

NOTE

- Pay attention not to damage the tail light lens when removing it.
- Be sure to install the lens seal accurately when installing the tail light lens.



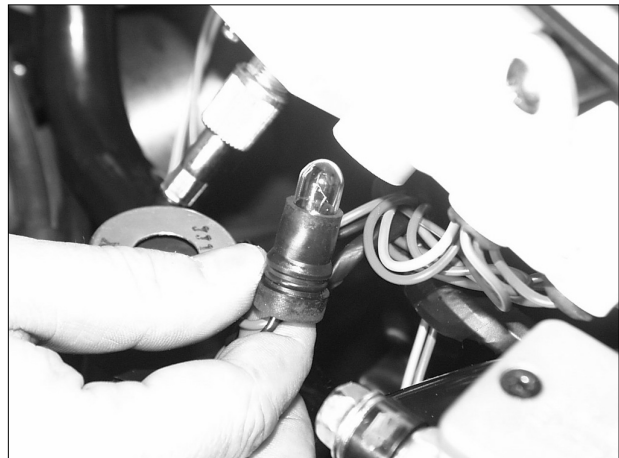
METER

BULB REPLACEMENT

- Remove the back mirror.
- Remove the wind screen. (⇒4-10)
- Remove the front handle cover. (⇒4-10)
- Remove the RH./LH. front winker wiring.
- Remove the bulb from the socket, replace with a new bulb.
- Install in the reverse order of removal.

NOTE

- Check the each switch for proper operation.



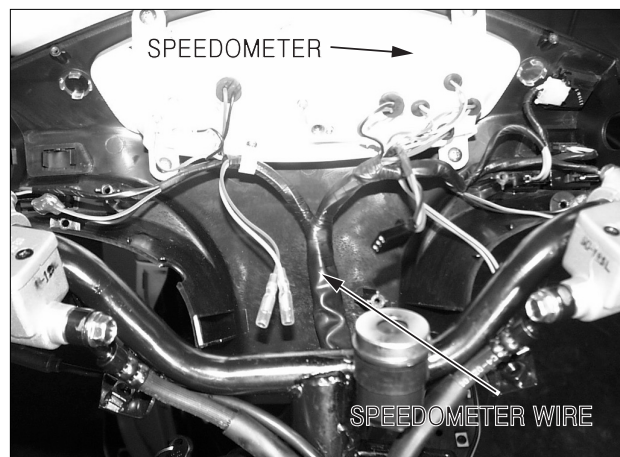
SPEEDOMETER

REMOVAL

- Remove the wind screen. (⇒4-10)
- Remove the front handle cover. (⇒4-10)
- Remove the front cover. (⇒4-10)
- Remove the front top cover.
- Remove the front / rear stop switch wire.
- Remove the speedometer cable from the meter.
- Remove the winker relay and horn wire.
- Loosen the 2 rear handle cover setting screws, remove the speedometer and rear handle cover from the steering handle.
- Disconnect the RH./LH. switch wire.
- Loosen the 4 tapping screws securing the rear handle cover, remove the speedometer from the rear handle cover.
- Remove the speedometer wire from the clamp, remove the speedometer coupler connected to the wire harness.
- Remove the speedometer assembly.
- Install in the reverse order of removal.

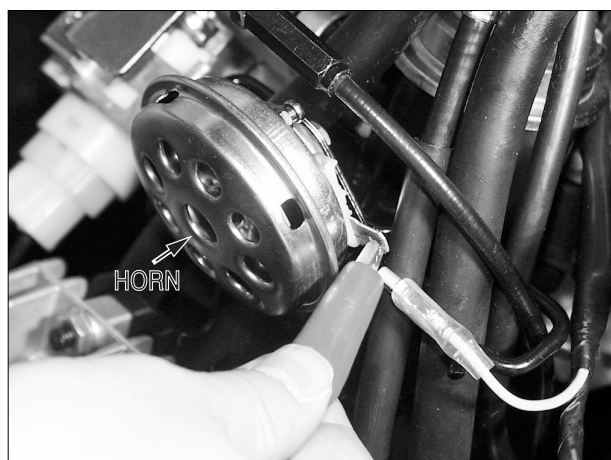
NOTE

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



HORN INSPECTION

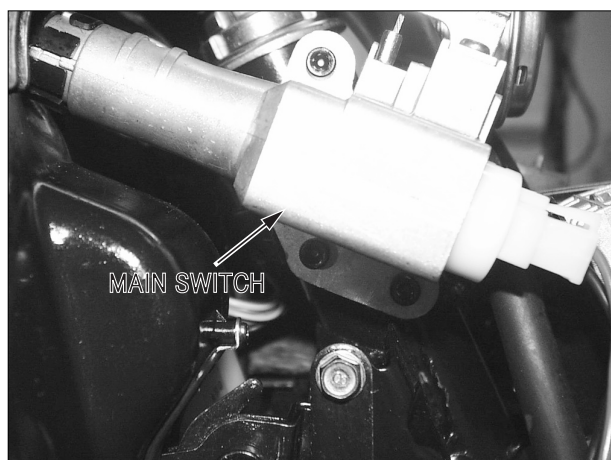
- Remove the front cover. (⇒4-3)
- Remove the horn wiring, and connect a fully charged 12V battery. Check the sound quality for any abnormalities.
- Install in the reverse order of removal.



MAIN SWITCH

REMOVAL

- Remove the front cover. (⇒4-3)
- Disconnect the main switch coupler.
- Release the lock, remove the main key cover.
- Remove the seat lock cable.
- Loosen the 3 screws and remove the main switch.
- Install in the reverse order of removal.



INSPECTION

- Check for continuity between the terminals
- There should be continuity between the O—O positions on the continuity chart.

COLOR	BLACK/WHITE	GREEN	RED	BLACK
TERMINAL	IG	E	BAT	BATO
OFF	○ — ○			
ON			○ — ○	
LOCK	○ — ○			



HANDLE BAR SWITCH

INSPECTION

- Remove the back mirror.
- Remove the wind screen. (⇒4-10)
- Remove the front handle cover. (⇒4-10)
- Disconnect the RH./LH. winker wire.
- Disconnect the handle bar switch connector and coupler, check for continuity between the terminals.
- There should be continuity between the O—O positions on the continuity chart.



STARTER SWITCH

COLOR	YELLOW/RED	GREEN
TERMINAL	ST	E
FREE		
PUSH		

LIGHTING SWITCH

COLOR	PINK	BROWN/WHITE	BROWN	BLACK
TERMINAL	RE	HL	TL	BAT
OFF				
PO				
(N)				
H				



DIMMER SWITCH

COLOR	BLUE	BROWN/WHITE	WHITE
TERMINAL	HI	HL	LO
LO			
(N)			
HI			

WINKER SWITCH

COLOR	SKY BLUE	GRAY	ORANGE
TERMINAL	R	WR	L
R			
N			
L			



HORN SWITCH

COLOR	LIGHT GREEN	BLACK
TERMINAL	HO	BATO
FREE		
PUSH		

HAZARD SWITCH

COLOR	SKY BLUE	GRAY	ORANGE
TERMINAL	R	WR	L
FREE			
PUSH			

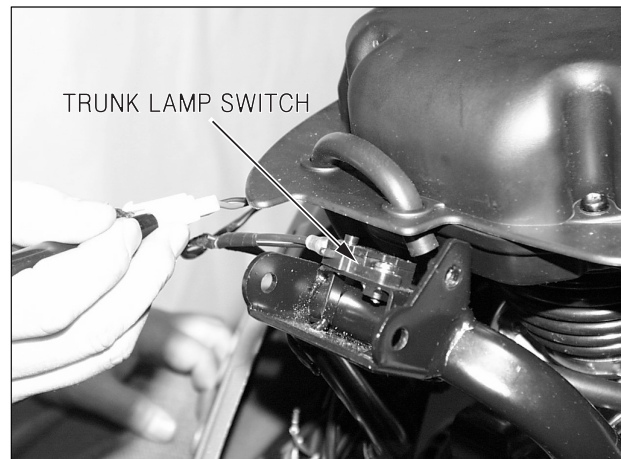
- Install in the reverse order of removal.

TRUNK LAMP SWITCH

INSPECTION

- Release the seat lock with the main key, open the seat.
- Disconnect the trunk lamp switch, check for continuity between the terminals.

COLOR	BLACK/LIGHT GREEN	RED
TERMINAL	TR	BAT
PUSH		
FREE		



FRONT/REAR STOP SWITCH

INSPECTION

- Remove the wind screen. (⇒4-10)
- Remove the front handle cover. (⇒4-10)
- Check for continuity between the black and green / yellow wire terminals inside the speedometer assembly.
 - When the brake lever is pulled - CONTINUITY.
 - When the brake lever is released - NO CONTINUITY.
- Install in the reverse order of removal.

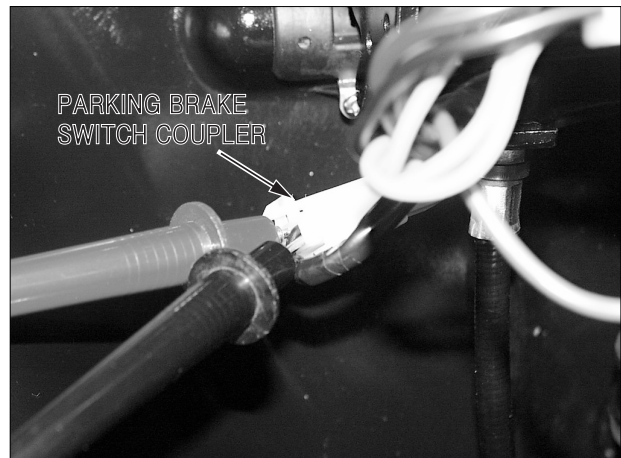


PARKING BRAKE SWITCH

INSPECTION

- Remove the front cover. (⇒4-3)
- Disconnect the parking brake switch coupler, check for continuity between the terminals.
 - When the brake lever is pulled - CONTINUITY.
 - When the brake lever is released - NO CONTINUITY.

COLOR	BROWN/BLACK	BLACK
TERMINAL	PB	HO
ON		
OFF		



FUEL UNIT

REMOVAL

- Release the seat lock with the main key, open the seat.
- Remove the luggage box. (⇒4-4)
- Remove the rear center cover. (⇒4-5)
- Remove the fuel unit wire from the wire harness.
- Loosen the 2 seat catch component fixing screws.
- Turn the fuel unit set cap component to the left, and remove it.
- Remove the fuel unit from the fuel tank.



NOTE

- Be careful not to damage the wire.
- Be careful not to damage the float arm.
- Check the base packing for damage.

INSPECTION

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

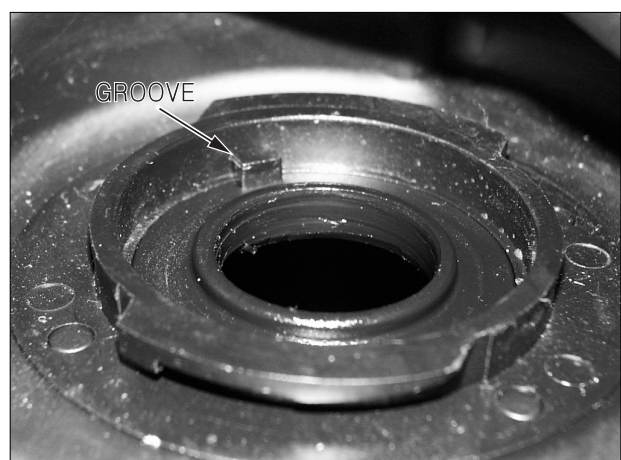
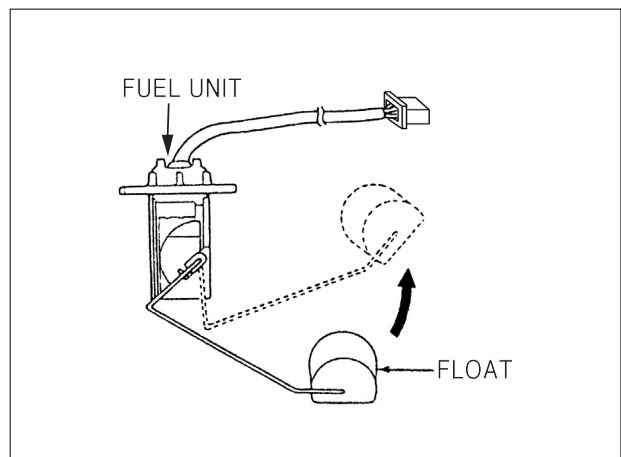
Unit: Ω , (20°C)

WIRE TERMINAL	FLOAT UPPER LINE	FLOAT LOWER LINE
GREEN AND YELLOW/WHITE	30~36	400~750
GREEN AND BLUE/WHITE	400~700	140~160
BLUE/WHITE AND BLUE/WHITE	450~750	450~750

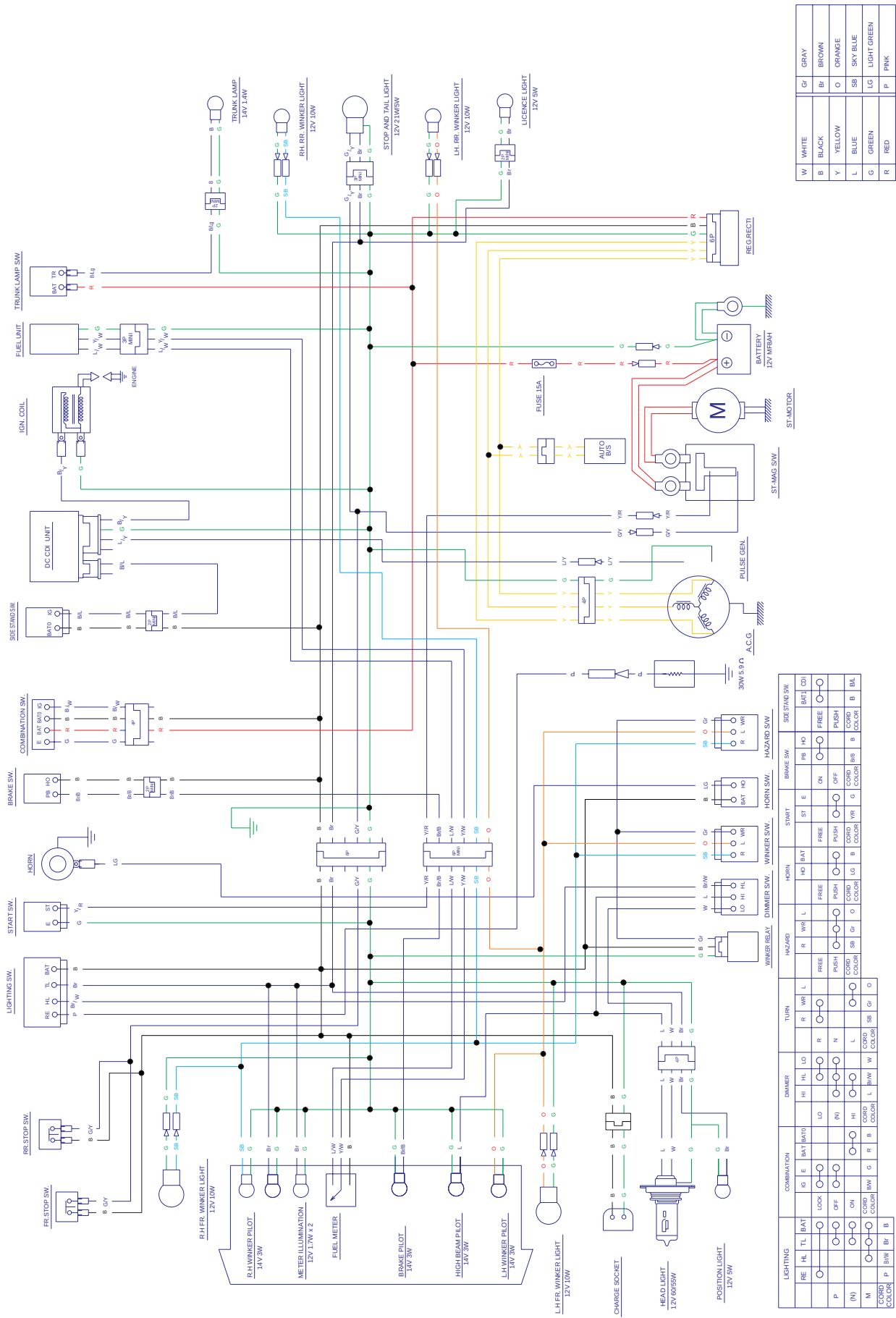
- When the measured value differs greatly from the standard value, replace the fuel unit.
- Install in the reverse order of removal.

NOTE

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



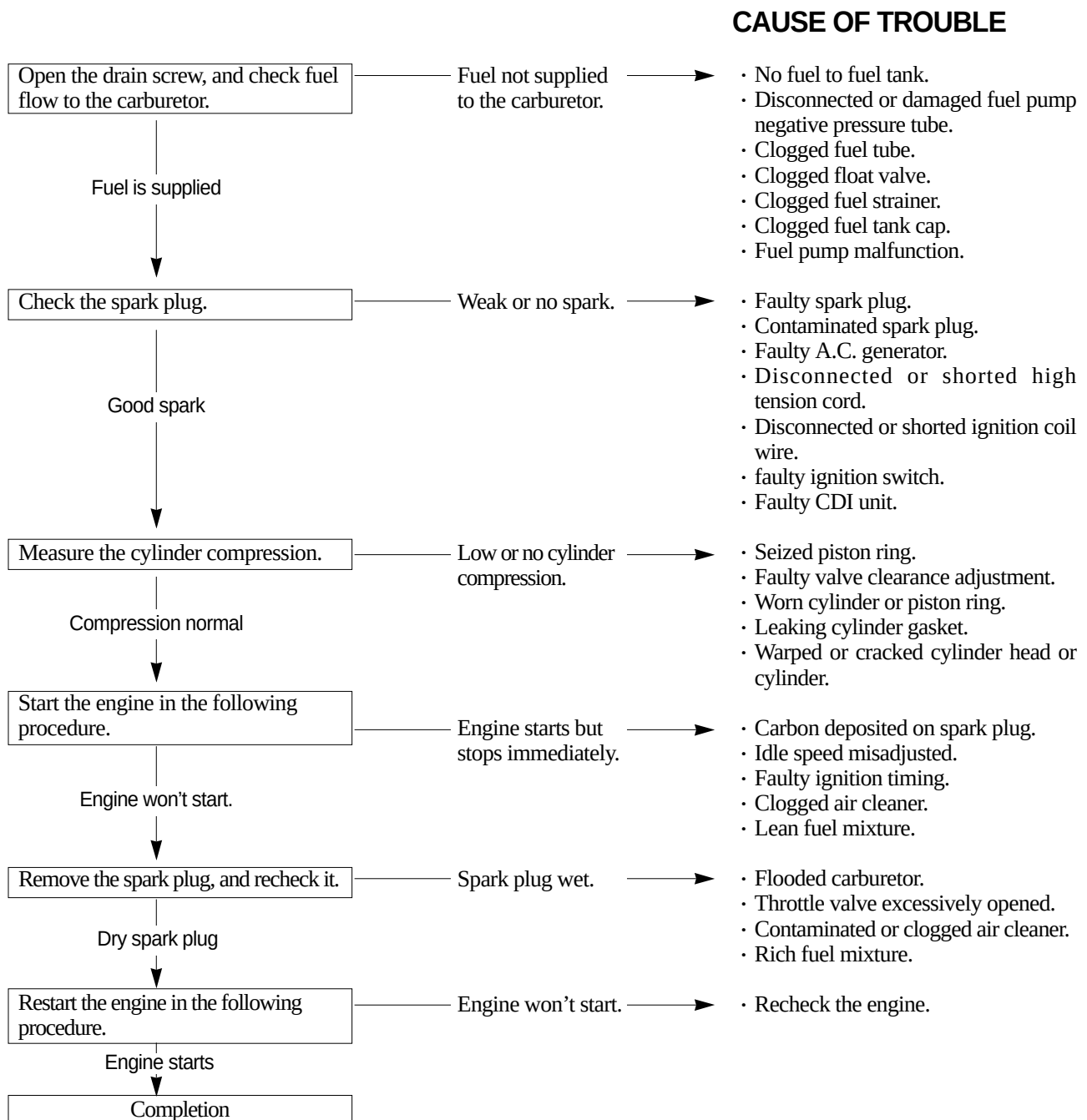
19. WIRING DIAGRAM



20. TROUBLESHOOTING

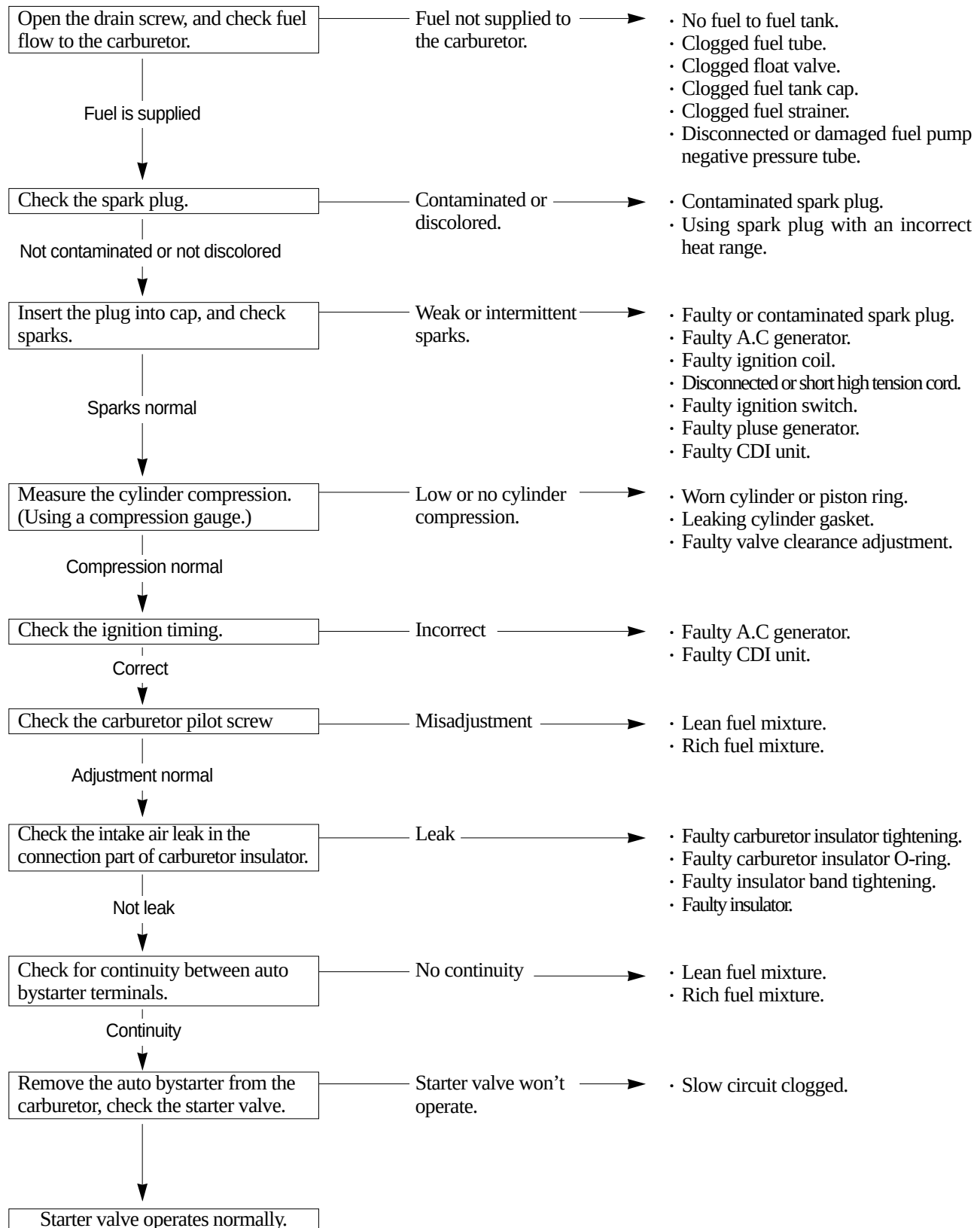
ENGINE WON'T START OR HARD TO START	20-1
ENGINE STALLS, HARD TO START, ROUGH IDLING	20-2
POOR PERFORMANCE AT LOW SPEED AND IDLING	20-3
POOR OPERATION	20-4

ENGINE WON'T START OR HARD TO START



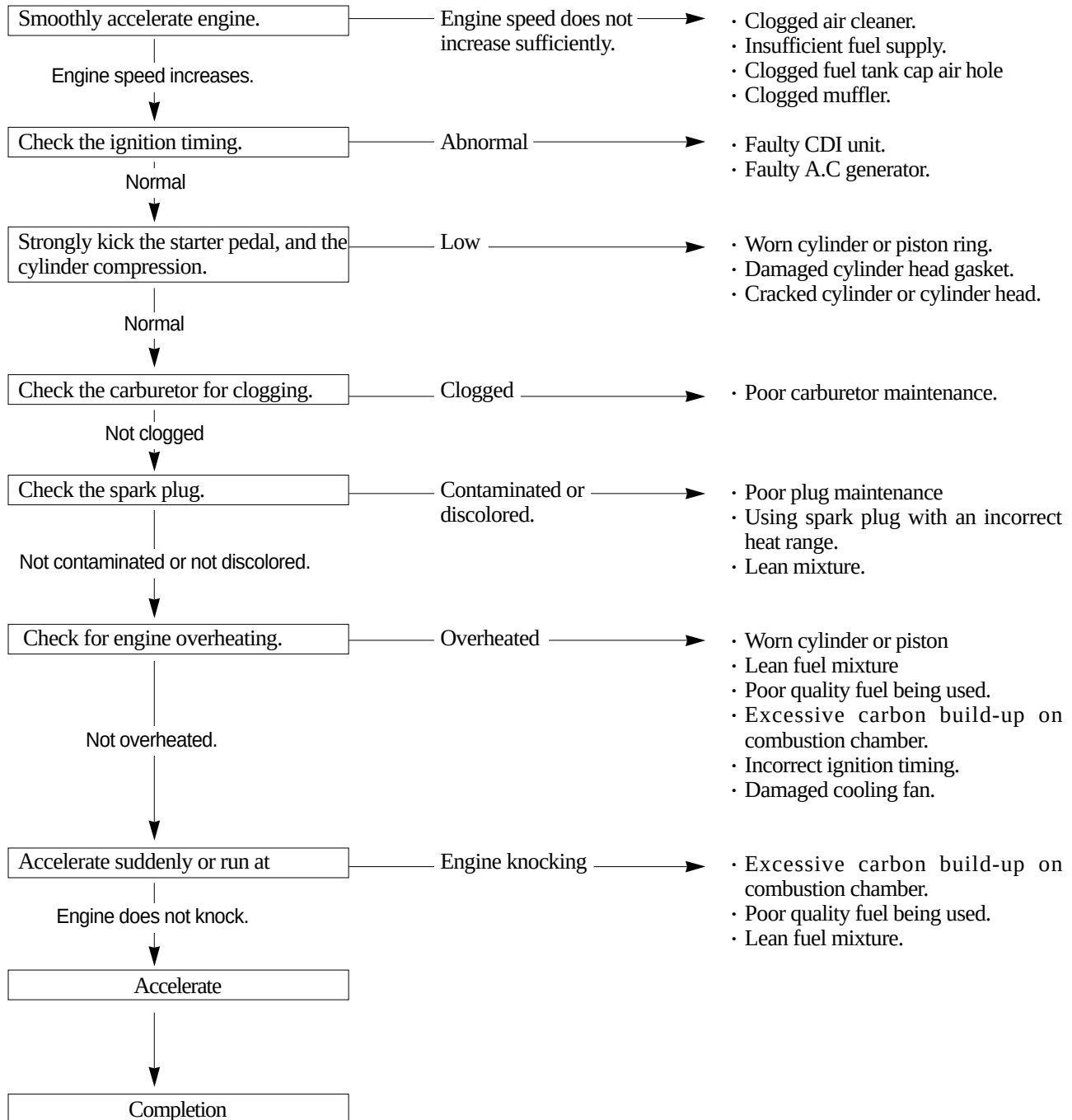
ENGINE STALLS, HARD TO START, ROUGH IDLING

CAUSE OF TROUBLE



POOR PERFORMANCE AT LOW SPEED AND IDLING

CAUSE OF TROUBLE



POOR OPERATION

CLUTCH DRIVE / DRIVEN PULLEY

CAUSE OF TROUBLE

Engine starts but vehicle won't move.	→	• Worn or damaged drive belt. • Damaged ramp plate. • Faulty weight roller. • Faulty movable drive face. • Damaged driven pulley weight shoe spring. • Faulty transmission. • Seized transmission.
Engine stalls or vehicle creeps.	→	• Broken driven pulley weight spring. • Seized clutch outer and weight.
Poor performance at start or lack of power.	→	• Worn or slipped drive belt. • Worn weight roller. • Seized driven face bearing. • Weak driven spring. • Faulty movable driven face.
Poor performance at high speed or lack of power.	→	• Worn or slipped drive belt. • Worn weight roller. • Worn driven pulley bearing.
Abnormal noise or odor.	→	• Oil or grease spilled on the drive belt and inside pulley. • Worn drive belt. • Damaged driven face weight spring. • Worn or seized driven pulley bearing.

HANDLE / WHEEL

Hard steering.	→	• Steering top thread too tight. • Insufficient tire pressure. • Damaged steering bearing. • Damaged ball race. • Faulty tire.
Steering wobbling.	→	• Insufficient tire pressure. • Worn or faulty tire. • Faulty wheel valance. • Bent rim. • Worn or damaged wheel bearing. • Loose axle shaft.
Steers to one side or does not track straight.	→	• Front and rear wheels not aligned. • Bent front cushion. • Bent rear cushion. • Faulty engine hanger. • Poor steering operation. • Faulty wheel alignment.
Wheel turns hard.	→	• Faulty wheel bearing. • Bent axle shaft. • Bent brake disk. • Faulty caliper piston.

POOR FRONT/REAR SUSPENSION PERFORMANCE

CAUSE OF TROUBLE

Soft suspension.	→	• Weak cushion spring • Overloaded • Oil leakage from damper unit
Hard suspension.	→	• Bent fork pipe or cushion rod
Suspension noisy.	→	• Worn slider • Damaged cushion stopper rubber

history SERVICE MANUAL

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