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Notes during operation

Safety cautions

Cautions Exhaust contains toxic ingredients. Do not run the engine in closed places or places with poor ventilation for a long time.



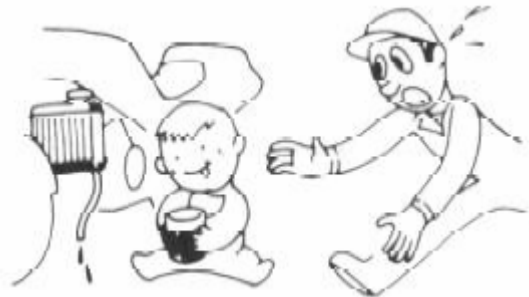
Cautions When the engine just stops, the temperature of engine, muffler is still high; please do not touch them with bare hands, for avoiding burn. Please wear uniform with long sleeves as well as gloves when maintaining.



Cautions The liquor (dilute sulfuric acid) in Battery is strong corrosive; it may burn the skin and blind the eyes when it contacts them. In case of contact, please wash it with a great deal of clear water immediately, and receive medical treatment in hospital. Besides, please also wash it by a great deal of clear when it contacts the clothes, for avoiding skin burn. The Battery and Battery liquor must be stored strictly, away from where children can touch.



Cautions The coolant is poisonous, please do not drink it, do not let it contact the skin, eyes neither clothes. In case it contacts the skin or clothes, please suds it immediately. When it contacts the eyes, please wash it thoroughly with a great deal of clear water immediately, and receive medical treatment in hospital. In case the coolant is drunk by mistake, please try to vomit it out, and receive medical treatment immediately after gargling. The coolant must be stored strictly, away from where children can touch.



Cautions Uniform (pilot uniform etc), cap, safety boots suitable for the operation must be worn, and the safety articles such as dustproof goggles, dustproof respirator and gloves shall be worn for protection when necessary.



Cautions: No smoking or naked fire is allowed at the operation site, for the gasoline is combustibile. Not only flames, but electric sparks shall be avoided. Besides, the vapored gasoline is explosive, please operate it in the place with nice ventilation.



Cautions The Battery may produce combustible and explosive hydrogen when it is being charged. So it may explode if there is flame or electric spark. So please charge it in the place with nice ventilation.



Cautions The personnel shall make them be aware of each other from time to time when operating, for safety confirmation.

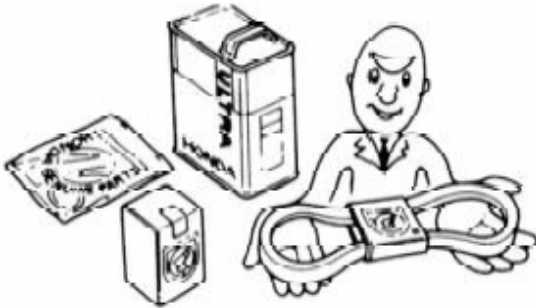


Cautions: do not let the turning or movable pieces such as rear wheel, clutch etc clip your hands or clothes when maintaining.



Cautions to disassembly, assembly

- The parts, lubricant and grease must adopt the pure parts of Chunfeng Brand or recommendation.



- Please clean the dirt, dusts on the vehicle before maintenance.



- The parts of each system shall be arranged and stored separately, so that the parts can be assembled to the original places.



- The gasket, O-ring, piston pin retainer and split pin must be renewed after disassembly.

- The elastic retainer will deform if it is opened too wide upon disassembly, then it will easily fall off when assembled again. Please do not use the elastic retainer that is already loose and without elasticity.



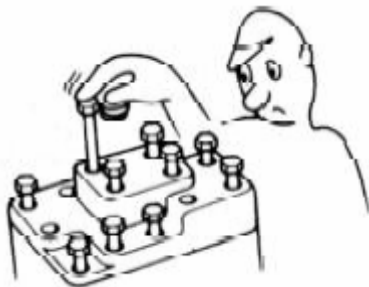
- The parts shall be washed and the cleanser shall be blown away by compressed air prior to determination when they are disassembled and inspected. The working surface shall be lubricated before assembly.



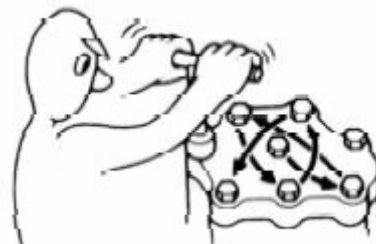
- Inspect the necessary sites upon disassembly, measure the relevant data, so that the original status can be resumed after assembly.



- Insert and arrange the bolts one by one and make sure the insertion volume of each bolt is equal before inserting them, when the bolt length is unidentified.



- The fasteners such as bolts, nuts and screws shall be pre-fastened, and then be fastened on the diagonal according to regulated fastening torque in the principle of from big to small, from inside to outside.



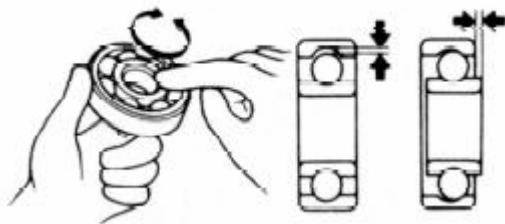
- The rubber parts shall be checked whether they are aged upon disassembly, renew them in advance when necessary. Besides, try not to make volatile oil, grease etc attach on the rubber parts, for they are not resistant to corrosion of gasoline or kerosene.



- Proper special tools must be applied to the operations which require special tools



- The inside or outside track of ball bearing shall be turned manually, for confirming the flexibility and smoothness of turning.
 - The parts that are loose axially or radially shall be renewed.
 - The parts that are unsmooth shall be washed with oil, and the parts that are not repaired after washing shall be renewed (the dual-side dustproof type cannot be washed)
 - Press it into the machine or axis, and the bearing shall be renewed if the pressed part is not tight enough.



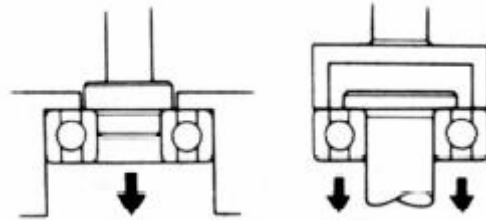
- Do not let the bearing race turn back when blowing the ball bearing by compressed air after washing. If the bearing race turns back, its high back turning speed will be beyond the limit that may result in damage of bearing. The bearing shall be lubricated with engine oil or grease before assembly.



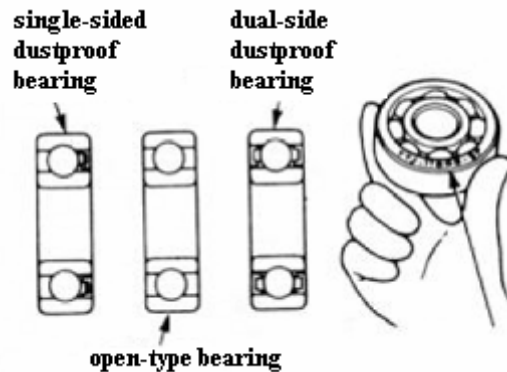
- The recommended lubricating grease must be applied or injected in the appointed positions.



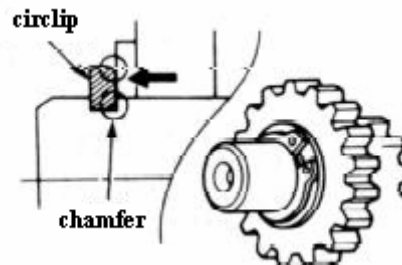
- When disassembling the pressed ball bearing, the disassembled bearing must not be used again if the balls are forced for disassembly.



- The installation direction of single-sided dustproof bearing shall be paid attention to upon disassembly. The surface of open-type or dual-side dustproof bearing that is with the sign of manufacturer, dimensions shall face outside upon installation.



- The side with chamfer shall face the impact direction when installing the circlip. The circlip that is loose already or without elasticity shall not be used again. Rotate the circlip after assembly, for confirming that it is installed in the groove properly.



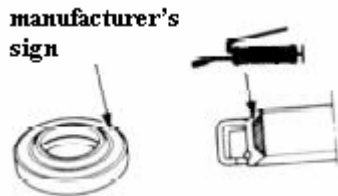
- Each fastening part must be inspected whether they are tightened and work well after assembly.



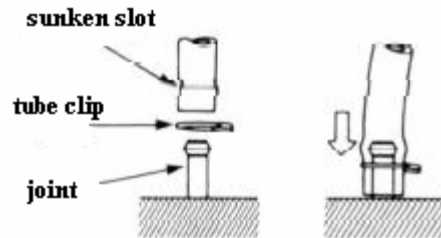
- The brake fluid and coolant may damage the application surface, plastic parts, rubber parts etc. Do not let the fluid attach to such parts. In case of attachment, wash it immediately with water.



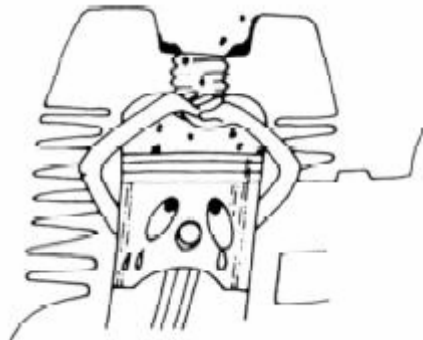
- The side of oil seal with manufacturer's sign shall be installed facing outside (the direction without oil).
 - Avoid the crimp of oil seal lip when assembling, do not let the burrs damage the oil seal lip.
 - The oil seal lip shall be applied with grease before assembly.



- The tube shall be inserted to the base of joint when installing the tube parts. If there is tube clip, the tube clip shall be installed in the sunken slot of tube. The tube that is without tightness upon installation shall be renewed.



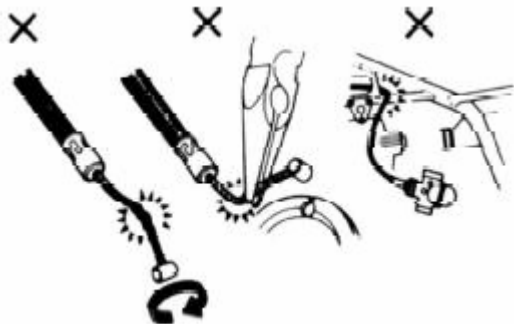
- Avoid the entry of dusts, dirt into the engine or the oil pressure system of brake.



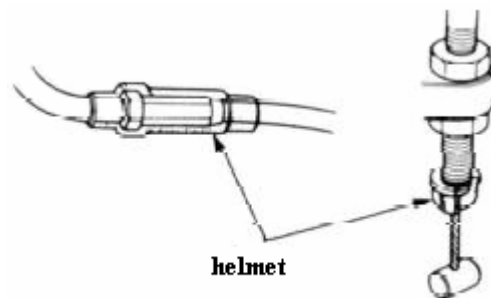
- The gasket attached to the combination surface of each cabinet of engine shall be cleaned before assembly. The impact mark on the contact surface must be removed by whetstone evenly.



- The stayed cables shall not be over contorted or bent. Deformed or damaged stayed cables will cause malfunction or dilapidation.

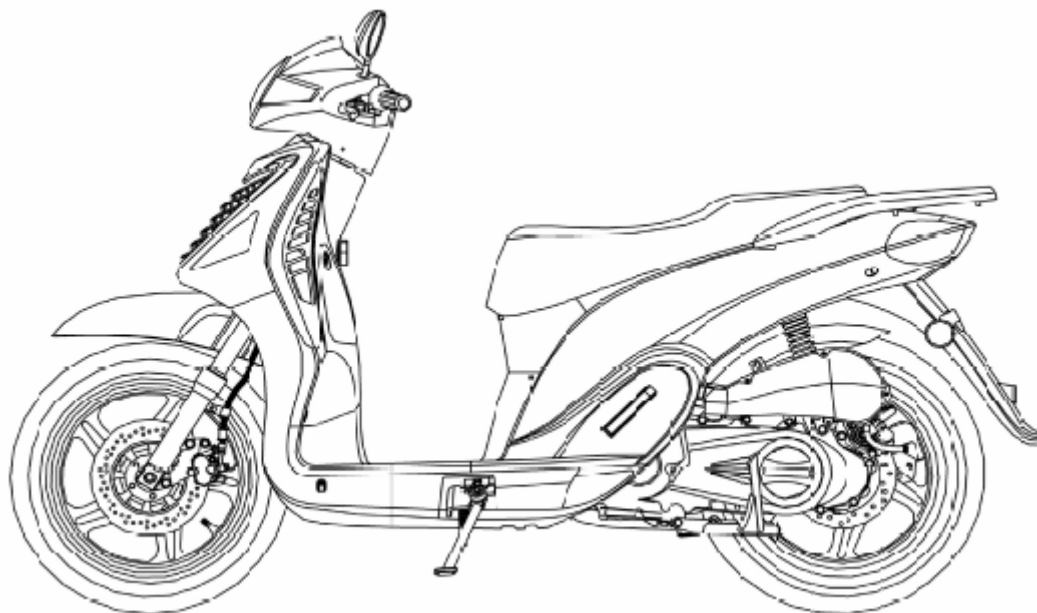


- When assemble the helmet type parts, the helmet must be inserted into the groove if there is groove.

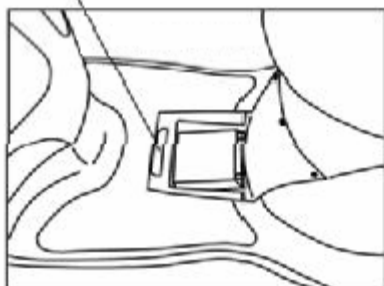


Number marking position

	CF150T-5i	CF125T-21i
Vehicle frame number:	LCETDKP6~	LCETDJPM~
Engine number:	1P58MJ-A(1)~	1P52MI-B(1)~



marking position of
vehicle frame number



marking position of engine number

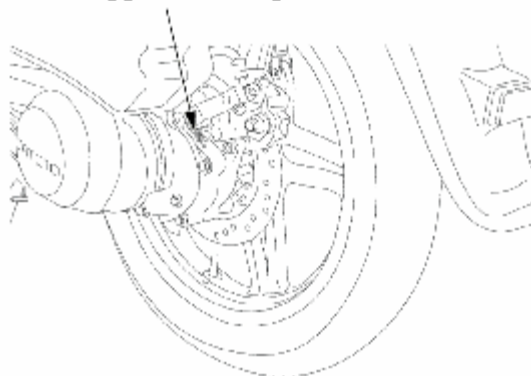


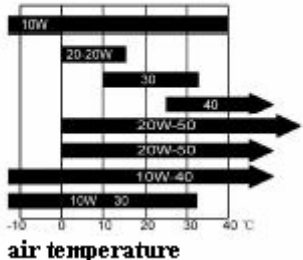
Table of main parameters

Item		Parameter		
Name and model		CF150T-5i/CF125T-21i		
Length		2075mm		
Width		690mm		
Height		1200mm		
Wheelbase		1385mm		
Engine model		1P58MJ-A(1) /1P52MI-B(1)		
Total capacity		152.7ml /124.6ml		
Fuel type		Gasoline above #93		
Gross weight		130kg	127kg	
Number of passenger		2 (including driver)		
Rated load		150kg		
Tyre specification	Front-wheel	100/80-16		
	Rear wheel	110/80-16		
Minimum ground Gap		160mm		
Minimum turning diameter		4.5m		
Engine	Startup mode		Electric startup	
	Engine model		Four-stroke gasoline engine	
	Cylinder quantity and distribution		Single-cylinder, horizontal	
	Model of combustion chamber		Hemisphere	
	Valve drive model		OHC chain drive	
	Cylinder diameter × stroke		58 × 57.8mm	52.4 × 57.8mm
	Compression ratio		11:1	10.3:1
	Max. power and relevant rotate speed		9.0kW/8500r/min	6.5kW/8500r/min
	Max. torque and relevant rotate speed		10.8N· m/7250r/min	8.0N· m/7000r/min
	Air distribution Phase	Air inlet gate	Open	0° (1mm) BTDC
			Close	30° ABDC
		Air exhaust gate	Open	35° BTDC
			Close	0° TDC
	Lubricating method		Pressure, splashing type	
Type of lubricating oil pump		Rotor type		
Type of lubricating oil filter		Full flow filtration screen		
Cooling mode		Forcing water cooling		

Item		Parameter	
Air inlet device	Type of air cleaner	Paper filter core	
	Body of throttle valve	Model	BING: 7226101
		Diameter of throttle valve	26mm
	Idle air control valve	Model	Siemens ABV379-015
Transmission device	Clutch	Type	Dry automatic centrifugation type
		Operation mode	Automatic centrifugation type
	1-stage reduction	Type of gear	Bevel wheel
		Reduction ratio	3.13/3.77
	2-stage reduction	Type of gear	Bevel wheel
		Reduction ratio	3.21
	Variable speed gear	Type	V-notched belt type
		Operation mode	Automatic infinitely variable speeds
Variable speed ratio		2.5~ 0.8	
Turning device	Turning angle	Right	45°
		Left	45°
Type of braking device		Front	Hydraulic disc type
		Back	Hydraulic disc type
Buffer unit	Suspension mode	Front wheel	Cylinder type
		Rear wheel	Rocker type
Frame type		Steel pipe and steel plate welding type	

Table of maintenance parameter

Lubricating device

Item		Standard	Operation limit
Capacity of engine oil	When the engine renews oil	0.8 <i>l</i>	-
	Full capacity	1.0 <i>l</i>	-
Recommended engine oil (see the original).		<ul style="list-style-type: none"> ■ SAE-10W-40、20W-50 are be used exclusively for 4-stroke motorcycle <p>Selection must be made within the following range if substitute is preferable.</p> <ul style="list-style-type: none"> ■ API classification: SE or SF grade engine oil. ■ SAE specification: select from the table at right according to the outdoor temperature. 	
<p style="text-align: center;">relationship of air temperature and viscosity</p>  <p style="text-align: center;">air temperature</p>			
Oil pump rotor	Gap between external rotor and internal rotor	0.15mm	0.20mm
	The body Gap	0.15 ~ 0.23mm	0.25mm
	Gap of end face	0.05 ~ 0.10mm	0.12mm

Fuel device

Item		Standard
Oil supply device	Capacity of fuel tank	Full capacity: 7.8 <i>l</i>
	Oil injector	Model: Valeo: 01F023
	Fuel pump	Voltage: DC13.5V
		Pressure: 0.25± 0.007Mpa
		Flow rate: ≥ 35L/h
		Current: ≤ 2.20A
		Safe pressure: 0.5-0.6Mpa
Idle rotate speed	1700± 100r/min	

Cooling device

Item		Standard
Capacity of coolant	Full capacity	0.8l
	Capacity of assistant water box	0.26l
	Standard concentration	50% (proportion for compounding with original fluid)
Opening pressure of water-adding entry lid		108kPa (1.1kgf/cm ²)
Thermostat	Initial temperature	71± 3℃
	Full opening temperature	88℃
	Full opening lift range	3.5—4.5mm

Cylinder cover, valve

Item		Standard	Operation limit	
Compression pressure of cylinder		700kPa(7.0kgf/cm ²) -260r/min	-	
Valve gap	IN	0.05mm	-	
	EX	0.20mm	-	
Skewness of cylinder cover		-	0.05mm	
Camshaft	Height of cam top	IN	30.74— 30.86mm	30.69mm
		EX	30.33— 30.45mm	30.28mm
Valve rocker	Interior diameter of valve rocker hole	IN/EX	10.000— 10.015mm	10.10mm
	External diameter of valve rocker shaft	IN/EX	9.978— 9.987mm	9.91mm
Valve	External diameter of valve stem	IN	4.975— 4.99mm	4.965mm
		EX	4.955— 4.97mm	4.945mm
Sleeve for valve guide	Interior diameter of valve guide	IN	5— 5.012mm	5.04mm
		EX	5— 5.012mm	5.04mm
	Gap of valve stem and valve guide	IN	0.01— 0.037mm	0.075mm
		EX	0.03— 0.057mm	0.095mm
Driving depth of valve guide	IN/EX	11.9— 12.1mm	-	
Contact width of valve seat	IN/EX	0.9-1.1mm	1.8mm	
Valve spring	Overhanging length (outer/inner spring)	IN/EX	35.0/32.3mm	33.5/30.8mm

Automatic continuously variable transmission variator

Item		Standard	Operation limit
Drive wheel of Derailleur	Moving disc subassembly for derailleur	24.007— 24.028mm	24.07mm
	External diameter of shaft sleeve for drive wheel disc	23.959— 23.98mm	23.92mm
	External diameter of centrifugal rotor subassembly	19.95— 20.05mm	19.45mm
Belt width		21.7— 23.3mm	20.7mm
Driven wheel of clutch	Thickness of friction plate	—	2.75mm
	Internal diameter of clutch outer rotary table	124.5— 124.2mm	125mm
	Overhanging length of clutch spring	144— 146mm	140mm
	External diameter of driven rotary table	33.95— 33.975mm	33.92mm
	Internal diameter of moving driven rotary table	34.000— 34.025mm	34.06mm

Reducing mechanism

Item		Standard
Quantity of engine oil	Upon renewal	0.15l
	Upon disassembly	0.15l
Recommended reducer oil		Grade SAE15W-40/SF

Starting motor

Item		Standard	Operation limit
Starting motor	Brush length	10mm	7mm

Crank, piston, and cylinder

Item			Standard (Unit mm)		Operation limit (Unit mm)	
			1P52MI-B(1)	1P58MI-A(1)		
Crank	Big end of the connecting rod	Axial Gap	0.16— 0.304		0.5	
		Radial Gap	0.005-0.017		0.05	
	Crank runout	—		0.10		
Piston	Installation direction of piston		The “IN” mark shall face the air inlet side		—	
	External diameter of piston		52.37— 52.39	57.97— 57.99	52.32	57.92
	Interior diameter of piston pin hole		15.002— 15.008		15.04	
	External diameter of piston pin		14.994— 15.000		14.98	
	Interior diameter of the small end of connecting rod		15.016— 15.034		15.05	
	Gap between cylinder and piston		0.02— 0.04		0.08	
	Gap between piston and piston pin		0.002— 0.014		0.04	
	Gap between piston pin and connecting rod		0.016-0.040		0.06	
	Gap between piston ring and piston ring grooves	Piston ring (I)	0.02— 0.044		0.07	
		Piston ring (II)	0.02— 0.044		0.07	
	Gap of piston ring opening	Piston ring (I)	0.15— 0.30		0.45	
		Piston ring (II)	0.10— 0.25		0.45	
Oil ring		0.2— 0.7		0.9		
Installation direction of piston ring		Mark upward		—		
Cylinder	Interior diameter		52.4— 52.419	58— 58.019	52.449	58.049
	Deformation on the top		—		0.05	
	Roundness		—		—	
	Cylindricity		—		0.05	

Front wheel

Item		Standard	Operation limit	
Front wheel	Front wheel axis bend	—	0.2mm	
	Rim runout	Longitudinal	0.8mm	2.0mm
		Transverse	0.8mm	2.0mm
	Tyre	Remnant groove	—	1.6mm
Air pressure		200kPa(2.0kgf/cm ²)	—	

Rear wheel

Item		Standard	Operation limit	
Rear wheel	Rim runout	Longitudinal	0.8mm	2.0mm
		Transverse	0.8mm	2.0mm
	Tyre	Remnant groove	—	1.6mm
		Air pressure	225kPa(2.25kgf/cm ²)	—

Brake system

Item		Standard	Operation limit
Front brake	Gap of brake handlebar	10—20mm	—
	Thickness of brake disc	4mm	3mm
Back brake	Gap of brake handlebar	10—20mm	—
	Thickness of brake disc	4mm	3mm

Battery, charging device

Item		Standard	
AC magneto	Type	Permanent-Magnetic AC	
	Output	3-phase AC	
	Resistance of charge coil (20°C)	0.2 -0.3Ω	
Model of rectifier		3-phase loop rectification, silicon control voltage-stabilizing in parallel	
Battery	Capacity	12V7Ah	
	Voltage between terminals	Full charge	12.8V
		Undercharge	Below 11.8V
	Charging current/period	Standard	0.7A× 5~10h
		Fast	3.0A× 1h

Ignition device

Item		Standard
Ignition mode		ECU control unit ignition mode
Spark plug	Type	NGK
	Standard	DPR7EA-9
	Selection	
	Gap of spark plug	0.8—1.0mm
Ignition period	Max. advance angle	43° BTDC
Peak voltage	Ignition coil	≥ 150V
	Pulser	≥ 0.8V

Light, instrument, switch, trigger coil

Item		Standard
Fuse	Main	20A
	Auxiliary	10A× 2 5A× 2
Light, bulb	Headlamp (Hi/Lo)	12V-35/35W
	Brake light/Taillight	12V-21/5W
	Turning indicator	12V-10W× 4
	Lamp for speedometer	12V-1.7W× 3
	Turning indicator light	3.4W-12V× 2
	Indicator light for high beam	3.4W-12V× 1
	Indicator light for P gear	3.4W-12V× 1
	Error indicator light	1.7W-12V

Fastening torque

Category	Torque N·m (kgf·m)	Category	Torque N·m (kgf·m)
5mm Bolt, nut	5 (0.5)	5mm Screw	4 (0.4)
6mm Bolt, nut	10 (1.0)	6mm Screw	9 (0.9)
8mm Bolt, nut	22 (2.2)	6mmSH Bolt with flange	10 (1.0)
10mm Bolt, nut	34 (3.5)	6mm Bolt with flange, nut	12 (1.2)
12mm Bolt, nut	54 (5.5)	8mm Bolt with flange, nut	26 (2.7)
		10mm Bolt with flange, nut	39 (4.0)

The places which are not recorded in the following table shall be tightened according to standard torque.

Cautions: 1. The screw thread, combination surface shall be applied with engine oil

2. The self-lock bolt shall be renewed upon disassembly

Category	Quantity	Diameter of screw thread (mm)	Torque N.m (kgf.m)	Remark
Spot test, adjustment				
Test of engine oil in reduction box/discharging plug screw	1	8	22 (2.2)	
Cover of engine oil filtering screen	1	36×1.5	20 (2.0)	
Oil discharging bolt	1	12×1.5	25 (2.5)	
Spark plug	1	12×1.5	12 (1.2)	
Lubricating device				
Mounting bolt of oil pump and body	2	6	10 (1.0)	
Screws for cover plate of oil pump	1	3	2 (0.2)	
Cooling device				
Draining bolt	1	6	8(0.8)	
Water temperature sensor	1	12	12(1.2)	
Impeller of water pump	1	7	10(1.0)	
Hood for cylinder cover, cylinder cover				
Bolts of cylinder cover hood	2	6	10(1.0)	
Double-head bolt for cylinder	Short 2	8	30(3.0)	
	Long 2		30(3.0)	
Bolts for timing chain wheel	2	5	9(0.9)	
Bolts of tensioner spring seat	1	8×1	10(1.0)	
Pin shaft with screw thread for tensioning plate	1	8	13(1.3)	
Belt infinitely variable speeds mechanism				
Bolts for left cover	5	6	10(1.0)	
Nuts of speed changer	1	14	59(6.0)	
Nuts special for clutch	1	28	59(6.0)	
Clutch nuts	1	12	53(5.3)	
AC magneto				
Nuts for AC magneto	1	14	59(6)	
Bolts for case flange	8	6	12(1.2)	
Internal hexagonal bolt overrun clutch	3	6	15(1.5)	

Vehicle

Category	Quantity	Diameter of screw thread (mm)	Fastening torque N.m (kgf.m)	Remark
Disassembly and assembly of engine				
Mounting bolts for engine hanger	2	10	55(5.6)	
Nuts for engine hanger shaft	1	10	55(5.6)	
Front wheel, front suspension, steering gear				
Steering column locknut	1	23	68(7.0)	
Nuts for assembling steering handle	1	10	55(5.6)	
Nuts of front wheel shaft	1	12	80(8.1)	
Upper Mounting bolts on shock absorber	4	8	40(4.1)	
Rear wheel, back suspension				
Nuts of rear wheel shaft	1	16	140(14.3)	
Upper Mounting bolts on shock absorber	2	10	55(5.6)	
Lower Mounting bolts on shock absorber	2	8	30(3.1)	
Mounting bolts of back fork	2	10	55(5.6)	
Braking device				
Mounting bolts of front brake disc	5	6	12(1.2)	
Mounting screws of rear brake disc	4	8	26(2.7)	
Mounting bolts of front brake clamp	2	8	30(3.1)	
Mounting bolts of rear brake clamp	2	8	30(3.1)	
Muffler				
Mounting nuts of muffler joint	2	8	26(2.7)	
Mounting bolts of muffler shell	3	10	55(5.6)	
Oxygen sensor	1	18	60(6)	
Others				
Taillight /Screw group for stoplight	2	4.2	1.8(0.18)	

Special tools

Tool name	Tool number	Operation place
Cylinder cover group and valve		
Assembling clamp for valve	1P52MI-A-922-020000	Disassembly of gas distribution system
Valve pipe reamer 5mm	152MI-234-022300-34B	Repair, cleaning of valve guide
Milling cutter for valve seat		Modification of valve seat
Valve line countersink Drill 27mm (45° IN)	152MI-236-022301-27	
Valve line countersink Drill 27mm (45° EX)	152MI-236-022301-27	
Belt infinitely variable speeds mechanism		
Universal stand	1P52MI-A-922-040000	D/A of nuts for drive grooved wheel D/A of nuts for clutch cover
Compression tools for clutch spring	152MI-922-070000	D/A of nuts for driven grooved wheel
Reducing mechanism		
Pressure assembly of main shaft	152MI-921-070000	Main shaft pressed into
Rolling bearing 6202	1P39MB-921-110001	Counter shaft bearing pressed into
Rolling bearing 6201	1P39MB-921-080001	
Disassembly tools group for disassembling bearings	1P52MI-A-922-050000 1P52MI-A-922-060000 1P52MI-A-922-080000	Disassembly of bearing
Rolling bearing 22X50X14	172MM-921-030000	Installation of main bearing
Rolling bearing 6301	1P52MI-A-921-020000	
Rolling bearing 6004	1P52MI-A-921-010000	Installation of output shaft bearing
Rolling bearing 6205	1P52MI-A-921-030000	
AC magneto/starting motor		
Flywheel puller	152MI-922-030000	Disassembly of stator
Front wheel, front suspension, steering gear		
Shaft of bearing disassembling tools	519-922-070001	Disassembly of wheel bearing
Head of bearing disassembling tools 12mm	519-922-070002	
Handlebar A of pressing tool	519-922-070003	Installation of wheel bearing
Outer cover of pressing tool 28×32	519-922-070004	
Guide tools 12mm	519-922-070005	
Spanner for locknut	519-922-050001	D/A of steering column locknut
Adjusting spanner for steering column bearing	519-922-050002	Disassembly of bearing adjusting nuts
Tool group for bearing disassembly	519-922-050000	Disassembly of outer ring of steering column bearing
Rotor puller	519-922-050010	
Shaft of disassembling tools	519-922-050003	
Heavy hammer of disassembling tools	519-922-050004	
* Installation tool A for the bearing race of steering column 27× 40mm	519-922-050005	
Shaft of assembling tools	519-922-050006	Installation of upper bearing ring
Installation tools B for the bearing race of steering column 30× 50mm	519-922-050007	Installation of lower bearing ring
Shaft of assembling tools	519-922-050008	Installation of plough inner ring
Cover for front fork of pressing tools	519-922-050009	
Charging and ignition device		
Peak voltage stabilizer	519-922-150000	Peak voltage mensuration

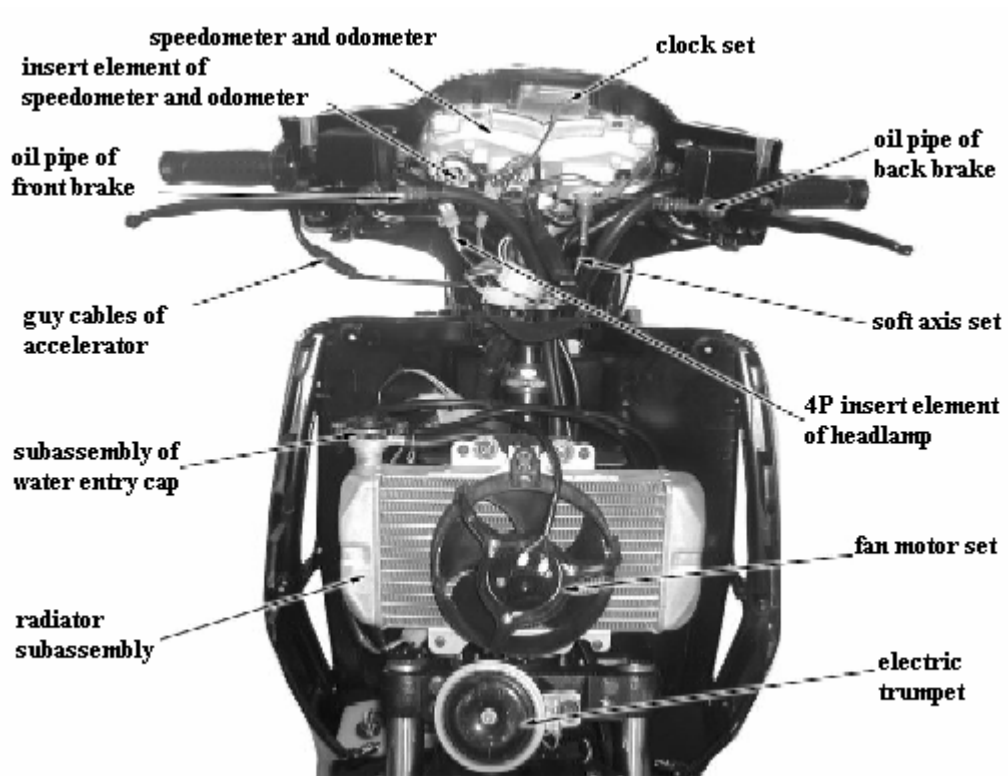
D/A indicates **Disassembly and assembly**

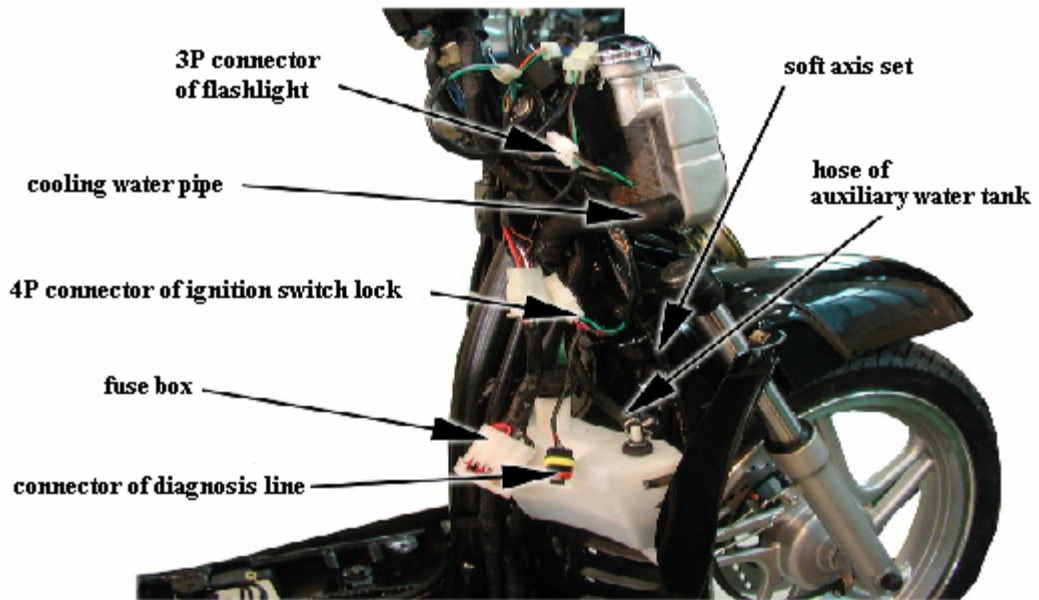
Lubricating grease, Sealant

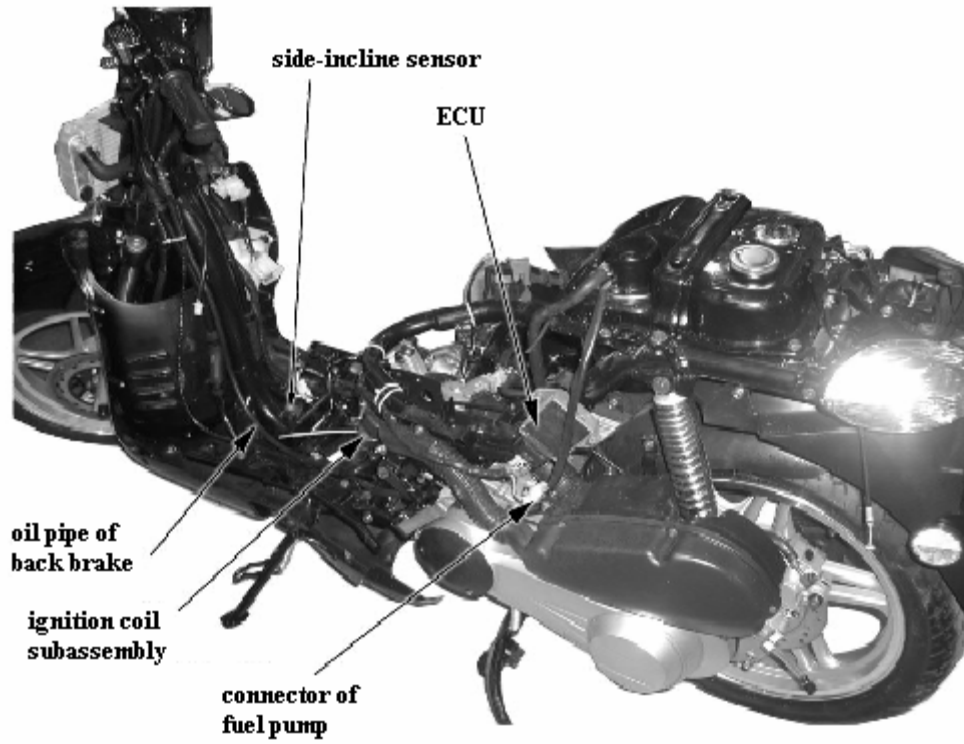
Application place	Cautions	Grease
Internal circumferential surface of cylinder liner Joint conical surface for installing the AC magneto rotor Bearing and side at the big end of the connecting rod Inner face of small end of the connecting rod Rotating surface of the main bearing for Crank Tooth surface of the timing chain wheel for Crank Tooth surface of the drive gear for oil pump External circumferential surface of piston pin Piston ring groove External circumferential surface of piston pin Full circumferential surface of piston ring Rotating surface of camshaft bearing Tooth surface of timing chain wheel Surface of valve rocker shaft Tooth surface of oil pump chain wheel Oil pump group Screw thread part and combination surface of drive wheel nuts Each lip of oil seal, pressed into external circumferential surface Reduction gear, tooth surface of gear shaft, bearing part Cam profile surface or full circumferential surface of camshaft Inner hole surface of valve rocker shaft Valve stem (guide running surface)		Exclusively for 4-stroke motorcycle SAE specification: 10W-40 API category: engine oil with grade SE or SF
Screw thread part of water temperature sensor Screw thread part of Mounting screw for timing chain wheel		Screw thread fastening emulsion
Ball bearing of driven wheel (6901UU) Needle bearing of driven wheel Running surface of movable driven grooved wheel	5.0-5.5g (shall not be attached on the running surface of drive belt)	Multi-purpose lubricating grease
Sealing surfaces of all O-rings Fastening bolts for cylinder body	Shall not be applied to the pointed places	Sealant

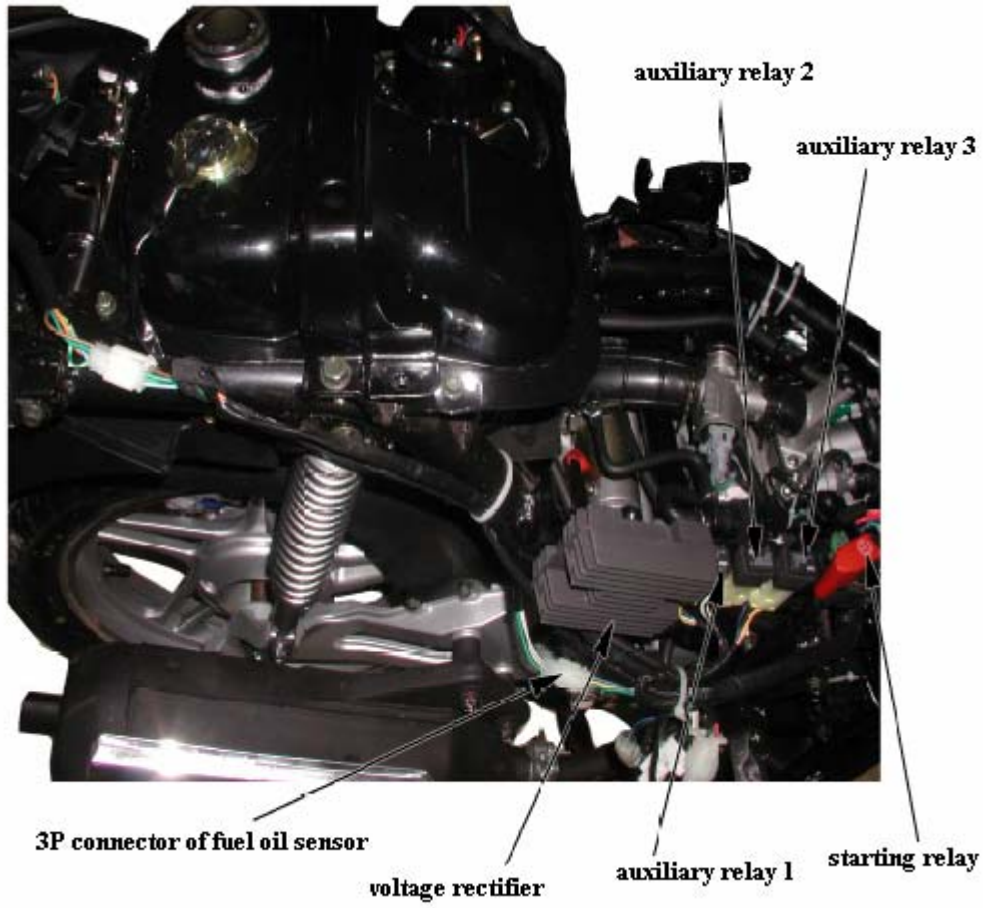
Application place	Cautions	Grease
Ball race of head tube Lip of front wheel dustproof oil seal Joints of both ends of instrument soft shaft Joints of accelerator guy cable Handlebar of accelerator Rotating part of left and back footstep Rotating part of right and back footstep Rotating part of side support Lip of rear fork oil seal Counter gear/tooth face of pinion Moving part Shaft part of main support		Multi-purpose lubricating grease
Lip of dustproof seal under front shock absorber		#5 oil for shock absorber
Internal circumferential surface of steering handlebar		Engine oil

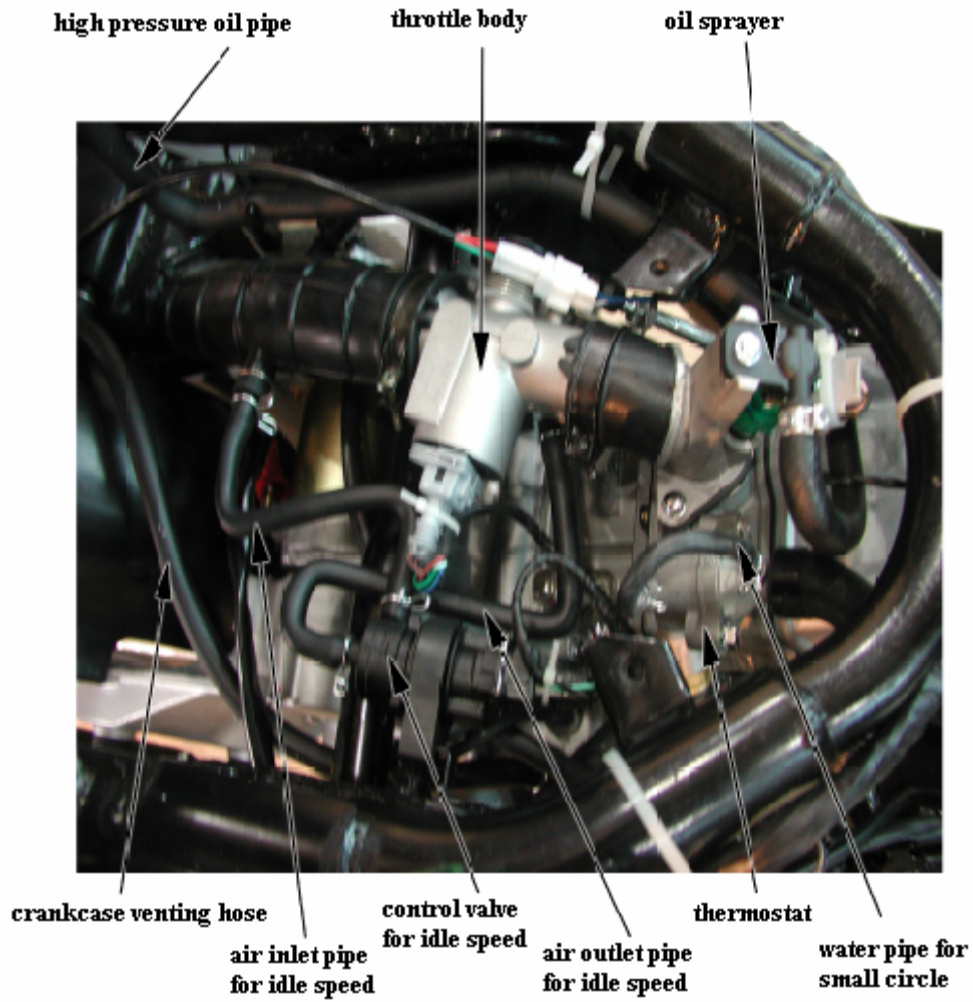
Wiring diagram of cables, pipes and guy cables







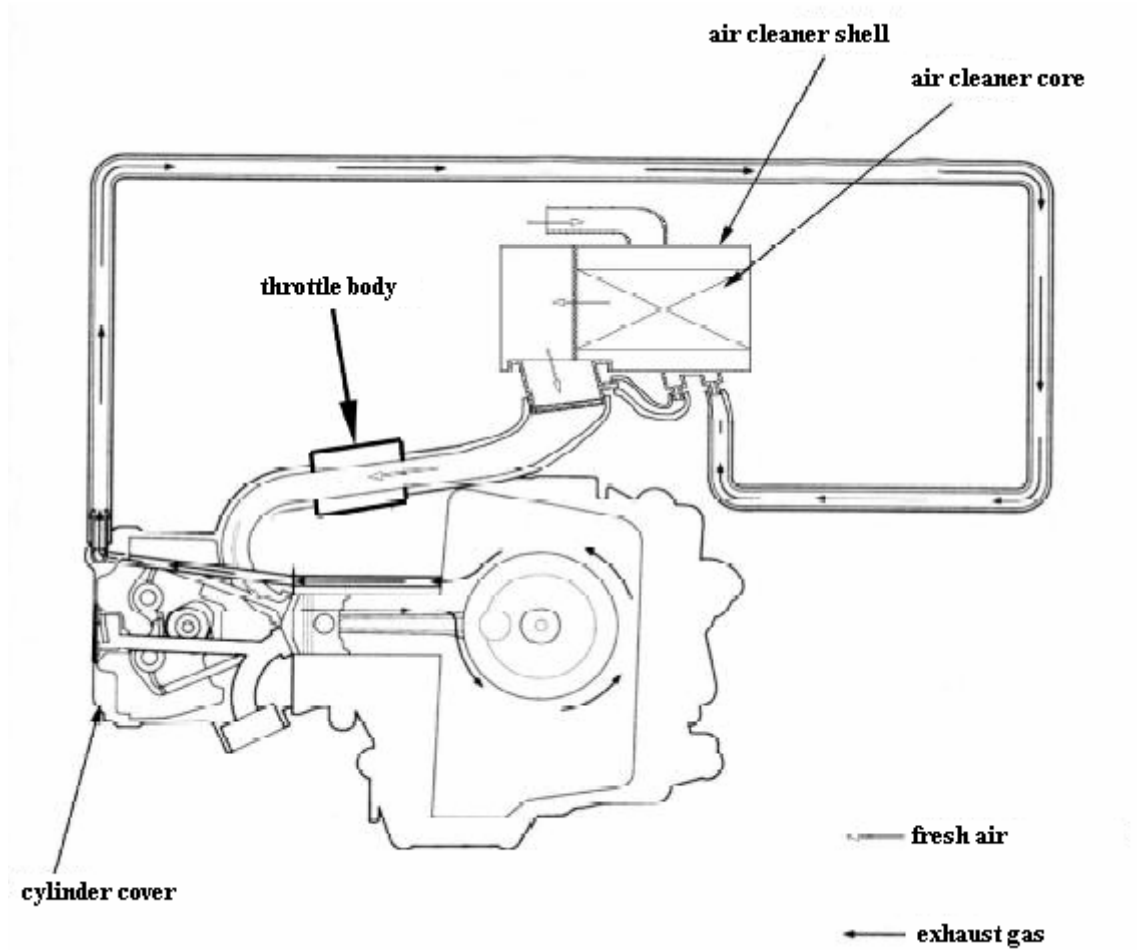




Pervasion prevention device for poisonous gas etc

Waste gas reduction device

This device makes the hazardous waste gas from the crankcase to be filtered by air cleaner, and enter in the firebox through carburetor for burning, thus prevents the air pollution caused by direct discharge of poisonous gas from the engine.



Maintenance information	2-1	Front venting board, front trunk...	2-9
Error diagnosis	2-1	Left and right cover of front trunk.....	2-10
Seating mat, maintenance cover.....	2-2	Left and right air outlet grid	2-11
Trunk, lock seat of seating mat	2-3	Front part of foot board	2-12
Rear shelf	2-4	Fender of rear wheel	2-12
Rear connecting board, left and right guard		Rear taillight, Rear fender	2-13
Board	2-5	Fuel tank	2-14
Left, right, Heel of foot board	2-6	Muffler	2-15
Soleboard.....	2-7	Name of outer parts	2-16
Front fenderboard, front faceboard.....	2-8		

Maintenance information

Notes during operation

Cautions

No smoking or naked fire is allowed at the operation site, for the gasoline is combustible. Not only flames, but also electric sparks shall be avoided. Besides, the vaped gasoline is explosive, please operate it in the place with nice ventilation.

The muffler should be assembled or disassembled after cooling.

- In this chapter, the assembly and disassembly operation for the outer parts, the vent-pipe and the muffler will be explained.
- The pipelines, the guy cables, etc should pass through the correct place according to the wiring diagram of cables, pipelines, guy cables, etc.
- During assembling and disassembling the muffler, the shim should be changed new.
- After the muffler has been assembled, check whether there is the phenomenon of air leakage.

Fastening torque

Screws for taillight/stoplight	1.8N·m (0.18kgf·m)
Screws for rear turning indicator housing	1.8N·m (0.18kgf·m)
Screws for rear taillight housing	1.8N·m (0.18kgf·m)

Error diagnosis

The noise from exhaust is big.

- The muffler has been broken and damaged.
- Air leakage

Lack of air

- The muffler is deformed.
- Air leakage
- The muffler is choked.

Seating mat

Disassembly

Open the lock of seating mat by the key of ignition switch, and then remove two nuts 1 shown in the drawing.

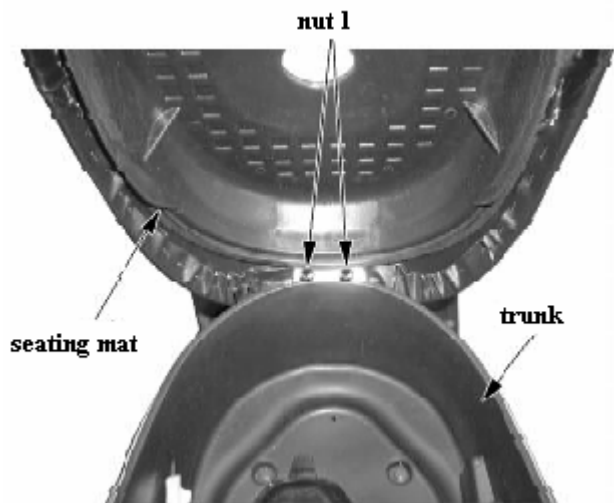
Get the seating mat off.

Assembly

Make assembling in the reverse sequences of disassembling

Cautions

After the seating mat has been assembled, shake up and down, rear and forth to confirm whether there is deviation.



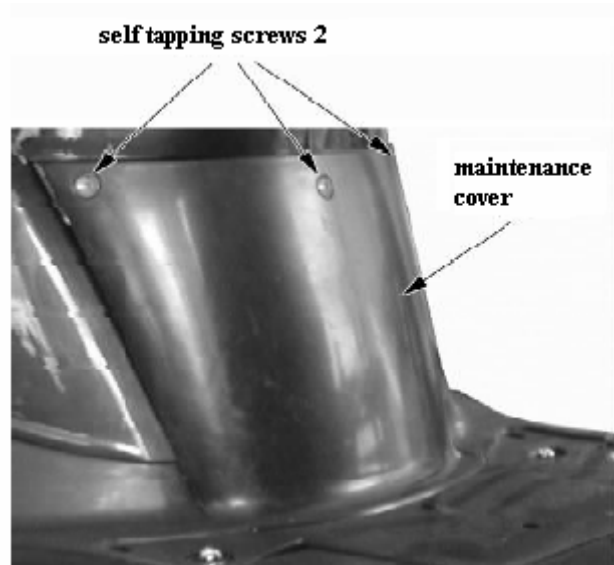
Maintenance cover

Disassembly

Get the rubber of foot board off, and remove the three self tapping screws 2 shown in the drawing, then disassemble the maintenance cover.

Assembly

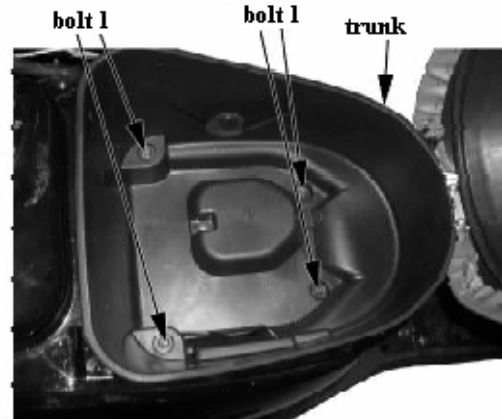
Make assembling in the reverse sequences of disassembling



Trunk

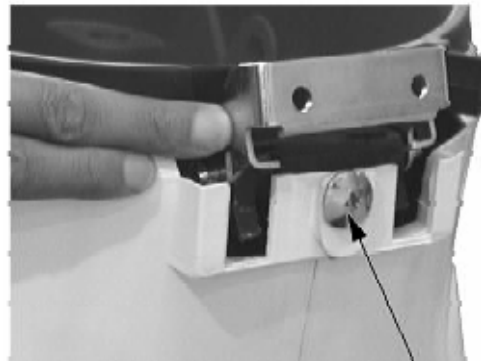
Disassembly

Disassemble the seating mat (→ 2 - 2),
 Remove the bolts 1 shown in the drawing,
 Remove the screw 2 shown in the drawing,
 Disassemble the trunk.



Assembly

Make assembling in the reverse sequences of disassembling

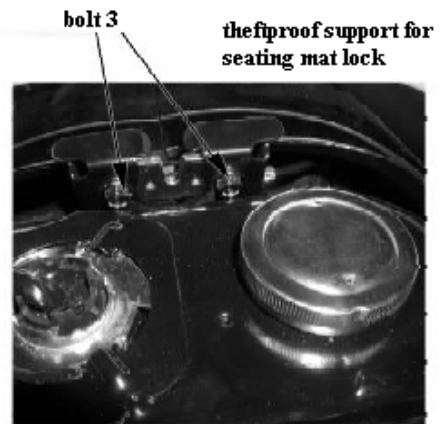


screw 2

Lock seat of seating mat

Disassembly

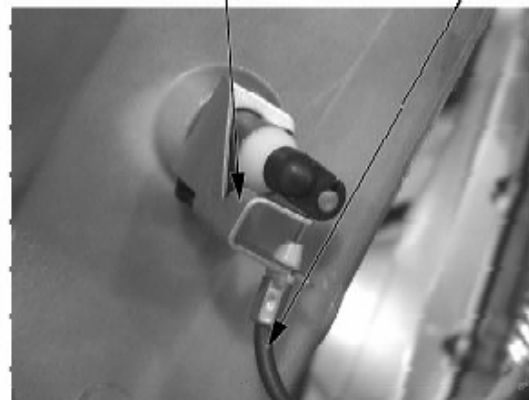
Disassemble the rear shelf (→2-4),
 Disassemble the rear connecting board (→2-5)
 Disassemble the left guard board (→2-5),
 Disassemble the right guard board (→2-5),
 Disassemble the theftproof support for seating mat lock,
 Disassemble two bolts 3 by the open spanner,



theftproof support for seating mat lock

Disassemble the guy cable of seating mat from the support for seating mat lock,
 Get the lock seat of seating mat off,

guy cable of seating mat support for seating mat lock



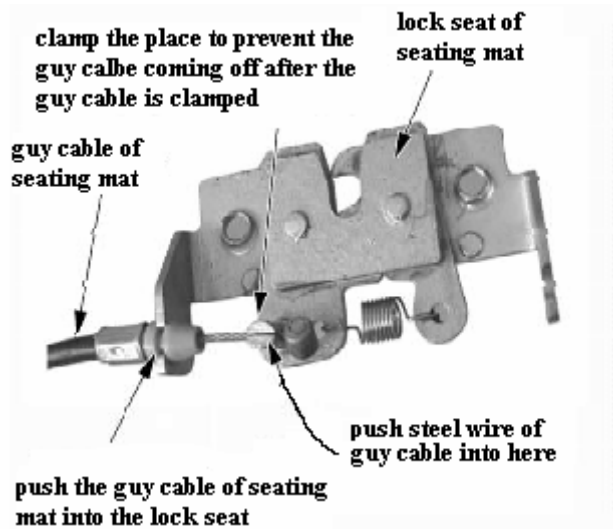
Remove the guy cable of seating mat lock form the lock seat of seating mat.

Assembly

Make assembling in the reverse sequences of disassembling

Cautions

The guy cable of seating mat should be assembled according to the drawing.



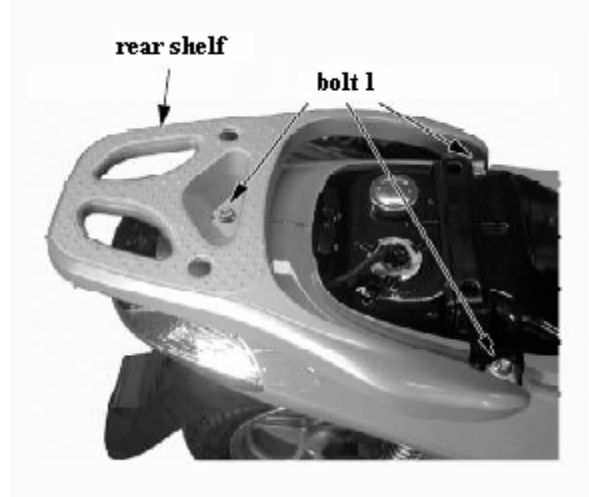
Rear shelf

Disassembly

Open the seating mat by the key of ignition switch,
and disassemble three bolts 1,
then disassemble the Rear shelf.

Assembly

Make assembling in the reverse sequences of disassembling



Rear connecting board

Disassembly

Disassemble the two self tapping screws 1 shown in the drawing, and then get the Rear connecting board off.



rear connecting board self tapping screw 1

Left guard board

Disassembly

Disassemble the rear connecting board (→2-5),
 Disassemble the seating mat (→2-2),
 Disassemble the maintenance cover (→2-2),
 Disassemble the trunk (→2-3),
 Disassemble the guy cable of seating mat from the lock of seating mat (→2-3),
 Disassemble the rear shelf (→2-4),
 Disassemble the self tapping screw 2 which is connecting the left heel of foot board with the left guard board, pull out the left guard board from the rubber ring on the rear taillight, and then disassemble the left guard board.



self tapping screw 2 left heel of foot board left guard board

Assembly

Make assembling in the reverse sequences of disassembling

Right guard board

Disassembly

Disassemble the rear connecting board (→2-5),
 Disassemble the seating mat (→2-2),
 Disassemble the maintenance cover (→2-2),
 Disassemble the trunk (→2-3),
 Disassemble the left guard board (→2-5),
 Disassemble the rear shelf (→2-4),
 Disassemble the self tapping screw 3 which is connecting the right heel of foot board with the right guard board, pull out the right guard board from the rubber ring on the rear taillight, and then disassemble the right guard board.



self tapping screw 3 right guard board right heel of foot board

Assembly

Make assembling in the reverse sequences of disassembling

Left heel of foot board

Disassembly

Get the rubber of foot board off,

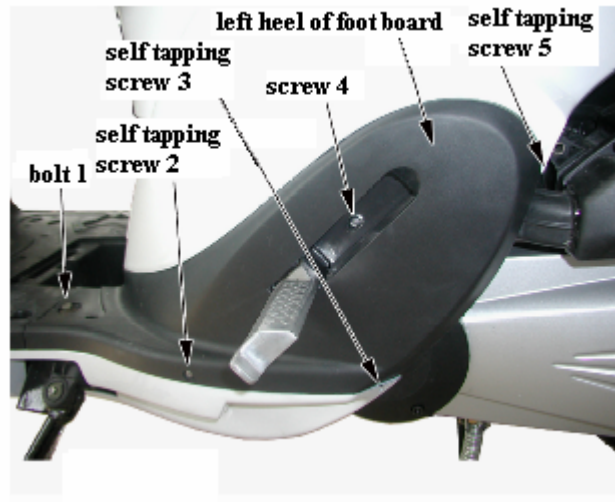
Disassemble the maintenance cover (→ 2-2),

Disassemble the self tapping screw 5 which is connecting the left heel of foot board with the left guard board.

Disassemble the self tapping screws 2 and 3 which are connecting the left heel of foot board with the soleboard.

Disassemble the screw 4 which is connecting the left heel of foot board with the motorcycle frame.

Disassemble the bolt 1, get the left heel of foot board off.



Assembly

Make assembling in the reverse sequences of disassembling

Right heel of foot board

Disassembly

Get the rubber of foot board off,

Disassemble the maintenance cover (→ 2-2),

Disassemble the self tapping screw 6 which is connecting the right heel of foot board with the right guard board.

Disassemble the self tapping screws 8 and 9 which are connecting the right heel of foot board with the soleboard.

Disassemble the screw 7 which is connecting the right heel of foot board with the motorcycle frame.

Disassemble the bolt 10, get the right heel of foot board off.

Make assembling in the reverse sequences of disassembling



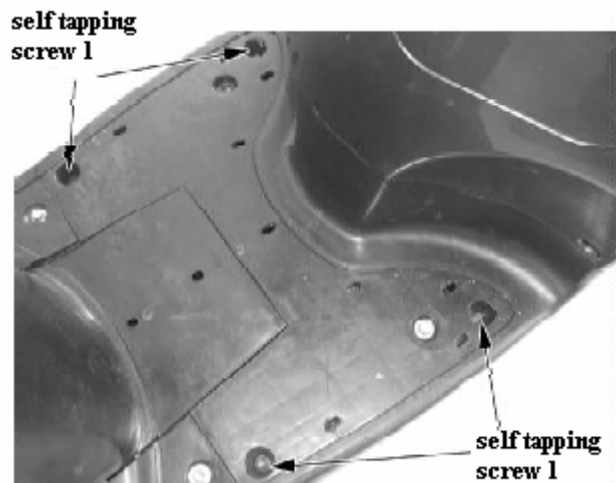
Assembly

Make assembling in the reverse sequences of disassembling.

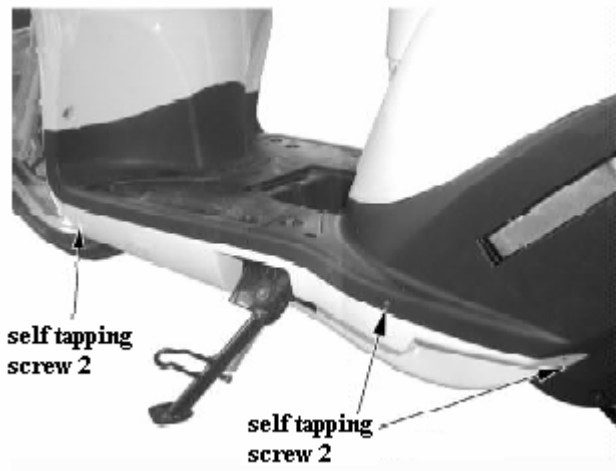
Soleboard

Disassembly

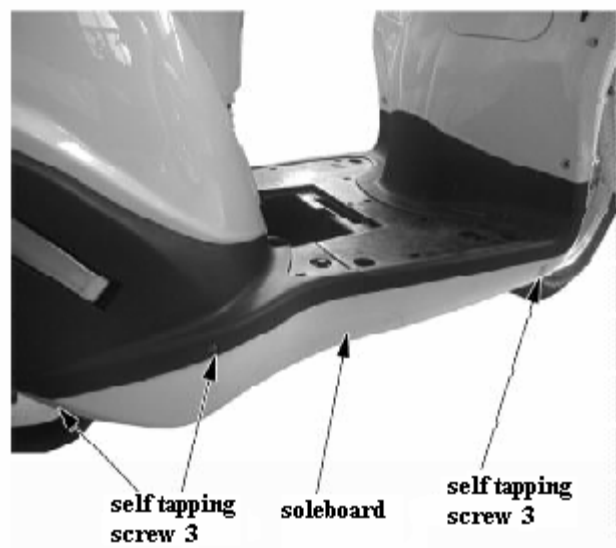
Disassemble the four self tapping screws 1 which are connecting the front part of foot board with the soleboard.



Disassemble the three self tapping screws 2 located at the left of the soleboard.



Disassemble the three self tapping screws 3 located at the right of the soleboard.



Disassemble the soleboard.

Assembly

Make assembling in the reverse sequences of disassembling

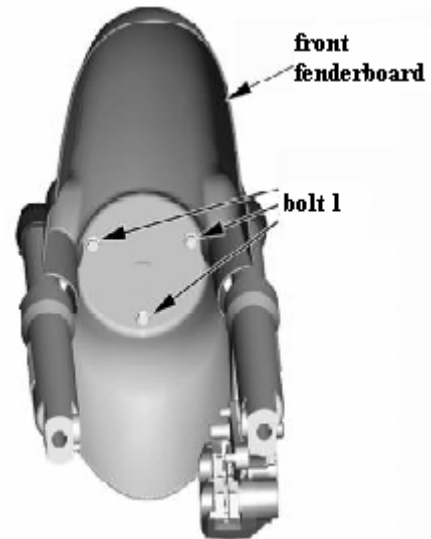
Front fenderboard

Disassembly

Disassemble the front wheel assembly (→ 13-3),
Disassemble the three bolts 1,
Get the Front fenderboard off.

Assembly

Make assembling in the reverse sequences of disassembling



Front faceboard

Disassembly

Disassemble the four self tapping screws 2 and 3 which are connecting the front faceboard with the front trunk.

Disassemble the two self tapping screws 4 which are connecting the front faceboard with the front venting board.

Pull out the connector 2P for the left and right cornering lamp,
Get the front faceboard off.

Assembly

Make assembling in the reverse sequences of disassembling



Front air inlet opening and

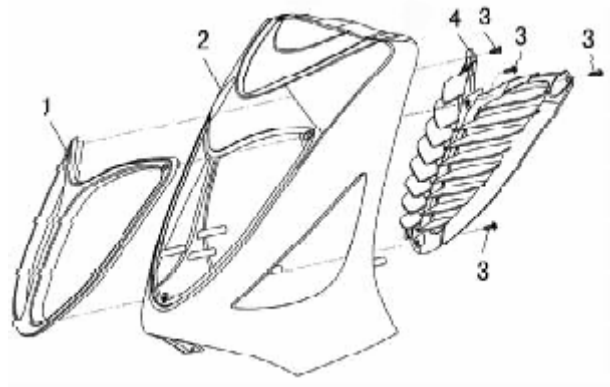
front air inlet grid

Disassembly

Disassemble the front faceboard 2 according to the above contents,
Disassemble the four self tapping screws 3,
Get off the front air inlet opening 1 and the front air inlet grid 4,

Assembly

Make assembling in the reverse sequences of disassembling



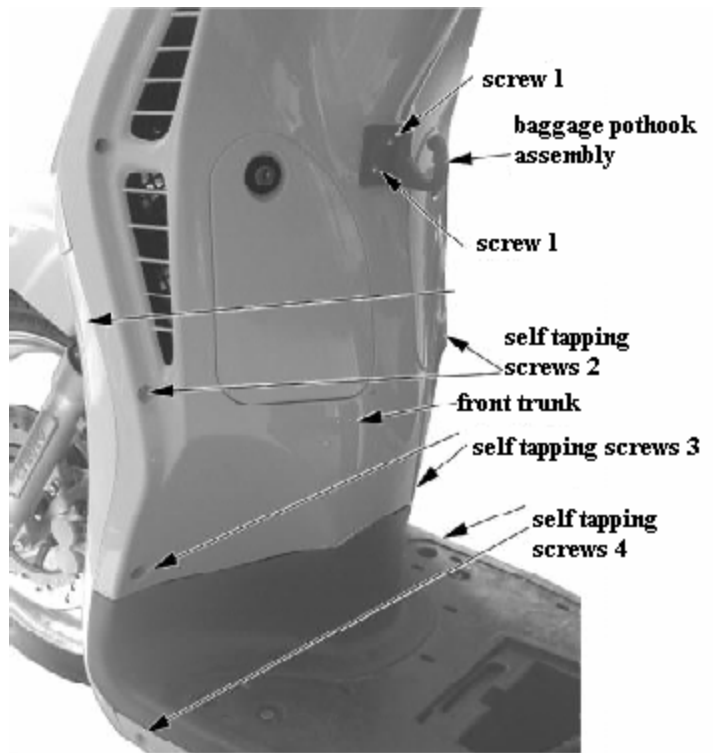
Front venting board

Disassembly

Disassemble the front faceboard (→2-8),
Disassemble the self tapping screws 2 and 3
at the left and the right of the front trunk,
Disassemble the self tapping screws 4 at the
left and the right of the soleboard,
Get off the front venting board.

Assembly

Make assembling in the reverse sequences
of disassembling



Baggage pothook assembly

Disassembly

Disassemble the two screws 1 on the
baggage pothook assembly,
Disassemble the baggage pothook assembly.

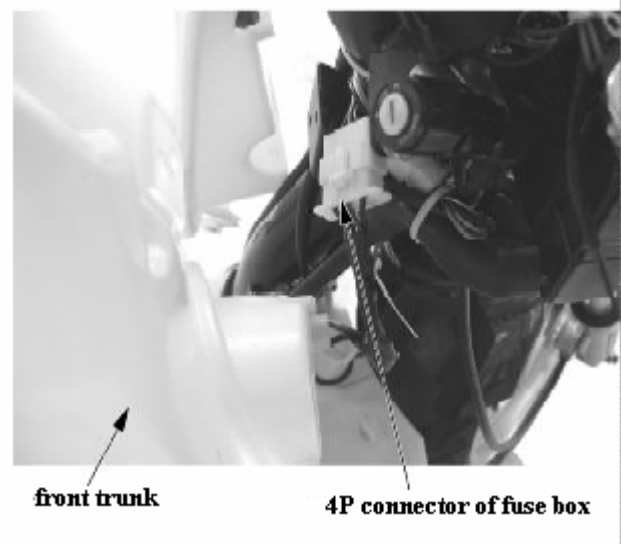
Assembly

Make assembling in the reverse sequences of
disassembling

Front trunk assembly

Disassembly

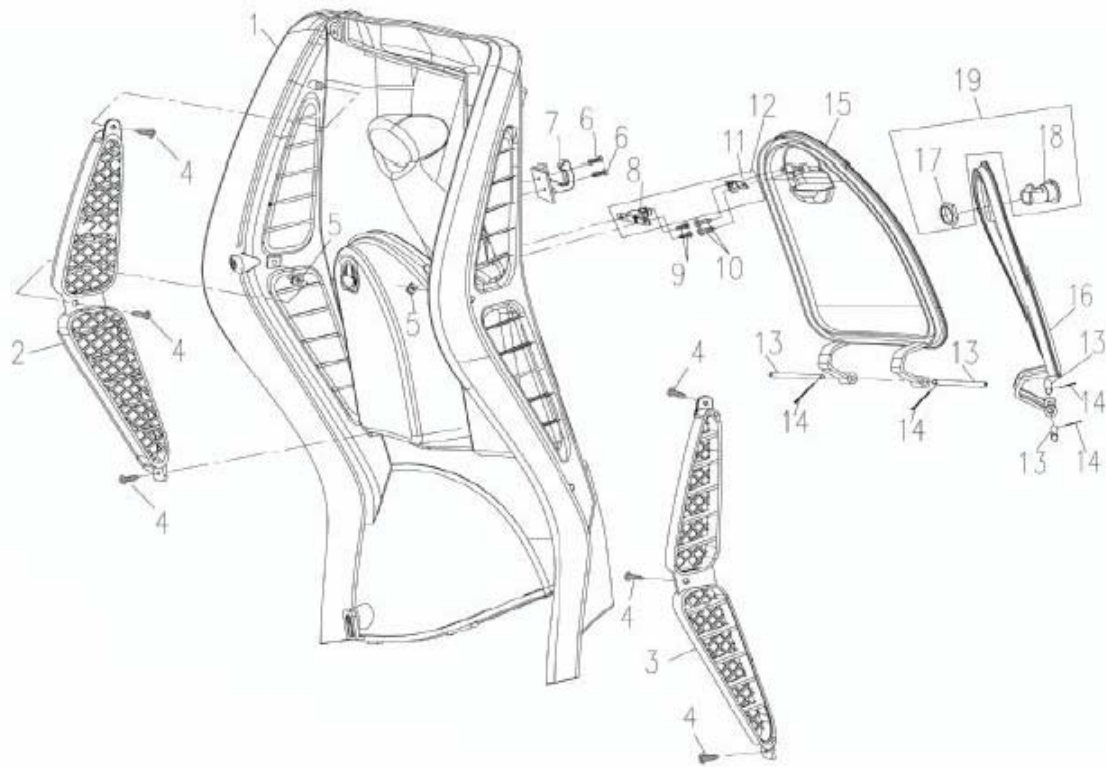
Disassemble the front faceboard (→2-8),
Disassemble the front venting board (→2-9),
Disassemble the baggage pothook assembly
(→2-9),



Disassemble the connector 4P for the fuse box,
Disassemble the front Trunk assembly.

Assembly

Make assembling in the reverse sequences of disassembling



Left cover of front trunk

Disassembly

Disassemble the front trunk assembly (→2-9),

Open the left cover of front Trunk 16 by the key of ignition switch,

Disassemble the two split pins 14, and then disassemble the two rotor shafts of front trunk 13,

Get off the left cover of front trunk 16.

Assembly

Make assembling in the reverse sequences of disassembling

Right cover of front trunk

Disassembly

Disassemble the front trunk assembly (→2-9),

Open the right cover of front trunk 15,

Disassemble the two split pins 14, and then disassemble the two rotor shafts of front trunk 13,

Get off the right cover of front trunk 15.

Assembly

Make assembling in the reverse sequences of disassembling

Left lock of front trunk

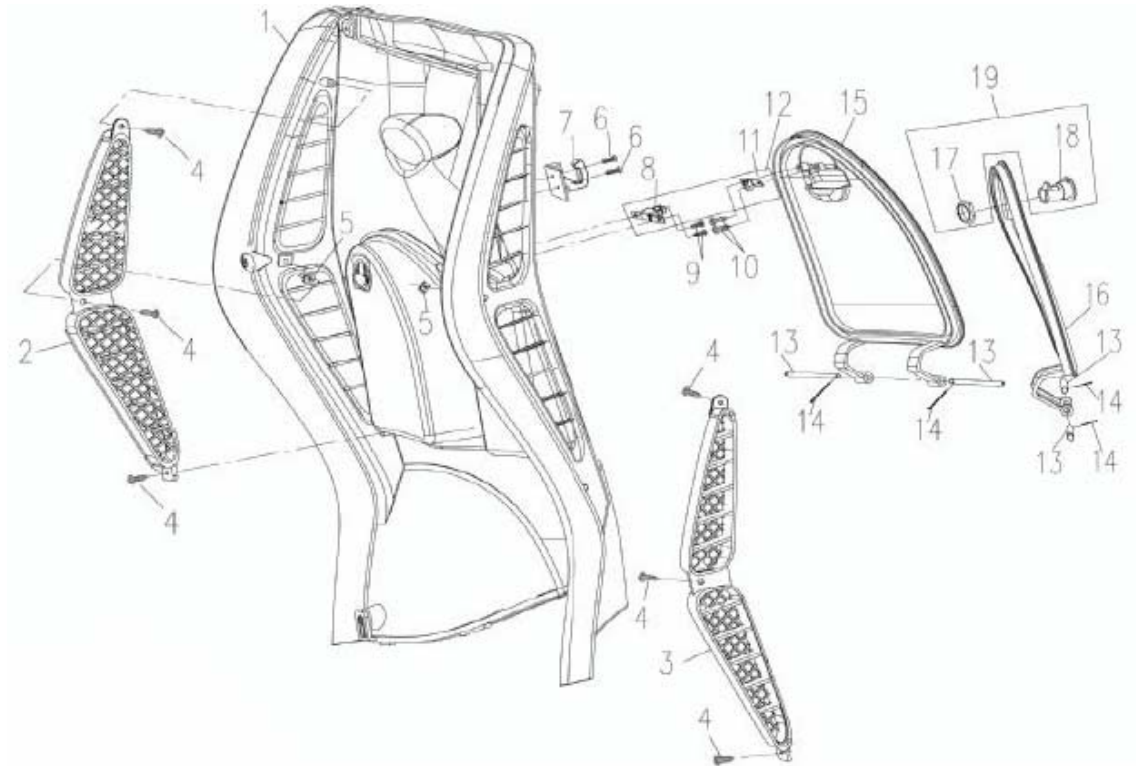
Disassembly

Open the left cover of front trunk by the key of ignition switch,

Screw off the nut 17, and then disassemble the right lock of front trunk 19.

Assembly

Make assembling in the reverse sequences of disassembling



Right lock of front trunk

Disassembly

Open the right cover of front trunk,

Disassemble the two screws 10, and then get off the striking board of right lock for front trunk 11,

Disassemble the two screws 9, and then get off the s right lock seat for front trunk 8,

Assembly

Make assembling in the reverse sequences of disassembling

Left air outlet grid

Disassembly

Disassemble the front Trunk assembly (→2-9),

Disassemble the three screws 4,

Get off the left air outlet grid 3.

Assembly

Make assembling in the reverse sequences of disassembling

Right air outlet grid

Disassembly

Disassemble the front Trunk assembly(→2-9),

Disassemble the three screws 4,

Get off the right air outlet grid 2.

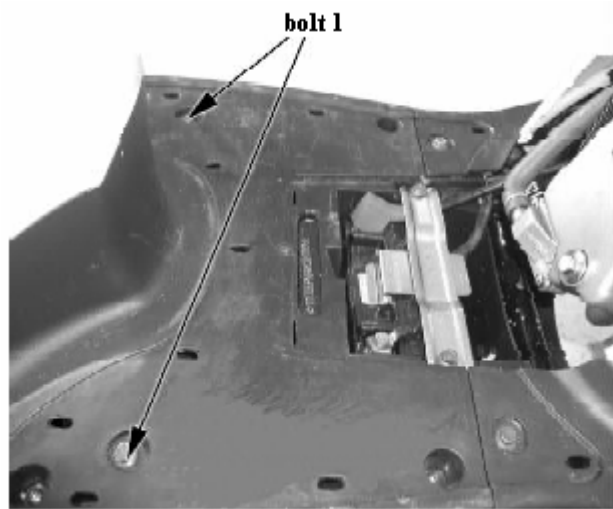
Assembly

Make assembling in the reverse sequences of disassembling

Front part of footboard

Disassembly

- Disassemble the maintenance cover (→2-2),
- Disassemble the accumulator (→15-4),
- Disassemble the front faceboard (→2-8),
- Disassemble the front venting board (→2-9),
- Disassemble the soleboard (→2-7),
- Disassemble the left heel of the footboard (→2-6),
- Disassemble the right heel of the footboard (→2-6),
- Disassemble the front Trunk assembly (→2-9),



Disassemble the two bolts 1 at the front of the footboard, and then disassemble the footboard.

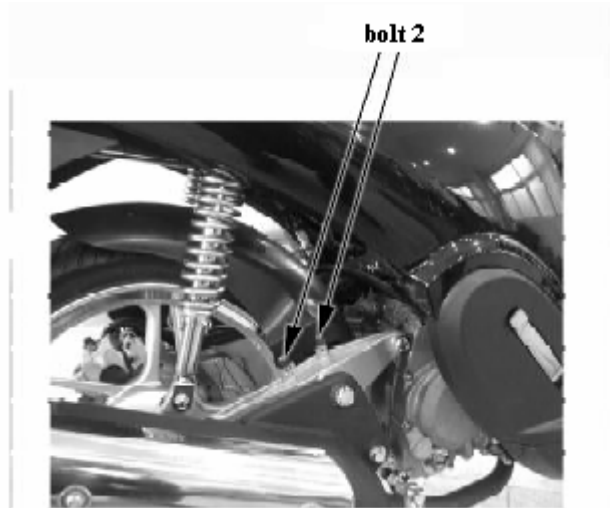
Assembly

Make assembling in the reverse sequences of disassembling

Fender of Rear wheel

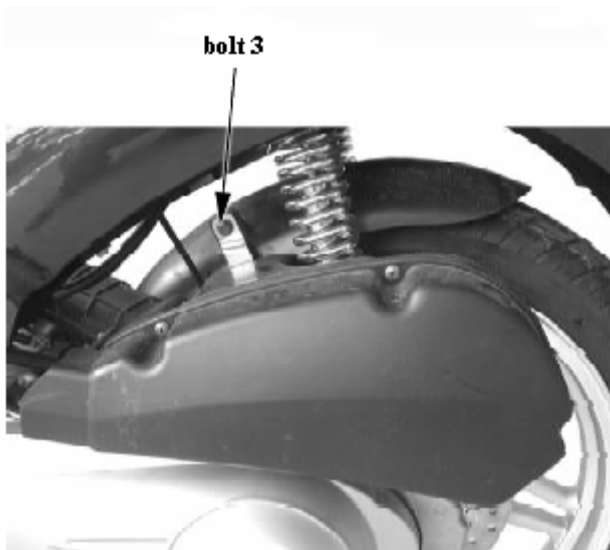
Disassembly

- Remove the two bolts 2,
- Remove the bolts 3,
- Disassemble the fender of rear wheel.



Assembly

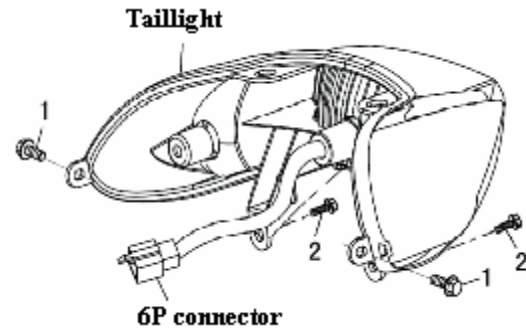
Make assembling in the reverse sequences of disassembling



Taillight

Disassembly

Disassemble the rear shelf (→2-4),
 Remove the seating mat (→2-2),
 Disassemble the maintenance cover (→2-2),
 Disassemble the rear connecting board (→ 2-5),
 Disassemble the left guard board (→2-5),
 Disassemble the right guard board (→2-5),
 Remove the two bolts 1 and two bolts 2,
 Pull out the connector 6P of the rear taillight,
 Get off the taillight.



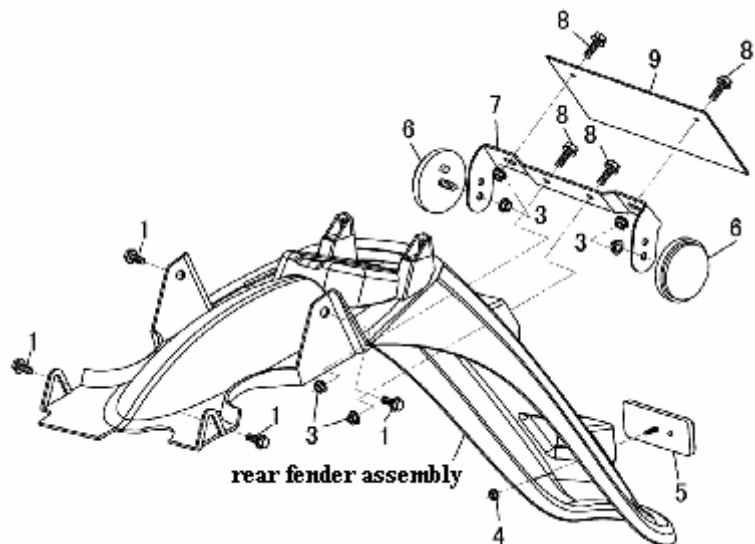
Assembly

Make assembling in the reverse sequences of disassembling

Rear fender assembly

Disassembly

Disassemble the rear shelf (→2-4),
 Disassemble the seating mat (→2-2),
 Disassemble the maintenance cover (→2-2),
 Disassemble the rear connecting board (→2-5),
 Disassemble the left guard board (→2-5),
 Disassemble the right guard board (→2-5) ,
 Disassemble the taillight according to the above content,
 Remove the four bolts 1, get off the rear fender assembly.



Assembly

Make assembling in the reverse sequences of disassembling

Disassembling of the Rear fender group

Remove the two bolts 8, and then disassemble the rear license board 9,
 Remove the two bolts 8, and then disassemble the support of rear license board 7,
 Remove the two nuts 2, and then disassemble the left and right reflector 6,
 Remove the nuts 4, and then disassemble the rear reflector5,

Assembly

Make assembling in the reverse sequences of disassembling

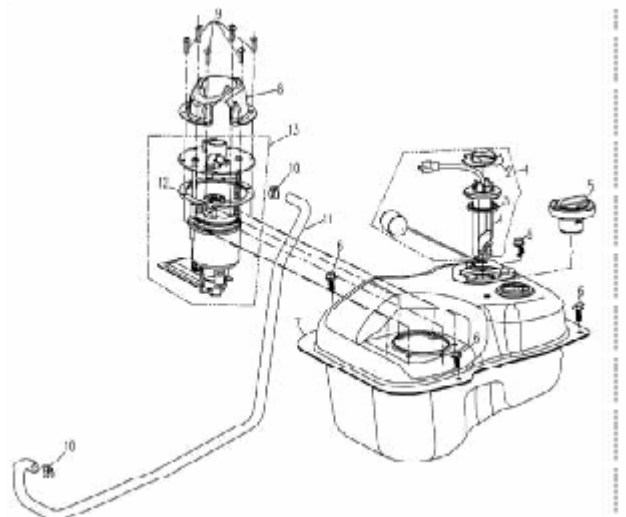
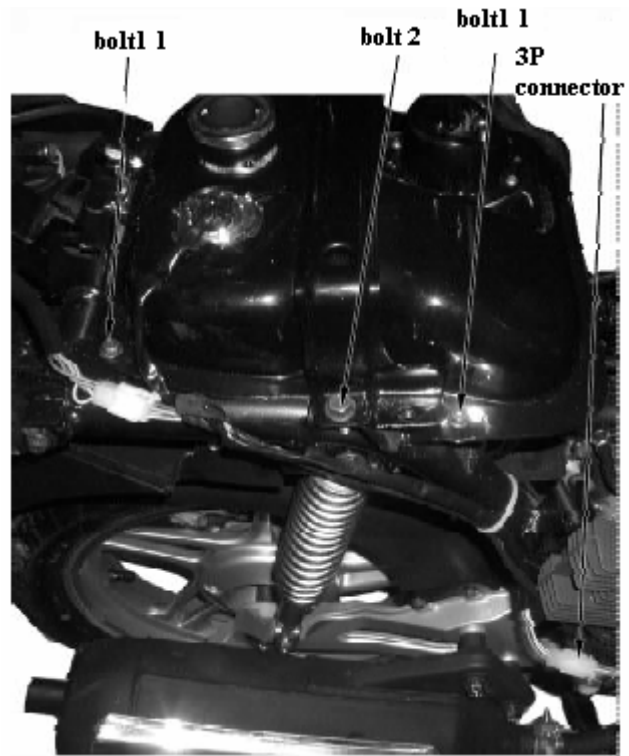
Fuel tank

Disassembly

Cautions

No smoking or naked fire is allowed at the operation site, for the gasoline is combustible. Not only flames, but electric sparks shall be avoided. Besides, the gasoline is explosive, please operate it in the place with nice ventilation.

Disassemble the seat cushion (→2-2)
 Disassemble the trunk (→2-3),
 Disassemble the maintenance cover (→2-2),
 Disassemble the rear shelf (→2-4),
 Disassemble the rear joint board (→2-4),
 Disassemble the left guard board (→2-5),
 Disassemble the right guard board (→2-5),
 Remove the four bolts 2, and then seat cushion top board combination,
 Remove the four bolts 2, and then fuel sensor 3P connector,
 Loosen the fuel tube 9 and the hoop 12 ($\phi 8$), connecting the fuel switch
 pull out the fuel tube 9
 loosen the suction tube 11, and the hoop 13, connecting the fuel switch,
 pull out the suction 11,
 Take down the fuel tank.



Assembly

Make assembling in the reverse sequences of disassembling

Note:

Please don't damage the tubes and the mail cable assembly, when assembling.

The mail cable assembly, guy cables should set the correct position in accordance with the wiring diagram requirement of cables, tubes and guy cables.

When the fuel tube disassemble 9 is disassembled, please avoid the leakage of the fuel.

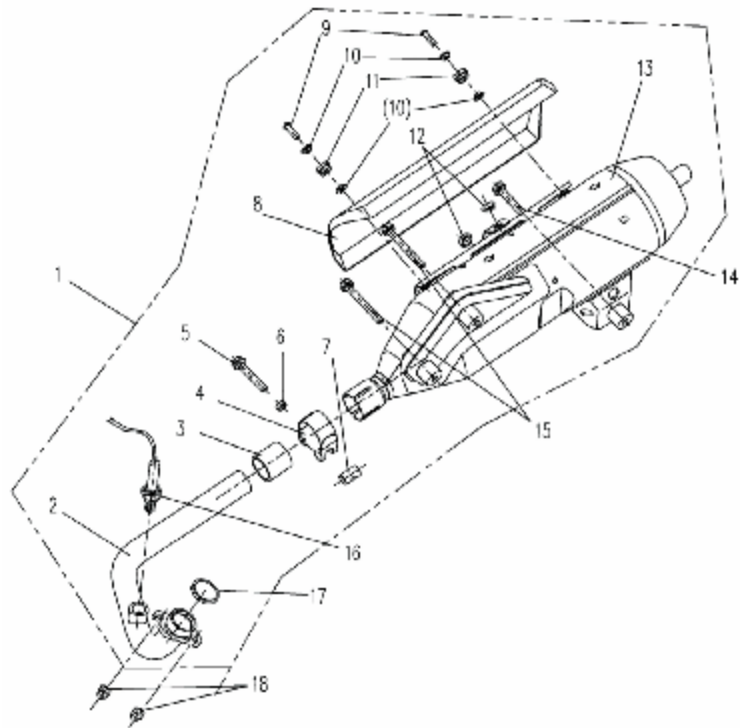
Muffler

Disassembly

Notes

When the muffler is in the cooling condition, it can be disassembled.

Remove the 2 nuts 5, tie-in at angle pipe in front muffler.
 Take off bolt 14, 15
 Disassemble the oxygen sensor 16.
 Remove muffler



Assembly

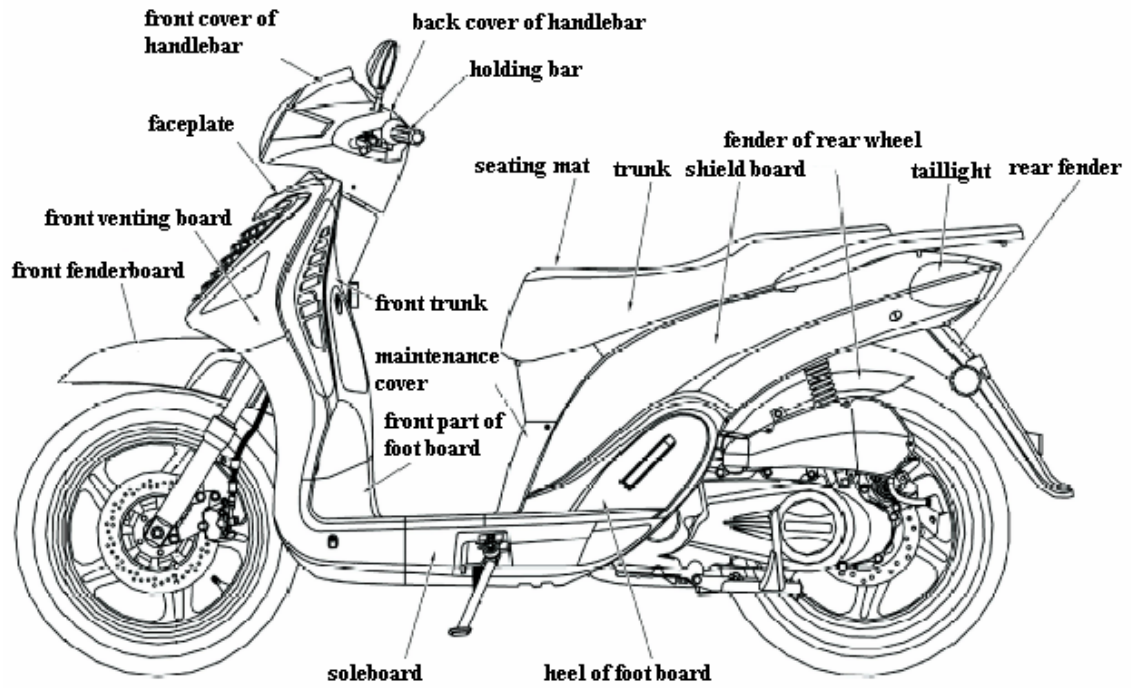
Make assembling in the reverse sequences of disassembling

Torque: The front angle tube nut: 30N • m (3.0 k g f • m)
Muffler bolt : 40N • m (40.5kgf • m)

Notes

When assembling, the vent seal washer should be renewed.

Name of outer parts



The broken line means the unsighted parts in the drawing.

Maintenance information	3-1	Ignition device	3-9
Replacing parts regularly	3-1	Lubricating device	3-11
Mode of Test and overhaul	3-2	Fuel device	3-12
Steering column	3-5	Cooling device	3-16
Brake system	3-5	Waste gas recycle device	3-18
Wheels	3-7	Lighting device	3-19
Suspension system	3-8	Others	3-20
Transmission	3-9		

Maintenance information

Notes during operation

Notes

- It is forbidden to run the engine for long time in closed place or place without nice ventilation, because the tail gas contains poisonous elements such as carbon monoxide (CO) etc.
- When the engine just stops, the temperature of muffler and engine is still high; they will burn the skin if they touch it. Uniform with long sleeves and gloves must be worn for operation when overhaul is necessary while the engine just stops.
- Gasoline is easily combustible, so no smoking or naked fire is allowed at the operation site. Not only flames, but also electric sparks shall be avoided. Besides, the vapoured gasoline is explosive, please operate it in the place with nice ventilation.
- Please be cautious that do not let the turning pieces such as driving system etc as well as movable pieces clip your hands or clothes.

Notes

The vehicle must be placed in an even and stable place, raise the vehicle properly with the main support of the vehicle or maintenance bracket.

Replacing parts regularly

The renewal period is determined according to year or driving distance, it shall be implemented when either condition is met.

Items need regular renewal	Renewal period	Remarks
The filter core of air cleaner	Clean or renew it once when it drivings for 2,000-3,000km.	
the engine oil	Renew it first driving for 1,000km or one month Renew it once after driving for 3,000km afterwards	
Coolant	Renew it once every year	
The engine oil of Transmission	Renew it once every year	

Mode of Test and overhaul

○: Overhaul time

Items for test and maintenance			Maintenance period			Determination standard
Test part	Test item	Daily Test	6-month Test	Annual Test		
Turning device	Steering handlebar	Operation flexibility			○	
	Front fork	Damaged			○	
		Installation status of steering column			○	
		Vibration of bearing of steering column			○	
Brake device	Braking handle	Clearance	○	○	○	Front-wheel drive: 10-20mm to the end of handle Rear wheel: 10-20mm to the end of handle
		Brake effect	○	○	○	
	Connecting bar and oil pipes	Loose and damaged			○	
	Hydraulic brake and brake disc	Quantity of front and rear brake fluid	○	○	○	The level of brake fluid shall be above the LOWER limit
		Abrasion and damage of brake disc			○	The working discs of the front and rear brake discs shall be renewed in time when their thickness is less than 3mm.
Driving device	Wheel	Tyre pressure	○	○	○	Front-wheel: 200kPa(2.50kgf/cm ²) Rear wheel: 225kPa(3.00kgf/cm ²)
		Tyre chap and damage	○		○	
		Tyre groove depth and abnormal abrasion	○		○	No abrasion indication appeared on the tyre surface (depth of remained groove shall not be less than 1.6mm)
		Loose of wheel nut and wheel axis		○	○	
		Vibration of front wheel bearing			○	
		Vibration of rear wheel bearing			○	
Bumper device	Suspension arm	Vibration of connection and damage on vibration arm			○	
	Shock absorber	Oil leakage and damage			○	
		Function			○	
Transmission device	Gear-box	Oil leakage and oil volume				Loosen the opening of fuel bolt, the oil level shall reach the opening

3 Test, Adjustment

Items for test and maintenance			Maintenance period			Determination standard
Test part		Test item	Daily Test	6-month Test	Annual Test	
Transmission device	output shaft (transmission shaft)	Loose of connection		○	○	
		Vibration of spline			○	
Electric device	ignition device	Status of spark plug		○	○	Clearance of spark plug: 0.8-0.9 mm
		Ignition period		○	○	
	Accumulator	Connection of terminals			○	
	Electric connection	Loose and damage on linkage			○	
Engine	Main body	Startup status and abnormal sound	○		○	
		Adjustment of timing chain		○	○	
		Low speed and accelerating status	○		○	
		Idle speed rotate speed		○	○	1700± 100r/min
		Exhaust status		○	○	
		Status of filter core of air cleaner		○	○	
	Lubricating device	Oil leakage		○	○	
		Contamination and volume of engine oil	○	○	○	Gauge type: the oil volume must be between the upper and lower limits
	Fuel device	Fuel leakage		○	○	
		Status of connection mechanism of body of throttle valve			○	
		Status of accelerator			○	Clearance of accelerator handle 1/8-1/4r
	Cooling device	Water volume	○	○	○	
		Water leakage			○	
	Pervasion prevention device of hazardous gas with black smoke and malodor	Waste gas reduction device	Damage on pipeline			○
Clearing of ventilation opening				○	○	
					○	

Items for test and maintenance		Maintenance period			Determination standard
Test part	Test item	Daily Test	6-month Test	Annual Test	
Lighting device and turning indicator	Function	○	○	○	
Alarm and lock device	Function			○	
Instrument	Function			○	
Vent-pipe and muffler	Any loose or damage of installation			○	
	Performance of muffler			○	
Vehicle frame	Loose and damage			○	
Others	Lubricating grease status of each part of frame			○	
The parts whose failure can be determined during operation	Determine whether there is failure on relevant parts	○			

Steering column

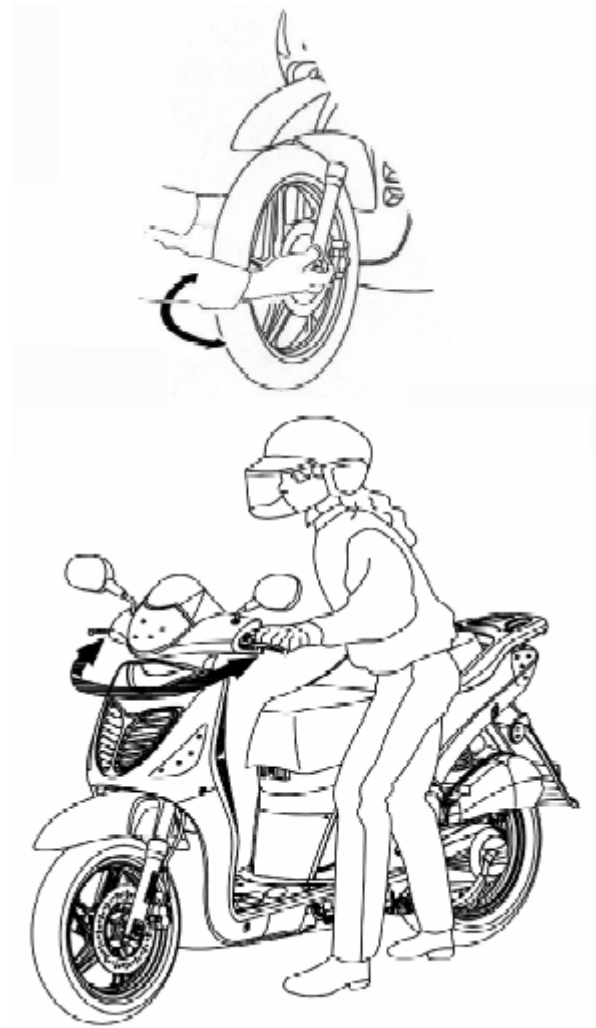
Raise the main bracket, lift the front wheel, hold the lower end of shock absorber and shake it forward and backward, inspect whether there is vibration.

If vibration is felt, it shall be determined that whether the Steering column vibrates or other part vibrates, and corresponding overhaul shall be carried out.

If the Steering column vibrates, enhance the locking force of locknut of steering column, or disassemble the Steering column for overhaul.

Raise the front wheel from ground, turn the steering handle leftward and rightward slowly, and determine whether it turns smoothly and flexibly.

If block is felt, inspect whether there is interference on the main guy cable assembly and stayed cable, if no, disassemble the Steering column, inspect whether there is damage on the bearing race of steering column.



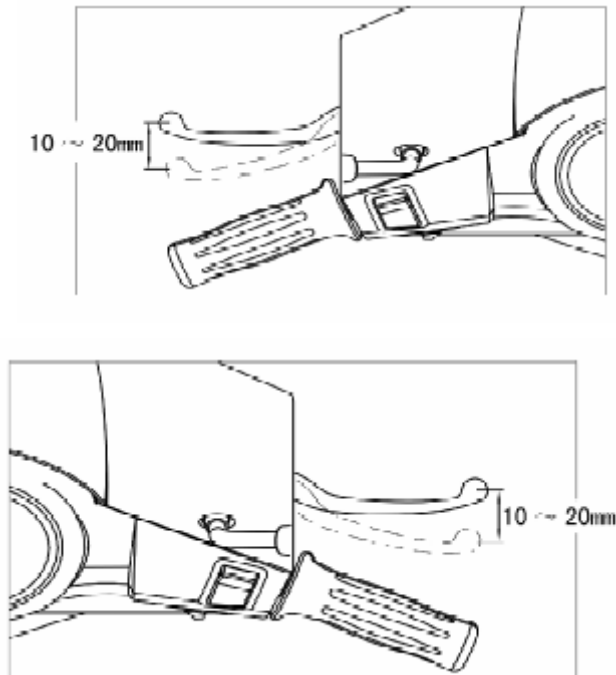
Brake system

Gap of braking handle

Operate the front and rear brake handles, inspect the brake effect and action status of handles.

Inspect the handle clearance at the ends of the handles.

Gap: 10-20mm



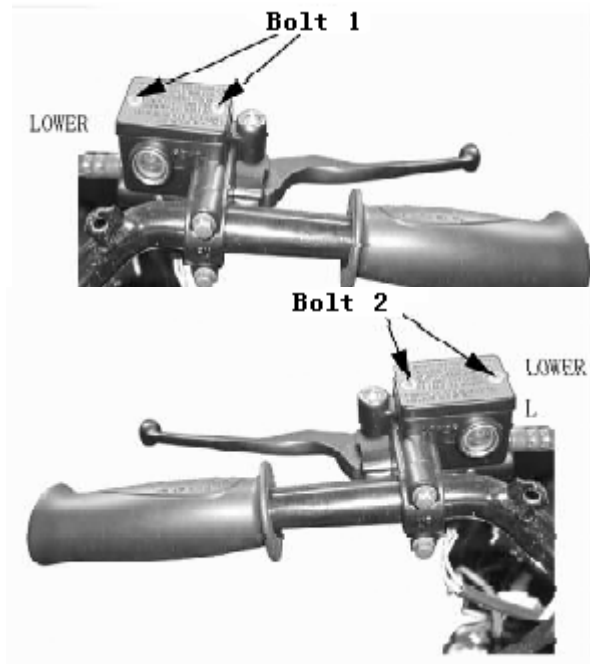
Brake combination

(Fluid volume)

Inspect the brake fluid volume.

When the brake fluid volume reduces to around the lower limit, the leakage of brake pump, brake pipe and connections shall be inspected. Disassemble the installation bolt 1\2 of the oil cup cap, remove the oil cup cap, and supplement DOT 3 or DOT 4 brake fluid up to the upper limit.

- No dust or water can be mixed when supplementing the brake fluid.
- Please apply the brake fluid with appointed brand, for avoiding chemical reactions.
- Please do not splash the brake fluid onto plastic and rubber parts, for it may cause damage on the surfaces.
- Turn the steering handle leftward and rightward slightly, and then disassemble the oil cup cap when the brake pump combination is in horizontal status.



Brake disc, brake pad

(Abrasion of brake pad)

Inspect the abrasion of brake pad at the marked place.

If the abrasion reaches the abrasion limit groove, renew the brake pad.

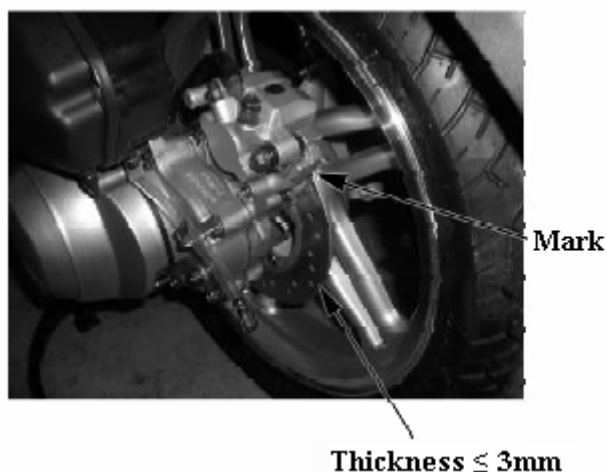
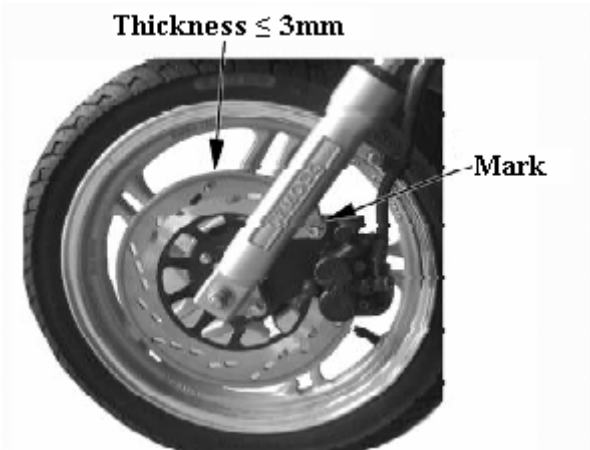
Notes

The brake pad shall be renewed in set.

Test and renewal of brake disc

Inspect whether there is abrasion, damage on the sliding surfaces of brake disc, and the brake disc shall be renewed in time when its thickness is no more than 3mm.

The limit operation thickness of brake disc: 3mm



Oil renewal

(Renewal of brake fluid)

The brake fluid shall be renewed annually.

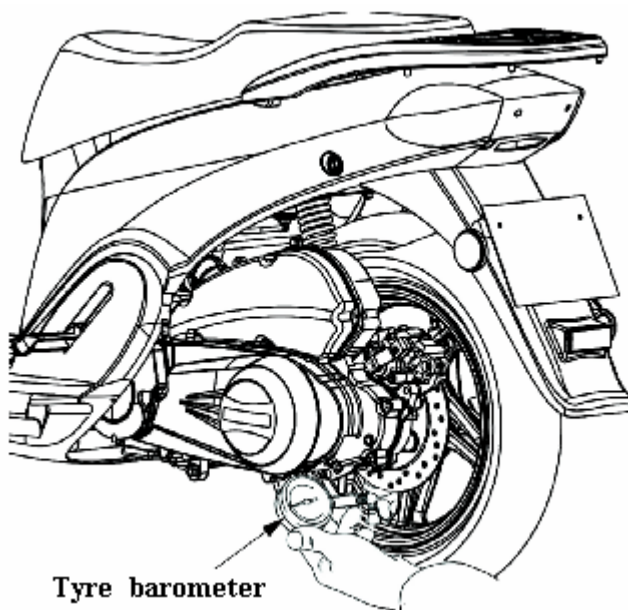
Wheels

Tyre pressure

Inspect the air pressure of tyre with barometer.

Notes

The test of Tyre pressure shall be carried out when the tyres are cool. If the vehicle is used when the Tyre pressure is improper, the operation and riding will be less comfortable, and may cause deflected abrasion on tyres etc.



Tyre barometer

Specified air pressure/ tyre

	Front wheel	Rear wheel
Air pressure	200kPa (2.00kgf/cm ²)	225kPa (2.25kgf/cm ²)
Tyre dimensions	100/80-14M/C	120/80-14M/C

Loose of wheel nuts and axes

Inspect the loose of nuts on front wheel axis and rear wheel axis.

Fasten according to specific torque when it is loose.

Torque:

Nuts on front wheel axis: $80\text{N} \cdot \text{m}$
($8.2\text{kgf} \cdot \text{m}$)

Nuts on rear wheel axis: $140\text{N} \cdot \text{m}$
($14.3\text{kgf} \cdot \text{m}$)



Nuts on front wheel axis

Nuts on rear wheel axis

Vibration of wheel bearing

Support the main bracket, lift the front wheel, and turn the steering handle to the limit position either leftward or rightward, shake the wheels axially, inspect whether there is vibration. If there is vibration, disassemble the front wheel and inspect the wheel bearing. (→ 13-4)



Suspension system

Action

Front suspension

Hold the front Braking handle tightly; compress the front suspension up and down for several times for confirmation of the action. If there is vibration or abnormal sound, inspect the front shock absorber, Steering column.

Inspect whether the front shock absorber is leaking, whether there is damage, loose on each fastening part.



Rear suspension

Compress the rear suspension up and down for several times for confirmation of the action. If there is vibration or abnormal sound, inspect the rear shock absorber, hanger pivot.

Inspect whether the rear shock absorber is leaking, whether there is damage, loose on each fastening part.



Vibration of connection

Support the main bracket, shake the engine leftward and rightward, inspect whether there is damage, vibration etc on the hanger cushion cover, renew it when there is vibration.

Transmission

Spot Test of lubricating oil in the transmission

Inspect whether the transmission leaking.

Support the vehicle with main bracket, put the vehicle horizontal.

Turn off the engine; disassemble the engine oil Test bolt, Inspect whether the oil level reaches the bolt opening.

Supplement the engine oil up to the lower edge of bolt opening when the oil is insufficient.

Recommended engine oil: hyperbola gear oil #90

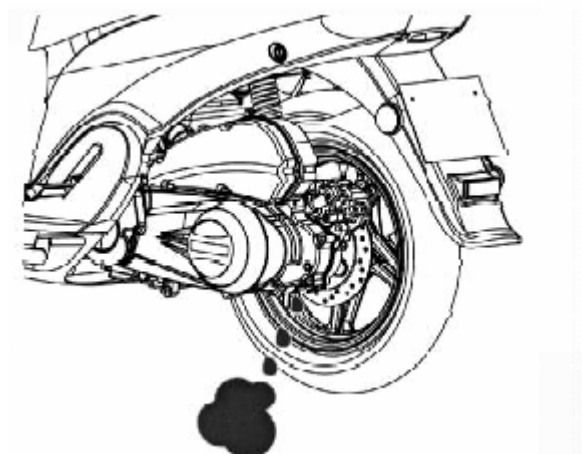
Inspect the status of sealing gasket, install the engine oil Test bolt and fasten it.

Torque: 22N· m (2.2kgf· m)

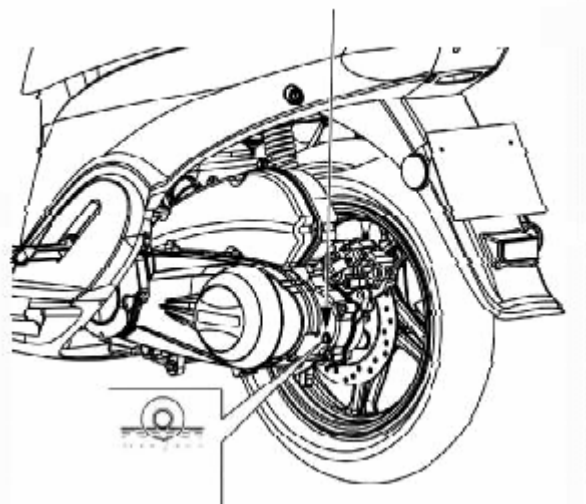
Ignition device

Spark plug

Disassemble the maintenance cover (→ 2-2)

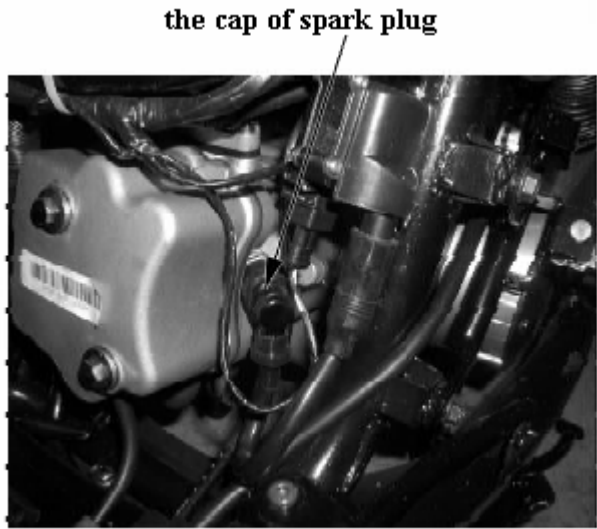


The engine oil test bolt



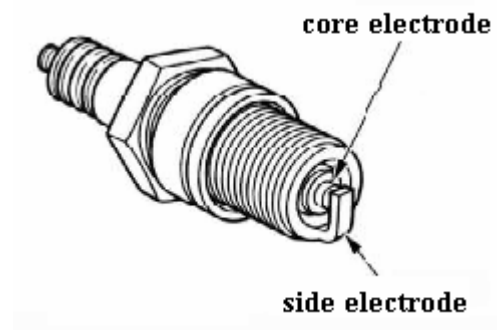
Disassemble the cap of spark plug.

Clean the combination surface of spark plug with compressed air when disassemble the spark plug, for avoiding the entry of dusts etc into the combustion chamber.



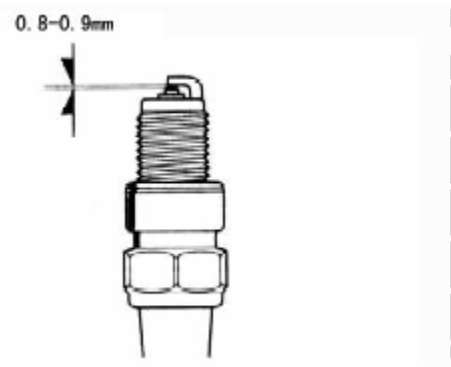
Disassemble the spark plug.

Inspect the consumption, corrosion, burn of the core and side electrode of the spark plug as well as the damage of insulation electromagnet, it shall be renewed if it is burnt.



Appointed spark plug:

	NGK
Standard selection	DPR7EA-9
Clearance of spark plug	0.8-0.9mm



Install the spark plug back to the spark plug hole on the cylinder cover.

Notes

In order to prevent damage on thread of the spark plug hole, when install the spark plug, firstly revolve it into the cylinder cover manually, and then fasten it by spark plug spanner.

If the spark plug is new, fasten it further by 1/4 revolution when the sealing gasket contacts the combination surface.

Old spark plug shall be fastened according to specific torque.

Torque: 12N·m (1.2kgf·m)

Install the spark plug cap.

Lubricating device

Test of engine oil

Run the engine for warm up.

Turn off the engine; disassemble the oil level gauge, clean the engine oil attached on the oil level gauge.

Put the motorcycle on flat ground, make it vertical.

When the engine has been turned off for 2-3 minutes, insert the oil level gauge (but do not revolve it), inspect the engine oil volume.

If the oil level is between the upper and lower limits, it means the oil is sufficient.

When the oil reduces to close to the lower limit, the engine oil shall be supplemented to the upper limit.

Recommended engine oil:

- SAE 10W-40、20W-50 are exclusively for the four-stroke motorcycle. Selection shall be made within the following range if substitute is preferable.
- API classification: SE or SF grade engine oil

Notes

The viscosity of engine oil shall be selected according to the table at right, and the engine oil viscosity shall be suitable to the climate in the place where it is used.

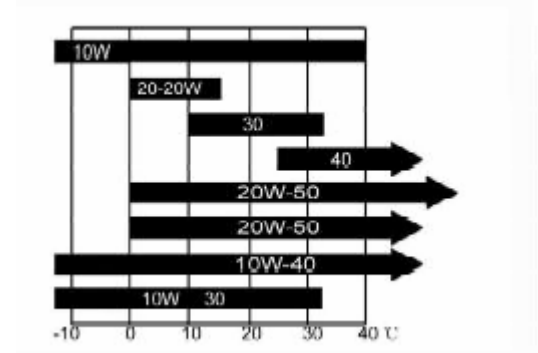
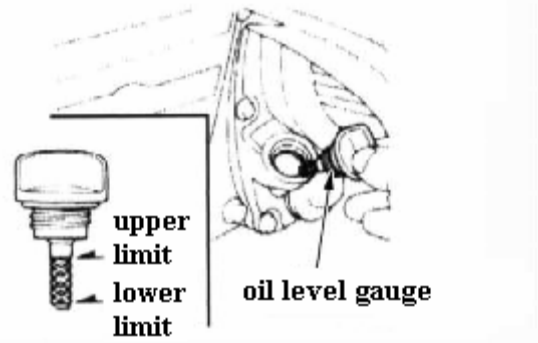
Install the oil level gauge, and tighten it.

Renew the engine oil

Raise the motorcycle by main bracket.

Run the engine for warm-up.

Turn off the engine; disassemble the oil level gauge. Disassemble the drain bolt and sealing gasket, discharge the engine oil. Make the motorcycle incline to left side, press the startup button for 2-3 times.



Install the washed drain bolt and new sealing gasket; fasten it according to specific torque.

Torque: 25N·m (2.5kgf·m)

Inject the recommended engine oil into the engine oil injection opening.

Oil capacity of the engine:

0.8l (upon renewing the engine oil)

1.0l (upon disassembly)

The engine oil must be determined by the engine oil level gauge while it is injected into the engine, until the oil level reaches the upper limit of engine oil level gauge.

Install the engine oil level gauge, start the engine, inspect whether there is oil leakage on the engine.

Stop the engine, and check the oil volume again.

Washing of engine oil filter screen

Discharge the engine oil

Remove the filter screen cover of engine oil
Remove the spring, filter screen, and wash the filter screen.

Inspect the O-ring of oil filter screen cover, renew it when necessary.

Install the oil filter screen, spring; fasten the engine oil filter screen cover with specific torque.

Torque: 20N·m (2.0kgf·m)

Fuel device

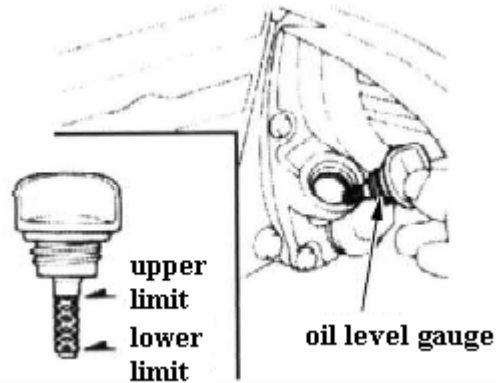
Status of fuel system

Inspect whether the high pressure oil pipe is aged or damaged.

The high pressure oil pipe shall be renewed when it is aged or damaged.

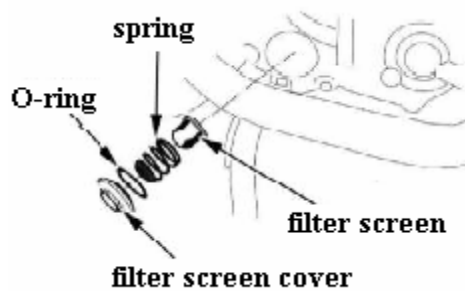


**drain bolt
sealing gasket**



**upper
limit
lower
limit**

oil level gauge

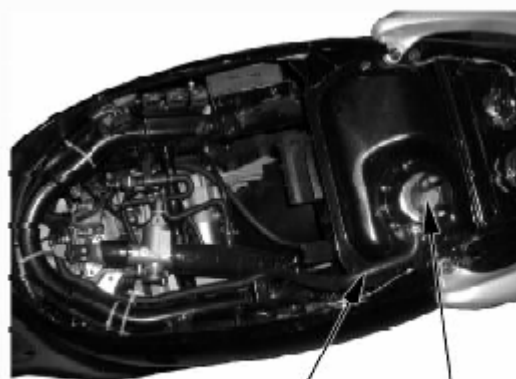


spring

O-ring

filter screen

filter screen cover



high pressure oil pipe

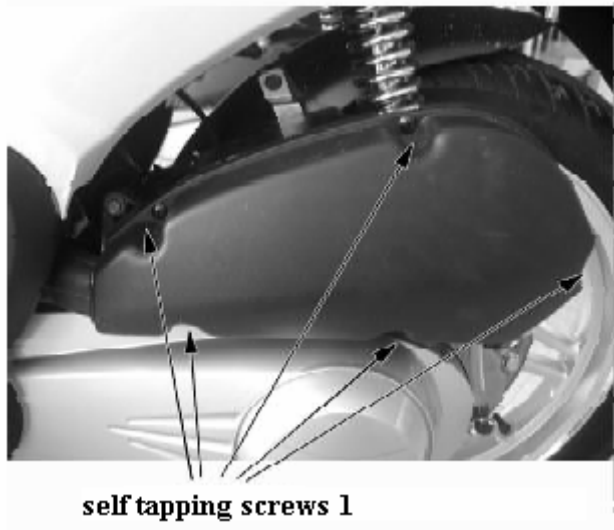
oil pump

Renewal of filter core of air cleaner

Disassemble the 5 self tapping screws 1 according to the diagram;
Remove the right cover of air cleaner.

Remove the filter core of air cleaner and renew it.

Assemble the removed parts in reversed sequence.

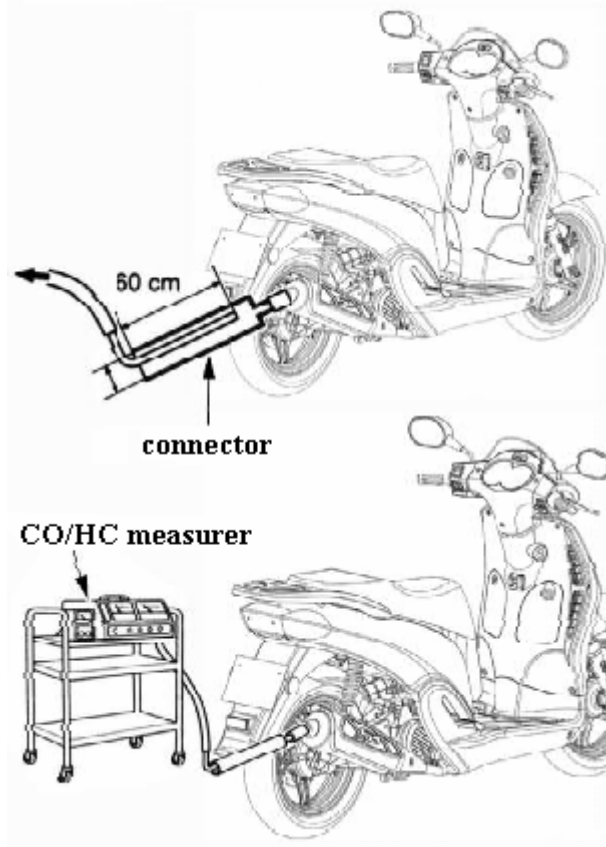


Idle speed Test

Idle speed revolutions: 1700 ± 100 rpm

Discharge Test

For ensuring the regulated insertion depth (60cm) of probe, the connector as showed in the right figure shall be prepared and connected to the muffler.



Measure the concentration of carbon monoxide (CO%) and hydrocarbon (HC%) when the idle speed is adjusted strictly.

- CO concentration upon idle speed: below 3.8%**
- HC concentration upon idle speed: below 800ppm**
- Idle speed revolutions: 1700± 100r/min**

Test of accelerator handle

Turn the accelerator handle; check whether it can operate smoothly and flexibly. If it does not operate smoothly, determine respectively that whether the accelerator guy cable is damaged, wire rope is rusted, accelerator handle is stuck.

Inspect the clearance of the outer edge of accelerator handle.

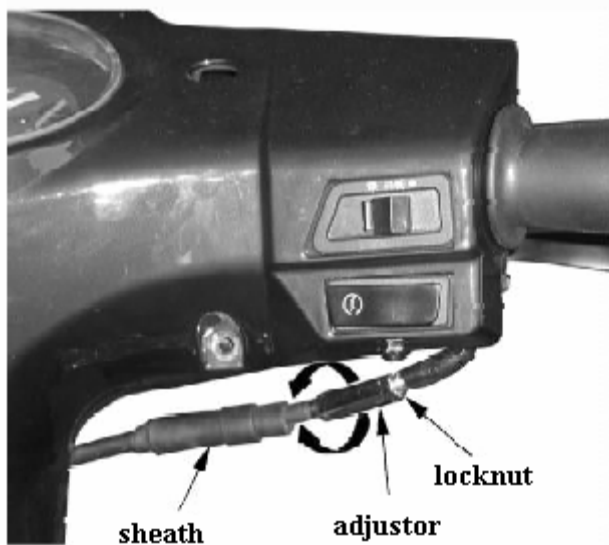
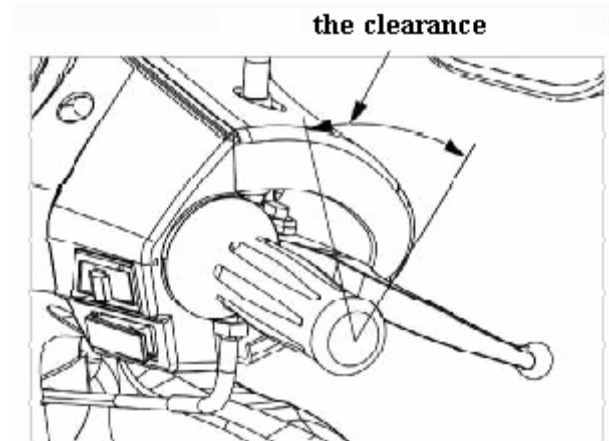
Gap: 1/8-1/4 of a revolution

Adjust the clearance if it is not within the regulated range.

Remove the sheath of accelerator guy cable. Loose the locknut of the accelerator guy cable, turn the adjustor, and adjust the clearance of accelerator handle.

After the adjustment, fasten the locknut and install the sheath of accelerator guy cable.

The accelerator guy cable shall be renewed if the regulated clearance still cannot be achieved by adjusting the adjustor, or the action is still not flexible.



Cooling device

Notes

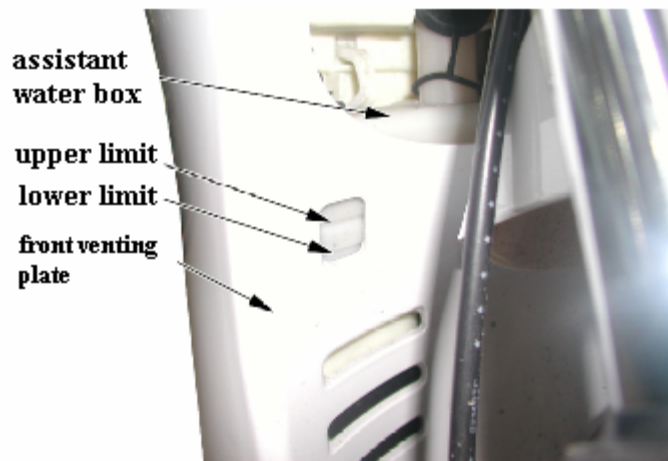
- The liquid volume test shall be carried out in the side of assistant water box, instead of the side of radiator. If open the radiator cover when the engine is hot (generally above 100°C), the pressure of cooling system will reduce, the coolant will suddenly boil. Therefore, the cover must not be opened until the temperature of coolant drops.
- The coolant is poisonous, so it is not drinkable. Do not let it contact the skin, eyes or clothes.
 - ✓ In case it contacts the skin or clothes, wash it immediately with soap.
 - ✓ In case it enters the eyes, wash it thoroughly with water immediately and receive treatment in specific hospital.
 - ✓ In case the coolant is drunk by accident, try to vomit it immediately and receive treatment in specific hospital after gargling.
- The coolant shall be stored strictly in a safe place where children cannot touch.

Coolant volume

Due to natural evaporation etc, the coolant will decrease, so the volume shall be inspected regularly.

Notes

- The coolant is with the functions of antirust, freeze resistance. It will rust in the engine and freeze in winter which may cause break of engine if tap water is adopted. Therefore, coolant must be used.
- The motorcycle shall be raised vertically when inspecting the coolant. The coolant volume cannot be checked correctly if the vehicle is inclining.
- The test of coolant shall be carried out when the engine is warmed up.



Start the engine for warm-up.

Stop the engine; raise the motorcycle vertically on flat ground.

Check whether the coolant level of assistant water box is between the upper and lower limits.

When the coolant level is below the “LOWER” (lower limit), open the right cover of front storage box, remove the cover of assistant water box, and supplement the coolant up to the upper limit (supplement coolant or dilute the original coolant for supplement).

Recommended coolant: Chunfeng coolant

Standard concentration: 50% (the freezing temperatures of coolant are different according to different mixture ratio. Please adjust the mixture ratio according to the lowest temperature in the region where it is used.)

Coolant leakage shall be inspected when the coolant volume decreases evidently. When there is absolutely no coolant in the assistant water box, there may be air mixed into the cooling system, then the cooling system shall be exhausted.

Coolant leakage

Inspect whether the pipeline, water pump, water pipe and the connection of radiator are leaking. It shall be disassembled and repaired if there is leakage. (→ Chapter 6)

Inspect whether the radiator pipeline is aged, damaged or chapped.

The rubber pipe will age naturally due to heat and long-time operation. Along with the aging, the heating of cooling system will break the pipeline. Nip the pipe by fingers to inspect whether there are tiny cracks.

Renew the parts when abnormality is discovered during above overhaul.

Inspect the tightness of coolant pipeline hoop; fasten it when it is loose.

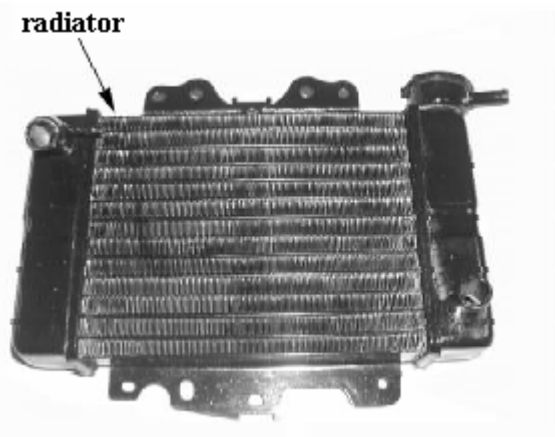
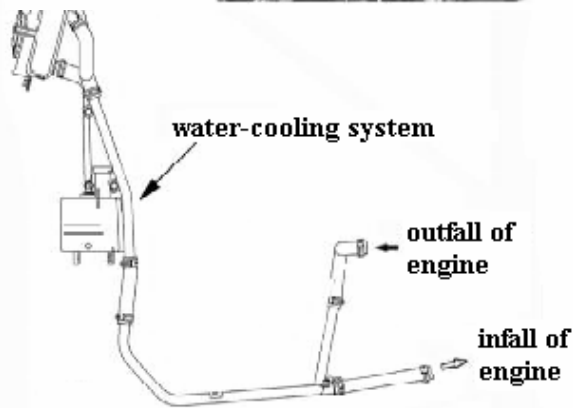
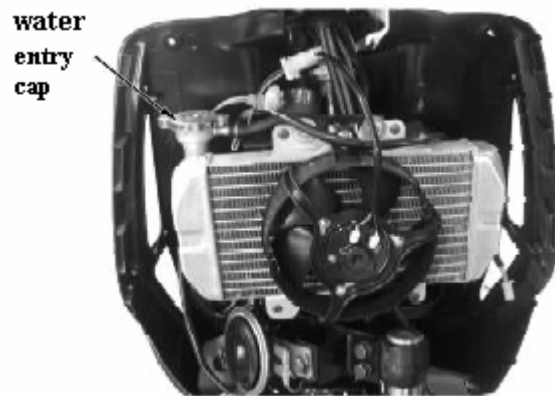
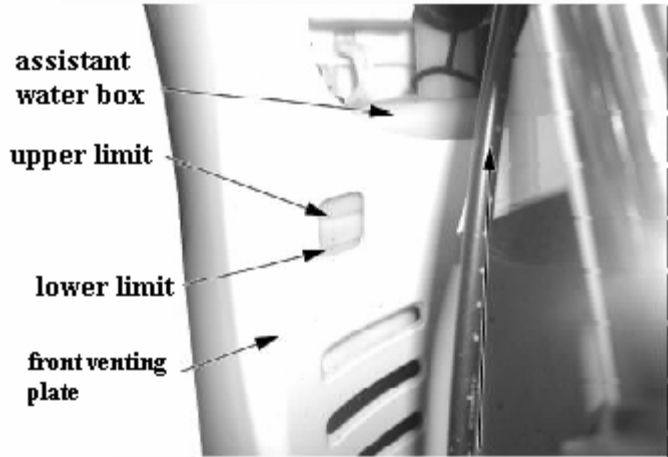
See (→6-8) for details of radiator disassembly and assembly

Inspect whether there is dirt block or damage on the radiation fin of radiator.

Modify the bending of radiation fin; remove the blocking dirt with water and compressed air.

The radiator shall be renewed if the damaged area of radiation fin of the radiator is over 20% of the entire area. (→6-8)

Please refer to page 6-4 for renewal of coolant



Waste gas recycle device

Inspect whether there is deposit in the discharge pipe (at the right bottom of air cleaner) of waste gas/oil spray separation.

If there is deposit, disassemble the discharge plug and discharge the deposit in the pipe.

Install the discharge plug after discharge, and fasten it with hoop.

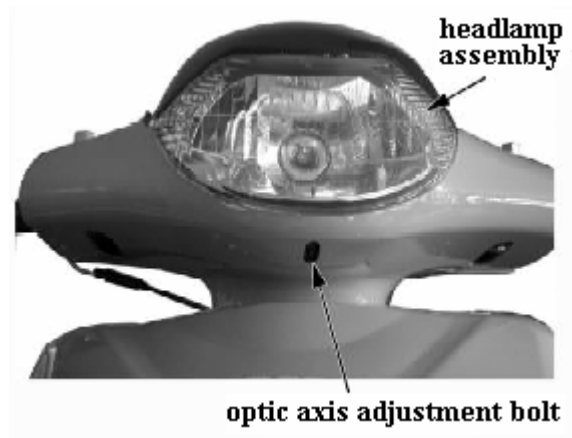


the crankcase venting hose

Lighting device

Adjustment of headlamp optic axis

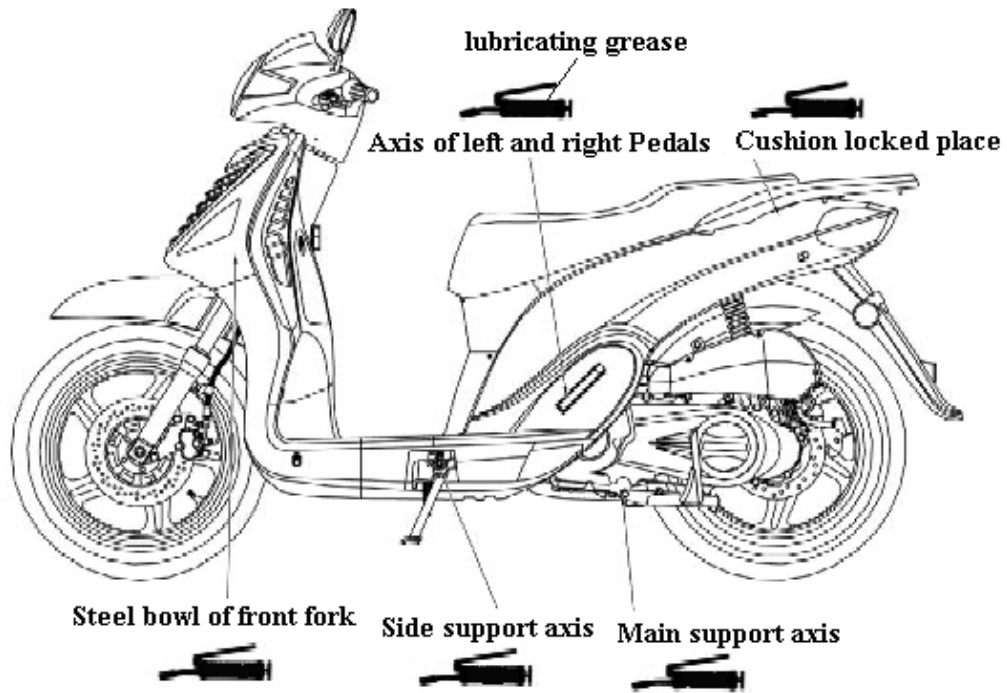
Tweak the optic axis adjustment bolt with cross screwdriver, for adjusting the far and short reaching of light. Therefore the operation requirements can be met.



Others

Lubricating grease status of each part of the vehicle frame

Make each movable part of the vehicle act; determine the status of lubricating grease. Add the recommended lubricating grease or lubricating oil to the moving part if the action is not smooth.



The broken line in the diagram indicates the invisible parts in the schematic diagram

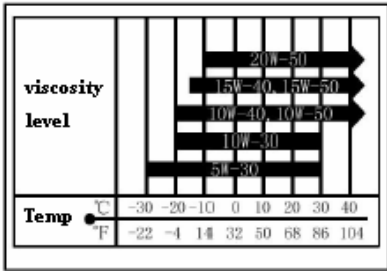
Maintenance information	4-1	Oil pump	4-2
Error diagnosis	4-1		

Maintenance information

Notes during operation

- The oil pump will be maintained after the right side cap has been disassembled. (→ Chapter 11)
- If each measured value of the oil pump exceeds the using limit, the oil pump group needs to be renewed.
- During assembling or disassembling the oil pump, please pay attention to do not let the foreign inclusion into the interior of the engine.
- After the oil pump has been assembled, check whether there is the phenomenon of oil leakage.

Maintenance standard

Item		Standard	Usage limit
Oil capacity of engine oil	During renewing the engine oil	0.8l	—
	Full capacity	1.0l	—
Commended engine oil		SAE10W-40、20W-50, special for 4- stroke motorcycle When using substitute, please choose from the following range. API: SE or SF engine oil SAE: Choose from the left table according to the environment air temperature.	
			
Oil pump rotor	Gap between internal rotor and external rotor	0.07—0.15mm	0.20mm
	Gap between the rotor of oil pump and the main body	0.15—0.23mm	0.25mm
	End face Gap	0.05—0.10mm	0.12mm

Fastening torque

Construction bolts for the body of oil pump	10 N·m (1.0kgf·m)
Screws for the cover plate of oil pump	2 N·m (0.2kgf·m)
Isolation board subassembly B for oil pump	10 N·m (1.0kgf·m)
Isolation board A for oil pump	10 N·m (1.0kgf·m)

Error diagnosis

Lack of engine oil

- Consume the engine oil naturally.
- Leak out of the engine.
- The piston ring has been worn out or can not be assembled well.
- The valve guide or the valve stem has been worn out.
- The oil seal for the valve stem has been broken and damaged.
- The cylinder, the piston or the piston ring has been worn out.

Engine oil smudge

- The engine oil has not been renewed in time.
- The piston ring has been worn out
- Mixed with coolant (white turbidness).
 - The water seal subassembly for the water pump has not been sealed well.
 - The shims for the cylinder have not been sealed well.

Oil pump

Notes:

During assembling or disassembling the oil pump, please pay attention to do not let the foreign inclusion into the interior of the engine.



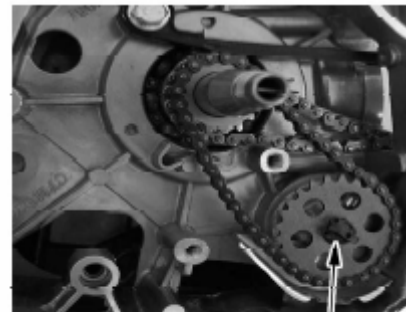
isolation board subassembly B

Disassembly

Disassemble the right side cap (→ 11-2).

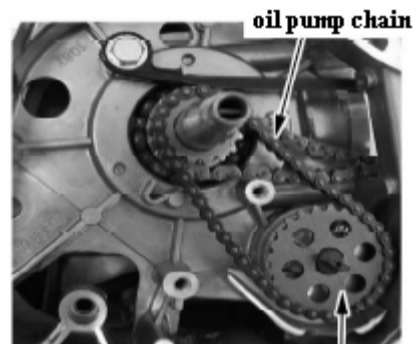
Disassemble the rotor subassembly and the driven gear subassembly (→ 11-3).

Disassemble the isolation board subassembly B for oil pump.



elastic collar for shaft

Disassemble the elastic collar for shaft.



oil pump chain
chain wheel

Disassemble the chain wheel and the chain of the oil pump.

Check whether the chain wheel of the oil pump has been damaged or worn out.

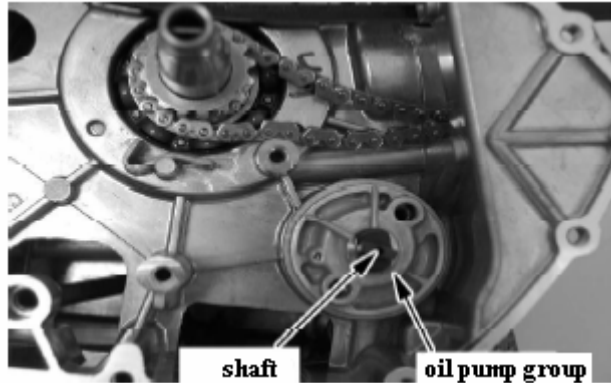
Disassemble the isolation board A for oil pump



isolation board A

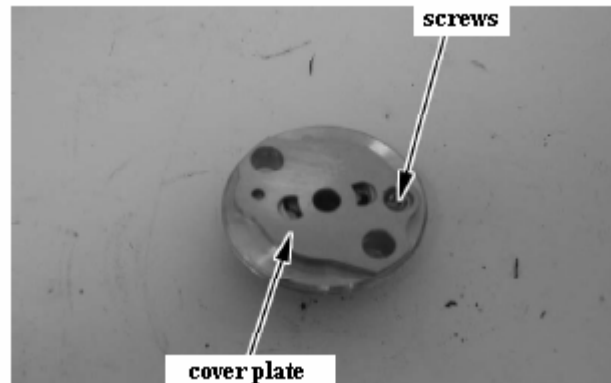
Disassemble the oil pump group and then remove the shaft of the oil pump.

Check whether the oil pump group has been damaged or worn out.



Disassembly

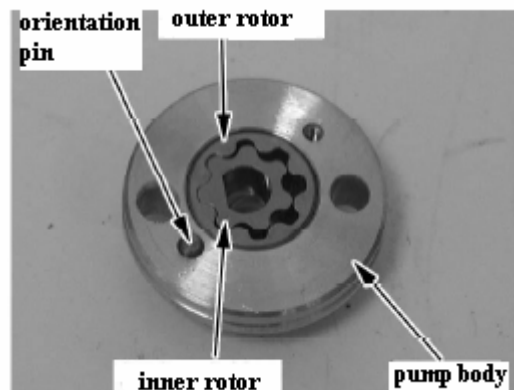
Disassemble the screws and then remove the cover plate of the oil pump.



Disassemble the internal rotor and external rotor of the oil pump.

Notes of Maintenance

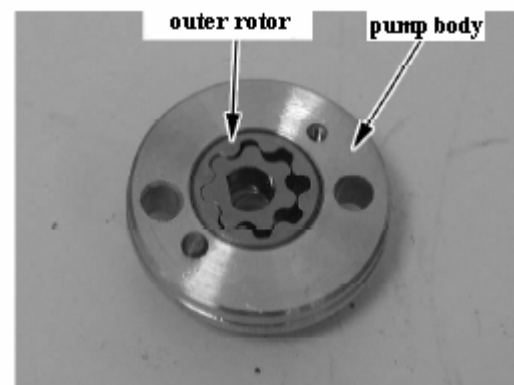
- Please measure a lot of places and then take of the max. measured value.
- If each measured value of the oil pump exceeds the using limit, the oil pump group should be renewed.



Main body Gap

Measure the external diameter of the oil pump outside rotor and the internal hole diameter of the oil pump body with the vernier caliper separately, and then calculate the different value (Gap value) between them.

Using limit: 0.25mm



Gap between external rotor and internal rotor of the oil pump

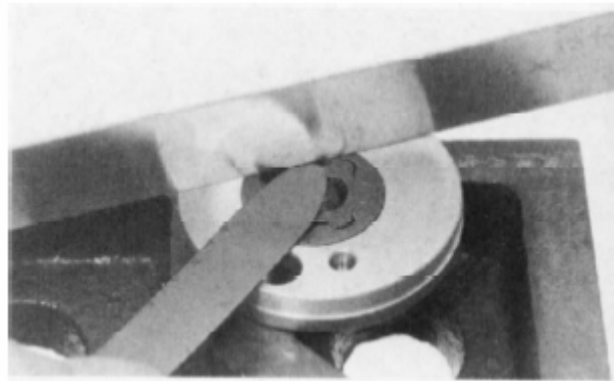
Assemble the external rotor and the internal rotor of the oil pump with the pump body, and then measure the Gap with the Gap gauge (the Gap between the external rotor and the internal rotor).

Using limit: 0.20mm

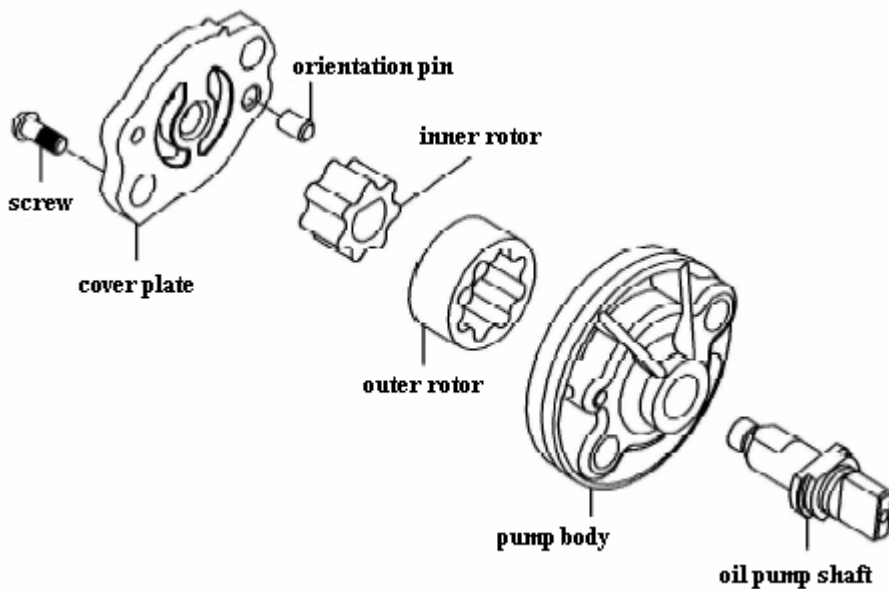


Assemble the external rotor and the internal rotor of the oil pump with the pump body, and then measure the Gap with the Gap gauge (the Gap between the rotor and pump body).

Using limit: 0.12mm



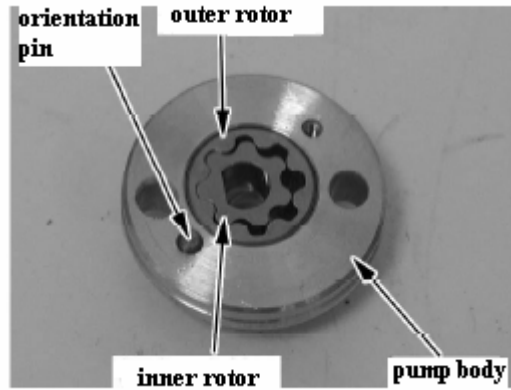
Oil pump assembly



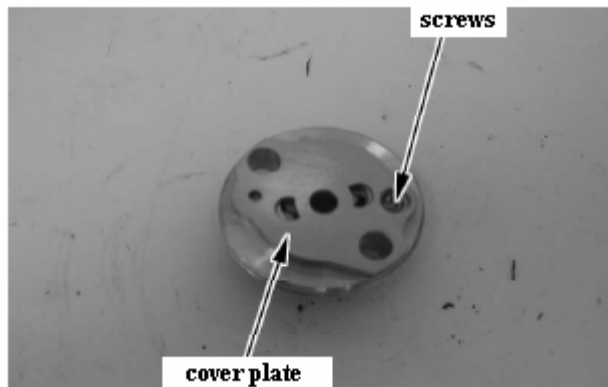
Notes

Before assembly, wash every parts and components clean with the clean coal oil.

Assemble the external rotor and the internal rotor of the oil pump with the pump body.



Assemble the cover plate of the oil pump, and then screw the screws down by the stated torque, and the torque is $2\text{N}\cdot\text{m}$ ($0.2\text{kgf}\cdot\text{m}$). After assembly, pretighten the cover plate of the oil pump, put the shaft of the oil pump into the body, and finally check whether the shaft of the oil pump can rotate freely.

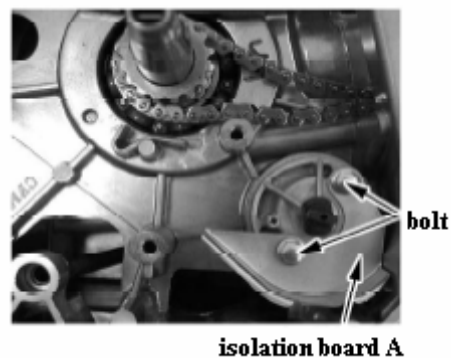


Assembly

After aligning the two mounting holes on the oil pump group with the two mounting holes on the right box, all of them can be assembled, or the construction bolts can not be screwed down.

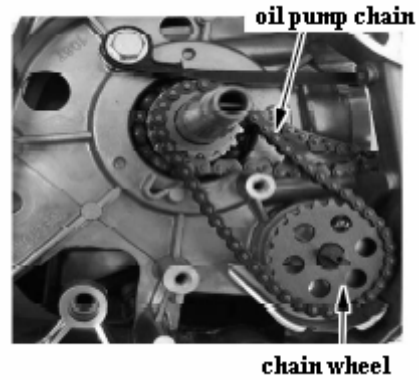


Assemble and tighten the two bolts of the oil pump group and the isolation board A for the oil pump, and then screw them down by the stated torque, and the torque is $10\text{N}\cdot\text{m}$ ($1.0\text{kgf}\cdot\text{m}$).



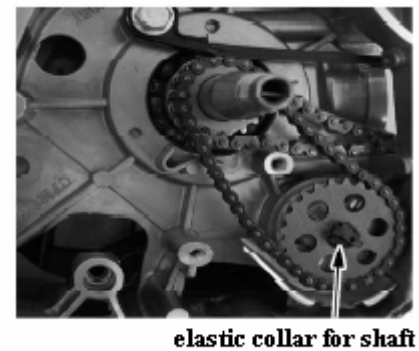
Assemble the chain wheel and the chain of the oil pump.

Notes : They should be assembled to their positions.



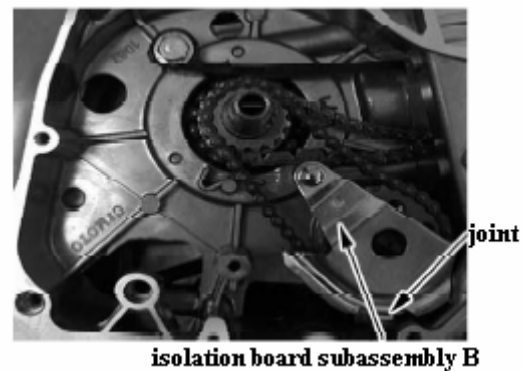
Assemble the new elastic collar for shaft into the groove for the elastic collar of the oil pump shaft.

Check whether the baffle ring has been assembled to its place.



After jointing the isolation board subassembly B for oil pump with the isolation board A for oil pump, screw them down with the bolts.

**Assemble the rotor subassembly and the driven gear subassembly (→ 11-6)
Assemble the right side cap (→ 11-7)**



Maintenance information	5-1	Disassembly/ assembly of oil injector branch assembly	5-4
Error diagnosis	5-2	Disassembly/installation of Idle Air Control Valve	5-4
Inspection of fuel pump	5-3	Disassembly/installation of Air cleaner	5-5
Disassembly/installation of high pressure oil pipe	5-3	Disassembly of Air cleaner	5-6
Disassembly/installation of body of throttle valve	5-3		
Disassembly/installation of oil injector branch assembly.....	5-3		

Maintenance information

Notes during operation

Notes

Gasoline is easily combustible, so no smoking or naked fire is allowed at the operation site. Not only flames, but also electric sparks shall be avoided. Besides, the vapored gasoline is explosive, please operate it in the place with nice ventilation.

- The guy cable shall not be distorted, bent excessively. The deformed or damaged guy cable may cause improper actions.
- Loose the high pressure oil pipe before disassembly, discharge the gasoline in the high pressure oil pipe and put it in a container.
- When the body of throttle valve is disassembled, the air inlet shall be covered by dishcloth or tape, for avoiding the entry of other objects into the engine from the air inlet side of the engine.
- When the vehicle will be stored for more than one month, the gasoline in the high pressure oil pipe and cap of the oil injector must be discharged. Otherwise, the gasoline will age and form colloidal elements which may block the nozzle of oil injector, therefore the engine cannot start or the rotate speed is unstable.

Maintenance standard

	Item	Standard
Capacity of gasoline tank	Full capacity	7.8L
	Fuel pressure	0.25MPa
Oil injector	Model	VALEO: 01F023
Body of throttle valve	Model	BING: 7226101
	Idle rotate speed	1700 ± 100rpm
Air control valve of idle	Model	Siemens ABV379-008

Error diagnosis

Engine fails to start

- Too much fuel in the engine
 - The air cleaner is jammed
 - The ventilation of idle air pipe is not free
- There is air leakage between the oil injector and seat of oil injector
- There is no fuel in the oil injector
 - The fuel filter is jammed
 - The high pressure oil pipe is jammed
 - The oil injector is jammed

Difficult to start, or it extinguishes right after startup, unstable idle speed

- The ventilation of idle air pipe is not free
- The fuel system is jammed
- The ignition system does not work well
- There is air leakage between the oil injector and seat of oil injector
- The holes on the cover of oil box are jammed

It extinguishes when accelerating

- The ignition system does not work well, the clearance of spark plug is improper

Disassembly of high pressure oil pipe

Disassemble the trunk (→2-3), loosen the belt.
 Loosen the clamping band on the cap of oil injector which is exclusively for oil pipe;
 loosen the clamping band on the gasoline tank which is exclusively for oil pipe.
 remove the high pressure oil pipe

Notes

Hold the remained gasoline from the high pressure oil pipe with container when loosening the clamping band which is exclusively for oil pipe.

Installation of high pressure oil pipe

Make assembling in the reverse sequences of disassembling. Please use the OETIKER pinchers for clamping band when installing the clamping band which is exclusively for oil pipe.

Disassembly of body of throttle valve

Disassemble the trunk (→2-3), loosen the belt, and disassemble the insert element of the throttle valve body.

Loosen the locknut, remove the adjusting nut, and remove the accelerator guy cable from the accelerator rotating drum.

Disassemble the idle speed air outlet pipe on the body of throttle valve.

Loosen the air inlet connecting hoop, the connecting hoop of air cleaner, and disassemble the body of throttle valve

Notes

Do not adjust the bolts of throttle valve. Do not remove the cap on the body of throttle valve.

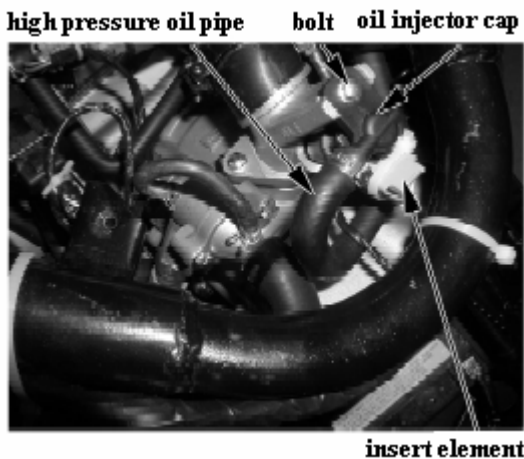
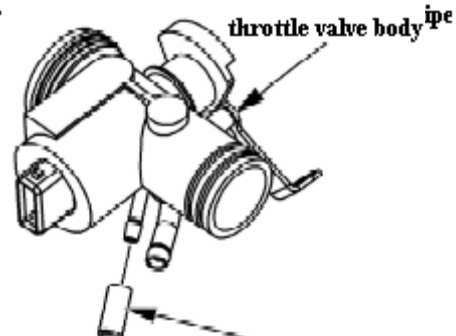
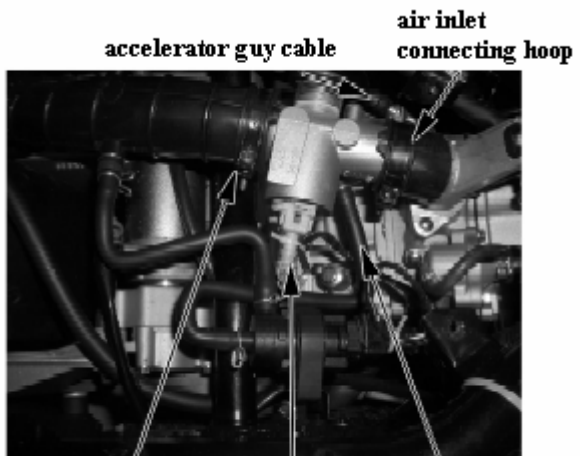
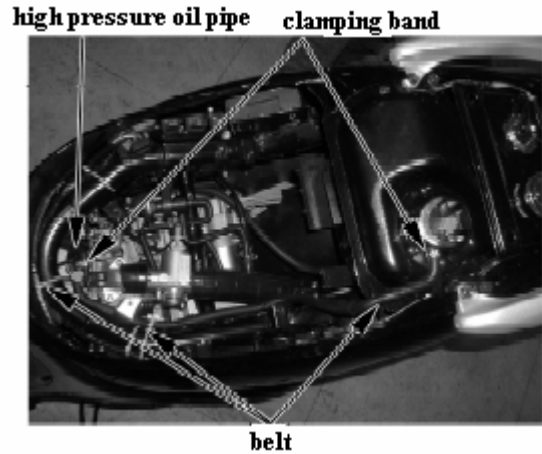
Installation of body of throttle valve

Make assembling in the reverse sequences of disassembling.

Disassembly of oil injector branch assembly

Disassemble the trunk (→2-3)
 Disassemble the high pressure oil pipe (→5-3)
 Disassemble the belt; disassemble the insert element of oil injector.
 Disassemble the bolts, remove the cap of oil injector and oil injector

Installation of oil injector branch assembly

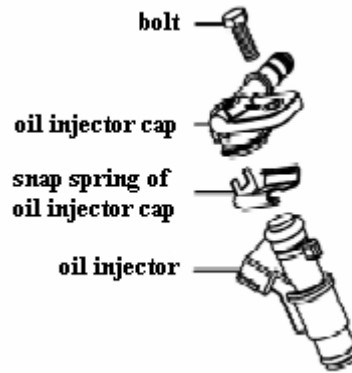


Make assembling in the reverse sequences of disassembling.

Disassembly of oil injector branch assembly

Push both sides of the snap spring of oil injector cap by the thumbs of both hands, and remove the snap spring of oil injector cap.

Separate the cap of oil injector and oil injector.



Assembly of oil injector branch assembly

Install the cap of oil injector onto the oil injector, then aim the groove of snap spring of oil injector cap at the dummy club on the cap of oil injector, and press the snap spring of oil injector cap into it.

idle speed air inlet pipe idle speed air outlet pipe



idle air control valve insert element

Disassembly of idle air control valve

Disassemble the trunk (→2-3)

Disassemble the idle speed air inlet pipe and idle speed air outlet pipe.

Loosen the belt, disassemble the insert element of idle air control valve, and remove the idle air control valve.

Installation of idle air control valve

Make assembling in the reverse sequences of disassembling.

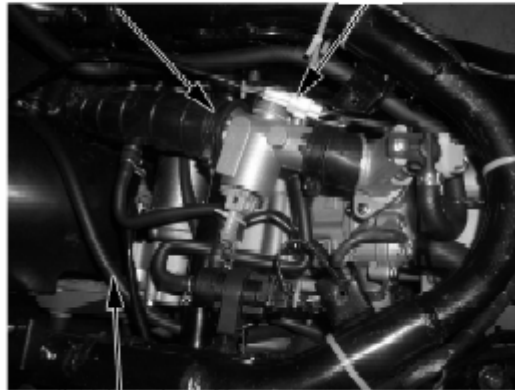
Disassembly of air cleaner

Disassemble the trunk (→2-3)

Disassemble the insert element of air temperature sensor.

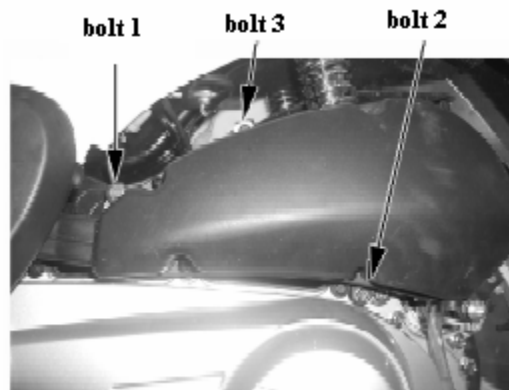
Loosen the connecting hoop of air cleaner, waste gas pipe hoop of crankcase, and remove the crankcase venting hose.

connecting hoop of air cleaner **insert element of air temperature sensor**



the crankcase venting hose

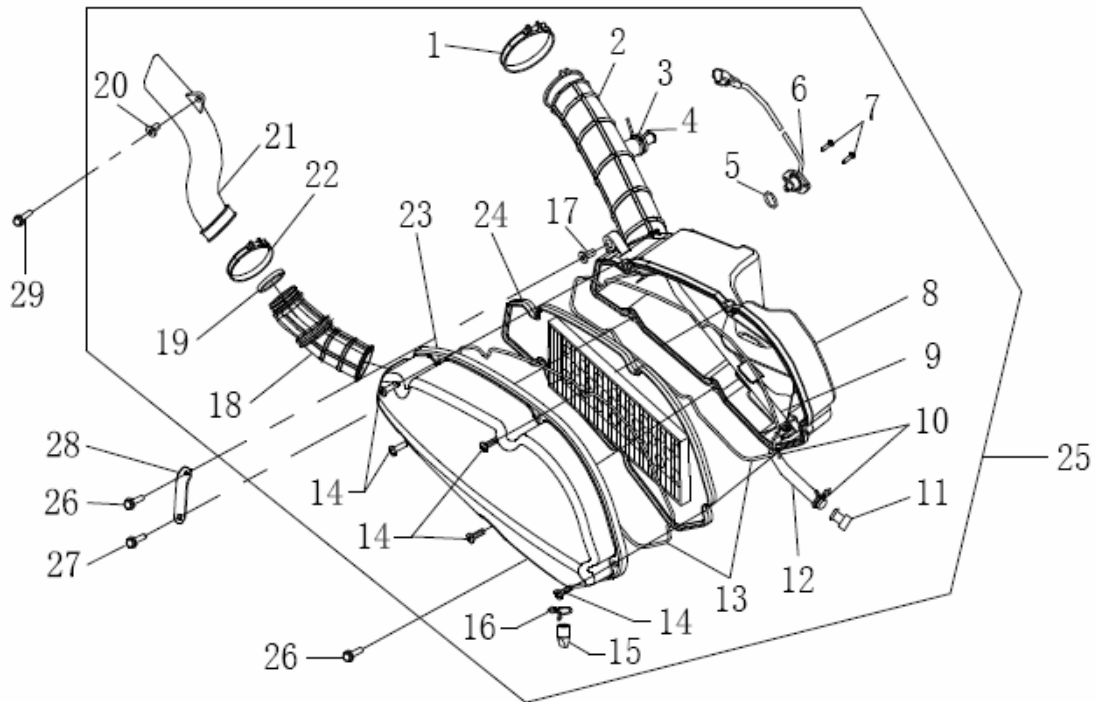
Disassemble the bolt 1, bolt 2 and bolt 3.



Disassemble the air cleaner assembly.

Assemble

Make assembling in the reverse sequences of disassembling.



Disassembly of Air cleaner

Disassemble the five bolt 14; disassemble the front shell 23 of air cleaner, take out the seal ring 13, cleaner core and support 24 of cleaner core; disassemble the bolt 7, take out the air temperature sensor 6, loosen the hoop 10, and disassemble the oil storage pipe 12.

Maintenance information	6-1	Thermostat	6-7
Error diagnosis	6-2	Radiator	6-8
Performance maintenance	6-3	Water pump	6-8
Auxiliary water box	6-5	Cooling system diagram	6-9

Maintenance information

Notes during operation

Notes

- When the temperature of coolant is above 100°C, if open the cover of radiator, the pressure of cooling system will decrease, the coolant will suddenly boil, and vapor will be ejected which may cause hazard. Therefore, the cover must be wrapped with rag etc and opened gently when the temperature of coolant has dropped.
- The Maintenance of coolant must be carried out when it is cooled completely.
- The coolant is poisonous, so it is not drinkable. Do not let it contact the skin, eyes or clothes either.
 - In case it contacts the skin or clothes, wash it immediately with soap.
 - In case it enters the eyes, wash it thoroughly with water immediately and receive treatment in specific hospital.
 - In case the coolant is drunk by accident, try to vomit it immediately and receive treatment in specific hospital after gargling.
 - The coolant shall be stored strictly in a safe place where children cannot touch.
- The Maintenance of water pump can be carried out in the engine in-car status.
- The supplement of coolant shall be carried out through the assistant water box. Generally, the water entry cap shall not be opened unless the coolant is being supplemented or discharged when the cooling system is being disassembled.
- The coolant shall not touch the coating surface, or it will damage the coating surface. In case it touches such surface, it shall be washed by water immediately.
- The measuring instrument for water entry cap (commonly sold in markets) shall be used for coolant leakage determination at each connection when the cooling system is disassembled.

Maintenance standard

Item	Standard	
Capacity of coolant	Full capacity	0.8L
	Capacity of auxiliary water box	0.26L
	Standard concentration	50%
The opening pressure of water entry cap	108kpa (1.1kgf/cm ²)	
Thermostat	The initial temperature	72 ± 2°C
	The full opening temperature	88°C
	The full opening lift range	3.5-4.5mm

Fastening torque

Bolts of draining for water pump: 8 N · m (0.8 k g f · m)

Impeller of water pump: 10 N · m (1.0 k g f · m) Left screw thread

Error diagnosis

The water temperature rises too fast

- The water entry cap does not work well
- The pipeline of cooling system is mixed with air
- The water pump does not work well
- The thermostat does not work well (the thermostat has not been turned on)
- The pipeline of radiator or cooling water pipe is jammed
- Lack of coolant

The water temperature does not rise or rises improperly

- The thermostat does not work well (the thermostat has not been turned off)

Water leakage

- The water seal for water pump does not work well
- The O-ring is aged, damaged or with poor airproof
- The shim is aged, damaged or with poor airproof
- The pipeline was not properly installed
- The pipeline is aged, damaged or with poor airproof

Performance maintenance

Inspection of specific gravity of the coolant

Notes

The water entry cap can be opened and the front faceplate (→2-8) and the water entry cap shall be disassembled when it is confirmed that the coolant is cooled already. Check with densimeter whether the concentration of coolant is suitable for the air temperature in the place where it is used. Inspect whether the coolant is contaminated.



Maintenance of water entry cap

cap

Notes

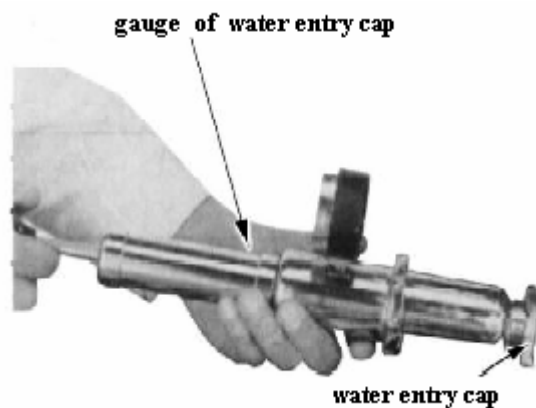
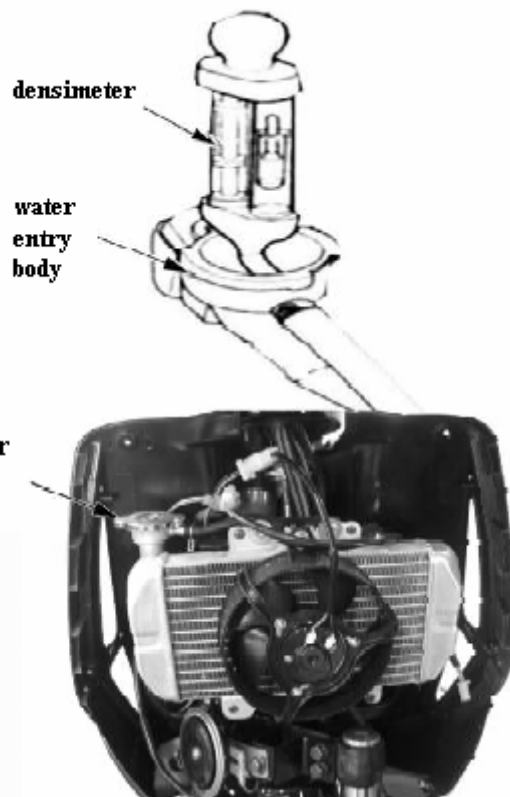
The water entry cap must be opened when it is confirmed that the coolant is cooled. Disassemble the front faceplate (→2-8); remove the water entry cap (refers to the previous article).

Notes

Water shall be applied to the sealed face of water entry cap when installing the measuring instrument for water entry cap onto the water entry cap.

Determine with the measuring instrument for water entry cap whether the water entry cap works well, the water entry cap is OK if it can keep the opening pressure for 6 seconds.

Opening pressure of water entry cap:
108kPa(1.1 kg f/cm²)



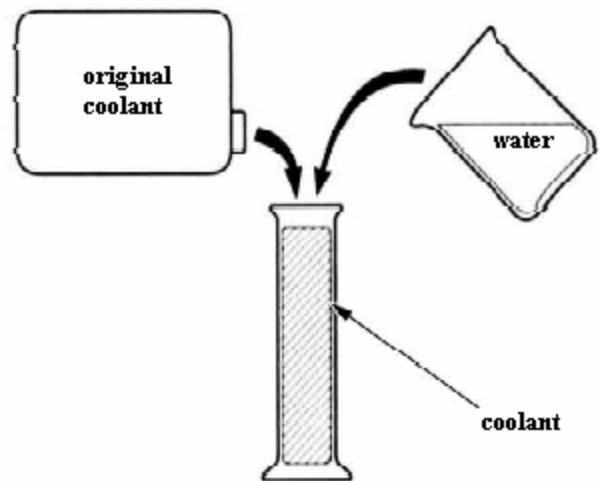
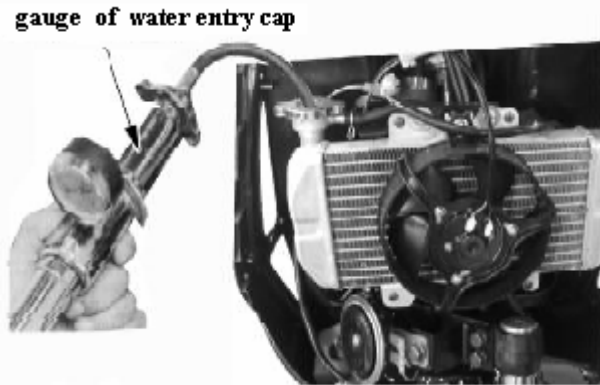
Pressurized test of radiator

Apply the specific pressure (opening pressure of water entry cap) to the cooling system by measuring instrument for water entry cap; determine that whether it can keep for 6 seconds within the specific pressure range.

Notes

- Do not apply pressure which is above the opening pressure of water entry cap (108kPa(1.1 kg f/cm²)), otherwise the cooling system might be broken.

When there is pressure leakage, inspect whether there is water leakage at the pipeline, each connection, the combination part of water pump and the drainage hole of water pump (→ 6-8).



Renewal, exhaustion of coolant

Fabrication of coolant

Notes

- The coolant is poisonous, so it is not drinkable. Do not let it contact the skin, eyes or clothes either.
- In case it contacts the skin or clothes, wash it immediately with soap.
- In case it enters the eyes, wash it thoroughly with water immediately and receive treatment in specific hospital.
- In case the coolant is drunk by accident, try to vomit it immediately and receive treatment in specific hospital after gargling.
- The coolant shall be stored strictly in a safe place where children cannot touch.

Notes

The coolant (original fluid) shall be mixed with soft water at the temperature which is about 5°C lower than the lowest air temperature of the place where it is used.

The coolant is made by diluting the original fluid of coolant with soft water.

Standard concentration of coolant: 50%
 Recommend: Chunfeng Coolant (ready for application, need no dilution)



Coolant discharging

Discharge the water entry cap

Notes

The water entry cap can be opened only when the coolant is confirmed cooled.

To disassemble the front decorative sheet (→ 2-8), and open the water entry cap

Disassemble the draining bolts

Disassemble the draining bolts, sealing shim, and discharge the coolant.

When the coolant is discharged, assemble new sealing shim, draining bolts and tighten them.



Bolts of draining + sealing shim

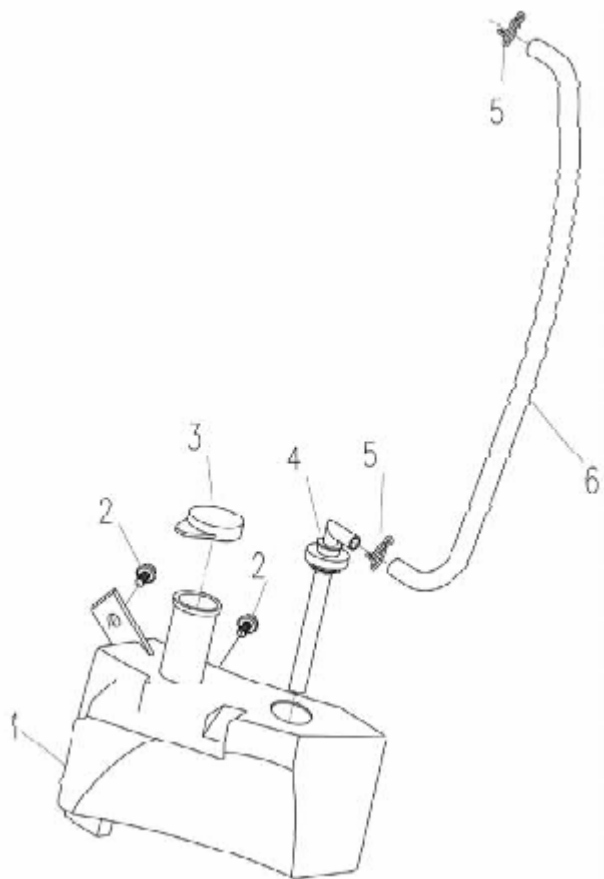
Auxiliary water box

Disassembly

Disassemble the front faceplate (→2-8);
 Disassemble the front venting plate (→2-9);
 Disassemble the two bolt-2 on the assistant water box; loosen the hoop 5 of assistant water box; Disassemble the connection between water pipe 6 of Auxiliary water box and the assistant water box; remove the assistant water box, open the cover 3 of assistant water box, discharge the coolant in the assistant water box, and wash the Auxiliary water box with water.

Assemble

Make assembling in the reverse sequences of disassembling

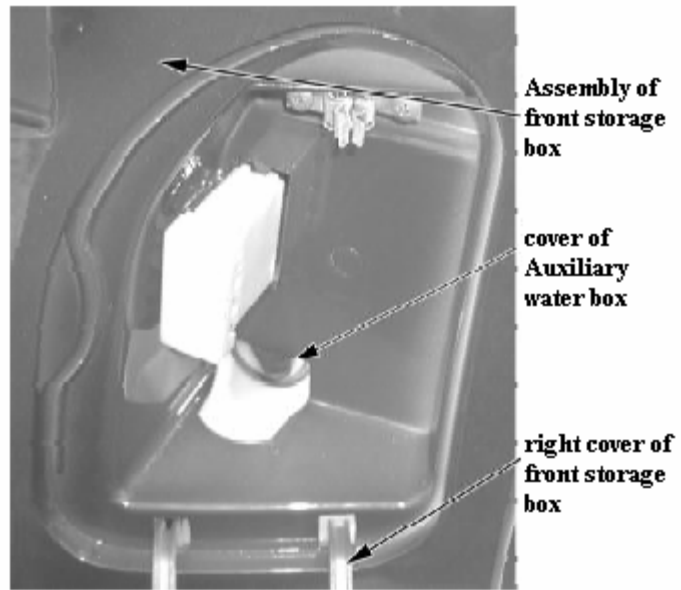


Injection of coolant

Open the water entry cap; inject the coolant into the water entry.

Start the engine, eliminate the air in the cooling system, and install the water entry cap when it is confirmed through the water-adding opening that the air in the cooling system is completely ejected.

Open the right cover of front storage box, remove the cover of assistant water box; supplement the coolant up to the upper limit of the assistant water box.

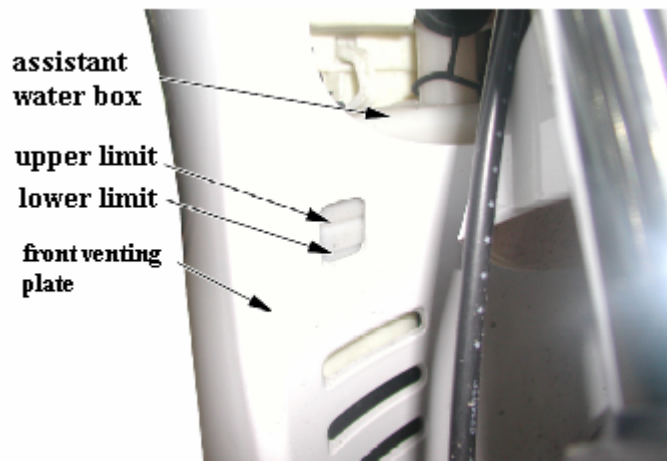


Notes

Inspection of coolant volume shall be carried out when the motorcycle is vertical.

Exhaustion

1. Exhaustion shall be carried out according to the following sequence:
2. Start the engine, run it for several minutes at idle speed, Spin the accelerator fast but gently for 3-4 times, eject the air in the cooling system,
3. Install the water entry cap properly when coolant is added again up to the entry opening,
4. Inspect the coolant level in the assistant water box, and supplement the coolant up to the upper limit when it is insufficient, install the cover of assistant water box.



Thermostat

Disassembly and assembly

Notes

The radiator cover can be opened only when the coolant is confirmed cooled.

Disassemble the foot plate (→2-12); eject the coolant (→6-4);

Disassemble the bolt 1, remove the upper shell 7, lower shell 2 of thermostat, and take out the thermostat 11.

Make assembling in the reverse sequences of disassembling

Erect the foot plate. (→2-8)

Inject the coolant, eject the air. (→6-4)

Assemble the carburetor. (→5-13)

Maintenance

Notes

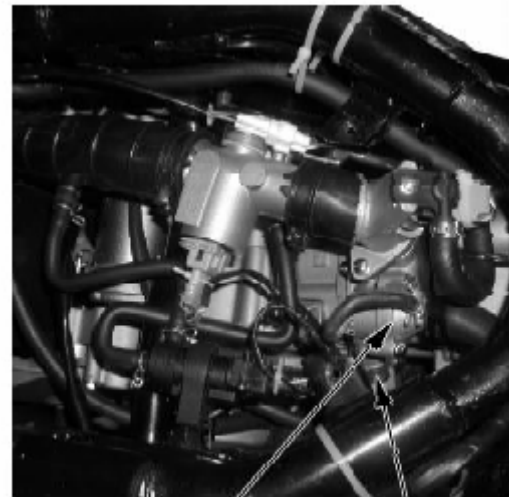
- At normal temperature, the thermostat shall be renewed even it is opened a little only.
- The thermostat will be lagged in terms of time, for its temperature detecting area is small. So that the lift range of opening valve shall be inspected when keeping the full opening temperature for 5 minutes before and after.
- The thermostat and thermometer shall not contact the bottom of the test container.

Put the thermostat into the water of container, make the water temperature rise slowly, and inspect the opening temperature of the valves of thermostat.

Operating temperature of opening valve: $72 \pm 2^{\circ}\text{C}$

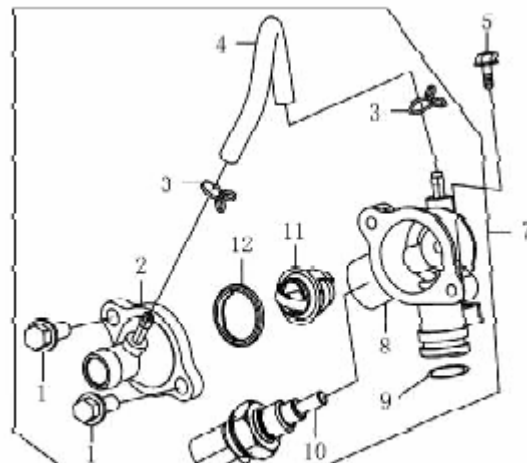
Full opening lift range/temperature: 3.5 — 4.5mm / 88°C

Assemble the thermostat. (Refers to the above content)

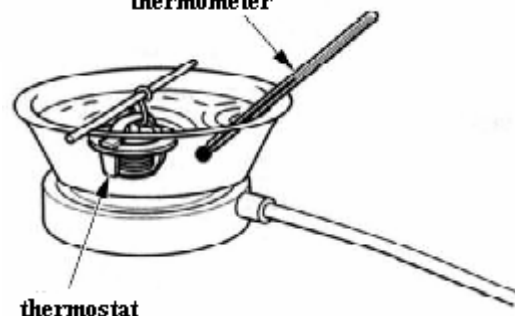


thermostat assembly

bolt



thermometer



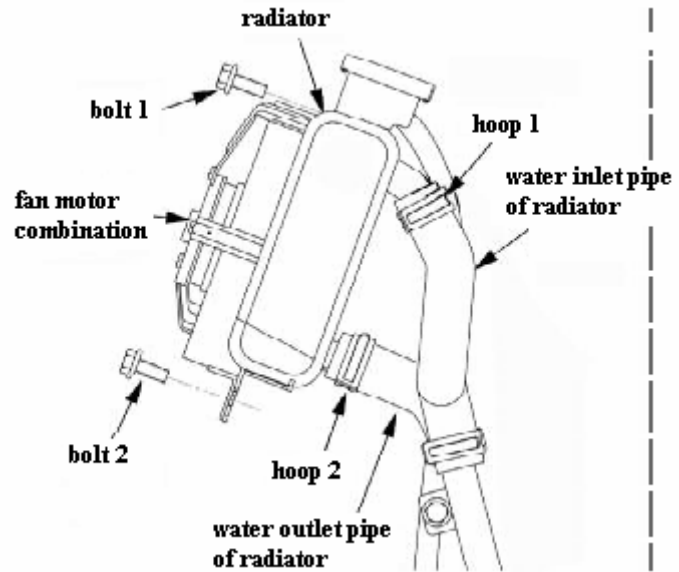
thermostat

Radiator

Notes

Do not damage the radiation fin of radiator.

Disassemble the front faceplate (→2-8),
 disassemble the bolt 1, bolt 2,
 disassemble 2P insert element of fan motor,
 remove the fan motor combination;
 Loosen the hoop 1 and hoop 2;
 disassemble the water inlet pipe of radiator, water outlet pipe of radiator;
 disassemble the small circulating water pipe, eject the coolant,
 unplug the wire of temperature switch,
 and disassemble the radiator.



Assemble

Make assembling in the reverse sequences of disassembling

Water pump

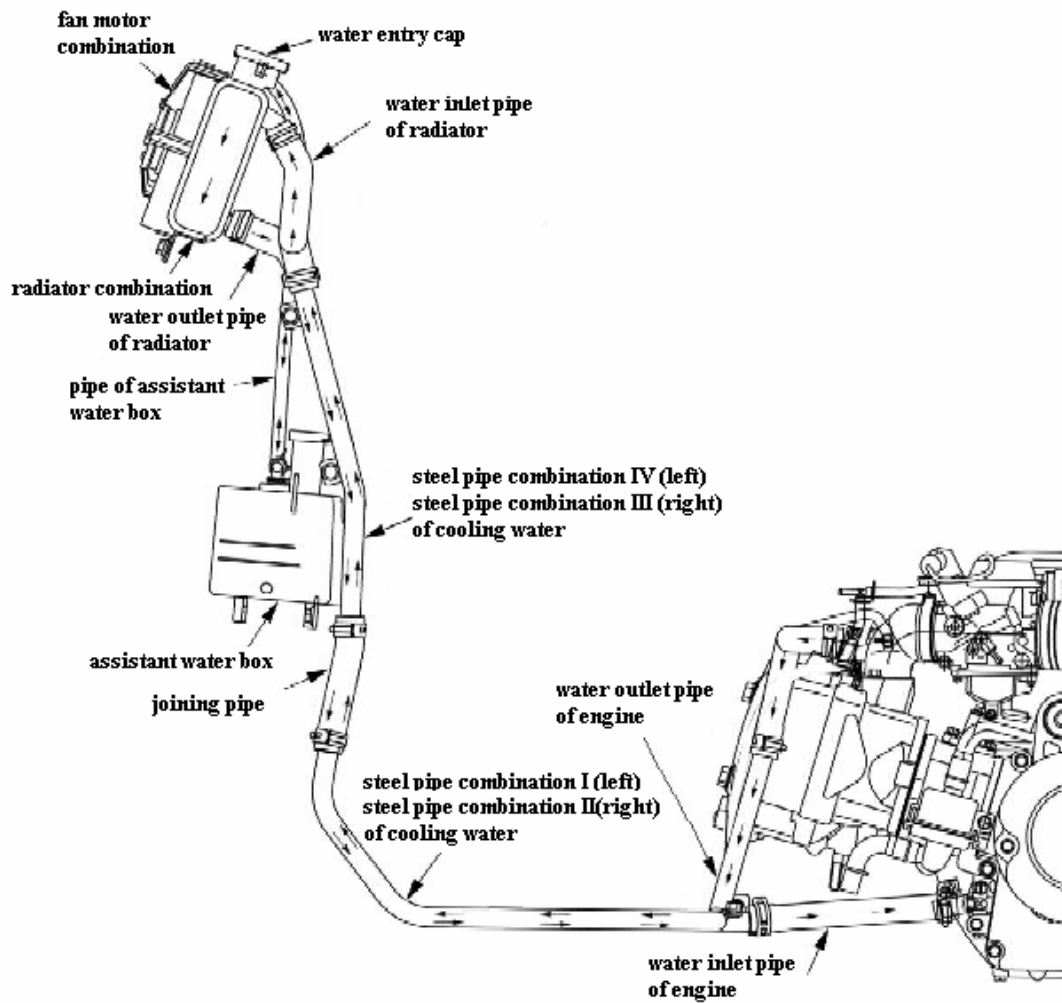
Maintenance

Inspect whether there is coolant leakage at the draining hole at lower part of the water pump. When there is coolant leaking from the draining hole, it means that the water seal subassembly is damaged, and the water seal subassembly for water pump shall be renewed. (→11-4)



Bolts of draining + sealing shim

Diagram of cooling system



Maintenance information	7-1	Disassembly of engine	7-4
Installation of engine	7-2		

Maintenance information

Notes during operation

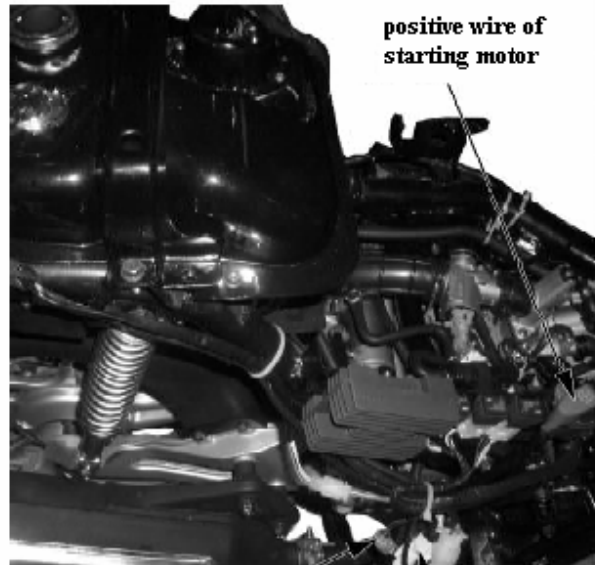
- When disassembling or assembling the engine, the vehicle shall be supported firmly by jack etc. Be cautious not to damage the frame, the engine, bolts and cables upon operation.
- The frame etc shall be wrapped for protection when disassembling or assembling the engine.
- The engine may not be disassembled from the vehicle upon the following operation.
 - Oil pump (→Chapter 4)
 - Oil supplying system, air inlet system (→Chapter 5)
 - Cylinder cover hood, cylinder cover, cylinder body, camshaft (→Chapter 8)
 - Infinitely variable speed system, left side cover (→Chapter 9)
 - Reduction box (→Chapter 10)
 - Right side cover, AC magnetogenerator, water pump (→Chapter 11)
 - Piston, piston ring, piston pin (→Chapter 12)
- The engine shall be disassembled from the vehicle upon the following operation.
 - Crank shaft (→Chapter 12)

Fastening Torque

Bolts for assembling the engine hanger	55 N · m (5.6 kgf · m)
Nuts for hanger shaft of engine	55 N · m (5.6 kgf · m)
Construction bolts for rear shock absorber (upper)	55 N · m (5.6 kgf · m)
Construction bolts for rear shock absorber (lower)	30 N · m (3.1 kgf · m)
Construction bolts for rear fork	55 N · m (5.6 kgf · m)

Disassembly of engine

Disassemble the plastic parts of the vehicle (→Chapter 2),
 Disassemble the body of throttle valve and idle air control valve. (→ 5-3),
 Disassemble the air cleaner. (→5-10),
 Eject the coolant (→6-4)



2P insert elements of AC magnetogenerator

3P insert elements of AC magnetogenerator

insert elements of water temperature sensor

Disassemble the 3P, 2P insert elements of AC magnetogenerator,

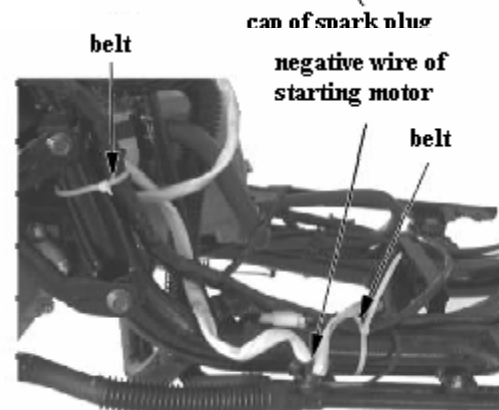
Disassemble the insert element of water temperature sensor,



Disassemble the cap of spark plug,



Loosen the positive wire of starting motor, the negative wire of starting motor and belt.



Loosen the locknut;
disassemble the gun guy cable,
disassemble the water inlet pipe and hoop,
disassemble the water outlet pipe and hoop,
disassemble the combination of exhaust
muffler (→2-15).

Disassemble the bolt 3, bolt 4, and remove
the combination of back brake calipers,
disassemble the bolt 1, bolt 2, and loosen the
combination of back brake pipes,

oil injector, high pressure oil pipe and hoop



**locknut gun guy
cable water-recycled
pipe and hoop water outlet
pipe and hoop**

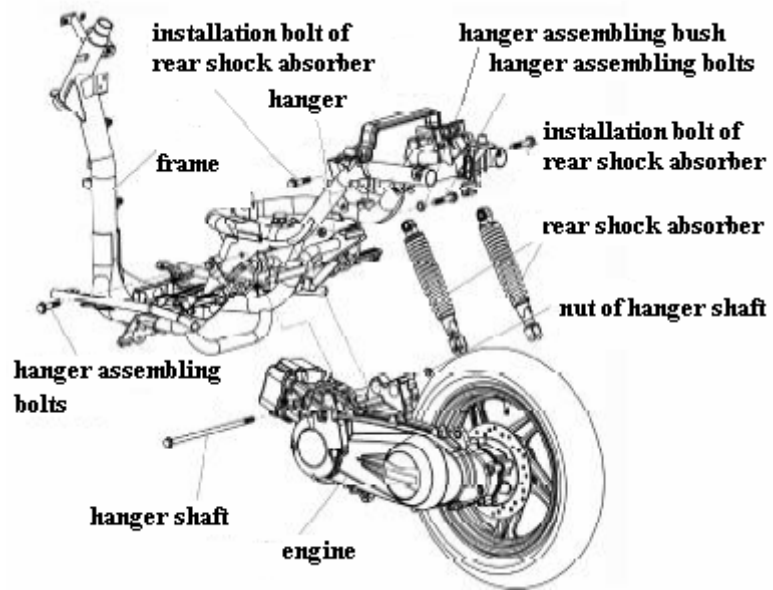
Disassemble the hoop of high pressure oil
pipe from the oil injector, then remove the
high pressure oil pipe.



bolt 1, nut 2 bolt 3 bolt 4

Take down the engine from the frame according to the following sequence.

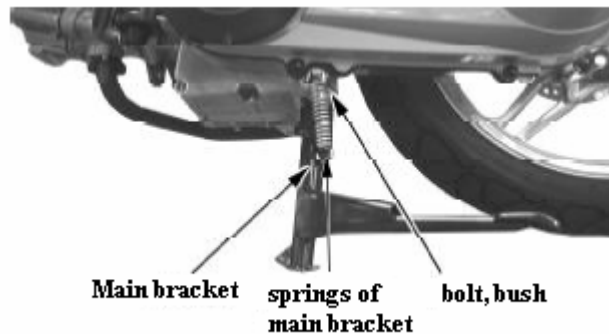
1. Disassemble the rear shock absorber (→ 14-5),
2. Remove the engine hanger assembling bolts and the bush, disassemble the engine,
3. Disassemble the hanger shaft nuts of the engine, draw the hanger shaft, and remove the hanger,
4. Disassemble the rear fork (→ 14-4),
5. Disassemble the rear wheel (→ 14-3),
6. Disassemble the spring of main support, disassemble the main support construction bolts and the bush, then remove the main support.



Installation of engine

Notes

The guy cables, cables shall pass through the proper positions according to the wiring diagram of cables, pipes and guy cables. (→ Chapter 01)



Erect the main support onto the engine, install the bush, bolts, and tighten to the specific torque,

Torque: 2.6 N·m (2.7 kgf·m)

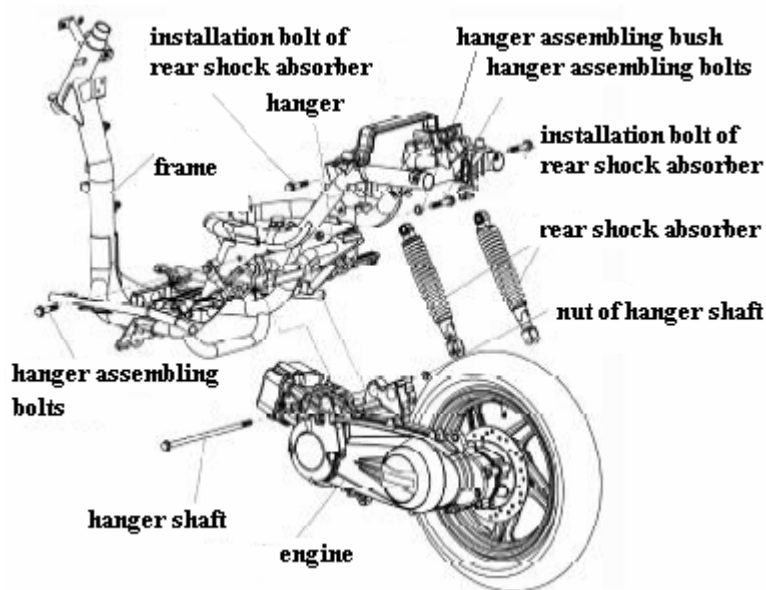
Hang the spring of main support.

Notes

The outer surfaces of left and right bushes of main support shall be applied with lubricating grease.

Install the engine to the frame according to the following sequence:

1. Install the rear wheel to the engine,
2. Install the rear fork to the engine, install the nuts of back shaft and rear fork construction bolts, and tighten them to the specific torque,
3. Install the engine hanger to the engine, and screw the hanger shaft nut,
4. Install the engine hanger construction bolts and engine hanger assembling bush, hoist the engine to the frame,
5. Install the back shock absorber,
6. Tighten the following nuts (bolt) according to specific torques:



Hanger assembling bolts

Torque: 55 N·m (5.6 kgf·m)

Back shock absorber construction bolts (upper)

Torque: 55 N·m (5.6 kgf·m)

Back shock absorber construction bolts (lower)

Torque: 30 N·m (3.1 kgf·m)

Hanger shaft nuts

Torque: 55 N·m (5.6 kgf·m)

Rear fork construction bolts

Torque: 55 N·m (5.6 kgf·m)

Rear wheel shaft nuts

Torque: 140 N·m (14.3 kgf·m)

Install the combination of back brake calipers, tighten the bolt 3 and bolt 4 according to specific torques,

The tightening torque of bolt 3 and bolt 4 is:

Torque: 3 0 N·m (3 . 1 k g f·m)

Install the vehicle parking guy cable; adjust the vehicle parking (→ 14-6)

Install the combination of back brake pipes, tighten the bolt 1 and bolt 2.

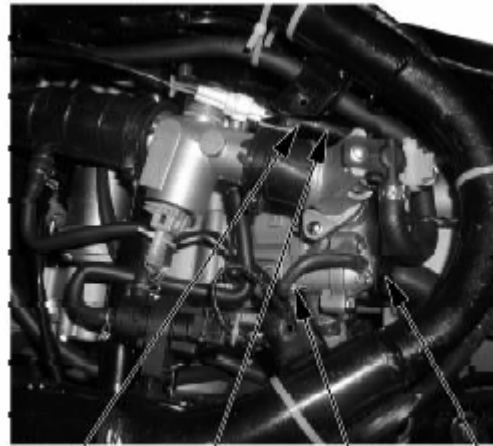


bolt 1, nut 2 **bolt 3** **bolt 4**

Notes

The combination of back brake pipes shall pass through the proper position, it shall not interfere the rear wheel, back brake disc or other parts.

Install the water outlet pipe, water inlet pipe and small circulating water pipe, and tighten with corresponding ring hoops.



locknut **gun guy cable** **water-recycled pipe and hoop** **water outlet pipe and hoop**

Notes

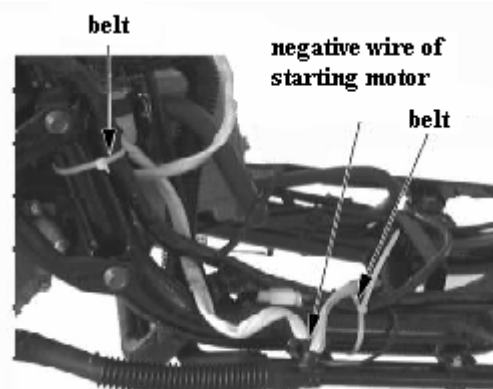
The water pipes shall not be with cracks or other damages.

The water pipes shall be installed properly; the joints shall be with no leakage.

Connect the guy cable; adjust the gap of accelerator rotating handle (→ 3-15)

Lock the locknut tightly when the gap is adjusted.

Install the positive wire of starting motor and negative wire of starting motor properly, and bind them properly.



belt **negative wire of starting motor**

belt

Install the cap of spark plug,



cap of spark plug

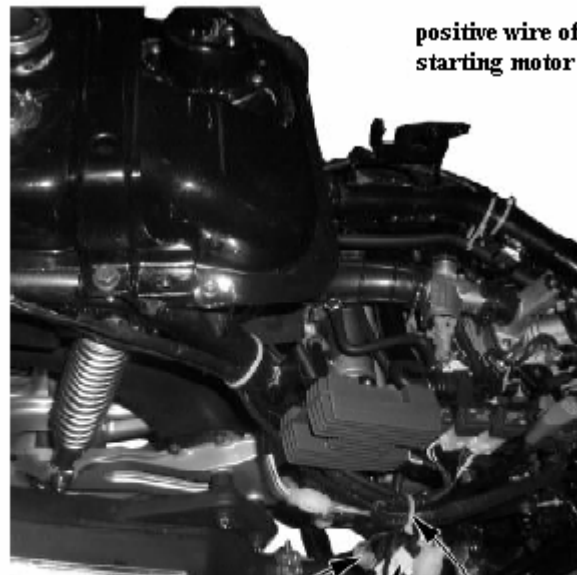
Install the insert element of water temperature sensor,

insert element of temperature sensor



Install the insert elements 2P, 3P of magnetogenerator, insert the insert elements 2P and 3P into the jacket, and bind them properly.

Install the combination of exhaust muffler (→ 2-15),
install the air cleaner (→ 5-10),
install the body of throttle valve and idle air control valve (Chapter 5),
inject the coolant, eject the air (→ 6-4),
and install the plastic parts of vehicle (→ Chapter 2).



positive wire of starting motor

2P insert elements of AC magnetogenerator

3P insert elements of AC magnetogenerator

belt

Maintenance information	8-1	Renewal of valve guide	8-13
Error diagnosis	8-2	Test, correction of valve retainer ...	8-14
Compression pressure of cylinder ...	8-3	Assembly of cylinder cover	8-16
Adjustment of valve gap	8-3	Test of cylinder body	8-17
Disassembly of cylinder cover hood ..	8-5	Assembly of cylinder body	8-18
Disassembly of camshaft support subassembly	8-6	Assembly of cylinder cover	8-19
Disassembly of cylinder cover	8-9	Assembly of camshaft support	
Disassembly of cylinder body	8-10	Subassembly	8-20
Disassembly of cylinder cover	8-11	Assembly of cylinder cover hood ...	8-22

Maintenance information

Notes to operation

- The maintenance of cylinder cover hood, camshaft subassembly, camshaft support subassembly, rocker, cylinder cover subassembly and cylinder body group can also be carried out in the engine in-car status.
- Be cautious not to damage each combination surface when disassembling the cylinder cover hood, cylinder cover subassembly and cylinder group.
- The parts shall be marked respectively when disassembled, for awareness of their disassembly positions, and they must be installed back to the original places.
- The parts shall be washed after disassembly and before test and determination, and they shall be blown to dry with compressed air.
- Before assembly, in order to ensure the initial lubrication, the shaft journal of camshaft subassembly, cam surface, rocker shaft and rocker inner hole shall be applied with lubricating oil.
- The lubricating oil supplied to camshaft subassembly is supplied through the oil path in the cylinder body group, cylinder cover subassembly and hood of cylinder cover.
- The lubricating oil paths of the cylinder cover hood, cylinder cover subassembly and cylinder body group must be cleaned before assembly.

Maintenance standard

Item		Standard		Operation limit
		CF125	CF150T	
Compression pressure of cylinder		700kPa (7kgf/cm ²) @260r/min		—
Valve gap		IN	0.05mm	—
		EX	0.15mm	—
Flatness of cylinder cover		—		0.05mm
Camshaft	Height of cam top	IN	30.74— 30.86mm	30.69mm
		EX	30.33— 30.45mm	30.28mm
Valve rocker	Interior diameter of valve rocker hole	IN/EX	10.000— 10.015mm	10.10mm
	External diameter of valve rocker shaft	IN/EX	9.978— 9.987mm	9.91mm
Valve Valve guide	External diameter of valve stem	IN	4.975— 4.990mm	4.965mm
		EX	4.955— 4.970mm	4.945mm
	Interior diameter of valve guide sleeve	IN	5— 5.012mm	5.04mm
		EX	5— 5.012mm	5.04mm

	Clearance of valve stem and valve guide	IN	0.010— 0.037mm		0.075mm	
		EX	0.030— 0.057mm		0.095mm	
	Driving depth of valve guide	IN/EX	11.9— 12.1mm		—	
	Contact width of valve retainer	IN/EX	0.9-1.1mm		1.8mm	
Valve spring	Overhanging length (outer/inner spring)	IN/EX	35.0/32.3mm		33.5/30.8mm	
Cylinder	Interior diameter		52.4~	58~	52.449	58.049
			52.419mm	58.019mm	mm	mm
	Flatness of cylinder combination surface		—		0.05mm	
	Roundness		—		—	
	Cylindricity		—		0.05mm	

Fastening torque

Bolts for hood of cylinder cover	10N·m (1.0kgf·m)
Acorn nuts for cylinder cover	35N·m (3.5kgf·m)
Bolts for timing chain wheel	9 N·m (0.9kgf·m)
Bolts for tensioner spring seat	10 N·m (1.0kgf·m)
Bolts for cylinder cover	10N·m (1.0kgf·m)
Bolts for tensioner	10N·m (1.0kgf·m)
Bolts for hood of cylinder body	10N·m (1.0kgf·m)

Error diagnosis

- Generally, the poor airproof of perimeter of cylinder cover can be determined by measuring the compression pressure of cylinder or according to the sound from the upper cylinder cover seal of engine.
- Test whether the ventilating pipe of crankcase smokes when it cannot start properly or run improperly at low speed. If the ventilating pipe of crankcase smokes, it means the piston ring is worn, broken or blocked.

Unstable idle speed

Ventilation of idle air pipe is not free
 The seat of oil injector is leaking
 Low compression pressure
 Fuel supply system does not work well

Compression pressure is too low

Improper adjustment on valve gap
 The valve is burnt or worn
 Incorrect adjustment on timing of air distribution
 Elasticity of valve spring is insufficient
 Poor airproof of valve seat
 The sealing gasket of cylinder cover is leaking
 The cylinder cover is deformed or chapped
 Incorrect installation of spark plug

Compression pressure is too high

Carbon is accumulated at piston, firebox

Abnormal sound

Cam surface of cam shaft subassembly is worn or damaged
 Improper adjustment on valve gap
 The valve is burnt or the valve spring is damaged
 The rocker, rocker shaft are damaged
 The chain is stretched
 The chain tensioner does not function well

The muffler emits blue smoke

The valve guide or valve stem is worn
 The seal ring of valve stem is worn, damaged
 The piston ring or cylinder is severely worn

Compression pressure of cylinder

Notes

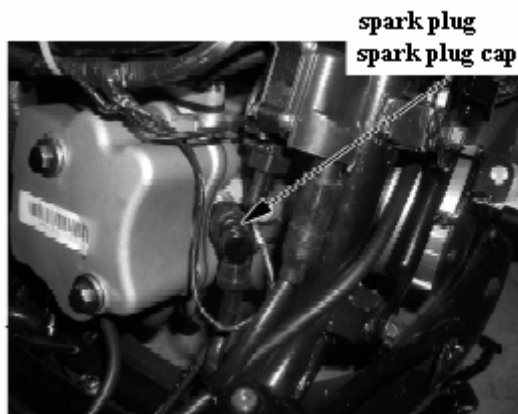
Determination shall be made when the engine is warmed up.

Disassemble the maintenance cover (→Chapter 2)

Disassemble the left guard plate (→Chapter 2)

Disassemble the spark plug cap, spark plug

Select proper compression pressure gauge, install it into the spark plug hole of cylinder cover.



The accelerator is fully open.

Measure the compression pressure of cylinder by electric starting.

Notes

- The compression pressure gauge and its accessories shall be installed strictly; the connection must be with no pressure leakage.
- The accumulator will overflow because it is electric starting, so the starting motor must not operate continuously for 5 seconds or above.



Compression pressure:

700kPa (7kgf/cm²) @260r/min

When the compression pressure is too high, test the carbon accumulation at the piston head and the firebox in the cylinder cover.

When the compression pressure is too low, pour some engine oil into the hole of spark plug, and measure again.

Compare the measured value with the previously measured value, if the pressure rises, measure the cylinder, piston and piston ring (→Chapter XII). If the pressure remains the same, maintain the cylinder cover, valve.

- The valve leaks
- Improper adjustment on valve gap

Adjustment on valve gap

Test

Notes

The test, Adjustment of valve gap shall be carried out in cooling condition.

Disassemble the hood of cylinder cover
(→8-6)

Disassemble the left side cover. (→ 9-3)

Turn the drive wheel of transmission, make the two parallel reticle marks on chain wheel of camshaft parallel to the machining surface of cylinder cover, and the groove opening of camshaft journal shall be upward.

Insert the feeler gauge between the valve rocker and valve, test the valve gap.

Valve gap (in cooling condition)

IN: 0.05mm

EX: 0.15-0.20mm

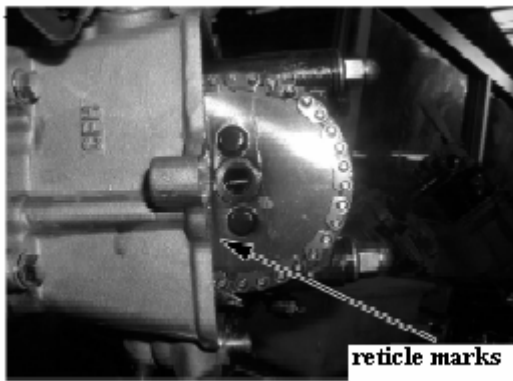
Adjustment

Loosen the locknut by spanner, and loosen the adjusting screw for valve gap.

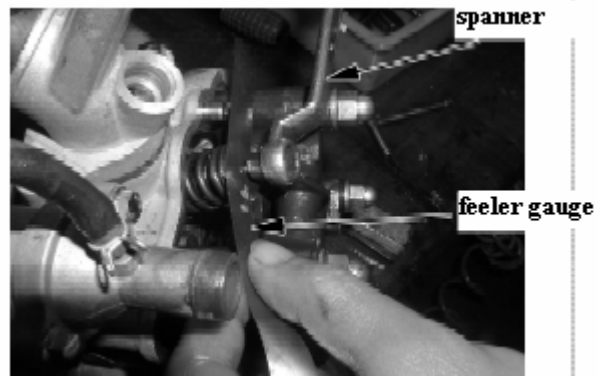
Insert the feeler gauge with selected thickness into between the valve rocker and valve.

Turn the valve gap adjusting bolt by socket spanner to contact the feeler gauge, keep the position of socket spanner, and tighten the locknut by spanner.

hood of cylinder cover

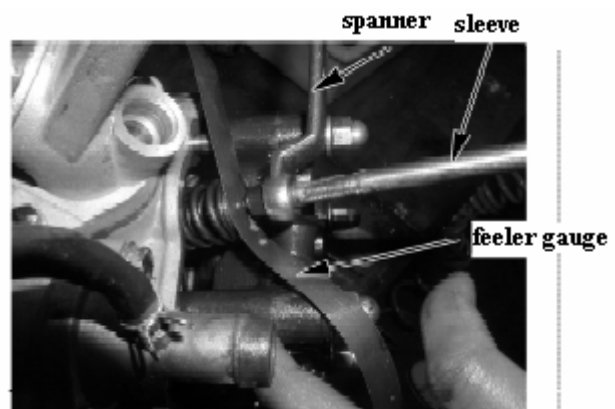


reticle marks



spanner

feeler gauge



spanner sleeve

feeler gauge

Turn the drive wheel of transmission for two revolutions, and test again whether the valve gap meets the requirement.

Install the left side cover. (→ 9-20)

Install the hood of cylinder cover. (→ 8-22)

Disassembly of cylinder cover hood

Disassemble the maintenance cover (→ Chapter 2)

Disassemble the bolts for cylinder cover hood and seal ring subassembly for cover hood bolts.

Disassemble the hood of cylinder cover

bolt and seal ring subassembly for hood



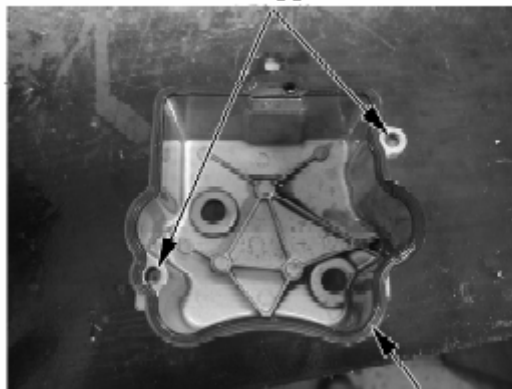
hood of cylinder cover

Notes

Be cautious not to damage the combination surface when disassembling the hood of cylinder cover.

Disassemble the locating pin, seal ring for hood of cylinder cover.

locating pin



seal ring of hood

Disassembly of camshaft

support subassembly

Disassemble the left side cover. (→9-3)

Disassemble the hood of cylinder cover. (→8-5)

Turn the drive wheel of transmission anticlockwise, confirm that the reticle mark on the chain wheel of camshaft is parallel to the machining surface of cylinder cover, and the groove opening of camshaft journal shall be upward. (→ 8-4)

Disassemble the bolts of tensioner spring seat, washer and spring.

Disassemble the bolts of tensioner, remove the tensioner and shim.

Disassemble the oil channel joint and spring of oil channel joint.

Notes

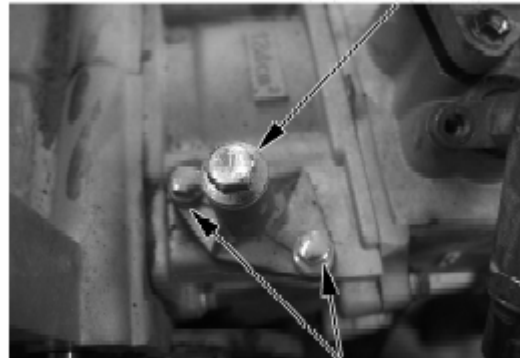
Do not let the bolts of timing chain wheel drop into the box.

Loosen the bolts which fasten the timing chain wheel.

Disassemble the timing chain wheel.

Disassemble the acorn nuts and shim.

bolts of tensioner spring seat

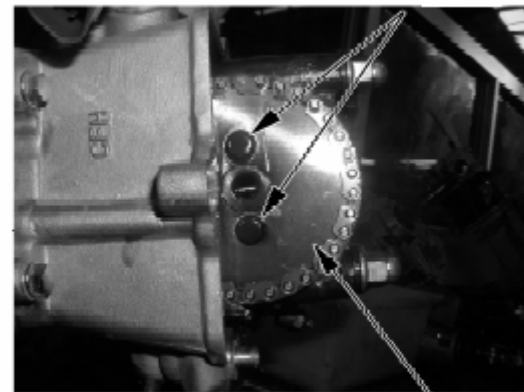


bolts of tensioner

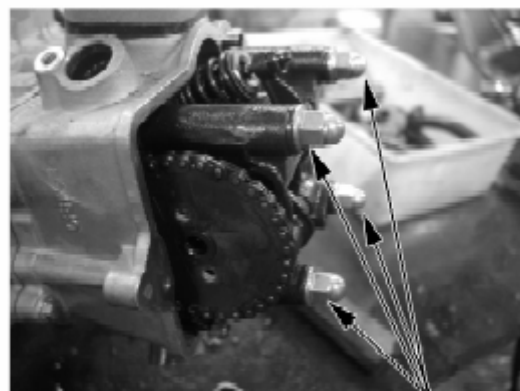


oil channel joint and spring

bolt



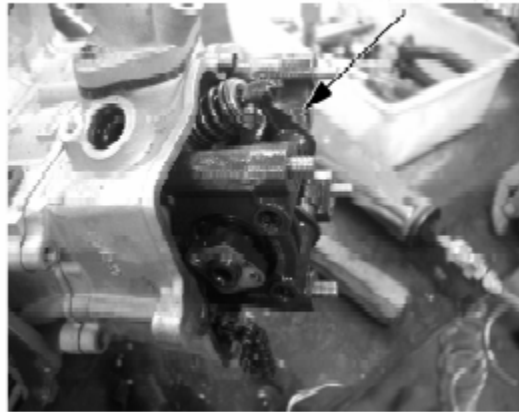
timing chain wheel



acorn nuts and shim

Disassemble the camshaft support subassembly.

camshaft support subassembly



Disassemble the three hole-purpose elastic collars in the hole of rocker shaft and hole of camshaft.

hole-purpose elastic collars

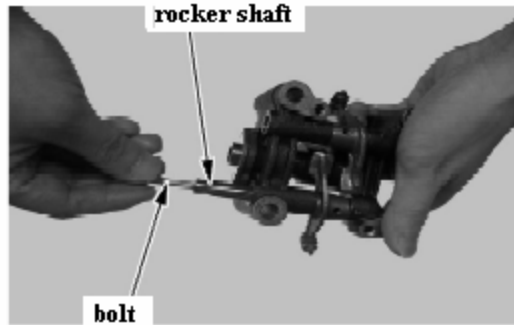


Disassemble the valve rocker.

Notes:

Pull the rocker shaft out by an M5 bolt.

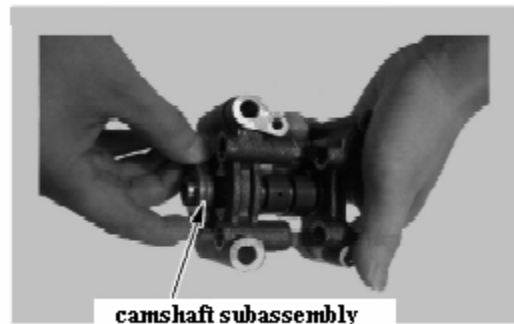
rocker shaft



Disassembly of camshaft

Disassemble the camshaft subassembly.

camshaft subassembly



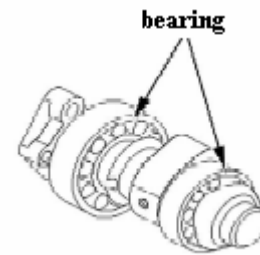
Test

Camshaft

Turn the outer circle of bearing by fingers; test whether it can turn around flexibly and smoothly.

The camshaft shall be renewed if there is vibration or the turning is inflexible.

Test whether the surface of each cam is with scratch or stripping.

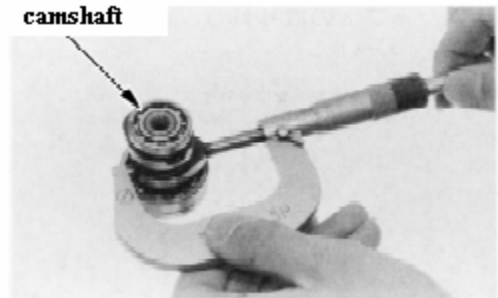


Measure the height of each cam top by micrometer.

Operation limit: IN: 30.69mm
EX: 30.28mm

- **Notes**

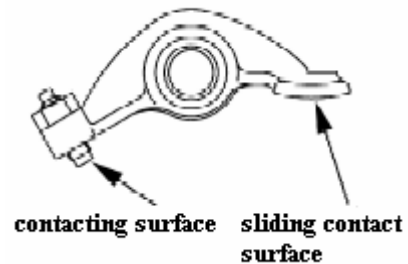
The valve rocker shall be tested when the surface of cam is worn or damaged.



Valve rocker, valve rocker shaft

Test whether the sliding part of valve rocker, the surface contacting with the terminal of valve stem are scratched or worn.

Test the cam top of camshaft when the sliding contact surface of valve rocker is scratched or worn.



Measure the interior diameter of each valve rocker hole.

Operation limit: 10.10mm

Measure the external diameter of each valve rocker shaft.

Operation limit: 9.91mm



Disassembly of cylinder cover

* Notes

The chain shall be suspended by steel wire so as not to fall into the vehicle.

Hold the vehicle firmly by the main support.

Disassemble the muffler. (→2-15)

Discharge the coolant. (→6-4)

Disassemble the body of throttle valve. (→5-3)

Disassemble the hood of cylinder cover. (→8-5)

Disassemble the camshaft support subassembly. (→8-6)

Disassemble the locating pin.

locating pin



Loosen the bolts; disassemble the oil injector seat subassembly.

Disassemble the shim for oil injector seat.

bolt oil injector seat subassembly, shim



Disassemble the insert element of water temperature sensor.

insert element of water temperature sensor



Disassemble the bolts; disassemble the thermostat group.

bolt thermostat group

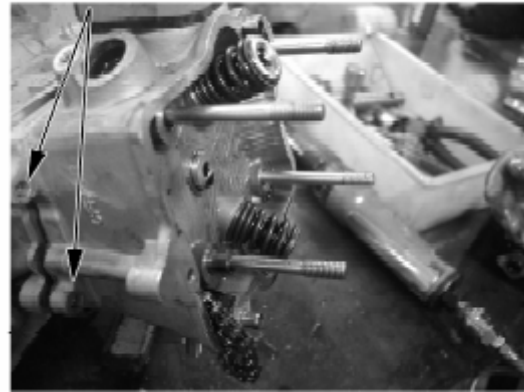


Disassemble the bolts and washers of cylinder cover.
Disassemble the cylinder cover subassembly.

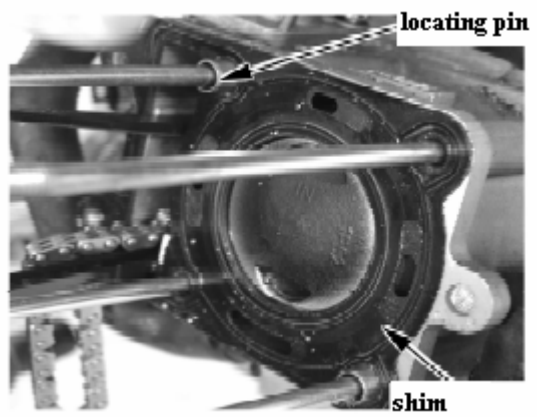
Notes

Stand the main support, and press the rear part of the whole vehicle downward forcibly by hands, then the cylinder cover can be removed.

bolts and washers of cylinder cove



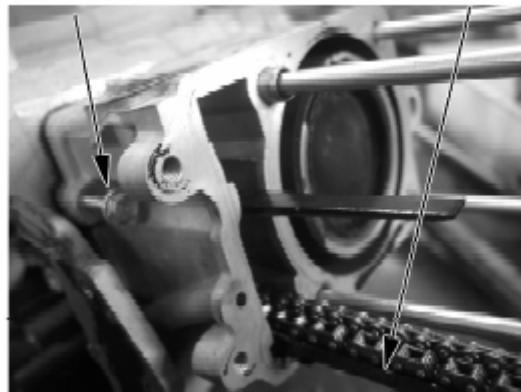
Disassemble the shim, locating pin of cylinder cover.



Disassembly of cylinder body

Disassemble the chain guide.
Disassemble the bolts, washers.

bolt and washer **chain guide**



Disassemble the air inlet hose, cylinder body group.

Disassembly of cylinder cover

* Notes

The parts shall be stored separately when they are disassembled, and they must be installed to the original positions upon installation.

Take out the valve locker by the compressing tools for valve spring.

! Notes

In order to prevent the weakening of the elasticity of valve spring, just compress the valve spring to the length required for valve locker disassembly.

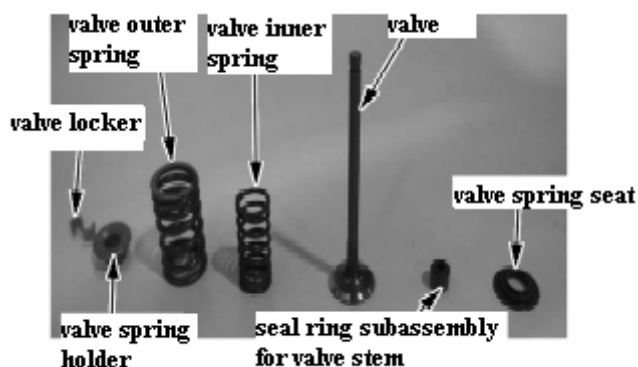
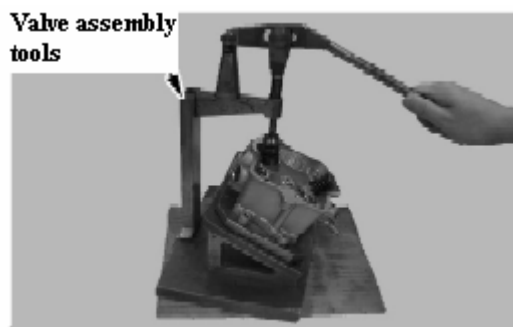
Special tools:

Valve assembly tools:

1P52MI-A-922-020000

Disassemble the compressing tools for valve spring; take out the valve spring seat, valve spring, valve, seal ring subassembly for valve stem and valve spring holder.

The disassembled seal ring subassembly for valve stem shall not be used again.



Remove the accumulated carbon attached to the firebox and valve.

* Notes

The accumulated carbon can be removed easier when it is immersed with gas.

! Notes

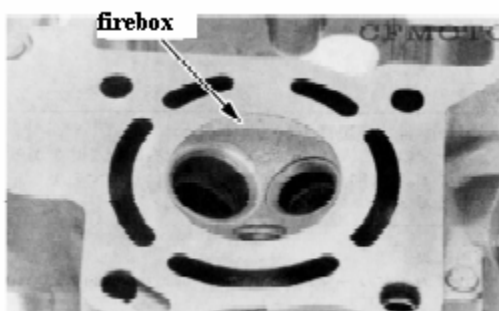
Gas is easily combustible, so no smoking or naked fire is allowed at the operation site. Not only flames, but also electric sparks shall be avoided. Besides, the vaped gas is explosive, please operate it in the place with nice ventilation.

! Notes

Please be cautious not to damage the combination face with the cylinder, and the valve retainer.

Test whether there is chapping around the hole of spark plug, valve retainer.

Clean the combination face with cylinder.



Valve spring

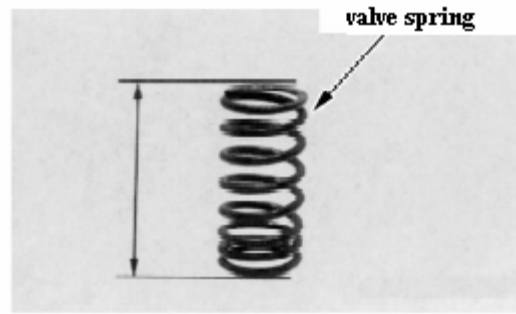
Test whether the elasticity of valve spring is weakened or it is damaged.

Measure the overhanging length of valve outer spring.

Operation limit: 33.5mm

Measure the overhanging length of valve inner spring.

Operation limit: 30.8mm



Valve stem

Test whether the valve is bent (valve deflexion), damaged, burnt; whether there is deflected abrasion at the end of valve stem.

Put the valve into the valve guide, test the actions of valve.

Measure the external diameter of the valve stem which corresponds to the sliding part of valve guide.

Operation limit: IN: 4.965mm

EX: 4.945 mm

The accumulated carbon on the valve guide shall be removed by reamer before measuring the interior diameter of the valve guide.

* Notes

The reamer shall enter from the inlet side of firebox.

When the reamer is entering or going out, it shall be always turning rightward while entering or going out. If it turns leftward or the reamer does not turning while entering or going out, the inner surface of valve guide will be damaged.

Special tools:

Reamer for valve guide:

152MI-234-022300-34B

Measure the interior diameter of valve guide.

Operation limit: IN: 5.04mm

EX: 5.04mm

Calculate the gap between the valve stem and valve guide.

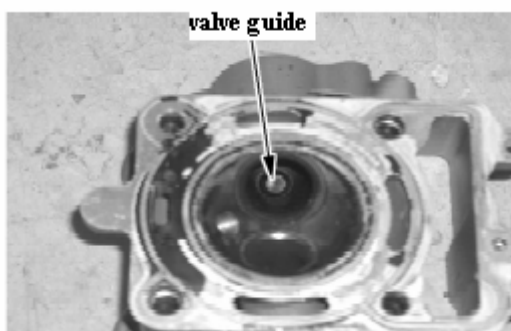
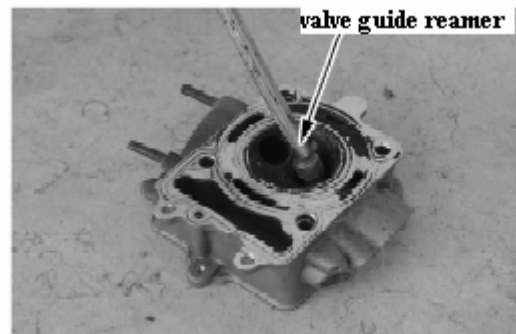
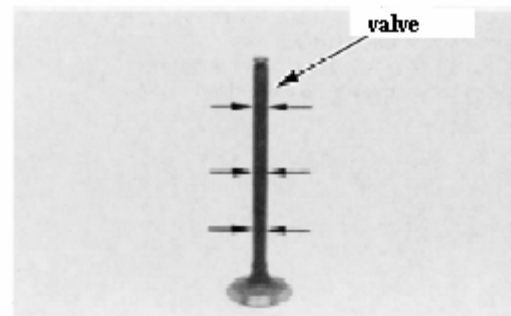
Operation limit: IN: 0.075mm

EX: 0.095mm

It shall be renewed when the gap exceeds the operation limit.

Measure the interior diameter of valve guide; calculate whether the gap is within the operation limit.

The valve shall also be renewed if the gap is not within the operation limit.



Renewal of valve guide

* Notes

Because the valve works by taking the valve guide as axis, when the valve guide is renewed, sometimes the valve and valve seat cannot contact to airproof.

Therefore, the valve seat shall also be modified when the valve is renewed.

Heat the whole cylinder cover evenly to 100-150°C.

Do not use gas jet for partial heating while heating

the cylinder cover, otherwise the cylinder cover may deform. There is danger of burn, do not operate with bare hands.

The valve guide comes out fro the side of firebox.

Do not damage the combination face of cylinder.

Make the new valve guide enter it from the side of camshaft when the cylinder cover is not cooled yet.

When the cylinder cover is cooled, the reamer enters from the side of firebox, and reams the valve guide carefully.

* Notes

The reamer must enter from the side of firebox.

Be cautious not to make the reamer deflected, if the reamer cuts in deflected status, the valve guide hole is deflected, which may cause leakage of the airproof of valve stem, or there will be a big deflexion on contact with the valve seat, so that the airproof surface of valve seat cannot be modified.

Clean the cylinder cover, remove the scrap iron. Test, modify the contact surface of valve seat.

Special tools:

Valve line countersink drill: 152MI-236-022301-27

Test, modification of valve retainer

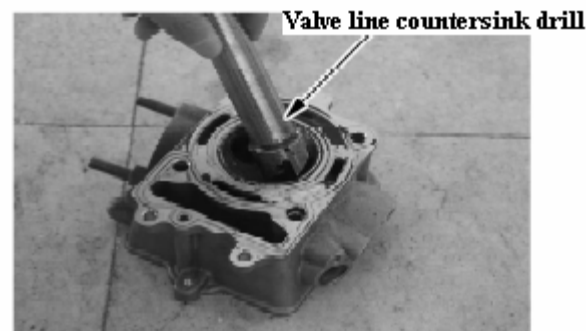
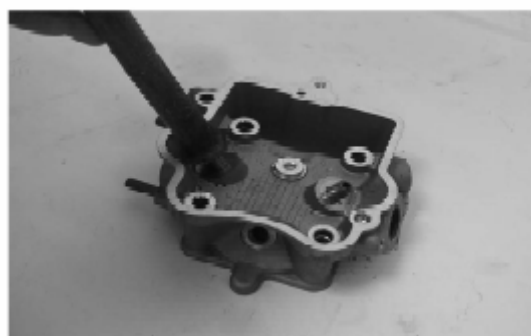
Test

Remove the deposit on the valve such as accumulated carbon.

The valve face is with chap, deflected abrasion
→renewal.

Apply a thin layer of red lead to the valve seat of cylinder cover.

Do not let the valve rotate, knock the valve gently with valve gavel, test the airproof contact.



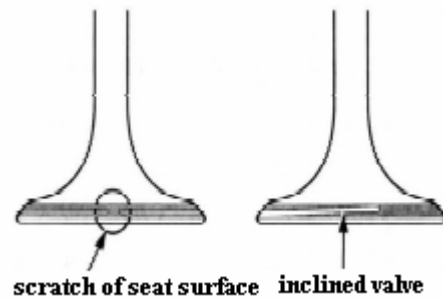
*** Notes**

The valve cannot be modified. When the valve face is with chap, uneven abrasion, or no contact with the valve seat, the valve shall be renewed.

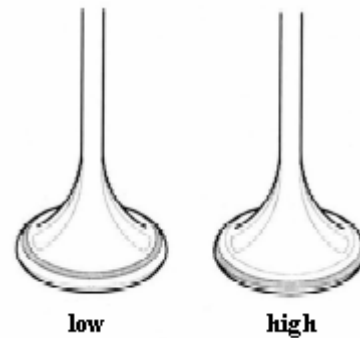
Remove the valve; test the airproof surface of valve seat by checking the attachment of red lead on the valve face.

The valve seat shall be modified when there is scratch.

If the valve inclines, test the gap between the valve guide and valve stem, and the valve guide shall be renewed if the gap is improper.



Modify the valve seat with milling cutter for valve seat if the contact surface is either too high or too low.

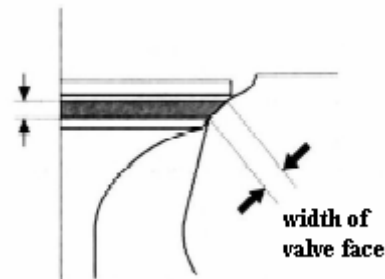


Measure the airproof width of valve face.

Standard value: 0.9-1.1mm

Operation limit: 1.8mm

Modify the valve seat with milling cutter for valve seat if the airproof width is uneven, too wide or too narrow.



Modification

Modification shall be carried out with milling cutter for valve retainer.

Refer to the operation instructions of milling cutter for valve retainer for details.

Under a pressure of 4-5kg, along with a certain direction, grind it while turning it by hands for modification.

*** Notes**

The milling cutter shall be applied with lubricating oil, and remove the ground powder while grinding.



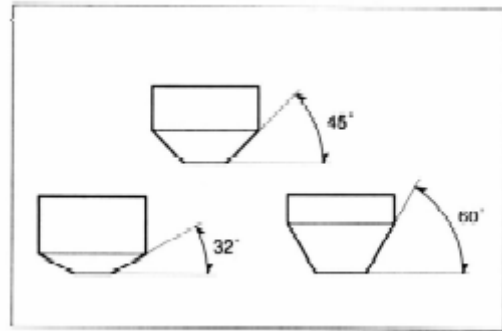
8 cylinder, air distribution system

If there is chap, scratch on the surface of valve seat, grind and remove the chap, scratch on the seat surface firstly by 45° milling cutter.

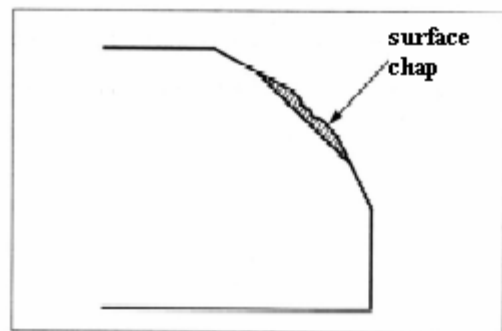
* Notes

The surface of valve seat shall also be ground when renewing the valve guide.

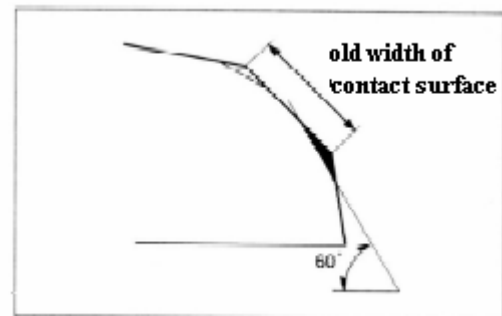
Be cautious not to grind excessively.



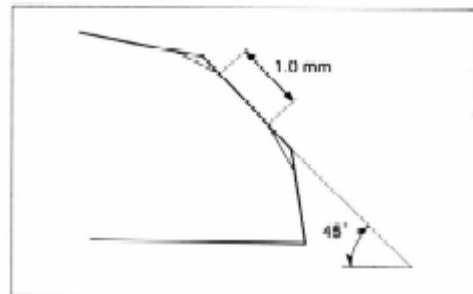
Modify the outer side gradually by 32° milling cutter.



Modify the side gradually by 60° milling cutter.



Modify the airproof surface to the specific width by 45° milling cutter.

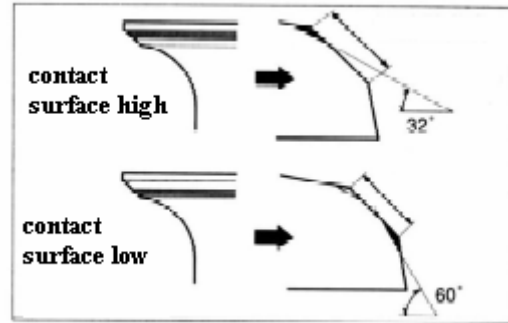


Confirm again the contact of valve seat surface.

When the contact place is too high, firstly, grind it by 32° milling cutter, then modify it to the specific width by 45° milling cutter.

When the contact place is too low, firstly, grind it by 60° milling cutter, then modify it to the specific width by 45° milling cutter.

After modification, apply grinding paste evenly to the valve seat, and grind the valve configuration by valve gavel.



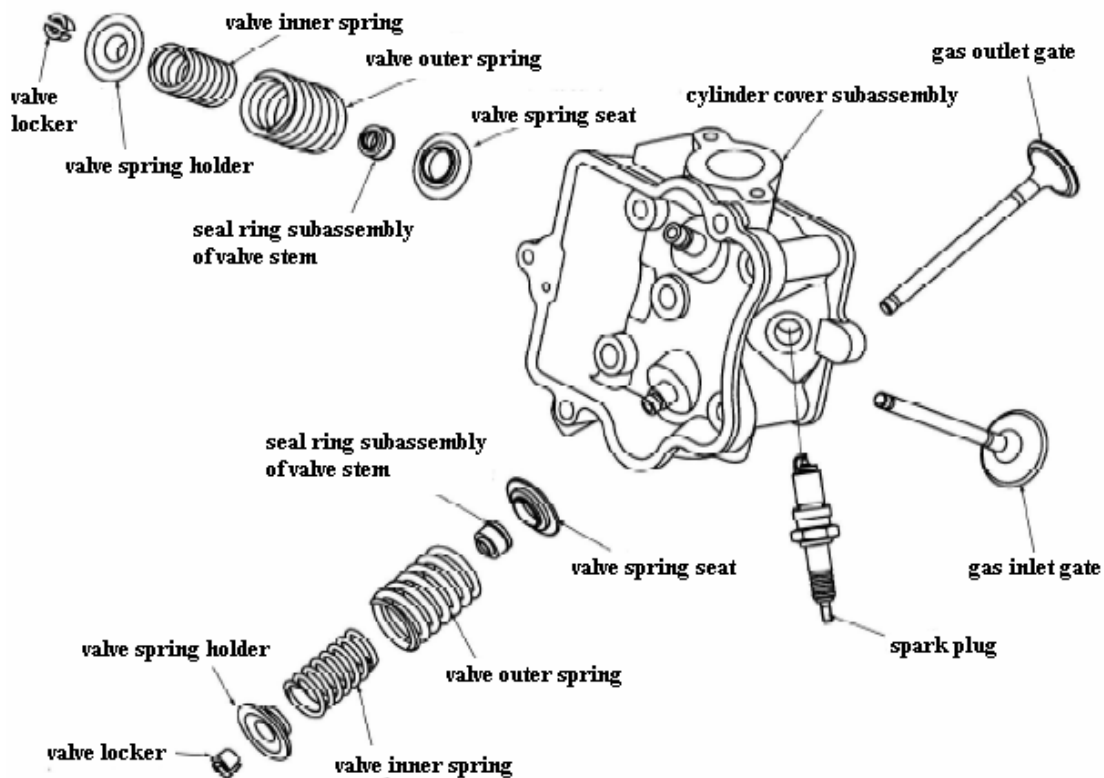
! Notes

- Just beat gently while grinding the configuration, do not press the gyration with strong force, otherwise the valve seat will be damaged.
- The valve shall be turned little by little for configuration grinding, do not grinding the configuration always in the same place; otherwise the grinding of valve seat surface will deflect.
- Be cautious not let the grinding paste enter the gap between the valve stem and valve guide.

Clean the cylinder cover, valve after the configuration grinding.

Confirm the contact of valve seat once again when the modification is entirely completed.

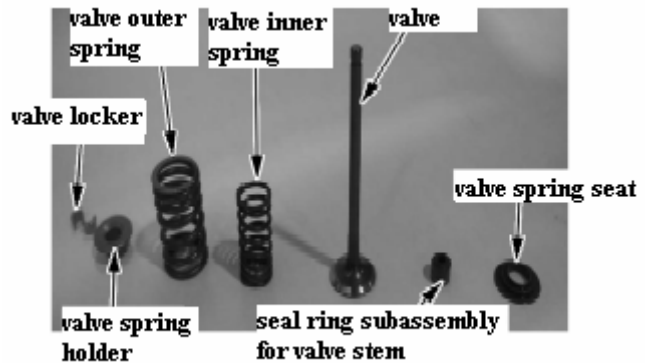
Assembly of cylinder cover



Cover the lower seat of spring and seal ring subassembly of new valve stem in the valve guide.

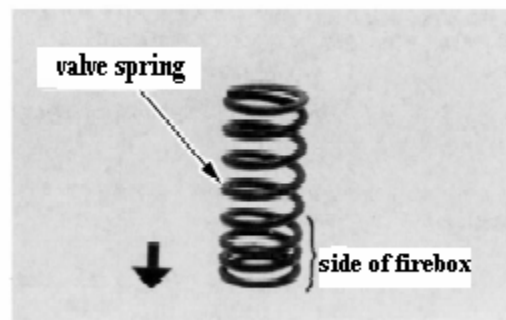
Apply Mo-based solution or lubricating oil to the internal circumferential surfaces of valve stem, valve guide.

Turn the valve slowly, put it into the valve guide, be cautious not to damage the seal ring subassembly of valve stem.



The end with smaller pitch of valve inner/outer spring shall be installed towards the firebox. Install the upper seat of valve spring.

Compress the valve spring by the compressing tools for valve spring, install the valve locker.



! Notes

In order to prevent the weakening of elasticity of valve spring, do not compress the valve spring excessively into the required length.

Test of cylinder body

Test the abrasion, damage situation of inner surface of cylinder.

Measure the interior diameter of cylinder at the upper, middle and lower positions (6 places) in the directions of piston pin and vertical to it (X-Y directions), and make record.

Take the max. value as the interior diameter of cylinder.

Operation limit: 52.449/58.049mm

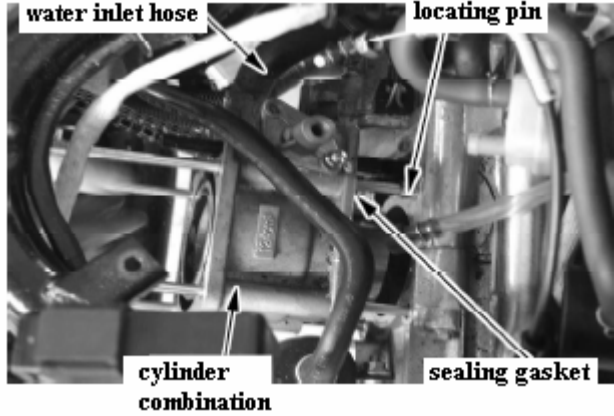


Installation of cylinder body

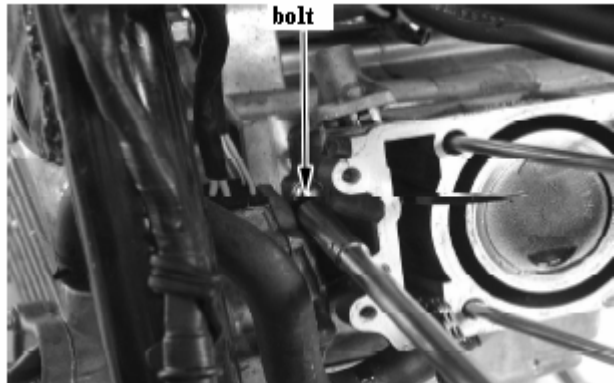
Test whether the chain guide is with scratch, damage or deflected abrasion.

Remove the paper pad, dirt on the combination face; test whether there are other objects in the cooling water way, oil path and bolt holes.

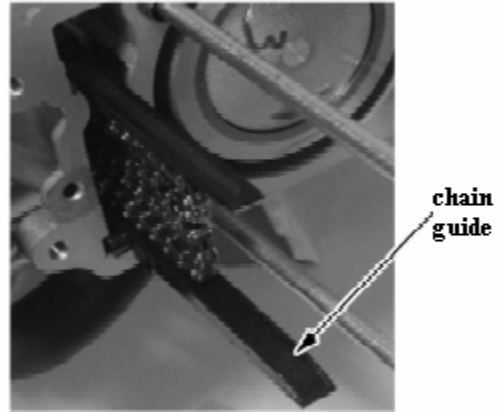
Install the sealing gasket for cylinder body, cylinder body, water inlet hose and locating pin in such sequence.



Slip the shim on the bolts for cylinder body, rotate into the bolt hole, but do not tighten it.



Install the chain guide.

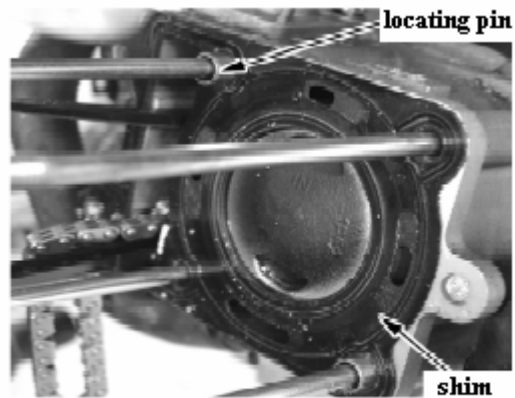


Turn the crank shaft (variable speed drive wheel) to raise the piston to the upper dead point (namely make the piston top face equal to the cylinder combination face).

Notes:

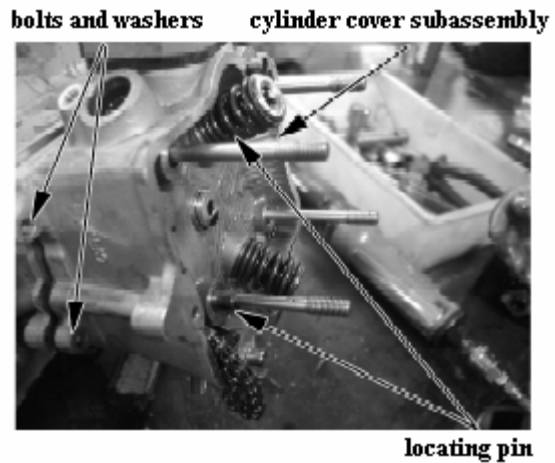
Do not make the crank shaft turn again during the following operation.

Install the shim, locating pin for new cylinder cover.



Cylinder cover installation

Install the cylinder cover subassembly.
Install the bolts and washers for cylinder cover, revolve them but do not tighten.

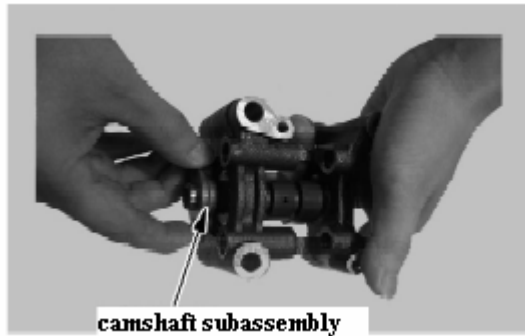


Install the locating pin.

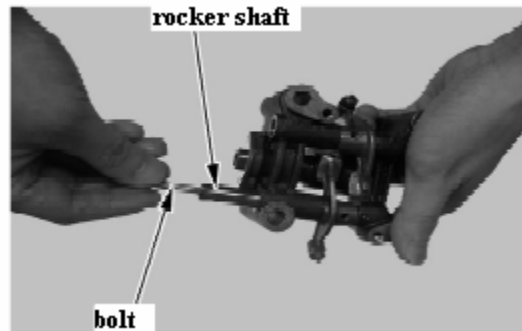
Installation of camshaft support subassembly

Installation of camshaft subassembly

Install the camshaft into the camshaft hole of camshaft support.



Apply the head of rocker shaft with some lubricating oil, and make it enter the hole of rocker shaft, meanwhile, enter the rocker.



Install the elastic collar for hole into the collar groove of rocker shaft hole and camshaft hole.



Apply lubricating oil to the cam surface of camshaft.

Install the cam top of camshaft towards the side of crankcase.

Press it to tight with 4 acorn nuts and shims.

Screw the acorn nuts to tight for 2-3 times according to the specific torque.

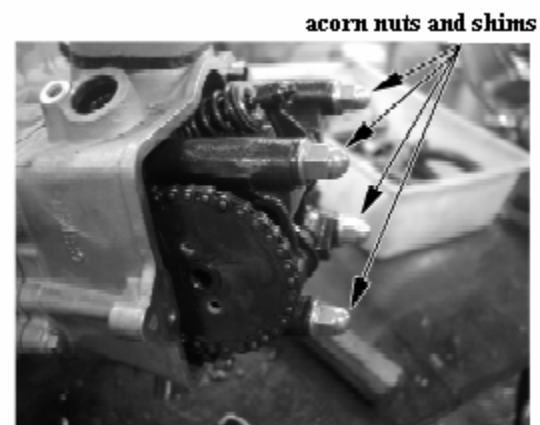
Torque: $30\text{N} \cdot \text{m}$ ($3.0\text{kgf} \cdot \text{m}$)

Screw the bolts for cylinder body to tight according to the specific torque.

Torque: $10\text{N} \cdot \text{m}$ ($1.0\text{kgf} \cdot \text{m}$)

Screw the bolts for cylinder cover to tight according to the specific torque.

Torque: $10\text{N} \cdot \text{m}$ ($1.0\text{kgf} \cdot \text{m}$)



Install the timing chain onto the timing chain wheel.

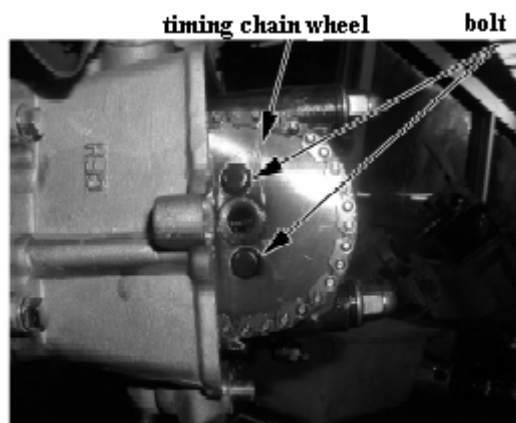
Install the chain wheel onto the camshaft; the upper reticle of chain wheel shall be equal to the upper plan of the cylinder cover.

Install the bolts for fastening chain wheel.

Torque: 9 N·m (0.9kgf·m)

Notes

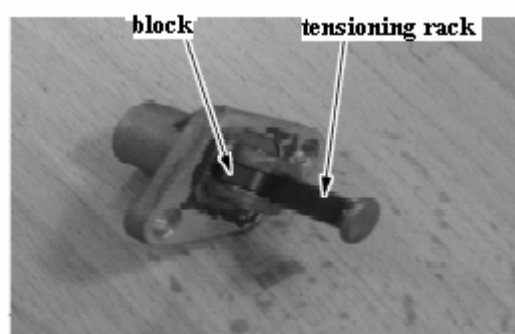
Confirm that the upper reticle of chain wheel is equal to the upper plan of cylinder cover before adjusting the valve gap, and the groove opening on the camshaft journal is upward.



Press down the block on the tensioner by hands, and retreat the tensioning rack of tensioner into the tensioner body.

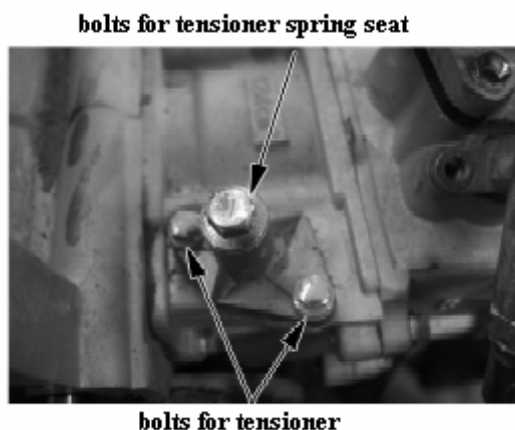
Install the bolts for tensioner and tighten them.

Torque: 10N·m (1.0kgf·m)



Put in the tensioner spring, washer, and screw the bolts for tensioner spring seat to tight.

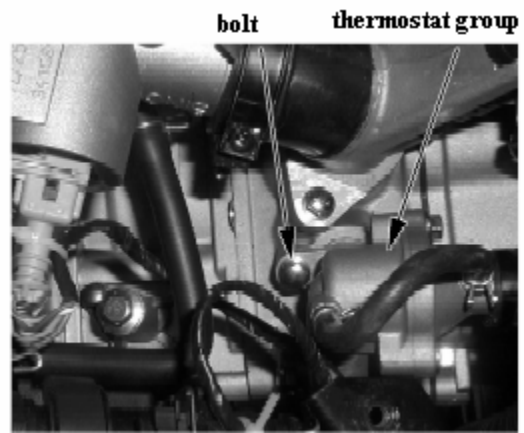
Torque: 10N·m (1.0kgf·m)



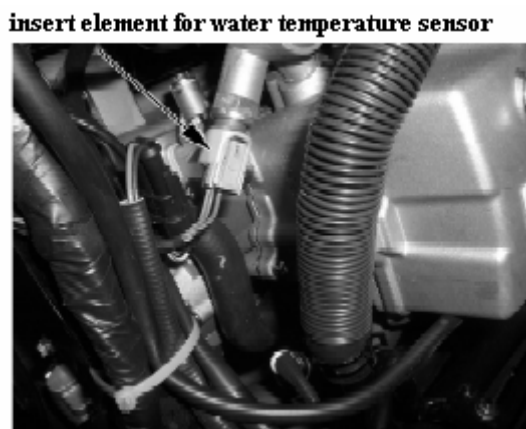
Install the shim of oil injector seat, subassembly of oil injector seat, and fasten with bolts.



Install the thermostat group.



Install the insert element for water temperature sensor.



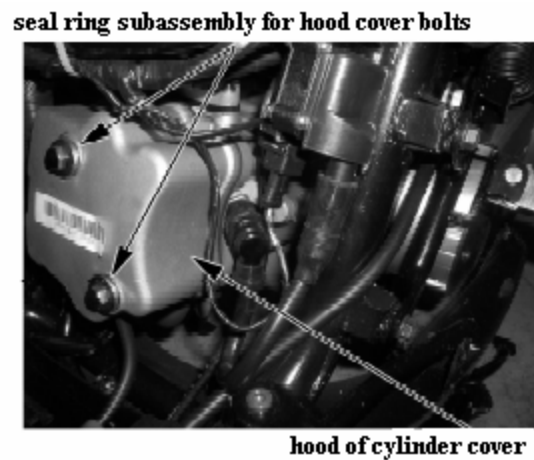
Installation of cylinder cover hood
Install the seal ring for cylinder cover hood,
locating pin onto the hood of cylinder cover.



Slip the joint of oil path/spring to the joint of oil path, insert to the pin in the camshaft hole.



Install the assembled hood of cylinder cover.
Install the seal ring subassembly for hood cover bolts and bolts for hood of cylinder cover.



Inject the coolant, eject the air. (→6-5)
Install the muffler. (→2-8)
Install the body of throttle valve. (→5-3)
Install the left side cover. (→9-18)

9 Continuously variable Transmission System & Left Cover

Maintenance Information.....	9-1	Clutch Disassembly.....	9-8
Error Diagnosis.....	9-2	Disassemble Clutch.....	9-8
Left Cover Disassembly.....	9-3	Assemble Clutch.....	9-13
Transmission Disassembly.....	9-4	Clutch Erection.....	9-17
Disassemble Speed Variator.....	9-4		

Maintenance Information

Notes During Operation

Notes

•Please note if there are grease things on the tooth shape strap and the surface of the strap sheave. Degrease it if there are or it may cause slip between tooth shape strap and strap sheave decreasing the transmission efficiency.

- Any lubricate grease shall not be attached on main traction wheel disc and centrifugal roller.
- The maintenance of continuously variable transmission system could be operated during engine is working.
- Avoid damage any combining surface when assembling on and disassembling.
- Avoid odds and ends, clay, sands and other things entering into and remain in the inner of engine.

Maintenance standard

Item		Standard	Operation limit
Transmission Main traction wheel	Groupware internal diameter of speed variator mobile disc	24.007— 24.028 mm	24.07 mm
	External diameter of axle cover of main traction wheel disc	23.959— 23.98 mm	23.92 mm
	Groupware external diameter of centrifugal roller	19.95— 20.05 mm	19.45 mm
Width of tooth shape strap		21.7— 23.3 mm	20.7 mm
Clutch Driven wheel	Thickness of rubber	—	2.75 mm
	Internal diameter of clutch felly disc	124.5— 124.2 mm	125 mm
	Free length of clutch spring	144— 146 mm	140 mm
	External diameter of driven wheel disc	33.95— 33.975 mm	33.92 mm
	Internal diameter of mobile driven wheel disc	34— 34.025 mm	34.06 mm

Tighten Torque

Left cover bolt 10 N • m (1.0kgf • m)

Speed variator nut 59N • m (6.0kgf • m)

Clutch nut 53 N • m (5.3kgf • m)

Special nut 88 N • m (9.0kgf • m)

Error Diagnosis

Though engine can start, it cannot run and work

- Tooth shape strap worn and torn
- Bevel board damaged
- Clutch rubber worn and damaged
- Clutch spring broken off

Engine flameouts when starting and rear wheel rotates in idle speed

- Clutch back spring broken off

Cannot reach the highest speed and horsepower not enough

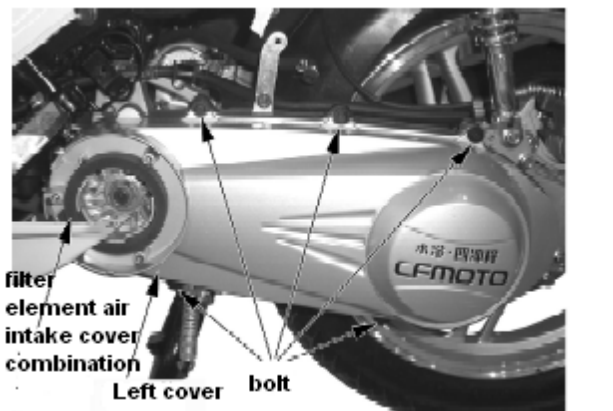
- Tooth shape strap worn and torn
- Weakening of elastic force of Clutch spring
- Centrifugal roller worn and torn
- Stain or damage of slide surface of mobile main traction wheel disc

9 Continuously variable Transmission System & Left Cover

Left Cover Disassemble

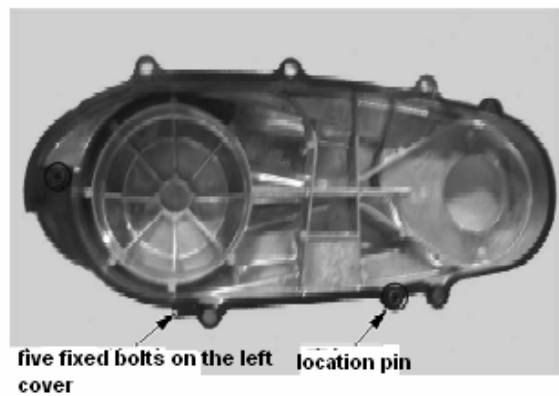
* Notes

Cares shall be taken not to damage combining surface
Disassemble the left and right parts of footplate (→ 2-6)
Disassemble three inside six-angle bolts, and remove air intake cover combination
Remove air intake filter core
Remove air filter combination (→ 5-10)
Remove five fixed bolts on the left cover
Left Cover Disassembly
Remove the seal on the left cover
Remove location pin



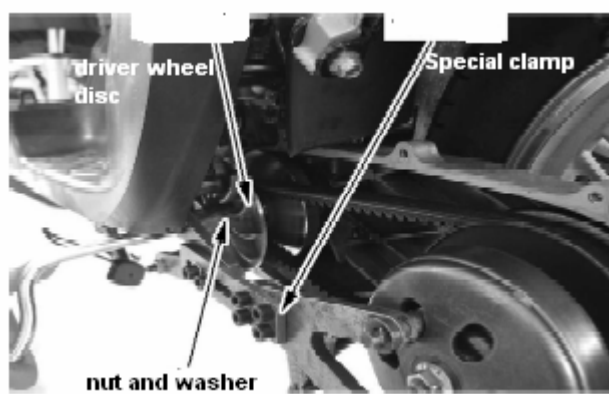
Erection

Make assembling in the reverse sequences of disassembling.



**CF Moto
Disassemble Branch Assembly
of Transmission**

Left Cover Disassembly
Fix transmission and clutch
with special clamp, and
loosen fixed transmission
nut and washer with sleeve
wrench.



Special tool:
1P52MI-A-922-040000



tooth shape strap

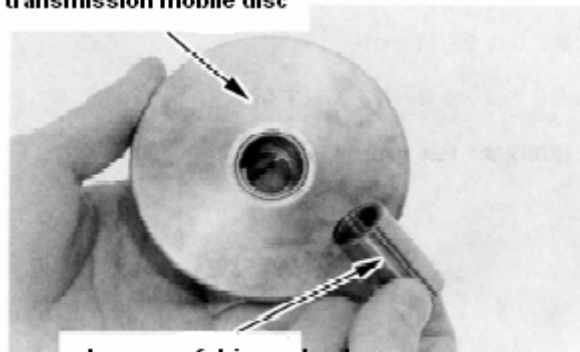
Special clamp:
Remove driver wheel disc and
tooth shape strap
Hold the inside of
transmission mobile disc, and
remove it and the axle cover of
driver wheel.



Transmission axle cover of main traction wheel disc

Disassemble
Remove axle cover of driver
wheel from transmission
mobile disc.

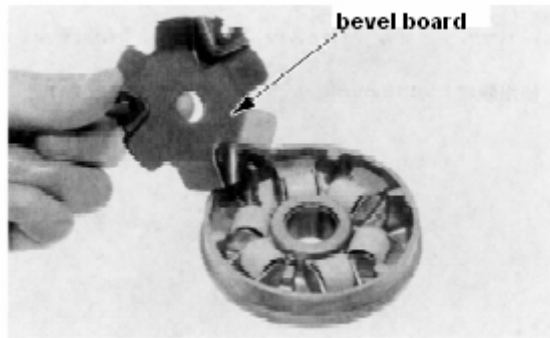
transmission mobile disc



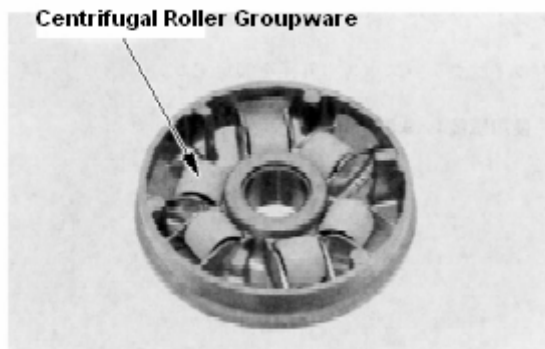
axle cover of driver wheel

9 Continuously variable Transmission System & Left Cover

Remove bevel board.



Remove centrifugal roller groupware.



Test

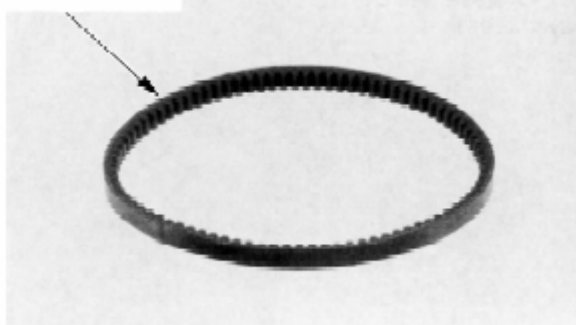
Tooth shape strap

Check strap for chap, cog fall off, cloth flake and abnormal wearing.

Measure strap width.

Service Limit: 20.7 mm

Tooth shape strap



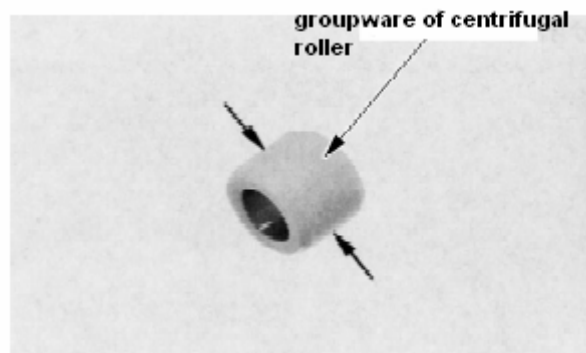
Centrifugal Roller

Groupware

Check for wearing and damage.

Measure external diameter of roll wheel.

Service Limit: 19.45 mm



CF Moto

Move driver wheel

Measure bush internal diameter of mobile driver wheel.

Operation limit: **24.07 mm**

mobile main traction wheel disc



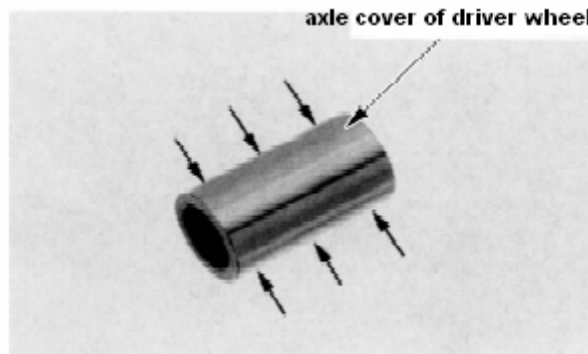
Check axle cover of driver wheel disc for wearing and damage.

Measure axle external of driver wheel disc.

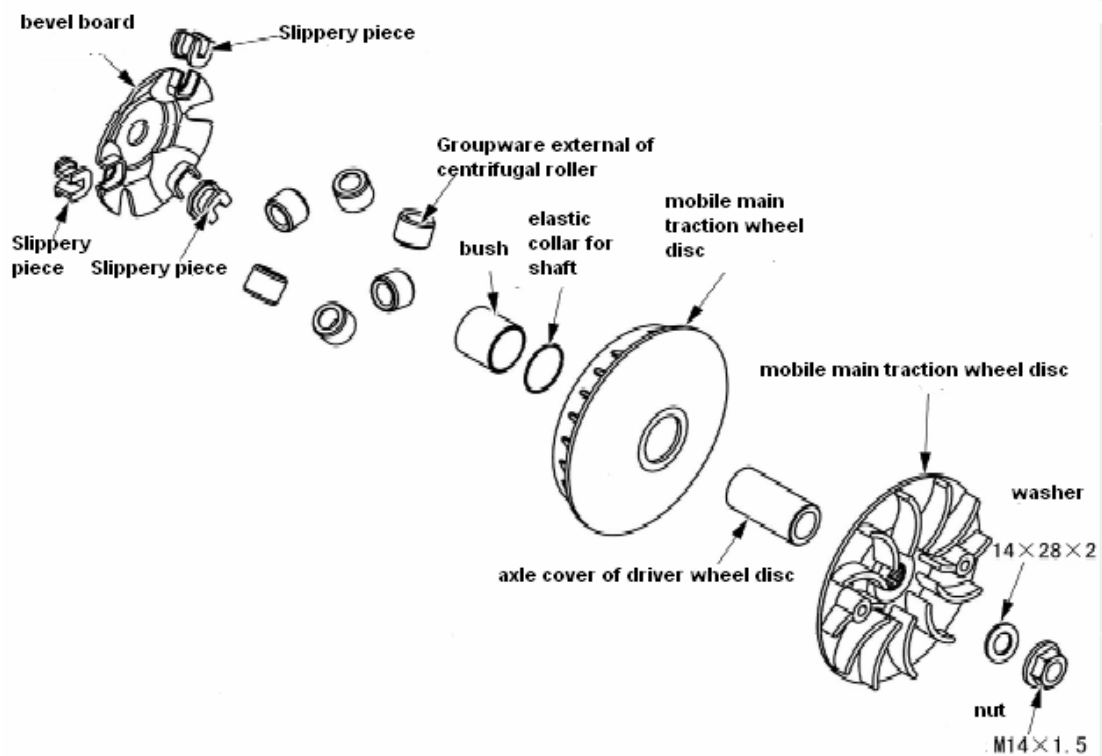
Service Limit: 23.92 mm

Erection

axle cover of driver wheel

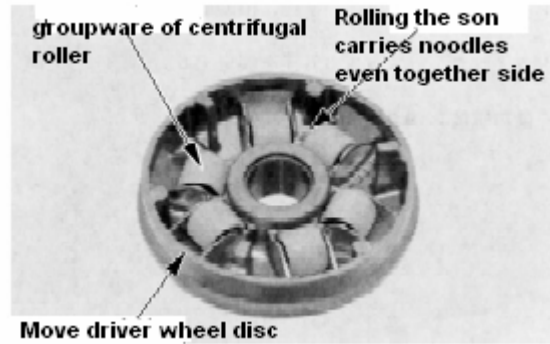


Erection

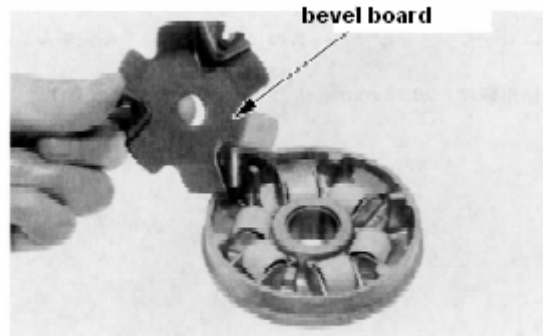


9 Continuously variable Transmission System & Left Cover

Assemble groupware of centrifugal roller into the slide groove of driver disc.



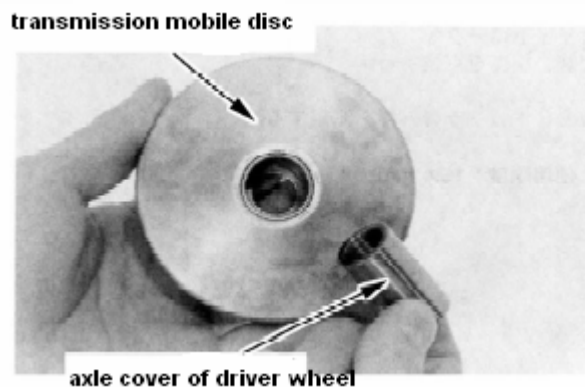
Set the same-length ends of centrifugal roller according the picture orientation.



Set bevel board.

Install axle cover of driver wheel into the bush cave of transmission mobile disc.

Erection



Notes

Don' t attach grease to tooth shape strap and the surface of strap sheave.
Hold two sides of transmission mobile disc and assemble it with axle cover of driver wheel.



Transmission axle cover of main traction wheel disc

CF Moto

Install tooth shape strap.



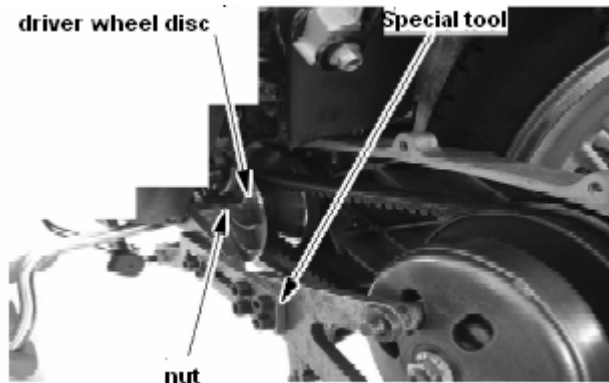
tooth shape strap

Install driver wheel, washer and nut.

Besmead thread tighten glue on the thread on driver wheel and set and tighten it.

Tighten nuts on the driver wheel with air-powered wrench pressing specified torque.

Torque: 59 N • m (6.0kgf • m)



Clutch

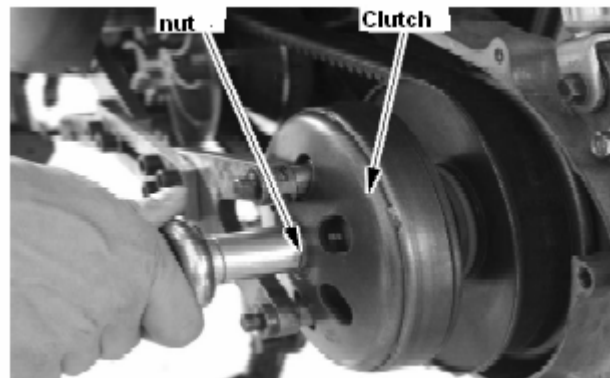
Remove

Left Cover Disassembly. (→ 9-3)

Remove driver wheel. (→ 9-5)

Fix groupware of external wheel disc with special clamp and remove fixed nuts.

Clutch Disassembly.



Disassemble

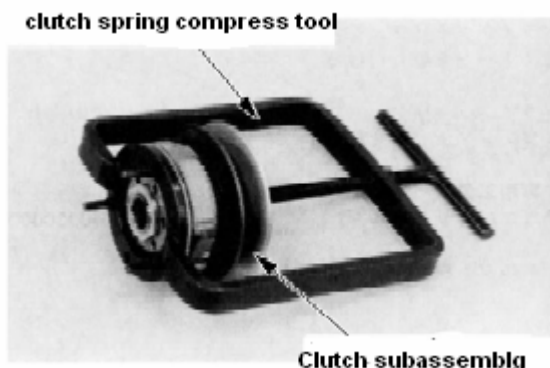
Clap the groupware cave of driven wheel disc with the bulge of spring compress tool used in clutch.

Notes

Tighten clutch spring compress tool below the required torque.

Special tool:

Clutch spring compress tool: 152MI-922-070000

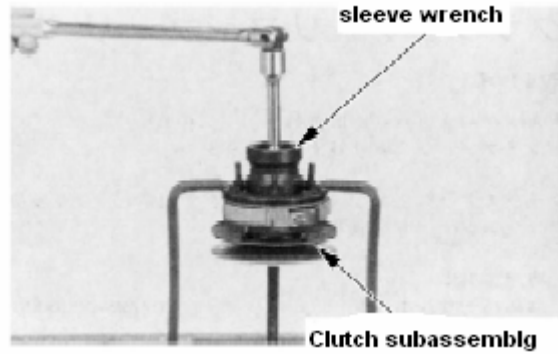


9 Continuously variable Transmission System & Left Cover

Use table vice and other fixed clutch spring compress tool.
Remove special nuts with sleeve wrench from clutch combination.

Notes

Be cautious of clutch spring, and avoid hurting others.



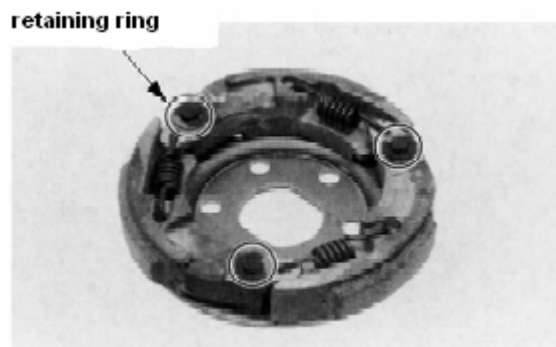
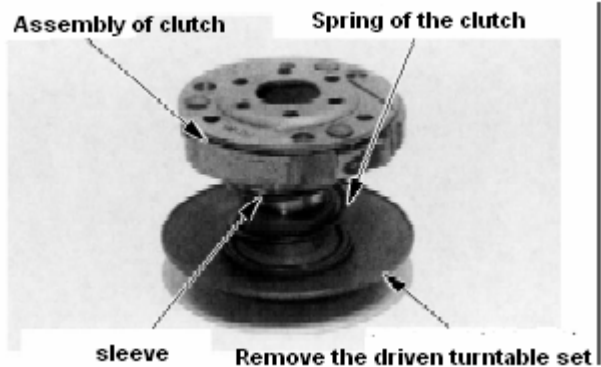
Remove hardware below from clutch spring compress tool.

- Clutch combination
- Mobile driven wheel disc groupware
- Clutch spring
- sleeve
- Shock absorb washer
- Plastic washer

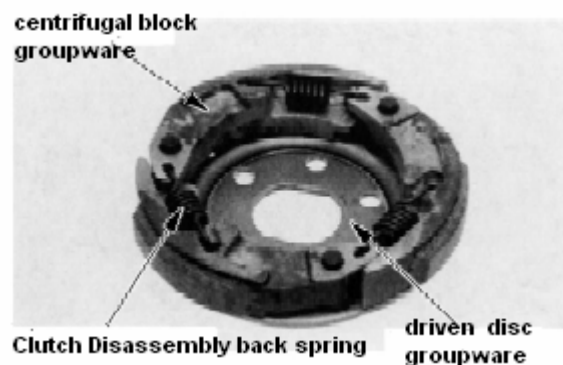
Disassemble clutch combination and mobile driven wheel disc groupware.

Disassemble Clutch Combination

Remove retaining ring

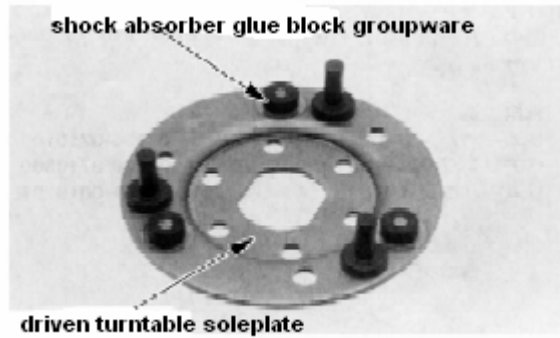


Clutch Disassembly back spring and centrifugal block groupware from driven wheel disc groupware.

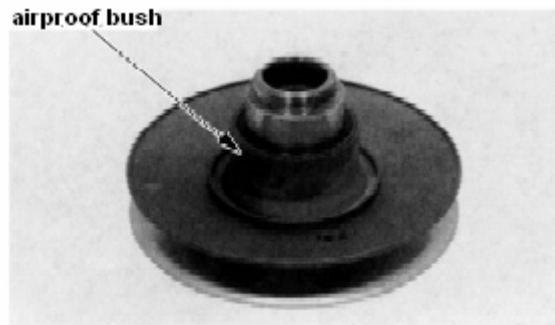


CF Moto

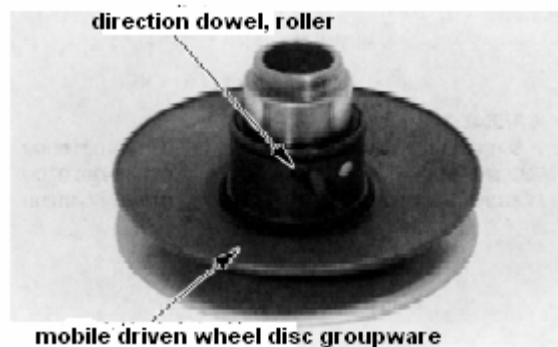
Remove shock absorber glue block groupware from driven wheel.



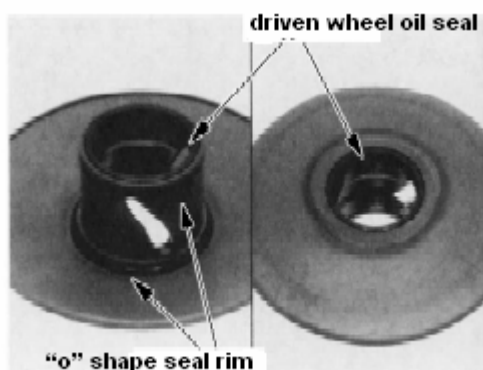
Disassemble driven wheel.
Remove airproof bush.



Remove direction dowel, roller and mobile driven wheel disc groupware.
Check direction dowel and roller for damage or wearing.

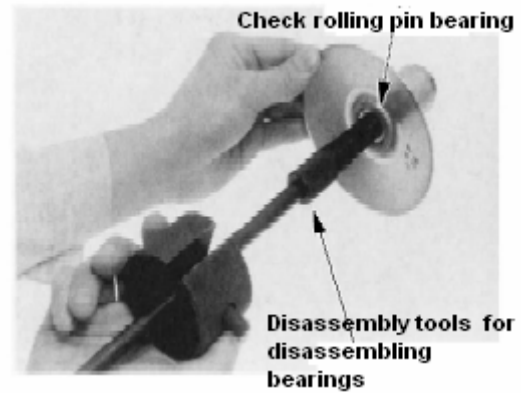


Remove driven wheel oil seal and "o" shape seal rim. (Replace a new one when reinstalling)
Check rolling pin bearing and ball bearing inside the mobile sub-traction wheel for non-free rotation, sticking and shaking. Replace in case of any.

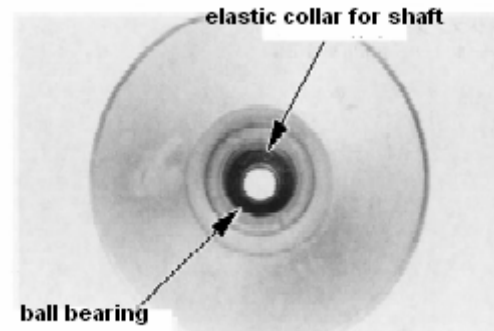


9 Continuously variable Transmission System & Left Cover

Replace groupware bearing of driven wheel



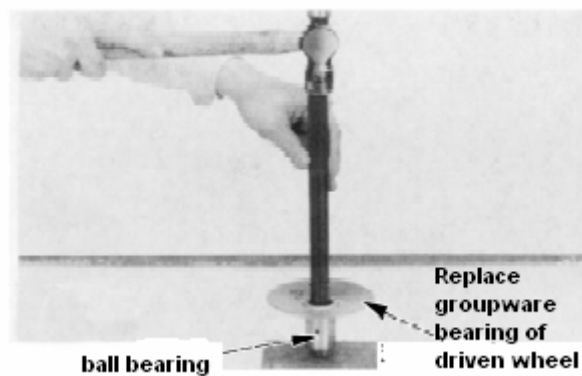
Remove rolling pin bearing with bearing special tool inside driven wheel.



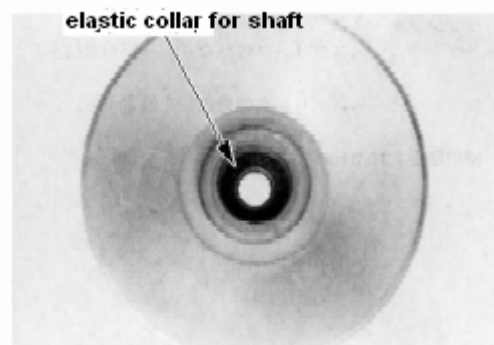
Remove elastic collar for shaft and take off ball bearing.

Coat lubricating oil on new ball bearing.

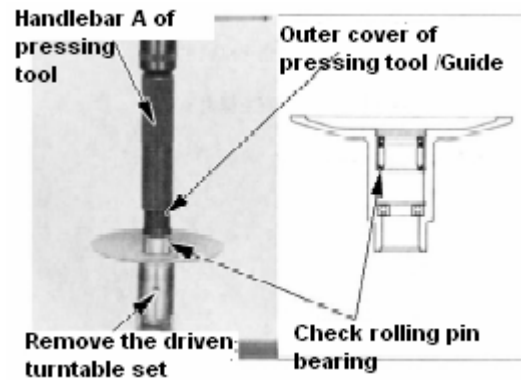
Put the ball bearing with upper countermark into the turntable of driven wheel.



Set elastic collar for shaft.

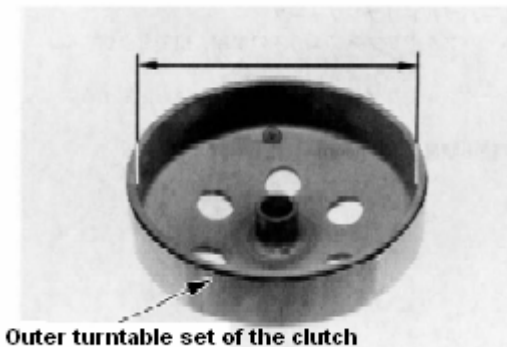


Coat lubricating oil on the internal circle face of the moving turntable of driven wheel.
 Smear lubricating oil on the new rolling needle bearing.
 Put the ball bearing with upper countermark into the turntable of driven wheel.



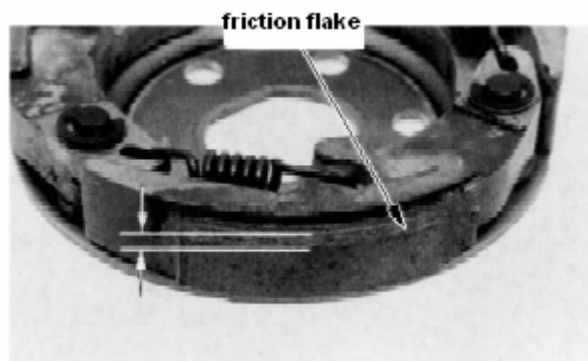
Check

Outer turntable set of the clutch
 Examine whether there's any abrasion and damage in the outer turntable set of the clutch
 Measure the internal diameter of outer turntable set of the clutch.



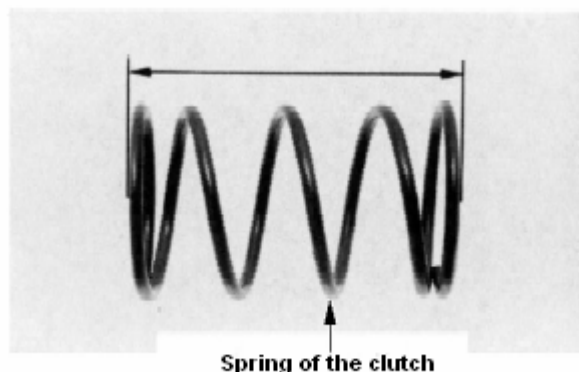
Operation limit: 125 mm
Hoof friction flake of the clutch

Examine whether there's any abrasion and damage in the outer turntable set of the clutch
 Measure the thickness of the friction flake of the clutch.
Operation limit: 2.75 mm



Clutch spring

Examine the elasticity of the clutch spring.
 Measure the free length of the spring.
Operation limit: 140 mm



9 Continuously variable Transmission System & Left Cover

Driven turntable set

Examine the abrasion and destroying of the driven turntable set

Test the outer diameter of axis sheath of the driven turntable set.

Operation limit: 33.92 mm

Remove the driven turntable set

Examine the abrasion and destroying of the moving driven turntable set

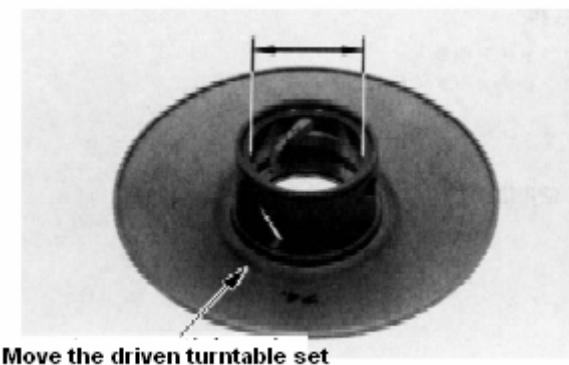
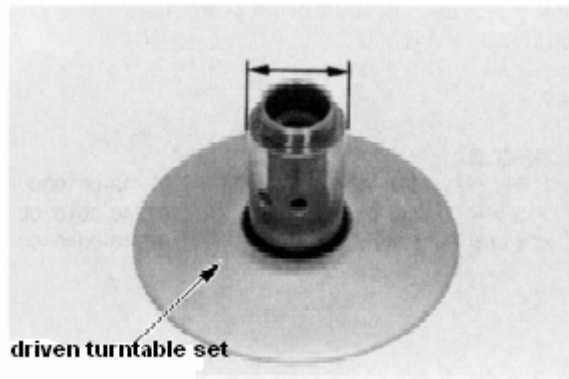
Test the inner diameter of axis sheath of the driven turntable set.

Operation limit: 34.06 mm

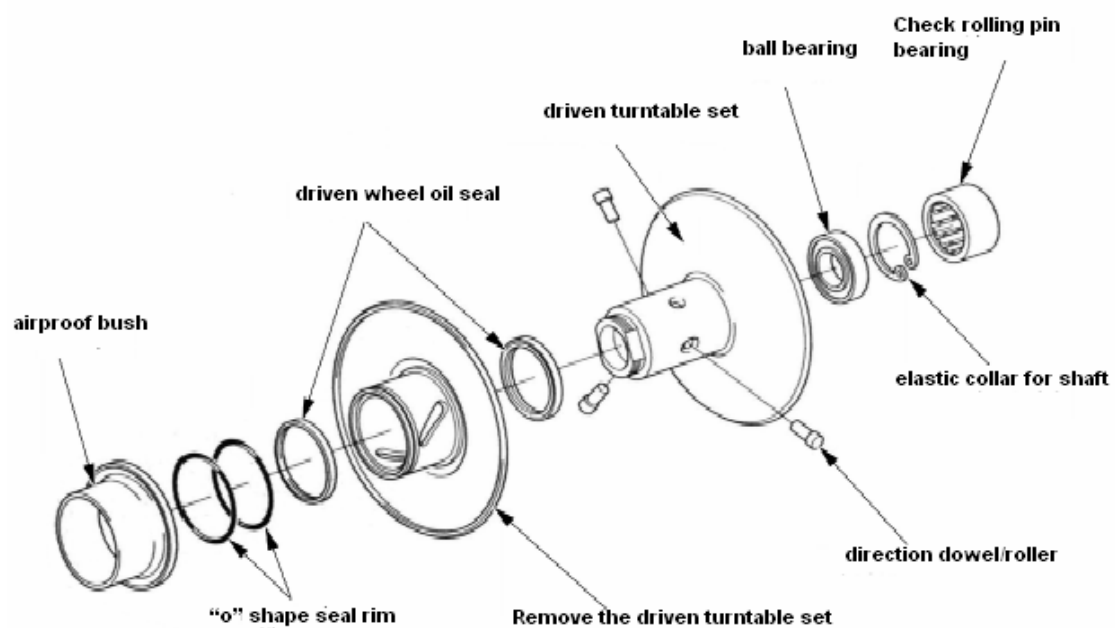
Assembly of the clutch

Cautions

While assembling, degrease and cleanse the strap gliding face of the driven turntable, outer clutch and the circle face of turntable set. Assembly of the driven turntable set.



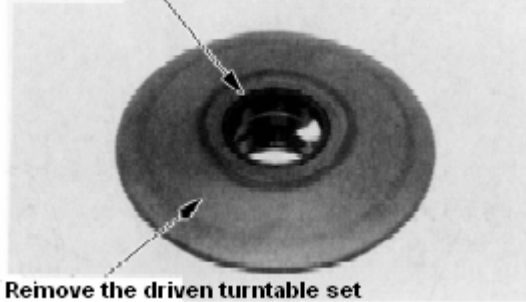
Assembly of the driven turntable set



CF MOTO

Degrease and cleanse the strap gliding face of the driven turntable set.
Smear lubricating oil on the lip of the driven wheel, install the lip towards the internal side of the moving driven turntable set.

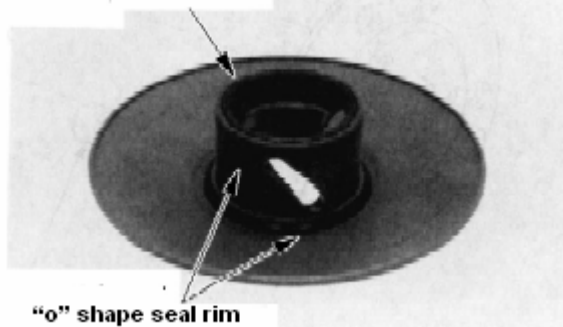
driven wheel oil seal



Remove the driven turntable set

Smear lubricating oil on the new "O" seal ring, install it on the moving driven turntable set.
Smear the lubricating oil on the lip of driven turntable oil, install the lip towards the moving driven turntable set.

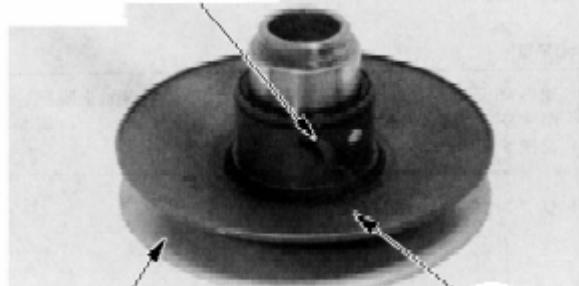
driven wheel oil seal



"o" shape seal rim

Fill proper lithium lubricating oil in the Φ 34 hole of the moving driven turntable set, the guiding groove, the rolling needle bearing and the ball bearing.

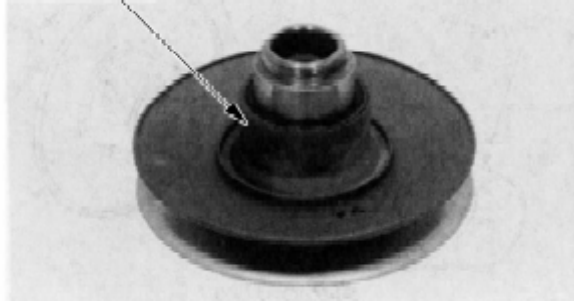
direction dowel, roller



Driven turntable set Remove the driven turntable set

Install the moving driven turntable set to the driven turntable set.
Smear the lubricating oil on the guiding pin and rolling poll, then install them on the driven turntable set.
Install the airproof bush.

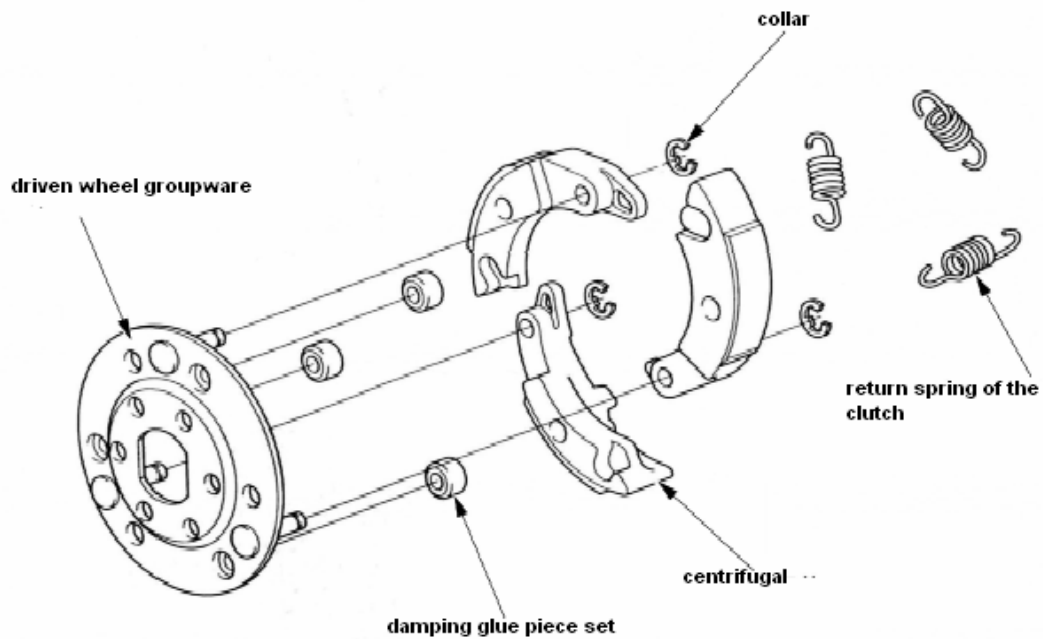
airproof bush



9 Continuously variable Transmission System & Left Cover

Assembly of clutch set

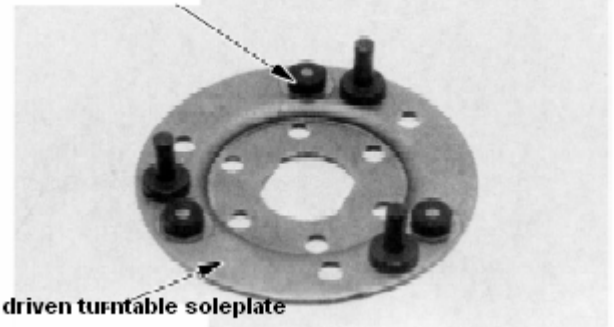
Assembly of clutch set



Install the damping glue piece set on the driven turntable soleplate of the clutch.

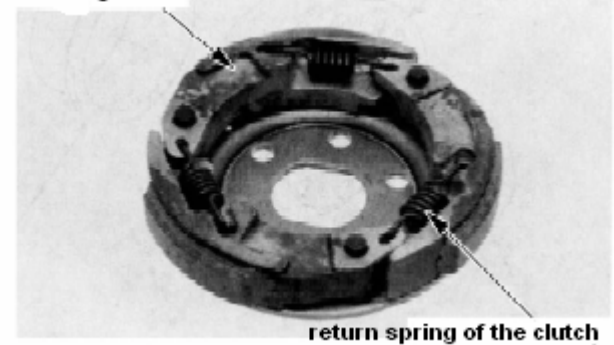
Pay attention to the installment direction of return spring of the clutch;

damping glue piece set



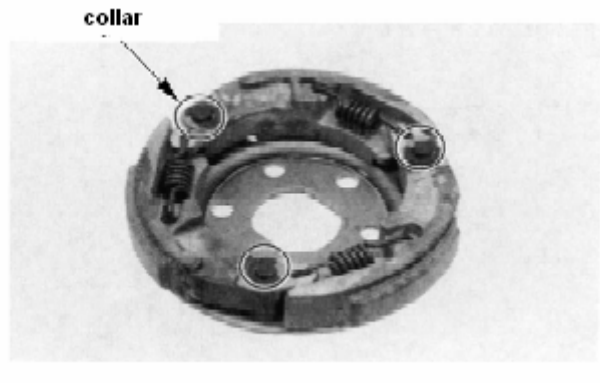
install the centrifugal set and the return spring of the clutch.

centrifugal set



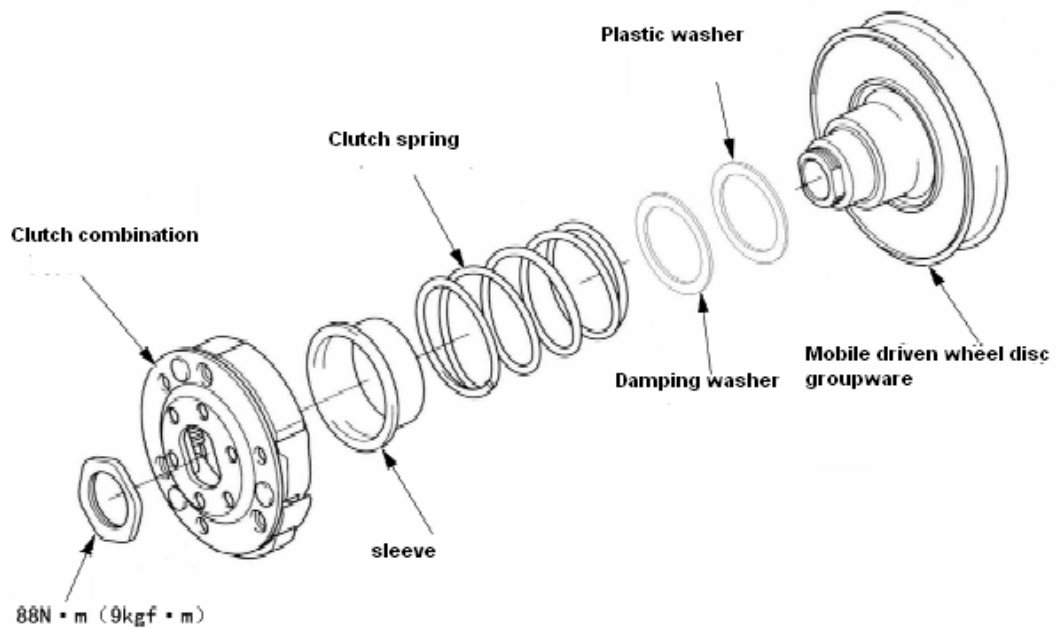
CF MOTO

Install the collar.



Assembly

Assembly



Assemble the following parts

- Clutch assembly
- Sleeve
- Spring of the clutch
- Damping washer
- Plastic washer
- Move the driven turntable set

9 Continuously variable Transmission System & Left Cover

Assemble rightly between the hole of driven turntable set and the protruding part of spring compress tool of the clutch.

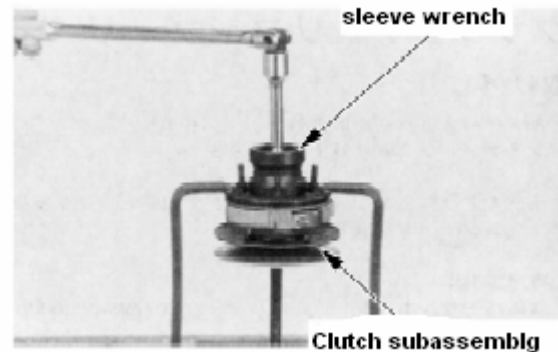
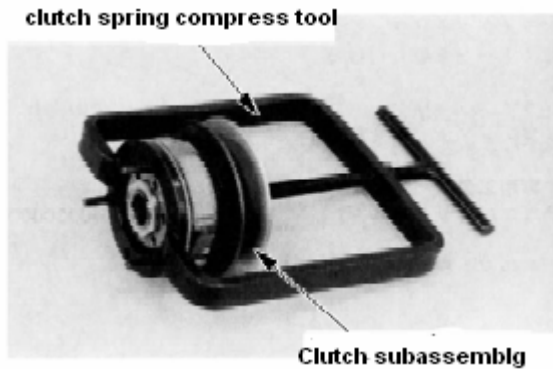
Cautions

Don't fix the spring compress tool of the clutch over the needed wring square.

Fix the spring compress tool of the clutch with table vice, etc.
Install driven nut.

Tightly fix the special nut of the clutch with sleeve spanner at the specified wring square.

Torque : 88 N · m (9.0kgf · m)



Take down the sub-assembly of the clutch with the spring compress tool of the clutch.

Assembly of the clutch

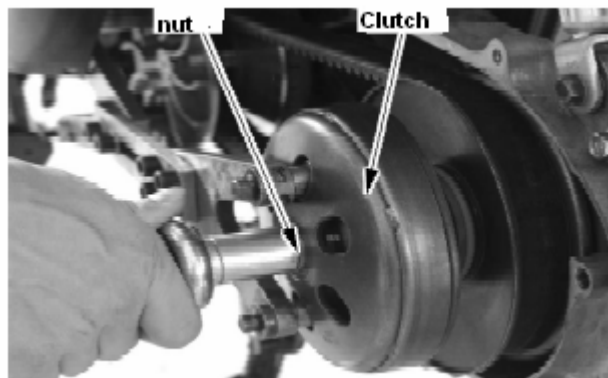
Install the clutch, and tighten the nut at appointed wring square.

Torque: 53 N · m (5.3kgf · m)

Install the driver turntable.

(→ 9-12)

Install the left cover. (→ 9-3)



Maintenance information	10-1
Error diagnosis	10-1
Disassemble of reduction box	10-2
Check of reduction box	10-3
Arrangement diagram of bearing	10-4
Disassemble and assemble of bearings and oil seals of reduction box	10-4
Disassemble and assemble of bearings and oil seals of left box	10-6
Assemble of reduction box	10-7

Maintenance information

Notes during operation

- The reduction box may be maintained under the engine-carried state.
- The main shaft shall be erected with special tools and the bearing cone is fixed and then inserted onto the main shaft.

Maintenance basis

Item		Standard
Machine oil volume	At replacement	0.15l
	At disassemble	0.15l
Recommended machine oil for reduction box		Grade SAE15W-40/SF

Tightening torque

- reduction box machine oil check/drain screw 22 N·m (2.2 kgf·m)
Bolts of reduction box 22 N·m (2.2 kgf·m)

Error diagnosis

The engine is able to start, but unable to run

- Damage of reduction system
- Ablation of reduction system
- No connection of belt type infinite transmission system (→ Chapter 9)

Abnormal sound during running

- Wearing-out of gear, ablation, damage of tooth face
- Wearing-out or loosening of bearing

Oil leakage

- Excessive filled machine oil
- Wearing-out or damage of oil seal
- Damage of sealing pad of reduction box

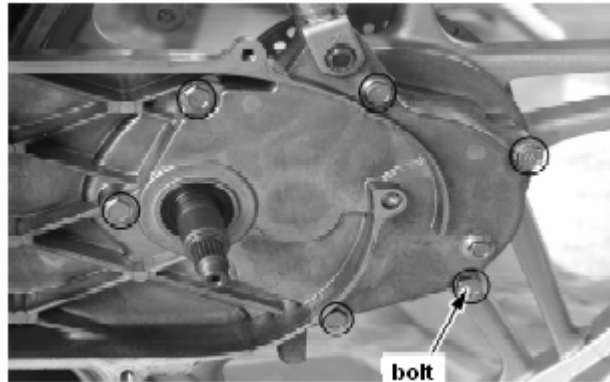
Disassemble of reduction box

Drain lubricating oil from the reduction box. (→ 3-10)

Remove following parts:

- rear wheel . (→ 14-3)
- clutch branch unit . (→ 9-9)

Remove 6 bolts

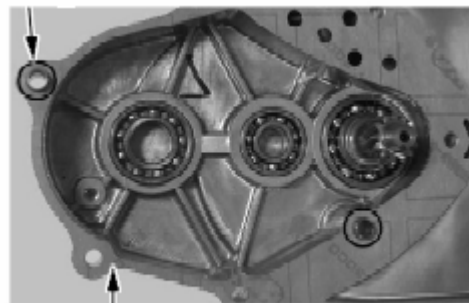


Remove reduction box.

Take out positioning pin and sealing pad of reduction box

Remove sealant adhered on the combination face

positioning pin

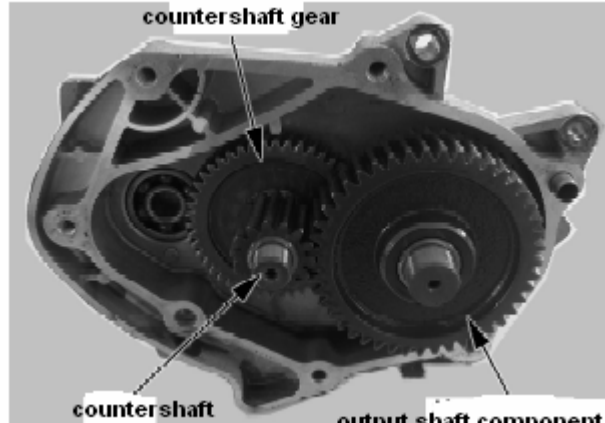


sealing pad of reduction box

Remove output shaft component

Remove countershaft and countershaft gear

countershaft gear



countershaft

output shaft component

Take out adjustment washer.

adjustment washer



Disassemble of main shaft

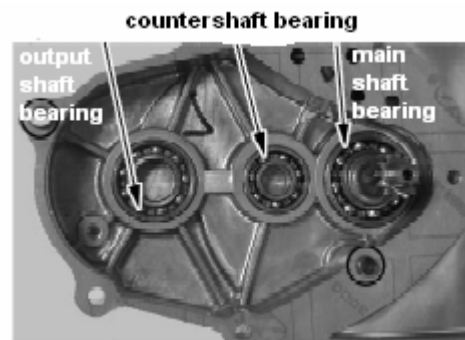
Remove the main shaft through knocking at its end face with a wooden harmer.



Check of reduction box

Rotate each bearing cone in the reduction box and left box with finger to check for free and stable rotation without seizure. In case of unstable rotation or shaking

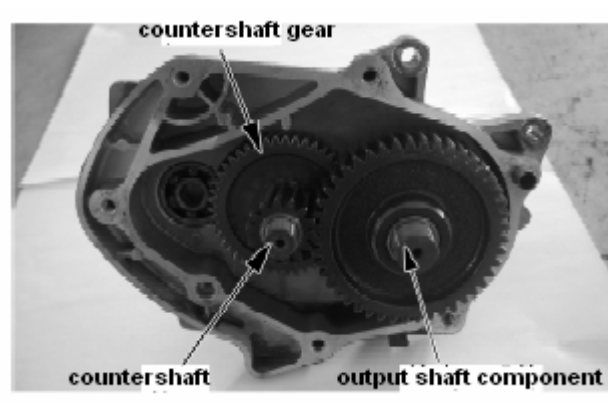
between outer race bearing and base hole of the bearing, make replacement.



Check bearing holes in the reduction box and left box for scratch and damage.

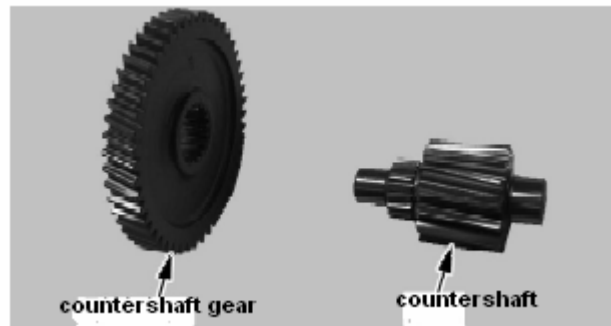


Check the shaft portion and gear portion of the output shaft for wearing-out or damage and in case of abnormality make replacement. Check the shaft portion and gear portion of the main shaft for wearing-out or damage and in case of abnormality make replacement.



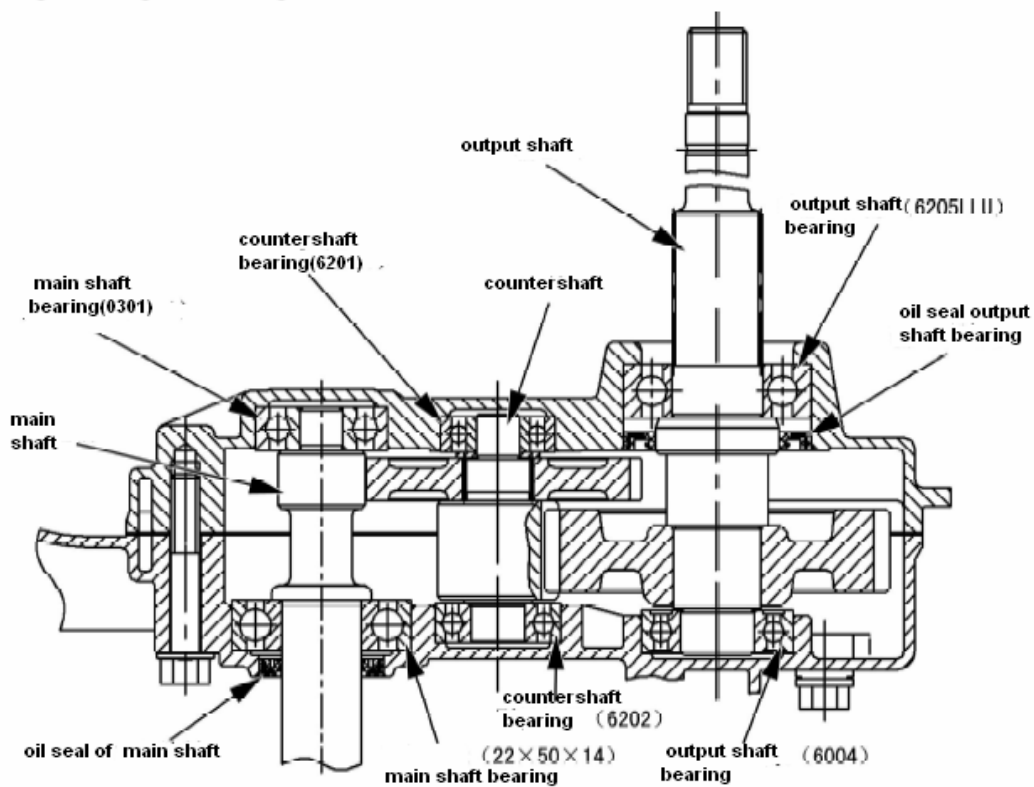
Check the countershaft for wearing-out or damage and in case of abnormality make timely replacement.

Check the gear of the countershaft gear for wearing-out or damage and in case of abnormality make timely replacement.



Arrangement diagram of bearing

Arrangement diagram of bearing

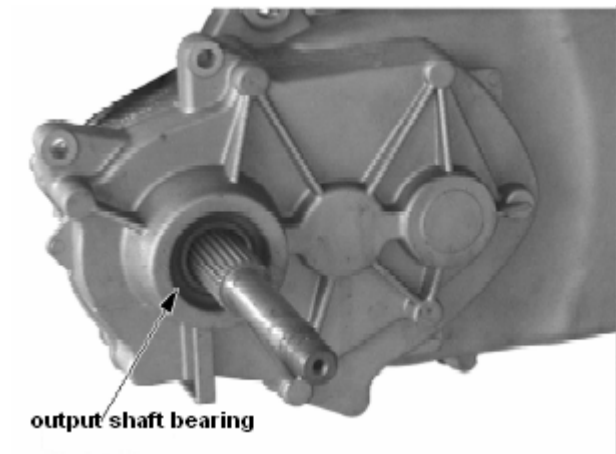


Disassemble and assemble of bearings and oil seals of reduction box

Remove output shaft's oil seal from reduction box



Remove output shaft bearing with special tools
 Make assemble with special tools in reversed sequences of disassemble.



Remove the main shaft bearing and countershaft bearing at reduction box side with same special bearing disassembling tools.

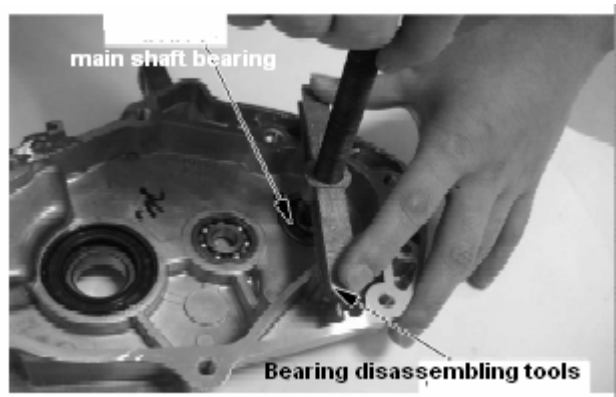
Special tools:

Bearing disassembling tools:

1P52MI-A-922-050000

-060000

-080000



With special tools vertically press the new main shaft bearing into the reduction box body till stopping by the step on bearing bottom hole, with its mark faced upwards.
 Erect the countershaft bearing at reduction box side with special tools and same method.



Coat grease on lip of the oil seal of new output shaft and fix the said oil seal with its lip towards reduction box side.

Notes

At fixing oil seal, keep it flush with end face, not stop the leaking port on middle.



Disassemble and assemble of bearing and oil seal in left box

Remove the oil seal of main shaft
Disassemble main shaft bearing, countershaft bearing and output shaft in the bearing left box with the procedures of (→ 10-5) “Disassembling of main shaft bearing in reduction box”



Vertically press the new main shaft bearing into the left box body till stopping.
Erect the main shaft bearing, countershaft bearing and output shaft bearing with the same method.

**Erection of main shaft**

Pull the main shaft into the left box body with crank box combined bushing and crank box combined shaft tools.



Coat grease on lip of the oil seal of new main shaft.
Fix the oil seal with its lip towards reduction box side.

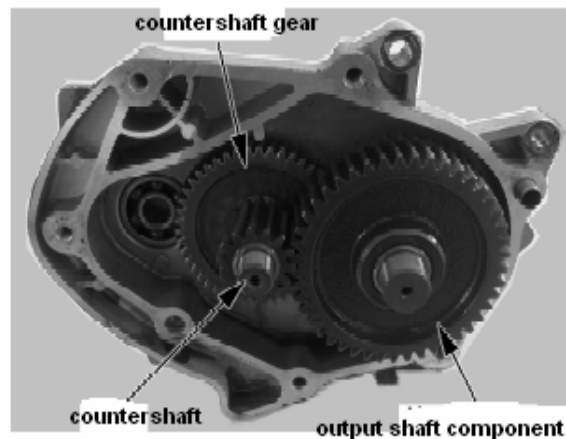


Assemble of reduction box

Erect the adjustment washer.

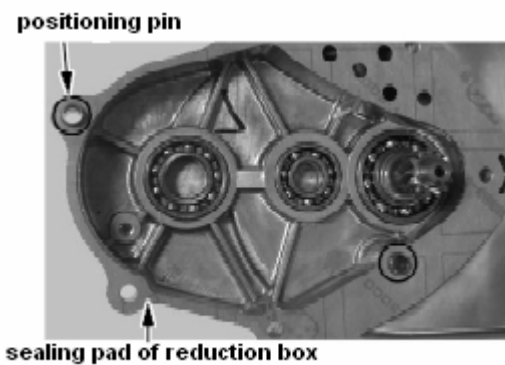


Fix countershaft gear and countershaft to the reduction box and insert the adjustment washer onto the shaft.



Erect the output shaft

Erect the positioning pin
Soak the sealing pad of the reduction box in kerosene and then fix the sealing pad onto the combination face of the left box.



Erect the reduction box

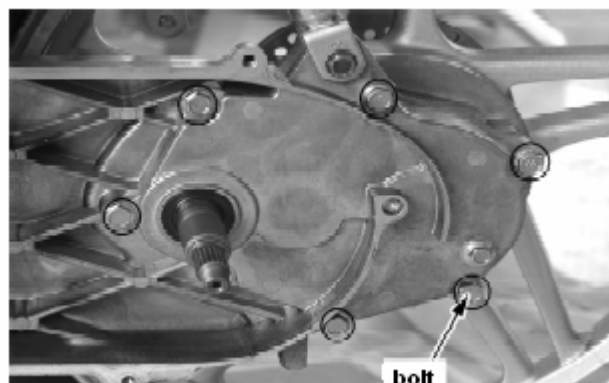
Place and tighten the bolts

Tightening torque: 22 N·m (2.2 kgf·m)

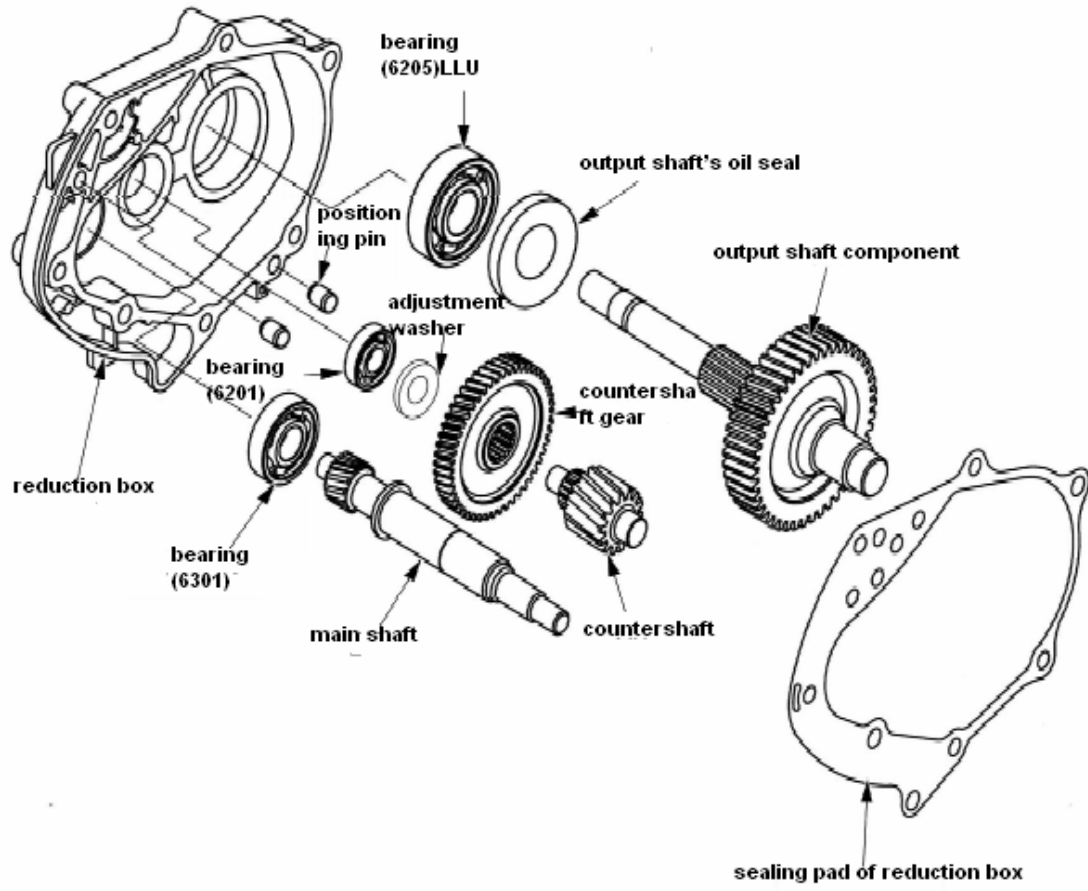
Fix the following parts:

- clutch branch unit (→ 9-19)
- rear wheel (→ 14-3)

Fill lubricating oil of reduction box (→ 3-10)



Assemble diagram of reduction box



11 Right side cover, magneto and water pump

Maintenance information.....	11-1	Erection of waterpump.....	11-4
Disassemble of right side cover.....	11-2	Erection of right side cover.....	11-5
Disassemble of flywheel combination.....	11-2	Erection of stator combination.....	11-6
Disassemble of driven gear component...	11-3	Erection of driven gear component.....	11-6
Stator combination	11-3	Erection of right side cover.....	11-7

Maintenance information

Notes during operation

! Notes

The right side cover, stator combination and flywheel combination shall be assembled and disassembled under cold engine state.

- The right side cover may be maintained under the engine-carried state..
- The AC magneto may be maintained under the engine-carried state..
- AC magneto shall be checked as per Chapter 15.

Tightening torque

Locking nut of flywheel combination 59 N· m (6.0kgf· m)

Bolt of right side cover 12 N· m (1.2kgf· m)

Bolt of water pump cover 12 N· m (1.2kgf· m)

Error diagnosis

- Error diagnosis of magneto (→ **Chapter 15**)

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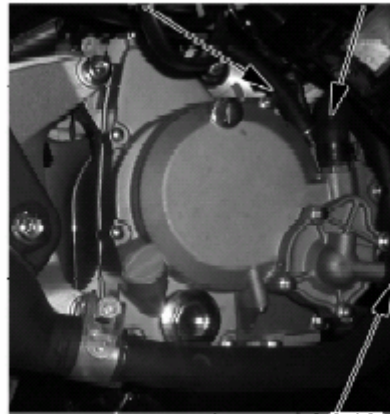
Disassemble of right side cover

Remove body plastic parts (→ 2)

Drain coolant (→ 6 - 4)

Drain lubricating oil from crank box (→ 3-11)

vent hose water pump outlet hose



water pump inlet hose

Notes

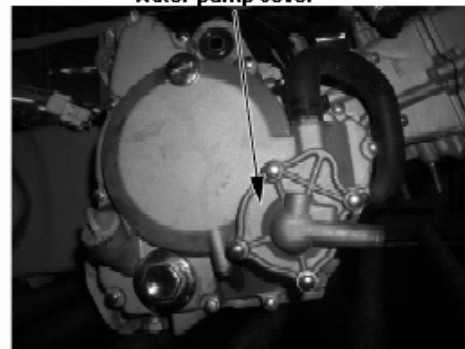
The right side cover shall be disassembled under cold engine state.

Remove water inlet hose, water outlet hose and vent hose.

Remove water pump cover, positioning pin and water pump cover sealing pad.

Remove bolts of right side cover bolt and take out the right side cover.

water pump cover

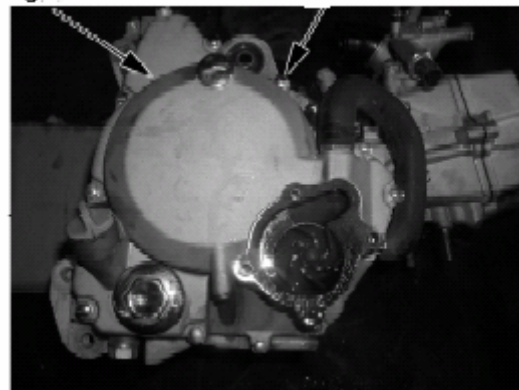


Disassemble of flywheel combination

Remove oil duct connector and spring of oil duct connector.

Remove positioning pin and right side cover sealing pad

right side cover nut



Remove dual gear and dual gear shaft.

Remove nut and washer

dual gear shaft positioning pin
right side cover sealing pad



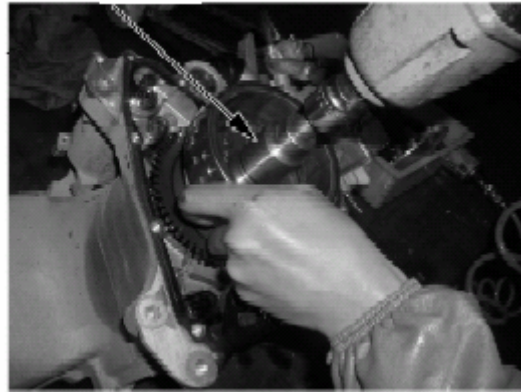
nut and washer spring of oil duct connector

Fix the flywheel combination with special tools and then remove the flywheel combination with special flywheel disassembling tools.

Special tools:

Special flywheel disassembling tools:
152MI-922-030000

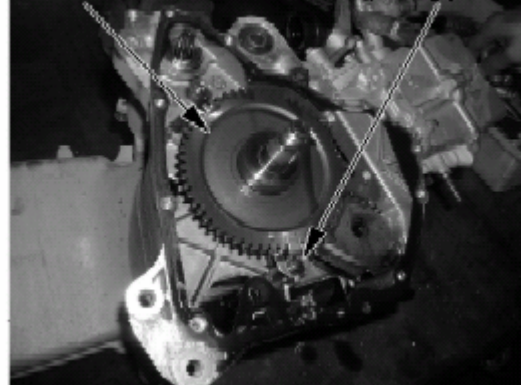
Special flywheel disassembling tools



Disassemble of driven gear

Remove bolts, fixing plate and driven gear component

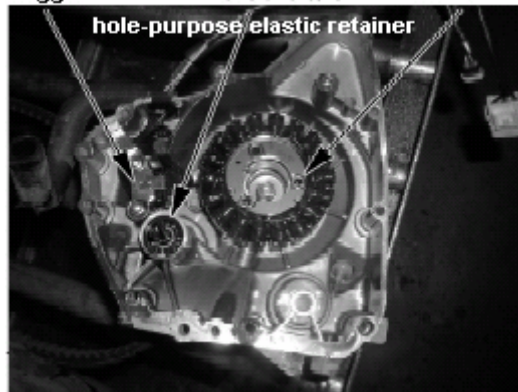
driven gear component bolts, fixing plate



Disassemble of stator combination

Remove the stator combination and trigger.
Remove the hole-purpose elastic retainer
Clamp the water pump shaft at the back side clockwise remove the water pump component with open wrench

trigger screw and washer hole-purpose elastic retainer



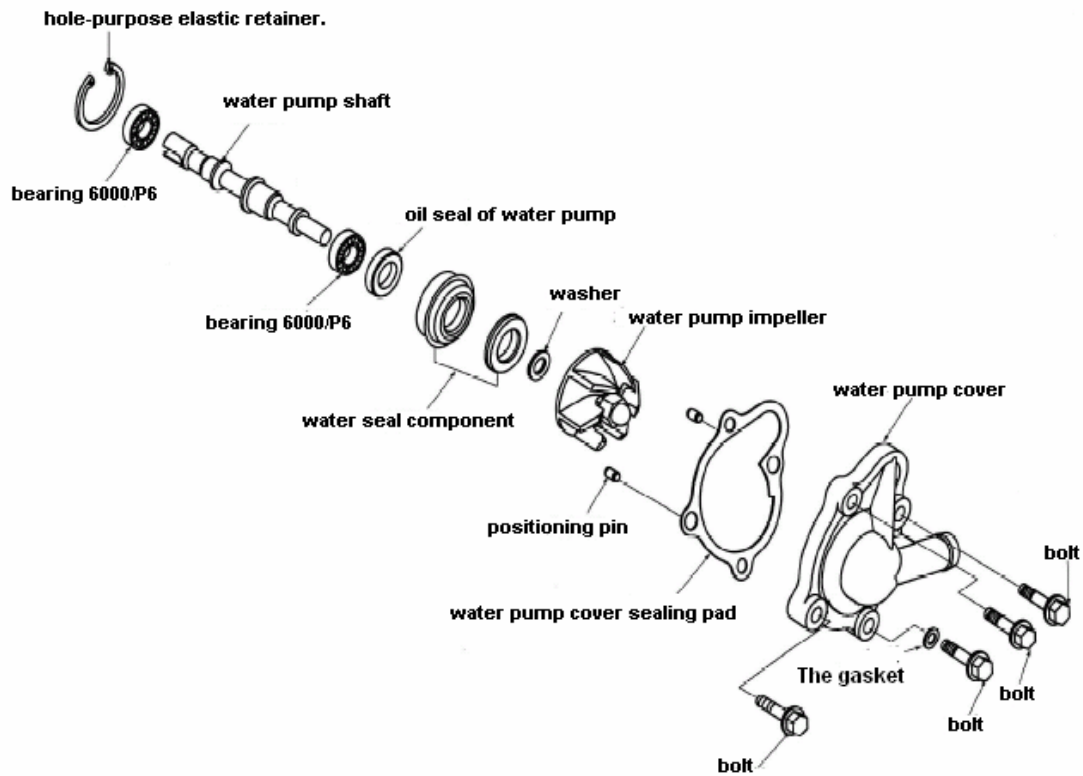
Remove the machine level stick, upper view window cover, and seal ring of the upper view window cover.

machine level stick



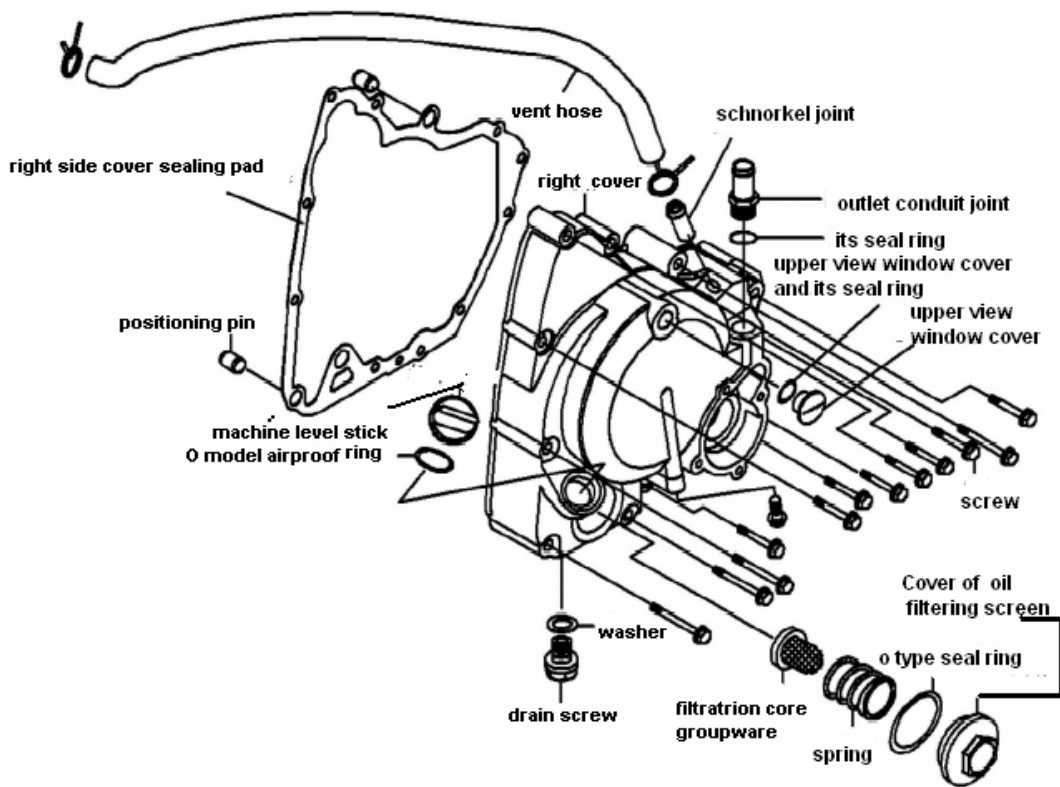
Remove drain screw and washer
Remove oil-filtering component

drain screw and washer oil-filtering component water pump component

**CF
Moto****Erection of water pump****Erection sequences**

1. Fix bearing 6901/P6 onto water pump shaft and then insert it into the water pump shaft hole on the right side cover
2. Fix bearing 6000/P6 onto water pump shaft and clamp it with the hole-purpose elastic retainer.
3. Coat cylindrical face-purpose sealant round circumference of the oil seal of water pump and fix it on the right side cover.
4. Fix and the water seal component into the right side cover and heavily press it.
5. Insert the washer onto the water pump shaft and tighten the water pump impeller in the water pump shaft.

Sub-assembly of right side cover



Erect the water pump component as per the diagram

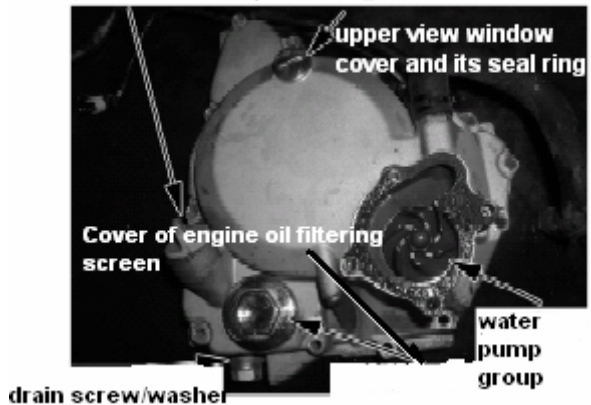
Erect the upper view window cover and its seal ring.

Fix machine level stick.

Erect the oil-screen component.

Erect the drain screw and washer.

machine level stick.



CF Moto

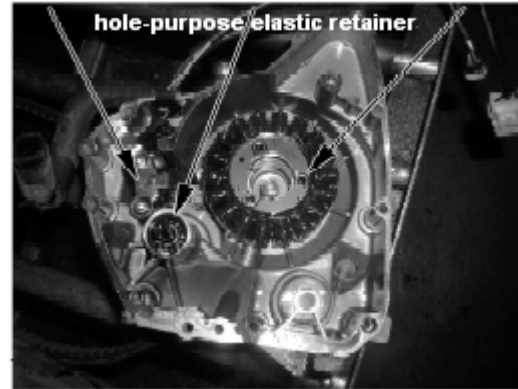
Erection of stator combination

Fix stator combination and trigger and tighten them with bolts and washer. The chamfered face of the inner-hole of the washer is faced towards the bolt.

Notes:

Clamp the wires of stator combination and trigger with compression plate and coat tread tightening glue on locking bolts. Insert the sealing fixture block of wires into the slot.

trigger screw and washer



into the slot



Notes:

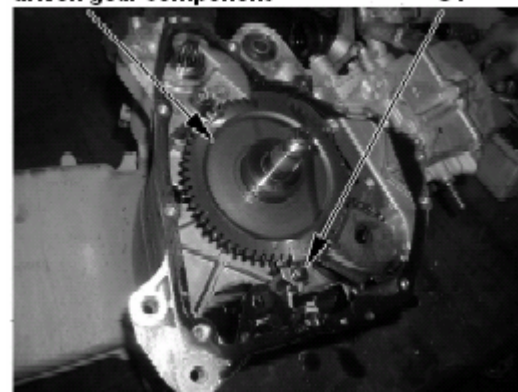
Apply sealant.

Erection of driven gear component

Fix the driven gear component onto crank, insert the fixing plate onto the driven gear, tighten the fixing plate with bolts, and adjust the fixing plate till not contact or colliding with the toothed disk end face of driven gear component.

Fix the flywheel combination, insert the pin into the hole on the crank and lock the nuts with specified torque.

driven gear component bolt fixing plate



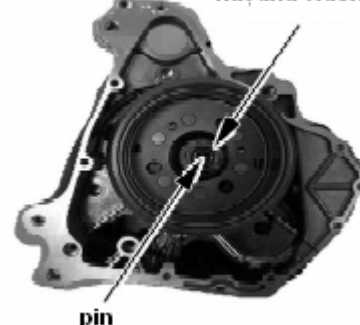
Notes:

Check the pin for being inserted.

At erecting of flywheel combination, align the semi-circular key on the crank.

Torque: 59 N·m (6.0kgf·m)

nut and washer



11 Right side cover, magneto and water pump

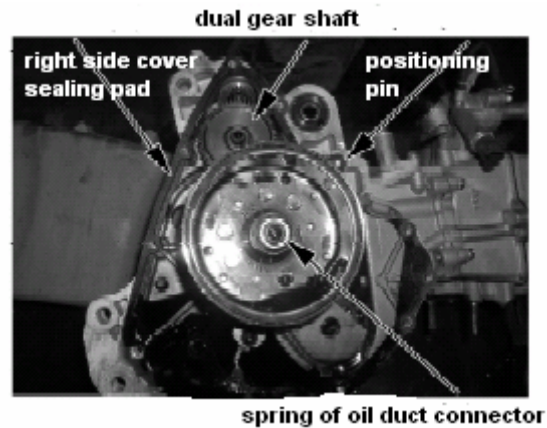
Sequentially re-fix the dual gear, dual gear shaft, oil duct connector and spring of oil duct connector.

Fix the positioning pin and sealing pad of right side cover.

Erection of right side cover

Place the right side cover and diagonally tighten the bolts in 2-3 times.

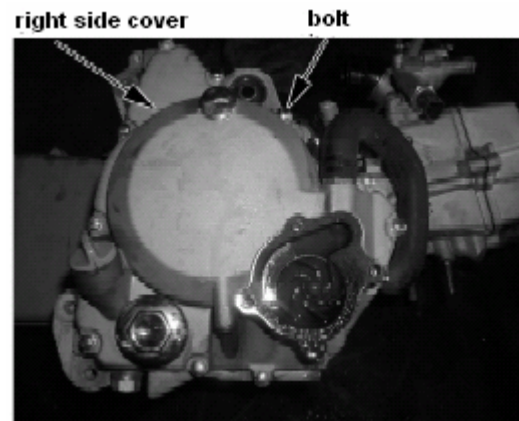
Torque: 12 N·m (1.2kgf·m)



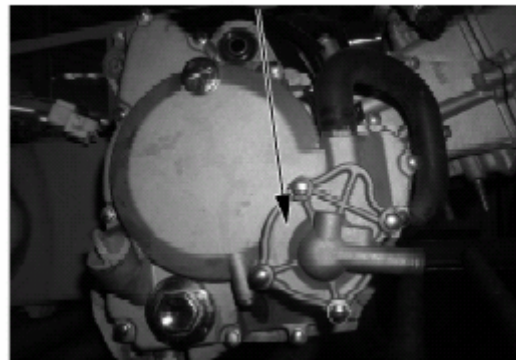
Notes:

The opening of the water pump shaft shall be aligned with the machine oil pump shaft; otherwise, erection would be impossible.

Sequentially fix the positioning pin, water pump cover and its sealing pad, and then tighten them with bolts.



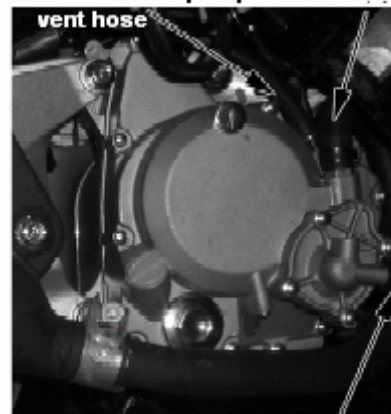
water pump cover



Notes:

Diagonally tighten them in 2-3 times.

water pump water outlet hose



Re-place water inlet hose, water outlet hose and vent hose.

Fill coolant (→ 6-6)

Fill lubricating oil into the crank box (→ 3-11)

Erect body plastic parts (→ Chapter 2)

water pump water inlet hose

Maintenance information.....	2-1	Crank/piston	12-4
Error diagnosis.....	12-2	Assemble of box body.....	12-11
Disassemble of box body.....	12-3		

Maintenance information

Notes during operation

The crank and crank box shall be maintained after disassemble of the box body and for their maintenance the engine shall be removed from the frame. (→ Chapter 7)

· The disassemble box body shall be made in the following sequences.

-Disassemble of engine (→ Chapter 7)

- cylinder head cover, cylinder head and cylinder body (→ Chapter 8)

- left side cover and infinite transmission system (→ Chapter 9)

- right side cover (→ Chapter 11)

- electric start system (→ Chapter 17)

- lubrication system (→ Chapter 4)

· The piston and piston ring may be maintained on the entire motorcycle and for this purpose merely the cylinder head cover, cylinder head and cylinder body are disassembled. (→ Chapter 8)

· During maintenance, cares shall be taken not to damage the box body's combination face.

· Take cares not to inner face of damage cylinder and piston.

Item			Standard		Service limit
			CF125T-21i	CF150T-5i	
Crank	Big end of connecting rod	Axial gap	0.16- 0.304 mm		0.50mm
		Radial gap	0.005- 0.017mm		0.05mm
	Crank run-out		---		0.10mm
Piston	The erection direction mark		“In” is towards the air-inlet side		---
	Outside diameter of piston		52.37- 52.39/57.97-57.99mm		52.32/57.92mm
	Inside diameter of piston pin		5.002- 15.008mm		15.04mm
	Outside diameter of piston pin		14.994- 15mm		14.98mm
	Inside diameter of hole at small end of connecting rod		15.016- 15.034mm		15.05mm
	Gap between the cylinder and the piston (In-group assembled)		0.02- 0.04mm		0.08mm
	Gap between the piston and the piston ring		0.002- 0.014mm		0.04mm
Gap between the piston ring and connecting rod		0.016- 0.040mm		0.06mm	

	Inter-piston ring gap and Inter-slot gap	piston ring (I)	0.02- 0.044mm	0.07mm
		piston ring (II)	0.02- 0.044mm	0.07mm
	Piston ring end gap	Piston ring (I)	0.15- 0.30mm	0.45mm
		piston ring (II)	0.10- 0.25mm	0.07mm
		Piston ring	0.2- 0.7mm	0.9mm
	Keep the erection direction	mark of piston ring upwards		---

Maintenance standard**Tightening torque**

Bolts on flange face of box body 12N· m (1.2kgf· m)

Chain tension plate-purpose threaded pin shaft: 13N· m (1.3kgf· m)

Error diagnosis**Too low compression pressure**

- Wearing-out or damage of piston ring
- Wearing-out of cylinder or piston
- Poor seal of cylinder head or valve (→ Chapter 8)
- Burning-out, breaking or seizure of piston ring

Excessively high compression pressure

- carbon in piston head or combustion chamber

Blue smoke in the exhausted gas

- Wearing-out of cylinder, piston ring or piston
- Wearing-out of valve duct or damage of oil seal of valve

Abnormal sound

- Wearing-out of cylinder or piston
- Poor erection of piston ring
- Damage of surrounding of the piston and inner face of the cylinder
- Damage and wearing-out of f crank bearing

Disassemble of the box body

Remove the engine from the frame (→ Chapter 7)

Before disassembling the box body, remove related parts from the engine as per page 12-1

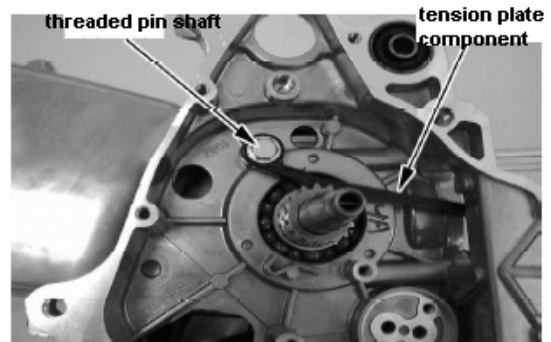
Remove threaded pin shaft and tension plate component.

Unscrew bolts from box body.

Keep the right box body downwards and remove left box body.

Remove crank, crank box sealing pad and positioning pin

Remove crank oil seal.

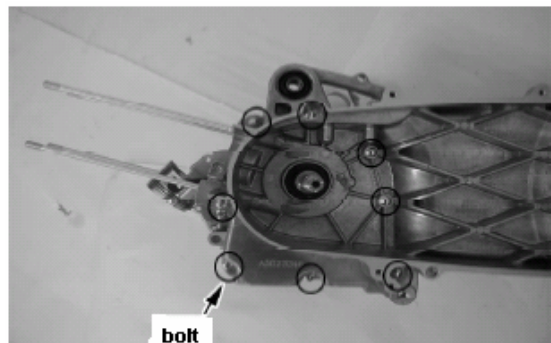


Notes

Not pry the box body combination face with screw-driver

When the right box body is difficult to take out, its projected portion shall be lightly knocked with a plastic harmer and then the left box body is slowly and evenly lifted.

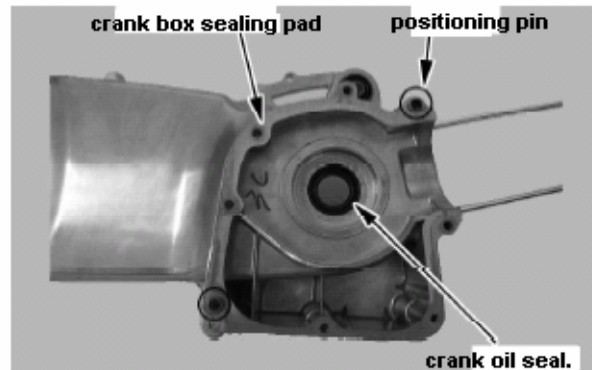
Check the tension plate for scratch, damage and sidewise wearing-out.



Piston

Disassemble of piston

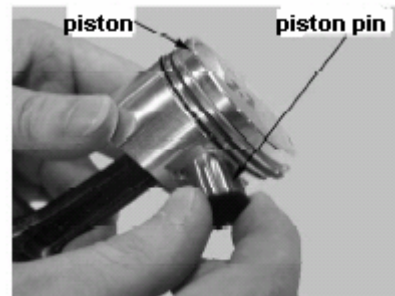
Before disassembling the piston, remove related parts from the engine as per page 12-1



Remove retainer of piston pin.

Pull out piston pin and take out piston

Enlarge the opening of the piston ring and take out the piston ring from piston top.

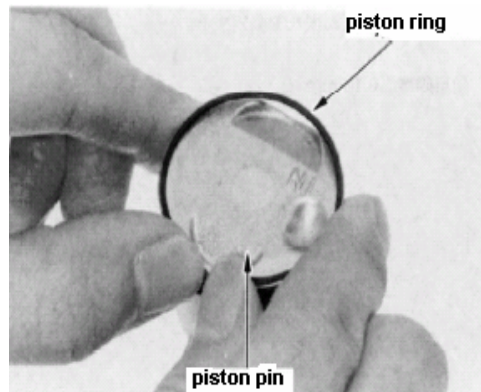


Notes

- The piston ring is liable to break, and thus the opening shall not be excessively large.
- Prevent the piston from damage by the piston ring.

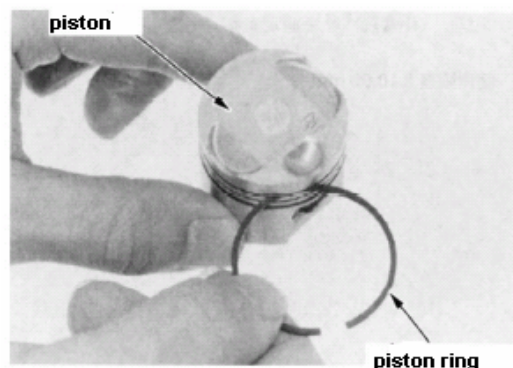
Clear off stains such as carbon from the piston.

Clear off carbon from the piston ring slot with old piston ring.



Notes

- Take care not to damage piston ring slot.
- The wire brush would damage piston ring slot and thus it shall not be used.

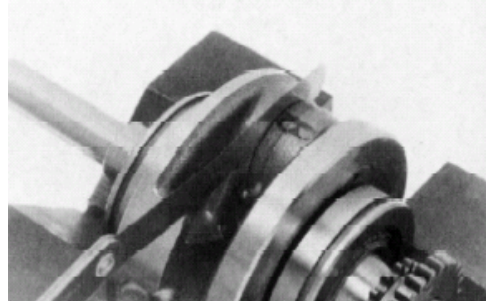


Check

Crank

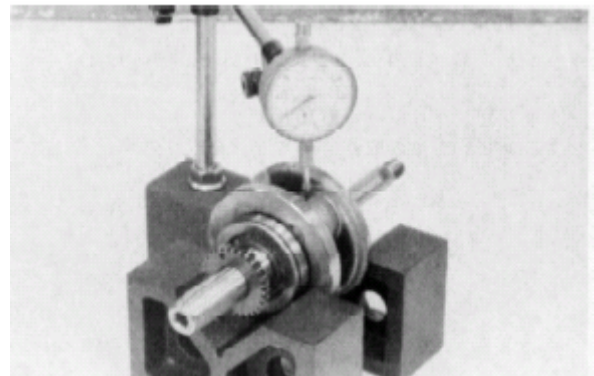
Measure the side gap of the big end of connecting rod.

Service limit: 0.5mm



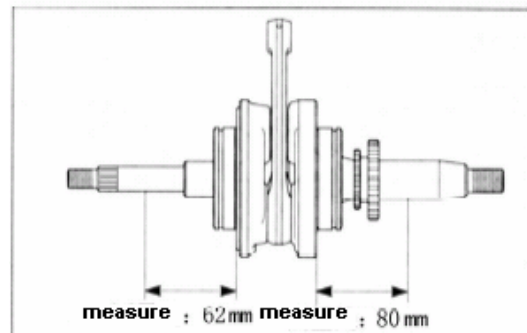
Measure the radial gap of the big end of connecting rod.

Service limit: 0.05mm



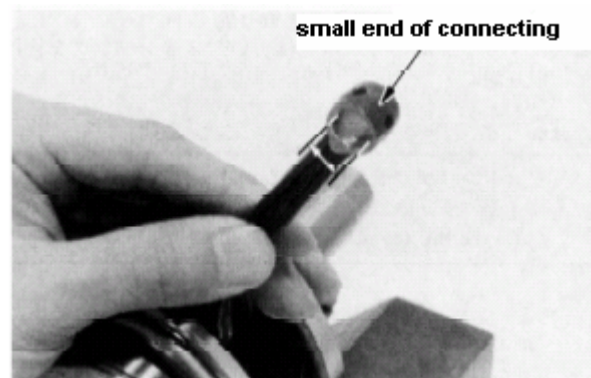
Measure the crank run-out .

Service limit: 0.10mm



Measure the Inside diameter of hole at small end of connecting rod.

Service limit: 15.05mm



Rotate the crank bearing and check for abnormal sound and shaking.
 In case of abnormal sound or shaking, replace the t crank.

Piston and cylinder

Check outer circumference of piston for scratch.

Check piston ring slot for wearing-out and oil port for blocking.

Measure the outside diameter of piston at 90° with (vertical to) to the piston pin hole at position 6mm below the lower end of piston.

Service limit 52.32/57.92 mm

Calculate the gap between piston and cylinder (cylinder bore: → 8-12)

Service limit: 0.08mm

Measure the inside diameter of the piston pin hole in direction X and Y respectively and take the maximum value as the inside diameter of the piston pin hole.

Service limit: 15.04mm

Slide location of piston pin and slide

locations at small end of connecting rod (totally 3 locations)

Measure the outside diameter of piston pin

Service limit: 14.98mm

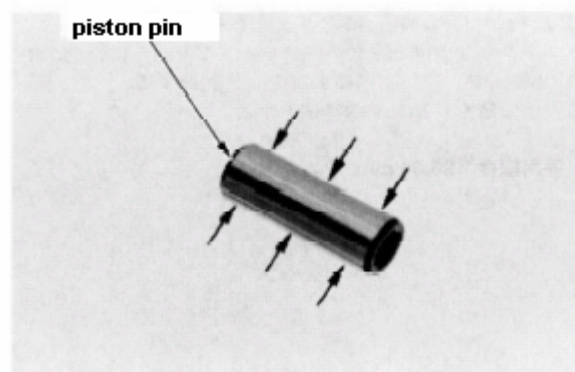
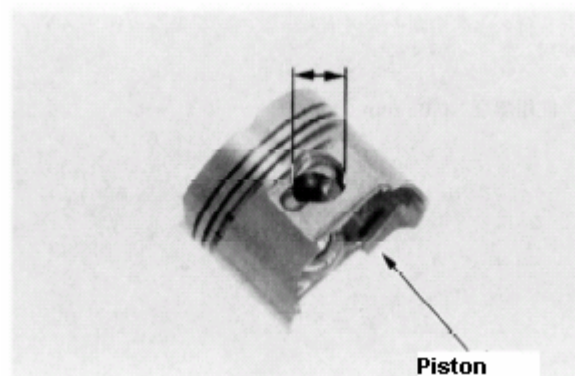
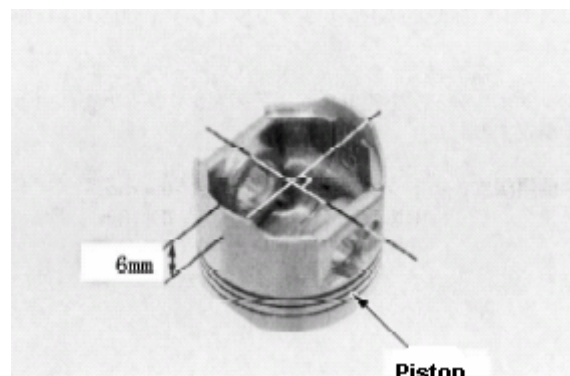
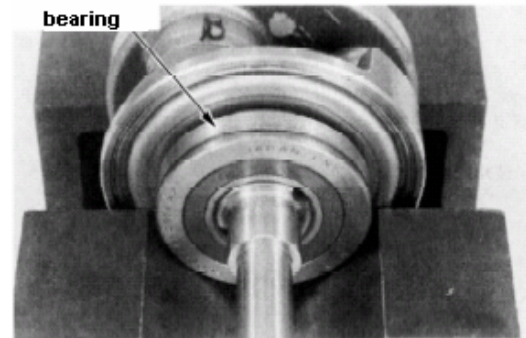
Calculate the gap between the piston pin and piston pin hole.

Service limit: 0.04mm

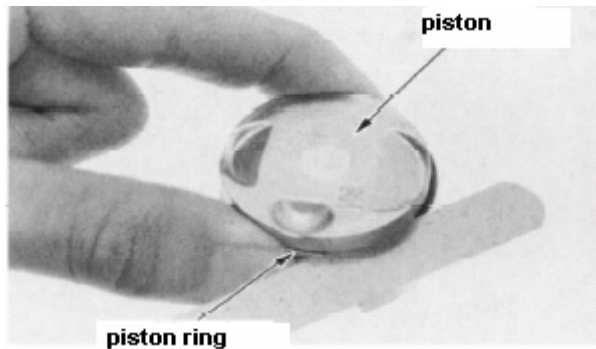
Calculate the gap between the piston pin and the small end of connecting rod

Service limit: 0.06mm

Check the upper face and the lower face of the piston ring for scratch, sidewise or wearing-out.



Fix the piston ring into the correct piston ring slot and press the piston ring till reaching basically same position of side faces of the piston



Measure the gap between the piston ring and piston ring slot with a feel gauge.

Service limit: First run of ring: 0.07mm

Second run of ring:

0.07mm

Levelly fix the piston ring into the lower portion of the cylinder with piston head.

Measure the piston ring end gap with a feel gauge.



Service limit: First run of ring: 0.45mm

Second run of ring: 0.45mm

Oil ring (flat ring): 0.9mm

Erection of piston

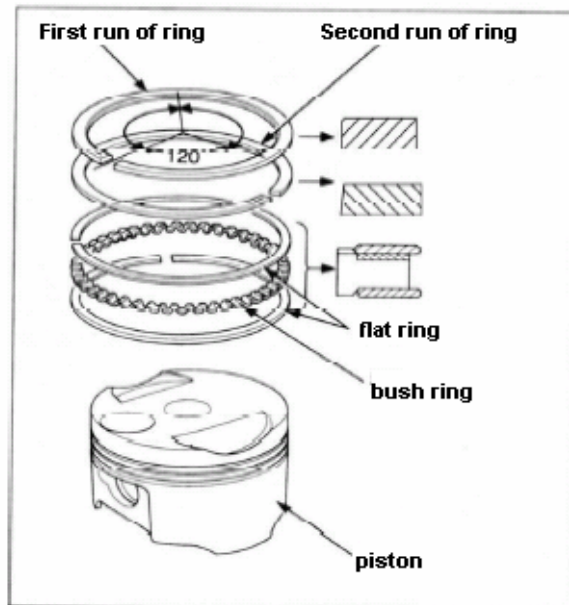
Notes

During erection of piston, cares shall be taken not to damage the piston ring or the piston.

Keep the marked face upwards and fix the piston ring onto the piston.

Notes

- The first run of ring and second run of ring are for respective application.
- During erection of piston ring, keep the marked face upwards.
- The openings of the piston ring shall be staggered at 120° interval.



After erection, check the piston ring for free rotation in the piston ring slot.

Coat engine oil on the small end of connecting rod, piston pin and piston pin hole.

At erection of piston, after the crank is fixed onto the engine piston the mark "In" shall be towards the air-inlet side.

Erection of new retainer of piston pin



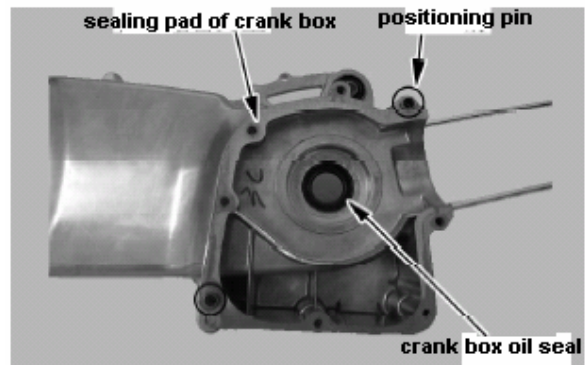
***Notes**

- The retainer of piston pin shall be surely inserted into the slot.
- The opening of retainer of piston pin shall be kept away from the cut of piston.

Erection of crank box

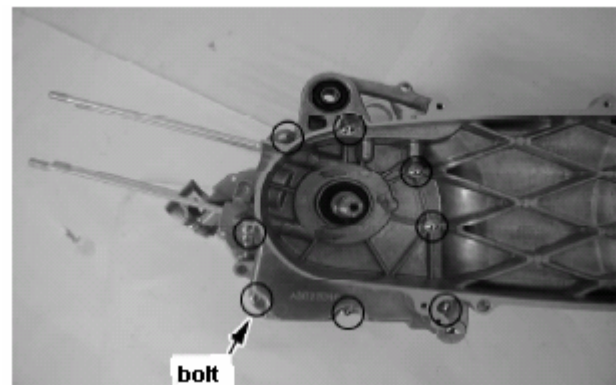
Coat grease on the inner lip of the new oil seal, coat sealant round its outer circumference and then fix it onto the left crank box.

Fix positioning pin, and sealing pad of crank box

**Erection of crank**

Tighten the left and the right box body with bolts at the specified torque.

After tightening, the crank shall be able to freely run without any seizure.
Required torque: 12N· m (1.2kgf· m)

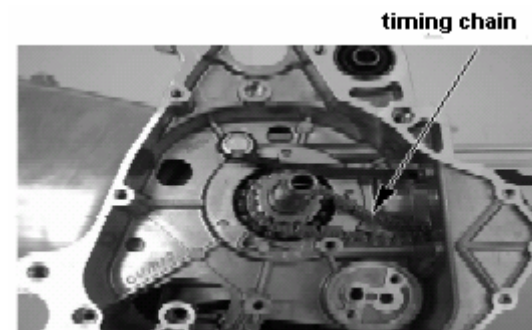
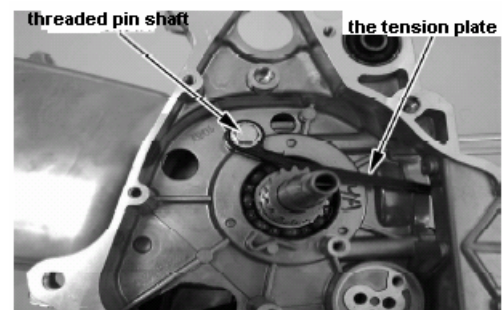
**Notes**

The bolts on the flange face of crank box shall be diagonally tightened in 2-3 times bolt.

During erection, take cares not to damage box body combination face.

Re-place the tension plate and threaded pin shaft and tighten them at the specified torque.

Required torque: 13N· m (1.3kgf· m)

**Erection of timing chain**

Erect the engine at the sequences reversed to (→ 12-1)

Fix the retaining ring of upper bearing on the steering column and tighten it with specified torque.

Special tools:

Adjustment wrench of steering column bearing:

519-922-050002

Torque: 1 0N. m (1 . 0 k g f · m)

Leftwards and rightwards rotate the front fork to the left and right stop (limit position) for several times to make the retaining ring and bearing fully run-in.

Loose the retaining ring of upper bearing on the steering column

Manually tighten the retaining ring of upper bearing on the steering column and then loose it (backwards rotating) by 45° (1/8) revolution.

Align the pawl of retaining washer with the groove of front fork and fix locking washer

Fix locking nut of steering column

Special tools:

Wrench for locking nut 07916-KM10000

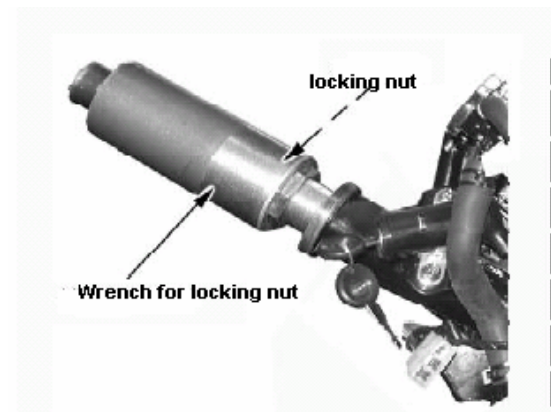
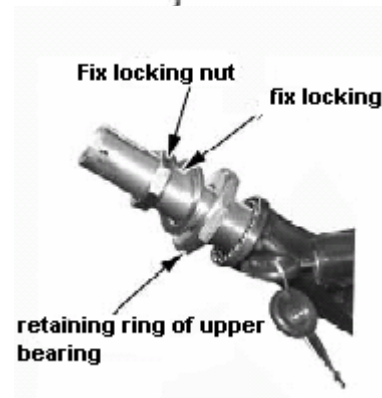
Torque: 6 8 N. m (7.0 k g f · m)

Leftwards and rightwards rotate the front fork to the left and right stop position for several times to confirm no upwards-downwards shaking and free movement.

Fix following parts

- handlebar (→ 13-13)
- front damper (→ 13-9)
- front mud guard (→ 2-8)
- front wheel (→ 13-3)
- header board (→ 2-8)

1 3 Front wheel, braking, suspension and steering system

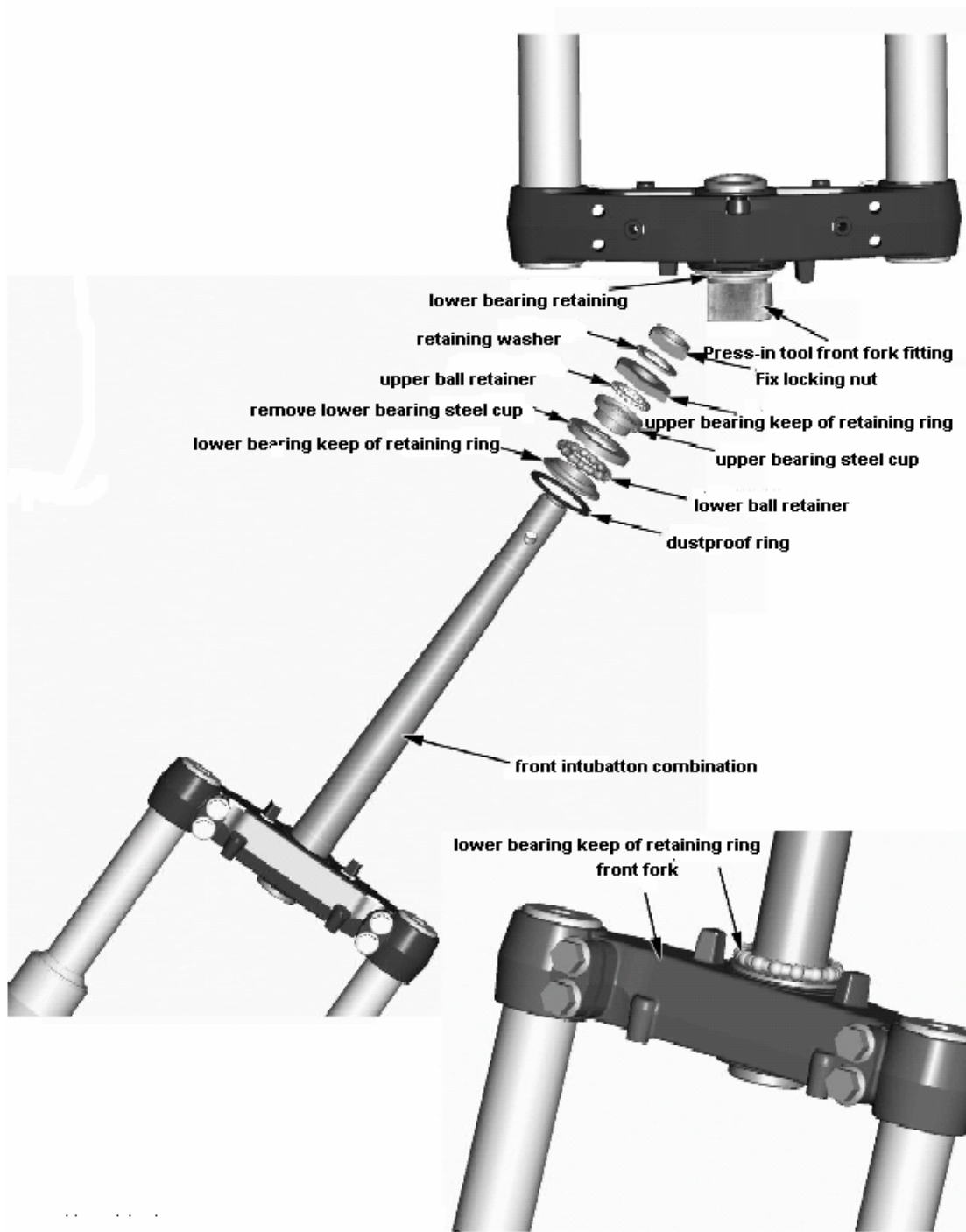


Press the new lower retaining ring of upper bearing into the front fork with special tools and hydraulic press

Special tools:

Press-in tool front fork guard

519-922-050009



Erection

After coating grease on new lower bearing fix the front fork

Fix after coating grease on new upper bearing 13-18

Fix the steel cup of new upper bearing on the steering column with following special tools

Special tools:

steering column bearing race erecting tools

A 519-922-050005

Assembling tool shaft 519-922-050006

Steering column bearing race erecting tools

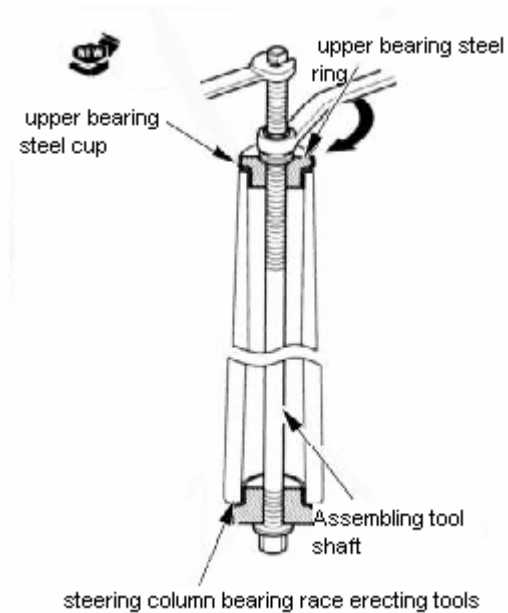
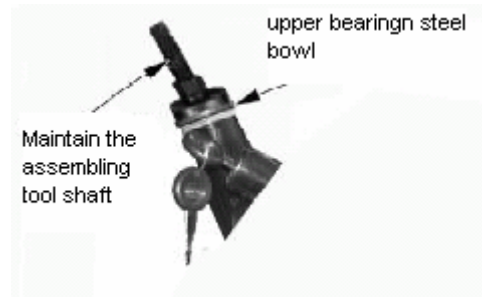
B 519-922-050007

Assembling tool shaft

519-922-050008

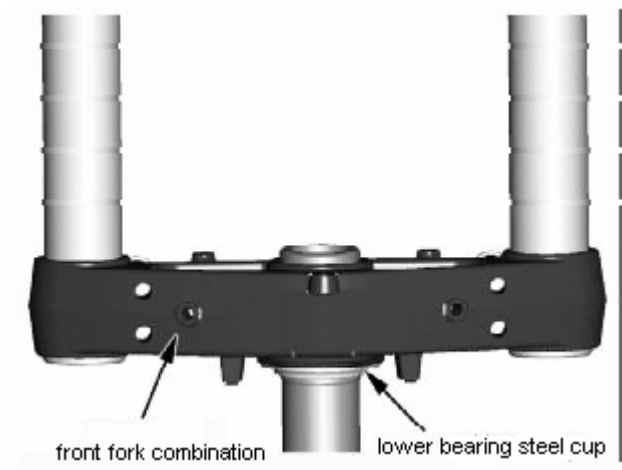
Maintain the assembling tool shaft, and press the upper bearing steel cup into the steering column while locking the nut.

Replacement of lower retaining ring of upper bearing



Remove lower retaining ring of upper bearing

13 Front wheel, braking, suspension and steering system



Fix the special tools onto the square tube of support and remove upper bearing steel cup

Special tools:

Bearing disassembling tool modular

519-922-050000

Rotor puller 519-922-050010

Disassembling tool shaft 519-922-050003

Disassembling tool weight 519-922-050004

Erection

Fix the new lower bearing steel cup and following special tools onto the steering column.

Special tools:

steering column bearing race erecting tools A 519-922-050005

Assembling tool shaft

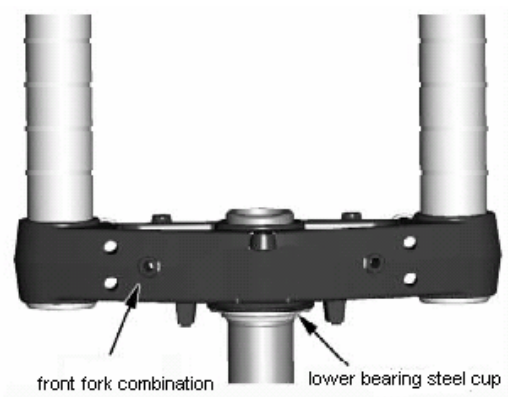
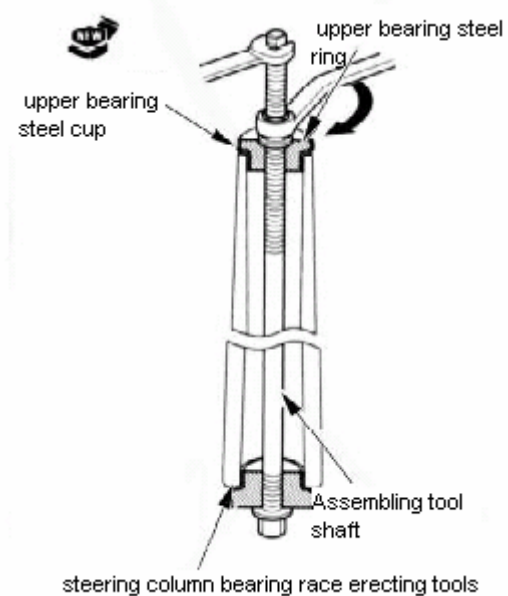
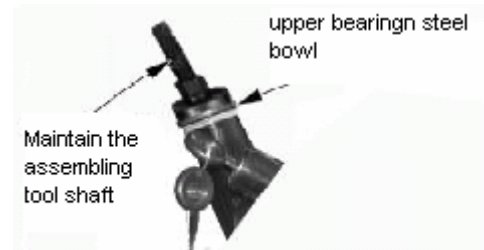
519-922-050006

steering column bearing race erecting tools B 519-922-050007

Assembling tool shaft

519-922-050008

Maintain the assembling tool shaft, and press the lower bearing steel cup into the steering column while locking the nut.



Take out retaining washer

Remove the retaining ring of upper bearing on the steering column

Special tools:

Steering column bearing adjustment wrench 519-922-050002

Remove upper ball retainer

Remove the front fork

Remove lower ball retainer

Fix the special tools on the stem of frame and remove lower bearing steel cup

Special tools:

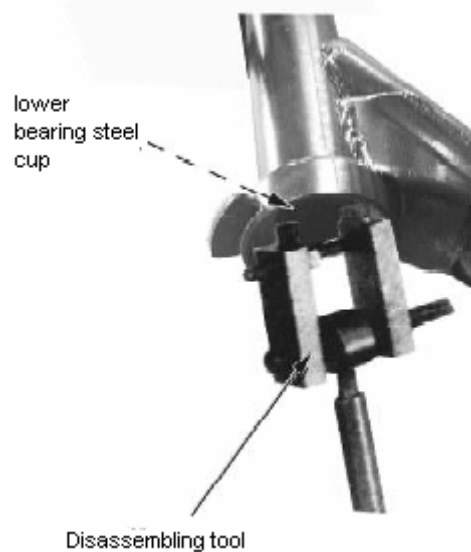
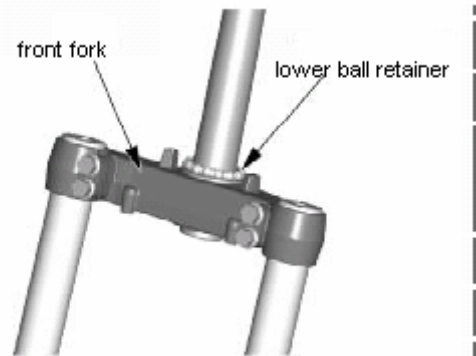
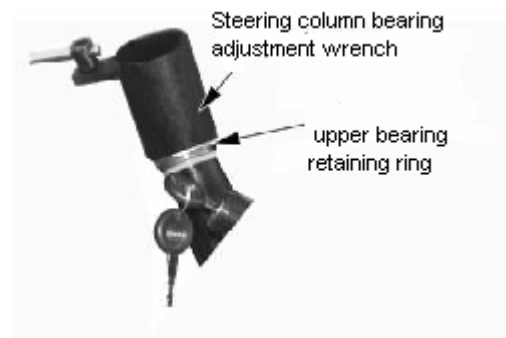
Bearing disassembling tool modular 519-922-050000

Rotor puller 519-922-050010

Disassembling tool shaft 519-922-050003

Disassembling tool weight 519-922-050004

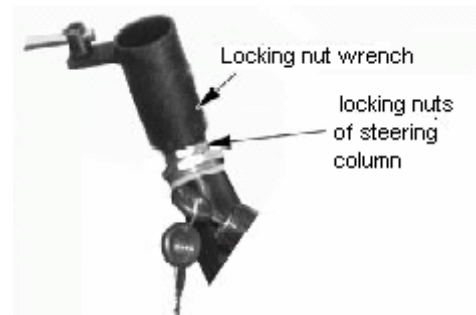
13 Front wheel, braking, suspension and steering system



Front fork

Disassembly

- Remove header board (→ 2 - 8)
- Remove front wheel (→ 13 - 3)
- Remove front mud guard (→ 2-8)
- Remove front damper (→ 13-9)
- Remove handlebar (→ 13-13)
- Remove the locking nuts of steering column



Erection

Make assembling in the reverse sequences of disassembling

Notes:

1. Tightening torque of locking nut of handlebar 50~ 60N· m
- 2 . Correctly thread the main cable assembly, throttle control cable, brake fluid tube, cables and wires as per the diagram.
(→Chapter 1)
3. Correctly insert each plug into corresponding socket without any loosing or dropping off
- 4 .At fixing the throttle control cable, pull out its anti-dust cap, add several drops of lubricating oil into the wires, forwards-backwards pull the cable for several time to make the lubricating oil enter the cable and finally tighten locking nut 1 and locking nut 2.
- 5 . At fixing the rotating handle of throttle, coat grease on its inside and its fitted slide face and the handlebar.
6. At fixing the left and right rear view mirror, please note that the left rear view mirror is right thread and the right rear view mirror is left thread.



Braking pump

Disassembly

Remove the left and right rear view mirror. (→ 1 3 - 1 2)

Remove handlebar front guard combination. (→ 1 3 - 1 0)

Remove handlebar rear guard combination. (→ 1 3 - 1 1)

Remove bolt 1 and braking wire connector

Remove left braking pump

Remove the right braking pump with the same way

Notes:

- 1 Not suspend the braking pump on the brake hose .
- 2 In order to prevent air from entering hydraulic system due to up-side-down, the braking pump shall be kept at the mounting position and fixed on the handlebar.

Erection

Make assembling in the reverse sequences of disassembling

Notes: Fix the braking pump with the “UP” on the mounting base mark on the mounting base upwards

Align the limiting column of mounting base with the positioning hole of the handlebar and fix the bolt.

Handlebar

Disassembly

Remove the left and right rear view mirror (→ 1 3 - 1 2)

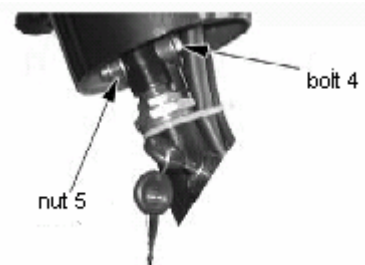
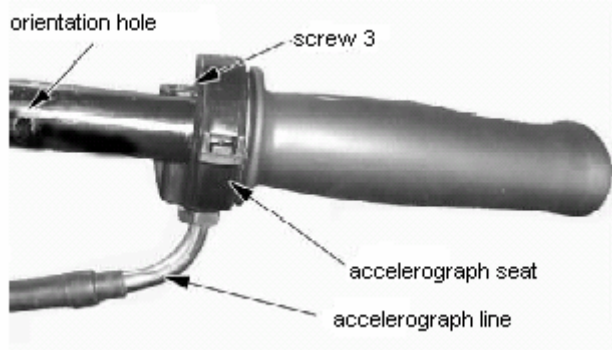
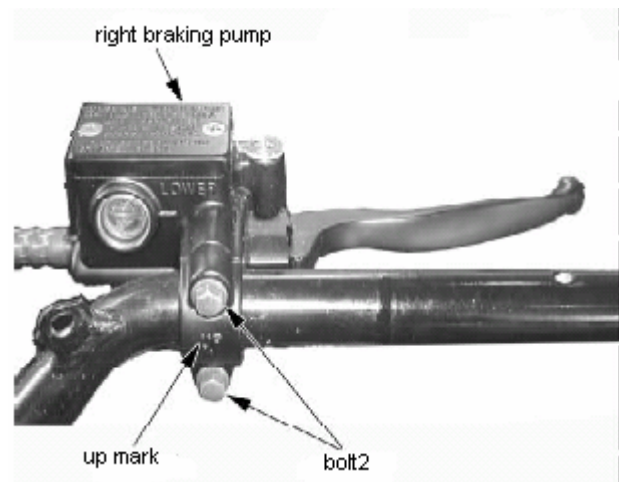
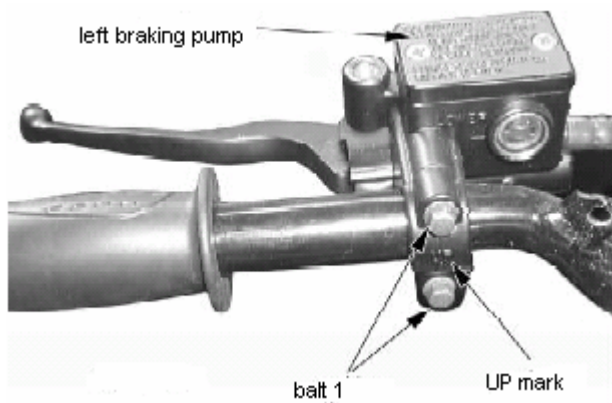
Remove handlebar front guard combination. (→ 1 3 - 1 0)

Remove handlebar rear guard combination. (→ 1 3 - 1 1)

Remove the left and right braking pump. (→ 1 3 - 1 3)

Remove screw 3, and take out throttle base, throttle cable and rotating handle of throttle.

Remove nut 5, bolt 4 and take out handlebar.

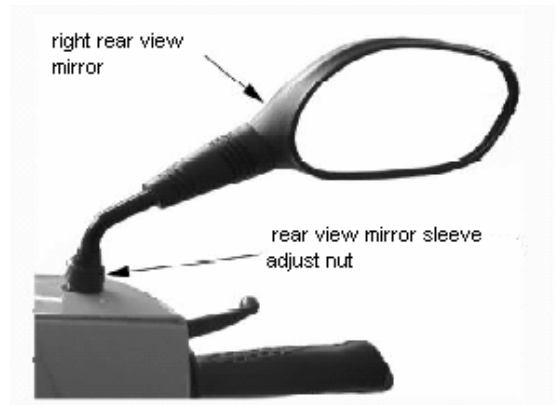


Rear view mirror

Disassembly

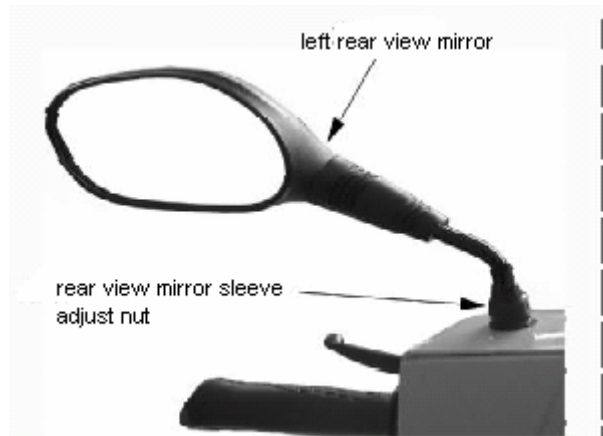
Pull out rear view mirror sleeve, counterclockwise loose the nut and take out the left rear view mirror through counterclockwise rotation.

Pull out rear view mirror sleeve, clockwise loose nut and take out the right rear view mirror through clockwise rotation.



Erection

Make assembling in the reverse sequences of disassembling
1 3 Front wheel, braking, suspension and steering system



Handlebar rear guard combination

Disassembly

Remove handlebar front guard combination (→ 13-10)

Remove self-taping screw 1 and self-taping screw 2

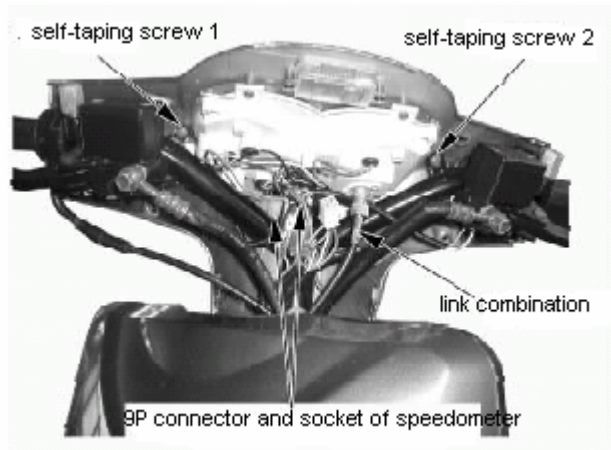
Remove screw 3

9P Remove connector and socket of speedometer

Remove link combination and the connection of speedometer

Remove 5-switch connector

Remove instrument and handlebar rear guard



Erection

Make assembling in the reverse sequences of disassembling



Erection

Fix damper

Fix sealing cap and sealing ring of the damper

Tighten it with specified torque.

Torque: 50N·m (5.1kgf·m)

Fix locking bolt 3 of damper and tighten it with specified torque

Torque: 40-50N·m (4.1-5.1kgf·m)

Fix front wheel (→ 13-3)

Fix brake caliper combination

Insert the brake caliper onto brake cable disk, place bolt 2, and tighten the brake caliper combination at specified torque.

Torque: 40 - 50N·m (4.1-5.1kgf·m)

Place bolt 1 and fix front brake tube combination.

Handlebar

Handlebar front guard combination

Disassembly

Remove the left and right rear view mirror (→ 13 - 12)

Remove two self-taping screws 1 (left and right) for handlebar rear guard

Remove two screws 2 (left and right) for handlebar rear guard

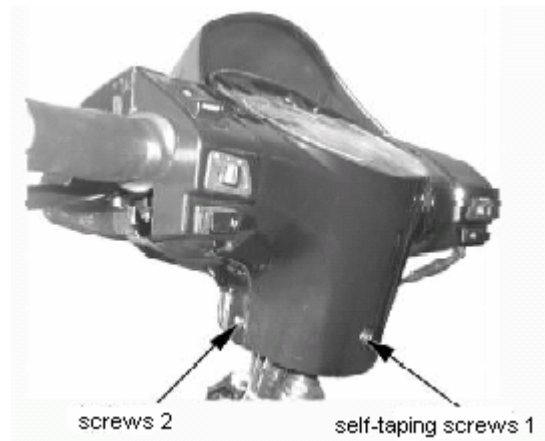
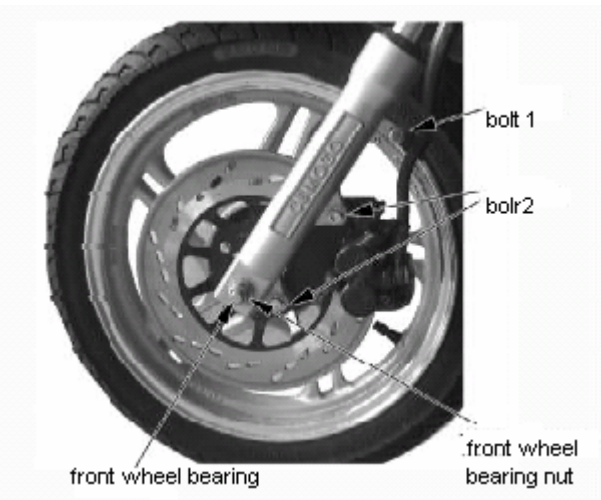
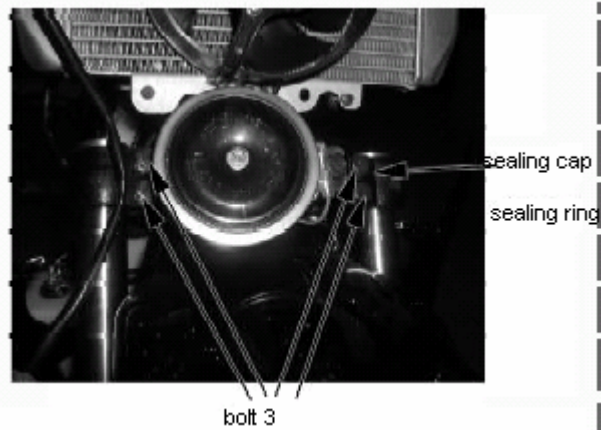
Withdraw 4P connector of headlamp

Remove handlebar front guard and headlamp.

Erection

Make assembling in the reverse sequences of disassembling

13 Front wheel, braking, suspension and steering system



Front damper

Disassembly

Remove front wheel → (13-3)

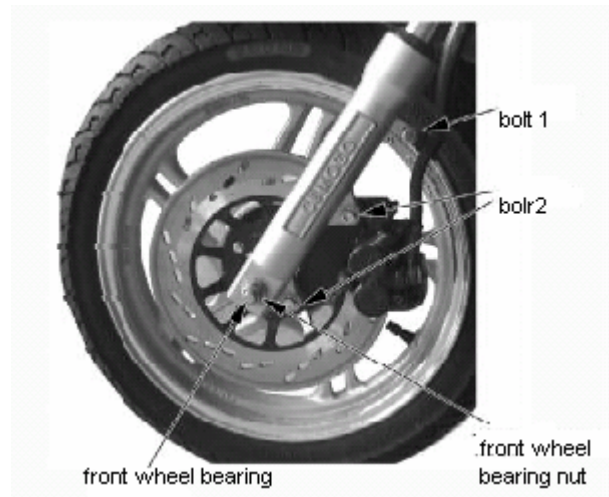
Remove bolt 1 and bolt 2

Remove 4 fixing bolts 3, sealing cap and sealing ring

Remove damper

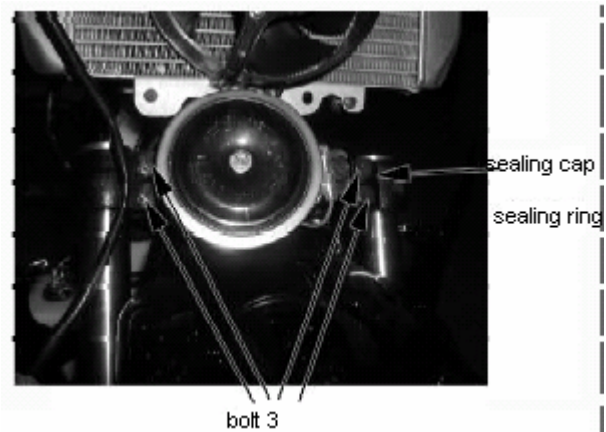
Notes:

Not inverse the damper to avoid flowing out of its fluid



Inspection

Check damper oil leakage, weathered oil seal and damage, and make replacement if case of abnormalities.



Notes:

The sealing ring shall be free of damage.



13 Front wheel, braking, suspension and steering system

Coat grease on the projected portion of counter gear retainer

Coat grease on the meshed portion and slide portion of the counter gear.

Align the groove of the counter gear with the projected portion of the retainer and fix them.

Erection

Erect the front wheel while aligning the braking disk with the brake base

Notes:

Confirm the alignment of counter component and the stop of front fork

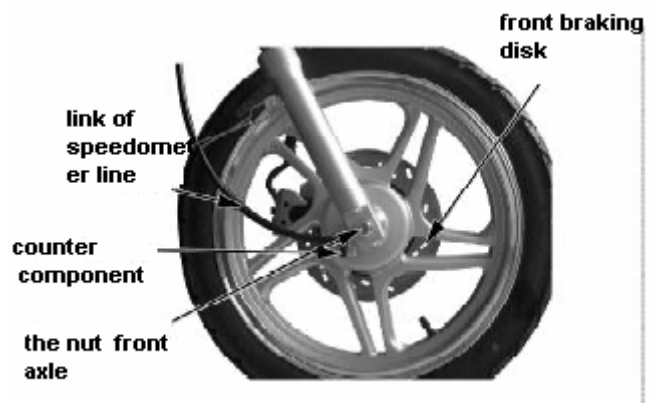
Tighten the nut through the front axle

Torque: 80-90N·m (8.0 - 9.0 kgf·m)

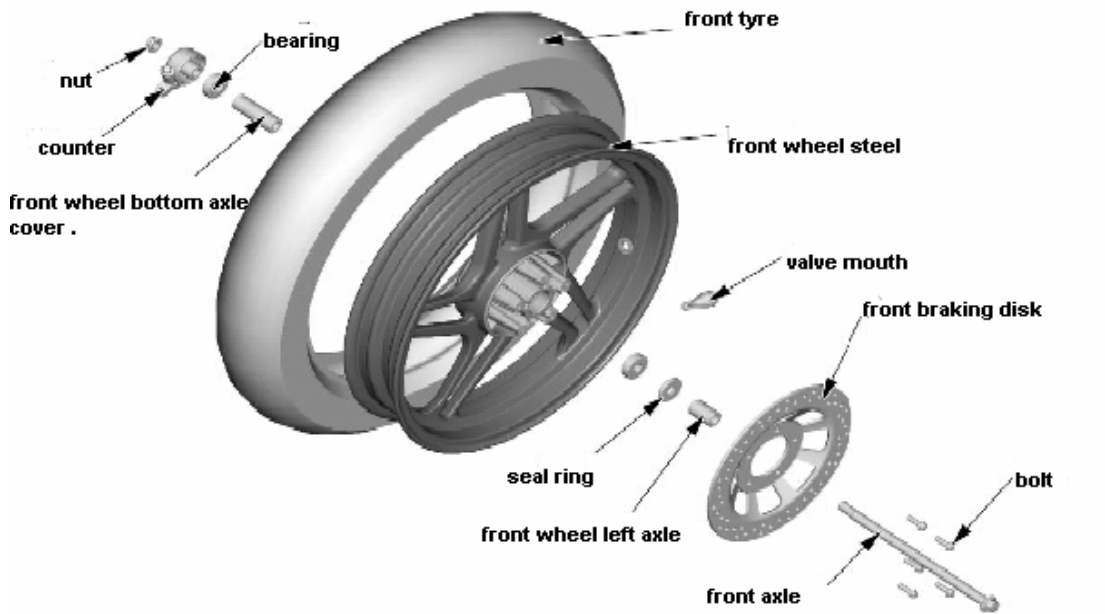
Fix the link of speedometer onto the counter component and tighten the small screw

Torque: 3.5-5N·m (0.35-0.5kgf·m)

13 Front wheel, braking, suspension and steering system



Assembling



Assemble front wheel bottom axle cover .

Coat grease on the rotating portion of the new bearing and at first inert the left bearing

Fix the front wheel bottom axle cover

Insert the right bearing

Special tools:

Press-in tool handle A

519-922-070003

Press-in tool sleeve, 28× 30 519-922-070004

Pilot tools, 12mm 519-922-070005

Notes:

Parallel insert the bearing



13-6

Remove 5 bolts on braking disk and take out the braking disk

Inspection:

Braking disk thickness: Replace disk, in case of thickness below 3mm

Remove bolt 1 and bolt 2 and then take out brake caliper combination

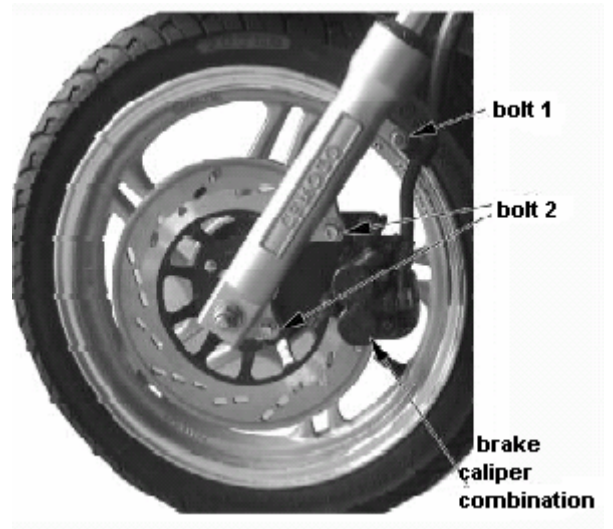


bolts on braking disk

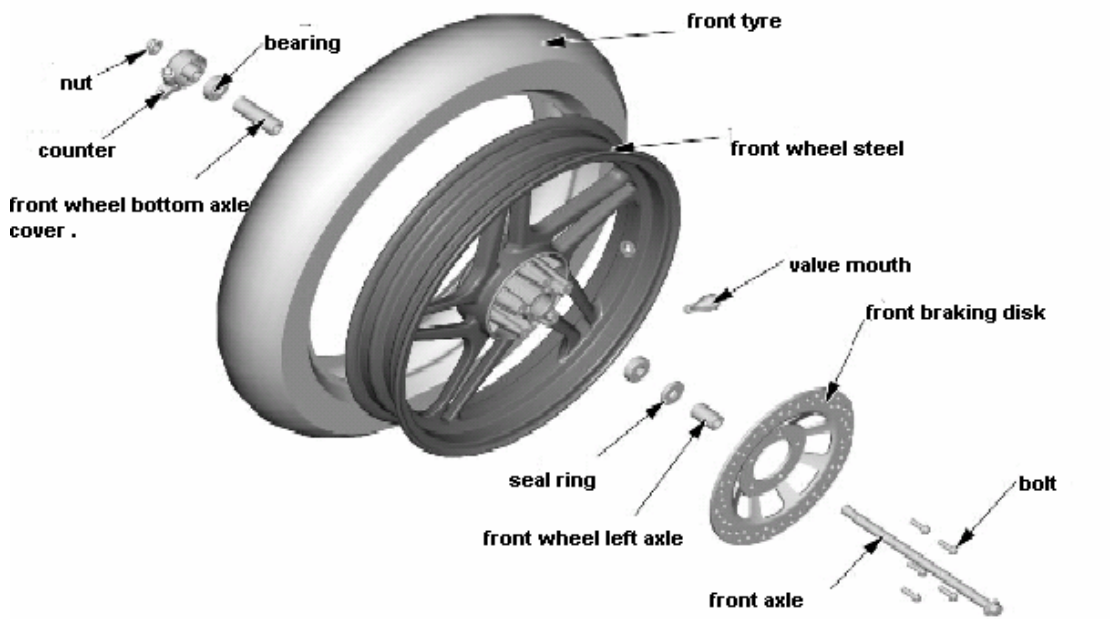
Inspection

brake caliper: Check the brake caliper for crack and oil leakage from tightened locations, and make replacement, if any

1 3 Front wheel, braking, suspension and steering system



Disassembly



Take out oil seal

Fix the disassembling tool head onto the rim

From back side fix the disassembling tool shaft to the disassembling tool head, and then insert it into and remove the lower bearing.

take out intermediate spacer ring

Special tools:

Bearing disassembling tool shaft

519-922-070001

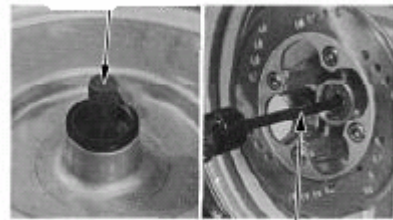
Bearing disassembling tool head, 12mm

519-922-070002

Notes:

Replace the bearings in package. Not use the removed bearing.

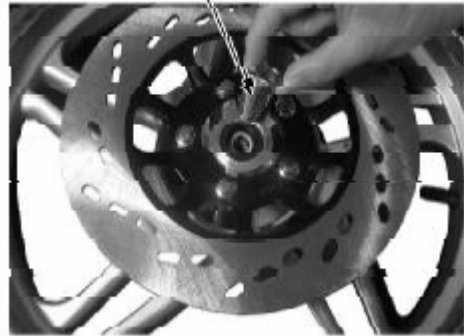
Bearing disassembling tool head



Bearing disassembling tool shaft

Take out left axle cover off front wheel from left side of front wheel

left side of front wheel axle cover



Inspection

Axle

Place the axle on the V-shaped pad and measure its run-out with micrometer

Service limit: 0.2mm

Rim

Check the rim for damage, deformation and scratch and replace the rim, in case of abnormality

Slowly rotate the wheel and measure the run-out of the rim with micrometer

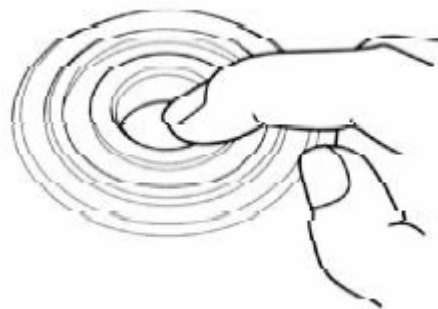
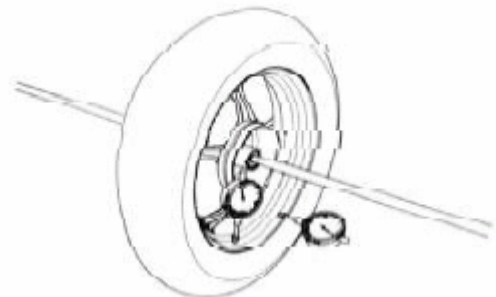
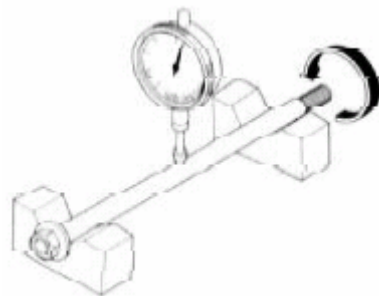
Service limit: Axial: 2.0mm

Radial: 2.0mm

Wheel bearing

Rotate the bearing cone with finger, check it for free and steady rotation and check for loosening when it is erected onto the hub.

In case non-free or unstable rotation, abnormal sound or shaking, replace new one.



Notes:

Replace the bearings in package (left and right bearing)

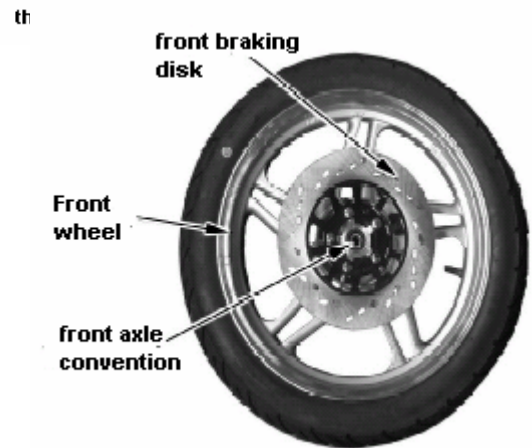
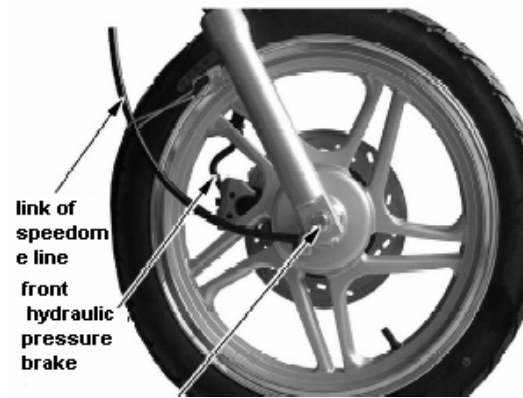
1 3 Front wheel, braking, suspension and steering system

Front wheel

Disassembly

Lift the frame with jack, raise the front

wheel, unscrew the front axle nut, withdraw front axle, pull out the braking disk from the brake caliper, and remove front wheel.



Take out counter



Diagnosis of Error s

Heavy handlebar

- Excessively tightening of threads of upper portion
- Damage or wearing-out of steering bearing
- Damage, wearing-out, or stepping of inner and outer bearing race
- Deformation of steering column
- Low tire pressure
- Wearing-out of tire

Loosing of handlebar

- Damage or poor-tightening of steering bearing damage
- Unmatched left damper and right damper
- Deformation of front axle or skew of tire
- Deformation of frame
- Wearing-out of tire or sidewise wearing-out of tire
- Shaking of wheel bearing
- Shaking of fixing portion of engine (→ Chapter 7)

Running-out of front wheel

- Deformation of rim
- Poor wheel bearing
- Poor tire
- Improper wheel balance
- Poor fixing of surrounding of axle

Non-free rotation of wheel

- Poor wheel bearing
- Bent front axle
- Drag of braking

Excessively soft front suspension

- Weakening of elastic force of front damper
- Too low tire pressure

Excessively hard front suspension

- Bent front damper
- Excessively high tire pressure

Abnormal sound from front damper

- Poor front damper
- Loosing of tightened locations of damper

Poor braking effect

- Poor adjustment of the brake
- Stain or damage of surface of braking disk
- Wearing-out of skid

Special tools

Bearing disassembling tool shaft	07746-0050100
Bearing disassembling tool head, 10mm	07746-0050200
Press-in tool handle A	00749-0010000
Press-in tool sleeve, 28 × 30	07946-1870100
Pilot tools, 10mm	07746-0040100
Locking nut wrench	07916-KM10000
Adjustment wrench of steering column bearing	07SMA-GBC0100
bearing disassembling tool modular	07JAC-PH80000
Rotor puller	07JAC-PH80100
Disassembling tool shaft	07JAC-PH80200
Disassembling tool weight	07741-0010201
Erecting tools A for steering column bearing race, 27× 47mm	07YMF-GEE0100
Erecting tools B for steering column bearing race, 30× 47mm	07YMF-GEE0200
Assembling tool shaft	07VMF-KZ30200

13 Front wheel, braking, suspension and steering system

Maintenance information.....13-1	Front damper..... 13-9
Diagnosis of Error s.....13-2	Handlebar..... 13-10
Front wheel..... 13-3	Front fork..... 13-15

1 3 Front wheel, braking, suspension and steering system

Maintenance information

Notes during operation

Notes:

- Only after the frame is surely supported on the ground, may the front wheel and suspension system be maintained.
- The lighting, instrument and switches shall be maintained as per Chapter 18.
- The wheel shall not be excessively applied with force. Cares shall be taken not to damage the wheel.
- In order to protect the rim from damage, the tire shall be assembled on or disassembled from the rim with special tire rod and rim protector.

Maintenance basis

Item		Standard	service limit
Front wheel	Bending of front axle	---	0.2mm
	Running out of rim	Longitudinal	0.8mm
		Lateral	0.8mm
	tyre	Residual groove	---
tire pressure		200kPa (2.0kgf / cm ²)	---
Front brake	Gap of braking handle	10- 20mm	---

Tightening torque

- Set nut of handlebar 55 N· m (5.6kgf· m)
- Nut of front axle 80 N· m (8.1kgf· m)
- Set bolt of front damper 40 N· m (4.1kgf· m)

Maintenance information.....14-1	Rear fork..... 14-4
Error diagnosis.....14-2	Rear bumper..... 14-5
Rear wheel..... 14-3	

Maintenance Information

Notes During Operation

Notes

- Only after the frame is surely supported on the ground, may the rear wheel and suspension system be maintained.
- Must use high quality parts of installing bolt and nut of rear bumper.
- The wheel shall not be excessively applied with force, avoiding the wheel damaged.
- In order to protect tire bead, tires shall be assembled on or disassembled from tire bead with special tire rod and tire bead protector.

Item		Standard	Operation limit
Rear wheel	Running out of tire bead	Longitudinal	—
		Lateral	—
	Tire	Residual groove	—
		Pressure 225kPa	(2.25kgf / cm ²)
Rear brake	Gap of braking handlebar	10~ 20mm	—

Maintenance standard

Tighten torque

Rear wheel axis nut 140N · m (14.3 kgf · m)

Installing bolt above bumper 55 N · m (5.6kgf · m)

Erect bolt under bumper 30 N · m (3.1kgf · m)

Erect bolt on rear fork 55 N · m (5.6kgf · m)

Error diagnosis

Running out of rear wheel

- Tire bead deformation
- Poor tire
- Over-low tire pressure
- Improper wheel balance
- Poor fixing axle nut of wheel

Excessively soft rear bumper

- Weakening of elastic force of spring
- Oil leaking from rear bumper

Excessively hard rear bumper

- Bent rear bumper
- Excessively high tire pressure

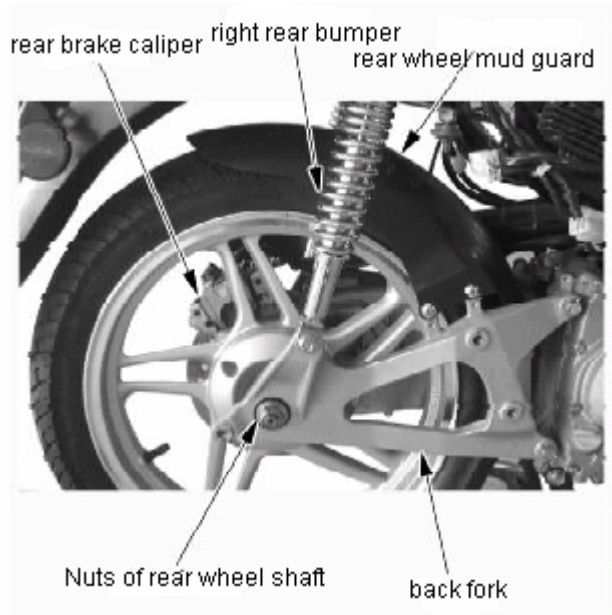
Poor braking effect

- Poor adjustment of the brake
- Stain or damage of surface of braking disc or brake shoe block
- Wearing out of brake shoe block

Rear wheel

Disassemble

Firmly support car body with main bracket,
 Remove rear wheel mud guard (→ 2-12)
 Remove muffler (→ 2-15) ,
 Remove right rear bumper (→ 14-5)
 Remove rear brake caliper (→ 14-6)
 Remove rear fork (→ 14-4)
 Remove rear fork inner axle cover,
 Remove rear wheel



Test

Tire bead

Check the tire bead for damage, deformation and scratch

Slowly rotate the wheel and measure the run out of the tire bead with micrometer referring to page

Replace in case of abnormality

Operation limit: Longitudinal: 2.0 mm

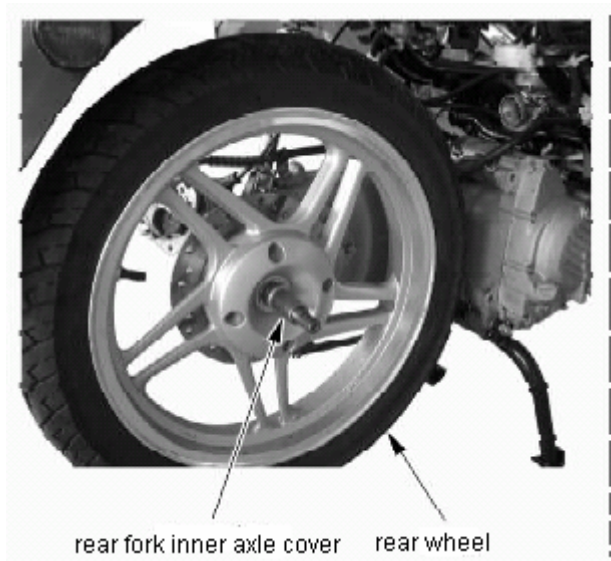
Lateral: 2.0mm

Erection

Make assembling in the reverse sequences of disassembling.

Besmeared with glue at thread and combining surface of rear wheel axis nut, and tighten it with specified torque.

Torque: 140N • m (14.3 kgf • m)

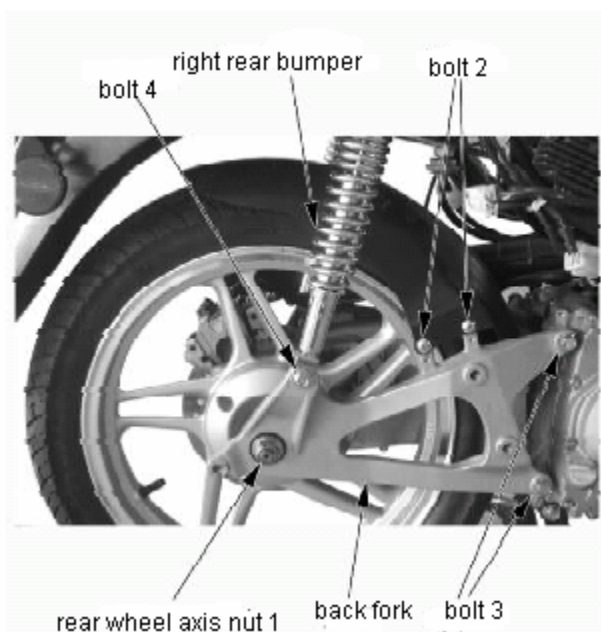


Disassemble rear fork

- Remove front oil seal 1,
- Remove rear oil seal 6,
- Open clip ring 5
- Open bearing 4 with special tool

Test

- Test the bearing rotation is free and whether ball bearing is damaged.
- Replace if damaged.



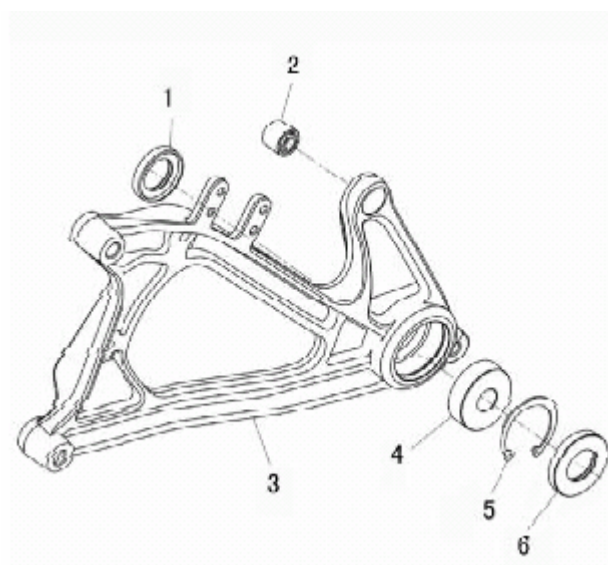
Erection

- Press upper bearing with special tool
- Click upper clip ring 5,
- Install oil seal 1 and oil seal 6,
- Assemble rear fork assembly in the reverse sequences of disassembling, and tightly screw all of bolts and nuts to specified torque.

Rear fork

Disassemble ,

- Remove muffler (→ 2-15) ,
- Remove right rear shock absorber bolt 4,
- Remove rear wheel axis nut 1,
- Remove two bolts 2,
- Remove two bolts 3,
- Take off rear fork assembly.



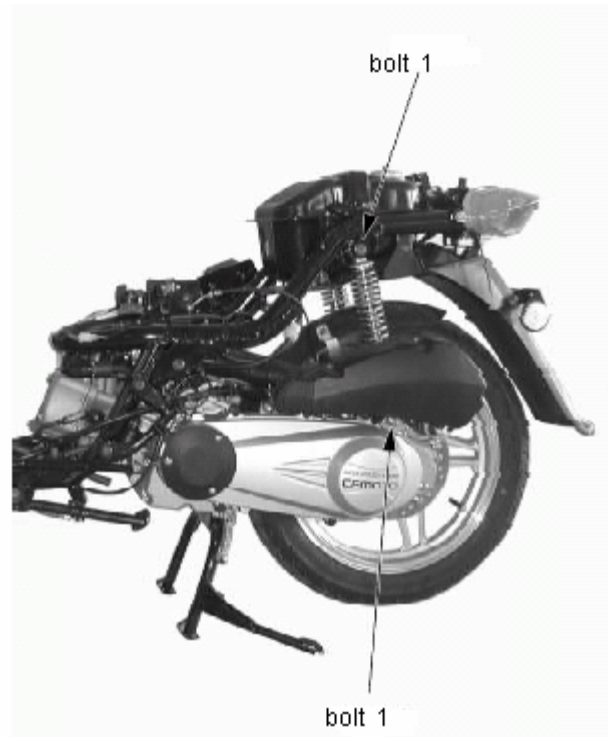
Rear Wheel, Braking, Suspension

Rear Bumper

Left Rear Bumper

Disassemble

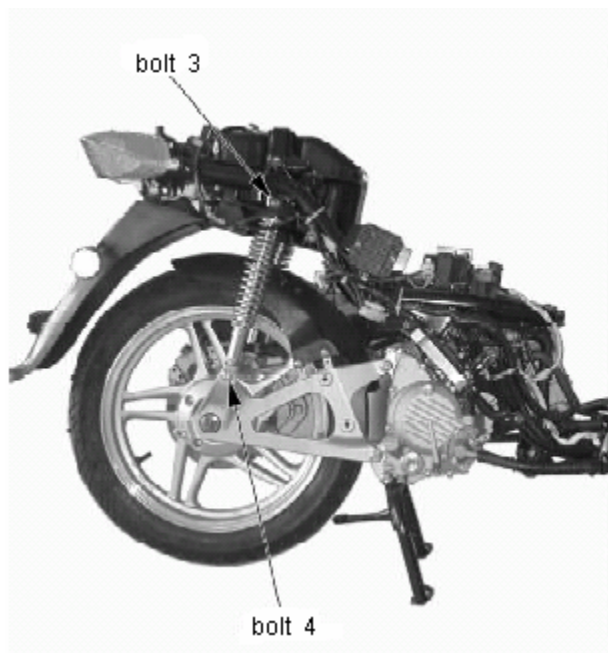
Firmly support car body with main bracket,
 Remove mending cover (→ 2 - 2) ,
 Remove seat mat (→ 2 - 2) ,
 Remove trunk combination (→ 2 - 3) ,
 Remove rear goods shelf (→ 2 - 4)
 Remove rear joining board (→ 2 - 5)
 Remove left defender (→ 2 - 5)
 Remove fixed bolt 1 above left rear bumper,
 Remove fixed bolt 2 below left rear bumper,
 Remove left rear bumper.



Right Rear Bumper

Disassemble

Firmly support body with main
 bracket,
 Remove mending cover (→ 2 - 2) ,
 Remove seat mat (→ 2 - 2) ,
 Remove trunk combination (→ 2 -
 3) ,
 Remove rear goods shelf (→ 2 - 4) ,
 Remove rear joining board (→ 2 -
 5) ,
 Remove left guarder (→ 2 - 5) ,
 Remove right guarder (→ 2 - 5) ,
 Remove muffler (→ 2 - 1 5) .
 Remove fixed bolt 3 above right rear
 bumper,
 Remove fixed bolt 4 below right rear bumper,
 Remove right rear bumper.



Test

Check bumper for oil leakage, aging bush rubber and other scathes. Replace it if abnormality.

Erection

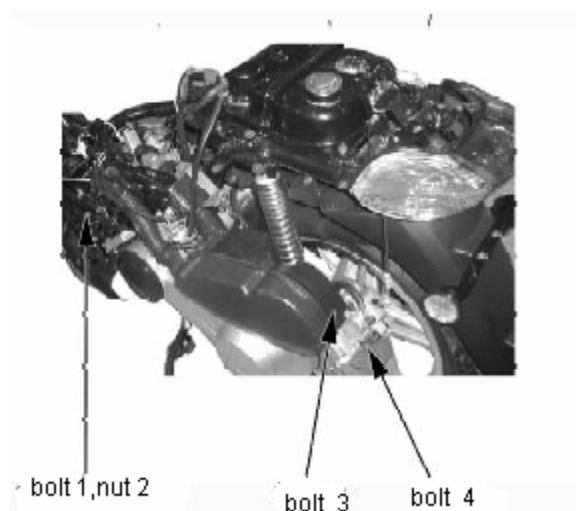
Make assembling in the reverse sequences of disassembling, and tighten bumper installing bolt with specified moment.

Erect fixed bolt above bumper

Torque: 55 N • m (5.6kgf • m)

Erect fixed bolt below bumper

Torque: 30 N • m (3.1kgf • m)



Rear Brake

Rear Brake Caliper

Disassemble

Remove bolt 3 and bolt 4

Remove rear brake caliper combination

Test

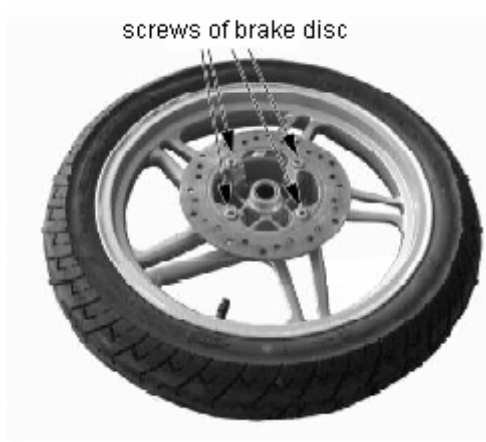
Check the brake caliper for crack and oil leakage from tightened locations and make replacement, if any.

Test brake piece wearing situation (→ 3-6) .

Rear Braking Disc

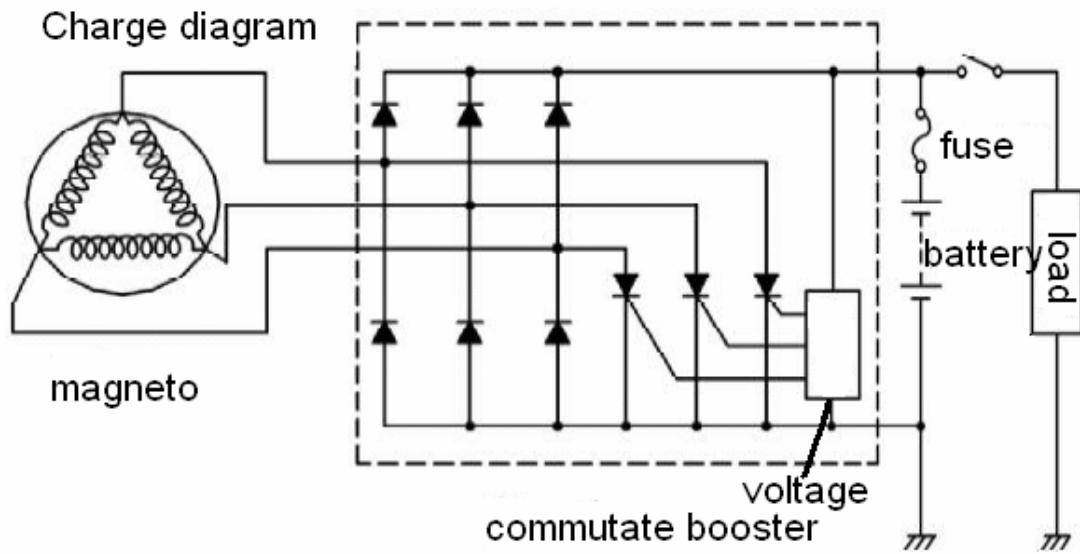
Test

Check the slide surface of braking disc for worn and impaired place. Replace braking disc in time when the thickness is less 3mm.



Setup of charging system	15-1	Test of charging system	15-5
Maintenance information	15-2	Rectifier readjusted	15-6
Error diagnosis	15-3	AC magneto inspection	15-8
Battery	15-4		

Charging circuit diagram



Maintenance information

Notes during operation

Notice

- Generally, no hydrogen is generated during charging. But some gases could be produced on overcharging, hence no fire should be approaching during charging.
- The electrolyte (dilute sulfuric acid) is a strong corrosive solution, it is hazardous to be contaminated, it corrodes clothe, hurt skin and eye, even blindness. Flush with water when contaminated. When it hits eye, flush with water immediately and be treated in hospital. The contaminated clothes may transfer the liquor to the skin , it have to be changed and cleaned thoroughly.

Notice

- The setting and unsetting of plug and connector on the electric element lively, spark may be erupted, the unit, such as the rectifier may be damaged. Hence, it should be carried out under the ignition switch off.
- The charging of the battery should be operated dismounted from the car, but the lid of the battery should not be removed.

Notice

The battery has to be renewed when its service life is ended. The ignition switch has to be off when dismounted the electric parts.

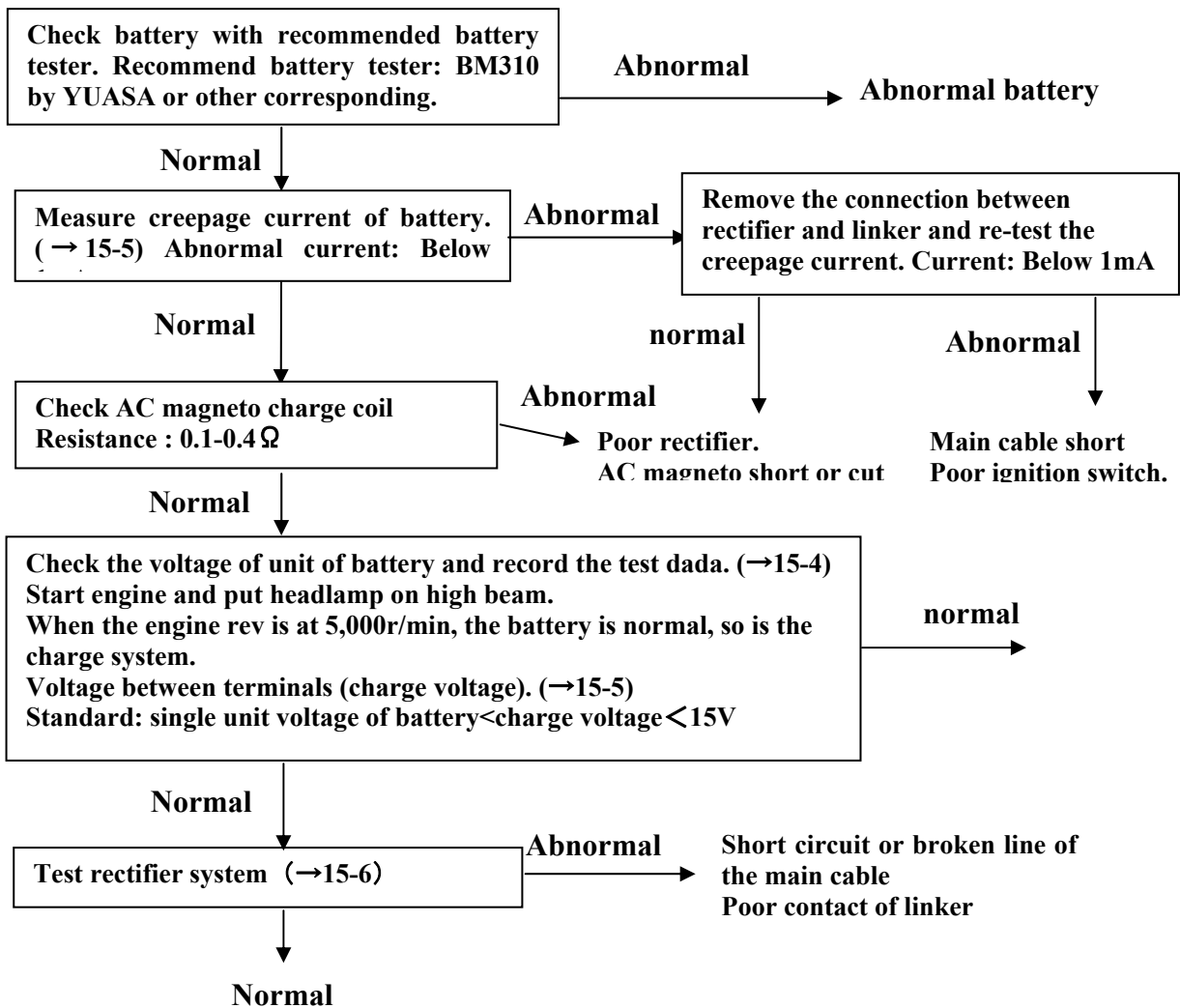
- Before to preserve the battery in the car, the connecting wire of the negative pole has to be removed.
- Quick charge is not a conventional means, it could shorten the service life of the battery.
- The battery will be deteriorated when it is under deep charging and discharging (charging and discharging completely)frequently, or standby under discharging for a long time, making its service life shortened and capacity decreased. The capacity will be decreased after the battery used for 2 or 3 years even under normal conditions. The battery with capacity decreased has raised its voltage after recharging, but its load capacity is poor, it should be renewed.
- Charging the battery conventionally to 12.4V when the open voltage (voltage between terminals)is less than 12.4V.
- The check of the charging system should be carried out according to the sequence of the trouble examination.(→15-3).
- The service parts used in the charging system refers to figure, page 15-9.
- The assembly and disassembly of the AC magneto refers to Chapter 11.
- The check of the battery is carried out according to the instructions of the battery tester.

Reference for inspection

Item		Standard	
AC magneto	Pattern	AC permanent magnetic	
	Output	AC 3-phase	
	Resistance of charging coil(20°C)	0.1~0.4Ω	
Pattern of rectifier		3-phase, ring-type rectifying controllable integrated with stabilizing voltage.	
Battery	Capacity	12V 7Ah	
	Leakage current	Less than 1mA	
	Voltage between terminals	Full charge	12.8V
		Undercharge	Below 11.8V
	Charge current/hour	Standard	0.7A × 5~ 10 hours
Speediness		3.0A × 1.0 hour	

Error Diagnosis

Battery flooding




Battery

Disassembly

Notes

Before operation, must make ignition switch

at “” position.

Take down footstep rubber

Take down the maintenance cover (→2-2)

Take down bolt 1 and bolt 2, as well as the battery press board set.

Loosen the bolt of cathode connection pole, take apart the cathode lead connection of the battery.

Take down connection pole rubber cap and the bolt of anode connection pole.

Take apart the anode lead connection of the battery.

Assembly

Make assembling in reverse sequences of disassembling.

Notes

·After assembling, smear clean lubrication oil on the connection pole.

·After assembling, tightly install the cover on the anode connection pole.

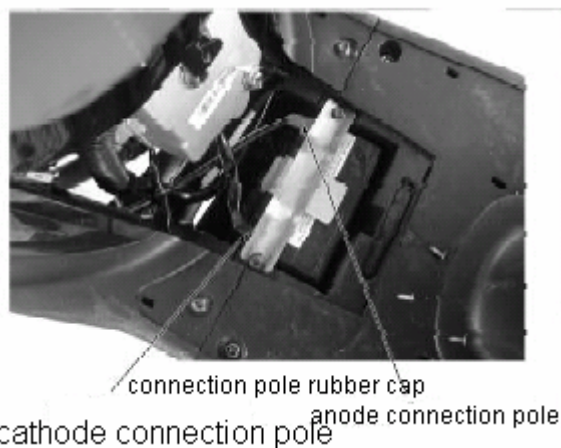
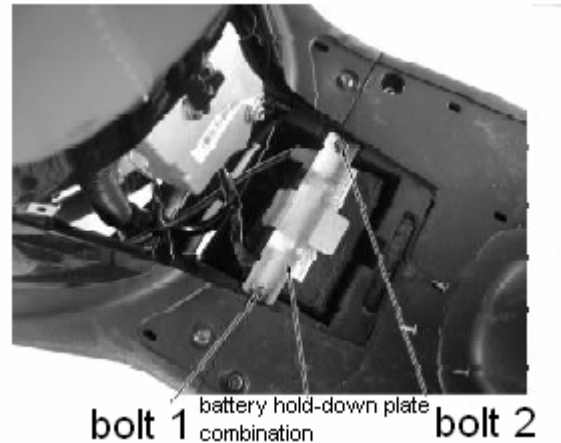
Check

Measure the voltage between battery terminals, examine the measured state.

Full measurement: 12.8V

Shortage: Below 11.8V

Charge up when there's undercharge.



Cautions

When supplementary charging is to be performed after the charging, the voltage between the terminals should not be measured in less than 30 minutes after the charging is completed.

If you test the voltage soon after the charging, the voltage between the terminals will change quite much so that correct measurement cannot be obtained.

Charging of the battery

Cautions

Generally, no hydrogen is generated during charging. But some gases could be produced on overcharging, hence no fire should be approaching during charging.

Remove the battery (refer to the aforesaid contents)

Connect the positive lead of the charger to the positive terminal of the battery.
 Connect the negative lead of the charger to the negative terminal of the battery.

Charging current x time:

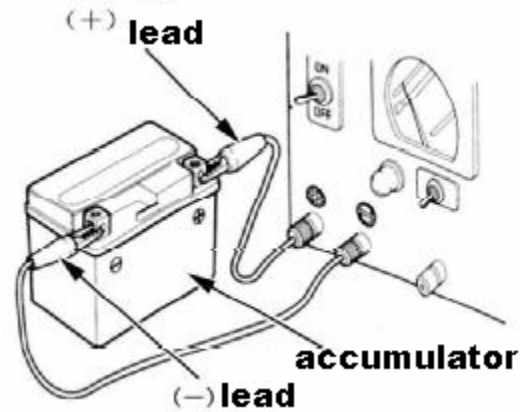
Standard: 0.7A × 5~ 10 hours,

Fast charging: 3.0A x 1.0 hour

Cautions

Prevent the battery liquid temperature from being higher than 45°C. When the temperature is too high, reduce the current.


Charging with fast speed may cut down the life span of the battery or even destroy it. Generally not use fast charging except for urgency.



Inspection of the charging system

Inspection of the charging status

Remove the battery (→15-4), and install a battery with full voltage.

Set the ignition switch to the “” position.

After the engine is warmed up, connect the voltage meter in between the terminals of the battery.

Cautions

When testing, protect the circuit from short circuit.

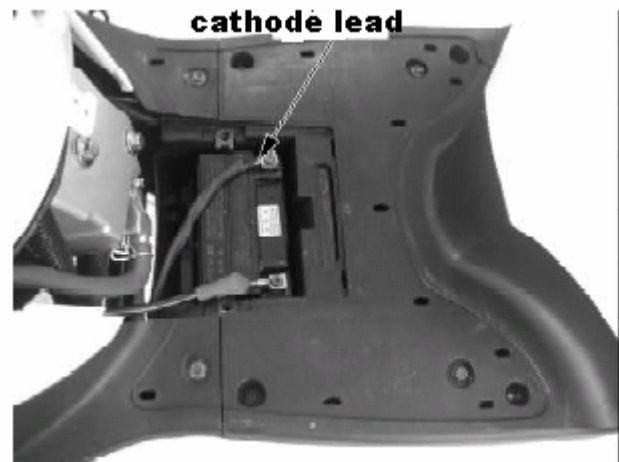
Over-voltage may be resulted when current flows through the terminals that are being connected or detached thus causing the damage of the multi-meter and other electric parts. Be sure to start operation only after the ignition switch is closed.

Test should be made to battery with full voltage.

Start the engine with high-beam headlamp on. Raise the engine rev gradually until a specified speed (5,000 rpm), the value shall be normally in between 13.5-15V. Measure the voltage between the terminals of the battery.


Standard:

The voltage of single unit of battery < charging voltage < 15V (at 5, 000rpm)




Leaking test

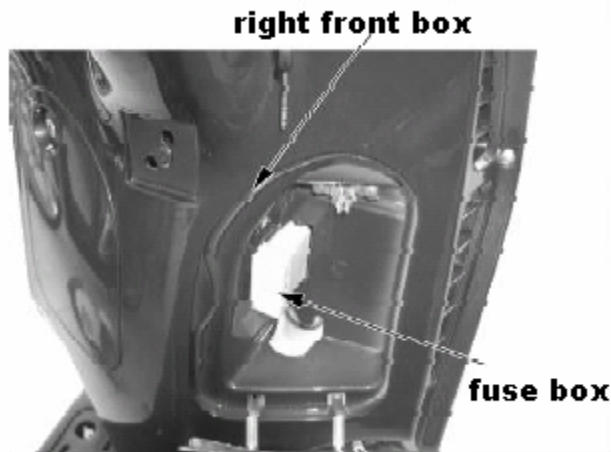
Remove the maintenance cover (→ 2-2)

Set the ignition switch to “” position, and then remove the negative lead from the battery.

Remove the fuse.

Link the current meter in between the negative terminal and the negative lead of the battery.

Measure the leak current with the ignition switch being under the “” state.



Cautions

- The fuse of the multi-meter will be burned if the current to be measured is out of the measuring range. Therefore, the current should be measured from a large measuring range and to a smaller one step by step.
- The current should be measured with ignition switch closed. Note that when a smaller current range at mA level is selected, the fuse of the multi-meter will be burned out by large current.



Leaking current: Less than 1mA

When a leaking current is bigger than the specified one, there must be some abnormality existing in the circuit.

In order to locate the abnormality, you should test the current value while detach the connecting point of the connector according to a proper sequence.

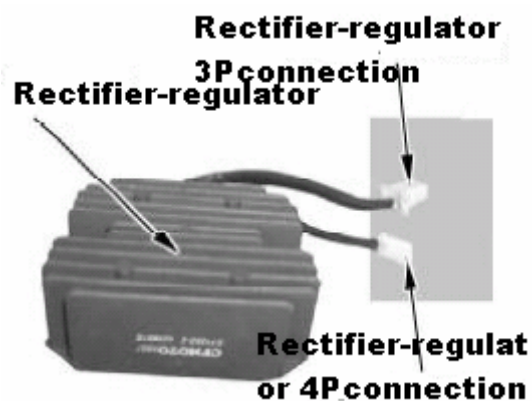
Rectifier-regulator

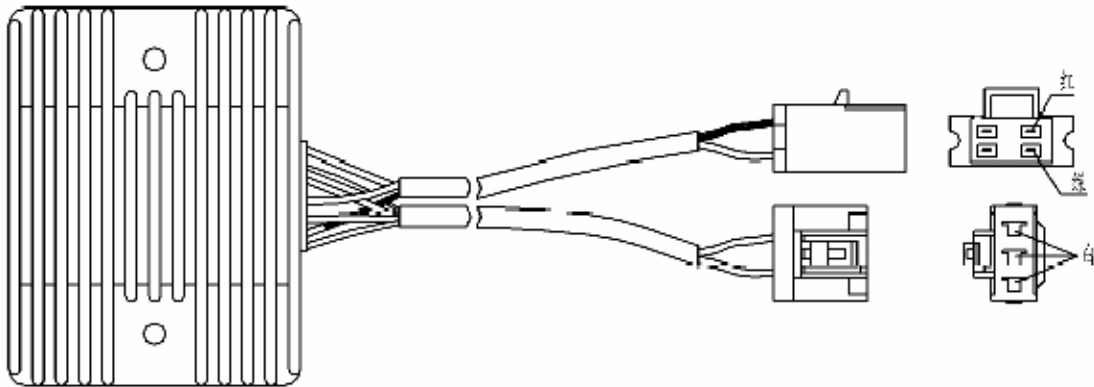
Check System

Cautions

- The said measure can be done without removing the AC magneto from the engine.
- Remove the left protective board (→ 2-5)
- Remove the right protective board (→ 2-5)
- Remove the rectifier-regulator (→ 15-7)

Detach the linking of the two connectors of the rectifier-regulator





Rectifier-regulator

Measure the resistance between the individual terminals by a multi-meter as shown in the table below. In case one of the values falls out of the specified range, replace it with a new one with the multi-meter switched to the diode scale.

Cautions

In case the probe is not connected while the multi-meter shows a reading of less than 1.4V, then replace the battery of the meter.

		Red [Ⓞ]					
		Yellow	Yellow	Yellow	Green	Red	Black
Black [Ⓞ]	Yellow		∞	∞	400-500	∞	∞
	Yellow	∞		∞	400-500	∞	∞
	Yellow	∞	∞		400-500	∞	∞
	Green	∞	∞	∞		∞	∞
	Red	400-500	400-500	400-500	750-850		∞
	Black	∞	∞	∞	∞	∞	

Check whether the connector terminal is loose, bent, rusted or breaking off

Proceed to check the main cable end of the two connectors of the rectifier.

Items	Standard
the battery wire (red)	Battery voltage exists between the red terminal (+) of the battery wire and the grounding wire of the car body.
the grounding wire (green)	The green terminal shall be conductive to the grounding wire of the car body
the wire of charging coil (yellow, yellow, yellow)	The resistance value between one yellow terminal to another shall be: $0.1 - 0.4 \Omega$ (at 20°C)
the exit leads of the ignition switch (black)	The black exit leads of the ignition switch shall be conductive to black terminal

Disassembly

Remove the left protective plate. (→2-5)

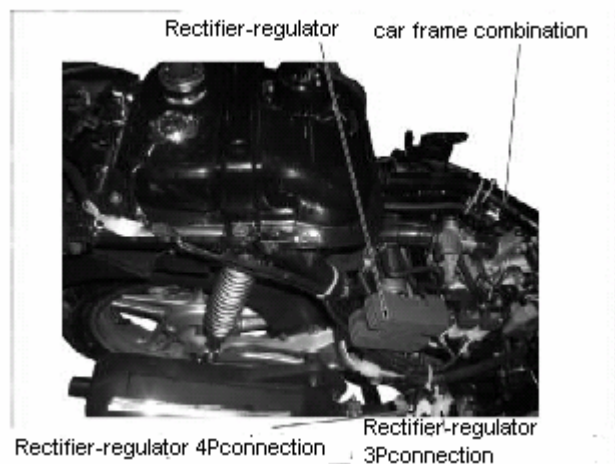
Remove the right protective plate. (→2-5)

Remove the bolt 1 and 2.

Dismantle the linking of the 2 rectifier connectors.

Remove rectifier readjusted.

Make assembly in the reverse sequences of the dismantling procedures.



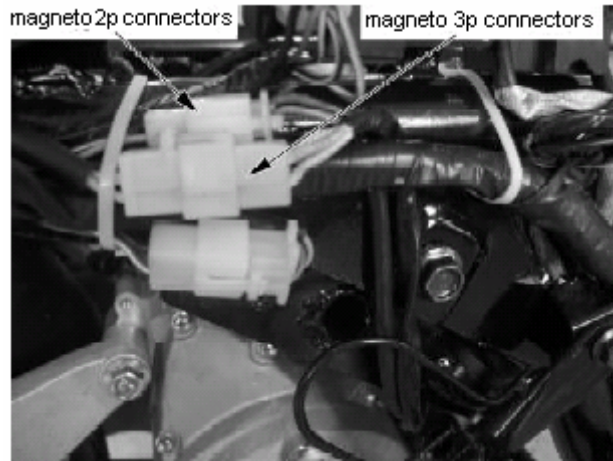
Cautions

All the guy cable, cable and hose should be laid as per the relevant wiring schematic drawings. (→ Chapter 1)

AC magneto test

Remove the left protective plate. (→2-5)
 Remove the right protective plate. (→2-5)

Dismantle the AC magneto (yellow, yellow, yellow), triggering coil (black/white, green) and the link of the connector.



Resistance of the magneto coil

- Measure the resistance between the 3-phase magneto stator coils.
- If the resistance value is out of the specified range, replace with a new stator coil.
- Check whether the insulation is good between the stator coil and the stator center.
- If the resistance is under $1M\ \Omega$, replace with a new stator coil.

With multi-meter switched to $1X10\ \Omega$:

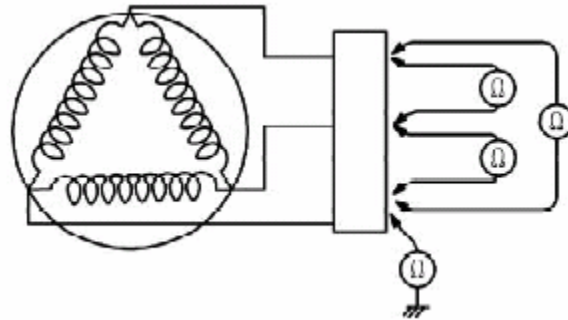
Resistance of the magneto coil:
 $0.2-0.5\ \Omega$ (yellow-yellow)

With multi-meter switched to $1X100K$

Ω :

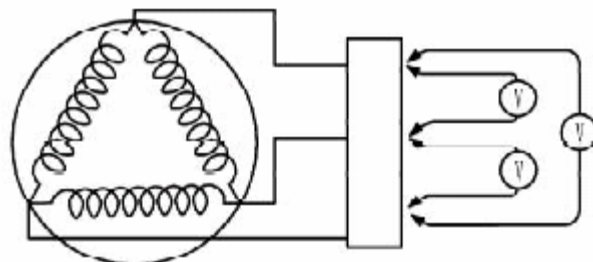
Insulating resistance:

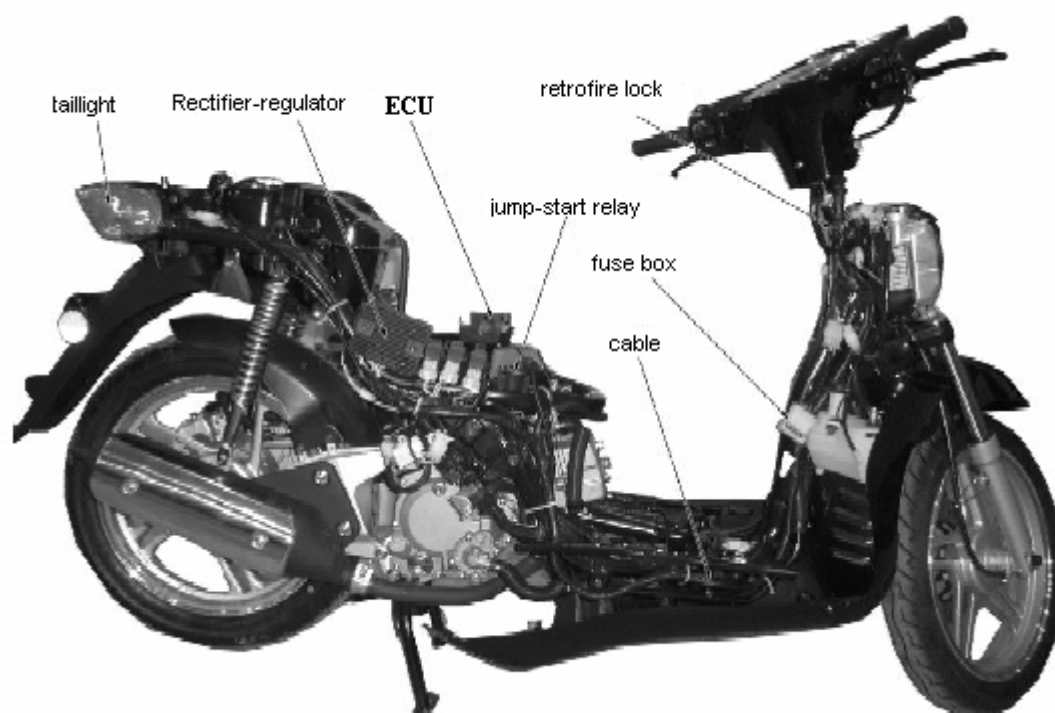
$\infty\ \Omega$ (yellow-ground)



Performance of the magneto under no-load condition

- Start the engine and keep at a running speed of 5000r/min.
 Use a multi-meter to measure the voltage between the three output wires of the magneto stator
- If the measured voltage is under the specified value, use a new magneto
 With multi-meter switched to AC scale
 Voltage value of the magneto under no-load condition: $> 140V$ AC at 5000r/min.





Maintenance Information1.....6-1	Trigger coil1.....6-6
Error diagnosis.....16-3	Ignition coil1.....6-6
Ignition system examination.....16-4	Ignition System configuration1.....6-7

Maintenance Information

Notes during operation

Notes

Exhaust contains toxic ingredients. Do not run the engine in closed places or places with poor ventilation for a long time.

- Check ignition system by order according to the contents in the error diagnosis table.
- Refer to the legends for the configuration of the parts of ignition system. (→ 16 - 7)
- ECU controls the ignition device of the unit, therefore the ignition system automatically adjusts the ignition period.
- You should pay great attention to ECU. It may fail when it falls onto the ground or is under strong impact. In addition, if you disassemble or assemble the connector or joints during the time when the current is flowing through, overvoltage will be generated on ECU and thus cause the damage of internal circuit of the ECU, therefore you must conduct operations after turning off the ignition switch.
- Failures of ignition system are mostly caused by poor contact of connectors and joints, therefore you should check up whether the connectors and joints are contacted or not before maintenance.
- Spark plug with appropriate calorific value must be used. Using inappropriate spark plug may cause poor operation, or damage of the engine.
- Refer to Chapter 18 for switch examination.

Maintenance standard

Item	standard	
Ignition method	ECU electronic control unit ignition	
spark plug	NGK/TORCH	
	Standard	DPR7EA-9/D7RTC
	Choosing	
	Spark plug gap	0.8 - 0.9mm
Ignition period	Maximum advance angle	43°
Peak voltage	Ignition coil	≥ 1000V
	pulse generator	≥ 1.5V

Special tools:

Peak voltage pickup 07HGJ— 0020100

(Used together with digital multi-meter sold on the market, whose input resistance is larger than 10MΩ / DCV)

Ignition system

Error diagnosis

- Cannot start engine: First use diagnostic meter to look for the error code (→ Chapter 20), then check up whether the oil circuit and the gas circuit are in normal condition or not. If they are both normal, then you should check the ignition system.

- Ignition system error diagnosis : Conditions of ignition system are as follows:

1. Spark examination: The procedures are: Remove the spark plug; disassemble the spark cap; put the high-voltage soft cable head to ground to check spark flashover. If the spark flashover is over 8mm, it is in normal condition. If it is less than 5mm, the spark is weak; If the spark is normal, you should check the spark plug. You can use replacement method to check it.

Abnormal conditions of spark plugs are as follows:

(1) The spark plug is wet. This belongs to drowned spark plug phenomenon. The reason is that the concentration of the mixed gas is too high. You can turn off the oil circuit first, and ignite several times. (2) The spark plug is black and is seriously coked. The reason is that the concentration of the mixed gas is too high, or the engine oil leaks into combustion chamber. You can clean and grind the spark plug to make it back to normal. (3) Insulator of the spark plug cracks and gas leaking occurs.

(4) Short circuit happens between the two electrodes of the spark plug, or the negative electrode and the thread, the positive electrode _____ and the input end are not connected.

2. Abnormal conditions of the spark plug are of two cases: no spark or weak spark.

In the case of no spark, you can check the following:

(1) Check the ignition coil. You can use replacement method or measurement method. As for replacement method, use multi-meter to check:

① Measure the resistance of primary rolling thread, it is generally around 1Ω ; ② the resistance of secondary rolling thread, its normal value is around $4.2K$; ③ damping resistance, its normal value is around $5K$.

(2) Check ECU, replacement method is generally used. Check up whether ECU fails or not.

(3) Check ignition power. The voltage between blue/black wire and ground (green) wire should be 12 V. If not, you can check from the positive electrode of the battery to the blue/black end in turn.

(4) Cable test: You mainly check up whether the connections from the trigger signal input (connected to the output of the trigger of magneto) to the output (connected to ECU terminal), and to the ignition output, i.e., black/yellow wire, are good or not.

(5) Check flameout switch, when it is switched to the IGNITION position, the black/white wire and the green wire should be disconnected.

In the case of weak spark, you can check the following:

(1) Check ECU by using replacement method.

(2) Check up whether partial short-circuit error happens in the secondary rolling thread of the ignition coil or not, or whether deterioration happens in the damping resistor.

Ignition system examination

Note:

- If the spark plug does not ignite, first you should make sure that no abnormal conditions such as falling off, loosening and poor contact happen among all parts of the circuit, then measure each peak voltage.

- Different kinds of multi-meters have different input resistances, therefore the values they indicate are also different. We

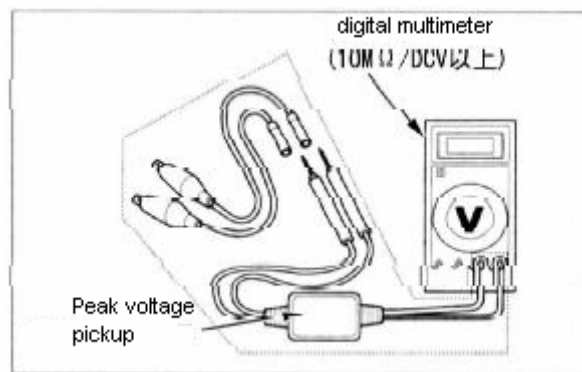
cannot measure the correct value. You must measure the voltage with a digital multi-meter whose input resistance should be larger than $10\text{M}\Omega$ / DCV.

Connect the peak voltage pickup to the digital multi-meter.

Special tools:

Peak voltage pickup 519-922-150000

(Used together with digital multi-meter sold on the market, whose input resistance is larger than $10\text{M}\Omega$ / DCV)

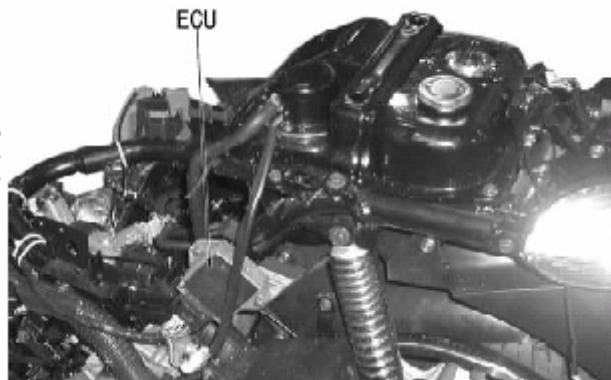


Ignition system

Trigger coil

Note:

- Measure the coil after connecting all circuits correctly. If falling off happens in circuit connection, you cannot measure the coil correctly.
- You must check the coil under the condition that there is compression pressure in the cylinder, and the spark plug and its cap are installed normally. If you measure the coil with the spark plug disassembled, the peak voltage will rise.



- Disassemble left guard plate. (→ 2-5)
- Disassemble right guard plate. (→ 2-5)
- Disconnect ECU unit connectors.

Connect the probe of peak voltage pickup to the following terminals of the main cable.

Special tools:

Peak voltage of the trigger coil

- Measure peak voltage of the trigger coil by the order described below:
- Connect the multi-meter and the peak voltage adapter according to the right figure:

- + Probe: black lead
- Probe: dark blue lead

Note:

Refer to relevant manuals while using the multi-meter and the peak voltage adapter.

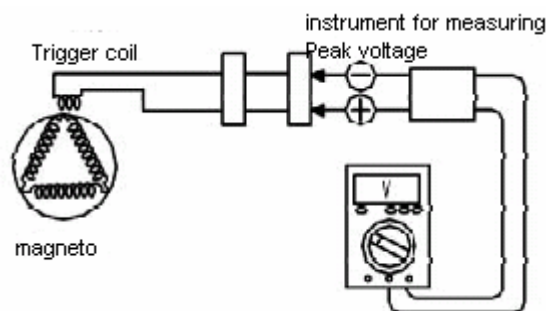
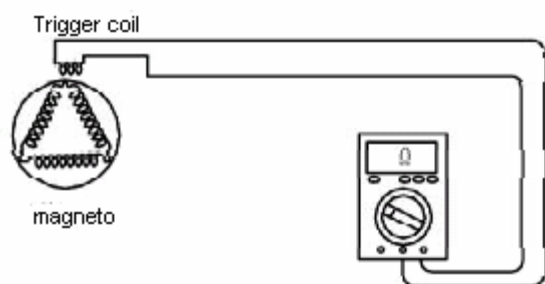
- Switch the shift to zero span, and switch the ignition switch to “ON” .
- Press the START button and let the engine rotate for several seconds, then measure the peak voltage of the trigger coil.

- Repeat the measurement for several times to get the highest peak voltage of the trigger coil.

Switch the multi-meter to V span, AC

Peak voltage of the trigger coil: $\geq 4\text{ V}$

- If the peak voltage of the trigger coil is not within the designated area, replace the coil with a new one.



Disassembling the trigger

Disassemble the connector of AC magneto
 Disassemble the inlet pipe and the outlet pipe of the pump to drain the cooling water.

(→ Chapter 6)

Disassemble the ventilation hose of the crankcase. (→ Chapter 11)

Disassemble the exhaust muffler. (→ Chapter 2)

Disassemble the right-side cover (→ Chapter 11)

Note:

Since the stator is mounted on the side cover, it is attracted by the magnetic force of the rotor.

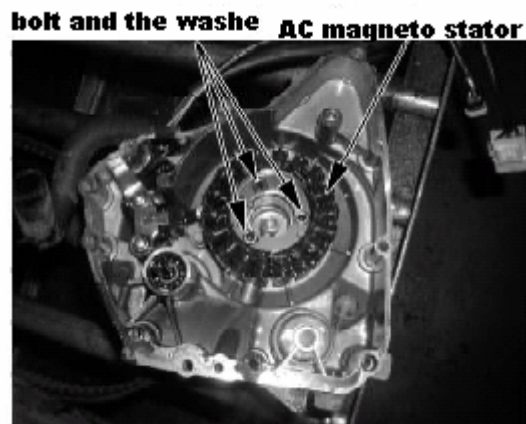
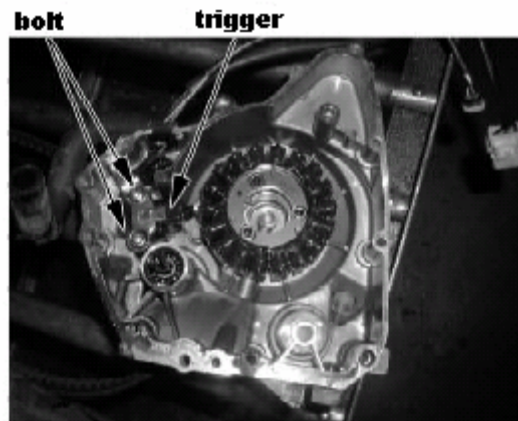
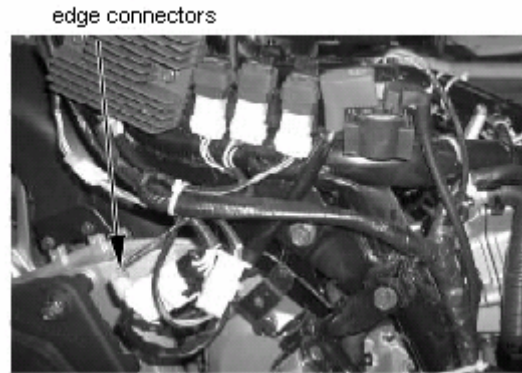
While disassembling, be careful not to let the right-side cover clip and hurt you fingers.

Unfasten the bolt to take off the trigger.

Unfasten the bolt and the washer to take off the AC magneto stator

Assembling the trigger

Assemble the trigger by the inverse order of disassembling.



Disassembling the ignition coil

Disassembling

Disassemble the maintenance cover (→ 2-2);

Take off the spark plug cap from the spark plug;

Disconnect the primary connector of the

ignition coil;

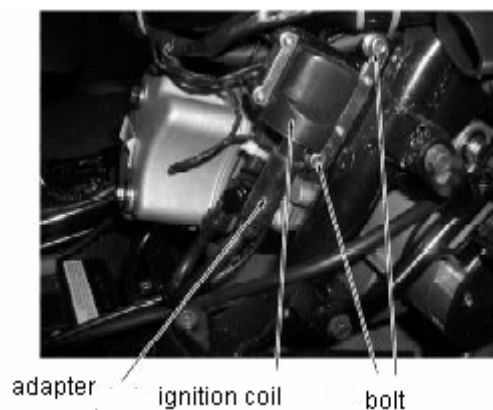
Unfasten the mounting screw of the ignition coil and disassemble the ignition coil.

Assembling

Assemble the ignition coil by the inverse order of disassembling.

Note:

Cables should pass through the correct position according to wiring diagrams of cables, pipes and wires. (→ Chapter 1)



Ignition system

Ignition coil

Primary voltage of the ignition coil

● Pull the spark plug cap out of the cylinder head, put a new spark plug into the spark plug cap, connect the circuit correctly, taking the cylinder head as ground.

● Measure the primary voltage of the ignition coil with a multi-meter by the following order

● Connect the multi-meter and the peak voltage adapter by the following order:

+ probe: white/yellow lead or ground

- Probe: black/yellow lead

Note:

Make sure that the battery voltage $\geq 12V$, and the ignition coil lead is not disconnected.

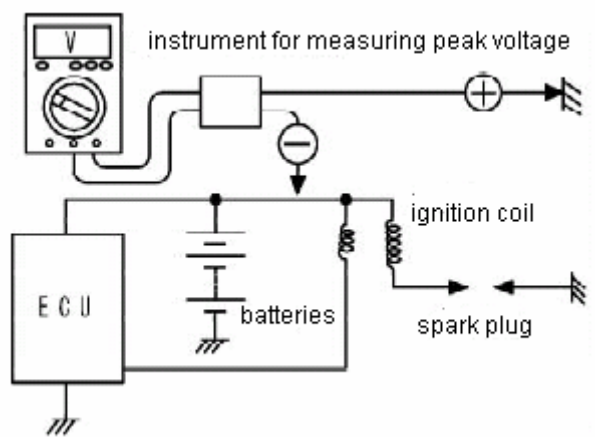
Refer to relevant manuals while using the multi-meter and the peak voltage adapter.

● Switch the shift to zero span, and switch the ignition switch to “ON” .

Press the START button and let the crankshaft rotate for several seconds, then measure the primary peak voltage of the ignition coil.

● Repeat the measurement for several times to get the highest primary peak voltage of the ignition coil.

Switch the multi-meter to V span, AC



Primary peak voltage of the ignition coil: ≥ 1200 V

! Warning

While testing, do not touch the probe or the spark plug to avoid electric shock.

- If the peak voltage is lower than the specified value, check the resistance of the ignition coil and the resistance of the trigger coil.

- Disconnect ignition coil lead and spark plug cap to take off ignition coil.

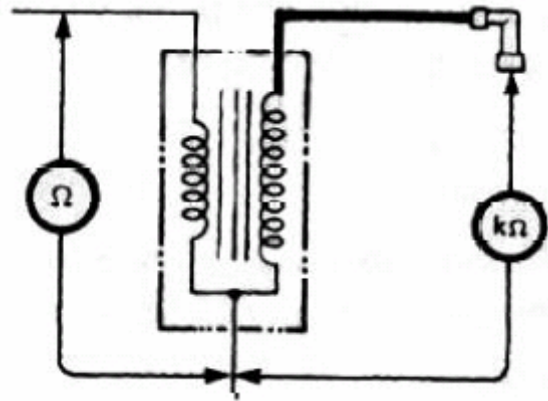
- Measure the resistance of the primary rolling thread and the secondary rolling thread of the ignition coil with a multi-meter. If the resistance of the primary rolling thread and the secondary rolling thread is within the given range, the ignition coil is in good condition

Switch the multi-meter to Ω span

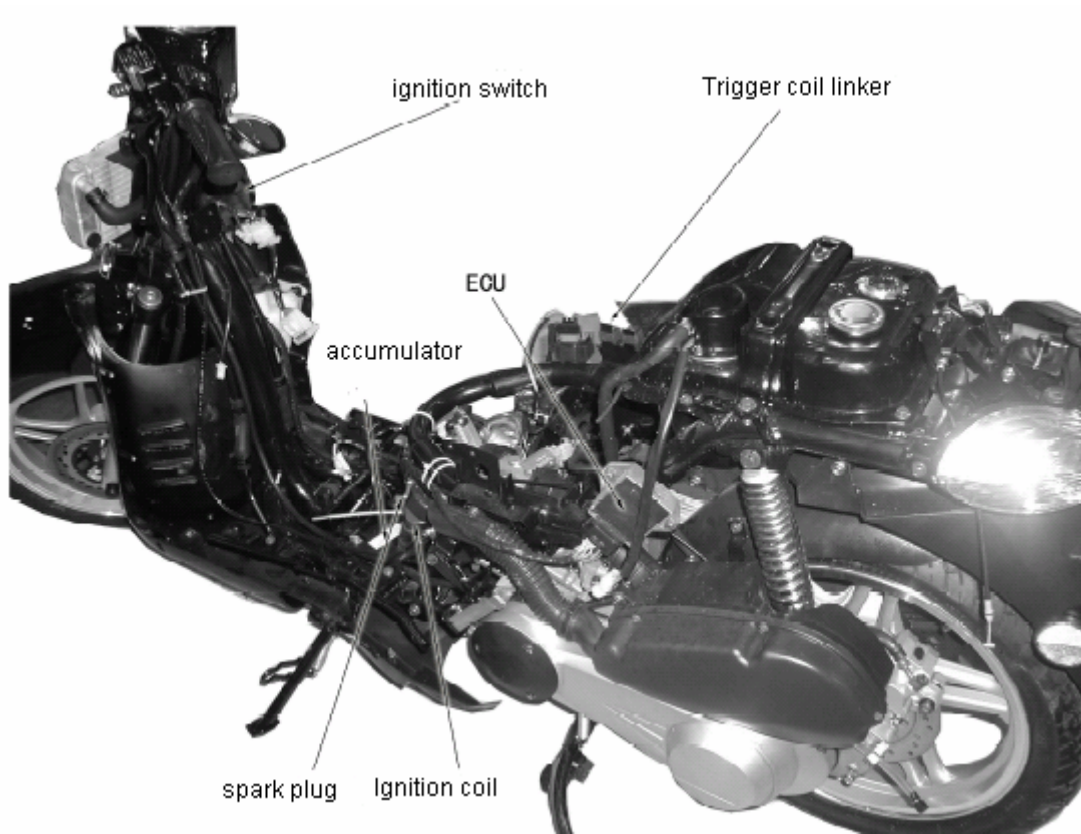
Ignition coil resistance:

primary rolling thread resistance: 0.3- 0.6 Ω (terminal - ground)

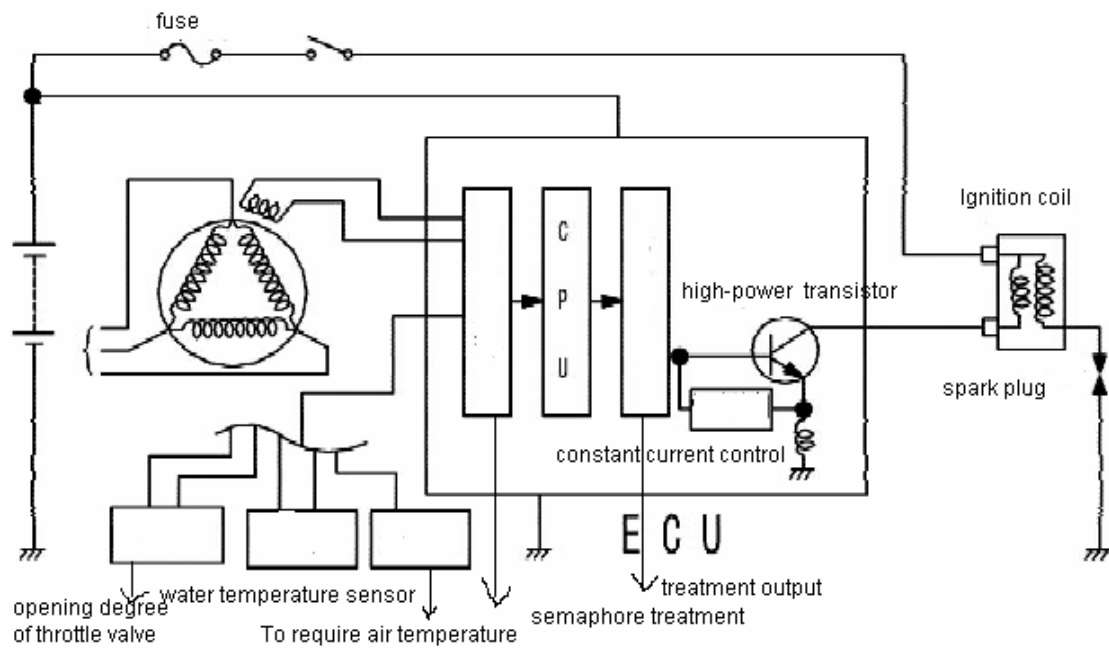
secondary rolling thread resistance: 5-12K Ω (terminal - spark plug cap)



Ignition System



Circuit diagram of the ignition system



Maintenance information.....17-1 Starting the relay.....17-2
Error diagnosis.....17-1 Subassembly of starting motor.....17-2
Overrun clutch.....17-5

Maintenance information

Notes during operation

Put all the wires with the same color in bundles. Wires with different colors should be put on sleeves with the same color at the place the device is connected with the wire. Before disassembling the wire, be aware of the color of the wire. The connector should be linked to that of the same color.

Maintenance standard

Items	standard values	Usage limit
Length of the brush	10 mm	7mm

Error diagnosis

The starting motor does not run

- Battery low
- Main switch does not work well
- Starting switch is not in good condition
- Defective starting relay
- Ill connection in wire bundles, connectors and connecting posts; short circuit or wire breakage
- Defective starting motor
- Fuse burn

Starting motor with insufficient torque

- Battery low
- Ill connection in wire bundles, connectors or connecting posts
- Bits or chips are jammed in electric motor or starting gears

CF Moto

Starting relay

Notes

Before test, make sure that the battery is in good condition.

In case of start failure, check all the brakes, switches and relays (refer to Chapter 16)

Disconnect the starting relay 4P connector and remove the starter

Input the power

Turn *ON* the ignition switch

Holding the front/rear brake to check for sure that the battery voltage exists between the red/white end (+) of the wire and the body grounding wire.

When abnormality is found in the inspection, check the ignition switch, braking switch, main fuse (15A) and secondary fuse (10A);

Replace the starting relay when there is no abnormality.

Grounding circuit

Disassemble the starting relay 4P connector and remove the starter.

Press down the start button, and check whether the green end of the starting relay 4P connector is linked with the car body grounding wire.

If the linking is through, that's OK.; otherwise check whether the main cable is broken or short circuited.

Starting motor subassembly

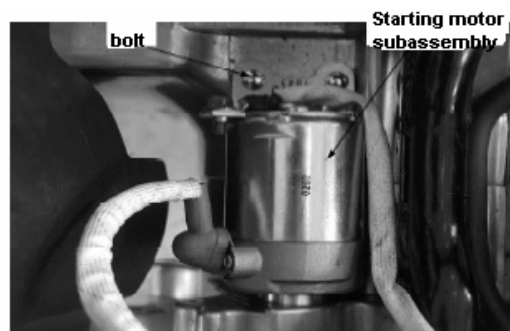
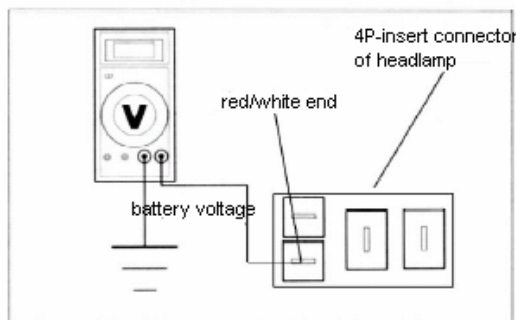
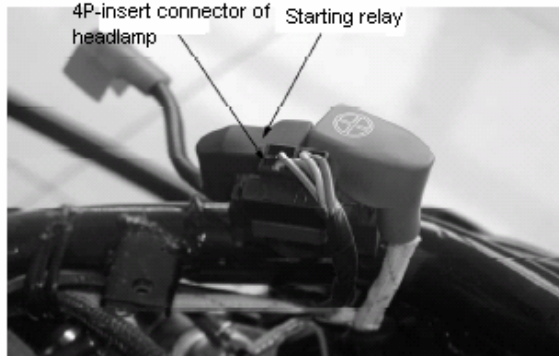
Disassembly

Remove carburetor and air filter.

Unscrew the starting motor anchor bolts and remove the motor subassembly.

Disassemble the starting motor subassembly

Unscrew the starting motor case bolts and remove the motor case and seat..



17 Electrical startin

Test

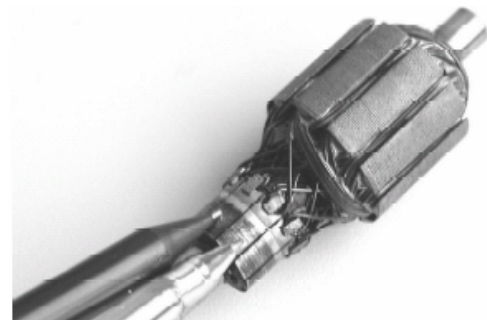
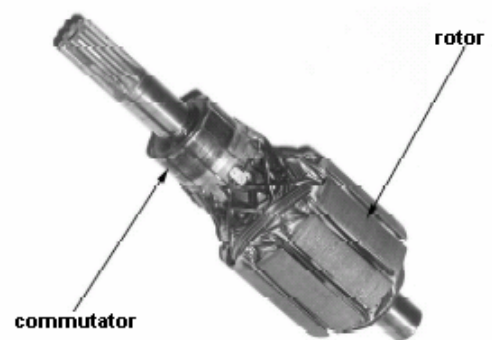
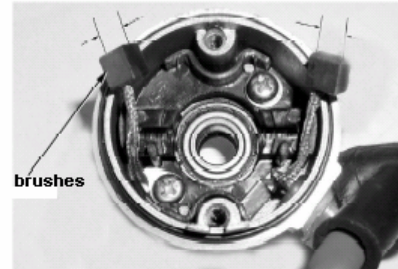
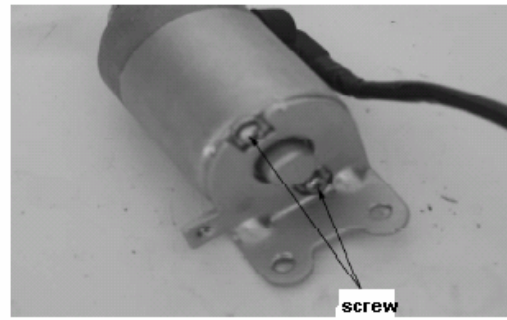
Measure the length of the brushes

Usage limit: brush with length less than 6.5mm should be replaced.

Check the variation in color of the commutator.

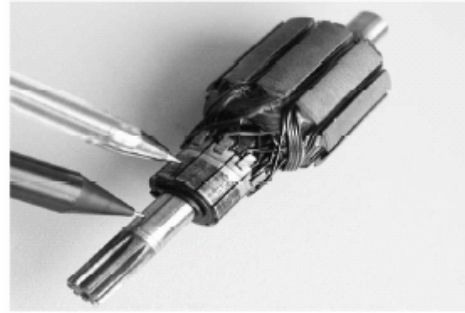
Replace the commutator with color changed happening to 2 or more commutator to avoid short circuit.

Confirm that all the commutators are mutually conductive.



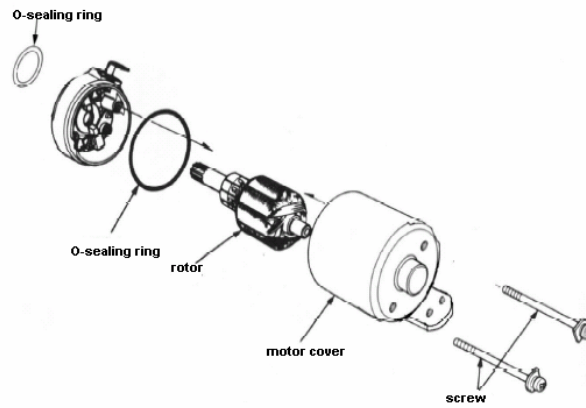
CF Moto

Confirm that no conduction existing between the rotor shaft and the individual commutator.



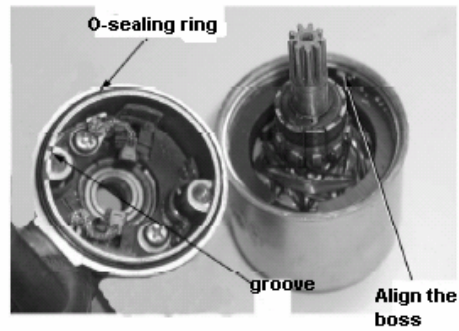
Assemble

Put the O-sealing ring in the groove on the



starting motor seat.

Apply a litter grease on the O-sealing ring.



17 Electrical starting system & overrun clutch

Apply grease on both ends of the rotor shaft, and mount the rotor on the starting motor case.

While pressing the brush into the brush seat,

mount the brush seat on the commutator.

Align the boss of the starting motor case to the groove on the motor case, and mount the motor seat on the case. Tighten the

bolts.

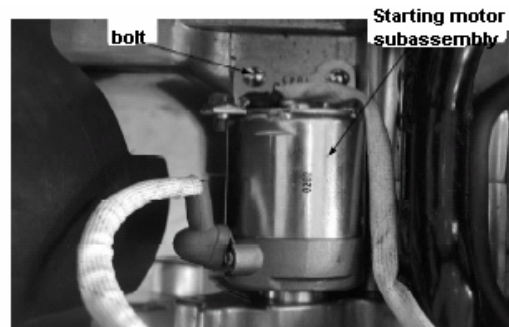
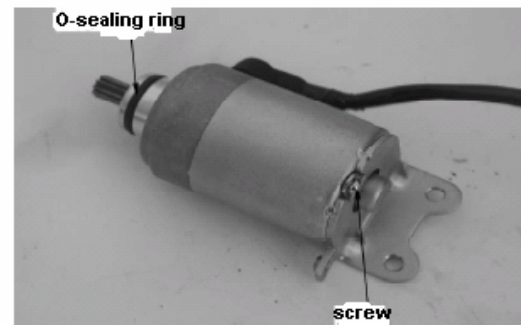
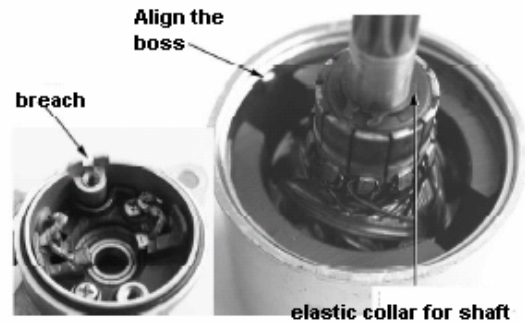
Place the O-sealing ring on the groove in the motor positioning boss.

Assemble

Notes

Mount the starting motor in front of the engine, make the wiring and confirm the direction of rotation in operation.

Proceed to install in the sequence oppose to the dismantling



Overrun clutch

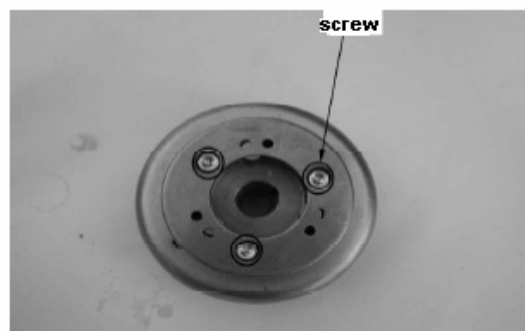
Disassemble

Take down the right cover (→ 11-2)

Take down the dual gear and gear shaft (→ 11-2)

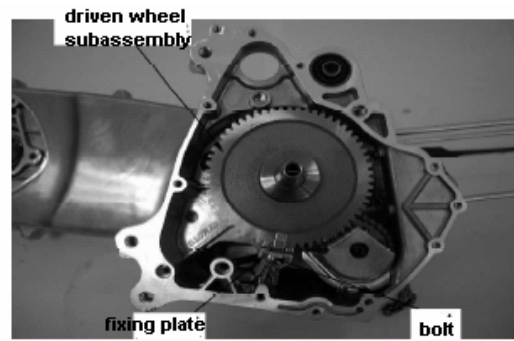
Remove the flywheel subassembly.. (→ 11-3)

Remove the hexagonhead screw fixing the overrun clutch.



CF Moto

Unscrew the bolts and remove the fixing plate and the driven wheel subassembly.

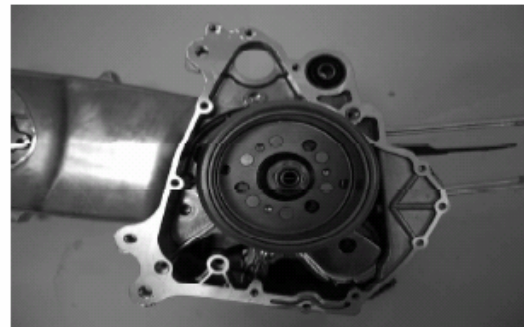


Assemble

Make assembling in the reverse sequences of disassembling

Apply a little lubricating grease to the dual gear shaft in the right box.

Tighten the three inner hexagon binding bolt in the overrun clutch with the designated torque at 12-14N·m (screw-thread glue applied)



Maintenance information.....	18-1	Switch of braking light.....	18-8
Error diagnosis.....	18-2	Electric horn.....	18-8
Bulb replacement.....	18-3	Speedometer.....	18-9
Headlamp.....	18-5	Fuel sensor.....	18-10
Ignition switch lock.....	18-6	Water temperature sensor.....	18-12
Handlebar switch.....	18-7		

Maintenance information

Notes during operation

Notes

- The headlamp bulb has large power, with high temperature while ignited; touching it immediately with bare hands after closing light, you will be scalded, so you must not operate until the bulb is cooling down.
- The check of temperature Notes switch concerns fire source and high-temperature liquid, so don't put combustible articles nearby, and pay attention not to be scalded.
- The temperature is very high when the headlamp is ignited; while replacing the bulb, if you touch the glass surface of the bulb with bare hands or hands in dirty gloves, then the oil will be attached to it, which will form into hot spot, inducing hot distortion of the glass, and destroying the bulb.
- Please pay attention to the followings while replacing the bulb:
Don't replace it while igniting the light; must not run it until the ignition switch at " " and the bulb is cooling down.
Must wear clean gloves when replacing the bulb, lest the oil be attached to the glass surface.
When the glass surface is attached with oil, must wipe it up with clean cloth dipped with alcohol or banana water.
- When using the battery, firstly confirm if it is in order or not.
- Check and test the transmittance of the switch under its bodywork Erection.
- After exam and test of all parts, the cable and guy cable must be correctly passed through strictly according to the concerned layout chart (→ 1-20)
- The removal and Erection of taillight set and back turning indicator set refers to Chapter 2.

items		standard
fuse	main	20A
	auxiliary	2× 5A 2× 10A
light、bulb	headlamp (Hi / Lo)	12V-35/35W
	brake light / taillight	12V-21/5W
	turning indicator	12V-10W
	speedometer light	12V-1.7W× 3
	all indicators	12V-3.4W× 4
	Error indicator	12V-1.7W

Maintenance standard

Error diagnosis

fail to ignite the headlamp

- broken fuse
- open main cable
- open main cable
- burnout bulb
- broken night switch

replace bulb

bulb of the headlamp

Notes

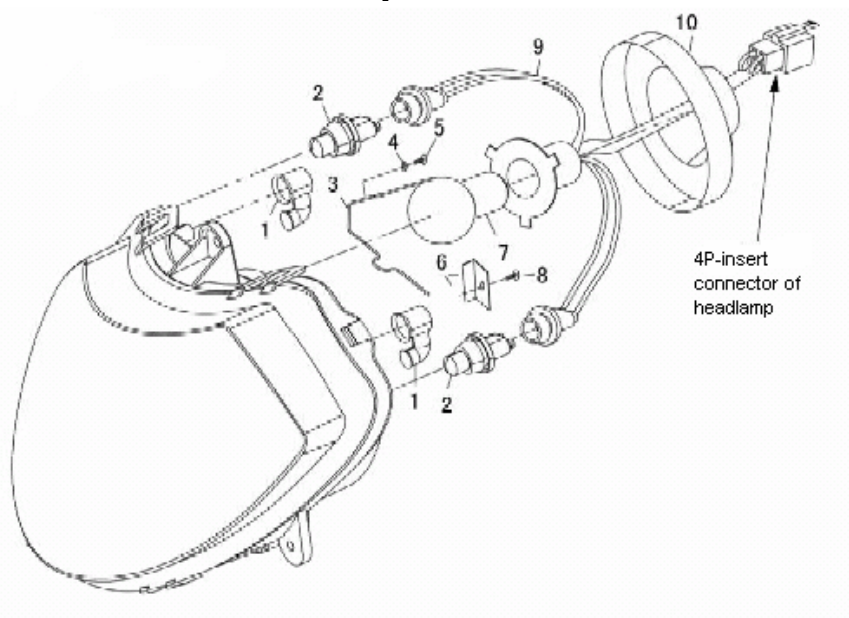
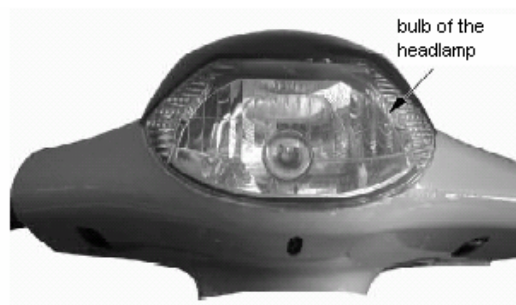
The headlamp bulb has large power, with high temperature while ignited; touching it immediately with bare hands after closing light, you will be scalded, so you must not operate until the bulb is cooling down.

Remove front cover of handlebar. (→ 13-10)

Remove the 4P-insert connector of headlamp.

Remove dustproof hat 10 and loosen clip reed 3, remove the lamp seat and bulb set of headlamp,

Remove front bulb and replace it.



Notes

Must wear clean gloves when replacing the bulb.

When the glass surface is attached with oil, the bulb will be broken, must wipe it up with clean cloth dipped with alcohol or banana water.



When replacing the headlamp bulb, you shall be sure that the 3 orientation flakes of bulb must point to 3 orientation holes of the lamp seat.

bulb specification: 12V-35/35W

Install according to the reverse order of removal.

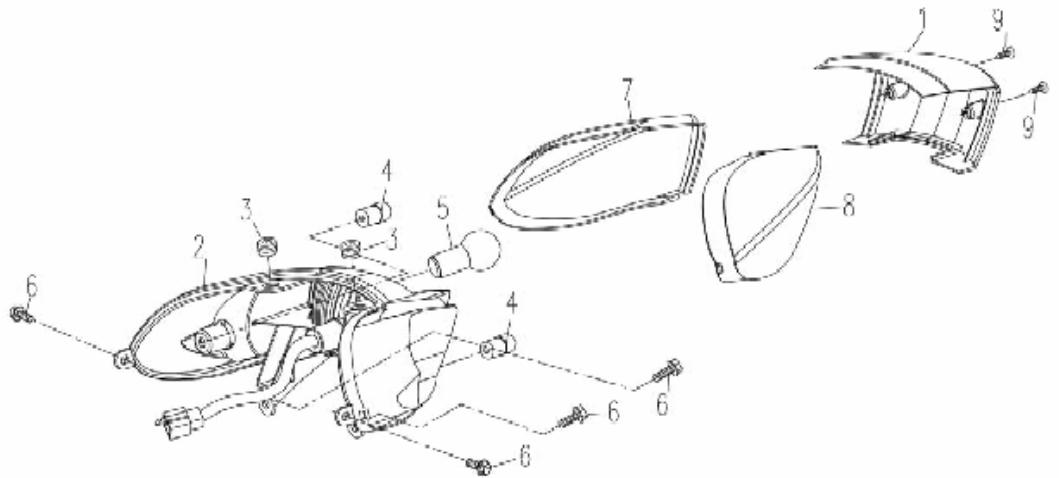
After replacing the bulb, adjust the light axis of the headlamp (→ 3-19)

Check to the headlamp

The ignition switch is at “”, move the lighting switch to “”, the check the headlamp being on or not.

On: normal

off: broken main cable or short circuit



brake/ bulb of taillight

Remove self-attack bolt 9, Remove taillight cover 1,
Rotate the brake at counter-clockwise/remove taillight bulb 5.
Replace brake/taillight bulb
bulb specification: 12V-21/5W
Make assembling in the reverse sequences of disassembling

Back turning indicator bulb

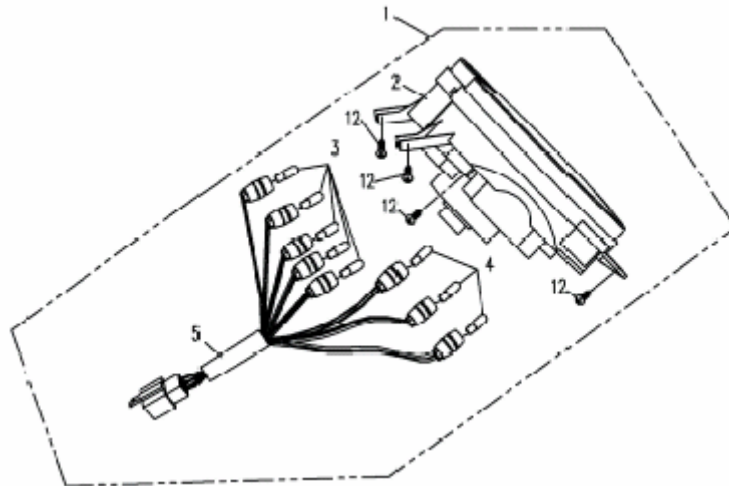
Remove bolt 9
Remove taillight cover 1
Remove right back turning indicator shell 7.
Replace right back turning indicator bulb 4.
Bulb specification: 12V-10W
Replace left back turning indicator bulb 4 with the same method.
bulb specification: 12V-10W
Make assembling in the reverse sequences of disassembling

Instrument lighting lamp

Remove front cover set of handlebar (→ 1 3 - 1 0) ,

Remove back cover set of handlebar (→ 1 3 - 1 1) 。

Remove 4 self-attack bolt 1



Remove the instrument

Take out the lamp seat and replace bulb from the instrument.

Bulb specification:

12V-1.7W (lighting bulb) 3

12V-3.4W (indicating bulb) 4

Notes

The main cable and guy cable must be correctly passed through according to the concerned layout chart (→ 1-20)

Make assembling in the reverse sequences of disassembling

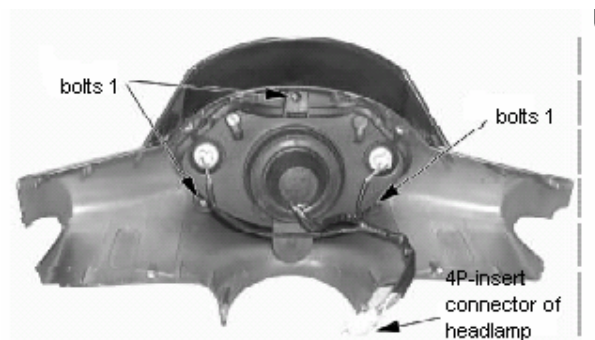
Headlamp

headlamp set

Remove the front cover set of handlebar (→ 1 3 - 1 0) ,

Remove the 4P-insert connector of headlamp,

Remove 3 bolts 1, remove the headlamp.



Make assembling in the reverse sequences of disassembling

Notes

Pay attention not to destroy the main cable when installing.
 After operation, adjust the light axis of headlamp (→ 3 - 19) .

Notes

The main cable and guy cable must be correctly passed through according to the concerned layout chart (→ 1-20) .

Ignition switch lock

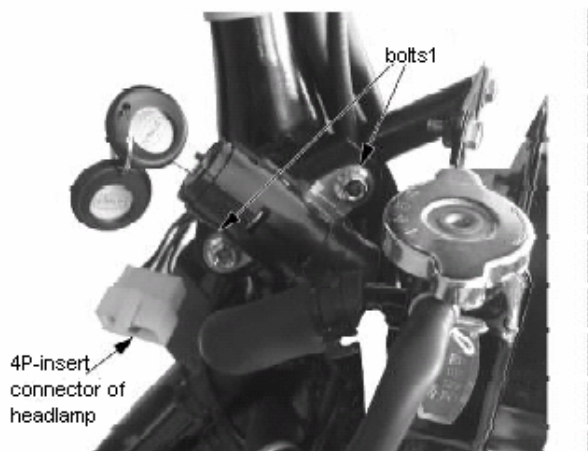
Removal and Erection

Remove the front panel set → (2 - 9)

remove the 2 bolts1,
 remove the connector of 4P insert of ignition switch lock,
 Take out the ignition switch lock.
 Make assembling in the reverse sequences of disassembling

Check

Check if the switch connector terminals are transmitted to each other.



• — • It is normal when it is through between • — • .

	red	Black	Black / white	green
NO	●	●	┌───┐ │ │ └───┘	
OFF			●───●	
LOCK			●	●

5 switches

removal

Remove the front cover set of handlebar (→ 13 - 10) ,

Remove the back cover set of handlebar

→ 13-11) ,

Remove all switches.

Erection

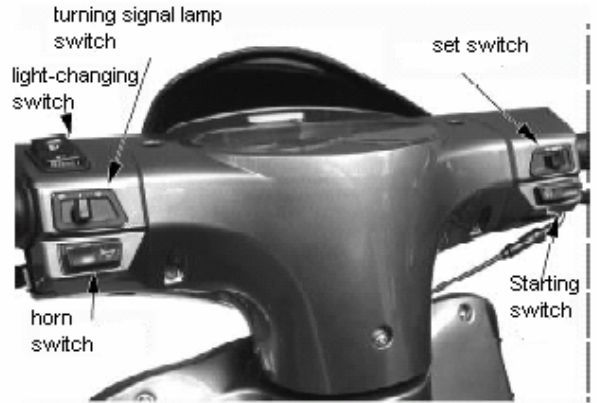
Install it at the reverse order of removal,

Pay attention to the switch corresponding with connector.

Starting switch

Check if the switch connector terminals are transmitted to each other.

- — • It is normal when it is through between • — • .

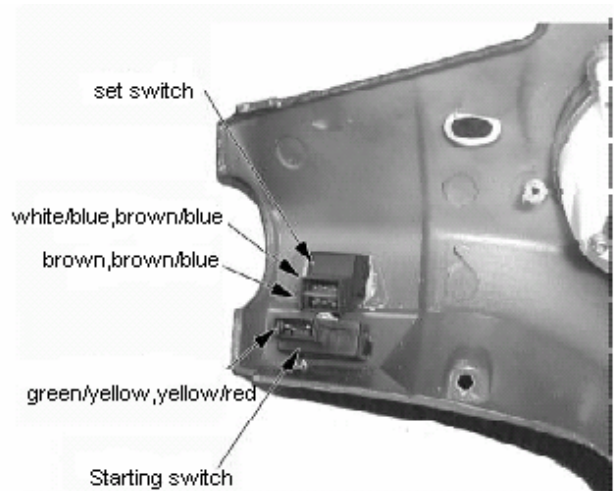


	Yellow/red	Green/yellow
NO	● — ●	● — ●
OFF		

light-changing switch

• — • Check if the switch connector terminals are transmitted to each other.

- — • It is normal when it is through between • — • .



	White	White/blue	Blue	Black/brown
	● — ●	● — ●		
		● — ●	● — ●	
PASSING			● — ●	● — ●

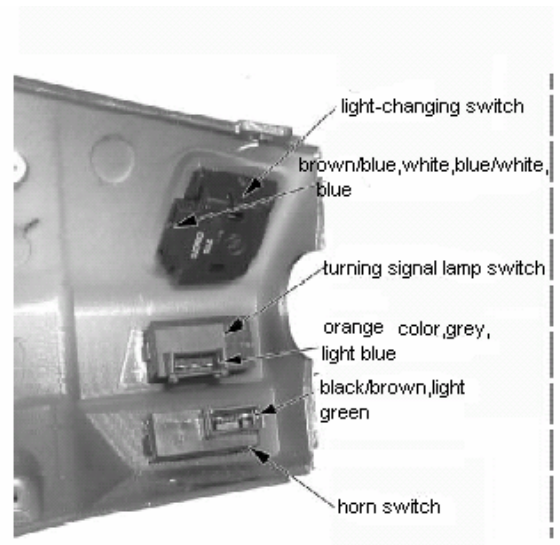
horn switch

- — •

Check if the switch connector terminals are transmitted to each other.

It is normal when it is through between • — • .

	Black/brown	Light green
ON	● — ●	● — ●
OFF		



set switch

Check if the switch connector terminals are transmitted to each other.

• — • It is normal when it is through between • — •.

	White/blue	Brown/blue	Brown
●			
∞∞∞		● — ●	●
☀	● —	● —	●

turning signal lamp switch

Check if the switch connector terminals are transmitted to each other.

• — • It is normal when it is through between • — •.

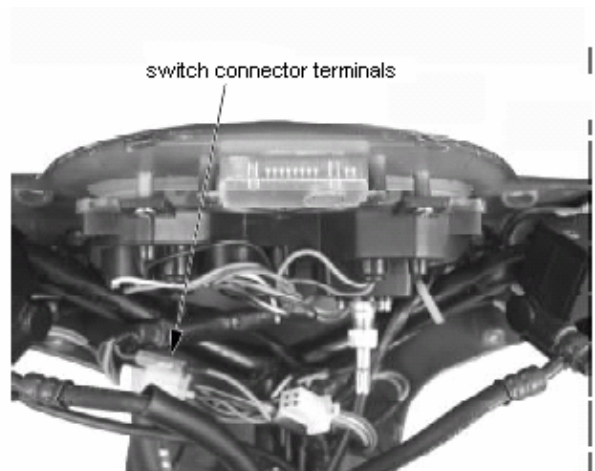
	Orange	Grey	Light blue
←	● — ●		
●			
→		● — ●	

switch for brake light

Remove the front cover set of handlebar (→ 13 - 10) ,

Remove the connector of brake light switch, check if the switch connector terminals are transmitted to each other.

Grasping the brake handlebar, it is transmitted, while undoing it, it is not transmitted, and then it is normal. When the exam above is of abnormality, you must replace the brake light switch.

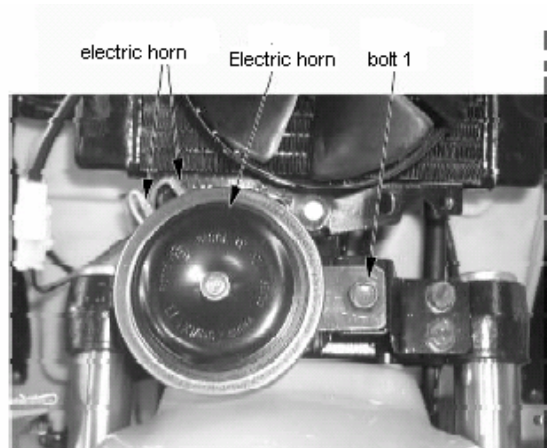


Electric horn check

Remove the front panel. (→ 2-8)

Remove the connector of electric horn. When connecting the full charged 12V battery , confirm the electric horn resounding.

When the exam above is of abnormality, you must replace the electric horn.



Removal and Erection

Pull out the connector of electric horn.

Remove the electric horn, install the bolt 1, take out the electric horn.

Make assembling in the reverse sequences of disassembling

Speedometer

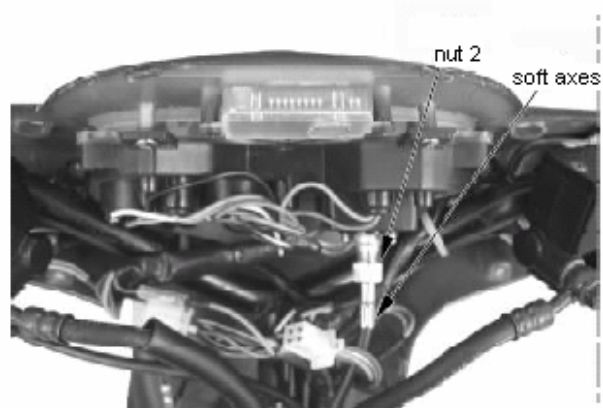
Notes

Before check, confirm if the soft axis of the speedometer falls off, the nut 2 is loose or the soft axes are broken or not.

Fill up stably the front tire with check frame.

Confirm the speedometer finger is turning round when the front tire is turning round lightly and quickly.

When the exam above is of abnormality, you must replace the speedometer.



Removal and Erection

Remove the front cover set of handlebar. (→ 13-10)

Loosen nut 2, also the bolt on the counter, remove soft axes.

Make assembling in the reverse sequences of disassembling

The main cable and guy cable must be correctly passed through according to the concerned layout chart.

Fuel sensor

disassembly

Remove the back goods frame

(→ 2 - 4)

Remove the maintenance cover

(→ 2 - 2)

Remove the back connecting

board (→ 2-5

Remove the left protective

board (→ 2-5)

Remove the right protective

board (→ 2 - 5)

Remove the of 3P-insert

connector of fuel sensor

Rotate out oil box sensor

pressboard by

counter-clockwise with

“-” screwdriver, take out the fuel sensor.

check

Remove fuel sensor(referring to the contents above)

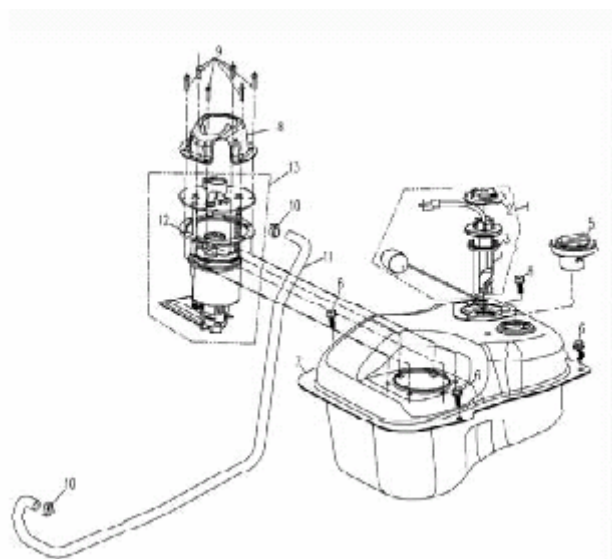
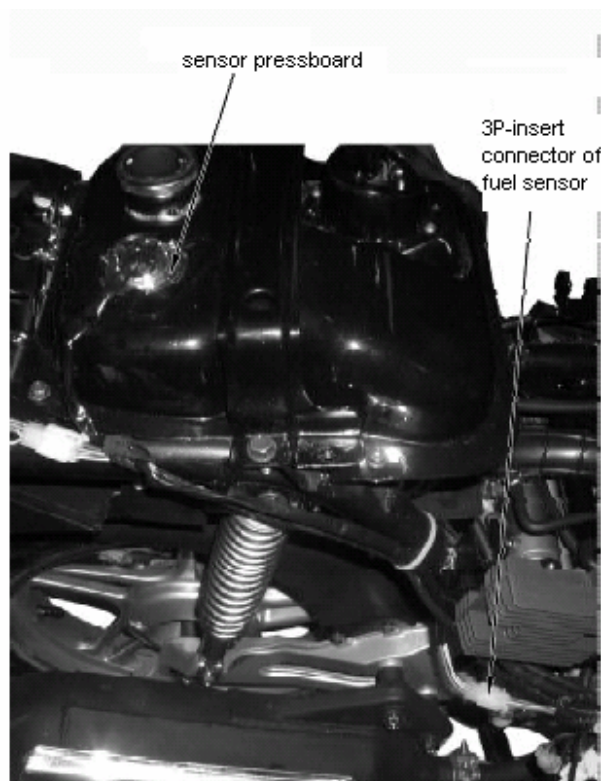
connect 3P-insert connector of fuel sensor

make the ignition switch at

“ ”

Stirring the fuel sensor bobber with hands, confirm the scale of fuel meter being consistent.

If it not in consistent, to check if the main cable is broken or in short circuit, otherwise, check the fuel sensor and the fuel meter itself.



Remove 3P-insert connector of fuel sensor.

Connect the multimeter between the terminals of 3P-insert connector of fuel sensor.

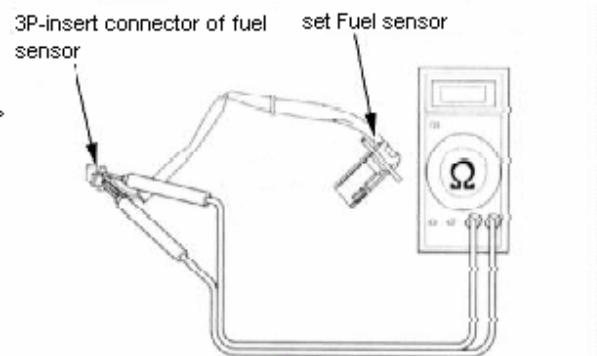
Shake the fuel sensor bobber with hands, measure the resistance value of bobber in various positions.

connecting terminals: yellow/
white— green

bobber position: up: $33 \pm 2 \Omega$
(20 °C)

down: $566 \pm 4 \Omega$ (20°C)

If the exam above is in abnormal, then replace the fuel sensor.



Erection

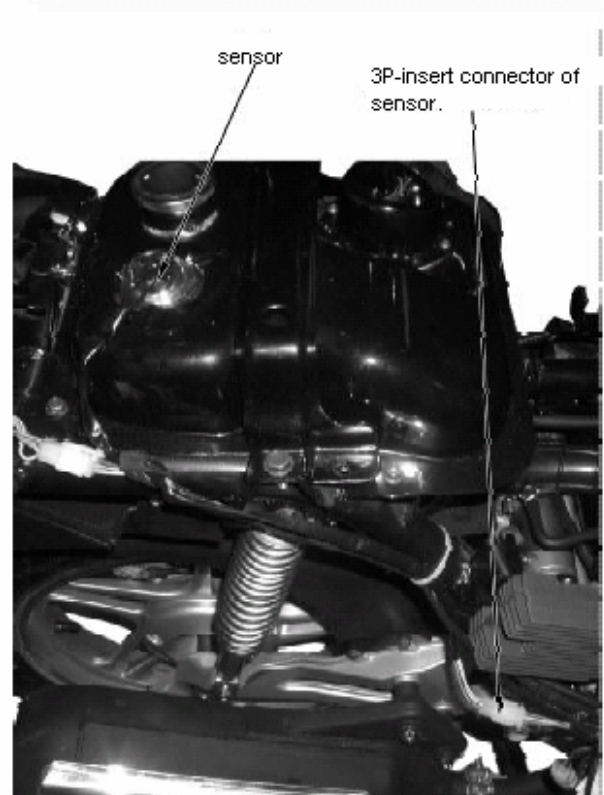
Make assembling in the reverse sequences of disassembling

Notes :

Install the fuel sensor into the hole of the oil box to a right position. Connect the 3P-insert connector of fuel sensor.

Check the fuel meter

Put through the power supply; check if the fuel meter can run normally. Confirm the fuel meter to run normally, install body plastic and seat mat at the reverse order of removal.



Water temperature sensor

Notes

Pay attention not to be burn, nor put combustible articles nearby.

Notes

- The cooling liquid must immerse the whorl of switch; the distance shall be over 40mm between container base and switch head.

- Before measurement, keep liquid temperature for 3min or so, don't raise the temperature quickly. Besides, the thermometer must not contact to container base.

Disassembly

Remove seat mat (→ 2-2)
Remove trunk (→ 2 - 3)

Remove water temperature sensor connector, Remove water temperature sensor. Put water temperature sensor into the container with cooling water, slowly

make liquid warm, measure the resistance value of temperature sensor.

50°C 154 ± 16 Ω

88°C 52 ± 4 Ω

100°C 27 ± 3 Ω

120°C 16 ± 2 Ω

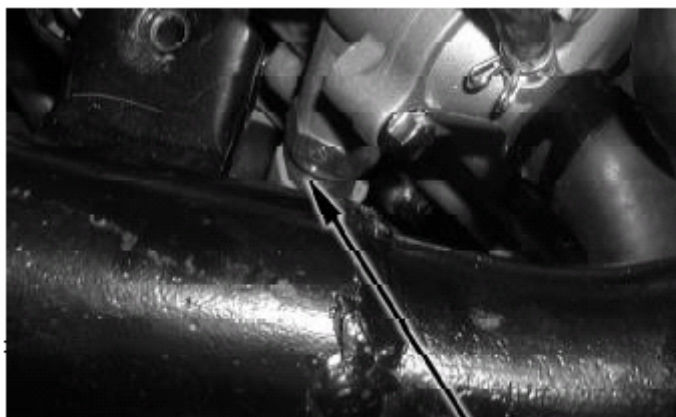
Replace the water temperature sensor when it is over the specified value.

install water temperature sensor,

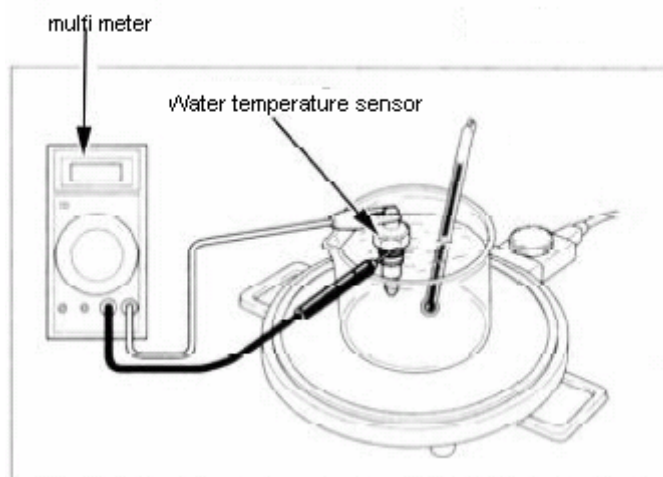
join the connector of water temperature alarm switch,

pour into cooling liquid, discharge air,

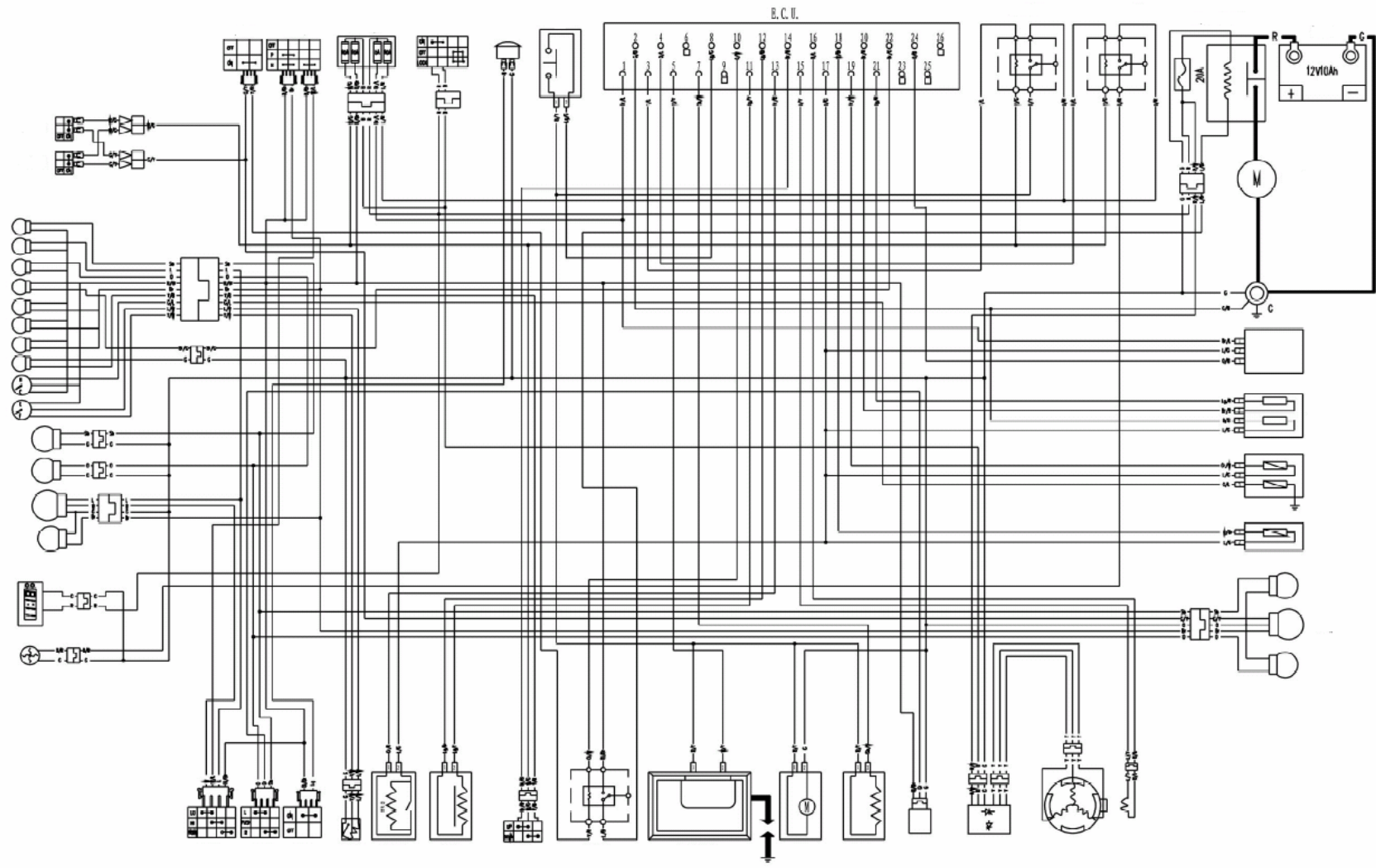
Install the trunk and seat mat at the reverse order of removal.



Water temperature sensor



circuit principle diagram



20 Electric injection diagnostic system and error diagnosis

Introduction to the electric injection system.....	20-1
Notes.....	20-2
Error diagnosis.....	20-3
Engine fail to start.....	20-3
The cold/hot engine starts in difficulty.....	20-4
Flameout/unstable/too low speed of engine in idle speed.....	20-5
The engine can't return to idle speed/the idle speed is too high.....	20-6
When slowing down, the engine made puffing sounds.....	20-7
When the restrictor is open, the engine works irregularly.....	20-8
When the engine speed is in maximum, engine power descends/ the engine works irregularly when accelerated.....	20-9
Detonation.....	20-10

I. Introduction to the electric injection system

1.The electric injection system is an integral system that composed of fuel injection and ignition.

2.Fuel is spurted directly into the suction manifold by electric injector

The time of injection and ignition is controlled by trigger signal and different sensor signals

3.The control of fuel atomization and ignition depends on the engine's rotate speed and restrictor opening scale

Further adjustment depends on the following parameters:

Coolant temperature

Inlet air temperature

Ambient atmosphere pressure

4.When the engine is in cold position, the idle valve controls the adjustment of system idle speed, and the idle valve is controlled by ECU, ensure the stabilization of idle speed .

5.Composition of the fuel

fuel pump

fuel filter screen

injector

pressure adjusting valve

fuel tank, oil pipe tunnel and others

Fuel pump, fuel filter screen, pressure adjusting valve are fixed in fuel tank by bracket

6.Composition of the ignition circuit

Ignition coil

high-pressure down lead

high-pressure cap

ECU

sparking plug and so on

ECU controls the ignition advance, ensuring the ignition

CF Moto

II. Notes

1. This chapter states the main error diagnosis in electric rejection diagnostic system and the whole engine. The errors excluding in the chapter, please refer to other chapter .

Before debugging the electric injection system, please check the error records

When checking the error records, don't cut off the join of wire and battery

2. The pressure, supplied to the system by fuel oil, is 2.45 Bar, so smoking and fire is forbidden when removing the conduit coupling. Take care of the fuel oil splashing into eyes.

3. Cut off the join of wire and battery when repairing electrical components, exclude special requirement.

4. When examining operating function, the battery voltage must be above 12V

5. When starting the engine, ensure that the fuel oil in fuel tank is more than 2 litres, or it's possible to damage the fuel pump.

6. If the motorcycle isn't used for a long time, you'd better let the fuel oil out before using, in order to avoid the fuel line plugging

7. When washing the motorcycle, prevent the water from crushing into electrical components and cables.

8. Only after switching off the power, cutting off the join of wire and battery, can ECU be pulled out, avoid the damage of ECU. Don't insert and pull out the ECU rashly.

9. TPS sensor (restrictor place sensor) moves randomly, it is hard to start engine probably.

10. Avoid counter electrode when dismounting battery

When the motorcycle heeling to the land for 7 seconds, the heel sensor works, the engine automatically flameouts, powers off. You can start it when processing the power again

11. Maintenance attention, when ECU has worked for 100 hours, the error light flashes continuously 15 times when switching on the power, prompts that it's time to go to the service apron for maintaining.

21. Electron diagnostic system and error diagnosis

20 Electric injection diagnostic system and error diagnosis

III. Error diagnosis

1、 he error that relates to the ECU system comes from connection error, so when checking the anomaly of the system, please affirm the followings:

- a. power supply
 - battery voltage
 - fuse integrity
 - initiating relay coil
- b. frame bracket iron
- c. fuel supply
 - fuel pump
 - fuel filter screen
- d. ignition system
 - sparking plug
 - ignition coil
 - screened cap
- e. air access
 - air filter
 - idle valve
- f. others
 - ignition angle
 - idle spread atomization
 - TPS reset

2. common errors

a. the engine fails to start

abnormal	affirmation
abnormal diagnosis analyzer	fuel pump ignition coil injector
fuel supply	oil quantity in the fuel tank fuel pump start fuel pressure fuel flow
ignition	sparking plug ignition coil screened cap
data reliability	coolant temperature firing angle injection phase inlet air temperature

b. The cold/hot engine starts in difficulty

abnormal	affirmation
abnormal diagnosis analyzer	fuel pump relay ignition coil injector trigger signal air temperature coolant temperature atmosphere pressure
fuel supply	oil quantity in the fuel tank fuel pump start fuel pressure fuel flow
start speed	start motor initiating relay battery ground wire
ignition	sparking plug ignition coil screened cap trigger signal ignition advance
data reliability	coolant temperature inlet air temperature TPS position idle valve air filter

20 Electric injection diagnostic system and error diagnosis

c. Flameout/unstable/too low speed of engine in idle speed

abnormal	affirmation
abnormal diagnosis analyzer	fuel pump relay ignition coil injector trigger signal air temperature coolant temperature atmosphere pressure
fuel supply (the low fuel pressure)	pressure adjustive valve fuel pump fuel filter screen fuel flow
inlet gas system cleaning	air filter idle valve
gas handling system tightness	air tightness between intake manifold inlet and cylinder caliber air tightness between intake manifold inlet and restrictor valve intake hose air filter
ignition	sparking plug ignition advance
data reliability	coolant temperature sensor air temperature sensor TPS position idle valve

d. The engine can't return to idle speed/the idle speed is too high

abnormal	affirmation
abnormal diagnosis analyzer	fuel pump relay ignition coil injector trigger signal air temperature coolant temperature atmosphere pressure
fuel supply (the low fuel pressure)	pressure adjustment valve fuel pump fuel filter screen fuel flow
data reliability	coolant temperature sensor air temperature sensor TPS position idle valve
gas handling system tightness	air tightness between intake manifold inlet and cylinder caliber air tightness between intake manifold inlet and restrictor valve block air filter inlet hose
ignition	Ignition advance

20 Electric injection diagnostic system and error diagnosis

e. When slowing down, the engine makes puffing sounds

abnormal	affirmation
abnormal diagnosis analyzer	fuel pump relay ignition coil injector trigger signal air temperature coolant temperature atmosphere pressure
fuel supply (the low fuel pressure)	pressure adjustment valve fuel pump fuel filter screen fuel flow
data reliability	coolant temperature sensor inlet air temperature sensor TPS position sensor idle valve
gas handling system tightness	air tightness between intake manifold inlet and cylinder caliber air tightness between intake manifold inlet and restrictor valve block inlet hose air filter
exhaust system air tightness	air tightness between the exhaust pipe and cylinder caliber air tightness between the exhaust pipe and muffler muffler welding other plugs of the exhaust pipe

f. When the restrictor opens lightly, the engine works irregularly.

abnormal	affirmation
abnormal diagnosis analyzer	fuel pump relay ignition coil injector trigger signal air temperature coolant temperature atmosphere pressure
gas handling system cleaning	air filter strainer element restrictor valve block idle valve
data reliability	coolant temperature signal air temperature signal TPS position signal ignition advance
gas handling system tightness	inlet hose air filter
ignition	sparking plug wearing-out

20 Electric injection diagnostic system and error diagnosis

g. When the engine speed is in maximum, power of the engine goes down/ the engine works irregularly when accelerated

abnormal	affirmation
abnormal diagnosis analyzer	fuel pump relay ignition coil injector trigger signal air temperature coolant temperature atmosphere pressure
fuel supply	oil level fuel pressure fuel filter screen injection capacity
data reliability	coolant temperature signal air temperature signal TPS position signal ignition advance
gas handling system tightness	inlet hose (sealing) air filter(sealing) air filter strainer element
ignition system	sparking plug screened cap high-voltage leg wire ignition coil

g. Detonation

abnormal	affirmation
abnormal diagnosis analyzer	fuel pump relay ignition coil injector trigger signal air temperature coolant temperature atmosphere pressure
fuel supply	fuel pressure fuel filter screen injection capacity fuel quality
data reliability	coolant temperature signal air temperature signal TPS position signal Ignition advance
gas handling system tightness	inlet hose air filter
ignition	sparking plug
TPS reset	
piston shim thickness choice	

CFMOTO LOGO

Function of buttons of diagnosis analyzer (FIG 1)

Selection bar: Highlighting of selection bar.

Button 1 downwards

The selection bar moves downwards.

Button 2 upwards

The selection bar moves upwards.

Button 3 rightwards

- Review the parameters corresponding to the selected function.
- Activate LCD background light (When “background light” setting is selected)

Button 4 OK

Selection of acknowledgement

Button 5 Exit

- Cancel the executed selection
- Return to the upper-level menu
- Return to the main menu

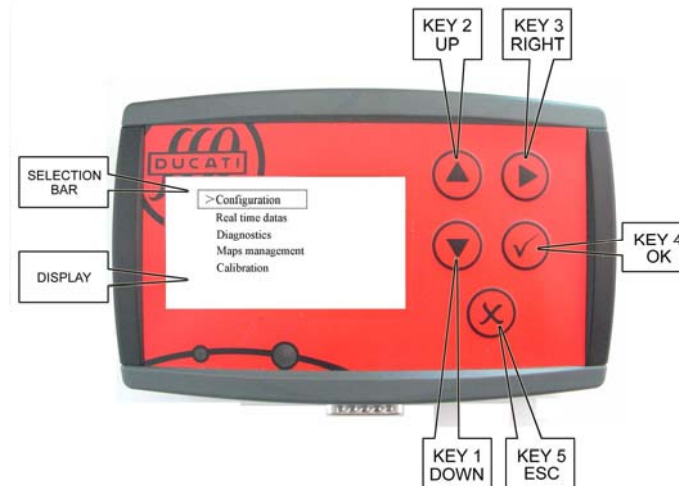


FIG 1

Main menu (FIG 1)

Connecting diagnosis analyzer

Note ! Before connecting diagnosis analyzer, check for correct voltage of battery, connection wires and fuses.

The plug of diagnosis wire 2P is in the right trunk.

Open the right front trunk cover A

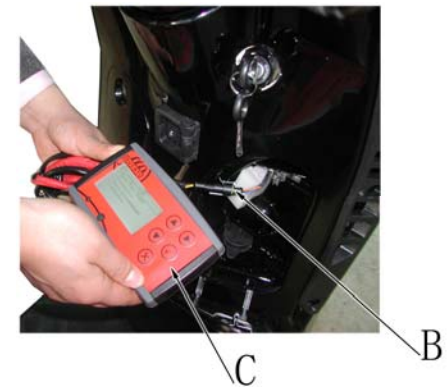
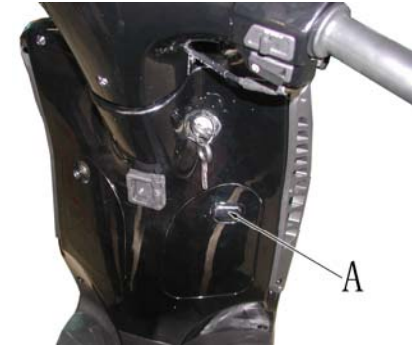
Connect the plug B of diagnosis wire 2P with diagnosis analyzer C

Note !!

After connection of plug of diagnosis analyzer, the screen will prompt “checking connection”:

Rotating the power key to ON:

The diagnosis analyzer will prompt “Connected” and after 5 seconds shows the main menu.



Calibration of TPS

Note ! At implementing the TPS calibration program, check the throttle cable and ECU for correct state.

- Set the selection bar (with up or down button) at **calibration** (FIG5).
Press OK Button for acknowledgment
Options will be shown at bottom of the calibration menu. (FIG6)
 - **Zeroing of LAMBDA pulse spectrum**
 - **TPS calibration**
- Set the selection bar (with up or down button) at **TPS calibration** (FIG6)
Press OK Button for acknowledgment (FIG6)
- The screen prompts:
 - **Press OK Button for acknowledgment or ESCB Button for exiting** (FIG7)
 - Press OK Button to start calibration program
 - Rotate the throttle handle to the maximum location and then fully return (FIG8)
 - Press OK Button for acknowledgment
 - Information confirmed on the screen: **calibration completed.** (FIG9)
 - Press ESC Button to Return to the main menu
 - Rotating the power key to **OFF** and remove the diagnosis analyzer.



FIG 5



FIG 6



FIG 7



FIG 8



FIG 9

Configuration of diagnosis analyzer

Connect diagnosis analyzer and rotate the power key to **ON**.

The diagnosis analyzer will prompt “Connected” and after 5 seconds shows the main menu (FIG10).

Move the selection bar (with up or down button) **to configuration** (FIG10)

Press OK Button for acknowledgment

The screen of diagnosis analyzer will show the options (FIG11)

Move the selection bar (with up or down button) **to background light**,

Press OK Button for acknowledgment (FIG11).

Options will be shown at bottom of the **background light** menu. (FIG12)

-Constant lighting on

-Economical

Move the selection bar (with up or down button) **to “Constant lighting on”** at

The screen background brightness is set at “Constant lighting on”. (FIG12)

Move the selection bar (with up or down button) **to “Economical”** and press C

The default of screen background brightness is “Constant lighting on”

Press ESC to return to **configuration**

Move the selection bar (with up or down button) **to Language** and press OK.

Options will be shown at bottom of the **Language** menu. (FIG13)

- English

- Italy

- French

- Germany

- Spanish

Move the selection bar (with up or down button) **to the desired language** and

Press ESC to return to **configuration**

Move the selection bar (with up or down button) **to LCD contrast** and press OK.

With up or down button adjust **LCD to proper contrast**

Press OK Button for acknowledgment or **ESCB Button for exiting** (FIG14).



FIG 10



FIG 11



FIG 12



FIG 13



FIG 14

Real-time data

Main menu

Move the selection bar (with up or down button) to **real-time data**

Press OK Button for acknowledgment

Show the list of **real-time data** (FIG 15, FIG 16, FIG 17)

- 1-inject. time Map
- 2-inject. time out
- 3-injection. phase
- 4-ignition. advance
- 5-RPM
- 6-TPS

- Injection time
- Injection correction
- Injection initial-phase
- Ignition advance
- Engine speed
- TPS (Throttle position scope)
- TPS = 0% Full-closed throttle
- TPS = 100% Full-opened throttle
- air temperature
- air temperature injection correction
- engine temperature
- engine temperature injection correction
- air pressure
- air pressure injection correction
- battery voltage
- battery voltage injection correction
- lambda offset
- Lambda injection correction
- crank correction
- General correction of pulse spectrum
- Idle valve opening phase
- Idle valve duty
- ECU temperature
- Error code
- ECU life time

- 7-Air. temperature
- 8-Air. temp. cor
- 9-Engine. Temp
- 10- Eng. Temp.cor
- 11- Air. pressure
- 12- Air. pres. cor.
- 13- Battery. voltage
- 14- Battery. inj. off
- 15- Lambda. offset
- 16-Lambda. cor.
- 17-Crank. cor.
- 18-General. cor.
- 19-Idel. phase
- 20-Idel. duty
- 21-ECU. Temperature
- 22-Error code
- 23-Life. time



FIG 15



FIG 16



FIG 17

Diagnosis

Main menu

Move the selection bar (with up or down button) to **diagnosis**

Press OK Button for acknowledgment (FIG18)

Options will be shown at bottom of the diagnosis menu. (FIG19)

Move the selection bar (with up or down button) to **Error check** (FIG19) and press OK Button for acknowledgment

Options will be shown at bottom of the **Error check** menu (FIG20).

Current error

Previous errors

Deleting previous errors

Move the selection bar selection to **Current error** and press **OK button** for acknowledgment

The screen shows the current error code and related information

Press ESCB Button for exiting and return to Error check (FIG20)

Move the selection bar (with up or down button) to Previous errors and press OK Button for acknowledgment

The screen shows the previous errors code and related information

Press ESCB Button for exiting and return to Error check

Move the selection bar (with up or down button) to **Deleting previous errors** and press OK Button for acknowledgment

The screen will prompt “Deleting previous errors?”

Press OK Button for acknowledgment to delete the previous errors from the memory

Press ESCB Button for exiting and return to diagnosis.



FIG 18



FIG 19



FIG 20

Diagnosis activation

Main menu

Move the selection bar (with up or down button) to Diagnosis activation and press OK button for acknowledgment (FIG21);

Options will be shown at bottom of the menu (FIG22)

- **Test of fuel pump relay**
- **Test of fan relay**
- **Test of idle valve**
- **Check of ignition coil**
- **Check of injector**

Move the selection bar (with up or down button) to **Test of fuel pump relay** and press OK Button for acknowledgment

Press OK Button again to implement the test of target sample or Press ESC Button to cancel the test

After activation the screen will show definite results and information confirmation

Move the selection bar (with up or down button) to **Test of fan relay** and press OK Button for acknowledgment

Press OK Button again to implement the test of target sample or Press ESC Button to cancel the test

After activation the screen will show definite results and information confirmation

Move the selection bar (with up or down button) to **Test of idle valve** and press OK Button for acknowledgment.

Press OK Button again to implement the test of target sample or Press ESC Button to cancel the test

After activation the screen will show definite results and information confirmation

Move the selection bar (with up or down button) **to Check of ignition coil** and press OK Button for acknowledgment

Press OK Button again to implement the test of target sample or Press ESC Button to cancel the test

After activation the screen will show definite results and information confirmation

Move the selection bar (with up or down button) **to Check of injector** and press OK Button for acknowledgment

Press OK Button again to implement the test of target sample or Press ESC Button to cancel the test

After activation the screen will show definite results and information confirmation

Press ESCB Button for exiting and return to diagnosis.

Move the selection bar (with up or down button) to **engine working time** and press OK Button for acknowledgment.

After pressing OK Button again, the screen will show total working time of ECU and the last maintenance time.

Press ESCB Button for exiting and return to diagnosis.

Press ESCB Button for exiting and return to main menu .



FIG 21



FIG 22

ECU ERRORS CODING TABLE

SHORT FLASHING [S.F.] = DECIMAL UNIT.

LONG FLASHING [L.F.] = DECINE.

S.C. = SHORT CIRCUIT.

O.C. = OPEN CIRCUIT.

ERRORS TYPE	ERROR NUMBER	FLASHING NUMBER	DIAGNOSIS
ERROR_TPS_LOW	1	1 S.F.	<ul style="list-style-type: none"> • TPS NOT CONNECTED.
ERROR_TPS_HIGH	2	2 S.F.	<ul style="list-style-type: none"> • WRONG TPS CALIBRATION. • WIRING FAULTY [Wire that connected PIN20 ECU to PIN2 TPS SENSOR is at voltage $\geq +5V$]. • TPS FAULTY
ERROR_TEMP-H ₂ O_LOW	3	3 S.F.	<ul style="list-style-type: none"> • WIRING FAULTY [Short Circuit between the two wires of the TH₂O SENSOR: Wire 1 connect PIN19 ECU to PIN1 TH₂O SENSOR; Wire 2 connect PIN17 ECU to PIN2 TH₂O SENSOR]. • TH₂O SENSOR FAULTY.
ERROR_TEMP-H ₂ O_HIGH	4	4 S.F.	<ul style="list-style-type: none"> • TH₂O SENSOR NOT CONNECTED → [Before to execute the ACTIVE DIAGNOSIS-FAN TEST, to solve the problem at the TH₂O SENSOR (error 4)]. • WIRING FAULTY [Wire that connected PIN19 ECU to PIN1 TH₂O SENSOR is at voltage $\geq +5V$]. • TH₂O SENSOR FAULTY.
ERROR_TEMP-AIR_LOW	5	5 S.F.	<ul style="list-style-type: none"> • WIRING FAULTY [Short Circuit between the two wires of the TAIR SENSOR: Wire 1 connect PIN18 ECU to PIN1 TAIR SENSOR; Wire 2 connect PIN17 ECU to PIN2 TAIR SENSOR]. • TAIR SENSOR FAULTY.
ERROR_TEMP-AIR_HIGH	6	6 S.F.	<ul style="list-style-type: none"> • TAIR SENSOR NOT CONNECTED. • WIRING FAULTY [Wire that connected PIN18 ECU to PIN1 TAIR SENSOR is at voltage $\geq +5V$]. • TAIR SENSOR FAULTY.

ERROR_PRES-AIR_LOW	7	7 S.F.	• ECU FAULTY.
ERROR_PRES-AIR_HIGH	8	8 S.F.	
ERROR_VB_LOW	9	9 S.F.	• WIRING FAULTY. • VOLTAGE REGULATOR FAULTY.
ERROR_VB_HIGH	10	1 L.F.	
ERROR_INJECTOR_S.C.	11	1 L.F. + 1 S.F.	• WIRING FAULTY [Short Circuit between the two wires of the INJECTOR: Wire 1 connect PIN7 ECU to PIN2 INJECTOR; Wire 2 connect PIN87 MAIN RELAY to PIN1 INJECTOR]. • INJECTOR FAULTY.
ERROR_INJECTOR_O.C.	12	1 L.F. + 2 S.F.	• INJECTOR NOT CONNECTED. • WIRING FAULTY [Short Circuit between the wire that connect PIN7 ECU to PIN2 INJECTOR and GND] → [ONLY ENGINE ON (RPM > ZERO)]. • INJECTOR FAULTY.
ERROR_IDLE-VALVE_S.C.	13	1 L.F. + 3 S.F.	• WIRING FAULTY [Short Circuit between the two wires of the IDLE VALVE: Wire 1 connect PIN8 ECU to PIN2 IDLE VALVE; Wire 2 connect PIN87 MAIN RELAY to PIN1 IDLE VALVE]. • IDLE VALVE FAULTY.
ERROR_IDLE-VALVE_O.C.	14	1 L.F. + 4 S.F.	• IDLE VALVE NOT CONNECTED. • WIRING FAULTY [Short Circuit between the wire that connect PIN8 ECU to PIN2 IDLE VALVE and GND]. • IDLE VALVE FAULTY.
ERROR_FAN-RELAY_S.C.	15	1 L.F. + 5 S.F.	• WIRING FAULTY [Short Circuit between the wire that connect PIN4 ECU to PIN85 FAN RELAY and +BATTERY]. • FAN RELAY FAULTY. • To execute the ACTIVE DIAGNOSIS-FAN TEST, only if there is no problem on the TH ₂ O SENSOR].
ERROR_FAN-RELAY_O.C.	16	1 L.F. + 6 S.F.	• FAN RELAY NOT CONNECTED. • WIRING FAULTY [Short Circuit between the wire that connect PIN4 ECU to PIN85 FAN RELAY and GND]. → [THE FAN ALWAYS ON]. • FAN RELAY FAULTY.
ERROR_MAIN-RELAY_S.C.	17	1 L.F. + 7 S.F.	• WIRING FAULTY [Short Circuit between the wire that connect PIN3 ECU to PIN85 MAIN RELAY and +BATTERY] → [ERROR 17 CAUSE ERROR 32, ONLY WITH ENGINE ON]. • MAIN RELAY FAULTY.

ERROR_MAIN-RELAY_O.C.	18	1 L.F. + 8 S.F.	<ul style="list-style-type: none"> • MAIN RELAY NOT CONNECTED → [ERROR 18 CAUSE ERROR 12 AND ERROR 14]. • WIRING FAULTY [Short Circuit between the wire that connect PIN3 ECU to PIN85 MAIN RELAY and GND]. • MAIN REALY FAULTY.
ERROR_ENABLE-START_S.C.	19	1 L.F. + 9 S.F.	<ul style="list-style-type: none"> • WIRING FAULTY [Short Circuit between the wire that connect PIN10 ECU to PIN85 START RELAY and +BATTERY]. • START RELAY FAULTY.
	20		
	21		NOT USED IN THIS APPLICATION
	22		
ERROR_LAMBDA	23	2 L.F. + 3 S.F.	<ul style="list-style-type: none"> • LAMBDA SENSOR NOT CONNECTED. • WIRING FAULTY [Short Circuit between the two wires of the LAMBDA SENSOR: Wire 1 connect PIN12 ECU to PIN1 LAMBDA SENSOR; Wire 2 connect PIN11 ECU to PIN2 LAMBDA SENSOR]. • LAMBDA SENSOR FAULTY. • DIAGNOSIS ONLY WITH ENGINE ON (RPM > ZERO) → IF VEHICLE IS IN IDLE CONDITION; TH₂O > 35°C; MANAGEMENT LAMBDA ON → ERROR 23 IS DETECTED FROM THE ECU AFTER ABOUT 3 MINUTS.
ERROR_SAFETY-SWITCH_0	24	2 L.F. + 4 S.F.	<ul style="list-style-type: none"> • ROLL OVER SENSOR NOT CONNECTED. • WIRING FAULTY [wire that connected PIN13 ECU to PIN1 ROLL OVER SENSOR is at voltage ≥ +5V]. • ROLL OVER SENSOR FAULTY.
ERROR_SAFETY-SWITCH_1	25	2 L.F. + 5 S.F.	<ul style="list-style-type: none"> • ROLL OVER SENSOR IN ON CONDITION → [ERROR 25 CAUSE ERROR 32, ONLY WITH ENGINE ON]. • WIRING FAULTY [Short Circuit between the wire that connect PIN13 ECU to PIN1 ROLL OVER SENSOR and GND]. • ROLL OVER SENSOR FAULTY.
	26		
	27		NOT USED IN THIS APPLICATION
ERROR_TEMP-ECU_HIGH	28	2 L.F. + 8 S.F.	<ul style="list-style-type: none"> • ECU FAULTY.
ERROR_TEMP-ECU_LOW	29	2 L.F. + 9 S.F.	

ERROR_PICK-UP_O.C.	30	3 L.F.	<ul style="list-style-type: none"> • PICK-UP SENSOR NOT CONNECTED. • WIRING FAULTY [Short Circuit between the wire that connect PIN15 ECU to PIN1 PICK-UP SENSOR and +BATTERY]. • PICK-UP SENOR FAULTY. <p>DIAGNOSIS ONLY WITH ENGINE ON (RPM > ZERO) → IN THE STARTING PHASE THE ECU NOT SHOW THE ERROR 30 BUT THE RPM VALUE = 0 [THE DIAGNOSTIC INSTRUMENT → MAIN MENU' → STATUS MONITOR → REAL TIME VALUES → (5) PRM → RPM=0].</p>
ERROR_PICK-UP	31	3 L.F. + 1 S.F.	<ul style="list-style-type: none"> • PICK-UP SENSOR FAULTY.
ERROR_IGNITION_CURRENT	32	3 L.F. + 2 S.F.	<ul style="list-style-type: none"> • IGNITION COIL NOT CONNECTED. • WIRING FAULTY [Short Circuit between the wire that connect PIN3 ECU to PIN85 MAIN RELAY and +BATTERY] → [ONLY ENGINE ON (RPM>ZERO)]. • IGNITION COIL FAULTY.

OSS DIAGNOSTIC LED:

1) KEY ON; ENGINE OFF → NOT ERRORS PRESENT:

- DIAGNOSTIC LED ON FOR 5 SECONDS THEN THE DIAGNOSTIC LED TURN OFF AND STAY OFF.

2) KEY ON; ENGINI OFF → ONLY ONE ERROR PRESENT:

- DIAGNOSTIC LED ON FOR 10 SECONDS THEN THE DIAGNOSTIC LED TURN OFF AND THAN BEGIN TO FLASHING TO CODING THE ERROR (TO SEE THE ERRORS CODING TABLE).
- CODIFIED THE ERROR THE DIAGNOSTIC LED ON FOR 10 SECONDS THEN THE DIAGNOSTIC LED TURN OFF AND THAN REPEATS THE ERROR CODE.
- THIS LOOP CONTINUE UNTIL THAT THE ENGINE ON (IF POSSIBLE) OR KEY OFF.

3) KEY ON; ENGINE OFF → MORE ERRORS PRESENT:

- DIAGNOSTIC LED ON FOR 10 SECONDS THEN THE DIAGNOSTIC LED TURN OFF AND THAN BEGIN TO FLASHING TO CODING THE ERRORS (TO SEE THE ERRORS CODING TABLE).
- CODIFIED THE FIRST ERROR THE DIAGNOSTIC LED ON FOR 10 SECONDS THEN THE DIAGNOSTIC LED TURN OFF AND THAN FLASHING TO CODING THE SECOND ERROR; THIS LOOP CONTINUE UNTIL THAT THE LAST ERROR IS CODIFIED; THAN THE DIAGNOSTIC LED ON FOR 10 SECONDS THEN THE DIAGNOSTIC LED TURN OFF AND THAN BEGIN TO FLASHING TO CODING THE FIRST ERROR...
- THIS LOOP CONTINUE UNTIL THAT THE ENGINE ON (IF POSSIBLE) OR KEY OFF.

4) KEY ON ENGINE OFF → EXCEEDED MAINTENANCE TIME AND NOT ERRORS PRESENT:

- DIAGNOSTIC LED ON FOR 5 SECONDS THEN THE DIAGNOSTIC LED TURN OFF AND THAN BEGIN TO FLASHING TO CODING THE EXCEEDED MAINTENANNCE TIME (15 SHORT FLASHING); THAN THE DIAGNOSTIC LED TURN OFF AND STAY OFF.
- THIS SINGLE LOOP IS REPEATED EVERY TIME THAT THE KEY OFF AND THEN KEY ON.

TO RESET THE MAINTENANCE TIME FLASHING TO EXECUTE THIS PROCEDURE:

- TO HOLD THE TPS FULL OPEN AND THEN KEY ON;
- (TPS ALWAYS FULL OPEN) THE DIAGNOSTIC LED TURN OFF;
- (TPS ALWAYS FULL OPEN) AFTER 10 SECONDS THE DIAGNOSTIC LED ON FOR 5 SECONDS AND WITHIN THIS 5 SECONDS TO CLOSE THE TPS AND KEY OFF.

THIS IS THE PROCEDURE TO RESET THE DIAGNOSTIC LED WHEN EXCEEDED THE MAINTENANCE TIME.

THIS EVENT IS REPEATED WHEN THE MAINTENACHE TIME IS AGAIN PASSED.
THIS TIME (MAINTENACHE TIME) IS A PARAMETER OF THE ECU MAP.

5) KEY ON; ENGINE OFF → EXCEEDED MAINTENANCE TIME AND ONE OR MORE ERRORS PRESENT:

- DIAGNOSTIC LED ON FOR 10 SECONDS THEN THE DIAGNOSTIC LED TURN OFF AND THAN BEGIN TO FLASHING TO CODING THE ERRORS (TO SEE THE ERRORS CODING TABLE).
- CODIFIED THE FIRST ERROR THE DIAGNOSTIC LED ON FOR 10 SECONDS THEN THE DIAGNOSTIC LED TURN OFF AND THAN FLASHING TO CODING THE SECOND ERROR; THIS LOOP CONTINUE UNTIL THAT THE LAST ERROR IS CODIFIED; THAN THE DIAGNOSTIC LED ON FOR 10 SECONDS THEN THE DIAGNOSTIC LED TURN OFF AND THAN BEGIN TO FLASHING TO CODING THE FIRST ERROR...
- THIS LOOP CONTINUE UNTIL THAT THE ENGINE ON (IF POSSIBLE) OR KEY OFF.
- THE CODIFIED OF THE EXCEEDED MAINTENANCE TIME NOT EXECUTED UNTIL THAT SOME ERRORS ARE PRESENT.
- RESTORED THE INJECTION SYSTEM AND KEY ON, ENGINE OFF; THE LOOP IS THAT ONE AT THE POINT 4 (**EXCEEDED MAINTENANCE TIME AND NOT ERRORS PRESENT**).