SERVICE MANUAL

ATV-50/90 II ANSI

September, 2005

High Power Engine

HER CHEE INDUSTRIAL CO., LTD.

Foreword

This service manual contains information on servicing ATV-50/90/100.

This manual is written for use as a guideline only. It is recommended that any mechanic, with or without sufficient experience, thoroughly read through the manual and only attempt to service those areas that are fully understood in accordance with the guidelines provided by this manual. For fully qualified mechanics, this manual supplies service data necessary for repairs and maintenance. It is highly recommended that a qualified mechanic, regardless of technical level, should study the service manual in full before attempting service on ATV-50/90/100.

All the data and diagrams provided in this service manual are valid at the time of publication. Information may be updated without notice due to improvements or upgrades.

I N D E X

Engine-

Chassis-

Initial Set-Up Information

Injector Oil

Use a good grade of oil that is specially formulated for two-stroke engines, synthetic type is recommended. JEHM recommends SAE 30.

Transmission Gear Oil

Use multi-grade motor oil of SAE 90 or 85W-140.

Break-In Procedure

To insure maximum durability and optimal performance and to avoid engine damage, please pre-mix the first four tanks of fuel with two-stroke engine oil at 30:1 ratio. Do not operate the ATV at more than half throttle for the first three hours. During the break-in period (the first four tanks of fuel), operate the vehicle at various RPM's and do not operate the vehicle above half throttle for extended periods.

Engine

The ATV-50/90/100Ⅱ have a two-stroke, reed induction, piston port motor. It requires the use of two-cycle oil and should never be run without oil in the oil tank. Extreme damage to the motor will result.

Ignition System

The ignition system installed on ATV-50/90/100Ⅱ is the Computerize Digital Ignition (CDI) type. There is no maintenance required for this type of system.

Chassis

The chassis is constructed of mild steel tubing. If any frame repairs are necessary, oxyacetylene welding can be used. If wire feed or arc welding is used, use extreme care and disconnect the battery while welding.

Set-Up Procedure

The following instructions provided a general overview of the procedures needed to properly set-up and deliver the ATV-50/90/100 to the retail customer.

1. Take out the battery and fill with acid liquid. Pre-charging the battery will extend its life. The preparation and charge procedure is based on the battery's instruction.
2. Install the rear wheels and parts in the following order:
   A. 14x40x4.5mm washer (big)
   B. 14mm hex-bolt (torque 450-550kg-cm, 44-54N-m)
   C. Cotter pin (open up the end after installed)
   D. Rubber cap
3. Install the front wheels and parts in the following order:
   A. 12x40x4.5mm washer (big)
   B. 12mm hex-bolt (torque 300-350kg-cm, 29.5-34N-m)
   C. Cotter pin (open up the end after installed)
   D. Rubber cap
4. Set the handle bar into the lock-pin of the steering base. Tie-up the 4 hex-socket bolts. Install the rear cover into handle bar and adjust the cables and wires properly. Install the front cover into the rear cover.
5. Pull the seat-lock cable and remove the seat. Install the battery with the red wire to positive (+) and the black wire to the negative (-).
6. Remove the oil tank cap and fill with 2 stroke oil (SAE 30)of a synthetic and low-smoke type, and enough unleaded gasoline to operate. Be sure the arrow mark on the fuel valve arm (petcock) is set into the correct position (on).
7. Install the Front Bumper.
8. Turn on the main switch and try to start up the engine. In order to use the electric starter, you need to check the following.
   A. Turn on the engine operation switch located on left handle bar
   B. Pull the rear-brake lever
   C. Push the electric starter bottom to left or right
9. If the vehicle is operating in a very dusty area, please add more oil on the air cleaner filter.

PDI (PRE DELIVERY INSPECTION)
(For ATV-50/90/100)

☐ 1. Record the frame and engine number into the owner's manual.

☐ 2. Check that all tires have correct pressure specified on the tire or in the owner's manual.

☐ 3. Engine lubrication oil (2 stroke, Grade SAE30) tank is filled.

☐ 4. Battery is installed properly.

☐ 5. All brake cables are adjusted properly.

☐ 6. Fuel tank has enough gasoline to operate.

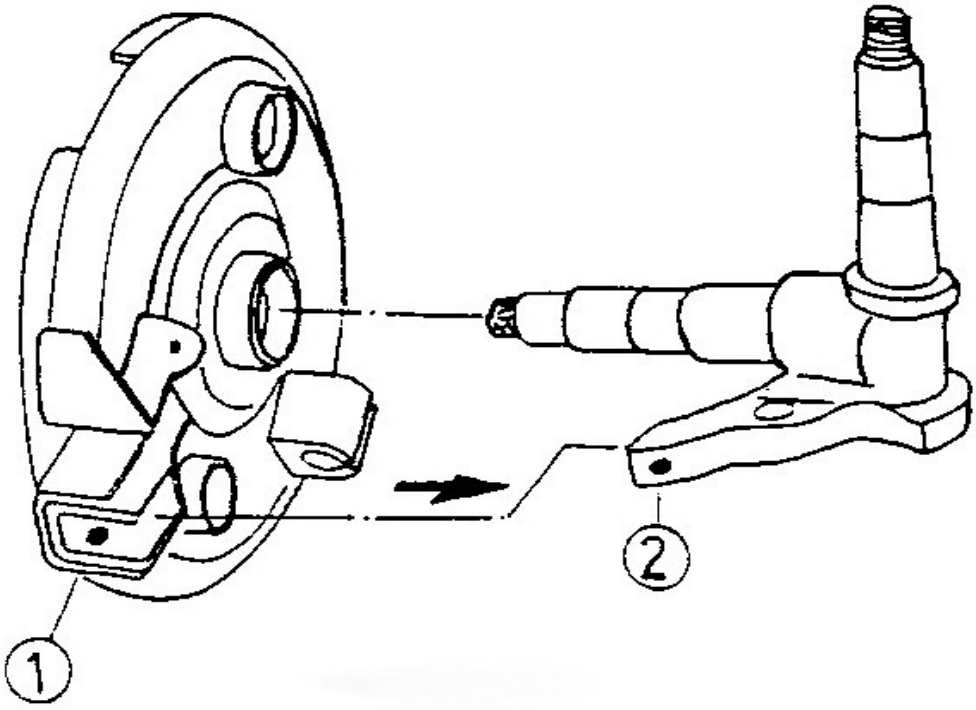
☐ 7. Check the suspension and drive chain for proper setup.

☐ 8. Check that all electrical components and lights are working properly.

☐ 9. Make sure that the owner's manual and tool bag are installed under the seat.

If there are any other questions, please check the owner's manual for details.

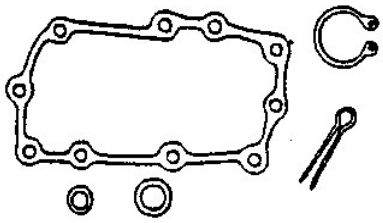
CAUTION: Before install the front rim, beware the stopper• of front brake plate assembly must fit into the front knuckle 7-mm plate• .



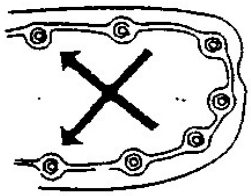
INFORMATION FOR PREPARATION

Attention on Operation

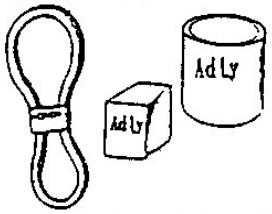
- All washers, oil rings, clamp rings, opening pins shall be duly replaced by a new item when dismounted.



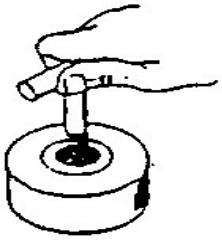
- Locking of all screws, nuts, cross screws shall be performed in the order of first the large screws and then the small ones and from inside to outside in opposite angles by tightening the torque locks.



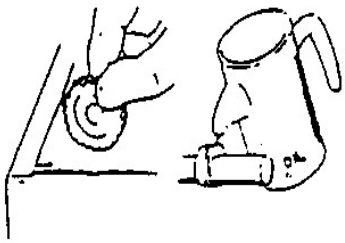
- All items must use original parts, pure oil and greases.



- All service shall use special tools and general tools to repair.



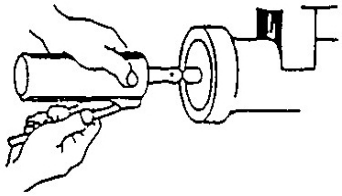
- All dismounted items requiring for checks shall be duly cleaned and for assembly, all items shall be duly lubricated.



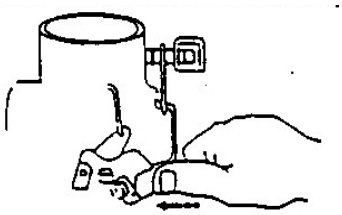
INFORMATION FOR PREPARATION

Attention on Operation

- Certified lubricants in cans shall be used on all the elements to be lubricated.



- After assembly, performance of all elements shall be duly checked and the locking shall be duly verified.



- In case of an operation is performed by over 2 people, the assignment shall be conducted in coordination and safety shall be the first priority.

- Definition of signs:
  The sign given in the Service Manual shall refer to the operation methods and observation.

OIL: Lubrication by designated lubricant.

GREASE: Lubrication by grease

Special Tool: Parts on which special tools shall be used

Tool: General tools shall be used

New: Replace by new items after dismounting

Attention

Dangerous and important operations

INFORMATION FOR PREPARATION

SPECIFICATION

MODEL	ATV-50	ATV-90
ENGINE	50 C.C.	90 C.C.
TYPE	AIR-COOLED, 2-STROKE SINGLE CYLINDER	
STARTING	KICK & ELECTRIC	
LUBRICATION	OIL PUMP SEPARATE SUPPLY	
TRANSMISSION	AUTOMATIC (C.V.T. V-BELT)	
SPARK PLUG	NGK BP7HS	
BATTERY	12V-4AH	
OIL CAPACITY	1 LITER	
FUEL TANK	4.5 LITER	
OVERALL LENGTH	1270 mm	1540 mm
OVERALL WIDTH	875 mm	850 mm
OVERALL HEIGHT	860 mm	900 mm
SEAT HEIGHT	660 mm	700 mm
WHEEL BASE	955 mm	
CLAIMED DRY WEIGHT	100 kg	105 kg
FRONT BRAKE	DOUBLE DRUM	
REAR BRAKE	DRUM	
FRONT SUSPENSION	OIL DAMPED, INDEPENDENT, SINGLE A-ARM	
REAR SUSPENSION	OIL DAMPED, SWING SINGLE SHOCK	
FRONT TIRE	16x8-7	20 x7-8（19*8-7）
REAR TIRE	16x8-7	18.5x9.5-8（19*8-7）

☆SPECIFICATIONS SUBJECT TO CHANGE WITHOUT ANY NOTICE. ☆

LOCKING TORQUE

Adopt the standard torque locking for the item unlisted.

STANDARD TORQUE：

Type	Locking Torque (kg-m)
5 mm Screw	0.4
6 mm Screw	1.0
6 mm Hex Washer Face Bolt / Nut	1.2
8 mm Hex Washer Face Bolt / Nut	2.7
10 mm Hex Washer Face Bolt / Nut	4.0

CHASSIS：

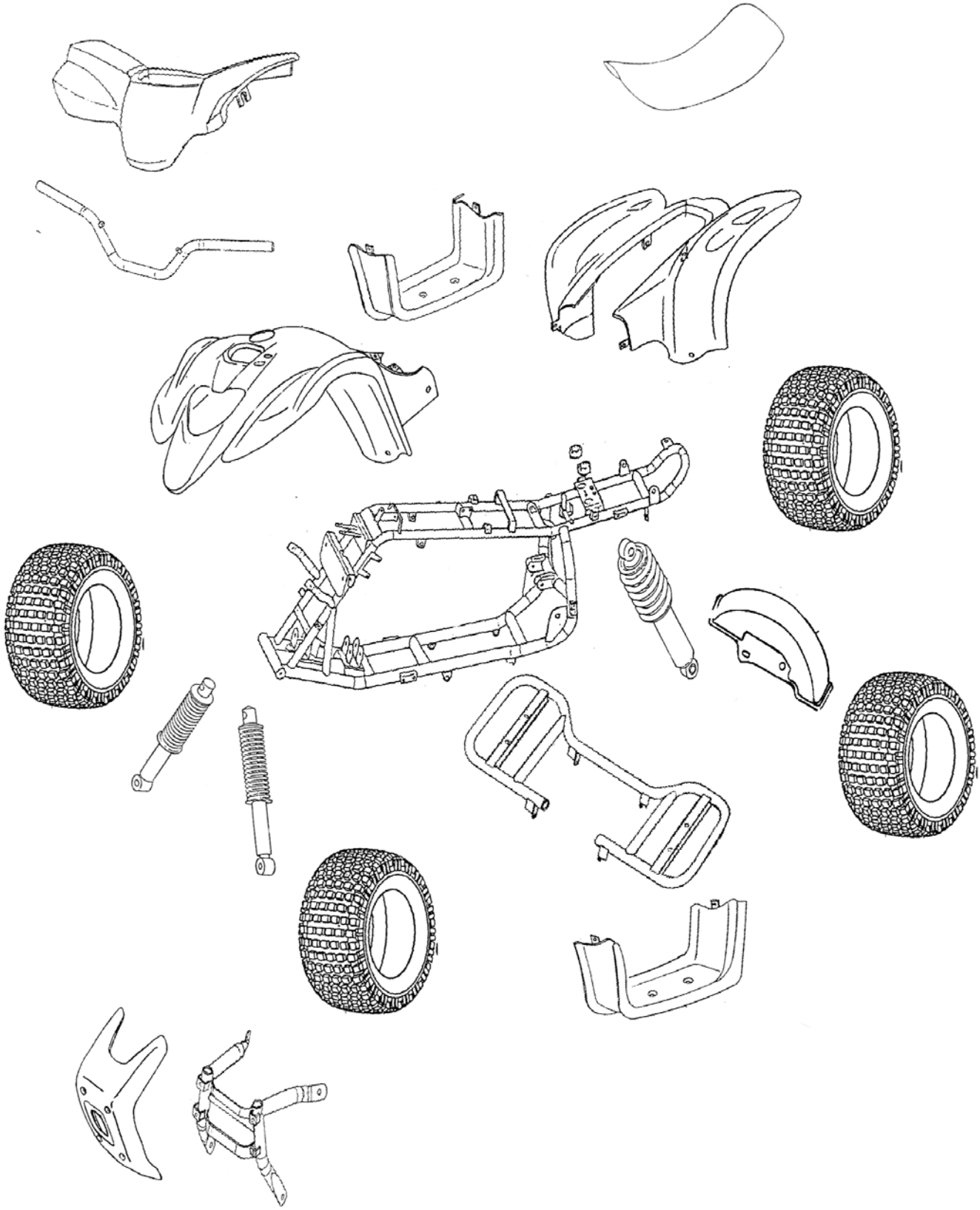
Locking Place	Quantity	Dia. (mm)	Locking Torque (kg-m)
Front Wheel Axle Nut	1	12	3.5
Rear Axle Nut	1	14	5.0
Rear Brake Arm Screw	1	6	1.2
Front Shock Absorber	4	10	4.0
Rear Shock Absorber	2	10	4.0
Engine Mounting Nut – Front	1	10	4.5
Engine Mounting Nut – Rear	1	8	3.0

ENGINE：

Locking Place	Quantity	Dia. (mm)	Locking Torque (kg-m)
Screw of Cylinder Cap	4	6	1.0
Flywheel Nut	1	10	3.8
Clutch Cover Nut	1	10	3.8
Clutch Carrier Nut	1	28	5.5
Nut of Primary Fix Sheave	1	10	3.8
Oil-check Screw	1	8	1.3
Joint Screw of Exhaust Muffler	2	6	1.2
Exhaust Pipe Support Screw of Muffler	1	8	3.0
Spark Plug	1	14	1.4
Bolt of Crank Shaft Case	6	6	1.0

INFORMATION FOR PREPARATION

The following drawing that shows the disassembling situation of the cover parts for ATV-50/90/100(II).



CHECK AND ADJUST

Way of Check & Adjustment

1. Mark "◯" is checking time.
2. Mark "☆" is the regular exchange of service items.
   This exchange time is just for general riding of the majority not for the special use , please arrange with this principle according to the difference of the riding condition.

Service Items	Service Time (month)				Judgement Standard	Remarks
	Before riding	1st	Each 6	each 12		
Operating Device						
Handle- Play, loose/tight	◯		◯	◯		
Operation	◯		◯	◯		
Wheels- Right/left turn round angle				◯		
Front and Rear Cushion – Damage			◯	◯		
Installation of Bolt			◯	◯		
Brake Device						
Brake- Play	◯		◯	◯	Play Handle , handle front 10-20 mm	
Test Ride	◯		◯	◯		
Adjust	◯	◯	◯	◯		
Wires- Loose / tight and damage		◯	◯	◯		
Wore of brake & operating parts				◯		
Brake Hub.				◯	(mm) / Front / Rear	
					Standard diameter / 85 / 130	
					Limitation / 85.5 / 130.7	
Riding Device					Tire Size / 20×7-8 / **19×7.5-8** / 19×7-8 / 16×8-7	
Tires pressure	◯		◯	◯	Normal / 8 psi / 10 psi / 2.2 psi / 4.5 psi	
					Max. / 9 psi / 11 psi / 2.6 psi / 5 psi	
					Min. / 7 psi / 9 psi / 1.8 psi / 4 psi	

Service Items	Service Time (month)				Judgement Standard	Remarks
	Before riding	1st	Each 6	each 12		
Riding Device						
Tire						
Check & damage of tires	○		○	○	Ditch--- front wheel till 3 mm Rear wheel till 3 mm	
Abnormal & ditch in tires	○		○	○		
Bolt & nut of tires locking			○	○	Blocking torque Front wheel – 3.0~3.5 kg-m Rear wheel – 4.5~5.5 kg-m	
Tightness of front bearing				○		
Tightness of rear bearing				○		
Buffer device						
Spring - damage			○	○		Spring of shock absorber.
Suspension arm – damage of joint gap & arm			○	○		
- oil leakage or damage			○	○		
Tightness of installation			○	○		
Power transmission device						
Clutch - action		○	○	○		
Gear Box			○	○	SAE 90 or 85W-140	
Electric device						
Ignition device - Spark plug			○	○	Gap of spark plug 0.6~0.7 mm	
Battery - connection of terminal				○		
Wiring of electrical appliance – damage or loose in connection place				○		
Engine						
Body – starting & abnormal noise			○	○		
Low speed & accelerating		○	○	○	Idle : 1800±100 rpm	
exhaust			○	○		
air filter			○	○		

Service Items	Service Time (month)				Judgement Standard	Remarks
	Before riding	1st	Each 6	each 12		
Lubrication device						
Oil and oil filter	○	○	○	○	Check the oil level	
Oil leakage			○	○		
Fuel installation						
Fuel filter is dirty / Clogged				○		
Leakage of fuel			○	○		
Throttle gate & choke				○		
Alteration of tubes				○		
Lights						
Action			○	○		
On/off normal , dirty , damage	○					
Exhaust pipe & muffler						
Installation loosed or damage				○		
Function of muffler				○		
Frame & body –loose or damage				○		
Cleaning combustion chamber , exhaust pipe , and carbon muck in muffler					۹Each 2 years	
DRIVE CHAIN						
Check the tension of drive chain	○	○			Tolerance: 10~20mm	
Others - greasing of each part			○	○		
Abnormal from previous day –confirm normal	○					

Disassembly of External Parts

- Remove the external parts for check and adjustment.

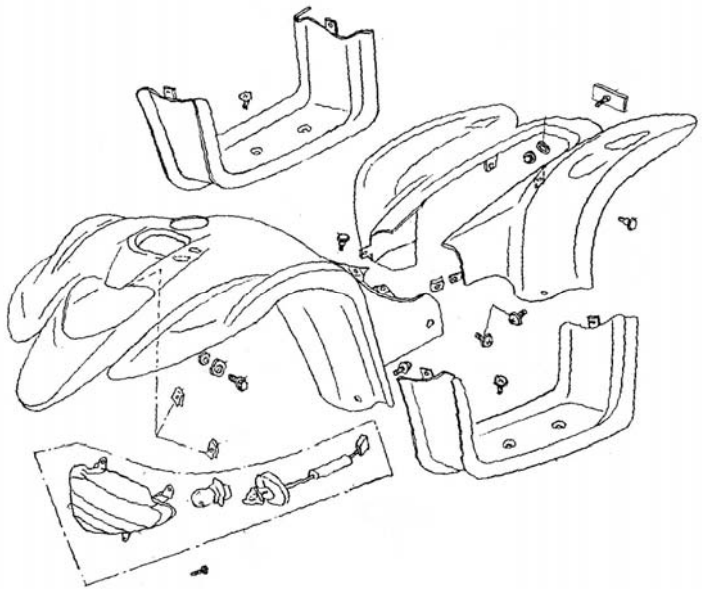
Disassembly the Rear Cover:
- Pull the Seat Releaser Unit and take off Seat Ass'y.
- Remove 4 Pan Flat Head Phillips Bolt.
- Remove 2 Ladder Bolt.
- Remove 4 Nylon Nut, 2 Plain Washer and 2 Rubber Washer.

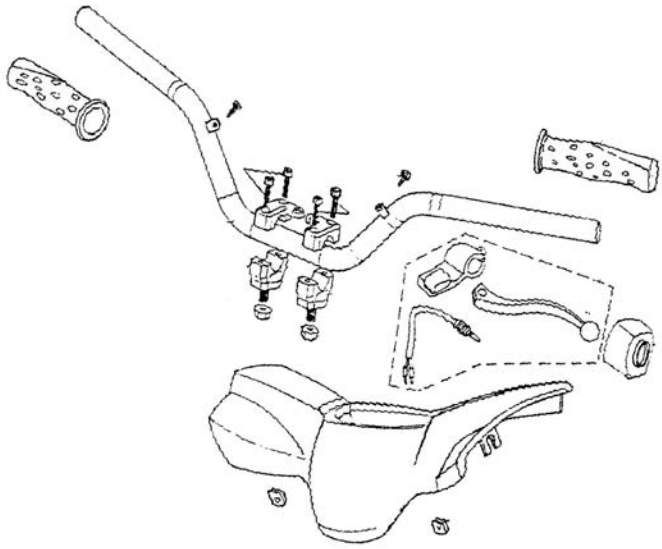
Remove Floor Panel:
- Remove 4 Pan Flat Head Phillips Bolt.

Disassembly the Handle Bar:
- Remove 2 Tapping Screw Truss Head Phillips and take off Front Handle Bar Cover.
- Remove 2 Handle Grip.
- Remove 4 Hex Socket Bolt and take off the Handle Bar.
- Release 1 Hex Socket Bolt and take off the R. Lever Ass'y.
- Release 2 Pan Flat Head Phillips Bolt and take off the L. Handle Switch Ass'y.
- Release 1 Hex Socket Bolt and take off the L. Lever Ass'y.

Disassembly the Front Cover:
- Disassembly the Handle Bar.
- Remove the Fuel Tank Cap.
- Pull the Seat Releaser Unit and take off Seat Ass'y.
- Remove 2 Ladder Bolt. and 4 Pan Flat Head Phillips Bolt.
- Remove 2 Hex Washer Face Bolt and 4 Plain Washer And 2 Hex Flange Nut With Serration.

- Disconnect Main Switch Wire and head light wire.





WARNNING:

∗ Do not damage & break the cover.

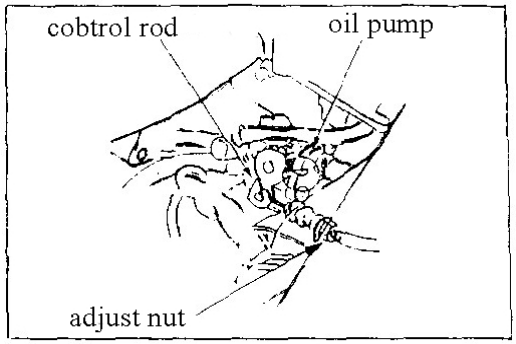
∗ Before locking screws, please confirm the matching is correct of all parts.

● CHECK AND ADJUST

Adjustment of Oil Pump

∗ ***WARNNING:***

Going on this operation after adjusting and checking the guide wiring of throttle.



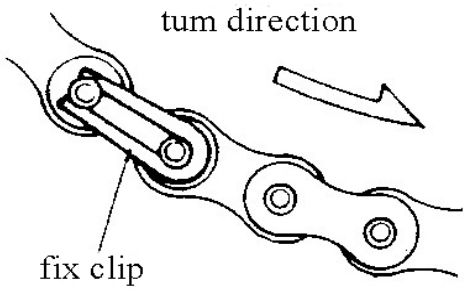
- The tolerance within 1 mm of the oil pump control cable is good. Starting the engine, push slightly the throttle to feed oil. At same time of rising the engine rotation, confirm the function of control rod.

- The condition will be appeared with bad synchronizing as follows :
  ∗ Starting difficult and having smoke when opening degree of oil pump's control rod is too big.
  ∗ Piston will be burnt when the opening degree of oil pump's control rod is too small.

Adjustment of Drive Chain

- Loose 4 Hex Bolts on Rear Brake Panel.
- Adjust the drive chain adjuster to proper chain tolerance 10 ~ 20 mm (unload).
- Tie up 4 Hex bolt on Rear Brake Panel.
- Lubricate the chain.

CANTION: Beware the direction of chain fix clip if disassembly the chain.



LUBRICANT SYSTEM

Attention of Operation

- Pay attention to avoid dust enter to the interior of engine and oil tube when disassembly the oil pump.
- Never disassembly oil pump.
- Must draw out the air in the pump if there have air in the pump when disassembly tube of carburetor.
- After disconnect the oil tube, must fulfill the oil in the connection tube before installation.

Diagnosis of Troubles

Too much smoke, means too much carbon muck piping up the spark plug.

- Poor synchronizing adjust of oil pump (too much exhaust gas).
- Bad quality of engine oil.

Overheating

- Poor synchronizing adjustment of oil pump (too exhaust gas).
- Bad quality of engine oil.

Piston burnt

- Short of engine oil, or engine oil tube is clogged.
- Poor adjustment of oil pump.
- Air in tube system or in oil pump.
- Bad oil pump.

Clogging oil from oil tank

- Vent of oil tank's cap is blocked.
- Oil Filter is clogged.

Preparation standard

- Use separating engine oil appointed (use for 2-stroke).
- Oil tank capacity: 1.1 liter

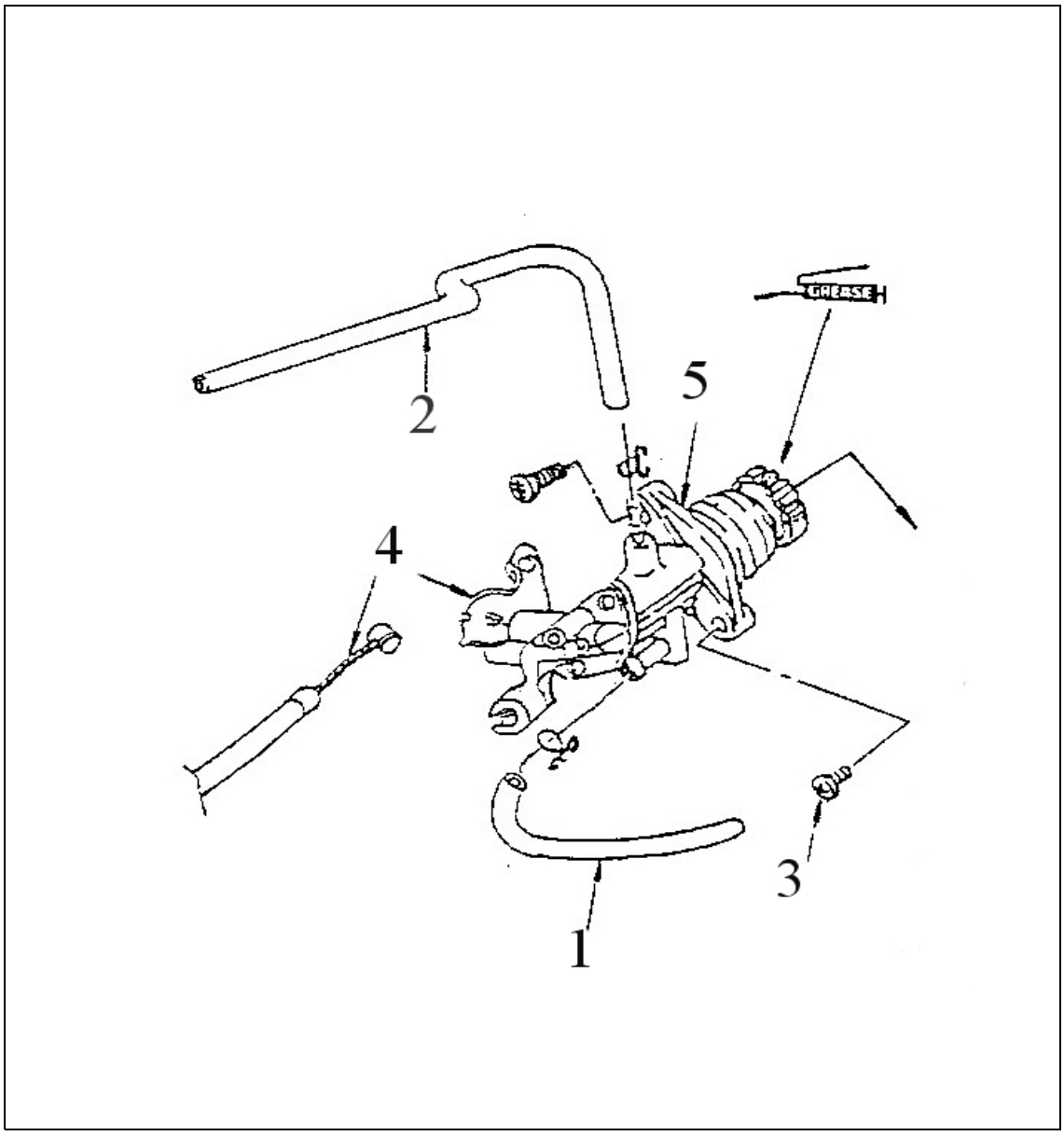
LUBRICANT SYSTEM

Disassembly of Motor Oil Pump

- Remove Generator Cover.
- Remove A.C.G. fly wheel and fly wheel base.

＊***WARNING:***

Operating after cleaning motor oil pump around and no entering to the crank shaft case.

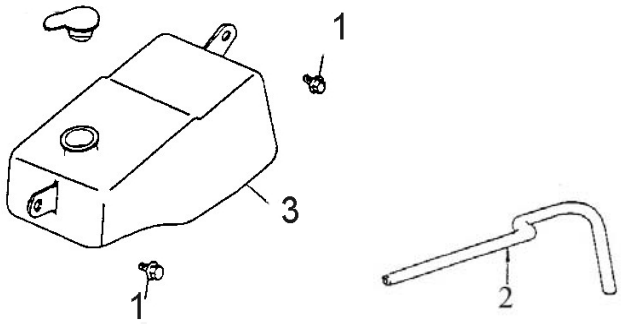


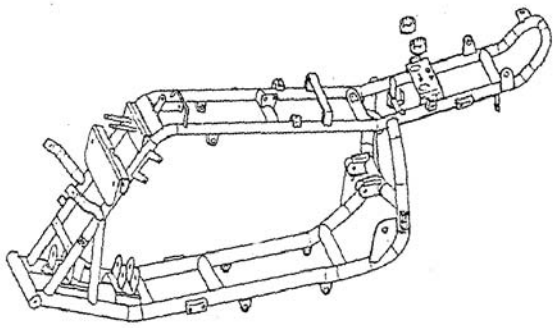
LUBRICANT SYSTEM

	Operation / Parts Name	Q'ty	Remarks
	Disassembly		
1	Fuel tube	1	***WARNING:*** Clogging the tube to avoid fuel flow out.
2	Fuel connection tube	1	
3	Pan phillips bolt	2	• Remove from both side of oil pump.
4	Control cable	1	• Remove from oil pump.
5	Oil pump	1	
Assembly 5→1			• Assembly with sequence in reverse of disassembly. ∗ ***WARNING:*** –Smear oil to new O ring ,before install the oil pump into crank case. –The oil pump must correctly installed into crank case. ***WARNING:*** –Don't loosen adjusted screw on control cable. –Adjust the cable if it's loose.

LUBRICANT SYSTEM

Disassembly of Oil Tank





	Operation / Parts Name	Q'ty	Remarks
	Disassembly		
1	Hex Bolt	1	∗ ***WARNING:***
2	Joint of oil disassembly oil pipe	1	Fill motor oil with clean container.
3	Oil tank	1	
	Assembly 3→1		• Operation with sequence in reverse of disassembly. ∗ ***WARNING:*** Connect correct oil pipe after assembly , release the air in motor oil pump.

FUEL SYSTEM

Attention in Operation

- Pay attention to the parts which using gasoline.
- Tube & Cable must be in accordance with the correct location.
- Release air in oil pump when disconnect oil tube.

Diagnosis of Trouble

No starting

- No gasoline in tank
- The arrow mark of Fuel valve pointed at “OFF” position
- Gasoline blocked
- Too much fuel in cylinder
- Air filter is clogged

Idle speed unstable , of carburetor rotation not smooth

- Poor idle speed adjustment of carburetor.
- Low compression pressure
- Poor ignition system
- Bad adjustment of air adjusting screw on carburetor
- Air filter is clogged
- Defect of auto side-plunger on carburetor
- Idle speed nozzle is clogged

Mixed air too thin

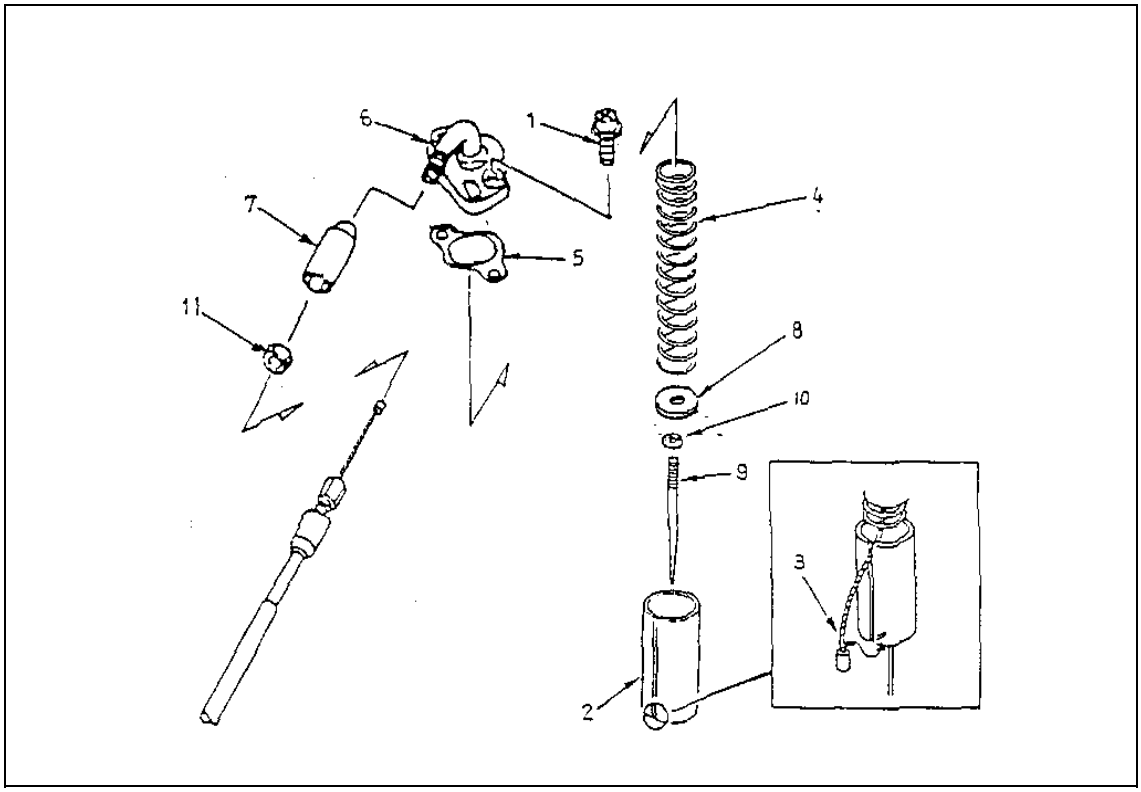
- Nozzle of carburetor is clogged
- Gasoline filter is clogged
- Vent of gasoline tank is clogged
- Gasoline tube cranked, broke, clogged
- Poor action of float chamber valve.
- Gasoline level too low
- Air pipe is clogged

Mixed air too rich

- Poor action of float chamber valve
- Gasoline level too high
- Air nozzle is clogged
- Auto side-plunger defect

Disassembly / Assembly Valve Of Throttle

- Disassembly carburetor.



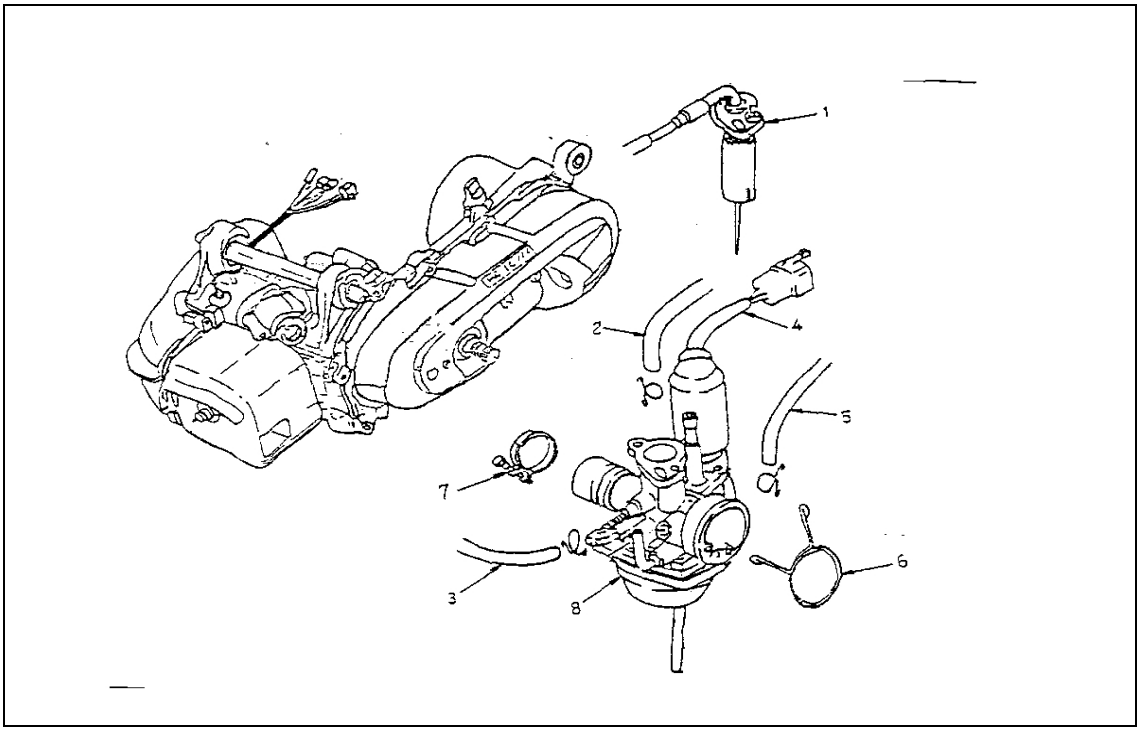
	Operation / Parts Name	Q'ty	Remarks
	Disassembly		
1	Pan phillips bolt	2	
2	Throttle valve	1	
3	Throttle cable	1	
4	Throttle valve spring	1	
5	Gasket	1	∗ ***WARNING:***
6	Throttle cover	1	Remove from guide wire of throttle
7	Rubber Sealing	1	valve.
8	Washer	1	
9	Needle nozzle	1	
10	Clamp	1	
11	Adjust nut	1	

FUEL SYSTEM

	Operation / Parts Name	Q'ty	Remarks
	Assembly		
11	Adjusted screw	1	＊***WARNING:***
10	Clamp	1	Assembly of needle nozzle.
9	Needle nozzle	1	Assembly of throttle valve.
8	Washer	1	
7	Sealing set of guide wire	1	Assembly of throttle cable.
6	Throttle cover	1	
5	Washer	1	
4	Throttle valve spring	1	
3	Throttle cable	1	
2	Throttle valve	1	Aim the ditch of throttle valve to chamber, then install throttle valve into carburetor.
1	Pan phillips bolt	1	Lock the throttle cover.

Remove Carburetor

- Turn the arrow of fuel valve pointed at “OFF”.



	Operation / Parts Name	Q’ty	Remarks
	Disassembly		
1	Throttle valve set	1	
2	Gasoline tube	1	
3	Engine oil tube	1	
4	Auto-side plunger wire of carburetor	1	
5	Vacuum pressure tube	1	
6	Clip	1	
7	Intake manifold hose clamp	1	
8	Carburetor	1	
	Assembly		
	8→1		∗ ***WARNING:*** Don’t let dust enter into carburetor.
3	Motor oil joint		∗ ***WARNING:*** Release air.

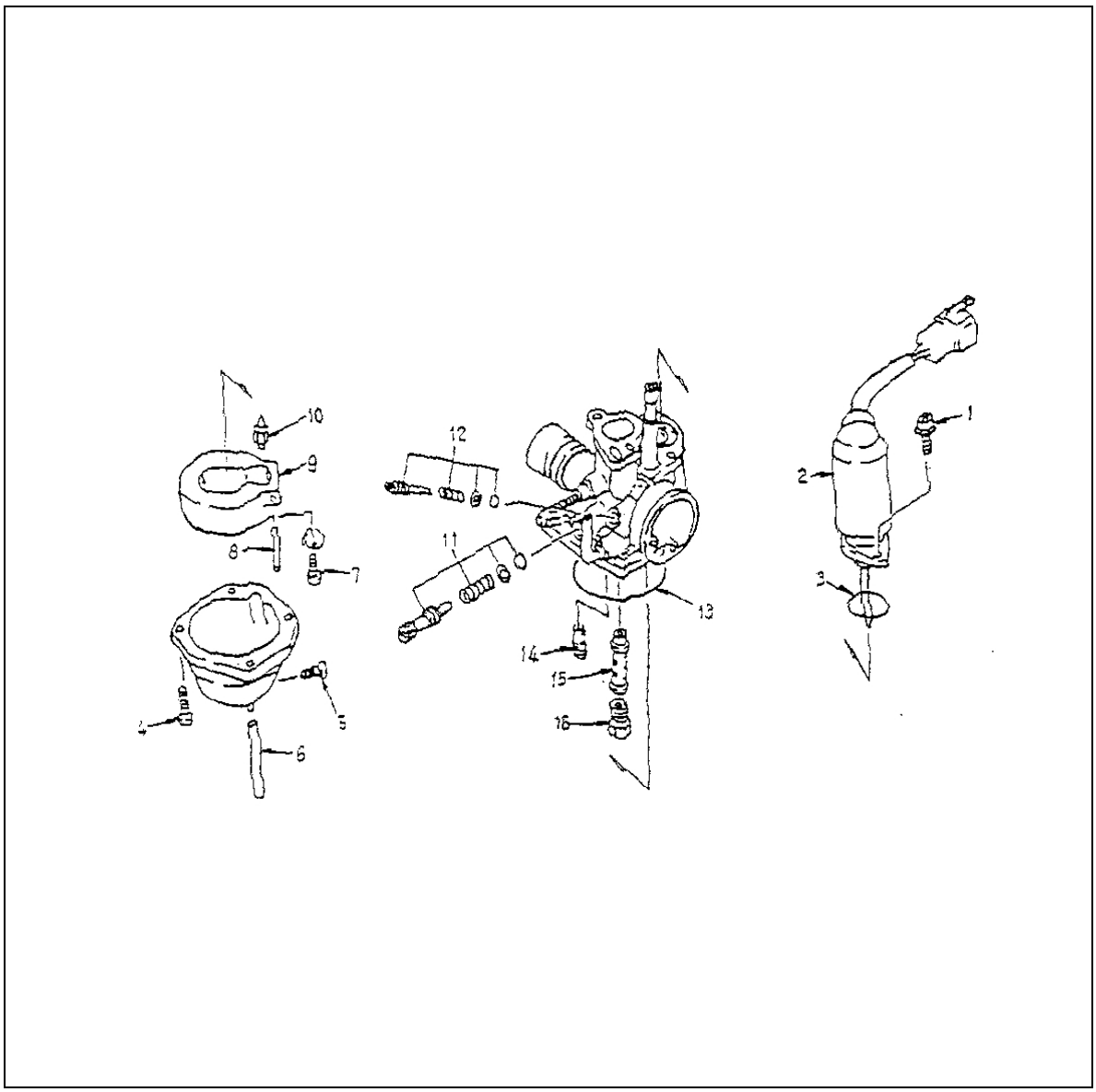
FUEL SYSTEM

Disassembly / Assembly Carburetor

- Disassembling of carburetor.
- Adjust the idle speed.
- Adjust the air adjust screw.

∗ ***WARNING:***

- No fire.
- Before disassembling, loose fuel-draining screw, draining out the gasoline from carburetor.

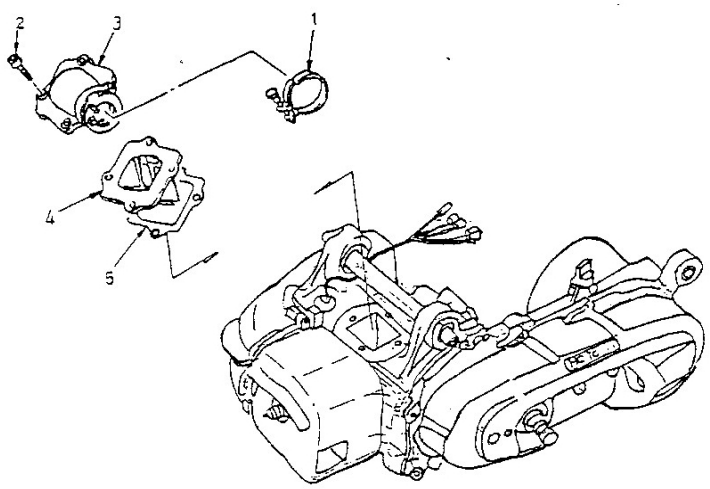


FUEL SYSTEM

	Operation / Parts Name	Q'ty	Remarks
	Disassembly		
	Plunger starter		
1	Pan phillips bolt	2	
2	Auto-side plunger	1	
3	Oil ring	1	
	Float Chamber		
4	Pan phillips bolt	4	
5	Drain screw	1	
6	Over flow tube	1	
7	Pan phillips bolt	1	
8	Float pin	1	
9	Float	1	
10	Needle valve	1	
	Carburetor Ass'y		
11	Throttle screw set	1	
12	Air adjust screw set	1	∗ ***WARNING:*** Must confirm rotation before disassembling.
13	Float chamber seal		
14	Pilot jet	1	Not locking too much, avoid to hurt seat face.
15	Main jet base	1	
16	Main jet	1	
	Assembly		• Operating with sequence in reverse of Disassembling.
	16→1		
12	Air adjust screw set		∗ ***WARNING:*** use high pressure air clean each way of carburetor.
			∗ ***WARNING:*** must adjust air screw when changing air screw and carburetor ass'y.

Disassembly of Inlet Valve

- Disassembly of handle bar & front cover.
- Disassembly of fuel tank
- Disassembly of carburetor.



	Operation / Parts Name	Q'ty	Remarks
	Disassembly		
1	Intake manifold hose clamp	1	
2	Hex washer face bolt	4	
3	Intake manifold	1	
4	Reed valve ass'y	1	
5	Reed valve gasket	1	
	Assembly		・Assembling with sequence in reverse of disassembly.
	5→1		
4	Reed valve ass'y		∗ ***WARNING:*** Using new gasket , the gasket must aim at hole of reed valve.
5	Reed valve gasket		∗ ***WARNING:*** confirm no leaking of the reed valve and manifold.

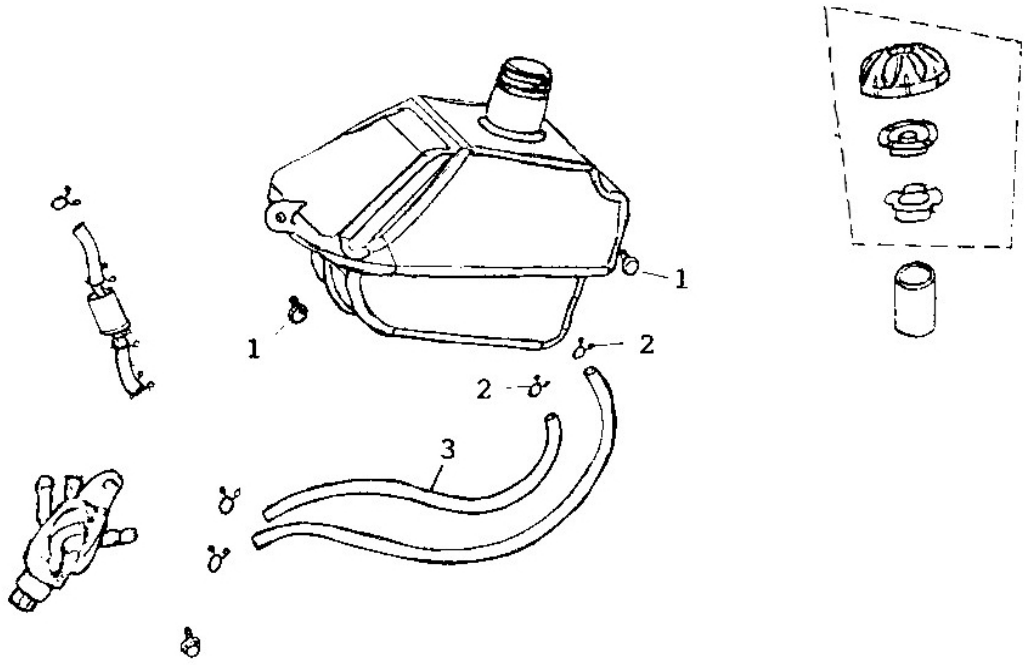
FUEL SYSTEM

Disassembly of Fuel Tank

- Disassembly of handle bar and front cover.

＊ ***WARNING:***

- No fire.
- Shall be wiped off when fuel overflowed.



	Operation / Parts Name	Q'ty	Remarks
	Disassembly		
1	Hex bolt	2	
2	Clip	2	
3	Fuel Tube	2	
	Assembly 3→1		● Operating with sequence in reverse of disassembly.

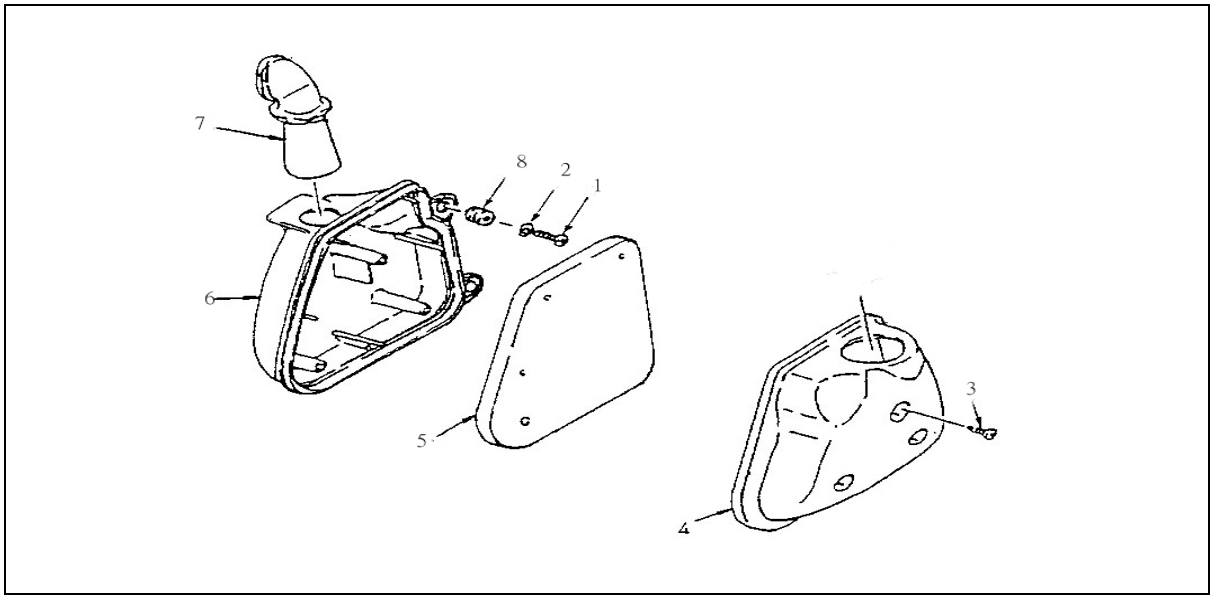
FUEL SYSTEM

Replace Air filter

- Disassembly of oil tank.
- Remove 2 Hex Bolt and move to the rear of the Air Cleaner Ass'y.
- Remove 3 Tapping Screw Truss Head Phillips.
- Remove Air Cleaner case cap.
- Replace new Air filter.

Disassembly of Air Cleaner Ass'y

- Disassembly of handle bar and front cover.
- Disassembly of oil tank.



	Operation / Parts Name	Q'ty	Remarks
	Disassembly		
1	Hex socket bolt	2	
2	Plain washer	1	
3	Self-tapping screw	3	
4	Air cleaner case cap	1	
5	Air filter	4	
6	Air cleaner case	1	
7	Cleaner guide pipe	2	
8	Grommet	1	
	Assembly 8→1		● Operating with sequence in reverse of disassembly.

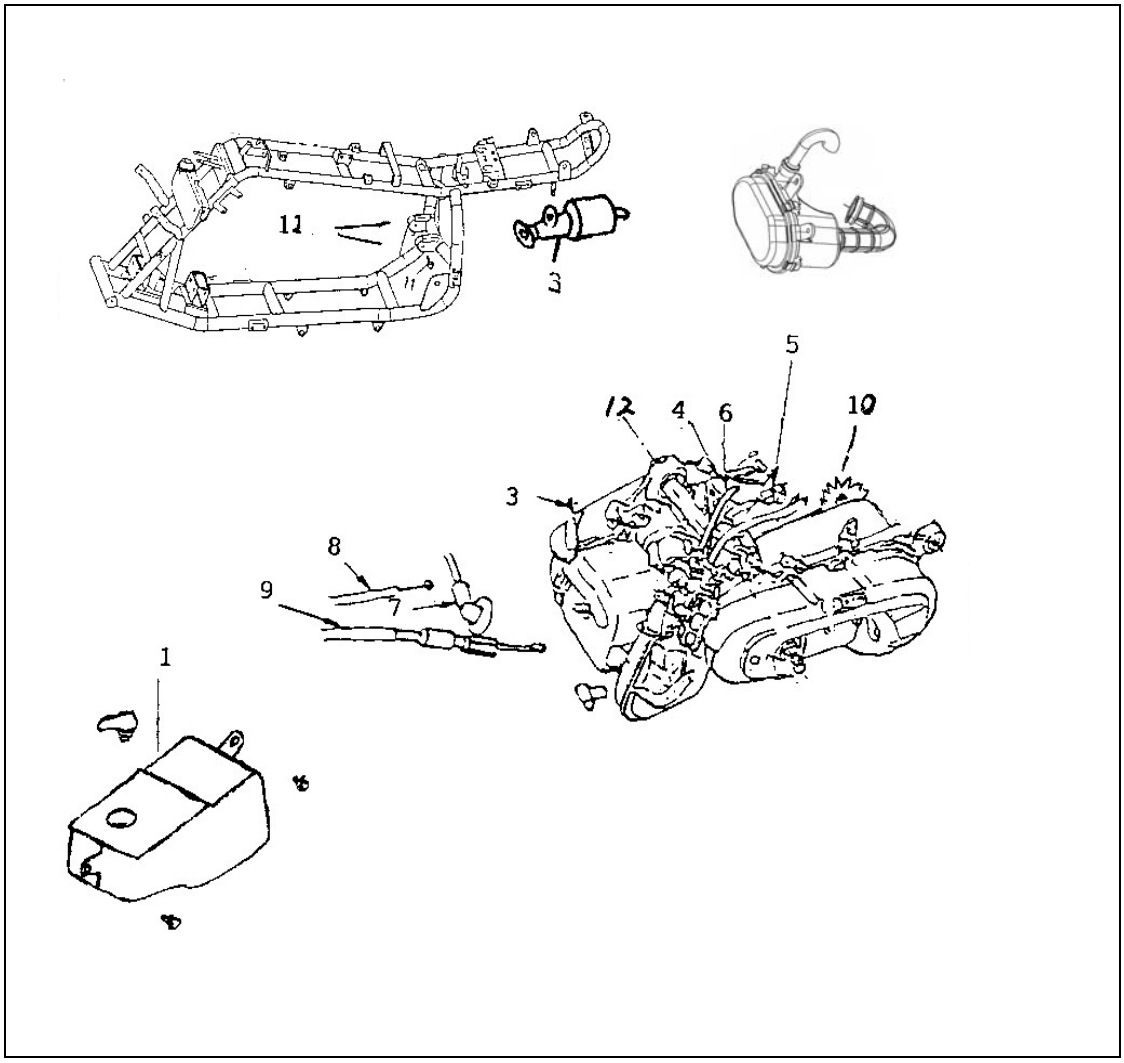
REMOVE OF ENGINE

Attention of Operation

- Operation after disassembling the engine.
  - Crank shaft case
  - Crank shaft
  - Exchange bearing of final transmission mechanisms.

Disassembly of Engine

- Disassembly of external cover of body.
- Disassembly of throttle valve and cable.

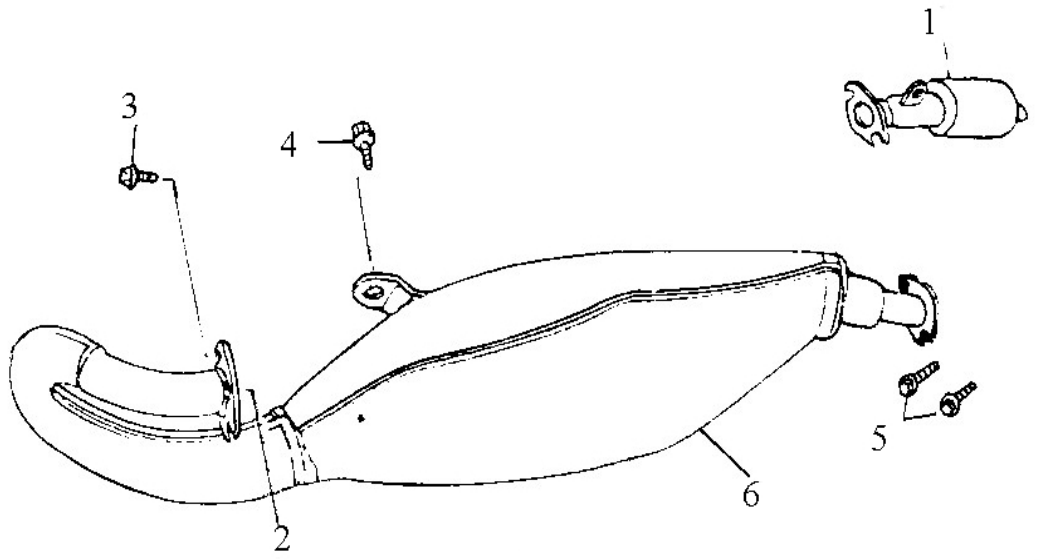


REMOVE OF ENGINE

	Operation / Parts Name	Q'ty	Remarks
	Disassembly		
1	Oil Tank	1	7.***WARNING:***
2	Air Cleaner Ass'y	1	The oil over-flow when remove the oil tube , so use clip or plug stop the seal.
3	Tail of Muffler	1	
4	ACG wire /wire of start motor	2	
5	Starter wire of carburetor	1	
6	Vacuum pressure tube	1	
7	Cap of spark plug	1	
8	Oil pump control cable	1	
9	Throttle cable	1	
10	Drive Sprocket Ass'y	1	∗ ***WARNING:***
11	Hex washer face bolt of engine	4	● Actually for brace the frame, avoid body turn inside out.
12	Engine	1	
	Assembly 12→1		∗ ***WARNING:*** Carry out following adjusting after installation. – Cable of throttle valve – Oil pump control cable – Rear break cable

REMOVE OF ENGINE

Disassembly of Muffler



	Operation / Parts name	Q'ty	Remarks
	Disassembly		
1	Remove tail of muffler	1	
2	Take off the engine Ass'y	1	
3	Hex head phillips bolt	2	
4	Hex washer face bolt	1	
5	Hex washer face bolt	1	
6	Muffler		
	Assembly		• Assembling with sequence in reverse of disassembly.
	5→1		

CYLINDER HEAD / CYLINDER / PISTON

Attention of Operation

- Can be operated when engine installed on vehicle.
- Must cleaning before operating, avoiding dust enter the engine.
- Remove the gasket dust stay on joint face.
- Avoid to use screw driver harm the joint face when remove the cylinder & cylinder head.
- Avoid to harm the cylinder inner surface and piston face.
- Cleaning before check parts, and smear motor oil appointed in sliding face before installing.

Diagnosis of Troubles

Low compression pressure , poor start , idle speed not stable

- Air leakage of cylinder head gasket.
- Wear & damage the piston ring.
- Wrong installation of spark plug
- Wear & damage the cylinder and piston.
- Reed valve defect.

Compression pressure too high, overheating, locking

- Piling up carbon of cylinder head or piston head.

Piston Noise

- Wear the cylinder and piston.
- Wear the piston pin hole and piston pin.
- Wear the needle bearing of crank connecting rod (small end) .

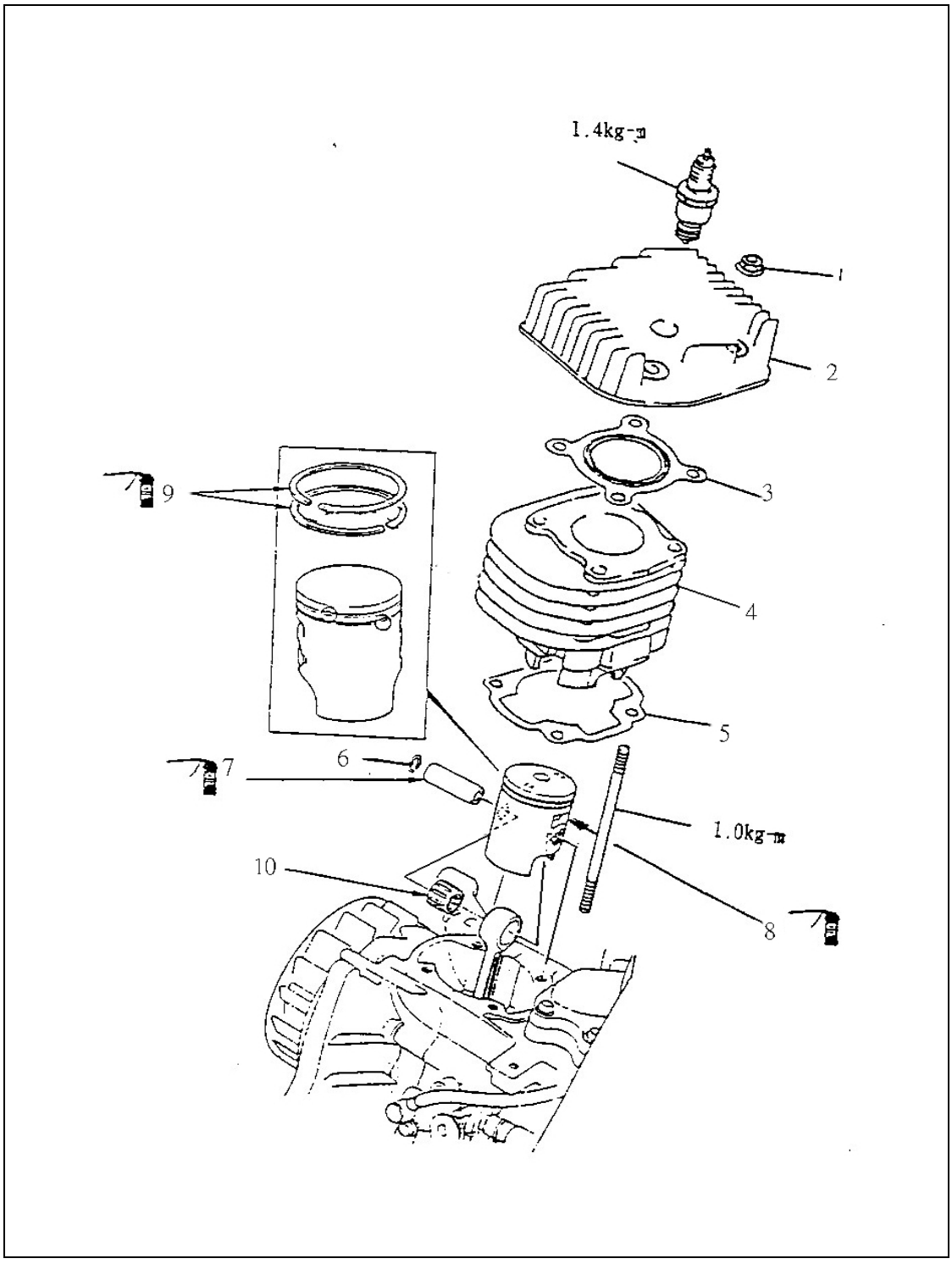
Piston ring noise

- Wear or damage the piston ring.
- Wear or damage the cylinder.

CYLINDER HEAD / CYLINDER / PISTON

Disassembly of Cylinder Head / Cylinder / Piston

- Disassembly of cover
- Disassembly of muffler
- Disassembly of generator cover
- Disassembly of spark plug cap

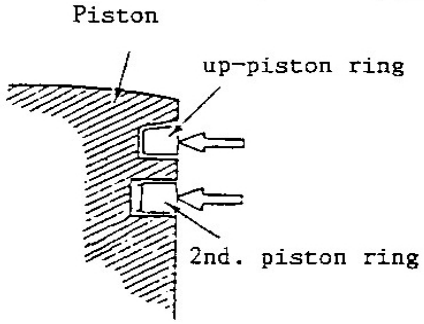


CYLINDER HEAD / CYLINDER / PISTON

	Operation / Parts Name	Q'ty	Remarks
	Disassembly		
	Cylinder head		
1	Nut of cylinder head	4	∗ ***WARNING:*** Loosing nut 2-3 times.
2	Cylinder head	1	
3	Cylinder head gasket	1	
	Cylinder		
4	Cylinder	1	∗ ***WARNING:*** Don't knock cooling fin.
5	Cylinder gasket	1	∗ ***WARNING:*** Clean and not damage cylinder gasket of crank shaft case.
	Piston		
6	Piston ring clip	2	
7	Piston pin	1	
8	Piston	1	
9	Piston ring	2	
10	needle bearing	1	
	Assembly 10→1		• Operation with sequence in reverse of disassembly.

Installation of Piston Ring

- Install top-piston ring & 2nd piston ring on piston.
- Do not scratch piston and do not bend piston rings.
- Remove carbon muck inside ring ditch and piston ring when not installed.
- Be sure the rings rotate freely after install into piston.



∗ ***WARNING:***

Change whole set of piston ring with genuine parts.

Starter / Driving Disc / Clutch / Transmission Disc

Attention of Operation

- Don’t make greases stick to surface of transmission belt or belt plate. Otherwise , the efficiency of power transmission will be lowered by skid.

Diagnosis of Trouble

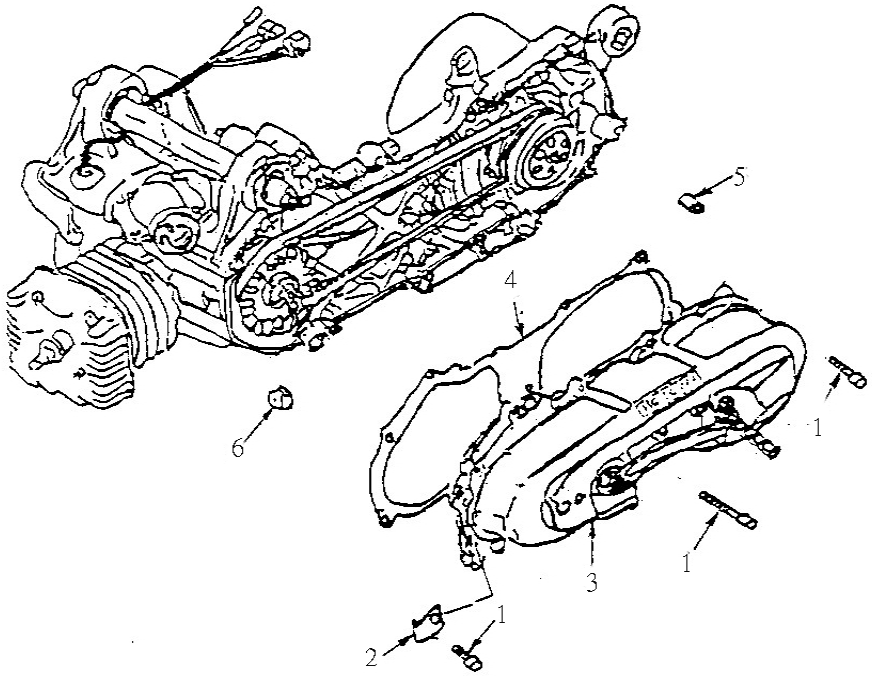
Vehicle does not move after engine start up

- Drive belt wear-out
- Drive face comp. damage
- Clutch lining wear-out
- Driven Ass’y spring defect

Power insufficient

- Drive belt wear-out
- Driven Ass’y spring defect
- Drive face dirty or oily
- Weight roller wear-out

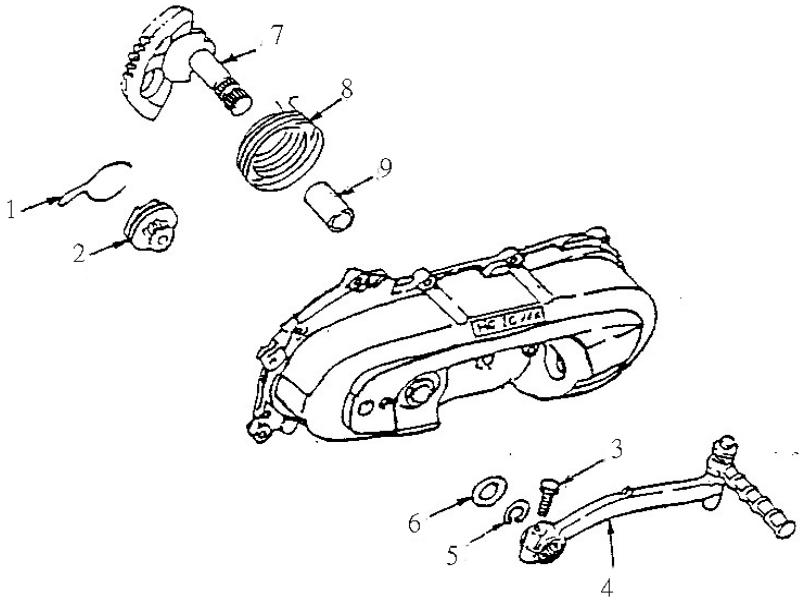
Disassembly of Left Crank Case Cover



	Operation / Parts name	Q'ty	Remark
	Disassembly		
1	Hex socket bolt	12	
2	Carburetor tube bracket	1	
3	Left crank case cover	1	
4	Crankcase cover gasket	1	
5	Dowel pin	2	
6	Grommet	1	
	Assembly 6→1		• Operation with sequence in reverse of disassembly.

Disassembly of Kick Starter

- Disassembly of left crank case cover.

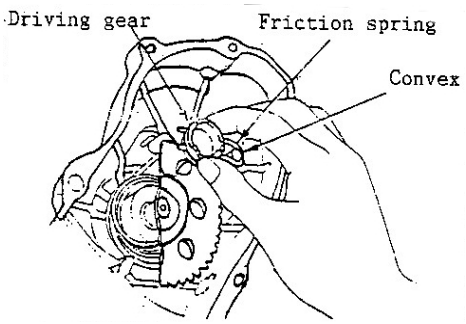


	Operation / Parts name	Q'ty	Remark
	Disassembly		
1	Kick pinion spring clip	1	
2	Kick pinion	1	∗ ***WARNING:*** Rotating pedal kick to crank and remove the case cover assembly.
3	Hex washer face bolt	1	
4	Kick crank	1	
5	External ring clamp	1	
6	Plain washer	1	
7	Starting shaft ass'y	1	
8	Starting shaft reset spring	1	
9	Bushing	1	

	Operation / Parts name	Q'ty	Remark
	Assembly		
9	Washer	1	
8	Starting shaft reset spring	1	∗ ***WARNING:*** Unable to install main shaft fix position when inside and outside reset spring overlap. Use flat-driver screw start from inside then outside spring and press main shaft.
7	Starting shaft ass'y	1	
6	Plain washer	1	
5	External ring clamp	1	
4	Kick crank	1	
3	Hex washer face bolt	1	
2	Kick pinion	1	
1	Kick pinion spring clip	1	

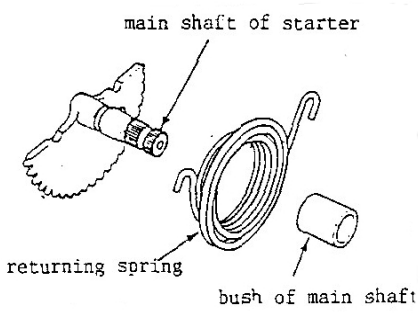
Installation of Kick Pinion / Kick Pinion Spring Clip

- Set kick starter shaft first.
- Turning starter, hang kick pinion spring clip on crank shaft case convex and assembly of kick pinion to the location of removing.
- Turning starter, let starting shaft and kick pinion conjoin.

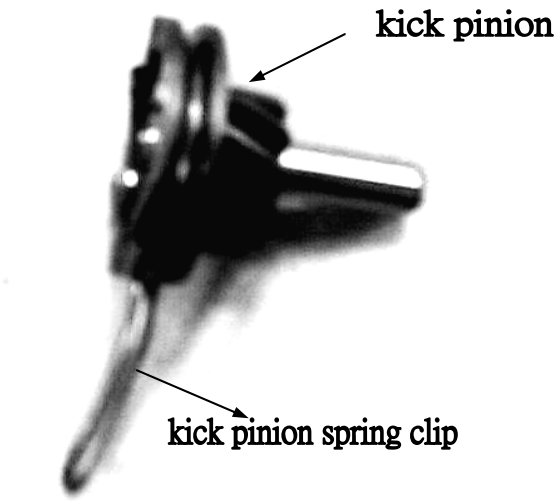


Check of Starter

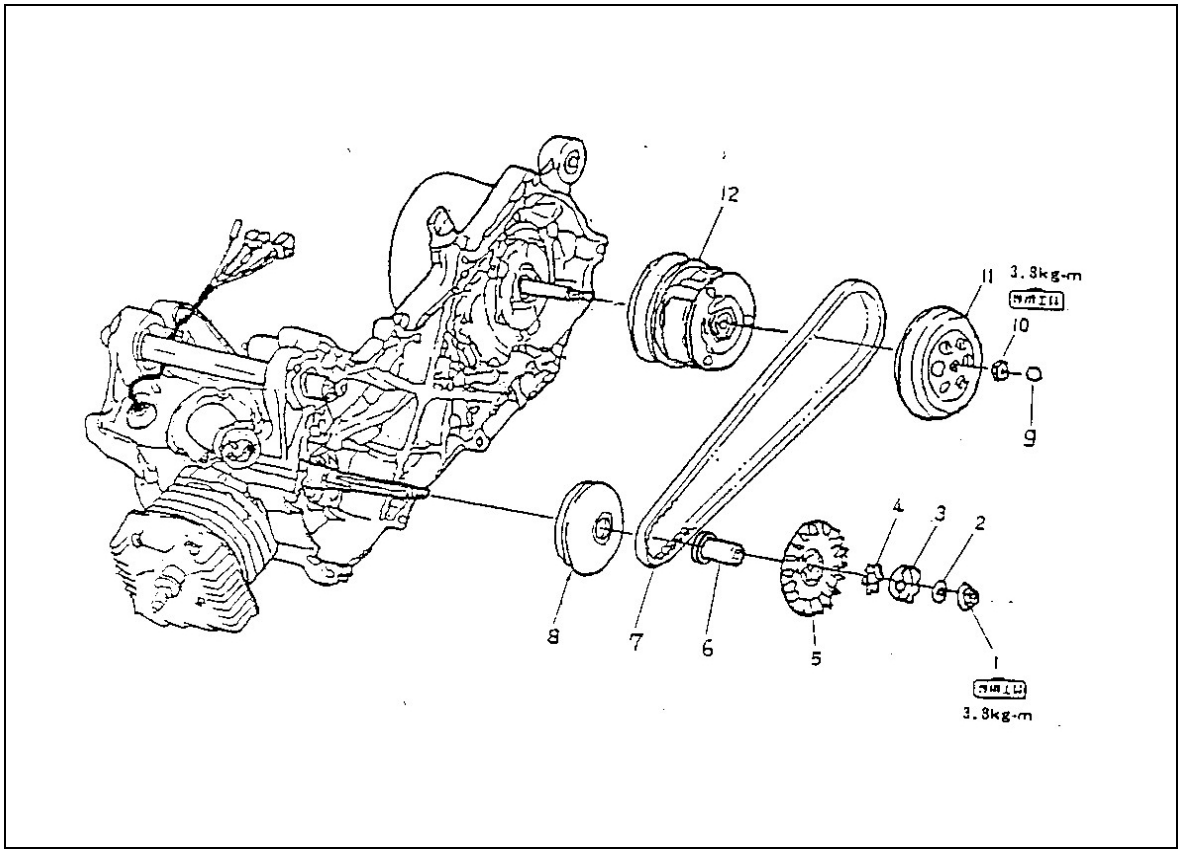
- Check the wear & damage of starting shaft or gear.
- Check the tightness & damage of starting shaft reset spring.
- Check the wear & damage of bush.



- Check the wear & damage of kick pinion.
- Check the wear & damage of kick pinion spring clip.

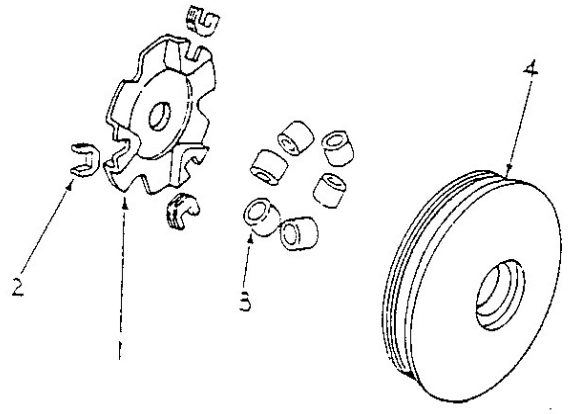


Disassembly of Left Crank Case



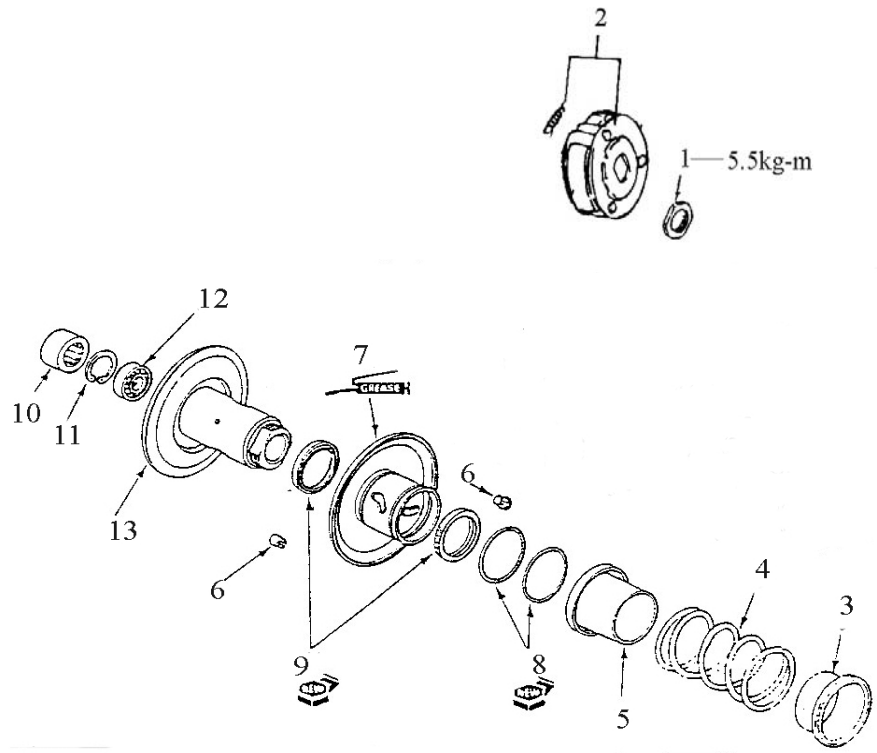
	Operation / Parts name	Q'ty	Remark
	Disassembly		
1	Hex washer face bolt	1	∗ ***WARNING:***
2	Cone spring washer	1	Don't damage transmission belt.
3	One-way clutch gear	1	
4	Clamp washer	1	
5	Primary fixed sheave	1	
6	Bushing	1	
7	V-Belt	1	
8	Primary sliding slot wheel	1	
9	Oil ring	1	
10	Hex nut	1	
11	Clutch cover	1	
12	Drive face ass'y	1	
	Assembly 12→1		• Operation with sequence in reverse of disassembly.

Disassembly of Sliding Driving Disc



	Operation / Parts name	Q'ty	Remark
	Disassembly		
1	Cam plate	1	
2	Cam plate slider	3	
3	Weight roller	6	
4	Primary sliding slot wheel	1	
	Assembly 4→1		• Operation with sequence in reverse of separating.

Disassembly of Clutch / Transmission Belt Disc



	Operation / Parts name	Q'ty	Remark
	Disassembly		
	Clutch		
1	Nut	1	
2	Clutch Weight Set	1	
	Drive face ass'y		
3	Axle ring of spring	1	
4	Compression spring	1	
5	Secondary spring seat	1	
6	Guide pin	2	
7	Secondary sliding slot wheel	1	
8	Oil ring	2	
9	Oil seal	2	
10	Needle bearing	1	
11	Internal circle clip	1	
12	Radial ball bearing	1	
13	Secondary fix slot wheel	1	
	Assembly		• Operation with sequence in reverse of separating.
	13→1		

Final Transmission Mechanism

Attention of Operation

- This chapter explain that final reduction mechanism maintenance can be operated in the vehicle.
- Use professional tool to change driving shaft.

Replace Transmission Gear Oil

- Remove 4 Hex Washer Face Bolt fixed on Floor Panel.
- Move forward the Floor Panel.
- Remove Hex Washer Face Bolt and Copper Plain Washer.
- Leak out oil Transmission Gear Oil.
- Fix Hex Washer Face bolt and Copper Plain Washer.
- Remove Oil Plug and add 80C.C. new Transmission Gear Oil.
- Fix Oil Plug.
- Recommend use grade SAE 90 or 85W-140 Gear Oil.

Diagnosis of Trouble

Engine starts but vehicle does not move.

- Transmission gears broken.
- Transmission gears burns out.

Operate of noise

- Abrasion、wore and teeth hurted of gear
- Bearing wore and loosened.

Gear oil leaking

- Too much gear oil filled.
- Oil seal wear-out or damage.

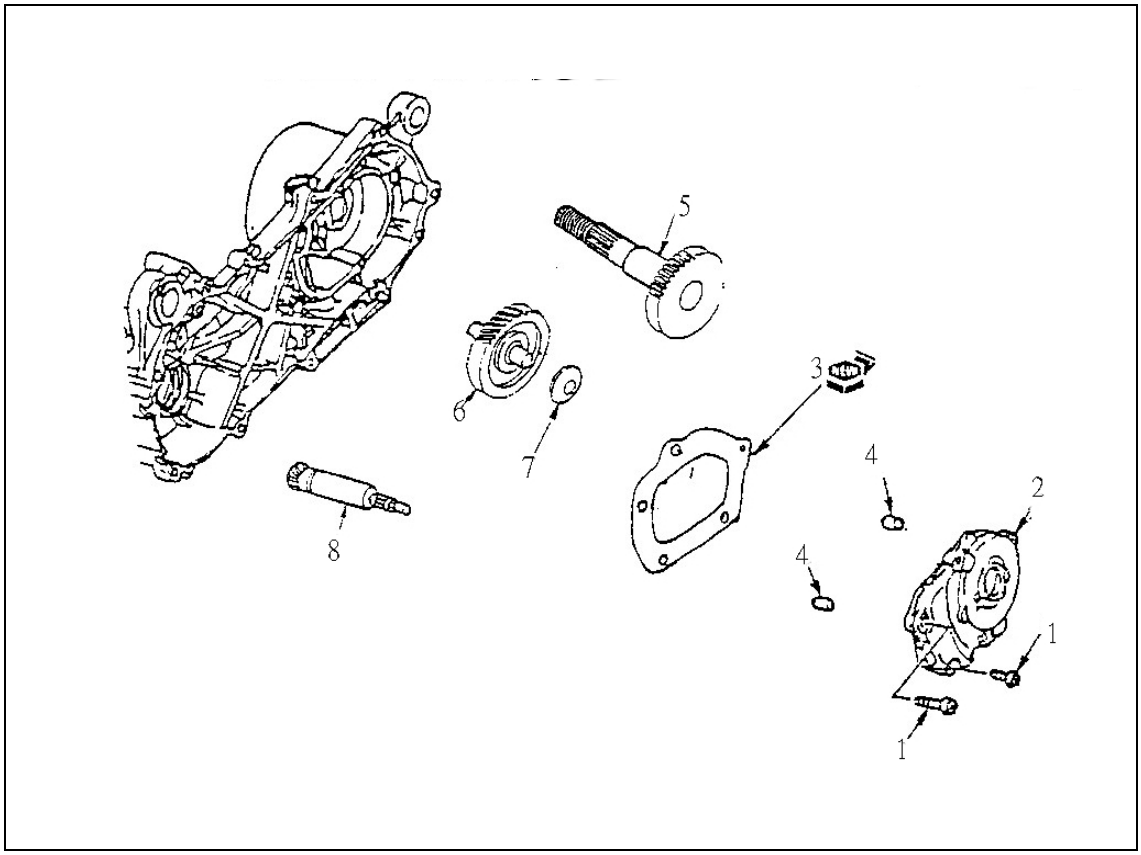
Final Transmission Mechanism

Disassembly of primary drive gear / final reduction mechanism

- Disassembly of Drive Sprocket Ass'y (Remove 1 Nylon Nut and 1 Plain Washer).
- Disassembly of clutch / drive face.

7***WARNING:***

First drain the oil of transmission.

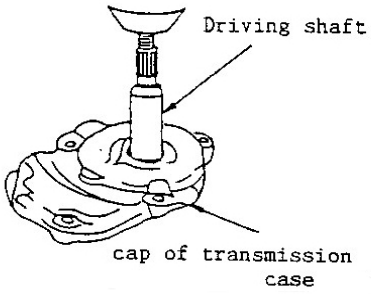


	Operation / Parts name	Q'ty	Remark
	Disassembly		
1	Bolt	5	
2	Mission cover	1	
3	Gasket	1	
4	Dowel pin	2	
5	Drive axle	1	
6	Main axle comp.	1	● Check the wear & damage of shaft and gear.
7	Plain washer	1	
8	Primary drive gear	1	
	Assembly 8→1		● Operation with sequence in reverse of disassembly.

Final Transmission Mechanism

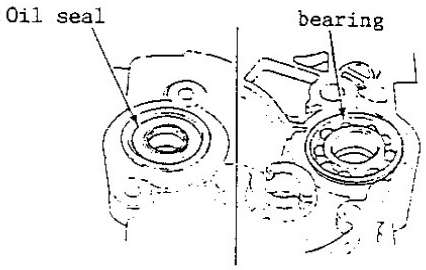
Change the Driving Shaft

- Remove the driving shaft from mission cover.

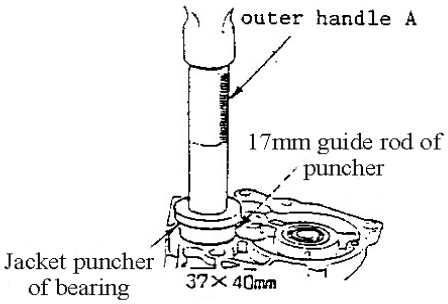


＊WARNING:

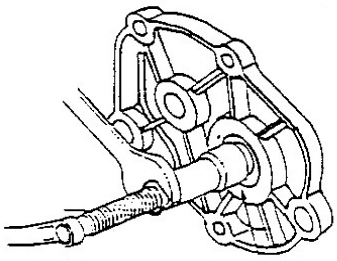
Don’t damage joint face of mission cover.



- Remove the oil seal of primary drive gear.
- Remove the bearing.



- Install the new bearing in the mission cover.



Crank Case / Crank Shaft

Attention of Operation

- This chapter explain the necessary procedure of disassembling crank case due to repair & maintain the crank shaft.
- Before disassembling of crank case , must operation with sequence of each chapter to disassembly.
  - Disassembly of oil pump
  - Disassembly of carburetor
  - Disassembly of intake valve
  - Dis-mounting of engine
  - Disassembly of cylinder head and cylinder
  - Disassembly of ACG
  - Disassembly drive face ass'y

- Must disassembly of final reduction mechanism when change the left crank case.

- Must use special tool into the inner ring of crank shaft bearing , and pull in crank shaft to assembly when assembly crank case & crank shaft , put new bearing into crank case, and put into new oil seal after assembling crank case.

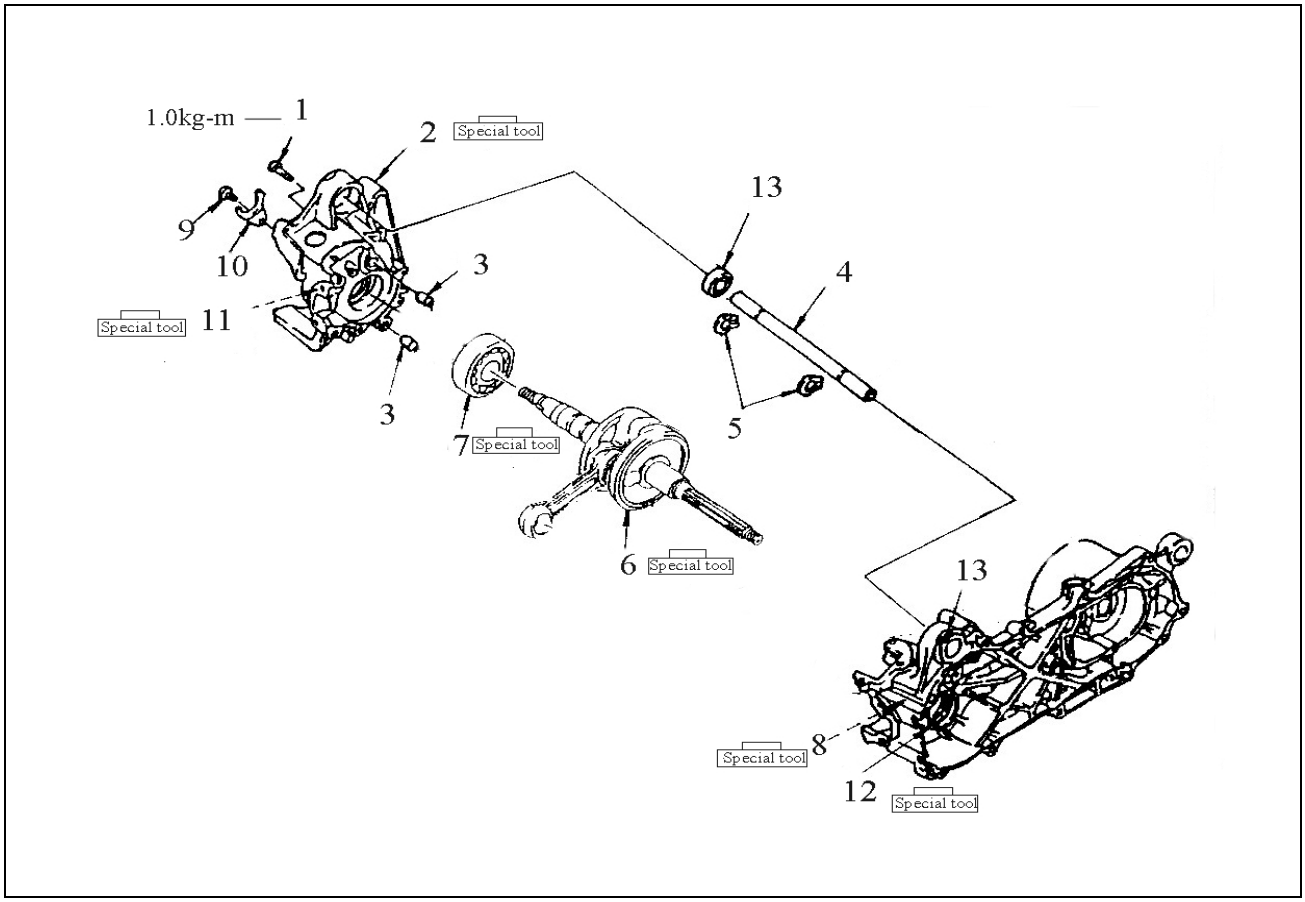
Diagnosis of Troubles

Noise of Engine

- Damage of crankshaft bearing.
- Damage of needle bearing of crankshaft pin.

Crank Case / Crank Shaft

Assembly / Disassembly of Crank Case



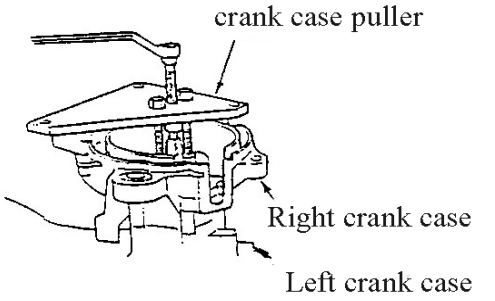
	Operation / Parts name	Q'ty	Remark
	Disassembly		
1	Hex socket bolt	6	
2	Right crank shaft case	1	
3	Dowel pin	2	
4	Fix shaft of crank shaft case	1	
5	External circle clip	2	
6	Crank shaft	1	
7	Radial ball bearing (Right)	2	
8	Radial ball bearing (Left)	1	
9	Hex socket bolt	1	
10	Oil seal bracket	1	
11	Right oil seal	1	
12	Left oil seal	1	
13	Radial ball bearing	2	
	Assembly 13→1		

Crank Case / Crank Shaft

Disassembly of Crank Case

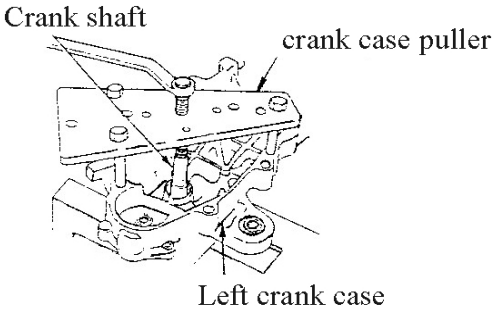
- Install the puller on right crank case, separate the R. crank case and L. crank case.

Special tool: Crank case puller **(TLJT-03)**



- Install the puller on left crank case, remove the crank shaft from the crank case.

Special tool: Crank case puller (TLJT-03)

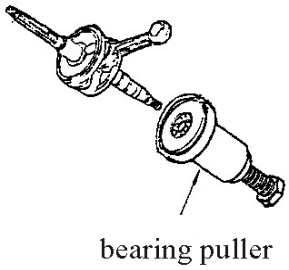


＊WARNING:

Don't knock the crank shaft when disassembling.

- Use the bearing puller to remove the crankshaft bearing from crank shaft, then remove the R/L crank case.

Special tool: Bearing puller (TLJT-00)



＊WARNING:

Must remove the oil seal when separate the crank case, and never use the old oil seal.

Assembly of Crank Case

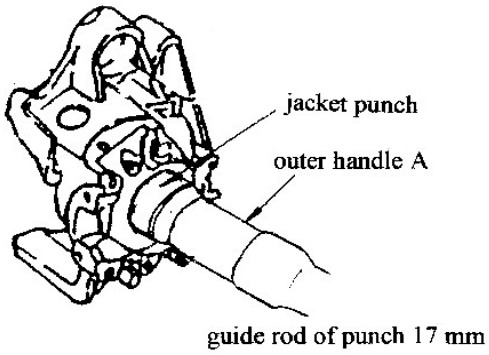
- Clean the crank case with gasoline, and check each part whether damaged or cracked.

＊WARNING:

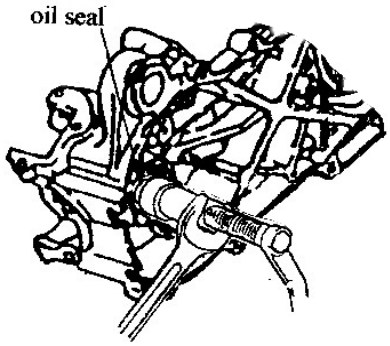
- Smear of oil on sliding surface of each shaft in crank case after checking.
- Cleaning the washer dust of joint face, and amend the part damage with oil stone.

Crank Case / Crank Shaft

- Put new crank shaft into right crankcase.



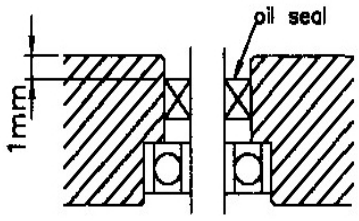
- Put crank shaft assembly into left crank case.



＊***WARNING:***

- Smear the 2-stroke oil to main bearing and big end of connecting rod.
- Note the position of connecting rod.

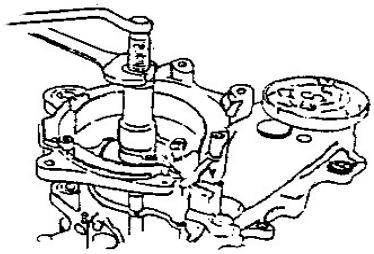
- Put left oil seal into L. crank shaft case, surface depth under 1.0 mm.



Crank Case / Crank Shaft

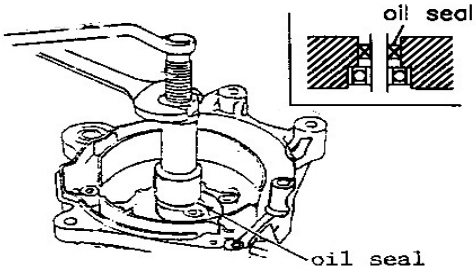
Assembly of Crank Case

- Install the dowel pins in the joint face of left crank case.
- ・Install the right crank case.



Special tool : Bearing puller (TLJT-00)

- Install the new R. oil seal to crank case.



Special tool : Bearing puller (TLJT-00)

Front Wheel

Attention of Operation

- Remove the body cover and support the frame body bottom before remove the front wheel, don’t invert the front wheel when front wheel depart ground.

Diagnosis of Trouble

Heavy steering movement

- Air pressure too low inside of front tire.
- Rim radial ball bearing broken.

Brake efficiency abnormal

- Brake lining wear-out.
- Brake pads adjust not correct or wear out.
- Brake drum wear-out.
- Tire wear-out.

Steering handle not straight

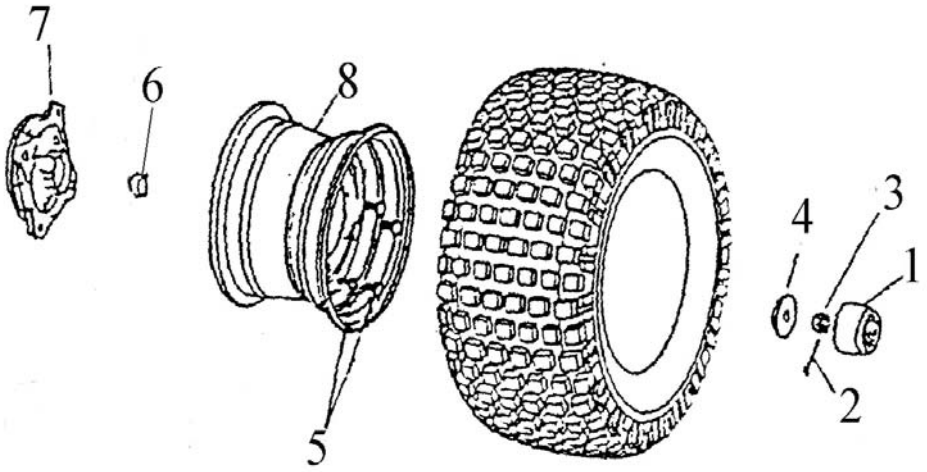
- Loose, not correct adjustment or damaged, right (or left) link Ass’y.
- Steering shaft bended.
- Suspension arm, knuckle damaged.
- Rim damaged.

Front wheel shaking or deviation

- Front rim defected.
- Loose or damaged of front rim bearings.
- Tire defect.
- Bad adjustment or defected of the right (or left) link Ass’y.
- Bad adjustment or defected of the right (or left) knuckle.

FRONT WHEEL/FRONT SUSPENSION/ FRONT BRAKE

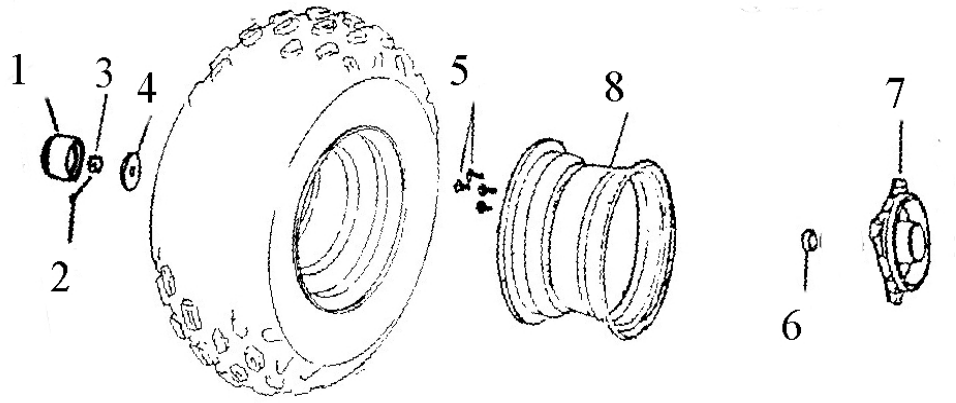
Disassembly of Front Wheels of ATV-50



	Operation / Parts name	Q'ty	Remarks
	Disassembly front wheels (L/R)		
1	Rubber cover	2	
2	Cotter pin	2	
3	Scotch nut	2	
4	Plain washer 12*40*4.5	2	
	Disassembly front brake drum		
5	Hex washer face bolt	8	
6	Front coller	2	
7	Front brake drum	2	
8	Rim	2	
	Assembly front brake drum 8→5 Assembly wheels 4→1		● Assembling with sequence in reverse of disassembly. ∗ ***WARNING:*** Change the R/L bearing set if necessary.

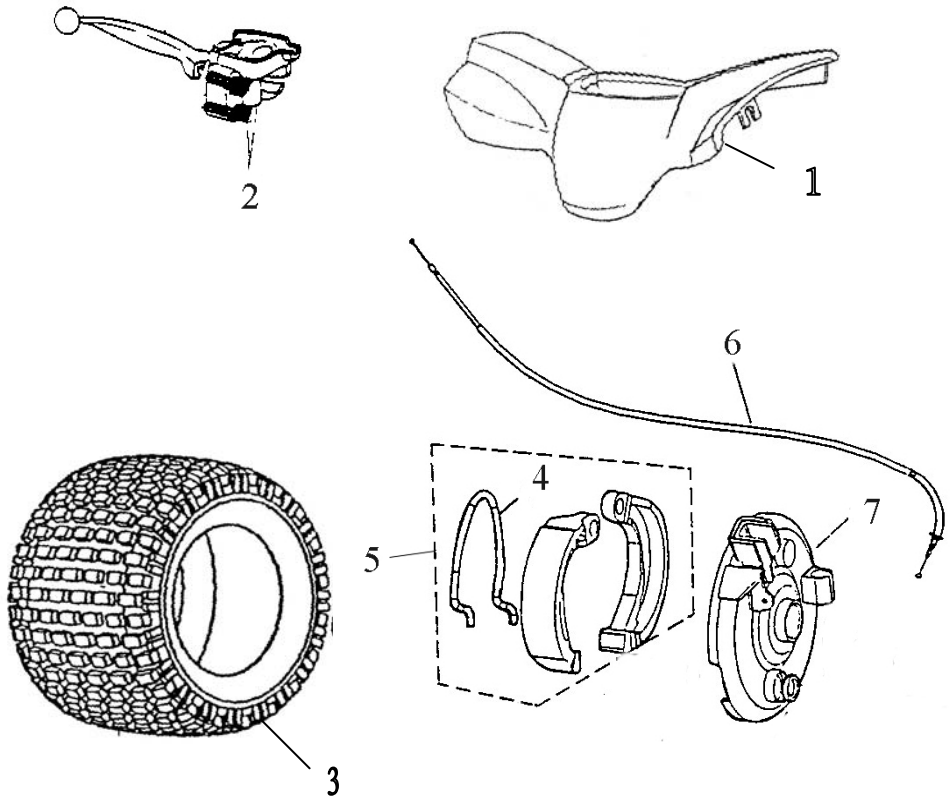
FRONT WHEEL/FRONT SUSPENSION/ FRONT BRAKE

Disassembly of Front Wheels of ATV-90/100



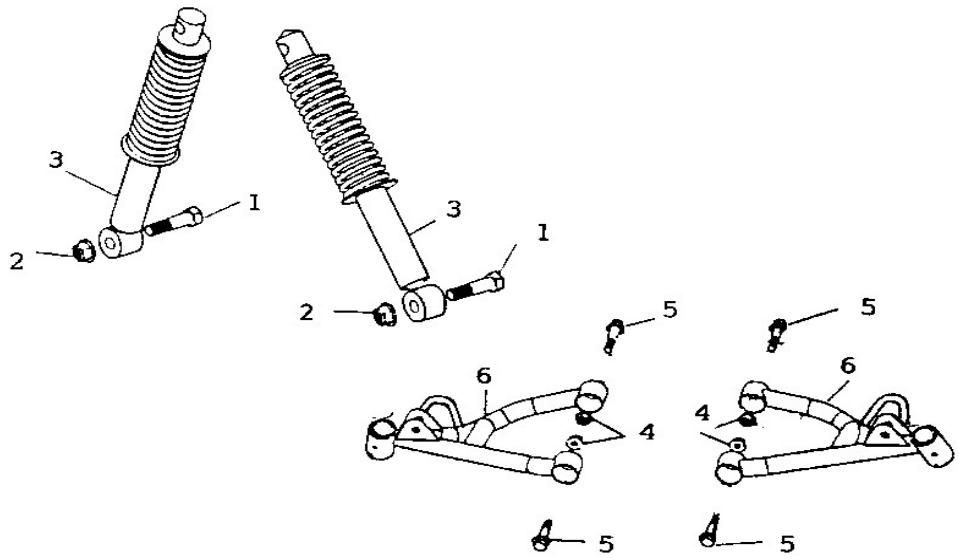
	Operation / Parts name	Q'ty	Remarks
	Disassembly front wheels (L/R)		
1	Rubber cover	2	
2	Cotter pin	2	
3	Scotch nut	2	
4	Plain washer 12*40*4.5	2	
	Disassembly front brake drum		
5	Hex washer face bolt	8	
6	Front coller	2	
7	Front brake drum	2	
8	Rim	2	
	Assembly front brake drum 8→5 Assembly wheels 4→1		● Assembling with sequence in reverse of disassembly. ＊***WARNING:*** Change the R/L bearing set if necessary.

Disassembly of Front Brake



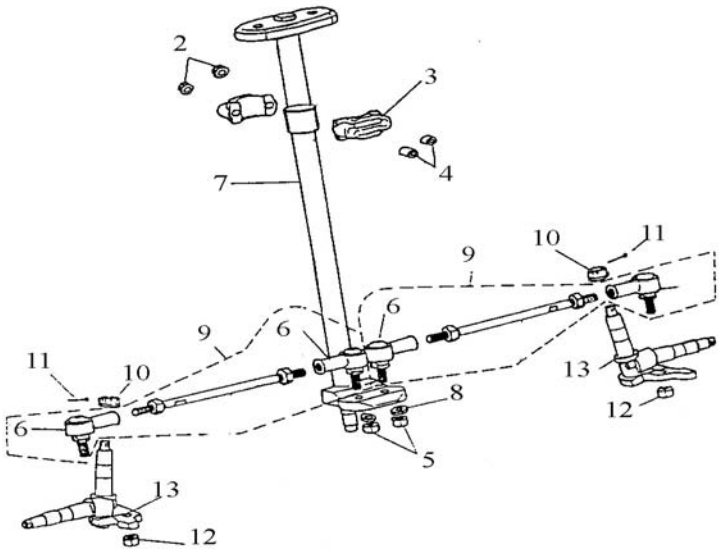
	Operation / Parts name	Q'ty	Remarks
	Disassembly brake plate		
1	Handle bar covers	2	
2	Release adjustment screws	2	
3	Release front (left or right) wheel Ass'y	2	
4	Strain spring	2	
5	Front brake shoe Comp.	2	
6	Release brake cables	2	
7	Front brake panels	2	
	Assembly 7→1		● Assembling with sequence in reverse of disassembly.

Disassembly of Suspension Arm



	Operation / Parts name	Q'ty	Remarks
	Disassembly (L/R)		
1	Hex bolt	2	
2	Hex flange nut with serration	2	
3	Release front cushions	2	
4	Hex flange nut with serration	4	
5	Hex washer face bolt	4	
6	Suspension arms	2	
	Assembly 6→1		● Assembling with sequence in reverse of disassembly.

Disassembly of Steering Shaft Ass'y



	Operation / Parts name	Q'ty	Remarks
	Disassembly *steering shaft Ass'y*		
1	Handle bar A'ssy	1	
2	Hex flange nut with serration	2	
3	Steering shaft holder	2	
4	Holder spacer coller	2	
5	Hex flange nut with serration	2	
6	Release Ball joint, left (right) thread	1	
7	Steering shaft Ass'y	1	
		1	
	Disassembly knuckles		
8	Cotter pin	2	
9	Hex flange nut with serration	2	
10	Left & right link Ass'y	2	
11	Scotch flange nut	2	
12	Left & right knuckle	2	
	Assembly knuckles 12→8 ***Aassembly steering shaft Ass'y*** 7→1		● Assembling with sequence in reverse of disassembly. ∗ ***WARNING:*** Adjusting gap of throttle.

REAR WHEEL / SUSPENSION / BRAKE

Diagnosis of Troubles

Rear wheel shaking or deviation

- The shape of rear rim damaged.
- Rear wheel axle damaged.
- Swing arm sub Ass'y damaged
- Rear rim bearing defected.

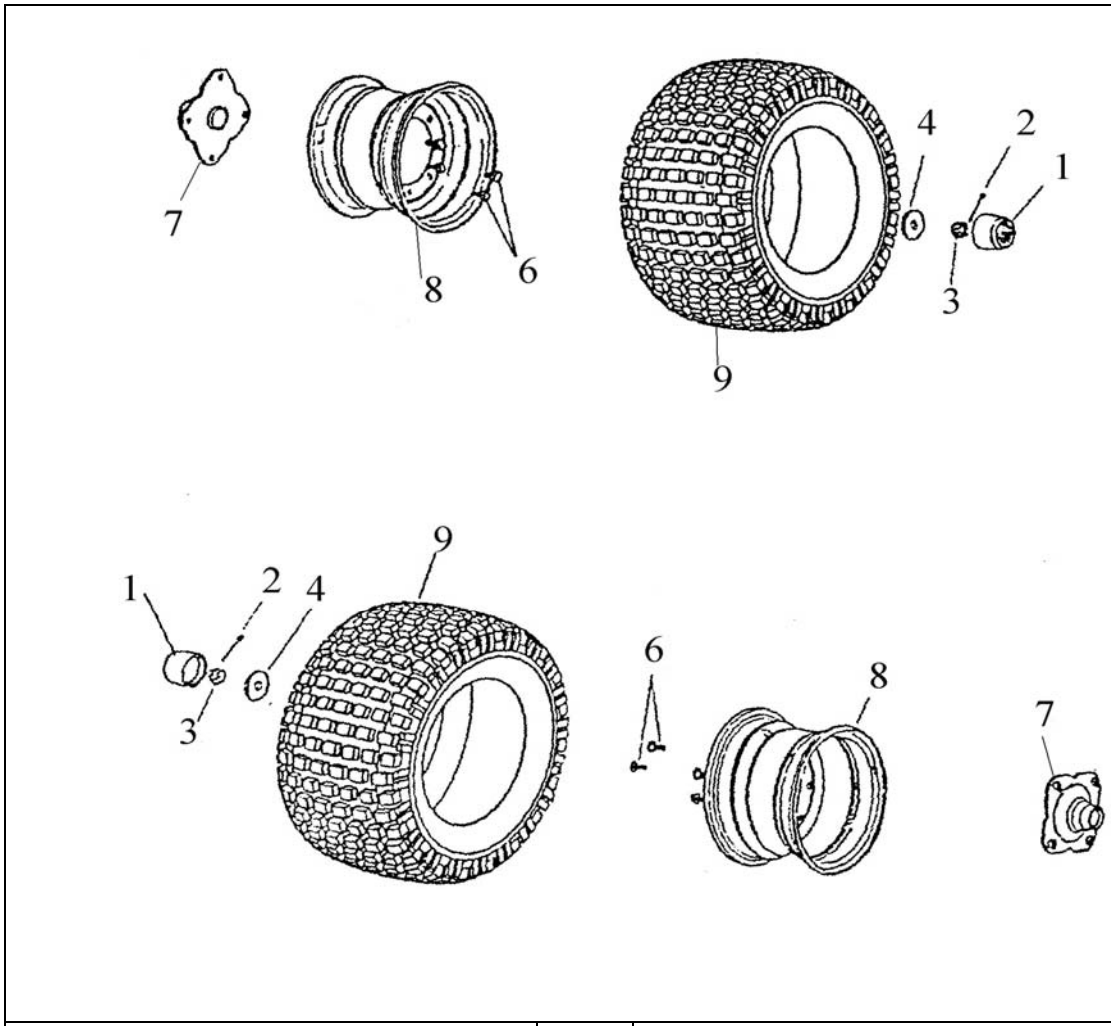
Rear suspension too soft

- Spring too soft or adjust not correct.

Brake efficiency abnormal

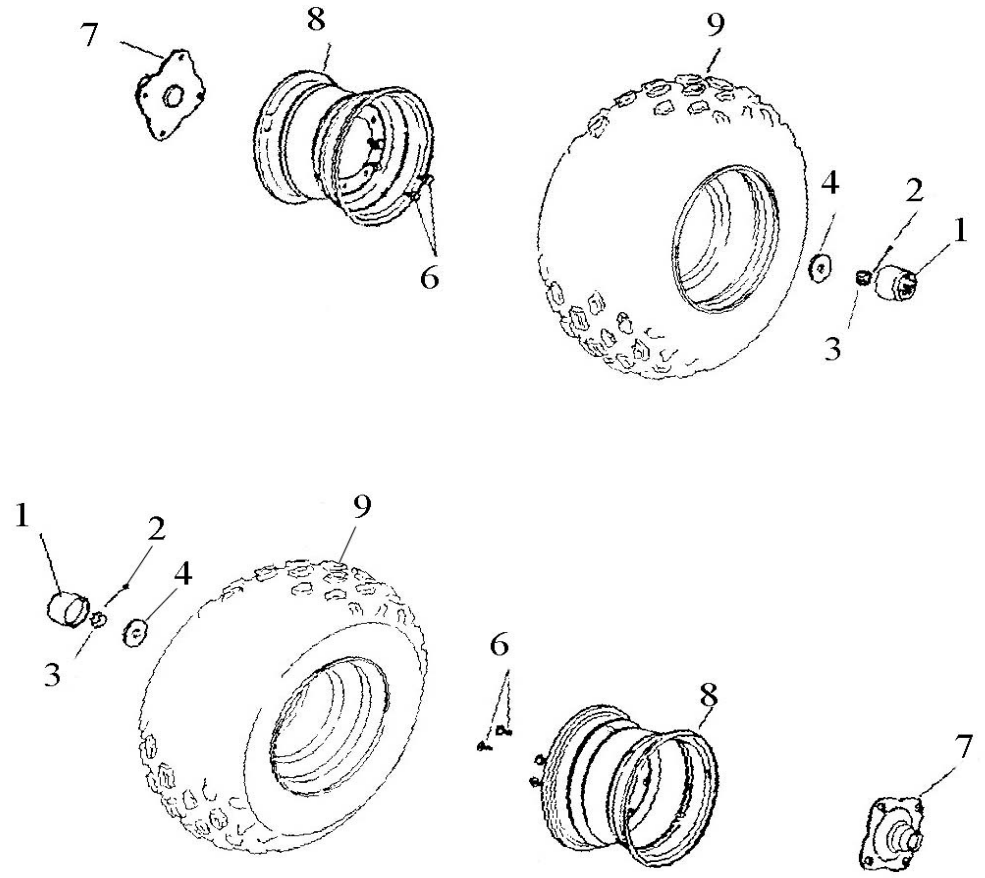
- Brake lining wear-out.
- Brake pads adjust not correct or wear out.
- Brake drum wear-out.
- Tire wear-out.

Assembly/Disassembly Rear Wheel of ATV-50



	Operation / Parts name	Q'ty	Remarks
	Disassembly (L/R)		
1	Rubber cover	2	
2	Cotter pin	2	
3	Scotch nut	2	
4	Plain washer 14*40*4.5	2	
5	Take off the wheel Ass'y	2	
6	Hex washer face bolt	8	
7	Take off shaft connector	2	
8	Rim	2	
9	Tire	2	
	Assembly 9→1		• Assembling with sequence in reverse of disassembly.

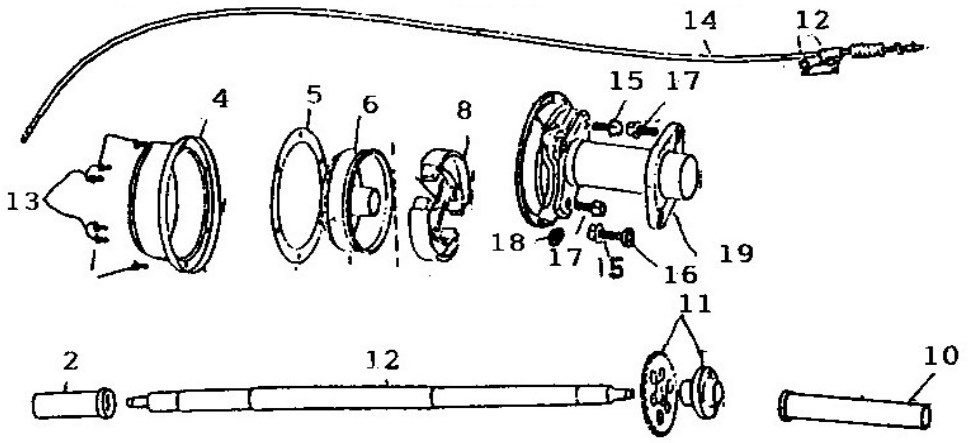
Assembly/Disassembly Rear Wheel of ATV-90/100



	Operation / Parts name	Q'ty	Remarks
	Disassembly Wheels		
1	Rubber cover	2	
2	Cotter pin	2	
3	Scotch nut	2	
4	Plain washer 14*40*4.5	2	
5	Take off the wheel Ass'y	2	
6	Hex washer face bolt	8	
7	Shaft connector	2	
8	Rim	2	
9	Tire	2	
	Assembly 10→1		● Assembling with sequence in reverse of disassembly.

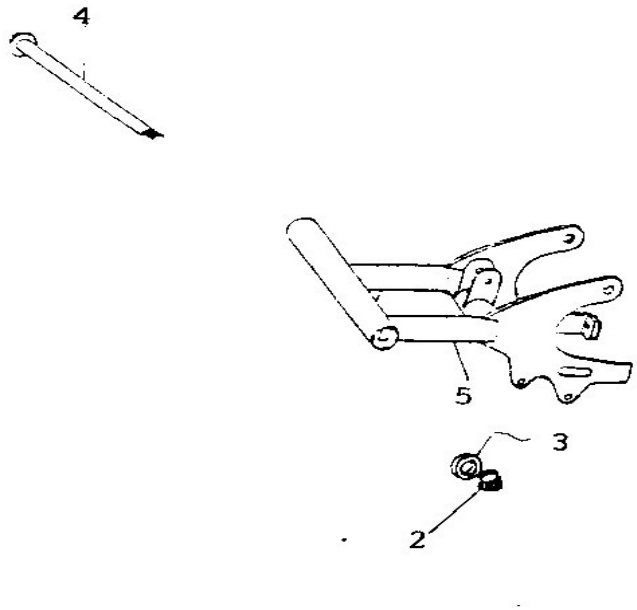
REAR WHEEL / SUSPENSION / BRAKE

Disassembly / Assembly of Rear Brake, Rear wheel axle and Brake panel



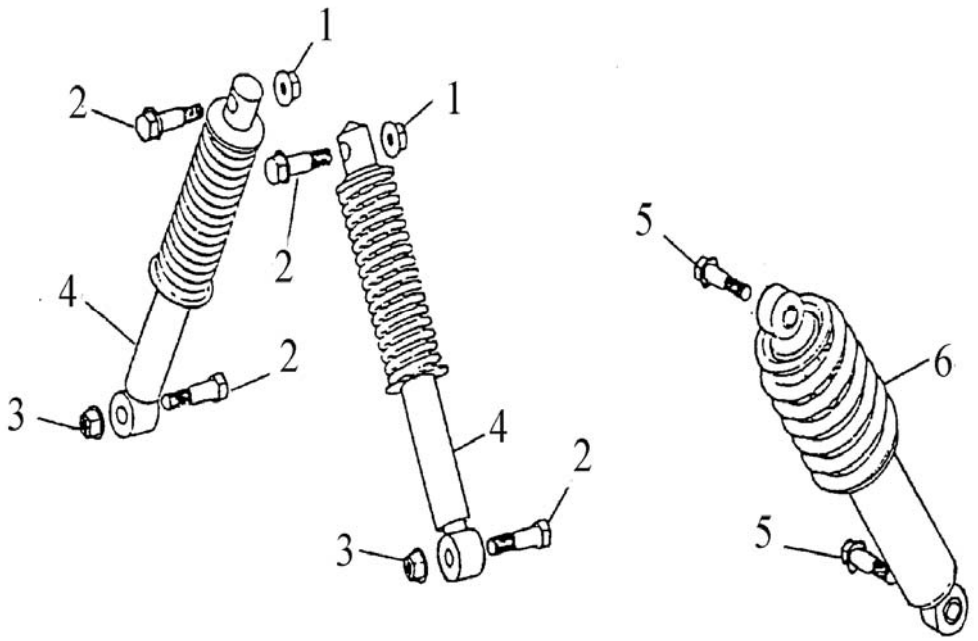
	Operation / Parts name	Q'ty	Remarks
	Disassembly Rear Brake		
1	Left rear wheel Ass'y	1	
2	Left spacer collar	1	
3	Hex washer face bolt	6	
4	Rear drum cover	1	
5	Rear drum cover gasket	1	
6	Rear drum	1	
7	Rear brake shoe Comp.	1	
	Disassembly Rear wheel axle		
8	Right rear wheel Ass'y	1	
9	Right spacer collar	1	
10	Rear sprocket Ass'y	1	
11	Take off rear wheel axle	1	
	Disassembly Rear Brake Panel		
12	Hex flange nut with serration	2	
13	Rear brake cable	1	
14	Hex washer face bolt 12*27	2	
15	Plain washer	1	
16	Hex washer face bolt 12*22	2	
17	Plain washer	1	
18	Rear brake panel	1	
	Assembly Rear break 7→1 Rear wheel axle 11→8 Rear break panel 18→12		● Assembly with sequence in reverse of disassembly.

Disassembly / Assembly of Swing arm sub Ass'y



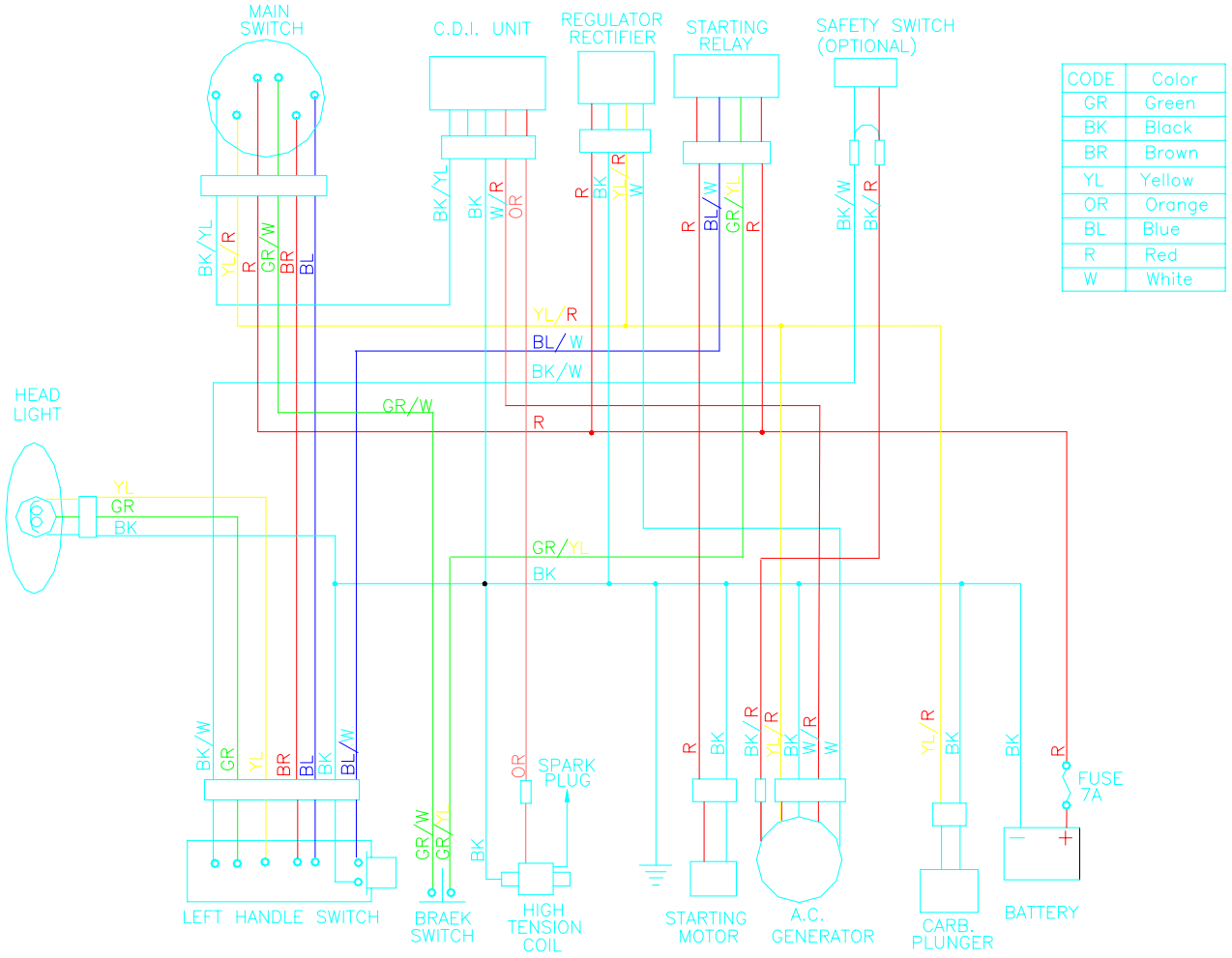
	Operation / Parts name	Q'ty	Remarks
	Disassembly Swing arm sub Ass'y		
1	Rear brake panel Ass'y	1	
2	Hex flange nut with serration	1	
3	Plain washer	1	
4	Hex washer face bolt 14*290	1	
5	Swing arm sub Ass'y	1	
	Assembly 5→1		● Assembly with sequence in reverse of disassembly.

Assembly/Disassembly of Front & Rear Cushion



	Operation / Parts name	Q'ty	Remarks
	Disassembly Front Cushion		
1	Hex washer face bolt	2	
2	Hex flange nut with serration	4	
3	Hex bolt	2	
4	Front cushion	2	
	Disassembly Rear cushion		
5	Hex washer face bolt	2	
6	Rear cushion	1	
	Assembly Front cushion 4→1 Rear cushion 6→5		• Assembly with sequence in reverse of disassembly.

ATV ELECTRICAL DIAGRAM



CODE	Color
GR	Green
BK	Black
BR	Brown
YL	Yellow
OR	Orange
BL	Blue
R	Red
W	White