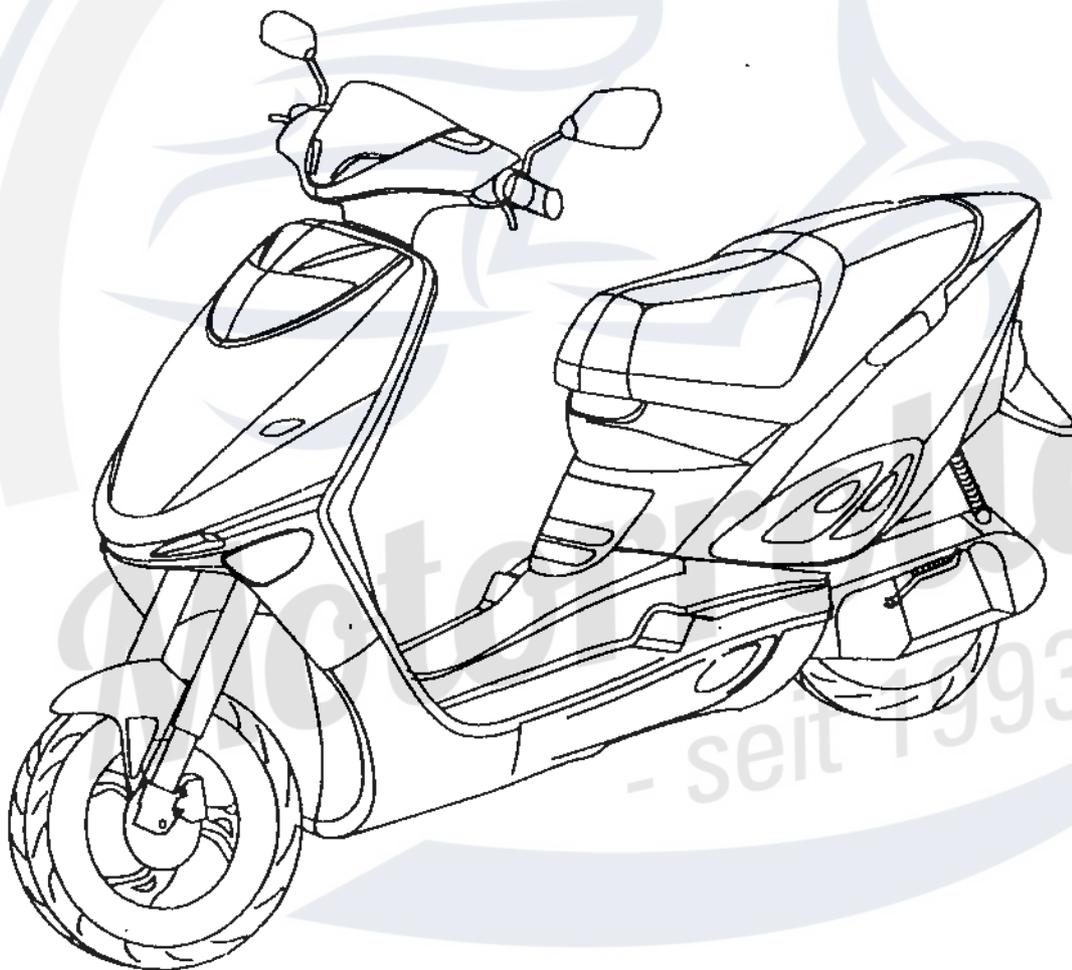


# **SERVICE MANUAL**

**TB-50/100**



**December, 1998**

**High Power Engine**

**HER CHEE INDUSTRIAL CO., LTD.**

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## Preface

The Service Manual in reference is provided as the technical information for checking and preparation of **ADLY TB-50/100** scooter and the edit description is given in diagrams with " Operation Sequence ", " Highlights " and " Checking Arrangement " for reference of the service staffs.

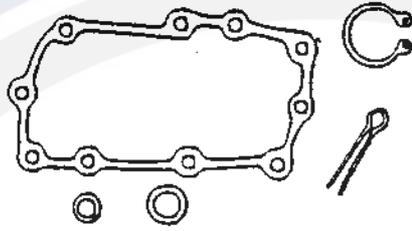
The information, illustrations or contents included in this manual may be different with the actual scooter in case specifications are changed. Your understanding will be appreciated.

HER CHEE INDUSTRIAL CO., LTD.

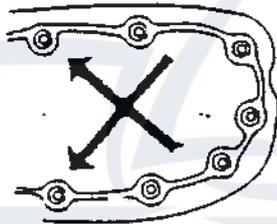
## INFORMATION FOR PREPARATION

### Attention on Operation

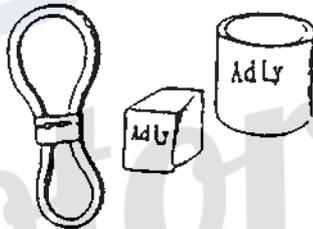
- All washers, oil rings, clamp rings, opening pins shall be duly replaced by a new item when dismantled.



- 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.



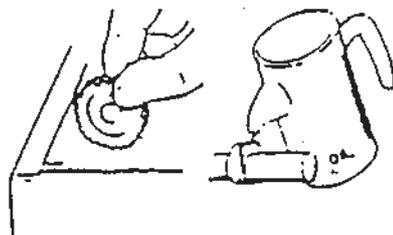
- All items must use original parts, pure oil and greases.



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



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

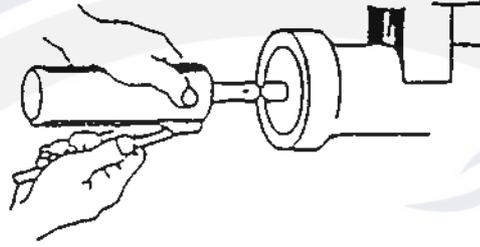


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## INFORMATION FOR PREPARATION

### 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



**General Tool:** General tools shall be used



**New:** Replace by new items after dismounting



**Attention**



**Dangerous and important operations**

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# INFORMATION FOR PREPARATION

## SPECIFICATION

TYPE	TB50 I / II	TB100 I / II	
LENGTH	1780 mm	1780 mm	
WIDTH	675 mm	675 mm	
HEIGHT	1160 mm	1160 mm	
WHEEL BASE	1250 mm	1250 mm	
NET WEIGHT	75 kg	75 kg	
ENGINE TYPE	2-STROKE, Single Cylinder	2-STROKE, Single Cylinder	
COOLING	AIR COOLED	AIR COOLED	
DISPLACEMENT	49.26 C.C.	95.57 C.C.	
BORE×STROKE	40.0×39.2	52×45	
COMPRESSION RATIO	7.2:1	5.8:1	
IGNITION	C.D.I	C.D.I	
STARTER	ELECTRIC / KICK	ELECTRIC / KICK	
SUSPENSION	Hydraulic Shock Absorber	Hydraulic Shock Absorber	
TRANSMISSION	AUTOMATIC	AUTOMATIC	
TIRE FRONT/REAR	TB( I )	120/70-12 (Front & Rear)	120/70-12 (Front & Rear)
	TB( II )	120/70-12	120/70-12
FRONT BRAKE	TB( I )	Disc	Disc
	TB( II )	Double Disc	Double Disc
REAR BRAKE	Drum	Drum	
MAX. POWER	2.8Kw / 5500 rpm	5.26kw / 7000 rpm	
MAX. TORQUE	4.75N-m / 5500 rpm	7.4N-m / 6500rpm	

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## INFORMATION FOR PREPARATION

### 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)
Spanner Nut of Handle Steering Steam	1	25	7.0
Front Wheel Axle Nut	1	10	4.5
Rear Axle Nut	1	14	11
Rear Brake Arm Screw	1	5	0.6
Upper Screw of Rear Shock Absorber	1	10	4.0
Lower Screw of Rear Shock Absorber	1	8	2.7
Engine Mounting Bracket	1	8	6.0

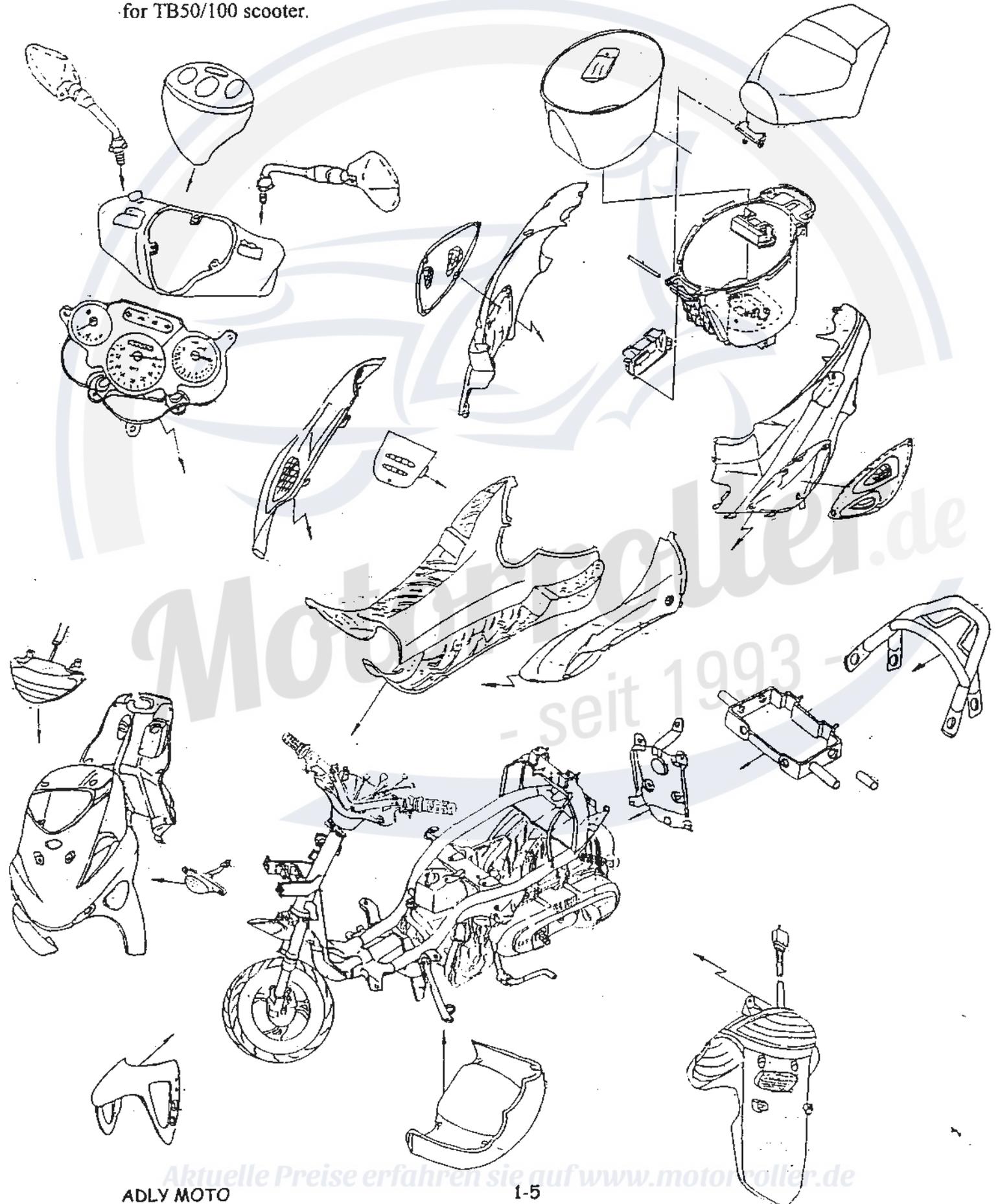
#### ENGINE :

Locking Place	Quantity	Dia. (mm)	Locking Torque (kg-m)
Screw of Cylinder Cap	4	6	1.0
Flywheel Nut	1	10	3.8
Clutch Jacket Nut	1	11	3.8
Driving Disc Nut	1	28	5.5
Nut of Transmission Disc	1	10	3.8
Oil-check Screw	1	8	1.3
Joint Screw of Exhaust Manifold	2	6	1.2
Exhaust Pipe Support Screw of Muffler	2	6	1.2
Spark Plug	1	14	1.4
Bolt of Crank Shaft Case	6	6	10
Bolt of Engine Installation	1	8	5.0

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## INFORMATION FOR PREPARATION

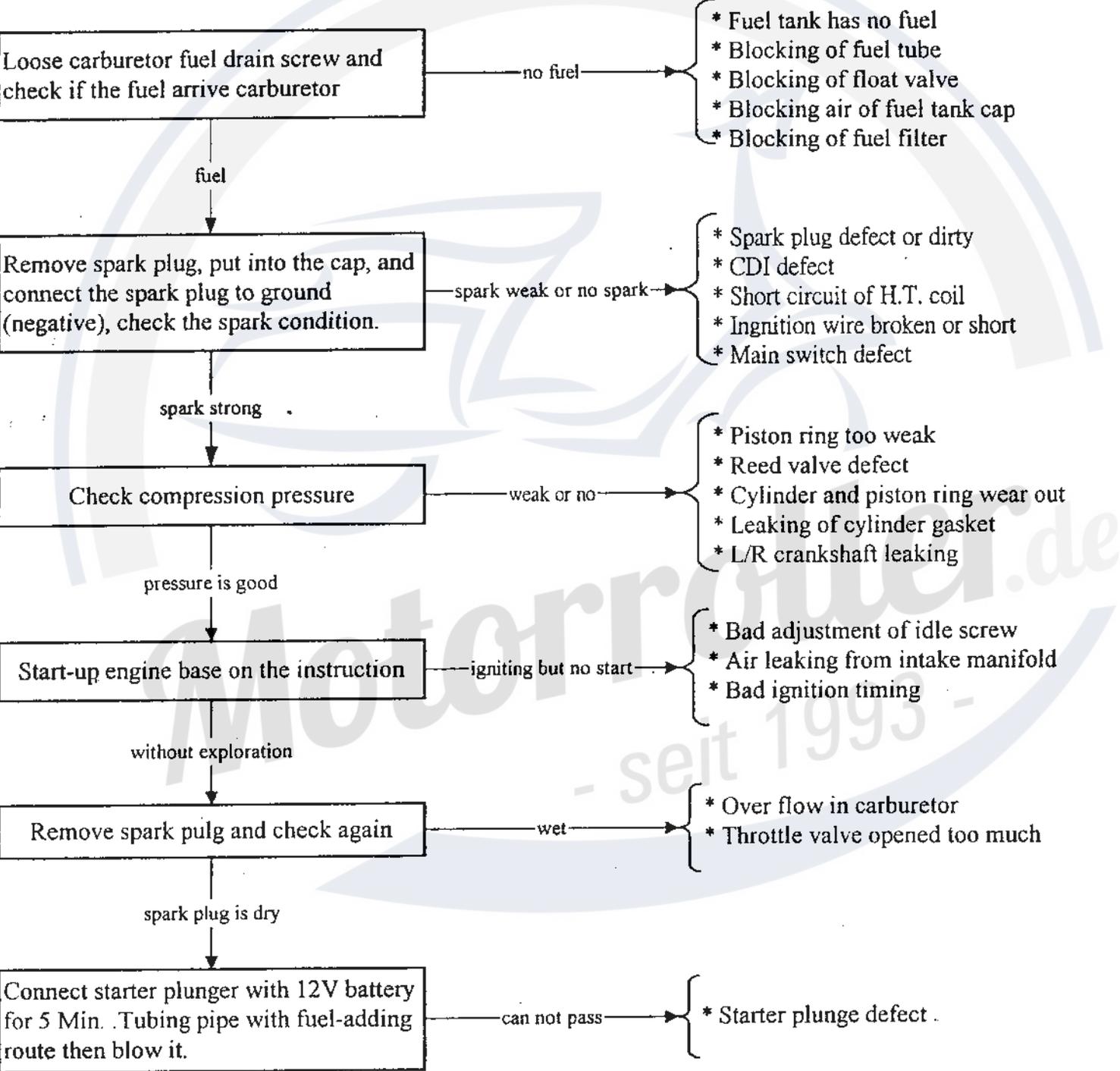
The following drawing that shows the disassembling situation of the cover parts for TB50/100 scooter.



# INFORMATION FOR PERPARATION

## Diagnosis of Breakdown

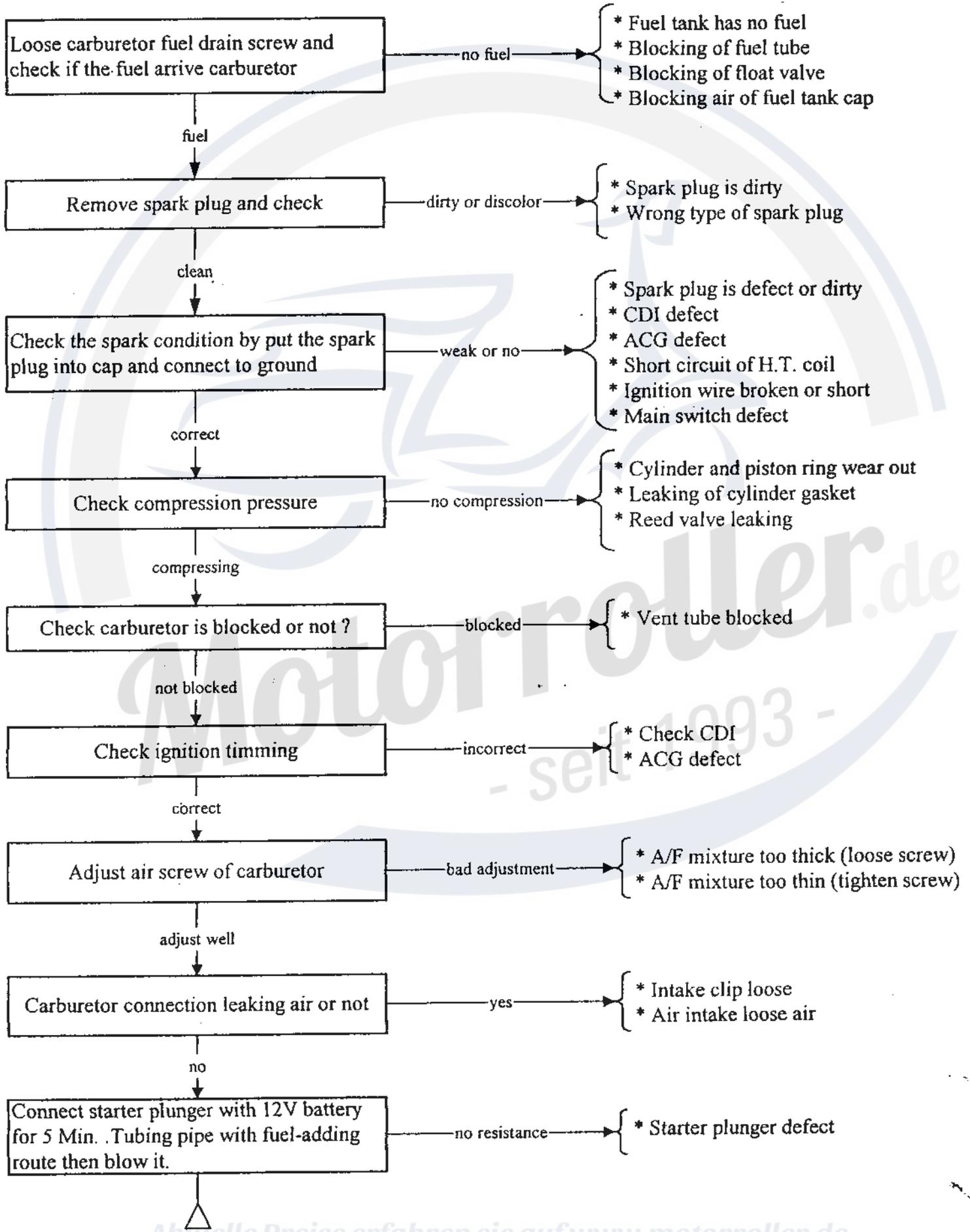
This content is the explanation of diagnosis of the engine breakdown, please see each content for reference of the breakdown diagnosis not mentioned here.



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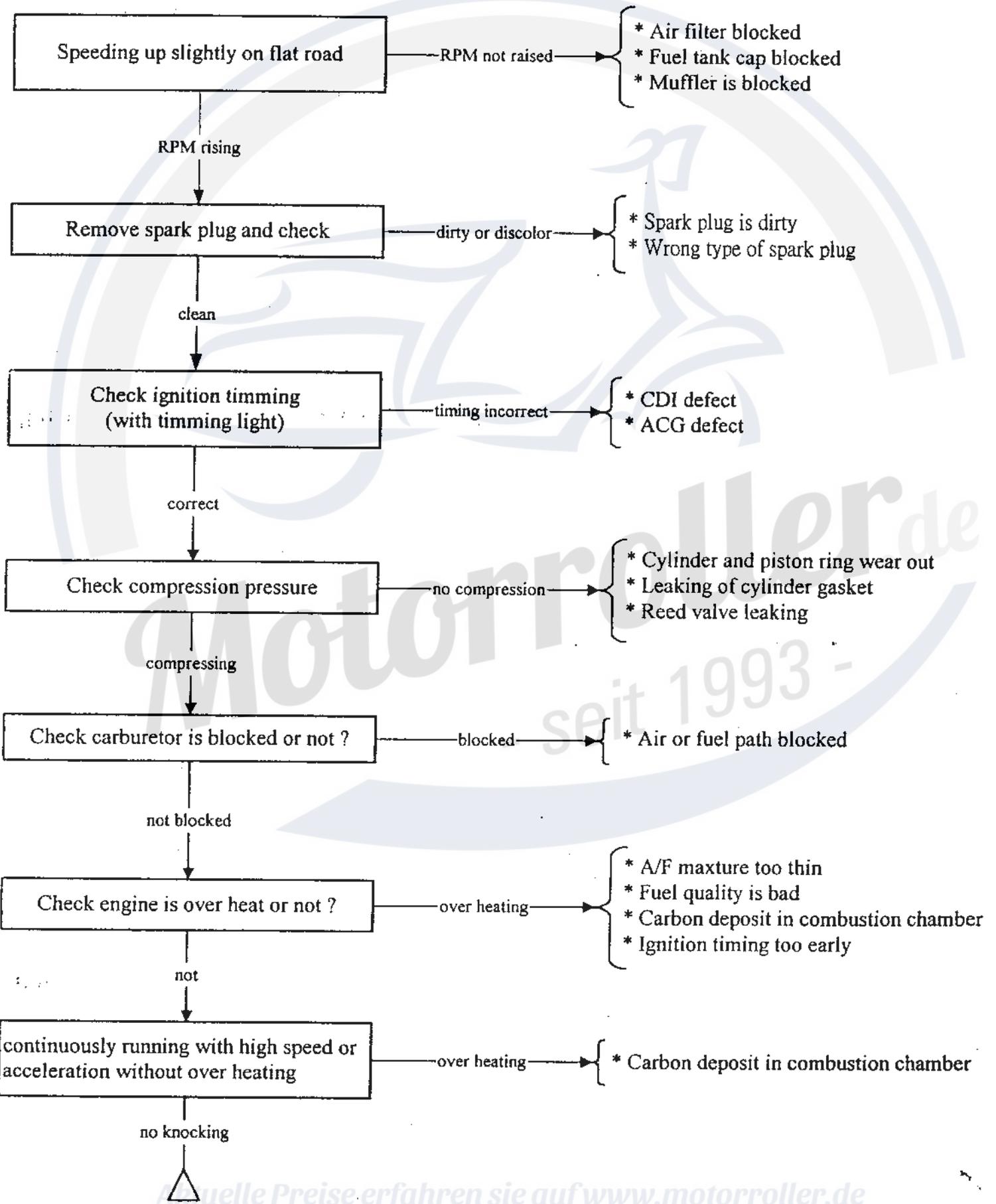
# INFORMATION FOR PERPARATION

## Engine Operation is Not Smooth After Starting



# INFORMATION FOR PERPARATION

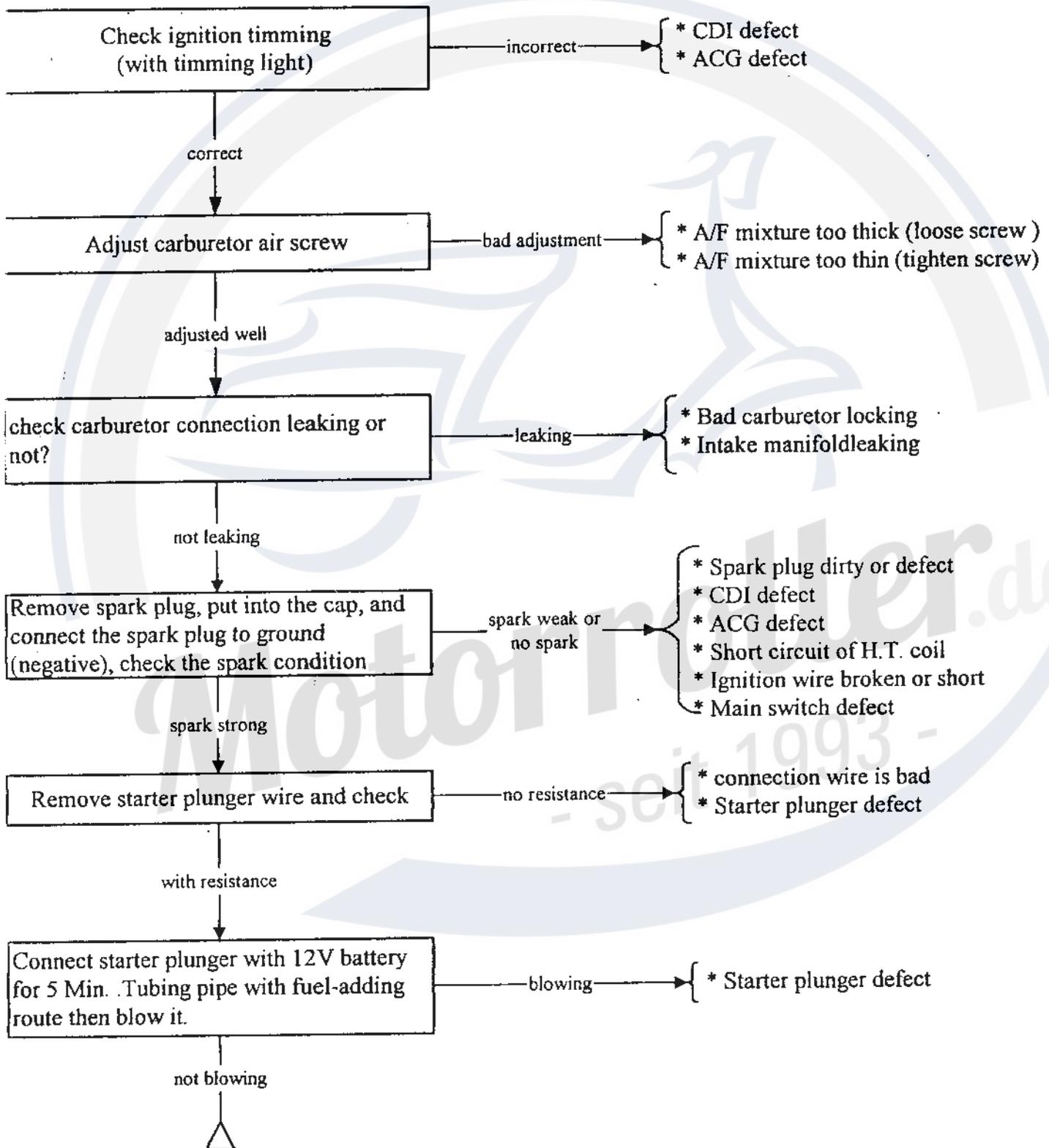
## Not Powerful On High Speed



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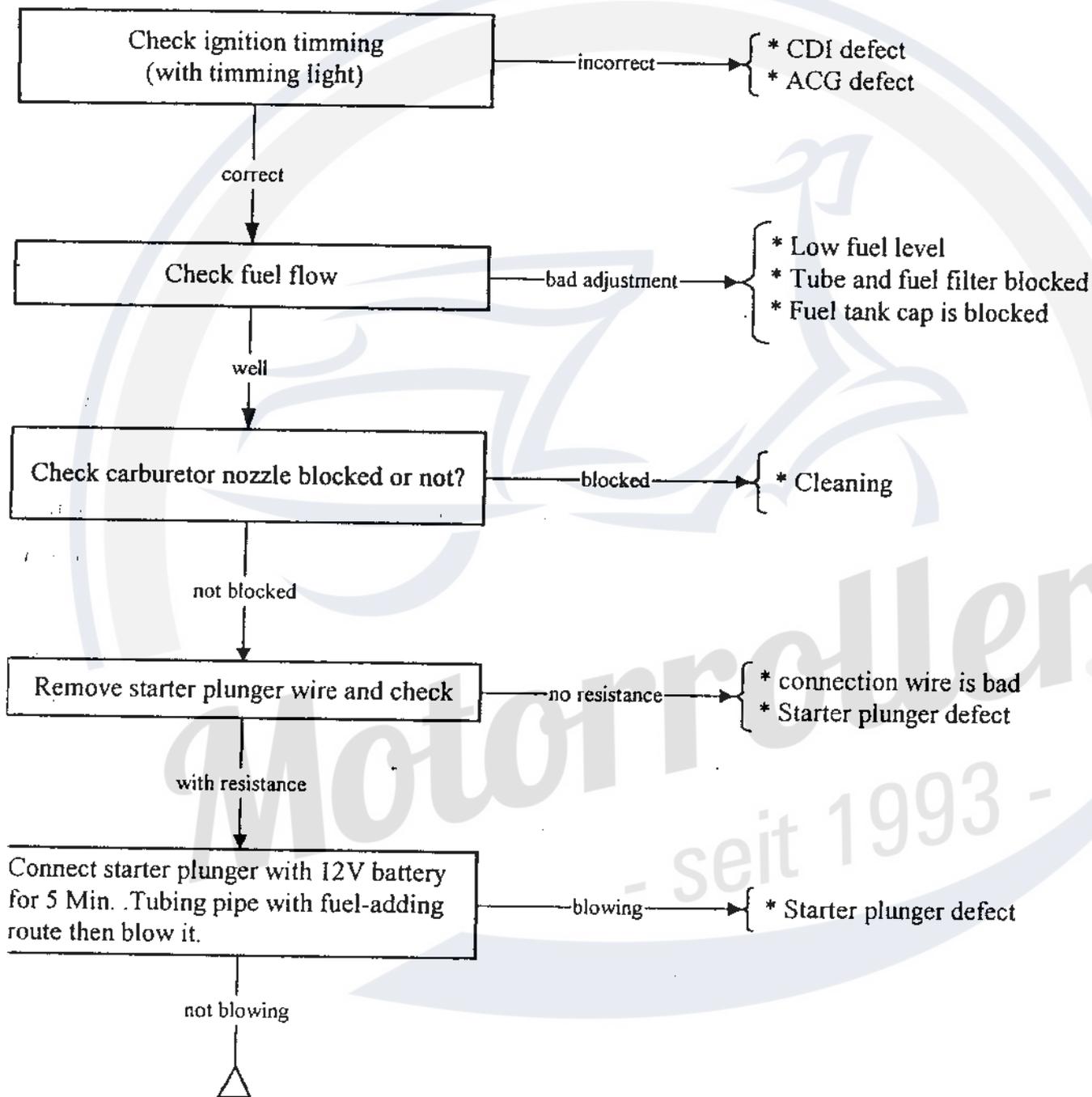
# INFORMATION FOR PERPARATION

**Bad idle, not smoothly in low speed**



# INFORMATION FOR PERPARATION

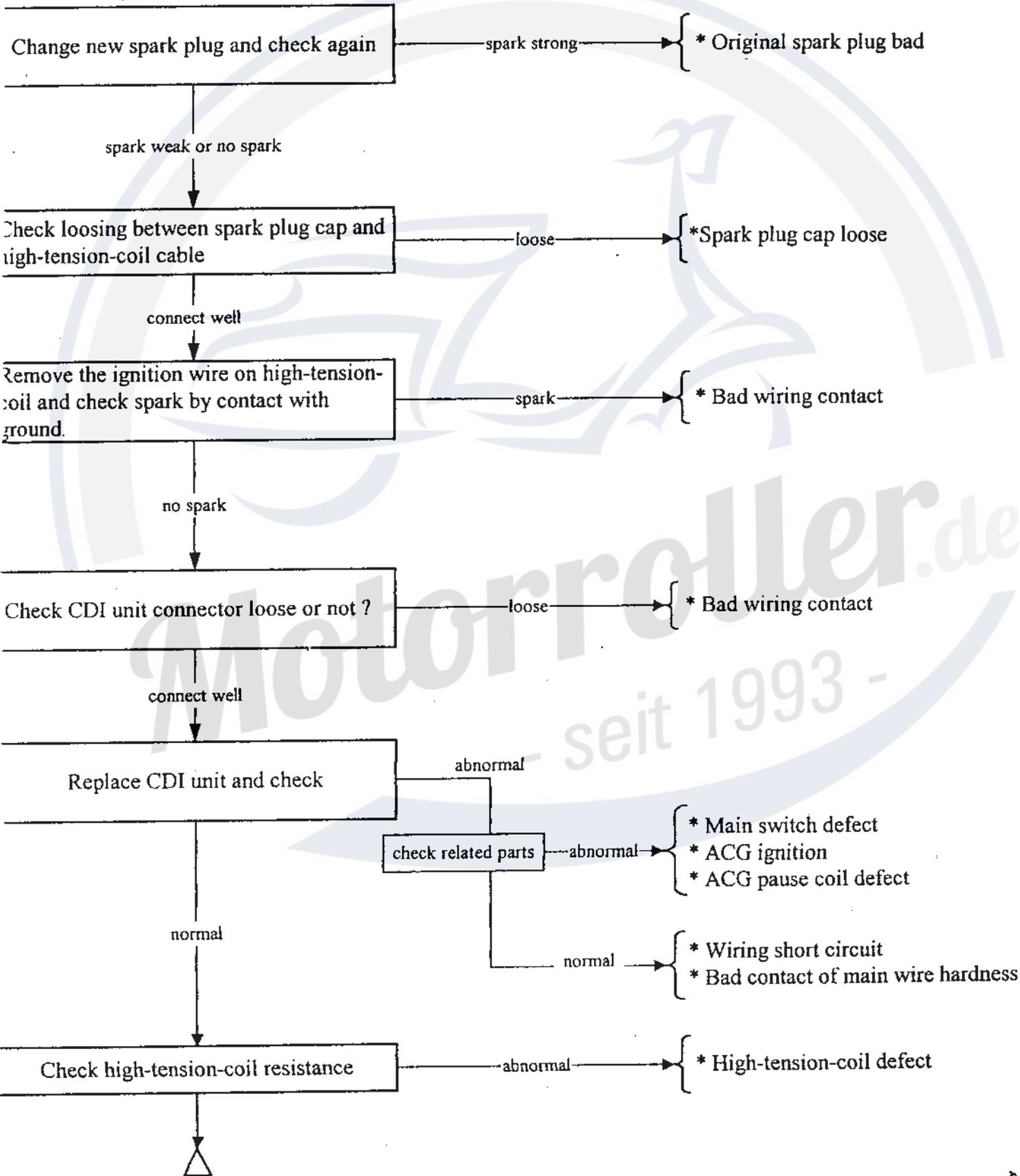
Engine running not smoothly with middle ~ high RPM



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# INFORMATION FOR PERPARATION

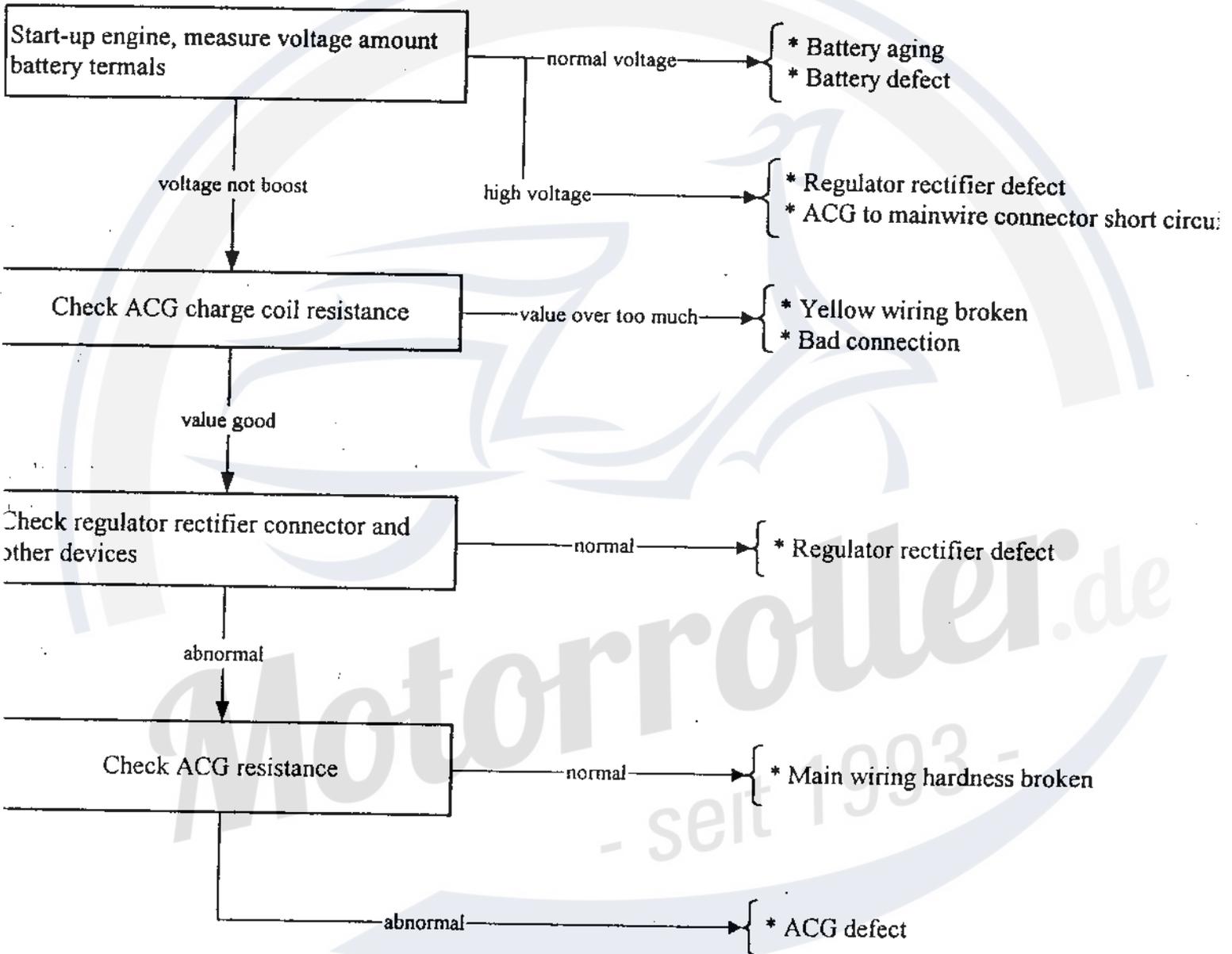
## Spark Plug Has No Spark



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# INFORMATION FOR PERPARATION

## Charging poor



# 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	1 st	each 6	each 12											
Operating Device															
Handle- Play, loose/tight Operation				○ ○											
Wheels- Right/left turn round angle				○											
Front Fork-Damage Installation of shaft Shaft Gap			○ ○	○ ○ ○		Direction Post Direction Post									
Brake Device															
Brake- Play  Try to run Correct brake	○ ○		○ ○ ○	○ ○ ○	Play Handle , handle front 10-20 mm										
Wires- Loose / tight and damage		○	○	○											
Gap of casing & brake			○	○											
Wore of brake & operating parts				○		Direction									
Wore & Damage of casing				○	Standard diameter 110 mm Limitation 110.5mm										
Riding Device Tires-Air pressure of tires	○		○	○	<table border="1"> <thead> <tr> <th></th> <th>front</th> <th>rear</th> </tr> </thead> <tbody> <tr> <td>air pressure</td> <td>1.5 kg/cm<sup>2</sup></td> <td>1.75 kg/cm<sup>2</sup></td> </tr> <tr> <td>tire</td> <td>120/70-12</td> <td>120/70-12</td> </tr> </tbody> </table>		front	rear	air pressure	1.5 kg/cm <sup>2</sup>	1.75 kg/cm <sup>2</sup>	tire	120/70-12	120/70-12	
	front	rear													
air pressure	1.5 kg/cm <sup>2</sup>	1.75 kg/cm <sup>2</sup>													
tire	120/70-12	120/70-12													

Riding Device						
Tire						
Check & damage of tires	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	Ditch-front wheel till 0.8mm Rear wheel till 0.8 mm	
Abnormal & ditch in tires	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>		
Bolt & nut of tires locking			<input type="radio"/>	<input type="radio"/>	Flocking torsion Front wheel – 4.0~5.0 kg-m Rear wheel –10~12 kg-m	
Damage of felly ,side ring , disc		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Vibration of felly, in edge of felly Front wheel – horizontal under 2.0 mm vertical under 2.0 mm Rear wheel – horizontal under 2.0 mm vertical under 2.0 mm	
Tightness of front bearing				<input type="radio"/>		
Tightness of rear bearing				<input type="radio"/>		
Buffer device						
Spring -damage				<input type="radio"/>		Spring of shock absorber
Suspension arm – damage of joint gap & arm				<input type="radio"/>		
Buffer -oil leakage or damage				<input type="radio"/>		
Tightness of installation				<input type="radio"/>		
Power transmission device						
Clutch -action		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
Transmission			<input type="radio"/>	<input type="radio"/>	Level : way of direction hole , oil fill to the mark of the hole	It's rear Gear case
Electril device						
Ignition device -condition of ignition spark plug			<input type="radio"/>	<input type="radio"/>	Gap of spark plug 0.6~0.7 mm	
Battery -connection of terminal				<input type="radio"/>		
Wiring of electrical appliance – damage or loose in connection place				<input type="radio"/>		

Check Items	Before riding	1 st M	6 M	12 M	Judged standard	remarks
Engine						
Body – starting & abnormal noise low speed & accelerating exhaust air filter		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Idle : 1800 ± 100 rpm	
Lubrication device						
Oil and oil filter			<input type="radio"/>	<input type="radio"/>	Warning light lighting	
Oil leakage			<input type="radio"/>	<input type="radio"/>		
Oil level	<input type="radio"/>					
Fuel installation						
Gasoline filter is dirty				<input type="radio"/>		
Leakage of fuel			<input type="radio"/>	<input type="radio"/>		
Throttle gate & choke				<input type="radio"/>		
Fuel filter is clogged				<input type="radio"/>		
Oil level	<input type="radio"/>					
Alteration of pipes					* each 2 years	
Lights & direction lights						
Action			<input type="radio"/>	<input type="radio"/>		
On/off normal , dirty , damage	<input type="radio"/>					
Rear mirror – view	<input type="radio"/>			<input type="radio"/>		
Reflector & license tag –dirty & damage						
Instrument –action				<input type="radio"/>		
Exhaust pipe & muffler						
Installation loosed or damage				<input type="radio"/>		
Function of muffler				<input type="radio"/>		
Frame & body –loose or damage				<input type="radio"/>		
Abnormal from previous day –confirm normal	<input type="radio"/>					
Others - greasing of each part			<input type="radio"/>	<input type="radio"/>		
Cleaning combustion chamber , exhaust pipe , and carbon muck in muffler				<input type="radio"/>		

# CHECK AND ADJUST

## Disassembly of External Parts

- Remove the external parts for check and adjustment.

- Remove 4 hex washer face bolts, 4 space tubes, and then remove luggage carrier.
- Remove 12 self-tapping screws and 2 pan flat bolts.
- Remove central cover, L/R side cover, decoration strip and cowling.
- Install with the reverse sequence.

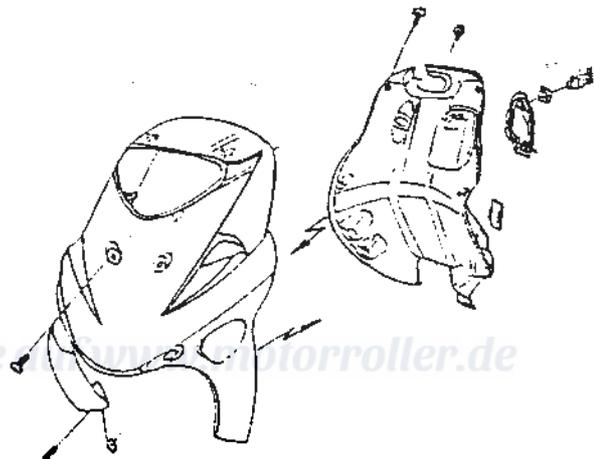
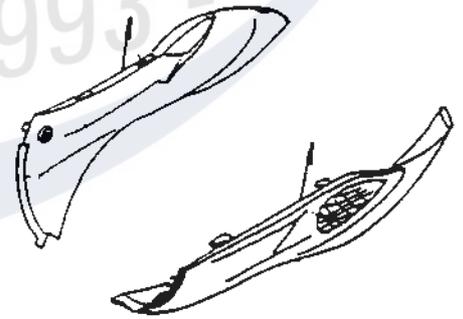
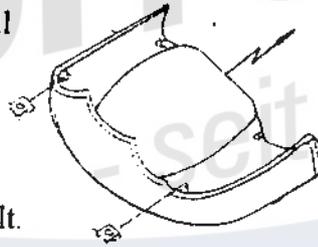
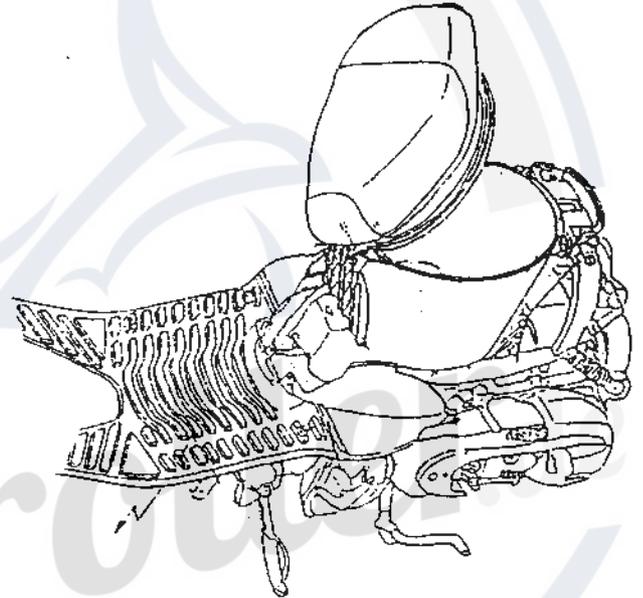
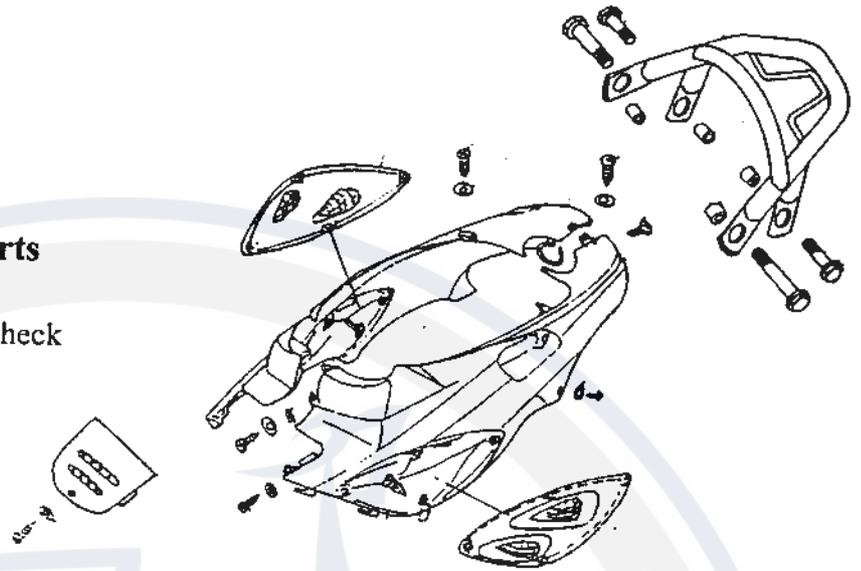
### WARNING:

- \* Do not break the union of body and pedal.
- \* Before locking screws, please confirm the matching correct of all parts.

- Front cover.
- Remove 3 pan flat bolts, 1 hex bolt.
- Remove 12 self-tapping screws.
- Disconnect the light connectors.
- Install with the reverse sequence.

### WARNING:

- \* Do not damage & break the joint of inner body and front damper.
- \* Before locking screws, please confirm the matching correct of all parts.



## CHECK AND ADJUST

### Disassembly of Pedal

- Remove L/R body cover.
- Remove 4 bolts, 6 self-tapping screws  
2 pan flat bolts.
- Separate the joint with luggage case  
(claw & groove) and remove the pedal
- Install with the reverse sequence.

#### **WARNING:**

- \* Installing to the luggage box after  
composing confirming the pedal with  
the joint of luggage case correctly.



### Disassembly of Luggage Case

- Remove front fender.
- Disconnect the light connectors.
- Remove power switch cap.
- Remove edge nut on luggage case.
- Install with the reverse sequence.

#### **WARNING:**

- \* Going on the installation operation  
after jointing correctly the luggage  
case and front fender.



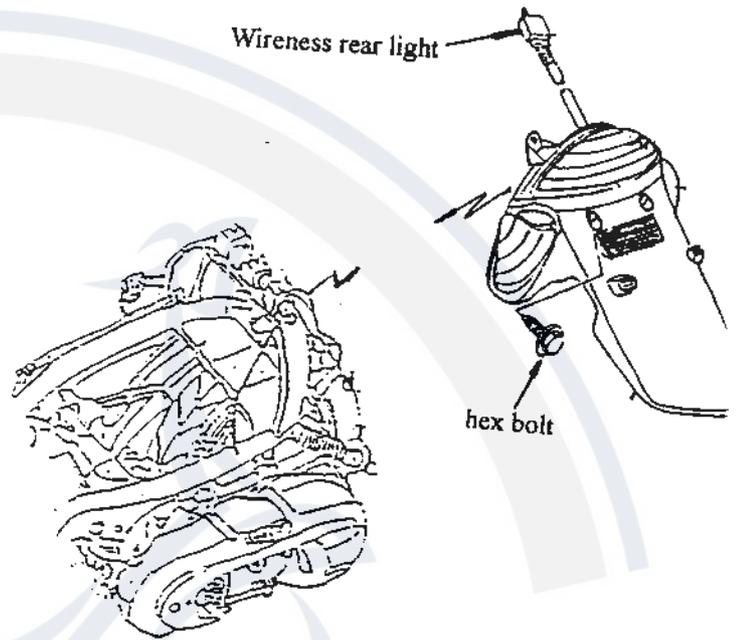
## CHECK AND ADJUST

### Rear Light Assembly

- Remove 2 hex bolts.
- Remove 3 L/R sides body cover.
- Disassembly the connection head of wireness rear light.
- Assembly with the sequence in reverse of disassembly.

**WARNING:**

- \* Ensuring the joint of tail light hole correct with the bracket.

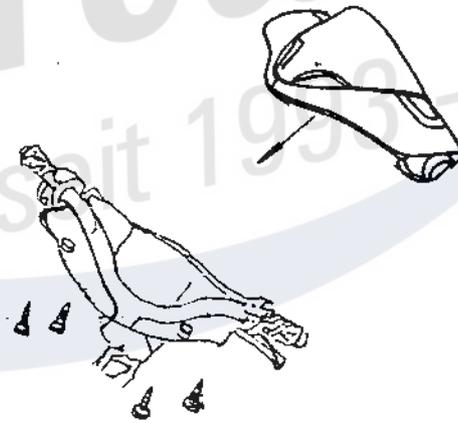


### Handle Covering

- Remove 4 self-tapping screws , separate the joint with speedometer.
- Remove the handle covering.
- Assembly with the sequence in reverse of disassembly.

**WARNING:**

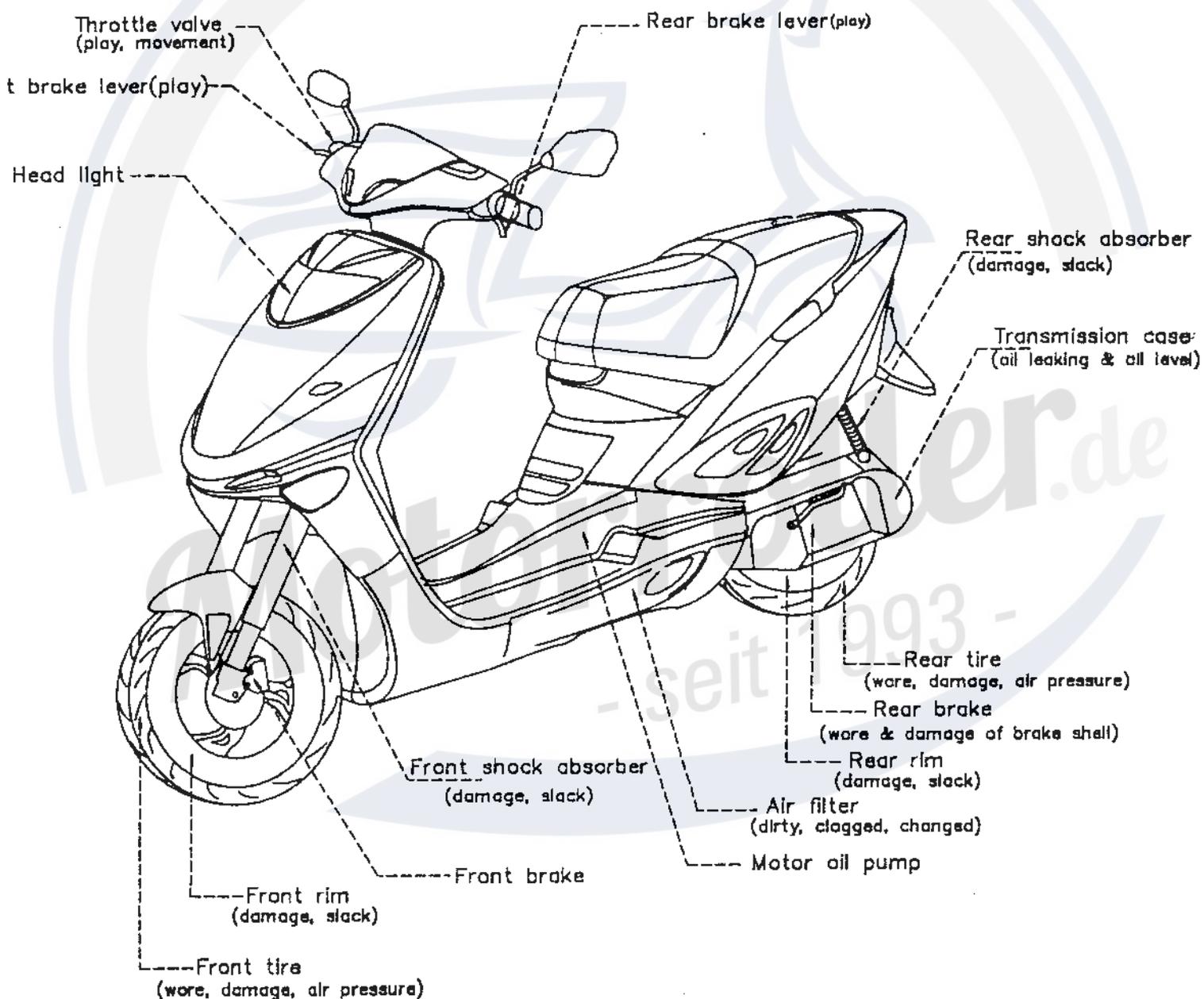
- \* Aim handle covering correctly the handle covering back's joint.



# CHECK AND ADJUST

## Layout of Parts Maintenance

The location of main parts of maintenance are showed as follows :



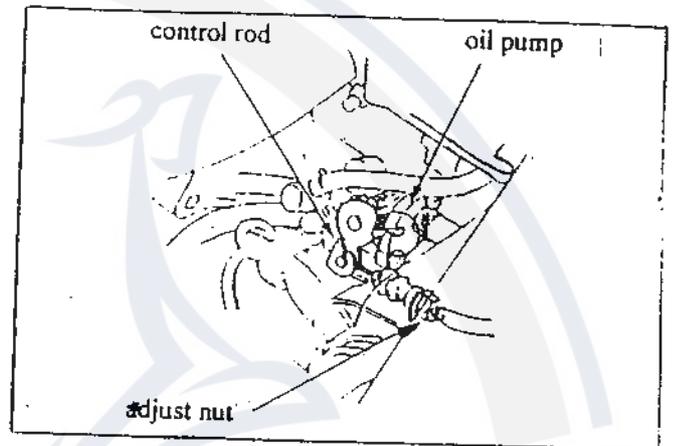
## CHECK AND ADJUST

### Adjustment of Motor Oil Pump

**\*WARNING:**

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

- The tolerance within 1 mm of the adjust O/P control cable is good. Starting the engine, turn slightly the throttle to feed motor oil idle-speed. At same time of rising the rotation of engine, confirm the working of control rod.



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

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# INSTALLATION OF LUBRICATION

## Attention of Operation

- Pay attention to avoid dust enter to the interior of engine and motor oil pipe when disassembly the motor oil pump.
- Never disassembly motor oil pump.
- Must draw out the air on the pump if there have air in the pump when disassembly pipe of carburetor.
- After disassembling the motor oil connection tube, must fulfill the motor oil in the connection pipe, then, connect the tube.

## Diagnosis of Troubles

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

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

### Overheating

- Poor synchronizing adjustment of motor oil pump (too much ~~exhaust~~).
- Bad quality of engine motor oil.

### Piston burnt

- Short of engine oil, or engine oil pipe is clogged.
- Poor adjustment of motor oil pump (lesser the exhaust).
- There have air in the motor oil pipes system.
- Bad motor oil pump.

### Clogging oil from oil tank

- Vent of motor oil case's cap is clogged.
- Filter of motor oil is clogged.

### Preparation standard

- Use separating motor oil appointed (use for 2-stroke).
- Content of motor oil tank : 1.1 liter

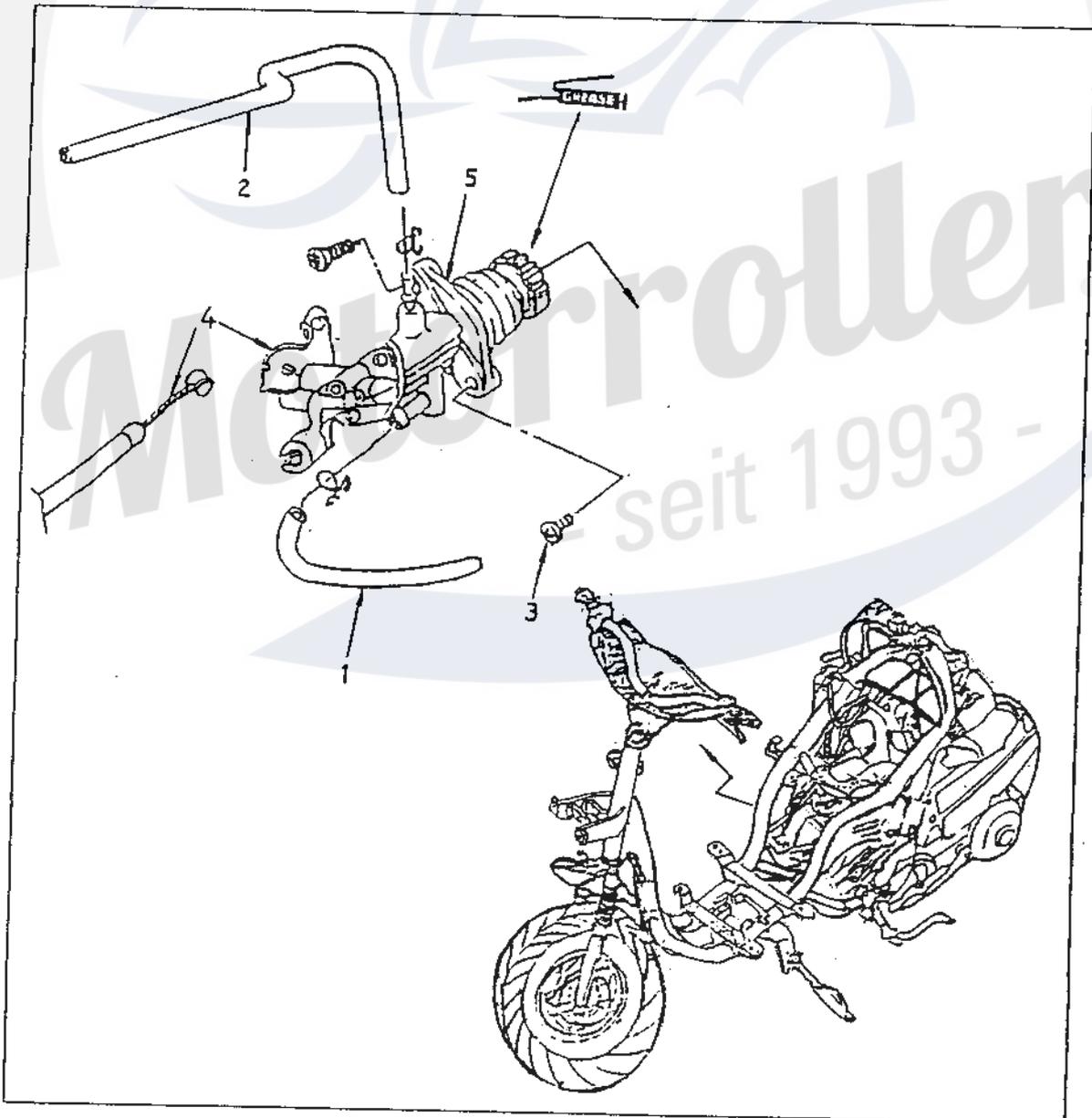
# INSTALLATION OF LUBRICATION

## Disassembly of Motor Oil Pump

- Remove right side cover.
- Remove stator cover.
- Remove A.C.G

### \***WARNING:**

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



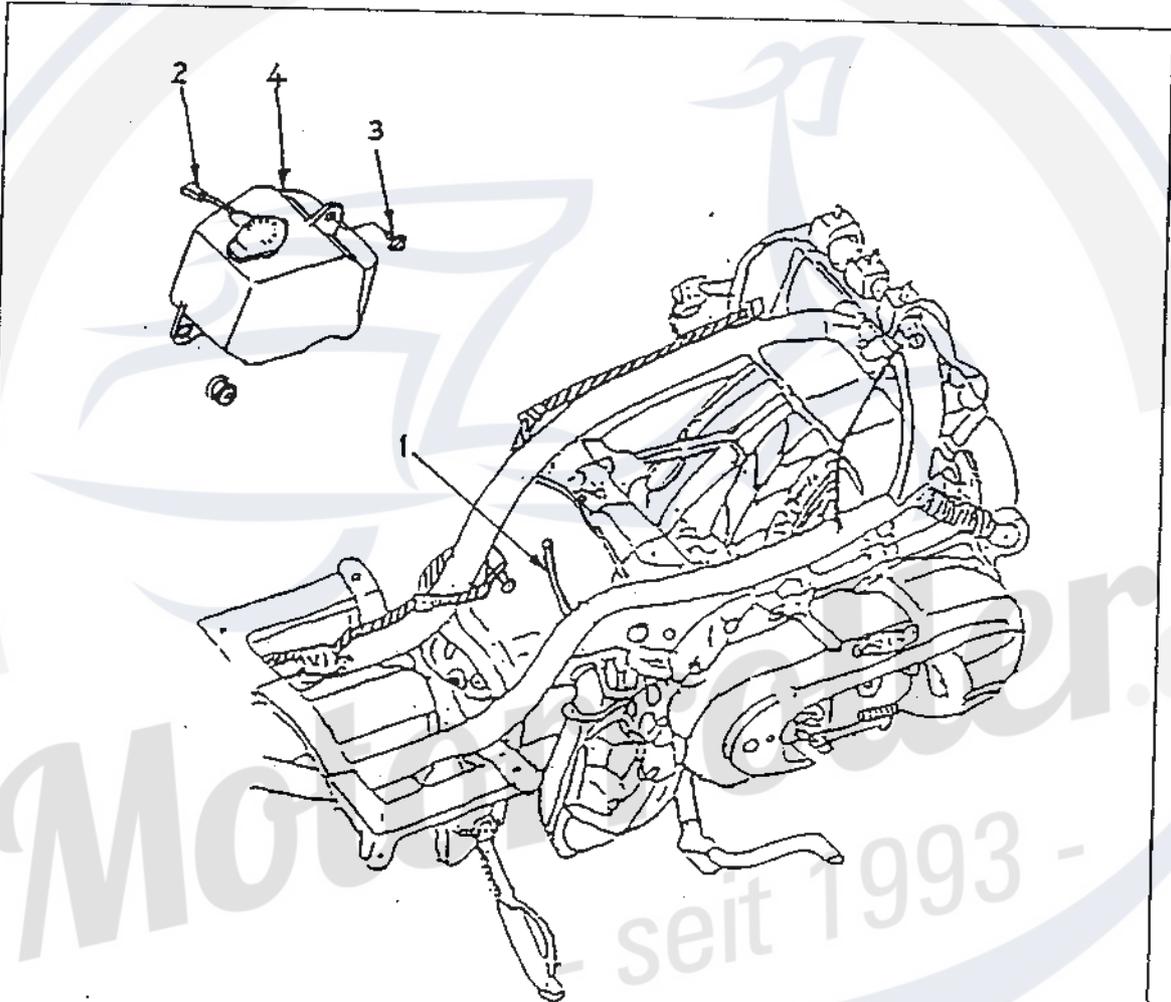
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## INSTALLATION OF LUBRICATION

Operation / Parts Name		Q'ty	Remarks
1	Disassembly Fuel pipe	1	<p><b>*WARNING:</b> Clogging the pipe with clamp or plug for avoiding fuel flow out.</p> <ul style="list-style-type: none"> <li>• Remove from both side of motor oil pump.</li> <li>• Remove from oil pump.</li> </ul>
2	Fuel connection pipe	1	
3	Pan phillips bolt	2	
4	Control cable	1/1	
5	Motor oil pump	1	
Assembly 5→1			<ul style="list-style-type: none"> <li>• Assembly with sequence in reverse of disassembly.</li> </ul> <p><b>*WARNING:</b></p> <ul style="list-style-type: none"> <li>-Smear motor oil to new O ring ,then, assembly motor oil pump.</li> <li>-The oil pump must installed correctly into crank case.</li> </ul> <p><b>*WARNING:</b></p> <ul style="list-style-type: none"> <li>-Don't loosen adjusted screw on control cable, but must adjust oil pump after assembling if need to loosen.</li> </ul>

# INSTALLATION OF LUBRICATION

## Disassembly of Oil Tank



Operation / Parts Name		Q'ty	Remarks
Disassembly			
1	Joint of oil disassembly oil pipe	1	<b>*WARNING:</b> Fill motor oil with clean container.
2	Joint of wires	1	
3	Bolt	1	
4	Oil tank	1	
5	Grommet	1	
Assembly 5→1			• Operation with sequence in reverse of disassembly.  <b>*WARNING:</b> Connect correct oil pipe after assembly , release the air in motor oil pump.

# FUEL INSTALLATION

## Attention in Operation

- Pay attention to the parts which using gasoline.
- Pipes & Cable must be in accordance with the location directed of wiring diagram.
- Release air in motor oil pump when remove motor oil pipe.

## Diagnosis of Trouble

### No starting

- No gasoline in tank
- 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
- Poor 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 pipe cranked, broke, clogged
- Poor action of valve of float chamber
- Gasoline level too low
- Air pipe is clogged

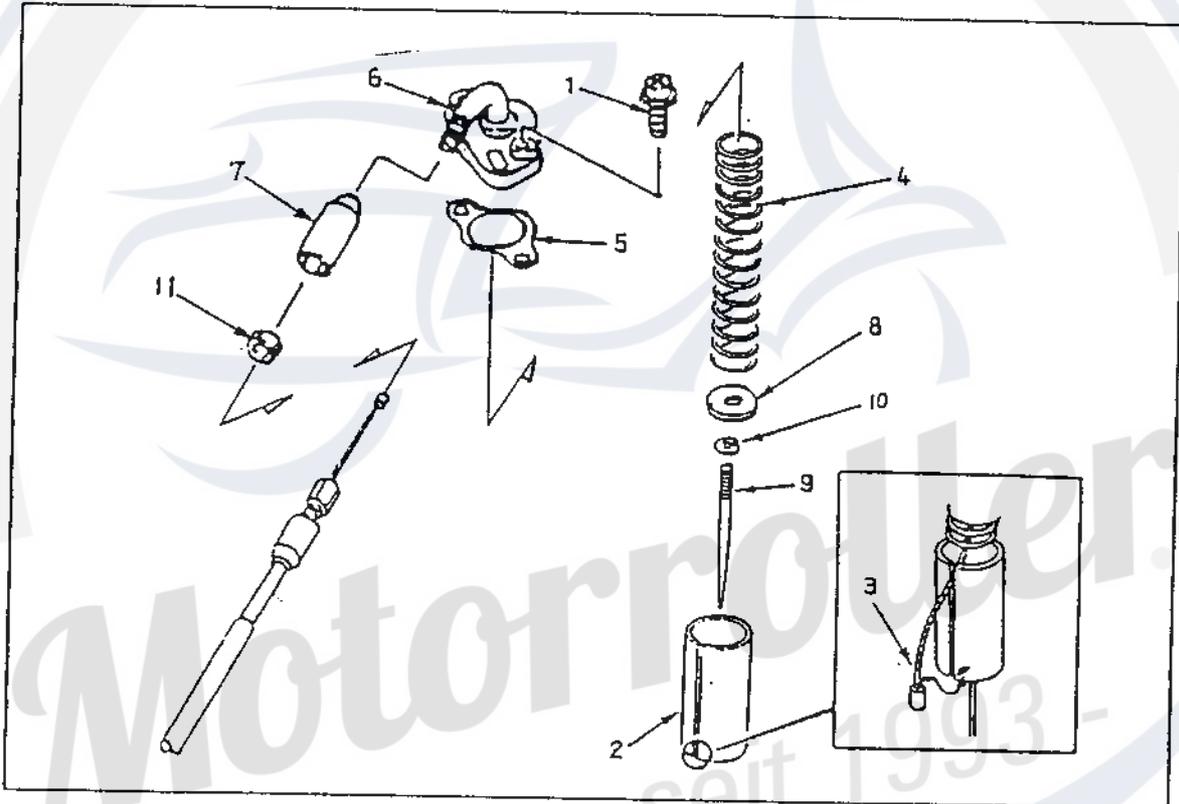
### Mixed air too thick

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

## FUEL INSTALLATION

### Disassembly / Assembly Valve Of Throttle

- Disassembly of left body covering
- Adjustment of play of throttle
- Adjustment of reverse rotation of idle speed



Operation / Parts Name		Q'ty	Remarks
<b>Disassembly</b>			
1	Pan phillips bolt	2	<b>*WARNNING:</b> Loosing top cap of carburetor, and removing.
2	Throttle valve	1	
3	Throttle cable	1	
4	Throttle valve spring	1	
5	Carburetor washer	1	<b>*WARNNING:</b> Remove from guide wire of throttle valve.
6	Throttle cover	1	
7	Sealing set	1	
8	Washer	1	
9	Needle nozzle	1	
10	Clamp	1	
11	Adjusted screw	1	

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## FUEL INSTALLATION

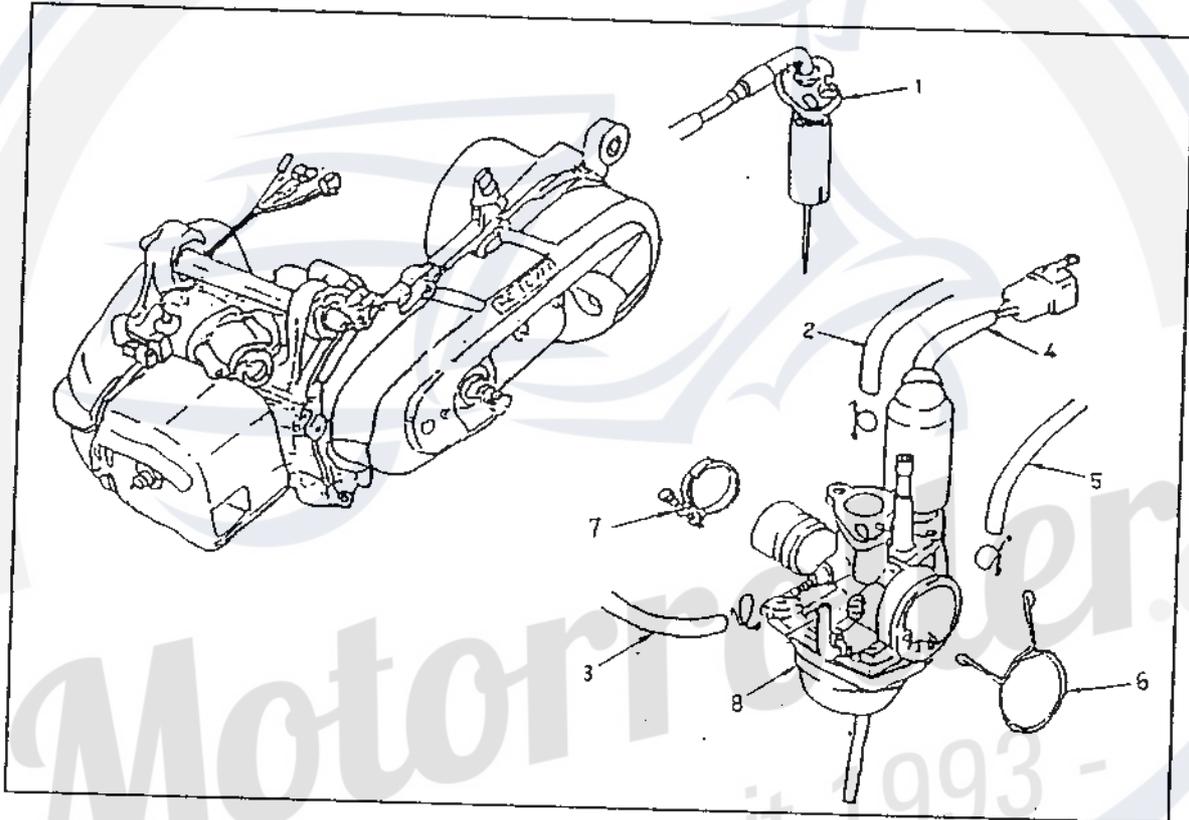
Operation / Parts Name		Q'ty	Remarks
	<b>Assembly</b>		
11	Adjusted screw	1	
10	Clamp	1	<b>*WARNING:</b> Assembly of needle nozzle.
9	Needle nozzle	1	<b>*WARNING:</b> Assembly of throttle valve.
8	Washer	1	
7	Sealing set of guide wire	1	<b>*WARNING:</b> Assembly of throttle cable.
6	Throttle cover	1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

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# FUEL INSTALLATION

## Disassembly of Carburetor

- Remove the air cleaner ass'y.
- Remove the left body cover



Operation / Parts Name		Q'ty	Remarks
<b>Disassembly</b>			
1	Throttle valve set	1	
2	Gasoline pipe	1	
3	Motor oil joint	1	
4	Starter wire of carburetor	1	
5	Vacuum pressure tube	1	
6	Clip	1	
7	Intake manifold hose clamp	1	
8	Carburetor	1	
<b>Assembly</b>			
	8→1		<b>*WARNING:</b> Don't let dust enter into carburetor.
3	Motor oil joint		<b>*WARNING:</b> Release air.

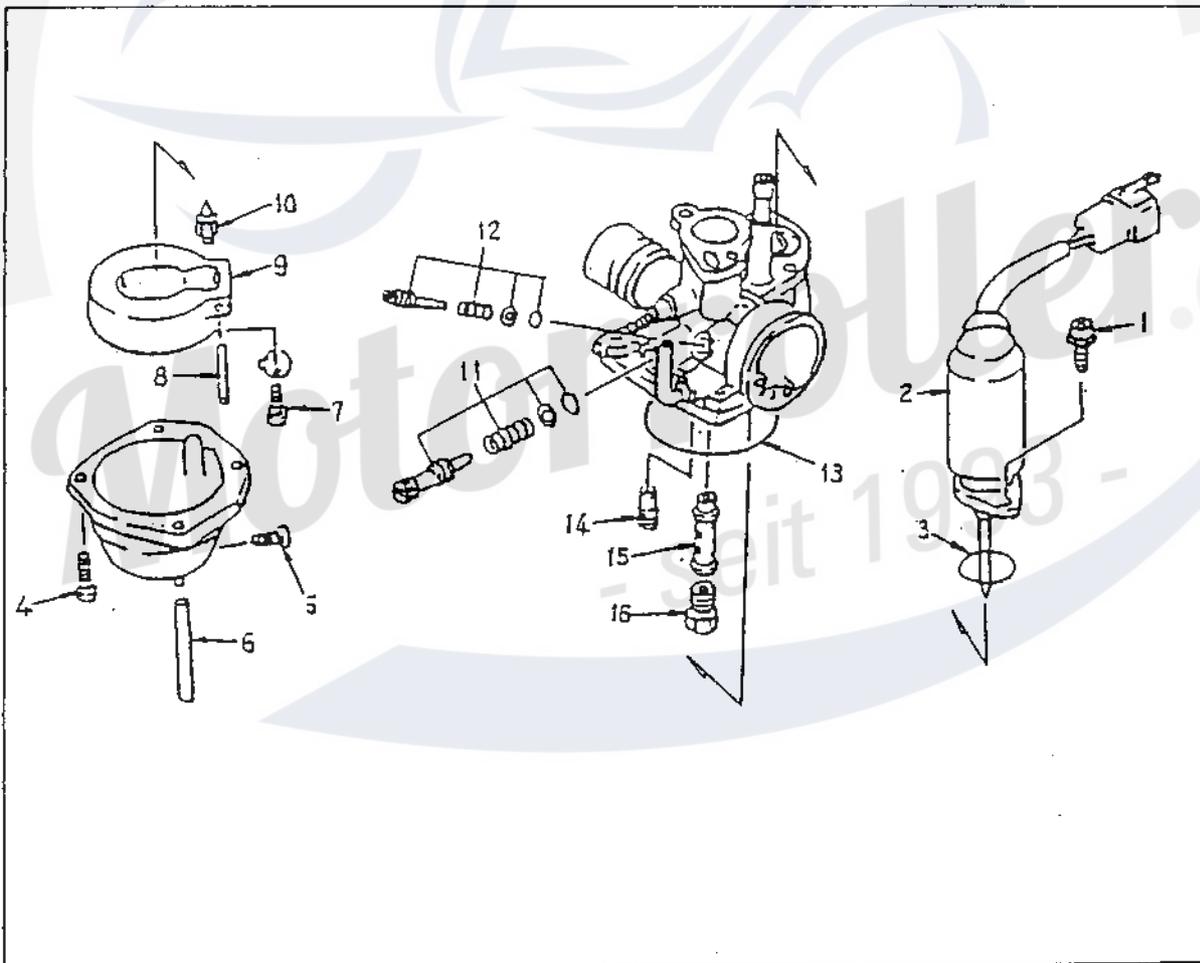
## FUEL INSTALLATION

### Disassembly / Assembly Carburetor

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

#### \* **WARNING:**

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



## FUEL INSTALLATION

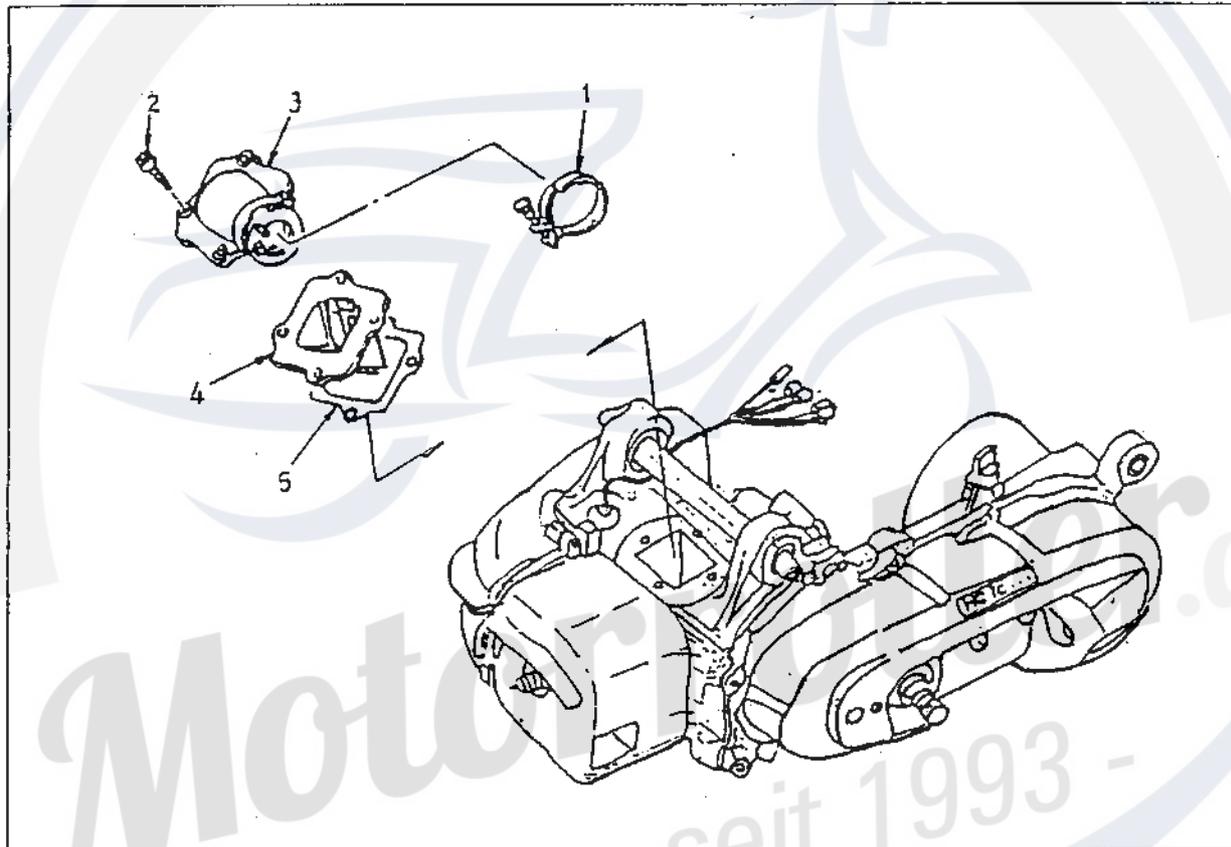
Operation / Parts Name		Q'ty	Remarks
<b>Disassembly</b>			
	Plunger starter		
1	Pan phillips bolt	2	
2	Start plug screw	1	
3	Oil ring	1	
<b>Float Chamber</b>			
4	Pan phillips bolt	4	
5	Drain plug	1	
6	Over flow tube	1	
7	Pan phillips bolt	1	
8	Float pin	1	
9	Float	1	
10	Needle valve	1	
<b>Carburetor Ass'y</b>			
11	Throttle screw set	1	
12	Air adjust screw set	1	* <b>WARNNING:</b> Must confirm rerotation location before disassembling , not locking too much avoid to hurt seat face.
13	Float chamber seal		
<b>Assembly</b>			
	13→1		• Operating with sequence in reverse of Disassembling.
12	Air adjust screw set		* <b>WARNNING:</b> use high pressure air clean each way of carburetor.
			* <b>WARNNING:</b> must adjust air screw when changing air screw and carburetor ass'y.

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# FUEL INSTALLATION

## Disassembly of Inlet Valve

- Disassembly of body cover.
- Disassembly of carburetor.



Operation / Parts Name	Q'ty	Remarks
<b>Disassembly</b>		
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	
<b>Assembly</b>		
5→1		• Assembling with sequence in reverse of disassembly.
4 Reed valve ass'y		* <b>WARNING:</b> Using new washer , the washer must aim at hole of reed valve.
5 Reed valve gasket		* <b>WARNING:</b> confirm no secondary air entering after installing.

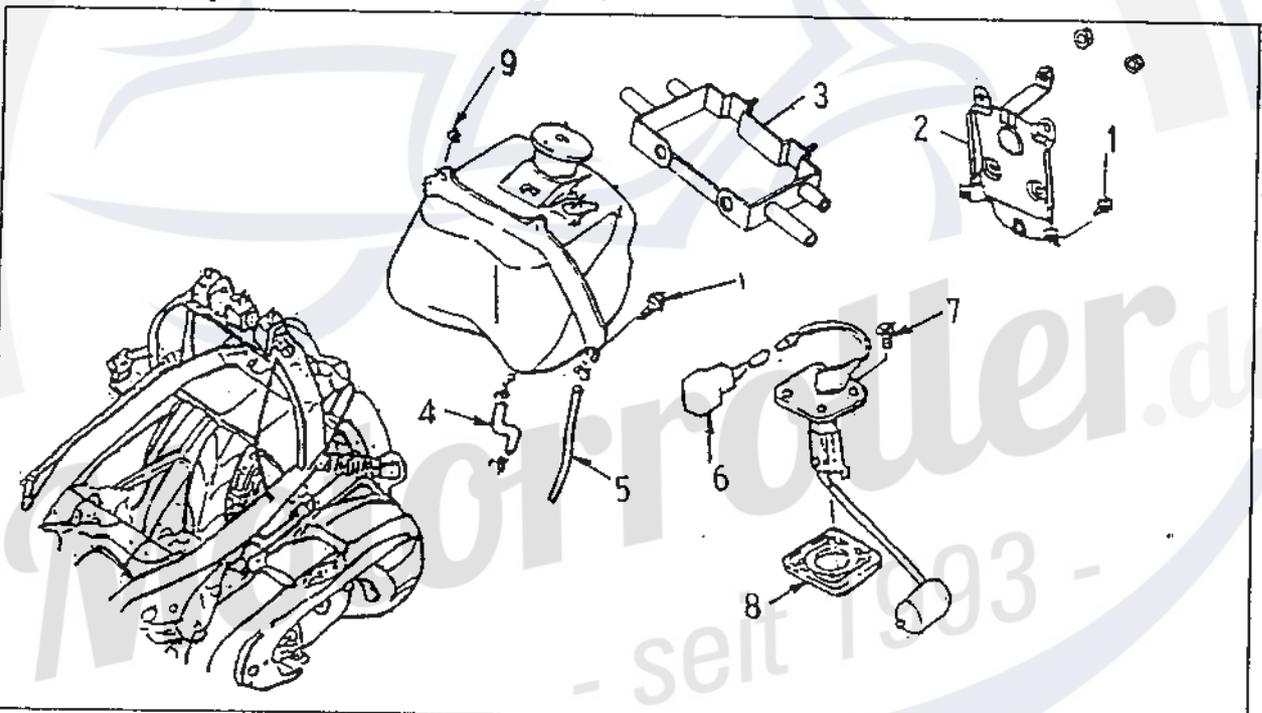
# FUEL INSTALLATION

## Disassembly of Fuel Tank

- Disassembly of body cover.
- Disassembly of tail light fix bracket.
- Disassembly of inner carrier.

### \* **WARNNING:**

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



Operation / Parts Name		Q'ty	Remarks
<b>Disassembly</b>			
1	Hex bolt	4	
2	Tail light fix bracket	1	
3	Inner carrier	1	
4	Oil tube	1	
5	Tube	1	
6	Petrol gauge ass'y	1	* <b>WARNNING:</b> Clip the tube, avoid fuel over-flow.
6	Joint of petrol gauge wire	4	
7	Round phillips bolt	1	
8	Oil lever gauge gasket	4	
9	Hex flat head phillips bolt		
<b>Assembly</b>			
9→1			
8	Oil lever gauge gasket	1	• Operating with sequence in reverse of disassembly. • Change new one.

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## FUEL INSTALLATION

### Disassembly of Petrol Gauge

- Disassembling wire joint of petrol gauge and remove 4 hex phillips bolt.

\* **WARNING:**

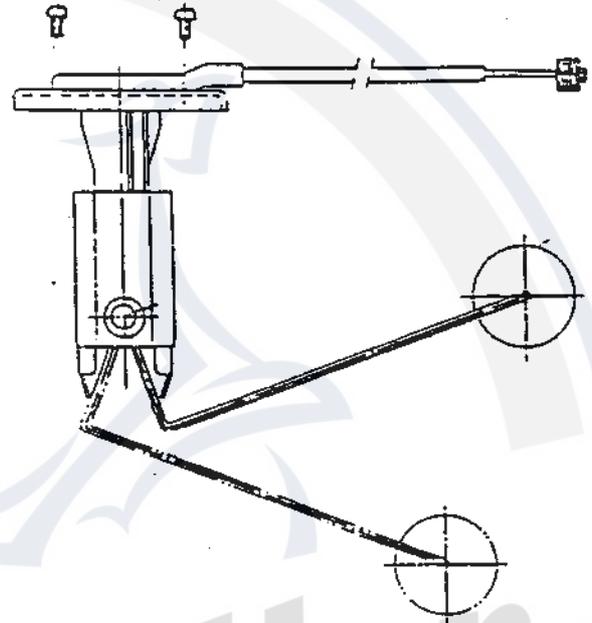
Don't damage petrol gauge wires.

- Remove the petrol gauge.

\* **WARNING:**

Don't curving float arm of petrol gauge.

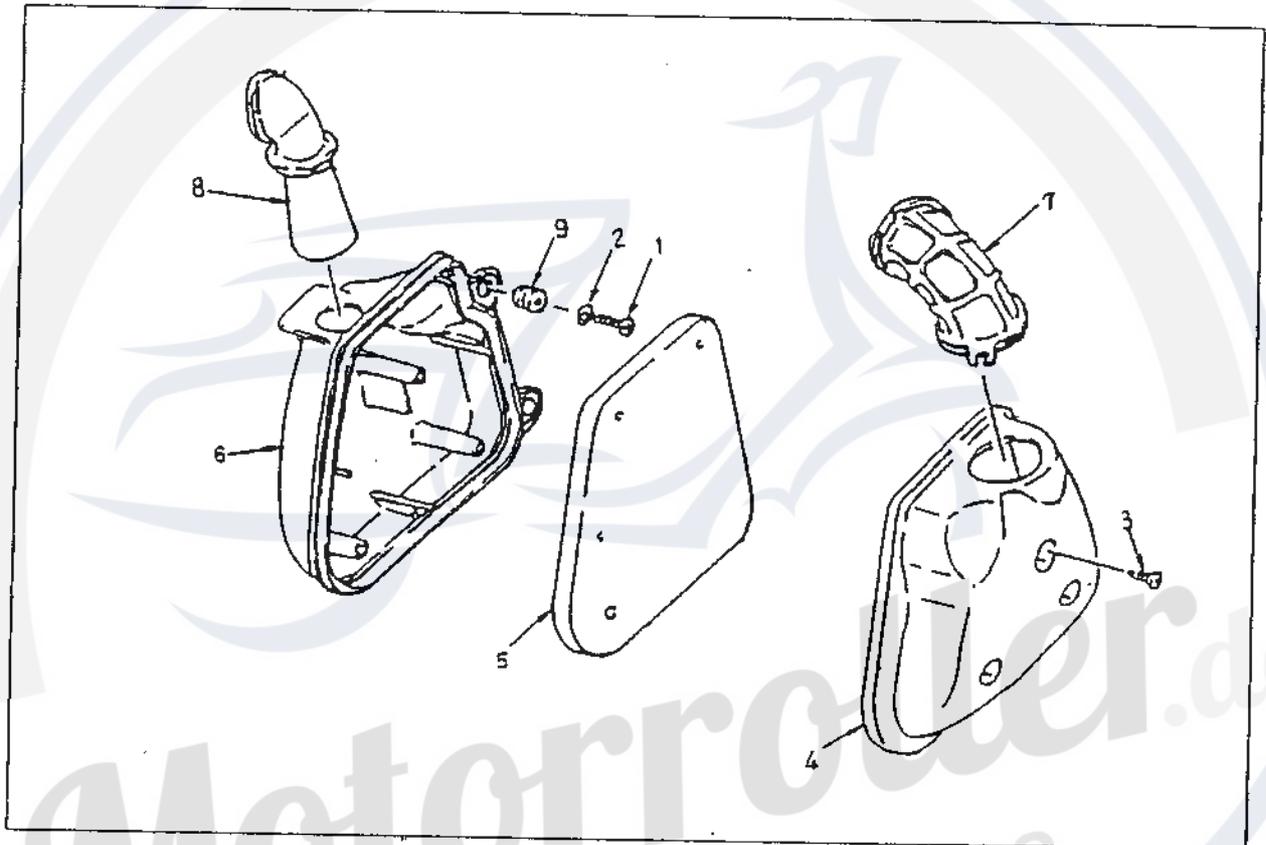
- Operation with sequence in reverse of disassembly.



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# FUEL INSTALLATION

## Disassembly of Air Cleaner



Operation / Parts Name		Q'ty	Remarks
<b>Disassembly</b>			
1	Hex socket bolt	2	
2	Plain washer	1	
3	Self-tapping screw	3	
4	Air cleaner case cap	1	
5	Air cleaner element	4	
6	Air cleaner case	1	
7	Air cleaner joint	1	
8	Cleaner guide pipe	2	
9	Grommet	1	
<b>Assembly</b>			
9→1			• Operating with sequence in reverse of disassembly.

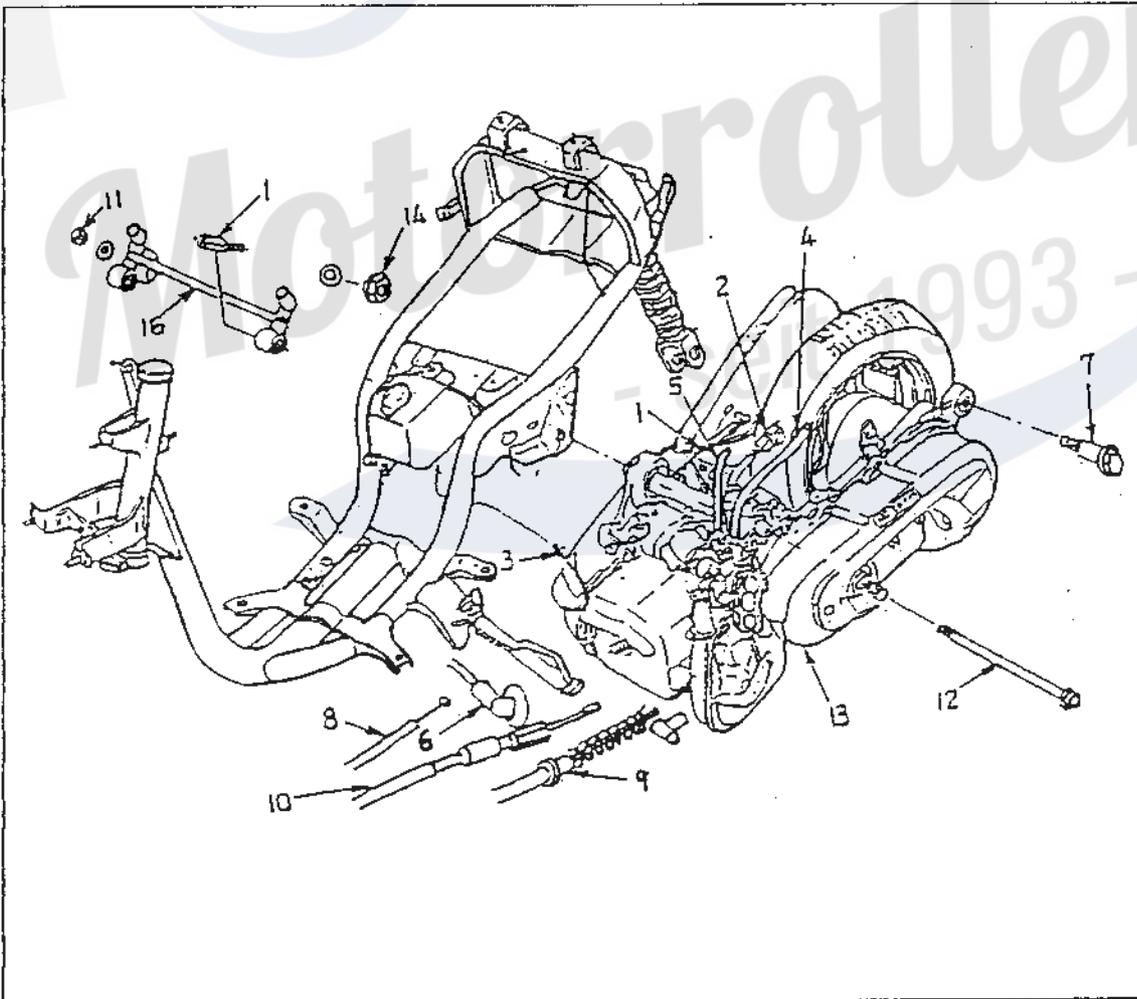
## DISASSEMBLY OF ENGINE

### 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 cap of body.
- Disassembly of luggage case.
- Disassembly of throttle valve.
- Adjustment the throttle cable.
- Adjustment the rear break cable.
- Adjustment the oil pump control cable.



## DISASSEMBLY OF ENGINE

Operation / Parts Name		Q'ty	Remarks
<b>Disassembly</b>			
1	ACG wire /wire of start motor	2	<p><b>*WARNING:</b></p> <p>The oil over-flow when remove the oil tube , so use clip or plug stop the seal.</p> <p><b>*WARNING:</b></p> <ul style="list-style-type: none"> <li>• Don't damage rear fender when remove the engine.</li> <li>• Actually for brace the frame, avoid body turn inside out.</li> </ul>
2	Starter wire of carburetor	1	
3	Oil tube	1	
4	Fuel tube	1	
5	Vacuum pressure tube	1	
6	Cap of spark plug	1	
7	Hex washer face bolt of rear cushion	1	
8	Oil pump control cable	1	
9	Cable of rear brake	1	
10	Throttle cable	1	
11	Hex washer face bolt of engine	1	
12	Bolt	1	
13	Engine	1	
14	Nut	1	
15	Engine bracket bolt	2	
16	Engine bracket	1	
<b>Assembly</b>			
	16→1		<p><b>*WARNING:</b> Carry out following adjusting after installation.</p> <ul style="list-style-type: none"> <li>- Cable of throttle valve</li> <li>- Oil pump control cable</li> <li>- Rear break cable</li> </ul>

## 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 driver harm the joint face when remove the cylinder & cylinder head.
- Avoid to harm the cylinder inner 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 washer.
- Wear & damage the piston ring.
- Wrong installation of spark plug
- Wear & damage the cylinder and piston.
- Inlet valve poor.

#### 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) .

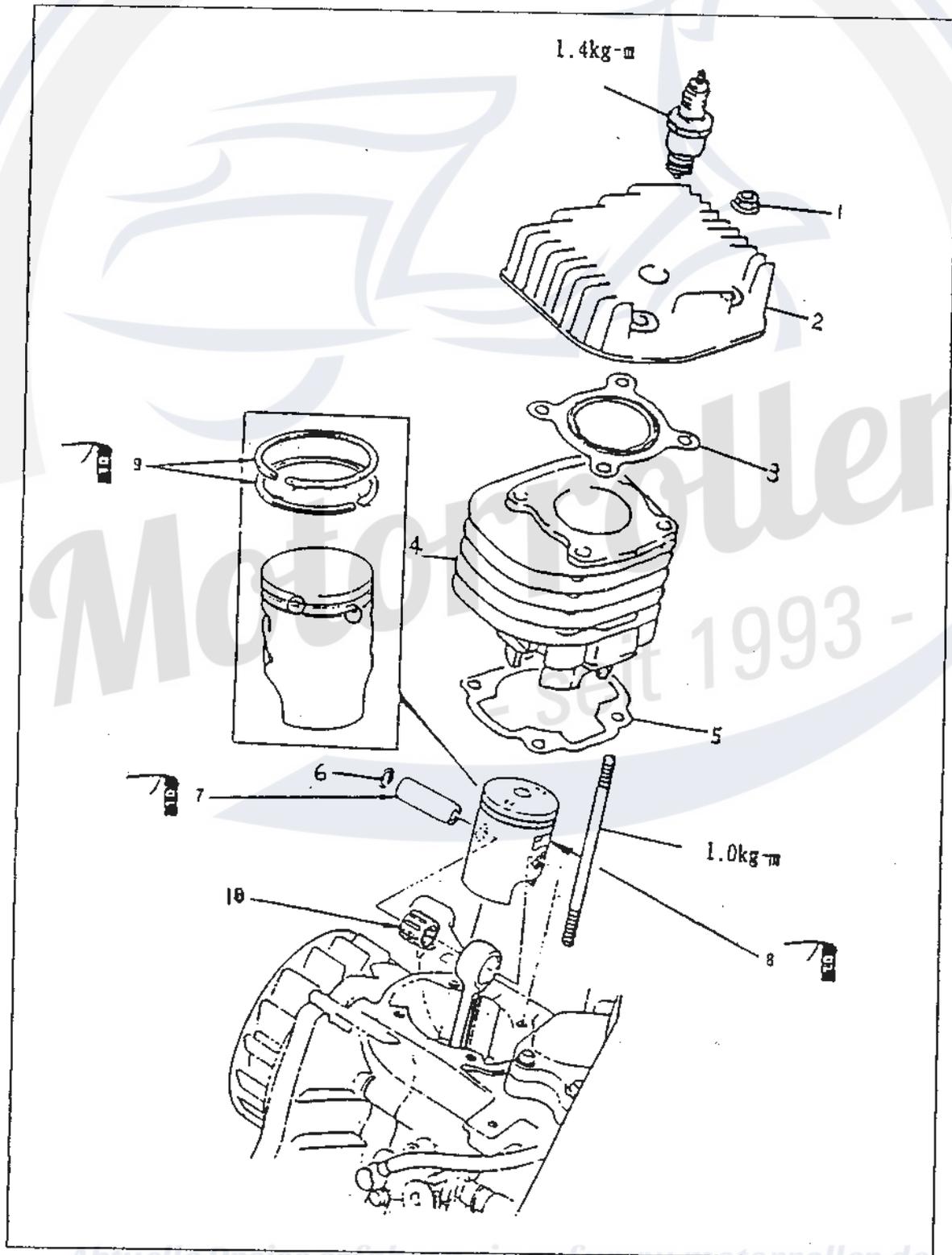
#### Piston ring noise

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

## CYLINDER HEAD / CYLINDER / PISTON

### Disassembly of Cylinder Head / Cylinder / Piston

- Disassembly of cover (→4-7)
- Disassembly of generator cover (→12-7)
- Disassembly of muffler (→11-2)
- Disassembly of spark plug cap (→5-2)

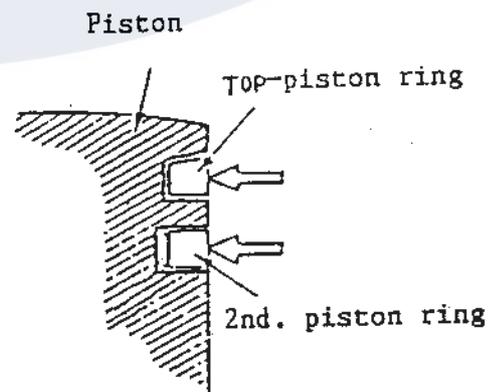


## CYLINDER HEAD / CYLINDER / PISTON

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

### Installation of Piston Ring

- Install top-piston ring & 2<sup>nd</sup> piston ring in 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 same brand.

## 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.
- Don't rotation the starter when remove the front cap of left crankshaft case.

### 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

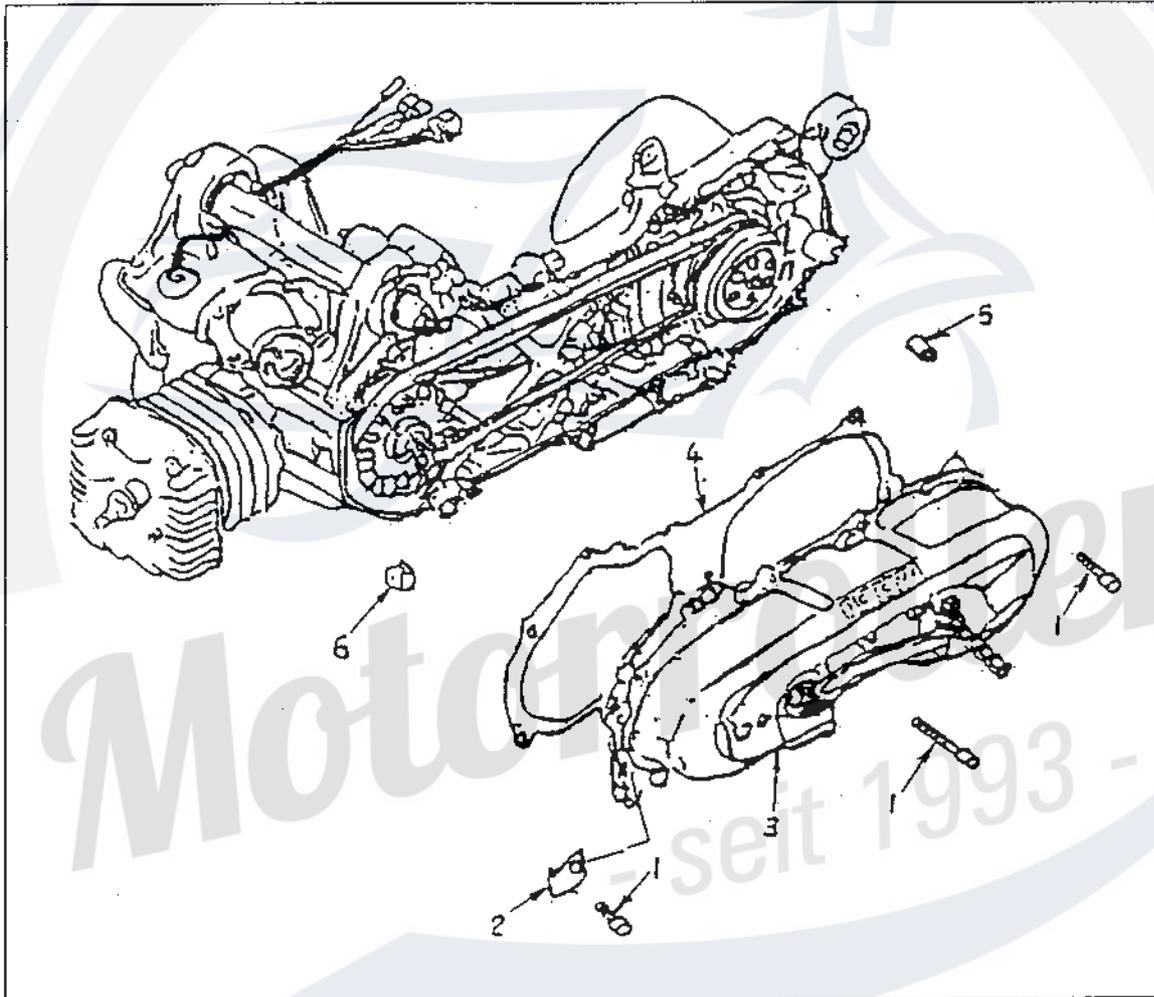
- Drive belt wear-out
- Driven ass'y spring defect
- Drive face dirty or oily
- Weight roller wear-out

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## Starter / Driving Disc / Clutch / Transmission Disc

### Disassembly of Left Crank Case Cover

- Disassembly of air cleaner ass'y.

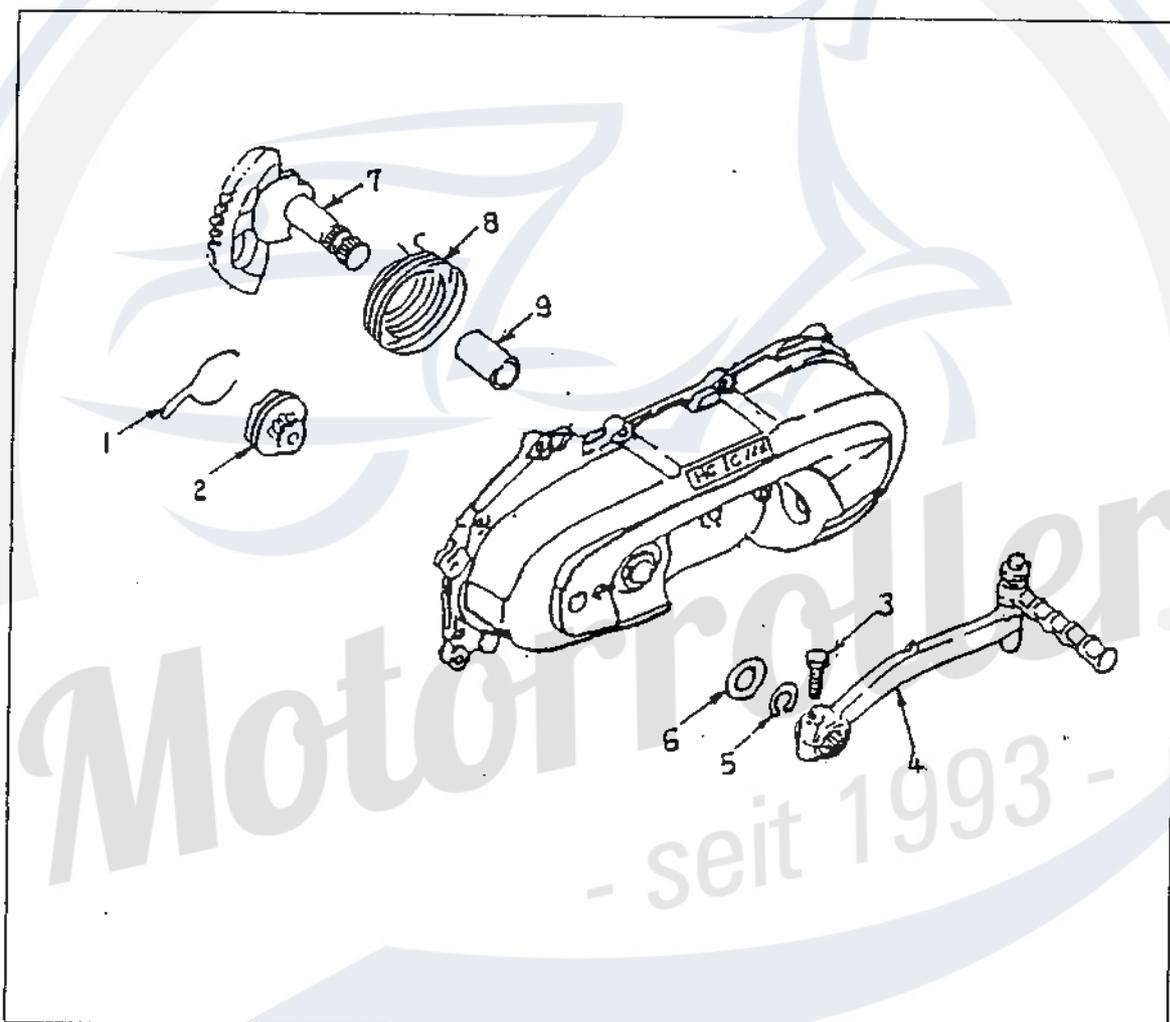


Operation / Parts name		Q'ty	Remark
<b>Disassembly</b>			
1	Hex socket bolt	12	
2	Carburetor tube bracket	1	
3	Left crank case cover	1	
4	Crankcase cover gasket	1	<b>*WARNING:</b>
5	Dowel pin	2	Check the air cleaner whether
6	Grommet	1	worsen or harm.
<b>Assembly</b>			
6→1			• Operation with sequence in reverse of disassembly.

## Starter / Driving Disc / Clutch / Transmission Disc

### Disassembly of Kick Starter

- Disassembly of left crank case cover.



Operation / Parts name	Q'ty	Remark
<b>Disassembly</b>		
1 Kick pinion spring clip	1	* <b>WARNING:</b> Rotating pedal kick crank and remove the assembly.
2 Kick pinion	1	
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	

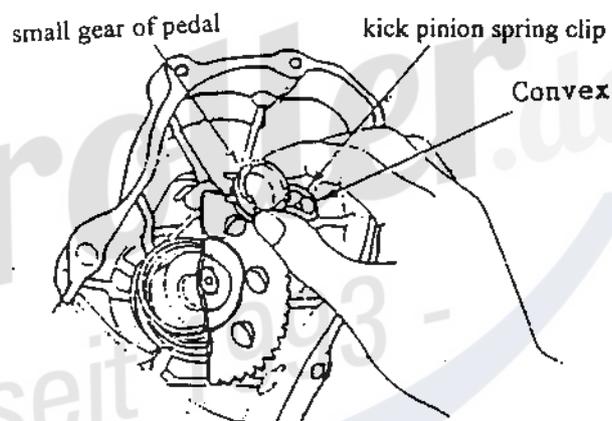
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## Starter / Driving Disc / Clutch / Transmission Disc

Operation / Parts name	Q'ty	Remark
<b>Assembly</b>		
9 Washer	1	* <b>WARNING:</b> Unable into main shaft fix position when inside and outside reset spring overlap, use flat-driver will inside outside spring part, then press main shaft.
8 Starting shaft reset spring	1	
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	

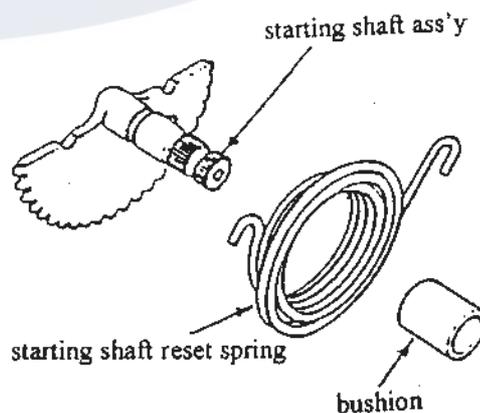
### Installation of Kick Pinion / Kick Pinion Spring Clip

- 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.



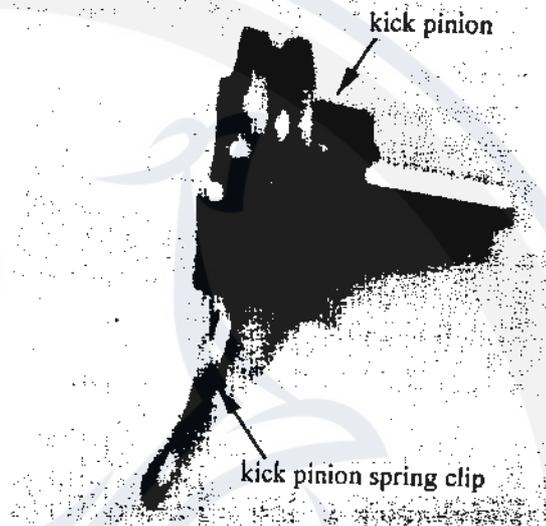
### Check of Starter

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



## Starter / Driving Disc / Clutch / Transmission Disc

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

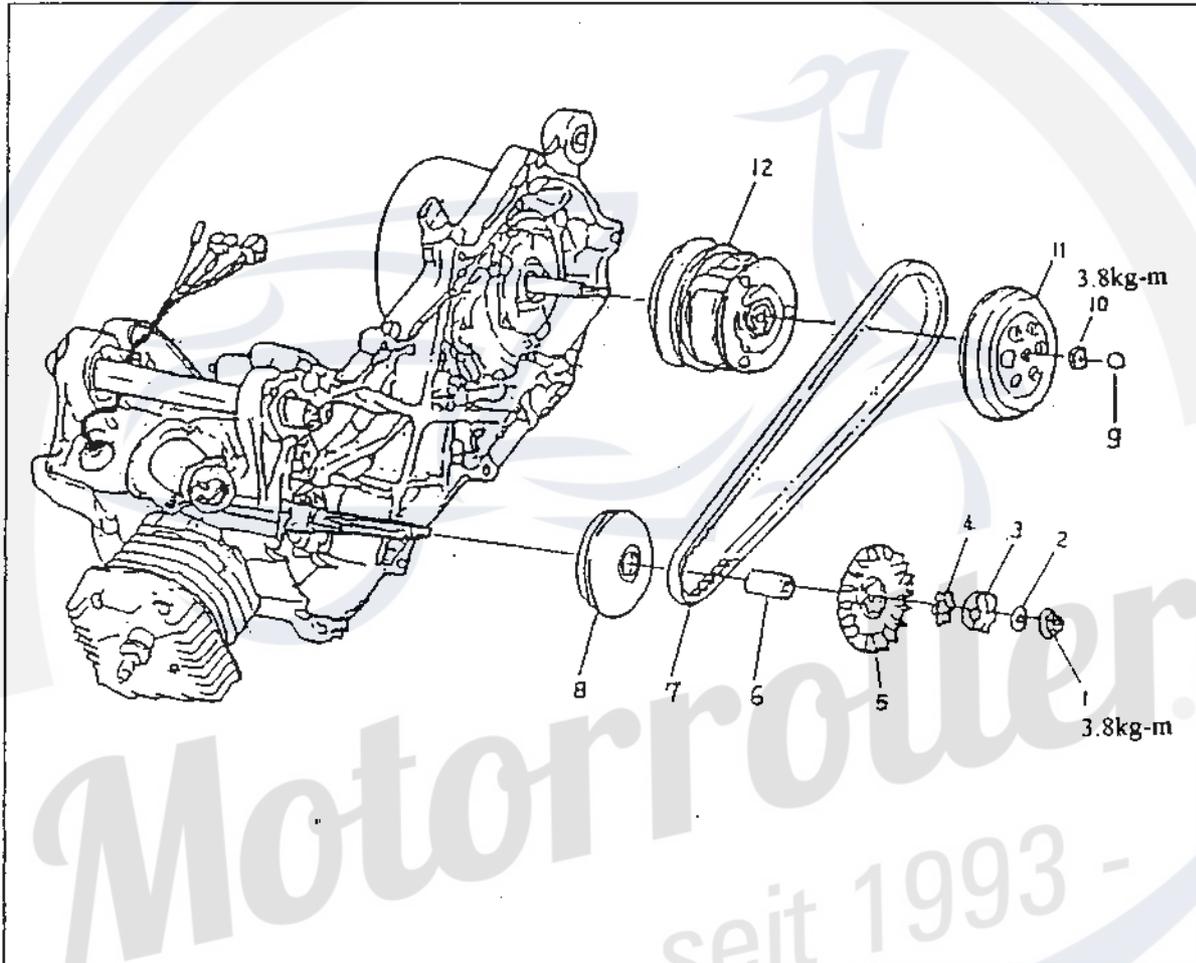


- Check the wear & damage of starting shaft , bearing and driving gear.

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# Starter / Driving Disc / Clutch / Transmission Disc

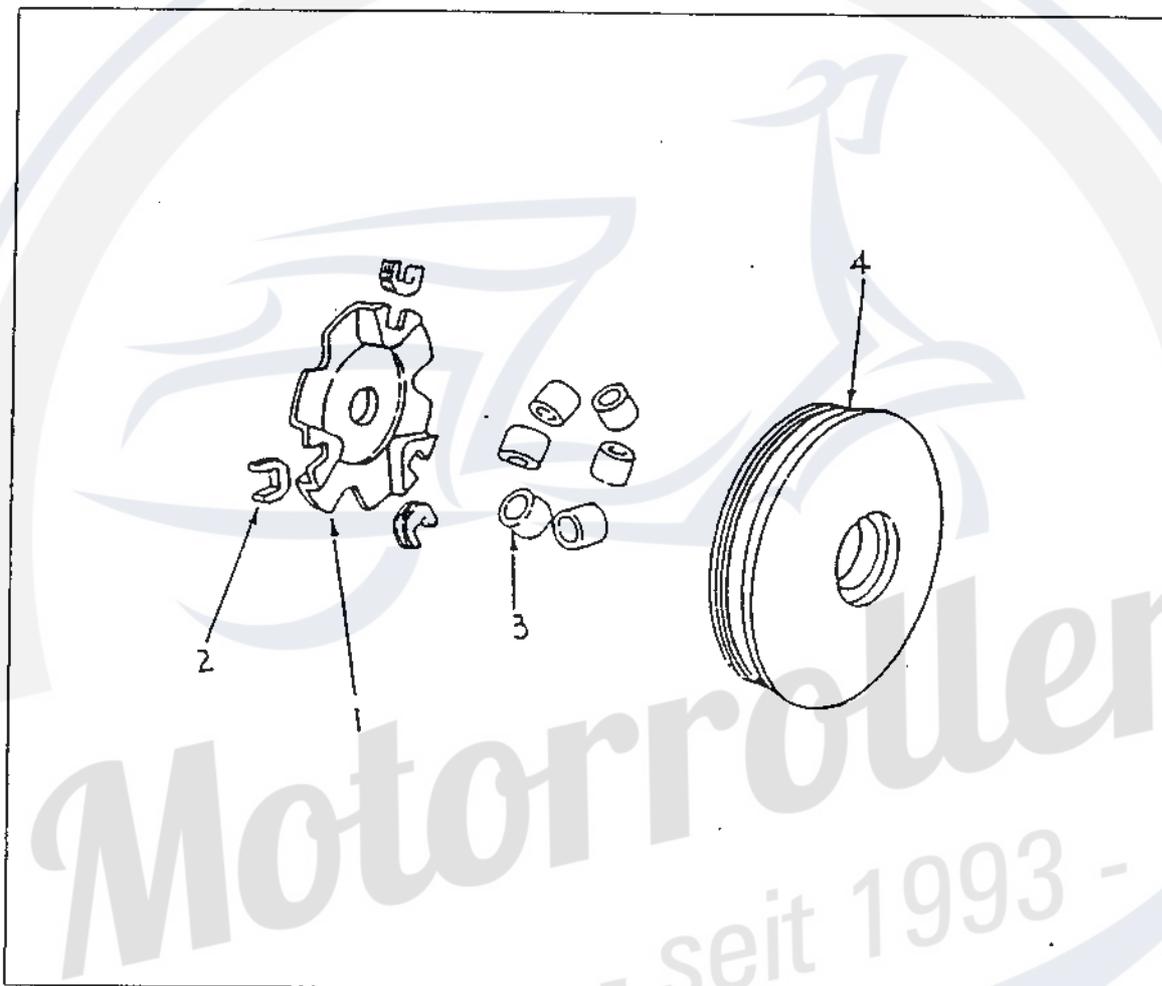
## Disassembly of Left Crank Case (→7-2)



Operation / Parts name	Q'ty	Remark
<b>Disassembly</b>		
1 Hex washer face bolt	1	* <b>WARNNING:</b> Don't hurt transmission belt.
2 Cone spring washer	1	
3 One-way clutch	1	
4 Clamp washer	1	
5 Primary fixed sheave	1	
6 Bushing	1	
7 V-Belt	1	
8 Primary sliding slot wheel	1	Separation / assembling (→ 7-7)
9 Oil ring	1	
10 Hex nut	1	
11 Covering of clutch	1	Separation / assembling (→ 7-8)
12 Drive face ass'y	1	
<b>Assembly</b>		• Operation with sequence in reverse of disassembly.
12→1		

# Starter / Driving Disc / Clutch / Transmission Disc

## Disassembly of Sliding Driving Disc

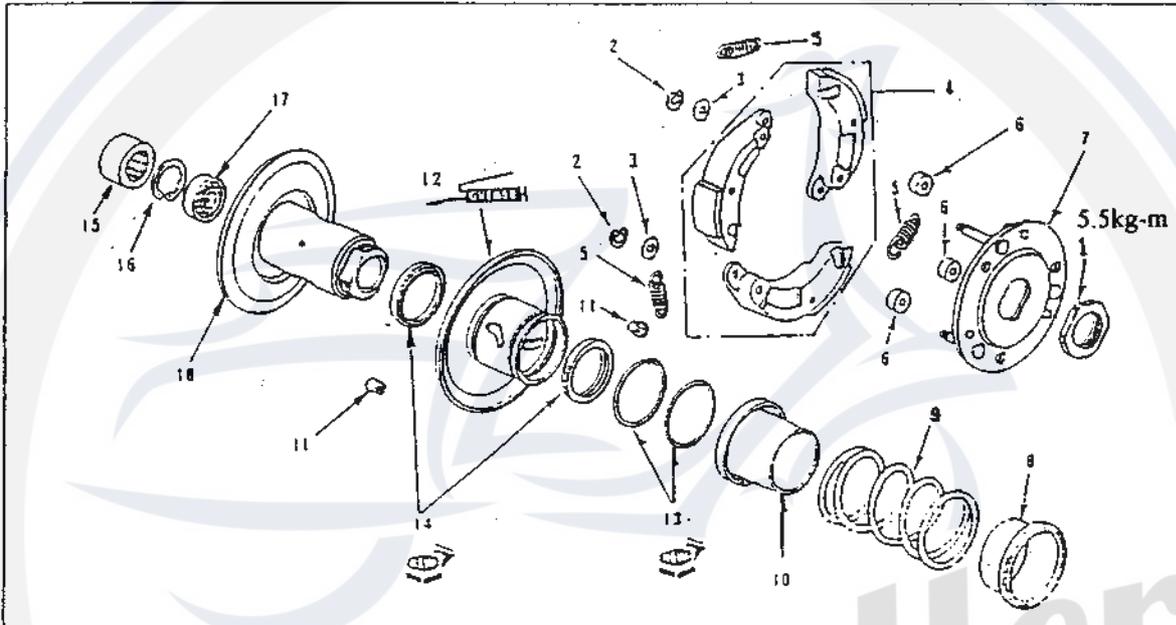


Operation / Parts name	Q'ty	Remark
<b>Disassembly</b>		
1 Cam plate	1	
2 Cam plate sliding	3	
3 Weight roller	6	
4 Primary sliding slot wheel	1	
<b>Assembly</b>		
4→1		• Operation with sequence in reverse of separating.

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# Starter / Driving Disc / Clutch / Transmission Disc

## Disassembly of Clutch / Transmission Belt Disc



Operation / Parts name	Q'ty	Remark
<b>Disassembly</b> Clutch		
1 Nut	1	
2 C retaining ring	3	
3 Washer	3	
4 Clutch weight set	3	
5 Clutch weight spring	3	
6 Rubber buffer	3	* <b>WARNING:</b> Must replacing when the buffer have damage, hardening and distortion.
7 Driving plate of clutch	1	
Drive face ass'y		
8 Axle ring of spring		
9 Compression spring		
10 Secondary spring seat		
11 Guide pin		
12 Secondary sliding slot wheel		
13 Oil ring		
14 Oil seal		
15 Needle bearing		
16 Internal circle clip		
17 Radial ball bearing		
18 Secondary fix slot wheel		
<b>Assembly</b> 18→1		• Operation with sequence in reverse of separating.

## Final Transmission Mechanism

### Attention of Operation

- This chapter explain that final reduction mechanism maintance. Can be operated in the vehicle.
- For no hurting case cap, changing the bearing of left crank shaft case after removing the rear break of engine.
- Use professional tool to change driving shaft and pull out the shaft after fixing inner ring of bearing.

### 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.

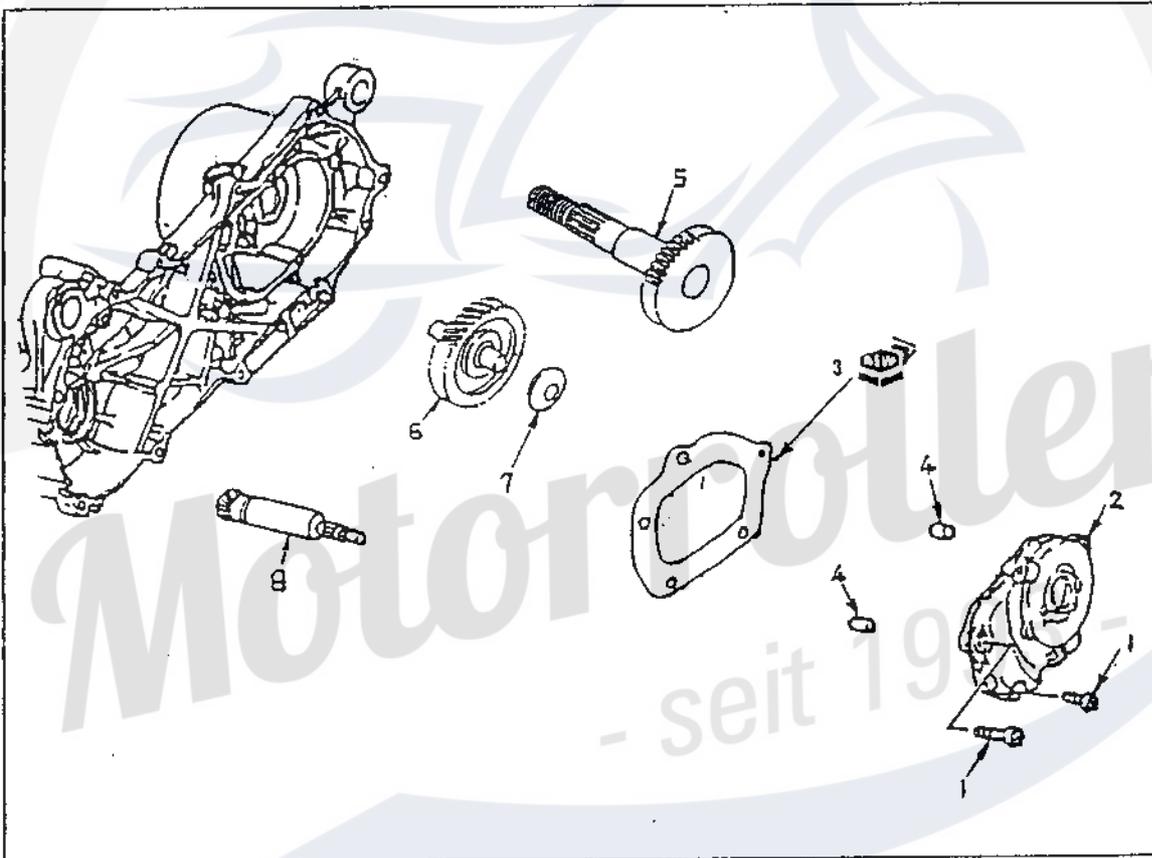
# Final Transmission Mechanism

## Disassembly of primary drive gear / final reduction mechanism

- Disassembly of rear tire(→11-2).
- Disassembly of clutch / drive face(→7-6).

**\*WARNING:**

First drain the oil of transmission.



Operation / Parts name	Q'ty	Remark
<b>Disassembly</b>		
1 Bolt	5	
2 Mission cover	1	
3 Washer	1	
4 Dowel pin	2	
5 Drive axle	1	
6 Main axle comp.	1	• Check the wear & damage of shaft and gear. Change new one. (→8-3)
7 Plain washer	1	
8 Primary drive gear	1	
<b>Assembly</b>		
8→1		• Operation with sequence in reverse of disassembly.

# Final Transmission Mechanism

## Change the Driving Shaft

- Remove the driving shaft from mission cover.

### **\*WARNING:**

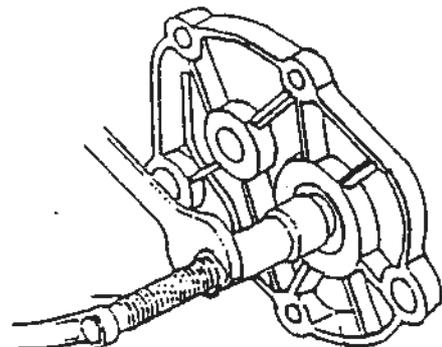
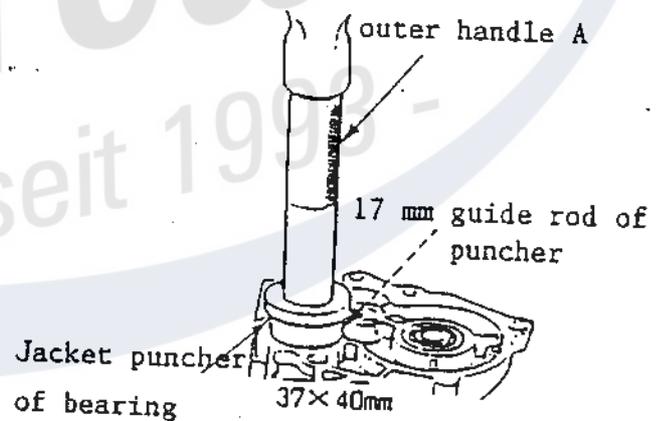
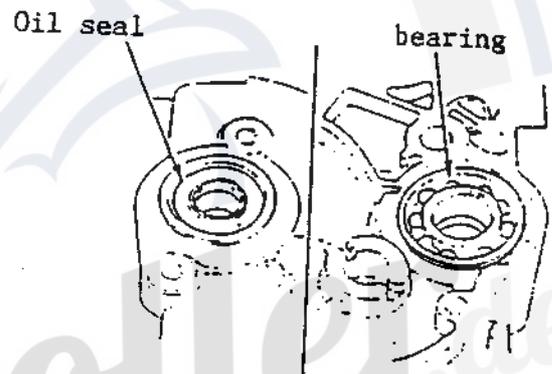
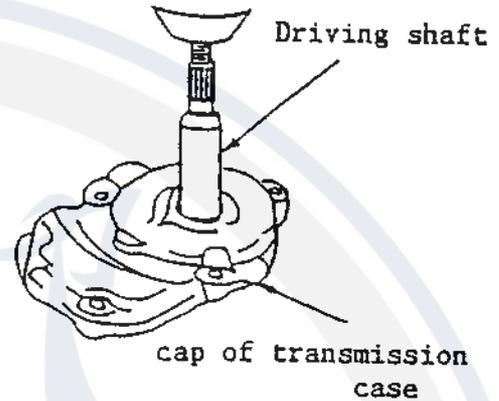
Don't damage joint face of mission cover.

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

- Install the new bearing in the mission cover.

### **\*WARNING:**

Install the bearing with facing outside.



## **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 ( Chap. 3 )
  - Disassembly of carburetor ( Chap. 4 )
  - Disassembly of intake valve ( Chap. 4 )
  - Dis-mounting of engine ( Chap. 5 )
  - Disassembly of cylinder head and cylinder ( Chap. 6 )
  - Disassembly of ACG ( Chap. 12 )
  - Disassembly drive face ass'y ( Chap. 7 )
- 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.

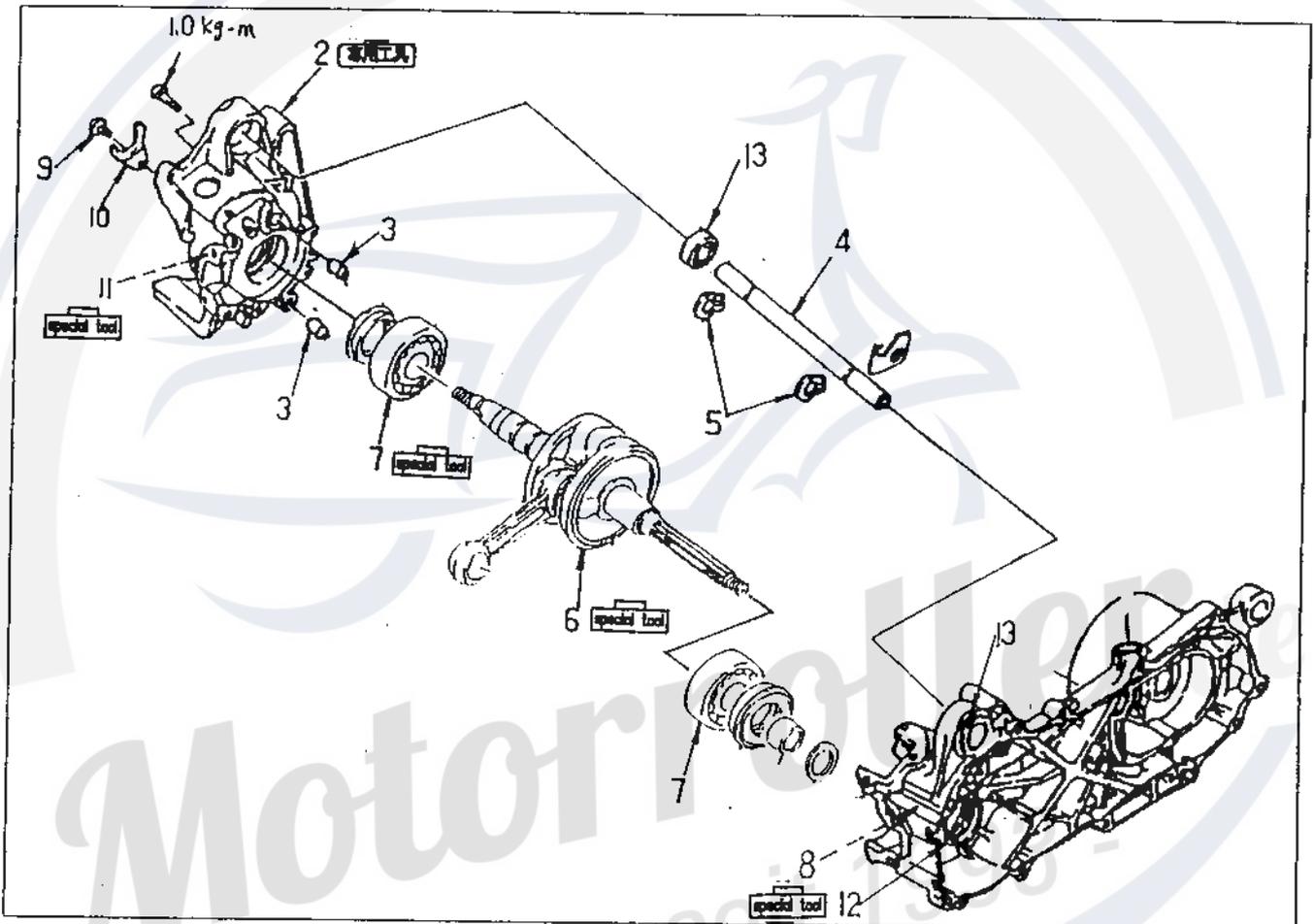
### **Diagnosis of Troubles**

#### **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
<b>Disassembly</b>			
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	
<b>Assembly</b>			
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.

 : Crank case puller (TLJT-03)

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

 : Crank case puller (TLJT-03)

#### \*WARNING:

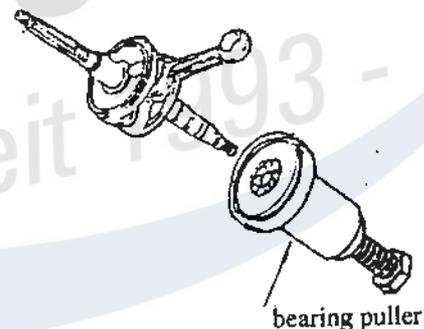
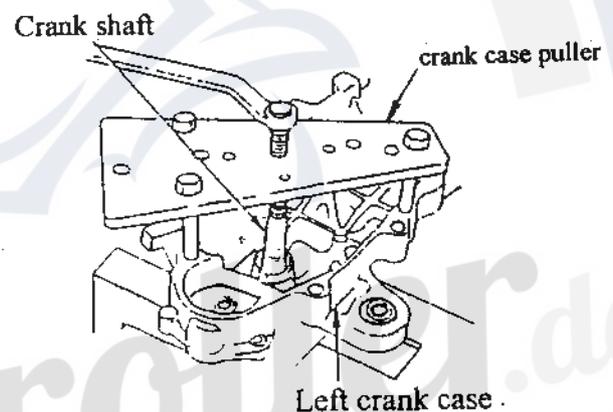
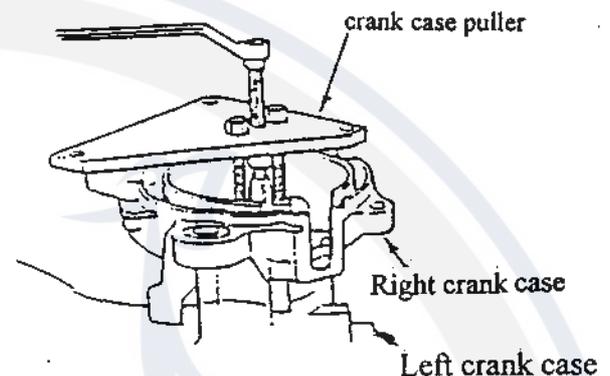
Don't knock the crank shaft when disassembling.

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

 : 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

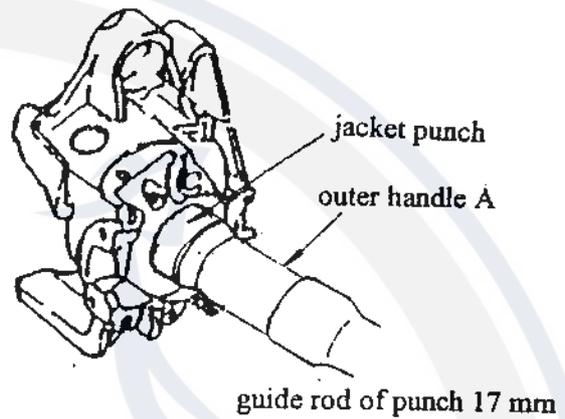
- Clean the crank case with gasoline, and check the each part whether damaged or crack.

#### \*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

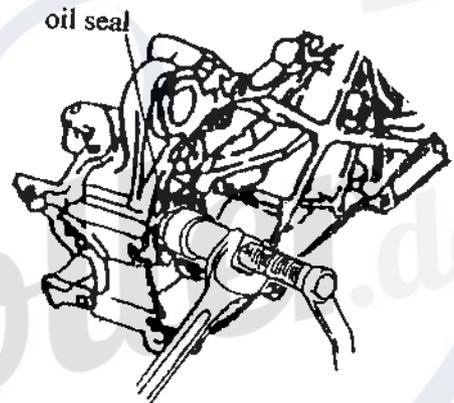
- Put new crank shaft into right crank case.



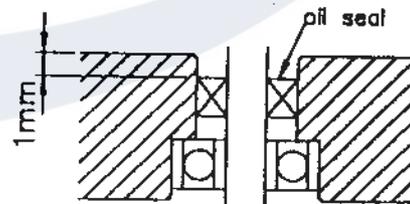
- Put crank shaft assembly into left crank case.

### \*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.

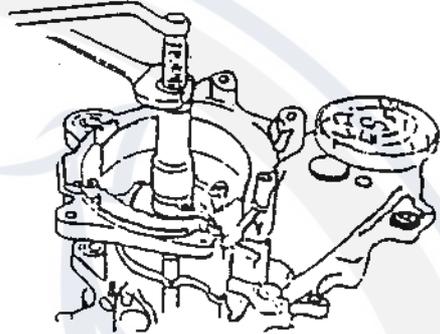


## Crank Case / Crank Shaft

### Assembly of Crank Case

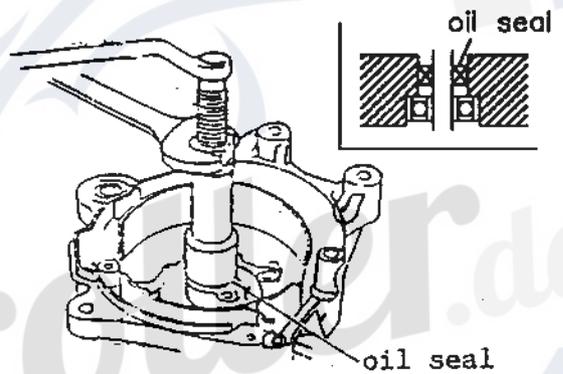
- Install the dowel pins in the joint face of left crank case.
- Install the right crank case.

 : Bearing puller (TLJT-00)



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

 : Bearing puller (TLJT-00)



## Front Wheel / Front Suspension / Front Brake

### 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

- Over tied of the steering ball race.
- Steel ball inside ball race broken.
- Air too less inside of front tire.

#### Brake efficiency abnormal

- Brake lining wear-out.
- Brake pads adjust not correct.
- Brake disc attrition.
- Tire wear-out.

#### Poor Brake

- Bad adjustment of brake.
- Wear the brake pad.

#### Steering handle not straight

- L/R suspension not balanced.
- Front fork banded.
- Front tire axle banded, tire wear-out.

#### Front wheel shaking

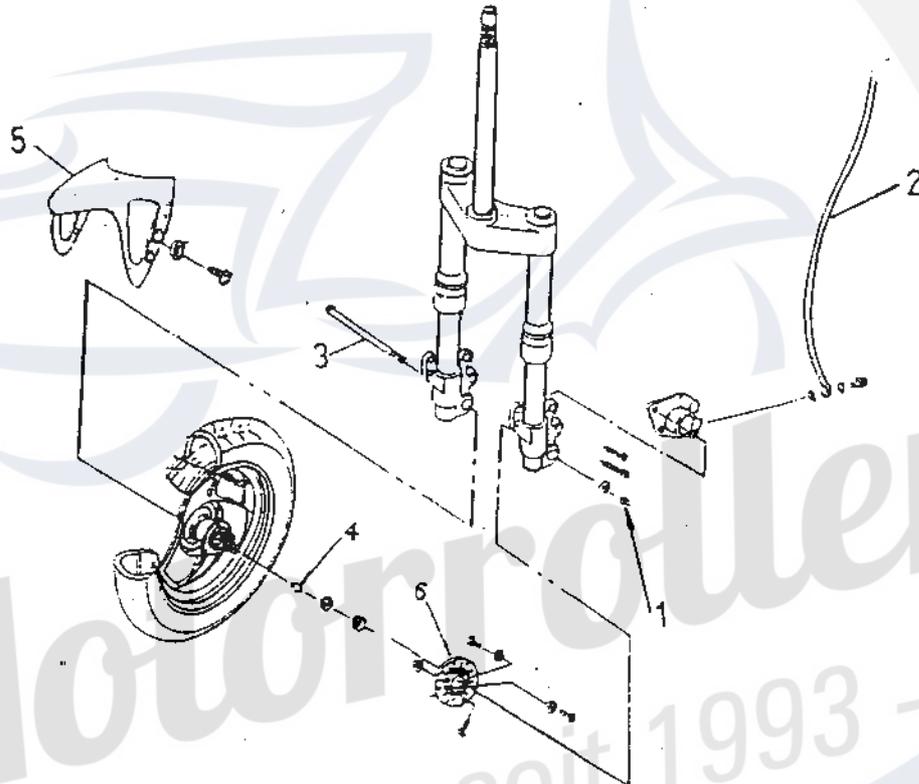
- Front rim defected.
- Loose of front rim bearings.
- Tire defect.
- Bad adjustment of the front axle.

# Front Wheel / Front Suspension / Front Brake

## Disassembly of Front Wheel

- Disassembly of front fender.

Front Wheel – IRON RIM



Operation / Parts name	Q'ty	Remarks
<b>Disassembly of Front Wheel</b>		
1 Nut nylon	1	
2 Brake hose	1	
3 Hex washer face bolt	1	
4 Front collar	1	
5 Front fender	1	
6 Front brake disc	1	
<b>Assembly</b> 6→1		<ul style="list-style-type: none"> <li>• Assembling with sequence in reverse of disassembly.</li> <li>*<b>WARNING:</b> Assembly of front fork , shall be aimed at convex of front fork</li> </ul>

# Front Wheel / Front Suspension / Front Brake

## Disassembly of Front Wheel

- Disassembly of front fender.

Front Wheel – IRON RIM		
Operation / Parts name	Q'ty	Remarks
<b>Disassembly of Front Wheel</b>		
1 Nut nylon	1	
2 Brake hose	1	
3 Hex washer face bolt	1	
4 Front collar	1	
5 Front fender	1	
6 Front brake disc	1	
<b>Assembly</b> 6→1		<ul style="list-style-type: none"> <li>• Assembling with sequence in reverse of disassembly.</li> <li><b>*WARNING:</b> Assembly of front fork , shall be aimed at convex of front fork</li> </ul>

## Front Wheel / Front Suspension / Front Brake

Front Wheel – Aluminum Rim			
Operation / Parts name		Q'ty	Remarks
<b>Disassembly of Front Wheel</b>			
1	Nut nylon	1	
2	Brake hose	1	
3	Hex washer face bolt	1	
4	Front collar	1	
5	Front fender	1	
6	Front brake disc (right)	1	
7	Front brake disc (left)	1	
<b>Assembly</b> 7→1			<ul style="list-style-type: none"> <li>• Assembling with sequence in reverse of disassembly.</li> <li>*<b>WARNING:</b> Assembly of front fork shall be aimed at convex of front fork and brake arm.</li> </ul>

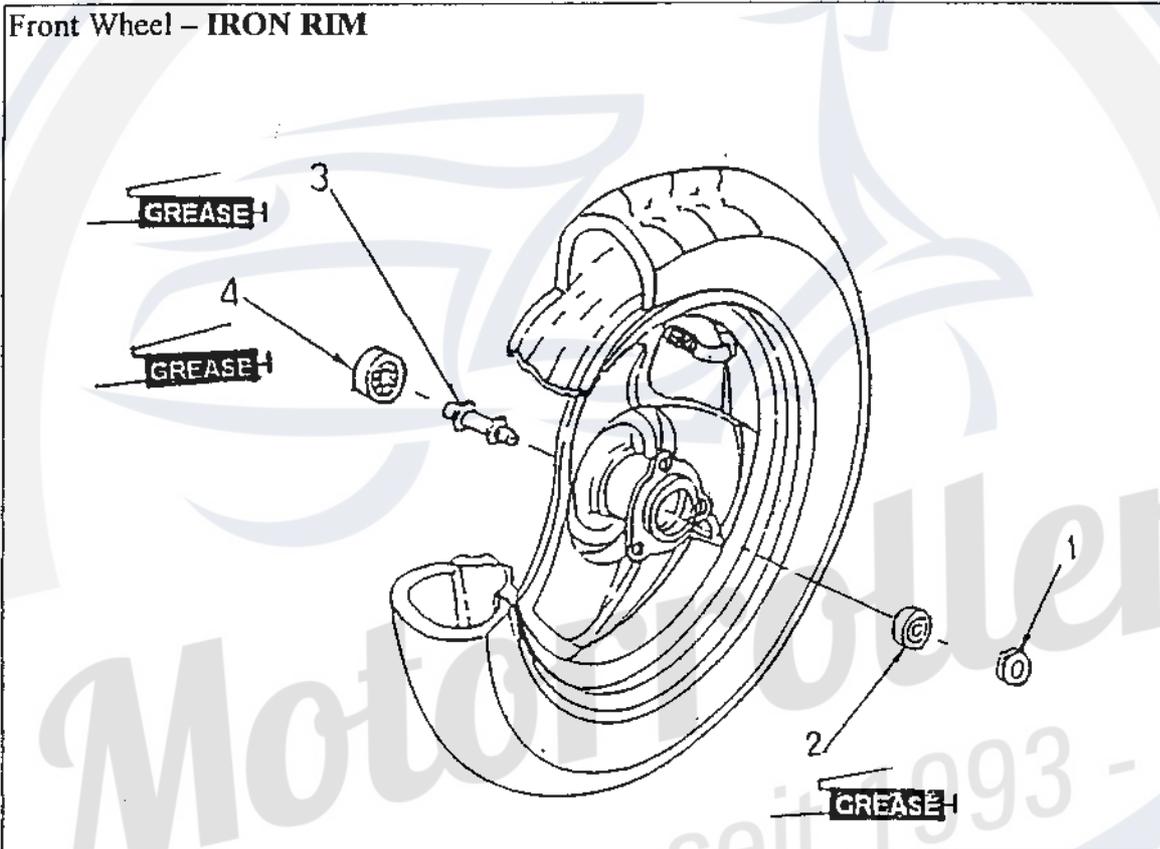


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# Front Wheel / Front Suspension / Front Brake

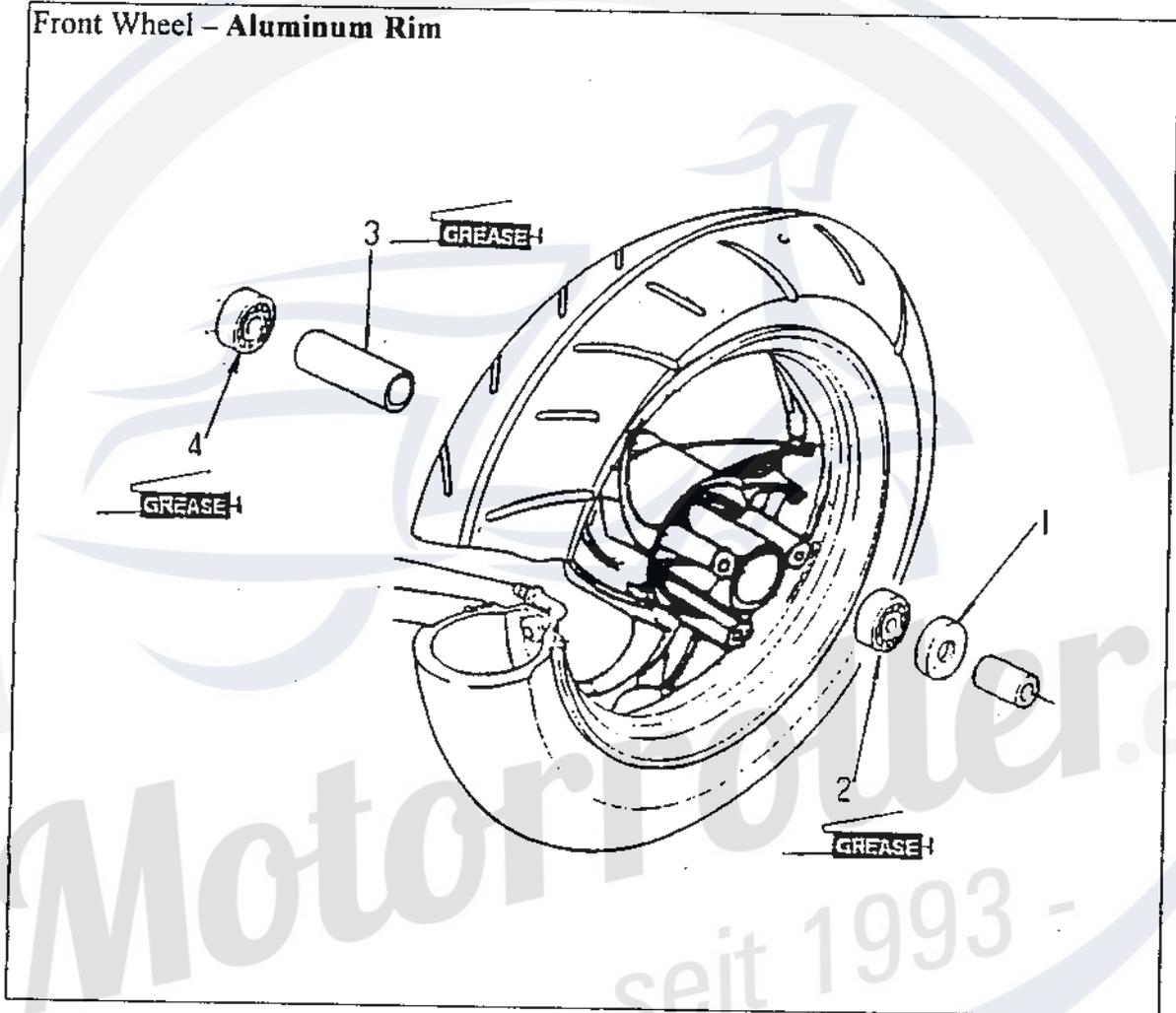
## Assembly / Disassembly of Front Wheel

- Disassembly of front wheel.



Operation / Parts name	Q'ty	Remarks
<b>Disassembly</b>		
1 Oil seal	1	
2 Radial ball bearing(left)	1	
3 Front wheel spacer tube	1	
4 Radial ball bearing(right)	1	
<b>Assembly</b>		
4→1		<ul style="list-style-type: none"> <li>• Assembling with sequence in reverse of disassembly.</li> <li><b>*WARNNING:</b> Must change the R/L bearing set.</li> </ul>

# Front Wheel / Front Suspension / Front Brake

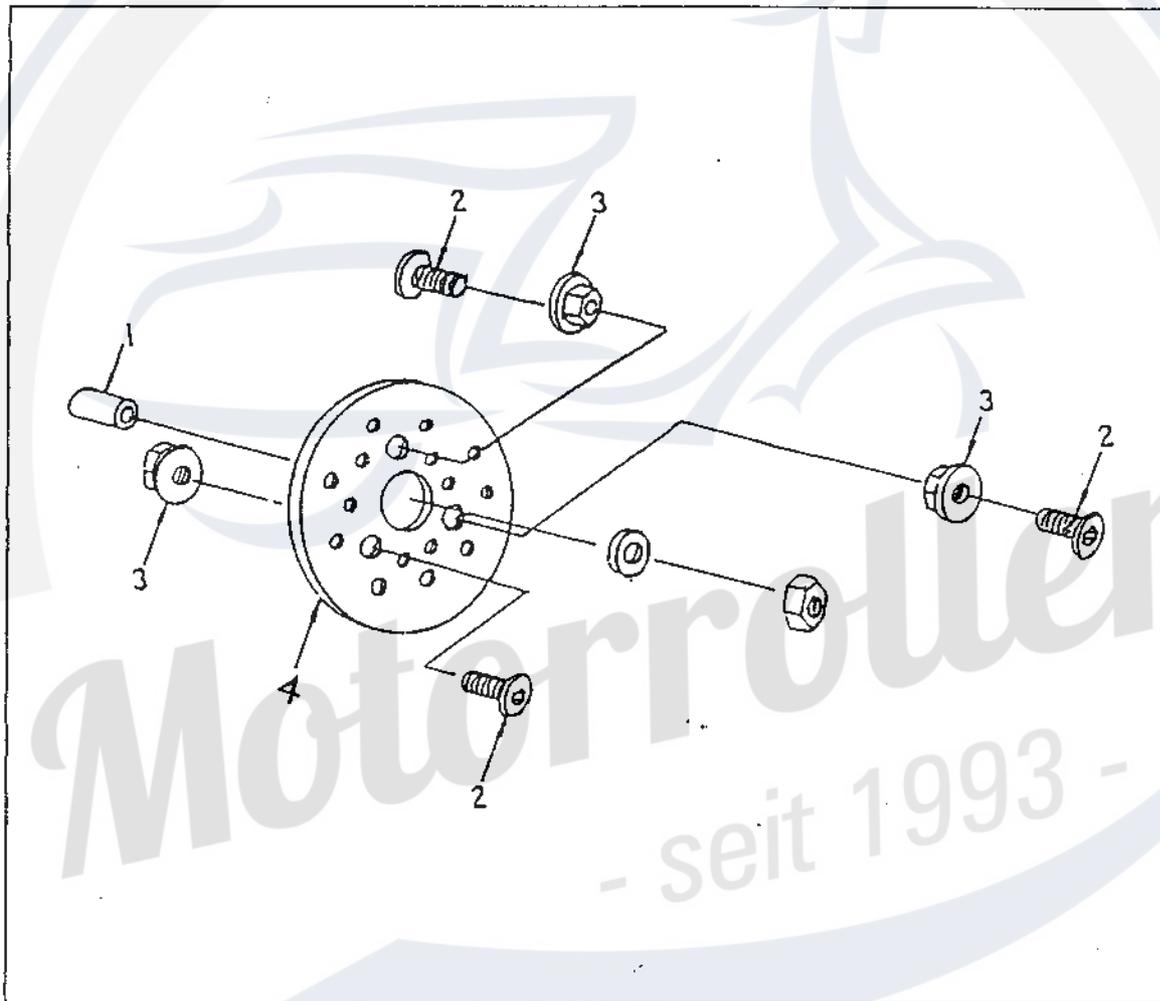


Operation / Parts name	Q'ty	Remarks
<b>Disassembly</b>		
1 Oil seal	1	
2 Radial ball bearing(left)	1	
3 Front wheel spacer tube	1	
4 Radial ball bearing(right)	1	
<b>Assembly</b> 4→1		<ul style="list-style-type: none"> <li>• Assembling with sequence in reverse of disassembly.</li> <li><b>*WARNING:</b> Must change the R/L bearing set.</li> </ul>

## Front Wheel / Front Suspension / Front Brake

### Assembly / Disassembly of Front Brake

- Disassembly of front disc.

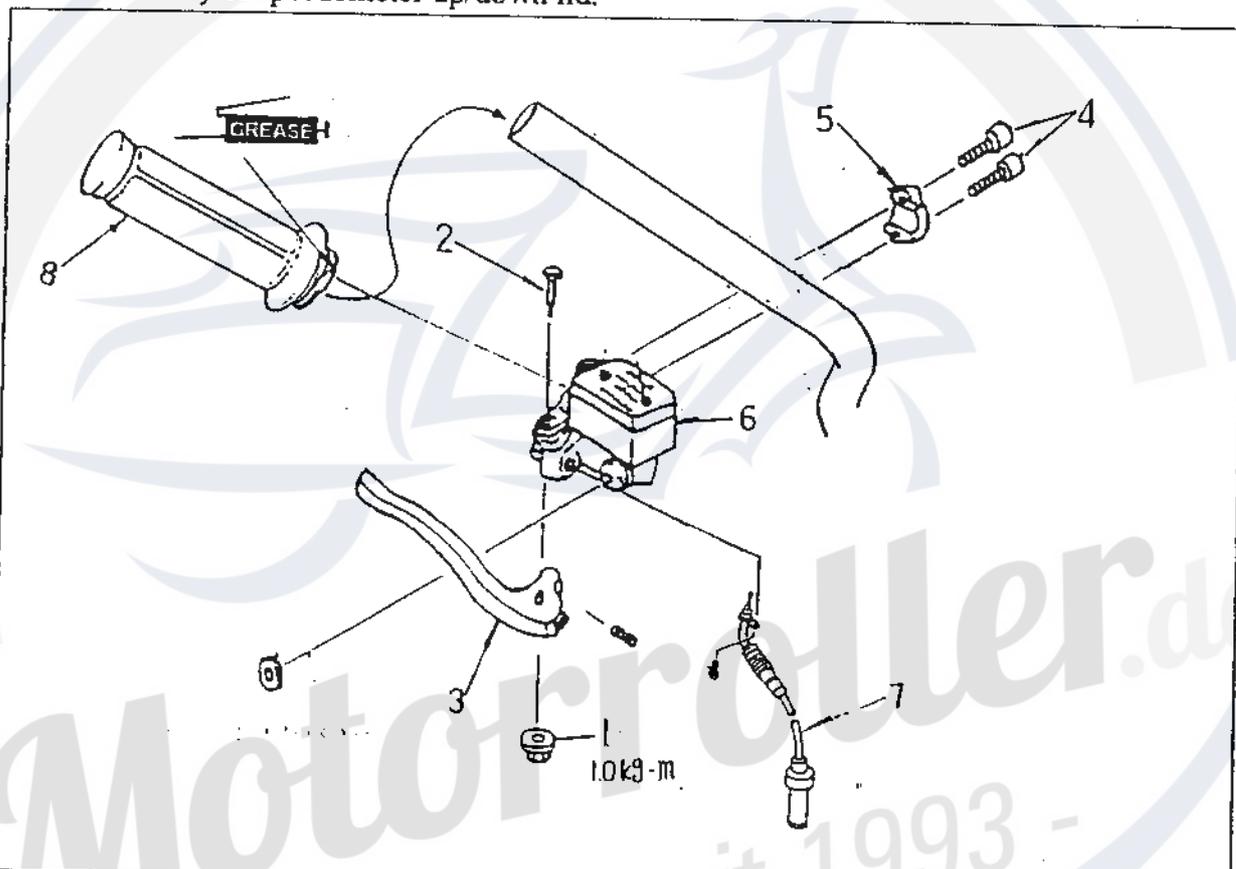


Operation / Parts name		Q'ty	Remarks
<b>Disassembly</b>			
1	Front collar	1	
2	Brake disc hex socket bolt	3	
3	Hex flange nut with serration	3	
4	Front brake disc	1	
<b>Assembly</b> 6→1			• Assembling with sequence in reverse of disassembly.

# Front Wheel / Front Suspension / Front Brake

## Disassembly of Throttle Handle

- Disassembly of speedometer up/down lid.



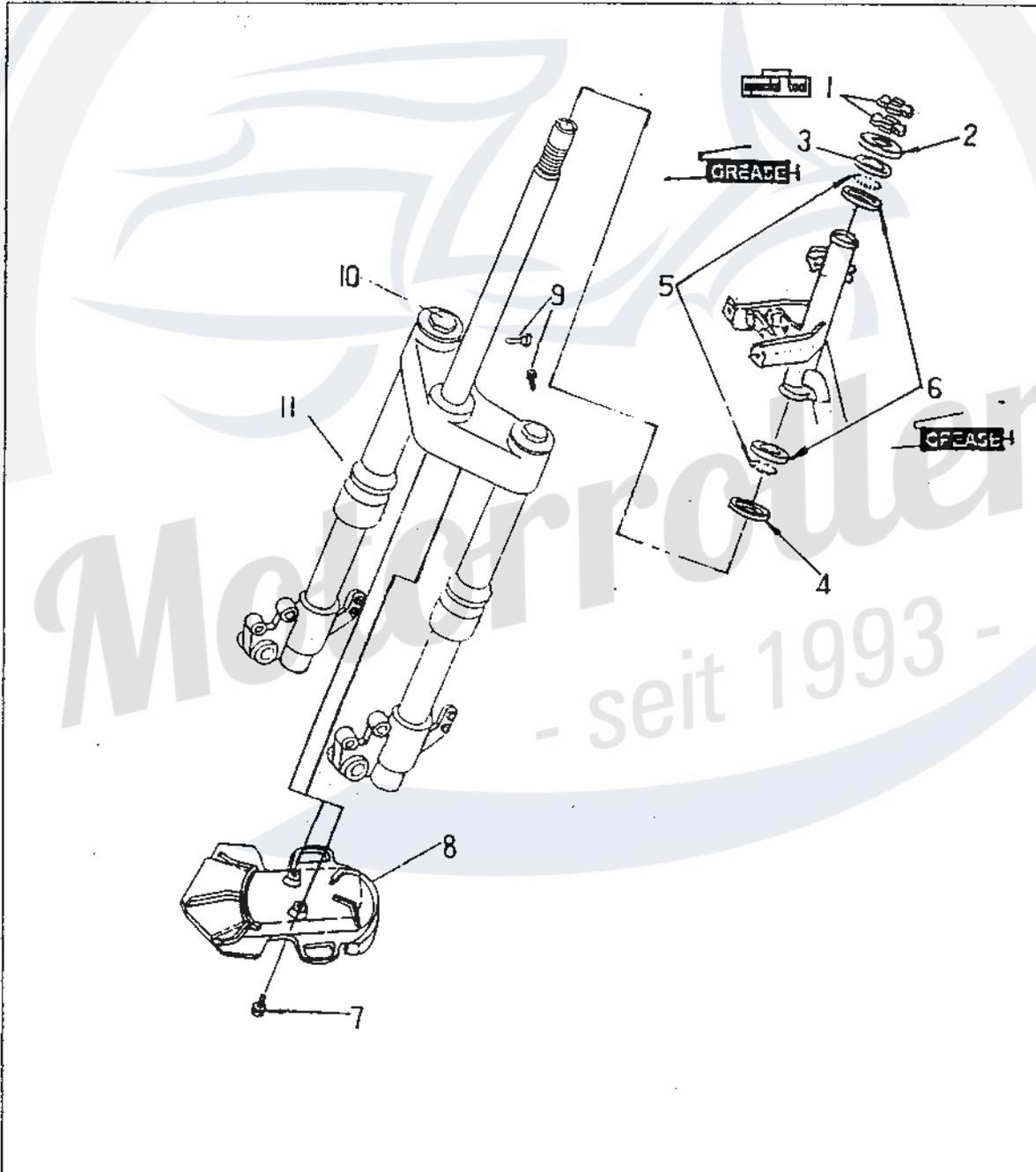
Operation / Parts name	Q'ty	Remarks
<b>Disassembly</b>		
1 Hex flange nut with serration	1	
2 Right lever set bolt	1	
3 Lever of front brake	1	
4 Hex socket bolt	1	
5 Master cylinder bracket	1	
6 Master cylinder sub	1	
7 Throttle cable	1	
8 Handle	1	
<b>Assembly</b> 8→1		• Assembling with sequence in reverse of disassembly.
7 Throttle cable	1	* <b>WARNING:</b> Adjusting gap of throttle.
6 Master cylinder sub	1	* <b>WARNING:</b> Install, make the convex of master cylinder bracket and hole of handle aimed.

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# Front Wheel / Front Suspension / Front Brake

## Disassembly of Steering Stem

- Disassembly of front wheel.
- Disassembly of steering handle.



## Front Wheel / Front Suspension / Front Brake

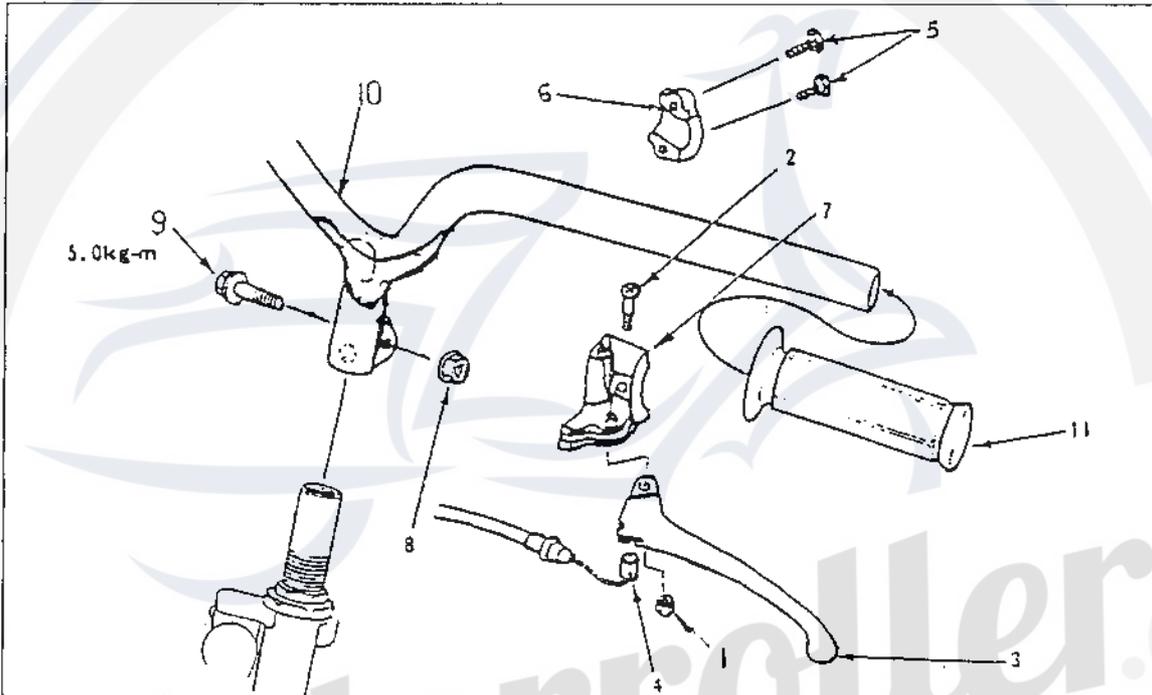
Operation / Parts name		Q'ty	Remarks
<b>Disassembly</b>			
Steering Main rod			
1	Spaner nut	2	
2	Steering stem dust cover	1	<b>*WARNNING:</b> No damage main rod & front brake.
3	Lathe cone on steering top #2	1	
4	Race ball #5	1	
5	Steel ball	2	
6	Lathe on steering inner #3	2	
7	Bolt / washer	2/2	
8	Front inner fender	1	
9	Hex bolt	2	<b>*WARNNING:</b> Remove L/R tube by loose these two hex bolts.
10	Hex bolt	2	
11	Front fork	1	
<b>Assembly</b>			
	10→1		
5	Steel ball	2	<b>*WARNNING:</b> Note the direction of installing bearing . Assembly (→10-11)
2	Steering stem dust cover	1	
1	Spaner nut	2	

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## Front Wheel / Front Suspension / Front Brake

### Disassembly of Steering Handle

- Disassembly of throttle handle. (→10-7)



Operation / Parts name		Q'ty	Remarks
<b>Disassembly</b>			
	Rear brake lever		
1	Nut	1	
2	Left lever set bolt	1	
3	Rear brake lever	1	
4	Rear brake cable	1	
	Bracket of rear brake lever		
5	Hex socket bolt	1	
6	Fixed belt of steering handle	1	
7	Bracket of rear brake lever	1	
	Steering Handle		
8	Hex flange nut with serration	1	
9	Hex washer face bolt	1	
10	Steering handle	1	
11	Handle grip	1	
<b>Assembly</b>			
	11→1		
10	Steering handle	1	• Assembling with sequence in reverse of disassembly. <b>*WARNING:</b> Install steering handle with handle convex at ditch of main rod type part.
7	Bracket of rear brake lever	1	
4	Rear brake cable	1	



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## Front Wheel / Front Suspension / Front Brake

### Turning Front Fork to Right / Left

- Turn the front fork several times, make the bearing smoothly.
- Confirm the rotation smooth and gap of steering main rod.

 : fixed nut spanner B

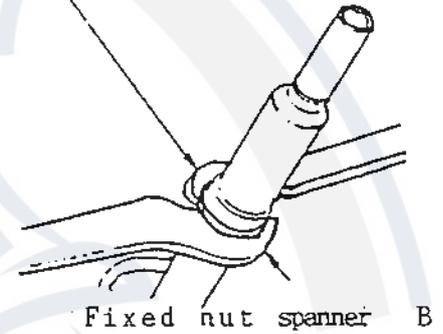
- For no back-turning together with up-cone seal ring, locking fixed screw to fix it.

**Locking Torque : 7.0 kg-m**

 : Fixed nut spanner B

 : Fixed nut spanner A

Fixed nut spanner A



Fixed nut spanner B

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- seit 1993 -



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## REAR WHEEL / SUSPENSION / BRAKE

### Diagnosis of Troubles

#### Rear wheel shaking

- The shape of rear rim damaged.
- Tire defected.

#### Rear suspension too soft

- Spring too soft.

#### Brake efficiency abnormal

- Brake pad adjust not correct.
- Brake pad attrition.
- Brake pad cam part wear.
- Brake cam wear.
- The tooth groove setting poor of break arm.

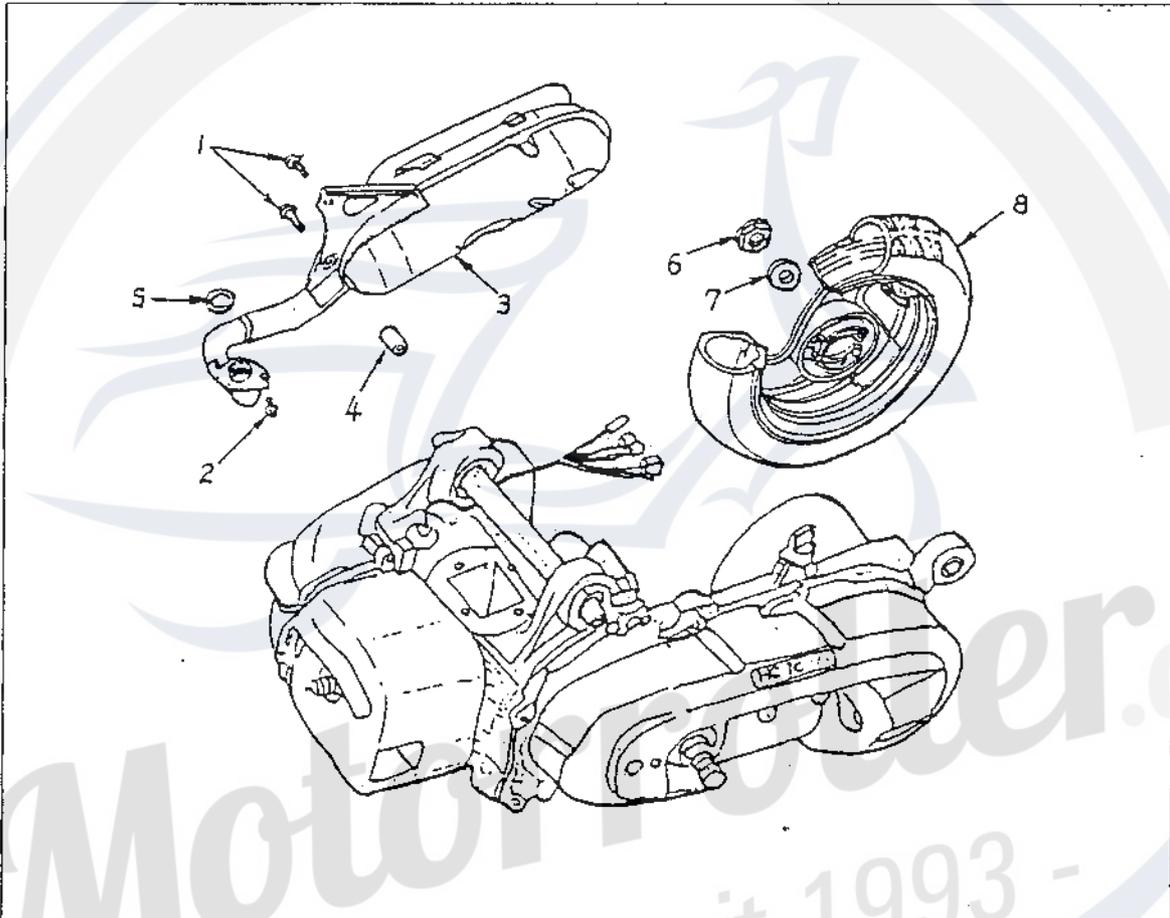
**Motorroller.de**  
- seit 1993 -



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## REAR WHEEL / SUSPENSION / BRAKE

### Disassembly of Rear Wheel



Operation / Parts name		Q'ty	Remarks
<b>Disassembly</b> Muffler			
1	Hex washer face bolt	2	
2	Hex head phillips bolt	2	
3	Assembly of exhaust pipe	1	
4	Collar	1	
5	Gasket of exhaust pipe	1	
Rear wheel			
6	Nut	1	
7	Plain washer	1	
8	Rear wheel	1	
<b>Assembly</b> 8→1			• Assembling with sequence in reverse of disassembly.

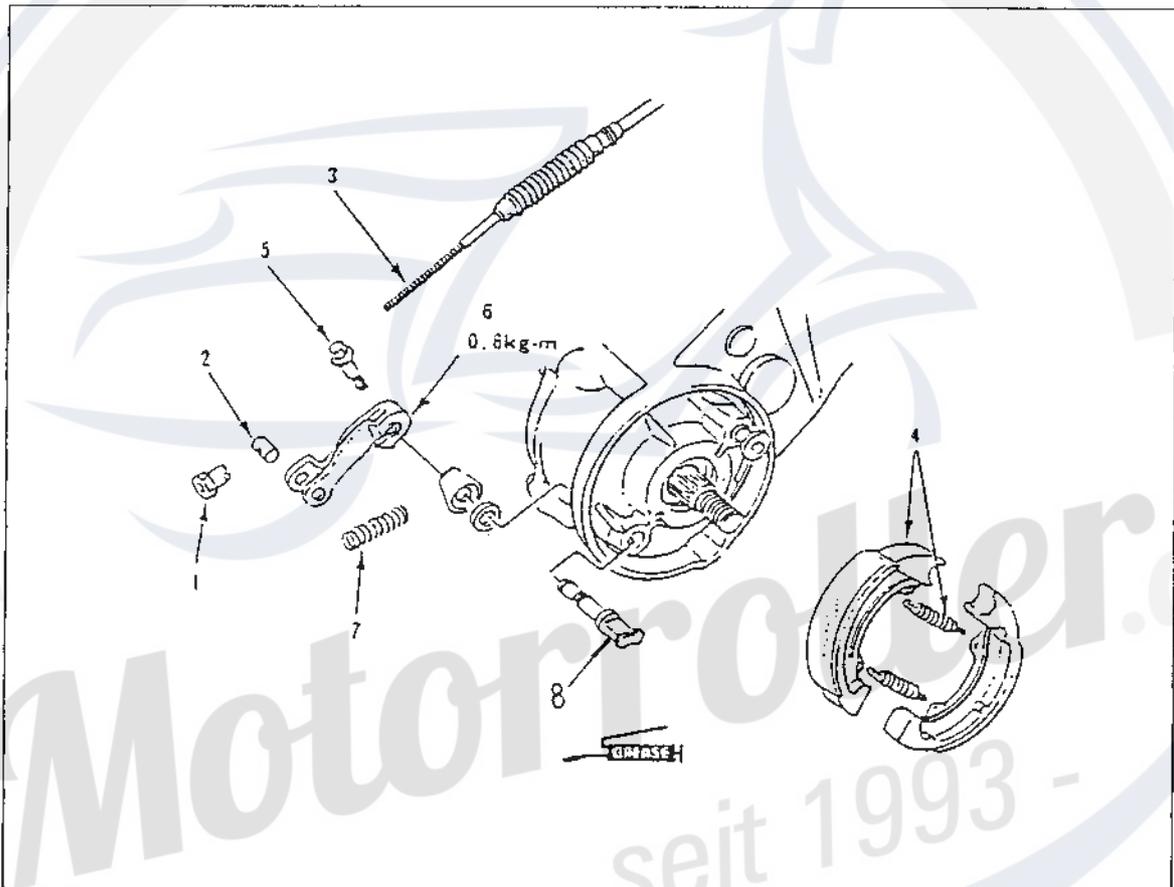


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## REAR WHEEL / SUSPENSION / BRAKE

### Disassembly / Assembly of Rear Brake

- Disassembly of Rear Wheel.



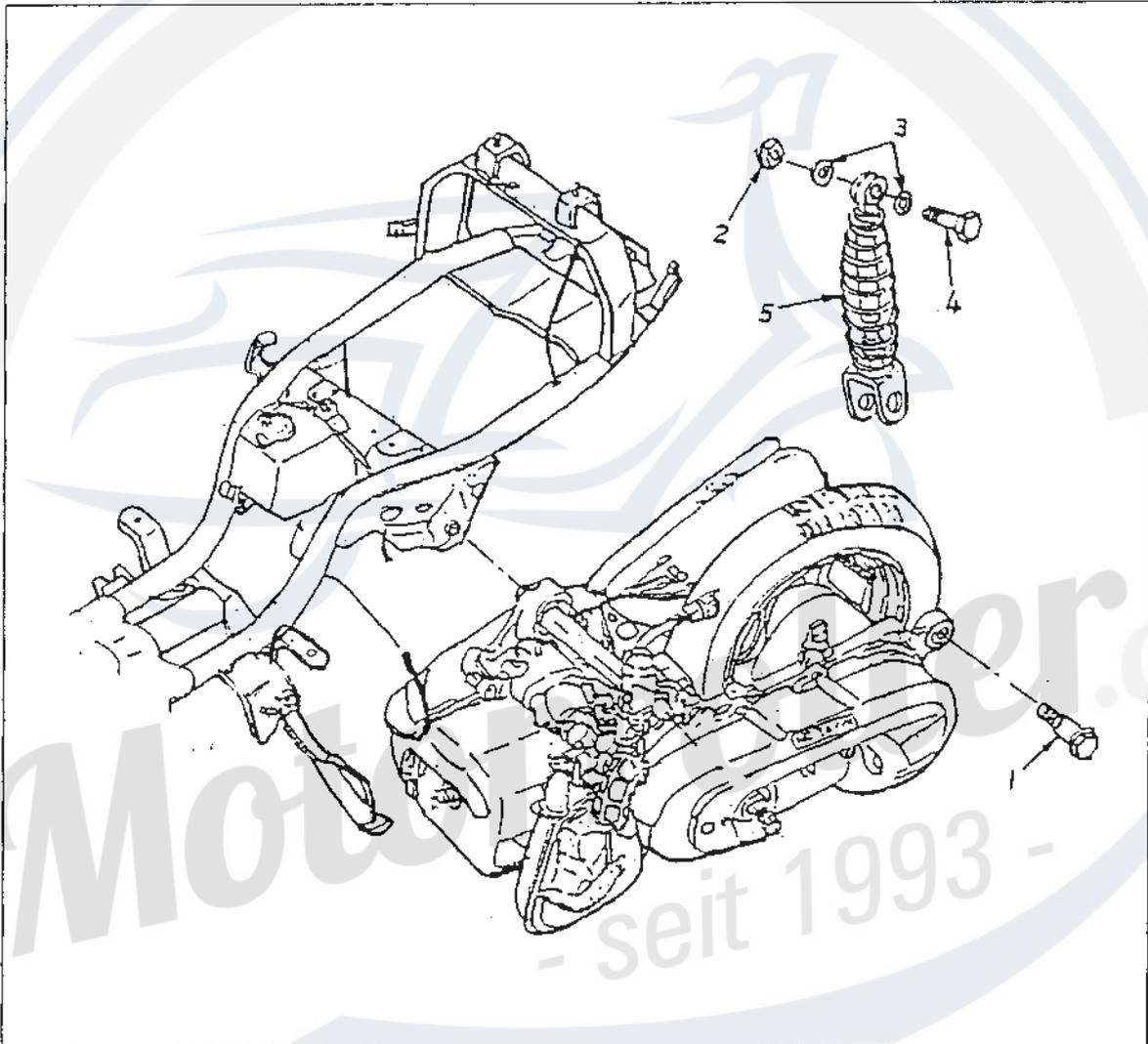
Operation / Parts name	Q'ty	Remarks
<b>Disassembly</b>		
1 Adjusted nut of rear brake	1	
2 Rear brake fixture	1	
3 Rear brake cable	1	
4 shoe/shoe strain spring of rear brake	2/2	
5 Hex washer face bolt	1	
6 Rear brake arm	1	
7 Reset spring	1	
8 Brake cam shaft	1	
<b>Assembly</b>		
8→1		• Assembly with sequence in reverse of disassembly.



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## REAR WHEEL / SUSPENSION / BRAKE

### Disassembly of Rear Cushion



Operation / Parts name	Q'ty	Remarks
<b>Disassembly</b>		
1 Hex washer face bolt	1	
2 Nut (nylon insert)	2	
3 Plain washer	2	
4 Hex bolt	1	
5 Rear cushion	1	
<b>Assembly</b> 5→1		• Assembly with sequence in reverse of disassembly.



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## ELECTRICAL DEVICE

### Attention of Operation

- \* Battery electrolyte contains sulfuric acid, which can cause severe burns. Avoid contact of skin, eyes, or clothing
- \* When sulfuric acid water spill into clothing will stick to skin. Take off the clothing and flush with water.

- Battery can be charged and discharged. Without charging, the battery will have less lifetime and damaged after discharged.
- If the battery have short circuit inside, both terminal will not have voltage existed. Besides, the regulator rectifier lost the function and shorter lifetime.
- If the battery stay too long without use, it will lost power and have less capacity. The battery need to charge each 2~3 months.
- After fill up the electrolyte, the new battery will generate voltage. It's necessary to recharge if the voltage is low. It's necessary to leave the battery for more than 20 minutes before sealing the cap. It will increase the lifetime of new battery if recharged before installed.
- Do not unplug the electrical components from wire hardness when the current is working. This will cause too high of voltage and damage other compounds such as rectifier, light bulbs... etc. Turn off the main switch to OFF before the operation.
- The Maintenance Free battery does not need to refill electrolyte or water.
- All charge system needs to be load before check.
- Do not use quick charge unless it's in urgent.
- The battery needs to be taking out from vehicle when doing charge work.
- When checking the voltage, must use the electrical meter.



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## ELECTRICAL DEVICE

### TROUBLE DIAGNOSE

#### No Electrical Power

- Over discharged of the battery.
- Wire hardness did not connected to the battery.
- Fuse broken.
- Main switch defect.

#### Low Voltage

- Battery charges insufficient.
- Bad connection
- Charge system defect.
- Regulator rectifier defect.

#### No Continues Current

- Bad contact of battery with main wire hardness
- Bad connection of charge system
- Bad contact of the lighting system cause short circuit

#### Charge System no function

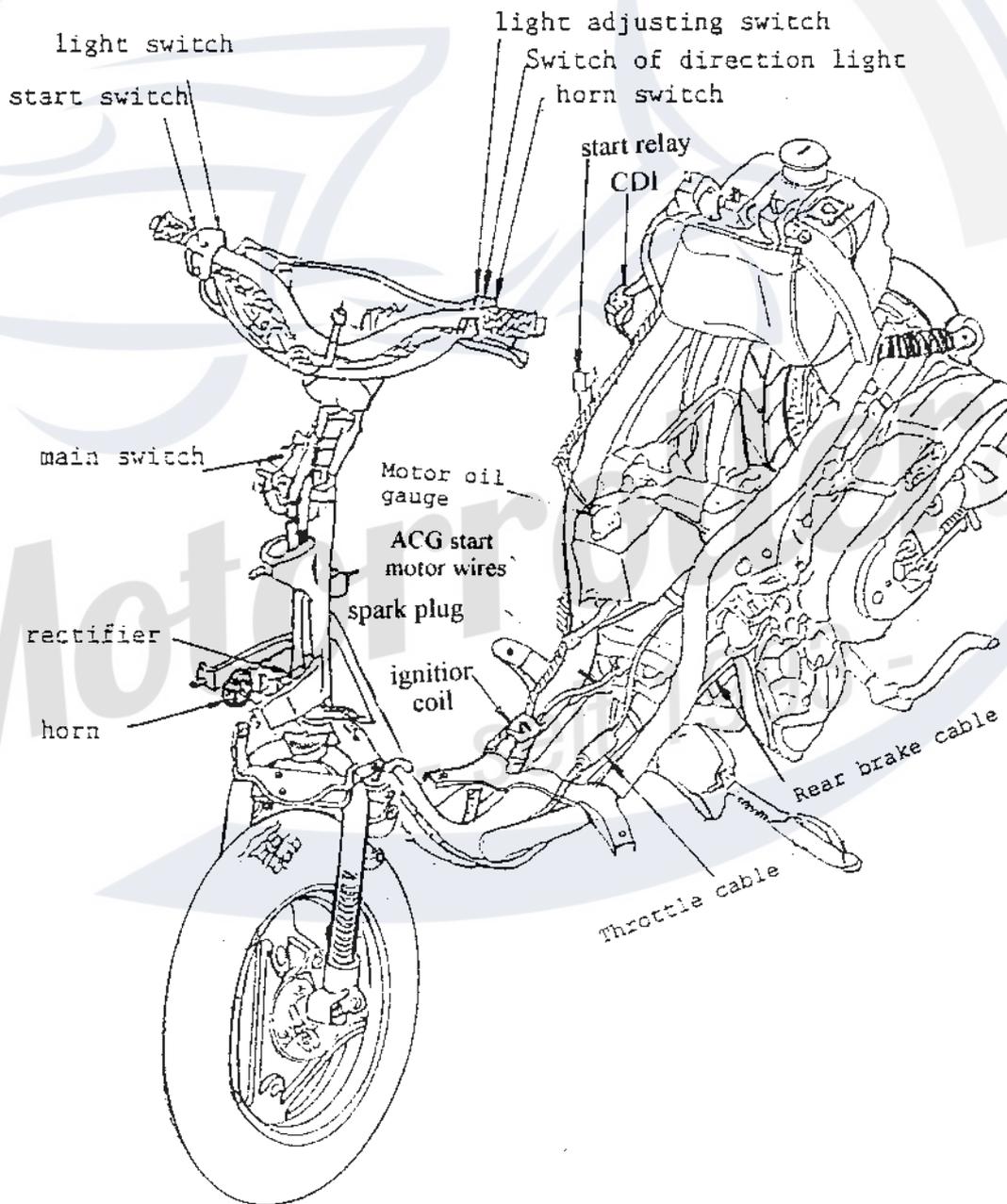
- Bad connection of the wire hardness connectors
- Main wire hardness broken or short-circuit
- Regulator rectifier defect.
- AC Generator defect.



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# ELECTRICAL DEVICE

## Solid Wiring Diagram

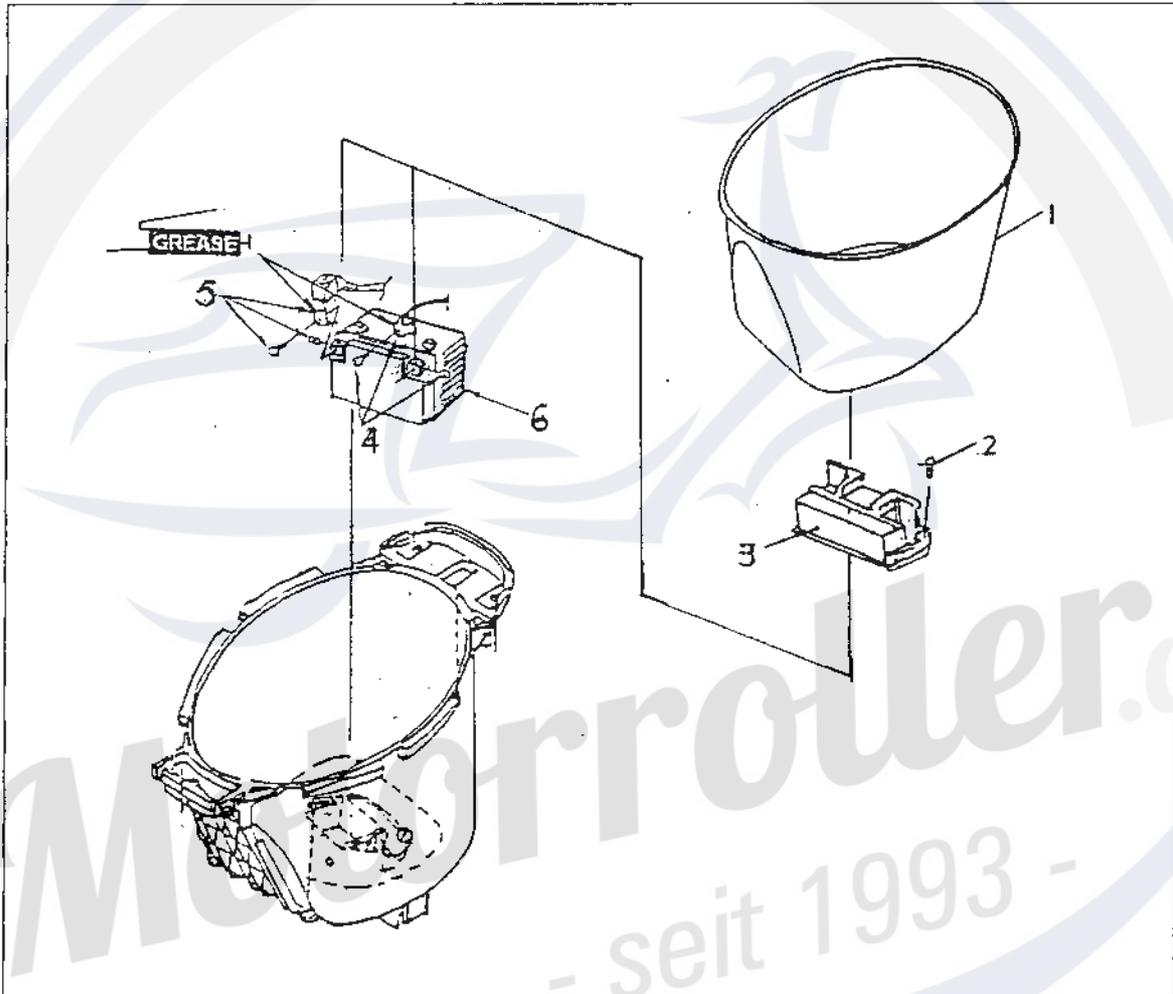




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# ELECTRICAL DEVICE

## Disassembly Of Battery



Operation / Parts name		Q'ty	Remarks
<b>Disassembly</b>			
1	Helmet box mat	1	<b>*WARNING:</b> Disassembly battery from $\ominus$ end to $\oplus$ end.
2	Self-tapping screw	1	
3	Battery cover	1	
4	Battery $\ominus$ end	2	
5	Battery $\oplus$ end	1	
6	Battery	1	
<b>Assembly</b>			
6 $\rightarrow$ 1			• Assembling with sequence in reverse of disassembly. <b>*WARNING:</b> Connect $\oplus$ end first , next $\ominus$ end ,cover both terminals with cap.
2	Battery terminal		



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## ELECTRICAL DEVICE

### Check Voltage of Battery

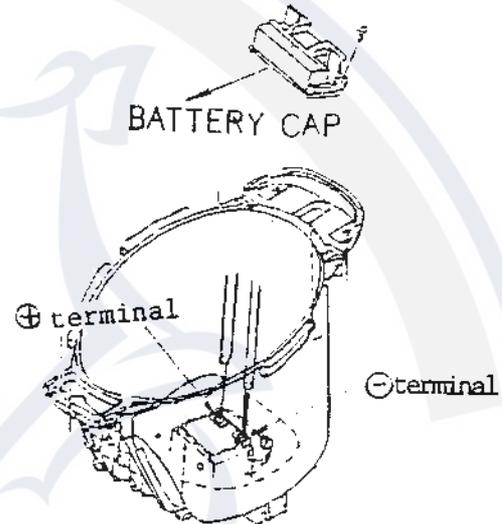
- Remove helmet box mat and battery cap , disassembly connection wires of battery , check voltage between battery terminals.

*Charging sufficiently : over 12.8 V*

*Charging insufficiently : 11.5-12.8V*

**\*WARNING:**

Must check battery voltage with digital voltmeter.



### Check Charging System

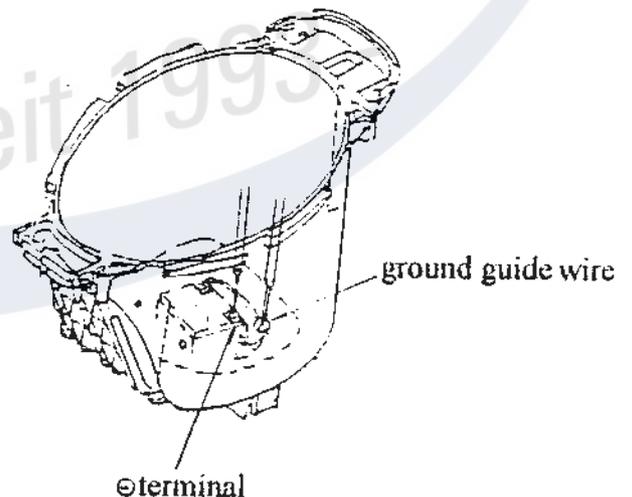
#### Power leakage test

- Disassembly ground guide wire from battery after turning "OFF" main switch, next, connect voltmeter to the end between terminal (-) & ground guide wires.
- Check voltage when main switch is "OFF".

**\*WARNING:**

- Check voltage according to sequence from big to small.
- Voltmeter's fuse will be broke when check voltage over the limitation choosed.
- Don't turn "ON" main switch when check current.

*Current Leakage : under 1 mA*





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## ELECTRICAL DEVICE

### Check Charging Status

**\*WARNING:**

- Voltage will have big change following the charging status of battery in this check, so, must check with charging completely, over 12.8 V.
- There will produce big current due to start-will consume the power in battery.

- Assembly voltmeter to terminal of main fuse, start engine, open light, rise running amount, and check charging voltage & current.

*Charging current : 1~2 Amp/5000rpm*

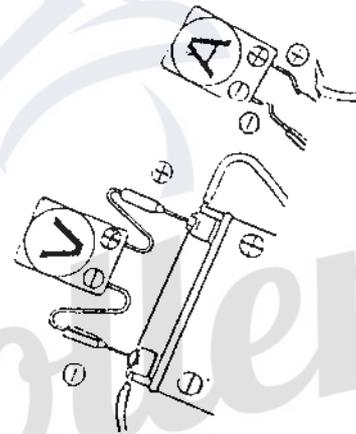
*Voltage of charging control:*

*14~15V/5000rpm*

Voltmeter

ammeter

terminal of main fuse



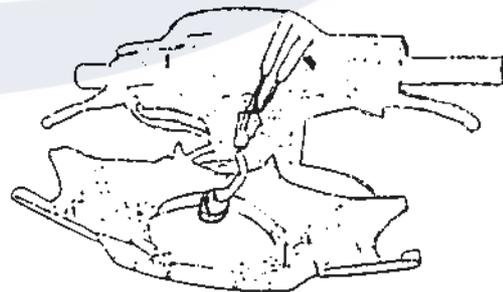
### Check Voltage of Front Lighting Control

- Disassembly front covering of handle.

**\*WARNING:**

Check head light which wires connecting.

- Start engine, turn "ON" light switch, open high beam.
- Check voltage between green (+) & black (-) guide wires.





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## ELECTRICAL DEVICE

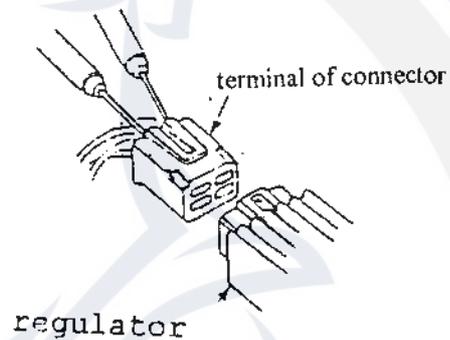
**\*WARNING:** Check in range of AC.

- Check voltage adjuster when voltage is not in the range controlling.

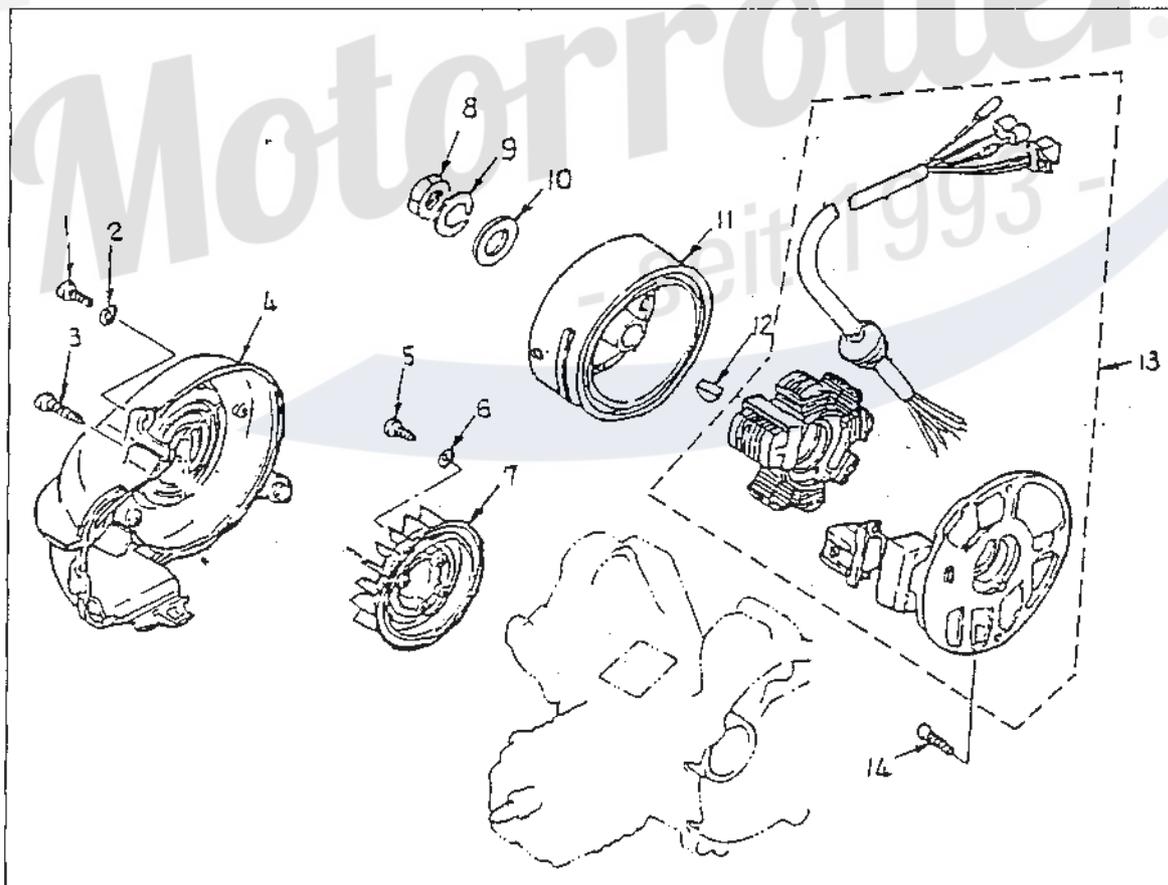
*Control voltage: 12~14V/5000rpm*

### Check the Rectifier

- Check the rectifier.
- Disassembly connector of rectifier.
- Check the terminal of connector.



### Disassembly of ACG





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## ELECTRICAL DEVICE

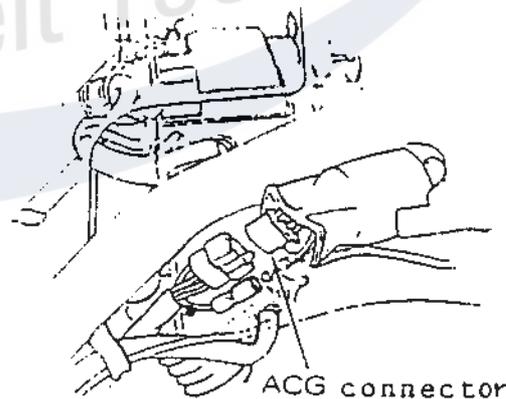
Operation / Parts name		Q'ty	Remarks
<b>Disassembly</b>			
1	Hexagon socket bolt	2	<b>*WARNING:</b> Beware not to damage the coil.
2	Plain washer	2	
3	Self-tapping screw	1	
4	Cap of electric disc	1	
5	Hexagon socket bolt	4	
6	Plain washer	1	
7	Fan	1	
8	Hexagon nut	1	
9	Spring washer	2	
10	Plain washer	1	
11	Fly wheel of generator	2	
12	Semi-cycle of electric disc	1	
13	A.C.G base	1	
14	Hexagon socket bolt	1	
<b>Assembly</b>			• Assembling with sequence in reverse of disassembly.
14→1			

### ACG ( Charging Coil ) Check

**\*WARNING:**

Checking in the engine connected  
 With start motor.

- Disassembly ACG connection.
- Check resistance of charging wire & lighting wire.





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# ELECTRICAL DEVICE

## Ignition Coil

### Disassembly

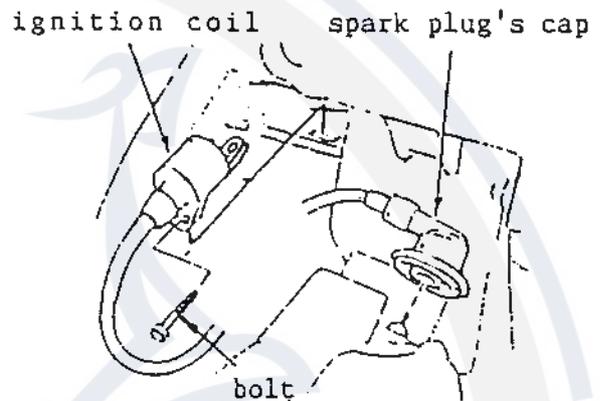
- Disassembly spark plug cap.
- Separating cable, disassembling installed bolt, then, disassembly ignition coil.

### Assembly

- Assembly with sequence in reverse of disassembly.

### \*WARNING:

Guide wire must be installed in the right place.



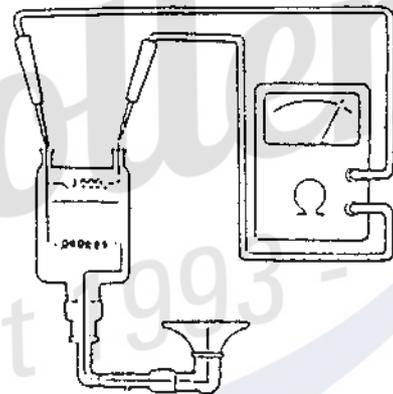
### Conduction Test

- Check first coil resistance of ignition terminal.

*Standard valve (20 °C): 0.3~0.5Ω*

### \*WARNING:

Check ignition status with performance tester due to this test has its own standard.



- Check second coil resistance between spark plug cap & (-) terminal.

*Standard valve : 9.5~11 kΩ*

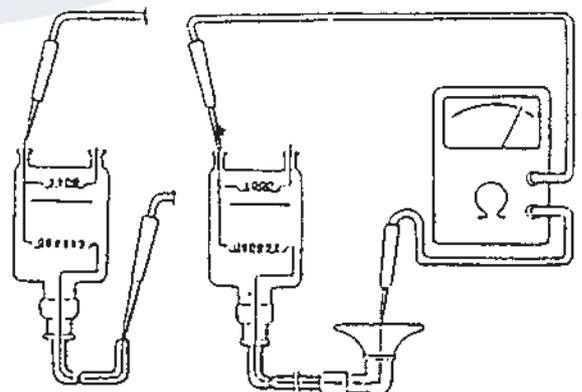
*(spark plug cap in team)*

- Remove spark plug cap from high Voltage coil.

- Check second coil resistance between high voltage & (-) terminal.

*Standard valve : 5~7 kΩ*

*(without spark plug cap)*



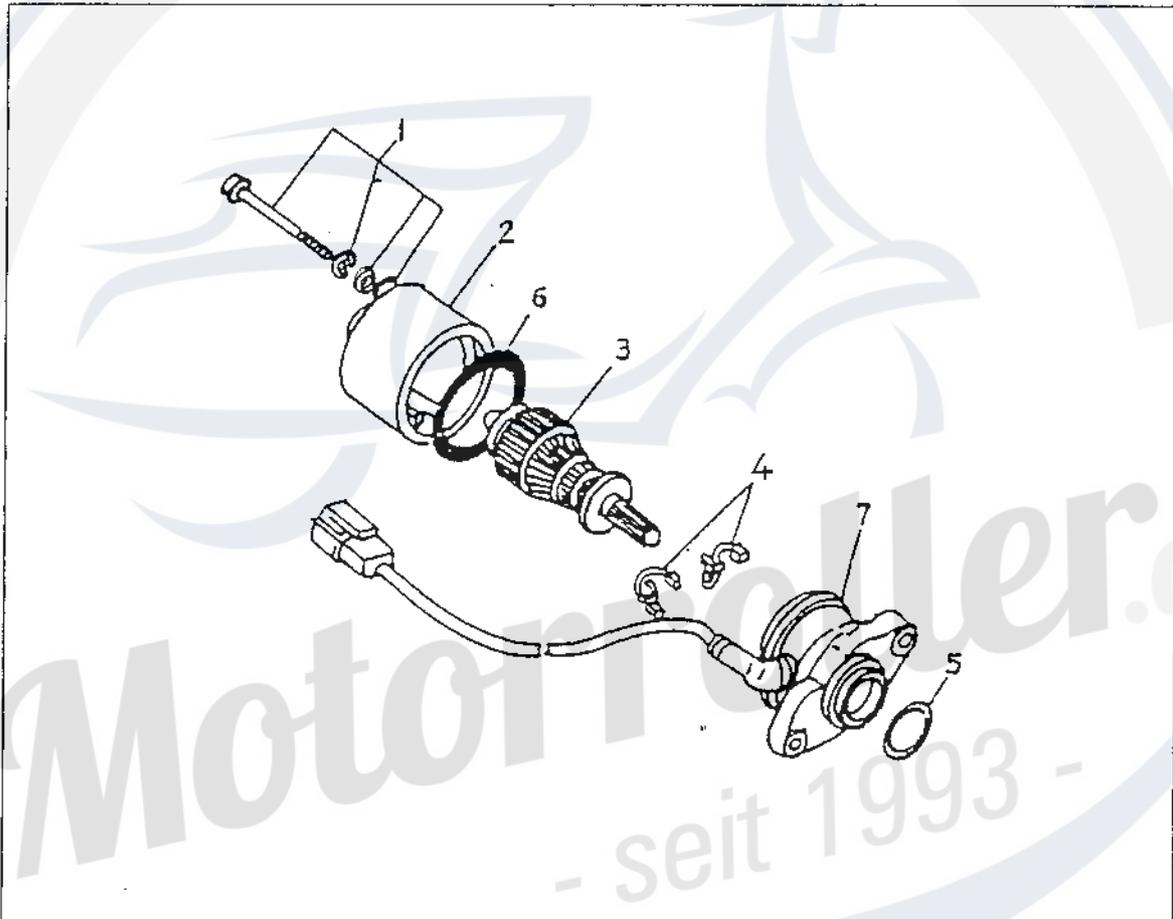


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## ELECTRICAL DEVICE

### Assembly / Separation of Starting Motor

- Disassembly of starting motor.



Operation / Parts name	Q'ty	Remarks
<b>Separation</b>		
1 Bolt set	2	
2 Casing	1	
3 Armature rotor	1	
4 Carbon brush	2	
5 Oil ring	1	
6 Oil ring	1	
7 Front fixed seat	1	
<b>Assembly</b> 7→1		• Assembling with sequence in reverse of disassembly.



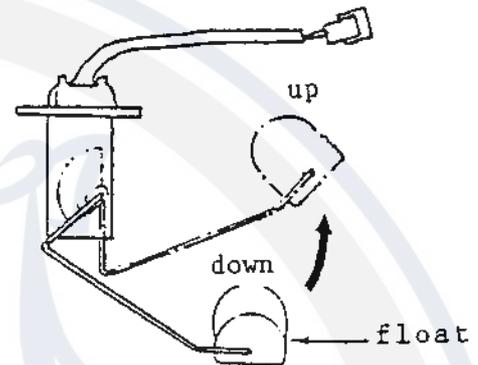
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## ELECTRICAL DEVICE

### Check Fuel Gauge

- Remove fuel gauge.
- Put the float to up top bottom position to check the resistance between each terminal.

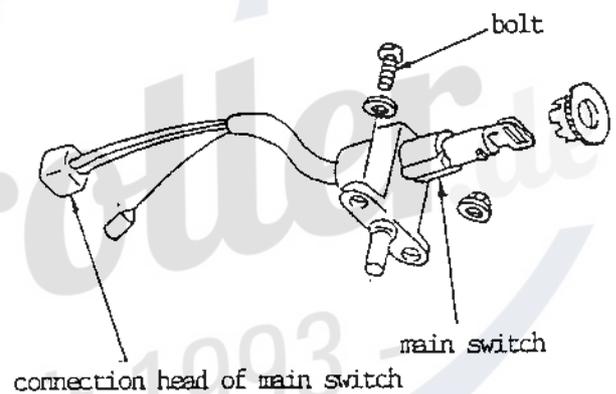
Terminal of Guide wire	Up end of float	Down end of float
Green & black	0~20Ω	90~110Ω



### Check Main Switch

- Remove connection of main switch guide wire, check conductivity between each terminal.

Color	Brown	black/red	black	red
LOCK		○ — ○		
OFF		○ — ○		
ON	○ —			○ —



### Exchange main switch

- Remove front cover.
- Remove 2 bolts, disassembly main switch.
- Installing with the sequence in reverse of disassembly.

### Check switch of handle

- Remove the speedometer up/down lid.
- Disassembly connection of handle switch, check conductivity between each terminal.



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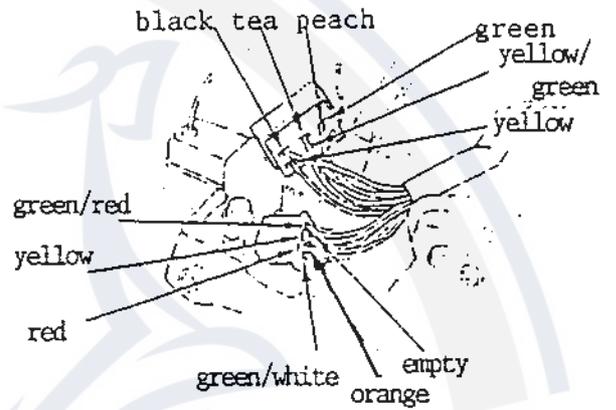
# ELECTRICAL DEVICE

## Switch of Lights

Color	Yellow/red	Blue
OFF		
ON	○ —	○ —

## Start Switch

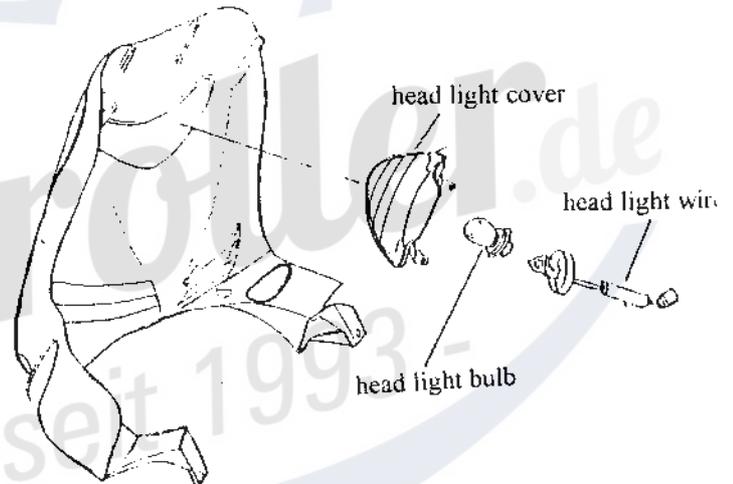
Color	blue/white	Black
Up		
Down	○ —	○ —



## Exchange of Bulbs

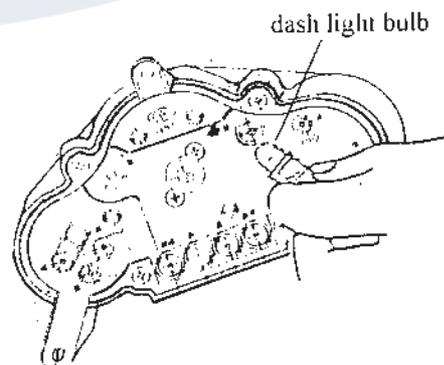
### Head light bulb

- Remove front covering of handle press down the connection and press down turn left to change head light bulb.



### Dash light bulb

- Remove the speedometer up lid pull out the connection of bulb, and replace the bulb.



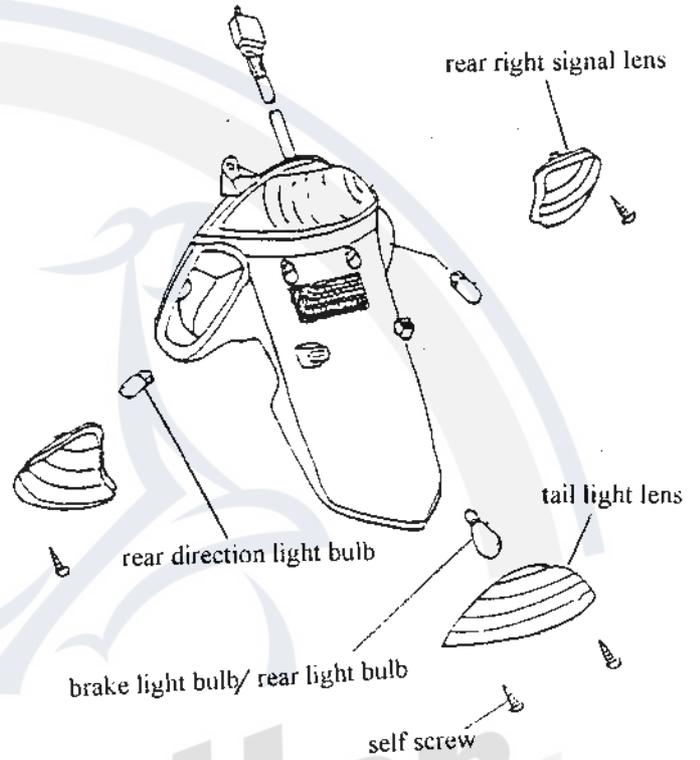


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## ELECTRICAL DEVICE

### Rear light bulb / Brake light bulb / Rear direction light bulb

- Remove 2 screws, pull out the light cover then change bulb.
- Remove R/L screw on direction light cover, pull out the cover then replace the bulb.



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