# HD125 / 200

# SERVICE MANUAL

# FORWARD

This service manual contains the technical data of each component inspection and repair for the SANYANG HD 125 / 200 motorcycle. The manual is shown with illustrations and focused on “Service Procedures”, “Operation Key Points”, and “Inspection Adjustment” so that provides technician with service guidelines.

If the style and construction of the motorcycle, HD 125 / 200, are different from that of the photos, pictures shown in this manual, the actual vehicle shall prevail. Specifications are subject to change without notice.

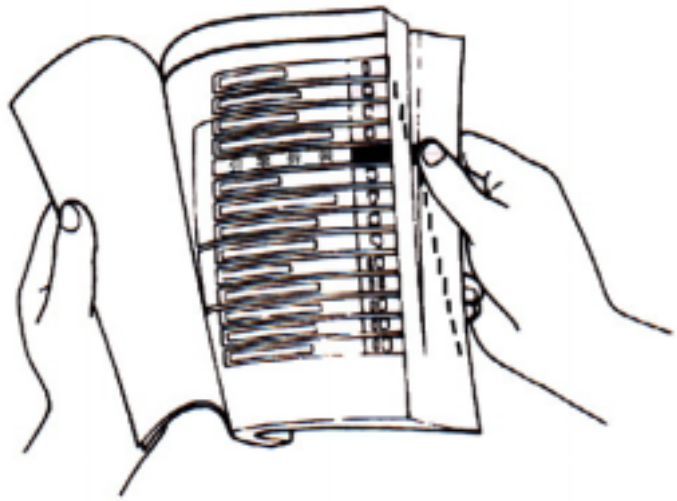
**Service Department**

**SANYANG INDUSTRY CO., LTD.**

# HOW TO USE THIS MANUAL

This service manual describes basic information of different system parts and system inspection & service for SANYANG HD 125/200 motorcycles. In addition, please refer to the manual contents in detailed for the model you serviced in inspection and adjustment.

The first chapter covers general information and trouble diagnosis.
The second chapter covers service maintenance information and special tools manual.
The third to the 11th chapters cover engine and driving systems.
The 12th chapter is cooling system.
The 13th to the 16th chapter is contained the parts set of assembly frame body.
The 17th chapter is electrical equipment.
The 18th chapter is wiring diagram.
Please see index of content for quick having the special parts and system information.



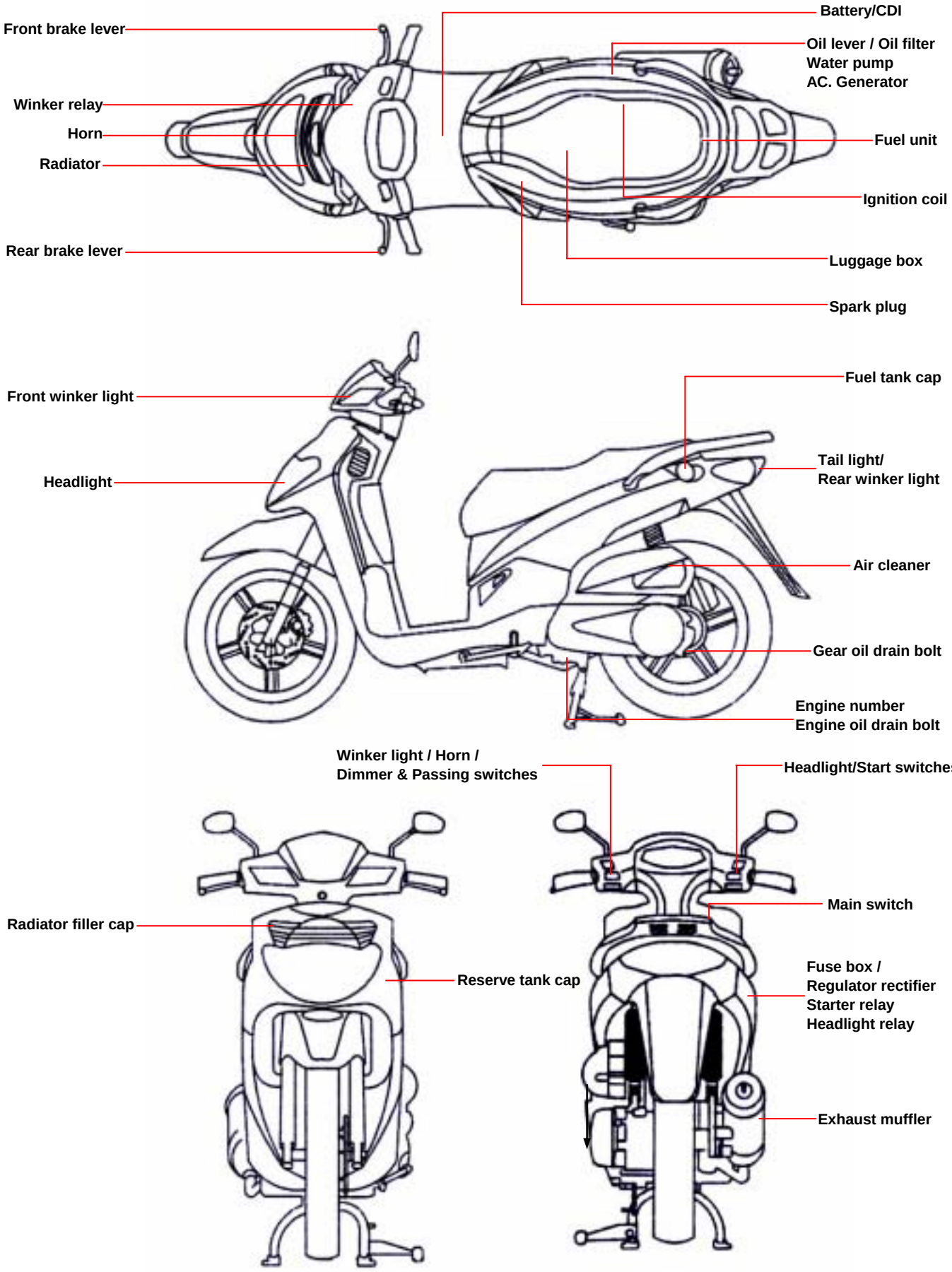
There are 4 buttons, “Forward”, “Contents”, “How to use this manual” and “Mechanism Illustrations” on the CD-R version, and can be access to these items by click the mouse.

If user wants to look for the content of each chapter, selecting the words of each chapter on the contents can reach to each chapter. There are two buttons, “Homepage and contents, onto the top line of first page of the each chapter. Thus, if the user needs to check other chapters, he can click the top buttons to back the homepage or contents. The content of each chapter can be selected too. Therefore, when needs to checking the content inside of the chapter, click the content words of the chapter so that can back to the initial section of the content. In addition, there is a “To this chapter contents” button at the second page of each content so that clicking the button can back to the contents of this chapter.

# CONTENTS

# MECHANISM ILLUSTRATIONS

## LH12W / LH18W



## Symbols and Marks

Symbols and marks are used in this manual to indicate what and where the special service are needed, in case supplemental information is procedures needed for these symbols and marks, explanations will be added to the text instead of using the symbols or marks.

| | |
|---|---|
| Warning | Means that serious injury or even death may result if procedures are not followed. |
| Caution | Means that equipment damages may result if procedures are not followed. |
| Engine oil | Limits to use SAE 10W-30 API SG class oil. Warranty will not cover the damage that caused by not apply with the limited engine oil. (Recommended oil: KING MATE G-3 oil) |
| Grease | King Mate G-3 is recommended. |
| Gear oil | King Mate gear oil serials are recommended. (Bramax HYPOID GEAR OIL # 140) |
| Locking sealant | Apply sealant, medium strength sealant should be used unless otherwise specified. |
| Oil seal | Apply with lubricant.。 |
| Renew | Replace with a new part before installation. |
| Brake fluid | Use recommended brake fluid DOT3 or WELLRUN brake fluid. |
| Special tools | Special tools |
| Correct | Meaning correct installation. |
| Wrong | Meaning wrong installation. |
| Indication | Indication of components. |
| Directions | Indicates position and operation directions |
| | Components assembly directions each other. |
| | Indicates where the bolt installation direction, --- means that bolt cross through the component (invisibility). |

## General safety

### Carbon monoxide

If you must run your engine, ensure the place is well ventilated. Never run your engine in a closed area. Run your engine in an open area, if you have to run your engine in a closed area, be sure to use an extractor.

**Caution**

Exhaust contains toxic gas which may cause one to lose consciousness and even result in death.

### Gasoline

Gasoline is a low ignition point and explosive material. Work in a well-ventilated place, no flame or spark should be allowed in the work place or where gasoline is being stored.

**Caution**

Gasoline is highly flammable, and may explode under some conditions, keep it away from children.

### Used engine oil

**Caution**

Prolonged contact with used engine oil (or transmission oil) may cause skin cancer although it might not be verified.
We recommend that you wash your hands with soap and water right after contacting. Keep the used oil beyond reach of children.

### Hot components

**Caution**

Components of the engine and exhaust system can become extremely hot after engine running. They remain very hot even after the engine has been stopped for some time. When performing service work on these parts, wear insulated gloves and wait until cooling off.

### Battery

**Caution**

- Battery emits explosive gases; flame is strictly prohibited. Keep the place well ventilated when charging the battery.
- Battery contains sulfuric acid (electrolyte) which can cause serious burns so be careful do not be spray on your eyes or skin. If you get battery acid on your skin, flush it off immediately with water. If you get battery acid in your eyes, flush it off immediately with water and then go to hospital to see an ophthalmologist.
- If you swallow it by mistake, drink a lot of water or milk, and take some laxative such as castor oil or vegetable oil and then go to see a doctor.
- Keep electrolyte beyond reach of children.

### Brake shoe

Do not use an air hose or a dry brush to clean components of the brake system, use a vacuum cleaner or the equivalent to avoid dust flying.

**Caution**

Inhaling brake shoe or pad ash may cause disorders and cancer of the breathing system

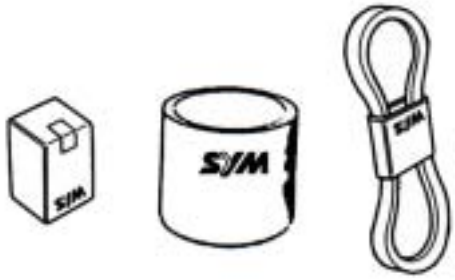
### Brake fluid

**Caution**

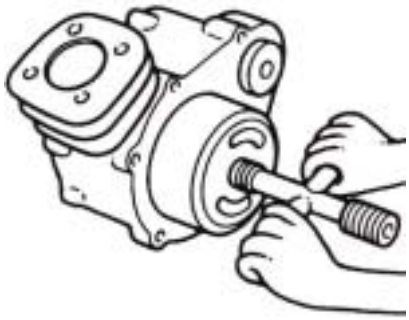
Spilling brake fluid on painted, plastic, or rubber parts may cause damage to the parts. Place a clean towel on the above-mentioned parts for protection when servicing the brake system. Keep the brake fluid beyond reach of children.

## Service Precautions

- Always use with Sanyang genuine parts and recommended oils. Using non-designed parts for Sanyang motorcycle may damage the motorcycle.



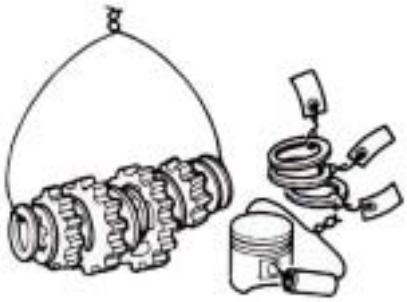
- Special tools are designed for remove and install of components without damaging the parts being worked on. Using wrong tools may result in parts damaged.



- When servicing this motorcycle, use only metric tools. Metric bolts, nuts, and screws are not interchangeable with the English system, using wrong tools and fasteners may damage this vehicle.
- Clean the outside of the parts or the cover before removing it from the motorcycle. Otherwise, dirt and deposit accumulated on the part's surface may fall into the engine, chassis, or brake system to cause a damage.
- Wash and clean parts with high ignition point solvent, and blow dry with compressed air. Pay special attention to O-rings or oil seals because most cleaning agents have an adverse effect on them.

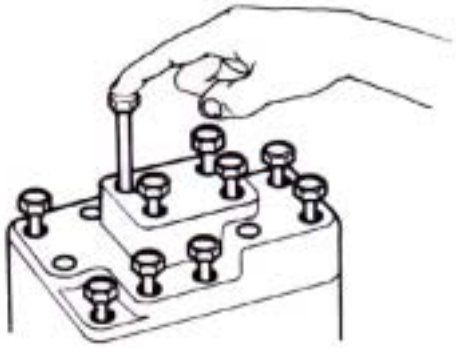
- Never bend or twist a control cable to prevent unsmooth control and premature worn out.

- Rubber parts may become deteriorated when old, and prone to be damaged by solvent and oil. Check these parts before installation to make sure that they are in good condition, replace if necessary.
- When loosening a component which has different sized fasteners, operate with a diagonal pattern and work from inside out. Loosen the small fasteners first. If the bigger ones are loosen first, small fasteners may receive too much stress.
- Store complex components such as transmission parts in the proper assemble order and tie them together with a wire for ease of installation later.

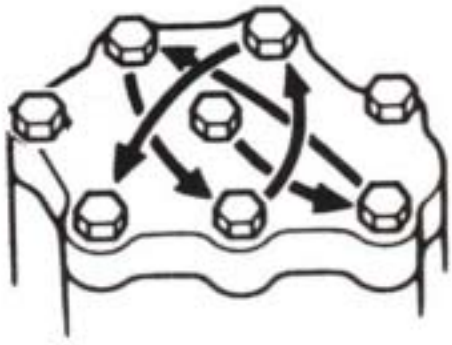


- Note the reassemble position of the important components before disassembling them to ensure they will be reassembled in correct dimensions (depth, distance or position).
- Components not to be reused should be replaced when disassembled including gaskets metal seal rings, O-rings, oil seals, snap rings, and split pins.

- The length of bolts and screws for assemblies, cover plates or boxes is different from one another, be sure they are correctly installed. In case of confusion, Insert the bolt into the hole to compare its length with other bolts, if its length out side the hole is the same with other bolts, it is a correct bolt. Bolts for the same assembly should have the same length.



- Tighten assemblies with different dimension fasteners as follows: Tighten all the fasteners with fingers, then tighten the big ones with special tool first diagonally from inside toward outside, important components should be tightened 2 to 3 times with appropriate increments to avoid warp unless otherwise indicated. Bolts and fasteners should be kept clean and dry. Do not apply oil to the threads.

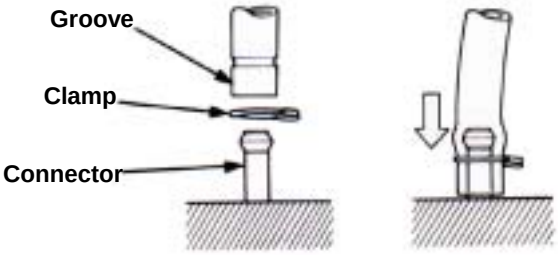


- When oil seal is installed, fill the groove with grease, install the oil seal with the name of the manufacturer facing outside, check the shaft on which the oil seal is to be installed for smoothness and for burrs that may damage the oil seal.

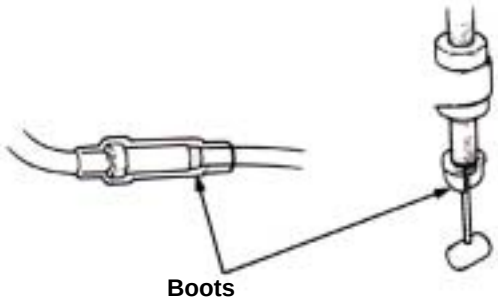


- Remove residues of the old gasket or sealant before reinstallation, grind with a grindstone if the contact surface has any damage.

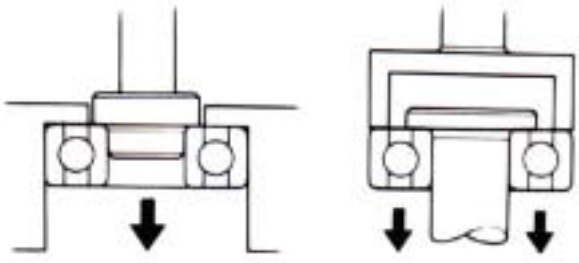
- The ends of rubber hoses (for fuel, vacuum, or coolant) should be pushed as far as they can go to their connections so that there is enough room below the enlarged ends for tightening the clamps.




- Rubber and plastic boots should be properly reinstalled to the original correct positions as designed.

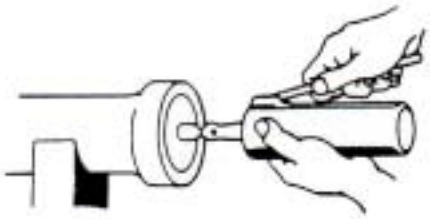



- The tool should be pressed against two (inner and outer) bearing races when removing a ball bearing. Damage may result if the tool is pressed against only one race (either inner race or outer race). In this case, the bearing should be replaced. To avoid damaging the bearing, use equal force on both races.



**Both of these examples can result in bearing damage.**

- Lubricate the rotation face with specified lubricant on the lubrication points before assembling.

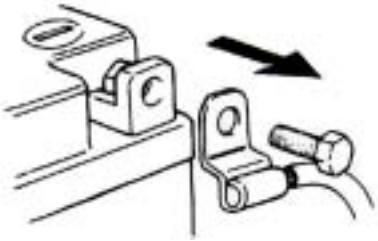


- Check if positions and operation for installed parts is in correct and properly.

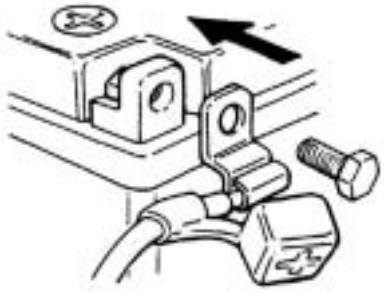
- Make sure service safety each other when conducting by two persons.


- Note that do not let parts fall down.

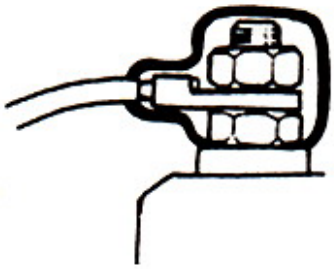
- Before battery removal operation, it has to remove the battery negative (-) cable firstly. Notre tools like open-end wrench do not contact with body to prevent from circuit short and create spark.



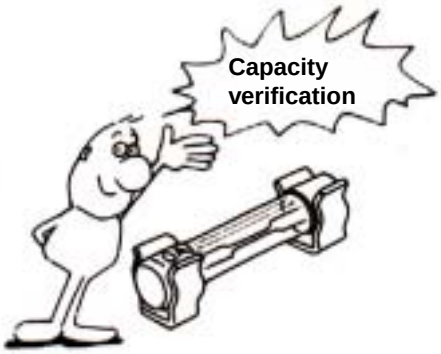
- After service completed, make sure all connection points is secured.
  Battery positive (+) cable should be connected firstly.
- And the two posts of battery have to be greased after connected the cables.



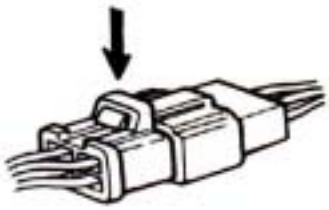
- Make sure that the battery post caps are located in properly after the battery posts had been serviced.



- If fuse burned, it has to find out the cause and solved it. And then replace with specified capacity fuse.

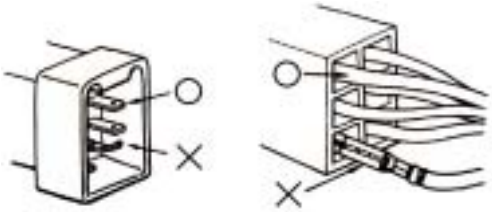


- When separating a connector, it locker has to be unlocked firstly. Then, conduct the service operation.



- Do not pull the wires as removing a connector or wires. Hold the connector body.

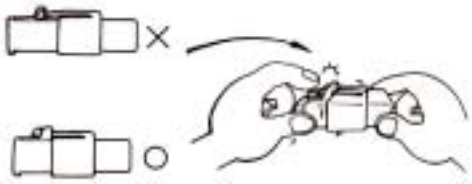
- Make sure if the connector pins are bent, extruded or loosen.



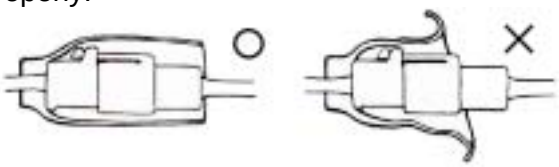
- Insert the connector completely.

  If there are two lockers on two connector sides, make sure the lockers are locked in properly.

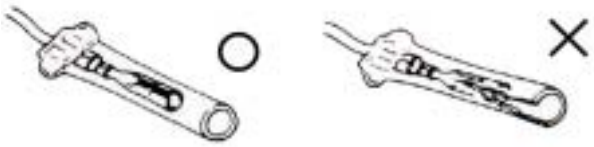
  Check if any wire loose.



- Check if the connector is covered by the twin connector boot completely and secured properly.

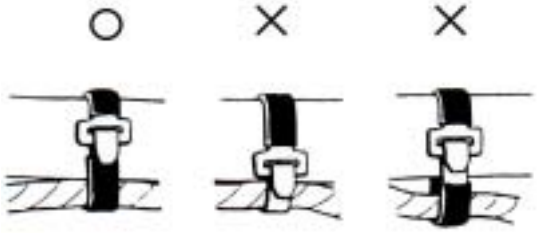


- Before terminal connection, check if the boot is crack or the terminal is loose.

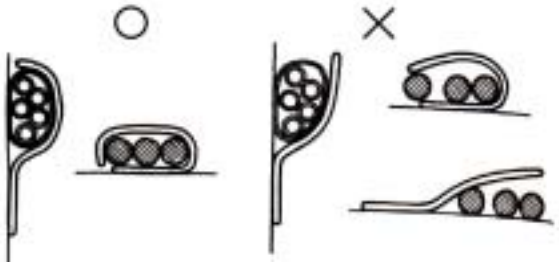


- Insert the terminal completely.
  Check if the terminal is covered by the boot.
  Do not let boot open facing up.

- Secure wires and wire harnesses to the frame with respective wire bands at the designated locations. Tighten the bands so that only the insulated surfaces contact the wires or wire harnesses.

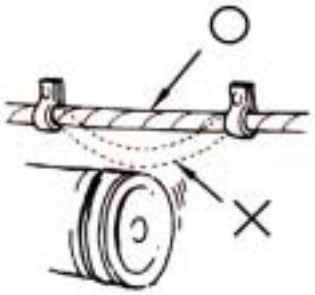


- Wire band and wire harness have to be clamped secured properly.

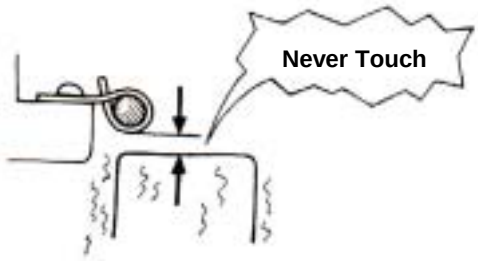


- Do not squeeze wires against the weld or its clamp.

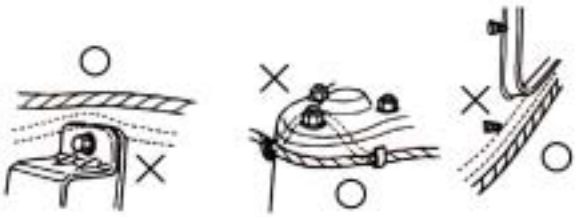
- Do not let the wire harness contact with rotating, moving or vibrating components as routing the harness.



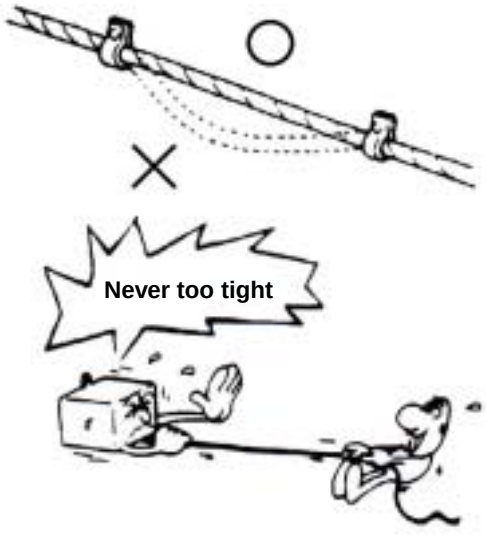
- Keep wire harnesses far away from the hot parts.



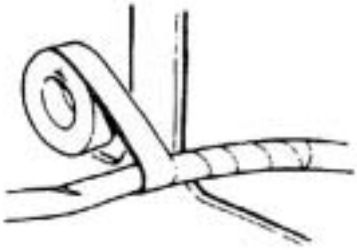

- Route wire harnesses to avoid sharp edges or corners and also avoid the projected ends of bolts and screws.



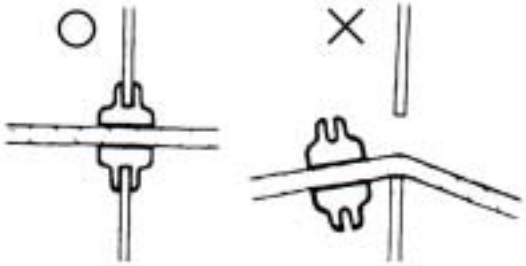
- Route harnesses so that they neither pull too tight nor have excessive slack.



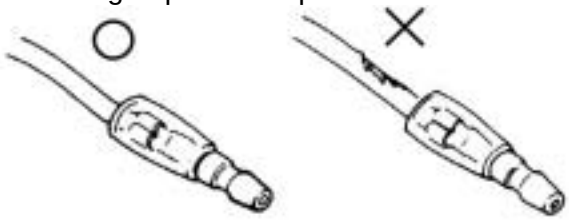

- Protect wires or wire harnesses with electrical tape or tube if they contact a sharp edge or corner. Thoroughly clean the surface where tape is to be applied.



- Secure the rubber boot firmly as applying it on wire harness.

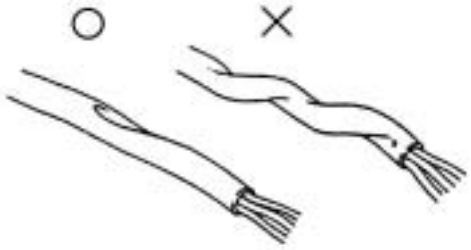


- Never use wires or harnesses which insulation has been broken. Wrap electrical tape around the damaged parts or replace them.

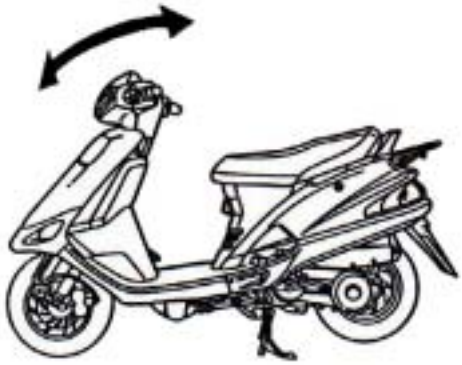


- Never clamp or squeeze the wire harness as installing other components.

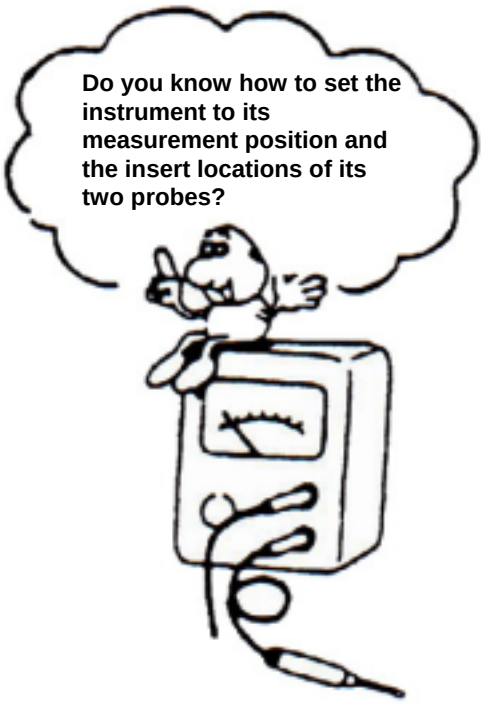
- Do not let the wire harness been twisted as installation.



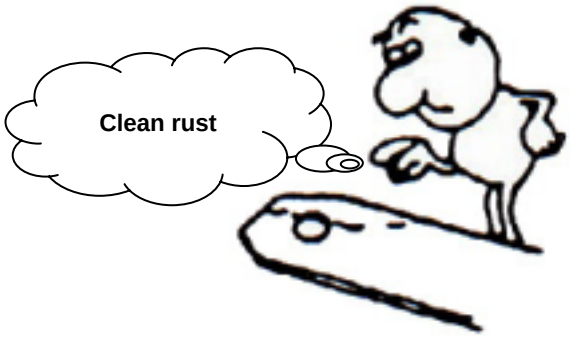
- Wire harnesses routed along the handlebar should not be pulled too tight or have excessive slack, be rubbed against or interfere with adjacent or surrounding parts in all steering positions.



- Before operating a test instrument, operator should read the operation manual of the instrument. And then, conduct test in accordance with the instruction.




- With sand paper to clean rust on connector pins/terminals if found. And then conduct connection operation later.



## Specifications

| MAKER | | | SANYANG | MODEL | | LH18W-6 |
|---|---|---|---|---|---|---|
| Dimension | Overall Length | | 2064 mm | Suspension System | Front | Telescopic Fork |
| | Overall Width | | 760 mm | | Rear | Unit Swing |
| | Overall Height | | 1165 mm | Tire Specifications | Front | 100 / 80 – 16 50P/TL |
| | Wheel Base | | 1385 mm | | Rear | 120 / 80 - 16 60P/TL |
| Weight | Curb Weight | Front | 53 kg | Brake System | Front | Disk (ψ220mm) |
| | | Rear | 82 kg | | Rear | Drum (ψ130mm) |
| | | Total | 135 kg | | | |
| | Passengers/Weight | | Two /110 kg | Performance | Max. Speed | Above 108 km/hr |
| | Total Weight | Front | 75 kg | | Climb Ability | Below 28° |
| | | Rear | 170 kg | Reduction | Primary Reduction | Belt |
| | | Total | 245 kg | | Secondary Reduction | Gear |
| Engine | Type | | 4-Stroke Engine | | Clutch | Centrifugal, dry type |
| | Installation and arrangement | | Vertical, below center, incline 80° | | Transmission | C.V.T. |
| | Fuel Used | | Unleaded | Speedometer | | 0 ~ 140 km/hr |
| | Cycle/Cooling | | 4-stroke/water cooled | Horn | | 93~112 dB/A |
| | Cylinder | Bore | 61 mm | Muffler | | Expansion & Pulse Type |
| | | Stroke | 58.6 mm | Exhaust Pipe Position and Direction | | Right side, and Backward |
| | | Number/Arrangement | Single Cylinder | Lubrication System | | Forced circulation & splashing |
| | Displacement | | 171.2 cc | Exhaust Concentration | Solid Particulate | |
| | Compression Ratio | | 10.8 : 1 | | CO | Below 5.5 g/ km |
| | Max. HP | | 11.4kw / 8000rpm | | HC | Below 1.0g/ km |
| | Max. Torque | | 15.3Nm / 6500rpm | E.E.C. | | — |
| | Ignition | | C.D.I. | P.C.V. | | — |
| | Starting System | | Power & Foot | Catalytic reaction control system | | — |

## Specifications

| MAKER | | | SANYANG | MODEL | | LH12W-6 |
|---|---|---|---|---|---|---|
| Dimension | Overall Length | | 2064 mm | Suspension System | Front | Telescopic Fork |
| | Overall Width | | 706 mm | | Rear | Unit Swing |
| | Overall Height | | 1165 mm | Tire Specifications | Front | 100 / 80 -16 50P/TL |
| | Wheel Base | | 1385 mm | | Rear | 120 / 80 -16 60P/TL |
| Weight | Curb Weight | Front | 53 kg | Brake System | Front | Disk (ψ220mm) |
| | | Rear | 82 kg | | Rear | Drum (ψ130mm) |
| | | Total | 135 kg | | | |
| | Passengers/ Weight | | Two/110 kg | Performance | Max. Speed | Above 100 km/hr |
| | Total Weight | Front | 75 kg | | Climb Ability | Below 28° |
| | | Rear | 170 kg | Reduction | Primary Reduction | Belt |
| | | Total | 245 kg | | Secondary Reduction | Gear |
| Engine | Type | | 4-Stroke Engine | | Clutch | Centrifugal, dry type |
| | Installation and arrangement | | Vertical, below center, incline 80° | | Transmission | C.V.T. |
| | Fuel Used | | Unleaded | Speedometer | | 0 ~ 140 km/hr |
| | Cycle/Cooling | | 4-Stroke/Water Cooled | Horn | | 93~112 dB/A |
| | Cylinder | Bore | 57 mm | Muffler | | Expansion & Pulse Type |
| | | Stroke | 48.8 mm | Exhaust Pipe Position and Direction | | Right side, and Backward |
| | | Number / Arrangement | Single Cylinder | Lubrication System | | Forced circulation & splashing |
| | Displacement | | 124.5 cc | Exhaust Concentration | Solid Particulate | |
| | Compression Ratio | | 10.5 : 1 | | CO | Below 5.5g/km |
| | Max. HP | | 9.2kw / 8500rpm | | HC | Below 1.2 g/km |
| | Max. Torque | | 10.9Nm / 6500rpm | E.E.C. | | — |
| | Ignition | | C.D.I. | P.C.V. | | — |
| | Starting System | | Power & Foot | Catalytic Reaction Control System | | Yes |

## Torque Values

The torque values listed in above table are for more important tighten torque values. Please see standard values for not listed in the table.

### Standard Torque Values for Reference

| Type | Tighten Torque | Type | Tighten Torque |
|---|---|---|---|
| 5 mm bolt、nut | 0.45~0.6kgf-m | 5 mm screw | 0.35~0.5kgf-m |
| 6 mm bolt、nut | 0.8~1.2kgf-m | 6 mm screw、SH nut | 0.7~ 1.1kgf-m |
| 8 mm bolt、nut | 1.8~2.5kgf-m | 6 mm bolt、nut | 1.0 ~1.4kgf-m |
| 10 mm bolt、nut | 3.0~4.0kgf-m | 8 mm bolt、nut | 2.4 ~3.0kgf-m |
| 12 mm bolt、nut | 5.0~6.0kgf-m | 10 mm bolt、nut | 3.5~4.5kgf-m |

### Engine Torque Values

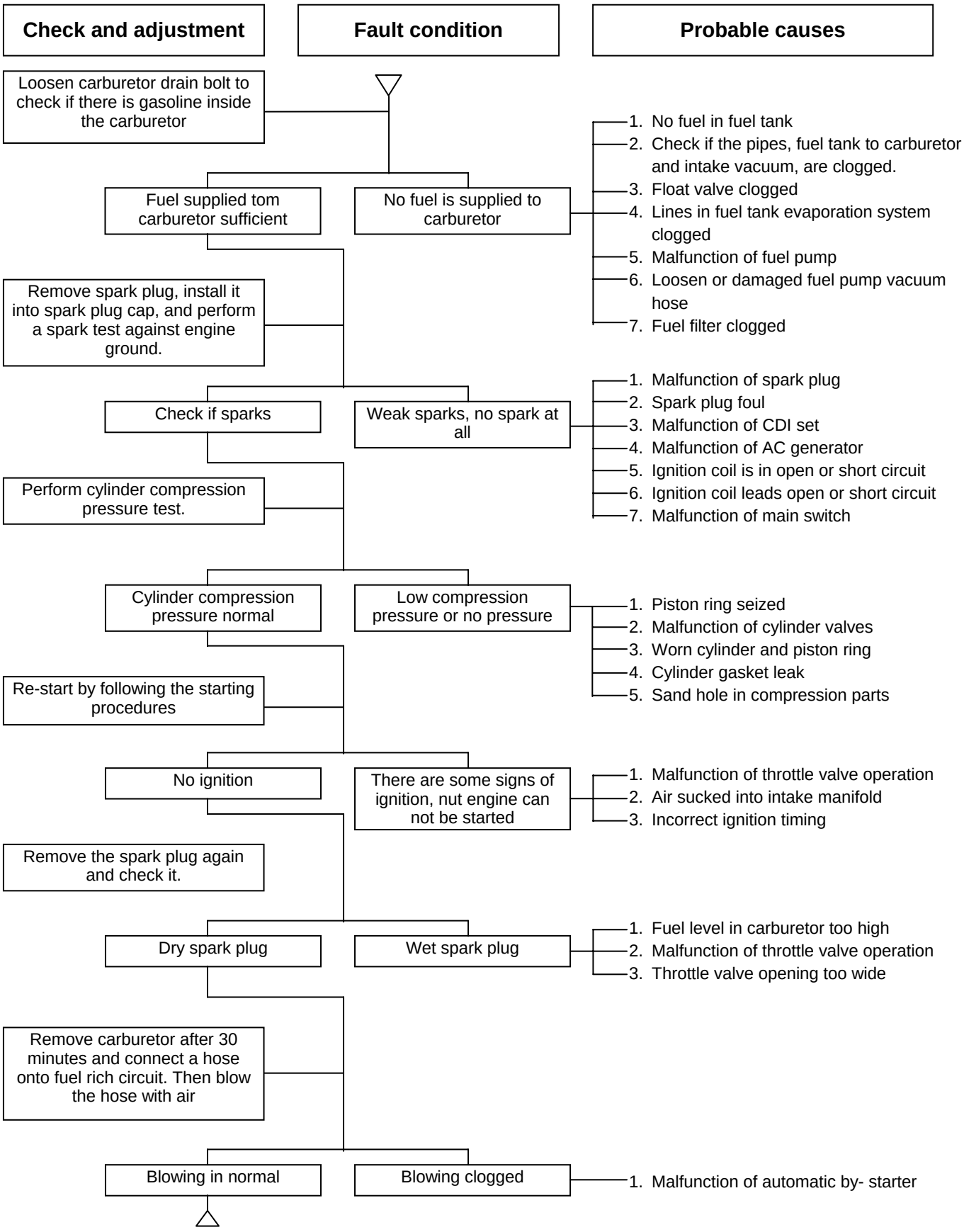
| Item | Q'ty | Thread Dia. (mm) | Torque Value(kgf-m) | Remarks |
|---|---|---|---|---|
| Cylinder head nut | 4 | 8 | 2.0~2.4 | |
| Cylinder head right bolt | 2 | 8 | 2.0~2.4 | |
| Cylinder head stud bolt (inlet pipe) | 2 | 6 | 0.7~1.1 | |
| Cylinder head stud bolt (EX. pipe) | 2 | 7 | 0.5~1.0 | |
| Tappet adjustment hole cap bolt | 6 | 6 | 1.0~1.4 | |
| Tappet adjustment screw nut | 4 | 5 | 0.7~1.1 | Apply oil to thread |
| Spark plug | 1 | 10 | 1.0~1.2 | |
| Carburetor insulator bolt | 2 | 6 | 0.7~1.1 | |
| Cylinder stud bolt | 4 | 8 | 0.7~1.1 | |
| Engine left cover bolt | 7 | 6 | 1.1~1.5 | |
| Engine oil draining bolt | 1 | 12 | 1.1~1.5 | |
| Engine oil strainer cap | 1 | 30 | 1.3~1.7 | |
| Mission draining bolt | 1 | 8 | 0.8~1.2 | |
| Mission filling bolt | 1 | 10 | 0.8~1.2 | |
| Clutch driving plate nut | 1 | 28 | 5.0~6.0 | |
| Clutch outer nut | 1 | 12 | 5.0~6.0 | |
| Drive face nut | 1 | 12 | 5.0~6.0 | |
| Flywheel nut | 1 | 12 | 5.0~6.0 | |
| Crankcase bolts | 7 | 6 | 0.8~1.2 | |
| Mission case bolt | 7 | 8 | 2.0~2.4 | |

### Frame Torque Values

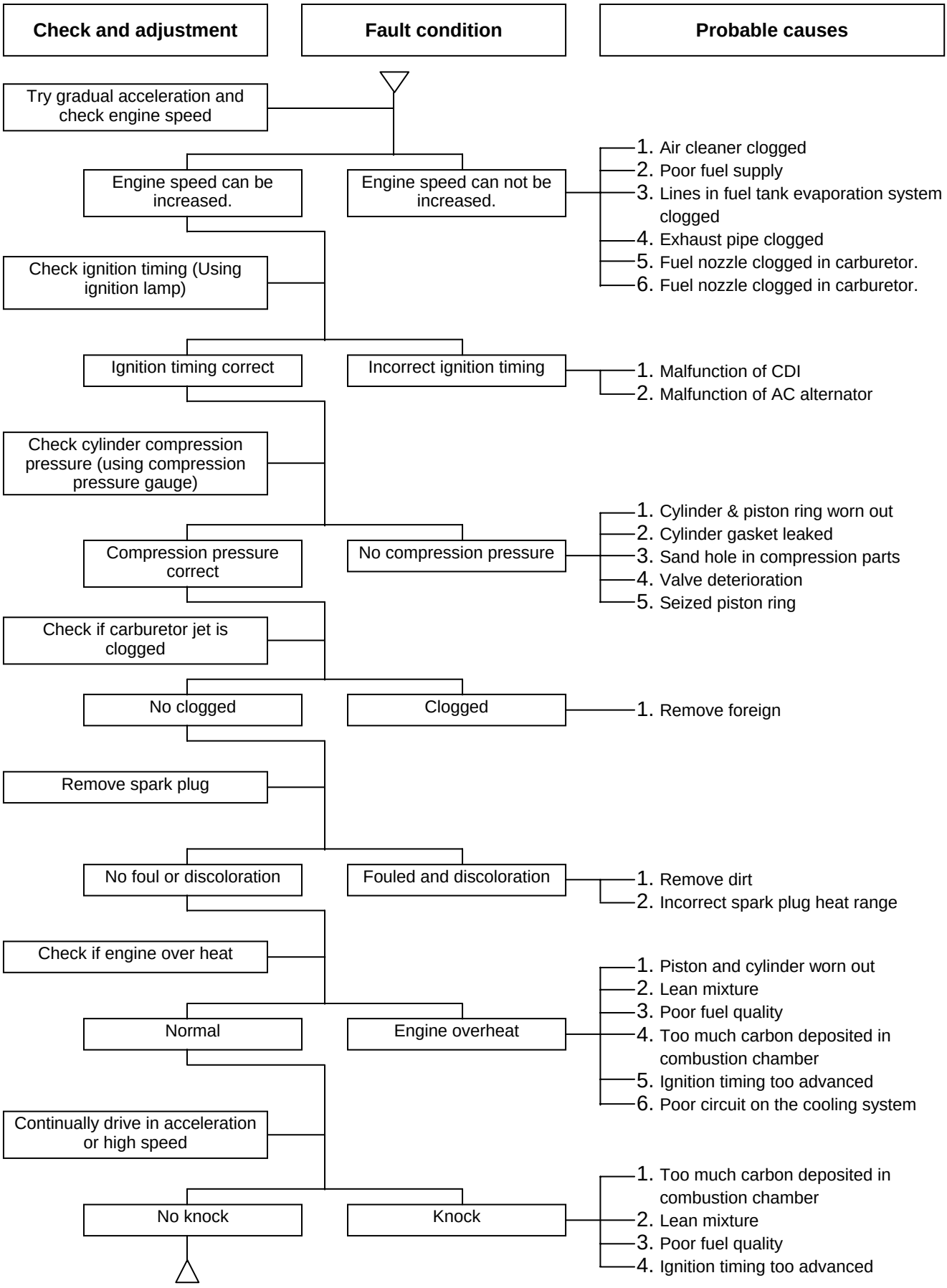
| Item | Q'ty | Thread Dia. (mm) | Torque Value(kgf-m) | Remarks |
|---|---|---|---|---|
| Stopper nut for engine hanger rubber | 1 | 8 | 1.8~2.2 | |
| Engine hanger nut | 2 | 12 | 4.0~5.0 | |
| Engine hanger bolt | 1 | 12 | 4.0~5.0 | |
| Engine connection bolt | 1 | 10 | 3.5~4.5 | |
| Front wheel axle nut | 1 | 12 | 5.0~7.0 | |
| Rear wheel shaft nut | 1 | 14 | 10.0~12.0 | |
| Rear fork | 2 | 8 | 4.0~5.0 | |
| Rear cushion upper bolt | 2 | 10 | 3.5~4.5 | |
| Rear cushion under bolt | 2 | 8 | 2.4~3.0 | |
| Nut for steering post | 1 | 10 | 4.0~5.0 | |
| Front cushion | 4 | 8 | 2.4~3.0 | |
| Brake lever nut | 2 | 6 | 0.8~1.2 | |
| Nut for the rear brake arm | 1 | 6 | 0.5~0.6 | |
| Front brake hose bolt | 4 | 10 | 3.0~4.0 | |
| Front brake caliper bolt | 4 | 6 | 3.0~3.5 | |
| Front brake disk mounting bolt | 7 | 8 | 4.0~4.5 | |
| Air-bleed valve | 1 | 5 | 0.5~0.6 | |
| Speedometer cable locking screw | 1 | 5 | 0.15~0.3 | |
| Exhaust muffler bolt | 3 | 8 | 3.2~3.8 | |
| Exhaust muffler connection nut | 2 | 7 | 1.0~1.2 | |

## Troubles Diagnosis

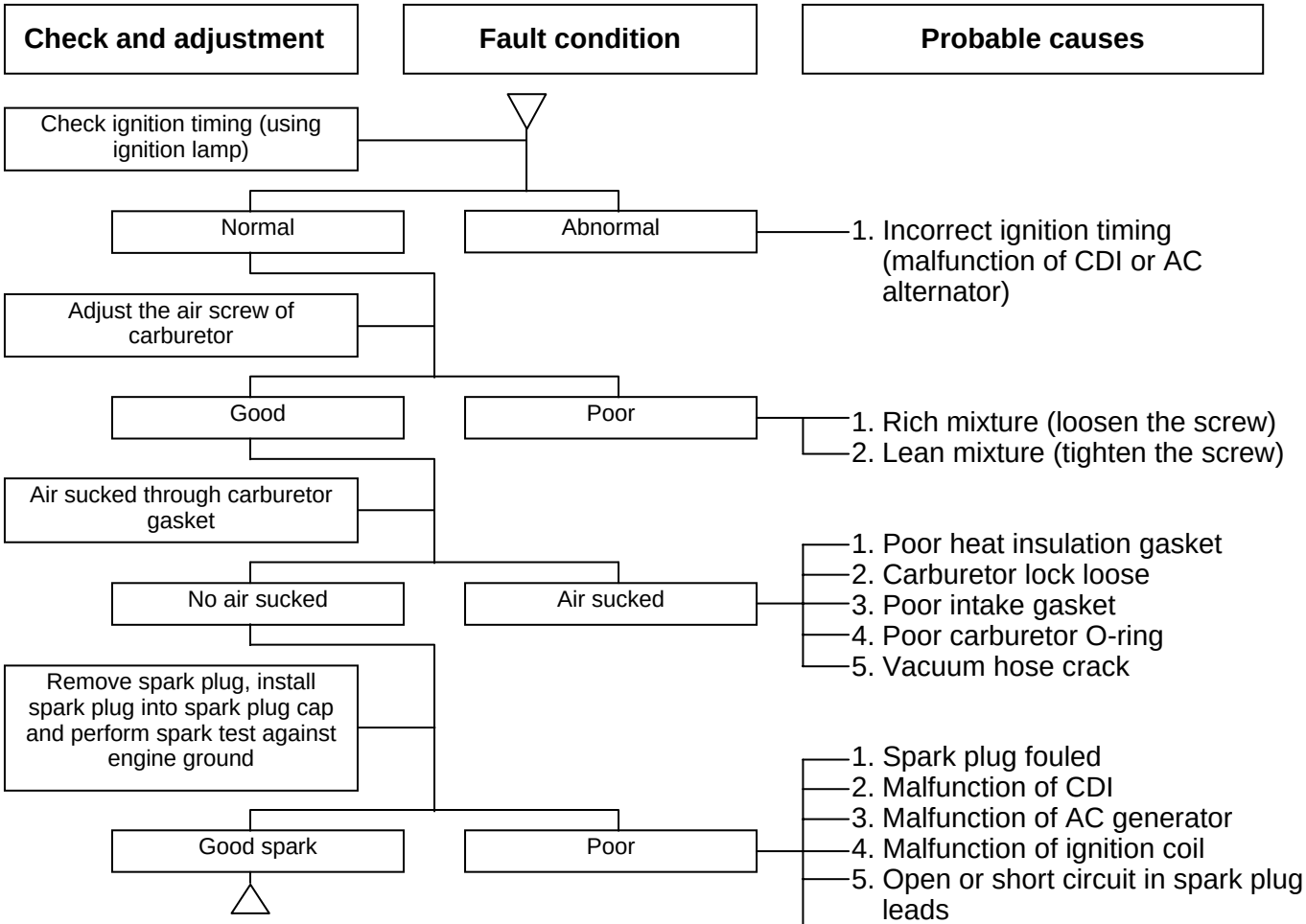
### A. Engine hard to start or can not be started



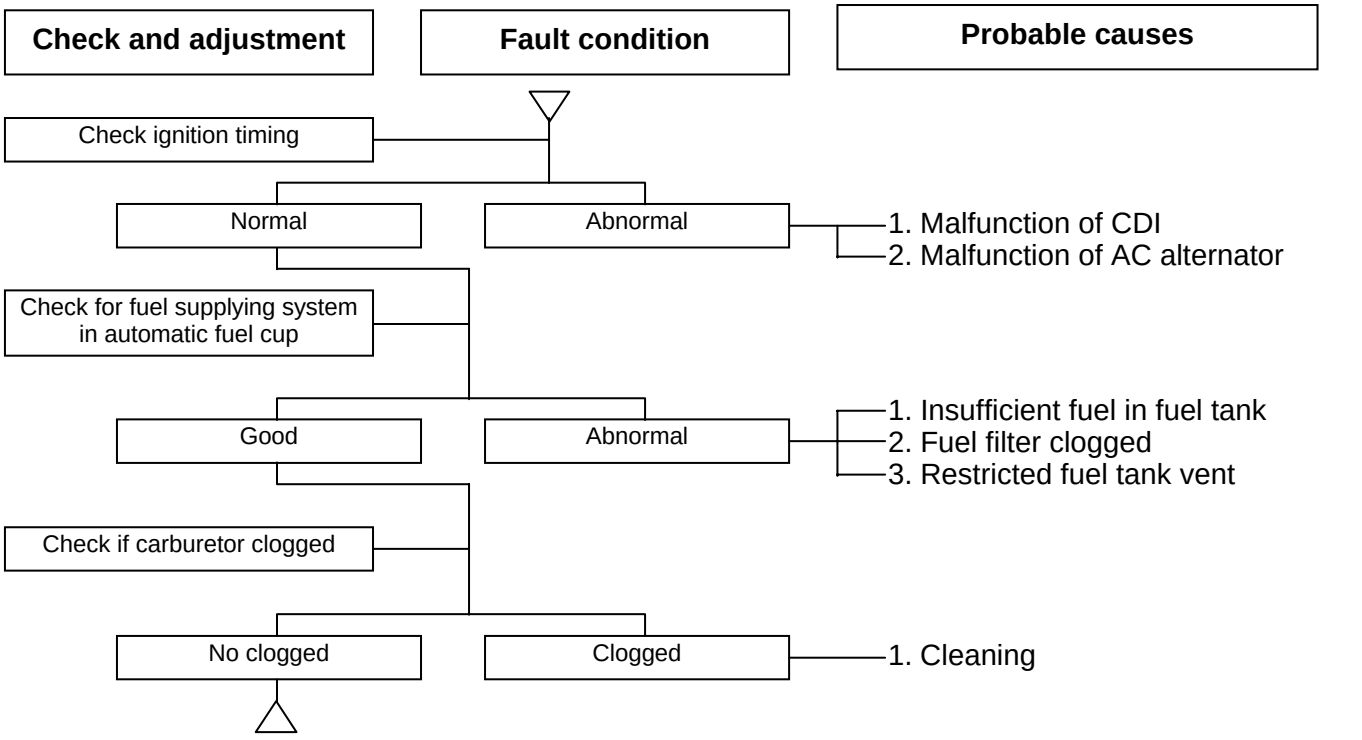
## B. Engine run sluggish (Speed does not pick up, lack of power)



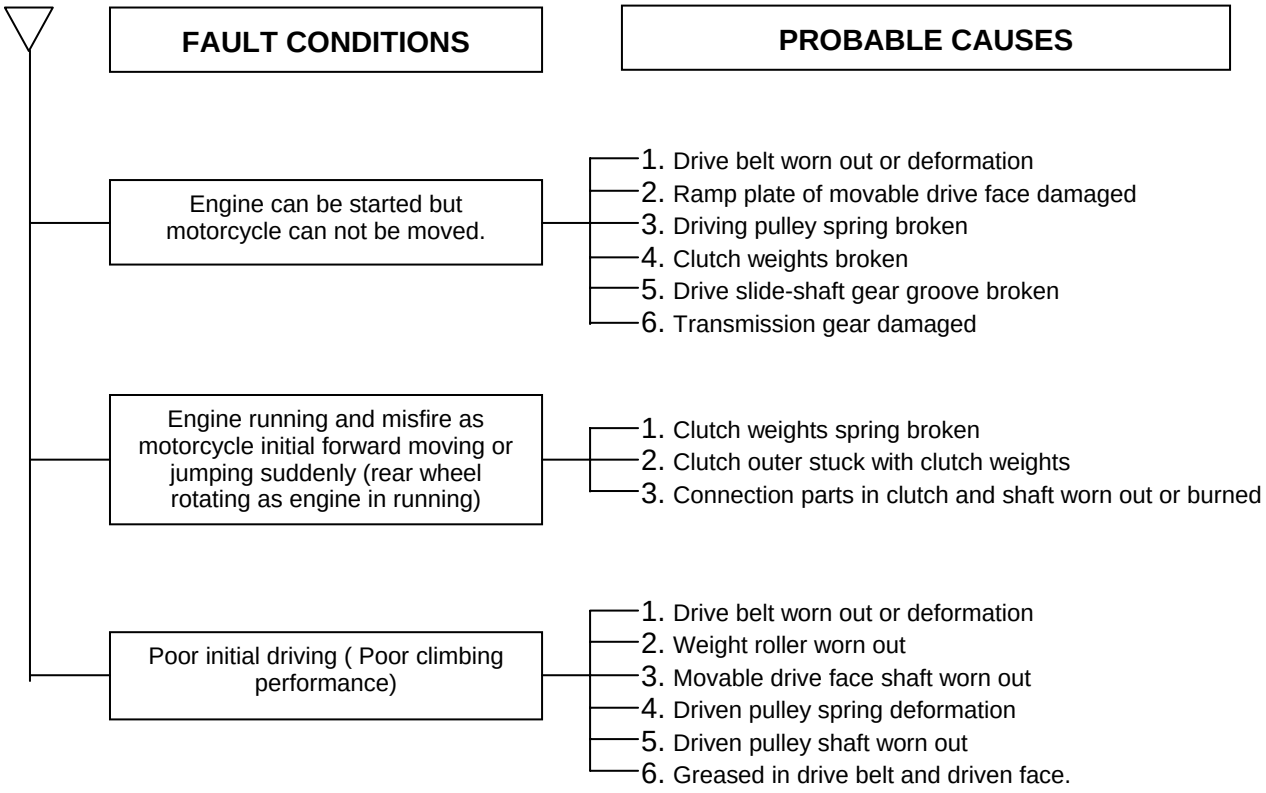
## C. Engine runs sluggish (especially in low speed and idling)



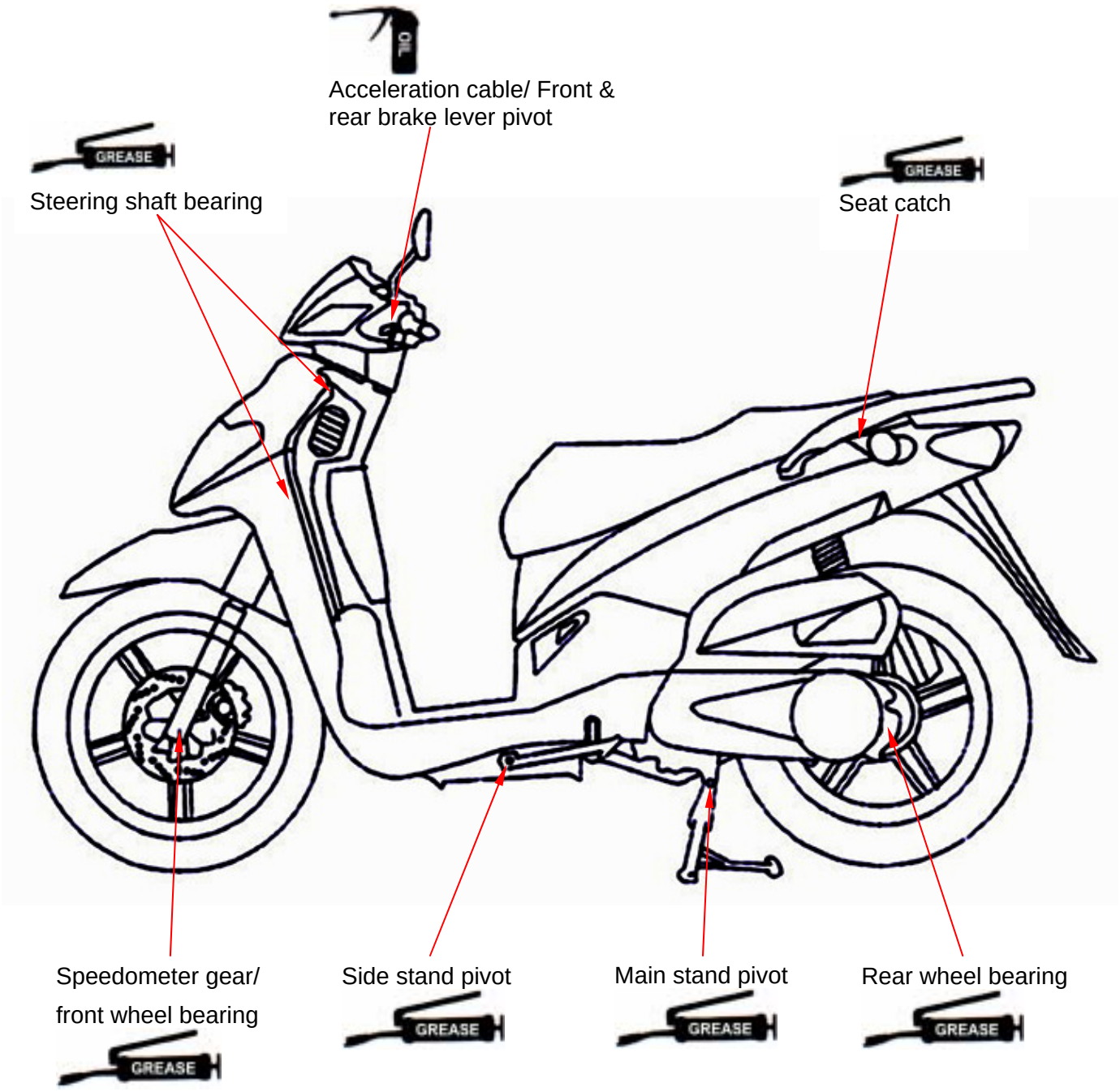

## D. Engine runs sluggish (High speed)



## E. Clutch, driving and driving pulley



## Parts to Be Greased



**Note:**

## Precautions in Operation

**Specification**

| | | |
|---|---|---|
| Fuel Tank Capacity | | 8000 c.c. |
| Engine Oil | Capacity | 1000 c.c. |
| | Change | 800 c.c. |
| Transmission Gear oil | Capacity | 110 c.c. |
| | Change | 100 c.c. |
| Capacity of coolant | Engine + radiator | 780 c.c. |
| | Reservoir upper | 420 c.c. |
| Clearance of throttle valve | | 2~6 mm |
| Spark plug | Type | NGK CR8E |
| | Gap | 0.8 mm |
| “F” Mark in idling speed | | BTDC 13º / 1000 rpm |
| Full timing advanced | | BTDC 27º / 6000 rpm |
| Idling speed | | 1600±100 rpm |
| Cylinder compression pressure | | 12.0 ±2 kgf/cm² |
| Valve clearance: IN/EX | | 0.12 ± 0.02 mm |
| Tire dimension | Front | 100/80-16 50P |
| | Rear | 120/80-16 60P |
| Tire pressure (cold) | Single | Front: 1.75 kg/cm² rear : 2.25 kg/cm² |
| | Two persons | Front: 1.75 kg/cm² rear : 2.50 kg/cm² |
| Battery | | 12V8Ah (MF battery) type: YTX9-BS |

## Periodical Maintenance Schedule

| Maintenance Code | Item | Every 300KM | 1 Month every 1,000KM | 3 month every 3,000KM | 6 month every 6000KM | 1 year every 12,000KM | 15 month every 14,500KM |
|---|---|---|---|---|---|---|---|
| 1 | ☆Air cleaner | I | | C | | R | |
| 2 | ☆2nd air jet leaner | I | | C | | R | |
| 3 | ☆Fuel filter | I | | | I | R | |
| 4 | ☆Oil filter | C | | | C | | |
| 5 | ☆Engine oil change | R | Replacement for every 1000 km | | | | |
| 6 | Tire pressure | I | I | | | | |
| 7 | Battery inspection | I | I | | | | |
| 8 | Brake & free ply check | I | I | | | | |
| 9 | Steering handle check | I | | | I | | |
| 10 | Cushion operation check | I | | | I | | |
| 11 | Every screw tightening | I | I | | | | |
| 12 | Gear oil check for leaking | I | I | | | | |
| 13 | ☆Spark plug check or change | I | | I | R | | |
| 14 | ☆Gear oil change | R | Replacement for every 5000 km | | | | |
| 15 | Frame lubrication | | | | L | | |
| 16 | Exhaust pipe | I | I | | | | |
| 17 | ☆Ignition timing | I | I | | | | |
| 18 | ☆emission check in Idling | A | I | | | | |
| 19 | ☆Throttle operation | I | | I | | | |
| 20 | ☆Engine bolt tightening | I | | I | | | |
| 21 | ☆CVT driving device(belt) | | | | I | R | |
| 22 | ☆CVT driving device(roller) | | | | C | | |
| 23 | Lights/electrical equipment/multi-meters | I | I | | | | |
| 24 | Main/side stands & springs | I | | | I | | |
| 25 | Fuel lines | I | | I | | | |
| 26 | Cushions | | | I | | | |
| 27 | Cam chain | I | | I | | | |
| 28 | ☆Valve clearance | I | | A | | | |
| 29 | ☆Crankcase evaporative | I | | C | | | |
| 30 | ☆Crankcase blow-by | | Replacement for every 2000 km | | | | |
| 31 | ☆2nd air jet system | I | | I | C | | |
| 32 | ☆Evaporative control system | | | I | | | |
| 33 | Lines & connections in cooling | I | I | | | | |
| 34 | Coolant reservoir | I | I | | | | |
| 35 | Coolant | I | I | | | R | |

**Code: I ~ Inspection, cleaning, and adjustment R ~ Replacement C ~ Cleaning (replaced if necessary) L ~ Lubrication**
Have your motorcycle checked, adjusted, and recorded maintenance data periodically by your SYM Authorized Dealer to maintain the motorcycle at the optimum condition

The above maintenance schedule is established by taking the monthly 1000 kilometers as a reference which ever comes first.

Remarks: 1. **These marks "☆" in the schedule are emission control items. According to EPA regulations, these items must be performed normally periodical maintenance following the use r manual instructions. They are prohibited to be adjusted or repaired by unauthorized people. Otherwise, SYM is no responsible for the charge.**

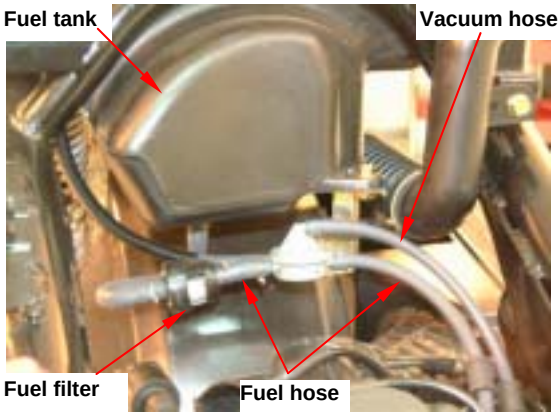
2. Clean or replace the air cleaner element more often when the motorcycle is operated on dusty roads or in the Heavily- polluted environment.
3. Maintenance should be performed more often if the motorcycle is frequently operated in high speed and after the motorcycle has accumulated a higher mileage.
4. Preventive maintenance
   a. Ignition system—Perform maintenance and check when continuous abnormal ignition, misfire, after-burn, overheating occur.
   b. Carbon deposit removal—Remove carbon deposits in cylinder head, piston heads, exhaust system when power is obvious lower. Than ever

## Fuel Lines / Cable

Remove luggage box.
Remove rear carrier.
Remove body covers.
Check all lines, and replace it when they are deterioration, damage or leaking.

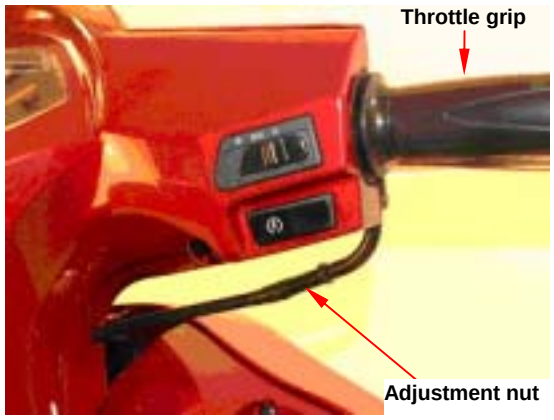
**Warning**

Gasoline is a low ignition material so any kind of fire is strictly prohibited as dealing it.

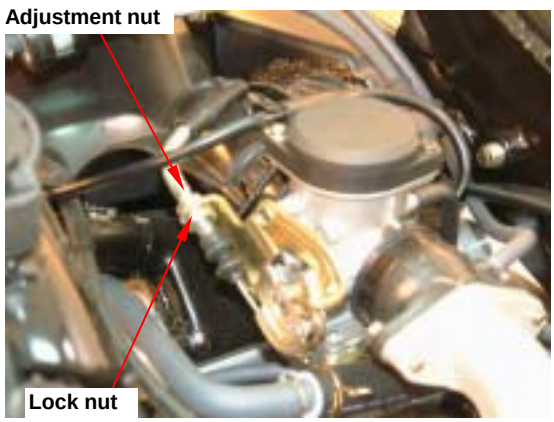



### Acceleration Operation

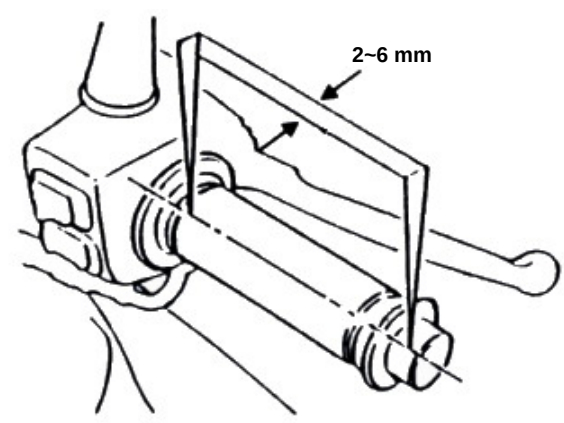
Have a wide open of throttle valve as handle in any position and release it to let back original (full closed) position.
Check handle if its operation is smooth.
Check acceleration cable and replace it if deteriorated, twisted or damaged.
Lubricate the cable if operation is not smooth
Measure the throttle grip free play in its flange part.




Adjustment can be done in either end.
Secondary adjustment is conducted from top side.
Remove rubber boot, loosen fixing nut, and then adjust it by turning the adjustment nut.



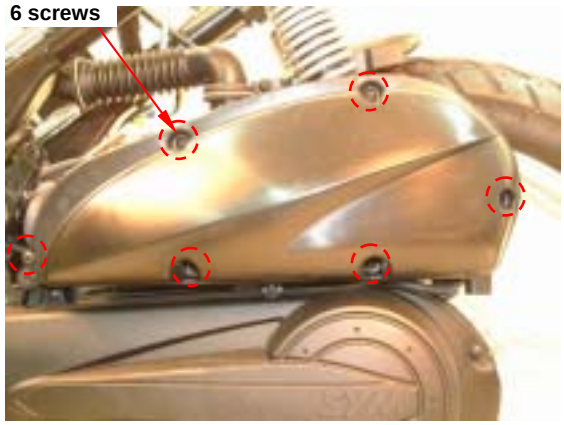

Primary adjustment is conducted from bottom side.
Loosen fixing nut, and adjust by turning the adjustment nut.
Tighten the fixing nut, and check acceleration operation condition.
**Free play: 2~6 mm.**



## Air Cleaner

### Air Cleaner Element

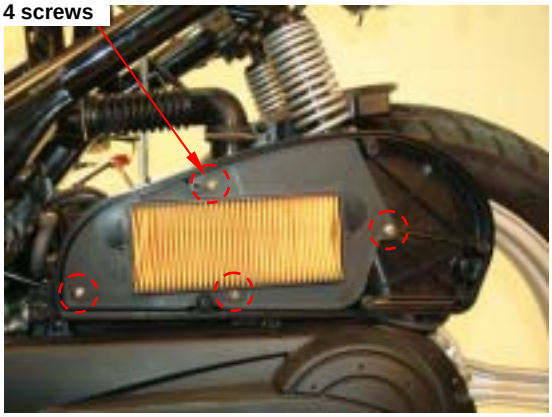
Remove 6 screws from the air cleaner cover and then remove the cover.




Remove 4 screws, and then remove the air cleaner element.

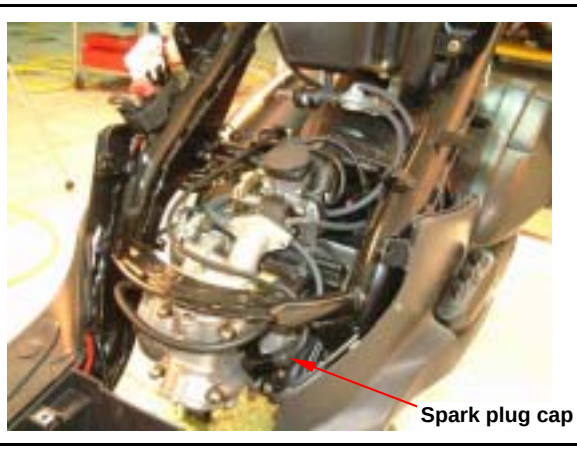
**Caution**

The air cleaner element is made of paper so do not soap it into water or wash it with water.

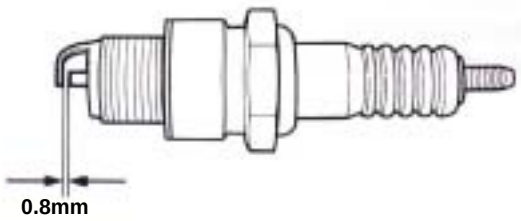



## Spark Plug

Remove central cover.
Remove spark plug cap.
Clean dirt around the spark plug hole.
Remove spark plug.




Measure the spark plug gap.
Spark plug gap：0.8 mm
Carefully bend ground electrode of the plug to adjust the gap if necessary.
Hold spark plug washer and install the spark plug by screwing it.
**Tighten torque: 1.0~1.2kgf-m**
Connect spark plug cap.
Recommended spark plug: CR8E

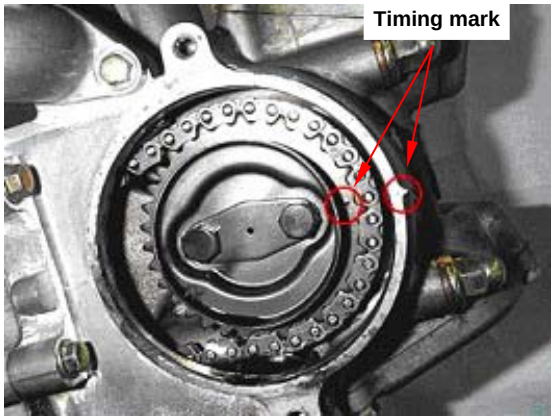


## Valve Clearance

**Caution**

Checks and adjustment must be performed when the engine temperature is below 35℃.

Remove trunk.
Remove central cover.
Remove valve adjustment cap.
Remove cylinder head side cover.
Turn camshaft bolt in C.W. direction and let the “T” mark on the camshaft sprocket align with cylinder head mark so that piston is placed at TDC position in compression stroke.




**Caution**

Do not turn the bolt in C.C.W. direction to prevent from camshaft bolt looseness.

Valve clearance inspection and adjustment.
Check & adjust valve clearance with feeler gauge.
**Valve clearance (IN/EX): 0.12 ± 0.02 mm**
Loosen fixing nut and turn the adjustment nut for adjustment.

**Caution**

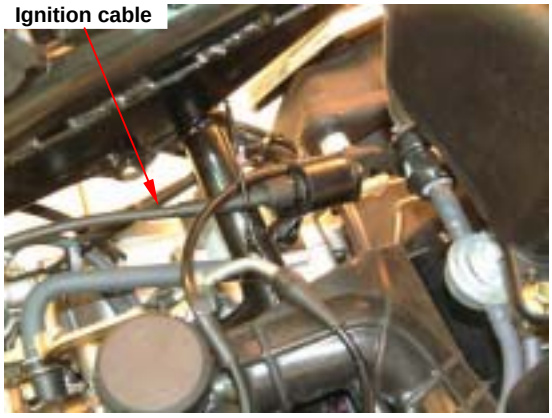
Re-check the valve clearance after tightened the fixing nut.

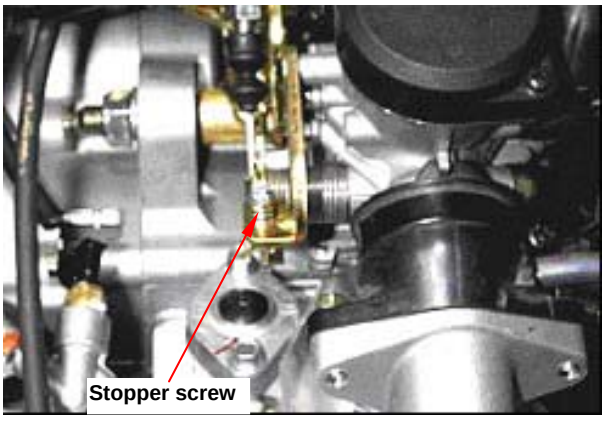
## Carburetor Idle Speed Adjustment

### ⚠ Caution

- Inspection & adjustment for idle speed have to be performed after all parts in engine that needed adjustment have been adjusted.
- Idle speed check and adjustment have to be done after engine is being warm up. (It is enough that operates engine from stop to running for 10 minutes.)

Park the motorcycle with main stand and warm up engine.
Connect tachometer (the wire clamp of tachometer is connected to the high tension cable).
Open carburetor cover from the luggage box.
Turn the throttle valve stopper screw to specified idle speed.
Specified idle speed: 1600 ± 100 rpm



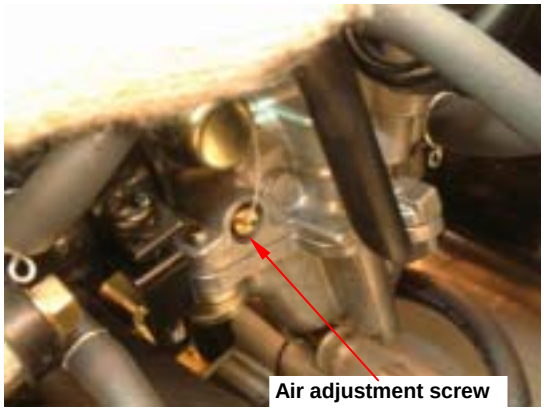




### Emission adjustment in idle speed

Warm up the engine for around 10 minutes and then conduct this adjustment.

1. Connect the tachometer onto engine.
2. Adjust the idle speed adjustment screw and let engine runs in 1600±100 rpm.
3. Insert the exhaust sampling pipe of exhaust analyzer into the front section of exhaust pipe. Adjust the air adjustment screw so that emission value in idle speed is within standard.
4. Slightly accelerate the throttle valve and release it immediately. Repeat this for 2~3 times.
5. Read engine RPM and value on the exhaust analyzer. Repeat step 2 to step 4 procedures until measured value within standard.

**Emission standard** **CO: below 2.5~3.5%**
**HC: below 2000ppm**

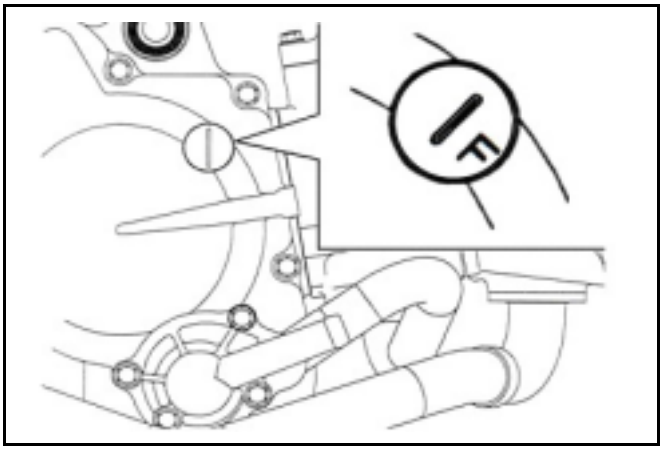


## Ignition System

### Caution

- C.D.I ignition system is set by manufacturer so it can not be adjusted.
- Ignition timing check procedure is for checking whether CDI function is in normal or not.

Remove right side cover.
Remove ignition timing hole cap located in front upper side of engine right cover.
Connect tachometer and ignition lamp.
Start engine.
As engine in idle speed: 1600 rpm, aim at the mark “F” with the ignition lamp. Then, it is means that ignition timing is correct.
Increase engine speed to 6000 rpm to check ignition advance degree. If indent is located within the ignition advance degrees, it is means that the ignition advance degree is in normal.
If ignition timing is incorrect, check CDI set, pulse rotor and pulse generator. Replace it if malfunction of these parts is found.




## Cylinder Compression Pressure

Warm up engine.
Turn off the engine.
Remove the trunk.
Remove the central cover.
Remove spark plug cap and spark plug.
Install compression gauge.
Full open the throttle valve, and rotate the engine by means of starter motor.

### Caution

Rotate the engine until the reading in the gauge no more increasing.
Usually, the highest pressure reading will be obtained in 4~7 seconds.

**Compression pressure: 12 ± 2 Kg/cm²**
Check following items if the pressure is too low:

- Incorrect valve clearance.
- Valve leaking.
- Cylinder head leaking, piston, piston ring and cylinder worn out.

If the pressure is too high, it means carbon deposits in combustion chamber or piston head.