



编 制： 陈佳鑫

审 核： 陈泓育

批 准： 洪敏超

TY125T-31E

SERVICE MANUAL



Foreword

This service manual contains the technical data of each component inspection and repair for the TY125T-31E 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, TY125T-31E, are different from that of the photos, pictures shown in this manual, the actual vehicle shall prevail. Specifications are subject to change without notice.

Zhejiang Tianying Locomotive Co., Ltd.

I . General information

01-The main technical parameters.....	3
02-Lubrication system specifications.....	4
03-Crankshaft, piston and cylinder specifications.....	4
04-Cylinder head and valve specifications.....	5
05-Torque value.....	6
06-Service precautions.....	8
07-Troubleshooting.....	14
08-Lubrication points.....	18

II. Maintenance information

09-Air cleaner.....	19
10-Steering handle top bearing.....	24
11-Cushion.....	24
12-Schematic diagram of the braking system.....	25
12.1-Precautions in operation.....	30
12.2-Troubleshooting.....	31

12.3-Disc brake system inspection.....	32
12.4-Add brake fluid.....	33
12.5-Brake fluid replacement / Air-bleed.....	34
12.6-Front brake caliper.....	36
12.7-Rear brake caliper.....	37
12.8-Brake disk.....	39
12.9-Master cylinder.....	39

III. Engine maintenance

13-Main characteristics.....	42
14-Precautions for use.....	42
15-Regular maintenance project and schedule.....	44
16-List and purpose of all componentsmonitored by the OBD system.....	45

I. General information

01—Main technical parameters:

Item	Technical parameters
Engine model	1P53QMI-9
Engine type	Single cylinder, four-stroke, forced air cooling, cylinder positioned horizontally
Transmission type	CVT
Transmission ratio	23.746~7.727
Compression ratio	9.5:1
Bore diameter × stroke mm	53.5×55.1
Working volume	124cm ³ (Calculated: 123.8cm ³)
Clutch type	Automatic centrifugal hoof block
Lubrication method	Pressure, pressure splash combined
Idle speed r/min	1700±170
Crankcase lubricating oil volume L	0.8
Lubricant grade	SF 10W/40
Ignition method	ECU
transmission case oil volume L	0.12
Gear oil grade	SAE 80W/90
Fuse	15 A
Spark plug specifications	B8RTC
Spark plug gap	0.6~0.8

02-Lubrication system specifications:

unit: mm

Item		Standard value	Maintenance threshold
Engine oil capacity	change engine oil	0.8 L	-
	after removing the engine	0.9 L	-
80W/90 Gear Oil	change gear oil	0.12 L	-
	after removing the engine	0.2 L	-
Recommended engine oil		Recommended engine oil: SF 10W/40 API Quality Grade: SG or higher (do not use oils marked as energy efficient on the circular API service label)	-
Engine oil pump rotor	Tip clearance	Not more than 0.15 (between inner and outer rotors)	0.16
	Intermediate gap	0.016~0.074 (inner rotor hole and shaft)	0.084
	Gap on both sides	0.06 to 0.12 (up and down direction)	0.13

03-Crankshaft, piston and cylinder specifications:

unit: mm

Item			Standard value	Maintenance threshold
Crankshaft	Large end side clearance of connecting rod		0.10~0.35	0.45
	Clearance between connecting rod big end bearing bush and crank pin		0.004~0.012	0.07
	Beat		-	0.05
Cylinder block	Bore		52.400~52.410	52.500
	Out-of-roundness		-	0.05
	Taper		-	0.05
	Flatness		-	0.05
Pistons, Piston Pins, Piston Rings	Piston base circle diameter		52.370~52.390	52.30
	Pin hole diameter		15.002~15.008	15.04
	Piston pin diameter		14.994~15.000	14.96
	Piston to Piston Pin Clearance		0.002~0.014	0.02
	Piston ring closed gap	First ring	0.10~0.30	0.35
		Second ring	0.20~0.40	0.45
		Oil ring (scraper ring)	0.20~0.70	0.9
	Piston ring and ring groove clearance	Clearance between first ring and groove	0.020~0.060	/
		Gap between second ring	0.020~0.060	/

		and groove		
Cylinder clearance			0.010~0.045	0.10
Inner diameter of connecting rod small end			15.016~15.034	15.06
Fitting clearance between connecting rod and pin			0.016~0.040	0.06

04-Cylinder head and valve specifications:

unit: mm

Item			Standard value	Maintenance threshold
Electric start cylinder pressure			(800~1200)kPa	-
Valve clearance		Intake valve	0.08~0.12	-
		Exhaust valve	0.12~0.16	-
Rocker arm, rocker arm shaft	Rocker arm inner diameter	Intake/exhaust	10~10.015	10.10
	Rocker bearing outer diameter	Intake/exhaust	9.972~9.987	9.91
	Rocker arm and bearing	Intake/exhaust	/	/
	Gap	Intake/exhaust	/	/
	Rocker bearing inner diameter	Intake/exhaust	9.978~9.988	9.962
	rocker shaft outer diameter	Intake/exhaust	/	/
Camshaft	Camshaft hull height	Intake	29.435~29.555	29.39
		Exhaust	29.140~29.260	29.10
	Bearing and bore clearance		0.002~0.026	0.036
	Beat		/	/
Valve/vale catheter	Valve stem diameter	Intake	4.975~4.990	4.96
		Exhaust	4.955~4.97	4.94
	Valve guide inner diameter	Intake/exhaust	5.000~5.012	5.03
		Intake/exhaust	5.000~5.012	5.03
	Valve stem to valveduct gap	Intake	0.01~0.037	0.07
		Exhaust	0.03~0.057	0.08
	Catheter height (leakage)	Intake/exhaust	9.6~10	/
	Valve seat width	Intake/exhaust	1.0~1.2	1.6
Valve spring free length		Inside diameter	38.0	37.0
		Inside diameter	35.5	34.5
Cylinder head flatness		0.05		0.05

05-Torque values:

The torque values listed in below are for more important tightening torque values. Please see standard values for those 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	0.7~1.1 kgf.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 value (regular maintenance):

Item	Quantity	Thread diameter (mm)	Torque value (N.m)	Remark
Spark plug	1	10	12~15	
Valve cover	1	30	20~25	Strainer cover
Sealing plug	1	12	25~30	Crankcase oil drain bolt
Transmission case oil drain bolt	1	8	18~22	With gasket
Transmission case refueling bolt	1	8	18~22	With gasket

Cylinder head and valve:

Item	Quantity	Thread diameter (mm)	Torque value (N.m)	Remark
Cylinder head nut	4	8	28~32	Oil on the nut end
Camshaft flapper bolt	1	6	8~12	
Valve rocker shaft bolt	2	5	5~9	
Oil and gas separation plate screw	4	ST4.2	2~3	
Cylinder head bolts	4	6	8~12	
Cylinder head cover see oil bolt	1	5	8~12	
Tensioner adjusting bolt	1	6	Hand tighten	
Cylinder connecting bolt	2	6	8~12	

Belt combination:

Item	Quantity	Thread diameter (mm)	Torque value (N.m)	Remark
Main drive pulley tightening nut	1	14	63~77	Auxiliary tooling required
Driven pulley tightening nut	1	12	43~53	Auxiliary tooling required
Left crankcase cover bolts	10	6	8~12	

Magneto:

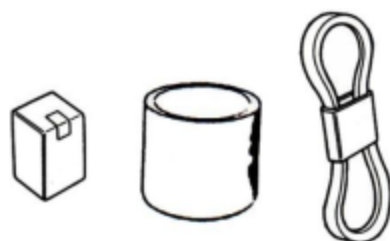
Item	Quantity	Thread diameter (mm)	Torque value (N.m)	Remark
Magneto rotor bolts	1	12	80~90	Apply 1262 thread glue
Magneto stator bolts	3	6	18~12	
Hall sensor bolt	1	6	7~9	Apply 1262 thread glue
Trigger fixing bolt	2	6	8~12	
Clamping plate bolts	2	6	8~12	
Right crankcase cover bolts	10	6	8~12	

Case and transmission system:

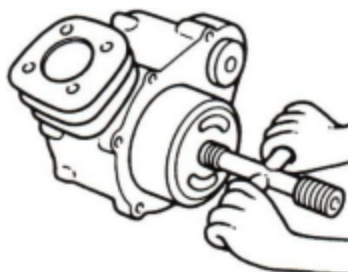
Item	Quantity	Thread diameter (mm)	Torque value (N.m)	Remark
Crankcase bolts	10	6	8~12	
Crankcase positioning stud	4	6	8~12	
Transmission case bolts	7	8	18~22	
Pin lock nut	1	8	18~22	transmission case brake drum locating pin
Rear brake camshaft limit bolt	1	6	8~12	Rear brake arm
Press pin body tightening bolt	1	6	8~12	Timing chain limit plate fastening
Fastening bolt for speed sensor	1	6	8~12	
Speed sensor protection board, lower	2	6	Hand tighten	

06-Service precautions:

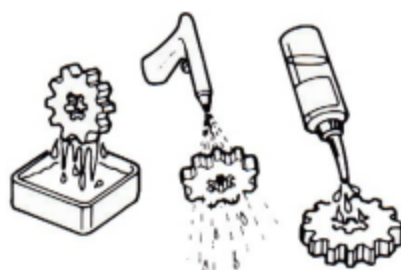
- Always use genuine parts and recommended oil. Using improper parts may cause damage to or destruction of the vehicle.



- Special tools are designed for removal and installation of component parts without damaging them. Using wrong tools may result in parts damage.



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

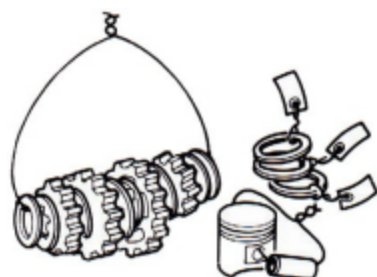


- Never bend or twist control cables to avoid unsmooth control and premature worn out.



- Rubber parts may become deteriorated when old, and be damaged by solvent and oil easily. 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.

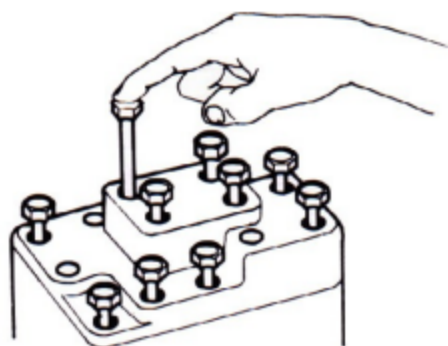
- Store complex components such as transmission parts in the proper assemble order and tie them together with a wire for ease of installation later.



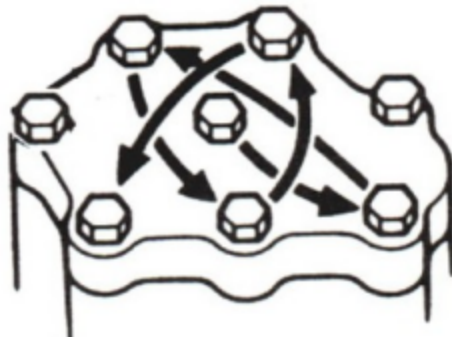
- Note the reassemble position of the important components before disassembling them to ensure they will be reassembled in correct dimensions (depth, distance or position).
- Components not to be reused should be replaced when disassembled including gaskets metal seal rings, O-rings, oil seals, snap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



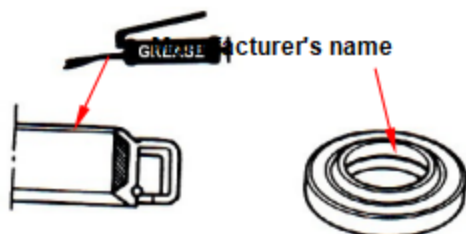
- The length of bolts and screws for assemblies, cover plates or boxes is different from one another, be sure they are correctly installed. In case of confusion, Insert the bolt into the hole to compare its length with other bolts, if its length out side the hole is the same with other bolts, it is a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



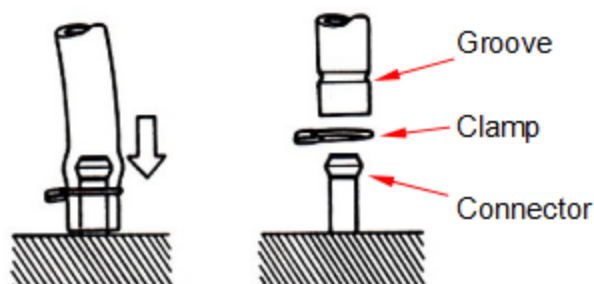
- When oil seal is installed, fill the groove with grease, install the oil seal with the name of the manufacturer facing outside, and check the shaft on which the oil seal is to be installed for smoothness and for burrs that may damage the oil seal.



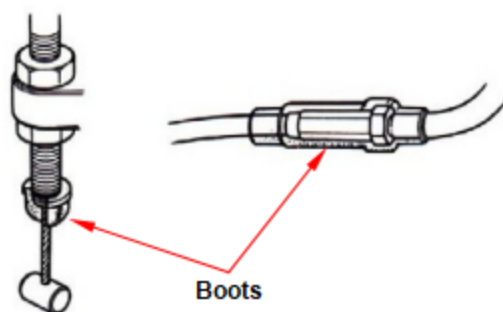
- Remove residues of the old gasket or sealant before reinstallation, grind with a grindstone if the contact surface has any damage.



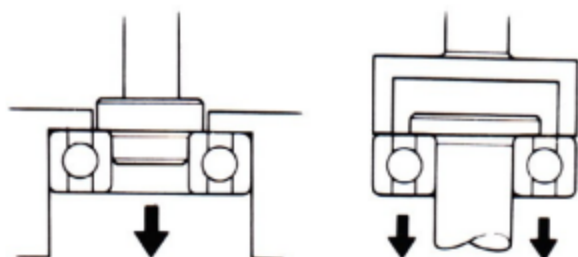
- The ends of rubber hoses (for fuel, vacuum, or coolant) should be pushed as far as they can go to their connections so that there is enough room below the enlarged ends for tightening the clamps.



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

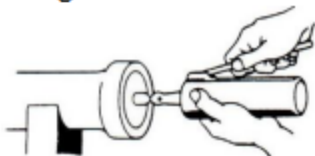


- The tool should be pressed against two (inner and outer) bearing races when removing a ball bearing. Damage may result if the tool is pressed against only one race (either inner race or outer race). In this case, the bearing should be replaced. To avoid damaging the bearing, use equal force on both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



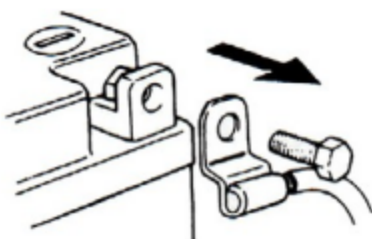
- Make sure service safety each other when conducting by two persons.



- Note that do not let parts fall down.

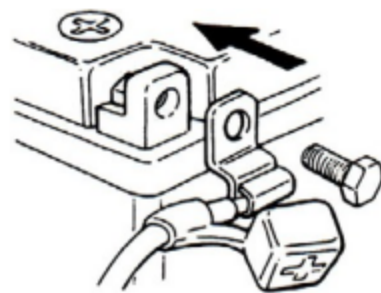


- Before battery removal operation, it has to remove the battery negative (-) cable firstly. Notre tools like open-end wrench do not contact with body to prevent from circuit short and create spark.

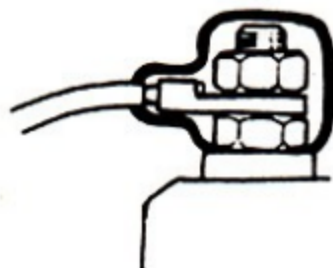


- After service completed, make sure all connection points is secured. Battery positive (+) cable should be connected firstly
- And the two posts of battery have to be greased

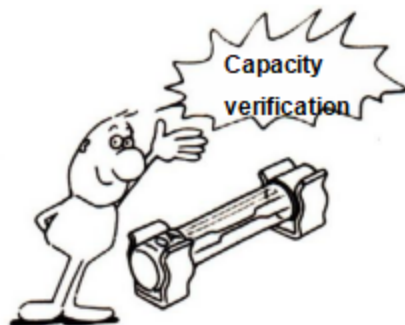
after connected the cables.



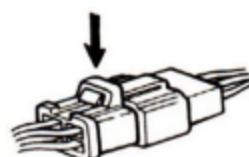
- Make sure that the battery post caps are located in properly after the battery posts had been serviced.



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



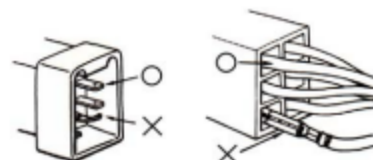
- When separating a connector, it locker has to be unlocked firstly; Then, conduct the service operation.



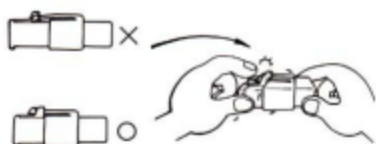
- Do not pull the wires as removing a connector or wires; Hold the connector body.



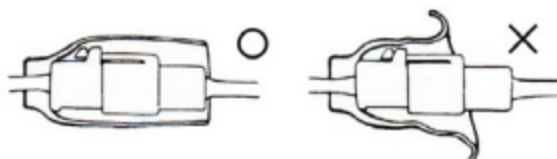
- Make sure if the connector pins are bent, extruded or loosen.



- 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.



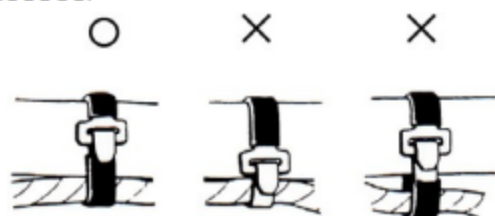
- Before terminal connection, check if the boot is crack or the terminal is loose.



- 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.



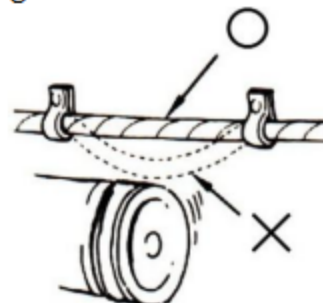
- Wire band and wire harness have to be clamped secured properly.



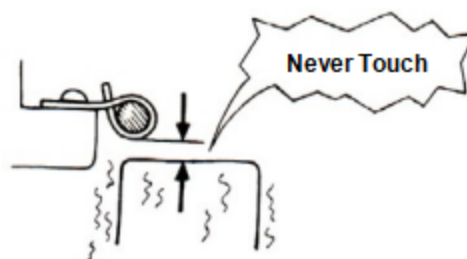
- Do not squeeze wires against the weld or its clamp.



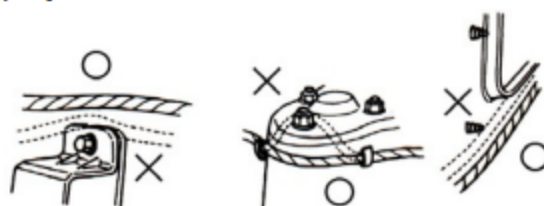
- Do not let the wire harness contact with rotating, moving or vibrating components as routing the harness.



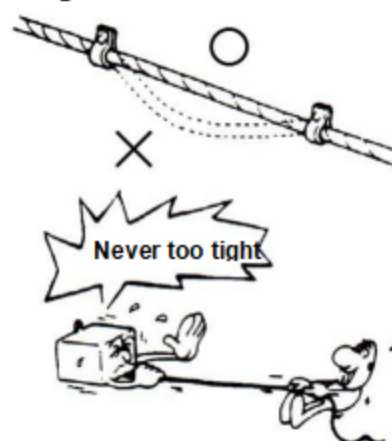
- Keep wire harnesses far away from the hot parts.



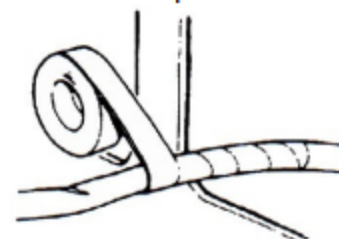
- Route wire harnesses to avoid sharp edges or corners and also avoid the projected ends of bolts and screws.



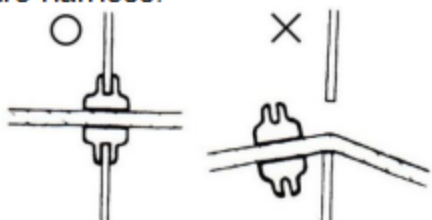
- Route harnesses so that they neither pull too tight nor have excessive slack.



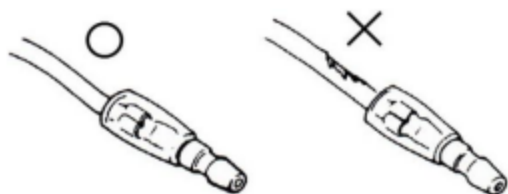
- Protect wires or wire harnesses with electrical tape or tube if they contact a sharp edge or corner. Thoroughly clean the surface where tape is to be applied.



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



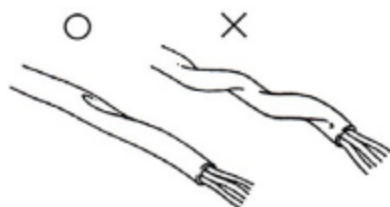
- Never use wires or harnesses which insulation has been broken. Wrap electrical tape around the damaged parts or replace them.



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

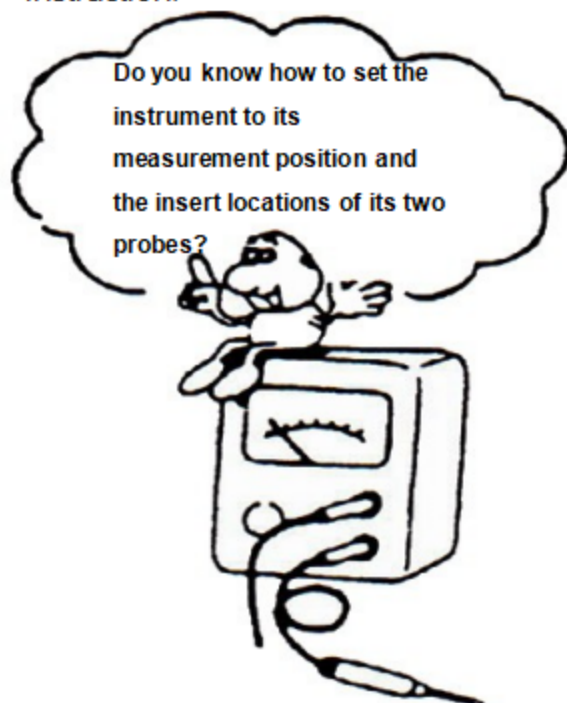


- Do not let the wire harness been twisted as installation.



- 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.

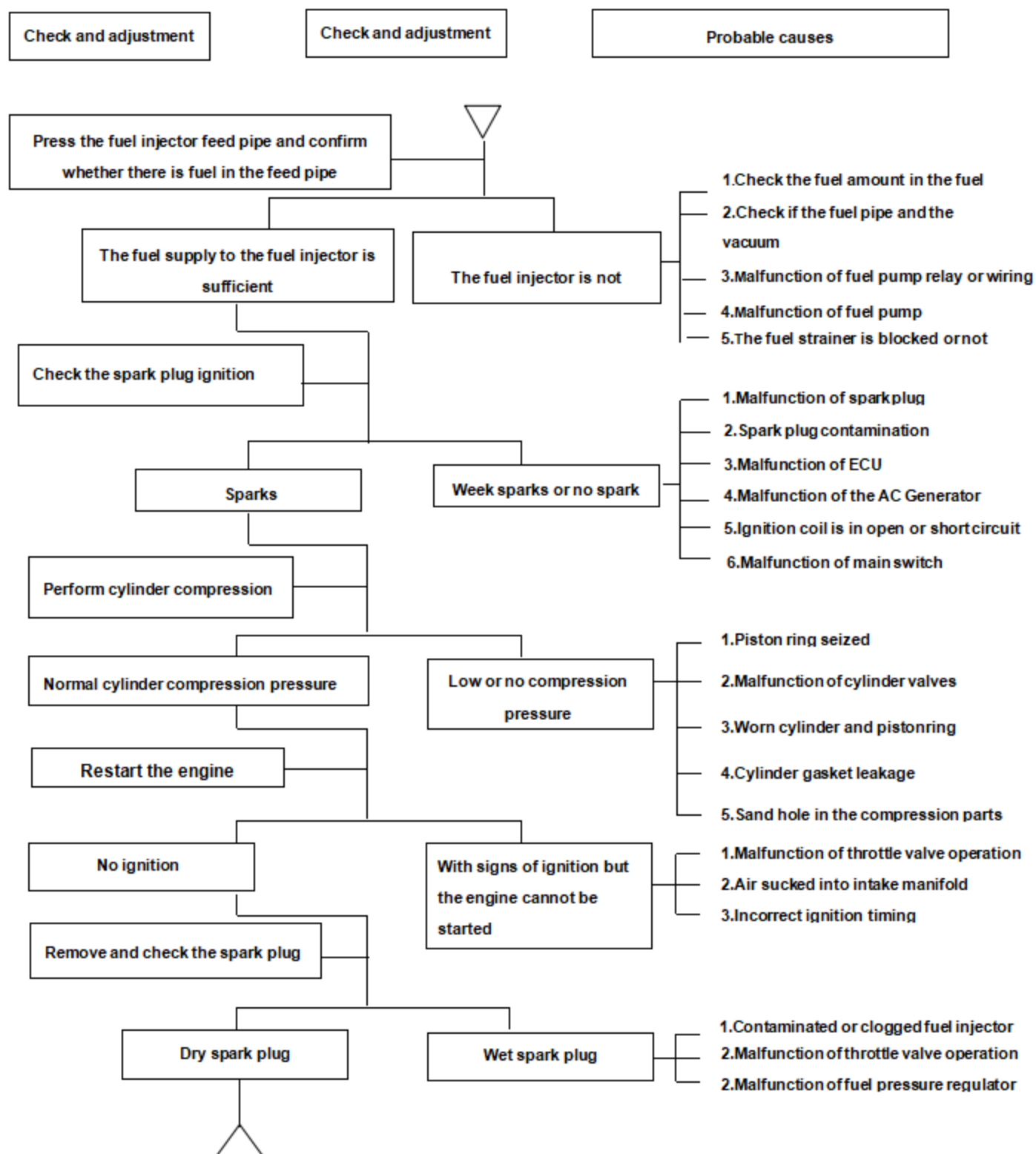


- With sand paper to clean rust on connector pins/terminals if found. And then conduct connection operation later.

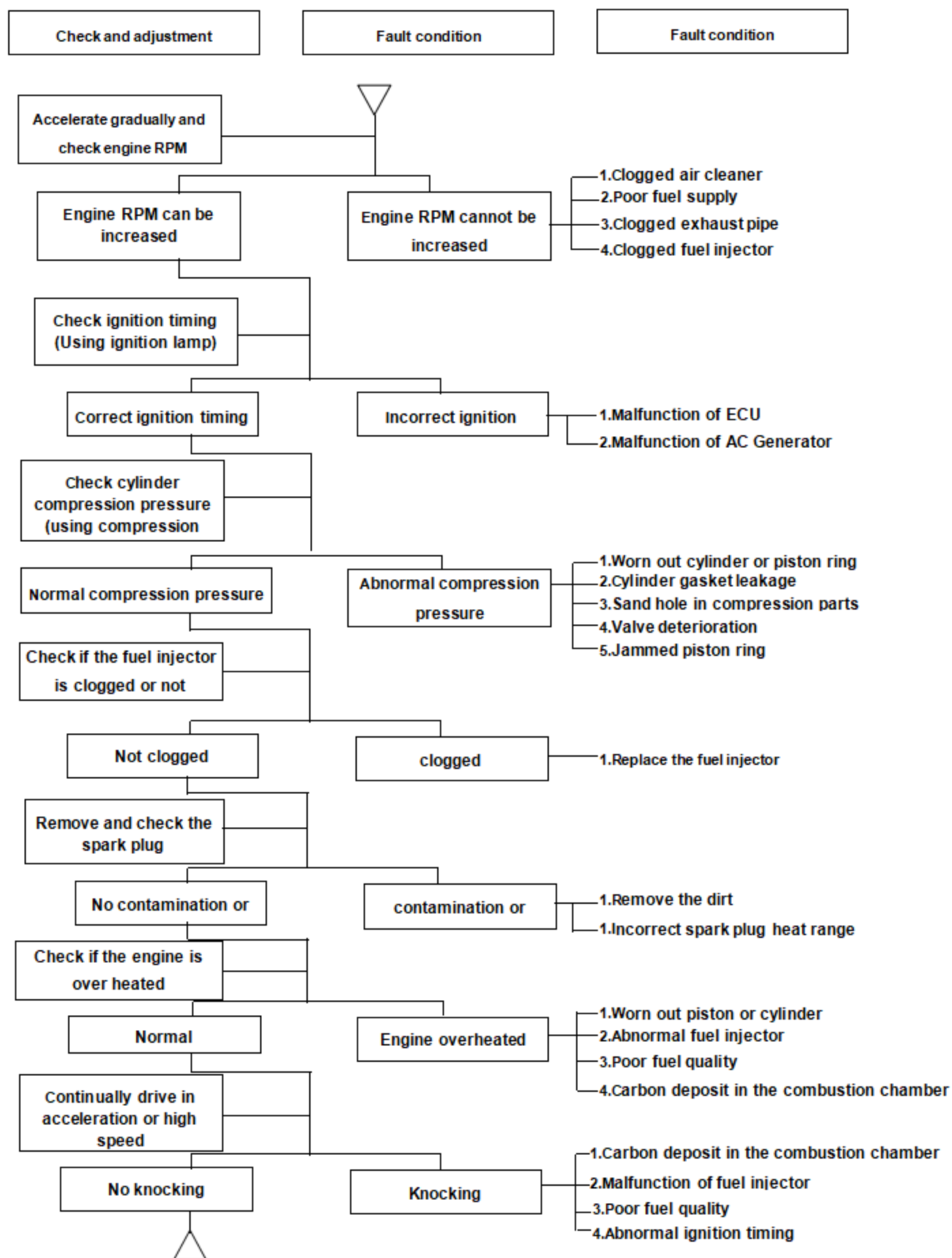


07-Troubleshooting:

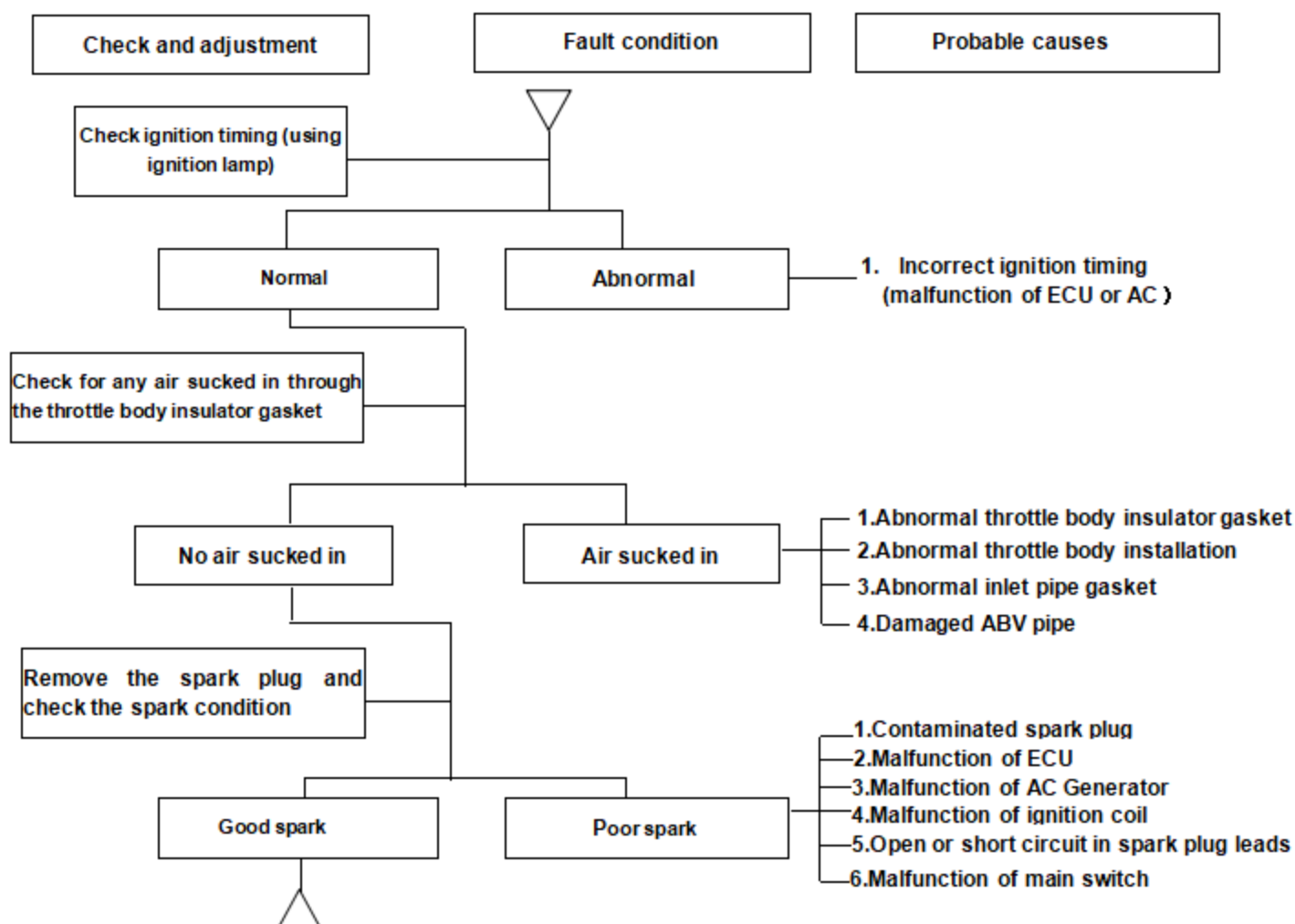
A.Engine cannot be started or difficult to be started



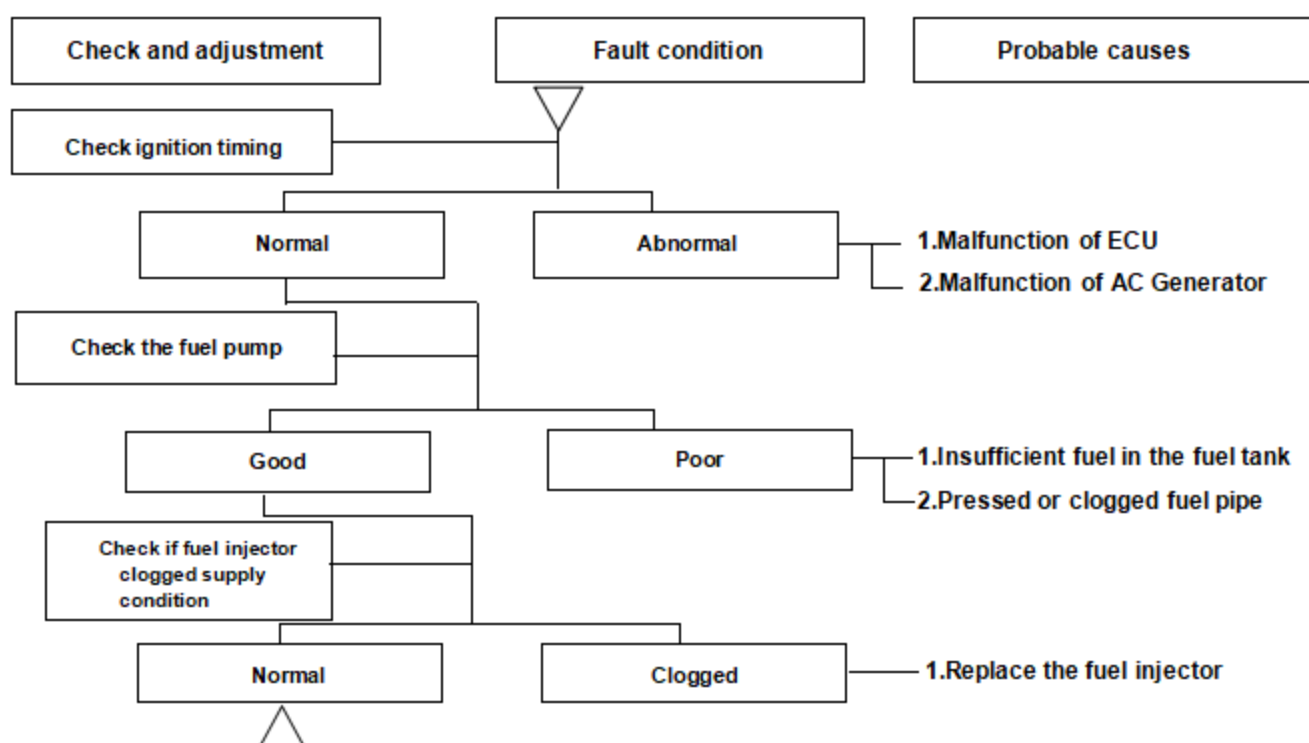
B.Engine runs sluggish (Speed does not pick up, lack of power)



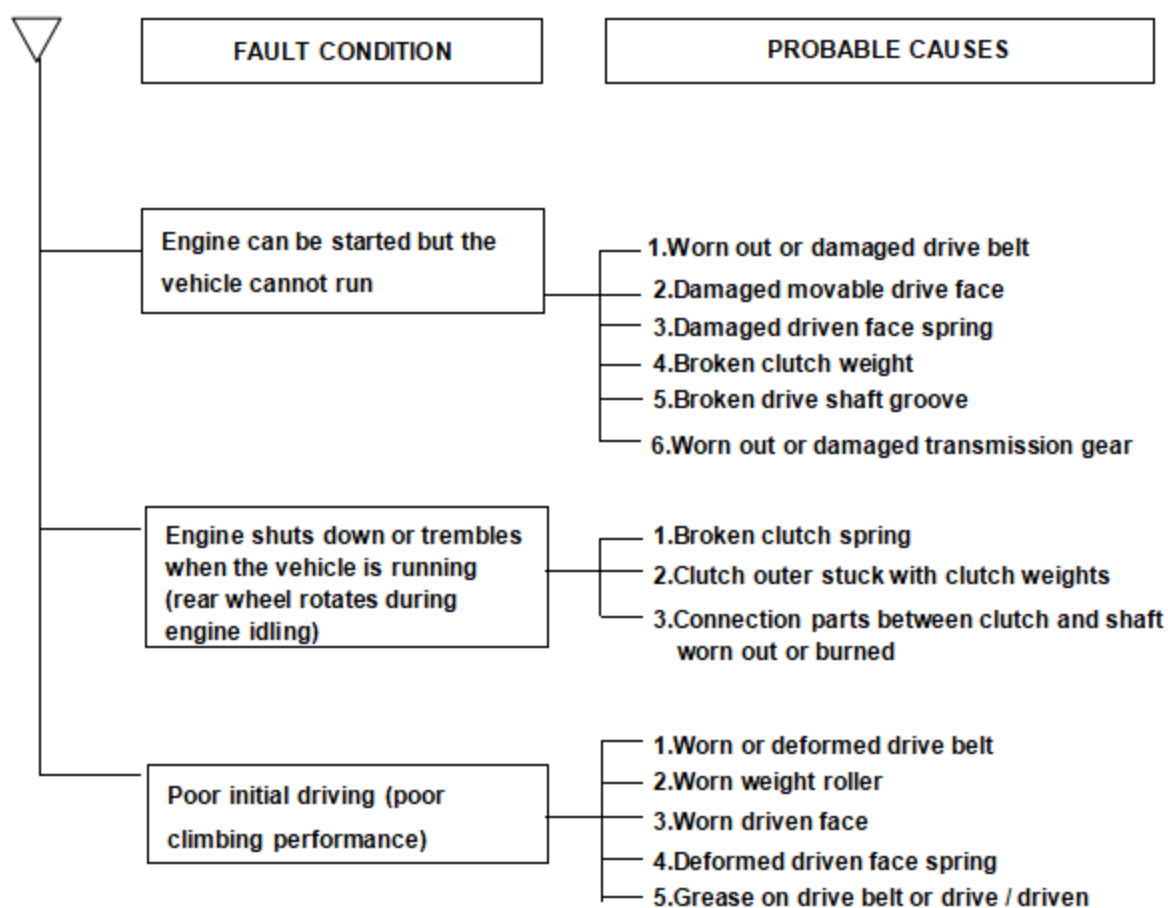
C.Engine runs sluggish (especially in low speed and idling)



D.Engine runs sluggish (High speed)



E. CLUTCH AND DRIVING PULLEY



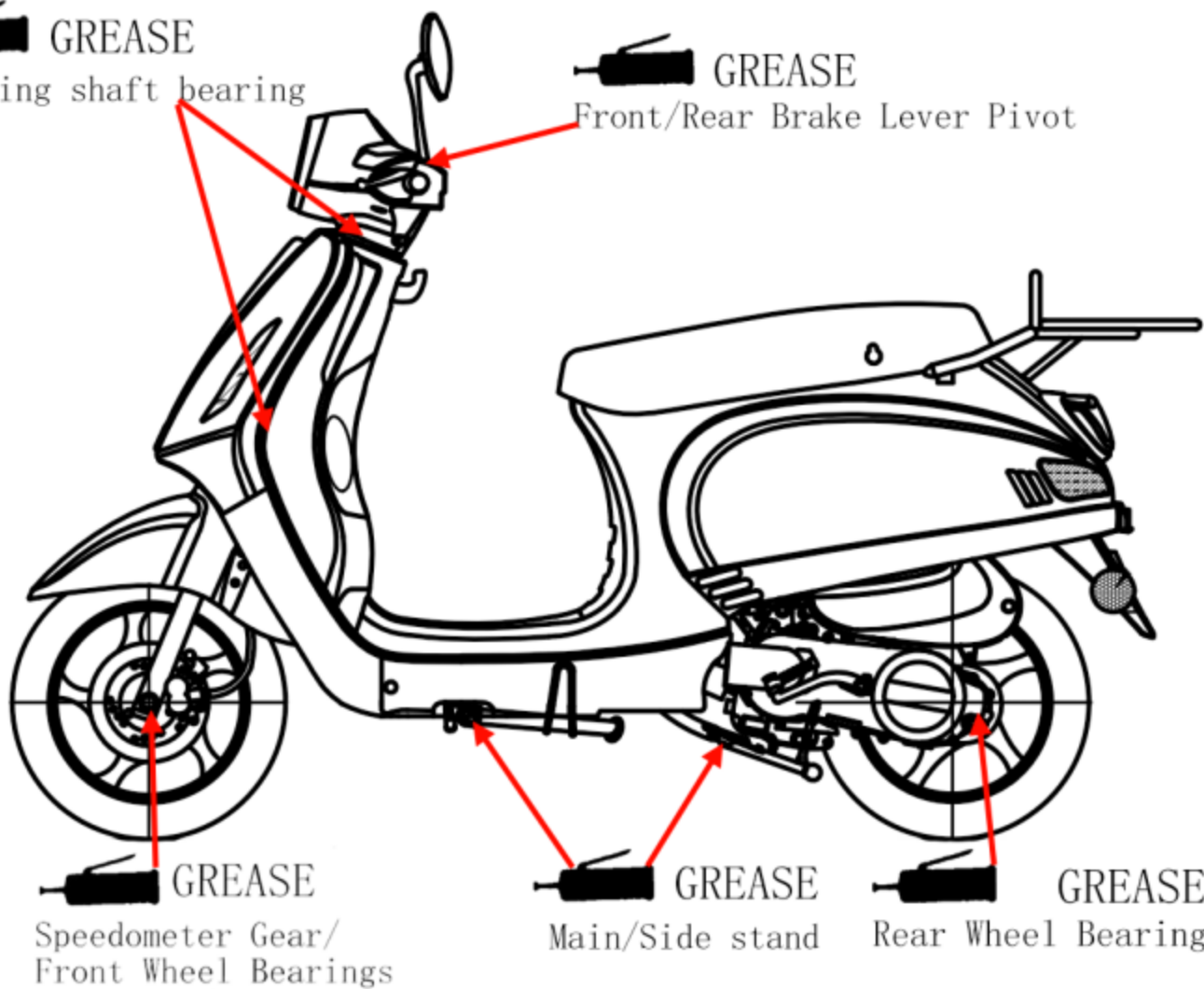
08-Lubrication points:

 GREASE

Steering shaft bearing

 GREASE

Front/Rear Brake Lever Pivot



 GREASE

Speedometer Gear/
Front Wheel Bearings

 GREASE

Main/Side stand

 GREASE

Rear Wheel Bearing

II. Maintenance Information

09-Air Cleaner:

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

2. Remove the air cleaner element;

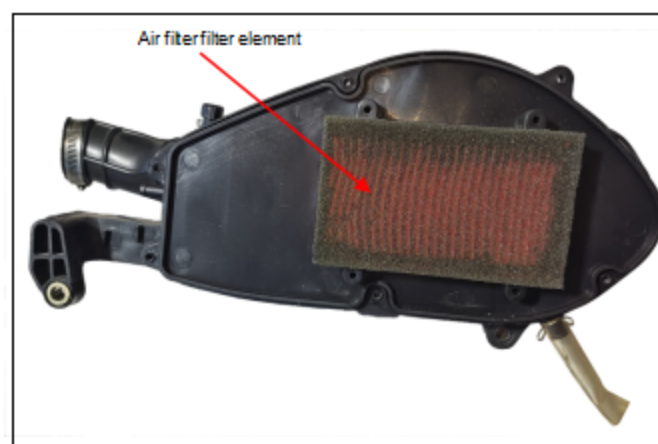


3. Clean air cleaner element:

Use compressed air to remove the adhesion of dirt, if too much dirt, please new replacement.

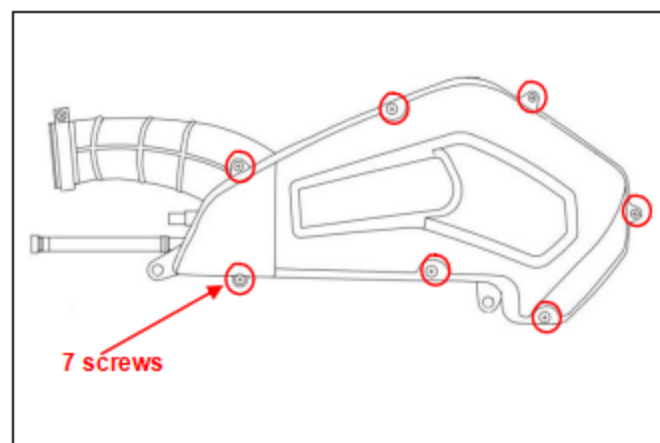
Caution

- The air filter element is made of paper products, must not soak or cleaning by water.



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

2. Remove the air cleaner element;

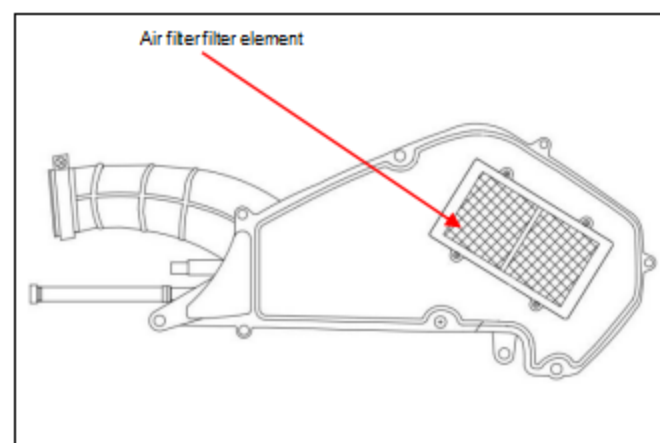


3. Clean air cleaner element:

Use compressed air to remove the adhesion of dirt, if too much dirt, please new replacement.

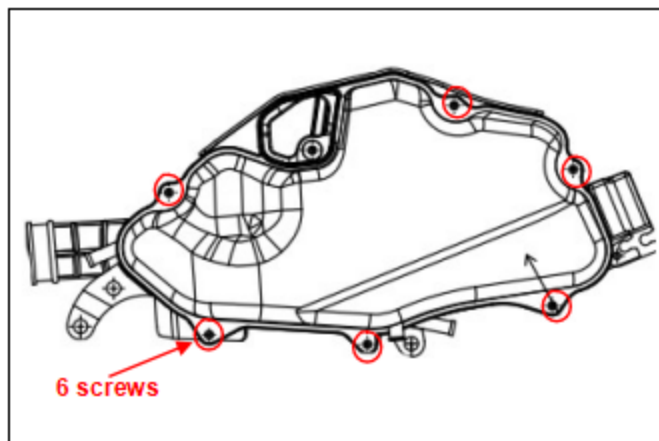
⚠ Caution

- The air filter element is made of paper products, must not soak or cleaning by water.



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

2. Remove the air cleaner element;

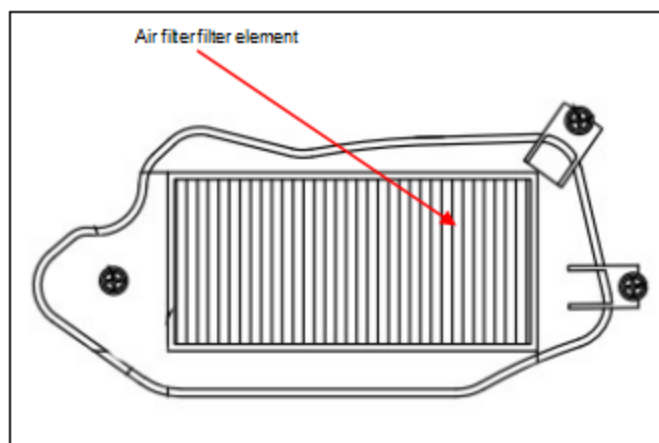


3. Clean air cleaner element:

Use compressed air to remove the adhesion of dirt, if too much dirt, please new replacement.

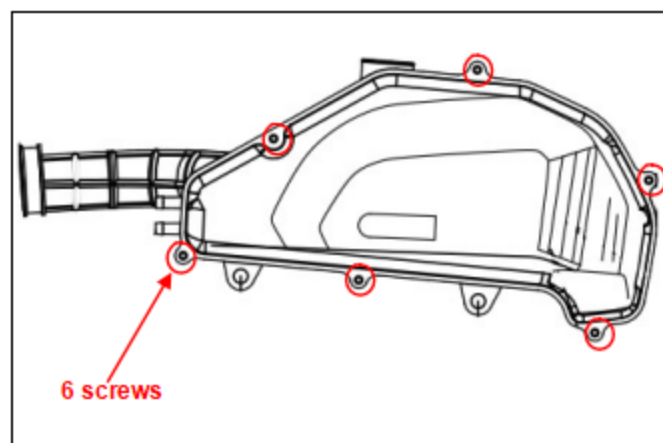
⚠ Caution

- The air filter element is made of paper products, must not soak or cleaning by water.



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

2. Remove the air cleaner element;

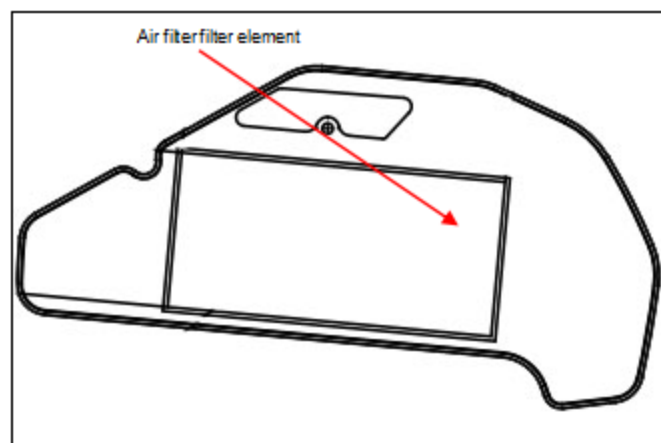


3. Clean air cleaner element:

Use compressed air to remove the adhesion of dirt, if too much dirt, please new replacement.

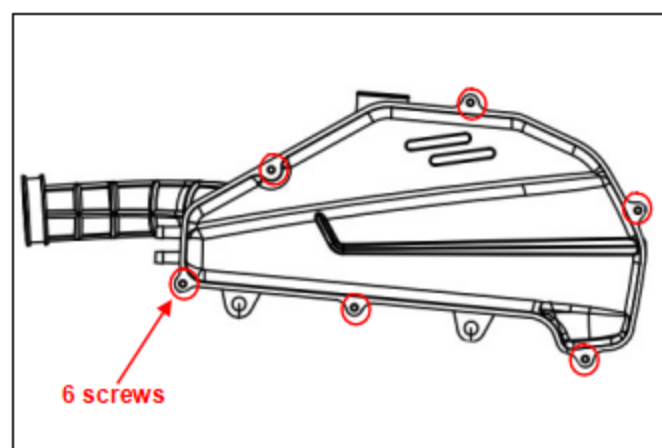
⚠ Caution

- The air filter element is made of paper products, must not soak or cleaning by water.



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

2. Remove the air cleaner element;

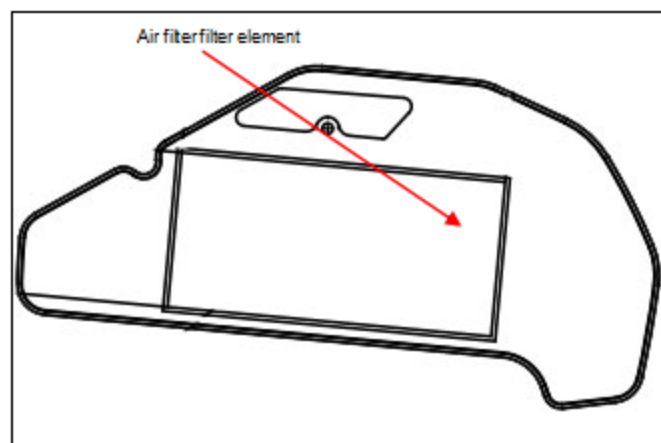


3. Clean air cleaner element:

Use compressed air to remove the adhesion of dirt, if too much dirt, please new replacement.

⚠ Caution

- The air filter element is made of paper products, must not soak or cleaning by water.



10-Steering handle top bearing:

Caution

- Check all wires and cables if they are interfered with the rotation of steering handle bar.
- Lift the front wheel out of ground;
- Turn handle from right to left alternative and check if turning is smoothly;
- If handle turning is uneven and bending, or the handle can be operated in vertical direction, then adjust the handle top bearing.



11-Cushion:

Caution

- Do not ride the motorcycle with poor cushion
- Looseness, wear or damage cushion will make poor stability and drive-ability.



Front cushion

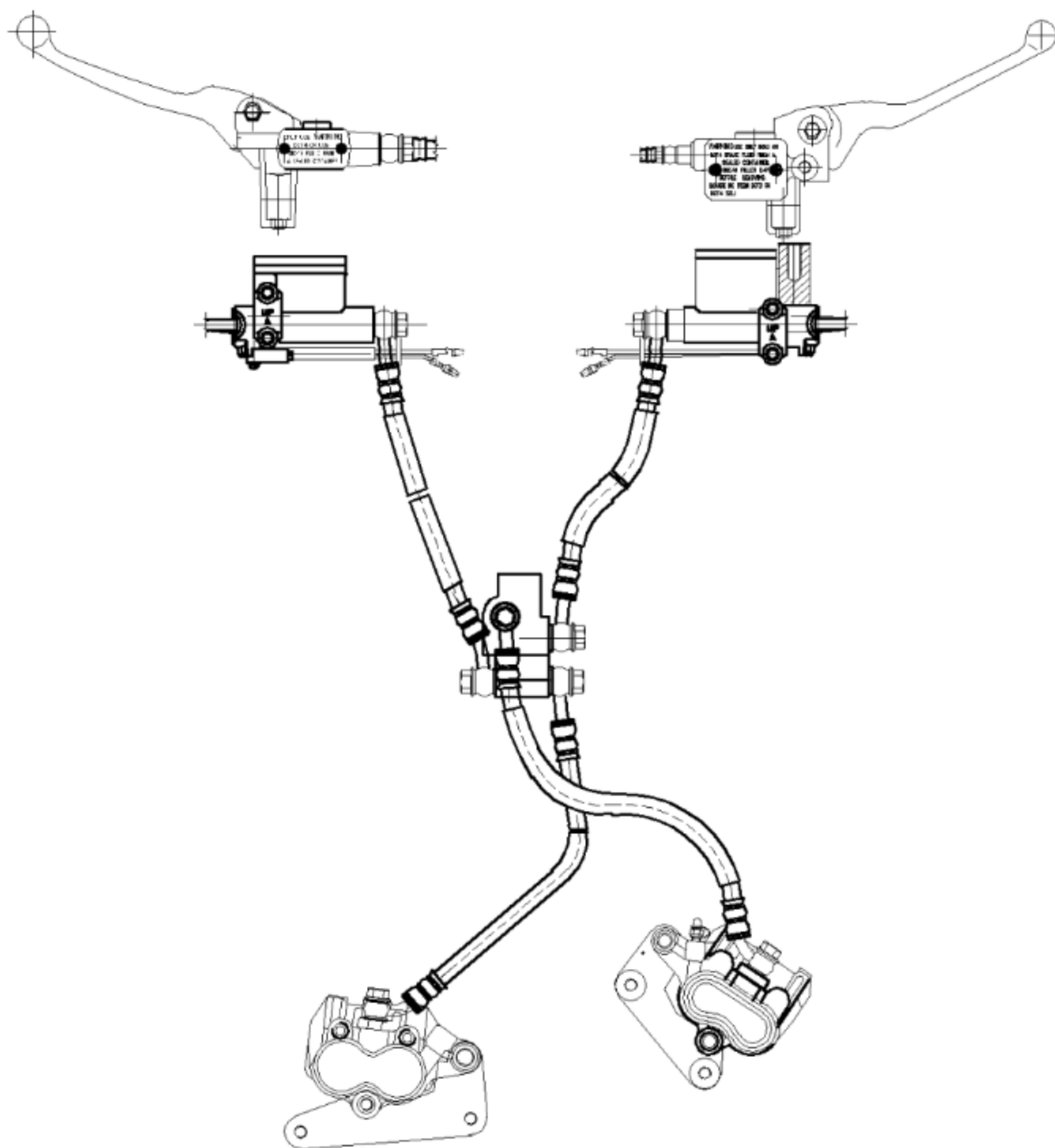
- Press down the front cushion for several times to check it operation;
- Check if it is damage Replace relative parts if damage found;
- Tighten all nuts and bolts

Rear Cushion

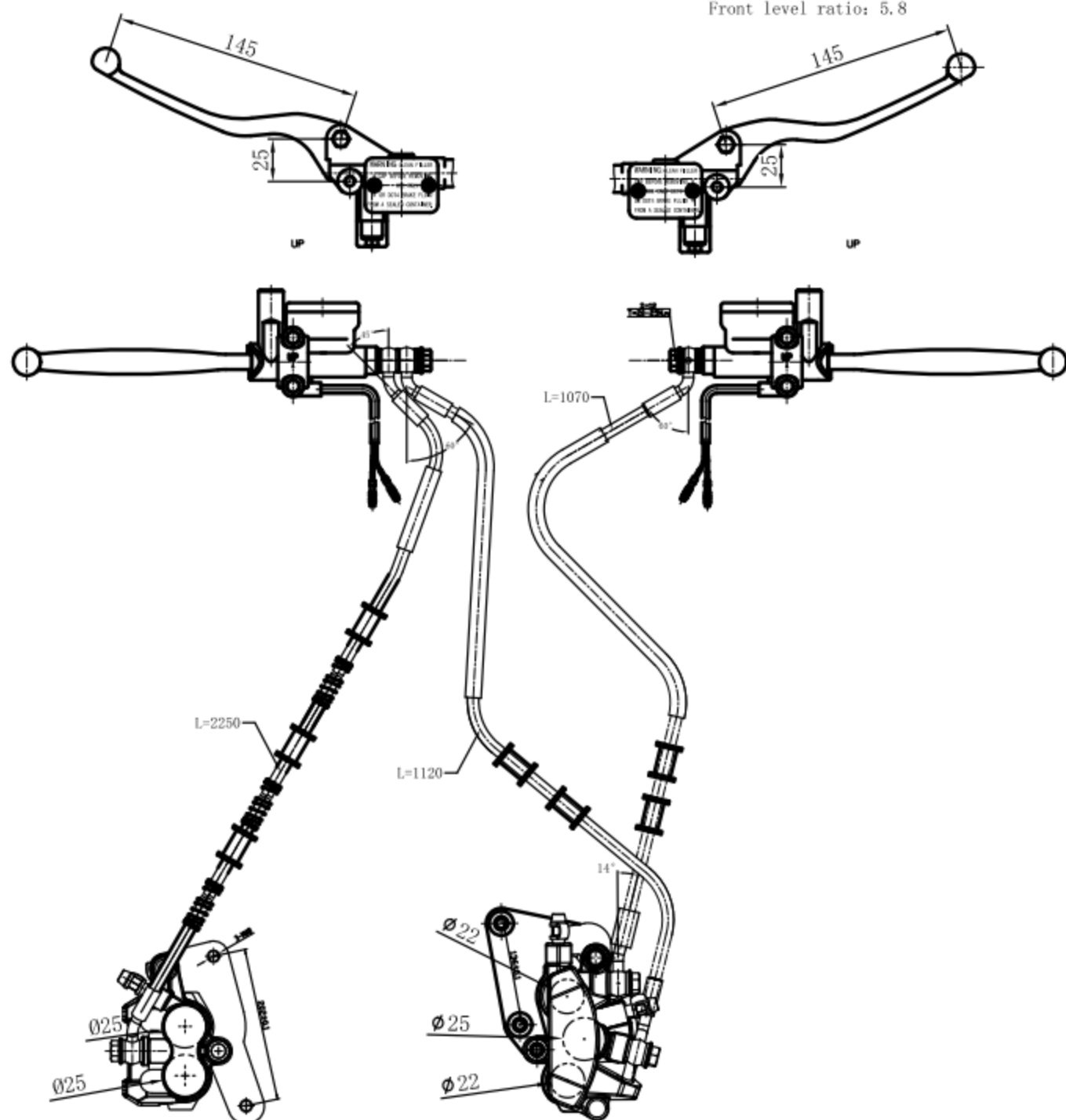
- Press down the front cushion for several times to check it operation;
- Check if it is damage Replace relative parts if damage found;
- Park motorcycle with main stand;
- Turn the rear wheel forcefully and check if engine bracket bushing worn out Replace the bushing if looseness found;
- Tighten all nuts and bolts.

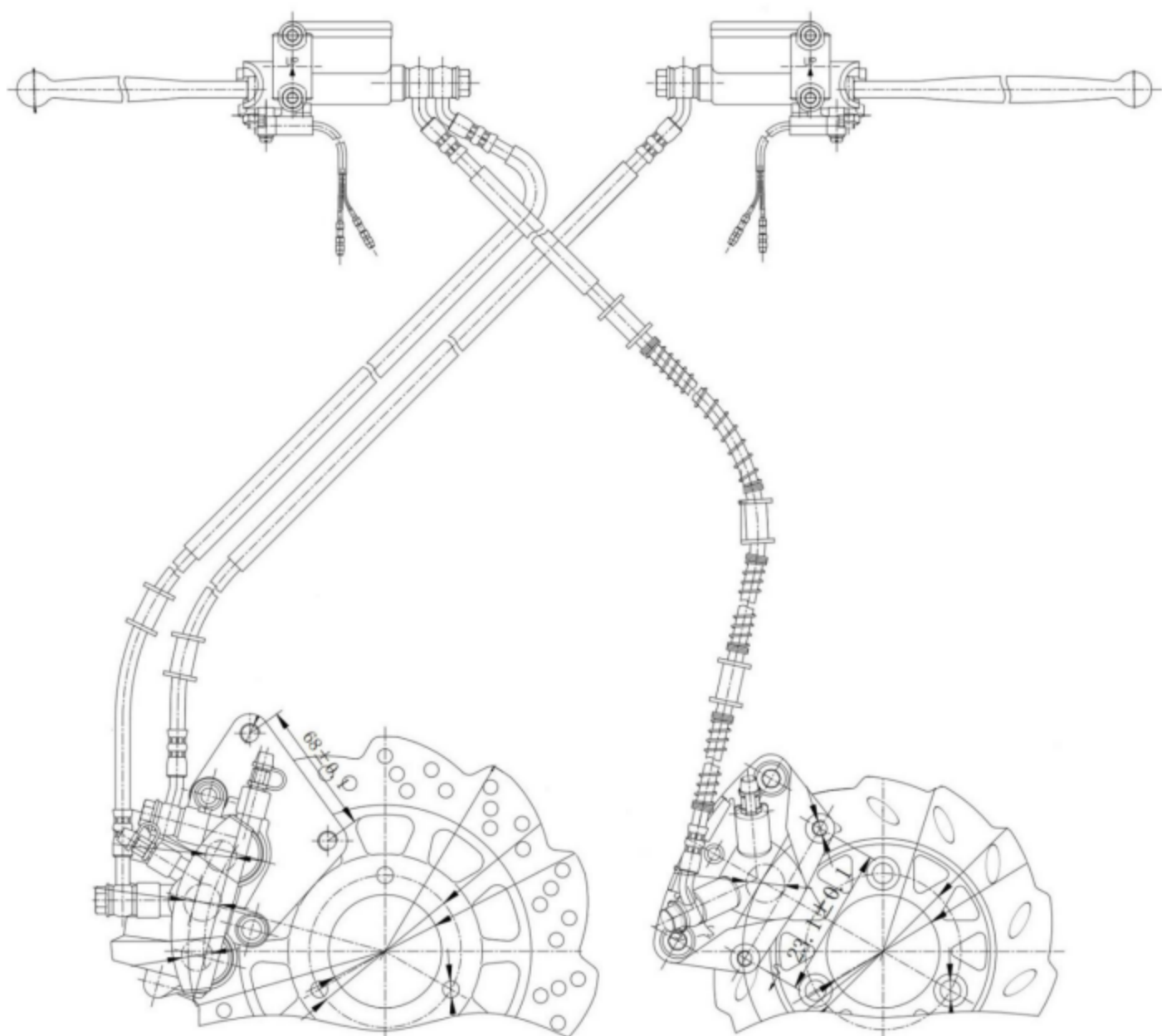


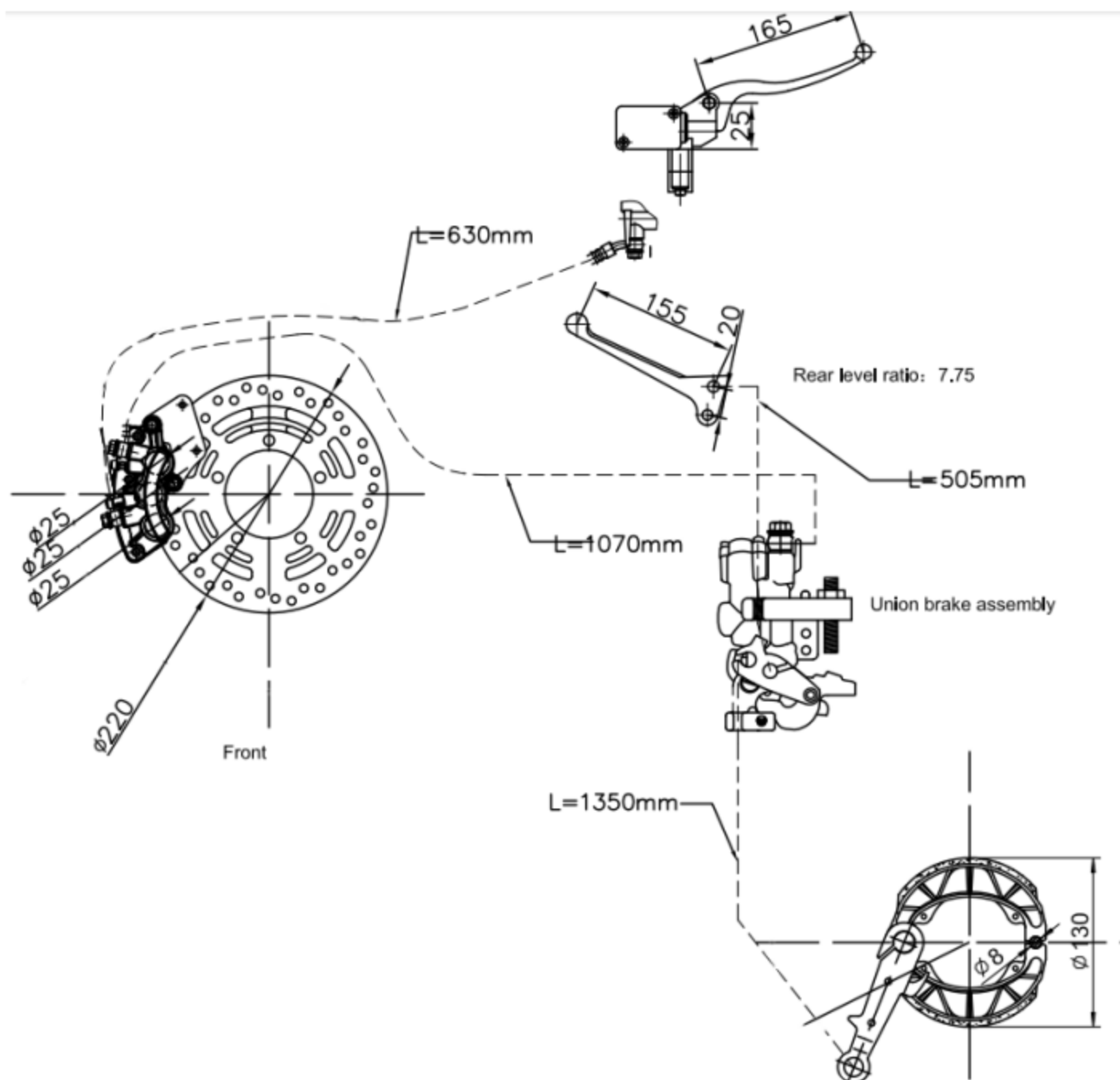
12—Schematic diagram of the braking system:

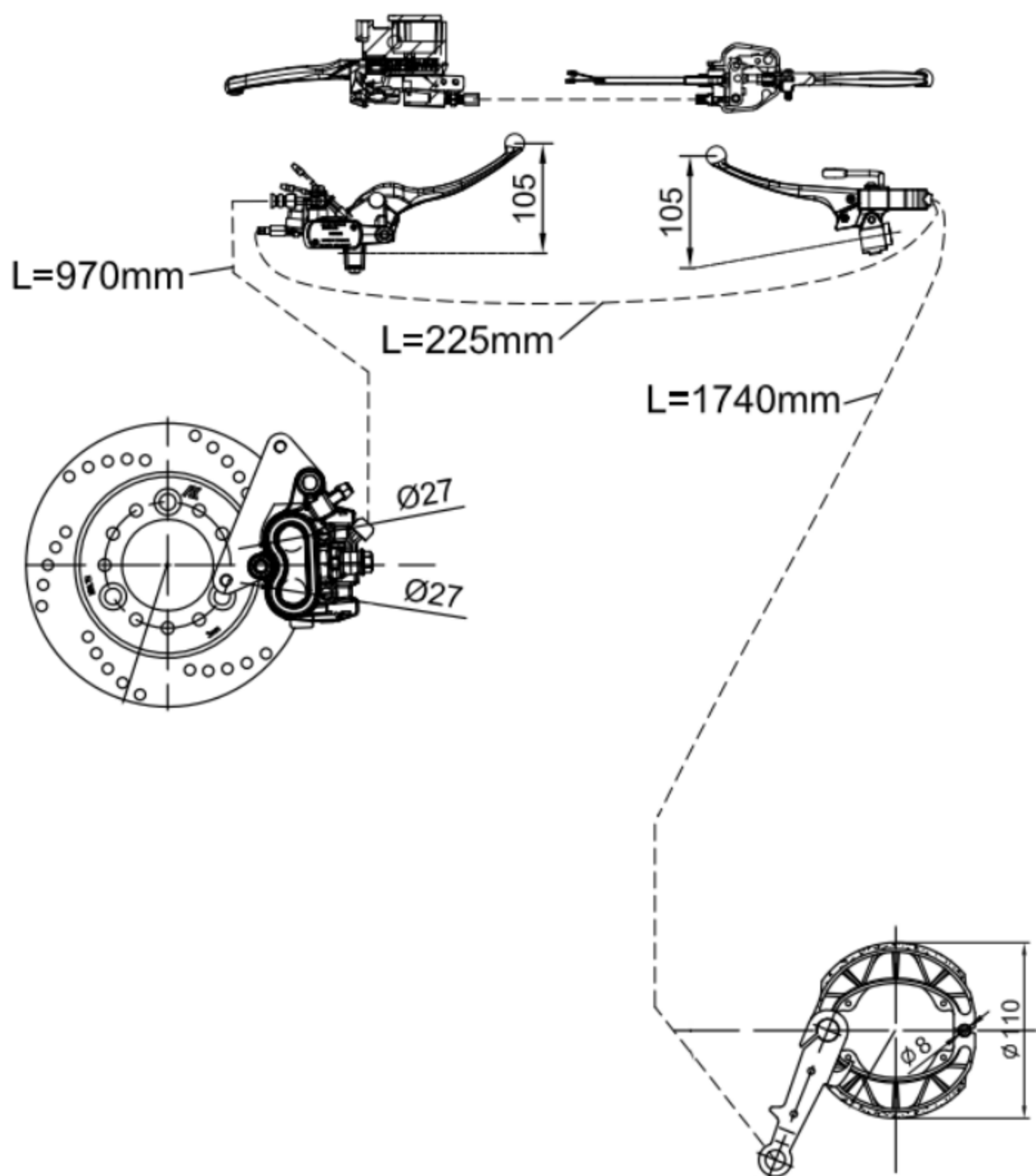


Front level ratio: 5.8









12.1—Precautions in operation:

- Inhaling asbestos may cause disorders of respiration system or cancer, therefore, never use air hose or dry brush to clean brake parts. Use vacuum cleaner or other authorized tool instead.

Caution

- The brake caliper can be removed without removing the hydraulic system;
- After the hydraulic system is removed, or the brake system is felt to be too soft, bleed the hydraulic system;
- While refilling brake fluid, care should be taken not to let the foreign material entering into the brake system;
- Do not spill brake fluid on the painted surfaces, plastic or rubber parts to avoid damage;
- Check the operation of the brake system before riding.

Specifications

unit: mm

Item	Standard	Limit
The thickness of front brake disk	3.500	2.500
The thickness of rear brake disk	3.500	2.500
Front and rear brake disk eccentricity	< 0.100	0.300
Front brake master cylinder inner diameter	$12.7^{+0.055}_0$	12.765
Front brake master cylinder piston outer diameter	$12.7^{+0.055}_0$	12.765
Rear brake master cylinder inner diameter	$12.7^{+0.055}_0$	12.765
Rear brake master cylinder piston outer diameter	$12.7^{+0.055}_0$	12.765
Thickness of front brake lining	6.000	2.000
Thickness of rear brake lining	6.000	2.000

Torque values:

Brake hose bolts:	3.0~4.0kgf.m
Bolt for front brake caliper:	2.9~3.5kgf.m
Brake lever nut:	0.8~1.0kgf.m
Air-bleed valve:	0.8~1.0kgf.m

12.2—Troubleshooting:

Soft brake lever

1. Air inside the hydraulic system
2. Hydraulic system leaking
3. Worn master piston
4. Worn brake pad
5. Poor brake caliper
6. Worn brake lining/disk
7. Low brake fluid
8. Blocked brake hose
9. Warp/bent brake disk
10. Bent brake lever

Hard operation of brake lever

11. Blocked brake system
12. Poor brake caliper
13. Blocked brake pipe
14. Seized/worn master cylinder piston
15. Bent brake lever

Uneven brake

16. Dirty brake lining/disk
17. Poor wheel alignment
18. Clogged brake hose
19. Deformed or warped brake disk
20. Restricted brake hose and fittings

Tight brake

21. Dirty brake lining/disk
22. Poor wheel alignment
23. Deformed or warped brake disk

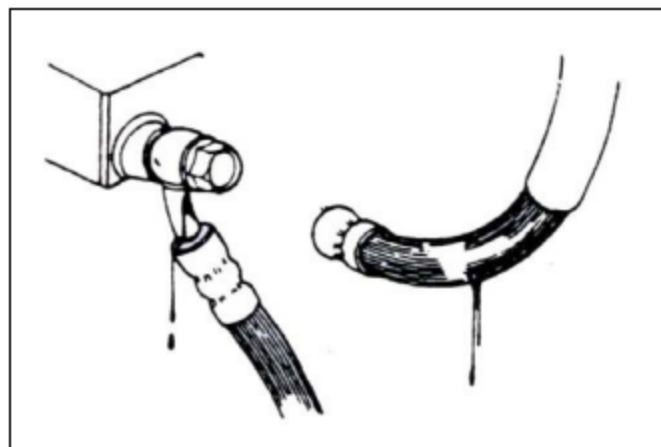
Brake noise

24. Dirty lining
25. Deformed brake disk
26. Poor brake caliper installation
27. Imbalance brake disk or wheel

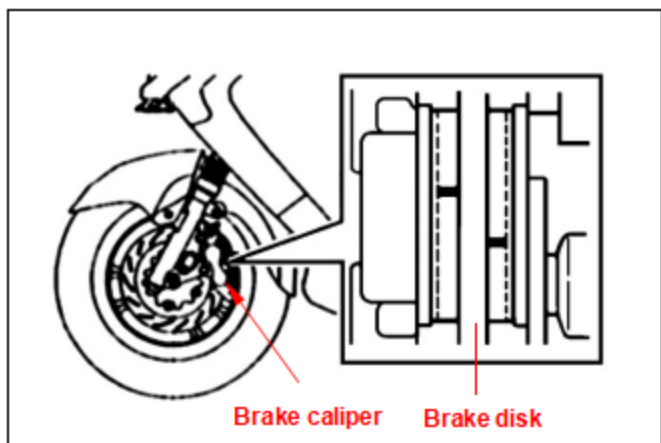
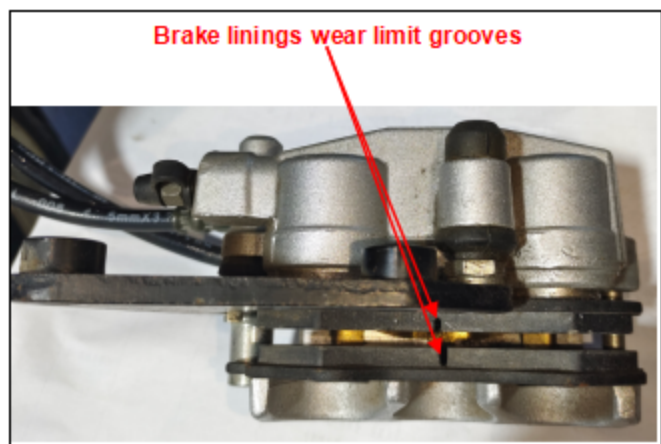
12.3-Disk brake system inspection:

Inspection

- By visual examination whether divulges or the damage, with spanner inspection brake tube seam whether becomes less crowded, and the inspection handle bar turn right or turn left, or pressure the cushion, whether besides the pipeline protection department, whether there is interferes, contacts other parts of;



- Remove the front brake pad cap;
- Check the brake from behind the brake caliper;
- The brake pad must be replaced with new lining when the brake pad wear limit reaches the brake disk;
- Park the motorcycle on a level ground, and check if fluid level is under the "LOWER" mark;
- Recommended Brake Fluid: WELL RUN BRAKE OIL (DOT 3).



Caution

- The vehicles inclined or just stop, the survey oil level could not be accurate, had to settle the 3~5 minute ;
- In order to prevent has the chemical change, please do not use counterfeiting or other unclear trade marks brake fluid ;
- Uses by all means must with the trade mark brake fluid, guarantees the ghost vehicle efficiency。



12.4—Add brake fluid:

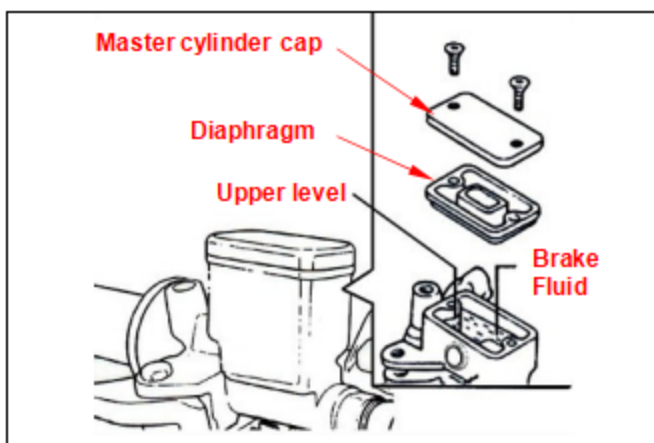
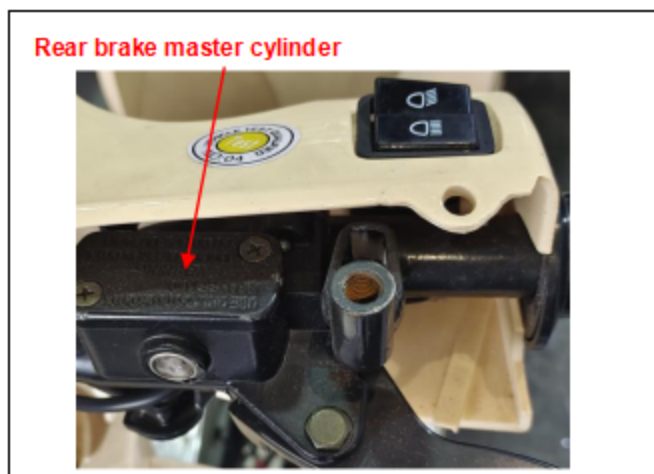
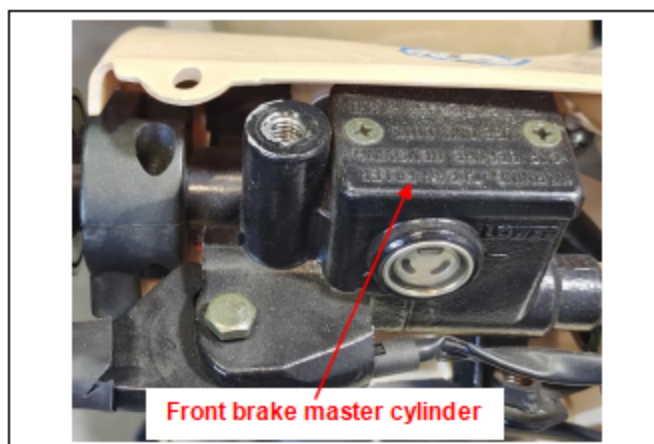
- Before the brake fluid reservoir is removed, turn the handle so that the brake fluid reservoir becomes horizontal, and then remove the brake fluid reservoir.
- When maintenance brake system, will be supposed to paint the surface or the rubber parts catches up by the rags.

Caution

- Supplement brake fluid please do not surpass the upper limit, spilled brake fluid on painted surfaces, plastic or rubber components may result in their damages.
- Remove the master cylinder cap and diaphragm;
- Increases the high quality brake fluid, uses by all means must with the trade mark brake fluid joins in the master cylinder;
- Clean the dirty brake disk.

Caution

- The dirty brake lining or disk will reduce the brake performance.
- To mixed non-compatible brake fluid will reduce brake performance.
- Foreign materials will block the system causing brake performance to be reduced or totally lost.



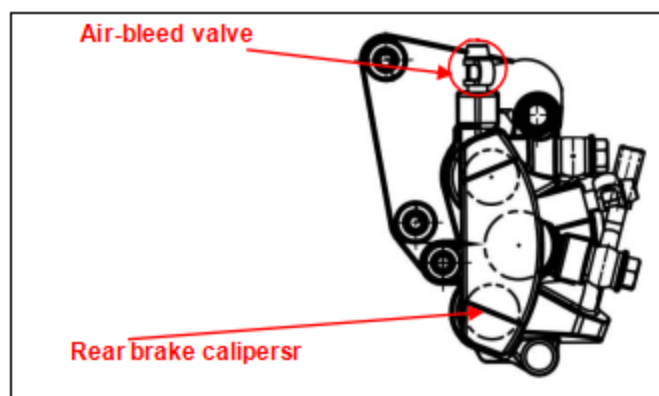
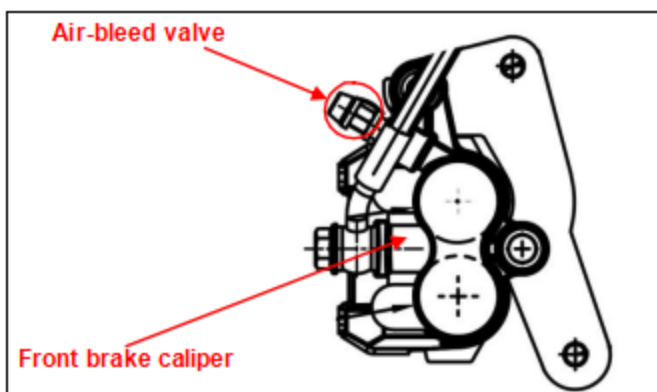
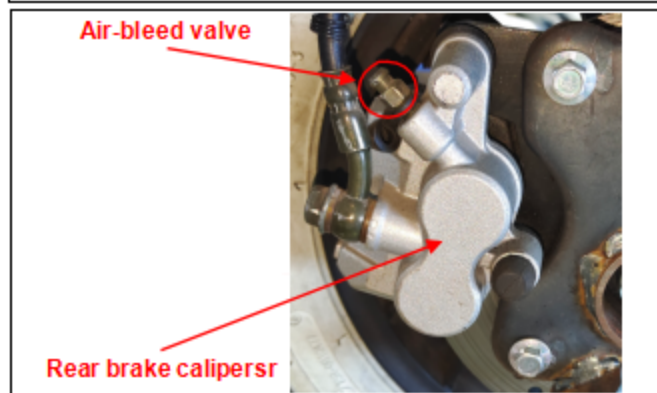
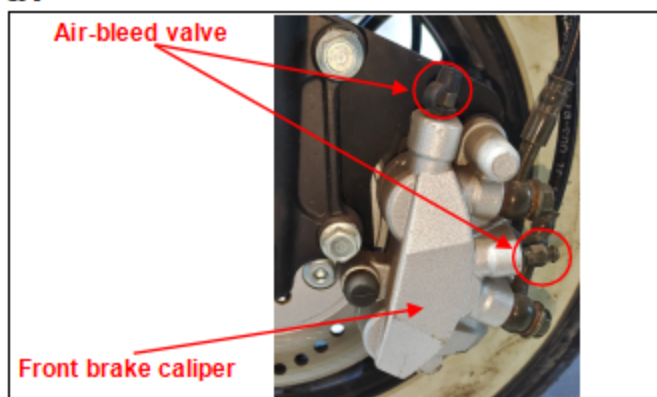
12.5-Brake fluid replacement/Air-bleed:

- 1.Connect drain hose to air-bleed valve;
- 2.Open the drain valve on the calipers and delay valve the brake lever until the old brake fluid is entirely drained out;
- 3.Close the drain valve and add specified brake fluid into the brake master cylinder.

Recommended brake fluid:

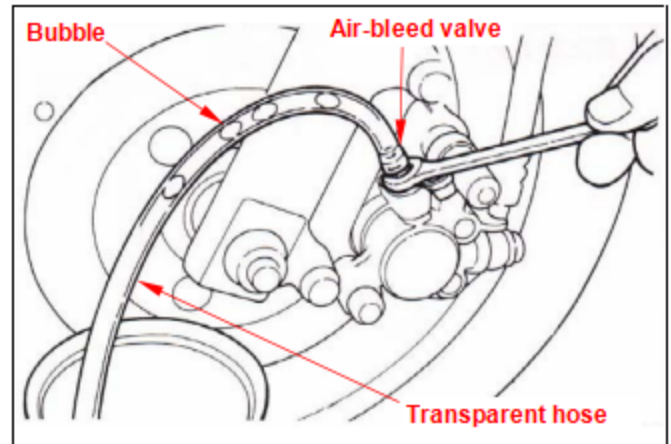
WELLRUN DOT 3 brake fluid

- 4.Connect one end of transparent hose to the drain valve, and put the other end into a container;
- 5.Open the drain valve around 1/4 turns, and at the same time hold the brake lever until there is no air bubble in the drain hose and also feeling resistance on the brake lever;
- 6.Close the drain valve when finishing the brake system refilling fluid procedure, and operate the brake lever to check whether air bubble is in brake system or not;
- 7.If brake is still soft, please bleed the.
 - 7.1.Tightly hold the brake lever and open the drain valve around 1/4 turns, and then close the valve;
 - 7.2.Slowly release the brake lever, and wait for a few seconds until it reaches its top position;
 - 7.3.Repeat the steps 1 and 2 until there is no air bubble at the end of the hose;
 - 7.4.Tightly close the drain valve;
 - 7.5.Make sure the brake fluid is in the UPPER level of the master cylinder, and refill the fluid if necessary;
 - 7.6.Cover the cap.



⚠ Caution

- Discharge air from the lower pump;
- The brake fluid can be replaced by machine, with shorter time and less bubbles.
- Do not release the brake lever before the drain valve is closed.
- Always check the brake fluid level when carrying out the air bleeding procedure to avoid air enter into the system.



12.6-Front brake caliper:

Removal

- Place a container under the brake caliper, and loosen the brake hose bolts and finally remove the brake hoses;

⚠ Caution

- Do not spill brake fluid on painted surfaces.
- Remove two caliper mounting bolts and the caliper.

Installation

- Install the brake caliper and tighten the mounting bolts.

Torque: 2.9~3.5kgf.m

⚠ Caution

- Use M8 x 35 mm flange bolt only.
- Long bolt will impair the operation of brake disk.

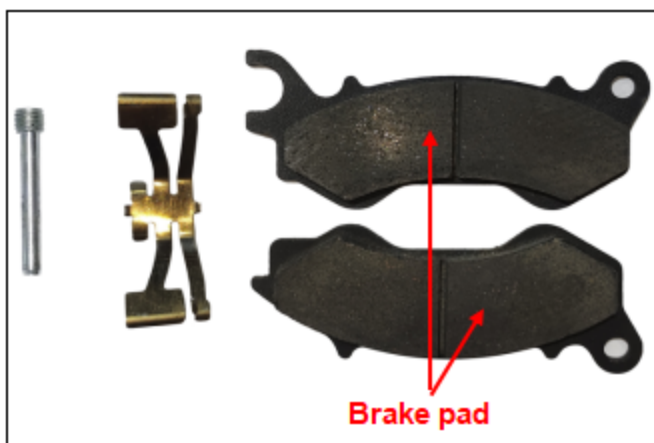
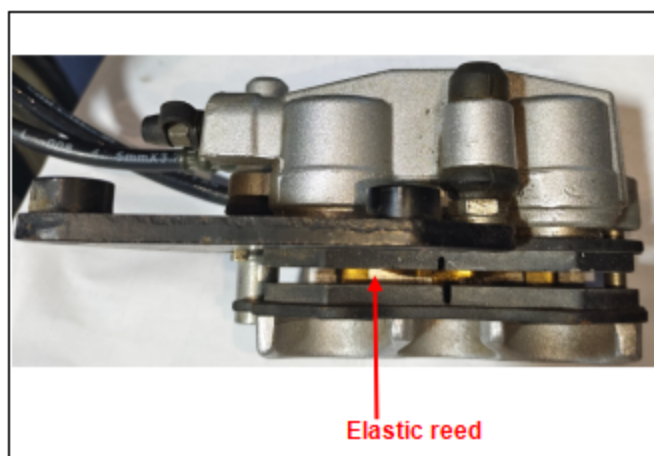
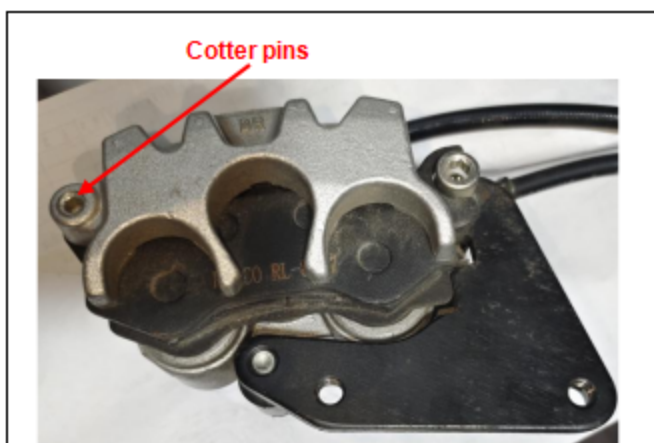
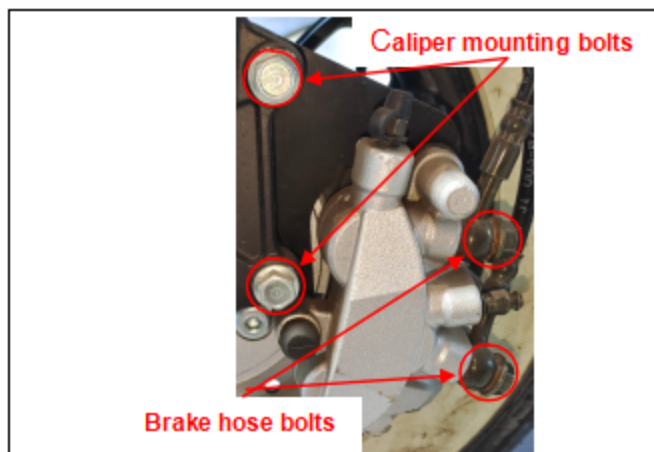
- Use two seal washers and hose bolts to lock the hoses and brake caliper in place.

Torque: 3.0~4.0kgf.m

- Refill up the brake fluid to the reservoir and make necessary air bleeding.

Brake pad replacement

- Remove brake caliper;
- Remove brake pads;
- Install the Elastic reed;
- Install the Elastic reed, new brake pads onto brake caliper;
- tighten the Cotter pins;



12.7-Rear Brake Caliper:

Removal

- Place a container under the brake caliper, and loosen the brake hose bolts and finally remove the brake hoses.

⚠ Caution

- Do not spill brake fluid on painted surfaces.
- Remove two caliper mounting bolts and the caliper.

Installation

- Install the brake caliper and tighten the mounting bolts.

Torque: 2.9~3.5kgf.m

⚠ Caution

- Use M8 x 35 mm flange bolt only.
- Long bolt will impair the operation of brake disk.

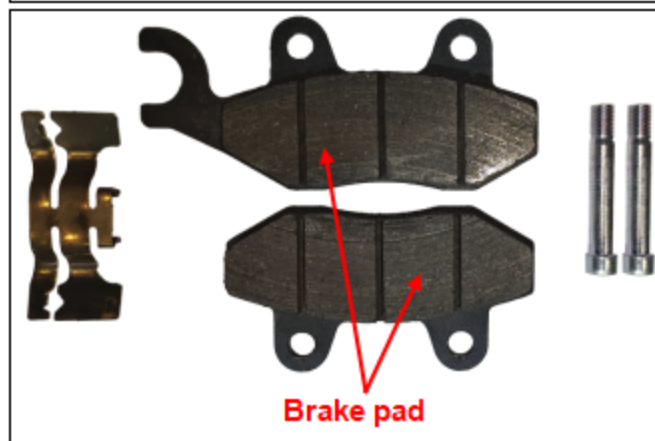
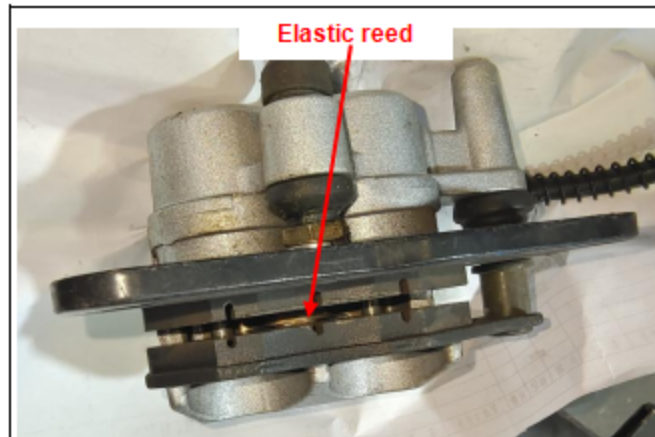
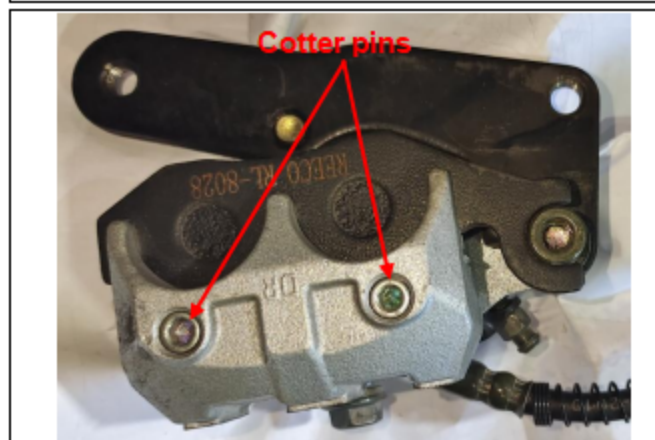
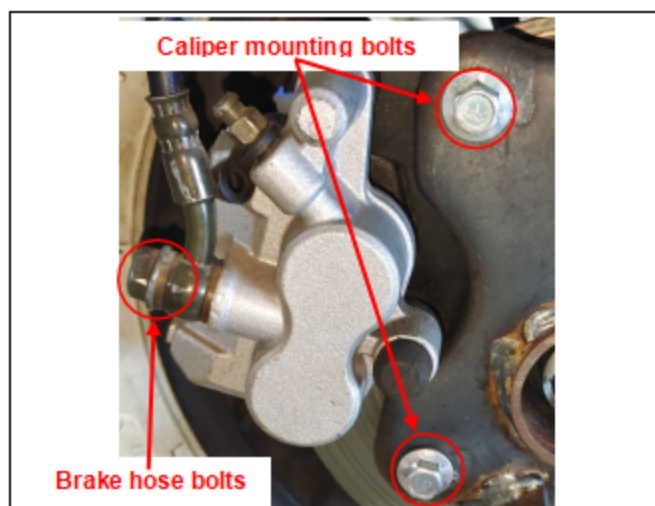
- Use two seal washers and hose bolts to lock the hoses and brake caliper in place.

Torque: 3.0~4.0kgf.m

- Refill up the brake fluid to the reservoir and make necessary air bleeding.

Brake pad replacement

- Remove brake caliper;
- Remove brake pads;
- Install the Elastic reed;
- Install the Elastic reed, new brake pads onto brake caliper;
- tighten the Cotter pins;



Removal:

- Release the rear brake cable adjusting nut, so that the brake rocker arm is in a relaxed state;

- Remove the rear wheel nut and Bolts shown,
Then remove the rear wheel;

- Remove the rear brake shoe assembly.

Installation:

- Install the rear brake shoe block assembly;
- Install the rear wheel and rear wheel nuts;

Torque: 10.2-13.8kgf.m

- Install the rear brake cable adjusting nut and adjust the brake rocker arm to proper position.

Caution

- When the brake rocker arm is adjusted to the limit position, the rear wheel brake is weak or the braking distance increases, please replace the rear brake shoe.

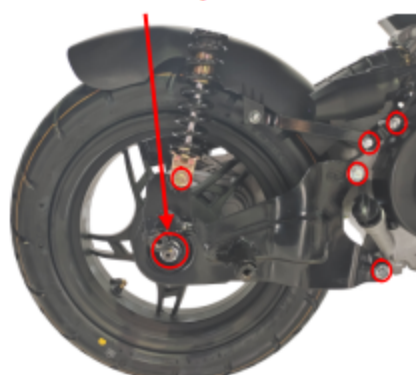
Rear brake shoe assembly replacement:

- Check the friction plate. If it exceeds the wear limit, replace it with a new rear brake shoe assembly.

Rear brake cable adjustment nut



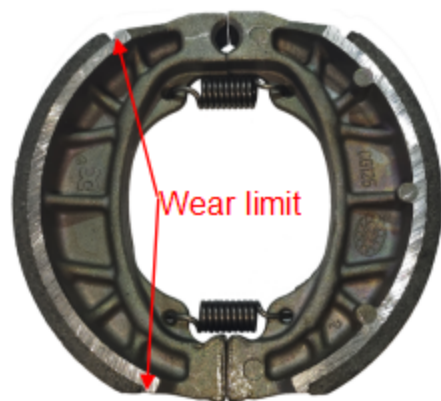
Rear brake cable adjustment nut× 1



Rear brake shoe assy



Wear limit



12.8—Brake Disk: Inspection

- Visually check the brake disk for wear or break.
- Measure the thickness of the disk at several places.
- Replace the disk if it has exceeded the service limit.

● Allowable limit:

Front brake disk 2.5mm

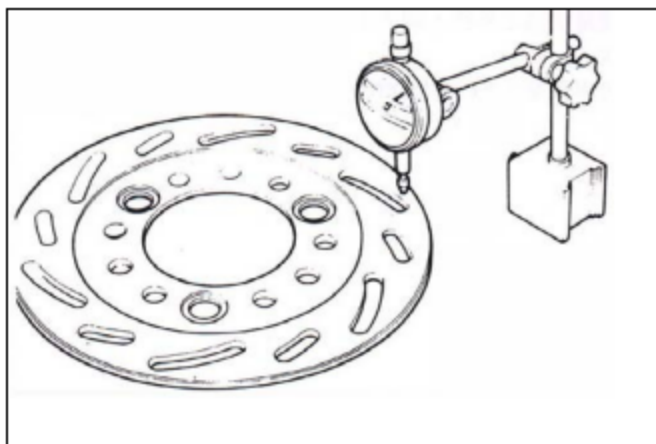
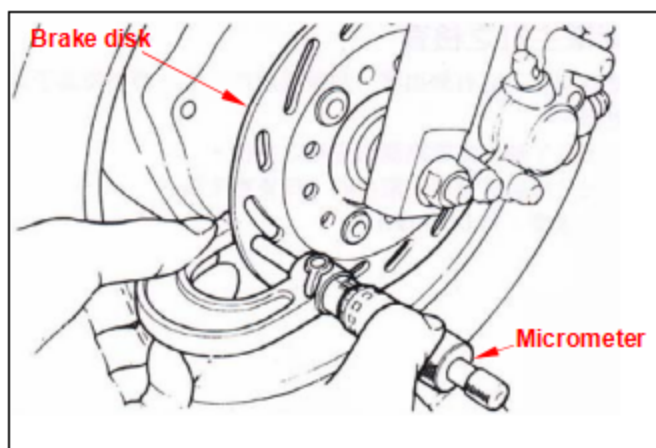
Rear brake disk 2.5mm

- Remove the brake disk from wheel.
- Check the disk for deformation and bend.

● Allowable limit: 0.30 mm

⚠ Caution

- The dirty brake lining or disk will reduce the brake performance.
- Brake lining includes the asbestos ingredient, cannot use the air-gun to be clean, the operator should dress the mouthpiece and the glove, use vacuum cleaner clean it.



12.9—Master Cylinder:

Master Cylinder Removal

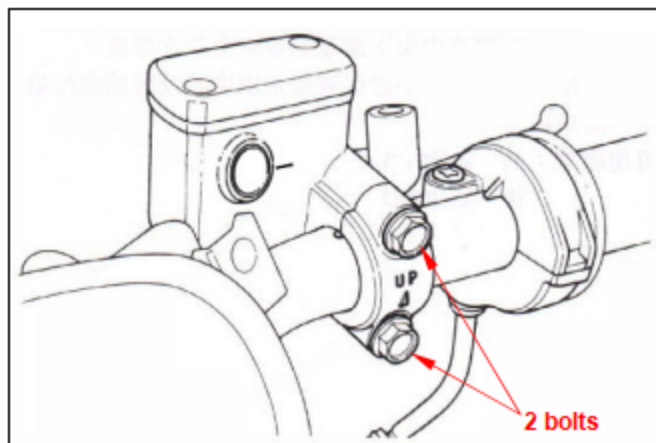
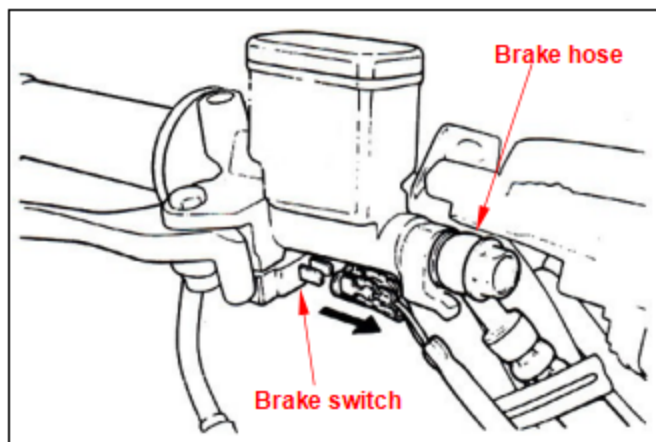
⚠ Caution

- Do not let foreign materials enter into the cylinder.

⚠ Caution

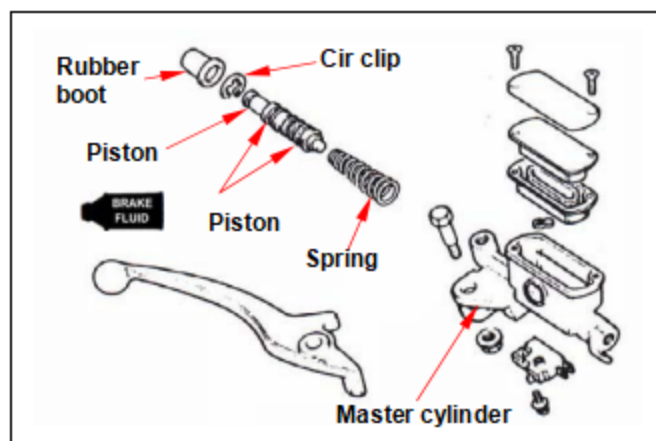
- The whole set of master cylinder, piston, spring, diaphragm and cir clip should be replaced as a set.

- Remove the handlebar covers;
- Remove the leads of brake light switch;
- Drain out the brake fluid;
- Remove the brake lever from the brake master



cylinder;

- Remove the brake hose;
- Remove the master cylinder bolts and the master cylinder.
- Remove the rubber pad;
- Remove the cir clip;
- Remove the piston and the spring;
- Clean the master cylinder with recommended brake fluid.



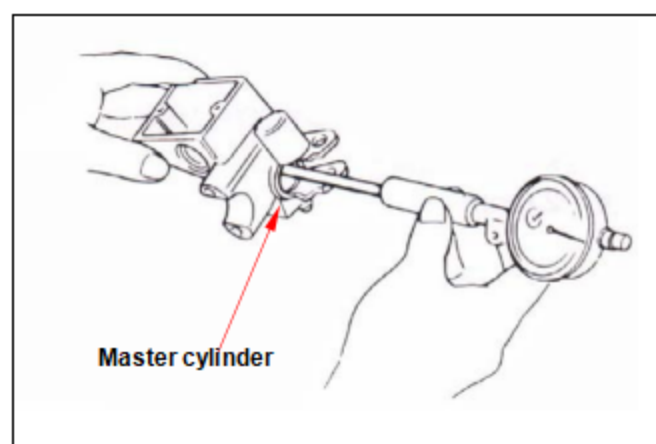
Master Cylinder Inspection:

- Check the master cylinder for damage or scratch, Replace it if necessary;
- Measure the cylinder inner diameter at several points along both X and Y directions;
- Replace the cylinder if the measured values exceed allowable limit.

- **Allowable limit:**

Front brake: 12.755 mm

Rear brake: 12.755 mm



Measure the outer diameter of the piston:

- Replace the piston if its measured value exceeds allowable limit.

- **Allowable limit:**

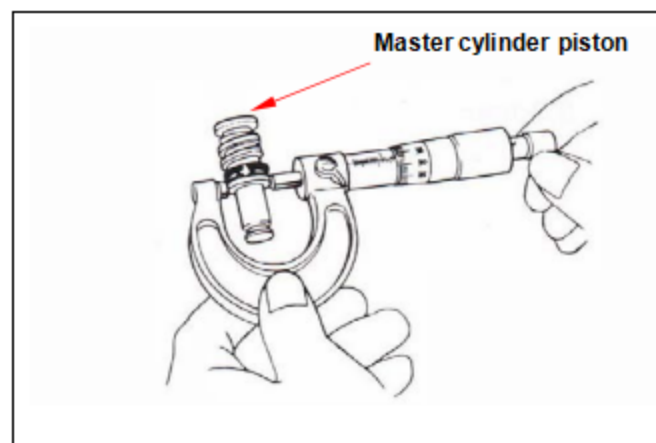
Front brake: 12.645 mm

Rear brake : 12.645 mm

Master Cylinder Assembly

⚠ Caution

- It is necessary to replace the whole set comprising piston, spring, piston cup, and cir clip.
- Make sure there is no dust on all components before assembling.
- Apply clean brake fluid to the piston cup, and

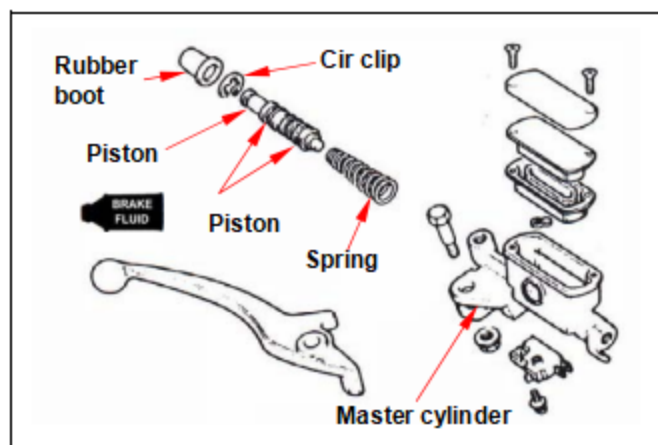


then install the cup onto the piston;

- Install the larger end of the spring onto the master cylinder;
- The master cup's cavity should be face inside of master cylinder when installing the master cup;
- Install the cir clip.

⚠ Caution

- Never install cup lip in the opposite direction.
- Make sure the cir clip is seated securely in the groove.

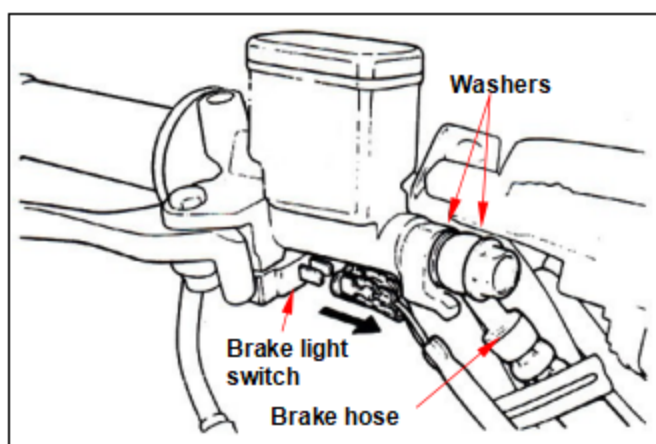
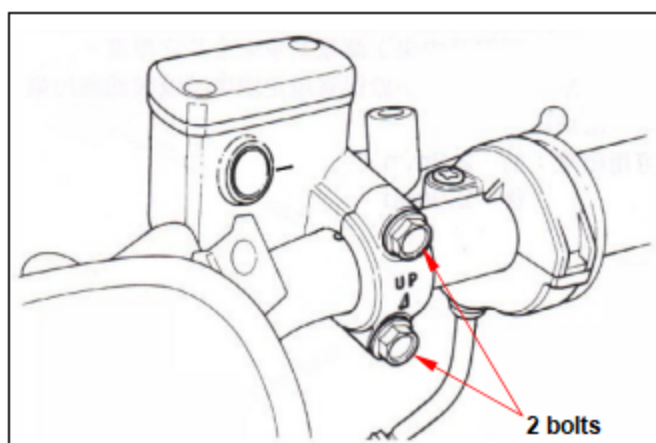


Master Cylinder Install:

- Install the rubber pad into the groove correctly;
- Place the master cylinder onto handlebar, and install the bolts;
- Install the brake lever, and connect leads to brake light switch.
- Connect brake hoses with 2 new washers;
- Tighten the brake hose bolt to the specified torque value;
- Make sure the hose is installed correctly;
- Install all wires, hoses, and components carefully so avoid to twisting them together.

⚠ Caution

- Kink of brake leads, hose or pipe may reduce brake performance.
- Improper routing may damage leads, hoses or pipes.



Add specified brake fluid and bleed the system

III. Engine maintenance

13-Main characteristics:

1. Using dry type, shoe type clutch and automatic centrifugal V-belt, automatic stepless transmission system, the operation is simple and reliable.
2. Cam mechanism is used to control air intake and exhaust to give full play to mechanical properties.
3. Using trigger CDI contactless electronic ignition device, has good starting performance.
4. The vacuum diaphragm flat-suction carburetor is adopted, which has good atomization, low fuel consumption and lower emission than Euro V standard.
5. Large power, torque, stable power operation, low noise.
6. Easy maintenance, safe and reliable work.
7. The engine factory number is printed on the lower left of the left crankcase.

14-Precautions for use:

1. For electric starting, press the start button for no more than 15S each time, and the interval should be more than 10S. After the engine starts, release the starting button immediately to prevent damage to the engine.
2. In order to extend the service life of the engine, it must be preheated for 1-3 minutes after each start.
3. Before starting, check whether the parts are loose or defective, and whether the throttle handle, brake and other control mechanisms are flexible and reliable.
4. The running-in mileage of the new machine is 300km, the speed during the running-in period should not be more than 35km / h, and the engine oil should be replaced in time. After the engine is running-in well, it is conducive to the performance of the engine and the extension of its service life.
5. Addition and replacement of lubricating oil:
 - 5.1. Add: The user should often check the amount of crankcase oil, the oil scale is inserted into the oil inspection hole, the oil level should be between the upper and lower scale, lower than the bottom line or close to the bottom line should be timely added oil.
 - 5.2. Replacement: Idle the engine for 3 to 5 minutes, so that the engine heating, oil temperature rise easy to flow. After stopping, remove the oil bolt under the right crankcase cover (hexahexagonal width is 17mm), the dirty oil is discharged, the oil filter net is cleaned and installed back, the new oil is re-added from the oil scale hole, and the oil scale is tightened after confirming the oil capacity.
6. Air filter cleaning:

Remove the filter element, first pat the dust on the outside of the paper filter element, and then use the air gun to blow the filter element clean. The dusty filter element must be replaced. Motorcycles driving on dusty roads should increase the frequency of cleaning and replacement of air filter elements.

7.Adjustment of valve clearance:

7.1.The valve clearance (hot state) of the 1P53QMI-9 engine is specified as follows:

Valve clearance: 0.06~0.1mm.

7.2.Adjustment steps:

7.2.1.First, find the top dead center of piston compression stroke, remove the rubber plug on the fan cover, and observe the scale line on the magneto;

7.2.2.Then remove the spark plug on the cylinder head (using a special sleeve), turn the fan impeller clockwise with the sleeve, and observe that when the top dead center mark is aligned with the marking of the magneto flywheel shell, the piston is in the top dead center position;

7.2.3.At this time, there should be valve clearance, and the piston is in the compression top dead center position. Otherwise, you need to rotate the crankshaft for another week, and then adjust the valve clearance as required, and lock the valve clearance adjustment nut. The valve clearance should be detected by a gauge, and it cannot be detected by hand.

15-Regular maintenance project and schedule:

Project	Driving distance (KM)							Often
	300	1000	3000	6000	9000	12000	15000	
Crankcase oil	◇	◇	2000Km/time					☆
Gearbox oil		◇		◇		◇		
Air filter element			△	△	△	△/◇	△	In dusty areas, clean once every 1000km
Valve clearance		☆		☆		☆		
Spark plug			☆	☆/◇	☆	☆/◇	☆	
Carbureter				△		△		
Carbon deposition						△		
V-belt cavity				△		△		

☆:Inspect △:Clean ◇:Replace

16-List and purpose of all components monitored by the OBD system

Component/ System	Fault code	Monitor Strategy Description	Malfunction Criteria	MIL activation	Secondary Parameters	Precond itioning	Demonst ration test
Control module(ECU/PC U) internal error	P0602	ECU check	N.A.	OFF	Key position	N.A.	N.A.
Engine Coolanttemperature Sensor	P0118	Circuit check	signal voltage.eng ine coolant	5sec.after Fault	N.A.	N.A.	driving cycle
	P0117		temperatur e sensor	5sec.after Fault	N.A.	N.A.	driving cycle
	P0116	Out of Range	Difference between measured temperature of sensor signal and model temperature	5sec.after Fault	N.A.	N.A.	driving cycle
	P0119	Coolant temperature	thecoolant temperature (tmotlin) below lambda control switch-on throsoid	5sec.after Fault	N.A.	N.A.	driving cycle
Fuel injector1	P0262	Circuit check	short to battery plus	5sec.after Fault	N.A.	N.A.	idle
	P0261		short to ground		N.A.	N.A.	idle
	P0201		open circuit		N.A.	N.A.	idle
Fuel pump	P0629	Circuit check	short to battery plus	5sec.after Fault	N.A.	N.A.	idle
	P0628		short to ground		N.A.	N.A.	idle
	P0627		open circuit		N.A.	N.A.	idle
Ignition Coil "A"Primary Control	P2300	Circuit check	short to ground	5sec.after Fault	N.A.	N.A.	idle
EvaporativeEmissio n SystemPurge Control Valve	P0459	Circuit check	short to battery plus	5sec.after Fault	N.A.	N.A.	driving cycle
	P0458		short to around		N.A.	N.A.	
	P0444		open circuit		N.A.	N.A.	
Manifoldabsolutepr essure sensor	P0108	Circuit check, max limit exceeds	short to battery plus	5sec.after Fault	N.A.	N.A.	driving cycle
	P0107	Circuit check, min limit exceeds	Short to 5V Ground	5sec.after Fault	N.A.	N.A.	driving cycle
	P0106	Out of Range	Higher than 108Kpa	5sec.after Fault	N.A.	N.A.	driving cycle
	P0109	Signal stuck	Between 0Kpa and 105Kpa	5sec.after Fault	N.A.	N.A.	driving cycle

Crankshaft Position Sensor	P0335	Not operational/ Not present	Crankshaft Position Sensor "A"Circuit	5sec.after Fault	N.A.	N.A.	driving cycle
Idle Air Control System	P0509	Circuit check	short to battery plus	1 drivingcyc les	N.A.	N.A.	idle
	P0508		Short to 5V Ground		N.A.	N.A.	idle
	P0505		open circuit		N.A.	N.A.	idle
	P0519	Performance / Plausibility	Idle speed Idle speed higherthan 500rpm		N.A.	N.A.	idle
Intake AirTemperature Sensor	P0113	Circuit check	short to battery plus	5sec.after Fault	N.A.	N.A.	idle
	P0112		short to ground	5sec.after Fault	N.A.	N.A.	idle
	P0111	Out of Range	signal voltage	5sec.after Fault	N.A.	N.A.	idle
	P0114	Signal stuck	signal voltage, speed	5sec.after Fault	N.A.	N.A.	driving cycles
Throttle Position Sensor	P0123	Circuit check	short to battery plus	5sec.after Fault	N.A	N.A	idle
	P0122		short to ground		N.A	N.A	idle
	P0121	Out of Range	signal voltage		N.A	N.A	idle
	P0124	Signal stuck	signal voltage. speed		N.A	N.A	driving cycles
misfire Cylinder 1	P0301	misfire rate that harmful to catalyst (mx fault)	fault counter of catalyst damaging misfiring of all cylinders	MIL-blinki ngat presentdri ving cycle& MIL-blinki ng offafter ti-cutoff	fuel cut off		Type1
		misfire rate that deteriorate emission (mnfault)	fault counter of emission relevant misfiring of all cylinders	3driving cycles	engine load		
		implausible fault	fault counter of emission relevant misfiring of all cylinders at the first interval afterstart.	1 driving cycles	N.A.		
Oxygen Sensorheater (Bank 1)	P0032	Circuit check	short to battery plus	5sec.after Fault	N.A.	N.A.	idle
	P0031		short to ground		N.A.	N.A.	idle
	P0030		open circuit		N.A.	N.A.	idle
	P0135	Performance IPlausibility	signal voltage	5sec.after Fault	N.A.	N.A.	driving cycles

Oxygen Sensor (bank1)	P0132	Oxygen Sensor Circuit High Voltage	output voltage Oxygen Sensor upstream catalyst	5sec. after Fault	N.A.	N.A.	driving
	P0131	Oxygen Sensor Circuit Low Voltage	output voltage Oxygen Sensor upstream catalyst		N.A.	N.A.	cycles
	P0134	Sensor resistance is high when exhaust temperature high	Oxygen Sensor resistance		N.A.	N.A.	driving
Oxygen Sensor deterioration (slow response) Bank 1)	P0133	filtered cycle delay time of sensor signal upstream cat. is greater than threshold value	filtered cycle delay time of sensor signal upstream	3 driving cycles	N.A.	2 Type cycles	Type 1
Misfire cylinder 1	P0301	Cyl. 1 misfire detected					
Throttle Position Sensor	P0122	Circ. low input					
	P0123	Circ. high input					

Component	Fault code	Malfunction Criteria	Description
Fuel injector1	P0201	Open circuit	Unable to injection, Engine power loss
	P0262	Short to battery plus	
	P0261	Short to ground	increases injection duration, Engine misfire, Engine power loss
Ignition Coil1	P2300	Short to ground	Lost ignition, Engine power loss
Fuel pump	P0627	Fuel pump "A" control circuit /Open	Fuel supply Failure, Engine power loss
	P0629	Fuel pump "A" control circuit High	
Manifold absolute pressure sensor	P0108	Short to battery plus	System switching control mode, Engine torque fluctuation
	P0107	Short to ground	
	P0106	Over range	
Oxygen sensor1	P0131	Low voltage	Closed-loop correction anomaly, Engine torque reduction; Exit closed-loop, Engine power fluctuation
	P0132	High voltage	Closed-loop correction anomaly, Engine torque reduction; Exit closed-loop, Engine power reduction
	P0133	Slow response	Closed-loop correction anomaly, Engine torque reduction; Exit closed-loop, Engine power reduction

Misfire cylinder 1	P0301	Cyl.1 misfire detected	Engine torque reduction or flameout
Throttle Position Sensor	P0122	Circ. low input	System switching control mode, Engine torque reduction
	P0123	Circ. high input	