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SAFETY INSTRUCTIONS

For your personal and vehicle safety, please abide by the following six regulations：

①、Wear all kinds of protective equipment correctly.

Riding protective equipment includes safety helmets, goggles, knee pads, elbow pads and gloves. Wearing protective equipment can greatly reduce the injury to your body during an accidental crash and protect your personal safety to the utmost extent.

②、 Familiar with vehicle structure.

The driver’s driving skills and understanding of the vehicle are the basis for safe driving. Before officially riding on the road, you need to practice in an open field where there are no other vehicles and be fully familiar with the vehicle and the method of manipulating it.

③、Understand the limit of your own safe speed.

The driving speed depends on the ground conditions, your own skills and the weather. Drive at a safe speed and within your skill range at all times. Knowing this limit will prevent accidents.

④、Wear appropriate clothing.

Loose, bizarre clothing can make you uncomfortable and unsafe when driving. When you are on the saddle, wearing well-fitting clothing will make your hands, feet, and whole body move freely. So try to choose high-quality tight clothing.

⑤、Check before driving.

Please carefully read the instructions in the section "Inspection before driving" in this manual, driving in accordance with the rules can ensure the safety of you and the passengers.

⑥、Pay extra attention to safety when driving on cloudy and rainy days.

Pay special attention to rainy days. Keep in mind that the braking distance is twice that in sunny days. When driving, keep clear of the hole caps, marking paints, and oily roads to avoid slipping.

GENERAL PRECAUTIONS

⚠ WARNING

- ❖ Proper service and repair procedures are important for the safety of the service mechanic and the safety and reliability of the vehicle.
- ❖ When 2 or more persons work together, pay attention to the safety of each other.
- ❖ When it is necessary to run the engine indoors, make sure that exhaust gas is forced outdoors.
- ❖ When working with toxic or flammable materials, make sure that the area you work in is well-ventilated and that you follow all off the material manufacturer's instructions.
- ❖ Never use gasoline as a cleaning solvent.
- ❖ To avoid getting burned, do not touch the engine, engine oil or exhaust system during or for a while after engine operation.
- ❖ After servicing fuel, oil, exhaust or brake systems, check all lines and fittings related to the system for leaks.

⚠ CAUTION

- ❖ If parts replacement is necessary, replace the parts with Genuine Parts or their equivalent.
- ❖ When removing parts that are to be reused, keep them arranged in an orderly manner so that they may be reinstalled in the proper order and orientation.
- ❖ Be sure to use special tools when instructed.
- ❖ Make sure that all parts used in reassembly are clean, and also lubricated when specified.
- ❖ When use of a certain type of lubricant, bond, or sealant is specified, be sure to use the specified type.
- ❖ When removing the battery, disconnect the negative cable first and then positive cable. When reconnecting the battery, connect the positive cable first and then negative cable, and replace the terminal cover on the positive terminal.
- ❖ When performing service to electrical parts, if the service procedures do not require use of bat- tery power, diconnect the negative cable at the battery.
- ❖ Tighten cylinder head and case bolts and nuts, beginning with larger diameter and ending with smaller diameter, from inside to outside diagonally, to the specified tightening torque.
- ❖ Whenever you remove oil seals, gaskets, packing, O-rings, locking washers, cotter pins, circlips, and certain other parts as specified, be sure to replace them with new ones. Also, before installing these new parts, be sure to remove any leftover material from the mating surfaces.
- ❖ Never reuse a circlip. When installing a new circlip, take care not to expand the end gap larger than required to slip the circlip over the shaft. After installing a circlip, always ensure that it is completely seated in its groove and securely fitted.
- ❖ Do not use self-locking nuts a few times over.
- ❖ Use a torque wrench to tighten fasteners to the torque values when specified. Wipe off grease or oil if a thread is smeared with them.
- ❖ After reassembly, check parts for tightness and operation.
- ❖ To protect environment, do not unlawfully dispose of used motor oil and other fluids: batteries, and tires.
- ❖ To protect Earth's natural resouces, properly dispose of used vehicles and parts.

EXTERIOR PHOTOGRAPH

N O T E
Difference between photographs and actual motorcycles depends on the markets.

FUNCTION OF EI SENSOR EI

★ ECU (Engine Control Unit, EI Control Unit) ECU

: ECU decide the fuel injection volume and ignition time to adjust the fuel injector opening and closing rate which is considered the engine speed, intake air pressure, intake air volume, engine temperature, oxygen volume and throttle opening angle, etc.

★ EI (Electric fuel Injector) EI

: EI spray the fuel to intake pipe by ECU's injection signal.
Fuel which is needed combustion in the combustion chamber is supplied from the fuel tank.

★ GP switch (Gear Position Switch) GP

: GP switch is used when start / stop and control ECU as the converted electrical signal of the gear position is supplied ECU.

★ IAP sensor (Intake Air PRESSURE : IAPS)

: IAP sensor measure the pressure which is generated from the intake pipe and compare with the provided absolute pressure, then analogize the air volume indirectly and help to work the fuel injector properly.

★ IAT sensor (Intake Air Temperature Sensor : IATS)

: IAT sensor perceive the atmospheric temperature and is located the air cleaner case.

★ ISC solenoid (Idle Speed Control Solenoid)

: ISC solenoid is interlocked with the throttle body, so ECU control the engine idle speed.

★ O_2 sensor (Oxygen Sensor : O_2S)

: O_2 sensor measure the oxygen volume from the exhaust gas and convert the oxygen volume into voltage value, then communicate the output voltage to ECU.

★ Pick-up Coil

: Pick-up coil perceive the front and rear cylinder's engine speed and realtime of piston position.

★ PV (Purge control Valve)

: Purge control valve is part of the evaporative emission control system. The purge control valve closes to prevent the vapor from reaching the engine when it is turned off. When the engine is started and is ready to receive the canister's contents, the purge control valve opens to allow the vapor flow.

★ RO switch (Roll Over Switch)

: RO switch is the fuel cut-off system when the motorcycle is leaned over 60°for upset accident.

★ TP sensor (Throttle Position Sensor : TPS)

: TP sensor detect the throttle opening angle and is located the throttle body.
It decide the fuel injection volume and compensate the ignition time as inform idle· acceleration· deceleration condition and throttle full opening etc. to ECU.

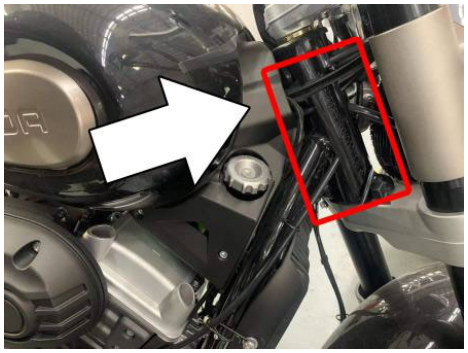
★ WT sensor (Water Temperature Sensor : WTS)

: WT sensor is located on the cylinder block's water jacket, the intake pipe or the cylinder head coolant passage's thermostat part for contact with the coolant.
WT sensor is the NTC (Negative Temperature Coefficient) resister that measure the coolant temperature and inform ECU.

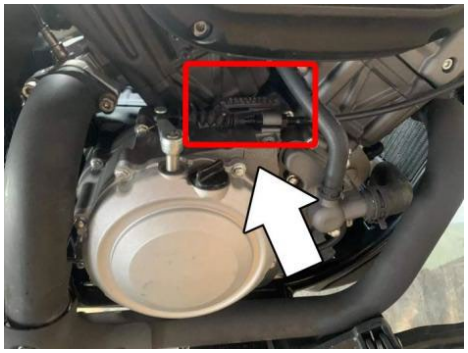
SERIAL NUMBER LOCATION

The frame serial number or V.I.N. (Vehicle Identification Number) is stamped on the steering head tube. The engine seri- al number is located on the left upside of crankcase assembly.
These numbers are required especially for registering the machine and ordering spare parts.

◉ **FRAME SERIAL NUMBER**



◉ **ENGINE SERIAL NUMBER**



FUEL AND OIL RECOMMENDATION

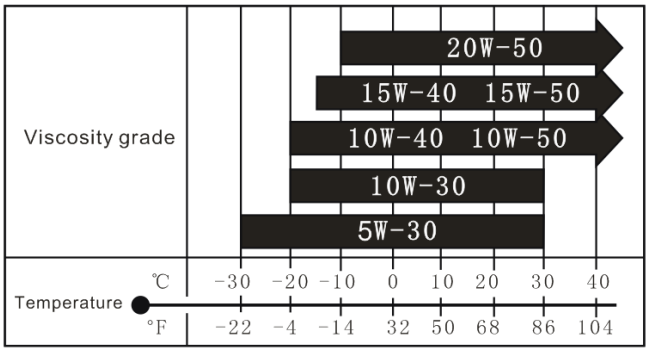
◉ **FUEL**

Gasoline used should be graded 92 octane (Research Method) or higher. An unleaded gasoline type is recommended.

◉ **ENGINE OIL**

ENGINE OIL SPECIFICATION

Classification system	Grade
API	Over SN
SAE	10W-50



- *If an SAE 10W-50 motor oil is not available, select*

an alternative according to the following chart.

Use a premium quality 4-stroke motor oil to ensure longer service life of your motorcycle.

⚠ WARNING

- **Don t mix the unrecommended oil. It could damage the engine.**
- **When refilling the oil tank, don t allow the dust to get inside.**
- **Mop the oil spilt.**
- **Don t put the patch on the cap. It could disturb the oil to be provided and damage the engine.**

◉ BRAKE FLUID

Specification and classification: DOT4

⚠ WARNING

Since the brake system of this motorcycle is filled with a glycol-based brake fluid by the manufacturer, do not use or mix different types of fluid such as silicone-based and petroleum-based fluid for refilling the system, otherwise serious damage will result.
Do not use any brake fluid taken from old or used or unsealed containers.
Never re-use brake fluid left over from a previous servicing, which has been stored for a long period.

◉ ANTIFREEZE

Antifreeze selection:

1. Antifreeze must not be mixed using.
2.The freezing point of antifreeze is normally lower than the local minimum ambient temperature 5-10 degrees.
3. The boiling point of antifreeze is more than 107 ° C.

⚠ WARNING

This motorcycle engine is water cooling system. During motorcycle running, the antifreeze is high temperature and high pressure in the cooling system. So, it is strictly forbidden opening the radiator cap in this state, avoiding burn.
The antifreeze must be added in a timely manner and sufficient amount to prevent damaging the engine.
The antifreeze must be added after the engine is stopped and cooled.

⚠ WARNING

Antifreeze belongs to chemicals, which include toxic substances. If the antifreeze gets into your eyes or skin, wash with plenty of water immediately.

BREAK-IN PROCEDURES

During manufacture only the best possible materials are used and all machined parts are finished to a very high standard but it is still necessary to allow the moving parts to BREAK-IN before subjecting the engine to maximum stresses. The future performance and reliability of the engine depends on the care and restraint exercised during its early life. The general rules are as follows:

- Keep to these break-in procedures:

Initial 300km	**Less than 1/2 throttle**
Up to 300~600km	**Less than 2/3 throttle**
Up to 600-1500km	**Less than 3/4 throttle**

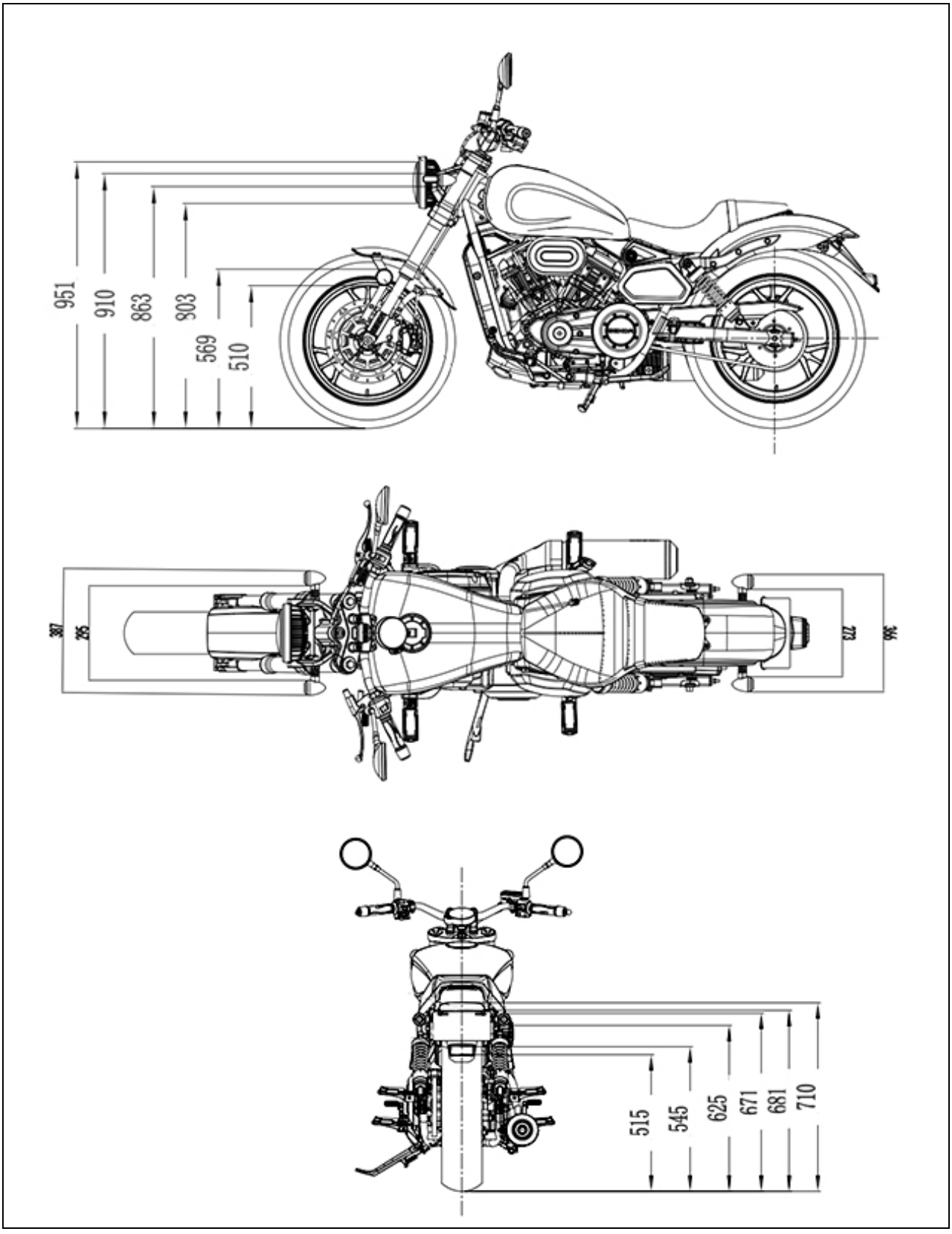
- Upon reaching an odometer reading of 1,600 km you can subject the motorcycle to full throttle operation.

Do not maintain constant engine speed for an extended period during any portion of the break-in. Try to vary the throttle position.

CYLINDER CLASSIFICATION

The engine of RKV125C is composed of the two cylinder, is classified into the front cylinder and rear cylinder as basis of the motorcycle ahead.

EXTERIOR ILLUSTRATION



SPECIFICATIONS

⊙ DIMENSIONS AND MASS

ITEM	RKV125C
Overall length	2130 mm
Overall width	810 mm
Overall height	1100 mm
Wheelbase	1460 mm
Minimum ground clearance	138 mm
Overall mass	163kg

⊙ ENGINE

ITEM	RKV125C
Type	V-type Duplex cylinder, 4-stroke, water cooling
Number of cylinder	V-2 cylinder
Bore	42.0 mm
Stroke	45.0mm
Total displacement	125
Fuel system	#95 or higher unleaded gasoline
Starter system	Electric starter
Lubrication system	Pressure and splashing

⊙ TRANSMISSION

ITEM		RKV125C
Clutch		Wet type normal pressure multi disc
Transmission		Foot operated 6-gear transmission
Primary speed ratio		71/19
Final speed ratio		53/14
Gear ratio	1st	29/12
	2nd	26/17
	3rd	26/22
	4th	24/23
	5th	20/22
	6th	21/26
Drive chain		428-132

⊙ CHASSIS

ITEM	RKV125C
Front suspension	Spring oil damping
Rear suspension	Spring oil damping
Steering angle	35° (right & left)
Front brake	Disk brake
Rear brake	Disk brake
Front tire size	120/80-17M/C
Rear tire size	140/70-17M/C

⊙ ELECTRICAL

ITEM	RKV125C	
Ignition type	ECU	
Ignition timing	BTDC 14°/1800rpm and35°/5500rpm	
Spark plug	CR8E	
Battery	12V 11.2Ah	
Fuse	HEAD LIGHT	20A
	ECU	15A
	MAIN	20A
	SPARE	20A
		15A
		1A
Head light specification	12V 35W/35W	
Turning light	12V LED	
Brake light / rear-position light	LED TYPE	
Rear license plate lamp	LED TYPE	
Meter indicator light	LED TYPE	
Horn model	13V 3A 105-118dB	

※ LED : Light Emitting Diode
LCD : Liquid Crystal Display

BRIEF DESCRIPTION

Engine and the chassis separation:

1. Remove the seat and fuel tank (Tubing and trachea and power cord coupler).
2. Drain the engine oil and antifreeze. Remove the air cleaner.
3. Remove the throttle cable, stepper motor, throttle open power cord, clutch cable, muffler, front right footrest.
4. Remove the drive chain, Disconnect the battery lead wire and magneto coupler and gear display switch. Remove the gear shift cam lever and left footrest. Remove the starting motor.
5. Remove the left frame cover, front and rear tubing, tubing three-wire, upper water pipe, Ignition coil, intake air temperature sensor (IATS), fuel injector power cord, horn wire, thermostat comp.
6. Remove the oxygen sensor, water temperature sensor, stepper motor, throttle open power cord, engine mounting bolts. Remove the engine from the frame.

Engine decomposition:

1. Remove the throttle body, intake air connector, muffler connector comp.
2. Remove the cylinder head cover, magneto cover bolt, observation hole bolt.
3. Remove the engine sprocket outer cover, adjust the timing sprocket. Remove the chain drive sprocket.
4. Remove the front cylinder head, cylinder comp, piston comp.
5. Remove the rear cylinder head, cylinder comp, piston comp, engine oil filter comp, Magneto.
6. Remove the clutch inner and drive gears.
7. Remove the gear shift shaft comp, oil pump, camshaft plate, oil pump idle gear, gear shift cam driven gear, crankshaft bearing limit plate, cam chain tension plate.
8. Remove the left and right crankcase fixing bolts, open the left and right crankcase,
9. Remove the gear shift fork, gear shift pawl return spring, remove the camshaft and drive shaft, counter shaft.
10. Decomposition the cylinder head.
11. Decomposition the piston.

Maintenance section:

1. Cylinder head combination Check repair;
2. Piston combination Check repair;
3. Crankshaft Check repair;
4. Magneto combination inspection repair;
5. Starting motor combination inspection repair;
6. Clutch inspection repair;
7. Crankcase inspection repair.

Assembly considerations:

1. When reassembling the engine, do so in the reverse order as when decomposition and removal occur.
2. In the assembly of the left and right box to apply sealant evenly, do not let the sealant into the oil passage and water passage.
3. According to the requirements of assembly torque, the bolts in each part are tightened.
4. Fill with lubrication oil and antifreeze as required.

Engine and the chassis separation:

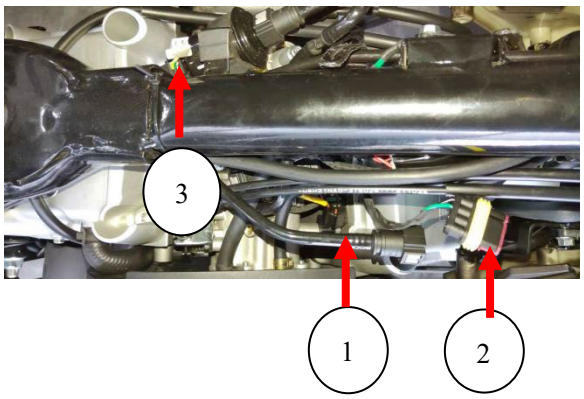
Remove the rear bolt of saddle, remove the seat.

Remove the fixing bolts at the rear of the oil tank.

After exiting the tank backwards, gently lift the rear of the tank to facilitate the removal of the lower switch of the tank;

Remove the injection pump tubing 1, fuel pump power supply 2, fuel sensor 3.

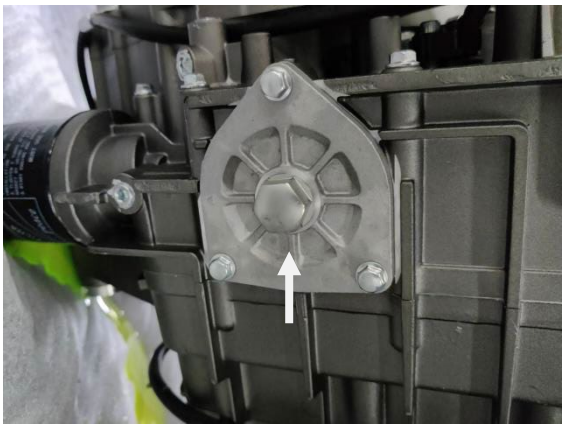
Reverse operation during installation, requires installation in place.



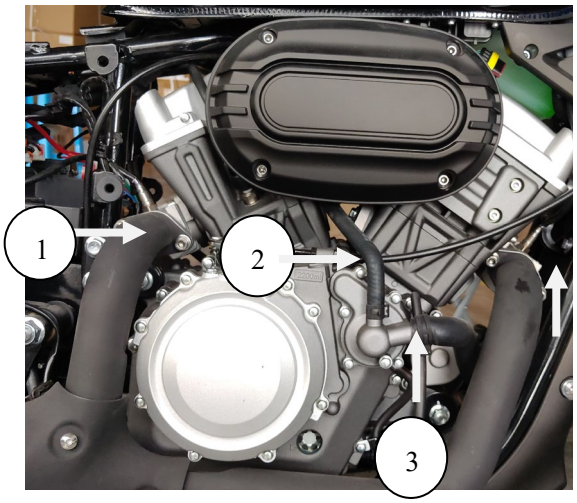
Drain the engine oil by removing the engine oil drain plug located on the bottom of the engine.

Engine oil: SAE10W-40

ENGINE OIL CAPACITY	
Oil change	1,900ml
Oil and filter change	2,100ml
Engine overhaul	2,200ml



Remove the exhaust pipe1, remove the thermostat water pipe 2, remove the lower water pipe 3; Drain the coolant;.

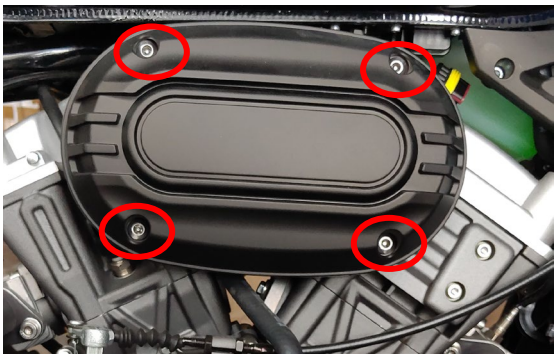


⚠ CAUTION

First add liquid antifreeze is about 0.75L, replacement and maintenance add at about 0.7 L.
Antifreeze level shall not exceed the upper scale line, nor below the lower scale line.
Antifreeze liquid level should be the water tank between two scale marks, if necessary, add or remove.

Remove the air cleaner comp:

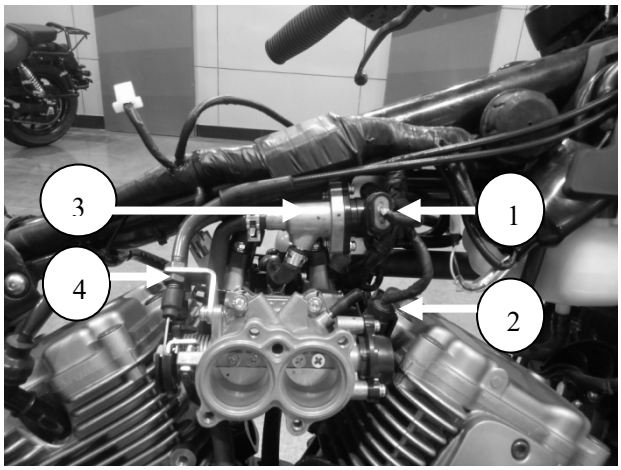
With the four screw loosened, remove the right air cleaner case.



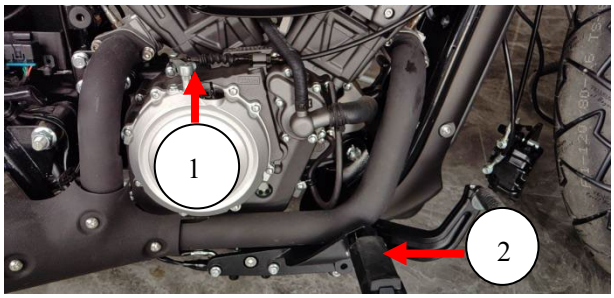
With the four screw and one nut loosened.

Remove the air filter case comp.

Remove the idle speed control solenoid coupler 1.
Remove the throttle position sensor (TPS) coupler 2.
Remove the ISC 3.
Remove the throttle cable 4.

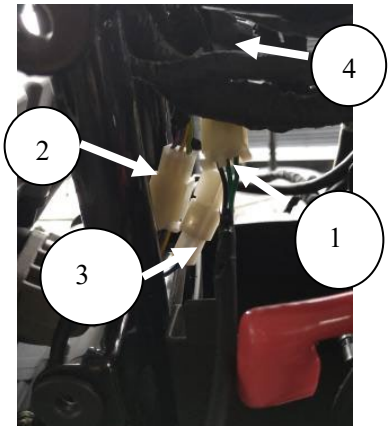


Remove the clutch cable 1.
Remove the front right footrest 2.



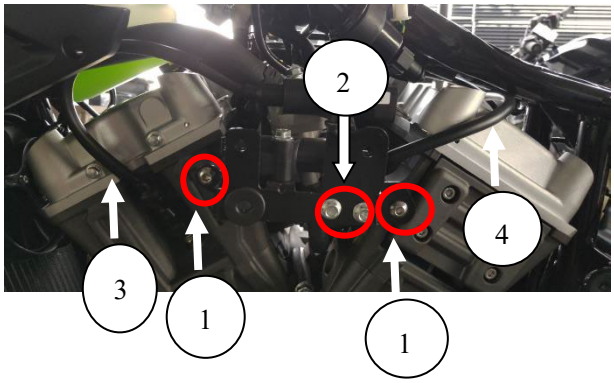
Remove the right side cover.

Disconnect the side stand switch 1.
Disconnect magneto coupler 2.
Disconnect the gear position switch coupler 3.
Disconnect the rear cylinders oxygen sensor coupler 4.

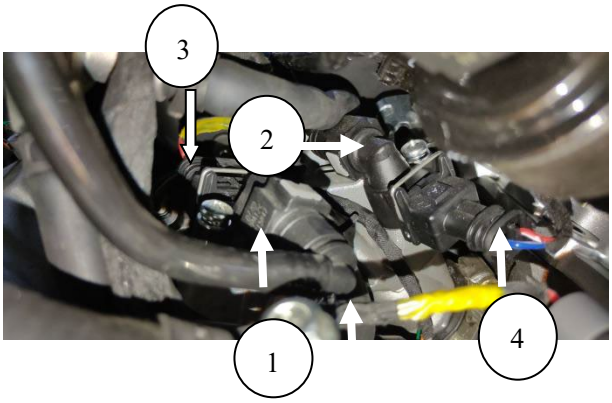


NOTE
The installation is connected by wire color and interface shape and must be installed accurately.

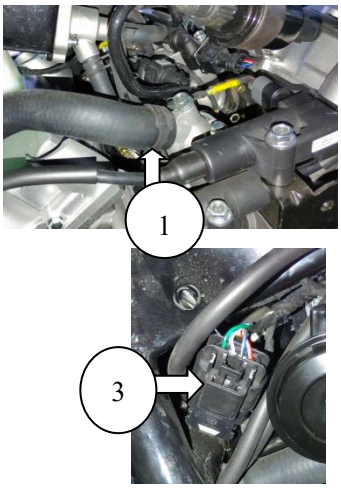
Remove the high-pressure package assembly 1
Remove thermostat 2
Remove the front and rear high voltage package assembly cables 3 and 4



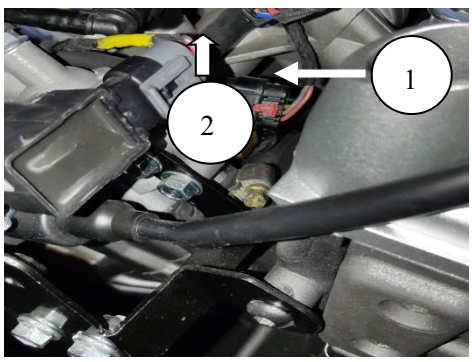
Remove the fuel injection nozzle link pipe 1 and 2
Remove the electrical plug-ins of the front and rear fuel injection nozzles 3 and 4



Remove the hose 1.
Remove the front left trim cover of the fuel tank 2.
Remove the front cylinder oxygen sensor 3.

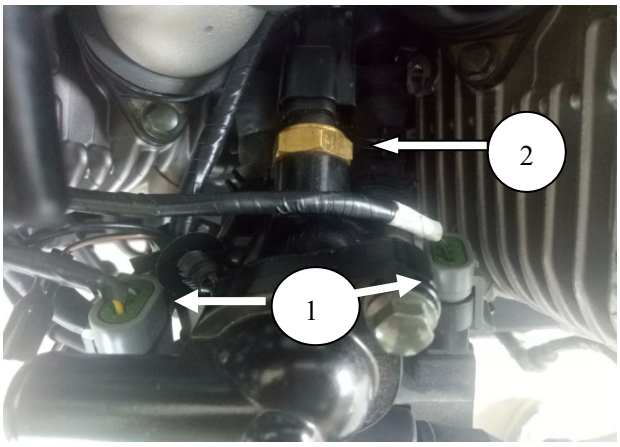


Remove the thermostat connector 1.
Remove the pressure sensor plug-in 2



Disconnect the ignition coil coupler 1.

Remove the thermostat connector 2.



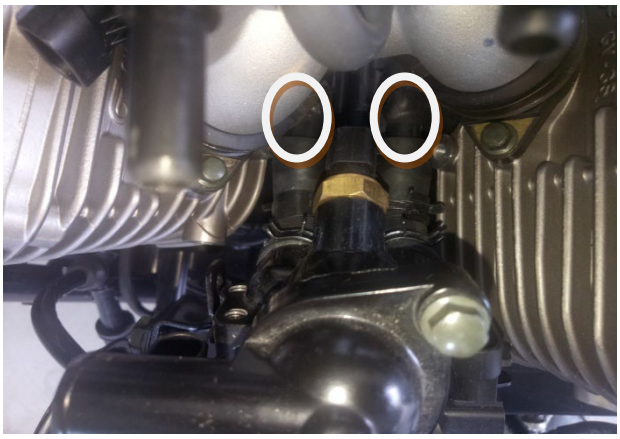
NOTE
Ignition coil coupler with white marked as front cylinder during installation.

Remove the thermostat power cord.

Remove the antifreeze circulation pipe.

Remove the ignition coil

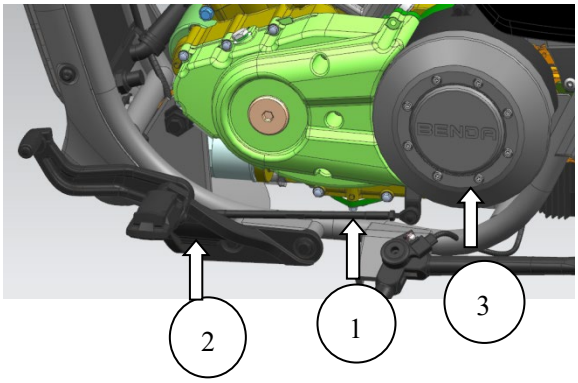
Remove the thermostat power.



Remove the gear shift cam lever 1.

Remove the left footrest 2.

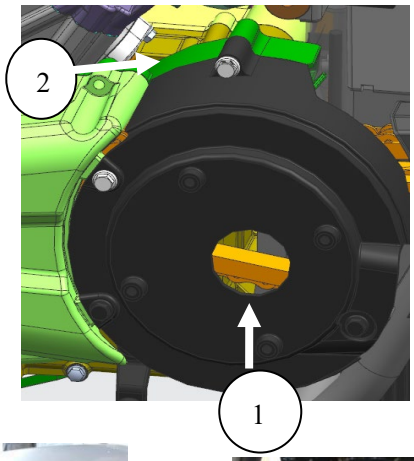
Remove the engine sprocket outer cover 3.



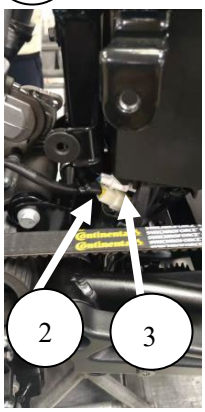
Remove drive belt 1.

NOTE
Be careful not to use sharp objects to lift the belt

Remove the sprocket cover mounting seat 1
Remove the mounting bracket of sprocket cover 2



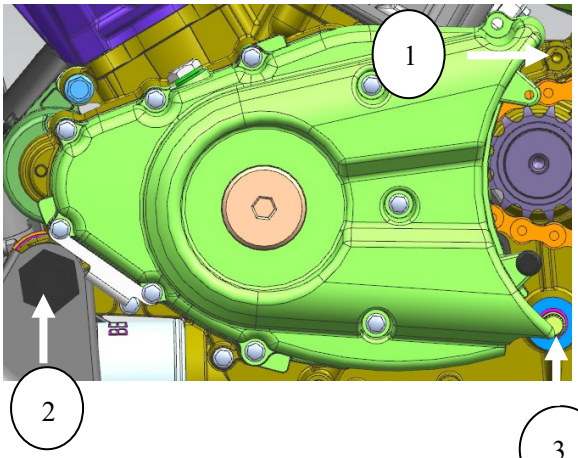
Disconnect the battery lead wire 1.
Remove the engine ground wire and the main harness link port 2.
Remove the starter motor lead wire 3.



NOTE

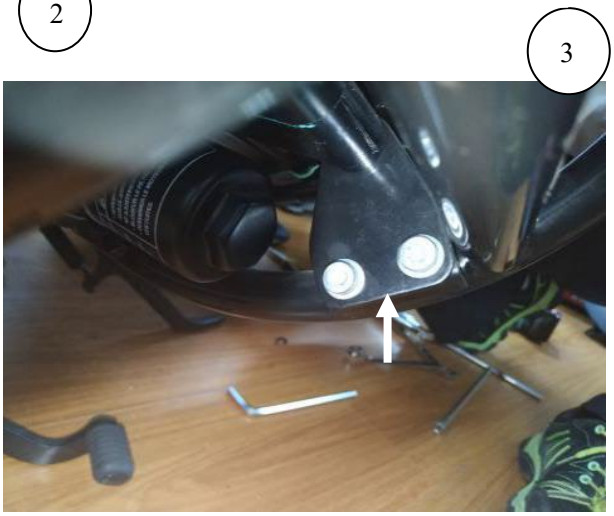
Place all connectors between the engine and the body harness in order.

Remove the engine's three fixing bolts.



Remove the left-hand fixed connection plate at the front of the engine.

Lift the engine out of the left side of the body.



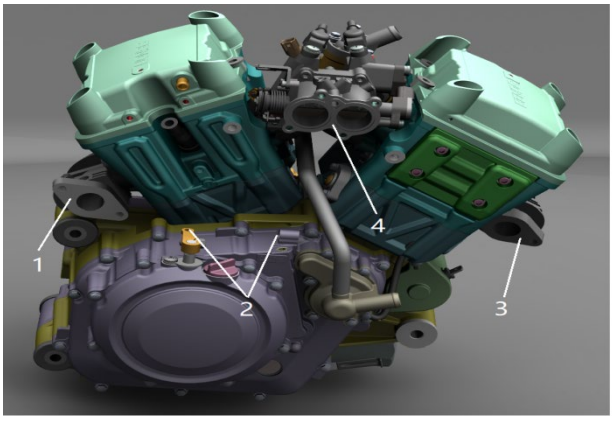
Engine decomposition

Loosen the rear cylinder inlet bending pipe 1.

Remove the clutch cable 2.

Loosen the front cylinder inlet bending pipe 3.

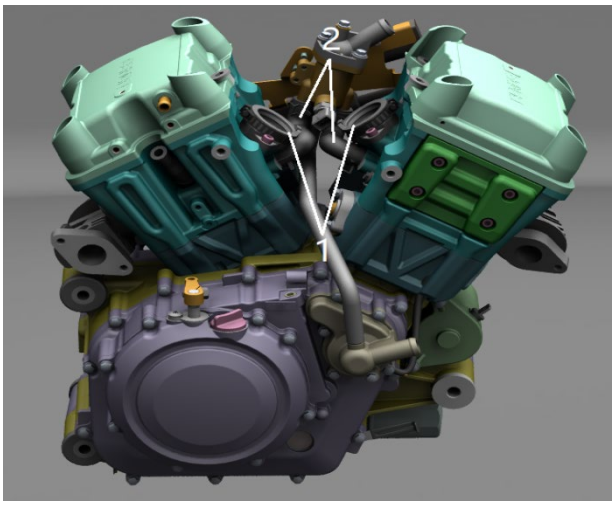
Remove the valve body 4.



Remove the front and rear cylinder intake connector1.

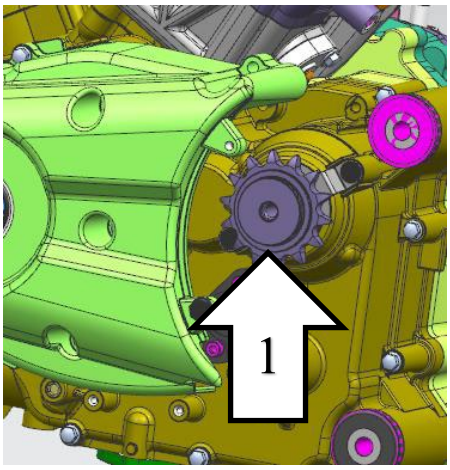
Remove the thermostat antifreeze connection tube 2.

NOTE
The tube port of the thermostat connecting the elbow should be oriented in the direction of the magnet.

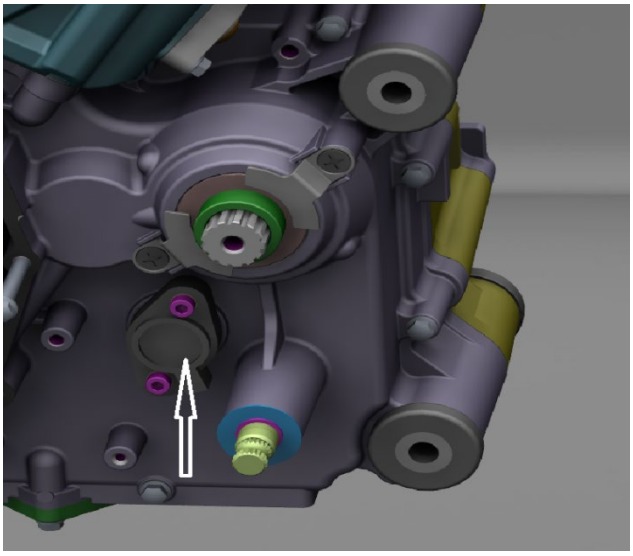


Remove the engine sprocket 1.

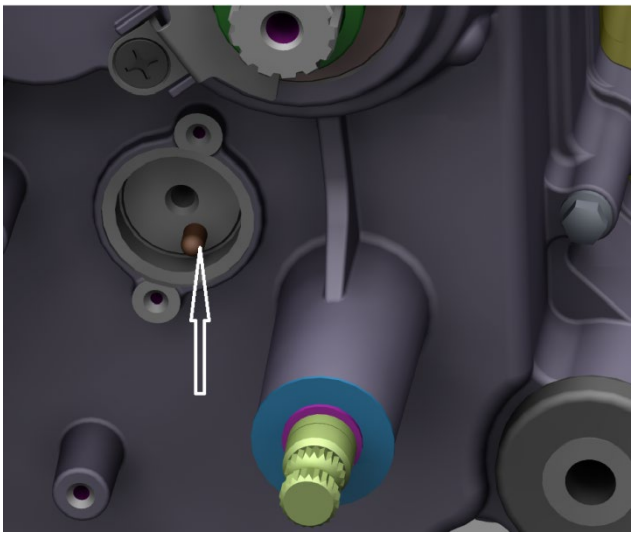
NOTE
Engine sprocket mounting lock nut torque requirement85-90Nm. **After the nut is locked, raise the edge of the stop gasket to prevent the nut from loosening during operation.**



Remove the gear shift switch.

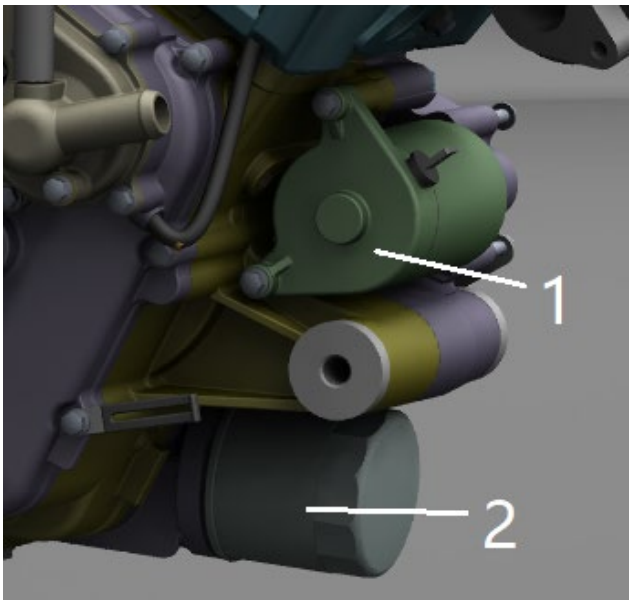


Remove gear shift switch contact and spring.



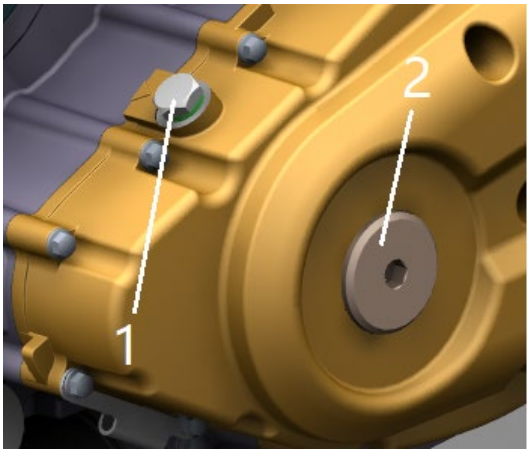
Remove the starting motor1.

Remove the oil filter2.



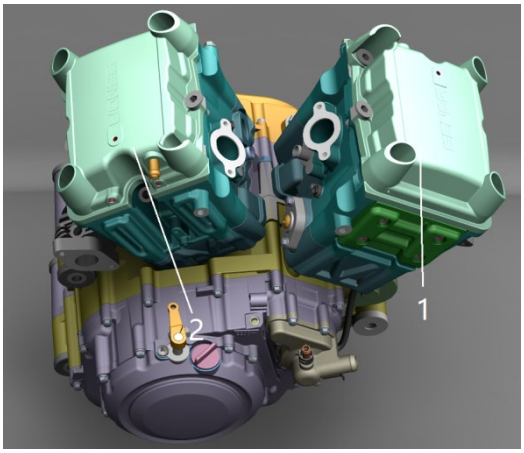
Remove the magnetic motor gas timing observation hole mounting bolt 1.

Remove the magnetic motor cover bolt 2.



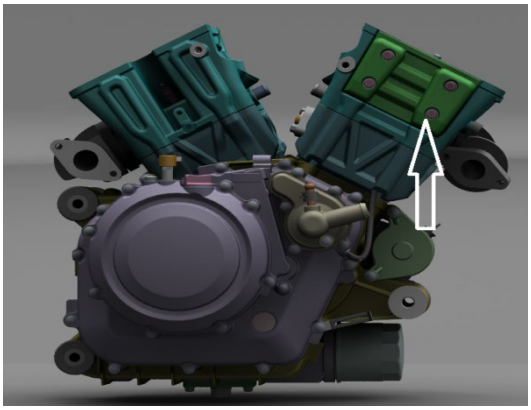
Remove the front cylinder head cover 1.

Remove the rear cylinder head cover 2.



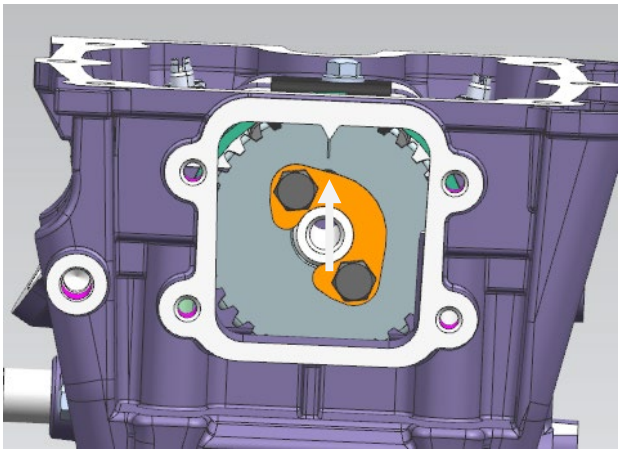
NOTE
The front and rear valve covers are not interchangeable when reassembling.

Remove the cylinder head side cover.

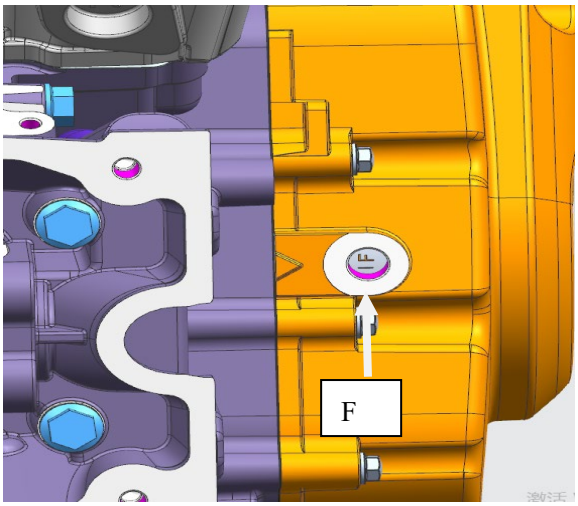


Turn the crankshaft counterclockwise.

Front cylinder head with sprocket marked in a straight line.

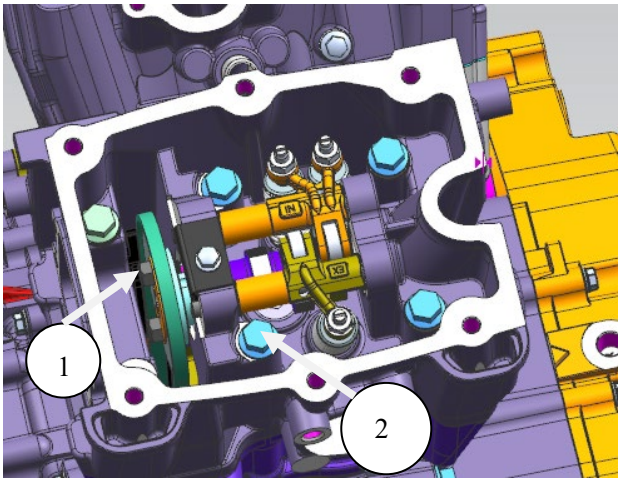


Align the arrow with the magnetor rotor timing "F".



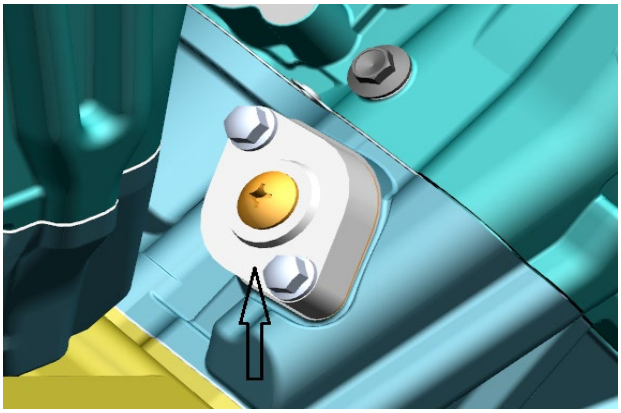
Remove the sprocket and remove the positioning pin 1

Remove cylinder head six fixing Bolts 2.

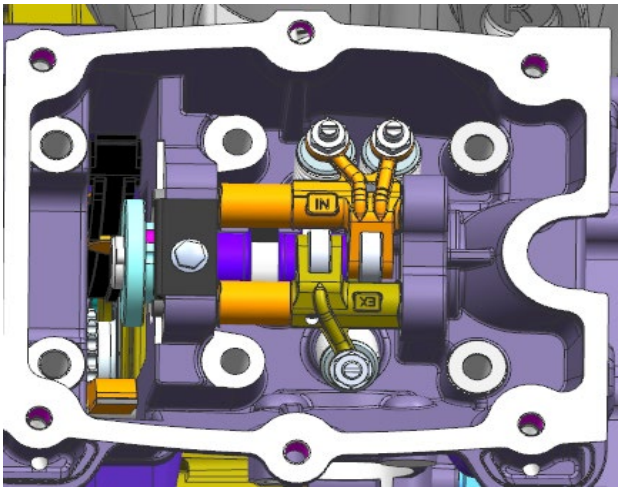


NOTE
Six fixed bolt torque values of 30Nm at assembly.

Remove the chain tensioning device.

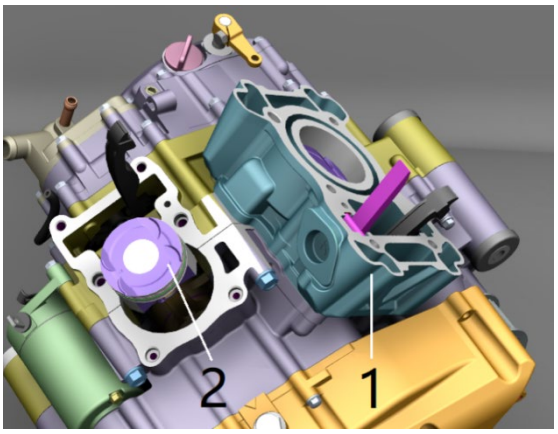


Remove the front cylinder head.



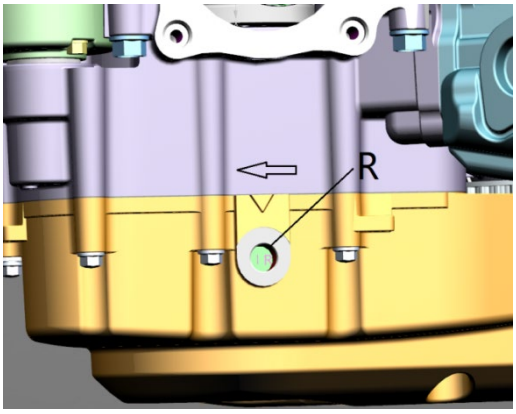
Remove the cylinder 1.

Remove the piston 2.

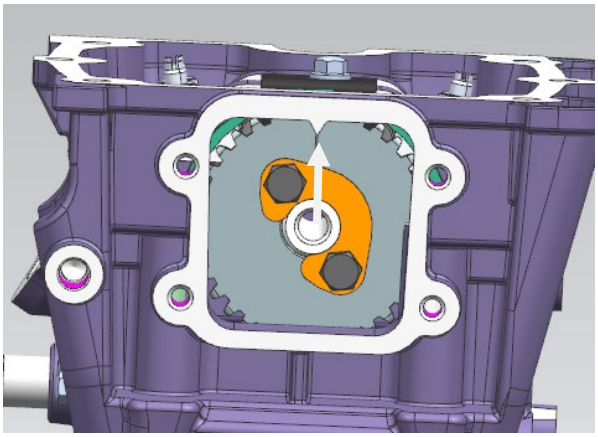


Remove the rear cylinder head. Cylinder and Piston: The steps are the same as the front cylinder.

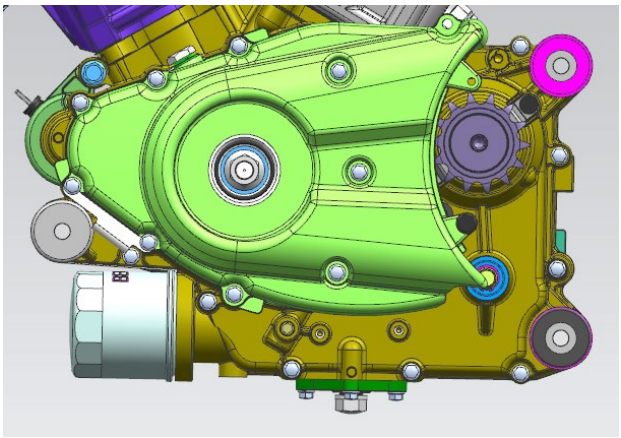
NOTE
Turn the magneto rotor counterclockwise, rotate the 300°, Mark the "R" Alignment arrow.



Rear cylinder head with sprocket marked in a straight line.



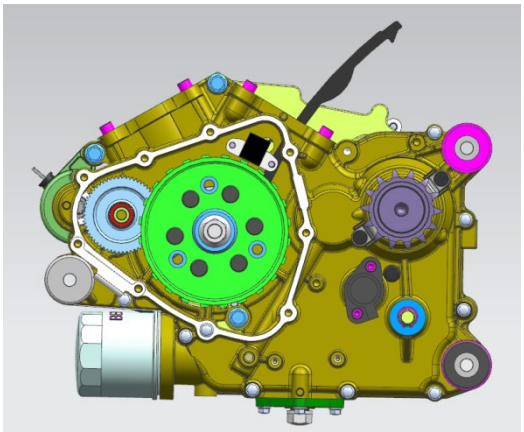
Remove 9 bolts and remove the magneto cover.



NOTE
That the stator coil is fixed on the inside.

Stator Coil fixing.

Remove the crankshaft nut.



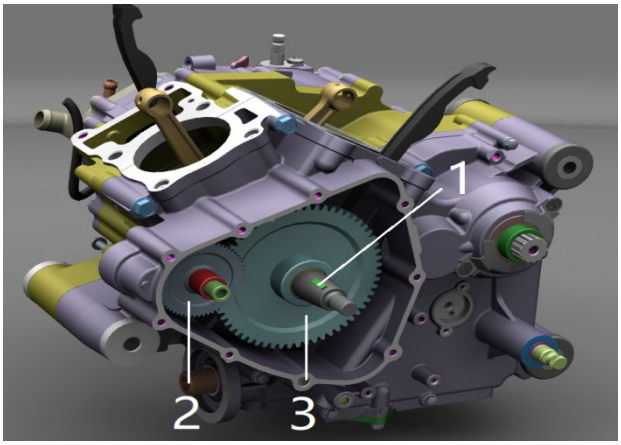
NOTE
Torque 60-80N·m when mounting nuts.

Remove the rotor with special tools.

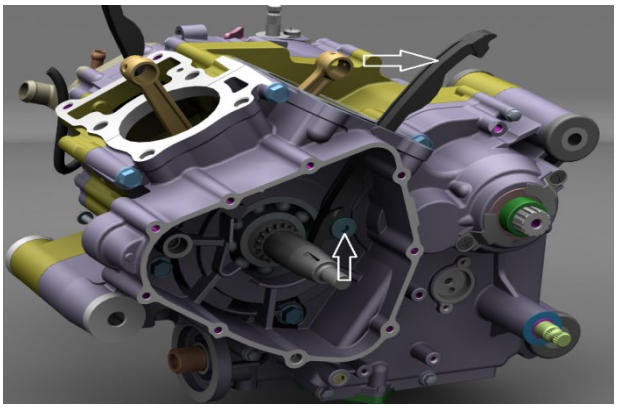
Remove the semicircle key 1.

Starter idle gear 2.

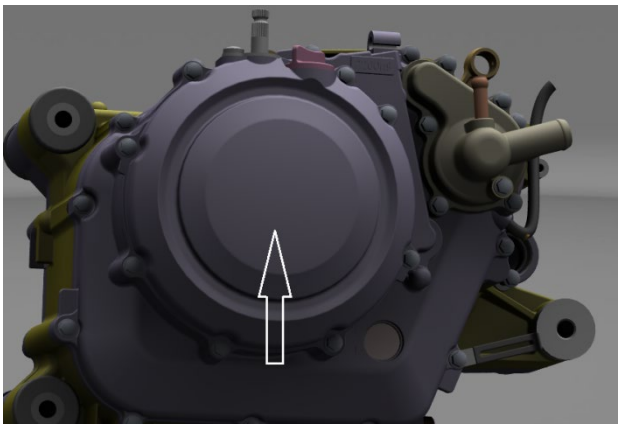
Electric start clutch 3.



Remove the bolt and remove the cam chain guide.



Remove 11 right cover bolts and remove the right cover.



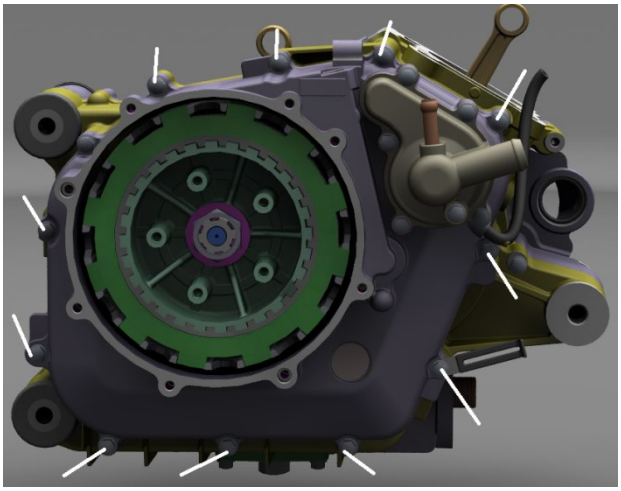
NOTE
Torque Requirements During installation 8-12Nm.

Remove 5 clutch press plate fixing bolts.

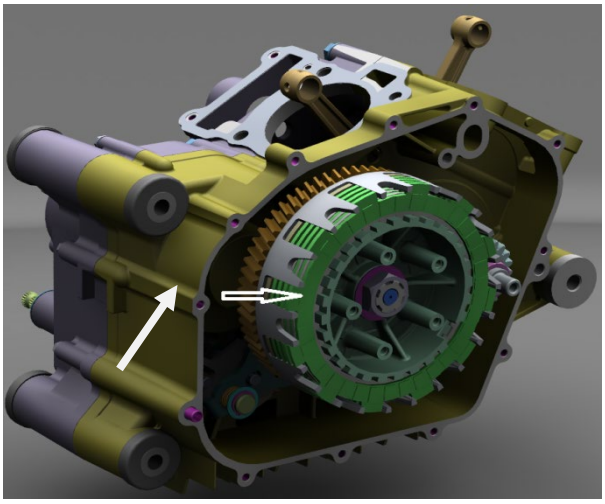
NOTE
Diagonal fastening torque requirements during installation 6-10Nm.

NOTE

Diagonal fastening torque requirements during installation 6-10Nm.



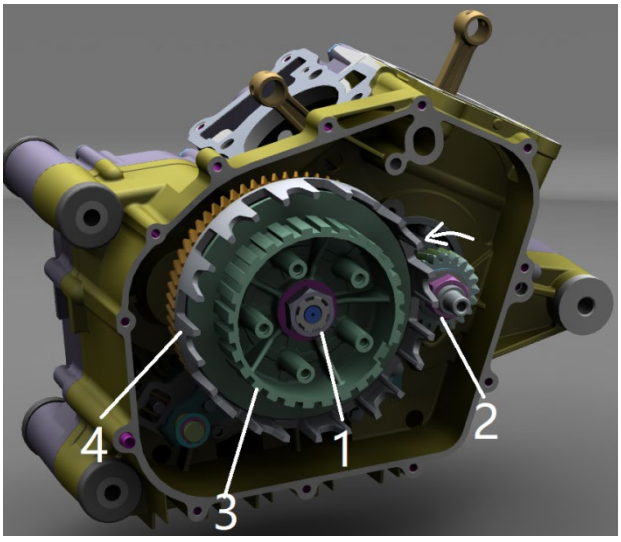
Remove the clutch friction sheet.



Disassembly clutch Large hub fixing nut 1.
Mounting torque 50-70Nm.
Remove the drive gear fixing nut 2.
Mounting torque 50-70Nm.

NOTE

The nut is left-handed and the gasket convex is outward oriented.



Remove Clutch small Hub 3.
Demolition of clutch Large hub 4.

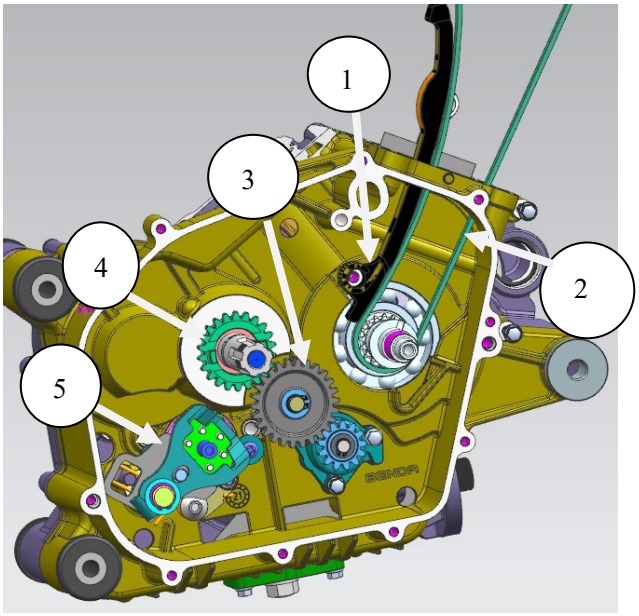
Remove the gas distribution chain tightening guide rail 1.

Remove the gas distribution chain 2.

Remove the machine oil pump drive inert wheel 3.

Remove the machine oil pump driving wheel 4.

Remove the variable shaft 5.

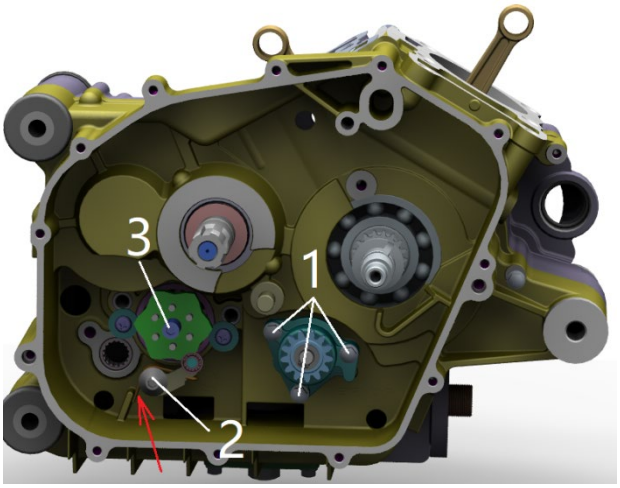


NOTE
The installation is assembled in the opposite order, This location is gap position.

Remove 3 bolts from the pump and remove the oil pump 1.

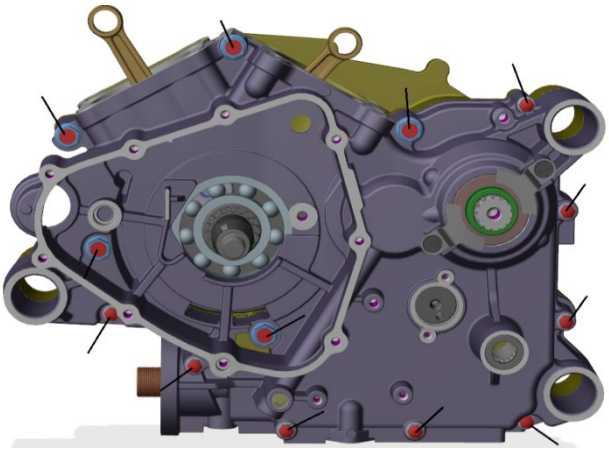
Remove the variable camshaft bezel 2 bolts and remove the bezel 2.

Remove the variable camshaft holder 2 bolts and remove the cage 3.



NOTE
When installing the shift drum set-up wheel, the spring is stuck in the position indicated by the arrow

Remove 13 box fixing bolts on the left side of the engine.



NOTE
Diagonal disassembly.

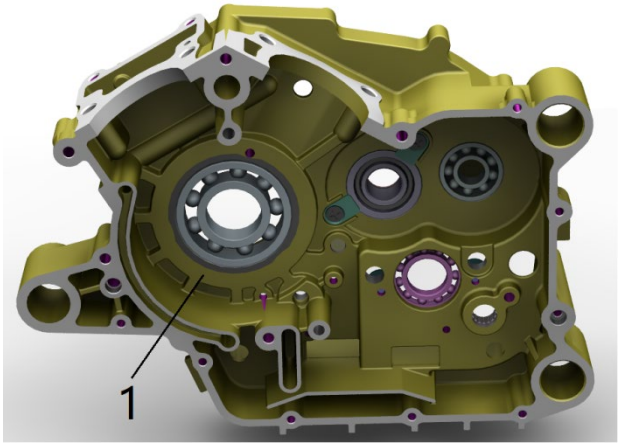
Assembly torque M8 Bolt 18-28Nm.

Assembly torque M6 Bolt 8-12Nm.

Separate engine crankcase: use a special tool (box separation rama) on the right side of the box (clutch side), take the crankshaft as the center, find the three focus points, install the pull horse, turn the pull horse center bolt, and make the box separate;

NOTE
Only the right box can be separated.

Remove the right crankcase comp 1.



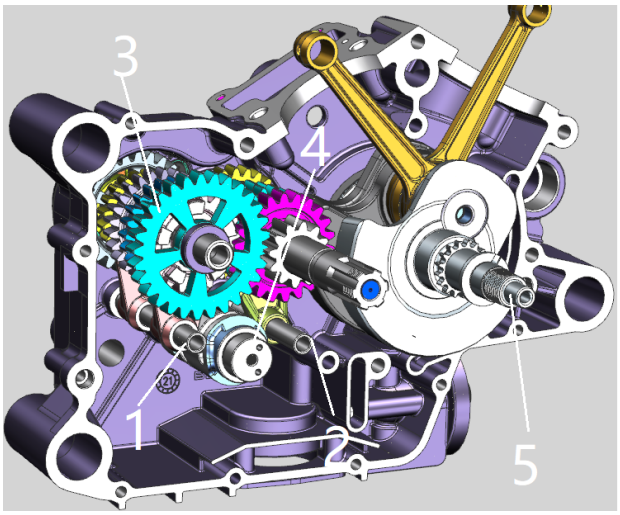
Remove the gear shift fork shaft, remove gear shift fork 1.

Remove the gear shift fork shaft and remove gear shift fork 2.

To remove the main and pay shafts together two sets of gears 3.

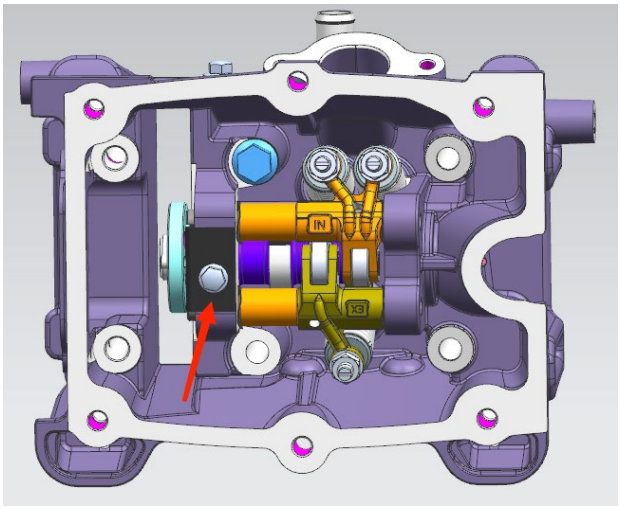
Remove the camshaft 4.

Remove the crankshaft assembly 5.



Cylinder head combination decomposition.

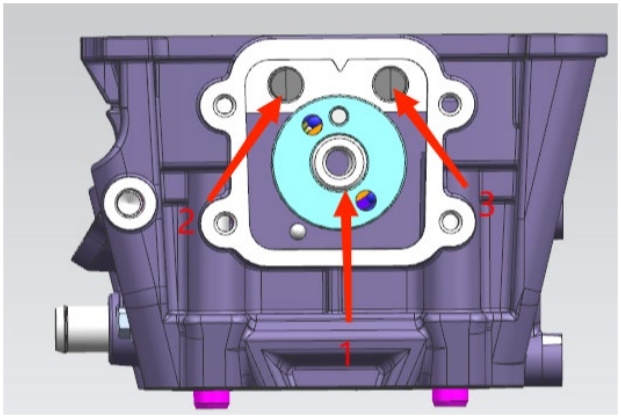
Remove the camshaft and rocker shaft limit plate.



Remove Camshaft1.

Remove the intake valve rocker shaft 2.

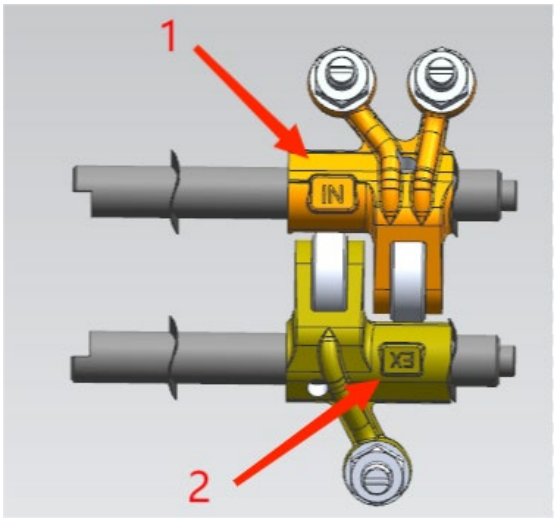
Remove the exhaust valve rocker shaft 3.



Remove the intake valve rocker and the exhaust valve rocker arm.

Intake valve rocker (IN)1.

Exhaust valve rocker (EX) 2.

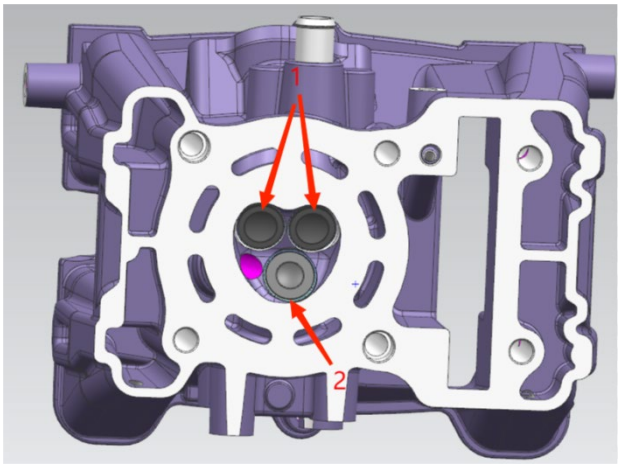


NOTE
Do not miss the gasket of each rocker shaft during assembly.

See if the valve room is carbon-accumulating.

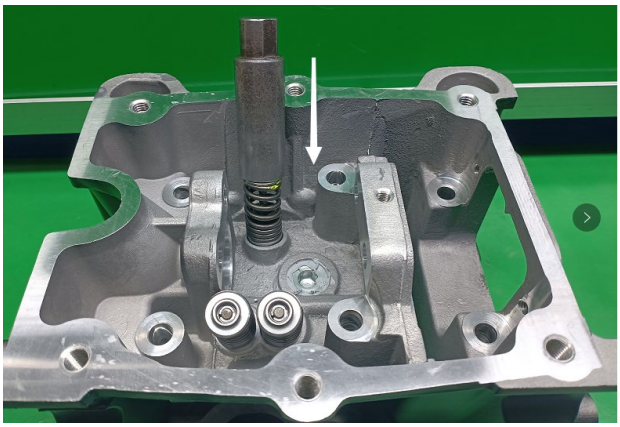
2 Intake valve, slightly larger in diameter.

2 Exhaust valve, slightly smaller in diameter.



Pressurized gas door lock disassembly device, remove the lock plate, remove the valve base, valve oil seal.

The same removal method for the intake and exhaust valves.



Valve lock plate 1.

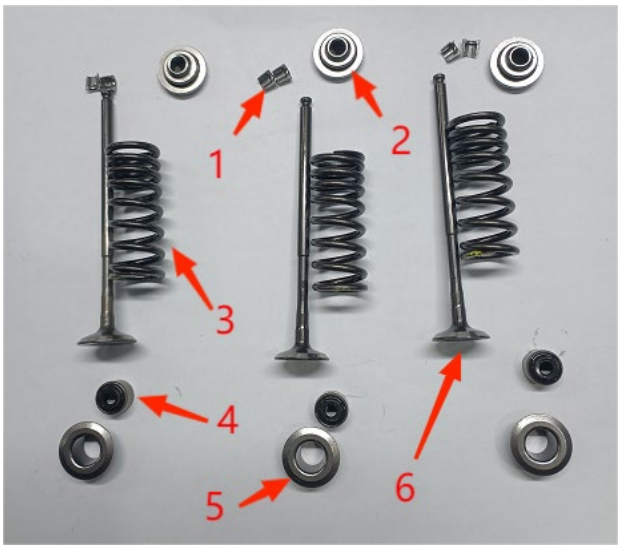
Valve retainer 2.

Valve spring 3.

Valve oil seal 4.

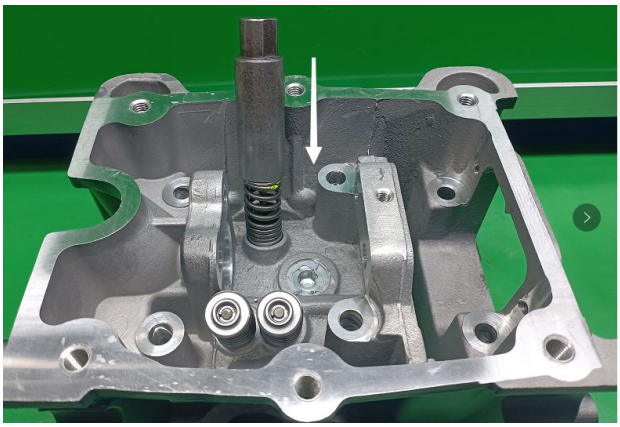
Valve spring seat 5.

Valve 6.

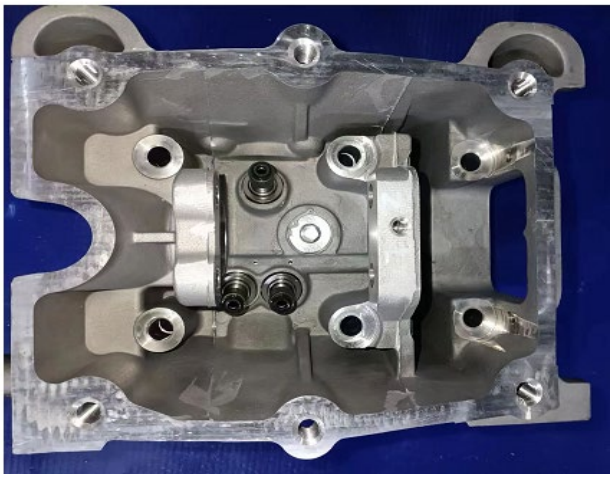


NOTE

When combining the cylinder heads, use a special tool (valve lock chip installer) to press down the valve spring to install the lock gasket in place.



Cylinder head.



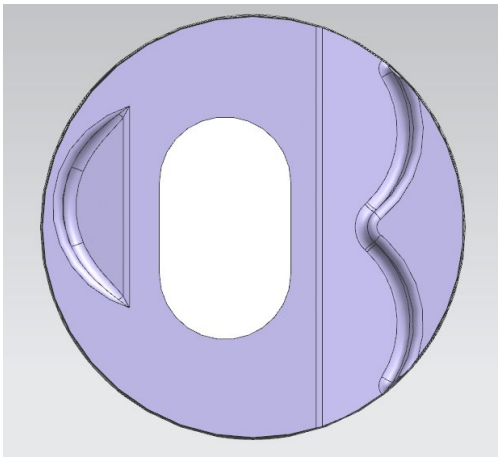
NOTE

When installed, the valve springs are closely turned down.

When the piston ring is installed, 3 ring openings are staggered 120° respectively.

NOTE

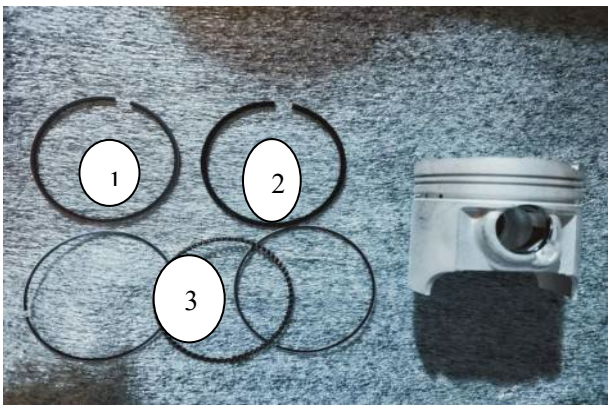
When installing the piston, the top notch portion corresponds to the valve and the arrow markings on the piston face the exhaust valve.



NOTE

Note When replacing:
A gas ring chrome plating 1.
Two air ring Black 2.

Three oil ring combination up and down a scraper ring, the middle is a spring-like oil storage ring 3.



Engine assembly Considerations:

1. Reverse operation in the above order.
2. The disassembled engine must be cleaned clean.
3. When the left and right box is merged, apply the sealant evenly and the fixing bolt diagonally according to the torque requirement to lock.
4. When installing the piston, apply lubricating oil.
5. The mounting cylinder head must be aligned with the timing mark, the requirement corresponds to the magneto rotor mark, the fixed bolt diagonally according to the torque requirements locking, the valve clearance must be within the specified value.
6. Clutch large hub, magneto rotor, small sprocket according to the torque requirements of the lock.
7. Engine using oil model SAE10W-50. Oil volume 2200ml.
8. Water tank filling antifreeze 0.1L, required between the upper and lower scales.
9. 0.9L of antifreeze in radiator.

ENGINE COMPONENT INSPEC TION AND SERVICE

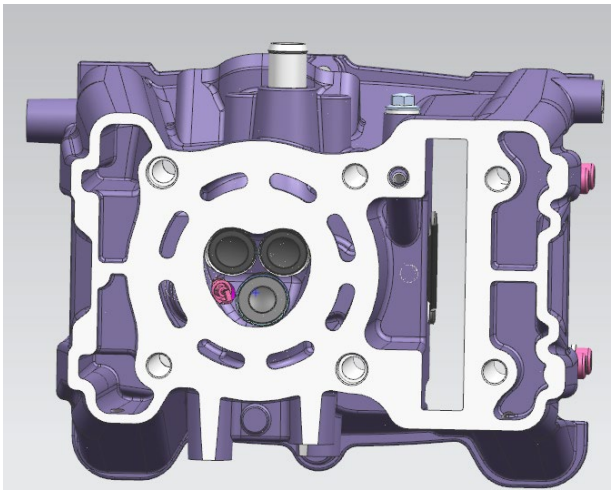
⚠ CAUTION

Be sure to identify each removed part as to its location, and lay the parts out in groups designated as "Front cylinder", "Rear cylinder", "Exhaust", "Intake", so that each will be restored to the original location during assembly.

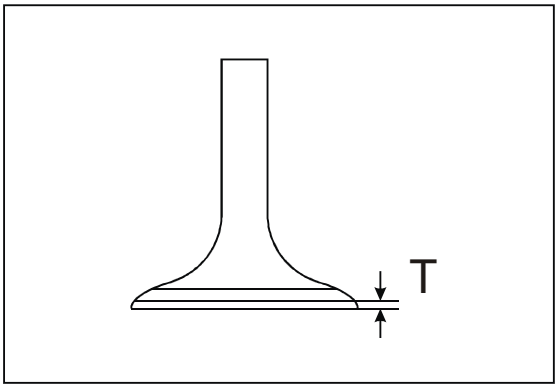
CYLINDER HEAD DISTORTION

Decarbonate in combustion chamber.

Check the gasketed surface of the cylinder head for distortion with a straightedge and thickness gauge, taking a clearance reading at several places as indicated. If the largest reading at any position of the straightedge exceeds the limit, replace the cylinder head.

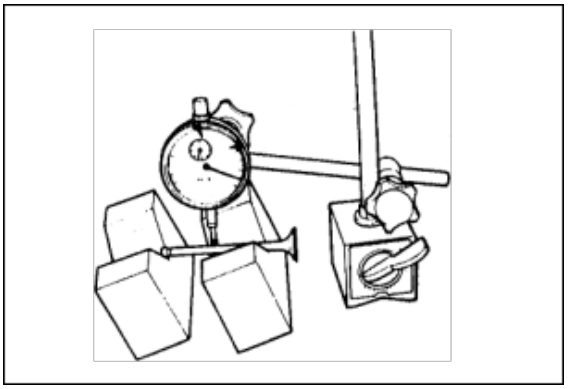


Cylinder head distortion	Service limit
	0.05 mm



TOOL **Thickness gauge : 09900-20806**

VALVE FACE WEAR

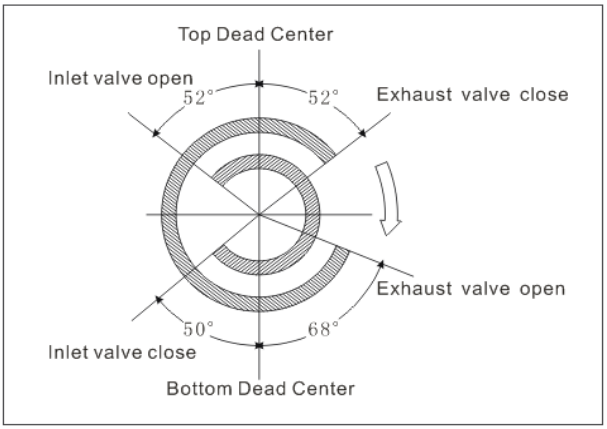


Visually inspect each valve face for wear. Replace any valve with an abnormally worn face. The thickness of the valve face decreases as the face wears. Measure the valve head T. If it is out of specification, replace the valve with a new one.

	Service limit
Valve face wear	0.5 mm

TOOL **Vernier calipers :**

VALVE STEM RUNOUT



Check the valve stem for abnormal wear or bend.

Place the valve on V-blocks and measure runout.

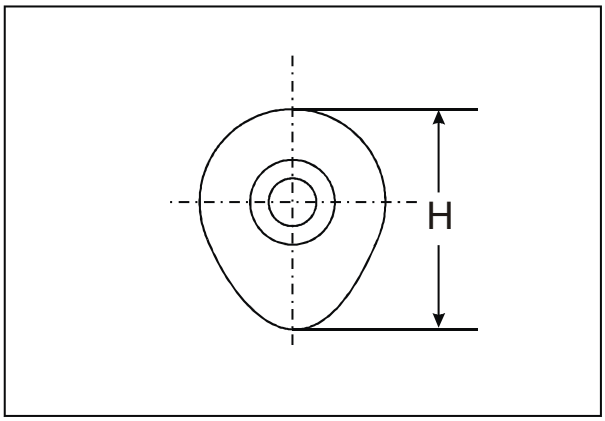
If the service limit is exceeded or abnormal condition exists, replace the valve.

	Service limit
Valve stem runout	0.05 mm

TOOL **Dial gauge :**

TOOL **Magnetic stand :**

V-block :



CAMSHAFT

The camshaft should be checked for runout and also for wear of cams and journals if the engine has been noted to produce abnormal noise or vibration or a lack of out- put power. Any of these abnormality could be caused by a worn camshaft.

CAMSHAFT WEAR

Worn-down cams are often the cause of mistimed valve operation resulting in reduced output power.

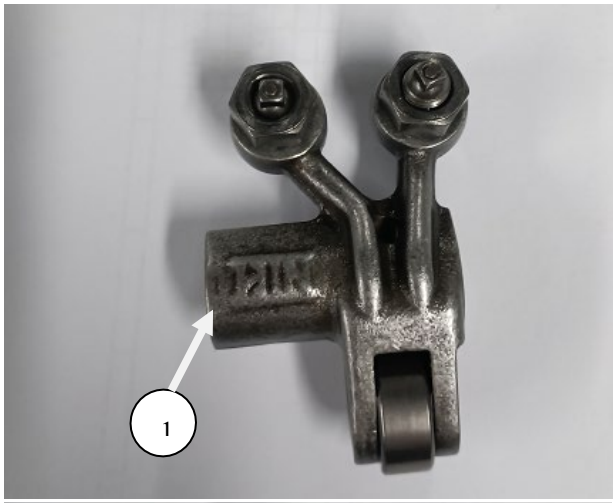
The limit of cam wear is specified for both intake and exhaust cams in terms of cam height H, which is to be measured with a micrometer.

Replace camshafts if found it worn down to the limit.

Cam height H	Service limit
Intake cam	29.68mm
Exhaust cam	29.83mm

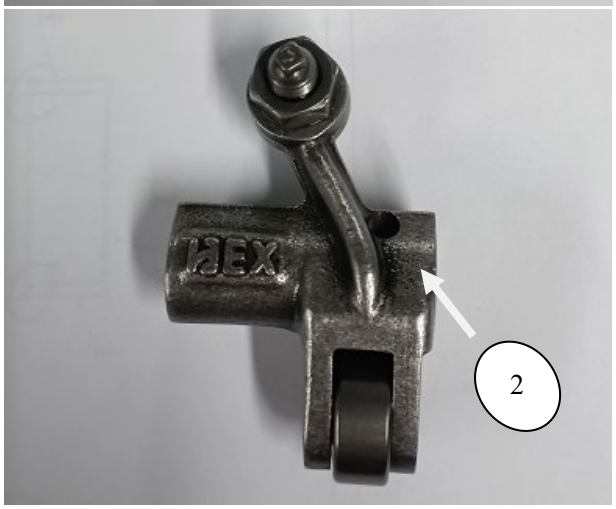
Micrometer(25~50 mm): 09900-20202

Valve rocker arm



If the engine produces abnormal noise or vibration or the output power decreases, the valve rocker arm should be checked, and any of these anomalies may be caused by the worn valve rocker arm.

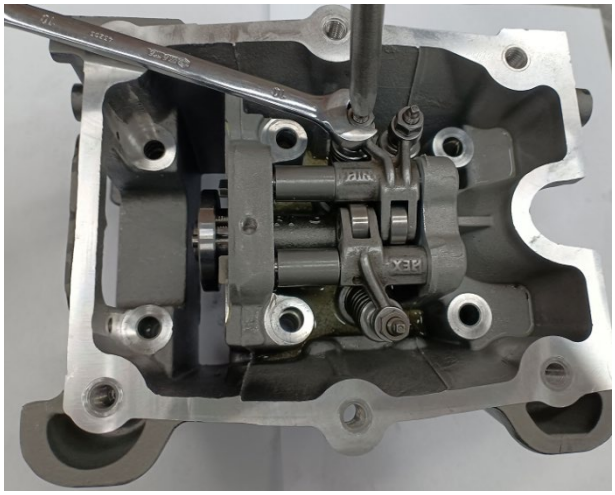
Intake valve rocker arm 1（IN）
Exhaust valve rocker arm 2(EX)



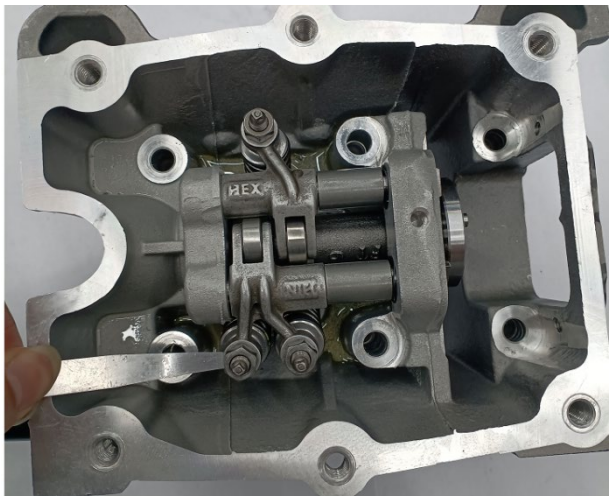
Tappet & shimwear

When measuring the valve clearance, the clearance should be within the standard range.

Valve clearance	Standard(When cold)
Intake valve	0.06±0.01mm
Exhaust valve	0.10±.0.01mm



Inspect the tappet for wear and scratch.



VALVE HEAD RADIAL RUNOUT

Place a dial gauge as shown and measure valve head radial runout.

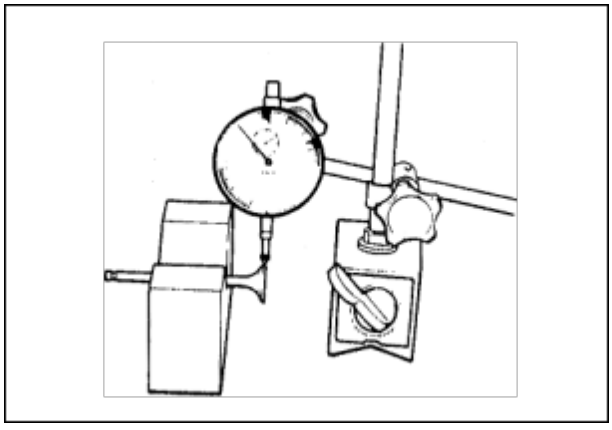
If the service limit is exceeded, replace the valve.

Valve head radial runout	Service limit
	0.03 mm

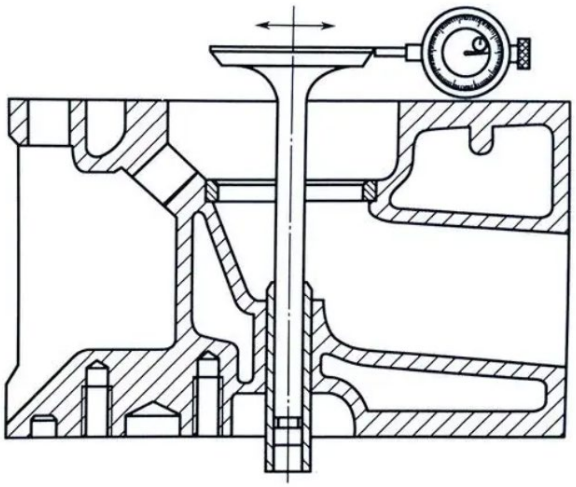
Dial gauge: 09900-20606

Magnetic stand: 09900-20701

V-block: 09900-21304



VALVE GUIDE-VALVE STEM CLEARANCE



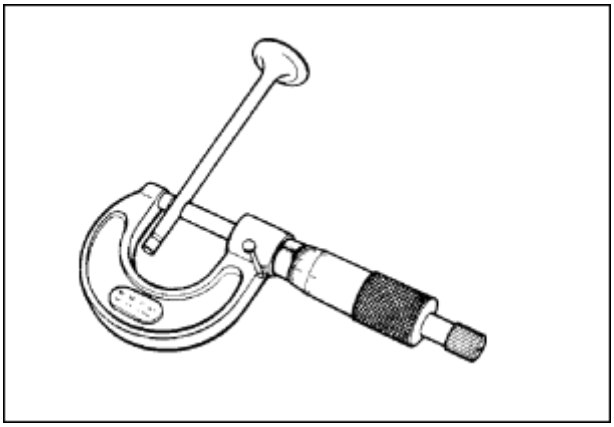
Measure the clearance in the valve guide-valve stem, by rigging up the dial gauge as shown. If the clearance is measured exceeds the limit specified below, then deter- mine whether the valve or the guide should be replaced to reduce the clearance to within the standard range:

Valve guide-valve stem clearance	Standard
IN.	0.010~0.037 mm
EX.	0.030~0.057 mm

TOOL **Dial gauge : 09900-20606**

Magnetic stand: 09900-20701

VALVE STEM DIAMETER



Measure the valve stem outside diameter.

If the diameter measured exceeds the standard, replace the valve.

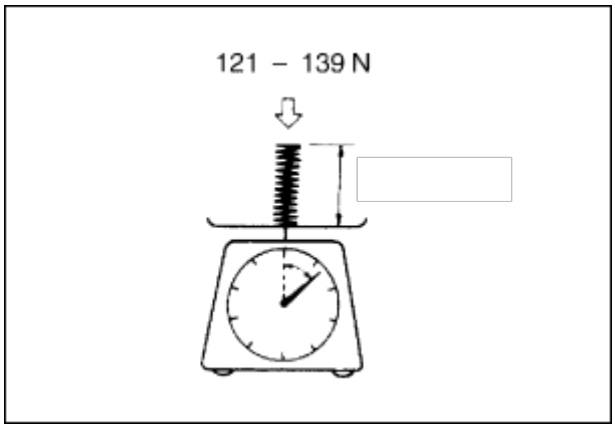
Valve stem diameter	Standard
IN.	3.975~3.990 mm
EX.	3.955~3.970 mm

TOOL **Micrometer (0~25 mm) : 09900-20201**

VALVE SPRING

The force of the coil spring keeps the valve seat tight. A weakened spring results in reduced engine power out- put and often accounts for the chattering noise coming from the valve mechanism.

Check the valve springs for proper strength by measuring their free length and also by the force required to compress them. If the spring length is less than the ser- vice limit or if the force required to compress the spring does not fall within the specified range, replace both the inner and outer springs as a set.



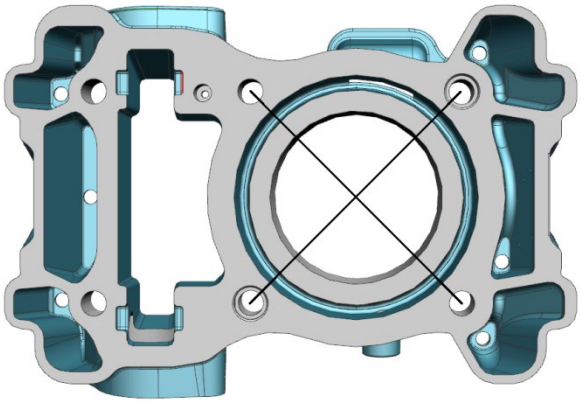
Valve spring free length(IN. & EX.)	Service limit极
	40.5mm

TOOL **Venier calipers : 09900-20101**

Valve spring tension (IN. & EX.)	Standard
	9.36~11.64kgf (at length 36.5mm)

CYLINDER DISTORTION

Check the gasketed surface of the cylinder for distortion with a straightedge and thickness gauge, taking a clearance reading at several places as indicated. If the largest reading at any position of the straightedge exceeds the limit, replace the cylinder.

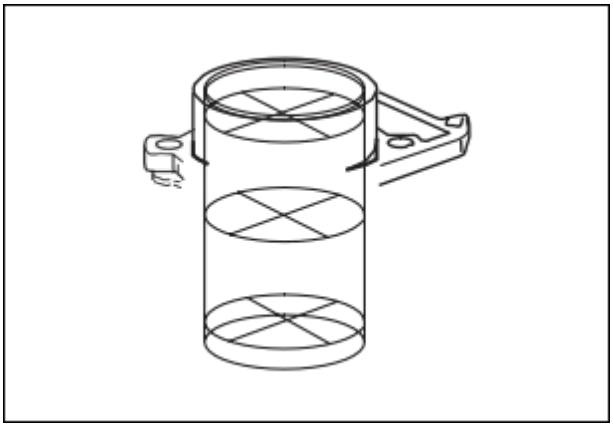


Cylinder distortion	Service limit
	0.05 mm

TOOL **Thickness gauge : 09900-20806**

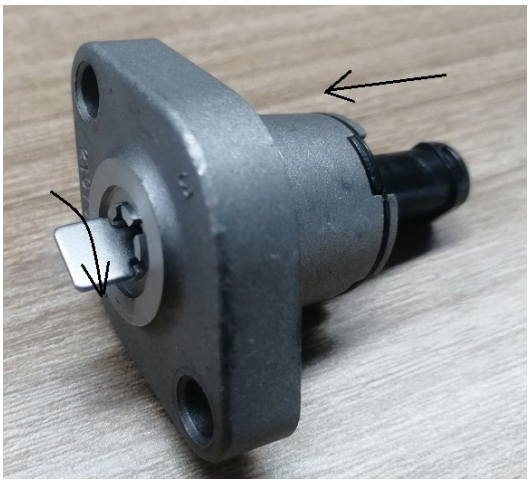
CYLINDER BORE

Measure the cylinder bore diameter at six place.
If any one of the measurements exceeds the limit, overhaul the cylinder and replace the piston with an oversize, or replace the cylinder.



Cylinder bore	Standard	Service limit
	42.000~42.015 mm	42.040 mm

TOOL **Cylinder gauge set : 09900-20508**



CAM CHAIN TENSION ADJUSTER

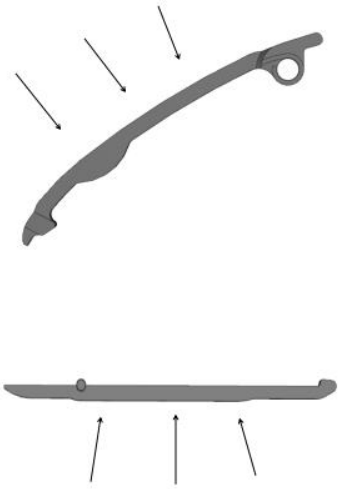
Check that the push rod slides smoothly with the lock shaft handle ① clockwise ( ).

If it does not slide smoothly, replace the cam chain tension adjuster with a new one.

CAM CHAIN TENSIONER

Check the contacting surface of the cam chain tensioner.

If it is worn or damaged, replace it with a new one.



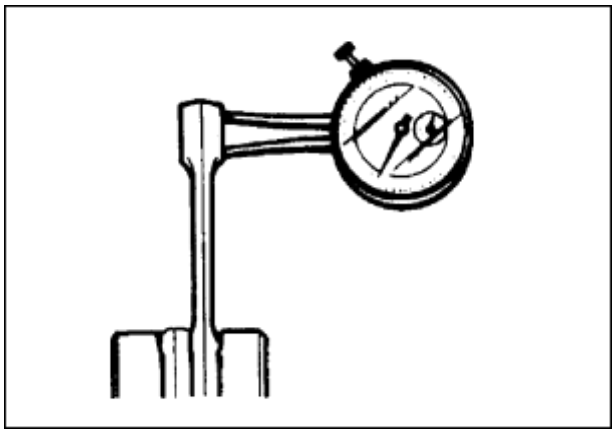
CAM CHAIN AND CAM CHAIN GUIDE

Check the cam chain for wear, damage and kinked or binding links. If any defects are found, replace it with a new one.

Check the cam chain guide for wear and damage. If it is found to be damaged, replace it with a new one.

CONROD SMALL END INSIDE DIAMETER INSPECTION

Using a dial calipers, measure the conrod small end inside diameter both in vertical and horizontal directions. If any of the measurements exceeds the service limit, replace the conrod.

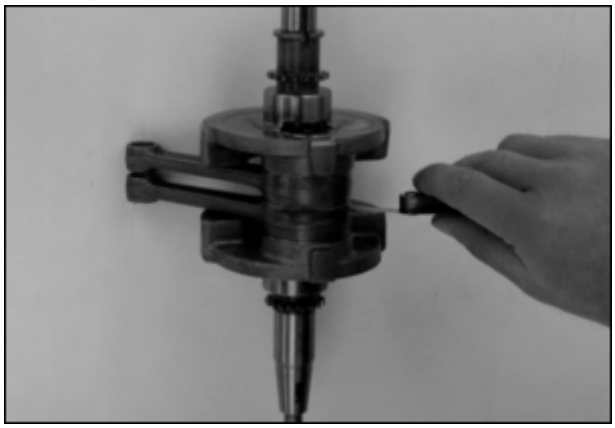


	Standard	Service limit
Conrod small end inside diameter	13.006~13.014 mm	13.040 mm

TOOL **Dial calipers : 09900-20605**

CONROD BIG END SIDE CLEARANCE INSPECTION

Using a thickness gauge, measure the side clearance at the conrod big end. If the measurement is out of stan- dard value, measure the conrod big end and the crank pin widths individually to determine which one is to be replaced.

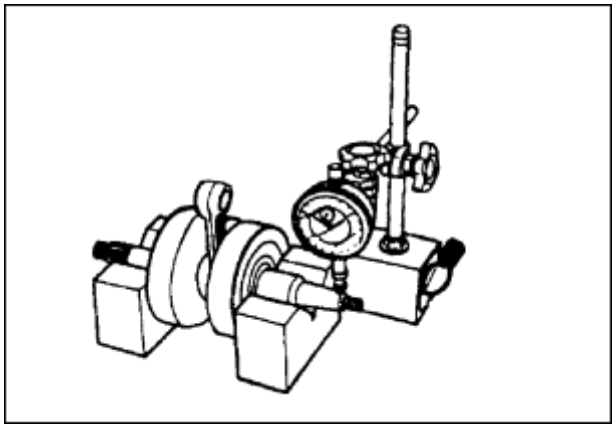


	Standard	Service limit
Conrod big end side clearance	0.40~0.85 mm	1.0 mm

TOOL **Thickness gauge : 09900-20806**

CRANKSHAFT RUNOUT INSPECTION

With the right and left crank journals supported with V- block, turn the crankshaft slowly. At this time, measure the crankshaft end runout using a dial gauge. If the runout exceeds the service limit, replace the crankshaft.



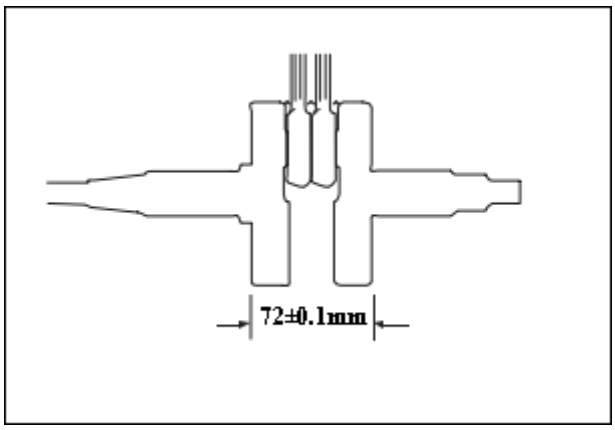
	Service limit
Crankshaft runout	0.05 mm

TOOL **Magnetic stand: 09900-20701**
Dial gauge : 09900-20606
V-block: 09900-21304

CRANKSHAFT REASSEBLY

Measure the width between the webs referring to the figure below when rebuilding the crankshaft.

Width between webs	Standard
	72±0.1 mm



MAGNETO COVER

MAGNETO INSPECTION

DISASSEMBLY

Remove the stator.

STARTER CLUTCH

Install the starter driven gear onto the starter clutch and turn the starter driven gear by hand(the gear turns in only one direction). The starter driven gear should turn smoothly. If excessive resistance is felt while turning the starter driven gear, inspect the starter clutch. Also, inspect the surface of the starter driven gear which contacts the starter clutch, for wear or damage. If any wear or damage is found, replace the defective part(-s).

DISASSEMBLY

Hold the magneto rotor with the rotor holder and remove the starter clutch bolts.

Rotor holder : 09930-44510

REASSEMBLY

Apply a small quantity of THREAD LOCK“1324” to the starter clutch bolts and tighten them to the specified torque while holding the rotor holder.

Thread Lock “1324”

Rotor holder: 09930-44510

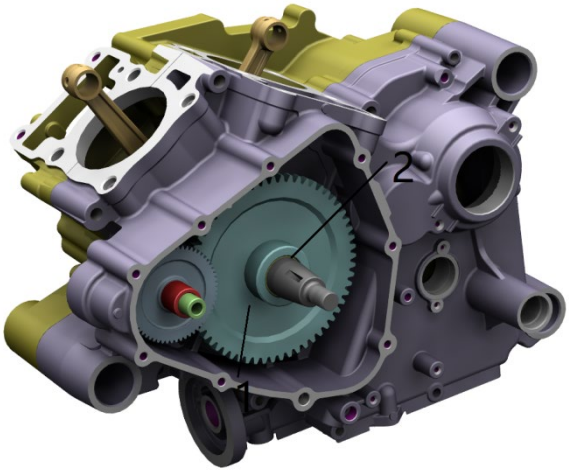
Starter clutch bolt

23~28 N·m(2.3~2.8 kg·m)

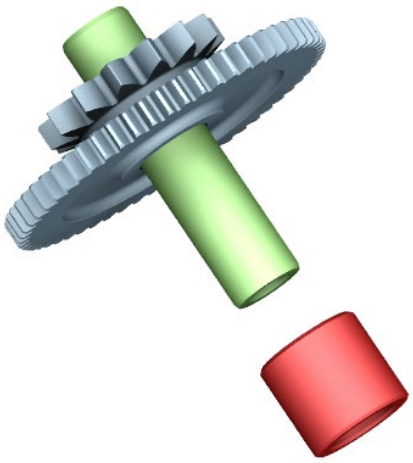
STARTER DRIVEN GEAR

STARTER DRIVEN GEAR BUSHING

Install the starter driven gear bushing ① and gear ②onto the crankshaft and turn the starter driven gear by hand. Inspect the starter driven gear bushing for smooth rotation and any abnormal noise. If the bushing does not turn smoothly or there is any abnormal noise, replace it.

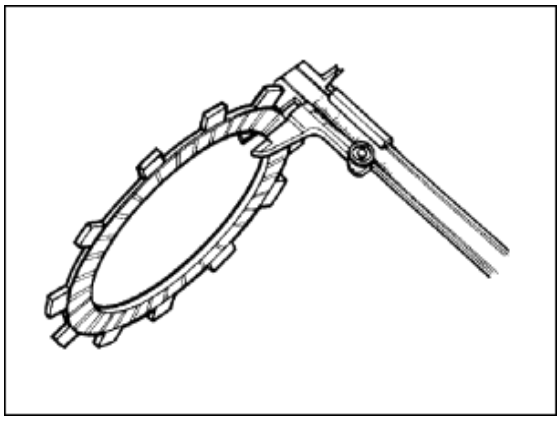


Electric starting motor idler wheel assembly



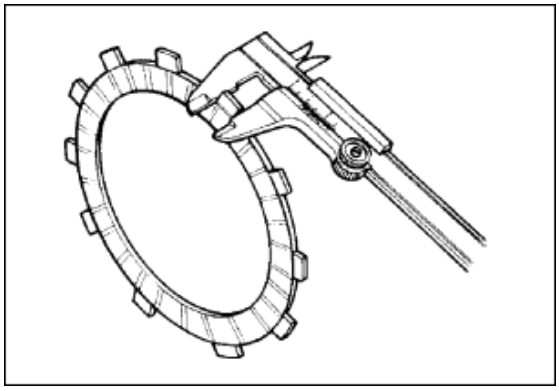
CLUTCH DRIVE PLATES

Measure the thickness and claw width of the clutch drive plates using vernier calipers. If a clutch drive plate is not within the service limit, replace the clutch plates as a set.



Clutch drive plate thickness	Standard	Service limit
	2.9~3.1 mm	2.6 mm

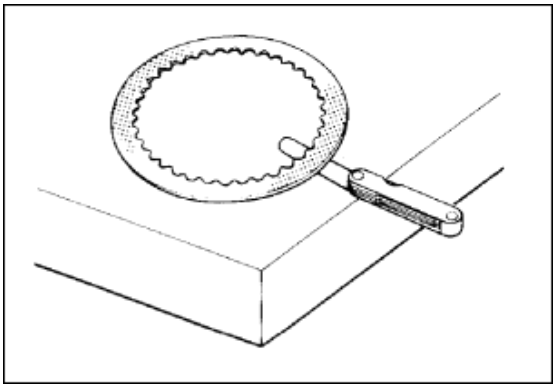
TOOL **Vernier calipers : 09900-20101**



Clutch drive plate claw width	Standard	Service limit
	11.8~12.0 mm	11.0 mm

CLUTCH DRIVEN PLATES

Measure each clutch driven plates for distortion using the thickness gauge. If a clutch driven plate is not within the service limit, replace the clutch plates as a set.



Clutch driven plate distortion	Service limit
	0.1 mm

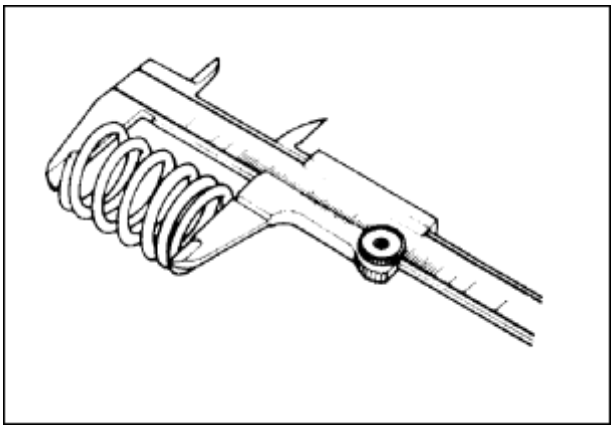
TOOL **Thickness gauge: 09900-20806**

CLUTCH SPRING FREE LENGTH

Measure the free length of each clutch spring using vernier calipers. If any spring is not within the service limit, replace all of the spring.

Clutch spring free length	Service limit
	28.3mm

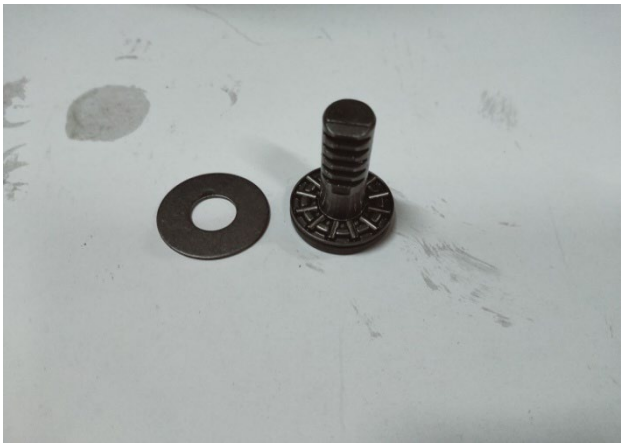
Vernier calipers : 09900-20101



CLUTCH RELEASE BEARING

Inspect the clutch release bearing for any abnormality, especially cracks. When removing the bearing from the clutch, decide whether it can be reused or if it should be replaced.

Smooth engagement and disengagement of the clutch depends on the condition of this bearing.



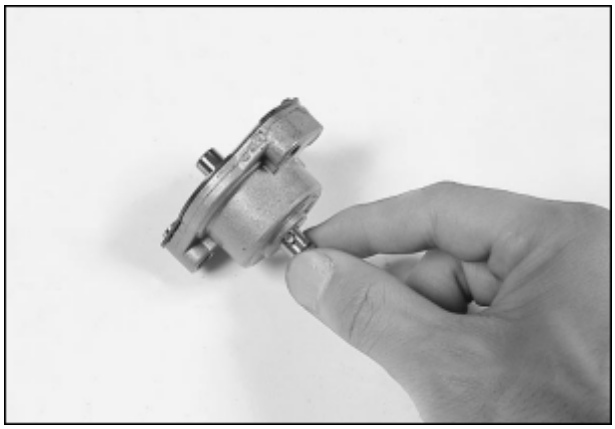
PRIMARY DRIVEN GEAR

Inspect the primary driven gear bearing for any damage.

If any abnormal condition are found, replace the primary driven gear.

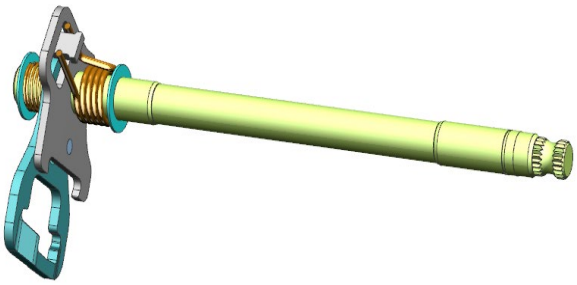
OIL PUMP

Turn the oil pump shaft and check that rotation is smooth. If any abnormal condition is found, replace the oil pump with new one.



GEARSHIFT SHAFT

Disassemble and reassemble the gearshift shaft as shown in right picture.



TRANSMISSION

INSPECTION

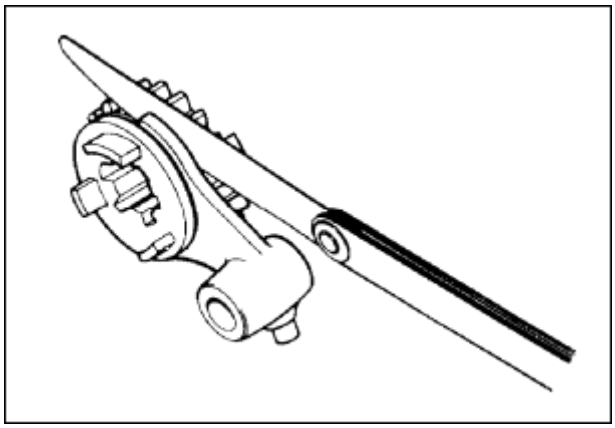
GEAR-SHIFTING FORK

Using a thickness gauge, check the clearance between in the groove of its gear and shifting fork.

The clearance for each of the three shifting forks plays an important role in the smoothness and positiveness of shifting action.

If the clearance checked is noted to exceed the limit specified, replace the fork or its gear, or both.

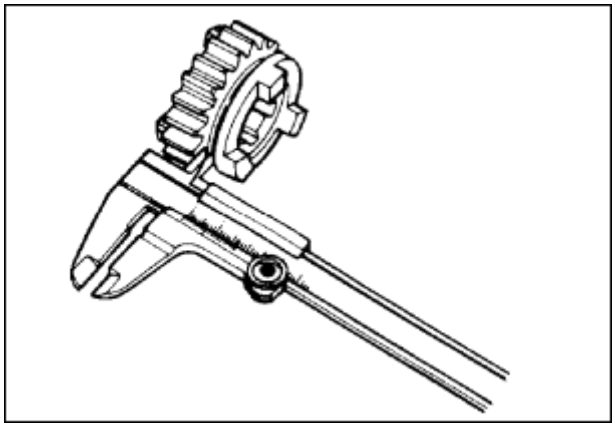
Shift fork-groove clearance	Standard	Service limit
	0.10~0.30 mm	0.5 mm



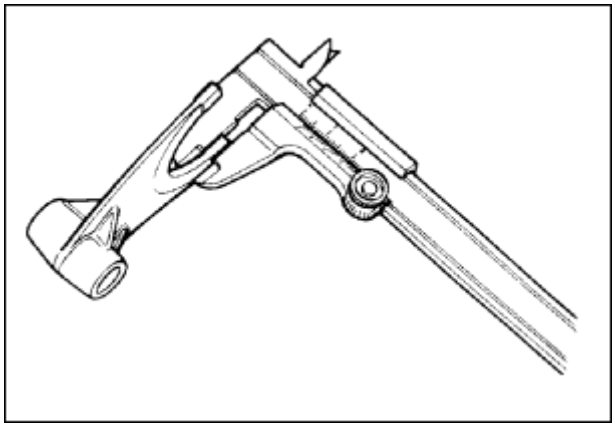
Thickness gauge : 09900-20806

Vernier calipers: 09900-20101

Shift fork groove width	Standard
NO.1 & NO.2	5.0~5.1 mm
NO.3	5.0~5.1mm



Shift fork thickness	Standard
NO.1 & NO.2	4.8~4.9 mm
NO.3	4.8~4.9 mm

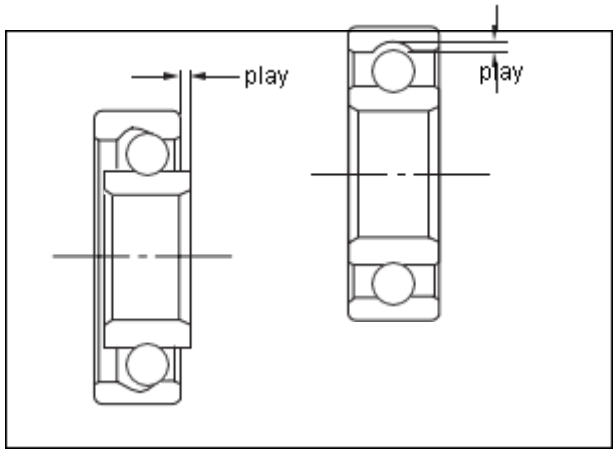


CRANKCASE

BEARING INSPECTION

Rotate the bearing inner race by finger to inspect for abnormal play, noise and smooth rotation while the bearings are in the crankcase.

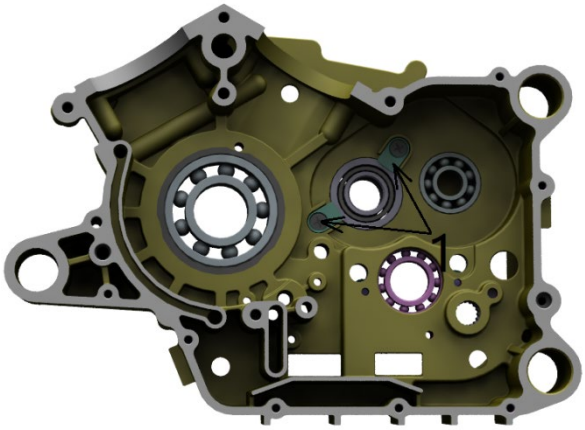
Replace the bearing in the following procedure if there is anything unusual.



DISASSEMBLY

RIGHT CRANKCASE BEARING

Remove the bearing retainer 1.

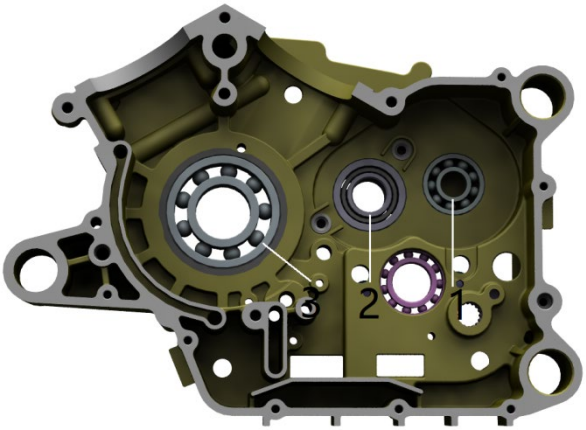


Remove the bearings ① and ②.

Bearing remover (17 mm) : 09923-73210

Bearing remover (20~35 mm) : 09923-74510

Bearing installer: 09913-76010



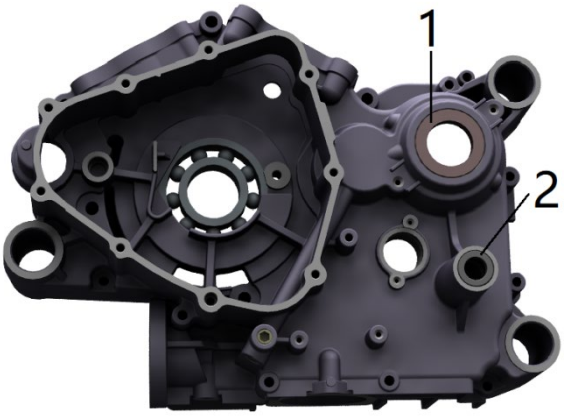
CAUTION

The removed bearing should be replace with a new one.

LEFT CRANKCASE BEARING

Remove the oil seals 1 and 2.

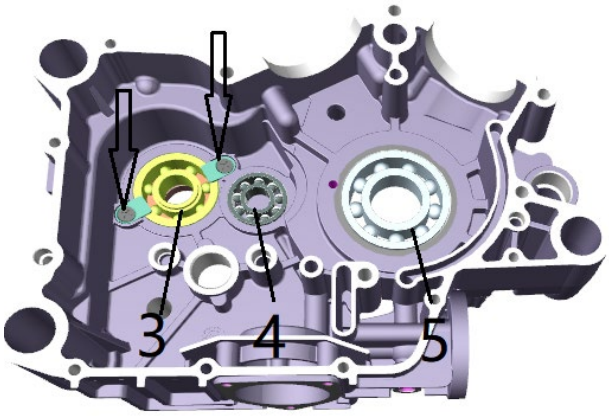
Oil seal remover : 09913-50121



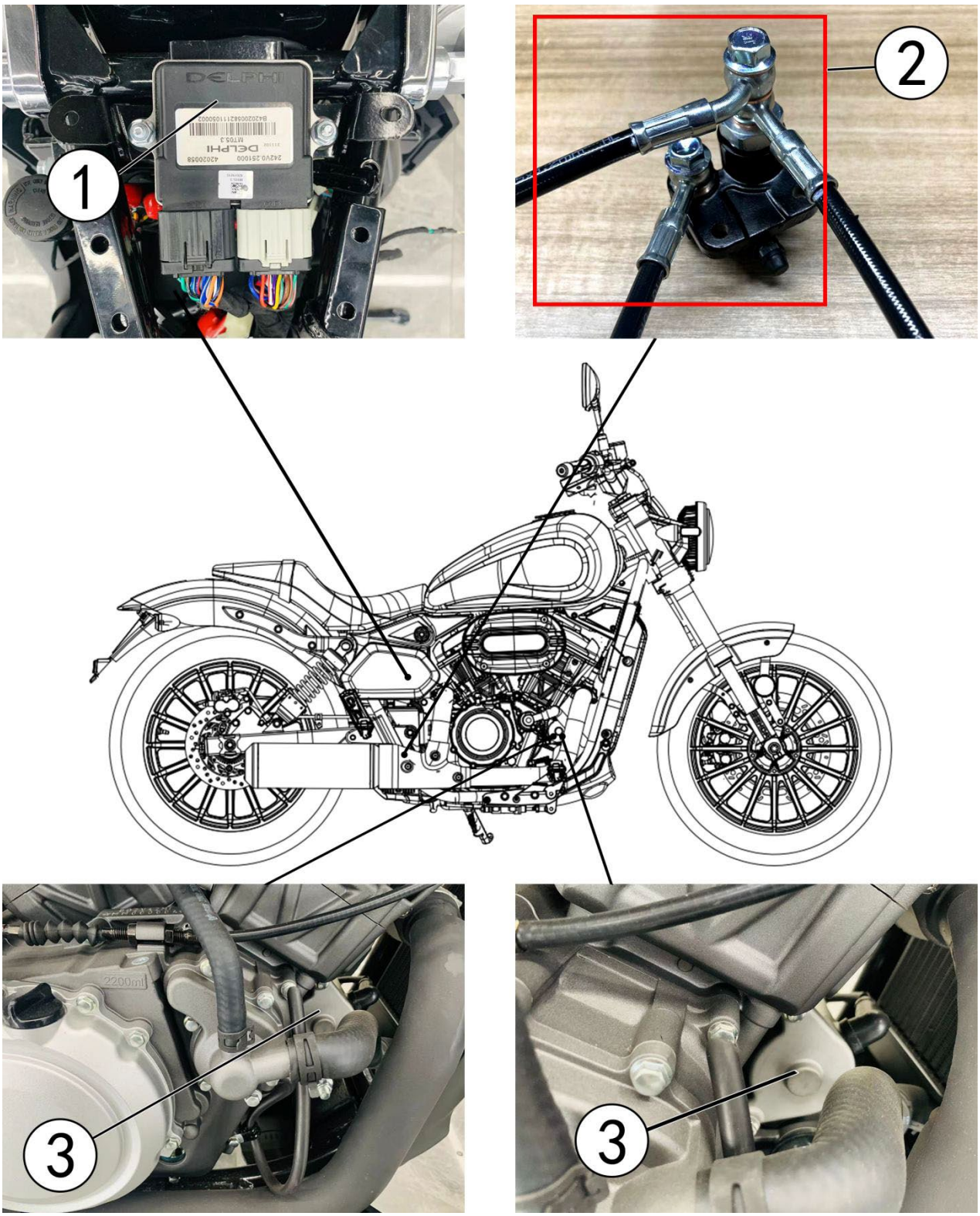
Remove the bearing retainer.

Remove the bearings 3, 4 and 5.。

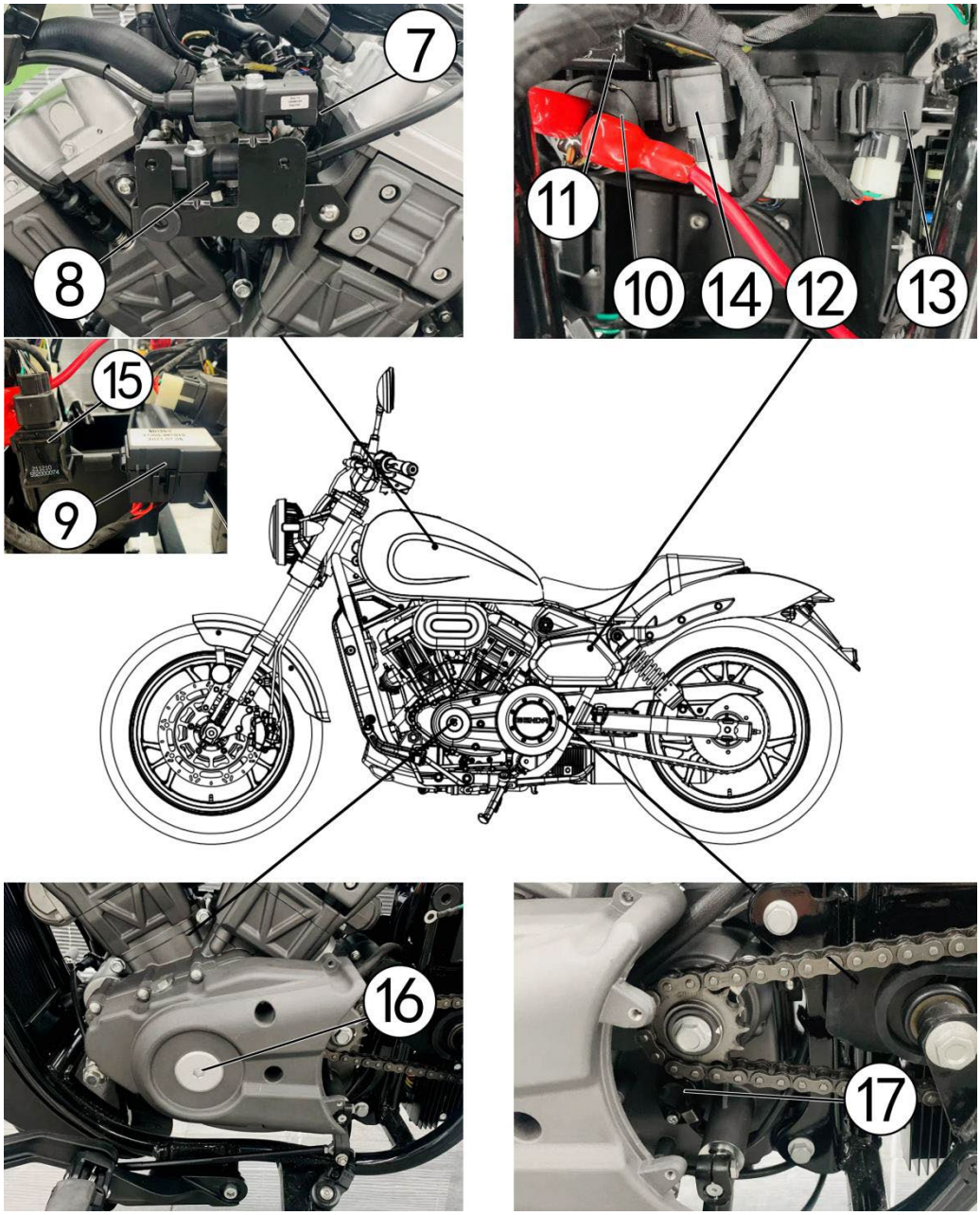
Bearing remover (17 mm) : 09923-73210
Bearing remover (20~35 mm) : 09923-74510



LOCATION OF ELECTRICAL COMPONENTS



①	ECU	②	Fuse	③	Starter motor



⑦	**Ignition coil (NO.1 FRONT)**	⑧	**Ignition coil (NO.2 REAR)**	⑨	**ECU fuse box ECU**
⑩	**Main relay**	11	**(RO) switch**	12	**Logic relay1**
13	**Logic relay2**	14	**Logic relay3**	15	**Flasher**
16	**Magneto**	17	**Gear position switch**		

⚠ CAUTION

Be sure not to misassemble the position of battery plus & minus terminal.

ELECTRIC INJECTION SYSTEM

Brief introduction of electric injection system

The RKV125C uses Delphi electric injection system, which is oxygen sensor closed-loop control, ECU injection and ignition control. The system adopts closed-loop control self-learning system, which can effectively eliminate the manufacturing differences of the system and related mechanical parts, improve the comprehensive consistency of the vehicle, and eliminate the errors caused by wear and tear after actual use of the vehicle.

Electric injection system components

Engine controller ECU

working principle

The electric injection management system of DELPHI is adopted. The ECU of the system analyzes and calculates the working state of the engine by receiving sensor signals and work request switch signals at different positions of the engine and the body. According to the preset control model, through the actuator of the engine and the body, Precise control of engine oil, fire, gas and corresponding mechanism.

appearance

Stitch definition

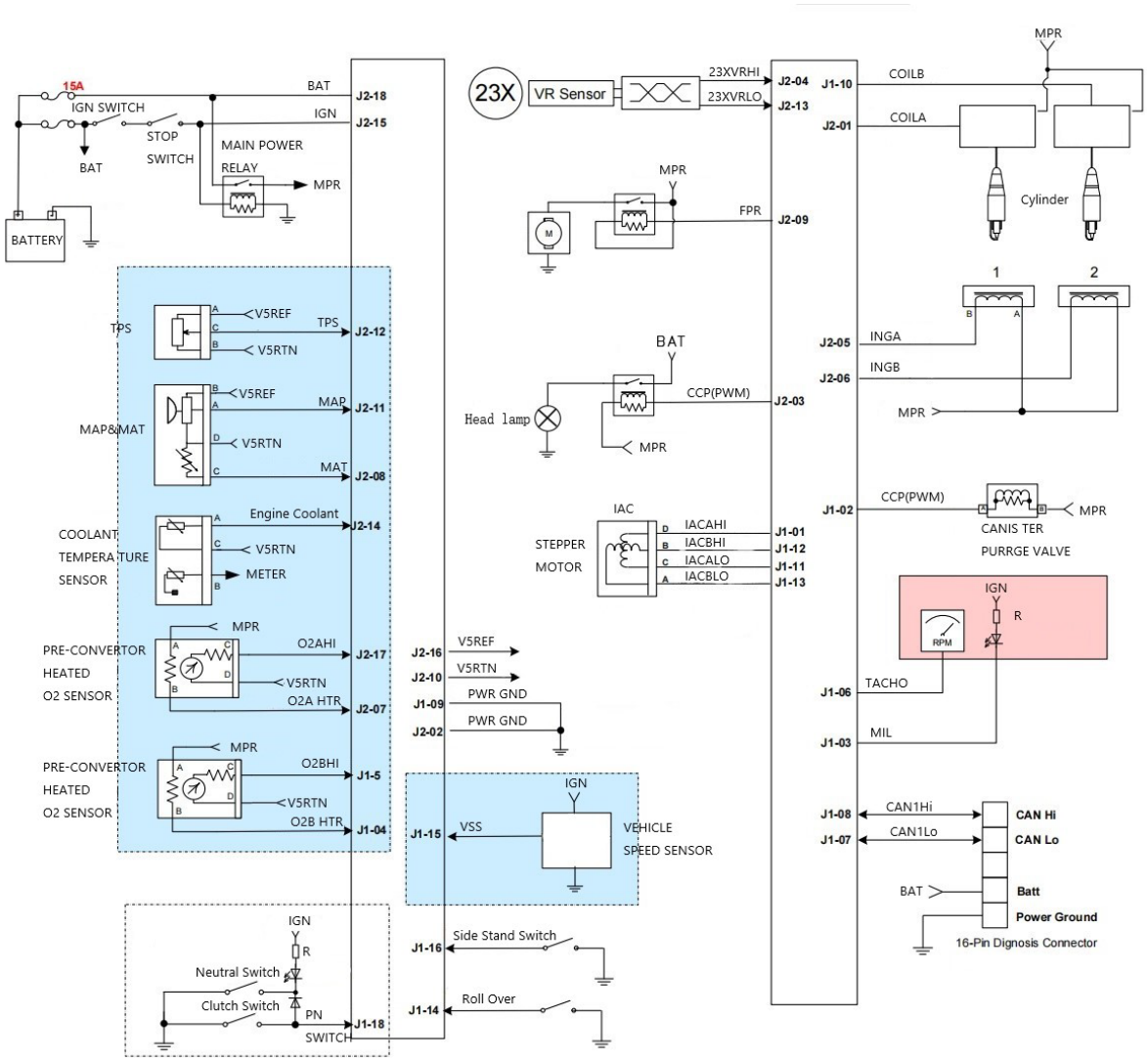
J1-1	IACAHI	J2-1	COILA
J1-2	MAGNETO CUT RELAY	J2-2	GND
J1-3	MIL	J2-3	Head lamp
J1-4	O2BHTR	J2-4	CRANK Hi
J1-5	O2B	J2-5	INJA
J1-6	TACH	J2-6	INJB
J1-7	CAN Lo	J2-7	O2AHTR
J1-8	CAN Hi	J2-8	IAT_MAT
J1-9	GND	J2-9	FUEL PUMP RELAY
J1-10	COILB	J2-10	5V RTN
J1-11	IACA Lo	J2-11	MAP
J1-12	IACB Hi	J2-12	TPS

J1-13	IACB Lo	J2-13	CRANK Lo
J1-14	ROLLOVER	J2-14	CLT
J1-15	VSS	J2-15	IGN
J1-16	Side Stand Switch	J2-16	5VREF
J1-17		J2-17	O2A
J1-18	PNSW	J2-18	VBATT

Remark:

J1 indicates the grey plug-in on the ECU, J2 indicates the black plug-in on the ECU, and J1-1 indicates the pin # 1 on the grey plug-in on the

ECU schematic diagram



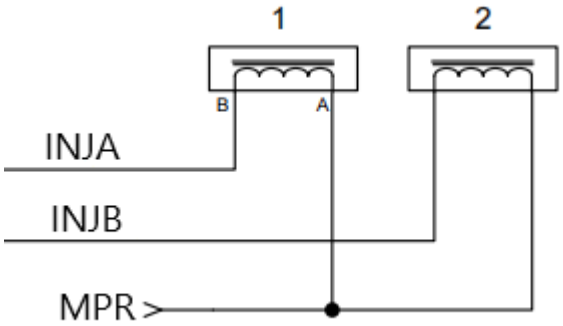
Electric fuel Injector

working principle

Injector interior design with surrounding the core of electromagnetic coil, an electromagnetic coil leads to the two electrodes is the fuel injector input control interface, when the electromagnetic coil current and electromagnetic force generated by overcoming the ball valve spring force and oil pressure, make the ball valve rises, the fuel tube of high pressure fuel (300 kpa) can through the fuel valve seat hole, Flow through the orifice plate and form a conical fog spray to the inlet valve, when the fuel injector power off, the electromagnetic force of the solenoid coil disappears, the valve valve of the fuel injector under the action of the return spring closed, so that the fuel injection action stopped.

appearance

Stitch definition



technical specification

A.	SYSTEM FUEL PRESSURE (kPa) SET POINT PULSE WIDTH/PERIOD (ms)	350.0±0.2% 2.0/10.0
B.	SET POINT FLOW RATE (g/s) (1)	0.222±5%
C.	STATIC FLOW RATE (g/s) (2)	1.37±5%
D.	COIL RESISTANCE	12.0±0.6 Ohms
E.	MINIMUM OPERATING VOLTAGE - MAX INDIVIDUAL	7.0 V
F.	TIP LEAK RATE (N_2) - MAX. (cc/min) (3)	0.6
G.	SET POINT DURABILITY FLOW SHIFT - INDIVIDUAL (%)	10%
H.	STATIC DURABILITY FLOW SHIFT - INDIVIDUAL (%)	10%
J.	DURABILITY TEST FUEL	NAE10
K.	DURABILITY TEST FUEL TEMPERATURE (DEGREE C)	24±2
L.	INJECTOR TIP TO SPRAY AUDIT PLANE DISTANCE	100mm
L1.	DUAL SPRAY SEPARATION ANGLE - MAX. INDIVIDUAL MANUFACTURING SITE INFORMATION	20.5° ±6°
L2.	DUAL SPRAY SEPARATION ANGLE - SUBGROUP MEAN MANUFACTURING SITE INFORMATION	20.5° ±3°
L3.	DUAL SPRAY CONE ANGLE - MAX. INDIVIDUAL MANUFACTURING SITE INFORMATION	12.5° ±6°
L4.	DUAL SPRAY CONE ANGLE - SUBGROUP MEAN MANUFACTURING SITE INFORMATION	12.5° ±3°
L5.	DUAL SPRAY ORIENTATION ANGLE	90° ±5°

throttle body

working principle

It is mainly composed of the main casting body, return spring, throttle pull wire, stepper motor, throttle body position sensor and idle speed regulating screw.Throttle body position sensor provides throttle opening to the ECU; The stepper motor and the idle speed regulating screw can control the idle speed and its stability, clockwise to reduce the bypass air volume, reduce the idle speed, counterclockwise to increase the bypass air volume, increase the idle speed (this step has been set before factory), generally requires its position to be about 2 turns. Stepper motor is used for idling stability self-regulation of electric injection system.

appearance

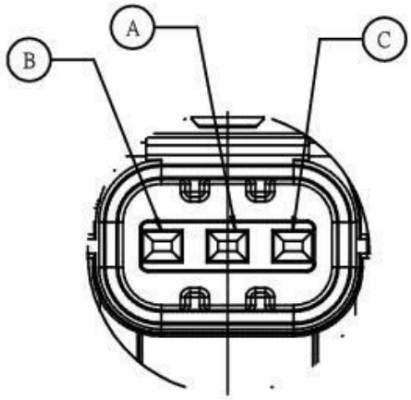
Throttle Position Sensor

working principle

Throttle position detection - provides throttle opening feedback signal to engine control system.

appearance

Stitch definition



ID	DESIGNATION
A	INPUT
B	OUTPUT
C	GND

technical specification

SPECIFICATION REQUIREMENTS

Linearity	See Fig. 1
Hysteresis	±50mV over the electrical travel (no filter used)
Index	0.5V at 38.1° ±2°
Resistance (□AR)	5 Kohm ±40%
Microgradient (0° - 40°)	40 mV/1° ±10 mV/1° (Initial before durability test)
	40 mV/1° ±20 mV/1° (Final after durability test)
Input Voltage (Vs)	5.0 Vdc ±0.1 Vdc
□utput Voltage at Full Rotation (Minimum)	4.89 Vdc
□perating Torque	0.89 Ncm to 5.1 Ncm
Insulation Resistance	100 MΩ Minimum (based on 500 V source)
□utput Deviation (Temperature)	Within region -30C° to +110C°, 0.3mV/°C or les
Storage Temperature	-40°C to +120°C
□perating Temperature	-30°C to +110°C
Connector Cycles	100 max on-off cycles (sensor only) [3]
Rotor Stop Strength	1.0 Nm maximum
Fastening Torque	No excessive play, buckling, deformation, fracture, or other abnormalities allowed when tightened by a 4.5 Nm torque with M5 bolt and Ø8.9 mm minimum X 1.0 mm thick washer. Scratches on bearing surfaces are allowed.
Tensile Strength	Connector integrity remains intact after a load of 49 N

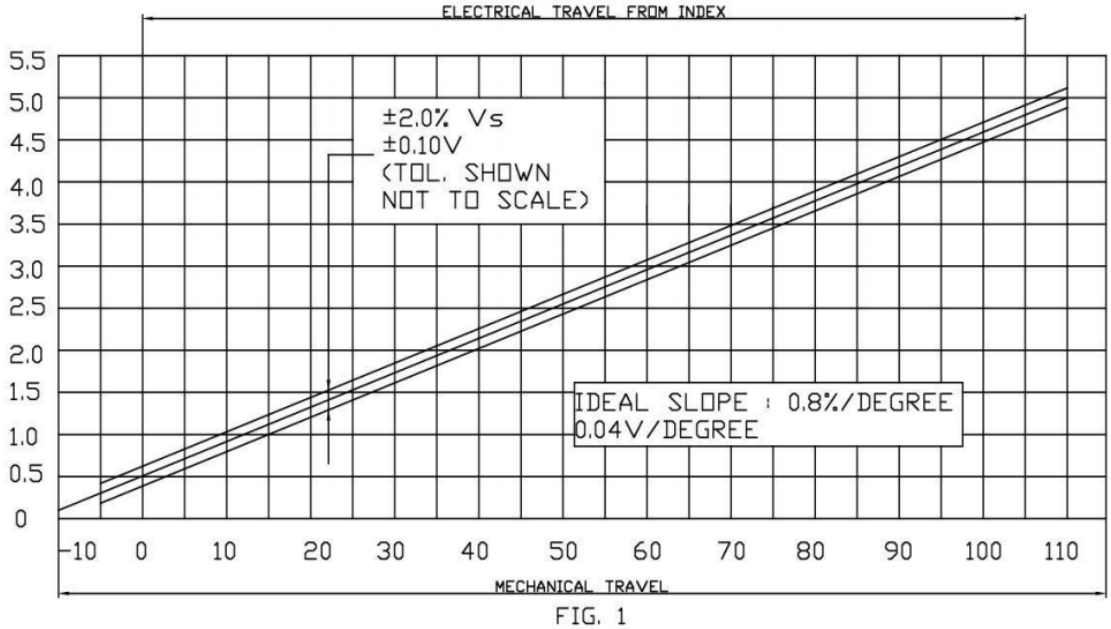


FIG. 1

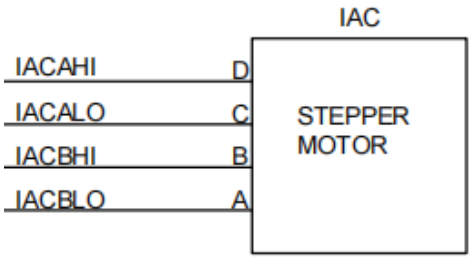
Stepper motor

working principle

The function of the idle stepper motor is to control the flow area of the vent beside the throttle body to adjust the amount of air entering the engine and control the idle speed of the engine.

appearance

Stitch definition



technical specification

NUM	ITEM	Arguments
1	NOMINAL VOLTAGE	12V
2	Allowable Opeerating Voltage	7.5VDC-14VDC
3	Each phase resistance(25℃)	53±3Ω
4	Each phase resistance(-40℃)	≥35 Ω
5	Each phase inductance(25℃)	35±5mH(Test under 1KHz sine wave)
6	Step torque Angle	15° ±15'
7	Step into the distance	0.0417mm±0.0063mm
8	Current by phase	160±30mA
9	Adjustable torque (12V/200pps)	20N.m
10	Maximum working distance	≥10mm
11	Dielectric strength of insulation	No breakdown or arc
12	Gas tightness(-61KPa VACUO)	leakage ≤100CC/min
13	Resonance frequency range	70-120 PPS

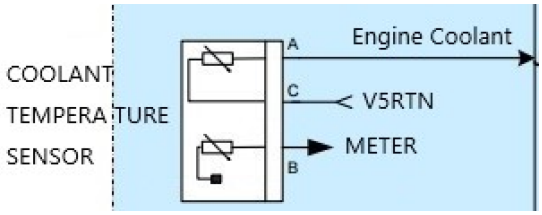
Water Temperature Sensor

working principle

Engine water temperature sensor is used for water-cooled engine to measure the temperature of engine cylinder head. Within the temperature range of the sensor, its resistance will change with the temperature of the engine, and its temperature characteristics are negative temperature coefficient resistance characteristics. It is a non-repairable part.

appearance

Stitch definition



technical specification

R (a-c)				R(b-METER)	
T (℃)	R(Ω)	R Accuracy (±%)	T Accuracy(±℃)	T (℃)	R(Ω)
−40	100856	4.87	0.7	45	265.0−323.0
−35	72437	4.64	0.7	50	216.0−264.0
−30	52594	4.43	0.7	54	185.0−226.0
−25	38583	4.21	0.7	60	148.5−180.5
−20	28582	4.00	0.7	80(Z)	74.6−90.6
−15	21371	3.80	0.7	90	53.5−66.5
−10	16120	3.60	0.6	100	40.6−48.6
−5	12261	3.40	0.6	108	34.0−38.0
0	9399	3.21	0.6	110	32.0−36.0
5	7263	3.06	0.6	113	30.0−34.0
10	5658	2.92	0.6	115(Z)	25.7−31.7
15	4441	2.78	0.6	120	23.0−27.0
20	3511	2.64	0.6	125	20.5−24.5

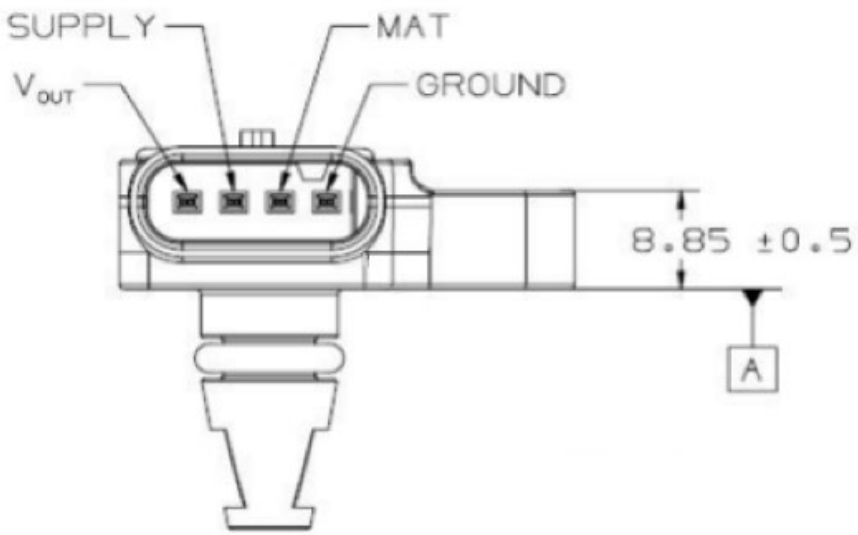
Intake Air Temperature Sensor

working principle

The sensor is used to measure the absolute pressure of the inlet bend pipe, according to the different resistance values reflect the size of the inlet pressure, so as to indirectly convert into the calculation of the size of the inlet gas into the engine combustion chamber, it is also a non-repairable part. At the same time for measuring the temperature of the air entering, the resistance will change with the temperature of the air intake, its characteristics are also negative temperature coefficient resistance characteristics, it is not repairable parts.

appearance

Stitch definition



technical specification

working voltage：5DVC

response time：＜15S

operating temperature：-40～150℃

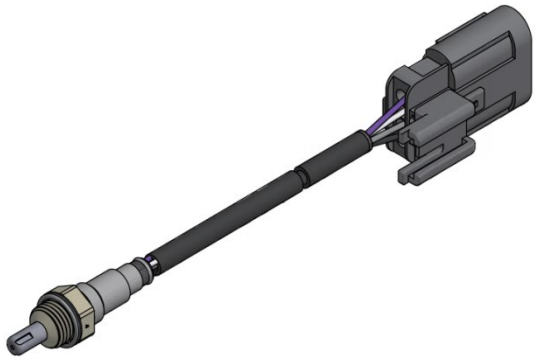
relative humidity：0 to 100% RH

Oxygen Sensor

working principle

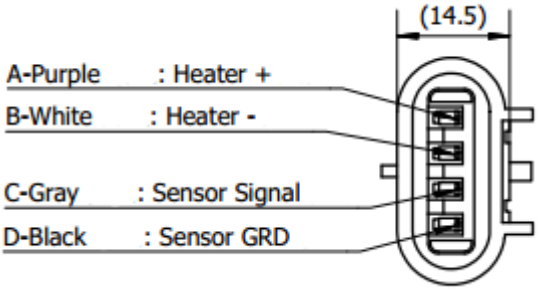
The oxygen sensor can detect the oxygen content in the exhaust gas of the engine exhaust pipe, which is used in the closed-loop control of the fuel inside the ECU, so that the engine combustion is always maintained at the most reasonable air to gasoline ratio.

appearance



Stitch definition

COLOR REF:
HEATER +(PURPLE)
HEATER - (WHITE)
SENSOR SIGNAL (GRAY)
SENSOR GRD. (BLACK)

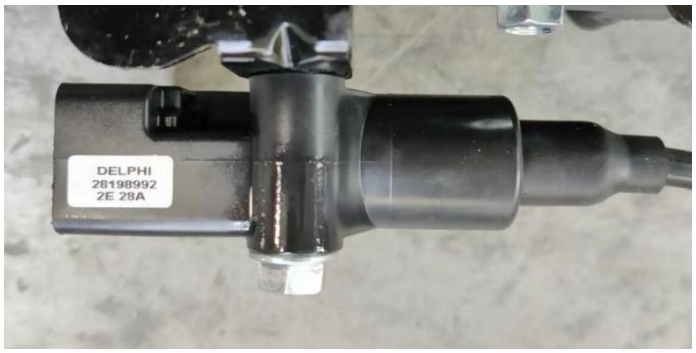


technical specification

Functional Values	
Exhaust gas temperature	450 ℃
Sensor voltage at λ=0.97 (mV)	≥720
Sensor voltage at λ=1.10 (mV)	≤120
Internal resistance (kohm)	≤0.5
Response time (ms) 600~300mv	≤120
Response time (ms) 300~600mv	≤80
Heater Current(A) U=13.5V	0.30±0.2

ignition coil

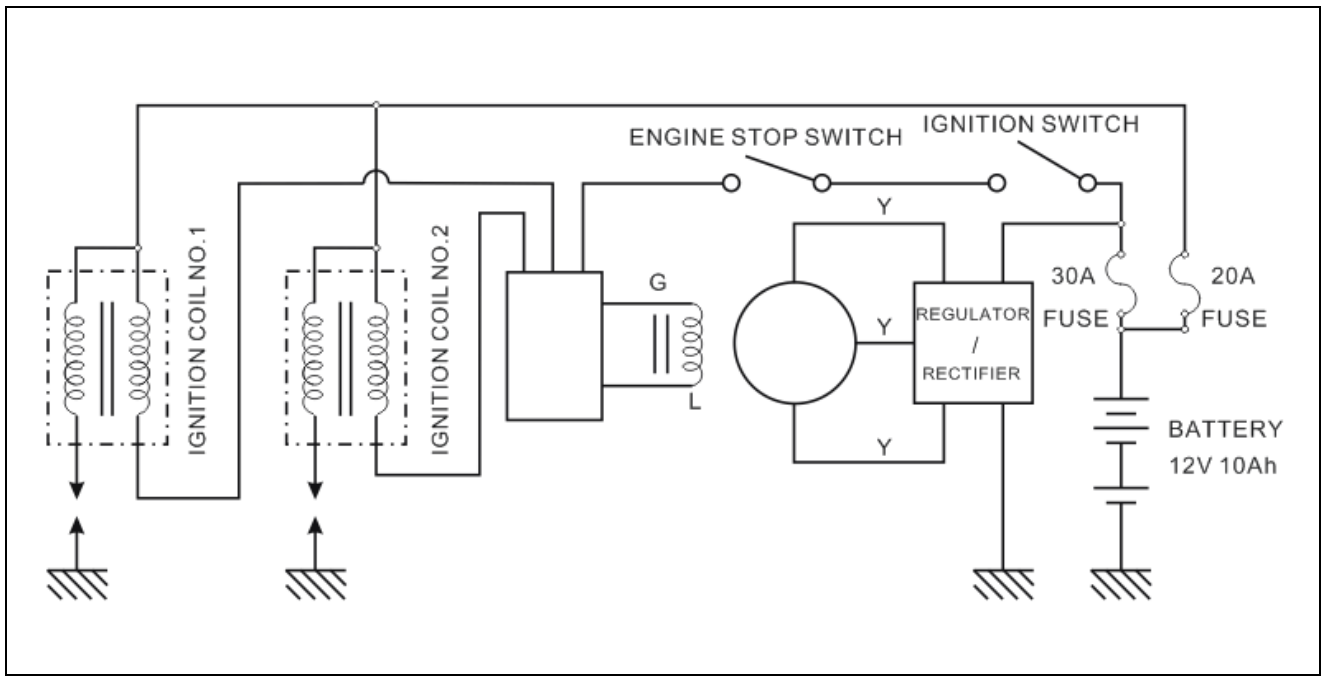
appearance



working principle

The ignition coil provides energy to the spark plug, and a high voltage wire connects the ignition coil to the spark plug.

IGNITION SYSTEM



□ INSPECTION

□ MAGNETO

□ Using the pocket tester, measure the resistance between the lead wires in the following table.

▫ If the resistance is not within the specified value, replace the stator coil, with a new one.

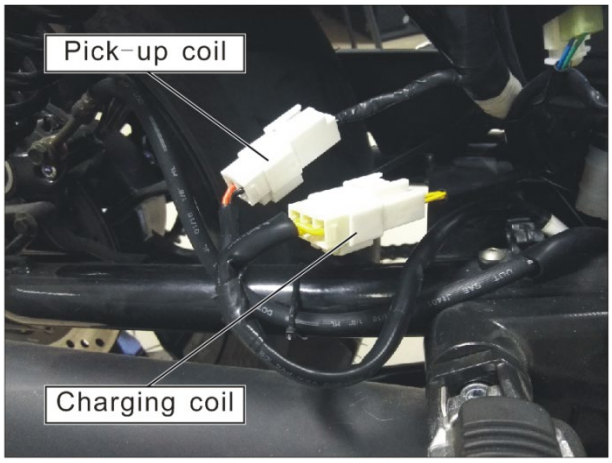
Stator coil resistance	Standard
Pick-up coil	G – L Approx. 95 ~ 125 Ω
Charging coil	Y – Y Approx. 0.3 ~ 0.6 Ω

Pocket Tester : 09900-25002

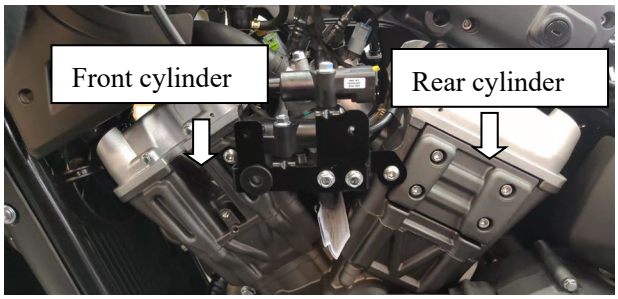
Multimeter： 09900-25002

Tester knob indication : Resistance(Ω)

N O T E
When making above test, it is not necessary to remove the magneto.



IGNITION COIL PRIMARY PEAK VOLTAGE INSPECTION

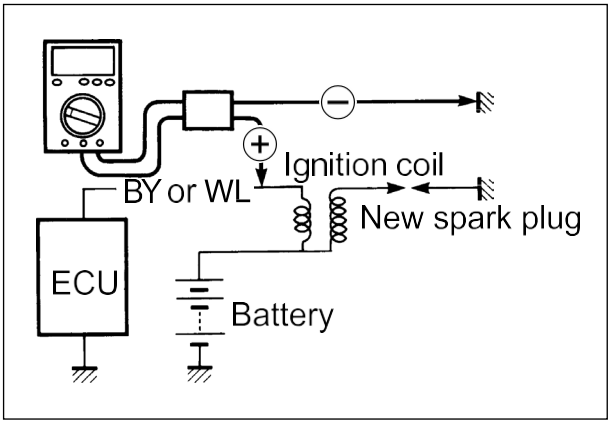


- Remove the fuel tank and frame cover.
- Disconnect the two spark plug caps.
- With the spark plug cap connected, place a new spark plug on the engine to ground it.

NOTE
❖ ***Check that all the couplers are connected.***   ❖ ***Check that the all battery is fully charged.***

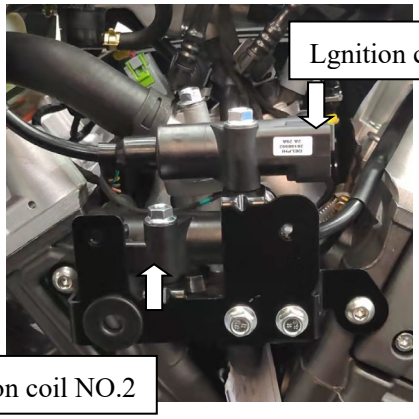
Measure the No.1 and No.2 ignition coil primary peak voltage using the tester in the following procedure.

- Connect the tester as follows.



NO.1 Ignition coil	
⇒	⊕ Probe : BY lead wire terminal
	⊖ Probe : Ground

NO.2 Ignition coil	
⇒	⊕ Probe : WL lead wire terminal
	⊖ Probe : Ground



NOTE
Do not disconnect the ignition coil / plug cap lead wire couplers.

- Shift the transmission into the neutral and then turn the ignition switch to the "ON" position.
- Squeeze the clutch lever.
- Press the starter switch and allow the engine to crank for a few seconds, and then measure the ignition coil primary peak voltage.
- Repeat the above procedure a few times and measure the highest ignition coil primary peak voltage.

Ignition coil primary peak voltage	400 V and more

TOOL Pocket tester : 09900-25002

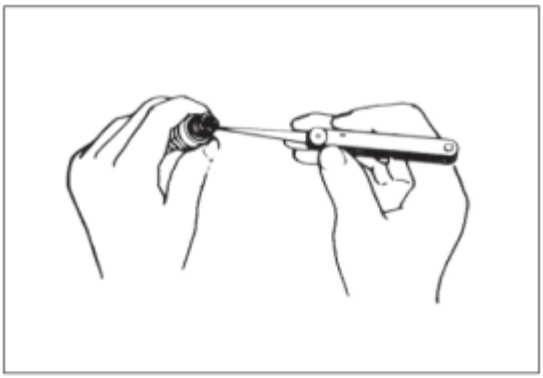
Tester knob indication : Voltage (⎓)

■ SPARK PLUG

▷ CARBON DEPOSITS

Check to see if there are carbon deposits on the spark plug.

If carbon is deposited, remove it with a spark plug cleaner machine or carefully use a tool with a pointed end.

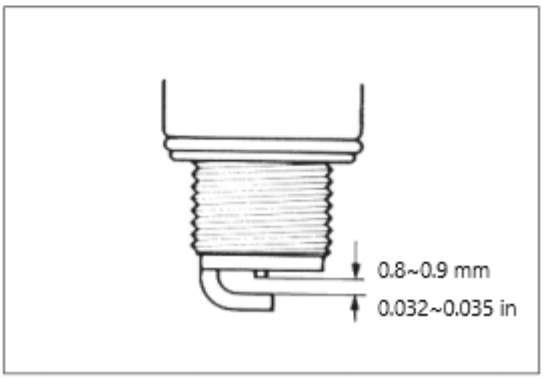


▷ SPARK PLUG GAP

Measure the spark plug gap with a thickness gauge.

If the spark plug gap is out of specification, adjust the gap.

Spark plug gap	**0.8 ~ 0.9 mm (0.032 ~ 0.035 in)**



Thickness gauge : 09900-20806

▷ ELECTRODE'S CONDITION

Check to see the worn or burnt condition of the electrodes.

If it is extremely worn or burnt, replace the spark plug.

Replace the spark plug if it has a broken insulator, damaged thread, etc.

⚠ CAUTION

Use recommended spark plug only.
A spark plug of the wrong rating may shorten engine life and cause loss of performance.

▷ SPARK PLUG INSTALLATION

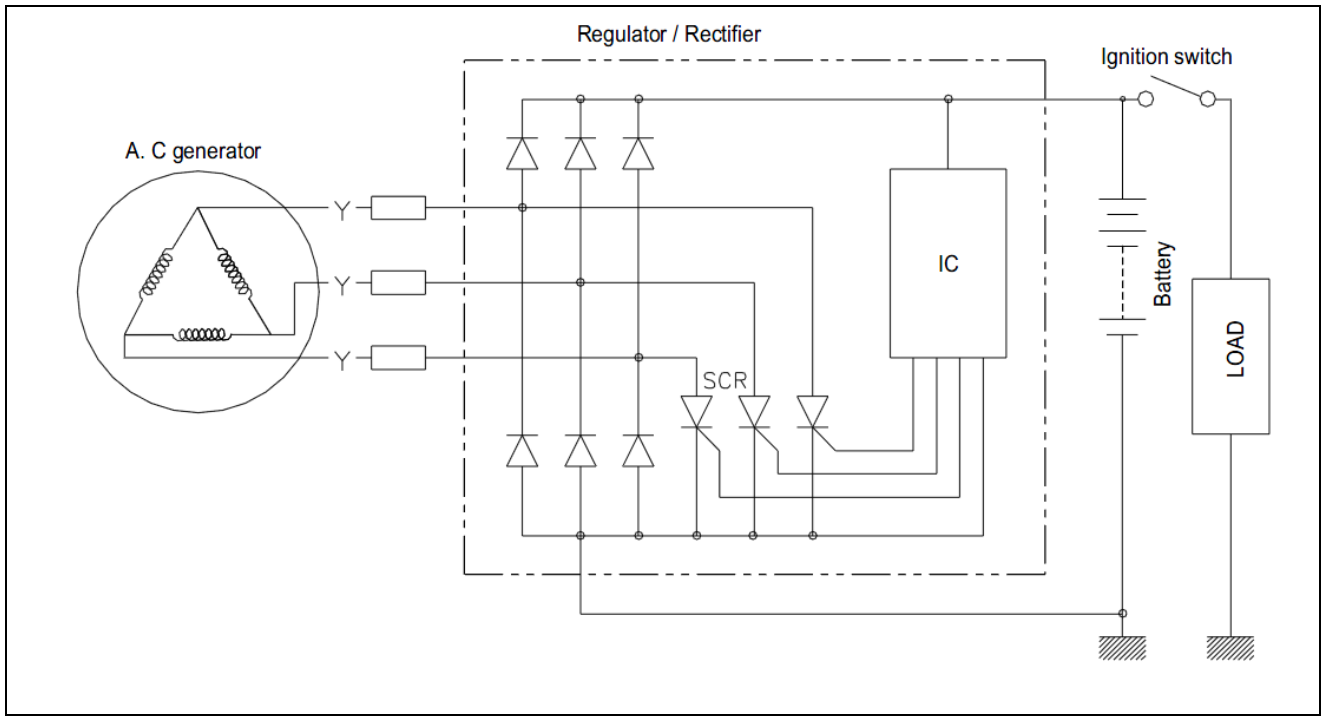
⚠ CAUTION

Before tightening the spark plug to the specified torque, carefully turn the spark plug by finger into the threads of the cylinder head to prevent damage the aluminum threads.

● First, finger tighten the spark plug, and then tighten them to the specified torque.

Spark plug
: 15 ~ 20 N·m (1.5 ~ 2.0 kgf·m)

CHARGING SYSTEM

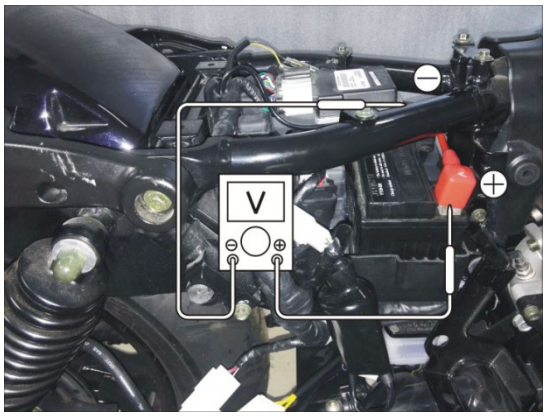


INSPECTION

CHARGING OUTPUT CHECK

Start the engine and keep it running at 5,000 rpm.
Using the pocket tester, measure the DC voltage between the battery terminal ⊕ and ⊖.

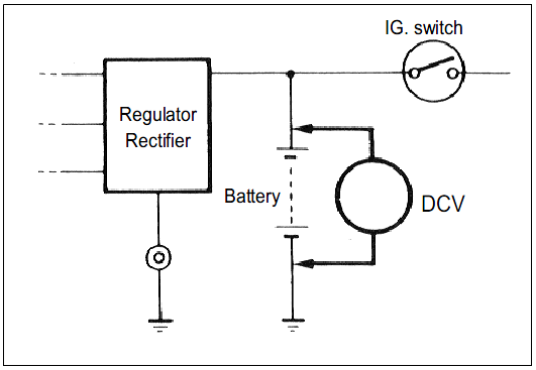
If the voltage is not within the specified value, check the magneto no-load performance and regulator / rectifier.



⚠ CAUTION

When making this test, be sure that the battery is full-charged condition.

Standard charge	13.5 ～ 15.0 V (at 5,000 rpm)



TOOL Pocket tester : 09900-25002

Tester knob indication : Voltage (⎓)

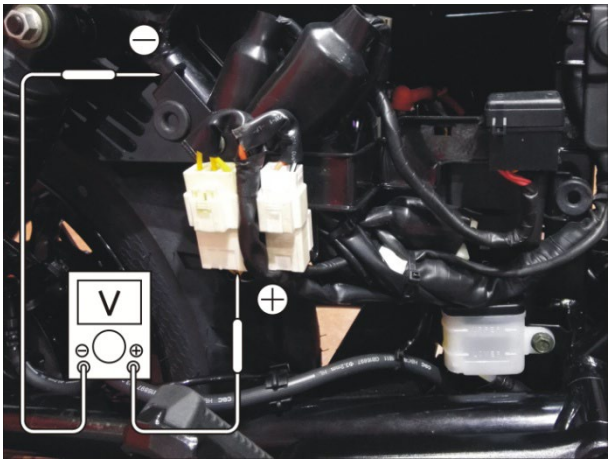
MAGNETO NO-LOAD PERFORMANCE

Disconnect the three lead wires from the magneto terminal.

Start the engine and keep it running at 5,000 rpm.

Using the pocket tester, measure the AC voltage between the three lead wires.

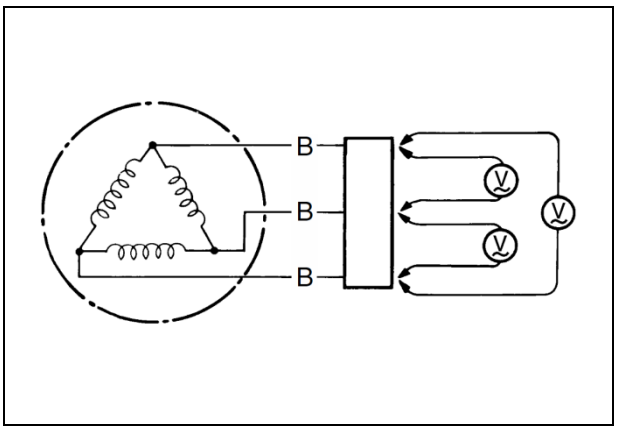
If the voltage is under the specified value, replace the magneto with a new one.



Standard no-load performance of magneto	Over 60 V (at 5,000 rpm)

Pocket tester :

Tester knob indication : Voltage (~)

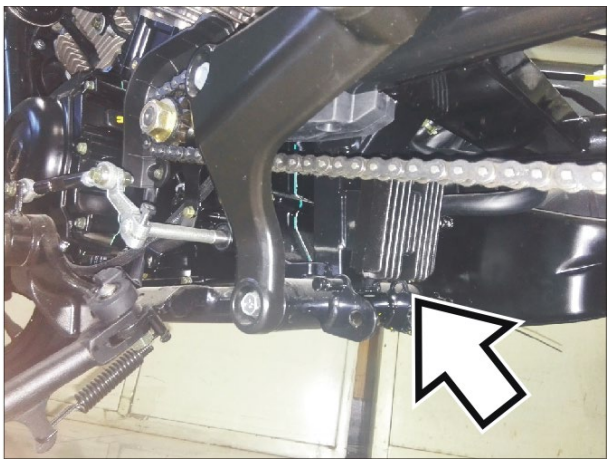


REGULATOR / RECTIFIER

Disconnect the regulator / rectifier couplers.

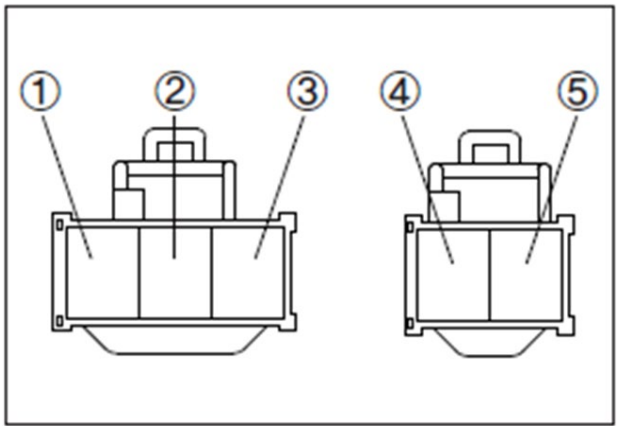
Measure the voltage between the terminals using the pocket tester as indicated in the table below.

If the voltage is not within the specified value, replace the regulator / rectifier with a new one.



Unit: V

– Tester probe	+ Tester probe					
		①	②	③	④	⑤
	①		0	0	0	0.4~0.7
	②	0		0	0	0.4~0.7
	③	0	0		0	0.4~0.7
	④	0	0	0		1.8 ~ 2.1
	⑤	0	0	0	0	



Pocket tester :

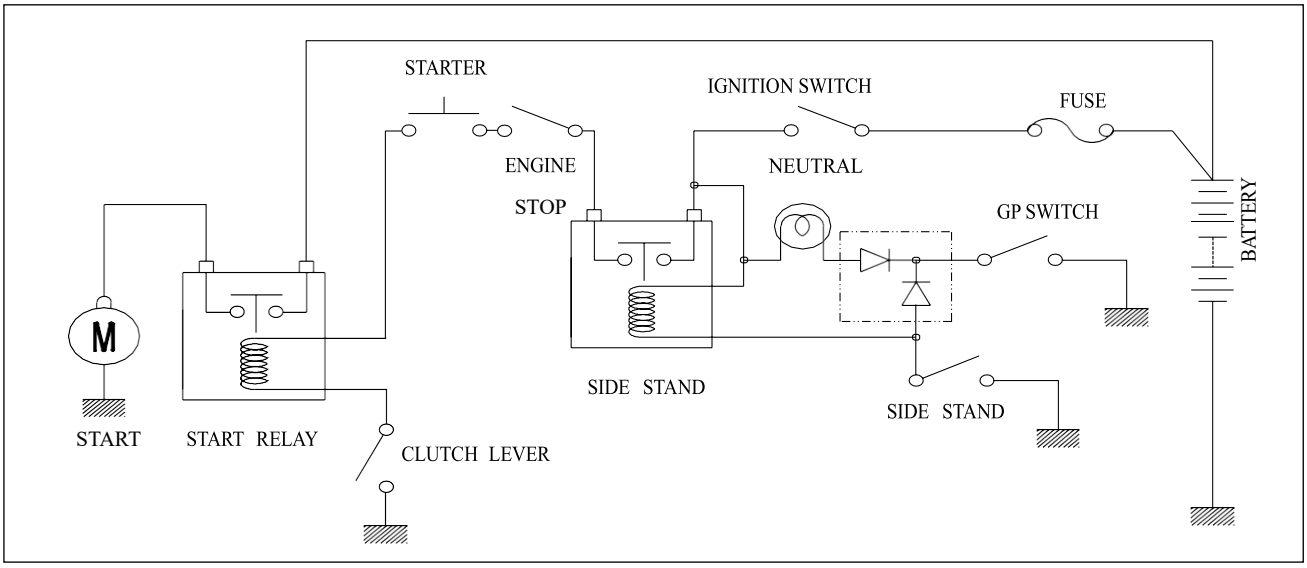
Testerknobindication:Diodetest (⊣)

STARTER SYSTEM AND SIDE STAND IGNITION INTERLOCK SYSTEM

⊙ STARTER SYSTEM DESCRIPTION

The starter system consists of the following components : the starter motor, starter relay, clutch lever switch, side stand switch, GP switch, starter switch, engine stop switch, ignition switch and battery.

Pressing the starter switch (on the right handlebar switch) energizes the starter relay, causing the contact points to close, thus completing the circuit from the starter motor to the battery.



SIDE STAND / IGNITION INTERLOCK SYSTEM DESCRIPTION

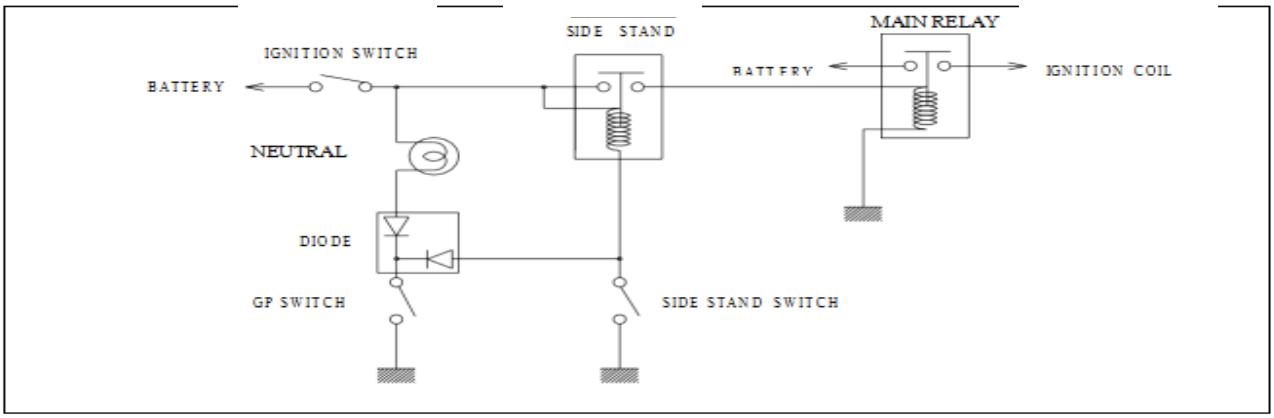
This side stand / ignition interlock system prevents the motorcycle from being started with side stand down.

The system is operated by an electric circuit provided between the battery and ignition coil.

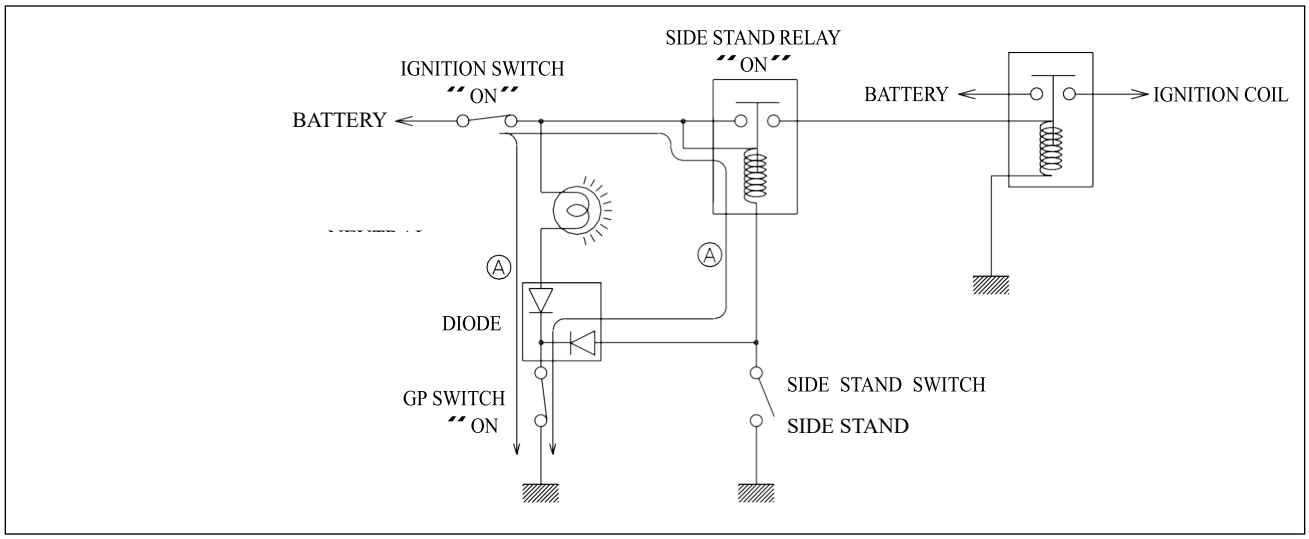
The circuit consists of the neutral indicator light and switches.

The ignition coils will send voltage to the spark plugs depending on what gear the transmission is in and whether the side stand is either up or down.

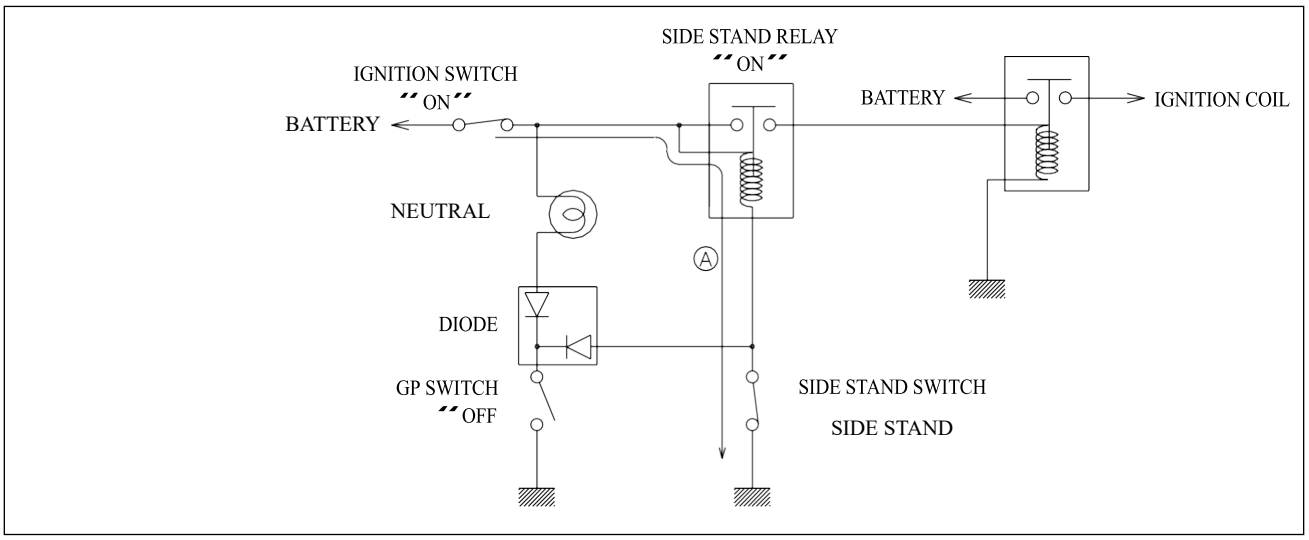
The gear position and side stand switches work together in this system. The ignition coil work only in two situations as follows.



TRANSMISSION : Neutral – ″ON″
Side stand - Down
Clutch lever - Squeeze



TRANSMISSION : Neutral - ″OFF″
Side stand - Up
Clutch lever - Squeeze



RKV125C are equipped with the side stand ignition interlock system.

If the transmission is in neutral, the engine can be started. If the transmission is not in neutral, the clutch lever must be pulled to start the engine.

NO	Neutral switch	Clutch lever	Side stand	Engine Start		
1	●	△	△	Possible	***N O T E***	
2	△	●	●	Possible		
3	△	●	△	Possible	●	***On or Up***
4	△	△	●	Impossible	△	***Off or Down***
5	△	△	△	Impossible		

STARTER MOTOR REMOVALAND DISASSEMBLY

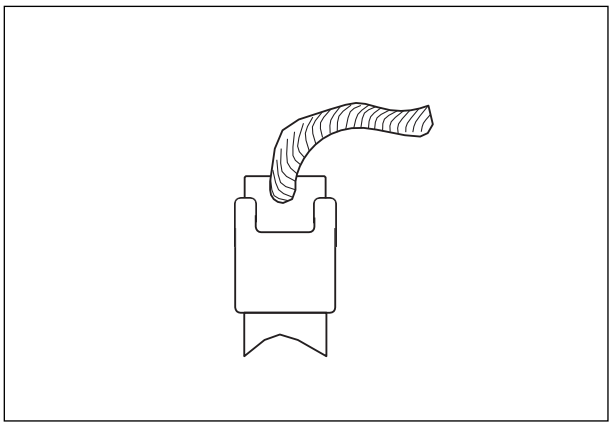
- Disconnect the starter motor lead wire ②. (Refer to page 3-6)
- With loosen the bolt ①, remove the starter motor. (Refer to page 3-6)
- Disassemble the starter motor.

◉ STARTER MOTOR INSPECTION

□ **CARBON BRUSH**

Inspect the brushes for abnormal wear, crack or smoothness in the brush holder.

If the brush has failed, replace the brush sub assy.



COMMUTATOR

Inspect the commutator for discoloration, abnormal wear or undercut ③.

If the commutator is abnomally worn, replace the armature.

When surface is discolored, polish it with #400 sand paper and clean it with dry cloth.

ARMATURE COIL INSPECTION

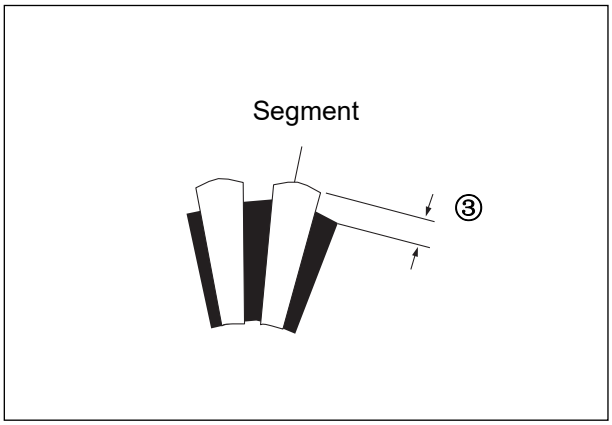
Check for continuity between each segment.

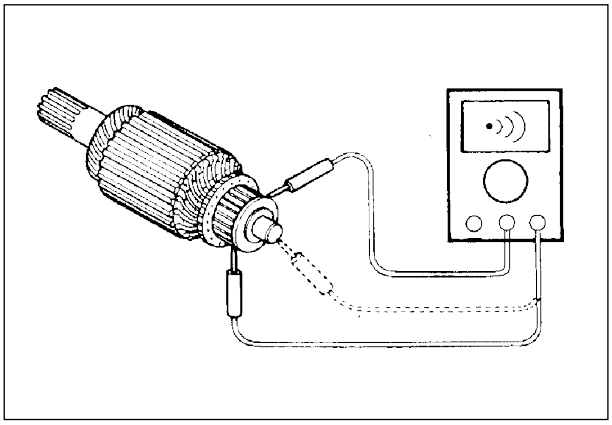
Check for continuity between each segment and the armature shaft.

If there is no continuity between the segments or there is continuity between the segment and shaft, replace the starter motor with a new one.

Pocket tester : 09900-25002

Tester knob indication
: Continuity test (•))))

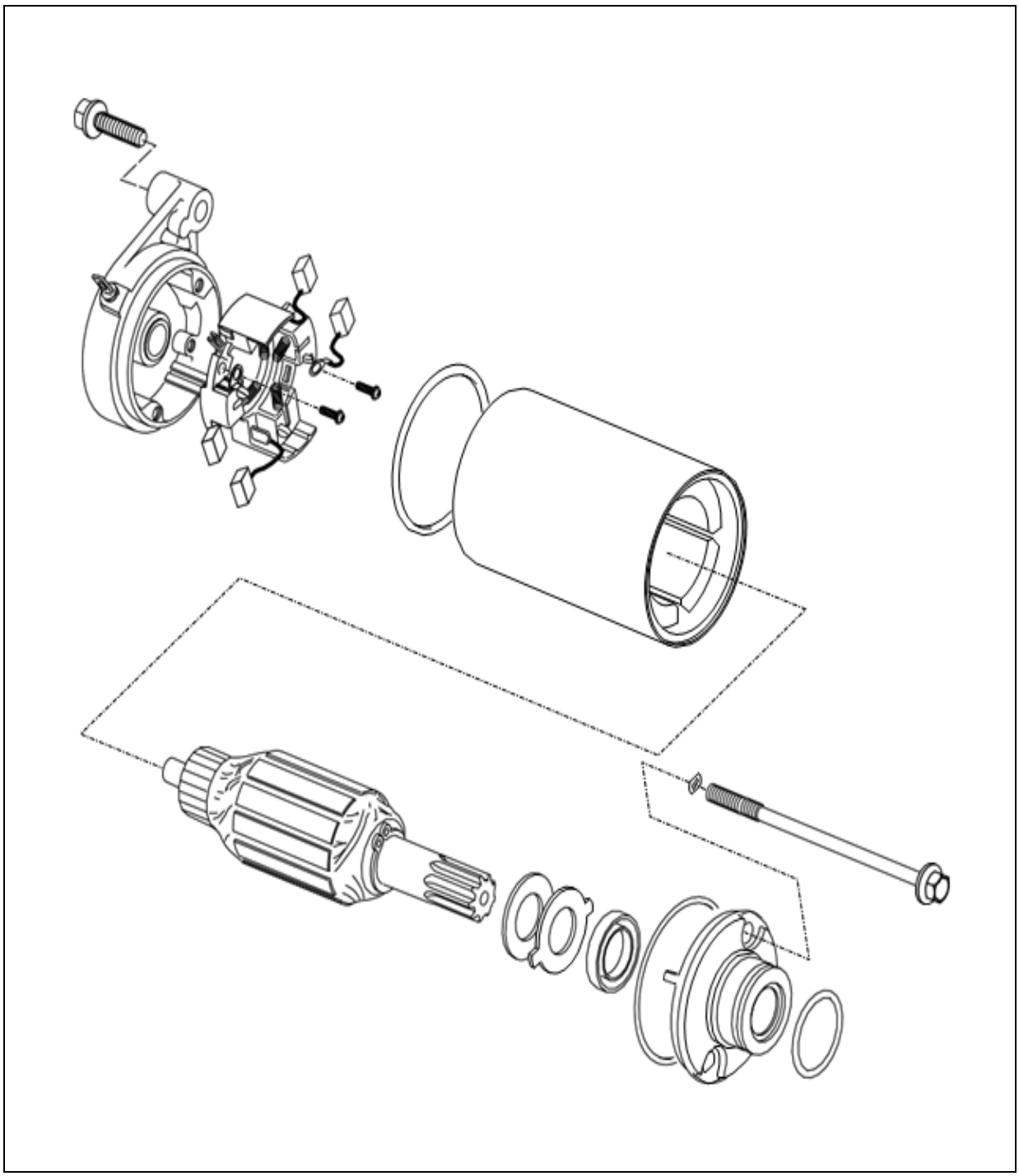




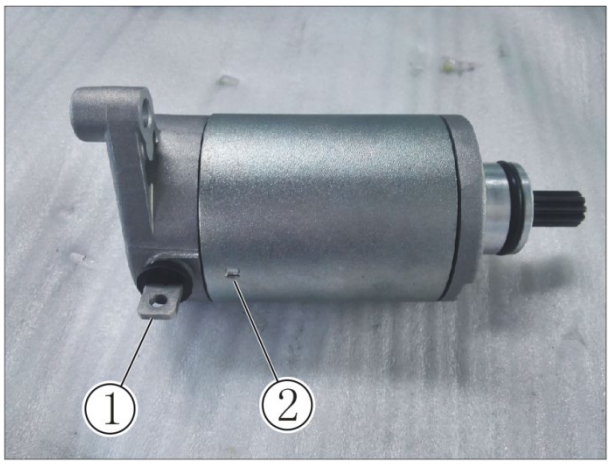
□ **STARTER MOTOR REASSEMBLY**

Reassembly the starter motor. Pay attention to the following points :

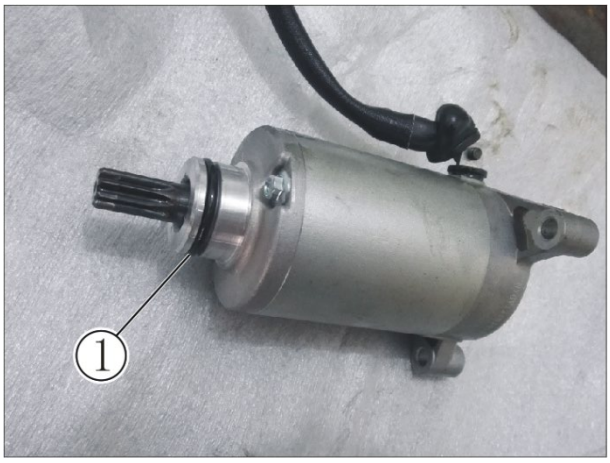
- Reassembly the starter motor as shown in the illustration.



- Align the mark ① on the housing with the line ② on the housing end.



- Apply GREASE to the O-ring ① and remount the starter motor.



SWITCHES

Measure each switch for continuity using a tester. If any abnormality is found, replace the respective switch assemblies with new ones.

LIGHT SWITCH

	BN/WH	BK	BN
☼	○	○	○
☼D		○	○
°			

ENGINE STOP SWITCH

	GN	BK/WH
⊗		
○	○	○

HAZARD SWITCH

	LB	GY	OG
▲	○	○	○

START SWITCH

	BK/WH	YE/RD
S	○	○

DIMMER SWITCH

	BN/WH	BU	WH	BK
≡D	○	○		
≡D	○		○	

TURN SIGNAL SWITCH			
	LB	GY	OG
⇨	○	○	
⇦		○	○

HORN SWITCH		
	LG	GN
	○	○

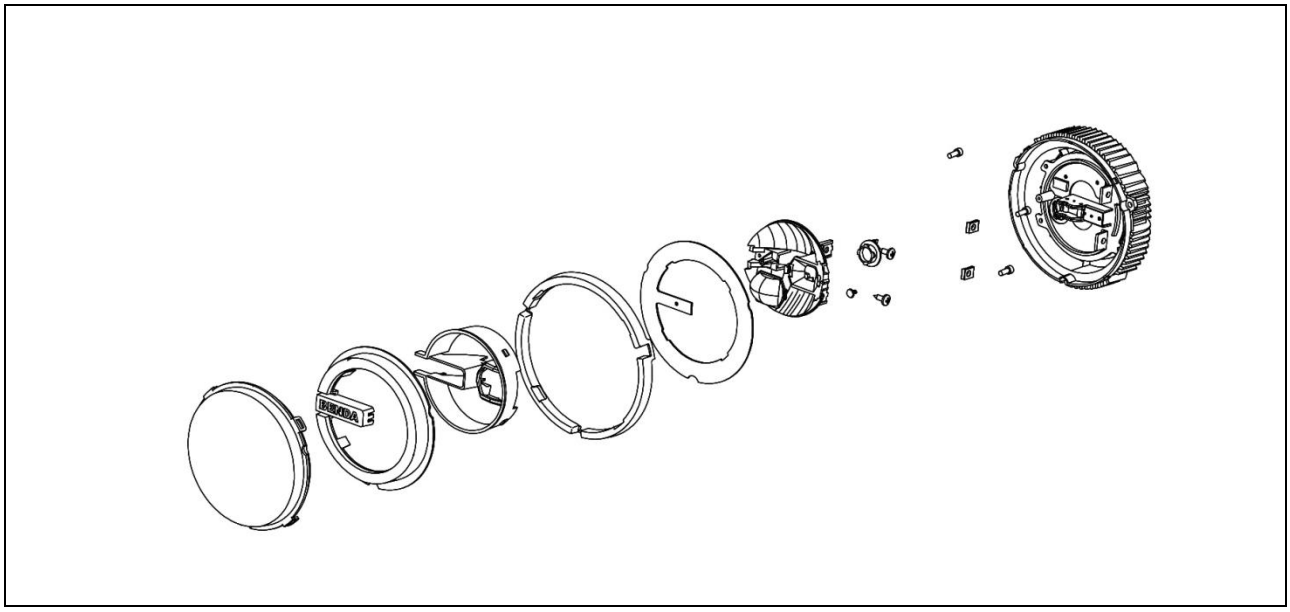
PASS SWITCH				
	BN/WH	BU	WH	BK
PASS		○		○

LAMP

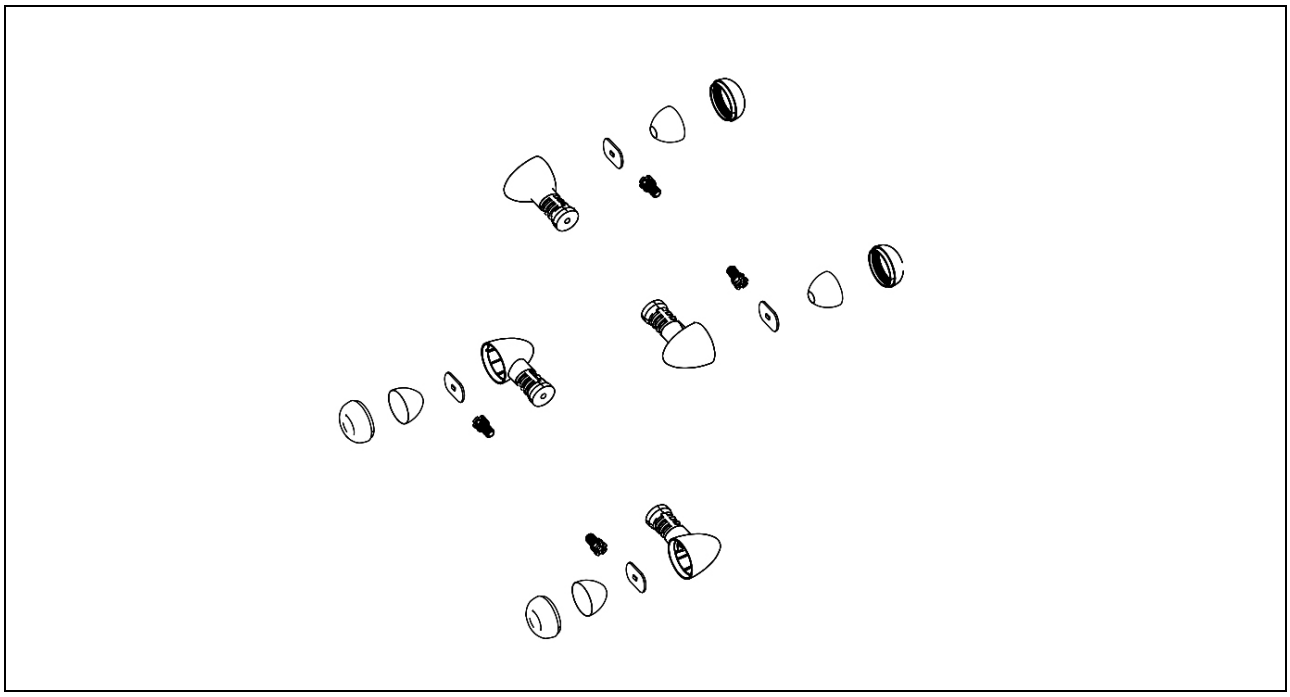
⚠ CAUTION

If you touch the bulb with your bare hands, clean the bulb with a cloth moistened with alcohol or soapy water to prevent premature bulb failure.

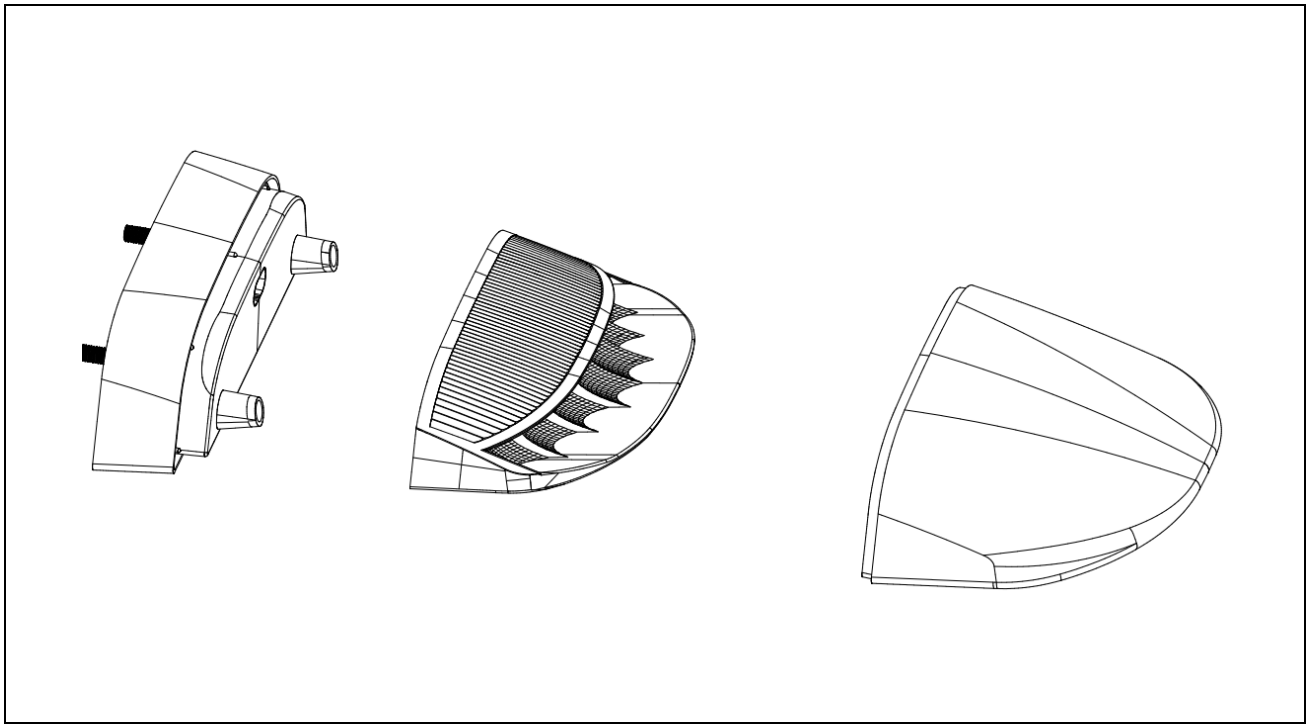
◉ HEADLAMP



◉ TURN SIGNAL LAMP



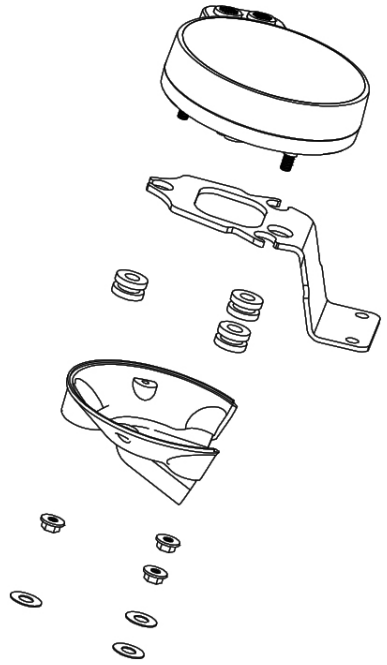
◉ TAIL / BRAKE LAMP



COMBINATION METER

Remove the combination meter.

Disassemble the combination meter as shown in the illustration.

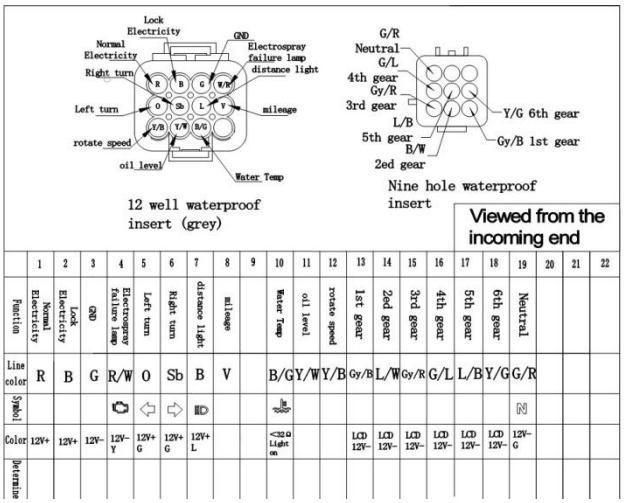


INSPECTION

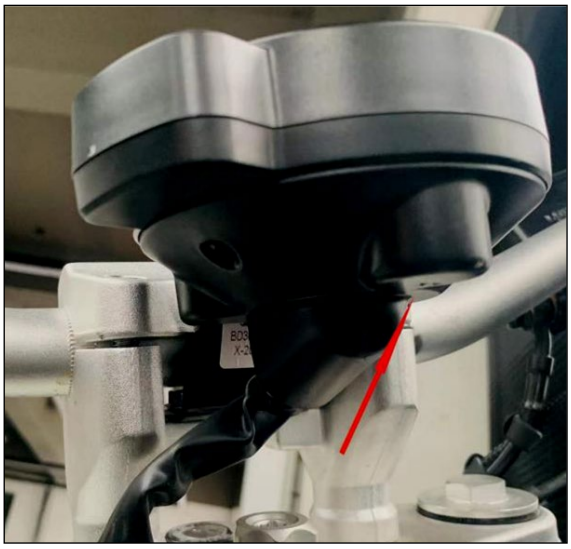
Using the pocket tester, check the continuity between lead wires in the following illustration.

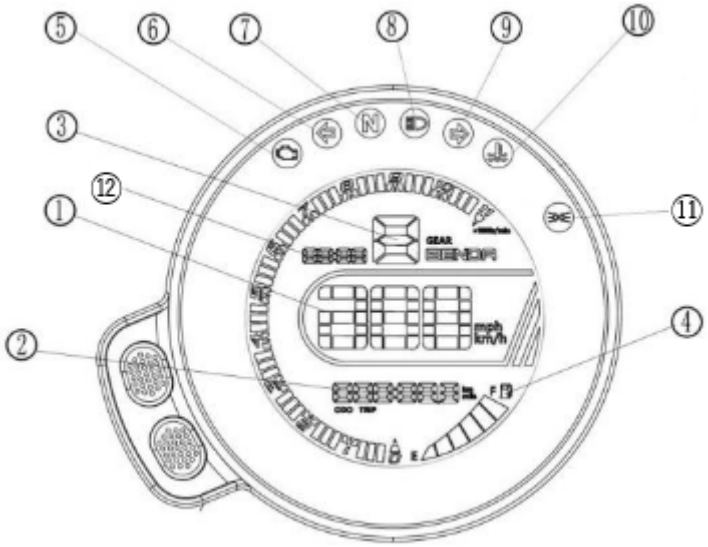
If the continuity measured incorrect, replace the respective part.

> **⚠ CAUTION**
>
> **When making this test, it is not necessary to remove the combination meter.**



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Function	Normal Electricity	Lock Electricity	GND	Electrospray failure lamp	Left turn	Right turn	distance light	mileage		Water Temp	oil level	rotate speed	1st gear	2ed gear	3rd gear	4th gear	5th gear	6th gear	Neutral			
Line color	R	B	G	R/W	O	Sb	B	V		B/G	Y/W	Y/B	Gy/B	L/W	Gy/R	G/L	L/B	Y/G	G/R			
Symbol																			N			
Color	12V+	12V+	12V-	12V- Y	12V+ G	12V+ G	12V+ L			<32Ω Light on			LCD 12V-	LCD 12V-	LCD 12V-	LCD 12V-	LCD 12V-	LCD 12V-	12V- G			
Determine																						





Please refer to the table for the names and functions of indicator symbols.

Code No.	Title	Function
1	Speed indicator	Instantaneous speed of the vehicle
2	Mileage indication	The total mileage of the vehicle
3	Gear indication	Display the gear position of the engine
4	Fuel quantity indicator	Display the amount of fuel left in the fuel tank
5	EFI failure indicator	After the engine is running, the light goes out, if there is a fault, it will show yellow light and flash
6	Left turn indicator	The front and rear left turn signals are flashing, light up to display green
7	Neutral indicator	Lights up green when in neutral
8	High beam indicator	The high beam light is on, and it lights up to show blue
9	Right turn indicator	The front and rear right turn signals are flashing and light up to display green
10	Water temperature alarm indication	Lights up and displays red: the coolant is overheated, and the cooling system is faulty
11	Marker light indication	Front position lamp, instrument panel lighting lamp, rear position lamp light up
12	Time indicator	Display current Beijing time

Note: When the upper button is pressed once, the total and subtotal of the mileage will be switched. When in the subtotal state, long-time presses the button to clear the subtotal mileage.

Long press the up button to enter the clock setting mode. At this time, press the up button once to switch the clock to adjust the position. Press the button once to adjust the time.

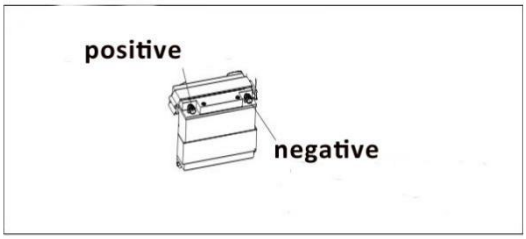
BATTERY

[Battery model]

Model: MG12ZS-C

Capacity: 12V 11.2Ah

Standard charging: 1A～1.5A×6～8 hours



[Assembly and disassembly battery]

Dismantling:

1. Open the seat cushion lock and remove the seat cushion;
2. Open the battery box cover;
3. Remove the ECU bracket;
4. First remove the negative lead (—);
5. Then remove the positive lead (+);
6. Remove the battery.

installation:

1. The installation sequence is opposite to the removal steps.
2. Install the positive lead (+) first, and then install the negative lead (—), and make sure the positive and negative The pole terminal is not loose, and the positive and negative poles cannot be reversed. Reverse connection will damage electrical parts.

[Battery charging]

1. Remove the vehicle seat cushion.
2. Remove the battery tie, remove the positive and negative wires, and take out the battery.
3. Connect the charger wire and ensure that the charging current is 1/10A of the battery capacity. For example, if you charge a battery with a capacity of 10Ah, its charging current is 1 ampere.
4. For detailed instructions on the charger, please contact your dealer.

[Inspection and maintenance of battery]

1. When used frequently, the motorcycle charging system automatically fully charges the battery. If the motorcycle is used occasionally or for a short period of time, the battery power may be insufficient. The battery will self-discharge, and the self-discharge speed will vary with the battery type and ambient temperature.
2. When the motorcycle is not used for a long time, the battery must be removed and stored after charging, and the battery should be charged regularly;
3. The positive (+) and negative (—) terminals of the battery should be cleaned regularly.
4. When replacing batteries, use batteries of the same model and specifications.

⚠ CAUTION

Use only the genuine BENDA battery on RKV125C.

◉ BRAKES

The RKV125C uses disc brakes.

Properly operating the brake systems is vital to safe riding. Be sure to perform the brake inspection requirements as schedules.

The brakes should be inspected at periodic inspection by your authorized BENDA dealer.

⚠ WARNING

Failure to properly inspect and maintain your motorcycle brake systems can be hazardous.
Improper maintenance of the brakes increases your chances of having an accident.
Be sure to inspect the brakes before each use of the motorcycle according to the INSPECTION BEFORE RIDING section.
Always maintain your brakes according to the MAINTENANCE SCHEDULE.

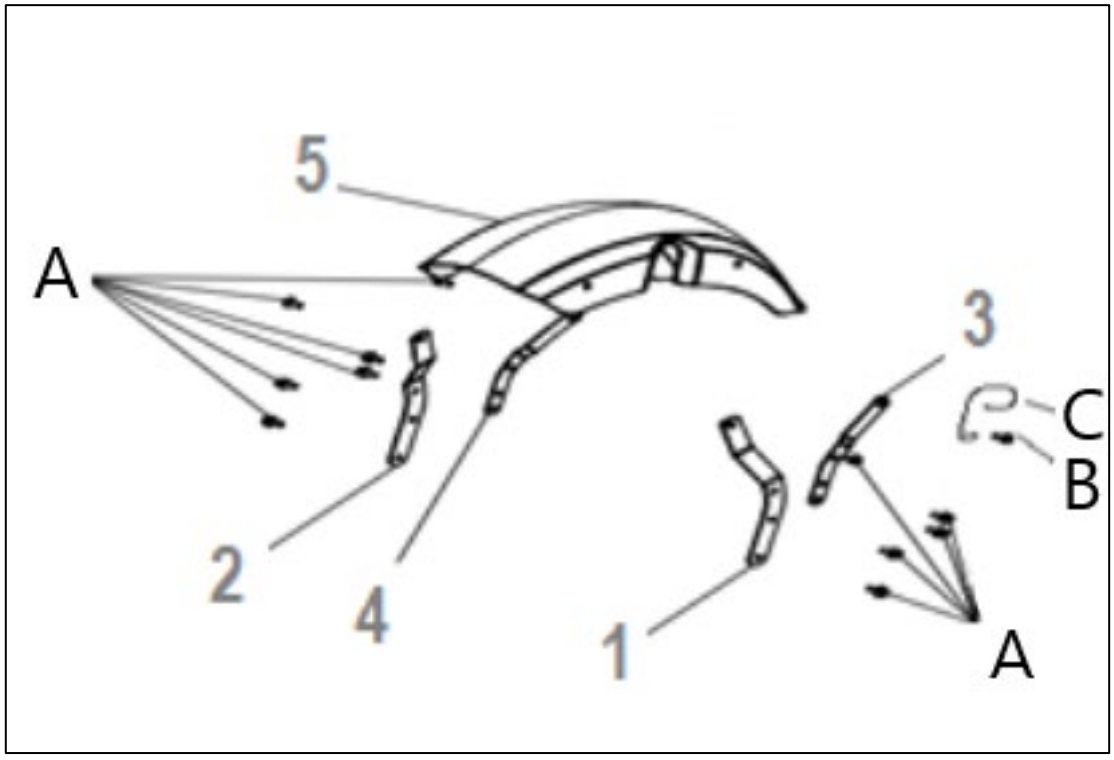
⚠ WARNING

Operating the motorcycle in harsh condition can be hazardous if you do not inspect brake wear often. Operating in mud, water, sand, or other extreme conditions can cause accelerated brake wear. This could lead to an accident.
If you operate your motorcycle under these conditions, the brakes must be inspected more often than recommended in the MAINTENANCE SCHEDULE.

Disassembly and installation of exterior parts

Disassemble and assemble body cover parts

Remove and assemble front fender and front fender bracket



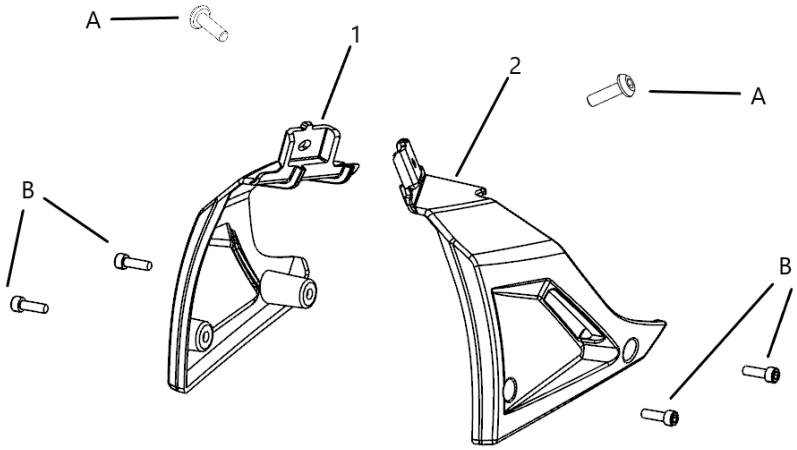
- disassembly

1. Hexagon socket head flat head screw M6×16（B）
2. Wire clip （C）
3. Hexagon socket head flat head screw M6×12（A）
4. Front mudguard （5）
5. Front fender left bracket （1）Front fender right bracket（2）
6. Front fender left bracket II（3）Front fender right bracket II（4）

- install

Install the previously removed parts as opposed to the disassembly process.

Remove and install trim cover before fuel tank



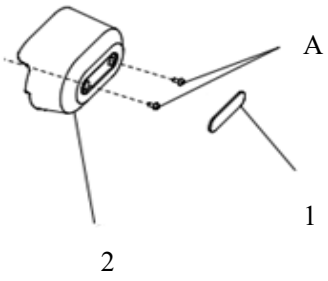
- disassembly

1. Hexagon socket head flat head screw M6*16（A）
2. Hexagon socket head screw M6×12 （B）
3. Tank front left trim cover （2）
4. Tank front right trim cover （1）

- install

Install the previously removed parts as opposed to the disassembly process.

Remove and assemble the thermostat decoration cover



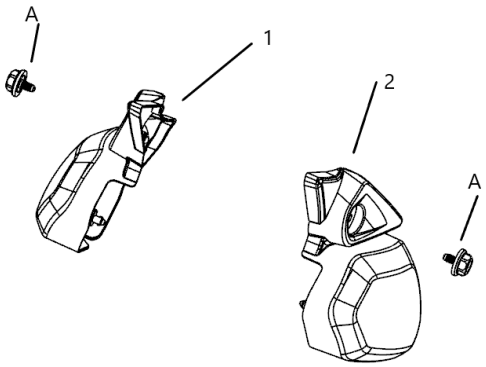
- disassembly

1. Thermostat decorative cover decorative strip（1）
2. Hexagon socket large flat head screw M6x16 （A）
3. Thermostat decoration cover

- install

Install the previously removed parts as opposed to the disassembly process.

Remove and assemble left and right guard plates



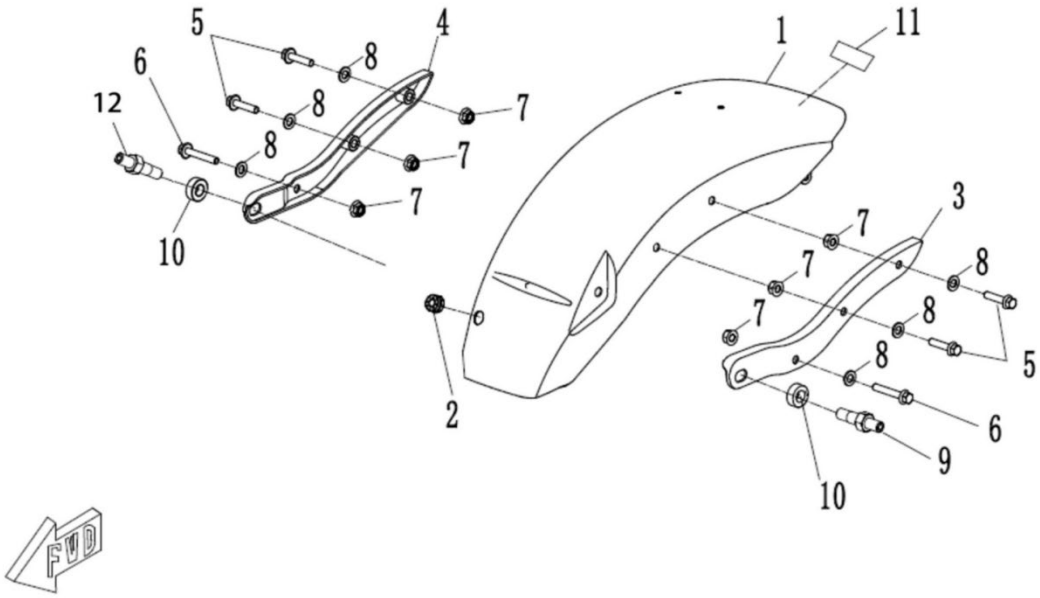
- disassembly

1. Quincunx aluminum bolt M10×1.5 （A）
2. left guard plate （1）
3. right guard plate （2）

- install

Install the previously removed parts as opposed to the disassembly process.

Remove and install rear fender



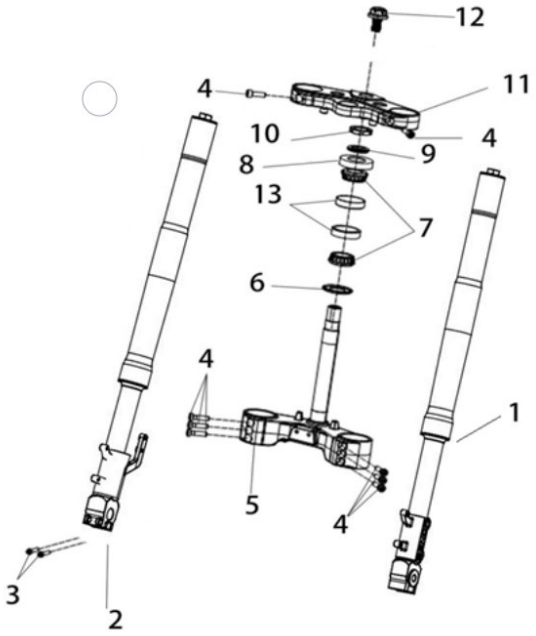
- disassembly

1. Hexagon head flange bolt M10×1.25×40 （5）
2. Hexagon head flange bolt M10×1.25×55 （6）
3. Flat pad ¢10×¢20×1.5 （8）
4. Hexagon flange face lock nut M10×1.25 （7）
5. Rear left shock absorber （9）
6. Rear shock absorber （12）
7. Rear shock bushing （10）
8. Rear mud panel right trim strip （4）
9. Rear mud panel left decorative strip （3）
10. Rear fender （1）
11. I-shaped buffer ring ¢9X¢13.5X¢21.5 2.7 4.8 12.5（2）

- install

Install the previously removed parts as opposed to the disassembly process.

Disassembly before suspension



- disassembly

1. Clamping bolts for upper plate （12）
2. Hexagon socket Head screws M8×30（4）
3. Hexagon socket head screw M6x30（3）
4. Front left shock absorber （1）
5. Front right shock absorber （2）
6. Top allied board （11）
7. Bearing lock nut M25X1 （10）
8. Dust cover bracket （9）
9. Dust cover （8）
10. Tapered Needle Roller Bearing (Bearing) (320/28x)（7）
11. Needle Roller cone bearing (steel bowl) (320/28x)（13）
12. Dust ring（6）

- install

Install the previously removed parts as opposed to the disassembly process.

Maintenance

Maintenance times Maintenance item	Maintenance period	Odometer km (remark ②)				
		1000km	4000km	8000km	12000km	remark
★tank,tubing		Damage and aging should be repaired or replaced in time				Before use
★throttle		I	I	I	I	Before use
★Coolant		Replace every 2 years				Inspection before use
Air filter element	Remarks①	Every 40 hours driving or 1000km/I; every 80 hours driving or 2000km/C; every 8000km/R driving				
Spark plug		Every 2000km or 80 hours/I; every 8000km/R				
Engine lubricating oil	Replace once when a new car is 1000km, and then every 4000km or so.					
Lubricating oil filter	Replace once when a new car is 1000km, and then every 4000km or so.					
Chain\sprocket	Remarks ① I and L are carried out every 500km	Remarks ① I and L are carried out every 500km				
★Brake friction plate	I and R if necessary every 1000km	I and R if necessary every 1000km				
★★Brake oil		Replace every 2 years				
★★Front and rear brake system	Remark ③	I	I	I	I	before use
★Switch		I	I	I	I	before use
★Lights, speakers		I	I	I	I	before use
★Battery	per month	I	I	I	I	
fuse		I	I	I	I	
Connection line		I	I	I	I	
★★Valve clearance	Remark ③	Initially: 20 hours or 200km/I; every 4000km or 80 hours/I				
★Clutch		Every 4000km or 80 hours/I				before use
★Suspension system		I	I	I	I	
★ Fastening of nuts and bolts		I	I	I	I	before use
★wheel		I	I	I	I	before use
★★Steering handle bearing	Remark ③	I	I	I	I	
★★Engine maintenance	Remark ③	I	I	I	I	

The symbols in the above table are: "I" timely inspection, cleaning, adjustment, lubrication or replacement; "C" cleaning; "R" replacement; "L" lubrication.

None★The item is maintained by you, or you can go to the designated dealership store for maintenance.

One ★ item is maintained by the personnel of the designated dealership; if you have special tools, repair spare parts or repair capabilities, you can also repair and maintain it yourself.

For the two ★★ projects, for the sake of driving safety, maintenance can only be carried out by the personnel of the designated dealership.

Remark ① means: when driving in dusty areas, the cleaning cycle should be shortened.

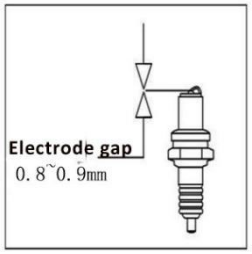
Remark ② means: when the odometer reading exceeds the highest number in the table, the maintenance and repair cycle will still be repeated according to the mileage specified in the table.

Remark ③ means: Only the personnel of designated dealership can carry out maintenance and adjustment.

Selection and replacement of spark plugs

Spark plug model: CR8E

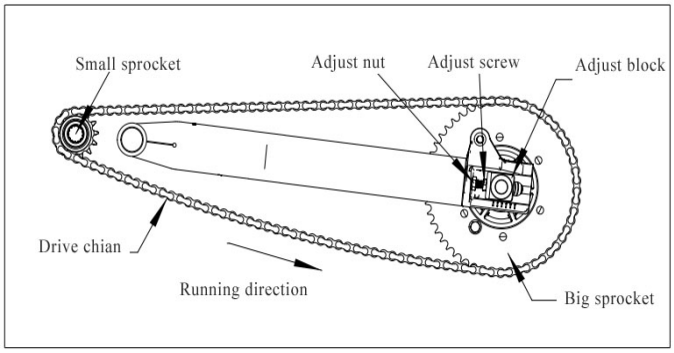
Opposite side of spark plug sleeve: 16mm



[Check and Replace]

1. The replacement cycle of the spark plug is: once every 8000 km.
2. Remove the spark plug cap, remove the surrounding dirt, use the spark plug socket wrench in the tool bag to remove the spark plug, and use a wire brush to remove the carbon deposits and dirt on the spark plug.
3. Check whether the spark plug is damaged, whether the electrode gap is ablated, and whether the gasket is intact; if it is damaged, it should be replaced.
4. Check the electrode gap with a high-precision feeler gauge, the normal electrode gap is 0.8 ~ 0.9mm.
5. When installing the spark plug: first screw the spark plug into the thread by hand, and then tighten it with a spark plug socket wrench.

CHAIN VERSION



Chain model: 428-132

1. Park the vehicle on a flat ground, switch to neutral, and turn off the engine.
2. Swing the chain up and down, measure the swing amplitude, the normal swing amplitude range:
   10~20mm.
3. Check whether the chain locking clamp is loose and whether the large and small sprocket are on the same level.
4. Check the wear condition of the chain. If there is a chain link defect, excessive wear, and the chain
   The chain must be replaced if it is too long.
5. Check the wear conditions of the large and small sprocket. If the teeth are severely worn, missing teeth, or broken teeth, they must be replaced.

[Adjustment]

It is advisable to adjust in time to keep the tightness of the motorcycle chain between 15mm and 20mm. Check the buffer body bearing frequently and add grease on time.

When adjusting the chain, in addition to adjusting the scale according to the frame chain adjustment, you should also observe whether the front and rear chainrings and the chain are in the same straight line.

Frequently check the matching clearance between the rear wheel fork buffer rubber sleeve and the wheel fork and the wheel fork shaft.

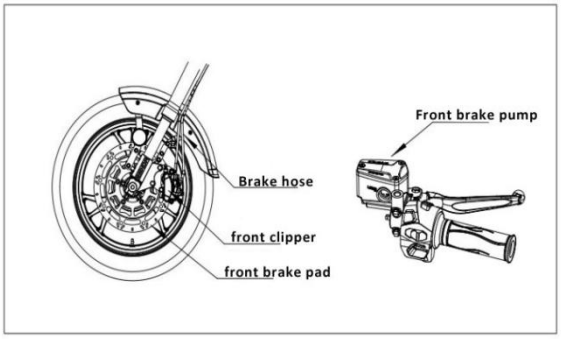
[lubricating]

1. Clean the chain and sprocket, add proper amount of engine oil or spray clean lubricating oil after cleaning.
2. The chain needs to be cleaned and lubricated every 500km.
3. After 3000km in general form, the chain should be removed and cleaned once, and soaked in the heated and melted graphite grease for 5-10 minutes.
4. After the vehicle is driving on the muddy road, the dust in the chain links should be cleaned up in time, and lubricating oil should be added.

[replace]

1. Use needle-nose pliers to carefully remove the chain locking clamp, disassemble the chain link, and remove the chain;
2. Remove the large and small sprocket with tools;
3. Install the large sprocket, small sprocket and chain in the reverse order of disassembly and adjust the swing of the chain;
4. When installing the chain, the locking clip must be on the outside of the vehicle, and the opening end is opposite to the running direction of the chain to prevent the locking clip from being thrown out by the centrifugal force generated by the high-speed running lock of the chain.
5. Clean the chain and gear plate regularly, and add grease in time. If there are rain, snow and muddy roads, the maintenance of the chain and gear plate should be strengthened.

Inspection and adjustment of the front brake



[Check]

●Measure the free stroke of the front brake handle: 5～10mm.

●Measure the thickness of the front brake disc and brake friction lining

●Check the oil level in the oil cup; check whether the brake caliper is normal; check the brake oil pipe ; there is no oil leakage or cracks in the brake oil cup; check the wear of the brake disc.

●When operating the brake handle, if you feel that the handle pressure is insufficient, then there is air in the brake system; the air in the brake system should be completely discharged before normal use; otherwise it will reduce the braking performance or brake failure. This work should be completed at the designated dealership.

⚠warning:

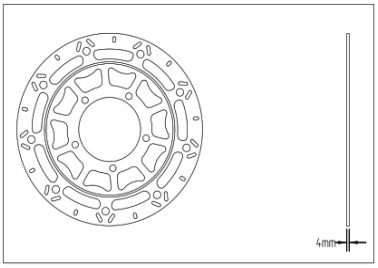
1. It should be added: non-petroleum-based brake oil of DOT3 or DOT4; different brands cannot be mixed;
2. Brake oil is highly corrosive, do not splash on the surface of painted or plastic parts; if you drink it by mistake, you should force it to spit out; if it gets on your eyes or skin, you should rinse it with plenty of water immediately and consult a doctor;
3. Hydraulic disc brakes work under high pressure. In order to ensure safety and reliability, the replacement time of brake friction pads and brake oil should not exceed the maintenance period;
4. When the hydraulic disc brake system needs to be repaired, it can only be repaired by professional technicians.

⚠Note:

The brake is an extremely important component to ensure the personal safety of the rider, and the brake should be checked and adjusted frequently.

Replace with a new brake disc or brake friction pad, and do not drive immediately; you should first manipulate (hold and

Check the front brake disc



The brake disc will gradually wear out during long-term use, so it is necessary to check the thickness of the brake disc at multiple positions of the brake disc. And check its appearance to confirm whether the brake disc is damaged, cracked or deformed.

If the thickness of the brake disc is lower than the specified value: please replace the brake disc.

If the brake disc is damaged, cracked or deformed: please replace the brake disc

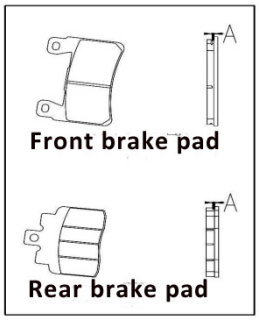
Brake disc wear limit	
Front	3mm
Rear	3mm

warning:

The wear of the brake disc will reduce the thickness of the brake disc within the contact surface of the brake friction lining, which will reduce the braking effect and threaten your driving safety. Once damage, cracks, or deformation occur, please replace the brake disc immediately .

When the brake disc is worn to the limit thickness of 3mm, it must be replaced; remove the front brake caliper and front wheel, and then replace the brake disc.

Check the brake pads of the front brake



Check the minimum thickness of the brake pads (A).

The minimum thickness of the brake friction pad: A=1.5mm.

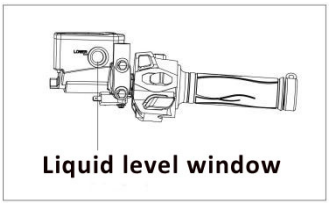
If the thickness is lower than the minimum thickness: please replace the friction plate in time.

If the friction plate is found to be damaged or cracked: please replace the friction plate in time.

Note:

The friction lining will gradually wear out during the braking process of the vehicle. The braking effect will gradually decrease. To ensure the safety of you and the vehicle, please check it frequently and replace it in time. If you do not understand the specifications of the friction plate or cannot replace it by yourself, please go to the designated after-sales point for repair.

Check the brake fluid level of the front brake system



Adjust the placement posture of the vehicle so that the brake fluid in

the brake fluid is in a horizontal position, and check the brake fluid level through the fluid level window.

When the brake fluid level is below the scale line: please replenish the brake fluid in time.

Warning:

If the brake fluid level is lower than the scale line, it means that the brake system is not sealed, or the brake friction lining has been completely worn. Check the braking system and do not continue driving. Please go to designated after-sales point for repairs.

If the brake fluid is used for too long, the braking effect will be reduced. Please replace the brake fluid in time.

Inspection and adjustment of the rear brake

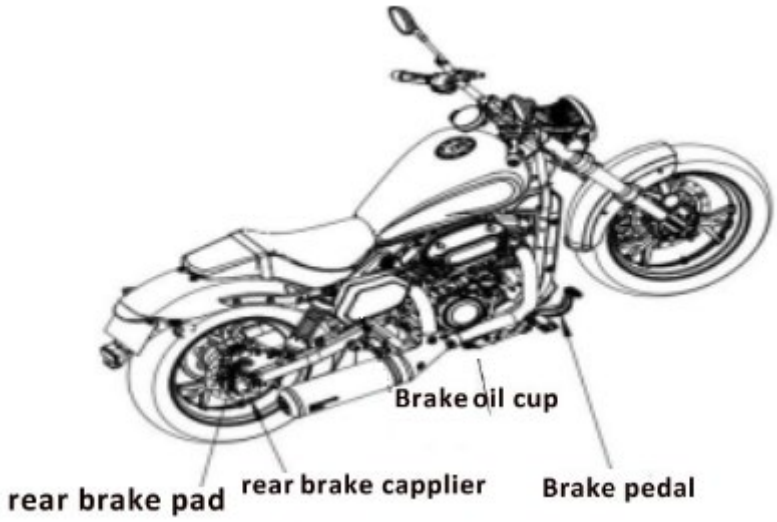
[Check]

●The free stroke of the brake pedal after measurement is: 10-20mm.

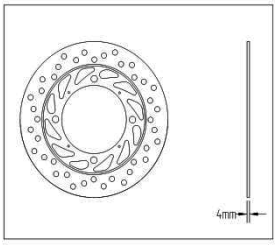
●Measure the thickness of the rear brake disc and brake pad thickness.

●Check the oil level in the oil cup; check whether the brake caliper is normal; check the brake oil pipe and brake oil cup for oil leakage or cracks; check the wear of the brake disc.

●When operating the brake pedal, if you feel that the pedal pressure is insufficient, then there is air in the brake system; the air in the brake system should be completely discharged before normal use; otherwise it will reduce the braking performance or brake failure. Please let the professional technicians of the maintenance organization serve you for this repair.



Check the rear brake disc



The brake disc will gradually wear out during long-term use, so it is necessary to check the thickness of the brake disc at multiple positions of the brake disc. And check its appearance to confirm whether the brake disc is damaged, cracked or deformed.

If the thickness of the brake disc is lower than the specified value: please replace the brake disc.

If the brake disc is damaged, cracked or deformed: please replace the brake disc.

Brake disc wear limit	
front	3mm
rear	3mm

Complaint	Symptom and possible causes	Remedy
Engine lacks power.	**Defective engine internal / electrical parts**	
	1. Loss of tappet clearance.	Adjust.
	2. Weakened valve springs.	Replace.
	3. Valve timing out of adjustment.	Adjust.
	4. Worn piston rings or cylinders.	Replace.
	5. Poor seating of valves.	Repair.
	6. Fouled spark plugs.	Clean or replace.
	7. Incorrect spark plug gaps.	Adjust or replace.
	8. Clogged injectors.	Clean.
	9. Clogged air cleaner element.	Clean.
	10. Sucking air from throttle valve or vacuum hose.	Retighten or replace.
	11. Too much engine oil.	Drain out excess oil.
	12. Defective fuel pump or ECU.	Replace.
	13. Defective pick-up coil and ignition coils.	Replace.
	14. Defective TP sensor.	Replace.
	Defective control circuit or sensor	
	1. Low fuel pressure.	Repair or replace.
	2. Defective IAT sensor.	Replace.
	3. Defective pick-up coil.	Replace.
	4. Defective IAP sensor.	Replace.
	5. Defective ECU.	Replace.
	6. Defective TP sensor.	Replace.
	7. Defective GP switch.	Replace.
Engine overheats.	**Defective engine internal parts**	
	1. Heavy carbon deposit on piston crowns.	Clean.
	2. Not enough oil in the engine.	Add oil.
	3. Defective oil pump or clogged oil circuit.	Replace or clean.
	4. Sucking air from intake pipes.	Retighten or replace.
	5. Use incorrect engine oil.	Change.
	6. Defective oil cooler.	Clean or replace.
	Lean fuel / air mixture	
	1. Short-circuited IAP sensor / lead wire.	Repair or replace.
	2. Short-circuited IAT sensor / lead wire.	Repair or replace.
	3. Sucking air from intake pipe joint.	Repair or replace.
	4. Defective fuel injectors.	Replace.
	5. Defective ET sensor.	Replace.
	The other factors	
	1. Ignition timing too advanced due to defective timing advance system (ET sensor, pick-up coil, GP switch and ECU).	Replace.

	2. Drive chain is too tight.	Adjust.

Complaint	Symptom and possible causes	Remedy
Dirty or heavy exhaust smoke.	**1.** Too much engine oil in the engine. 2. Worn piston rings or cylinders. 3. Worn valve guides. 4. Cylinder wall scored or scuffed. 5. Worn valves stems. 6. Defective stem seals. 7. Worn side rails.	Check with inspection window, drain out excess oil. Replace. Replace. Replace. Replace. Replace. Replace.
Slipping clutch.	1. Weakened clutch springs. 2. Worn or distorted pressure plates. 3. Distorted clutch plates or pressure plates.	Replace. Replace. Replace.
Dragging clutch.	1. Some clutch springs weakened while others are not. 2. Distorted pressure plates or clutch plates.	Replace. Replace.
Transmission will not shift.	1. Broken gearshift cam. 2. Distorted gearshift forks. 3. Worn gearshift pawl.	Replace. Replace. Replace.
Transmission will not shift back.	1. Broken return spring on shift shaft. 2. Rubbing or sticky shift shaft. 3. Distorted or worn gearshift forks.	Replace. Repair or replace. Replace.
Transmission jumps out of gear.	1. Worn shifting gears on driveshaft or countershaft. 2. Distorted or worn gearshift forks. 3. Weakened stopper spring on gearshift stopper.	Replace. Replace. Replace.

RADIATOR (COOLING SYSTEM)

Complaint	Symptom and possible causes	Remedy
Engine overheats.	1. Not enough engine coolant. 2. Radiator core clogged with dirt or scale. 3. Faulty cooling fan. 4. Defective cooling fan thermo-switch. 5. Clogged water passage. 6. Air trapped in the cooling circuit. 7. Defective water pump.	Add coolant. Clean. Repair or replace. Replace. Clean. Bleed out air. Replace.

	8. Use of incorrect engine coolant. 9. Defective thermostat.	Replace. Replace.
Engine overcools.	1. Defective cooling fan thermo-switch. 2. Extremely cold weather. 3. Defective thermostat.	Replace. Put on the radiator cover. Replace.

⊙ ELECTRICAL

Complaint	Symptom and possible causes	Remedy
No sparking or poor sparking.	1. Defective ignition coils or spark plug caps. 2. Defective spark plugs. 3. Defective pick-up coil. 4. Defective ECU. 5. Defective RO switch. 6. Open-circuited wiring connections.	Replace. Replace. Replace. Replace. Replace. Check and repair.
Spark plug soon become fouled with carbon.	1. Mixture too rich. 2. Idling speed set too high. 3. Incorrect gasoline. 4. Dirty element in air cleaner. 5. Spark plugs too cold.	Inspect EI system. Inspect EI system. Change. Clean or replace. Replace by hot type plug.
Spark plug become fouled too soon.	1. Worn piston rings. 2. Pistons or cylinders worn. 3. Excessive clearance of valve stems in valve guides. 4. Worn stem oil seal.	Replace. Replace. Replace. Replace.
Spark plug electrodes overheat or burn.	1. Spark plugs too hot. 2. The engine overheats. 3. Spark plugs loose. 4. Mixture too lean.	Replace by cold type plug. Tune up. Retighten. Inspect EI system.
Magneto charge, but charging rate is below the specification.	1. Lead wires tend to get shorted or open-circuited or loosely connected at terminals. 2. Grounded or open-circuited stator coils of magneto. 3. Defective regulator / rectifier. 4. Defective cell plates in the battery.	Repair or retighten. Replace. Replace. Replace the battery.
Magneto overcharges.	1. Internal short - circuit in the battery. 2. Resistor element in the regulator / rectifier damaged or defective. 3. Regulator / rectifier poorly grounded.	Replace the battery. Replace. Clean and tighten ground connection.
Magneto does not charge.	1. Open - or short - circuited lead wires, or loose lead connections. 2. Short - circuited, grounded or open stator coil. 3. Short - circuited or punctured regulator / rectifier.	Repair or replace or retighten. Replace.

		Replace.
Unstable charging.	1. Lead wire insulation frayed due to vibration resulting in intermittent shorting. 2. Magneto internally shorted. 3. Defective regulator / rectifier.	Repair or replace. Replace. Replace.
Starter switch is not effective.	1. Battery run down. 2. Defective switch contacts. 3. Brushes not seating properly on commutator in starter motor. 4. Defective starter relay / ignition interlock switch. 5. Defective main fuse.	Recharge or replace. Replace. Repair or replace. Replace. Replace.

BATTERY

Complaint	Symptom and possible causes	Remedy
Battery runs down quickly.	1. The charging method is not correct.	Check the generator, regulator/rectifier and circuit connections, and make necessary adjustments to obtain specified charging operation.
	2. Cell plates have lost much of their active material as a result of over-charging.	Replace the battery, and correct the charging system.
	3. Battery is too old.	Replace the battery.
Reversed battery polarity.	The battery has been connected the wrong way round in the system, so that it is being charged in the reverse direction.	Replace the battery and be sure to connect the battery properly.
Battery discharges too rapidly.	1. Dirty container top and sides.	Clean.

CHASSIS

Complaint	Symptom and possible causes	Remedy
Steering feels too heavy or stiff.	1. Steering stem nut overtightened. 2. Worn bearing or race in steering stem. 3. Distorted steering stem. 4. Not enough pressure in tires.	Adjust. Replace. Replace. Adjust.
Steering oscillation.	1. Loss of balance between right and left front suspensions.	Replace. Repair or replace.

	2. Distorted front fork. 3. Distorted front axle or crooked tire.	Replace.
Wobbling front wheel.	1. Distorted wheel rim. 2. Worn-down wheel bearings. 3. Defective or incorrect tire. 4. Loosen nut on axle.	Replace. Replace. Replace. Retighten.
Front suspension too soft.	1. Weakened springs. 2. Not enough fork oil.	Replace. Refill.
Front suspension too stiff.	1. Fork oil too viscous. 2. Too much fork oil.	Replace. Drain excess oil.
Noisy front suspension.	1. Not enough fork oil. 2. Loosen nuts on suspension.	Refill. Retighten.
Wobbling rear wheel.	1. Distorted wheel rim. 2. Worn-down rear wheel bearing. 3. Defective or incorrect tire. 4. Loose nut on axle. 5. Worn swing arm bushing or bearing. 6. Loosen nut on the rear shock.	Replace. Replace. Replace. Retighten. Replace. Retighten.
Rear suspension too soft.	1. Weakened springs. 2. Rear suspension adjuster improperly set.	Replace. Adjust.
Rear suspension too stiff.	1. Rear suspension adjuster improperly set. 2. Worn swing arm bushing or bearing.	Adjust. Replace.
Noisy rear suspension.	1. Loosen nuts on suspension. 2. Worn swing arm bushing or bearing.	Retighten. Replace.

BRAKES

Complaint	Symptom and possible causes	Remedy
Poor braking (FRONT and REAR)	1. Not enough brake fluid in the reservoir. 2. Air trapped in brake fluid circuit. 3. Pads worn down. 4. Too much play on brake lever or pedal. 5. Shoes worn down.	Refill to level mark. Bleed air out. Replace. Adjust. Replace.
Insufficient brake power.	1. Leakage of brake fluid from hydraulic system. 2. Worn pads.	Repair or replace. Replace.

	3. Oil adhesion of engaging surface of pads. 4. Worn disk. 5. Air in hydraulic system.	Clean disk and pads. Replace. Bleed air.
Brake squeaking.	1. Carbon adhesion on pad surface. 2. Tilted pad. 3. Damaged wheel bearing. 4. Loosen front-wheel axle or rear-wheel axle. 5. Worn pads. 6. Foreign material in brake fluid. 7. Clogged return port of master cylinder.	Repair surface with sandpaper. Modify pad fitting. Replace. Tighten to specified torque. Replace. Replace brake fluid. Disassemble and clean master cylinder.
Excessive brake lever stroke.	1. Air in hydraulic system. 2. Worn brake lever cam. 3. Insufficient brake fluid. 4. Improper quality of brake fluid.	Bleed air. Replace brake lever. Replenish fluid to specified level ; bleed air. Replace with correct fluid.
Leakage of brake fluid.	1. Insufficient tightening of connection joints. 2. Cracked hose. 3. Worn piston and/or cup.	Tighten to specified torque. Replace. Replace piston and/or cup.

TIGHTENING TORQUE

ITEM	N – m	kg – m
Rear shock absorber fitting nut (Upper)	20 ~ 30	2.0 ~ 3.0
Rear shock absorber fitting nut (Lower)	35 ~ 55	3.5 ~ 5.5
Rear sprocket nut	20 ~ 30	2.0 ~ 3.0
Rear axle nut	90 ~ 140	9.0 ~ 14.0
Swing arm pivot nut	45 ~ 70	4.5 ~ 7.0
Steering stem nut	40 ~ 50	4.0 ~ 5.0
Steering stem head nut	80 ~ 100	8.0 ~ 10.0
Front brake disc bolt	18 ~ 28	1.8 ~ 2.8
Front brake master cylinder mounting bolt	5 ~ 8	0.5 ~ 0.8
Front brake caliper air bleeder valve	6 ~ 9	0.6 ~ 0.9
Front brake caliper mounting bolt	18 ~ 28	1.8 ~ 2.8
Front brake hose union bolt	20 ~ 25	2.0 ~ 2.5
Front axle	50 ~ 80	5.0 ~ 8.0
Front axle pinch bolt	15 ~ 25	1.5 ~ 2.5

Front fork damper rod bolt	15 ~ 25	1.5 ~ 2.5
Front fork cap clamp bolt	22 ~ 35	2.2 ~ 3.5
Front fork lower clamp bolt	15 ~ 30	1.5 ~ 3.0
Front fork upper bolt	22 ~ 35	2.2 ~ 3.5
Front footrest bolt	40 ~ 60	4.0 ~ 6.0
Handlebar clamp bolt	24 ~ 28	2.4 ~ 2.8
Handlebar holder lower nut	40 ~ 60	4.0 ~ 6.0

Service Data

CLUTCH

Unit : mm

ITEM	STANDARD	LIMIT
Clutch cable play	4	———
Drive plate thickness	2.9~3.1	2.6
Drive plate claw width	11.8~12.0	11.0
Driven plate distortion	———	0.1
Clutch spring free length	36.3	34.3

TRANSMISSION + DRIVE CHAIN

Unit : mm

ITEM	STANDARD		LIMIT
Primary speed ratio	71/19		———
Final speed ratio	53/14		———
Gear ratio	1st	29/12	———
	2nd	26/17	———
	3rd	26/22	———
	4th	24/23	———
	5th	20/22	———
	6th	21/26	———
Shift fork to groove clearance	0.10~0.30		0.5
Shift fork groove width	NO.1 & NO.2	5.0~5.1	———
	NO.3	5.0~5.1	———
Shift fork thickness	NO.1 & NO.2	4.8~4.9	———
	NO.3	4.8~4.9	———

Drive chain	Type	428-132	———

⊙ EI SYSTEM PARTS EI

ITEM	N－m	kgf－m
Water temperature sensor (WT sensor)	5 ~ 8	0.5 ~ 0.8
Fuel injector mounting bolt	5 ~ 8	0.5 ~ 0.8
Intake air temperature & temperature sensor (IAP&T sensor)	5 ~ 6	0.5 ~ 0.8

⊙ THROTTLE BODY

ITEM	SPECIFICATION	NOTE
I.D. No.	13400KH9100	
Bore size	⌀ 28	
Idle rpm	1,500 ~ 1,700 rpm	
Throttle cable play	0.5 ~ 1.0 mm (0.02 ~ 0.04 in)	

⊙ FUEL INJECTOR + FUEL PUMP

ITEM	SPECIFICATION	NOTE
Fuel injector resistance	11.4 ~ 12.6 Ω at 20℃ (68℉)	
Fuel injector voltage	Battery voltage	
Fuel pressure of fuel pump	350 kPa	

⊙ELECTRICAL

Unit : mm (in)

ITEM	SPECIFICATION		NOTE
Ignition timing	BTDC 12° /1900rpm and30° /7000rpm		
Spark plug	Type	CR8E	
	Gap	0.8 ~ 0.9 (0.032 ~ 0.035)	
	Hot type	CR7E	
	Standard type	CR8E	
	Cold type	CR9E	
Spark performance	More than 8 (0.32)		

Ignition coil primary peak voltage	400 V and more		
Ignition coil resistance	Primary	0.52 ~ 0.64 Ω	1st ⊕ - ⊖
	Secondary	6.4 ~ 7.8 kΩ	2nd ⊕ - ⊖
Spark plug cap resistance	10 kΩ		
Ignition coil secondary/ Spark plug cap resistance	16.4 ~ 17.8 kΩ		spark plug cap - ⊖
Stator coil resistance	Pick-up coil	Approx. 95 ~ 125 Ω	G - L
	Charging coil	Approx. 0.3 ~ 0.6 Ω	Y - Y
Magneto no-load performance	Over 60 V / 5,000 rpm		
Battery standard charging voltage	13.5 ~ 15.0 V / 5,000 rpm		
Battery	Type	MG14ZS-C	
	Capacity	12V 11.2Ah/10HR	
Fuse size	HEAD LIGHT	20A	
	ECU ECU	15A	
	MAIN	20A	
	SPARE	20A	
		15A	
		1A	

⊙ WATTAGE

Unit:W

ITEM	SPECIFICATION
Head lamp	12V—HS1 : 35W/35W
Position lamp	12V – 5W
License lamp	12V – 0.5W
Brake/Tail lamp	8V – 1W/0.5W
Turn signal lamp	12V 1W x 4
Speedometer lamp	LED TYPE
Engine warning lamp	LED TYPE
Turn signal indicator lamp	LED TYPE
High beam indicator lamp	LED TYPE
Odometer/ Trip meter/ clock	LCD TYPE
Fuel meter/ Coolant temp. meter	LCD TYPE
Neutral indicator lamp	LED TYPE

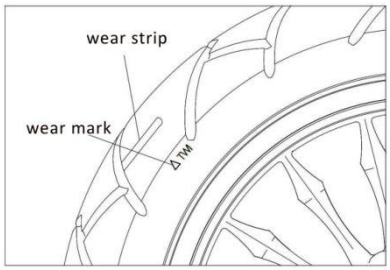
※ LED: Light Emitting Diode
LCD: Liquid Crystal Display

Code Tyre pressure	Cold inflation tire pressure (Solo riding)			Cold inflation tire pressure (Dual riding)		
	kPa	kgf/cm2	psi	kPa	kgf/cm2	psi
FR TYRE	225	2.25	33	225	2.25	33
RR TYRE	225	2.25	33	225	2.25	33

⚠ CAUTION

Do not use except the specified bulb (Wattage).

TIRE



1. The triangle mark indicates the location of the wear bar. If the wear bar touches the ground, the tire has worn to the limit. The tires must be replaced.

2. When replacing tires, make sure that the size and model of replacement tires should conform to the contents of Table 3. If you change the tires of a different size or model, it will affect the handling performance of the motorcycle and may cause the motorcycle to lose control.

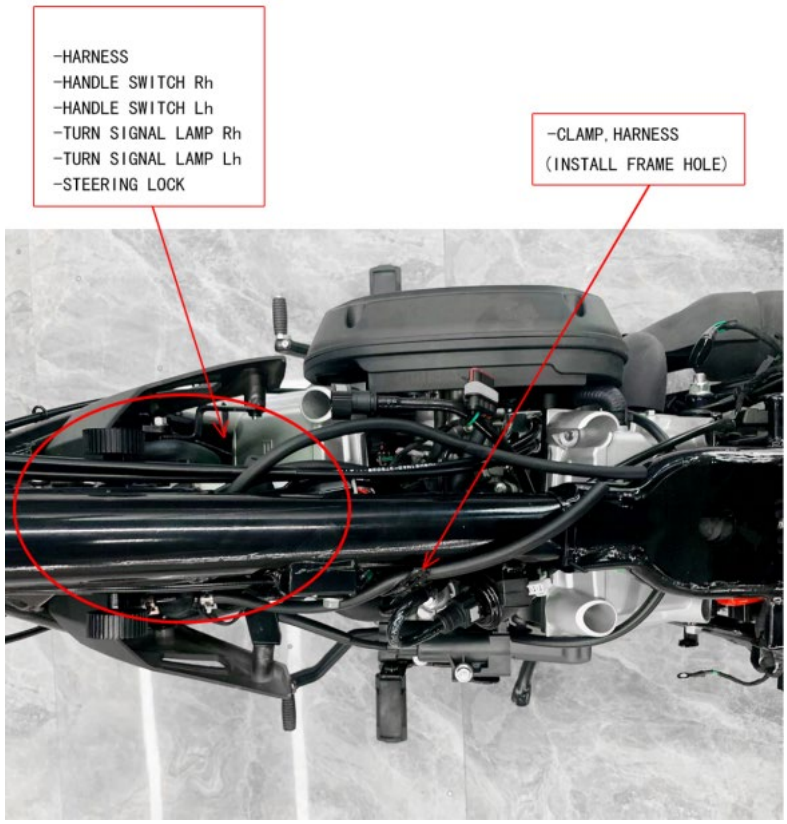
3. After repairing or replacing tires, balance the wheels. It is very important to balance the wheel correctly to avoid uneven contact between the tire and the road, and to avoid uneven wear of the tire.

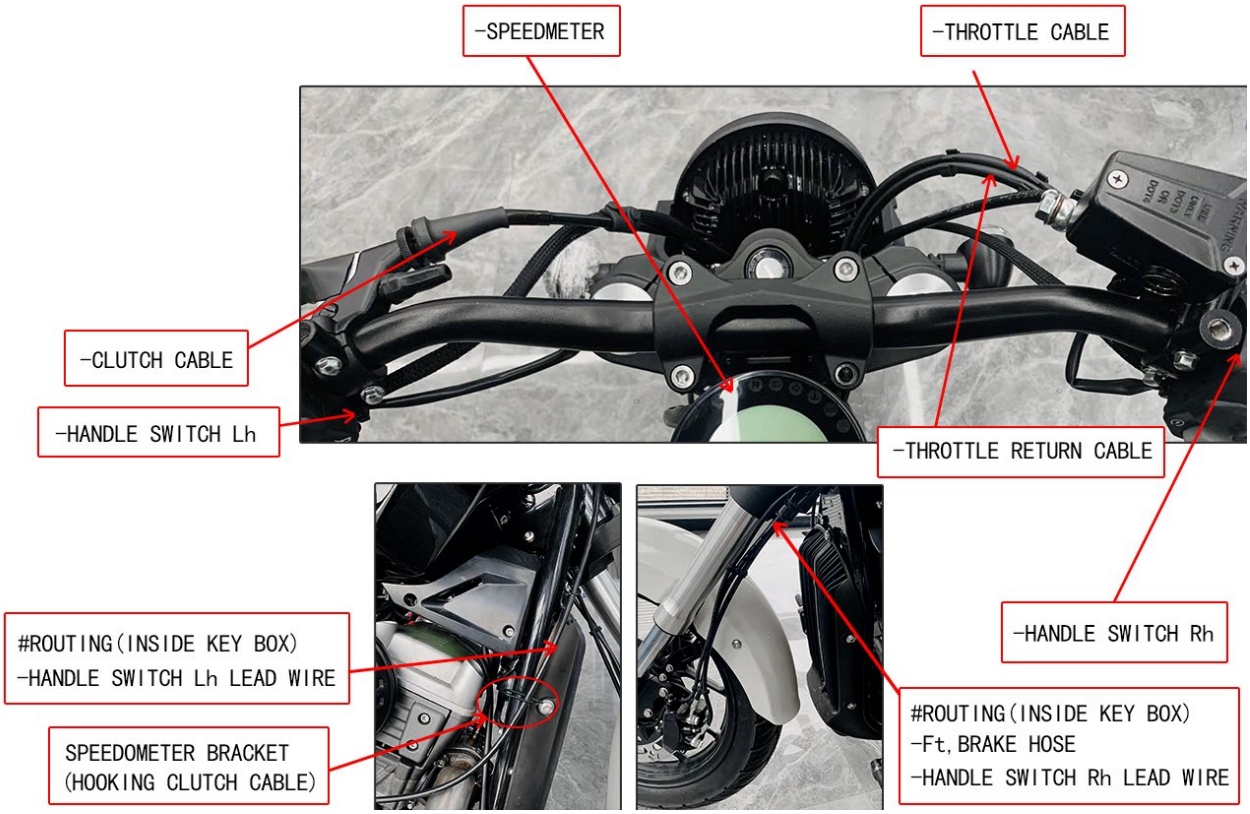
FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	The gasoline used shall be unleaded gasoline above 95# grade.		
Fuel tank capacity	Including reserve	15 L	

	Reserve	5 L	
Engine oil type	SG 15W-40		
Engine oil capacity	Oil addition amount of new machine	2000 ml	
	oil change amount (without oil filter)	2000 ml	
	oil change amount (with oil filter)	2200 ml	

WIRING AND CABLE ROUTING

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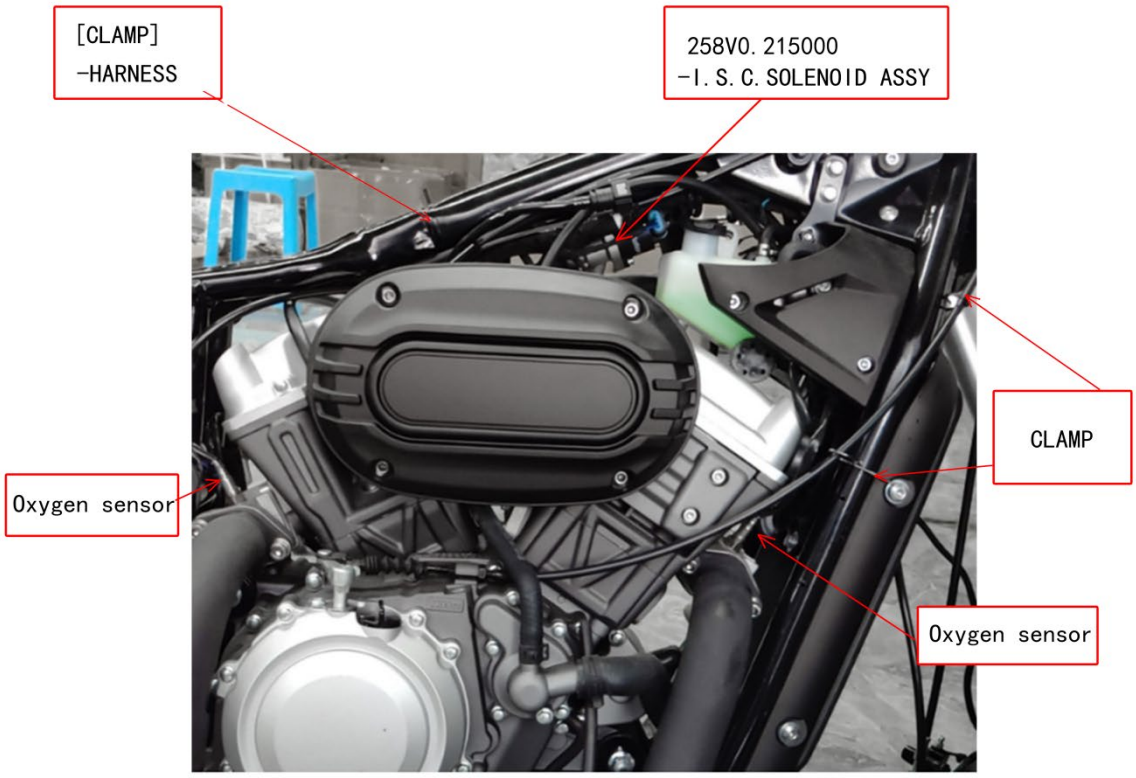
-THROTTLE CABLE
-CLUTCH CABLE
-HANDLE SWITCH Lh
-THROTTLE RETURN CABLE
-HANDLE SWITCH Rh
#ROUTING(INSIDE KEY BOX)
-HANDLE SWITCH Lh LEAD WIRE
SPEEDOMETER BRACKET
(HOOKING CLUTCH CABLE)
#ROUTING(INSIDE KEY BOX)
-Ft, BRAKE HOSE
-HANDLE SWITCH Rh LEAD WIRE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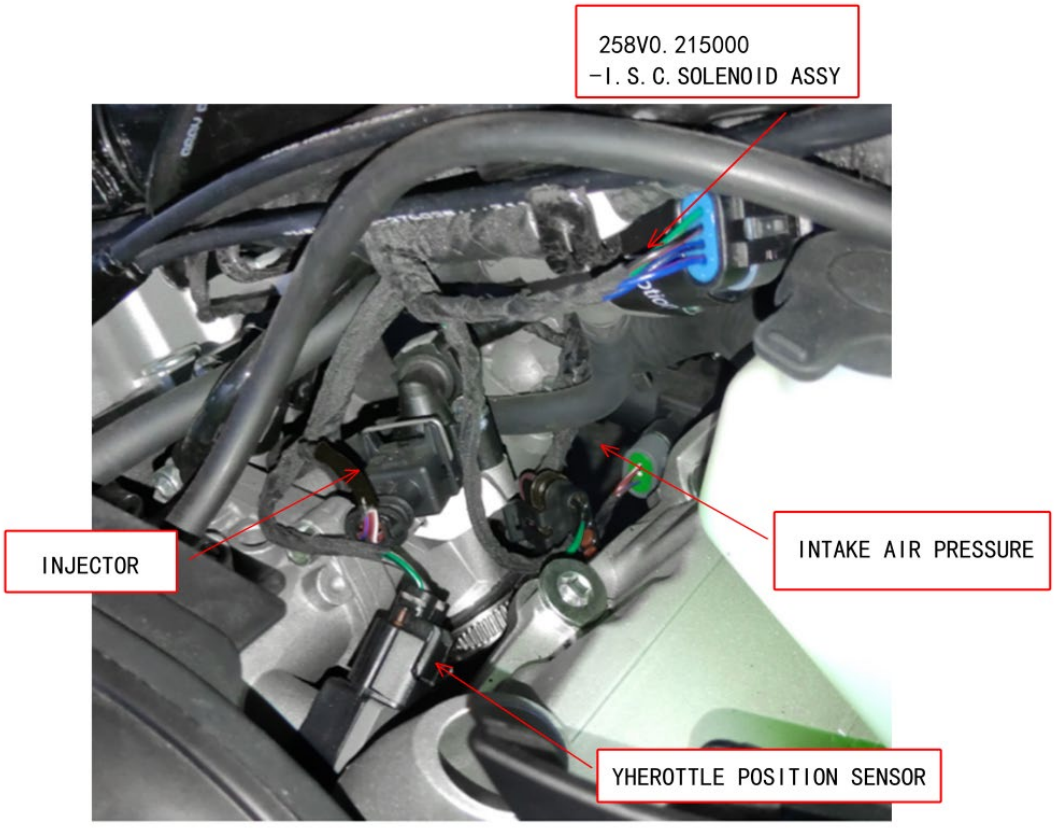
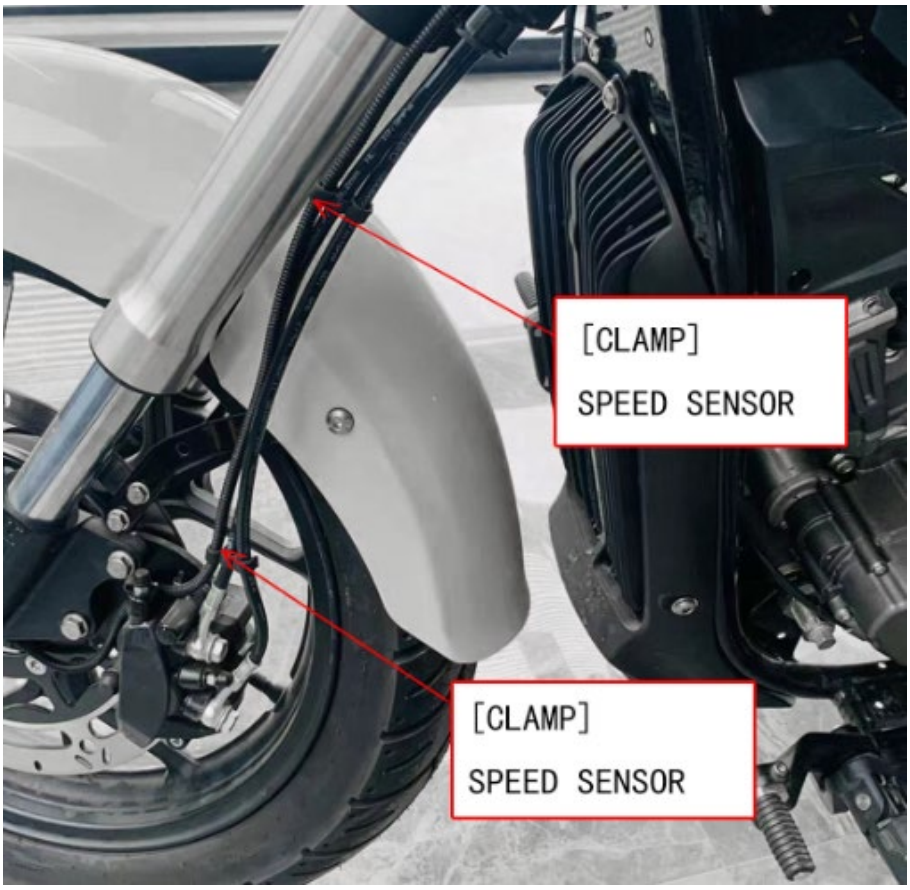
258V0.215000
-I.S.C.SOLENOID ASSY
CLAMP
Oxygen sensor
Oxygen sensor


258V0.215000
-I.S.C.SOLENOID ASSY
INJECTOR
INTAKE AIR PRESSURE
YHEROTTLE POSITION SENSOR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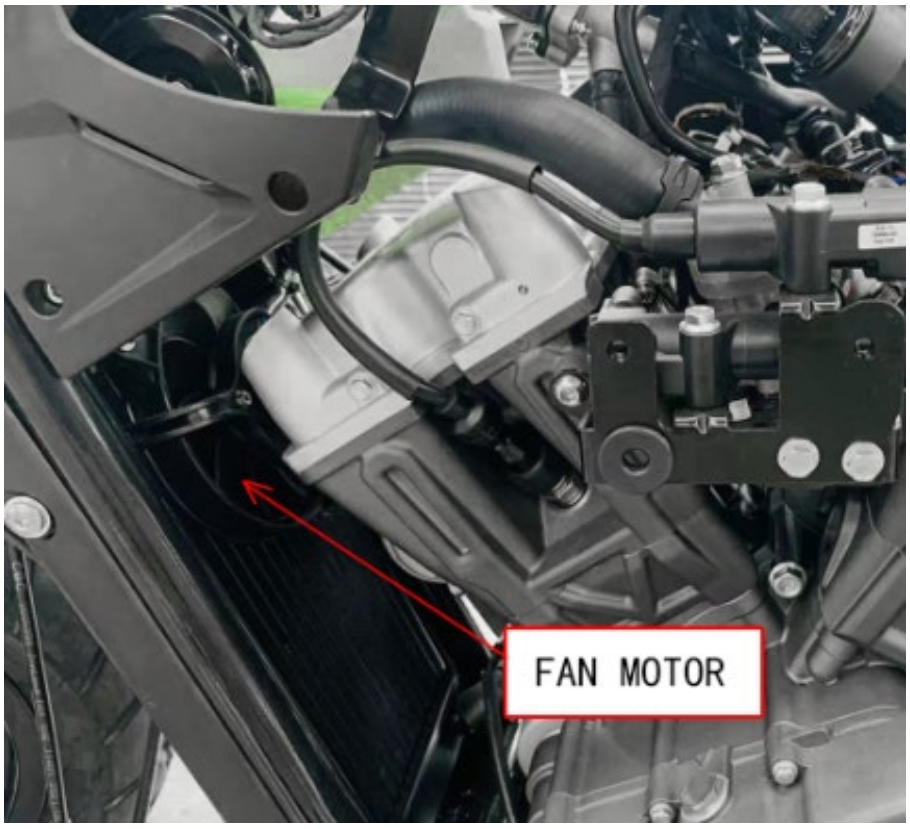
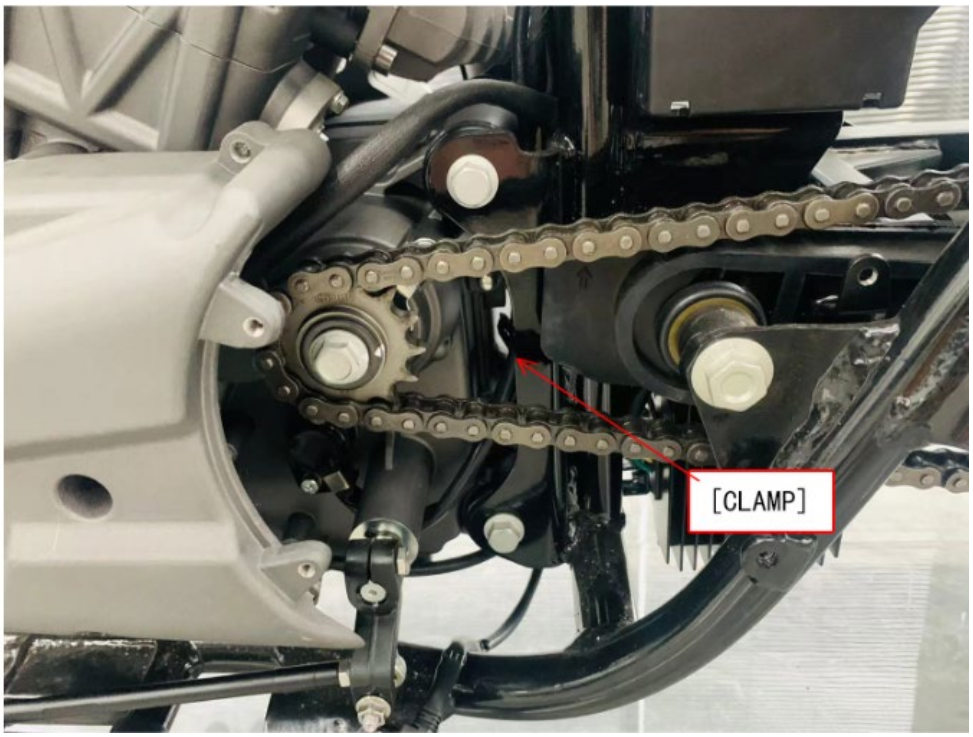

FAN MOTOR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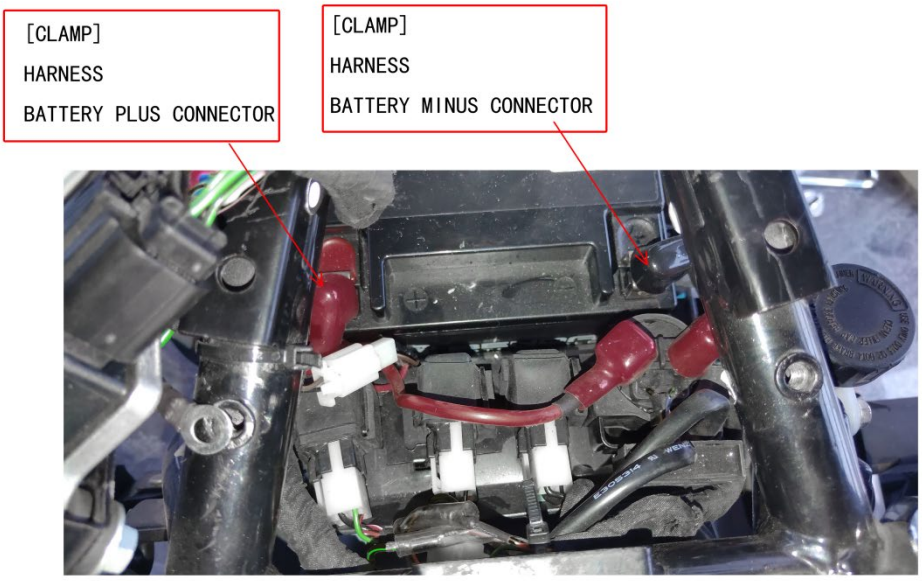
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HARNESS
BATTERY PLUS CONNECTOR
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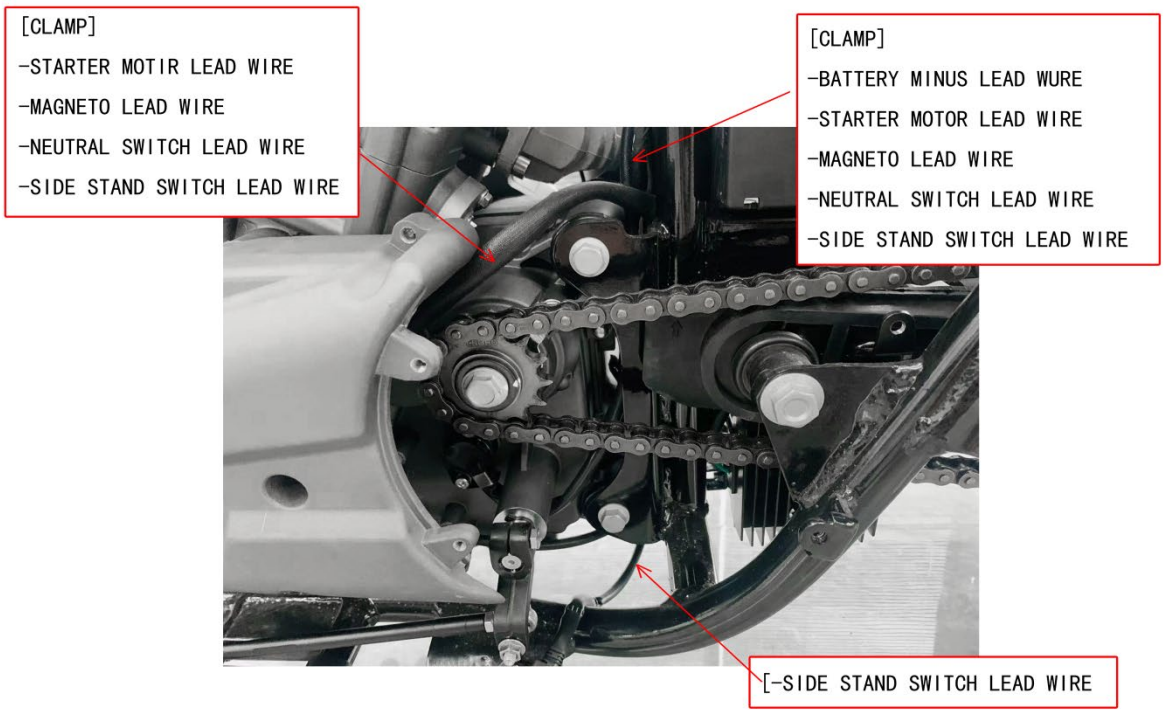
HARNESS
BATTERY MINUS CONNECTOR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-MAGNETO LEAD WIRE
-NEUTRAL SWITCH LEAD WIRE
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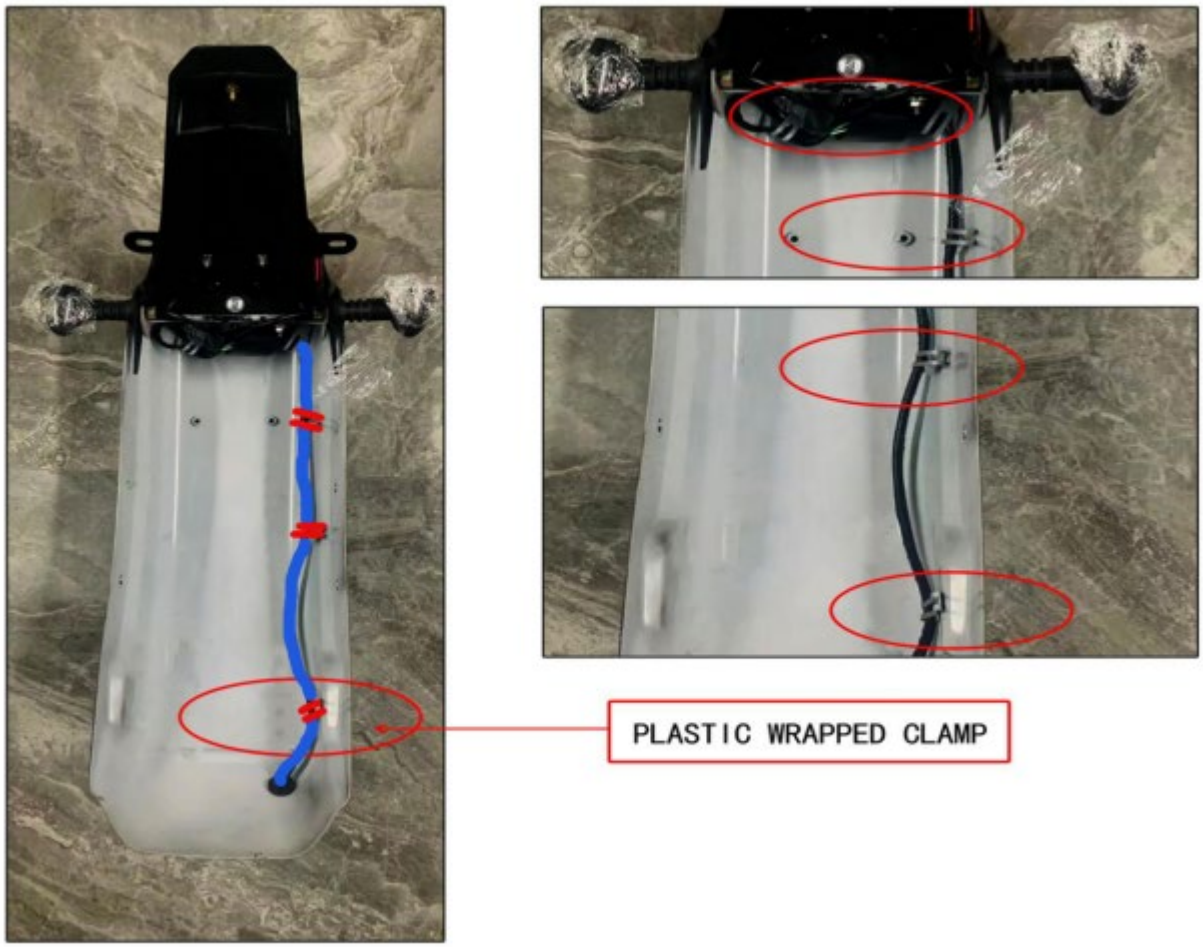
PLASTIC WRAPPED CLAMP

WIRING DIAGRAM