KAYO MOTO

AU300

Service Manual

www.kayomoto.com

Version Code：20221224
Version Name：AU300 Service Manual

www.kayomoto.com

Zhejiang Kayo Motor Co., Ltd.
December 2022

Preparation instructions

This Service manual provides a

detailed introduction to the maintenance and adjustment procedures, disassembly and assembly essentials, inspection and maintenance points, troubleshooting methods, and maintenance technical data of the AU300 four-wheel motorcycle (All terrain vehicle) (ATV), and is accompanied by detailed graphical materials to guide the operation.

Please read this manual carefully and carry out maintenance according to standard operating procedures, which can effectively extend the service life of various components, improve engine performance, and enhance the reliability of the entire vehicle.

The first chapter mainly introduces general work items, tools used, basic techniques, and maintenance parameters.

The second chapter introduces the assembly and disassembly techniques of the vehicle cover panel

The third chapter introduces the regular inspection and adjustment of the entire vehicle

The fourth chapter introduces the disassembly of engine peripheral assembly components

The fifth chapter introduces the methods and precautions for disassembling, inspecting, repairing, and assembling various parts of the engine

The sixth chapter introduces information related to fuel control system fault codes

The seventh chapter introduces information related to vehicle chassis

The eighth chapter introduces the detection and maintenance information of the vehicle signal and lighting system

Appendix: Electrical schematic diagram

If the content involved in this manual is changed due to vehicle improvement and other reasons, no prior notice will be given. Performing maintenance should be based on the actual condition of the vehicle.

Zhejiang Kayo Motor Co., Ltd.
Research and development department
December 2022

Contents

Maintenance information	1
Covering parts of the body of the vehicle	2
Regular inspection and adjustment	3
Around the engine	4
Engine	5
Fuel control system fault codes	6
Vehicle chassis	7
Signal and lighting systems	8
Electrical schematic diagram	Appendix

The unit conversion table in this book

Item	Unit conversion
Pressure	1kgf/cm^2=98.0665kPa ; 1kPa=1000Pa
	1mmHg=133.322Pa=0.133322kPa
Torque	1kgf·m=9.80665N·m
Volume	1mL=1cm^3=1cc
	1L=1000cm^3
Force	1kgf=9.80665N
Length	1in=25.4mm

Danger/Warning/Caution

Please read the following explanations carefully, which emphasizes the special meanings of the words "Danger", "Warning" and "Caution", and special attention should be paid to their prominent meanings when repairing the engine.

Danger: means to be vigilant to high danger
Warning: means to be vigilant to moderate danger
Caution: means to pay attention to minor danger

However, Attention please the "Danger" and "Warning" contained in this Service manual cannot cover all potential dangers during engine use and maintenance. Therefore, in addition to the relevant provisions of "Danger" and "Warning", maintenance personnel must also have basic knowledge of mechanical safety. If you are not sure about completing the entire maintenance operation process, please consult a more experienced senior technician.

1 Maintenance information

1.1 Precautions for operation……1-1
1.2 Vehicle identification number……1-3
1.3 Main parameter table……..1-5
1.4 Maintenance parameter table……..1-7
1.5 Tightening torque……1-10
1.6 Lubricants, sealants……1-11
1.7 Wiring diagrams for cables, hoses, and cables……....1-12

1.1 Precautions for operation

Safety precautions

1. Work clothes (one-piece work clothes, etc.), hats, safety boots suitable for the operation must be worn, and if necessary, dust-proof glasses, dust-proof mask, gloves and other safety protection articles should be worn to protect your body.

2. Due to the harmful components contained in the exhaust gas, it is forbidden to run the engine for a long time in a closed place or a place with poor ventilation.

3. When the engine is just stopped, the temperature of the engine and muffler is still very high. Do not touch it before cooling to avoid burns.

4. Battery solution (dilute sulfuric acid) is a strong corrosive agent that poses a risk of burns and blindness when it comes into contact with the skin and eyes. If clothes or skin accidentally come into contact with battery solution, please wash it with plenty of water immediately and go to the hospital for treatment. Batteries and battery solutions should be strictly stored and must be kept in a safe place out of reach of children. When charging a battery, flammable and explosive hydrogen gas is generated, and there is a risk of explosion once there is an ignition source or electric spark approaching. Therefore, please charge in a well ventilated area.

5. Due to the fact that gasoline is a flammable substance, fireworks are strictly prohibited in the workplace. Pay attention not only to open flames, but also to electric sparks. In addition, the evaporated gasoline poses a risk of explosion. Please choose a well-ventilated site for operations.

6. During maintenance, be careful not to let the rear wheel, clutch, other rotating parts and movable parts clamp your hands and clothes.

7. When two or more people are working, they must constantly greet each other to confirm safety.

Precautions for disassembly and assembly

1. Parts, lubricating oil and grease must use products recommended by Kayo brand.

2. The parts of each system should be sorted and kept separately, so that each part can be reinstalled in their original position.

3. Please clean the soil and dust on the vehicle before maintenance.
4. Gaskets, O-rings, piston pin retaining rings, cotter pins, etc. must be replaced with new ones after disassembly.
5. If the opening of the elastic retaining ring is too large during disassembly, it will be deformed, and it will easily fall off after reassembly. Please do not use the elastic retaining ring that has loosened its strength and lost its elasticity.
6. After the parts are disassembled and inspected, they should be cleaned before measurement and the cleaning agent should be blown off with compressed air. Lubricating oil should be applied to the moving surface before assembly.
7. When disassembling, necessary places should be inspected and relevant data should be measured so that it can be restored to the state before disassembly during assembly.
8. Fasteners such as bolts, nuts, and screws should be pre-tightened first, and then tightened according to the specified tightening torque on the diagonal according to the principle of from large to small, from inside to outside.
9. When the rubber parts are disassembled, check whether they are aging, and replace them in advance if necessary. In addition, as rubber parts are not resistant to corrosion from gasoline, kerosene, etc., try not to let volatile oils and greases attach to them.
10. According to the requirements of the Service manual, apply or inject the recommended grease on the designated parts.
11. Correct special tools should be used for disassembly and assembly operations.
12. Ball bearings can be rotated with fingers to confirm whether the rotation is flexible and smooth. If force is applied to the ball during disassembly, the disassembled bearing should not be used again:

- If the axial and radial clearance of the bearing is too large, replace it.
- Bearings that feel stuck when rotating should be cleaned, and those that still feel stuck after cleaning should be replaced, and those that cannot be cleaned should be replaced directly.
- It was originally a tight fit with the body or the shaft diameter, but if the fit is not tight after disassembly, the bearing should be replaced.

13. Bearings should be coated with engine oil or grease before assembly. Pay attention to the installation direction when assembling single-sided dust-proof bearings. When assembling open-type or double-sided dust-proof bearings, install the side engraved with the manufacturer's logo and size facing outward during assembly.
14. When installing the rectangular retaining ring, the chamfered side should face the direction of the force. Do not use the retaining ring that has been loosened and lost its elasticity. After assembly, turn the rectangular retaining ring to confirm that it has been firmly installed in the groove.
15. After assembly, it is necessary to check whether all fastening parts are tightened and whether the work is normal.
16. Brake fluid and coolant can damage the coating surface, plastic parts, rubber parts, etc. Do not let them adhere to these parts. In box of adhesion, rinse them with water immediately.
17. The oil seal should be installed with the side marked by the manufacturer facing outward (in the

direction without oil)：

- When assembling, pay attention not to curl the lip of the oil seal or scratch the lip of the oil seal with burrs.
- Apply lubricating grease to the oil seal lip before assembly.

18. When installing rubber hose parts, insert the rubber hose to the root of the joint. If there is a pipe clip, install the pipe clip in the dent of the pipe. Replace the rubber hose that is not tight during installation.

19. Do not get dust, mud, etc. into the interior of the engine or the hydraulic system of the brake.

20. The gasket materials attached to the joint surfaces of the engine boxes must be cleaned before assembly, and the scratches on the contact surfaces must be evenly polished and removed with an oil stone.

21. Do not twist or bend the cables excessively. A deformed or damaged cable may cause poor movement or damage.

22. When assembling protective cap parts, if there is a groove, the protective cap must be inserted into the groove.

Running-in of the engine

The engine has many parts that do relative motion, such as pistons, piston rings, cylinder blocks, and transmission gears that mesh with each other, etc. Therefore, in the early stage of its use, it is necessary to carry out standardized running-in. Running-in can make the moving parts adapt to each other, correct the working gap, and form a good smooth friction surface that can withstand heavy loads. An engine that has been run-in according to specifications can have excellent performance and reliability.

The recommended break-in time is 10 hours, with the following specifications:

0 to 10 hours: avoid continuous operation with more than 1/2 throttle, and change the speed frequently. It is not recommended to run for a long time at a fixed throttle position; after every 1 hour of work, cool down the engine for 5 to 10 minutes; Avoid rapid acceleration, the throttle should be changed slowly, not suddenly large and small, and do not drag the cargo during the running-in period.

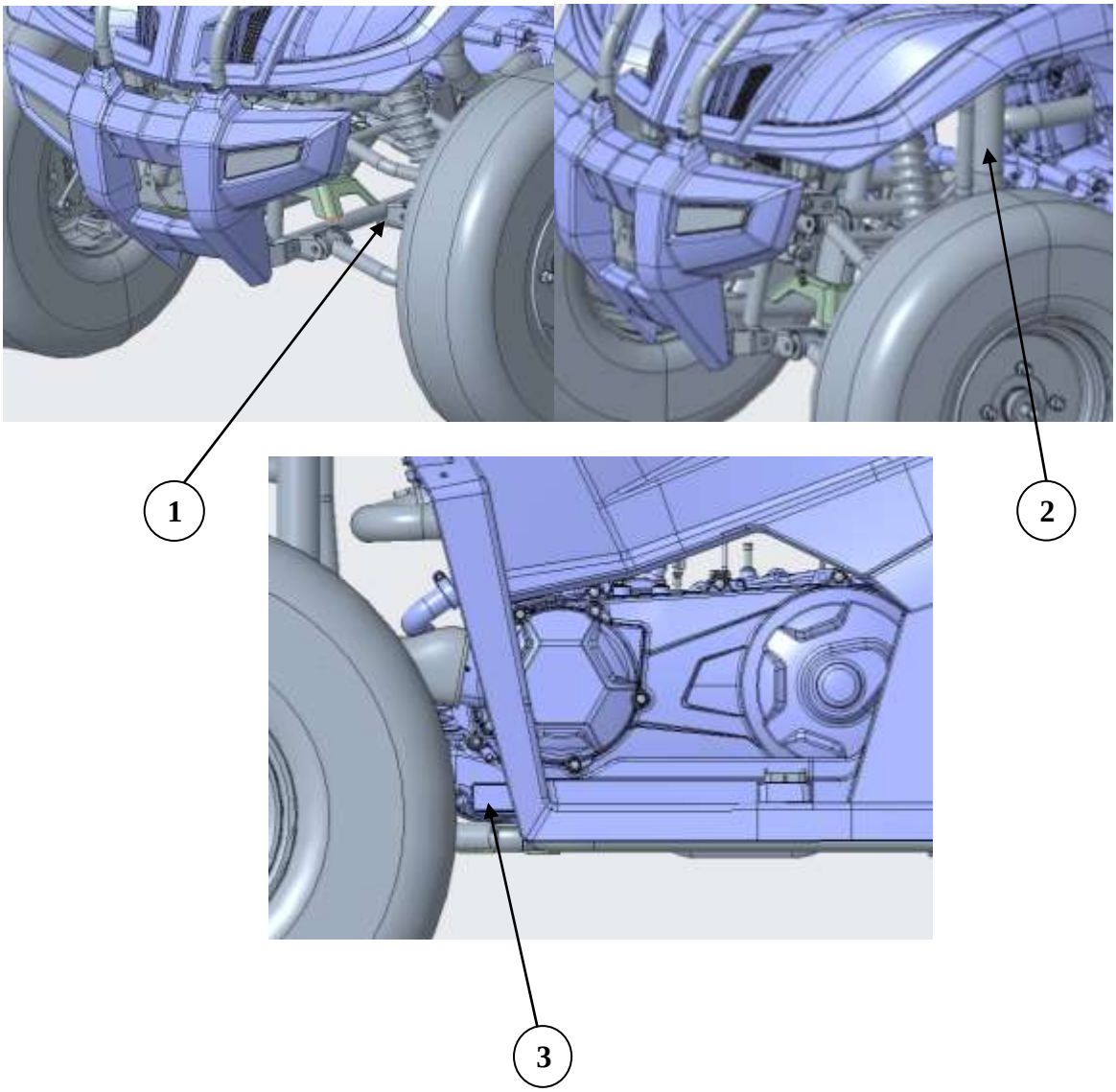
Attention：

- During the running-in period, maintenance should be carried out according to daily maintenance regulations, and any faults found should be promptly eliminated;
- After the running-in period is over, the whole machine can be maintained after the running-in period before it can enter the normal driving stage.

1.2 Vehicle identification number

①Frame number
②Vehicle nameplate
③Engine number

Vehicle model	AU300
Frame number	L6JADPZA ~
Engine number	LX172MN-A ~



1.3 Main parameter table

Items		Parameters
Vehicle model		AU300
Length (mm)		1970
Width (mm)		1150
Height (mm)		1050
Wheelbase (mm)		1230
Engine model		LXCTV300
Total displacement (ml)		270.5
Fuel type		92 and above gasoline
Curb weight of the whole vehicle (kg)		247
Number of passengers		1 person (driver)
Rated loading mass		1 person ＋ 60kg = 120kg
Tire specifications	Front wheel	AT23×7-10
	Rear wheel	AT22×10-10
Minimum ground clearance		165mm
Turning circle radius (minimum turning radius at the closest point)		3000mm
Engine	Starting method	Electric starting
	Engine type	Single cylinder, SOHC, four stroke, water-cooled
	Gas distribution method	Shaft drive
	Cylinder diameter × stroke (mm)	72.7×65.2
	Compression ratio	11.0:1
	Lubrication method	Wet type
	Oil pump type	Rotor type
	Lubricating oil filter type	Full flow filtration rotary type
	Oil grade	SAE15W-40/SF and above
	Cooling method	Water-cooling

Items		Parameters	
Air filter type		Sponge filter element filtration type	
Throttle body	Type	Plunger throttle	
	Mixture valve diameter	30mm	
Fuel tank capacity		12L	
Transmission system	Clutch type	Dry automatic clutch	
	Variable speed mode	Automatic continuously variable transmission (CVT)	
	Gearshift	One high gear, one low gear, one neutral gear, one reverse gear	
	Transmission mode/sequence	Manual operation/L—H—N—R	
	(CVT) continuously variable ratio	0.757~2.415	
	Output type	Rear axle output	
	Engine output rotation direction	When in forward gear, it is clockwise when viewed from the rear of the vehicle	
Steering device	Steering angle	Inner	32°
		Outer	24°
Brake device type		Front	Hydraulic pressure disc type
		Rear	Hydraulic pressure disc type
Buffering method	Suspension method	Front wheel dual rocker arm independent suspension, rear wheel non independent suspension	
Frame type		Steel pipe and steel plate welding type	

1.4 Maintenance parameter table

•Lubrication device

Items		Standards	Usage limit
Engine oil capacity	Change oil	1400ml（without changing the oil filter）	—
	Change oil	1600ml（in the same time change the oil filter element）	
	Full capacity	1800ml	—
Recommended engine oil		Only use SAE 15W/40-SE engine oil, do not replace or mix different grades of oil, as this can cause engine damage and cause accidents	
Oil pump rotor	Radial clearance between inner and outer rotors	—	0.12mm
	Radial clearance between outer rotor and pump body	—	0.12mm
	Axial clearance between rotor surface and pump body	0.05~0.1	0.2mm

•Air intake system (see -05 engine section for details)

•Cooling device

Items		Standard value/parameter		Notes
Coolant capacity	Full capacity	About 800mL		
	Auxiliary water tank capacity	100mL		
	Standard concentration	50%		
Opening pressure of water filler cap		110kPa±15kPa(1.1kgf/cm^2)		
Thermostat	Opening temperature of opening valve	65℃±2℃		
	Full open temperature	85℃		
	Full open lift	85℃时，＞5mm		
The relationship between the resistance of the water temperature sensor and the water temperature	Water temperature (℃)	B outer shell end resistance (Ω)	A. C-terminal resistance (kΩ)	
	-20	----	13.71~16.94	
	25	-----	1.825~2.155	
	50	176~280	-----	
	80	63.4~81.4	0.303~0.326	
	110	24.6~30.6	0.138~0.145	
Type of coolant	-10 ℃ advanced antifreeze, anti-corrosion, high boiling point coolant			

•Wheels (same front and rear wheels)

Items		Standards	Usage limit
Rim runout	Longitudinal	0.8mm	2.0mm
	Lateral	0.8mm	2.0mm
Tire	Residual groove	—	3mm
	Air pressure	35kPa（0.35kgf/cm^2）	—

•Braking System

Items		Standards	Usage limit
Front brake	Brake disc thickness	3.5mm	3.0mm
Rear brake	Brake pedal travel	2 ~ 6mm	—
	Brake disc thickness	4.0mm	3.0mm

•Battery/charging device/trigger coil

Items			Standards
Magneto	Type		Permanent magnet AC generator
	Output		Three phase full wave
	Magneto trigger coil resistance		120Ω±20Ω
	Magneto no-load voltage (engine in cold state)		None
	Maximum output power of magneto		217W（5000r/min）
	Stabilized voltage		14.5V±0.5V
	Trigger coil peak voltage		Vp≥1.5V（300r/min）,
Rectifier type			Full wave rectification
Battery	Capacity		12V14AH
	Voltage between terminals	Fully charged	14.4V
		Insufficient charge	Less than 11.8V

•Ignition device

Items		Standards
Ignition type		ECU controls ignition
Spark plug	Type	Resistance type spark plug
	Standard	D8RC
	Spark plug gap	0.6~0.7mm
	Spark characteristics	Blue and white light
Ignition coil resistance	Primary	0.3 Ω
	Secondary	3.8 kΩ
Peak voltage	Ignition coil primary	300~450V
	Pulse generator	20kV~30kV
Starting relay coil resistance		3.5 Ω

- **Lights / Meters / Switches**

Items		Standards
Fuse		10A
Lights, light bulbs	Headlamps	12V—35W
	Front turning lights	12V—5.7W
	Tail/brake lights	12V—2W
	Rear turning lights	12V—5.3W
	Position lights	12V—3W

Valve train+cylinder head (see 05-engine part for details)

Cylinder+piston+piston ring+crank connecting rod (see 05-engine part for details)

Clutch+transmission mechanism (see 05-engine part for details)

1.5 Tightening torque

Attention：

Before installing the thread, apply anti-rust grease on the threaded part and joint surface

Tightening torques at designated parts - whole vehicle parts

Serial number	Items	Fastener code	Quantity	Tightening torque (N · m)
1	Suspension lower rocker arm bolts	GB5789 M10×1.25×80	4	45~59
2	Front and rear shock absorption bolts	GB5787 M10×1.25×40	6	45~59
3	Front wheel hub installation slotted nuts	GB9457 M14×1.5×H18	2	126~218
4	Steering rod ball pin slotted nuts	GB9457 M10×1.25	4	33~45
5	Direction handle cover screws	GB70-85 M8×35	4	22~30
6	Front brake caliper bolts	GB5789 M8×25	4	22~30
7	Front brake disc bolts	M8×1.25×20	8	22~30
8	Rear brake caliper body bolts	GB5789 M8×25	2	22-30
9	Rear brake disc mounting screws	GB70-85 M8×16	4	22~30
9	Installation bolts of the steering handle pressure block	GB5783 M10×1.5×30	2	45~59
12	Water cooler installation bolts	GB5789 M6×25	4	9~12
13	Mounting screws for the trailer ball fixing plate	GB70-85 M10×1.5×30	4	45~59
14	Rear wheel hub installation slotted nuts	GB9457 M16×1.5	2	199~311
15	Steering column installation slotted nuts	GB9457 M12×1.25	1	110~130
16	Steering column clamp mounting bolts	GB5787 M8×60	2	22~30
17	Mounting bolts for the front of the fuel tank	GB5789 M6×25	2	9~12
18	Mounting bolts for the rear of the fuel tank	GB5789 M6×30	2	9~12
19	Horn mounting bolts	GB5787 M6×16	1	9~12
20	Engine mounting bolts	GB5787 M10×1.25×160	1	45~59
21	Sprocket seat mounting screws	GB70-85 M8×20	4	38~51
22	Plastic bottom bracket mounting screws	GB70-85 M6×45	4	13~16
23	Cross pan head self tapping screws	GB845-85 ST4.2	—	—
24	Cross pan head machine gear screw	GB828-88 M5×16	2	—
25	Cross large flat head machine gear screw	TM6	—	—

26	Rim mounting nut	GB6187-86 M10×1.25	16	45~59

Tightening torque of designated parts - engine parts (see 05-engine part for details)
Tightening torque of fasteners at unspecified parts

Category	Torque N·m	Category	Torque N·m
5mm bolts and nuts	4.5~6	5mm screws	3.5~5
6mm bolts and nuts	8~12	6mm screws	7~11
8mm bolts and nuts	18~25	6mm raised bolts	10~14
10mm bolts and nuts	30~40	8mm raised bolts, nuts	20~30
12mm bolts and nuts	35~50	10mm raised bolts, nuts	30~40

Engine maintenance tools (see 05 Engine part for details)

Special tools for engines (see 05 Engine part for details)

1.6 Lubricants, sealants

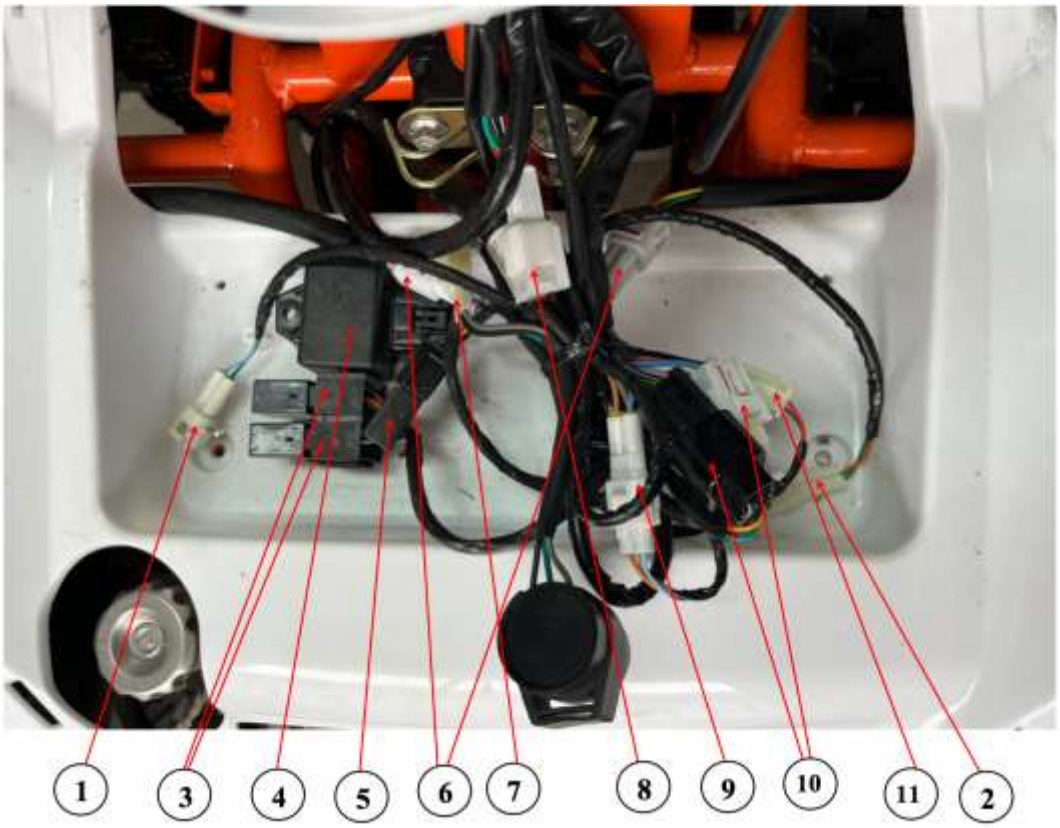
Coating site	Points for attention	Oils and fats
Steering bearing		Lightweight lithium soap based lubricating grease
Throttle cable connection		
Rocker arm movable parts		
Inner peripheral surface of directional		
Movable parts of seat cushion lock		
Shift mechanism movable parts		

Lubrication of control cables, bearings and rotating parts

Parts	Content	Oils
Steering shaft spherical sleeve	Lubrication	General lithium based lubricating grease for automobiles GB/T5671
Rear wheel axle mount		
Front and rear shock absorber joints		
Accelerator handle shaft and cable joint		
At the rotation axis of the left and right brake handles		
Parking cable connection		

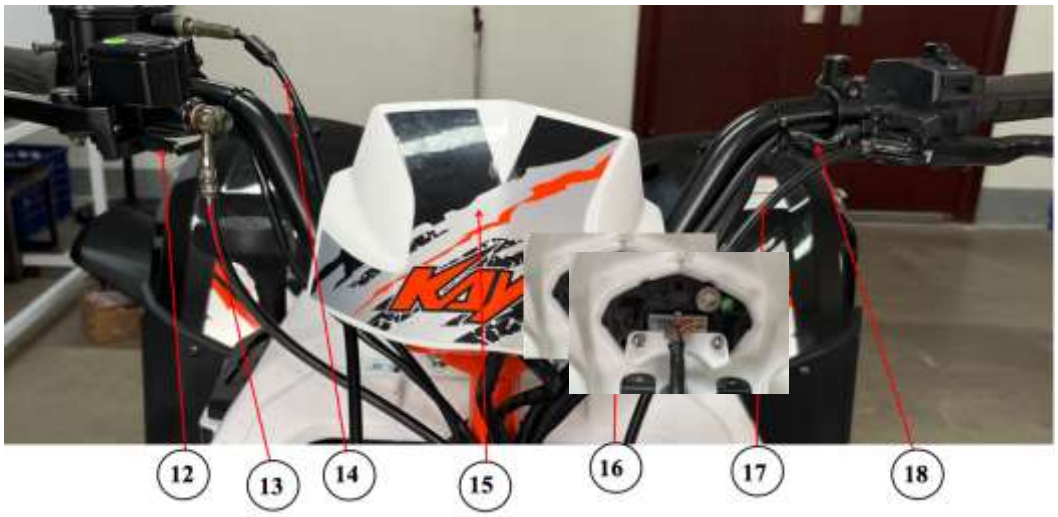
Engine operating materials and installation accessories (see 05-engine part for details)
Engine operating materials include lubricating oil (engine oil), lubricating grease (butter), and coolant, etc; Installation accessories include flat sealant and thread locking adhesive

1.7 Wiring diagrams for cables, hoses, and cables

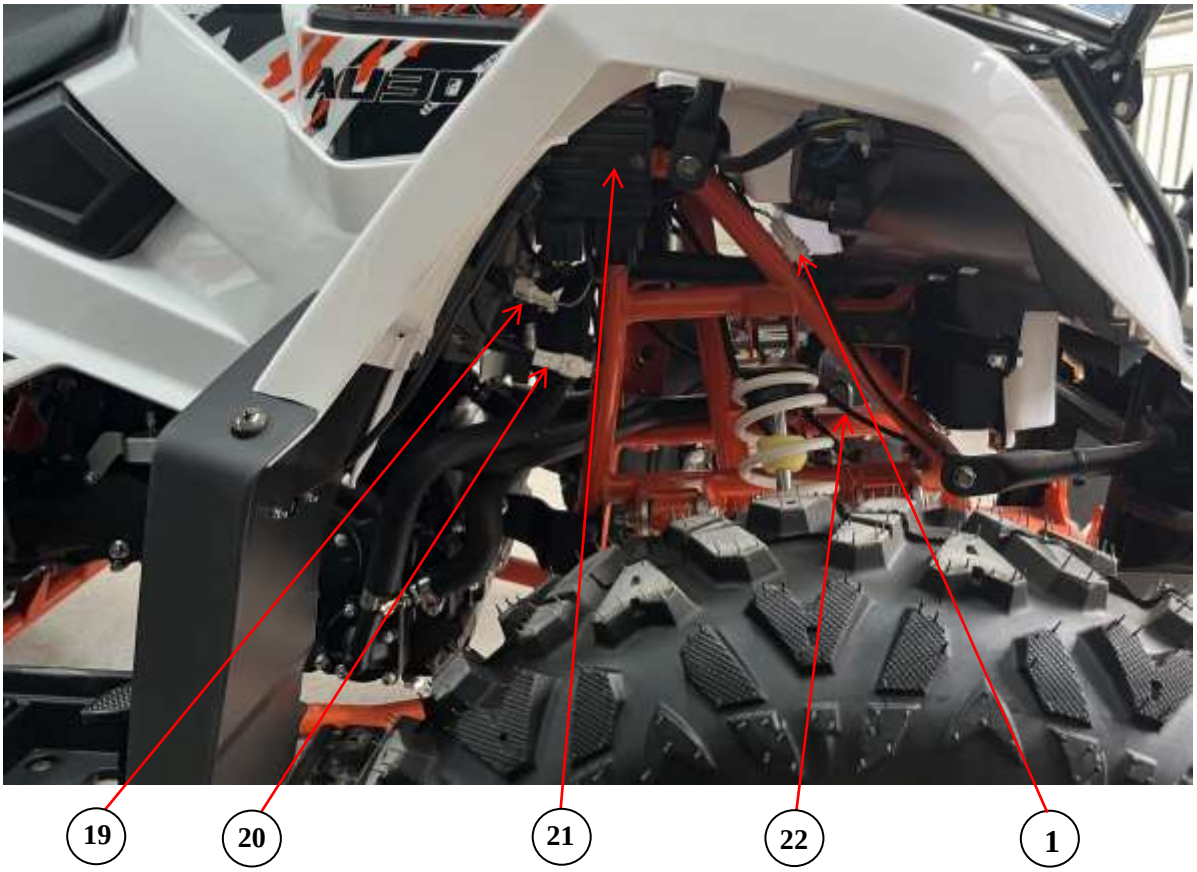


1. Right turn signal plug-in 2. Left turn signal plug-in 3. Relay 4. Infrared sensor controller 5.Diode 6.Headlight plug-in 7.Flasher plug-in 8.Electric door lock switch plug-in 9.Double flashing switch plug-in 10.Combination switch plug-in 11.Parking plug-in

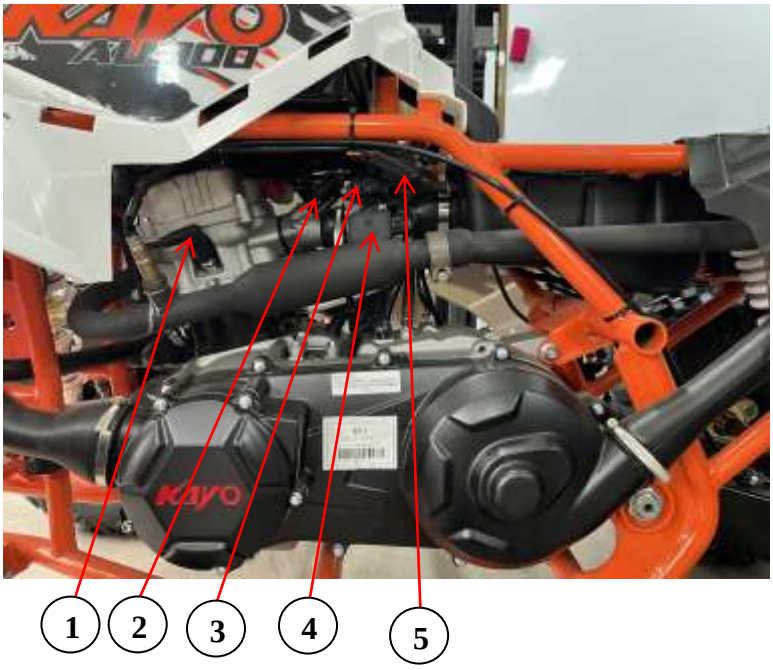
Attention: Before inspecting and repairing the above components, the front panel must be removed. For specific disassembly, refer to the second chapter - covering parts of the body of the vehicle



12. Brake sensor 13.Brake oil pipe 14.Accelerator cable 15.Hood 16. Instrument plug-in 17.Parking cable 18.Combination switch

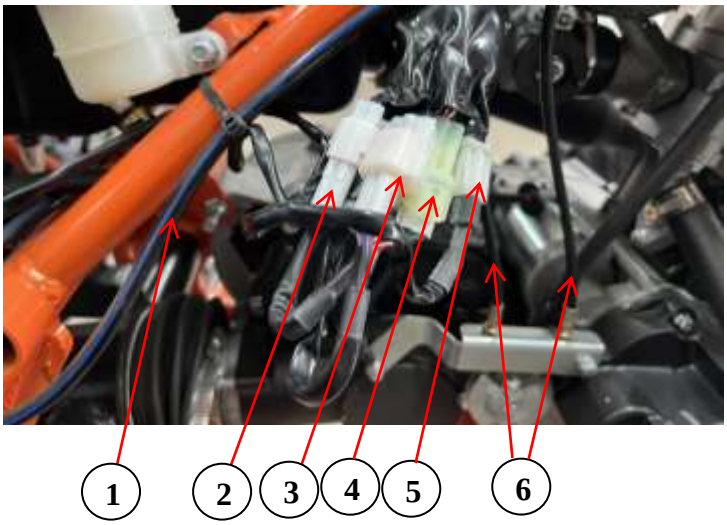


19. Magneto trigger plug-in 20. Infrared induction plug-in 21.Voltage regulator 22.Horn plug-in



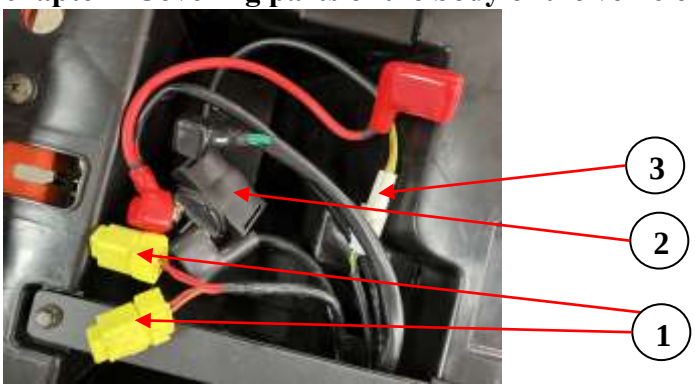
1. High pressure package 2.Fuel injection nozzle 3.Stepper motor 4. Three in one sensor 5.Oxygen sensor

Attention: Before inspecting and repairing the above components, the left foot pedal and left center guard must be removed. For specific disassembly, refer to the second chapter - Covering parts of the body of the vehicle



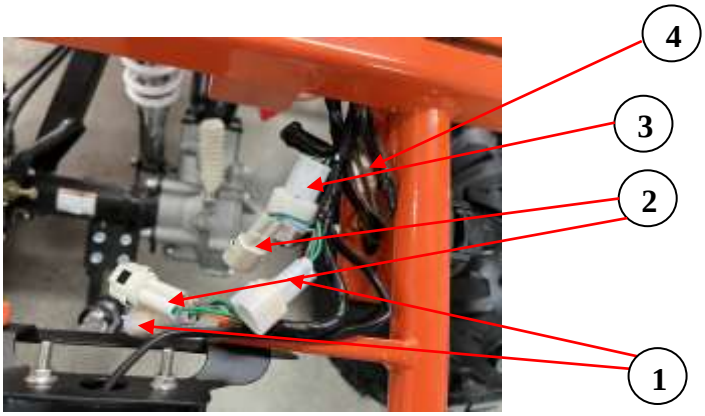
1.Brake oil pipe 2.Liquid level sensor plug-in 3.Speed sensor plug-in 4. Gear sensor plug-in 5.Brake sensing 6. Shift cable

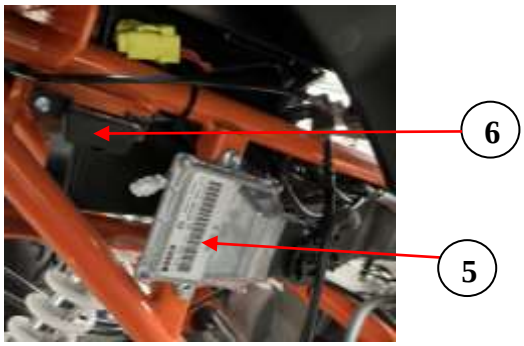
Attention: Before inspecting and repairing the above components, the right foot pedal and right center guard must be removed. For specific disassembly, refer to the second chapter - Covering parts of the body of the vehicle



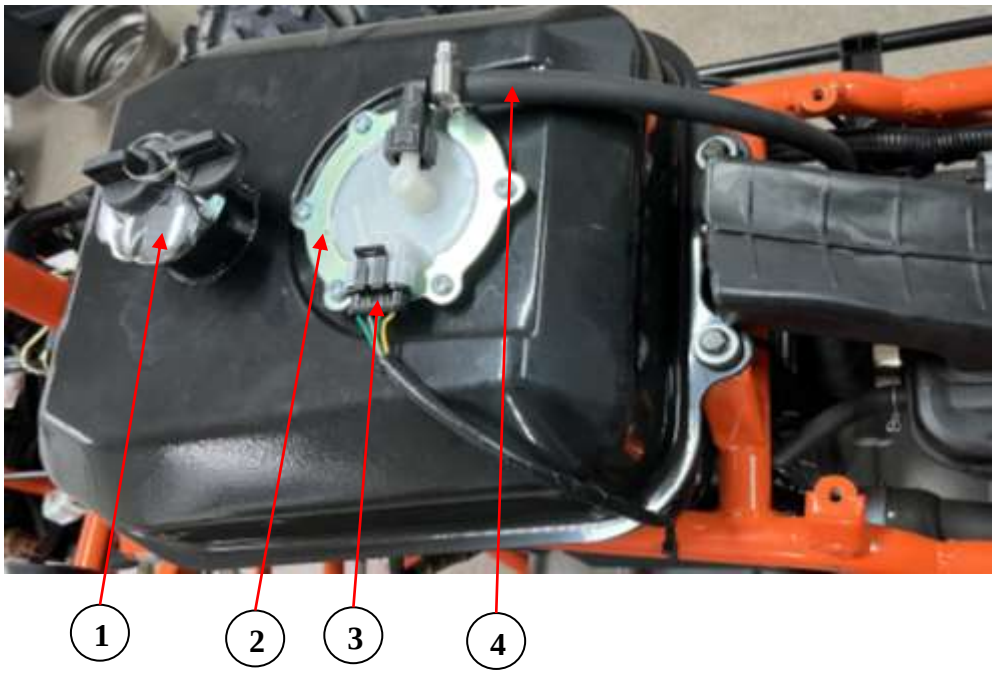
1. ECU, switch lock fuse plug-in 2.Relay 3.Relay plug-in

Attention: Before inspecting and repairing the above components, the seat cushion must be removed. For specific disassembly, refer to the second chapter -Covering parts of the body of the vehicle

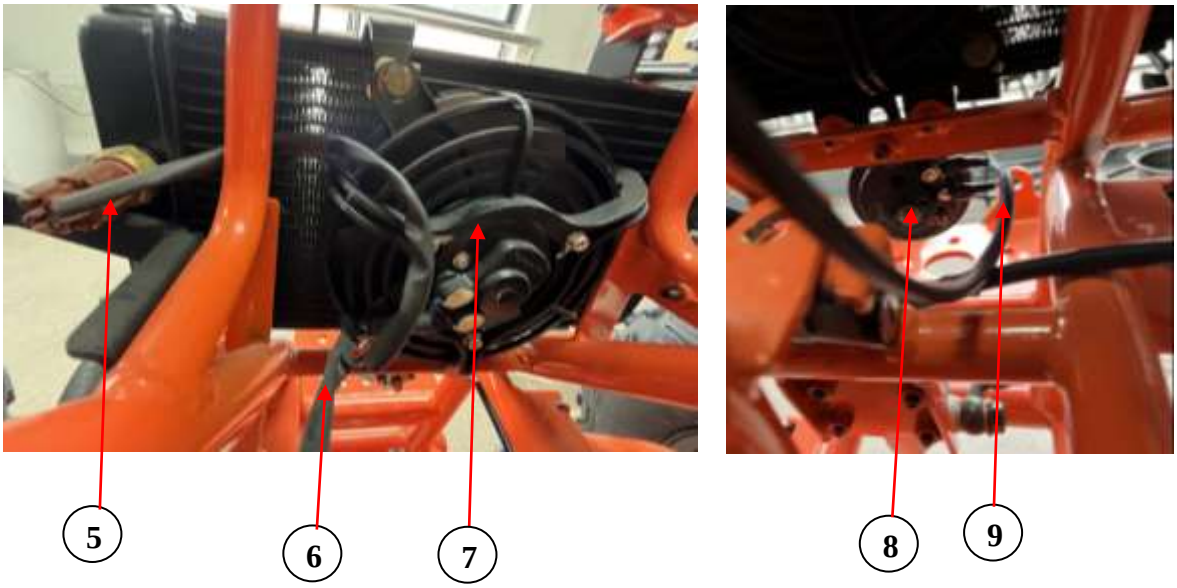




1. Left and right brake light plug-in 2. Left and right turn signal plug-in 3. External power plug-in 4. License plate light plug-in 5. ECU6, OBD interface



1. Oil tank cover 2.Oil pump 3.Oil pump and liquid level plug-in 4.Oil outlet nozzle
Attention: When inspecting and repairing the above components, it is necessary to remove the seat cushion, front shelf, front body, and instrument cover. For specific disassembly, refer to the second chapter-Covering parts of the body of the vehicle



5. Water tank power cable 6.Temperature sensor plug-in 7.Water tank fan 8.Horn 9.Horn plug-in

2 Covering parts of the body of the vehicle

2.1 Maintenance information……...2-2
2.2 Installation torque……..2-2
2.3 Disassembly and assembly of seat cushion and front and rear shelves
2.3.1 Seat cushions……..2-3
2.3.2 Plastic front cover plate……..2-3
2.3.3 Front shelf……...2-3
2.3.4 Plastic front cover plate……..2-4
2.3.5 Rear shelf……2-4
2.4 Disassembly and assembly of front panel, instrument front cover, instrument panel, gear shift head assembly, gear shift decorative cover
2.4.1 Front panel…….....2-4
2.4.2 Instrument front cover……2-5
2.4.3 Instrument panel…….2-5
2.4.4 Gear shift head assembly combination……...2-5
2.5 Disassembly and assembly of left foot pedal, right foot pedal, left center guard board, and right center guard board
2.5.1 Left foot pedal…….2-6
2.5.2 Right foot pedal……...2-6
2.5.3 Left center guard…….2-6
2.5.4 Right center guard……...2-7
2.6 Disassembly and assembly of front bumper and front plastic bumper
2.6.1 Front bumper……...2-7
2.6.2 Front plastic bumper……....2-7
2.7 Disassembly and assembly of front and rear body assemblies
2.7.1 Front body assembly……2-8
2.7.2 Rear body assembly…….2-9

2.1 Maintenance information

Precautions for operation

When replacing the covering parts with regulatory warning labels affixed or riveted on the vehicle, the corresponding labels must be correctly and completely supplemented as they are.

This chapter describes the disassembly and assembly sequence of vehicle body covers. When repairing internal components of the vehicle that require disassembly of relevant covers, it can be referred to in this chapter.

This chapter describes the disassembly and assembly operations of shelves, seat cushions and exterior parts.

Please pass the pipes and cables through the correct position according to the wiring diagram of cables, pipes and cables.

2.2 Installation torque

M8 bolts	21（2.1）	Torque N·m(kgf·m)
M6 bolts	10（1.0）	Torque N·m(kgf·m)
M5 bolts	5（0.5）	Torque N·m(kgf·m)
Self-tapping screws	4（0.4）	Torque N·m(kgf·m)

2 Covering parts of the body of the vehicle

2.3 Disassembly and assembly of seat cushion and front and rear

2.3.1 Seat cushion

Disassembly

Rotate the key to the right and the seat cushion will automatically pop open 1

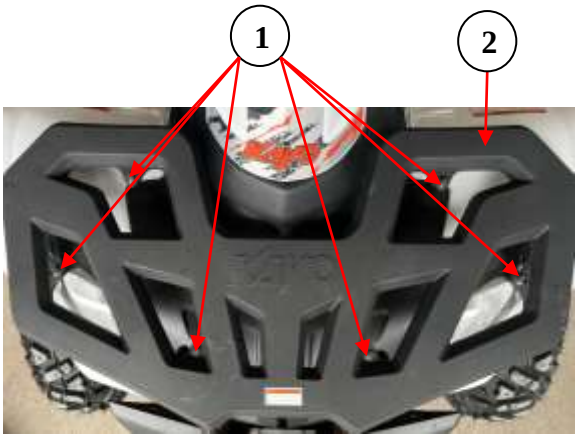
Remove the seat cushion

Installation

Align the position and press the seat cushion

After installation, check whether the seat cushion is installed in place, secure, etc

2.3.2 Plastic front cover plate



Disassembly

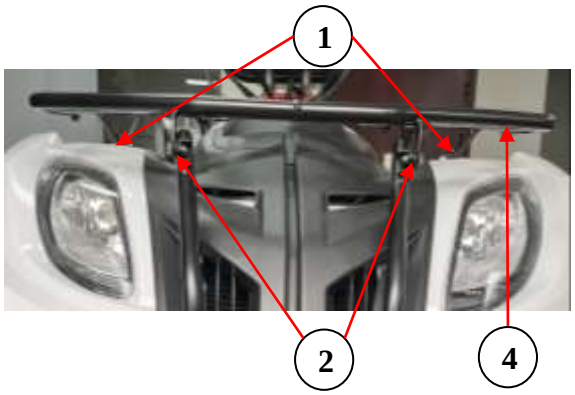
Remove the plastic front cover plate mounting screws 1 (6 in total)

Remove the plastic front cover plate 2

Installation

Installation is carried out in reverse order of removal

2.3.3 Front shelf



Disassembly

Remove the front shelf mounting screws 1 (one on the left and one on the right)

Remove the mounting bolt 2

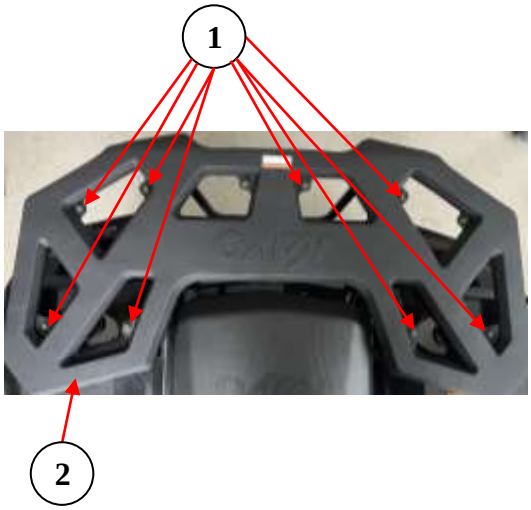
Remove the mounting bolt 3

Remove the front shelf 4

Installation

Remove two mounting screws 1
Remove the front panel 2

Installation
Follow the reverse order and direction of disassembly



2.3.4 Plastic rear cover plate

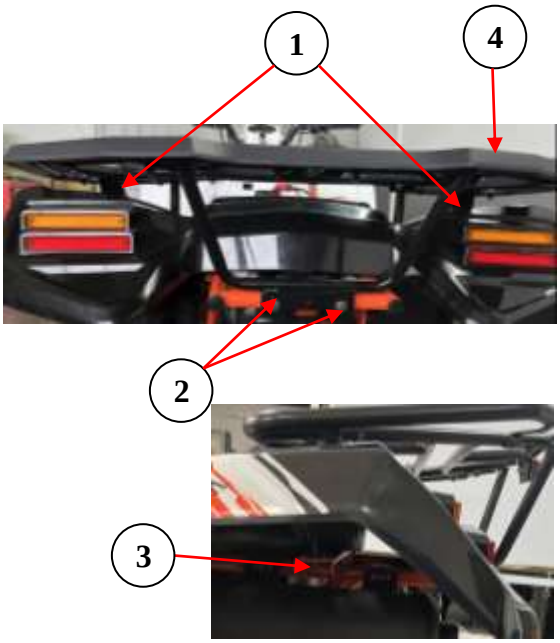
Disassembly
Remove the plastic front cover plate mounting screws 1 (6 in total)
Remove the plastic front cover plate 2

Installation
Installation is carried out in reverse order of removal

2.3.5 Rear shelf

Disassembly
Remove the plastic rear shelf mounting screw 1
Remove the mounting bolt 2
Remove the mounting bolt 3
Remove rear shelf 4

Installation
Installation is carried out in reverse order of removal



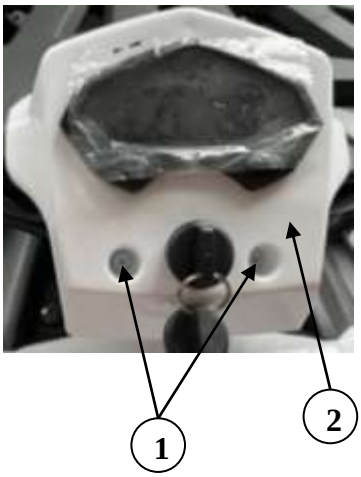
2.4 Disassembly and assembly of front panel, instrument front cover, instrument panel, gear shift head assembly, gear shift decorative cover

2.4.1 Front panel

Disassembly
Remove the front shelf (→ 2.3.3)

2 Covering parts of the body of the vehicle

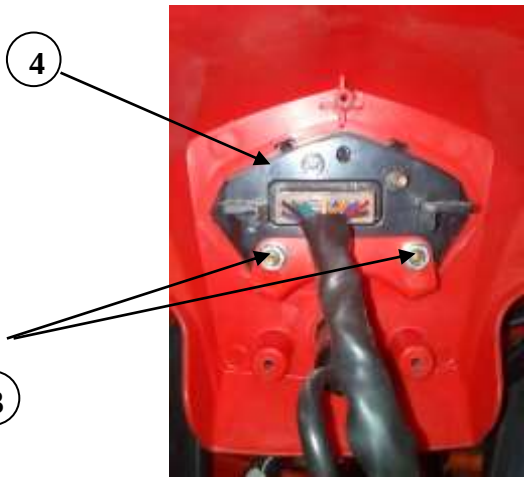
2.4.2 Instrument front cover



Disassembly
Unscrew 2 screws 1
Remove the instrument front cover 2

Installation
Follow the reverse order and direction of disassembly

2.4.3 Instrument panel



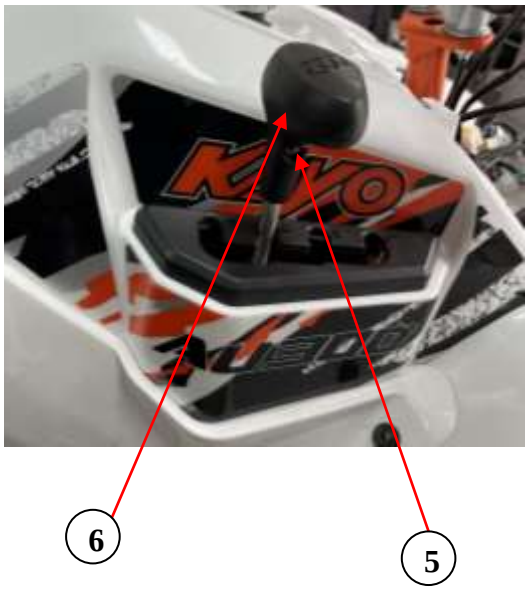
Disassembly
Remove the instrument front cover (→ 2.4.2)
Unscrew 2 nuts 3
Remove instrument panel 4

Installation
Follow the reverse order and direction of disassembly

2.4.4 Gear shift head assembly combination

Disassembly
Loosen the lock nut 5
Pull out the gear shift combination 6

Installation
Install in reverse order of disassembly



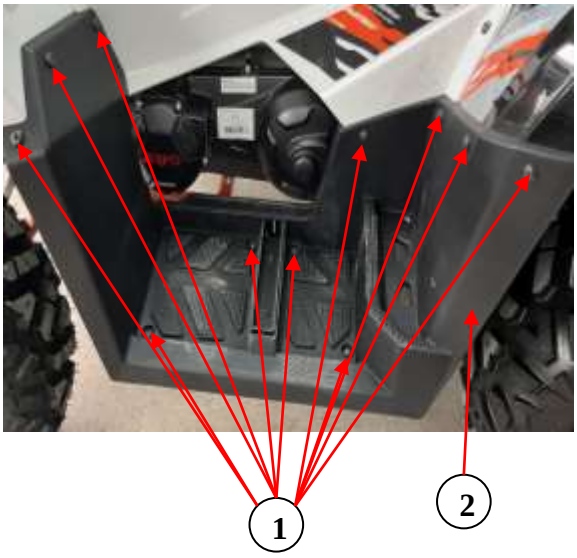
Installation
Follow the reverse order of disassembly

2.5.3 Left center guard

Disassembly
Remove the seat cushion (→ 2.3.1)
Remove the left foot pedal (→ 2.5.1)
Remove screw 5
Remove the left trim panel 6

Installation
Follow the reverse order of disassembly

2.5 Disassembly and assembly of left foot pedal, right foot pedal, left center guard board, and right center guard board



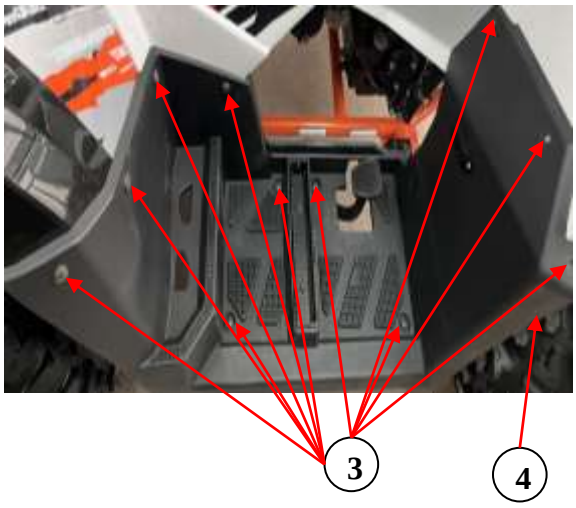
2.5.1 Left foot pedal

Disassembly
Remove the fastening screw 1
Remove the left foot pedal 2 from the bottom up

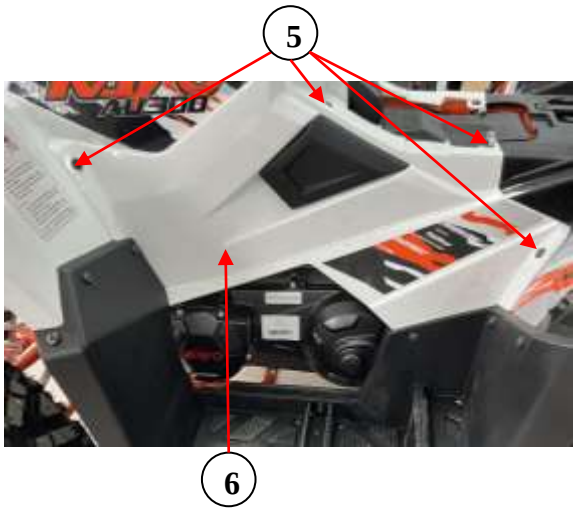
Installation
Follow the reverse order of disassembly

2.5.2 Right foot pedal

Disassembly
Remove the fastening screw 3
Remove the right foot pedal 4 from the bottom up



each side)
Remove the front bumper 6



Installation
Follow the reverse order of disassembly

2.6.2 Front plastic bumper

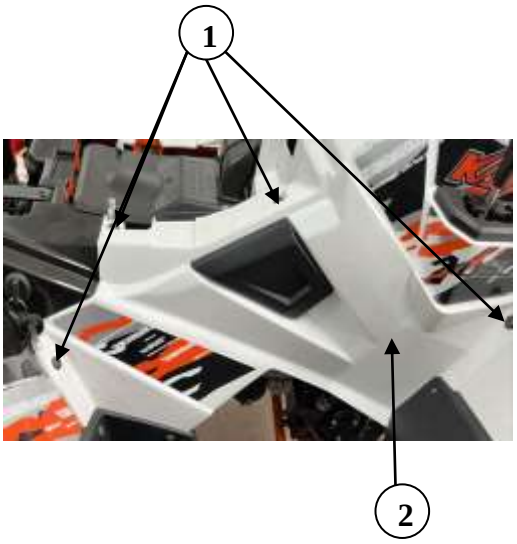
Disassembly
Remove the front bumper (→ 2.6.1)
Remove the mounting bolts 7
Remove the installation screws 8
Remove the plastic front bumper 9

Follow the reverse order of disassembly

2.5.4 Right center guard

Disassembly
Remove the right foot pedal (→ 2.5.2)
Remove screw 5
Remove the left trim panel 6

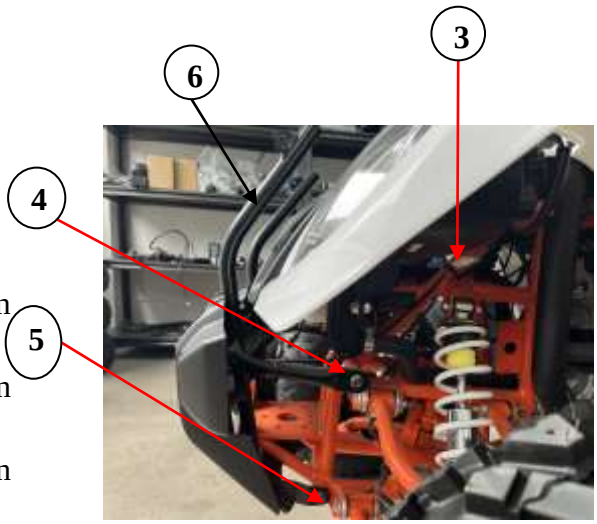
Installation
Follow the reverse order of disassembly

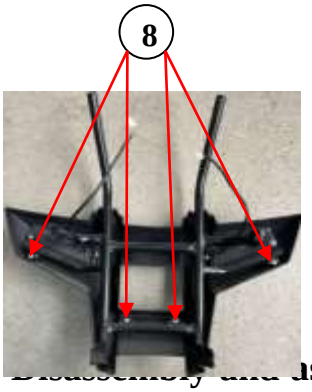


2.6 Disassembly and assembly of front bumper and front plastic bumper

2.6.1 Front bumper

Disassembly
Remove the front left and right turn signal inserts 3
Remove the installation bolts 4 (1 on each side)
Remove the installation bolts 5 (1 on





2.7 Disassembly and assembly of front and rear body assemblies

2.7.1 Front body assembly

Disassembly

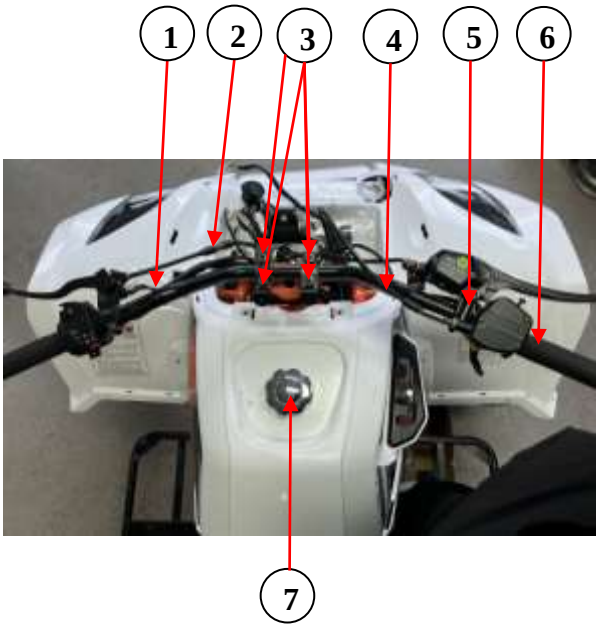
Remove the instrument front cover (→ 2.4.2)
Remove the front panel (→ 2.4.1)
Remove the combination switch plug-in 1
Remove clutch line 2
Remove the fixing bolt 3 of the steering handle assembly
Remove the throttle cable 4
Remove brake handle 5
Remove the steering handle assembly 6
Remove the fuel tank cap 7
Remove the seat cushion (→ 2.3.1)
Remove the left foot pedal (→ 2.5.1)
Remove the right foot pedal (→ 2.5.2)
Remove the left middle guard board (→ 2.5.3)
Remove the right middle guard board (→ 2.5.4)
Remove the installation bolts 8 (1 on each side)
Remove the front body assembly 9

Installation

Follow the reverse order of disassembly

Attention

Before disassembly, the cables on the front vehicle body, the front left and right headlight connectors, the connectors on the steering handle assembly, and the clutch cables on the steering handle assembly should be removed. After installation, the cables and connectors should be checked to prevent incorrect connections.



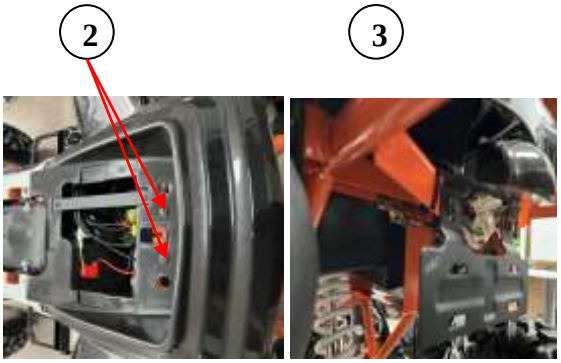
install the negative pole of the battery first. After installation, check the removed electrical appliances, cables, etc.

2 Covering parts of the body of the vehicle

2.7.2 Rear body assembly

Disassembly

Remove the seat cushion (→ 2.3.1)
Remove the left foot pedal (→ 2.5.1)
Remove the right foot pedal (→ 2.5.2)
Remove the left middle guard board (→ 2.5.3)
Remove the right middle guard board (→ 2.5.4)
Remove the air inlet fixing screw 1
Remove the fixing screws 2 from the rear body assembly
Remove the fixing screws 3 from the seat cushion lock plate
Remove the rear assembly plate 4



Installation

Follow the reverse order of disassembly

Attention

Before disassembly, disconnect the cables of tail lamp and rear turn signal lamp. When disassembling the battery, turn off the ignition switch, remove the positive pole of the battery first, and

4

3 Regular inspection and adjustment

Maintenance information…….....3-1

3.1 Determination of maintenance cycle……...3-2

3.2 Inspection and maintenance methods……..3-3

3.3 Steering column, brake system……3-6

3.4 Wheels…….....3-11

3.5 Suspension system……..3-13

3.6 Shift mechanism, fuel device……..3-14

3.7 Throttle inspection……..3-15

3.8 Instrumentation……...3-16

3.9 Lighting device…….....3-16

Maintenance information

Operation precautions

Attention

- Because the exhaust gas contains carbon monoxide (CO) and other toxic components, please do not operate the engine for a long time in closed or a place with poor ventilation.
- When the engine just stops, the temperature of the muffler and the engine is still very high. If it touches the skin, it will cause burns. If it is necessary to carry out maintenance when the engine just stops, you must wear long-sleeved overalls and gloves for the operation.
- Gasoline is very easy to catch fire, and fireworks are strictly prohibited in the workplace. Not only should we pay attention to open flames, but also pay special attention to electrical sparks. In addition, because evaporated gasoline has the risk of explosion, the operations should be carried out in a well ventilated area.

Attention

Keep hands and clothing away from rotating parts such as the drive system

Attention

The vehicle must be placed on a flat and stable surface

3.1 Determination of maintenance cycle

The maintenance of the engine is a regular and periodic task, and it is very important to maintain the engine at a certain time interval. Standardized maintenance and upkeep can ensure excellent engine performance, reliable operation, and economic durability. The following is the maintenance and upkeep schedule for the LXCVT300 engine:

Attention: The following table is designed according to normal operating conditions. Under severe conditions, the maintenance cycle of the engine should be correspondingly shortened

Maintenance item	Items	Odometer km				
	Cycle	1000km	4000km	8000km	12000km	Notes
Fuel system passage			I	I	I	
Fuel filter		C	C	C	C	
Carburetor choke valve						
Air filter element	Note ①					
Spark plug		I	I	I	I	
Valve clearance		I	I	I	I	
Engine lubricating oil	Every year	R	R	R	R	
Lubricating oil filter screen	Every year R			C		
Clutch		I	I	I	I	
Carburetor idle speed		I	I	I	I	

Vehicles should be maintained according to the specified maintenance time. The meanings of the various codes in the table are as follows:

C: Cleaning
R: Replacement
A: Adjustment
L: Lubricating
I: Inspection

Note ①: Driving in dusty areas should be cleaned regularly

3.2 Inspection and maintenance methods

Inspection and maintenance items			Maintenance period			Judgment criteria
Inspection parts		Inspection items	Daily inspection	Semi-annual inspection	Annual inspection	
Steering device	Steering wheel	Operational flexibility	○			
	Steering system	Damage	○			
		Installation status of the steering system	○			
		Wag of the ball pin	○			
Braking device	Brake pedals	Pedal stroke	○	○		
		Braking effect	○	○		
	Connecting rods and oil pipes	Slack, looseness and damage	○		○	
	Hydraulic braking and brake discs	Front and rear brake fluid volume	○	○		The brake fluid should be above the lower limit
		Wear and damage of brake discs	○	○		When the working disc thickness of the current brake disc is less than 3mm, and the working disc thickness of the rear brake disc is less than 3mm, it should be replaced in time.
	Brake pads	Wear and damage of brake pads	○	○		Minimum brake pad (friction pad) thickness ≥ 1mm; Please replace it when it is less than 1mm
Running gear	Wheels	Tire pressure	○	○		Front wheel: 35kPa (0.35kgf/cm2) (5PSI) Rear wheel: 35kPa (0.35kgf/cm2) (5PSI)
		Tire cracking and damage	○		○	
		Tire groove depth and abnormal wear	○		○	If there is no wear indication on the tire surface, the residual groove depth size should not be less than 3mm
		Looseness of wheel nuts and wheel axles	○	○		
		Shake of front wheel bearings	○		○	
		Shake of rear wheel bearings	○		○	
	Suspension arm	Shake of the connecting part and	○		○	

Buffer device		damage to the rocker arm				
	Shock absorber	Oil leakage and damage	○		○	
		Function			○	
Transmission device	Front Axle	Transmission, lubrication	○		○	
	Rear axle	Transmission, lubrication	○		○	
	Gearbox	Oil leakage and oil volume	○		○	Loosen the refueling bolt port, and the amount of oil should reach the port

Inspection and maintenance items			Maintenance period			Judgment criteria
Inspection parts		Inspection items	Daily inspection	Semi-annual inspection	Annual inspection	
Transmission device	Output shaft (transmission shaft)	Looseness of the connection part	○	○		
		The shaking of the spline part			○	
Electrical device	Ignition device	Status of spark plugs		○		Spark plug gap: 0.6mm~0.7mm
		Ignition period		○		
	Battery	Connection state of the terminal part			○	
	Electrical wiring	Looseness and damage of the connection part			○	
Fuel leakage		Fuel leakage		○		
		The status of the throttle			○	Accelerator handle clearance: 2 ~ 6mm
Lighting device and direction indicator		Function	○	○		
Alarm and lock device		Function			○	
Instrument		Function			○	
Exhaust pipe and muffler		Whether the installation is loose or damaged			○	
		The function of the muffler			○	
Vehicle frame		Looseness and damage			○	
Other		Lubricating grease status of various parts of the frame			○	
Parts that can confirm anomalies during operation		Confirm if there are any abnormalities in the relevant parts	○			

3.3 Steering column, brake system

Put the vehicle on a horizontal position, grip the steering handle tightly, and apply force in the direction shown in the diagram to check if there is any shaking.

If shaking is felt, it should be confirmed whether it is the steering column shaking or other shaking, and corresponding maintenance should be carried out.

If the steering column shakes, increase the locking force of the steering column locking nut or disassemble the steering column for maintenance

Place the vehicle on a horizontal position and slowly turn the steering wheel to the left and right to confirm if it can rotate smoothly and flexibly. If there is obstruction in some areas, check the main cable assembly and cables for interference. If the end position of the steering rod is not observed, confirm whether there is interference and whether the steering bearing is damaged.

Attention: It must be confirmed that the steering is flexible, otherwise the control handle will cause accidents due to inability to control the direction

Front brake handle clearance:

Operate the front brake handle, check the braking effect and the action of the handle.

Check the clearance at the front brake handle

Front brake pump combination
<Liquid volume>

Check the amount of brake fluid

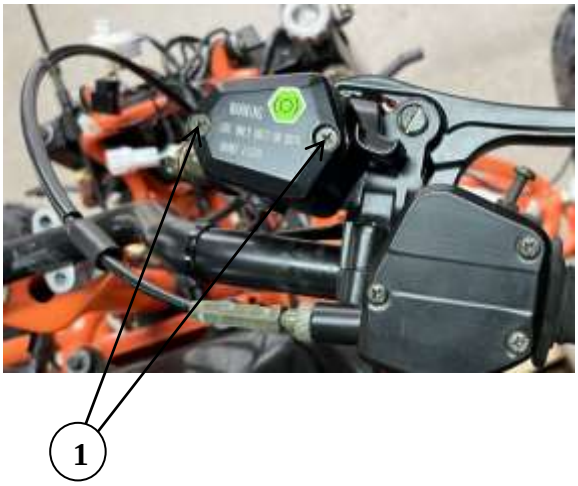
Check the brake fluid volume through observation hole 3. When the brake fluid volume decreases to 30%, the vehicle will no longer be able to use. It is necessary to check the leakage of the brake pump, brake pipe, and various connections. If the inspection is normal, it is necessary to check the wear of the brake disc and brake pad. If there is damage or wear below the limit of use, please replace it.

It is also necessary to inspect these items before each use of the vehicle

Remove two exhaust screws 1

Remove the oil cup cover 2

Replenish the brake fluid recommended by Kayo until it reaches the upper limit line



Attention

- When replenishing brake fluid, dust and water should not be mixed in
- To prevent chemical changes, please use the specified brand of brake fluid
- Because brake fluid can damage the plastic and rubber surfaces, please do not splash it onto these components. Turn the steering handle slightly to the left and right until the brake pump assembly is level before removing the oil cup cover

1. Exhaust screw
2. Oil cup cover
3. Observation hole

Front brake disc, brake pad wear<Wear of brake pads>
Check the wear of the brake pads
If the wear has reached the wear limit, replace the brake pads

Attention
The brake pads should be replaced as a whole

Inspection and replacement of brake discs
Check the sliding surface of brake disc 1 for wear or damage. If the current brake disc thickness is ≤ 3.0mm, replace the brake disc

Front brake disc service limit thickness: 3.0mm

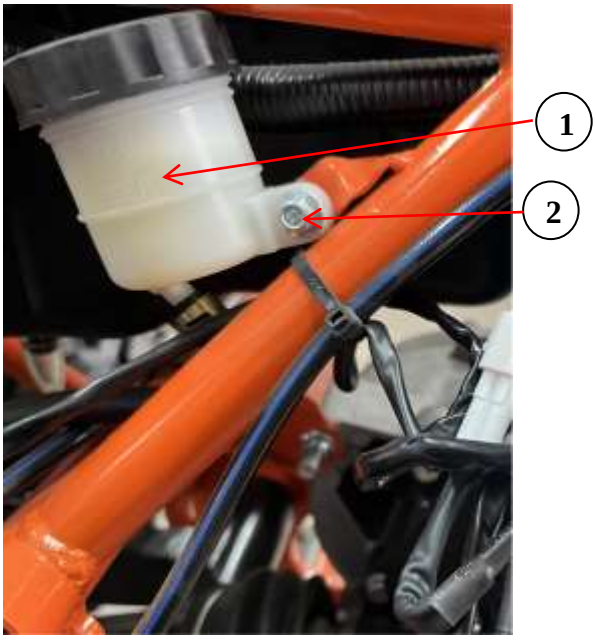
Check the minimum thickness of brake friction plate 2
Minimum friction plate thickness ≥ 1 mm
If it is less than the minimum friction plate thickness, please replace it with a new brake friction plate
Check if there is any damage or crack on the brake friction plate. If there is any damage or crack, please replace it with a new brake friction plate

Attention: Please regularly check the brake fluid level to keep it in a safe position. Check the oil circuit and connection points for damage. If there are any, please replace them in a timely manner. Check the main pump/caliper for damage. If there are any, please replace them in time
Attention: Do not open the brake fluid cup for a long time

Oil Change (replace the brake fluid)
Replace the brake fluid once a year

Oil Change (Replace the brake fluid)
Replace the brake fluid once a year.

Rear brake pump combination
<Liquid volume>
Check the amount of brake fluid. When the brake fluid level decreases to near the lower limit of 1 (LOWER), an alarm will be displayed on the instrument panel. At this time, the vehicle will no longer be able to use. It is necessary to check the leakage of the brake pump, brake pipe, and various connections. If the inspection is normal, it is necessary to check the wear of the brake disc and brake pad. If there is damage or wear below the limit of use, please replace it. It is also necessary to inspect these items before each use of the vehicle
Remove 1 mounting screw 2 from the oil cup cover and remove the oil cup cover
Replenish the brake fluid recommended by Kayo until it reaches the upper limit line



Attention

- When replenishing brake fluid, dust and water should not be mixed in
- To prevent chemical changes, please use the specified brand of brake fluid
- Because brake fluid can damage the plastic and rubber surfaces, please do not splash it onto these components

Turn the steering lever slightly to the left and right, and remove the oil cup cover after the brake pump assembly is in a horizontal state

Rear brake disc, brake pad wear<Wear brake pads>
Check the wear of the brake pads
If the wear has reached the wear limit, replace the brake pads

Attention
The brake pads need to be replaced as a complete set

Inspection and replacement of brake discs
Check the sliding surface of brake disc 1 for wear or damage. If the current brake disc thickness is ≤ 3.0mm, replace the brake disc

Rear brake disc service limit thickness: 3.0mm

Check the minimum thickness of brake friction plate 2
Minimum friction plate thickness ≥ 1 mm
If it is less than the minimum friction plate thickness, please replace it with a new brake friction plate
Check if there is any damage or crack on the brake friction plate. If there is any damage or crack, please replace it with a new brake friction plate

Oil Change <Replace the brake fluid>
Replace the brake fluid once a year

3.4 Wheels

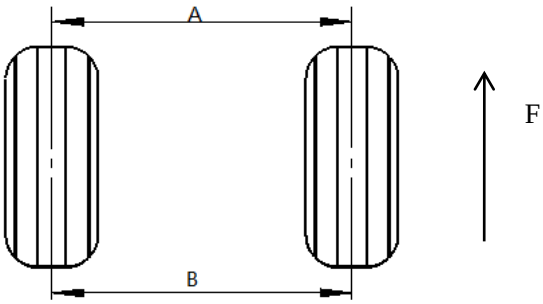
Jack up the front wheel with a tool in a horizontal position to ensure that there is no force acting on the wheel. Shake the front wheel left and right to check if the connection of the front wheel is secure and if there is shaking, check and tighten the rocker arm, axle, rim bolts, and nuts. If there is still shaking, check and replace: bearings, rocker arm buffer sleeves, ball pins

Front wheel size

Place the vehicle body in a horizontal position and measure the toe in dimensions of the wheels; The front wheel is relative to the direction of forward travel of the vehicle. The front wheel is A, and the rear wheel is B

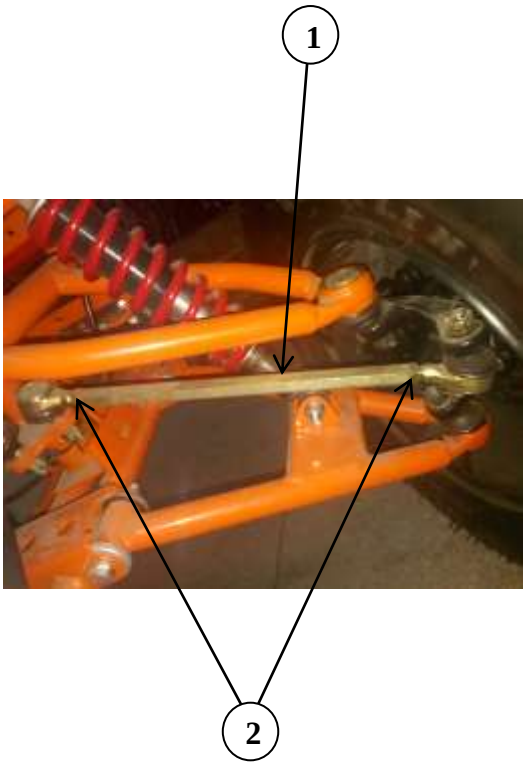
Toe in size: A-B=1.5~2.5mm

F is the forward direction



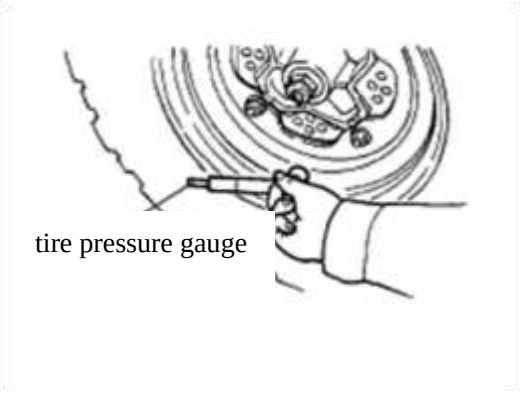
If not within this range, adjust the lock nut 2 of the steering rod 1

Attention: After adjusting the toe in size, drive the entire vehicle slowly to ensure that the handlebars can correctly constrain the direction of the vehicle body



Tire pressure

Use a pressure gauge to check the tire pressure.



Attention

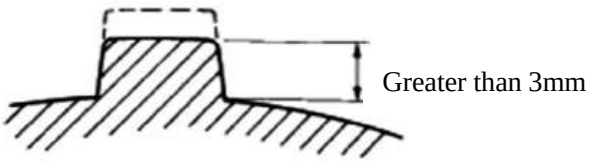
The inspection of tire pressure should be carried out while the tire is cool. If used in a state where the tire pressure is not appropriate, it will lead to poor operation and riding comfort, and cause adverse effects such as tire bias wear.

Designated air pressure/tire

	Front wheel	Rear wheel
Air pressure	35kPa（0 .35kgf/cm^2）	35kPa（0.35kgf/cm^2）
Tire size	See the first chapter	See the first chapter

Tire pattern

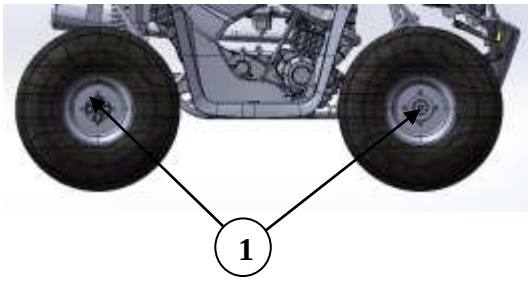
Check the tire pattern, and once the height of the pattern is less than 3mm, replace it with a new tire.



Attention

When the tire pattern is less than 3mm, it must be replaced immediately

Wheel nuts and wheel axles
Check the looseness of the front wheel axle, rear wheel axle nut 1, and bolt. If there is any looseness, tighten it according to the specified torque
Torque:
Front wheel axle nut:
126N · mm~218N · mm
（12.6kgf·mm ～ 22kgf·mm）
Rear wheel axle nut:
199N · mm~311N · mm
（20kgf·mm ～ 31kgf·mm）



The shaking of the wheel hub
Use a tool to lift the front wheels, and when there is no force on the front wheels, shake the wheels axially to check for any shaking.

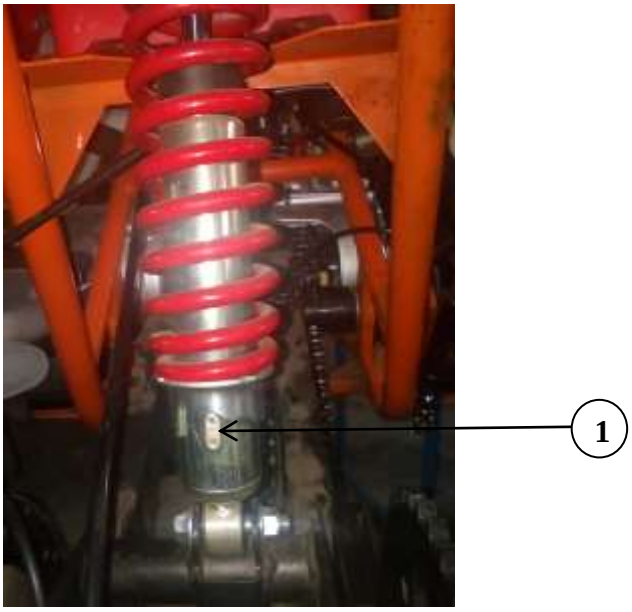
Remove the front wheel and inspect the wheel hub when there is shaking

3.5 Suspension system

Place the vehicle body in a horizontal position and compress it up and down several times according to the diagram. If there is shaking or abnormal noise, check the shock absorber for oil leakage, and check the fastening parts for damage, looseness, etc

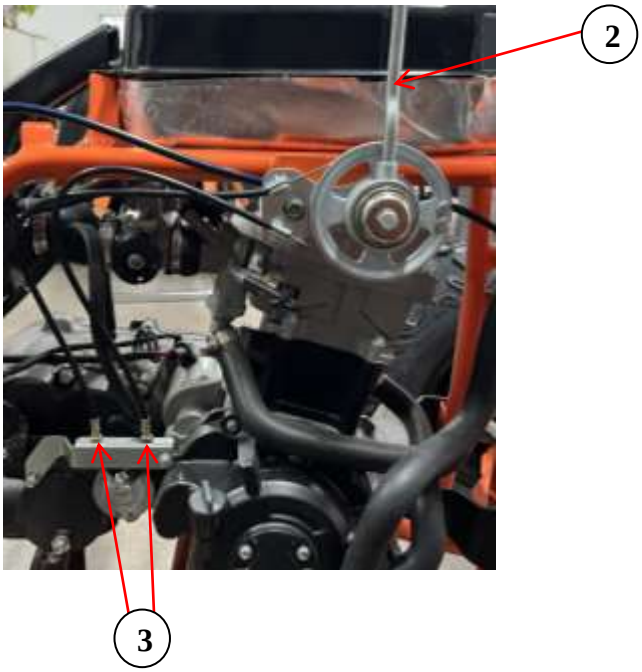
Adjustment of shock absorbers

Use a special tool to adjust the adjusting cam 1 of the shock absorber according to the load
Clockwise rotation is adjustable from high to low, and counterclockwise rotation is adjustable from low to high in both directions



3.6 Shift mechanism, fuel device

Shift mechanism
Change the gear, check if the shift mechanism 2 is flexible and if the gear is shifting in. If it is difficult to shift, adjust the length of the shift mechanism lever 3

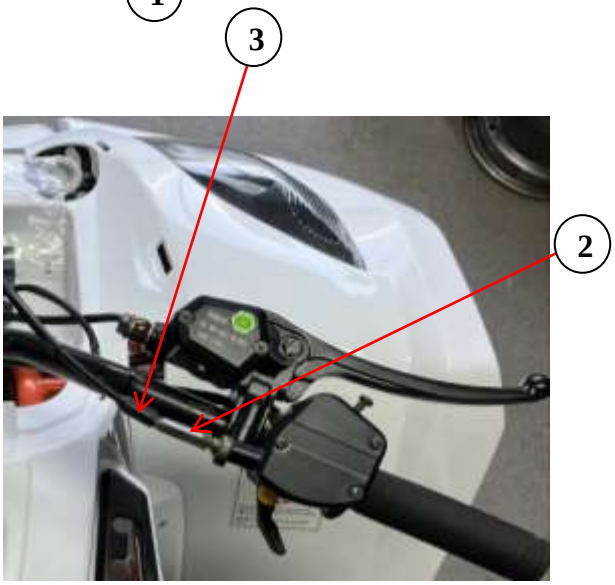


Fuel device
The status of the fuel system
Remove the seat cushion (→ 2.3.1)
Check the fuel pipes for aging or damage.
Replace the fuel pipe with a new one when it is aged or damaged.
Check if the fuel tank vent pipe or the adsorption pipe of the fuel evaporation system is cracked or bent. If there is any damage, replace it with a new one.

3.7 Throttle inspection

Check the free travel of throttle button 1
Clearance: 2-5 mm

When the clearance is not within the specified range, adjust the clearance
Remove the protective tube 3
Loosen the throttle cable lock nut 2
Rotate the adjuster to adjust the free stroke of the throttle button
After adjustment, tighten the locking nut 2 and install the throttle cable cover 3
If the adjustment of the regulator still cannot reach the specified clearance or if the action is still not flexible, replace the throttle cable with a new one



Speed limit device adjustment
The speed limiting device is used to limit the opening of the throttle valve
Check the thread limit length of speed limiting screw 4,
Thread limit length: a=12mm
Adjustment method
Loosen the locking nut
Adjust with a cross screwdriver
Attention: For beginners, the speed limit device should be in a tightened state, and only after reaching a certain level of technology can the speed limit device be used to change the size of the throttle valve
In addition, 12mm is the limit length of the speed limit device thread, which is usually only adjusted to 3mm~5mm

3.8 Instrumentation

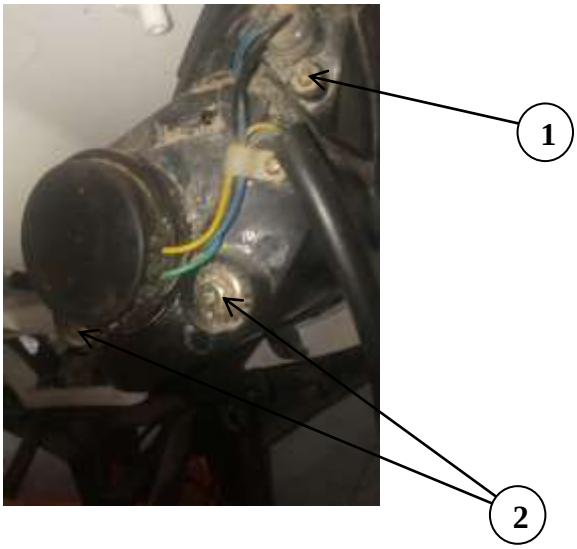
Inspection instrument

When the entire vehicle system is first powered on (or after the first instrument replacement) and the engine is not working, the speed should be in the zero position. Start the engine and pay attention to whether there is a change in the speed value indication. If there is no change, it should be repaired in time.

3.9 Lighting device

Headlamp optical axis adjustment

(Take the right headlamp as an example) Use a "cross" screwdriver or wrench to adjust bolt 1 to adjust the low beam lamp; Adjust bolt 2 to adjust the up and down direction of the high beam of the headlight



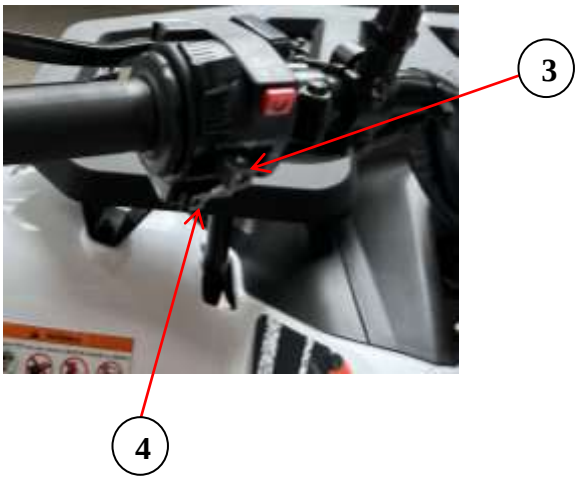
Attention : Before checking the lighting device, the entire vehicle system requires power on

Inspection the turning lights

Turn the turn signal switch 3 to the left and right respectively, and observe whether the front and rear turn signal lights up. If not, please check whether the line is connected incorrectly. If the wiring is correct, please replace the turn signal in time

Inspection the tail lights

Hold the brake lever by hand and observe the tail lights. If the tail lights do not light up, please check if the wiring is connected incorrectly. If the wiring is correct, please replace the tail lights in time



Inspection the horn

Press and hold the horn switch 4 to observe the horn. If the horn does not sound or the sound is too light, please check if the wiring is incorrect. If the wiring is correct, please replace the horn in time

4 Around the engine

Maintenance information……..4-1
4.1 Fuel system…….4-2
4.2 Intake system……..4-2
4.3 Exhaust system……...4-3
4.4 Engine removal and installation…….4-4

Maintenance information

Precautions for operation

- During operation and maintenance, please ensure that the vehicle is turned off and left standing for no less than 1 hour. Confirm that the heating components have cooled before proceeding with maintenance to avoid injury to maintenance personnel.
- Be careful not to damage the frame, engine body, bolts, and cables during operation.
- When disassembling the engine, in order to protect the frame, the frame should be wrapped and protected.
- When the engine is removed, corresponding containers should be prepared to contain coolant, engine oil, and fuel to protect the environment. During installation, the coolant and engine oil should be replenished as required.

Tightening torque

Engine bracket mounting bolt GB5787 M10×1.25×160 45~59N·m

4.1 Fuel system

Disassembly

Remove the seat cushion, front body, instrument front cover, and steering handle (→ The second chapter -Covering parts of the body of the vehicle)

Remove the mounting bolt 1

Remove the oil outlet nozzle 2

Remove the oil pump and liquid level plug 3

Remove fuel tank 4

Attention

Gasoline is very easy to catch fire, so smoking and fire are strictly prohibited in the workplace

Not only open flames, but also high attention should be paid to electric sparks

In addition, due to the risk of explosion after gasoline evaporation (vaporization), operations should be carried out in a well ventilated area

When disassembling the fuel tank, if there is still fuel in the tank, the fuel delivery pipe 4 should be tightened in advance to prevent fuel leakage, and then the fuel tank should be removed

Installation

Installation is carried out in reverse order of removal

The connector is required to be inserted in place and there is a noticeable "Da" sound when installed in place

Check the integrity of each oil pipe during installation

4.2 Intake system

Disassembly

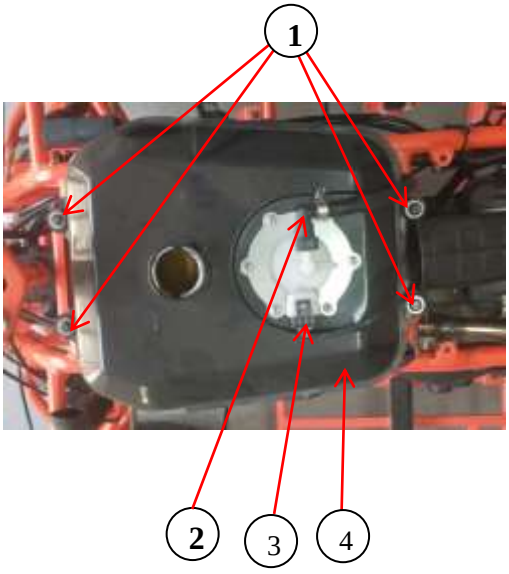
Remove the seat cushion and rear body (→ The second chapter -Covering parts of the body of the vehicle)

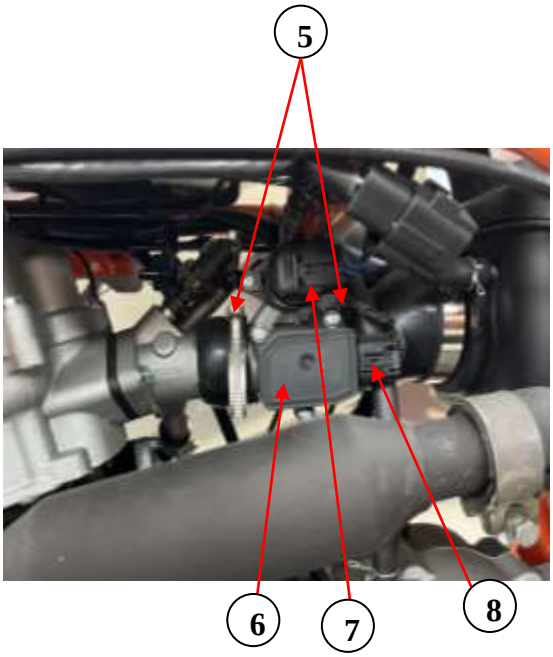
Remove clamp 5

Unplug the stepper motor plug-in 7

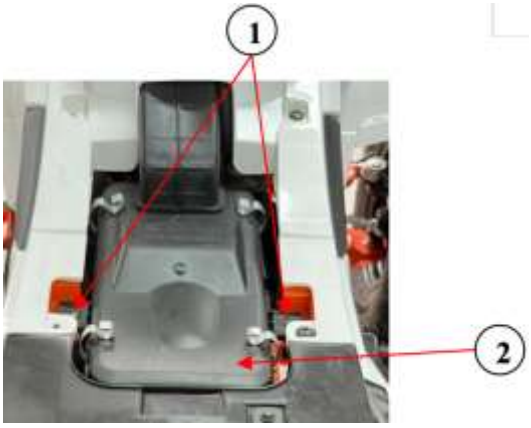
Remove the three in one sensor plug-in 8

Remove EFI 6

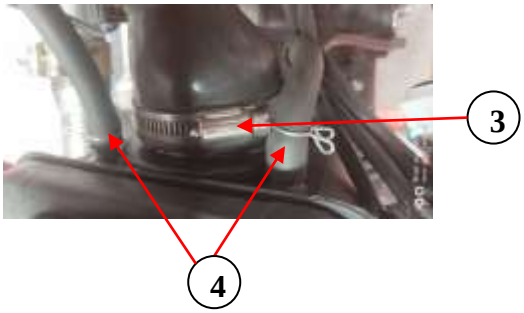




Remove the fuel tank (→ 4.1 Removal and installation of fuel tank)
Remove the two mounting screws 1
Loosen clamp 3
Remove the engine exhaust pipe 4
Remove air filter 2



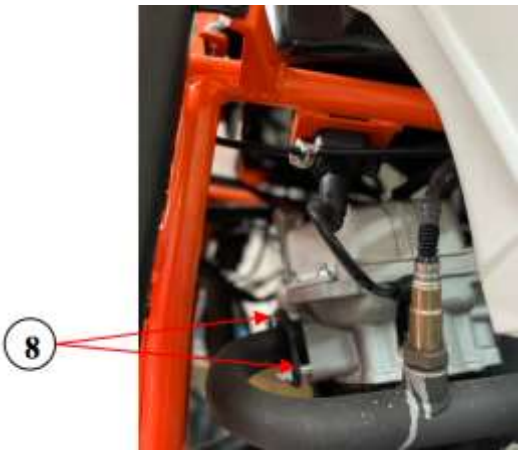
Installation
Installation is carried out in reverse order of removal



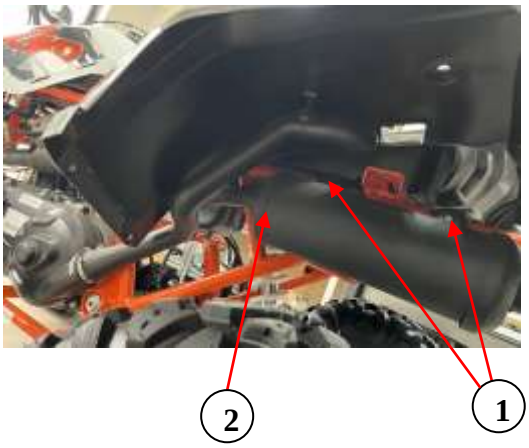
4.3 Exhaust system

Disassembly
Remove the seat cushion, front body, instrument front cover, steering handle, front assembly panel, and rear body (→ The second chapter -Covering parts of the body of the vehicle)
Loosen clamp 6
Remove oxygen sensor 7

Remove the mounting nut 8



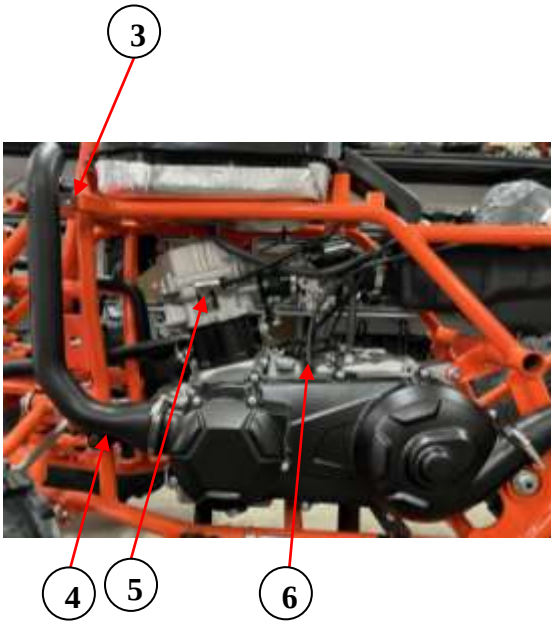
Remove the muffler cylinder mounting bolt 1
Remove the exhaust pipe assembly 2



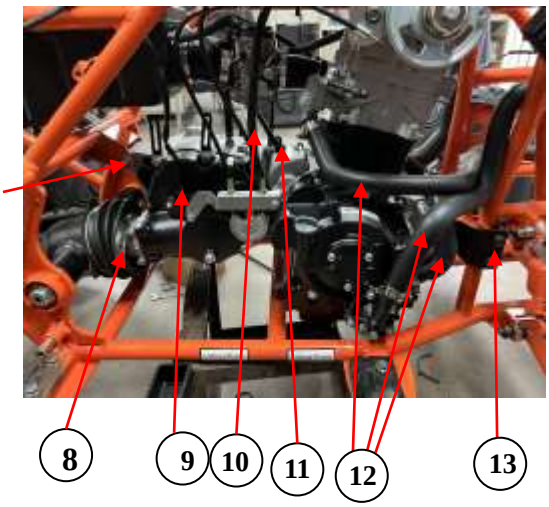
Installation
Installation is carried out in reverse order of removal

4.4 Engine removal and installation

Disassembly
Remove the seat cushion, instrument front cover, steering handle, front body, left and right foot pedals, and rear body (→ The second chapter -Covering parts of the body of the vehicle)
Remove the fuel tank (→ 4.1 Fuel system)
Remove the air filter and electronic fuel injection (→ 4.2 intake system)
Remove the exhaust pipe assembly (→ 4.3 Exhaust system)

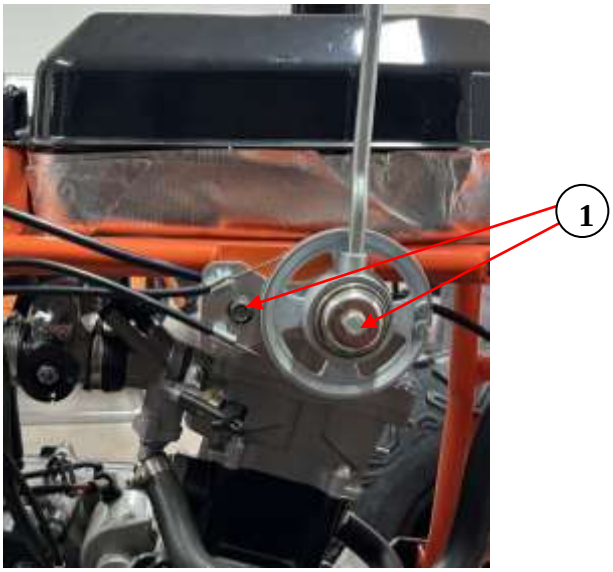


Remove the engine intake pipe fixing bolt 3
Remove the engine suspension plate - left 3 bolts 4
Remove high-pressure package 5
Remove the gear signal plug-in 6
Remove exhaust pipe 7

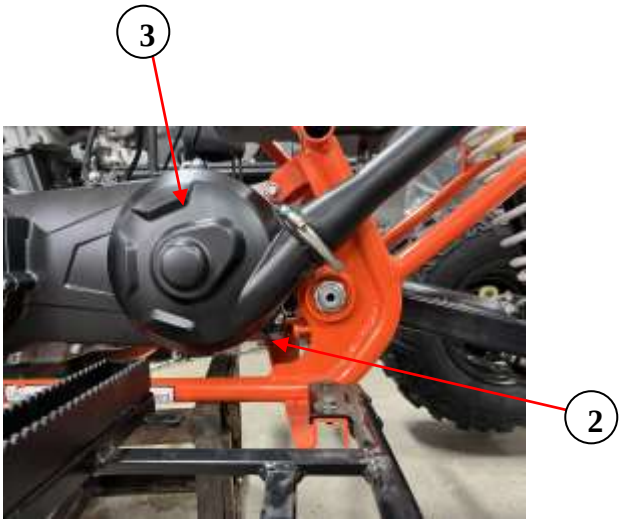


Remove the engine fixing bolts 7
Loosen clamp 8
Unplug the speed sensor plug-in 9
Unplug the magneto plug-in 10
Unplug the motor plug-in 11
Remove the water tank inlet and outlet pipes 12
Remove the engine suspension plate - right 3 bolts 13

Remove the shift assembly bolt 1



Remove the engine lower fixing bolt 2
Remove engine 3



Installation

Installation is carried out in reverse order of removal

5 Engine

5.1 Overview…….....5-2
5.2 Maintenance ……5-5
5.3 Cooling system……5-17
5.4 Lubrication system……..5-27
5.5 Cylinder head and valve……..5-36
5.6 Clutch and gear shifter……5-54
5.7 Magneto and starting clutch……5-71
5.8 Box and transmission system……..……5-79
5.9 Crankshaft, piston, cylinder body, balance shaft…….....5-99

5.1 Overview

Maintenance precautions……..5-2
5.1.1 Main performance technical parameters…….5-3
5.1.2 Mark torque values…….....5-4

Maintenance precautions

1.Please use components, lubricants, or other auxiliary materials produced by Chongqing Longxin Power Co., Ltd. or recognized and recommended by Longxin General Power Co., Ltd. If the materials used do not meet the specifications or requirements of "Longxin", it may damage the entire vehicle;

2.When repairing the whole vehicle, please do not use tools with non-metric specifications. Bolts, nuts and screws of metric specifications cannot be interchanged with fasteners of imperial specifications;

3.When reassembling after disassembly, please replace with new gaskets, washers, O-rings, cotter pins and locking pieces;

4.When tightening bolts or nuts, please tighten the bolts with larger diameter or inner bolts first. Then gradually tighten each bolt to its specified torque value in diagonal order, unless a special order is specified;

5.Clean the disassembled parts with detergent. Lubricating oil should be applied to the sliding surfaces of parts before assembly.

6.After reassembly, it should be checked whether the parts are installed correctly and operated properly, and the rotation, movement and operation checks should be carried out.

5.1.1 Main performance technical parameters

Items		Data
Engine	Model	LXCVT300
	Type	4-stroke, SOHC, single cylinder
	Cylinder arrangement	Vertical
	Cylinder diameter × trip	72.7X65.2mm
	Working volume	Pot type combustion chamber, 270.5ml
	Compression ratio	11:1
	Maximum power and corresponding speed	17kw/7000r/min
	Maximum torque and corresponding speed	24.5N•m/5500r/min
	Minimum fuel consumption rate	284g/kw•h
	Valve clearance (during cooling)	Inlet and exhaust 0.08mm
	Engine net weight	49.5kg
	Idling	1500r/min
Drive system	Clutch	Centrifugal continuously variable speed
	Transmission ratio	High gear 2.926 Low gear 4.147 Reverse gear 4.128
	Transmission ratio of continuously variable transmission	0.757~2.415
	Shift mode	Non cyclic shifting
	Starting device	Electric starting
Electrical system	Ignition method	ECU controls ignition
	Alternator	Permanent magnet AC generator
	Battery capacity	12V14Ah
	Spark plug model	D8RTC
	Spark plug gap	0.6~0.7mm

5.1.2 Mark torque values

Serial number	Items	Torque value N•m	Notes
1	Intake rocker arm shaft	10~14	
2	Exhaust stud	25±1	
3	Inlet double head bolt	20±1	
4	Secondary air supply double head bolt	16±1	
5	Spark plug	18~22	
6	Pipe joint	20~25	1271 thread sealant
7	Oil dipstick	3~5	
8	Crankcase oil drain bolt	25~30	
9	Transmission refueling bolt	25~30	
10	Transmission oil drain bolt	10~15	
11	Driven bevel gear installation nut	98~102	M18
12	Installation bolts for oil and gas separation plate	3~4	
13	Oil filter cover	20~25	
14	Cylinder head locking nut	25~30	Tighten crosswise at 10 and 15, and finally tighten to 25~25
15	Valve adjustment screw	9~12	
16	Tensioning plate bolts	10~15	
17	Rotor Installation nut	60~65	M14
18	Variable speed drum limit bolt	25~30	M14
19	Driving pulley nut	93~97	M14
20	Driven pulley nut	55~60	M14

Except for the torque values of important parts listed in the above table, the torque ranges of other fasteners are as follows:

Serial number	Name and size (major diameter of thread)	Torque value N•m
1	5mm bolts and nuts	5~9
2	6mm bolts and nuts	8~12
3	8mm bolts and nuts	26~32

5.2 Maintainance

5.2.1 Maintenance information……5-6
5.2.2 Maintenance interval table……..5-7
5.2.3 Water pipe……...5-8
5.2.4 Valve clearance……...5-9
5.2.5 Belt……..5-11
5.2.6 Crankcase oil…….....5-12
5.2.7 Transmission oil…….....5-14
5.2.8 Spark plug…….....5-16

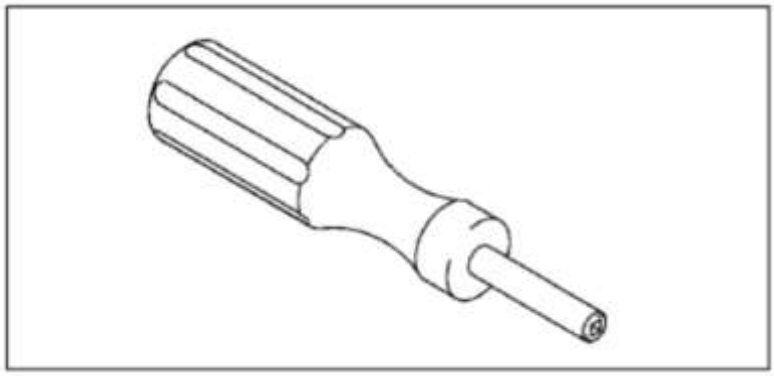
5.2.1 Maintenance information

Overview

•Before all operations, please place the entire vehicle on a horizontal plane.

Tool

•Valve adjustment screw fixing tool



5.2.2 Maintenance interval table

Maintenance frequency / Maintenance items	First maintenance	Regular maintenance	
	After using 300km or 1 month	Whichever comes first after every 1000km or 6 months of use	Whichever comes first after every 2000km or 1 year of use
Oil - replace	√		√
Oil sight window- clean	√	√	√
Transmission oil - check	√	√	
Transmission oil - replace	√		√
Oil filter clean	√		√
Air filter element - clean and check	Every 20-40 hours (150 ~ 300km)		
Idle speed - check	√	√	
Valve Clearance - check	√		√
Breather pipe and interface - check		√	
Belt wear -check		√	
Spark plugs - clean and gap check	√		√
Replace the spark plug			√
Oil pipe and interface - check			√
Valve cleanliness - check	√		√
Spark cap - clean			√
Coolant leakage (water pipe) - check	√	√	
Coolant - replace	Every 2 years		
Exhaust leakage - check	√		√
Radiator - clean and check			√
Radiator pipe - replace	Every 3 years		
Oil pipe - replace	Every 5 years		

*Maintenance should be carried out by Longxin dealers, unless the owner requires tools and has a certain mechanical knowledge foundation, and self maintenance should also refer to this manual.

**From a safety perspective, we recommend that these items be repaired by Longxin dealers.

Attention:

1. If the odometer reading is high, repair and maintenance should be carried out according to the specified cycle above.

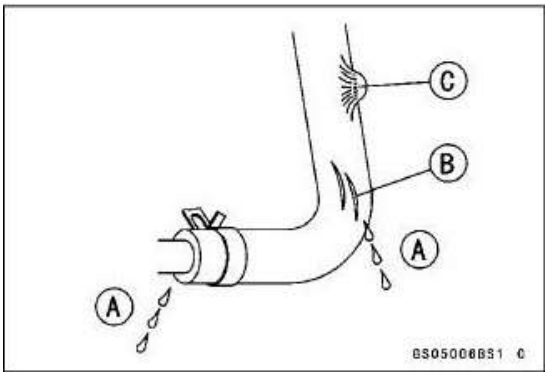
2. When driving under harsh conditions such as high dust, mud, humidity, high speed, or frequent start/stop, maintenance work should be carried out more frequently.

3. If necessary, clean, adjust, lubricate, recheck torque, and replace the parts.

5.2.3 Water pipe

Check the water pipe

· If the water pipe is not properly maintained, the high pressure inside the water pipe may cause coolant leakage A or the water pipe to rupture. Visually inspect the water pipes for signs of damage. Squeeze the water pipe, it can neither be hard and brittle, nor can it be soft and swollen.



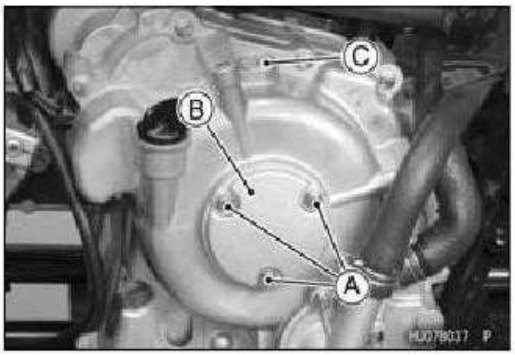
★ If any wear, cracks B or protrusions C are found, please replace the water pipe.

· Check if the water pipe connection is secure and tightened correctly.

5.2.4 Valve clearance

Check the valve clearance

Attention
The valve clearance can only be checked when the engine has cooled to room temperature.



· Disassembly：

Cylinder head cover

Right decorative cover bolt A

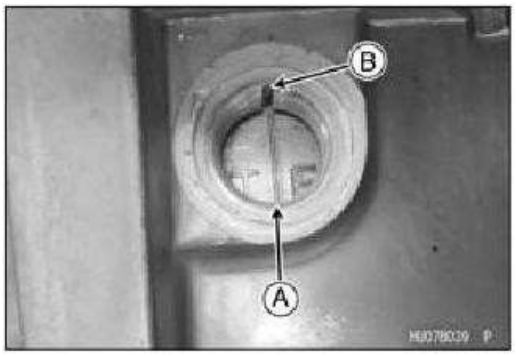
Right decorative cover B

Timing observation hole cover C

· Disassembly

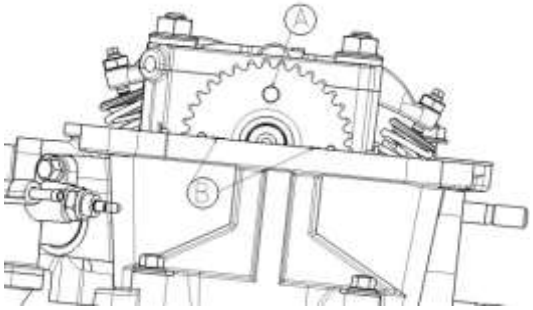
Oil passage pipe and pressure spring A

· Place the wrench on the bolt of the magneto rotor and rotate the crankshaft clockwise until the "T" marking line A on the magneto rotor aligns with the notch B on the right crankcase cover, as shown in the figure: it is the top dead center of cylinder compression.



★Attention： Unable to rotate the crankshaft counterclockwise

·Confirm that the cylinder head timing driven wheel circular hole A is above the engine cylinder head surface, and the timing mark "-" scribed line B is parallel to the cylinder head plane



·Confirm that the pressure reducing valve support and stop plate combination limit plate are fully attached before starting to check the valve clearance.

·Measure the valve clearance with a feeler gauge A, and measure the clearance between the end of the valve stem and the adjusting screw B.

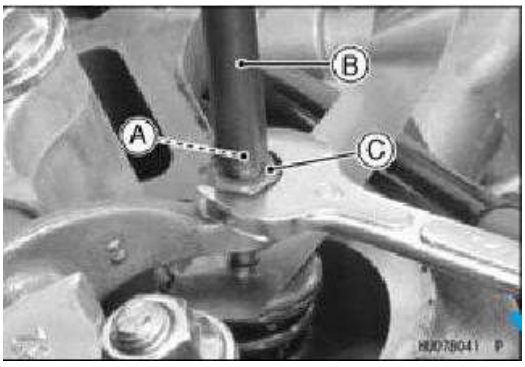
·Valve clearance (when cold)

Exhaust valve: 0.08-0.12mm

Intake valve: 0.08~0.12mm

★If the valve clearance is not correct, adjust the valve clearance.

Adjusting valve clearance



·Loosen the locking nut and rotate the adjusting screw until the gap is correct;

·Secure the adjusting screw B with fixture A and tighten the locking nut C; Tightening torque of locking nut: 9~12N·m.Special tool - adjusting screw fixture.

·Recheck the valve clearance.

★If the gap is not correct, readjust it.

★If the clearance is correct, adjust the clearance of the other valve.

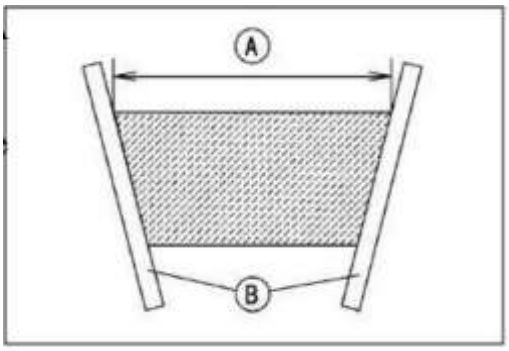
5.2.5 Belt

Check for belt wear

Warning
Any improper operation or clutch stalling or slipping may cause severe wear or damage to the transmission and wheels due to belt jamming. This may cause the operator to lose control and lead to accidents, resulting in injury or death. Carry out maintenance according to the maintenance schedule.

· Remove the left crankcase cover.

· As shown in the figure, use a pair of suitable straight edge holders to measure the width A of the belt at several positions.



★If the measured value is less than the usage limit, please replace the belt.

· Belt width standard: 22.6~23mm

Service limit: 22mm

· Check the belt for cracks, fractures, or peeling.

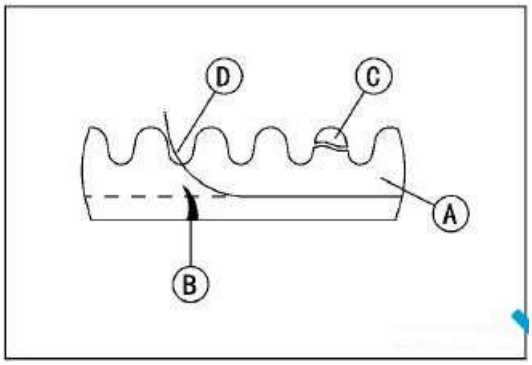
· If necessary, please replace the belt.

Belt A

Crack B

Fracture C

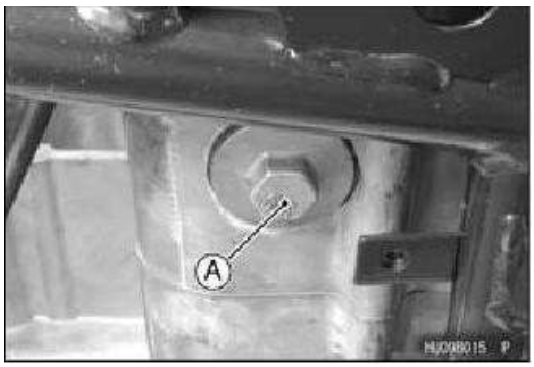
Peeling D



Attention
When replacing the belt, check the active pulley components and the driven pulley components.

5.2.6 Crankcase oil

Change oil



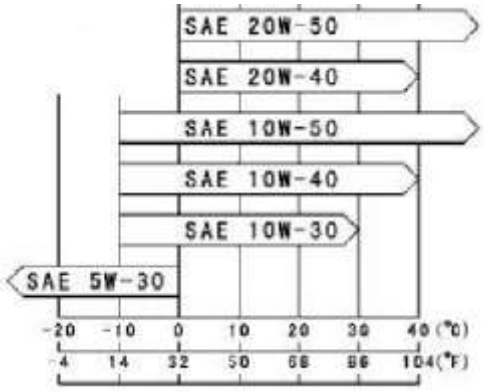
·After preheating the engine, keep it in a horizontal position on both the front, rear, left, and right sides.

·Remove the oil drain plug A and drain the oil.

·Replace the oil drain plug with a new flat washer.

Tightening torque of the oil drain plug: 25-30N · m.

·Add the specified type and quantity of engine oil or select the recommended lubricating oil viscosity according to the actual usage environment, and the quality level should reach SG level or above.



Viscosity: SG 15W/40-SAE (summer)

SG 10W/30-SAE（winter).

Capacity: 1.8L (engine fully dry).

Attention
Please use the specified engine oil and do not add other chemical additives to the engine oil.

·Check the engine oil level.

·When checking the oil level on a routine basis, place the entire vehicle horizontally, start the engine, let it idle for one minute, turn off the engine, wait for about one

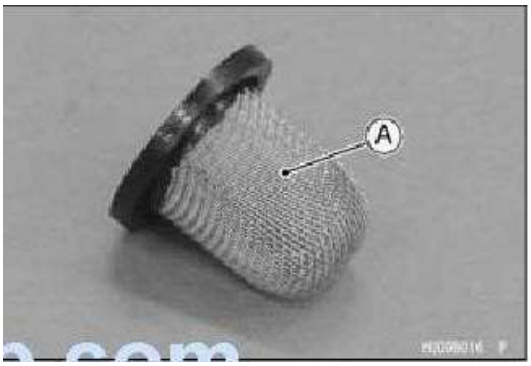
minute, and check the oil level through the oil level window. At this point, the oil level should be between the "H" and "L" marks. If it is below the "L" mark, add it to the middle position between the "H" and "L" marks.

Clean the oil filter screen

·Drain the engine oil.

·Remove the oil filter cover A and the compression spring.

·Clean the engine oil filter screen with a high ignition point solvent to remove particles sticking to the engine oil filter screen.



Warning
Do not use gasoline or low ignition point solvents to clean the engine oil filter. Gasoline and low ignition point solvents may be flammable and/or explosive, and may cause serious burns. Clean the engine oil filter in a well ventilated area and ensure that there are no sparks or flames near the work area, including any indicator lights.

·Carefully check whether the oil filter screen A is damaged and whether the filter pad is detached.

★If the oil filter screen is damaged, please replace it.

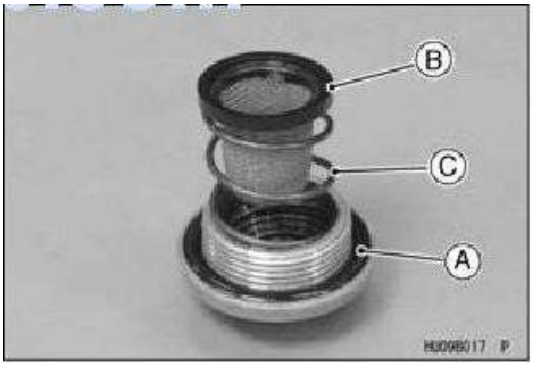
·Replace with a new O-ring A.

·Install oil filter B and compression spring C.

·The smaller side of the spring diameter faces downwards.

Tightening torque of the oil filter cover:

20-25N · m.



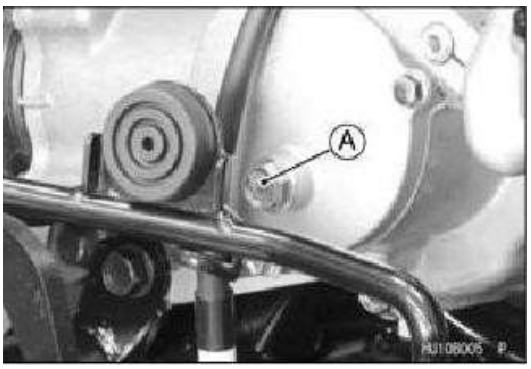
5.2.7 Transmission oil

Check the transmission oil level

·Park the vehicle so that it is level in front, back, left, and right.

·Disassembly：

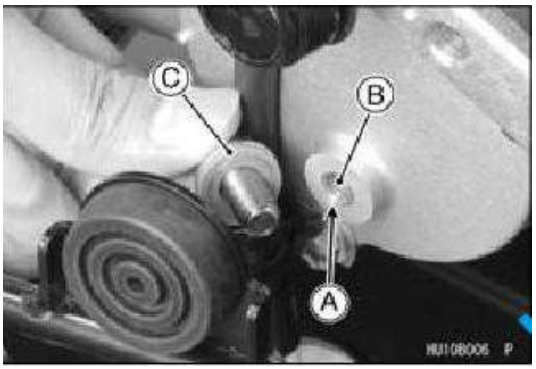
Transmission oil level inspection bolt A



Attention
Do not allow any dirt or foreign objects to enter the transmission box.

·Check the oil level. The normal oil level should be at the upper part B of the inspection bolt hole A.

★If the oil level is insufficient, first check if there is any oil leakage in the transmission box. If necessary, replenish it by opening the inspection bolts. Use the same type and brand of oil as the transmission box.



·Replace with a new flat washer C and tighten the inspection bolt.

Check the tightening torque of the bolts: 10-15N · m.

Replace the transmission oil

· By running the vehicle to preheat the engine oil, it will adsorb some sediment and be easy to discharge. Then stop the vehicle.

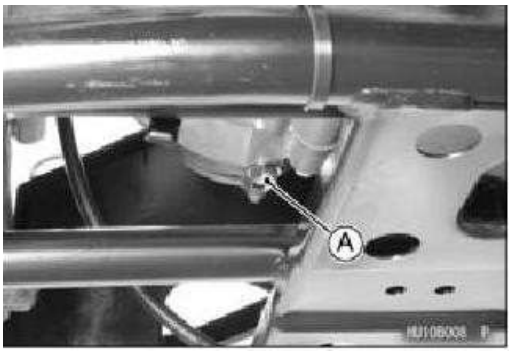
· Remove the transmission oil filler bolt A.

· Place an oil basin under the transmission box. Remove the transmission oil drain bolt A and allow the oil to completely drain.

· Replace with a new gasket

· After the oil is completely drained. Install the oil drain bolt and flat washer.

Tightening torque of the oil drain bolt: 10-15N · m.



·Fill the transmission box with high-quality oil.

Transmission oil type: viscosity: SAE80W/90

Capacity: 0.6L

·Check the oil level.

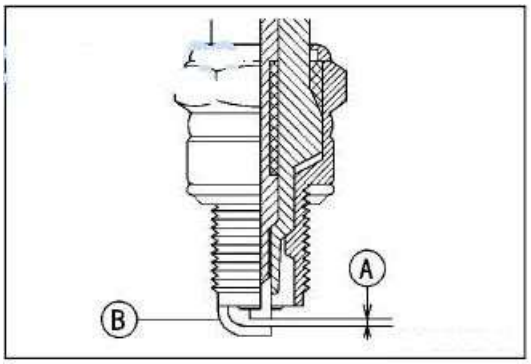
·Replace with a new refueling bolt flat washer and apply lubricating oil to the flat washer.

Tightening torque of refueling bolts: 20-25N · m.

5.2.8 Spark plug

Clean/inspect spark plugs

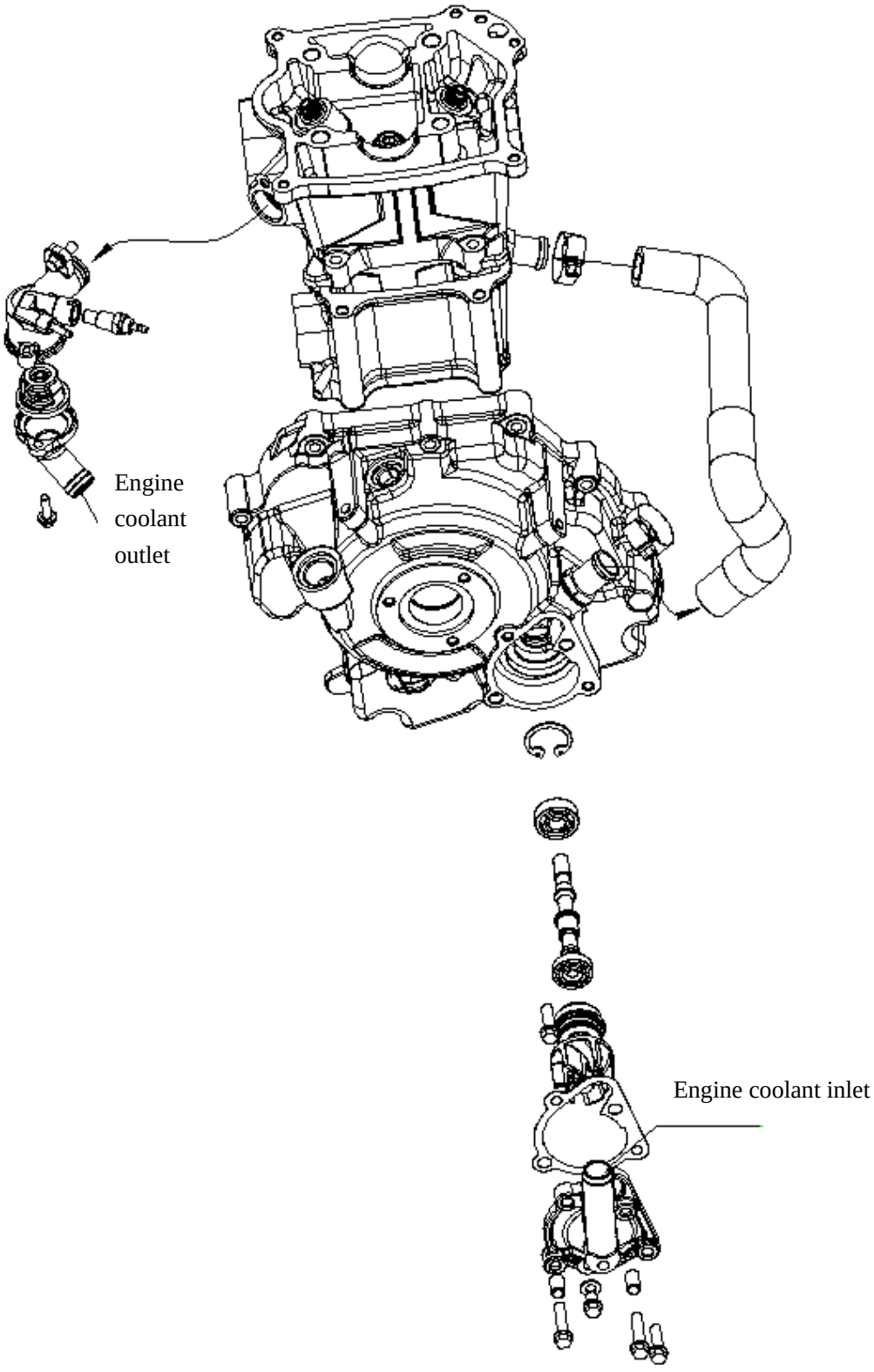
Remove the spark plug. Clean the spark plug, preferably in a sandblasting device, and then clean the abrasive particles. It can also be cleaned with a wire brush or other suitable tools. If the spark plug electrode is corroded or damaged, or the insulation material is broken, please replace the spark plug. Use standard spark plugs or equivalent spark plugs. Spark plug gap inspection uses a metal wire thickness gauge to measure gap A. If the gap is not correct. Carefully bend the side electrode B with a suitable tool to obtain the correct gap. Spark plug gap: 0.8-1.0mm.



5.3 Cooling system

5.3.1 System explosion view……5-18
5.3.2 Specification parameters……5-19
5.3.3 Cooling pump…….....5-20
5.3.4 Thermostat components……...5-24
5.3.5 Water temperature sensor……5-26

5.3.1 System explosion view



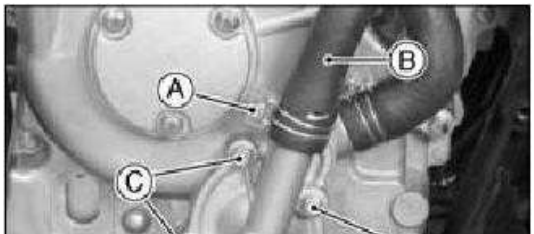
5.3.2 Specification parameters

Items		Standards	Service limit
Coolant	Type	Permanent antifreeze (soft water and ethylene glycol for engines and radiators combined with anti-corrosion and rust inhibitor chemicals)	/
	Colour	Green	/
	Mixing ratio	70% water+30% ethylene glycol	/
	Capacity	1.4L	/
Radiator cover	Relief pressure	About 108kpa	/
Thermostat components	Opening temperature	80˚C	/
	Full open temperature	90˚C	/
	Valve lift	3.5~4.5mm	

5.3.3 Cooling pump

Remove the cooling pump cover

5-



·Drain the coolant;

·Completely loosen the clamp bolt A;

·Disassembly :

Radiator hose B

Cooling pump cover

bolt C

Cooling pump cover D

Install the cooling pump cover

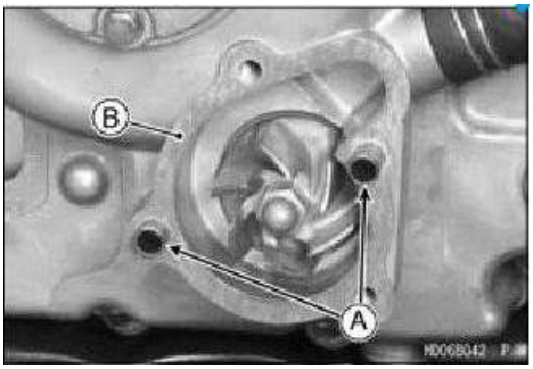
· Installation :

Positioning pin A

New cooling pump cover gasket B

· Tightening:

Tightening torque of cooling pump cover bolts: 10-15N • m

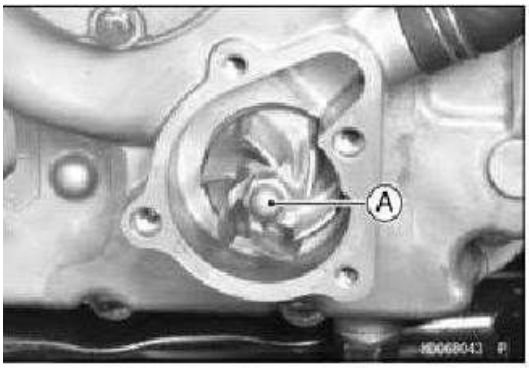


Remove the cooling pump impeller

·Drain the coolant;

·Remove the cooling pump cover;

·Loosen the cooling pump impeller A and the flat washer.



Attention
The cooling pump impeller is left-hand threaded, rotate the impeller clockwise, and then remove it.

Install the cooling pump impeller

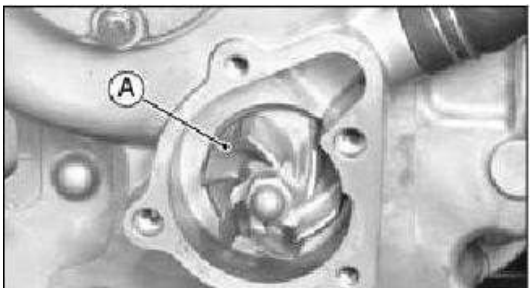
· On the smooth surface A of the water seal dynamic and static rings of the cooling pump Apply a small amount of coolant;

· Install the flat washer B;

· Install the impeller onto the cooling pump shaft and then rotate counterclockwise to lock it.

Check the cooling pump impeller

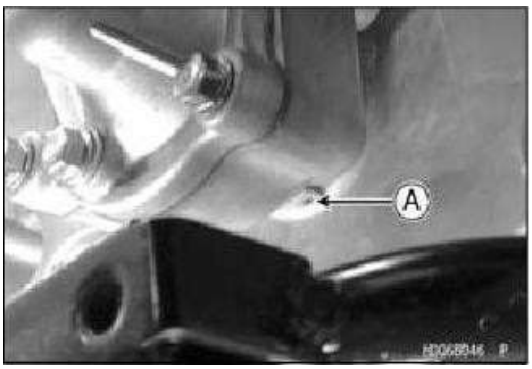
· Visually inspect impeller A.



★If the surface is corroded or the blades are damaged, the impeller should be replaced immediately.

Check for leakage in the cooling pump

· Check if there is coolant leakage in channel A of the drainage outlet at the bottom of the cooling pump body.



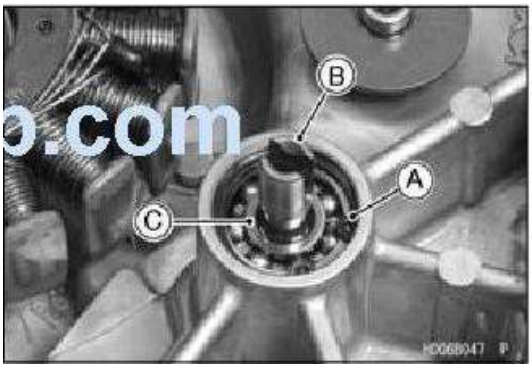
★If there is coolant leakage, it may be due to damage to the dynamic and static rings of the cooling pump water seal, and a new one should be replaced immediately.

Replace the cooling pump water seal dynamic and static rings

·Disassembly：Right crankcase cover of cooling pump impeller (refer to the chapter on magneto components)

Retaining ring A

Tool - Internal circlip pliers.



· Disassembly：

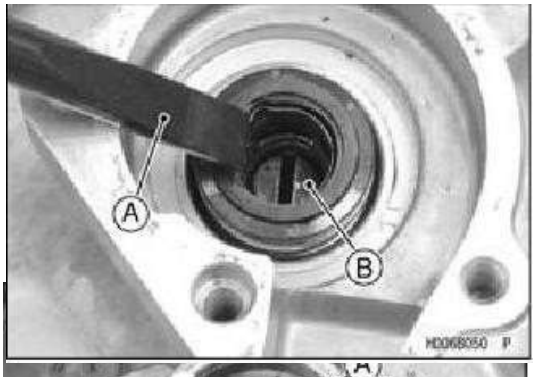
Cooling pump

shaft B

Inner bearing C

· Use the bearing disassembly tool to remove the outer bearing.

Tool - bearing disassembly shaft A -bearing disassembly head B.



· Press out the water seal stationary ring and oil seal from the inside of the right crankcase

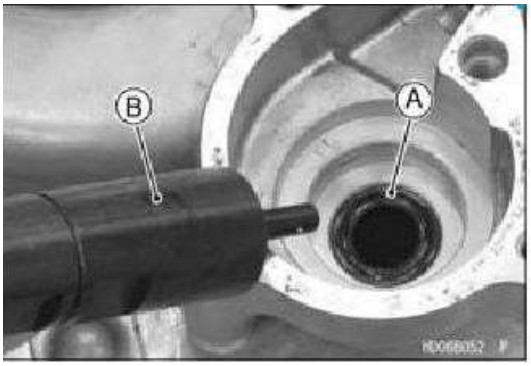
cover.

Tool - bearing disassembly head A.

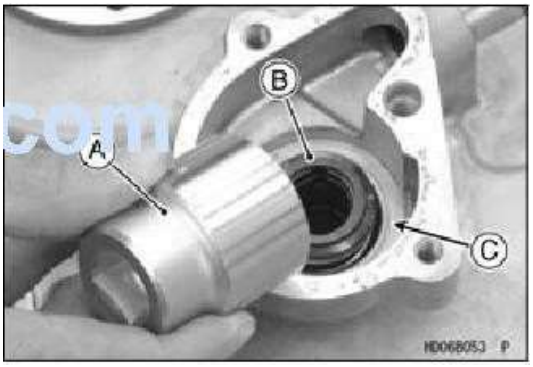
·Replace with a new water seal stationary ring and oil seal.

· Press in oil seal A until the bottom is exposed.

Tool - Oil seal pressure head B.



· Press a new water seal static ring B with a suitable sleeve A until flange C is pressed against the step surface.



· Press in outer bearing A from inside the right crankcase cover until the bottom is exposed.

Tool - bearing pressure head B.

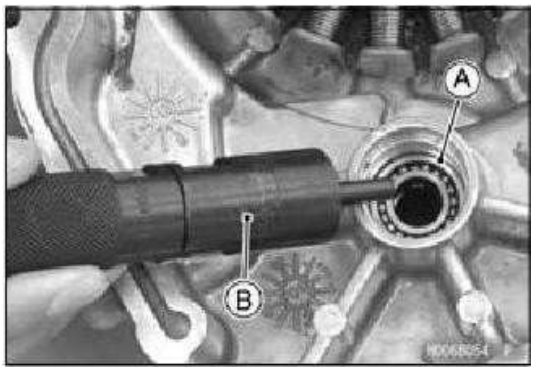
· Installation：

Inner bearing

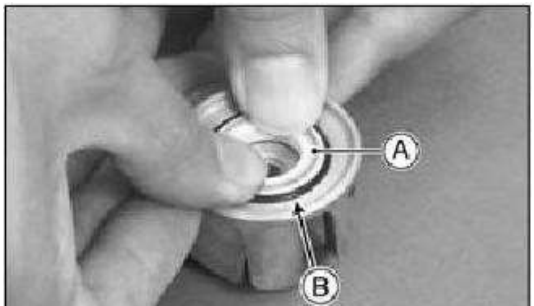
Cooling pump shaft

New retaining ring

Tool - Internal circlip pliers.



· Clean the surface of the new stationary ring with a high ignition point solvent and apply a

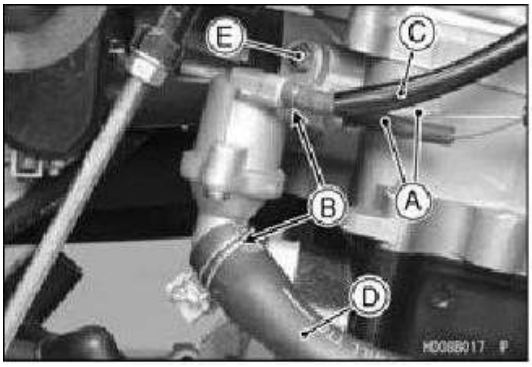


small amount of coolant to the surface to provide initial lubrication for the stationary ring.

· Apply coolant to the surface of the rubber seal and sealing seat A, and then press the rubber seal B and sealing seat into the impeller by hand until the bottom of the sealing seat is exposed.

· Rotate counterclockwise to tighten the cooling pump impeller.

5.3.4 Thermostat components



Remove thermostat components

·Drain the coolant

·Disassembly：

Right side cover (refer to the chapter on removing the right side cover of the frame)

Water temperature sensor connector A

Pipe clamp B

Exhaust pipe C

Radiator pipe D

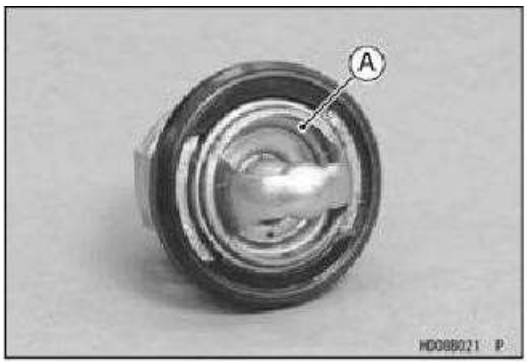
Thermostat component installation bolt E

· Disassembly：

Thermostat cover bolt A

Thermostat cover B

Thermostat components

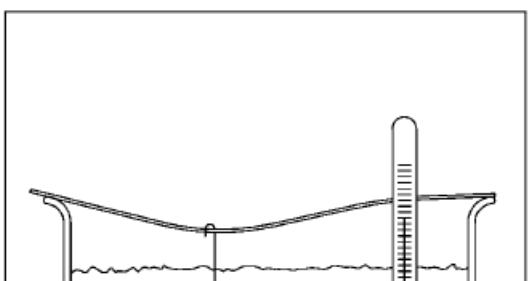


Check the thermostat components

·Disassemble the thermostat components and check the room temperature of the thermostat valve A.

★If the thermostatic valve has been opened, replace it with a new one.

· Check the opening temperature of the thermostat valve, hang the thermostat



component A and the precise thermometer B in a water container, and ensure that the two heat sensitive parts are almost at the same height.

Attention
The thermostatic valve must be completely submerged in water, and the thermostatic valve and thermometer must not come into contact with the side or bottom of the container.

· Gradually increase the water temperature while gently stirring to make the water temperature uniform.

★If the measured value exceeds the specified range, replace the thermostatic valve.

Temperature at which the thermostatic valve opens: 80 ℃.

Install thermostat components

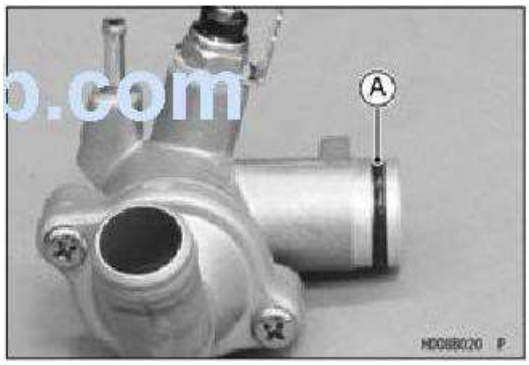
·Install the thermostatic valve;

·Tighten the thermostat cover bolts;

·Replace with a new O-ring A;

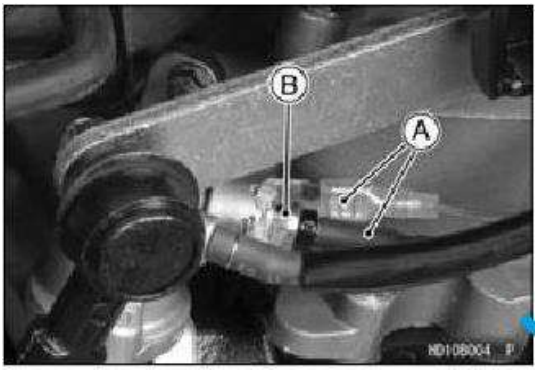
·Tighten the installation bolts of the thermostat components;

·Add coolant.



5.3.5 Water temperature sensor

Remove water temperature sensor



·Drain the coolant.

·Remove the right side cover.

·Disconnect the sensor lead connector A.

·Remove water temperature sensor B.

Install water temperature sensor

·Apply silicone sealant to the threads of the sensor and tighten.

·Fully tighten the water temperature sensor.

·Add coolant.

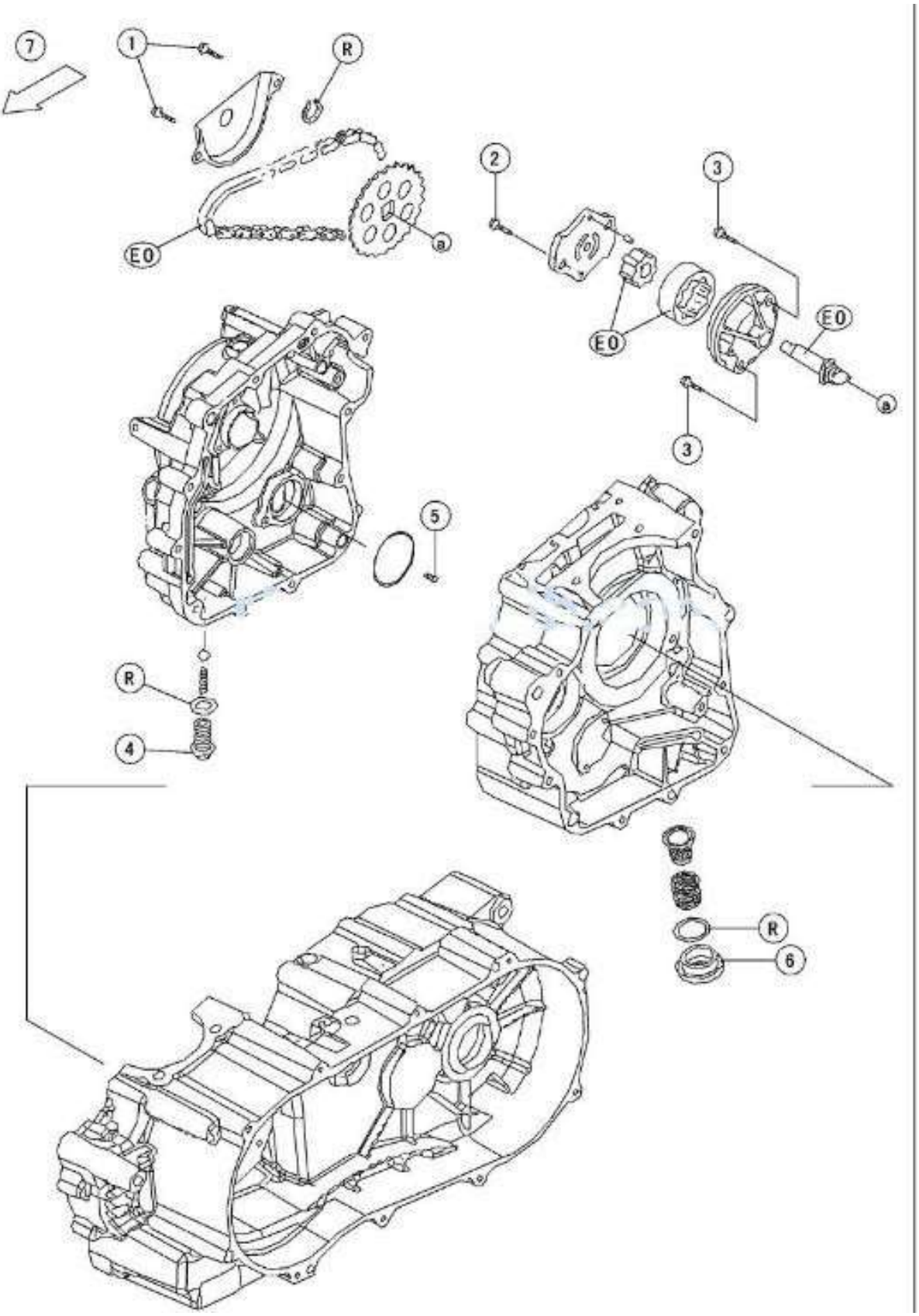
Check the water temperature sensor

·Please refer to the electrical system section for the inspection of the water temperature sensor.

5.4 Lubrication system

5.4.1 System explosion view…….....5-28
5.4.2 Specification parameters…….5-29
5.4.3 Lubrication system diagram……5-30
5.4.4 Oil and filter……5-31
5.4.5 Oil pump……..5-33

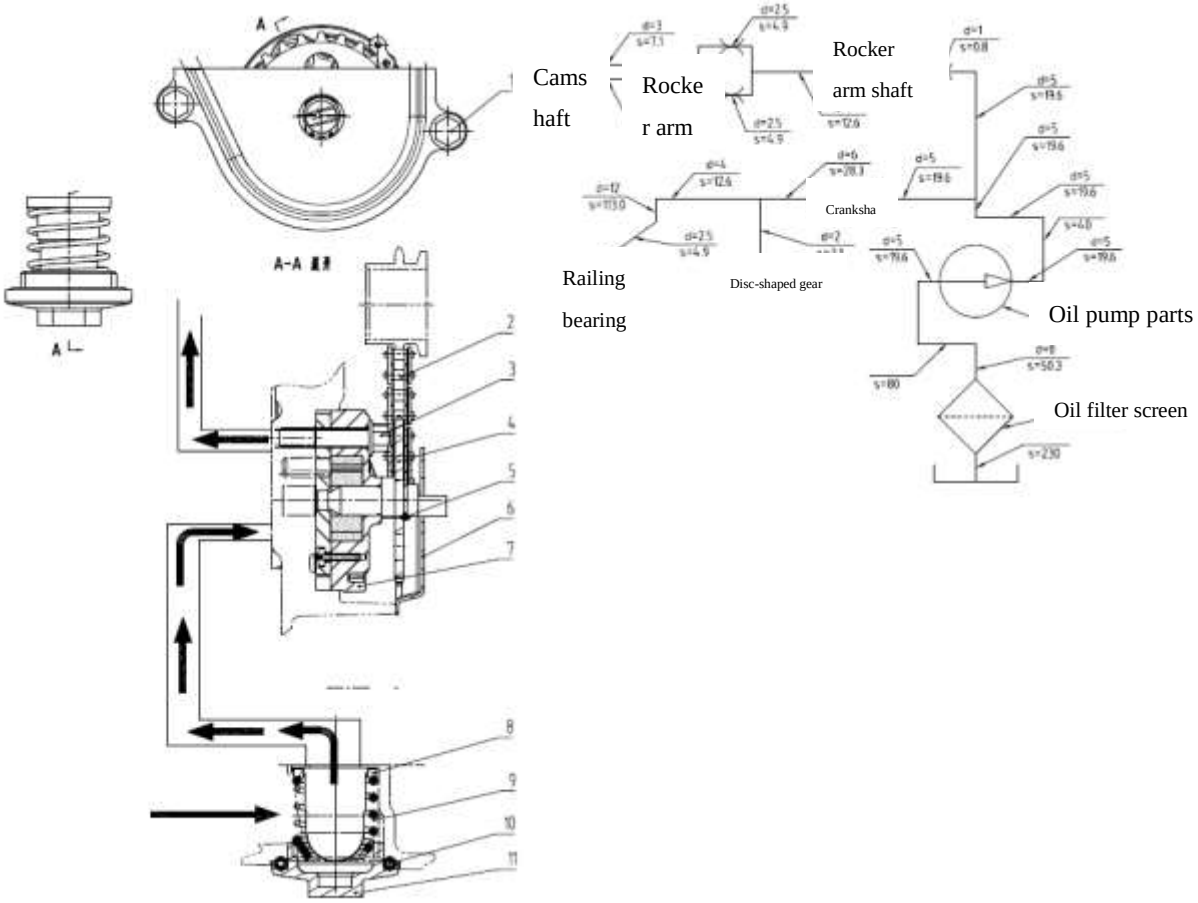
5.4.1 System explosion view



5.4.2 Specification parameters

Items		Standards	Service limit
Engine oil	Viscosity	SG 15W/40-SAE(Summer) SG 10W/30-SAE(Winter)	/
	Capacity	1.8L	/
	Oil level (hot engine or in operation)	Between the upper and lower reticles	/
Oil pump	Clearance between inner and outer rotors	0.05~0.15mm	0.2mm
	Clearance between outer rotor and oil pump body	0.12~0.21mm	0.26mm
	Clearance between rotor end face and oil pump body	0.05~0.11mm	0.16mm

5.4.3 Lubrication system diagram



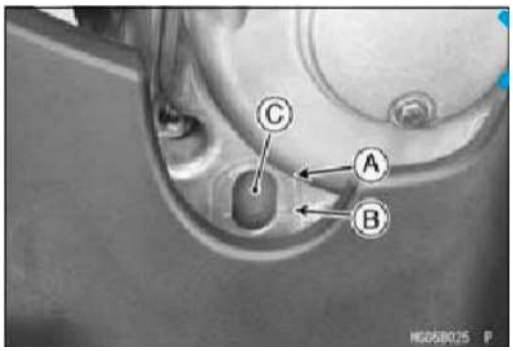
5.4.4 Oil and filter

5-

Warning

Running a vehicle under inappropriate conditions, harsh conditions, or contaminated engine oil can accelerate wear and tear, and may also lead to engine seizure, accidents, and injuries. Check the oil level before each use and replace the oil and filter according to the maintenance interval table.

Check the oil level



·Park the vehicle so that it is level in front, back, left, and right.

· The oil level should be checked at the center line between the H and L marks in observation window C.

Attention

If the oil has just been changed, start the engine, idle for one minute, turn off the engine, and then wait for one minute until the oil settles. Accelerating the engine before the oil reaches each level can cause engine malfunction.

★If the oil level is too high. Use a syringe or other suitable tool to suck excess oil out of the refueling hole.

★If the oil level is too low, oil can be added through the oil filling hole. Use oil of the same type and composition.

Attention

If the type and composition of the engine oil are unknown, priority should be given to topping up the oil level with any designated brand of oil, so that the engine can run at low oil levels. Then find the appropriate oil as soon as possible and replace it all.

Oil change

·Please refer to the oil change section in the maintenance section.

Remove oil filter screen

·Drain the engine oil

·Disassembly：

Oil filter cover A

and O-ring B

Pressure spring C

Oil filter screen D

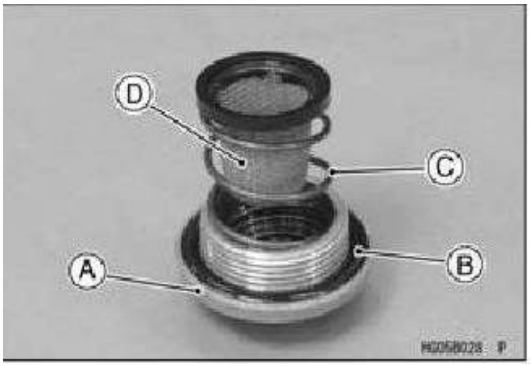
Install the oil filter screen

·Installation and disassembly are exactly the opposite.

·Note that a new O-ring needs to be replaced.

Tightening torque of oil filter cover:

20-25N • m



Clean the oil filter screen

·Please refer to the section on cleaning the oil filter screen in the maintenance section.

5.4.5 Oil pump

Remove the oil pump

·Disassembly：

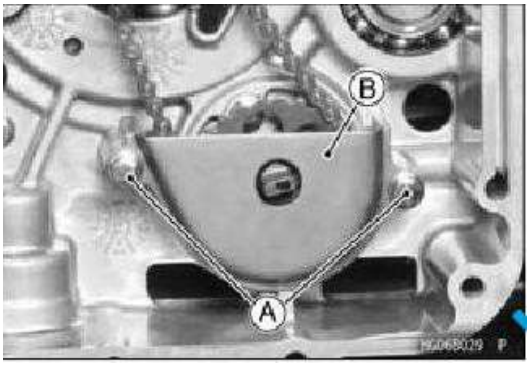
Magneto rotor

Disc gear

Oil pump sprocket cover

bolt A

Oil pump sprocket cover B

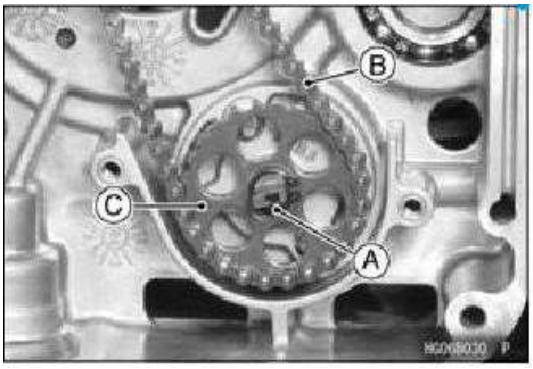


· Disassembly：

Circlip A

Oil pump chain B and oil pump driven wheel C

Tool - External circlip pliers.

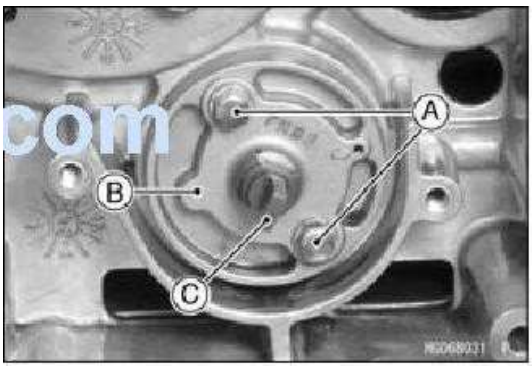


·Disassembly：

Oil pump mounting bolt A

Oil pump assembly B

Oil pump transmission shaft C



· Disassembly：

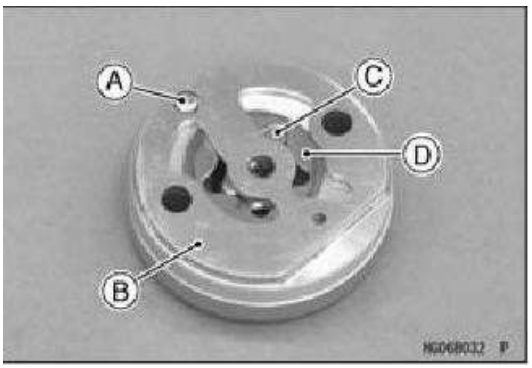
Oil pump cover

bolt A

Oil pump cover B

Inner rotor C

Outer rotor D

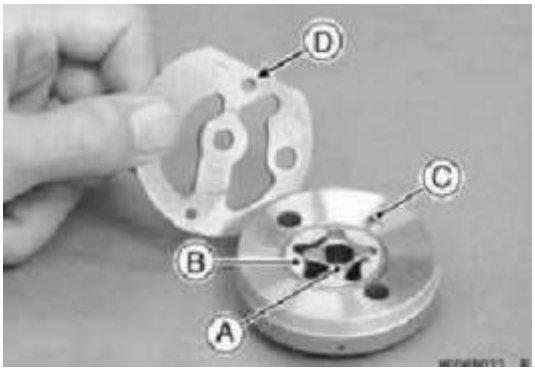


Install oil pump

·Apply engine oil to the following parts:

Oil pump transmission shaft

Inner rotor A and outer rotor B



·Installation：

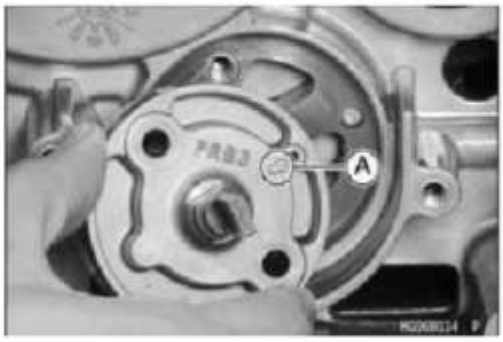
Inner rotor

Outer rotor

·Check if the positioning pin is installed properly.

·Install the oil pump cover by aligning the locating pin with hole D on the oil pump cover

·Hand tighten the oil pump cover bolts.



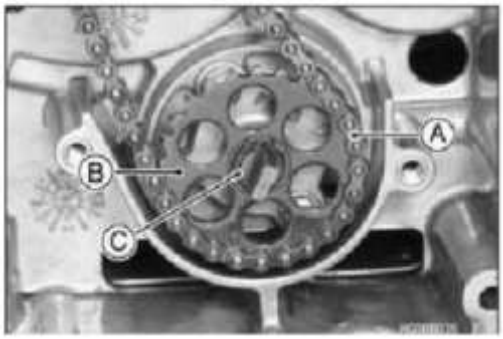
·Install the oil pump transmission shaft.

·Fill the oil pump with oil.

·Install the oil pump assembly with the arrow mark A facing the engine exhaust valve.

·Tighten the oil pump mounting bolts.

Tightening torque of oil pump bolts: 8-12N · m.



·Check if the oil pump transmission shaft rotates freely.

·Replace with a new circlip.

·Installation：

Oil pump chain A and oil pump driven wheel B

New circlip C

Tools - External circlip pliers

·Install the oil pump sprocket cover and tighten the bolts.

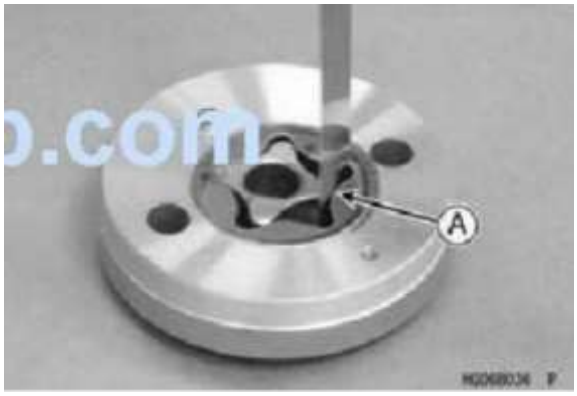
The tightening torque of the oil pump sprocket cover bolts is 8-12N·m.

Check the oil pump

·Remove the oil pump

·Visually inspect the oil pump driven wheel, inner and outer rotors, and oil pump cover.

★If there is damage or uneven wear, please replace it.Use a feeler gauge to check the gap A between the inner and outer rotors. Measure the gap between the highest point of the inner rotor and the highest point of the outer rotor.

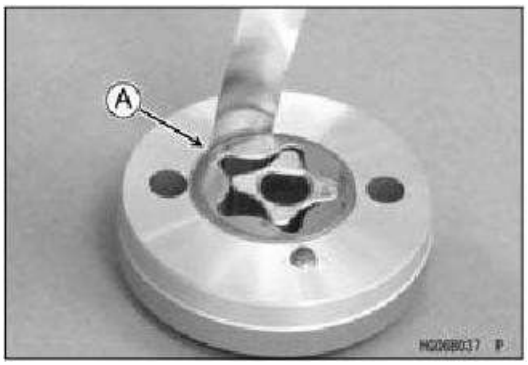


★If the measured value exceeds the usage limit, please replace the inner and outer rotors.

·Clearance between inner and outer rotors

Standard: 0.05-0.15mm

Service limit: 0.2mm.



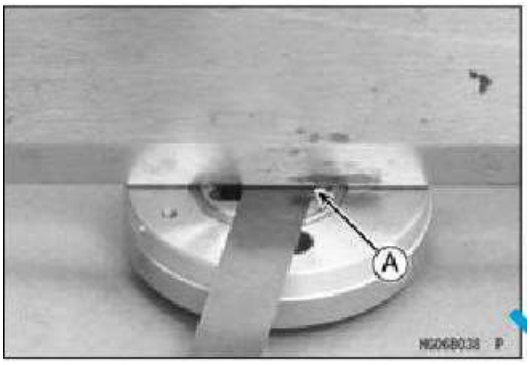
·Use a feeler gauge to check the gap A between the outer rotor and the oil pump body.

★If the measured value exceeds the usage limit, please replace the oil pump and the inner and outer rotors.

·Clearance between outer rotor and oil pump body

Standard: 0.12-0.21mm.

Service limit: 0.26mm.



·Use a feeler gauge to check the gap A between the outer rotor end face and the oil pump body.

★If the measured value exceeds the usage limit, please replace the oil pump and the inner and outer rotors.

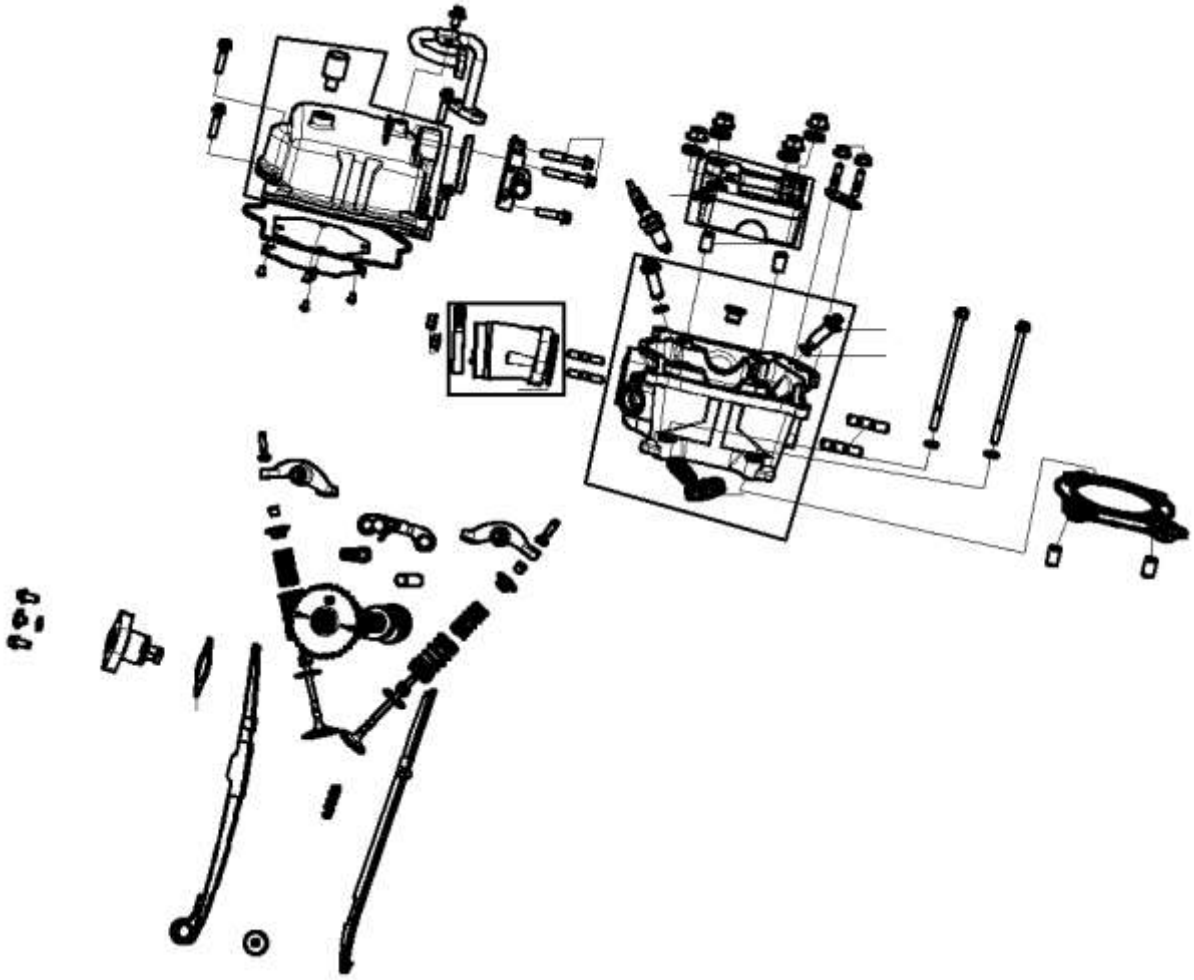
·Clearance between outer rotor end face and oil pump body

Standard: 0.05-0.11mm. Service limit: 0.16mm.

5.5 Cylinder head and valve

5.5.1 System explosion view……....5-37
5.5.2 Specification parameters……..5-38
5.5.3 Secondary air supply system……....5-39
5.5.4 Cylinder head cover…….5-40
5.5.5 Tensioner…….....5-41
5.5.6 Valve rocker arm and valve rocker arm shaft……..5-43
5.5.7 Camshaft…….....5-45
5.5.8 Cylinder head……..5-48
5.5.9 Valve……...5-51

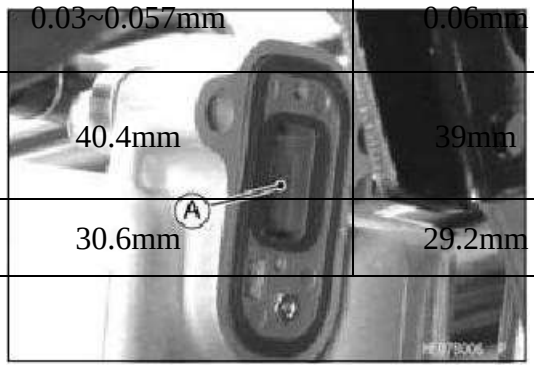
5.5.1 System explosion view



Items		Standards	**Service limit**
Valve rocker arm	Clearance between valve rocker arm and valve rocker arm shaft	0.013~0.043mm	0.05mm

5.5.2 Specification parameters

Cam height of camshaft	Exhaust	35.171mm	35.05mm
	Inlet	35.061mm	34.94mm
Cylinder head	Cylinder pressure	Available range: 1150~1400kpa（600~700rpm）	/
	Deformation amount	/	0.05mm
Valve clearance	Exhaust valve	0.08~0.12mm	/
	Intake valve	0.08~0.12mm	/
Clearance between valve and valve guide	Exhaust valve	0.03~0.057mm	0.08mm
	Intake valve	0.03~0.057mm	0.06mm
Free length of valve spring	Valve outer spring	40.4mm	39mm
	Inner valve spring	30.6mm	29.2mm



5.5.3 Secondary air supply system

Note: There is no secondary air supply system in the carburetor state.

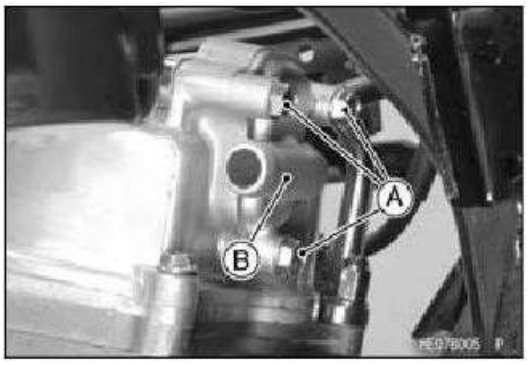
Remove the reed valve

·Disassembly：

Vacuum switching valve

Pipe joint installation bolt A

Pipe joint B



·Remove reed valve A

Install the reed valve

·The installation steps are the reverse of the disassembly steps.

Pipe joint installation bolt torque: 8-12N · m.

Check the reed valve

·Dismantle the reed valve;

·Visually inspect spring A for cracks, wrinkles, bending, thermal damage, or other damages;

★If there are any problems with the reed, immediately replace it with a new reed valve;

·Check the contact area B of the spring for grooves, scratches, any signs of separation from the valve seat, or thermal damage;

★If there is any problem with the contact area of the reed, immediately replace it with a new reed valve;

★If any carbon residue or foreign particles accumulate between the reed and the contact area of the reed, please clean the reed valve with a high ignition point solvent.

Attention
Do not use a scraper to remove sediment, as this will damage the rubber and require replacing the reed valve

5.5.4 Cylinder head cover

Note: There is no secondary air supply system in the carburetor state.

Remove cylinder head cover

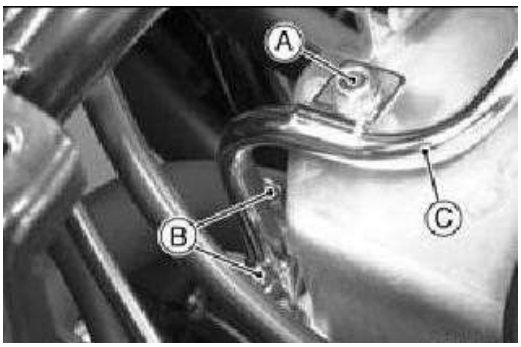
·Disassembly：

Fuel tank (refer to the fuel system chapter)

Reed valve

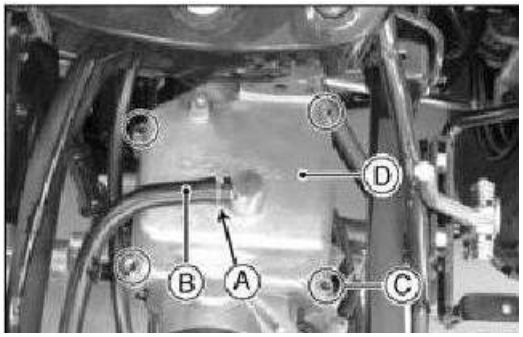
Ventilation pipe installation bolt A and nut B

Ventilation pipe C



·Remove pipe clamp A and vent pipe B.

·Remove the cylinder head cover mounting bolts C and cylinder head cover D.



Install the cylinder head cover

·Replace the cylinder head cover gasket A with a new one.

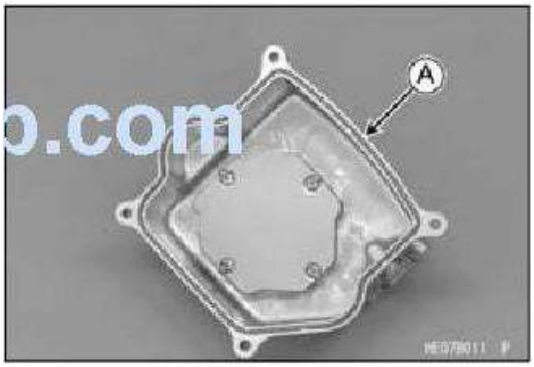
·Install the cylinder head cover.

Bolt torque: 8-12N · m.

·Install the ventilation pipe.

Bolt and nut torque: 8-12N · m.

·Install the removed parts.



5.5.5 Tensioner

Remove the tensioner

Attention
This is not an automatic return tensioner. When the push rod is pushed out to compensate for the slack in the timing chain, the push rod will not return to its original position. The following principles should be followed: When disassembling the tensioner, do not only remove the mounting bolts on one side, as this can easily damage the tensioner and timing chain. Once the bolts are loosened, the tensioner must be disassembled and reset according to the instructions for installing the tensioner. Do not rotate the crankshaft when removing the tensioner, as it may disrupt the timing and damage the valves.

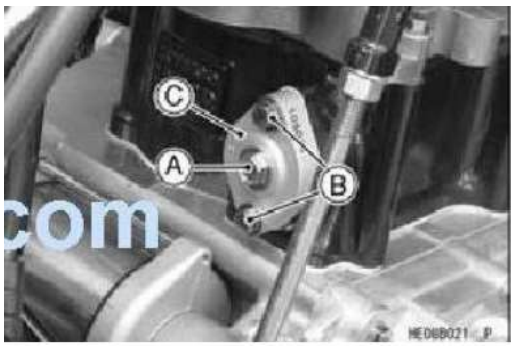
·Disassembly：

Thermostat components

Tensioner bolt A and sealing ring

Tensioner installation bolt B

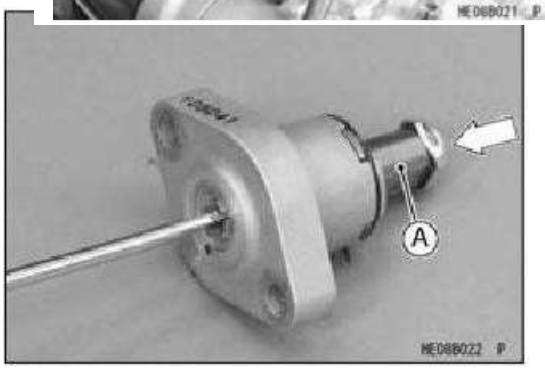
Tensioner C



Install the tensioner

·Remove the tensioner bolt and sealing ring.

·Press the push rod A and use a suitable screwdriver to rotate clockwise until the push rod is in place.



Attention
Do not rotate the push rod counterclockwise before installing the tensioner, as it may detach and prevent reinstallation of the tensioner.

·Replace the tensioner gasket with a new one. Fix the push rod in place with a suitable push rod support plate A, and then install the tensioner on the cylinder block.

·Tightening torque of tensioner installation bolt A: 8-12N · m.

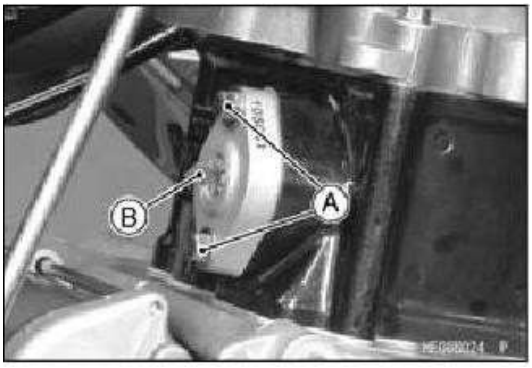
·Remove support plate B.

·Replace with a new sealing ring.

·Apply engine oil to the new sealing ring.

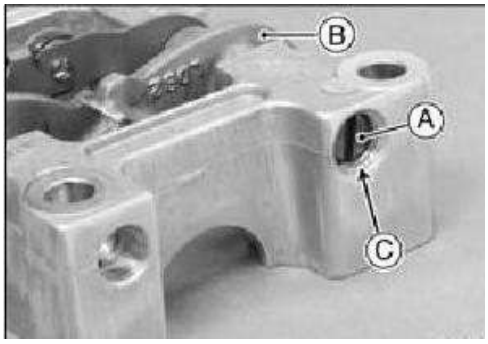
·Install a new sealing ring and tighten the tensioner bolt by hand.

·Install the disassembled parts.



5.5.6 Valve rocker arm and valve rocker arm shaft

Remove valve rocker arm



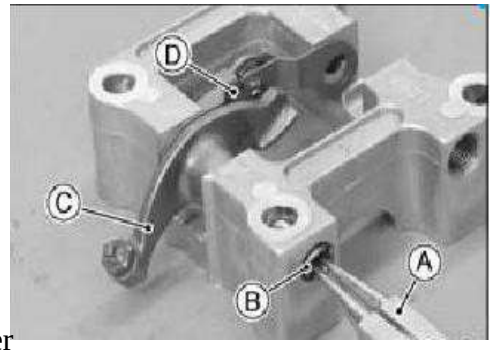
·Disassembly：

Rocker arm support seat (refer to the camshaft chapter)

Valve rocker arm shaft (intake side) A

Intake rocker arm B

·The intake side valve rocker arm shaft has thread C.



·Use a suitable tool A, remove the valve rocker arm

Shaft (exhaust side) B

·Disassembly：

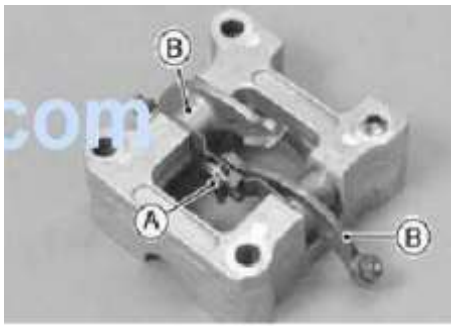
Exhaust rocker arm C

Cylinder head stop plate combination D

·Mark and record the position of the valve rocker arm so that it can be installed back in its original position.

·The valve rocker arm and valve rocker arm shaft come off together.

Install valve rocker arm



·Apply oil to the following parts:

Valve rocker arm shaft

Valve rocker arm mounting hole

·Install the following parts as shown in the diagram:

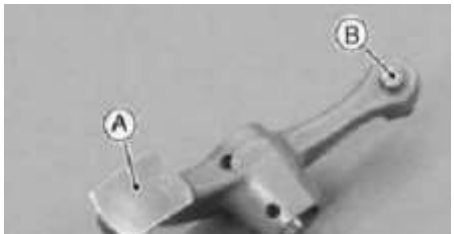
Cylinder head stop plate assembly A

Valve rocker arm B

Valve rocker arm shaft

Check the valve rocker arm and valve rocker arm shaft

·Check area A on the rocker arm and the cam



for friction.

★If there are scratches, discoloration, or other damages on the rocker arm, please replace it and check the camshaft tip at the same time.

·Check the position where the end of valve adjustment bolt B contacts the valve.

★If there is mushroom shaped or other damage to the end of the valve adjustment bolt, or the bolt cannot rotate smoothly, please replace it and check the end of the valve.

· Insert the valve rocker arm shaft into the valve rocker arm and measure the clearance.

★If the gap exceeds the limit of use, please replace it at the same time.

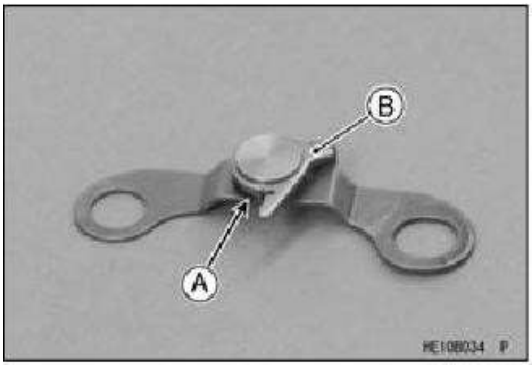
Valve rocker arm/valve rocker arm shaft clearance

Standard: 0.013~0.043mm

Service limit: 0.05mm

Check the cylinder head stop plate assembly

·Check if the stop plate torsion spring A is damaged.

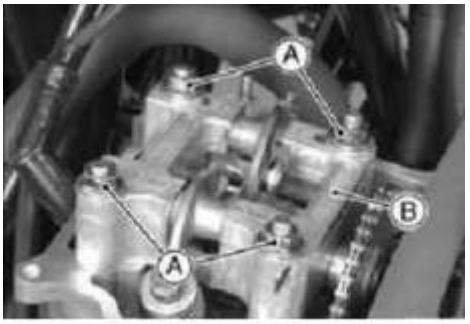


★If there is any damage to the torsion spring, replace the stop plate assembly.

·Check whether the stop plate shift block B rotates smoothly and is not damaged.

★If there is any damage to the stop plate shift block, replace the stop plate combination.

5.5.7 Camshaft



Remove camshaft

·The piston turns to the top dead center.

·Disassembly

Cylinder head cover

Tensioner

Rocker arm support seat installation nut A

Rocker arm support seat B

·Remove camshaft A.

·Support the timing chain with a suitable tool.

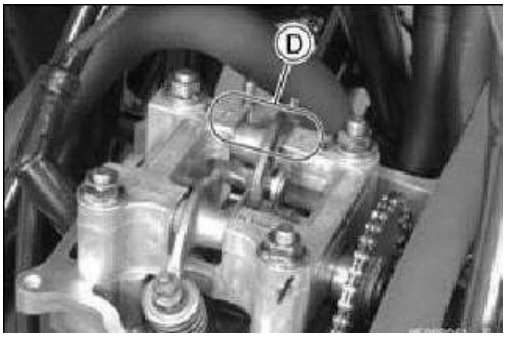
Install camshafts

·Apply oil to all cam components.

·Install locating pin A.

·Engage the timing chain and timing driven wheel.

·Maintain the circular hole A of the timing driven wheel facing upwards, and the straight line formed by the "-" mark B is parallel to the upper plane C of the cylinder head (with the inlet and outlet cam tips facing downwards).



·Install the rocker arm support seat with the EX mark D facing the exhaust side.

·Apply engine oil to the threads of the mounting nut on the rocker arm support seat.

·Install the flat washer and nut.

· Nut tightening torque: First, apply 10 and 15 N • m respectively

Cross tighten and finally tighten to 25-30N • m.

·Install the tensioner.

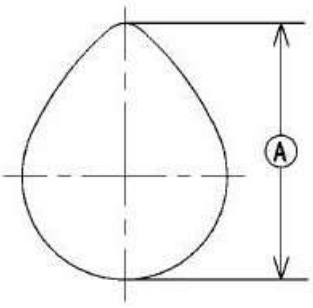
·Rotate the crankshaft clockwise by 2 turns to open the tensioner and recheck the timing.

·Install the removed components.

Check for cam wear

·Remove the camshaft.

·Measure the height A of the cam with a micrometer.



★If the measured value exceeds the cam wear limit, replace the camshaft.

Cam height

Standard: Exhaust 35.171mm

Intake 35.061mm

Service limit: exhaust 35.05mm

Intake 34.94mm

Check camshaft bearings

·Check each bearing A pressed onto the camshaft.

·Due to the very small manufacturing tolerance of bearings, the wear of bearings must be based on hand feeling rather than measurement. Clean the bearings with a high ignition point solvent, dry (do not rotate the bearings when dry), and lubricate with engine

oil.

·Quickly rotate the bearing by hand to check its condition.

★If there is abnormal noise, unsmooth

rotation, or any violent stop in the bearing,

replace the camshaft.

Remove timing chain

·Disassembly：

Cylinder head

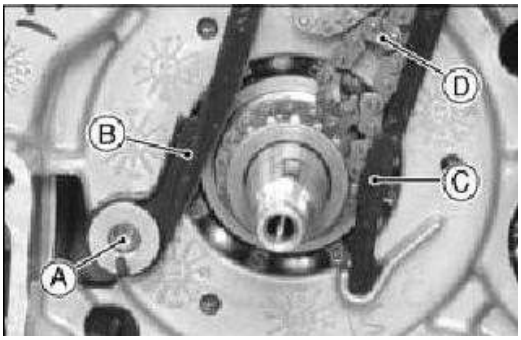
Disc gear

Tensioning plate bolt A

Chain tensioning plate

B

Chain guide plate C



·Remove timing chain D from the timing driven wheel.

Install timing chain

·Hang timing chain A on the timing driven wheel.

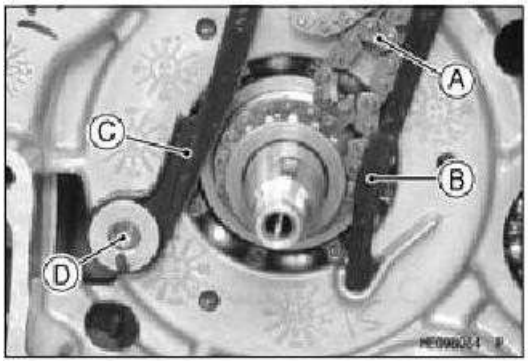
·Installation：

Chain guide plate B

Chain tensioning plate

C

Tensioning plate bolt D



Tightening torque of tensioning plate bolts: 10-15N · m.

·Install the disassembled parts.

Check the wear of the chain guide plate and tensioning plate

·Visually inspect the rubber on the guide plate and tensioning plate.

★If the rubber is damaged, cut or peeled off,

replace the guide plate and tensioning plate.

5.5.8 Cylinder head

Measure cylinder pressure

Attention
Use a fully charged battery.

·Warm up the engine and stop it.

·Remove the spark plug (refer to the electrical system chapter).

·Connect cylinder pressure gauge A and adapter B firmly into the spark plug hole.

Tool - cylinder pressure gauge 20kg/cm2
Adapter M12 × 1.25

•Start the engine and fully open the throttle until the cylinder pressure gauge reading no longer rises. At this point, the cylinder pressure gauge reading is the highest cylinder pressure.

The available range of cylinder pressure: 1150~1400kPa (600~700rpm).

If the cylinder pressure gauge reading is not within the available range, please refer to the following table:

Problem	Diagnosis	Remedial measures
Cylinder pressure above available	Piston carbon deposits, cylinder head, combustion chamber may be due to damage to the oil shield and/or damage to the piston oil ring (emitting white smoke)	If necessary, remove carbon deposits and replace damaged parts

range	Incorrect thickness of cylinder head gasket	Replace with a standard specification sealing gasket
Cylinder pressure below available range	There is gas leakage around the cylinder head	Replace the damaged sealing gasket and check for deformation of the gun head
	Abnormal valve spring seat	Replace if necessary
	Incorrect valve clearance	Adjust valve clearance
	Incorrect piston/cylinder clearance	Replace the piston and/or cylinder
	Piston cylinder	Check the cylinder and replace/repair the cylinder and/or piston as necessary
	Abnormal piston ring and/or piston ring groove	Replace the piston and/or piston ring

Remove cylinder head

· Drain the coolant

· Disassembly：

Carburetor (refer to the fuel system chapter)

Exhaust pipe

Spark plug cap

Camshaft

Cylinder head bolt A and flat washer

Cylinder head B and sealing gasket

Install cylinder head

·Replace with a new cylinder head gasket

·Installation：

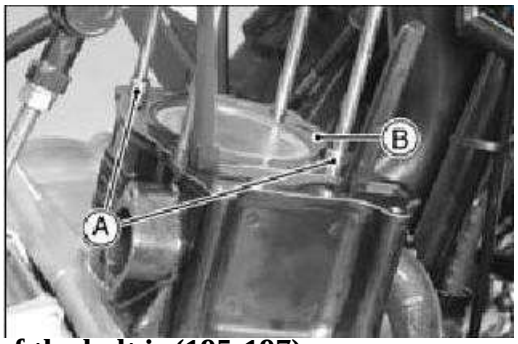
Positioning pin A

New cylinder head gasket B

Cylinder head

Camshaft

·Tighten the cylinder head bolts.



Tightening requirements: The exposed height of the bolt is (195-197) mm.

Clean the cylinder head

·Disassemble the cylinder head ;

·Use suitable tools to scrape off carbon deposits from the combustion chamber and exhaust port;

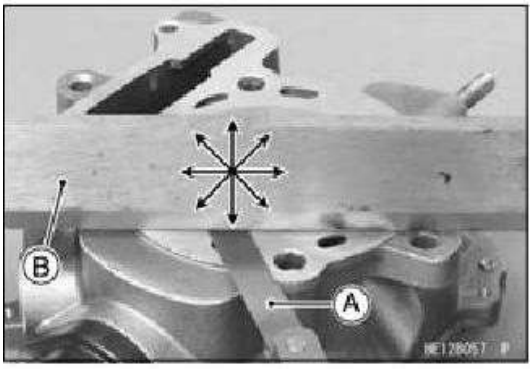
·Clean the cylinder head with a high ignition point solvent.

Check the deformation of the cylinder head

·Clean the cylinder head;

·Place a straight edge on the lower surface of the cylinder head;

·Measure the gap between the straight edge B and several positions on the lower plane of the cylinder head using a feeler gauge A.



Cylinder head deformation

Standard: No gap

Service limit: 0.05mm

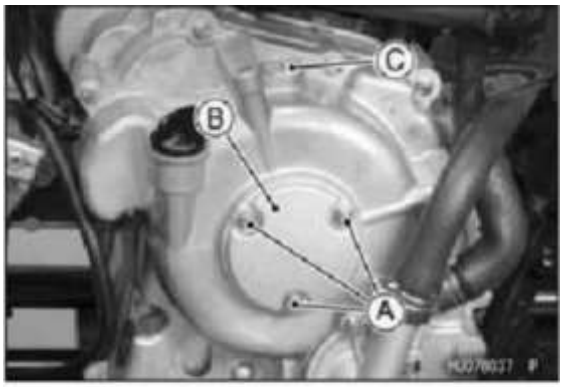
★If the deformation of the cylinder head exceeds the service limit, please replace it.

★If the deformation of the cylinder head is lower than the limit of use, grind the lower plane with fine sandpaper.

5.5.9 Valve

Check valve clearance

Attention
The valve clearance can only be checked when the engine has cooled to room temperature.



·Disassembly：

Cylinder head cover

Right decorative cover bolt A

Right decorative cover B

Timing observation hole cover C

·Disassembly

Oil passage pipe A

·Place the wrench on the bolt of the magneto rotor and rotate the crankshaft clockwise until the "T" mark A on the magneto rotor aligns with the notch B on the right crankcase cover, as shown in the figure: the end of the cylinder compression stroke.

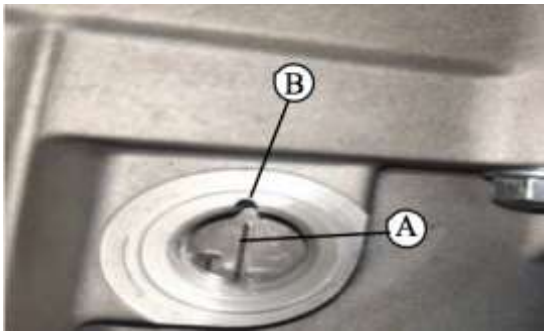
·Measure the valve clearance using a feeler gauge B, and measure the clearance between the end of the valve stem and the adjusting screw A.

·Valve clearance (when cold)

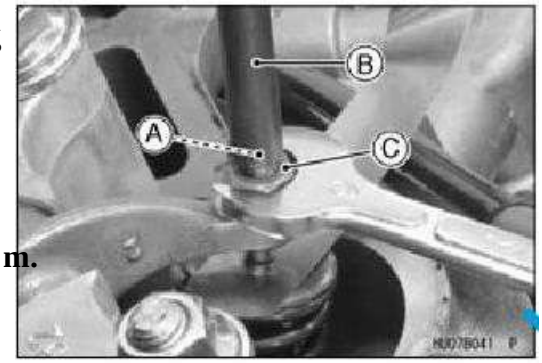
Exhaust valve: 0.08-0.12mm

Intake valve: 0.08~0.12mm

★If the valve clearance is not correct, please



Adjusting valve clearance



·Loosen the locking nut and rotate the adjusting screw until the gap is correct;

·Secure the adjusting screw B with fixture A and tighten the locking nut C;

Tightening torque of the locking nut: 9-12N · m.

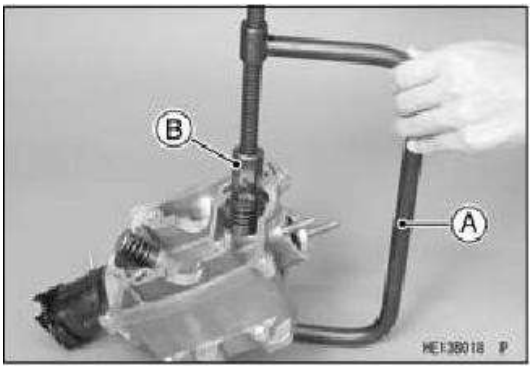
Tool - Adjusting screw fixture.

·Recheck the valve clearance.

★If the gap is not correct, readjust it.

★If the clearance is correct, adjust the clearance of the other valve.

Remove valve



·Disassemble the cylinder head;

·Mark the valve position so that it can be installed back in its original position;

·Remove the valve using valve spring compression device A and adapter B.

Tool - Valve spring compression device;

-Adapter.

Install valve

·Replace the oil baffle cover.

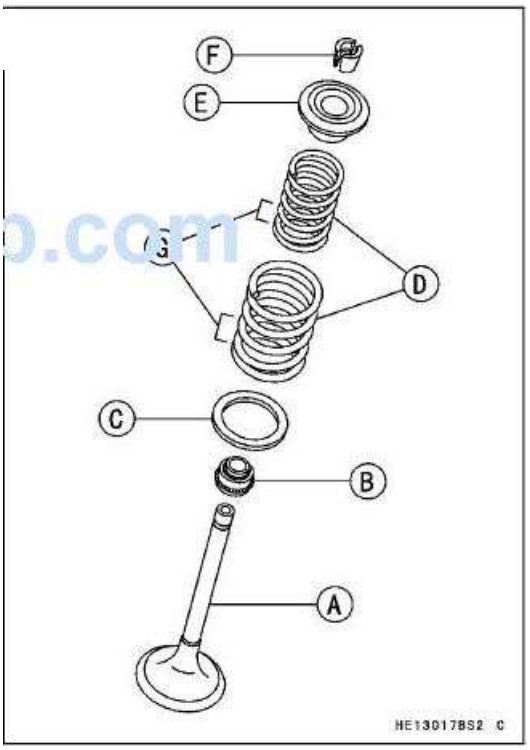
·If a new valve is to be used, check the clearance between the valve and the valve guide.

·If the gap is too large or too small, replace the cylinder head.

·Apply engine oil to the valve stem and install the valve and spring lower seat.

·Install the spring with the sparse coil facing upwards and the dense coil facing downwards.

5-52



Valve A

Oil shield B

Valve spring lower seat C

Valve inner and outer springs D

Valve spring upper seat E

Locking clip F

Sealing ring end G

Measure the clearance between the valve and valve guide

·Measure the outer diameter of each valve stem and the inner diameter of each valve guide.

·Subtract the outer diameter of the valve stem from the corresponding inner diameter of the valve guide to obtain the clearance between them.

★If the gap exceeds the service limit, replace the cylinder head.

Valve and valve guide clearance

Standards:

Exhaust valve 0.03-0.057mm

Inlet valve 0.01-0.037mm

Service limit:

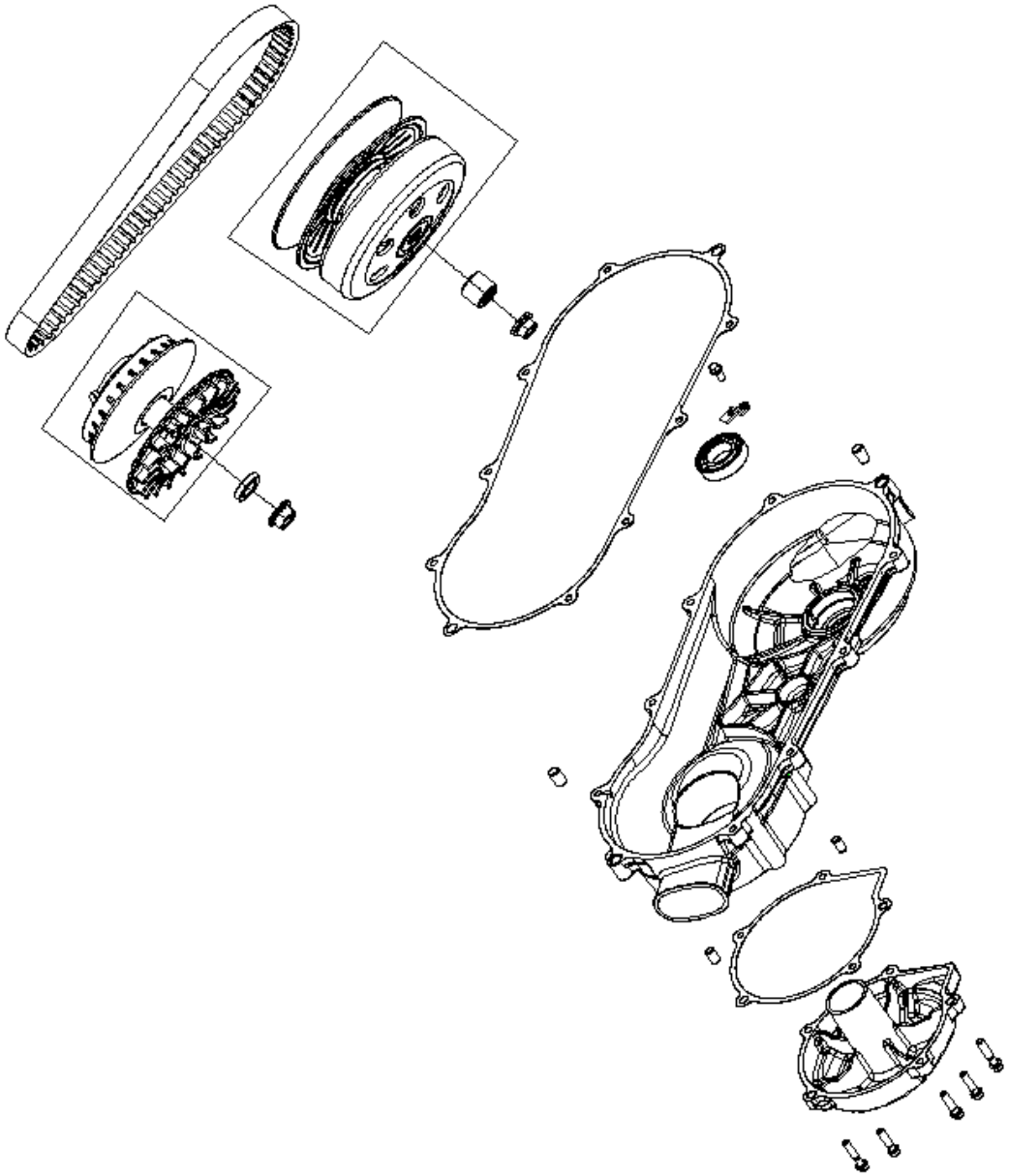
exhaust valve 0.08mm

Intake valve 0.06

5.6 Belt transmission system

5.6.1 System explosion view…… 5-53 ……5-55
5.6.2 Specification parameters……..5-56
5.6.3 Left crankcase cover…….....5-57
5.6.4 Belt…….....5-59
5.6.5 Active pulley components…….....5-61
5.6.6 Driven pulley components……5-64

5.6.1 System explosion view 5-54



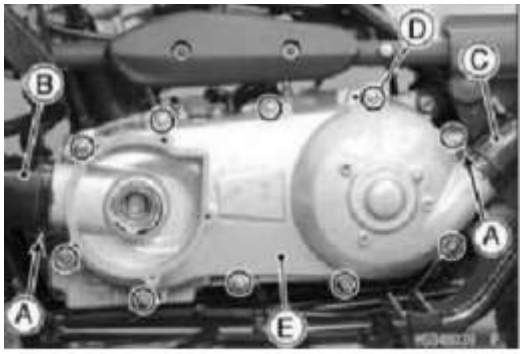
Items		Standards	Service limit
Belt	Belt width	22.6~23.4mm	22mm
Active pulley components	Bore diameter of drive plate assembly hole	28.05~28.1mm	28.2mm
	Outer diameter of bushing	28.02~28.04mm	27.95mm
	Outer diameter of roller	22.90～23.1mm	22.8mm
Driven pulley components	Driven sliding plate assembly hole diameter	41～41.025mm	41.06mm
	Driven fixed shaft	40.965～40.985mm	40.94mm

5.6.2 Specification parameters

	diameter		
	Free length of compression spring	137mm	131mm
	Clutch lining thickness	3.6～4.4mm	2mm
	Inner diameter of clutch outer plate	153～153.25mm	153.5mm

5.6.3 Left crankcase cover

Remove left crankcase cover



·Disassembly:

Left decorative cover

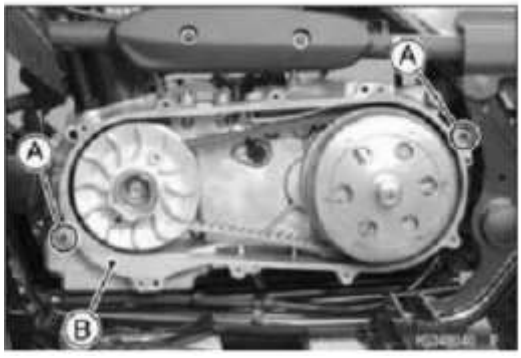
Clamp bolt A

Intake pipe B and exhaust pipe C

Left crankcase cover bolt D

Left crankcase cover E and sealing gasket

Install left crankcase cover



·Replace with a new left crankcase cover gasket.

·Installation:

Positioning pin A

New sealing gasket B

Left crankcase cover

·Tighten the left crankcase cover bolts.

Install the left crankcase cover bearing

·Use a pressure head to press the bearing in 5-57 installation hole.

·Install the bearing pressure plate.

·Install the pressure plate bolts and apply thread locking agent to the bolt threads.

Tightening torque of pressure plate bolts: 8-12N · m.

Check bearings

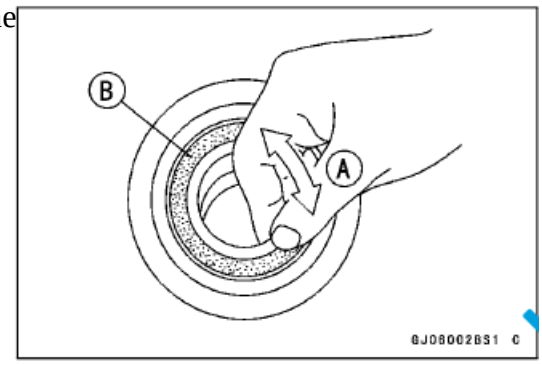
Attention
Do not remove the bearings for inspection. If the bearing is removed, it needs to be replaced with a new one.

·When checking for clearance and flexibility, rotate bearing A back and forth.

★If gaps, roughness, or adhesion are found in the bearings, they should be replaced.

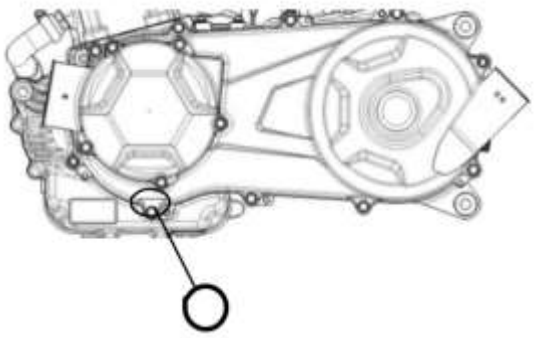
·Check the bearing sealing surface B for cracks or leaks.

★If there are cracks or leaks on the sealing surface, replace the bearing.



CVT cavity drain bolt

Attention: that the CVT chamber cannot be filled with water. If there is water, please remove the drain bolt A. After draining the water, tighten the bolt with a tightening torque of 8-12N · m.



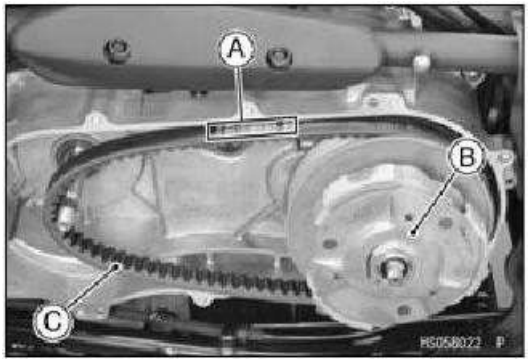
5.6.4 Belt

Remove the belt

·Remove the active pulley components.

·Remove the clutch outer plate.

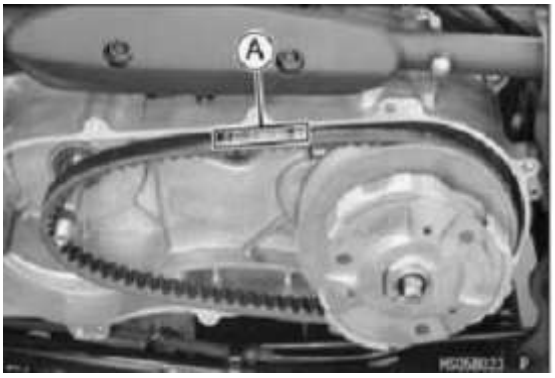
Attention
Before disassembly, observe the orientation of information A (such as the manufacturer's name) engraved on the belt so that the belt can be reinstalled on the pulley and rotate in the same direction as the original installation.



·Remove driven pulley component B and belt C.

Install the belt

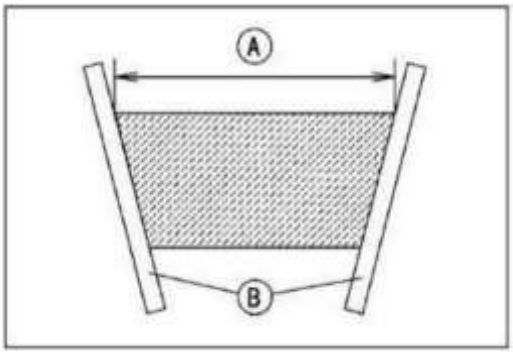
Attention
Ensure that the imprinted information faces in the same direction, so that the belt can be installed back in the original direction of rotation. When installing a new belt, the imprinted information A can be read from the side of the vehicle.



·The installation steps are the reverse of the disassembly steps.

Check for belt wear

Warning
Any improper operation or clutch stalling or slipping may cause severe wear or damage to the transmission and wheels due to belt jamming. This may cause the operator to lose control and lead to accidents, resulting in injury or death. Maintain according to the maintenance schedule.



Remove the left crankcase cover.

·As shown in the figure, use a pair of suitable straight edge holders to measure the width A of the belt at several positions.

★If the measured value exceeds the usage limit, please replace the belt.

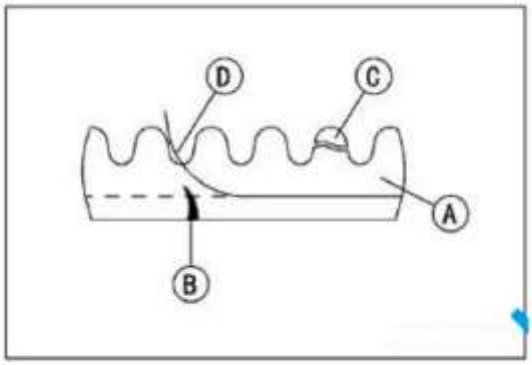
· Belt width

Standards：22.6～23.4mm

Service limit: 22mm

·Check the belt for cracks, fractures, or peeling.

·If necessary, please replace the belt.



Belt A

Crack B

Fracture C

Peeling D

Attention
When replacing the belt, check the active pulley components and the driven pulley components.

5.6.5 Active pulley components

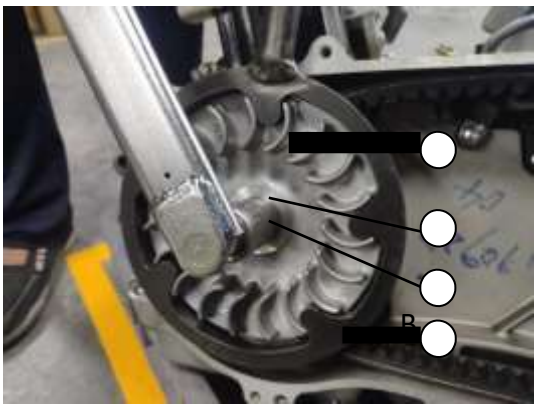
5-60

Remove the active pulley components

·Remove the left crankcase cover.

·Install the stop rotation fixture A, remove the drive pulley mounting nut B and bushing C.

·Remove the sliding drive disc D.



A

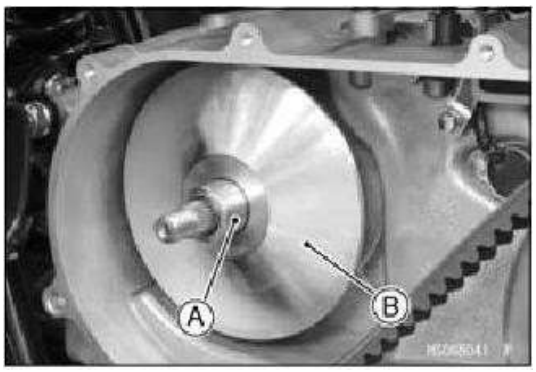
Tools - Stop rotation tooling.

·Disassembly：

Bushing A

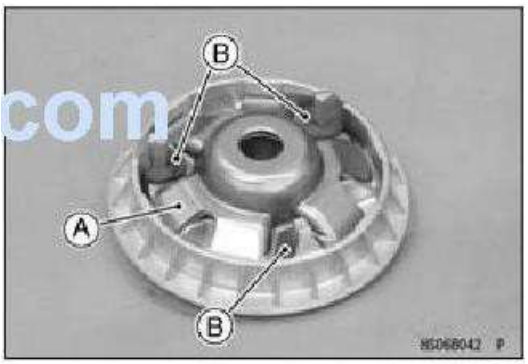
Drive disc combination

B



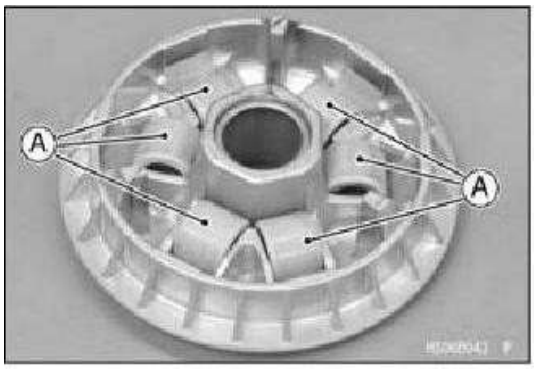
·Disassembly：

Slope plate A and conical sleeve B

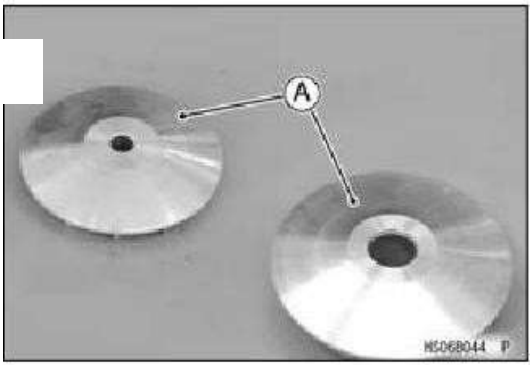


·Disassembly：

Roller A



Check the active pulley components

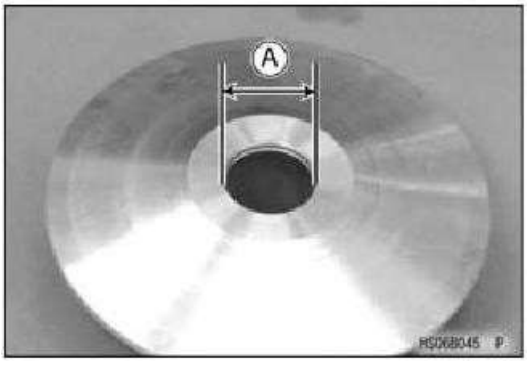


★If the surface A of the driving pulley is damaged, the sliding drive plate and/or drive plate should be replaced.

★If the installation hole of the drive disc is damaged or worn, please replace it.

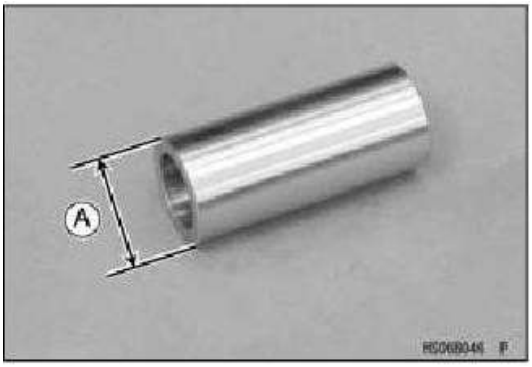
·Drive disc installation hole aperture A

Standard: 28.05-28.1mm



Service limit: 28.2mm

★If the bushing is damaged or worn, please replace it.

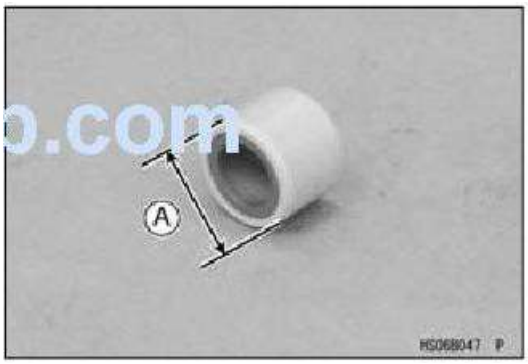


·Outer diameter A of bushing

Standard: 28.02-28.04mm

Service limit: 27.95mm

★If the roller is damaged or worn, please replace it.



·Roller outer diameter A

Standard: 22.9-23.1mm

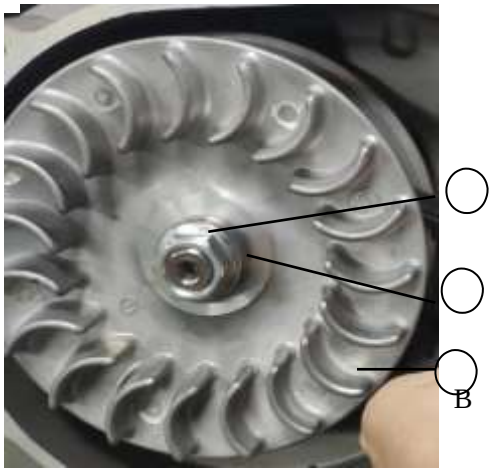
Service limit: 22.8mm

Install the active pulley parts

·Installation and disassembly are exactly the opposite. Pay attention to the following: Clean the following parts with degreasing detergent, and then dry the drive disc cone, crankshaft, and belt with a clean cloth

Warning

These cleaning agents are usually highly flammable and harmful if breathed for a long time. Be sure to pay attention to the manufacturer's warning.



·When installing sliding drive plate A, press the sliding drive plate tightly to move the belt

outward to the lowest position, and then install bushing B. Apply a small amount of oil to the threads of nut C before assembly.

·Install the stop fixture and tighten the pulley nut.

Tightening torque of the driving pulley nut: 93-97N · m.

Tools - Stop rotation tooling.

5.6.6 Driven pulley components

Remove the driven pulley components

·Disassembly：

Left crankcase cover

Active pulley components

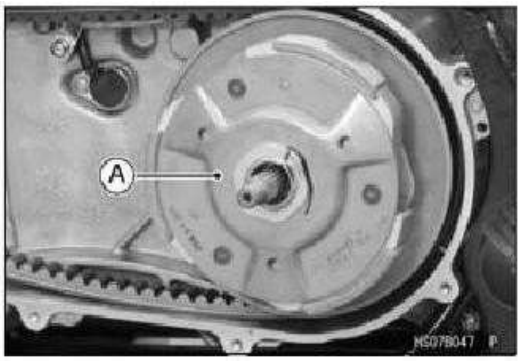
·Install the stop fixture A and remove the driven pulley mounting nut B.

Tools - Stop rotation tooling.

· Remove bushing C and clutch outer plate D.

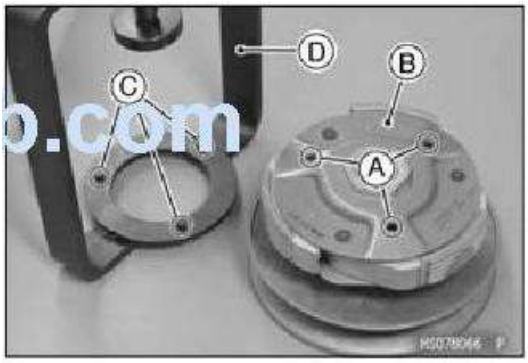
· Disassembly:

Driven pulley component A



Disassemble the driven pulley component assembly

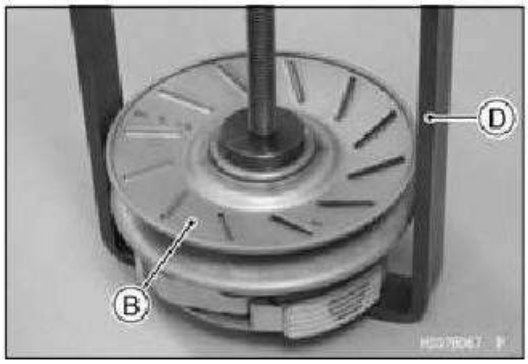
Attention
Be sure to use a clutch spring compressor to avoid damage to the compression spring.



·Fix the hole A on the driven pulley component assembly B onto the pin C of the clutch spring compression device D

·Fix the driven pulley component assembly and clutch spring compression device.

Tool - Clutch spring compression device.



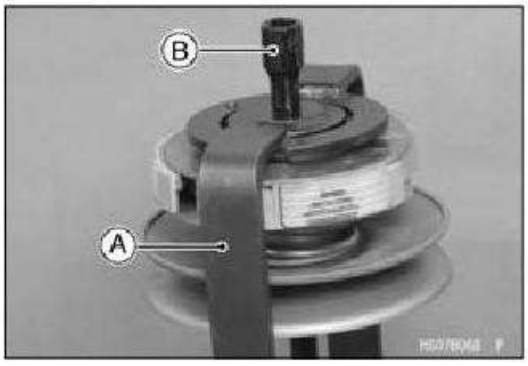
5-64

·Clamp the clutch spring compression device A onto a vice.

·Using a 39 mm hex nut B wrench, remove the clutch driven plate nut.

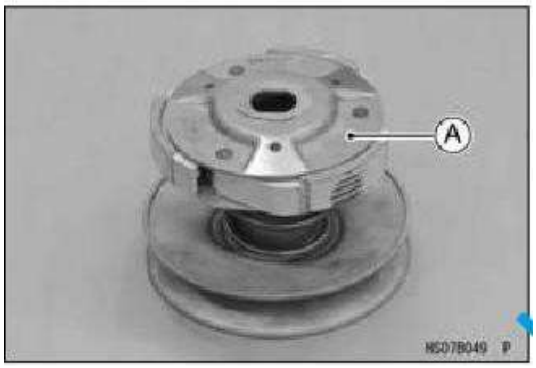
Tool - Clutch spring compression device.

·Release the clutch spring compression device and remove the driven pulley



component assembly.

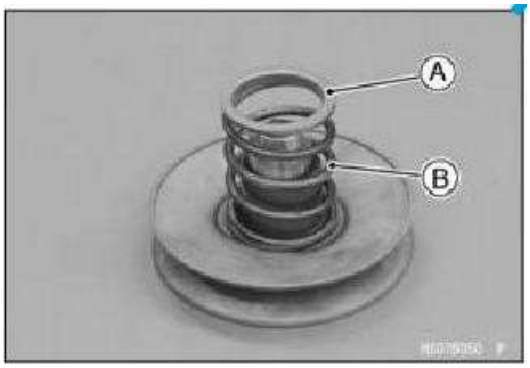
·Remove clutch A.



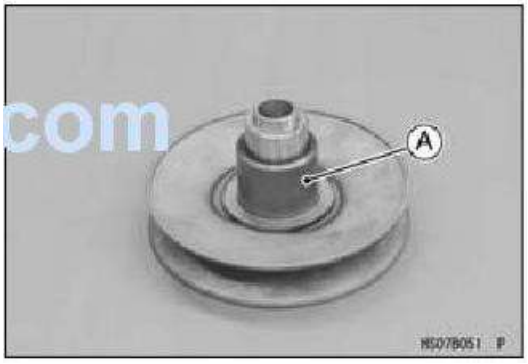
·Disassembly：

Spring seat A

Pressure spring B



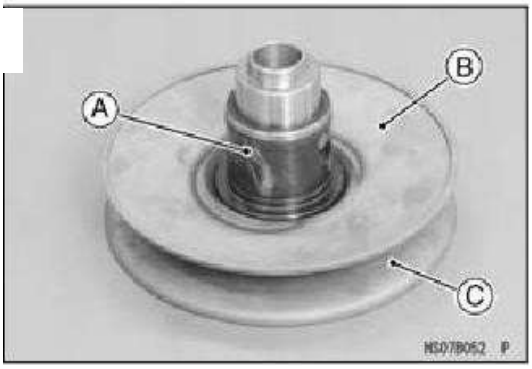
·Remove bushing A.



·Wipe off the grease.

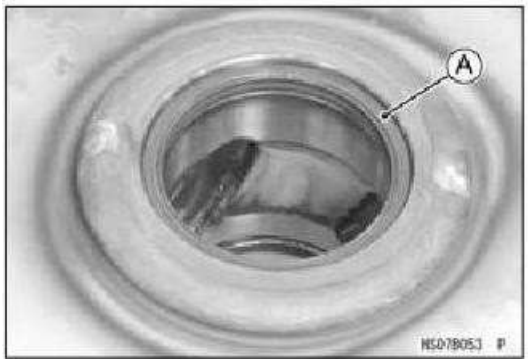
·Remove the pin shaft and locating pin A.

·Remove the driven sliding plate C from the driven fixed plate B



·Disassembly：

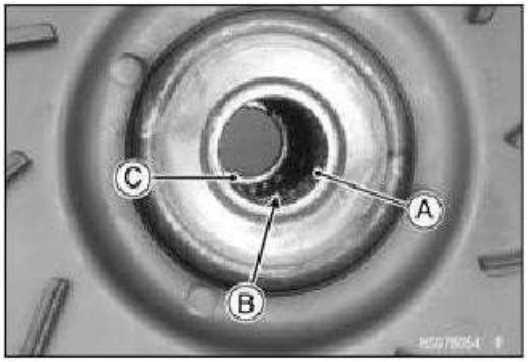
Oil seal A



·Remove needle bearing A.

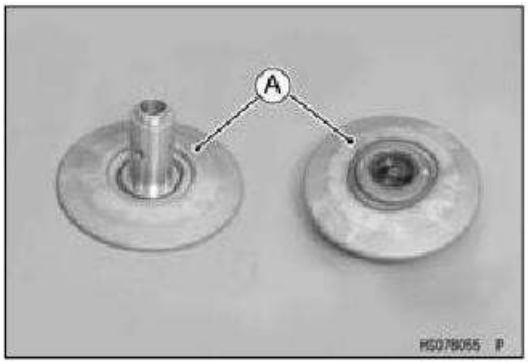
·Remove the circlip B and outer bearing C.

Tool - Internal circlip pliers.



Inspect the driven pulley components

★If surface A of the drive disc is damaged, please replace the driven sliding disc and/or the driven fixed disc.



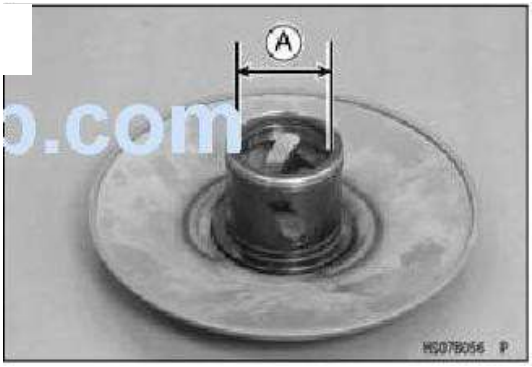
★If the driven sliding disc is damaged or worn, please replace it.

·Driven sliding plate installation hole aperture A

Standard: 41-41.025mm

Service limit: 41.06mm

5-66

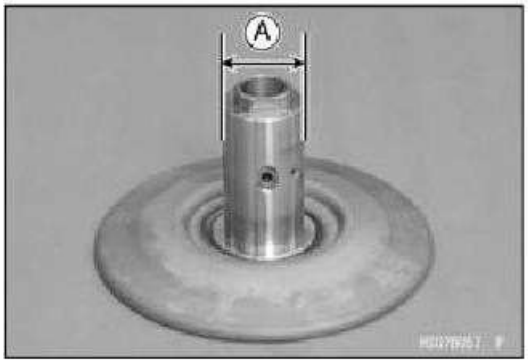


★If the driven fixed plate assembly is damaged or worn, please replace it.

·Driven fixed shaft diameter A

Standard: 40.965-40.985mm

Service limit: 40.94mm

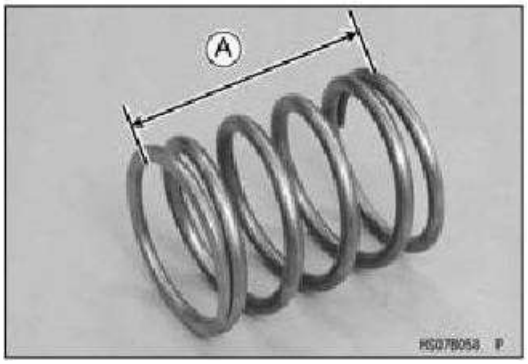


★If the pressure spring is damaged or worn, please replace it.

·Free length A of pressure spring

Service limit: 131mm

★If the spring coil is twisted, please replace it.



Install the driven pulley component assembly

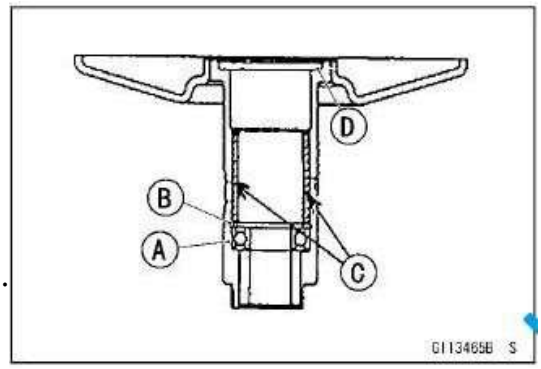
·Apply lubricating oil to outer bearing A.

·Press the new outer shaft under pressure into the driven fixed plate, with the sealing face facing upwards.

·Replace the original circlip with a new circlip B.

Tool - Internal circlip pliers.

·Apply lubricating grease around the driven fixed shaft hole C.



Attention

Fill the bearing cavity with heat-resistant 250 ℃ lubricating grease.

·Press a new needle bearing into the driven fixed plate.

Tool - bearing pressure head.

·Clean the grease and dirt from the driven sliding plate and the driven fixed plate. Then dry with a clean cloth.

Attention
Be sure to clean the grease on the drive disc.

·Install the compression spring and spring seat.

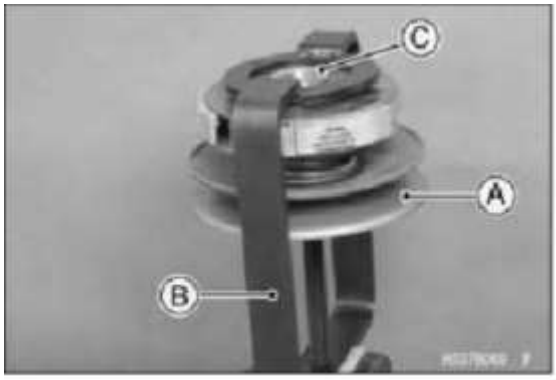
·Align plane B of clutch drive plate A with plane D of driven fixed plate C.

Attention
Be sure to use a clutch spring compressor to avoid damage to the compression spring.

·Install hole A of the driven pulley comp 5-68 onto the pin of clutch spring compressor B.

·Fix the driven pulley component assembly and clutch spring compressor.

Tool - clutch spring compressor.

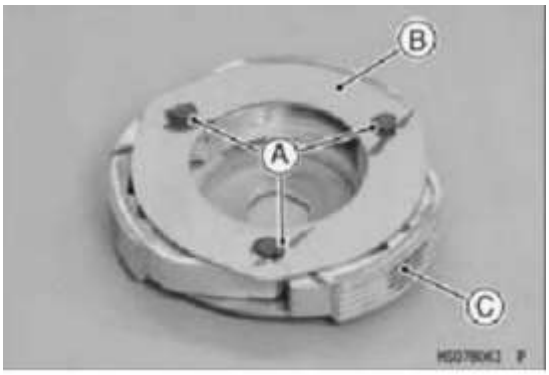


·Place the clutch spring compressor in a vice.

·Temporarily tighten the clutch driven plate nut C.

·Use a 39 mm hex nut A wrench to tighten the

Attention
Do not get oil on the clutch shoes.

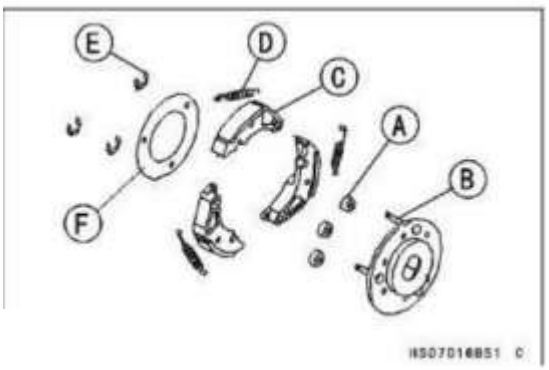


Install the clutch assembly

·Install shock-absorbing rubber A on the drive plate pin shaft B.

·Install clutch shoe C and pressure spring D.

·Replace with a new circlip E.



·Install the fixed disc F and install a ı 5 Engine
in the groove of the drive disc pin shaıt.

Check the clutch

5-69

·Check if the clutch shoes are damaged.

★If there is any damage, please replace it.

·Measure the thickness A of the clutch lining.

★If the lining thickness is worn beyond the service limit, please replace the clutch shoe.

·Clutch lining thickness

Standard: 3.6-4.4mm

5.7 Magneto and starting clutch 5-70

5.7.1 Maintenance information…….5-72
5.7.2 Specifications for magneto and starting clutch……..5-72
5.7.3 Troubleshooting……...5-72
5.7.4 Component position relationship……..5-73
5.7.5 Right crankcase cover…….....5-73
5.7.6 Magneto spindle and trigger…….....5-75

5.7.7 Magneto rotor…….....5-75
5.7.8 Starting clutch…….....5-77

5.7.1 Maintenance information

Overview

- This chapter explains the maintenance of the stator and rotor of a magneto, and all operations do not require the engine to be removed from the frame.
- Inspection of the charging coil of the AC generator.
- Inspection of triggers.
- Maintenance of the starting motor.

5.7.2 Specifications for magneto and starting clutch

Unit：mm

Items	Standard value	Maintenance limit value
Outer diameter of the gear shaft sleeve of the electric disc	42.195-42.208	42.175
Inner diameter of the gear sleeve of the starter disk	25.00-25.027	25.05

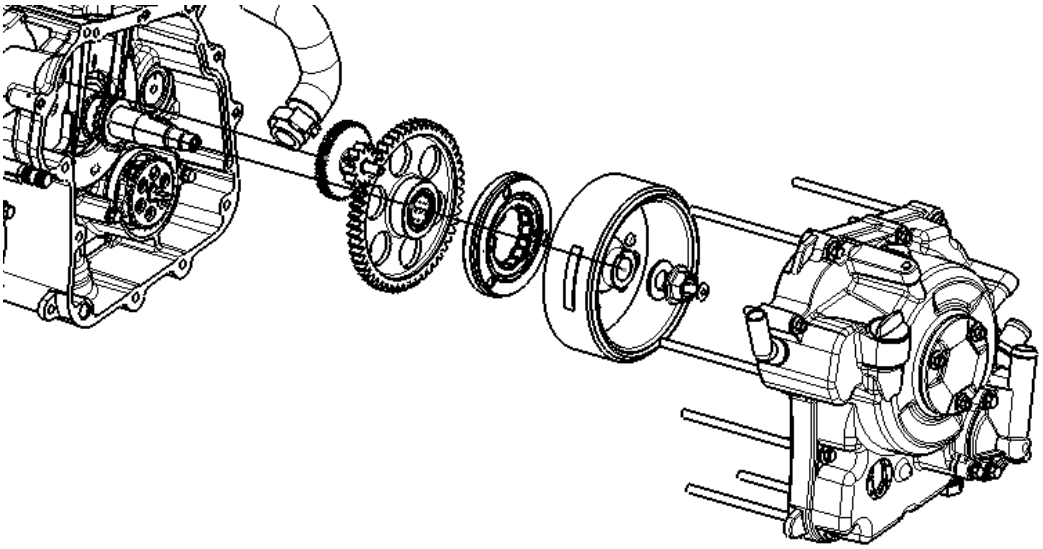
Tool

5.7.3 Troubleshooting

Starting motor rotates, engine does not start

- ●Starting clutch failure
- ●Starting motor dual gear or shaft failure
- ●Starting motor pinion failure or wear
- ●Starter drive gear failure

5.7.4 Component position relationshi 5-72



5.7.5 Right crankcase cover

Disassembly/Installation

Attention：

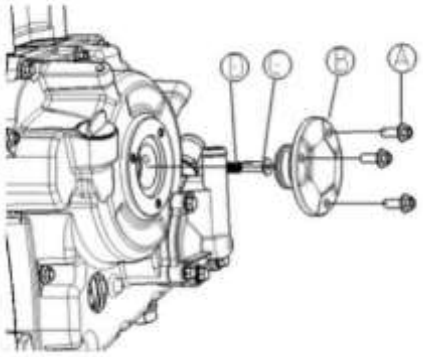
●When removing the left crankcase cover, place a clean oil pan at the bottom of the engine to prevent oil from flowing out. After installation, add the recommended oil to the specified amount.

Place the entire vehicle on a level surface and keep it level.

Remove the following components:

- Right side cover of the entire vehicle
- Magneto, trigger plug

Remove the right decorative cover bolt A, remove the right decorative cover B, take out the oil passage pipe C, press the spring D



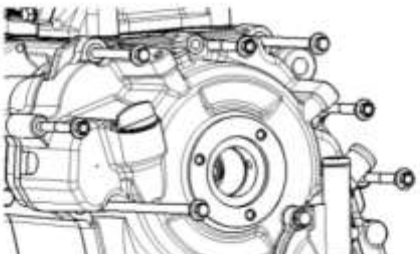
Attention:

●The sealing ring on the right decorative cover should be replaced during reassembly

Loosen the right crankcase cover several diagonal steps.

Attention:

●The right crankcase cover (spindle) bears the magnetic attraction of the rotor, so be careful during disassembly and installation

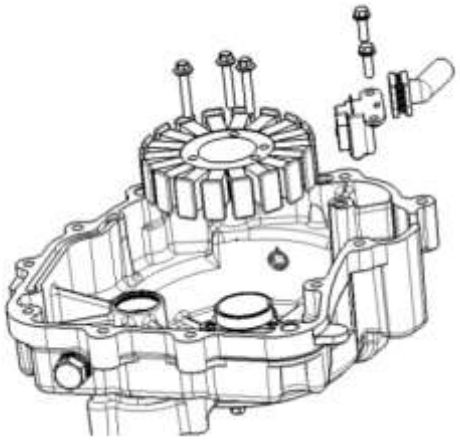


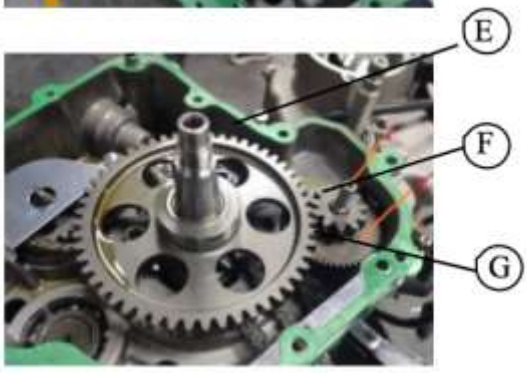
5.7.6 Magneto spindle and trigger 5-74

Disassembly/Installation

Remove the right crankcase cover.

Disassemble and install the spindle/trigger according to the following diagram.





Inspection

Inspect the following components for scratches, damage, abnormal wear, or deformation. If necessary, please replace it.

- Double gear shaft
- Double gears

5.7.8 Starting clutch

5-76

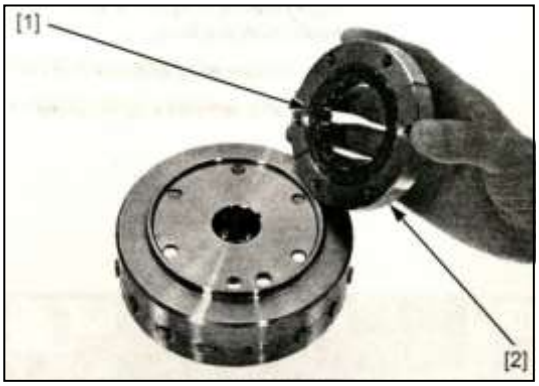
Starting clutch operation inspection

6-27

Remove the rotor.
Check the operability of the starting clutch by rotating the disc gears [1].
Check if the disc gears rotate smoothly clockwise and ensure that there is no counterclockwise rotation.

Disassembly

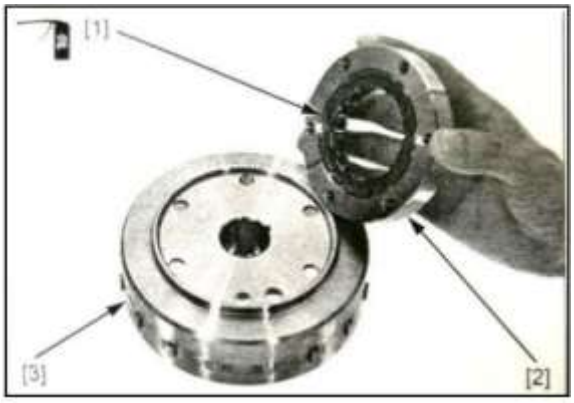
Remove the rotor. Rotate the disc gears clockwise and remove them [1]. Fix the magneto rotor with a magneto retainer [1], and remove the fastening bolts of the starting clutch [2].
Attention: Install the magneto rotor retainer [3] and the fixing block [4] to prevent the rotor from rotating.

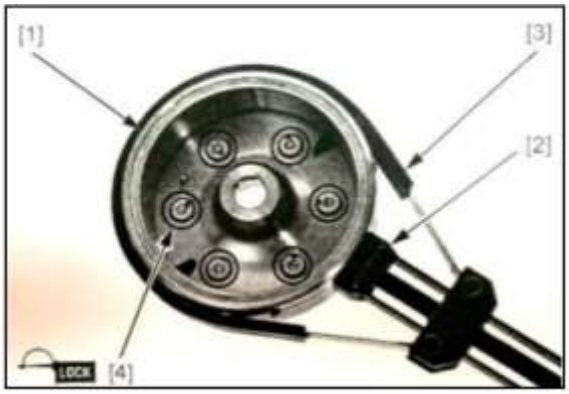


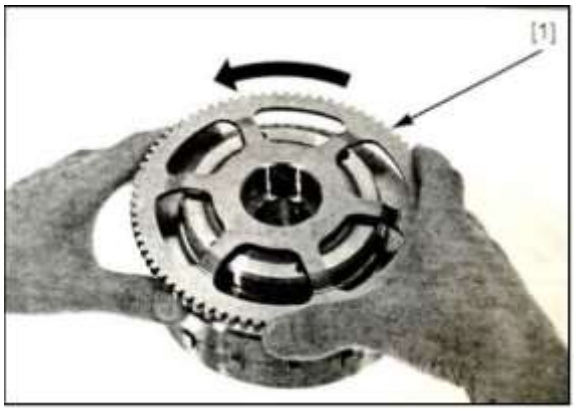
Remove the starting clutch combination.
Remove the starter clutch [2] from the starter clutch housing [1].

Inspection

Inspect the following components for scratches, damage, abnormal wear, or deformation. If necessary, please replace it.
- Disc gears
- Clutch cover







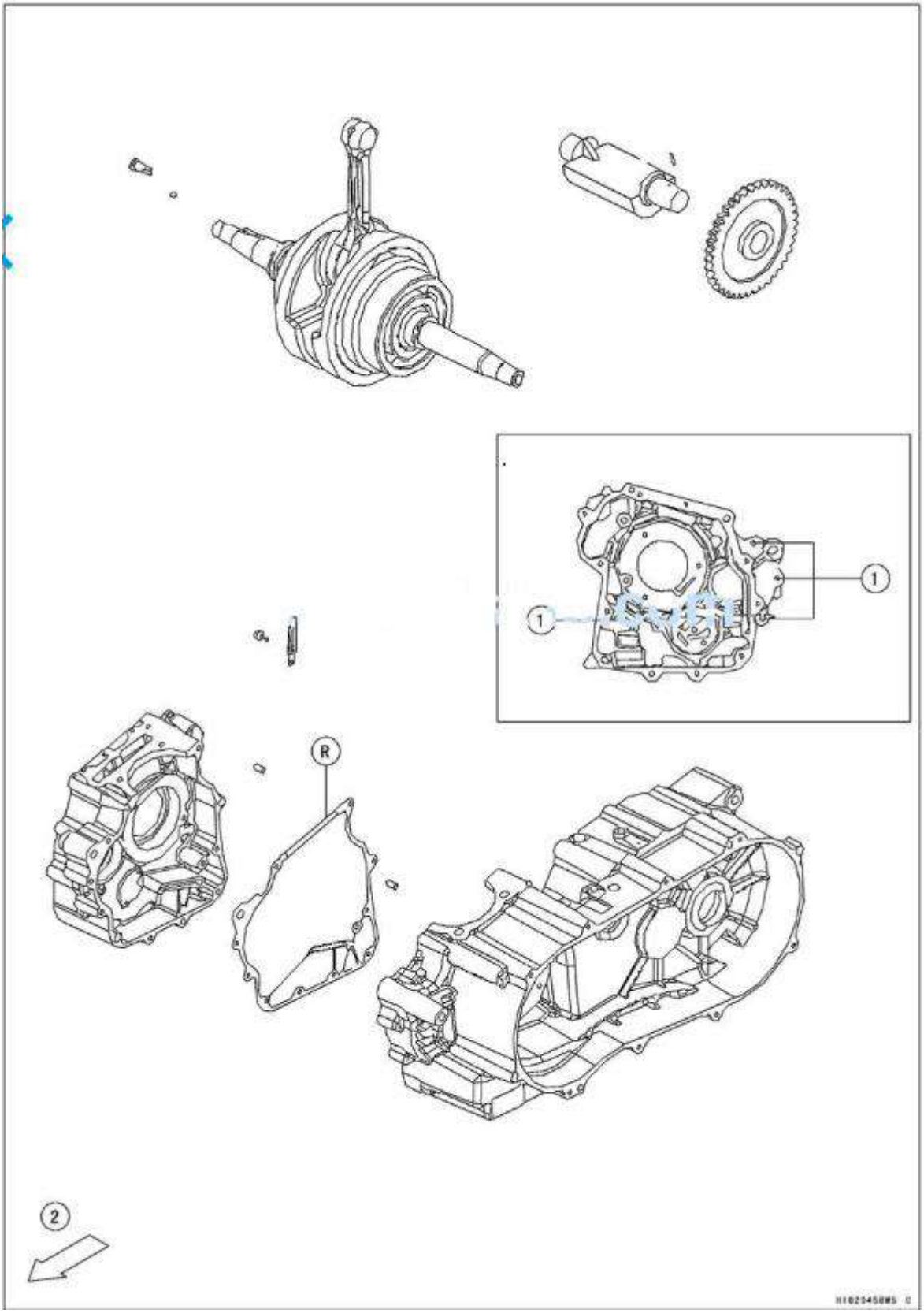
5.8 Crankshaft case/transmission

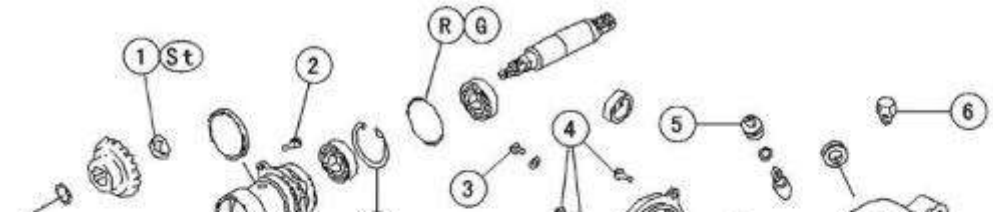
5-78

5.8.1 Explosion view…….....5-80
5.8.2 Fastener torque table…….....5-82

5.8.3 Specifications……....5-83
5.8.4 Special tools…….…….....5-84
5.8.5 Transmission box disassembly…….....5-86
5.8.6 Transmission box assembly…….....5-87
5.8.7 Disassembly of transmission and transmission system……...5-87
5.8.8 Assembly of transmission box secondary shaft components…….....5-89
5.8.9 Assembly of transmission case reverse intermediate shaft components….....5-90
5.8.10 Transmission system assembly…….....5-90
5.8.11 Shift fork shaft runout…….....5-91
5.8.12 Spindle disassembly…….....5-92
5.8.13 Spindle installation……5-92
5.8.14 Disassembly of output shaft components……...5-93
5.8.15 Output shaft assembly……....5-94
5.8.16 Adjustment of transmission shaft bevel gear……5-96
5.8.17 Adjustment of bevel gear clearance……...5-97
5.8.18 Replace rolling and needle roller bearings……5-98
5.8.19 Inspection for wear of rolling and needle bearing……..5-98
5.8.20 Oil seal inspection…….....5-98

5.8.1 Explosion view


1
1
R
2


1 St
2
R G
3
4
5
6

5.8.2 Fastener torque table

Serial number	Fastener	Torque	Notes
		N.m	
1	Driving bevel gear fastening nut	98～102	St
2	Rear drive output shaft end cover bolt	8～12	
3	Crankcase oil level check bolt	8～12	
4	Transmission case cover bolts	8～12	
5	Speed sensor bracket	8～12	
6	Transmission oil injection bolt	20～25	
7	Transmission box bolts	26～32	
8	Transmission oil drain screw plug	8～12	
9	Driven bevel gear fastening nut	98～102	St
10	Driven pulley bearing fixing bolt	8～12	L
	[illegible]	25～30	

Front

G: Apply lubricating oil

L: Apply a non permanent locking agent

R: Replace parts

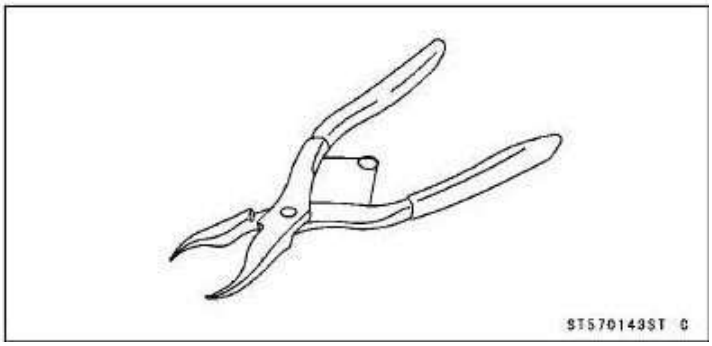
St: Lock the fasteners to prevent loosening

5.8.3 Specifications

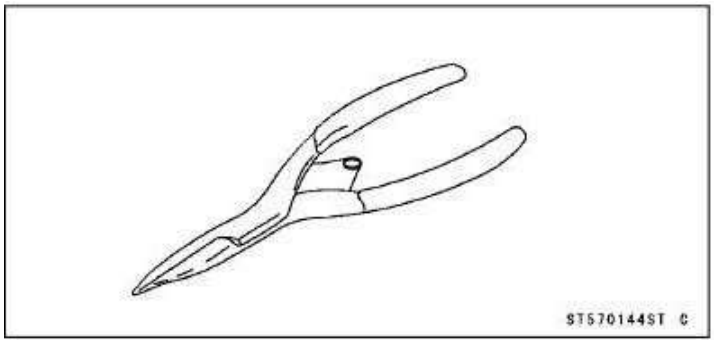
Items	Standards	Service limit
Crankshaft Crankshaft runout Connecting rod small end diameter Connecting rod big end side clearance Crank width	 0.03eyang 17.013~17.025 0.15~0.4mm	 0.1mm 17.06mm 0.6mm
Crankshaft bearing Axial Radial		 0.2mm 0.05mm
Transmission lubricating oil Viscosity Oil level Capacity	SAE80W/90 Transmission case cover oil level observation bolt inspection 0.6L	
Transmission Driven bevel gear backlash	 0.03~0.15mm	Greater than 0.15mm Less than 0.03mm

5.8.4 Special tools

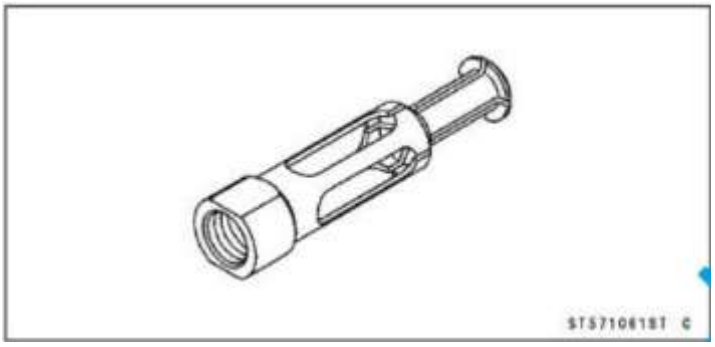
Internal circlip pliers



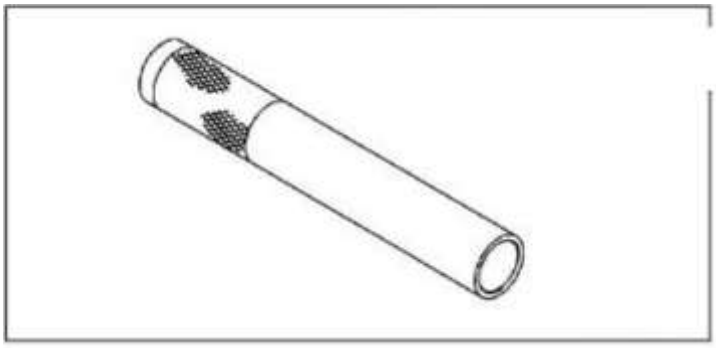
External circlip pliers

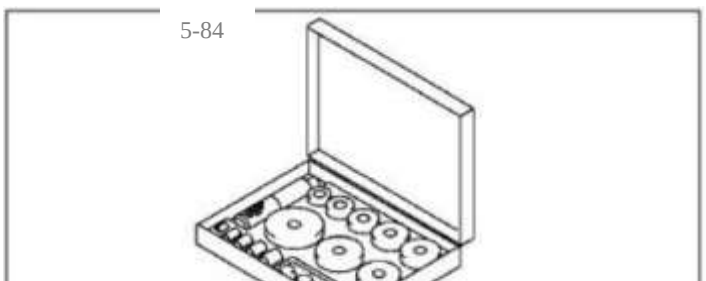


Oil seal and bearing remover, adapter A:



Bearing drive tool set

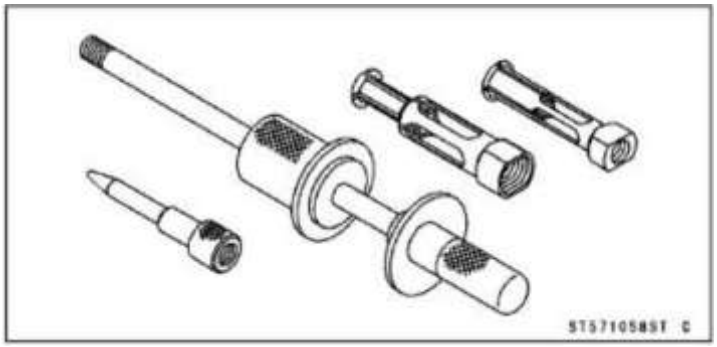




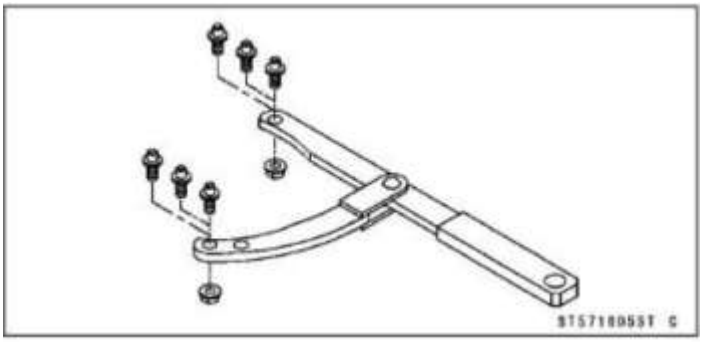
Bearing drive, 32

Bearing drive adapter, 42

Oil seal and bearing remover



Flywheel rotor retainer

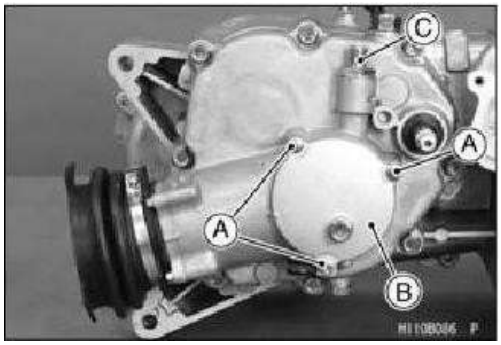


5.8.5 Transmission box disassembly

●Disassembly

Transmission case cover bolt A.

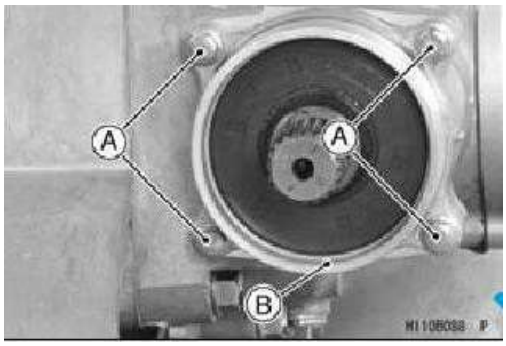
Transmission case cover B.



●Demolition:

Rear drive output shaft end cover bolt A.

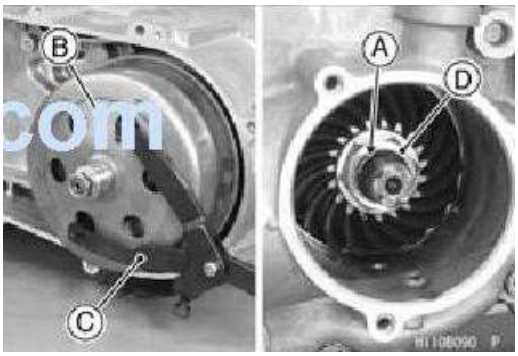
Rear drive output shaft end cover B.



●Flatten the threaded part A of the bent nut.

●Fix the clutch housing B with flywheel retainer C and remove the output drive bevel gear nut D.

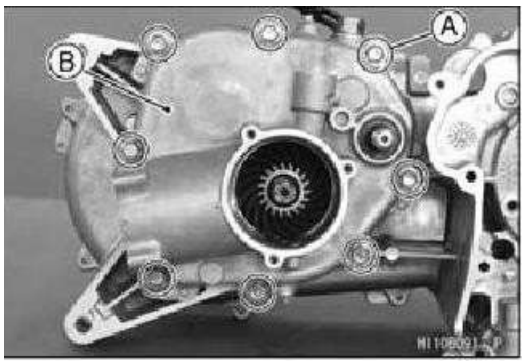
Special tools - flywheel and pulley frame



●Demolition:

Transmission box bolt A.

Transmission box B.



5.8.6 Transmission box assembly

5-86

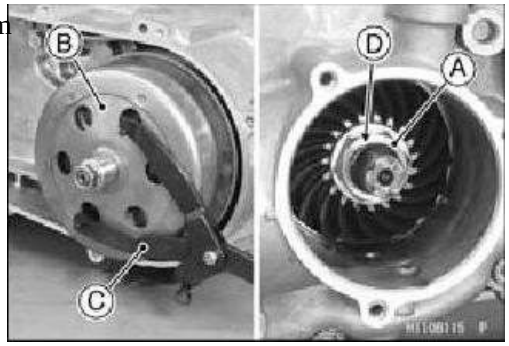
●Install the transmission box

●Ensure: Torque - Transmission box bolt torque: 26N. m

●Install the gasket and output drive bevel gear.

●Fix clutch B with flywheel and pulley bracket holder C, tighten output drive bevel gear nut A, torque output drive bevel gear nut: 98~102N. m

●Bend the locking point D of the nut



●Install the rear drive output shaft end cover.

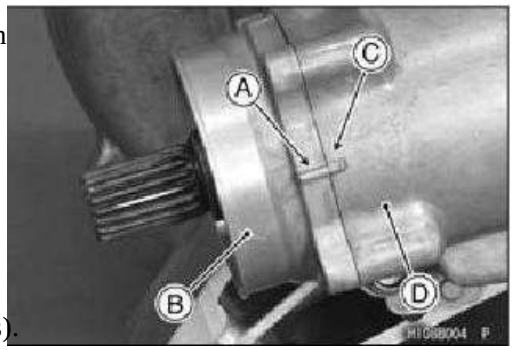
●Align A on the rear drive output shaft end cover B with C on the transmission box D.

●Ensure: torque - rear drive output shaft end cover bolt: 8-12N. m

●Install the rear drive output shaft end cover.

●Ensure: torque - rear drive output shaft end cover bolt: 8-12N. m

●Install the removed components (see relevant chapters).



5.8.7 Disassembly of transmission and transmission system

●Demolition:

Transmission box

Variable speed drum positioning bolt A, washer, spring, and shift fork shaft B, shift fork C.

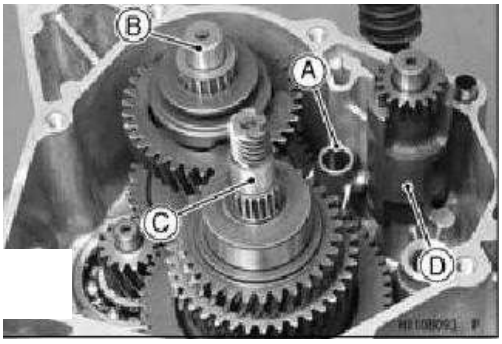
●Demolition:

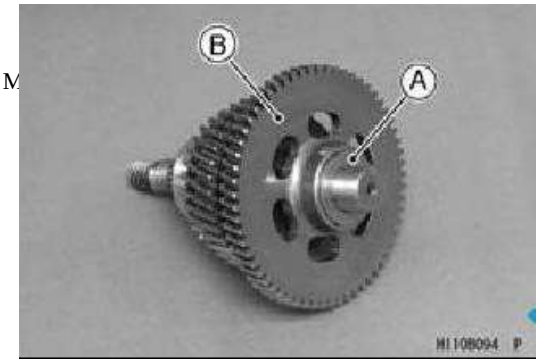
Shift fork A.

Intermediate shaft B.

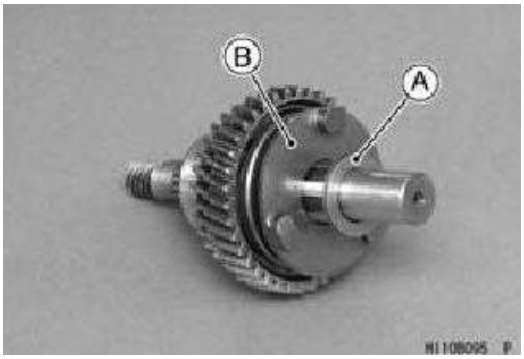
Secondary axis C.

Variable speed drum D.

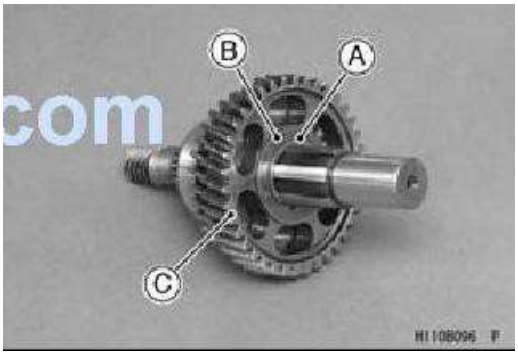




●Demolition:
Shoulder retaining ring(φ20 xφ33 x 1.0) A.
Reverse gear B.



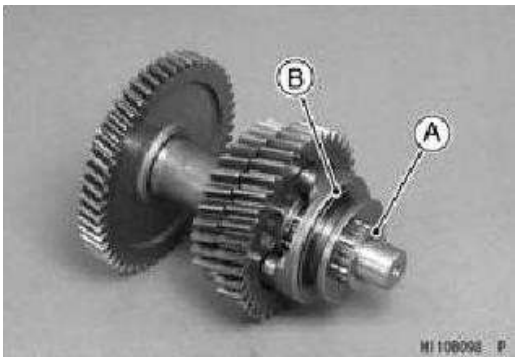
●Demolition:
Shoulder retaining ring(φ20 xφ33 x 3.0) A.
Shift shifting wheelB.



●Demolition
Elastic retaining ringA.
Special tool - external expanding
circlip pliers

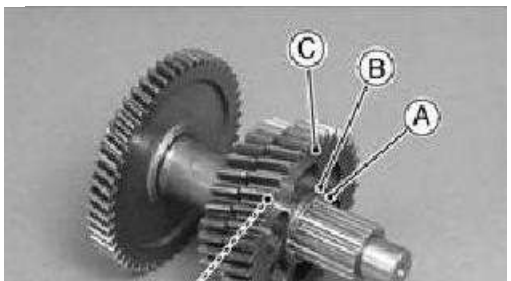
●Demolition
Shoulder retaining ring B.
Low speed gearC.

●Demolition
Flat washer(φ22 xφ38 x 1.0) A.



●Demolition:
Shoulder retaining ring(φ17 xφ26 x 1.0) [A]
Shift shifting wheel B.

●Demolition:
Circlip A.



Outer ring pliers

●Demolition:

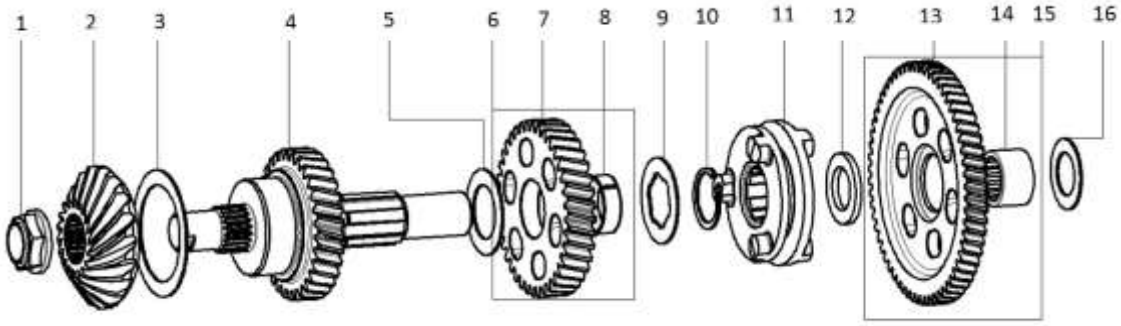
Shoulder retaining ring B.

High speed gear C.

Spline washer D.

5.8.8 Assembly of transmission box secondary shaft components

●Assemble the secondary shaft components as shown in the figure.

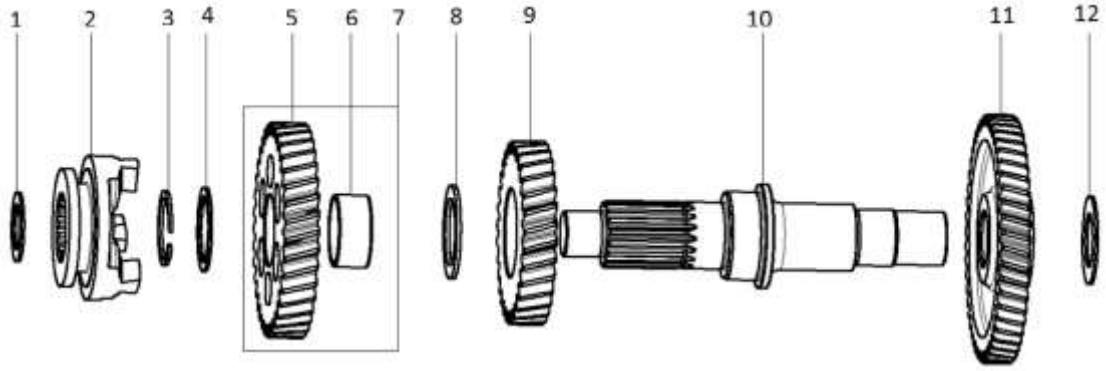


1. All metal hexagonal flange lock nut
2. Driving bevel gear
3. Reverse driven wheel
4. Secondary shaft
5. Shoulder retaining ring（φ25×φ40×1.0)
6. Forward low-range driven gear combination
7. Forward low gear driven gear
8. Bushing
9. Spline washer
10. Elastic retainer ring（φ25×1.2)
11. Shift shifting wheel
12. Shoulder retaining ring（φ20 xφ33×3.0)
13. Reverse driven wheel
14. Bearing HK202616
15. Reverse gear driven wheel combination
16. Shoulder retaining ring（φ20 xφ33×1.0)

- Special tool - external expanding circlip pliers

5.8.9 Assembly of transmission case reverse intermediate shaft components

Assemble the reverse intermediate shaft co 5-89 as shown in the figure



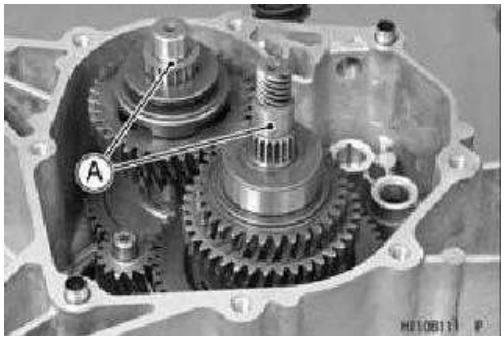
1. Shoulder retaining ring(φ17×φ26×1.0)
2. Shift shifting wheel
3. Elastic retainer ring(φ25×1.2)
4. Spline washer
5. Forward gear high-end driving gear
6. Bushing(φ25×φ27×12.5,copper sleeve)
7. Forward gear high-end driving gear
8. Shoulder retaining ring(φ25×φ35×1.5)
9. Forward low gear driving gear
10. Reverse intermediate shaft
11. Forward driven wheel
12. Shoulder retaining ring(φ20 xφ38×1.0)

- Special tool - external expanding circlip pliers

5.8.10 Transmission system assembly

●Assemble reverse intermediate shaft component A and secondary shaft component B.

●Install the reverse intermediate shaft component and auxiliary shaft component A as a group into the crankshaft box.
Attention: Confirm that the shoulder retaining ring has not fallen off



●Install shift fork A and shift drum B as show 5-90 the figure.

●Install the fork A as shown in the figure, and then

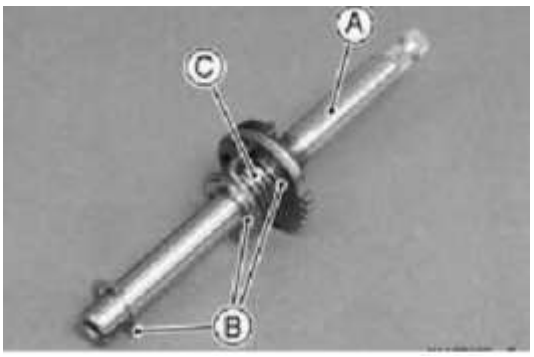
●Visually inspect the condition of the shift shaft [A], clamp [B], and spring [C]

*★If the shift shaft is excessively bent or damaged, a new shift shaft should be replaced.

★If the snap ring or spring is damaged or excessively worn, a new snap ring or spring shift fork shaft should be replaced for inspection

●Visually inspect the shift fork shaft

★When the shift fork shaft is bent, replace it with a



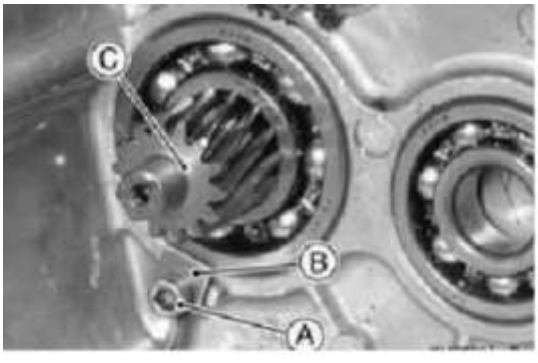
●Installation:

Spindle bearing pressure plate B

●Use non permanent tightening adhesive on the fixed bolt A of the transmission bearing

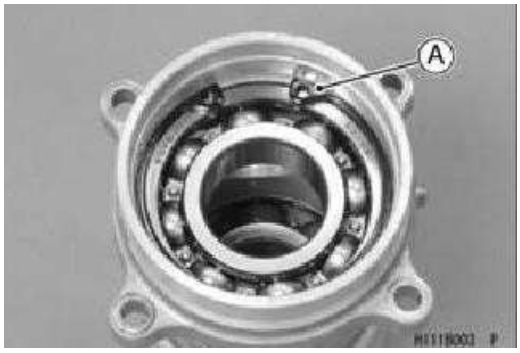
●Ensure that:

Bearing fixing bolt torque: **8-12 N.m**



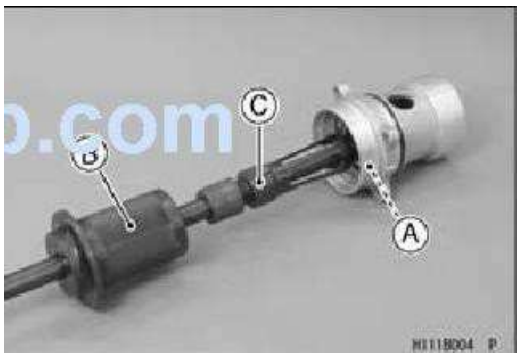
- Remove the oil seal [A].

- Remove the elastic retaining ring A
  Tools - Internal circlip pliers



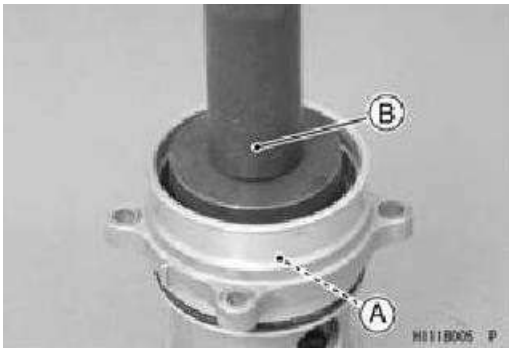
- Remove bearing A

Tools - bearing remover B, adapters A, C.

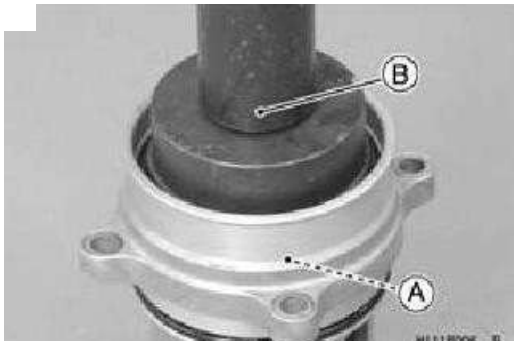


5.8.15 Output shaft assembly

- Replace bearing A with a new one.
- Press the shaft to the bottom
- Replace the clamp with a new one
- Install a new circlip
  Tool - bearing assembly tool B
  Internal expanding circlip pliers

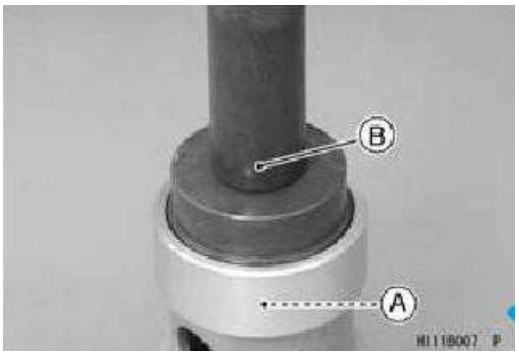


- Replace with a new oil seal A.

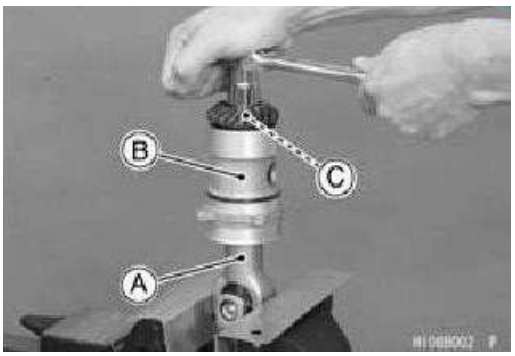


- Press the oil seal into the bottom.
  Special tool - oil seal pressing tool B.

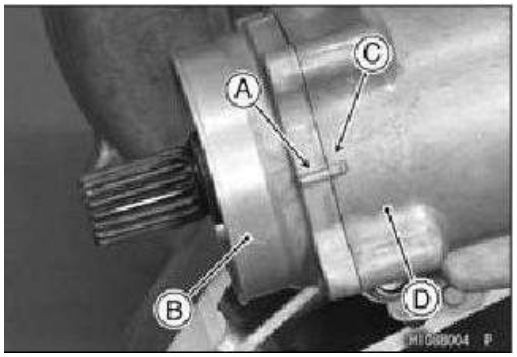
- Replace with a new bearing A.
- Press the shaft to the bottom
  Special tool - bearing press-in tool B.
- Replace with a new circlip
- Install the elastic retainer ring.
  Special tool - inner ring pliers
- Install the transmission shaft.



- Install the universal joint A onto the rear drive output shaft end cover B.
  Clamp the universal joint with a vice
- Torque output drive bevel gear nut C: **98~102 N.m**
- Bend one pointed end of the nut to lock it.

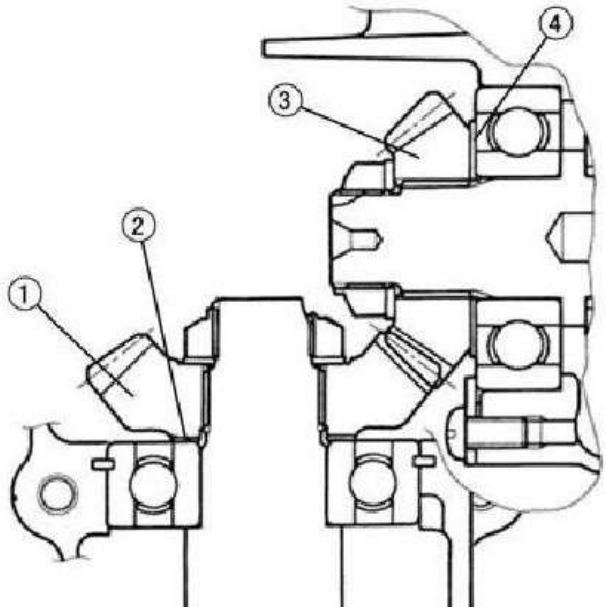


- Align the mark A on the rear drive output shaft end cover B with the mark C on the transmission D.
- Ensure that:
  Torque - Output shaft end cover bolt: **8-12 N.m.**



5.8.16 Adjustment of transmission shaft bevel gear

- The backlash and gear contact mode of helical gears must be correct and appropriate to prevent noise and damage to the gears.
- After replacing any components related to the gear back, it is necessary to inspect and clean the gear back and foreign objects in contact with the gear surface of the bevel gear. Firstly, adjust the backlash, and then replace the gasket to ensure normal gear contact.



1. Driven bevel gear
2. Driven bevel gear gasket
3. Driving bevel gear
4. Driving bevel gear gasket

Driving bevel gear gasket

Thickness	Mark
0.90	A
1.00	B
1.10	C
1.20	D
1.30	E

Driven bevel gear gasket

Thickness	Mark
0.90	A
1.00	B
1.10	C
1.20	D
1.30	E

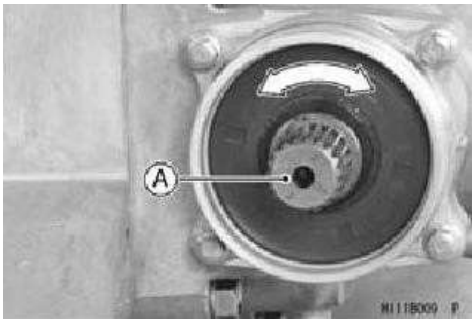
5.8.17 Adjustment of bevel gear clea 5-96

●Remove the transmission case cover.

●Clean any dirt and oil on the output drive bevel gear gears.
●As shown in the figure, set a dial gauge A on the driven bevel gear B.

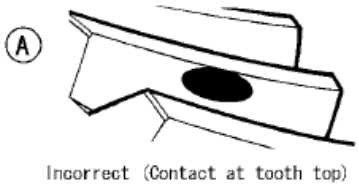
●Measure the backlash by rotating the driven bevel gear shaft A in each direction, and read the total backlash on the dial

Driven bevel gear backlash standard: 0.03~0.15 mm.

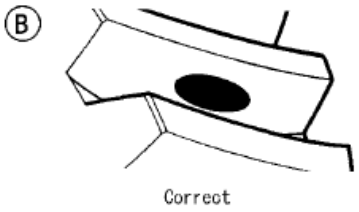


★If the backlash does not meet the specifications, the gasket must be replaced and the backlash immediately rechecked (see gear contact adjustment).
★If the backlash is too small (less than 0.03 mm), replace the driven bevel gear gasket with a thinner bevel gear gasket.
★If the backlash is too large (exceeding 0.15 mm), replace the driven bevel gear gasket with a thicker gasket.

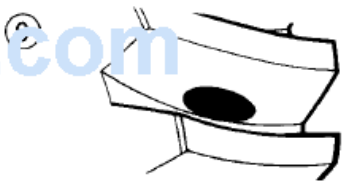
Perform gear contact adjustment and clearance adjustment. The gear contact must be checked. Pay attention to the following procedures



●Dismantle the driven bevel gear.
●Clean and degrease the gears of the driving bevel gear and the driven bevel gear. Apply a layer of red lead to several gears of the driven bevel gear.
●Install the driven bevel gear.
●Rotate the driven bevel gear a few revolutions
●Disassemble the driven bevel gear and check the coating marks on the transmission bevel gear. The gear contact mode should be as shown in Figures A, B, and C.



★If the gear surface contact is found to be correct (Example B, complete the installation).
★If incorrect gear contact marks are found (such as A and C), the thickness of the gasket between the driving bevel gear and the driven bevel gear must be changed, and the gear contact marks must be rechecked until they are correct.



Attention

Adjust until they are all within specifications. If correct gear contact cannot be maintained when adjusting the backlash, replace the drive and driven bevel gears.

Gear contact	Adjustment of the driving bevel gear gasket	Driven bevel gear gasket adjustment
Gear top contact A	Increase gasket t 5-97	Increase gasket thickness

Gear heel contact C	Reduce gasket thickness	Reduce gasket thickness

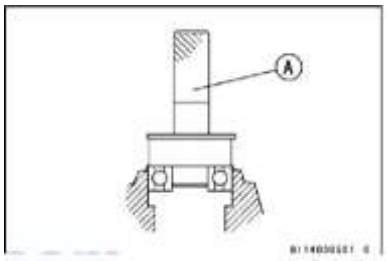
5.8.18 Replace rolling and needle roller bearings

Attention please
Do not disassemble rolling or needle roller bearings unless necessary. Removing them may damage them

Use a press or puller to remove the rolling bearings and/or needle bearings. Please note that in the absence of the aforementioned tools. Heating the casing to a maximum temperature of about 93 °C can achieve satisfactory results, and tapping the bearing may allow for removal

Attention please
Do not use a unipolar heat source to heat the casing. This will cause the box to twist. Immerse the box in oil and heat the oil.

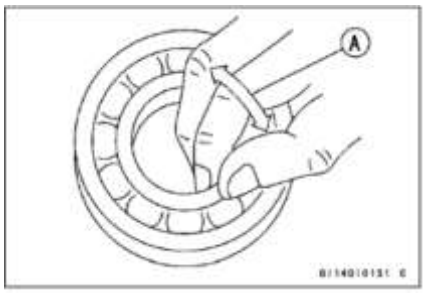
●**Using a press and bearing drive device [A], install a new rolling bearing until it stops at the bottom of the bearing seat. Three new needle roller bearings must be pressed into the crankcase so that the end face is flush with the end face of the hole.**
Special tool - bearing installation tool



5.8.19 Inspection for wear of rolling and needle bearing

Attention please
Do not remove the bearings for inspection. Remove them may damage them

●Check the ball bearing.
Due to the close tolerance of ball bearings, wear must be judged by sensation rather than measurement. Clean each bearing with a high flash point solvent. Dry (do not rotate when the bearing is dry), then oil it with engine oil.
Rotate bearing A by hand to check its condition.
★If the bearing has noise, unstable rotation, or any rough spots, replace it



●Inspect needle roller bearings. Most needle roller bearings have very little wear on their rollers, making it difficult to measure wear. Check bearings for wear, color changes, or other damage, rather than measuring.
★If there is any doubt about the condition of the needle bearing, it should be replaced.

5.8.20 Oil seal inspection

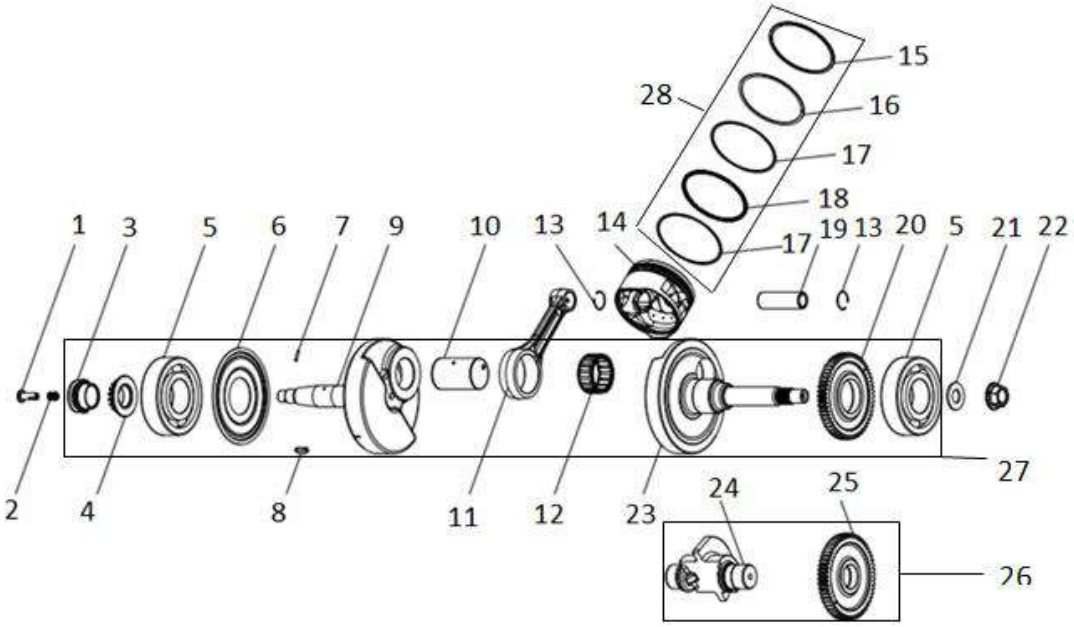
● Check the oil seal
★ If the lip is deformed, discolored (indicating that the rubber has deteriorated), hardened or damaged, replace it.

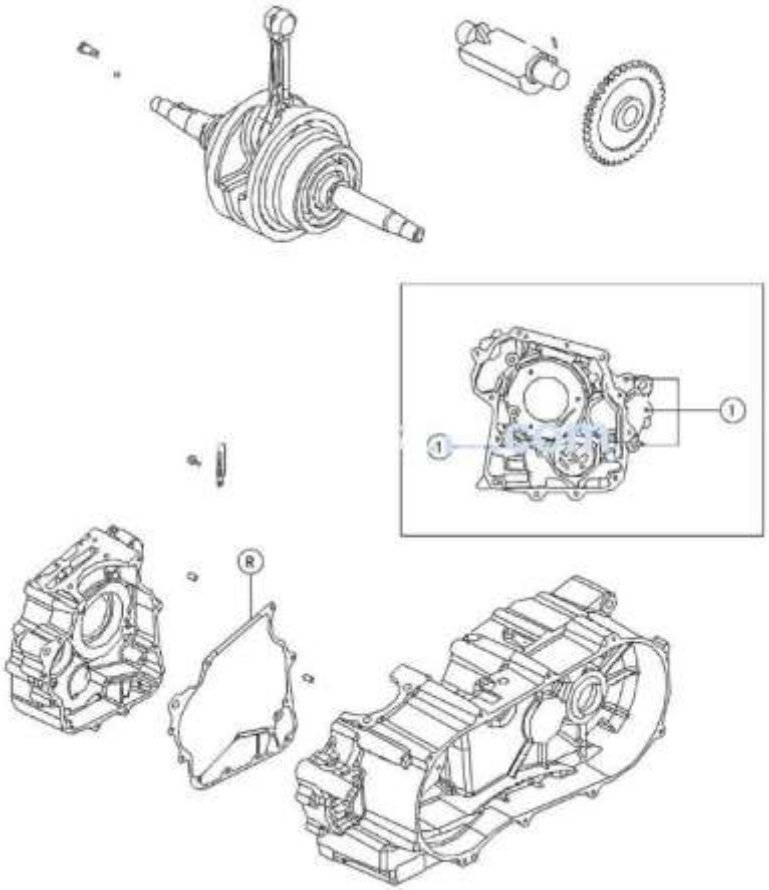
5.9 Crankshaft components, balanc 5-98 piston, cylinder block

5.9.1 Explosion view…….....5-100
5.9.2 Cylinder block disassembly…….....5-101
5.9.3 Piston disassembly……..5-101
5.9.4 Cylinder block wear inspection…….....5-102
5.9.5 Piston wear inspection…….....5-102
5.9.6 Clearance inspection between piston and cylinder block…….……5-102
5.9.7 Wear inspection for piston ring and piston ring groove…….....5-103
5.9.8 Piston ring end clearance inspection…….……5-103
5.9.9 Wear inspection of piston, piston pin, and connecting rod hole……5-103
5.9.10 Installation of cylinder block and piston…….....5-104
5.9.11 Crankcase disassembly…….....5-105
5.9.12 Crankshaft inspection……...5-106
5.9.13 Balance shaft assembly…….....5-108
5.9.14 Crankcase assembly…….....5-108

5.9.1 Explosion view

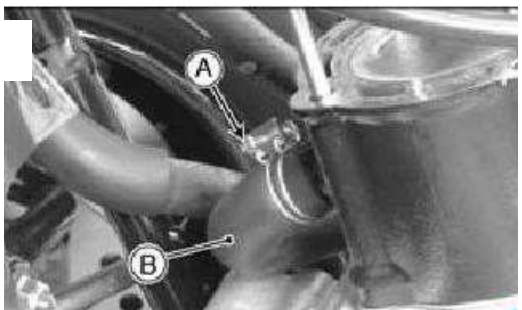
Crank connecting rod assembly





5.9.2 Cylinder block disassembly

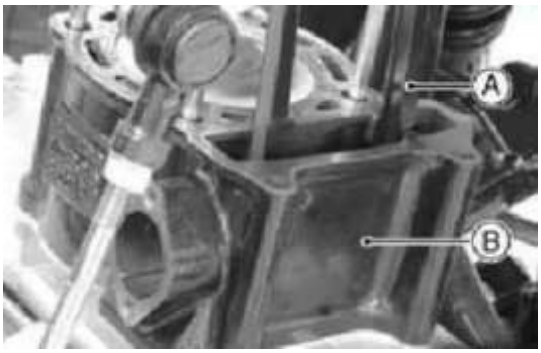
5-100



6-51

- Demolition:
  Cylinder head components.
  Clamp A.
  Water pipe B.

- Demolition:
  Chain tensioning plate A.
  Cylinder block B.



Attention please

When disassembling the chain tensioning plate and cylinder, pull the timing chain upwards and keep it tight after disassembly. Without a chain tensioning plate, the timing chain will detach from the crankshaft sprocket

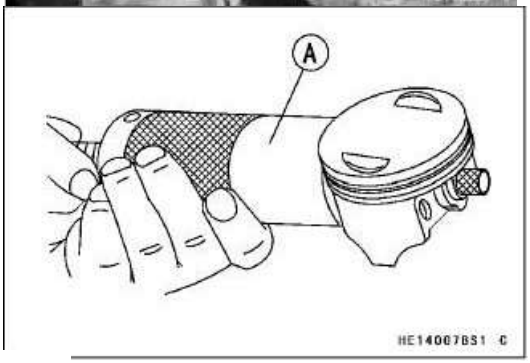
5.9.3 Piston disassembly

- Remove the cylinder block.
- Place a clean cloth under the piston and remove the piston pin wire retainer [A]

Attention please

Do not reuse the piston pin wire retainer. Removal may weaken and deform them, and they may fall off and scratch the cylinder walls

- Use the piston pin puller assembly A, remove the piston pin
  Special tool - piston pin puller assembly
- Dismantle the piston



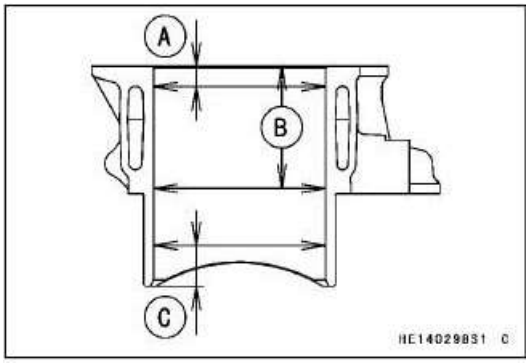
- Carefully open one ring of piston ring with

thumb, then push the other side of piston ring up A, and take down one ring of piston ring.

- Use your thumb to remove the second ring and scraper ring in the same way.

5.9.4 Cylinder block wear inspection

- Due to the different wear of the cylinder in different directions, please take measurements on the left, right, and front and back at the three positions shown in the figure (a total of six measurements).



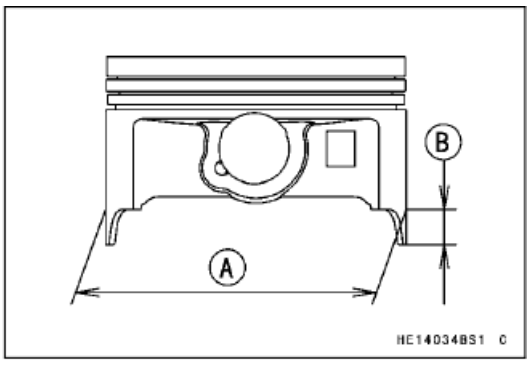
★ If the inner diameter measurement of any part of the cylinder exceeds the service limit, it should be replaced

10mm A
60mm B
20mm C

Cylinder body diameter standard: 72.73~72.74mm
Service limit: 72.8 mm

5.9.5 Piston wear inspection

- Measure the outer diameter of the piston [A] from the bottom of the piston up 10mm (0.4 in.) [B] , perpendicular to the direction of the piston [C] pin hole



★If the measured value exceeds the range of use, replace the piston with a new one
Piston diameter standard: 72.675~72.685mm.

Service limit: 72.6 mm.

5.9.6 Clearance inspection between piston and cylinder block

- Cylinder diameter minus piston diameter to get piston/cylinder clearance
- Piston/cylinder clearance standard: 0.045-0.065mm.

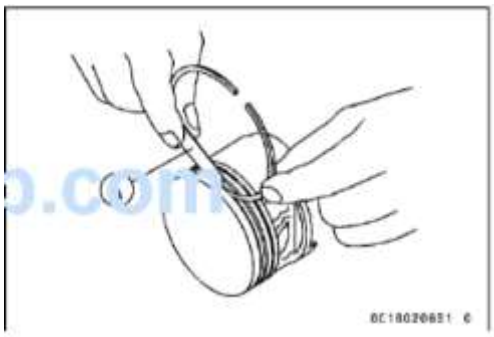
★ If the clearance exceeds the service limit, check the piston and cylinder.

5.9.7 Wear inspection for piston riniston ring groove

- Check the wear of piston ring and ring groove

★ The piston ring should be completely parallel to the groove surface. If not, replace the piston and all piston ring

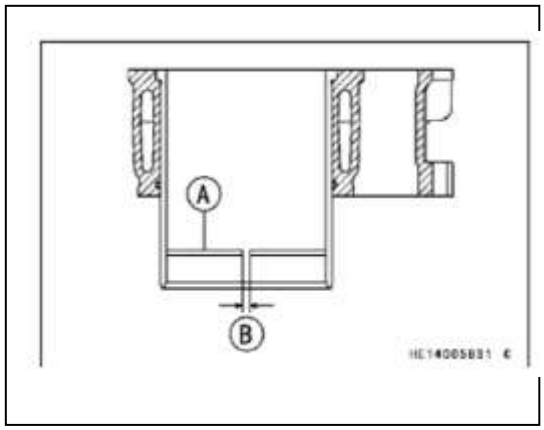
- When the piston ring is in the groove, use a feeler gauge to make several measurements to determine the piston



5.9.8 Piston ring end clearance inspection

- Put piston ring A into the cylinder, and use the piston to position the piston ring to a proper position. Set it near the bottom of the cylinder, where there is less wear on the cylinder.
- Use a thickness gauge to measure the gap between the two ends of the ring [B] Piston ring end gap standard:

The first ring is 0.1-0.3 mm.
The second ring is 0.15-0.35 mm.
Oil ring 0.2-0.7mm.
Service limit:
The first ring is 0.5 mm.
The second ring is 0.55mm.
Oil ring 0.9mm.
★If the end gap of any ring exceeds the usage limit, replace all rings.



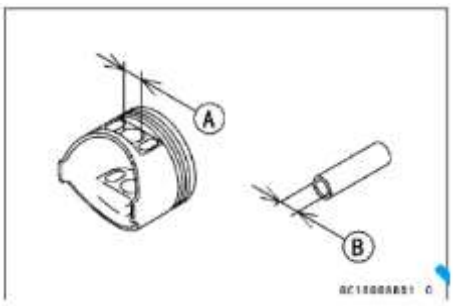
5.9.9 Wear inspection of piston, piston pin, and connecting rod hole

- Measure the inner diameter A of the piston pin holes at both ends. Inner diameter of piston pin hole

Standard: 17.002~17.008mm.
Service limit: 17.04 mm.
★ If the diameter of the piston pin hole exceeds the usage limit. Replace the piston.

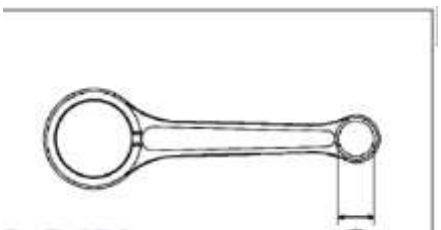
- Measure the diameter B of the piston pin.

Standard: 16.995-17mm.
Service limit: 16.96mm.
★ If the diameter of the piston pin is less than the usage limit at any time, replace the piston pin



- Measure the inner diameter A of the small the connecting rod.

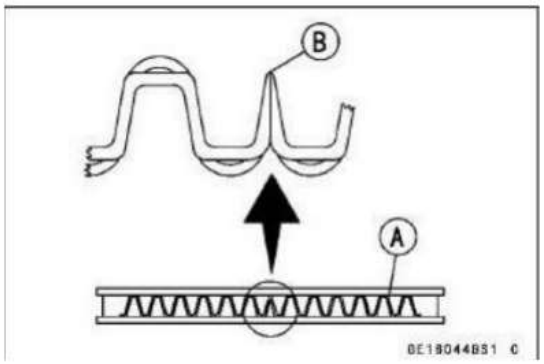
Inner diameter of connecting rod small end
Standard: 17.013 -17.025.
Service limit 17.05 mm.
★ If the diameter exceeds the usage limit, replace the



5.9.10 Installation of cylinder block and piston

Attention please

○ When using a new piston or cylinder, check the clearance between the piston and the cylinder (see Piston/Cylinder Clearance Inspection), and use a new piston ring



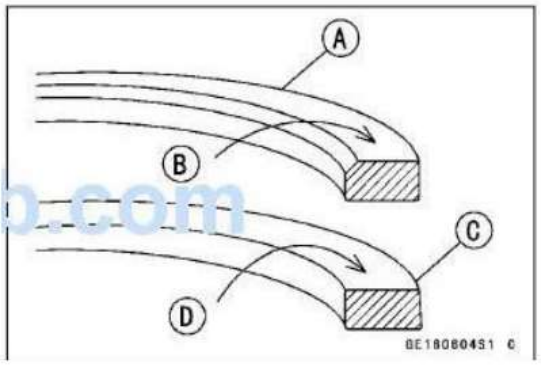
Attention please

○ The oil ring does not have a "top" or "bottom" and does not distinguish between the upper and lower directions.

- Apply engine oil to the oil ring machine and lining ring. Install the oil ring liner ring A in the bottom of the piston ring groove, so that both ends B butt joint.
- Install the oil ring scraper ring. One piece is above the lining ring, and the other piece is below it.

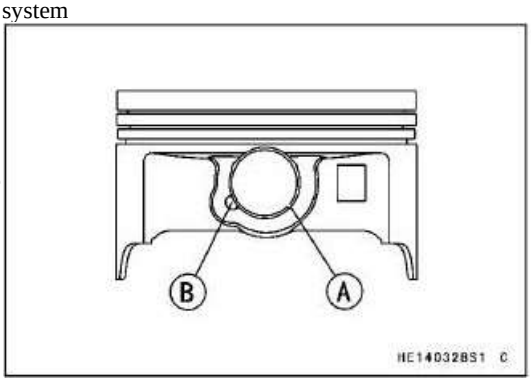
○ Grasp the railing with your thumb. But it is only enough to put the handrail on the piston or insert the rail into the bottom piston ring groove.

○ Or press the rail into the bottom piston ring.



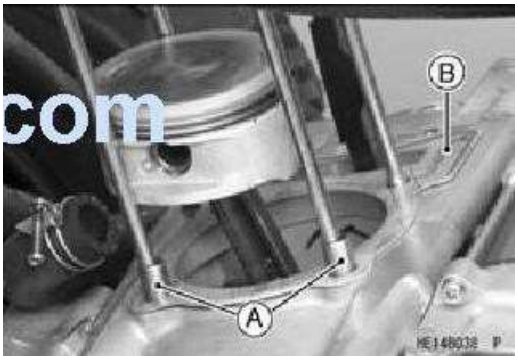
- Apply engine oil on the piston ring
- Do not mix the first ring with the second ring. Install the first ring A with the "R" mark B facing upwards.
- Install the second ring C with the "RN" mark D facing upwards.
- Attention: the openings of two adjacent rings of the piston ring are staggered by 120 °, and the piston ring is staggered from the intake side and the direction of the piston pin.
- Apply engine oil to the piston pin.
- Install the piston with the "IN" mark A facing the air inlet side.
- Install the piston pin

- Install a new piston pin wire retainer on one side of the piston, so that the opening A of the wire retainer does not coincide with the notch B of the piston pin hole
  ○ When install the piston pin retainer ring, only compress it enough to fit the piston pin wire retainer ring, do not compress too much

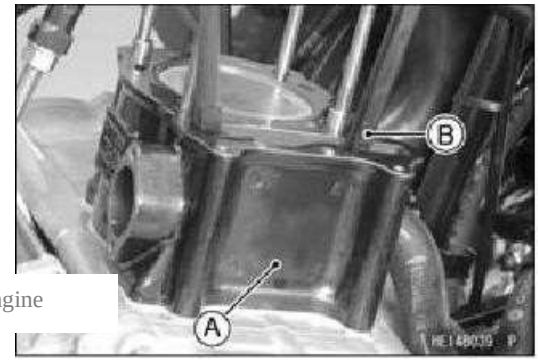


- Apply engine oil to the inner diameter of the cylinder and the piston skirt.
- The position of piston ring opening must be as shown in the figure.
  The first ring A.
  The second ring B.
  Oil ring scraper ring (upper) [C]
  Oil ring lining ring [D]
  Oil ring scraper ring (downward) [E]

- Replace the cylinder block sealing gasket with a new one
- Installation
  Positioning pin A.
  Cylinder block gasket B.



- Installation
  Cylinder block A.
  Chain tensioning plate B.



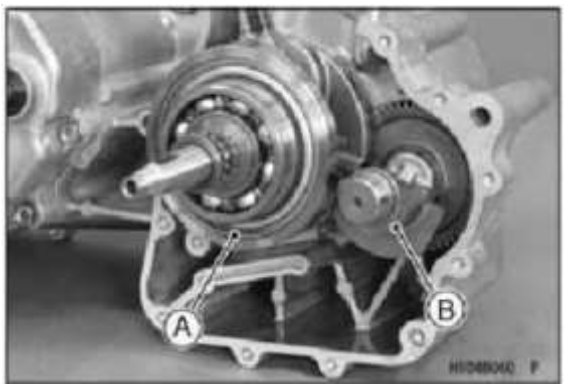
Demolition

Engine (refer to engine removal in the engine removal/installation section)
Starting motor (refer to removing starting motor in the electrical system section)
Oil screen (refer to oil screen removal in the chapter "Engine lubrication system")
Pistons (refer to piston disassembly in the upper chapter of the engine)
Drive pulley (refer to disassembly of drive pulley in frequency converter system)

5.9.11 Crankcase disassembly

Demolition:
Crankcase bolt A.
Right crankcase B.

Demolition:
Locating pin
Crankshaft
component A.
Balance shaft B.



5.9.12 Crankshaft inspection

●Remove the crankshaft (refer to crankcase disassembly).
●Measure the small end diameter of the connecting rod [A].
●If the measured value exceeds the service limit, please replace the crankshaft with a new one.
★Connecting rod small end diameter A
Service limit: 17.05mm

5.9.13 Balance shaft assembly

- Align the mark A on the balance shaft with the mark B on the crankshaft
- Install the right crankcase
- Apply a non permanent tightening adhesive to the crankcase bolts
- Important: Torque - crankcase bolts: 9.8 N-m

5.9.14 Crankcase assembly

Installation of crankcase

Attention please
The left and right halves of the crankcase are processed in the factory assembly state, so both sides of the crankcase must be replaced as a complete set

Reminder
● Ensure that all components are thoroughly cleaned before assembly. ● Purge all oil passages with compressed air to remove any blockages in the crankcase halves and inside the crankshaft

Warning
Gasoline and low flash point solvents may be flammable and/or explosive and cause severe burns. Clean engine components in a well ventilated area and ensure that there are no sparks or flames near the working area. Do not use gasoline or low flash point solvents to clean parts.

● Press and insert new rolling bearings A until they fit inside Tools - Bearing Puller

● Add oil to the bearings

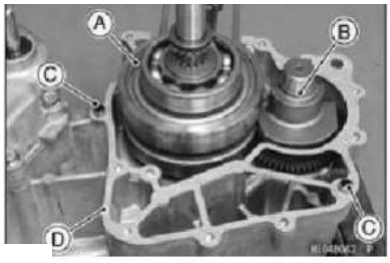
Ensure that the following components are positioned in the left crankcase.

Crankshaft component A.

Balance shaft B.

Close the box positioning pin C.

New sealing gasket D.



6 Fuel control system fault codes

Maintenance information……6-1
6.1 Basic principles of electronic control systems…….....6-2

6.2 Usage and maintenance…….....6-4
6.3 Fault code list…….....6-6

6.1 Basic principles of electronic control systems

1.1 Basic composition of electronic control system for gasoline engines

Any electronic control system, including a gasoline engine electronic control system, is composed of the following three parts:

(1) Sensors - convert various non electrical physical quantities of the engine into electrical quantities, thereby providing various information to the electronic control unit. Sensors used in electronic control systems include:

Integrated intake pressure sensor (load information)

Throttle position sensor (load information, load range information, acceleration and deceleration information)

Intake air temperature sensor (density of air information)

Crankshaft position sensor (speed information and crankshaft position information)

Coolant temperature sensor (engine temperature information)

Oxygen sensor (excess air coefficient λ Information greater than or less than 1)

(2) Electronic control unit - is the brain of the entire electronic control system, abbreviated as ECU. It analyzes and processes various information provided by sensors, and sends the conclusions to the actuator in the form of instructions, thereby enabling the engine to operate in an optimized state.

(3) Executor - Executes the instructions of the electronic control unit. The actuator is the hand and foot of the electronic control system. The actuators used for electronic control systems include:

Electronic fuel pump

Fuel injector

Ignition coil

Idle speed control valve.

1.2 Fuel system for electronically controlled gasoline injection engines

The fuel system of electronically controlled gasoline injection engine is composed of fuel tank, electronic fuel pump bracket assembly, quick coupler, fuel filter, fuel delivery pipe, injector cap, injector, etc.

1.3 Fuel injection method

Inject fuel once per cycle.

1.4 Basic functions of electronic control system

1.5.1 Electronic control of fuel quantification

This is the most important function of the electronic control system for gasoline engines, which plays a crucial role in the power, economy, and emissions of gasoline engines, as well as the driving and comfort of the entire vehicle λ Closed loop control, start control, post start control, warm-up control, idle speed control (that is idle speed control), partial load control, full load control, acceleration and deceleration control, overspeed fuel cut-off control, reverse drag fuel cut-off control, etc.

1.5.2 Electronic control of ignition timing and ignition closure angle

This is an important function of the electronic control system of gasoline engines, second

only to fuel quantification, and also plays an important role in the power, economy, and emissions of gasoline engines, as well as the driving and comfort of the entire vehicle.

1.5.3 System self diagnosis

Under what circumstances is system self diagnosis used?

* When checking whether the electronic injection system is working properly
* The fault indicator light is always on, when judging a fault

This function refers to the ability to self diagnose and correct. During self inspection, the system will automatically solve the discovered problems. For problems that cannot be solved automatically, the indicator light will display fault information and be manually resolved. System self check is usually performed automatically and does not require manual operation.

Diagnostic prompts are provided through the fault indicator light information, as detailed in "2.2 System self test".

1.5.4 System self-learning

Under what circumstances is using system self-learning?

* The system self-learning is automatically executed during vehicle operation and does not require manual operation.

The system self-learning is based on the feedback information of the oxygen sensor to correct the parameters recorded in the original ECU. By utilizing the vehicle's usage and environment to obtain more precise parameters, the ultimate performance of the vehicle can be achieved.

1.5.5 Self correction of altitude

Under what circumstances is the altitude self correction function performed?

* When the altitude of the vehicle changes.

The intake pressure sensor can detect the ambient atmospheric pressure and transmit this signal to the ECU. The ECU modifies the engine operating parameters based on this signal to meet changes in altitude and power. Automatically set and correct the optimal fuel injection state required for the sea level according to different geographical environments.

6.2 Usage and maintenance

2.1 Conventional use

When using a new car for the first time, it is recommended to continuously turn on and off the key three times before ignition, with a recommended interval of 15 seconds each time, in order to eliminate residual gases in the fuel supply system and fully establish oil pressure.

In the normal use process in the future, it is recommended to wait for the oil pump to run (or 10 seconds after turning on the key) before ignition, in order to fully establish oil pressure for easy starting.

2.2 System self check

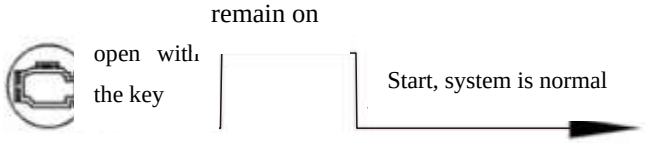
1）System self check refers to the process of self diagnosis and correction of a system. During self inspection, the system will automatically solve the discovered problems. For problems that cannot be solved automatically, the fault indicator light will display fault information and be manually resolved.

2）System self check is usually performed automatically, occurring during vehicle operation or at a certain moment after parking, and does not require manual operation. The fault indicator light is located on the dashboard, and its function is to display the current status and fault information of the electronic injection system, engine, etc.

3）After turning on the ignition switch, the indicator light "remains on" and goes off after the entire vehicle is started. The system is functioning normally.

4） The fault indicator light remains on after the engine is started, and running three diagnostic cycles after repeated starts still remains on, indicating that there is a current fault in the electronic fuel injection components that needs to be investigated.

5）Before starting the engine, the fault indicator light remains on after the ignition lock and ignition switch are turned on. However, it remains on after the engine is running, but after three diagnostic runs after repeated starts, it goes out. This indicates that there has been a historical fault in the electronic fuel injection system components and the historical fault code has not been cleared. The current electronic fuel injection components are normal.



2.3 Clean the throttle assembly

2.3.1 Steps for disassembling the throttle assembly:

1）Turn off the ignition lock;

6-4

2）Open the vehicle seat cushion, remove the air support, and remove the storage box;

3）Remove the throttle cable;

4） Remove the 3-in-1 plug, remove the idle control valve connector, and remove the vent pipe

(at the idle control valve);

5）Loosen the clamps at both ends of the throttle assembly and remove the throttle assembly;

Attention：Clean the throttle body assembly every 6000km.

2.3.2 Cleaning steps for throttle body assembly:

1) Use throttle body assembly cleaning agent or gasoline to clean the inner wall of the throttle body assembly and the combined throttle valve of the throttle body;

2) Rotate the throttle body combination wheel to ensure smooth return of the wheel, without any jamming or ineffective return;

3) After the cleaning agent has completely evaporated, install the throttle body assembly;

4) Install the throttle body assembly in the reverse order of removing the throttle body assembly.

6.3 Fault code list

	Fault path	Fault	Illustrate	EOBD	

Serial number		code		Fault class	Is the MIL light on	EUV
1	CDCHSVE	P0030	1-way oxygen sensor heating control circuit failure	4	√	
2		P0031	1-way oxygen sensor heating control circuit voltage is too low	4	√	
3		P0032	1-way oxygen sensor heating control circuit voltage is too high	4	√	
4	CDCHSVE2	P0050	2-way oxygen sensor heating control circuit failure	4	√	
5		P0051	2-way oxygen sensor heating control circuit voltage is too low	4	√	
6		P0052	2-way oxygen sensor heating control circuit voltage is too high	4	√	
7	CDCHSV	P0053	1-way oxygen sensor heating internal resistance is unreasonable	3	√	√
8	CDCHSV2	P0059	2-way oxygen sensor heating internal resistance is unreasonable	3	√	√
9	CDCLSV	P0130	1-way oxygen sensor signal is unreasonable	4	√	
1		P0131	1-way oxygen sensor signal circuit voltage is too low	4	√	
1		P0132	1-way oxygen sensor signal circuit voltage is too high	4	√	
1	CDCLATP1	P0133	1-way oxygen sensor delays both rich and lean mixture reactions	3	√	√
1	CDCLSV	P0134	1-way oxygen sensor circuit signal circuit malfunction	4	√	
1	CDCLSV2	P0150	2-way oxygen sensor signal is unreasonable	4	√	
1		P0151	2-way oxygen sensor signal circuit voltage is too low	4	√	
1		P0152	2-way oxygen sensor signal circuit high voltage	4	√	
1	CDCLATP2	P0153	2-way oxygen sensors delay both rich and lean mixture reactions	3	√	√
1	CDCLSV2	P0154	2-way oxygen sensor circuit signal failure	4	√	
1	CDCDK	P0122	Throttle position sensor 1 signal circuit low voltage	3	√	
2		P0123	Throttle position sensor 1 signal circuit high voltage	3	√	
2	CDCLM	P0105	Intake pressure sensor signal malfunction	3	√	√
2		P0106	Intake pressure sensor signal exceeds the limit	3	√	√
2		P0107	Intake pressure sensor short circuit to ground	3	√	
2		P0108	Intake pressure sensor short circuit to power	3	√	
2	CDCTA	P0111	Intake temperature sensor signal is not reasonable	3	√	√
2		P0112	Intake air temperature sensor signal circuit voltage low/exceeding limit	3	√	
2		P0113	Intake air temperature sensor signal circuit high voltage	3	√	
2	CDCTM	P0116	Engine coolant temperature sensor signal is not reasonable	3	√	
2		P0117	Engine coolant temperature sensor circuit low voltage	3	√	
3		P0118	Engine coolant temperature sensor circuit high voltage	3	√	
3		P0119	Engine coolant temperature sensor signal intermittent	3	√	√
3	CDCTMLIMIT	P1116	Engine coolant temperature exceeds the limit value	30	√	
3	CDCEV1	P0201	Cylinder 1 injector control circuit open circuit	4	√	
3		P0261	Cylinder 1 injector control circuit short circuit to ground	4	√	
3		P0262	Cylinder 1 injector control circuit short circuit to power	4	√	
3	CDCEV2	P0202	Cylinder 2 injector control circuit open circuit	4	√	
3		P0264	Cylinder 2 injector control circuit short circuit to ground	4	√	
3		P0265	Cylinder 2 injector control circuit short circuit to power	4	√	
3	CDCIG	P2300	Cylinder 1 ignition coil short circuit to ground	4	√	
3	CDCIG2	P2303	Cylinder 2 ignition coil short circuit to ground	4	√	
4	CDCMD_xx	P0300	Multiple cylinders catch fire	2	√or Blink	√
4		P0301	The first cylinder catches fire	2	√or Blink	√
4		P0302	The second cylinder catches fire	2	√or Blink	√
4	CDCN	P0322	Speed sensor signal malfunction	4	√	
4	CDCSSAL	P0413	Secondary air replenishment solenoid valve circuit open circuit	3	√	
4		P0414	Secondary air replenishment solenoid valve circuit voltage too low	3	√	
4		P0412	Secondary air replenishment solenoid valve circuit high voltage	3	√	

4		P0411	Secondary air system flow detection failure	3	√	√
	CDCTES	P0441	Incorrect flow rate of carbon canister solenoid valve	3	√	√
4	CDCTEVE	P0444	Carbon canister solenoid valve circuit open circuit	3	√	
4		P0458	Carbon canister solenoid valve circuit low voltage	3	√	
5	CDCLUEA	P0459	Carbon canister solenoid valve circuit high voltage	3	√	
5		P0480	Cooling fan control circuit open circuit	3	√	
5	CDCLUEA	P0691	Cooling fan control circuit low voltage	3	√	
5		P0692	Cooling fan control circuit high voltage	3	√	
5	CDCVFZ	P0501	Vehicle speed sensor signal malfunction	3	√	
5	CDCLLR	P0506	Idle control speed lower than target idle speed	5	×	√
5		P0507	Idle control speed higher than target idle speed	5	×	√
5	CDCISA	P0511	Stepper motor drive control circuit malfunction	3	√	
5	CDCOT1	P0615	Starting control circuit open circuit	4	√	N
5		P0616	Starting control circuit voltage too low	4	√	N
6		P0617	Starting control circuit voltage too high	4	√	N
6	CDCKPE	P0627	Oil pump relay control circuit open circuit	4	√	
6		P0628	The voltage of the oil pump relay control circuit is too low	4	√	
6		P0629	The voltage of the oil pump relay control circuit is too high	4	√	
6	CDCMILE	P0650	MIL lamp driver stage circuit malfunction	5	×	
6	CDCUB	P0560	The system battery voltage signal is unreasonable	5	×	
6		P0562	The system battery voltage is too low	5	×	
6		P0563	System battery voltage too high	5	×	
6	CDCDUMP	P1098	Dump sensor signal voltage too low	4	√	
6		P1099	Dump sensor signal voltage too high	4	√	
7	CDCFRAU	P2177	空然比闭环控制自学习值超上限	1	√	√
7		P2178	空然比闭环控制自学习值超下限	1	√	√
7		P2179	空然比闭环控制自学习值超上限	1	√	√
7		P2180	空然比闭环控制自学习值超下限	1	√	√
7	CDCDUMMY	P0602	Electronic control unit coding failure	5	×	
7		P0604	Electronic control unit RAM failure	5	×	
7		P0605	Electronic control unit ROM failure	5	×	
7	CDCTOX	U0198	TOX CAN communication failure	5	×	
7	CDCDASH	U0155	Abnormal communication between ECU and IPC (Instrument cluster	5	×	
7	CDCCIF	U0073	CAN bus failure	5	×	
8	CDCABS	U0121	Lost communication between ECU and ABS control module	5	×	
8	CDCISA	P0508	Idle speed actuator control circuit short circuit to ground	4	√	
8		P0509	Idle speed actuator control circuit short circuit to power	4	√	
8		P0511	Idle speed actuator control circuit malfunction	4	√	
8	CDCSTPE	P0511	Idle speed actuator control circuit malfunction	4	√	

Note: The 81-83 carbon canister valve serves as idle control

84 stepper motor as idle control

7 Vehicle chassis

Maintenance information……..7-2
7.1 Fault diagnosis……7-3
7.2 Front wheel…….....7-3
7.3 Braking system…….....7-4
7.4 Front suspension system……7-6
7.5 Steering system…….....7-9
7.6 Rear suspension system……..7-12
7.7 Rear transmission shaft assembly……...7-12

Maintenance information

Attention

•When conducting maintenance work on the front wheel and suspension system, the frame must be firmly supported before operation

•The maintenance and inspection of lighting, instruments, and switches should be carried out according to the corresponding chapters

•Do not exert excessive force on the wheels. Be careful not to damage the wheels

•When disassembling tires from the wheel rims, it is necessary to use specialized tires and wheel rim protectors to avoid damaging the wheel rim

Maintenance benchmark

Items		Standards	Service limit
Wheel rim	Axial runout	0.8mm	2.0mm
	Radial runout	0.8mm	2.0mm
Tires	Residual groove	—	3mm
	Pressure	35kPa(0.35kgf/cm^2)	—
Front brake	Brake handle clearance	0mm	—

Tightening torque

Name	Specifications	Torque
Steering lock nuts	GB9457 M10 × 1.25	33~45N·m
Front brake disc bolts	M8 × 20 × 1.25	22~30N·m
Front brake caliper body bolts	GB5789 M8 × 16	30~36N·m
Rim shaft slotted nuts	GB9457-1988 M14 ×1.5 × H18	209～278N·m
Front shock absorber bolts	GB5789 M10 ×1.25 × 45 half thread	45～59N·m
Rim mounting nuts	GB6187-86 M10 × 1.25	45~59N·m
Lower rocker arm bolts	GB5789 M10 × 1.25 × 80	45~59N·m

Tools

Inner hexagonal m6	Assembly tool shaft
Open end ratchet wrench s8	Pneumatic wrench s12
Open end wrench s10-s12	Pneumatic wrench s14
Open end ratchet wrench s14	Socket wrench m12
Open end wrench s17-s19	Socket wrench m14
Open end ratchet wrench s22	Socket wrench m20

Open end ratchet wrench s24	Socket wrench m24
Cross screwdriver	Needle nose pliers
Flat screwdriver	External circlip pliers
Hammer	

7.1 Fault diagnosis

1. Steering heavy
1)The upper bolts of the steering column are too tight
2)Damage and wear of steering bearings
3)The inner and outer race of the bearing is damaged, worn, and has steps
4) Direction column deformation
5) Low tire pressure
6) Tire wear
2. Shake the steering handle
1)Damaged and poorly tightened steering bearings
2) Left and right shock absorbers do not match
3) Tire skewness
4) Frame deformation
5) Tire wear and eccentric wear
6) Wheel bearing shaking
3. Front wheel runout
1) Wheel deformation
2) Poor wheel bearings
3) Poor tires
4) Improper wheel balance
5) Poor fastening around the wheel axle
4. Wheel rotation is not flexible
1) Poor wheel bearings
2) Improper installation of front wheels
3) Brake oil pipe and cable are stuck
5. Front suspension too soft
1) Reduced elasticity of the front shock absorber
2) Low tire pressure
6. Front suspension too hard
1) Damaged front shock absorber
2) Excessive tire pressure
7. Abnormal noise from the front shock absorber
1) Poor front shock absorber
2) Loose fastening parts of the shock absorber
8. Poor braking effect
1) Poor brake adjustment
2) The surface of the brake disc is dirty
3) Brake pad wear

7.2 Front wheel

Disassembly

Use a tool to lift the front wheel and ensure that there is no force acting on the front wheel
Remove the four nuts 1 installed on the front wheel bracket
Remove front wheel 2

Inspection of wheel rims

Check if wheel 1 is damaged, deformed, or scratched, and replace it if there are any abnormalities. Slowly rotate the wheel and measure the runout of rim 1 with a dial gauge

Service limit: Axial: 2.0mm

Radial: 2.0mm

Installation of wheel rims

Press wheel rim 2 into the tire on a dedicated machine

Remove the front wheel mounting bracket

Remove the front wheel

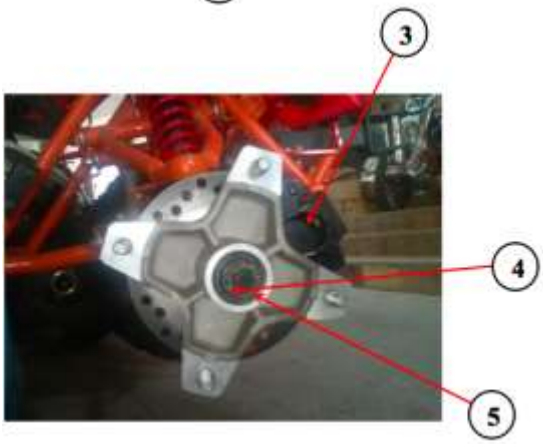
Remove the front brake caliper body 3

Remove the cotter pin 4

Remove the rim shaft mounting nut 5

Remove the brake disc and mounting bracket together

Remove the front wheel mounting bracket



Installation

Install in the reverse order of disassembly

Rim shaft mounting nut torque: 209N·m~278N·m

Brake disc installation bolt torque: 30N·m~36N·m (coated with thread fixing agent)

Note: The removal and installation of the rear wheel is similar to the front wheel, please refer to the front wheel

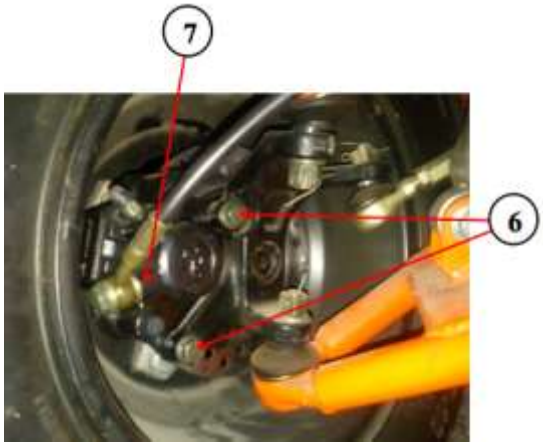
7.3 Braking system

Remove the front brake caliper

Remove the front wheel

Remove the 2 bolts 6 installed on the steering knuckle

Remove the brake caliper 7



Inspection

Observe if there are cracks in the brake caliper and if there is oil leakage at each fastening point, replace it if there is any

Installation

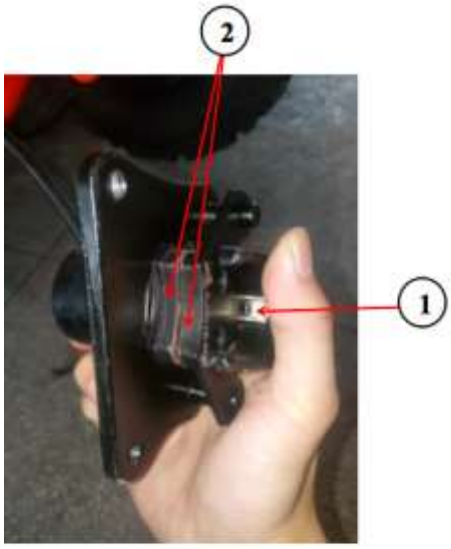
Brake caliper fixing bolt 2 torque: 38N · m~51N · m (coated with thread fixing agent)

Remove the brake pads

Loosen one fastening bolt

Rotate brake caliper 1

Remove the brake pads 2



Inspection

Measure the thickness of brake pad friction layer 2. When the thickness of brake pad friction layer 2 is less than or equal to 1 mm, both brake pads should be replaced with new ones at the same time.

Installation

Install in the reverse order of disassembly

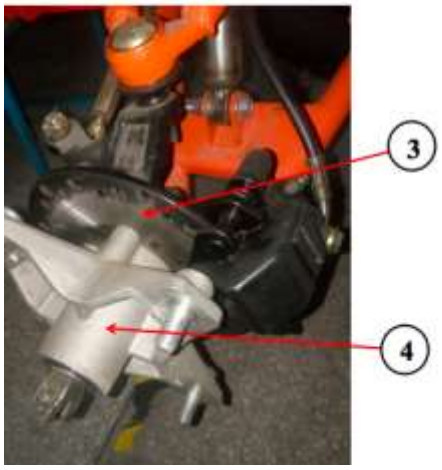
Remove the brake disc

Remove the front wheel

Remove the brake caliper

Remove the brake disc 3 and front wheel mount 4 together from the vehicle

Remove the brake disc 3



Inspection

Front brake disc thickness: If it is less than 3.0mm, replace it with a new brake disc

Installation

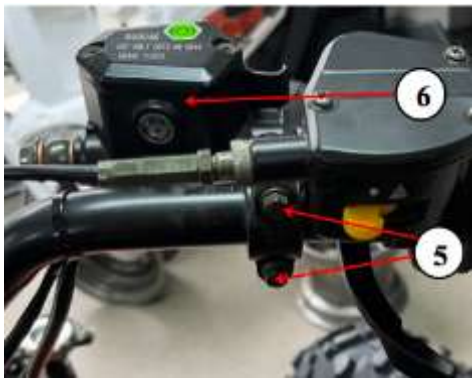
Install the brake disc

Brake disc fixing bolt torque: 22N • m~30N • m

Disassembly of the front brake pump

Remove bolt 5

Separate the front brake handbrake pump 6 from the steering lever, and there is no need to remove the front brake handbrake pump from the vehicle body without replacing the brake pump assembly



Installation

Install in the reverse order of disassembly

Attention: Do not use the brake oil pipe to suspend the brake pump

Due to concerns that the front brake handbrake pump may tip over and cause air to enter the hydraulic system, it is necessary to maintain the installation position while fixing it on the steering handle.

The direction of the oil pipe on the vehicle body must be arranged according to the cables and wires in the first Chapter, and the smooth flow of the brake oil circuit must be ensured

When the brake system assembly is installed, the braking force must be checked.

Remove the brake tee joint

Remove bolt 1

Separate the brake tee joint 2 from the vehicle body

Installation

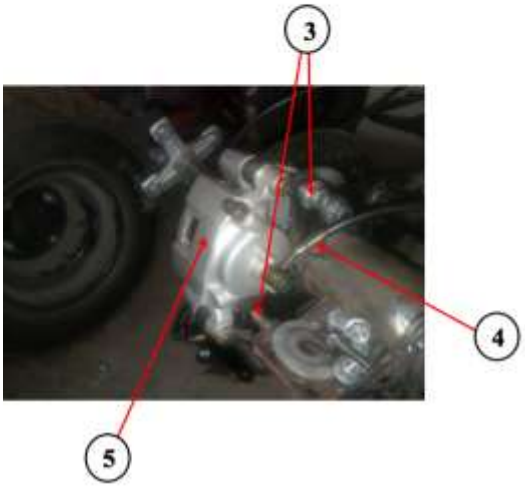
Install in the reverse order of disassembly

Attention: The direction of the oil pipe on the vehicle body must be ensured to be smooth according to the cable and wire routing diagram in the first Chapter. The braking system must be checked for braking force when the assembly is installed

Remove the rear brake caliper body

Remove bolt 3 and parking brake cable 4

Remove the rear brake caliper body 5



Installation

Install in the reverse order of disassembly

Attention: The direction of the oil pipe on the vehicle body must be ensured to be smooth according to the cable and wire routing diagram in the first Chapter. When the brake system assembly is installed, the brake force must be checked. If the front and rear cannot be linked to control the brake system, check whether the joint is connected and whether the brake fluid volume in the brake oil cup is between the upper and lower limit graduation lines. If necessary, add the brake fluid recommended by Kayo to the upper and lower limit graduation lines. Check if the brake switch and brake light are working properly

7.4 Front suspension system

Remove the right front suspension assembly

Attention: When repairing the suspension system, the left and right suspension systems cannot be removed simultaneously, otherwise the vehicle body will fall down due to lack of support

Park the vehicle on a level surface and use a jack to support the front of the vehicle firmly

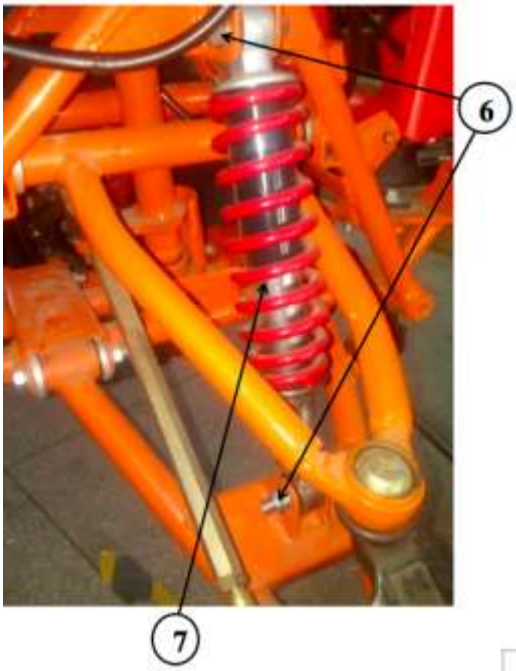
Remove the front assembly plate

Remove the front wheel

Remove the brake caliper

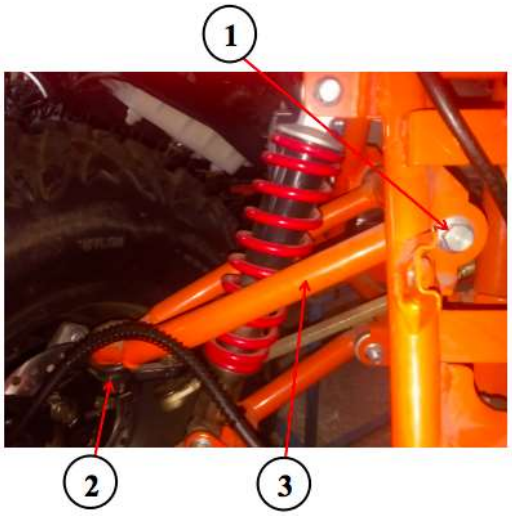
Remove the front wheel hub bracket

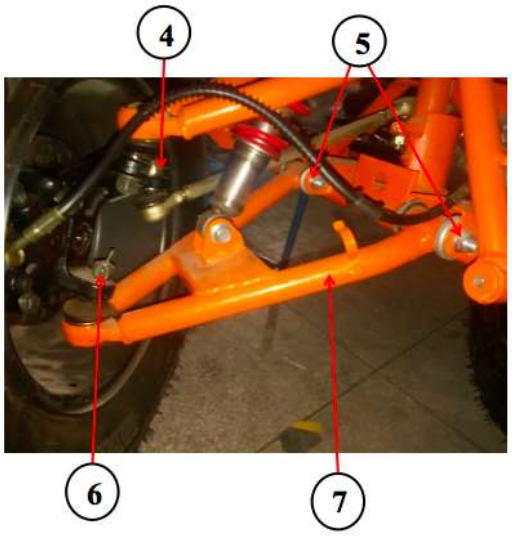
Remove the bolts 6 on which the right front shock absorber is installed on the vehicle body and on the right front lower rocker arm



Remove the front shock absorber 7

Remove the bolt and nut 1 fastening the right front upper rocker arm installed on the frame
Remove the cotter pin and nut 2 installed on the right front upper rocker arm ball pin and the right steering knuckle
Remove the right front upper rocker arm 3
Remove the split pin and lock nut 4 from the steering rod ball pin
Remove the bolts and nuts 5 that install the right front lower rocker arm on the frame
Remove the right front lower rocker arm ball pin locking bolt 6
Remove the right front lower rocker arm 7
Pull the steering knuckle out of the drive shaft. The suspension system of this car has multiple configurations, suitable for different customer groups. The above mentioned suspension system is a basic configuration, and the maintenance methods for suspension systems in other configurations are similar. You can refer to the above methods for maintenance





Installation
Install in the reverse order of disassembly

The disassembly, installation, and inspection methods for the left front suspension assembly are the same as those for the right front suspension assembly

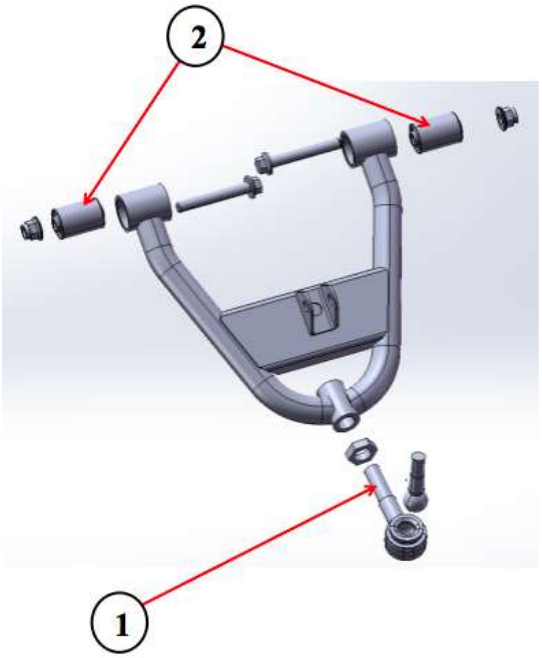
Disassembly and assembly of the right front rocker arm assembly
Remove the right front shock absorber
Remove the bolts and nuts 1 fastening the right front upper rocker arm installed on the frame
Remove the bolts and nuts 5 that secure the right front lower rocker arm to the frame
Before removing the shock absorber, the wheels, brake calipers, and rim brackets must be removed first
Before removing each bolt, remove the steering linkage first
Before removing the right front rocker arm assembly, first pull the steering knuckle out of the front constant velocity drive shaft

Remove the right front rocker arm assembly
Check the upper and lower rocker arms
Remove the right front upper rocker arm welding combination 3

Remove the upper ball pin assembly 8

Check whether the grease inside the ball pin has deteriorated (grease model: No. 2 lithium based grease GB7324-87), and whether the dust cover on the ball pin is cracked or aged. If the above problems occur, replace the ball pin with a new one.

Remove the buffer sleeve assembly inside the right front upper rocker arm welding assembly and check if the buffer sleeve assembly is damaged or aged. If necessary, replace it with a new one



Remove the welding combination of the right front lower rocker arm

Remove the lower ball pin assembly 1

Check if the lower ball pin combination 1 can rotate flexibly in all directions, as well as the gap inside the upper ball pin, if it cannot rotate flexibly or the gap is too large; Check whether the grease inside the ball pin has deteriorated (grease model: No. 2 lithium based grease GB7324-87), and whether the dust cover on the ball pin is cracked or aged. If the above problems occur, replace the ball pin with a new one.

Remove the buffer sleeve assembly 2 inside the right front lower rocker arm welding assembly

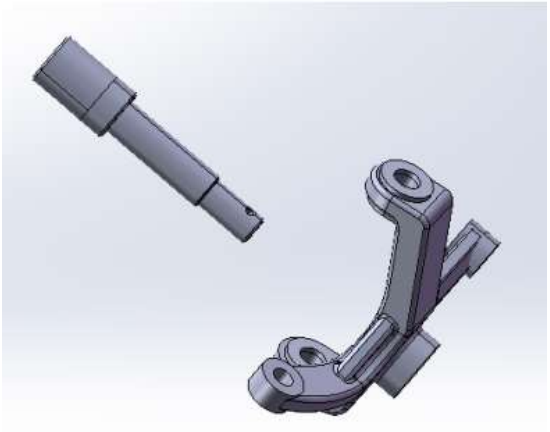
Check if the buffer sleeve combination 2 is damaged or aged, and replace it with a new one if necessary.

Installation

Use a special tool to press the ball pin into the rocker arm assembly

Install in the reverse order of disassembly

Attention: The upper and lower rocker arms should not shake after installation. If there is shaking, replace it with a new combination of buffer sleeves



Check the right steering knuckle

Remove the right steering knuckle

Remove the wheel hub bearing with a special tool

Check if the wheel hub bearing is damaged, rotates flexibly, and has excessive clearance. If defects occur, replace it with a new one

Installation

Install in the reverse order of disassembly

7.5 Steering system

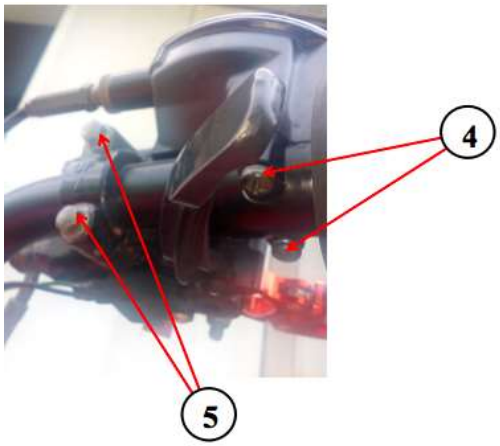
Directional handle

Instrument cover disassembly

Remove instrument cover 1, instrument panel 2, and instrument 3

Installation

Install in the reverse order of disassembly



Handle disassembly

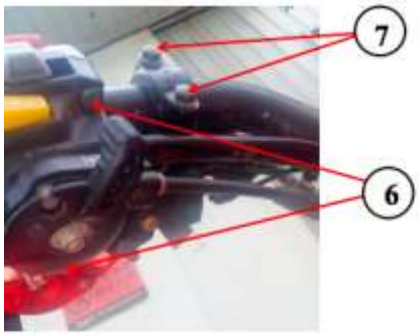
Removal of the Right Hand Handle Switch Assembly

Remove screw 4

Remove bolt 5

Remove the front handbrake pump

Remove the right-hand handle switch assembly



Removal of the left hand handle switch assembly

Remove screw 6

Remove bolt 7

Remove the rear handbrake pump

Remove the left-hand handle switch assembly

Release the connector

Remove the left hand handle switch multifunctional plug 8

Installation

Rotate the switch assembly with the left and right hands in the reverse order of disassembly

Remove the steering handle tube

Remove the instrument cover

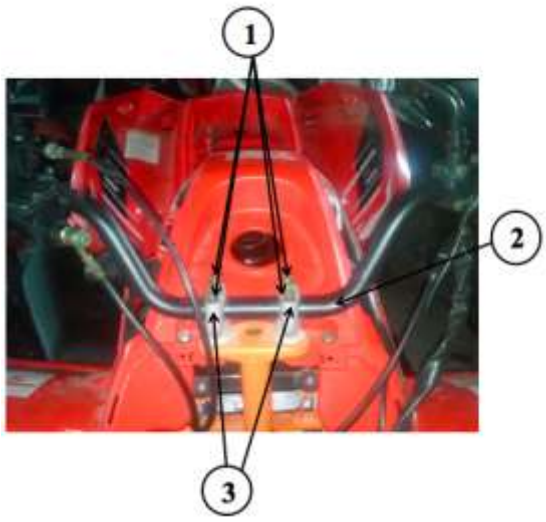
Remove the left and right handlebars

Separate the hydraulic brake handbrake pump from the steering handle

Remove bolt 1

Remove the upper pressing block 3 of the steering handle

Remove the steering handle tube 2



Installation

Install in the reverse order of disassembly

Installation bolts for the aluminum cover of the steering handle: M8 × 35

Torque: 30N • m~36N • m

(3.0kgf • m~3.6kgf • m)

Attention: The main cable assembly, throttle cable, brake oil pipe, and cable attachment should be arranged correctly according to the diagram

Throttle cable

Disassembly

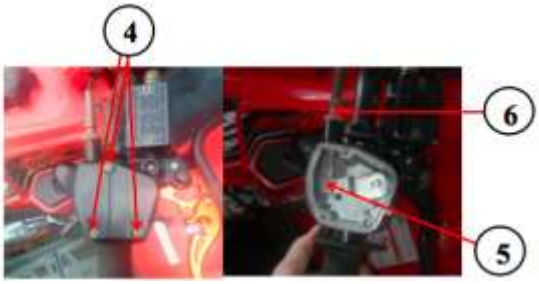
Remove screw 4

Remove the right-hand handle

Remove the throttle cable connector 5

Unscrew the throttle seat connector 6

Remove the throttle cable



Installation

Install in the reverse order of disassembly

Steering system

Steering shaft assembly

Disassembly

Remove the instrument cover

Remove the front assembly plate

Remove the front wheel

Remove the steering handle tube

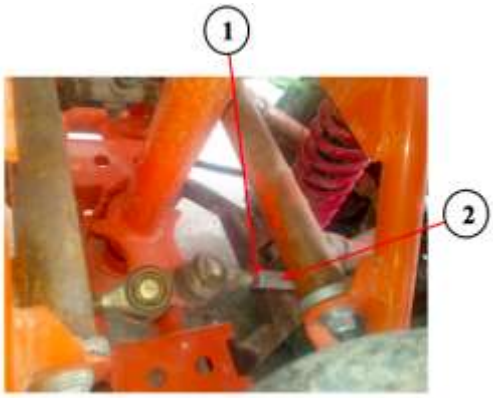
Remove the rear brake parking handle assembly

Remove the hydraulic brake handbrake pump

Remove the left and right handlebars from the steering handle tube

Loosen the locking nut 1 on the steering rod (2 on the left and 2 on the right)

Remove the steering linkage 2

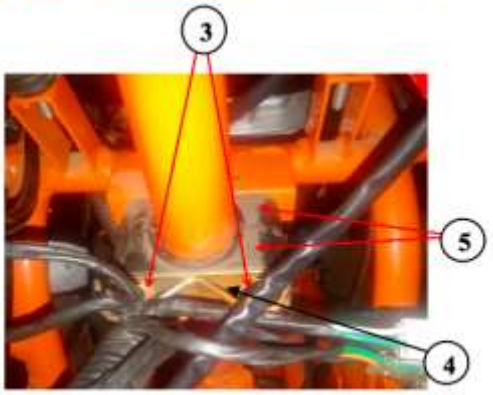


Remove the steering rocker arm (1 set on the left and 1 set on the right)

Remove the fixing bolt 3

Remove the clamping block clamp plate 4

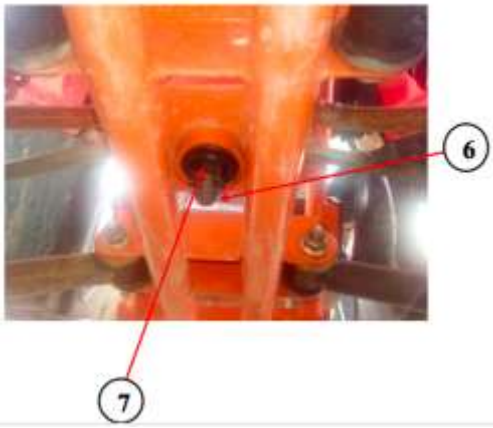
Remove clamp block 5



Remove the split pin 6

Remove the lock nut 7

Lift the steering shaft upwards to remove the steering shaft assembly



Installation

Install in the reverse order of disassembly

Attention: When installing the split pin, replace it with a new one; After installation, it is necessary to check whether the steering flexibility and left and right steering angles are the same; Cable and cable routing shall follow the first chapter for cable and cable routing; When assembling the steering rocker arm, be sure to place it in the center before assembling the steering shaft; When assembling the steering shaft, it is necessary to be patient and ensure that the left and right steering angles are consistent before locking all components

7.6 Rear suspension system

Remove the rear shock absorber

When repairing the suspension system, the vehicle body should be suspended first and the suspension system should be removed, otherwise the vehicle body will fall down due to lack of support

Park the vehicle on a level surface and use a jack to firmly support the rear of the vehicle

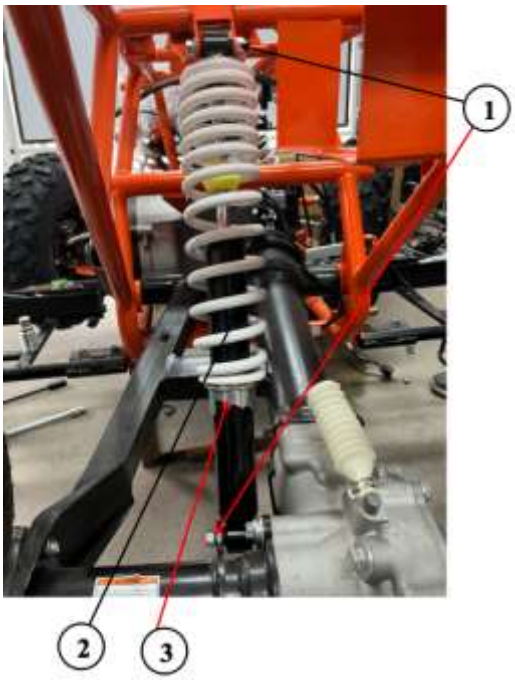
Remove the rear assembly plate

Remove the rear wheel

Remove the brake caliper

Remove the bolt 1 that installs the rear shock absorber on the vehicle body and the flat fork assembly

Remove the rear shock absorber 2



Inspection

Check the removed shock absorber and adjust the adjustment cam 3 to the appropriate position

Installation

Install in the reverse order of disassembly

7.7 Rear transmission shaft assembly

Remove the rear transmission shaft assembly

Before removing the rear transmission shaft, the vehicle body should be suspended in the air, otherwise the vehicle body will fall down due to lack of support at the rear of the vehicle

Park the vehicle on a level surface and use a jack to firmly support the rear of the vehicle before starting work

Remove the rear assembly plate

Remove the rear wheel

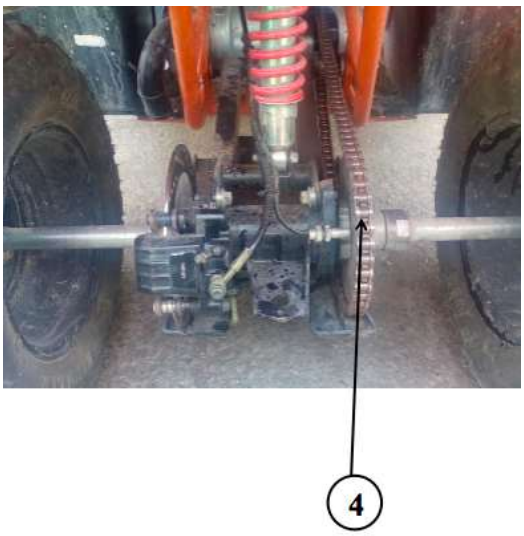
Remove the drive chain 4

Remove the rear brake caliper

Remove the rear shock absorber

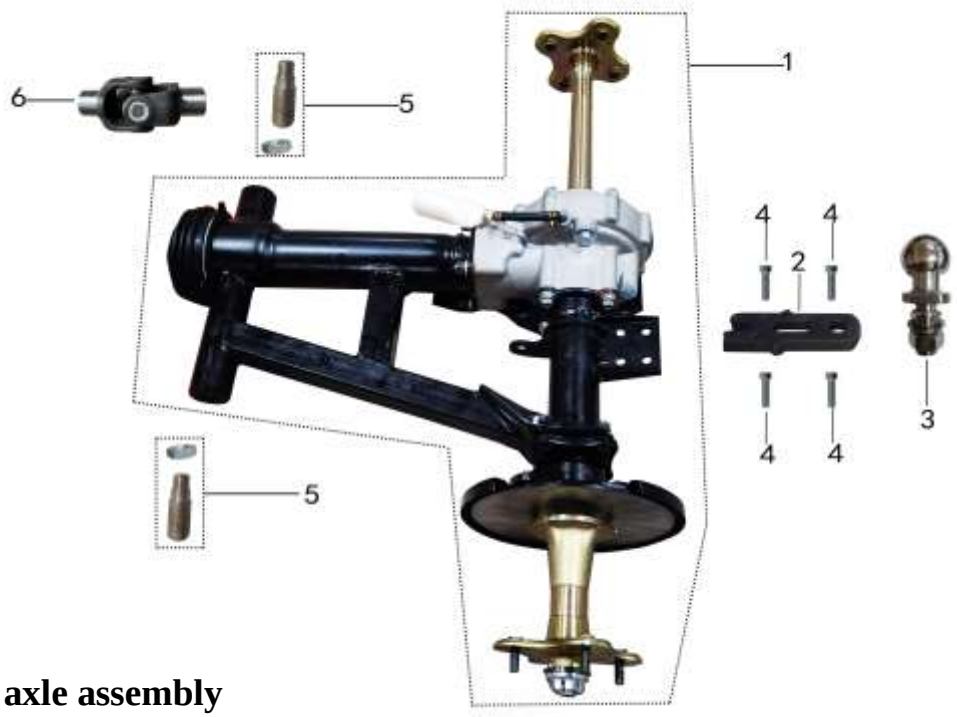
Remove the connecting bolts and nuts between the flat fork assembly and the frame

Remove the rear transmission shaft assembly



Inspection

The diagram of the total component of the rear transmission shaft of the vehicle is as follows



Rear axle assembly

Number	Name	Quantity			
1	Rear axle assembly	1			
2	Trailer ball fixing plate	1			
3	Trailer ball assembly	1			
4	Hexagon socket head cap screw GB70-85	4			
5	Rear axle mounting bolts	2			
6	Universal joint	4			

Inspection after disassembly of the rear transmission shaft

- Check if the rear wheel hub is damaged. If it is damaged, replace it with a new one
- Check the thickness of the disc brake disc. If the disc brake thickness is ≤ 3mm, a new disc brake disc should be replaced
- Check if the rear transmission shaft is bent or damaged, and if so, replace it with a new transmission shaft
- Check the flat fork assembly, and if there is any damage, replace it with a new one
- Check the rear sprocket. If there is any damage to the gear gears, replace it with a new one
- Check if the other parts are damaged, and if there is any damage, replace them with new ones

Installation

Proceed in the reverse order of disassembling the rear drive shaft

Attention：When installing the bushing, apply lithium based grease containing molybdenum

disulfide to both ends of the flat fork shaft

8 Signal and lighting system

Maintenance instructions…….....8-1
8.1 Troubleshooting…….....8-2
8.2 Headlamp inspection…….....8-2
8.3 Bulb replacement……8-3
8.4 Ignition switch lock…….....8-5
8.5 Handle switch…….....8-6
8.6 Brake light switch…….....8-6
8.7 Electric horn……....8-7
8.8 Instrument…….....8-7
8.9 Fuel sensor…….....8-8

Maintenance instructions

When conducting inspection operations, the entire vehicle can be powered on; When carrying out disassembly and installation operations, the entire vehicle should be powered off first and both hands should be kept dry.

Specifications of each component

Name	Specifications	Quantity	Notes
Front left turn light	White shell/Yellow lamp E4-6R-0162294	1	Bulb replaceable
Front right turn light	White shell/Yellow lamp E4-6R-0162294	1	Bulb replaceable
Left headlight	JUTELCA5 E4-113R-0125787 E4-7R-0225787	1	Bulb replaceable
Right headlight	JUTELCA5 E4-113R-0125787 E4-7R-0225787	1	Bulb replaceable
Rear taillights	Red with plugin	2	Replace the entire
Rear left and right turn light	Yellow/Flowing light with plug-in	2	Replace the entire
Instrument, with fault light	4 magnetic sensors/magnetic steel	1	
Electric horn	12V-1.5A EEC II-E9-00.6287	1	

8.1 Troubleshooting

1. Left headlight does not light up
1) Bulb damage
2) Poor contact of connectors
3) Damaged handlebar switch

2. Right headlight does not light up
1) Bulb damage
2) Poor contact of connectors
3) Damaged handlebar switch

3. Front left turn light does not light up
1) Bulb damage
2) Poor contact of connectors
3) Damaged handlebar switch

4. Front right turn light
1) Bulb damage
2) Poor contact of connectors
3) Damaged handlebar switch

5. Rear tail light does not come on
1) Bulb damage
2) Poor contact of connectors
3) Damaged handlebar switch

6. Rear left turn light does not light up
1) Bulb damage
2) Poor contact of connectors
3) Damaged handlebar switch

7. Rear right turn light does not light up
1) Bulb damage
2) Poor contact of connectors
3) Damaged handlebar switch

8. The electric horn does not sound or is too light
1) Damaged horn
2) Poor contact of connectors
3) Damaged handlebar switch

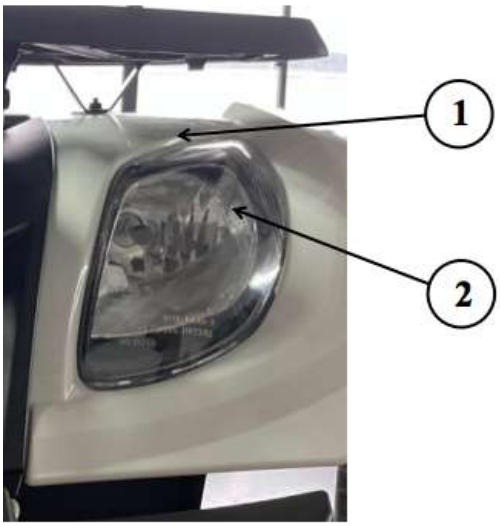
8.2 Headlamp inspection

Turn the ignition switch to ON, turn the lighting switch to the lighting position, and check if the headlights are on
- Light up: normal
- Not light up:
  - Main cable disconnection or short circuit
  - Fuse broken
  - Switch damage
  - Lamp damage

If the headlight bulb is damaged, the bulb should be replaced

8.3 Bulb replacement

8-3



Headlamp bulb

Attention

The power of the headlight bulb is high, and the temperature is very high when lighting. If you touch it with bare hands immediately after turning off the light, you will be burned. Work must be carried out after the bulb has cooled down

Remove the front assembly plate 1

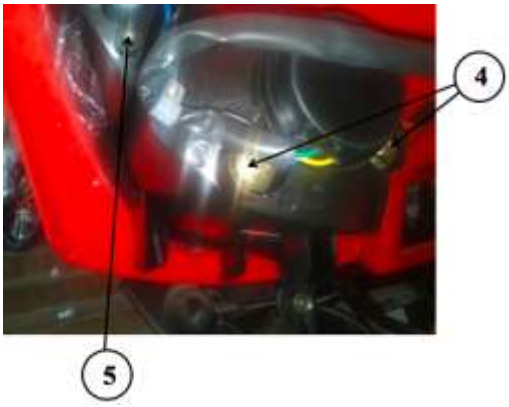
Remove the headlight combination 2

Disconnect the headlight connector 3

Remove the rear cover and headlamp connector, and remove and replace the headlamp bulb.

Attention

Clean gloves must be worn when replacing light bulbs. When oil is attached to the glass surface, it can cause the light bulb to break and must be wiped clean with alcohol or banana water. When replacing a headlight bulb, it is important to align the two locating tabs on the bulb with the two locating holes on the bulb holder. Bulb specification: 12V-35W



Installation

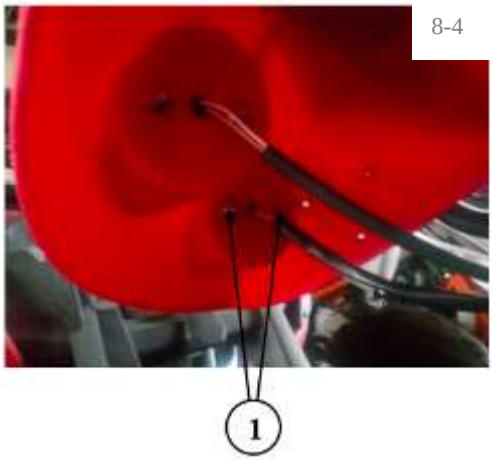
Proceed in reverse order of disassembly

After replacing the bulb, adjust the optical axis of the high beam lamp by adjusting screw 4; Adjust the optical axis of the low beam through the adjusting screw 5.

Replace the taillights

Because the taillight bulb is a combination of LED light-emitting diodes, the bulb cannot be replaced individually. If it is damaged, only the entire taillight can be replaced

Remove the rear tail light socket
Remove 2 nuts 1
Remove and replace the tail light

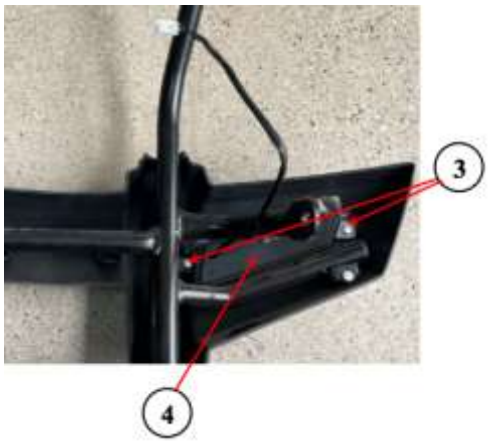


Installation
Proceed in reverse order of disassembly.

Replace the front turn light

Remove the front turn signal lamp connector 2 (left and right)
Remove nut 3 (1 on the left and 1 on the right)
Remove the front turn light 4

Remove the front guard and replace it
Attention
Because the front turn signal is a combination of LED light-emitting diodes, the bulb cannot be replaced separately. If it is damaged, only the entire turn light can be replaced 4

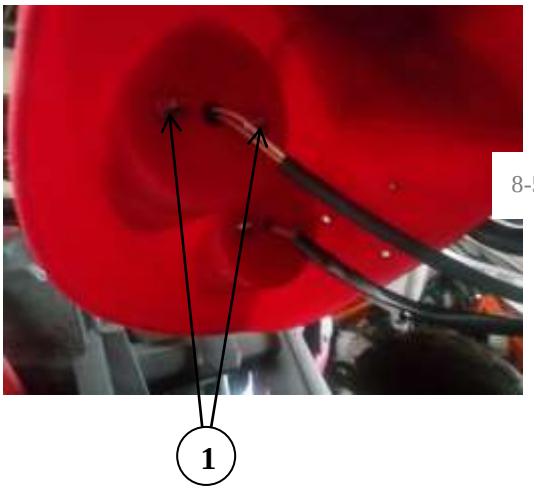


Installation
Proceed in reverse order of disassembly.

Rear turn light

The rear turn light is an integral structure. If the turn light is damaged, only the whole rear turn light combination 5 can be replaced

Remove the rear tail light socket
Remove two nuts 1
Remove and replace the tail light



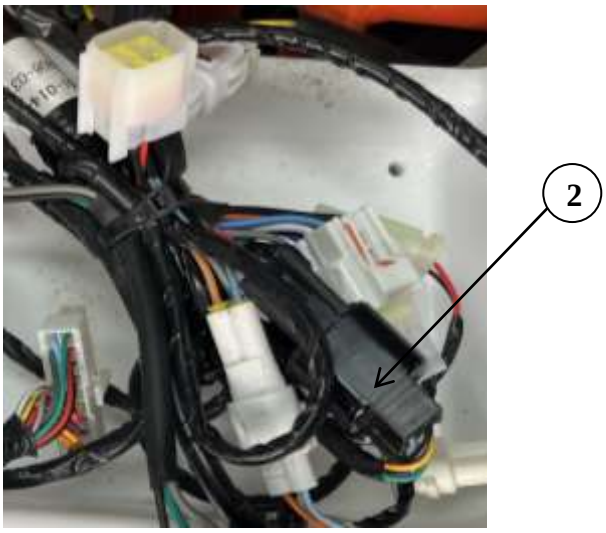
8-5

Installation
Follow the reverse order of disassembly

8.4 Ignition switch lock

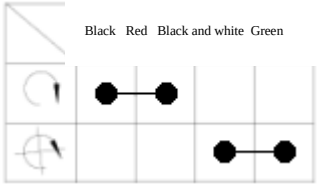
Disassembly
Remove the front panel

Disconnect ignition switch lock connector 2



Loosen the nut and remove the ignition switch lock 3

Inspection
Check the continuity between the terminals of the switch lock connector according to the table below.
The conduction between ● — ● is considered normal
Ignition switch wiring diagram



Installation
Follow the reverse order of disassembly

8.5 Handle switch

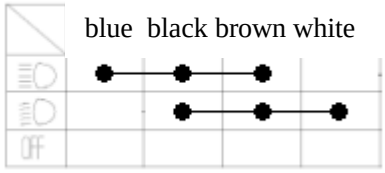
Remove the front panel

Disconnect the connection of the left hand handle switch connector 1

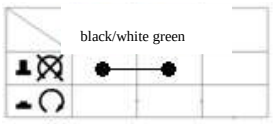
Check for continuity between the terminals of each control switch connector according to the following tables

●The conduction between ● — ● is considered normal

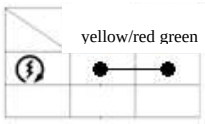
Wiring diagram of lighting switch 2



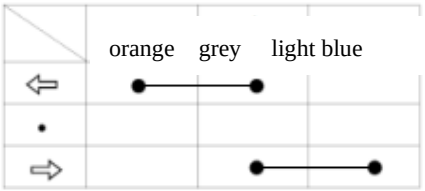
Wiring diagram of flameout switch



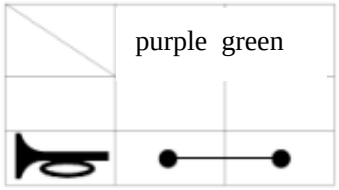
Wiring diagram of electric starting switch



Steering switch 5 wiring diagram



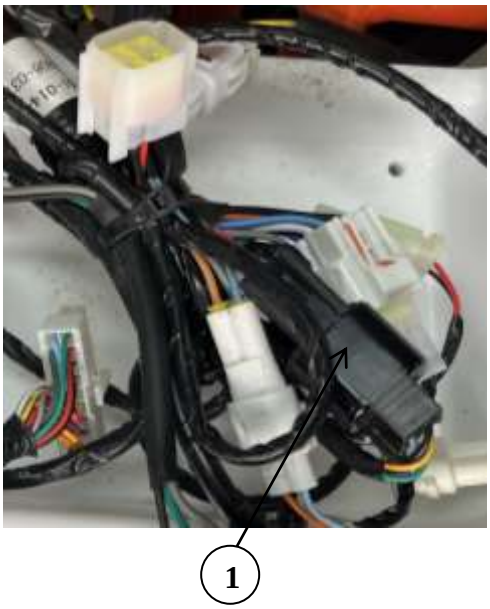
Wiring diagram of electric horn switch 6

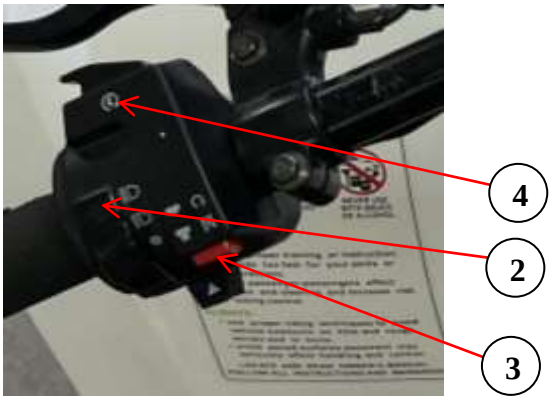


8.6 Brake light switch

Check for continuity between terminals

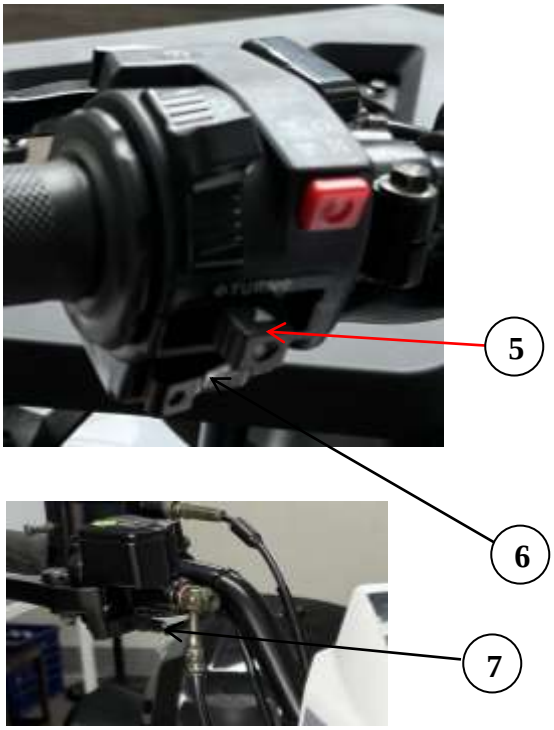
Check if the brake sensor is connected in place. After confirming that the connection is in place, it is normal to hold the brake handle and if it is not connected when the brake handle is released. If there are any abnormalities in the above inspection, replace the brake light switch





3: Flameout switch

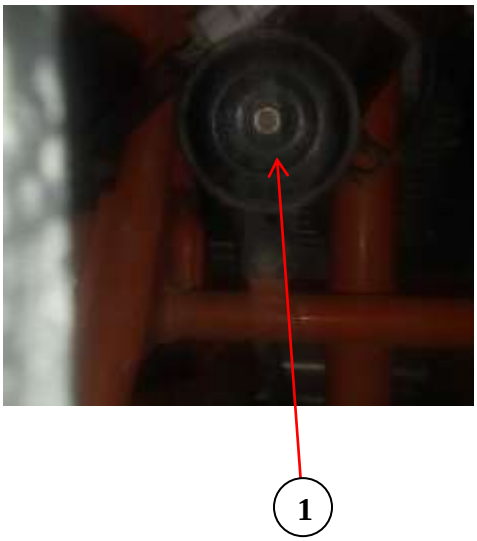
4: Electric starting switch



8.7 Electric horn

Disassembly

Remove the front guard
Remove the electric horn connector
Remove the nut
Remove the electric horn 1



Inspection

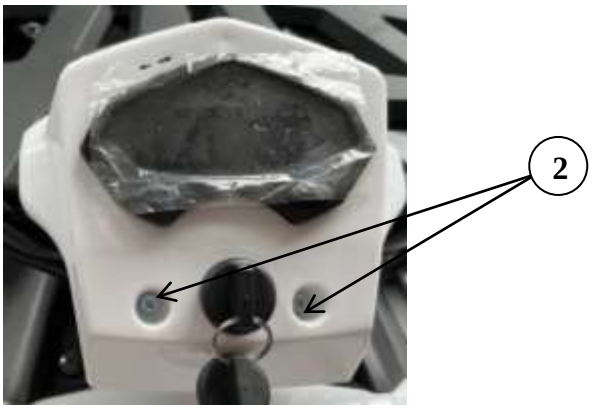
When connecting a fully charged 12V battery, confirm that the electric horn sounds.
If there are any abnormalities in the above inspection, replace the electric horn

Installation

Follow the reverse order of disassembly

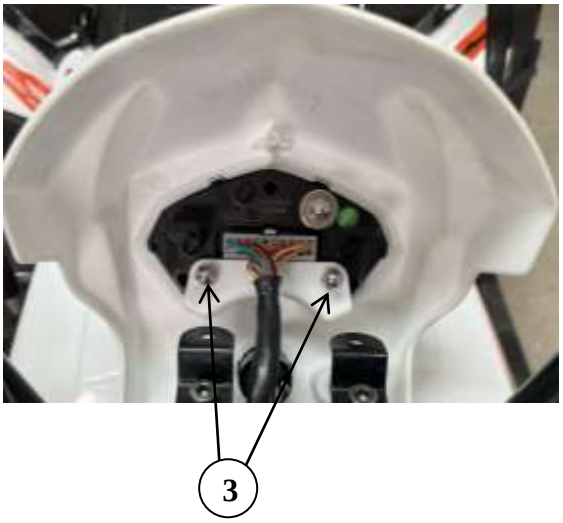
8.8 Instrument

Start the vehicle body, drive slowly, and confirm that the instrument display is normal. If there are any abnormalities during the above inspection, replace the instrument.



Disassembly

Remove the instrument mounting screw 2
Remove the instrument cover
Disconnect the instrument cable plug connector
Remove the instrument panel fastening nut 3
Remove the instrument cluster



Installation

Follow the reverse order of disassembly。

Attention

The main cables and cables should be correctly assembled according to the wiring diagram of cables, pipes, and cables

8.9 Fuel sensor

Disassembly

Remove the oil pipe clamp 1
Remove the 6 fuel sensor fastening screws 2
Remove the sensor plug-in 3
Remove fuel sensor 2 from the fuel tank
Disconnect the fuel sensor connector

Inspection

Connect the fuel sensor connector
Turn the ignition switch to ON
Shake the float of the fuel sensor by hand to confirm its position and whether the corresponding scale on the fuel gauge is consistent
If there are inconsistencies, check if the main cable is disconnected or short circuited. If there are no abnormalities, check the fuel sensor and fuel gauge themselves

Connect a multimeter between the terminals of the fuel sensor connector. Shake the fuel sensor float by hand and measure the resistance value at each position of the float.

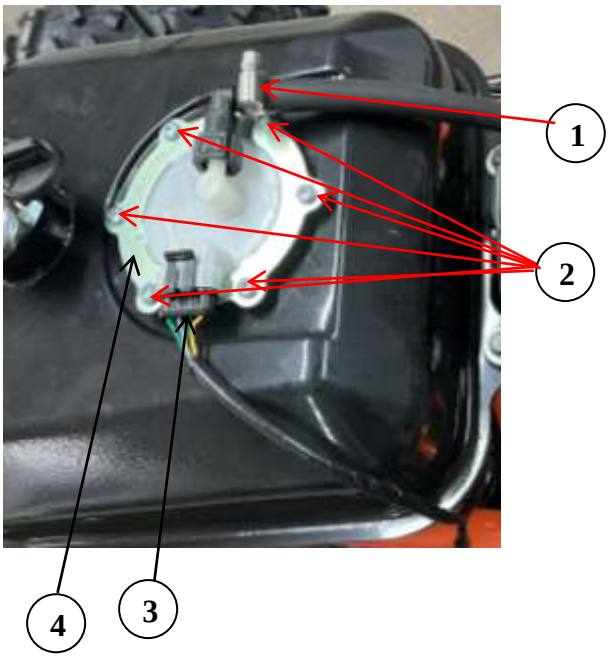
If there are any abnormalities in the above inspection, replace the fuel sensor

Installation

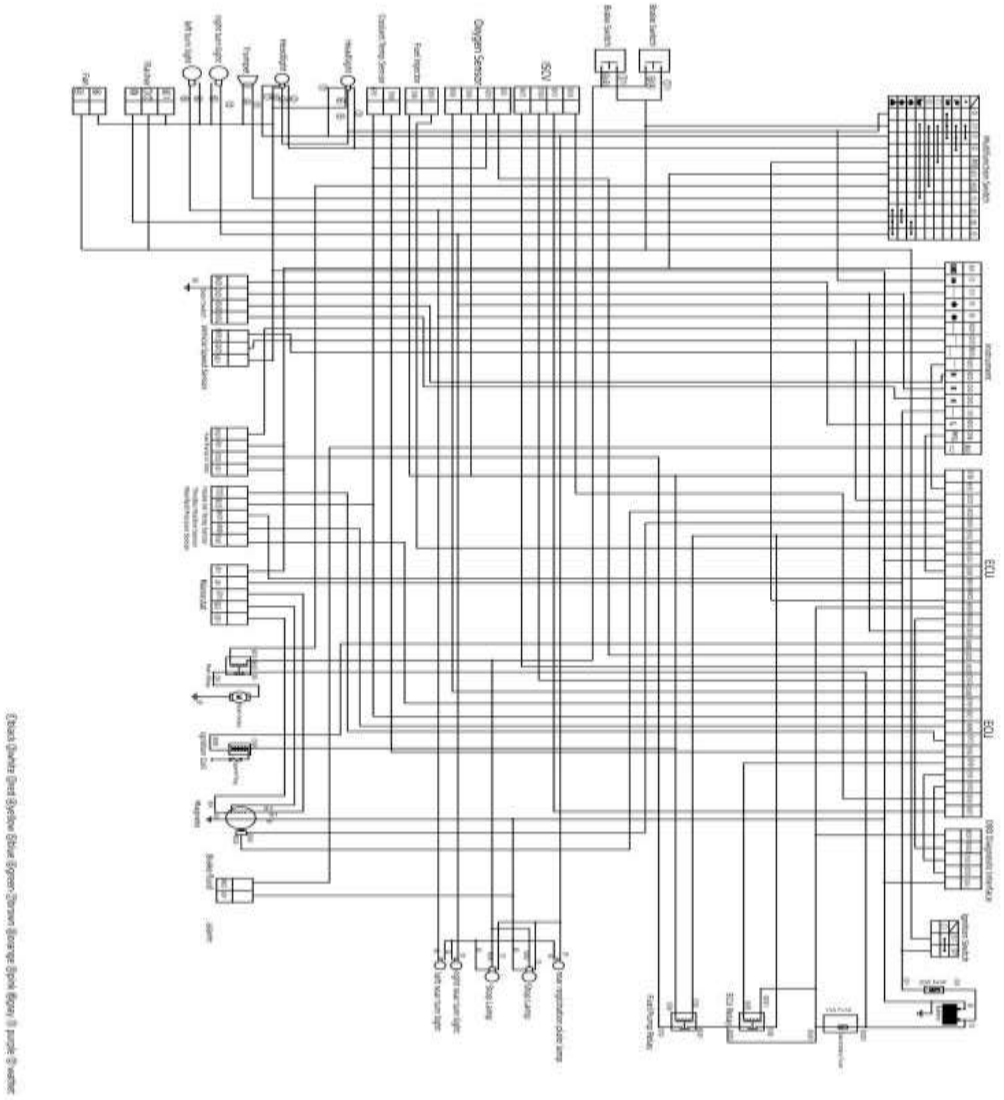
Place the fuel sensor into the mounting hole of the fuel tank and ensure it is properly assembled without any oil leakage.

Connect the fuel sensor connector.

Check the fuel gauge
Turn on the power and check if the fuel gauge is working properly
After confirming that the fuel gauge indicates normal operation, install the body plastic parts and seat cushion in the reverse order of disassembly



Appendix



Electrical diagram