ZT1P77MP
Engine Maintenance Manual

Foreword

All the materials, illustrations, photos, etc. collected in this manual are compiled according to the latest product of ZT 1P77MP Euro 5 . However, due to continuous improvement of products and changes in other aspects, there may be some inconsistencies between your motorcycle and this manual. For parts upgrades, please refer to the part codes on the official website of Zontes, which will not be listed in detail in this manual; if the names of parts in this manual are inconsistent with the official website of Zontes, the official website of Zontes shall prevail.

If some contents of this manual are insufficient, please refer to the “Driver’s Manual" attached to the vehicle. You can download the latest version of the driver's manual as a PDF in the corresponding model introduction on the Zontes official website.

Notice to users

This manual is compiled by Guangdong Tayo Motorcycle Technology Co., Ltd. and is used to guide dealers or service personnel. This manual cannot provide more detailed knowledge about motorcycles, and is only for reference for maintenance. If you do not have the corresponding knowledge such as electrician, machine repair, etc., improper assembly or maintenance failure may occur during repair.

If you need to clean or wash the body parts of this vehicle, you should use neutral motorcycle wash liquid or tap water or diesel oil, kerosene, etc. Acidic or alkaline motorcycle wash liquid will cause irreversible corrosion to the surface paint, electroplated surface, anodized surface, etc. of parts; gasoline will cause premature aging or hardening of sealants, gaskets, rubber parts, etc., reducing the service life. It should be wiped with a non-woven cloth that will not leave residues. Ordinary rags may leave rags or wool that will affect assembly or cause other adverse effects.

Our company tries to update this manual in a timely manner after product changes.

The following are the meanings of the icons marked in this manual:

	Failure to comply will result in personal injury or death of the driver or maintenance personnel ; or serious damage to spare parts , shortened service life, etc.
	Failure to comply may result in personal injury or death of the driver or maintenance personnel ; or damage to spare parts , abnormality, etc.
	Failure to follow the warnings will result in personal injury to the driver or maintenance personnel ; or matters requiring special attention during disassembly.
	Indicates that there is a requirement for torque
	Indicates that the part needs to be replaced after disassembly
	Indicates that the location needs to be measured

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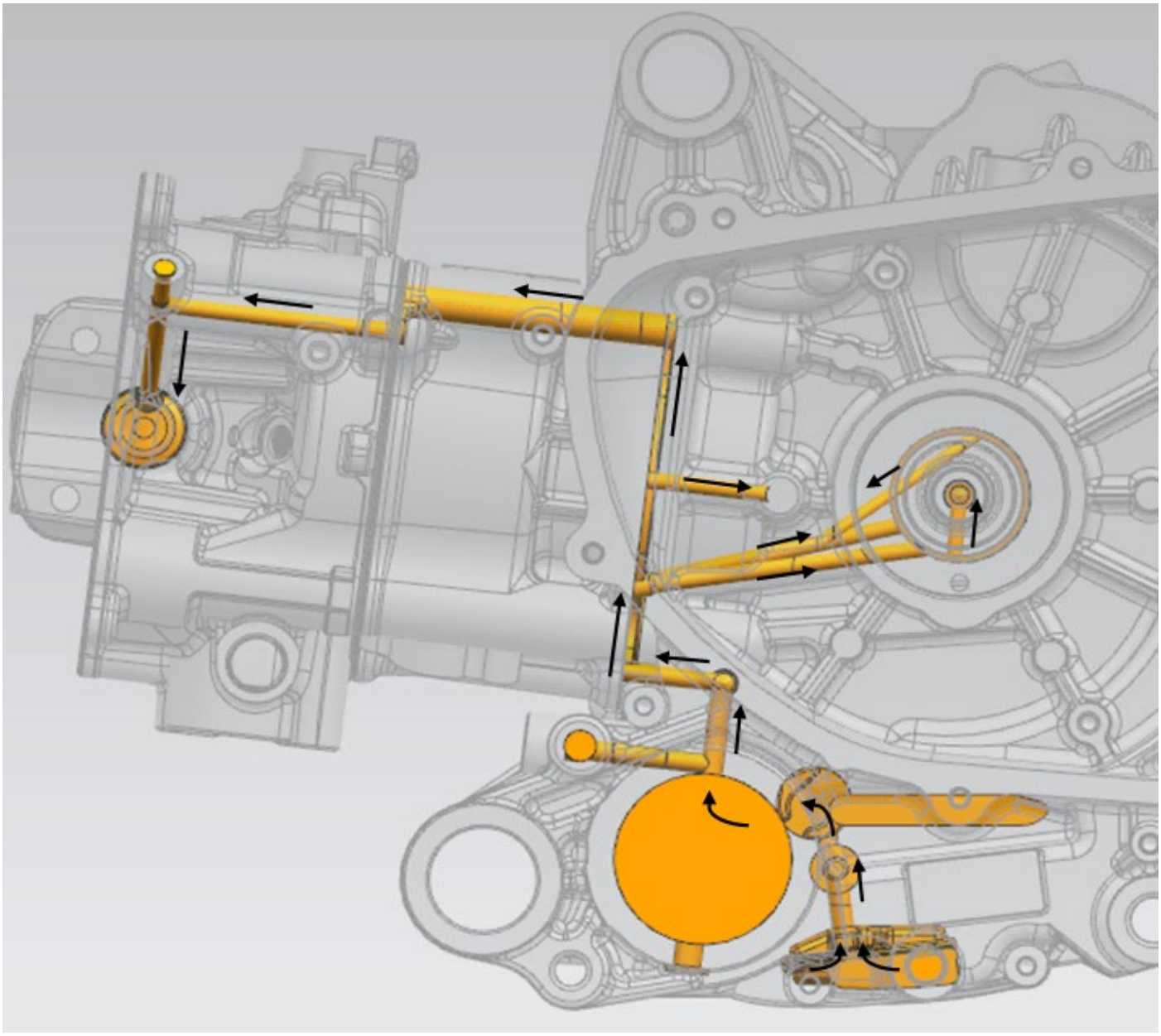
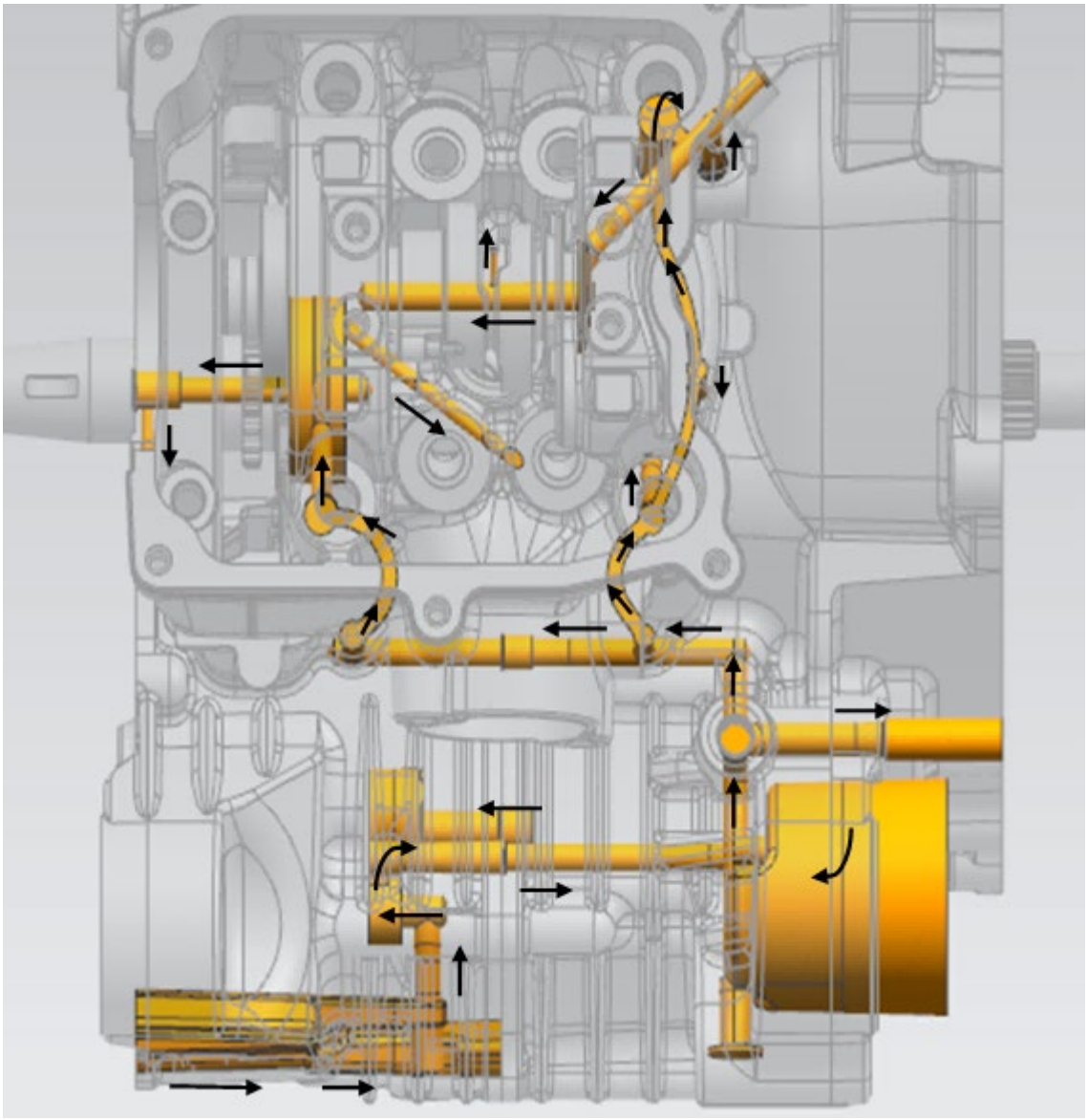
Lubrication system

1. Diagram of lubrication system





2. Maintenance information

General information

1. This chapter introduces the structural composition of the lubrication system and the maintenance of related parts.
2. The maintenance of the oil pump can be carried out on the whole vehicle without dismantling the engine separately.
3. The maintenance steps in this chapter must be carried out only after the engine oil has been drained.
4. When disassembling and installing the oil pump, be careful not to let dust and dirt enter the engine.
5. If the wear of any part of the oil pump exceeds the maintenance threshold, the entire oil pump assembly should be replaced.

Specification

Project		Standard	Remark
Engine Oil Capacity	Drain the oil for normal maintenance (replace filter element)	1.75L (1.85 US qt, 1.54 lmp qt)	
	Drain the oil for normal maintenance (without changing the filter element)	1.55L (1.64 US qt, 1. 36 lmp qt)	
	Drain the oil and remove the right cover for normal maintenance (replace the filter element)	1.8L (1.9 US qt, 1.5 8 lmp qt)	
	Drain the oil and remove the right cover for normal maintenance (without replacing the filter element)	1.6L (1.69 US qt, 1.41 lmp qt)	
	Disassembly and reassembly of the whole machine	2.0L (21 US qt, 1.76 lmp qt)	
recommended engine oil		API SN grade or higher motorcycle special motor oil	

Torque value

Bolt model	Assembly position	Quantity	Torque (Nm)	Remark
M6×60 hex flange bolts	Oil pump locking bolt	2	11 ± 1.5 Nm	-

tool

1. Torque wrench + 8# sleeve;
2. 8#-T-shaped socket wrench;

3. Common failure phenomenon/troubleshooting

1. Engine oil level is too low

·Engine oil leakage

Worn or improperly installed piston rings

·Cylinder wear

Abrasion of seals such as valve guides and valve rod diameter oil seals

2. The oil is dirty

·No regular oil change

·Poor gasoline quality

·Piston ring wear

·Oil oxidation

4. Oil pump

to disassemble

Before disassembling the oil pump, do the following:

· Remove the muffler. **(Refer to the ZT350T-D maintenance manual for disassembly and assembly-- 2. Maintenance-air filter (filter element)-bolts and nuts of the muffler)**

- Remove the right crankcase cover of the engine. **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly--right crankcase cover, magneto-right crankcase cover, magneto stator)**

· Remove the magneto rotor. **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly - right crankcase cover, magneto - magneto rotor)**

·Remove the 5×5.7×16 half-round key and the large electric starter gear. **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly - magneto rotor)**

① Use an 8#-T socket wrench to remove the 2 oil pump locking bolts (rotate counterclockwise).

② Take out the 2 oil pump bolts , and take out the oil pump assembly and the oil pump chain together.

Install

① Put one end of the oil pump chain on the driven sprocket of the oil pump, and the other end on the driving gear of the oil pump at the crankshaft end, align the oil pump shaft with the oil pump installation hole on the box body, and align the oil pump positioning pin with the box body. Install the oil pump on the upper positioning pin hole and press it in place (**Note** : spray oil on the chain, inner and outer rotors of the oil pump); then install 2 oil pump bolts, use a torque wrench (or air batch) and 8 #Tighten the bolt with the sleeve, and the bolt locking torque is 11±1.5N.

·Install 5×5.7×16 semicircle keys and large gear for electric starter. **(Refer to ZT1P77MP engine maintenance manual for installation - right crankcase cover, magneto - magneto rotor)**

·Install the magneto rotor. **(Refer to ZT1P77MP engine maintenance manual for installation - right crankcase cover, magneto - magneto rotor)**

·Install the right crankcase cover of the engine. **(Refer to ZT1P77MP engine maintenance manual for installation - right crankcase cover, magneto - right crankcase cover, magneto stator)**

·Install the muffler. **(Refer to the ZT1P77MP maintenance manual for installation -- 2. Maintenance-air filter (filter element)-bolts and nuts of the muffler)**

Disassembly/installation

Disassemble in the following order

· M6×40 cross recessed pan head screw

· ZT1P72MN oil pump cover

·Inner rotor JBZ-29-18

·Outer rotor JBZ-29-18

· 2.5×12 cylindrical pin

· 8.6×11.5×1 thrust washer

· ZT1P72MN oil pump lower case

· 3×12 cylindrical pins

·Inner rotor JBZ-29-11

·Outer rotor JBZ-29-11

· 2.5×12 cylindrical pin

· ZT1P72MN oil pump upper casing

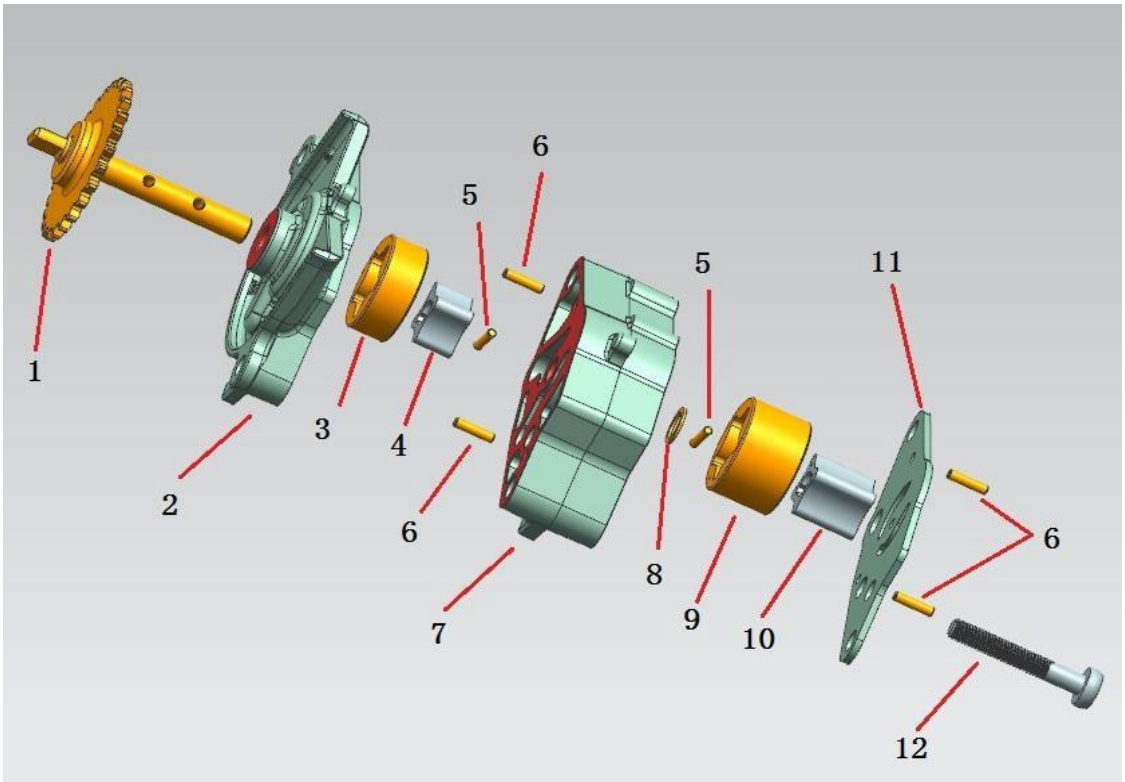
· ZT1P72MN oil pump shaft assembly

Please assemble in the reverse order of disassembly

(Note: During assembly, oil should be applied to the inner and outer rotors to fully lubricate the inner cavity of the oil pump)

Bolt: M6×40 cross recessed pan head screw (tighten with a cross screwdriver or air batch + cross batch head)

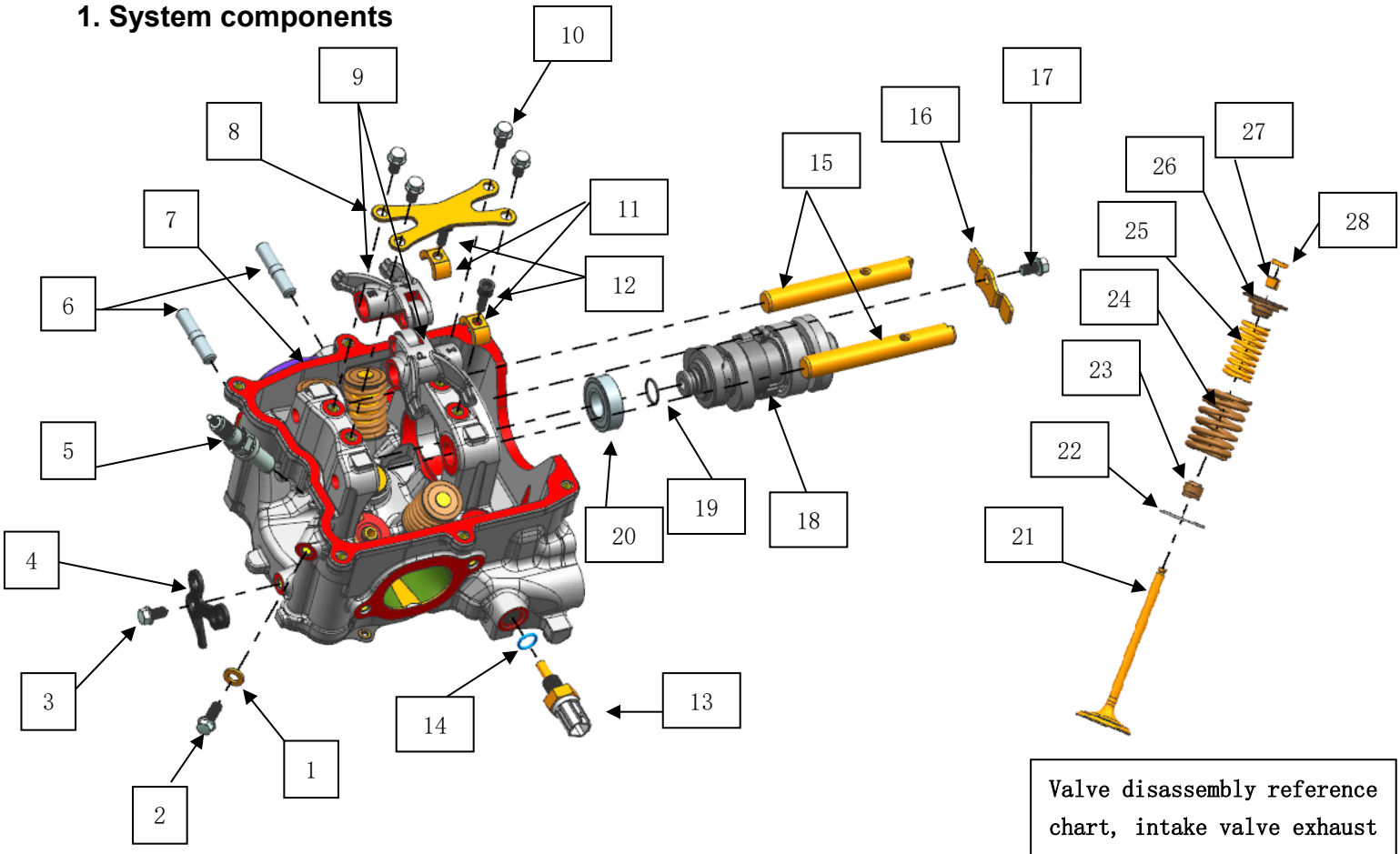
Torque: 5～7N.m



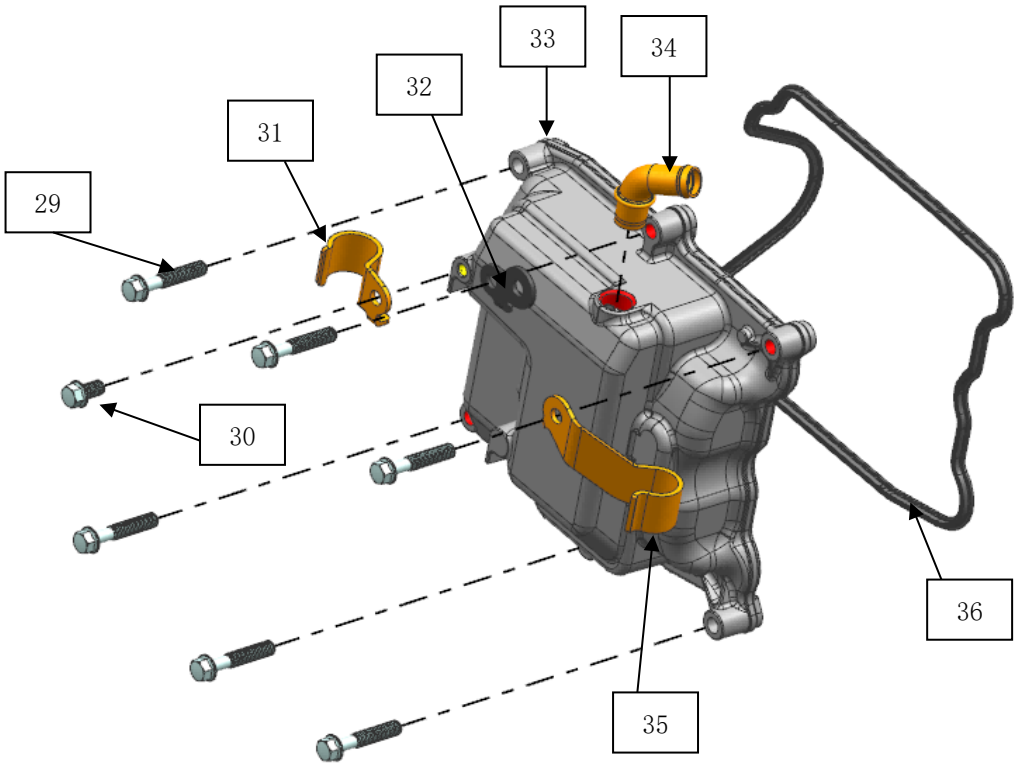
No.	Name	Quantity
1	ZT1P72MN oil pump shaft assembly	1
2	ZT1P72MN oil pump upper housing	1
3	External rotor JBZ-29-11	1
4	Internal rotor JBZ-29-11	1
5	2.5x12 cylindrical pin	2
6	3x12 cylindrical pin	4
7	ZT1P72MN oil pump lower housing	1
8	86x11.5x1 thrust spacer	1
9	External rotor JBZ-29-18	1
10	Internal rotor JBZ-29-18	1
11	ZT1P72MN Oil Pump Cap	1

Cylinder head cover, cylinder head

1. System components



Valve disassembly reference chart, intake valve exhaust valve disassembly structure is the same.



Parts information

Serial number	Name	Quantity	Serial number	Name	Quantity
1	6.3×12×1.6 copper gasket	1	19	φ11.11×φ1.78 fluorine rubber O-ring	1
2	M6×16 hex flange bolts	1	20	GB276－6002-RS/P5C3 deep groove ball bearings	1
3	M6×10 top pin bolt	1	21	ZTIP77MP valve	Into 2 row 2
4	ZT1P77MP cylinder head clamp bracket	1	22	φ17.2×φ25×1 valve spring base	4
5	LMAR8A－9 spark plug	1	23	φ5.0 valve rod diameter oil seal	4
6	AYM8－M8×38 double head 10.9 grade stud	2	24	ZT1P77MP valve outer spring	4
7	ZT1P77MP cylinder head	1	25	ZT1P77MP valve inner spring	4
8	ZT1P72MN cylinder head pressure plate	1	26	ZT1P77MP valve spring bearing plate	4
9	ZT1P77MP intake/exhaust rocker arm parts	1/1	27	ZT1P58MJ valve lock clip	8
10	M6×10 top pin bolt	4	28	Φ8.85 valve clearance adjustment pad	4

11	ZT1P77MP rocker limit block	2	29	M6×30 hexagonal flange bolts (environmental protection color zinc)	6
12	M5×15－5# hexagon socket head screw (oxidized black)	2	30	M6×10 top pin bolt (environmental protection color zinc)	1
13	Water and oil shared sensor	1	31	ZT1P77MP high-pressure fuel pipe bracket (short wheelbase)	1
14	9 x 2 EPDM O-rings	1	32	ZT1P77MP cylinder head cover harness bracket	1
15	ZT1P77MP intake and exhaust rocker shaft	2	33	ZT1P77MP cylinder head cover-B	1
16	ZT1P77MP camshaft bearing pressure plate	1	34	ZT1P77MP cylinder head cover air balance tube	1
17	M6×16 top pin bolt	1	35	ZT1P77MP high-pressure fuel pipe bracket (long wheelbase)	1
18	ZT1P72MN decompression camshaft parts	1	36	ZT1P72MN cylinder head cover rubber gasket	1

2. Maintenance information

General information

1. For the maintenance of the cylinder head cover and cylinder head, the engine must be removed from the frame. **(For the engine to be removed from the vehicle, refer to the ZT350T-D Maintenance Manual - 11. Vehicle Engine Disassembly)**
2. Disassemble the cylinder head cover and cylinder head. The engine oil does not need to be released. The rear wheel and the main bracket can be used to stand the engine stably.
3. Before disassembly, the foreign matter and dust on the cylinder head cover and the joint surface of the cylinder head need to be removed.
4. After removing the cylinder head cover and before removing the cylinder head, check the timing and turn the piston to the top dead center.
5. When disassembling, the disassembled parts must be packed in a clean box and marked to prevent wrong assembly during assembly.
6. When removing the cylinder head, first remove the 2 M8×1×117 hexagonal flange bolts on the side, and finally remove the 4 M10×1.25 hexagonal flange nuts from the cylinder head.
7. When disassembling the cylinder head, it is forbidden to bump or scratch the joint surface of the cylinder head.
8. When disassembling and assembling the cylinder head, the cylinder head gasket cannot be reused to prevent blow-by and air leakage.

Bolt torque value

Bolt model	Assembly position	quantity	Torque (N•m)	Remark
M6×30 hex flange bolts	Cylinder head cover bolts	6	1 2 ± 1 .5	-
M8×1×117 hex flange bolts	cylinder head bolts	2	2 0 ±2	-
M10×1.25 hexagon flange nut	cylinder head nut	4	5 5 ±5	-
M6×10 top pin bolt	-	10	1 0 ± 1	-

M6×22 hexagon flange full thread bolts	Thermostat lock bolt	2	1 2 ± 1 .5	-
M6×16 hex flange bolts	-	3	1 2 ± 1 .5	-
LMAR8A－9 spark plug	-	1	1 4 ± 1	-

tool

1. Pliers.
2. T-shaped sleeve -8#.
3. T-shaped socket-10# / torque wrench+10# socket.
4. T-shaped socket-14# / torque wrench+14# socket.
5. 5# inner hexagon.
6. 6# inner hexagon.
7. Valve spring top clamp.
8. 22# open-end wrench.
9. 17# plum wrench
10. Spark plug sleeve.
11, 10# inner hexagon.

3. Fault phenomenon/fault analysis

When the cylinder head of the engine fails, it will affect the performance of the engine at least, and it will make the engine difficult to start. Troubleshooting can be done by detecting cylinder pressure, endoscope and other methods.

1. When the engine starts, the idling speed is unstable, or it is difficult to start

• The valve clearance is incorrect.
·Wrong timing, wrong teeth.
·The valve spring is broken.
·The air valve is not closed tightly and leaks air.
·The spark plug has serious on deposits, and the ignition energy is not enough.
·The spark plug is loose and leaks air.
·Cylinder head gasket gas blowing.

2. After the engine is running, there is abnormal sound

· The valve clearance is incorrect.
·The valve spring is broken.
· Valve seat ring wear.
· The camshaft throwing block is broken.
• Camshaft bearings are worn or damaged.
·The tensioner is damaged.
·Intake and exhaust valve rocker arm bearings are worn or damaged.
·The limit block of the rocker arm is broken.
·Excessive motorcycle carbon deposits in the engine, resulting in deflagration.

3. After the engine heats up, the exhaust gas is abnormal

·The oil seal of the valve stem diameter is worn or damaged.
• Valve guides are worn or damaged.
·The cylinder head gasket is damaged.

4. The engine is started electrically, and the crankshaft rotates without cylinder pressure or with very little cylinder pressure

·The valve spring is broken.

·The valve is broken.

·Cylinder head gasket gas blowing.

·The spark plug is loose and leaks air.

· Excessive motorcycle carbon deposits on the valves cause the valves to not close tightly.

4. Cylinder compression test

1. Preheat the engine to the normal operating temperature, stop the engine, pull out the spark plug cap and remove the spark plug **(refer to ZT1P77MP maintenance manual for disassembly - 2. Maintenance - spark plug)**.

2. Install the cylinder pressure gauge connector into the spark plug hole.

3. Fully open the throttle, press the start switch, and use the starter motor to drive the crankshaft and piston to run until the cylinder pressure gauge reading stops rising (starter motor running time ≤ 15s).

Engine speed: 480-525r/min

Compression pressure: 750-1050KPa (7.65-10.71 Kgf/cm ^{2} , 108.8-152.3 psi)

① If the measured cylinder pressure is larger than the normal value, it means that there is motorcycle carbon deposit on the top of the piston or the wall of the cylinder.

②If the measured cylinder pressure is lower than the normal value , pour a small amount of clean engine oil from the spark plug, turn the crankshaft a few times, so that the piston ring and cylinder wall are evenly covered with oil film, and retest the cylinder pressure. If the cylinder pressure measured after pouring oil is greater than the last cylinder pressure value, please dismantle the machine and check the piston and piston ring.

Failure analysis:

a. Piston ring wear.

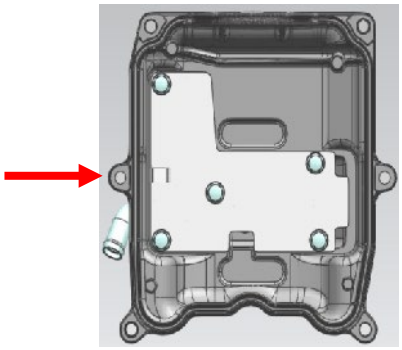
b. Cylinder wear.

③If the cylinder pressure measured by pouring in the engine oil is the same as the last time (the cylinder pressure is too small), first measure whether there is any abnormality in the valve clearance of the intake and exhaust valves, and then disassemble the machine to check whether there is leakage of the intake and exhaust valves, the cylinder block and cylinder pressure. Check whether the coating of the head gasket is damaged or blown by gas.

5. Cylinder head cover

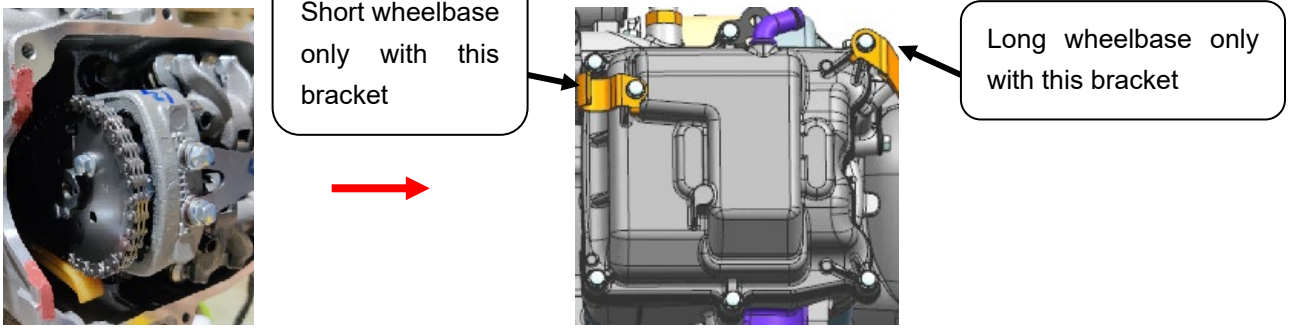
Cylinder head cover removal

1. As shown in the figure, use the T rod -8# to remove the cylinder head cover locking bolt, and remove the cylinder head cover wiring harness support, cylinder head cover, and cylinder head cover sealing ring.



Cylinder head cover installation

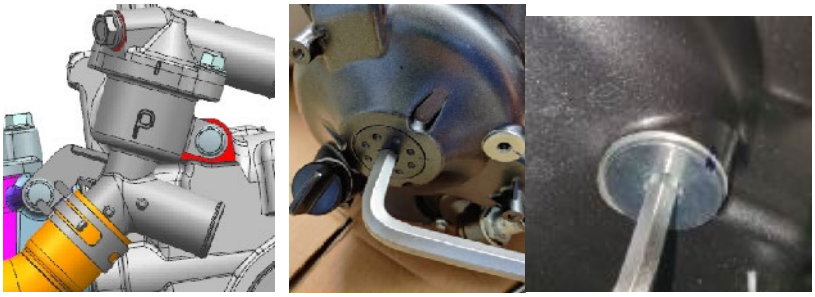
1. As shown in the figure, after removing the plane sealant, oil stains and dust on the joint surface of the cylinder head and the cylinder head cover, apply an appropriate amount of plane sealant on the position shown in the figure. Check the cylinder head cover sealing ring and wire harness bracket on the cylinder head cover. After confirming that the installation is in place, install the cylinder head cover assembly to the corresponding position of the cylinder head. Use M6×30 bolts to pre-tighten the cylinder head cover and tighten it with a fixed torque, 1 2 ± 1.5N •m . And check the installation of the high-pressure oil pipe support, pre-tighten the support with M6×10 bolts and tighten it with a fixed torque, 1 0 ± 1 N•m .



6. Cylinder head

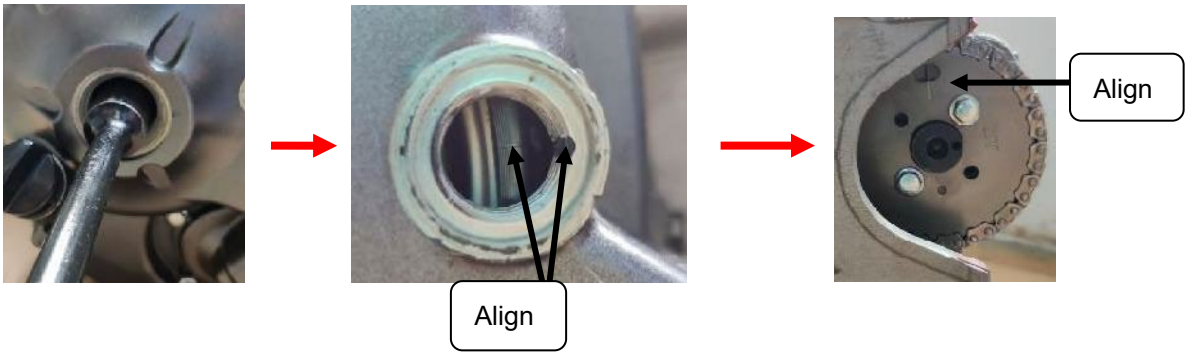
Cylinder head removal

1. Use a T-shaped sleeve -8# to remove the thermostat bolt and take off the thermostat, and use the 5# and 10# inner hexagonal wrench to remove the M14×1.5 screw plug and M30×1.5 screw plug on the right crankcase cover respectively. Aluminum plug, and remove the O-ring.



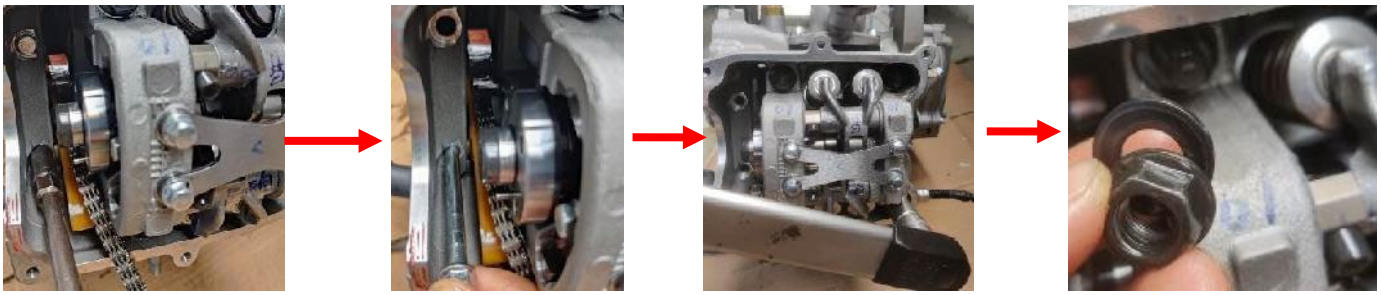
2. Insert a 14#-T-type socket wrench from the M30×1.5 aluminum screw plug hole and set it on the magneto rotor locking bolt, then turn the crankshaft clockwise to align the T point mark on the flywheel with the M14×1.5 screw. The plug hole marks the gap. At the same time, the top dead center marking line on the timing driven sprocket should also be aligned with the raised marking line on the cylinder head.

Note: Once the marking line at point T turns over the marking line when turning the flywheel, it cannot be turned back to the point in the opposite direction. It is necessary to turn the crankshaft clockwise two times again to re-align the point! ! !



3. As shown in the picture, use T bar -8# to remove the tensioner, timing driven sprocket fixing bolts, and timing driven sprocket **(refer to ZT1P77MP engine maintenance manual for disassembly and assembly - cylinder head cover, cylinder head - tensioner)** .

4. As shown in the picture, first remove 2 pieces of M8×1×117 hexagonal flange bolts on the side of the cylinder head with T rod -10#, and then use wrench -14# to remove 4 pieces of M10×1.25 from the opposite corner of the cylinder head and lock the nuts.



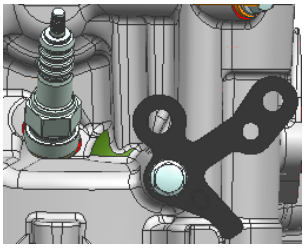
5. As shown in the figure, remove the cylinder head, cylinder head gasket and positioning pin.

Cylinder Head Disassembly

1. Use a 6#-hexagon socket to remove the intake manifold subassembly and heat insulation pad (Note: the O-ring of the heat insulation pad must not be damaged or broken).

2. As shown in the figure below, use a 22# open-end wrench to remove the oxygen sensor (the long-wheelbase version has it, and the short-wheelbase version has an oxygen sensor), and T-bar-8# to remove the cylinder head clamp bracket

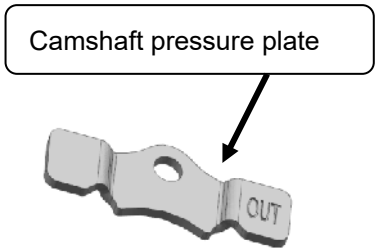
(short-wheelbase model does not have an oxygen sensor installed). Remove the spark plug with a spark plug socket. Use a 17# plum wrench to remove the water oil temperature sensor.



3. As shown in the figure below, loosen the cylinder head pressure plate and camshaft pressure plate bolts, and remove the cylinder head pressure plate and camshaft pressure plate.



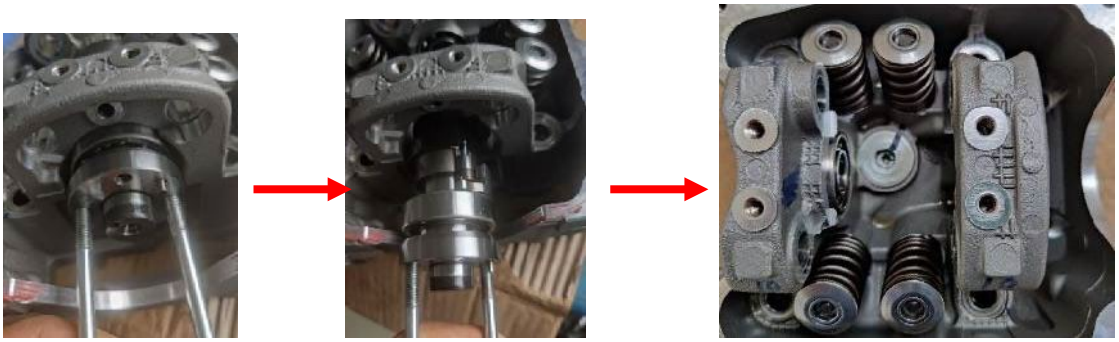



4. As shown in the figure below, use a 5# inner hexagon to remove the rocker arm limit block bolt, and remove the rocker arm limit block, rocker shaft, and intake and exhaust rocker arms, and valve adjustment gaskets.

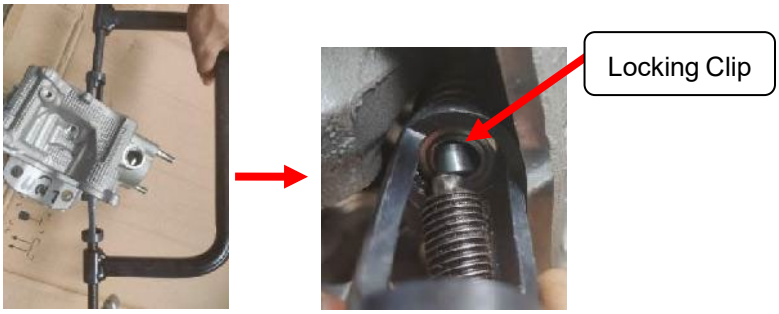




5. As shown in the picture, screw two M6 bolts into the threaded holes of the camshaft, keep the camshaft angle consistent with the T point of the alignment timing or slightly rotate counterclockwise to an appropriate angle, and remove the camshaft.



6. Use valve spring overhead pliers to remove the valve lock clip (do not compress the valve spring excessively). After taking out the valve lock clip, remove the valve spring retainer, valve inner and outer springs, valve stem diameter oil seal (**The removed valve stem diameter oil seal cannot be used again**), valve spring base, and valve in sequence.



7. As shown in the figure, remove the carbon deposits in the combustion chamber. Do not scratch the joint surface of the cylinder head and the surface of the valve seat ring.

Inspection of cylinder head parts:

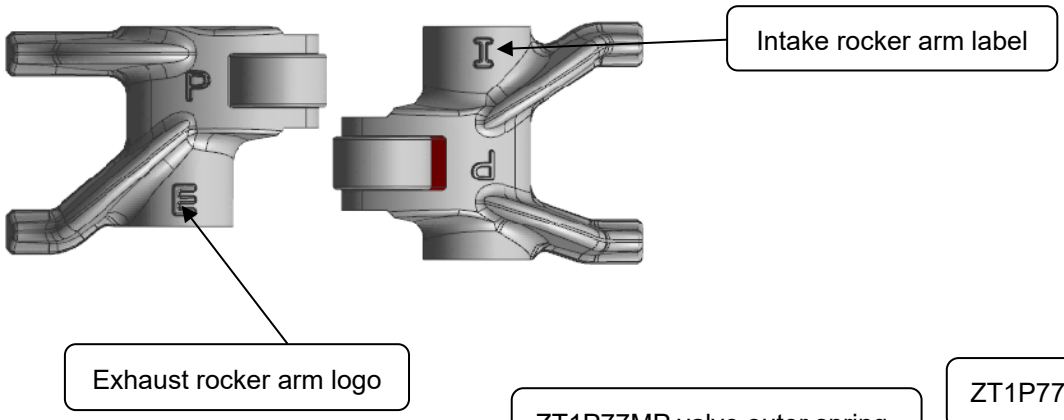
1. Inlet and exhaust rocker shaft

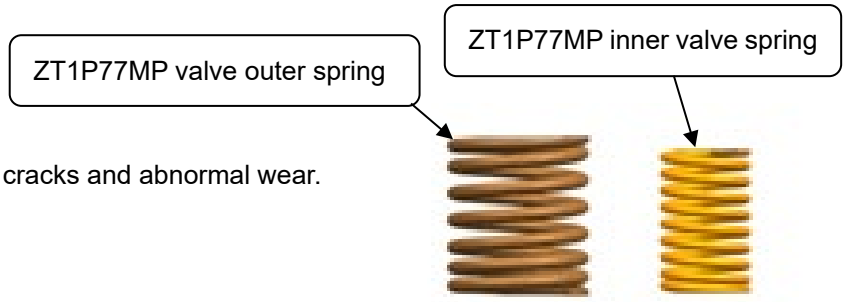
a. There is no abnormal wear on the intake and exhaust rocker shafts.

2. Intake rocker arm, exhaust rocker arm

a. The intake rocker arm (mark I) and the exhaust rocker arm (mark E) have no abnormal wear.

b. The intake and exhaust rocker rollers rotate smoothly without abnormal noise.





3. Intake and exhaust valve springs

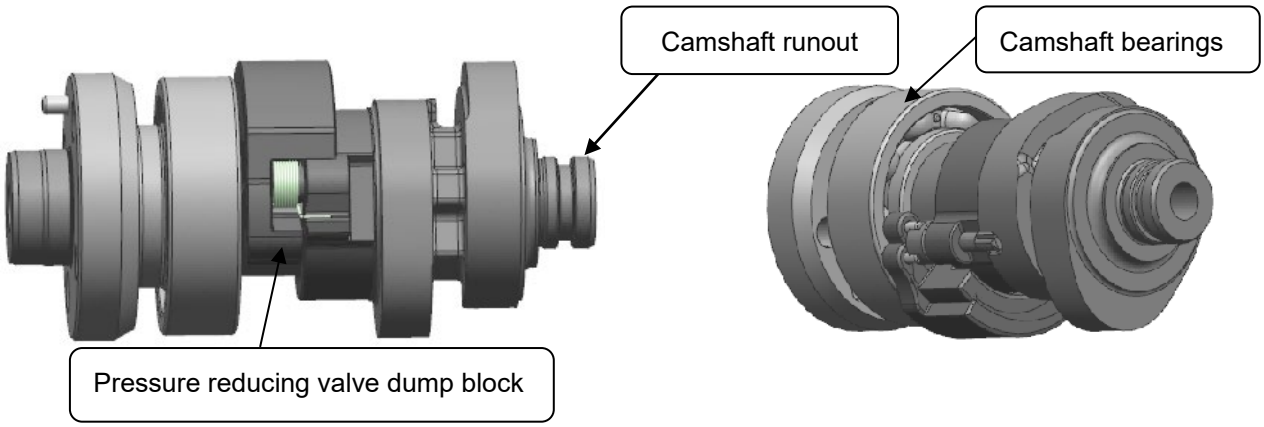
a. The intake and exhaust springs have no cracks and abnormal wear.

4. Camshaft

a. Check whether the throwing block of the camshaft pressure reducing valve returns normally.

b. Check whether the camshaft pick is abnormally worn.

c. Turn the camshaft bearing by hand, it should turn smoothly without abnormal noise.

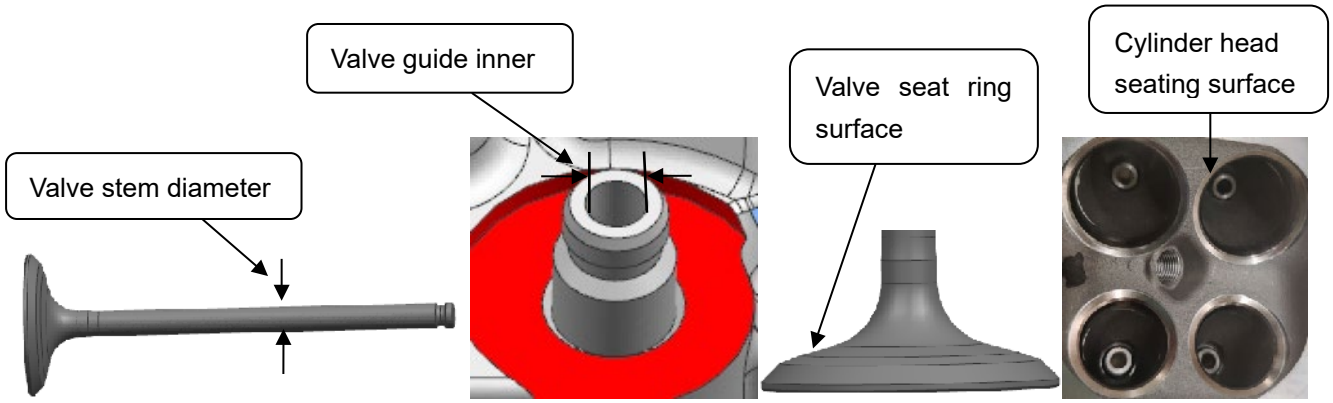


5. Intake valve, exhaust valve, cylinder head seat ring

a. Check whether the diameter of the valve stem is abnormally worn, bent or ablated, and check whether the valve can move smoothly in the valve guide.

b. Check the valve seat surface for abnormal wear and erosion.

C. Check the seat surface of the cylinder head, no abnormal wear and ablation.

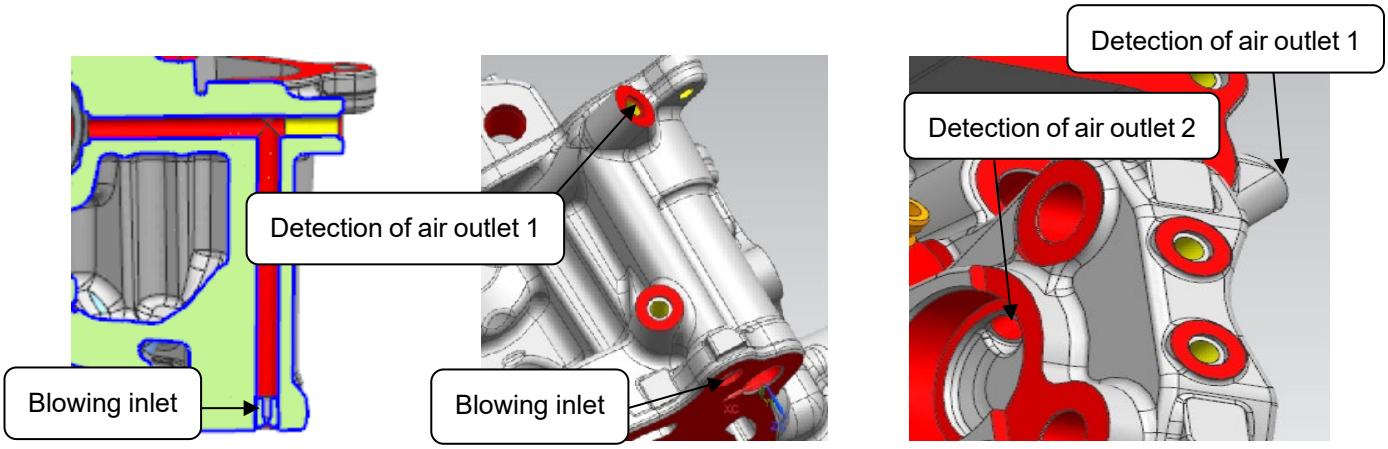


6. Cylinder head bearing

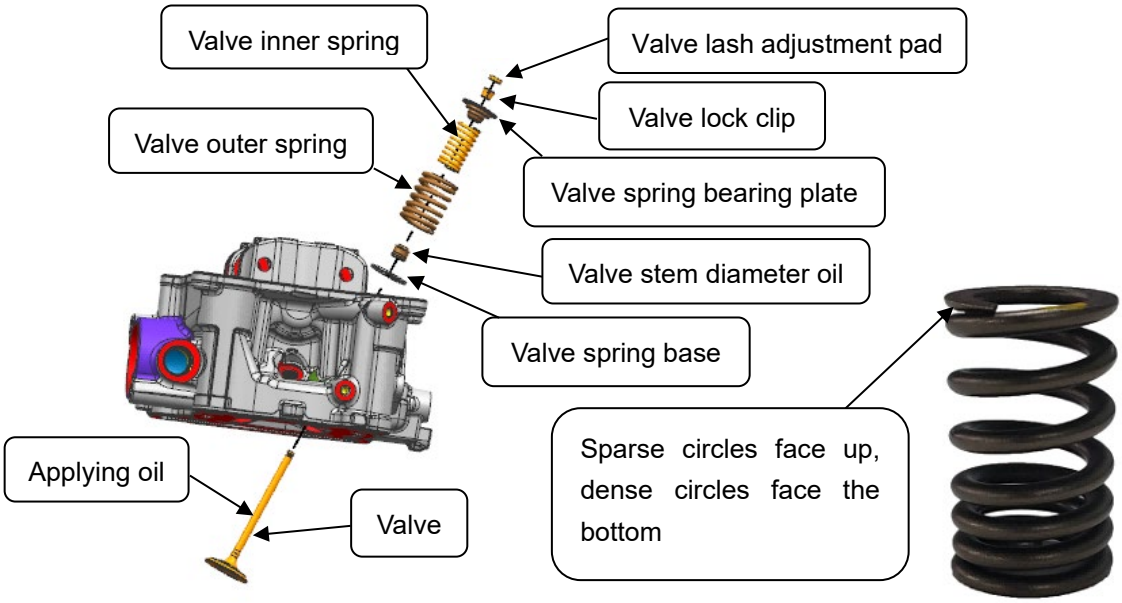
a. Check the cylinder head bearing. The inner ring of the bearing should rotate smoothly without stagnation. If the inner ring of the bearing is stuck, please replace the cylinder head bearing.

Cylinder head

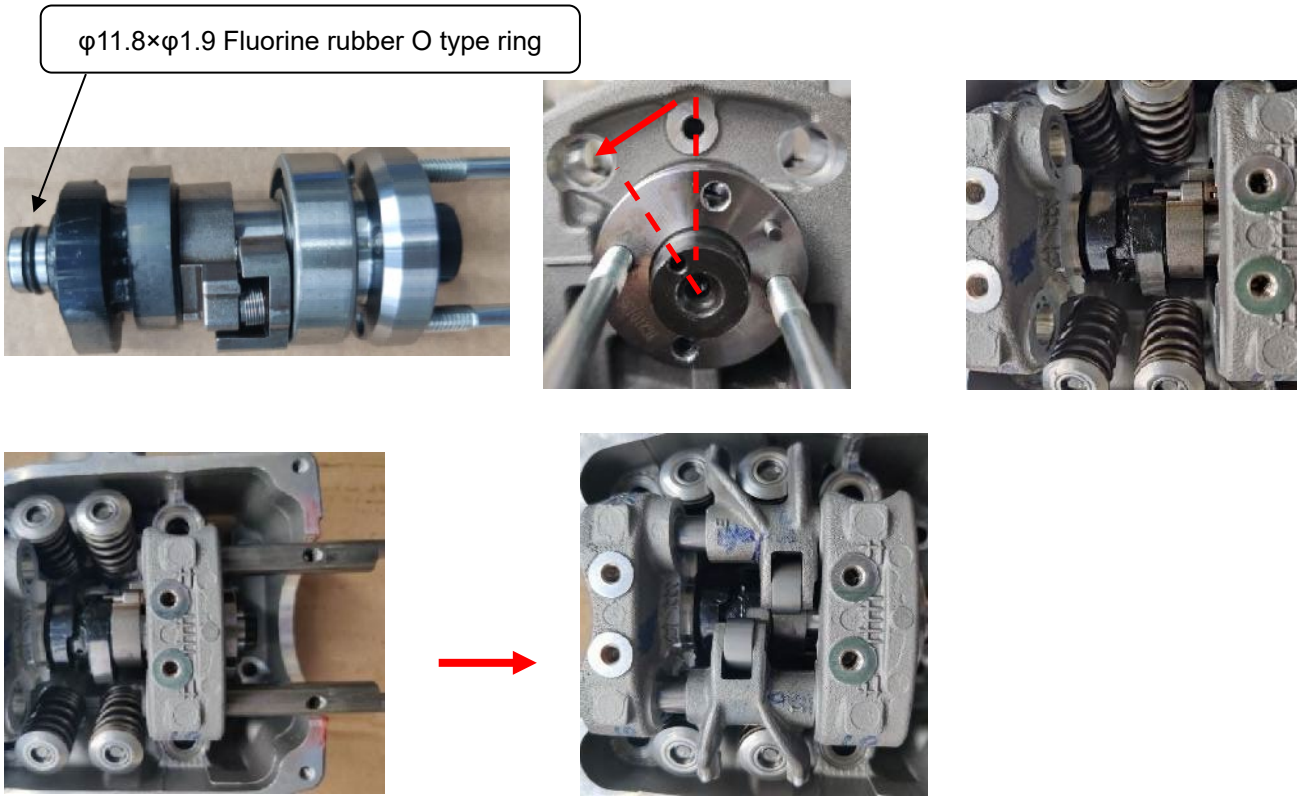
1. As shown in the figure, use an air gun to blow the oil passage of the cylinder head to ensure that the oil passage of the cylinder head is unblocked.



2. As shown in the figure, install the valve (apply engine oil), valve spring base, valve stem diameter oil seal (press in place after installation), valve inner and outer springs, valve spring retainer, and valve lock clip (install with valve installation tool) in sequence. **(Note: When installing the inner and outer springs of the valve, the sparse circle faces upwards and the dense circle faces downward.)**

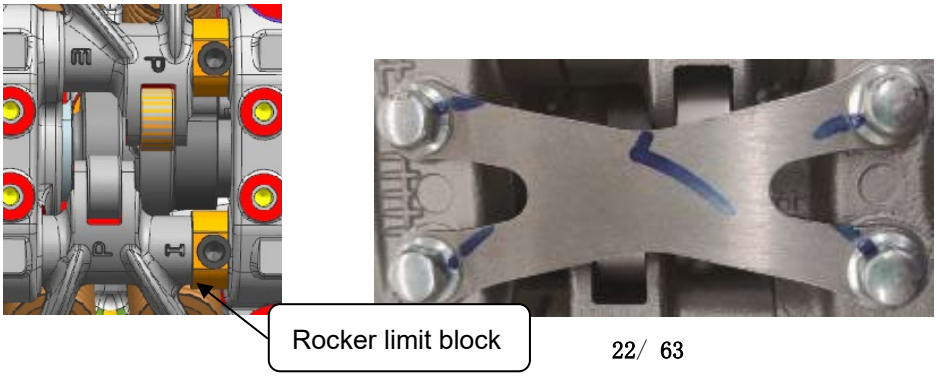


3. As shown in the figure, install the camshaft (O-rings need to be installed), the intake rocker arm sub-assembly, the exhaust rocker arm sub-assembly, and the intake and exhaust rocker arm shaft in sequence. **(Note: O-rings cannot be missed on the camshaft. When the camshaft is installed, the normal T-point position needs to be inserted at an appropriate angle in the counterclockwise direction to install it in place.**)



4. Install the camshaft bearing pressure plate, and the M6×16 bolts need to be threaded and glued. Install the valve clearance adjustment pad to adjust the valve clearance.

5. As shown in the figure, after the valve clearance is adjusted, install the rocker arm limit block and the limit block locking bolt (the bolt needs to be coated with thread glue, and the torque is 7 ± 1 N•m) . Install the cylinder head pressure plate and lock it with 4 M6×10 bolts respectively (apply thread glue, torque 10 ± 1 N•m).

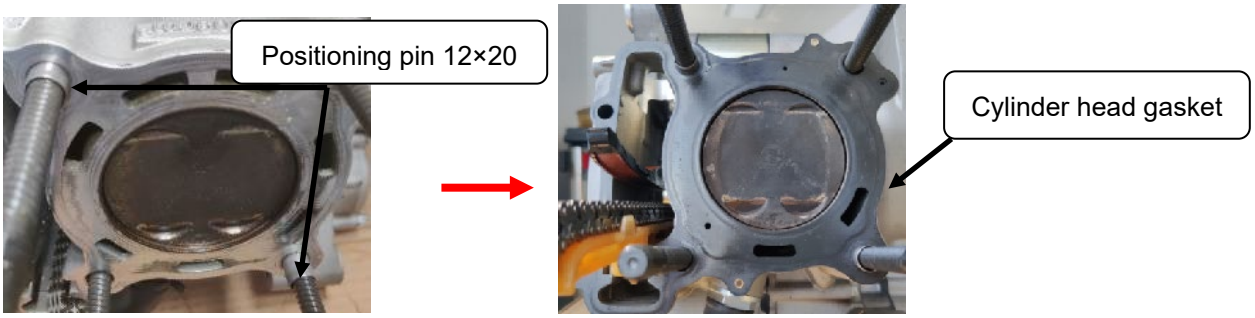


6. As shown in the figure, install the spark plug (torque 14 ± 1 N•m), water and oil temperature sensor (do not omit the O-ring, torque 14 ± 1.5 N•m), oxygen sensor, cylinder head clamp bracket (Torque 10 ± 1 N•m, the bracket is not installed on short wheelbase models).

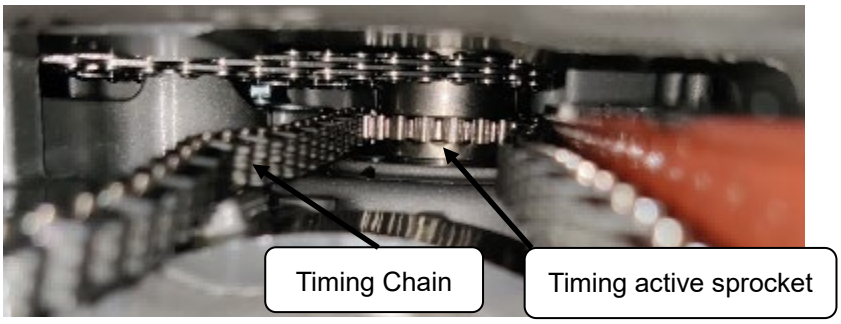
7. Install the insulation pad (do not miss out the 2 O-rings), and the intake manifold subassembly.

Cylinder head installation

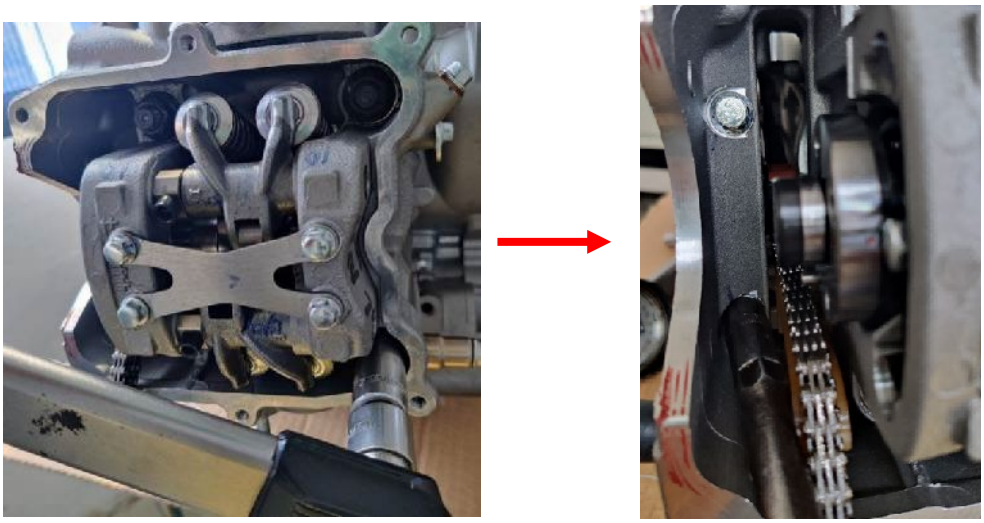
1. Remove the oil stains, water stains and dust on the joint surface of the cylinder and the cylinder head. After checking that there is no foreign matter on the surface of the cylinder and piston, install two φ12 positioning pins and cylinder head gaskets (Note: cylinder head gaskets cannot be reused**. After dismantling the cylinder head, the gasket of the cylinder body box needs to be replaced, and the joint surface needs to be sealed with flat sealant. For the installation of the cylinder piston, refer to the ZT1P77MP Engine Maintenance Manual--Cylinder, Piston)** .



2. As shown in the figure, check whether the timing chain is detached from the timing driving sprocket. If it is detached, the timing chain needs to be hung on the timing driving gear again.

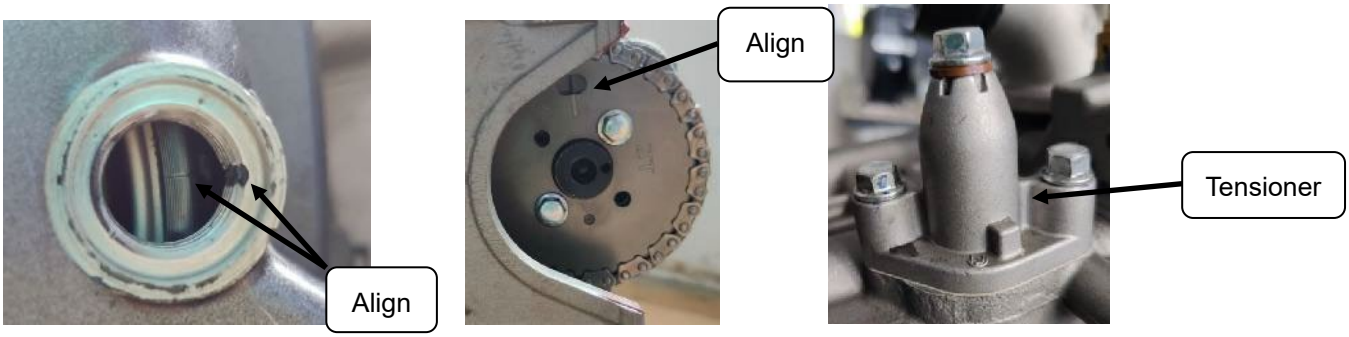


3. As shown in the figure, after confirming that there is no missing or wrong installation, install the cylinder head into the corresponding position of the engine. After evenly diagonally pre-tightening the cylinder head nut and the two locking bolts on the side, use a fixed torque wrench to tighten them respectively (M10×1.25 hexagonal flange nut fixed torque 55 ± 5 N•m , M8 × 1 ×117 hexagonal flange 9.8 class bolts with fixed torque 20 ±2 N·m).



4. As shown in the figure, check the marking line at point T of the flywheel, and after confirming that it is aligned with the scale of the M14×1.5 screw plug hole on the right cover, turn the camshaft so that the dot is aligned with the camshaft pressure plate bolt, and insert the timing driven sprocket into the timing chain and assemble on the camshaft, meanwhile, the timing scale of the timing driven sprocket is aligned with the timing scale mark of the cylinder head. Apply thread glue to the M6×16 bolts, and tighten the timing sprocket with a fixed torque (torque is 12 ± 1.5 N•m). After confirming that it is in place, install the tensioner. **(For tensioner installation, refer to ZT1P77MP Engine Maintenance Manual - Cylinder Head Cover, Cylinder Head - Tensioner)**.

(Note: After confirming that the timing chain has not fallen off from the timing drive gear, tighten the timing sprocket at a constant torque, and after installing the tensioner, turn the crankshaft to recheck the timing for the second time.)



7. Guide bar

Guide bar removal

Before removing the guide bar, the following parts need to be removed.

· Tensioner. **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly--cylinder head cover, cylinder head-tensioner)**

·Cylinder head cover parts. **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly--cylinder head cover, cylinder head-cylinder head cover)**

·Cylinder head assembly. **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly--cylinder head cover, cylinder head-cylinder head)**

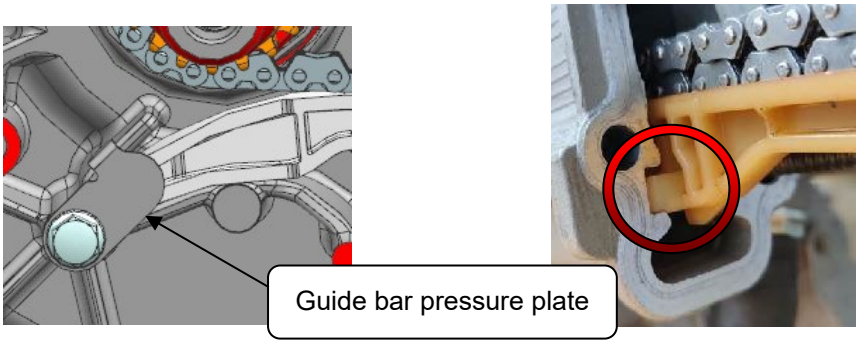
1. As shown in the picture, remove the guide bar.

Examine

1. Check the guide bar for excessive wear or damage.

Guide bar installation

1. As shown in the figure, install the guide bar. (Note: After the guide bar is installed in place, the convex point of the guide bar is lower than the joint surface of the cylinder block and cylinder head.)



8. Tension strip

Before removing the tension bar, the following parts need to be removed.

·Tensioner. **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly--cylinder head cover, cylinder head-tensioner)**

·Cylinder head cover parts. **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly--cylinder head cover, cylinder head-cylinder head cover)**

·Cylinder head sub-assembly. **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly--cylinder head cover, cylinder head-cylinder head)**

·Cylinder piston sub-assembly. **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly - cylinder, piston)**

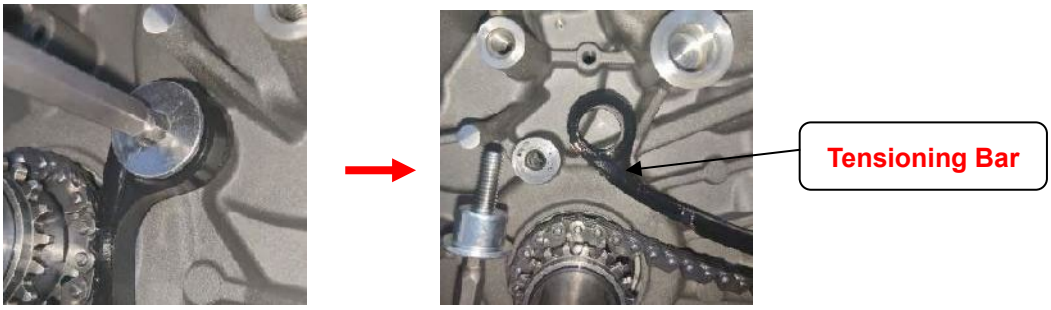
·Right crankcase cover sub-assembly. **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly--right crankcase cover, magneto-right crankcase cover, magneto stator)**

·Magneto rotor sub-components. **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly - right crankcase cover, magneto - magneto rotor)**

·Electric starter big gear. **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly - right crankcase cover, magneto - magneto rotor)**

Tension strip removal

1. As shown in the picture, use a 5# inner hexagon to remove the fixing bolt of the tensioner, and remove the tensioning strip.



Examine

1. Check the tensioning strip for excessive wear or damage.

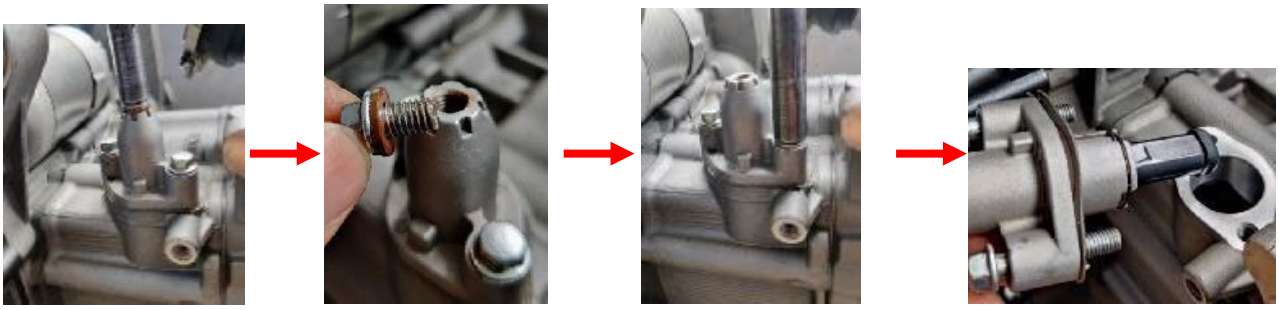
Tension bar installation

1. As shown in the figure, apply thread glue to the fixing bolts of the tensioning strips, install the tensioning strips to the corresponding position of the box, and tighten the bolts with a fixed torque, the torque is 1 2 ± 1.5N ·m .

9. Tensioner

Tensioner Removal

1. As shown in the picture, use T bar -8# to remove the top bolts and copper pads of the tensioner, then loosen the tensioner fixing bolts evenly diagonally, and remove the tensioner and tensioner gasket.

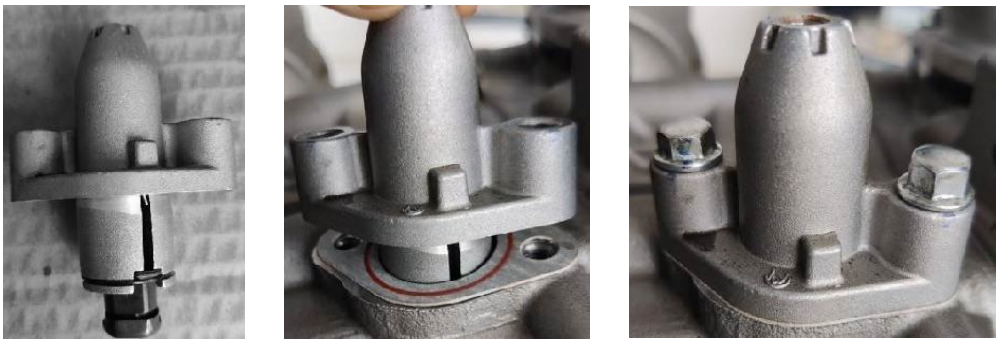


Examine

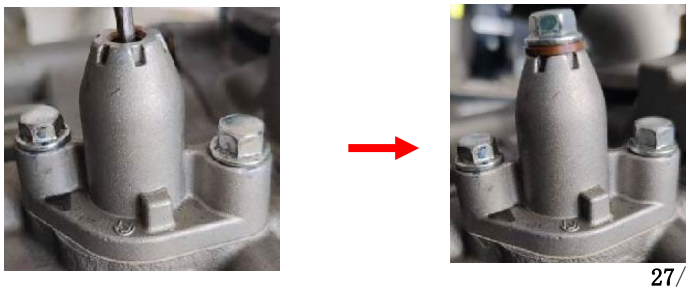
1. As shown in the figure, when the tensioner ejector rod is normally extended, press the tensioner fixed rod by hand, if the ejector rod cannot rebound, it is qualified.

Tensioner installation

1. As shown in the picture, tighten the tensioner ejector rod with a flat screw **(rotate the flat screw clockwise while holding the tensioner ejector rod with your hands)**, and tighten it when it reaches the highest point, and the ejector rod can automatically lock, put the tensioner gasket into the tensioner and put it in the corresponding position of the cylinder, and tighten it with M6×30 bolts at a fixed torque, the torque is 12 ± 1.5N •m .

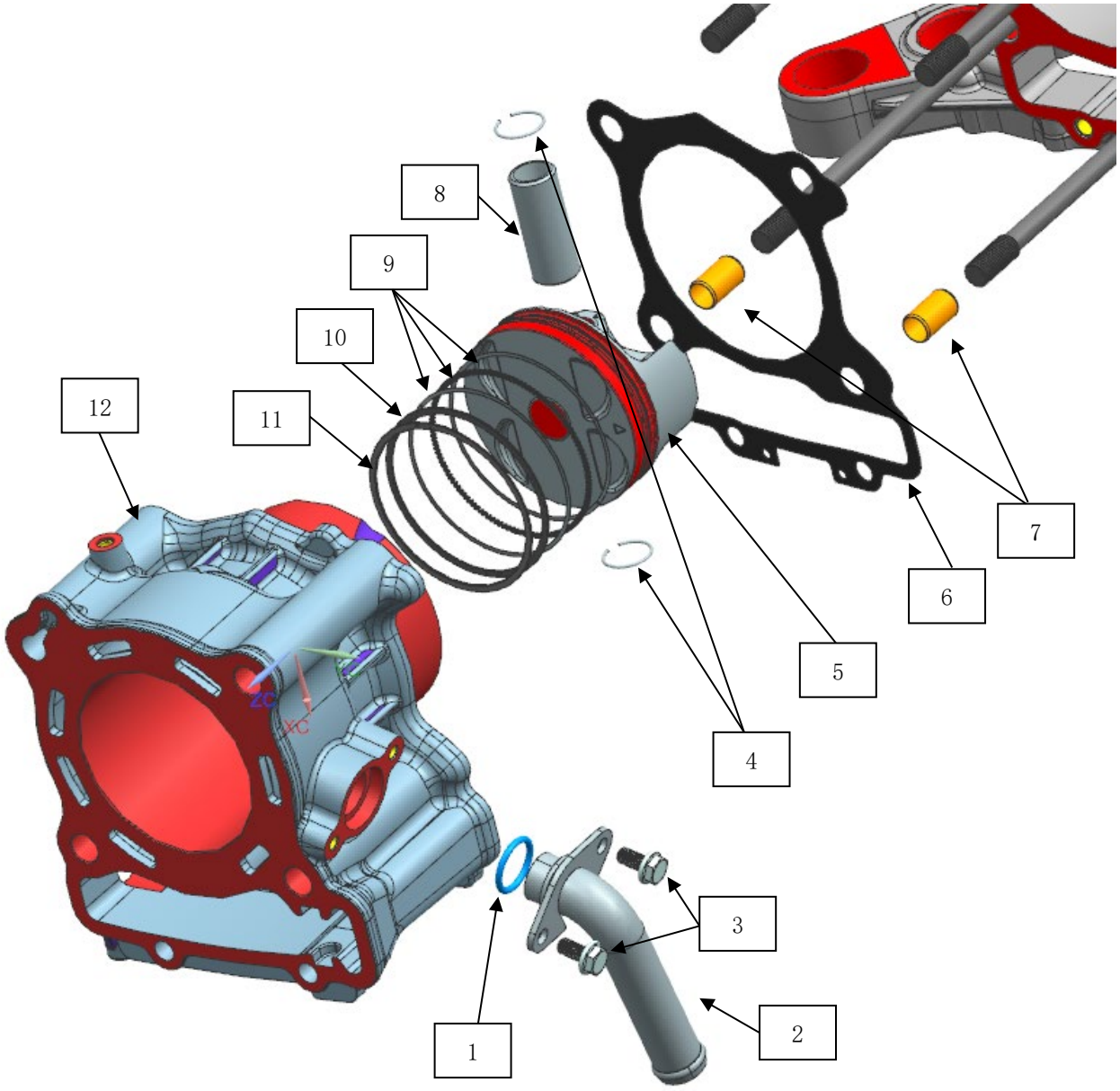


2. As shown in the figure, use a flat batch to rotate the ejector bolt counterclockwise. After confirming that the tensioner ejector rod pops up, put in the copper gasket and the M6×10 bolt, and tighten it with a fixed torque. The torque is 10 ± 1 N·m .



Cylinder, piston

1. System components



Parts information

Serial number	Part Name	Quantity	Serial number	Part Name	Quantity
1	19×2.65 EPDM O-ring	1	7	φ 12×20 hollow positioning pin	2
2	ZT1P77MP cylinder water inlet pipe joint	1	8	18×44×11 piston pin	1
3	GB5789M6×12 (environmental protection color)	2	9	ZT1P77MP oil ring combination	1
4	20.4×1.2 piston pin retaining ring	2	10	ZT1P77MP second gas ring	1
5	ZT1P77MP piston	1	11	ZT1P77MP first gas ring	1
6	ZT1P77MP cylinder body box gasket B	1	12	ZT1P77MP cylinder block	1

2. Maintenance information

General information

·This chapter introduces the maintenance of cylinder and piston.

·The maintenance of cylinder and piston needs to remove the engine from the whole vehicle.

.Remove the cylinder head cover. **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly--cylinder head cover, cylinder head-cylinder head cover)**

·Remove the tensioner. **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly--cylinder head cover, cylinder head-tensioner)**

·Remove the cylinder head sub-assembly. **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly--cylinder head cover, cylinder head-cylinder head)**

When disassembling the cylinder, avoid scratching the joint surface of the cylinder and the box to cause damage.

·When the cylinder is separated from the piston, pay attention to protect the piston and connecting rod to prevent damage caused by the collision between the piston connecting rod and the box.

·After removing the piston, clean up the carbon deposition and dirt on the top, and be attention not to drop it into the box.

·Clean and dry the disassembled parts before checking.

Tool

1. Clamp pliers
2. Needle nose pliers

3. Troubleshooting

1. The compression pressure is too low when the engine is running at low speed, it is difficult to start or the performance is not good

·The cylinder wall is worn, the top of the piston is cracked or the wall of the cylinder block is scratched.

·Piston rings are worn or cracked.

·The connecting rod is bent.

·Cylinder head valve leakage.

2. The pressure is too high during the compression process of the engine, and there is a knocking sound during operation

· Excessive carbon deposit on the top of the piston or in the combustion chamber.

3. Engine abnormal sound

· The piston ring is broken.

· Piston ring wear or cylinder wall scratches.

· Piston ring carbon deposition or piston ring groove wear.

· Piston pin or piston pin hole wear.

· Piston ring sticks to the piston ring groove.

4. The engine produces obvious smoke

·Cylinder and piston pull the cylinder, the piston is damaged or the coating of the cylinder falls off.

· Cylinder, piston or piston rings are worn.

·The installation position of the piston ring is not correct.

4. Cylinder

Disassemble

1. After the cylinder head is disassembled, use clamp pliers to remove the clamp on the water pipe joint of the right crankcase cover, pull out the water pipe, and remove the cylinder block.
2. Remove the cylinder.

Remarks: ① Turn the piston to the top dead center before disassembly, and fix the crankshaft when pulling out the cylinder.

② Do not drop the timing chain into the crankcase.

③ When the cylinder is pulled out of the piston, fix the piston and connecting rod by hand or other auxiliary tools to avoid collision with the box and cause damage.

3. Remove the gasket of the cylinder block and clean the residual sealant on the joint surface of the cylinder block.

Remarks: ① Be careful when cleaning the joint surface to avoid scratches on the joint surface.

Examine

Check whether there are scratches and wear on the inner wall of the cylinder. If there are obvious scratches and wear, the defective parts must be replaced.

Install

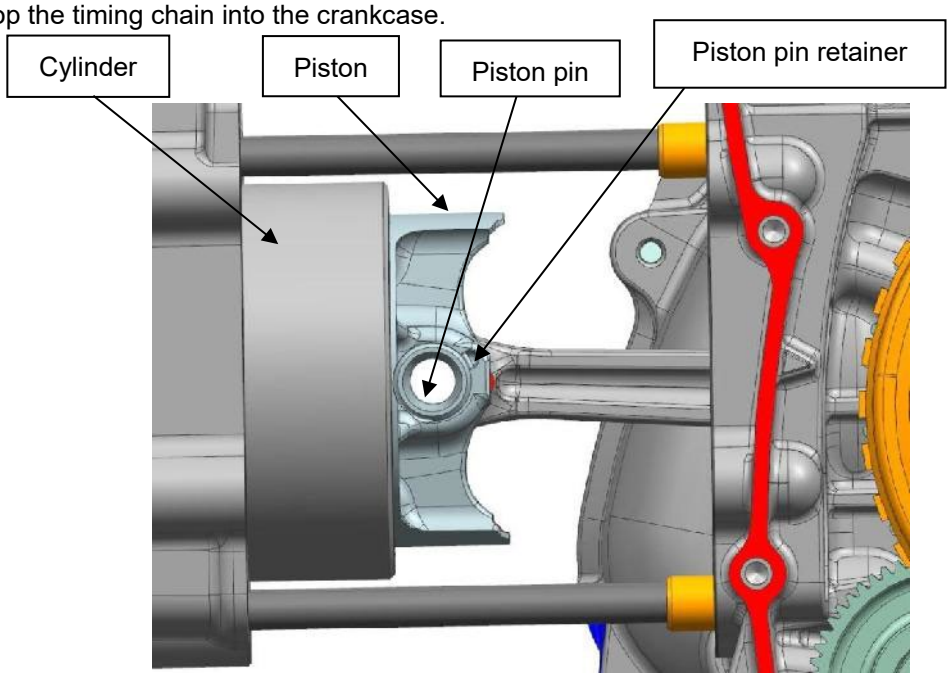
1. Apply an appropriate amount of sealant to the corresponding position of the joint surface of the cylinder block, install a new cylinder block gasket, and two 12 × 20 positioning pins.

2. Install the cylinder block, press the piston ring by hand to fit it into the cylinder block; stagger the openings of the piston ring, install the cylinder in place, and wipe off excess oil. (There is a 349cc logo and 3 ribs on the side of the cylinder)

Remarks: ① Before installing the cylinder block, apply an appropriate amount of engine oil evenly on the inner wall of the cylinder block.

③ Apply proper amount of engine oil to the piston skirt and piston ring.

④ Do not drop the timing chain into the crankcase.



3. Insert the water pipe into the water pipe joint of the water pump cover, and use clamp pliers to clamp the clamp on the water pipe joint.

5. Piston

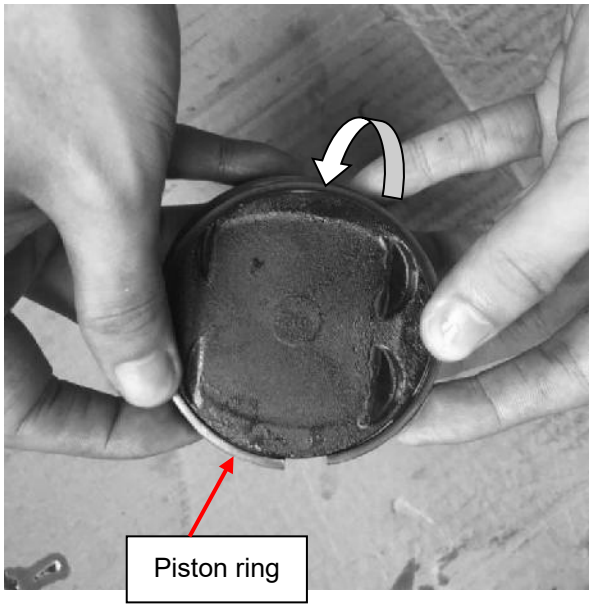
Disassemble

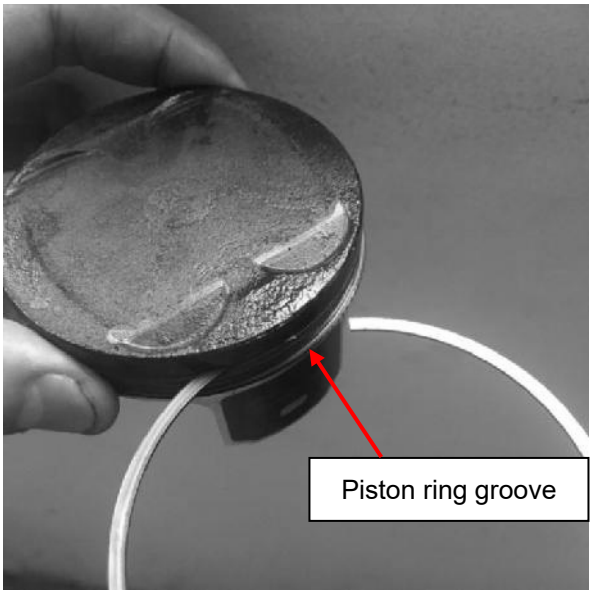
1. After the cylinder is removed, use needle-nose pliers to remove the piston pin retaining ring, push the piston pin out of the piston and connecting rod, and then remove the piston.

Remarks: ① Do not scratch the piston and piston ring when removing the piston pin retaining ring.

② Use cloth or other objects to block the opening of the crankcase to prevent the piston pin retaining ring from falling into the casing during disassembly.

2. Pull off each piston ring and remove it by lifting it to a position directly above the gap, use an old piston ring that has been used or other suitable objects to remove the carbon deposits on the piston ring groove.





Examine

1. Check whether the outer surface of the piston is scratched or damaged, and replace it if there is any obvious scratch or damage.
2. Check whether the three piston rings are abnormally worn, turn the piston rings, and check the rotation of the piston rings. The piston rings should be able to rotate freely in the groove without the feeling of being stuck. If there is abnormal wear or abnormal rotation, the corresponding parts need to be replaced.

Install

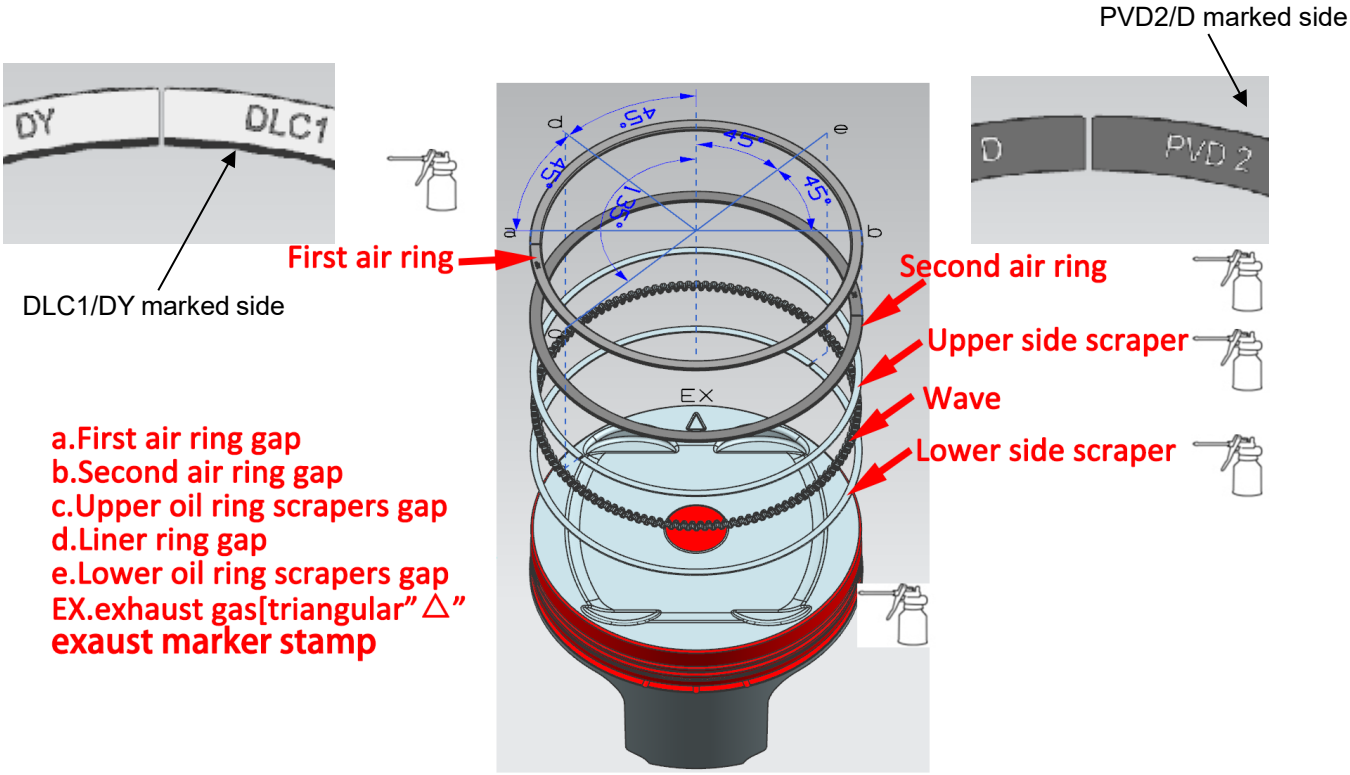
1. Apply an appropriate amount of engine oil to each piston ring and piston ring groove, and install the piston ring to the corresponding groove.

Remarks: ① Do not use the first air ring and the second air ring interchangeably.

② When installing the gas ring, the side with the marked face faces up (piston top).

③ Install the oil ring assembly, first install the corrugated lining ring, then install the lower side scraper ring, and finally install the side scraper ring.

④ The notch " a " of the first ring is on the left side of the "△" EX mark, along the axial direction of the piston pin; the notch " b " of the second ring is on the right side of the "△" EX mark, and the angle with " a " is 180 °; the notch " e " of oil ring scraper of the lower side is at 45 ° between "△" EX and " b " ; the angle between " c " and " e " of upper oil ring scraper is 180 °; the notch " d " of oil ring backing is a "△" on the left side of EX , perpendicular to the line connecting " c " and " e ". (As shown in the picture below)



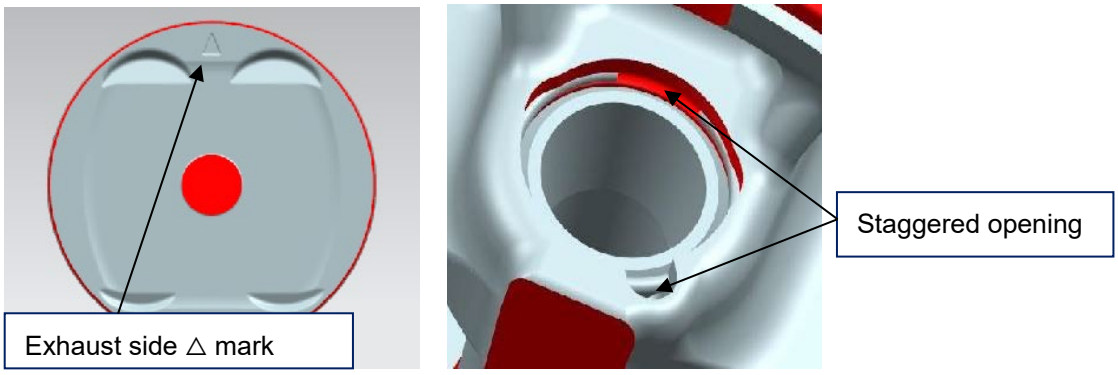
2. Insert the piston pin into the piston and install it on the connecting rod, and install the piston pin retaining ring into the ring groove with needle-nose pliers.

Remarks: ① Apply an appropriate amount of engine oil to the piston pin hole and the small end hole of the connecting rod.

② The opening of the piston pin retaining ring should be staggered with the circular arc groove of the piston.

③ Piston pin retaining ring is installed in place.

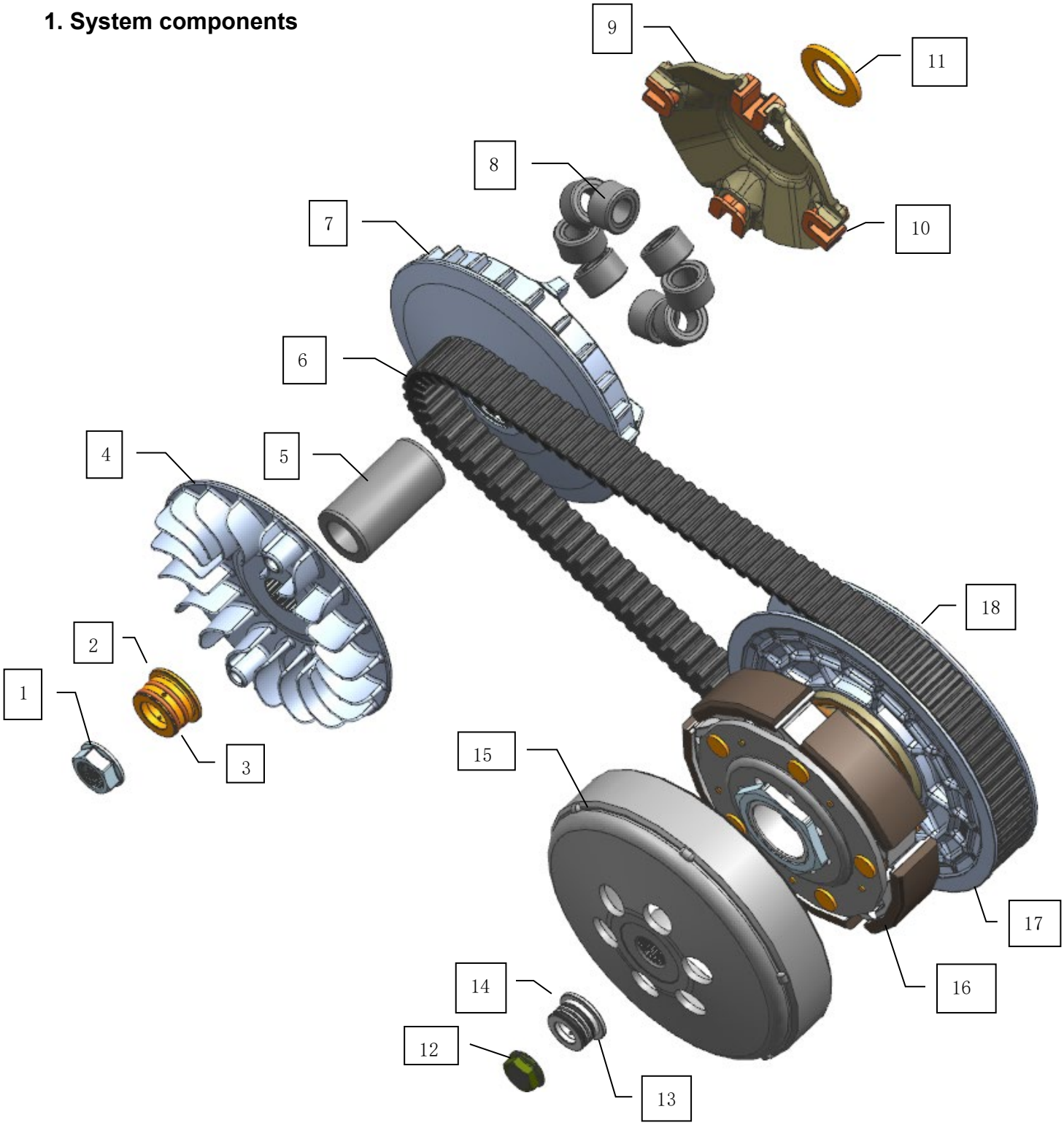
⑤ The direction of the arrow on the top of the piston points to the exhaust side, do not install it backwards.

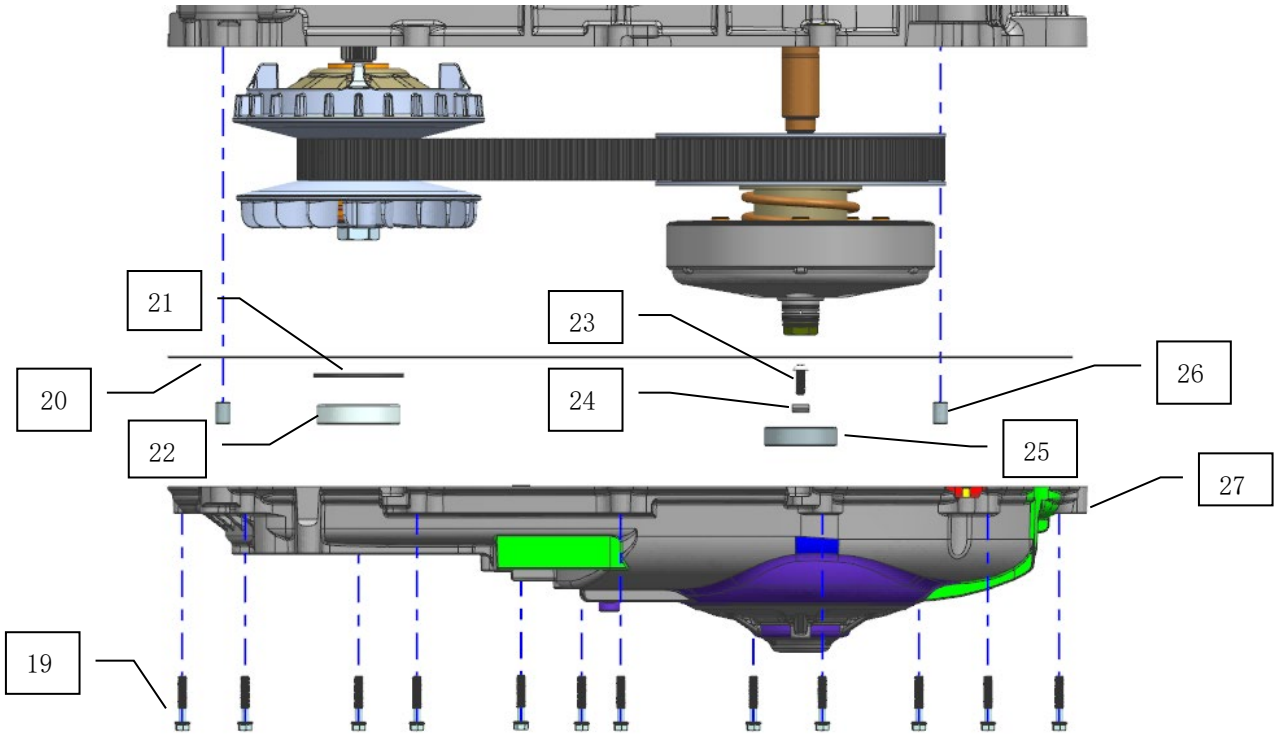


Note: The cylinder and piston are divided into three groups: A, B and C. To ensure proper cylinder clearance, the cylinder and piston must be in the same group.

Left crankcase cover, continuously variable clutch sub-assembly

1. System components





Parts information

Serial number	Part Name	Quantity	Serial number	Part Name	Quantity
1	M18×1 hexagon flange nut (grade 10/environmental protection color zinc)	1	15	ZT1P77MP clutch jacket	1
2	φ 18.5×φ30×19.1 Drive wheel bushing	1	16	ZT1P77MP driven wheel shoe assembly	1
3	φ 26×φ2 fluorine rubber O-ring	2	17	ZT1P77MP driven wheel sliding plate	1
4	ZT1P77MP main fixed disk	1	18	ZT1P77MP driven wheel fixed plate	1
5	ZT1P77MP driving wheel sleeve	1	19	M6×30 hexagonal flange bolts (environmental protection color zinc)	12
6	ZT1P77MP V-shaped transmission belt	1	20	ZT1P72MN left crankcase cover gasket	1
7	ZT1P77MP main sliding wheel subassembly	1	21	GB893.1 circlip φ55 for holes	1
8	ZT1P77MP centrifugal roller	8	22	600 6-2R S /P5C3 deep groove ball bearing	1
9	ZT1P77MP slope plate	1	23	Non-standard bolt M6×16 (environmental protection color)	1
10	ZT1P77MP buffer slider	4	24	ZT1P58MJ left crankcase cover bearing pressure plate	1
11	φ 23.2×φ40×3.25 washer	1	25	6005－2RD/P5C3 deep groove ball bearings	1

12	M14×1 hexagon flange nut (grade 10/environmental protection color zinc)	1	26	φ 10×14 hollow positioning pin	2
13	φ 21.2×φ1.8 fluorine rubber O-ring	2	27	ZT1P77MP left crankcase cover A	1
14	φ 14.5×φ25×16 driven wheel bushing	1			

2. Maintenance information

General information

1. This chapter introduces the repair and maintenance of driving wheel and driven wheel.
2. The maintenance of the driving wheel and the driven wheel can be motorcycleried out on the whole vehicle without disassembling the engine separately.
3. During maintenance, the driving wheel, driven wheel, and V-shaped transmission belt must not touch engine oil or grease to prevent the V-shaped transmission belt from slipping.

Torque value

Serial number	Name	Quantity	Torque (N·m)	Remark
1	M14× 1 hexagonal flange nut (grade 10/environmental protection color zinc)	1	75 ± 7N·m	-
2	M18×1 hexagon flange nut (grade 10/environmental protection color zinc)	1	103 ± 10 N·m	-
3	M6×30 hex flange bolts	12	12 ± 1.5 N·m	-
4	Non-standard bolt M6×16 (environmental protection color)	1	10 ± 1 N·m	-

tool

1. Torque wrench;
2. 19# and 24# sleeves (it is recommended to use extended sleeves);
3. Special fixed fixture for driving and driven wheels;
4. Elastic clip;
5. T-shaped sleeve-8#;

3. Common failure phenomenon/troubleshooting

1. The engine can be started, but the rear wheel does not turn when the throttle is added.

·The V-shaped transmission belt is severely worn or broken.

· Clutch shoes are worn or damaged.

·The large spring of the driven wheel is damaged.

·The splines matching the clutch housing and the drive shaft are damaged.

·The gear in the gear chamber is damaged.

2. The engine stalls or lacks power.

·The V-shaped transmission belt is slipping.

·The large spring of the driven wheel is damaged.

3. Insufficient high-speed power.

·The V-belt is worn or slipping.

·The clutch jacket and the clutch shoes are slipping.

·The large spring of the driven wheel fails.

· Centrifugal roller wear.

4. When the engine is idling normally, the rear wheels rotate rapidly.

· Centrifugal roller stuck in return position.

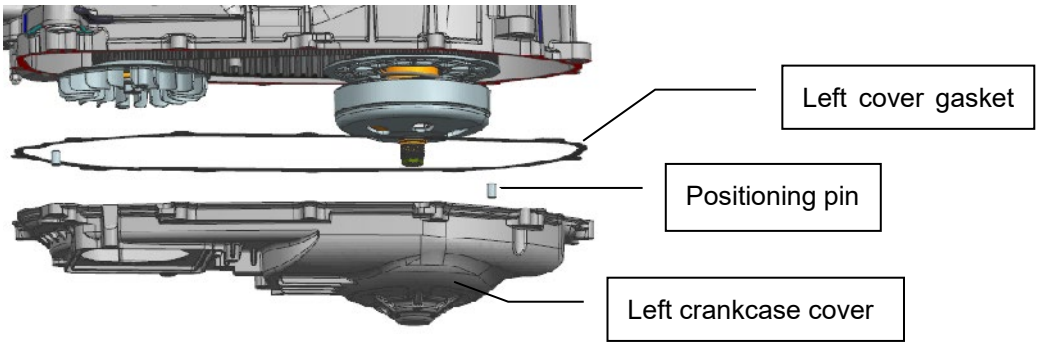
·The small spring of the driven wheel shoe block is damaged.

·The driven wheel bearing is damaged and the bearing is stuck.

4. Left crankcase cover

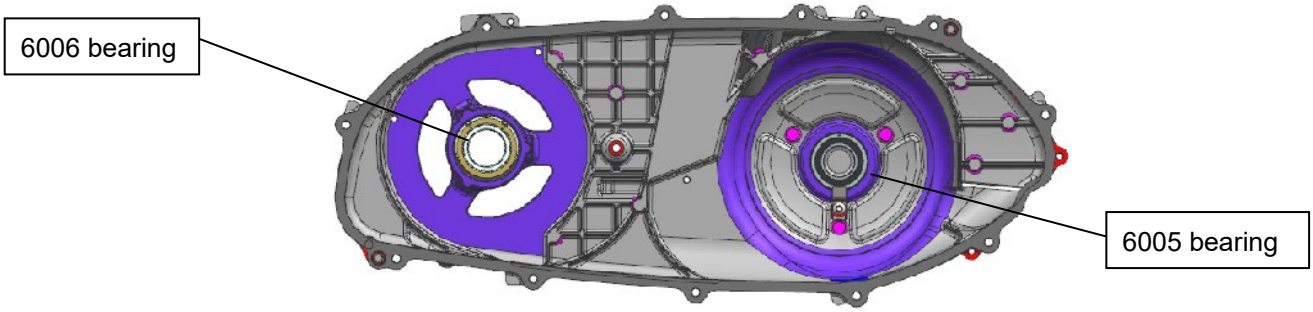
to disassemble

1. Use a T-shaped sleeve - 8# to remove 12 M6 × 30 hexagon flange bolts on the left crankcase cover (the 2 box bolts at the bottom of the air filter need to be removed first , and then move the air filter upward to remove the left cover to be exposed), remove the left crankcase cover, left crankcase cover gasket and positioning pin.



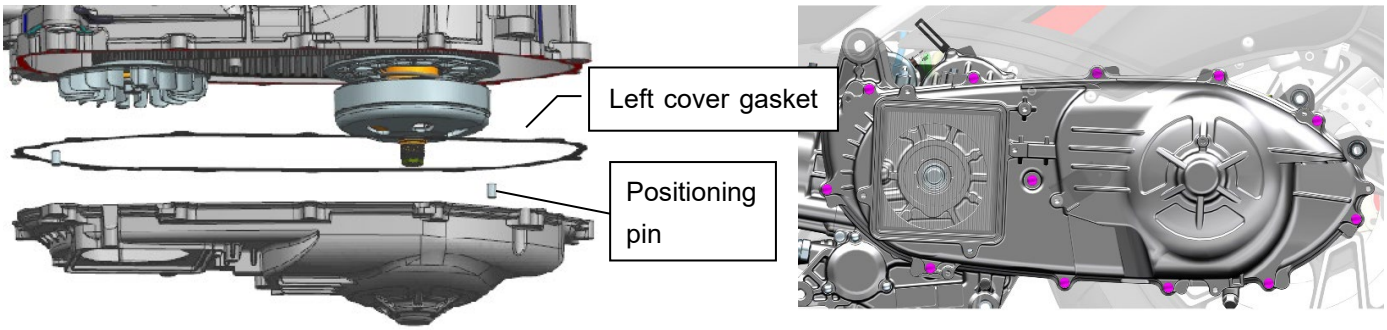
examine

1. Check the 6005 and 6006 bearings of the left crankcase cover. If the inner ring of the bearing is stuck, please replace it in time.



Install

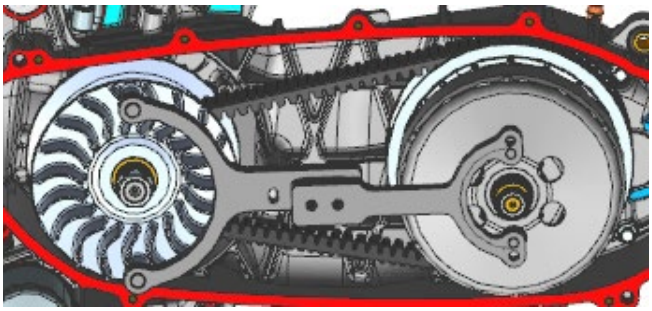
1. Install the positioning pin and left crankcase cover gasket in place in sequence. Then align the positioning pins to install the left crankcase cover in place, pre-tighten the bolts of the left crankcase cover evenly diagonally, and then tighten them to a fixed torque with a torque of 12 ± 1.5 Nm . **(Note: The left crankcase cover gasket may be damaged or broken when disassembled, and a new gasket needs to be replaced for assembly)**



5. CVT clutch sub-assembly

to disassemble

1. Align the cylindrical bayonet pins of the special driving and driven wheel positioning fixtures with the two positioning holes inserted into the outer blade of the main fixed disc, and the two symmetrical cooling holes on the outer cover of the driven wheel clutch. The driving wheel and the driven wheel cannot rotate freely.



2. Use a torque wrench (or air batch) and a 24# sleeve to disassemble the M18×1 hexagon flange nut counterclockwise .

3. Use a torque wrench (or air batch) and a 19# sleeve to disassemble the M14×1 hexagonal flange nut counterclockwise .

4. Take off the M18×1 hexagon flange nut and φ 18.5×φ30×19.1 driving wheel bushing , and then remove the M14×1 hexagon flange nut and φ 14.5×φ25×16 driven wheel bushing .

5. Remove the positioning fixture of the driving and driven wheels, and remove the ZT1P77MP main fixed plate from the crankshaft.

6. Remove the clutch cover of the driven wheel from the drive shaft.

7. Pinch the middle part of the V-shaped transmission belt, and remove the belt and driven wheel sub-components together.

8. Pinch the main sliding wheel subassembly and the slope plate inside, and remove it together with the driving wheel bushing.

9. Finally, take out the φ23.2×φ40×3.25 washer , and the disassembly of the continuously variable clutch sub-assembly is completed.

examine

1. Check whether the centrifugal roller is worn and out of round, and if it is out of round and deformed, it needs to be replaced.

2. Check whether the V -shaped transmission belt is damaged such as cracks, broken wires, and teeth. If it occurs, it needs to be replaced.

3. Check whether the inner circular surface of the driven wheel clutch casing and the driven wheel clutch shoe are worn or damaged, and they need to be replaced if they appear. (**Note: It is not recommended to grind the clutch shoes, which will increase the wear of the inner ring of the clutch casing and the clutch shoes, and may also cause riding vibration.)**

assembly

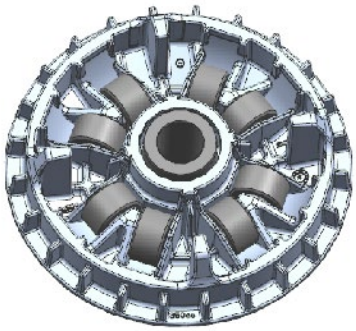
Remarks : ① All components of the dismantled continuously variable clutch sub-assembly need to be fully inspected before assembly.

② Use an air gun to completely clean the dust accumulated in the belt chamber of the left crankcase before assembly.

③ Before assembly, it must be ensured that there is no oil on the driving wheel, V-belt, and driven wheel to avoid slippage after assembly.

1. First install the φ23.2×φ40×3.25 washer on the crankshaft and assemble it in place.

2. Check whether the 8 centrifugal rollers are completely placed in the centrifugal roller groove of the sub-component of the main sliding wheel and the Puli beads roll smoothly without jamming, then it is qualified (picture 1 below), otherwise replace the Puli beads, and then install them The slope plates of the four buffer slide blocks are assembled on the main sliding wheel subcomponent corresponding to the main sliding wheel subcomponent guide column.



3. Turn over the main sliding wheel subassembly with the centrifugal roller and the slope plate installed, and then put the driving wheel shaft into the inner hole of the main sliding wheel subassembly. Then pinch the sliding disc and the ramp plate with one hand (to prevent the centrifugal roller from falling after being disassembled), and hold the exposed driving wheel bushing with the other hand to align the inner hole of the driving wheel bushing with the crankshaft. Then the ramp plate, the centrifugal roller, the sub-components of the main sliding wheel, and the driving wheel bushing are integrally pushed and assembled on the crankshaft and withstand the φ 23.2 × φ 40 × 3.25 washer .

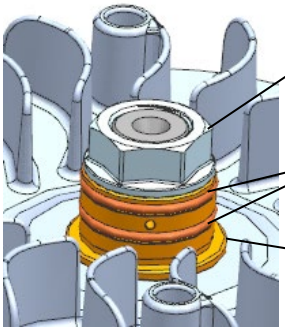
4. Lay the driven wheel on the workbench or clean ground as a whole, then make the indicator arrow on the V-shaped transmission belt point to the counterclockwise rotation direction, place the V-shaped transmission belt on the outer ring of the driven wheel, and make a certain distance The driven wheel is 4~5cm away. Press the clutch cover of the driven wheel with the palms of both hands, and rotate clockwise while clasping the moving plate of the driven wheel with the fingers of both hands and pulling it up. After raising the movable plate of the driven wheel to a height of about 10mm, quickly stretch out the finger close to the side of the V-shaped transmission belt to dial the V-shaped drive belt into the belt groove between the movable plate of the driven wheel and the fixed plate. Finally, clamp the middle of the belt with an elastic clip to prevent the belt from loosening by itself.

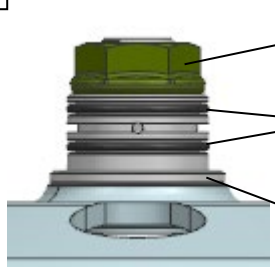
Remarks: This step requires strong hand strength and certain operating experience to complete. Insufficient hand strength or no operating experience may cause injury to fingers caught by the driven pulley pulley.

5. Pick up the combined driven wheel and the V-shaped transmission belt as a whole, make the clutch outer cover of the driven wheel face the outside, align the inner hole of the center of the driven wheel with the drive shaft, and then push the driven wheel inward and install it in place (the drive shaft is used for One section of the optical shaft of the φ 14.5 × φ 25 × 16 driven wheel bush is exposed), and the other part of the V-shaped transmission belt is placed on the exposed spline outer ring of the crankshaft.

6. Put the side of the main fixed disk with the wind blades facing outward, align the spline hole in the middle with the spline on the crankshaft, and then assemble it on the crankshaft, and assemble it in place.

7. Put the ZT1P77MP driving wheel bushing equipped with two φ26×φ2 fluorine rubber O-rings and grease on the crankshaft, and take an M18×1 hexagonal flange nut and screw it into the crankshaft manually .





8. Point the stepped end of the φ14.5×φ25×16 driven wheel bushing to the driven wheel, and install it on the exposed section of the optical shaft of the drive shaft. Then screw on the M14×1 hexagonal flange nut on the drive shaft thread .

Remarks : ① If there is no grease in the groove of the inner ring of the driven wheel bush, add high temperature resistant grease.

② Do not leave out the two O-rings. When screwing the nut, if there is grease on the thread, wipe it clean.

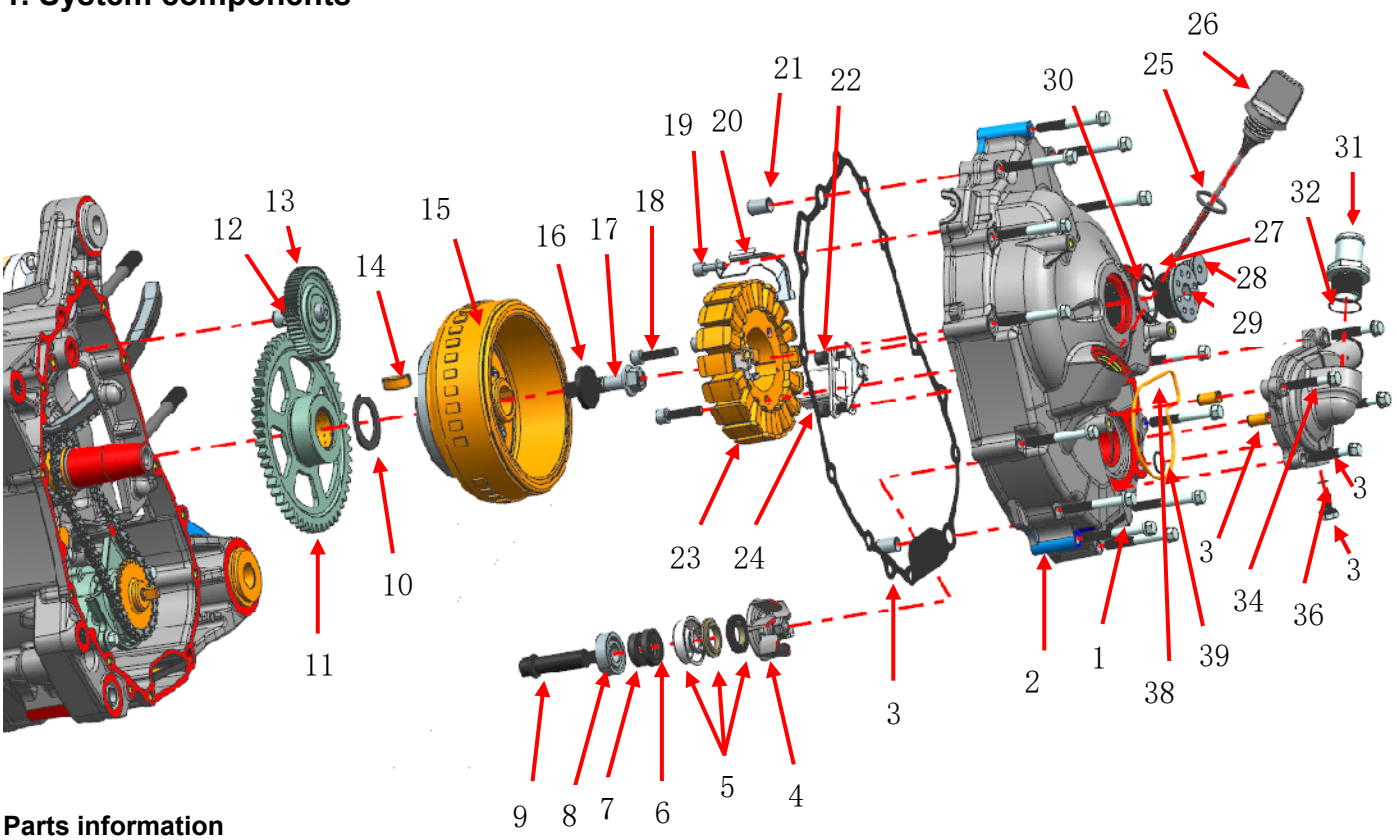
9. Same as the first step in the disassembly, use a special clamp to clamp the main fixed plate and the clutch cover of the driven wheel so that they cannot rotate freely.

10. Use a torque wrench (or air batch) and a 24# sleeve to tighten the M1 8 × 1 hexagon flange bolt clockwise , and the tightening torque must reach the range of 103±10N.M. Then use a torque wrench (or air batch) and a 19# sleeve to tighten the M1 4 × 1 hexagon flange nut clockwise , and the tightening torque must reach the range of 75±7N.M.

(Note: When tightening the M18×1 hexagonal flange nut at a fixed torque, the belt cannot withstand the surface of the main fixed disk, which will result in insufficient constant torque.)

Right crankcase cover, magneto

1. System components



Parts information

Serial number	Part Name	Quantity	Serial number	Part Name	Quantity
1	M6×45 hexagonal flange surface 9.8 grade bolts (environmental protection color zinc)	14	22	M5×15－5# hexagon socket head screw (oxidized black)	2
2	ZT1P72MN right crankcase cover (dark gray)	1	23	ZT1P77MP magneto stator parts	1
3	ZT1P77MP right crankcase cover gasket	1	24	trigger	1
4	ZT1P77MP water pump blade	1	25	18×3×3.5 Acrylic O-rings	1
5	ZT180MN water seal subassembly	1	26	ZT1P7 2 M N oil dipstick	1
6	FB12×24×5 hydrogenated nitrile oil seal (PTFE)	1	27	13×2.8 Acrylic O-rings	1
7	FB12×22×5 fluorine rubber oil seal	1	28	M14×1.5×9.5 inner hexagon flat plate screw plug	1
8	GB276－6001/P5C3 deep groove ball bearings	1	29	M30×1.5 aluminum screw plug (dark gray)	1
9	ZT1P72MN water pump shaft	1	30	27.4×2.65 Acrylic glue O-ring	1
10	25.2×37×1.6 thrust washer	1	31	ZT1P72MN water pipe connector	1
11	ZT1P72MN electric starter big gear	1	32	φ21×φ1.5 EPDM O-ring	1
12	ZT1P72MN electric starter reduction gear shaft	1	33	ZT1P77MP water pump cover (dark gray)	1

13	ZT1P72MN electric starter reduction gear assembly	1	34	M6×30 hexagonal flange bolts (environmental protection color zinc)	4
14	5×5.7×16 half round keys	1	35	GB5789M6×12 (environmental protection color)	4
15	ZT1P7 7 MN magneto rotor subassembly	1	36	φ5.6×φ1 EPDM O-ring	1
16	φ10.3×φ28×4 washer	1	37	φ8×14 hollow positioning pin	2
17	M10×1.25×45 hex flange bolts (grade 10.9/oxidized black)	1	38	ZT1P72MN water pump cover O-ring	1
18	GB70.1M6×25 (environmental protection color zinc)	3	39	φ11.5×φ1.8 EPDM O-ring	1
19	M5×15－5# hexagon socket head screw (oxidized black)	1	40		1
20	ZT173YMM stator crimping plate	1	41		
21	φ10×14 hollow positioning pin	2	42		

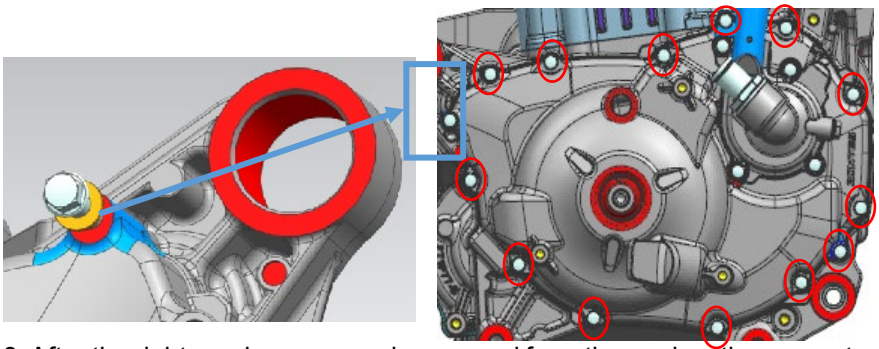
2. Right crankcase cover / magneto stator

to disassemble

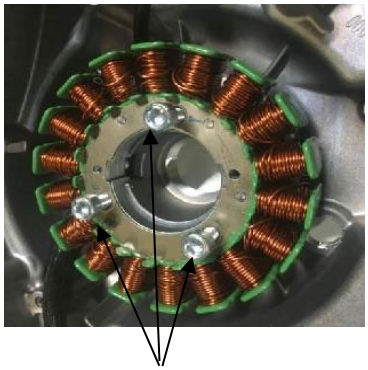
1. Before removing the right crankcase cover, drain the engine coolant and oil.

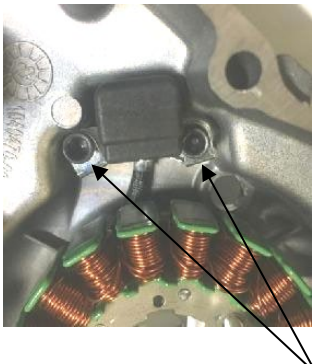
Remarks: If only the right crankcase cover gasket is replaced, there is no need to put coolant, and the water pipe does not need to be pulled out.

2. Remove 14 M6×45 hexagonal flange bolts on the right crankcase cover counterclockwise with a torque wrench (or air batch) and extended outer hexagon socket -8#, one of which has a 6.3 ×12×1.6 copper pad , remove the right crankcase cover, 2 φ10×14 hollow positioning pins and the right crankcase cover gasket.



3. After the right crankcase cover is removed from the engine, the magneto stator sub-assembly is on the right crankcase cover. Use a torque wrench (or air batch) and an inner hexagonal gun head -5# to fix three GB70.1M6×25 bolts on the coil, two M5×15-5# inner hexagonal cylindrical screws on the trigger plate, and the stator Remove one M5×15-5# hexagon socket head screw on the pressure plate.





GB70.1M6×25 (environmentally friendly color zinc)　M5×15－5# hexagon socket head screw (oxidized black)

Install

1. Put the sub-components of the magneto stator on the corresponding position of the right crankcase cover, and install three GB70.1M6×25 (environmentally friendly colored zinc) bolts and three M5×15-5# inner hexagon cylindrical screws (oxidized black) Apply an appropriate amount of thread glue on the thread of the thread, screw it into the corresponding threaded hole with a torque wrench and the inner hexagonal gun head -5# and tighten it. The torque standards are 10±1N·m and 5±1N·m respectively.

Remarks: ① The trigger cannot be installed backwards, and the side with the sensing point faces inward.

② The magneto wire is stuck at the bottom of the stator crimping plate.

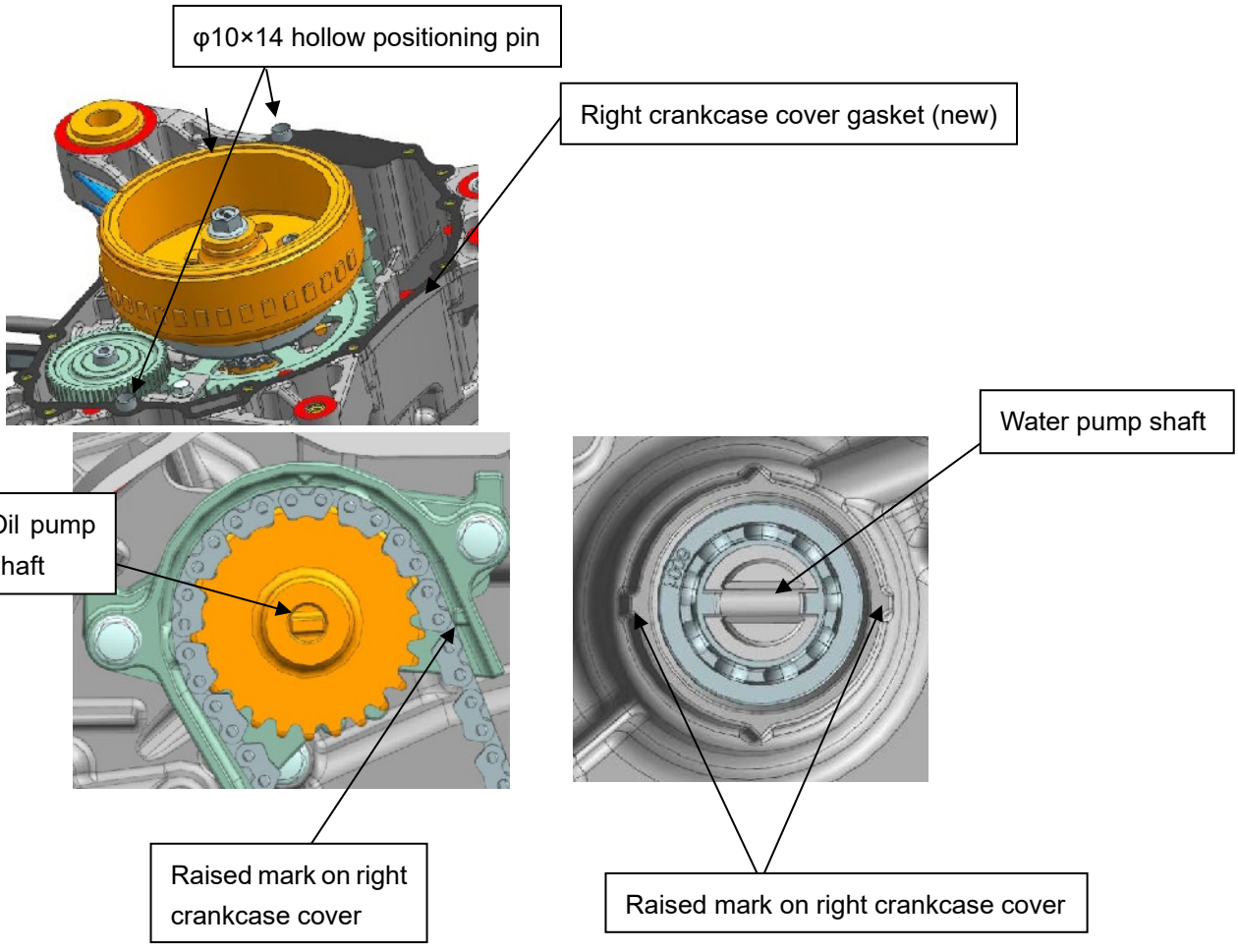
Thread Fastener

2. Install two φ10×14 hollow positioning pins and a new right crankcase cover gasket at the joint surface of the right crankcase and the right crankcase cover; Oil pump bump marks; use a slotted bolt cutter to turn the water pump shaft so that the slots are aligned with the raised marks on the right crankcase cover.

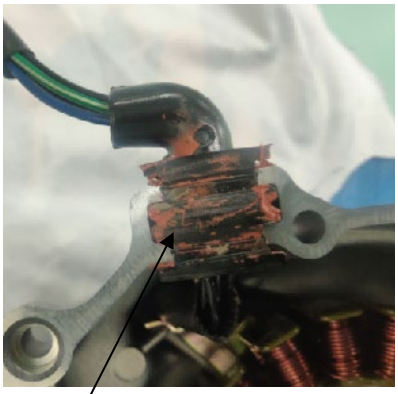
Remarks: ① When adjusting the oil pump shaft, turn the flywheel clockwise to drive the oil pump to rotate.

② Do not miss the positioning pin. There should be no creases or cracks in the right crankcase cover gasket.

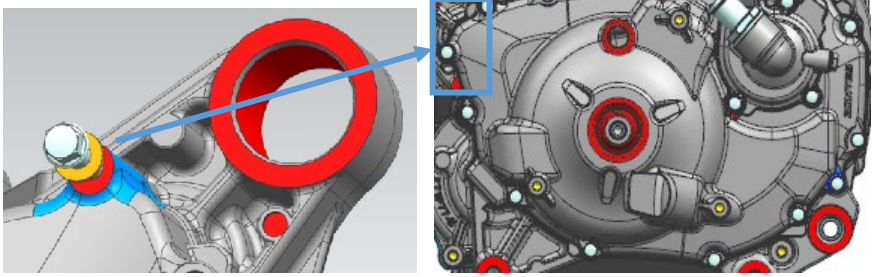
③ The removed right crankcase cover gasket cannot be reused, and there is a risk of oil leakage, so it needs to be replaced with a new right crankcase cover gasket.



3. Apply an appropriate amount of flat sealant on the waterproof rubber sleeve of the right crankcase cover and press it tightly, install the right crankcase cover, use a torque wrench and an extended outer hexagon socket -8# to insert 14 M6×45 hexagonal flange surface 9.8 grade bolts (environmental protection color zinc) tighten, 13 bolts torque is 12±1.5 N·m , one bolt plus 6.3×12×1.6 copper pad, fixed torque is 10±1 N·m.



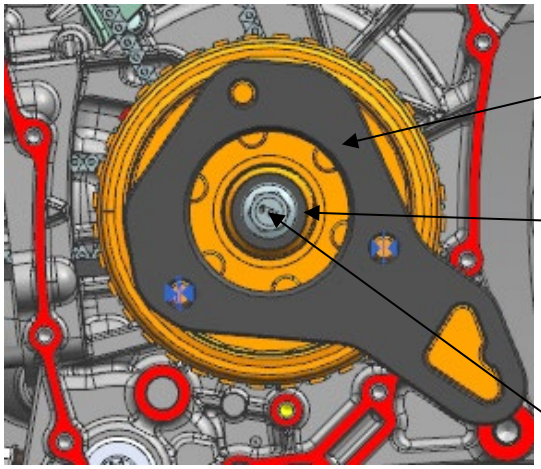
Flat sealant



3. Magneto rotor

to disassemble

1. After the right crankcase cover is disassembled, use a special clamp to fix the flywheel so that the flywheel cannot rotate freely, use a torque wrench (or electric gun) and a socket -14# to remove the M10×1.25×45 hexagon flange bolts, and remove the φ10.3×φ28×4 washer; screw the flywheel puller into the thread on the flywheel, and remove the flywheel with an electric gun and sleeve -17#.



Special fixture

φ10.3×φ28×4 washer

M10×1.25×45 hex flange bolts (grade 10.9/oxidized black)

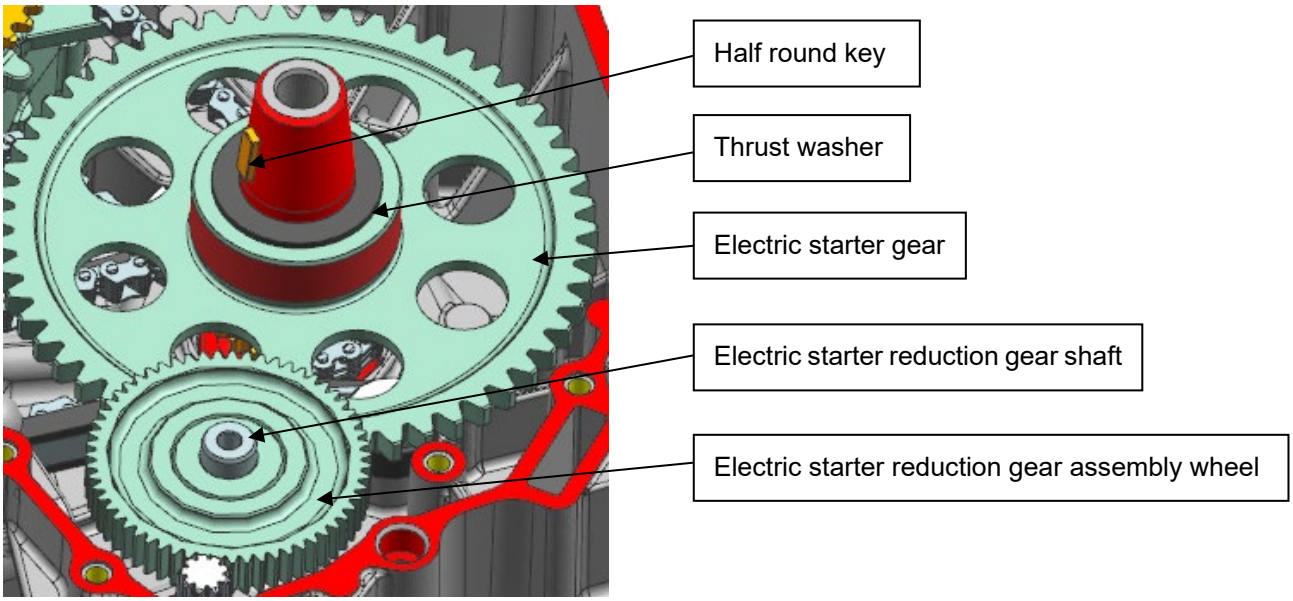
Flywheel puller

Socket-17

2. Knock out the half-round key in the crankshaft groove with a copper rod, take out the 25.2×37×1.6 thrust washer; the electric starter reduction gear assembly; the electric starter large gear; the electric starter reduction gear shaft.

Remarks: ① When tapping the half-round key, the pad cloth prevents the half-round key or burr from falling into the box.

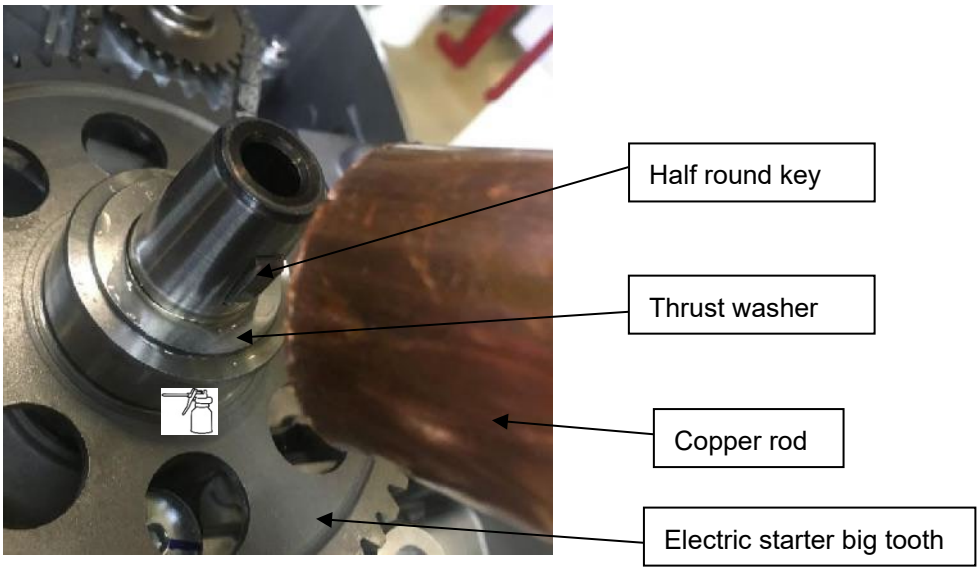
② Do not deform the semicircular key.



Install

1. After checking that the electric starter large gear, 25.2×37×1.6 thrust washer , electric starter reduction gear assembly , and electric starter reduction gear shaft are all installed correctly, use a copper rod to knock the half-round key into the crankshaft.

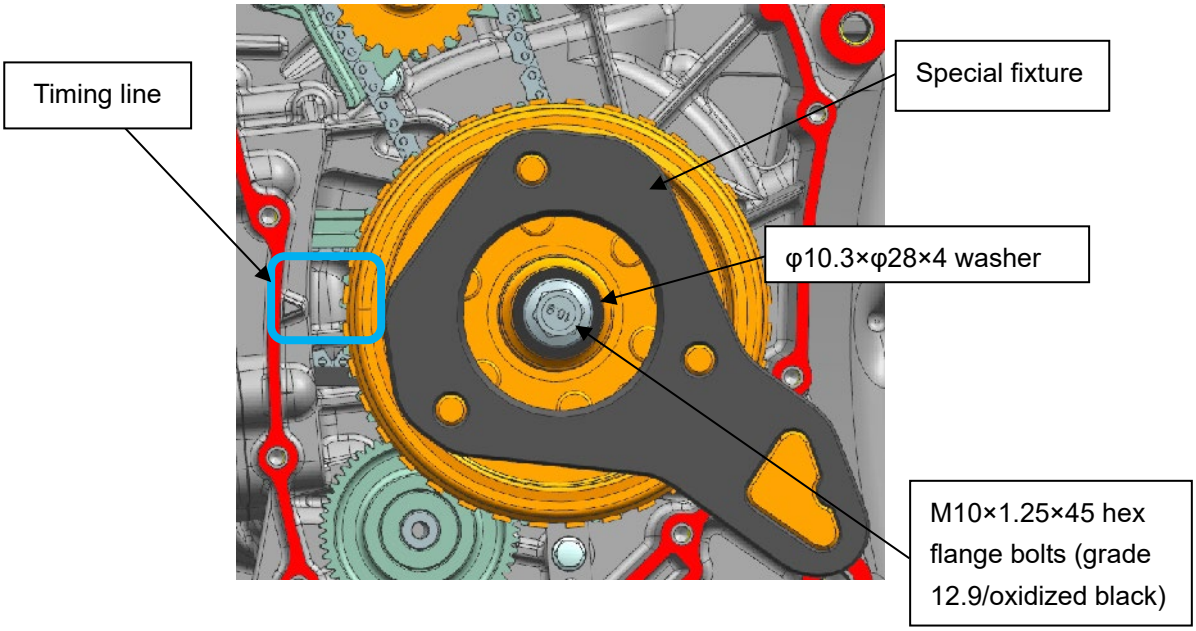
Remarks: ① When installing the half-round key, the padding cloth prevents the half-round key from falling into the box.



2. Install the flywheel in place, put in φ10.3×φ28×4 washers, M10×1.25×45 hexagonal flange bolts and screw them into the threads, turn the flywheel clockwise to make the mark next to the “T” mark on the flywheel Align the line with the triangular mark of the box, use a special fixed flywheel fixture to prevent the flywheel from rotating freely, use a torque wrench and a socket -14# to tighten the M10×1.25×45 hexagonal flange bolts (grade 10.9/oxidized black), and tighten the torque The standard is 75±7 N·m.

Remarks: ① Apply engine oil on the joint surface of the large starting gear and the one-way device (integrated with the flywheel).

② After the flywheel is installed, check whether the large gear of the electric starter rotates counterclockwise smoothly (when the reduction gear is not installed), and move up and down by hand to check whether there is any axial play, and the axial play is about 0.7 mm .



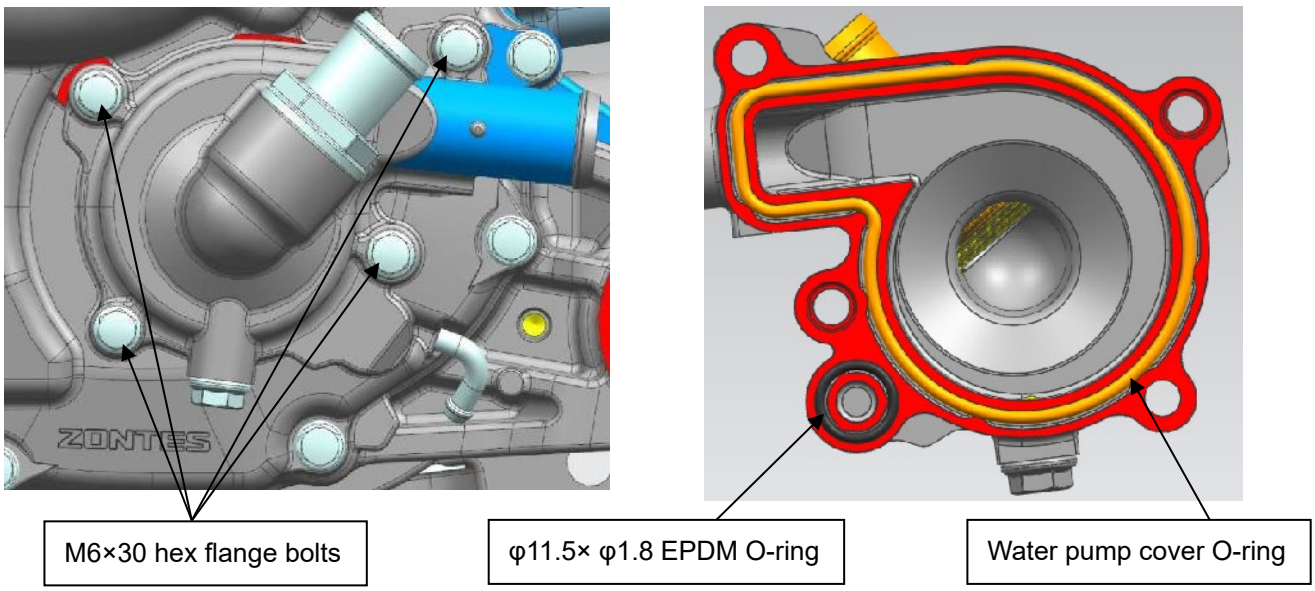
3. Install the right crankcase cover after the flywheel is installed.

4. Water pump

to disassemble

The combined parts of the water pump are detailed in the system components and parts information table.

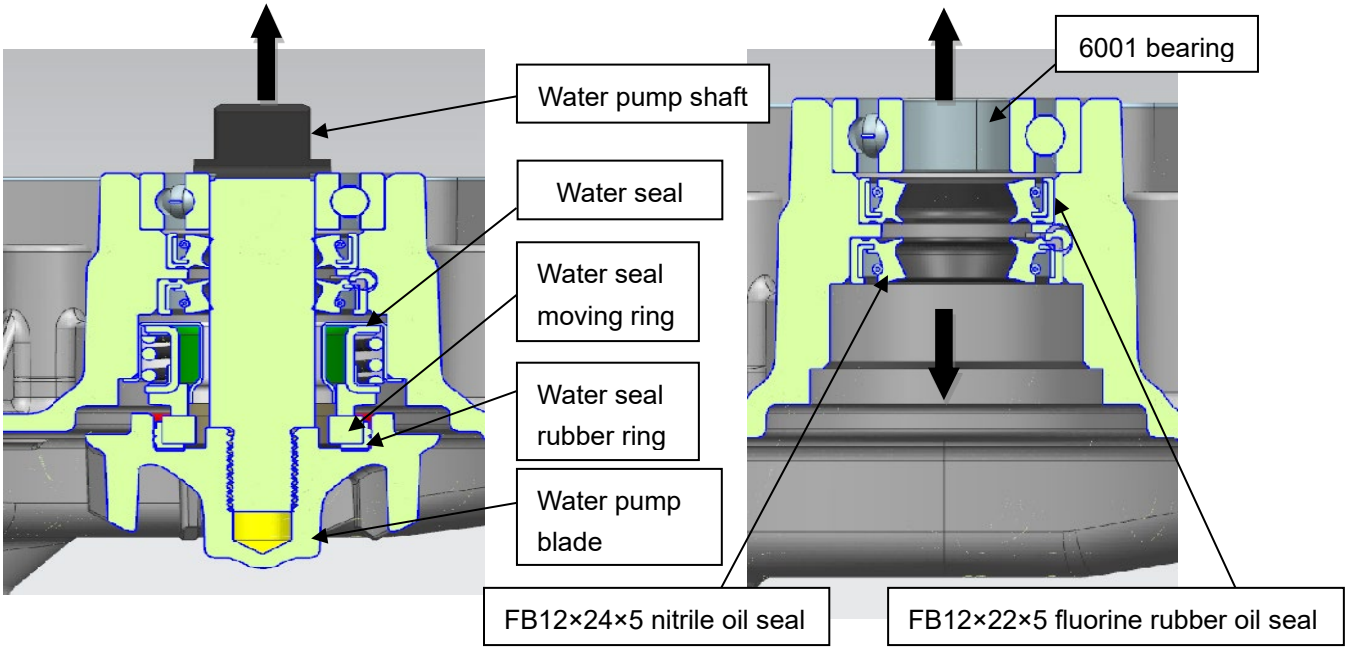
1. Use a torque wrench (or air batch) and an extended outer hexagonal sleeve -8# to disassemble the 4 M6×30 hexagonal flange bolts (environmental protection color zinc) on the water pump cover counterclockwise, and remove the water pump cover O-ring, φ11.5×φ1.8 EPDM O-ring and two φ8×14 hollow positioning pins.



2. Use a flat-head screwdriver to limit the slot of the water pump shaft, use a 12# wrench to rotate clockwise to loosen and remove the water pump blade, and take out the water seal moving ring and rubber.

Press out the water pump shaft, use a flat-head screwdriver to extend from the bearing hole until it contacts the water seal, and then tap it slowly to knock out the water seal.

Use a flathead screwdriver to pry out the two oil seals, and then knock out the bearings to complete the disassembly of the water pump. **(Note: When the water pump is running normally without failure, it is not recommended to disassemble the water pump, internal bearings, oil seals, and water seals. The shaft thread of the water pump is a left-handed reverse thread.)**



examine

1. Check the water pump cover O-ring and φ11.5×φ1.8 EPDM O-ring on the water pump cover . If there are any defects such as wear and trimming, replace the O-ring with a new one to prevent it from happening. Leakage due to poor sealing.
2. Check whether the threads of the water pump blades and the water pump shaft are slippery.
3. Check the water pump shaft and blades for cracks, damage, wear, etc. If they are defective, replace them with new ones.

Install

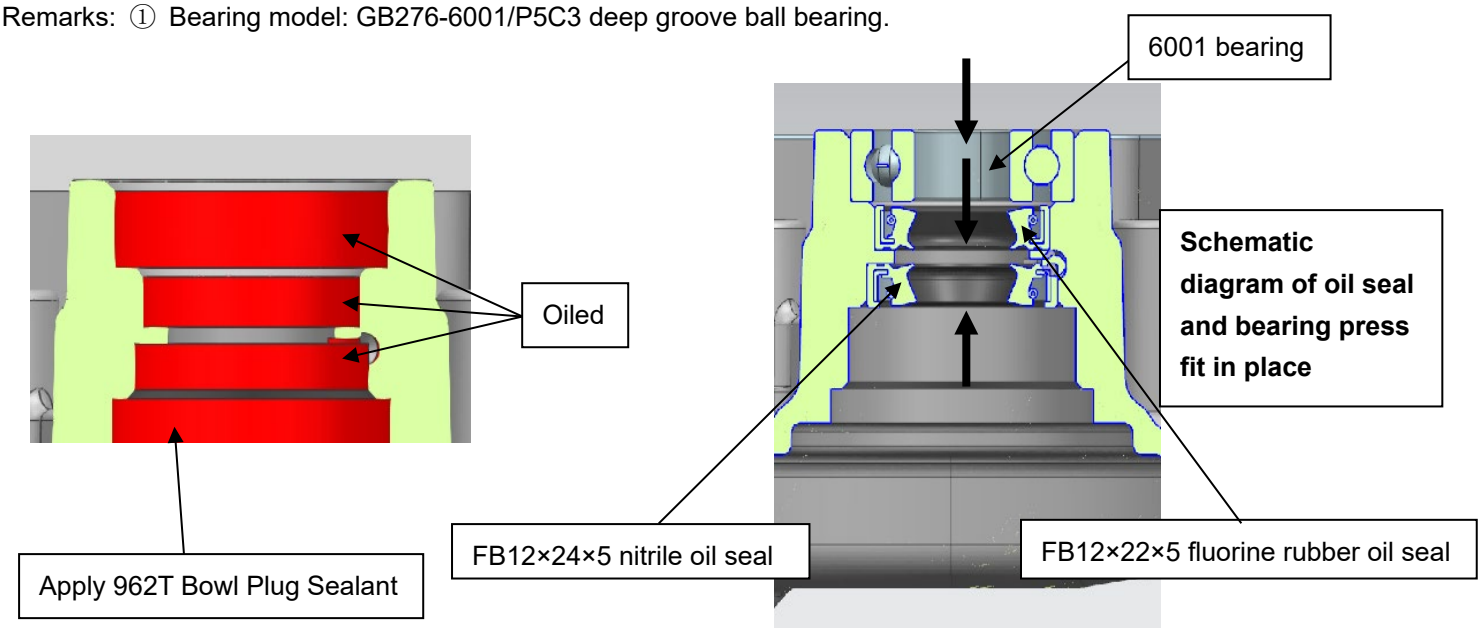
1. Take the new FB12×22×5 fluorine rubber oil seal and FB12×24×5 nitrile rubber oil seal (PTFE) and press them to the position shown in the figure below. After installation, measure the depth to confirm whether it is installed in place.

Remarks: ① Apply engine oil to the oil seal installation hole and install the oil seal.

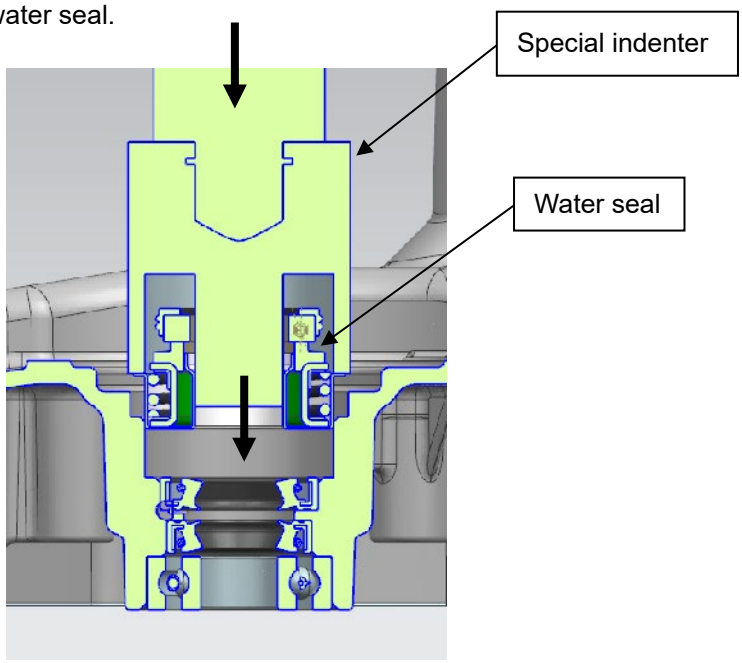
② The height of the FB12×22×5 fluorine rubber oil seal is 0.3-0.5mm shorter than the limit surface of the bearing.

2. Check whether the bearing rotates smoothly. If the bearing rotates stuck, replace it with a new one. After oiling the bearing hole, use a special pressure head to press the bearing into place.

Remarks: ① Bearing model: GB276-6001/P5C3 deep groove ball bearing.

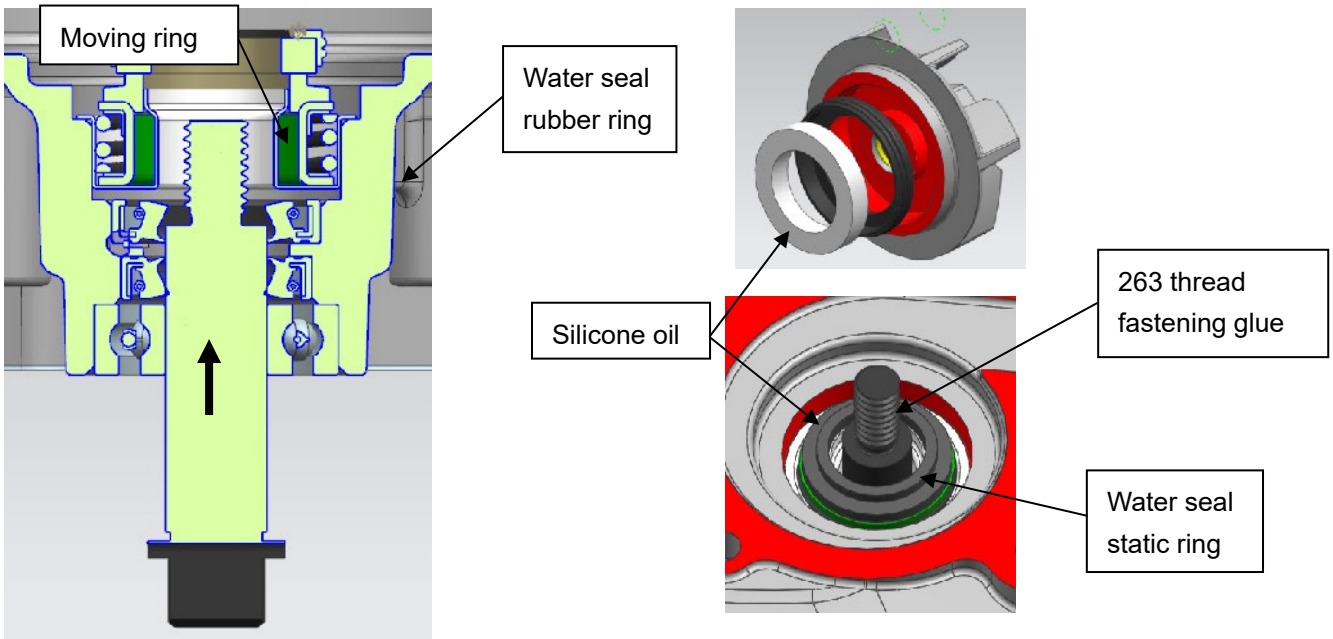


3. Take a new water seal, check to make sure that the surface of the water seal is clean and free of debris, apply 962T bowl-shaped plug sealant on the hole where the water seal is installed, and press the water seal in place with the special pressure head for installing the water seal.



4. After checking that the water pump shaft has no abnormal wear, press it into the bearing hole. If the flange surface of the water pump shaft touches the inner ring of the bearing, it is pressed into place.

Remarks: ① After the water pump shaft is installed in place, apply an appropriate amount of thread fastening glue to the thread.



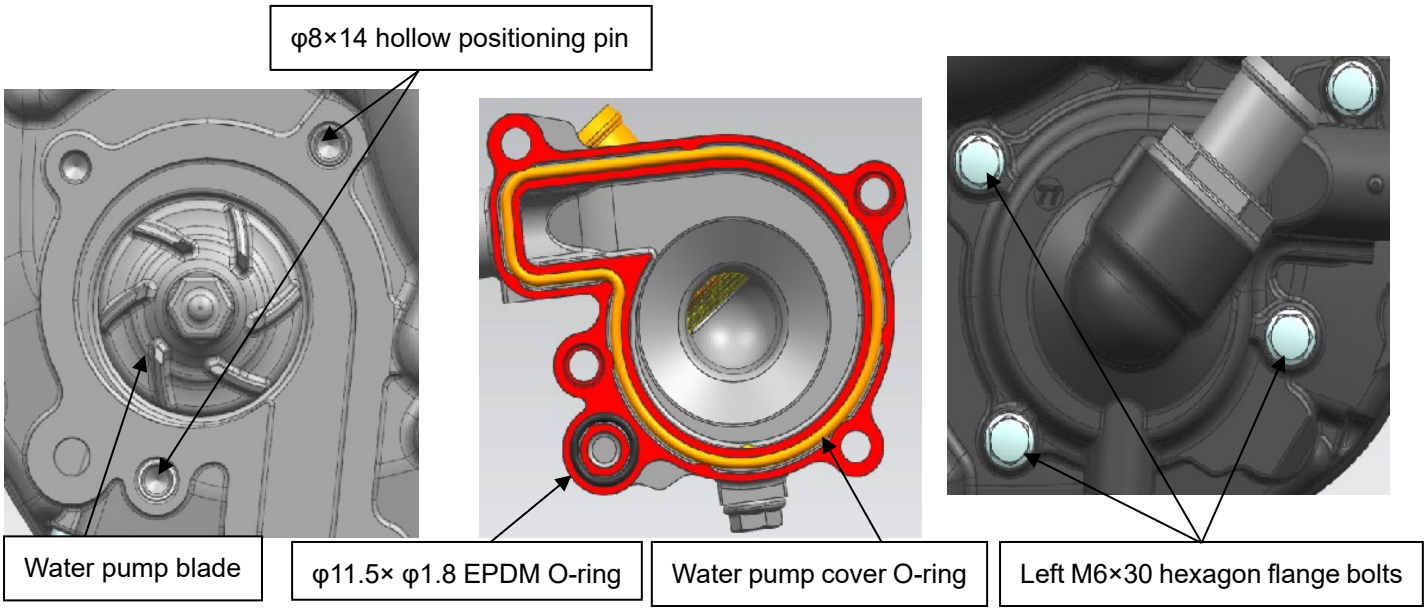
5. As shown in the figure above, disassemble the moving ring of the water seal, first put the rubber into the water pump blade, and then put the ceramic moving ring into the water pump blade (Note: You can apply a proper amount of silicone oil on the outer ring of the moving ring to make it easier to put it into the water seal in the rubber ring).

Remarks: ① Assembled in place, the ceramic scribe line faces inward, and the glossy surface faces outward.

② Apply an appropriate amount of water-soluble silicone oil on the static and dynamic rings of the water seal.

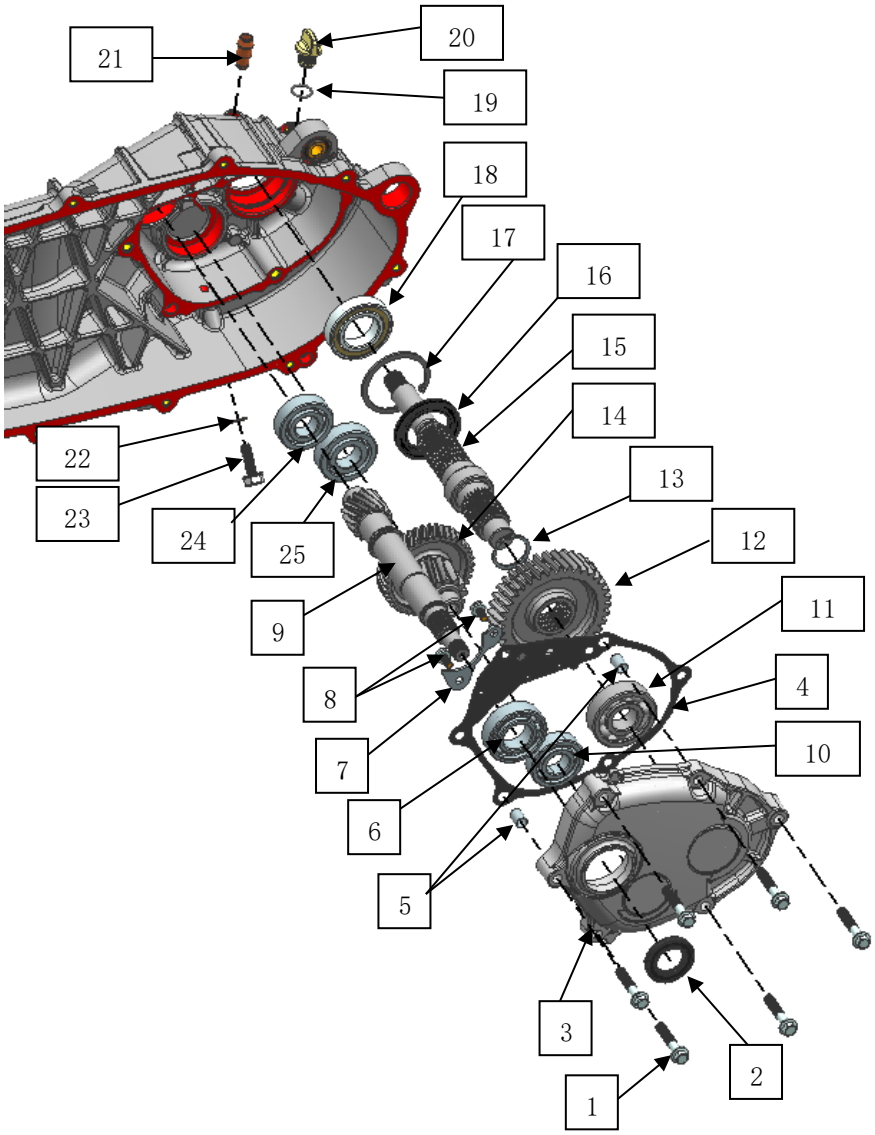
6. Limit the water pump shaft with a flat-head screwdriver, take a water pump blade, use a 12# wrench to turn left to tighten the water pump blade to the water pump shaft, and tighten it with a 12# sleeve and torque wrench. Torque standard: 20N·m± 1.5 .

7. Take two φ8×14 hollow positioning pins and put them into the corresponding holes, and put the water pump cover O-ring and φ11.5×φ1.8 EPDM rubber O-ring on the water pump cover groove (if the O-ring occurs If the edge is trimmed or worn, replace it with a new one), pre-tighten the 3 bolts on the left side first, and finally tighten all the bolts clockwise with a torque wrench (or air batch) and an extended external hexagon socket -8#. Bolt torque standard: 12±1.5 N m.



Gearbox

1. System components



Parts information

Serial number	Name	Quantity	Serial number	Name	Quantity
1	GB16674M8×40 (environmental protection color zinc)	6	14	ZT1P77MP double gear assembly	1
2	FB25×42×6 fluorine rubber oil seal	1	15	ZT1P77MP output shaft	1
3	ZT1P77MP gearbox cover	1	16	FB38×56×7 hydrogenated nitrile oil seal	1
4	ZT1P72MN gearbox cover gasket	1	17	GB893.1 circlip φ55 for holes	1
5	φ10×14 hollow positioning pin	2	18	GB276-6006-2RS/P5C3 deep groove ball bearings	1
6	GB276－6205/C3H-F deep groove ball bearings	1	19	13.8×2.5 Acrylic glue O-ring	1

7	ZT1P77MP drive shaft bearing pressure plate	1	20	M14×1.5 oil filler nut	1
8	GB5789M6×12 (environmental protection color)	2	21	ZT1P58MJ cylinder head cover air balance tube	1
9	ZT1P77MP drive shaft	1	22	8.3×16×1.5 copper gasket	1
10	GB276-6204/P5C3 deep groove ball bearings (nitrogenation)	1	23	Non-standard bolt M8×25 (environmental protection color)	1
11	GB276－63/22P5C3 deep groove ball bearings (nitridation)	1	24	GB276-6204/P5C3 deep groove ball bearings (nitrogenation)	1
12	ZT1P77MP output gear	1	25	GB276－62/22/P5 deep groove ball bearings (human/nitrided)	1
13	GB894.1 circlip for shaft φ29×1.5	1			

2. Maintenance information

General information

Gear box oil quantity:

Maintainance		Oil volume
Gearbox oil	Routine maintenance (without disassembling the gearbox)	200ml
	Non-routine maintenance (disassembly of gearbox)	230ml

Bolt torque value:

Bolt model	Assembly position	quantity	Torque (N•m)	Remark
GB16674M8×40 (environmental protection color zinc)	Gear case cover locking bolt	6	20±2.5	-
GB5789M6×12 (environmental protection color)	6205 bearing platen bolts	2	1 0 ± 0.5	Apply thread glue
Non-standard bolt M8×25 (environmental protection color)	Gearbox oil drain bolt	1	20±2.5	-

tool:

1.T bar-10#

2. Circlip pliers for shaft

3. Fixed torque wrench

4.10# Extended socket head

5.14# socket head

3. Fault phenomenon/fault analysis

1. The gas pedal of the engine runs normally, but the motorcycle does not move

· Damage of the drive shaft, output shaft, double tooth keyway or helical teeth in the gearbox causes the idling rear wheel to not move.

· The gears or bearings in the gearbox are stuck, causing the motorcycle to be unable to move (the rear wheels cannot rotate at this time).

2. There is abnormal noise in the gearbox

· Gears are worn, and the gear meshing surface is corroded or damaged.

• Bearings are worn or damaged.

3. Gearbox oil leakage

· The oil seal is worn or damaged.

· The locking bolts of the gearbox are loose or the joint surface of the gearbox cover leaks oil.

4. Disassembly and decomposition of the gearbox

When disassembling the gearbox, the engine does not need to be removed from the vehicle, but the gearbox oil needs to be drained and the following parts removed.

Drain the gearbox oil. (**Refer to ZT350T-D Maintenance Manual--Maintenance--Engine Oil-Replace Gearbox Oil**)

The parts to be disassembled are as follows:

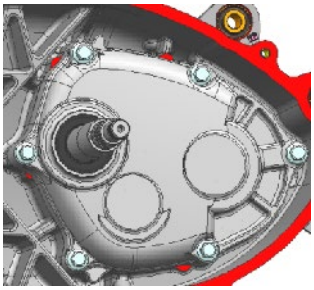
·Left crankcase cover (**Refer to ZT1P77MP engine maintenance manual -- left crankcase cover, continuously variable clutch subassembly -- left crankcase cover**)

·CVT assembly (**Refer to ZT1P77MP engine maintenance manual -- left crankcase cover, CVT clutch sub-assembly -- CVT clutch sub-assembly**)

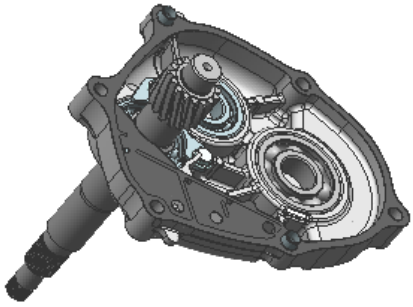
·Rear brake oil pipe, rear rocker arm assembly (**Refer to ZT350T-D maintenance manual -- 2. Maintenance -- brake system -- replace brake disc**)

·Rear wheel assembly (**Refer to ZT350T-D Maintenance Manual-- 2. Maintenance--Brake System--Replace Brake Disc**)

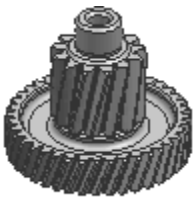
1. As shown in the picture, use T bar -10# to remove the 6 GB16674M8×40 locking bolts of the gearbox cover.

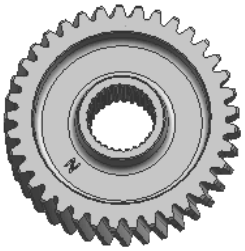


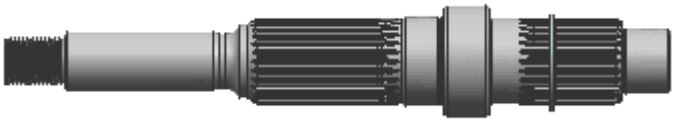
2. As shown in the figure, remove the gear case cover, gear case cover gasket and positioning pin in sequence.



3. As shown in the figure, remove the output gear, duplex gear assembly, output shaft and output shaft retaining ring in sequence.



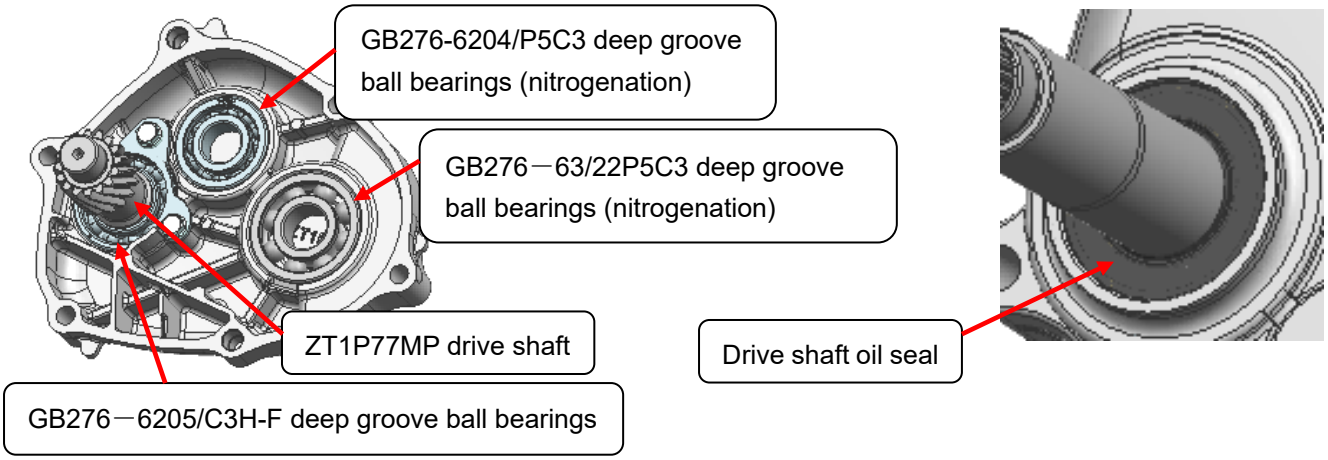




Five, gearbox gear, bearing inspection

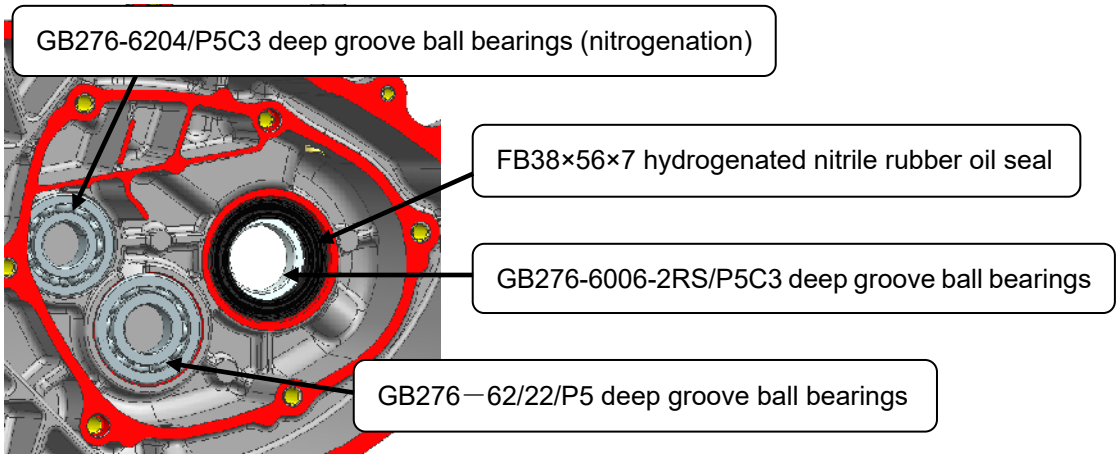
Gearbox cover bearing and oil seal inspection

1. As shown in the figure, turn the inner ring of the bearing by hand, the bearing will rotate smoothly and silently, and turn the drive shaft by hand, the bearing of the drive shaft will rotate smoothly and silently. If the bearing rotation is stuck, please replace the bearing. Check the drive shaft oil seal, there is no scratch or abnormal wear on the oil seal, if it is scratched or abnormal wear, please replace it.



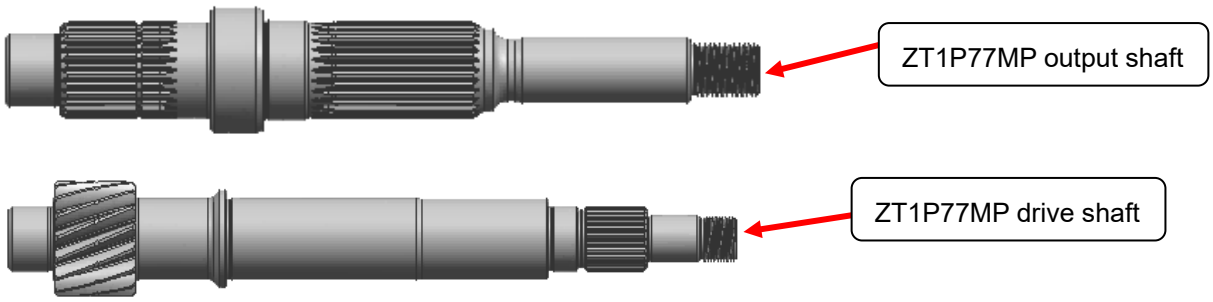
Inspection of left crankcase bearing and oil seal

1. As shown in the figure, turn the inner ring of the bearing by hand, and the bearing will rotate smoothly and silently. If the bearing rotates stuck, please replace the bearing. Check the output shaft oil seal, there is no scratch or abnormal wear on the oil seal, if it is scratched or abnormal wear, please replace it.

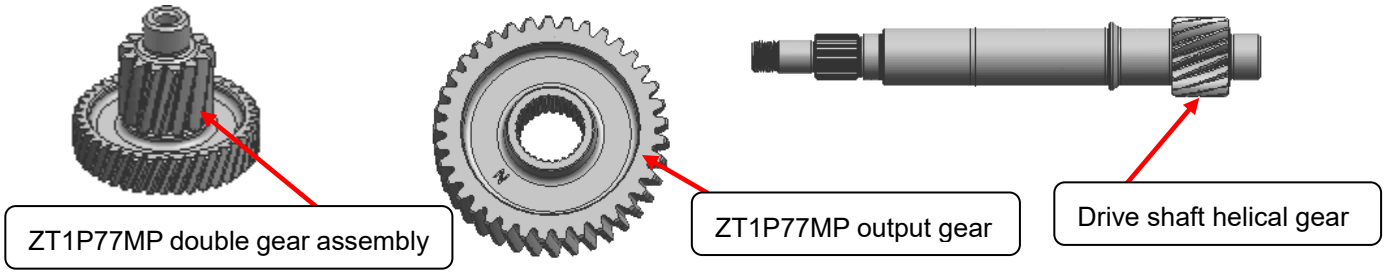


Drive shaft, output shaft, duplex gear inspection

1. As shown in the figure, check the position of the drive shaft, output shaft and splines for bending deformation and abnormal wear. If so, please replace them. **(Note: If the drive shaft has no obvious problems, it is not recommended to press it out from the 6205 bearing. Pressing out the drive shaft will damage the 6205 bearing.)**



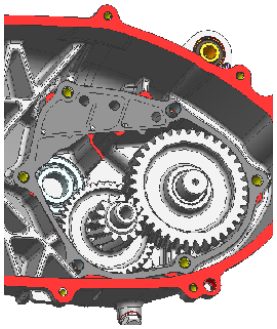
2. As shown in the figure, check the duplex gear assembly, output gear, and drive shaft helical teeth for abnormal wear and corrosion, and replace them if any.



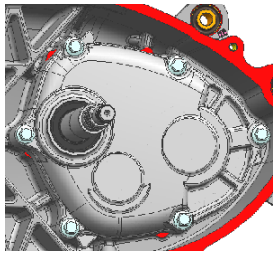
6. Gear box assembly

Before the gear case cover is installed, remove oil stains and residual paper pads on the joint surface of the gear case cover, and check the joint surface of the gear case cover to ensure that there are no scratches or bumps.

1. As shown in the figure, apply engine oil on the bearing surface of the gear chamber of the left crankcase, insert the output shaft with the output shaft retaining ring installed into the corresponding position of the left crankcase (there will be a bang when the output shaft is installed in place), and then insert the two The coupling gear assembly and the output shaft gear are installed in place, and then the positioning pin and the new gearbox cover paper pad are placed on the joint surface of the gearbox.

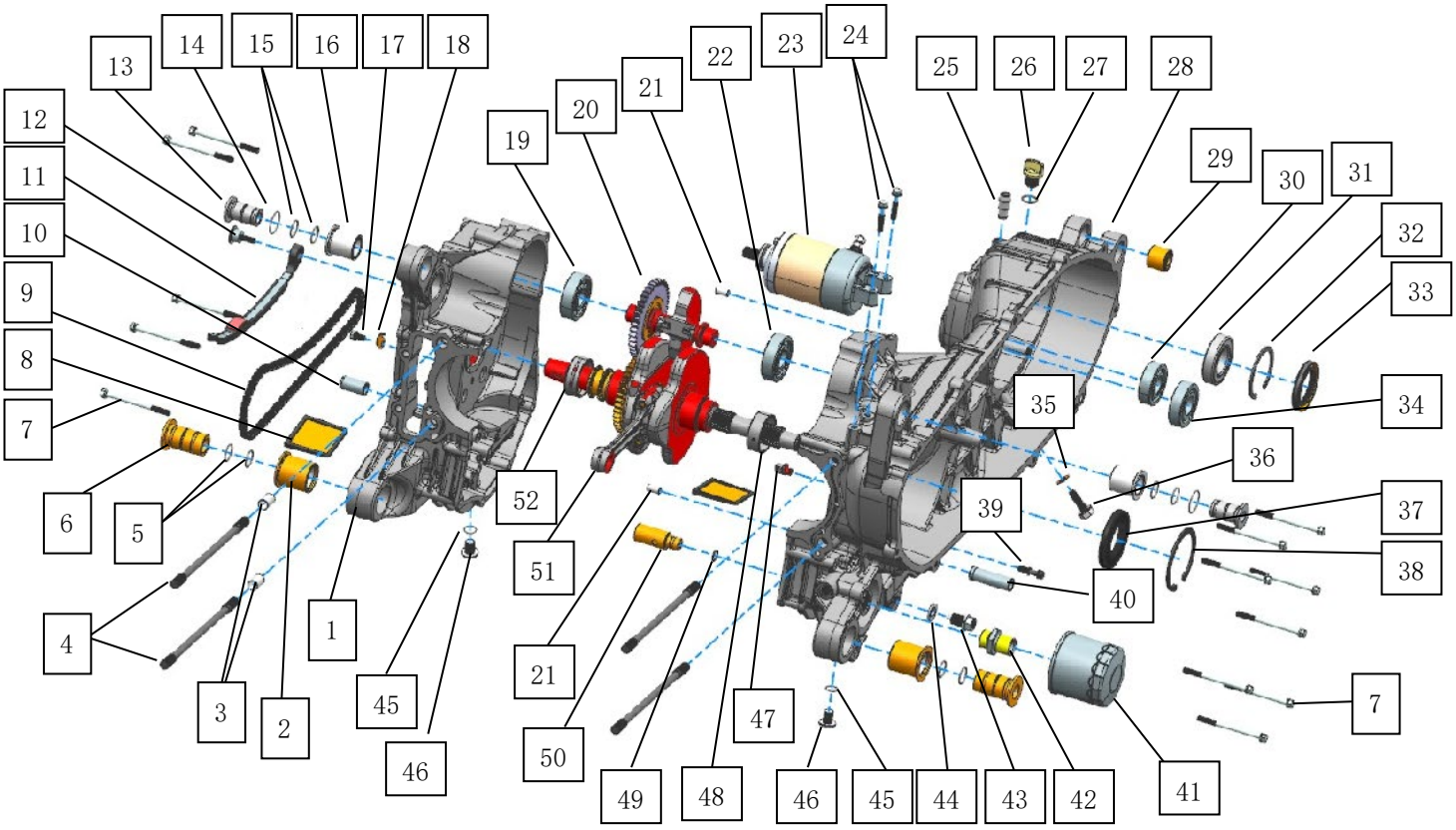


2. As shown in the figure, apply engine oil on the bearing surface of the gear box cover, install the gear box cover in place, put in 6 M8×40 bolts in sequence, pre-tighten diagonally from the position of the positioning pin and tighten it with a fixed torque, the torque is 20± 2.5 N•m .



Crankcase

1. System components



Parts information

Serial number	Name	Quantity	Serial number	Name	Quantity
1	ZT1P77MP right crankcase B	1	19	GB276-6304P5C3 deep groove ball bearings (nitridation)	1
2	ZT1P77MP lower hanging bush press assembly	2	20	ZT1P77MP balance shaft assembly	1
3	Locating pin 12×20	2	21	Φ 8×14 hollow positioning pin	2
4	YM10×1.25－M10×1.25×190 stud	4	22	6304-C3 deep groove ball bearings (FAG)	1
5	φ20.8×φ2.4 Acrylic O-ring	4	23	ZT1P72MN starter motor parts	1
6	φ16.3×φ25×45.5 lower hanging bush	2	24	GB16674M6×30 hexagon flange bolts	2
7	GB16674M6×75 hexagon flange bolts	13	25	ZT1P58MJ cylinder head cover air balance tube	1
8	53×50.5 trapezoidal strainer	2	26	M14×1.5 oil filler nut	1
9	6.35×7×110 toothed chain	1	27	13.8×2.5 Acrylic glue O-ring	1
10	φ 10×φ15×28.2 main bracket bushing	1	28	ZT1P77MP left crankcase B	1
11	ZT1P72MN tension strip	1	29	φ 10×φ25×22 shock-absorbing lifting hole bushing	1

12	M6×16－13.8×8.7 pivot bolt	1	30	GB276-6204/P5C3 deep groove ball bearings (nitrogenation)	1
13	φ 12.2×φ20×35.3 upper hanging bushing	2	31	GB276-6006-2RS/P5C3 deep groove ball bearings	1
14	φ 23×φ2 nitrile rubber O-ring	2	32	GB893.1 circlip φ55 for holes	1
15	φ 15.3×φ2.2 nitrile rubber O-ring	4	33	FB38×56×7 hydrogenated nitrile oil seal	1
16	ZT1P77MP upper hanging bush press assembly	2	34	GB276－62/22/P5 deep groove ball bearings (human/nitrided)	1
17	M6×10 top pin bolt (environmental protection color zinc)	1	35	8.3×16×1.5 copper gasket	1
18	ZT1P72MN guide bar pressure plate	1	36	Non-standard bolt M8×25 (environmental protection color)	1
37	FB35×66×7 fluorine rubber oil seal	1	46	M10×1.25×10 oil plug bolt	2
38	GB893.1 circlip for holes φ68	1	47	ZT1P72MN fuel injector	1
39	ZT1P58MJ main support return spring column	1	48	ZT1P77MP left box bearing bush φ40×φ44×15	2
40	φ 10×φ15×47.5 main bracket bushing	1	49	9.8×2.4 hydrogenated nitrile rubber O-ring	1
41	φ 65×65 oil filter (external)	1	50	ZT1P72MN pressure relief valve subassembly	1
42	M20×1.5 hexagonal hollow 14 stud bolts (grade 9.8/oxidized black)	1	51	ZT1P77MP crankshaft connecting rod assembly	1
43	M12×1.5×15 oil drain bolt (environmental protection color zinc)	1	52	ZT1P77MP right box bearing bush φ40×φ44×15	2
44	Combined gasket 12×φ20×2	1			
45	φ 11.11×φ1.78 fluorine rubber O-ring	2			

(Note: For the ZT1P77MP model, the upper hanging material and the lower hanging material box of the left and right boxes are the same. The pressing position of the hanging hanger is related to the vehicle model. When disassembling and assembling, select the corresponding material assembly drawing for reference according to the actual situation.)

2. Maintenance information

General information

1. This chapter introduces the separation of the crankcase and the inspection and maintenance of the crankshaft and other parts.

2. The maintenance steps in this chapter can only be motorcycleried out after draining the engine oil and gear chamber oil.

3. The maintenance of the crankcase can only be motorcycleried out by disassembling the engine separately. **(Refer to the ZT350T-D maintenance manual for disassembling the engine -- XI. Vehicle engine disassembly)**

4. After the engine is disassembled from the vehicle, the following components must be removed before the crankcase is unpacked:

·Main bracket **(Refer to ZT350T-D maintenance manual for disassembly and assembly of the main bracket -- 2. Maintenance -- main bracket)**

·Cylinder head cover **(Refer to the ZT1P77MP engine maintenance manual for disassembly and assembly of the cylinder head cover--cylinder head cover, cylinder head)**
Tensioner **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly of the tensioner--cylinder head cover, cylinder head--tensioner)**
·Cylinder head assembly **(Refer to the ZT1P77MP engine maintenance manual for disassembly and assembly of the cylinder head assembly--cylinder head cover, cylinder head)**
·Cylinder and piston **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly of cylinder and piston - cylinder and piston)**
·Left crankcase cover **(refer to the ZT1P77MP engine maintenance manual for disassembly and assembly of the left crankcase cover--left crankcase cover, continuously variable clutch sub-assembly)**
CVT clutch **(refer to ZT1P77MP engine maintenance manual for disassembly and assembly of CVT clutch - left crankcase cover, CVT clutch sub-assembly)**
·Right crankcase cover **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly of the right crankcase cover -- right crankcase cover, magneto)**
Flywheel, reduction gear **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly of the right crankcase cover - right crankcase cover, magneto)**
·Electric starter big gear **(Refer to ZT1P77MP engine maintenance manual for disassembly and assembly of the right crankcase cover -- right crankcase cover, magneto)**
·Oil pump **(Refer to ZT1P77MP Engine Maintenance Manual--Lubrication System for oil pump disassembly and assembly)**

5. During the disassembly and installation of the crankcase, do not operate violently to prevent damage to the joint surface of the crankcase.

Torque value

Bolt model	Assembly position	quantity	torque	Remark
M6× 75 hex flange bolts	Left and right box closing bolts	13	12 ± 1.5 Nm	-
M6× 10 hex flange bolts	-	-	10±1 Nm	-
M6× 30 hex flange bolts	starter motor lock bolt	2	12 ± 1.5 Nm	-
M20×1.5 hexagonal hollow 14 stud bolts	-	1	40± 4Nm	-
φ 65×65 oil filter (external)	-	1	20-25Nm _	-

tool
1. Torque wrench + 8#/10#/27# sleeve;
2. 8# -T-shaped sleeve;
3. Circlip pliers for shaft;
4. Filter disassembly wrench

3. Common failure phenomenon/troubleshooting

1. Abnormal noise
·Crankcase bearing bush is abnormally worn.
·The bearing bush at the big end of the connecting rod is abnormally worn.
·The small end of the connecting rod is abnormally worn.
·The balance shaft bearing is abnormally worn.

2. The crankshaft does not rotate

· Crankshaft bearing shell damage.

·The big end bearing shell of the connecting rod is damaged.

.The small end of the connecting rod is abnormally worn.

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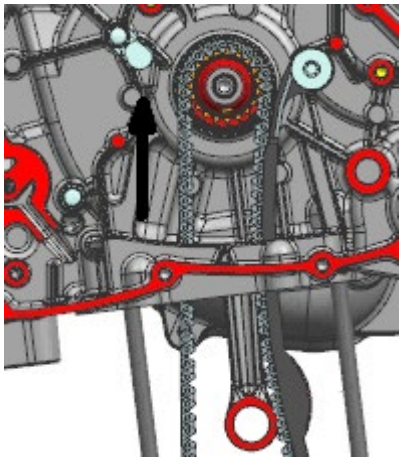


Fourth, the decomposition of the crankcase

1. Remove the timing chain

① Disassembly

Pull out in the direction shown by the arrow in the figure to remove the timing chain.

② check

If the following problems exist, the timing chain and timing driven sprocket must be replaced together.

●cracking

●Severe wear and tear

●Obviously stuck in rotation

③ Assembly

Spray the surface of the chain with engine oil, still follow the method shown above to put one end of the chain on the teeth of the timing sprocket, pull the other end out of the sprocket cavity and straighten it to prevent the chain from falling off.

2. Remove the tension strip

Refer to the ZT1P77MP engine maintenance manual for disassembly and assembly of the tension strip - cylinder head cover, cylinder head - tension strip.

3. Disassembly and assembly of the guide bar pressure plate

① Disassembly

Use tool 1 or 2 to remove the pressure plate bolts and take out the pressure plate.

② check

If the pressure plate is deformed or broken, it should be replaced.

③ Assembly

Install the pressure plate according to the position shown in the figure, apply an appropriate amount of thread glue to the bolts, screw them into the bolt holes of the pressure plate and tighten them with tool 1, the tightening torque is 10 ± 1 N. m.

4. Disassembly and assembly of the trapezoidal coarse filter

① Disassembly

Use flat-nose pliers (or other tools with flat clamping function) to gently clamp (to prevent deformation and damage to the coarse filter) to remove the trapezoidal coarse filter, and clean the dirt with a mild solvent.

② check

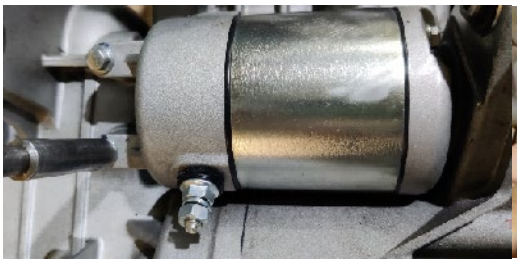
If the filter screen is damaged, it should be replaced.

③ Assembly

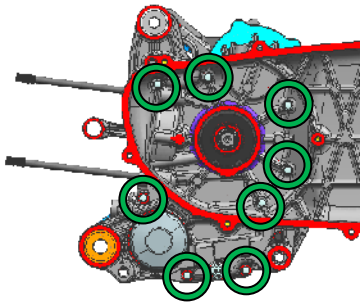
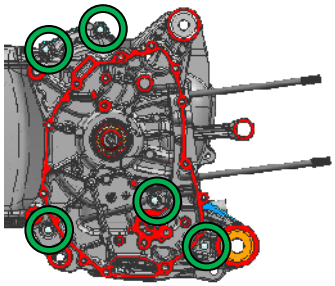
Put the coarse filter back into the box according to the picture, and press it in place (the side with the font logo is facing down, do not install it in the wrong direction).

5. Disassemble the crankcase

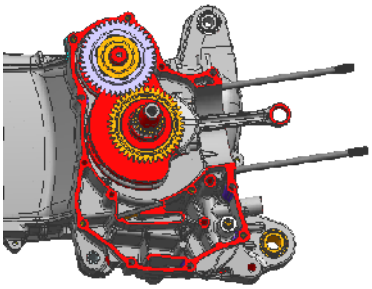
① As shown in the figure below, use tool 1 or tool 2 to remove the starter motor.




② Use tool 1 or tool 2 to evenly remove the crankcase locking bolts diagonally, first remove the 8 M6× 75 hexagonal flange surface bolts on the left side , and then rotate the box to remove the 5 M6× 75 hexagonal flange surface bolts on the right side .

③ Place the left crankcase downwards, take a rubber hammer and tap the reinforcement holes or process bosses symmetrically (note: do not hit the crankcase joint surface or other assembly joint surfaces) to separate the crankcase evenly, and finally remove the right crankcase. Crankcase, balance shaft, crankshaft, positioning pin.



④ Clean the crankcase

Thoroughly clean the crankcase with a mild solvent to remove residual glue from assembly joints.

⑤ Check the crankcase

●If the crankcase is found to have functional damage such as cracks or serious scratches on the joint surface, the corresponding crankcase should be replaced.

●Turn the inner rings of the balance shaft bearings of the left and right boxes by hand. If there is any sticking, abnormal noise, or loose inner rings, replace the corresponding bearings.

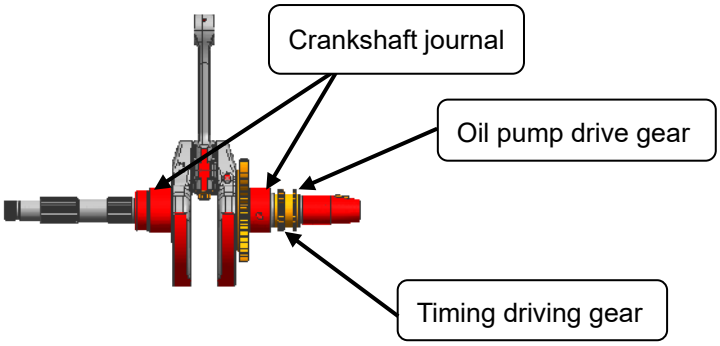
●Check the crankshaft bearing pads of the left and right casings, and replace the bearing pads if there is any abnormal wear.

●Check the crankshaft oil seal, and replace it if the main and auxiliary lips are severely worn.

6. Check the crankshaft

● Check the oil pump drive gear and timing drive gear for abnormal wear and damage;

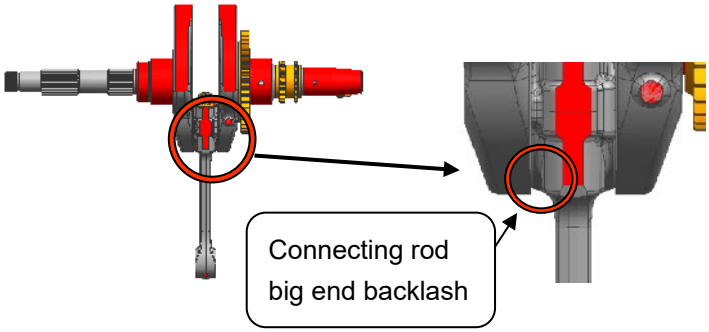
Inspect the crankshaft journal surfaces for damage, discoloration or scratches, and replace the crankshaft if present.



●Connecting rod big end backlash inspection

Insert a feeler gauge between the crankshaft and the big end face of the connecting rod to measure the clearance.

Maintenance limit value: 0.40mm (0.016in)

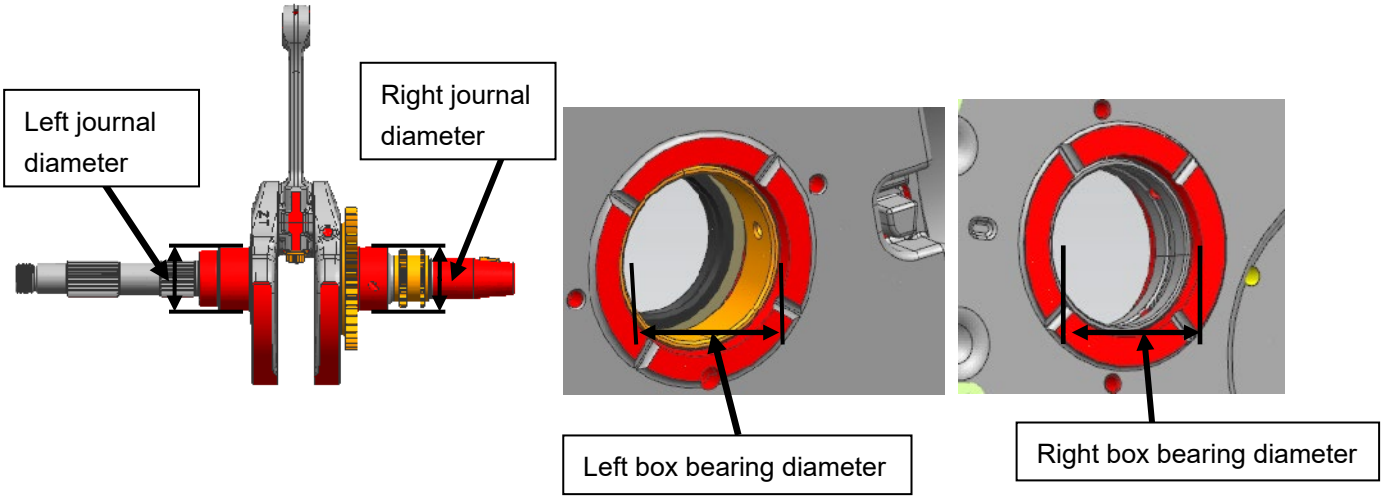


Check the fit clearance between crankshaft main journal and bearing bush

Measure the diameters of the left and right journals of the crankshaft and the left and right bearing bushes of the box respectively, and subtract the diameter of the bearing bushes from the diameter of the main journal of the crankshaft to calculate the fit clearance between the left and right main journals of the crankshaft and the bearing bushes.

Maintenance limit value: 0.075mm (0.003in)

Note: When the fitting clearance between the main journal and the bearing bush exceeds the maintenance limit value, please evaluate and replace the parts with a large amount of wear, and judge whether the fit clearance is within the maintenance limit value, if yes, replace the corresponding parts, if not, replace it Brand new crankshaft and bearing bush.

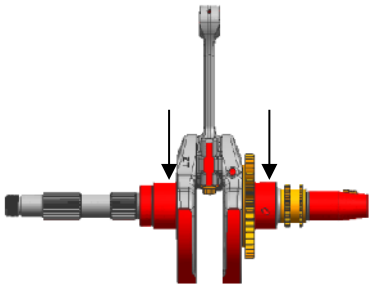


●Crankshaft runout inspection

Put the crankshaft on the V-shaped block or bracket, and measure the jump value of the corresponding point with a dial gauge.

Note: When the runout of the crankshaft exceeds the maintenance threshold, a new crankshaft needs to be replaced.

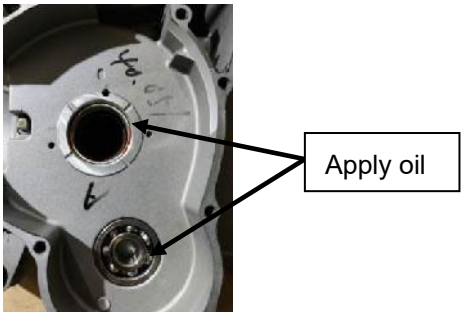
Service Threshold: 0.03 mm (0.0012 in)

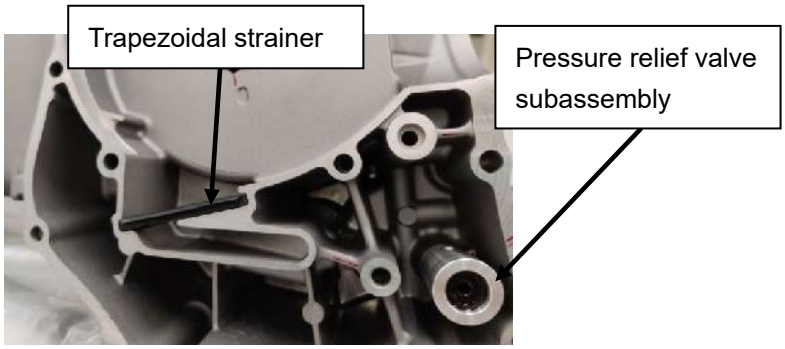


5. Assembly of the crankcase

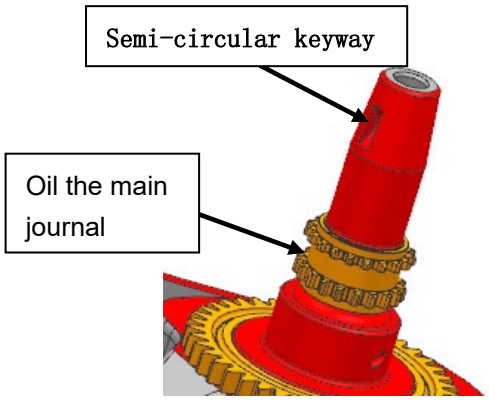
Before assembly, clean the interior of the crankcase and all mating surfaces, and check for cracks or other damage.

① Apply an appropriate amount of engine oil to the inner ring of the left crankcase bearing, the cage, the inner diameter of the bearing bush, and the lip of the oil seal. (**Note: Before installation, check that the subassembly of the left crankcase pressure relief valve, 9.8×2.4 hydrogenated nitrile rubber O-ring** , and **trapezoidal coarse filter are not missing**)

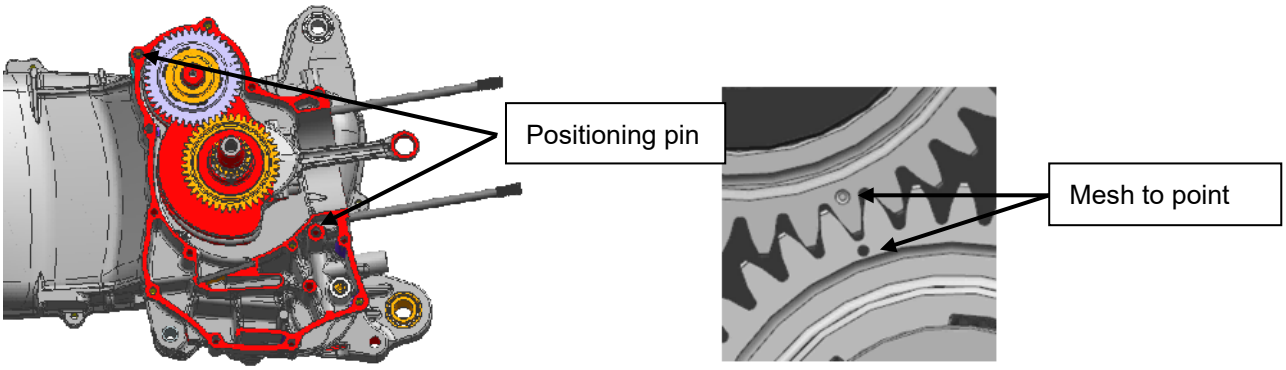




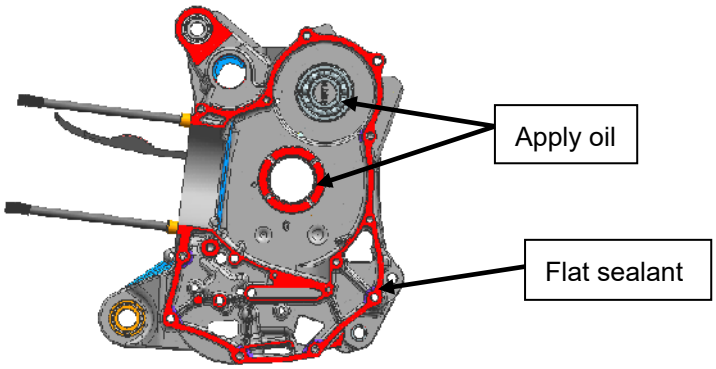
② Apply an appropriate amount of engine oil to the left and right main journals of the crankshaft, as shown in the figure below, and put the crankshaft into the left crankcase (Note: The semicircular keyway of the crankshaft is upward, and when putting the crankshaft, do not scratch the bearing bush of the left crankcase and the crankshaft oil seal).



③ Apply an appropriate amount of engine oil to the balance shaft journal, align the balance shaft with the balance shaft bearing hole and install it into the left crankcase, and install 2 φ 8×14 hollow positioning pins into the positioning pin holes of the left crankcase. **(Note: The balance shaft teeth and the drive teeth of the balance shaft on the crankshaft must be properly meshed!)**

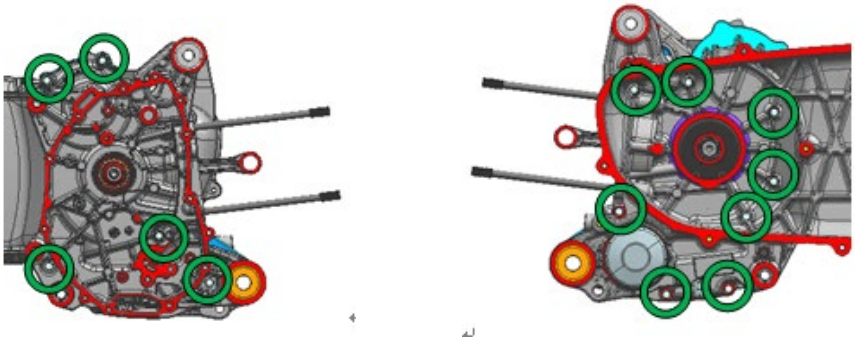


④ As shown in the figure, apply a layer of flat sealant on the joint surface of the right crankcase, and apply an appropriate amount of engine oil on the inner ring of the bearing, the cage, and the inner diameter of the bearing bush.

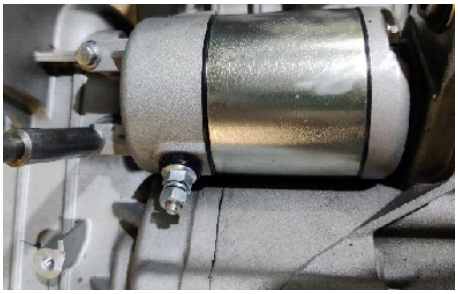


⑤ Align the right crankcase with the two positioning pins, and complete the box assembly vertically downward.
(Note: When placing the right crankcase in the box, do not scratch the bearing bush of the right crankcase, and do not operate violently when closing the box, so as to avoid bumping and scratching of parts and joint surfaces)

⑥ Put 5 M6× 75 hexagonal flange face bolts into the crankcase from the right side, pre-tighten them diagonally from the position of the positioning pins and fix the torque, the torque is 12±1.5Nm, rotate the box, and put 8 M6 × Install the 75 hexagon flange bolts into the crankcase from the left side, and tighten them evenly at the opposite corners, with a fixed torque of 12±1.5Nm.



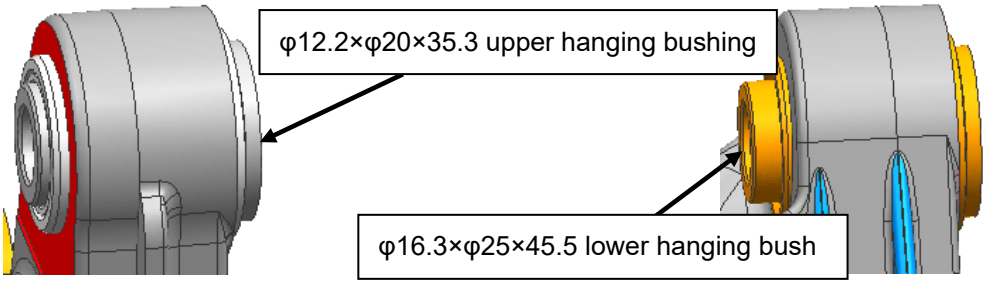
⑦After installing the starter motor in place according to the diagram, put in 2 pieces of M6×30 hexagon flange bolts, pretighten and tighten with a fixed torque, the torque is 12±1.5Nm.



Sixth, left and right crankcase suspension disassembly, inspection

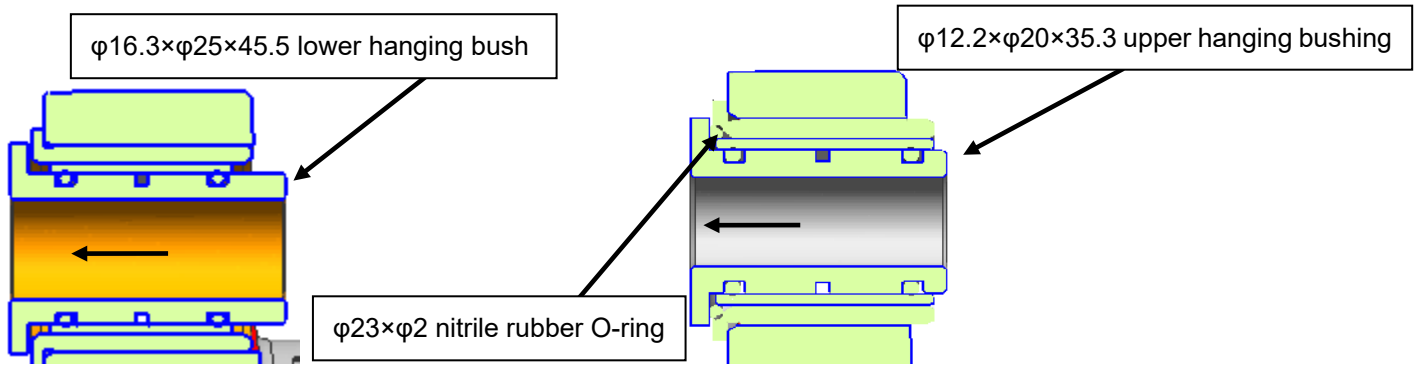
Hanging inspection

1. As shown in the picture, hold the two ends of the φ 12.2×φ20×35.3 upper suspension bush or the φ 16.3×φ25×45.5 lower suspension bush by hand , and turn it back and forth. If it can rotate, it is qualified. **(Note: If the hanging bush is stuck and cannot be rotated, it needs to be disassembled and added an appropriate amount of high temperature resistant and high load resistant grease.)**



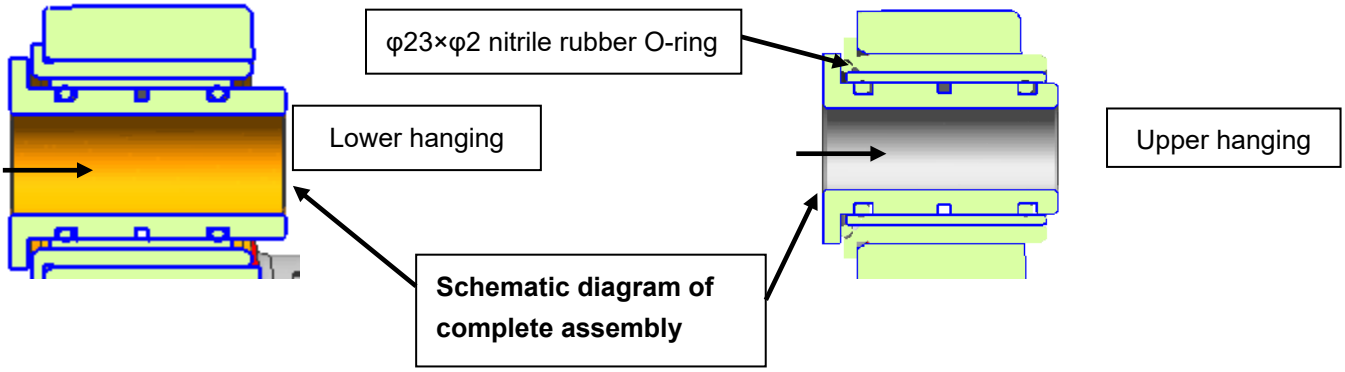
Hanging removal

1. As shown in the figure, remove the φ 16.3×φ25×45.5 lower hanging bushing or the φ 12.2×φ20×35.3 upper hanging bushing respectively (if the O ring is not damaged or cracked, do not need to remove it).



Hanging installation

1. As shown in the figure, apply an appropriate amount of grease on the surface of the suspension bushing and insert it into the corresponding suspension press-fitting assembly, and place a φ 23×φ2 nitrile rubber O-type on the flange side of the suspension bushing for the upper suspension . circle . **(Note: The grease needs to use high temperature resistant and high load resistant grease.)**



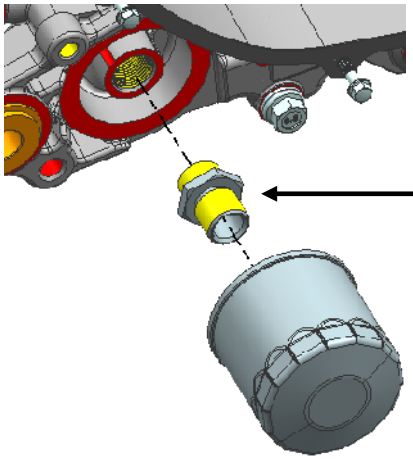
Seven, fine filter

Disassembly, installation

1. Use the filter removal tool to rotate counterclockwise to remove the fine filter. After checking that there is no problem, apply an appropriate amount of engine oil on the surface of the O ring of the fine filter, rotate it clockwise, and tighten it

with a fixed torque: 20-25N.m (Note: the fine filter There is no scratch or damage on the O ring, and no bump or scratch on the installation joint surface of the fine filter of the left box) .

Note: Please refer to the ZT350D maintenance manual for normal maintenance of the fine filter of the engine -- 2. Maintenance -- engine oil -- replace the fine filter.



M20×1.5 hexagonal hollow 14 stud bolts are not recommended to be disassembled and removed. If disassembled for secondary installation, an appropriate amount of thread glue should be applied, and the fixed torque: 40±4N.m.