



ZT180MN Engine EuroIV_V

Maintenance Manual

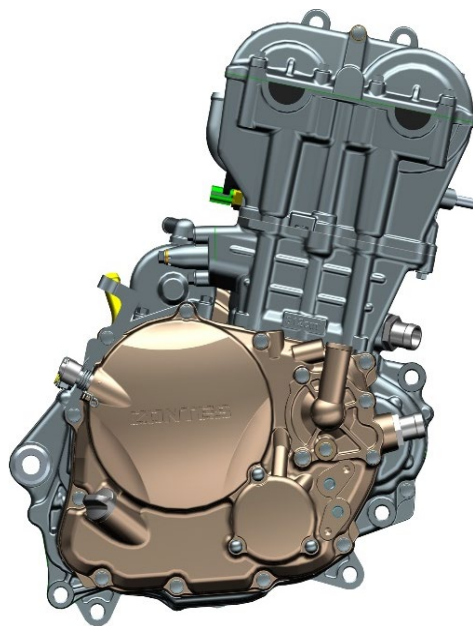


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This manual is suitable for ZT180MN series engines. All the materials, illustrations, photos, etc. collected in this manual are compiled according to the latest products. However, due to the continuous improvement of the product and other changes, there may be some inconsistencies between your engine and this manual.

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1-PREPARATION STEPS

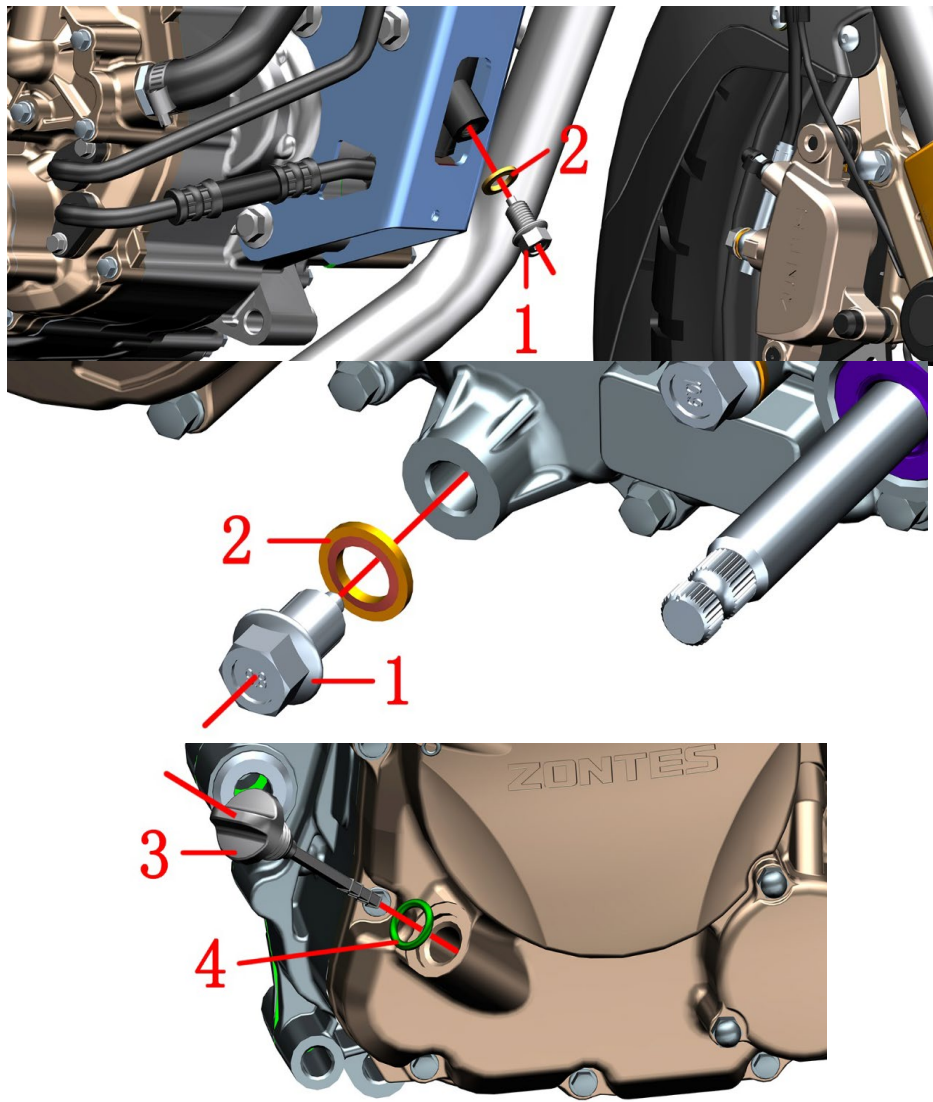



Fig.1 PREPARATION STEPS		Draining oil-1	CHK	
NO.	PART NO.		ADJ	
		PART NAME	QTY	CAUTION
1	1251100-066093	M12×1.5×15 oil drain bolt (color zinc)	2	25±4N.m
2	1244100-033000	Combined sealing gasket12×φ20×2	2	
3	1050854-002000	ZT180MN oil level gauge	1	
4	1051454-003000	15×3.1 acrylate adhesive O—ring	1	

PROCEDURE:

● Drain oil

Place a larger container under the engine, use 14 sleeve + ratchet wrench to remove the 2 oil drain bolts at the bracket and the left crankcase (1), and remove the gasket (2).

Unscrew the oil dipstick (3) on the right crankcase cover, take out the sealing ring (4), and wait for the oil to drain from the oil drain.

CAUTION:

● Combined gasket (2) It is recommended to replace it after disassembly to avoid oil leakage and oil leakage due to damage caused during disassembly.

● After removing the oil drain bolt (1), check whether the magnet on the bolt has adsorbed iron filings. If there are many foreign objects or parts adsorbed, check the inside of the engine. If there is only a small amount of metal chips, don't worry, just clean it up.

● Draining oil and antifreeze can only be done when the machine is cold to prevent burns.

1-PREPARATION STEPS

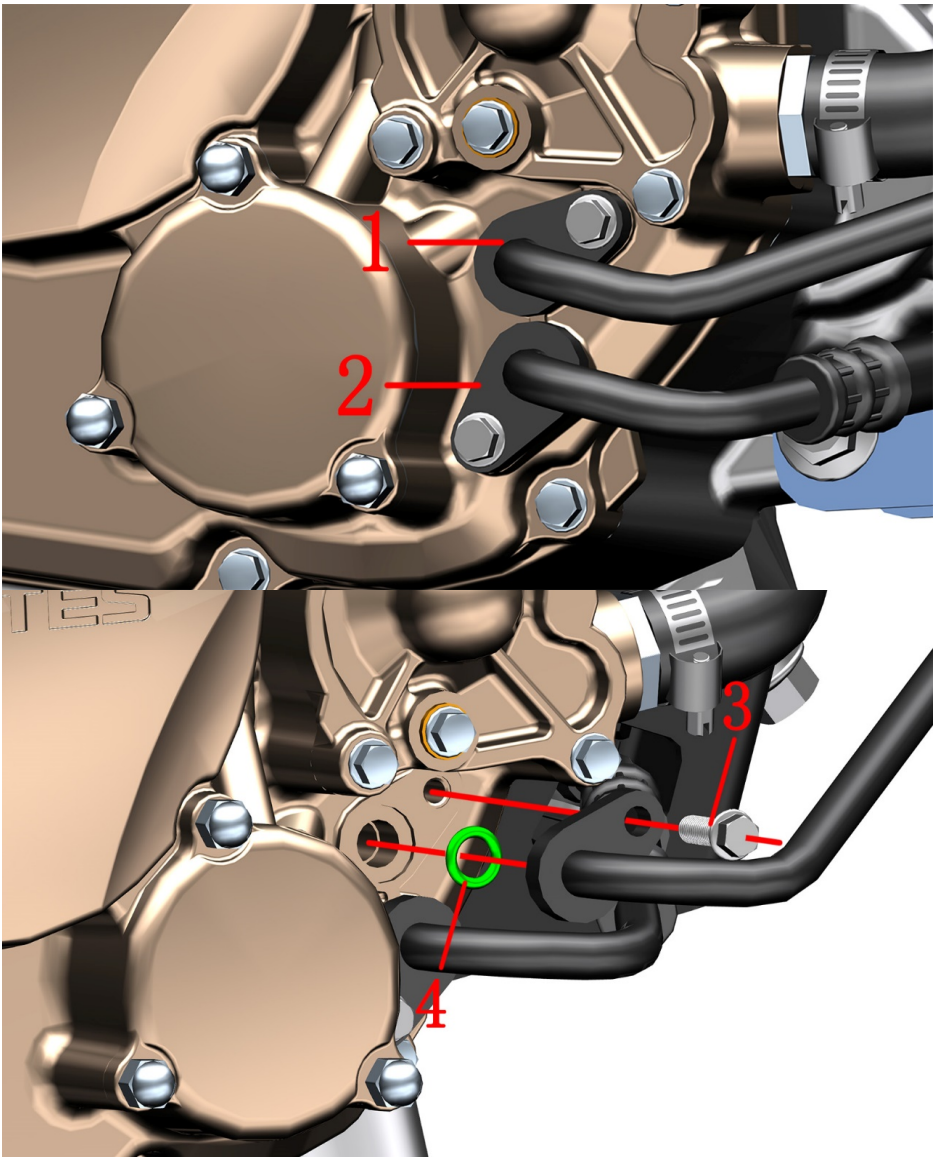



Fig.2 PREPARATION STEPS		Draining oil-2	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1		Oil outlet pipe of engine	1	【1】
2		Oil inlet pipe of engine	1	
3	1251100-061093	M6×22 Hex flang bolt thread level 8.8 (color zinc)	2	12±1.5N.m
4	1051454-014000	9.8×2.5 acrylic o—ring	2	

PROCEDURE:

● Drain oil

Use an 8# sleeve to remove the 2 bolts (3) on the engine oil outlet pipe (1) and the engine oil inlet pipe (2), and remove the O-ring (4).

Wait for the oil to flow out.

CAUTION:

● 【1】 Because there may be multiple states for different models, colors, status changes, etc., only the name is reserved here, and the corresponding correct state can be found in the official website parts. Similar situations will not be repeated in the follow-up.

● O-rings are recommended to be replaced after disassembly to avoid oil leakage and oil leakage due to improper seals caused by damage during disassembly.

1-PREPARATION STEPS

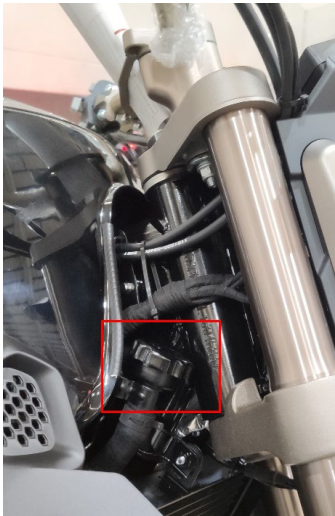
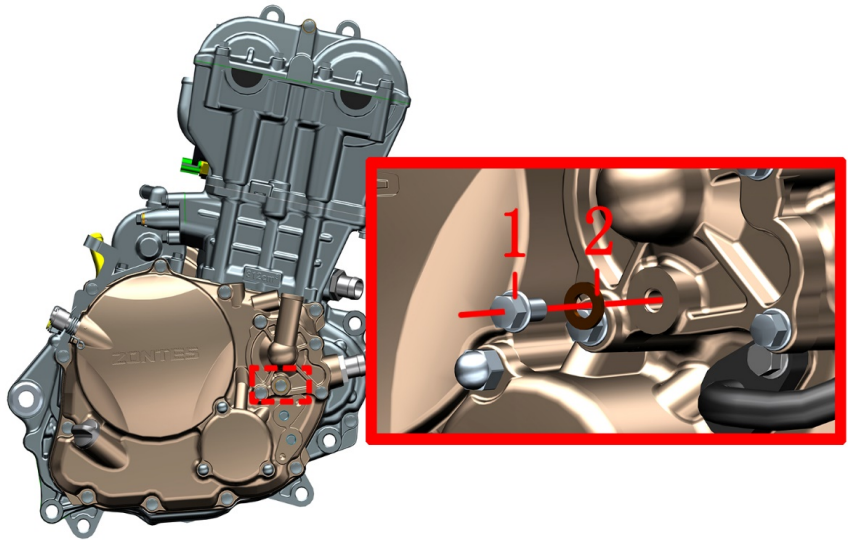



Fig.3 PREPARATION STEPS		Drain antifreeze	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1	1251112-001093	M6×16 Hexagon flange bolts (color zinc)	1	12±1.5N.m
2	1251513-001019	6.3×12×1.6 copper gasket	1	

PROCEDURE:

● Put antifreeze

Place a container under the drain hole, ready to receive antifreeze, use an 8# sleeve to remove the bolt (1), and remove the copper pad (2).

Locate the water filler cap at the lower link plate on the right side of the vehicle, press down the water filler cap and turn it counterclockwise before removing it, and wait for the antifreeze to drain.

CAUTION:

- Gasket (2) After disassembly, new gaskets must be replaced to avoid water leakage.
- Antifreeze is corrosive to a certain extent, so be careful not to contaminate the engine, other parts, body, clothing, etc., when discharging the antifreeze. If parts are accidentally contaminated with antifreeze, immediately wipe them with a clean lint-free cloth. If clothing or skin is stained with antifreeze, immediately rinse with clean water. If the antifreeze is splashed into the eyes, immediately rinse with plenty of water and observe to decide whether to seek medical attention.
- The engine can be removed from the vehicle after draining the antifreeze and engine oil.

2-CYLINDER HEAD ASSEMBLY

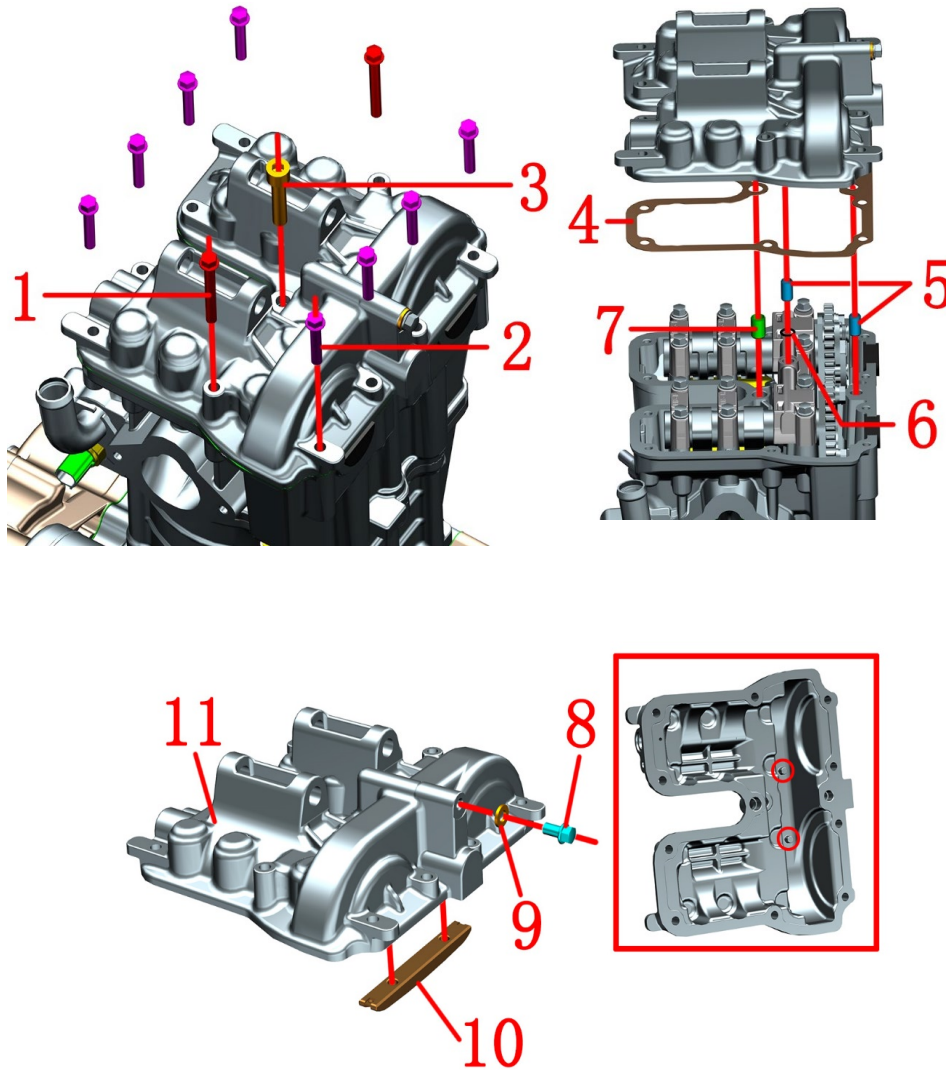


Fig.1 CYLINDER HEAD ASSEMBLY		Cylinder head cover assembly		CHK	CAUTION
NO.	PART NO.	PART NAME	QTY	ADJ	
1	1251112-003093	M6×45 Hex flange surface 9.8 bolt (color zinc)	2		12±1.5N.m
2	1251112-002093	M6×30 Hexagon flange bolts (color zinc)	8		12±1.5N.m
3	1250205-023000	GB70.1 inner hexagonal M8X35 (environmental color)	1		21±1.5N.m
4	1051654-001000	ZT180MN Cylinder head cover gasket	1		
5	1251401-001000	φ8×14 hollow locating pin	2		
6	1051454-001000	7.5×1.5 Fluorine O—ring	1		
7	1251401-003000	Φ10×14 hollow positioning pin	1		
8	1251100-067093	M6×10 top pin bolt (color zinc)	1		12±1.5N.m
9	1251513-001019	6.3×12×1.6 copper gasket	1		
10	1050154-034000	ZT180MN timing chain plate	1		
11	1040754-001000	ZT180MN Cylinder head cover	1		

PROCEDURE:

●Cylinder head cover assembly

Use an 8# sleeve to remove 2 bolts (1) and 8 bolts (2), and remove 1 bolt (3) for 6# inner hexagon, then the cylinder head cover assembly can be removed.

Take out the gasket (4), remove one large positioning pin (7) and two small positioning pins (5). Note: One of the small positioning pins (5) has an O-ring (6). Clean up the remaining sealant on the joint surface.

Remove the bolt (8) with an 8# sleeve, and remove the copper pad (9).

Remove the chain guard (10) from the inside of the cylinder head cover (11), and install the chain guard (10) on the boss shown in the circle in the figure.

CAUTION:

- When installing a new gasket, apply a proper amount of sealant on the assembly plane of the cylinder head and the upper surface of the gasket.
- The cylinder head cover bolts must be evenly loosened or tightened diagonally when removing and installing.
- Gasket (4) is for one-time use, and must be replaced after disassembly, otherwise the seal will not be in place and problems such as engine oil leakage will occur.
- When cleaning residual sealant and other impurities, avoid foreign matter from entering the engine.

2-CYLINDER HEAD ASSEMBLY

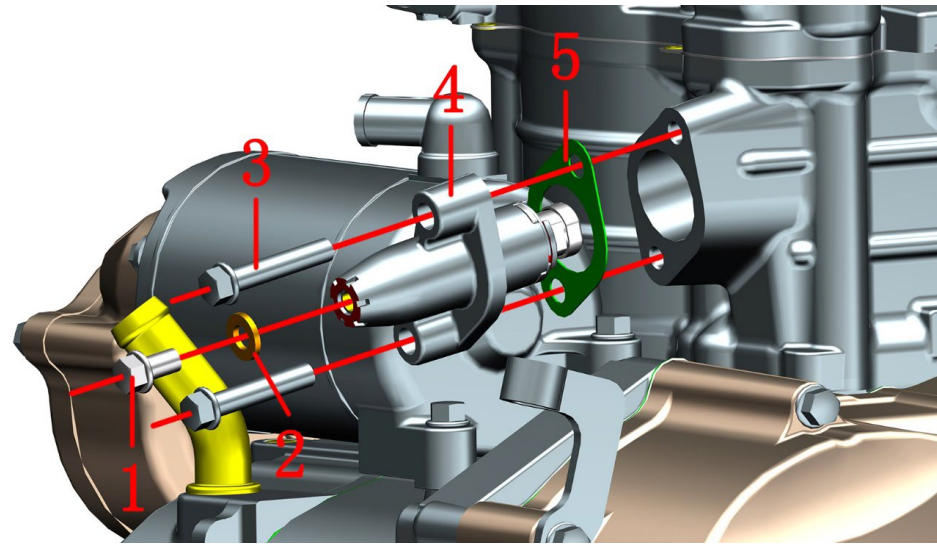


Fig.2 CYLINDER HEAD ASSEMBLY			CHK	CAUTION
Disassembling the camshaft-1			ADJ	
NO.	PART NO.	PART NAME	QTY	
1	1251100-067093	M6×10 top pin bolt (color zinc)	1	12±1.5N.m
2	1251513-001019	6.3×12×1.6 copper gasket	1	
3	1251112-002093	M6×30 Hexagon flange bolts (color zinc)	2	12±1.5N.m
4	1051253-003000	30×38 tensioner parts	1	
5	1051253-004000	30×38 Washer, tensioner	1	
6	1050153-005000	Cylinder head sealing cap parts	2	

PROCEDURE:

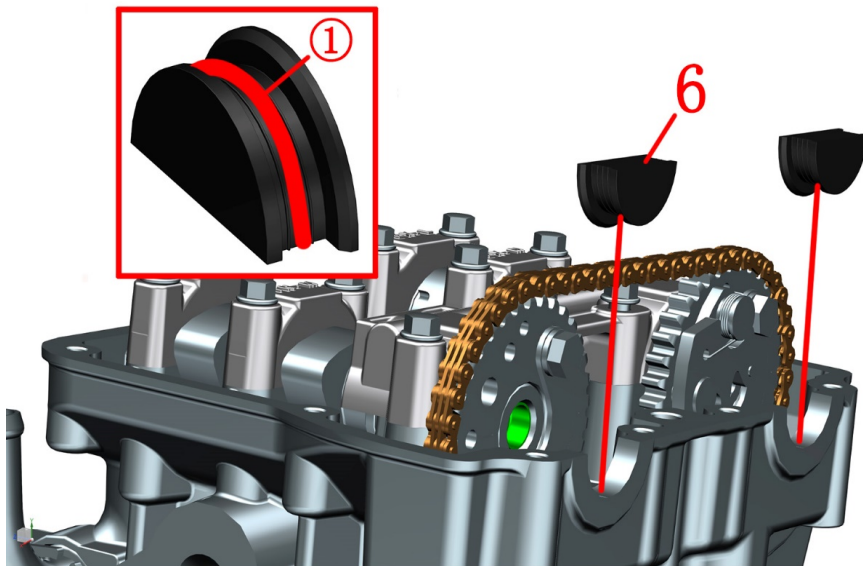
● Tensioner assembly

Use an 8# sleeve to remove the bolt (1), and take out the copper pad (2).

Use an 8# sleeve to remove the 2 bolts (3), and use the tensioner disassembly tool to remove the tensioner (4) and gasket (5).

● Sealing cap assembly

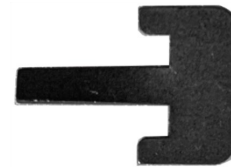
When installing the sealing cap (6), a proper amount of sealant should be applied at ① to prevent oil leakage.



CAUTION:

● Gasket (5) is for one-time use, and must be replaced after disassembly, otherwise the seal will not be in place and problems such as engine oil leakage will occur.

● When removing the tensioner, it is necessary to use the tensioner removal tool. Disassembly tooling is included when purchasing the tensioner assembly. The tooling is as follows:



2-CYLINDER HEAD ASSEMBLY

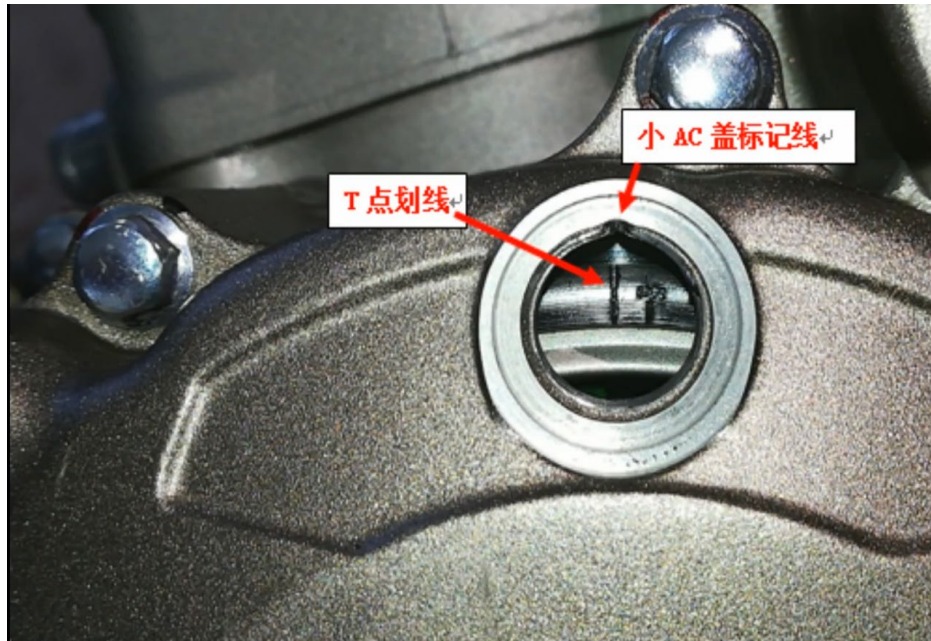
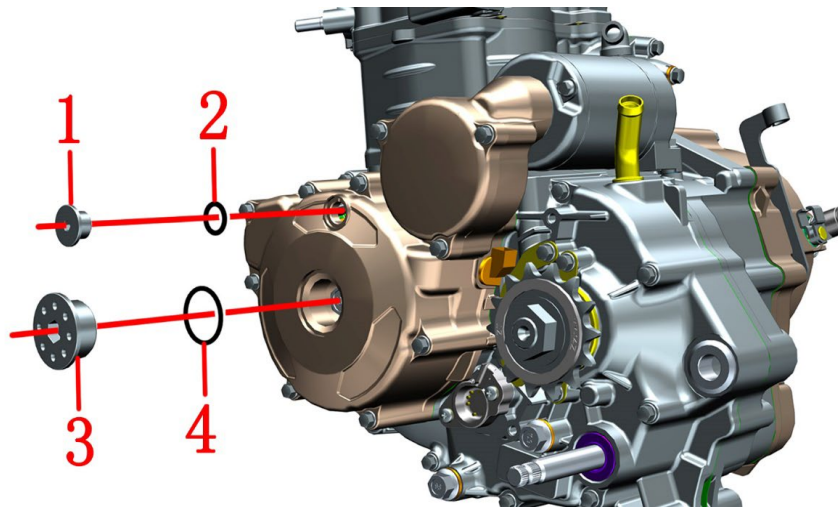


Fig.3 CYLINDER HEAD ASSEMBLY		Disassembly of camshaft-2		CHK ADJ	CAUTION
		NO.	PART NO.	PART NAME	
1	1040953-002093			M14×1.5 plug screw (environmental color zinc)	1
2	1051453-009000			O—ring 13×2.8	1
3				M30×1.5 aluminum screw plug	1
4	1051453-003000			27.4×2.65 Acrylate rubber o—rings	1

PROCEDURE:

● Remove the camshaft

Use 5# hexagon socket to remove the screw plug (1), and remove the O-ring (2).

Use 10# internal hexagon to remove the aluminum screw plug (3), and remove the O-ring (4).

Use a 17# sleeve to extend from the aluminum screw plug (3), use the sleeve to turn the flywheel bolt counterclockwise, so that the flywheel "T" dot-dash line coincides with the center line of the small AC hole mark slot on the left cover.

CAUTION:

● When the "T" dashed line coincides with the marked line, the ends of the intake and exhaust camshafts all face outward.

2-CYLINDER HEAD ASSEMBLY

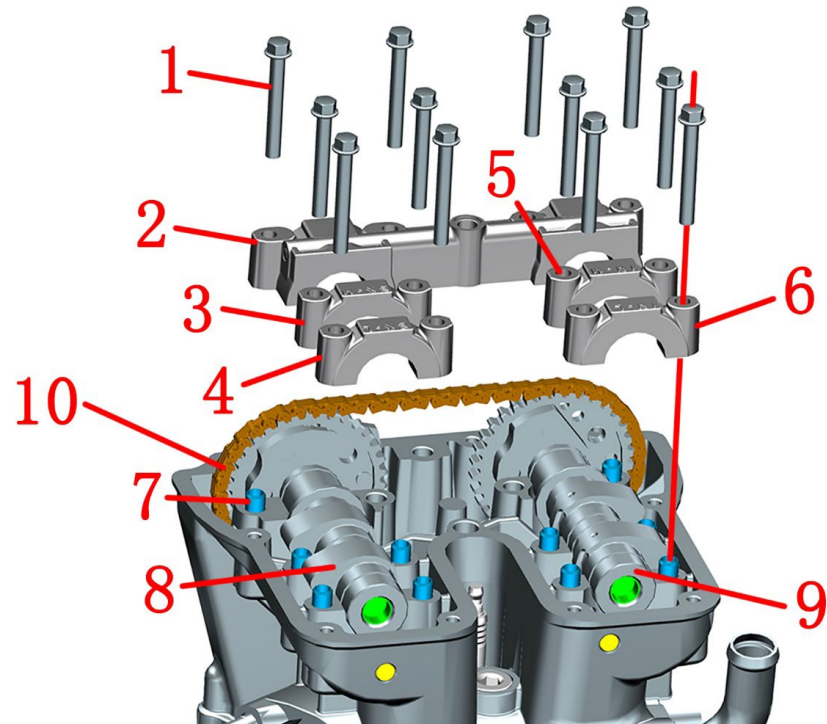


Fig.4 CYLINDER HEAD ASSEMBLY		Disassembling the camshaft-3	CHK ADJ	CAUTION
NO.	PART NO.	PART NAME	QTY	
1		M6×45 Hex flange surface 9.8 bolt (color zinc)	12	【1】
2		Intake and exhaust camshaft right seat cover blank	1	
3		ZT180MN intake camshaft middle seat cover blank	1	
4		ZT180MN intake camshaft left seat cover blank	1	
5		ZT180MN exhaust camshaft middle seat cover blank	1	
6		ZT180MN exhaust camshaft left seat cover blank	1	
7		φ8×14 hollow locating pin	10	
8	1050154-042000	ZT180MN intake camshaft sub—assembly	1	
9	1050154-043000	ZT180MN exhaust camshaft sub—assembly	1	
10	1050154-033000	6.35×9×130 gear chain	1	

PROCEDURE:

● Camshaft assembly

Use 8# cylinder to remove 12 bolts (1), torque standard: $12 \pm 1.5 \text{ N.m}$, remove camshaft pressing blocks (2), (3), (4), (5), (6), do not take out the positioning pin (7).

Remove the intake camshaft assembly (8) first, and then remove the exhaust camshaft assembly (9). The timing chain does not need to be taken out at this time, just put it back into the engine.

CAUTION:

- 【1】 Parts not marked with codes are included in the parts assembly and are not sold separately.
- "EX" means out of air, "IN" means air in, "L" means left seat, and "M" means middle seat. Be careful not to install it wrongly.
- The positioning pin (7) needs to be put back to the corresponding position of the cylinder head and cannot be misplaced.
- When installing, apply a proper amount of oil to the corresponding position of the camshaft, install the exhaust camshaft first, and then install the intake camshaft.
- The bolts of the camshaft seat cover must be tightened diagonally, otherwise it will damage the cylinder head, seat cover and camshaft.

2-CYLINDER HEAD ASSEMBLY

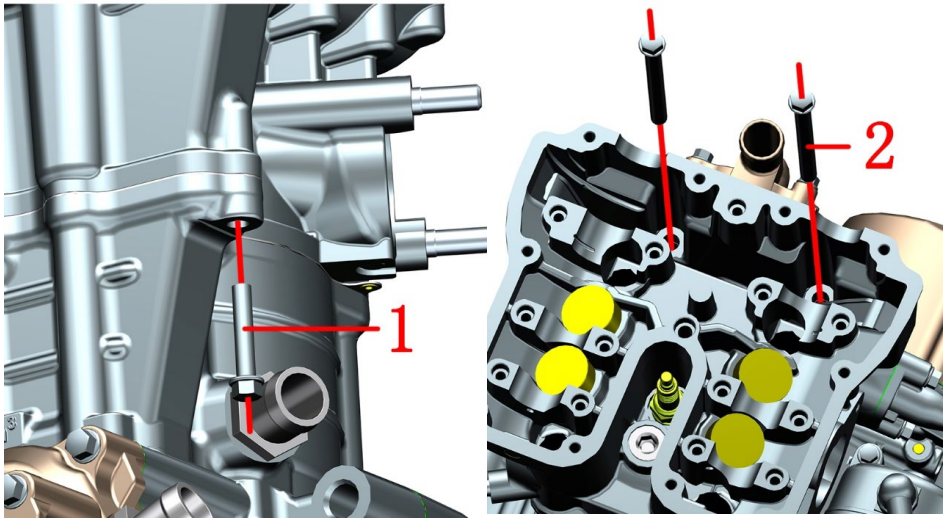
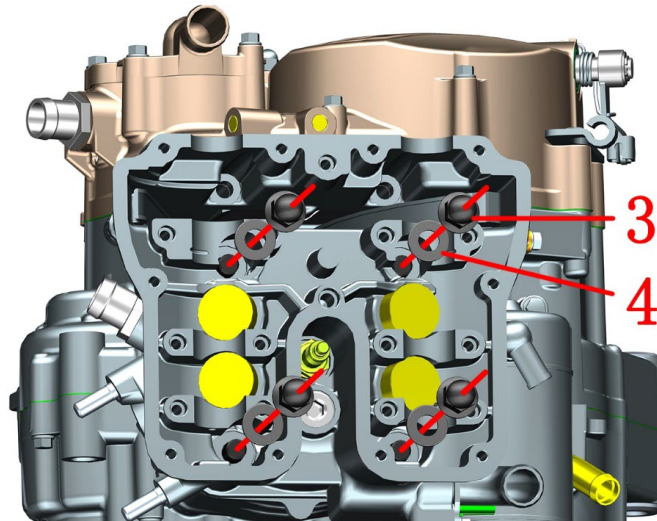


Fig.5 CYLINDER HEAD ASSEMBLY			CHK	CAUTION
Cylinder head assembly-1			ADJ	
NO.	PART NO.	PART NAME	QTY	
1	1251112-002093	M6×30 Hexagon flange bolts (color zinc)	1	12±1.5N.m
2	1251112-010000	M8×110 Hexagonal flange Level 9.8 bolt(color zinc)	2	25±1.5N.m
3	1251300-052094	M10×1.25 cap nut (12 grade / oxidized black)	4	60±1.5N.m
4	1251500-041000	10.3×20×2 gasket	4	

PROCEDURE:

- Remove the cylinder head
 - Use 8# torx wrench to remove 1 bolt (1) connecting the cylinder and the cylinder head.
 - Use an 8# sleeve to remove the 2 bolts in the cylinder head (2).
 - Use a 14# sleeve to remove the 4 nuts (3) in the cylinder head, and remove the gasket (4).



CAUTION:

- The bolt (2) is for one-time use, and must be replaced every time it is disassembled. Failure to replace it may cause problems with the airtightness of the cylinder and the cylinder head.
- Prevent foreign objects from falling into the engine during disassembly and installation.
- Nuts (3) must be evenly loosened diagonally, and each nut must be loosened 1/3 at a time, and then removed after all the nuts are completely loosened.
- Nut (3) Before installation, lubricating oil should be applied to the thread of the nut, and the installation also needs to be evenly tightened diagonally in 3 times.

2-CYLINDER HEAD ASSEMBLY

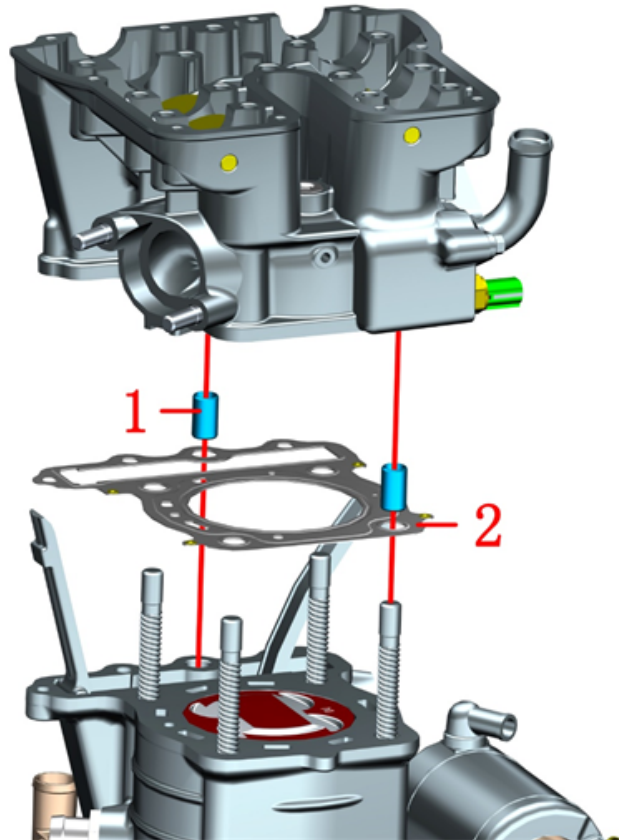



Fig.6 CYLINDER HEAD ASSEMBLY		Cylinder head assembly-2	CHK	
NO.	PART NO.		ADJ	
		PART NAME	QTY	CAUTION
1	1051301-052000	Locating pin 12×20	2	
2	1051654-006000	Cylinder body and head gasket subassembly A	1	

PROCEDURE:

● Remove the cylinder head

Take out the cylinder head assembly vertically upwards, and remove the positioning pin (1) and gasket (2). The gasket (2) is for one-time use and must be replaced after disassembly.

CAUTION:

- When removing and installing the cylinder head assembly, pay attention to the guide bar.
- When removing and installing the cylinder head assembly, avoid foreign matter from entering the engine.

2-CYLINDER HEAD ASSEMBLY

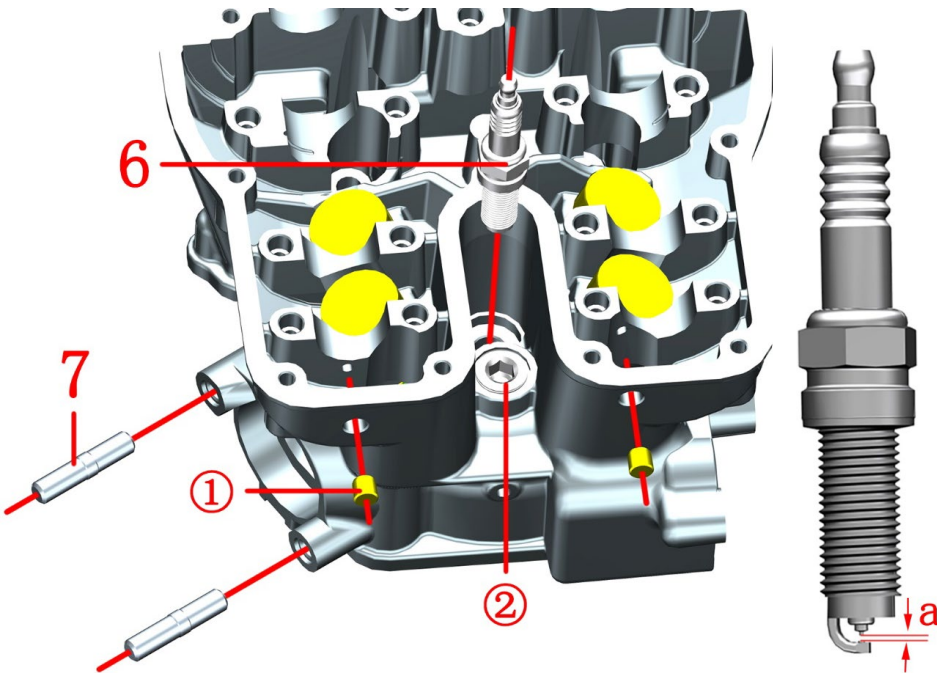
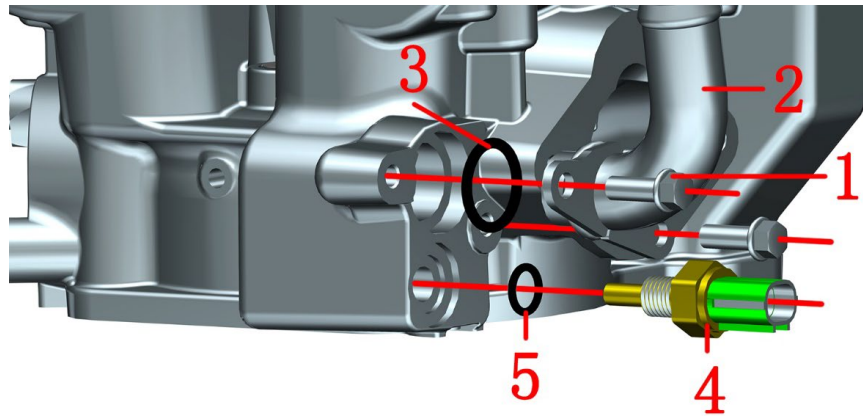


Fig.7 CYLINDER HEAD ASSEMBLY		Cylinder head assembly-3		CHK	CAUTION
NO.	PART NO.	PART NAME	QTY	ADJ	
1	1251112-001093	M6×16 Hexagon flange bolts (color zinc)	2		12±1.5N.m
2	1051954-001000	ZT180MN Outlet pipe subassembly	1		
3	1051454-007000	19×2.65 EPDM O—ring	1		
4	1050954-003000	Communal sensor of water and oil	1		13±1.5N.m
5	1051454-009000	9×2 EPDM O—ring	1		
6	1050954-017000	LDK8RTIP—0.8 sparking plug	1		20±2N.m
7	1251111-011000	AYM8—M8×38 double head 10.9 stud bolts is deactivated	2		20±1.5N.m

PROCEDURE:

●Cylinder head assembly

Use an 8# sleeve to remove the 2 bolts (1), and remove the outlet pipe (2) and O-ring (3).

Use a 17# sleeve to remove the sensor (4), and remove the O-ring (5).

Use the spark plug special sleeve to remove the spark plug (6).

Use M8 double-end stud sleeve to remove the stud (7). When installing, apply a proper amount of thread glue to the thread of the stud (7) and the cylinder head.

① The oil plug at the place cannot be disassembled. Here is an interference fit. If disassembled and then assembled, it will cause problems with the sealing of the cylinder head.

②The water plug at the place is also not removable. Special waterproof glue is applied to the threads here. Disassembly and assembly may cause water leakage.

CAUTION:

●Apply appropriate amount of thread glue to the thread of the bolt (1) during installation.

●O-rings (3) and (5) are for one-time use. If they are removed, they must be replaced. Failure to replace it may cause problems such as water leakage.

●When removing and installing the cylinder head assembly, avoid foreign matter from entering the engine.

●Check the spark plug thread and center electrode. If there is damage or deformation, replace the spark plug.

●The standard value of spark plug gap a is: 0.7-0.9mm, and it must be replaced if it exceeds the range.

2-CYLINDER HEAD ASSEMBLY

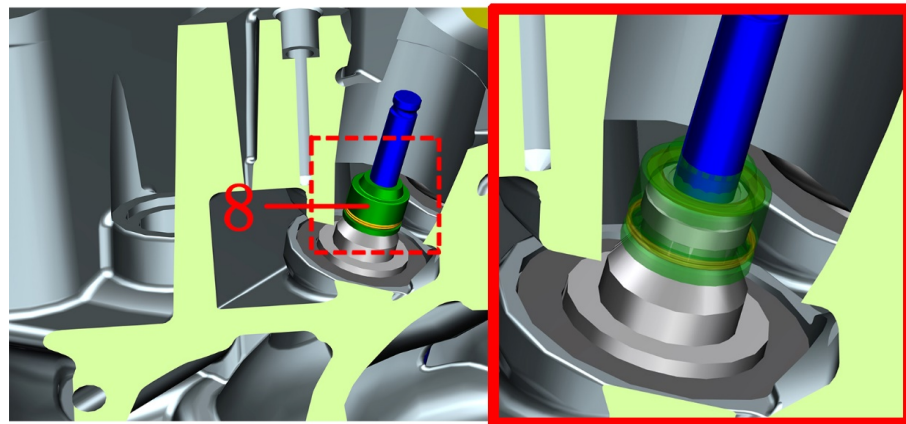
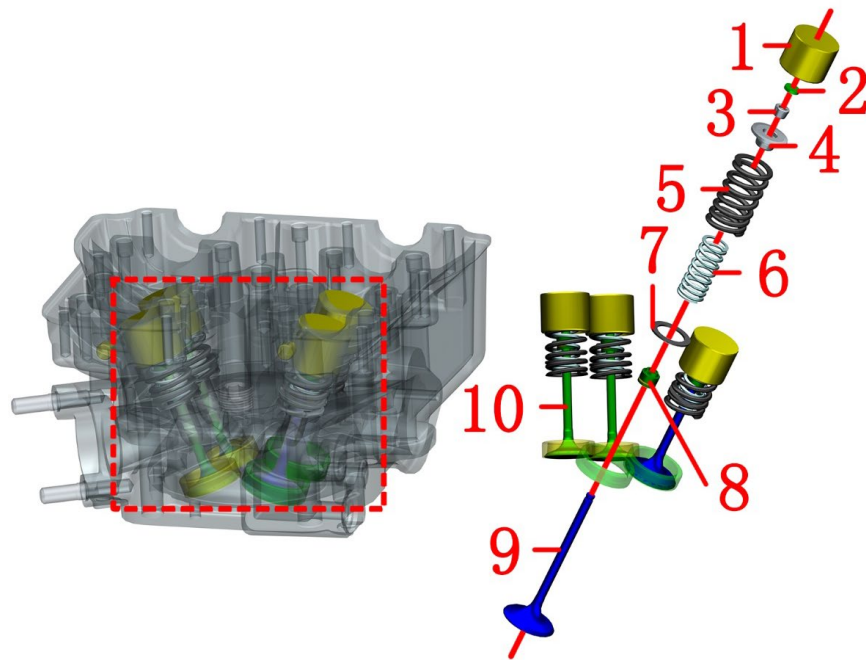


Fig.8 CYLINDER HEAD ASSEMBLY		Disassembling the valve	CHK	CAUTION
NO.	PART NO.		ADJ	
		PART NAME	QTY	
1	1050154-032000	3×27 slide tappet	4	
2	1050154-020000	φ 8.85 valve clearance adjusting pad	4	
3	1050154-017000	ZT180MN Valve lock clamp	8	
4	1050154-016000	ZT180MN Valve spring ring	4	
5	1050154-039000	ZT180MN valve outer spring A	4	
6	1050154-040000	ZT180MN valve inner spring A	4	
7	1050153-015000	16.5×23.5×1 valve spring seat	4	
8	1051553-001000	Φ5.0 valve stem diameter oil seal	4	
9	1050154-012000	ZT180MN Intake valve A	2	
10	1050154-013000	ZT180MN Exhaust valve A	2	

PROCEDURE:

● Valve assembly

Remove the sliding tappet (1) and valve clearance adjustment cushion (2).

Squeeze the valve spring with a valve disassembler, remove the valve lock clamp (3), and remove the upper spring ring (4), outer spring (5), inner spring (6), spring seat (7), oil seal (8), and intake valve (9) in sequence.

Use the same method to remove the other valves.

CAUTION:

● Oil seal (8) is for one-time use and must be replaced after disassembly; oil seal (8) needs to be press-fitted on the boss on the valve guide; please go to a qualified maintenance organization for replacement.

● Install the valve spring with the close-spaced end facing down.

● When disassembling the valves, the 4 groups of dismantled valves should be marked so that they can be installed back to their original positions.

2-CYLINDER HEAD ASSEMBLY

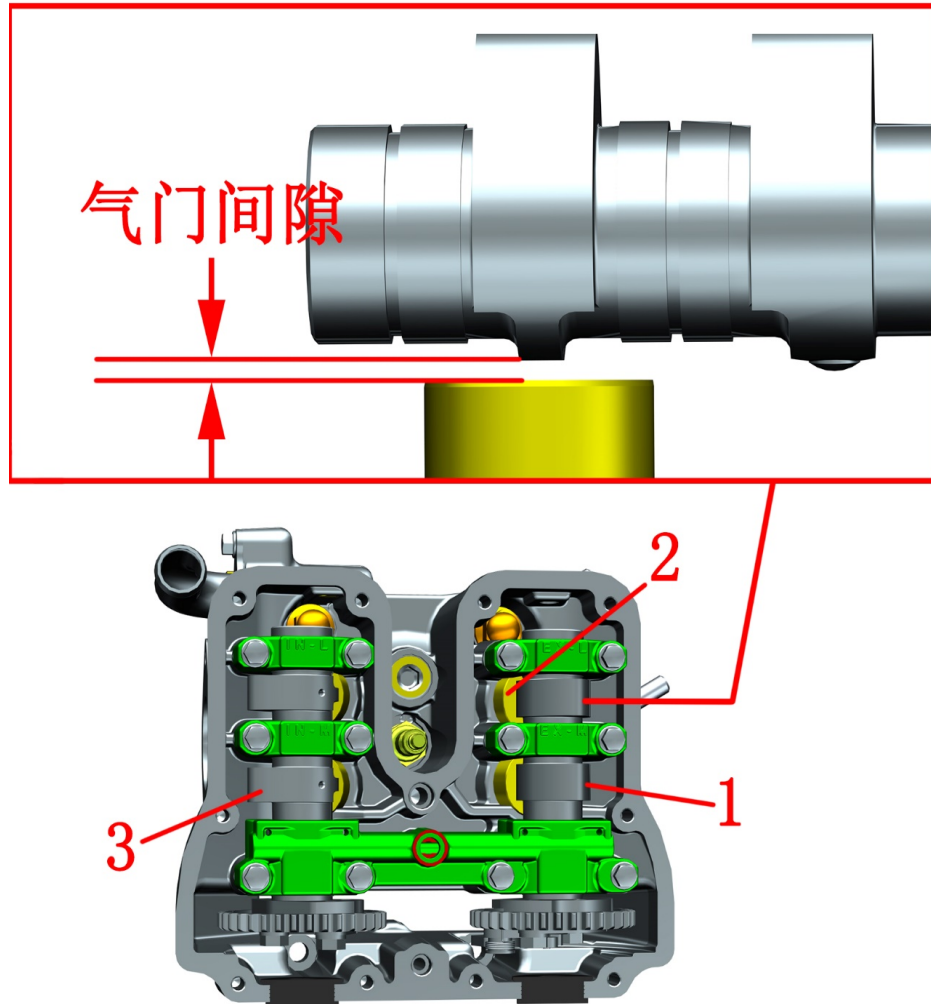


Fig.9 CYLINDER HEAD ASSEMBLY		Adjust the valve clearance		CHK	CAUTION
				ADJ	
NO.	PART NO.	PART NAME		QTY	
1	1050154-043000	ZT180MN exhaust camshaft sub—assembly		1	
2	1050154-032000	3×27 slide tappet		4	
3	1050154-042000	ZT180MN intake camshaft sub—assembly		1	

PROCEDURE:

● Adjust the valve clearance

Rotate the intake and exhaust camshafts so that the base circle of the intake and exhaust camshafts is directly on the tappet, and the camshaft can rotate flexibly.

Use a feeler gauge to measure the valve clearance.

Standard interval of intake valve clearance: 0.10-0.19mm

Standard interval of exhaust valve clearance: 0.15-0.28mm

If it does not meet the standard, remove the intake and exhaust camshafts, take out the tappet, and replace the valve clearance adjustment pad under the tappet.

After the replacement is completed, measure the valve clearance with a feeler gauge again, the adjustment is successful if it is qualified, otherwise continue to replace the valve clearance adjustment pad.

CAUTION:

● When measuring the clearance of the right exhaust valve, you need to rotate the pressure reducing mechanism by hand until it is fully opened before measuring.

● When installing the camshaft, apply a proper amount of engine oil to the camshaft.

● You can watch the detailed operation in "ZT310 Valve Clearance Adjustment Video".

2-CYLINDER HEAD ASSEMBLY

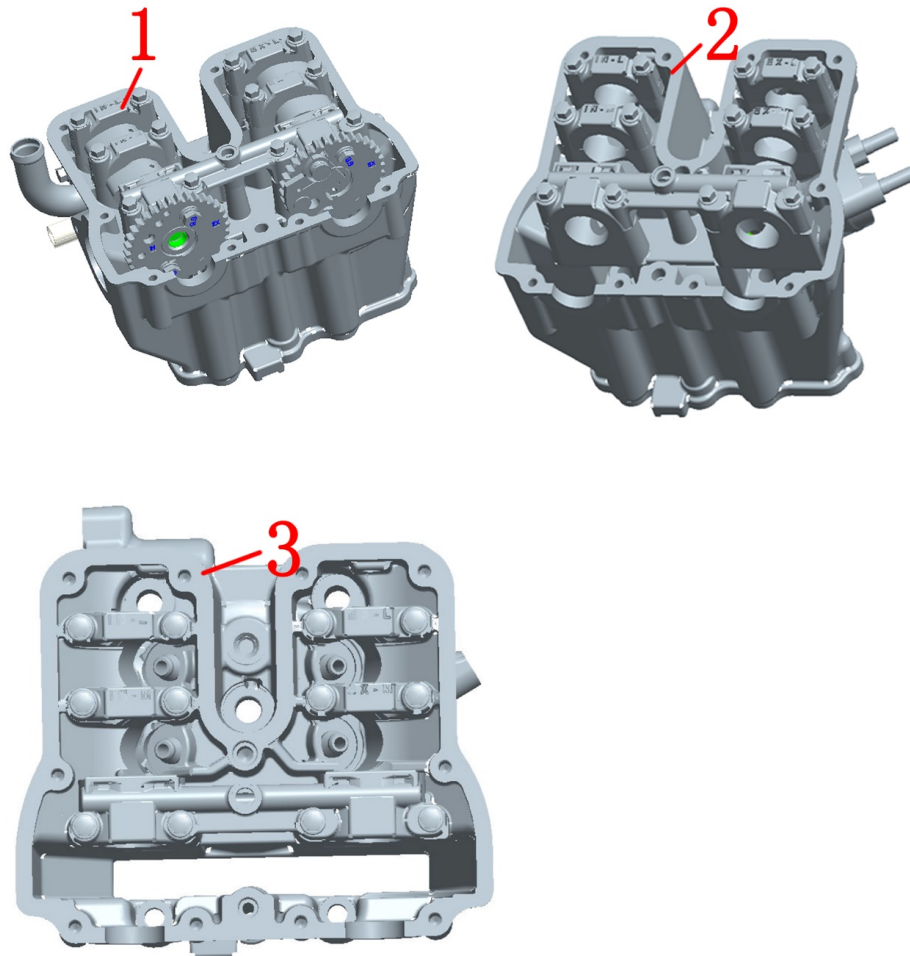


Fig.10 CYLINDER HEAD ASSEMBLY		Description of after-sales parts		CHK	CAUTION
NO.	PART NO.	PART NAME	QTY	ADJ	
1	4050654-008000	ZT180MN cylinder head sub — assembly (Bosch)	1		After-sale
2	4050654-004000	ZT180MN cylinder head assembly	1		
3	4050654-001000	ZT180MN Cylinder head subassembly	1		

PROCEDURE:

● Cylinder head sub-assembly

Cylinder head assembly (1) includes cylinder head assembly, valve assembly, camshaft assembly, etc.

● Cylinder head assembly

Cylinder head assembly (2) includes cylinder head assembly, valve assembly, excluding camshaft and other components.


● Cylinder head sub-assembly

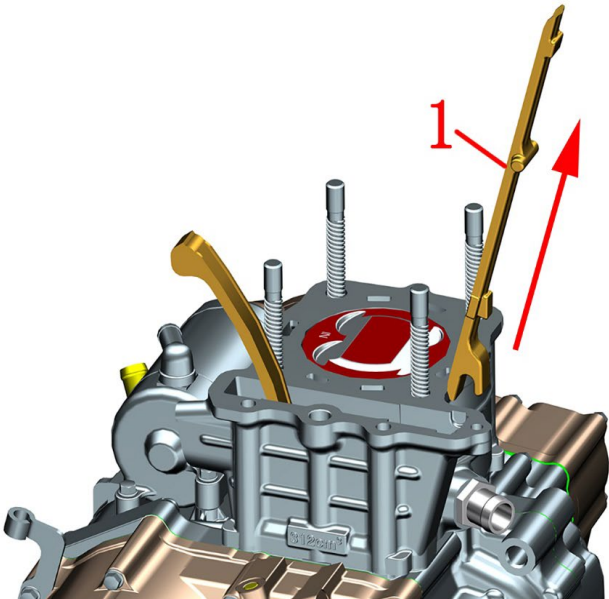
The cylinder head sub-assembly (3) only contains the cylinder head assembly.

CAUTION:

- Please check the status of parts before placing an order and place an order according to your own needs.

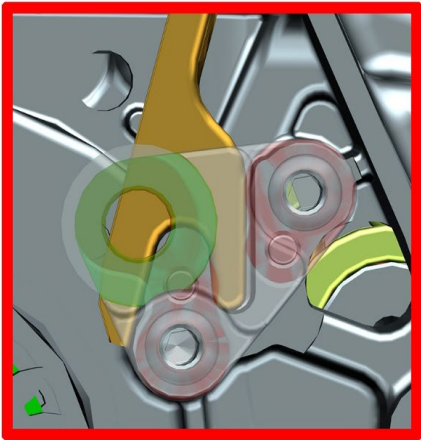
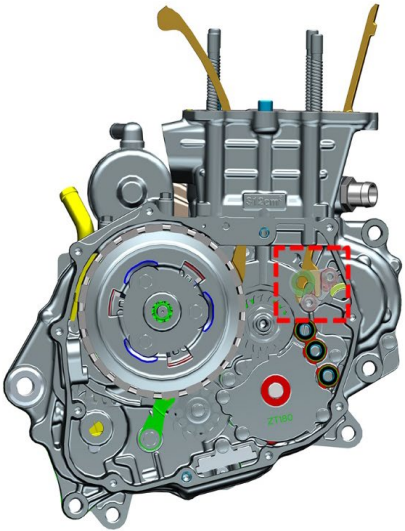
3-CYLINDER BLOCK ASSEMBLY

Fig.1 CYLINDER BLOCK ASSEMBLY		Disassembling the guide bar	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1	1051254-004000	ZT180MN guide bar part B	1	



PROCEDURE:

- Guide Strip
- Pull out the guide bar (1) in the direction of the arrow.



CAUTION:

- When installing the guide bar, the guide bar needs to be clamped to the position shown in the lower left.
- Prevent foreign objects from falling into the engine during disassembly and installation.

3-CYLINDER BLOCK ASSEMBLY

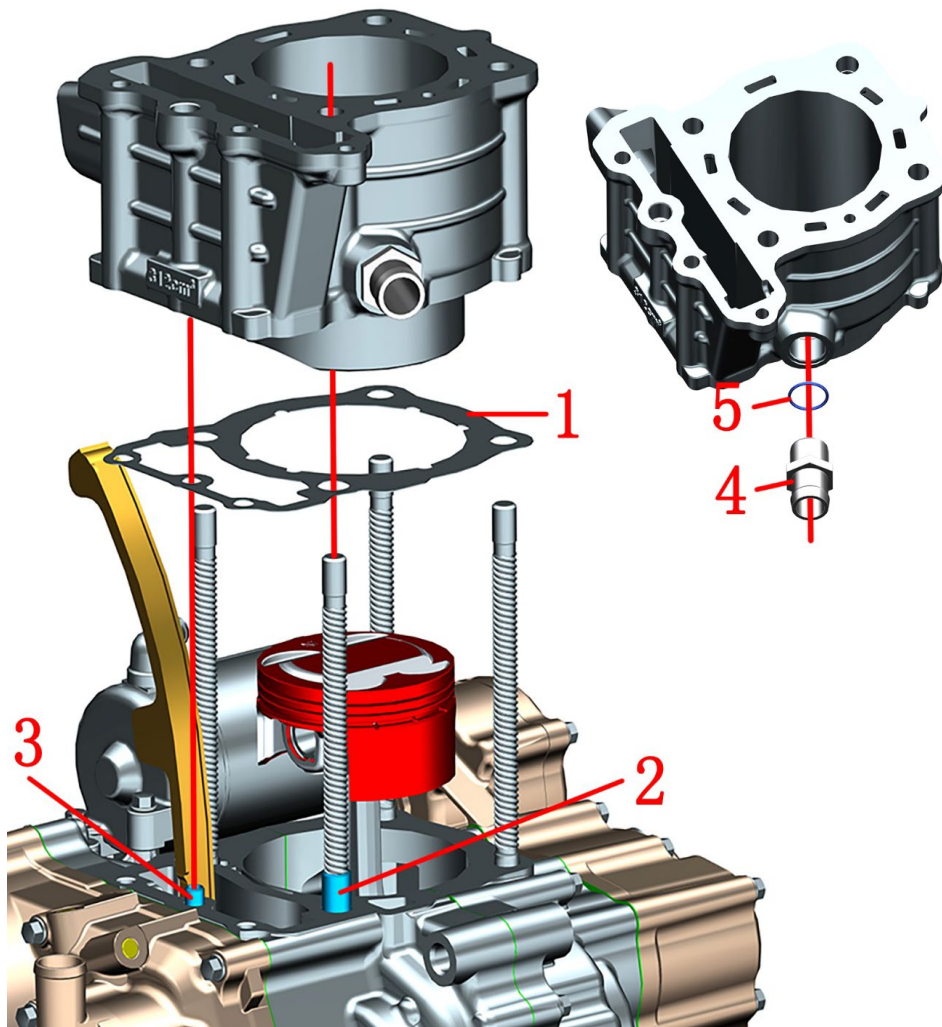


Fig.2 CYLINDER BLOCK ASSEMBLY		Cylinder block assembly		CHK	CAUTION
				ADJ	
NO.	PART NO.	PART NAME		QTY	
1	1051654-007000	ZT180MN Cylinder body gasket A		1	
2	1051301-052000	Locating pin 12×20		1	
3	1251401-001000	φ8×14 hollow locating pin		1	
4	1051954-007000	ZT180MN Inlet and outlet pipe connector		1	
5	1051454-008000	19×1.5 ethylene propylene terpolymer O shape circle		1	

PROCEDURE:

● Cylinder assembly

Take the cylinder assembly out vertically, remove the gasket (1), positioning pins (2), (3), and clean the remaining sealant on the joint surface.

Use 24# torx wrench to remove the outlet pipe joint (4), and take out the O-ring (5).

CAUTION:

● The gasket (1) and O-ring (5) are for one-time use and must be replaced after disassembly, otherwise there will be oil leakage and water leakage.

● Check the inner wall of the cylinder. If there are obvious scratches or damages on the inner wall of the cylinder, it must be replaced.

● Before installing the cylinder, make sure that the box and cylinder assembly planes are smooth and flat and apply a proper amount of sealant on the box assembly plane. After installing the new gasket, apply a proper amount of sealant on the upper surface of the new gasket.

● Prevent foreign objects from falling into the engine during disassembly and installation.

● Before installing the cylinder, apply a proper amount of engine oil to the inner wall of the cylinder as lubrication.

3-CYLINDER BLOCK ASSEMBLY

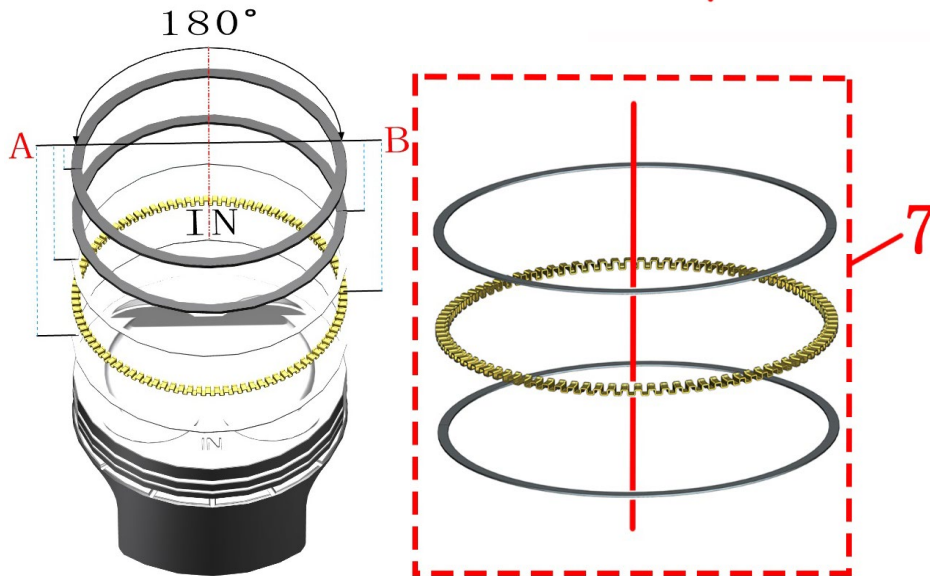
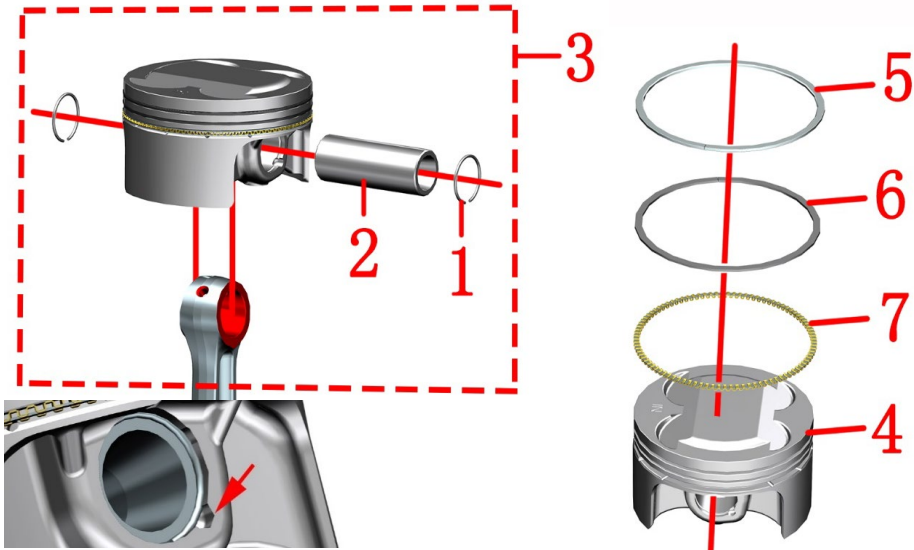



Fig.3 CYLINDER BLOCK ASSEMBLY

Fig.3 CYLINDER BLOCK ASSEMBLY		Disassemble the piston	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1	1050454-007000	21×1.2 piston pin retainer	2	After-sale
2		ZT180MN Piston pin	1	
3	1050454-013000	ZT180MN Piston assembly	1	Assembly
4	1050454-002000	ZT180MN Piston	1	After-sale
5		ZT180MN First air ring	1	
6		ZT180MN Second air ring	1	
7	1050454-006000	ZT180MN Oil ring combination	1	

PROCEDURE:

- Piston assembly

Turn the opening of the piston retaining ring (1) to the vicinity of the gap of the retaining ring groove, and remove it with needle-nose pliers.

Push the piston pin (2) out of the crankshaft connecting rod, and remove the piston (3).

Open the gap at the end of the first air ring (4) by hand, and lift the other side to the top of the piston, and remove the first air ring (4).

Use the same method to remove all gas and oil rings.

CAUTION:

- Remove the carbon deposits on the piston ring groove and piston ring, and apply appropriate amount of engine oil to the piston ring groove.
- It is necessary to prevent the piston pin retaining ring (1) or other foreign objects from falling into the box during installation and removal.
- Check whether the piston skirt is scratched or damaged, if any, it must be replaced.
- When installing the oil ring assembly, you need to install the copper liner ring first, and then install the two wiper rings. The copper liner ring interface cannot overlap.
- When installing the air ring, the marked surface should be installed toward the top of the piston, air ring 1: "R", air ring 2: "2R"
- When installing, the openings of each air ring and scraper ring should be staggered by 180 degrees.
- Check the piston pin retaining ring (1), if it is deformed and has no elasticity, it must be replaced.
- Before placing an order, please carefully read the instructions of the official website to prevent the wrong purchase.

3-CYLINDER BLOCK ASSEMBLY

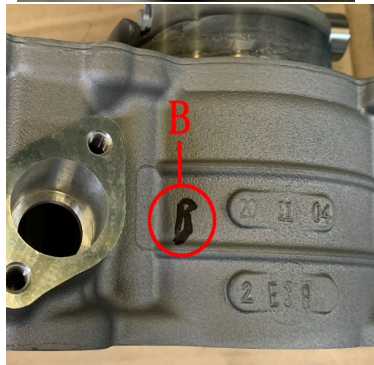
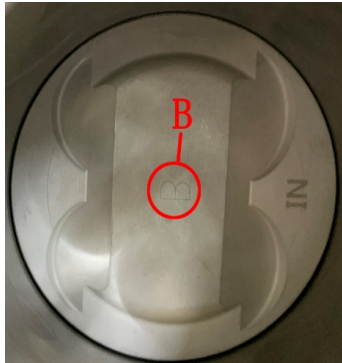
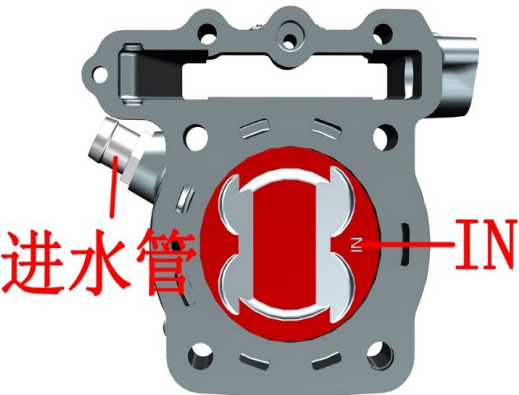
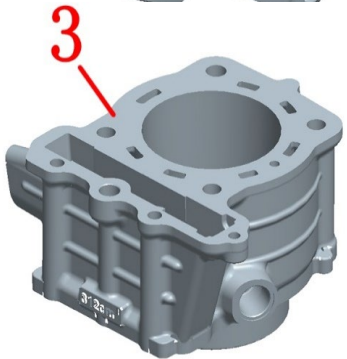
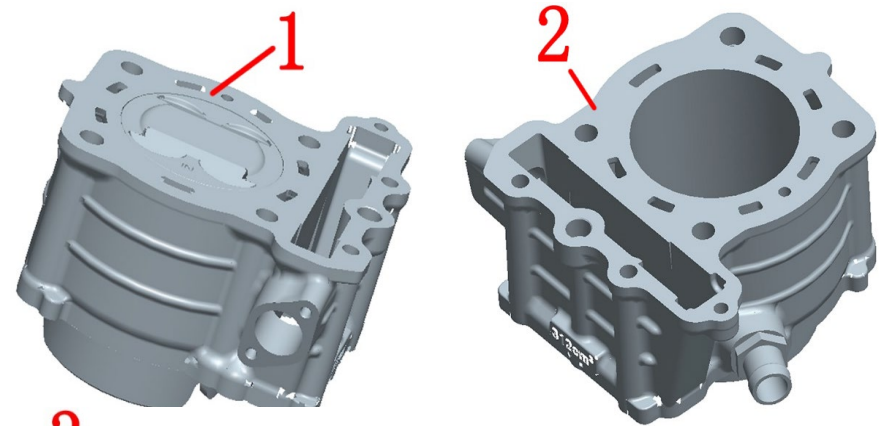



Fig.4 CYLINDER BLOCK ASSEMBLY		Description of after-sales parts	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1	4050554-001000	ZT180MN Cylinder piston subassembly	1	After-sale
2	4050554-002000	ZT180MN Cylinder body assembly	1	
3	1040554-001000	ZT180MN Cylinder body	1	

PROCEDURE:

- Cylinder piston sub-assembly
The cylinder piston sub-assembly includes a piston assembly and a cylinder block assembly.
- Cylinder block assembly
The cylinder block assembly includes a cylinder block, water inlet and outlet pipe joints and O-rings.
- Cylinder block
The cylinder block is just a single cylinder block.

CAUTION:

- Please check the status of parts before placing an order and place an order according to your own needs.
- When installing the piston, make sure that the side with the "IN" mark on the piston head is not on the side of the water inlet pipe.
- The piston ring should be inserted into the cylinder correctly, and it should not come out of the ring groove.
- Pistons and cylinders are divided into four groups: A, B, C, and D. The assembled piston and cylinder must be in the same group.

4-RIGHT CRANKCASE COVER ASSEMBLY

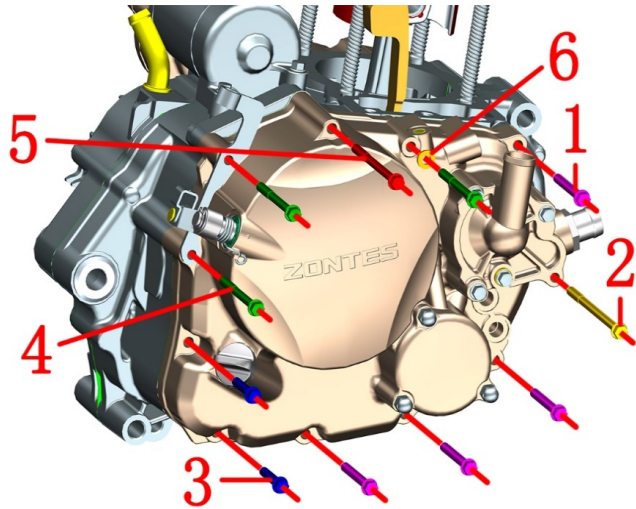
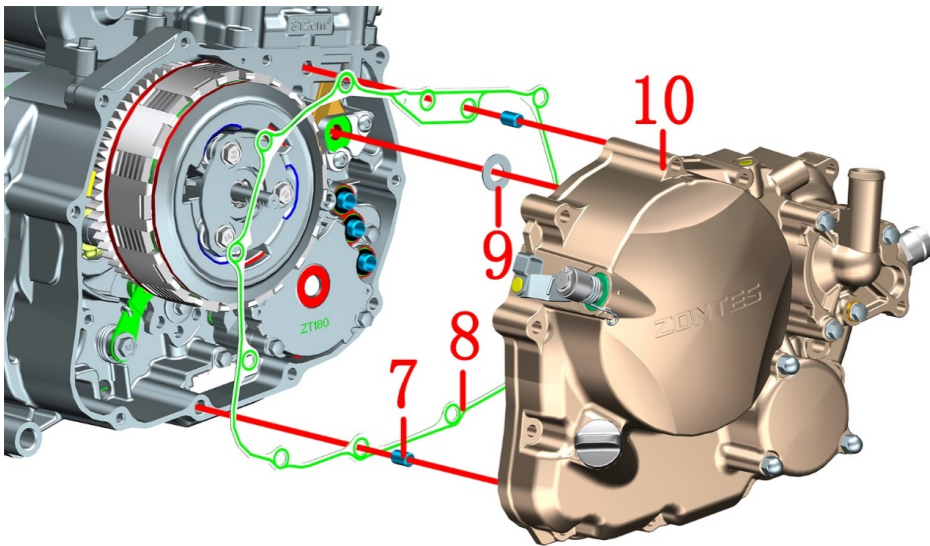


Fig.1 RIGHT CRANKCASE COVER ASSEMBLY		ZT180MN right crankcase cover assembly-1	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1	1251112-003093	M6×45 Hex flange surface 9.8 bolt (color zinc)	4	12±1.5N.m
2	1251112-006093	M6×90 Hexagon flange bolts (color zinc)	1	
3	1251112-002093	M6×30 Hexagon flange bolts (color zinc)	2	
4	1251112-004093	M6×60 Hexagon flange bolts (color zinc)	3	
5	1251112-005093	M6×75 Hexagon flange bolts (color zinc)	1	
6	1251513-001019	6.3×12×1.6 copper gasket	1	
7	1251401-001000	φ8×14 hollow locating pin	2	
8	1051653-005000	Right crankcase cover cushion piece	1	
9	1051354-012000	9.2 × 18 × 1 Thrust Washer	1	【1】
10		Sliding clutch right crankcase cover sub—assembly	1	



PROCEDURE:

● Remove the right crankcase cover

First, prevent the engine from falling over to prevent the gasket (9) from falling off when the right cover (10) is removed.

Use a 8# sleeve to remove 4 bolts (1), 1 bolt (2), 2 bolts (3), 3 bolts (4), 1 bolt (5), and remove 1 copper pad (6).

Remove the right cover (10) from the engine, and take out the 2 positioning pins (7), gasket (8), and washer (9).

CAUTION:

- The gasket (8) is for one-time use and must be replaced after disassembly.
- Before installing the box body, make sure that the box body assembly plane is smooth and flat and apply an appropriate amount of sealant on the box body assembly plane. After installing the new gasket (8), it is necessary to apply sealant again on the upper surface of the gasket (8).
- When installing the right cover, all bolts should be evenly tightened at the corners to ensure tightness.
- You can watch the detailed operation in the "Clutch Cover and Clutch Disassembly Video".

4-RIGHT CRANKCASE COVER ASSEMBLY

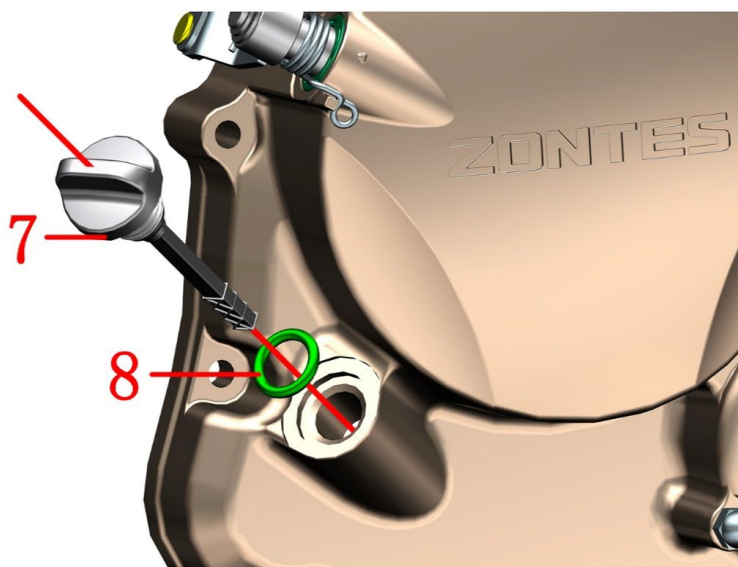
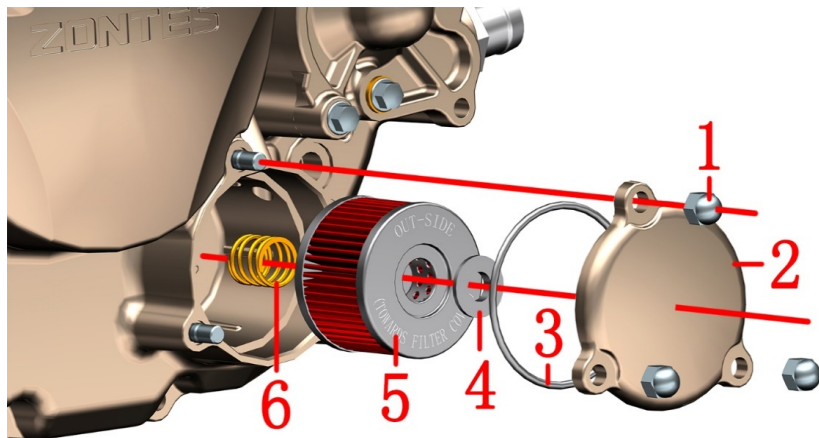


Fig.2 RIGHT CRANKCASE COVER ASSEMBLY		ZT180MN right crankcase cover assembly-2	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1	1251300-056093	M6 cap nut(12 grade / environmental color)	3	12±1.5N.m
2		ZT180MN fine filter cover A	1	
3	1051454-004000	55×2.5 acrylate adhesive O shape circle	1	After-sale
4	1051454-005000	ZT180MN Oil filter sealing ring	1	
5		ZT180MN fine filter sealing assembly	1	
6	1050853-009000	Φ16.4×17×1.6 filter spring	1	
7	1050854-002000	ZT180MN oil level gauge	1	
8	1051454-003000	15×3.1 acrylate adhesive O—ring	1	

PROCEDURE:

●Fine filter assembly

Use a 10# sleeve to remove the 3 nuts (1), remove the fine filter cover (2), O-ring (3), sealing ring (4), fine filter (5), spring (6).

●Dipstick

Pinch the upper boss of the oil dipstick and rotate it counterclockwise, take out the oil dipstick (7) and O-ring (8).

CAUTION:

- It is strictly forbidden to lift the fine filter cover with hard objects, otherwise it will cause oil leakage.
- Check whether the O-ring is damaged. If it is damaged, replace it immediately, otherwise it will cause oil leakage.
- Do not install the fine filter cover upside down. The end face of the filter element with the "OUT-SIDE" mark faces the fine filter cover.
- You can watch the detailed operation in "ZT310 Replacing Fine Filter Video".

4-RIGHT CRANKCASE COVER ASSEMBLY

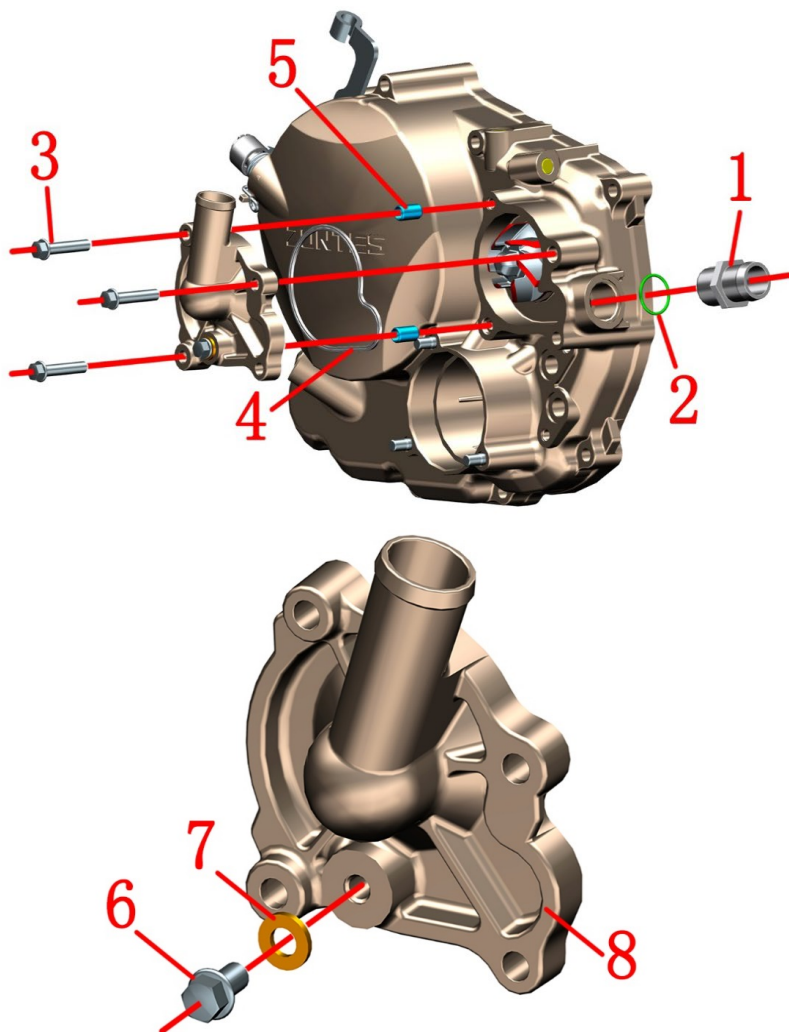


Fig.3 RIGHT CRANKCASE COVER ASSEMBLY		Disassembling the water pump assembly-1		CHK	CAUTION
				ADJ	
NO.	PART NO.	PART NAME	QTY		
1	1051954-007000	ZT180MN Inlet and outlet pipe connector	1		
2	1051454-008000	19×1.5 ethylene propylene terpolymer O shape circle	1		
3	1251112-002093	M6×30 Hexagon flange bolts (color zinc)	3		12±1.5N.m
4	1051454-006000	ZT180MN Water pump sealing ring	1		
5	1251401-001000	φ8×14 hollow locating pin	2		
6	1251112-001093	M6×16 Hexagon flange bolts (color zinc)	1		12±1.5N.m
7	1051654-002000	Combination seal 6×13×1.8	1		
8		ZT180MN water pump cover A	1		

PROCEDURE:

●Outlet pipe joint

Use a 24# torx wrench to remove the outlet pipe joint (1), and take out the O-ring (2).

●Water pump cover assembly

Use an 8# sleeve to remove the 3 bolts (3), remove the water pump cover assembly, and take out the sealing ring (4) and the positioning pin (5).


Use an 8# sleeve to remove 1 bolt (6) from the water pump cover (8), and remove the gasket (7).

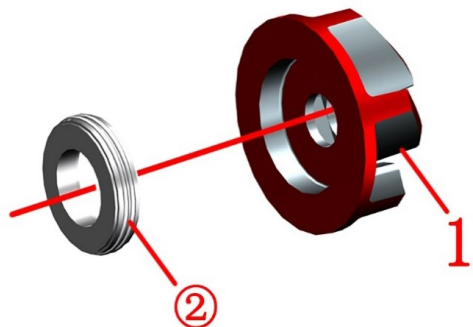
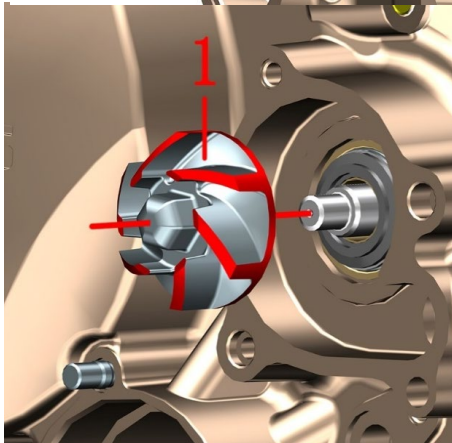
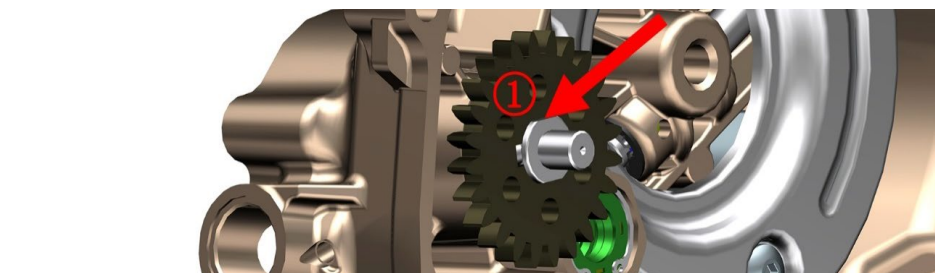
CAUTION:

●The 3 bolts for fixing the water pump cover need to apply appropriate amount of sealant on the threads to prevent water leakage.

●O-ring (2), sealing ring (4) and gasket (7) are for one-time use, and must be replaced after disassembly to prevent water leakage.

4-RIGHT CRANKCASE COVER ASSEMBLY

Fig.4 RIGHT CRANKCASE COVER ASSEMBLY		Disassembling the water pump assembly-2	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1	1051954-015000	ZT180MN water pump	1	20±1.5N.m
2	1051954-010000	ZT180MN Water pump shaft	1	
3	1250404-006000	φ5×16 cylindrical pin	1	
4	1051954-004000	ZT180MN Water pump gear	1	
5	1251512-007000	12.2×20×1 thrust washer	1	

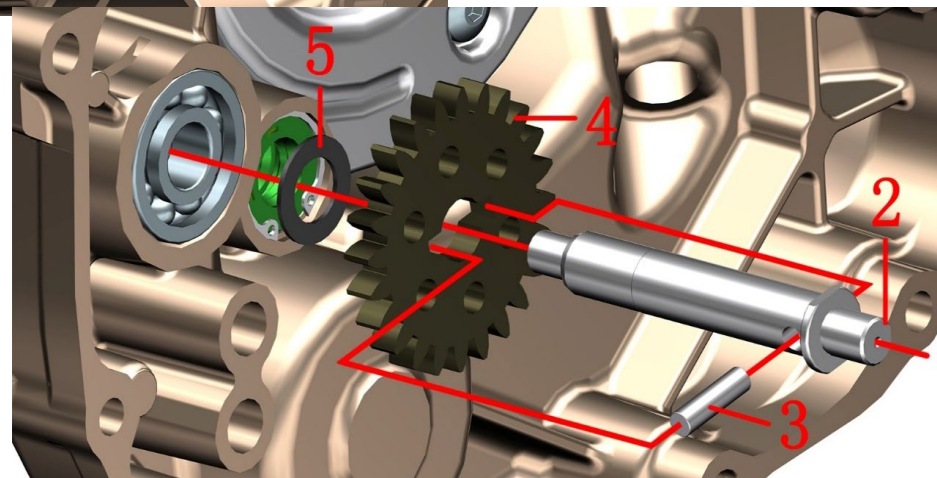


PROCEDURE:

● Water pump components

Use a 14# open-end wrench to fix the ① on the water pump shaft, and then use a 12# sleeve to remove the water pump (1). (The water seal moving ring ② belongs to the water seal assembly and is installed on the water pump.) Remove the water seal moving ring ② from the water pump.

Pull out the water pump shaft (2) from the reverse side, and remove the cylindrical pin (3), gear (4) and washer (5) on the water pump shaft (2).



CAUTION:

- The smooth surface of the water seal moving ring faces outwards and a proper amount of silicone oil should be applied, and the sealing rubber gasket should not protrude.
- The water seal movable ring and the water seal static ring form the water seal sub-assembly.

4-RIGHT CRANKCASE COVER ASSEMBLY

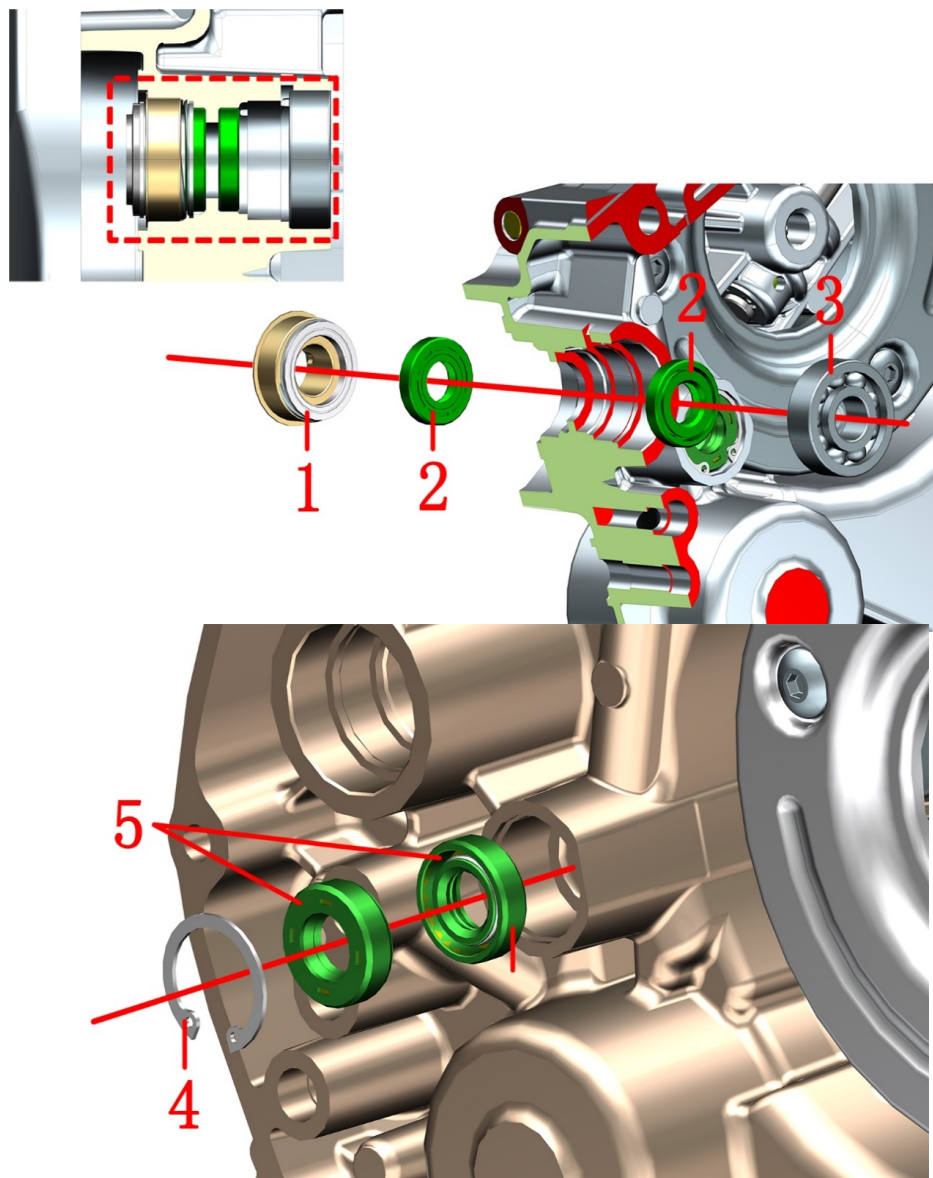


Fig.5 RIGHT CRANKCASE COVER ASSEMBLY		Disassembling the water pump assembly-3		CHK	CAUTION
				ADJ	
NO.	PART NO.	PART NAME		QTY	
1	1051954-006000	ZT180MN Water seal subassembly		1	
2	1051554-001000	FB12×24×5 HNBR oil seal		2	
3	1250601-077000	6201—C deep groove ball bearing(FAG)		1	
4	1051354-013000	Type hole circlip $\phi 24 \times 1$		1	
5	1051554-004000	NY12×23×7 Hydrogenated nitrile rubber oil seal		2	

PROCEDURE:

●Bearing and oil seal assembly

Pull out the static ring of the water seal subassembly (1), you can remove the 2 oil seals (2), knock out the bearing (3).

Use circlip pliers to take out the retaining ring (4), then 2 oil seals (5) can be removed.

CAUTION:

●When press-fitting, the black resin side of the water seal stationary ring faces the indenter, the bearing marked side faces the indenter, and the oil seal marked side faces the indenter.

●Bearings are all press-fitted. Most of the bearings are interference fit and have accuracy requirements. It is not recommended to disassemble unless special circumstances. If disassembly is required, please go to a qualified maintenance organization for press-fitting.

●When installing the oil seal, the oil seal should be press-fitted evenly to avoid deformation and flanging of the oil seal.

●Oil seals will be damaged if they are disassembled. To avoid oil leakage, please disassemble and replace them.

●The retaining ring will be deformed during disassembly. It is recommended to replace it after disassembly.

4-RIGHT CRANKCASE COVER ASSEMBLY

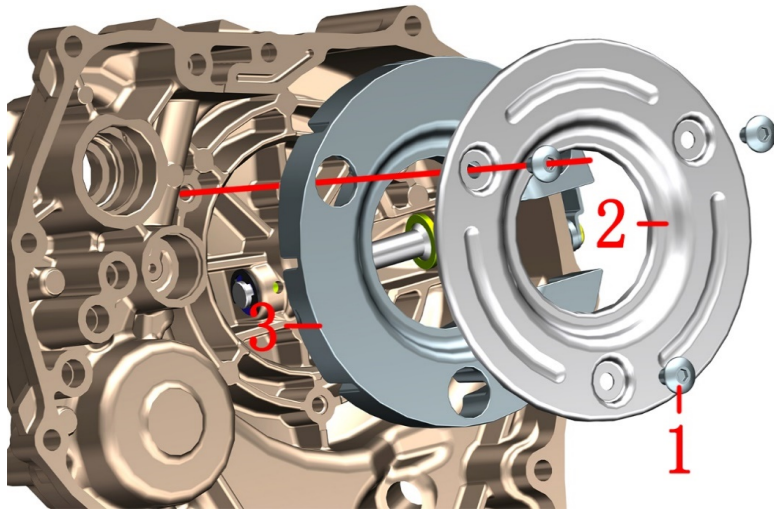



Fig.6 RIGHT CRANKCASE COVER ASSEMBLY		Remove the noise reduction component of the right cover	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1	1251100-119093	Non — standard bolt M6×12 (environmental color)	3	
2	1051354-010000	ZT180MN right cover noise reduction plastic shield	1	
3	1051454-015000	ZT180MN right cover noise reduction glue	1	

PROCEDURE:

● Right cover noise reduction component

Use 4# inner hexagon to remove 3 bolts (1), take off guard plate (2), noise reduction glue (3).

CAUTION:

● Appropriate amount of thread fastening glue should be applied to the threads of the 3 bolts during installation.

4-RIGHT CRANKCASE COVER ASSEMBLY

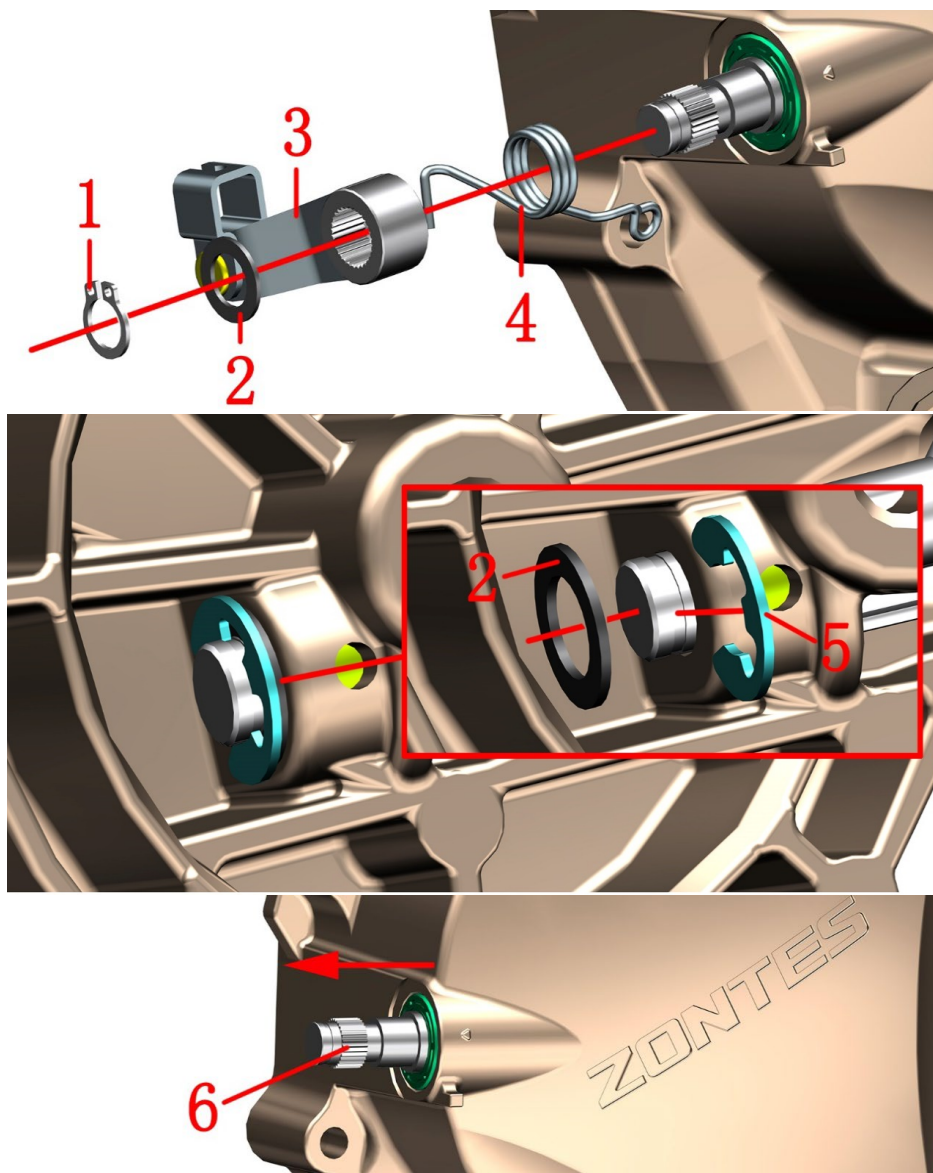


Fig.7 RIGHT CRANKCASE COVER ASSEMBLY		Disassembling the clutch lever		CHK	CAUTION
				ADJ	
NO.	PART NO.	PART NAME		QTY	
1	1051154-003000	GB894.1 shaft retaining ring 10 (plated up to.Crowe)		1	
2	1051154-004000	10.2×18×1 gasket (plated up to Crowe)		2	
3	1051354-009000	ZT180MN clutch lever rocker arm assembly		1	
4	1050754-018000	ZT180MN sliding clutch rod torsion spring		1	
5	1250511-003000	GB896 opening retaining ring φ9		1	
6	1050254-008000	ZT180MN clutch rod shaft		1	

PROCEDURE:

● Clutch lever assembly

Use circlip pliers to take out the retaining ring (1), remove the washer (2), and pull out the lever rocker arm assembly (3) and torsion spring (4).

Use circlip pliers to pick out the retaining ring (5) and remove the gasket (2).

Take out the clutch lever shaft (6) in the direction of the arrow.

CAUTION:

● Retaining ring (1) and retaining ring (5) will be deformed during disassembly, it is recommended to replace them after disassembly.

4-RIGHT CRANKCASE COVER ASSEMBLY

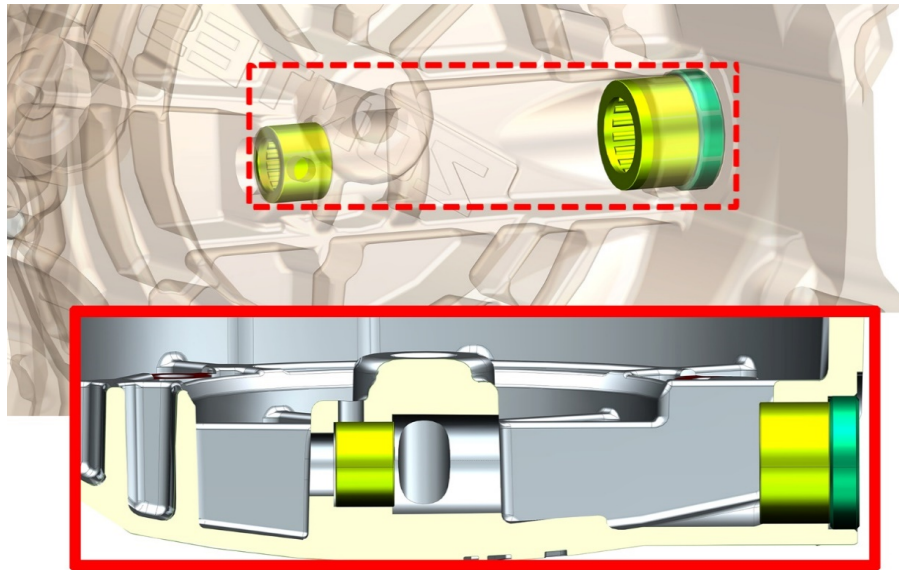



Fig.8 RIGHT CRANKCASE COVER ASSEMBLY		Right cover bearing and oil seal	CHK ADJ	 CAUTION
NO.	PART NO.	PART NAME	QTY	
1	1051553-002000	FB14×22×5 Hydrogenated nitrile oil seal	1	Aftre-sale
2	1250602-033000	HK1412 needle roller bearing	1	
3	1250602-022000	GB290—HK1010 needle roller bearing	1	

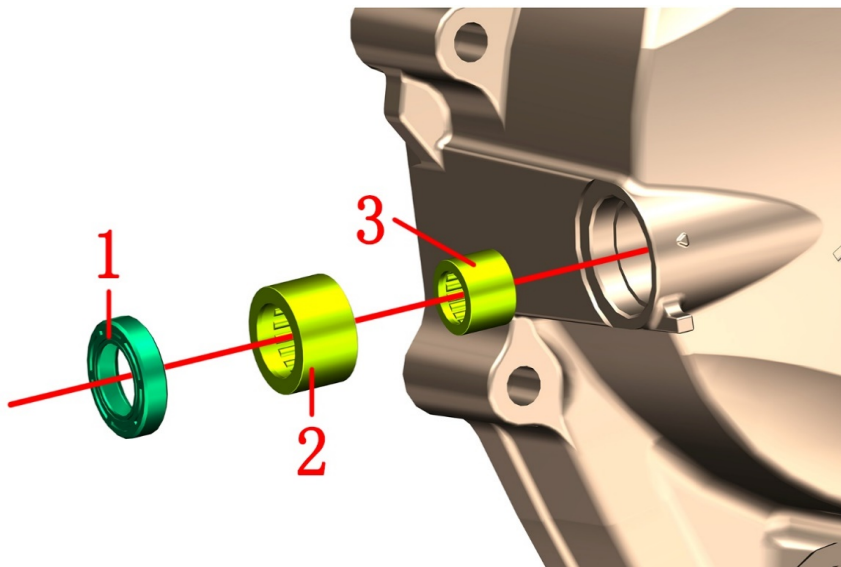
PROCEDURE:

● Right cover bearing and oil seal parts

The oil seal (1), bearing (2), and (3) are all press-fitted in the right cover and will not be damaged under normal circumstances.

CAUTION:

- Oil seals will be damaged if they are disassembled. To avoid oil leakage, please disassemble and replace them.
- When installing the oil seal, the oil seal should be press-fitted evenly to avoid deformation and flanging of the oil seal.
- When the oil seal is press-fitted, the marking surface of the oil seal should face outwards. Do not install it backwards to cause oil leakage.
- Please do not disassemble or assemble the bearing unless special circumstances. If it is necessary to replace the bearing, please go to a maintenance organization capable of replacing it.



4-RIGHT CRANKCASE COVER ASSEMBLY

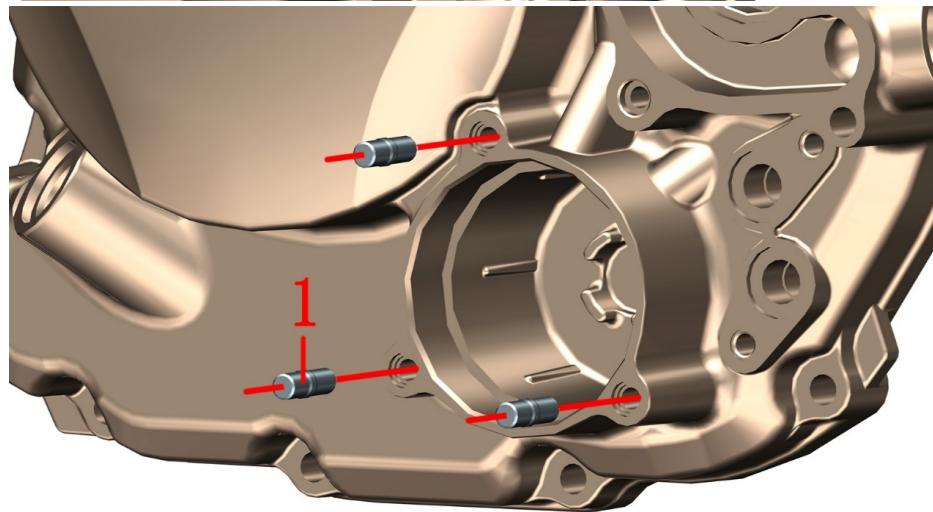
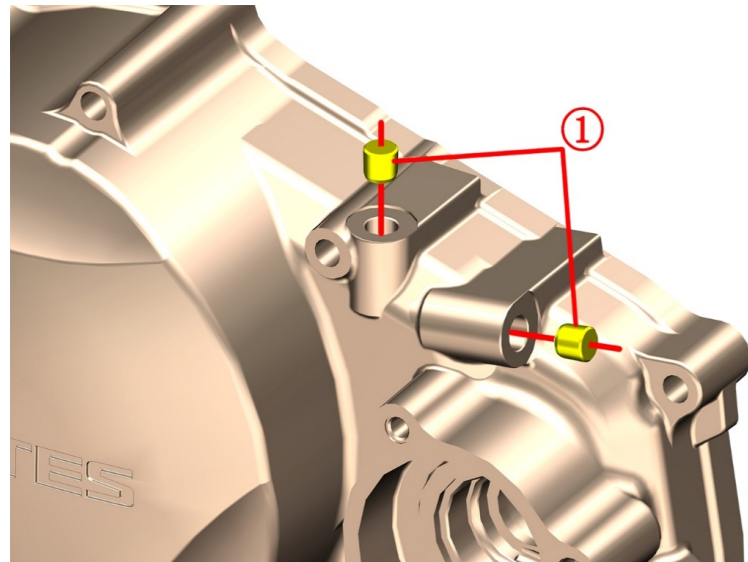


Fig.9 RIGHT CRANKCASE COVER ASSEMBLY		Right cover parts	CHK	CAUTION
NO.	PART NO.		ADJ	
1	1251111-010000	Non — standard M6×23.5 double — head 9.8 studs bolts	3	

PROCEDURE:

● Right cover assembly

The 2 oil plugs ① are interference press-fitting and cannot be disassembled unless under special circumstances, otherwise oil leakage will occur.

Stud (1) generally does not need to be disassembled, disassembly is to weld an M6 nut where the thread is exposed, and then use an 8# sleeve to remove it.

CAUTION:

● When installing the stud, screw in an M6 cap nut on the longer thread, apply sealant on one end of the shorter thread, and install the stud on the right cover with an 8# sleeve.

4-RIGHT CRANKCASE COVER ASSEMBLY

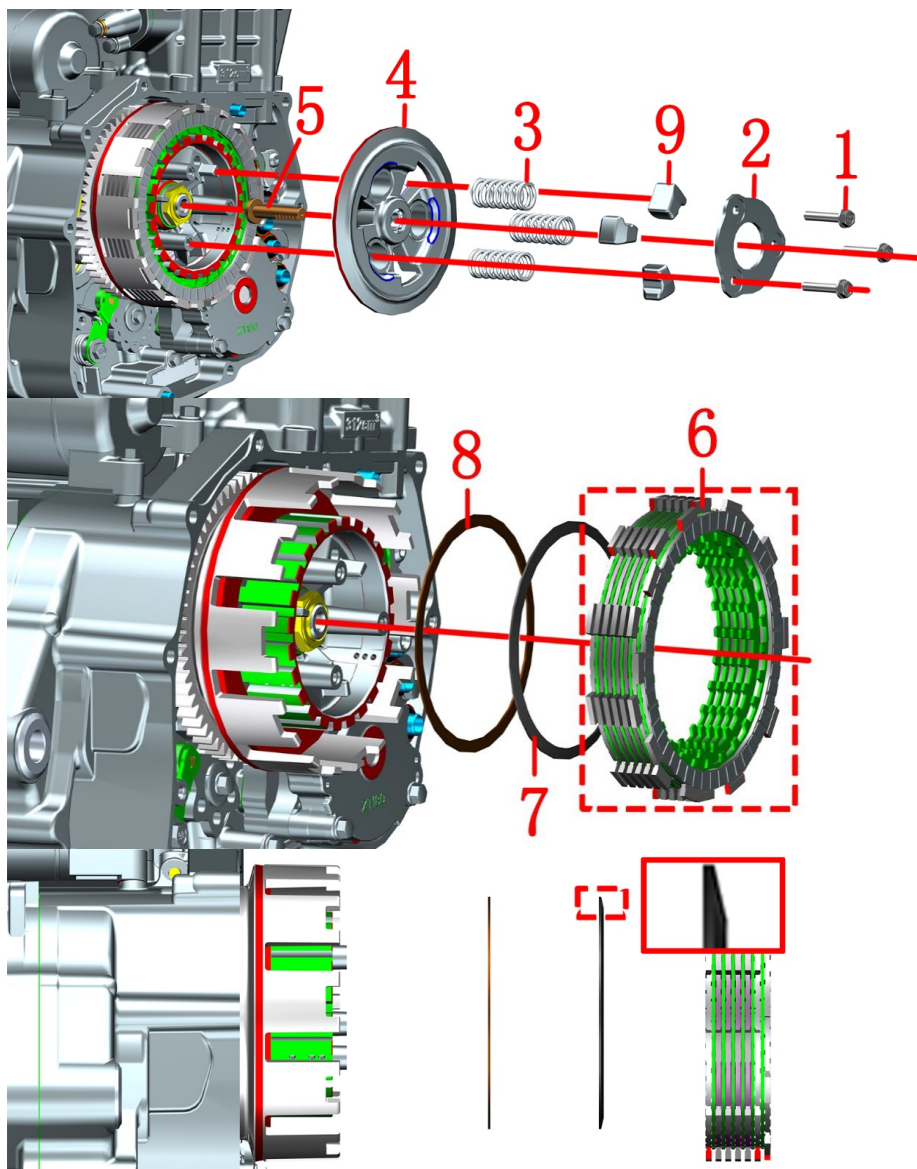



Fig.10 RIGHT CRANKCASE COVER ASSEMBLY		Clutch assembly-1		CHK	
NO.	PART NO.	PART NAME	QTY	ADJ	
1	1251100-070093	M6×30 flange full bolt	3		12±1.5N.m
2	1050754-007000	ZT180MN clutch spring pressure plate	1		
3	1050758-002000	ZT184MP clutch spring	3		
4	1050754-024000	Sliding clutch pressure plate sub—assembly	1		
5	1050754-006000	ZT180MN clutch release lever	1		
6	1050754-023000	ZT180MN sliding clutch friction plate sub—assembly	1		
7	1251514-006000	96.5×107×2.2×1 gasket	1		Flat cushion
8	1251512-031000	96.3×107×7 thrust washer	1		Butterfly gasket
9	1051454-017000	ZT180MN clutch cushion rubber	3		

PROCEDURE:

● Clutch assembly

Use an 8# sleeve to remove 3 bolts (1), and take out the pressure plate (2) and 3 springs (3). Pull out the pressure plate (4), and remove the separation lever (5).

Take out the friction plate sub-assembly (6), lock washer (7), thrust washer (8). The edge of the lock washer (7) is chamfered.

CAUTION:

- When installing, the side of the lock washer with lettering should face outward.
- When disassembling the bolts, loosen them one by one. Try to keep the bolts from having too much height difference, otherwise the parts may bounce off under the action of the spring. The installation should also be tightened one by one.
- Check the wear of each part of the clutch, and replace the defective parts with serious wear.
- For installation details, please refer to "ZT310 sliding clutch disassembly video".

4-RIGHT CRANKCASE COVER ASSEMBLY

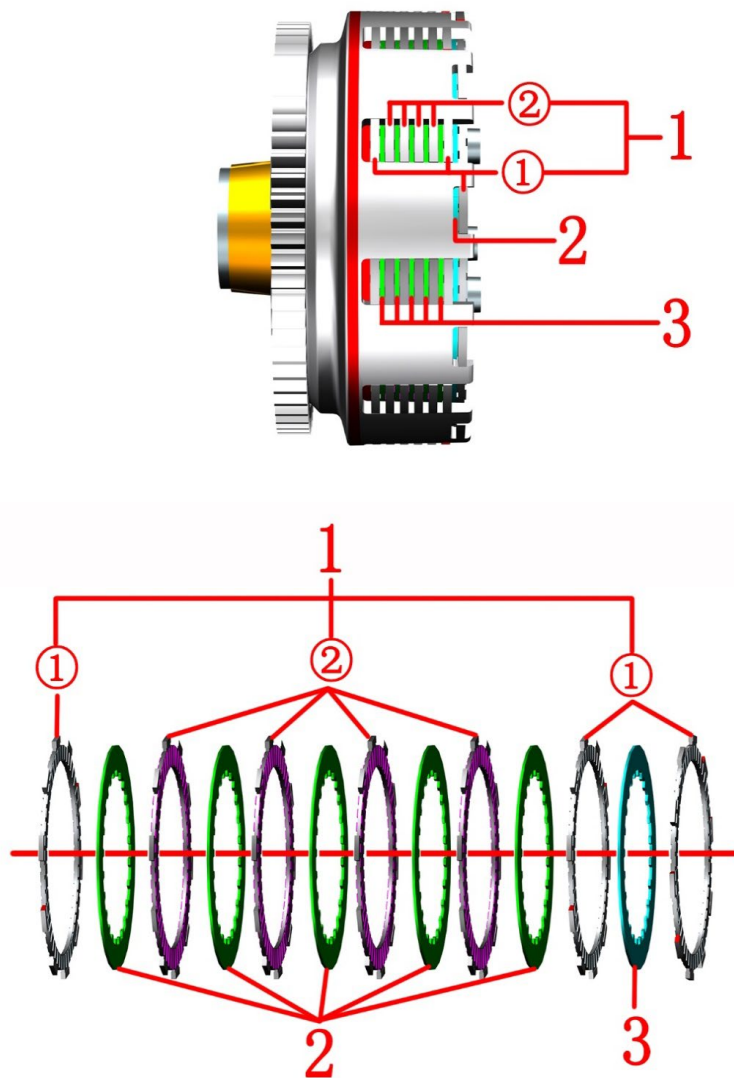


Fig.11 RIGHT CRANKCASE COVER ASSEMBLY		Clutch assembly-2		CHK	CAUTION
				ADJ	
NO.	PART NO.	PART NAME		QTY	
1	1050754-023000	ZT180MN sliding clutch friction plate sub—assembly		1	
2	1050754-022000	125×1.5—26Z clutch driven plate		1	
3	1050753-012000	125X1.5 clutch driven piece		5	

PROCEDURE:

●Friction plate assembly

Take out 1 piece of friction plate with large inner hole → 1 piece of follower plate with large inner hole → 1 piece of friction plate with large inner hole → follower plate with small inner hole → friction plate with small inner hole → follower of small inner hole Disc → friction disc with small inner hole → follower disc with small inner hole → friction disc with large inner hole. There are 7 friction plates and 6 driven plates, including 3 friction plates with large inner holes and 1 driven plate with large inner holes.

CAUTION:

- The direction of the outermost friction plate is inconsistent with the direction of other friction plates and is stuck in the groove of the driving disc.
- Please check the friction lining during installation. If the friction lining becomes more black, you need to replace a new set of friction lining.
- When installing, please check whether the follower is assembled evenly. If it is not, you need to replace it with a new one.
- For installation details, please refer to "ZT310 sliding clutch disassembly video".

4-RIGHT CRANKCASE COVER ASSEMBLY

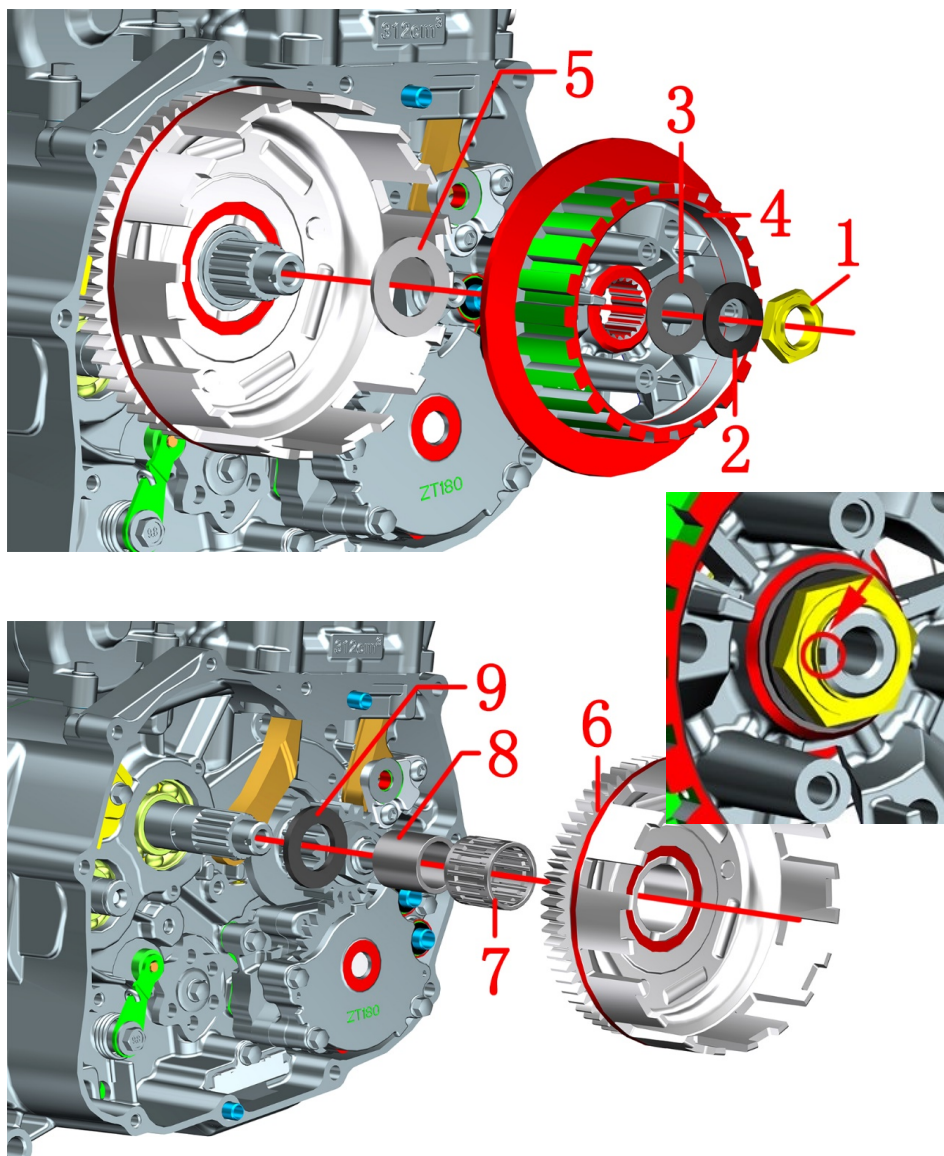


Fig.12 RIGHT CRANKCASE COVER ASSEMBLY			CHK	CAUTION
			ADJ	
NO.	PART NO.	PART NAME	QTY	
1	1251311-001094	M16×1 thin nut hexagonal	1	108±15N.m
2	1251514-002000	Lock washer, 16.2×28×2.4×2	1	
3	1251512-011000	Thrust washer, 16.2×30×1	1	
4	1050754-002000	ZT180MN slip clutch driven disc	1	
5	1251512-022000	Thrust washer, 22.2×37×2	1	
6	1050753-004000	ZT173YMM clutch outer comp subassembly	1	
7	1250602-014000	K27X32X29.3 Needle bearing	1	
8	1050753-022000	ZT173YMM Clutch bushing (home—made)	1	
9	1050753-010000	ZT173YMM clutch bush thrust pad	1	

PROCEDURE:

●Clutch master and driven disc assembly

Use a 24# sleeve to remove bolt (1), remove lock washer (2), thrust (3), take out driven plate (4), thrust washer (5).

Take out the driving disc (6), needle roller bearing (7), bush (8), thrust pad (9).

CAUTION:

●Install the lock washer with the "OUT" mark facing outward.

●It is necessary to knock the edge of the nut at the notch of the spindle with a rubber hammer and a flat-head screw during installation to further prevent loosening.

5-LEFT CRANKCASE COVER ASSEMBLY

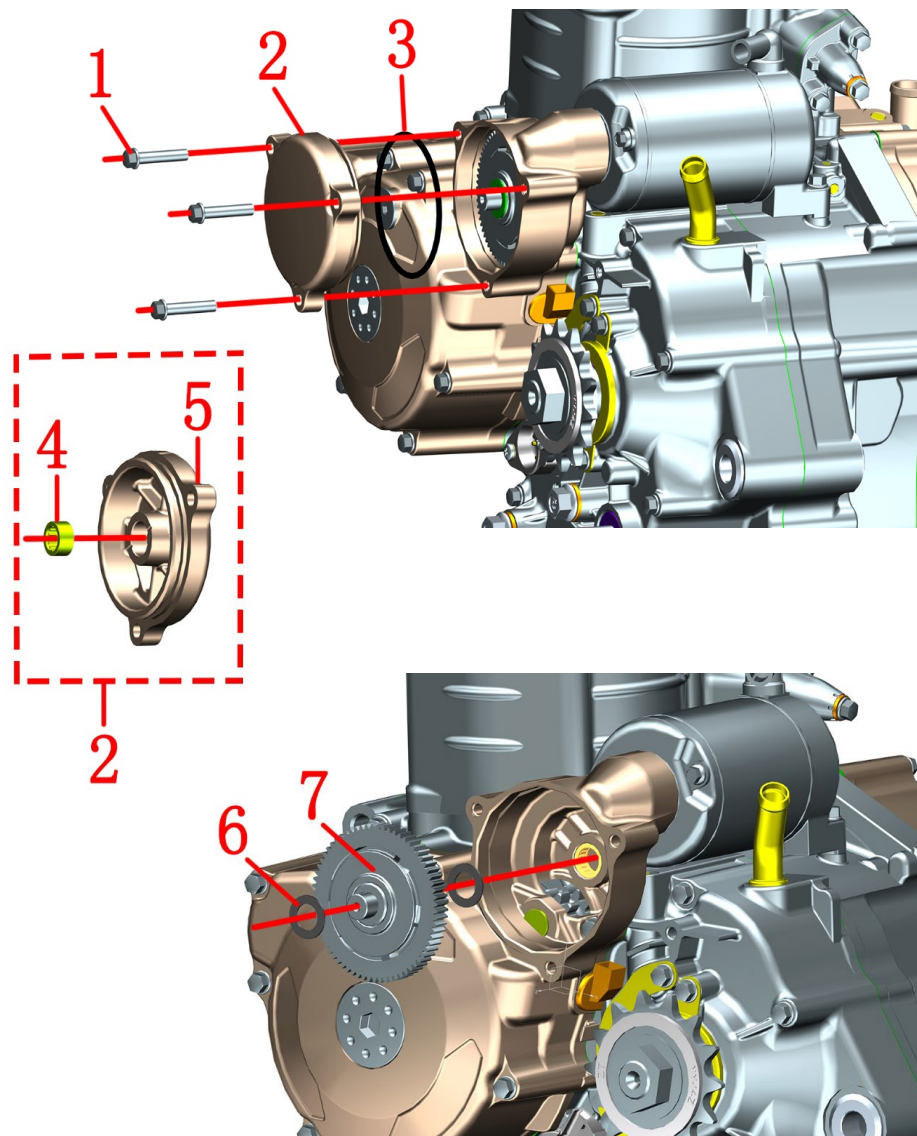



Fig.1 LEFT CRANKCASE COVER ASSEMBLY		Disassembling the reduction gear	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1	1251112-002093	M6×30 Hexagon flange bolts (color zinc)	3	12±1.5N.m
2		ZT180MN reduction gear cover sub—assembly	1	Old
		ZT184MN reduction gear cover sub—assembly		New
3	1051453-005000	69×3 Nitrile rubber o—rings	1	
4	1051054-028000	GB290—HK1212 Needle roller bearing	1	Old
	1250601-077000	6201—C deep groove ball bearing（FAG）		New
5		ZT180MN Reduction gear cove	1	Old
		ZT184MN Reduction gear cove		New
6	1251512-007000	Thrust washer,12.2×20×1	2	
7		ZT180MN reduction gear sub—assembly	1	Old
		ZT184Mp reduction gear sub—assembly		New

PROCEDURE:

●Reduction gear assembly

Use an 8# sleeve to remove 3 bolts (1), and remove the reduction gear cover assembly (2) and O-ring (3).

The bearing (5) is press-fitted in the reduction gear cover (5), and there is no need to take it out for non-special circumstances. Reduction gear cover assembly (2) includes bearing (4) and reduction gear cover (5).

Remove the washer (6) and the reduction gear (7). One washer at the front and rear of the deceleration tooth(6)

CAUTION:

- It is recommended to replace the O-ring after disassembly to prevent oil leakage.
- Check the reduction gear, if it is damaged or worn, replace the reduction gear.
- When the reduction gear is installed, there is a washer on the front and the back, which can not be omitted.
- Please do not disassemble or assemble the bearing unless special circumstances. If it is necessary to replace the bearing, please go to a maintenance organization capable of replacing it.
- Before placing an order, please carefully read the instructions of the officai website to prevent the wrong purchase.

5-LEFT CRANKCASE COVER ASSEMBLY

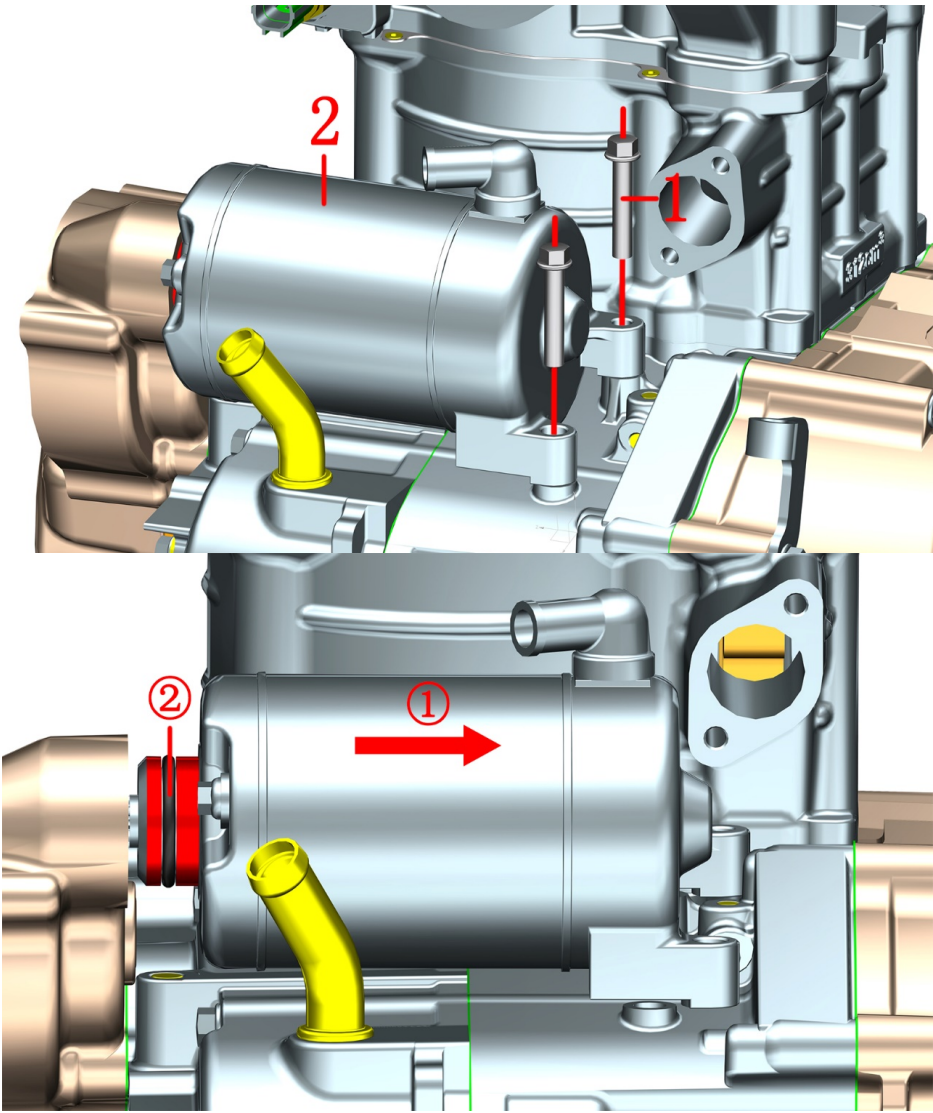



Fig.2 LEFT CRANKCASE COVER ASSEMBLY		Disassembling the starter motor	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1	1251112-002093	M6×30 Hexagon flange bolts (color zinc)	2	12±1.5N.m
2		ZT180MN starter motor parts	1	Old
		ZT184MP starter motor parts		New

PROCEDURE:

- Starter motor components:
Use an 8# torx wrench to remove the 2 bolts (1), grasp the place ① and pull it out in the direction of the arrow, and take out the starting motor (2).

CAUTION:

- When installing and removing, pay attention to whether the O-ring at ② has fallen off.
- Bolts (1) must be coated with appropriate amount of sealant, otherwise it may leak.
- Before placing an order, please carefully read the instructions of the officai website to prevent the wrong purchase.

5-LEFT CRANKCASE COVER ASSEMBLY

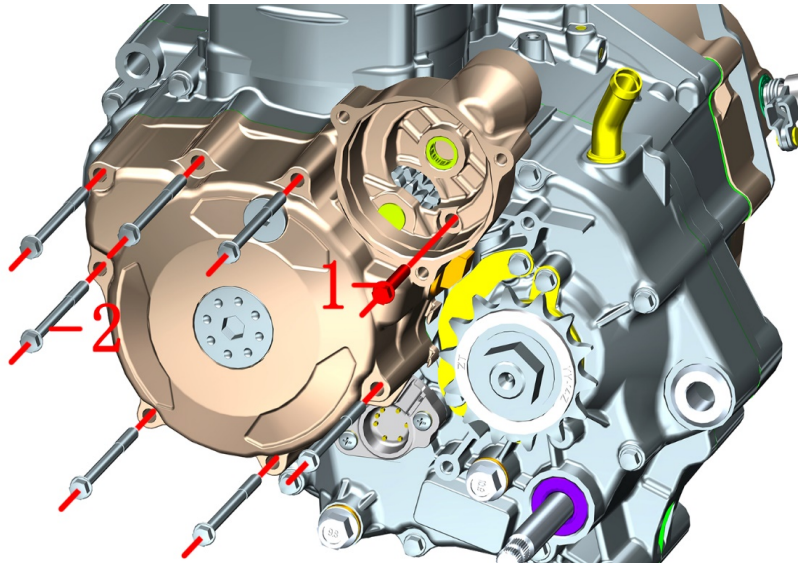
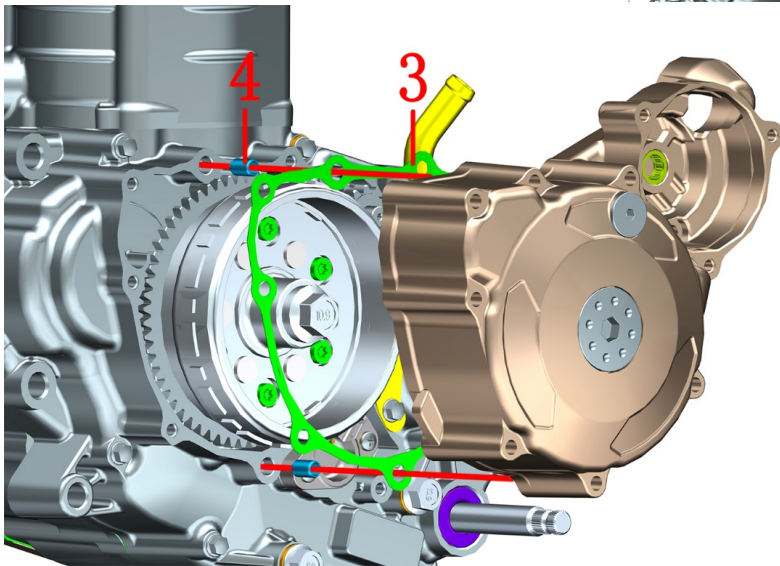


Fig.3 LEFT CRANKCASE COVER ASSEMBLY			CHK	CAUTION
Remove left crankcase cover assembly			ADJ	
NO.	PART NO.	PART NAME	QTY	
1	1251112-002093	M6×30 Hexagon flange bolts (color zinc)	1	12±1.5N.m
2	1251112-005093	M6×75 Hexagon flange bolts (color zinc)	7	
3	1051653-004000	ZT173YMM left crankcase cover cushion piece	1	
4	1251401-001000	φ8×14 hollow locating pin	2	

PROCEDURE:

- Remove the left cover assembly
Use an 8# sleeve to remove 7 bolts (2) and 1 bolt (1).
Remove the left cover assembly, take out the gasket (3) and 2 positioning pins (4).



CAUTION:

- Gasket (3) must be replaced once removed. Otherwise, oil leakage may occur.
- Before installing the left cover, make sure that the assembly plane of the box body and the left cover is smooth and flat, and apply a proper amount of sealant on the assembly plane of the box body. After installing the new gasket (3), apply the sealant again on the upper surface of the gasket (3).
- When installing the left cover, all bolts should be evenly tightened at the corners to ensure tightness.

5-LEFT CRANKCASE COVER ASSEMBLY

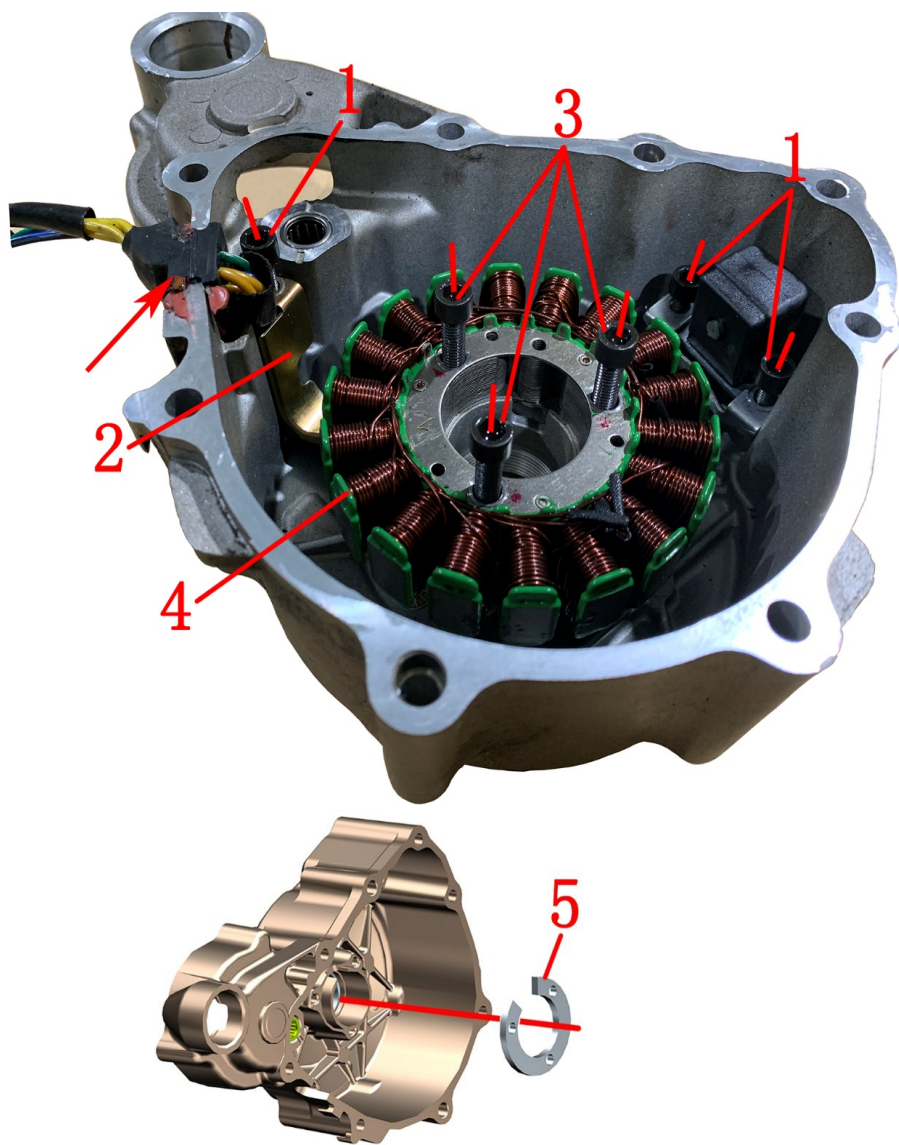


Fig.4 LEFT CRANKCASE COVER ASSEMBLY		Disassembling the magneto stator		CHK	CAUTION
				ADJ	
NO.	PART NO.	PART NAME		QTY	
1	1251201-001094	M5×15 — 5# internal hexagonal round screw		1	5±1N.m
2	1051353-005000	ZT173YMM Stator pressure plate		1	
3	1251201-002094	M6×35 internal hexagonal screw		3	12±1.5N.m
4	1051054-022000	ZT180MN magnetic motor stator sub — component A		1	
5	1051054-024000	ZT180MN magnetic motor stator split washer A		1	

PROCEDURE:

●Magnetic motor stator assembly

Use 5# inner hexagon to remove 3 bolts (1), take out the crimping plate (2).

Use 5# inner hexagon to remove 3 bolts (3), and take out the entire magneto stator sub-component (4).

Finally, take out the gasket (5).

CAUTION:

●When installing bolts (1) and (3), apply proper amount of thread fastening glue to the threads.

●Clean up the surface sealant indicated by the arrow before installation to ensure that the installation surface is flat and smooth. Appropriate amount of flat sealant should be applied to the waterproof rubber sleeve according to the arc surface.

●For installation details, please refer to "Video of Replacing Magneto Stator".

5-LEFT CRANKCASE COVER ASSEMBLY

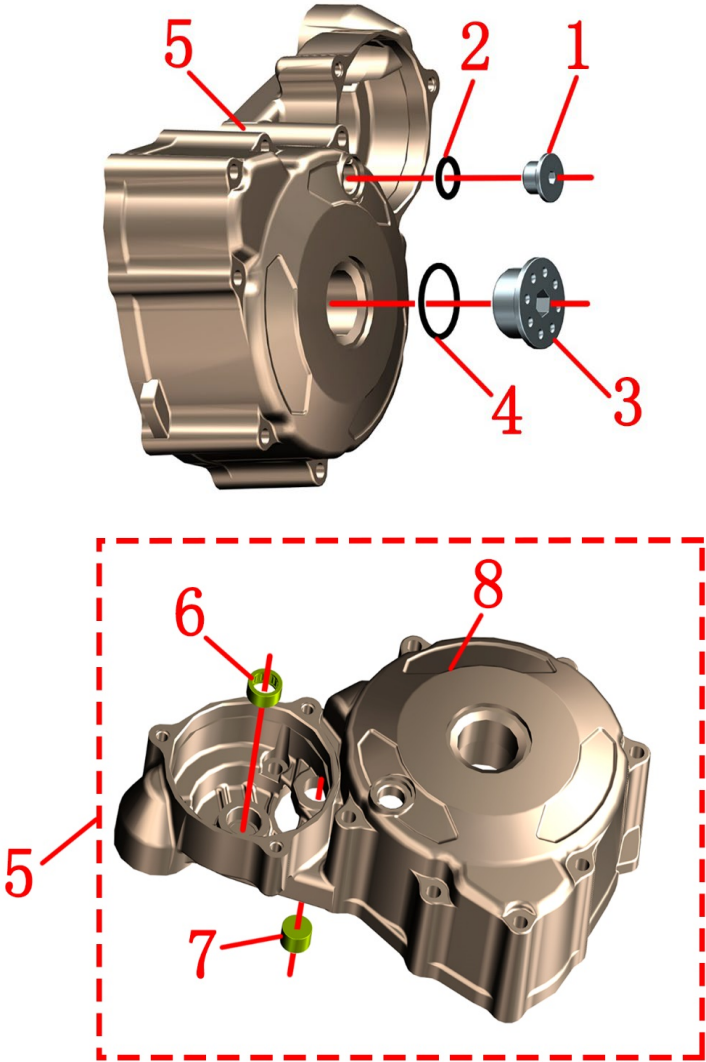



Fig.5 LEFT CRANKCASE COVER ASSEMBLY		Left cover parts	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1	1040953-002093	M14×1.5 plug screw (environmental color zinc)	1	
2	1051453-009000	O—ring 13×2.8	1	
3		M30×1.5 aluminum screw plug	1	
4	1051453-003000	27.4×2.65 Acrylate rubber o—rings	1	
5		ZT180MN left crankcase cover components	1	Old
		ZT184MP left crankcase cover components		New
6		GB290—HK1210 needle rolling bearing	1	【1】
7		GB290—BK1010 Needle roller bearing	1	
8		ZT180MN left crankcase cover	1	

PROCEDURE:

- Screw plug assembly
Use 5# inner hexagon to remove the screw plug (1), and remove the O-ring (2).
Use 10# inner hexagon to remove the plug (3), and remove the O-ring (4).

CAUTION:

- 【1】 Parts not marked with codes are included in the parts assembly and are not sold separately.
- When disassembling the screw plug, please check whether the O-ring is damaged, which affects its sealing performance.
- Bearings are all press-fit, and cannot be disassembled under normal circumstances. Do not disassemble or disassemble the bearings unless special circumstances. If it is necessary to replace the bearing, please go to a maintenance organization capable of replacing it.
- Before placing an order, please carefully read the instructions of the officai website to prevent the wrong purchase.

6-RIGHT CRANKCASE ASSEMBLY

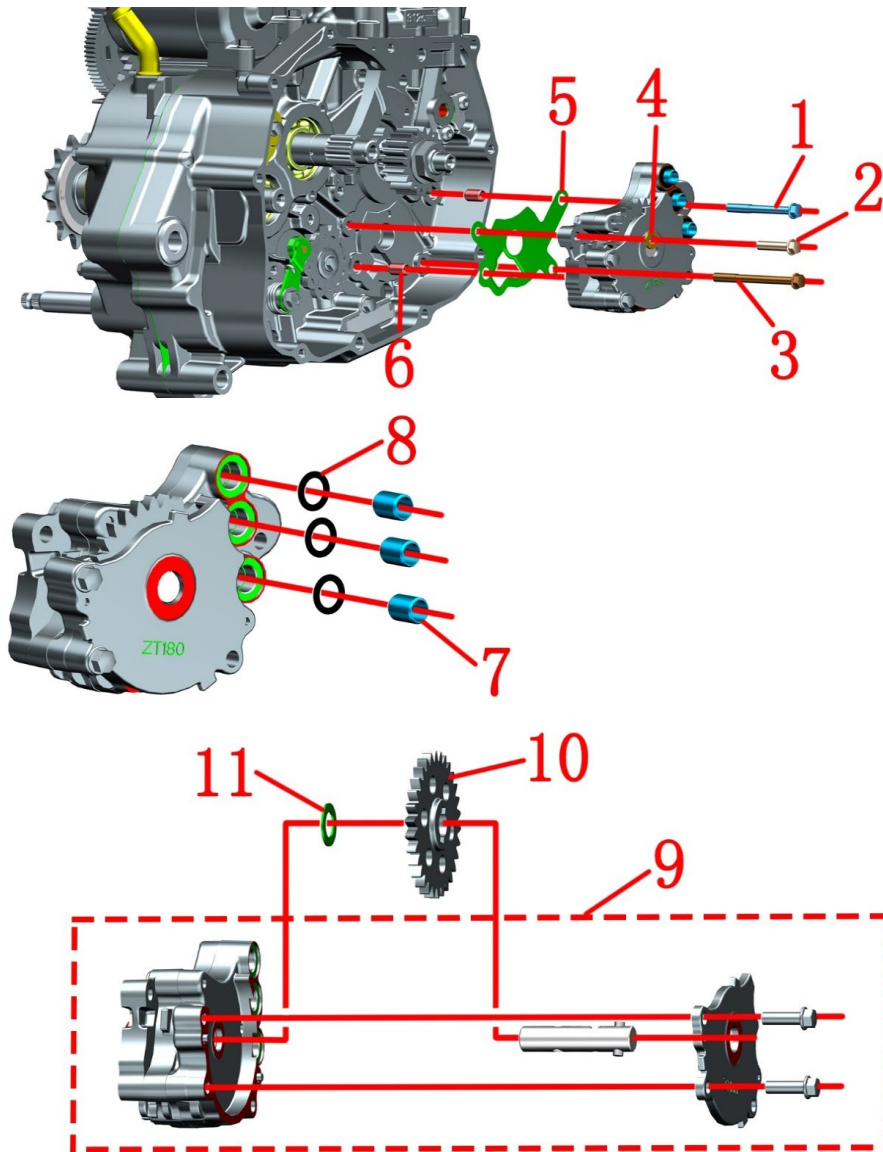


Fig.1 RIGHT CRANKCASE ASSEMBLY		Oil pump assembly		CHK	CAUTION
NO.		PART NO.	PART NAME	QTY	
1	1251112-004093	M6×60	Hexagon flange bolts (color zinc)	1	12±1.5N.m
2	1251112-005093	M6×75	Hexagon flange bolts (color zinc)	1	
3	1251112-002093	M6×30	Hexagon flange bolts (color zinc)	1	
4	1251513-001019	6.3×12×1.6	copper gasket	1	
5	1050854-003000	ZT180MN	Oil pump seat cushion	1	
6	1251401-001000	φ8×14	hollow locating pin	2	
7	1251401-003000	φ10×14	hollow locating pin	3	
8	1051454-014000	9.8×2.5	acrylic o—ring	3	
9	1050854-001000	ZT180MN	Oil pump subassembly	1	
10	1050854-004000	ZT180MN	Oil pump driven gear	1	
11	1251512-007000	12.2×20×1	thrust washer	1	

PROCEDURE:

● Remove oil pump components

Use an 8# sleeve to remove the bolts (1), (2), and (3), take out the copper pad (4), and remove the entire oil pump assembly.

Remove the seat cushion (5) and the two positioning pins (6) under the oil pump assembly to prevent loss.

Remove the 3 positioning pins (7) and O-ring (8) on the oil pump assembly.

Note: The oil pump subassembly (9) does not include gear (10) and thrust washer (11), please confirm the state you need before placing an order.

CAUTION:

● Check the oil pump: shift the driven gear of the oil pump to check whether it can rotate normally. If it does not rotate normally, the oil pump needs to be replaced.

● Check whether the oil pump seat cushion is deformed or cracked, if it is, it needs to be replaced. Check whether the O-ring is cracked or hardened, if it is, it needs to be replaced.

● When assembling the oil pump, the parts should be sprayed with proper amount of oil.

6-RIGHT CRANKCASE ASSEMBLY

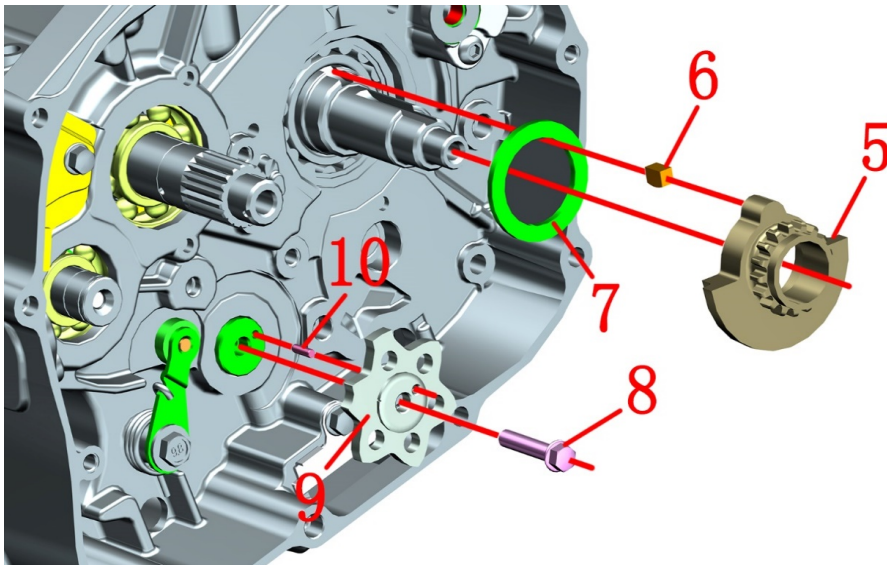
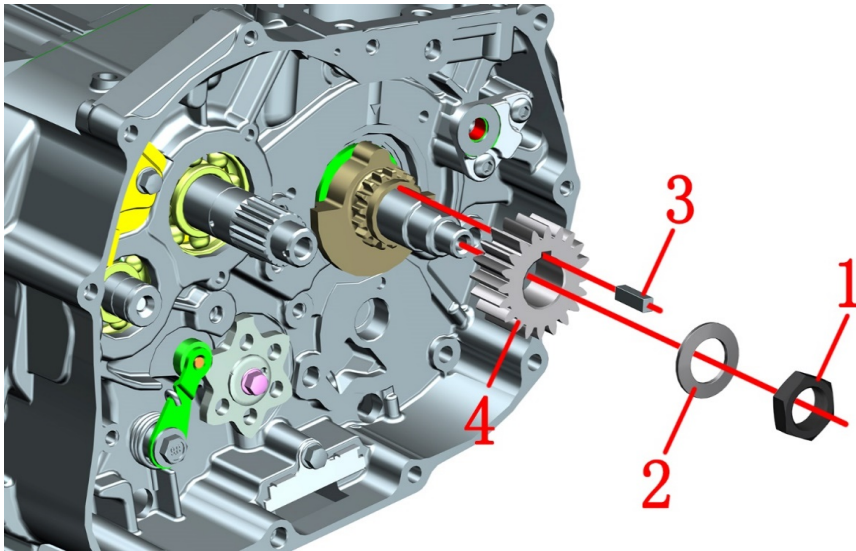


Fig.2 RIGHT CRANKCASE ASSEMBLY		Right box assembly-1	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1	1251311-002094	M18×1.0 thin nut hexagonal	1	108±15N.m
2	1251514-003000	Lock washer, 18.2×30×2.5×2	1	
3	1251801-003000	5×5.5×19.2 general flat key	1	
4	1050353-001000	ZT173YMM primary drive gear	1	
5	1050154-041000	ZT180MN counterweight timing drive sprocket A	1	
6	1251802-004000	5×5.5×26×9 woodruff key	1	
7	1050454-017000	ZT180MN crankshaft right bearing limit retaining ring	1	
8	1251112-002093	M6×30 Hexagon flange bolts (color zinc)	1	12±1.5N.m
9	1050654-001000	ZT180MN variable speed star cam	1	
10	1250404-003000	GB119.2φ3×10 cylindrical pin	1	

PROCEDURE:

● Remove the driving sprocket

Use a 24# sleeve to remove the nut (1), take out the lock washer (2), the flat key (3) and the primary drive tooth (4).

Pull out the driving sprocket (5), take out the half-circle key (6), the limit retaining ring (7).

● Remove the gearshift star wheel

Use 8# sleeve to remove bolt (8), take out cam (9) and cylindrical pin (10).

CAUTION:

● After putting in the retaining ring and half-circle key, spray proper amount of engine oil.

● When assembling the lock washer, the side marked with "out" faces outward.

● The timing chain can be assembled after the drive sprocket is installed, and the timing chain can be taken out after the oil pump is disassembled.

7-LEFT CRANKCASE ASSEMBLY

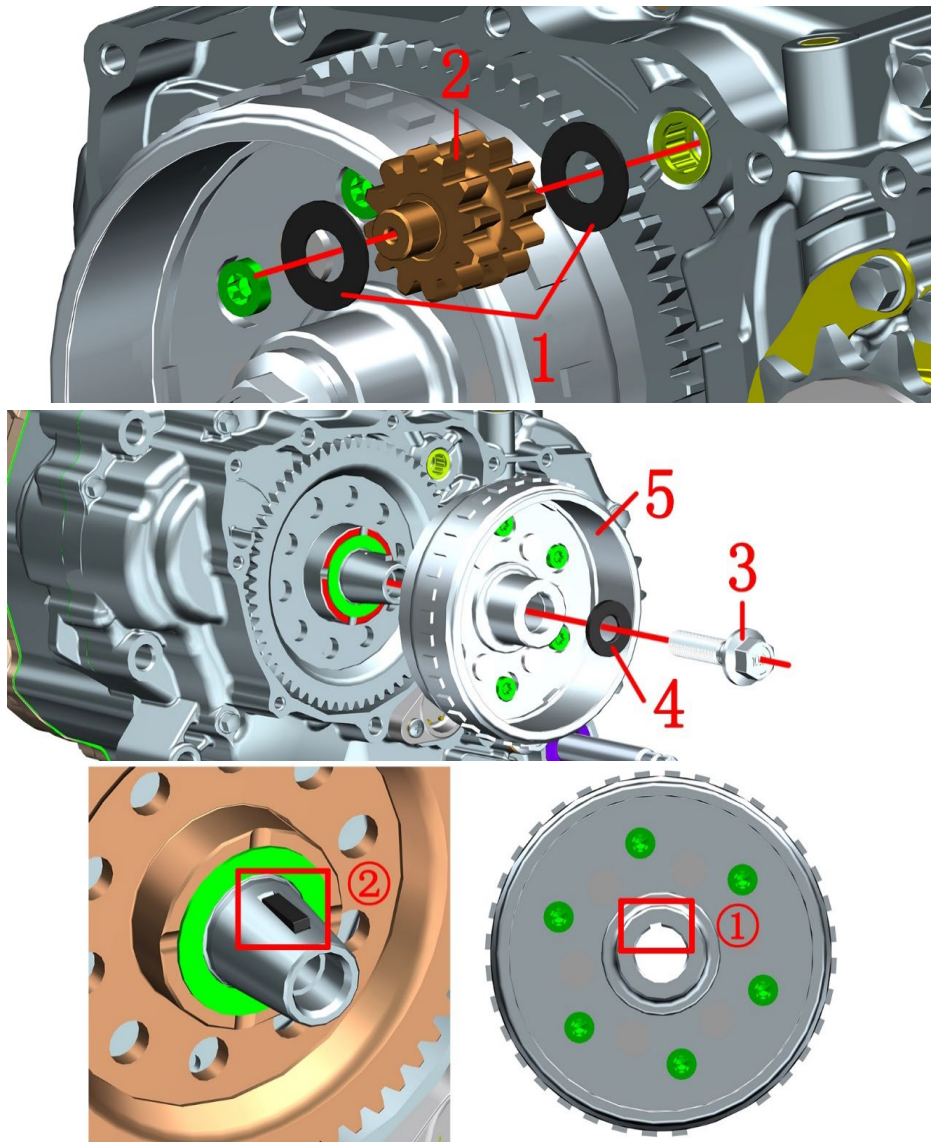


Fig.1 LEFT CRANKCASE ASSEMBLY		Disassemble the bridge teeth and the magneto rotor	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1	1251512-004000	10.2×21×1 thrust washer	2	
2		ZT173YMM electric starting carrier gear	1	Old
		ZT184MP electric starting carrier gear		New
3	1251100-065094	M12X1.25X50 hexagonal flange bolts (10.9 level/black)	1	103±15N.m
4	1251500-034000	12.3×26×3 gasket	1	
5	1051054-027000	ZT180MN Magneto Motor Rotor Clutch Sub part A	1	

PROCEDURE:

- Electric start bridge gear assembly
Take out the gasket and the bridge tooth. Note: There is a gasket before and after the bridge tooth.
- Magnetor rotor assembly
Grasp the magneto rotor with your hands, and remove the bolts with the gun +17# sleeve head. Use a 24# sleeve to screw the M20*1.5 bolt into the middle position of the magneto and push the magneto out.

CAUTION:

- There is a semicircular key between the main shaft and the magneto, which is located in the groove on the magneto and the main shaft. When installing, install it according to the groove.
- You can watch the detailed operation in "Replacement of Large Magnet Motor and Rectifier Teaching Video".
- Before placing an order, please carefully read the instructions of the official website to prevent the wrong purchase.

7-LEFT CRANKCASE ASSEMBLY

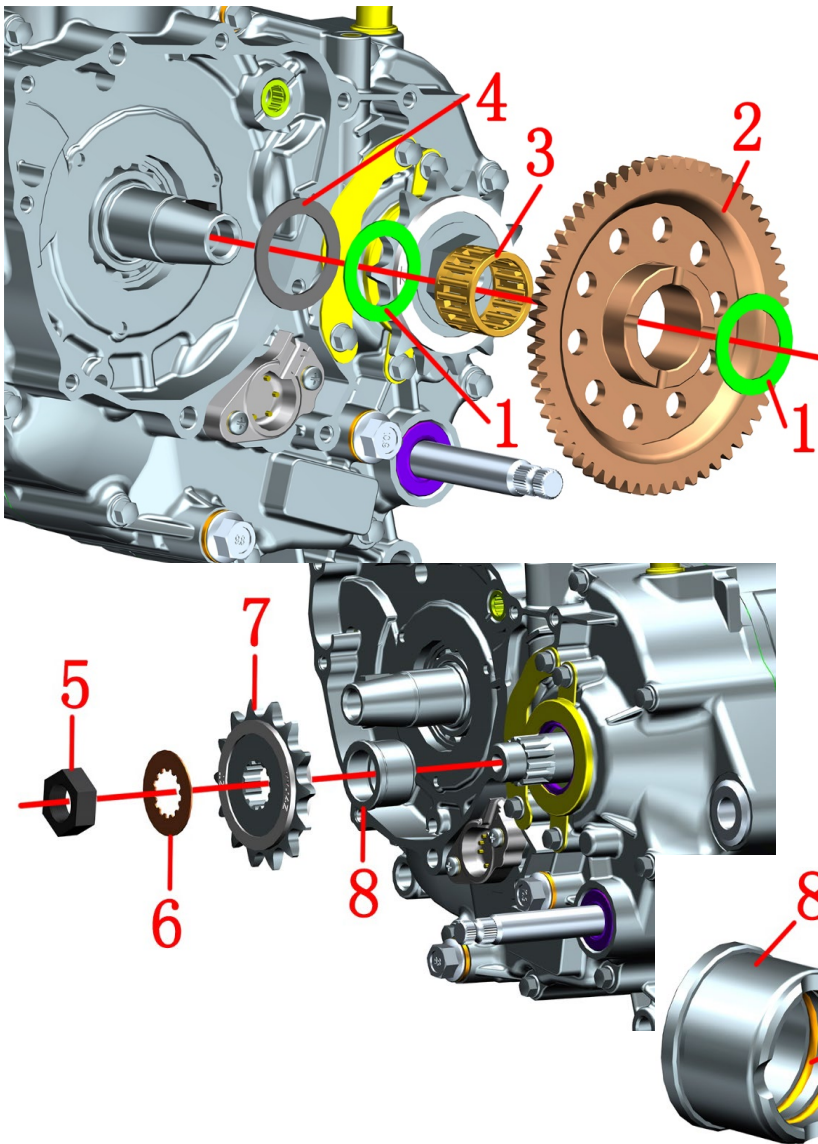


Fig.2 LEFT CRANKCASE ASSEMBLY		Disassemble the large starting gear and the output sprocket		CHK	CAUTION
NO.	PART NO.	PART NAME	QTY	ADJ	
1	1251512-028000	26.2×38×1 thrust washer	2		
2	1051054-012000	ZT180MN electric start large tooth A	1		
3	1250602-028000	KT26×32×21.8 needle bearing	1		
4	1051354-006000	30.2×41.2×1.5 thrust washer	1		
5	1251300-066093	M18×1.0 lock nut level 10 (environmental color zinc)	1		95±15N.m
6	1051354-002000	ZT180MN output sprocket nut lock piece	1		
7	1050354-023000	Rubber—covered output sprocket subassembly	1		
8	1050254-001000	ZT180MN Output chain wheel shaft sleeve	1		Ordinary
	1050254-007000	ZT180MN output sprocket bushing (lengthened)			Lengthened
9	1051454-011000	22.5×2.5 fluoro rubber o—ring	2		

PROCEDURE:

● Starting gear assembly

Take out the thrust washer (1), start gear (2), needle bearing (3), thrust washer (4). Note: Start the big gear (2), 1 thrust washer at the front and back (1).

● Output sprocket assembly

Before disassembly and assembly, use a hammer and a flat blade to knock the locking piece (6) flat, use a 24# sleeve to remove the bolt (5), remove the locking piece (6), and pull out the output sprocket (7) and sprocket shaft sleeve (8). The O-ring (9) is installed in the groove inside the sprocket sleeve (8).

CAUTION:

- After installing the nut, knock one end of the locking piece flush with one end of the nut. Prevent bolts from falling off.
- When installing the shaft sleeve, please check whether the two O-rings inside the shaft sleeve have fallen off.

7-LEFT CRANKCASE ASSEMBLY

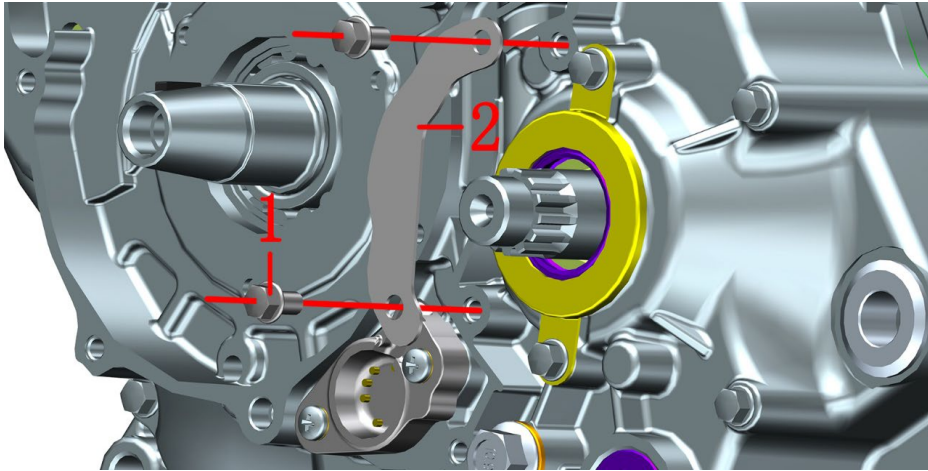



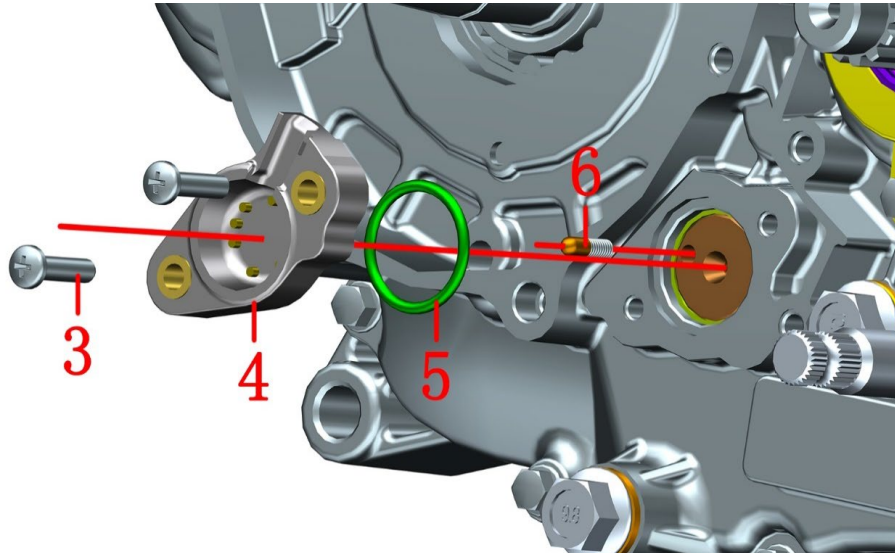
Fig.3 LEFT CRANKCASE ASSEMBLY		Remove the gear switch	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1	1251100-067093	M6×10 top pin bolt (color zinc)	2	12±1.5N.m
2	1051354-005000	ZT180MN Gear switch tension disc	1	
3	1250201-034093	GB818M5×20 (environmental color)	2	5±1N.m
4	1050654-005000	ZT180MN Gear switch	1	
5	1051454-011000	22.5×2.5 fluoro rubber o—ring	1	
6	1050654-007000	ZT180MN gear Display contact parts	1	

PROCEDURE:

● Gear switch assembly

Use an 8# sleeve to remove the 2 bolts (1), and remove the crimping plate (2).

Use a cross batch to remove the 2 bolts (3), and take out the gear switch (4), O-ring (5) and contact (6).



CAUTION:

● Bolt (1) Appropriate amount of thread fastening glue should be applied when installing.

● After installing the contact (6), spray a proper amount of engine oil on it.

● O-rings are for one-time use and must be replaced after disassembly to prevent oil leakage.

8-CRANKCASE

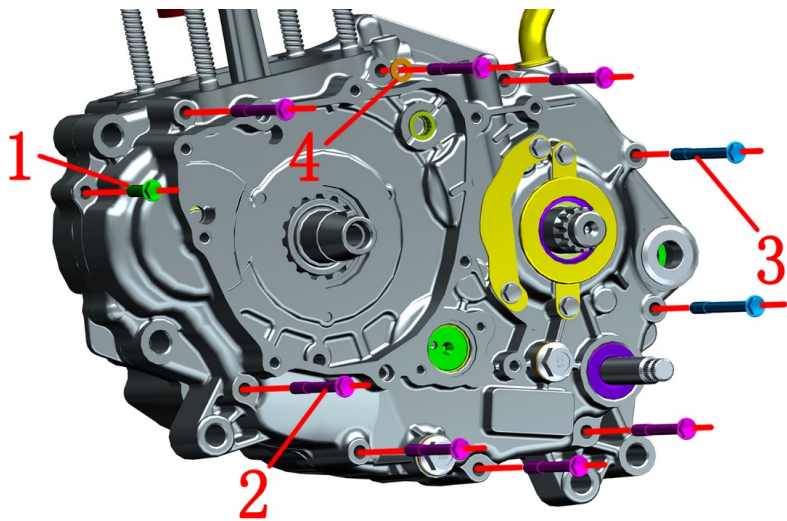
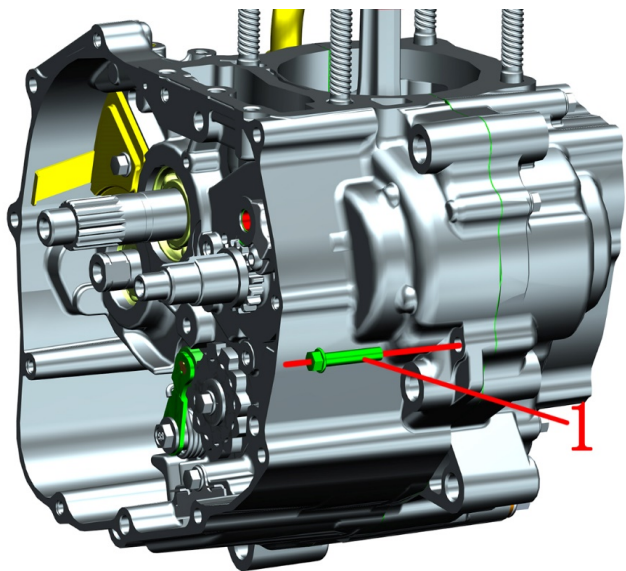



Fig.1 CRANKCASE		Crankcase disassembly-1		CHK	
				ADJ	
NO.	PART NO.	PART NAME		QTY	CAUTION
1	1251112-002093	M6×30 Hexagon flange bolts (color zinc)		2	12±1.5N.m
2	1251112-005093	M6×75 Hexagon flange bolts (color zinc)		7	
3	1251112-006093	M6×90 Hexagon flange bolts (color zinc)		2	
4	1251513-001019	6.3×12×1.6 copper gasket		1	

PROCEDURE:

● Cabinet split

Use an 8# sleeve to remove 1 bolt (1) on the right crankcase body.

Use an 8# sleeve to remove 1 bolt (1), 2 bolts (3), 7 bolts (2) and 1 copper pad (4) on the left crankcase body.

CAUTION:

● The bolts must be tightened or loosened diagonally when removing and installing.

8-CRANKCASE

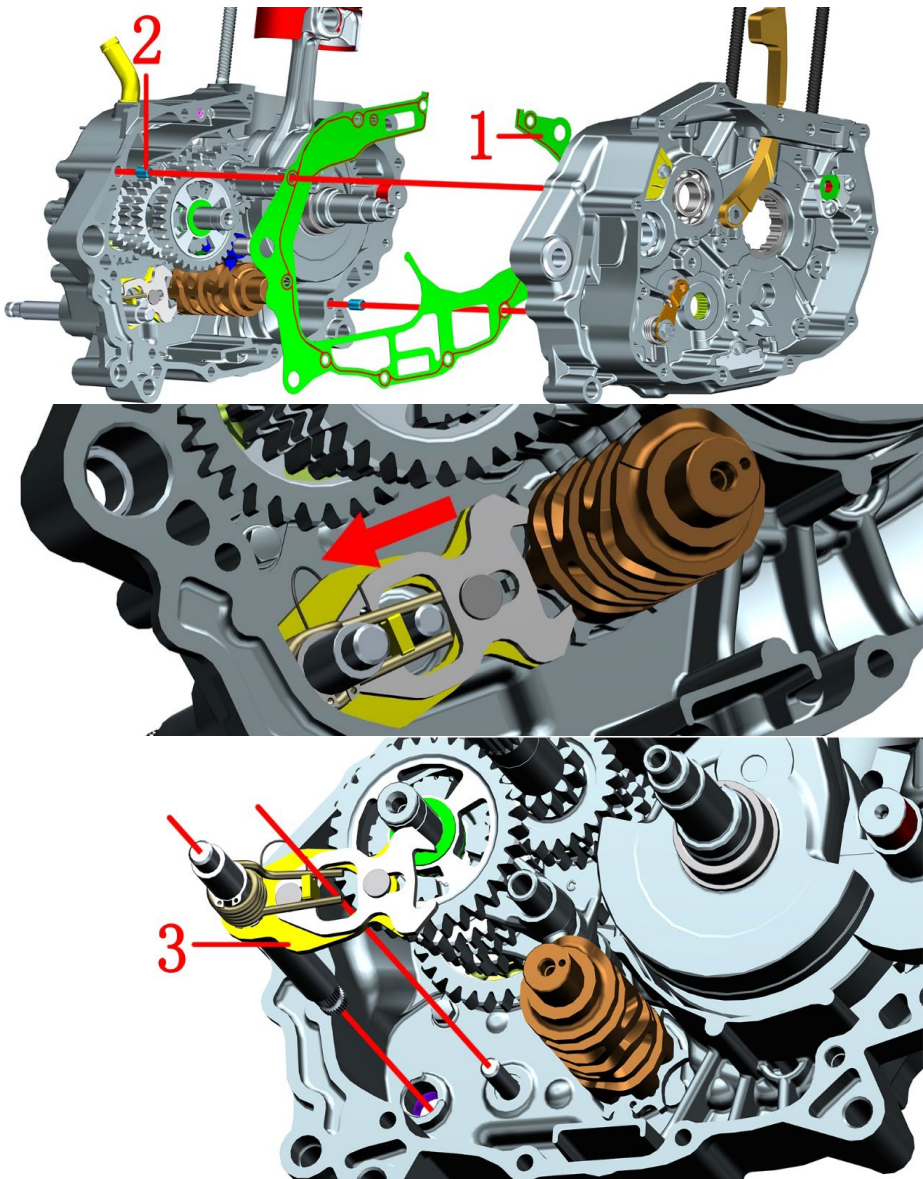


Fig.2 CRANKCASE		Crankcase disassembly-2		CHK	
				ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION	
1	1051654-005000	ZT180MN Crankcase gasket	1		
2	1251401-001000	φ8×14 hollow locating pin	2		
3	1050653-003000	ZT173YMM gear swift comp	1		

PROCEDURE:

● Cabinet split

Place the left crankcase horizontally (the closing surface is facing upward), and take out the right crankcase assembly, gasket (1), and positioning pin (2).

Press the shift shaft (3) in the direction of the arrow by hand, and then take out the shift shaft (3).

CAUTION:

- Most parts of the box body are installed on the left crankcase. When disassembling, the left crankcase must be down, otherwise the parts will fall off.
- The gasket is for one-time use. Once removed, it must be replaced, otherwise it will cause oil leakage.
- Before assembling the shift shaft, apply a proper amount of engine oil on the surface of the part.
- Before installing the box body, make sure that the box body assembly plane is smooth and flat and apply a proper amount of sealant on the box body assembly plane. After installing the new gasket (1), you need to apply the sealant again on both sides of the gasket (1) according to the red line.

8-CRANKCASE

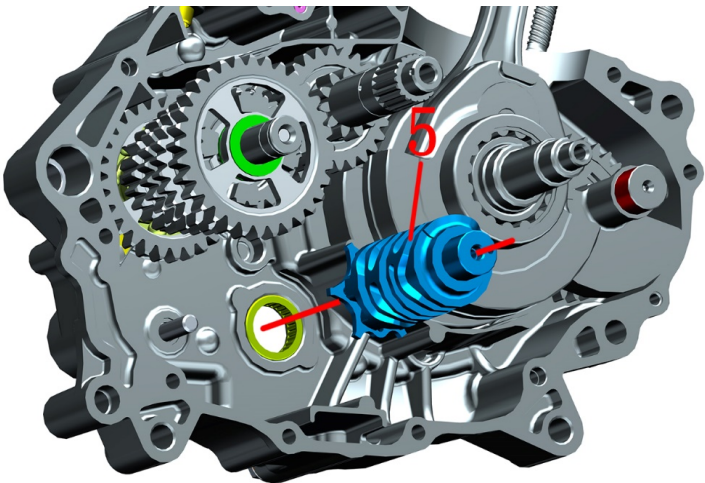
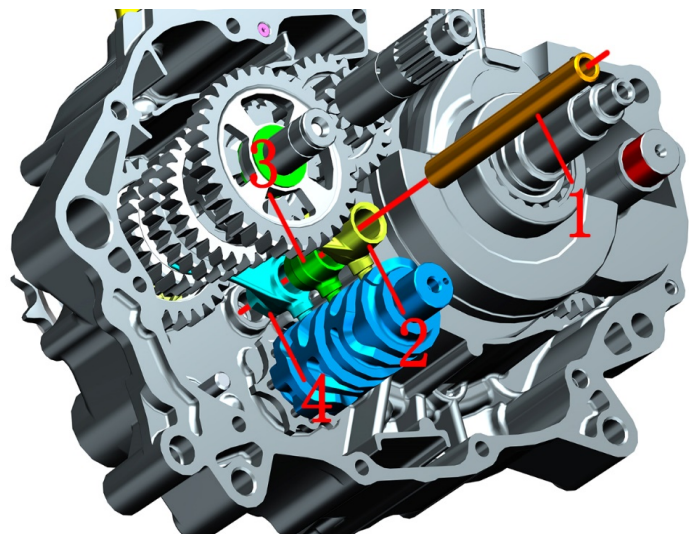



Fig.3 CRANKCASE		Crankcase disassembly-3		CHK	
				ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION	
1	1050653-007000	ZT173YMM fork axle, gear shift	1		
2	1050654-003000	ZT180MN variable speed countershaftright fork	1		
3	1050654-004000	ZT180MN shifting spindle in the fork	1		
4	1050654-002000	ZT180MN shifting auxiliary shaft left shift fork	1		
5	1050654-006000	ZT180MN Shift speed changer subassembly	1		

PROCEDURE:

● Cabinet split

Pull out the shift fork shaft (1), take out the left shift fork (2), middle shift fork (3), right shift fork (4). Note: The marks "L", "R" and "C" on the shift fork correspond to the left shift fork (2), the right shift fork (3), and the middle shift fork (4) respectively.

Take out the variable speed drum (5).

CAUTION:

- When installing, the side with the mark on the fork should be installed upwards.
- Check the fork shaft, roll the fork shaft on a flat surface and find that it is bent, it must be replaced.
- Check the shift fork, whether there are any problems such as bending, damage, cracks, etc. at the shift fork jaws. If there is, it must be replaced.
- Check the variable speed drum, whether the variable speed drum has abrasion, scratches, etc., if there is, it must be replaced.
- When installing, apply proper amount of engine oil on the surface of the parts.

8-CRANKCASE

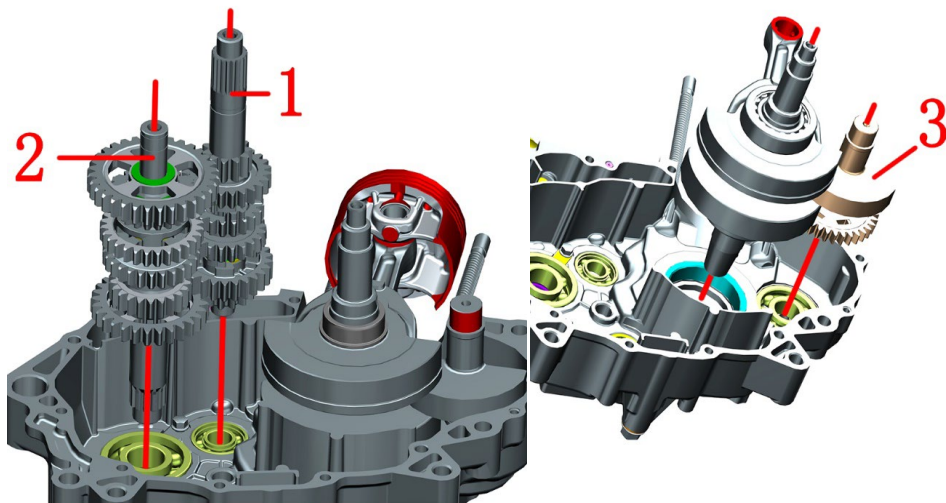


Fig.4 CRANKCASE		Crankcase disassembly-4		CHK	
				ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION	
1	1050254-012000	ZT180MN drive spindle sub — component A	1		
2	1050254-005000	ZT180MN Transmission countershaft parts	1	Ordinary	
	1050654-011000	ZT180MN transmission auxiliary shaft sub — assembly		Lengthened	
3	1050554-006000	ZT180MN Balance shaft assembly A	1		
4	1050454-012000	ZT180MN Crankshaft connecting rod assembly	1		
5	1251802-003000	4×4.6×25×14 woodruff key	1		

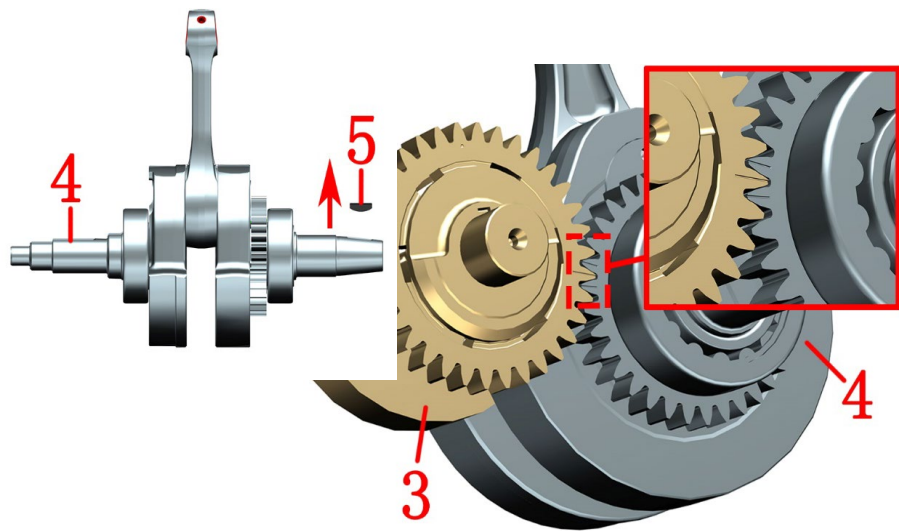
PROCEDURE:

● Cabinet split

Take out the main shaft (1) and the counter shaft (2) at the same time, paying attention to any parts on the main shaft and the counter shaft not to be disassembled.

Stagger the angle between the crankshaft assembly and the balance shaft (3), hold the upper crank with one hand, and tap the lower crank with a rubber hammer with the other hand to take out the crankshaft assembly and balance shaft (3).

Take out the half circle key (5) from the crankshaft (4).



CAUTION:

- When installing and removing, the crankshaft connecting rod cannot hit the box.
- Check the balance shaft, if there are scratches or wear, replace the balance shaft.
- The crankshaft and balance shaft should be installed as shown in the left figure. The two marked teeth on the crankshaft clamp the marked teeth on the balance shaft.
- Apply a proper amount of engine oil on the surface of the parts before installation.

9-RIGHT CRANKCASE ASSEMBLY

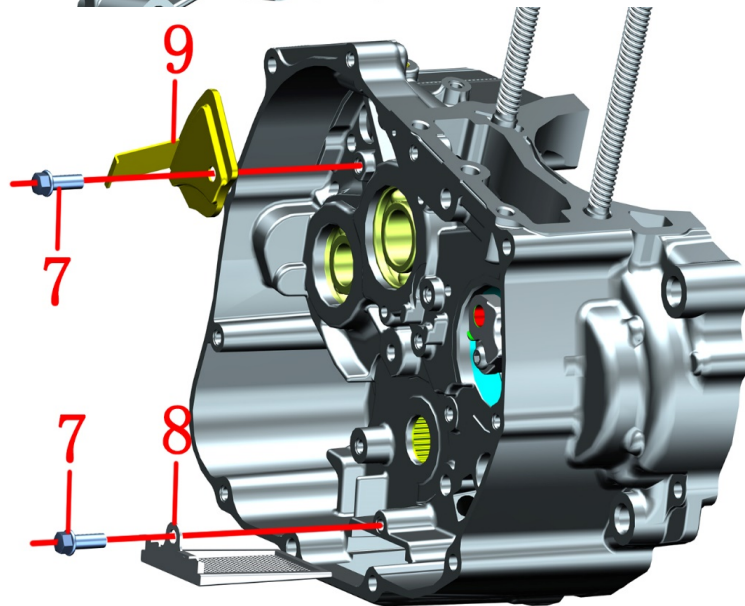
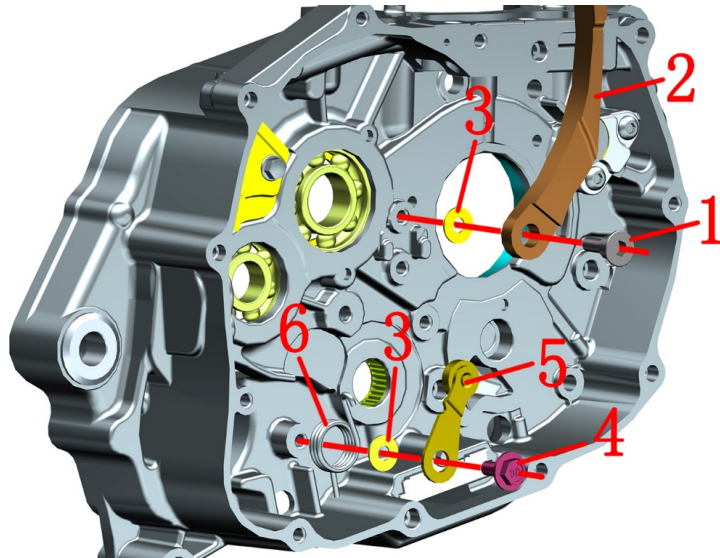


Fig.1 RIGHT CRANKCASE ASSEMBLY		Right box assembly-2		CHK ADJ	CAUTION
NO.	PART NO.	PART NAME	QTY		
1	1251100-168093	M6×15—10×7.8 pivot bolt(Zinc)	1		12±1.5N.m
2	1051254-003000	ZT180MN tensioning strip sub—component B	1		
3	1251512-001000	6.2×15×1 thrust washer	2		
4	1251100-068093	M6×14—9×2.6 pivot bolt (color zinc)	1		12±1.5N.m
5	1050653-002000	ZT173YMM gear swift limit sprocket comp	1		
6	1050654-008000	ZT180MN limit stop wheel torsion spring	1		
7	1251112-001093	M6×16 Hexagon flange bolts (color zinc)	2		12±1.5N.m
8	1050853-010000	66×50 trapezoid coarse coarse filter	1		
9	1051353-001000	ZT173YMM oil and gas baffle sub—assembly	1		

PROCEDURE:

● Tension bar assembly

Use 5# inner hexagon to remove bolt (1), take out the tension bar (2) and thrust washer (3).

● Stop wheel assembly

Use a 12# sleeve to remove bolt (4), take out stop wheel (5), thrust washer (3) and torsion spring (6).

● Coarse filter

Use an 8# sleeve to remove the bolt (7) and remove the coarse filter (8).

● Oil-air baffle

Use an 8# sleeve to remove the bolt (7), and pull out the oil-air baffle (9).

CAUTION:

● When installing bolts (1) and (7), apply proper amount of thread fastening glue to the threads.

9-RIGHT CRANKCASE ASSEMBLY

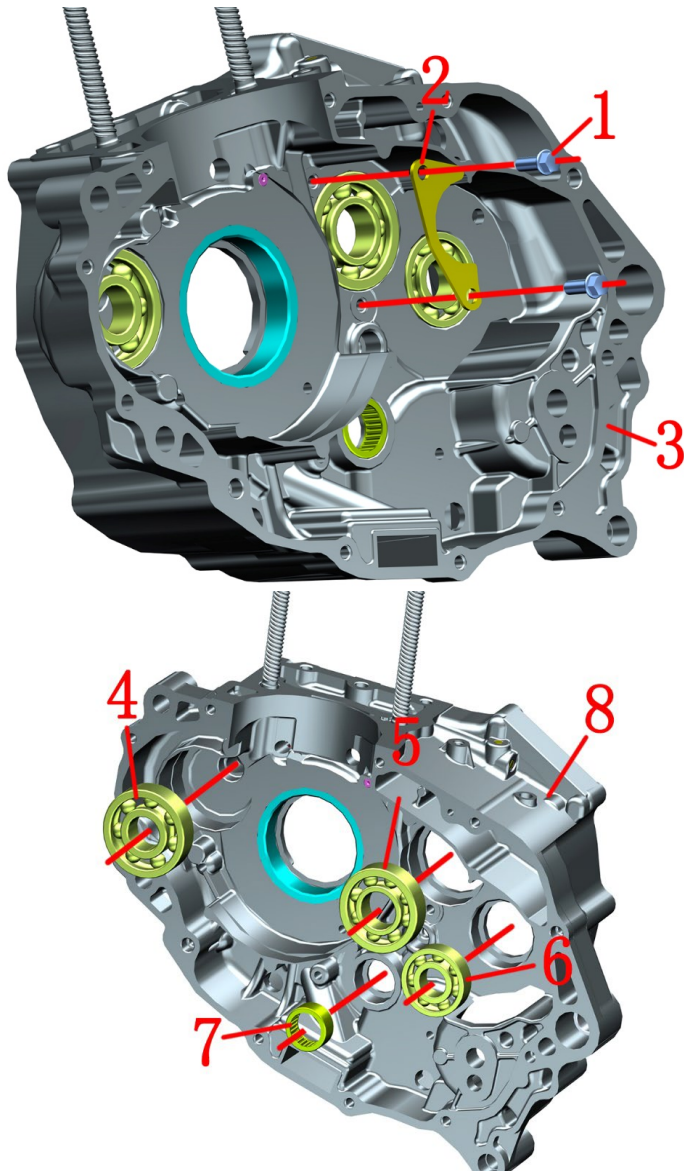



Fig.2 RIGHT CRANKCASE ASSEMBLY		Right box assembly-3	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1	1251112-001093	M6×16 Hexagon flange bolts (color zinc)	2	12±1.5N.m
2	1051353-006000	ZT173YMM spindle bearing baffle	1	
3	4050254-003000	ZT180MN Right crankcase assembly	1	
	4050254-009000	ZT180MN right crankcase sub—assembly (V)		
4	1250601-082000	6304—C3 deep groove ball bearing(FAG)	1	After-sale
5	1250601-052000	GB276—62/22/P5 deep groove ball bearing (nitride)	1	
6	1250601-057000	GB276—6203/P5 deep groove ball bearing (nitride)	1	
7	1250602-026000	GB290—HK2012 Needle roller bearing	1	
8	4050254-005000	ZT180MN right crankcase parts(without bearing)	1	

PROCEDURE:

● Spindle bearing baffle

Use an 8# sleeve to remove the 2 bolts (1), and remove the bearing baffle (2) from the right box assembly (3).

● Bearing parts and after-sales parts

The bearings (4), (5), (6), and (7) are all press-fitted on the right box (8) and will not be damaged under normal circumstances.

CAUTION:

● Bolt (1) When installing, apply proper amount of thread fastening glue on the thread.

● "ZT180MN right crankcase assembly assembly" contains "ZT180MN right crankcase assembly assembly (excluding bearings)" and 4 bearings. Please confirm the accessories you need before placing the order.

● Please do not disassemble or assemble the bearing unless it is special. If the bearing must be replaced, please go to a maintenance organization capable of replacing it.

10-LEFT CRANKCASE ASSEMBLY

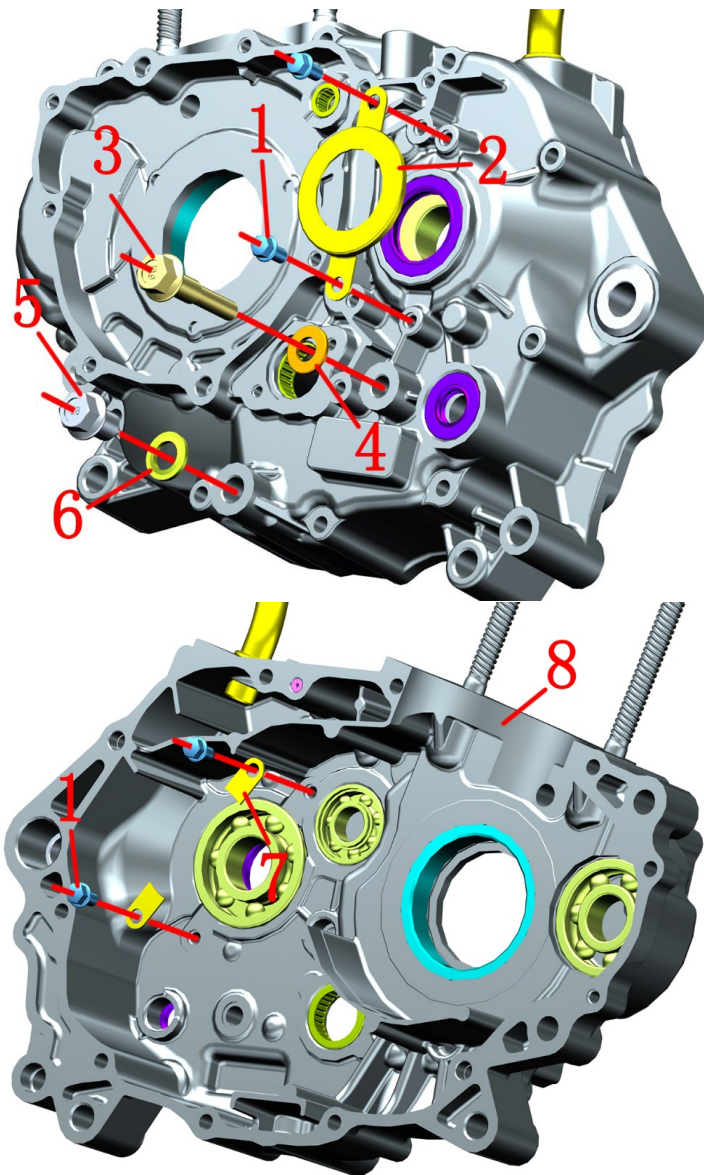


Fig.1 LEFT CRANKCASE ASSEMBLY		Left crankcase parts	CHK	
NO.	PART NO.		ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1	1251100-067093	M6×10 top pin bolt (color zinc)	4	12±1.5N.m
2	1051354-001000	ZT180MN countershaft oil seal cover	1	
3	1251400-002000	M10×1.25 Rebound spring	1	25±4N.m
4	1251513-004019	10.3×20×2 copper gasket	1	
5	1251100-066093	M12×1.5×15 oil drain bolt (color zinc)	1	25±4N.m
6	1244100-033000	Combined sealing gasket12×φ20×2	1	
7	1051354-003000	63/22 deep groove ball bearing fixed pin	2	
8	4050154-003000	ZT180MN Left crankcase assembly	1	Ordinary
	4050154-008000	ZT180MN left crankcase sub—assembly (V)		Lengthened

PROCEDURE:

- Oil seal cover assembly
Use an 8# sleeve to remove the 2 bolts (1), and remove the oil seal cover (2).
- Return spring column
Use 14# to remove the spring column (3), and remove the copper pad (4).
- Drain bolt
Use a 14# sleeve to remove the oil drain bolt (5) and take out the gasket (6).
- Bearing limit piece
Use an 8# sleeve to remove the 2 bolts (1), and take out the 2 bearing limit pieces (7).

CAUTION:

- When installing bolts (1) and (3), apply proper amount of thread fastening glue to the threads.
- The gasket (6) is recommended to be replaced after disassembly to prevent oil leakage.

10-LEFT CRANKCASE ASSEMBLY

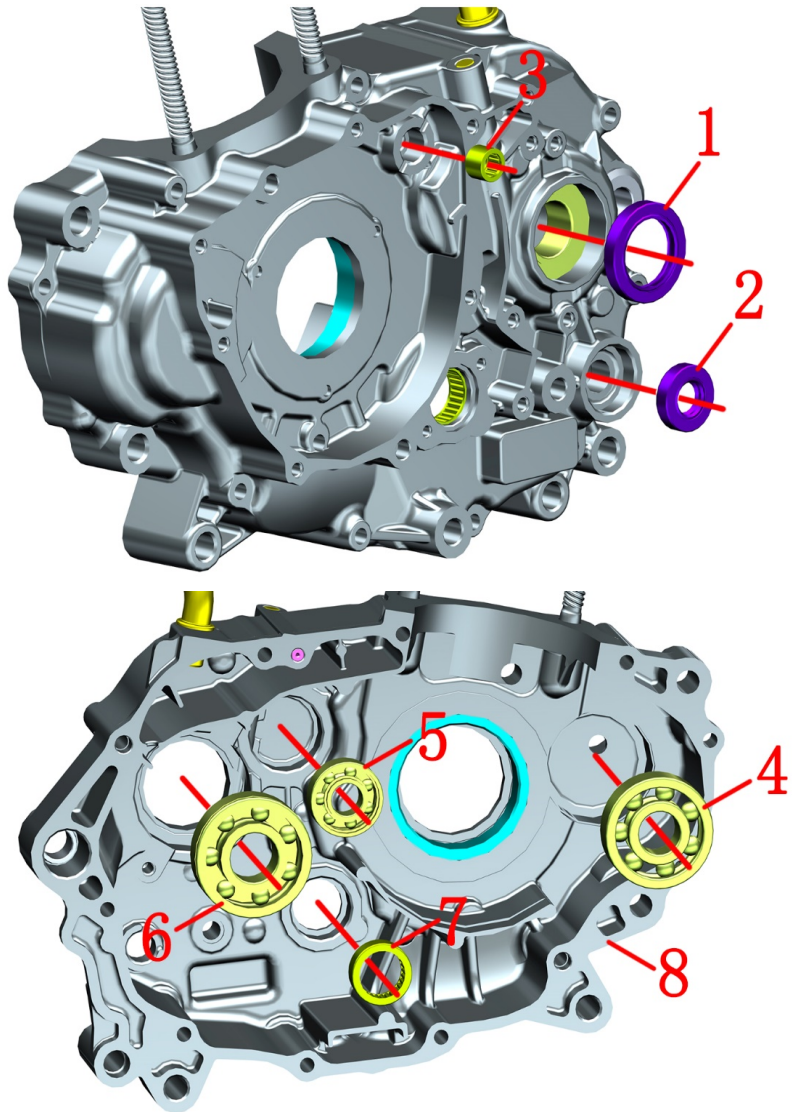


Fig.1 LEFT CRANKCASE ASSEMBLY		After-sales spare parts for left crankcase		CHK	CAUTION
				ADJ	
NO.	PART NO.	PART NAME		QTY	After-sale
1	1051554-002000	FB30×42×7 hydrogenated nitrile oil seal		1	
2	1051553-005000	FB14×28×7 Fluorine rubber oil seal		1	
3	1250602-022000	GB290—HK1010 needle roller bearing		1	
4	1250601-082000	6304—C3 deep groove ball bearing(FAG)		1	
5	1250601-036000	GB276—6202RS/P6 deep groove ball bearing (nitride)		1	
6	1250601-056000	63/23RS/P5 deep groove ball bearing (nitriding)		1	
7	1250602-020000	HK222910 needle roller bearing		1	
8	4050154-004000	ZT180MN left crankcase parts(without bearing)		1	

PROCEDURE:

●Left box after-sales spare parts

Oil seals (1), (2), bearings (2), (4), (5), (6), (7) are all press-fitted on the left box body.

CAUTION:

●When the oil seal is press-fitted, the marking surface of the oil seal should face outwards. Do not install it backwards to cause oil leakage. It is recommended to go to a maintenance organization capable of doing the replacement.

●Please do not disassemble or assemble the bearing unless it is special. If the bearing must be replaced, please go to a maintenance organization capable of replacing it.

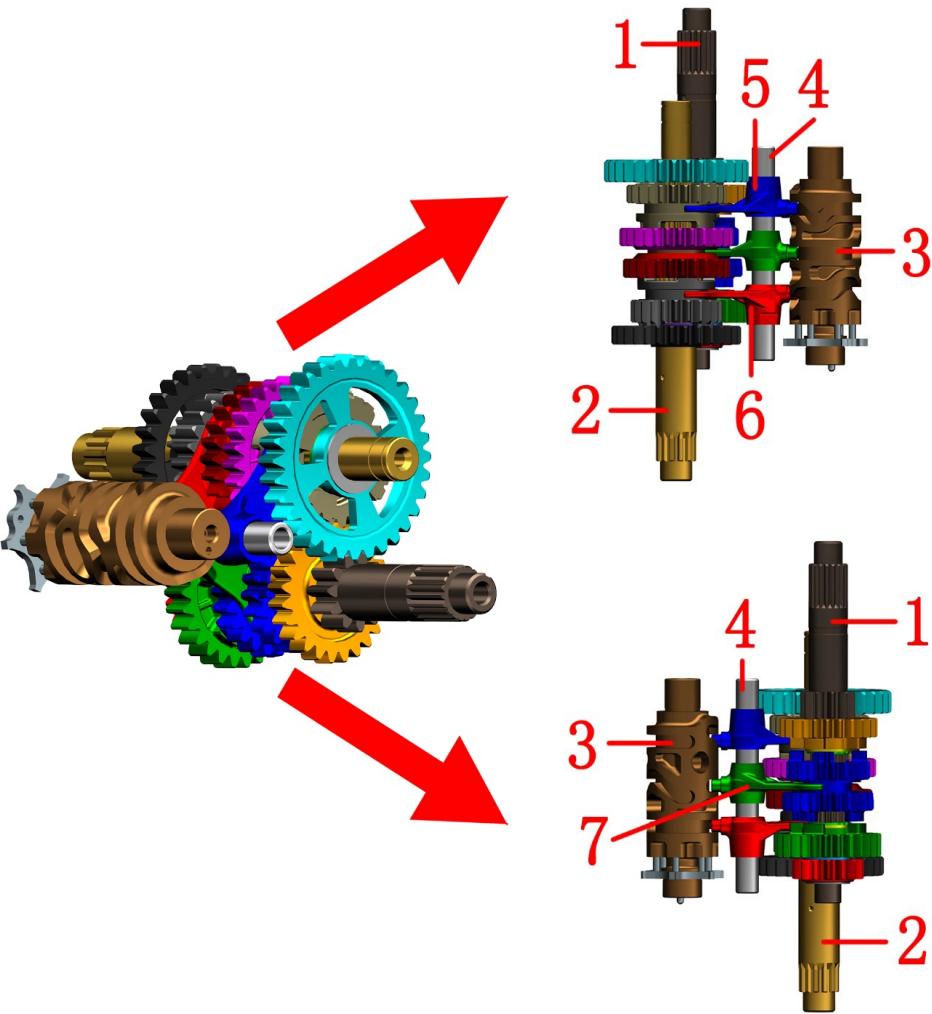



Fig.1 GEARSHIFT AND TRANSMISSION		The position relationship of the components of the speed change and transmission mechanism		CHK	
				ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION	
1	1050254-012000	ZT180MN drive spindle sub — component A	1		
2		ZT180MN Transmission countershaft parts	1	Ordinary Lengthened	
	1050654-011000	ZT180MN transmission auxiliary shaft sub — assembly			
3	1050654-006000	ZT180MN Shift speed changer subassembly	1		
4	1050653-007000	ZT173YMM fork axle, gear shift	1		
5	1050654-003000	ZT180MN variable speed countershafteright fork	1		
6	1050654-002000	ZT180MN shifting auxiliary shaft left shift fork	1		
7	1050654-004000	ZT180MN shifting spindle in the fork	1		

PROCEDURE:

- Assembly position relation of speed change and transmission mechanism

The positions of main shaft (1), counter shaft (2), speed change drum (3), fork (5), (6), (7), and fork shaft (4) are shown in the left figure.

The protruding ends of the shift forks (5) and (6) are assembled on the shift drum (3), and the groove is locked on the counter shaft (2). The protruding end of the shift fork (7) is transferred to the transmission drum (3), and the grooved end is locked on the main shaft (1).

When disassembling, first take out the shift fork shaft (4), remove the shift forks (5), (6), (7), take out the speed change drum (3), and finally remove the main shaft (1) and the counter shaft (2) at the same time.

CAUTION:

- When installing the shift fork, the side with letters on the shift fork faces the right crankcase.
- Place one end of the spindle shift fork into the slot of the third and fourth gears of the spindle, and one end into the groove of the transmission drum profile.
- The right shift fork (5) near the right crankcase is placed in the fifth gear slot of the counter shaft, and the left shift fork (6) near the left crankcase is placed in the sixth gear slot of the counter shaft.

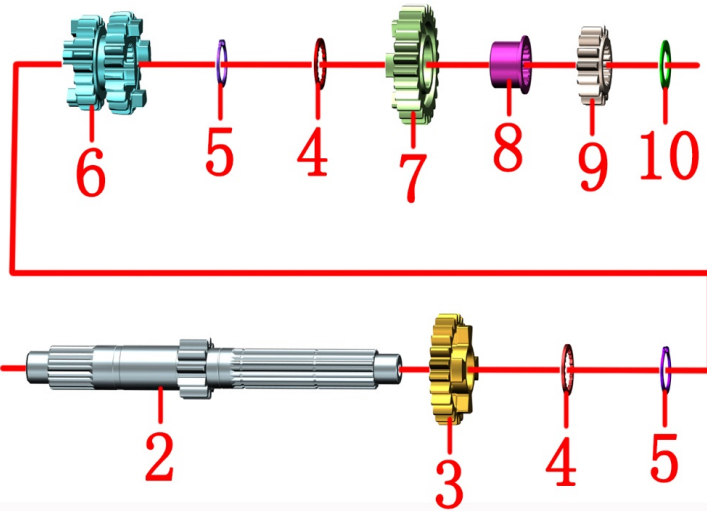
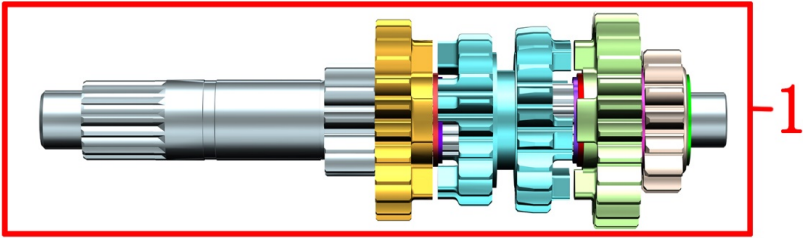



Fig.2 GEARSHIFT AND TRANSMISSION		Spindle assembly relationship		CHK ADJ	 CAUTION
		NO.	PART NO.	PART NAME	
1	1050254-012000			ZT180MN drive spindle sub — component A	1
2				ZT173YMM drive spindle B	1
3				ZT180MN Main shaft five gear	2
4				19Z×1M×37.5×1.5×25.5 evolvent Spline gasket	2
5				GB894.1 shaft circlip with φ20×1.2	1
6				ZT180MN Main shaft three or four gear	1
7				ZT180MN spindle six gears	1
8				ZT180MN spindle six gear sleeve	1
9				ZT180MN spindle second gear	1
10				15.2×25×1.0 thrust washer	1

PROCEDURE:

- Spindle assembly relationship
The assembly relationship of the gears on the main shaft is shown on the left.

CAUTION:

- The spindle is not allowed to be disassembled under special circumstances, and only the assembly relationship is shown here.
- 【3】 Parts not marked with codes are included in the parts assembly and are not sold separately.

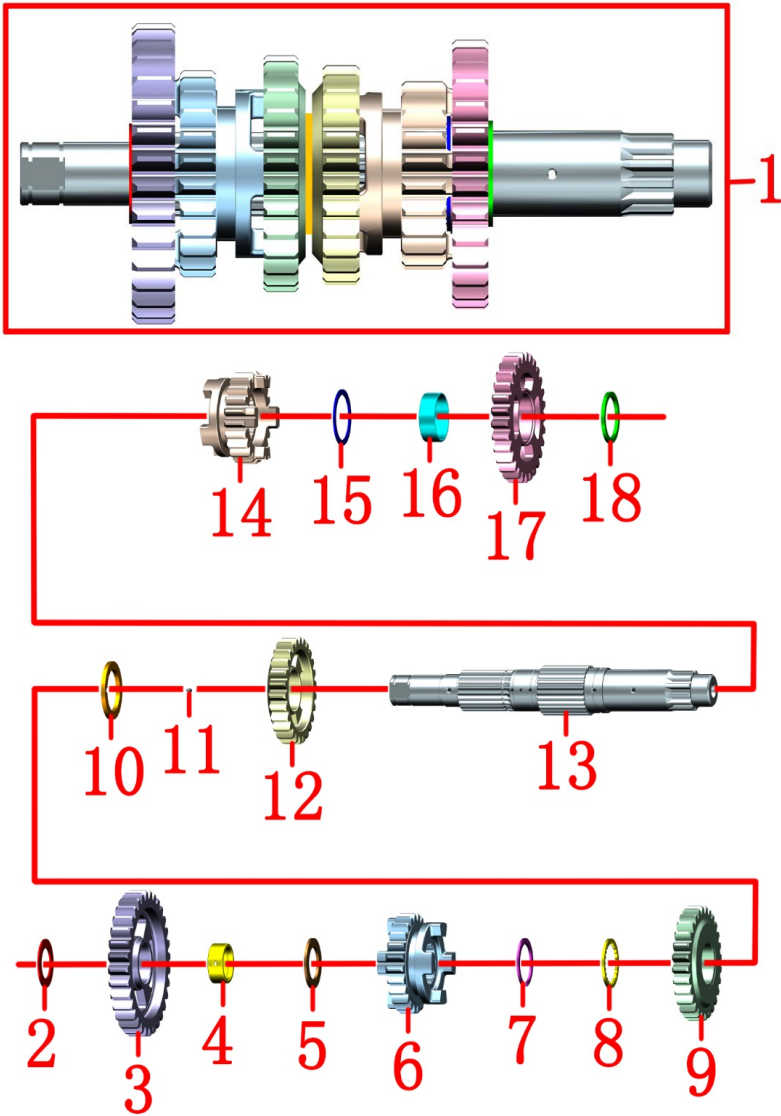



Fig.3 GEARSHIFT AND TRANSMISSION		Countershaft assembly relationship	CHK	
			ADJ	
NO.	PART NO.	PART NAME	QTY	CAUTION
1		ZT180MN Transmission countershaft parts	1	【3】
2		17.2×27×1 thrust washers	1	
3		ZT173YMM countershaft gear shaft sleeve	1	
4		ZT180MN countershaftone gear	1	
5		18.2×28×1.5 thrust washer	1	
6		ZT180MN Countershaft five gear	1	
7		23×1.2 shaft retaining ring	1	
8		22Z×1M×37.5×1.5×27.5 involute spline washer	1	
9		ZT180MN Countershaft three gear	1	
10		ZT173YMM countershaftbaffles of third— forth gears	1	
11		GB119.2φ2×5 cylindrical pin	1	
12		ZT180MN Countershaft four gear	1	
13		ZT180MN transmission auxiliary shaft subassembly	1	
14		ZT180MN Countershaft six gear	1	
15		25.2×31×1.0 thrust gasket	1	
16		ZT180MN countershaftsecond gear shaft sleeve	1	
17		ZT180MN countershaftsecond gear shaft sleeve	1	
18		23.1 × 28.5 × 2 Thrust Washer	1	

PROCEDURE:

● Counter shaft assembly

The assembly relationship of the gears on the countershaft is shown in the left figure.

CAUTION:

● It is forbidden to dismantle the countershaft except in special circumstances, here only the assembly relationship is indicated.

● 【3】 Parts not marked with codes are included in the parts assembly and are not sold separately.

