

GEELY

4G20/4G24 Engine

Service Department

Date: April 8, 2013



Items	Specifications
Bore (mm/in)	85
Stroke (mm/in)	88
Displacement (L)	1.997
Compression Ratio	10.2
Power (km/rpm)	105/6000
Torque (Nm/rpm)	186/4000-4200
Idle Speed (rpm)	750±50
Ignition Sequence	1-3-4-2
Minimum Fuel consumption rate (g/KW.h)	≤260
Fuel	Unleaded motor gasoline, 93# or above
Oil Tank Capacity (L/pt)	(Fill-up drily) 4L
Lubricant Specification/Grades	Designation of SAE10W-30 or 15W-40 with the API quality grade of SL or above.
Spark Plug Model	K6RTC
Spark Plug Gap (mm/in)	0.8-0.9
Dry Mass (kg/lb)	≤119
Overall Size (LxWxH) mm/in	618×672×655

Cylinder Block

**VVT
Operating
Oil Channel**



**Lubricating
Oil Channel
for Intake
and Exhaust
Camshafts**

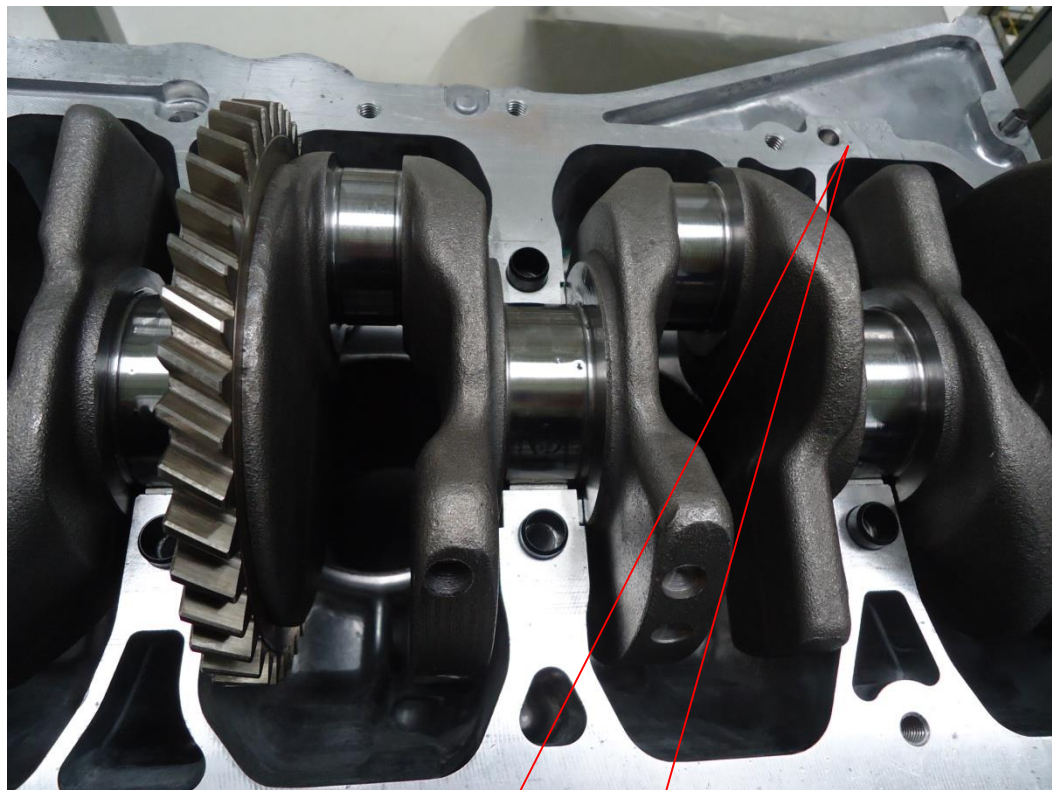
Engine Number



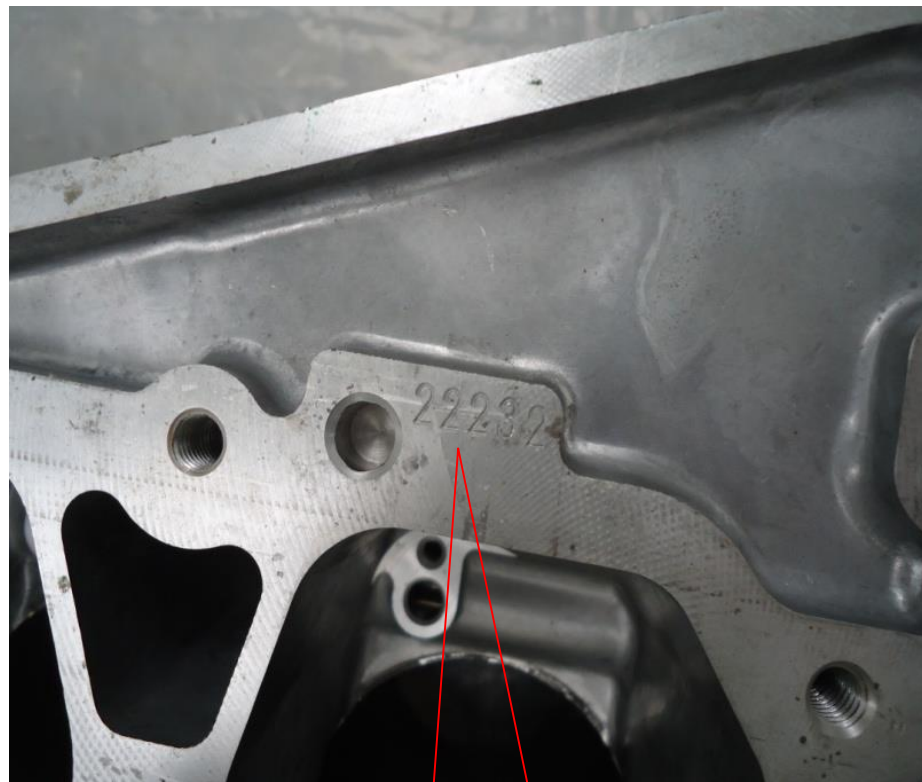


**4G24: Cylinder
Bore 88.700-
88.715**

**4G20: Cylinder
Bore 85.00-
85.015**



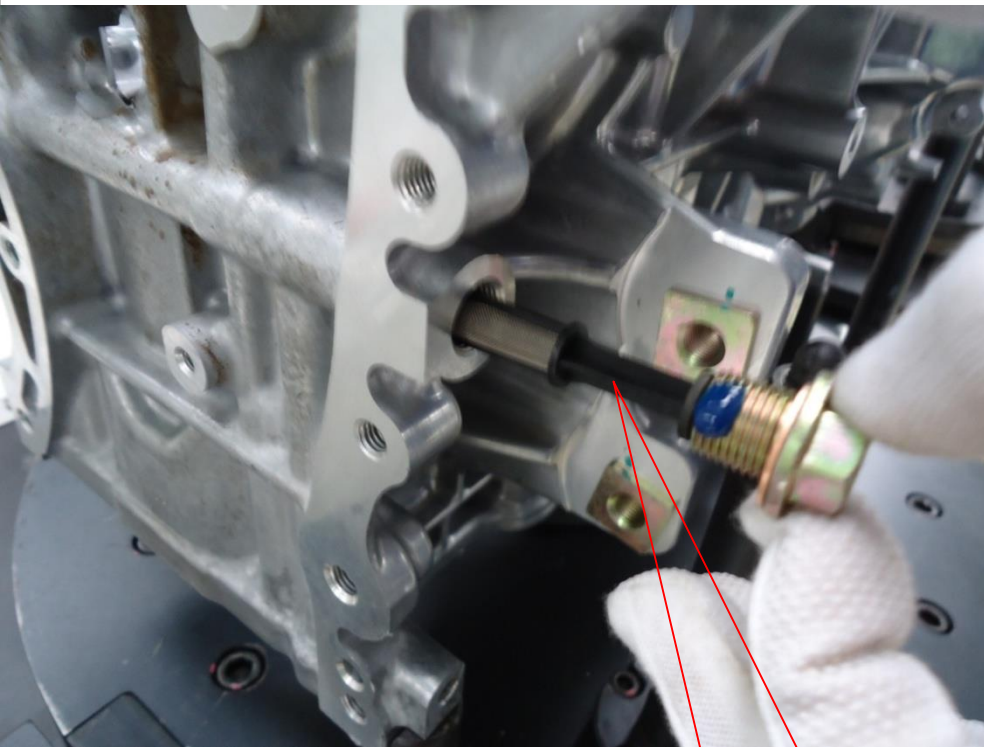
Position where the grouping number of the spindle hole of cylinder block is printed



Group number of the spindle hole of cylinder block



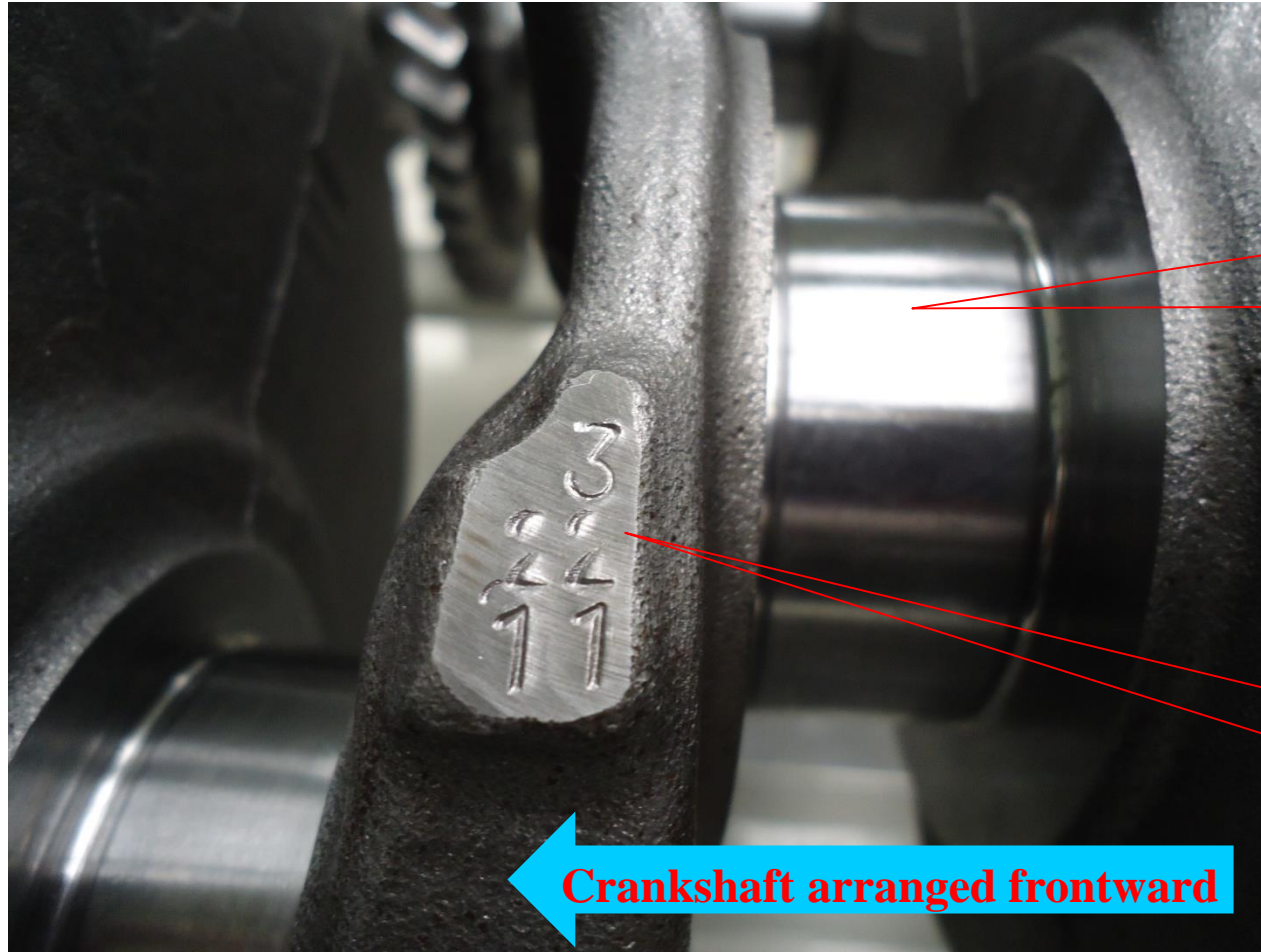
**Piston
Cooling
Nozzle**



**Filter Screen for Oil
Channel on the
Cylinder Head**

Key Notices:

- 1. Identification of engine model (4G20\24) and number;
- 2. Cleaning for each operating surface of the cylinder block;
- 3. Cleaning for oil inlet channel of VVT drive and oil inlet channel of intake and exhaust camshafts;
- 4. Grouping numbers for each main bearing hole base of the cylinder block (1, 2 and 3);
- 5. Directions and positions of installation of piston cooling nozzle and filter screen.



**Main
Journal:54.782-
54.800**

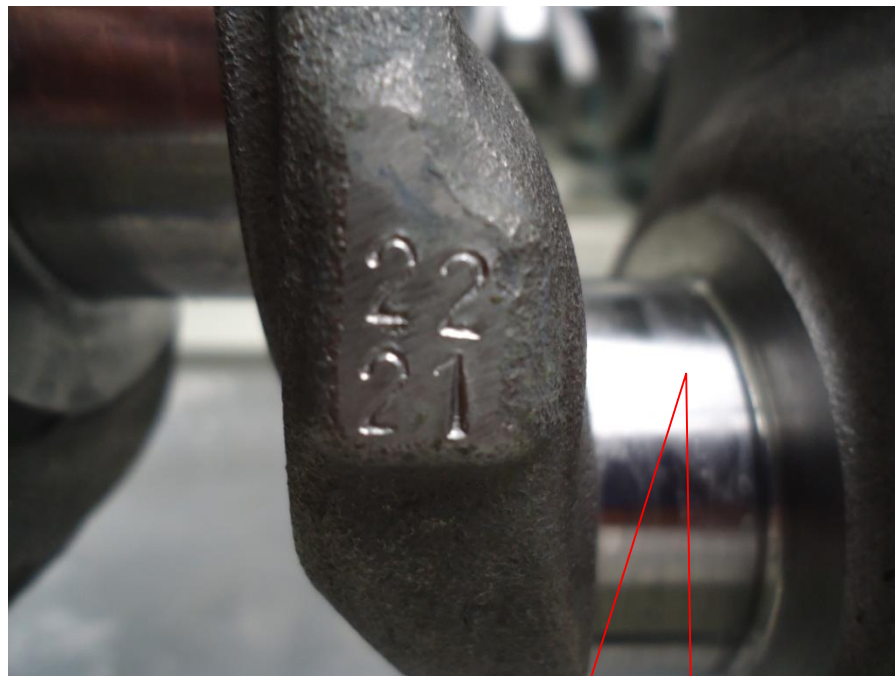
**Grouping
Number of
Main Journal**

Crankshaft arranged frontward

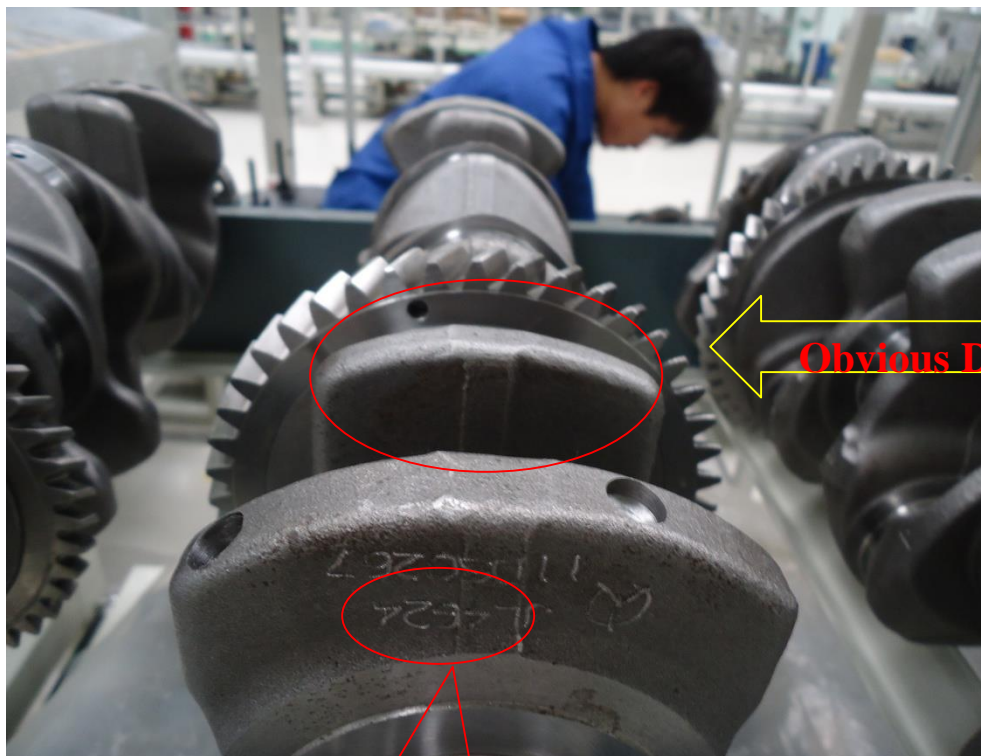


crankshaft arranged frontward

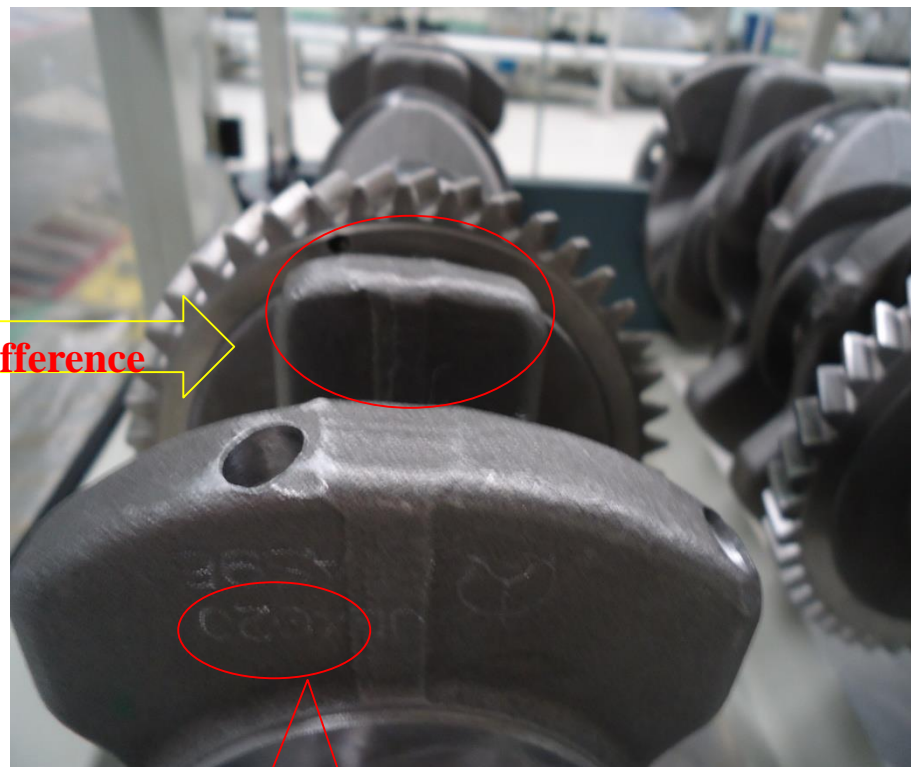
**Grouping Number of
Rod Journal**



**Rod Journal:47.982-
48.000**



Obvious Difference



Mark of Crankshaft Model

Mark of Crankshaft Model



**Corresponding
Mark of
Balance Shaft**

**Drive Gear of
Balance
Shaft**



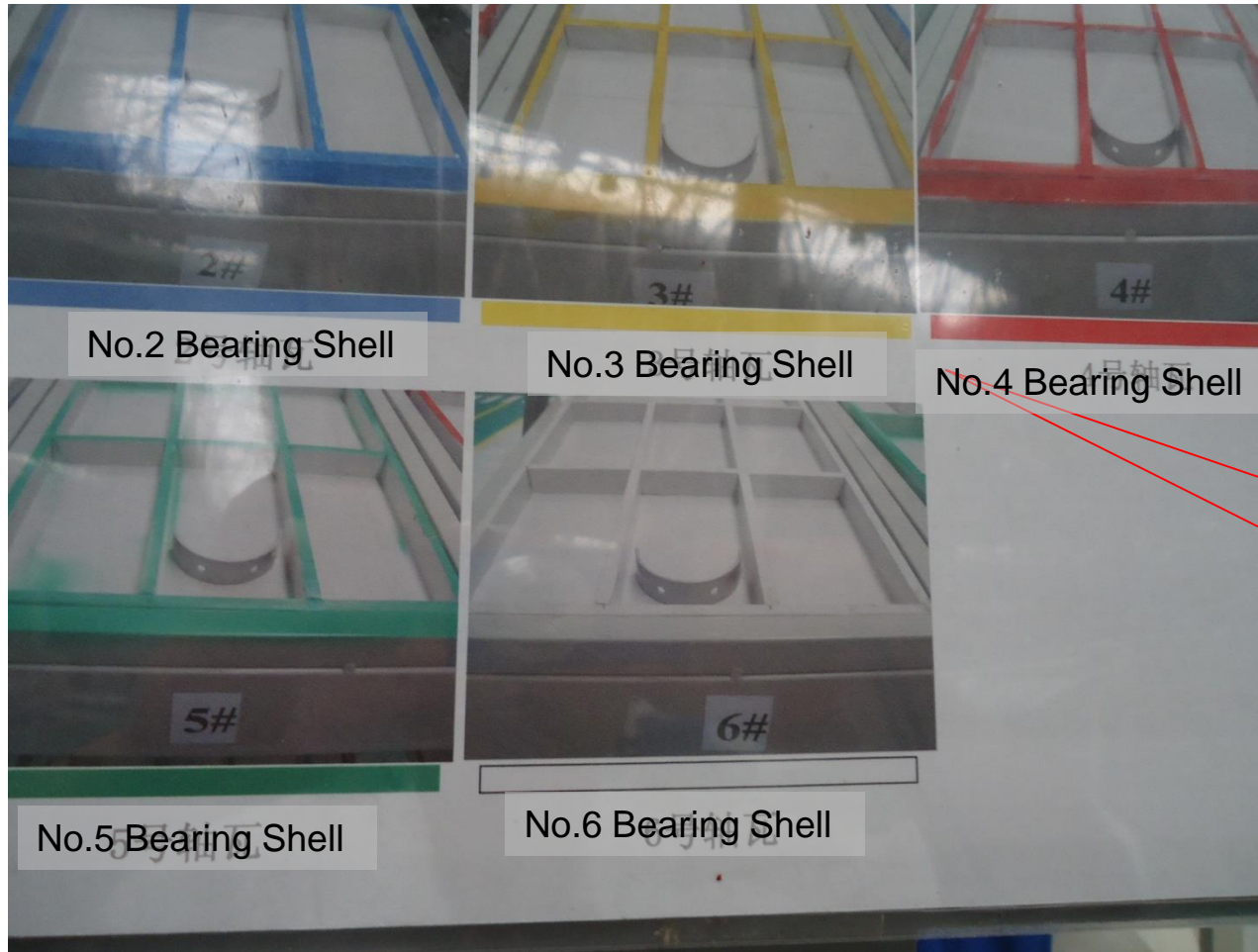
While assembling the installation mark corresponding to the balance shaft, the crankshaft shall be rotated to the first TDC position.

Not Installation Mark

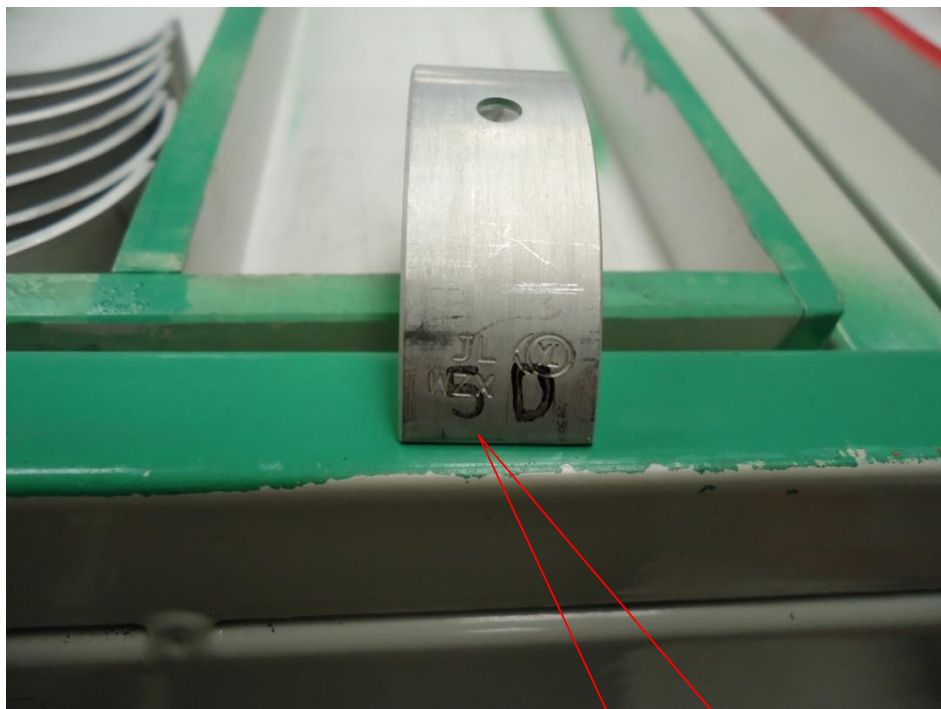
Key Notices

- 1. Identification and distinguishing of crankshaft for engine (4G20\24)
- 2. Identification of grouping number and corresponding sequence of crankshaft main journal and rod journal
- 3. The crankshaft main journal has a total of three group numbers as 1, 2 and 3;
- 4. The crankshaft rod journal has a total of three group numbers as 1, 2 and 3;
- 5. Pay attention to the position of timing point for the drive gear of balance shaft on the crankshaft.

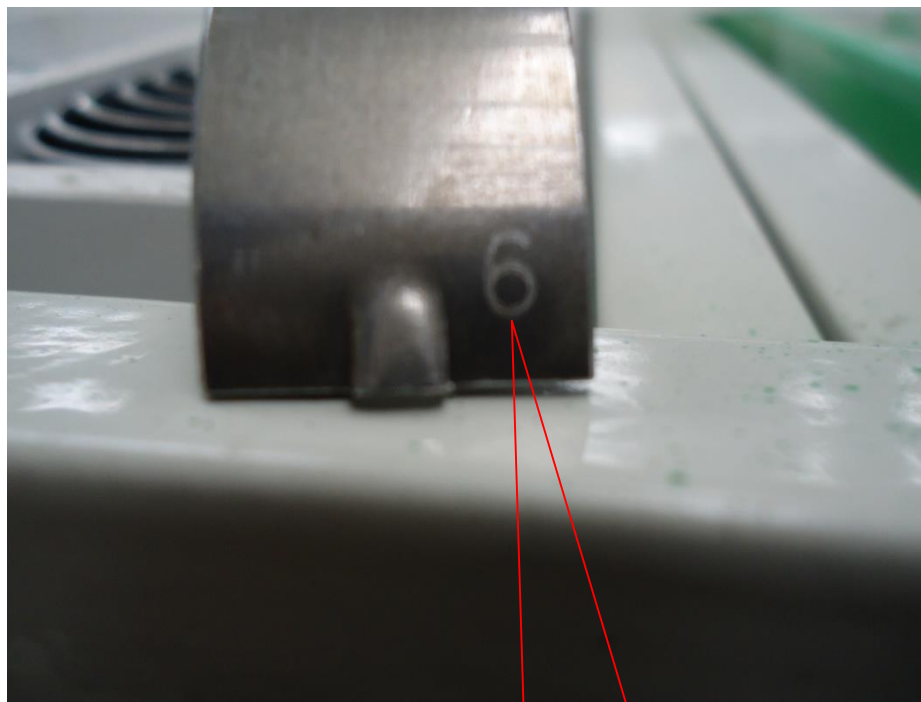
Main Bearing Shell, Thrust Plate



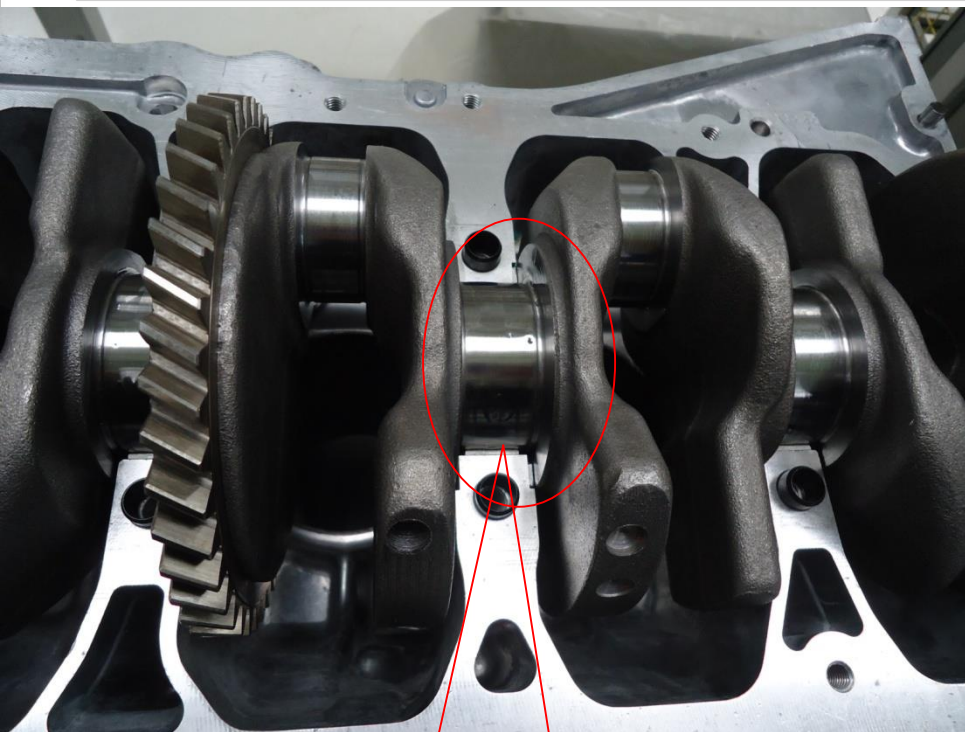
The main bearing shell has a total of 5 group numbers.



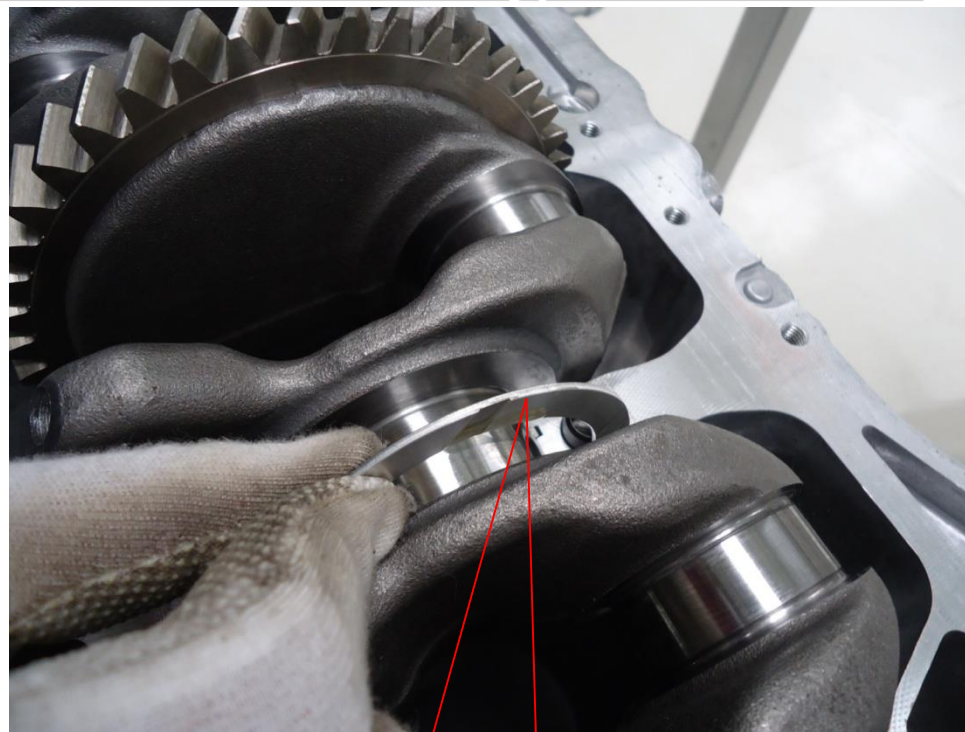
**Group Number of
Main Bearing Shell**



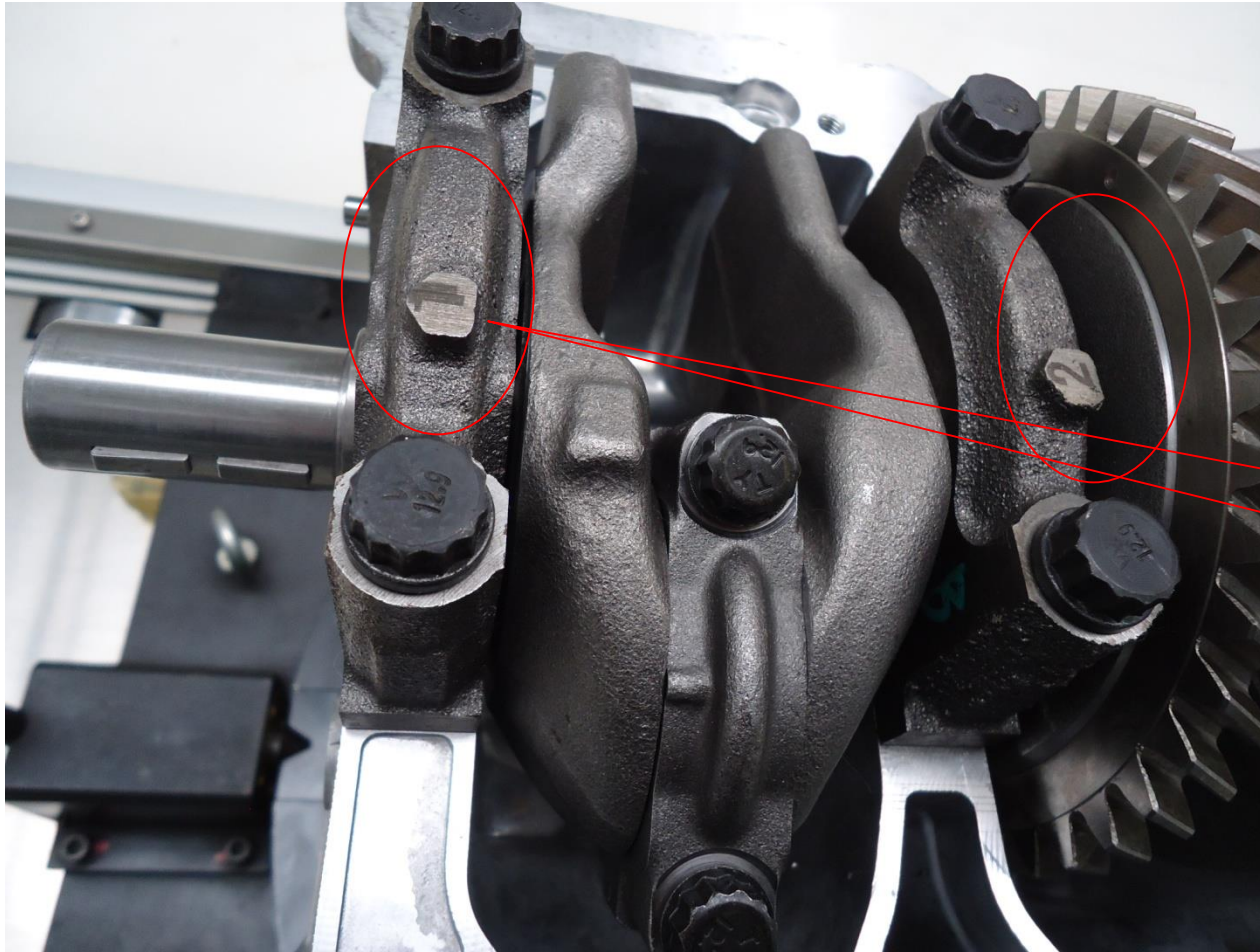
**Group Number of
Main Bearing Shell**



A total of 2 thrust plates are installed in the shaft hole on the 3rd channel.



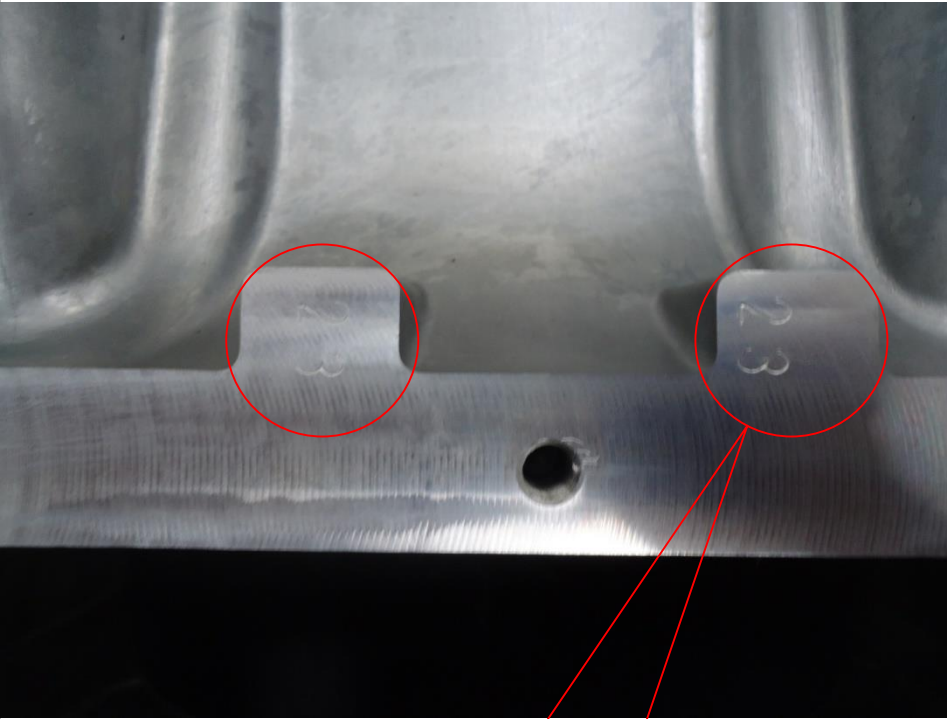
Pay attention to the installation direction of the thrust plates.



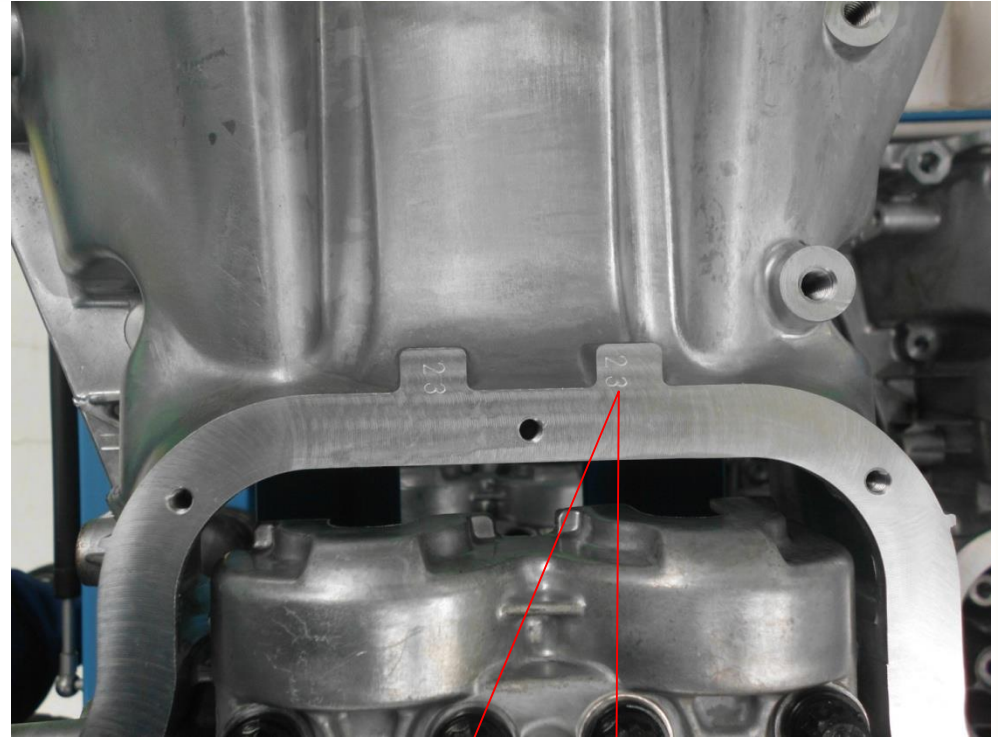
**Mark for
assembling the
big bush cover**

Key Points for Maintenance

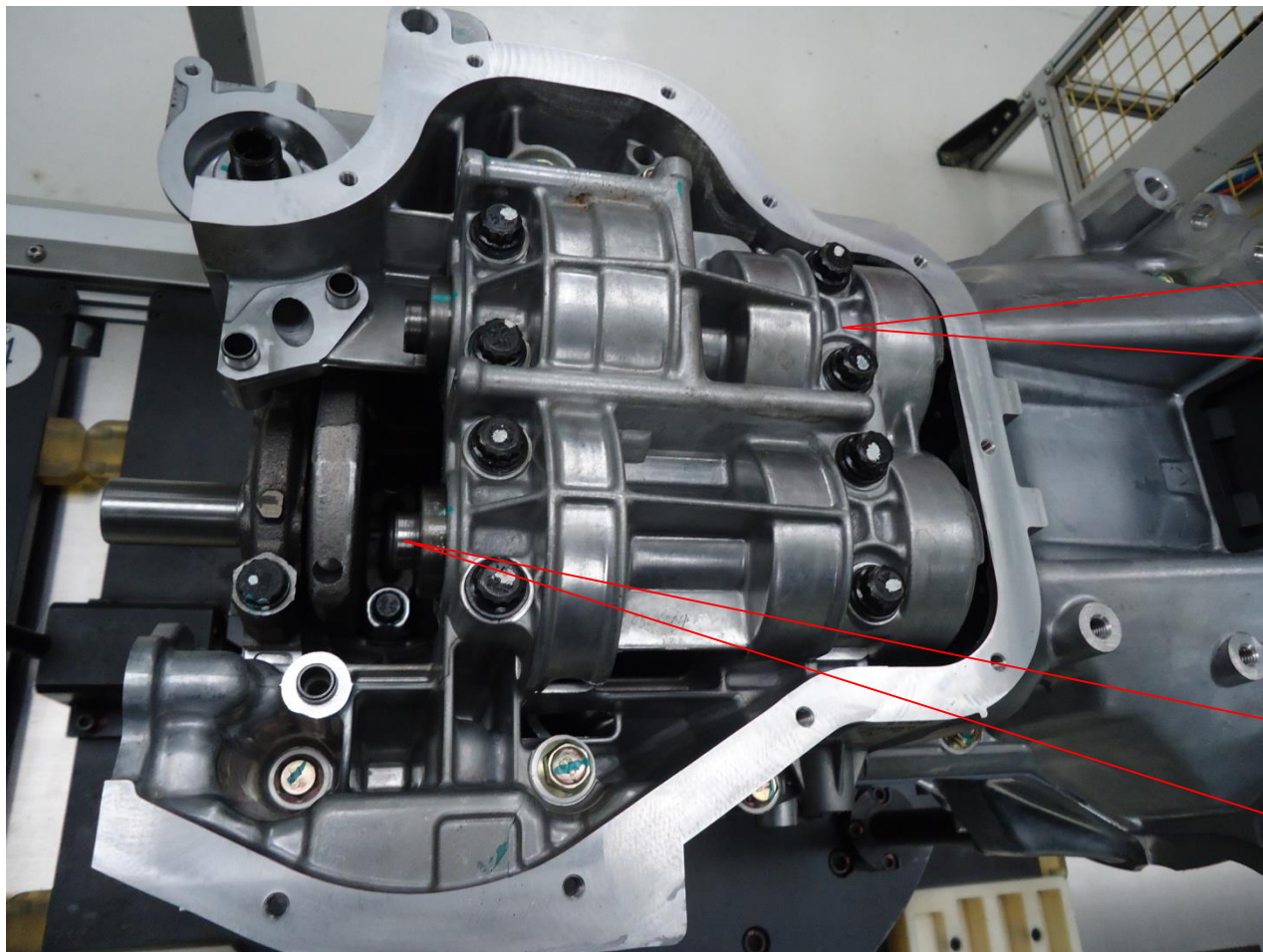
1. Determination of grouping number for big bush: grouping number of main journal of corresponding crankshaft + grouping number of main bearing hole journal of corresponding cylinder block = grouping number of big bush.
2. Direction of installation for each bush cover, and the cross tightening sequence for bolts by three times.
3. Tightening torque for bolts of bush cover: $60 \pm 2\text{N.M}$; others: $24 \pm 1\text{N.M}$
4. Oil clearance for main bearing shell: 0.016~0.034MM



**Group Number on
Balance Shaft Hole**

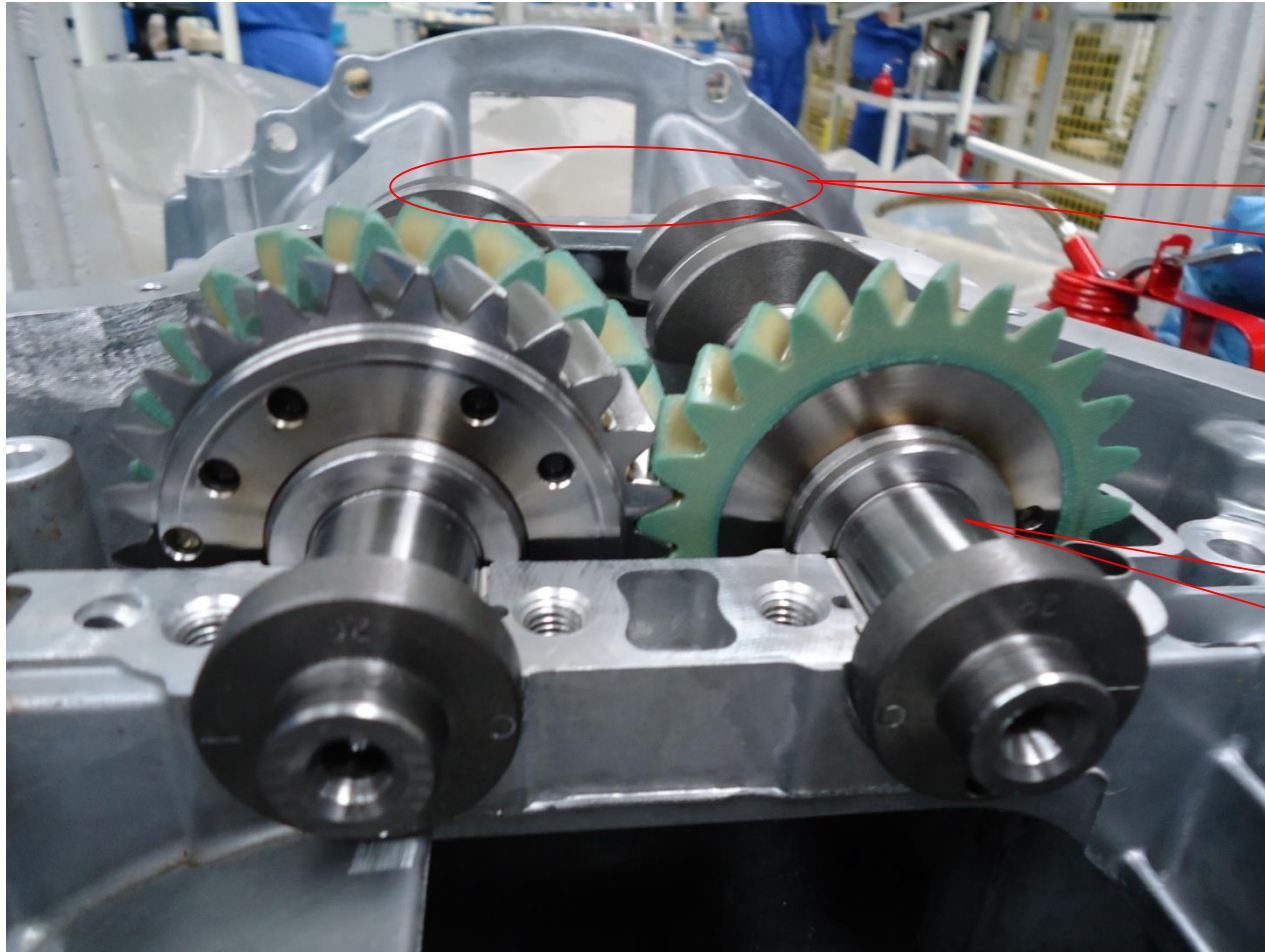


**Group Number on
Balance Shaft Hole**



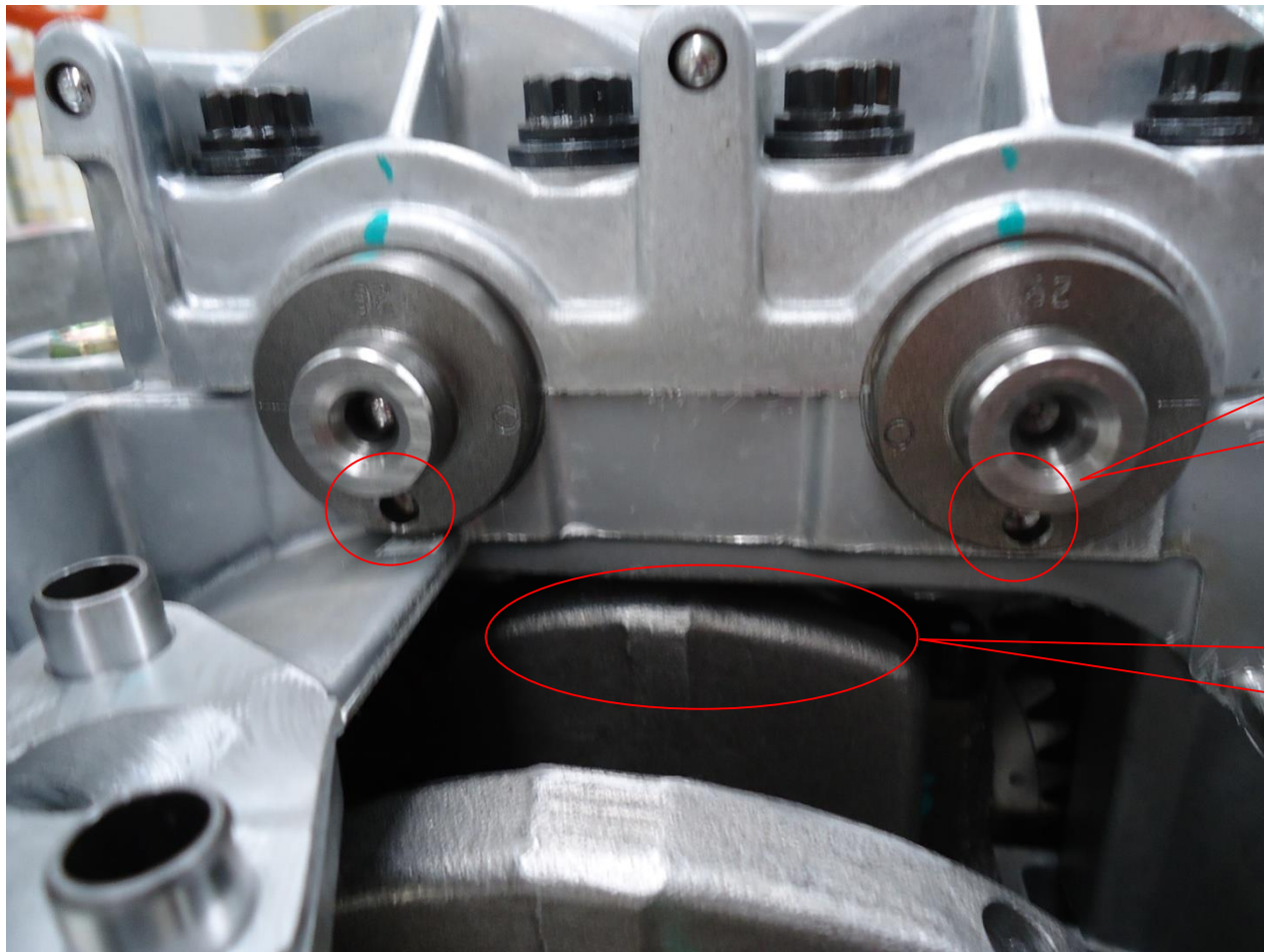
The bearing bush of the balance shaft has a total of 3 grouping numbers as 1, 2 and 3.

The grouping number of the balance shaft hole is equal to the number of the selected bearing bush.



**Position of
Turning
Wall in
Installation**

**Journal:
22.988-
23.000**



The timing points of both balance shafts are vertical to the upper plane of the cylinder block.

The crankshaft shall be in the TDC position of No.1 cylinder.

Key Points for Maintenance

1. The bearing bush of the balance shaft has 3 grouping numbers as 1, 2 and 3.
2. The grouping number of each balance shaft hole is equal to the number of the selected bearing bush.
3. Rotate the timing mark of the assembled balance shaft assembly to the correct installation position.
4. Make sure to install the two balance shafts of which the timing marks are in the correct positions only when the crankshaft is rotated to the TDC position of No.1 cylinder.
5. Tightening torque for bolts of bush cover: $38 \pm 3\text{N.M.}$

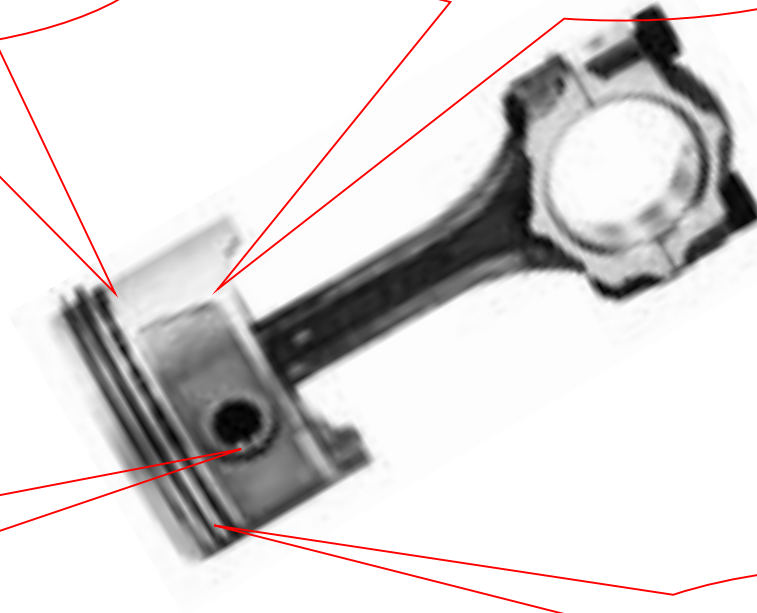
Piston Rod Assembly

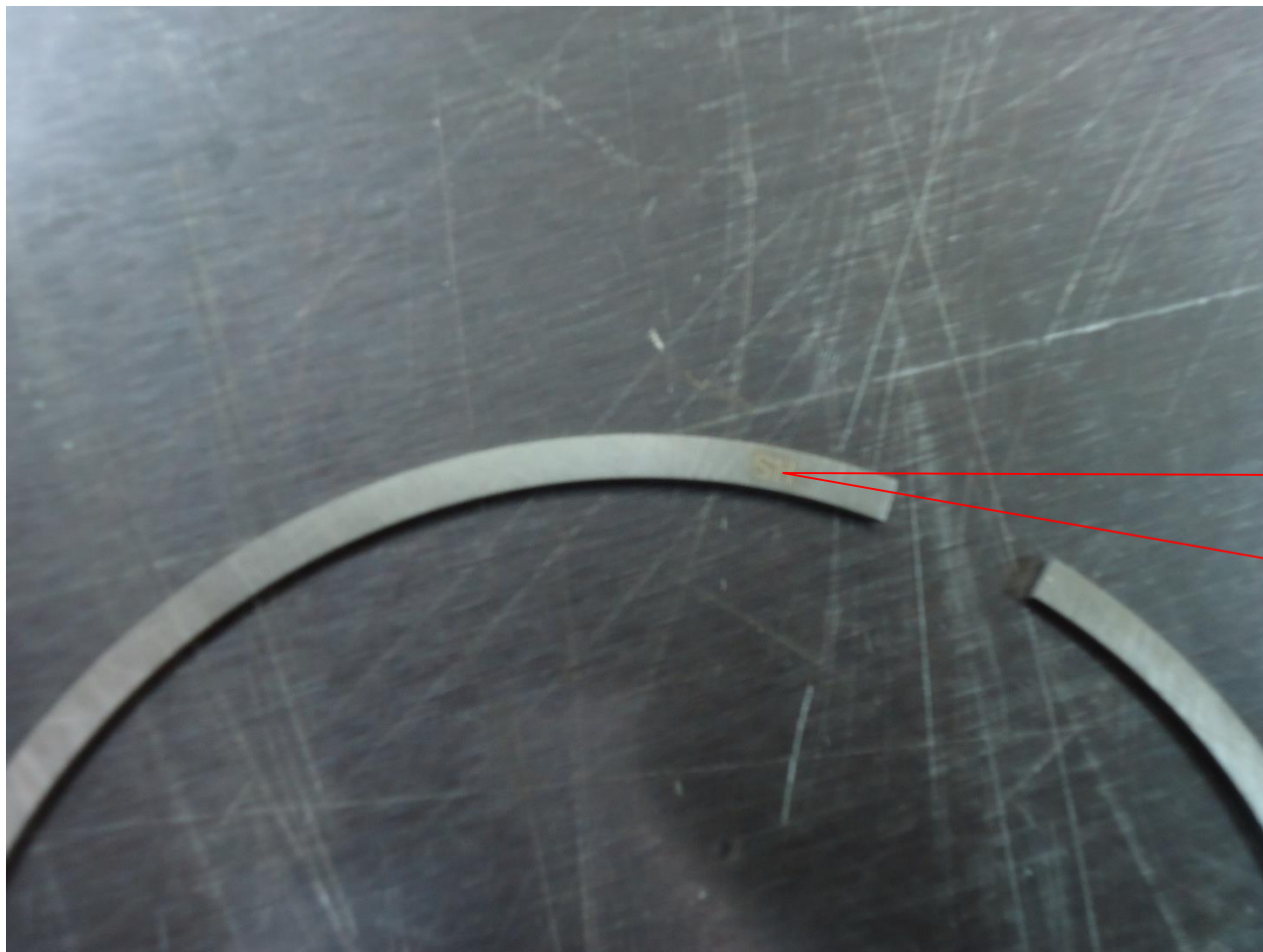
4G20: 84、 965 ± 0.0075

4G24: 88、 665 ± 0.0075

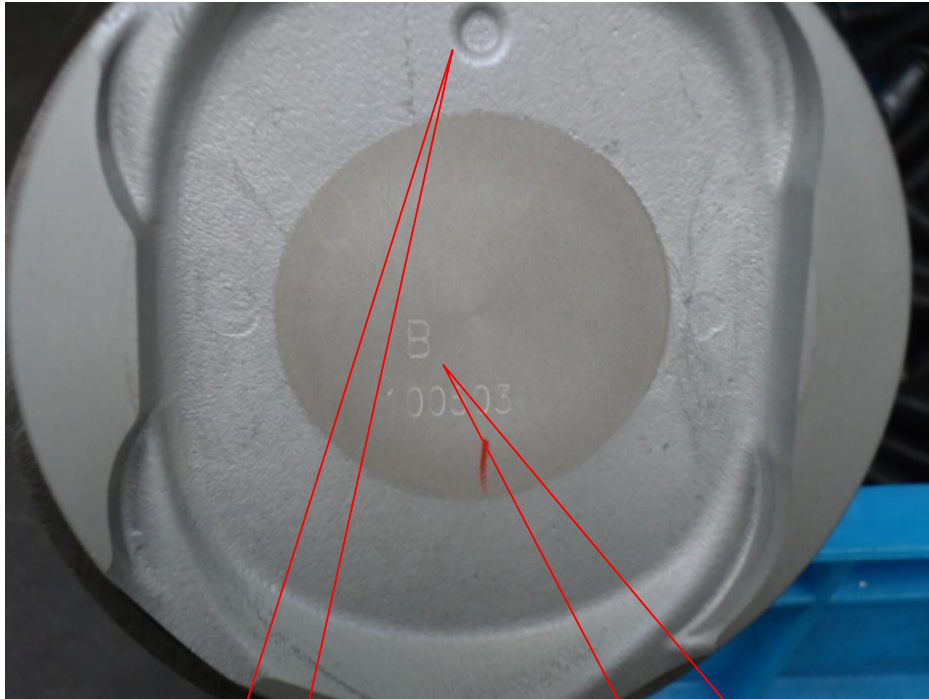
Grouping numbers of
piston pin as A
and B

Two gas rings and one oil
ring



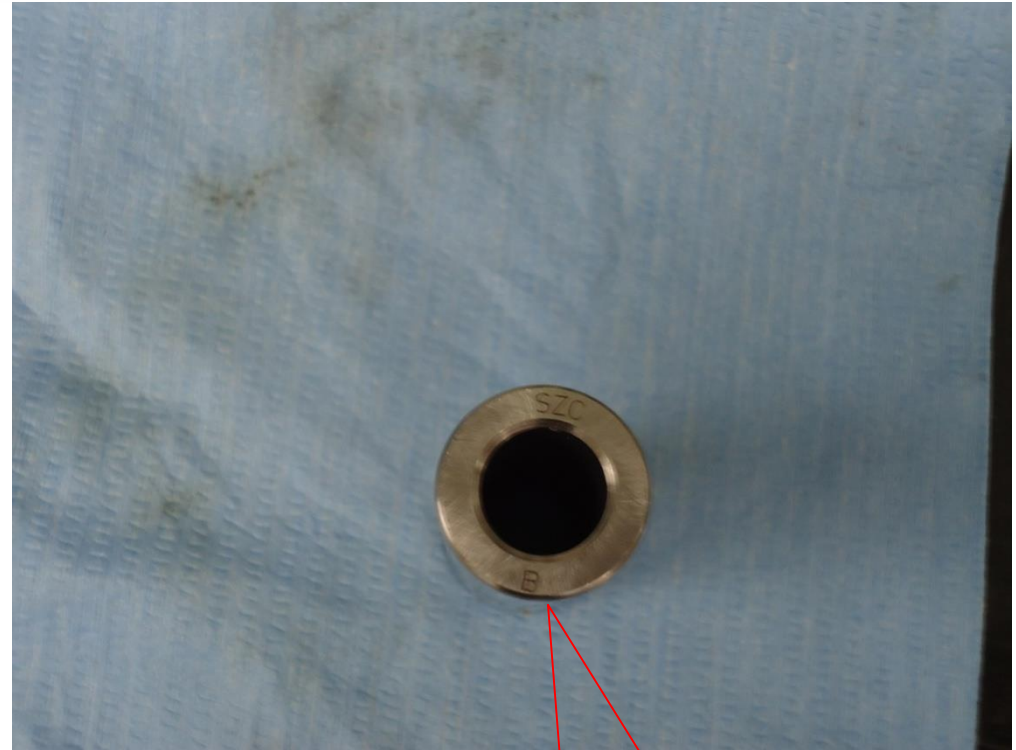


The piston ring shall be assembled with lettered surface facing upwards.



**Mark for
Frontward
Installation of
Piston**

**The piston pin hole has two
groups of grouping
numbers as A and B.**



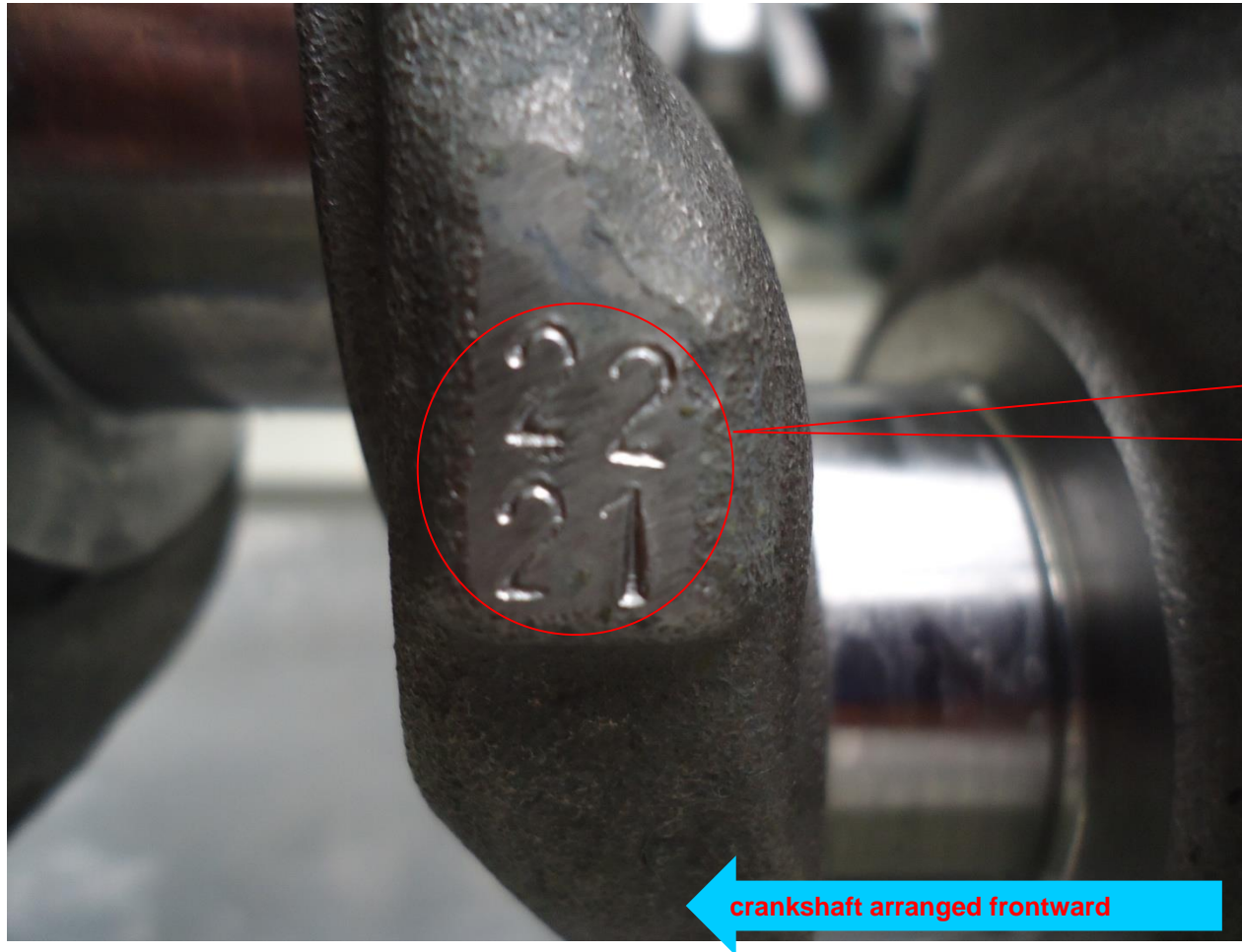
**The piston pin has two
groups of grouping
numbers as A and B.**



The big end of the connecting rod has a total of 3 groups of grouping numbers as 1, 2 and 3.

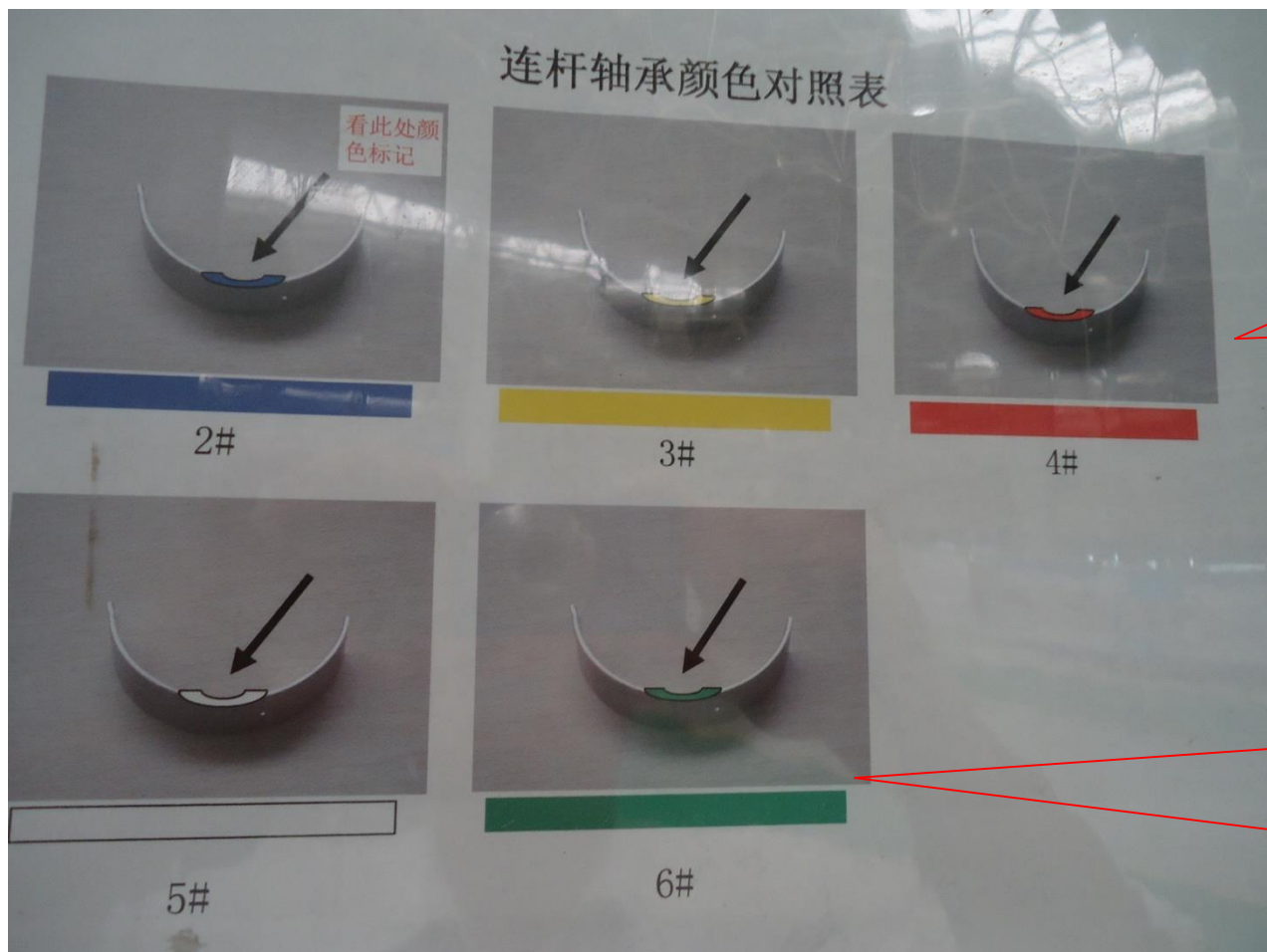
The small end of the connecting rod has a total of 2 groups of grouping numbers as A and B.

Piston Rod Assembly



**Grouping
Number of
Crankshaft
Rod Journal**

crankshaft arranged frontward



The grouping number of connecting rod bearing shall be marked by color.

Grouping number of big end of connecting rod + grouping number of crankshaft connecting rod journal = grouping number of connecting rod bearing.

Key Notices

1. Grouping number of piston pin hole = Grouping number at small end of connecting rod = Grouping number of piston pin.
2. Grouping number at big end of connecting rod + grouping number on connecting rod neck of crankshaft = grouping number on connecting rod bearing.
3. The lettered surface of the piston ring shall be installed upwards; staggered angle of ring openings.
4. Opening clearance of piston ring (4G20: 0.20 ~ 0.30mm for the first; 0.45~0.65mm for the second ring opening; 0.20~0.70mm for the oil ring) (4G24: 0.20~0.40mm for the first; 0.30~0.50mm for the second ring opening; 0.20~0.40mm for the oil ring)
5. Bolt torque for connecting rod: 50-55 N.M



**Water Divide
Jacket, Water
Divide Table**



GEELY
JL 8-4G24
431002
110114

**Mark of
Cylinder
Head Gasket**

Key Points for Maintenance

1. The gaskets of 4G20\4G24 can't be used universally.
2. The lettered surface of the gasket shall be assembled upwards.
3. Whether each sealing surface of the gasket has any defect or not.
4. The water divide jacket can't be installed reversely, and the water retaining slope surface shall face the front end of the engine.
5. The water retaining slope surface of the water divide jacket shall not have any damage or defect.
6. Tightening torque for bolts of cylinder head: 87~93N.M

Cylinder Head Assembly

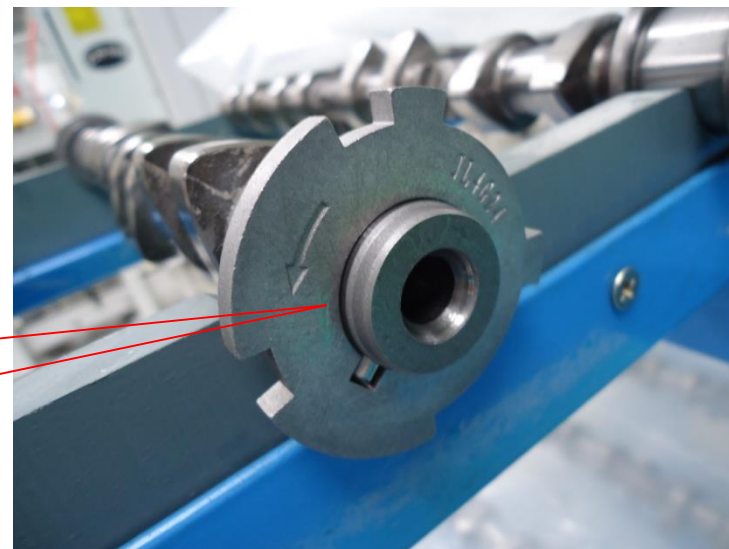


**Intake and
exhaust
camshafts in
the TDC
position of
No.1 cylinder**

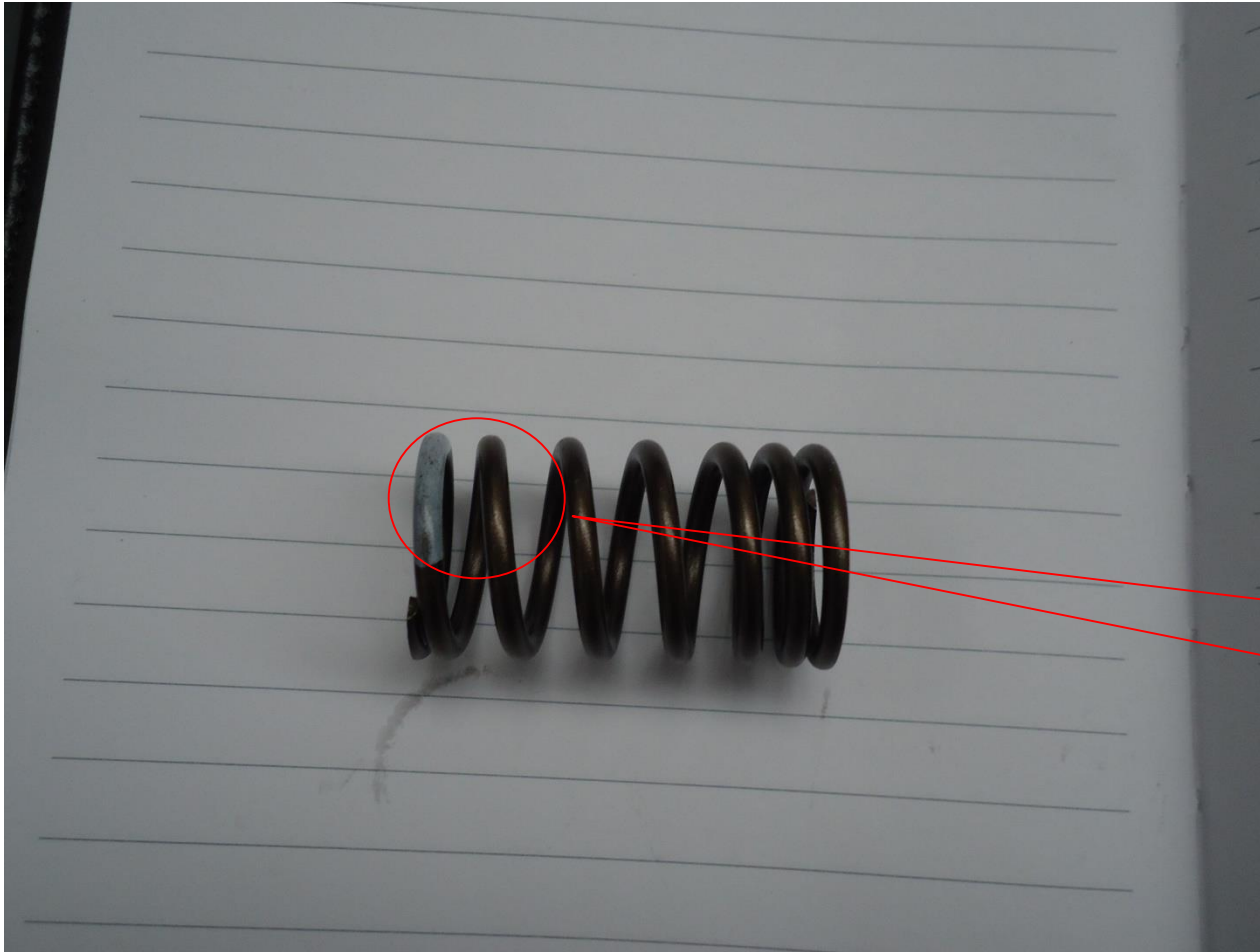


Sequence numbers and direction mark for bearing bush cover of intake and exhaust cams

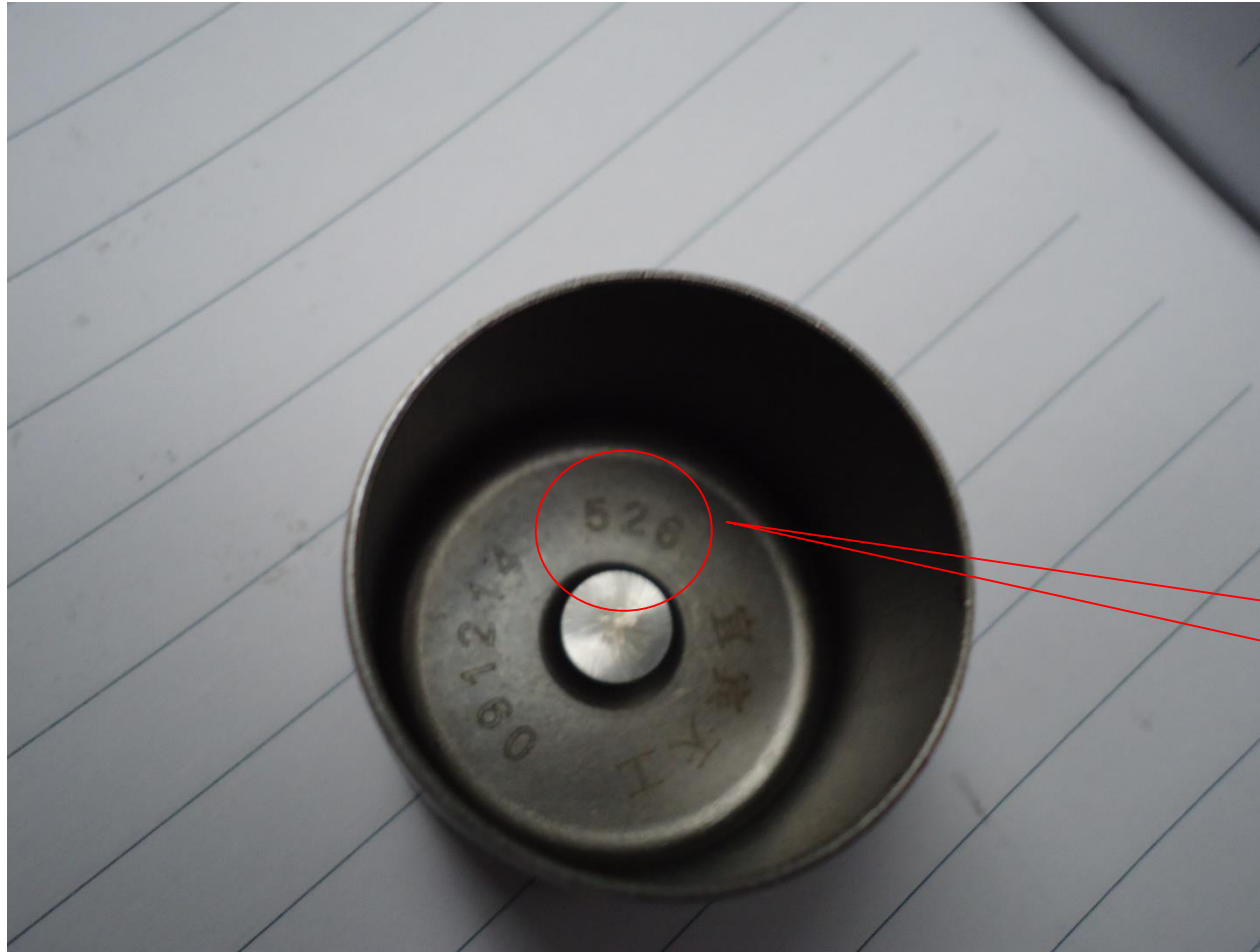
Interference fit between signal panel and camshaft



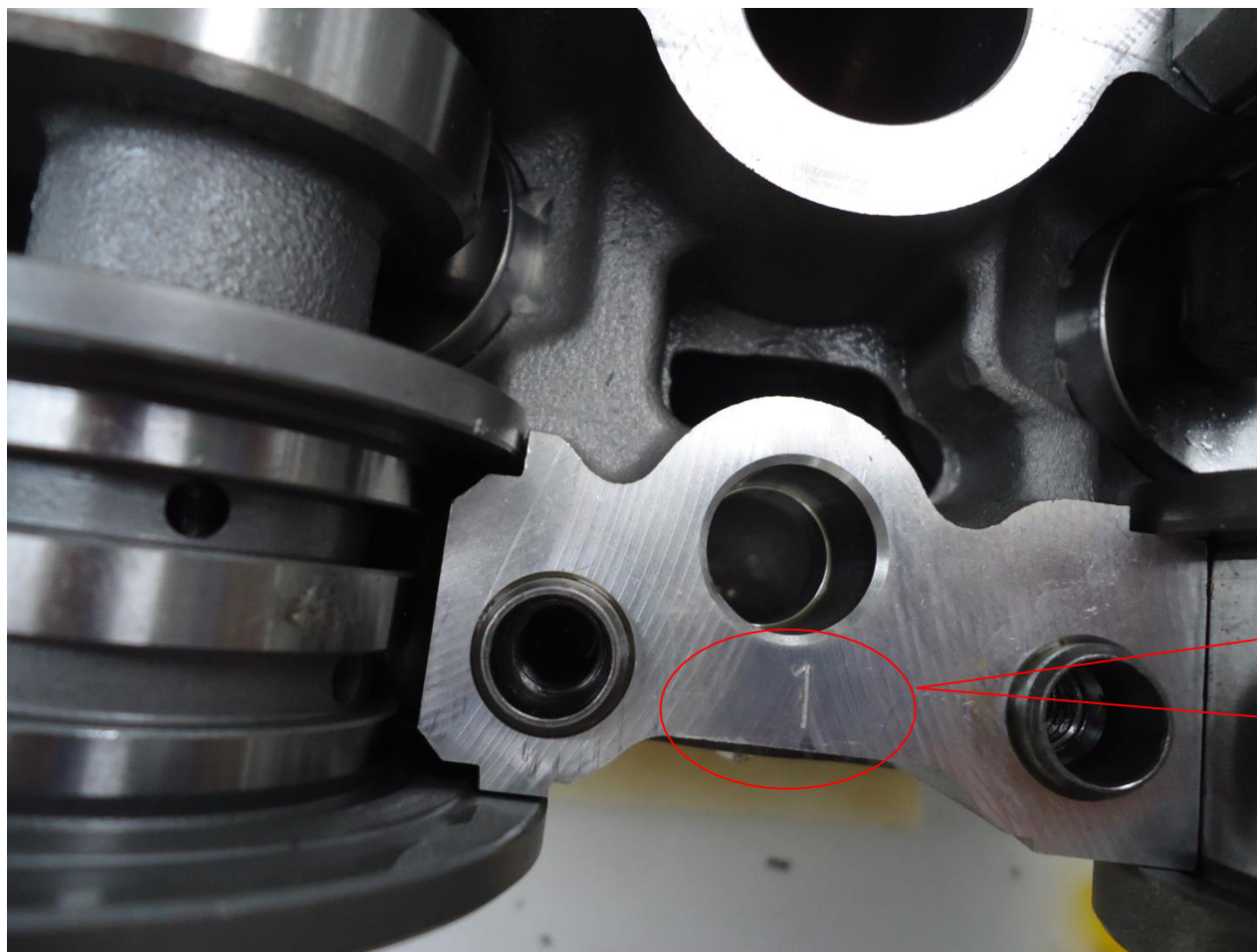




**The colored end of
the torque spring
shall face
upwards.**



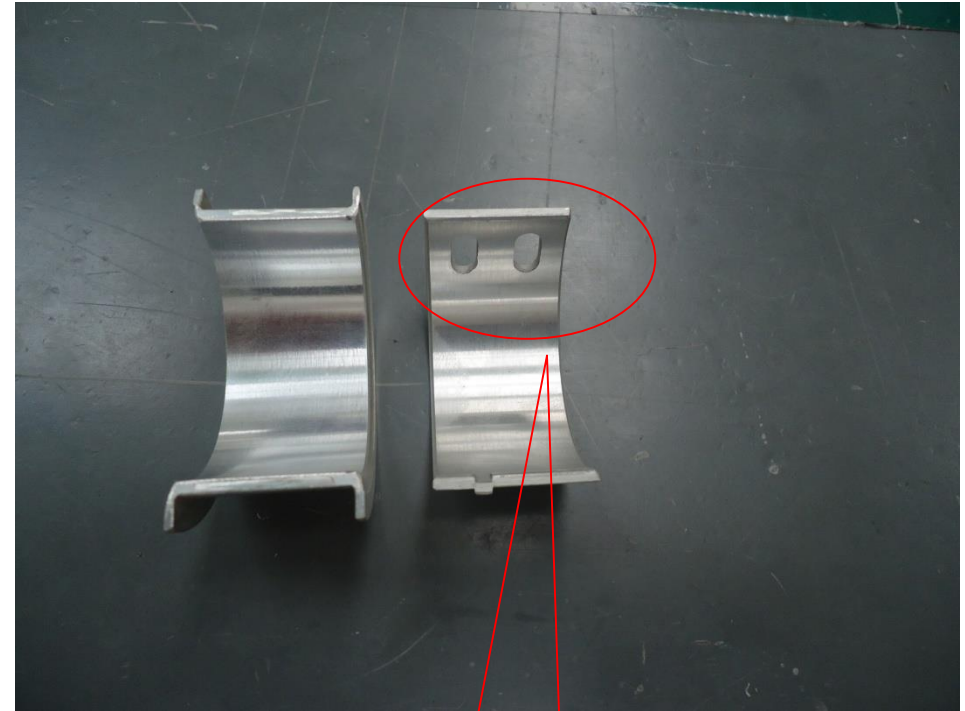
**Integral
Mechanical
Lift**



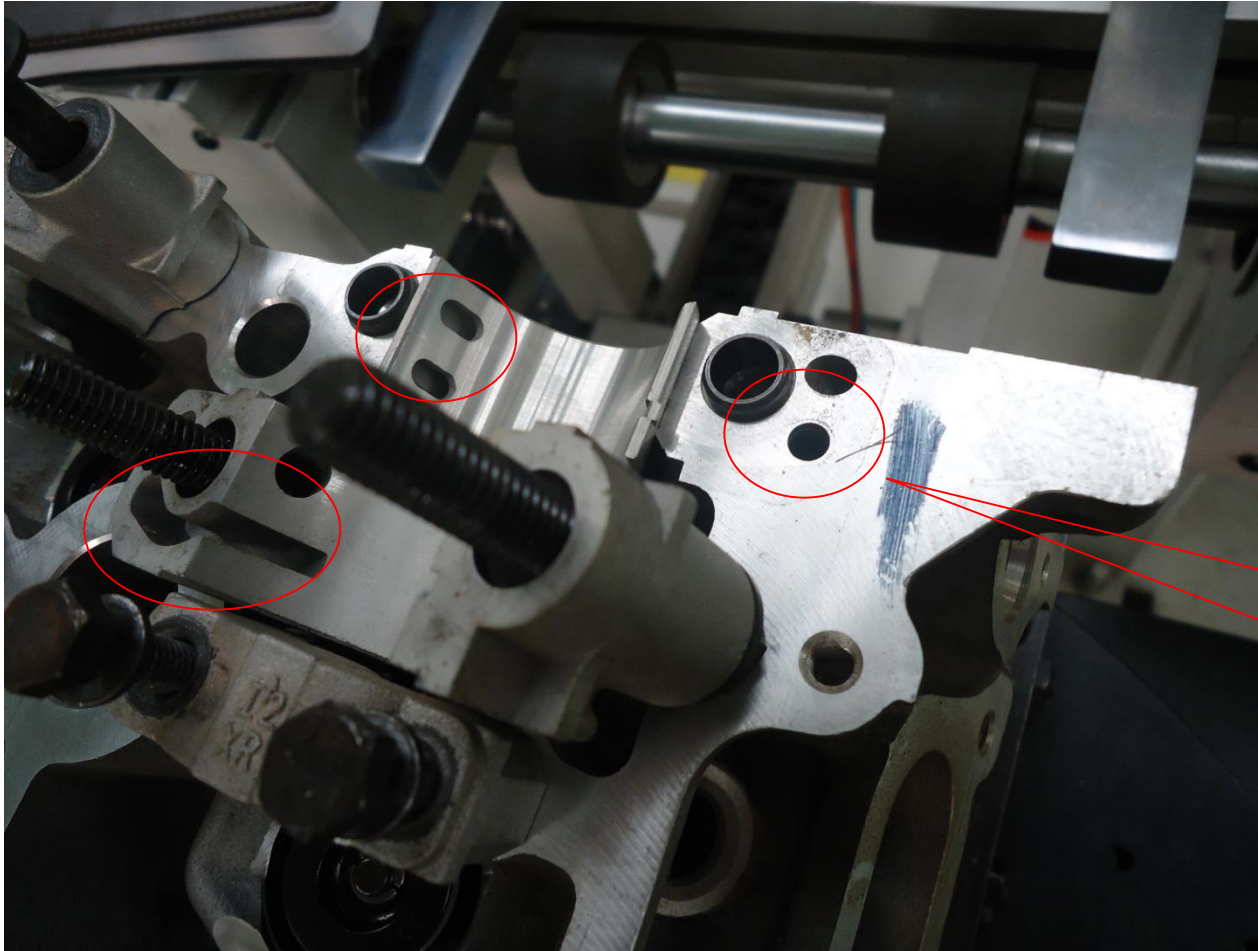
The grouping number for the first shaft hole of intake camshaft is classified as 1, 2 and 3.



The grouping number for the first bearing bush of intake camshaft is classified as 1, 2 and 3.



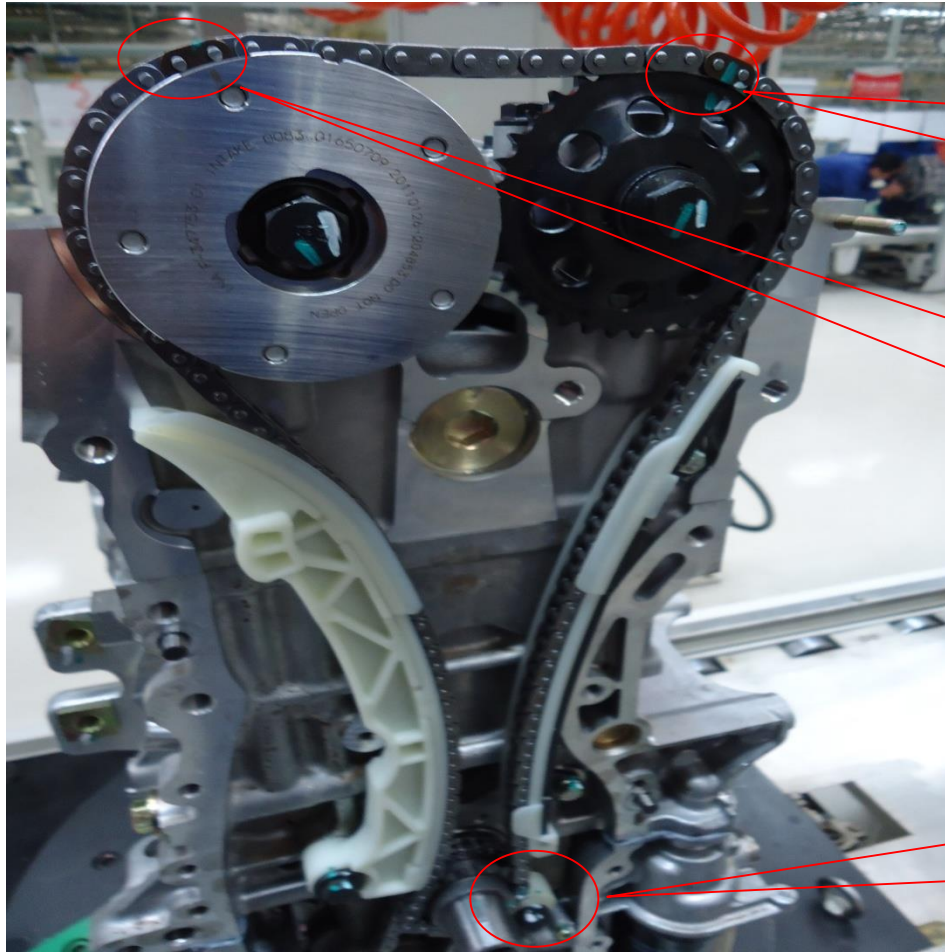
Oil Supply Hole on the First Bearing Bush of Intake Camshaft



**First VVT
Controlled Oil
Channel of Intake
Camshaft**

Key Points for Maintenance

1. The intake and exhaust valve oil seals are different.
2. Tightening torque of camshaft bearing cap: $13 \pm 1\text{N.m}$
3. The bush cover on the intake side is marked as 'I', and that on the exhaust side is marked as 'E'.
4. Grouping number on the first shaft hole of intake camshaft = Number of bearing bush
5. Installation direction for torque valve spring
6. Integral adjustable mechanical valve lift
7. Intake valve clearance: $0.25 \pm 3\text{mm}$; exhaust valve clearance: $0.30 \pm 3\text{mm}$



**Timing mark on exhaust
camshaft gear
corresponding to mark on
chain**

**Timing mark on VVT drive
corresponding to mark on
chain**

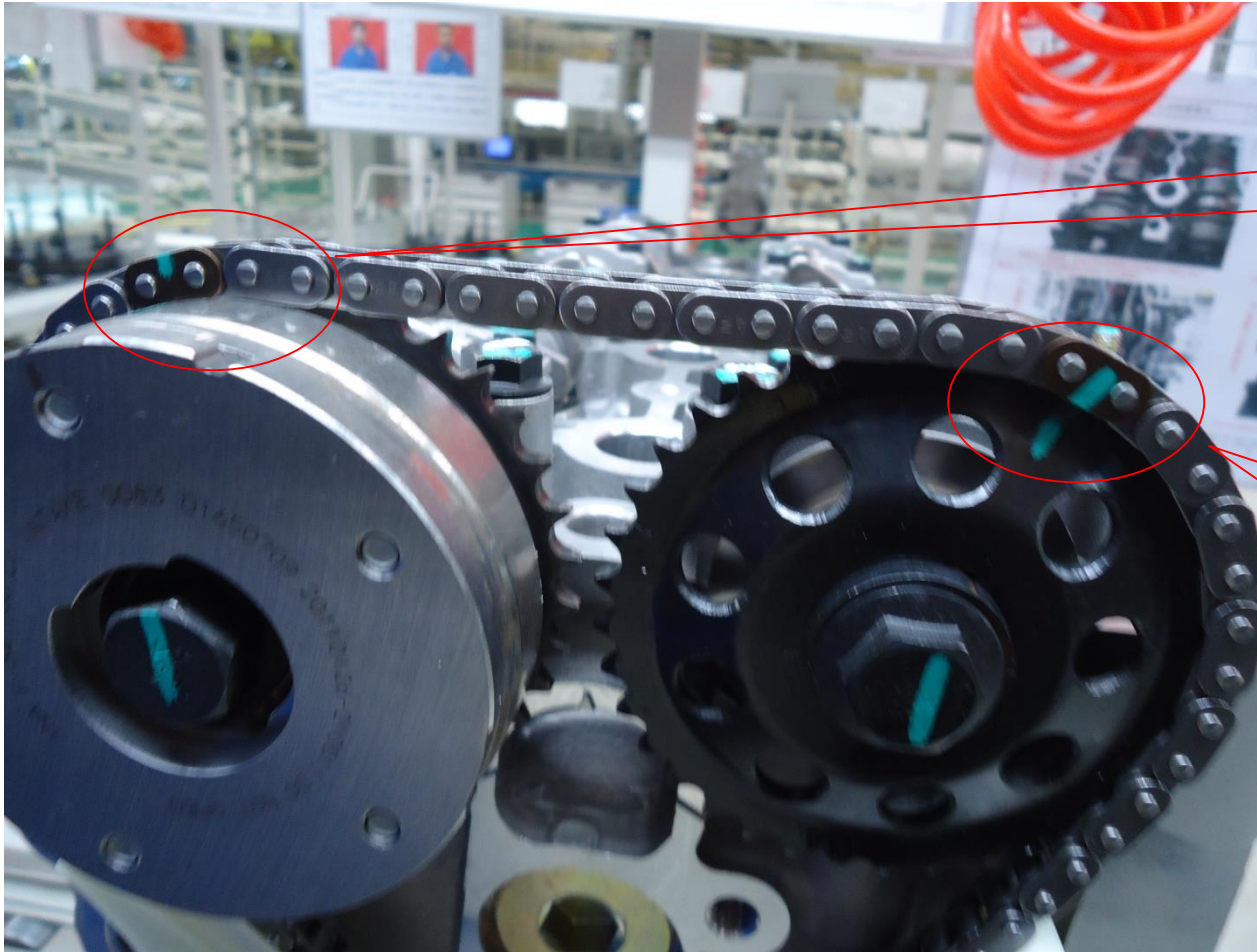
**Timing mark on exhaust crankshaft
gear corresponding to mark on
chain**



**Timing mark
on VVT drive**



**Timing mark
on exhaust
camshaft gear**



**Timing mark on VVT
drive corresponding to
mark on chain**

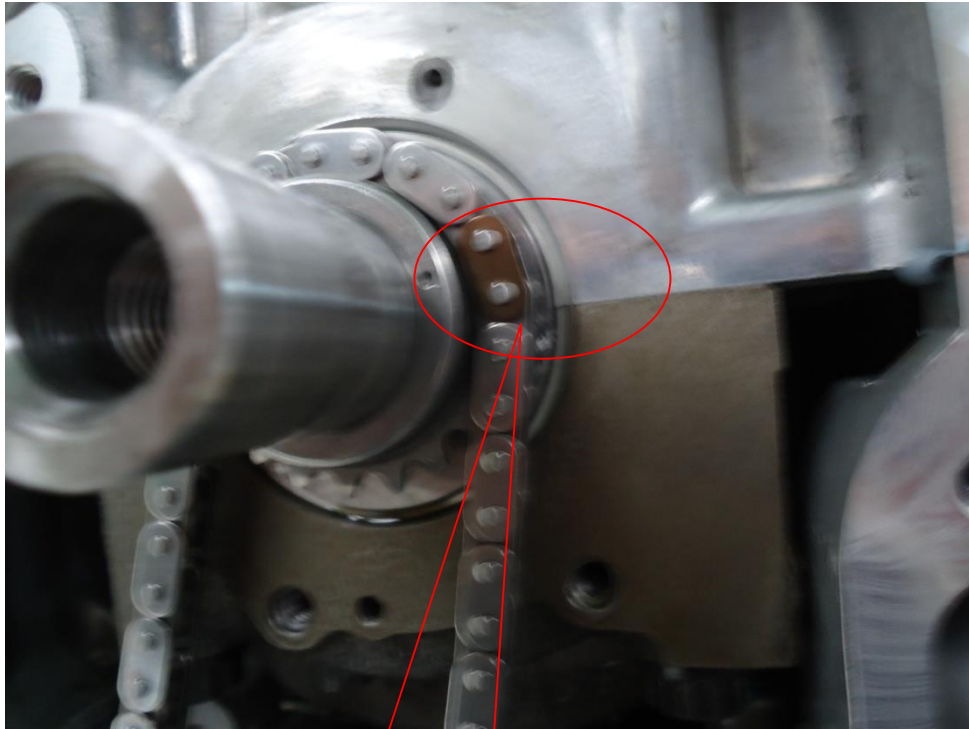
**Timing mark on
exhaust camshaft gear
corresponding to mark
on chain**

Tip: Prior to installing the chain and checking the timing, both the intake and exhaust camshafts and crankshafts shall be rotated to the compressed TDC state of No.1 cylinder.

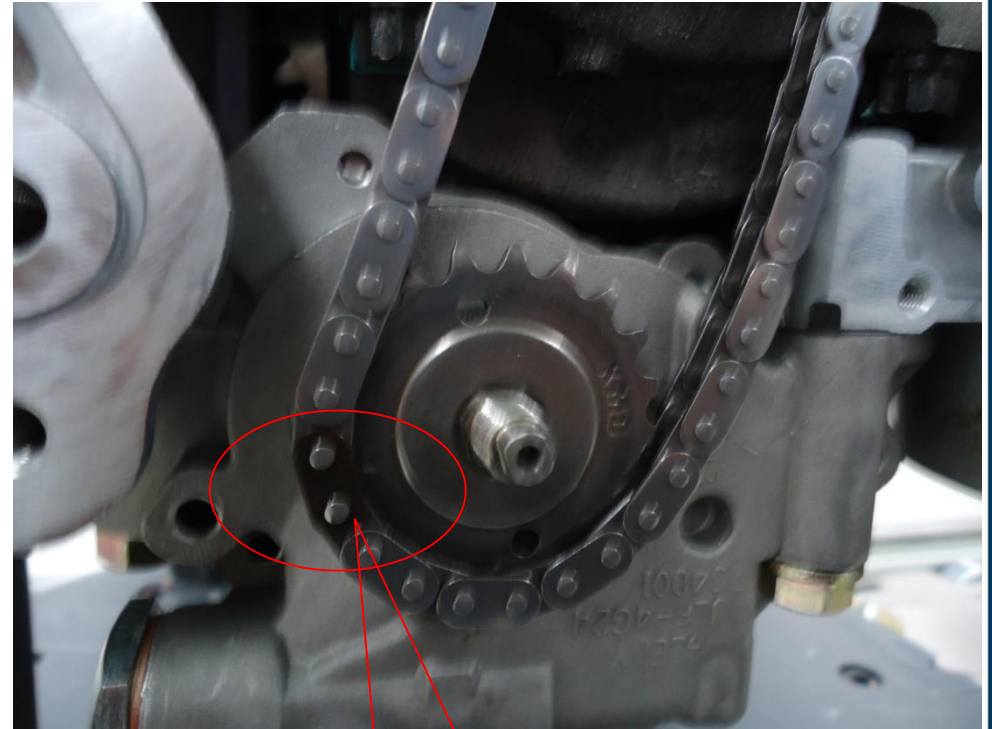


**Timing mark on
crankshaft gear
corresponding to mark
on chain**

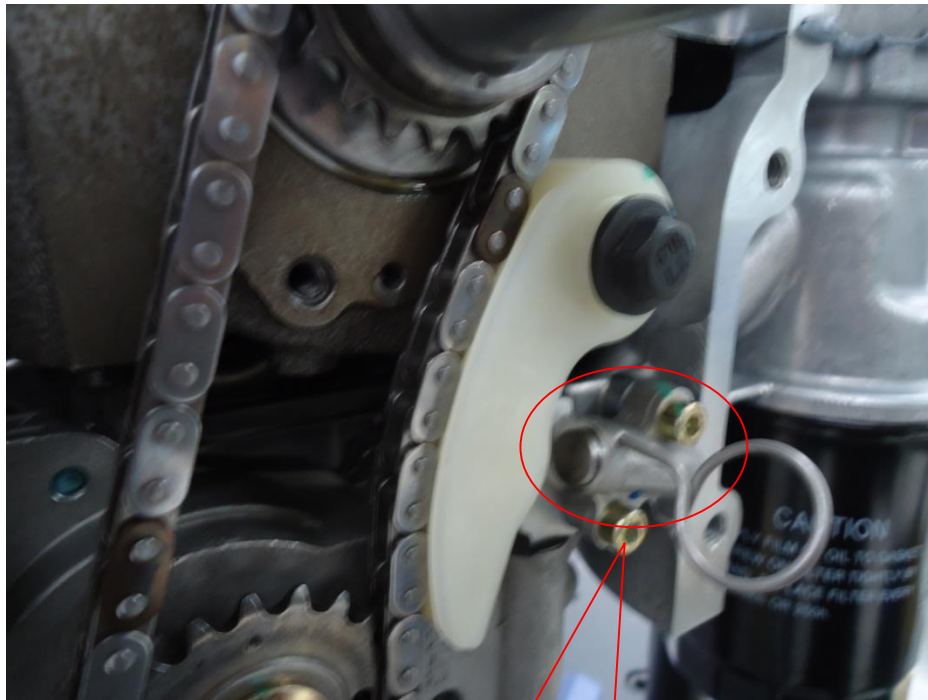
Tip: Prior to installing the chain and checking the timing, both the intake and exhaust camshafts and crankshafts shall be rotated to the compressed TDC state of No.1 cylinder.



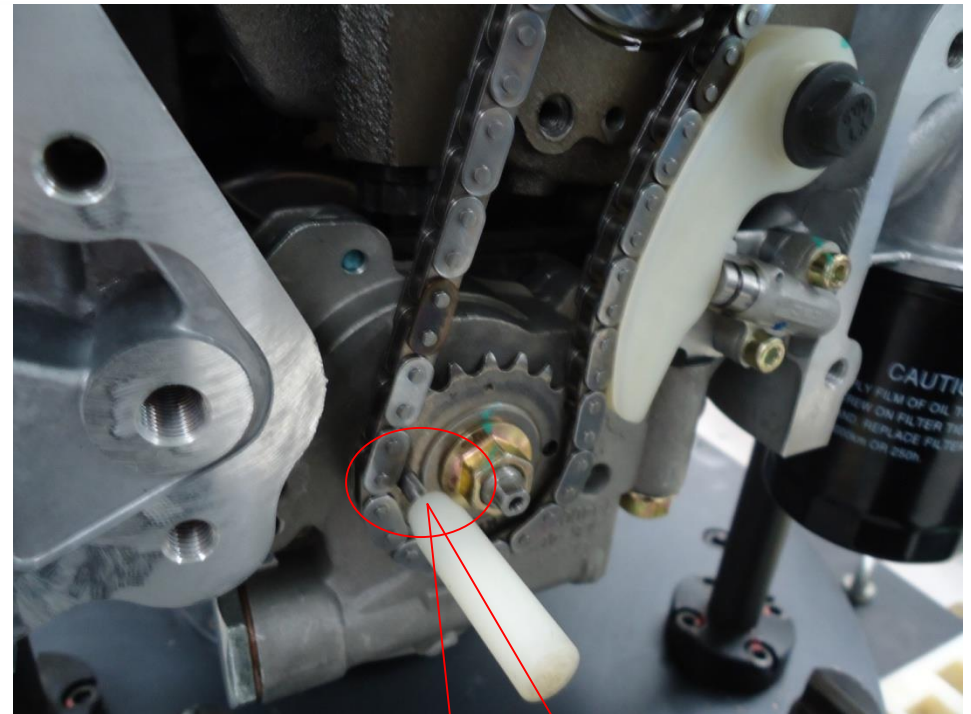
**Mark on chain and
mark on crankshaft
drive gear**



**Mark on chain and
mark on oil pump gear**



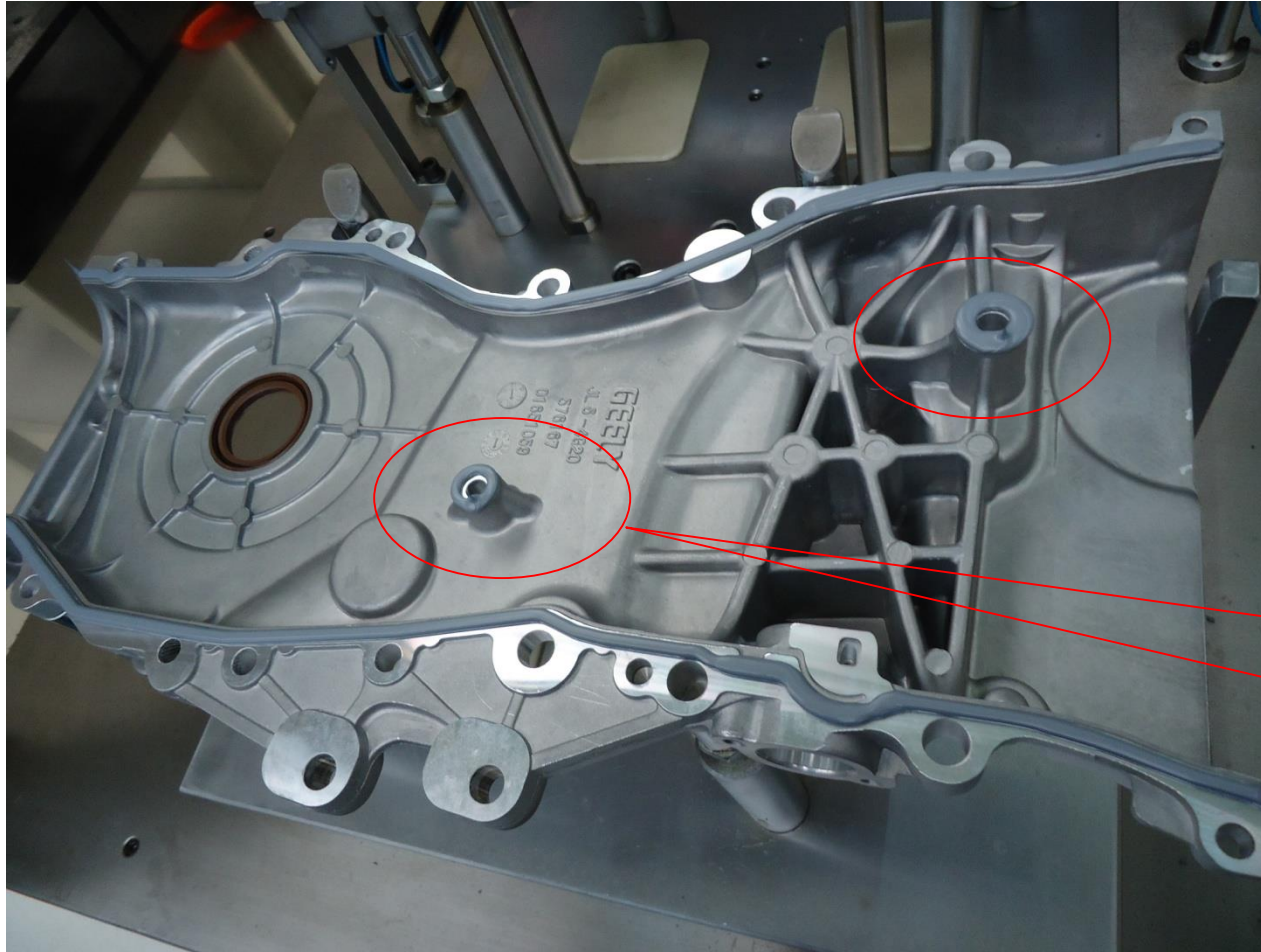
**Assembly for locking
and fastening
tensioner**



**Assembly for locking
and fastening oil
pump gear**

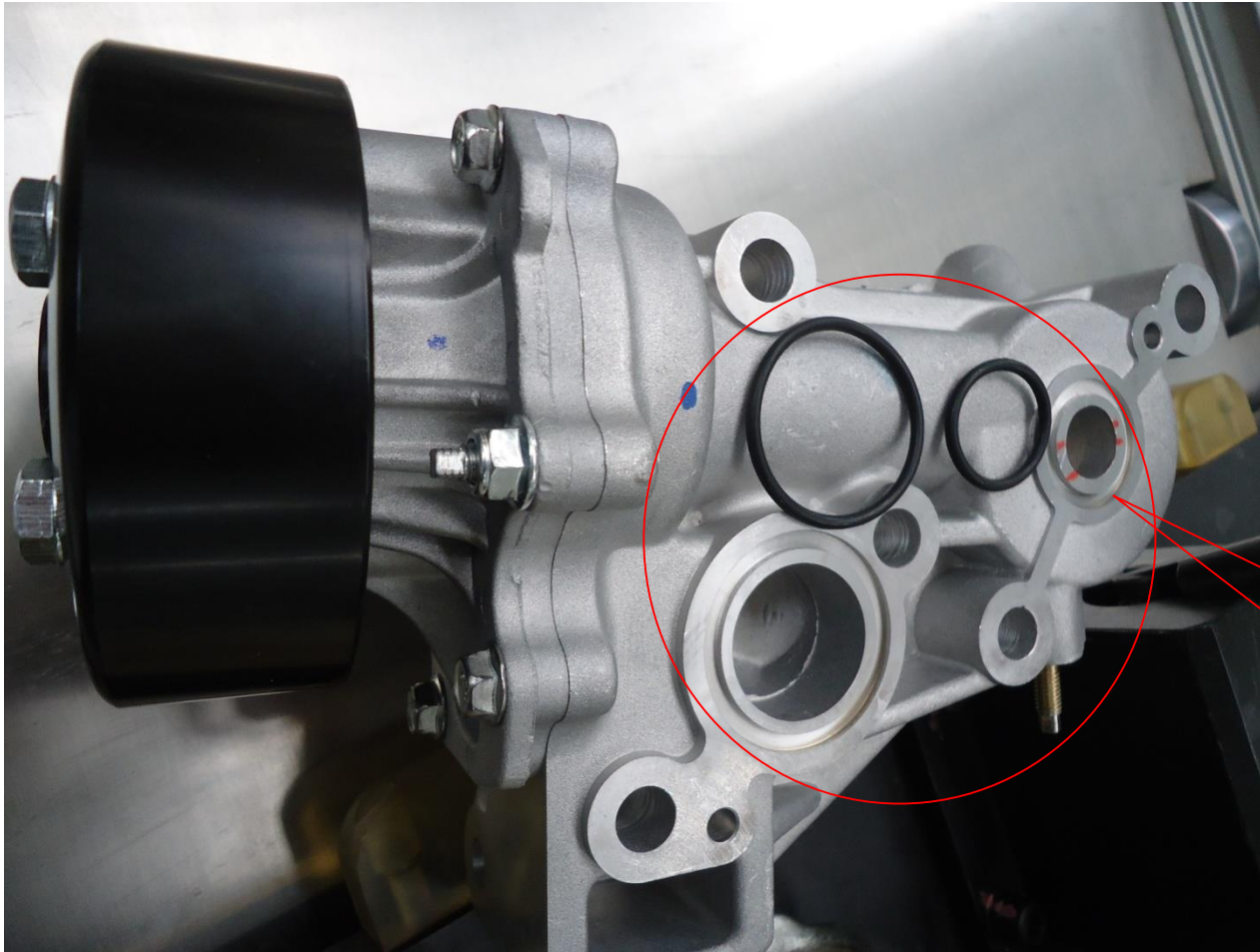
Key Points for Maintenance

1. Confirm if the intake and exhaust camshafts and crankshafts of the engine are in the compressed TDC state of No.1 cylinder.
2. Confirm if the black chain on the chain is aligned with the mark on the VVT drive.
3. Confirm if the black chain on the chain is aligned with the mark on the exhaust camshaft gear.
4. Confirm if the black chain on the chain is aligned with the mark on the timing gear of crankshaft.
5. Tightening torque for bolts on VVT drive: $60 \pm 3\text{N.m}$, tightening torque for bolts on exhaust camshaft: $50 \pm 3\text{N.m}$

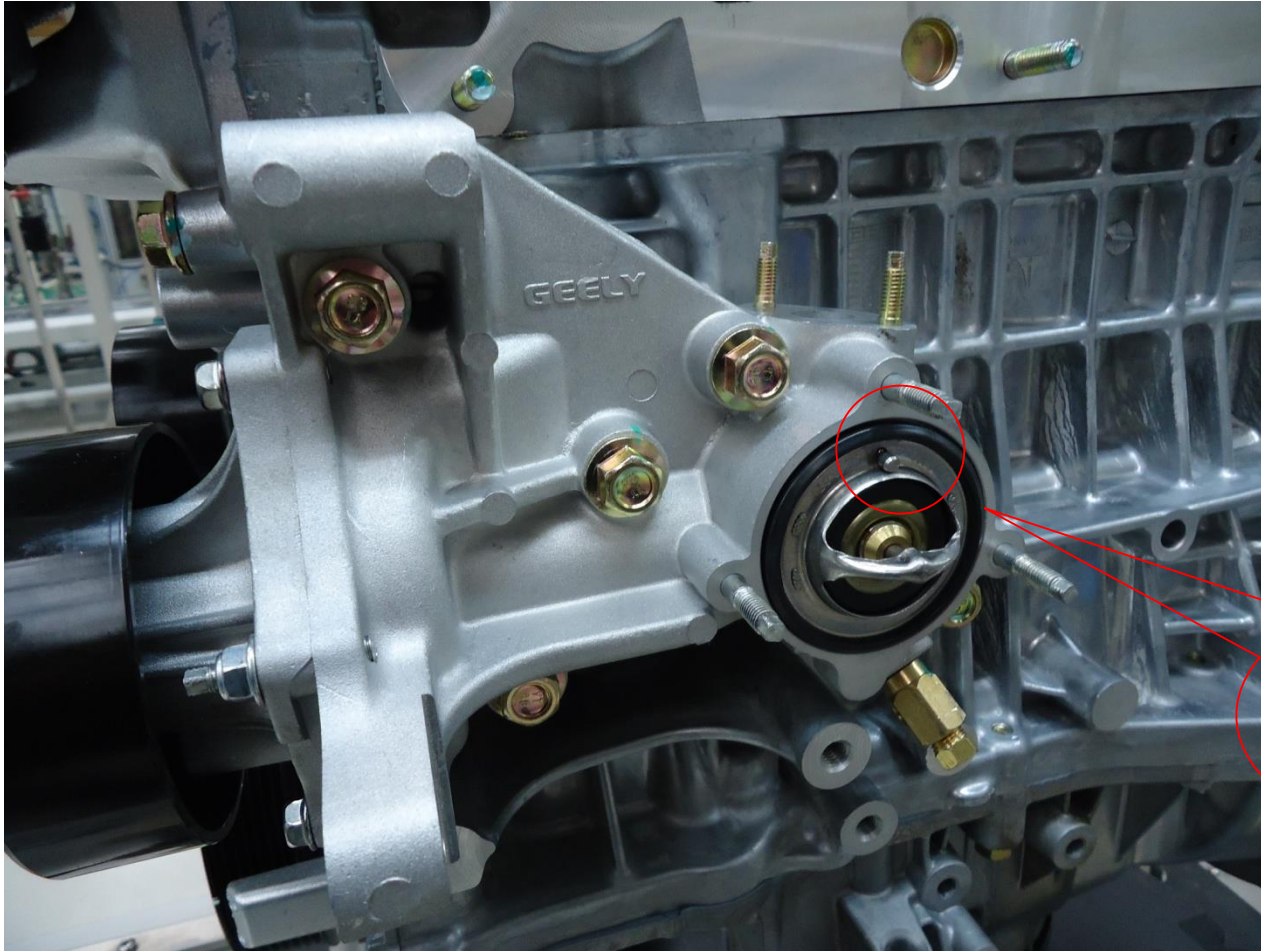


The application of sealant can't be missed for the hole.

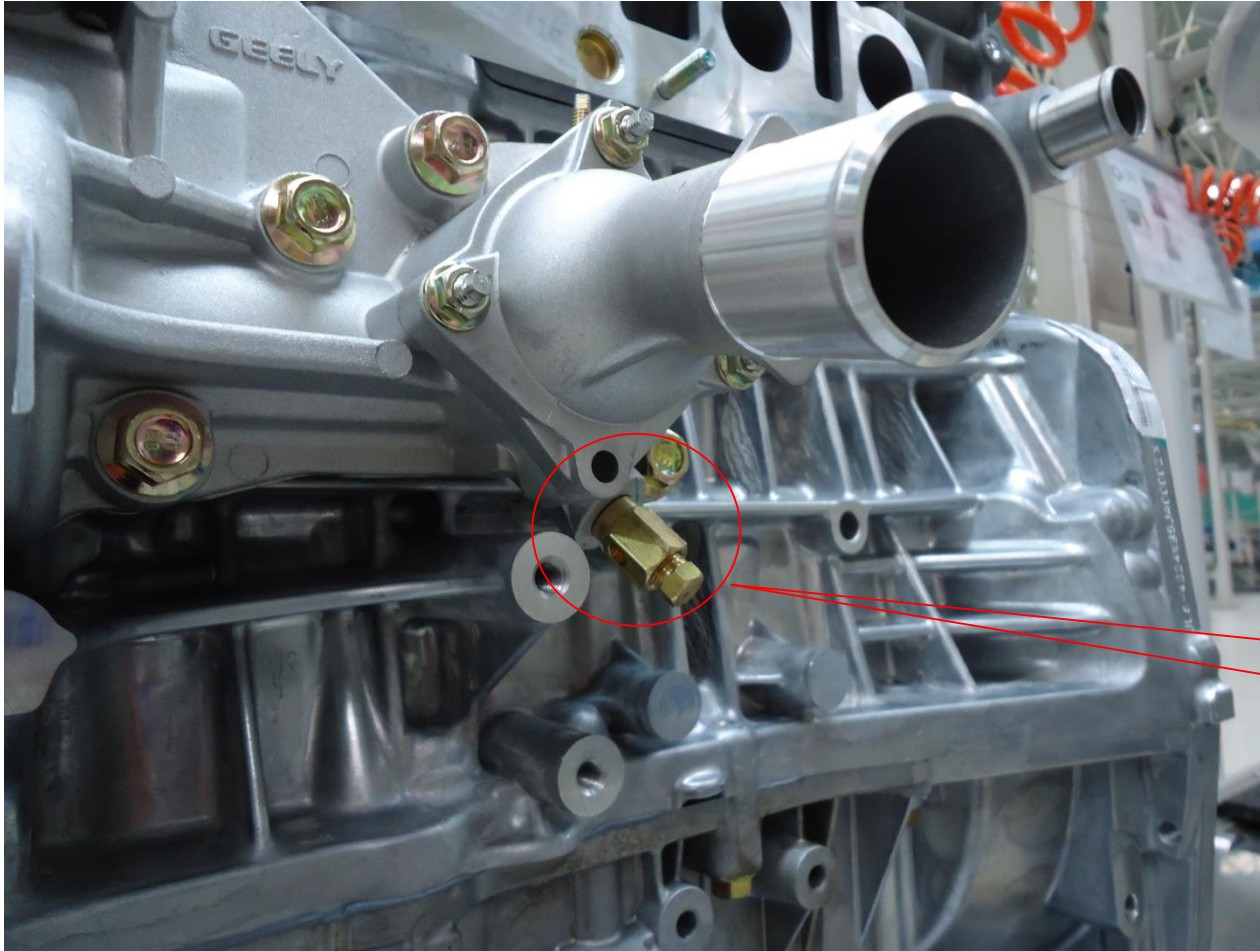
Water Pump Assembly



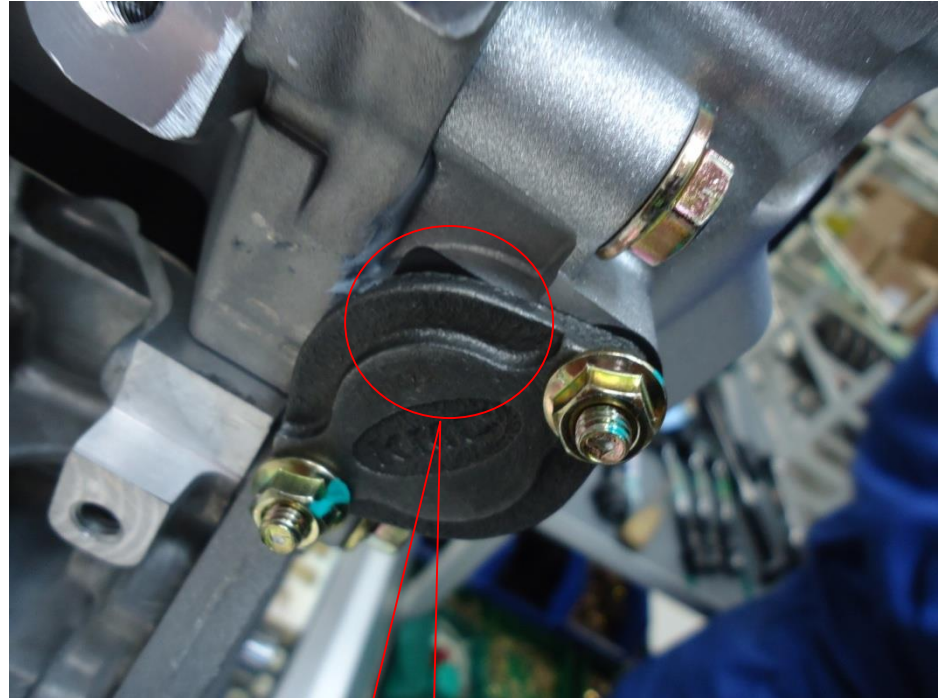
The water pump is sealed in two positions.



**Thermostat
arranged
horizontally**



**Drain Plug of
Engine**

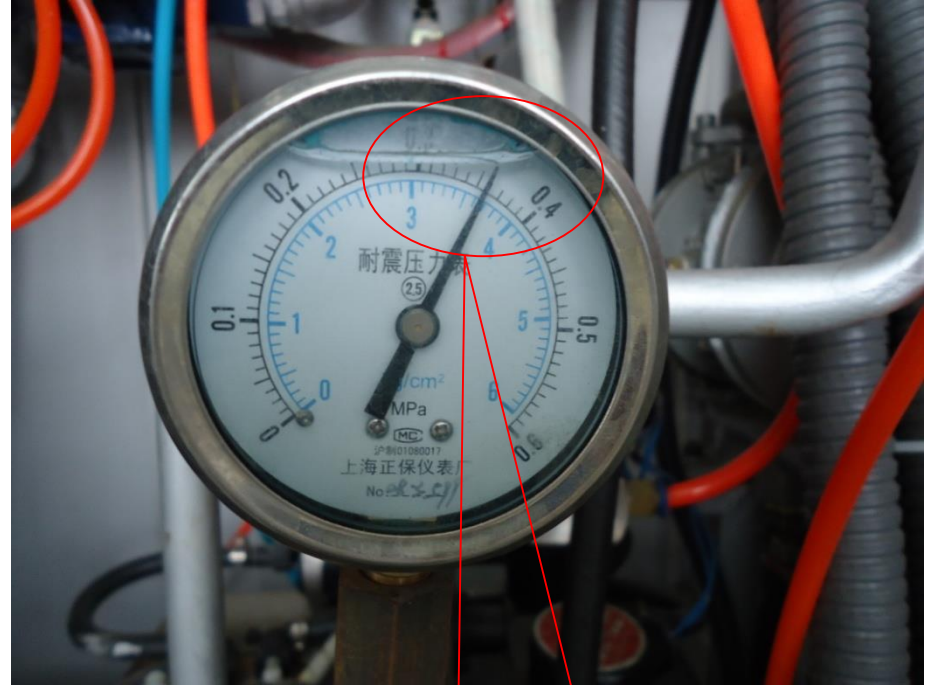


**Sealing for
Tensioner
Gasket**

Oil Control Valve (OCV)



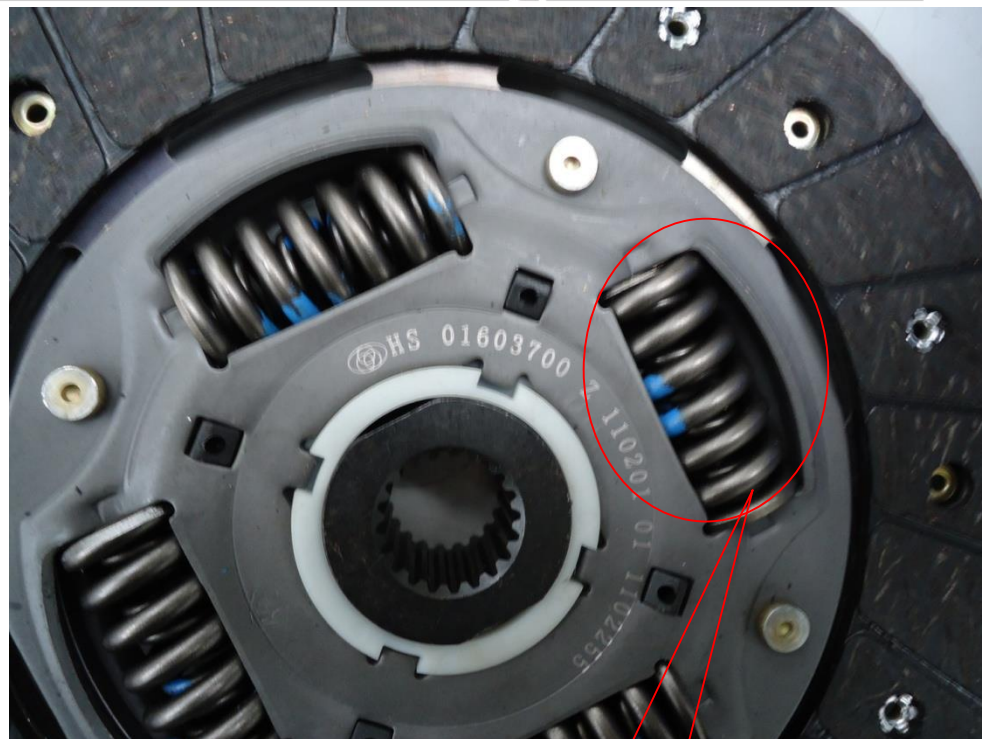
**OCV with
Filter Screen**



**Oil Supply System
without Oil Return**



110A Generator



**Dual-spring
Wearing Plate**

GEELY

THANKS