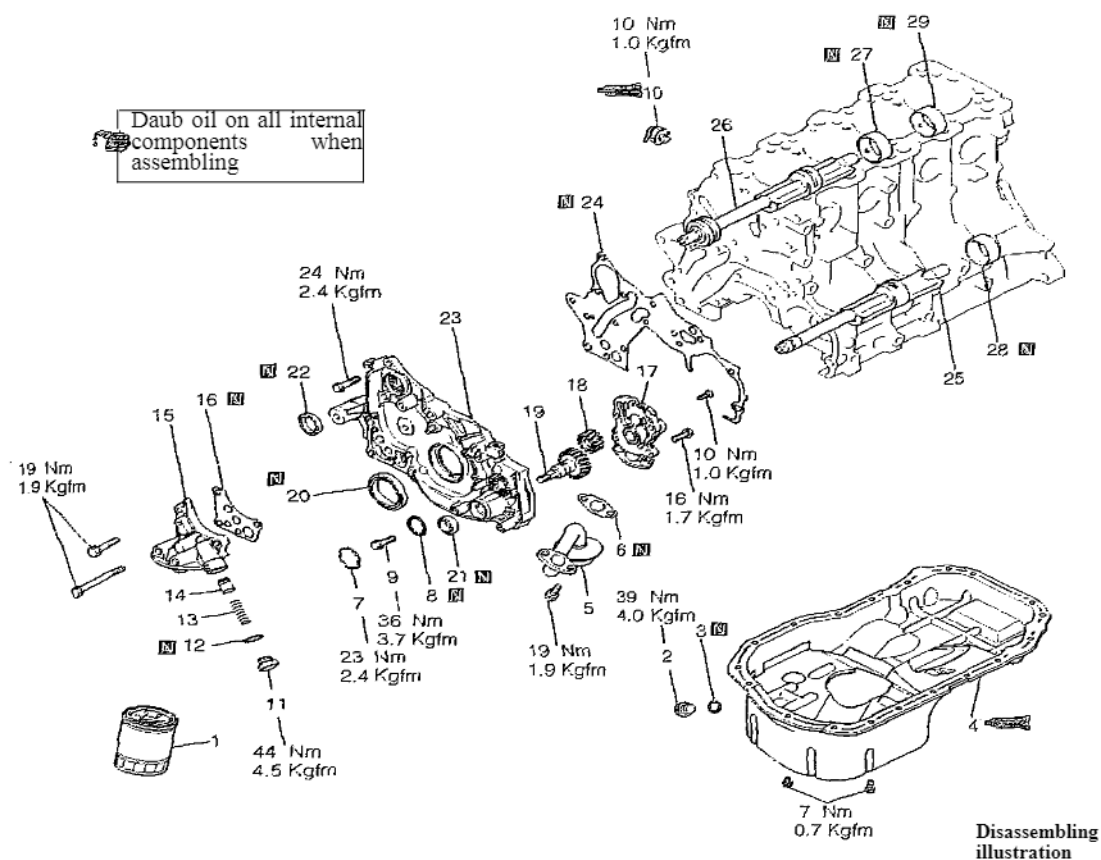




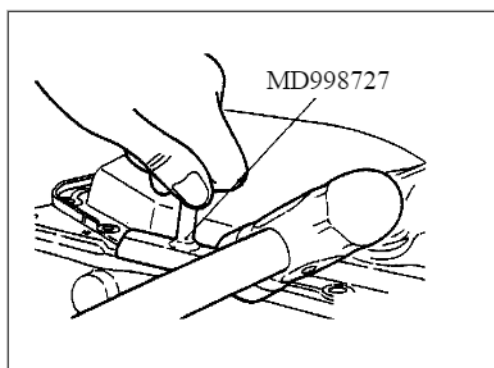
Chapter 5 Lubrication System

Front cover, oil pump, balance axle and oil pan



Disassembling Steps

1. Oil cleaner
2. Oil drain plug
3. Oil drain plug cushion
4. Oil pan
5. Oil collect filter
6. Oil collect filter cushion
7. Plug
8. O-shape ring
9. Flange bolt
10. Oil pressure switch
11. Pressure relief plug
12. Seal cushion
13. Pressure relief spring
14. Pressure-relief plunger
15. Oil cleaner bracket
16. Oil cleaner bracket cushion
17. Oil pump cover
18. Oil pump driven gear
19. Oil pump drive gear
20. Crankshaft front oil seal
21. Oil pump oil seal
22. Balance axle oil seal
23. Front cover
24. Front cover cushion
25. Left balance axle
26. Right balance axle
27. Right balance axle front bearing
28. Left balance axle bearing
29. Right balance axle rear bearing



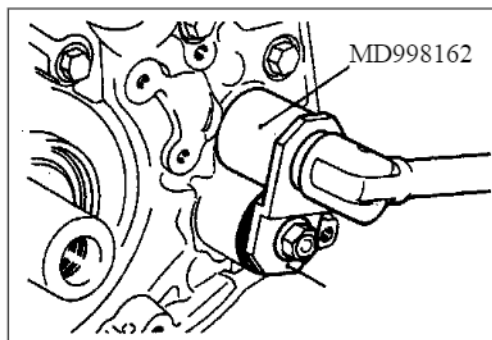
Disassemble Notice

Oil pan disassemble

- (1) Disassemble all oil pan bolts
- (2) Insert special tool between cylinder body and oil pan.

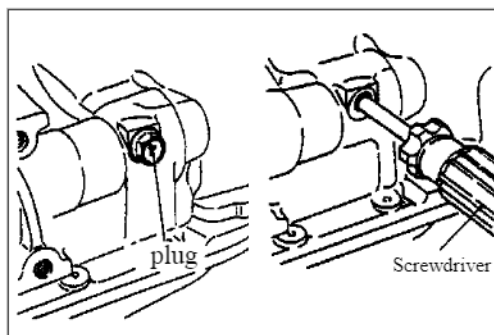
Remarks:

Do not use screwdriver or chisel instead of special tool, otherwise the edge of oil pan may be distorted and oil leakage will occur.



Plug disassemble

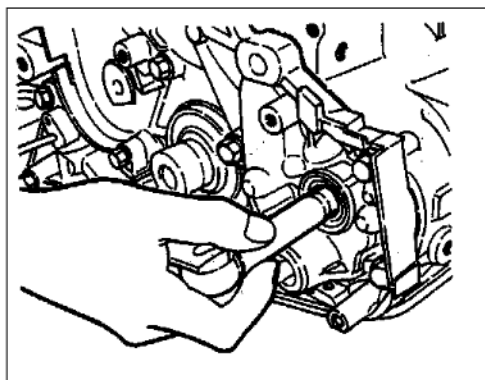
Disassemble plug cock with special tool. If plug is tightened, tap the plug top with hammer several times and the plug will loose.



Flange bolt disassemble

- (1) Disassemble plug from cylinder body.
- (2) Insert cross screwdriver (pole diameter is 8mm) into the plug hole and lock balance axle.

- (3) Loosen flange bolt

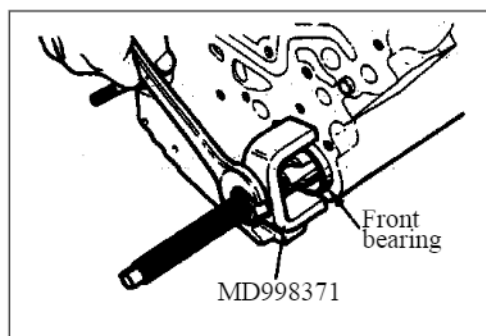


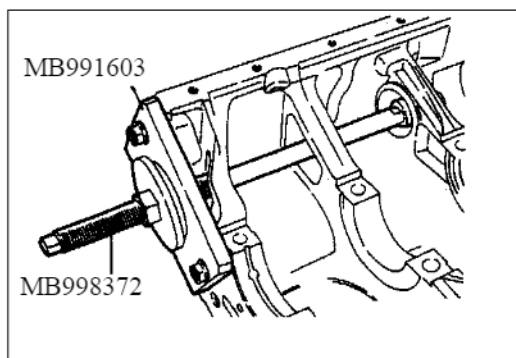
Right balance axle front bearing disassemble

- (1) Disassemble balance axle right-front bearing with special tool from cylinder body.

Remarks:

Front bearing must be disassembled firstly. If it is not disassembled, rear bearing puller can not be used.



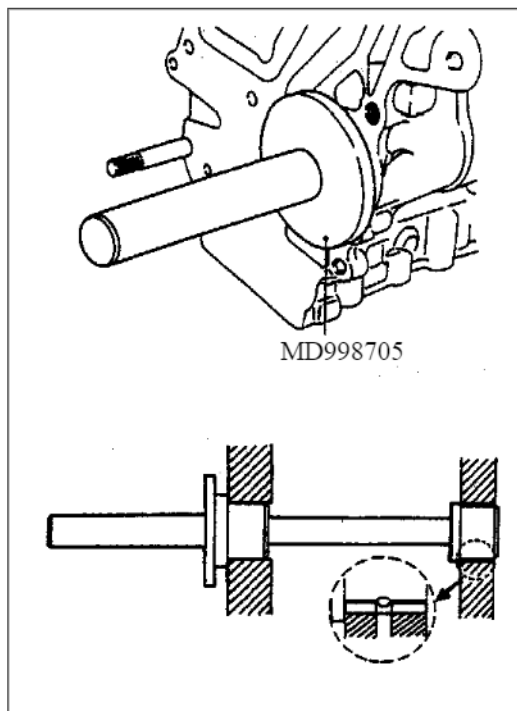


Balance axle rear bearing disassemble

Disassemble left balance axle rear bearing with special tool from cylinder body.

Remarks:

Special tool (MB991603) should be installed in front of cylinder body when disassembling left balance axle rear bearing.



Installation Notice

Right balance axle rear bearing installation

- (1) Daub oil on bearing surface.
- (2) Install right rear bearing with special tool. Make sure that oil holes on bearing and cylinder body are aligned.

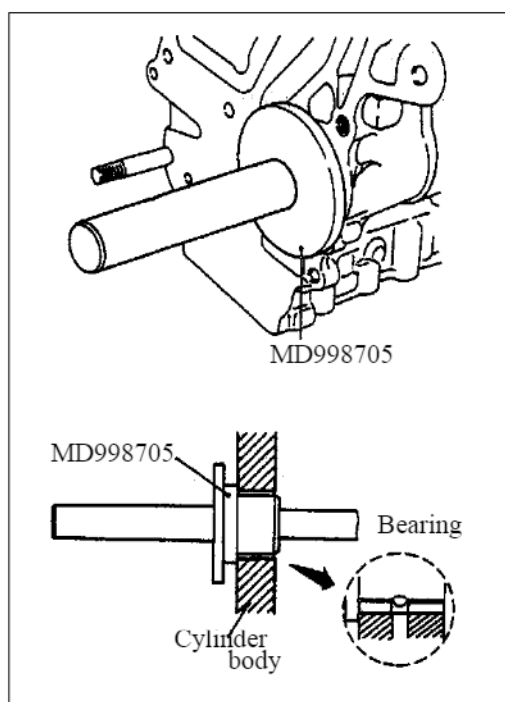
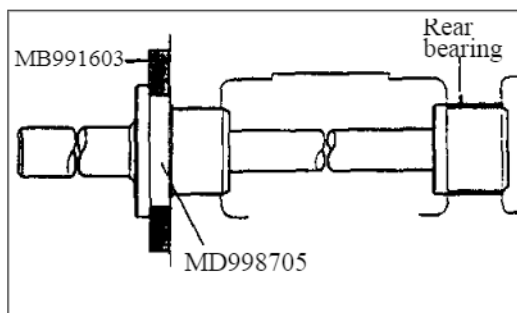
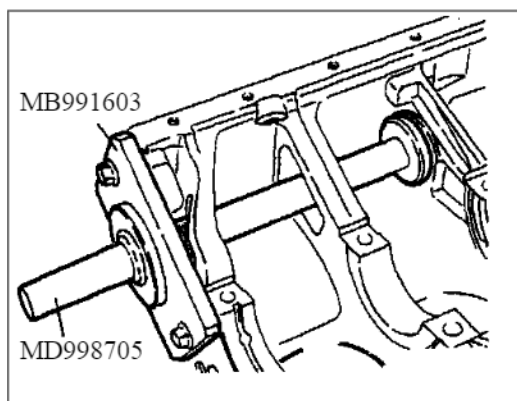
Left balance axle rear bearing installation

- (1) Install special tool (conducting board) on cylinder body.
- (2) Daub oil on rear bearing edges and inside cylinder body bearing holes.

- (3) Install rear bearing with special tool

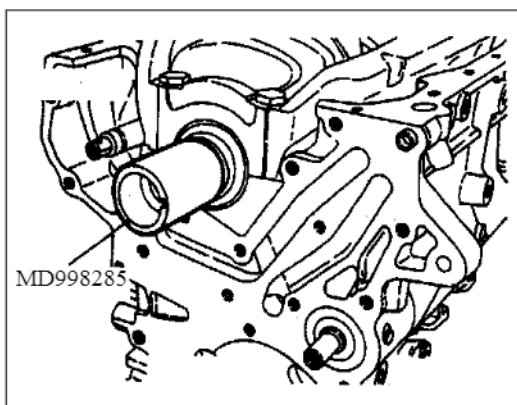
Remarks:

There is no oil hole in left rear bearing.



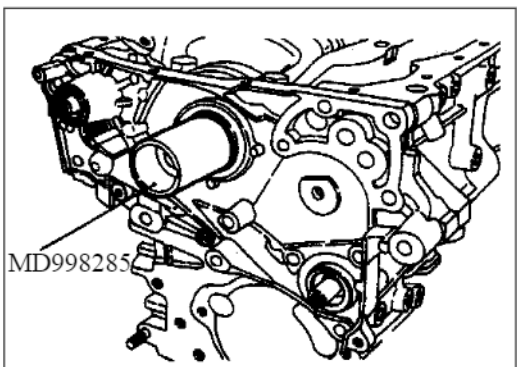
Balance axle front bearing installation

Install front bearing with special tool

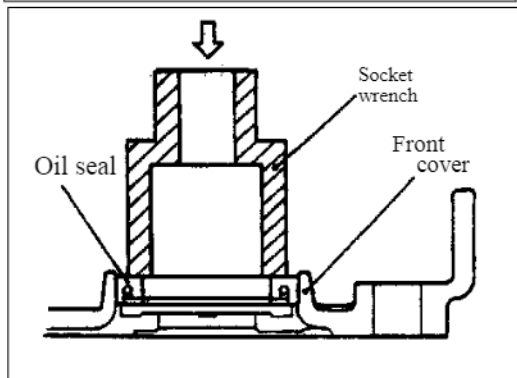


Front cover installation

(1) Install special tool on crankshaft front end .
daub oil slightly on the exterior circle
surface of special tool and then install front
cover

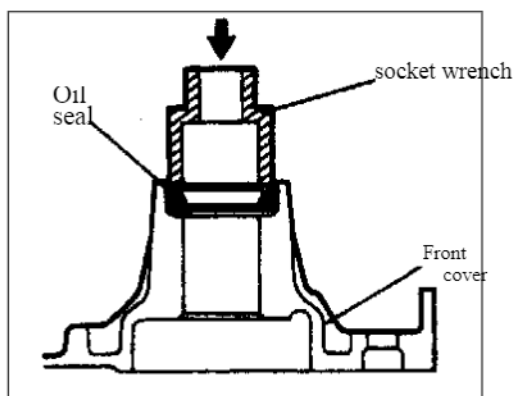


(2) Use new front cover oil seal cushion and
install front cover component. Tighten
flange bolt temporarily (Except for oil
cleaner bracket locking bolt)



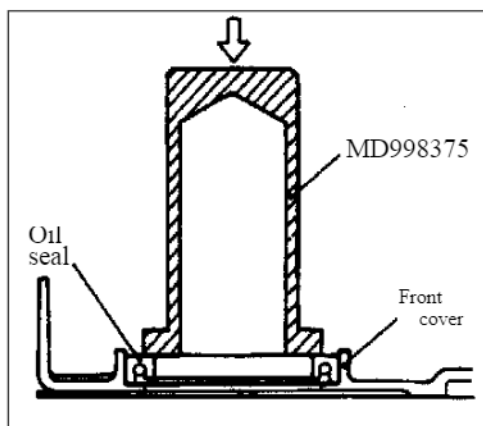
Balance axle oil seal installation

Press oil seal into front cover with socket
wrench.



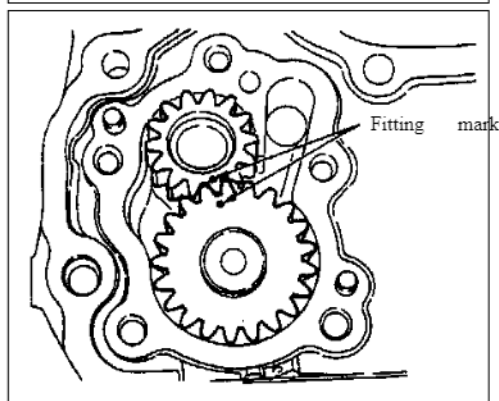
Oil pump oil seal installation

Press oil seal into front cover with socket wrench.



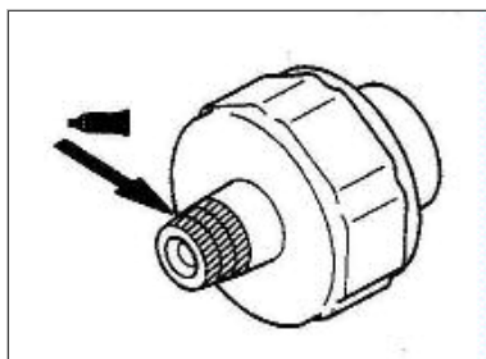
Crankshaft front oil seal installation

Install crankshaft oil seal on front cover with special tool.



Oil pump driven/drive gear installation

Daub oil on gear surface and align the fitting marks.



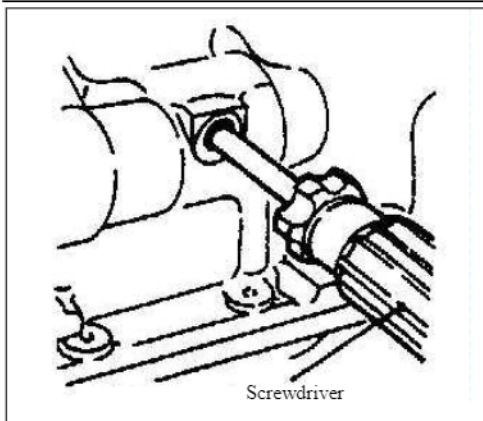
Daub sealant on oil pressure switch

Daub sealant on oil pressure switch screw thread parts and then install the said switch with special tool.

Special sealant: 3M ATV or relevant equivalents.

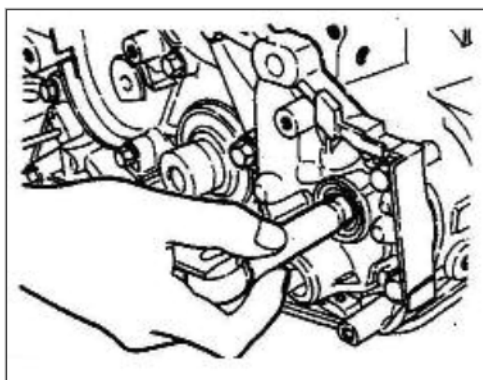
Caution:

- Keep the top of screw thread clean and do not daub sealant.
- Excessive tightening should be avoided.

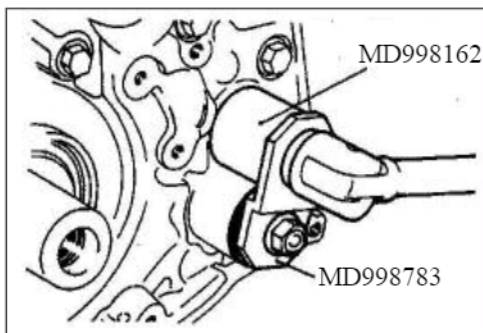


Flange bolt installation

- (1) Insert cross screwdriver into the hole in the left side of cylinder body and lock balance axle.

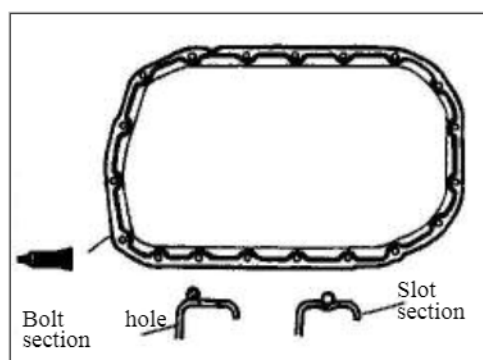


- (2) Tighten flange bolt with specified torque to ensure driven gear of oil pump is fixed on left balance axle.



Plug installation

- (1) Install O-shape ring in front cover slot.
- (2) Install plug with special tool and tight it to specified torque.



Oil pan installation

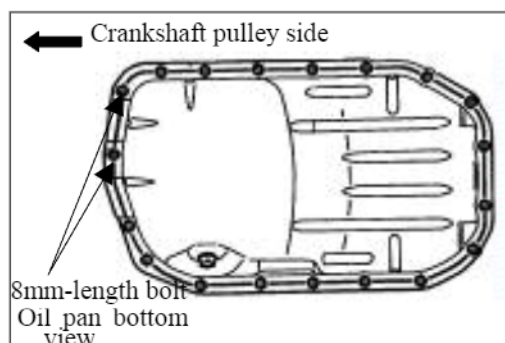
- (1) Keep the fitting surface of oil pan and cylinder body clean.
- (2) Daub 4mm-diameter sealant on the edge of oil pan flange surface.

Specified sealant:

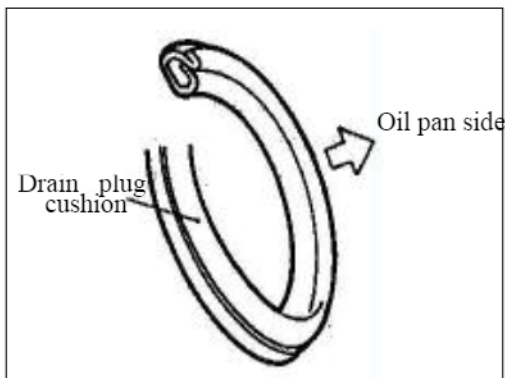
Mitsubishi pure product MD970389 or relevant equivalents.

Remarks:

- (1) Install oil pan quickly when sealant is still wet (about 15 minutes)
- (2) Do not make the sealed part bedewed with oil in an hour or so after installation.



- (3) Confirm the bolt length and their installation locations are a little different.

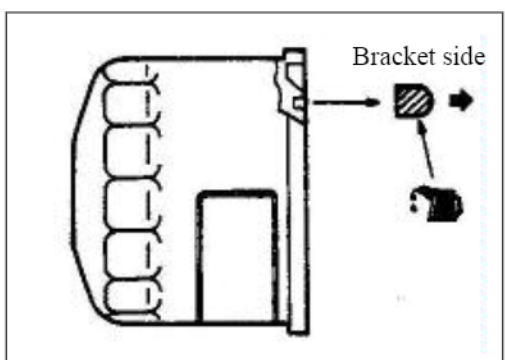


Drain plug cushion installation

Install drain plug cushion according to the direction as shown.

Caution:

The incorrect installation direction may result in oil leakage.



Oil cleaner installation

- (1) Make installation surface of oil cleaner bracket clean.
- (2) Daub engine oil on O-shape ring of oil cleaner.
- (3) Screw on oil cleaner. When the O-shape ring reaches installation surface, screw 3/4 cycle further. (Tighten torque: 1.4kg.m)

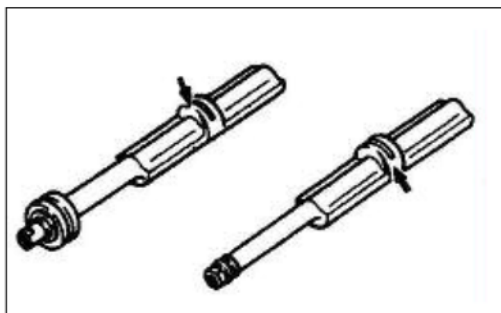
Check

Front cover

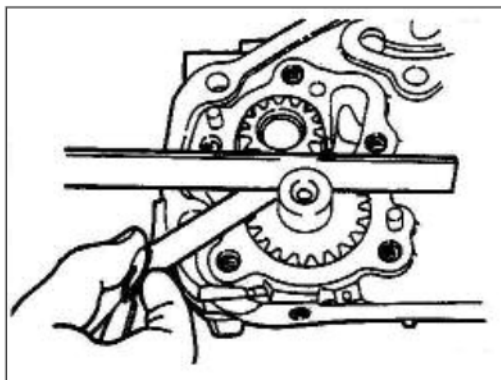
- (1) Check if oil hole is jammed. If necessary, clear it up.
- (2) Check if there is abrasion, damnification or sinter on left balance axle front bearing. If necessary, replace front cover.
- (3) Check if there is crack or other damnification. If any, replace front cover component.

Oil seal

- (1) Check if there is abrasion or damnification on oil seal lip. If necessary, replace oil seal.
- (2) Check if there is deterioration on oil seal lip. If necessary, replace oil seal.

**Balance axle**

- (1) Check if oil hole is jammed.
- (2) Check if there is sinter, damage or **interposition of bearing**. If any badness, replace balance axle, bearing or front cover component.

**Oil pump**

- (1) Install oil pump gear on front cover and then screw on the gear. Check if it can rotate smoothly and is tightened.
- (2) Ensure there is no **ridge shape abrasion** on the contact surface of front cover and oil pump cover gear surface.
- (3) Check side clearance.

Standard value:

Drive gear 0.08-0.14mm

Driven gear 0.06-0.12mm