SHOP MANUAL MT30

(MT27 / MT30R / MT30 / MT30S)

Part no.: 059729

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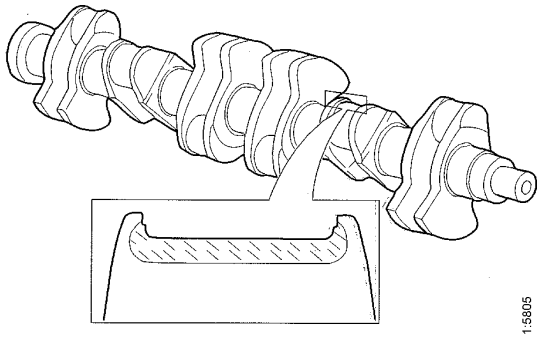
CRANKSHAFT

Each compression stroke ”brakes” the crankshaft and each combustion stroke attempts to increase the speed of rotation of the crankshaft.

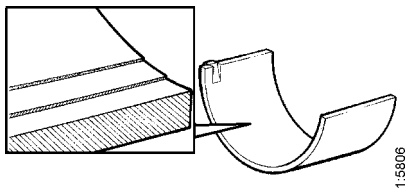
The pistons and connecting rods change their direction of travel twice during each rotation of the crankshaft. This exposes the crankshaft to numerous power pulses during each revolution.



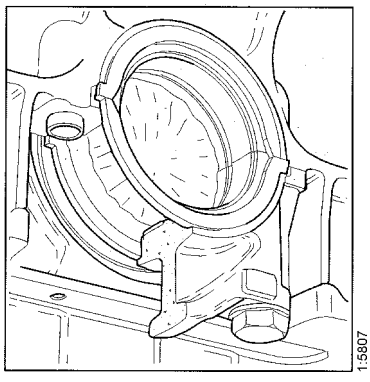
The material is of major importance for the useful life of the crankshaft. Its design and surface treatment also help to extend its life - for instance, the surface quality of the shaft journals is an important factor in providing protection against fatigue failure.

The bearing surfaces on the crankshaft are hardened to a sufficiently great depth to allow them to be ground in several stages.
Only the bearing surfaces are hardened as it is important to retain the toughness of the material in other parts.

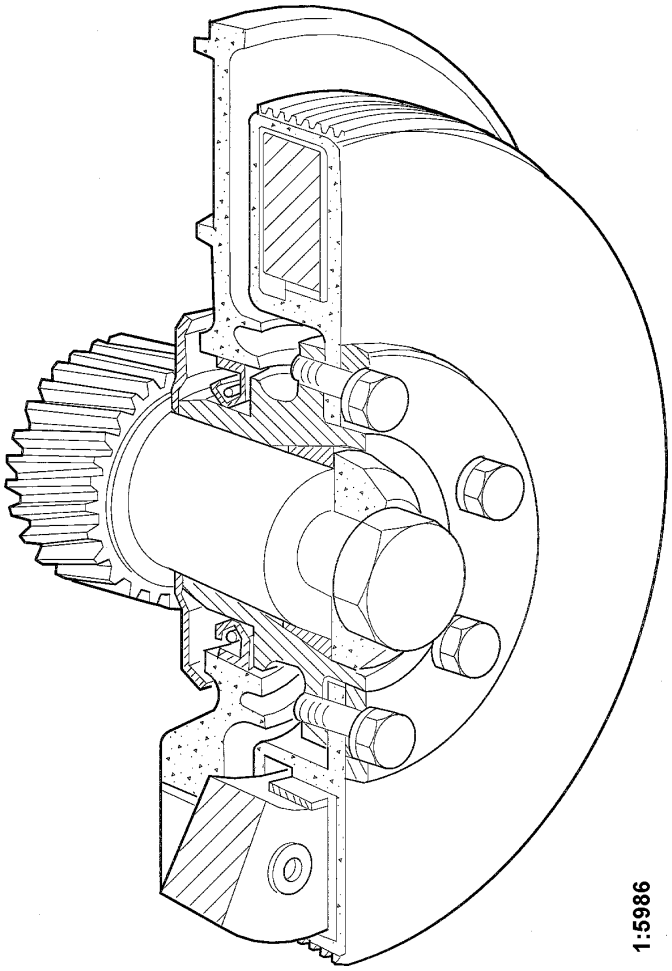
The bearing shells of the main and big-end bearings consist of three layers. An outer layer or backing of steel, an interlayer of lead-bronze and nearest the crankshaft an overlay consisting of a mixture of lead and indium or lead, tin and copper. The innermost layer is usually worn away during the course of engine utilization.



Thrust washers are used for endways location of the crankshaft at the rear main bearing. These thrust washers are available in different thicknesses so that the crankshaft can be adjusted to the correct clearance. The thrust washers have the same types of layer as the big-end bearing shells.



VIBRATION DAMPER



The power impulses from the connecting rods give rise to torsional oscillation in the crankshaft. These oscillations are severest at a certain rpm which varies with the design of the engine, how it is loaded, etc.

Torsional oscillation is characterized as follows:
The flywheel (at the “rear end” of the crankshaft) rotates at a constant speed throughout the revolution of the crankshaft. Relative to the flywheel, the rotational speed of the front end of the crankshaft will increase and decrease several times during each revolution.

This oscillation may give rise to noise from the timing gears and increases the risk of crankshaft breakage.

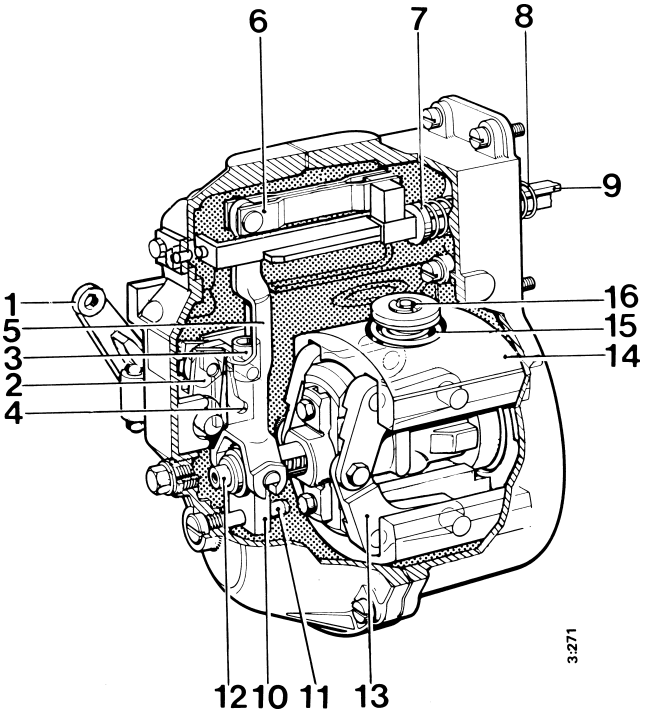
To reduce the oscillation a crankshaft damper is attached to the front end of the crankshaft.

A ring of steel is incorporated in the circular and completely enclosed housing of the crankshaft damper. The housing is screwed onto the crankshaft.

Between the housing and ring is a viscous liquid which brakes the movement between ring and housing. Since the ring endeavours to rotate at a constant speed, the oscillation at the front of the crankshaft is damped.

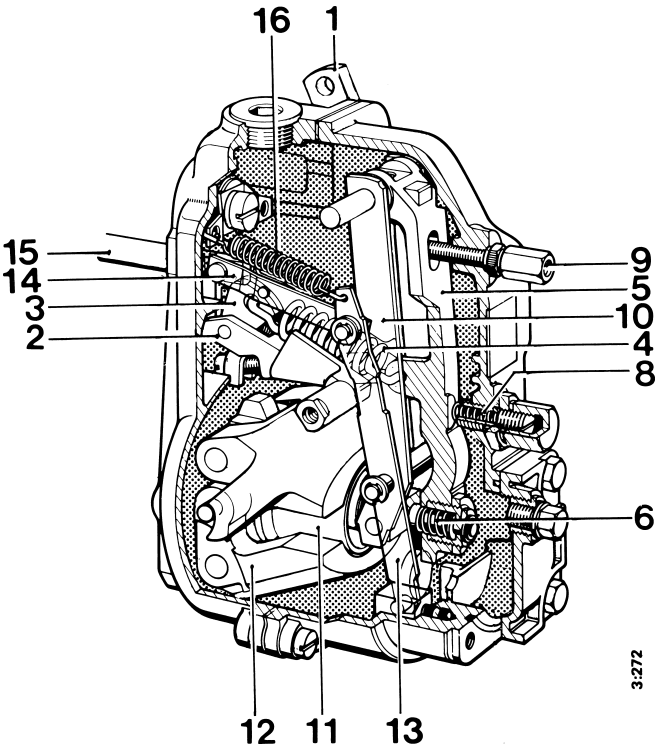
The crankshaft damper has numerous belt grooves for a “Multigroove V-belt”, see also page 13.

GOVERNORS



RQV GOVERNOR

1. Accelerator arm
2. Guide lever
3. Guide plunger
4. Guide block
5. Governor arm
6. Link
7. Spring disk
8. Clearance elimination spring
9. Control rack
10. Pressure ring
11. Guide bolt
12. Spring loaded governor sleeve
13. Bell crank
14. Flyweights
15. Governor springs
16. Adjusting nuts



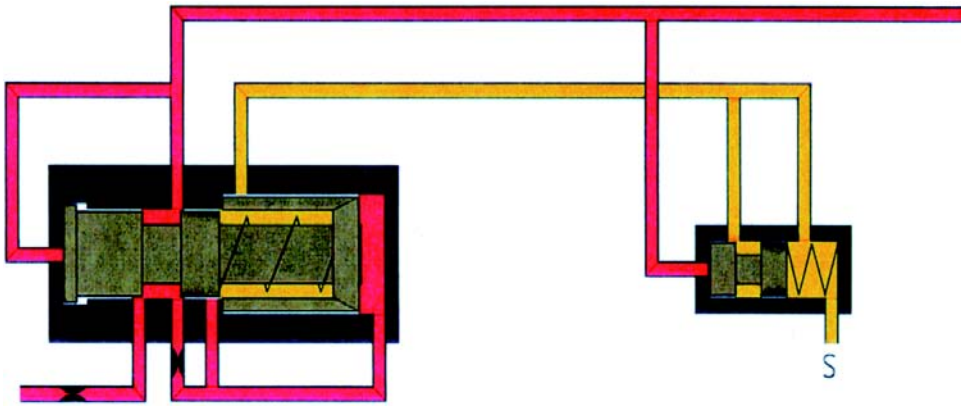
RSV GOVERNOR

1. Accelerator arm
2. Fulcrum arm
3. Toggle arm
4. Governor spring
5. Tension arm
6. Elemination spring
8. Ideling damper spring
9. Stop or ideling screw
10. Guide arm
11. Governor sleeve
12. Flyweight
13. Governor arm
14. Link
15. Control rack
16. Start spring
17. Adjusting screw

3RD STEP

Due to the continuously increasing pressure in front of the repression piston the modulation valve will be pushed fully back.

The clutch pressure line opens and the reset valve will be pushed to the right.

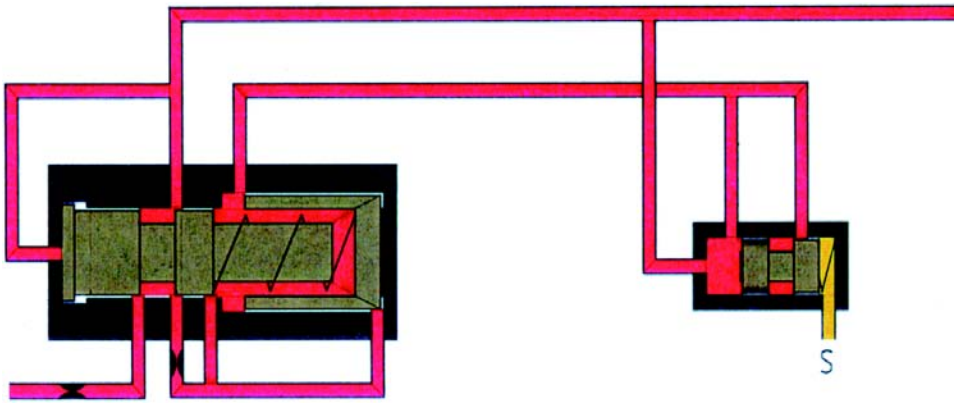


3st step

4TH STEP

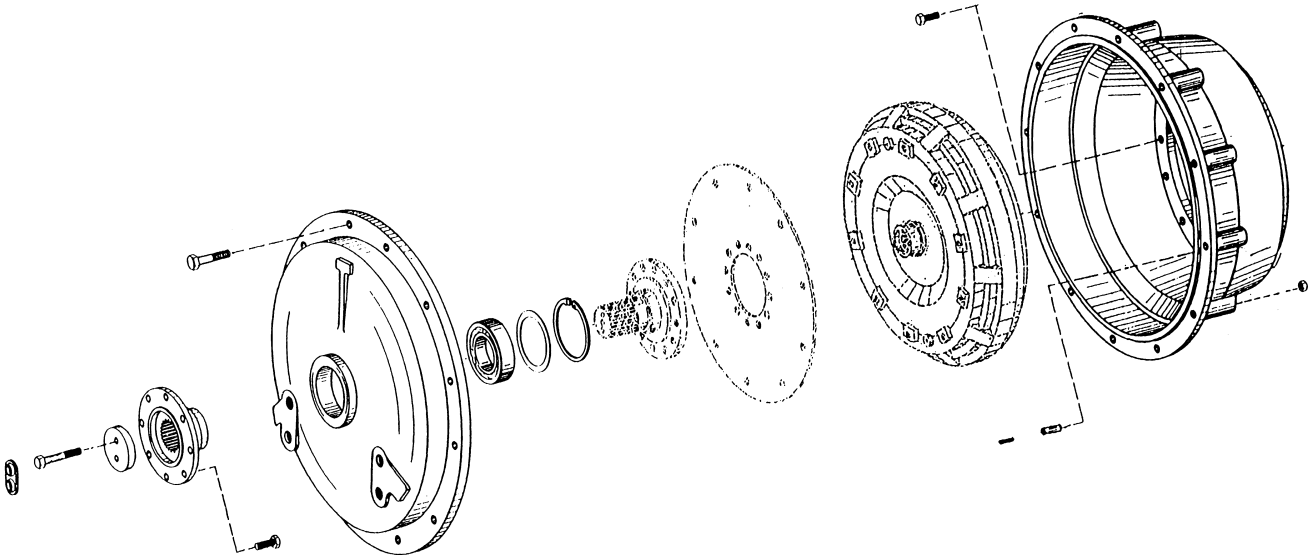
The pressure modulation is finished.

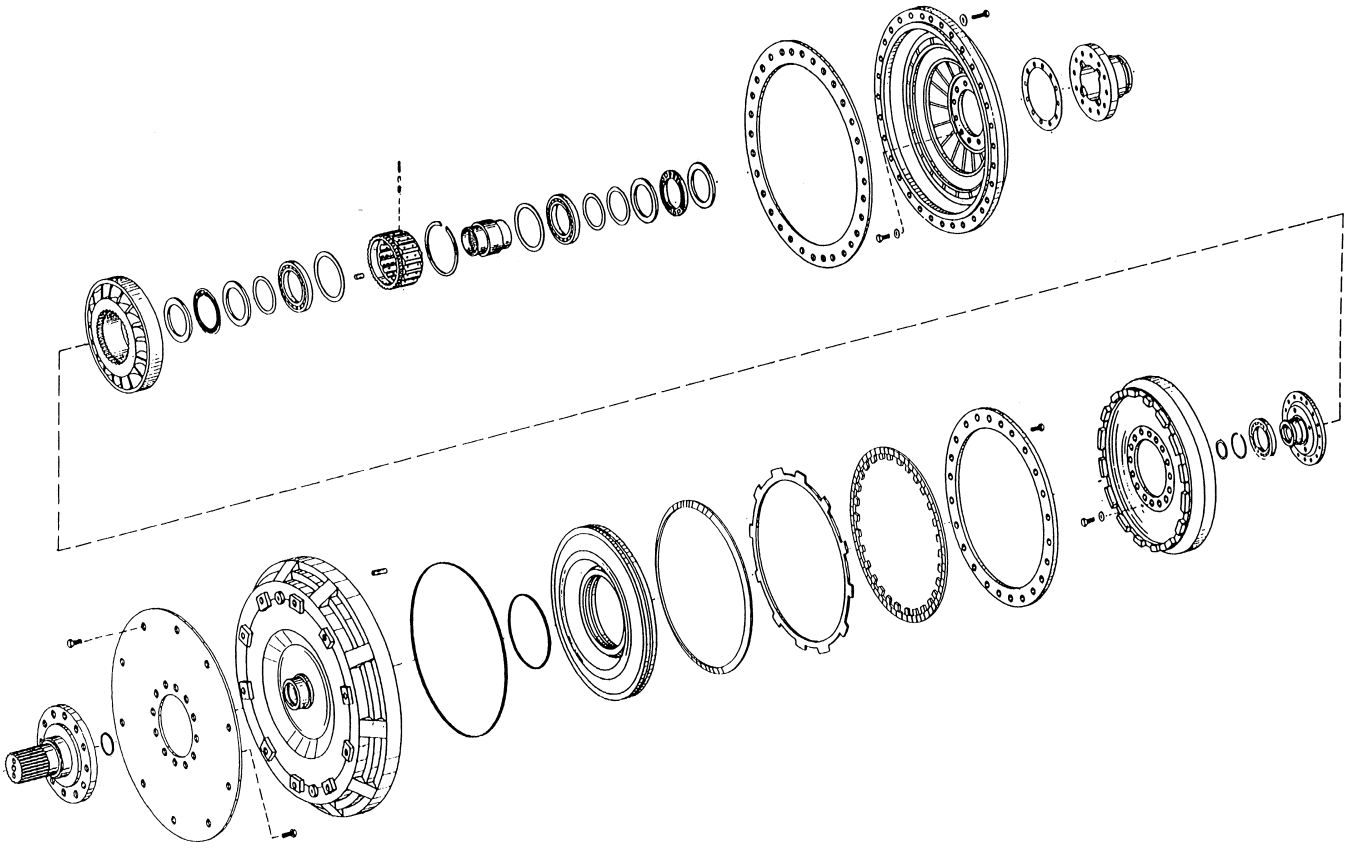
The reset valve moved to the right hand side. The line which goes between the reset valve and repression pistons is opened, whereby repression piston and modulation valve is pushed back to their starting position to be ready to engage a new gear.



4st step

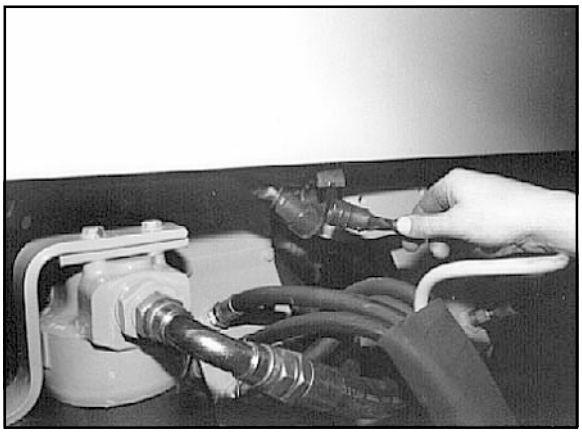
TORQUE CONVERTER



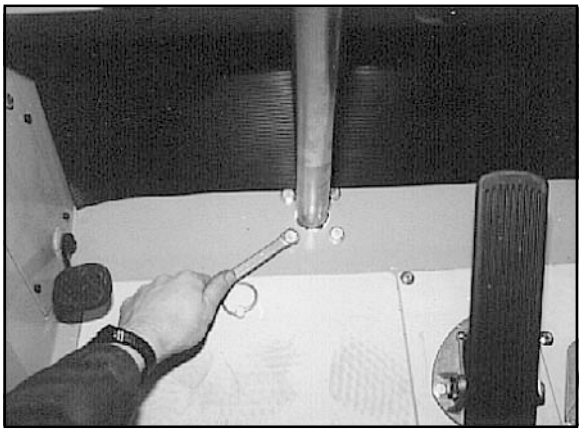


Fasten exhaust pipe to top of cab.

Fasten air inlet tube to cab roof. Insert top cover and fasten the clamp.



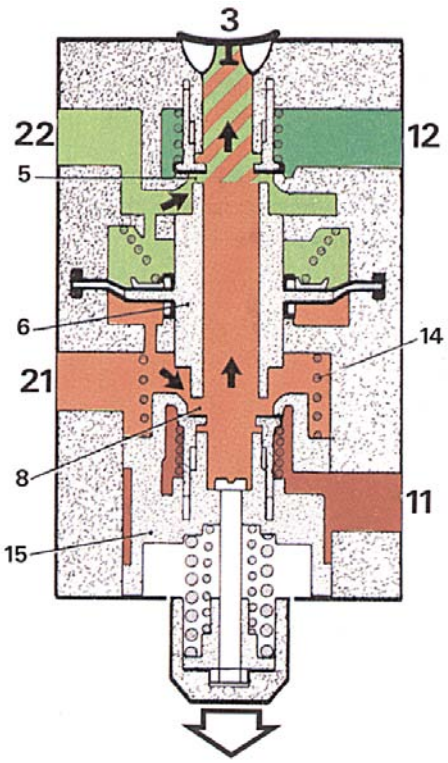
Connect the electrical connector to the rear frame. Only older machines.



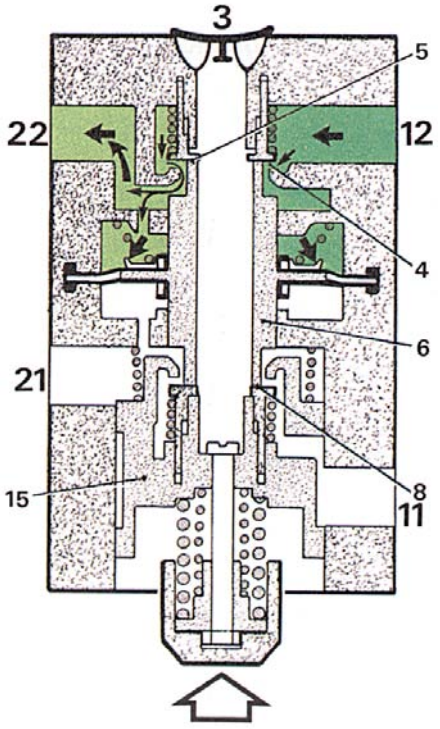
Carefully position the orbitrol and tighten screws.

Tightening torque: 3 Nm

Note!
Be aware of the reduced tightening torque on the orbitrol screws. To high tightening torque may cause deformation and steering disturbances.



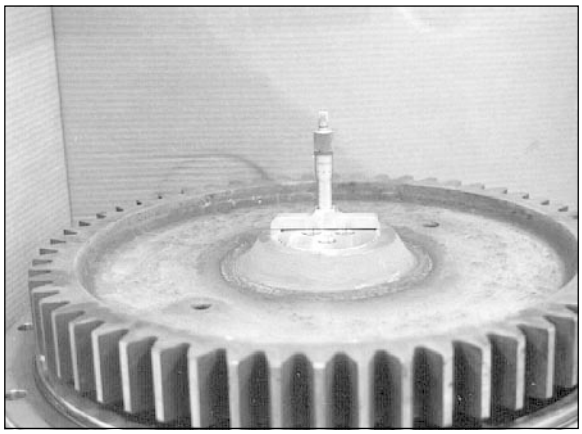
Brake release:
When the brake pedal is released, pressure in outlet 21 and spring 14 presses down valve holder 15 (Piston 6 will follow a little) and outlet valves 5 and 8 will open. The brake chambers are evacuated and brake is released.



Pressure drop in one circuit:
If leakage occurs in e.g. a rear circuit, connection 11 will
lose pressure and the following will occur:
When braking, valve holder 15 is pressed up. Outlet valve 8 closes against piston 6. When the pedal is sufficiently depressed, outlet valve 5 closes and inlet valve 4 opens. Air flows through and applies front wheel brake.

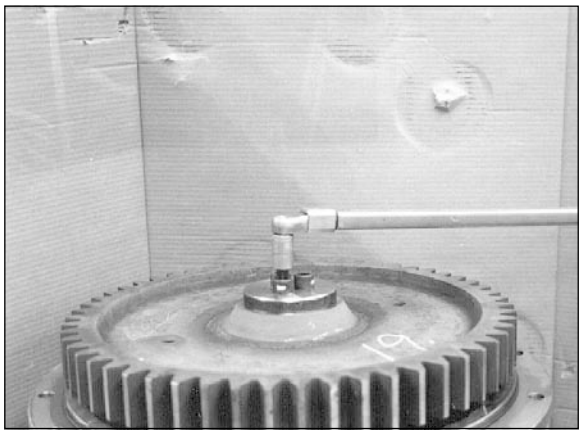
Fit gear wheel and adjust bearings.

Preload: 0,05 - 0,1 mm5

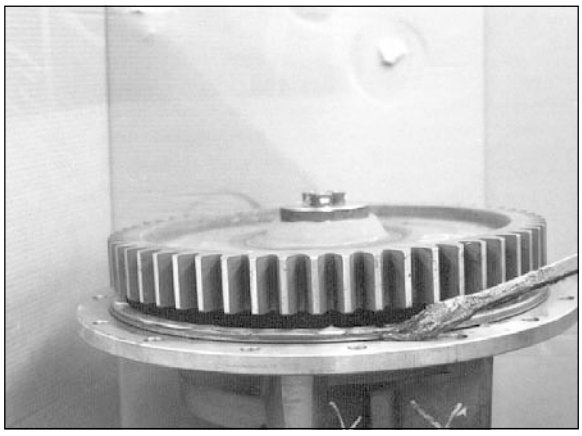


Fit shims, thrust washer and tighten screws. Apply Locktite 242 on the screws.

Tightening torque: 333 Nm

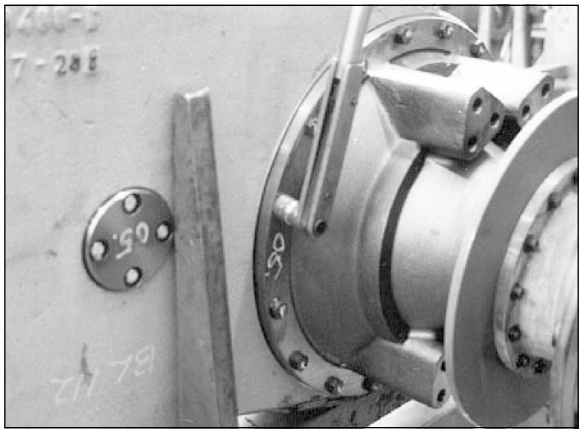


Insert lubricated o-ring.



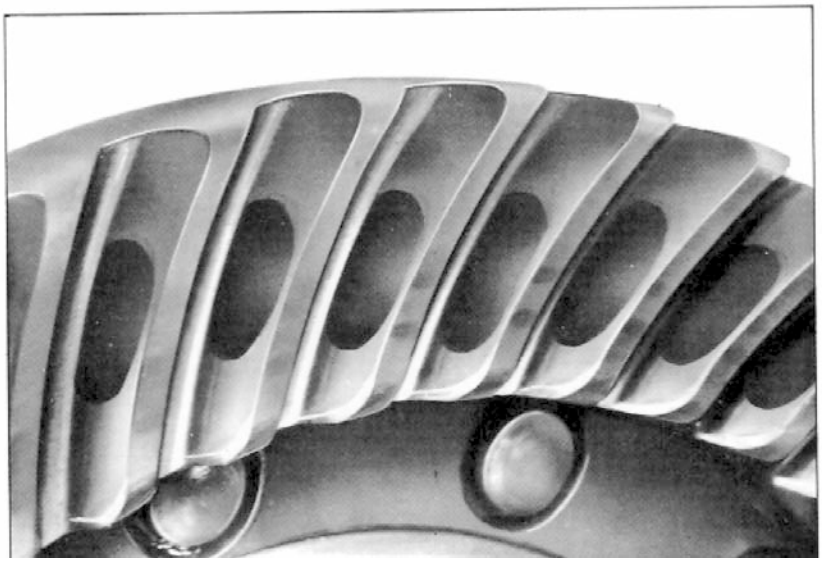
Insert the wheel hub on tandem housing and use Locktite 242 on the screws.

Tightening torque: 333 Nm

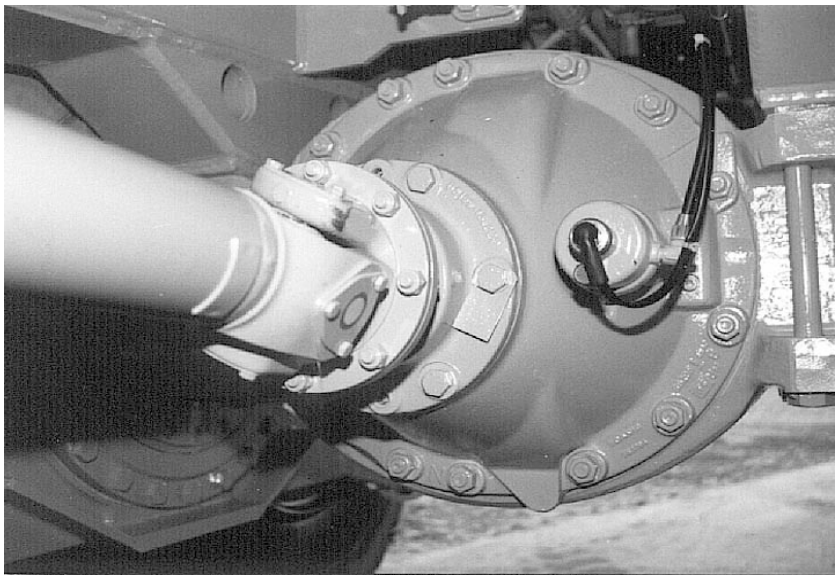


GEAR TOOTH CONTACT PATTERNS

IDEAL TOOTH-CONTACT PATTERN.



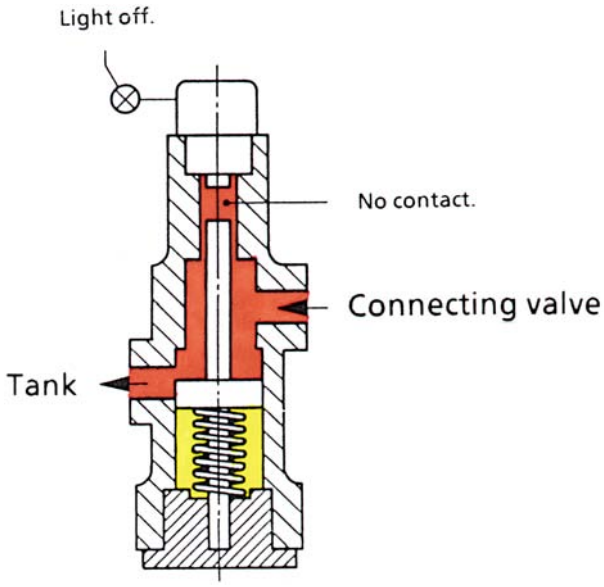
Coast side - concave.



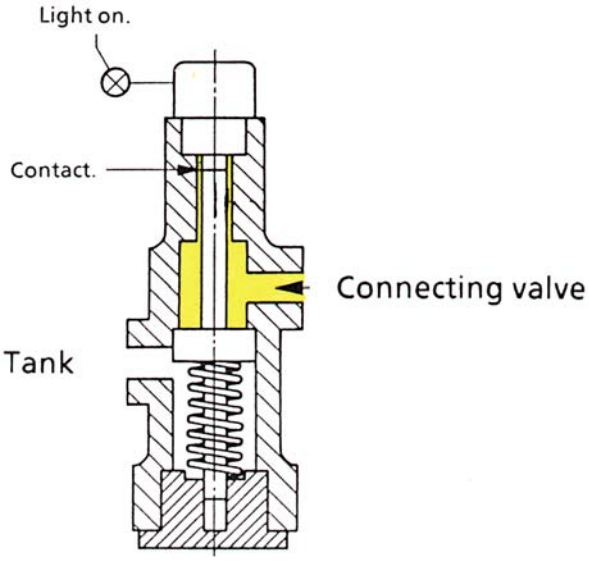
Drive side - convex.

FLOW INDICATOR VALVE

The flow indicator valve function is only to switches the warning light for the emergency steering on the instrument panel on and off.



When the oil flow from the emergency steering pump is not directed to the steering valve it flows through the flow indicator valve and disconnects the ground connection for the instrument warning light, and back to tank.
We know now that the main pump flow is higher than the emergency steering pump flow.

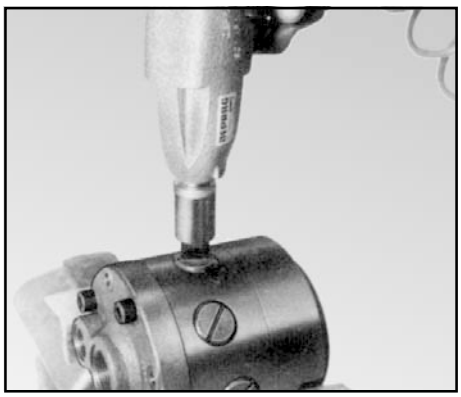


If the emergency steering pump flow is directed to the steering valve no oil flow will disconnect the flow indicator valve ground connection and the warning light remains on.

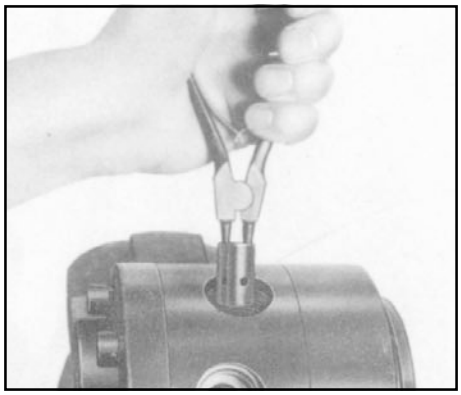
EMERGENCY STEERING PUMP

Remove transmission ass`y. (see chapter 2.3). Only for models which have the emergency steering pump installed in the front side of the transmission.

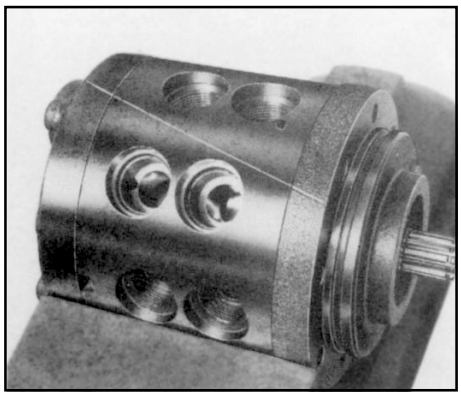
Remove emergency steering pump see page 2.3.69 or page 2.3.84 (dependent on transmission type)



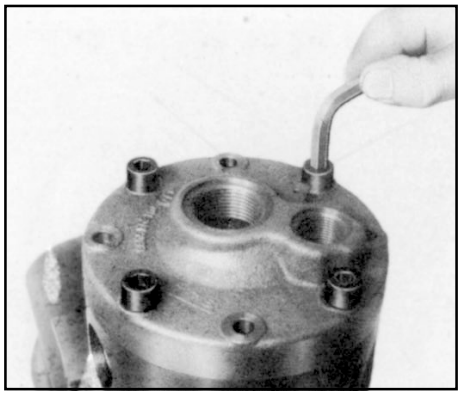
Remove all screwplugs.



Remove the spring and pull piston out off pump section bore.



Mark assembly position of pump-housing, pump section and end cover, see photo.



Unscrew bolts.

MT 27/30 TRANSMISSION CONTROL
353756- (Ref. 000735)

S/NO. 353756 -
Reference : 000735
23.01.97 J.H.
MT 27/30 R/S

ARTICULATION HINGE - BALL TYPE

DISASSEMBLY

1. Apply wheel blocks to front wheels.
2. Support front frame with two ramps, one at each side of front end.
3. Disconnect rear end of articulation propeller shaft.
4. Unscrew outer turning ring bolts and pull rear frame carefully backwards. Support rear frame with ramps.

   Note!
   Be aware of the propeller shaft.

5. Unscrew the turning ring by losening inner ring bolts.
6. Clean, inspect and replace worn and/or damaged parts. Replace all seals.

ASSEMBLY

1. Fit turning ring onto articulation hinge. Use *Loctite 242* on bolts. **Tightening torque: 333 Nm.**
2. Fit outer (half moon) seals and tighten screws to pressurise lip seal.
3. Connect front and rear frame and position the turning ring in front frame.

   Note!
   Turn bearing until ball filling hole faces horizontally to the right of the truck.

4. Fit outer ring bolts, apply *Loctite* 242 and tighten. ***Tightening torque: 333 Nm.***
5. Connect articulation propeller shaft. ***Tightening torque: 65 Nm.***