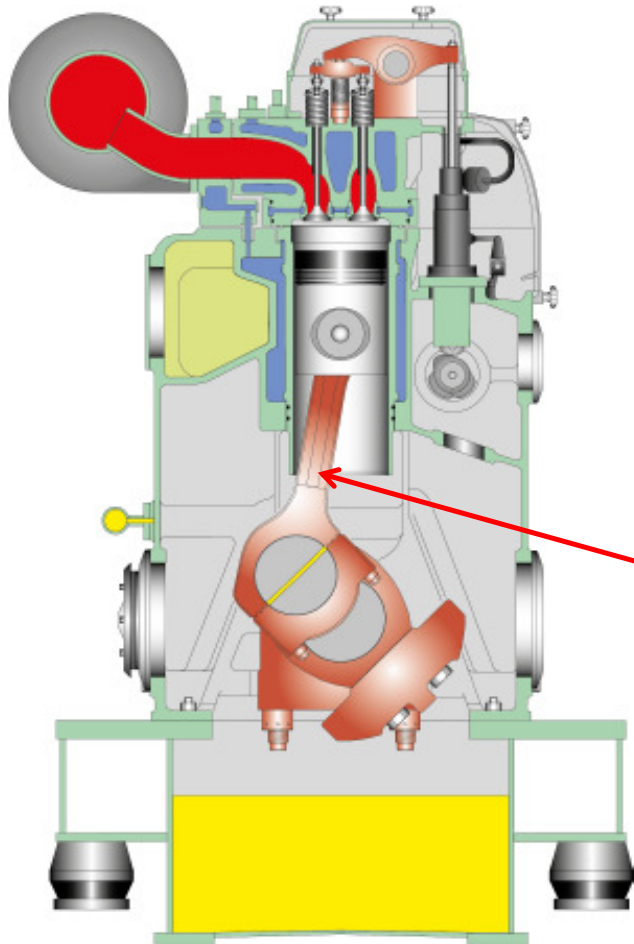


L23/30H, Piston, Con. Rod and Cyl. Liner

- *Connecting rod*



- Lubricating oil for the connecting rod bearings and for the piston is supplied from the main bearing through bores in the crankshaft.
- Each individual main bearing is being supplied with oil through a bore in the frame connected to the external main pipe of the lubricating oil system.



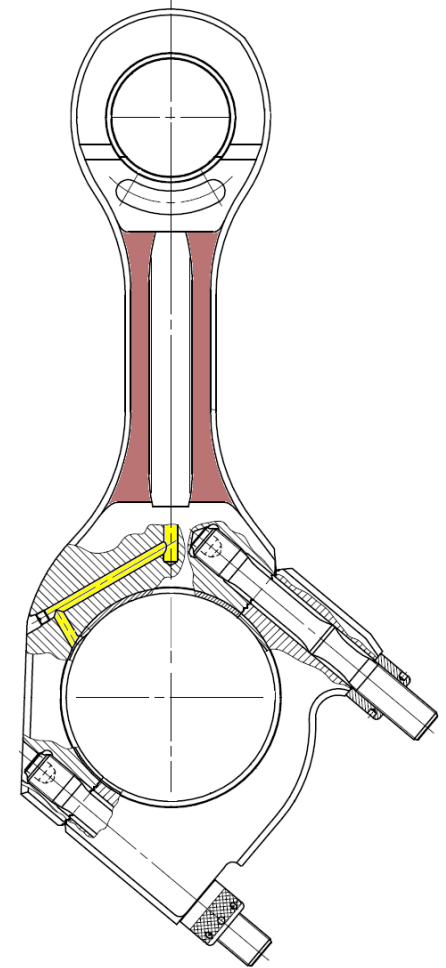
L23/30H , Piston, Con. Rod and Cyl. Liner

- *Connecting rod*



Connecting Rod

- The connecting rod is die-forged. The big-end has an inclined joint in order to facilitate the piston and connecting rod assembly to be withdrawn up through the cylinder liner. The joint faces on connecting rod and bearing cap are serrated to ensure precise location and to prevent relative movement of the parts.
- The connecting rod has bored channels for supply of oil from the big-end to the small-end eye.
- The big-end bearing is of the tri-metal type coated with a running layer.
- The bearing shells are of the precision type and are therefore to be fitted without scraping or any other kind of adaption.
- The small-end bearing is of tri-metal type and is pressed into the connecting rod.
- The bush is quipped with an inner circumferential groove, and a pocket for distribution of oil in the bush itself and for supply of oil to the pin bosses.

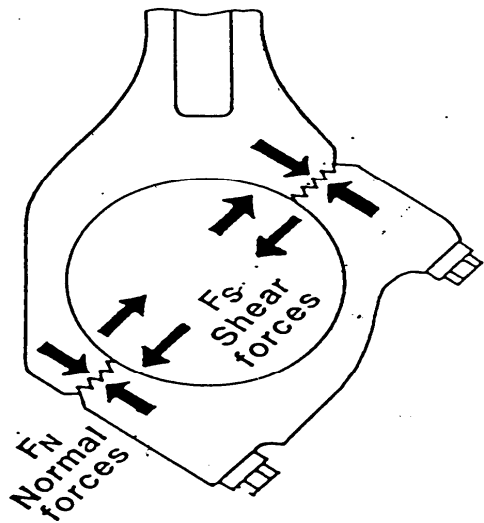


L23/30H, Piston, Con. Rod and Cyl. Liner

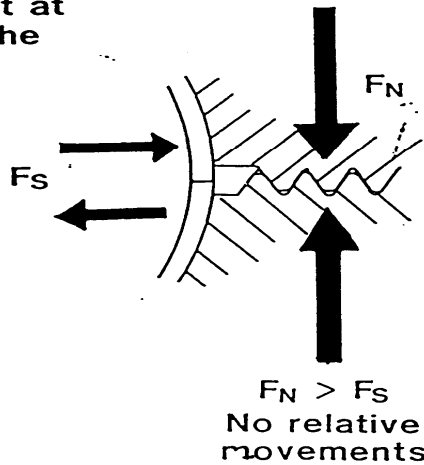
- big end bearing



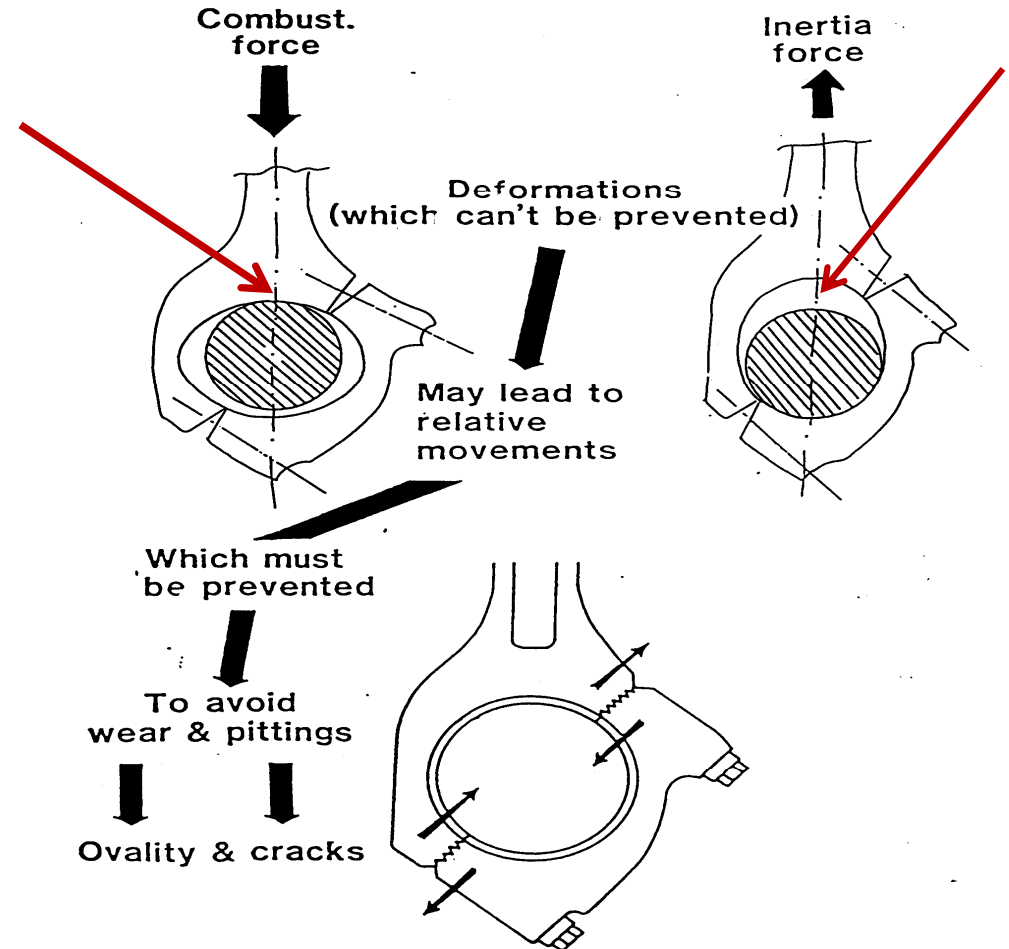
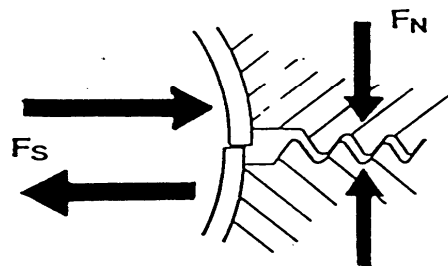
To prevent relative movements the normal forces F_N must at any time be bigger than the shear forces F_S



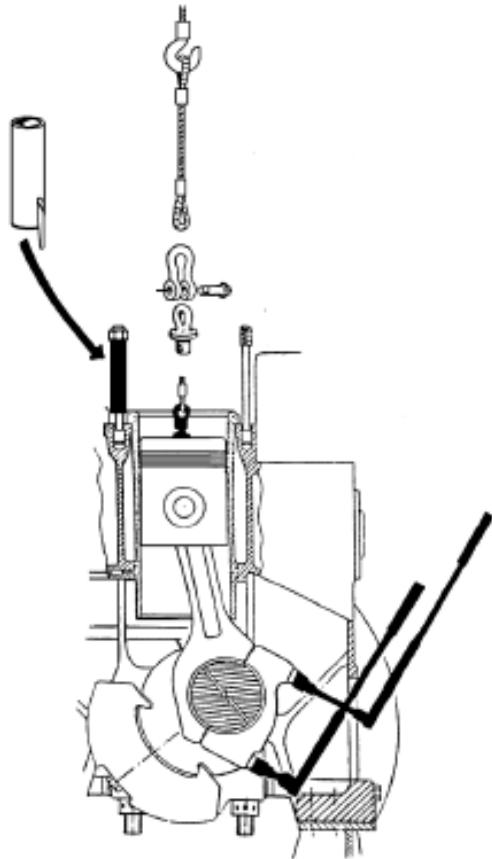
$F_S > F_N$
Relative movements



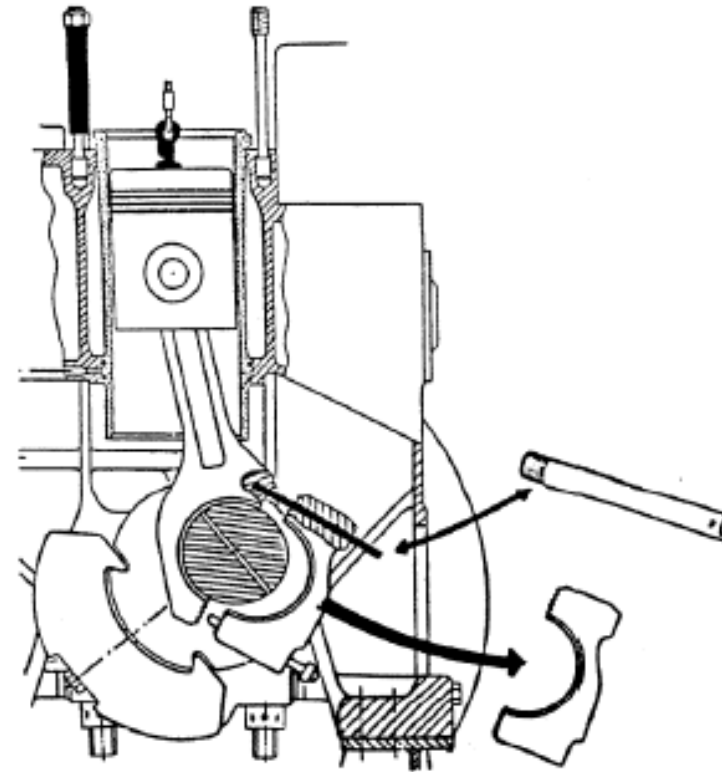
$F_N > F_S$
No relative movements



L23/30H, Piston, Con. Rod and Cyl. Liner - Tools

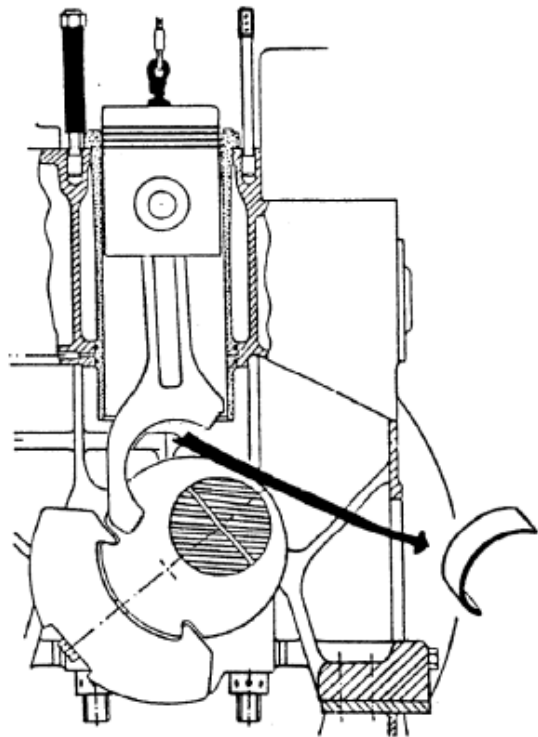


Mounting of tools



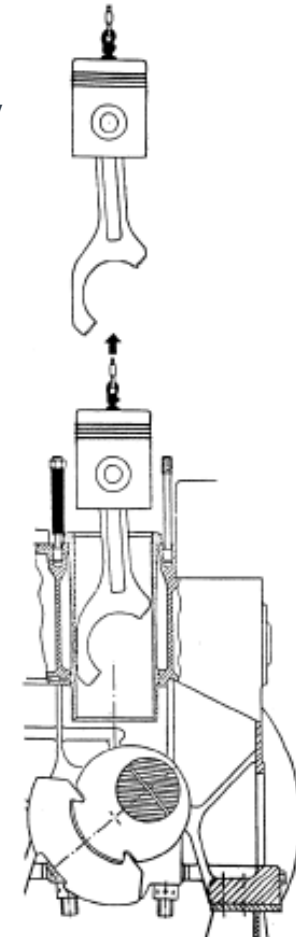
Removal of bearing cap

L23/30H, Piston, Con. Rod and Cyl. Liner - Tools



Removal of upper big-end bearing shell

Lift of piston and connecting rod assembly

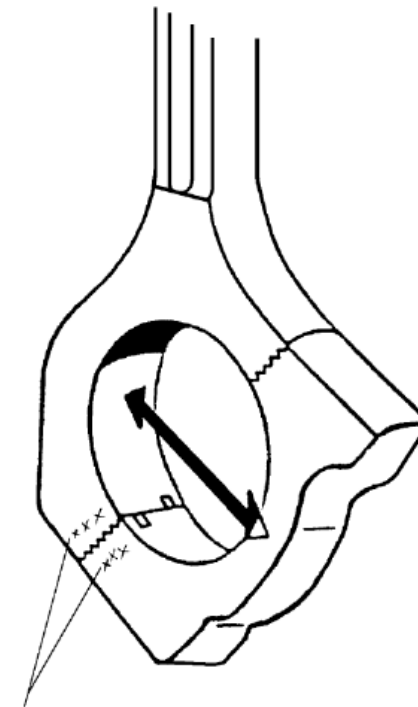


L23/30H, Piston, Con. Rod and Cyl. Liner

- Inspection of Connecting rod and ident. Nr.

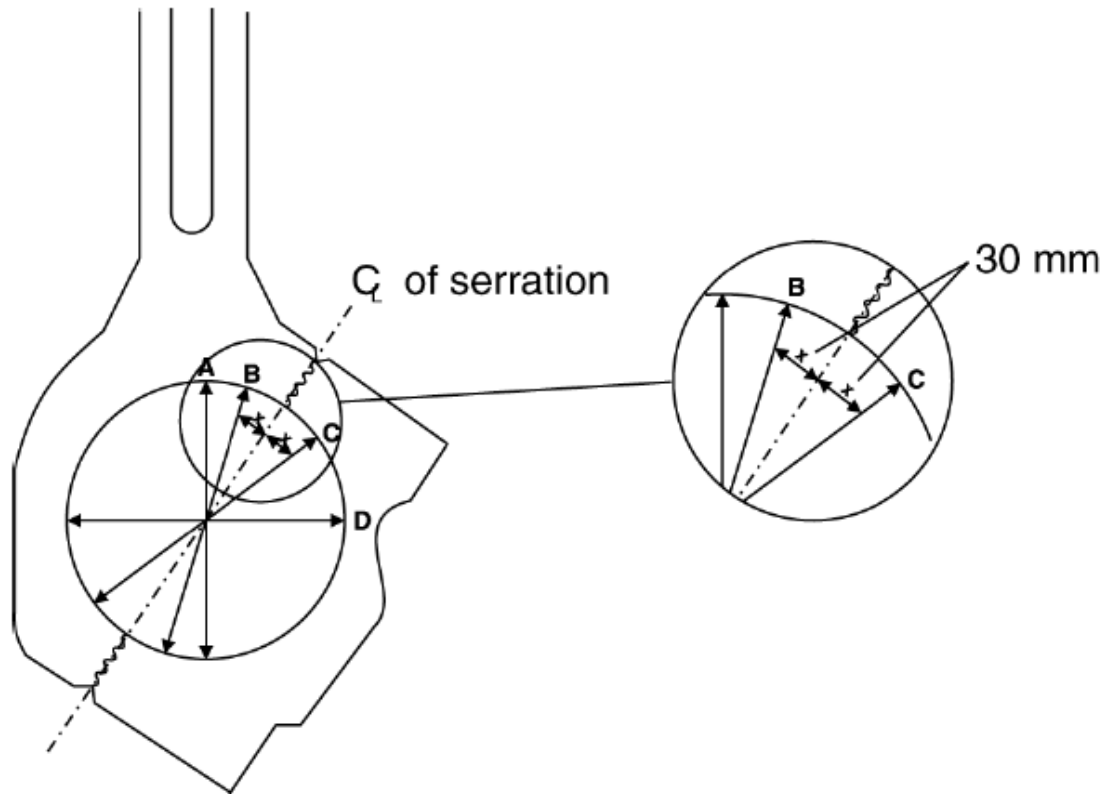


Connecting Rod Inspection for L+V28/32H (SI)			Plant/Ship:
			Engine No.:
			Sign.:
Cylinder no.	1	2	3
Connecting rod ident no.			
Running hours for connecting rod			
	A	- 0,5	- 3,0
	B	- 2,0	- 7,0
	C	- 1,5	- 5,0
	D	+ 5,0	+ 5,5
	E	+ 3,0	+ 3,5
Ovalness: Difference between minimum and maximum.	7,0	12,5	
Condition of serration	<input type="checkbox"/> Serration OK	<input type="checkbox"/> Serration OK	<input type="checkbox"/> Serration OK
Tightening for measurement see instruction	<input type="checkbox"/> Wear	<input type="checkbox"/> Wear	<input type="checkbox"/> Wear
	<input type="checkbox"/> Cracks	<input type="checkbox"/> Cracks	<input type="checkbox"/> Cracks
	<input type="checkbox"/> Corrosion/ Pitting	<input type="checkbox"/> Corrosion/ Pitting	<input type="checkbox"/> Corrosion/ Pitting
	<input type="checkbox"/> Impact mark	<input type="checkbox"/> Impact mark	<input type="checkbox"/> Impact mark
Remarks:	Remarks:	Remarks:	
	to be reused	to be rejected	



Connecting rod
Ident no

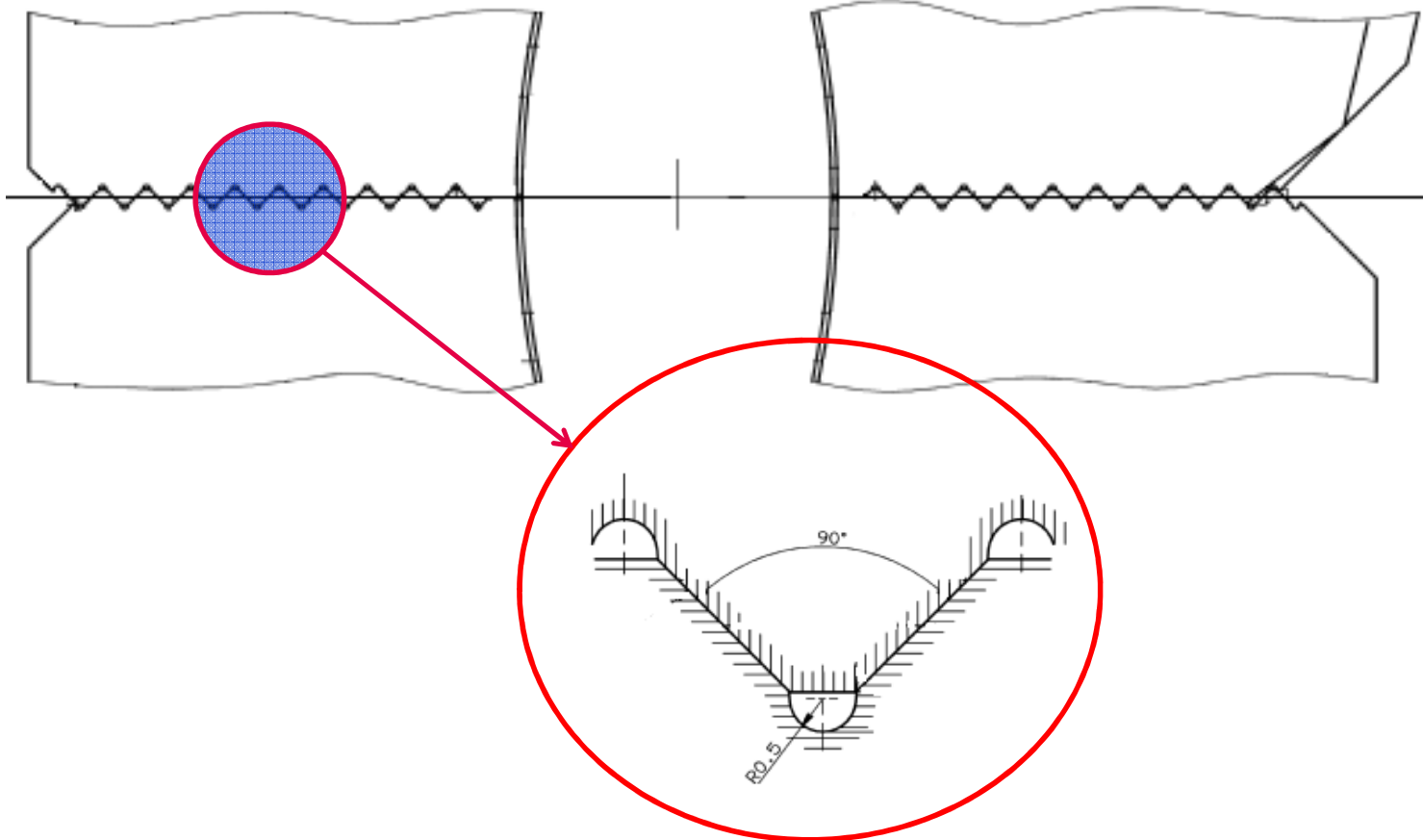
L23/30H, Piston, Con. Rod and Cyl. Liner - *Connecting rod inspection*



- Connecting rod bearing



L23/30H, Piston, Con. Rod and Cyl. Liner - Groove

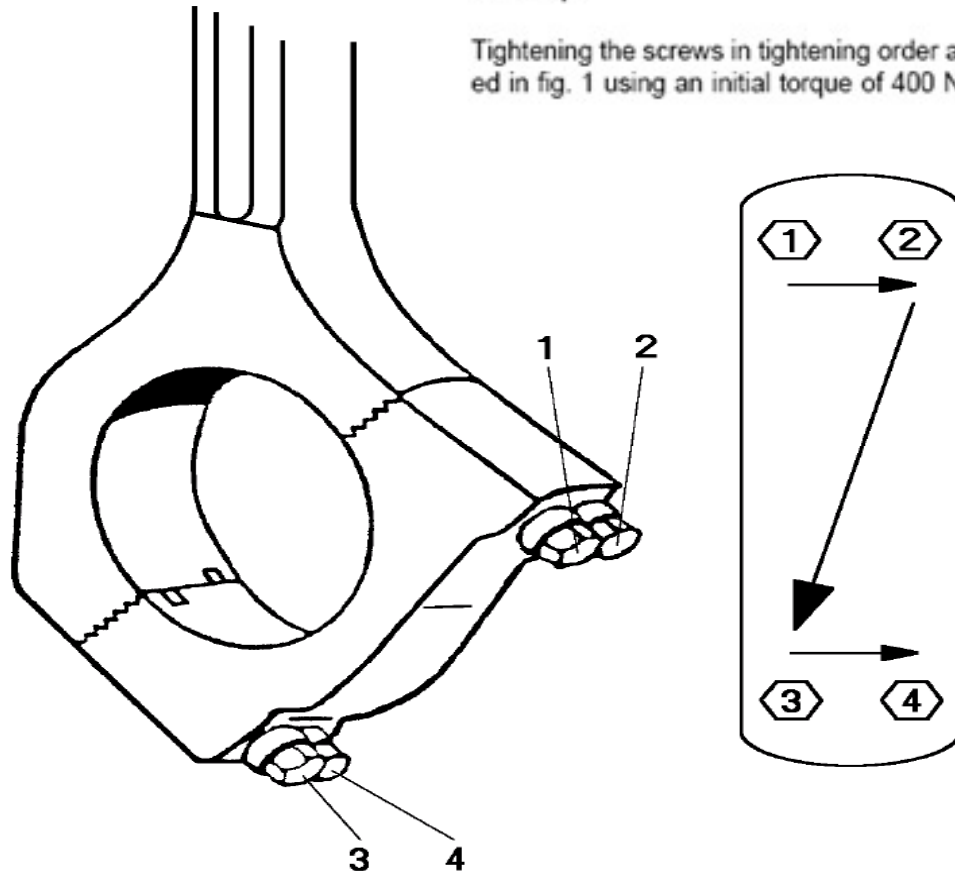


L23/30H Piston, Con. Rod and Cyl. Liner -Tightening order



1st Step.

Tightening the screws in tightening order as illustrated in fig. 1 using an initial torque of 400 Nm.



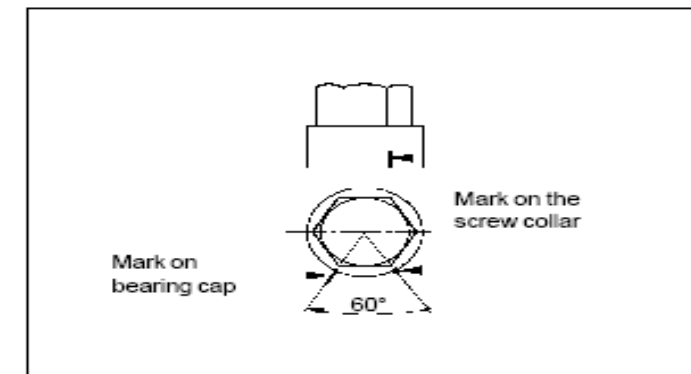
2nd Step.

Once more tightening the screws in prescribed tightening order, still using a torque of 400 Nm.

3rd Step.

Mark the four screws and the bearing cap felt-tippen as illustrated in fig. 2.

Tightening order by turning through a $60^\circ \pm 2^\circ$ angle i.e. until the marks on screws collar and connecting rod coincide radially.



L23/30H, Piston, Con. Rod and Cyl. Liner -Tightening order



No seizure on the heads of the screw nor on the cap

4th Step.

Check the screw tightening in prescribed order using a torque of 700 Nm.

Proper tightening condition is present, if the screws are not turned further during this test.

5th Step.

Check that the bearing can easily be moved on the journal.

Check of Connecting Rod Screws, Tightening Condition:

Check of the tightening condition of connecting rod screws has to be executed within a short running period after remounting/mounting of the connecting rod.

This check can be fulfilled after only a few running hours at max. rpm at full load but has to be fulfilled not later than 200 running hours after starting up.

The tightening condition is checked with a torque of 700 Nm executed in prescribed screw tightening order, see fig. 1.

Proper tightening condition is present if the screws are not turning further during the test.

L23/30H, Piston, Con. Rod and Cyl. Liner

-Marking on connecting rod screws



Tightening according to procedure:

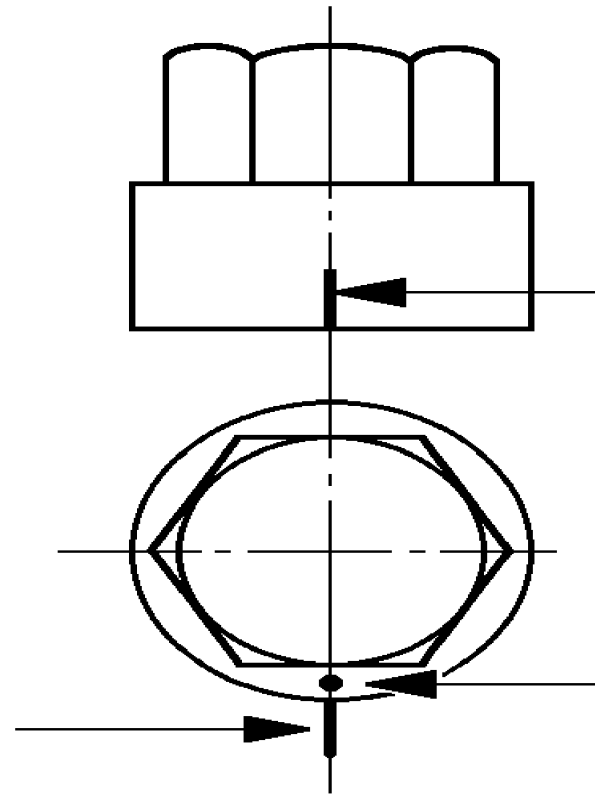
- 400 Nm
- 60 degrees

L23/30H, Piston, Con. Rod and Cyl. Liner

- Marking for the 60 degrees



Coinciding
mark on
bearing cap

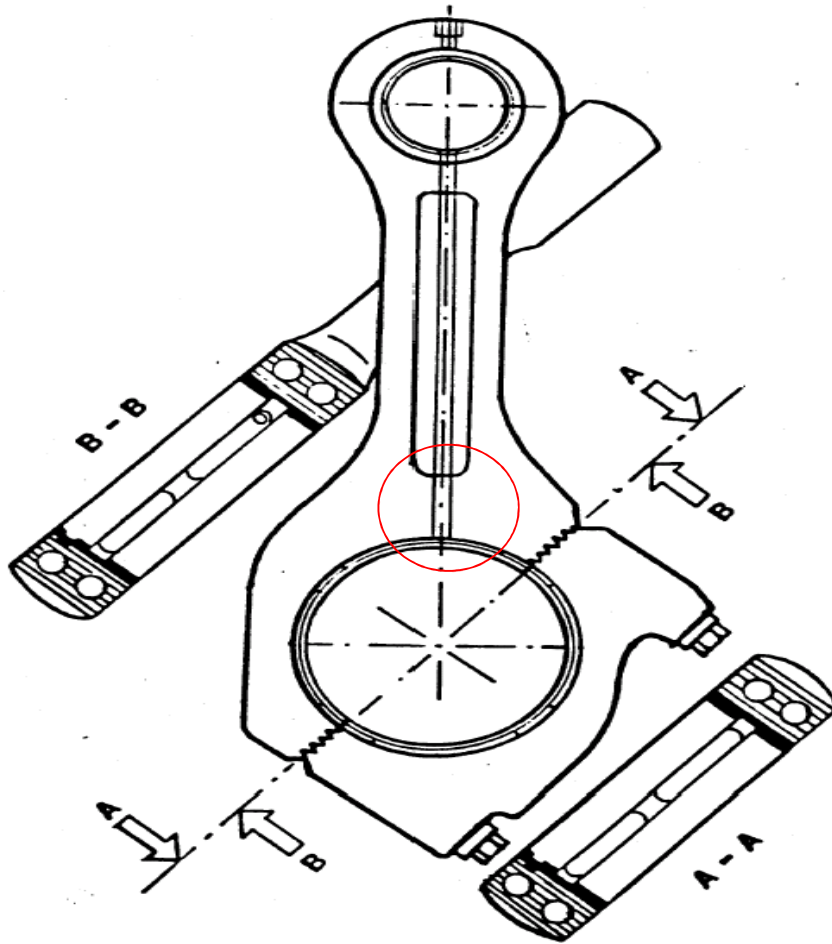


Mark on
screw collar

L23/30H, Piston, Con. Rod and Cyl. Liner -Oil channel system 1



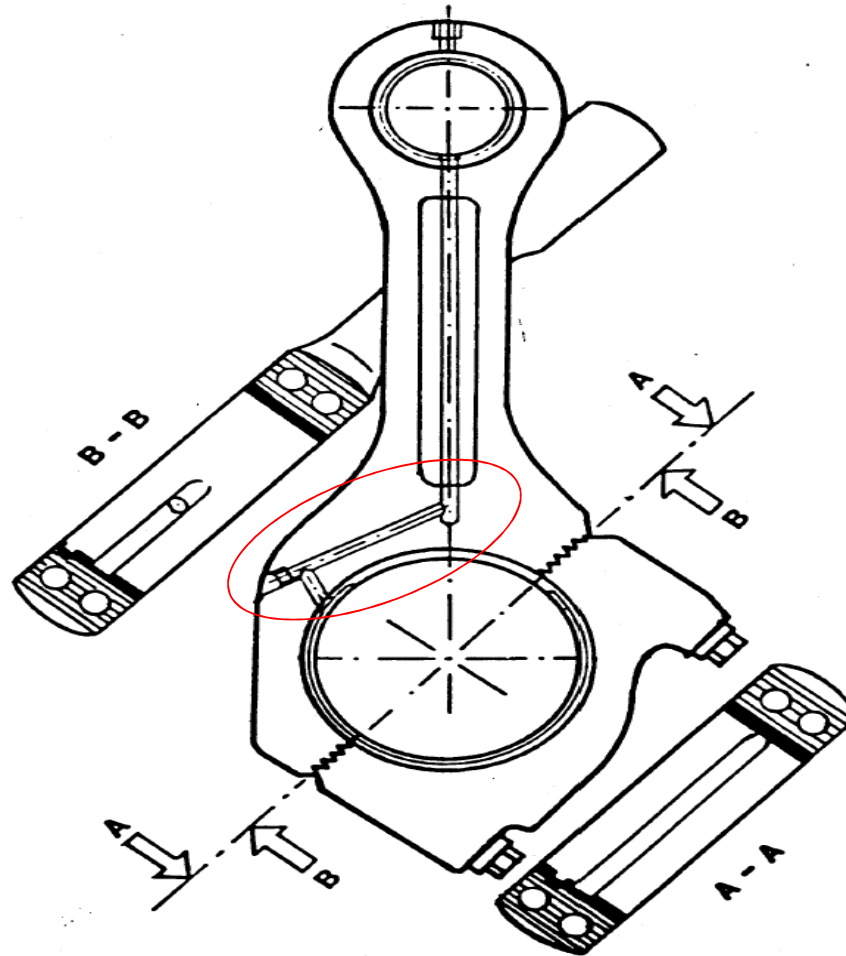
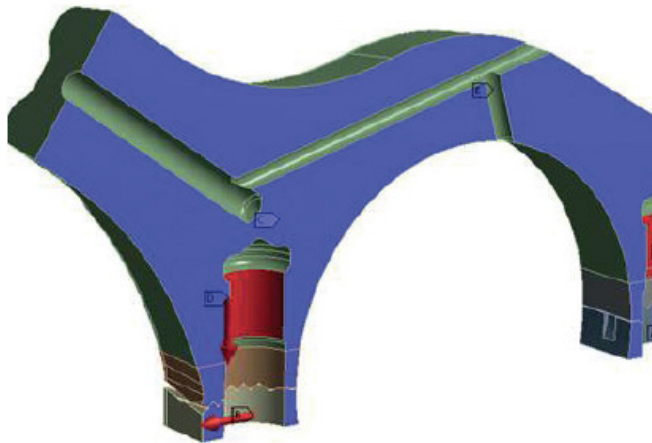
Bearing System no. 1



L23/30H, Piston, Con. Rod and Cyl. Liner - Oil channel system 2



Bearing System no. 2



L23/30H Piston and Connecting rod



Comparison of Bearing System no.1 and no.2

