



Dear Sirs

This service letter contains important information about the development of ridge wear at the crankshaft journal and the precautions required in connection with the replacement of connecting rod bearings. If the ridge is not addressed, this may cause severe engine damage with a possible loss of property and life.

Ridge wear will inevitably develop over time at the crank pin journal. The wear pattern is caused by abrasive impurities that remain in the lube oil. Efficient lube oil cleaning is therefore essential to keep the development of ridge wear as low as possible in trunk engines.

If you have any questions or comments, please forward your email to [LEO7-HOL@mandieselturbo.com](mailto:LEO7-HOL@mandieselturbo.com) with reference to this service letter.

Yours faithfully

**Mikael C. Jensen**  
Vice President  
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Action code: **WHEN CONVENIENT**

## Ridge Wear at Crankpin Journals

Replacement of SL2016-634/JNN

SL2017-647/JNN

May 2017

### Concerns

Owners and operators of MAN four-stroke diesel engines.

Type:

Marine: L16/24, L21/31, L27/38, L23/30H, L28/32H

Stationary: L16/24S, L21/31S, L27/38S, L23/30S, L28/32S, V28/32H, V28/32S

Propulsion: L21/31, L27/38, L23/30(A), V23/30(A), L28/32(A), V28/32(A)

Dual Fuel: L23/30DF, L28/32DF

### Change compared to SL2016-634/JNN

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Allowed ovality changed from 5/100 mm to 3/100 mm.

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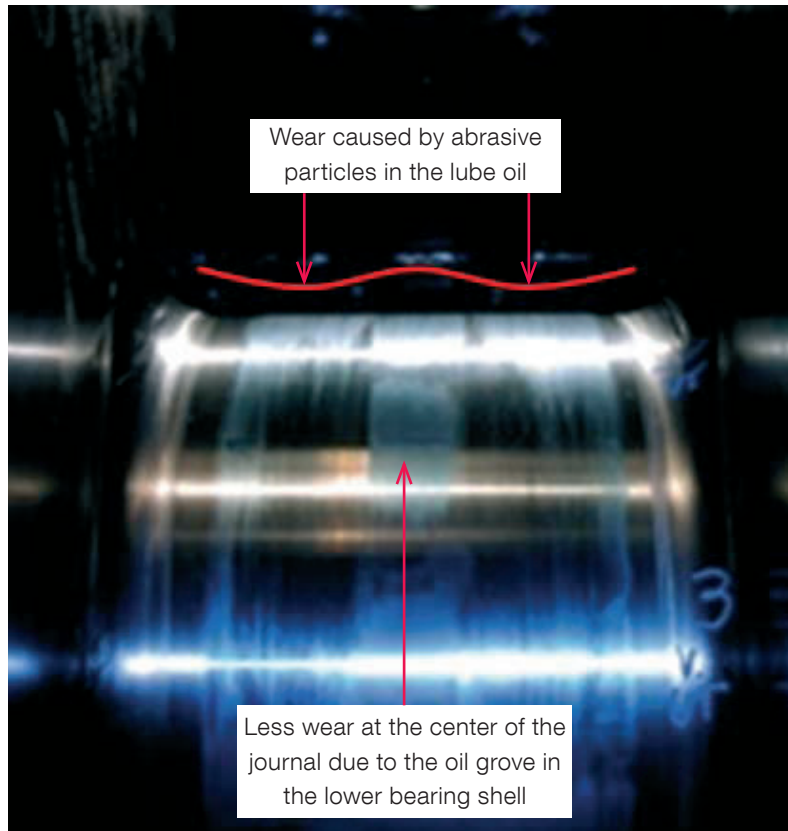
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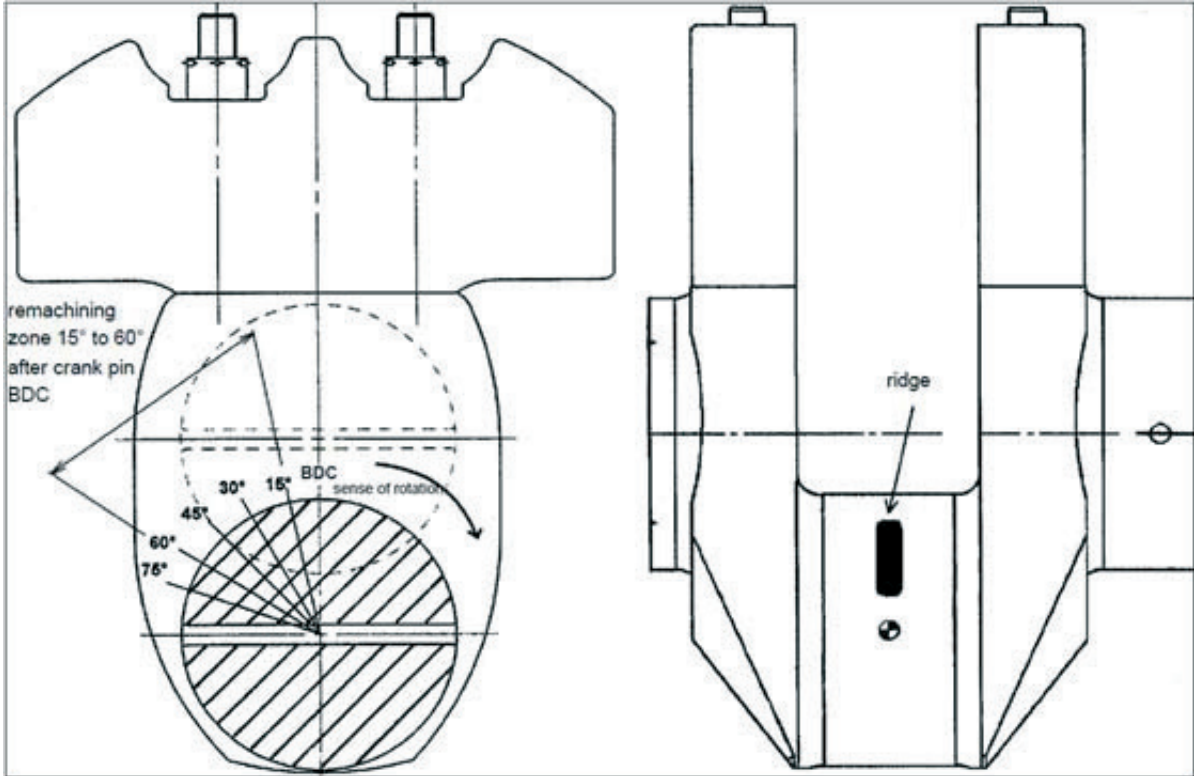
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Ridge wear will inevitably develop over time at the crank pin journal. The wear pattern is caused by abrasive impurities that remain in the lube oil. Efficient lube oil cleaning is therefore essential in order to keep the development of ridge wear as low as possible in trunk engines.

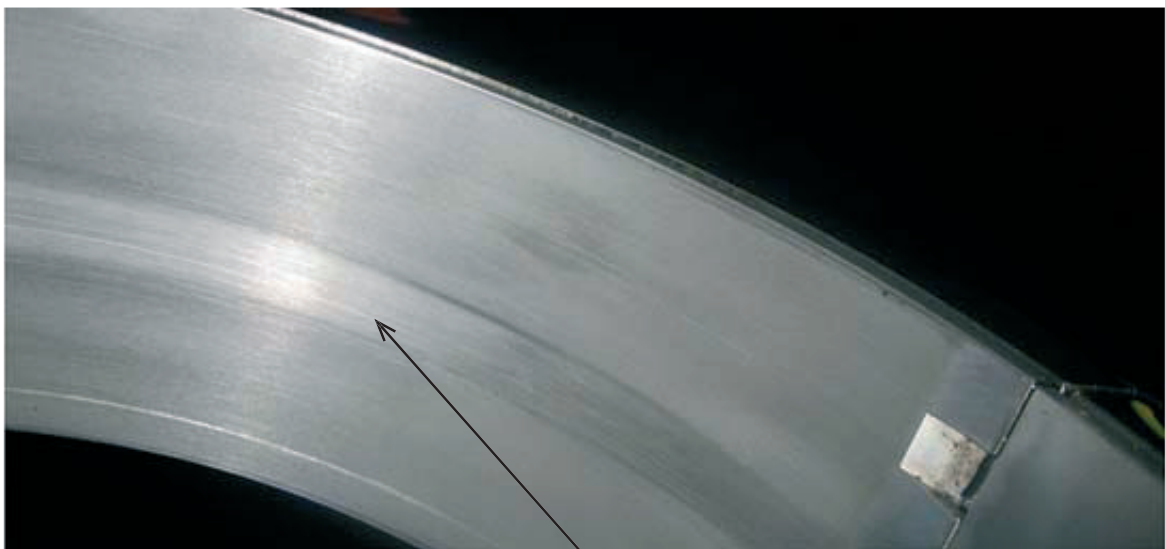


Ridge wear can be observed as wear on both sides of the centre of the crankpin journal. Ridge wear is often observed 15-60° after BDC, but can be extended to larger parts of the journal.



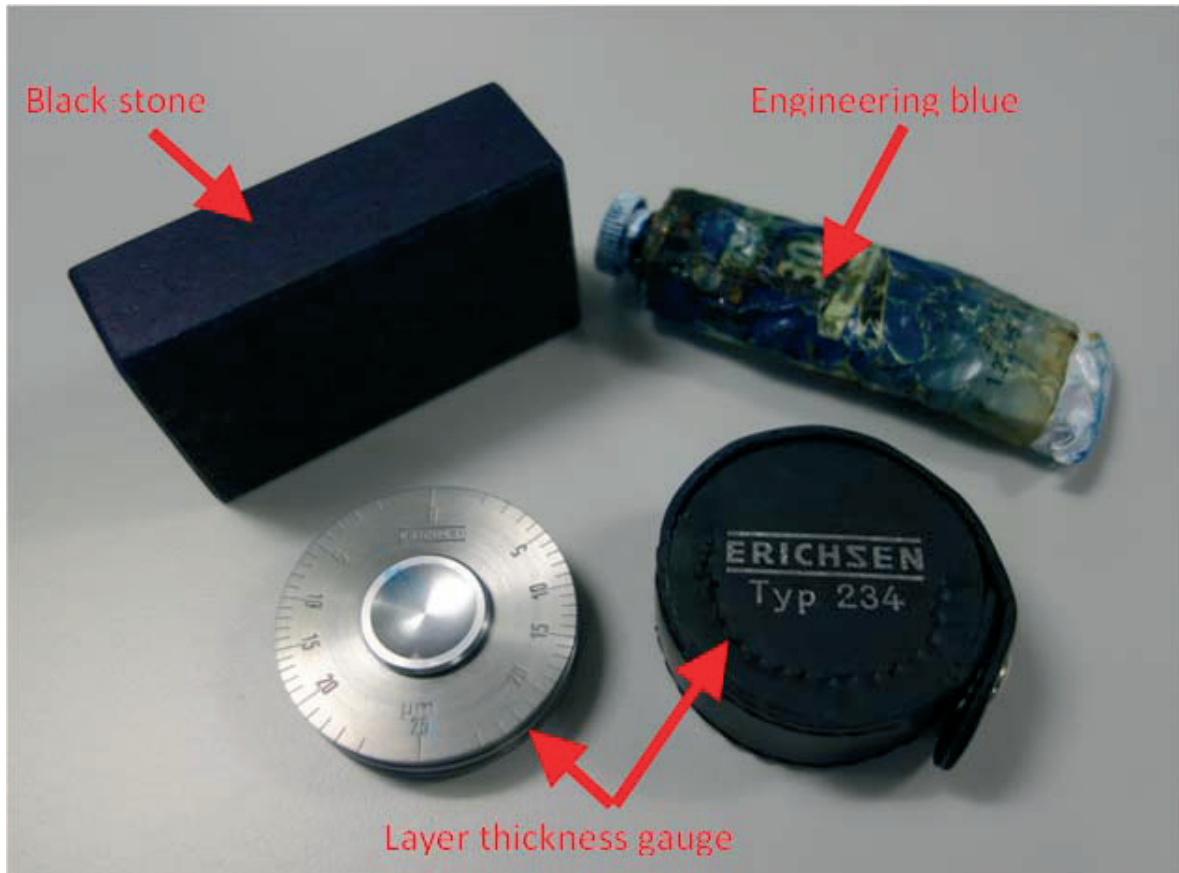
The sketch shows the location of the ridge wear in the highest loaded zone 15-60° after BDC.

Careful inspection and judgement of the crankpin journals must be carried out whenever a new crankpin bearing is installed. If ridge wear is observed, this must be rectified before new upper and lower bearing shells are installed. In case rectification is not carried out, the bearing damage as shown in the following will occur after a few hours of operation. In case of continuous operation serious damage might occur to the bearing and journal.



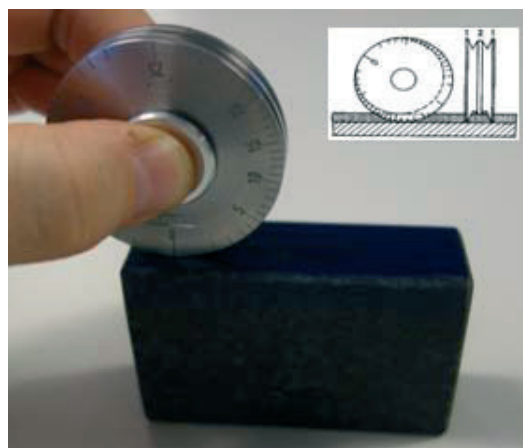
Bearing shell with damage from ridge wear.

To check the journal for ridge wear, a set of tools (see below) consisting of a black stone, Prussian blue or similar and a gauge to measure the thickness of the marking paste is required.

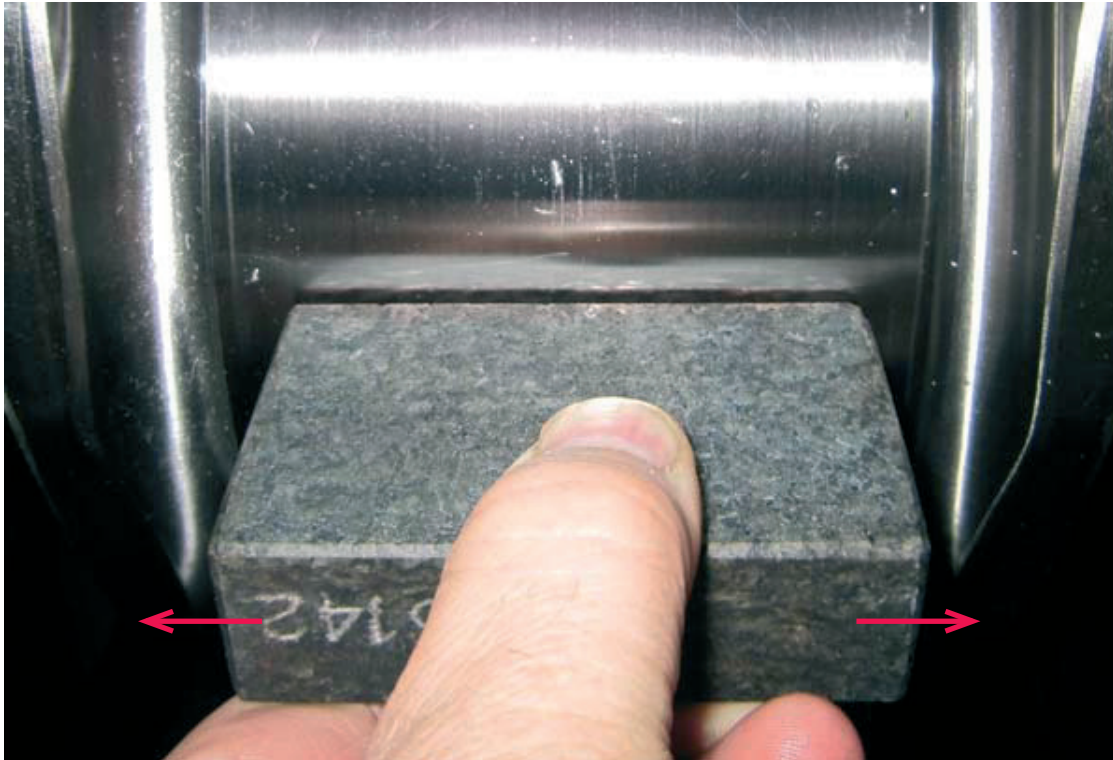


Example of a tool kit used for checking for ridge wear

To measure ridge wear on a journal, blue paste should be applied to the black stone in a thin uniform layer, and it is best applied with a sponge. The thickness of the layer should be 4-5 microns. Use the layer thickness gauge to check the thickness before the contact test at the journal is carried out.



The layer thickness of the marking paste is checked before the test is carried out.



Test the journal by moving the stone back and forth on the journal to determine possible ridge wear on the journal.



Contact test at a journal with no ridge wear, indicated by an unbroken line of the marking paste.

If there are indications of ridge wear, the line will be broken and look similar to the picture below. The broken line will look different from case to case since the depth and shape of the ridge wear will be different.



Example of journal with ridge wear – indicated by the broken lines of the marking paste.

Depending on the depth of the ridge wear, the affected journals must be polished or, in the worst case, machined to undersize.

< 5 micron, no action needed.

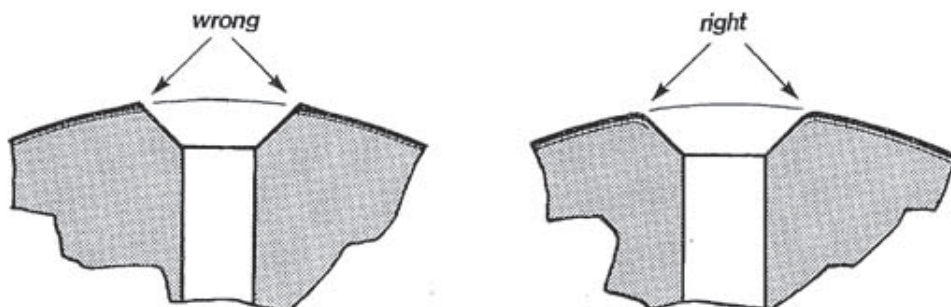
> 5-10 micron, polish the journal with a 400 grid emery cloth mainly in the centre of the journal to remove or bring the ridge wear below 5 micron.

> 10 micron, it is recommended to machine the journal to undersize (not available for L16/24).

If polishing is made, the ovality of the journal must be checked afterwards; the ovality may not exceed 3/100 mm.

After polishing the surface roughness must be within Ra 0,2-0,4.

After any polishing, it must be checked that no sharp edge is formed in the transition zone between the lube oil supply holes and the journal.



In case of any doubt about the need for polishing of the journals or the above rectification procedure, we recommend to contact our worldwide PrimeServ organisation for assistance.