Service Bulletin-Engine Bearings

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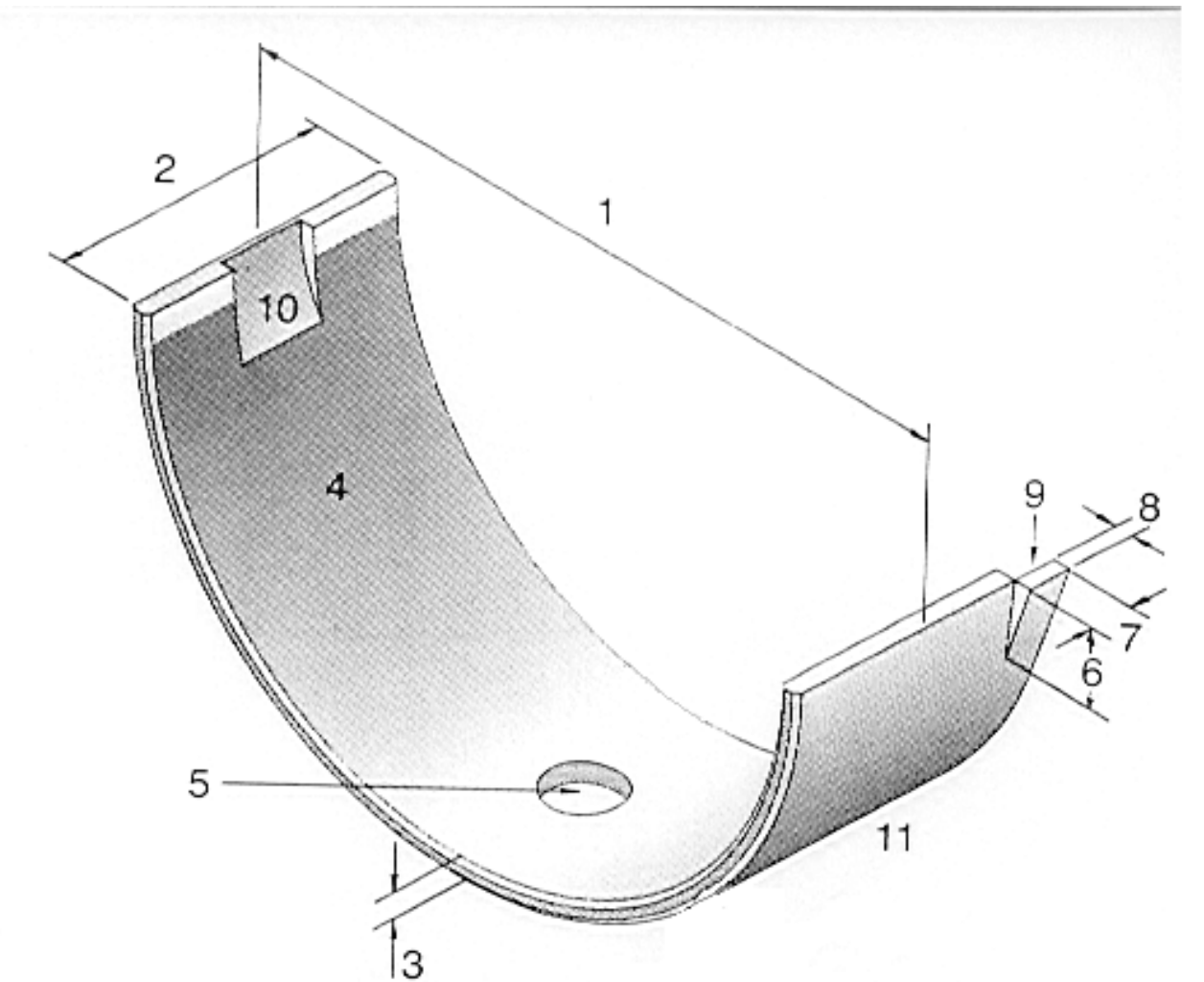
Plain bearing shell terminology

1. Outer diameter
2. Bearing length
3. Wall thickness
4. Overplate
5. Oil - hole
6. Length of lip
7. Width of lip
8. Depth of lip
9. Lip relief
10. Oil-groove



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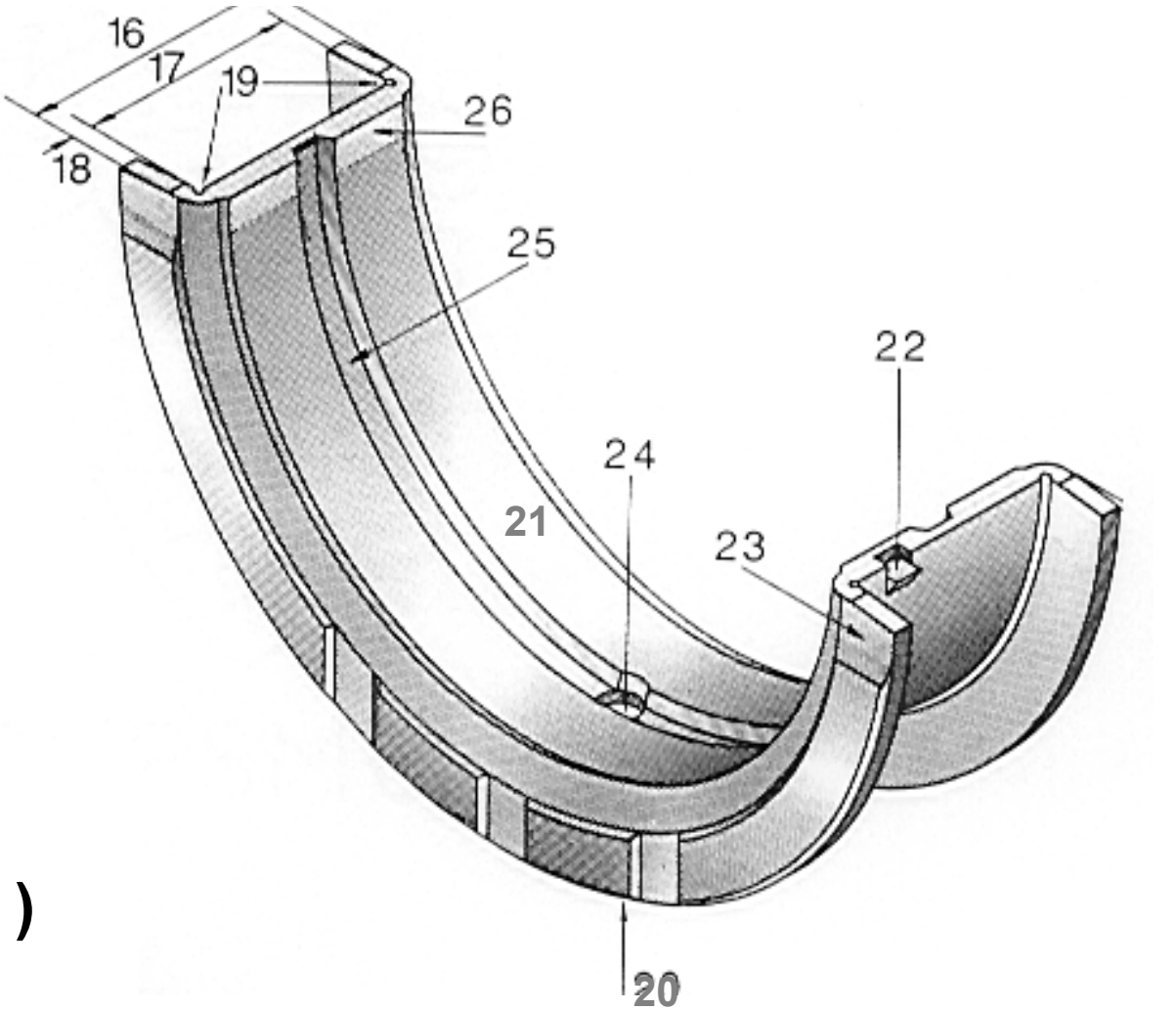
Thrust bearing terminology

16. Length
17. Flange distance
18. Flange wall-thickness
19. Stress reduction reliefs
20. Outer flange diameter
21. Overplate
22. Coined lip
23. Joint relief (thrust face)
24. Oil-hole
25. Oil-groove
26. Joint relief (inner surface)



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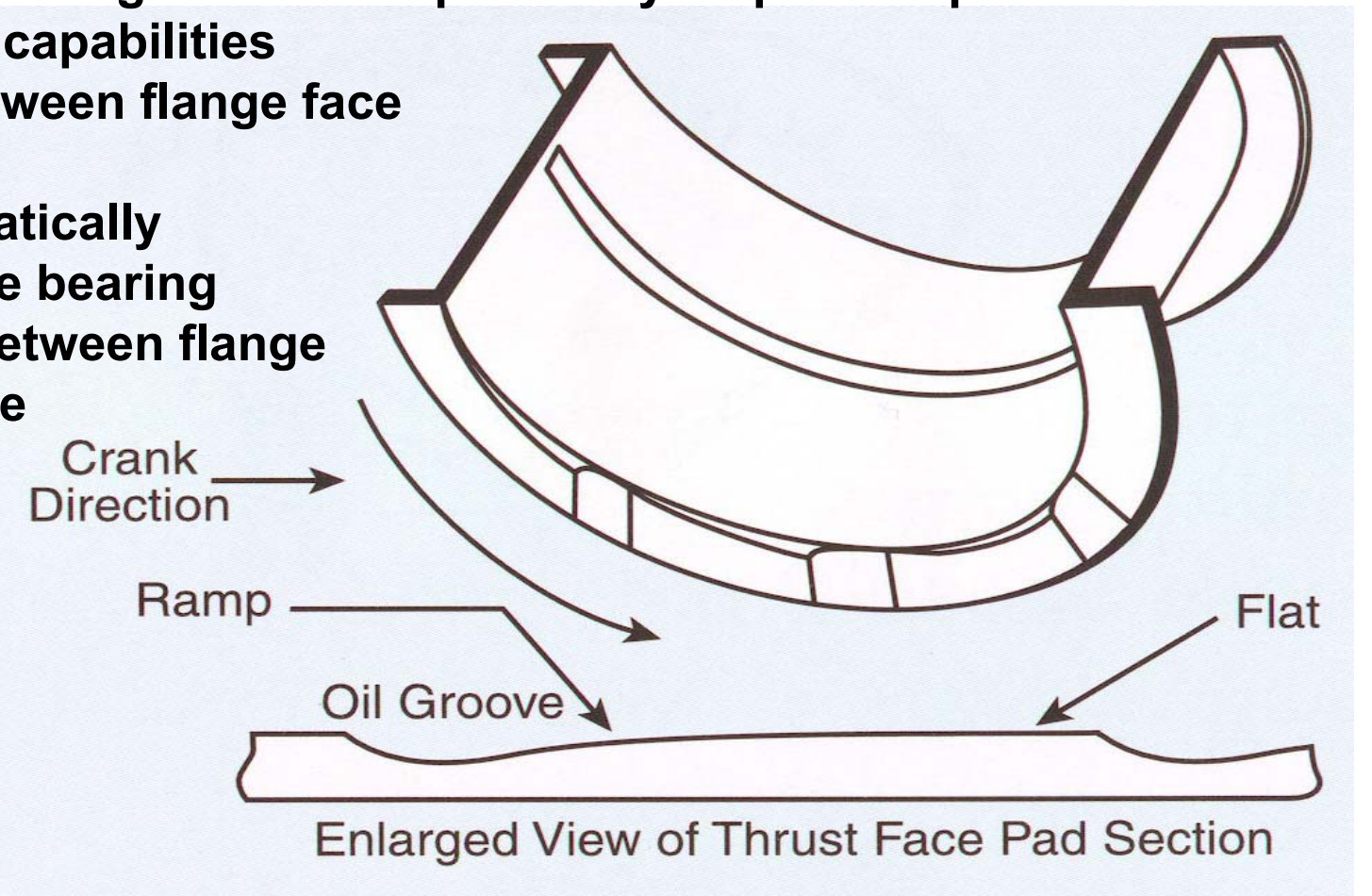
Design - contoured flange

- Uses a series of formed ramp & flat hydrodynamic profiles on the flange surface to wedge oil via the positively sloped ramp.
- Doubles thrust load capabilities
- Reduces friction between flange face & thrust surface
- Reduces wear dramatically
- Extends life of flange bearing
- Improves lubricity between flange face & thrust surface



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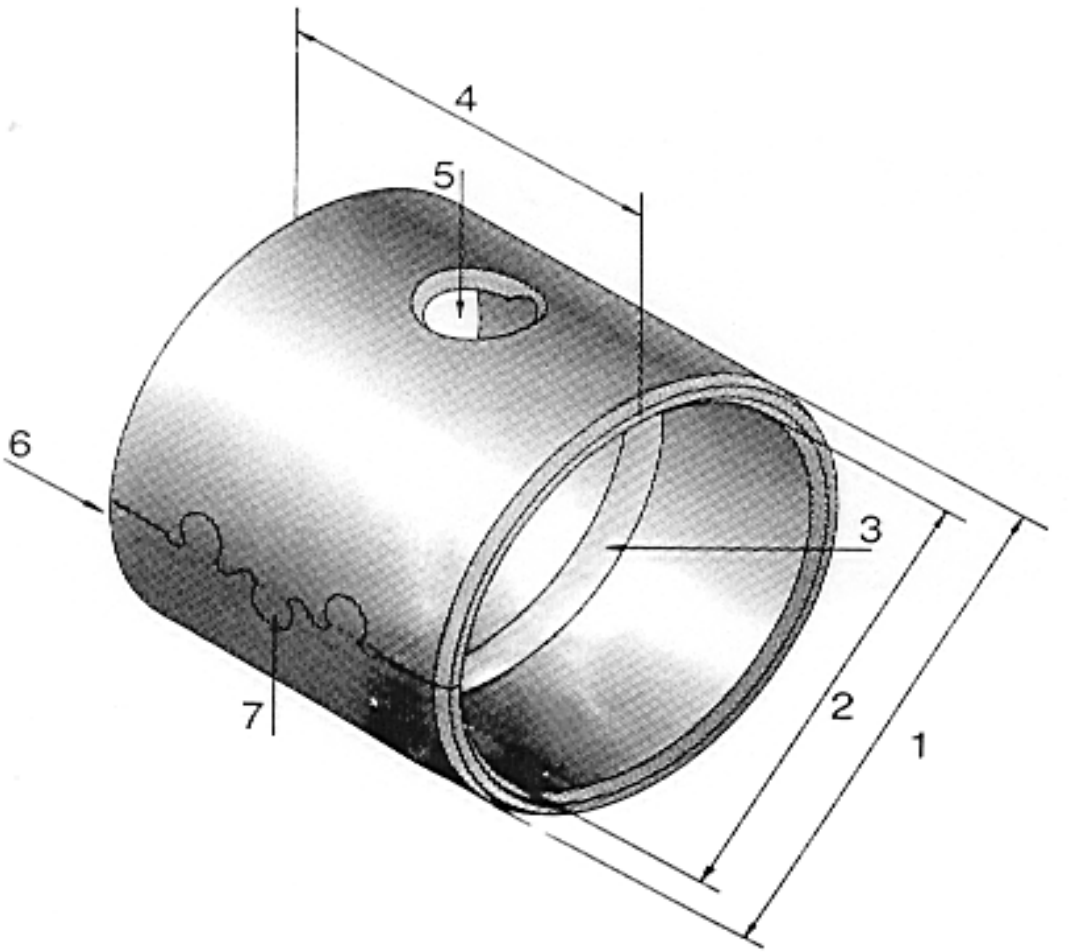
Small-end bush terminology:

1. Outer diameter
2. Inner diameter
3 Oil-groove
4. Length
5. Oil-hole
6. Joint
7. Clinch or laser weld



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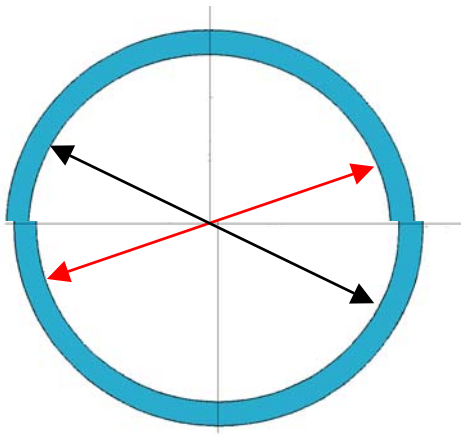
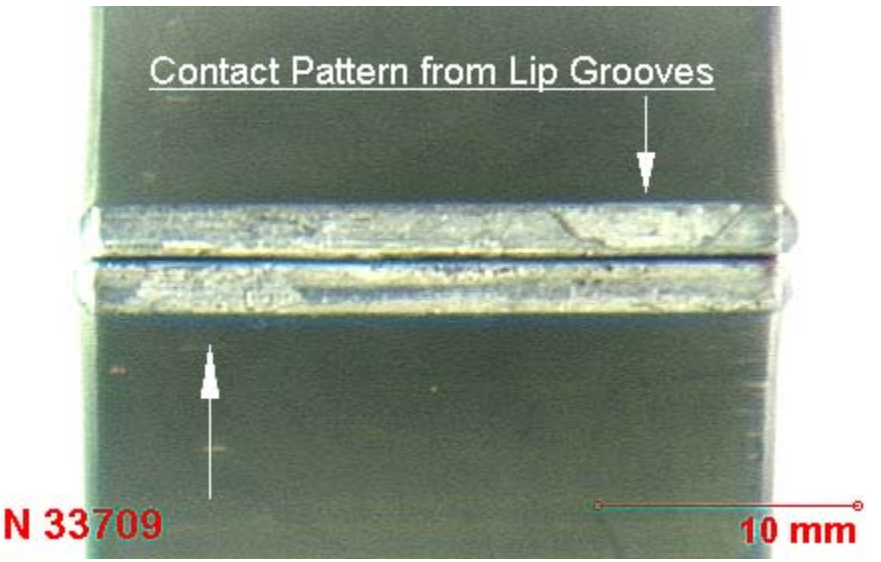
Wear due to housing cap offset - (shells installed incorrectly)





Diameter too narrow

Diameter too wide

Lip groove contact marks on wrong joint face

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Overplate wear

Appearance: surface (overplate) of bearing worn through, exposing material below.
Causes: marginal lubrication, contaminated lubricating oil or blockages/restrictions in oil feed galleries.
Remedy: thoroughly flush out engine lubrication system, ensuring that all galleries are free from blockages/debris.
Replace oil and oil filter.

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Edge contact due to incorrect journal fillet radius

Appearance: bearing lining and steelback are torn along one or both edges.
Cause: Incorrect fillet radii on crankshaft journals.
Remedy: Replace all bearings, flush out engine lubrication system, ensuring that all galleries are free from blockages/debris and replace oil and oil filter.

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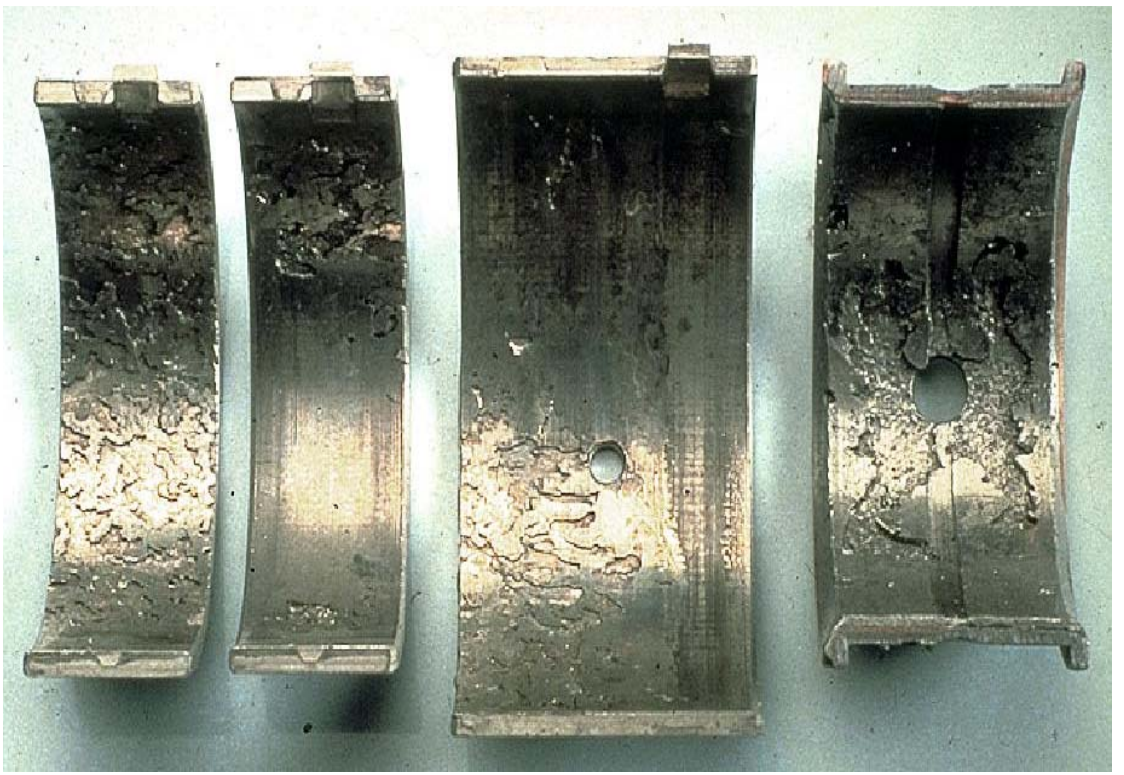
Bearing lining material fatigue.



Appearance: bearing lining cracked with material missing, forming craters.
Cause: Incorrect bearing clearance, excessive compression pressures, "lugging" - caused by low speed high gear.
Remedy: Replace all bearings & check clearance. Flush out engine lubrication system, ensuring that all galleries are free from blockages/debris and replace oil and oil filter.

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Fatigue of steel-back:

Appearance: steel-backing of bearing cracked/broken.
Cause: Incorrect bearing clearance, excessive compression pressures, "lugging" - caused by low speed high gear - Overload conditions.
Remedy: replace all bearings & check clearance. Flush out engine lubrication system, and replace oil and oil filter.

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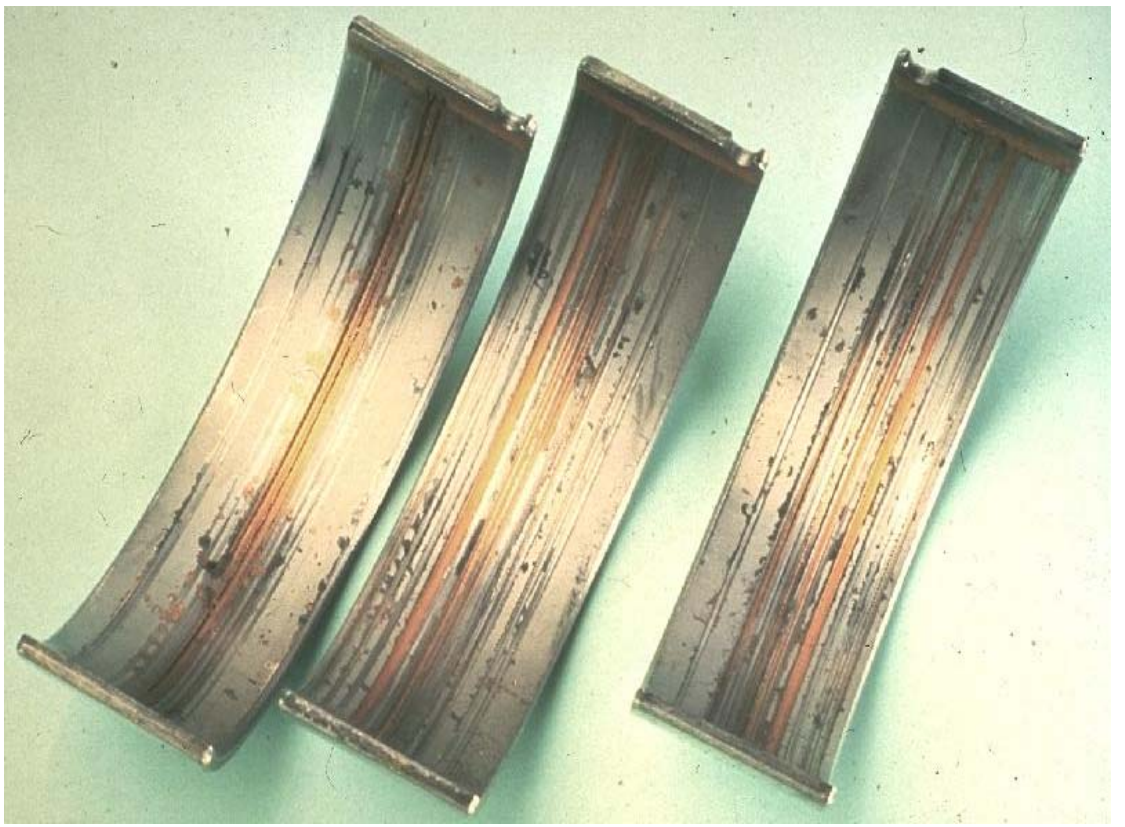
Scored lining material:



Appearance: bearing surface is deeply scratched/scored..
Cause: lubrication system contaminated with foreign particles.
Remedy: flush out engine lubrication system, ensuring that all galleries are free from blockages/debris, replace bearings and regrind crankshaft if necessary. Replace engine oil & filter, prime lubrication system before initial start up.

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Burnt/ wiped lining.

Appearance: bearing surface/lining material discoloured and wiped from backing material. Lining material often found extruded along edges of shell.

Cause: lubrication starvation, blocked oil passage, low oil level, misalignment, insufficient clearance etc.

Remedy: flush out engine lubrication system, ensuring that all galleries are free from blockages/debris, replace bearings and regrind crankshaft if necessary. Replace engine oil & filter, prime lubrication system before initial start up.

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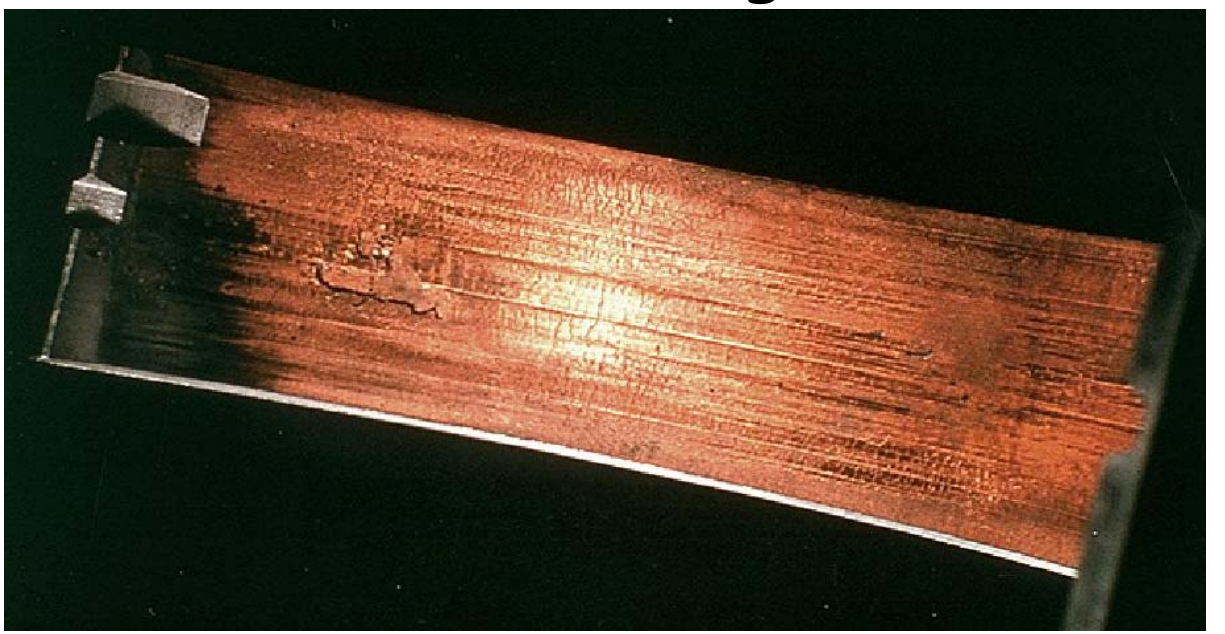
Corrosion of lining material.



Appearance: bearing surface/lining material discoloured, darkened and often etched by chemical attack.
Cause: acid build up in engine oil due to: high sulphur fuel, use of "sewer gas", coolant contamination of oil, over-aged engine oil.
Remedy: flush out engine lubrication system, replace bearings and regrind crankshaft if necessary. Replace engine oil & filter, prime lubrication system before initial start up.