Document title General information on inspecting cylinder walls

Document number ah0100p030001a

Engine **111, 122, 132.9, 134, 135, 160.9, 200, 260, 264, 266, 270, 271, 274, 276.9, 281, 282, 602, 604, 605, 606, 607, 608, 611, 612, 613, 622, 626, 628, 629, 639, 640, 646, 647, 648, 651, 660.9, 699**

General information on engines with cast iron cylinder barrels

In order to be able to make a correct decision on the condition and further use of the crankcase, the following figures and notes help when assessing the cylinder barrel.

i Carry out a mechanical pressure test and a manual compression test for an objective assessment of the condition of the cylinder or the cylinder barrel.

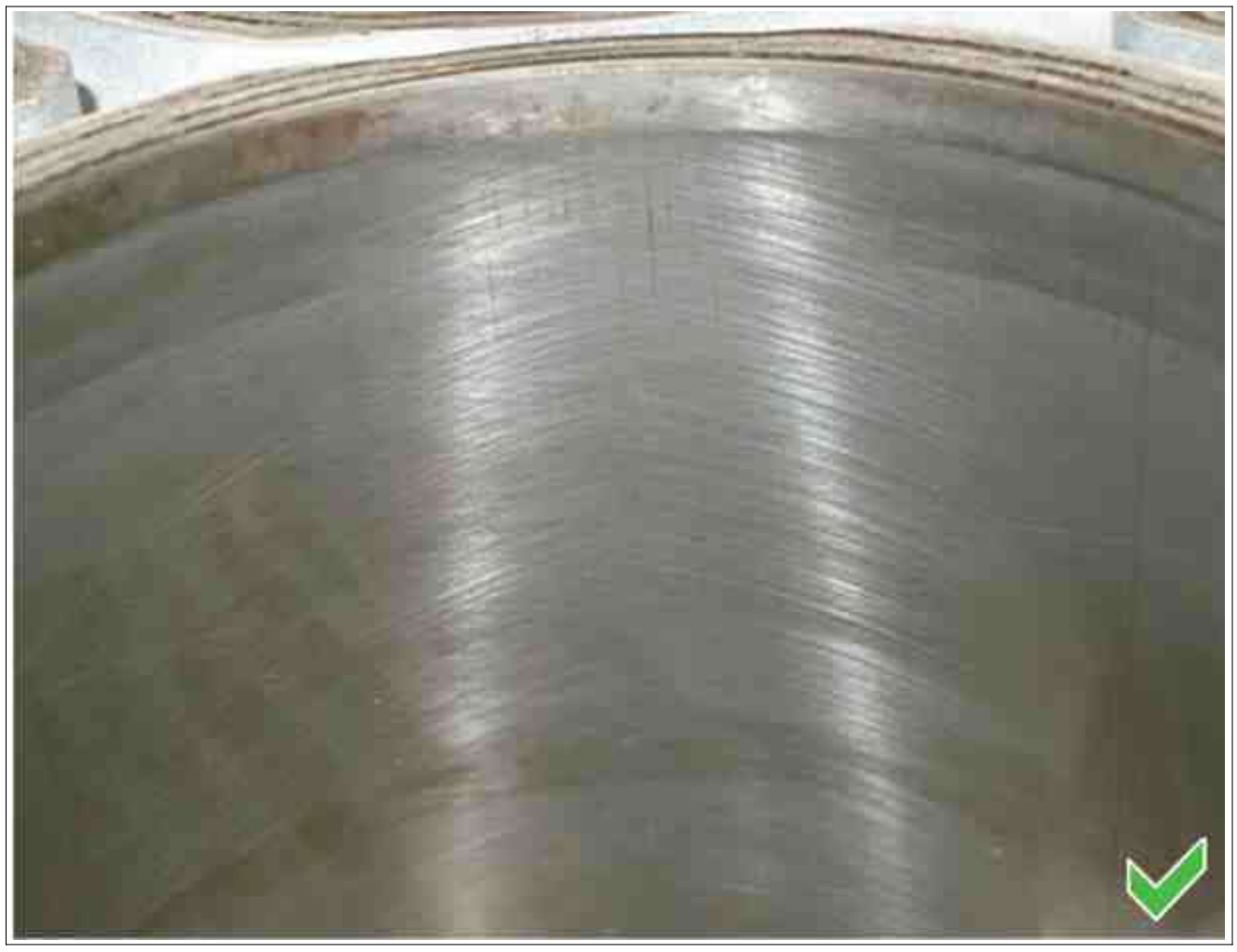
i If an increased pressure loss was found with the cylinder leakage tester: Inspect engine by listening at cylinder head gasket, air intake area, exhaust system, oil filler opening and prechamber or spark plug bore of the cylinder or adjacent cylinders and thereby locate the area in which pressure escapes. A smoke detector can be used to localize the cause of the problem.

i A score mark that can be felt with your fingernail is not permitted as a sole criterion for exchange.

i A significant degree of scoring in the cylinder barrel with material accumulation can justify an engine replacement.
If there is a score mark in the cylinder barrel with significant material accumulation, this should be documented with representative pictures.

Crankcase with cast iron cylinder barrels

i For a quick check, use a magnet to determine the cylinder barrel concerned because cast iron cylinder barrels are magnetic.



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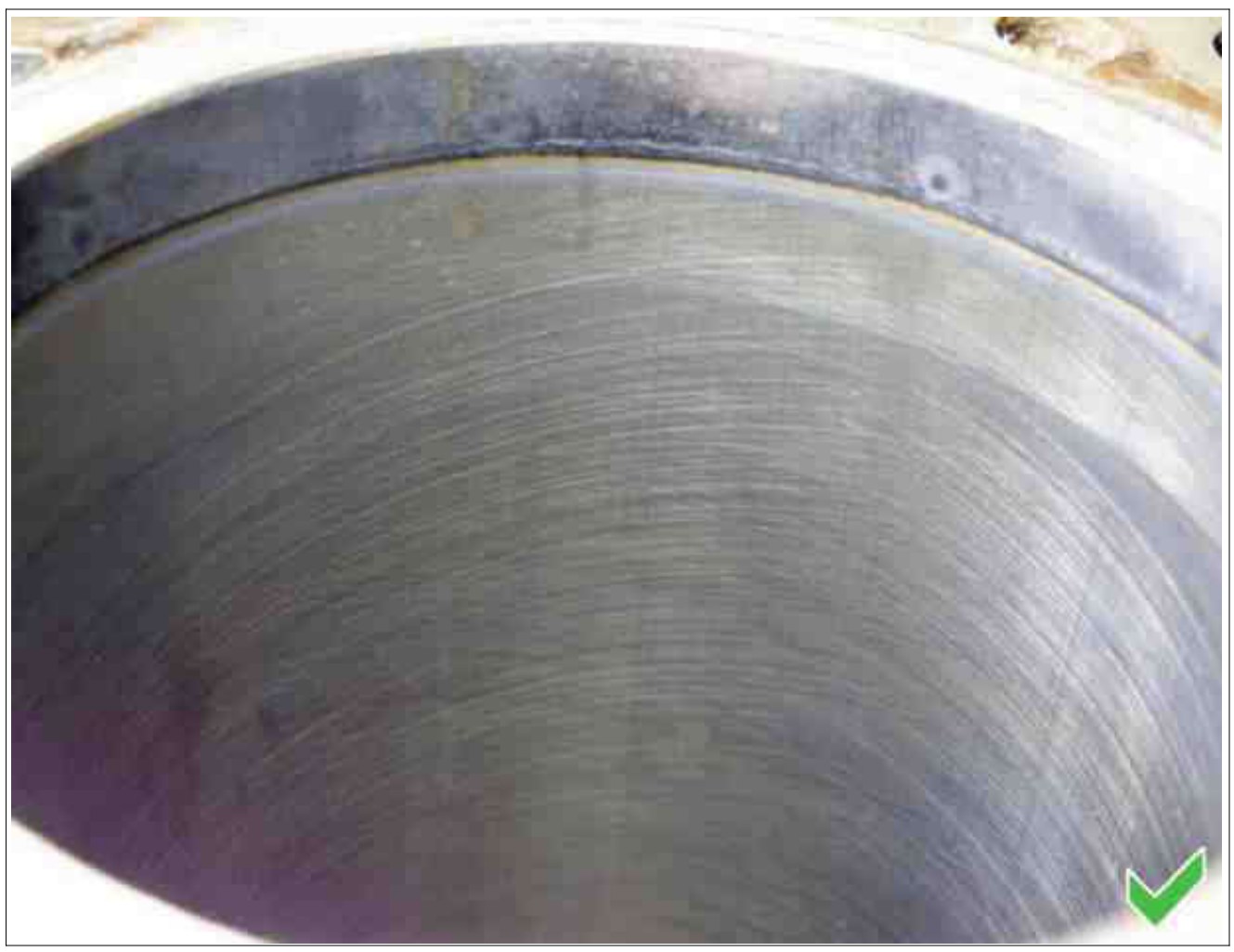
Ideal condition (not for engine 622/626)

Cross-grinding marks from honing clearly visible on cylinder wall.

i Reuse crankcase.



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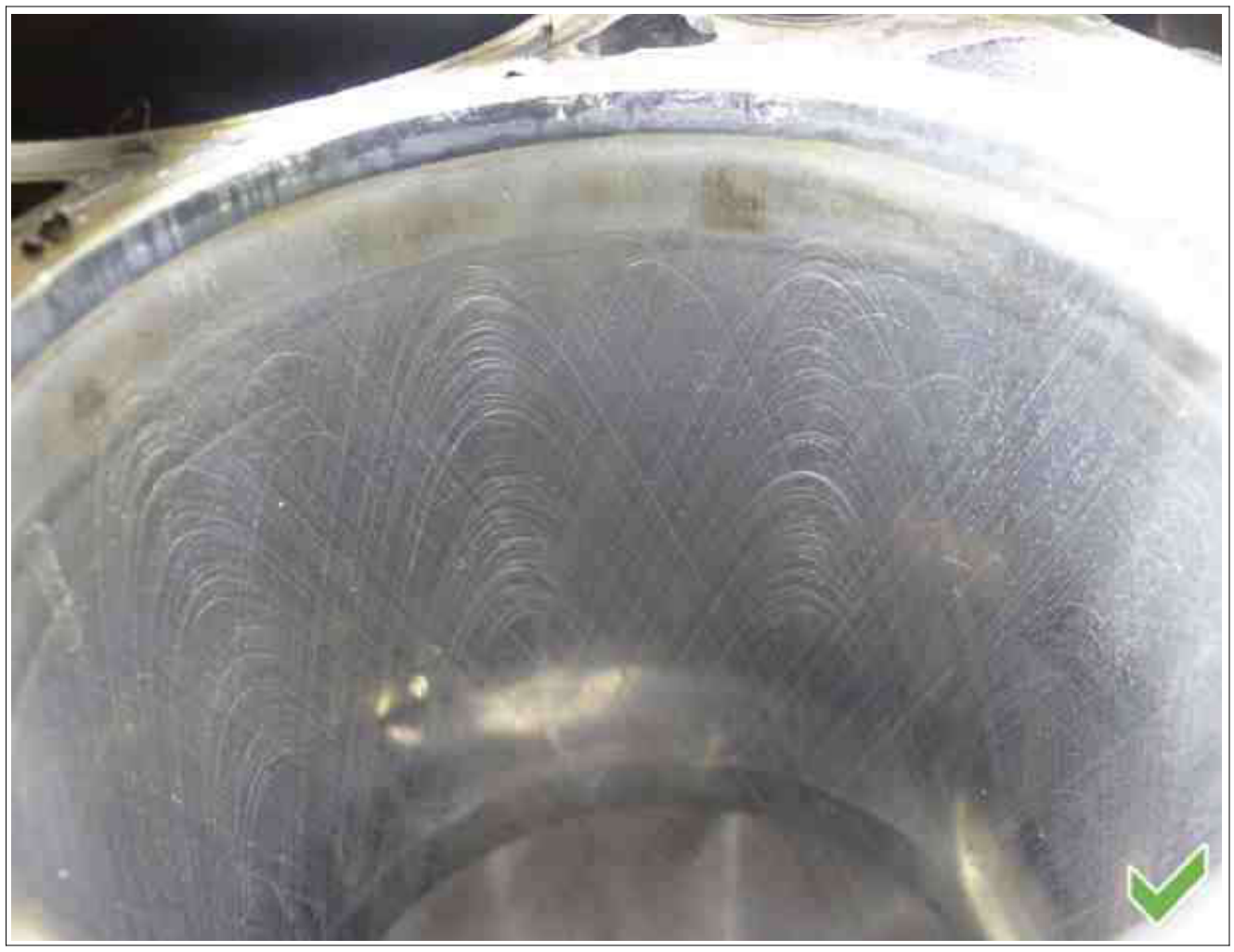
Ideal condition (for engine 622/626)
Parabolic cut marks from honing clearly visible on cylinder wall.
i Reuse crankcase.



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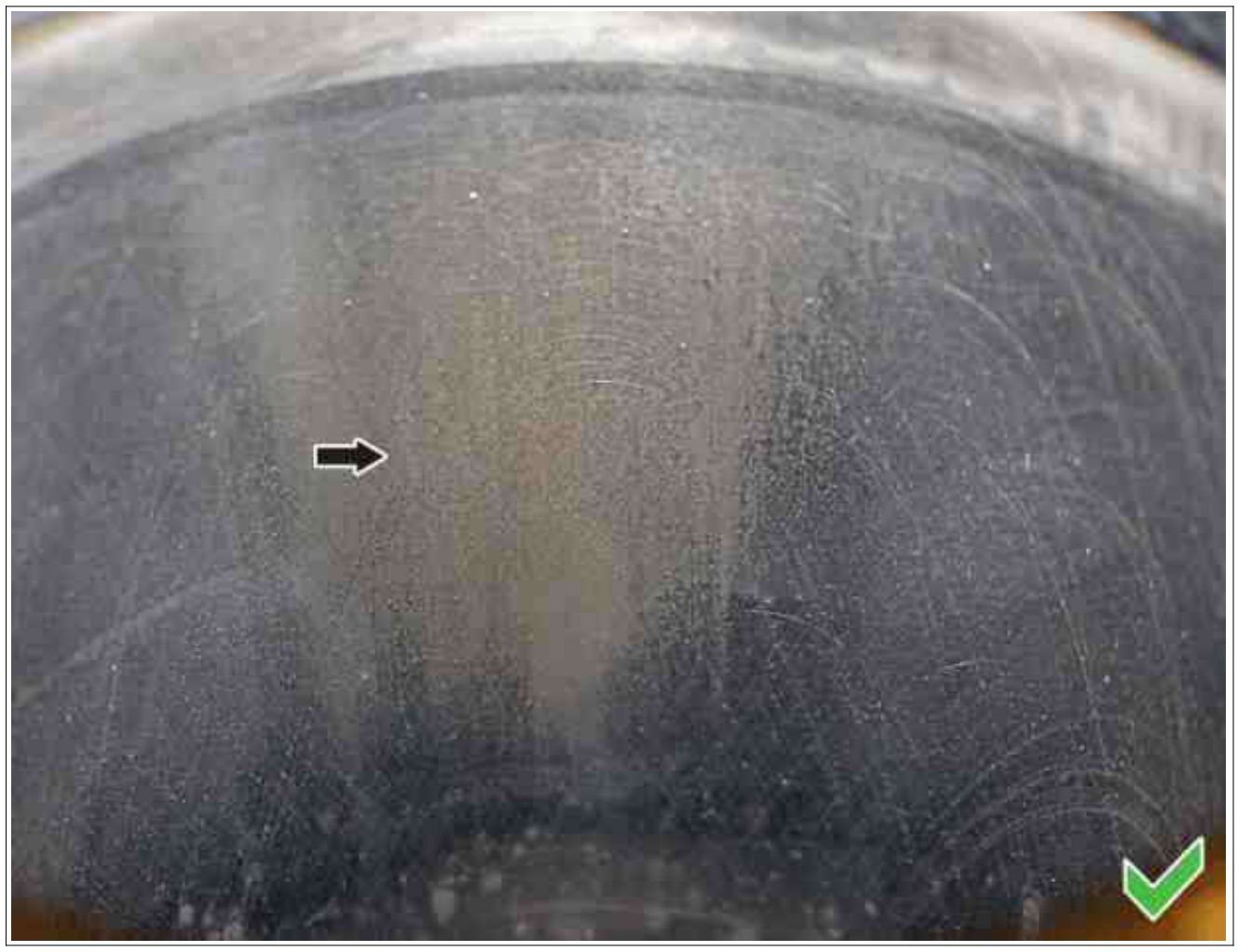
Erosion of cylinder barrel (for engine 622/626)
To detect surface erosion of cylinder barrel.
i Reuse crankcase.



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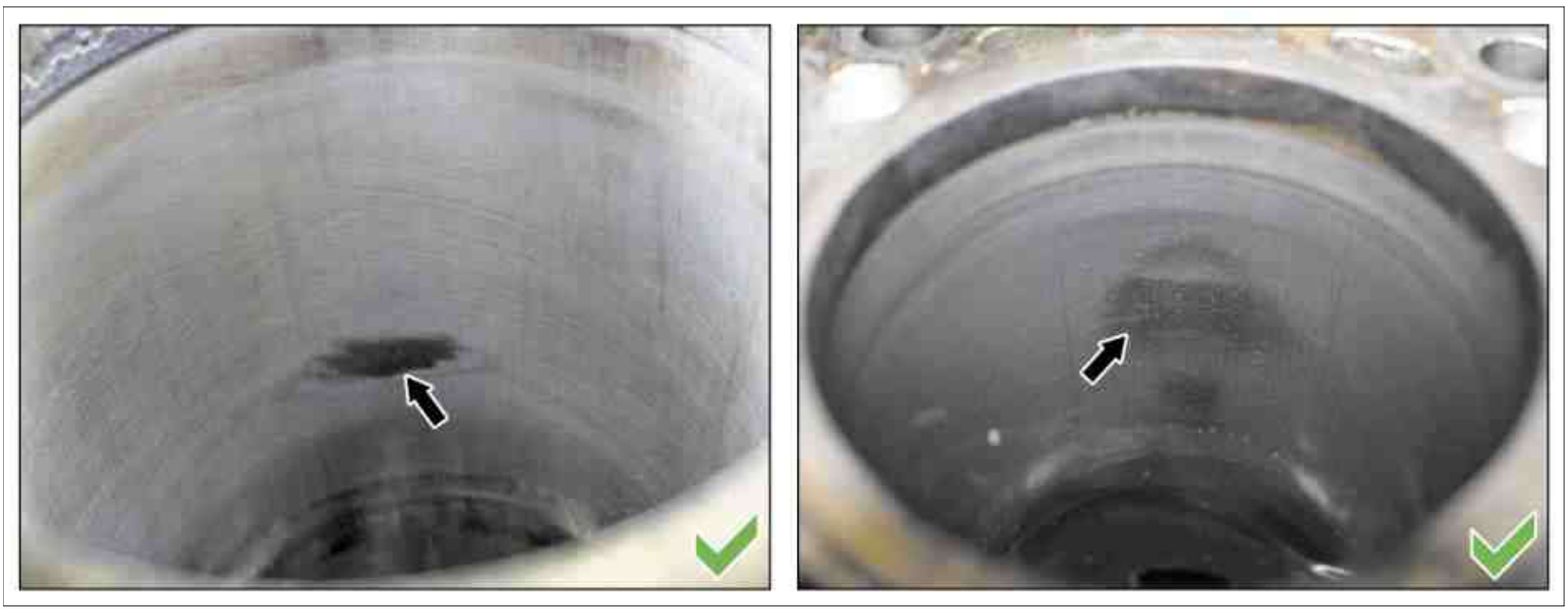
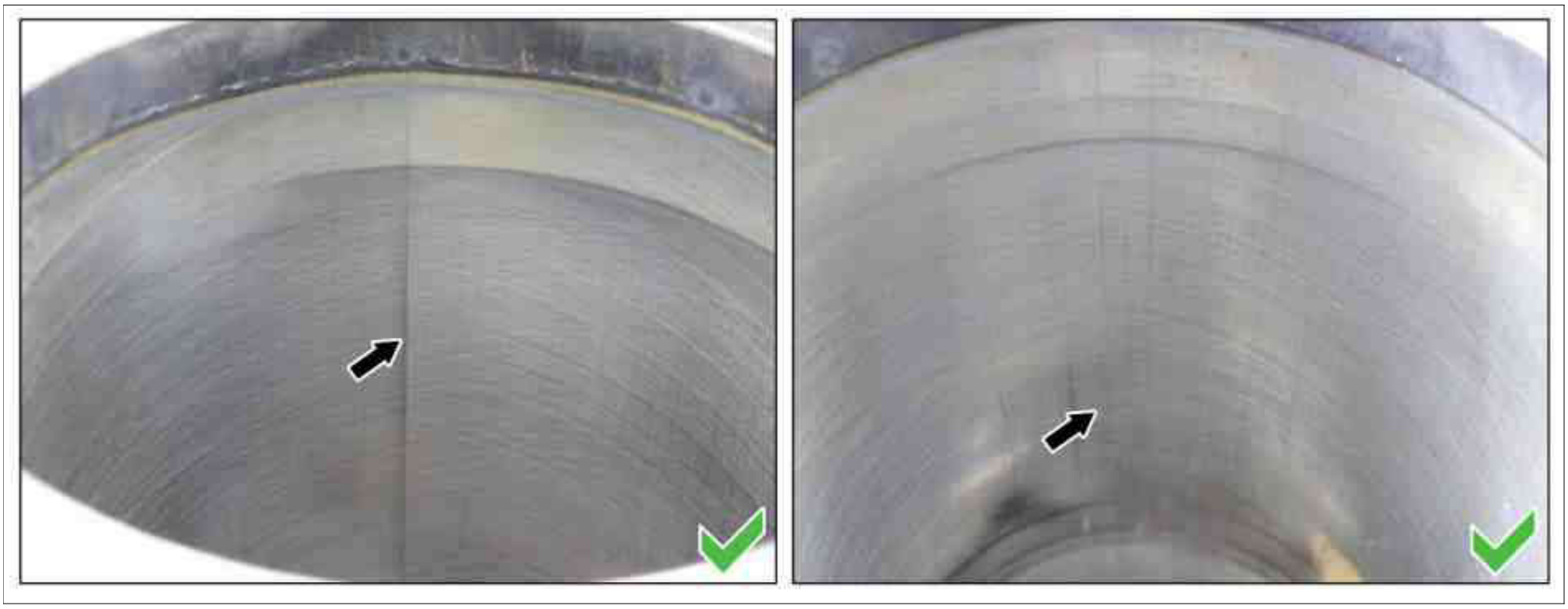


Glazing, smooth spots
Individual blank points, e.g. in the middle of the cylinder barrel or around the cylinder head bolts.

ⓘ Reuse crankcase.



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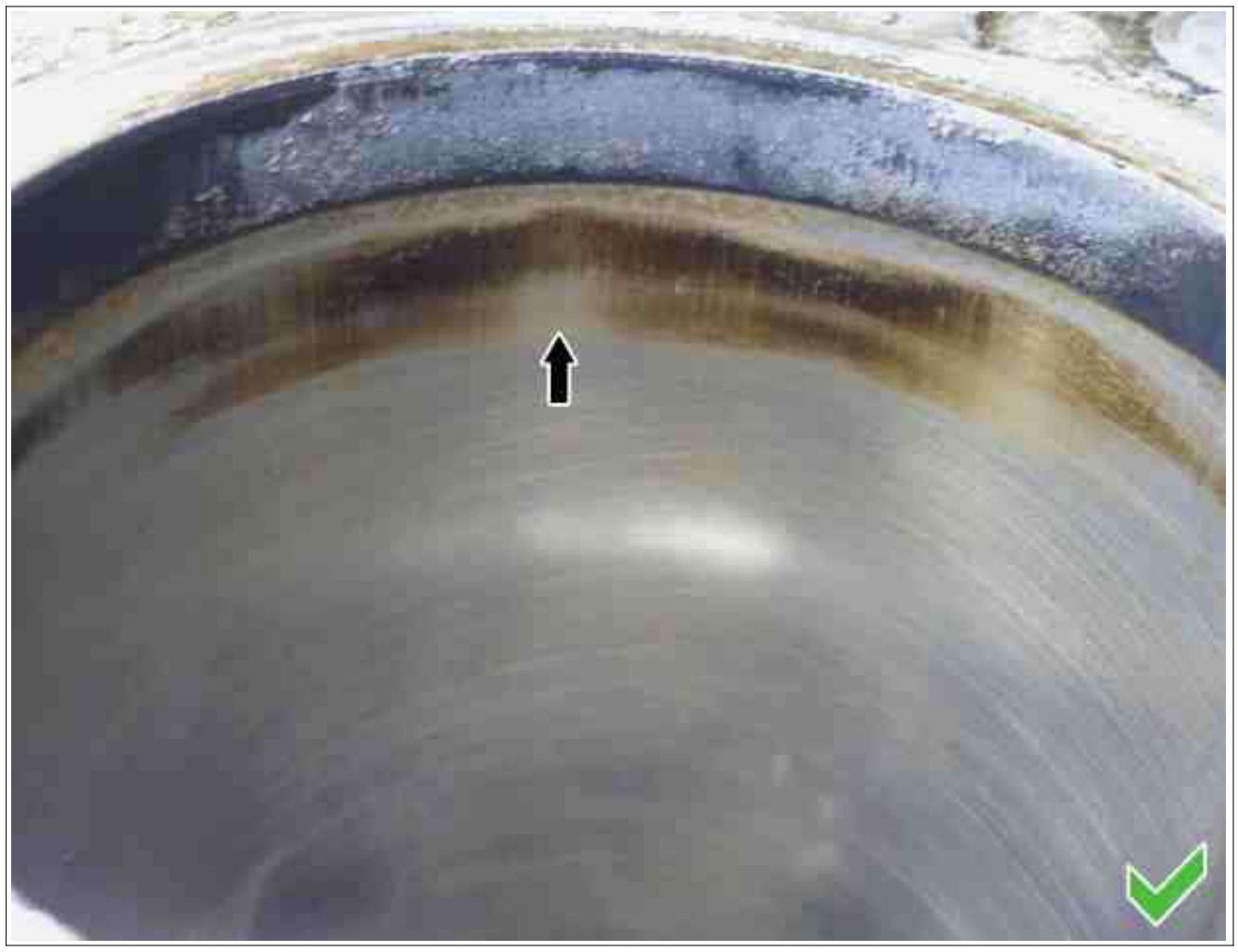
Continuous individual traces of scratch
Oil carbon marks caused by soiling, for example through back-pulsation of soot particles from the exhaust system. They are imperceptible to the touch.

ⓘ Reuse crankcase.

Brown coloration of cylinder barrel
A brown coloration over large areas of the cylinder barrel arises from oil varnish and indicates that the engine has been driven at a high temperature level.
Oil varnish above piston ring zone is normal and is not a reason for complaint.
ⓘ Reuse crankcase.



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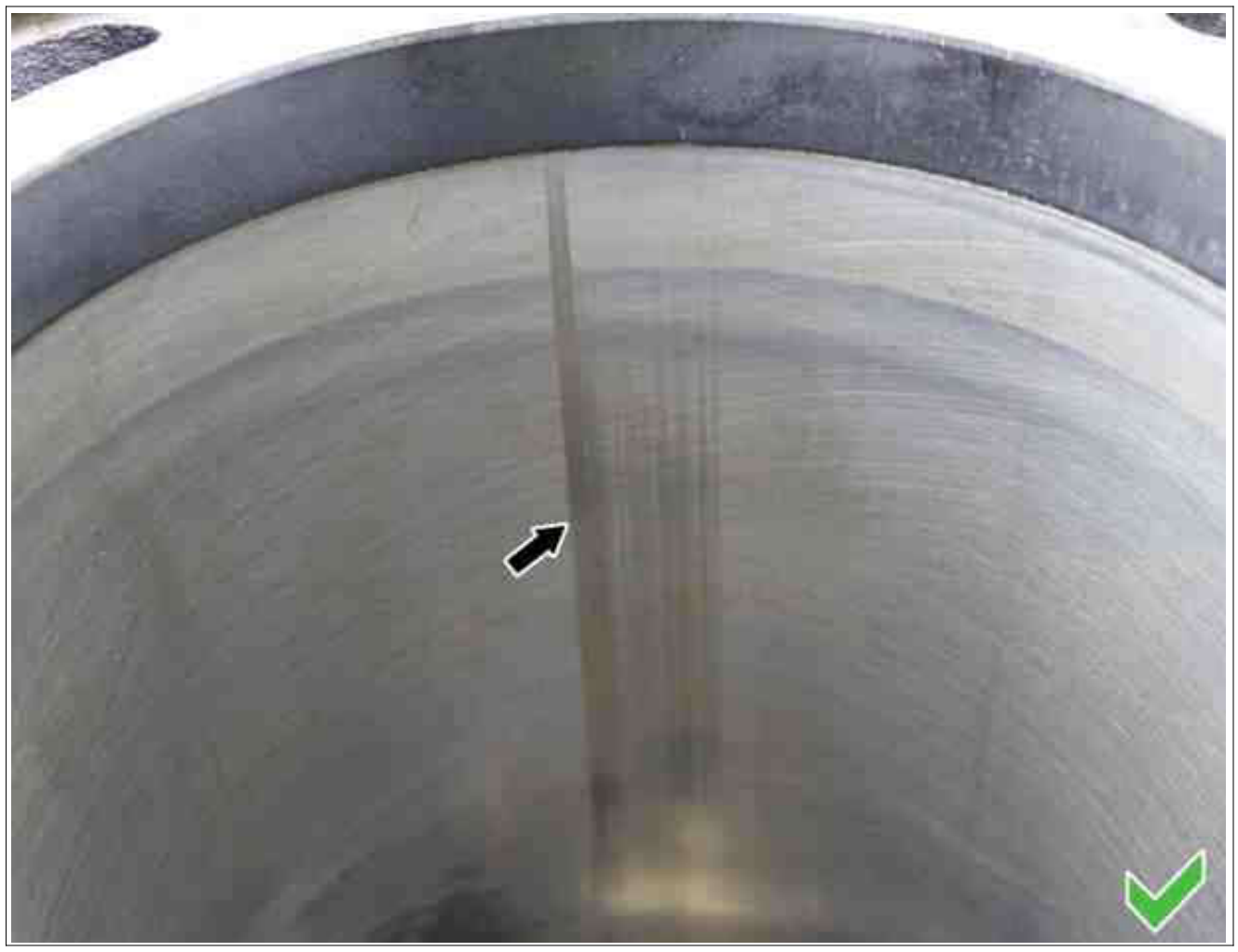
P01.00-A026-76

Visible stripes, friction marks
Starting from reverse area of the upper piston ring tapering downwards.
Friction marks that are imperceptible to the touch, caused by oil film being washed off by fuel, the piston rings are not damaged.
i Reuse crankcase.



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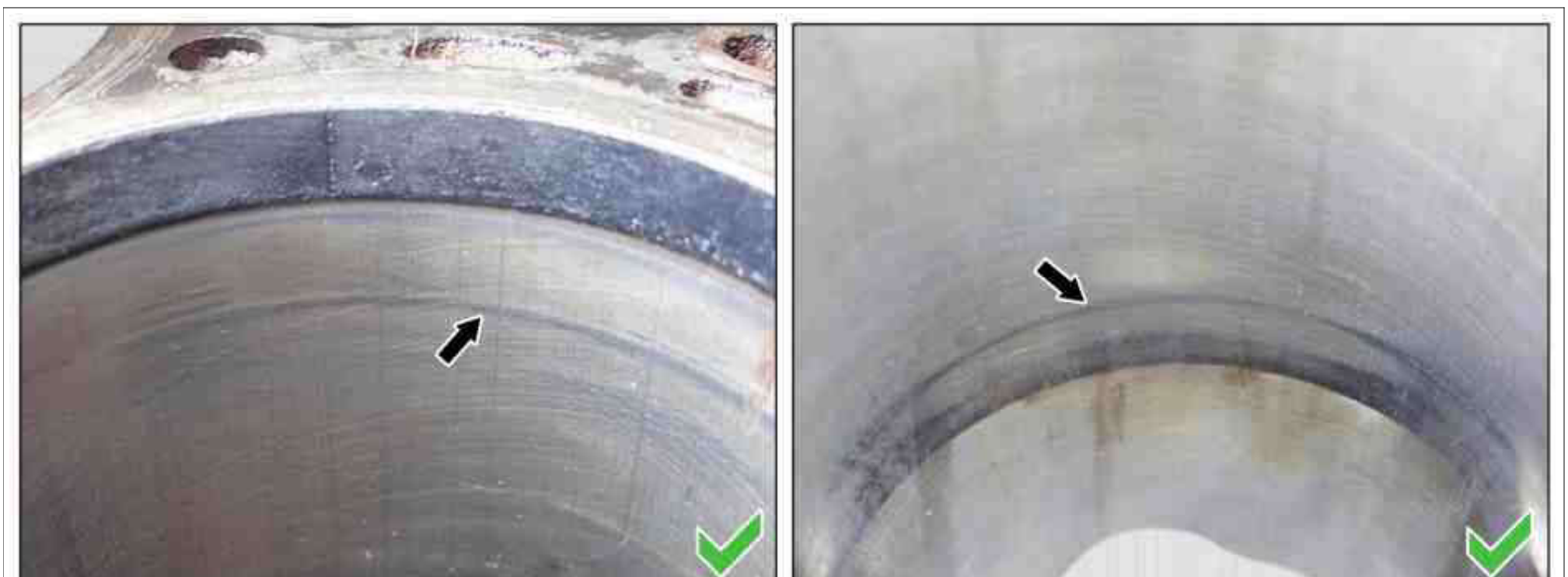

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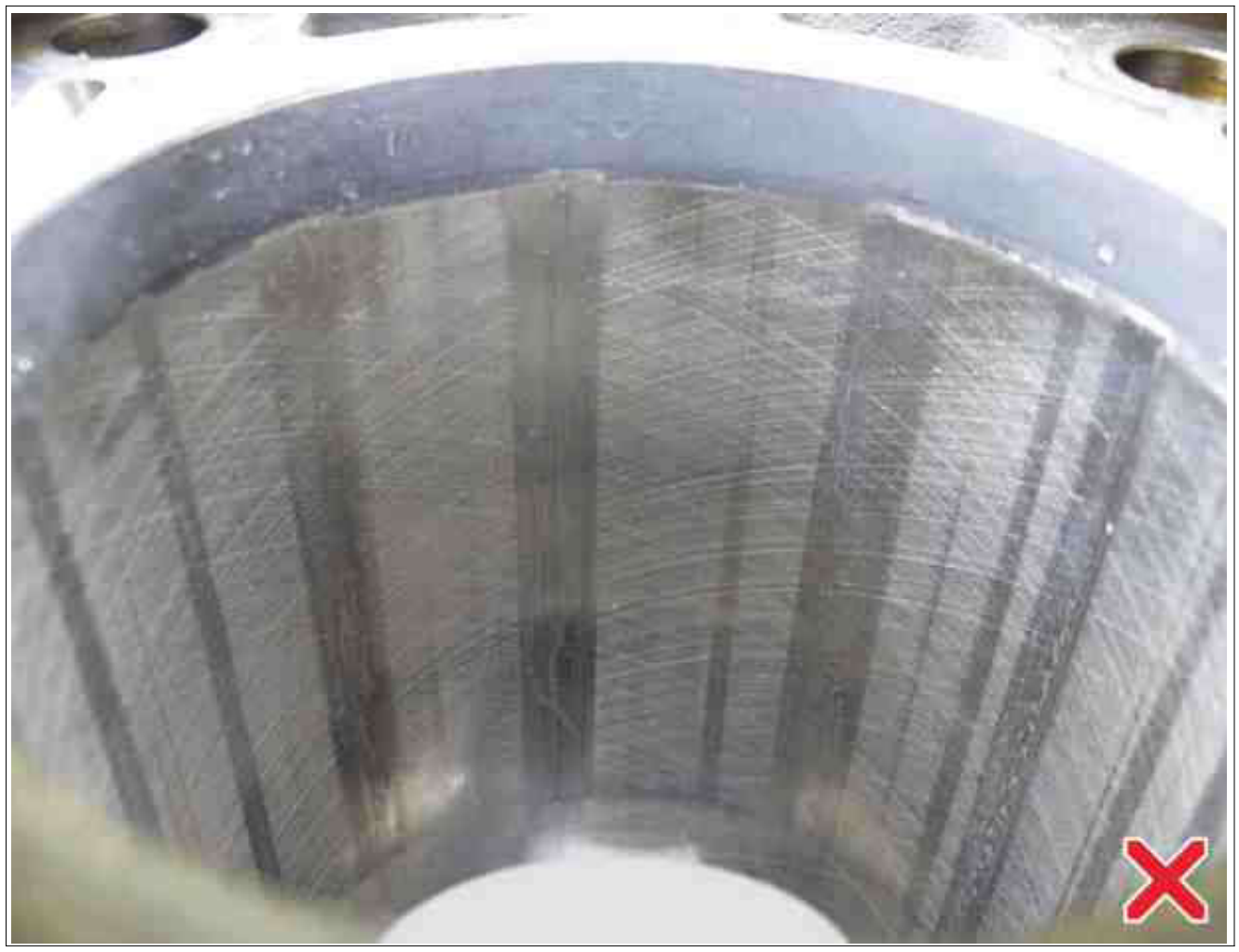
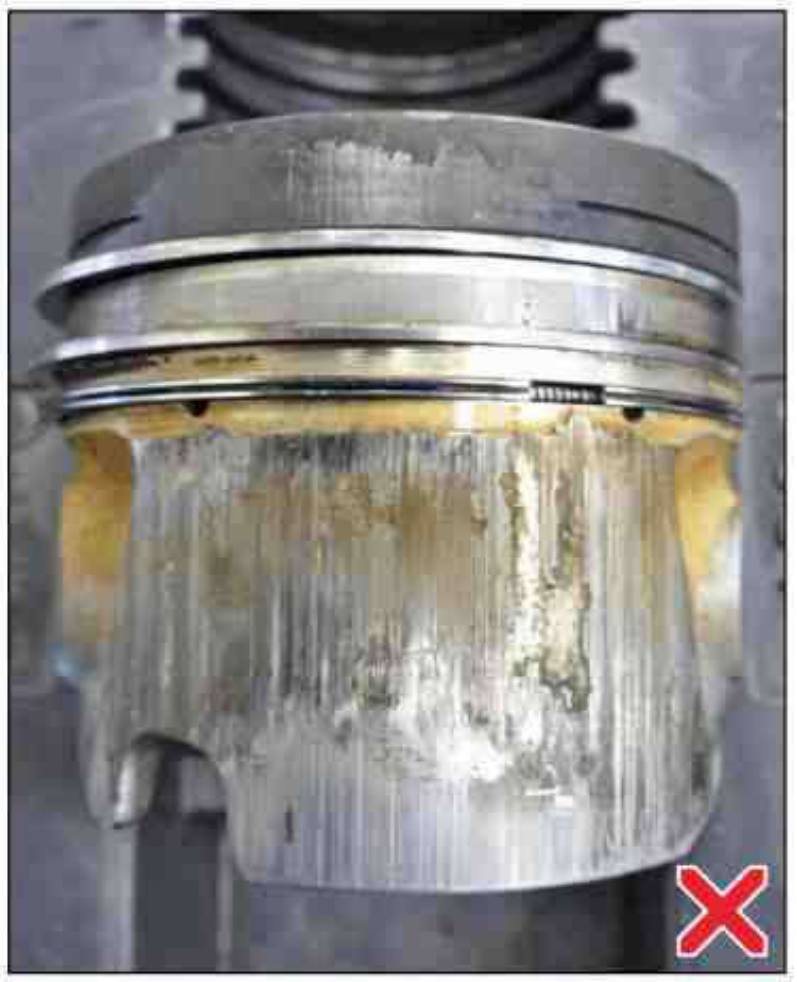
Ring shaped imprints
Visible imprints on cylinder barrel in the upper and lower reverse area of piston rings are not a cause for complaint.

i Reuse crankcase.

Rough streaks, friction scoring
Starting from first and second piston ring, tapering to an end only in bottom part of cylinder. Progressive signs of friction lead to friction score marks.
Where these signs of friction are perceptible, the cylinder barrel is unusable. The piston rings may be damaged.
i Do not use crankcase again.





Piston seizure
Most of cylinder wall perceptibly roughened over the entire length.

Material deposits and perceptible scoring marks on cylinder wall and at piston skirt.
i Do not use crankcase again.