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Service Bulletin - Piston Rings:



Piston ring failure diagnosis - foreign particle contamination:



Note: oil ring lands worn away on right hand piston.

Appearance:

Running surface worn, Ring flanks scored
Ring grooves badly worn
Liner surface scored

Cause:

Solid particles / debris in engine.
Insufficient cleaning of liner surface after honing.

Symptoms:

Oil consumption, oil smoke from stack
Scoring marks on liner surface
Blow - bye

Remedy:

Thorough cleaning of liner surface after honing,
Check oil maintenance system / filters,
Clean engine lubrication system before refilling with new oil.

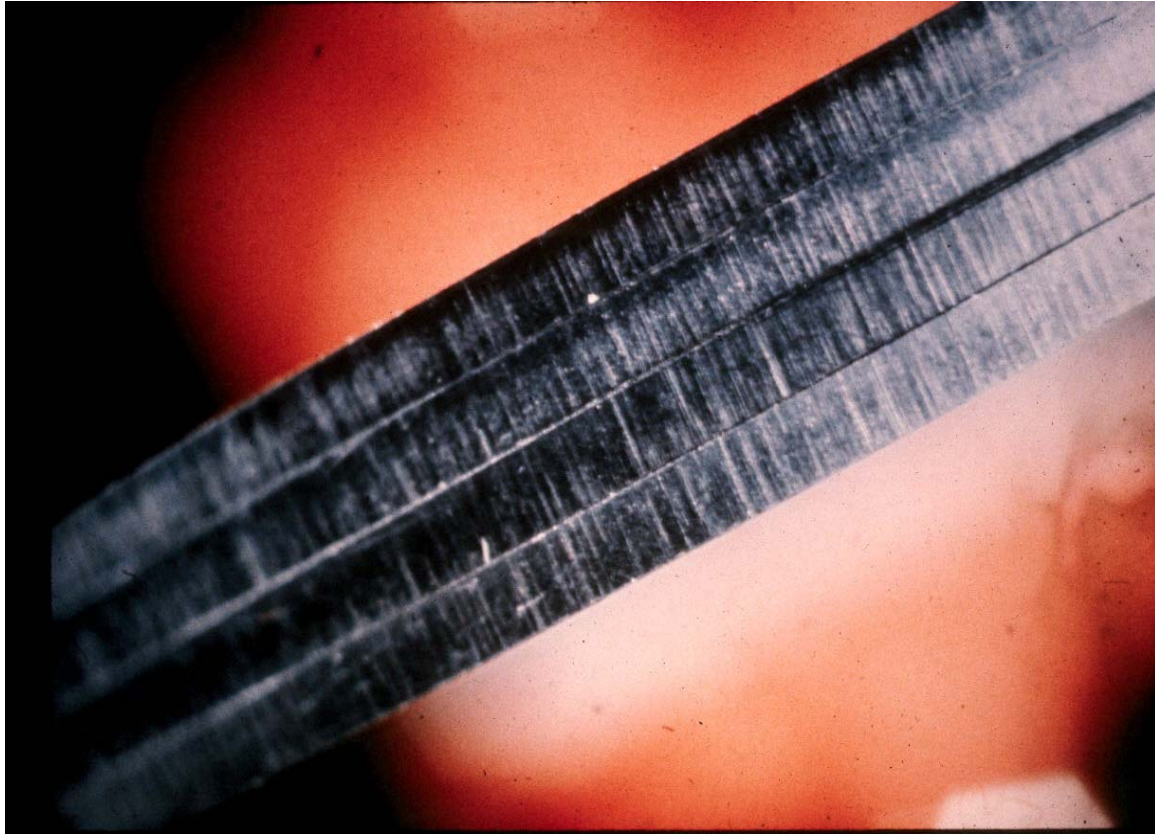


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Service Bulletin - Piston Rings:



Piston ring failure diagnosis - incorrect bore finish:



Appearance:

Running surface of rings scored & torn

Cause:

Bore surface finish too coarse.

Honing angle incorrect.

Symptoms:

Oil consumption, smoke from exhaust

Scoring marks on liner surface

Blow - by

Remedy:

Check boring equipment & specifications for correct bore surface finish.

Check oil maintenance system / filters,

Clean engine lubrication system before

refilling with new oil.



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Piston ring failure diagnosis - scuffing:



Appearance:

Running surface scuffed, worn

Causes:

Lack of lubrication,

Dry start of engine after ring installation,

Glaze on liner surface

Liner roundness fault

Symptoms:

Oil consumption,

Oil smoke from exhaust

Scuffing marks on liner surface

Blow - by

Remedy:

Correct reconditioning of liner surface,
oil-wettening of liner and rings before
assembly

Control engine lubrication system.





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Piston ring failure diagnosis - high oil consumption:



Appearance:

Oil sludge deposits on scraper edges

Cause:

Engine oil overaged,
Oil contamination with water

Symptoms:

Oil consumption,
Oil smoke from exhaust

Remedy:

Check engine lubrication system,
Check cooling system for leaks.
Clean engine lubrication system before
refilling with new oil.

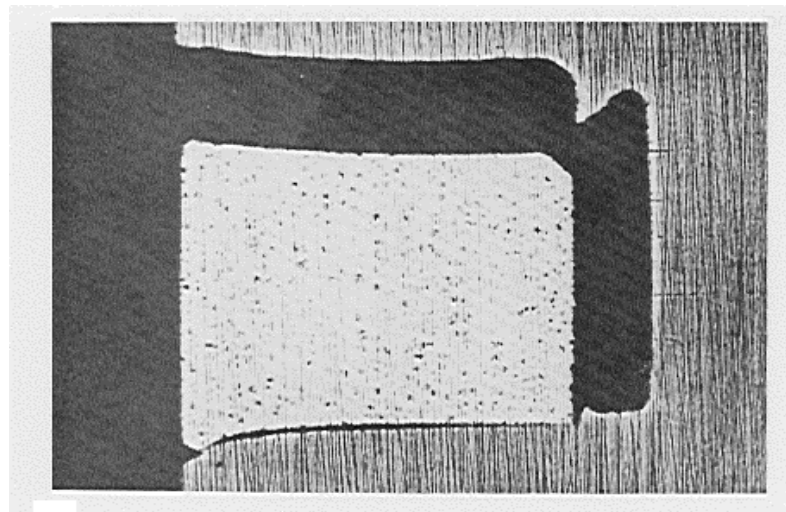
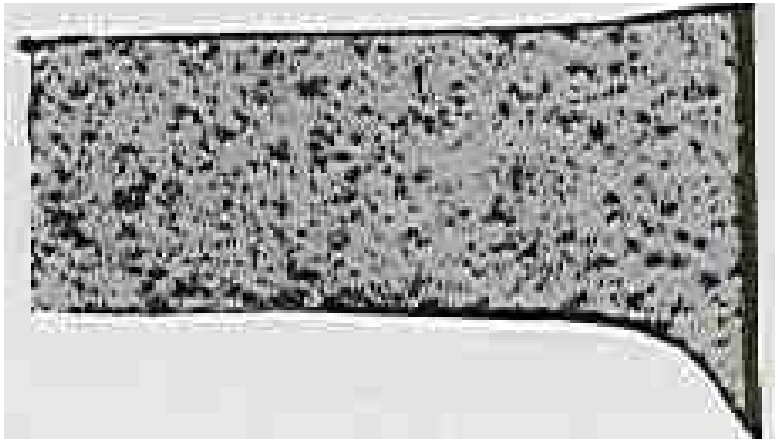


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Piston ring failure diagnosis - ring/groove side face wear:



Appearance:

Accelerated wear on side faces of rings (worse on lower side) and ring grooves (compression rings in particular. Other rings may be affected to a lesser degree.

Cause:

Liquid fuel degrading lubricant in ring grooves.

Solid residue from honing erodes flank material.

Symptom:

Oil consumption. Loss of power.

Remedy:

Ensure that fuel mixture is correct, that the choke is not abused or sticking, manifold raw fuel drain is clear, air filter is not blocked or choked.

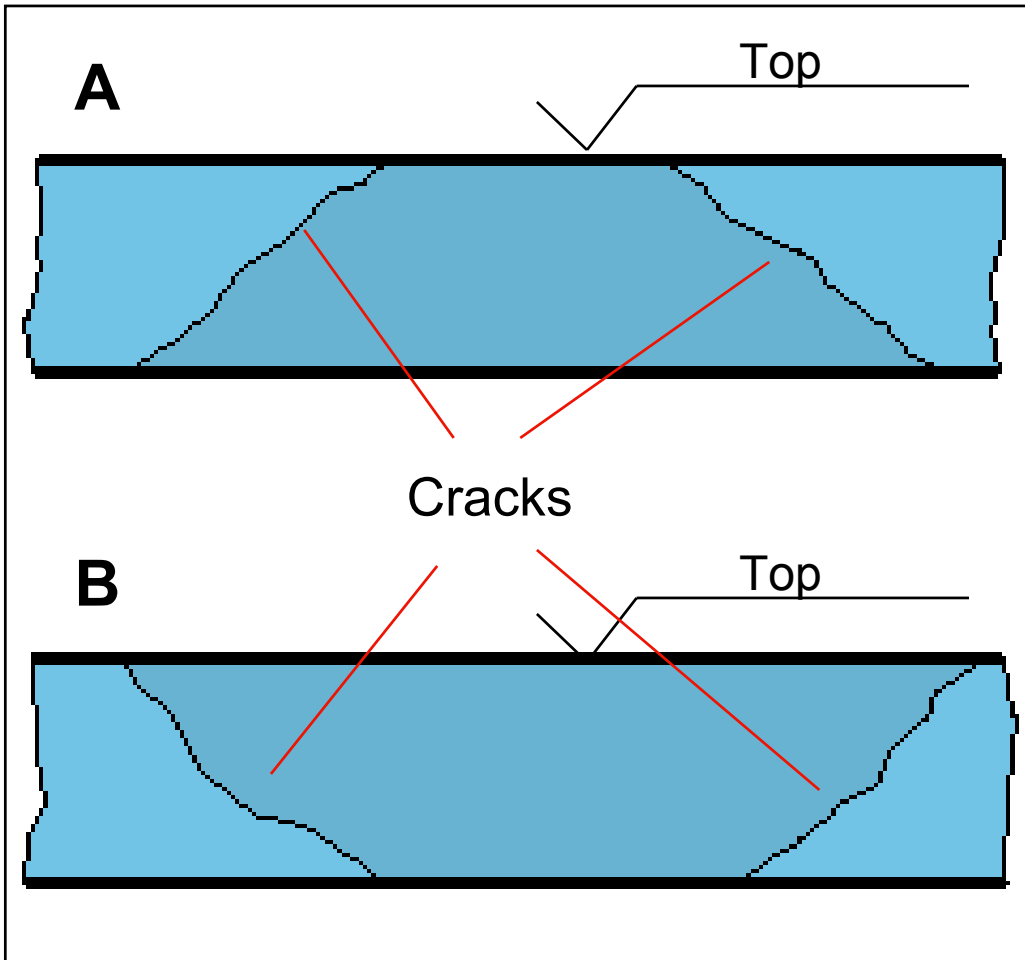


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Piston ring failure diagnosis - cracked rings:



Appearance:

Ring fracture

Cause:

Excessive gas pressure.

Worn-out ring groove.

Installation fault.

Symptoms:

Oil consumption, loss of power

Oil smoke from exhaust

Remedy:

Check engine combustion.

Check ring grooves in piston

Use piston ring expander tool to prevent over-stressing rings during installation.

Remove ridge on upper edge of cylinder before inserting piston.

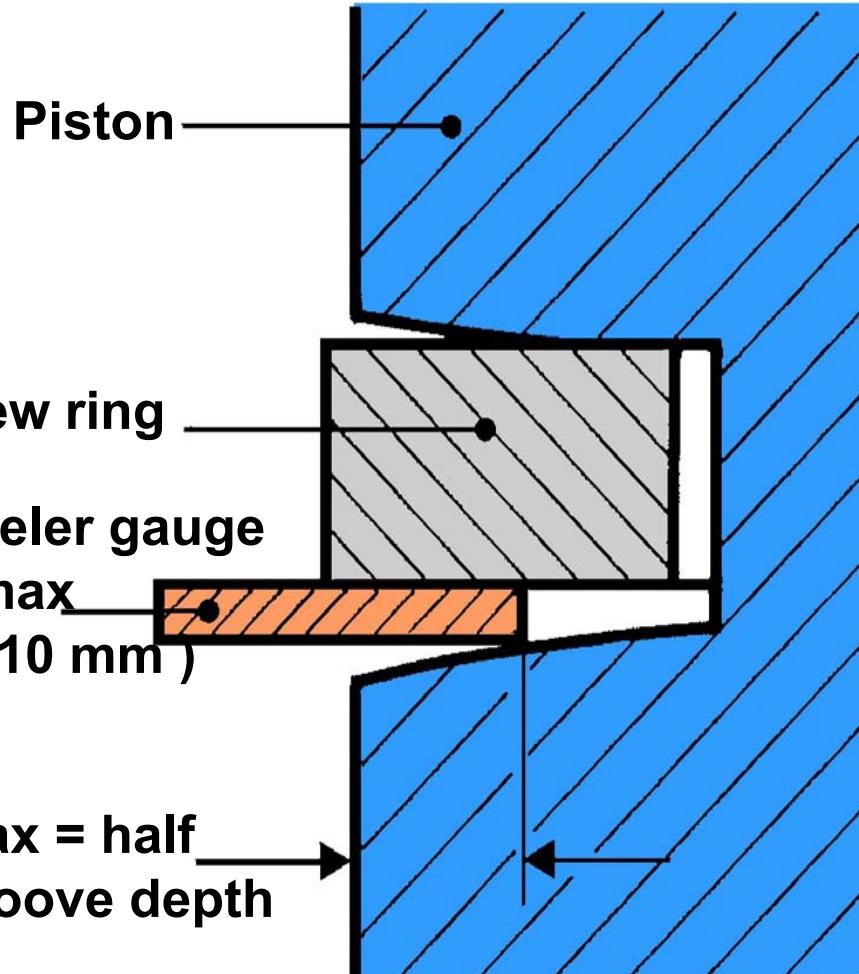


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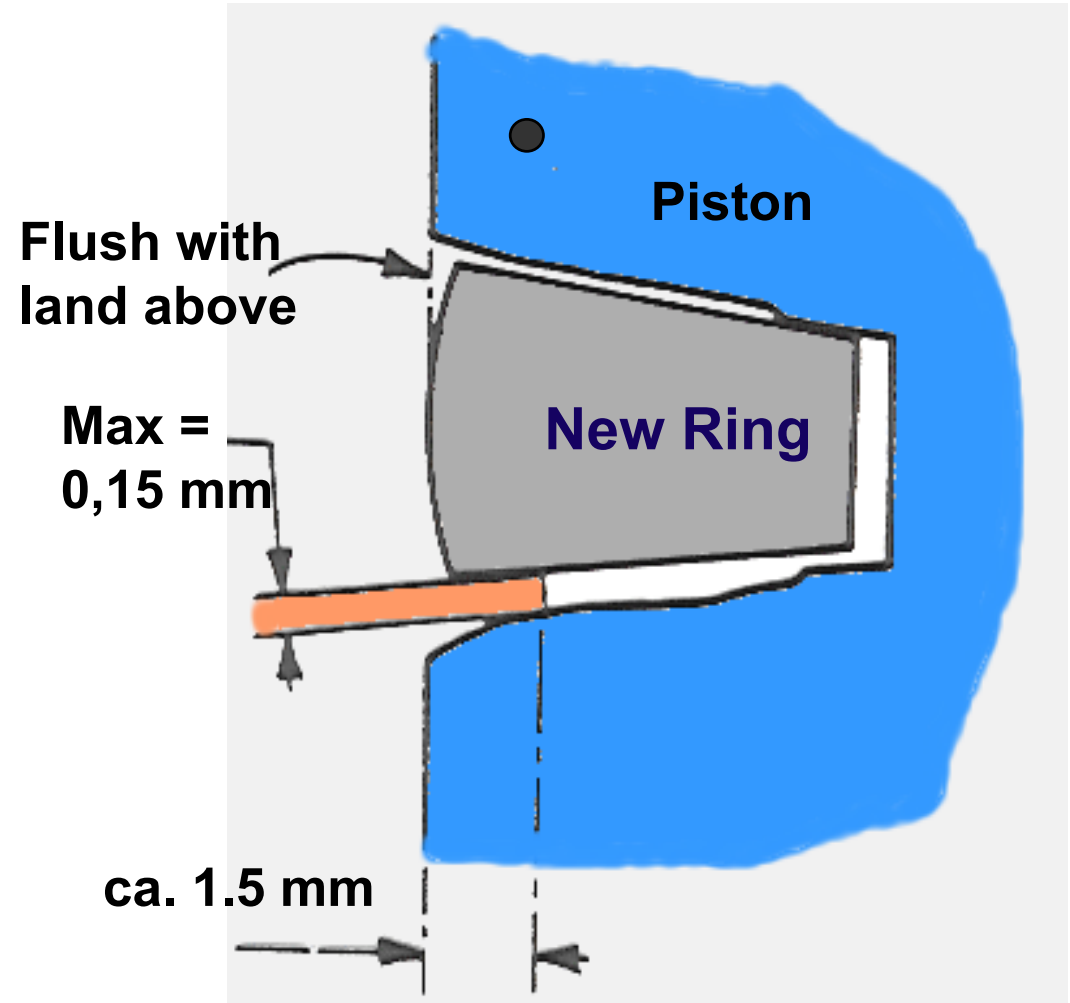
Service Bulletin - Piston Rings:



Piston ring failure diagnosis - wear limits:



Parallel rings/grooves



Keystone rings/grooves