Nüral® FITTED WITH GOETZE® RINGS

TROUBLE TRACER CHART

PETROL Cylinder Component

Erosion of piston skirt adjacent to piston pin hole. The material sometimes appears to have melted Damage to cylinder bore.

Symptom: Engine noise. Oil consumption.
Cause: Foreign matter assembled with piston, in pin bore. Used circlips refitted. Incorrect fitting of circlips. End thrust transmitted via the piston pin from misaligned connecting rod or crankshaft end float.
Remedy: Correct any cylinder bore damage. Check for and correct any connecting rod or small end bush misalignment. Check and correct any connecting rod misalignment or excessive crankshaft end float. Replace piston assembly ensuring that the circlips are correctly located.

Piston pin seizure

Symptom: Engine noise.
Cause: Lack of clearance between rod bushing and pin. Lack of lubrication between piston pin and pin bore during installation.
Remedy: Replace damaged components. Ensure that the piston pin has the correct clearance in the small end, or if the pin is anchored in the connecting rod, ensure that the piston is free to articulate about the piston pin. Ensure adequate lubrication of piston and pin, especially during installation. Avoid lengthy periods of low engine speed during the running in period. Ensure any piston under crown cooling jets are functioning correctly.

Fracture of piston ring land (Note fracture angle)

Symptom: Oil consumption, loss of power.
Cause: Incorrect fuel usage. Oil in combustion chamber. Excessively high compression ratio. Ignition timing too advanced. Intake air temperatures too high.
Remedy: Establish cause, and correct. Replace damaged components.

Hole in piston crown. Crown edge burning.

Symptom: Engine noise: Pinging/loss of power.
Cause: Heat range of spark plugs too low. Mixture too lean. Damaged/leaking valves, or insufficient valve clearance. Unsuitable fuel. General overheating.
Remedy: Check spark plugs and ignition setting. Ensure correct carburation/fuel injection. Ensure that no air leaks exist in the induction system. Use only correct fuel as specified by the engine manufacturer. Clear engine of debris & check valves and bearings for damage. Replace all damaged components.

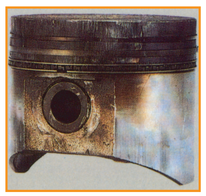
Seizure or scuffing of piston skirt thrust face (Non-thrust face remains relatively undamaged)

Symptom: Engine noise. Some power loss.
Cause: Oil starvation, possibly during initial use.
Remedy: Check the lubrication system and the cylinder bore and correct as necessary. Replace damaged components. Ensure the complete engine lubrication system is fully primed (oil pump, filter, etc.) before starting engine.

Piston seizure. Skirt contact areas may appear smooth and polished.

Symptom: Engine does not develop normal full power. Engine may overheat.
Cause: Insufficient piston skirt to cylinder running clearance.
Remedy: Check cylinder bore size and correct if necessary. Ensure efficiency of engine cooling system. Replace damaged components and correct any damage to cylinder bore. Replace piston.

Piston rings trapped in their grooves. Rapid wear of piston ring outer surface.



Symptom: Oil consumption. Loss of power. Possible piston seizure.
Cause: High combustion temperature.
Remedy: Ensure ignition settings and spark plugs are correct. Ensure that the induction system is free of air leaks, and that the fuel to air mixture is correct. Replace damaged components.

Incorrect (diagonal) skirt contact

Symptom: Oil consumption.
Cause: Bent connecting rod or misaligned small end bush. Excessive crankshaft end float. Liners not installed straight.
Remedy: Check connecting rod, also small end for any misalignment. Check crankshaft end float. Correct as necessary. New piston rings should be fitted.

Vertical scratching or scuffing of piston skirt. Piston rings and cylinder bore may also be damaged by vertical scratching

Symptom: Oil consumption.
Cause: Abrasive matter in engine.
Remedy: Clean and inspect all engine components. Clean all oil-ways. Ensure that air and oil filters are clean and fitted with correct filter elements. Check the integrity of all connections between the air filter and engine. All damaged components should be replaced.

Accelerated side face wear of top compression rings (Other rings may be affected to a lesser degree)

Symptom: Oil consumption. Loss of power.
Cause: Liquid fuel degrading lubricant in ring grooves.
Remedy: Ensure that fuel mixture is correct, check fuel injection /ecu settings/choke, the air filter is not blocked or choked and that whenever possible the engine, once started from cold, attains full working temperature before being switched off, thus preventing fuel condensing in the cylinders. Do not "Pump" the throttle when the carburettor is fitted with an accelerator pump.
If all rings in any cylinder are affected, check the cylinder honing pattern. Asymmetric or skewed honing may cause rings to rotate rapidly, and accelerate wear.

ORIGINAL QUALITY OE
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ENGINE EXPERTISE

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