PISTON CROWN DAMAGE

Seizure due to overheating (mainly piston crown)
- Overheating due to combustion defaults
- Incorrect oil level
- Incorrect oil pressure
- Malfunctions in the sealing system
- Clearance restriction in the upper sliding surface area

Impact marks
- Piston protrusion too great
- Excessive machining of the cylinder head sealing surface
- Incorrect seal valley
- Incorrect cylinder head gasket
- Carbon deposits on the piston crown
- Insufficient valve clearance
- Incorrect valve timing caused by incorrect adjustment or a slipped toothed belt

Fused/melted off material
- Faulty injection nozzles
- Inadequate quantity of injected fuel
- Insufficient compression
- Ignition delay
- Oscillating injection lines

Cracks in the crown and crown bowl
- Faulty or incorrect injection nozzle
- Inadequate quantity of injected fuel
- Insufficient compression
- Ignition delay
- Lack of piston cooling
- Installation of pistons with incorrect bowl shape
- Improvement in performance (e.g. chip tuning)

PISTON RING DAMAGE

Material washout in the ring area
- Incorrectly installed pistons
- Fuel flooding
- Severe acid wear of the ring groove and piston rings
- Ring chatter

Radial wear due to fuel flooding
- Fuel during mixture formation
- Combustion defaults
- Insufficient compression pressure
- Incorrect piston pin diameter

Axial wear due to ingress of dirt
- Abrasive dirt particles due to inadequate filtration
- Dirt particles that are not completely pressed during manufacture
- Abraded particles caused when the engine is being run in

PISTON SKIRT DAMAGE

Asymmetrical piston wear pattern
- Bent/twisted connecting rod
- Connecting rod neck bored at an angle
- Individual cylinder not installed straight
- Excessive connecting rod bearing clearance

45° seizure
- Excessively narrow fit of the piston pin
- Seizure in connecting rod eye
- Inadequate lubrication at initial start-up
- Incorrectly installed shrink-fit connecting rod

Dry running/Fuel damage
- Over-rich engine running
- Combustion defaults (misfiring)
- Insufficient compression
- Defective cold-start device
- Oil dilution with fuel

CYLINDER LINER DAMAGE

Cavitation
- Poor/inaccurate seating of the cylinder liner
- Use of incorrect O-ring seals
- Use of unsuitable coolant agent
- Insufficient prepressure in the cooling system
- Operating temperature too low/too high
- Restricted coolant flow

Bright spots in the upper cylinder area
- Carbon deposits on the piston top land due to:
  - Excessive ingress of oil into the combustion chamber due to defective components
  - Increased emissions of blow-by gases with oil entering the intake air system
  - Insufficient separation of oil vapour from the blow-by gases
  - Frequent idling or short-distance drives

You can receive more professional knowledge, direct from the experts, from your local Motorservice partner and on: www.ms-motorservice.com/tech

PISTONS

OUR HEART BEATS FOR YOUR ENGINE.