Grinding & Machining for cylinder liners

Unistress Piston Ring Expander

CHRIS-MARINE®
UPRE

The Unistress Piston Ring Expander ensures safe and easy changing of piston rings thanks to a unique expanding principle. The principle makes sure there is equal stress throughout the piston ring.



Product features

- For 4-stroke engines with straight-cut piston rings
- Lowest stress possible for desired opening of the ring
- Provided with a stop, limiting deformation of the ring
- Delivered adjusted and ready for use
- Suits any type of piston ring and diameter upward of 130 mm
- Type 1: piston rings 100-250 mm
- Type 2: piston rings 250-380 mm
- Type 3: piston rings 380-600 mm
- Type 4: piston rings 600-980 mm

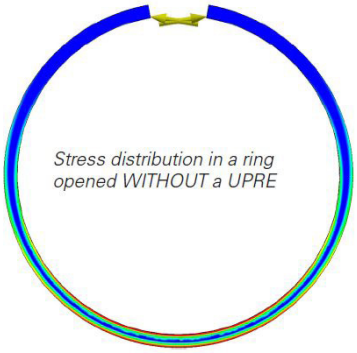
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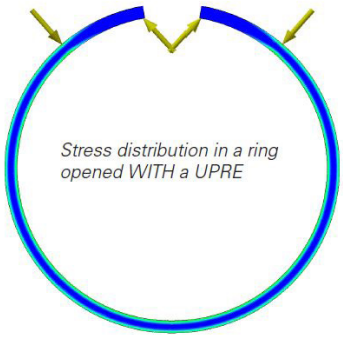
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To ensure reliable and economic operation of diesel engines, it is of paramount importance that the piston rings fit closely to the cylinder wall along their entire circumference. The manufacturers therefore take great care in machining the piston rings to such a shape that the rings, when installed, will match the cylinder bore correctly.

If a cast iron piston ring is opened during assembly, and without using a UPRE, the ring back will be exposed to stresses above the yield limit, leading to plastic deformation around the back of the ring. Such plastic deformation will reduce the sealing capability for the ring, thereby shortening the life of the ring/liner system and increasing lube oil consumption. For steel rings, there is a risk for overstressing the rings during assembly without the UPRE.

The use of the UPRE during assembly of new piston rings ensures that there will be NO plastic deformation at all at the back of the ring, thereby improving the lifetime of the piston ring pack and cylinder liner while at the same time minimizing lube oil consumption.





The UPRE subjects the ring to four forces as indicated and therefore to a uniform bending moment throughout the ring, except at the ring ends where the bending moment decreases towards zero.

By applying a constant bending moment and thereby constant stress to the ring, the UPRE guarantees the possible stress for a desired opening of the ring. Each UPRE is provided with a stopper, limiting the deformation of the ring to the minimum required to slip it over the piston diameter.

As a result one may count on a UPRE always being used once it has been procured. The UPRE are delivered adjusted and ready for use for any type of piston ring and diameter upward of 130 mm.

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