

Action code: **WHEN CONVENIENT**

Gas-tight Lock
Top Piston Ring

SL2016-625/AAB
September 2016

Concerns

Owners and operators of MAN B&W two-stroke marine diesel engines with semi-high or high piston top-land. Type: MC/MC-C/MC-S, ME/ME-C, ME-GI/ ME-GI-S and ME-B

Summary

Important maintenance routines that should be observed to avoid damaging the gas-tight lock of the top ring are highlighted.

Reference is made to SL2000-383, SL2002-399, SL2008-496, SL2009-521, SL2012-562, SL2014-591 and SL2016-620.

Dear Sirs

The gas-tight lock of the top piston ring may be exposed to elevated stress levels and subsequent damage if the maintenance procedures are not followed. Damage to the gas-tight lock usually occurs because:

1. the wear ridge in the top of the liner has NOT been removed during overhaul in accordance with the recommendations given in service letter SL2000-383 and today's standard manuals.
2. the ring joint has been exposed to elevated stress during the installation. The typical reason is that incorrect or inappropriate tools have been used for ring expansion during installation.
3. the ring groove condition or wear rates exceeds the normal acceptance criteria given in the standard manual.

Therefore, take the necessary steps to ensure that:

1. the wear ridge is always removed during overhaul as indicated in SL2000-383.
2. the correct and appropriate ring expanders are available and USED as intended on board.
3. the engines are NOT operated for a prolonged period with worn-out or excessive ring groove wear clearance in order to avoid subsequent piston ring breakage.

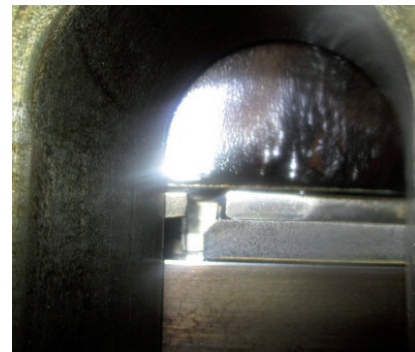
Yours faithfully



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Broken gas-tight lock of the top piston ring

Fig. 1 shows a well run-in top piston ring, except for the broken gas-tight lock.



Fig. 1: Top piston ring with a broken gas-tight lock

The Figs. 2 and 3 show the effect of running with an excessive ring groove clearance.



Fig. 2: Excessive ring groove wear and gap in the gas-tight lock



Fig. 3: Excessive ring groove wear and missing contact between groove and ring resulted in worn-out piston rings with gaps in the gas-tight lock

Fig. 4 illustrates the induced stress on the gas-tight lock, happening when a cylinder unit is operated with a too large piston-crown ring-groove clearance.

In general, such operational conditions should be avoided by monitoring the total amount of vertical clearance for all rings on a regular basis.

If the piston crown ring groove wear exceeds the figures given in the manual, the crown must be replaced by either a reconditioned or a new crown.

The explanation is simple, in particular for the top rings. The excessive ring groove clearance for the top ring causes stress on the weaker gas-tight lock of the top ring to increase significantly.

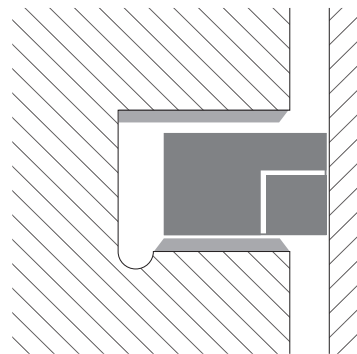


Fig. 4a: New top piston ring (gas-tight lock is shown) and new piston crown

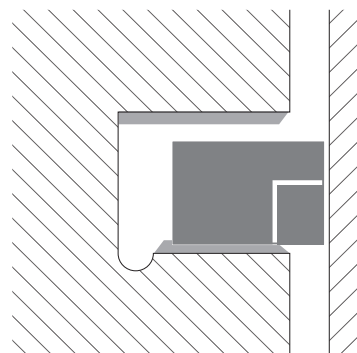


Fig. 4b: After running

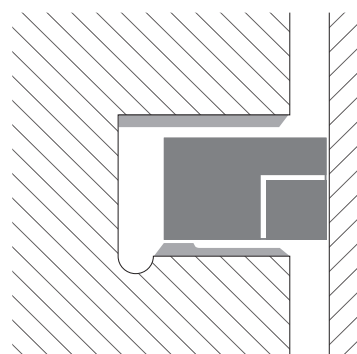


Fig. 4c: After overhaul with a new top piston ring, the result will be elevated stress in the gas tight lock due to the excessive ring-groove wear

Note: All service letters can be downloaded here: <http://primeserv.man.eu/marine-engines-and-systems/service-letter-marine>