

Action code: AT FIRST OPPORTUNITY

Check of Camshaft Coupling

Fitted Bolts

SL2012-567/AAB
December 2012

Concerns

Owners and operators of MAN B&W two-stroke marine diesel engines.
Type: MC and MC-C

Summary

Update on inspection areas and intervals based on the latest service experience.

Dear Sirs

Based on service experience, we have found it relevant to issue an update to the already existing service letters SL1999-368 and SL2002-405. This update presents a slightly modified strategy for inspection intervals and inspection areas as summarised below:

- Different and graduated intervals between the chain drive mounted assemblies and the remaining centre-installed units.
- Differentiated and possibly prolonged intervals based on inspection results.
- Recommended corrective actions based on results of inspection.

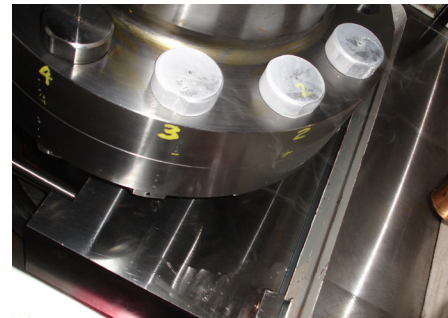
Yours faithfully



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Background

It has come to our knowledge that, in a few cases, previous service letters on the checking of camshaft coupling fitted bolts may have been overlooked by the operator, resulting in broken camshafts and, in two cases, the formation of oil mist.

Therefore, the purpose of this Service Letter is to specify the, in our opinion, best suited strategy that considers the expected long-life span of our engines and, furthermore, to highlight that we distinguish between the adjustable camshaft bearings in the chain drive and in the remaining units.

Because the bearings are adjustable, there is an elevated risk that they may have been incorrectly adjusted from the start. Another cause could be changes in service due to operational aspects, such as incorrect tensioning of the main chain(s), or changes to the original adjustment of the bearings by wear mechanisms caused by, for instance, off-spec. oil properties, or relative movement due to incorrect tension of the fixating bolts or similar.

On the other hand, centre-mounted “non-adjustable” bearings are less prone to change their original position/height, unless wear in the camshaft bearings occurs. Wear in these bearings is rare and will only occur in case of severe oil contamination or otherwise deteriorated oil properties.

In addition, we have experienced, in a few cases, that the original factory adjustment of the block-type bearings in the chain drive, and the camshaft fitted bolts or their flange holes were not manufactured according to the specified tolerances.

Misaligned bearings and incorrect shrink-fit of the fitted bolts may result in forces on the flange joints exceeding the design values. If such a condition is overlooked, this can eventually lead to loss of tension or loss of shrink-fit and, subsequently, bolt breakage and/or parting of the bolted flange joint.

Therefore, it is important to note that if parts and adjustments comply with our specifications, and the operational condition of the engine is maintained according to the instruction book and our operation manual, there is no risk of bolt breakage and subsequent full parting of any camshaft flange.

Conclusion

The aim of the inspection strategy, as indicated in the diagrams enclosed and the described corrective actions, is to minimise the risk of subsequent problems to an absolute minimum, thereby ensuring the safe operation of the engine for its entire lifetime.

Practical information

- The specified bolt torques for the individual engine type are listed in Fig. 1.
- If tension of the bolts is found to be less than 85% of the tension specified, the flange joint must be checked for gaps in accordance with Fig. 2 before and after retightening. The size of the gaps must be recorded.
- Before commencing the inspection, ensure that the specified torque spanner and necessary attachments are available according to the instruction book on board and the standard scope of tool supply.
- Ensure that the consequence diagrams in Figs. 3 and 4 are followed strictly, and record the inspection intervals and findings in the plant maintenance system on board.

For questions or technical assistance, please contact PrimeServ DT-CPH in Copenhagen using the following email: dt-cph@mandieselturbo.com

Data and figures

Ref.	Description	Value	Unit
	Camshaft coupling bolts, tightening torque		
D06-67	L 42 MC	130	Nm
D06-60	S/K/L 50 MC	300	Nm
D06-61	S/K/L 60 MC	460	Nm
D06-62	S/L 70 MC	700	Nm
D06-63	S/K/L 80 MC	985	Nm
D06-64	S/K/L 90 MC	1,350	Nm
D06-65	K98MC	1,650	Nm
D06-66	K98MC-C	1,650	Nm

Fig. 1: Bolt tightening torque

Check the connection between the camshaft coupling flanges with a 0.05 mm feeler gauge.

NOTE!

If any gap can be measured on the entire circumference of the couplings, MAN Diesel & Turbo should be contacted for further instructions.

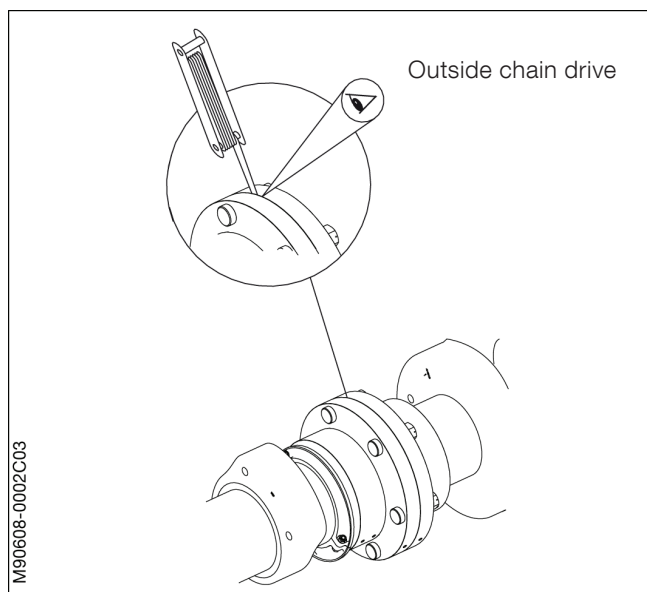
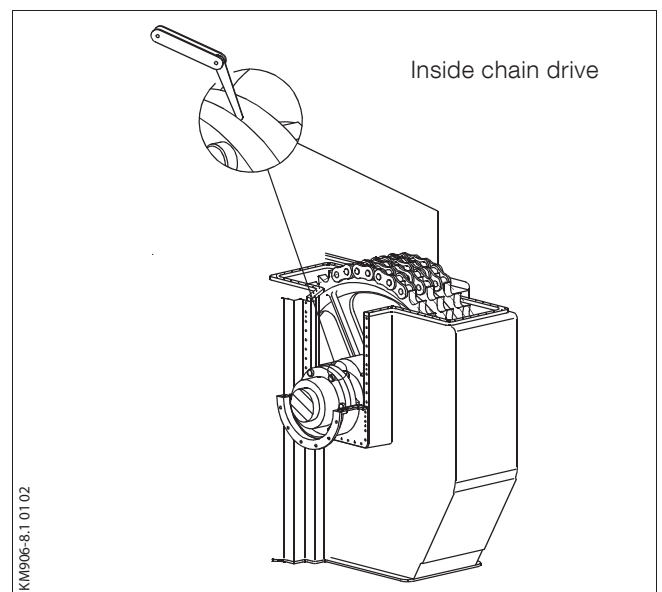


Fig. 2: Check with feeler gauge



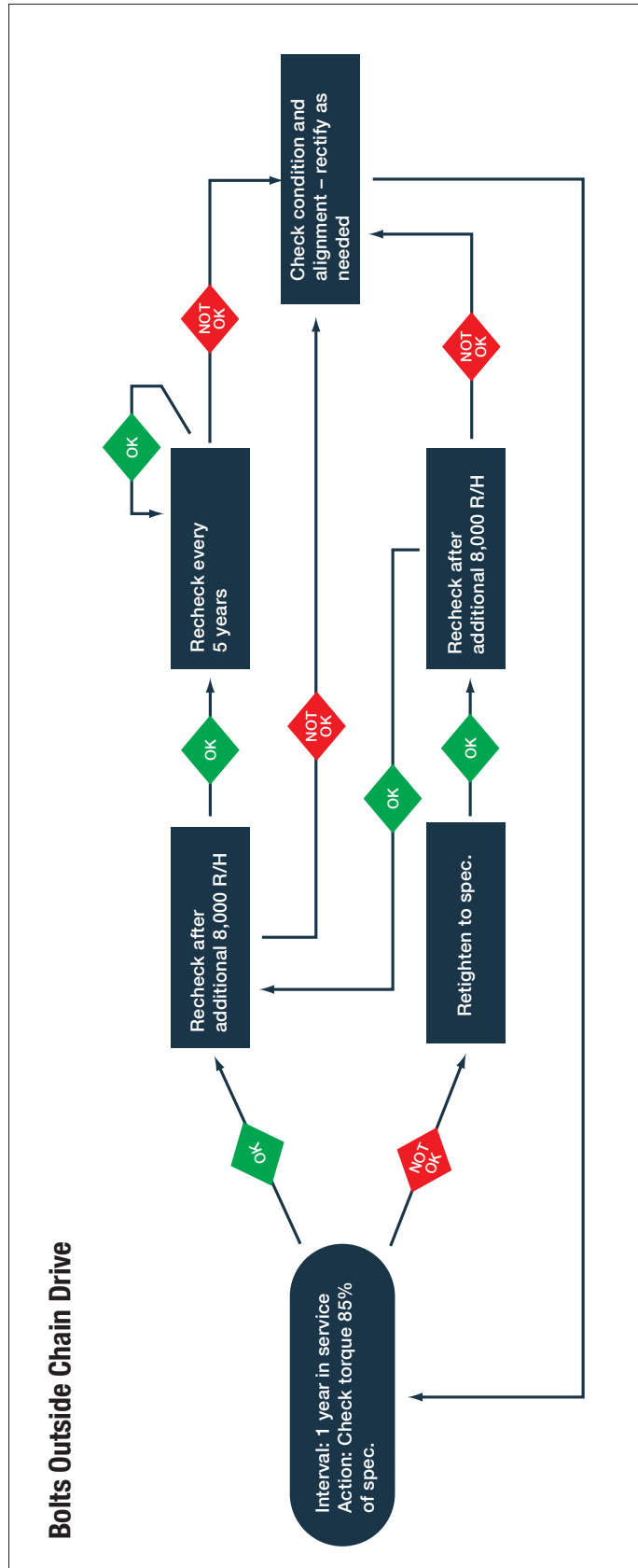


Fig. 3: Inspection scheme for bolts placed outside the chain drive

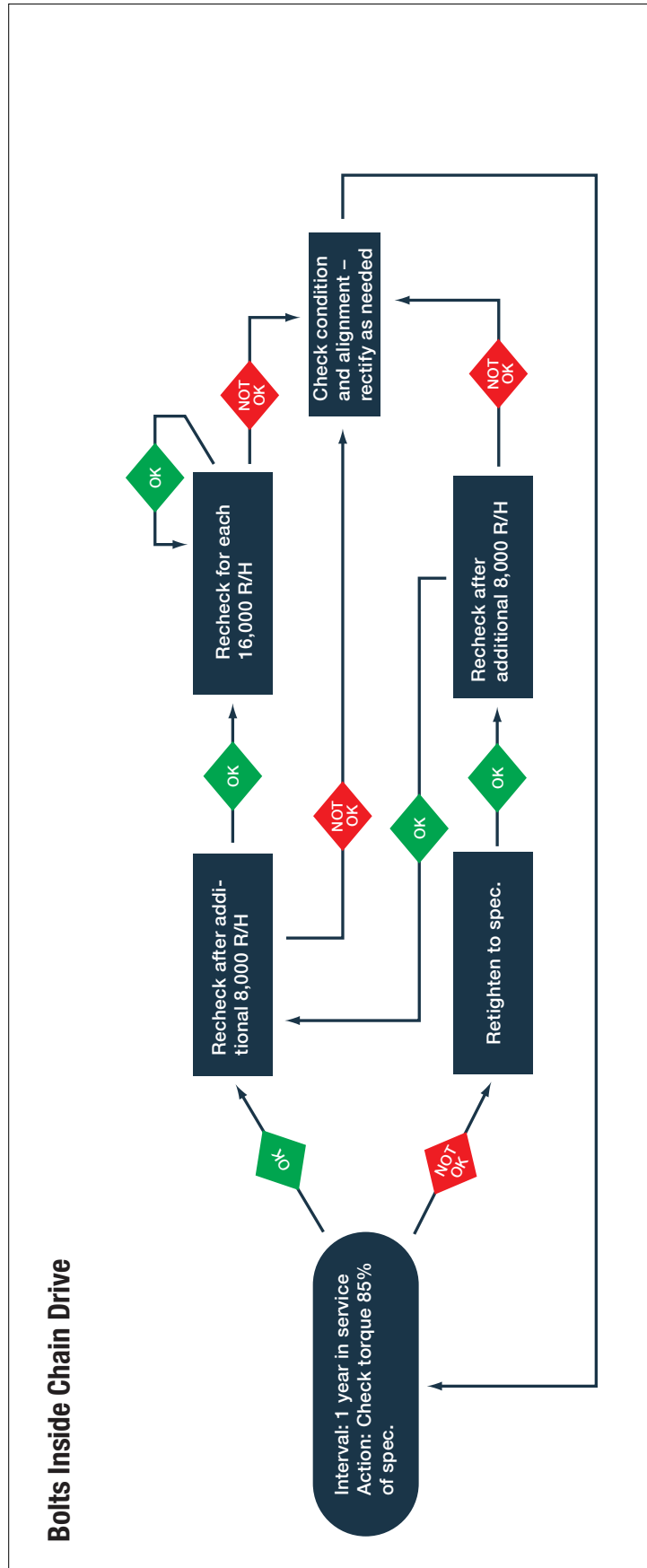


Fig. 4: Inspection scheme for bolts placed inside the chain drive