Crosshead bearing design for S and G-type ME-C/ME-B Mark 9 and 10 engines

We have introduced a new crosshead bearing assembly design which is suitable for the higher maximum pressures of the latest generation of MAN B&W two-stroke engines. This new design, called the wide-pad design, has been gradually introduced on all new engine designs from 2007 and onwards. Since 2012, the wide-pad design has also been used for large bore 80 and 90 engine types. The wide-pad designation refers to the uninterrupted centre pad in the loaded lower bearing shell. The oil grooves in this centre pad have been omitted, and the distance between the axial oil grooves has been extended.

Fig. 1 illustrates the major difference between the traditional crosshead bearing design of MAN B&W engines and the wide-pad design.

A typical comparative elasto-hydrodynamic bearing calculation, see Fig. 2, illustrates the much lower oil film pressure in the wide-pad design compared to the traditional design. Furthermore, the minimum oil film thickness is larger in the new wide-pad design for the same running condition.

Crosshead bearings are exposed to the highest load on heavily derated engines operating with a high maximum pressure at relatively low revolutions. Crosshead bearings subjected to this load pattern have therefore been inspected. A 7G80ME-C9.2 was first inspected after sea trial and then again after 6,600 running hours.

Fig. 3 shows the condition after sea trial, which is very good with well-distributed bearing load over the entire bearing shell.
Fig. 4 and Fig. 5 show the condition of the bearings No. 4 and No. 6, respectively, after 6,600 hours of operation. Good contact can be seen on the centre pad and far up on the lower side pads.

Only insignificant local wiping is visible on the lead overlayer. This is a natural part of the bearing adaption using redistribution of the lead overlayer. This redistribution of overlayer has occurred within the first running hours in service. No indications of micro-cracks or other abnormalities can be seen.

If you need more information, do not hesitate to contact us at:

MAN Diesel & Turbo
Department LEO
Teglholmsgade 41
2450 Copenhagen SV, Denmark
Phone +45 33 85 11 00
Fax +45 33 85 10 30
leo@mandieselturbo.com
www.mandieselturbo.com