

## Service Information No. 13/06

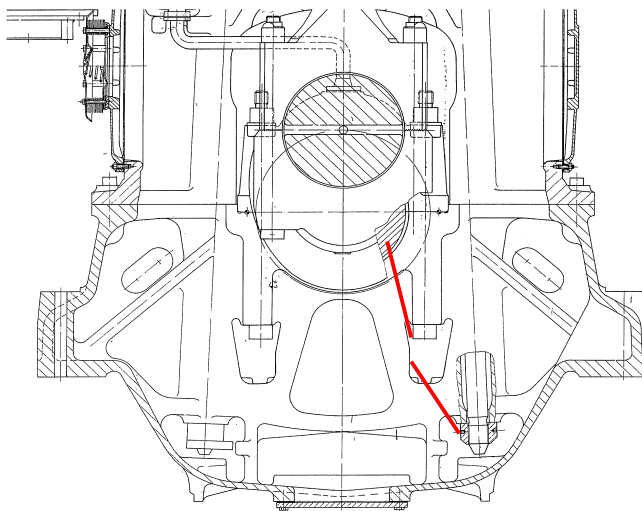
Date: 05.01.2007

### Bedplates, Cracks in the Bearing Blocks

### 8 M 601 C

The M601C is a redesigned version of our very successful M601 engine model. In the period from 1993 to 2001 a total of 78 engines of our M601 engine type were delivered in **C version**. 58 of these engines are being operated as marine main engines and 20 as stationary EPG engines. These engines have accumulated an aggregate operating time of more than 3,000,000 running hours. Some of these engines have in the meantime reached individual operating times of more than 80,000 hours.

Since 2005, the bedplates of 3 resiliently mounted marine engines have cracked in the bearing blocks. The crack path is nearly identical in all three cases. It is always located at camshaft side according to the attached sketch, i.e. from main bearing bore towards the pocket in which the nut of the bearing cap bolt rests.



At the time the damage happened the affected engines had logged operating times in the range from 46,000 to 70,000 hours.

Investigations by external experts have shown the following:

- The bedplates were manufactured according to drawing specifications in the cracked areas.
- The material samples taken clearly exceed the minimum requirements for GGG50 laid down in our specification.

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It has not yet been possible to identify the root cause of these damages. The following operational influences will increase local stress in the affected areas:

- Increased thermal stress due to many start/stop manoeuvres
- Insufficient preheating of the engine before starting
- Influences attributable to the ship's foundation, e.g. due to the ship touching ground
- Pitting corrosion in the main bearing bore due to insufficient bearing pretensioning
- Inclined position and edge pressure of the bearing journal
- Increased dynamic stress due to:
  - Increased firing pressures
  - Unfavourable engine adjustment (significant differences in firing pressure between the individual cylinders)
  - Impact of the fuel
    - Poor ignition quality
    - Insufficient treatment
  - Worn injection components

It is difficult to impossible to identify the actual damage cause over such a long operating period, the more so as there may have been a combination of different causes. We, therefore, recommend to pay attention to the a.m. items and also to carry out regular visual inspections of the bearing blocks.

If a crack is found at an early stage, its propagation could be stopped by stop-drilling and stitching or at least slowed down so that a repair can be scheduled.

According to our estimation based on the information available to us, there will be no acute operational risk for the engine even in case of a crack all through the material. The bearing, however, must not be opened under any circumstances.

Should an inspection by the crew reveal an irregularity, please inform your dealer. They will be pleased to assist you in the required measures and coordinate the further course of action.