

Date: 18.03.2011  
Subject: Turbocharger HPR 5000

Engine type: **M 20 C**  
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### **KBB Turbocharger HPR 5000 KBB Service Information S071**

Subject: Axial Bearing Wear under Heavy Fuel Operation

In isolated cases increased wear was found on the turbine side thrust bearing of turbochargers of type HPR 5000.

Within the framework of product improvement KBB changed the bearing design to prevent wear and increase service life.

The attached Service Information of KBB provides additional guidelines for avoiding damage and replacing the compressor bearing.

Ref.: Wear on the HPR5000 thrust bearing during heavy fuel oil operation  
Valid for TC type: HPR5000

## **Wear on the HPR5000 thrust bearing during heavy fuel oil operation**

The combustion of heavy fuel oil may result in increased wear on components of the exhaust gas turbocharger.

During inspections of various HPR5000 turbochargers increased wear was found on the turbine-side thrust bearing surface of the compressor bearing in individual cases.

The wear is caused, amongst other things, by erosive particles which are produced during the combustion of heavy fuel oil and which may enter the bearing via the engine's lubricating oil circuit. The wear depends on various factors that can differ considerably, resulting in a variance in terms of the expected service life of the bearing.

### **1 Measures to prevent damage**

The individual cases of increased bearing wear that are known have been analysed by Kompressorenbau Bannewitz GmbH.

As a consequence of product improvement, Kompressorenbau Bannewitz GmbH implemented design changes to the compressor bearing which result in a longer bearing service life.

These design changes were introduced into series production as from October 2009.

Compressor bearings of this new design are identified by the part number **4588283** (Figure 1).



**Figure 1: Compressor bearing, new version – part number**



**Kompressorenbau Bannewitz GmbH recommends that an earlier inspection be performed after 6,000 operating hours for heavy fuel oil operation.**

The compressor bearing has to be replaced if abnormal wear is found during the inspection. Both compressor bearings of the old design (part number **1,69,30062** or **4588290**) and compressor bearings of the new design (part number **4588283**) can be used for this purpose.

The thrust ring also has to be checked for wear and replaced if necessary within the scope of this inspection.



**Should compressor bearings with the part numbers 1,69,30062 or 4588290 be used for more than 6,000 operating hours during heavy fuel oil operation, a total breakdown of the turbocharger as a result of increased bearing wear may be the consequence.**



**Since the wear also depends on the condition of the engine lubricating oil, amongst other things, an oil analysis (viscosity, base number BN) is recommended.**

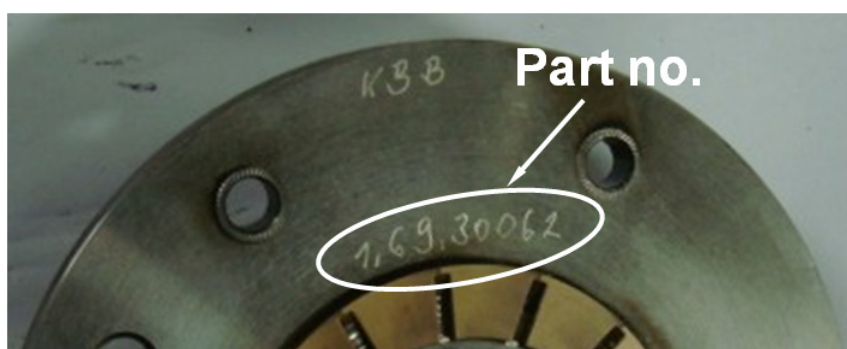
With low lubricating oil consumption there is a risk that the existing lubricating oil quantity is subject to increased ageing and less fresh oil is refilled.

In this case it is recommended that a type of fresh oil with a higher BN be used for topping up after consulting the engine manufacturer.

## 2 Determination of the equipment status

The part number of the compressor bearing has to be known so as to determine the turbocharger's equipment status in terms of the compressor bearing.

The part number of the bearing is located on the fastening flange of the compressor bearing as shown in Figure 2.



**Figure 2: Compressor bearing, old version - position of part number**