



## *Important Safety Warning*

*ALERT Service Bulletin*

ASB2013/02/18

Alert SB-No.: ASB2013/02/18

Subject **Product safety warning for previous generation turbochargers with grey cast iron casings of type NR12, NR14, NR15, NR17, NR20, NR24, NR26, NR29, NR34, NA34, NA40, NA48, NA57, NA70**

Important operational instruction relating to safety and the safe operation of the above turbochargers

Serial Numbers Concerned With a high degree of probability your NR or NA turbocharger is affected by this product warning (the older the turbocharger the more likely). This Alert Service Bulletin (ASB) relates to the casing material of your turbocharger, where the traditional grey cast iron is safety critical. Since there is no clear indication for you to distinguish traditional grey cast iron material from modern nodular cast iron material, we kindly **ask you to contact us** and to submit the respective work number(s) and year of production of your entire MAN turbocharger population – and in case of licensed production also the name of the maker – for our detailed check and review whether your turbocharger is truly affected (contact details see below). You can find this information in the Instruction Manual or on the type plate of the turbocharger. We will then revert back to you as soon as possible with a clear written statement on whether or not your turbocharger(s) is/are affected.

Current Analysis As a world leader for high-quality turbomachinery applications, we take our responsibility to actively monitor the performance of our products in operation very seriously. This product monitoring enables us to assist you as our valued customer in maintaining the safe and reliable long-term operation of our products, and to constantly improve our products and services to you.

With this ASB we would like to inform you about the results of our product monitoring efforts regarding the containment characteristics of the above listed turbochargers equipped with grey cast iron casings. Following comprehensive testing and field observations of the safety performance of these turbochargers, we have established that the casing design used for these turbochargers – which was once considered state of the art – does not provide the same level of containment safety as our current designs do and current regulations require. In particular we have observed that grey cast iron casings are not sufficiently strong to withstand extreme load situations which may for example occur in the very rare case of a rotor failure. In case of such a catastrophic breakage of turbomachinery

components, there is a risk that fragments may be released, or that the casing can be dislodged from the turbocharger. This in turn creates a substantial risk for the health and safety of operating personnel including the risk of bodily or even fatal injury and a risk of damage to adjacent machines or property, including the risk of fires.

Compliance

**Mandatory / immediate action required**

Recommendation/Advice

The risks associated with the containment failure of grey cast iron casings may be reduced by strictly adhering to the safety instructions of the Instruction Manual, in particular by observing our recommendation that personnel should not unnecessarily dwell in the vicinity of a turbocharger while it is in operation. We have furthermore defined a hazardous area (see addendum "Safety Instructions") which should be avoided while the turbocharger is in operation. This newly defined hazardous area is larger than the area previously described in the Instruction Manual.

The execution of maintenance work as defined in the Instruction Manual should be partly changed until further notice as per addendum "Safety Instructions". Please instruct your operating personnel accordingly.

In our experience, most cases of containment failure are caused by a compressor wheel breakage. According to our investigations and test results, a breakage of the compressor wheel will predominantly occur if there is a pre-damaged compressor wheel or turbine wheel which results in a spontaneous major unbalance of the rotor at high turbocharger speed, causing a rotor damage with consequential destruction of the compressor wheel.

To assess and reduce the potential risk of a critical compressor wheel damage we recommend to inspect the compressor wheel for pre-damage. Our Service Department (contact details: see below) can provide the necessary support and information on how to conduct such an inspection. Please refer also to addendum "Safety Instructions".

The risk of a compressor wheel damage in particular and a rotor damage in general can be minimized by regular maintenance work according to the Instruction Manual, carried out by authorized personnel, and by actively avoiding overspeed, poor fuel quality and foreign object impact e.g. by ensuring a clean air supply and keeping the engine (e.g. exhaust valves and injection nozzles) in good condition.

Finally, we explicitly request your support to assure the implementation of precautionary and preventive measures by asking you to please forward this ASB to all your operators (or charterers, if applicable) using the affected NR and NA turbochargers.

This ASB is intended as an initial advisory relating to possible risks associated to turbochargers with grey cast iron casings. It is being issued so that you can take immediate and proper precautions and implement the appropriate preventive measures quickly. Further information on technical remedies will follow. Please be assured that we regret the inconvenience caused. We are working with the highest priority to offer additional safety information and/or commercially available upgrade solutions wherever feasible as quickly as possible or complete turbocharger retrofits with additional operational benefits.

**Contact**

Our Service Department is always at your disposal:

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**Please forward this information to your affected technical operating personnel and/or your charterers, if applicable!**