

MAN Diesel & Turbo



MAN Diesel & Turbo SE 86224 Augsburg Germany

Customer

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Supplement to MAN Diesel & Turbo SE's Alert Service Bulletin ASB2013/02/18

Dear Sir or Madam,

Please find the following attachments to this letter:

- Alert Service Bulletin ASB2013/02/18
- Addendum to ASB2013/02/18 "Safety Instructions"
- Acknowledgement of Receipt

In the Alert Service Bulletin ASB2013/02/18 and the Addendum thereto, which was sent out to you on February 19, 2013, we asked you to **contact us** and – **independent of the age of the turbochargers in your fleet – to please submit to us the respective work number(s) and year of production of your entire population of NR and NA series turbochargers.** In case your turbochargers were licensed but not built by MAN Diesel & Turbo SE, please also submit the name of the maker, so that we can provide you with more detailed information about the status of those turbochargers. Up till today, we have unfortunately not received a reply from you. This is one of the reasons why we have chosen to contact you again today.

Supplementing the content of the above mentioned ASB, we would like to provide the following additional information:

Vorsitzender des Aufsichtsrates:
Dr.-Ing. Georg Pachta-Reyhofen
Vorstand: Dr.-Ing. René Umlauf (Sprecher),
Dr.-Ing. Hans-O. Jeske, Arnd Löttgen, Dr. Peter Park,
Dr.-Ing. Stephan Timmermann
Sitz der Gesellschaft: Augsburg
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MAN Diesel & Turbo – a member of the MAN Group

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On February 19, 2013, MAN Diesel & Turbo SE published the ASB2013/02/18, informing you that turbochargers of the NR and NA types equipped with casings made from **grey cast iron** do not ensure full containment safety, since the casing material grey cast iron is not sufficiently fortified to withstand extreme load situations which may occur in the very rare case of a rotor failure.

Over the years we have changed the casing material to **nodular cast iron** for most of these series. Each such change had been validated by extensive state-of-the-art simulations. However, since publishing the ASB2013/02/18, we have established a more **extensive testing program** with turbochargers equipped with nodular cast iron casings, and we have re-evaluated information about damage cases with such turbochargers in the field. For the purpose of confirming the containment safety of these turbocharger types, we are conducting destructive hardware tests, by which we simulate worst case scenarios with extremely critical forms of rotor failures, regardless of whether or not we have observed such worst case scenarios in the field.

Due to the number of turbocharger types and their varieties and the necessarily complex test setup, we have not been able yet to conduct destructive hardware tests for all NR and NA turbocharger types with nodular cast iron casings. However, as a consequence of the tests and evaluations performed up till now, we hereby **supplement the important safety warning** given with the ASB2013/02/18 as follows:

The warning regarding a potential containment failure in case of a rotor breakage **applies to all NR and NA turbochargers**, which means that with all these turbochargers there is a **potential risk** to the health and safety of the operating personnel in the rare case of a rotor failure. For certain types of turbochargers the risk can clearly be ascribed to the grey cast iron casings; for certain other types of turbochargers the risks lie in the flange connection and are not in any way associated with the nodular cast iron casing material.

Therefore please apply the ASB2013/02/18 including its Addendum and all safety recommendations mentioned therein for all NR and NA turbochargers operating in your fleet.

Please **confirm receipt** of this letter and the attached documents by returning via e-mail or fax a signed copy of the attached Acknowledgment of Receipt, and furthermore **please provide us with the data requested** in the ASB2013/02/18. With this data we will be able to provide you with **more specific information (as applicable) for your NR and NA turbocharger population** on a dedicated MAN Diesel & Turbo SE Internet page, specifically:

- A risk evaluation based upon our actual field experience
- Recommendations on a turbocharger specific rotating speed, for which the turbocharger can be considered containment safe without any further restrictions or modifications
- A date when an upgrade kit may be made available
- A date when an intermediate, temporary measure may be made available (e.g. a validated protection around the turbocharger)
- Information about retrofitting possibilities for increased charging efficiency.

Please be assured that we are working with the utmost priority on finalizing the review program described above and on validating technical solutions for the affected turbochargers.

Finally we would like to underline that based on our field feedback NR and NA type turbochargers are operating very reliably and do not have an increased general risk of a rotor failure.

MAN Diesel & Turbo



If you should have any questions please do not hesitate to contact us at:

TC-ASB-Feedback@mandieselturbo.com

Phone: +49 821 322 4402

Fax: +49 821 322 49 2830

We deeply regret the inconvenience which this updated information about our ASB may cause, and thank you for your understanding and cooperation in this effort to assure the optimal containment safety of your MAN turbochargers.

With best regards

MAN Diesel & Turbo SE

A handwritten signature in black ink, appearing to read "Ralf Großhauser".

Ralf Großhauser
Senior Vice President
Head of Business Unit Turbocharger

A handwritten signature in black ink, appearing to read "Thorsten Lehmann".

Thorsten Lehmann
Senior Manager
Head of PrimeServ Turbocharger