MAN Diesel & Turbo

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Customer

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

Dear Sir or Madam,

Thank you for providing us with prompt information about your turbocharger fleet. We apologize for our late feedback, but are now in a position to inform you as follows:

On February 19, 2013, MAN Diesel & Turbo SE published the Alert Service Bulletin 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:

Vorsitzender des Aufsichtsrates:
Dr.-Ing. Georg Pachta-Reyhofen
Vorstand: Dr.-Ing. René Umlauft (Sprecher),
Dr.-Ing. Hans-O. Jeske, Arnd Löttgen, Dr. Peter Park,
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The warning regarding a potential containment failure in case of a rotor breakage **applies to all your NR and NA turbochargers listed below**, 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 your turbochargers listed below. The safety recommendations for all turbocharger types and variations are identical.

You will find **more specific information (as applicable) for your NR and NA turbocharger population** at a dedicated MAN Diesel & Turbo SE Internet page. You should click on the individual links in the table below to receive the following specific information on your turbochargers:

- 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.

The internet page will become available on Wednesday, May 15, 2013. It can be printed for your easy reference and will be updated continuously with the latest information as soon as this becomes available.

TC work number	TC type incl spec.	Material	Name of ship/plant	Link to detailed information

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.

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

TC-ASB-Feedback@mandieselturbo.com
Phone: +49 821 322 4402
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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

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Senior Vice President
Head of Business Unit Turbocharger

Thorsten Lehmann
Senior Manager
Head of PrimeServ Turbocharger