


for MITSUI—MAN B&W engines,  <b>Product Safety Warning for TCA type turbocharger</b>		<b>No.203</b>	
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		<b>CHECKED</b>	
		<b>PREPARED</b>	<b>T.Matsubara</b>
<b>ENGINE TYPE</b>	<b>TCA type turbocharger (TCA55, TCA66, TCA77)</b>	<b>DATE</b>	<b>2021.02.17</b>
<p>Recently, our Licensor, MAN Energy Solutions (Augsburg), issued an Important Safety Warning (Product Safety Warning) for TCA type turbocharger.</p> <p>This warning is announced for the recommendation of your immediate preventive measures as the purpose of the keeping safety, because TCA turbocharger built by MAN suffered from a compressor wheel hub burst and the compressor wheel fragments were ejected from the turbocharger structure in the field incident.</p> <p>The hazardous area has been described on the instruction manual. Besides, along this warning information, we recommend to avoid an unnecessary stay near TCA turbocharger while the engine is in operation more than 50% load and set larger hazardous area than the conventional hazardous area on the instruction manual.</p> <p>The larger hazardous area around the engine and the TCA turbocharger is shown on Figure1,2 and in the attached “Addendum Safety Instructions”.</p> <p>The maintenance recommendations on Table1 in this information is to be given the priority against the description on the conventional instruction manual so as to reduce this risk.</p> <p>As for the turbocharger overhaul inspection, we again recommend the turbocharger maintenance regularly along the instruction manual.</p>			
<b>PRIORITY</b>			
<b>IMMEDIATELY</b> 	<b>AT FIRST OPPORTUNITY</b> <input type="checkbox"/>	<b>WHEN CONVENIENT</b> <input type="checkbox"/>	<b>OTHERS</b> <input type="checkbox"/>

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## 1. Maintenance recommendations

It is recommended to carry out the following maintenance prior to description in the instruction manual.

Table1. Maintenance recommendations

Maintenance	Recommendation
Inspection for abnormal noise and vibration	In case of an abnormal noise, stay out of the hazardous area. Stop the engine immediately. Engine can be re-started after eliminating the cause of the problems.
Check pipes	Inspect when the engine is stopped.
Check the fixing screws	Inspect when the engine is stopped.
Turbine dry cleaning	Carry out when the engine load is reduced.
Turbine wet cleaning	Carry out when the engine load is reduced.
Compressor wet cleaning	Don't carry out. (See MITSUI Mini News No.80.)
Cleaning of air filter	Carry out when the engine is stopped. Use air-filter without breakage and holes. Don't check U-tube manometer when engine is running.
Inspection of sealing air valve	Inspect when the engine is stopped.

Detailed specifications of the affected turbocharger and information of the technical modification will be informed after confirmed with the licensor.

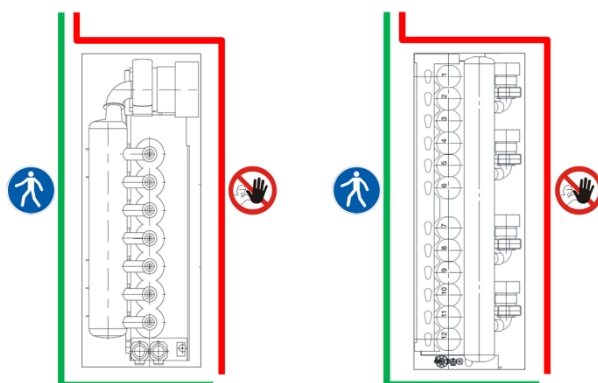


Figure 1. Hazardous area (around main engine)

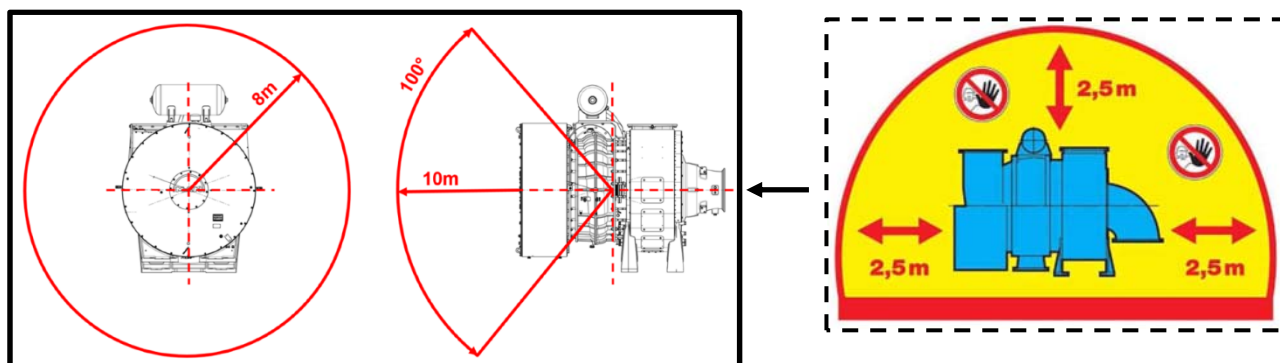


Figure2. Hazardous area (around turbocharger)

[Left: recommendation of this letter, Right: recommendation of conventional instruction manual]

Attachment:

- Product Safety Warning
- Addendum Safety Instructions

MAN Energy Solutions SE, 86224 Augsburg, Germany

to whom it may concerns

Augsburg, 3rd February 2021

Ref. APS 2020-036

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SWIFT: DEUTDEDE365  
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## Product safety warning for TCA55, TCA66 & TCA77

Dear Sir or Madam,

We take safety issues relating to our products very seriously. Given this commitment, we are continuously monitoring the performance of our products in the field. As a manufacturer of premium quality products, we are committed to keeping you informed of any significant changes in the perceptions of risk as they relate to the safe operation of our products.

With reference to a reported field incident, a TCA turbocharger suffered from a compressor wheel hub burst. As a result, the flange connection between silencer, insert piece and compressor casing failed and compressor wheel parts ejected from the turbocharger structure.

**Such an incident would pose a potential threat to properties and persons, and may potentially even result in bodily injuries and/or in very rare cases in fatal casualties.**

From our delivery files we identified you as an owner of a potentially affected turbocharger. We kindly ask you to contact us and to submit the respective serial number(s) of your TCA55, TCA66 and TCA77 turbocharger population 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 to you as soon as possible with a clear written statement on whether or not your turbocharger(s) is/are affected.

**We would like to inform you that the risks associated with the failure of the affected turbochargers 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 and shall wear the personnel protection equipment.

- a proper and regular cleaning of the turbine (dry and wet) as explained in your instruction manual and by PCI No. 413. Please make sure that both cleaning devices are installed on your engine and in operation regularly. (According to instruction manual, turbine wet cleaning device is optional for TCA turbochargers on 2-stroke engines)
- inspection, maintenance and repair may only be carried out by authorized persons who are aware of related operating and maintenance instructions and working cards.
- with proper handling, such a damage can be avoided by following the regular operating and maintenance instructions of turbocharger and engine system.

As a final solution, we can offer a technical modification. This modification can be inquired and ordered now for your specific TCA Turbocharger.

**Please communicate this information to the respective technical personnel.**

Our highest priority is a safe and reliable machinery operation. Therefore, please do not hesitate to contact us, so that we may continue to provide our optimal support.

We kindly ask you to provide us with a short acknowledgement regarding the receipt of this safety notice.

In case of any queries, please do not hesitate to contact our Technical Service Department for further assistance:

**MAN Energy Solutions SE**

86224 Augsburg, Germany

E-Mail: [TC-ASB-Feedback@man-es.com](mailto:TC-ASB-Feedback@man-es.com)

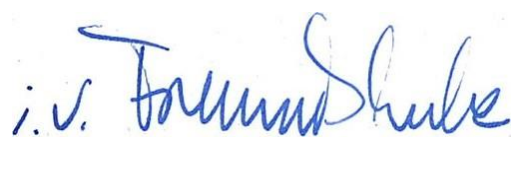
Telephone: +49 821 322 4402

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Our Service Department is always at your disposal:



**Stefan Eefting**  
Senior Vice President  
PrimeServ Germany



**Albrecht Freundshuber**  
Senior Manager  
Technical Service, PrimeServ Germany

**Please forward this information to your technical operating personnel and/or your clients!**

## Addendum Safety Instructions

### Organizational safety instructions

Make sure that only instructed personnel enters the engine room.

You can significantly reduce the risk for your personnel by these measures:

1. Do not enter the turbocharger hazardous area while the engine operates above 50% MCR (mean continuous rating), unless this is unavoidable.
2. Minimize your stay in the engine room and operate your engine exclusively from the engine control room. Do not use the operating panel, which is attached to the engine close to the turbocharger.
3. Wear appropriate protective clothing, protective goggles, safety boots, hard helmet etc. as recommended in the instruction manual of your turbocharger.

In any case please optimise your path through the engine room in order to minimize your stay in the hazardous area (Figure 1).

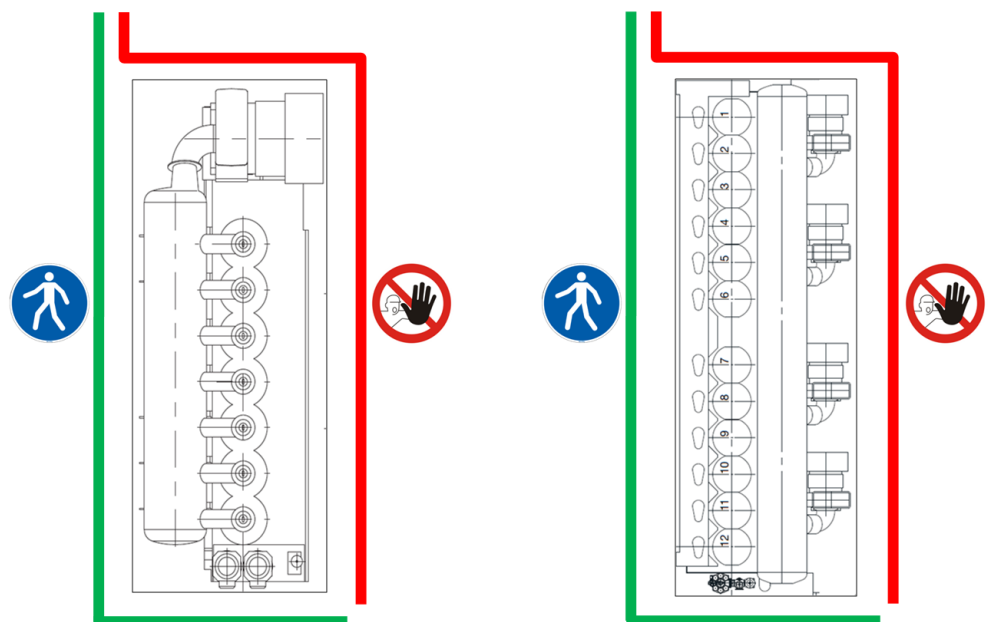


Fig. 1: Example of an optimized path around the engine

## Change of normal turbocharger maintenance and inspection work

We recommend also to change the maintenance work as follows - please refer to the work item number in your instruction manual. Please make sure that the instruction manual you are working with corresponds with your turbocharger.

Work item	Description in the manual	Recommendation
901 / 501	Inspection for abnormal noise and vibrations	Stay out of the hazardous area (ref. Fig. 1) for this inspection. In case of an abnormal noise stay away from the turbocharger, stop the engine immediately, identify and eliminate the source of the noise before re-starting the engine.
903	Check turbocharger and system pipes for leaks	Carry out this work only when engine is stopped. Oil leaks as well as gas leaks can also be identified by residues when the engine is stopped.
905 / 508	Check all the fixing screws, casing screws and pipe connections for tight fit	Carry out this inspection only when the engine is stopped.
911 / 504	Turbine wet cleaning	Use it regularly at reduced engine load according to the description of turbine wet cleaning.
913 / 503	Turbine dry cleaning	Use it regularly according to the manual but not above 50% MCR.
915 / 502	Compressor wet cleaning	Use it regularly according to the manual, but not above 50% MCR.
917 / 505	Cleaning of air filter	Carry out this work only when engine is stopped. Make sure that the filter mat is always installed properly and undamaged. In case a U-pipe manometer is installed on your turbocharger stop using it.

## Organizational safety instructions for extended maintenance work on turbochargers or engines

During extended maintenance work a longer stay in the engine room may be necessary. In this case please do not perform this work in the extended safety zone (Figure 2).

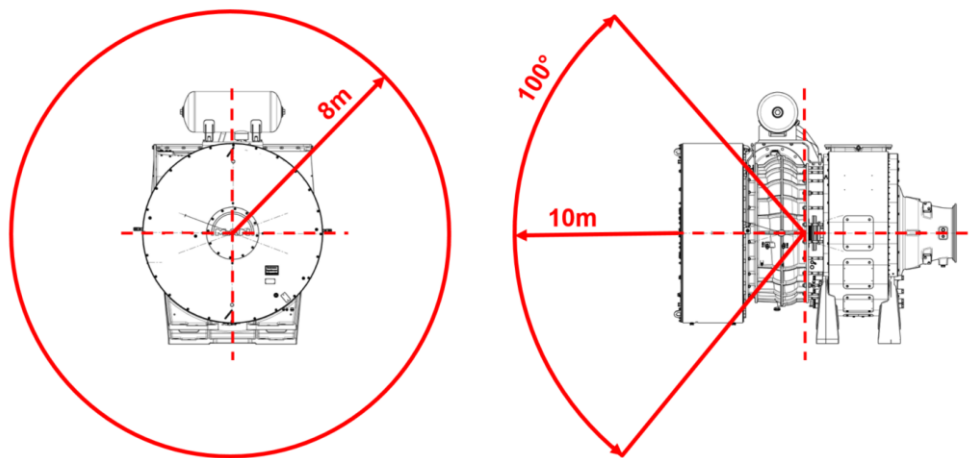


Fig. 2: Red zone = extended safety zone (extended compared to the safety zone which is defined in the Instruction Manual)

## Addendum PCI No. 413

### PrimeServ Customer Information



#### Reason

It has often been observed that turbocharger in the field are not being adequately cleaned. Cleaning according to specification and instruction manual is necessary, in order to ensure a reliable and safe operation of the turbocharger. Wet and dry cleaning is mandatory when the engine is operated with HFO.



Figure 1: Heavily contaminated nozzle ring vane

According to the TCA project guide, the following turbocharger cleaning equipment is required by today:

	Wet cleaning	Dry cleaning
Two-stroke engines (diesel / HFO)	-	•
Four-stroke engines (diesel / MDO / MGO)*	-	•
Four-stroke engines (HFO)*	•	•
Gas-powered engine	-	o
• Included in the standard scope of supply of MAN Diesel & Turbo. o Offered as an option for all TCAs; to be used dependent on the gas quality.		

\*For dual-fuel applications, equipment depends on the quality of the approved liquid fuel.

**Action Code:**  
At first opportunity

**TCA turbocharger turbine cleaning**

**PrimeServ Customer Information**  
**PCI No. 413 / December 2019**

#### Concerns

MAN Energy Solutions SE  
All axial TCA turbocharger types

578.000

Turbine cleaning - wet and dry cleaning procedure



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PrimeServ Customer Information

Description

A high contamination level, caused by exhaust gas deposits, lead to an offset of the normal gas-flow parameters. This can lead to a temperature rise right in front of the turbine and/or surging, as well as to a significant increase of unfavorable excitation orders, which may lead to severe damage to the turbocharger.



Figure 2: Inhomogeneous fouling of turbine blades

Turbocharger cleaning must be carried out in accordance with the turbocharger operating manual (figure 3), furthermore it is mandatory to check adjustments of the cleaning system such as air and water pressures, pipe connections and installation.





					per						
						24	150	250	3000	6000	12000
911	Clean turbine - Dry clean, if available	500.22	1	0.3		1					
913	Clean turbine - Wet clean, if available	500.21	1	0.6			1				

Figure 3: Maintenance schedule for dry- and wet cleaning of the turbine according to operating manual.

## PrimeServ Customer Information

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MAN PrimeServ Turbocharger ([primeserv-tc-retrofit@man-es.com](mailto:primeserv-tc-retrofit@man-es.com)) can offer the cleaning equipment for the whole TCA turbocharger series:

TCA33  
TCA44  
TCA55  
TCA66  
TCA77  
TCA88  
TCA88-25

All questions related to the cleaning procedure and installation will be answered by the responsible office as well, or at [primeserv-tc-technical@man-es.com](mailto:primeserv-tc-technical@man-es.com).

### Contact

In case of any queries, please do not hesitate to contact our Technical Service Department for further assistance:

**MAN Energy Solutions SE**  
Stadtbachstraße 1  
86153 Augsburg, Germany  
Tel.: +49 821 322-4010  
Fax: +49 821 322-2411  
E-mail: [primeserv-tc-technical@man-es.com](mailto:primeserv-tc-technical@man-es.com)



ppa. Alexander Schäfer  
Vice President  
PrimeServ Turbocharger & Exhaust Gas Treatment



i.V. Klaus-Peter Ebel  
Head of Technical Consulting  
PrimeServ Turbocharger & Exhaust Gas Treatment

Please forward this information to your technical operating personnel and remember to inform us of the current operating hours of your MAN turbochargers.

## Acknowledgment of Receipt

To: MAN Energy Solutions	Fax: +49 821 322 49 2830
From:	Date:
Ref.: Prod. Safety warning TCA55/66 and 77 Pages 1	



**Re: Product safety warning for TCA55, TCA66 & TCA77**

We herewith confirm and acknowledge receipt of MAN Energy Solutions.

- Cover letter (shipowner/manager)
- Addendum to Product safety warning and PCI0413

By: (Mr./Ms.) \_\_\_\_\_

Company: \_\_\_\_\_

Date: \_\_\_\_\_ Signature: \_\_\_\_\_