



Certificate no.:  
**TAM00001D0**

# TYPE APPROVAL CERTIFICATE

**This is to certify:**

**that the Turbocharger**

with type designation(s)  
**MET42MB**

issued to

**MITSUI E&S CO., LTD.**  
**Tamano, Okayama Pref., Japan**

is found to comply with

**DNV rules for classification – Ships Pt.4 Ch.3 Sec.1 Reciprocating internal combustion engines**

**Application:**

**Product approved by this certificate is accepted for installation on all vessels classed by DNV.**

Issued at **Høvik** on **2024-04-30**

This Certificate is valid until **2029-04-29**.

for **DNV**

DNV local unit: **Japan CMC**

Approval Engineer: **Tage Olav Alexander Strøm**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.  
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

Revision: 2023-09

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## Product description

Exhaust driven turbochargers served by cylinder groups with combined power in the range of 2900-5300 kW <sup>1)</sup>

<sup>1)</sup> Engine power range is the reference values subject to pressure ratio of 3.0

## Place of production

MITSUI E&S Co., Ltd., Tamano, Japan

## Application/Limitation

| Turbocharger type      | MET42MB |       |       |       |       |       |
|------------------------|---------|-------|-------|-------|-------|-------|
| Impeller type          | V (W,T) |       | U, T  |       |       |       |
|                        |         |       | H     |       | S     |       |
|                        | 2       | 3     | 2     | 3     | 2     | 3     |
| Impeller tip dia. [mm] | 462     |       |       |       |       |       |
| Max rated speed (RPM)  | 21800   | 20540 | 21800 | 21800 | 21040 | 21040 |
| Max temperature (°C)   | 580     |       |       |       |       |       |
| Max compressor ratio   | 4.2     |       | 5.0   |       | 4.6   |       |

H – High compressor ratio

S – Standard compressor ratio

## Alarm levels:

Overspeed, maximum alarm level: 105% of maximum rated speed

High exhaust temperature at turbine entry, maximum alarm level: 550 °C.

Low lubrication oil pressure at turbocharger inlet, minimum alarm level: 0.6 bar (gauge pressure)

Maximum lubrication oil outlet temperature, maximum alarm level: 90 °C

## Application constraints:

Maximum allowed inclinations for MET-MB turbochargers:

Static: ± 15°

Dynamic (momentary): ± 22.5°

Engine and rotor vibrations to be within specifications for MET-MB turbochargers (ref. Tz-E002-3925).

## Type Approval documentation

As listed in our reference "M-KJ-CMC/TOAS/262.1-040799-J-8"

## Tests carried out

Type Approval test of MET66MB August 2011.

Type Approval test report MET66MB (no.GU3L23DCD4J0), dated 2010-11-25

Type Approval test of MET90MB 12 Jan 2022.

## Marking of product

The product to be marked with manufacturer's name or trademark and type number identification.

## Periodical assessment

For retention of the type approval, a DNV surveyor shall perform an assessment after 2 years and after 3.5 years, both referring to the issue date of the type approval certificate to verify that the conditions of the type approval are complied with. A renewal assessment will be performed at renewal of the certificate.

In cases where the type approved product is manufactured at other companies, the periodical assessment shall verify that the type approval applicant has a quality control system for consistent production at their licensees/subcontractors. Furthermore, periodical assessment shall be carried out randomly at these companies.

END OF CERTIFICATE