

TYPE APPROVAL CERTIFICATE

Certificate No:
TAM00000F6

This is to certify:

That the Diesel Engine

with type designation
L21/31

Issued to

MAN Diesel & Turbo SE
Copenhagen, Denmark

is found to comply with

DNV GL Rules for classification, Ships - DNVGL-RU-SHIP-Pt4 Ch3 Sec1, Reciprocating Internal Combustion Engines

Application :

Propulsion / Auxiliary

Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **19th February, 2022**.

Issued at **Høvik** on **20th February, 2017**

DNV GL local station: **Copenhagen**

for **DNV GL**

Approval Engineer: **Tin Nguyen**

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Oddvar Deinboll
Head of Section

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.

Product description

Four stroke, in-line engine, non-reversible, trunk-piston, with supercharging, with charge air cooling, constant-pressure charging system, direct injection, injection operation by cams, valve operation by cams, liquid fuel

Cylinder bore : 210
Piston stroke : 310
No. of cylinders : 5-9

Additional place of production

MAN Diesel & Turbo India Ltd, Aurangabad, India

Application/Limitation

Rated power [kW/cyl.]	200	220	220	215
Rated speed [rpm]	900	900	1000	1000
Mean effective pressure [bar]	24.84	27.32	24.6	24.03
Max. firing pressure [bar]	210	220	220	210
Definition	Auxiliary	Auxiliary	Auxiliary	Propulsion/Auxiliary

Marking of product

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

Periodical assessment

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

The objective of the Periodical Assessment is to verify that the conditions for the Type Approval are not altered since the Type Approval certificate was issued.

In case 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.

Other Conditions

Foundation arrangement to be submitted for each installation according to the Rules Pt.4 Ch.3 Sec.1 [1.4]
– Documentation of arrangement.

Torsional vibration calculations to be submitted for each installation according to the Rules Pt.4 Ch.2 Sec.2 – Torsional Vibration.

Signboards according to the Rules Pt.4 Ch.3 Sec.1 [2.3.6] – Warning Notice.

Flexible hoses to be Type Approved by DNV GL.

Engine safety, control and monitoring systems, including sensors and actuators are not covered by this type approval certificate. Documentation for engine safety, control including speed governing and monitoring systems shall be submitted for approval according to the Rules Pt.4 Ch.9 Sec.1 Table 5 and/or as listed in relevant type approval certificates.

Electric cables and installation of this is not covered by this approval and must be verified to comply with the requirement of the Rules Pt.4 Ch.8 - Electrical Installation.



Job Id: **262.1-000364-11**
Certificate No: **TAM00000F6**

The approval does not include driven member.

END OF CERTIFICATE