

TYPE APPROVAL CERTIFICATECertificate No:
TAM00000V4**This is to certify:****That the Diesel Engine**with type designation(s)
VM32CLS

Issued to

Caterpillar Motoren GmbH & Co. KG
Kiel, Germany

is found to comply with

DNV GL rules for classification: Ships Pt.4 Ch.3 Sec.1 "Reciprocating internal combustion engines",**DNV GL offshore standards: DNVGL-OS-D101 "Marine and machinery systems and Equipment" and****DNV GL statutory interpretations: DNVGL-SI-0166 "Verification for compliance with Norwegian shelf regulations".****Application :**

propulsion / auxiliary / emergency (see Application/Limitation next page)

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2023-06-07**.Issued at **Hamburg** on **2018-06-08**DNV GL local station: **Hamburg**for **DNV GL**Approval Engineer: **Jan Sell**

Burkhard Lilienthal
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, v-engine, non-reversible, trunk-piston, with supercharging, with charge air cooling, constant-pressure charging system, pulsating pressure charging system, direct injection, injection operation by cams, valve operation by cams, liquid fuel, with or without Flexible Cam Technology (FCT)

Cylinder bore [mm]	320
Piston stroke [mm]	460
No. of cylinders	12, 16

Additional place of production

Caterpillar Motoren Rostock GmbH, Rostock, Germany

Application/Limitation

Rated power [kW/cyl.]	500	500
Rated speed [rpm]	720	750
Mean effective pressure [bar]	22.5	21.6
Max. firing pressure [bar]	210	210

The approval according DNV GL Rules for Ships is valid for propulsion and auxiliary duty with main data as specified in above table.

Approval according to DNV GL Offshore Standard DNV-OS-D101 "Marine and machinery systems and equipment", January 2018:

The engine type is approved for use as driver for generators for continuous duty and emergency generators onboard mobile offshore units with main data as specified in above table.

Approval according to DNV GL Statutory Interpretation DNVGL-SI-0166 "Verification for Compliance with Norwegian shelf regulations", July 2017:

The approval is valid for emergency use according to DNVGL-SI-0166 (NMA 856/87 §11) with main data as shown in above table, and is valid for VM32CLS engines in combination with generators built according to the same construction principles as the tested Siemens 1DK4537-8AJ05-Z generator with regard to bearings and support.

Type Approval documentation

Tests carried out

Documentation:

Test report title	Test Report 02/10/32 - Type Approval Test 16M32CLS
Place of test	Test Cell 6, Caterpillar Motoren Rostock GmbH
Date of test	2010-03-29 until 2010-03-31

Test engine:

Model	16M32CLS
Serial no.	34254
No. of cylinders	16
Power [kW/cyl.]	500
Speed [rpm]	750

Demonstration test according to NMD 856 §11 – 1987-09-04 carried out 2010-05-11 with engine type 12M32CLS, engine serial no 34251, Caterpillar test report no 11/10/32 dated 2010-06-03.

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.

Job Id: **262.1-000744-37**
Certificate No: **TAM00000V4**

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

1. Engine safety, control and monitoring systems, including sensors and actuators, are not covered by this certificate. Documentation for engine safety, control (including speed governing), and monitoring systems shall be submitted for approval according to DNV GL Rules Ships Pt.4 Ch.9 Sec.1 Table 5 and/or as listed in relevant Type Approval certificates.
2. Correct oil sump has to be selected for the application (e.g. regarding inclinations in case of emergency engine application on mobile offshore units).
3. The approval does not include driven member. Excepted from this, is compliance with NMA 856/87 §11 for the engine and generator combination referred to under Application/Limitation. If other types of generators shall be used must either a new prototype test be carried out or a generator bearing pressure calculation be submitted for approval.

END OF CERTIFICATE