



DNV

TYPE APPROVAL CERTIFICATE

Certificate No:
TAM000019H

This is to certify:

That the Diesel Engine

with type designation(s)
X15

Issued to

Cummins Inc.
29405 Charleston, SC, USA

is found to comply with

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

Application :

propulsion, multi engine plant / auxiliary / emergency

Issued at **Hamburg** on **22nd March, 2022**

This Certificate is valid until **21st March, 2027**.

DNV local station: **Certification & Inspection Services**
Houston

for **DNV**

Approval Engineer: **Jan Sell**

.....
Olaf Drews
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.

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.

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 electronically controlled, valve operation by cams, liquid fuel

Cylinder bore [mm]	137
Piston stroke [mm]	169
No. of cylinders	6
Turbocharger	Cummins Turbo Technologies, HE600WG

Additional place of production

Cummins Inc. - Jamestown Engine Plant, Lakewood, NY, USA

Application/Limitation

Rated power [kW/cyl.]	78.3	74.5	70.8	62.2
Rated speed [rpm]	2100	1800	1800	1500
Mean effective pressure [bar]	20	20	19	20
Max. firing pressure [bar]	164	164	161	163
Definition	Heavy Duty, Propulsion, X15-M	Continuous, Propulsion, X15-M	Prime, auxiliary/ Emergency, X15-DM	Prime, auxiliary/ Emergency, X15-DM

Type Approval documentation

Tests carried out

Documentation:	
Test report title	X15 Marine Agency Approval Testing
Place of test	Charleston, SC
Date of test	2021-11-01 until 2021-11-03

Test engine:	
Model	X15-M/DM
Serial no.	80340441
No. of cylinders	6
Power [kW/cyl.]	470
Speed [rpm]	2100

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

- 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 Rules Ships Pt.4 Ch.9 Sec.1 Table 5 and/or as listed in relevant Type Approval certificates (for control and monitoring system CM2350 see TAA000024R, for safety system C- Command Elite Plus X15 see TAA000032G).
- An engine safety system independent of the engine control system CM2350 shall be provided and tested for emergency stop, too low lube oil pressure and overspeed protection (and too high coolant temperature for auxiliary engines on ships with class notation E0), DNV Rules Ships Pt.4 Ch.3 Sec.1 [5].
- For propulsion engines, off-engine duplex fuel filters shall be provided upstream of the fuel lift pump.

END OF CERTIFICATE