

TYPE APPROVAL CERTIFICATE

Certificate No:
TAM000014N

This is to certify:

That the Diesel Engine

with type designations
S46ME-B

Issued to

**MAN Energy Solutions, branch of MAN Energy Solutions SE,
Germany
Copenhagen SV, Denmark**

is found to comply with

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

Application :

propulsion

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

Rating: See page two for ratings

This Certificate is valid until **11th August, 2023**.

Issued at **Høvik** on **18th November, 2019**

DNV GL local station: **Copenhagen**

for **DNV GL**

Approval Engineer: **Geir Olav Moen**

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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

two stroke, in-line engine, reversible, crosshead, with supercharging, with charge air cooling, constant-pressure charging system, direct injection, injection operation by cams, injection operation electronically controlled, valve operation by cams, valve operation electronically controlled, liquid fuel

Cylinder bore [mm]	460
Piston stroke [mm]	1932
No. of cylinders	4 - 8

Application/Limitation

Crank throw no.	242547	242710	244959
Rated power [kW/cyl.]	1380	1380	1310
Rated speed [rpm]	129	129	129
Mean effective pressure [bar]	20	20	19
Max. firing pressure [bar]	170	170	150

Type Approval documentation

15-002832, 15-014567, 262.1-000566-7, 262.1-000655-8

Tests carried out

Documentation:

Test report title	Report of Type Approval Test of MAN B&W S46MC-C Engine-No. 7779
Place of test	Kawasaki Heavy Industries, Kobe, Japan
Date of test	1998-02-18 until 1998-02-20

Test engine:

Model	S46MC-C
Serial no.	7779
No. of cylinders	6
Power [kW/cyl.] @ [rpm]	1310 @ 129

Type test of the ME-B system on a 4-cylinder test engine at MAN Energy Solutions, Copenhagen 18 October 2007.

Extended shop test at HHM, Shanghai, 6S46ME-B-8.2, D2340, Power 1380 kW/cyl x 129 rpm, ref. 14-107238.

Marking of product

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

Periodical assessment

Meetings on regular basis and at least every second year with the Type Approval applicant (hereof: the Engine Designer) shall be arranged with the objective to verify that the conditions for the Type Approval are not altered since the Type Approval Certificate was issued, and to keep DNV updated with regard to:

- The latest development status and design as covered by the Type Approval certificate.
- Damages and failures of products certified by DNV leading to break down or other malfunctions in service. The causes and reasons for the failure and results from investigations are to be made available to DNV upon request. Failure to inform DNV may lead to suspension of this Type Approval certificate.

In cases where the Type Approved design is manufactured at other companies, DNV shall verify that the Type Approval applicant has a quality control system for consistent production at their licensees/subcontractors.

Other Conditions

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



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

END OF CERTIFICATE