

TYPE APPROVAL CERTIFICATE

Certificate No:
TAM00000MV

This is to certify:

That the Diesel Engine

with type designation(s)

D13MH, D13MG, D13-700, D13-800, D13-900, D13-1000

Issued to

**AB Volvo Penta
Göteborg, Sweden**

is found to comply with

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

Application :

mechanical propulsion / auxiliary / emergency

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

This Certificate is valid until **21st August, 2022**.

Issued at **Høvik** on **22nd August, 2017**

DNV GL local station: **Gothenburg**

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.

Job Id: **262.1-008794-4**
Certificate No: **TAM00000MV**

Product description

four stroke, in-line engine, trunk-piston, with supercharging, injection operation by cams, valve operation by cams, liquid fuel

Cylinder bore : 131
Piston stroke : 158
No. of cylinders : 6

Application/Limitation

The below listed ratings are the highest approved powers for each rpm.

Marine Heavy duty MH:

Volvo Rating Group	R1	R2
Mean indicated pressure (bar):	21.6	24.3
Max. cylinder pressure (bar):	160	165
Rated power (kW):	368	441
Corresponding to (RPM):	1800	1900

Marine Propulsion MP:

Volvo Rating Group	R3		R4	R5	R5
Mean indicated pressure (bar):	24.5	24.3	27.6	30.7	31.3
Max. cylinder pressure (bar):	170	193	190	200	238
Rated power (kW):	515	515	588	662	735
Corresponding to (RPM):	2250	2300	2300	2300	2400

Marine Genset/Auxiliary & Emergency MG:

Volvo Rating Group	Aux/Eme	
Mean indicated pressure (bar):	24.5	23.3
Max. cylinder pressure (bar):	176	170
Rated power (kW):	360 *	400 *
Corresponding to (RPM):	1500	1800

*Rated output power is stated for the bare engine. Fan power consumption for radiator cooled engines is 11 kW @ 1500 rpm and 19 kW @ 1800 rpm causing a net power reduction of the rated power.

Type Approval documentation

10-068188, 11-052315, 11-121490, 11-135768, 262.1-008794-4

Tests carried out

Documentation	262.1-008794-4	11-121490
Test report title	P2358-D13-1000hp-Test report	Type test D13 Marine R1-2
Place of test	Göteborg, Test bed 21	Göteborg, Test cell 20, 21
Test engine:		
Model	D13-1000hp	D13 Marine R1-2
Serial no.	24206	D13B-E MH13-277895, D13-277900, D13-277912
No. of cylinders	6	6
Power [kW/cyl.]	122.5	73.5
Speed [rpm]	2400	1900

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For R1, R2 and the Auxiliary & Emergency engines, type test report no. 173515 dated 2011-07-06.
For R3, R4 and R5, type test report no. 128812-1 dated 2010-02-18.
For R5 (D13-1000hp), type test report no. 202726-1 dated 2017-06-14.

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 Vibrations.

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

Flexible hoses with couplings 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 - Documentation requirements.

Electric cables and cabling are not covered by this approval and must be verified to comply to the rules Pt.4 Ch.8 - Electrical Installation.

END OF CERTIFICATE