Certificate No:
TAM000002V

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Diesel Engine

with type designation(s)
D11

Issued to
AB Volvo Penta
Göteborg, Sweden

is found to comply with
DNV GL rules for classification – High speed and light craft

Application :

The approval is valid for propulsion and auxiliary duty

Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.
Rating 493 kW at 2450 RPM, additional ratings see page two

This Certificate is valid until **2019-10-20**.

Issued at **Høvik** on **2015-10-21**
DNV GL local station: **Gothenburg** for **DNV GL**

Approval Engineer: **Tage Olav Alexander Strøm**

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.

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Product description
Four stroke diesel engine

Cylinder bore: 123 mm
Piston stroke: 152 mm
No. of cylinders: 6 in-line

Application/Limitation
The approval is valid for propulsion duty and is based on the following main data:

Volvo Rating Group	R3	R4	R5
Rated power (kW):	375	460	493
Corresponding to (RPM):	2250	2400	2450
Mean indicated pressure (bar):	20,5	23,7	25
Mean effective pressure (bar)	18,3	21,2	22,9
Max. cylinder pressure (bar):	170	200	204

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

Periodical assessment
For retention of the Type Approval, a DNV surveyor shall perform a survey every second year and before the expiry date of this certificate to verify that the conditions of the type approval are complied with.

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. The main scope of the Periodical Assessment will normally include:

- Verification of the Type Approval applicant's production and quality system w.r.t. ensuring continued consistent production of the Type Approved products at the Type Approval applicant's own premises and at other companies that are given the responsibility for manufacturing of the products.
- Review of the Type Approval documentation and that this is still used as basis for the production
- Review of possible changes to the design, the material and the performance of the product
- Verification of the product marking.

Other conditions
Foundation arrangement to be submitted for each installation according to the Rules, Pt. 4 Ch.3 Sec.1 A500 – Documentation of arrangement.

Torsional vibration calculations to be submitted for each installation according to the Rules Pt.4, Ch.3, Sec.1, G - Vibration.

Signboards according to the Rules Pt.4, Ch.3, Sec.1, C 406

Flexible hoses with couplings to be type approved by DNV.

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 Pt.4 Ch.9 Sec.1 Table C2 and/or as listed in relevant type approval certificates.

Electric cables and cabling are not covered by this approval and must be verified to comply with the requirement of DNV Rules for Ships/ High, Speed Light Craft and Naval Surface Craft Pt.4 Ch.8 - Electrical Installation.
The approval does not include driven member.

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END OF CERTIFICATE