



Certificate No. 02-003050/025092

TYPE APPROVAL CERTIFICATE

This is to certify that this product complies with the Rules for the classification of ships, Part 1 - General requirements, Chapter 3 - Type approval of products.

TYPE AND DESCRIPTION OF PRODUCT:

**DIESEL ENGINE,
type D13**

MANUFACTURER:

**AB VOLVO PENTA
Vara Volvofabriken 1
SE-534 91 Vara
Sweden**

THE PRODUCT MEETS FOLLOWING RULES/REGULATIONS:

CRS: Rules for the classification of ships, Part 9. - Machines.

FURTHER DETAILS OF THE PRODUCT AND CONDITIONS FOR CERTIFICATION ARE GIVEN OVERLEAF.

APPROVAL IS VALID UNTIL: **2024-10-10**

Place and date: Split, 2020-10-01

Seal _____

Marinko Popović, dipl.ing.

NOTE: This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Croatian Register of Shipping of any modification or changes to the product in order to obtain a valid certificate.

DETAILED PRODUCT DESCRIPTION:

Number of cylinders	6
Cylinder arrangement	In-line
Working cycle	4- stroke
Cylinder bore (mm)	131
Stroke (mm)	158
Kind of fuel	Liquid
Fuel system	Electronically controled, direct injection
Valve operation	Cam control
Turbocharging system	Single-stage wih charge air cooling

APPLICATION / LIMITATIONS:

Application: Propulsion engine

Rated power (kW)	368	441	515	588	662
Rated speed (rpm)	1800	1900	2300	2300	2300
Mean effective pressure (bar)	19,4	21,9	22,1	24,8	30,7
Max. firing pressure (bar)	160	165	193	190	200
Application / Rating*	Heavy Duty	Medium Duty	Light Duty	Special Light Duty	Pleasure Duty

*Reference is made to Manufacturer marine rating classification.

Application: Auxiliary, genset engine

Rated power (kW)	368	400
Rated speed (rpm)	1500	1800
Mean effective pressure (bar)	22,5	20,9
Max. firing pressure (bar)	176	170

Lower ratings than this stated is accepted as long as they are within the values approved by engine designer.

TYPE APPROVAL DOCUMENTATION:

Approved by the Croatian Register of Shipping with letter No.(dated):

/TS/IA/023347 (2012-10-10)
1978/TS/IA/023978 (2016-08-23)
2226/TSE/IA/024223 (2017-10-23)
2008/TSE/KF/025092 (2020-10-01)

MARKING OF PRODUCT:

- manufacturer's mark
- location and year of final fitting
- CRS mark

CONDITIONS FOR CERTIFICATION:

Signalization and protection related to the engine shall be subject to CRS approval in each particular case and will depend on service applied and the degree of automation of the engine plant.