

# Type Approval Certificate



Certificate No. **35327-11 HH**

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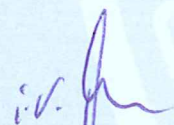
This is to certify that the Diesel Engine noted hereunder has been approved in accordance with the relevant requirements of the GL Approval System

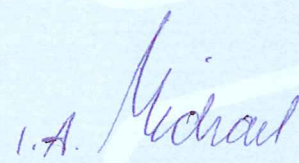
Engine Manufacturer	AB Volvo Penta 41715 Göteborg, Sweden
Engine Series / Type	D13
Design / Working Process	in-line engine, four stroke, trunk-piston type
Combustion Method / Kind of Air Charging	direct injection, with supercharging, charger cooler
Technical Data	
Rated Power [kW/Cylinder]	73.5
Rated Speed [1/min]	1900
Mean effective Pressure [bar]	24.2
Max. Firing Pressure [bar]	183
Application	Auxiliary/ Propulsion
Approval Standard	Rules for Classification and Construction, I Ship Technology, Part 1, Chapter 2, Section 2.E Tests and Trials
Approval Documents	10-068188, 11-052315, 11-121490, 11-135768

Hamburg, 2011-11-22

valid until 2016-11-22

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Notice: This Certificate is subject to remarks and details overleaf. Any significant change in design, up-fit or construction may render this Certificate invalid. The latest edition of the General Terms and Conditions of Germanischer Lloyd is applicable. German law applies.



GLAPP001090872R



## Technical Data (cont'd):

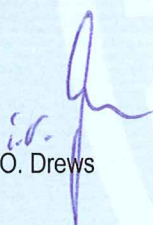
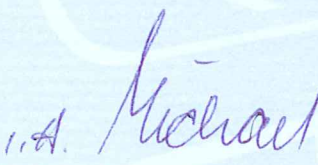
Number of cylinders	6
Cylinder bore [mm]	131
Stroke [mm]	158

## Type Approval Test Documentation:

Test Program Ref. No.	11-071735
Test Program Approval Date	2011-06-16
Place of Test	Gothenburg, Test cell 21, 20
Date of Test	2011-06-20 until 2011-06-30
Test Report	Type test D13 Marine R1-2
Test Report Ref. No.	11-121490
Date of Test Report	2011-07-07

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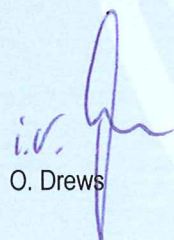
## Technical Data of engine tested:

Serial No. of Engine tested	D13B-E MH 13-277895, D13-277912 , D13-277900
No. of cylinders	6
Compression ratio	18,5:1
Fuel used for Test	SD-DIESEL SD10
Exhaust gas turbocharger	Holset HX55W D98K68RAV
Injection pump	Delphi 21379939 P
Injector	Delphi 21379939 P
Governor	EMS2.2
Actuator	-
Engine safety and monitoring system	Test bed euipment
Starter	electrical starter

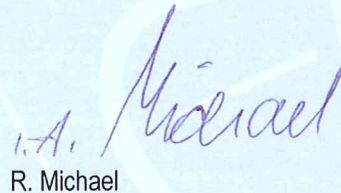
- Remarks
1. This type approval is granted on the basis of the test and is valid for multiple engine installation.
  2. All connections of pipes carrying lubrication oil or fuel oil have to be shielded in accordance with SOLAS amendments.
  3. All hoses and hose assemblies have to be GL type approved in accordance with ISO 15540/15541.
  4. The turbo charger has got to be type approved according to GL I-1-2/3b-A-3.
  5. The EMS - Engine Control- and Monitoring-System is type approved with TAC 2005304 HH.
  6. A second local display shall be provided as spare parts for monitoring of engine's operating parameters according to GL I-1-2/2-A-7
  7. Exhaust gas lines are to be insulated that the surface temperature cannot exceed 220 °C at any point.
  8. The engine has got to be operated and serviced in straight accordance to the relevant manufacturers operating and maintenance and fluid recommendations.

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