

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Diesel Engine

with type designation(s)
H21C

Issued to

**Hyundai Heavy Ind. Co. Ltd., Engine & Machinery Division
Ulsan, Republic of Korea**

is found to comply with
DNV GL rules for classification – Ships

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Rating 240 kw/cyl

This Certificate is valid until **2019-10-04**.

Issued at **Høvik** on **2015-10-05**

DNV GL local station: **Ulsan**

for **DNV GL**

Approval Engineer: **Jørgen Jensen Tande**

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

Four Stroke Diesel Engine.

Cylinder bore: 210 mm
Piston stroke: 330 mm
Cylinder configuration: 5, 6, 7, 8 and 9 Inline

Application/Limitation

The approval is valid for propulsion and auxiliary duty, and is based on the following main data:

	HIMSEN H21C	
Mean indicated pressure, [bar]	28.0	25.2
Max. cylinder pressure, [bar]	240	240
Rated power, [kW/cyl.]	240	240
Corresponding to, [rpm]	900	1000

Marking of product

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

Periodical assessment

For retention of the Type Approval, a DNVGL 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.

In cases 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. 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.

Job Id: **262.1-019626-1**
Certificate No: **TAM000000A**

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

Flexible hoses with couplings to be type approved by DNVGL.

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.

END OF CERTIFICATE