# TYPE APPROVAL CERTIFICATE

Certificate No:
**TAM00001A8**

## This is to certify:

**That the Dual Fuel Engine**

with type designation(s)
**H32DF-LM**

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

is found to comply with
**DNV Rules for classification, Ships - DNV-RU-SHIP-Pt4 Ch3 Sec1, Reciprocating Internal Combustion Engines**

## Application :

propulsion / auxiliary

Issued at **Høvik** on **27th December, 2022**
This Certificate is valid until **26th December, 2027**.

DNV local station: **Ulsan**

for **DNV**

Approval Engineer: **Dag Harald Williksen**

**Olaf Drews**
**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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

## Product description

four stroke, in-line engine, non-reversible, trunk-piston, with supercharging, with charge air cooling, direct injection, injection operation by cams, injection operation electronically controlled, valve operation by cams, dual fuel, diesel and methanol

| | |
|---|---|
| Cylinder bore [mm] | 320 |
| Piston stroke [mm] | 400 |
| No. of cylinders | 6, 7, 8 and 9 in-line |

## Application/Limitation

| | | |
|---|---|---|
| Rated power [kW/cyl.] | 500 | 500 |
| Rated speed [rpm] | 720 | 750 |
| Mean effective pressure [bar] | 25.9 | 24.9 |
| Max. firing pressure [bar] | 210 | 210 |

## Type Approval documentation

## Tests carried out

Documentation:

| | |
|---|---|
| Test report title | Content |
| Place of test | Hyundai, Ulsan, Korea |
| Date of test | 2022-09-28 until 2022-09-30 |

Test engine:

| | |
|---|---|
| Model | 8H32DF-LM |
| Serial no. | KYE001151 |
| No. of cylinders | 8 |
| Power [kW] | 4000 |
| Speed [rpm] | 720 |

## 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

Flexible hoses 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 the Rules Pt.4 Ch.9 Sec.1 Table 5 and/or as listed in relevant type approval certificates.

Electric cables and installation of this is not covered by this approval and must be verified to comply with the requirement of the Rules Pt.4 Ch.8 - Electrical Installation.

END OF CERTIFICATE