

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Diesel Engine

with type designation(s)
3/5/6/8 DK(M)-20(e)(F)(L)

Issued to

Daihatsu Diesel Mfg. Co. Ltd Moriyama Division
Moriyama Shiga Pref, Japan

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

Application :

The approval is valid for auxiliary and propulsion duty.

Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.

Rating see page two of certificate

This Certificate is valid until **2021-06-30**.

Issued at **Høvik** on **2016-06-24**

DNV GL local station: **Kobe**

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.

Job Id: **262.1-000502-9**
Certificate No: **TAM000008B**

Product description

Four stroke diesel engine

Cylinder bore: 200 mm
Piston stroke: 300 mm
Number of cylinders: 3, 5, 6 or 8 in-line

"-": Generator engine, eg 6DK-20
"M": Propulsion engine, eg 6DKM-20
"F": Propulsion engine with power takeoff to other equipment, eg 6DKM-20F
"L": Anticlockwise rotation, seen from flywheel side, eg 6DKM-20L
"e": IMO Tier II Complaint version

Application/Limitation

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

	3DK(M)-20	5DK(M)-20			5DK(M)-20e			5DK(M)-20(e)		
Mean indicated press[bar]	24,3	23,2	22,3	22,8	21,7	20,9	20,1	23,2	22,3	24,3
Max. cylinder press. [bar]	157	157*			157*			170/177*		
Rated cont. output, [kW]	480	610	610	750	570	570	660	610	610	800
Engine speed, [rpm]	900	720	750	900	720	750	900	720	750	900

6DK(M)-20(e)			8DK(M)-20(e)		
25,4	24,3	26,3	25,5	24,4	25,9
177			177		
800	800	106	107	107	136
		0	0	0	0
720	750	900	720	750	900

* Allowable firing pressure depending on crankshaft used

Marking of product

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

Periodical assessment

Job Id: **262.1-000502-9**
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For retention of the Type Approval, a DNV GL 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 [1.4]
– Documentation of arrangement.

Torsional vibration calculations to be submitted for each installation according to the Rules Pt.4 Ch.2 Sec.2 – Torsional Vibration.

Signboards according to the Rules Pt.4 Ch.3 Sec.1 [2.3.6] – Warning Notice.
Flexible hoses to be Type Approved by DNV GL.

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