

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Diesel Engine

with type designation(s)
K19 series

Issued to

Cummins Inc.
COLUMBUS IN, United States

is found to comply with
DNV GL rules for classification – Ships
DNV GL rules for classification – High speed and light craft

Application :

The approval is valid for propulsion, auxiliary and emergency duty.

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

Rating from 272 kW at 1800 RPM to 507 kW at 1800 RPM

This Certificate is valid until **2021-01-13**.

Issued at **Høvik** on **2016-01-14**

DNV GL local station: **New York**

Approval Engineer: **Dag Harald Williksen**

for **DNV GL**

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

4-stroke diesel engine

Cylinder bore: 159 mm
Piston stroke: 159 mm
No. of cylinders: 6

Manufacturing plant:

Cummins Industrial Center (CIC) Seymour, Indiana, USA.

Application/Limitation

The approval is valid for propulsion, auxiliary and emergency duty and is based on the following main data (according to Cummins application groups):

Propulsion:

	KT-19-M	
Mean eff. press(bar):	9.6	10.0
Max.cyl. press(bar):	114.4	104.8
Rated cont.output(kW):	272	283
Corresponding to (RPM):	1800	1800

	KT-19-M	
Mean eff. press(bar):	11.5	
Max.cyl. press(bar):	132.4	
Rated cont.output (kw):	380	
Corresponding to(RPM):	2100	

	KTA-19-M	
Mean eff. press(bar):	13.2	13.9
Max.cyl. press(bar):	103.4	148.2
Rated cont.output (kW):	373	395
Corresponding to(RPM):	1800	1800

	KTA-19-M3	
Mean eff. press(bar):	15.9	16.8
Max. cyl. pressbar):	143.6	148.2
Rated cont.output (kw):	447	477
Corresponding to(RPM):	1800	1800

Auxiliary/Emergency:

	KTA-19-D(M)			
Mean eff. press(bar):	14.3	13.9	17.0	16.3
Max. cyl. press(bar):	121.4	133.8	136.5	143.1
Rated cont.output (kw):	336	392	403	462
Corresponding to (RPM):	1500	1800	1500	1800

	KTA-19-D(M)	
Mean eff. press(bar):	19.0	17.9
Max. cyl. press(bar):	151.7	148.9
Rated cont.output (kw):	447	507
Corresponding to (RPM):	1500	1800

	KTA-19-D(M1)			
Mean eff. press(bar):	15.2	15.0	17.4	17.2
Max. cyl. press(bar):	113.5	118.8	128.2	138.8
Rated cont.output (kw):	358	425	410	485
Corresponding to (RPM):	1500	1800	1500	1800

Marking of product

Manufacturer's name or trademark. Type number designation.

Periodical assessment

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. 4 Ch.2 Sec.1 [6]
– Documentation of arrangement.

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

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 C2 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 requirements of the Rules Pt.4 Ch.8 - Electrical Installation.

END OF CERTIFICATE