



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **M-11849**

This is to certify that the
Diesel Engine

with type designation(s)
C32, C32 (ACERT)

Manufactured by
Caterpillar Inc.
Lafayette IN, United States

is found to comply with
Det Norske Veritas' Rules for Classification of Ships/High Speed and Light Craft

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

Rating see page 2

Høvik, 2011-11-07
for **Det Norske Veritas AS**

This Certificate is valid until
2015-12-31

Tomas Heber Tronstad
Head of Section

DNV local office:
New York

Hans-Kristian Eriksen
Surveyor

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.
If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

Product description

Four stroke diesel engine

Cylinder bore : 145 mm

Piston stroke : 162 mm

No. of. cylinders : 12 in V

Application/Limitation

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

Propulsion:

	C32		C32 (ACERT)					
Power (kW), cont.	1044	820	708	970	1044	1288	-	-
Power (kW), intermittent	-	-	-	-	-	-	1343	1417
Speed (rpm)	2300	2100	1600	1800	2100	2300	2300	2300
Mean ind. press. (bar):	18,9	16,6	18,34	22,13	20,78	23,23	24,14	25,35
Max. cyl. press. (bar):	172	135	135,44	143,64	140	152	163	170,14

Auxiliary/emergency:

	C32 (ACERT)	
Power (kW), cont.	874	995
Speed (rpm)	1500	1800
Mean ind. press. (bar):	23,58	22,64
Max. cyl. press. (bar):	158	146

For emergency use the engine model has to be equipped with Deep Oil Pan 4N-7182.

Type Approval documentation

Tests carried out

Marking of product

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

Certificate retention survey

For retention of the Type Approval, DNV surveyor shall perform survey every second year and before expiry date of this certificate to verify that the conditions of the type approval is complied with.

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.

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

Flexible hoses for flammable fluids to be type approved by DNV.

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.

The engine control unit ADEM-IV to be in compliance with valid type approval certificate.

Electric cables and installation of this is 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