

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Engine Control System**

with type designation(s)

A5:M15

Issued to

**Caterpillar Inc.
Lafayette, IN, USA**

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Location classes:****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Location classes:****Temperature D****Humidity B****Vibration B****EMC A****Enclosure B (IP57)**This Certificate is valid until **2023-12-02**.Issued at **Hamburg** on **2018-12-03**DNV GL local station: **New York**for **DNV GL**Approval Engineer: **Didier Girardin**

**Joannis Papanuskas
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.

Certificate No: **TAA000023Z**
File No: **852.20**
Job Id: **262.1-018202-2**

Product description

A5:M15 is an electronic valve control system. The control module is intended for motor drives on engine systems, typically controlling actuators for the engine air system. Power is supplied through a Corcom 60DCF6-1 power line filter.

Place of manufacture

The Morey corporation
100 Morey drive
Woodridge, IL
60517
USA

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case.

The following documentation is to be submitted:

- Reference to this Type Approval Certificate
- System block diagram
- Power supply arrangement (may be part of the System block diagram)

Product certificate

As long as the units are covered by the Type Approval, a product certificate according to Pt.4 Ch.9 Sec.1 A 202 will **not** be required. Correct configuration and set up for each delivery to be tested during commissioning after installation.

Clause for application software control

All changes in software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to DNV for evaluation and approval.

Major changes in the software are to be approved before being installed in the computer.

A Certification of Application Functions may be required for the particular vessel.

Type Approval documentation

Hidden

Tests carried out

Applicable tests according to Standard for Certification No. 2.4, April 2006.

Marking of product

The products to be marked with:

- part number
- serial number
- company name

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Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

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.

END OF CERTIFICATE