



Certificate No. 03-001760/031457

TYPE APPROVAL CERTIFICATE

This is to certify that this product complies with the Rules for the classification of ships, Part 1 - General requirements, Chapter 3 - Type approval of products.

TYPE AND DESCRIPTION OF PRODUCT:

Electronic Thermostat

Part # 484-9643 & Part # 346-6780

MANUFACTURER:

EMP
2701 North 30th Street
Escanaba, Michigan 49829
UNITED STATES OF AMERICA

THE PRODUCT MEETS FOLLOWING RULES/REGULATIONS:

**Croatian Register of Shipping: Rules for the classification of ships,
Part 9. – Machinery, Part 13. – Automation**

IACS UR E10

FURTHER DETAILS OF THE PRODUCT AND CONDITIONS FOR CERTIFICATION ARE GIVEN OVERLEAF.

APPROVAL IS VALID UNTIL: **2024-10-06**

Place and date: Split, 2020-07-23

Seal

Marinko Popović, dipl.ing.

NOTE: This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Croatian Register of Shipping of any modification or changes to the product in order to obtain a valid certificate.

DETAILED PRODUCT DESCRIPTION:

Electronically Controlled Engine Thermostat is a chassis mounted valve used to control the engine's coolant flow direction. The valve will divert coolant flow to the radiator, the water jacket or both depending upon the coolant temperature set point signal received by the engine control module.

EMP Drawings:

6 inch Prints		4 inch Prints	
Valve Control Group	246-6700	Controller	3000003001
Motor Group	278-7384	Ass'y Control Valve	p0004620000_E
Control Module	341-2377	Body Piston	p0004620010_B
Valve Control Group Detailed	286-4571	Insert, support hub	p0004620015_B
Housing Assembly Motor	312-2187	Housing elbow	p0004620020_B
Cover Motor Housing	312-2191	Adapter, Motor Mount	p0004620030_D
Main Body	312-2192	Shaft, Threaded/Seal	p0004620040_D
Dowel	312-2193	Piston Diverter	p0004620060_C
Piston	312-2194	Rod Reaction Dowel	p0004620070_B
Adapter As Flange	312-2195	O-ring	p0004620080_B
Mount As Motor	312-2197	Ass'y Spoked Hub/Bushing	p0004620510_C
Controller	3000004035	Ass'y Piston Body	p0004620610_C
		Ass'y Bearing/Shaft	p0004620640_C
		Ass'y Motor Mount	p0004620650_C
		Ass'y Diverter Piston	P0004620660_C

APPLICATION / LIMITATIONS:

Temperature: Open deck, masts/Ambient temps
Humidity: All locations (up to 100% humidity all relevant temps.)
Vibration: On machinery
EMC: All locations except bridge and open deck
Enclosure: Open deck, masts, below floor plates in engine room (IP56)

TYPE APPROVAL DOCUMENTATION:

- *Technical Documentation Approval, CRS letter – 57/TE/VB/030750 – January 11, 2008.*
- *Design FMEA – DFMEA-5,*
- *Caterpillar Software Development and Quality Procedures,*
- *EMP, Escanaba - DnV Quality Certificates, CERT-12254-2007 & CERT-01644-2004,*
- *EC-29 Marine Society Testing Requirements, Ver. 1.6- December 12,2007,*
- *Environmental Test Report – Elite No. 0801187-01, Rev.B, 3/12/2007-4/23/2008,*
- *EMC Test Report – Elite No. 0801188-02, April 9-16, 2008,*
- *Marine Society Witness Test Final Report - May 21, 2008,*
- *CATERPILLAR Whitepaper Ver. 1.0 - 10/31/2011 showing changes, dated November 7, 2011,*
- *CATERPILLAR Whitepaper Ver. 1.0-10/06/2016 showing Part # Change.*

MARKING OF PRODUCT:

In accordance with IEC60945 – Marking and identification (The Manufacturer and Type Designation of the product, serial number, date of manufacture, safe distance to magnetic compass-if app., supply voltage, software version...).

CONDITIONS FOR CERTIFICATION:

All changes in components and 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 CRS for evaluation and approval. Major changes in the software are to be approved before being installed in the computer.