

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Window Wipers**

with type designation(s)

Type C and D MKV wiper mechanisms with Series 8000 Network Control System

Issued to

**B HEPWORTH & CO LTD
REDDITCH, United Kingdom**

is found to comply with

Det Norske Veritas' Rules for Classification of Ships and Det Norske Veritas' Offshore Standards**Application :****See Page 2**This Certificate is valid until **2018-12-31**.Issued at **Høvik** on **2014-08-26**DNV GL local station: **Manchester**Approval Engineer: **Frederik Tore Elter**for **DNV GL**

**Jan Tore Grimsrud
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. If any person suffers loss or damage which is proven to have been caused by any negligent act or omission of the Society, then the Society shall pay compensation to such person for his proven direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question. The maximum compensation shall never exceed USD 2 million. In this provision the "Society" shall mean DNV GL AS as well as all its direct and indirect owners, affiliates, subsidiaries, directors, officers, employees, agents and any other person or entity acting on behalf of DNV GL AS.

Certificate No: **A-13883**
 File No: **847.10**
 Job Id: **262.1-013022-1**

Product description

Heavy Duty Straight Line Windscreen Wiper Mechanism with Series 8000 Network Control System, Type C and D MKV including Controller and Keypad, consisting of:

Component	Type	Environment
Straight line Wiper Mechanisms	Type C MKV or Type D MKV – IP67	Exposed*
Wiper Motors	3 Phase 115V AC for 8000 Series Controller, PARV81, IP20 or 3 Phase 230V AC for 8000 Series Controller, PARV82, IP20	Protected
Series 8000 Network Control System	8000 Series Module	Protected
	8000 Series 19" Rack Module	Protected
	8500 Keypad, IP66	Protected

Application/Limitation

- For marine and offshore applications.
- Installation to be performed according to the manufacturers Installation and operation manual.
- When installed on ships with class notations NAUT- AW, NAUT-OC or NAUT –OSV(A), the window wiper system shall comply with the minimum blade coverage and speed/frequency requirements described in the relevant class notation rules.

*Motor parts for Straight line window wiper Type C shall be mounted in protected area.

Type Approval documentation

DNV No	Drawing No	Rev.	Title
20	Type C Mkv 8000	1	Manual Type C Straight Line Wiper - Inside Motor Series 8000 Network Control System
19	N207859	2	Bodycote Materials Test Certificate N207859 Salt Spray
18	09A029 CR	1	Test report from Hursley EMC Services Ltd, No 09A029 CR
17	1424	C	Test report from PARC, No. 1424
16	08A489 CR	1	Test report from Hursley EMC Services Ltd, No 08A489 CR
15	08J049 CR	1	Test report from Hursley EMC Services Ltd, No 08J049 CR
14			Test report from Wynn Marine, DNV Report Issue 2
13	4816	1	Test report from AQL EMC Limited. No. 4816
12			Test Record Sheet 3000h dry test - Type D
11			Test Record Sheet 3000h dry test - Type C
10	170614	A	Audio Report
9	TRA022314CC01A	A	REPORT: TRAC, Low Temp, Dry Heat, Damp Heat
8	TRA-005367-21-CR-02A	A	Report: TRAC, Environmental test report for 8000 series wiper system
7	TRA-014119-36-02A	1	Report: TRAC, EMC test report for 8000 series wiper system
6		01.08.2013	Test Plan: Wynn Marine, Test Plan for DNV Type Approval Test Programme
3	Type D Mkv 8000		Manual: Wynn Marine, Installation and Maintenance Manual, Type D Mkv 8000 Controller Standard

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Tests carried out

- IEC 60945 – Environmental testing [2002]
- ISO 17899 – Marine electric window wipers – First Edition [2004]

Marking of product

The Manufacture and Type Designation to be applied to the equipment in a clearly visible location and in addition the equipment shall be marked with serial number, safe distance to magnetic compass, power consumption and/or supply voltage.

Periodical assessment

A retention survey is to be performed at least once every second year, and again upon renewal of this certificate.

The scope of the retention/renewal survey is to verify that the production quality conditions stipulated for the type approval are complied with and that no alterations are made to the product design or its components and/or materials without appraisal by the Society