TYPE APPROVAL CERTIFICATE

Certificate no.:
TAA00002DN
Revision No:
1

This is to certify:

that the Metal Particle Detectors

with type designation(s)
Metallic Wear Debris Sensor MWDS FG-K19567-KW,
Fluid Condition Sensor FCS3111, FCS3112, FCS3113, FCS3121,
SDI BOX ACC6NF006

issued to
Parker Hannifin Manufacturing Ltd
Littlehampton, West Sussex, United Kingdom

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application:

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Location classes:

Type	Temperature	Humidity	Vibration	EMC	Enclosure
Metallic Wear Debris Sensor	B	B	B	A	B
Fluid Condition Sensor	B	B	B	A	B
SDI BOX	B	B	A	A	B

Issued at **Høvik** on **2024-11-14**

This Certificate is valid until **2029-08-21**.
DNV local unit: **UK & Ireland CMC & VMC**

Approval Engineer: **Ståle Sneen**

for **DNV**
Digitally signed by Elter, Frederik Tore
Location: DNV Høvik, Norway

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

Metallic Wear Debris Sensor (MWDS) FG-K19567-KW
The Metallic Wear Debris Sensor (MWDS) can be used to monitor the amount of metallic ferrous and non-ferrous wear debris in an oil or fluid medium. Mounted into the lubrication system of a machine, the MWDS reports wear debris particles, resulting from machinery wear.
The MWDS differentiates between discrete metallic particles of ferrous and non-ferrous origin. It simultaneously quantifies the metallurgical composition and the size of particles in a fluid as the fluid flows through the MWDS.

Fluid Condition Sensor (FCS) FCS3111, FCS3112, FCS3113, FCS3121 and SDI BOX ACC6NF006
The Fluid Condition Sensor (FCS) is a robust online multi parameter sensor capable of measuring the temperature, moisture content, pressure, permittivity and conductivity of lubricating oils depending on the variant of sensor purchased.

Product Code	Parameters Measured/ Features
FCS3111	Temperature, Moisture, Pressure, Permittivity and AC Conductivity
FCS3112	Temperature and Moisture
FCS3113	Temperature, Permittivity and AC Conductivity
FCS3121	Fluid Condition Sensor+Sensor Display Interface
ACC6NF006	Display, 4 x 4-20mA outputs, Digital Communications Pass Through

Nominal voltage: 24V DC

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. Reference is made to DNV rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Type Approval documentation

Data sheets: MAK19755PA Issue 2 FGK19567PA Metallic Wear Debris Sensor (MWDS)
FDKB700UK rev 2, ONLINE FLUID CONDITION SENSOR AND DISPLAY SYSTEM
MA-K31030 dated 2017-02 SDI Box ACC6NF006 Info Sheet
Manuals: MA-K19578-KW Issue 12, MWDS-Metallic Wear Debris Sensor, Installation and Operation
MA-K30712-KW Issue 9, FCS FLUID CONDITION SENSOR, Instr. Manual
Test reports: 75942659-01 Issue 02, EMC testing of MWDS, FCS & Display
75942659-02 Issue 2, ENV testing of FCS, Display & MWDS
Drawings: RS-254 rev 1, MWDS_MKII_DNVGL_GA
FC-302 Issue 1, FCS General Assembly
FC-122 Issue 1, SDI Box Assembly

Type approval renewal assessment report, UK & Ireland CMC & VMC 2024-11-04

Tests carried out

Applicable tests according to class guideline DNV-CG-0339, August 2021.

Marking of product

The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply ratings

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