DNV·GL

Certificate No:
TAA0000003

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Condition Monitoring System

with type designation(s)
Bearing Wear Monitoring System(BWM system)

Issued to
Nabtesco Corporation
Kobe Hyogo Pref, Japan

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

Application :

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

Temperature	**B**
Humidity	**B**
Vibration	**A/B - See Product description**
EMC	**A/B - See Product description**
Enclosure	**Required protection according to DNV Rules shall be**

This Certificate is valid until **2017-06-22**.

Issued at **Busan** on **2015-06-23**

for **DNV GL**

DNV GL local station: **Kobe**

Approval Engineer: **Sang Bum Park**

Baeg Soon Choi
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.

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Job Id: **262.1-018909-1**
Certificate No: **TAA0000003**

Product description

BWM system is designated to monitor condition of the three major bearings (main, crank pin, and crosshead bearings) of a two stroke crosshead engine.

BWM system comprising the following equipment:

Type	Description	Temp.	Humidity	Vibration	EMC
SCC-401-**	PCB card	B	B	B	A
SCC-402-**	PCB card	B	B	B	A
SCC-403-**	PCB card	B	B	B	A
V-UNIT BOX[1)]	Box for SCC series PCB card	B	B	B	B
W-UNIT BOX[1)]	Box for SCC series PCB card	B	B	B	A
IA262-I-LX	Industrial PC	B	B	A	A
SUP-EL15	Noise filter	B	B	B	B
RSEL-2002W	Noise filter	B	B	A	A
N-WIO-004	WIO sensor	B	B	B	A
BAW M18ME-ICC50B-S04G	Gap sensor 1	B	B	B	A
BAW M18MI-ICC50B-S04G	Gap sensor 2	B	B	B	A
NR981-O	Temperature sensor	B	B	B	A

[1)] Typically, SCC card is inserted into V-UNIT BOX and it may be inserted in W-UNIT BOX when the SCC cards are placed in engine side.

Application/Limitation

The Type Approval covers **only 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 Ships Pt.4 Ch.9 Control and Monitoring Systems.

Type Approval documentation

Tests carried out

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

Marking of product

Manufacturer: Nabtesco
Model name: As listed under Product description
Serial number: Unique for each delivered item

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 at least every second year and at renewal of this certificate.

END OF CERTIFICATE