

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Position Transmitter

with type designation(s)

NIS20-S, NIS20-L, NIS20-SNS, NIS20-LNS, NIS20-SM, NIS20-LM, NIS20-SN, NIS20-LN

Issued to

Nabtesco Corporation
Kobe Hyogo Pref, Japan

is found to comply with

DNV GL rules for classification – High speed and light craft

DNV GL rules for classification – Ships and offshore units

Application :

Location classes:

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

Temperature	B
Humidity	B
Vibration	B
EMC	A
Enclosure	B / IP67

This Certificate is valid until **2021-06-30**.

Issued at **Busan** on **2016-07-01**

DNV GL local station: **Kobe**

for **DNV GL**

Approval Engineer: **Jong Yun Kim**

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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.

Product description

NIS20 gap sensors comprising the following variants:

NIS20-S, NIS20-SNS NIS20-SM, NIS20-SN	For fuel plunger and exhaust valve, engine bore size < 700 mm For fuel plunger, engine bore size > 800mm
NIS20-L, NIS20-LNS NIS20-LM, NIS20-LN	For exhaust valve, engine bore size > 800 mm

Specifications:

Measuring range	7 mm (0.5-7.5mm)
Output	4-20 mA, $R_L < 400 \Omega$, $C_L < 1 \mu F$
Non-linearity	$< \pm 1\%$ FS
Repeatability accuracy	$< \pm 0.5\%$ FS
Supply voltage	24 VDC / 50 mA

The sensors shall be supplied by a dedicated instrument power supply, typically from a controller.

Application/Limitation

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 DNVGL 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.

Cold test: -20°C, 8h (transducer) / -20°C, 1h (Amplifier)

Dry heat test: 150°C, 8h (transducer) / 110°C, 1h (Amplifier)

Enclosure test: IP67 according to IEC 60529

Marking of product

Type designation	NIS20-Sxx, NIS20-Lxx, NIS20-SNSxx, NIS20-LNSxx, NIS20-SMxx, NIS20-LMxx, NIS20-SNxx, or NIS20-LNxx where xx is product version
Manufacturer	Nabtesco Corporation
Unique serial no.	xxx-xxxx
Power supply rating	24 VDC 50 mA

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



Job Id:
Certificate No: **TAA00000J1**

- 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