

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Flexible Hoses of Metallic Material with permanently fitted couplings

with type designation(s)
FTS and FTSP

Issued to

Nangoku Flexible Hose Ind. Co. Ltd.
Daito Osaka Pref, Japan

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems

DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition July 2015

DNV GL class programme DNVGL-CP-0184 – Type approval – Flexible hoses with permanently fitted couplings

Application :

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

Temperature range: -40 to 170/360°C (dep. on media, see cert.)

Max. working press.: 22/32 bar (dep. on media, see cert.)

Sizes: FTS: DN6, 10, 15, 20 and 25
FTSP: DN10 and 15

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

Issued at **Høvik** on **2016-11-18**

for **DNV GL**

DNV GL local station: **Kobe**

Approval Engineer: **Zeinab Sharifi**

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Marianne Spæren Marveng
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.

Job Id:
Certificate No: **TAP00000NG**

Product description

Corrugated stainless steel hoses, stainless steel wire braiding and welded end connections.

Materials:

Tube, ring, braid: SUS 304
Union Nut, nipple, union body: S25C

Application/Limitation

The hose assemblies are approved for use in the following systems: Thermal oil, fuel oil, lube oil, hydraulic oil, steam, fresh water & compressed air.

Maximum working pressure and temperature:

Hose type	Size (DN)	Fuel oil		Steam	
FTS	6, 10, 15, 20 and 25	32 bar	170 °C	22 bar	360 °C
FTSP	10 and 15	32 bar	170 °C	22 bar	360 °C

Means shall be provided to isolate flexible hoses used in systems for fuel oil, lubricating oil and compressed air.

This certificate is valid for the specific assembly of hose and coupling type as specified, assembled and delivered by the holder (named as manufacturer) of this certificate.

All hose assemblies delivered under this type approval certificate shall be in compliance with an assembly procedure issued by the certificate holder.

Welding shall meet relevant requirements of DNV GL Rules Pt. 2 Ch.5.

Each hose is to be hydraulically pressure tested to 1.5 times the maximum working pressure before installation and to be delivered with a test report with reference to this type approval certificate.

Flexible hoses are only to be used in short lengths where it is necessary due to vibrations or flexible mounting of the machinery. The hose shall not be used to replace fixed piping and must only be fitted on places where they are always accessible for inspection.

In case of elevated temperatures, maximum working pressure shall be reduced according to the reduction factors as per Table 1 from DNV GL-CP-0184, Sec. 2.

The hose assemblies may not be used in systems subjected to high pressure impulses.

Type Approval documentation

Document title	Document no.	date
Technical drawing	NFK-247079	2016-02-02
Technical drawing	NFK-247078	2016-02-02
Technical drawing	NFK-247077	2016-02-02
Flexible tube strength calculations	NA-20160601	2016-09-06
Burst test report	-	2016-11-09
Pliable test report	Pt.161108	2016-11-09
Fatigue test report FTS, U bend	UB160614	2016-06-07/08
Fatigue test report FTSP, U bend	UB160614	2016-06-09/14
Weld detail between hose and fitting	NFK-247080	2016-09-21
DNV witnessed burst test report	-	2007-11-02
Retention survey report including witnessed burst test	-	2012-07-06



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Tests carried out

Burst test, fatigue/bend test and pliable test.

Marking of product

For traceability to this Type Approval, the products are at least to be marked with:

- Manufacturer's name or trade mark
- Type designation
- Maximum working pressure
- Size
- Additional marking at manufacturer's option

Periodical assessment

For retention of the Type Approval, DNV GL Surveyor shall perform a survey every second year, to verify that the conditions for the type approval are complied with and to witness a burst test on a selection of sizes.

The tests are to be performed with the type of couplings fitted that is Type Approved with the hoses.