

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Flexible hoses of metallic material with permanently fitted couplings

with type designation(s)
(PN)HYJR

Issued to

Jiangsu Hongyuan Pipes Co., Ltd.
Taizhou City, 100, China

is found to comply with

DNV class programme DNV-CP-0184 – Type approval – Flexible hoses with permanently fitted couplings
DNV rules for classification – Ships Pt.4 Ch.6 Piping systems

Application :

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

Temperature range: -20 °C up to 450 °C

Max. working press.: Up to 10 MPa

Sizes: DN10, DN15, DN20, DN25, DN32, DN40, DN50, DN65, DN80, DN100, DN125, DN150

Issued at **Hamburg** on **2023-05-22**

This Certificate is valid until **2028-05-21**.

DNV local unit: **Nantong**

for **DNV**

Approval Engineer: **Andre Pischanski**

Sven Klinger
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

Type (PN)HYJR consist of corrugated metallic hose fitted with hose end fittings ready for installation.
The main components and their materials are as follows:

- Sizes DN 10 – DN 25

Component	Material # (material designation) as per GB/T 3280
Bellows	S30408 ¹⁾ (06Cr19Ni10)
Braiding	S31608 ²⁾ (06Cr17Ni12Mo2)
Ferrules	S31603 ³⁾ (022Cr17Ni12Mo2)
End rings	S32168 ¹⁾ (06Cr18Ni11Ti)
Nipples	
Loose nuts	S30408 ¹⁾ (06Cr19Ni10)

- Sizes DN 30 – DN 150

Component	Material # (material designation)
Bellows	S30408 ¹⁾ (06Cr19Ni10)
Braiding	S31608 ²⁾ (06Cr17Ni12Mo2)
Ferrules	S31603 ³⁾ (022Cr17Ni12Mo2)
End rings	S32168 ¹⁾ (06Cr18Ni11Ti)
Nipples	S30408 ¹⁾ (06Cr19Ni10) S31608 ²⁾ (06Cr17Ni12Mo2) S31603 ³⁾ (022Cr17Ni12Mo2) S32168 ¹⁾ (06Cr18Ni11Ti) 20
Welded slip-on flange	S30408 ¹⁾ (06Cr19Ni10)
Welded slip-on collar	S31608 ²⁾ (06Cr17Ni12Mo2)
Loose flanges	S31603 ³⁾ (022Cr17Ni12Mo2) S32168 ¹⁾ (06Cr18Ni11Ti) 20 16Mn

Note

- The stainless steel grade is not considered suitable for use in:
 - Piping systems (e.g. seawater cooling) with flowing and stagnant seawater;
 - Seawater atmosphere, i.e. unprotected area subject to seawater spray or green water, e.g. open deck;
- The stainless steel grade after welding is not considered suitable for use in:
 - Piping systems (e.g. seawater cooling) with flowing and stagnant seawater;
 - Seawater atmosphere, i.e. unprotected area subject to seawater spray or green water, e.g. open deck;
- The stainless steel grade is not considered suitable for use in piping systems (e.g. seawater cooling) with stagnant seawater.

Application/Limitation

The metallic hose assemblies of type JRxxA/F are type approved for application according to their suitability in piping systems as per DNV-RU-SHIP Pt.4 Ch.6 Sec.9 - 4.1.2.

Maximum allowable working pressures (M.A.W.P.) are as follows:

Size	M.A.W.P. [MPa]
DN 10, DN 15, DN 25	10
DN 32, DN 40	6
DN 50, DN 65, DN 80, DN 100	4
DN 125, DN 150	2.5

Pressure reduction factor shall be used for high service temperature as follows:

Temperature [°C]	20	50	100	150	200	250	300	350	400	450
Pressure reduction factor [/]	1.0	0.95	0.85	0.77	0.71	0.67	0.51	0.48	0.46	0.45

Selection of materials

In addition, it shall be noted that the selection of the materials considers the applicable service condition with respect to type of media, flow velocity, media temperature etc. and installation area of the piping system. In particular, the resistance to corrosion, erosion, oxidation and other deterioration during projected service life are to be considered. Refer to DNV-RU-SHIP Pt.4 Ch.6 Sec.2.

Combinations of welded slip-on flanges or welded slip-on collars made of carbon steel with stainless steel nipple and vice versa are not approved for seawater systems.

Application range of slip-on threaded joints of end fitting nuts shall be as per DNV-RU-SHIP Pt.4 Ch.6 Sec.9 - 5.2.6.

Welding Workshop is approved as per Approval Certificate # WWA000024A.

Every hose assembly is subject to pressure test as per DNV-RU-SHIP Pt.4 Ch.6 Sec.9 - 4.1.7.

Installation on board shall be as per DNV-RU-SHIP Pt.4 Ch.6 Sec.9 - 4.2.

Type Approval documentation

Tests carried out

Pliability test, fatigue test and burst pressure test.

Marking of product

For traceability to this Type Approval Certificate the hose assemblies are to be marked with:

Scope
Product name
Product model
Serial number
Manufacturing date

Periodical assessment

For retention of the Type Approval, a periodical assessment as per DNV-CP-0338 Sec.4 shall be performed by a DNV Surveyor in order to verify that the conditions for the Type Approval are complied with.

To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>.