DNV·GL

Certificate No:
TAP00001FJ

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings

with type designation(s)
781

Issued to
Parker Hannifin Fluid Connectors (Qingdao) Co., Ltd.
Qingdao City, Shandong Province, China

is found to comply with
DNV GL class programme DNVGL-CP-0183 – Type approval – Flexible hoses
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018

Application :

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

Temperature range:	**-40°C up to +100°C. Refer to certificate.**
Max. working press.:	**Up to 350 bar.**
Sizes:	**DN 19 up to DN38.**

Issued at **Hamburg** on **2018-11-02**
This Certificate is valid until **2023-11-01**.
DNV GL local station: **Qingdao**

Approval Engineer: **Andrii Pishchanskyi**

for **DNV GL**

Olaf Drews
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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Product description

Hose assemblies of type 781 are according to ISO 3862 and consist of the following components:

Components	Description
Inner tube	Oil resistant synthetic rubber
Reinforcement	Four of six spirals of high tensile steel wire
Cover	Oil and weather resistant synthetic rubber
Fittings	Parker coupling series 78

The material of hose end fittings is as follows:

Material	Standard
C10 (non alloy steel)	GB/T 699
C20 (non alloy steel)	GB/T 699
C45 (non alloy steel)	GB/T 699
AISI 316 (stainless steel)[1)]	ASTM A 276
AISI 316L (stainless steel)[1)]	ASTM A 276
AISI 316Ti (stainless steel)[1)]	ASTM A 276

Footnote

1) The material is not suitable for seawater systems.

Application/Limitation

The hose assemblies of type 781 are approved for the use according to their suitability in:

- Fuel, lubricating, hydraulic and thermal oil systems;
- Fresh water cooling systems;
- Seawater cooling systems[2];
- Compressed air systems[1];
- Bilge systems;
- Ballast systems[2];
- Class III steam systems;
- Non-main class piping systems.

Foototes

1) Pin prick cover is required for gas applications above 17 bar.
2) Hose end fittings of stainless steel are not approved.

Hose assemblies are not approved for application in high pressure fuel oil injection systems.

Hose assemblies with couplings made of carbon steel are not to be used at temperatures below -10 °C unless the material is normalized.

When used in systems conveying flammable fluids flexible hoses shall be shielded from hot surfaces and other sources of ignition.

Maximum allowable working pressure (M.A.W.P.)

Hose size		(M.A.W.P.) [bar]
Dash	DN	
-12	19	350
-16	25	350
-20	31	350
-24	38	350

Temperature range[1]

Medium	Temperature range
Mineral oil	-40 °C up to +100 °C
Air	Up to +70 °C
Water, water-glycol and water-oil emulsion	Up to +85 °C

Footnotes
[1] Refer to manufacturer's catalogue.

Installation

In general, hose assemblies:

- Are to be used only in short lengths (up to 2m) where it is necessary due to vibrations or flexible mounting of the machinery;
- Shall not replace or be installed where permanent piping is feasible;
- Shall only be fitted in places where they are always accessible.

Flexible hoses of these types are not to be used on boiler fronts.

It shall be possible to shut off all flexible hoses used in systems for compressed air, lubricating oil, fuel oil and hydraulic oil.

The hose assemblies shall be installed according to manufacturer's instructions.

Production testing

Each hose assembly is to be subjected to a hydraulic pressure test with 1.5 times the M.A.W.P. by the manufacturer and shall be delivered with Works Certificate (W).

Type Approval documentation

Tests carried out

1. Dimensional check test;
2. Change in length;
3. Cold flexibility test at -40°C;
4. Oil resistance test;
5. Cover adhesion test;
6. Ozone resistance test;
7. Fire resistance test;
8. Vacuum test;
9. Impulse test;
10. Burst test.

Marking of product

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

Marking item	**Example**
Type No.	781
Dash No.	-12
Maximum allowable working pressure	35 MPa (5000 psi)
Relative standard	ISO 3862
Production date	07.2018

Periodical assessment

A condition for retention of the TA certificate in its validity period is that periodical assessments are successfully carried out. The objective of the periodical assessment is to verify that the conditions for the TA have not been altered. Periodical assessments for type approval is required after two years (+/- 90 days) and after 3.5 years (+/- 90 days). Refer to DNVGL Class Programme CP-0338 for the scope of the periodical assessment.
In connection with the renewal assessment, a surveyor shall witness / review test reports with respect to the following tests on every 3rd size appropriate test reports to be submitted:

- Dimensional check,
- Change in length test,
- Pressure test with 1.5 times M.A.W.P. and burst test (witnessed by DNV GL surveyor).