DNV·GL

Certificate No:
TAP000002J

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)
421, 481

Issued to
PARKER HANNIFIN CONNECTORS LTD.
Gyeongsangnam-do, Republic of Korea

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV GL class programme CP-0183 – Type Approval of flexible hoses of non-metallic material

Application :

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

Type:	Temperature range:	Max. working press.:	Sizes:
421	-40°C to 125°C	26 bar to 190 bar (dependent on the size)	1/4" to 2"
481	-40°C to 100°C	40 bar to 225 bar (dependent on the size)	1/4" to 2"

This Certificate is valid until **2019-06-30**.

Issued at **Høvik** on **2016-01-25**

for **DNV GL**

DNV GL local station: **Pusan**

Approval Engineer: **Adel Samiei**

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.

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Job Id:
Certificate No: **TAP000002J**

Product description

Two types of hose assemblies with Synthetic rubber hoses and one braid of high tensile steel wire.

Hose assembly types:

- 421 with Parker couplings series 43
- 481 with Parker couplings series 43

Application/Limitation

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.

The hose assemblies are approved for use with petroleum base and water base hydraulic fluids. Operating temperatures in excess of +100°C may materially reduce the life of the hose.

Maximum working pressure of hose assemblies 421 & 481 shall be as follows:

Dash size	Hose ID		Maximum working pressure (421)		Maximum working pressure (481)	
	inch	mm	bar	psi	bar	psi
-4	¼	6.4	190	2750	225	3250
-5	5/16	7.9	172	2500	225	3250
-6	3/8	9.5	155	2250	207	3000
-8	½	12.7	138	2000	173	2500
-10	5/8	15.9	103	1500	138	2000
-12	¾	19.0	86	1250	121	1750
-16	1	25.4	69	1000	88	1275
-20	1 ¼	31.8	43	625	63	900
-24	1 ½	38.1	34	500	50	725
-32	2	50.8	26	375	40	575

Flexible hoses are only to be used where it is necessary due to vibrations or flexible mounting of the machinery. The hoses shall not replace/be used where permanent piping is possible/required.

All hoses delivered under the DNV type approval scheme shall be subject to a pressure test at 1.5 times the maximum working pressure and shall be delivered with the pressure test report with reference to the type approval certificate.

The hoses must only be fitted in places where they are always accessible.

The hoses are to be mounted in accordance with the manufacturer's instructions.

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

Type Approval documentation

- Parker test reports ref. W7270, W7327, W6302, 1J108
- Fire Insurers Laboratories of Korea test report no. 1943-0534-1, March 31, 2003 (421-16 & 481-16)
- Manufacturer's catalogue 4400 KR, issued 01/07
- Cover adhesion and vacuum test reports dated 2002-02-08
- Oil resistance, ozone resistance & cold flexibility test report dated 2002-02-09
- Burst test report witnessed by DNV local station Pusan dated 2002-02-06
- Burst test report witnessed by DNV local station Pusan dated 2003-02-07
- Dimensional check, change in length & burst test reports witnessed by DNV local station Pusan dated 2007-04-12
- Leakage test, change in length & burst test reports witnessed by DNV local station Pusan dated 2011-06-23
- Burst test report witnessed by DNV local station Pusan dated 2015-06-15

- Fire test report number K-15118 witnessed by DNV GL local surveyor Gimhae dated 2015-12-03

Tests carried out

Burst, Ozone Resistance, Cold Flex, Impulse, Dimensional Check, Fire test, Vacuum test, Cover adhesion, Oil resistance, Change in length 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

Periodical assessment

For retention of the Type Approval, DNV GL Surveyor shall perform a periodical assessment every second year, to verify that the conditions for the type approval are complied with and to witness the following tests on a selection of sizes:

- Dimensional check
- Change in length
- Burst test

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