

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)
TSRVXX-B01

Issued to

HYDRAPOWER DYNAMICS LTD
Birmingham, United Kingdom

is found to comply with

DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV-OS-D101 – Marine and machinery systems and equipment, Edition July 2021
DNV class programme DNV-CP-0183 – Type approval – Flexible non-metallic hoses

Application :

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

Temperature range: -40°C to +204°C

Max. working press.: See page 2

Sizes: -4, -5, -6, -7, -8, -10, -12, -14, -18

Issued at **Høvik** on **2022-02-15**

This Certificate is valid until **2027-02-14**.

for **DNV**

DNV local station: **Manchester**

Approval Engineer: **Renata Rossi**

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Zeinab Sharifi
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

One type of hose assembly constructed according to SAE J517 100R14 standard (type A):

Inner tube : Medium wall smoothbore PTFE tube according to ASTM D4895, Type 1, Grade4, Class B
Reinforcement : High tensile SS 304 braid
Cover : High tensile 304 maypole wound

Hose manufacturer : Kongsberg Automotive
Address : Euroflex Centre, Foxbridge Way, Normanton, WF6 1TN - UK.

Couplings manufacturer(s)
Ferrules : DICSA
Address : Pol. Ind. Alcalde Caballero, C. Virgen del Buen Acuerdo, s/n, 50014 Zaragoza - Spain

Insert : Manuli Hydraulics Manufacturing Sp. z o.o ul
Address : Przedsiębiorców 5, 97-500 Radomsko - Poland

Hose assembling location : HYDRAPOWER DYNAMICS LTD, Birmingham, United Kingdom

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.

Hose assemblies covered by this certificate may be used in systems conveying petroleum based hydraulic fluid within a temperature range of -40° to +204°C:

Maximum working pressure (MAWP):

DN	Dash	Insert	Ferrule	Minimum Bend Radius (mm)	MAWP (bar)
5	-04	M20813-04-04	01-905-03-03-54/F	51	105
6.3	-05	M20813-04-04	01-905-04-04-54/F	76	105
8	-06	M20513-05-06	01-905-05-05-54/F	100	105
10	-07	M20813-06-06	01-905-06-06-54/F	127	105
11	-08	M20813-08-08	01-905-06-06-54/F	133	70
12.5	-10	M20813-08-08	01-905-08-08-54/F	165	56
16	-12	M20812-10-10	01-905-10-10-54/F	197	56
19	-14	M20812-12-12	01-905-12-12-54/F	229	56
25	-18	M20812-16-16	01-905-16-16-54/F	305	56

Flexible hoses are only to be used in short lengths 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.

The hose assemblies must only be fitted in places where they are always accessible. Flexible hoses of these types are not to be used on boiler fronts.

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

The outer end of the pipe coupling (performing the connection to the fixed piping) is not covered by this certificate and shall follow the below requirements:

- Flanged ends shall be according to a recognized standard
- Slip-on threaded joints having pipe threads where pressure-tight joints are made on the threads with parallel or tapered threads, shall comply with requirements of a recognized standard. Limitations stated in DNV-RU-SHIP Pt.4 Ch.6 Sec.9 [5.2.6] to be followed.
- If these outer ends are going to be part of a mechanical joint as covered by Table 10 DNV-RU-SHIP Pt.4 Ch.6 Sec.9, then they shall be separately type approved.

Production testing

All hose assemblies 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 this type approval certificate.

Type Approval documentation

Tests carried out

Dimensional check test, specific gravity test, change in length test, leakage test, vacuum test, burst test, cold flexibility test, fluid resistance test and fire test.

Marking of product

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

- hose manufacturer's name or trademark;
- date of manufacture (month/year);
- designation type reference;
- nominal diameter;
- pressure rating;
- temperature rating.

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNV-CP-0338.