

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)

TEFLON RTH1

Issued to

RYCO Hydraulics Pty. Ltd.
FOOTSCRAY VICTORIA, Australia

is found to comply with

Det Norske Veritas' Rules for Classification of Ships Pt.4, Ch.6 "Piping Systems"
Offshore Standard DNV-OS-D101, Marine and Machinery Systems and Equipment
Det Norske Veritas' Standards for Certification 2.9 No. 5-791.70

Application :

May be used for hydraulic applications.

Temperature range: dependent on the medium, see certificate
Max. working press.: 55 to 170 bar size dependent
Sizes: DN6, 10, 12, 16, 19, 25

This Certificate is valid until **2018-12-31**.

Issued at **Høvik** on **2014-11-12**

for **DNV GL**

DNV GL local station: **Melbourne**

Approval Engineer: **Tom Berg-Nielsen**

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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. If any person suffers loss or damage which is proven to have been caused by any negligent act or omission of the Society, then the Society shall pay compensation to such person for his proven direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question. The maximum compensation shall never exceed USD 2 million. In this provision the "Society" shall mean DNV GL AS as well as all its direct and indirect owners, affiliates, subsidiaries, directors, officers, employees, agents and any other person or entity acting on behalf of DNV GL AS.

Certificate No: **P-14697**
File No: **791.70**
Job Id: **262.1-015853-1**

Product description

Teflon Hose type RTH1

Design :

Ryco proprietary hose with inner tube of PTFE reinforced by one braid of steel wire braid (in AISI304) which also act as cover.

Couplings: 1-piece crimp couplings series T1000
Couplings material: Carbon steel 12L14, 1010, 1020, 1040, 1045
Stainless steel 316 ASTM A276 or equivalent

Hose manufacturer: Kongsberg, West Yorkshire, U.K.

Couplings manufacturers: RYCO Hydraulics (DALIAN) Ltd., P.R.China
RYCO Hydraulics Pty. Ltd, Footscray Victoria, Australia

Application/Limitation

May be used for hydraulic applications.

RTH1	Hose size			Max working pressure		Couplings
	DN	INCH	DASH	BAR	PSI	Bitelok
RTH14	6	¼	-04	170	2450	T1000
RTH16	10	3/8	-06	165	2375	T1000
RTH18	12	½	-08	120	1750	T1000
RTH110	16	5/8	-10	105	1500	T1000
RTH112	19	¾	-12	85	1250	T1000
RTH116	25	1	-16	55	800	T1000

Temperature range: 0°C to +260°C (32°F to +500°F)

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.

Each hose assembly is before delivery to be hydraulic pressure tested to 1.5 times the maximum working pressure.

Hose assemblies delivered from the certificate holder shall be delivered with the following documentation:
- Pressure test report with reference to the type approval certificate.

The hose assemblies covered by this type approval may be assembled and delivered by other than the certificate holder under the following conditions:

- The assembler is authorised by a written authorization from the certificate holder. The certificate holder shall keep record of all assembler authorisations.
- Hose assemblies are in accordance with an assembly procedure issued by the certificate holder and the assembler has proved their qualifications by burst testing of a selection of hose/coupling combinations.
- Selection of sizes and testing is to be performed in compliance with the DNV Type Approval Programme 5-791.70 and the testing is to be witnessed by DNV.

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Hose assemblies delivered from an authorized assembler shall in addition to the pressure test report with reference to the typeapproval certificate be delivered with a copy of the written authorization stamped by DNV.

The hoses can be used in short lengths for ordinary machinery purposes in the systems mentioned on the front page. They are not to be used where fixed piping is possible/required.

Hoses used for continuous operation at temperatures higher than 100°C will have their lifetime reduced. In such cases more frequent inspections and planned exchange should be a part of the maintenance program.

The hoses 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.

It must be possible to shut off from the system all flexible hoses used in systems for compressed air, lubrication oil, fuel oil and petroleum base hydraulic oil.

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

Type Approval documentation

The approval is based on the following documentation :

- Manufacturer's leaflet "RTH1"
- Manufacturer's test reports nos. 5784i, 5785i, 5786i, RH-FT-17, RH-FT-18, RH-FT-19, 2012-BT0135, 2012-BT0136

Tests carried out

Impulse test, fire test, Dimensional check test, change in length test, Burst test, Leakage test

Marking of product

For traceability to this type approval, the hoses should at least be marked with:

- Manufacturer's trade mark
- Type designation

Periodical assessment

For retention of the Type Approval, DNV Surveyor shall perform a survey 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
- Leakage test
- Burst test

The tests shall be performed in accordance with procedures given in Det Norske Veritas' Standard for Certification no. 2.9 – 5-791.70 "Type Approval of Flexible Hoses of Non-Metallic Material", or another recognised standard.

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

END OF CERTIFICATE