

## TYPE APPROVAL CERTIFICATE

### This is to certify:

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

with type designation(s)  
**Textile M2**

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 medium pressure hydraulic oil lines, antifreeze solutions, water.**

**Temperature range: -40°C to +100°C**  
**Max. working press.: 52 to 86 bar size dependent**  
**Sizes: 1/4" to 3/4"**

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-14692**  
File No: **791.70**  
Job Id: **262.1-015853-1**

## Product description

Flexible rubber hoses with permanently attached couplings according to SAE 100R3.

### Materials:

Inner tube: Oil resistant synthetic rubber, Nitrile

Reinforcement: 2 textile braids.

Cover: Oil and weather resistant rubber, black.

End couplings: RYCO M900 Series or Bitelok T4000.

Coupling material: 12L14;1010, 1020, 1040, 1045, Stainless steel 316 ASTMA276 or equivalent

Hose assemblies are manufactured at RYCO Hydraulics, Footscray, Victoria.

Rubber hoses are produced by Ilke (Sel) Istanbul, Turkey.

End couplings are produced by RYCO Hydraulics, Australia and RYCO Hydraulics (DALIAN), P.R.China.

## Application/Limitation

The hoses may be used with the following max. allowable working pressures:

Textile M2	Hose size ID		Max. pressure		Coupling
	Inches	mm	psi	bar	Bitelok
M24	1/4	6	1250	86	T4000
M26	3/8	10	1125	78	T4000
M28	1/2	12	1000	69	T4000
M212	3/4	20	750	52	T4000

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 assemblers other than the certificate holder (manufacturer), shall be authorized by a written authorization from the certificate holder to deliver under this Type Approval. The hoses assemblies shall be in compliance with an assembly procedure issued by the certificate holder. The assembler's qualification shall be documented by burst testing of the hose assemblies. The extent of testing is to be decided between the assembler and the local DNV surveyor.

Each hose assembly is before delivery to be hydraulic pressure tested to 1.5 times the working pressure, and delivered with the manufacturer's/assemblers pressure test report and CoC (certificate of compliance) with reference to this Type Approval Certificate.

Flexible hoses are in general only to be used where it is necessary due to vibrations or flexible mounting of the machinery. They are not to be used where fixed piping is possible/required.

The hoses must only be fitted in places where they are always accessible and always in accordance with the manufacturer's instructions.

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

## Type Approval documentation

### Reference documents:

- Test reports from hose manufacturer.
- Burst test report, cert. No. 1565, DNV witnessed.
- DNV Inspection and Testing Report TAR 28913076 dated 2009-04-17 (with attached Test Certificate No. 3089)
- SEL test reports: L04-0758, L08-0148, L06-0161, L06-0160, L09-0322

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## Tests carried out

Dimensional check, Burst, Change in length, Abrasion Resistance, Adhesion, Cold flexibility, Oil resistance, Ozone resistance, Fire test.

## Marking of product

For traceability to this Type Approval, the hoses are to be marked by an embossed system with:

- Manufacturers logo
- Type designation
- Nominal size
- Quarter and year of production.

## 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".

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

END OF CERTIFICATE