Certificate number: 43719/C0 BV
File number: ACM 135/2764/4
Product code: 2104I

This certificate is not valid when presented without the full attached schedule composed of 7 sections. Full certificate is to be requested to the manufacturer

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

Manuli Ryco Hydraulics Sdn Bhd

KEDAH - MALAYSIA

for the type of product

NON-METALLIC HOSES (FLEXIBLE PIPES) ASSEMBLIES

Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings acc. to SAE 100R12 / SAE 100R13 / SAE 100 R15 and SAE 100R5

Requirements:
Bureau Veritas Rules for the Classification of Steel Ships

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 26 Oct 2031

For Bureau Veritas Marine & Offshore,
At BV KUALA LUMPUR, on 26 Oct 2026,
Azwan Yahya

This certificate was created electronically and is valid without signature

This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings acc. to SAE 100R12 / SAE 100R13 / SAE 100 R15 and SAE 100R5

1.1 - Design specifications of type SAE 100 R12

SAE 100R12: Synthetic rubber inner tube with four alternating layers of spiralled high tensile steel wire reinforcement and resistant rubber cover.

H12	H1206 D/S	H1208 D/S	H1210 D/S	H1212 D/S	H1216 D/S	H1220 D/S	H1224 D/S	H1232 D/S	H1240 D
DN (mm)	10	12	16	19	25	31	38	51	63
Max. design pressure (bar)	350	350	350	350	350	275	255	210	140

Temperature range from - 40 °C to 121 °C.

The maximum design pressure is not to exceed one quarter of the burst pressure at the service temperature.

1.2 - Design specifications of type SAE 100 R5

SAE 100R5: Polyester inner braid covered with one braid of high tensile steel wire.

SURVIVOR RQP5	RQP54	RQP55	RQP56	RQP58	RQP510	RQP512	RQP516	RQP520	RQP524	RQP532
DN (mm)	5	6	8	10	12	16	22	28	35	46
Max. design pressure (bar)	210	210	157	140	122	105	56	43	35	24

Temperature range from - 40 °C to + 150 °C.

The maximum design pressure is not to exceed one quarter of the burst pressure at the service temperature.

TRUCKER T5	T54	T55	T56	T58	T510	T512	T516	T520	T524	T532
DN (mm)	5	6	8	10	12	16	22	28	35	46
Max. design pressure (bar)	210	210	157	140	122	105	56	43	35	24

Temperature range from - 40 °C to + 100 °C.

The maximum design pressure is not to exceed one quarter of the burst pressure at the service temperature.

1.3 - Materials

Parts	**Materials**
Inner tube	Oil resistant CR-NBR rubber (Neoprene), black
Reinforcement	Layer of steel wire Layer of steel wire with a rubber layer between the spirals Polyester inner braid covered with one braid of high tensile steel wire (RQP5 Survivor)
Cover	Oil and abrasion resistant synthetic rubber, black Oil and weather resistant rubber CSM-CR Blue polyester braid (RQP5 Survivor)
Coupling	Carbon steel AISI / SAE 12L14 , 1010, 1020, 1040, 1045 (Standard) Electroplated Fe/Zn12c acc. to AS1789 Stainless Steel 316 ASTM A276 or equivalent (Option)

End fittings according to manufacturer's specifications.

When other choices of materials are used per manufacturer's recommendations, the BV agreement is to be obtained.

2. DOCUMENTS AND DRAWINGS

- RYCO metric crimp chart and rapid numbers RYCO-MKT0300 document N° RH-WI-61 rev.09 dated 21/12/2017.
- RYCO Product Technical Manual Catalogue Version 4-4 dated january 2021: *For RQP5.*
- RYCO Hydraulic Hose Catalogue V 1-5 dated 2026: *For H12 & T5.*
- RYCO Hydraulics company profile N° RHY-CP0608.

No departure from the above documents shall be made without the prior consent of the Society. The manufacturer must inform the Society of any modification or changes to these documents and drawings.

3. TEST REPORTS

3.1 - Tests carried out: Burst, change in length, impulse, proof pressure, cold flexibility, oil resistance, abrasion resistance and ozone resistance tests.

- Avenger H12 test certificate N° RHAU-HA-H1206A~H1224A dated 17/10/2013 and 16/12/2013
- Impulse test certificate AVENGER H12, H1224 N° 4770i dated 06/07/2012, DIEHARD H12, H1206 N° 5041i dated 20/11/2012, H1212D N° KP2 047/12 dated 12/08/2012.
- Impulse test certificate TRUCKER T54 N° 5049i dated 21/11/2012, RQP55 Survivor N° 5047i dated 21/11/2012, TRUCKER T58 N° 5198i dated 21/11/2012, RQP510 N° 5048i dated 21/11/2012.

3.2 - Fire resistance test according to ISO 15540/15541

- DIEHARD H12, H1206A test certificate ° RH-FT-54 dated 06/04/2006, H1224D report N° RH-FT-11 dated 21/07/2005 witnessed by DNV.
- SLIDER H12S, H1212S test certificate ° RH-FT-33 dated 29/11/2005 witnessed by DNV
- SURVIVOR RQP5 RQP520 test certificate N° RH-FT-47 dated 09/02/2006, RQP512 N° RH-FT-21 dated 15/11/2005 RQP54 N) RH-FT-20 dated 16/11/2005witnessed by DNV.
- TRUCKER T5 N° RH-FT-129, RH-FT-131 dated 15/03/2013, N° RH-FT-135 dated 19/07/2013 witnessed by DNV
- Fire resistance test report N° IRH-FT-005/13 dated 17/05/2013.

4. APPLICATION / LIMITATION

4.1 - May be used for the following services on board: Fuel oil*, lubricating oil*, hydraulic oil*, compressed air, fresh water, sea water*, sanitary, bilge, ballast water, Class III steam systems.

** When required, only approved fire resistant type (hoses assembled with or without fire sleeve protection) is to be used as per above design specifications.*

4.2 - End fittings as per manufacturer's catalogue. The hoses are to be entirely assembled in the manufacturer's workshop.

4.3 - The hoses assemblies are to be installed according to manufacturer’s instructions and Bureau Veritas Rules.

4.4 - Hose assemblies must be fabricated using Ryco Hydraulics hoses, Ryco Hydraulics fittings, Ryco Hydraulics Ferrule and Ryco Hydraulics hose assembly equipment.

4.5 - Flexible hoses assemblies for essential services or containing either flammable or toxic media are not to exceed 1.5 meters in length.

4.6 - Not to be used as Cargo transfert hose.

4.7 - Not to be used in high pressure fuel oil injection systems in accordance with the relevant requirements stated in *NR 467, Pt C, Ch 1, Sec 10 [2.6.3]*.

4.8 - The use of metallic material is restricted according to Bureau Veritas Rules *NR 467, Pt C, Ch 1, Sec 10, Table 5*.

4.9 - Taper threaded end fittings are not to be used in engine rooms, nor any place containing an ignition source unless otherwise suitably screened at the Society's Surveyor satisfaction.

4.10 - Not to be used in case of high level of vibrations where fitted to engines, pumps, compressors and other sources of high vibrations.

5. PRODUCTION SURVEY REQUIREMENTS

5.1 - The products are to be supplied by **Manuli Ryco Hydraulics Sdn Bhd** in compliance with the type and the requirements described in this certificate.

5.2 - This type of product is within the category IBV of Bureau Veritas Rule Note *NR 320*.

5.3 - Bureau Veritas product certificate is required.

5.4 - Each flexible hose together with its connections is to is to undergo a hydrostatic test under a pressure at least equal to 1.5 times the maximum service pressure and provided with the manufacturer’s pressure test report and conformity of production.

5.5 - For information, **Manuli Ryco Hydraulics Sdn Bhd**. has declared to Bureau Veritas the following production sites:

Production site	Location	Hose	Hose couplings	Hose assemblies	Adaptors
Fluiconnecto Ryco Australia Pty Ltd	**99 Calarco Drive Derrimut, AUSTRALIA**			**x**	
Manuli RYCO Hydraulics (Dalian) Co. Ltd.	**38 Yingri Rd., Ying Cheng Zi Industrial Zone, Gan Jing Zi District, Dalian, China**		**x**		**x**
Manuli RYCO Hydraulics Sdn. Bhd.	**PLOT 207 KUALA KETIL INDUSTRIAL ESTATE KUALA KETIL 09300 KEDAH MALAYSIA**	**x**		**x**	
Fluiconnecto USA	**1207 Rankin Rd, 77073 HOUSTON UNITED STATES OF AMERICA**			**x**	
Fluiconnecto USA	**410 Keystone Drive Suite B, Warrendale, PA 15086 UNITED STATES OF AMERICA**			**x**	
Fluiconnecto USA	**1007 W 10th ST. Pella, IA 50219 UNITED STATES OF AMERICA**			**x**	
Manuli Hydraulics (Suzhou) Co., Ltd.	**No.85 Xinglin Street, Suzhou Industrial Park, Suzhou, Jiangsu Province, China**	**x**		**x**	

6. MARKING OF PRODUCT

Each hose assembly shall be at least clearly and indelibly marked with:

- Manufacturer name or logo
- Date of manufacture (month/year)
- Type designation
- Nominal Diameter
- Pressure rating
- Temperature rating
- Bureau Veritas' Mark

7. OTHERS

It is **RYCO HYDRAULICS Pty. Ltd.**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

This certificate supersedes the Type Approval Certificate No. 43719/B0 BV issued by the Society.

***** END OF CERTIFICATE *****