



Marine & Offshore  
Division

Certificate number: 43721/A0 BV

File number: ACM 135/2764/6

Product code: 2104I

*This certificate is not valid when presented without the full attached schedule composed of 7 sections*

www.veristar.com

## TYPE APPROVAL CERTIFICATE

*This certificate is issued to*

**RYCO HYDRAULICS Pty Ltd**

Footscray - AUSTRALIA

*for the type of product*

**NON-METALLIC HOSES (FLEXIBLE PIPES) ASSEMBLIES**

Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings

acc. to SAE 100R4, SAE J1527 class I & USCG SAE J1942, SAE 100R14, SAE 100R3 and drill rig hose

**Requirements:**

- BUREAU VERITAS Rules for the Classification of Steel Ships

*This certificate is issued to attest that BUREAU VERITAS 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: 11 May 2021**

**For BUREAU VERITAS,**

At BV BRISBANE, on 11 May 2016,

Florin ZAHARIA



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. 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 Division 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 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 electronic version is available at: <http://www.veristarm.com/veristarnb/jsp/viewPublicPdfTypepec.jsp?id=xwhmhbgcs>

BV Mod. Ad.E 530 October 2014

This certificate consists of 4 page(s)

## THE SCHEDULE OF APPROVAL

### 1. PRODUCT DESCRIPTION

**Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings acc. to SAE 100R4, SAE J1527 class I & USCG SAE J1942, SAE 100R14, SAE 100R3 and drill rig hose**

#### **1.1 Design specifications of type SAE 100 R4**

SAE 100 R4: Inner tube of black synthetic rubber reinforced by textile braid and a spiral wire to prevent collapsing during suction operation.

<b>DEFIANT SRF</b>	SRF12	SRF16	SRF20	SRF24	SRF32
DN size (mm)	19	25	31	38	51
Max. Working Pressure (bar)	21	17	14	10	7

<b>DEFIANT SR</b>	SR12	SR16	SR40	SR48
DN size (mm)	19	25	63	76
Max. Working Pressure (bar)	21	17	4.3	3.9

Temperature range (°C): -40 up to +100

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

#### **1.2 Design specifications of type SAE J1527 type class I and USCG SAEJ1942**

Biotrans Hose: Synthetic rubber inner tube, wire braids reinforcement and resistant rubber cover.

<b>BIOTRANS BT1</b>	BT14	BT15	BT16	BT18	BT110	BT112	BT116
DN size (mm)	6	8	10	12	16	19	25
Max. Working Pressure (bar)	50	50	50	50	50	50	50

Temperature range (°C): -40 up to +135

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

#### **1.3 Design specifications of type SAE 100R14**

SAE 100 R14: Teflon hose with inner tube of PTFE reinforced by one braid of steel wire braid (AISI304) which also act as cover

<b>Teflon RTH1</b>	RTH14	RTH16	RTH18	RTH110	RTH112	RTH116
DN (mm)	6	10	12	16	19	25
Max. Working Pressure (bar)	170	165	120	105	85	55

Temperature range (°C): -60 up to +260

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

#### **1.4 Design specifications of type SAE 100 R3**

SAE100R3: Inner tube of oil resistant synthetic rubber reinforced by 2 textile braid, cover of black oil and weather resistant rubber.

<b>M2 TEXTILE</b>	M24	M26	M28	M212
DN (mm)	6	10	12	19
Max. Working Pressure (bar)	88	79	70	52

Temperature range (°C): -40 up to +100

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

#### **1.5 Design specifications of type drill rig hose**

Inner tube of black synthetic rubber reinforced by two braids of high tensile steel wire, cover of black synthetic rubber.

<b>DRILLER D2B</b>	D224B	D232B
DN (mm)	38	51
Max. Working Pressure (bar)	100	90

Temperature range (°C): -40 up to +121 (air) / -40 up to +135 (oil)

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

**1.6 Materials**

Inner tube	Oil resistant synthetic rubber / PTFE (RTH1 Teflon)
Reinforcement	Layers of steel wire braid 2 Textile braids (M2 Textile) Textile braids and spiral wire (SR/SRF) One braid stainless steel wire grade 304 (RTH1 Teflon)
Cover	Oil and weather resistant rubber, black Oil resistant rubber
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 Hydraulics Product Technical Manual N° RHY-RHC0707AUS dated 2015
- RYCO Hydraulics Product Technical Manual dated 2013
- RYCO metric crimp chart and rapid numbers RYCO-MKT0300 document N° RH-WI-61 rev.07 dated 08/12/2015
- 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 at least 4 times the maximum working pressure, change in length, impulse, proof pressure, cold flexibility, oil resistance, abrasion resistance and ozone resistance tests.

- Biotrans test reports N° RHAU-BT-1001~1004 dated 30/08/2012
- DRILLER D2B, D224B test report N° RHAU-DB-1001 dated 31/08/2012
- DEFIANT SR test report ( only for hydrostatic test, burst test and ozone resistance test) dated 09/10/2012
- DEFIANT SRF test reports N° RHAU-SRF-SRF12 dated 24/01/2014, N° RHAU-SRF-SRF20/24/32 dated 14/07/2014
- Textile braid reports N° RHAU-M2-M24 and RHAU-M2-M28 dated 21/07/2014
- Impulse test certificate RTH14 report N° 5784i dated 22/05/2013, RTH18 report N°5785i dated 22/05/2013, RTH112 report N° 5786i dated 22/05/2013, M24 report N°5788i dated 03/06/2013, M28 report N°5789i dated 03/06/2013
- Textile braid M2 test reports N° RHAU-M2-M24 and RHAU-M2-M28 dated 21/07/2014
- TEFLON RTH1 reports N° 2439-030 and 2440-030 dated 16/12/2015

3.2 Fire resistance test according to ISO 15540

- SUCTION SR, SR12 test certificate N° RH-FT-60, SR20 report N° RH-FT-61, SR32 report N° RH-FT-62 daed 07/04/2006 witnessed by DNV
- TEFLON RTH1, RTH14 test certificate N° RH-FT-18, RTH18 report N° RH-FT-17, RTH116 report N° RH-FT-19 dated 15-16/11/2005 witnessed by DNV
- TM2 TEXTILE, M24 test certificate N° RH-FT-27, M212 report N° RH-FT-28 dated 16/11/2005 witnessed by DNV
- DRILLER D2B, 224B test certificate N° IRH-FT-003/13 dated 17/05/2013
- BIOTRANS fire resistance test report N° RH-FT-93 dated 26/09/2012, N° RH-FT-108, RH-FT-113 dated 21/11/2012 witnessed by DNV
- Biotrans fire resistance test report N° RH-IFT-003/14 dated 12/04/2014
- Driller D2B fire resistance test report N° RH-FT-136 dated 19/07/2013 witnessed by DNV
- Fire resistance test report N° IRH-FT-003/13 dated 17/05/2013

**4. APPLICATION / LIMITATION**

4.1 May be used for the following services on board: Fuel oil\*, lubricating oil\*, hydraulic oil\*, bilge, ballast, compressed air, fresh water, sea water\* and sanitary. \* 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 installation of hose assemblies is to be in accordance with the manufacturer's instructions to take into consideration forces due to vibration. The hoses are not to be used on services when vibration test is required in the Society's Rules.

4.4 The hoses are to be limited to a length necessary to provide for relative movement between fixed and flexibly mounted items of machine/equipment or systems and are only to be used in lengths up to 2 m. The hoses are to be installed in clearly visible and readily accessible locations at all times.

4.5 Taper threaded end connections are not to be used for oil circuits in engine rooms nor any place containing an ignition source unless otherwise suitably screened at the Society's Surveyor satisfaction.

## **5. PRODUCTION SURVEY REQUIREMENTS**

5.1 The products are to be supplied by **RYCO HYDRAULICS Pty. Ltd.** in compliance with the type described in this certificate and in compliance with the requirements stated on the front page of this certificate. This type of product is within the category IBV of Bureau Veritas Rule Note NR320.

5.2 This certificate is also valid for other companies authorised by **RYCO HYDRAULICS Pty. Ltd.** when same specifications, tolerances, equipment and quality control procedures are used. In such case, the BV agreement is to be obtained.

5.3 Each hose with end fittings is to be hydraulically pressure tested to twice the maximum working pressure and provided with the manufacturer's pressure test report and conformity of production.

5.4 BV product certificate is required.

### **Places of production**

<b>Production site</b>	<b>Location</b>	<b>Hose</b>	<b>Hose couplings</b>	<b>Hose assemblies</b>	<b>Adaptors</b>
<b>RYCO HYDRAULICS Pty. Ltd.</b>	<b>19 Whitehall Street Footscray, VIC 3011 AUSTRALIA</b>		<b>x</b>	<b>x</b>	<b>x</b>
<b>RYCO HYDRAULICS (Dalian) Ltd.</b>	<b>38 Ying Ri Road Ying Cheng Zi Industrial Zone Gan Jing Zi District DALIAN 116036 CHINA</b>		<b>x</b>	<b>x</b>	<b>x</b>
<b>RYCO HYDRAULICS Sdn. Bhd.</b>	<b>Plot 207 Kuala Ketil Industrial Estate 09300 Kuala Ketil Kedah Darulaman MALAYSIA</b>	<b>x</b>		<b>x</b>	
<b>RYCO HYDRAULICS (Dalian) Ltd. Taicang Branch</b>	<b>2nd Building No.88 Dalian East Road Taicang Economy Developing Area Taicang, 215400 Jiangsu Province CHINA</b>			<b>x</b>	
<b>RYCO HYDRAULICS Inc.</b>	<b>1616 Greens Road Houston, Texas, 77032 USA</b>			<b>x</b>	

## **6. MARKING OF PRODUCT**

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

- Manufacturer name or logo
- Type designation
- Date of manufacture and lot #
- Society's brand as relevant

## **7. OTHERS**

This approval is given on the understanding that the manufacturer will accept full responsibility for informing shipbuilders or their sub-contractors of the proper method of fitting and general maintenance of the products and of the conditions of this approval.

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