



# TYPE APPROVAL CERTIFICATE

**Certificate No.** : SDN31874-HS001                      **Initial Approval** : 24th February, 2014  
**Product** : Flexible Rubber Hose Assembly  
**Manufacturer** : RYCO Hydraulics Pty. Ltd.- Melbourne  
99 Calarco Drive, Derrimut, Victoria, 3026 Australia

**Product Description** : Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings

Model : T3000, T3600, T4000, T5000, T6000,  
H3000, H4000, H5000, H6000,  
DF1, DF2, T1, T2, T5, DK1, DK2, M2,  
R4SP, R4SH, H12, H13, H15,  
RTH1, RQP1, RQP2, RQP5, D2B, BT1,  
SRF, SR, SRX

Application : Lubricating oil, Fuel Oil, Hydraulic oil  
Compressed air, Fresh water, Sea water

" See Appendix 1 "

**Approval Condition** : " See Appendix 1 "

**THIS IS TO CERTIFY** that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows and entered in the "List of Approved Manufacturers and Type Approved Equipment".

Pt 5, Ch 6, Sec 1 of the Rules for Classification of Steel Ships.

This Certificate is valid until 23rd February, 2024

Reissued at Busan, Korea on 24th February, 2020



This certificate is signed electronically in accordance with IMO FAL.5/Circ.39/Rev.2. Validation and authentication of the certificate can be confirmed from "<http://e-cert.krs.co.kr>" by using the tracking No (ME20006998434) and certificate No.(SDN31874-HS001).



KOREAN REGISTER

General Manager of  
Marine & Ocean Equipment Team

- Note :**
1. This certificate will be valid subject to complying with the approval conditions described on the certificate and/or on the Rules of this Society.
  2. This certificate will be invalid from the expiry date aforementioned unless the extension or renewal has been granted to the applicant or the manufacturer.
  3. Any significant modifications or changes in design or construction to the above product without approval from this Society will render this certificate invalid.
  4. Should the specified rules, regulations or standards be amended during the validity of this certificate, the product is to be re-approved by this Society in accordance with the requirements as amended.

## Appendix 1

# Product Description and/or Approval Condition

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## A. Product Description

### 1. Product Specification

#### 1) Isobaric Braid

Type	Size(DN)	Max.Pressure(bar)	Service Temp.(°C)
T3000	6 ~ 25	245	-40 ~ +100
T3600	6 ~ 25	250	-40 ~ +100
T4000	6 ~ 25	280	-40 ~ +100
T5000	6 ~ 19	350	-40 ~ +100
T6000	6 ~ 12	420	-40 ~ +100

#### 2) Isobaric Spiral

Type	Size(DN)	Max.Pressure(bar)	Service Temp.(°C)
H3000	31 ~ 51	215	-40 ~ +121
H4000	10 ~ 51	280	-40 ~ +121
H5000	10 ~ 51	350	-40 ~ +121
H6000	10 ~ 51	420	-40 ~ +121

#### 3) Braid

Type	Size(DN)	Max.Pressure(bar)	Service Temp.(°C)
DF1	6 ~ 25	88 ~ 225	-40 ~ +100
DF2	6 ~ 31	140 ~ 420	-40 ~ +100
T1	5 ~ 51	40 ~ 250	-40 ~ +100
T2	6 ~ 76	70 ~ 420	-40 ~ +100
T5	5 ~ 46	24 ~ 210	-40 ~ +100
DK1	6 ~ 31	100 ~ 295	-40 ~ +100
DK2	6 ~ 31	175 ~ 450	-40 ~ +100
M2	6 ~ 19	52 ~ 88	-40 ~ +100

#### 4) Spiral

Type	Size(DN)	Max.Pressure(bar)	Service Temp.(°C)
R4SH	19 ~ 51	250 ~ 420	-40 ~ +100
R4SP	10 ~ 25	350 ~ 445	-40 ~ +100
H12	10 ~ 51	210 ~ 350	-40 ~ +121
H13	19 ~ 51	350	-40 ~ +121
H15	19 ~ 51	420	-40 ~ +121

#### 5) TEFLON

Type	Size(DN)	Max.Pressure(bar)	Service Temp.(°C)
RTH1	6 ~ 25	55 ~ 170	-60 ~ +260

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### 6) Specialty and high temperature

Type	Size(DN)	Max.Pressure(bar)	Service Temp.(°C)
RQP1	6 ~ 25	90 ~ 225	-40 ~ +150
RQP2	6 ~ 51	90 ~ 400	-40 ~ +150
RQP5	5 ~ 46	24 ~ 210	-40 ~ +150
D2B	38 ~ 51	90 ~ 100	-40 ~ +135 *a) -40 ~ +121 *b)
BT1	6 ~ 25	50	-40 ~ +135 *c) -40 ~ +121 *b) -40 ~ +120 *d) -40 ~ +100 *e) -40 ~ +80 *f) -20 ~ +100 *g)

\* Remarks (When used for each application)

- a) Oil
- b) Air
- c) Petroleum base hydraulic fluids, Lubricating oils
- d) Engine oils
- e) Ethanol blends, Biodiesel, Diesel fuel
- f) Water, Water Emulsions
- g) Unleaded Petrol/Gasoline, Jet Fuel JP8, Kerosene

### 7) Suction and Return

Type	Size(DN)	Max.Pressure(bar)	Service Temp.(°C)
SRF	19 ~ 51	7 ~ 21	-40 ~ +100
SR	19 ~ 76	3.9 ~ 21	-40 ~ +100
SRX	19 ~ 76	4 ~ 21	-40 ~ +100

Coupling material : Carbon Steel AISI/SAE 12L14,#1010,#1020,#1040,#1045  
Stainless Steel  
Electroplated Fe/Zn12c acc. to AS1789

\* Hose manufacturer ;

- 1) RYCO Hydraulics Sdn, Bhd, Malaysia  
: T3000, T3600, T4000, T5000, T6000, H3000, H4000, H5000, H6000, DF1, DF2, T1, T2, T5  
R4SH, R4SP, H12, H13, H15, RQP1, RQP2, RQP5, D2B, BT1, DK1, DK2
- 2) Wellcall Sdn, Bhd, Malaysia  
: SR, SRF
- 3) ILKE(SEL) Istanbul, Turkey  
: M2, SRX
- 4) Diesse Rubber Hoses Italy  
: RQP5, T5
- 5) Kongsberg Automotive West Yorkshire UK  
: RTH1

\* End coupling manufacturer : RYCO Hydraulics Australia and China

## 2. Approved Drawings and Documents

- 1) Approved drawing No. 2000-16, 7000-16, 9090-1616, 90000-16
- 2) Approved catalogues for BT1, D2B, T3000, T3600, T4000, T5000, T6000, H3000, H4000, H5000, H6000, R4SP, R4SH, T1, SR, SRF, SRX, M2, H12, H13, H15, T2, DF1, DF2, RQP1, RQP2, RQP5, T5, RTH1, DK1, DK2

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### 3. Test Reports, etc.

- 1) Burst Test Report (DF1) No. RT-BT-001/13 dated on 15 Mar 2013 witnessed by DNV
- 2) Burst Test Report (RQP5, T5, M2, H6000, BT1, H4000, T4000, H5000, H3000, etc) No. 5378 dated on 20 Feb 2013 witnessed by GL and LR
- 3) Burst Test Report (T3000, T4000, T5000, T6000, H3000, H4000, H5000, H6000, BT1, T1, T2, RQP1, RQP2, DF2, T5, RQP5, H12, H13, M2, SRF, etc) No. 5185 dated on 15 Nov 2012 witnessed by DNV and LR
- 4) Test Report (DIEHARD, SLIDER) No. RHAU-IB-1001~1009 dated 27 Aug 2012
- 5) Test Report (AVENGER) No. RHAU-IS-1002~1011 dated 27 Aug 2012
- 6) Fire Resistance Test (DK1, DK2) Report No. RH-FT-173~178 dated 18 Oct 2018 witnessed by DNV-GL
- 7) Fire Resistance Test (SR Series) Report No. RH-FT-60~62 dated 07 Apr 2006
- 8) Impulse Test (DK1, DK2) Report No. 5796~99-030, 5805~5806-030 dated 30 Oct 2018
- 9) Burst Test (DK1, DK2) Report No. RH-BT-003/18 dated 18 Oct 2018 witnessed by DNV-GL
- 10) Burst Test (SRX) Report No. #20181128 dated 28 Nov 2018 witnessed by DNV-GL

## B. Approval Condition

### 1. Application & Limitation

- 1) SRX hose is approved in accordance with SAE 100R4, and impulse test was not carried out.
- 2) The flexible hoses are to be installed in clearly visible and readily accessible locations.
- 3) The flexible hoses are to be used as short as possible in the permanent piping system where flexibility is required.
- 4) This certificate is valid for the specific assembly of hose and coupling type as specified, assembled and delivered directly by the Manufacturer.
- 5) Flexible Hose assemblies are not to be installed where they may be subjected to torsional deformation (twisting) under normal operating conditions.
- 6) The installation and maintenance are to be carried out in accordance with the manufacturer's instructions.

### 2. Individual Product Cert. and Drawing Approval Requirement

- 1) Individual Product Certification is required in case of pipes belonging to Class I and II.

### 3. Marking

- 1) Hoses should be marked with the following items.
  - Hose manufacturer's name of trademark,
  - Date of manufacture (Month/Year),
  - Rated pressure,
  - Type designation,
  - Nominal diameter,
  - Rated temperature

### 4. Others

Nil

< End of Certificate >