

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings**

with type designation(s)

SURVIVOR RQP5/ TRUCKER T5

Issued to

RYCO Hydraulics Pty. Ltd.**Derrimut, VIC, Australia**

is found to comply with

DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018**DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems****DNV GL class programme DNVGL-CP-0183 – Type approval – Flexible hoses****Application :****Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV GL.****Temperature range: -40°C to +150°C (see page 2)****Max. working press.: 24 to 210 bar (see page 2)****Sizes: See page 2**Issued at **Høvik** on **2020-02-24**for **DNV GL**This Certificate is valid until **2023-12-31**.DNV GL local station: **Melbourne**Approval Engineer: **Maheshraja Venkatesan****Zeinab Sharifi**
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.



Product description

Flexible rubber hoses TRUCKER T5/ SURVIVOR RQP5 with permanently attached couplings constructed according to SAE 100R5 from SAEJ517 with the following design:-

Hose inner tube	: Black, oil resistant synthetic rubber
Reinforcement	: Polyester inner braid covered with one braid of high tensile steel wire
Hose cover	: Polyester braid, (black – TRUCKER, blue – SURVIVOR)
End fittings	: BITELOK NON-SKIVE ONE-PIECE CRIMP T4000 series or V000 series
Material for end fittings	: Carbon steel - AS1443 grades 12L14, 1010, 1020, 1040 & 1045 Stainless steel - ASTM A276 type 316
Fire protection	: Fire sleeve FS1072

Hose and fire sleeve manufacturing location:

- RYCO Hydraulics, Victoria, Australia

End fittings manufacturing location:

- RYCO Hydraulics, Victoria, Australia
- RYCO Hydraulics (DALIAN), P.R.China

Hose assembling location:

- RYCO Hydraulics, Victoria, Australia

Application/Limitation

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 assemblies covered by this certificate are approved to be used in:

Operating media	Temperature range	
	TRUCKER T5	SURVIVOR RQP5
Petroleum based hydraulic fluids	-40°C to +100°C	-40°C to +150°C
Water based Hydraulic fluids and air	-40°C to +70°C	-40°C to +70°C
Water	0°C to +70°C	0°C to +70°C

Maximum working pressure (MAWP):

Part no.	Hose size		MAWP		End fitting designation (Bitelok)
	Dash	Metric	bar	psi	
RQP54/T54	-04	5	207	3000	T4000/V000 non skive
RQP55/T55	-05	6.3	207	3000	T4000/V000 non skive
RQP56/T56	-06	8	155	2250	T4000/V000 non skive
RQP58/T58	-08	11	138	2000	T4000/V000 non skive
RQP510/T510	-10	12.5	121	1750	T4000/V000 non skive
RQP512/T512	-12	16	103	1500	T4000/V000 non skive
RQP516/T516	-16	22	55	800	T4000/V000 non skive
RQP520/T520	-20	29	43	625	T4000/V000 non skive

Hose assemblies for fire safe applications shall always be installed with fire sleeve as specified in this certificate.

Flexible hoses are only to be used in short lengths where it is necessary due to vibrations or flexible mounting of the machinery. The hoses shall not replace/be used where permanent piping is possible/required.

The hose assemblies must only be fitted in places where they are always accessible. Flexible hoses of these types are not to be used on boiler fronts.

Hose assemblies covered by this certificate shall not be used in system subject to pressure below atmospheric or vacuum condition.

The outer end of the pipe coupling (performing the connection to the fixed piping) is not covered by this certificate and shall follow the below requirements:

- Flanged ends shall be according to a recognized standard
- Slip-on threaded joints having pipe threads where pressure-tight joints are made on the threads with parallel or tapered threads, shall comply with requirements of a recognized standard. Limitations stated in DNVGL-RU-SHIP Pt.4 Ch.6 Sec.9 [5.2.6] to be followed.
- If these outer ends are going to be part of a mechanical joint as covered by Table 10 DNVGL-RU-SHIP Pt.4 Ch.6 Sec.9, then they shall be separately type approved.

Production testing

All hose assemblies delivered under the DNV GL type approval scheme shall be subject to a pressure test at 1.5 times the maximum working pressure and shall be delivered with the pressure test report with reference to this type approval certificate.

Type Approval documentation

<u>Document No.</u>	<u>Rev.</u>	<u>Title</u>
Page 108 & 116	-	Datasheets – T5 & RQP5
RH-WI-83	8	Hose and coupling Assembly instructions dated 29/11/2017
RH-WI-61	09	RYCO – Metric Crimp Chart and Rapid Numbers dated 2017-12-21
28913076	-	DNV Inspection and Testing Report dated 2009-04-17
5047i & 5048i	-	Impulse test certificates dated 2012-11-21
RH-FT-20, RH-FT-21, RH-FT-47 & RH-FT-135	-	Fire test report witnessed by DNV Surveyor
5185	-	Burst test certificate witnessed by DNV GL surveyor dated 2012-11-15
5378	-	Report on burst pressure test witnessed by GL Surveyor dated 2013-02-20
20181024	-	Renewal burst test report witnessed by DNV GL Surveyor dated 2018-11-02
6486-030	-	RQP516 test summary sheet dated 2019-05-23
6488-030	-	RQP524 test summary sheet dated 2019-05-23
6490-030	-	RQP532 test summary sheet dated 2019-05-23
6491-030	-	RQP54 test summary sheet dated 2019-05-23
6482-030	-	RQP56 test summary sheet dated 2019-05-23
6490-030	-	RQP55 test summary sheet dated 2019-05-23
6483-030	-	RQP58 test summary sheet dated 2019-05-23
6485-030	-	RQP512 test summary sheet dated 2019-05-23
6487-030	-	RQP520 test summary sheet dated 2019-05-23
6484-030	-	RQP510 test summary sheet dated 2019-05-23
-	-	Oil resistance test report for RYCO RQP and Driller hose tube dated 7th June 2019

Tests carried out

As per DNVGL-CP-0183 Sec.2 Table 1 and 2 (except vacuum testing)

Marking of product

Flexible hoses are to be permanently marked by the manufacturer with the following details:

- Hose manufacturer's name or trademark;
- Date of manufacture (month/year);
- Designation type reference;
- Nominal diameter;
- Pressure rating;
- Temperature rating.



Job Id: **262.1-015853-9**
Certificate No: **TAP00001SE**

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNVGL-CP-0338.