

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.
FOOTSCRAY VICTORIA, Australia

is found to comply with
Det Norske Veritas' Rules for Classification of Ships Pt.4, Ch.6 "Piping Systems"
Det Norske Veritas' Offshore Standards
Det Norske Veritas' Standards for Certification 2.9 No. 5-791.70

Application :

May be used for hydraulic oil, diesel fuel oil, lubrication oil, compressed air (with 30% reduction is sworking pressure) .

Type:	Temperature range:	Max. working press.:	Sizes:
Survivor RQP5	-40°C to +150°C (-40°F to +302°F)	24 to 210 bar size dependent	DN5, 6, 8, 10, 12, 16, 22, 28, 35, 46
Trucker T5	-40°C to +100°C (-40°F to +212°F)	24 to 210 bar size dependent	DN5, 6, 8, 10, 12, 16, 22, 28, 35, 46

This Certificate is valid until **2018-12-31**.

Issued at **Høvik** on **2014-11-12**

DNV GL local station: **Melbourne**

for **DNV GL**

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-14696**
File No: **791.70**
Job Id: **262.1-015853-1**

Product description

RQP5/T5 :

Black synthetic rubber reinforced by one polyester inner braid covered with one braid of high tensile steel wire.

Cover of blue polyester braid

Couplings: Bitlok non-skive one-piece series T4000

Coupling material: Carbon steel: 12L14, 1010, 1020, 1040, 1045
Stainless steel: 316 ASTM A276 or equivalent

Hose manufacturer: T5: RYCO Hydraulics, Sdn. Bhd, Malaysia
RQP5: Diesse, Italy

Couplings manufacturers:
RYCO Hydraulics, Footscray Vic, Australia
RYCO Hydraulics (DALIAN), P.R.China

Application/Limitation

May be used for hydraulic oil, diesel fuel oil, lubrication oil, compressed air (with 30% reduction in working pressure)

Max working pressure:

Part no. Hose	Hose size				Max. working pressure	
	DN	Dash	mm	Inch	bar	psi
RQP54/T54	5	-04	4,8	3/16	210	3050
RQP55/T55	6	-05	6,4	1/4	210	3050
RQP56/T56	8	-06	7,9	5/16	155	2250
RQP58/T58	10	-08	10,3	13/32	138	2000
RQP510/T510	12	-10	12,7	1/2	121	1750
RQP512/T512	16	-12	15,9	5/8	103	1500
RQP516/T516	22	-16	22,2	7/8	55	800
RQP520/T520	28	-20	31,0	1	43	625

Temperature range:

Survivor RQP5: -40°C to +150°C (-40°F to +302°F)

Trucker T5: -40°C to +100°C (-40°F to +212°F)

This certificate is valid for the specific assembly of hose and coupling type as specified, assembled and delivered by the holder of this certificate.

All hose assemblies delivered under this type approval certificate shall be in compliance with an assembly procedure issued by the certificate holder.

Each hose assembly is before delivery to be hydraulic pressure tested to 1.5 times the maximum working pressure.

Hose assemblies delivered from the certificate holder shall be delivered with the following documentation:

- Pressure test report with reference to the type approval certificate.

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The hose assemblies covered by this type approval may be assembled and delivered by other than the certificate holder under the following conditions:

- The assembler is authorised by a written authorization from the certificate holder. The certificate holder shall keep record of all assembler authorisations.
- Hose assemblies are in accordance with an assembly procedure issued by the certificate holder and the assembler has proved their qualifications by burst testing of a selection of hose/coupling combinations.
- Selection of sizes and testing is to be performed in compliance with the DNV Type Approval Programme 5-791.70 and the testing is to be witnessed by DNV.

Hose assemblies delivered from an authorized assembler shall in addition to the pressure test report with reference to the type approval certificate be delivered with a copy of the written authorization stamped by DNV.

The hoses can be used in short lengths for ordinary machinery purposes in the systems mentioned on the front page. They are not to be used where fixed piping is possible/required.

Hoses used for continuous operation at temperatures higher than 100°C will have their lifetime reduced. In such cases more frequent inspections and planned exchange should be a part of the maintenance program.

The hoses must only be fitted in places where they are always accessible.

Flexible hoses of these types are not to be used on boiler fronts.

The hoses are to be mounted in accordance with the manufacturer's instructions.

It must be possible to shut off from the system all flexible hoses used in systems for compressed air, lubrication oil, fuel oil and petroleum base hydraulic oil.

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

Type Approval documentation

The approval is based on the following documentation:

- Manufacturer's leaflets "Survivor RQP5" and "T5"
- Manufacturers test reports nos. 5047i, 5048i, RH-FT-20, RH-FT-21, RH-FT-47
- Diesse's test reports no 4 and 6

Tests carried out

Impulse test, Dimensional check test, change in length test, Burst pressure test, oil resistance test, cover adhesion test, ozone resistance test, Cold flex test, Leakage test

Marking of product

For traceability to this type approval, the hoses should at least be marked with:

- Manufacturer's trade mark
- Type designation

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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' Certification no. 2.9 – 5-791.70 "Type Approval of Flexible Hoses of Non-Metallic Material", or another recognised standard.

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

END OF CERTIFICATE