



DET NORSKE VERITAS

EC TYPE-EXAMINATION CERTIFICATE

Application of: Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive 2002/75/EC, issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Directorate. This certificate is issued by Det Norske Veritas under the authority of the Government of the Kingdom of Norway.

CERTIFICATE NO. MED-B-3625

This Certificate consists of 8 pages

This is to certify that the product

**Materials other than steel for pipes conveying oil or fuel oil:
flexible pipe assemblies**

with the type designation(s)

flexible hoses with couplings

Manufactured by

RYCO Hydraulics Pty. Ltd.

Footscray, Victoria 3011, Australia

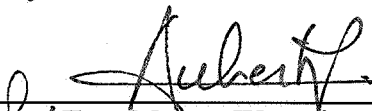
is found to comply with the requirements in the following Regulations/Standards:
Annex A.1, item No. A.1/3.15c and Annex B, Module B in the Directive. SOLAS 74 as amended, Regulation II-2/4.2.2.5.1, II-2/4.2.2.5.6 & X/3 and 2000 HSC Code 7.5.4.

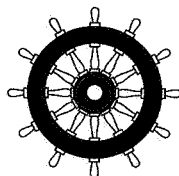
Further details of the product and conditions for certification are given overleaf.

Place and date

Høvik, 2006-05-02

for DET NORSKE VERITAS AS


Tore Morten Wetterhus
Manager, MTPNO370
Department Systems & Components



Notified Body No. 0575

This Certificate is valid until

2011-05-02



DNV local office:
DNV Melbourne



Notice: The certificate is subject to terms and conditions overleaf. Any significant changes in design or construction of the product, or amendments to the Directive or Standards referenced above may render this certificate invalid. The product liability rests with the manufacturer or his representative in accordance with Council Directive 96/98/EC, as amended.

The Mark of Conformity may only be affixed to the product and a Declaration of Conformity may only be issued when the production/product assessment module referred to in the council directive, is fully complied with.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



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File No.: A1/3.15C

Product description

Flexible rubber hoses with permanently attached couplings. Type of hoses as listed in Appendix.

Applications/Limitations

As listed in Appendix to this certificate.
The cover on hoses for gaseous applications shall be pin-prickled.

Type Examination documentation


Fire test certificates from fire resistant testing. Certificate Number see Appendix.

Tests carried out


Fire resistant testing according to ISO 15540/15541

Marking of product

The hoses are line marked:
RYCO type, size, mawp,

In addition to the line marking, each hose assembly is to be marked:  0575, and year of production.

Mark of conformity

The manufacturer is allowed to affix the Mark of Conformity  according to Article 11 in the Council Directive 96/98/EC on Marine Equipment and issue a Declaration of Conformity, only when the module D or E or F of Annex B in the same directive is fully complied with.

- Module D: The quality system for production and testing shall be approved by the Notified Body.
- Module E: The quality system for inspection and testing shall be approved by the Notified Body.
- Module F: Compliance of the products to type as described in this EC Type-Examination Certificate must be verified by the Notified Body who also shall issue a Certificate of Conformity.

END OF CERTIFICATE



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APPENDIX , rev. No. 0

EC-Type Examination Certificate, Certificate No. MED-B-3625

Hose types included in this certificate:

1) T1A AVENGER

2) RQP1 SURVIVOR

3) T1F FIRE SUPPRESSION

Applications: Hydraulics systems, pneumatic systems fresh water and sanitary systems.

Product description:

Flexible rubber hoses with permanently attached couplings.

Materials:

Inner tube: Oil resistant synthetic rubber

Reinforcement: 1 wire braid acc. to SAE 100R1.

Cover: Oil and weather resistant rubber.

End couplings: Carbon steel AISI/SAE 12L14, electroplated Fe/Zn12c acc. to AS1789

| AVENGER T1A | Hose size ID | | Max. pressure | | Couplings | | | |
|----------------|--------------|----|---------------|-----|------------|---------|---------|------|
| | Inches | mm | Psi | bar | Insert | Ferrule | Bitelok | |
| T14A* | 1/4" | 6 | 3,250 | 225 | 600 series | K00-04 | T200 | |
| T16A | 3/8" | 10 | 2,600 | 180 | 600 series | K00-06 | T200 | T700 |
| T18A | 1/2" | 12 | 2,300 | 160 | 600 series | K00-08 | T200 | T700 |
| T110A | 5/8" | 16 | 1,890 | 130 | 600 series | K00-10 | T200 | T700 |
| T112A* | 3/4" | 20 | 1,500 | 105 | 600 series | K00-12 | T200 | T700 |
| T116A | 1" | 25 | 1,300 | 90 | 600 series | K00-16 | T200 | T700 |
| T120A* | 1 1/4" | 32 | 945 | 65 | 600 series | A00-20 | T200 | T700 |
| T124A | 1 1/2" | 40 | 725 | 50 | 600 series | A00-24 | | T700 |
| T132A | 2" | 50 | 580 | 40 | 600 series | A00-32 | | T700 |

| SURVIVOR RQP1 | Hose size ID | | Max. pressure | | Couplings | | | |
|---------------|--------------|----|---------------|-----|------------|---------|---------|------|
| | Inches | mm | psi | bar | Insert | Ferrule | Bitelok | |
| RQP14* | 1/4" | 6 | 3,250 | 225 | 600 series | K00-04 | T200 | |
| RQP16 | 3/8" | 10 | 2,600 | 180 | 600 series | K00-06 | T200 | T700 |
| RQP18* | 1/2" | 12 | 2,300 | 160 | 600 series | K00-08 | T200 | T700 |
| RQP110 | 5/8" | 16 | 1,890 | 130 | 600 series | K00-10 | T200 | T700 |
| RQP112 | 3/4" | 20 | 1,740 | 120 | 600 series | K00-12 | T200 | T700 |
| RQP116* | 1" | 25 | 1,300 | 90 | 600 series | K00-16 | T200 | T700 |

| T1F FIRE SUPPRESSION | Hose size ID | | Max. pressure | | Couplings | | | |
|-------------------------|--------------|----|---------------|-----|------------|---------|---------|------|
| | Inches | mm | psi | bar | Insert | Ferrule | Bitelok | |
| T14F* | 1/4" | 6 | 3,250 | 225 | 600 series | K00-04 | T200 | |
| T16F | 3/8" | 10 | 2,600 | 180 | 600 series | K00-06 | T200 | T700 |
| T18F | 1/2" | 12 | 2,300 | 160 | 600 series | K00-08 | T200 | T700 |
| T112F* | 3/4" | 20 | 1,740 | 120 | 600 series | K00-12 | T200 | T700 |

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- 4) T2A AVENGER**
- 5) RQP2 SURVIVOR**
- 6) TXA2D-DIEHARD**
- 7) DF2A DINFLEX**
- 8) T2S SLIDER**

Applications: May be used for the following systems: Hydraulics, pneumatics, fuel and lube oil, fresh water, sea water and sanitary.

Product description:

2 wire braid reinforced flexible rubber hoses with permanently attached couplings, according to SAE100 R2 AT/ EN853 type 2SN.

Materials:

Inner tube: Oil resistant synthetic rubber (Nitrile)

RQP2: Specially compounded for temperature and chemical resistance.

Reinforcement: 2 steel wire braids .

Cover: T2D, TXA2D: Oil and weather resistant rubber.

DF2A, T2A, RQP2: Oil and abrasion resistant synthetic rubber.

T2S: Oil and abrasion resistant synthetic rubber, sheathed with polyethylene.

| AVENGER T2A | Hose size ID | | Max. pressure | | Couplings | | |
|----------------|--------------|----|---------------|-----|-----------|-------------------|-----------|
| | Inches | mm | psi | Bar | Insert | Ferrule | Bitelok |
| T24A | 1/4" | 6 | 6000 | 420 | 600 ser | L00-04 | T200 |
| T26A | 3/8" | 10 | 5100 | 350 | 600 ser | L00-06 | T200/T700 |
| T28A | 1/2" | 12 | 5000 | 345 | 600 ser | L00-08 | T200/T700 |
| T210A | 5/8" | 16 | 3600 | 250 | 600 ser | L00-10 | T200/T700 |
| T212A | 3/4" | 20 | 3100 | 215 | 600 ser | L00-12 | T200/T700 |
| T216A | 1" | 25 | 2400 | 167 | 600 ser | L00-16 | T200/T700 |
| T220A | 1 1/4" | 32 | 1800 | 125 | 600 ser | L00-20 | T200/T700 |
| T224A | 1 1/2" | 40 | 1300 | 90 | 600 ser | B00-24 | T700 |
| T232A | 2" | 50 | 1150 | 80 | 600 ser | B00-32 | T700 |
| T240A | 2 1/2" | 63 | 1000 | 69 | | 1200-40 two piece | |

Temp. range: -40 °C to +100 °C

| SURVIVOR RQP2 | Hose size ID | | Max. pressure | | Couplings | | |
|---------------|--------------|----|---------------|-----|-----------|---------|-----------|
| | Inches | mm | psi | bar | Insert | Ferrule | Bitelok |
| RQP24 | 1/4" | 6 | 5800 | 400 | 600 ser | L00-04 | T200 |
| RQP26 | 3/8" | 10 | 5100 | 350 | 600 ser | L00-06 | T200/T700 |
| RQP28 | 1/2" | 12 | 4350 | 300 | 600 ser | L00-08 | T200/T700 |
| RQP210 | 5/8" | 16 | 3600 | 250 | 600 ser | L00-10 | T200/T700 |
| RQP212 | 3/4" | 20 | 3100 | 215 | 600 ser | L00-12 | T200/T700 |
| RPQ216 | 1" | 25 | 2420 | 167 | 600 ser | L00-16 | T200/T700 |
| RPQ220 | 1 1/4" | 32 | 2175 | 150 | 600 ser | L00-20 | T200/T700 |
| RPQ224 | 1 1/2" | 40 | 1450 | 100 | 600 ser | B00-24 | T700 |
| RPQ232 | 2" | 50 | 1300 | 90 | 600 ser | B00-32 | T700 |

Temp. range:
 Petroleum-base fluids: -40°C to +150 °C
 Water/ oil emulsions: to +121 °C
 Diesel fuels: to +93 °C
 Air: to +121 °C (max. press. to be reduced by 30%) the outer cover must be pierced



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| DIEHARD TXA2D | Hose size ID | | Max. pressure | | Couplings | | |
|------------------|--------------|----|---------------|-----|-----------|---------|-----------|
| | Inches | mm | psi | bar | Insert | Ferrule | Bitelok |
| TXA28D | 1/2" | 12 | 5440 | 375 | 600series | L00-08 | T200/T700 |
| TXA210D | 5/8" | 16 | 5000 | 345 | 600series | L00-10 | T200/T700 |
| TXA212D | 3/4" | 20 | 4530 | 313 | 600series | L00-12 | T200/T700 |
| TXA216D | 1" | 25 | 3260 | 225 | 600series | L00-16 | T200/T700 |
| TXA220D | 1 1/4" | 32 | 2540 | 175 | 600series | L00-20 | T200/T700 |

Temp. range: -40 °C to +100 °C

| DINFLEX DF2A | Hose size ID | | Max. pressure | | Couplings | | |
|-----------------|--------------|----|---------------|-----|-----------|--|-----------|
| | Inches | mm | psi | Bar | | | Bitelok |
| DF24A* | 1/4" | 6 | 6000 | 420 | | | T200 |
| DF26A | 3/8" | 10 | 5100 | 350 | | | T200/T700 |
| DF28A* | 1/2" | 12 | 4250 | 295 | | | T200/T700 |
| DF212A* | 3/4" | 20 | 3100 | 215 | | | T200/T700 |

| SLIDER T2S | Hose size ID | | Max. pressure | | Couplings | | |
|---------------|--------------|----|---------------|-----|-----------|--|-----------|
| | Inches | mm | psi | Bar | | | Bitelok |
| T24S* | 1/4" | 6 | 6000 | 420 | | | T200 |
| T26S | 3/8" | 10 | 5100 | 350 | | | T200/T700 |
| T28S* | 1/2" | 12 | 5100 | 350 | | | T200/T700 |
| T210S | 5/8" | 16 | 3600 | 250 | | | T200/T700 |
| T212S | 3/4" | 20 | 3100 | 215 | | | T200/T700 |
| T216S* | 1" | 25 | 2420 | 167 | | | T200/T700 |
| T220S | 1 1/4" | 32 | 1800 | 125 | | | T200/T700 |
| T224S | 1 1/2" | 40 | 1300 | 90 | | | T700 |
| T232S | 2" | 50 | 1150 | 80 | | | T700 |

Temp. range: -40 °C to +100 °C

- 9) H12A AVENGER**
- 10) H12S SLIDER**
- 11) HSHA AVENGER**
- 12) HSPA AVENGER**
- 13) H15D DIEHARD**

Temp. range: -40°C to +121°C

Product description:

Inner tube: oil resistant CR-NBR rubber (Neoprene), black

Cover: oil and abrasion resistant CSM-CR, black

Reinforcement: 4 layers of steel wire with a rubber layer between the spirals.

6 layers (H15D sizes 20 & 24)

according to SAE 100 R12, SAE 100 R15, prEN 856/R12, EN 856 4SP/4SH.

| Part no. | Hose size inner diameter | | | Working pressure | | Coupling |
|----------|--------------------------|------|------|------------------|------|-----------|
| | DN | Inch | Dash | Bar | Psi | Series |
| H1206A* | 10 | 3/8 | -06 | 350 | 5100 | T700/T200 |
| H1208A | 12 | 1/2 | -08 | 350 | 5100 | T700/T200 |

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| | | | | | | |
|---------|----|-------|-----|-----|------|-----------|
| H1210A | 16 | 5/8 | -10 | 350 | 5100 | T700/T200 |
| H1212A* | 20 | 3/4 | -12 | 350 | 5100 | T700 |
| H1216A | 25 | 1 | -16 | 350 | 5100 | T700 |
| H1220A | 32 | 1.1/4 | -20 | 275 | 4000 | T700 |
| H1224A | 40 | 1.1/2 | -24 | 255 | 3700 | T700 |
| H1232A* | 50 | 2 | -32 | 210 | 3000 | T700 |

| Part no. | Hose size inner diameter | | | Working pressure | | Coupling |
|----------|--------------------------|-------|------|------------------|------|-----------|
| | DN | Inch | Dash | Bar | Psi | Series |
| H1206S | 10 | 3/8 | -06 | 350 | 5100 | T700/T200 |
| H1208S | 12 | 1/2 | -08 | 350 | 5100 | T700/T200 |
| H1212S* | 20 | 3/4 | -12 | 350 | 5100 | T700 |
| H1216S* | 25 | 1 | -16 | 350 | 5100 | T700 |
| H1220S* | 32 | 1.1/4 | -20 | 275 | 4000 | T700 |
| H1224S | 40 | 1.1/2 | -24 | 255 | 3700 | T700 |

| Part no. | Hose size inner diameter | | | Working pressure | | Coupling |
|----------|--------------------------|-------|------|------------------|------|-----------|
| | DN | Inch | Dash | Bar | Psi | Series |
| HSP04A* | 6 | 1/4 | -04 | 450 | 6550 | T200 |
| HSP06A | 10 | 3/8 | -06 | 445 | 6450 | T700/T200 |
| HSP08A* | 12 | 1/2 | -08 | 420 | 6000 | T700/T200 |
| HSP10A | 16 | 5/8 | -10 | 350 | 5100 | T700/T200 |
| HSH12A* | 20 | 3/4 | -12 | 435 | 6300 | T900 |
| HSH16A | 25 | 1 | -16 | 420 | 6000 | T900 |
| HSH20A | 32 | 1.1/4 | -20 | 350 | 5100 | T700 |
| HSH24A* | 40 | 1.1/2 | -24 | 290 | 4200 | T700 |
| HSH32A | 50 | 2 | -32 | 275 | 4000 | T700 |

| Part no. | Hose size inner diameter | | | Working pressure | | Coupling |
|----------|--------------------------|-------|------|------------------|------|----------|
| | DN | Inch | Dash | Bar | Psi | Series |
| H1512D* | 20 | 3/4 | -12 | 420 | 6000 | 6900N |
| H1516D | 25 | 1 | -16 | 420 | 6000 | 6900N |
| H1520D* | 32 | 1.1/4 | -20 | 420 | 6000 | 6900N |
| H1524D | 40 | 1.1/2 | -24 | 420 | 6000 | 6900N |

14) H13A AVENGER

15) H13D DIEHARD

Applications: May be used for hydraulic oil, fuel oil, lubricating oil, compressed air, fresh water, sea water and compressed air systems. **NOTE: When using compressed air, the outer cover must be pierced and max working pressure reduced by 30%.**

Temperature range: - 40°C to + 121°C.

Product description:

Fleksibel hoses according to SAE 100 R13, prEN 856/R13.

Inner tube oil resistant CR-NBR rubber

Cover weather and oil resistant CSM-CR.

The hoses sizes -12 & -16 are reinforced with 4 layers

and sizes -20 to -32 with 6 layers of steel wire with a rubber layer between the spirals.



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| Part no. | Hose size inner diameter | | | Working pressure | | Coupling |
|----------|--------------------------|-------|------|------------------|------|----------|
| | DN | Inch | Dash | Bar | Psi | Series |
| H1312A* | 20 | 3/4 | -12 | 350 | 5100 | T900 |
| H1316A | 25 | 1 | -16 | 350 | 5100 | T900 |
| H1320A* | 32 | 1.1/4 | -20 | 350 | 5100 | T900 |
| H1324A | 40 | 1.1/2 | -24 | 350 | 5100 | T900 |
| H1332A* | 50 | 2 | -32 | 350 | 5100 | T900 |

| Part no. | Hose size inner diameter | | | Working pressure | | Coupling |
|----------|--------------------------|-------|------|------------------|------|----------------|
| | DN | Inch | Dash | Bar | Psi | Series |
| H1312D* | 20 | 3/4 | -12 | 350 | 5100 | T900 non skive |
| H1316D | 25 | 1 | -16 | 350 | 5100 | T900 non skive |
| H1320D* | 32 | 1.1/4 | -20 | 350 | 5100 | T900 non skive |
| H1324D | 40 | 1.1/2 | -24 | 350 | 5100 | T900 non skive |
| H1332D* | 50 | 2 | -32 | 350 | 5100 | T900 non skive |

16) M2 Textile, (with FS1072 fire sleeve protection only).

Applications: May be used for medium pressure hydraulic oil lines, antifreeze solutions, water.
 For oil lines with fire sleeve protection only.

Product description:

Flexible rubber hoses with permanently attached couplings according to SAE 100R3.

Materials:

Inner tube: Oil resistant synthetic rubber, Nitrile

Reinforcement: 2 textile braids.

Cover: Oil and weather resistant rubber, black.

| Hose No | Hose size ID | | Max. pressure | |
|---------|--------------|----|---------------|-----|
| | Inches | mm | psi | bar |
| M24* | 1/4 | 6 | 1250 | 86 |
| M26 | 3/8 | 10 | 1125 | 78 |
| M28 | 1/2 | 12 | 1000 | 69 |
| M212* | 3/4 | 20 | 750 | 52 |

17) SR, (with FS1072 fire sleeve only).

Applications. May be used for petroleum and water based hydraulic fluids in suction lines or in low pressure return lines. Only with Fire Sleeve FS1072.

Product description:

Flexible rubber hoses with permanently attached couplings according to SAE 100R4.

Materials:

Inner tube: Oil resistant synthetic rubber, Nitrile

Reinforcement: textile braid and spiral wire.

Cover: Oil resistant rubber.

| Hose No | Hose size ID | | Max. pressure | |
|---------|--------------|----|---------------|-----|
| | Inches | mm | psi | bar |
| SR12* | 3/4 | 20 | 300 | 21 |
| SR16 | 1 | 25 | 250 | 17 |



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| | | | | |
|-------|-----|----|-----|-----|
| SR20* | 1 ¼ | 32 | 200 | 14 |
| SR24 | 1 ½ | 40 | 150 | 10 |
| SR32* | 2 | 50 | 100 | 7 |
| SR40 | 2 ½ | 63 | 62 | 4,3 |
| SR48 | 3 | 75 | 56 | 3,9 |

18) RQP5 SURVIVOR (with FS1072 fire sleeve only).

Applications: Medium to high pressure hydraulic systems . . Only with Fire Sleeve FS1072.

Product description:

Flexible hoses with permanently attached couplings according to SAE100R5.

Materials:

Inner tube: Black synthetic rubber

Reinforcement: Polyester inner braid covered with one braid of high tensile steel wire.

Cover: Blue polyester braid.

| Part no. | Hose size inner diameter | | | Working pressure | | Coupling Series |
|----------|--------------------------|----------|------|------------------|------|-----------------|
| | DN | Inch | Dash | Bar | Psi | |
| RQP54 | 5 | 3/16 | -04 | 207 | 3000 | |
| RQP55 | 6 | ¼ | -05 | 207 | 3000 | |
| RQP56 | 8 | 5/16 | -06 | 155 | 2250 | |
| RQP58 | 10 | 13/32 | -08 | 138 | 2000 | |
| RQP510 | 12 | ½ | -10 | 121 | 1750 | |
| RQP512 | 16 | 5/8 | -12 | 103 | 1500 | |
| RQP516 | 22 | 7/8 | -16 | 55 | 800 | |
| RQP520 | 28 | 1- 1/8 | -20 | 43 | 625 | |
| RQP524 | 35 | 1- 3/8 | -24 | 35 | 500 | |
| RQP532 | 46 | 1- 13/16 | -32 | 24 | 350 | |

19) RTH1 TEFLON (with FS1072 fire sleeve only).

Applications: High pressure hydraulic oil systems. Non-conductive hose.

Flexible PTFE hose with permanently attached couplings according to SAE 100R14.

Temp. range: -60 to +100°C for the working pressures given below.

Materials:

Inner tube: PTFE

Reinforcement/cover: One braid stainless steel wire grade 304.

| Part no. | Hose size inner diameter | | | Working pressure | | Coupling Series |
|----------|--------------------------|------|------|------------------|------|-----------------|
| | DN | Inch | Dash | Bar | Psi | |
| RTH14 | 6 | ¼ | -04 | 170 | 2450 | 1RT200 |
| RTH16 | 10 | 3/8 | -05 | 165 | 2375 | 1RT200 |
| RTH18 | 12 | 1/2 | -06 | 120 | 1750 | 1RT200 |
| RTH110 | 16 | 5/8 | -08 | 105 | 1500 | 1RT200 |
| RTH112 | 20 | 3/4 | -10 | 85 | 1250 | 1RT200 |
| RTH116 | 25 | 1 | -12 | 55 | 800 | 1RT200 |

END OF APPENDIX