Marine & Offshore

Certificate number: 50756/B0 BV
File number: ACM 135/2607/10
Product code: 2104I

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

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

Danfoss Power Solutions II GmbH

Baden-Baden - GERMANY

for the type of product

NON-METALLIC HOSES (FLEXIBLE PIPES) ASSEMBLIES

Hydraulic hose assemblies, type: GH681

Requirements:
BUREAU VERITAS Rules for the Classification of Steel Ships
BUREAU VERITAS Rules for the Classification of Offshore Units

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate is a renewal of certificate N° 50756/A1 BV expiring on 25/10/2022

This certificate will expire on: 25 Oct 2027

For Bureau Veritas Marine & Offshore,
At BV HAMBURG, on 28 Jul 2022,
Adama Diene

This certificate was created electronically and is valid without signature

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 Marine & Offshore. 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 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 Marine & Offshore 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 SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

Hydraulic hose assemblies, type: GH681

1.1 Identification and technical data:

Part number	DN	O.D. nominal [mm]	Maximum working pressure [bar]	Min. bending radius [mm]
GH681-3	5	10.9	250	45
GH681-4	6	12.9	255	50
GH681-5	8	14.05	225	55
GH681-6	10	16.3	235	63
GH681-8	12	19.9	221	90
GH681-10	16	22.25	140	100
GH681-12	19	26.0	138	120
GH681-16	25	34.0	103	150
GH681-20	31	41.45	69	210
GH681-24	38	47.9	52	250
GH681-32	51	64	41	315

Temperature range: -46°C up to +126°C

1.2 Materials and components:

Inner tube	Synthetic rubber (NBR)
Reinforcement	Single wire braid
Cover	Synthetic rubber (NBR/PVC)
End fittings	Carbon steel

2. DOCUMENTS AND DRAWINGS:

According to following drawings and documents:

Drawing No.	Rev.	Designation
GH681	R	AEROQUIP HOSE
AGN 7000	A	HOSE STYLE AND FITTING GUIDE
AGN 6000	B	ENGINEERING STANDARD

3. TEST REPORTS:

3.1 Following type tests carried out: Dimensional check, elongation / contraction test, burst pressure test, impulse test according to ES 2850T15, adhesion test according to EN28033, fluid compatibility test (aging) according to ISO 1817, cold flexibility test according to EN 24672, abrasion test according to ISO 6945, ozone resistance test according to ISO 7326, flame test according to ISO 15540.

Test report no. TR-019506A, witnessed by an IACS member, carried out at Eaton Hydraulics, Maumee, Ohio / USA dated: 12-Feb-2017

Test report no. TR-018878A, witnessed by an IACS member, carried out at Eaton Hydraulics, Cerkezkoy / Turkey dated: 14-March-2017

Quality report 1 – 7, witnessed by an IACS member, dated: 15.06.2017

3.2 Fire resistance test according to ISO 15540:

Test report no. 121.0IS0110/17, carried out at LAPI S.p.A. Laboratory, Prato / ITALY dated: 01/03/2017

Test report no. 122.0IS0110/17, carried out at LAPI S.p.A. Laboratory, Prato / ITALY dated: 01/03/2017

Test report no. 123.0IS0110/17, carried out at LAPI S.p.A. Laboratory, Prato / ITALY dated: 07/07/2017

Test report no. 124.0IS0110/17, carried out at LAPI S.p.A. Laboratory, Prato / ITALY dated: 07/07/2017

Test report no. 316.0IS0110/17, carried out at LAPI S.p.A. Laboratory, Prato / ITALY dated: 01/03/2017

4. APPLICATION / LIMITATION:

4.1 May be used for the following media: hydraulic systems with petroleum and water-glycol base fluids, for lubricating oils and water.

4.2 Before using on cargo piping system on board chemical tankers, the compatibility of materials with intended cargoes should be confirmed. The maximum working pressure for cargo piping system is not to exceed one fifth of the burst pressure.

4.3 End fittings as per manufacturer's catalogue. The hoses are to be entirely assembled in the manufacturer's workshop.

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

4.5 The hose assemblies are to be installed according to the Society's Rules requirements and the manufacturer's instructions.

4.6 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.

4.7 The hose assemblies intended for use in piping systems where high levels of vibration are expected to occur in service are to be designed for the maximum expected forces due to vibration. Otherwise, this use is to be subject to special consideration by the Society for each case.

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 The hoses are to be supplied by **Danfoss Power Solutions II GmbH** in compliance with the types and the requirements described in this certificate.

5.2 This type of product is within the category IBV of BUREAU VERITAS Rule Note NR320.

5.3 BUREAU VERITAS product certificate is required.

5.4 For information, **Danfoss Power Solutions II GmbH** has declared to BUREAU VERITAS the following production sites:
Danfoss Power Solutions II GmbH, Baden-Baden / GERMANY and
Danfoss Power Solutions II LLC, Van Wert, Ohio 45891 / USA

5.5 Each hose with end fittings is to be hydraulic pressure tested to 1.5 times the maximum working pressure under witnessing of a Society's Surveyor.

6. MARKING OF PRODUCT:

Each hose with end fittings is to be clearly marked as follows to avoid any wrong utilization:
- Manufacturer's name or logo
- Type designation
- Maximum working pressure
- Maximum and minimum working temperature
- Date of manufacture
- BUREAU VERITAS' marks

7. OTHERS:

7.1 It is **Danfoss Power Solutions II GmbH**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

7.2 This certificate supersedes the Type Approval Certificate N° 50756/A1 BV issued on 15 Jul 2021 by the Society.

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