Certificate number: 84065/A1 BV
File number: .
Product code: 2103I

This certificate is not valid when presented without the full attached schedule composed of 7 sections. Full certificate is to be requested to the manufacturer

www.veristar.com

TYPE APPROVAL CERTIFICATE

This certificate is issued to

ALFAGOMMA HYDRAULIC S.P.A.

CASTELNUOVO VOMANO (TE) - ITALY

for the type of product

METALLIC HOSES (FLEXIBLE PIPES) ASSEMBLIES

Metallic Hoses Assemblies FLEX TREC B (single braid) and FLEX TREC 2B (double braid)

Requirements:
Bureau Veritas Rules for the Classification of Steel Ships
Bureau Veritas Rules for the Classification of Offshore Units
Bureau Veritas Rules for the Classification of Naval Ships
Bureau Veritas Rules for the Classification of Yachts
IGC code as amended by IMO Resolution MSC.566(109)

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 will expire on: 06 Sep 2031

For Bureau Veritas Marine & Offshore,
At BV NAPOLI, on 04 Oct 2026,
Alessandro Asborno

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

Metallic Hoses Assemblies FLEX TREC B (single braid) and FLEX TREC 2B (double braid)

1.1 - Ratings for ordinary machinery:

Nominal Diameter DN (mm)	FLEX TREC B	FLEX TREC 2B
	Design pressure (bar)	
8	110	N/A
10	90	N/A
12	70	120
15	65	95
20	43	85
25	49	75
32	35	60
40	35	45
50	26	42
65	21	27
80	16	22
100	10	20

At elevated temperatures, the design pressure shall be reduced according to the following derating factors, depending on the hose materials:

	Temperature (°C)	20	50	100	150	200	250	300	350	400	450	500	550
Materials	1.4404	1	0.88	0.74	0.67	0.62	0.58	0.54	0.52	0.50	0.48	0.47	0.47
	1.4571	1	0.90	0.81	0.76	0.73	0.69	0.65	0.63	0.61	0.59	0.59	0.58
	1.4541	1	0.92	0.83	0.78	0.74	0.71	0.67	0.64	0.62	0.61	0.60	0.59
	1.4306	1	0.87	0.72	0.65	0.59	0.55	0.51	0.48	0.46	0.45	0.44	0.43
	1.4301	1	0.88	0.73	0.66	0.60	0.56	0.52	0.50	0.48	0.47	0.46	0.42

Design standard: ISO 10380

Temperature range (°C): –55 / +550

The design pressure in relation to temperature must be in conformity with manufacturer's specifications.

1.2 - Ratings for cryogenic application:

Nominal Diameter DN (mm)	FLEX TREC B	FLEX TREC 2B
	Design pressure (bar)	
8	88	N/A
10	72	N/A
12	56	96
15	52	76
20	34	68
25	39	60
32	28	48
40	28	36
50	21	34
65	17	22
80	13	18
100	8	16

Design standard: ISO 10380

Temperature range (°C): –253 / –55

The design pressure in relation to temperature must be in conformity with manufacturer's specifications.

1.3 - Materials

Part	Raw material	Material grade
Hose	Stainless steel	321 / 316L / 316Ti / 304 / 304L / 1.4541 / 1.4404 / 1.4571 / 1.4301 / 1.4306
Braiding		
Ferrule (collar)		

When other choices of materials are used per manufacturer's recommendations, the BV agreement is to be obtained.

2. DOCUMENTS AND DRAWINGS

- Catalogue flexible metal hoses with permanently fitted couplings N° HO\AG-EN Rev.01.1 dated July 2022.
- Drawing N° dwg1 Rev. 00 dated 08/04/2025.
- Drawing N° dwg2 Rev. 00 dated 08/04/2025.
- Use and maintenance manual for corrugated metal hoses Rev. 0 dated 28/08/2022.

No departure from the above documents shall be made without the prior consent of the Society. The manufacturer must inform the Society of any modification or changes to these documents and drawings.

3. TEST REPORTS

3.1 - Type tests report including burst test at 4 times the ordinary machinery design pressure and 5 times the cryogenic design pressure, pliability test, pressure and elongation test.

- Test report N° PPVT/38152 dated 25/02/2022: *FLEX TREC B DN8/16/50/65/100 and FLEX TREC 2B DN 12/32/50/60/100.*

3.2 - Cycle type test reports at ambient temperature:

Sample tested	Test report	Date	Test report	Date	Test report	Date
STF 100 DN 10	DN10 1 BRAID	07/01/2025	SS316/1B304_DN10	03/10/2024	STF100_DN10B	24/09/2024
STF 100 DN 20	DN20 1 BRAID	08/01/2025	SS316/1B304_DN20	03/10/2024	STF100_DN20B	24/09/2024
STF 100 DN 40	DN40 1 BRAID	08/01/2025	SS316/1B304_DN40	02/10/2024	STF100_DN40B	24/09/2024
STF 100 DN 80	DN80 1 BRAID	09/01/2025	SS316/1B304_DN80	02/10/2024	STF100_DN80B	23/09/2024
STF 200 DN 12	DN12 2 BRAIDS	07/01/2025	SS316/2B304_DN12	03/10/2024	STF200_DN122B	23/09/2024
STF 200 DN 25	DN25 2 BRAIDS	08/01/2025	DN25DB	24/02/2025	STF200_DN252B	16/01/2025
STF 200 DN 50	DN50 2 BRAIDS	08/01/2025	DN50DB	25/02/2025	STF200_DN502B	10/01/2025
STF 200 DN 150	DN150 2 BRAIDS	09/01/2025	DN150DB	25/02/2025	STF200_DN1502B	16/01/2025

3.3 - Impulse test not performed.

3.4 - Vibration test not performed.

4. APPLICATION / LIMITATION

4.1 - May be used for cryogenic applications as per *NR 467, Pt D, Ch 9* & *IGC Code*.

4.2 - May be used on the following services on board: Liquid fuel systems - Lubricating, hydraulic and thermal oil systems - Fresh water and seawater cooling systems - Compressed air systems - CO2 systems - Bilge and ballast systems - Refrigeration systems - Class III steam systems.

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

4.4 - The hoses assemblies are to be installed according to manufacturer's instructions and Bureau Veritas Rules.

4.5 - Flexible hoses assemblies for essential services or containing either flammable or toxic media are not to exceed 1.5 meters in length.

4.6 - Not to be used in high pressure fuel oil injection systems in accordance with the relevant requirements stated in *NR 467, Pt C, Ch 1, Sec 10 [2.6.3]* and corresponding requirements in *NR 483, NR 445* and *NR 500.*

4.7 - The use of stainless steel is restricted according to Bureau Veritas Rules *NR 467, Pt C, Ch 1, Sec 10, Table 5* and corresponding requirements in *NR 483, NR 445* and *NR 500.*

4.8 - Tapered threaded end fittings are not to be used in engine rooms, nor in any place containing an ignition source unless otherwise suitably screened at the Society's Surveyor satisfaction.

4.9 - Not to be used in case of high level of vibrations where fitted to engines, pumps, compressors and other sources of high vibrations.

4.10 - Not to be used where pressure impulses may occur.

5. PRODUCTION SURVEY REQUIREMENTS

5.1 - The products are to be supplied by **ALFAGOMMA HYDRAULIC S.p.A.** in compliance with the type and the requirements described in this certificate.

5.2 - This type of product certificate is within the category IBV of Bureau Veritas Rule Note *NR 320*.

5.3 - Bureau Veritas product certificate is required.

5.4 - Each flexible hose, together with its connections, is to undergo a hydrostatic test under a pressure at least equal to 1.5 times the maximum service pressure and provided with the manufacturer's pressure test report and conformity of production.

5.5 - For information, **ALFAGOMMA HYDRAULIC S.p.A.,** has declared to Bureau Veritas the following production sites:

Dunlop Hiflex Oy:	**SITEF SERVICE SRL:**
JASPERINTIE 320	**VIA ATTILIO DI SANTE S.N.**
33960 Pirkkala	**Z.I. SANT'ATTO**
FINLAND	**64100 TERAMO**
	ITALY

6. MARKING OF PRODUCT

Each flexible hose shall at least clearly and indelibly be marked with:

- Manufacturer name or logo
- Date of manufacture (month/year)
- Type designation
- Nominal Diameter
- Pressure rating
- Temperature rating
- Bureau Veritas' Mark

7. OTHERS

It is **ALFAGOMMA HYDRAULIC S.p.A.**'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.

This certificate supersedes the previous Type Approval Certificate No. 84065/A0 BV issued by the Society.

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