



Marine & Offshore

Certificate number: 59150/A0 BV

File number: .

Product code: 2103I

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

HACI AYVAZ END. MAMULLER SAN. VE TIC. A.S.
ISTANBUL - TURKEY

for the type of product

METALLIC HOSES (FLEXIBLE PIPES) ASSEMBLIES
Corrugated Stainless Steel Hoses

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships

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: 20 Apr 2025

For Bureau Veritas Marine & Offshore,

At BV ISTANBUL, on 20 Apr 2020,

Gurcan Yilmaz



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.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

Corrugated Flexible Metal Hoses

1.1 Dimensions and ratings

Design standard: EN ISO 10380

Temperature range: -20°C; +550°C

Screwed connection (as per general assembly drawing)

Nominal Diameter (mm)	8	10	12	16	20	25	32	40	50
Max. Working Pressure (bar)	140	60	55	50	45	40	35	30	27

Floating flange connection (as per general assembly drawing)

Nominal Diameter (mm)	65	80	100
Max. Working Pressure (bar)	17	12	10

The maximum working pressure is not to exceed one quarter of the burst pressure at the service temperature.

1.2 Materials specifications

Hose	AISI 316L / AISI 304
Braid	AISI 304
Band	AISI 304
Fittings	Carbon Steel / Stainless Steel

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

2. DOCUMENTS AND DRAWINGS

- Drawing N° AYV-STD-FMH Rev.2 dated 14/10/2019, General Assembly Drawing Flexible Metal Hose DN8 to DN50
- Drawing N° AYV-STD-FFFF Rev.3 dated 16/10/2019, General Assembly Drawing Flexible Metal Hose DN65 to DN100
- Drawings of fittings and internal parts as provided on 05/09/2019
- Burst test procedure N° LTAL.019 Rev.0 dated 07/05/2012
- Deformation test procedure N° LTAL.020 Rev.0 dated 07/05/2012
- Bend test procedure N° LTAL.016 Rev.0 dated 07/05/2012
- U Bending test N°LTAL.017 Rev.0 dated 07/05/2012
- Fatigue test procedure N° LTAL.079 Rev.0 dated 25/05/2019
- Pressure Impulse test N° LTAL.021 Rev.1 dated 20/10/2017
- Vibration test procedure N° TTAL.4.014 Rev.1 dated 13/12/2018
- Technical datasheet N°FMH-01 Rev.0 dated 11/07/2019
- Certificate of Conformity for materials dated 13/04/2020

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 witnessed by a BV surveyor including burst test at 4 times the design pressure, pliability test, cycle test, pressure and elongation test:

- Test reports N°3428, N°3429, N°3430, N°3431 dated 16/10/2019 and N°3433 dated 18/10/2019
- Test reports N°3435, N°3436, N°3437, N°3438 dated 16/10/2019 and N°3440 dated 21/10/2019
- Test reports N°3442, N°3443, N°3444, N°3445 dated 16/10/2019 and N°3447 dated 24/10/2019
- Test reports N°3449, N°3450, N°3451, N°3452 dated 16/10/2019 and N°3454 dated 27/10/2019

Specimens tested: DN12, DN25, DN65 and DN80

3.2 Impulse tests performed according to EN ISO 10380

- Test reports N°3432, N°3439, N°3446 and 3453 dated 16/10/2019

Specimens tested: DN12, DN25, DN65 and DN80

3.3 Vibration test performed according to according to EN ISO 10380

- Test reports N°3434, N°3441, N°3448 and 3455 respectively dated 16/10/2019, 17/10/2019, 18/10/2019 and 19/10/2019

Specimens tested: DN12, DN25, DN65 and DN80

4. APPLICATION / LIMITATION

4.1 May be used on the following services on board: fuel oil, lubricating oil, hydraulic oil, thermal oil, fresh water, sea water, compressed air systems, bilge, ballast water, Class III steam systems, sprinkler systems.

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

4.3 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 2m. The hoses are to be installed in clearly visible and readily accessible locations at all times.

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

4.5 The use of stainless steel is to be restricted as per the requirements of the Bureau Veritas Rules.

4.6 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.

5. PRODUCTION SURVEY REQUIREMENTS

5.1 The products are to be supplied by **HACI AYVAZ ENDUSTRIYEL MAMULLER SANAYI VE TICARET A.S.** in compliance with the type 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 BV product certificate is required.

5.4 Each hose assembly is to be hydraulically pressure tested to 1.5 times the maximum working pressure and provided with manufacturer's pressure test report and conformity of production.

5.5 For information, **HACI AYVAZ ENDUSTRIYEL MAMULLER SANAYI VE TICARET A.S.** has declared to Bureau Veritas the following production site:

**ATATURK ORGANIZE SANAYI BOLGESI
HADIMKOY MAH. MUSTAFA INAN CAD. NO:44
ARNAVUTKOY
34555 ISTANBUL
TURKEY**

6. MARKING OF PRODUCT

Each metal hose shall be at least permanently marked with:

- Manufacturer's name or trademark
- Date of manufacture (month/year)
- Designation type reference
- Nominal diameter
- Pressure rating
- Temperature rating
- Society's brand as relevant

7. OTHERS

It is **HACI AYVAZ ENDUSTRIYEL MAMULLER SANAYI VE TICARET A.S.**'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.

*** END OF CERTIFICATE ***