



Marine & Offshore

Certificate number: 20128/D0 BV

File number: ACM 135/2011/21

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
TOFLE CO., INC.
Osaka - JAPAN

for the type of product
METALLIC HOSES (FLEXIBLE PIPES) ASSEMBLIES
TFR-3000

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 will expire on: 02 Jul 2029

For Bureau Veritas Marine & Offshore,

At BV KOBE, on 02 Jul 2024,
Shinichi Takemoto

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 electronic version is available at: <http://www.veristarm.com/veristarnb/jsp/viewPublicPdfTypepec.jsp?id=s3gzj2odpa>

BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

TFR-3000 Metallic Flexible Pipe

1.1 Technical data

Size (inch)	Maximum working pressure (MPa)	Maximum working temperature (°C)	Braiding	End connections
3/8 to 2	1.0	300	Single wire braid	Flanged equivalent to JIS 5K and above

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

1.2 Material specification

Tube	SUS 304 / SUS 316L
Braid	SUS 304
Flanges	SUS F304 / SUS F316
Pipes	SUS 304 TP

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

2. DOCUMENTS AND DRAWINGS

- Drawing N° MWF801536-A dated 02/07/2007
- Type test method N° PNO-379-01 dated 27/02/2023

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

- Burst test report dated 22/08/2007
- Test report dated 16/08/2007 including pressure and bending test
- Vibration test report N° V-786 dated 01/03/2024

4. APPLICATION / LIMITATION

4.1 - May be used for the following services on board:

- Fuel oil, lube oil, hydraulic oil, thermal oil, fresh water, steam and compressed air

4.2 - End fittings as per manufacturer's catalogue. 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. When the hoses are intended to be used for essential services or containing either flammable or toxic media, they are not to exceed 1.5 m in length. The hoses are to be installed in clearly visible and readily accessible locations at all times.

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

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

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

5. PRODUCTION SURVEY REQUIREMENTS

5.1 - The products are to be supplied by **TOFLE CO., INC.** 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 metallic flexible pipe with end fittings is to be hydraulically pressure tested to 1.5 the maximum working pressure and provided with the manufacturer's pressure test report and conformity of production.

5.5 - For information, **TOFLE CO., INC.** has declared to Bureau Veritas the following production site:

TOFLE CO., INC.
886-1, Aza-Shiragami, Kawakami, Hagi, 7580141 Yamaguchi, JAPAN

6. MARKING OF PRODUCT

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

- Manufacturer name or logo
- Date of manufacture (month/year)
- Type designation
- Nominal Diameter
- Pressure rating
- Temperature rating
- Society's brand as relevant

7. OTHERS

It is **TOFLE CO., INC.**'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 Type Approval Certificate N° 20128/C0 BV issued by the Society.

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