



Marine &amp; Offshore

Certificate number: 20128/C0 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: 12 Mar 2023**

For Bureau Veritas Marine & Offshore,  
 At BV KOBE, on 12 Mar 2018,  
 Yoshio Asahara



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.veristarp.com/veristarnb/jsp/viewPublicPdfTypec.jsp?id=6hixxiais5>  
 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

- Application form B0708-2 dated 16/08/2007
- Test report dated 22/08/2007
- Drawing N° MWF801536-A dated 02/07/2007

*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

Tests carried out:

- Hydraulic test, burst test, endurance test, elastic deformation test
- Test reports as reviewed on 22/02/2008

### 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 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.

4.3 The installation of hose assemblies is to be in accordance with the manufacturer's instructions to take into consideration forces due to vibration. The hose assemblies are not to be used on services when vibration and/or pressure pulsation test is required in the Society's Rules.

4.4 The hoses are to be entirely assembled in the manufacturer's workshop.

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

### 5. PRODUCTION SURVEY REQUIREMENTS

5.1 The products are to be supplied by **TOFLE OMEGAFLEX 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 twice the maximum working pressure and provided with the manufacturer's pressure test report and conformity of production.

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

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

**6. MARKING OF PRODUCT**

Each metallic flexible pipe shall be at least marked with:

- Manufacturer's name or logo
- Type designation
- Maximum working pressure
- Society's brand as relevant

**7. OTHERS**

It is **TOFLE OMEGAFLEX 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/B0 BV issued by the Society.*

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