



TYPE APPROVAL CERTIFICATE
No. MAC137019PU

This is to certify that the product identified below is in compliance with the regulations herewith specified.

<i>Description</i>	Metallic flexible hoses
<i>Type</i>	TF-3000
<i>Applicant</i>	TOFLE CO., INC. 886-1, AZA-SHIRAGAMI, KAWAKAMI 758-0141 HAGI-CITY, YAMAGUCHI-PREF. JAPAN
<i>Manufacturer</i>	TOFLE CO., INC.
<i>Place of manufacture</i>	886-1, AZA-SHIRAGAMI, KAWAKAMI 758-0141 HAGI-CITY, YAMAGUCHI-PREF. JAPAN
<i>Reference standards</i>	Part C, Chapter 1, Section 10 of RINA Rules
<i>Reference documents</i>	RINA TYPE APPROVAL SYSTEM

Issued in **BUSAN** on **October 24, 2019**. This Certificate is valid until **October 23, 2024**



RINA Services S.p.A.
Young-Kwang Kim

This certificate consists of this page and 1 enclosure

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Reference documents

● **Manufacturer's Documentation**

- Document for Flexible Hose (RINA App.No.PUMC-14641 dated 24 October 2019)

● **Test Reports**

- Burst Pressure Test / Hydrostatic Pressure Test / Pliable Test / Leakage Test / Bend Test
(Type approval test report with test procedure no.PNO-043-02 performed on October 2018.)

Technical characteristics

● **Specification**

DIA.	Length BL	Design Temperature (°C)									
		40		60		150		170		300	
		Tube : SUS304	Tube : SUS316L	Tube : SUS304	Tube : SUS316L	Tube : SUS304	Tube : SUS316L	Tube : SUS304	Tube : SUS316L	Tube : SUS304	Tube : SUS316L
3/8"		7.2 (7.5)	7.2 (7.5)	6.9 (7.2)	6.9 (7.2)	5.7 (6.0)	5.7 (6.0)	5.6 (5.8)	5.6 (5.8)	4.7 (4.9)	4.7 (4.9)
1/2"		4.5 (6.0)	4.5 (6.0)	4.3 (5.8)	4.3 (5.8)	3.6 (4.8)	3.6 (4.8)	3.5 (4.7)	3.5 (4.7)	3.0 (4.0)	3.0 (4.0)
3/4"		3.2 (5.0)	3.2 (5.0)	3.1 (4.8)	3.1 (4.8)	2.6 (4.0)	2.6 (4.0)	2.5 (3.9)	2.5 (3.9)	2.1 (3.3)	2.1 (3.3)
1"		4.2 (4.4)	4.2 (4.4)	4.0 (4.2)	4.0 (4.2)	3.4 (3.5)	3.4 (3.5)	3.3 (3.4)	3.3 (3.4)	2.8 (2.9)	2.8 (2.9)
1 1/4"		2.5 (3.2)	2.5 (3.2)	2.4 (3.1)	2.4 (3.1)	2.0 (2.6)	2.0 (2.6)	1.9 (2.5)	1.9 (2.5)	1.6 (2.1)	1.6 (2.1)
1 1/2"		2.8 (3.8)	2.8 (3.8)	2.7 (3.6)	2.7 (3.6)	2.2 (3.0)	2.2 (3.0)	2.2 (3.0)	2.2 (3.0)	1.8 (2.5)	1.8 (2.5)
2"		1.6 (3.2)	1.6 (3.2)	1.5 (3.1)	1.5 (3.1)	1.3 (2.6)	1.3 (2.6)	1.2 (2.5)	1.2 (2.5)	1.1 (2.1)	1.1 (2.1)

- Design Pressure : MPa, () : Double Braids

- Dwg. no.MWN800231-A

● **Material**

- Tube : SUS 304, SUS316L
- Braid : SUS304
- Ring : SUS304

● **Connection**

- Flange : Dwg. no.WC10088-B
- Union : Dwg. no.WC10089-A, WC10090-A, WC10093-A
- Threaded : Dwg. no.WC10092-A, WC10093-A

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Acceptance Conditions

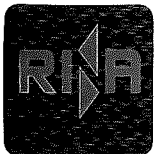
- The acceptance of the above mentioned products on board ships and other units classed with RINA is subject to the satisfactory outcome of testing as per RINA Rules.

Marking

- Manufacturer's name or trademark
- Date of manufacture (month/year)
- Designation type reference
- Nominal diameter
- Maximum design pressure & maximum / minimum design temperatures

Remarks

- The installation of flexible hoses on-board is to be in accordance with the Manufacturer's instructions and with the applicable requirements of Pt C, Ch 1, Sec 10, Para 2.6 of RINA Rules.
- The present Type Approval Certificate annuls and replaces the previously issued certificate no.MAC277815PU/002 on 24/12/2015.



BUSAN October 24, 2019

A handwritten signature in black ink, appearing to be 'U. L.', is written below the date and location.