



**TYPE APPROVAL CERTIFICATE**  
**No. MAC393324CS**

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

<i>Description</i>	<b>Non metallic flexible hoses</b>
<i>Type</i>	<b>TUBIFLON TX.T.88XX.XX</b>
<i>Applicant</i>	<b>TUBIFLEX S.P.A. STRADA TORINO 25 10043 ORBASSANO (TO) ITALY</b>
<i>Manufacturer</i>	<b>TUBIFLEX S.P.A.</b>
<i>Place of manufacture</i>	<b>VIA PLAVA, 98/C 10135 Torino (TO) ITALY</b>
<i>Reference standards</i>	<b>Parte C, Cap. 1, Sez. 10 delle Norme del RINA</b>

*Issued in* **Genoa** on **September 4, 2024**. *This Certificate is valid until* **September 3, 2029**

---

**RINA Services S.p.A.**  
**Rosario Pitruzzo**

This certificate consists of this page and 1 enclosure

TYPE APPROVAL CERTIFICATE

No. **MAC393324CS**

Enclosure - Page 1 of 1

TUBIFLON TX.T.88XX.XX

**Reference documents**

DWG. TX.T.8850/C - PPVT/46673

Tubiflex Catalogue - D10 (hoses series TUBIFLON); G120 (fittings) - PPVT/46672

**Reference standard**

Design characteristics as per item 3.3 of ISO 7313 standard / Aircraft - High temperature convoluted hose assemblies in polytetrafluoroethylene (PTFE).

**Materials**

Hose material: convoluted hose with helical corrugations in multilayer PTFE core, reinforced with anti-abrasion fiberglass covering, and high tensile steel braid 1.4301 EN 10088-3 (AISI 304); additional black conductive PTFE layer available (TX.T.88XX.50 - white PTFE; TX.T.88XX.51 - black conductive PTFE).

Fittings: Carbon steel, Stainless steel - insert: TX.R.XXXX fittings and flanges; collar: TX.S.1213.

**Technical characteristics**

Design pressure at ambient temperature according to the following table:

Hose code	Nominal diameter		Maximum working pressure (bar)
	in	mm	
TX.T.88XX.XX.010	3/8"	10	125
TX.T.88XX.XX.012	1/2"	13,2	105
TX.T.88XX.XX.016	5/8"	16	100
TX.T.88XX.XX.020	3/4"	19,5	90
TX.T.88XX.XX.025	1"	25,5	80
TX.T.88XX.XX.032	1 1/4"	32	64
TX.T.88XX.XX.040	1 1/2"	38,5	53
TX.T.88XX.XX.050	2"	51	35
TX.T.88XX.XX.065	2 1/2"	64,5	25
TX.T.88XX.XX.075	3"	76,5	20

TYPE APPROVAL CERTIFICATE

No. **MAC393324CS**

Enclosure - Page 2 of 2

TUBIFLON TX.T.88XX.XX

**Fields of application**

Hydraulic systems, with hydraulic oil having flash point higher than 150°C (closed cup test).

Compressed air and inert gas systems.

Heating and cooling systems (fresh water and sea water), sanitary systems.

**Acceptance conditions**

The installation onboard is to be carried out in accordance with Manufacturer's instructions and with the requirements of Para. 5.9.3 of Pt C, Ch 1, Sec 10 of RINA Rules.

Hoses can be used for pulsating pressure applications, provided that maximum pulsating pressure does not exceed 50% of rated maximum working pressure.

The acceptance of the products for fuel oil and lubricating oil systems is subject to the following conditions:

where hoses are to be used in oil supply lines to burners, they are to have an additional external wire braid protection according to para. 2.6.2 of Pt C, Ch 1, Sec 10 of RINA Rules;

for ships flying EC flag, the hoses are also to be certified in compliance with Marine Equipment Directive (MED) 96/98/EC as amended;

for ship not flying EC flag, the flexible hoses are also to be approved by the flag Administration.

For installation on services for which fire resistance is requested (e.g.: sea water systems where failure may result in flooding) hoses are to be Type Approved as fire-resistant (fire resistance to be demonstrated by testing in accordance with ISO 15540/15541).

The hoses are not intended for installation in services where high vibration levels are expected.

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

The product (hose and fittings) is to be marked, for traceability, with the following data:  
manufacturer's name or trademark, designation type reference, nominal diameter, design pressure and temperature, date of manufacture.

**Remarks**

The present Certificate annuls and replaces the previous one No. MAC013319CS.

Genoa September 4, 2024



## Production Quality Assurance Certificate

CERTIFICATE Nr. **PQA020123MI/001**

***This is to certify that RINA** did undertake the examination of the equipment identified below with the criteria for the Production Quality Assurance set-up in the “Rules for Testing and Certification of Marine Materials and Equipment”.*

*Description*

**Non metallic flexible hoses**

*Type*

**TUBIFLON TX.T.88XX.XX**

*Applicant*

**TUBIFLEX S.P.A.**

STRADA TORINO 25  
10043 ORBASSANO (TO)  
ITALY

*Type Approval  
certificate*

Number

**MAC393324CS**

Date

**04/09/2024**

*Issued in* RINA Milan Marine  
*on*  
September 13, 2024

*This Certificate is valid until*  
September 3, 2029

*This Certificate consists of this sheet plus an attachment*

*This certificate is relevant to the verification of the effectiveness of the quality assurance system adopted by the Manufacturer and applied for production, inspection and testing during manufacturing and on finished products, to guarantee the required characteristics of the products covered by relevant Type Approval certificates.*

Firmato digitalmente da MICHELE  
FUSCO  
DN: cn=MICHELE FUSCO, c=IT,  
ou=RINA SERVICE SPA,  
email=FUM@RINA.ORG  
Località: Genova  
Data: 2024.09.13 11:45:23 +02'00'

**Michele Fusco**

**RINA Services S.p.A.**



**ATTACHMENT TO  
CERTIFICATE Nr. PQA020123MI/001**

*Equipment:*

**TUBIFLON TX.T.88XX.XX**

*Manufacturer*

**TUBIFLEX S.P.A.**

*Place of Manufacturer*

VIA PLAVA

98/C

10135 Torino (TO)

ITALY

*Technical documentation*

INTERMEDIATE SCHEDULED AND UNSCHEDULED AUDITS			
Due Date	Carried out on	Surveyor's signature	Surveyor's stamp
06/02/2025			

***General conditions for the approval***

- a) The initial conditions verified by RINA at the time of the approval are to be maintained
- b) Any changes to the initial conditions are to be promptly communicated to RINA, which reserves the right to repeat the relevant assessment
- c) RINA personnel are to be allowed to witness during the performances of activities, upon their request
- d) The activities are to be carried out in compliance with the RINA Rules and/or other applicable Rules
- e) RINA may revoke the approval in the case of modifications to requirements or conditions for the approval
- f) Should the specified regulations or standards be amended during the validity of this certificate, the product is to be reapproved prior to it being placed on board vessels to which the amended regulations or standards apply.
- g) This certificate loses its validity in case the Type Approval certificate is no more valid.

**Michele Fusco**

**RINA Services S.p.A.**