



TYPE APPROVAL CERTIFICATE
No. MAC012825YC

This is to certify that the product identified below satisfies the requirements of the standard quoted under "Reference standard"

<i>Description</i>	MECHANICAL JOINTS FOR PIPES
<i>Type</i>	PYPLOK DM series (DM20, DM60, DM80), PYPLOK DP40 series (DP40N & DP40M)
<i>Applicant</i>	Tube-mac Piping Technologies Ltd. 853 Arvin Ave, Stoney Creek L8E 5N8 Ontario CANADA
<i>Manufacturer</i>	Tube-mac Piping Technologies Ltd.
<i>Place of manufacture</i>	853 Arvin Ave, Stoney Creek L8E 5N8 Ontario CANADA
<i>Reference standards</i>	Part C, Chapter 1, Section 10 of RINA Rules ; NC/C.58 Rules for the type approval of mechanical joints for pipes 2025

Issued in **RIO DE JANEIRO** *on* **September 22, 2025.** *This Certificate is valid until* **September 22, 2030**



Carolina Vasconcellos Teles

**RINA Services S.p.A.
Carolina Vasconcellos Teles**

This certificate consists of this page and 1 enclosure



TYPE APPROVAL CERTIFICATE

No. **MAC012825YC**

Enclosure - Page 1 of 5

PYPLOK DM series (DM20, DM60, DM80), PYPLOK DP40 series (DP40N & DP40M)

Product description

Mechanical Joints for pipes, Swage Type compression coupling approval Fire-Resistant Type in accordance with ISO 19921/2, 8min Dry / 22min Wet Test.

Reference documents

Leakage test reports C5126A dated 2009-07-31 & C7513A dated 2009-08-01
Gas Leakage test reports C5126C & C7513C dated 2009-08-01
Impulse test reports C5126D & C7513D dated 2009-08-01
Southwest research institute pull out test report 18.18055.16.612 dated 2016-10-11
Pull-out test report SwRI 18.18055.18.108 witnessed by DNV GL surveyor dated 2018-03-21 (DP40N – 4")
Burst pressure test reports C5126B dated 2009-07-31 & C7513B dated 2009-08-01
Burst Pressure test & Leakage test report witnessed by DNVGL surveyor dated 2018-04-13 (DP40N – 4")
Burst pressure test and tightness test reports stamped as witnessed by DNV dated 2020-05-28
Vibration test reports C5126E & C7513E dated 2009-08-01
Vibration and impulse test report dated 2018-10-01 (DP40N – 4")
Pull out test report number 18.18055.20.110 issued by Southwest Research institute dated 2020-08-06
Renewal burst pressure test reports: DNV-001, DNV-002, DNV-003
Southwest research institute fire test report 01.14432.01.205a dated 2009-04-27 & 01.14432.01.205b dated 2009 & 01.17787.01.802 dated 2013-03-14
Fire test report number 01.24919.01.608 issued by Southwest Research institute dated 2020-07-28
Fire test report SwRI 01.23234.18.402 dated 2018-04-13 (DP40N – 4")
Fire test report : No. 01.28401.24.202i, No. 01.28401.24.202e, No. 01.28401.24.202c, No.01.28401.24.202a, No 01.28401.24.202g issued by Southwest Research Institute dated 2024-10-07
Fire test report : No.01.28401.01.206c, No.01.28401.01.206h, NO.01.28401.01.206a, NO.01.28401.01.206d issued Southwest Research Institute dated 2024-09-10
Fire test report No. 01.28401.01.206a Dated: 2024-06-13
Fire test report No. 01.28401.01.206d Dated: 2024-06-14
Fire test report No. 01.28401.24.202a Dated: 2024-10-07
Fire test report No. 01.28401.01.206c Dated: 2024-06-12
Fire test report No. 01.28401.01.206h Dated: 2024-06-13
Fire test report No. 01.28401.24.202c Dated: 2024-09-03
Fire test report No. 01.28401.24.202e Dated: 2024-08-29 and 2024-09-03
Fire test report No. 01.28401.01.206h Dated: 2024-06-13
Fire test report No. 01.28401.24.202c Dated: 2024-08-29 and 2024-09-03
Fire test report No. 01.28401.24.202i Dated: 2024-08-29 and 2024-09-03
Fire test report No. 01.28401.24.202g Dated: 2024-08-29 and 2024-09-03
Material Report data sheet for correction in Viton's maximum and minimum Temperature
Material Report data sheet for correction in EPDM's maximum and minimum Temperature
TAO APP dated 2025-07-2025
Offer n. 2025/13952 accepted on 06/16/2025
The documents above-mentioned have been archived in the Leonardo Draw Plus portal under the project:
<https://leodrawplus.rina.org/projects/68525/detail>

Materials

Fittings	Carbon Steel (ASTM A350 Grade LF2, ASTM A105) Stainless Steel (ASTM A479 Grade 316/316L, Grade S32205, Grade S32750) Copper Nickel (Alloy 71500 - 70/30 CuNi, Alloy 70600 - 90/10 CuNi)
O-ring	NBR Viton EPDM

TYPE APPROVAL CERTIFICATE**No. MAC012825YC****Enclosure - Page 2 of 5****PYPLOK DM series (DM20, DM60, DM80), PYPLOK DP40 series (DP40N & DP40M)****Maximum working pressure****DM20:**

Size	Stainless Steel	Carbon Steel	Copper Nickel
¼" (DN8)	415 bar	345 bar	269 bar
3/8" (DN10)	415 bar	345 bar	269 bar
½" (DN15)	407 bar	339 bar	264 bar
¾" (DN20)	400 bar	333 bar	260 bar
1" (DN25)	393 bar	328 bar	255 bar
1 ¼" (DN32)	390 bar	325 bar	253 bar
1 ½" (DN40)	390 bar	325 bar	253 bar
2" (DN50)	330 bar	276 bar	215 bar

DM60:

Size	Stainless Steel	Carbon Steel	Copper Nickel
¼"	483 bar	402 bar	313 bar
3/8"	400 bar	333 bar	260 bar
½"	420 bar	350 bar	273 bar
5/8"	420 bar	350 bar	273 bar
¾"	414 bar	345 bar	269 bar
1"	400 bar	333 bar	260 bar
1 ¼"	400 bar	333 bar	260 bar
1 ½"	390 bar	325 bar	253 bar
2"	330 bar	275 bar	215 bar

DM80:

Size	Stainless Steel	Carbon Steel	Copper Nickel
6	450 bar	375 bar	390 bar
8	430 bar	355 bar	370 bar
10	415 bar	345 bar	360 bar
12	400 bar	335 bar	345 bar
15	400 bar	335 bar	- bar
16	400 bar	335 bar	345 bar
18	310 bar	260 bar	- bar
20	390 bar	325 bar	335 bar

TYPE APPROVAL CERTIFICATE**No. MAC012825YC****Enclosure - Page 3 of 5****PYPLOK DM series (DM20, DM60, DM80), PYPLOK DP40 series (DP40N & DP40M)****DM80:**

Size	Stainless Steel	Carbon Steel	Copper Nickel
22	305 bar	255 bar	- bar
25	390 bar	325 bar	335 bar
28	300 bar	325 bar	- bar
30	390 bar	325 bar	335 bar
35	295 bar	245 bar	- bar
38	390 bar	325 bar	335 bar
42	390 bar	325 bar	335 bar
50	350 bar	295 bar	305 bar
60	330 bar	275 bar	285 bar

DP40N:

Size	Stainless Steel	Carbon Steel	Copper Nickel
2 1/2" (DN65)	35 bar	35 bar	25 bar
3" (DN80)	35 bar	35 bar	25 bar
4" (DN100)	35 bar	35 bar	25 bar

DP40M:

Size	Stainless Steel	Carbon Steel	Copper Nickel
44.5 (DN40)	N/A	N/A	31 bar
57 (DN50)	N/A	N/A	31 bar

TYPE APPROVAL CERTIFICATE

No. MAC012825YC

Enclosure - Page 4 of 5

PYPLOK DM series (DM20, DM60, DM80), PYPLOK DP40 series (DP40N & DP40M)

Application of the referred compression couplings and their acceptable use for each service are indicated in the following table:

Systems	Classification of pipe system	Compression Coupling
Flammable fluids (flash point $\leq 60^{\circ}\text{C}$)		
1. Cargo oil lines (1)	dry	+
2. Crude oil washing lines (1)	dry	+
3. Vent lines (3)	dry	+
Inert Gas		
4. Water seal effluent lines	wet	+
5. Scrubber effluent lines	wet	+
6. Main lines (1) (2)	dry	+
7. Distributions lines (1)	dry	+
Flammable fluids (Flash point $> 60^{\circ}$)		
8. Cargo oil lines (1)	dry	+
9. Fuel oil lines (2) (3)	wet	+
10. Lubricating oil lines (2) (3)	wet	+
11. Hydraulic oil (2) (3)	wet	+
12. Thermal oil (2) (3)	wet	+
Sea Water		
13. Bilge lines (4)	dry/wet	+
14. Permanent Water filled fire extinguishing systems, e.g. fire main, sprinkler systems (3)	wet	+
15. Non-permanent water filled fire extinguishing systems, e.g. foam, drencher systems and fire main (3)	dry/wet	+
16. Ballast system (4)	wet	+
17. Cooling water system (4)	dry	+
18. Tank cleaning services	dry	+
19. Non-essential systems	dry dry/wet wet	+
Fresh water		
20. Cooling water system (4)	wet	+
21. Condensate return (4)	wet	+
22. Non-essential system	dry dry/wet wet	+
Sanitary/Drains/Scuppers		
23. Deck drains (internal) (5)	dry	+
24. Sanitary drains	dry	+
25. Scuppers and discharge (overboard)	dry	+
Sounding/Vent		
26. Water tanks/Dry spaces	dry, wet	+
27. Oil tanks (f.p. $> 60^{\circ}\text{C}$) (2) (3)	dry	+
Miscellaneous		
28. Starting/Control air (4)	dry	+
29. Service air (non-essential)	dry	+
30. Brine	wet	+
31. CO2 system (outside protected space)	dry	+
32. CO2 system (inside protected space)	dry	+
33. Steam	wet	+

Abbreviations:

+ Application is allowed

If mechanical joints include any components which readily deteriorate in case of fire the following footnotes are to be observed:

(1) Fire endurance test is to be applied when mechanical joints are installed in pump rooms and open decks.

(2) Approved fire-resistant types except in cases where such mechanical joints are installed on open decks, as defined in SOLAS II-2/Reg. 9.2.3.3.2.2(10) and not used for fuel oil lines.

(3) Fire endurance test is to be applied when mechanical joints are installed inside machinery spaces of category A.

(4) Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.

TYPE APPROVAL CERTIFICATE**No. MAC012825YC****Enclosure - Page 5 of 5****PYPLOK DM series (DM20, DM60, DM80), PYPLOK DP40 series (DP40N & DP40M)*****Temperature range (°C) depending on sealing material according to manufacturer's recommendations***

O-ring seal	Temperature (°C)
NBR	-20°C / +180°C
Viton	-26°C / +205°C
EPDM	-55°C / +205°C

Acceptance conditions

The installation on board of mechanical joints is to be made in accordance with the Manufacturer's assembly instructions and as per Part C, Chapter 1, Section 10, Article. 2.4.5 of RINA Rules for Ships. Where special tools and gauges are required for installation of the joints, these are to be supplied by the Manufacturer.

RIO DE JANEIRO September 22, 2025