



Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

| | |
|----------------------------|--|
| Manufacturer | Tube-Mac Industries Ltd. |
| Address | 853 Arvin Avenue, Stoney Creek, L8E 5N8, Canada |
| Place of Production | Tube-Mac Industries Ltd. 853 Arvin Avenue, Stoney Creek, L8E 5N8, Canada |
| Type | Retain Ring Flanges |
| Description | 4 and 8 bolt loose slip-on retain ring flanges |
| Trade Name | RFC34, RFC64, RFC74, RFAC48 |
| Application | Marine and offshore piping systems in accordance with the limitations and conditions as stated in other conditions Applications: <ul style="list-style-type: none">• Sanitary systems• Cooling Water systems• Fuel oil systems• Lubricating systems• Gas systems• Compressed air systems• Hydraulic systems |

237 Brownlow Avenue, Suite 200, Dartmouth, NS.
B3B2C7, Canada

Praveen Dwarakanath

Specialist-Engineering Systems to Lloyd's
Register Canada Limited
A member of the Lloyd's Register group

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.



Type Approval Certificate

Specified Standard ISO 6162-1:2012
ISO 6162-2:2018
ISO 6164:1994
Lloyd's Register Rules and Regulations for Ships, July 2022, Part.5, Chapter.12

Ratings see Appendix 1

Other Conditions

1. Maximum conditions for the fittings for which the manufacture's material test certificate is acceptable is when the working temperature is less than 300° C and DN < 50 mm or working pressure multiplied by the DN is less than 2500.
2. Charpy Impact Testing to be as per Chapter 2 of Lloyd's Register Rules and Regulations- Rules for the Manufacture, Testing and Certification of Materials
3. The wall thickness and material of tubes to be in accordance with the current Lloyd's Register Rules and Regulations.
4. The approval is only valid when the couplings are assembled with tubing of correct tolerances as recommended by the manufacturer.
5. Fittings, which rely on elastomeric sealing material in systems carrying flammable fluids, are to be fire tested to an approved national standard.
6. Retain ring flanges are not to be installed in systems subjected to vacuum.
7. Working pressure for flange connections made from Stainless Steel used at elevated temperatures conforming to ISO 6162-1 & ISO 6162-2, shall be reduced by 4% for temperatures from +50°C up to 100°C and by 11% for temperatures from +100°C up to 200°C.
5. For Flammable fluids, retain ring flanges are not accepted inside machinery spaces of Category A or accommodation spaces. They may be acceptable in other machinery spaces provided the joints are located in easily visible and

237 Brownlow Avenue, Suite 200, Dartmouth, NS.
B3B2C7, Canada

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.



Type Approval Certificate

accessible positions.

This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register Canada Limited of any modification or changes to the equipment in order to obtain a valid Certificate.

Previous Version: 08/60012(E4)

The Design Appraisal Document LR22501065TA and its supplementary Type Approval Terms and Conditions form part of this Certificate.

237 Brownlow Avenue, Suite 200, Dartmouth, NS.
B3B2C7, Canada

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.



**ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR22501065TA****Appendix****1. Ratings:**

| Model | Diameter (DN) | Max Working Pressure(bar) | Temperature range (°C) |
|-----------|---------------|---------------------------|------------------------|
| RFC34-050 | 13 | 350 | -20 to +120 |
| RFC34-075 | 19 | 350 | |
| RFC34-100 | 25 | 350 | |
| RFC34-125 | 32 | 274 | |
| RFC34-150 | 38 | 210 | |
| RFC34-200 | 51 | 210 | |
| RFC34-250 | 64 | 175 | |
| RFC34-300 | 76 | 140 | |
| RFC34-400 | 101 | 35 | |
| RFC64-050 | 13 | 420 | |
| RFC64-075 | 19 | 420 | |
| RFC64-100 | 25 | 420 | |
| RFC64-125 | 32 | 420 | |
| RFC64-150 | 38 | 420 | |
| RFC64-200 | 51 | 420 | |
| RFC74-250 | 64 | 400 | |
| RFC74-300 | 76 | 400 | |
| RFC74-400 | 100 | 400 | |

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.



ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR22501065TA

| | | | |
|------------|-----|-----|--|
| RFAC48-500 | 127 | 274 | |
| RFAC48-600 | 152 | 255 | |
| RFAC48-800 | 203 | 240 | |

