

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	Roxtec International AB
Address	Box 540, S-37123, Karkskrona, Sweden
Type	Watertight And Gastight Bulkhead Seals
Description	Cable & Pipe Penetrations TB 65/30 & 105/54 with fixed diameter inserts for use with single or multiple cables/pipes TB 65/8-30 & TB 105/24-54 with multidiameter, peelable inserts (8-30mmØ or 24-54mmØ) for use with a single cable/pipe
Trade Name	Roxtec TB-series seals with fixed or multidiameter technology
Application	Cable& Pipe Penetrations for use in tank boundary divisions
Specified Standard	Lloyd's Register Rules and Regulations for Classification of Ships 2021 Lloyd's Register Rules and Regulations for Classification of Special Service Crafts 2021 Lloyd's Register Rules and Regulations for Classification of Offshore Units 2020
Ratings	Continuous 6.6 bar water tightness (40% of test pressure - 16.5 Bar) Continuous 1.2 bar gas tightness (40% of test pressure - 3 BarHelium)

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Additional Tests

Vibration test according to DNVGL-CG-0339 Sec 3-6 Vibration Class A. Two TB seals were tested and witnessed by DNV:

- (1) Applied spring pressure of 5000N equivalent to an applied pressure of 6.6 bar with a pipe/cable diameter of 38mm.
- (2) One seal without pressure in case this would be more sensitive to vibration.

After successful vibration test, both seals were applied 6,6 bar water pressure. No water leaks registered within a test period of 6 hours.
Pressure tests with water and helium according to DNV GL class program DNVGL-CP-0165 dated 2017-10.

Other Conditions

The approval is limited for use in tank Boundary divisions only and the penetrations should not be installed in fire rated divisions.
All penetrations should be installed as per manufacture's specified procedures. The materials of the penetrations should be compatible with liquid medium exposed and this should be confirmed with the manufacturer of the penetrations.
Penetrations in general should be installed as far as practicable, on top or topside of the tank boundary division however, at least within the top 2/3rd of the tank boundary wall.
This approval is limited to the applicable or maximum pressure rating of the tank being protected. Application should fall within the approved test pressure ratings of the seal with suitable safety margin stated in the Ratings section above.

Intermediate PQA assessment is due in third quarter of 2024.

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 North America, Inc. of any modification or changes to the equipment in order to obtain a valid Certificate.

The Design Appraisal Document PRJ11100341630/001/GN and its supplementary Type Approval Terms and Conditions form part of this Certificate.