Certificate No: LR25305916TA
Issue Date: 18/11/2023
Expiry Date: 17/11/2028

# 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** | **LOROWERK** |
| **Address** | K.H. Vahlbrauk GmbH & Co. KG, Kriegerweg 1, Bad Gandersheim, 37581, Germany |
| **Type** | Metal Pipes |
| **Description** | Precision pipes, form pieces, deck and bulkhead penetrations from material galvanised steel, stainless steel or CuNiFe with sealing elements from either SBR, NBR, EPM, VMQ or LORO-X/VAC and LORO-XC/VAC with sealing element EPDM. |
| **Trade Name** | LORO-X, LORO-X/VAC LORO-XC, LORO-XCL, LORO-XC/VAC LORO-VAC-CuNiFe |
| **Application** | On ships and offshore installations classed or intended for Classification with Lloyd's Register as scuppers above freeboard deck and below in enclosed spaces and machinery compartments without direct overboard connection, as sanitary drain pipes for grey and black water also through critical areas, e.g. kitchens, food stores, pantries and accommodation areas. Connections through Type A-bulkheads by LORO pipe penetrations. LORO-X anchor clip is approved for use in LORO piping systems. It is furthermore approved for LORO-X and XCL piping systems intended to be used in wet fire main, deck wash-, water spray-, sprinkler and foam firefighting systems. |
| **Specified Standard** | Lloyd's Register Rules and Regulations for the Classification of Ships 2025 |

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**Dirk Schroeder**

Engineering Piping - Specialist to Lloyd's Register EMEA
A member of the Lloyd's Register group

71 Fenchurch Street, London, EC3M 4BS, United Kingdom

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**Ratings**

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|---|---|
| LORO-XCL | DN 40 to DN 150 |
| LORO-X, LORO- XC | DN 40 to DN 200 |
| LORO-X/VAC and LORO-XC/VAC | DN 40 to DN 70 |
| LORO-VAC CuNiFe | DN 40 to DN 50 |

All vacuum pipes, sizes DN 40 to DN 70 will be equipped with sealing element EPDM, Art. No. 918 X.
LORO-X Anchor Clips for pressure pipes DN 50 – DN 125 up to 12 bar

**Other Conditions**

At pressure exceeding 0.5 bar LORO securing /retaining clips are to be used against axial thrust. For penetrations through watertight bulkheads valves with control from above WT bulkhead deck are to be fitted or for closed systems the additional LORO-X pressure clamp may be acceptable.

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 EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

**Previous Version:** LR21188676TA-02

The Design Appraisal Document HMD 11552-03, Issue Number 5 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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