



CERTIFICATE NUMBER	21-2137203-PDA
EFFECTIVE DATE	26-Jul-2021
EXPIRY DATE	25-Jul-2026
ABS TECHNICAL OFFICE	Hamburg Engineering Department

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

LOROWERK K.H. VAHLBRAUK GMBH & CO. KG

located at

KRIEGERWEG 1, D-37581 BAD GANDERSHEIM, Germany

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: Steel Pipes
Model: LORO-X, LORO-XCL, DN 40 to DN 150; LORO-X Anchor Clip for Pressure Pipes, DN 50 to DN 125; A60-Pipe Penetrations
Endorsements:
Tier: 2 - PDA Issued

This Product Design Assessment (PDA) Certificate remains valid until 25/Jul/2026 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

Efstratios Maliatsos, Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

LOROWERK K.H. VAHLBRAUK GMBH & CO. KG

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Product: Steel Pipes

Model: LORO-X, LORO-XCL, DN 40 to DN 150; LORO-X Anchor Clip for Pressure Pipes, DN 50 to DN 125; A60-Pipe Penetrations

Endorsements:

Intended Service:

Gravity and vacuum discharge for Class III grey and blackwater systems and scupperpipe-lines. Furthermore, intended to be used in wet fire main and deck wash-, water spray-, sprinkler- and foam fire fighting systems.

Description:

Welded and sized precision steel tubes, deck and bulk head penetrations made of galvanized steel or stainless steel with adequate sealing elements from either SBR, NBR, EPDM, VMQ.

Rating:

LORO-X: DN 40 to DN 150 (hot dip galvanized steel pipe with special coating inside).

LORO-XCL: DN 40 to DN 150 (stainless steel pipe, 1.4404).

LORO-X Anchor Clip for pressure pipes DN 50 to DN 125.

A-60-Pipe Penetrations through A-Class decks and bulkheads (internal pipe material 1.4571 and welding ring material 1.4301 or internal pipe material E195 EN 10305 hot dip galvanized steel with special coating inside and welding ring material S355 J2H EN 10210-1 hot dip galvanized).

Service Restriction:

- 1) Unit Certification is not required for this product. If the manufacturer or purchaser requests an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.
- 2) Structural insulation approved by the Administration is to be applied for class "A-60" deck and bulkhead penetrations of at least 450 mm effective length on the insulated side of the deck and 450 mm for the bulkhead.
- 3) The pipes can be used above the freeboard deck and below in enclosed spaces and machinery spaces without direct overboard connections.
- 4) At watertight bulkhead penetrations a shut off valve is to be installed operable from above the freeboard deck.
- 5) The components are to be installed in a location where leakage would not create a hazard by way of damage to electrical systems or otherwise create a hazard to the vessel, equipment or personnel on board.
- 6) Ample provision is to be made to take care of expansion or contraction stresses in pipes due to temperature changes or working of the hull.
- 7) LORO-X Anchor Clips are not to be used in systems in which pressure pulsation occurs.

Comments:

- 1) Pipes, form pieces and couplings are to be installed in accordance with the manufacturer's recommendations.
- 2) In addition to "Class A-60" deck and bulkhead penetrations the referenced LORO-pipes have also satisfactorily undergone the relevant fire test for "class A-0" transitions. For other division penetrations the opening around the pipe is to be tight and maintain the integrity of the division.
- 3) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
- 4) The manufacturer's Trademark, pressure/temperature rating and material identification, as applicable, must be stamped or cast on the component.

Notes/Drawing/Documentation:

See Attached File.

Terms of Validity:

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STANDARDS

ABS Rules:

2021 Rules for Condition of Classification: 1-1-4/7.7, 1-1-A3 and 1-1-A4, which covers the following:
2021 Rules for Building and Classing Marine Vessels Rules: 4-6-1/3.7 4-6-1/5, 4-6-1/7.1, 4-6-1/Table 1, 4-6-1/Table 2, 4-6-2/3.1.1, 4-6-2/5.9, 4.6.2/9.7.

National:

DIN EN 1123-1:2004-12
DIN EN 1123-2:2007-12
DIN EN 1123-3:2005-02
DIN EN 1124-1:2004-12
DIN EN 1124-2:2014-08
DIN EN 1124-3:2009-02
DIN EN 1124-4:2014-02

International:

DIN EN ISO 15749-1:2004-09

Government:

NA

EUMED:

NA

OTHERS:

NA