



CERTIFICATE NUMBER	25-0344741-PDA
EFFECTIVE DATE	22-Sep-2025
EXPIRY DATE	21-Sep-2030
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

ROTH HYDRAULICS GMBH

located at

LAHNSTRASSE 34, , D-35216 BIEDENKOPF, 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.

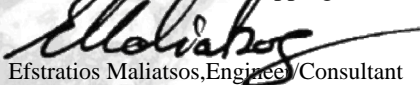
Product: Accumulator, Piston
Model: AK...-210-18
Endorsements:
Tier: 5 - Unit Certification Required

This Product Design Assessment (PDA) Certificate remains valid until 21/Sep/2030 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)

ROTH HYDRAULICS GMBH

LAHNSTRASSE 34

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Germany

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Email: service@roth-hydraulics.de

Web: www.roth-hydraulics.de

Tier: 5 - Unit Certification Required

Product: Accumulator, Piston

Model: AK...-210-18

Endorsements:

Intended Service:

For installation in hydraulic and fluid systems.

Description:

Seamless piston type hydraulic accumulators.

Capacity (ltr.): 2 to 95

Shell Thickness (mm): 15

Length A, approx. (mm): 390 to 4045

Material Grade of Shell/ Cap: P355N (DIN EN 10216-3) or P355NL1 (DIN 10216-3) or P460NL1/ P460NL2 (DIN 10216-3) - All with DIN EN 10204-3. 2 certificate

Applicable to non corrosive hydraulic fluid and nitrogen.

Rating:

Max. Allowable Working Pressure (bar): 210

Test Pressure (bar): 315

Working Temperature Range (°C): -20 to +80

Service Restriction:

1. Unit Certification is required for this product as per 4-4-1/Table 3 of the Rules for Building and Classing Marine Vessels.
2. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments:

1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2. Low temperature impact testing of materials for pressure retaining parts is to be carried out in accordance with the requirements of 2-3-2/9 of the Marine Vessels Rules to the satisfaction of the attending Surveyor.
3. Upon installation, each accumulator which may be isolated from the system is to be protected by its own relief valve or equivalent device in accordance with Section 4-6-7/3.5.4 of the Marine Vessels Rules.
4. Upon installation on board the final destination, safety relief valves are to be provided and set at pressure not exceeding the Maximum Allowable Working Pressure of the Accumulator.
5. Witnessed pressure testing is required in accordance with 4-4-1/7.11.2 of the Rules for Building and Classing Marine Vessels and is not to be less than 1.3 times the maximum allowable working pressure.
6. Materials, including welding consumables are to be certified by the material manufacturers as meeting the material specifications concerned. Certified mill test reports, traceable to the material concerned, are to be presented to the Surveyor for information and verification in all cases, as per 4-4-1/3.5 of Marine Vessel Rules
7. Factory Acceptance Test (FAT) in accordance with 6-1-5/Table 1 of the Offshore Rules, 4-4-1/Table 3, 4-1-1/Table 5 of the Marine Vessel Rules.

Notes/Drawing/Documentation:

Please refer to the attached file

Terms of Validity:

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

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Tier: 5 - Unit Certification Required

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.

STANDARDS

ABS Rules:

2025 Rules for Conditions of Classification : 1A-1-4/7.7, 1A-1-A3, 1A-1-A4, which covers the following:
2025 Marine Vessels Rules 4-4-1/1.1, 4-4-1/Table 1, 4-4-1/1.9, 4-4-1/3.5, 4-4-1/7.11.2, 4-6-7/3.5.4

2025 Rules for Conditions of Classification, Part I - 2020 Offshore Units and Structures 1B-1-4/9.7, 1B-1-A2, 1B-1-A3, which covers the following:
2025 Offshore Rules 2-3-2/9, 4-2-6/3.11, 6-1-1/3, 6-1-5/1.1

2021 Guide for the Classification of Drilling Systems Chapter 2-7/5.1, Chapter 3-2/Table 1, Chapter 5-3/3

National:

German Pressure Vessel Code AD-2000 (2014-11)

AD -Merkblaetter 2000-PED 2014/ 68/ EU: B0 2014-1, B5 2016-09, B8 2017-06, B1 2000-10, B3 2011-05, B9 2016-09.

International:

DIN EN 10204, Rev. 2005-01

DIN EN 14359, 2017-09

DIN EN 10216-3, 2014-03

DIN EN 10222-4, 2017-06

DIN EN 12516, 2015-01

PED 2014/ 68/ EU (2014-05)

Government:

NA

EUMED:

NA

OTHERS:

NA

Attachment to 25- 0344741-PDA covering
ROTH HYDRAULICS GMBH (WCN: 400408),
Accumulator, Piston

Models:

AK...-210-18

Issuance Date: 22-Sep-2025

Expiry Date: 21-Sep-2030

Document list approved under 25-0210155-PDA (September 2025)

Drawing No. 3_10X1821-01 Rev3, Calculation-AK ...210-18_3_10X1821-01_Rev2, Revision: 02, Pages:

Drawing No. 3_10x1821-01, Drawing_3_10x1821-01_Rev03, Revision: 03, Pages:

Document list approved under 25-0210155-PDA (February 2025)

Declaration of Conformity

Document list approved under 20-1979230-PDA (April 2020)

Drawing No. 3_10x1821- 01, GA Drawing, Revision: 2, Pages: 1

Drawing No. 42 04 023, pressure calibration, Revision: -, Pages: 1

Drawing No. 42 04 024, calibration protocol, Revision: -, Pages: 1

Drawing No. Calculation-AK, Calculation, Revision: 01, Pages: 12

Drawing No. Correspondence, email of April, 9th, Revision: -, Pages: -

Drawing No. Kalibrierprotokoll m U 42 04 029 HBM 2019, DAkkS certificate, Revision: -, Pages: 4

Drawing No. RHD-Zertifikat_ISO-9001_2022-01-28, ISO certificate, Revision: -, Pages: 2

Drawing No. request, request, Revision: -, Pages: -

Document list approved under 15-HG1379747-PDA (June 2015)

Drawing No. 3_10x1821-01, Piston accumulator drawing, Revision: 2, Pages: 1

Drawing No. AK -210-18_3_10X1821-012, Calculation, Revision:1-, Pages: 12

Drawing No. BSD-Zertifikat_ISO9001_bis-2016, Certificate, Revision: -, Pages: 2

Drawing No. form for type approval 210-18, request form, Revision: -, Pages: 2