Certificate no.:
TAP00002VC

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Hydraulic Accumulator

with type designation(s)
SW73403, SW73772, SW68978, SW73773

issued to

Hystat Systems Ltd

Huddersfield, West Yorkshire, United Kingdom

is found to comply with

DNV-OS-D101 – Marine and machinery systems and equipment, Edition July 2021
DNV-OS-E101 – Drilling facilities, Edition July 2021

Application:

Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV.

Type:	Temperature range:	Operating media:	Design pressure:	Sizes:
SW73403	-20°C to 80°C	Glycol & Nitrogen	250	8 L
SW73772	-20°C to 80°C	Glycol & Nitrogen	250	10 L
SW68978	-20°C to 80°C	Glycol & Nitrogen	250	15 L
SW73773	-20°C to 80°C	Glycol & Nitrogen	250	20 L

Issued at **Høvik** on **2024-05-02**

This Certificate is valid until **2029-05-01**.

for **DNV**

DNV local unit: **UK & Ireland CMC & VMC**

Approval Engineer: **Tobias Berntsen**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

Product description

Hydraulic accumulators designed according to EN14359:2017.

Model	Outer diameter	Design Code	Inner diameter	Cylinder barrel material	Piston material	End caps material
SW73403	160 mm	EN14359	140 mm	E355+SR (EN10305-1)*	AISI 4145H*	AISI 4145H*
SW73772	160 mm	EN14359	140 mm	E355+SR (EN10305-1)*	AISI 4145H*	AISI 4145H*
SW68978	160 mm	EN14359	140 mm	E355+SR (EN10305-1)*	AISI 4145H*	AISI 4145H*
SW73773	160 mm	EN14359	140 mm	E355+SR (EN10305-1)*	AISI 4145H*	AISI 4145H*

*Material shall be according to Particular Material Appraisal (PMA).

Application/Limitation

The accumulators covered by this certificate are approved for 500 pressure cycles between 0 bar to 250 bar.

Each accumulator shall be protected on both gas and hydraulic fluid side by a safety device such as relief valve, fuse plug or rupture disc to prevent excess pressure if overheated. When the accumulator is an integral part of a system with such a safety device, the accumulator itself need not be supplied with a safety device.

All manufacturing, workmanship and testing shall be done in accordance with EN 14359.

Production testing and Certification

Production Testing and Certification for the actual intended application shall follow EN 14359 and the latest applicable edition of the Rules (as mentioned on the front page of this certificate).

Type Approval documentation

Marking of product

Each hydraulic accumulator is to be permanently and legibly marked with following information:

- Date of manufacture, (month/year)
- Manufacturer’s serial number
- Manufacturer’s name/symbol
- Total shell volume in litres
- Allowable temperature range in degrees Celsius
- Maximum allowable pressure
- Test pressure

The location and process of stamping of the accumulators shall not be detrimental to its strength.

Periodical assessment

This certificate is only valid if required periodical assessments are carried out with satisfactory results.

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNV-CP-0338.

To check the validity of this certificate, please look it up in https://approvalfinder.dnv.com