

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Accumulators

with type designation(s)

5000psi WP Bladder Type Accumulator, 1 Gallon Capacity

6000psi WP Bladder Type Accumulator, 1, 2.5, 5, 10, and 15 Gallon Capacity

For Subsea and Non-Subsea Applications

Issued to

Accumulators Inc.

Houston, TX, USA

is found to comply with

DNVGL-OS-E101 – Drilling facilities, Edition January 2018

DNVGL-SI-0166 – Verification for compliance with Norwegian shelf regulations, Edition July 2018

Application :

See Page 2

This Type Approval Certificate is 7 pages long and replaces D-6006.

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

Issued at **Houston** on **2019-02-19**

This Certificate is valid until **2024-02-18**.

for **DNV GL**

DNV GL local station: **Houston, Approval CMC**

Approval Engineer: **M. Kevin Mandeville Jr.**

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Meindert van Mierlo
Head of Section

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.



The following design codes and standards were used as reference:

ASME Boiler and Pressure Vessel Code, Section VIII, Division1, 2017 Edition
ASME B1.1, 2003 Edition, *Unified Inch Screw Threads (UN and UNR Thread Form)*
ASME B1.20.1, 1983 Edition, *Pipe Threads, General Purpose, NPT (Inch)*
EN-14359, 2006 Edition, *Gas-Loaded Accumulators for Fluid Power Application*
SAE-J518, June 1993 Edition, "Hydraulic Flanged Tube/Pipe/Hose Connections, 4-Bolt Split Flange Type"

Product description

5000 PSI WP BLADDER TYPE ACCUMULATOR

1.0 Gallon Capacity Accumulator, Model No. A15100(Y)

6000 PSI WP BLADDER TYPE ACCUMULATOR

1.0 Gallon Capacity Accumulator, Model No. A16100(Y)

2.5 Gallons Capacity Accumulator, Model Nos. A2.56100(Y), A2.5TR6100(Y)

5.0 Gallons Capacity Accumulator, Model Nos. A56100(Y), A5TR6100(Y)

10.0 Gallons Capacity Accumulator, Model Nos. A106100(Y), A10TR6100(Y)

15.0 Gallons Capacity Accumulator, Model Nos. A156100(Y), A15TR6100(Y)

2.5 Gallons Capacity Transfer Barrier Accumulator, Model Nos. A2.5TB6100(Y), A2.5TBTR6100(Y)

5.0 Gallons Capacity Transfer Barrier Accumulator, Model Nos. A5TB6100(Y), A5TBTR6100(Y)

10.0 Gallons Capacity Transfer Barrier Accumulator, Model Nos. A10TB6100(Y), A10TBTR6100(Y)

15.0 Gallons Capacity Transfer Barrier Accumulator, Model Nos. A15TB6100(Y), A15TBTR6100(Y)

Application/Limitation

For Model No. A15100(Y)

Design Parameter	Value	Equivalent
Max Internal Working Pressure	5,000 psi	344.7 bar
Max Internal Test Pressure	7,500 psi	517.1 bar
Min Design Temperature	-40 °F	-40 °C
Max Design Temperature	200 °F	93 °C
Corrosion Allowance (Interior and exterior)	0 in	0 mm
Service	Standard	

For remaining model numbers

Design Parameter	Value	Equivalent
Max Internal Working Pressure	6,000 psi	413.7 bar
Max Internal Test Pressure	9,000 psi	620.5 bar
Min Design Temperature	-40 °F	-40 °C
Max Design Temperature	200 °F	93 °C
Corrosion Allowance (Interior and exterior)	0 in	0 mm
Service	Standard	

Note: Bladder Accumulators are not approved for external gage pressure. This statement does not, however, prevent subsea service.

Applicable Fluid Port Options

For the A(X)6100(Y) and A(X)TR6100(Y) models, the value of (X) indicates the nominal volume and the value of (Y) indicates the corresponding fluid port below:

Y	Description	Y	Description
None	2" NPT	-15	1-½" Code 61 SF Long
-1	1-¼" NPT	-18	1-1/16" SAE
-3	1-7/8" SAE	-22	1" MP
-4	1- ½" Code 62 SF	-25	1-7/8" SAE w/ 7/16" SAE Bleed
-5	1- ½" NPT	-27	1-7/8" SAE w/ 9/16" SAE Bleed
-6	1" NPT	-29	1-5/16" SAE w/ 9/16" SAE Bleed
-7	2" BSPP	-80	1.5" C62 Subseal, Special, Long
-9	1-5/16" SAE	-98	1.5" C62 Subseal, Long
-13	1" Code 62 SF	-99	1.5" C62 Subseal

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 Certificate No: **TAD000012E**

For the A(X)TB(Y)6100(Z) and A(X)TB(Y)TR6100(Z) models, the value of (X) indicates the nominal volume, the value of (Y) indicates the corresponding transfer barrier below, and the value of (Z) indicates the corresponding fluid port below:

Y	Description	Y	Description
-A	3/8" NPT	-S	1/4" NPT (TOP, SIDE X2)
-B	1/2" NPT	-T	1/4" NPT (TOP) 1/2" SAE (#5) (SIDE)
-C	3/4" NPT	-U	3/4" SAE (#8) (TOP) 7/16" SAE (#4) (SIDE X2)
-D	1" NPT	-V	1/2" NPT (TOP, SIDE X3)
-E	1-1/4" NPT	-W	1/4" BSPP
-F	1/2" NPT (TOP, SIDE X2)	-X	3/8" MED. PRESSURE (TOP, SIDE X2)
-G	1/4" NPT	-Y	1-1/4" NPT (TOP), 1/4" NPT (SIDE)
-H	1/2" SAE (#5)	-Z	1/4" NPT (TOP), 1/2" NPT (SIDE)
-I	3/8" NPT (SIDE X2) 1/2" NPT (TOP)	-AA	1/2"-20 SAE (GAS VALVE, TOP) 1/2" NPT (SIDE)
-J	1/8" NPT	-AB	1/2"-20 SAE (GAS VALVE, TOP) 1/2" NPT (SIDE X2)
-K	7/8" SAE (#10)	-AC	1/4" MEDIUM PRESSURE
-L	7/8" SAE (#10) (MALE)	-AE	1/2" NPT (TOP), 3/8"-24 SAE (GAS VALVE, SIDE), 1/2" NPT (SIDE)
-M	3/4" NPT (TOP, SIDE X2)	-AF	1/2"-20 SAE (GAS VALVE, TOP), 1/4" MEDIUM PRESSURE (SIDE)
-N	1/2" NPT (TOP, SIDE)	-AG	3/4" SAE (#8)
-O	3/4" SAE (#8)	-AH	3/8" MEDIUM PRESSURE
-P	7/16" SAE (#4, TOP) 1/4" NPT (SIDE)	-AI	1/2" NPT (TOP), 7/16" SAE (#4) (SIDE)
-Q	7/16" SAE (#4)	-AL	9/16" MEDIUM PRESSURE
-R	1-1/16" SAE (#12)		
Z	Fluid Port Description	Z	Fluid Port Description
None	2" NPT	-15	1-1/2" Code 61 SF Long
-1	1-1/4" NPT	-18	1-1/16" SAE
-3	1-7/8" SAE	-22	1" MP
-4	1- 1/2" Code 62 SF	-25	1-7/8" SAE w/ 7/16" SAE Bleed
-5	1- 1/2" NPT	-27	1-7/8" SAE w/ 9/16" SAE Bleed
-6	1" NPT	-29	1-5/16" SAE w/ 9/16" SAE Bleed
-7	2" BSPP	-80	1.5" C62 Subseal, Special, Long
-9	1-5/16" SAE	-98	1.5" C62 Subseal, Long
-13	1" Code 62 SF	-99	1.5" C62 Subseal

For A1(X)100(Y), the value of (X) indicates the working pressure and the value of (Y) indicates the corresponding fluid port below:

X	Pressure
5	5000 psi
6	6000 psi
Y	Description
None	1-1/4" NPT
-3	1-5/8" SAE
-4	1- 1/4" Code 62 SF
-7	1-1/4" BSPP
-9	1-5/16" SAE
-12	1" NPT
-14	1- 1/2" Code 62 SF

Type Approval documentation



Job Id: **262.1-030394-1**
Certificate No: **TAD000012E**

- Drawings

Job Id: **262.1-030394-1**
Certificate No: **TAD000012E**

			Exempt
			Exempt

Tests carried out

No additional testing required for this renewal.

Marking of product

For traceability, the following marking is to be carried out on each product:

1. Serial No.
2. Manufacturer's Name or Trademark
3. Additional marking at the manufacturer's discretion

Certificate Retention Survey

For retention of the Type Approval Certificate, DNV GL's surveyor shall perform a survey after two and three-and-a-half years in accordance with DNV GL's Class Program for Type Approvals, DNVGL-CP-0338.

Other conditions/comments

- Manufacture and Examination of integrally forged cylinder to be in accordance with the requirements of ASME 2017 BPVC Sec. VIII Div. 1, Mandatory Appendix 22
- Data report shall include "Constructed in Conformance with Mandatory Appendix 22, Integrally Forged Vessels"
- DNV GL Ref. Project No. PP096193-02; A0618740

END OF CERTIFICATE