

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Accumulators

with type designation(s)
**Accumulator, 3000 psi WP, Bladder Type,
One Quart, 1, 2.5, 5, 10, 11, & 15 Gallon Capacities**

Issued to

**Parker Hannifin Accumulator & Cooler Division
Santa Fe Springs, CA, United States**

is found to comply with
**DNV-OS-E101 Drilling Plant October 2013
and DNV GL AS' understanding of the implementation and interpretation of:
PSA's "Regulations relating to design and outfitting of the facilities etc. in the petroleum
activities" (THE FACILITIES REGULATIONS), Last amended 16 December 2014, Ch.VIII**

Application :

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This Type Approval Certificate is three pages long, and replaces D-5745, issued on 2014-08-05.

This Certificate is valid until **2018-12-31**.

Issued at **Houston** on **2016-01-06**

for **DNV GL**

DNV GL local station: **Houston - Systems &
Components**

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

**Christian Nilsen
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.

Job Id: **262.1-015319-2**
Certificate No: **TAD0000085**

The following design codes and standards were used as reference:

ASME Boiler and Pressure Vessel Code, Section VIII, Division1, 2013 Edition
ASME B1.1, 1989 Edition, *Unified Inch Screw Threads (UN and UNR Thread Form)*
SAE-J1926, March 1993 Edition, *Connections for General Use and Fluid Power Ports & Stud Ends with iso-725 Threads & O-Ring Sealing – Part 1: Threaded Port with O-Ring Seal in Truncated Housing*

Product description

3000psi WP Bladder Type Accumulator

Size	Standard Part No.	Top Repairable Part No.
1.0 Quart	1-QT-100-D	N/A
1.0 Gallon	1-100-D	N/A
2.5 Gallon	2.5-100-D	T2.5-100-D
5.0 Gallon	5-100-D	T5-100-D
10.0 Gallon	10-100-D	T10-100-D
11.0 Gallon	11-100-D	T11-100-D
15.0 Gallon	15-100-D	T15-100-D

Application/Limitation

Design Parameter	Value	Equivalent
Max Internal Working Pressure	3,000 psi	206.8 bar
Max Internal Test Pressure	4,500 psi	310.3 bar
Min Design Temperature	-40 °F	- 40 °C
Max Design Temperature	200 °F	93 °C
Corrosion Allowance	0in	0mm
Type of Service	Standard	

Type Approval documentation

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Tests carried out

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's surveyor shall perform a survey every second year in accordance with DNV's Standard for Certification No. 1.2.

Other conditions/comments

- Hydrostatic test requirements can be waived for the end fittings when these are manufactured under surveillance through an appropriate quality control system and full traceability is imposed on the critical pressure components as per DNV GL fax, reference number OFF-0028-97, dated 1997-10-20. This waiver only applies to the accumulators when they are used per the scope of DNV-OS-E101 and will be part of a system with subsequent commissioning and/or operation testing.
- Manufacture and Examination of integrally forged cylinder to be in accordance with the requirements of ASME 2013 BPVC Section VIII, Division 1.
- DNV Ref. Project No. PP147797-02

END OF CERTIFICATE