

# EU TYPE EXAMINATION CERTIFICATE - PRODUCTION TYPE

Certificate No:  
**PEDB000002S**  
Revision No:  
**2**

## This is to certify:

That representative samples of the product(s) **Pressure Vessel**

with name and/or type designation(s)

**Piston Accumulator, Shock Absorber, Accumulator, Nitrogen-Bottle, Gas-Reservoir, Pressure Tank, Gas-Bottle, Piston accumulator Ø267/200 (Drawing no. D017657) and Shock Absorber 230/195/155x500 SWL 35T**

Manufactured by

**Servi AS**  
**RISSA, Norway**

has been assessed with respect to the conformity assessment procedure described in Annex III Module B Production Type of Directive 2014/68/EU on Pressure Equipment, and found to comply with the requirements in Annex I – Essential Safety Requirements of the Directive.

Further details are given overleaf

This Certificate is valid until **2031-05-19**.

Issued at **Høvik** on **2022-04-07**



for the Notified Body 0575  
**DNV AS**

**Zeinab Sharifi**  
**Head of Notified Body**

Lack of fulfilment of conditions as set out in the Product Certification Agreement may render this Certificate invalid.  
The digitally signed and electronically distributed document is the original and valid certificate.

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### Jurisdiction

Application of Directive 2014/68/EU and Norwegian Regulation FOR-2017-10-10-1631 "Forskrift om trykkpåkjent utstyr", as amended, issued by the Norwegian Directorate of Civil Protection and Emergency Planning and by the Petroleum Safety Authority Norway.

### Certificate history

Revision	Description	Issue Date
-	Replaces certificate 79331-2010-CE-NOR-DNV, rev. 2 dated 2011-03-08. Piston accumulator Ø267/200 (Drawing no. D0179657) has been included.	2019-01-17
1	Renewal	2021-05-20
2	Shock Absorber type 230/195/155x500 SWL35T added	2022-04-07

### Products covered by this Certificate

Product Name	Product Description	PED Category	Product Std.
Piston Accumulator, Shock Absorber, Accumulator, Nitrogen-Bottle, Gas-Reservoir, Pressure Tank and Gas-Bottle	Pressure vessels for Hydraulic Systems (maximum inside diameter Ø700 mm)	II, III, IV	EN 14359:2017 / EN 13445:2014
Piston Accumulator Ø267/200 (Drawing no. D017657)	Pressure vessel for Hydraulic Systems	IV	EN 14359:2017 / EN 13445:2014
Shock Absorber	Type 230/195/155x500 SWL35T Cylinder barrel inside diameter 230 mm Piston rod outside/inside diameter 195/155 mm Stroke 500 mm Volume: 10.3 l gas, 0.8 l hydraulic fluid	IV	EN 14359:2017 / EN 13445:2021

### Design Data

Product Name	Max. allowable Pressure (PS)	Min. allowable Temperature	Max. allowable Temperature (TS)	Test Pressure	Fluid Group
Piston Accumulator, Shock Absorber, Accumulator, Nitrogen-Bottle, Gas-Reservoir, Pressure Tank and Gas-Bottle	Up to 1500 barg	-20°C	80°C	-	2
Piston Accumulator Ø267/200 (drawing no. D017657)	350 barg	-10°C	100°C	525 barg	2
Shock Absorber type 230/195/155x500 SWL35T	373 barg	-30°C	50°C	534 barg	Nitrogen - fluid group 2 Hydraulic fluid Erifon 818TLP – fluid group 1

### Prototype Test reference

Product Name	Site Name	Site Address	Inspected by	Report Dated
Piston Accumulator (without permanent joints)	Servi AS	Kvithyllveien 193, 7100 Rissa, Norway	DNV Høvik (NoBo 0575)	2020-01-20
Shock absorber type 230/195/155x500 SWL35T	Servi AS	Kvithyllveien 193, 7100 Rissa, Norway	DNV Høvik (NoBo 0575)	2022-04-07

### Documents Reviewed

Document No.	Rev.	Date	Title	Status <sup>1</sup>
643-94 B	B	31.05.2010	Piston Akkumulator 6L	A
646-04	-	12.03.2001	Stempelakkumulator, rør	A
646-05	-	13.03.2001	Stempelakkumulator, stempel	FI
646-06 A	A	15.12.2009	Stempelakkumulator, endelokk-oljeside	A
644-155 A	A	15.12.2009	Piston Accumulator, gland	A
646-07 A	A	15.12.2009	Stempelakkumulator, endelokk gass-side	A
423	-	16.12.2009	Calculations, 6L, Piston Accumulator	FI
03944 B	B	31.05.2010	Accumulator 5L	A
03944-02	A	07.01.2010	Accumulator, welded endcap	A
03944-03 A	A	07.01.2010	Accumulator, Threaded Endcap	A
03944-01	A	07.01.2010	Accumulator, Barrel	A
627	-	06.01.2010	Calculations 5L Accumulator	FI
1050-RA-001	B	09.02.2010	FEM stress analysis, Accumulator	FI
03945 B	B	31.05.2010	Nitrogen Bottle, 10 litre	A
03945-01	-	12.12.2005	Nitrogen Bottle, Barrel	A
03945-02	-	12.12.2005	Nitrogen Bottle, Welded Endcap	A
03945-03	-	12.12.2005	Nitrogen Bottle, Threaded Endcap	A
628	-	06.01.2010	Calculations 10L Nitrogen Bottle	FI
1050-RA-002	A	03.03.2010	FEM stress analysis Nitrogen Bottle	FI
03946 B	B	31.05.2010	Gas Reservoar 10 litre	A
03946-01 A	A	07.01.2010	Gas Reservoar, Barrel	A
03946-02 A	A	07.01.2010	Gas Reservoar, welded endcap 1	A
03946-03 A	A	07.01.2010	Gas Reservoar, welded endcap 2	A
629	-	06.01.2010	Calculations, 10 L Gas Reservoar	FI
1050-RA-003	A	03.03.2010	FEM stress analysis Gas Reservoar	FI
03947 B	B	31.05.2010	Pressure Tank, 15 litre	A
03947-01	-	12.12.2005	Pressure Tank, Barrel	A
03947-02	-	12.12.2005	Pressure Tank, Welded endcap	A
03947-03	-	14.12.2005	Pressure Tank, Threaded endcap	A
630	-	06.01.2010	Calculations 15L Pressure Tank	FI
1050-RA-004	A	08.03.2010	FEM stress analysis Pressure Tank	FI
03948 B	B	31.05.2010	Gas Bottle 20 Litre	A
03948-01 A	A	11.01.2010	Gas Bottle, Barrel	A
03948-02 A	A	11.01.2010	Gas Bottle, Endcap	A
03948-03 A	A	11.01.2010	Gas Bottle, Endcap	A
631	-	08.01.2010	Calculations 20 L Gas Bottle	FI
D017657	A	28.05.2018	PA 25L 350BAR 200-C-N	AC
D017778	-	29.08.2018	SYLRØR PA 200x1153	A
D017779	-	29.08.2018	ENDELOKK PA 200	A
D017780	-	29.08.2018	ENDELOKK PA 200	A
D003997	-	16.02.2012	STEMPEL PA 200	FI

<sup>1</sup> A = Approved, AC = Approved with comments, FI = For information

Document No.	Rev.	Date	Title	Status <sup>1</sup>
B1591	-	29.08.2018	Calculations	FI
D001422	D	23.08.2018	Skilt 155x50, PED Standard	A
D004086	C	23.08.2018	Skilt 175x50 for strips	A
-	-	-	Risikovurdering PED-Produkter levert av SERVI Group	FI

#### Shock Absorber type 230/195/155x500 SWL35T

D020001	C	17.03.2022	CRANEMASTER 230/195/155 X 500 SWL 35 T PED	A
D020055	-	09.01.2020	STANG 195/155 X 745	A
D020059	-	07.01.2020	STANGØRE DS 230/195/155	A
D001830	-	22.03.2011	HOVEDSTEMPEL 195	A
D001833	-	18.03.2011	CRANEMASTER GASS STEMPEL	FI
D020001 explanation	-	-	-	FI
B1658	C	10.03.2022	Calculation report, CM1-35T-500-A	FI
C7506	-	-	Inspection certificate 3.1	FI
B0651	-	-	Inspection certificate	FI
B0692	-	-	Mill test certificate	FI
SR100	-	15.02.2022	Particular Material Appraisal	A
SR101	-	16.02.2022	Particular Material Appraisal	A
341.2-J-475	0	13.12.2012	Particular Material Appraisal EN 10250-2 S355J2G3	FI
-	0	26.02.2010	Particular Material Appraisal EN 10219, grade S355J2H	FI
-	0	19.10.2010	Particular Material Appraisal EN 10088-3, type 1.4418	FI

#### Applications/Limitations

- Representative product with permanent joint shall be subjected to prototype testing by DNV NoBo 0575 during the next production.
- The type examination is based on reference drawings and calculations done for a representative range of products. The manufacturer is allowed to supply variants of the approved types of equipment within the specified limitations. The manufacturer shall make specific drawings and calculations for each variant.
- Where applicable, products shall be subjected to fatigue assessment according to EN13445-3.
- The Piston Accumulator Ø267/200 (Drawing no. D017657) has been evaluated for fatigue according to EN 13445-3 Clause 18 for a pressure range of 350 bar and infinite number of load cycles.
- For piston accumulator with drawing number D017657: The plug (position no. 13) is only used for testing purposes and have not formed part of the certification.
- NDE as per testing group 1 or 2 in EN13445-5 shall be applied for the permanent joints, where relevant.
- The following materials have been subject to a Particular Material Appraisal as required by PED Annex I Section 4.2b. The material grades are found acceptable under the conditions as stated in the following documents issued for the Particular Material Appraisal:

Material Standard	Grade	PMA Rev.
ISO 3506	A4-80	1
ASTM A320	L7	0
EN10025-2	S355J2+N	1
EN10219-1	S355J2H	0
EN10210-1	S355J2H	1
ASME SA-351	CF3M	0
ASME SA-351	CF8M	0
ASME SA-995	UNS J92205	2
ASME SA-995	UNS J93371	0
ASME SA-995	UNS J93404	2
ASTM A-890	UNS J92205	2
ASTM A-890	UNS J93371	0

Material Standard	Grade	PMA Rev.
ASTM A-890	UNS J93404	2
EN10088-3	1.4418	0
EN10305-1	E355+N	0
ASME SA-790	UNS S31803	1
ASME SA-789	UNS S31803	1
ASME SA-182	UNS S31803	1
ASME SA-182	UNS S32750	1
Sandvik Specification for SAF2205	SAF 2205	1
Sandvik Specification for SAF2507	SAF 2507	1
EN10250-4	1.4418	0
EN10297-1	E355	0
EN10250-2	S355J2G3	0
ASTM A694	F65	-
ASME SA479	UNS S31803	1
ASME SA479	UNS S32750	1
Datasheet 039R and EN10297-1	MW450K	1
Datasheet AISI 4145H Modified 110KSI	UNS G41450	1
Datasheet AISI 4130 Modified 75KSI	UNS G41300	1

- This type examination certificate does not include instrumentation and safety accessory integrated to the product.
- This Certificate only relates to directive described above. Other directives, covering other phenomena, and also having requirements related to CE marking, might also apply.

### Terms and conditions

Valid Terms and Conditions are found in the Product Certification Agreement which includes DNV's PED Certification Requirements.

This Certificate alone does not give the right to CE mark and put the product(s) listed in this Certificate on the market. Only after the product(s) have been found to comply with the requirements in one of the following Conformity Assessment Modules C2 or E (if product category III), D or F (if product category IV) the Manufacturer may draw up an EU declaration of conformity and legally affix the CE mark followed by the identification number of the Notified Body involved in these modules.