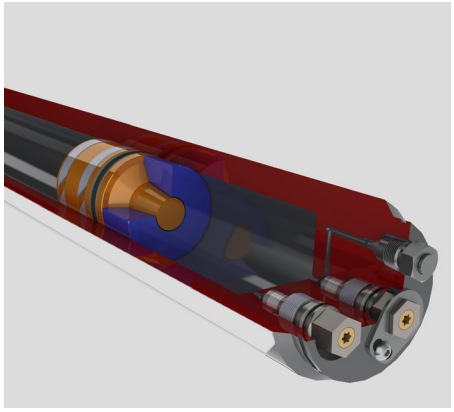
SAMPLE CYLINDER CATALOGUE



proserv

Proserv is the fresh alternative in global energy services. We are a technology-driven company providing products, services and bespoke solutions to clients across the drilling, production and decommissioning market sectors.

Combining technical ingenuity with design, engineering, manufacturing and field services expertise, we support clients throughout the lifecycle of their assets with a focus on maximising operational performance and efficiency.

In our ongoing pursuit for excellence, we are not afraid to challenge the conventional. Ingenious Simplicity is at our core and we are committed to helping clients produce more for less. Partnering with progressive, like-minded companies, we cut out unnecessary complexity to provide appropriate, yet ingenious solutions delivered simply.

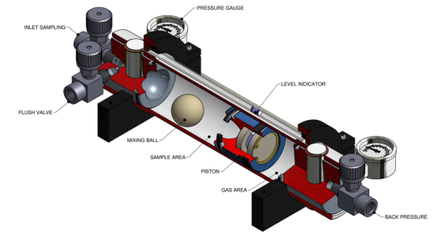
PRODUCTION SAMPLE CYLINDERS

ProSteel SS-150-100 MB

Proserv's ProSteel sample receiver is a constant pressure cylinder for oil, gas and condensate sampling. A free-floating piston design ensures constant precharge and sample pressure, which maintains the phase of the sampled fluid. The integrity of the sample can be monitored by two pressure gauges, and a volume indicator provides visual volume inspection. To help prevent segregation of the sampled fluids, the cylinder may be equipped with a mixing ball.

Features and benefits

- Lightweight single piston sample receiver with internal mixing ball
- Parker needle valves with 1/4 inch NPT female ports
- Purge valve
- Volume indicator
- Pressure gauge both on primary and secondary side



Technical Specification	
Description	
Part number	SS-150-100 MB
GA-drawing	3AA-032
Net volume	1,000 cc
Design temperature	-20 °C to 65 °C
MAWP	150 bar g @ 65 °F
Material	Cyl body: EN 10216-5 1.4404 End caps: EN 10272:2007 1.4404 Piston: EN 10272:2007 1.4404 Mixing Ball: EN 10272:2007 1.4404 Retainer Pin: EN 10272:2007 1.4418
Net weight	7.0 kg
Dimensions	700 x 150 x 90 mm (L x W x H)
Option	• Sour service edition • Mixing nozzle for use with ProMix bench • Other materials available upon request • Rupture disc • EN 10204 3.1 material certification • Transportation and storage box

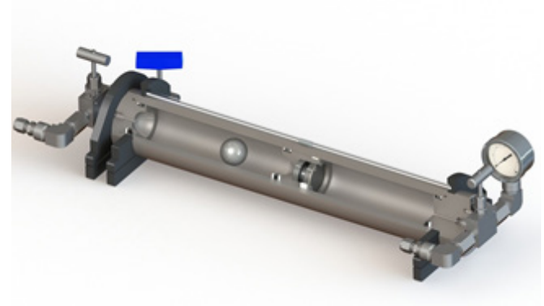
Design and Documentation	
Code	PD5500:2009
Applied directive	97/23/EC PED article 3, paragraph 3 (SEP)
Service	• UN 1267 petroleum crude oil • UN 1075 petroleum gases, liquefied or liquefied petroleum gas • UN 1954 compressed gasses, flammable, NOS • UN 1971 natural gas, compressed • UN 1066 nitrogen, compressed • Formation water
Standard documentation	• Hydrostatic pressure test certificate endorsed by third party • User manual • Declaration of conformity

ProFisc 220 bar 1,000 cc PED/DOT

The ProFisc sample receiver is a portable single piston sample cylinder. It is used for the collection of hydrocarbon liquids and gas Group 1 samples that require analysis in the laboratory environment and subsequent storage. This product is field proven with a substantial track record.

Features and benefits

- Lightweight single piston sample receiver with internal mixing ball
- Valves: Autoclave Engineers
- Inlet and outlet connections: Swagelok OD tube compression fittings
- Flushing valve outlet port: 1/8 inch AE W125
- Volume indicator (piston magnetic tracker)
- Zero to 250 bar pressure gauge on back pressure side

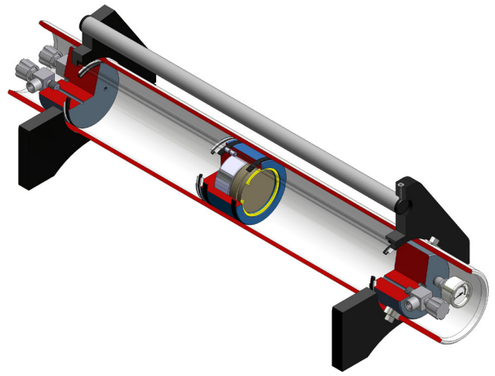


Technical Specification	
Description	
Part number	045317
Net volume	981 cc
Design temperature	-20 °C to +100 °C (see note 1)
Design pressure	220 bar (3,191 psi)
Material	Cylinder body: titanium grade 5 End caps: titanium grade 2 Piston: titanium grade 2 Mixing ball: AISI 316 St Stl Mini valves: AISI 316 St Stl
Net weight	8.4 kg
Dimensions	Cylinder length including valves and pressure gauge 737 mm Cylinder body length 610 mm Cylinder OD 72 mm
Option	• Hydrostatic test certificate, with third party endorsement, complete with third party inspection release note • Copy of PED 2014/68/EU declaration of conformity • Material certification to EN 10204: 3.1for pressure retaining components • Other type of connections available on request • Titanium grade 6246 for cylinder body (NACE MR 0175/ISO 15156 compliant) • Alternative valves material • Alternative O-ring seal material • Transportation box (DOT requirement)

Design and Documentation	
Approved for use within the European Union & Transportation within the USA under the following European Directives and US Special Permit: - 2014/68/EU (PED) - US DOT SP-15404 Design code: generally in accordance with PD 5500	
Service:	• UN 1954 compressed gas, flammable, NOS • UN 1964 hydrocarbon gas mixture, compressed, NOS • UN 1965 hydrocarbon gas mixtures, liquefied, NOS • UN 1053 hydrogen sulphide (H2S) • UN 3161 liquefied gas, flammable, NOS • UN 1971 UN 1972 Natural gas with methane content • UN 1066 nitrogen, compressed • UN 1267 petroleum crude oil • UN 1075 petroleum gases, liquefied or liquefied petroleum gas • UN 1006 argon, compressed • UN 1953 compressed gas, toxic, flammable, NOS NOTE 1: The design of the cylinder metal work, brackets and pressure gauge are suitable for sample medium temperatures up to 100 °C, the magnet tube has a maximum temperature of 70 °C. If the sample cylinder requires to be externally heated (reconditioning) then it should be noted that the pressure gauge has an external temperature limit of +60 °C.
Standard documentation	• Certificate of conformity • Hydrostatic test certificate • User instructions • User spare parts list • Authorised Inspectors Certificate of • Conformance to DOT SP-15404 • Copy of DOT SP-15404

ProLarge II SS-130-400-MB

Proserv's ProLarge sample receiver is a large constant pressure cylinder for oil, gas and condensate sampling. A free floating piston design ensures constant pre-charge and sample pressure, which maintains the phase of the sampled fluid. The integrity of the sample can be monitored by a pressure gauge, and a volume indicator provides visual volume inspection. To help prevent segregation of the sampled fluids, the cylinder may be equipped with a mixing ball.



Features and benefits

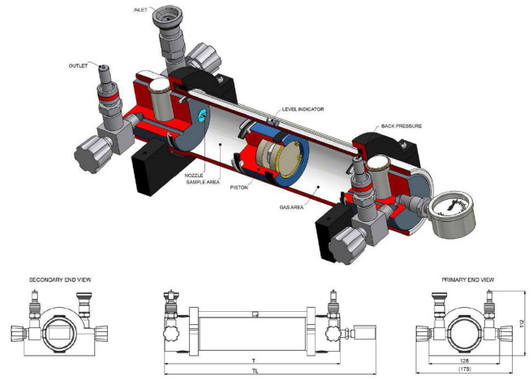
- Large volume piston sample receiver
- Needle valves with 1/4 inch NPT female outlets
- Purge valve
- Volume indicator
- Pressure gauge
- Carrying handle
- Available both in titanium and stainless steel

Technical Specification	
Description	
Part number	SS-130-400-MB
GA-drawing	3AA-121
Net volume	3,750 cc
Design temperature	-20 °C to +65 °C
Design pressure	130 bar g @ 65 °C
Material	Cyl body: EN 10216-5 1.4404 End caps: ASTM B348 Gr. 2 Piston: ASTM B348 Gr. 2 Mixing ball: ASTM B348 Gr. 5 Retainer pins: EN 10272 1.4418
Net weight	24 kg
Dimensions	850 x 250 x 250 mm (L x W x H)
Option	• Sour service edition • Mixing nozzle for ProMix Edition • Other materials and volumes upon request • Rupture disc • EN 10204 3.1 material certification • Transportation and storage box

Design and Documentation	
Standards and codes	• 97/23/EC PED, Cat. 3 • Design code EN 13445 • ISO 3170 and 3171 • API MPMS 8,1 & 8,2
Service	• UN 1267 petroleum crude oil • UN 1075 petroleum gases, liquided • UN 1954 compressed gasses, flammable, NOS • UN 1971 natural gas, compressed • UN 1066 nitrogen, compressed • Formation water
Standard documentation	• Hydrostatic pressure test certificate • User manual • Declaration of conformity

ProMix SS-150-100

The ProMix sample receiver is a portable constant pressure cylinder for crude oil sampling. It is designed for mixing/homogenising samples prior to analysis and is used in conjunction with the Proserv ProMix bench.



Features and benefits

- Lightweight single piston sample receiver
- Parker needle valves
- Volume indicator
- Pressure gauge with range zero to 160 bar on back pressure side
- On primary side, two needle valves make flushing of receiver possible
- Homogenising nozzle on primary side
- Connections: 1/4 inch NPT female fitted with quick connectors

Technical Specification	
Description	
Part number	SS-150-100
GA-drawing	3AA-034
Net volume	1,000 cc
Design temperature	-20 °C to +65 °C
MAWP	150 bar g @ 65°C
Material	Cyl body: EN 10216-5 1.4404 End caps: EN 10272 14404 Piston: EN 10272 14404 Nozzle: EN 10272 14404 Retainer pins: EN 10272 1.4418
Net weight	7 kg
Dimensions	T = 647 mm TL = 705 mm
Option	• Material cert. EN 10204 3.1 on vessel and valves • Transport box • Swagelok needle valves for sour gas • Various kinds of connections available

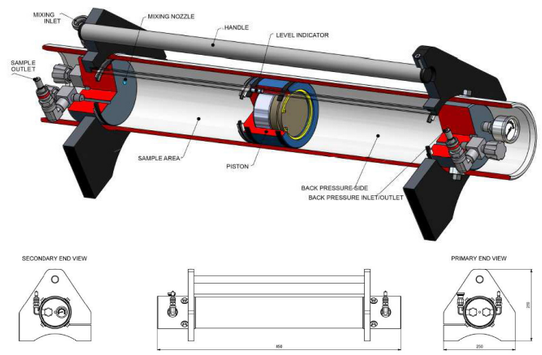
Design and Documentation	
Code	PD5500:2009
Applied directive	97/23/EC PED Article 3, paragraph 3 (SEP)
Service	• UN 1267 petroleum crude oil • UN 1075 petroleum gases, liquided • UN 1954 compressed gasses, flammable, NOS • UN 1971 natural gas, compressed • UN 1066 nitrogen, compressed • Formation water
Standard documentation	• Hydrostatic pressure test certificate endorsed by third party • User guide • Declaration of conformity

ProMix II SS-130-400

The ProMix sample receiver is a portable constant pressure cylinder for crude oil sampling. It is designed for mixing/homogenising samples prior to analysis and is used in conjunction with the Proserv ProMix bench.

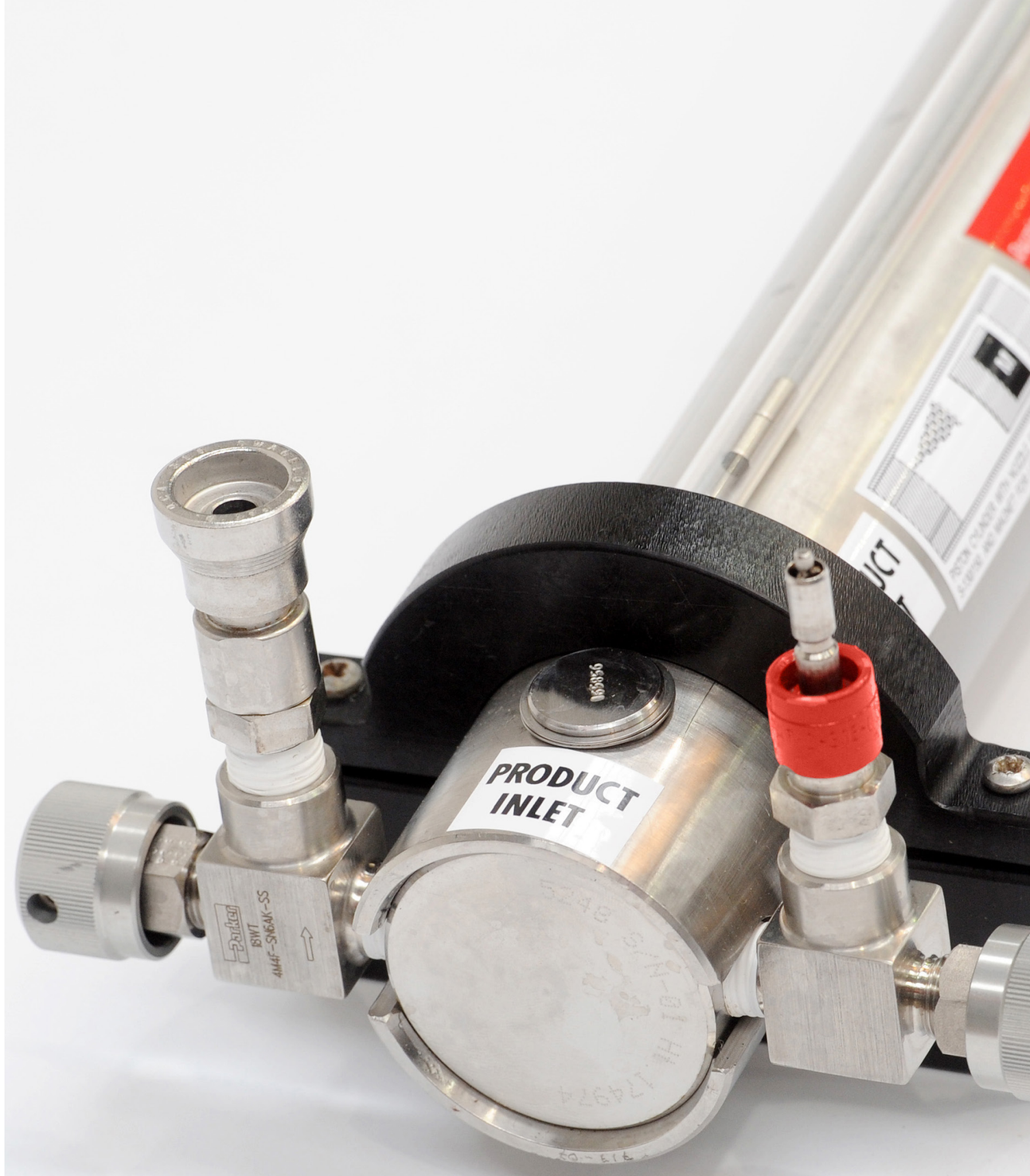
Features and benefits

- Large single piston sampling receiver
- Homogenising nozzle on primary side
- External volume indicator
- Pressure gauge with range zero to 160 bar on secondary side
- Parker needle valves
- On primary side, two needle valves make flushing of receiver possible
- Connections: 1/4 inch NPT female fitted with quick connectors



Technical Specification	
Description	
Part number	SS-130-400
GA-drawing	3AA-081
Net volume	4005 cc
Design temperature	-20 °C to +65 °C
MAWP	130 bar g @ 65 °C
Material	Cyl body: EN 10216-5 1.4404 End caps: EN 10272 1.4404 Piston: EN 10272 1.4404 Nozzle: EN 10272 1.4404 Retainer pins: EN 10272 1.4418
Net weight	30.5 kg
Dimensions	850 x 250 x 250 mm (L x W x H)
Option	• Material cert. EN 10204 3.1 on vessel and valves • Transport box • Swagelok needle valves for sour gas • Various kinds of connections available

Design and Documentation	
Code	PD5500:2009
Applied directive	97/23/EC PED
Service	• UN 1267 petroleum crude oil • UN 1075 petroleum gases, liquided • UN 1954 compressed gasses, flammable, NOS • UN 1971 natural gas, compressed • UN 1066 nitrogen, compressed • Formation water
Standard documentation	• Hydrostatic pressure test certificate endorsed by third party • User guide • Declaration of conformity

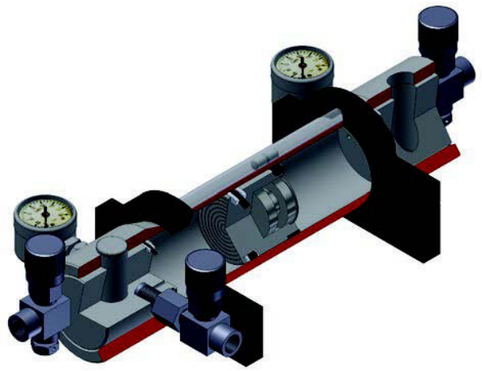


ProAI AI-150-30

The ProAI sample receiver is a constant pressure cylinder for gas and condensate sampling. Made of aluminium, this sample receiver has good properties for handling cold products. A free floating piston design ensures constant pre-charge and sample pressure, which maintains the phase of the sampled fluid. The integrity of the sample can be monitored by a pressure gauge, and a volume indicator provides visual volume inspection.

Features and benefits

- Lightweight single piston sample receiver
- Needle valves with 1/4 inch NPT female outlet
- Rupture disc
- Volume indicator
- Purge valve
- Pressure gauge on both primary and secondary side



Technical Specification	
Description	
Part number	AI-150-30
GA-drawing	3AA-014
Net volume	299 cc
Design temperature	-20 °C to +65 °C
MAWP	150 bar g @ 65 °C
Material	Cyl body: EN AW 6082 T6511 End caps: EN AW 6082 T6 Piston: EN AW 6082 T6 Retainer pins: EN 10272:2007 1.4418
Net weight	2.8 kg
Dimensions	400 x 182 x 91mm (L x W x H)
Option	• Material cert. EN 10204 3.1 on vessel and valves • Transportation and storage box • Carrying handle

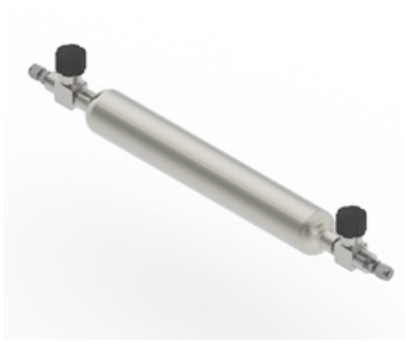
Design and Documentation	
Standards and codes	• 97/23/EC PED, Article 3, Paragraph 3 (SEP) • Design code EN 13445 • ISO 3170 and 3171 • API MPMS 8.1 & 8.2
Service	• UN 1267 petroleum crude oil • UN 1075 petroleum gases, liquided • UN 1954 compressed gasses, flammable, NOS • UN 1971 natural gas, compressed • UN 1066 nitrogen, compressed • Formation water
Standard documentation	• Hydrostatic pressure test certificate endorsed by third party • User guide • Declaration of conformity

TPED Flow Through Sample Cylinder Non Coated

The flow through sample cylinder is used for the collection of liquid and gas samples. Each assembly consists of one Proserv type sample cylinder, two 1/4 inch needle valves with 1/4 inch OD tube male connectors (Swagelok) complete with blanking caps.

Features and benefits

- Primarily used for taking gas samples
- Standard valve option is straight pattern needle valves with 1/4 inch OD tube connection (Swagelok)
- Valve ports fitted with Swagelok male connectors and 1/4 inch plugs



Technical Specification	
Description	
Part number	061605 061620 061627 061632
Net volume	150 cc 300 cc 500 cc 1,000 cc
Maximum allowable filling pressure	1,800 psi (124 bar)
Working temperature	-20 °c to 65 °c
Cylinder material	316L stainless steel cylinder body 316L stainless steel needle valves
Net weight	300 ml - 1.09 kg 500 ml – 1.37 kg 1,000 ml – 3.62 kg
Dimensions cylinder only (OD x L)	300 ml – 50 mm x 240 mm 500 ml – 50 mm x 369 mm 1,000 ml – 101 mm x 247 mm
Options	• Valve configuration with angle pattern valve • Independent witness pressure test product certificate by Lloyds • Alternative inlet/outlet connections • Transportation box

Design and Documentation	
Code	Transportable pressure equipment directive (TPED) 2010/35/EU
Reference	• BS EN 1964-3 TPED certified cylinder
Service	• UN 1006: argon, compressed • UN 1066: nitrogen, compressed • UN 1046: Helium, compressed • UN 1013: CO^2 • UN 1049: hydrogen, compressed • UN 1971: methane, compressed or natural gas • UN 1964: hydrocarbon gas mixtures, compressed
Standard documentation	• Hydro pressure test certificate • Proserv certificate of conformity • Manufacturing declaration of conformity with: TPED 2010/35/EU

PRODUCT SPECIFICATION SHEET PRODUCTION

Sample Cylinder Flow Through Sulfinert Coated 100 bar TPED

The Proserv flow through type cylinder is used for the collection of liquid and gas samples. Each assembly consists of one coated sample cylinder, two coated 1/4 inch needle valves with 1/4 inch OD tube connector (Swagelok) complete with blanking caps.

Features and benefits

- 1/4 inch OD tube connections (Swagelok)
- Straight pattern valve configuration
- 316 St Stl cylinder body
- Transport box available
- Sulfinert coated cylinder and valves for low level H2S studies
- Refer to Silcotek website for further information on Sulfinert coating

Technical Specification	
Description	
Part number	075333, 075327, 075328, 075329, 075330
Net volume	150 cc, 300 cc, 500 cc, 1,000 cc, 3,785 cc
Design pressure	1,450 psi (100 bar)
Design temperature	-20 °C to 50 °C
Cylinder material	Cylinder body 316 St. Stl (304 St. Stl for 3785cc option only) Valves 316 St. Stl Sulfinert coated wetted parts
Net weight	0.6 kg, 0.9 kg, 1.4 kg, 3.1 kg, 9.7 kg (approx. estimated) retrospectively
Dimensions	500 cc cylinder: 351 mm length (cylinder only) 50.3 mm cylinder diameter
Options	• Independent witness pressure test certificate by Lloyds • Cylinder material certification • Transportation box available fibre glass construction

Design and Documentation	
Reference	TPED 2010/35/EU
Service	• UN 1006: argon, compressed • UN 1066: nitrogen, compressed • UN 1046: helium, compressed • UN 1013: CO^2 • UN 1049: hydrogen, compressed • UN 1971: methane, compressed or natural gas • UN 1964: hydrocarbon gas mixtures, compressed • UN 1954 compressed gas flammable NOS
Standard documentation	• Hydrostatic pressure test certificate • Proserv letter of conformity • Manufacturing declaration of conformity with TPED 2010/35/EU

PRODUCT SPECIFICATION SHEET PRODUCTION

ProLight Flow Through Cylinder 355 bar 735 cc PED

The ProLight flow through cylinder is used for collecting gas or fluid samples. Each assembly consists of one Proserv ProLight type sample cylinder, two 1/4 inch needle valves, with 1/4 inch NPT to six millimetre A-Lok adaptors fitted.

Features and benefits

- Lightweight high pressure flow through cylinder
- Swagelok needle valves
- Inlet/outlet connections six millimetre A-Lok

Technical Specification	
Description and documentation	
Part number	045710
Net volume	735 cc
Design temperature	-20 °C to +93 °C
Design pressure	5,160 psi @ 93 °C 6,000 psi @ 37 °C
Material	Cyl body: ASTM B348 Ti Gr. 5 End caps: ASTM B348 Ti Gr.2 Needle valves: AISI 316 St Stl Adaptors: AISI 316 St Stl
Net weight	5.4 kg
Dimensions	Cyl length incl valves 660 mm Cyl body length 444 mm Cyl OD 72 mm
Option	• Hydrostatic test certificate, with third party endorsement, complete with inspection release note • Alternative connections • Transportation box

Design and Documentation	
2014/68/EU (PED) Design code: generally in accordance with PD 5500	
Service	• UN 1954 compressed gas, flammable, NOS • UN 1964 hydrocarbon gas mixture, compressed, NOS • UN 1965 hydrocarbon gas mixtures, liquefied, NOS • UN 1053 hydrogen sulphide (H2S) • UN 3161 liquefied gas, flammable, n.o.s • UN 1971, UN 1972 natural gas with methane content • UN 1066 nitrogen, compressed • UN 1267 petroleum crude oil • UN 1075 petroleum gases, liquefied or liquefied petroleum gas • UN 1006 argon, compressed • UN 1953 compressed gas, toxic, flammable, NOS
Standard documentation	• Hydrostatic test certificate • Leak test certificate • User instructions

PRODUCT SPECIFICATION SHEET PRODUCTION

Inconel 625 Flow Through Cylinder 500 cc 6,000 psi PED

The Inconel 625 sample receiver is a flow through type cylinder, used for the collection of Group 1 hydrocarbon liquids and gas samples requiring analysis in the laboratory and subsequent storage. The cylinder design allows sampling from extreme environments (H2S). Threaded end caps and a double seal arrangement at either end of the cylinder creates a robust and reliable design that is field proven.

Features and benefits

- Valves: Inconel 625
- Valve inlet ports: 1/2 inch NPT female
- Cylinder main components: Inconel 625
- Suitable for sour environments (H2S)

Technical Specification	
Description	
Part number	155548
Net volume	500 cc
Design temperature	0 °C to 93 °C (32 °F to 199 °F)
Design pressure	6,000 psi (413 bar)
Material	Cylinder body / end caps / Hex nipple / Valves: Inconel 625
Net weight	11 kg approx. (empty)
Dimensions	Overall length including valves 538 mm Cylinder OD 79 mm
Option	• Hydrostatic test certificate, with third party endorsement, complete with third party inspection release note • Copy of PED 2014/68/EU Declaration of Conformity • Material Certification to EN 10204: 3.1 for pressure retaining components • Transportation box

Design and Documentation	
Approved for use within the European Union under the following Directive: PED 2014/68/EU • Generally in accordance with PD 5500 • BS EN14359 • BS EN13445	
Service	• UN 1053 hydrogen sulphide (H2S) • UN 1066 nitrogen, compressed • UN 1075 petroleum gases, liquefied or liquefied petroleum gasses • UN 1267 petroleum crude oil • UN 1953 compressed gas, toxic, flammable, NOS • UN 1954 compressed gas, flammable, NOS • UN 1964 hydrocarbon gas mixture, compressed, NOS • UN 1965 hydrocarbon gas mixtures, liquefied, NOS • UN 1971, UN 1972 natural gas with methane content
Standard documentation	• Certificate of conformity • Hydrostatic test certificate • User instructions • User spare parts list

Inconel 625 Flow Through Cylinder 500 cc 10,000 psi PED

The Inconel 625 sample receiver is a flow through type cylinder, used for the collection of Group 1 hydrocarbon liquids and gas samples requiring analysis in the laboratory and subsequent storage. The cylinder design allows sampling from extreme environments (H2S). Threaded end caps and a double seal arrangement at either end of the cylinder creates a robust and reliable design that is field proven.

Features and benefits

- Valves: Autoclave Engineers Inconel 825
- Valve inlet ports: 1/4 inch NPT female
- Main components manufactured from Inconel 625 and Inconel 825
- Suitable for sour environments (H2S)

Technical Specification	
Description	
Part number	060424
Net volume	500 cc
Design temperature	0 °C to +149 °C
Design pressure	10,000 psi (690 bar) @ +93 °C 8,800 psi (606 bar) @ +149 °C
Material	Cylinder / end caps: Inconel 625 Valves: Inconel 825
Net weight	11 kg approx. (empty)
Dimensions	Overall length including valve 455 mm Cylinder OD 79 mm
Option	• Hydrostatic test certificate, with third party endorsement, complete with third party inspection release note • Copy of PED 2014/68/EU Declaration of Conformity • Material Certification to EN 10204: 3.1 for pressure retaining components • Transportation box

Design and Documentation	
Approved for use within the European Union under the following Directive: PED 2014/68/EU Generally in accordance with PD 5500 BS EN14359 BS EN13445	
Service	• UN 1053 hydrogen sulphide (H2S) • UN 1066 nitrogen, compressed • UN 1075 petroleum gases, liquefied or liquefied petroleum gasses • UN 1267 petroleum crude oil • UN 1953 compressed gas, toxic, flammable, NOS • UN 1954 compressed gas, flammable, NOS • UN 1964 hydrocarbon gas mixture, compressed, NOS • UN 1965 hydrocarbon gas mixtures, liquefied, NOS • UN 1971, UN 1972 natural gas with methane content
Standard documentation	• Certificate of conformity • Hydrostatic test certificate • User instructions • User spare parts list

EXPLORATION SAMPLE CYLINDERS

PRODUCT SPECIFICATION SHEET PRODUCTION

20 Litre Gas Cylinder TPED DOT TC

Proserv's unique double ended 20 litre aluminium gas cylinder is the sampling industry standard where large volume surface separator gas samples are required to be taken during well testing.

The cylinder is suitable for use in any ambient condition expected outdoors, subject to the specified temperature limitations, including offshore platforms, onshore terminals and sites in tropical areas.

Features and benefits

- Angled pattern Ventil valves with 1/4 inch NPT thread, female ports
- One valve is fitted with a fusible plug burst disc port - cylinder is supplied with fusible plug burst disc fitted
- Blanking plug available separately

Technical Specification	
Description	
Part number	PS002CYL
Net volume	20,000 cc (20L)
Maximum allowable working pressure	193 bar(g) (2,800 psi) at 65 °C 170 bar(g) (2,465 psi) at 95 °C
Design temperature	-20 °C to 95 °C
Material	Cylinder: aluminium alloy AA 6061 T6 grade aluminium alloys have been used without restriction on temperature under NACE. Valves: 316L stainless steel compliant to NACE MR-0175
Net weight	29 kg
Dimensions (OD x L)	250 x 980 mm
Burst disc plug	Rated to 220 bar @ 100 °C (3200 psi @ 212 °C)
Options	Transportation box for DOT compliance

Design and Documentation	
Code	• TPED Directive: 2010/35/EU • Department of Transport USA: DOT-3AL 2900 Transport Canada: TC-3ALM 200
Service	• UN 1075 petroleum gases, liquefied • UN 1965 hydrocarbon gas mixture, liquefied, NOS (not otherwise specified) • UN 1053 compressed gas, toxic, flammable, NOS • UN 1954 compressed gas, flammable, NOS • UN 1971 natural gas, compressed • UN 1006 argon compressed • UN 1016 carbon monoxide compressed • UN 1046 helium compressed • UN 1049 hydrogen, compressed • UN 1066 nitrogen, compressed • Gas mixtures: only when in compliance with the appropriate transport of dangerous goods regulations (see references)
Standard documentation	• User instructions • Spare parts list • Proserv certificate of conformity. • Manufacturing declaration of conformity with DOT-3AL 2900, TC-3ALM 200 & EU Directive 2010/35/EU

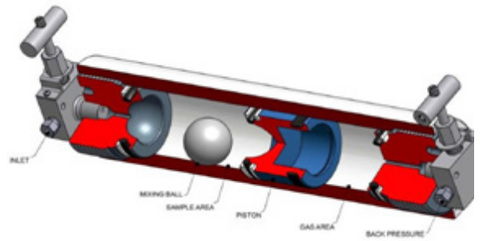
PRODUCT SPECIFICATION SHEET PRODUCTION

ProLight 690 bar 1,000 cc PED/DOT

The ProLight sample receiver is a portable single piston sample receiver with an internal mixing ball, double product inlet connections and one back pressure connection. The double inlet connection is suitable as a flush connection. Connections are furnished with mini-valves with 1/8 inch AE W125 ports.

Features and benefits

- Lightweight single piston sample receiver with internal mixing ball
- Autoclave engineers valves
- Inlet/outlet port: 1/8 inch AE W125

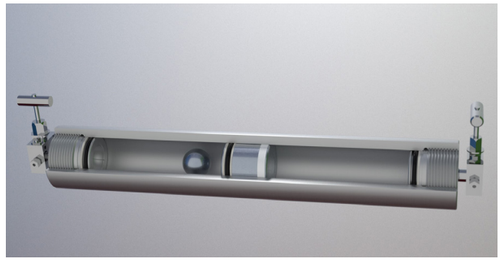


Technical Specification	
Description	
Part number	017774
Net volume	1,000 cc
Design temperature	-20 °C to +177 °C
Design pressure	10,000 psi @ 93 °C 9,700 psi @ 177 °C
Material	Cyl body: ASTM B348 Ti Gr. 5 End caps: ASTM B348 Ti Gr. 2 Piston: ASTM B348 Ti Gr. 2 Mixing ball: AISI 316 St Stl Mini valves: AISI 316 St Stl
Net weight	7.1 kg
Dimensions (OD x L)	Cyl length incl valves 660 mm Cyl body length 610 mm Cyl OD 72 mm
Options	• Hydrostatic test certificate, with third party endorsement, complete with inspection release note • Copy of PED 2014/68/EU D of C • Material certification to EN 10204: 3.1 for pressure retaining components • Other types of connections available on request • Ti Gr 6246 for Cyl body and Inconel valves (NACE MR 0175/ISO 15156 compliant) • Alternative O-ring seal material • Transportation box for compliance with DOT

Design and Documentation	
Approved for use and transport within, and across borders, in Europe and USA under the following European directives and US special permit: • 2014/68/EU (PED) • US DOT SP-15404 Design code: generally in accordance with PD 5500	
Service	• UN 1954 compressed gas, flammable, NOS • UN 1964 hydrocarbon gas mixture, compressed, NOS • UN 1965 hydrocarbon gas mixtures, liquefied, NOS • UN 1053 hydrogen sulphide (H2S) • UN 3161 liquefied gas, flammable, NOS • UN 1971, UN 1972 natural gas with methane content • UN 1066 nitrogen, compressed • UN 1267 petroleum crude oil • UN 1075 petroleum gases, liquefied or liquefied petroleum gas • UN 1006 argon, compressed • UN 1953 compressed gas, toxic, flammable, NOS
Standard documentation	• Certificate of conformity • Hydrostatic test certificate • User instructions • User spare parts list • Authorised inspectors certificate of conformance to DOT SP-15404 • Copy of DOT SP-15404

ProLight 690 bar 640cc NACE PED/DOT

The ProLight sample receiver is a portable single piston sample receiver with an internal mixing ball, double product inlet connections and one back pressure connection. The double inlet connection is suitable as a flush connection. Connections are furnished with mini-valves with 1/8 inch AE W125 ports.



Features and benefits

- Lightweight single piston sample receiver with internal mixing ball
- Autoclave Engineers valves
- Inlet/outlet port: 1/8 inch AE W125
- Compliant to NACE MR 0175/ISO 15156

Technical Specification	
Description	
Part number	054265
Net volume	629 cc
Design temperature	-20 °C to +177 °C
Design pressure	10,000 psi @ 93 °C 9,700 psi @ 177 °C
Material	Cyl body: 6246 titanium End caps: ASTM B348 Ti Gr. 2 piston: ASTM B348 Ti Gr. 2 mixing ball: AISI 316 St Stl mini valves sample: alloy 625 Mini valves precharge:316SS
Net weight	5.7 kg
Dimensions	Cyl length incl valves 500 mm Cyl body length 444 mm Cyl OD 72mm
Option	• Hydrostatic test certificate, with third party endorsement, complete with inspection release note • Copy of PED 2014/68/EU D of C • Material certification to EN 10204: 3.1 for pressure retaining components • Other types of connections available on request • Alternative valve material • Alternative O-ring seal material • Transportation box for compliance with DOT

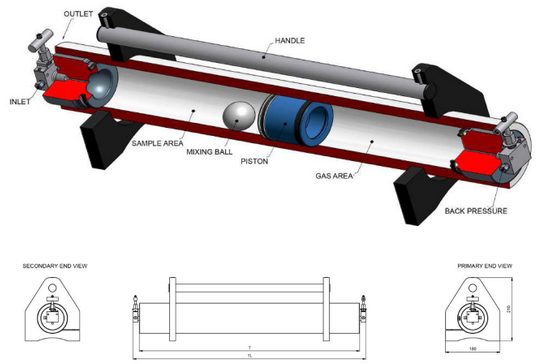
Design and Documentation	
Code	97/23/EC (PED) Design code: PD 5500:2012
Service	• UN 1954 compressed gas, flammable, n.o.s • UN 1964 hydrocarbon gas mixture, compressed, NOS • UN 1965 Hydrocarbon gas mixtures, liquefied, NOS • UN 1053 hydrogen sulphide (H2S) • UN 3161 liquefied gas, flammable, NOS • UN 1971, UN 1972 natural gas with methane content • UN 1066 nitrogen, compressed • UN 1267 petroleum crude oil • UN 1075 petroleum gases, liquefied or liquefied petroleum gas • UN 1006 argon, compressed • UN 1953 compressed gas, toxic, flammable, NOS
Standard documentation	• Certificate of conformity • Hydrostatic test certificate • User instructions • User spare parts list • Authorised inspectors certificate of conformance to DOT SP-15404 • Copy of DOT SP-15404

ProLight Ti-690-400-MB

The ProLight sample receiver is a portable single piston sample receiver with an internal mixing ball, double product inlet connections and one back pressure connection. The double inlet connection is suitable as flush connection. Connections are furnished with mini-valves with 1/8 inch AE W125.

Features and benefits

- Lightweight single piston sample receiver
- Internal mixing ball
- Autoclave Engineers needle valves
- Outlet port: 1/8 inch AE W125



Technical Specification	
Description	
Part number	Ti-690-400-MB
GA-drawing	3CA-031
Net volume	4,001 cc
Design temperature	-20 °C to +65 °C
MAWP	690 bar g @ 65 °C
Material	Cyl body: ASTM B348 Gr. 5 End caps: ASTM B348 Gr. 2 Piston: ASTM B348 Gr. 2 Mixing ball: ASTM A479 316
Net weight	26.5 kg
Dimensions	T = 1250 mm TL = 1293 mm H = 210 mm W = 180 mm OD = 100 mm
Option	• Mixing ball • Material cert. EN 10204 3.1 on vessel and valves • Transport box • Various kinds of connections available

Design and Documentation	
Code	PD5500:2009
Applied directive	PED 97/23/EC
Service	• UN 1267 petroleum crude oil • UN 1075 petroleum gases, liquided • UN 1954 compressed gasses, flammable, NOS • UN 1971 natural gas, compressed • UN 1066 nitrogen, compressed • Formation water
Standard documentation	• Hydrostatic pressure test certificate endorsed by third party • User guide • Declaration of Conformity

Type 5 10k 700 cc PED DOT TC

The Type 5 (10K) sample cylinder is designed specifically for the task of housing samples transferred from the Proserv downhole sampler, for transportation to the analysis laboratory and subsequent storage. This transportable sampling cylinder is of piston type with two end caps, sealed with double O rings and back-up rings.

Features and benefits

- Single piston sample receiver, with internal mixing device
- Sample mixing options of a single mixing ball
- Evacuation port on sample side of cylinder
- Autoclave Engineer needle valves fitted
- Valve inlet/outlet ports: 1/4 inch NPT female
- Valve protection guards fitted

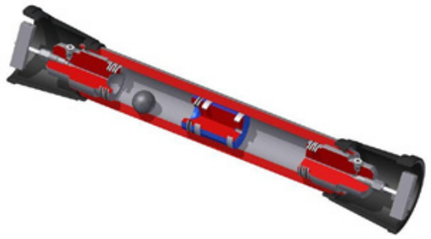
Technical Specification	
Description	
Part number	850669-700
Net volume	700 cc
Design temperature	-20 °C to +150 °C
Design pressure	10,000 psi (690 bar)
Material	Cylinder and end caps: 17-4PH St. Stl. (AISI 630) in NACE MR0175 condition piston and mixing device: 316 St. Stl. (AISI 316) in NACE MR0175 condition
Net weight	17.5 kg (empty) 18.2 kg (pre-charged water/glycol)
Dimensions	Overall length 693 mm Cylinder OD 89 mm
Options	• Hydrostatic certificate, with third party endorsement • Third party inspection release note Material certification to EN 10204: • 3.1 or 3.2 for main pressure retaining components • 500 cc and 1,000 cc volume options available • Transportation box for compliance with DOT

Design and Documentation	
Reference	Approved for use and transport within, and across borders, in Europe, USA and Canada under the following European Directives, US Special Permit and Transport Canada Equivalency Certificate: • 97/23/EC (PED) • US DOT SP-12116 • TC Equivalency Certificate SU9269
Service	• UN 1066 - nitrogen, compressed • UN 1075 - petroleum gases, liquefied or liquefied petroleum gases • UN 1267 - petroleum crude oil • UN 1953 - compressed gas, toxic, flammable, NOS • UN 1954 - compressed gas, flammable, NOS • UN 1964 - hydrocarbon gases mixtures, compressed, NOS • UN 1965 - hydrocarbon gases mixtures, liquefied, NOS • UN 1971 - methane, compressed or natural gas, compressed
Standard documentation	• Hydrostatic Certificate • Authorised Inspectors Certificate of Conformance to DOT SP-12116 and TC Equivalency Certificate SU9269 • Copy of DOT SP-12116 • User instructions and user spare parts list

PRODUCT SPECIFICATION SHEET PRODUCTION

Type 5 15k 700 cc PED DOT TC

The Type 5 (15K) sample cylinder is designed specifically for the task of housing samples transferred from the Proserv downhole sampler, for transportation to the analysis laboratory and subsequent storage. This transportable sampling cylinder is of piston type with two end caps, sealed with double O rings and back-up rings.



Features and benefits

- Single piston sample receiver, with internal mixing device
- Sample mixing options of a single mixing ball (illustrated)
- Evacuation port on sample side of cylinder
- Autoclave Engineer needle valves and valve protection guards fitted
- Valve inlet/outlet ports: 1/4 inch AE medium pressure female

Technical Specification	
Description	
Part number	850870-700
Net volume	700 cc
Design temperature	-20 °C to +200 °C
Design pressure	15,000 psi (1,034 bar)
Material	Cylinder and end caps: 17-4PH St. Stl. (AISI 630) in NACE MR0175 condition piston and mixing device: 316 St. Stl. (AISI 316) in NACE MR0175 condition
Net weight	21.2 kg (empty) 21.9 kg (pre-charged water/glycol)
Dimensions	Overall length 719 mm Cylinder OD 90 mm
Options	• Hydrostatic certificate, with third party endorsement • Third party inspection release note Material Certification to EN 10204: • 3.1 or 3.2 for main pressure retaining components • 500 cc and 1,000 cc volume options available • Transportation box for compliance with DOT

Design and Documentation	
Approved for use and transport within, and across borders, in Europe, USA and Canada under the following European Directives, US Special Permit and Transport Canada Equivalency Certificate: • 2014/68/EU (PED) • US DOT SP-12116 • TC Equivalency Certificate SU9269	
Service	• UN 1066 - nitrogen, compressed • UN 1075 - petroleum gases, liquefied or liquefied petroleum gases • UN 1267 - petroleum crude oil • UN 1953 - compressed gas, toxic, flammable, NOS • UN 1954 - compressed gas, flammable, NOS • UN 1964 - hydrocarbon gases mixtures, compressed, NOS • UN 1965 - Hydrocarbon gases mixtures, liquefied, NOS • UN 1971 - methane, compressed or natural gas, compressed
Standard documentation	• Hydrostatic certificate • Authorised Inspectors Certificate of Conformance to DOT SP-12116 and TC Equivalency Certificate SU9269 • Copy of DOT SP-12116 • User instructions and user spare parts list

PRODUCT SPECIFICATION SHEET PRODUCTION

Type 6 10k 700 cc PED DOT TC

The Type 6 (10K) cylinder is designed specifically for the task of housing samples transferred from the Proserv downhole sampler, for transportation to the analysis laboratory and subsequent storage.

Features and benefits

- Single piston sample receiver, with internal vortex ring mixing device
- Single phase nitrogen reservoir
- Evacuation port on sample side of cylinder
- Valve inlet/outlet ports: nitrogen reservoir – 1/4 inch AE medium pressure female.
- Sample and precharge: 1/4 inch NPT female

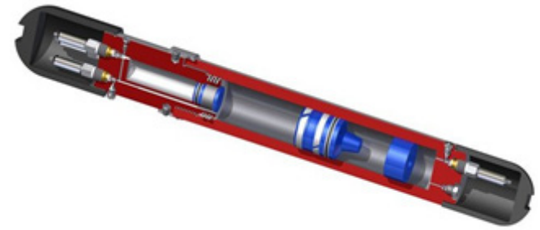
Technical Specification	
Description	
Part number	850409-700
Net volume	700 cc fluid and 100 cc nitrogen
Design temperature	- 20 °C to +150 °C
Design pressure	10,000 psi (690 bar)
Material	Cylinder and end caps: 17-4PH St. Stl. (AISI 630) in NACE MR0175 Condition piston and mixing device: 316 St. Stl.(AISI 316) in NACE MR0175 Condition
Net weight	22 kg (empty) 22.7 kg (pre-charged water/glycol)
Dimensions	Cylinder length 720 mm Cylinder OD 89 mm Length with guards 810 mm
Options	• Hydrostatic certificate, with third party endorsement • Third party inspection release note Material Certification to EN 10204: • 3.1 or 3.2 for main pressure retaining components • 500 cc and 1,000 cc volume options available. • Transportation box for compliance with DOT

Design and Documentation	
Approved for use and transport within, and across borders, in Europe, USA and Canada under the following European Directives, US Special Permit and Transport Canada Equivalency Certificate: • 2014/68/EU (PED) • US DOT SP-12116 • TC Equivalency Certificate SU9269	
Service	• UN 1066 - nitrogen, compressed • UN 1075 - petroleum gases, liquefied or liquefied petroleum gases • UN 1267 - petroleum crude oil • UN 1953 - compressed gas, toxic, flammable, NOS • UN 1954 - compressed gas, flammable, NOS • UN 1964 - Hydrocarbon gases mixtures, compressed, NOS • UN 1965 - hydrocarbon gases mixtures, liquefied, NOS • UN 1971 - methane, compressed or natural gas, compressed
Standard documentation	• Hydrostatic certificate • Authorised Inspectors Certificate of Conformance to DOT SP-12116 and TC Equivalency Certificate SU9269 • Copy of DOT SP-12116 • User instructions and user spare parts list

PRODUCT SPECIFICATION SHEET PRODUCTION

Type 6 15k 700 cc PED DOT TC

The Type 6 (15K) cylinder is designed specifically for the task of housing samples transferred from the Proserv downhole sampler, for transportation to the analysis laboratory and subsequent storage.



Features and benefits

- Single piston sample receiver with internal vortex ring mixing device
- Single phase nitrogen reservoir
- Evacuation port on sample side of cylinder
- Autoclave Engineer needle valves integral to end caps
- Valve inlet/outlet ports: 1/4 inch AE medium pressure female
- Valve protection guards fitted

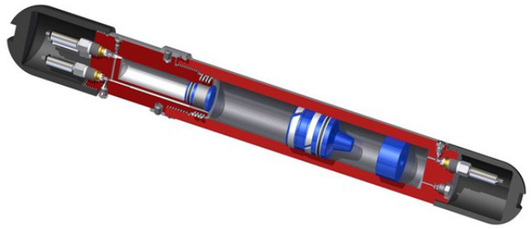
Technical Specification	
Description	
Part number	850852-700
Net volume	700 cc fluid and 100 cc nitrogen
Design temperature	-20 °C to +200 °C
Design pressure	15,000 psi (1034 bar)
Material	Cylinder and end caps: 17-4PH St. Stl. (AISI630) in NACE MR0175 Condition piston and mixing device: 316 St. Stl. (AISI 316) in NACE MR0175 condition
Net weight	24.1 kg (empty) 24.8 kg (pre-charged water/glycerol)
Dimensions	Cylinder length 720 mm Cylinder OD 91 mm Length with guards 820 mm
Options	• Hydrostatic certificate, with third party endorsement • Third party release note • Material Certification to EN1024: 3.1 or 3.2 for main pressure retaining components • Tranportation box for compliance with DOT

Design and Documentation	
Approved for use and transport within and across borders in Europe, USA and Canada under the following European Directives, US Special Permit and Transport Canada Equivalency Certificate: • 2014/68/EU (PED) • US DOT SP-12116 • TC Equivalency Certificate SU9269	
Service	• UN1066 - nitrogen, compressed • UN 1075 - petroleum gases, liquified or liquified petroleum gases • UN 1267 - petroleum crude oil • UN 1953 - compressed gas, flammable, NOS • UN 1954 - compressed gas, flammable, NOS • UN 1964 - hydrocarbon gases mixtures, compressed NOS • UN 1965 - hydrocarbon gases mixtures, liquified, NOS • UN1971 - methane, compressed or natural gas, compressed
Standard documentation	• Hydrostatic certificate • Authorised Inspectors Certificate of Conformance to DOT SP-12116 and TC Equivalency Certificate SU9269 • Copy of DOT SP-12116 • User instructions and user spare parts list

PRODUCT SPECIFICATION SHEET PRODUCTION

Type 6 15k 700 cc Extreme Service PED DOT

The Type 6 (15K) cylinder is designed specifically for the task housing samples transferred from the Proserv downhole sampler, for transportation to the analysis laboratory and subsequent storage.



Features and benefits

- Single piston sample receiver with internal vortex ring mixing device
- Inconel, 725, 625 and Hastelloy C-276 sample wetted parts
- Evacuation/purging port on sample side of cylinder
- Autoclave Engineer needle valves integral to end caps, with Hastelloy sample wetted parts
- Valve inlet/outlet ports: 1/4 inch AE medium pressure female.
- Valve protection guards fitted
- Fitted with H2S compatible FFKM seals (sample wetted)

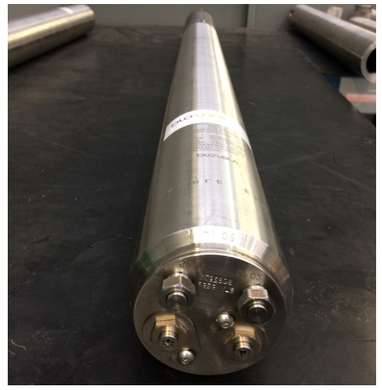
Technical Specification	
Description	
Part number	067851
Net volume	700 cc fluid and 100 cc nitrogen
Design temperature	-20 °C to +200 °C
Design pressure	15,000 psi (1034 bar)
Material	Cylinder body: NACE MR0175 compliant Inconel 725 Nitrogen end cap: 17-4 PH stainless steel (non-sample wetted) Piston and mixing device: NACE MR0175 compliant Inconel 625
Net weight	Approx 24.1 kg (empty)
Dimensions	Cylinder length 720 mm Cylinder OD 91 mm Length with guards 820 mm
Options	• Hydrostatic certificate, with third party endorsement • Third party release note • Material Certification to EN1024: 3.1 or 3.2 for main pressure retaining components • Tranportation box for compliance with DOT

Design and Documentation	
Approved for use and transport within and across borders in Europe, USA and Canada under the following European Directives, US Special Permit and Transport Canada Equivalency Certificate: • 2014/68/EU (PED) • US DOT SP-12116 • PD5500 • BS EN 13445 • BS EN 14359	
Service	• UN1066 - nitrogen, compressed • UN 1075 - petroleum gases, liquified or liquified petroleum gases • UN 1267 - petroleum crude oil • UN 1953 - compressed gas, flammable, NOS • UN 1954 - compressed gas, flammable, NOS • UN 1964 - hydrocarbon gases mixtures, compressed NOS • UN 1965 - hydrocarbon gases mixtures, liquified, NOS • UN1971 - methane, compressed or natural gas, compressed
Standard documentation	• Hydrostatic certificate • Authorised Inspectors Certificate of Conformance to DOT SP-12116 • User instructions and user spare parts list

PRODUCT SPECIFICATION SHEET PRODUCTION/LABORATORY

Sampling Cylinder Inconel 2,000 cc 20,000 psi PED

Proserv's 20K sample cylinder is a piston sample receiver suitable for transportation and subsequent storage of high pressure hydrocarbon samples. The cylinder can store both conventional or single phase samples depending on end cap configuration. The severe service cylinder can also be used as a fluid analysis lab large volume recombination vessel.



Features and benefits

- Large volume capacity
- Assembled for single phase/conventional samples
- Designed in accordance with PED 2014/68/EU
- Materials complaint to ANSI/NACE MR0175/ISO 15156
- Inconel construction, suitable for severe service
- Two litre recombination vessel
- Suitable for long term storage

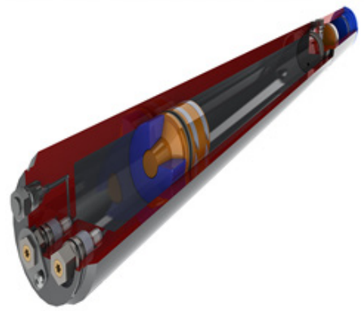
Technical specification	
Description	
Part number	108292
Net volume	2000 cc sample fluid and 500 cc nitrogen
Design pressure	20,000 psi (1379 bar)
Design temperature	-29 °C to 177 °C
Material	Cylinder body and end caps: Inconel 725 (UNS N07725) in ANSI/NACE MR0175/ ISO 15156 API-6A condition Sample piston and vortex ring: Inconel 625 (UNS N06625) in ANSI/NACE MR0175/ISO 15156 condition Nitrogen piston: 316 stainless steel (UNS S31600) Valves: Inconel 725 and 625 (UNS N07725 & N06625) in ANSI/NACE MR0175/ISO 15156 condition
Net weight	44 kg (empty) 46kg (pre-charged water/ glycol)
Dimensions	Cylinder length 1,341 mm Cylinder OD 88.9 mm
Options	1000 cc sample chamber volume on request, transportation box

Design and Documentation	
Optional certification	• Hydrostatic certificate, with third party endorsement • Third party inspection release notes • Material certification to EN 10204: 3.1 for main pressure retaining components • PED declaration of conformity
Service	• UN 1066 - nitrogen, compressed • UN 1075 - petroleum gases, liquefied or liquefied petroleum gases • UN 1267 - petroleum crude oil • UN 1953 - compressed gas, toxic, flammable, NOS • UN 1954 - compressed gas, flammable, NOS • UN 1964 - hydrocarbon gases mixtures, compressed, NOS • UN 1965 - hydrocarbon gases mixtures, liquefied, NOS • UN 1971 - methane, compressed or natural gas • UN 1053 – hydrogen sulfide
Standard documentation	• Hydrostatic test certificate • User instruction and user spare parts list
Approved for use within Europe under the following European directive: • 2014/68/EU (PED) DOT special permit approval (pending)	

SUBSEA SAMPLE CYLINDERS

Subsea Sampling Cylinder Inconel 2,000 cc 20,000 psi PED

Proserv's subsea sampling cylinder is designed to capture representative production fluid samples from a subsea environment, allowing for transportation directly to a fluid analysis laboratory without the requirement for fluid transfer. This reduces associated risk or sample loss / contamination, maintains sample integrity, limits the dangers associated with high pressure hydrocarbon transfer and reduces onsite equipment and personnel time during subsea sampling operations.



Features and benefits

- Large volume capacity
- Assembled for single phase / conventional samples
- Designed in accordance with PED 2014/68/EU
- Valves qualified to API 6A-PR2
- Materials complaint to ANSI/NACE MR0175/ISO 15156
- Inconel construction, suitable for severe service
- Eliminates need for transfer fluid in field

Technical specification	
Description	
Part number	108292
Net volume	2000 cc sample fluid and 500 cc nitrogen
Design pressure	20,000 psi (1379 bar)
Design temperature	-29 °C to 177 °C
Material	Cylinder and end caps: Inconel 725 (UNS N07725) in ANSI/NACE MR0175/ISO 15156 API-6A condition Sample piston and vortex ring: Inconel 625 (UNS N06625) in ANSI/NACE MR0175/ISO 15156 condition Nitrogen piston: 316 stainless steel (UNS S31600) Valves: Inconel 725 and 625 (UNS N07725 & N06625) in ANSI/NACE MR0175/ISO 15156 condition
Net weight	44 kg (empty) 46 kg (pre-charged water/ glycol)
Dimensions	Cylinder length 1341mm Cylinder OD 88.9mm
Water depth (maximum)	3,000 m
Options	1,000 cc sample chamber volume on request, transportation box

Design and Documentation	
Optional certification	• Hydrostatic certificate, with third party endorsement • Third party inspection release notes • Material certification to EN 10204: 3.1 for main pressure retaining components • PED declaration of conformity
Service	• UN 1066 - nitrogen, compressed • UN 1075 - petroleum gases, liquefiewd or liquefied petroleum gases • UN 1267 - petroleum crude oil • UN 1953 - compressed gas, toxic, flammable, NOS • UN 1954 - compressed gas, flammable, NOS • UN 1964 - hydrocarbon gases mixtures, compressed, NOS • UN 1965 - hydrocarbon gases mixtures, liquefied, NOS • UN 1971 - methane, compressed or natural gas • UN 1053 – hydrogen sulfide
Standard documentation	• Hydrostatic test certificate • API-6A PR2 Proserv certificate • User instruction and user spare parts list • Hyperbaric test (3000 m) third party witness
Approved for use within Europe under the following European directive: • 2014/68/EU (PED) DOT special permit approval (pending)	

ingenious simplicity

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