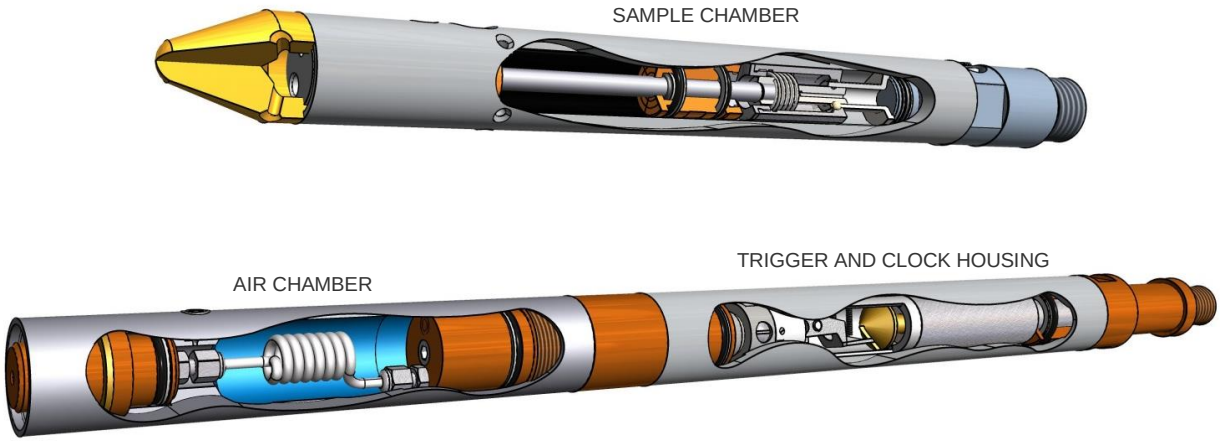
PRODUCT SPECIFICATION SHEET:

MK II PDS Downhole Sampler (600cc)



The P.D.S. Sampler tool is a device for taking hydrocarbon fluid samples from downhole reservoirs. The Sampler is designed to operate in most downhole environments and provide a method of capturing representative well fluid samples.

Main Features & Applications

- Suitable for sour service
- Deployed by Wire-line/Slick-line or Electric-line
- Double seals on all well pressure exposed joints
- Easily redressed onsite
- Rugged construction with minimal components

Type	
Part Number	86600.0.0000
Net volume	600 cc *(20 fl oz)* Sample
Max. Working Pressure Max. Working Temp.	15,000psi *(1035 bar)* 180°C *(356°F)*
Materials (Reservoir Wetted Parts)	17-4 PH St. Stl. (AISI 630), Aluminium Bronze CA104. Materials being in the condition specified within ANSI/NACE MR0175 /ISO 15156 latest edition
Net weight	28 kg *(62 lb)*
Dimensions	Diameter: 43 mm *(1.11/16 inch)* Length: 3,683 mm *(145 inch)*
Optional equipment	Transportation box available

Documentation & Design	
Standard	Hydrostatic Pressure Test Certificate: Sample Chamber Assembly Function Test Certificate Letter of Conformity User Manual
Option	Material Certificate: EN 10204 Type 3.1 for pressure retaining parts
Code	Generally to PD 5500 Code Lloyds Register Design Appraisal

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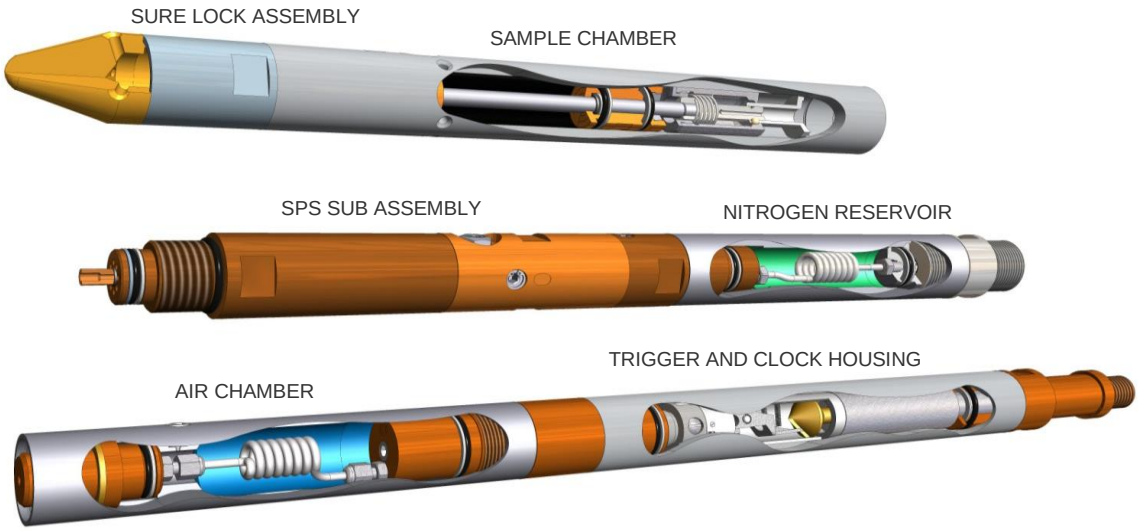
PRODUCT SPECIFICATION SHEET:

MK II PDS SPS Single Phase Sampler (600cc)



The P.D.S. S.P.S. Sampler is a device for taking fluid samples from down-hole reservoirs. The purpose of the Sampler is to capture high quality representative samples which are maintained in single phase (by inert gas cushion) during recovery to the surface. Subsequent PVT analysis of the sample provides data vital for economic and technical evaluation of a reservoir. The PDS SPS Sampler is designed to operate in most downhole environments.

Main Features & Applications

- Suitable for sour service
- Deployed by Wire-line / Slick-line, Electric-line or Carrier
- Easily redressed on-site
- Rugged construction with minimal components
- Suitable for sampling; fluids containing Asphaltines, Resins, Waxes and Formation water in solution.
- Also suitable for sampling condensates

Type	
Part Number	86600.SP.0.0000 - Dual
Net volume	600 cc *(20 fl oz)* Sample Approx. 500 cc *(17 fl oz)* Nitrogen
Max. Working Pressure Max. Working Temp.	15,000psi *(1035 bar)* 180°C *(356°F)*
Materials (Reservoir Wetted Parts)	17-4 PH St. Stl. (AISI 630), Aluminium Bronze CA104. Materials supplied in the condition specified within ANSI / NACE MR0175 / ISO 15156 latest edition
Net weight	34 kg *(75 lb)*
Dimensions	Diameter: 43 mm *(1.11/16 inch)* Length: 5,054 mm *(199 inch)*
Supplied separately	Transportation Box

Documentation & Design	
Standard	Hydrostatic Pressure Test Certificate: Sample Chamber Assembly Nitrogen Reservoir Assembly Function Test Certificate Letter of Conformity User Manual
Option	Material Certificate: EN 10204 Type 3.1 for pressure retaining parts
Code	Generally to PD 5500 Code Lloyds Register Design Appraisal

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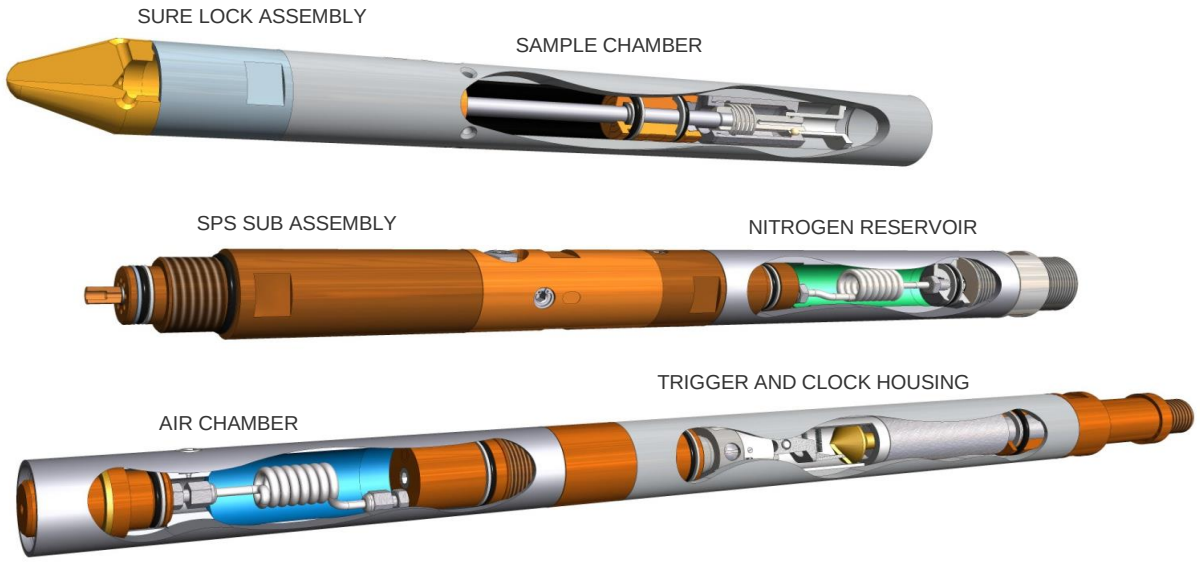
PRODUCT SPECIFICATION SHEET:

MK II PDS SPS Single Phase Inconel Sampler (600cc)



The P.D.S. S.P.S. Inconel Sampler is a device for taking fluid samples from downhole reservoirs. The purpose of the Sampler is to capture high quality representative samples which are maintained in single phase (by inert gas cushion) during recovery to the surface. Subsequent PVT analysis of a sample provides data vital for economic and technical evaluation of a reservoir. The P.D.S. S.P.S. Inconel Sampler has been designed using highly corrosion resistant materials, capable of operating in extremely sour service HP/HT environments.

Main Features & Applications

- Maintains downhole fluid samples in single phase
- Inconel sample chamber and sample wetted parts
- Suitable for sour service, with high H_2S & CO_2 reservoir conditions
- Suitable for sampling; fluids containing Asphaltines, Resins, Waxes and Formation water in solution.
- Also suitable for sampling condensates
- Rugged construction with minimal components
- Deployed by Wire-line / Slick-line, Electric-Line or Carrier
- On-site seals redress capability

Type	
Part Number	077723
Net volume	600 cc *(20 fl oz)* Sample 500 cc *(17 fl oz)* Nitrogen
Max. Working Pressure Max. Working Temp.	15,000psi *(1035 bar)* 180°C *(356°F)*
Material (Reservoir Wetted Parts)	Inconel 725, 925 & 625. Also Coated Bronze CA104. Materials supplied in the condition specified within ANSI / NACE MR0175 / ISO 15156 latest edition
Net weight	37kg *(82lb)*
Dimensions	Diameter: 43 mm *(1.11/16 inch)* Length: 5,054 mm *(199 inch)*
Supplied Separately	Transportation Box available

Documentation & Design	
Standard	Hydrostatic Pressure Test Certificate: Sample Chamber Assembly Nitrogen Reservoir Assembly Function Test Certificate Letter of conformity User Manual
Option	Material Certificate: EN 10204 Type 3.1 for pressure retaining parts
Code	Generally to PD 5500 Code

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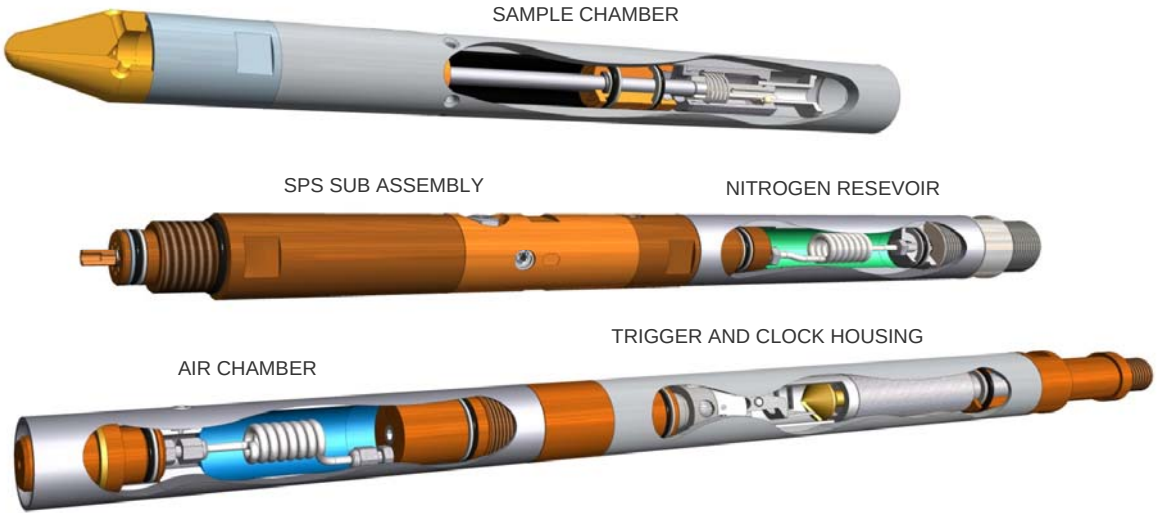
PRODUCT SPECIFICATION SHEET:

MK II PDS SPS Single Phase Sampler, Coated.



The P.D.S. S.P.S. MK II Downhole coated Sampler is a device for taking in-situ reservoir samples. The purpose of the Downhole coated Sampler is meet specific market requirements as well as to provide a high quality representative sample which is maintained in single phase (using nitrogen gas). Subsequent PVT analysis of a sample can provide data vital for economic and technical evaluation of a reservoir. The Downhole coated Sampler can either be Tech 12 coated, Dursan coated or Silconert 2000 coated. Both Dursan and silconert 2000 coatings has been designed to offer highly inert, hardness and superior corrosion resistant of stainless steel and durability in most harshest environments and consistently produce representative samples regardless of the fluid or conditions.

Main Features & Applications

- Suitable for sampling of sulphur, H_2S (within NACE material limits), mercaptan, ammonia , mercury, CO2 and high G.O.R. wells
- Suitable for all formation fluids including near critical fluid and formation water.
- Also suitable of sampling of organic scale (Asphaltines, Resins, Waxes)
- Dursan is the preferred coating for low level H_2S studies.
- Silconert 2000 stable inert surface prevents adsorption of active compounds like mercury and ensures accurate sampling.
- Rugged construction with minimal components
- Superior wear resistance and durability under extreme conditions
- Reduces the overall system maintenance cost and sampling reliability
- Suitable for fast redress ability
- Lloyd's Register Design Approval

Type	
Part Number	Tech 12-586600.SP.0.0000CT12 Dursan - TBC Silconert 2000 - TBC
Net volume	600 cc *(20 fl oz)* Sample 450 cc *(15 fl oz)* Nitrogen
M.A.W.P	1035 bar @ 180°C *(15,000 psi @ 356°F)*
Material	17-4 PH St. Stl. (AISI 630), Aluminium Bronze CA104. All conform to N.A.C.E. MR0175 latest review.
Net weight	34 kg *(75lb)*
Dimensions	Diameter: 43 mm *(1.7 in)* Length: 5,054 mm *(199 in)*

Documentation & Design	
Standard	Hydrostatic Pressure Test Certificate (Sample Chamber) Function Test Certificate
Option	Material certificate: EN 10204 Type 3.1 for pressure retaining parts Certificate of conformity on external wetted parts Letter of conformity User Manual Transportation Box available
Code	Generally to PD 5500 Code Lloyds Register Design Approval

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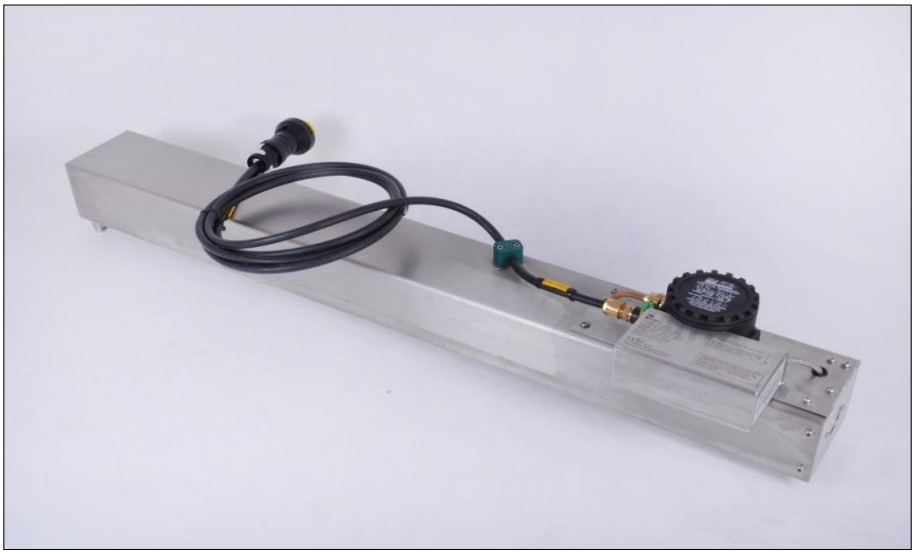
PRODUCT SPECIFICATION SHEET:

Ex Sampler Heating Jacket

Ex Sampler Heating Jacket



Features & Benefits

- EX II 2G Classification (See also individual equipment marking & certificates)
- For use in Zone 1 area
- Supplied for use with 110V or 240V supply (customer must specify preference).
- Allowable temp. setting of 0 to 180deg.C
- Fail safe temperature cut out set at 190deg.C.
- Includes a 4mtr mains cable complete with Ex Plug & Ex Glands.
- Temperature setting is preset before use, control dial located within Thermostat controller box.
- Used in conjunction with Proserv Downhole Sampler & Micro Field Transfer Bench

Description:	
Part No.	850687/9 110V EX 850687/9 240V EX
Supply Voltage	110 / 120V AC 220 / 240V AC
Current Rating	7.5 Amps 3.3 Amps
Power Range	800 Watts
Design Temp Range	0 to 180°C
Cut-off Temp Set Point	+190°C
Material – Outer Box Jacket	316 Stainless Steel
Material – Inner Tube Liner	Aluminium
Jacket Dimensions	H=120mm, W=150mm, L=1290mm
Internal Bore Diameter	1.750 inch, (44.5mm)
Weight	19.3Kg

Design & Documentation	
Design Code	ATEX 94/9/EC
Service	Suitable for use in Zone 1 Hazardous Area
Certification	Ex II 2G
Documentation	Certificate of Conformity User Instructions
Optional	Ex Component Certificates

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PRODUCT SPECIFICATION SHEET:

PDS/SPS Sampler Mechanical Clock

The Mechanical Clocks are designed specifically to trigger PDS and SPS Bottom Hole Samplers. The minimum time division varies depending on the maximum run time. Though of a robust design the clock should be handled with care and not be subjected to severe mechanical shock. It is advised that clocks should be returned to Proserv for maintenance and servicing by qualified technicians.

Features & Benefits

- Each clock can be set up to a maximum run time
- 2.5 hr, 5 hr, 10hr and 24 hr maximum clock run times are available

Description:	
Model	PDS/SPS Clocks
G.A Drawing.	851269-24H 851270-10H 851271-5H 851272-2.5h
M.W.A.T	180°C (356°F)
Material	Outer Body- Stainless Steel Clock Workings-Brass and St Stl With Jewelled High Temperature Escapement
Net Weight	1.4Kg (3.08lb)
Dimensions	Length: 405 mm (15.9” in) Diameter: 30 mm (1.2” in)

Design & Documentation	
Standard	Letter of conformity
Service	Contained in a non-pressurised Part of the Sampler and protected from external well pressure

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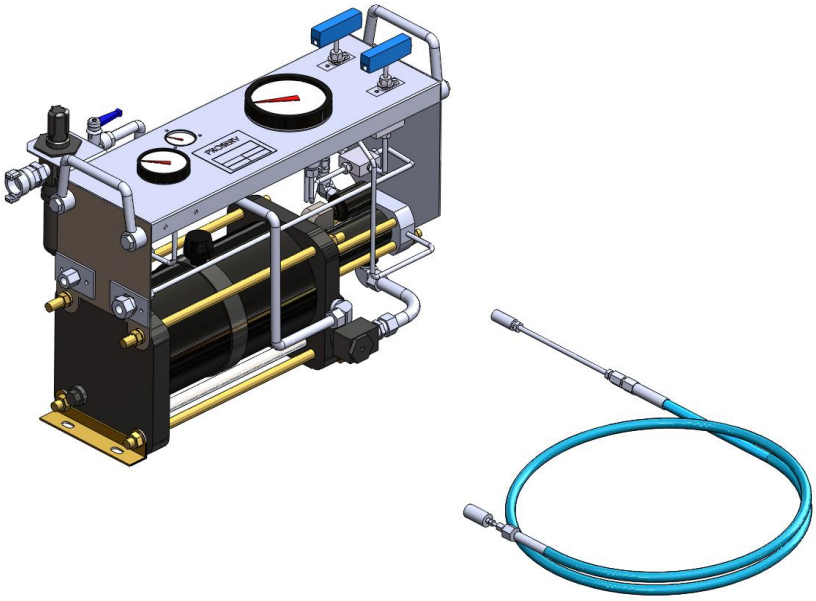
PRODUCT SPECIFICATION SHEET:

Gas Booster Pump

GAS BOOSTER PUMP



Features & Benefits

- Allows the precharging of Proserv's SPS Sampler
- Allows the precharging of Proserv's Type 6 Cylinder Nitrogen End Cap
- Monitoring & control of gas pressure during operation
- Aluminium Transportation Box
- Hose & fittings for ¼" AE MP High Pressure outlets to Proserv products

Specification	
Part Number	851007-AG-152-NGBP
Max Working Pressure*	1380 Bar (20,000 PSI)
Test Pressure*	1380 Bar (20,000 PSI)
Minimum Gas Inlet Pressure	17 Bar (250 PSI)
Maximum Air Drive Pressure	10.34 Bar (150 PSI)
Working Temperature	-4°C to +65°C

Service	
UN 1066	Nitrogen, compressed
UN1006	Argon, compressed
UN1971	Natural Gas, compressed
UN1072	Oxygen, compressed (at reduced pressure)

*Pressure figures given are for inert gases only (Nitrogen and Argon), for ratings for other gases please contact Proserv.

ADDITIONAL PRODUCTS USED:

Additional Products	Maximum Allowable Working Pressure	Maximum Allowable Working temperature
Proserv SPS Downhole Sampler	*1034 Bar (15000 PSI)*	*180°C (356°F)*
Proserv Type 6 Sample Cylinder	*As marked on cylinder*	*As marked on cylinder*

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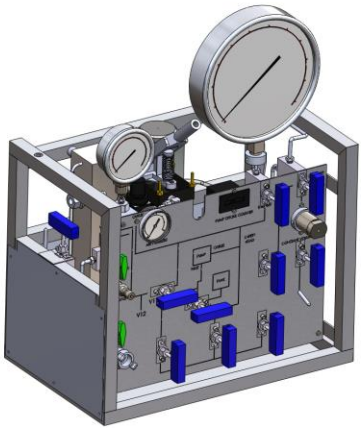
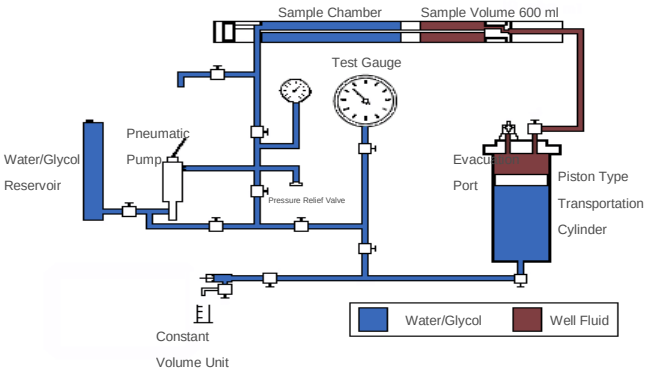
PRODUCT SPECIFICATION SHEET:

Micro Field Transfer Bench





The Transfer bench is of a stainless steel construction. When unpacked from its cover and assembled, all valves are accessible from the front with the sample chamber fixed across the top of the bench and the sample cylinder at the rear. In addition to the main bench itself, there is an accessories box which contains all hoses and attachments for the transfer operation. The bench is fitted with an Autoclave universal safety head containing a rupture disc.

Features & Benefits

- Compatible with Proserv P.D.S. / S.P.S. MK II Downhole Sampler and Piston Type Sample Cylinders.
- Allows samples to be transferred from the sampler to a shipping Cylinder for transportation to the P.V.T. Lab for analysis.
- The Sample must be monophasic and homogenous prior to transfer.
- Allows a validation to be carried out after the transfer to ascertain a bubble point and comparison between samples.

Type	
Part Number	88000.0.0000
M.A.W.P.	1034Barg (15000 PSI) @ 180°C
Rupture Disc Set Pressure	1237.25 – 1352.04 Bar @ 22°C (17945 – 19610 PSI @ 72°F)
Material	All Stainless Steel Construction
Dimensions (Not inc. Gauges)	L x W x H (mm) 570 x 340 x 430
Net Weight	42 Kg
Transfer Fluid	1/3 Glycol 2/3 Water
Valves	Autoclave Medium Pressure 20VM Series
Pump	Haskel M188

Documentation & Design	
Standard	Hydrostatic Pressure Test Certificate c/w Lloyds Verification Certificate of Calibration for both gauges Lloyd's Release Note Haskel Pump user guide & spare parts list Enerpac pump user guide & spare parts list
Option	Certificate of Conformity on external wetted parts Letter of Conformity User Manual

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