



WELL INTERVENTION

Bespoke Intervention Solutions



TIS Manufacturing | Bespoke Intervention Solutions

TIS Manufacturing has extensive experience in the provision of bespoke equipment for a range of unique intervention applications.

Bespoke Mechanical Equipment

- ▶ Hose Reelers & Capillary Spoolers
- ▶ Wireline Units
- ▶ Injectors & Powered Sheaves
- ▶ Control Units & Powerpacks
- ▶ Wireline Sheaves
- ▶ Ancillary Manifolds

Bespoke Pressure Control Equipment

- ▶ Wireline Valves
- ▶ Coiled Tubing BOPs
- ▶ Strippers, Stuffing Boxes & Snubbing Heads
- ▶ Lift Caps, Test Cabs & Ancillaries



Bespoke Intervention Solutions | Annulus Intervention Package

The **Annulus Intervention Equipment Package** is designed to facilitate annulus intervention operations, providing safe and easy means to deploy our client's proprietary technology into the annulus for a range of intervention applications.

The equipment is designed to be as compact as possible while working around wellheads, with each package comprised of the following;

- ▶ Reeler and remote
- ▶ Injector and remote
- ▶ Micro Pressure Test Unit
- ▶ Pump manifold
- ▶ Chemical manifold
- ▶ Air manifold

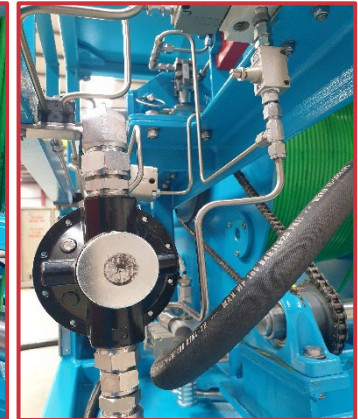
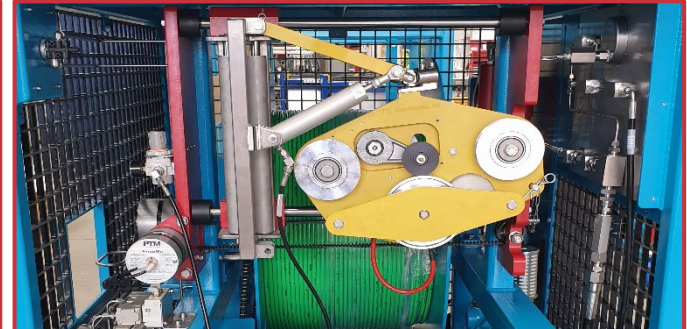


Annulus Intervention Package | Hose Reeler

The **Reeler Assembly** featured in the Annulus Intervention Package, is designed for the deployment and retrieval of 11.5mm or 6.9mm OD hosing.

Key features;

- ▶ DNVGL-ST-E271
- ▶ ATEX Zone 1
- ▶ Pneumatically Driven Motor
- ▶ Hydraulic Slipping
- ▶ Measuring Head (depth & tension)
- ▶ Steel Bulkhead
- ▶ Pneumatic Hookup Connectors
- ▶ Comes w/ Remote Control Panel

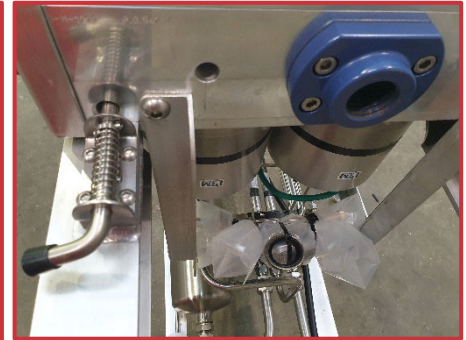


Annulus Intervention Package | Injector

The **Injector Stand** featured in the Annulus Intervention Package, is designed for the deployment and retrieval of 11.5mm or 6.9mm OD hosing. The Injector incorporates quick-release catches for de-mounting the injector from the stand.

Key features;

- ▶ ATEX Zone 1
- ▶ Two-off Pneumatically Driven Motors
- ▶ Six-off “Gripper” Cylinders
- ▶ Pneumatic Hook-Up Options
- ▶ ESD Controls
- ▶ Comes w/ Remote Control Panel

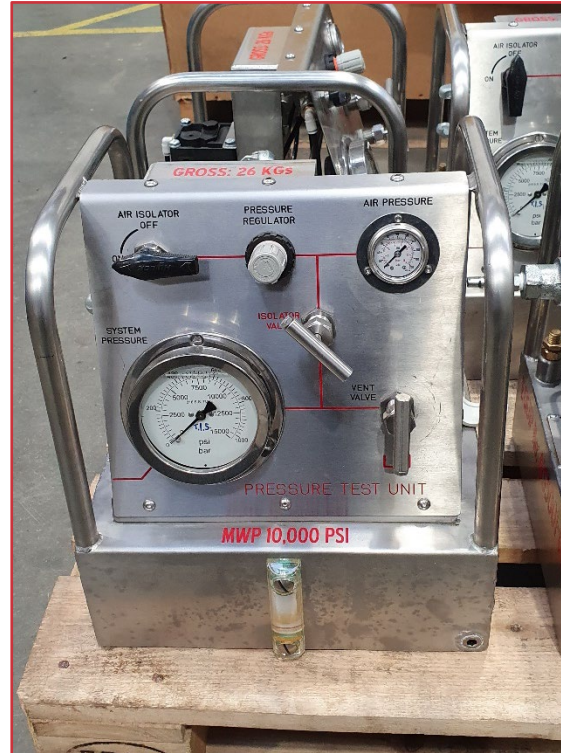


Annulus Intervention Package | Micro PTU's

The **Micro Pressure Test Units** featured in the Annulus Intervention Package, are designed for pressure testing through a single line outlet during via a robust hand portable unit.

Key features;

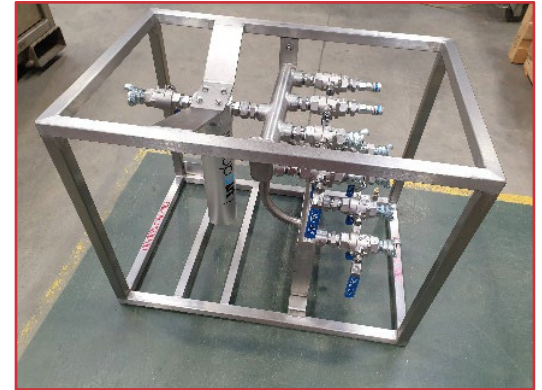
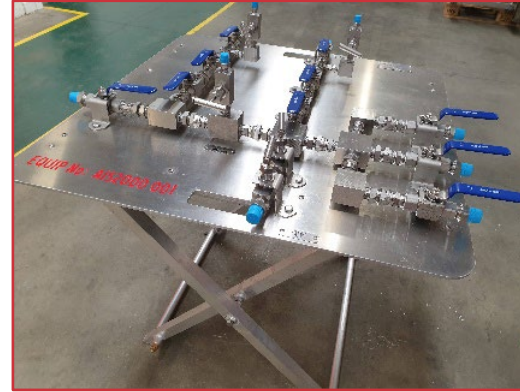
- ▶ ATEX Zone 1
- ▶ Hand Portable
- ▶ Air Driven Pump
- ▶ Fluid Reservoir with Filler Breather and Sight Glasses.
- ▶ Colour Engraved Control Panel



Annulus Intervention Package | Manifold Assemblies

The **Pump Manifold**, **Chemical Manifold**, and **Air Filter Manifold** are designed for filtering and diverting a range of common fluid & pneumatic supplies to multiple flow paths for testing and functionality purposes.

Each is designed to be as robust, compact and ergonomic as possible.



Bespoke Intervention Solutions | Capillary-Slickline Combi Package

The **TIS Capillary-Slickline Combi Package** is comprised of specialist, bespoke equipment for use in Well Intervention operations.

The package includes;

- ▶ Capillary-Slickline Combi Unit
- ▶ Injector Assembly
- ▶ Diesel Powerpack
- ▶ 4" Quad WLV, Snubbing Head, and Stuffing Box
- ▶ PCE Transportation Frame
- ▶ Drum Transportation Box



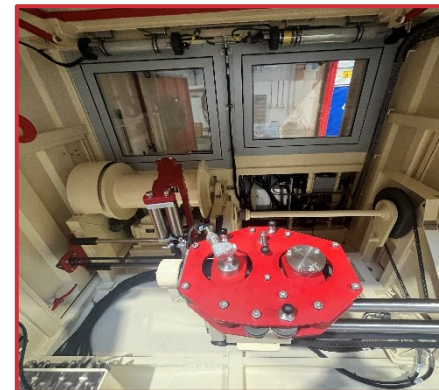
Capillary-Slickline Combi Package | Capillary-Slickline Combi Unit

The **Containerised Capillary-Slickline Combi Unit** is designed to deploy both capillary line and slickline from a DNV-ST-E271 and CE ATEX Zone 2 certified unit, while provides control for:

- ▶ Capillary Drum
- ▶ Slickline Drum
- ▶ Capillary Injectro
- ▶ 4" Quad BOP, Snubbing Head, and Stuffing Box

Key features:

- ▶ DNV-ST-E271
- ▶ CE ATEX Zone 2
- ▶ 4-Off 20 Litre Accumulators
- ▶ Digital Electronic Display Monitor
- ▶ Electric Space Heaters & A/C Unit for operator comfort
- ▶ Stainless Steel Control Panel w/ Colour Filled Engraving



Capillary-Slickline Combi Package | Injector Assembly

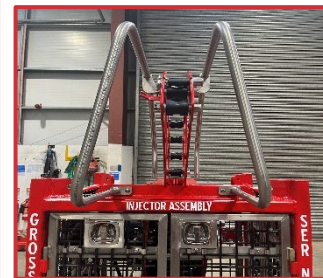
The **Injector Assembly** is specifically designed for the use of deployment and retrieval of capillary tubing strings of $\frac{1}{4}$ " and $\frac{3}{8}$ " OD.

The unit is supplied in a closed frame and with a top running sheave to suit above strings.

Operation of the Injector is manually controlled via the control panel in the Capillary-Slickline Combi Unit

Key features:

- ▶ DNV-ST-E271
- ▶ ATEX Zone 2
- ▶ Four-off "Gripper" cylinders
- ▶ Quick connect connections
- ▶ Capillary Gooseneck

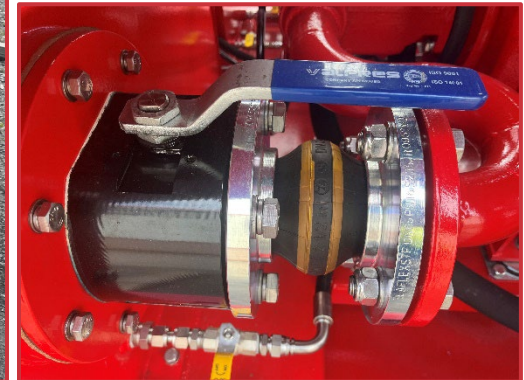
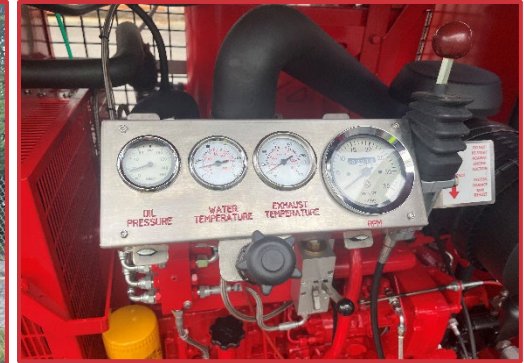


Capillary-Slickline Combi Package | Diesel Powerpack

The **Zone 2 Diesel Powerpack** supplied with the Capillary Package delivery. The unit is designed to supply power to the Capillary-Slickline Combi Unit.

Key features:

- ▶ DNV-ST-E271
- ▶ ATEX Zone 2
- ▶ 430 Litre Hydraulic Reservoir
- ▶ 4 cylinder 4.4 naturally aspirated engine, up to 84.5 BHP
- ▶ Robust & Compact Design



Capillary-Slickline Combi Package | 4" Quad Apollo Wireline Valve

The **4" Quad Apollo Wireline Valve** is of Monoblock construction, designed to be small, lightweight and easy to operate and maintain.

Key features:

- ▶ Stainless Steel Protection Frame
- ▶ Stainless Steel Cylinder / RAM Guide Bars
- ▶ Fitted Equaliser Valves
- ▶ Grease Injection Port

Additional PCE supplied:

- ▶ Test Mount Sub
- ▶ Lift Cap
- ▶ Capillary Snubbing Head
- ▶ Slickline Stuffing Box



Capillary-Slickline Combi Package | Transportation Frames

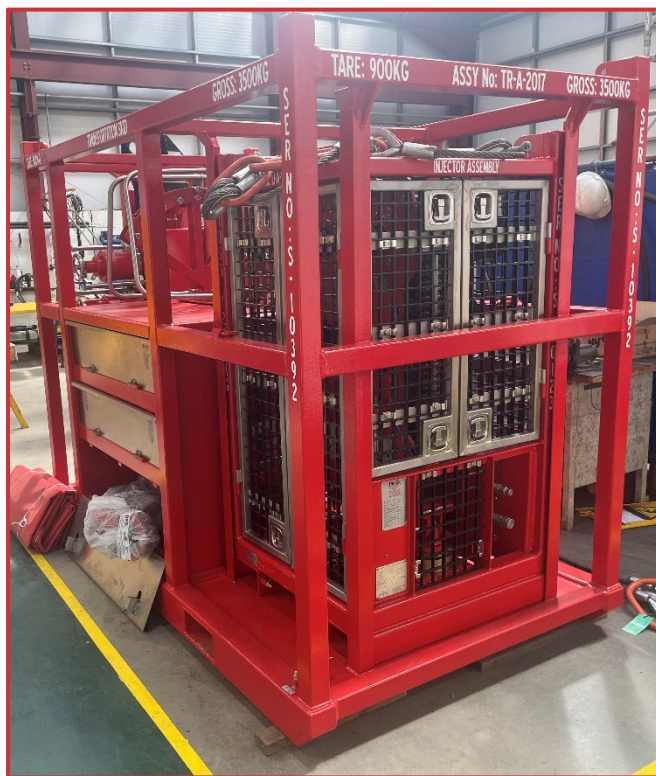
A **PCE Transportation Frame** and a **Drum Transportation Box** was supplied with each package for transportation and storage of various package items.

PCE Transportation Frame:

- ▶ DNV-ST-E271
- ▶ Housing Quad WLV, Capillary Snubbing Head, Slickline Stuffing Box, Lift-Test Cap, Injector, and WLV Hose Bridles

Drum Transportation Box:

- ▶ DNV-ST-E271
- ▶ Housing spare 48" Capillary Drum

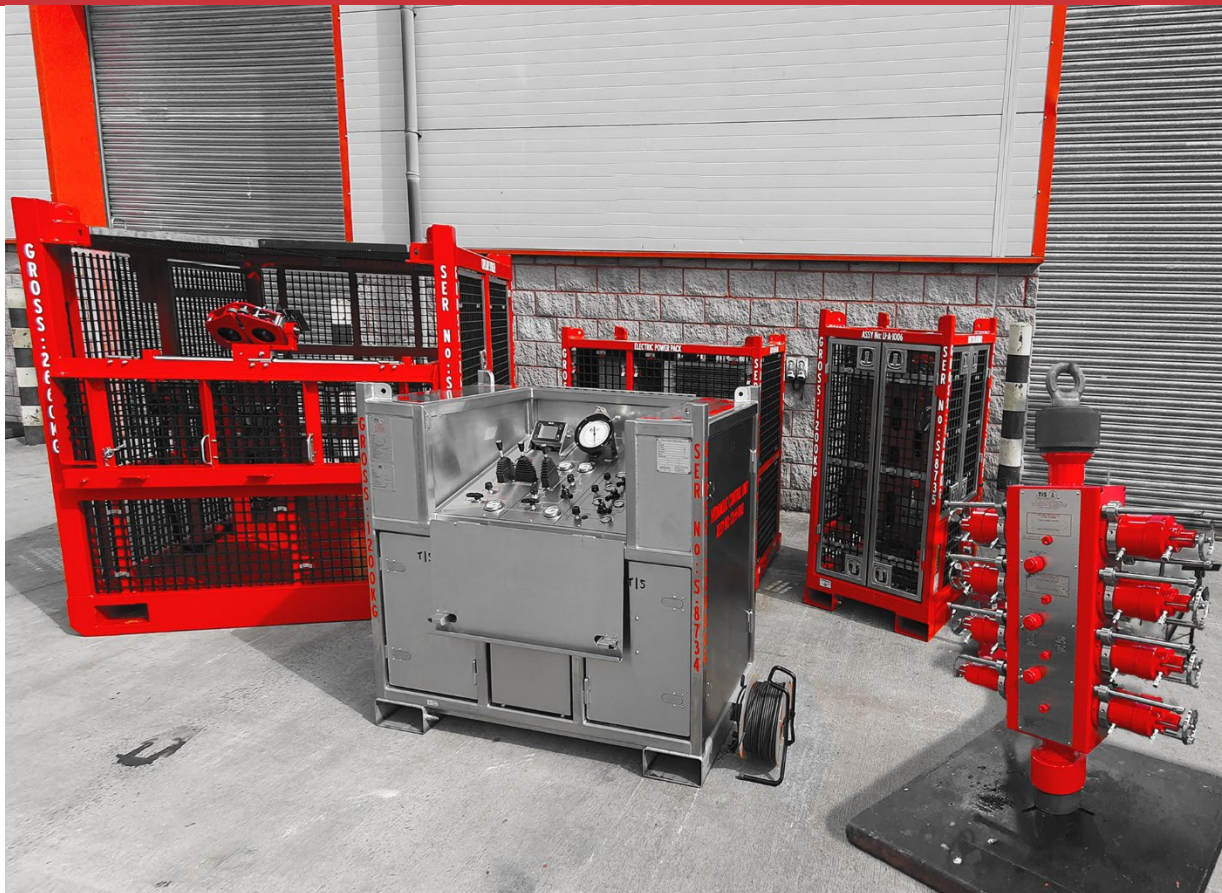


Bespoke Intervention Solutions | Capillary Package

The **TIS Capillary Package** is comprised of specialist, bespoke equipment for use in Well Intervention operations.

The package includes:

- ▶ Hydraulic Control Unit
- ▶ Capillary Spooling Assembly
- ▶ Injector Assembly
- ▶ Electric Powerpack
- ▶ 4" Quad WLV and Snubbing Head



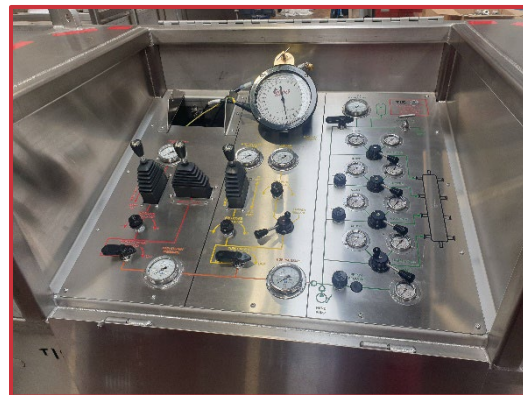
Capillary Package | Hydraulic Control Unit

The **Hydraulic Control Unit** is a stainless-steel box section unit which provides control for;

- ▶ Capillary Spooler Assembly
- ▶ Injector Assembly
- ▶ 4" Quad BOP

Key features;

- ▶ DNV-ST-E271
- ▶ ATEX Zone 2
- ▶ Operational functions: 3,000 psi
- ▶ Operation of package units
- ▶ 4-Off 20 Litre Accumulators
- ▶ Backup Hand Pump
- ▶ Digital Electronic Display Monitor
- ▶ Colour Filled Engraving

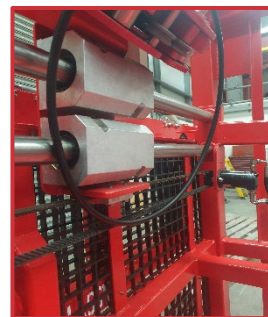
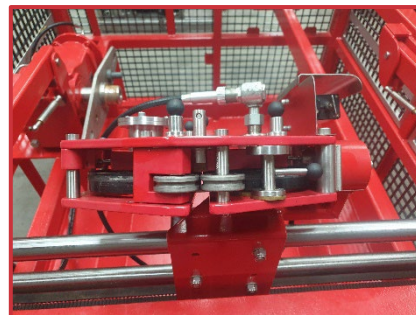


Capillary Package | Capillary Spooler Assembly

The **Capillary Spooler Assembly** is powered via the **Electric Powerpack** included in the package. The unit is designed to accept a 66" steel drum, loaded with capillary tubing and features sliding drum axle to facilitate easy loading / unloading. The **Spooler** has capability to deploy/retrieve ¼" or 3/8" tubing control line with ability to seamlessly switch drums in the field.

Key features;

- ▶ DNV-ST-E271
- ▶ ATEX Zone 2
- ▶ Drum Switching
- ▶ Level wind w/ counter head
- ▶ Four-Point Lift w/ Forklift Pockets
- ▶ Remotely Controlled via Hydraulic Control Panel (**CU-H-1003**)



Capillary Package | Injector Assembly

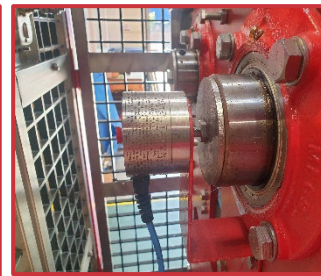
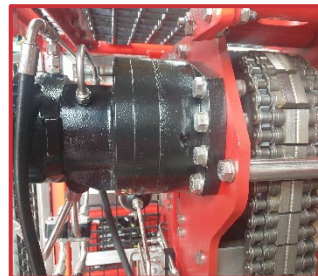
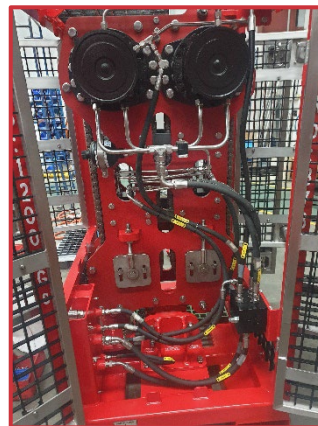
The **Injector Assembly** is specifically designed for the use of deployment and retrieval of capillary tubing strings of $\frac{1}{4}$ " and $\frac{3}{8}$ " OD.

The unit is supplied in a closed frame and with a top running sheave to suit above strings.

Operation of the Injector is manually controlled via the Hydraulic Control Panel (**CU-H-1003**)

Key features;

- ▶ DNV-ST-E271
- ▶ ATEX Zone 2
- ▶ Four-off "Gripper" cylinders
- ▶ Quick connect connections
- ▶ Max Snubbing: 2000lbs
- ▶ Max Pulling out force: 5000lbs



Capillary Package | Electric Powerpack

The **Electric Powerpack** supplied with the Capillary Package delivery. The unit is designed to supply power to;

- ▶ Hydraulic Control Unit
- ▶ Capillary Spooling Assembly
- ▶ Injector Assembly
- ▶ 4" Quad BOP

Key features;

- ▶ DNV-ST-E271
- ▶ ATEX Zone 2
- ▶ Robust Steel Framing
- ▶ 80 Litre Reservoir
- ▶ 25kW Power Rating
- ▶ Emergency Stop Buttons



Capillary Package | 4" Quad WLV

The **4" Quad Apollo Wireline Valve** is of Monoblock construction, designed to be small, lightweight and easy to operate and maintain.

Key features;

- ▶ Stainless Steel Protection Frame
- ▶ Stainless Steel Cylinder / RAM Guide Bars
- ▶ Fitted Equaliser Valves
- ▶ Grease Injection Port

Additional PCE supplied:

- ▶ Test Mount Sub
- ▶ Lift Cap
- ▶ Special Snubbing Head



Bespoke Intervention Solutions | Lightweight Capillary Package

The **TIS Lightweight Capillary Package** is comprised of specialist, bespoke equipment for use in Well Intervention operations. The package includes;

- ▶ Hydraulic Control Unit
- ▶ Wireline Unit
- ▶ Capillary Spooling Assembly
- ▶ Injector Assembly
- ▶ Modular Lightweight Powerpack
- ▶ Triplex Pumping Unit
- ▶ Powered Sheave



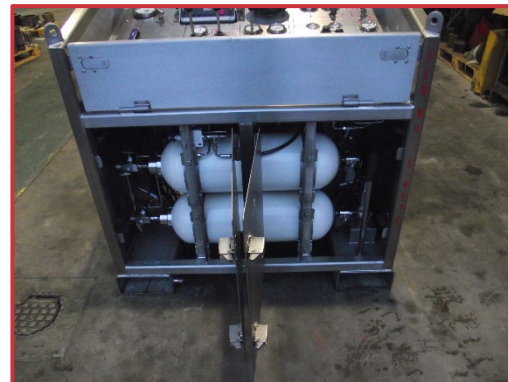
Lightweight Capillary Package | Hydraulic Control Unit

The **Hydraulic Control Unit** is powered by a **TIS Hydraulic Power Pack** and provides control for;

- ▶ Chemical Injection Triplex Pump
- ▶ Capillary Spooler
- ▶ Powered Sheave
- ▶ Quad Wireline Valve
- ▶ Pack-off

Key features;

- ▶ DNV 2.7-1
- ▶ ATEX Zone 2
- ▶ Electronic Display Monitor
- ▶ Control Panel with colour fill engraving
- ▶ Controls for connected units
- ▶ Auxiliary Valve BOP Controls

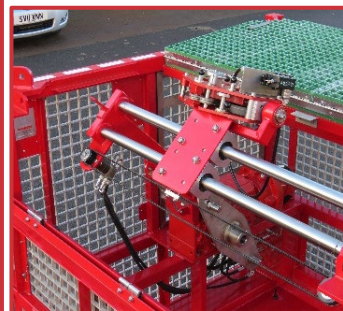


Lightweight Capillary Package | Capillary Spooler

The **Capillary Spooler Assembly** allows for the deployment & retrieval of ¼" or 3/8" tube control line. The unit also comes with the capabilities to switch drums in the field. The system incorporates a level wind complete with counter head. A counterbalance hydraulic system provides constant back tension against the **injector** head, which is also included in the package.

Key features;

- ▶ DNV 2.7-1
- ▶ 2,800 psi operating functions
- ▶ 300lbs line pull
- ▶ In-field Drum Switching
- ▶ Level Wind w/ Counter Head
- ▶ Counterbalance Hydraulic System
- ▶ 4-Point Lift



Lightweight Capillary Package | Powered Sheave

The **Powered Sheave Injector** is manufactured from carbon steel and is designed to accommodate a sheave wheel featuring hardened surface grooves to accept $\frac{1}{4}$ " and $\frac{3}{8}$ " capillary tubing with a composite inlet guide block.

Key features;

- ▶ DNV 2.7-1
- ▶ ATEX Zone 1
- ▶ 2,700 psi operating functions
- ▶ Max line speed: 95 feet / minute
- ▶ Snubbing Head
- ▶ Stuffing Box
- ▶ Stainless Steel Frame Guards

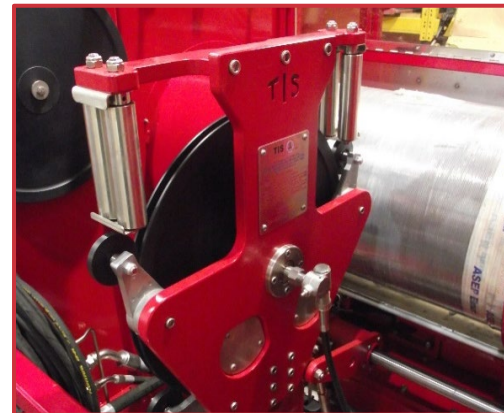
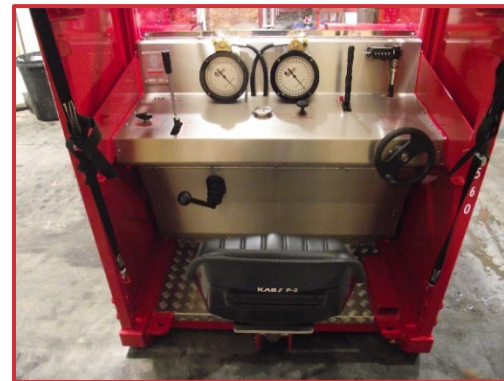


Lightweight Capillary Package | Wireline Unit

The Compact **Wireline Unit** is designed to be operator friendly with a stainless-steel control panel having colour fill engraving clearly depicting all operating functions. This unit is designed specifically to operate on a platform with limited lifting capability. The wireline drums can be easily removed for lifting the wireline frame its own reducing the lift weight to below 900kg. The drums provided allow the unit to run 0.108/0.125 or with the larger cored rum 0.160 wire size.

Key features;

- ▶ DNV 2.7-1
- ▶ Small Drum max line pull: 2,397 kg
- ▶ Large Drum max line pull: 2,802 kg
- ▶ Sun Hood Attached
- ▶ Drum Removal System
- ▶ Measuring Head



Lightweight Capillary Package | Triplex Pump

The **Triplex Pump** in this package was designed to match the flow and pressure of an existing Wireline Hydraulic Power Pack. The system operates on an open loop principle, with hydraulic supply, return and case drain connections all terminating with quick connect couplings on the main control panel unit.

Key features;

- ▶ DNV 2.7-1
- ▶ ATEX Zone 2
- ▶ Remote Control from HPU
- ▶ Supply: 2,800 psi
- ▶ Outlet: 6,000 psi
- ▶ 100 Litre tank capacity

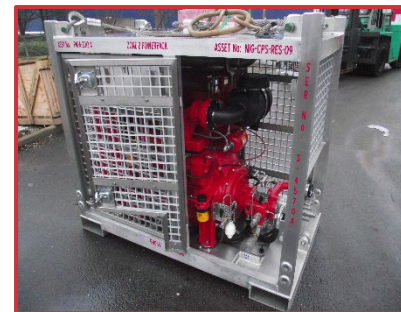


Lightweight Capillary Package | Modular Powerpack

The **Lightweight Two-Piece Hydraulic Powerpack** was designed to be modular for platforms with limited lifting capability. The frame is built from high grade aluminum extruded section and plate to reduce weight. An engine skid is provided with a naturally aspirated; in-line four cylinder, four stroke, direct injection diesel engine. A reservoir skid accommodates a tank with supply and return lines to the powerpack engine.

Key features;

- ▶ DNV 2.7-1
- ▶ ATEX Zone 2
- ▶ Lightweight design
- ▶ Automatic Engine Shut Down Features



Bespoke Intervention Solutions | SIS & CSS Control Panels

TIS Manufacturing have extensive experience delivering a range of **bespoke pumps and panels** solutions for control of proprietary equipment and technologies. The following panels are from a client delivery;

- ▶ Compact Shear/Seal Valve (CSS) Control Panel
- ▶ Surface Intervention System (SIS) Control Panel



Coil Shear Seal (CSS) Panels

The **CSS Panels** have been designed to operate a client's proprietary Compact Shear Seal Valve and can achieve 6,000 psi (414 bar) supply via a fireproof hose reel and utilises 2x 20 Litre Bladder Type Accumulators.

Key features;

- ▶ DNV-ST-E271
- ▶ ATEX Zone 1
- ▶ 45 Litre Stainless Steel Reservoir Tank
- ▶ Pilot Operated Air Driven Pump
- ▶ Pneumatic Pump and Hand Pump set 9,700 psi
- ▶ Two-off 20 Litre Bladder Accumulators
- ▶ Fireproof Hose Reel



Surface Intervention System (SIS) Panels

The **SIS Panels** have been designed as the primary control console for a client's proprietary technology – a Surface Intervention System (SIS).

Operating Functions;

- ▶ Load Indicator
- ▶ Cylinder
- ▶ Hydraulic Motor
- ▶ Rod Catcher

Key features;

- ▶ ATEX Zone 1
- ▶ Stainless Steel Control Panel
- ▶ Four-Point Lift, Forklift Pockets
- ▶ Colour Filled Engraving
- ▶ Heavy Duty Castors



Bespoke Intervention Solutions | Chemical Testing Units

The **Chemical Testing Units** are designed as a portable means to test sample hoses in various chemicals at an elevated temperature. The unit's intended use is for the two cylinders to be filled with a desired testing medium liquid, which then can be heated up to a maximum of 150°C (302°F). The two cylinders can be operated independently of one another, allowing testing to be carried out either on one cylinder or both cylinders at the same time.

Key features;

- ▶ Portable unit
- ▶ Control / data recorder
- ▶ Lifting hoist for hose sample
- ▶ Easy drain mechanism
- ▶ Dual Cylinders with independent functionality



Bespoke Intervention Solutions | Coiled Tubing Control Panels

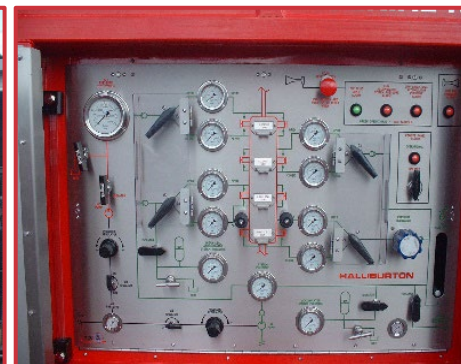
The **Coiled Tubing BOP Control Unit** is designed to provide control over coil shear seal functions. The unit has capability to quickly seal the CT line in the event of an emergency.

Operating functions;

- ▶ Locator Ram open / close: 0-3,000 psi
- ▶ Release Ram open / close: 0-3,000 psi
- ▶ Pipe Slip Ram open / close: 0 - 3,000 psi
- ▶ Shear Seal Ram open / close: 0 - 3,000 psi
- ▶ Pressure Test Function: 0 – 20,000 psi

Key features;

- ▶ DNV 2.7-1
- ▶ Shear seal accumulators: 4-off 50 Litres
- ▶ General accumulators: 7-off 50 Litres
- ▶ 6 Wet-centre hose reel connections
- ▶ Engraved control panel with all functions





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