



Product Catalogue

Mechanical Equipment
&
Pressure Control

Mechanical Catalogue

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Umbilical Reeler Unit



Main Frame

Robust carbon steel frame with 4 point lift, forklift pockets, drip tray, replicable weld down deck securing plates and integral tigger points in all 4 corners. The fabrications are shot blasted, Zinc primed before painting to customers livery.

Reel Drive System

For reliability a rugged geared 15 hp radial air piston motor is utilised coupled to a heavy duty roller chain transmission.

Pneumatic System

External bulkhead hook-up port, with isolator ball valve, large capacity dual water separator and filter, stainless steel pipe work is used for the main supply line to the bronze air pilot directional valve and air lubricator. Cut out safety switches fitted to all doors

Remote Control Panel

The stainless steel control panel with floor stand connected to the Reeler unit by a 10 meter umbilical. The control panel is fitted with pressure gauge, direction control lever, pressure regulator, spooler control valve and park brake controls with all operations fully colour engraved on the panel facia.

Fail Safe Brake System

The marine type fail safe brake and stainless steel brake disc provides a positive all weather system. The clamping force of the brake calliper is factory pre-set to the value at which reel will slip, protecting the SWL of the umbilical and sheave.

Spooling System

Air motor operated spooler with stainless steel rollers running on rails. The drive to the spooling head is by means of double chain and sprocket. It is manually operated by a control lever from the remote control panel.

Slip ring assembly

6 function lines, 10k slirping assembly connected in series with needle valves and pressure gauges. 5 ports ¼" and 1 port ½" line size.

Reel Sub-Sea Control Panel

Stainless steel, colour filled engraved control panels with 6 function lines connected by a series of isolator valves, pressure gauges and a legend holder set into on the drum.

Electrical Slip Ring

2 twin pair electrical signal lines pass through an electrical slip ring. The electrical lines are wired to the rear bulkhead.

Advantages

- Hinged doors for easy access for maintenance.
- Stainless steel, with colour filled engraved logic on all control panels.
- Adjustable brake system, protecting the umbilical.
- Bulkhead for remote control unit with quick connects.
- Easy to disassemble and assemble the slirping for servicing and maintenance.
- Fold down step for easy access and maintenance of control panel and slirping assembly.
- Bypass ports to bypass the slirping if necessary.



Safety Features

- Fully enclosed unit to prevent contact with moving parts.
- Safety cut-out valves fitted on all access doors.
- Drum lock arrangement with pneumatic cut-out feature.
- Pre-set line pull value to limit drive motor torque and to ensure max line pull on umbilical does not exceed 0.9 times the SWL of umbilical or maximum loading of sheave.

Specification

ATEX certified design

Mainframe: Carbon steel, 4 Point Lift, BS EN 12079 / DNV 2.7-1 certified.

Frame:

3,960 mm Length x 3,465 mm Width x 3,475 mm Height

Forklift Pockets:

280 mm wide x 110 mm high and 1,700 mm centres.

Reeler Drum:

Rim Diameter: 2,900 mm.

Core Diameter: 1,000 mm.

Between Flanges: 2,650 mm.

Tare weight: 8,500 kgs.

Design Gross Weight: 19,000 kgs.

Minimum air supply pressure: 90 psi.

Maximum air supply pressure: 130 psi.

Recommended volume: 275 cfm.

Subsea Control Panel:

6 function lines with maximum working pressure of 10k.

Designed to Accommodate Umbilical:

65 mm OD, 3030 m length umbilical.

ASSEMBLY NO TU-A-1005

Umbilical Reeler Unit



Main Frame

Robust carbon steel frame with 4 point lift, forklift pockets, drip tray, replicable weld down deck securing plates and integral tigger points in all 4 corners. The fabrications are shot blasted, Zinc primed before painting to customers livery.

Reel Drive System

For reliability a rugged geared 15 hp radial air piston motor is utilised coupled to a heavy duty roller chain transmission.

Pneumatic System

External bulkhead hook-up port, with isolator ball valve, large capacity dual water separator and filter, stainless steel pipe work is used for the main supply line to the bronze air pilot directional valve and air lubricator. Cut out safety switches fitted to all doors

Remote Control Panel

The stainless steel control panel with floor stand connected to the Reeler unit by a 10 meter umbilical. The control panel is fitted with pressure gauge, direction control lever and pressure regulator with all operations fully colour engraved on the panel facia.

Fail Safe Brake System

The marine type fail safe brake and stainless steel brake disc provides a positive all weather system. The Clamping force of the brake calliper is factory pre-set to the value at which reel will slip, protecting the SWL of the Umbilical and sheave.

Spooling System

An automatic endless or (diamond) screw used to synchronize the spooling with rotation of the reel. Driven by angle gear box and stainless steel drive shafts.

Fail Safe Brake System

The marine type fail safe brake and stainless steel brake disc provides a positive all weather system. The clamping force of the brake calliper is factory pre-set to the value at which reel will slip, protecting the SWL of the umbilical and sheave.

Reel Sub-Sea Control Panel

Stainless steel, colour filled engraved control panel with an isolator valve and pressure gauge are set into on the drum.

Advantages

- Hinged doors for easy access for maintenance.
- Stainless steel, with colour filled engraved logic on all control panels.
- Pivoted vertical roller for easy removal of the Umbilical.
- Manually operated spooler over-ride clutch for fine adjustment.
- Top roller set allowing spooling a wider spooling trajectory.
- Adjustable brake system, protecting the umbilical.
- Lift beam for easy lifting of the stab plate.



Safety Features

- Fully enclosed unit to prevent contact with moving parts.
- Safety cut-out valves fitted on all access doors.
- Drum lock arrangement with pneumatic cut-out feature.
- Fully enclosed stab plate storage for operator safety.
- Pre-set line pull value to limit drive motor torque and to ensure max line pull on umbilical does not exceed 0.9 times the SWL of umbilical or maximum loading of sheave.

Specification

ATEX certified design

Mainframe: Carbon steel, 4 Point Lift, BS EN 12079 / DNV 2.7-1 certified.

Frame: 3,160 mm Length x 2,650 mm Width x 3,305 mm Height

Forklift Pockets: 248 mm wide x 108 mm high and 1,650 mm centres.

Jumper Stab Plate Lift Beam:

Safe Working Load: 200 kgs

Reeler Drum:Rim Diameter: 2,700 mm.

Core Diameter: 1,650 mm.

Between Flanges: 1,804 mm.

Tare weight: 6,500 kgs.

Design Gross Weight: 10,000 kgs.

Minimum air supply pressure: 90 psi.

Maximum air supply pressure: 130 psi.

Recommended volume: 162 cfm.

Designed to Accommodate Umbilical:

84.5 OD, 550 m umbilical

ASSEMBLY NO TU-A-1006

Nitrogen Hose Reeler Unit



Main Frame

Robust carbon steel frame with 4 point lift, forklift pockets, drip tray, replicable weld down deck securing plates and integral tigger points in all 4 corners. The fabrications are shot blasted, Zinc primed before painting to customers livery.

Reel Drive System

For reliability a rugged geared 6.6 hp radial air piston motor is utilised coupled to a heavy duty roller chain transmission.

Pneumatic System

External bulkhead hook-up port, with isolator ball valve, large capacity dual water separator and filter, stainless steel pipe work is used for the main supply line to the bronze air pilot directional valve and air lubricator. Cut out safety switches fitted to all doors

Remote Control Panel

The stainless steel control panel with floor stand connected to the Reeler unit by a 10 meter umbilical. The control panel is fitted with system pressure gauge, direction control lever, pressure regulator and drum lock indicator with all operations fully colour engraved on the panel facia.

Fail Safe Brake System

The marine type fail safe brake and stainless steel brake disc provides a positive all weather system. The clamping force of the brake calliper is factory pre-set to the value at which reel will slip, protecting the SWL of the umbilical and sheave.

Spooling System

An automatic endless or (diamond) screw used to synchronize the spooling with rotation of the reel. Driven by angle gear box and stainless steel drive shafts.

Fail Safe Brake System

The marine type fail safe brake and stainless steel brake disc provides a positive all weather system. The Clamping force of the brake calliper is factory pre-set to the value at which reel will slip, protecting the SWL of the Hose and sheave.

Reel Sub-Sea Control Panel

Stainless steel, colour filled engraved control panel with an isolator valve and pressure gauge are set into on the drum.

Advantages

- Hinged doors for easy access for maintenance.
- Stainless steel, with colour filled engraved logic on all control panels.
- Pivoted vertical roller for easy removal of the Hose.
- Manually operated spooler over-ride clutch for fine adjustment.
- Top roller set allowing spooling a wider spooling trajectory.
- Adjustable brake system, protecting the hose.
- Integral storage basket for hook-up hoses or parts.



Safety Features

- Fully enclosed unit to prevent contact with moving parts.
- Safety cut-out valves fitted on all access doors.
- Drum lock arrangement with pneumatic cut-out feature.
- Integral "LOCK", spring centred direction control valve.
- Pre set line pull value to limit drive motor torque and to ensure max line pull on the hose does not exceed 0.9 times the SWL of hose or maximum loading of sheave

Specification

ATEX certified design

Mainframe:

Carbon steel, 4 Point Lift, BS EN 12079 / DNV 2.7-1 certified.

Frame:

2,610 mm Length x 2,400 mm Width x 2,710 mm Height

Forklift Pockets:

248 mm wide x 108 mm high and 1,650 mm centres.

Reeler Drum:

Rim Diameter: 2,000 mm.

Core Diameter: 1,000 mm.

Between Flanges: 1,554 mm.

Tare weight: 3,700 kgs.

Design Gross Weight: 6,600 kgs.

Minimum air supply pressure: 90 psi.

Maximum air supply pressure: 130 psi.

Recommended volume: 162 cfm.

Designed to Accommodate Hose:

19 mm OD by 1,200 m umbilical

Reel Control Panel Line Pressure ratings:

One line with maximum working pressure of 5k.

ASSEMBLY NO TU-A-1008

Nitrogen Hose Reeler Unit



Main Frame

Robust carbon steel frame with 4 point lift, forklift pockets, drip tray, replicable weld down deck securing plates and integral tugger points in all 4 corners. The fabrications are shot blasted, Zinc primed before painting to customers livery.

Reel Drive System

For reliability a rugged geared 6.6 hp radial air piston motor is utilised coupled to a heavy duty roller chain transmission.

Pneumatic System

External bulkhead hook-up port, with isolator ball valve, large capacity dual water separator and filter, stainless steel pipe work is used for the main supply line to the bronze air pilot directional valve and air lubricator. Cut out safety switches fitted to all doors

Remote Control Panel

The stainless steel control panel with floor stand connected to the Reeler unit by a 10 meter umbilical. The control panel is fitted with system pressure gauge, direction control lever, pressure regulator and drum lock indicator with all operations fully colour engraved on the panel facia.

Spooling System

An automatic endless or (diamond) screw used to synchronize the spooling with rotation of the reel. Driven by angle gear box and stainless steel drive shafts.

Manual Over-Ride Spooling Clutch Assembly

This can be used to over-ride spooler drive for fine adjustment of spooler position & is operated by Dog clutch and stainless steel hand wheel.

Fail Safe Brake System

The marine type fail safe brake and stainless steel brake disc provides a positive all weather system. The clamping force of the brake calliper is factory pre-set to the value at which reel will slip, protecting the SWL of the hose and sheave.

Reel Sub-Sea Control Panel

Stainless steel, colour filled engraved control panel with an isolator valve and pressure gauge are set into on the drum.

Advantages

- Hinged doors for easy access for maintenance.
- Stainless steel, with colour filled engraved logic on all control panels.
- Pivoted vertical roller for easy removal of the Hose.
- Manually operated spooler over-ride clutch for fine adjustment.
- Top roller set allowing spooling a wider spooling trajectory.
- Adjustable brake system, protecting the Hose.
- Integral storage basket for hook-up hoses or parts.



Safety Features

- Fully enclosed unit to prevent contact with moving parts.
- Safety cut-out valves fitted on all access doors.
- Drum lock arrangement with pneumatic cut-out feature.
- Integral "LOCK", spring centred direction control valve.
- Pre set line pull value to limit drive motor torque and to ensure max line pull on umbilical does not exceed 0.9 times the SWL of Hose or maximum loading of sheave.

Specification

ATEX certified design

Mainframe: Carbon steel, 4 Point Lift, BS EN 12079 / DNV 2.7-1 certified.

Frame: 2,610 mm Length x 2,400 mm Width x 2,710 mm Height

Forklift Pockets: 248 mm wide x 108 mm high and 1,650 mm centres.

Reeler Drum:

Rim Diameter: 2,000 mm.

Core Diameter: 1,000 mm.

Between Flanges: 1,554 mm.

Tare weight: 3,700 kgs.

Design Gross Weight: 5,500 kgs.

Minimum air supply pressure: 90 psi.

Maximum air supply pressure: 130 psi.

Recommended volume: 162 cfm.

Designed to Accommodate Hose:

½" OD hose, 2,500 m Hose

ASSEMBLY NO TU-A-1010

Umbilical Reeler Unit



Main Frame

Robust carbon steel frame with 4 point lift, forklift pockets, drip tray, replicable weld down deck securing plates and integral tugger points in all 4 corners. The fabrications are shot blasted, Zinc primed before painting to customers livery.

Concept

This Reeler was designed to meet customers requirements for operating on a semi-submersible platform, the unit having the capability of deploying umbilical without the use of a compensator system. The Reeler is fitted with a powerful PLC controlled hydraulic compensating transmission that can accommodate and respond to the heave of the platform when used in conjunction with the TIS compensated arch sheave

Reel Drive System

Powered by a 35 kw closed loop remote hydraulic power-pack unit via jumper hoses. Drive to the Reeler is via a low speed high torque hydraulic motor in constant mesh with the drum spur gear drum bearing.

Reeler Drum

Robust long steel tube with inset inner end flanges to accommodate the sliprings while keeping the overall length to a minimum, while the large ring gear drum bearings are mounted to floating fixtures allowing for any misalignment.

Spooling System

The infinitely adjustable tilting mesh roof supports the automatic diamond screw spooling system allowing umbilical deployment at any angle. Driven spooler drive is direct from the ring gear, stainless steel shaft and cross bevel gearboxes.

Manual Over-Ride Spooling Clutch Assembly

This can be used to over-ride spooler drive for fine adjustment of spooler position & is operated by "Dog clutch" arrangement and stainless steel hand wheel.

Remote Control Panel

The stainless steel control panel with floor stand connected to the Reeler unit by a 10 meter umbilical. The control panel provides both manual and PLC controlled automatic mode of operation providing constant tension. This allows the operator to pre-set the operating parameters and feedback displaying line pull.

Slip ring assembly

12 function lines, 12k slipring assembly connected in series with needle valves and pressure gauges. All ports are 3/8" line size. Plug ports provided for slipring bypass, via jumper hose

Electrical Slipping

66 pass Exd electrical slipping terminating with stainless steel junction boxes for umbilical installation, and external hook-up via multi-pin connectors.

Advantages

- Hinged doors for easy access for maintenance.
- Stainless steel, with colour filled engraved logic on all control panels.
- Automatic diamond screw spooling system
- Adjustable spooling mechanism for horizontal through to vertical spooling.
- Manual or automatic Reeler mode of operation.
- Dynamic adjustable brake slip system, protecting the umbilical.
- Fold down step is provided for easy access to slip ring & for maintenance.
- Integral storage basket for hook-up hoses or parts.



Safety Features

- Fully enclosed unit to prevent contact with moving parts.
- Safety cut-out valves fitted on all access doors.
- Audible and Visual warnings indicate when in an Over pull situation
- ESD cut-out valves fitted to isolate the unit.
- Pre set line pull value to limit drive motor torque and to ensure max line pull on umbilical does not exceed 0.9 times the SWL of umbilical or maximum loading of sheave.

Specification

ATEX certified design

Mainframe:

Carbon steel, 4 Point Lift, BS EN 12079/DNV2.7-1 certified.

Frame:

5,547 mm Length x 3,300 mm Width x 3,250 mm Height

Forklift Pockets: 284 mm wide x 1124 mm high.

Reeler Drum:

Drum width: 4,154 mm.

Core Diameter: 1,257 mm.

Between Flanges: 2,500 mm.

Tare weight: 11,700 kgs.

Design Gross Weight: 27,000 kgs.

Designed to Accommodate Umbilical:

78 mm OD by 7,100 feet umbilical

Bulkhead Interface:

12 x hydraulic subsea control lines 3/8" Medium Pressure female.

Hydraulic drive system hook-up Quick connect Supply "A, B & Drain return

Electrical Slipping:

Troxex TX4740 Explosion Protected Slip Ring Unit approved to ATEX Directive 94/9/EC and conforming to EN 50 014, EN 50 018 and EN50281-1-1. 64 x gold plated rings rated at 5 Amps 20V

Hydraulic Slipping:

12 pass slipping designed for dynamic operation. 3/8" Medium Pressure ports all round 12,000 psi MWP, 18,000 psi Test Pressure

ASSEMBLY NO TU-A-1009

Umbilical Reeler Unit



Main Frame

Robust carbon steel frame with 4 point lift, forklift pockets, drip tray, replicable weld down deck securing plates and integral tugger points in all 4 corners. The fabrications are shot blasted, Zinc primed before painting to customers livery.

Reel Drive System

For reliability a rugged geared 15 hp radial air piston motor is utilised coupled to a heavy duty roller chain transmission.

Pneumatic System

External bulkhead hook-up port, with isolator ball valve, large capacity dual water separator and filter, stainless steel pipe work is used for the main supply line to the bronze air pilot directional valve and air lubricator. Cut out safety switches fitted to all doors

Remote Control Panel

The stainless steel control panel with floor stand connected to the Reeler unit by a 10 meter umbilical. The control panel is fitted with system pressure gauge, direction control lever, pressure regulator, spooler controls and drum lock indicator with all operations fully colour engraved on the panel fascia.

Spooling System

Air motor operated spooler with stainless steel rollers, running on rails. It is manually operated by a control lever from the remote control panel.

Fail Safe Brake System

The marine type fail safe brake and stainless steel brake disc provides a positive all weather system. The clamping force of the brake calliper is factory pre-set to the value at which reel will slip, protecting the SWL of the umbilical and sheave.

Reel Sub-Sea Control Panel

Stainless steel, colour filled engraved control panel with 19 functions connected by a series of directional control valve, pressure gauge & isolator valve. Chemical injection & chart recorder points also provided. The reeler has a PLC operated ESD system integrated into the drum core. Slipping bypass ports set into on the drum. A fold down access step with hand rail allows the operator access to the panel.

Slip ring assembly

4 function lines, 10k slipping assembly connected in series with needle valves and pressure gauges. 3 ports ¼" and 1 port ½" line size. Plug ports provided for slipping bypass.

Advantages

- Hinged doors for easy access for maintenance.
- Stainless steel, with colour filled engraved logic on all control panels.
- Pivoted vertical roller for easy removal of the Umbilical.
- Remote manually operated spooler for easy spooling.
- Adjustable brake system, protecting the umbilical.
- Fold down step is provided for easy access to the sub-sea control panel & slip ring.
- Integral storage basket for hook-up hoses or parts.
- Forward meshed guards for complete view of spooling operation.

Automatic Spooling also available on this model



Safety Features

- Fully enclosed unit to prevent contact with moving parts.
- Safety cut-out valves fitted on all access doors.
- Drum lock arrangement with pneumatic cut-out feature.
- Integral "LOCK", spring centred direction control valve.
- Pre set line pull value to limit drive motor torque and to ensure max line pull on umbilical does not exceed 0.9 times the SWL of umbilical or maximum loading of sheave.

Specification

ATEX certified design

Mainframe: Carbon steel, 4 Point Lift, BS EN 12079 / DNV 2.7-1 certified.

Frame: 3,760 mm Length x 3,277 mm Width x 3,715 mm Height

Forklift Pockets: 238 mm wide x 100 mm high and 1,650 mm centres.

Reeler Drum:

Rim Diameter: 3,200 mm.

Core Diameter: 1,950 mm.

Between Flanges: 2,269 mm.

Tare weight: 7,500 kgs.

Design Gross Weight: 15,500 kgs.

Minimum air supply pressure: 90 psi.

Maximum air supply pressure: 130 psi.

Recommended volume: 162 cfm.

Subsea Control Panel:
Line 1: 7,000 PSI
Line 2: 7,000 PSI
Line 3: 10,000 PSI

Chemical injection: 10,000 psi

Designed to Accommodate Umbilical: 94 mm OD by 1,000 m umbilical

ASSEMBLY NO TU-A-1011

Umbilical Reeler Unit



Main Frame

Robust carbon steel frame with 4 point lift, forklift pockets, drip tray, replicable weld down deck securing plates and integral tigger points in all 4 corners. The fabrications are shot blasted, Zinc primed before painting to customers livery.

Reel Drive System

For reliability a rugged geared 6.6 hp radial air piston motor is utilised coupled to a heavy duty roller chain transmission.

Pneumatic System

External bulkhead hook-up port, with isolator ball valve, large capacity dual water separator and filter, stainless steel pipe work is used for the main supply line to the bronze air pilot directional valve and air lubricator. Cut out safety switches fitted to all doors

Remote Control Panel

The stainless steel control panel with floor stand connected to the Reeler unit by a 10 meter umbilical. The control panel is fitted with system pressure gauge, direction control lever, pressure regulator and drum lock indicator controls with all operations fully colour engraved on the panel facia.

Fail Safe Brake System

The marine type fail safe brake and stainless steel brake disc provides a positive all weather system. The clamping force of the brake calliper is factory pre-set to the value at which reel will slip, protecting the SWL of the umbilical and sheave.

Reel Sub-Sea Control Panel

Stainless steel, colour filled engraved control panel with 6 function lines connected by a series of isolator valves, pressure gauges and sliping bypass ports set into on the drum.

Slip ring assembly

6 function lines, 10k sliping assembly connected in series with needle valves and pressure gauges. All ports 1/4" line size.

Advantages

- Hinged doors for easy access for maintenance.
- Stainless steel, with colour filled engraved logic on all control panels.
- Adjustable brake system, protecting the umbilical.
- Bulkhead for remote control unit with quick connects.
- Easy to disassemble and assemble the sliping for servicing and maintenance.
- Bypass ports to bypass the sliping if necessary.



Safety Features

- Fully enclosed unit to prevent contact with moving parts.
- Safety cut-out valves fitted on all access doors.
- Drum lock arrangement with pneumatic cut-out feature.
- Integral "LOCK", spring centred direction control valve.
- Pre set line pull value to limit drive motor torque and to ensure max line pull on umbilical does not exceed 0.9 times the SWL of umbilical or maximum loading of sheave.

Specification

ATEX certified design

Mainframe: Carbon steel, 4 Point Lift, BS EN 12079 / DNV 2.7-1 certified.

Frame: 1,930 mm Length x 1,820 mm Width x 2,010 mm Height

Forklift Pockets: 212 mm wide x 102 mm high and 1,000 mm centres.

Reeler Drum:

Rim Diameter: 1,520 mm.

Core Diameter: 1,000 mm.

Between Flanges: 644 mm.

Tare weight: 2,300 kgs.

Design Gross Weight: 3,000 kgs.

Minimum air supply pressure: 90 psi.

Maximum air supply pressure: 130 psi.

Recommended volume: 162 cfm.

Subsea Control Panel:

6 function lines with maximum working pressure of 10k.

Designed to Accomodate Umbilical: 51 mm OD by 200 m umbilical

ASSEMBLY NO TU-A-1012

Umbilical Reeler Unit



Main Frame

Robust carbon steel frame with 4 point lift and replicable weld down deck securing plates. The fabrications are shot blasted, Zinc primed before painting to customers livery.

Reel Drive System

For reliability a rugged geared 15 hp radial air piston motor is utilised coupled to a heavy duty Spur gear transmission.

Pneumatic System

A bulkhead hook-up port, with isolator ball valve, large capacity dual water separator and filter, stainless steel pipe work is used for the main supply line to the bronze air pilot directional valve and air lubricator. An ESD safety switch is fitted to both sides of the unit.

Reeler Control Panel

The stainless steel control panel is mounted on the front side of Reeler unit. The control panel is fitted with regulated pressure gauge, direction control lever, pressure regulator and park brake controls with all operations fully colour engraved on the panel facia.

Fail Safe Brake System

The marine type fail safe brake and stainless steel brake disc provides a positive all weather system. The clamping force of the brake calliper is factory pre-set to the value at which reel will slip, protecting the SWL of the umbilical and sheave.

Drum Lock

The reeler provided with a manual operated locking mechanism to lock the drum in one position providing good access to the stab plate.

Spreader Bar

The reeler is provided with a spreader bar and lifting slings as this unit is designed for permanent platform installation. The spreader bar of the Umbilical Reeler unit designed, constructed and tested in accordance with BS-EN 7072. Two 12 tonne shackles are provided for the lifting operations.

Advantages

- Stainless steel, with colour filled engraved logic on all control panels.
- Adjustable brake system, protecting the umbilical.

Safety Features

- Fully enclosed gear drive assembly to prevent contact with moving parts.
- ESD cut-out valves fitted on the front and rear sides to isolate the reeler.
- Drum lock arrangement with pneumatic cut-out feature.
- Integral "LOCK", spring centred direction control valve.
- Pre set line pull value to limit drive motor torque and to ensure max line pull on umbilical does not exceed 0.9 times the SWL of umbilical or maximum loading of sheave.



Specification

Mainframe: Carbon steel, BS EN 7072 certified.

Frame: 3,160 mm Length x 2,500 mm Width x 3,500 mm Height

Reeler Drum:

Rim Diameter: 3,400 mm.

Core Diameter: 1,320 mm.

Between Flanges: 1,400 mm.

Tare weight: 6,500 kgs.

Design Gross Weight: 10,500 kgs.

Minimum air supply pressure: 90 psi.

Maximum air supply pressure: 130 psi.

Recommended volume: 300 cfm.

Rotary Unions:

1" Slip ring Maximum Working Pressure 300 bar

1/2" Slip ring Maximum Working Pressure 410 bar

Designed to Accommodate Umbilical:

103 mm OD by 762 m umbilical

ASSEMBLY NO TU-A-1013

Umbilical Reeler Unit



Main Frame

Robust carbon steel frame with 4 point lift, forklift pockets, drip tray, replicable weld down deck securing plates and integral tugger points in all 4 corners. The frames are shot blasted, Zinc primed before painting to customers livery.

Reel Drive System

For reliability a rugged geared 15 hp radial air piston motor is utilised coupled to a heavy duty roller chain transmission.

Pneumatic System

External bulkhead hook-up port, with isolator ball valve, large capacity dual water separator and filter, stainless steel pipework is used for the main supply line to the bronze air pilot directional valve and air lubricator. Cut out safety switches fitted to all doors

Remote Control Panel

The stainless steel control panel with floor stand connected to the Reeler unit by a 10 meter umbilical. The control panel is fitted with system pressure gauge, direction control lever, pressure regulator and spooler over-ride controls with all operations fully colour engraved on the panel facia.

Spooling System

An automatic endless or (diamond) screw used to synchronize the spooling with rotation of the reel. Driven by angle gear box and stainless steel drive shafts.

Remote Over-Ride Spooling Clutch Assembly

This can be used to over-ride spooler drive for fine adjustment of spooler position & is operated from the remote control panel without the need to stop umbilical deployment.

Fail Safe Brake System

The marine type fail safe brake and stainless steel brake disc provides a positive all weather system. The clamping force of the brake calliper is factory pre-set to the value at which reel will slip, protecting the SWL of the umbilical and sheave.

Reel Sub-Sea Control Panel

Stainless steel, colour filled engraved control panel with 16 lines connected by a series of isolator valves and pressure gauges are set into on the drum, a fold down access step with hand rail allows the operator access to the panel.

Stab Plate

A 16 pass hydraulic stab plate with clamp assembly connects all subsea control lines to the unit.



Advantages

- Hinged doors for easy access for maintenance.
- Stainless steel, with colour filled engraved logic on all control panels.
- Pivoted vertical roller for easy removal of the Umbilical.
- Remote operated spooler over-ride clutch reducing downtime while spooling.
- Top roller set allowing spooling a wider spooling trajectory.
- Adjustable brake system, protecting the umbilical.
- Fold down step is provided for easy access to the sub-sea control panel.
- Integral storage basket for hook-up hoses or parts.

Safety Features

- Fully enclosed unit to prevent contact with moving parts.
- Safety cut-out valves fitted on all access doors.
- Drum lock arrangement with pneumatic cut-out feature.
- Integral "LOCK", spring centred direction control valve.
- Pre set line pull valve to limit drive motor torque and to ensure max line pull on umbilical does not exceed 0.9 times the SWL of umbilical or maximum loading of sheave.

Specification

ATEX certified design

Mainframe: Carbon steel, 4 Point Lift, BS EN 12079 / DNV 2.7-1 certified.

Frame: 3,810 mm Length x 3,250 mm Width x 3,835 mm Height

Forklift Pockets: 248 mm wide x 108 mm high and 1,970 mm centres.

Reeler Drum: Rim Diameter: 3,280 mm.
Core Diameter: 1,540 mm.
Between Flanges:

2,269 mm.

Tare weight: 9,000 kgs.

Design Gross Weight: 21,000 kgs.

Minimum air supply pressure: 90 psi.

Maximum air supply pressure: 130 psi.

Recommended volume: 162 cfm.

Subsea Control Panel:

6 lines with maximum working pressure of 10k.

Designed to Accommodate Umbilical: 79 mm OD by 1,830 m umbilical

ASSEMBLY NO TU-A-1015

Umbilical Reeler Unit



Main Frame

Robust carbon steel frame with 4 point lift, forklift pockets, drip tray, replicable weld down deck securing plates and integral tigger points in all 4 corners. The fabrications are shot blasted, Zinc primed before painting to customers livery.

Reel Drive System

For reliability a rugged geared 15 hp radial air piston motor is utilised coupled to a heavy duty Spur gear transmission.

Pneumatic System

External bulkhead hook-up port, with isolator ball valve, large capacity dual water separator and filter, stainless steel pipework is used for the main supply line to the bronze air pilot directional valve and air lubricator. Cut out safety switches fitted to all doors

Remote Control Panel

The stainless steel control panel with floor stand connected to the Reeler unit by a 10 meter umbilical. The control panel is fitted with system pressure gauge, direction control lever, pressure regulator and spooler controls with all operations fully colour engraved on the panel facia.

Spooling System

An automatic endless or (diamond) screw used to synchronize the spooling with rotation of the reel. Driven by angle gear box and stainless steel drive shafts.

Remote Over-Ride Spooling Clutch Assembly

This can be used to over-ride spooler drive for fine adjustment of spooler position & is operated from the remote control panel without the need to stop umbilical deployment.

Fail Safe Brake System

The marine type fail safe brake and stainless steel brake disc provides a positive all weather system. The clamping force of the brake calliper is factory pre-set to the value at which reel will slip, protecting the SWL of the umbilical and sheave.

Reel Sub-Sea Control Panel

Stainless steel, colour filled engraved control panel with 9 lines connected by a series of directional control valves, isolator valves, pressure gauges and the female stab-plate are set in to the drum, a fold down access step with hand rail allows the operator access to the panel.

Stab Plate

A 65 pass hydraulic stab plate with clamp assembly connects all subsea control lines to the unit.

Advantages

- Hinged doors for easy access for maintenance.
- Stainless steel, with colour filled engraved logic on all control panels.
- Pivoted vertical roller for easy removal of the Umbilical.
- Remote operated spooler over-ride clutch reducing downtime while spooling.
- Top roller set allowing spooling a wider spooling trajectory.
- Flexible Spooling system that can be adjusted to spool at different angles.
- Adjustable brake system, protecting the umbilical.
- Fold down step is provided for easy access to the sub-sea control panel.



Safety Features

- Fully enclosed unit to prevent contact with moving parts.
- Safety cut-out valves fitted on all access doors.
- Drum lock arrangement with pneumatic cut-out feature.
- Integral "LOCK", spring centred direction control valve.
- Pre set line pull value to limit drive motor torque and to ensure max line pull on umbilical does not exceed 0.9 times the SWL of umbilical or maximum loading of sheave.

Specification

ATEX certified design

Mainframe: Carbon steel, 4 Point Lift, BS EN 12079 / DNV 2.7-1 certified.
Frame: 2,850 mm Length x 2,780 mm Width x 3,500 mm Height
Forklift Pockets: 248 mm wide x 108 mm high and 1,710 mm centres.

Reeler Drum:
Rim Diameter: 2,770 mm.
Core Diameter: 1,270 mm.
Between Flanges: 1,954 mm.
Tare weight: 6,000 kgs.
Design Gross Weight: 12,500 kgs.

Minimum air supply pressure: 90 psi.
Maximum air supply pressure: 130 psi.
Recommended volume: 162 cfm.

Subsea Control Panel:
61 lines with maximum working pressure of 3k.

Designed to Accommodate Umbilical:
103 mm OD by 2,000ft umbilical.

ASSEMBLY NO TU-A-1016

Umbilical Reeler Unit



Main Frame

Robust carbon steel frame with 4 point lift, forklift pockets, drip tray, replicable weld down deck securing plates and integral tigger points in all 4 corners. The fabrications are shot blasted, Zinc primed before painting to customers livery.

Reel Drive System

For reliability a rugged geared 15 hp radial air piston motor is utilised coupled to a heavy duty Spur gear transmission.

Pneumatic System

External bulkhead hook-up port, with isolator ball valve, large capacity dual water separator and filter, stainless steel pipework is used for the main supply line to the bronze air pilot directional valve and air lubricator. Cut out safety switches fitted to all doors

Remote Control Panel

The stainless steel control panel with floor stand connected to the Reeler unit by a 10 meter umbilical. The control panel is fitted with system pressure gauge, direction control lever, pressure regulator and spooler controls with all operations fully colour engraved on the panel facia.

Spooling System

An automatic endless or (diamond) screw used to synchronize the spooling with rotation of the reel. Driven by angle gear box and stainless steel drive shafts.

Remote Over-Ride Spooling Clutch Assembly

This can be used to over-ride spooler drive for fine adjustment of spooler position & is operated from the remote control panel without the need to stop umbilical deployment.

Fail Safe Brake System

The marine type fail safe brake and stainless steel brake disc provides a positive all weather system. The clamping force of the brake calliper is factory pre-set to the value at which reel will slip, protecting the SWL of the umbilical and sheave.

Reel Sub-Sea Control Panel

Stainless steel, colour filled engraved control panel with 9 lines connected by a series of directional control valves, isolator valves, pressure gauges and the female stab-plate are set in to the drum, a fold down access step with hand rail allows the operator access to the panel.

Stab Plate

A 65 pass hydraulic stab plate with clamp assembly connects all subsea control lines to the unit.

Advantages

- Hinged doors for easy access for maintenance.
- Stainless steel, with colour filled engraved logic on all control panels.
- Pivoted vertical roller for easy removal of the Umbilical.
- Remote operated spooler over-ride clutch reducing downtime while spooling.
- Top roller set allowing spooling a wider spooling trajectory.
- Flexible Spooling system that can be adjusted to spool at different angles.
- Adjustable brake system, protecting the umbilical.
- Fold down step is provided for easy access to the sub-sea control panel.



Safety Features

- Fully enclosed unit to prevent contact with moving parts.
- Safety cut-out valves fitted on all access doors.
- Drum lock arrangement with pneumatic cut-out feature.
- Integral "LOCK", spring centred direction control valve.
- Pre set line pull value to limit drive motor torque and to ensure max line pull on umbilical does not exceed 0.9 times the SWL of umbilical or maximum loading of sheave.

Specification

ATEX certified design

- Mainframe:** Carbon steel, 4 Point Lift, BS EN 12079 / DNV 2.7-1 certified.
- Frame:** 2,850 mm Length x 2,780 mm Width x 3,500 mm Height
- Forklift Pockets:** 248 mm wide x 108 mm high and 1,710 mm centres.
- Reeler Drum:**
- Rim Diameter:** 2,770 mm.
- Core Diameter:** 1,270 mm.
- Between Flanges:** 1,954 mm.
- Tare weight:** 6,000 kgs.
- Design Gross Weight:** 12,500 kgs.
- Minimum air supply pressure:** 90 psi.
- Maximum air supply pressure:** 130 psi.
- Recommended volume:** 162 cfm.

Subsea Control Panel:

61 lines with maximum working pressure of 3k.

Designed to Accommodate Umbilical:

103 mm OD by 2,000ft umbilical.

ASSEMBLY NO TU-A-1017

Umbilical Reeler Unit



Main Frame

Robust carbon steel frame with 4 point lift, forklift pockets, drip tray, replicable weld down deck securing plates and integral tigger points in all 4 corners. The fabrications are shot blasted, Zinc primed before painting to customers livery.

Reel Drive System

For reliability a rugged geared 15 hp radial air piston motor is utilised coupled to a heavy duty roller chain transmission.

Pneumatic System

External bulkhead hook-up port, with isolator ball valve, large capacity dual water separator and filter, stainless steel pipework is used for the main supply line to the bronze air pilot directional valve and air lubricator. Cut out safety switches fitted to all doors

Remote Control Panel

The stainless steel control panel with floor stand connected to the Reeler unit by a 10 meter umbilical. The control panel is fitted with system pressure gauge, direction control lever, pressure regulator and spooler controls with all operations fully colour engraved on the panel facia.

Spooling System

An automatic endless or (diamond) screw used to synchronize the spooling with rotation of the reel. Driven by angle gear box and stainless steel drive shafts.

Remote Over-Ride Spooling Clutch Assembly

This can be used to over-ride spooler drive for fine adjustment of spooler position & is operated from the remote control panel without the need to stop umbilical deployment.

Fail Safe Brake System

The marine type fail safe brake and stainless steel brake disc provides a positive all weather system. The clamping force of the brake calliper is factory pre-set to the value at which reel will slip, protecting the SWL of the umbilical and sheave.

Reel Sub-Sea Control Panel

Stainless steel, colour filled engraved control panel with 6 lines connected by a series of isolator valves and pressure gauges are set into on the drum, a fold down access step with hand rail allows the operator access to the panel.

Slip ring assembly

Hydraulic 6 function lines, 10k sliping assembly connected in series with needle valves and pressure gauges. All ports 1/4" line size. There is also a 16 pass electrical sliping on the opposite side of the drum.

Advantages

- Compact design with sliping mounted inside the drum keeping the width to minimum.
- Hinged doors for easy access for maintenance.
- Stainless steel, with colour filled engraved logic on all control panels.
- Pivoted vertical roller for easy removal of the Umbilical.
- Remote operated spooler over-ride clutch reducing downtime while spooling.
- Top roller set allowing spooling a wider spooling trajectory.
- Adjustable brake system, protecting the umbilical.
- Fold down step is provided for easy access to the sub-sea control panel.
- Integral storage basket for hook-up hoses or parts.
- Bulkhead for remote control unit with quick connects.
- Easy to disassemble and assemble the sliping for servicing and maintenance.
- Bypass ports to bypass the sliping if necessary.



Safety Features

- Fully enclosed unit to prevent contact with moving parts.
- Safety cut-out valves fitted on all access doors.
- Drum lock arrangement with pneumatic cut-out feature.
- Integral "LOCK", spring centred direction control valve.
- Pre set line pull value to limit drive motor torque and to ensure max line pull on umbilical does not exceed 0.9 times the SWL of umbilical or maximum loading of sheave.

Specification

ATEX certified design

Mainframe:

Carbon steel, 4 Point Lift, BS EN 12079 / DNV 2.7-1 certified.

Frame: 3,810 mm Length x 3,000 mm Width x 3,835 mm Height

Forklift Pockets:

248 mm wide x 108 mm high and 1,970 mm centres.

Reeler Drum:

Rim Diameter: 3,280 mm.

Core Diameter: 1,540 mm.

Between Flanges: 2,204 mm.

Design Gross Weight: 22,000 kgs.

Minimum air supply pressure: 90 psi.

Maximum air supply pressure: 130 psi.

Recommended volume: 162 cfm.

Subsea Control Panel:

6 lines with maximum working pressure of 10k.

Designed to Accommodate Umbilical:

64 mm OD by 3,000m umbilical

ASSEMBLY NO TU-A-1019

Umbilical Reeler Unit



Frame

Robust carbon steel frame with 4 point lift, forklift pockets, drip tray, replicable weld down deck securing plates and integral tigger points in all 4 corners. The fabrications are shot blasted, Zinc primed before painting to customers livery.

Reel Drive System

For reliability a rugged geared 15 hp radial air piston motor is utilised coupled to a heavy duty roller chain transmission.

Pneumatic System

External bulkhead hook-up port, with isolator ball valve, large capacity dual water separator and filter, stainless steel pipework is used for the main supply line to the bronze air pilot directional valve and air lubricator. Cut out safety switches fitted to all doors

Remote Control Panel

The stainless steel control panel with floor stand connected to the Reeler unit by a 10 meter umbilical. The control panel is fitted with system pressure gauge, direction control lever, pressure regulator and spooler controls with all operations fully colour engraved on the panel facia.

Spooling System

An automatic endless or (diamond) screw used to synchronize the spooling with rotation of the reel. Driven by angle gear box and stainless steel drive shafts.

Remote Over-Ride Spooling Clutch Assembly

This can be used to over-ride spooler drive for fine adjustment of spooler position & is operated from the remote control panel without the need to stop umbilical deployment.

Fail Safe Brake System

The marine type fail safe brake and stainless steel brake disc provides a positive all weather system. The Clamping force of the brake calliper is factory pre-set to the value at which reel will slip, protecting the SWL of the Umbilical and sheave.

Reel Sub-Sea Control Panel

Stainless steel, colour filled engraved control panel with 6 lines connected by a series of isolator valves and pressure gauges are set into on the drum, a fold down access step with hand rail allows the operator access to the panel.

Slip ring assembly

6 function lines, 10k slipping assembly connected in series with needle valves and pressure gauges. All ports 1/4" line size.

Advantages

- Compact design with slipping mounted inside the drum keeping the width to minimum.
- Hinged doors for easy access for maintenance.
- Stainless steel, with colour filled engraved logic on all control panels.
- Pivoted vertical roller for easy removal of the Umbilical.
- Remote operated spooler over-ride clutch reducing downtime while spooling.
- Top roller set allowing spooling a wider spooling trajectory.
- Adjustable brake system, protecting the umbilical.
- Integral storage basket for hook-up hoses or parts.
- Bulk head for remote control unit with quick connects.
- Easy to disassemble and assemble the slipping for servicing and maintenance.
- Bypass ports to bypass the slipping if necessary.



Safety Features

- Fully enclosed unit to prevent contact with moving parts.
- Safety cut-out valves fitted on all access doors.
- Drum lock arrangement with pneumatic cut-out feature.
- Integral "LOCK", spring centred direction control valve.
- Pre set line pull value to limit drive motor torque and to ensure max line pull on umbilical dose not exceed 0.9 times the SWL of umbilical or maximum loading of sheave.

Specifications

ATEX certified design

Mainframe: Carbon steel, 4 Point Lift, BS EN 12079 / DNV 2.7-1 certified.

Frame: 3,060 mm Length x 2,240 mm Width x 3,055 mm Height.

Forklift Pockets: - 248 mm wide x 108 mm high and 1,650 mm centres.

Reeler Drum:

Rim Diameter: 2,500 mm.

Core Diameter: 1,300 mm.

Between Flanges: 1,450 mm.

Design Gross Weight: 9,500 kgs.

Minimum air supply pressure: 90 psi.

Maximum air supply pressure: 130 psi.

Recommended volume: 162 cfm.

Subsea Control Panel:

6 lines with maximum working pressure of 10k.

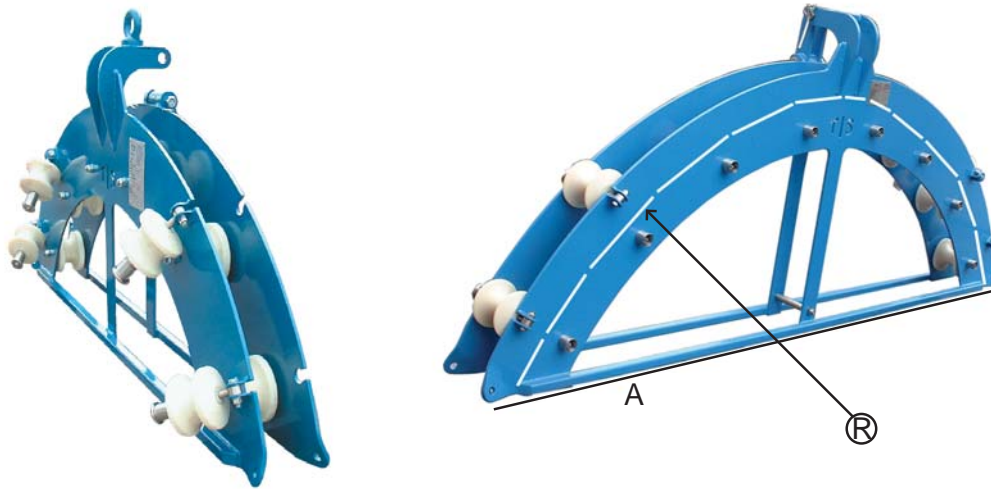
Designed to Accomodate Umbilical:

65 mm OD by 1,000m umbilical

Different umbilical diamters could be accomodated on this model

ASSEMBLY NO TU-A-1022

Arch Sheaves



The TIS arch umbilical sheave is a high quality item of equipment designed specifically for long life, ease of use and maintenance.

It has a mainframe of robust steel plate construction, equipped with a single lift eye and tie down fixture points.

Paintwork

The main framework is protected by a two stage powder coat system.

Steelwork is first blasted to give a uniform clean surface, it is then primed with polyzinc primer and cured in an oven before applying a final durable polyester finish to customer's color.

Features

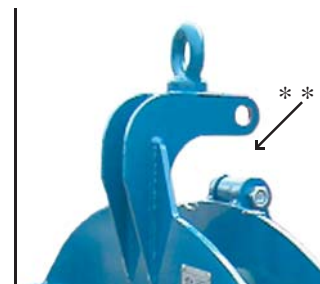
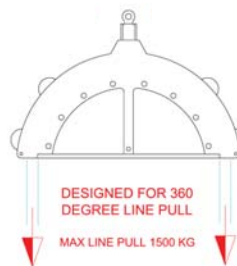
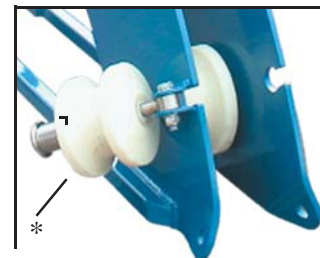
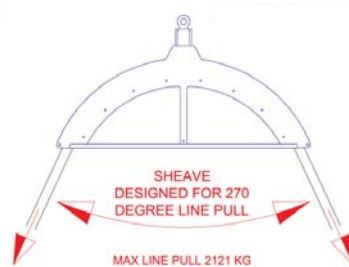
The sheave has the facility to allow the umbilical to be fitted and removed while the sheave is suspended, this is achieved by use of a hinged section to one side of the lift point.*

Large diameter nylon rollers having a spherical section are used to provide full support the umbilical section thus preventing any crushing effect on the inner lines.

The lower, load bearing rollers are fitted with ball bearing cartridges and provided with grease nipples.

All rollers run on stainless steel shafts, the top set have quick action sprung fixtures that allow full access to the umbilical in a matter of seconds. * *

Umbilical Dia.	A	R	Weight	Assembly No.	Line Pull Angle (°)
51mm	1850mm	860mm	140kg	SH-A-1010	270
57mm	1850mm	860mm	200kg	SH-A-1001	270
65mm	2670mm	1300mm	200kg	SH-A-1004	270
73mm	2670mm	1300mm	200kg	SH-A-1011	270
85mm	2670mm	1300mm	200kg	SH-A-1005	270
96mm	2670mm	1300mm	200kg	SH-A-1003	270
110mm	2670mm	1300mm	200kg	SH-A-1006	270
110mm	1710mm	690mm	160kg	SH-A-1009	180
123mm	2670mm	1300mm	200kg	SH-A-1007	270



TIS currently produce Sheaves for 270° and 360° Line Pull Angles

Main Frame

Custom designed Carbon steel container with 4 point lift, forklift pockets and ISO corner castings on the base, the container is dual certified to BS EN12079 and DNV 2.7-1 specifications. A man access door is provided on one side allowing the operator to walk inside the unit to monitor and service the unit, The cabin has full width double container doors on the end and removable roof hatches for removal of large items.

Hydraulic System

Two totally independent hydraulic systems are housed within the HPU, these are powered by a total of four 7,000 psi and two 12,000 psi electrically driven pumps and are used to charge a total of 14 accumulators piston and bladder type accumulators. The pressure headers, fitted with flow meters and pressure transmitters and pressure regulators supply four outlet headers.

Fluid Reservoir

The unit is fitted with dual 600 litre stainless steel reservoirs on system A and by 200 litre reservoirs on system B, for return and supply fluids, filtration is catered for by one return filter fitted to the return pipework. All four tanks fitted with large side access hatches, level indicators, level switches and isolators

Accumulators

The unit has nine 50 litre, 5000 psi and three 50 litre, 12000 psi piston type accumulators. All fitted with isolation valve manifolds on both the nitrogen and hydraulic ends as well as a central gas charging port.

Filtration/Flushing

On both systems a re-circulation pump is used to transfer fluid between the returns reservoir and the supply reservoir via a 3 micron filter used to flush and clean the fluid. Micro switches are used on the tank selector valves allowing in conjunction with the re-circulation pump and level switches to prevent over filling the tanks and also to protect the pumps.

Chemical Injection system

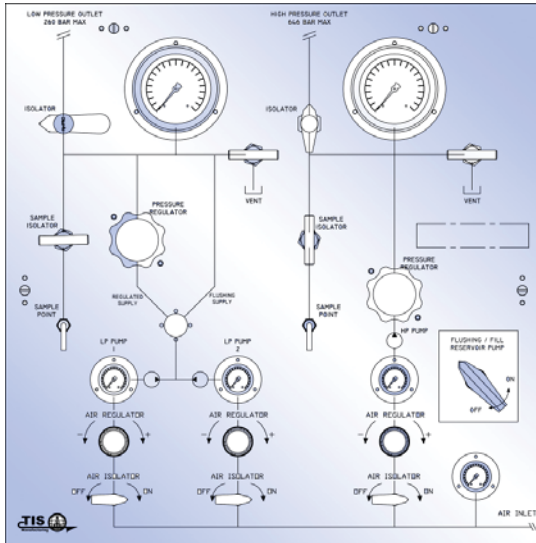
The unit has three air hydro pumps that can be manually controlled locally or remotely controlled via the PLC link, these are used to provide 2 off 10,000 psi supplies and one 2000 psi for fast fill, these pumps are fed from an external supply.

PLC Monitoring

A Exn cabinet contains all of the electronics required to monitor the many functions within the unit. Pressure, Flow monitoring, Reservoir levels Fluid cleanliness, Aqua monitor (for used with mineral fluids) etc.



Specification	
Unit Certification :	ATEX Certified, Zone 2
Mainframe:	BS EN 12079 / DNV 2.7-1 Specification
Dimensions :	
Length:	4470 mm
Width:	2450 mm
Height:	2754 mm
Gross Weight:	11,500 kg
Supply Reservoir System A: 600 litres	
Return Reservoir System A: 600 litres	
Supply Reservoir System B: 200 litres	
Return Reservoir System B: 200 litres	
LP System A maximum rated working pressure: 5,000 psi	
HP System A maximum rated working pressure: 12,000 psi	
LP System B maximum rated working pressure: 5,000 psi	
HP Accumulators:	Qty 3 @ 50 litre capacity
LP Accumulators:	Qty 9 @ 50 litre capacity
LP Accumulator pre-charge: 3,000 psi nitrogen.	
LP Accumulator pre-charge: 8,000 psi nitrogen.	
Electric LP Pump displacement: 16 litre/min	
Electric HP Pump displacement: 4.2 litre/min	
Air LP Pump 2 off displacement: 31 litre/min	
Air HP Pump displacement: 2.7 litre/min	
Number of supply lines: 6 including chemical injection	
Electrical supply	
440 volt 3 phase 64 amps	
240 volt 1 phase 16 amps	
Air Supply:	180 CFM
Filtration:	
Pressure filters:	Qty 2 @ 3 micron
Return filters:	Qty 1 @ 3 micron
Suction strainers:	Qty 3 @ 125 micron
ASSEMBLY NO HP-U-1001	



Main Frame

Custom designed stainless steel framework, with 4 point lift and forklift pockets, dual certified to BS EN12079 and DNV 2.7-1 specifications. Unit having removable panels and hinged doors all round for ease of access and maintenance.

Hydraulic System

There are three independent hydraulic systems on this unit. A twin pump flushing/low pressure system, with a selector valve allowing the flow to be directed through a hydraulic pressure regulator for a controlled pressure outlet range of 0 – 260 bar. This selector can be changed to bypass the hydraulic pressure regulator when both pumps are required for flushing. The second system is a single pump high pressure test system which has a regulated output pressure range of 0 – 646 bar. The third system is a fluid reservoir flushing/fill pump, this is provided by an air diaphragm pump. Each of the three systems has fluid sample points where samples can be taken and analysed while the unit remains operational

Fluid Reservoir

The unit is fitted with a single 250 litre capacity stainless steel reservoir. Filtration is catered for by return filter on the flushing loop. The tank is fitted level indicator and isolators

Filtration/Flushing

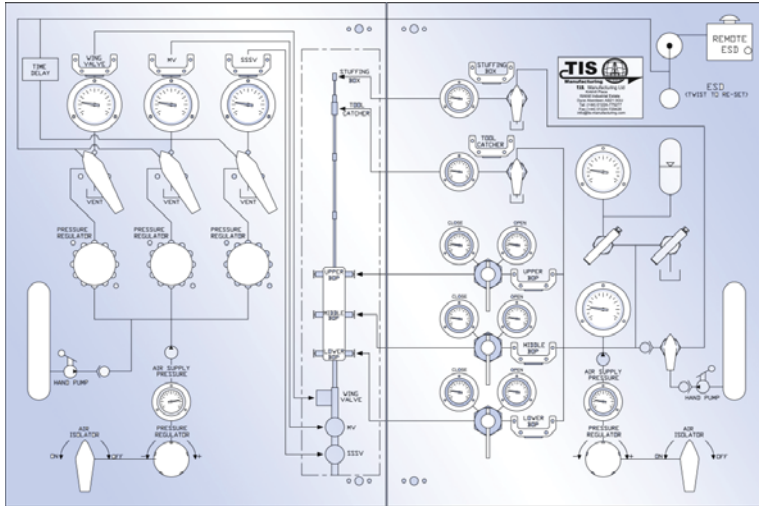
When filling the unit's reservoir all fluid passes through an inline 3 micron return filter. When the flushing function is selected all fluid being circulated also passes through this filter along with all fluid being vented from the high and low pressure systems. This filter has a mechanical clogging indicator and a fluid by-pass. The low and high pressure system pump outputs also pass through two 3 micron inline pressure filters with a mechanical clogging indicator with a fluid by-pass.

Pneumatic System

The air supply passes through an automatic drain type filter, a recommended air supply of 90 psi at 80 cfm is required to run the pumps efficiently.

Specification	
Mainframe :	BS 7072 Specification
Dimensions :	
Length:	1280 mm
Width:	1150 mm
Height:	1585 mm
Gross Weight:	1050 kg
Tank Capacity:	250 litres
Pressure outlets:	
Internal flushing system:	0 bar
Low pressure flushing system:	0 – 260 bar (3770psi)
High pressure test system:	0 – 646 bar (9370psi)
Low Pressure Flushing system	3770 psi
HP system maximum rated working pressure (outlet):	9370 psi
Flow rates:	
Internal flushing system:	50 l/min
Low pressure pump 1:	7.5 l/min
Low pressure pump 2:	7.5 l/min
Filtration:	
Pressure filters:	Qty 4 @ 3 micron
Return filters:	Qty 2 @ 3 micron
Suction strainers:	Qty 4 @ 125 micron
Air Requirement:	
90 CFM	
ASSEMBLY NO	HP-U-1002

Test and Flushing HPU



Main Frame

Carbon steel construction, dual certified to BS 7072 specifications.

A combination of steel removable panels and stainless hinged doors all round providing easy access for ease of maintenance.

Hydraulic System

The unit has four outlet supplies fed by two separate hydraulic systems allowing the unit to supply different fluids, both systems having an electrical 3000 psi pump charging bladder type accumulators of 35 and 54 litre capacity, each system also has a 690 psi air hydro pump,

Fluid Reservoir

The unit is fitted with two 600 litre capacity stainless steel reservoirs; one for each of the fluids, filtration is catered for by return filter on the flushing loop. Both tanks fitted with large side access hatches, level indicators, level switches and isolators

Accumulators

Removable roof hatches allow the removal of the accumulators.

Filtration/Flushing

A re-circulation pump is used to fill, drain and flush the fluids with a 3 micron filter in the loop to clean the fluid. Micro switches are used on the tank selector valves allowing in conjunction with the re-circulation pump and level switches to prevent over filling the tanks and also to protect the pumps.

Electrical System

On this unit IP 56 rated Industrial electrical motors and control gear are used, the control enclosure has, main isolator, stop / start pump controls with stand-by and running lamps as well as having filter clogging indicator lamps.

Specification

Mainframe : BS 7072 Specification

Dimensions :

Length: 2260 mm

Width: 1710 mm

Height: 2305 mm

Gross Weight: 3200 kg

Tank Capacity 2 off: 600 litres

HP system maximum rated working pressure (outlet): 10,000 psi

LP system maximum rated working pressure (outlet): 3000 psi

Accumulator LP system A: Qty 1 @ 54 litre capacity

Accumulator LP system B: Qty 1 @ 37 litre capacity

Accumulator pre-charge: 5000 psi nitrogen.

Electric Pump displacement: 1.2cc per rev.

LP maximum rated working pressure (system A outlet): 3000 psi.

HP maximum rated working pressure (system A outlet): 10,000 psi.

LP maximum rated working pressure (system B outlet): 3000 psi.

HP maximum rated working pressure (system B outlet): 10,000 psi.

Filtration:

Pressure filters: Qty 4 @ 3 micron

Return filters: Qty 2 @ 3 micron

Suction strainers: Qty 4 @ 125 micron

Electrical Requirement

3 phase 440 volt 32 amp AC

Air Requirement:

80 CFM

ASSEMBLY NO HP-U-1003

Main Frame

Custom designed stainless steel container, dual certified to BS EN12079 and DNV 2.7-1 specifications.

A man access door and full width container doors allow the operator to walk inside the unit to monitor and service the unit.

Hydraulic System

Two electrically driven and two back-up air hydro pumps are used to charge the 6 off piston accumulators, 4 off accumulators on the 12,000 psi and 2 off accumulators on the 7000 psi pressure headers. These pressure headers, fitted with flow meters and pressure transmitters in turn supply solenoid valves providing a means to isolate and vent the systems remotely, all solenoid valves have manual by-pass facilities fitted.

Fluid Reservoir

The unit is fitted with a large capacity stainless steel dual reservoir; for return and supply fluids, filtration is catered for by one return filter fitted to the return pipework. Both tanks fitted with large side access hatches, level indicators, level switches and isolators

Accumulators

The unit has two 20 litre, 7000 psi and four 26 litre, 12000 psi piston type accumulators. All fitted with isolation valve manifolds on both the nitrogen and hydraulic ends. Removable roof hatches allow easy removal of the accumulators.

Filtration/Flushing

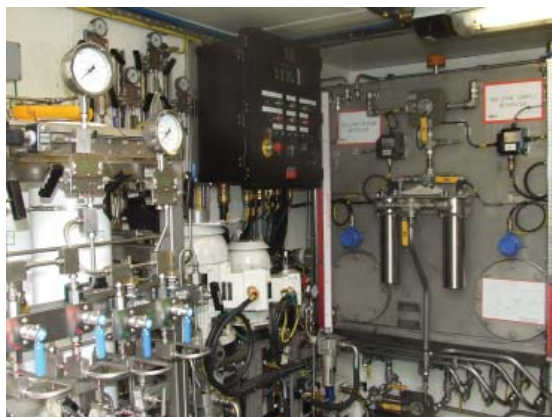
A re-circulation pump is used to transfer fluid between the returns reservoir and the supply reservoir via a 3 micron filter used to flush and clean the fluid. Micro switches are used on the tank selector valves allowing in conjunction with the re-circulation pump and level switches to prevent over filling the tanks and also to protect the pumps.

PLC Control

A Exn cabinet contains all of the electronics required to monitor and control the many functions within the unit. Pressure and temperature monitoring, Solenoid valve control and Pump motor control for the HP & MP electric pumps. Solenoids automatically enable the air driven pumps to run in an electrical failure.

UPS Cabinet

Dry cell rechargeable type batteries are stored in a cabinet and these are used to provide the PLC with power in the event of an electrical failure.



Specification

Unit Certification : ATEX Certified, Zone 2
Mainframe : BS EN 12079 / DNV 2.7-1 Specification

Dimensions :

Length: 3725 mm
Width: 2450 mm
Height: 2605 mm
Gross Weight: 8000 kg

Tank Capacity: 1190 litres
Supply Reservoir: 810 litres (700 litres operational volume)

Return Reservoir: 380 litres (300 litres operational volume)
HP system maximum rated working pressure: 12,000 psi

MP system maximum rated working pressure: 7,500 psi

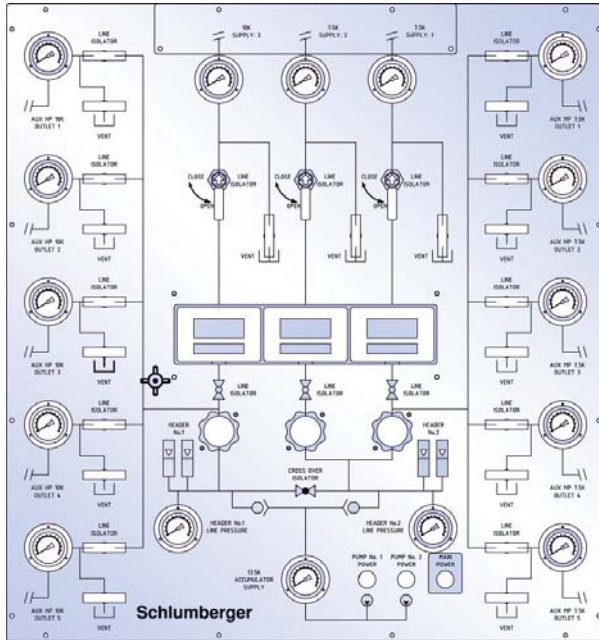
HP Accumulators: Qty 4 @ 26 litre capacity
HP Accumulator pre-charge: 6000 psi nitrogen.
HP Accumulator system relief set: 13,200 psi
MP Accumulators: Qty 2 @ 20 litre capacity
MP Accumulator pre-charge: 3,400 psi nitrogen.
MP Accumulator system relief set: 7,700 psi

Electric HP Pump displacement: 1.17cc per rev.
Electric MP Pump displacement: 1cc per rev.
Air HP Pump displacement: 49.2 cc per cycle.
Air MP Pump displacement: 73.7cc per rev.
Number of supply lines: 14 (8HP & 6MP)

Filtration:
Pressure filters: Qty 2 @ 3 micron
Return filters: Qty 1 @ 3 micron
Suction strainers: Qty 3 @ 125 micron

ASSEMBLY NO HP-U-1006

Hydraulic Power Unit



Main Frame

Stainless steel construction, dual certified to BS EN12079 and DNV 2.7-1 specifications.

A man access door allows the operator to walk inside the unit while hinged doors and removable panels all round for ease of maintenance.

Hydraulic System

Two electrically driven high pressure pumps charging four 80 litre piston accumulators provide to 13,500 psi, three regulated manifolds feeding thirteen pressure outlets are provided on the unit, ten of which are for test functions and have a chart recorder port in tandem with the pressure outlet. One 10,000 psi and two 7,500 psi outlets are monitored with flow meters and are the main supply outlets for the unit.

Fluid Reservoir

The unit is fitted with a large capacity stainless steel dual reservoir; for return and supply fluids, filtration is catered for by one return filter fitted to the return pipework. Both tanks fitted with large side access hatches, level indicators, level switches and isolator

Accumulators

The accumulators are arranged in two pairs and have an isolation valve between two linked manifolds. They are all piped up to a nitrogen pre-charge control panel that can be viewed from the front of the unit. Removable roof hatches allow the removal of the accumulators.

Filtration/Flushing

A re-circulation pump is used to transfer fluid between the returns reservoir and the supply reservoir via a 3 micron filter used to flush and clean the fluid. Micro switches are used on the tank selector valves allowing in conjunction with the re-circulation pump and level switches to prevent over filling the tanks and also to protect the pumps.

Specification

Unit Certification : ATEX Certified
Mainframe : BS EN 12079 / DNV 2.7-1 Specification

Dimensions :

Length: 3010 mm
Width: 2010 mm
Height: 2570 mm
Gross Weight: 6500 kg

Tank Capacity: 1380 litres

Supply Reservoir: 690 litres (618 litres operational volume)

Return Reservoir: 690 (618 litres operational volume)

HP system max working pressure: 13,500 psi

HP system maximum rated working pressure (outlet): 10,000 psi

MP system maximum rated working pressure (outlet): 7,500 psi

Accumulators: Qty 4 @ 80 litre capacity

HP Accumulator pre-charge: 9000 psi nitrogen.

MP Accumulator pre-charge: 2,700 psi nitrogen.

Electric Pump displacement: 1.17cc per rev.

MP maximum rated working pressure (outlet): 7,500 psi.

Filtration:

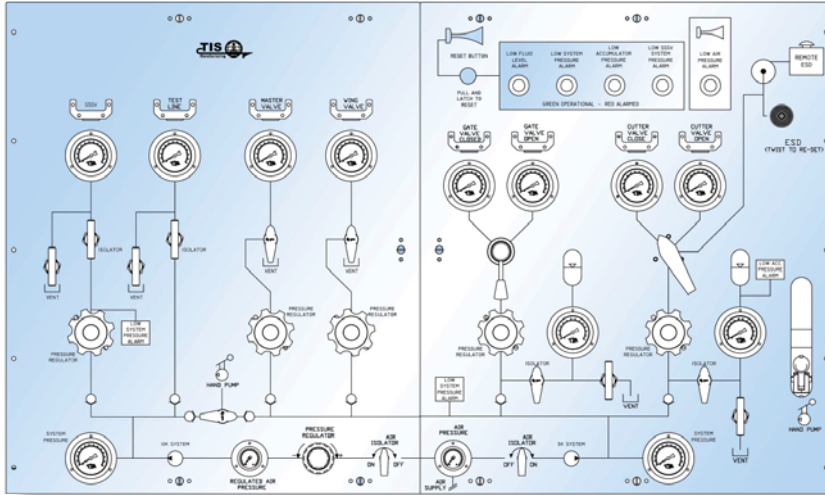
Pressure filters: Qty 2 @ 3 micron

Return filters: Qty 1 @ 3 micron

Suction strainers: Qty 3 @ 125 micron

ASSEMBLY NO HP-U-1007

Well Intervention Control Unit



Design

Compact ergonomic design providing an easy to use control unit with unrestricted access for maintenance throughout. The unit has hinged doors on all 4 sides fitted with high grade stainless hinges and flush catches. Front viewing doors when closed allow the operator to see system pressures while protecting from unauthorised use.

Control Panel

The control panel is fully engraved depicting the modes of operation, with the systems having being colour coded. When required, the control panel can be opened like a door for maintenance as it is hinged from both sides.

ESD

The ESD system can be activated from a button on the control panel or by the use of the remote ESD station attached to a hose reel within the unit.

Hose Reels

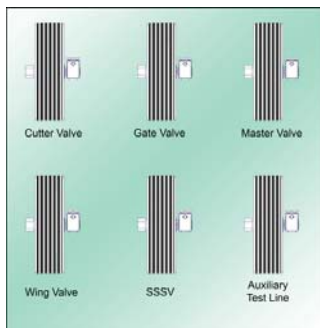
TIS hose reels are designed and manufactured for long life produced from stainless steel and bronze. The enclosed gearbox drive is another unique feature of TIS design.

Low air pressure warning system

The low air pressure warning system sounds whenever the incoming air pressure drops below a pre-set value, the system will give the operator a 20 second audible warning.

Reservoir supply

In order to ensure that only clean fluid can enter the system, both reservoirs are filled by a hand pump and short hose. This allows the taking of fluid directly from a barrel via the tank top filter to the reservoir.



Specification

Certified to: ATEX and PED

Frame designed and certified to:

BS-12079 & DNV2.7-1

Constructed from 316 stainless steel

Length: 1610mm

Width: 1270mm

Height: 1710mm

Weight: 1500kg

Wellhead valve control functions

- Cutter Valve: 5,000 psi (with ESD function)
- Gate valve: 5,000 psi
- Master Valve: 5,000 psi
- Wing Valve: 5,000 psi
- SSSV: 10,000 psi
- Auxiliary / Test line: 10,000 psi

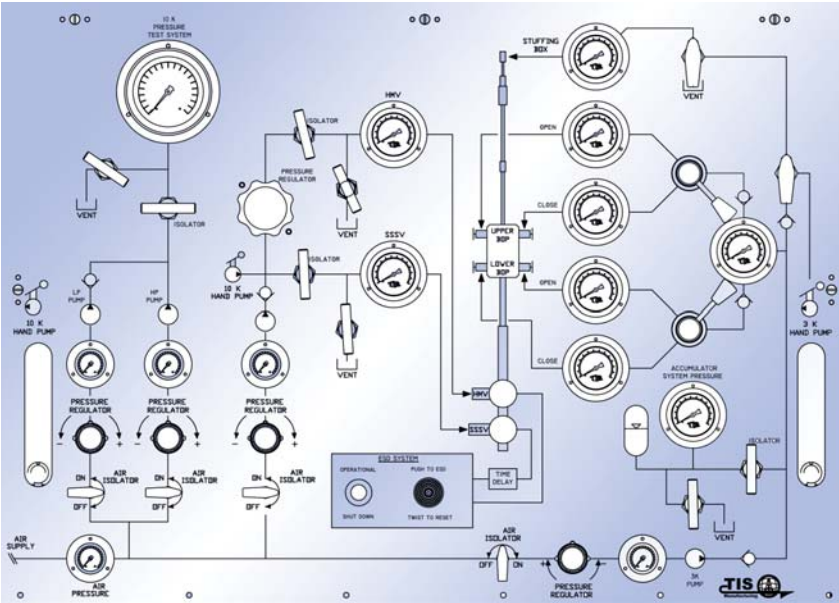
Hydraulic system features

- Reservoir 250 litre / 55 imperial gallon capacity
- Air hydro pump on CV, GC, MV, WV.
- Air hydro pump, with hand pump on SSSV, Auxiliary / Test
- X-Over valve between supply headers.
- Pressure Filters on both headers (3 micron)
- Low Reservoir level audible and visual warning
- Low Air pressure audible and visual warning
- Low Accumulator pressure audible and visual warning
- Low System pressure audible and visual warning
- Tank top filters: 20 micron
- Cutter valve system with 74 litre accumulator storage
- Gate valve system with 47 litre accumulator storage

- Recommended compressed air requirements 75 cfm, 80-150 psi

ASSEMBLY NO CU-W-1013

Well Intervention Control Unit



Design

Ergonomic design providing an easy to use control unit with unrestricted access for maintenance throughout. The unit has hinged doors on all 4 sides fitted with high grade stainless hinges and flush catches. Front viewing doors when closed allow the operator to see system pressures while protecting from unauthorised use.

Control Panel

The control panel is fully engraved depicting the modes of operation, with the systems being colour coded. An interchangeable "Well mimic" is mounted to the panel allowing it to be tailored to the operational requirements. When required, the control panel can be opened like a door for maintenance as it is hinged from both sides. All critical control functions have a lock mechanism preventing inadvertent operation.

ESD

The ESD system can be instigated from a button on the control panel or by the use of the remote ESD station. There is a pneumatic timer fitted to control the shutdown of the SSSV valve, ensuring it closes after the Master valve.

Reservoir supply

In order to ensure that only clean fluid can enter the system, both reservoirs are filled by a hand pump and short hose. This allows the taking of fluid directly from a barrel via the tank top filter to the reservoir. The Pressure test reservoir is fitted with a fluid level shutoff valve allowing it to be connected to an external supply.

Hook Up Hoses

Hose reels are stored within the back of the unit, and can be wrapped up around the supplied horns when not in use.

Specification

Certified to: ATEX and PED

Frame designed and certified to: BS-12079 & DNV2.7-1

Constructed from 316 stainless steel

Length: 1260mm

Width: 1020mm

Height: 1680mm

Weight: 1000kg

Wireline system control functions

- Upper BOP: 3000 psi *
- Lower BOP: 3000 psi *
- Stuffing box: 1500 psi (hand pump operation)
- *20 litre accumulator connected to these functions.
- Reservoir 35 litre / 7.5 imperial gallon capacity
- Single air hydro pump
- Hand pump back-up

Tree Isolation functions

- Master valve: Regulated 0-10,000 psi (ESD function timed delay)
- SSSV: Pump regulated supply 0-15,000 psi (ESD function timed delay)
- Reservoir 35 litre / 7.5 imperial gallon capacity
- Air hydro pump on MV and SSSV
- Hand pump back-up on MV and SSSV

Pressure Test System

- Low pressure High volume: 30 litre / min, 400 psi max
- High pressure low volume: 10,000 psi, 1 litre / minute max

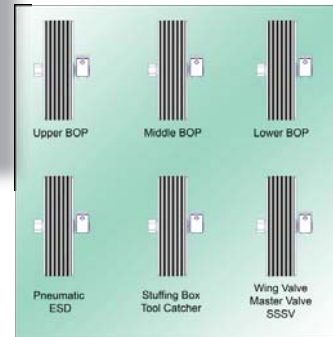
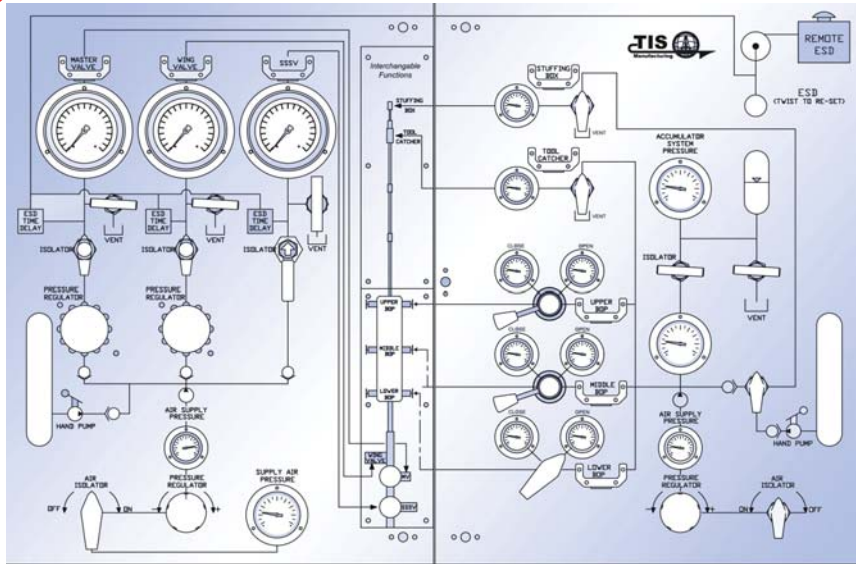
Hook Up Hoses

- Upper BOP open / close 1/4" N.B. x 50' long
- Lower BOP open / close 1/4" N.B. x 50' long
- Stuffing box 1/4" N.B. x 100' long
- Master Valve 3/8" N.B. x 50' long
- SSSV 1/4" N.B. x 50' long
- Pressure Test Line 3/8" N.B. x 50' long

- Recommended compressed air requirements 75 cfm, 80-150 psi

ASSEMBLY NO CU-W-1014

Well Intervention Control Unit



Design

Ergonomic design providing an easy to use control unit with unrestricted access for maintenance throughout. The unit has hinged doors on all 4 sides fitted with high grade stainless hinges and flush catches. Front viewing doors when closed allow the operator to see system pressures while protecting from unauthorised use.

Control Panel

The control panel is fully engraved depicting the modes of operation, with the systems being colour coded. An interchangeable "Well mimic" is mounted to the panel allowing it to be tailored to the operational requirements. When required, the control panel can be opened like a door for maintenance as it is hinged from both sides. All critical control functions have a lock mechanism preventing inadvertent operation.

ESD

The ESD system can be activated from a button on the control panel or by the use of the remote ESD station attached to a hose reel within the unit. There are two pneumatic timers that control the shutdown sequence of the Lower BOP valve and Wellhead valves.

Hose Reels

TIS hose reels are designed and manufactured for long life produced from stainless steel and bronze. The enclosed gearbox drive is another unique feature of TIS design.

Low air pressure warning system

The low air pressure warning system sounds whenever the incoming air pressure drops below a pre-set value, the system will give the operator a 20 second audible warning.

Reservoir supply

In order to ensure that only clean fluid can enter the system, both reservoirs are filled by a hand pump and short hose. This allows the taking of fluid directly from a barrel via the tank top filter to the reservoir.

Specification

Certified to: ATEX and PED

Frame designed and certified to: BS-12079 & DNV2.7-1

Constructed from 316 stainless steel

Length: 1410mm

Width: 1065mm

Height: 1660mm

Weight: 1500kg

Wireline system control functions

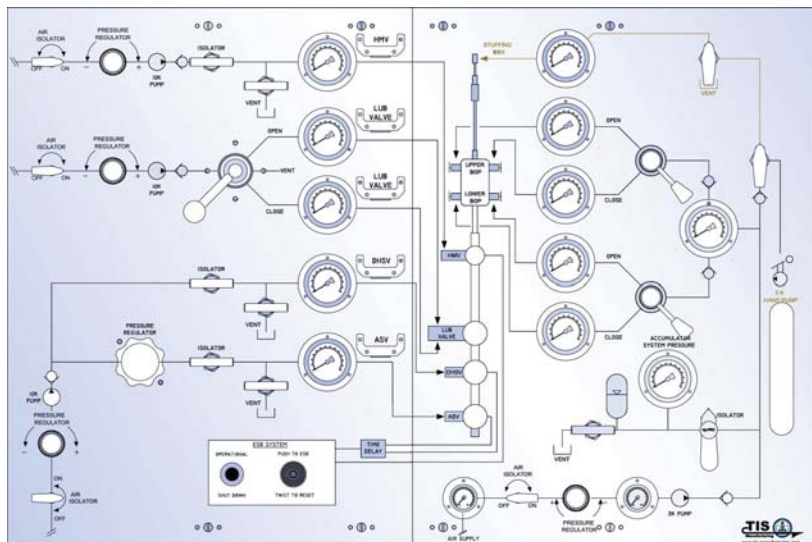
- Upper BOP: 3000 psi
- Middle BOP: 3000 psi
- Lower BOP: 3000 psi (with ESD "shear seal" function,)*
- Tool catcher: 3000 psi
- Stuffing box: 1500 psi (hand pump operation)
- * 20 litre accumulator connected to these functions.
- Reservoir 65 litre / 14 imperial gallon capacity
- Single air hydro pump
- Hand pump back-up

Wellhead valve control functions

- Master valve: Regulated 0-10,000 psi (ESD function timed delay)
- Wing valve: Regulated 0-10,000 psi (ESD function timed delay)
- SSSV: Pump regulated supply 0-15,000 psi (ESD function timed delay)
- Reservoir 56 litre / 12 imperial gallon capacity
- Air hydro pump on MV, WV and SSSV
- Hand pump back-up on MV, WV and SSSV
- Recommended compressed air requirements 75 cfm, 80-150 psi

ASSEMBLY NO CU-W-1015

Well Intervention Control Unit

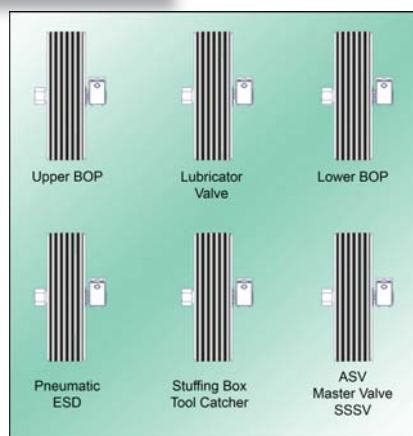


Design

Ergonomic design providing an easy to use control unit with unrestricted access for maintenance throughout. The unit has hinged doors on all 4 sides fitted with high grade stainless hinges and flush catches. Front viewing doors when closed allow the operator to see system pressures while protecting from unauthorised use.

Control Panel

The control panel is fully engraved depicting the modes of operation, with the systems being colour coded. An interchangeable "Well mimic" is mounted to the panel allowing it to be tailored to the platform requirements. When required, the control panel can be opened like a door for maintenance as it is hinged from both sides.



ESD

The ESD system can be activated from a button on the control panel or by the use of the remote ESD station attached to a hose reel within the unit. There are two pneumatic timers that control the shutdown sequence of the Wellhead valves.

Hose Reels

TIS hose reels are designed and manufactured for long life produced from stainless steel and bronze. The enclosed gearbox drive is another unique feature of TIS design.

Low air pressure warning system

The low air pressure warning system sounds whenever the incoming air pressure drops below a pre-set value, the system will give the operator a 20 second audible warning.

Reservoir supply

In order to ensure that only clean fluid can enter the system, both reservoirs are filled by a hand pump and short hose. This allows the taking of fluid directly from a barrel via the tank top filter to the reservoir.

Specification

Certified to: ATEX and PED

Frame designed and certified to: BS-12079 & DNV2.7-1

Constructed from 316 stainless steel

Length: 1410mm

Width: 1150mm

Height: 1700mm

Weight: 1500kg

Wireline system control functions

- Upper BOP: 3000 psi *
- Lower BOP: 3000 psi *
- Stuffing box: 1500 psi (hand pump operation)
- * 37 litre accumulator connected to these functions.
- Reservoir 70 litre / 15 imperial gallon capacity
- Single air hydro pump
- Hand pump back-up

Wellhead valve control functions

- HMV: Pump regulated supply 0-10,000 psi (ESD function)
- DHSV: Regulated 0-10,000 psi (ESD function timed delay)
- ASV: Regulated 0-10,000 psi (ESD function timed delay)
- Lubricator Valve: Pump regulated supply 0-10,000 psi
- Reservoir 80 litre / 17 imperial gallon capacity
- Air hydro pump on HMV
- Air hydro pump on DHSV and ASV
- Air hydro pump on Lubricator Valve
- System interconnecting valves between all 3 pumps

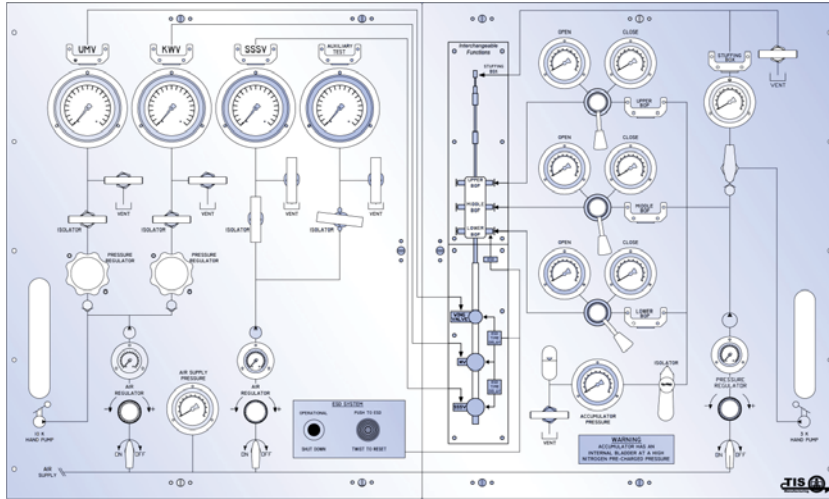
- **Recommended compressed air requirements 85 cfm, 90-150 psi**

- **Tank top filters:** 20 micron

- **Pressure filters:** 3 off 6 micron

ASSEMBLY NO CU-W-1016

Well Intervention Control Unit

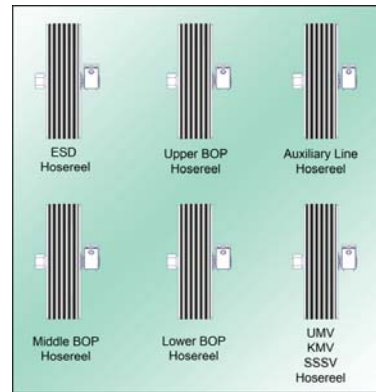


Design

Ergonomic design providing an easy to use control unit with unrestricted access for maintenance throughout. The unit has hinged doors on all 4 sides fitted with high grade stainless hinges and flush catches. Front viewing doors when closed allow the operator to see system pressures while protecting from unauthorised use.

Control Panel

The control panel is fully engraved depicting the modes of operation, with the systems being colour coded. An interchangeable "Well mimic" is mounted to the panel allowing it to be tailored to the operational requirements. The panel is hinged from both sides, when required the control panel can be opened like a door for maintenance. All critical control functions have a lock mechanism preventing inadvertent operation.



ESD

The ESD system can be activated from a button on the control panel or by the use of the remote ESD station attached to a hose reel within the unit, with a further facility to hook in a 3rd ESD control station from bulkhead ports within the unit. There are two pneumatic timers that control the shutdown sequence of the Lower BOP valve and Wellhead valves.

Hose Reels

TIS hose reels are designed and manufactured for long life produced from stainless steel and bronze. The enclosed gearbox drive is another unique feature of TIS design.

Low air pressure warning system

The low air pressure warning system sounds whenever the incoming air pressure drops below a pre-set value, the system will give the operator a 20 second audible warning.

Reservoir supply

In order to ensure that only clean fluid can enter the system, both reservoirs are filled by a hand pump and short hose. This allows the taking of fluid directly from a barrel via the tank top filter to the reservoir.

Specification
Certified to: ATEX and PED
Frame designed and certified to: BS-12079 & DNV2.7-1
Constructed from 316 stainless steel
Length: 1610mm
Width: 1180mm
Height: 1713mm
Weight: 1500kg

Wireline system control functions

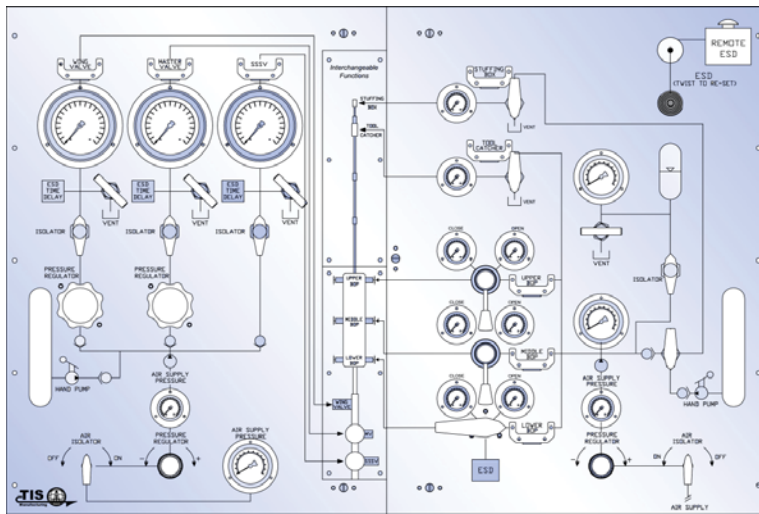
- Upper BOP: 5000 psi
- Middle BOP: 5000 psi
- Lower BOP: 5000 psi (with ESD "shear seal" function,)*
- Stuffing box: 1500 psi (hand pump operation)
 * 20 litre accumulator connected to these functions.
- Reservoir 65 litre / 14 imperial gallon capacity
- Single air hydro pump
- Hand pump back-up

Wellhead valve control functions

- Upper Master valve: Regulated 0-10,000 psi (ESD function timed delay)
- Kill Wing valve: Regulated 0-10,000 psi (ESD function timed delay)
- SSSV: Pump regulated supply 0-20,000 psi (ESD function timed delay)
- Auxiliary Test Line: Pump regulated supply 0-20,000 psi
- Reservoir 56 litre / 12 imperial gallon capacity
- Air hydro pump on MV, WV and SSSV
- Hand pump back-up on UMY, KWV
- Recommended compressed air requirements 75 cfm, 80-150 psi
- **Tank top filters:** 20 micron

ASSEMBLY NO CU-W-1019

Well Intervention Control Unit



Design

Ergonomic design providing an easy to use control unit with unrestricted access for maintenance throughout. The unit has hinged doors on all 4 sides fitted with high grade stainless hinges and flush catches. Front viewing doors when closed allow the operator to see system pressures while protecting from unauthorised use.

Control Panel

The control panel is fully engraved depicting the modes of operation, with the systems being colour coded. An interchangeable "Well mimic" is mounted to the panel allowing it to be tailored to the operational requirements. The panel is hinged from both sides, when required the control panel can be opened like a door for maintenance. All critical control functions have a lock mechanism preventing inadvertent operation.

ESD

The ESD system can be activated from a button on the control panel or by the use of the remote ESD station attached to a hose reel within the unit. There are two pneumatic timers that control the shutdown sequence of the Lower BOP valve and Wellhead valves.

Hose Reels

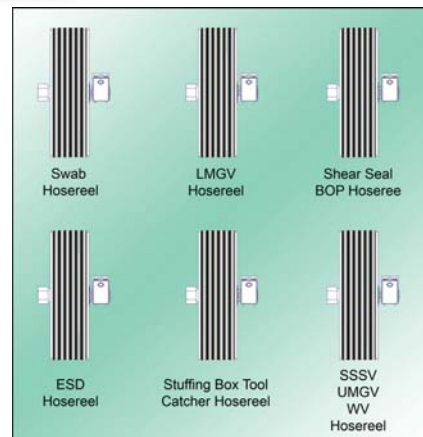
TIS hose reels are designed and manufactured for long life produced from stainless steel and bronze. The enclosed gearbox drive is another unique feature of TIS design.

Low air pressure warning system

The low air pressure warning system sounds whenever the incoming air pressure drops below a pre-set value, the system will give the operator a 20 second audible warning.

Reservoir supply

In order to ensure that only clean fluid can enter the system, both reservoirs are filled by a hand pump and short hose. This allows the taking of fluid directly from a barrel via the tank top filter to the reservoir.



Specification

Certified to: ATEX and PED

Frame designed and certified to: BS-12079 & DNV2.7-1

Constructed from 316 stainless steel

Length: 1410mm

Width: 1065mm

Height: 1660mm

Weight: 1500kg

Wireline system control functions

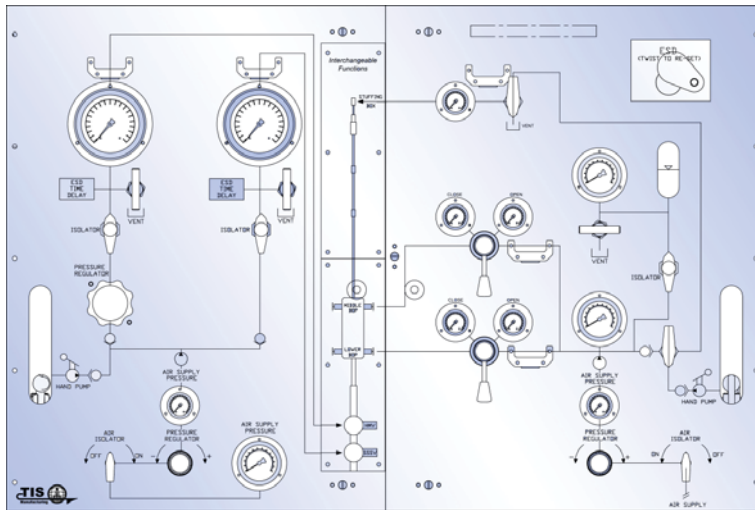
- Upper BOP: 3000 psi
- Middle BOP: 3000 psi
- Lower BOP: 3000 psi (with ESD "shear seal" function,)*
- Tool catcher: 3000 psi
- Stuffing box: 1500 psi (hand pump operation)
* 20 litre accumulator connected to these functions.
- Reservoir 65 litre / 14 imperial gallon capacity
- Single air hydro pump
- Hand pump back-up

Wellhead valve control functions

- Master valve: Regulated 0-10,000 psi (ESD function timed delay)
- Wing valve: Regulated 0-10,000 psi (ESD function timed delay)
- SSSV: Pump regulated supply 0-10,000 psi (ESD function timed delay)
- Reservoir 56 litre / 12 imperial gallon capacity
- Air hydro pump on MV, WV and SSSV
- Hand pump back-up on MV, WV and SSSV
- Recommended compressed air requirements 75 cfm, 80-150 psi
- Tank top filters: 20 micron

ASSEMBLY NO CU-W-1020

Well Intervention Control Unit



Design

Ergonomic design providing an easy to use control unit with unrestricted access for maintenance throughout. The unit has hinged doors on all 4 sides fitted with high grade stainless hinges and flush catches. Front viewing doors when closed allow the operator to see system pressures while protecting from unauthorised use.

Control Panel

The control panel is fully engraved depicting the modes of operation, with the systems being colour coded. An interchangeable "Well mimic" is mounted to the panel allowing it to be tailored to the operational requirements. The panel is hinged from both sides, when required the control panel can be opened like a door for maintenance. All critical control functions have a lock mechanism preventing inadvertent operation.

ESD

The ESD system is activated from a button on the control panel. There is an adjustable pneumatic timer fitted that controls the shutdown sequence of the SSSV

Hose Reels

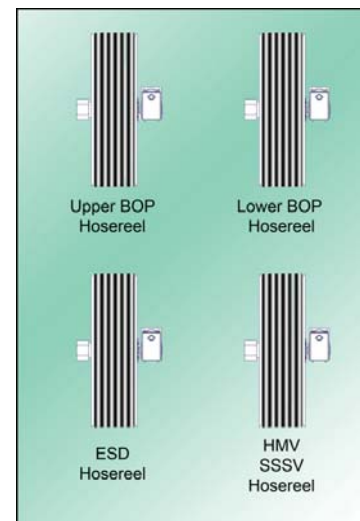
TIS hose reels are designed and manufactured for long life produced from stainless steel and bronze. The enclosed gearbox drive is another unique feature of TIS design.

Low air pressure warning system

The low air pressure warning system sounds whenever the incoming air pressure drops below a pre-set value, the system will give the operator a 20 second audible warning.

Reservoir supply

In order to ensure that only clean fluid can enter the system, both reservoirs are filled by a hand pump and short hose. This allows the taking of fluid directly from a barrel via the tank top filter to the reservoir.



Specification

Certified to: ATEX and PED

Frame designed and certified to: BS-12079 & DNV2.7-1

Constructed from 316 stainless steel

Length: 1410mm

Width: 1065mm

Height: 1660mm

Weight: 1500kg

Wireline system control functions

- Upper BOP: 3000 psi *
- Lower BOP: 3000 psi *
- Stuffing box: 1500 psi (hand pump operation)
* 20 litre accumulator connected to these functions.
- Reservoir 65 litre / 14 imperial gallon capacity
- Single air hydro pump
- Hand pump back-up

Wellhead valve control functions

- Higher Master valve: Regulated 0-10,000 psi (ESD function)
- SSSV: Pump regulated supply 0-10,000 psi (ESD function timed delay)
- Reservoir 56 litre / 12 imperial gallon capacity
- Air hydro pump on HMV and SSSV
- Hand pump back-up on HMV and SSSV

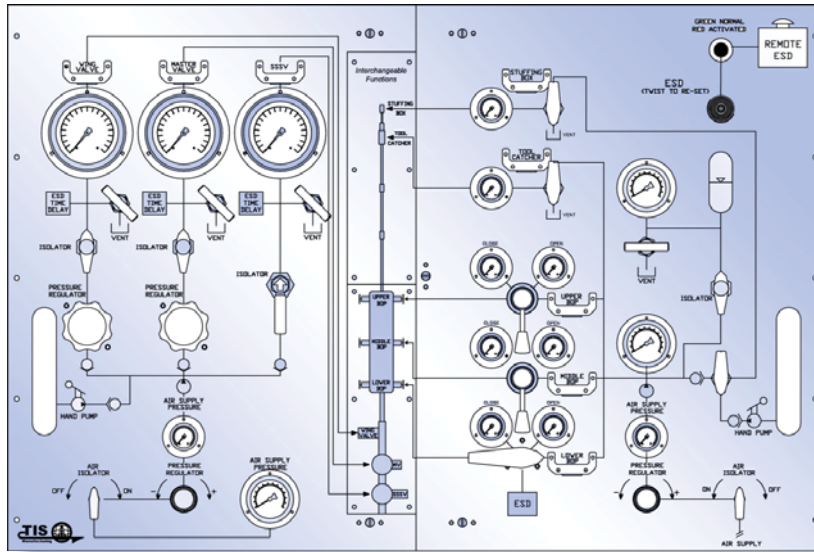
- Recommended compressed air requirements 75

cfm, 80-150 psi

Tank top filters: 20 micron

ASSEMBLY NO CU-W-1023

Well Intervention Control Unit



Design

Ergonomic design providing an easy to use control unit with unrestricted access for maintenance throughout. The unit has hinged doors on all 4 sides fitted with high grade stainless hinges and flush catches. Front viewing doors when closed allow the operator to see system pressures while protecting from unauthorised use.

Control Panel

The control panel is fully engraved depicting the modes of operation, with the systems being colour coded. An interchangeable "Well mimic" is mounted to the panel allowing it to be tailored to the operational requirements. The panel is hinged from both sides, when required the control panel can be opened like a door for maintenance. All critical control functions have a lock mechanism preventing inadvertent operation.

ESD

The ESD system can be activated from a button on the control panel or by the use of the remote ESD station attached to a hose reel within the unit, with a further facility to hook in a 3rd ESD control station from bulkhead ports within the unit. There are two pneumatic timers that control the shutdown sequence of the Lower BOP valve and Wellhead valves.

Hose Reels

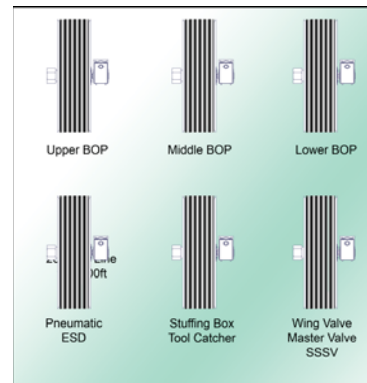
TIS hose reels are designed and manufactured for long life produced from stainless steel and bronze. The enclosed gearbox drive is another unique feature of TIS design.

Low air pressure warning system

The low air pressure warning system sounds whenever the incoming air pressure drops below a pre-set value, the system will give the operator a 20 second audible warning.

Reservoir supply

In order to ensure that only clean fluid can enter the system, both reservoirs are filled by a hand pump and short hose. This allows the taking of fluid directly from a barrel via the tank top filter to the reservoir.



Specification

Certified to: ATEX and PED
Frame designed and certified to: BS-12079 & DNV2.7-1
Constructed from 316 stainless steel
Length: 1410mm
Width: 1065mm
Height: 1660mm
Weight: 1500kg

Wireline system control functions

- Upper BOP: 3000 psi
- Middle BOP: 3000 psi
- Lower BOP: 3000 psi (with ESD "shear seal" function,)*
- Tool catcher: 3000 psi
- Stuffing box: 1500 psi (hand pump operation)
- * 25 litre accumulator connected to these functions.
- Reservoir 65 litre / 14 imperial gallon capacity
- Single air hydro pump
- Hand pump back-up

Wellhead valve control functions

- Master valve: Regulated 0-10,000 psi (ESD function timed delay)
- Wing valve: Regulated 0-10,000 psi (ESD function timed delay)
- SSSV: Pump regulated supply 0-15,000 psi (ESD function timed delay)
- Reservoir 56 litre / 12 imperial gallon capacity
- Air hydro pump on MV, WV and SSSV
- Hand pump back-up on MV, WV and SSSV
- **Recommended compressed air requirements 75 cfm, 80-150 psi**
- **Tank top filters: 20 micron**

ASSEMBLY NO CU-W-1022

Well Intervention Control Unit



Design

Ergonomic design providing an easy to use control unit with unrestricted access for maintenance throughout. The Stainless Steel unit has hinged doors on all 4 sides fitted with high grade stainless hinges and flush catches. Front viewing doors when closed allow the operator to see system pressures while protecting from unauthorised use.

Control Panel

The control panel is fully engraved and colour coded depicting the modes of operation. The panel is hinged from the bottom and can be opened like a door for maintenance.

ESD

The ESD system can be activated from a button on the control panel or by the use of a platform pneumatic ESD (operating on loss of air). The unit is also fitted with an Exd solenoid valve operating on the ESD system. Both the UMGV and DHSV shutdown simultaneously on receiving an ESD signal

Pressure monitoring

Pressure switches are fitted to both the UMGV and DHSV systems these are provided for customer hook-up and monitoring.

Bulkhead

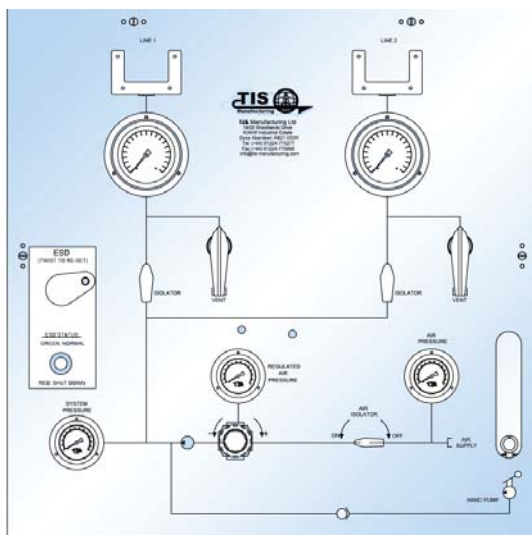
All external hook-up connections terminate at an engraved bulkhead plate.

Low fluid level warning system

An audible low fluid warning alarm is fitted to the stainless steel reservoir.

Reservoir supply

Filling the reservoir is by hand pump and short hose to allow taking fluid directly from a barrel via the tank top filter to the reservoir ensuring that only clean fluid enters the system.



Specification

Frame designed to BS EN 12079 standards

Length: 850mm
Width: 1000mm
Height: 1650mm
Weight: 1000 kg

Tank Capacity: 215 litres

Pump ratio: 60:1
Pump displacement: 0.67 cubic inches per stroke.
Recommended pump air requirement: 75 cfm

Main system maximum rated working pressure: 3,000 psi

Main relief valve set: 3,000 psi

Number of lines: 2

Maximum rated working pressure: 3,000 psi.

Pressure indicators:

Qty 2 full stainless steel trim 0-200 psi glycerine filled 63mm dia.

Qty 1 full stainless steel trim 0-4,000 psi glycerine filled 63mm dia

Qty 2 full stainless steel trim 0-4,000 psi glycerine filled 100mm dia.

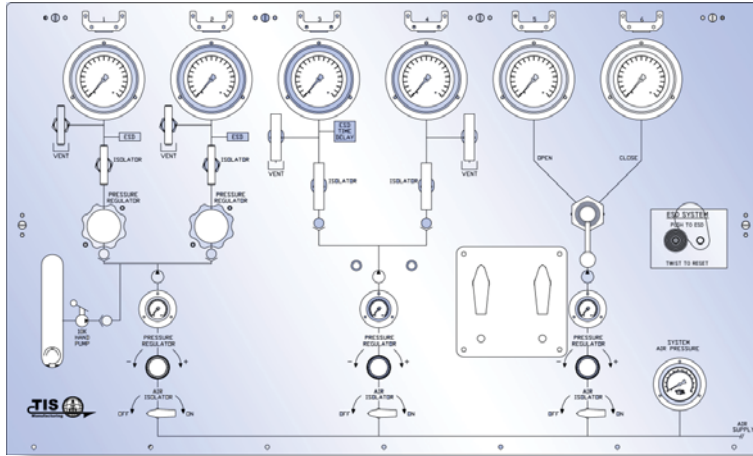
Ball Valves: Qty 2 1/2" stainless steel specification.

Ball Valves: Qty 2 1/4" stainless steel specification.

Pipe work: stainless steel 1/4" compression and 1/2" compression.

ASSEMBLY NO CU-W-1004

Well and Lubricator Intervention Control Unit



Design

Ergonomic design providing an easy to use control unit with unrestricted access for maintenance throughout. The unit has hinged doors on all 4 sides fitted with high grade stainless hinges and flush catches. Front viewing doors when closed allow the operator to see system pressures while protecting from unauthorised use.

Control Panel

The control panel is fully engraved depicting the modes of operation, with the systems being colour coded. An interchangeable "Well mimic" is mounted to the panel allowing it to be tailored to the operational requirements. The panel is hinged and can be opened like a door for maintenance. There are vent return sample points for the DHSV & Lube valve on the control panel allowing the returns to be measured if required.

ESD

The ESD system can be instigated from a button on the control panel or by the use of the remote ESD station attached to a hose reel within the unit. There is a pneumatic timer fitted that control the shutdown sequence of the Wellhead valves.

Hose Reels

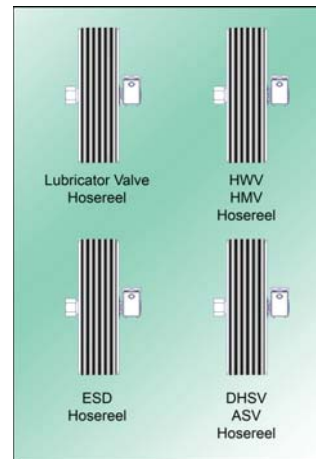
TIS hose reels are designed and manufactured for long life produced from stainless steel and bronze. The enclosed gearbox drive is another unique feature of TIS design.

Low air pressure warning system

The low air pressure warning system sounds whenever the incoming air pressure drops below a pre-set value, the system will give the operator a 20 second audible warning.

Reservoir supply

In order to ensure that only clean fluid can enter the system, both reservoirs are filled by a hand pump and short hose. This allows the taking of fluid directly from a barrel via the tank top filter to the reservoir.



Specification

Certified to: ATEX
Frame designed and certified to: BS-12079 & DNV2.7-1
Constructed from 316 stainless steel

Length: 1410mm
Width: 1065mm
Height: 1660mm
Weight: 1500kg

Lubricator system control functions

- Open: 11,500 psi *
- Closed: 11,500 psi *
- **Reservoir 65 litre / 14 imperial gallon capacity**
- **Single air hydro pump**

Wellhead valve control functions

- HWV: Regulated 0-10,000 psi (ESD function)
- HMV: Regulated 0-10,000 psi (ESD function)
- DHSV: Pump regulated supply 0-20,000 psi (ESD function timed delay)
- ASV: Pump regulated supply 0-20,000 psi (ESD function)
- Reservoir 65 litre / 14 imperial gallon capacity
- Air hydro pump shared between HWV and HMV
- Air hydro pump shared between DHSV and ASV
- Hand pump back-up on HWV and HMV

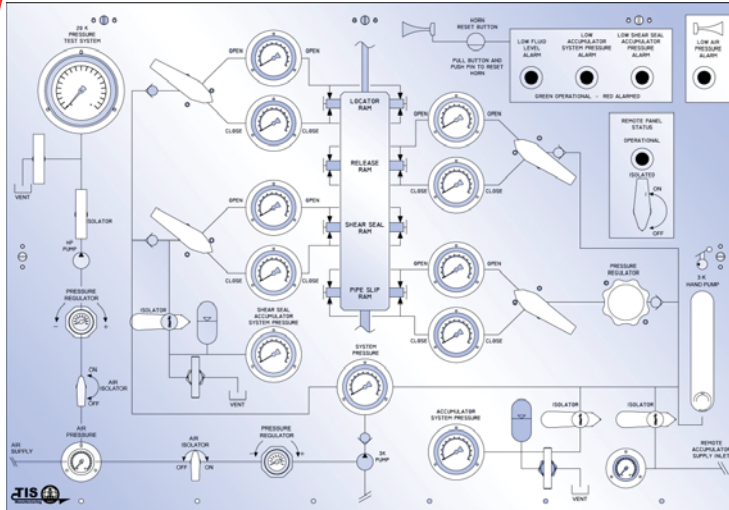
- **Recommended compressed air requirements 75 cfm, 80-150 psi**
- **Tank top filters:** 20 micron

ASSEMBLY NO CU-W-1024

Coil Tubing Control Unit



Main Control Panel



Design

Ergonomic design providing an easy to use control unit with unrestricted access for maintenance throughout. The unit has hinged doors on all 4 sides fitted with high grade stainless hinges and flush catches. Front viewing doors when closed allow the operator to see system pressures while protecting from unauthorised use, with roof hatches allow access for removing accumulators.

Control Panel

The control panel is fully engraved depicting the modes of operation, with the engraved systems being colour coded. The main control panel is hinged and can be opened like a door for maintenance. A separate accumulator panel indicates nitrogen charge pressures.

Remote Control Operation

The unit has a pneumatic remote control panel that can allow the operator to takeover control of all operational functions from the Operators Cabin, this panel mimics and relays the status of the system to the operator.

Hose Reels

TIS hose reels are designed and manufactured for long life produced from stainless steel and bronze. The enclosed gearbox drive is another unique feature of TIS design.

Audible warning system.

Audible and visual warnings cater for: Low air pressure, Low fluid level, Low accumulator pressure, low shear seal accumulator pressure.

Reservoir supply

In order to ensure that only clean fluid can enter the system, both reservoirs are filled by a hand pump and short hose. This allows the taking of fluid directly from a barrel via the tank top filter to the reservoir.

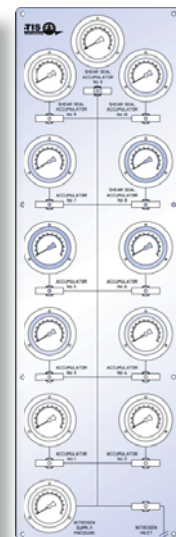
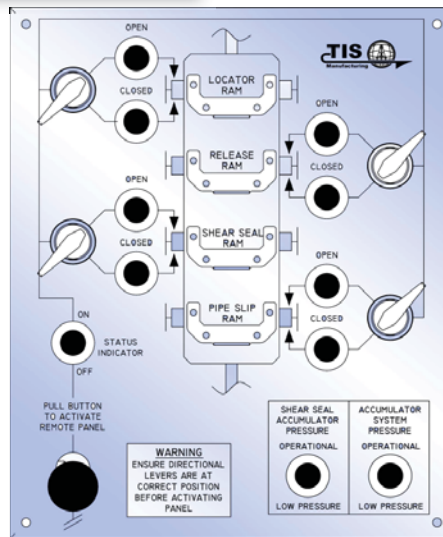
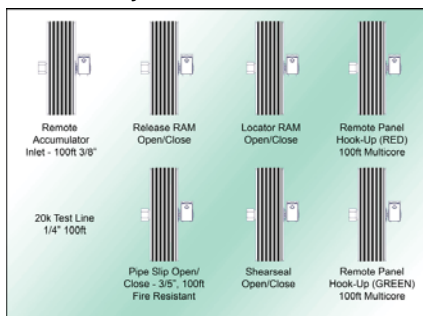
Pressure test system

The unit is fitted with a pneumatic single line 20k pressure test system having its own pump and reservoir.

Accumulators

A bank of accumulators are contained within the unit, these are split into two systems, with one dedicated for shear seal operation.

Hose Reel Layout



Remote control Panel

Accumulator Gas Panel

Specification

- Certified to:** ATEX and PED
- Built to Norsok standard for Coil tubing control system requirements
- Frame designed and certified to: BS-12079 & DNV2.7-1
- Constructed from carbon steel
- Length:** 2000mm
- Width:** 2000mm
- Height:** 2300mm
- Weight:** 4500kg

BOP Control functions

- Locator Ram: 3000 psi
- Release Ram: 3000 psi
- Shear Seal Ram: 3000 psi
- Pipe Slip Ram: 0-3000 psi, Regulated supply
- 4 x 50 litre accumulators for Shear Seal operation
- 7 x 50 litre accumulators for Locator, Release, Pipe Slip operation.
- Reservoir 300 litre / 66 imperial gallon capacity
- Dual air hydro pump system
- Hand pump back-up
- Fire rated hoses on all BOP lines

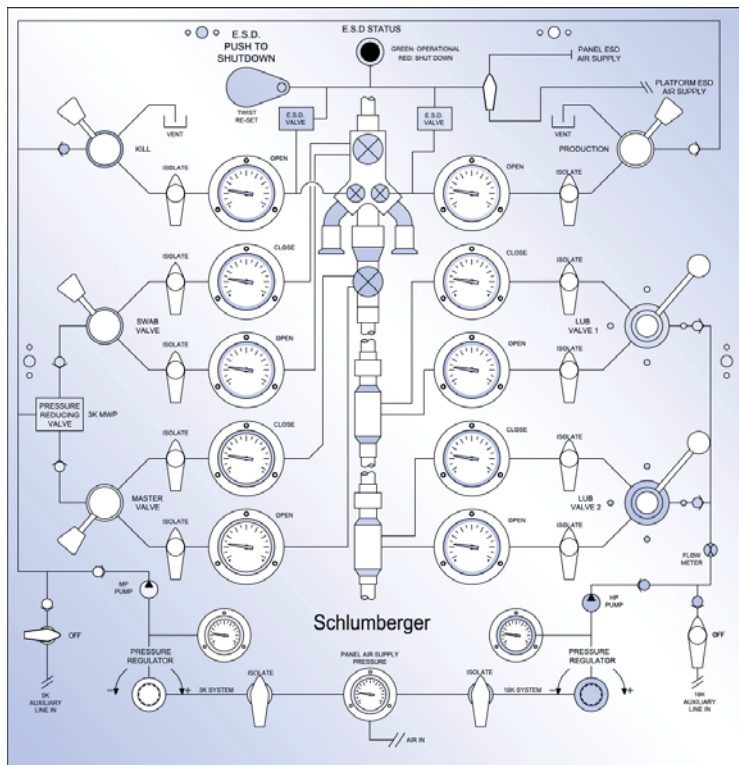
Pressure Test function

- **Single air hydro pump system:** 20,000 psi
- Reservoir 60 litre / 13 imperial gallon capacity

- **Recommended compressed air requirements 120 cfm, 90-140 psi**
- **Tank top filter (BOP system):** 20 micron

ASSEMBLY NO CU-W-1018

Flowhead Control Unit



Design

Ergonomic design providing an easy to use control unit with unrestricted access for maintenance throughout. The unit has hinged doors on all 4 sides fitted with high grade stainless hinges and flush catches. Front viewing doors when closed allow the operator to see system pressures while protecting from unauthorised use.

Control Panel

The control panel is fully engraved depicting the modes of operation, with the systems being colour coded. The panel is hinged when required the control panel can be opened like a door for maintenance. All well control functions have a secondary isolator valve preventing inadvertent operation.

ESD

The ESD system can be instigated from a button on the control panel and also by remote pneumatic or electrical ESD signal operating on an I.S solenoid valve, these operate on the Production Open and Kill Open systems.

Supply Bulkhead

The supply bulkhead manifold has Supply isolator valves, Chart recorder points and Relief valves fitted to all 10 outlets

Flowmeter Totaliser

A Flowmeter Totaliser provides a running total of fluid pumped to the 10 functions, the roof mounted unit can be flipped up for use when required.

Reservoir supply

In order to ensure that only clean fluid can enter the system, both reservoirs are filled by a hand pump and short hose. This allows the taking of fluid directly from a barrel via the tank top filter to the reservoir.

Specification

Certified to: ATEX

Frame designed and certified to: BS-12079 & DNV2.7-1

Constructed from 316 stainless steel

Length: 1000mm

Width: 850mm

Height: 1650mm

Weight: 950kg

System controls

- MV Open: 3000 psi
- MV Closed: 3000 psi
- Swab Open: 3000 psi
- Swab Close: 3000 psi
- Kill Open: 5000 psi (with ESD function,)
- Production Open: 5000 psi (with ESD function,)
- Lube Valve 1 Open: 10,00 psi
- Lube Valve 1 Close: 10,00 psi
- Lube Valve 2 Open: 10,00 psi
- Lube Valve 2 Close: 10,00 psi

- Auxiliary 5000 psi Supply
- Auxiliary 10,000 psi Supply
- Fluid Return port 3/4" line

- Reservoir 215 litre / 47 imperial gallon capacity
- Two 150:1 ratio double ended air hydro pumps
- Hand pump back-up

- Recommended compressed air requirements 75 cfm, 90-150 psi
- Tank top filter: 20 micron
- Pressure filter: 100 micron

ASSEMBLY NO CU-W-1025

Zone 2 Subsea Intervention Control



Zone 2 Sub-sea Intervention Control Cabin 4250x2438x2740mm (14x8x8 feet) container designed to DNV 2.7-1 & BS-EN-12079, having double door access one end, side access door, escape hatch other end. A hook-up bulkhead is recessed along one side of the container and fitted with stainless doors.

Controls

Three control cabinets fitted side by side along one side with 18x single line controls, 5x dual function controls and one panel with 2x 10k regulated controls, air supply monitor, and remote flushing triplex pump control. the panels are equipped for both air and 24v dc electrical ESD and linked to a status light system.

Electrics

The cabin requires both 440v 3 phase and 240v single phase supplies, roof mounted 5kva a/c unit, cabin strip lights, bulkhead lights fitted to the bulkhead recesses and a wall mounted 240 volt power socket. The unit is equipped with a fire and gas system integrated with the ESD system, both of these are provided with functions and monitors back to the vessel. Two power take off Ex rated sockets and plugs are also provided for any customer use. A recess on the end of the container is provided with 2x MCT cable entry points and hook-up J.B. for the incoming power supplies located on the outside wall.

Interior

The cabin is fully insulated and sheeted with "off white" ridged wall paneling. The floor is lined using a none slip oil resistant material and finished off with a skirting strip. A worktop desk is fitted to the end of the cabin along with two operators chairs.

Air System

The pneumatic system requires a clean, lubricant-free external air supply which passes through an internal automatic drain type air filter. An air supply of 2 CFM at 85 psi is required to run the unit which is connected to the unit through a standard air connector on the bulkhead. Air is used for operation of the cabin ESD system and for pressurizing the Well control electrical enclosure, the air supply from the bulkhead is passed through an air filter then to a air receiver via a check valve, this will maintain a supply sufficient to operate the ESD in the event of the air supply being interrupted.

Hydraulic System

The cabin is designed to accept a hydraulic supply from an external HPU and has no pumps or reservoirs.
Qty 17 single line controls, 4 of these can be reduced in pressure, 3000 psi.
Qty 1 line pilot control from 3k supply with a 10,000 psi line to the bulkhead
Qty 5 dual "open closed" controls, 3000 psi.
Qty 2 auxiliary controls with pressure reducing valve, 10,000 psi
All functions return via a common return port to the HPU

Control Panels

The control cabinets are provided with hinged stainless steel control cabinets allowing easy access for maintenance, these have fully engraved color-coded mimics of operation, all instruments and controls are clearly labelled to prevent operator error.

Bulkhead

The stainless steel bulkheads are mounted at the rear of each cabinet and protected on the outside of the container while not in use by a hinging panel. Each function number is clearly engraved on label strips attached to the bulkhead. All hook-up connections are of removable one piece bulkhead fittings. The bulkheads themselves are illuminated by 3 Zone 2 battery back-up lights.

Specification

Length:	4250mm
Width:	2440mm
Height:	2740mm (3220mm over the A/C unit frame)
Max gross Weight:	9500kg

Hydraulic System:-

The cabin is designed to accept a hydraulic supply from an external HPU and has no pumps or reservoirs.

Qty 17 single line controls, 4 of these can be reduced in pressure, 3000 psi.

Qty 1 line pilot control from 3k supply with a 10,000 psi line to the bulkhead

Qty 5 dual "open closed" controls, 3000 psi.

Qty 2 auxiliary controls with pressure reducing valve, 10,000 psi

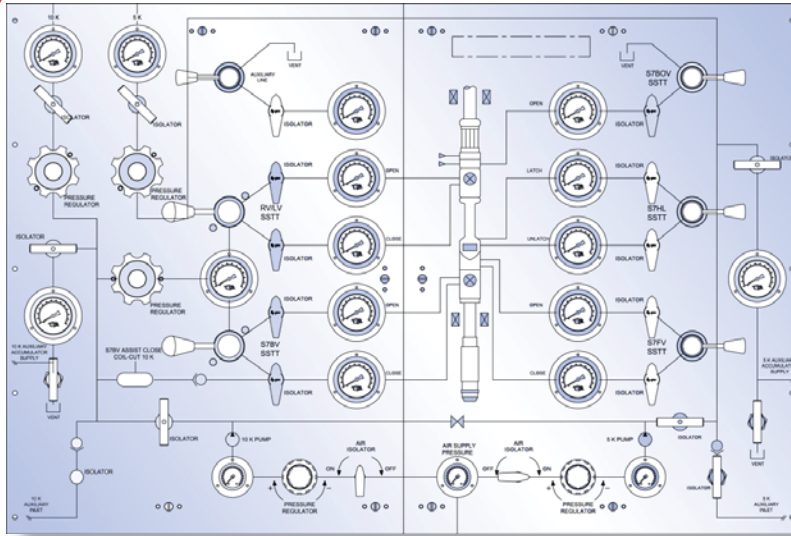
All functions return via a common return port to the HPU

Instrumentation

All instrumentation pipework and valves are of stainless steel construction and suitably rated for the maximum working pressures. The system comes complete with Pressure Test Certificates and Pressure Test Procedures.

ASSEMBLY NO CU-C-1001

Subsea Control Unit



Main Frame

The frame is fabricated from robust stainless steel square hollow section to BS EN 12079 supplied complete with hinged doors where regular access is required. A four point lift is provided along with forklift pockets, end on to the unit allowing ease in loading and unloading from shipping containers. A stainless steel hinged lid is provided on top to allow access to the single point lift which is for confined lifting only i.e. inside containers where height restriction may be an issue. To protect the instrumentation control console two hinged doors with a viewing window on each is provided to allow the operator to monitor pressure indicators, without having to open doors. Mounting points are provided within the frame to accommodate the fluid reservoir, pumps and hydraulic/pneumatic kit. A sealed drip tray encloses the bottom of the unit to catch any spillage that may occur while changing or topping up fluid levels.

Hydraulic System

Two air driven hydraulic oil service pumps with all stainless steel wetted parts capable of pumping either oil or water based fluids provide the required 5,000 psi and 10,000 psi system pressures. Each pump can be used to pressure either system by opening the isolator needle valves as a back up. The unit functions consist of:

- 5 K line out: 5,000 psi MWP (Regulated)
- 5 K auxiliary accumulator supply 5,000 psi MWP
- Spare line 5,000 psi MWP
- S7 BOV pump open: 5,000 psi MWP
- S7 FV: pump open / pump closed 5,000 psi MWP
- S7 HL: Latch / Unlatch 5,000 psi MWP
- S7 BV: open 5,000 psi MWP (Regulated)
- S7 BV: close 5,000 - 10,000 psi MWP (Regulated)
- S7 RV / LV: open 5,000 psi MWP (Regulated)
- S7 RV / LV: close 5,000 - 10,000 psi MWP (Regulated)
- 10 K line out: 10,000 psi MWP
- 10 K auxiliary accumulator supply 10,000 psi MWP
- Reeler returns port.
- Two auxiliary supply inlet ports are supplied on the bulkhead one for the 3,000 psi and one for the 10,000 psi system.

Vent needle valves are located directly below each clearly labeled port. A digital flow totaliser is incorporated in both the 5,000 and 10,000 psi system supply lines to allow the operator to easily monitor volume and flow rates of fluids being pumped at any one time.

Specification

Mainframe : BS EN 12079 / DNV 2.7-1

Dimensions

Length: 1410mm
Width: 1065mm
Height: 1650mm
Weight: 1500 kg
Tank Capacity: 370 ltr

Pump ratios:

100:1

Pump displacement: 2.1 cubic inches per stroke

Main system maximum rated working pressures: 5,000 psi and 10,000 psi

Main relief valves set: 5,000 psi and 10,000 psi

Instrumentation

All instrumentation pipework and valves are of stainless steel construction suitably rated for the maximum working pressures that the Subsea control unit can produce. 3/8" medium pressure pipework is used where 10,000psi is required at a high volume. System comes complete with pressure test certificates and pressure test procedures.

ASSEMBLY NO CU-S-1002

16 way Subsea Control Unit



The T.I.S. 16 way sub sea control unit is a high quality item of equipment designed specifically for long life, ease of use and maintenance.

It has a mainframe of robust stainless steel box section construction to BS EN12079 specification.

It is equipped with the normal four point lift, but also has a recessed single point lift built into the frame (for lifting in confined areas only) Forklift pockets are provided "end on" to the unit allowing it to be removed from shipping containers by forklift as required for on-shore handling.

Hinged doors are fitted all round the unit for protection with ease of access.

The control panel is also made from stainless steel and has colour fill engraving clearly depicting all operating functions.

The recessed bulkhead at the rear of the frame is clearly marked for all hook-up points and is easy accessible.

Air Hydro Pump

A high output low maintenance single air head double acting air hydro pump, is used to supply fluid under pressure directly to the panel or to charge the accumulator bank.

Fluid Reservoir Hand Pump

A diaphragm type hand pump is used to fill the reservoir, all fluid from the hand pump passes through the tank top filter to eliminate contamination entering the system.

Accumulators

The unit is fitted with three bladder type accumulators connected together in manifold and are situated below the tank.

Pneumatic System

Large bore pipework air supply to the pump is achieved by using pilot operated shutoff and regulator valves. An automatic drain air filter is fitted to remove any impurities from entering the system. A recommended air supply of 90 psi is required to run the pump efficiently.

Control Panel

The stainless steel control panel is divided into two sections, both halves being hinged to allow access behind for easy maintenance.

All 16 lines are equipped with pressure, isolation and vent valves.

Specification
Mainframe : BS EN 12079

Dimensions
Length: 1410mm
Width: 1040mm
Height: 1640mm
Weight: 1500 kg
Tank Capacity: 80 imp gallons

Main system maximum rated working pressure: 10,000 psi

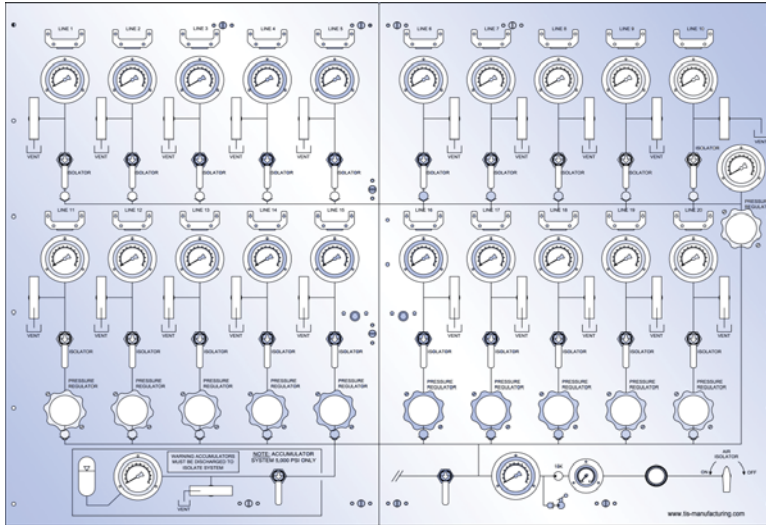
Main relief valve set: 10,000 psi
Accumulators: Qty 3 @ 20 litre capacity
Accumulator pre-charge: 1500 psi nitrogen
Accumulator system relief set: 5000 Psi

Pump ratio: 173:1
Pump displacement: 0.54 cubic inches per stroke
Recommended pump air requirement: 75 CFM

Filtration
Pressure filter: 6 micron
Tank top return filter: 20 micron
Suction strainer: 125 micron

ASSEMBLY NO CU-S-1003

20 Way Subsea Control Unit



The TIS 20 way sub-sea control unit is a high quality item of equipment designed specifically for long life, ease of use and maintenance.

It has a mainframe of robust stainless steel box section construction, dual certified to BS EN12079 and DNV 2.7-1 specifications.

It is equipped with the normal four point lift, but also has a recessed single point lift built into the frame (for lifting in confined areas only). Forklift pockets are provided "end on" to the unit allowing it to be removed from shipping containers by forklift as required for on-shore handling.

Hinged doors are fitted all round the unit for protection with ease of access.

The control panel is also made from stainless steel and has colour fill engraving clearly depicting all operating functions.

The recessed bulkhead at the rear of the frame is clearly marked for all hook-up points and is easy accessible.

Air Hydro Pump

A high output, low maintenance, single air head, double acting air hydro pump is used to supply fluid under pressure directly to the panel or to charge the accumulator bank.

Hydraulic System

The hydraulic system is supplied with pressure from an air hydro pump, this provides an available pressure head of up to 10,000 psi, lines number 1 through to 10 are serviced by a single hydraulic pressure regulator while lines 11 to 20 have individual hydraulic pressure regulators allowing the operator to adjust the outlet pressures individually. The hydraulic accumulators can be used as an "off line" back-up supply up to 5000 psi.

Fluid Reservoir Hand Pump

A diaphragm type hand pump is used to fill the reservoir, all fluid from the hand pump passes through the tank top filter to eliminate contamination entering the system.

Pneumatic System

Large bore pipe-work air supply to the pump is achieved by using pilot operated shut-off and regulator valves. An automatic drain air filter is fitted to remove any impurities from entering the system. A recommended air supply of 90 psi is required to run the pump efficiently.

Control Panel

The stainless steel control panel is divided into two sections, both halves being hinged to allow access behind for easy maintenance.

Specification

Unit Certification : ATEX Certified
Mainframe : BS EN 12079 / DNV 2.7-1 Specification

Dimensions :

Length: 1680 mm
Width: 1040 mm
Height: 1540 mm
Gross Weight: 1400 kg

Tank Capacity: 360 litres / 80 Imp gallons

Main system maximum rated working pressure: 10,000 psi

Main relief valve set: 10,000 psi

Accumulators: Qty 3 @ 20 litre capacity
Accumulator pre-charge: 1500 psi nitrogen.
Accumulator system relief set: 5000 psi

Pump ratio: 173:1
Pump displacement: 0.54 cubic inches per stroke.
Recommended pump air requirement: 75 CFM

ASSEMBLY NO CU-S-1004

8 Way Subsea Control Auxiliary Panel



The T.I.S. 8 way sub sea auxiliary is a high quality item of equipment designed specifically for long life, ease of use and maintenance.

It has a mainframe of robust stainless steel box section construction to BS EN12079 specification.

It is equipped with the normal four point lift along with forklift pockets "end on" to the unit allowing it to be removed from shipping containers by forklift as required for on-shore handling.

Hinged doors are fitted in all area's that require ease of access.

The control panel is also made from stainless steel and has colour fill engraving clearly depicting all operating functions.

The recessed bulkhead at the rear of the frame is clearly marked for all hook-up points and is easy accessible.

Control Panel

The stainless steel control panel consists of one complete panel hinged from the bottom to allow access behind for easy maintenance. The panel is held closed by stainless steel quick release catches. Colour filled engraving depicting all functions, individual controls all clearly identified, making it easy to operate. The panel is fitted out with high quality Hy-lok stainless steel valves and Hy-pro stainless steel fittings are used extensively throughout the unit. Protecting the control panel is a hinged door which allows the operator easy access to the control panel while offering protection to the panel and also preventing inadvertent operation of the controls.

Rear Bulkhead

The rear bulkhead is of stainless steel fabrication and is also hinged for ease in maintaining. The pressure lines terminate in 4 JIC capped ends clearly engraved for identification. Two additional ports are supplied to be hooked up to an additional auxiliary unit should it be required.

Storage Locker

The auxiliary unit has a fully enclosed storage locker at the rear of the unit. Access is by two stainless steel hinged doors held securely shut by four stainless steel door latches.

Guards

All guards are stainless steel, where access is required the guards are hinged and are held closed by high quality stainless steel latches. All other guards are bolted.



Specification

Mainframe Certification: BS-EN-12079

Dimensions

Length: 1050mm
Width: 750mm
Height: 1300mm
Weight: 436 kgs, allowing 100 kgs storage mass

Main system maximum rated working pressure: 10,000 Psi

Instrumentation

Number of lines: 8
Maximum rated working pressure: 10,000 psi
Pressure gauges: Qty 8 full stainless steel trim 0-15,000 psi glycerine filled 63mm dia.
Needle valves: Qty 8 full stainless steel specification.
Pipe work: Stainless steel 1/8", 1/4" OD sizes
Bulkhead connections: Terminating, 4 JIC male fitted with protector caps.

Forklift pocket dimensions:

Width: 250mm
Height: 110mm
Centres: 750mm

ASSEMBLY NO CU-A-1001

Auxiliary Back Pressure Unit



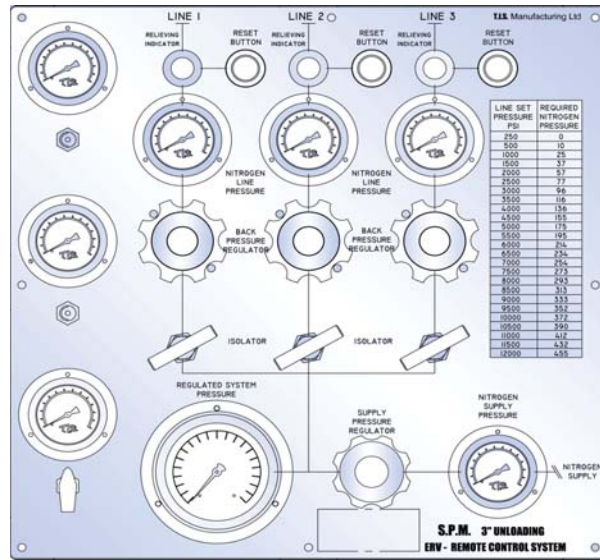
The TIS Auxiliary Back Pressure Unit is a superior piece of equipment designed specifically for long life, ease of use and maintenance. It has a mainframe of robust stainless steel plate and box section construction and is equipped with a hinged, lockable lid. The lid has a viewing window incorporated into the front facia. This allows the operator to view the system pressure indicators whilst the lid is closed thus eliminating personnel from accidentally changing a setting. The control panel is also made from stainless steel and, to prevent operator error, has colour fill engraving clearly depicting all operating functions.

System

The Back Pressure System is designed for use with compressed nitrogen supplied direct from a 230 bar bottle reservoir. A clearly marked inlet bulkhead is provided under the unit from which the supply and outlet hoses are connected. On the control panel, a safety pattern gauge indicates the supply reservoir pressure before it passes through an adjustable pressure regulator. Immediately after the regulator is a 4" dry face safety pattern gauge indicating what the regulated pressure of the nitrogen is set to. The system has two outlet lines, each line having

- :: an isolator needle valve
- :: a back pressure regulator,
- :: a pressure indicator,
- :: a venting pressure visual indicator and
- :: a visual indicator reset button.
- :: a reset line vent valve.
- :: A reset line pressure indicator.

Each line has a pressure relief valve which is set at 175 psi: this limits the line pressure as set. The back pressure regulator acts like a very accurate, adjustable relief valve which won't allow the line pressure to exceed the set pressure. All the instrumentation pressure lines are stainless steel tubing with twin ferrule fittings.



Specification

ATEX Certified

- Length:** 600 mm (base)
- Width:** 600 mm (base)
- Height:** 1,220 mm
- Gross Weight:** 68 kg

Operating Pressures:

- Maximum inlet pressure:** 3,300 psi
- Maximum Regulated pressure:** 175 psi

Bulkhead connections:

Qty 7 off 4 JIC male connections. These are clearly marked:

- Nitrogen Inlet
- SUPPLY LINE 1
- SUPPLY LINE 2
- SUPPLY LINE 3
- RESET VENT LINE 1
- RESET VENT LINE 2
- RESET VENT LINE 3

Pressure Gauges:

- Qty 3 full stainless steel trim 0-1000 psi dry face safety pattern 63 mm
- Qty 3 full stainless steel trim 0-300 psi dry face safety pattern 63 mm
- Qty 1 full stainless steel trim 0-400 psi dry face safety pattern 100 mm
- Qty 1 full stainless steel trim 0-4,000 psi dry face safety pattern 63 mm

ASSEMBLY NO CU-A-1005

Auxiliary Back Pressure Unit



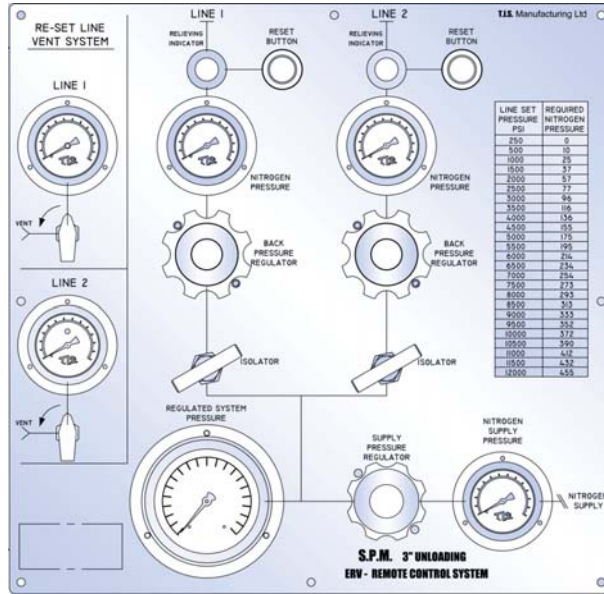
The TIS Auxiliary Back Pressure Unit is a superior piece of equipment designed specifically for long life, ease of use and maintenance. Constructed from stainless steel, is equipped with a hinged, lockable lid. The lid has a viewing window incorporated into the front fascia. This allows the operator to view the system pressure indicators whilst the lid is closed thus eliminating personnel from accidentally changing a setting. The control panel is also made from stainless steel and, to prevent operator error, has colour fill engraving clearly depicting all operating functions.

System

The Back Pressure System is designed for use with compressed nitrogen supplied direct from a 230 bar bottle reservoir. A clearly marked inlet bulkhead is provided under the unit from which the supply and outlet hoses are connected. On the control panel, a safety pattern gauge indicates the supply reservoir pressure before it passes through an adjustable pressure regulator. Immediately after the regulator is a 4" dry face safety pattern gauge indicating what the regulated pressure of the nitrogen is set to. The system has two outlet lines, each line having

- :: an isolator needle valve
- :: a back pressure regulator,
- :: a pressure indicator,
- :: a venting pressure visual indicator and
- :: a visual indicator reset button.
- :: a reset line vent valve.
- :: A reset line pressure indicator.

Each line has a pressure relief valve which is set at 175 psi: this limits the line pressure as set. The back pressure regulator acts like a very accurate, adjustable relief valve which won't allow the line pressure to exceed the set pressure. All the instrumentation pressure lines are stainless steel tubing with twin ferrule fittings.



Specification

- ATEX Certified**
- Length:** 600 mm (base)
- Width:** 600 mm (base)
- Height:** 1,220 mm
- Gross Weight:** 68 kg

Operating Pressures:

- Maximum inlet pressure:** 3,300 psi
- Maximum Regulated pressure:** 175 psi

Bulkhead connections:

Qty 5 off 4 JIC male connections:

- Nitrogen Inlet
- SUPPLY LINE 1
- SUPPLY LINE 2
- RESET VENT LINE 1
- RESET VENT LINE 2

Pressure Gauges:

- Qty 2 full stainless steel trim 0-1000 psi dry face safety pattern 63 mm
- Qty 2 full stainless steel trim 0-300 psi dry face safety pattern 63 mm
- Qty 1 full stainless steel trim 0-400 psi dry face safety pattern 100 mm
- Qty 1 full stainless steel trim 0-4,000 psi dry face safety pattern 63 mm

ASSEMBLY NO CU-A-1006

ESD Shut Down System with Battery Backup



The system consists of the following Control Panel c/w interconnecting cables.

The function of the ESD Master station and Remote Stations is the same as the pushbuttons and lights have been commoned up to produce the same results wherever the pushbutton is activated from.

The Reeler and Wing Valve Solenoids are powered from the ESD Master Station and when the respective control command is received from the ESD Stations the PLC System will operate the selected Solenoid Valves.

The Audible Alarm is activated when an ESD functions is activated and can only be muted when the Reset pushbutton is Operated, this will cancel the Latched signal selected from the Pushbuttons on the ESD Stations.

The Battery Charger indication light on the front of the ESD Master Station Panel is to indicate if a Battery Charger Fault has arisen.

The main switch will shut down power to the battery charger but will not isolate the battery, as this is an emergency system we assumed that switching on ff the main switch may occur accidentally and the system shut down.

As already noted the Battery must be disconnected if the system is to be powered down or the system is being shipped to an other site.

The system is suitable for operation on 230Vac 50/60Hz



SPECIFICATIONS

Mainframe: BS 12079 / DNV 2.7-1 specification.

Control Panels

1. ESD Master Control Station
2. ESD #1 Remote Control Station
3. ESD#2 Remote Control Station
4. Reeler Solenoid Valve Junction Box
5. Wing Valve Junction Box
6. Standby Battery Enclosure

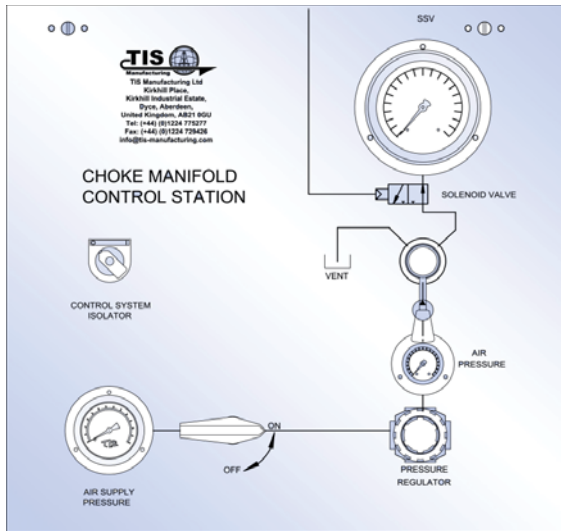
Interconnecting Cables

1. 1 x 19 Core cable ESD Master Station to ESD#1 Remote Station c/w Mating Plug
2. 1 x 19 Core cable ESD Master Station to ESD#2 Remote Station c/w Mating Plug
3. 1 x 19 Core cable ESD Master Station to Reeler Junction Box c/w Mating Plug
4. 1 x 3 Core cable ESD Master Station to Wing Valve Junction Box c/w Mating Plug
5. 1 x 3 Core cable ESD Master Station to Standby Battery Enclosure wired.
6. 1 x 3 Core cable ESD Master Station to Audible Alarm wired
7. 1 x 3 core cable ESD Master Station to 230Vac Power Supply
8. 1 x 7 core cable ESD Remote Station ESD#2 to End Clint c/w Mating Plug. fitted to the removable tank lid.

The system is suitable for operation on 230Vac 50/60Hz

ASSEMBLY NO CU-X-1002

Choke Manifold Control Unit



The TIS Choke Manifold Control Unit is a high quality piece of equipment built specifically for long life, ease of use and maintenance. It has a mainframe of robust pressed stainless steel of a vertical cabinet design and is intended for fixed installation within Zone 2 environments.

Control Panel

The stainless steel Control Panel is hinged to allow access behind for easy maintenance. Colour-filled engraving ensures that the panel is easy to use by clearly identifying individual controls and depicting all functions. The panel is fitted out with high quality Hy-lok stainless steel valves and Hy-pro stainless steel fittings are used extensively throughout the unit.

Electro-hydraulic Control System

The computerised Control System has a touch screen interface for the operator to set the operating parameters. There are three screen modes:

- Control display: This is where the operator inputs the required operational values and sets the system to run in either manual or automatic mode.
- Analogue display: This depicts pressure gauges for Upstream and Downstream pressures. Adjustable coloured bands show the upper and lower pre-set limits as well as the numerical nominal values.
- Graphical display:
 - (Channel 1) Downstream pressure is continuously monitored.
 - (Channel 2) can be set to show Upstream pressure or choke position.
 If the Upstream or Downstream pressure exceeds the defined limits, the system will automatically vent the SSV Hydraulic Control and shutdown the Sub-surface Valve.

Fluid Reservoir

The unit is fitted with a 10 litre stainless steel reservoir. Filtration is by a tank top return filter fitted to the removable tank lid. The fluid level can be easily monitored from the sight glass situated on the reservoir to the left of the unit and accessed by opening the door.

Air Hydro Pump

A high output, low maintenance, single air head, Air Hydro Pump is used to supply fluid, under pressure, directly to the Panel.

Hand Pump

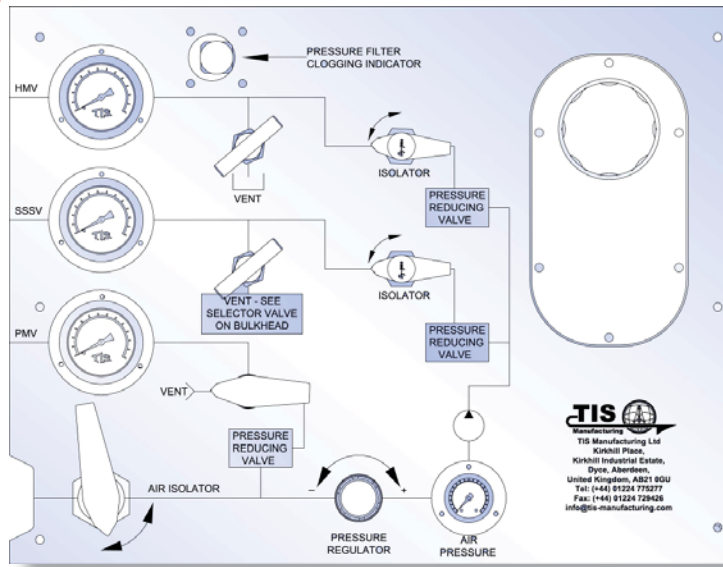
A stainless steel Hand Pump is fitted as back-up to the main Air Hydro Pump. (This can be used in emergencies to operate all hydraulic functions).

Pneumatic System

An Automatic Drain Air Filter is fitted to prevent any impurities from entering the system. A recommended air supply of 90 psi is required to run the pump efficiently. The pump requires no lubrication.

Specification	
Length:	660 mm
Width:	460 mm
Height:	1,560 mm
Weight:	100 kg (approximate value)
Tank Capacity: 10 litres - 2 imperial gallons	
Operating functions:	
Choke	
SSV	
Pump ratio:	60:1
Recommended pump air requirement:	75 CFM
Maximum air supply pressure:	150 psi
Main system maximum rated working pressure:	
3,000 psi	
Main relief valve set:	3,100 psi
Filtration:	
Tank top return filter:	20 micron
Suction strainer:	125 micron
ASSEMBLY NO CU-C-2001	

Hand-Portable Well Control Unit



Design

Compact portable design with the integral reservoir and control panel forming part of the structure. The unit has lifting handles and a hinged protection lid that protects the control panel.

Functions

The unit is designed to operate Hydraulic Master and Sub Surface Safety valves these valves operating on a Fail Safe to close principle, the unit is also equipped to take control of a Pneumatic Master Valve as required.

Control Panel

The control panel is fully engraved depicting the modes of operation, with the systems having been colour coded.

Reservoir

The stainless steel Reservoir has a hatch on top allowing the tank to be cleaned out easily when required, it has a level sight glass on the side of the tank and filler cap on top.

Pressure Regulators

The unit is fitted with three pressure regulators allowing the systems to all be set at individual pressures, these regulators are accessible via a hinged hatch on the side of the unit.

Instrumentation

All instrumentation work produced to the highest standards, all hydraulic pipework 316 stainless steel, with all fittings being the twin ferrule type throughout.

Specification

Certified to: ATEX

Constructed from 316 stainless steel

Length: 642mm

Width: 472mm

Height: 566mm

Weight: 28kg

Wellhead valve control functions

- Pneumatic Master Valve: Regulated 0-100 psi
- Higher Master valve: Regulated 0-5,000 psi
- SSSV: Pump regulated supply 0-10,000 psi

Tank Capacity: 20 litre / 4.4 Imp gallons

Main system maximum rated working pressure:

10,000 psi

Main relief valve set: 10,200 psi

Pressure reducing valve (HMV system) 0-5000 psi

Pressure reducing valve (SSSV system)

5,000-10,000 psi

Pneumatic pressure reducing valve (PMW system)

0-150 psi

Pump ratio: 60:1

Pump displacement: 0.67 cubic inches per stroke.

Recommended pump air requirement: 75 cfm

Filtration

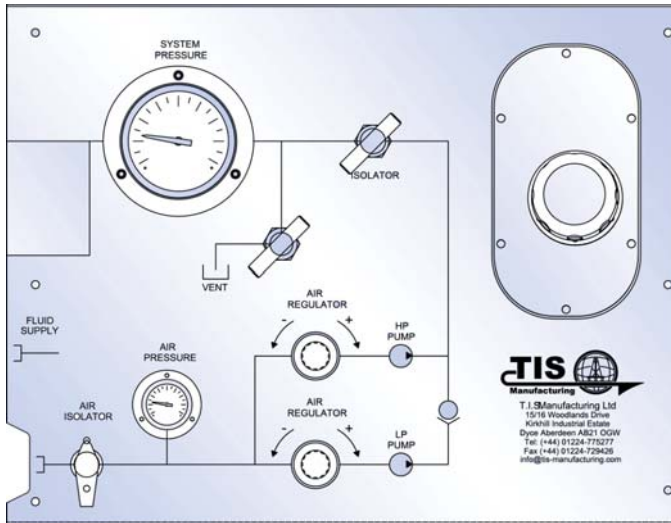
Suction strainer: 125 micron

Pressure Filter: 3 micron

Return filter: 10 micron

ASSEMBLY NO CU-W-1017

10K Single Pressure Test Pump



Main Frame

The frame is fabricated from lightweight stainless steel tubular section and comes complete with integral lifting handles. A stainless steel, hinged lid is provided on top, to protect the instrumentation on the control console. Mounting points are provided within the frame to accommodate the fluid reservoir tank, two air driven hydraulic pumps, instrumentation, air water trap assembly, protection lid and side stainless steel bulkhead.

Fluid Reservoir Tank

The system is fitted with a stainless steel 5 gallon fluid reservoir tank. The tank is fitted with a filler breather, sight glasses, suction strainer, drain port (plugged), fluid suction manifold complete with fluid return manifold. A ball cock filler system is fitted to tank so that a constant fluid level can be maintained while using fast fill option on panel.

Air System

The air system used to drive the hydraulic pumps comprises of a filter / water trap assembly, air on ball valve, two air pressure regulators and an air pressure gauge. A standard air connector is supplied on the bulkhead for air supply hose.

Hydraulic System

A low pressure high volume air driven hydraulic oil service pump provides the fast fill option, while a low volume high pressure pump gives the panel the high pressures required for testing to 10,000 psi. The system comprises of two needle valves (isolation and vent) complete with a pressure at port gauge. The outlet terminates at the bulkhead with a 10,000 psi rated quick connect, with a secondary outlet (normally plugged) supplied for attaching a chart recorder.

Control Console

The system comes with a stainless steel control console with engraved colour coded mimicking. All instruments and controls are clearly labeled to prevent operator error.

Instrumentation

All instrumentation and controls supplied are of best quality. All pressure lines are hard piped in stainless steel. Check and relief valves are provided for system protection.

Specification Dimensions

Length:	625mm
Width:	475mm
Height:	545mm
Weight:	50kg

Tank Capacity:	5 Imp gallons
Main system maximum rated working pressure:	10,000 psi
High Pressure relief valve set:	10,000 psi
Low Pressure relief valve set:	750 psi

Filtration Suction strainer:	125 micron
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Instrumentation

Number of lines:	1
Maximum rated working pressure:	10,000 psi.

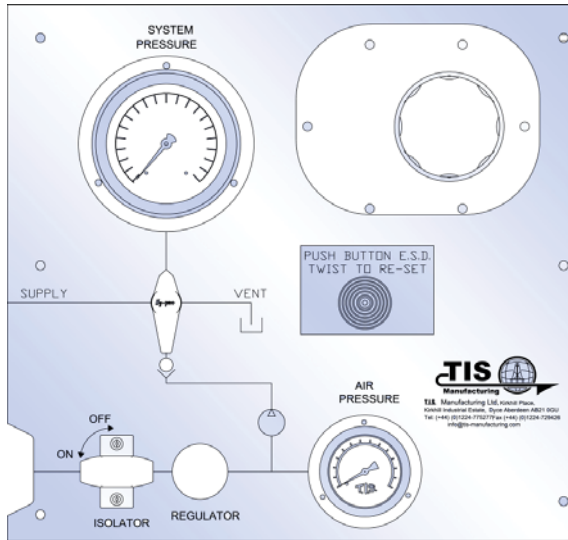
Recommended Pump Air Requirement:
75cfm

Minimum Air Supply Pressure: 80PSI

Bulkhead Connections: 1/4" Holmbury Nipple Chart Recorder Port 1/4" JIC male.

ASSEMBLY NO CU-T-1003

Hand-Portable Hydraulic Control Pump Unit



Construction

The frame is fabricated from lightweight stainless steel tubular section and comes complete with integral lifting handles. A stainless steel, hinged lid is provided on top, to protect the instrumentation on the control console. Mounting points are provided within the frame to accommodate the fluid reservoir tank, an air driven hydraulic pump, instrumentation, air water trap assembly, protection lid and side stainless steel bulkhead.

Fluid Reservoir Tank

The system is fitted with a stainless steel 9.75 litre 2.1 gallon fluid reservoir tank. The tank is fitted with a filler breather, sight glasses, suction strainer, drain port (plugged), fluid suction manifold complete with fluid return manifold.

Air System

The air system used to drive the hydraulic pump comprises of a filter / water trap assembly, air on ball valve, air pressure regulator and an air pressure gauge. The panel mounted ESD valve is of the push / twist re-set type, this is fed with an air supply taken before the pump isolation complete with check valve preventing an inadvertent shutdown with the pump turned off. A standard air connector is supplied on the bulkhead for air supply hose.

Hydraulic System

An air driven pump capable of pumping oil or water based fluids. The controls comprises of a trunion type ball control valve for isolation and vent function complete with a large glycerine filled stainless steel main system pressure gauge. A failsafe (normally open) air pilot operated valve located below the panel operates on the loss of air on any of the two ESD signals.

Control Console

The system comes with a stainless steel control console with engraved colour coded mimicking. All instruments and controls are clearly labeled to prevent operator error. The control panel is protected when the unit is not in use by a hinged cover.

Instrumentation

All instrumentation and controls supplied are of best quality. All pressure lines are hard piped in stainless steel. A relief valve is provided for system protection.

Specification

Certified to Atex Requirements

Length:	480mm
Width:	420mm
Height:	505mm
Weight:	48 kg

Tank Capacity: 9.75 litre - 2.1 Imp gallons

System Pressure

Main system maximum rated working pressure:	5,000 psi
Main relief valve set:	5,200 psi

Pump ratio:	60:1
Pump displacement:	0.67 cubic inches per stroke.
Recommended pump air requirement:	75 CFM
Minimum recommended air pressure:	100 psi

Filtration

Suction strainer: 125 micron

Number of lines: 1

Maximum rated working pressure: 5,000 psi.

Pipe work:

Stainless steel 3/8" and 1/4" compression.

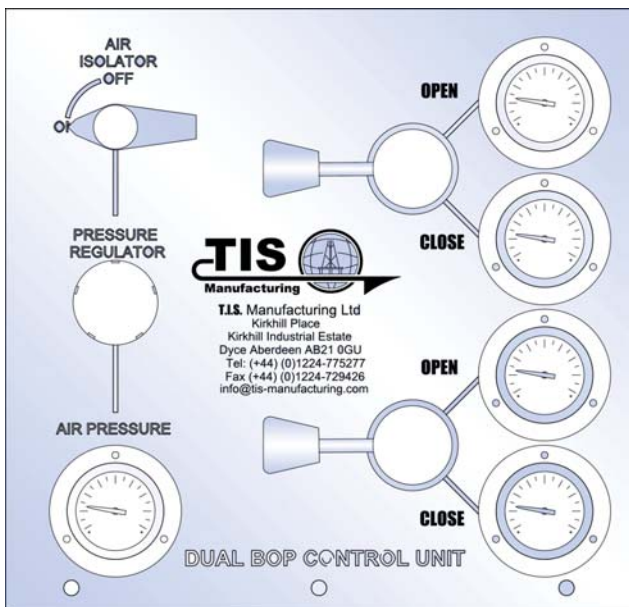
Bulkhead Connection: Terminating 1/4" Holmby quick connect.

Air pilot ESD valve:

2 way 2 position spring return normally open, rated at 690 bar @ 10 bar air.

ASSEMBLY NO CU-P-1004

Dual Hydraulic BOP Pump



Main Frame

The unit is built to be as compact as possible, fabricated from lightweight stainless steel tubular section attached directly to the fluid reservoir tank. The tubular section doubles up as carrying handles and forms protection for the control panel and instrumentation,

Fluid Reservoir Tank

The system is fitted with a stainless steel fluid reservoir tank. The tank is fitted with a filler breather, sight glasses, drain port (plugged), fluid suction and return ports.

Air System

The air system used to drive the hydraulic pump comprises of a water trap assembly, air on ball valve, air pressure regulator and air pressure gauge. A standard air connector is supplied on the bulkhead for air supply hose.

Hydraulic System

An air driven hydraulic oil service pump provides the pressure to operate the system. The system comprises of two four-way valves complete with pressure at port gauges, for dual wireline valve operations.

Control Console

The system comes with a stainless steel control console with engraved colour coded mimicking. All instruments and controls are clearly labeled to prevent operator error.

Instrumentation

All instrumentation and controls supplied are of best quality. All pressure lines are hard piped in stainless steel. Check and relief valves are provided for system protection.

Specification

Certified to Atex Requirements

Dimensions

Length:	336mm	13"
Width:	286mm	11"
Height:	390mm	15"
Weight:		

Tank Capacity: 2.2 Imp gallons

Main system maximum rated working pressure: 3,000 psi

Maximum Flow: 0.8 ltr/min

Recommended pump air requirement:
15 CFM 80 PSI

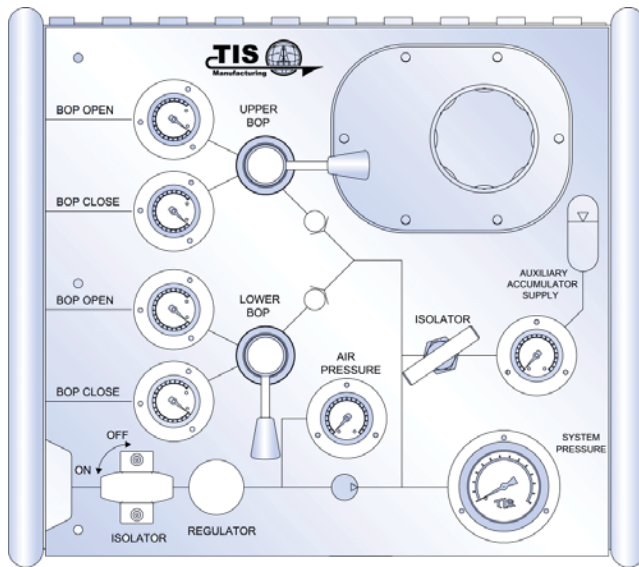
Number of lines: 4
Maximum rated working pressure: 3,000 psi.

Directional Valves: Qty 2 4 way 3 position.

Bulkhead Connections: 4 Off, Terminating 1/4" H series quick connects.

ASSEMBLY NO CU-B-1001

Hand-Portable Dual BOP Control Unit



Main Frame

It has a mainframe of lightweight stainless steel tubular section and comes complete with integral lifting handles. A stainless steel, hinged lid is provided on top, to protect the instrumentation on the control console. Mounting points are provided within the frame to accommodate the fluid reservoir tank, air driven hydraulic pump, instrumentation, air water trap assembly, protection lid and side stainless steel bulkhead.

Fluid Reservoir Tank

The system is fitted with a stainless steel fluid reservoir tank. The tank is fitted with a filler breather, sight glasses, suction strainer, drain port, fluid suction manifold complete with fluid return manifold.

Hydraulic System

Powered by a low maintenance Air Hydro Pump. The system comprises of two four way directional control valves complete with pressure at port gauges, for dual wireline valve operations. The hydraulic system incorporates an auxiliary accumulator supply connection which can be operated from the control console.

Control Panel

Colour filled engravings ensure the stainless steel panel is easy to use by clearly identifying individual controls and depicting all functions. The panel is fitted with high quality stainless steel valves.

Protecting the control panel is a hinged cover that opens through 270 degrees and secures against the side of the unit when access is required.

Instrumentation

All instrumentation and controls supplied are of best quality. All pressure lines are hard piped in stainless steel. Check and relief valves are provided for system protection.

Specification

Dimensions

Length:	487 mm
Width:	427 mm
Height:	518 mm
Gross Weight:	21 kg

Tank Capacity, Wellhead system: 2.2 Imp gallons (10 litre)

Operating Functions: Dual BOP function, Open / Close

Pump Ratio:

69:1

Pump Displacement:

0.67 cubic inches per stroke.

Recommended Pump Air Requirement:

75 CFM

Minimum Air Supply Pressure:

80 psi

Pump Max Pressure Set:

3000 psi

Filtration Suction Strainer:

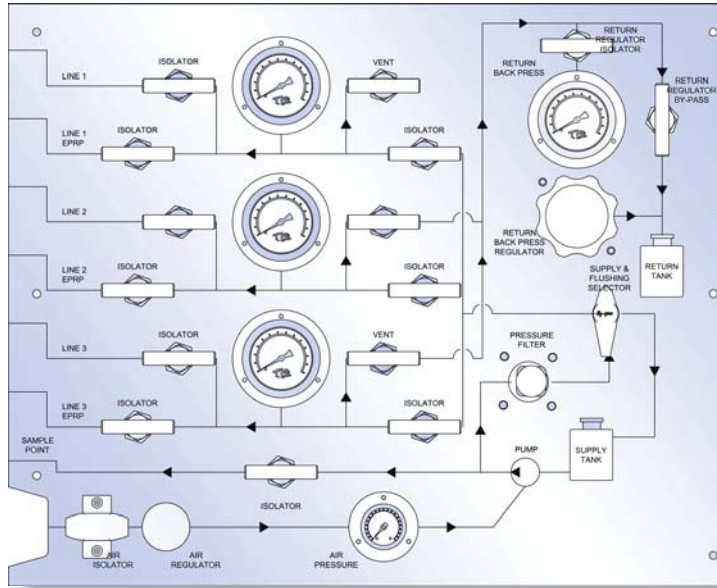
125 micron

Maximum Rated Working Pressure:

3,000 psi

ASSEMBLY NO CU-B-1002

Hand-Portable Hydraulic Control Pump Unit



Main Frame

The frame is fabricated from lightweight stainless steel tubular section and comes complete with integral lifting handles. A stainless steel, hinged lid is provided on top, to protect the instrumentation on the control console. Mounting points are provided within the frame to accommodate two fluid reservoirs, an air driven hydraulic pump, instrumentation, air water trap assembly and a side stainless steel bulkhead.

Fluid Supply & Return Reservoirs

The system is fitted with a supply and a return reservoir both made from HDPE plastic, they each have a capacity of 9 litres (1.98 gallon). The tanks are fitted with a breather and level indication; the supply tank is fitted with a suction port and a return port, the return tank only has a return port. All supply and return pipes are linked to the tanks using quick connects to allow easy removal of the tanks for refilling, emptying or cleaning.

Air System

The air system used to drive the hydraulic pump comprises of a filter / water trap assembly, air on ball valve, air pressure regulator and an air pressure gauge. A standard air connector is supplied on the bulkhead for an air supply hose. A regulator is fitted into the supply line to the pump to limit the air and thus control the output pressure of the pump.

Hydraulic System

An air driven pump capable of pumping oil or water based fluids provides the required 10,000 psi system pressure. The controls comprises of a 3 Way type ball control valve for a supply/ recirculation function. Each of the three system outlets has a glycerine filled stainless steel pressure gauge, non return valve, needle isolating valves and needle vent valve. The vents and any fluid returned to the unit are returned to the returns reservoir, this line has a back pressure regulator fitted with an adjustable range of 500-1500 psi. The outlets terminate at the bulkhead with quick connects for each line.

Control Console

The system comes with a stainless steel control console with engraved colour coded mimicking. All instruments and controls are clearly labeled to prevent operator error. The control panel is protected when the unit is not in use by a hinged cover.

Instrumentation

All instrumentation and controls supplied are of best quality. All pressure lines are hard piped in stainless steel. A relief valve is provided for system protection set at 10,500 psi.

Specification

Mainframe: BS 12079 / DNV 2.7-1 specification.

Length: 480mm

Width: 420mm

Height: 505mm

Weight: 48 kg

Tank Capacity: 9.75 litre - 2.1 Imp gallons

System Pressure

Main system maximum rated working pressure:

5,000 psi

Main relief valve set: 5,200 psi

Pump ratio: 60:1

Pump displacement: 0.67 cubic inches per stroke.

Recommended pump air requirement: 75 CFM

Minimum recommended air pressure: 100 psi

Filtration

Suction strainer: 125 micron

Number of lines: 1

Maximum rated working pressure: 5,000 psi.

Pipe work: Stainless steel 3/8" and 1/4" compression.

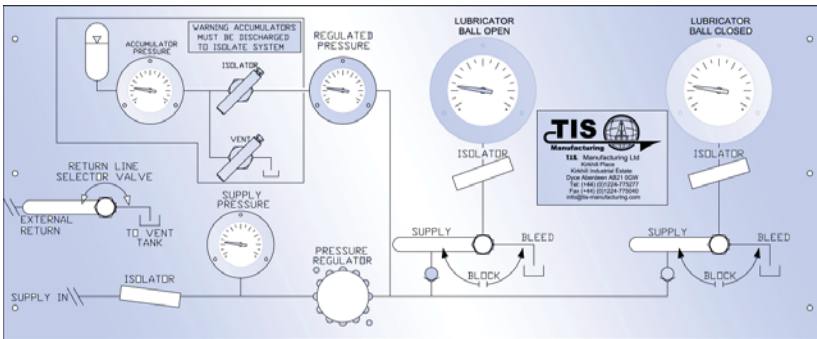
Bulkhead Connection: Terminating 1/4" Holmbyr quick connect.

Air pilot ESD valve:

2 way 2 position spring return normally open, rated at 690 bar @ 10 bar air.

ASSEMBLY NO CU-P-1006

Lubricator Valve Control Panel



The TIS Lubricator valve control panel is a high quality item of equipment designed specifically for long life, ease of use and maintenance. It has a mainframe of robust stainless steel box section construction dual certified to DNV2.7-1 & BS EN12079 specification.

It is equipped with the normal four point lift and forklift pockets are provided for on-shore handling. A hinged panel is fitted to protect the control panel, and all round removable covers on three sides allowing ease of access for maintenance. The control panel is made from stainless steel and has colour fill engraving clearly depicting all operating functions. The recessed bulkhead at the end of the frame is clearly marked for all hook-up points, and is easy accessible.

Accumulator

The unit is fitted with a single, high pressure bladder type accumulator fitted with an over-pressure rupture disk on the gas side.

Control Panel

The stainless steel control panel is divided into two sections, both halves being hinged to allow access behind for easy maintenance. Colour filled engraving helps make the panel easy to use by clearly identifying individual controls and depicting all functions. The panel is fitted out with high quality Hy-lok stainless steel valves and Hy-pro stainless steel fittings are used extensively throughout the unit. Protecting the control panel are 2 hinged doors complete with viewing windows, which allows the operator to easily see the pressure gauges while offering protection to the panel and also preventing inadvertent operation of the controls.

Specification

Dual certified construction to DNV2.7-1 & BS EN12079 specs, PED Directive.

Length: 1245mm
Width: 520mm
Height: 660mm

Weight: 250 kg

Maximum inlet supply working pressure: 7,500 psi

Main relief valve set: 7,500 psi

Accumulators: Qty 1 @ 20 litre capacity

Accumulator pre-charge: 1500 psi nitrogen. (supplied without gas precharge)

Instrumentation

Number of supply lines: 2

****Maximum rated working pressure:** 7,500 psi

Pressure gauges:

Qty 2 full stainless steel trim 0-20,000 psi glycerine filled 100mm dia.

Pressure gauges:

Qty 3 full stainless steel trim 0-10,000 psi glycerine filled 63mm dia.

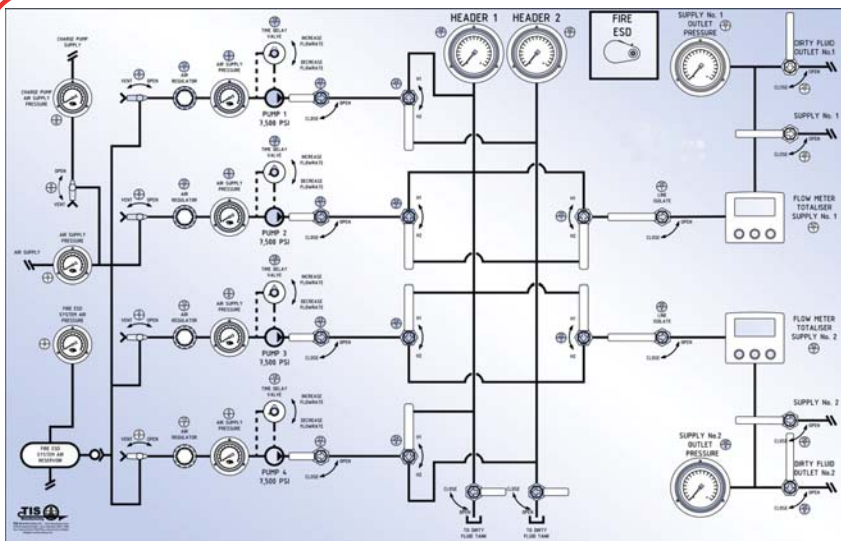
Needle Valves: Qty 3 full stainless steel specification.

Pipe work: Stainless steel 1/8" & 3/8" twin ferrule compression. 1/4" and 3/8" coned with gland nut Butech.

Bulkhead Connections: Terminating 9/16" medium pressure male fitted with protector caps.

ASSEMBLY NO CU-A-1002

Chemical Injection System



Hydraulic System

The hydraulic system is supplied with pressure from four air hydro pumps; each capable of running individually, this provides an available pressure head of up to 7,500 psi from two headers.

Fluid Reservoir

The unit is fitted with a large capacity stainless steel reservoir; filtration is catered for by two parallel filters fitted to the downstream pipework, change over valves allows a filter to be on standby at any one time. Fluid level can be easily monitored from the sight glass on the front of the tank. The tank supply line has a ball valve fitted to allow line isolation. An access hatch allows for visual inspection of the inside of the tank.

Pulsation Dampers

The unit is fitted with four bladder type pulsation dampers, one per pump outlet.

Air Hydro Pumps

Four high output, low maintenance, single air head, double acting air hydro pumps are used to supply fluid under pressure directly to the system.

Pneumatic System

Air supply to the pumps is achieved by using large bore pipework. Filters and moisture traps are fitted to remove any impurities from entering the system. A recommended air supply of 90 psi is required to run the pump efficiently.

Fire Suppression system

The system includes an 80 litre AFFF foam tank which is situated behind a fire barrier. There is enough foam concentrate to produce 22,000 litres of mixed foam. The ESD buttons and a sacrificial plastic pipe which is situated around the upper level of the unit hold a normally open solenoid valve in the closed position; they are supplied with air from a dedicated reservoir. If the air pressure drops, either by the push of a button, or a fire melting the pipe then the solenoid opens, this valve is linked to the rig water supply. The water passes through an inductor which draws AFFF foam out of the storage tank and mixes it with the water on its way to the sprinkler heads.

Instrumentation

The chemical injection unit has instrumentation that provides a 4-20 mA signal back to the PLC cabinet in the HPU. This consists of 4 pressure transducers that monitor the nitrogen buffer, the inlet air, header 1 and header 2 pressures. These readings are all duplicated by gauges that are mounted on the main control panel, with the exception of the nitrogen buffer which is located within the unit beside the nitrogen relief valve. A junction box provides an interface for a cable to run between the HPU and the CIU.

A level indicator is provided for a local visual indication of the tank fluid level.

Specification

Mainframe: BS 12079 / DNV 2.7-1 specification.

Length: 2930 mm

Width: 2112 mm

Height: 2105 mm

Gross Weight: 3500 kg

Dry Weight: 3000Kg

Tank Capacity: 700 litres

Operational Volume: 400 litres

Gas Blanket Pressure: 3 PSI

Main system max. rated working pressure:

7,500 psi

Main relief valves set: 8,250 psi

Pulsation Damper: Qty 4 @ 1 litre capacity

Pulsation Damper pre-charge: 1,000 psi nitrogen. Air

Pump displacement: 49.2 cc per cycle.

Filtration

Pressure filters: Qty 2 @ 3 micron

Suction strainers: Qty 4 @ 125 micron

Instrumentation

Number of supply lines: 2

Maximum rated working pressure: 7,500 psi

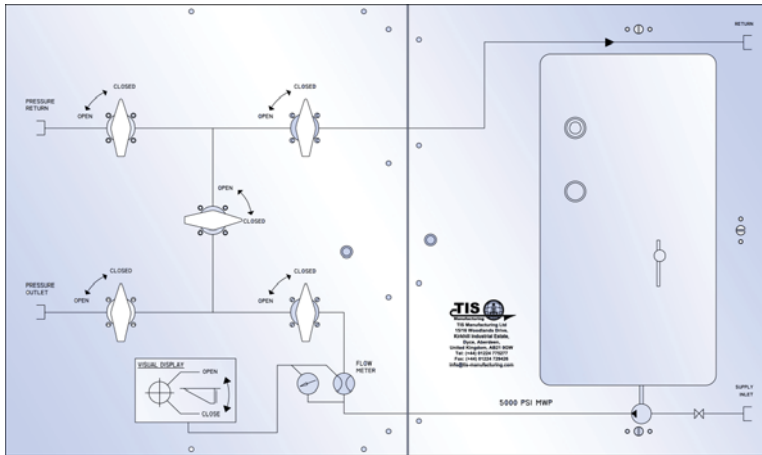
Fire Suppression System

Tank Capacity: 90 litres

Operational Capacity: 82.5 litres

ASSEMBLY NO CU-C-3001

Triplex Pumping Unit



Main Frame

The main frame is fabricated from robust, mild steel square hollow section with a rectangular section base designed and built to BS EN 12079/DNV 2.7-1 and supplied complete with hinged-doors where regular access is required. Forklift pockets are provided complete with a four-point lift and supplied with a five-legged sling set. To protect the instrumentation control console, two stainless steel hinged-doors are provided which hinge open 270 degrees. These doors lie flat against the unit allowing the operator unrestricted access to the control panel. Heavy duty steel angles are provided as mount points for the electric motor and Triplex Pump Unit. A sealed drip tray encloses the bottom of the unit to catch any spillage which may occur whilst attaching and removing hook-up hoses. The main frame is shot-blasted, undercoated and has a durable powder coat finish to eliminate unwanted erosion.

Air System

The pneumatic system requires a clean, lubricant-free external air supply which passes through an internal automatic drain type air filter. An air supply of 80 psi is required to operate the pilot valve system within the Triplex Pump Unit and is needed before the unit will raise any system pressure.

Hydraulic System

The electric motor-driven hydraulic Triplex Pump has fully stainless steel wetted parts capable of pumping sea water or water-based fluids to a maximum system pressure of 5,000 psi at a flow rate of 57 litres per minute (12.5 imperial gallon).

The Triplex Pump Unit has

- an external inlet (fluid supply to pump);
- an external return (fluid returning to reservoir);
- a pressure supply connection (fluid under pressure from Triplex Pump)
- a pressure return (return line from system being flushed).

A "Y" piece strainer filters the fluid before entering the Triplex Pump. Incorporated into the hydraulic pressure system is a high volume pressure relief valve which gives protection to the system.

Electrical System

The electric motor which runs the Triplex Pump requires a 440 volt, 60 Hz power supply which is connected directly into the Eexd rated direct on-line starter: this incorporates the motor on/off buttons and incoming isolator. A remote control function is available which can be connected directly into the starter enclosure allowing the pump to be controlled from a control cabin.

Control Panel

The stainless steel control panel comes in two halves with one panel fixed in position and the other hinged and held closed by three quick-release catches allowing easy access to the starter box. The panel has coloured engraved mimicking which clearly depicts the functions of the unit thus eliminating operator error.

On the fixed half of the panel there is a twist selector valve which, when turned, raises the flip-up control panel. This panel houses the pressure indicator gauges and flow meter.

Specification

Mainframe: BS 12079 / DNV 2.7-1 specification.

Length: 1,650 mm

Width: 1,250 mm

Height: 1,360 mm

Gross Weight: 1,750 kgs

Pump specification

Pressure outlet: 5,000 psi (345 Bar)

Flow: 57 litres/min (12.5 imperial gallons)

Max rpm: 600 rpm

Max fluid inlet temp: 60 °C

Electric Motor specification:

Temp limits: -20°C to + 40°C

Power supply: 440 volts, 60 Hz

Output: 42.5 KW

Instrumentation:

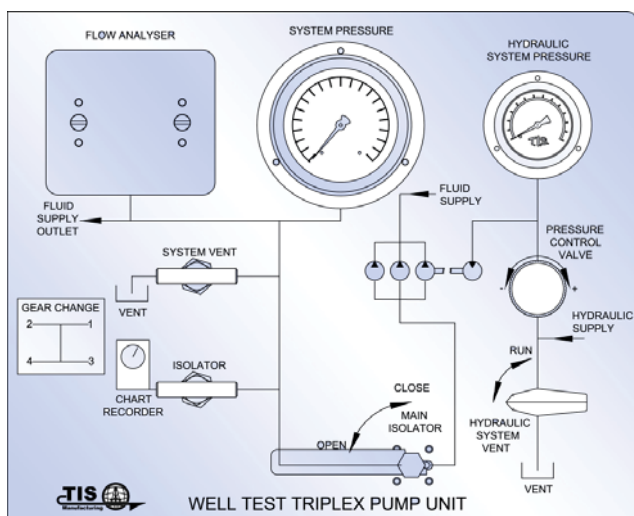
All instrumentation pipework, hose ends and valves are of stainless steel construction and suitably rated for the maximum working pressures that the Triplex Pump Unit can produce.

The Triplex Pump Unit has

- an external inlet (fluid supply to pump);
- an external return (fluid returning to reservoir);
- a pressure supply connection (fluid under pressure from Triplex Pump)
- a pressure return (return line from system being flushed).

ASSEMBLY NO CU-P-2001

Triplex Pumping Unit



Main Frame

The main frame is fabricated from robust, stainless steel square hollow section with a rectangular section base designed and built to BS 7072. Forklift pockets are provided complete with a four-point lift and supplied with a five-legged sling set. Within the compact frame design is mounting points for the transmission, Triplex Pump, chart recorder and control panel. Stainless steel hinged-doors are provided all round where regular access is required.

Hydraulic System

The hydraulic system on this unit is sized specifically to match the flow and pressure of an existing Wireline hydraulic powerpack. The system operates on an "Open loop" principle, with the hydraulic supply return and case drain connections all terminate with quick connect couplings on the main hydraulic bulkhead. The hydraulic system is pilot controlled from the main control panel with a hydraulic vent valve used to stop / start the motor, an adjustable pressure control valve is used to control the speed of the drive, thus controlling the flow and pressure obtainable from the triplex pump.

Triplex Pump

Triplex pump unit is produced with billet forged steel fluid ends, and fitted with 1in diameter "Colomony" plungers, and 805 spring loaded packing, and is designed for operations on well fluid service.

Maximum pump operating speed is 400 R.P.M, producing a theoretical displacement of 10.2 US G.P.M. at a maximum operating pressure of 10,000psi.

Pressure and flow monitoring

A flow meter turbine is built into the pump outlet line, with the display monitor totaliser located to the left hand side of the control panel beside the 4" system pressure gauge.

Control Panel

The stainless steel control panel has coloured engraved mimicking which clearly depicts the functions of the unit thus eliminating operator error. Hydraulic drive functions are located on the right hand side "green in colour" with the fluid system isolators and vents on the left side "red in colour".

Transmission

The transmission is designed for easy use and minimal maintenance, the hydraulic motor is direct coupled to the gearbox, this is also direct coupled to the outrigger assembly. A heavy duty roller chain drive is then used for final transmission to the triplex pump, tensioning the chain is by "jack" screws located under the gearbox assembly.

Specification

Mainframe: BS 12079 / DNV 2.7-1 specification.

Length: 1,086 mm

Width: 1,310 mm

Height: 1,000 mm

Gross Weight: 1,500 kgs

Pump specification:

Pressure outlet: 10,000 psi (700 Bar)

Flow: 38.6 litres/min (8.5 imperial gallons) (10.2 U.S. gallons)

Max rpm: 400 rpm

Max fluid inlet temp: 60 °C

Hydraulic Requirements:

Pressure: 2000 psi

Flow: 220 litre / minute

Transmission:

Industrial 4 speed manual change gearbox with ratios: 1st gear 6.66 through to 1:1 in 4th gear
5/8" Duplex roller chain, sprockets: 19 & 76 teeth

Bulkhead connections

Hydraulic supply: 1 1/2" H series Snaoptite coupler

Hydraulic return: 1 1/2" H series Snaoptite nipple

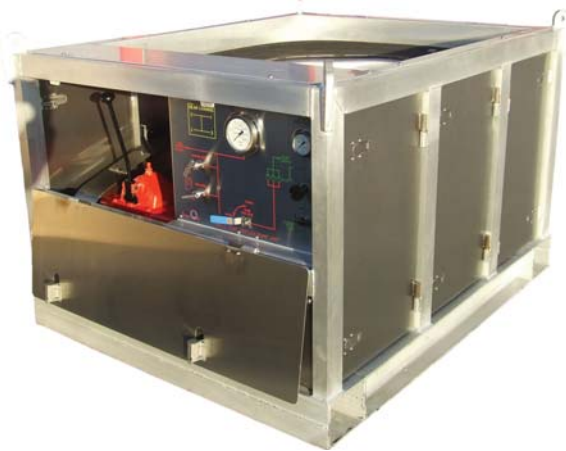
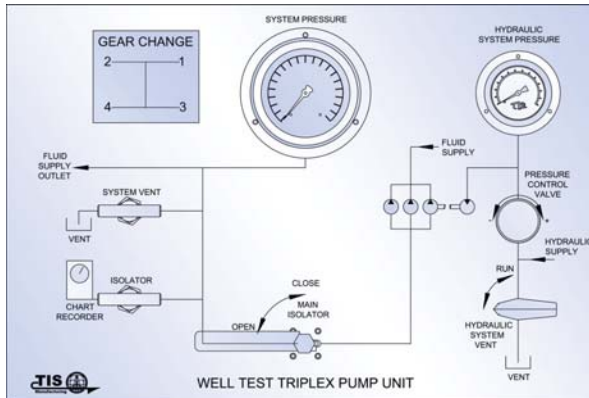
Hydraulic auxiliary return: 1/2" H series Snaoptite coupler

Fluid suction port: 2" Camlock nipple

Fluid supply port: 2" Weco FIG 1502 thread-half .

ASSEMBLY NO CU-P-2002

Triplex Pumping Unit



Main Frame

The main frame is fabricated from aluminium square hollow section with a rectangular section base designed and built to BS 7072. Forklift pockets are provided complete with a four-point lift and supplied with a five-legged sling set. Within the compact frame design is mounting points for the transmission, Triplex Pump, chart recorder and control panel. A sealed drip tray with drain plugs encloses the bottom of the unit to catch any spillage which may occur. Stainless steel hinged-doors are provided all round where regular access is required.

Hydraulic System

The hydraulic system on this unit is sized specifically to match the flow and pressure of an existing Wireline hydraulic powerpack. The system operates on an "Open loop" principle, with the hydraulic supply return and case drain connections all terminate with quick connect couplings on the main hydraulic bulkhead. A vane type hydraulic motor provides the drive and is close coupled to the 4 speed gearbox. The hydraulic system is pilot controlled from the main control panel with a hydraulic vent valve used to stop / start the motor; an adjustable pressure control valve is used to control the speed of the drive, thus controlling the flow and pressure obtainable from the triplex pump.

Triplex Pump

Triplex pump unit is produced with billet forged stainless steel fluid ends, and fitted with 1.25in diameter "Ceramic" plungers, and 6618 spring loaded packing, and is designed for operations on well fluid service. Maximum pump operating speed is 400 R.P.M, producing a theoretical displacement of 19.1 US G.P.M. at a maximum operating pressure of 5,246psi.

Pressure and flow monitoring

A mechanical chart recorder is fitted to the unit located behind one of the side doors; the door is designed to be restrained back when in operation. An isolation needle valve located on the control panel is fitted to protect the chart recorder when not in use. The supply line to the recorder has a snubba type valve fitted to help protect the chart recorder from shock damage caused by pressure pulses from the pump.

Control Panel

The stainless steel control panel has coloured engraved mimicking which clearly depicts the functions of the unit thus eliminating operator error. Hydraulic drive functions are located on the right hand side "green in colour" with the fluid system isolators and vents on the left side "red in colour".

The gear change lever is by the left of the control panel, the ability to changing gears allows the operator to closely match the pump speed to the required flow for the operations in hand.

Transmission

The transmission is designed for easy use and minimal maintenance, the hydraulic motor is direct coupled to the gearbox, this is also direct coupled to the outrigger assembly. A heavy duty roller chain drive is then used for final transmission to the triplex pump, tensioning the chain is by "jack" screws located under the gearbox assembly. A chain guard is fitted over the chain drive allowing access to the chain only as required for maintenance.

Specification

Mainframe: Aluminium manufactured to : BS 7072

Dimensions:

Length: 1,720 mm
Width: 1,360 mm
Height: 1,100 mm
Gross Weight: 1.300kgs.

Pump Specifications:

Pressure outlet: 5,246 psi (362 Bar)
Flow: 72.3 litres/min (15.9 imperial gallons) (19.1 U.S. gallons)
Max rpm: 400 rpm
Max fluid inlet temp: 60 °C

Hydraulic Requirements:

Pressure: 2000 psi
Flow: 220 litre / minute

Instrumentation:

Qty 1 full stainless steel trim 0-10,000 psi glycerine filled 100 mm pressure indicator.
 Qty 1 full stainless steel trim 0-400 psi glycerine filled 62 mm pressure indicator.
 Qty 1 mechanical 12" chart recorder 0-10,000 psi, 2 & 8 hour rotation

Transmission:

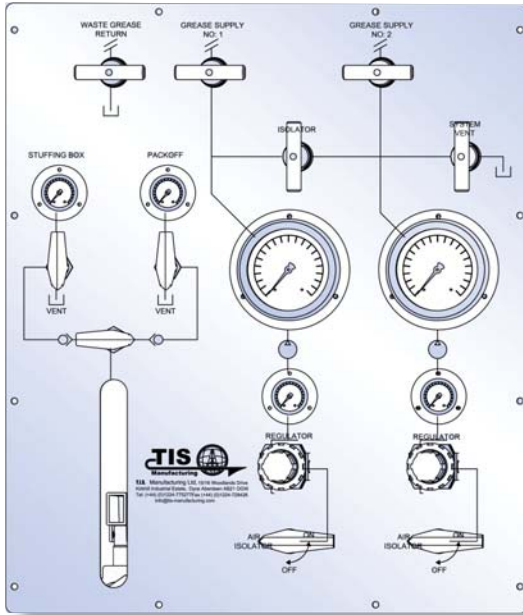
Industrial 4 speed manual change gearbox with ratios: 1st gear 6.66 through to 1:1 in 4th gear
 3/4" Duplex roller chain, sprockets: 20 & 76 teeth

Bulkhead connections

Hydraulic supply: 1 1/2" H series Snaptite coupler
Hydraulic return: 1 1/2" H series Snaptite nipple
Hydraulic auxiliary return: 1/2" H series Snaptite coupler
Fluid suction port: 2" Camlock nipple
Fluid supply port: 2" Weco FIG 1502 thread-half.

ASSEMBLY NO CU-P-2004

Dual Grease Injection Unit With Stuffing Box and Pack-off Controls



Main Frame

The frame is fabricated from robust steel hollow section and comes complete with 4 point lift and forklift pockets. A hinged mesh lid is provided on top of the unit to allow the grease pumps to be removed as required,

Air System

The air system used to drive the hydraulic pump comprises of a filter / water trap assembly, air on ball valve, air pressure regulator and an air pressure gauge. A standard air connector is supplied on the bulkhead for air supply hose.

Grease System

Two air driven pumps capable of supplying grease to the 10,000 psi system pressure. The air supply pressure is pre-set to limit the pump to this maximum working pressure, whilst the air pressure regulators on the control panel allows the operator to finely control the output from zero to the maximum pressure. Large bore isolator and vent valves are used to direct the flow to the supply ports on the bulkhead, a inter system valve allows both pumps to supply into one line if desired by the

Stuffing box and Packoff

Stuffing box and Packoff are catered for by a hand pump system to allow fine control of the pressures in these systems, the pump has its own integral fluid reservoir with sight glass.

Three way ball valves are used within this system to select and control the operations and pressures for both are displayed on the respective gauges. The supplies for all functions terminate with quick connects on the bulkhead.

Control Console

The system comes with a stainless steel control console with engraved colour coded mimicking. All instruments and controls are clearly labeled to prevent operator error. All pressure gauges are of stainless steel flange mount pattern and are glycerine filled.

The control panel is protected when the unit is not in use by a hinged door, that is held securely back in the open position when the unit is in use.

Instrumentation

All instrumentation and controls supplied are of best quality. All pressure lines are hard piped in stainless steel.

Specification

Mainframe: BS 12079 / DNV 2.7-1 specification.

Length: 1390mm

Width: 1150mm

Height: 1600mm

Hydraulic tank Capacity: 2 litre

System Pressure

Grease system maximum rated working pressure: 10,000 psi

Hand Pump system relief valve set: 3000 psi

Grease Pumps

Pump ratio: 100:1

Recommended pump air requirement: 75 CFM

Minimum recommended air pressure: 100 psi

Instrumentation

Ball Valve: Qty 1 1/4" stainless steel specification, (3,000 psi rated)

Pipe work: Stainless steel 1/4" compression.
Stainless steel 3/8" compression.

Bulkhead Connection grease:

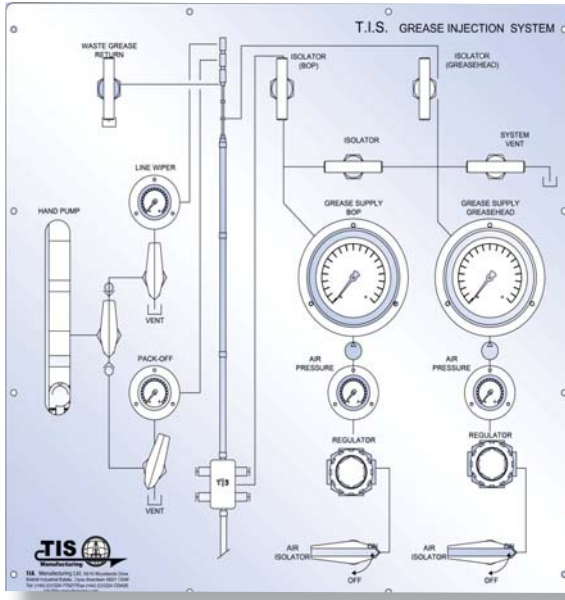
Terminating 3/8" Walther quick connect.

Bulkhead Connection hydraulic:

Terminating 1/4" Holmby quick connect.

ASSEMBLY NO CU-G-1001

Grease Injection Unit



Pump System

There are two independent air hydro grease pumps on this unit, set produce a maximum pressure of 10,000 psi. Both pumps have independent controls, air on-off, pressure control valve, pressure isolator and vent valve. An inter system isolator valve allows the operator to use both pumps to feed one line if required. The grease supply is via two wet centre Hosereels, whilst a third reel is used for grease return.

Grease Reservoir

The unit has a 290 litre stainless steel reservoir. A drain plug is fitted to the bottom of the tank to allow fluid to be drained when necessary. Both grease pumps are flange mounted allowing access to clean out the tank if required. A large hinged filler cap allows the operator to check the grease level and fill the tank using the supplied transfer pump.

Grease Injection Air Hydro Pumps

High output, low maintenance, single air head, air hydro pumps are used to supply fluid under pressure directly to the panel controls. The high pressure pumps are fitted with in-line lubricators.

Fluid Transfer Air Hydro Pump

An air hydro fluid transfer pump is provided, stored within the frame, this is used solely for transferring grease from 45 gallon steel drums into the reservoir of the grease unit. Care should be taken not to leave the pump running unattended, as the reservoir could be overfilled. The maximum grease level should be 40mm from the top of the reservoir. An in-line lubricator is present to ensure smooth operation of the pump.

Hand Pump

The hand pump for the Line wiper and Pack-off functions is made of stainless steel and totally maintenance free.

Pneumatic System

An automatic drain air filter is fitted to remove any impurities from entering the air system. A locked air regulator limits the air pressure to the pumps thus restricting the output grease pressure to 10,000 psi. A recommended minimum air supply of 90 psi is required to run the pumps efficiently.

Control Panel

Colour filled engravings ensure the stainless steel panel is easy to use by clearly identifying individual controls and depicting all functions. The panel is fitted with high quality stainless steel valves with Hy-pro stainless steel fittings used extensively throughout the system.

Protecting the control panel is a hinged door that opens through 270 degrees and secures against the side of the unit when access is required.

Hose Reels

TIS Hose Reels are designed specifically for long life and low maintenance. They are manufactured entirely from stainless steel and bronze and are provided with grease nipples for lubrication. The reels are fitted with a unique modular hand-wind recovery system that allows for smooth, effortless operation whilst rewinding the hoses.

Specification

Mainframe: BS 12079 / DNV 2.7-1 specification.

Length:	1450 mm
Width:	810 mm
Height:	1573 mm
Gross Weight:	1500 kg

Tank Capacity, Wellhead system: 290 litre - 64 Imp gallons (76 US gallons)

Operating functions

- Grease supply: BOB
- Grease Supply: Grease Head
- Grease Return
- Pack-off
- Line wiper

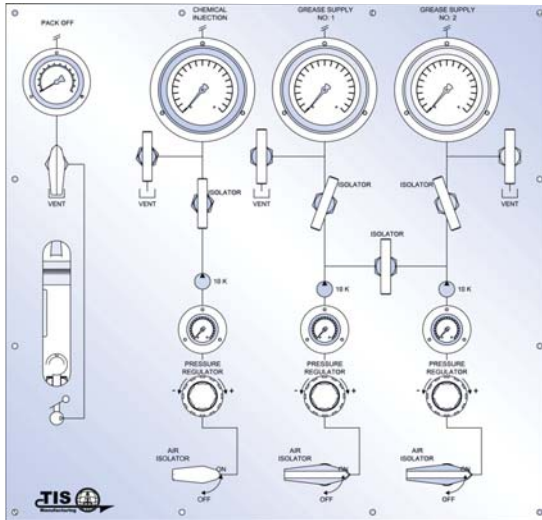
Grease Pump ratio:	100:1
Recommended pump air requirement:	75 cfm
Maximum air supply pressure:	150 psi
Minimum air supply pressure:	100 psi
Pump max pressure set:	10,200 psi
Hand pump system relief valve set:	3,200 psi

Transfer Pump ratio: 3:1 ratio

Pipe work:
1/8" compression, 0.035" Wall

ASSEMBLY NO CU-G-1002

Liquid Seal Grease Injection Unit



Grease Pump System

There are two independent air hydro grease pumps on this unit, set produce a maximum pressure of 10,000 psi. Both pumps have independent controls, air on-off, pressure control valve, pressure isolator and vent valve. An inter system isolator valve allows the operator to use both pumps to feed one line if required. The grease supply is via a two pass wet centre Hosereel, whilst grease return shares a hosereel with Chemical Injection and Pack-Off.

Reservoirs

The unit has a 30 litre pressurised stainless steel Grease reservoir fed by regulated air set at 10 psi. A pressurised system is utilised to ensure that the pumps are constantly charged with grease.. An air hydro barrel transfer pump is provided for filling the reservoir, and the fluid level can easily be monitored from the magnetic level indicator. There is an isolator / vent valve provided allowing the air pressure to be vented off, and must always be used when carrying out maintenance work. A drain plug is fitted to the bottom of the tank to allow fluid to be drained when necessary. Stainless steel 6 litre reservoirs with removable lids, and sight glasses for Pack off and Glycol injection systems.

Grease Injection Air Hydro Pumps

High output, low maintenance, single air head, air hydro pumps are used to supply fluid under pressure directly to the panel controls. The high pressure pumps require no lubrication.

Fluid Transfer Air Hydro Pump

An air hydro fluid transfer pump is provided, stored within the frame, this is used solely for transferring grease from 45 gallon steel drums into the reservoir of the grease unit. The maximum grease level should be 40mm from the top of the level indicator.

Pack-off Hand Pump

The hand pump for the Pack-off function is made of stainless steel and totally maintenance free.

Glycol Injection System

A low maintenance, single air head, air hydro pump supplies fluid under pressure directly to the control panel.

Pneumatic System

An automatic drain air filter is fitted to remove any impurities from entering the air system. two locked air regulator limits the air pressure to the grease pumps thus restricting the output grease pressure to 10,000 psi

Control Panel

Colour filled engravings ensure the stainless steel panel is easy to use by clearly identifying individual controls and depicting all functions. The panel is fitted with high quality stainless steel valves.

Hose Reels

TIS Hose Reels are designed specifically for long life and low maintenance. They are manufactured entirely from stainless steel and bronze and are provided with grease nipples for lubrication. The reels are fitted with a unique modular hand-wind recovery system that allows for smooth, effortless operation whilst rewinding the hoses.

Specification

Mainframe: BS 12079 / DNV 2.7-1 specification.

Length: 1400 mm

Width: 850 mm

Height: 1613 mm

Gross Weight: 1000 kg

Tank Capacity, Wellhead system: 30 litre – 6.6 Imp gallons

Operating functions

- Grease supply: BOB
- Grease Supply: Grease Head
- Grease Return
- Pack-off
- Glycol Injection

Grease Pump ratio: 150:1

Recommended pump air requirement: 75 cfm

Maximum air supply pressure: 150 psi

Minimum air supply pressure: 100 psi

Pump max Grease pressure set: 10,300 psi

Pump max Glycol Injection pressure set: 10,300 psi

Hand pump system relief valve set: 3,200 psi

Transfer Pump ratio: 3:1 ratio

Pipe work:

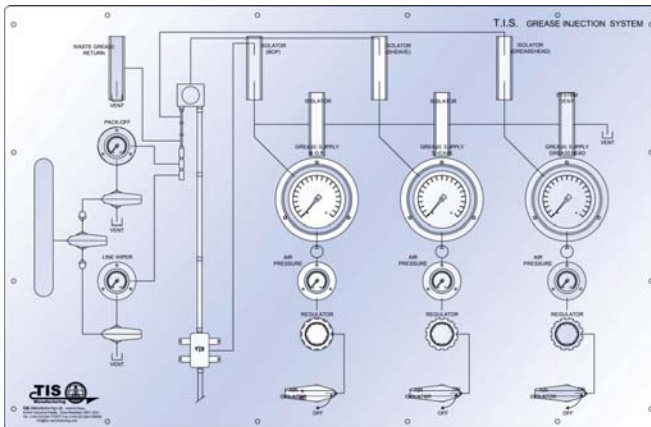
1/8" compression, 0.035" Wall

1/4" compression, 0.048" Wall

3/8" compression, 0.065" Wall

ASSEMBLY NO CU-G-1003

Grease Injection Unit



Main Frame

It has a mainframe of robust stainless steel box section construction and is equipped with a four-point lift and forklift pockets for on-shore handling. It also has a centre-point lift used only for local lifts, i.e. where height restriction is an issue. Hinged doors are fitted all round the unit for protection and ease of access.

Pump System

There are two independent air hydro grease pumps on this unit, set produce a maximum pressure of 10,000 psi. Both pumps have independent controls, air on-off, pressure control valve, pressure isolator and vent valve. An inter system isolator valve allows the operator to use both pumps to feed one line if required. The grease supply is via two wet centre Hosereels, whilst a third reel is used for grease return. A hand pump system is used for Line wiper and Pack-off functions, and is supplied with oil from a small stainless steel reservoir.

Grease Reservoir

The unit has a 290 litre stainless steel reservoir. A drain plug is fitted to the bottom of the tank to allow fluid to be drained when necessary. Both grease pumps are flange mounted allowing access to clean out the tank if required. A large hinged filler cap allows the operator to check the grease level and fill the tank using the supplied transfer pump.

Grease Injection Air Hydro Pumps

High output, low maintenance, single air head, air hydro pumps are used to supply fluid under pressure directly to the panel controls. The high pressure pumps are fitted with in-line lubricators.

Fluid Transfer Air Hydro Pump

An air hydro fluid transfer pump is provided, stored within the frame, this is used solely for transferring grease from 45 gallon steel drums into the reservoir of the grease unit. Care should be taken not to leave the pump running unattended, as the reservoir could be overfilled. The maximum grease level should be 40mm from the top of the reservoir. An in-line lubricator is present to ensure smooth operation of the pump.

Hand Pump

The hand pump for the Line wiper and Pack-off functions is made of stainless steel and totally maintenance free.

Pneumatic System

An automatic drain air filter is fitted to remove any impurities from entering the air system. A locked air regulator limits the air pressure to the pumps thus restricting the output grease pressure to 10,000 psi. A recommended minimum air supply of 90 psi is required to run the pumps efficiently.

Control Panel

Colour filled engravings ensure the stainless steel panel is easy to use by clearly identifying individual controls and depicting all functions. The panel is fitted with high quality stainless steel valves with Hy-pro stainless steel fittings used extensively throughout the system. Protecting the control panel is a hinged door that opens through 270 degrees and secures against the side of the unit when access is required.

Hose Reels

TIS Hose Reels are designed specifically for long life and low maintenance. They are manufactured entirely from stainless steel and bronze and are provided with grease nipples for lubrication. The reels are fitted with a unique modular hand-wind recovery system that allows for smooth, effortless operation whilst rewinding the hoses.

Specification

Mainframe : BS-EN-12079 & DNV 2.7-1 Specification

Dimensions :

Length: 1450 mm

Width: 1170 mm

Height: 1573 mm

Gross Weight: 1500 kg

Tank Capacity, Wellhead system:

290 litre - 64 Imp gallons (76 US gallons)

Operating functions

- Grease supply: BOB
- Grease Supply: Grease Head
- Grease Return
- Pack-off
- Line wiper

Grease Pump ratio:

100:1

Recommended pump air requirement:

75 cfm

Maximum air supply pressure:

150 psi

Minimum air supply pressure:

100 psi

Pump max pressure set:

10,200 psi

Hand pump system relief valve set:

3,200 psi

Transfer Pump ratio:

3:1 ratio

Pipe work: All stainless steel

1/8" compression, 0.035" Wall

1/4" compression, 0.048" Wall

3/8" compression, 0.065" Wall

Forklift Pocket Dimensions

Width: 238 mm

Height: 97 mm

Centres: 1,200 mm

ASSEMBLY NO CU-G-1004

Lightweight "Compact" Series Wireline Unit



Hydraulics

The hydraulic system is open loop and can be hooked up to any suitably sized open loop Powerpack providing it is fitted with (supply, return and case drain) hoses.

The unit has two operating modes:

Normal wireline control, and Descent control.

The descent control is intended to be used only for logging type of operations when Logging in hole is required at constant speeds. This function allows the operator to move the directional control lever to the down hole direction with weight on the line and maintain constant speeds.

Transmission

The Wireline unit is fitted with a manually operated four speed gearbox providing the operator with a wide speed range, The integral transmission unit is provided with a high capacity outrigger bearing assembly, with a duplex roller chain drive directly to the drum.

Traverse

The wireline comes with a paralegal motion traverse mechanism. Operating on linear bearings the traverse freely supports the measuring head allowing lateral and vertical travel as required by the line of the wire being spooled.

The traverse mechanism is produced mainly from aluminium to reduce weight and is provided with stainless steel components and fixtures. From the hand wheel by the operators control panel, the stainless steel shaft supported on bearings and driving through universal joints transmits to a linear motion by use of a high capacity toothed belt. This ensures that the operation of the traverse is smooth and operates freely for both spooling off and on the drum.

Measuring head

The MH-A-2 series central pivot type wrap round measuring head is specifically designed to enhance the life of the wire. With integral guide rollers the measuring head will always follow the line of the wire, this reduces by half the bending moments of the wire round the guide rollers.

The measuring wheel and pressure wheels are made of an aerospace grade composite material this dramatically reduces the weight of the components, vastly reducing the inertia of the measuring wheel during jarring operations making for a more accurate measurement system. This again helps reduce fatigue in the wire as it removes the high frequency resonance associated with the use of steel wheels.

Operator's Seat

The operators seat has 3 operating positions adjustable to suit the legroom required for the operator, the seat post is fitted with rubber buffers to remove any shock and vibration from the unit in operation.

When not in use the seat can simply be tilted forward and is protected along with the control panel by the hinged top cover panel.

Sun Hood

The sun hood provides good sun protection for the operator, it is easily and quickly erected into position and comes complete with a large laminated safety glass operators window. The sun hood with stainless steel framework and reflective white canopy can be easily folded away within the frame when not in use.



Specification

Mainframe: BS 7072 specification

Dimensions

Length: 1750mm

Width: 1150mm

Height: 1340mm

Weight: 760 kg (1675 lbs) excluding wire

Drum capacity:

0.092 wire: 39,000 feet

0.108 wire: 28,000 feet

0.125 wire: 21,000 feet

Hydraulic System

Maximum operating pressure: 3000 psi

Main relief valve set: 3,000 psi

Maximum required flow: 35 gpm

Pressure filter: 10 micron

Measuring wheels

Imperial wheel nominal diameter:

404mm Circumference: 4 feet

Metric wheel nominal diameter:

440mm Circumference: 1.333 mtr

ASSEMBLY NO TW-A-2001

Lightweight "Compact" Series Wireline Unit



Hydraulics

The hydraulic system is open loop and can be hooked up to any suitably sized open loop Powerpack providing it is fitted with (supply, return and case drain) hoses.

The unit has two operating modes:

Normal wireline control, and Descent control.

The descent control is intended to be used only for logging type of operations when Logging in hole is required at constant speeds. This function allows the operator to move the directional control lever to the down hole direction with weight on the line and maintain constant speeds.

Transmission

The Wireline unit is fitted with a manually operated four speed gearbox providing the operator with a wide speed range, The integral transmission unit is provided with a high capacity outrigger bearing assembly, with a duplex roller chain drive directly to the drum.

Traverse

The wireline comes with a paralegal motion traverse mechanism. Operating on linear bearings the traverse freely supports the measuring head allowing lateral and vertical travel as required by the line of the wire being spooled.

The traverse mechanism is produced mainly from aluminium to reduce weight and is provided with stainless steel components and fixtures. From the hand wheel by the operators control panel, the stainless steel shaft supported on bearings and driving through universal joints transmits to a linear motion by use of a high capacity toothed belt. This ensures that the operation of the traverse is smooth and operates freely for both spooling off and on the drum.

Measuring head

The MH-A-2 series central pivot type wrap round measuring head is specifically designed to enhance the life of the wire. With integral guide rollers the measuring head will always follow the line of the wire, this reduces by half the bending moments of the wire round the guide rollers.

The measuring wheel and pressure wheels are made of an aerospace grade composite material this dramatically reduces the weight of the components, vastly reducing the inertia of the measuring wheel during jarring operations making for a more accurate measurement system. This again helps reduce fatigue in the wire as it removes the high frequency resonance associated with the use of steel wheels.

Operator's Seat

The operators seat has 3 operating positions adjustable to suit the legroom required for the operator, the seat post is fitted with rubber buffers to remove any shock and vibration from the unit in operation.

When not in use the seat can simply be tilted forward and is protected along with the control panel by the hinged top cover panel.

Sun Hood

The sun hood provides good sun protection for the operator, it is easily and quickly erected into position and comes complete with a large laminated safety glass operators window. The sun hood with stainless steel framework and reflective white canopy can be easily folded away within the frame when not in use.



Specification

Mainframe: BS 12079 / DNV 2.7-1 specification.

Dimensions

Length: 1756mm
Width: 1108mm
Height: 1420mm
Weight: 1410 kg (3102 lbs)
 (including full drum of wire)

Drum capacity:

0.092 wire: 39,000 feet
0.108 wire: 28,000 feet
0.125 wire: 21,000 feet

Hydraulic System

Maximum operating pressure: 3000 psi
Main relief valve set: 3,000 psi
Maximum required flow: 35 gpm
Pressure filter: 10 micron

Measuring wheels

Imperial wheel nominal diameter: 404mm
Circumference: 4 feet
Metric wheel nominal diameter: 440mm
Circumference: 1.333 mtr

ASSEMBLY NO TW-A-2002

Lightweight Wireline Mast



Mast Base Frame:-

The TIS Manufacturing Lightweight Wireline Mast base frame is fabricated from a robust mild steel hollow section and plate construction certified to BS 7072. It includes a 4-point lift complete with a 5- legged lifting sling and also has fork-lift pockets. Mounting points for TIS jack-up castors are a standard design feature allowing the Mast to be easily manoeuvred into its required position. The Mast base has front and rear outriggers which stabilize the Mast during its lifting operations. Locking the front outriggers in position are secure spreader bars pinned in position. The outriggers have stainless steel jacking screws used to level the Mast before being erected. An aluminium tool box is located at the rear of the base frame: this houses all the guy ropes, spreader bars etc. Below the winch and hydraulic control console is an integral drip tray positioned to contain any spillages. A bulkhead, containing all clearly identified hydraulic hook-up connections, is located at the opposite side from the control console.

4 Section Telescopic Boom:-

In its transportation position the Mast Boom Assembly lies horizontal and is erected to the vertical position by means of a double-acting hydraulic cylinder. This cylinder pivots the Mast on two heavy duty flange type bearings to its extended position. The 4 section telescopic boom assembly extends the Mast crown to a height of 40 feet above ground level by means of a 3-stage integral telescopic hydraulic cylinder. An automatic latching mechanism is used to lock the sections in place making the erecting and lowering of the Mast possible by one trained operator. The hydraulic winch is located on the underside of the bottom boom section giving it maximum protection during transportation. A composite pulley is used to pass the winch wire through the Mast crown and down through a mechanical stop which eliminates the risk of the winch hook being pulled through the pulley. The hairpin hook located at the front of the Mast crown has a Safe Working Load of 5,000 lbs (2,275 Kgs).

Control Console:-

The Mast Control Console is located at the right-hand side of the Mast giving the operator maximum visibility of the working area whilst keeping him at a safe distance from the lifting area. Central to the control console is a hydraulic spring loaded safety lever which must be held in position before any of the Mast functions can be operated. A stainless steel door protects the hydraulic controls during transportation. This, when folded down, reveals the erecting and lowering procedure clearly engraved on the inside of the door. The control console itself is again manufactured from stainless steel with all functions clearly engraved and colour-coded to eliminate operator error.

Hydraulic Supply:-

A clean hydraulic supply of 2000psi and a flow of 160 litres per minute are required to operate the TIS Mast. This is connected to the Mast hydraulic system through the clearly engraved bulkhead. The supply is then divided at a ratio of 4:1 and the split supply provides the mast and also an outlet for a wireline unit.



Other variations available on request

Specifications

Main Frame construction to - BS 7072

Transportation Dimensions:-

Length -	4,300mm (14'1")
Width -	1,130mm (3' 9")
Height -	1,700mm (5'7")
Weight -	1420 Kgs (3125lbs)

Operational Dimensions:-

Length -	6,050mm (19'11")
Width -	4,470mm (14'8")
Height -	12,600mm (41'6")

Hydraulic Specification:-

Required hydraulic pressure - 2000psi (138 bar)
Required hydraulic flow - 160 litre/min (42 gallon/min)

Mast Specification:-

Safe Working Load on winch hook -
2,000 Kgs (4,400 lbs)
Safe Working Load on Mast hair pin hook -
2,275 Kgs (5,000lbs)

Note:

When working with pulley suspended from hairpin hook, Maximum Line pull will be 2,500 lbs.

ASSEMBLY NO TM-A-1002

Zone 2 Diesel Powerpack



Hydraulic Reservoir

The unit is fitted with a 205 litre hydraulic oil reservoir, integral to the main frame, filtration is by a tank top return filter. Fluid level can be easily monitored from the sight glass on the side of the skid. The tank supply suction line is fitted with an isolator ball valve.

Fuel Reservoir

The fuel reservoir is mounted above the engine and attached below the hose storage tray. Both are made from aluminium to reduce weight.

Engine

The nominal 80hp engine is fitted to the frame with rubber isolator mounts reducing vibration, the hazardous area kit fitted to the engine complies with current legislations for operation in Zone 2 environments.

Engine will shutdown on the following points.

- Overspeed
- High coolant water temperature.
- High exhaust temperature
- Low engine oil pressure

The engine instrumentation and controls are:

- Water temperature gauge
- Oil pressure gauge
- Engine speed
- Exhaust temperature gauge
- Vernier type throttle control
- Pull engine stop
- Emergency stop



Specification

Dimensions

Length:	1865mm
Width:	940mm
Height:	1430mm
Weight:	1800 lbs (approximate value)

Fitted with Air Starter System

Hydraulic Tank Capacity: 205 litre - 45 Imp gallons

Fuel Tank Capacity: 60 litre - 14 Imp gallons

System pressure set: 2,200 psi

Filtration

Tank top return filter: 20 micron

Suction strainer: 125 micron

ASSEMBLY NO PM-A-2001

Zone 2 Diesel Powerpack



Hydraulic System

The unit is fitted with a removable hydraulic oil reservoir; filtration is by a tank top return filter. Fluid level can be easily monitored from the sight glass on the side of the skid. The tank supply suction line is fitted with an isolator ball valve. Hydraulic system includes: twin hydraulic pump for running the Wireline and Powerpack simultaneously, relief valve, heat exchanger fitted to the front of the engine radiator and tank top return filter and clearly marked bulkhead quick couplings.

Fuel Reservoir

The fuel reservoir is mounted above the engine, attached to the underside of the hose storage tray. The fuel reservoir is constructed from aluminium, whilst the hose tray is mild steel. A clear fuel level gauge is located at the end of the fuel reservoir allowing the operator to easily monitor fuel levels.

Engine

A naturally aspirated; in-line four cylinder, four stroke, direct injection 80hp diesel engine. The engine is fitted to the frame with rubber isolated mounts reducing vibration. The hazardous area kit fitted to the engine complies with current legislations for operation in Zone 2 environments.

Engine will shutdown on the following conditions.

- Overspeed
- High coolant water temperature.
- High exhaust temperature
- Low engine oil pressure

The engine instrumentation and controls are:

- Water temperature gauge
- Oil pressure gauge
- Engine speed
- Exhaust temperature gauge
- Vernier type throttle control
- Pull engine stop
- Emergency stop



SPECIFICATIONS

Length: 2207mm
Width: 945mm
Height: 1643mm (over lift eyes)
Weight: 1680 kg (3696 lbs) (fill with fuel and oil)

Hydraulic Tank Capacity: 220 litres - 49 Imp gallons
Fuel Tank Capacity: 70 litres – 15.5 Imp gallons

System pressure set: 3000 psi
Pump 1 (Wireline): 35 GPM @ 2100 rpm
Pump 2 (Mast): 11 GPM @ 2100 rpm

Fitted with inertia Starter System

Filtration
Tank top return filter: 20 micron
Suction strainer: 125 micron

The engine conforms to:
BP 200, OCMA Mec 1 and EEMUA publication 107 1992 for Zone 2 applications, gas groups 11A and 11B, T3 (200 deg c) temperature limitation.

ASSEMBLY NO PM-A-2005

Lightweight "Heli-portable" Zone 2 Powerpack



Hydraulic System

The unit is fitted with a 220 litre hydraulic oil reservoir, integral to the mainframe, filtration is by a tank top return filter. Fluid level can be easily monitored from the sight glass on the side of the skid. The tank supply suction line is fitted with an isolator ball valve. Hydraulic system includes: twin hydraulic pump for running the Wireline Unit and Mast simultaneously, relief valve, heat exchanger fitted to the front of the engine radiator and tank top return filter and clearly marked bulkhead quick couplings.

Fuel Reservoir

The fuel reservoir is mounted above the engine, attached to the underside of the hose storage tray. Both are made from aluminium to reduce weight. A clear fuel level gauge is located at the end of the fuel reservoir allowing the operator to easily monitor fuel levels.

Engine

A naturally aspirated; in-line four cylinder, four stroke, direct injection 80hp diesel engine. The engine is fitted to the frame with rubber isolated mounts reducing vibration. The hazardous area kit fitted to the engine complies with current legislations for operation in Zone 2 environments.

Engine will shutdown on the following conditions.

- Overspeed
- High coolant water temperature.
- High exhaust temperature
- Low engine oil pressure

The engine instrumentation and controls are:

- Water temperature gauge
- Oil pressure gauge
- Dual Engine speed
- Exhaust temperature gauge
- Vernier type throttle control
- Pull engine stop
- Emergency stop



Specification

Length:	1920mm
Width:	940mm
Height:	1580mm (over lift eyes)
Weight:	1325 kg (2915 lbs)

Hydraulic Tank Capacity: 220 litre - 49 Imp gallons

Fuel Tank Capacity: 67 litre - 15 Imp gallons

System pressure set:	3000 psi
Pump:	35 GPM @ 2100 rpm 11 GPM @ 2100 rpm

Fitted with Inertia Starter System

Filtration

Tank top return filter:	20 micron
Suction strainer:	125 micron

The engine conforms to:

BP 200, OCMA Mec 1 and EEMUA publication 107 1992 for Zone 2 applications, gas groups 11A and 11B, T3 (200 deg c) temperature limitation.

ASSEMBLY NO PM-A-2003

Lightweight "Heli-portable" Zone 2 Powerpack



Hydraulic System

The unit is fitted with a 220 litre hydraulic oil reservoir, integral to the main frame, filtration is by a tank top return filter. Fluid level can be easily monitored from the sight glass on the side of the skid. The tank supply suction line is fitted with an isolator ball valve. Hydraulic system includes: hydraulic pump, relief valve, heat exchanger fitted to the front of the engine radiator, tank top return filter and bulkhead quick couplings

Fuel Reservoir

The fuel reservoir is mounted above the engine, attached to the underside of the hose storage tray. Both are made from aluminium to reduce weight.

Engine

A naturally aspirated; in-line four cylinder, four stroke, direct injection 80hp diesel engine. The engine is fitted to the frame with rubber isolator mounts reducing vibration, the hazardous area kit fitted to the engine complies with current legislations for operation in Zone 2 environments. Engine will shutdown on the following conditions.

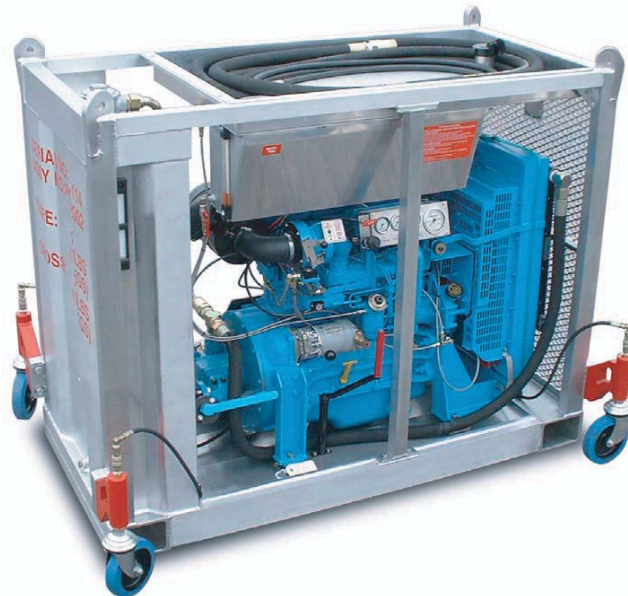
- Overspeed
- High coolant water temperature.
- High exhaust temperature
- Low engine oil pressure

The engine instrumentation and controls are:

- Water temperature gauge
- Oil pressure gauge
- Engine speed
- Exhaust temperature gauge
- Vernier type throttle control
- Pull engine stop
- Emergency stop

Optional

Detachable, hydraulic jack down castor set complete with hoo-up hoses and hand pump.



Specification

Length: 1920mm
Width: 940mm
Height: 1580mm (over lift eyes)
Weight: 1325 kg (2915 lbs)

Hydraulic Tank Capacity: 220 litre - 49 Imp gallons
Fuel Tank Capacity: 67 litre - 15 Imp gallons

System pressure set: 3000 psi
Pump: 35 GPM @ 2100 rpm

Fitted with Inertia Starter System

Filtration

Tank top return filter: 20 micron
Suction strainer: 125 micron

The engine conforms to:

BP 200, OCMA Mec 1 and EEMUA publication 107 1992 for Zone 2 applications, gas groups 11A and 11B, T3 (200 deg c) temperature limitation.

ASSEMBLY NO PM-A-2002

Lightweight "Heli-portable" Zone 2 Powerpack



Hydraulic System

The unit is fitted with a 220 litre hydraulic oil reservoir, integral to the main frame, filtration is by a tank top return filter. Fluid level can be easily monitored from the sight glass on the side of the skid. The tank supply suction line is fitted with an isolator ball valve. Hydraulic system includes: hydraulic pump, relief valve, heat exchanger fitted to the front of the engine radiator, tank top return filter and bulkhead quick couplings

Fuel Reservoir

The fuel reservoir is mounted above the engine, attached to the underside of the hose storage tray. Both are made from aluminium to reduce weight.

Engine

A naturally aspirated; in-line four cylinder, four stroke, direct injection 80hp diesel engine. The engine is fitted to the frame with rubber isolator mounts reducing vibration, the hazardous area kit fitted to the engine complies with current legislations for operation in Zone 2 environments.

Engine will shutdown on the following conditions.

- Overspeed
- High coolant water temperature.
- High exhaust temperature
- Low engine oil pressure

The engine instrumentation and controls are:

- Water temperature gauge
- Oil pressure gauge
- Engine speed
- Exhaust temperature gauge
- Vernier type throttle control
- Pull engine stop
- Emergency stop



Specification

Length:	1920mm
Width:	940mm
Height:	1580mm (over lift eyes)
Weight:	1325 kg (2915 lbs)

Hydraulic Tank Capacity: 220 litre - 49 Imp gallons

Fuel Tank Capacity: 67 litre - 15 Imp gallons

System pressure set: 3000 psi for Wireline units and (2500 psi for Triplex pumps)

Pump: 35 GPM @ 2100 rpm

Fitted with Pneumatic Starter System

Filtration

Tank top return filter:	20 micron
Suction strainer:	125 micron

The engine conforms to:

BP 200, OCMA Mec 1 and EEMUA publication 107 1992 for Zone 2 applications, gas groups 11A and 11B, T3 (200 deg c) temperature limitation.

ASSEMBLY NO PM-A-2004

Wireline Sheaves



General Overview

The TIS Manufacturing "Lightweight Sheave" is designed manufactured and sold solely for use with Wireline units running "Swab-Electric line" operations downhole.

The sheave is designed to be very easy to use and handle, there are a full set of optional accessory's available for use with this product.

Materials

The sheave assembly is manufactured from tough lightweight materials to make the assembly easy to handle.

The wheel is produced from a hard wearing tough composite material that has been heat treated prior to final machining ensuring good dimensional stability.

The frame is produced from a high grade structural aluminium alloy for its strength and low weight. The frames are protected from corrosion by first passing through an anodising process, this gives the surface of the material a harder finish and a cosmetically better appearance. All other components are made from stainless steel.



Accessories available include:



Example of Floor Stand



Example of Support Bracket



Example of Line Wiper

Wheel Dia.	Max Wire Size	Max Linepull	Weight	Floor Stand	Support Bracket	Line Wiper	Assembly No.
420mm	0.125"	3,600lbs	9kg	SH-A-3002	SH-A-3001	N/A	SH-A-2001
420mm	7/32"	8,250lbs	16.5kg	SH-A-3005	SH-A-3001	N/A	SH-A-2002
560mm	5/16"	20,000lbs	33kg	SH-A-3007	SH-A-3008	N/A	SH-A-2003
420mm	0.125"	3,600lbs	9kg	SH-A-3006	SH-A-3001	SH-A-3003	SH-A-2004
560mm	5/16"	5,040lbs		SH-A-3007	SH-A-3008	N/A	SH-A-2005
525mm	0.160"	4,250lbs	16.6kg	SH-A-3010	SH-A-3012	SH-A-3011	SH-A-2006
560mm	5/16"	15,300lbs		SH-A-3010	SH-A-3012	SH-A-3011	SH-A-2007
590mm	0.125"	3,600lbs	9kg	N/A	N/A	N/A	SH-A-2008
420mm	0.125"	3,600lbs	9kg	SH-A-3006	SH-A-3001	SH-A-3003	SH-A-2009
420mm	7/32"	8,250lbs	15kg	SH-A-3005	SH-A-3009	N/A	SH-A-2010
560mm	5/16"	7,700lbs	33kg	SH-A-3007	SH-A-3008	N/A	SH-A-2011
560mm	0.25"		33kg	N/A	N/A	N/A	SH-A-2012
574mm	0.25"	2,205lbs	33kg	N/A	N/A	N/A	SH-A-2013

Various Head Fixtures Available



Regulations and Standards

ATEX - Atmosphere Explosive

ATEX 94/9

The objective of directive 94/9/EC is to ensure free movement for the products to which it applies in the EU territory. Therefore the directive, based on Article 95 of the EC Treaty, provides for harmonised requirements and procedures to establish compliance.

The directive notes that to remove barriers to trade via the New Approach, provided for in the Council Resolution of 7 May 1985, essential requirements regarding safety and other relevant attributes need to be defined by which a high level of protection will be ensured. These Essential Health and Safety Requirements (EHSRs) are listed in Annex II to directive 94/9/EC.

PED - Pressure Equipment Directive

PED 97/23

The Pressure Equipment Directive 97/23/EC (PED) has been implemented in United Kingdom law by the Pressure Equipment Regs 1999 (SI 1999/2001).

These Regs have been amended by the Pressure Equipment (Amendment)

Regulation 2002 (SI 2002/1267). The Pressure Equipment Regulations 1999 ("the PER" – SI 1999/2001) implemented the Pressure Equipment Directive ("PED" 97/23/EC) in the United Kingdom.

API – American Petroleum Institute

API is an American National Standards Institute (ANSI) accredited standards developing organization. API produces standards, recommended practices, specifications, codes and technical publications, reports and studies that cover each segment of the industry. API standards promote the use of safe, interchangeable equipment and operations through the use of proven, sound engineering practices as well as help reduce regulatory compliance costs, and in conjunction with API's Quality Programs, many of these standards form the basis of API certification programs.

NORSOK – Norwegian Standards

International standards, ISO and EN, form the basis of all activities in the petroleum industry. Experts from a wide range of Norwegian companies participate heavily in the development of ISO and EN standards, in order to define safe and economical design and processes. However, Norwegian safety framework and climate conditions require amendments to ISO and EN standards. The NORSOK standards are developed to form this necessary amendment.

The NORSOK standards are developed by the Norwegian petroleum industry to ensure adequate safety, value adding and cost effectiveness for existing and future petroleum industry developments in Norway.

The objective is to provide international standardisation work with Norwegian knowledge in order to improve international standards and reduce the need for NORSOK standards.

Lifting Standards

Equipment and Products manufactured by TIS which required to be lifted by the use of wire rope slings or chains are designed in accordance with the following standards. BS-EN-12079, DnV (Det Norske Veritas) 2.7-1, 2.7-2 or 2.7-3 as applicable.

NACE – NACE International MR-01-75/ ISO 15156

NACE International is a professional technical society dedicated to promoting public safety, protecting the environment and reducing the economic impact of corrosion by advancing the knowledge of corrosion engineering and science. Established in 1943, NACE International has more than 15,000 members worldwide and offers technical training and certification programs, sponsors conferences and produces industry standards and reports, publications and software. NACE MR0175/ISO 15156 gives requirements & recommendations for the selection and qualification of carbon and low-alloy steels, corrosion-resistant alloys, and other alloys for service in equipment used in oil and natural gas production and natural gas treatment plants in H₂S-containing environments, whose failure could pose a risk to the health and safety of the public and personnel or to the environment.

NAS – National Aerospace Standard 1638 (Fluid Cleanliness)

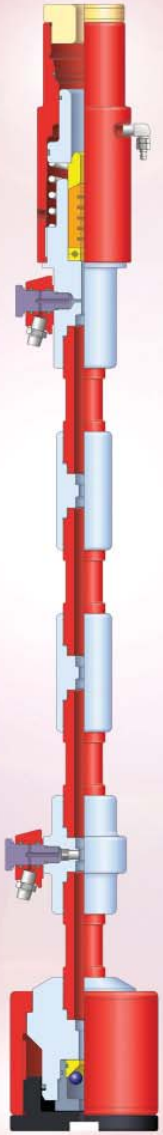
Fluid cleanliness can be to the above NAS 1638 standard or alternatively the ISO 4406 or SAE 4059 standards.

Other Standards and Directives in use

EN 13463-1	Non Electrical Eqpt. Basic Methods and Requirements
EN 13463-2	Non Electrical Eqpt. "fr" Prot by Flow restricting
EN 13463-3	Non Electrical Eqpt. "d" Prot by Flameproof Enclosure
EN 13463-4	Non Electrical Eqpt. "g" Prot by Inherent Safety
EN 13463-5	Non Electrical Eqpt. "c" Prot by Constructional Safety
EN 13463-6	Non Electrical Eqpt. "b" Prot by Control of Ignition source
EN 13463-7	Non Electrical Eqpt. "p" Prot by Pressurisation
EN 13463-8	Non Electrical Eqpt. "k" Prot by Liquid Immersion
EN 982	Safety Reqs for Fluid Power Systems - Hydraulics
EN 983	Safety Reqs for Fluid Power Systems - Pneumatics
EN 1127-1	Explosive Atmospheres/ Explosion Prevention & Protection
EN 60079-17	Electrical Inspect & Maint Standard
EN 50014	Electrical Apparatus Gen Reqs Expl Atmospheres
EN 60079:2004	Elec Apparatus for Exp Atmospheres Gen Reqmnts
EN 60079:2004	Elec Apparatus Flameproof enclosures 'd'
EN 60079:2004	Elec Apparatus Pressurized enclosures 'p'
EN 60079:2003	Elec Apparatus Increased safety 'e'.
EN 60079:2003	Elec Apparatus Type of protection 'n'
EN 60079:2004	Elec Apparatus type of protection encapsulation 'm'
EN 50015:1998	Elec Apparatus type of protection Oil immersion 'o'
EN 50017:1998	Elec Apparatus type of protection Powder filling 'q'
EN 50020:2002	Elec Apparatus type of protection Intrinsic 'i'
73/23	Low Voltage Directive
87/404	Simple Pressure Vessels
89/336	Electromagnetic Compatibility (EMC)
93/68	CE Marking Directive
98/37	Mechanical Eqpt- Machinery
99/92	ATEX 137 Workplace Directive
EN 10204	Metallic products type of inspection documents
ISO 13533	Drill Through Equipment
API 16 A	Drill Through Equipment
ISO 13626	Drilling & Well Service structures
ISO 13628-6	Subsea Production Controls Systems

Pressure Control Catalogue

Issue No. 1, 2008



Surface Pressure Control Equipment



Quality Assurance

TIS Manufacturing Limited recognises the need to meet the high standards expected by our customers, to this end, we have set up a quality system in accordance with European standard, ISO-9001. All products manufactured by us are subject to stringent quality procedures ensuring compliance with customer and industry requirements.

Design and Industry Standards

TIS Manufacturing surface pressure control products are designed to comply with the following Standards:-

- Statutory Instruments 1992 No 2932.
- Statutory Instruments 1992 No 3073.
- Statutory Instruments 1996 No 913.
- NACE MR-01-75 (latest).
- API 6A.
- Offshore installations:- guidance on design, construction and certification, section 43, well control equipment.
- N.P.D Regulations.

All critical components and assemblies are independently reviewed by a Certifying authority

Component Inspection

- 100% of all new component parts pass through our stringent inspection process and procedures.
- We regard dimensional accuracy and quality of finish to be critical to the performance of the product.
- TIS Manufacturing, have invested in the latest inspection equipment to accurately inspect all component parts, particularly the gauging of internal and external thread forms.
- All parts are fully interchangeable (100% quality control).

Component Identification

All TIS surface pressure control equipment, assemblies and component parts are supplied marked with the relevant assembly or part number and a unique traceability number. Large items are stamped with low stress stamps while smaller component parts are engraved using a computerised etching system.

Documentation Packages

All TIS surface pressure control equipment is provided with a comprehensive documentation package. Each documentation package contains all relevant certificates including: material, NDT, QA, QC, pressure test, IRC and COC certificates, assembly drawings, parts lists, detailed operating and maintenance procedures.

Protection and Preservation

In order to maximise the operational field life, all TIS surface pressure control equipment is protected with a phosphate based coating and where appropriate, additional protection is achieved by a special zylon coating, which is typically used on wireline valve bores and cylinders. TIS surface pressure control equipment comes painted to our own standards which are designed specifically to meet with arduous conditions encountered in the North Sea. All quick union connections come fitted with our rubber thread protectors. TIS thread protectors are precision moulded in hard wearing durable rubber, providing better thread protection, during transportation. When made up correctly to quick union connections, their superior design prevents accidental disengagement.

After Sales Service

TIS Manufacturing Limited's products are backed up by a comprehensive stock of spare parts. Our head office and store are situated next to Aberdeen airport, so we are ideally positioned to respond to "hot shot" requirements. Our trained specialist service technicians are available 365 days a year to assist our clients with maintenance and repair of their Surface Pressure Control products on a world-wide basis.

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9. Tooltraps



10. Hydraulic Tool Catchers



11. Test Caps and Stumos



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13. Terms and Conditions

Apollo Wireline Valves



TIS Apollo compact wireline valves are specifically designed to meet the arduous conditions often encountered in the North Sea, giving the operator maximum reliability, flexibility and simplicity of use, while carrying out routine intervention work. The innovative, unique valve configuration results in a truly compact design, making them especially suited for offshore operations, where the valve has to be lowered onto the Xmas tree through a restricted hatch space on the skid deck.

The TIS Apollo wireline valve range is available with the following options

- 3.00" ID to 9.00" ID Through bores.
- Single, dual, triple and quadruple ram configurations.
- Standard or sour service.
- Manual or remote hydraulic operation.
- 5,000 Psi, 10,000 Psi and 15,000 Psi, working pressures.
- Service temperature range of -29 to +121 Degrees C.
- Choice of quick union or API flanged connections.

Apollo ram assemblies are available dressed with the following options

- Slick line.
- Braided line.
- Wire / cable shear & seal.

Technical features include

- Operator friendly design, no tools required for redress.
- Compact mono-block forged bodies.
- Weld repairable valve bodies.
- Keyless ram bores.
- Compact short hydraulic cylinders.
- Orientation key design, allows complete flexibility to arrange ram configuration as required, including inverting rams for braided line operations.
- External ram position indicators.
- Non rising manual stems.
- Stainless steel one-piece pistons.
- Stainless steel ram support rods.
- Large cross-section ram seals.
- Inner seal retaining bars.
- Replaceable cartridge type equaliser valves.
- Grease injection ports with integral check valves.
- Special TIS swivel union on grease injection port, allows the operator to place the hose neatly to the best operating position.
- Stainless steel protection frames with stabbing platform & integral forklift pockets (optional).



**Dual Apollo Wireline Valve
with Protection Frame**



**Dual Apollo Wireline Valve
Without Protection Frame**

Apollo Wireline Valves



There are 4 Steps involved in the ordering of Wireline Valves :

Example

5,000psi 3.00" Dual Apollo Wireline Valve with Rams dressed for 3/16" Wire, 5" 4Thd 'O' Type Quick Union set and Protection frame

Body	0002-00017-TIS	Step 1
Rams	0002-00019-TIS	Step 2
Quick Union Set	0045-00002-TIS	Step 3
Protection Frame	TR-A-1007	Step 4

Step 2

Wireline Ram Sub Assembly

Thro' Bore	Working Pressure	Dressed For ...	Part Number	Redress Kit
3.00"	10,000 psi	0.125"	0002-00007-TIS	0002-00007-KIT
3.00"	10,000 psi	3/16"	0002-00019-TIS	0002-00019-KIT
3.00"	10,000 psi	7/32"	0002-00020-TIS	0002-00020-KIT
3.00"	10,000 psi	1/4"	0002-00006-TIS	0002-00006-KIT
3.00"	10,000 psi	5/16"	0002-00021-TIS	0002-00021-KIT
3.00"	10,000 psi	15/32"	0002-00022-TIS	0002-00022-KIT
3.00"	10,000 psi	Shear/Seal	0002-00012-TIS	0002-00012-KIT
4.00"	10,000 psi	0.125"	0003-00002-TIS	0003-00002-KIT
4.00"	10,000 psi	3/16"	0003-00012-TIS	0003-00012-KIT
4.00"	10,000 psi	7/32"	0003-00013-TIS	0003-00013-KIT
4.00"	10,000 psi	1/4"	0003-00014-TIS	0003-00014-KIT
4.00"	10,000 psi	5/16"	0003-00015-TIS	0003-00015-KIT
4.00"	10,000 psi	15/32"	0003-00016-TIS	0003-00016-KIT
4.00"	10,000 psi	Shear/Seal	0003-00004-TIS	0003-00004-KIT
5-1/8"	10,000 psi	0.125"	0004-00013-TIS	0004-00013-KIT
5-1/8"	10,000 psi	3/16"	0004-00023-TIS	0004-00023-KIT
5-1/8"	10,000 psi	7/32"	0004-00016-TIS	0004-00016-KIT
5-1/8"	10,000 psi	1/4"	0004-00022-TIS	0004-00022-KIT
5-1/8"	10,000 psi	5/16"	0004-00024-TIS	0004-00024-KIT
5-1/8"	10,000 psi	15/32"	0004-00025-TIS	0004-00025-KIT
5-1/8"	10,000 psi	Shear/Seal	0004-00015-TIS	0004-00015-KIT
6-5/8"	10,000 psi	0.125"	0009-00004-TIS	0009-00004-KIT
6-5/8"	10,000 psi	3/16"	0009-00013-TIS	0009-00013-KIT
6-5/8"	10,000 psi	7/32"	0009-00014-TIS	0009-00014-KIT
6-5/8"	10,000 psi	1/4"	0009-00015-TIS	0009-00015-KIT
6-5/8"	10,000 psi	5/16"	0009-00016-TIS	0009-00016-KIT
6-5/8"	10,000 psi	15/32"	0009-00017-TIS	0009-00017-KIT
6-5/8"	10,000 psi	Shear/Seal	0009-00006-TIS	0009-00006-KIT

Step 1

Wireline Valve Body Sub Assembly

Thro' Bore	Working Pressure	Type	Part Number	Redress Kit
3.00"	5,000 psi	Single	0002-00016-TIS	0002-00016-KIT
3.00"	5,000 psi	Dual	0002-00017-TIS	0002-00017-KIT
3.00"	5,000 psi	Triple	0002-00018-TIS	0002-00018-KIT
3.00"	5,000 psi	Quad	0002-00028-TIS	0002-00028-KIT
3.00"	10,000 psi	Single	0002-00009-TIS	0002-00009-KIT
3.00"	10,000 psi	Dual	0002-00008-TIS	0002-00008-KIT
3.00"	10,000 psi	Triple	0002-00015-TIS	0002-00015-KIT
3.00"	10,000 psi	Quad	0002-00029-TIS	0002-00029-KIT
4.00"	5,000 psi	Single	0003-00009-TIS	0003-00009-KIT
4.00"	5,000 psi	Dual	0003-00010-TIS	0003-00010-KIT
4.00"	5,000 psi	Triple	0003-00011-TIS	0003-00011-KIT
4.00"	5,000 psi	Quad	0003-00026-TIS	0003-00026-KIT
4.00"	10,000 psi	Single	0003-00005-TIS	0003-00005-KIT
4.00"	10,000 psi	Dual	0003-00003-TIS	0003-00003-KIT
4.00"	10,000 psi	Triple	0003-00008-TIS	0003-00008-KIT
4.00"	10,000 psi	Quad	0003-00027-TIS	0003-00027-KIT
5-1/8"	5,000 psi	Single	0004-00019-TIS	0004-00019-KIT
5-1/8"	5,000 psi	Dual	0004-00020-TIS	0004-00020-KIT
5-1/8"	5,000 psi	Triple	0004-00021-TIS	0004-00021-KIT
5-1/8"	5,000 psi	Quad	0004-00028-TIS	0004-00028-KIT
5-1/8"	10,000 psi	Single	0004-00014-TIS	0004-00014-KIT
5-1/8"	10,000 psi	Dual	0004-00017-TIS	0004-00017-KIT
5-1/8"	10,000 psi	Triple	0004-00018-TIS	0004-00018-KIT
5-1/8"	10,000 psi	Quad	0004-00026-TIS	0004-00026-KIT
6-5/8"	5,000 psi	Single	0009-00007-TIS	0009-00007-KIT
6-5/8"	5,000 psi	Dual	0009-00008-TIS	0009-00008-KIT
6-5/8"	5,000 psi	Triple	0009-00012-TIS	0009-00012-KIT
6-5/8"	5,000 psi	Quad	0009-00020-TIS	0009-00020-KIT
6-5/8"	10,000 psi	Single	0009-00009-TIS	0009-00009-KIT
6-5/8"	10,000 psi	Dual	0009-00001-TIS	0009-00001-KIT
6-5/8"	10,000 psi	Triple	0009-00011-TIS	0009-00011-KIT
6-5/8"	10,000 psi	Quad	0009-00021-TIS	0009-00021-KIT

Step 3

Quick Union Set Sub Assembly

Thro' Bore	Working Pressure	Quick Union	Part Number
3.00"	5,000 psi	5-1/2"-4x2 'B' Type	0059-00001-TIS
3.00"	5,000 psi	5"-4Thd 'O' Type	0045-00002-TIS
3.00"	10,000 psi	6-5/16"-4Thd 'B' Type	0061-00004-TIS
3.00"	10,000 psi	5-3/4"-4Thd 'O' Type	0046-00019-TIS
4.00"	5,000 psi	7"-5Thd 'B' Type	0063-00001-TIS
4.00"	5,000 psi	6-1/2"-4Thd 'O' Type	0047-00009-TIS
4.00"	10,000 psi	8-1/4"-4x2 'B' Type (10k)	0065-00001-TIS
4.00"	10,000 psi	8-3/8"-4Thd 'O' Type	0053-00001-TIS
5-1/8"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	0064-00001-TIS
5-1/8"	5,000 psi	8-1/4"-4Thd 'O' Type	0052-00001-TIS
5-1/8"	10,000 psi	8-7/8"-4x2 'B' Type	0078-00002-TIS
5-1/8"	10,000 psi	9"-4Thd 'O' Type	0054-00014-TIS
6-5/8"	5,000 psi	9-7/8"-4x2 'B' Type	0066-00002-TIS
6-5/8"	5,000 psi	9-1/2"-4Thd 'O' Type	0055-00004-TIS
6-5/8"	10,000 psi	13"-4Thd 'B' Type	0067-00002-TIS
6-5/8"	10,000 psi	11-1/2"-4Thd 'O' Type	0056-00002-TIS

Step 4

Protection Frame

Thro' Bore	Valve Type	Part Number
3.00"	Single	TR-A-1013
3.00"	Dual	TR-A-1007
3.00"	Triple	TR-A-1014
3.00"	Quad	TR-A-1020
4.00"	Single	TR-A-1010
4.00"	Dual	TR-A-1003
4.00"	Triple	TR-A-1015
4.00"	Quad	TR-A-1021
5-1/8"	Single	TR-A-1005
5-1/8"	Dual	TR-A-1004
5-1/8"	Triple	TR-A-1016
5-1/8"	Quad	TR-A-1022
6-5/8"	Single	TR-A-1018
6-5/8"	Dual	TR-A-1012
6-5/8"	Triple	TR-A-1017
6-5/8"	Quad	TR-A-1023



Single Apollo Wireline Valve

Triton Lightweight Wireline Valves



TIS TRITON lightweight wireline valves are specifically designed to give the operator maximum reliability, flexibility and simplicity of use, while carrying out routine intervention work. They are especially suited for wireline operations, where the surface equipment is installed onto the wellhead by means of a telescopic "Gin-pole" or lightweight mast.

The TIS Triton wireline valve range is available with the following options

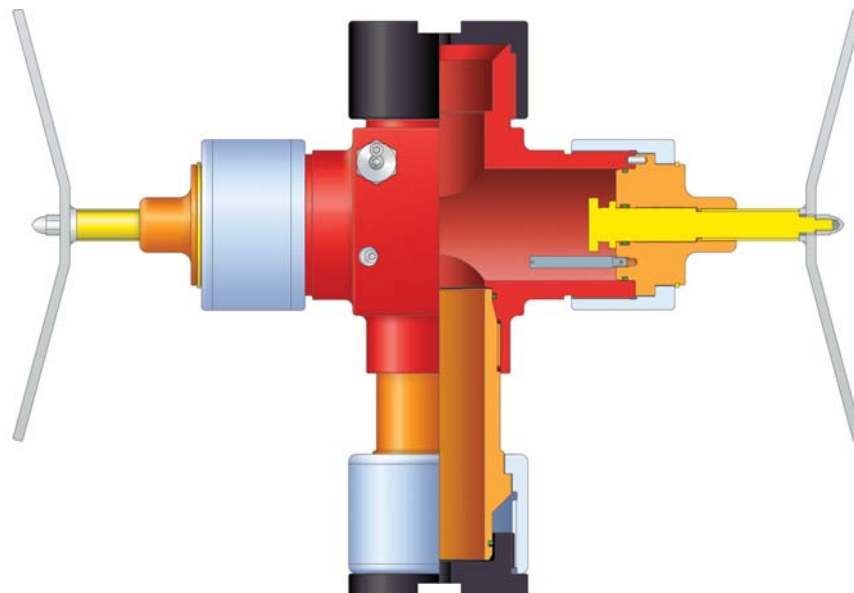
- 3.00" ID & 4.00" ID Through bores.
- Single, dual and triple ram configurations.
- Standard or sour service.
- Manual or remote hydraulic operation.
- 5,000 Psi – 10,000 Psi working pressures.
- Service temperature range of -29 to +121 Degrees C.
- Choice of quick union or API flanged connections.
- Rams dressed for slick line or braided line operations.

Technical features include (where applicable)

- Operator friendly design, no tools required for redress.
- Compact mono-block lightweight bodies.
- Compact lightweight cylinders with external ram position indicators.
- Non rising manual stems.
- Stainless steel one-piece pistons.
- Keyless ram bores, allows for ram inversion when used in dual configuration with braided cable.
- Large cross-section ram seals.
- Inner seal retaining bars.
- Replaceable cartridge type equaliser valves.
- Integral check valves on grease injection ports (where applicable).



Single Manual Triton Wireline Valve



Triton Lightweight Wireline Valves



To order triton wireline valves use the following 2 step procedure.

Step 1

Triton Manual Valves

Thro' Bore	Working Pressure	Type	Part Number
3.00"	5,000 psi	5'-1/2"-4x2 'B' Type	0002-00025-TIS
3.00"	5,000 psi	5"-4Thd 'O' Type	0002-00013-TIS
4.00"	5,000 psi	7"-5Thd 'B' Type	0003-00020-TIS
4.00"	5,000 psi	6'-1/2"-4Thd 'O' Type	0003-00019-TIS

Or

Triton Hydraulic Valves

Thro' Bore	Working Pressure	Type	Part Number
3.00"	5,000 psi	5'-1/2"-4x2 'B' Type	0002-00024-TIS
3.00"	5,000 psi	5"-4Thd 'O' Type	0002-00003-TIS
4.00"	5,000 psi	7"-5Thd 'B' Type	0003-00018-TIS
4.00"	5,000 psi	6'-1/2"-4Thd 'O' Type	0003-00017-TIS



Single Hydraulic Triton Wireline Valve

Step 2

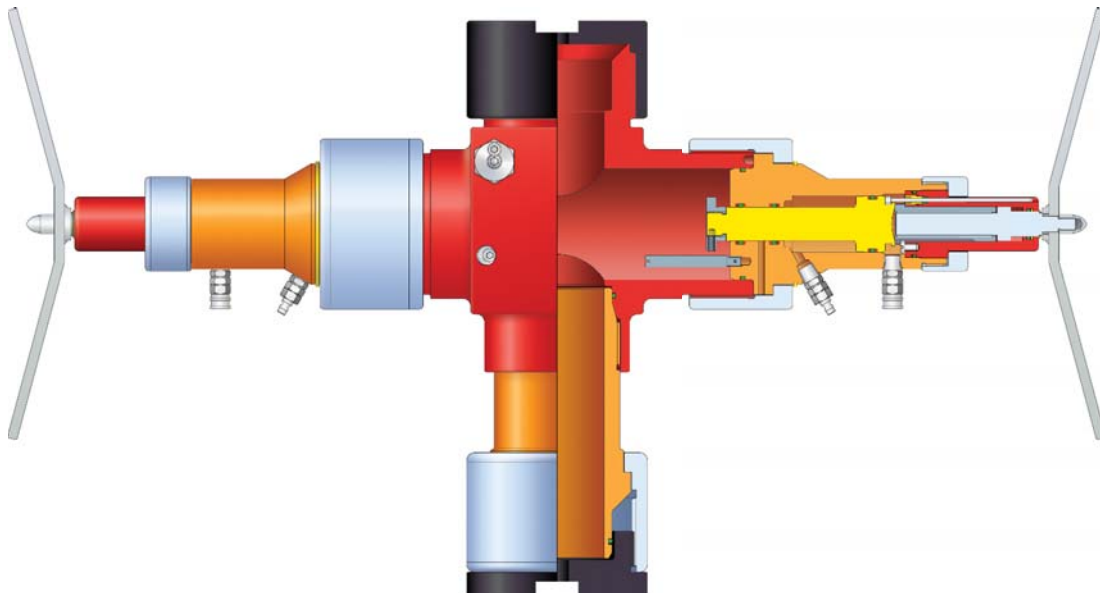
Triton Ram Sub Assembly

Thro' Bore	Working Pressure	Type	Part Number
3.00"	5,000 psi	0.125" Dia.	0002-00007-TIS
3.00"	5,000 psi	3/16" Dia.	0002-00019-TIS
3.00"	5,000 psi	7/32" Dia.	0002-00020-TIS
3.00"	5,000 psi	1/4" Dia.	0002-00006-TIS
3.00"	5,000 psi	5/16" Dia.	0002-00021-TIS
4.00"	5,000 psi	0.125" Dia.	0003-00021-TIS
4.00"	5,000 psi	3/16" Dia.	0003-00022-TIS
4.00"	5,000 psi	7/32" Dia.	0003-00023-TIS
4.00"	5,000 psi	1/4" Dia.	0003-00024-TIS
4.00"	5,000 psi	5/16" Dia.	0003-00025-TIS

Example

5,000psi 4.00" Triton Manual Valve with 7"-5Thd 'B' Type Connections with Rams dressed for 0.125" Wire.

Main Valve	0003-00020-TIS
Rams	0003-00021-TIS



Wireline Valve Consumables



There are many different accessories available for all Wireline Valves including:

Front Seal

Description	Part Number
3" Ram Front Seal 0.125" dia wire	0002-00001-C
3" Ram Front Seal 3/16" dia wire	0002-00007-C
3" Ram Front Seal 7/32" dia wire	0002-00008-C
3" Ram Front Seal 1/4" dia wire	0002-00051-C
3" Ram Front Seal 5/16" dia wire	0002-00006-C
3" Ram Front Seal 5/16" dia wire	0002-00006-C
4" Ram Front Seal 0.125" dia wire	0003-00004-C
4" Ram Front Seal 3/16" dia wire	0003-00011-C
4" Ram Front Seal 7/32" dia wire	0003-00002-C
4" Ram Front Seal 1/4" dia wire	0003-00052-C
4" Ram Front Seal 5/16" dia wire	0003-00003-C
5-1/8" Ram Front Seal 0.125" dia wire	0004-00001-C
5-1/8" Ram Front Seal 3/16" dia wire	0004-00004-C
5-1/8" Ram Front Seal 7/32" dia wire	0004-00005-C
5-1/8" Ram Front Seal 1/4" dia wire	0004-00086-C
5-1/8" Ram Front Seal 5/16" dia wire	0004-00003-C
6-5/8" Ram Front Seal 0.125" dia wire	0009-00002-C
6-5/8" Ram Front Seal 3/16" dia wire	0009-00003-C
6-5/8" Ram Front Seal 7/32" dia wire	0009-00004-C
6-5/8" Ram Front Seal 1/4" dia wire	0009-00057-C
6-5/8" Ram Front Seal 5/16" dia wire	0009-00005-C



Front Seal



Outer Seal



Ram Guide

Outer Seal

3" Ram Outer Seal	0002-00002-C
4" Ram Outer Seal	0003-00005-C
5-1/8" Ram Outer Seal	0004-00002-C
6-5/8" Ram Outer Seal	0009-00001-C

Ram Guide

3" Ram Guide 0.125" dia wire	0002-00004-C
3" Ram Guide 3/16" dia wire	0002-00084-C
3" Ram Guide 7/32" dia wire	0002-00090-C
3" Ram Guide 1/4" dia wire	0002-00076-C
3" Ram Guide 5/16" dia wire	0002-00091-C
4" Ram Guide 0.125" dia wire	0003-00009-C
4" Ram Guide 3/16" dia wire	0003-00013-C
4" Ram Guide 7/32" dia wire	0003-00012-C
4" Ram Guide 1/4" dia wire	0003-00053-C
4" Ram Guide 5/16" dia wire	0003-00014-C
5-1/8" Ram Guide 0.125" dia wire	0004-00008-C
5-1/8" Ram Guide 3/16" dia wire	0004-00045-C
5-1/8" Ram Guide 7/32" dia wire	0004-00046-C
5-1/8" Ram Guide 1/4" dia wire	0004-00087-C
5-1/8" Ram Guide 5/16" dia wire	0004-00047-C
6-5/8" Ram Guide 0.125" dia wire	0009-00008-C
6-5/8" Ram Guide 3/16" dia wire	0009-00013-C
6-5/8" Ram Guide 7/32" dia wire	0009-00014-C
6-5/8" Ram Guide 1/4" dia wire	0009-00058-C
6-5/8" Ram Guide 5/16" dia wire	0009-00015-C



Shear Blades

Shear Blades

Description	Part Number
3" Ram Top Blade	0002-00085-C
3" Ram Bottom Blade	0002-00086-C
4" Ram Top Blade	0003-00046-C
4" Ram Bottom Blade	0003-00047-C
5-1/8" Ram Top Blade	0004-00038-C
5-1/8" Ram Bottom Blade	0004-00037-C
6-5/8" Ram Top Blade	0009-00040-C
6-5/8" Ram Bottom Blade	0009-00041-C

Wellhead Flange Adapters



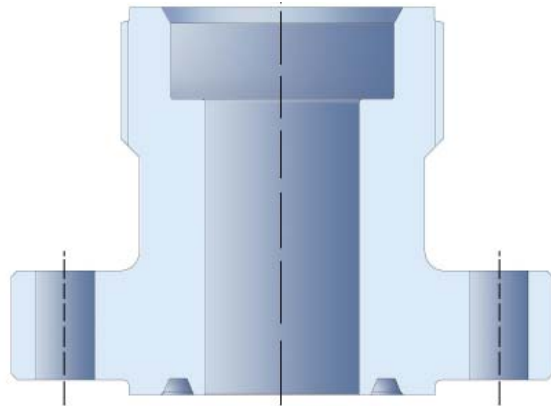
TIS Wellhead flange adapters are designed to be installed on to API wellheads and provide a transition between the xmas tree and the well intervention pressure control equipment. It is important to note that, the wellhead flange adapter should always be compatible with the through bore of the wellhead it is being installed on to.

The TIS wellhead flange adapter range is available with the following options

- Choice of through bores from 2 1/16" ID upwards.
- Choice of material: alloy steel, stainless steel and nickel alloys.
- Inlays on ring grooves.
- Choice of working pressures from 2,000 Psi to 15,000 Psi.
- Standard or sour service.
- Choice of fluid and temperature rating.
- Choice of API flanged connections.
- Choice of quick union connections.
- Choice of internal lifting thread.
- Bleed port.

Technical features include

- TIS API flange adapters are manufactured from weld repairable material.



Wellhead Flanges
5,000 & 10,000 psi

API Flange	Ring Groove	Working Pressure	Quick Union	Part Number
3-1/8"	API R35	5,000 psi	5-1/2"-4x2'B' Type	0075-00033-TIS
3-1/8"	API R35	5,000 psi	5"-4Thd'O' Type	0075-00034-TIS
3-1/16"	API BX154	10,000 psi	6-5/16"-4Thd'B'	0075-00014-TIS
3-1/16"	API BX154	10,000 psi	5-3/4"-4Thd'O' Type	0075-00035-TIS
4-1/16"	API R39	5,000 psi	7"-5Thd'B' Type	0075-00005-TIS
4-1/16"	API R39	5,000 psi	6-1/2"-4Thd'O' Type	0075-00036-TIS
4-1/16"	API BX155	10,000 psi	8-1/4"-4x2'B' Type (10k)	0075-00037-TIS
4-1/16"	API BX155	10,000 psi	8-3/8"-4Thd'O' Type	0075-00038-TIS
5-1/8"	API R44	5,000 psi	8-1/4"-4x2'B' Type (5k)	0075-00039-TIS
5-1/8"	API R44	5,000 psi	8-1/4"-4Thd'O' Type	0075-00040-TIS
5-1/8"	API BX169	10,000 psi	8-7/8"-4x2'B' Type	0075-00041-TIS
5-1/8"	API BX169	10,000 psi	9"-4Thd'O' Type	0075-00042-TIS
7-1/16"	API R46	5,000 psi	9-7/8"-4x2'B' Type	0075-00044-TIS
7-1/16"	API R46	5,000 psi	9-1/2"-4Thd'O' Type	0075-00045-TIS
7-1/16"	API BX156	10,000 psi	13"-4Thd'B' Type	0075-00043-TIS
7-1/16"	API BX156	10,000 psi	11-1/2"-4Thd'O' Type	0075-00018-TIS

Stuffing Boxes



TIS Stuffing boxes are installed on top of the lubricator stack and are used to facilitate a seal and retain well pressure around moving and stationary wireline. The operator friendly lightweight construction makes them especially good for man handling. They have been specially designed to increase the field service life of the wire.

TIS offer three types of conventional stuffing box

1. Manual stuffing boxes.
2. Hydraulic stuffing boxes.
3. Hydraulic stuffing boxes with integral chemical injection facility, which coats the wire with inhibitor chemicals and de-icing agents. This feature acts as a fluid barrier between the well and the stuffing box, which prevents hydrates forming and icing up the stuffing box. By including this facility within the stuffing box, it removes the need to supply a separate injection sub and reduces the overall operating height.

The TIS stuffing box range is available with the following options

- 5,000 Psi, 10,000 Psi and 15,000 Psi working pressures.
- Standard or sour service.
- Service temperature range of -29 to +121 Degrees C.
- Choice of quick union connections.
- Choice of wire size.

Technical features include

- All TIS stuffing boxes are supplied with lightweight composite sheave and bracket sub-assemblies, which are considerably lighter than normal brackets, making them easier to man handle while rigging up.
- The sheave bracket comes with a slide opening gate which allows the operator to install or remove the wire from the sheave while in service.
- Spring-loaded keeper blocks prevent the wire from "jumping out" of the sheave while rigging up and while in service.
- All internal hard component parts, within our stuffing boxes are manufactured from Brass material to increase the field life of the wire.
- A choice of conventional blow out plunger or ball safety check is available.
- Chemical injection conventional stuffing boxes, include; a small liquid chamber, additional felt packing, integral check valve on inlet manifold and ball safety check in place of a blow out plunger.



Chemical Injection Stuffing Box

Stuffing Boxes



Hydraulic Stuffing Boxes 5,000 & 10,000 psi

Working Pressure	Quick Union	Wire Size	Part Number	Redress Kit
5,000 psi	5-1/2"-4x2 'B' Type	0.108"	0035-00039-TIS	0035-00039-KIT
5,000 psi	5-1/2"-4x2 'B' Type	0.125"	0035-00040-TIS	0035-00040-KIT
5,000 psi	5"-4Thd 'O' Type	0.108"	0035-00023-TIS	0035-00023-KIT
5,000 psi	5"-4Thd 'O' Type	0.125"	0035-00020-TIS	0035-00020-KIT
10,000 psi	6-5/16"-4Thd 'B' Type	0.108"	0035-00024-TIS	0035-00024-KIT
10,000 psi	6-5/16"-4Thd 'B' Type	0.125"	0035-00037-TIS	0035-00037-KIT
10,000 psi	5-3/4"-4Thd 'O' Type	0.108"	0035-00038-TIS	0035-00038-KIT
10,000 psi	5-3/4"-4Thd 'O' Type	0.125"	0035-00031-TIS	0035-00031-KIT



Manual Stuffing Boxes 5,000 & 10,000 psi

Working Pressure	Quick Union	Wire Size	Part Number	Redress Kit
5,000 psi	5-1/2"-4x2 'B' Type	0.108"	0035-00041-TIS	0035-00041-KIT
5,000 psi	5-1/2"-4x2 'B' Type	0.125"	0035-00042-TIS	0035-00042-KIT
5,000 psi	5"-4Thd 'O' Type	0.108"	0035-00043-TIS	0035-00043-KIT
5,000 psi	5"-4Thd 'O' Type	0.125"	0035-00044-TIS	0035-00044-KIT
10,000 psi	6-5/16"-4Thd 'B' Type	0.108"	0035-00045-TIS	0035-00045-KIT
10,000 psi	6-5/16"-4Thd 'B' Type	0.125"	0035-00046-TIS	0035-00046-KIT
10,000 psi	5-3/4"-4Thd 'O' Type	0.108"	0035-00047-TIS	0035-00047-KIT
10,000 psi	5-3/4"-4Thd 'O' Type	0.125"	0035-00048-TIS	0035-00048-KIT



Chemical Safety Check Stuffing Boxes 5,000 & 10,000 psi

Working Pressure	Quick Union	Wire Size	Part Number	Redress Kit
5,000 psi	5-1/2"-4x2 'B' Type	0.108"	0035-00050-TIS	0035-00050-KIT
5,000 psi	5-1/2"-4x2 'B' Type	0.125"	0035-00051-TIS	0035-00051-KIT
5,000 psi	5"-4Thd 'O' Type	0.108"	0035-00052-TIS	0035-00052-KIT
5,000 psi	5"-4Thd 'O' Type	0.125"	0035-00053-TIS	0035-00053-KIT
10,000 psi	6-5/16"-4Thd 'B' Type	0.108"	0035-00054-TIS	0035-00054-KIT
10,000 psi	6-5/16"-4Thd 'B' Type	0.125"	0035-00055-TIS	0035-00055-KIT
10,000 psi	5-3/4"-4Thd 'O' Type	0.108"	0035-00049-TIS	0035-00049-KIT
10,000 psi	5-3/4"-4Thd 'O' Type	0.125"	0035-00027-TIS	0035-00027-KIT



Note: Please see page... for Lightweight Top Sheaves

Liquid Seal Stuffing Boxes



TIS Liquid seal grease injection control heads are installed on top of the Lubricator stack and are used to facilitate a seal and retain well pressure around moving and stationary slick line. They are predominately used while performing slick line operations on HP/HT wells.

The operational effectiveness of liquid seal injection control heads is dependent on the well pressure, flow tube clearance, number of flow tubes, temperature and the type of grease being used. TIS Liquid seal grease injection control heads can be very easily set up by the operator, to suit the wire size being run and subsequent well conditions.

TIS liquid seal stuffing box design includes the following primary well control features:-

- Ball Safety check valve, sub-assembly which contains well pressure in the event of the wire breaking.
- Conventional hydraulic packing nut complete with packing that can be operated in the event of losing the grease seal.
- Wire Wiper System which cleans well deposits from the wire, increasing the field life of the flow tubes and making wire move smoothly from the head. The wire wiper can also be used for chemical injection, preventing the formation of hydrates.
- All injection ports have integral ball safety check valves that prevent the loss of well pressure, in the event of the manifolds being knocked off.

The TIS grease injection control head range is available with the following options.

- 5,000 PSI and 10,000 PSI working pressures.
- Standard or sour service.
- Service temperature range of -29 to +121 Degrees C.
- Choice of quick union connections.
- Choice of wire size.

Technical features include

The potential for man riding operations while using our liquid seal stuffing boxes has been significantly reduced. This has been achieved by incorporating the following features in to the design:-

- The stuffing box has a conventional hydraulic packing nut complete with packing that can be operated in the event of losing the grease seal.
- The grease ports have stainless steel swivel manifolds complete with quick release couplings. This prevents the hoses from protruding from the head where they could be knocked-off and makes them easier to manhandle while changing tools out. Optional; A plastic shroud can be attached to protect the swivel from dropping objects.
- The sheave bracket includes spring loaded keepers.

Liquid Seal Stuffing Boxes 5,000 & 10,000 psi

Working Pressure	Quick Union	Type	Wire Size	Part Number	Redress Kit
5,000 psi	5-1/2"-4x2'B'Type	Hydraulic	0.108"	0074-00014-TIS	0074-00014-KIT
5,000 psi	5-1/2"-4x2'B'Type	Hydraulic	0.125"	0074-00015-TIS	0074-00015-KIT
5,000 psi	5"-4Thd'O'Type	Hydraulic	0.108"	0074-00016-TIS	0074-00016-KIT
5,000 psi	5"-4Thd'O'Type	Hydraulic	0.125"	0074-00017-TIS	0074-00017-KIT
10,000 psi	6-5/16"-4Thd'B'Type	Hydraulic	0.108"	0074-00018-TIS	0074-00018-KIT
10,000 psi	6-5/16"-4Thd'B'Type	Hydraulic	0.125"	0074-00019-TIS	0074-00019-KIT
10,000 psi	5-3/4"-4Thd'O'Type	Hydraulic	0.108"	0074-00013-TIS	0074-00013-KIT
10,000 psi	5-3/4"-4Thd'O'Type	Hydraulic	0.125"	0074-00012-TIS	0074-00012-KIT



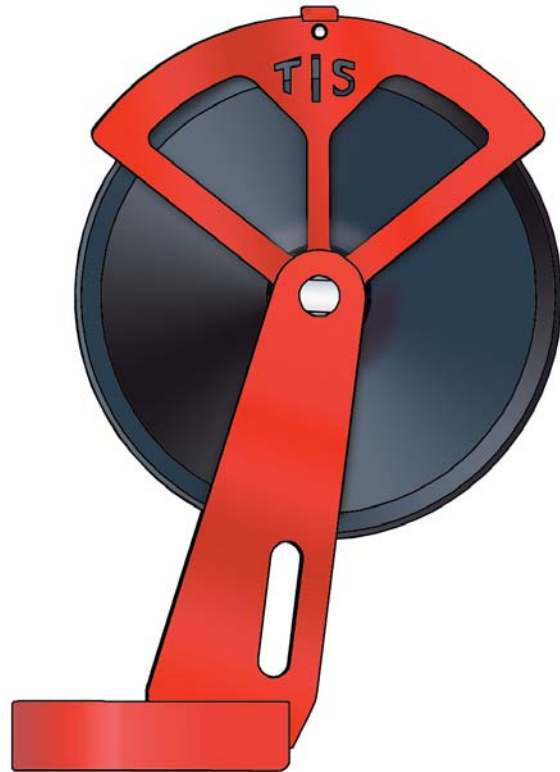
Liquid Seal Flow Tube Sets

Wire Size	Part Number
0.108"	0033-00020-TIS
0.125"	0033-00009-TIS

Lightweight Top Sheaves



The TIS Lightweight Top Sheave and Bracket sub-assembly comprises of a lightweight composite sheave wheel, bracket and bearings. Composite spring loaded wire keeper blocks prevent the wire from jumping out of the wheel when rigging up. Sheave bracket bearings allow the sheave to rotate to line-up with the bottom pulley. The sheave bracket is mounted to the stuffing box on adjustable heavy duty taper roller bearings which are fitted with seals, top and bottom.



Top Sheaves

Max Wire Size	Wheel Size	Max Line Pull	Part Number	
0.125"	16"	3,600 lbs	SH-A-4002	
0.125"	16"	3,600 lbs	SH-A-4003	*
0.125"	16"	3,600 lbs	SH-A-4004	**
0.160"	20"	4,250 lbs	SH-A-4005	

* To suit B type stuffing box

** Easy de-mountable type



Grease Injection Heads



TIS Grease Injection Control Heads are installed on top of the lubricator stack and are used to facilitate a seal and retain well pressure around moving and stationary braided line. The operator friendly lightweight construction makes them especially good for man handling. They have been specially designed to increase the field service life of the cable. Our unique short series, flow tube design, significantly reduces the overall height of the assembly, making them particularly useful where there is a height restriction.

The operational effectiveness of grease injection control heads is dependent on the well pressure, flow tube clearance, number of flow tubes, temperature and the type of grease being used. TIS Grease injection control heads can be very easily set up by the operator, to suit the cable size being run and subsequent well conditions.

Typically, a standard (10K) head comprises of the following

1. Quick union pin & collar connection with integral ball safety check.
2. Four flow tubes.
3. Grease injection and return manifolds.
4. Hydraulic pack off sub-assembly.
5. Optional hydraulic line wiper assembly.

The TIS Grease Injection Control Head range is available with the following options

- 5,000 Psi, 10,000 Psi and 15,000 Psi working pressures.
- Standard or sour service.
- Service temperature range of -29 to +121 Degrees C.
- Choice of quick union connections.
- Choice of cable size.

Technical features include

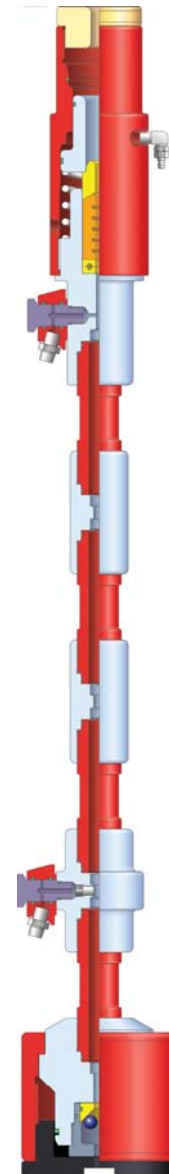
- Integral ball safety check valve within the quick union pin connection.
- Special TIS swivel unions on grease injection and return manifolds, allow the operator to place the hoses neatly to the best operating position.
- The grease injection port is fitted with an integral safety check valve.
- Unique short series, flow tube design reduces operating height.
- Compact pack off rubber design reduces operating height.
- Upper and lower bushings are manufactured from Brass material to increase the field life of the cable.
- Facility to install a hydraulic line wiper assembly. A Brass wear bushing is provided on the top of the pack off sub-assembly. The wear bushing is removed to install the line wiper.

Grease Injection Heads

Working Pressure	Quick Union	Wire Size	Part Number	Redress Kit
5,000 psi	5-1/2"-4x2'B' Type	3/16"	0033-00029-TIS	0033-00029-KIT
5,000 psi	5-1/2"-4x2'B' Type	7/32"	0033-00030-TIS	0033-00030-KIT
5,000 psi	5-1/2"-4x2'B' Type	5/16"	0033-00031-TIS	0033-00031-KIT
5,000 psi	5"-4Thd'O' Type	3/16"	0033-00032-TIS	0033-00032-KIT
5,000 psi	5"-4Thd'O' Type	7/32"	0033-00033-TIS	0033-00033-KIT
5,000 psi	5"-4Thd'O' Type	5/16"	0033-00034-TIS	0033-00034-KIT
10,000 psi	6-5/16"-4Thd'B' Type	3/16"	0033-00026-TIS	0033-00026-KIT
10,000 psi	6-5/16"-4Thd'B' Type	7/32"	0033-00027-TIS	0033-00027-KIT
10,000 psi	6-5/16"-4Thd'B' Type	5/16"	0033-00028-TIS	0033-00028-KIT
10,000 psi	5-3/4"-4Thd'O' Type	3/16"	0033-00025-TIS	0033-00025-KIT
10,000 psi	5-3/4"-4Thd'O' Type	7/32"	0033-00007-TIS	0033-00007-KIT
10,000 psi	5-3/4"-4Thd'O' Type	5/16"	0033-00024-TIS	0033-00024-KIT

Flow Tube Sets

Nom. Cable Size	Max. Wire Dia.	Part Number
3/16"	0.184"	0033-00016-TIS
3/16"	0.189"	0033-00012-TIS
3/16"	0.192"	0033-00017-TIS
3/16"	0.197"	0033-00023-TIS
7/32"	0.215"	0033-00015-TIS
7/32"	0.219"	0033-00011-TIS
7/32"	0.223"	0033-00009-TIS
7/32"	0.227"	0033-00013-TIS
5/16"	0.309"	0033-00019-TIS
5/16"	0.314"	0033-00020-TIS
5/16"	0.317"	0033-00021-TIS
5/16"	0.321"	0033-00022-TIS



Grease Injection Head

Hydraulic Line Wipers



TIS hydraulic line wiper assemblies are used in conjunction with our standard grease injection control heads. Installed in to the top of the grease head the line wiper is used to remove excess grease from the braided cable when retrieving tools from the well. The packing element is hydraulically energised around the cable removing the grease. A drain port on the side allows the grease to migrate down a hose to a waste bucket.

Hydraulic Line Wipers

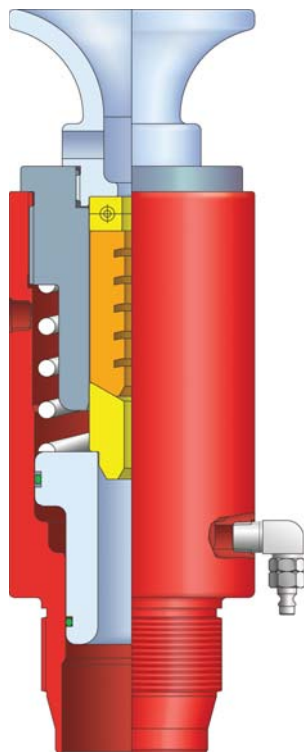
Wire Size	Part Number	Redress Kit
3/16" Dia.	0033-00005-TIS	0033-00005-KIT
7/32" Dia.	0033-00008-TIS	0033-00008-KIT
5/16" Dia.	0033-00035-TIS	0033-00035-KIT

The TIS line wiper range is available with the following options

- Choice of connection, TIS acme or quick union.
- Choice of cable size.

Technical features include

- Compact packing element design reduces operating height.
- Upper and lower bushings are manufactured from Brass material to increase the field life of the cable.



Greasehead with Line Wiper

Swabbing Heads



TIS Swabbing head assemblies are installed on top of the lubricator stack and are used to retain a low pressure fluid seal around braided cable during swabbing operations.

The TIS swabbing head range is available with the following options

- 5,000 Psi, working pressure.
- Standard service.
- Choice of quick union connection.
- Choice of cable size.

Technical features include

- Ball safety check valve in male quick union connection.
- Compact packing element design reduces operating height.
- Upper and lower bushings are manufactured from Brass material to increase the field life of the cable.

Swab Head

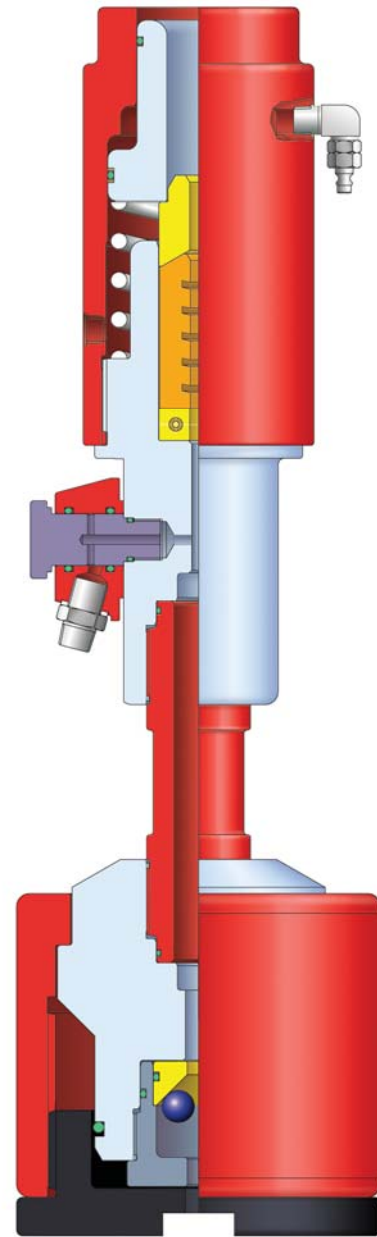
5,000 psi

Quick Union	Wire Size	Part Number	ReDress Kit
5-1/2"-4x2'B'Type	3/16" Dia.	0033-00036-TIS	0033-00036-KIT
5-1/2"-4x2'B'Type	7/32" Dia.	0033-00037-TIS	0033-00037-KIT
5-1/2"-4x2'B'Type	5/16" Dia."	0033-00038-TIS	0033-00038-KIT
5"-4Thd'O'Type	3/16" Dia.	0033-00039-TIS	0033-00039-KIT
5"-4Thd'O'Type	7/32" Dia.	0033-00040-TIS	0033-00040-KIT
5"-4Thd'O'Type	5/16" Dia.	0033-00041-TIS	0033-00041-KIT

Swab Head Flow Tube Sets

5,000 psi

Quick Union	Max Wire Size	Part Number	Redress Kit
3/16"	0.184" Dia.	0033-00042-TIS	0033-00042-KIT
3/16"	0.189" Dia.	0033-00043-TIS	0033-00043-KIT
3/16"	0.192" Dia."	0033-00044-TIS	0033-00044-KIT
3/16"	0.197" Dia.	0033-00045-TIS	0033-00045-KIT
7/32"	0.215" Dia.	0033-00046-TIS	0033-00046-KIT
7/32"	0.219" Dia.	0033-00047-TIS	0033-00047-KIT
7/32"	0.223" Dia.	0033-00048-TIS	0033-00048-KIT
7/32"	0.227" Dia.	0033-00049-TIS	0033-00049-KIT
5/16"	0.309" Dia.	0033-00050-TIS	0033-00050-KIT
5/16"	0.314" Dia.	0033-00051-TIS	0033-00051-KIT
5/16"	0.317" Dia.	0033-00052-TIS	0033-00052-KIT
5/16"	0.321" Dia.	0033-00053-TIS	0033-00053-KIT



Swabbing Head

TIS Pump-in tees are designed to facilitate a sizeable fluid flow entry path into the surface pressure control equipment during well stimulation or hydrostatic testing operations.

Pump-In Tees 5,000 psi & 10,000 psi

TIS offer two types of pump-in tee assemblies

1. Conventional types, typically each assembly comprises of; an extended female quick union connection with thread half side outlet(s) and quick union pin and collar.
2. Integral types, comprising of a one-piece body with integral quick union connections and thread half side outlet(s). The quick union collar being retained on to the body by means of a special TIS segment set.

The TIS pump-in tee range is available with the following options

- 3.00" ID to 9.00" ID Through bores.
- 5,000 Psi, 10,000 Psi and 15,000 Psi working pressures.
- Standard or sour service.
- Service temperature range of -29 to +121 Degrees C.
- Choice of quick union or API flanged connections.
- Single or dual side connections.
- A choice of connection on thread half, side outlet.
- A choice of connection used to attach the thread half to the main body.

Technical features include

- Unless specified otherwise, all pump-in tee assemblies with working pressures up to 10,000 Psi will be provided with FIG 2" 1502 thread half connections.
- The choice of connection used to connect thread half to the body include:- Integral, acme or line-pipe screwed connection, standard API flange connection or a special TIS flange connection.

Thro' Bore	Working Pressure	Quick Union	Part Number	Redress kit
3.00"	5,000 psi	5-1/2"-4x2'B'Type	0072-00020-TIS	0072-00020-KIT
3.00"	5,000 psi	5"-4Thd'O'Type	0072-00021-TIS	0072-00021-KIT
3.00"	10,000 psi	6-5/16"-4Thd'B'Type	0072-00007-TIS	0072-00007-KIT
3.00"	10,000 psi	5-3/4"-4Thd'O'Type	0072-00013-TIS	0072-00013-KIT
4.00"	5,000 psi	7"-5Thd'B'Type	0072-00022-TIS	0072-00022-KIT
4.00"	5,000 psi	6-1/2"-4Thd'O'Type	0072-00023-TIS	0072-00023-KIT
4.00"	10,000 psi	8-1/4"-4x2'B'Type (10k)	0072-00017-TIS	0072-00017-KIT
4.00"	10,000 psi	8-3/8"-4Thd'O'Type	0072-00014-TIS	0072-00014-KIT
5-1/8"	5,000 psi	8-1/4"-4x2'B'Type (5k)	0072-00024-TIS	0072-00024-KIT
5-1/8"	5,000 psi	8-1/4"-4Thd'O'Type	0072-00025-TIS	0072-00025-KIT
5-1/8"	10,000 psi	8-7/8"-4x2'B'Type	0072-00018-TIS	0072-00018-KIT
5-1/8"	10,000 psi	9"-4Thd'O'Type	0072-00004-TIS	0072-00004-KIT
6-5/8"	5,000 psi	9-7/8"-4x2'B'Type	0072-00015-TIS	0072-00015-KIT
6-5/8"	5,000 psi	9-1/2"-4Thd'O'Type	0072-00001-TIS	0072-00001-KIT
6-5/8"	10,000 psi	13"-4Thd'B'Type	0072-00019-TIS	0072-00019-KIT
6-5/8"	10,000 psi	11-1/2"-4Thd'O'Type	0072-00010-TIS	0072-00010-KIT



**Conventional
Pump In Tee**

In-Situ Test Subs



TIS pressure in-situ test subs are installed between the lower lubricator section and the wireline valve and are designed to significantly reduce operating costs, by removing the need to pressure test with glycol before every wireline run. After the initial pressure test of the complete pressure control package, the tools are changed out via the special TIS acme, secondary quick union connection on the pressure test sub. The secondary quick union connection has stepped seal bore diameters complete with o' ring seals and an injection port, that allows the union to be externally pressure tested. Due to the small volume of fluid required, testing of the secondary union can be carried out with a hand pump.

In-Situ test Subs 5,000 & 10,000 psi

Thro' Bore	Working Pressure	Quick Union	Part Number	Redress Kit
3.00"	5,000 psi	5-1/2"-4x2'B'Type	0044-00008-TIS	0044-00008-KIT
3.00"	5,000 psi	5"-4Thd'O'Type	0044-00009-TIS	0044-00009-KIT
3.00"	10,000 psi	6-5/16"-4Thd'B'	0044-00010-TIS	0044-00010-KIT
3.00"	10,000 psi	5-3/4"-4Thd'O'Type	0044-00011-TIS	0044-00011-KIT
4.00"	5,000 psi	7"-5Thd'B'Type	0044-00012-TIS	0044-00012-KIT
4.00"	5,000 psi	6-1/2"-4Thd'O'Type	0044-00013-TIS	0044-00013-KIT
4.00"	10,000 psi	8-1/4"-4x2'B'Type (10k)	0044-00014-TIS	0044-00014-KIT
4.00"	10,000 psi	8-3/8"-4Thd'O'Type	0044-00015-TIS	0044-00015-KIT
5-1/8"	5,000 psi	8-1/4"-4x2'B'Type	0044-00016-TIS	0044-00016-KIT
5-1/8"	5,000 psi	8-1/4"-4Thd'O'Type (5k)	0044-00017-TIS	0044-00017-KIT
5-1/8"	10,000 psi	8-7/8"-4x2'B'Type	0044-00018-TIS	0044-00018-KIT
5-1/8"	10,000 psi	9"-4Thd'O'Type	0044-00004-TIS	0044-00004-KIT
6-5/8"	5,000 psi	9-7/8"-4x2'B'Type	0044-00019-TIS	0044-00019-KIT
6-5/8"	5,000 psi	9-1/2"-4Thd'O'Type	0044-00020-TIS	0044-00020-KIT
6-5/8"	10,000 psi	13"-4Thd'B'Type	0044-00021-TIS	0044-00021-KIT
6-5/8"	10,000 psi	11-1/2"-4Thd'O'Type	0044-00002-TIS	0044-00002-KIT

The TIS pressure test sub range is available with the following options

- 3.00" ID to 9.00" ID Through bores.
- Standard or sour service.
- 5,000 Psi, 10,000 Psi and 15,000 Psi, working pressures.
- Service temperature range of -29 to +121 Degrees C.
- Choice of primary quick union connection.

Technical features include

- TIS pressure test subs have an isolation valve built into the injection manifold, allowing the operator to shut off the port after testing. This safety feature prevents well pressure from migrating to the hand pump, in the event of an o' ring failure.
- The injection manifold also has a TIS swivel union, which allows the operator to place the hose neatly to the best operating position.



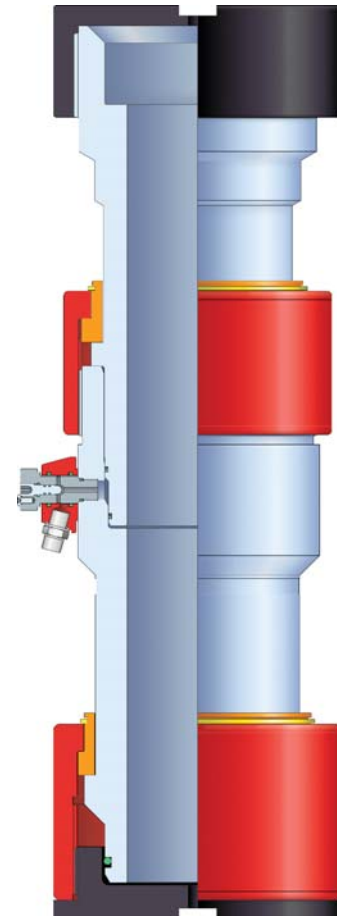
In Situ Lift/Test Cap

In Situ Lift/Test Caps

Size	Working Pressure	Safe Working Load	Part Number
3"	10,000 psi	5 Ton	0044-00024-TIS
4"	10,000 psi	5 Ton	0044-00025-TIS
5-1/8"	10,000 psi	5 Ton	0044-00005-TIS
6-5/8"	10,000 psi	5 Ton	0044-00003-TIS



In-Situ Test Sub



Rig-Up Dollies



TIS Quick union rig up dollies are designed to assist personnel safely whilst handling the lubricator stack from the horizontal to the vertical and vice-versa, when rigging up and rigging down from the wellhead.

As the lubricator stack is raised and lowered, the weight is distributed evenly through the wheels while safely maintaining the best lifting angle.

The TIS rig-up dolly range is available with the following options

- Choice of quick union connections.
- Choice of wheel and axle size.

Technical features include

- Lightweight plastic construction.
- Detachable stainless steel axle with plastic wheels.

Rig-up Dollies

Quick Union	Dolly Part Number	Wheel Set Part Number
5-1/2"-4x2'B'Type	0059-00011-C	RD-A-1007
5"-4Thd'O'Type	0045-00020-C	RD-A-1007
6-5/16"-4Thd'B'	0061-00036-C	RD-A-1007
5-3/4"-4Thd'O'Type	0046-00031-C	RD-A-1007
7"-5Thd'B'Type	0063-00014-C	RD-A-1007
6-1/2"-4Thd'O'Type	0047-00025-C	RD-A-1007
8-1/4"-4x2'B'Type (10k)	0065-00013-C	RD-A-1008
8-3/8"-4Thd'O'Type	0053-00014-C	RD-A-1008
8-1/4"-4x2'B'Type (5k)	0064-00022-C	RD-A-1008
8-1/4"-4Thd'O'Type	0052-00002-C	RD-A-1008
8-7/8"-4x2'B'Type	0078-00001-C	RD-A-1008
9"-4Thd'O'Type	0054-00023-C	RD-A-1008
9-7/8"-4x2'B'Type	0066-00001-C	RD-A-1008
9-1/2"-4Thd'O'Type	0055-00007-C	RD-A-1008
13"-4Thd'B'Type	0067-00007-C	RD-A-1009
11-1/2"-4Thd'O'Type	0056-00006-C	RD-A-1009



Rig Up Dolly

Lubricator & Riser Sections



TIS Lubricator & riser sections are pressure retaining cylinders used during well intervention operations, for tool deployment. Sections can be made-up together with an appropriate sealing device, to form an effectual operating height to retain the tool string complete with sub-surface deployment tool(s) being run or Retrieved from the well.

TIS offer two types of lubricator and riser sections

1. Conventional types, typically each assembly comprises of; lubricator tube, double box collar complete with bleed port(s), quick union pin and collar down and quick union box up.
2. Integral types, comprising of a one-piece tube with integral quick union connections and upset containing a bleed port (optional). The quick union collar being retained on to the tube by means of a special TIS segment set.

The TIS lubricator and riser section range is available with the following options

- 3.00" ID to 9.00" ID Through bores.
- 3ft to 20ft length options
- 5,000 Psi, 10,000 Psi and 15,000 Psi working pressures.
- Standard or sour service.
- Service temperature range of -29 to +121 Degrees C.
- Choice of quick union or API flanged connections.
- Choice of bleed port connections.

Technical features include

- On conventional lubricators, the component parts are screwed together by means of a special TIS acme connection, which has a primary o-ring seal and secondary metal to metal seal.
- On integral type lubricators, the quick union collars can be very quickly and easily removed for cleaning, inspection, etc.
- Integral lubricator sections can also be provided with an optional full re-cut facility on quick union connections.



Conventional Lubricators 5,000 & 10,000 psi

Thro' Bore	Working Pressure	Quick Union	Length	1/2" NPT Port	Part Number	Redress Kit
3.00"	5,000 psi	5-1/2"-4x2'B' Type	6 Feet	None	0037-00030-TIS	0037-00030-KIT
3.00"	5,000 psi	5-1/2"-4x2'B' Type	8 Feet	None	0037-00031-TIS	0037-00031-KIT
3.00"	5,000 psi	5-1/2"-4x2'B' Type	10 Feet	None	0037-00032-TIS	0037-00032-KIT
3.00"	5,000 psi	5-1/2"-4x2'B' Type	6 Feet	1 off	0037-00033-TIS	0037-00033-KIT
3.00"	5,000 psi	5-1/2"-4x2'B' Type	8 Feet	1 off	0037-00034-TIS	0037-00034-KIT
3.00"	5,000 psi	5-1/2"-4x2'B' Type	10 Feet	1 off	0037-00035-TIS	0037-00035-KIT
3.00"	5,000 psi	5"-4Thd'O' Type	6 Feet	None	0037-00036-TIS	0037-00036-KIT
3.00"	5,000 psi	5"-4Thd'O' Type	8 Feet	None	0037-00037-TIS	0037-00037-KIT
3.00"	5,000 psi	5"-4Thd'O' Type	10 Feet	None	0037-00038-TIS	0037-00038-KIT
3.00"	5,000 psi	5"-4Thd'O' Type	6 Feet	1 off	0037-00019-TIS	0037-00019-KIT
3.00"	5,000 psi	5"-4Thd'O' Type	8 Feet	1 off	0037-00039-TIS	0037-00039-KIT
3.00"	5,000 psi	5"-4Thd'O' Type	10 Feet	1 off	0037-00018-TIS	0037-00018-KIT
3.00"	10,000 psi	6-5/16"-4Thd'B' Type	6 Feet	None	0037-00040-TIS	0037-00040-KIT
3.00"	10,000 psi	6-5/16"-4Thd'B' Type	8 Feet	None	0037-00041-TIS	0037-00041-KIT
3.00"	10,000 psi	6-5/16"-4Thd'B' Type	10 Feet	None	0037-00042-TIS	0037-00042-KIT
3.00"	10,000 psi	6-5/16"-4Thd'B' Type	6 Feet	1 off	0037-00043-TIS	0037-00043-KIT
3.00"	10,000 psi	6-5/16"-4Thd'B' Type	8 Feet	1 off	0037-00044-TIS	0037-00044-KIT
3.00"	10,000 psi	6-5/16"-4Thd'B' Type	10 Feet	1 off	0037-00004-TIS	0037-00004-KIT
3.00"	10,000 psi	5-3/4"-4Thd'O' Type	6 Feet	None	0037-00045-TIS	0037-00045-KIT
3.00"	10,000 psi	5-3/4"-4Thd'O' Type	8 Feet	None	0037-00046-TIS	0037-00046-KIT
3.00"	10,000 psi	5-3/4"-4Thd'O' Type	10 Feet	None	0037-00047-TIS	0037-00047-KIT
3.00"	10,000 psi	5-3/4"-4Thd'O' Type	6 Feet	1 off	0037-00048-TIS	0037-00048-KIT
3.00"	10,000 psi	5-3/4"-4Thd'O' Type	8 Feet	1 off	0037-00015-TIS	0037-00015-KIT
3.00"	10,000 psi	5-3/4"-4Thd'O' Type	10 Feet	1 off	0037-00003-TIS	0037-00003-KIT

Conventional Lubricators 5,000 & 10,000 psi

Thro' Bore	Working Pressure	Quick Union	Length	1/2" NPT Port	Part Number	Redress Kit
4.00"	5,000 psi	7"-5Thd'B' Type	6 Feet	None	0016-00019-TIS	0016-00019-KIT
4.00"	5,000 psi	7"-5Thd'B' Type	8 Feet	None	0016-00020-TIS	0016-00020-KIT
4.00"	5,000 psi	7"-5Thd'B' Type	10 Feet	None	0016-00021-TIS	0016-00021-KIT
4.00"	5,000 psi	7"-5Thd'B' Type	6 Feet	1 off	0016-00022-TIS	0016-00022-KIT
4.00"	5,000 psi	7"-5Thd'B' Type	8 Feet	1 off	0016-00023-TIS	0016-00023-KIT
4.00"	5,000 psi	7"-5Thd'B' Type	10 Feet	1 off	0016-00024-TIS	0016-00024-KIT
4.00"	5,000 psi	6-1/2"-4Thd'O' Type	6 Feet	None	0016-00025-TIS	0016-00025-KIT
4.00"	5,000 psi	6-1/2"-4Thd'O' Type	8 Feet	None	0016-00026-TIS	0016-00026-KIT
4.00"	5,000 psi	6-1/2"-4Thd'O' Type	10 Feet	None	0016-00027-TIS	0016-00027-KIT
4.00"	5,000 psi	6-1/2"-4Thd'O' Type	6 Feet	1 off	0016-00028-TIS	0016-00028-KIT
4.00"	5,000 psi	6-1/2"-4Thd'O' Type	8 Feet	1 off	0016-00029-TIS	0016-00029-KIT
4.00"	5,000 psi	6-1/2"-4Thd'O' Type	10 Feet	1 off	0016-00030-TIS	0016-00030-KIT
4.00"	10,000 psi	8-1/4"-4x2'B' Type (10k)	6 Feet	None	0016-00013-TIS	0016-00013-KIT
4.00"	10,000 psi	8-1/4"-4x2'B' Type (10k)	8 Feet	None	0016-00014-TIS	0016-00014-KIT
4.00"	10,000 psi	8-1/4"-4x2'B' Type (10k)	10 Feet	None	0016-00015-TIS	0016-00015-KIT
4.00"	10,000 psi	8-1/4"-4x2'B' Type (10k)	6 Feet	1 off	0016-00016-TIS	0016-00016-KIT
4.00"	10,000 psi	8-1/4"-4x2'B' Type (10k)	8 Feet	1 off	0016-00017-TIS	0016-00017-KIT
4.00"	10,000 psi	8-1/4"-4x2'B' Type (10k)	10 Feet	1 off	0016-00018-TIS	0016-00018-KIT
4.00"	10,000 psi	8-3/8"-4 Thd'O' Type	6 Feet	None	0016-00010-TIS	0016-00010-KIT
4.00"	10,000 psi	8-3/8"-4 Thd'O' Type	8 Feet	None	0016-00011-TIS	0016-00011-KIT
4.00"	10,000 psi	8-3/8"-4 Thd'O' Type	10 Feet	None	0016-00012-TIS	0016-00012-KIT
4.00"	10,000 psi	8-3/8"-4 Thd'O' Type	6 Feet	1 off	0016-00008-TIS	0016-00008-KIT
4.00"	10,000 psi	8-3/8"-4 Thd'O' Type	8 Feet	1 off	0016-00005-TIS	0016-00005-KIT
4.00"	10,000 psi	8-3/8"-4 Thd'O' Type	10 Feet	1 off	0016-00009-TIS	0016-00009-KIT

Lubricator & Riser Sections



Conventional Lubricators

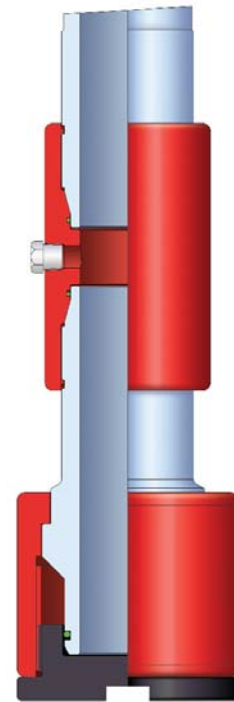
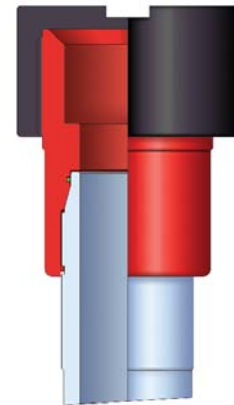
5,000 & 10,000 psi

Thro' Bore	Working Pressure	Quick Union	Length	1/2" NPT Port	Part Number	Redress Kit
5.12"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	6 Feet	None	0039-00012-TIS	0039-00012-KIT
5.12"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	8 Feet	None	0039-00013-TIS	0039-00013-KIT
5.12"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	10 Feet	None	0039-00014-TIS	0039-00014-KIT
5.12"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	6 Feet	1 off	0039-00015-TIS	0039-00015-KIT
5.12"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	8 Feet	1 off	0039-00016-TIS	0039-00016-KIT
5.12"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	10 Feet	1 off	0039-00017-TIS	0039-00017-KIT
5.12"	5,000 psi	8-1/4"-4Thd 'O' Type	6 Feet	None	0039-00018-TIS	0039-00018-KIT
5.12"	5,000 psi	8-1/4"-4Thd 'O' Type	8 Feet	None	0039-00019-TIS	0039-00019-KIT
5.12"	5,000 psi	8-1/4"-4Thd 'O' Type	10 Feet	None	0039-00020-TIS	0039-00020-KIT
5.12"	5,000 psi	8-1/4"-4Thd 'O' Type	6 Feet	1 off	0039-00021-TIS	0039-00021-KIT
5.12"	5,000 psi	8-1/4"-4Thd 'O' Type	8 Feet	1 off	0039-00022-TIS	0039-00022-KIT
5.12"	5,000 psi	8-1/4"-4Thd 'O' Type	10 Feet	1 off	0039-00023-TIS	0039-00023-KIT
5.12"	10,000 psi	8-7/8"-4x2 'B' Type	6 Feet	None	0039-00028-TIS	0039-00028-KIT
5.12"	10,000 psi	8-7/8"-4x2 'B' Type	8 Feet	None	0039-00029-TIS	0039-00029-KIT
5.12"	10,000 psi	8-7/8"-4x2 'B' Type	10 Feet	None	0039-00030-TIS	0039-00030-KIT
5.12"	10,000 psi	8-7/8"-4x2 'B' Type	6 Feet	1 off	0039-00025-TIS	0039-00025-KIT
5.12"	10,000 psi	8-7/8"-4x2 'B' Type	8 Feet	1 off	0039-00026-TIS	0039-00026-KIT
5.12"	10,000 psi	8-7/8"-4x2 'B' Type	10 Feet	1 off	0039-00027-TIS	0039-00027-KIT
5.12"	10,000 psi	9"-4Thd 'O' Type	6 Feet	None	0039-00031-TIS	0039-00031-KIT
5.12"	10,000 psi	9"-4Thd 'O' Type	8 Feet	None	0039-00032-TIS	0039-00032-KIT
5.12"	10,000 psi	9"-4Thd 'O' Type	10 Feet	None	0039-00033-TIS	0039-00033-KIT
5.12"	10,000 psi	9"-4Thd 'O' Type	6 Feet	1 off	0039-00024-TIS	0039-00024-KIT
5.12"	10,000 psi	9"-4Thd 'O' Type	8 Feet	1 off	0039-00009-TIS	0039-00009-KIT
5.12"	10,000 psi	9"-4Thd 'O' Type	10 Feet	1 off	0039-00005-TIS	0039-00005-KIT

Conventional Lubricators

5,000 & 10,000 psi

Thro' Bore	Working Pressure	Quick Union	Length	1/2" NPT Port	Part Number	Redress Kit
6-5/8"	5,000 psi	9-1/2"-4Thd 'O' Type	6 Feet	None	0038-00017-TIS	0038-00017-KIT
6-5/8"	5,000 psi	9-1/2"-4Thd 'O' Type	8 Feet	None	0038-00018-TIS	0038-00018-KIT
6-5/8"	5,000 psi	9-1/2"-4Thd 'O' Type	10 Feet	None	0038-00019-TIS	0038-00019-KIT
6-5/8"	5,000 psi	9-1/2"-4Thd 'O' Type	6 Feet	1 off	0038-00020-TIS	0038-00020-KIT
6-5/8"	5,000 psi	9-1/2"-4Thd 'O' Type	8 Feet	1 off	0038-00021-TIS	0038-00021-KIT
6-5/8"	5,000 psi	9-1/2"-4Thd 'O' Type	10 Feet	1 off	0038-00022-TIS	0038-00022-KIT
6-5/8"	5,000 psi	9-7/8"-4x2 'B' Type	6 Feet	None	0038-00014-TIS	0038-00014-KIT
6-5/8"	5,000 psi	9-7/8"-4x2 'B' Type	8 Feet	None	0038-00015-TIS	0038-00015-KIT
6-5/8"	5,000 psi	9-7/8"-4x2 'B' Type	10 Feet	None	0038-00016-TIS	0038-00016-KIT
6-5/8"	5,000 psi	9-7/8"-4x2 'B' Type	6 Feet	1 off	0038-00024-TIS	0038-00024-KIT
6-5/8"	5,000 psi	9-7/8"-4x2 'B' Type	8 Feet	1 off	0038-00025-TIS	0038-00025-KIT
6-5/8"	5,000 psi	9-7/8"-4x2 'B' Type	10 Feet	1 off	0038-00023-TIS	0038-00023-KIT
6-5/8"	10,000 psi	11-1/2 -4 Thd 'O' Type	6 Feet	None	0038-00011-TIS	0038-00011-KIT
6-5/8"	10,000 psi	11-1/2 -4 Thd 'O' Type	8 Feet	None	0038-00012-TIS	0038-00012-KIT
6-5/8"	10,000 psi	11-1/2 -4 Thd 'O' Type	10 Feet	None	0038-00013-TIS	0038-00013-KIT
6-5/8"	10,000 psi	11-1/2 -4 Thd 'O' Type	6 Feet	1 off	0038-00004-TIS	0038-00004-KIT
6-5/8"	10,000 psi	11-1/2 -4 Thd 'O' Type	8 Feet	1 off	0038-00001-TIS	0038-00001-KIT
6-5/8"	10,000 psi	11-1/2 -4 Thd 'O' Type	10 Feet	1 off	0038-00003-TIS	0038-00003-KIT
6-5/8"	10,000 psi	13"-4Thd 'B' Type	6 Feet	None	0038-00008-TIS	0038-00008-KIT
6-5/8"	10,000 psi	13"-4Thd 'B' Type	8 Feet	None	0038-00009-TIS	0038-00009-KIT
6-5/8"	10,000 psi	13"-4Thd 'B' Type	10 Feet	None	0038-00010-TIS	0038-00010-KIT
6-5/8"	10,000 psi	13"-4Thd 'B' Type	6 Feet	1 off	0038-00005-TIS	0038-00005-KIT
6-5/8"	10,000 psi	13"-4Thd 'B' Type	8 Feet	1 off	0038-00006-TIS	0038-00006-KIT
6-5/8"	10,000 psi	13"-4Thd 'B' Type	10 Feet	1 off	0038-00007-TIS	0038-00007-KIT



Conventional Lubricator

Integral Lubricators

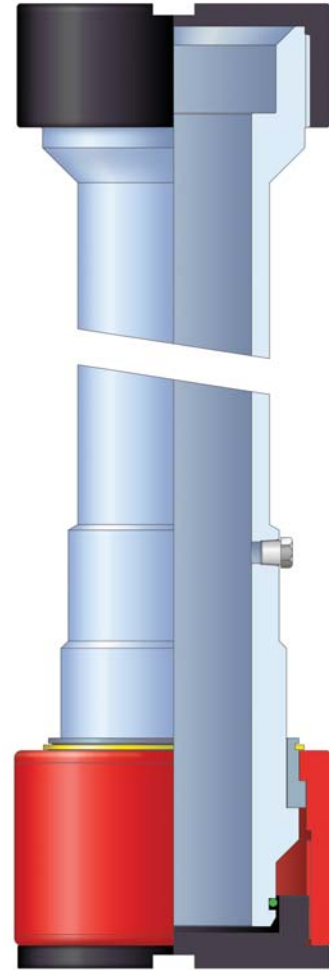
5,000 & 10,000 psi
With NPT Port

Thro' Bore	Working Pressure	Quick Union	Length	Part Number	Redress Kit
3.00"	5,000 psi	5-1/2"-4x2 'B' Type	6 Feet	0037-00051-TIS	0037-00051-KIT
3.00"	5,000 psi	5-1/2"-4x2 'B' Type	8 Feet	0037-00052-TIS	0037-00052-KIT
3.00"	5,000 psi	5-1/2"-4x2 'B' Type	10 Feet	0037-00053-TIS	0037-00053-KIT
3.00"	5,000 psi	5"-4Thd 'O' Type	6 Feet	0037-00049-TIS	0037-00049-KIT
3.00"	5,000 psi	5"-4Thd 'O' Type	8 Feet	0037-00021-TIS	0037-00021-KIT
3.00"	5,000 psi	5"-4Thd 'O' Type	10 Feet	0037-00050-TIS	0037-00050-KIT
3.00"	10,000 psi	6-5/16"-4Thd 'B' Type	6 Feet	0037-00054-TIS	0037-00054-KIT
3.00"	10,000 psi	6-5/16"-4Thd 'B' Type	8 Feet	0037-00055-TIS	0037-00055-KIT
3.00"	10,000 psi	6-5/16"-4Thd 'B' Type	10 Feet	0037-00056-TIS	0037-00056-KIT
3.00"	10,000 psi	5-3/4"-4Thd 'O' Type	6 Feet	0037-00057-TIS	0037-00057-KIT
3.00"	10,000 psi	5-3/4"-4Thd 'O' Type	8 Feet	0037-00058-TIS	0037-00058-KIT
3.00"	10,000 psi	5-3/4"-4Thd 'O' Type	10 Feet	0037-00059-TIS	0037-00059-KIT
4.00"	5,000 psi	7"-5Thd 'B' Type	6 Feet	0016-00031-TIS	0016-00031-KIT
4.00"	5,000 psi	7"-5Thd 'B' Type	8 Feet	0016-00032-TIS	0016-00032-KIT
4.00"	5,000 psi	7"-5Thd 'B' Type	10 Feet	0016-00033-TIS	0016-00033-KIT
4.00"	5,000 psi	6-1/2"-4Thd 'O' Type	6 Feet	0016-00034-TIS	0016-00034-KIT
4.00"	5,000 psi	6-1/2"-4Thd 'O' Type	8 Feet	0016-00035-TIS	0016-00035-KIT
4.00"	5,000 psi	6-1/2"-4Thd 'O' Type	10 Feet	0016-00036-TIS	0016-00036-KIT
4.00"	10,000 psi	8-1/4"-4x2 'B' Type (10k)	6 Feet	0016-00037-TIS	0016-00037-KIT
4.00"	10,000 psi	8-1/4"-4x2 'B' Type (10k)	8 Feet	0016-00038-TIS	0016-00038-KIT
4.00"	10,000 psi	8-1/4"-4x2 'B' Type (10k)	10 Feet	0016-00039-TIS	0016-00039-KIT
4.00"	10,000 psi	8-3/8"-4Thd 'O' Type	6 Feet	0016-00040-TIS	0016-00040-KIT
4.00"	10,000 psi	8-3/8"-4Thd 'O' Type	8 Feet	0016-00041-TIS	0016-00041-KIT
4.00"	10,000 psi	8-3/8"-4Thd 'O' Type	10 Feet	0016-00042-TIS	0016-00042-KIT

Integral Lubricators

5,000 & 10,000 psi
With NPT Port

Thro' Bore	Working Pressure	Quick Union	Length	Part Number	Redress Kit
5.12"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	6 Feet	0039-00042-TIS	0039-00042-KIT
5.12"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	8 Feet	0039-00043-TIS	0039-00043-KIT
5.12"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	10 Feet	0039-00044-TIS	0039-00044-KIT
5.12"	5,000 psi	8-1/4"-4Thd 'O' Type	6 Feet	0039-00039-TIS	0039-00039-KIT
5.12"	5,000 psi	8-1/4"-4Thd 'O' Type	8 Feet	0039-00040-TIS	0039-00040-KIT
5.12"	5,000 psi	8-1/4"-4Thd 'O' Type	10 Feet	0039-00041-TIS	0039-00041-KIT
5.12"	10,000 psi	8-7/8"-4x2 'B' Type	6 Feet	0039-00036-TIS	0039-00036-KIT
5.12"	10,000 psi	8-7/8"-4x2 'B' Type	8 Feet	0039-00037-TIS	0039-00037-KIT
5.12"	10,000 psi	8-7/8"-4x2 'B' Type	10 Feet	0039-00038-TIS	0039-00038-KIT
5.12"	10,000 psi	9"-4Thd 'O' Type	6 Feet	0039-00035-TIS	0039-00035-KIT
5.12"	10,000 psi	9"-4Thd 'O' Type	8 Feet	0039-00006-TIS	0039-00006-KIT
5.12"	10,000 psi	9"-4Thd 'O' Type	10 Feet	0039-00001-TIS	0039-00001-KIT
6-5.8"	5,000 psi	9-7/8"-4x2 'B' Type	6 Feet	0038-00026-TIS	0038-00026-KIT
6-5.8"	5,000 psi	9-7/8"-4x2 'B' Type	8 Feet	0038-00027-TIS	0038-00027-KIT
6-5.8"	5,000 psi	9-7/8"-4x2 'B' Type	10 Feet	0038-00028-TIS	0038-00028-KIT
6-5.8"	5,000 psi	9-1/2"-4Thd 'O' Type	6 Feet	0038-00029-TIS	0038-00029-KIT
6-5.8"	5,000 psi	9-1/2"-4Thd 'O' Type	8 Feet	0038-00030-TIS	0038-00030-KIT
6-5.8"	5,000 psi	9-1/2"-4Thd 'O' Type	10 Feet	0038-00031-TIS	0038-00031-KIT
6-5.8"	10,000 psi	13"-4Thd 'B' Type	6 Feet	0038-00032-TIS	0038-00032-KIT
6-5.8"	10,000 psi	13"-4Thd 'B' Type	8 Feet	0038-00033-TIS	0038-00033-KIT
6-5.8"	10,000 psi	13"-4Thd 'B' Type	10 Feet	0038-00034-TIS	0038-00034-KIT
6-5.8"	10,000 psi	11-1/2"-4Thd 'O' Type	6 Feet	0038-00035-TIS	0038-00035-KIT
6-5.8"	10,000 psi	11-1/2"-4Thd 'O' Type	8 Feet	0038-00036-TIS	0038-00036-KIT
6-5.8"	10,000 psi	11-1/2"-4Thd 'O' Type	10 Feet	0038-00037-TIS	0038-00037-KIT



Integral Lubricator

Integral Lubricators

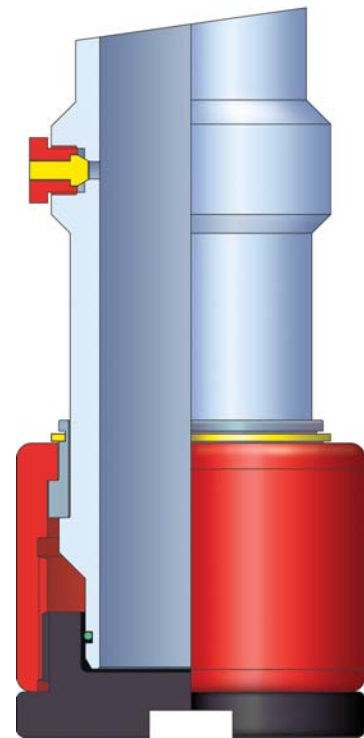
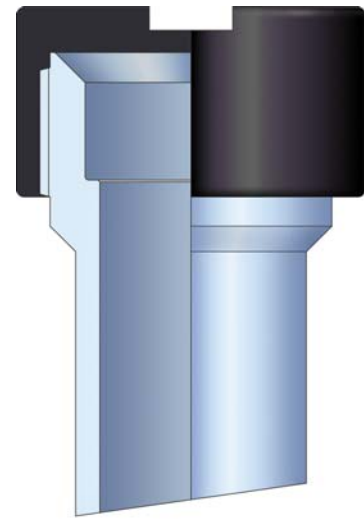


Integral Lubricators

15,000 psi

With high pressure port

Thro' Bore	Quick Union	Length	Part Number	Redress Kit
2-9/16"	6-5/16"-4Thd 'B' Type	6 Feet	0036-00001-TIS	0036-00001-KIT
2-9/16"	6-5/16"-4Thd 'B' Type	8 Feet	0036-00002-TIS	0036-00002-KIT
2-9/16"	6-5/16"-4Thd 'B' Type	10 Feet	0036-00003-TIS	0036-00003-KIT
2-9/16"	6-1/4"-4Thd 'O' Type	6 Feet	0036-00004-TIS	0036-00004-KIT
2-9/16"	6-1/4"-4Thd 'O' Type	8 Feet	0036-00005-TIS	0036-00005-KIT
2-9/16"	6-1/4"-4Thd 'O' Type	10 Feet	0036-00006-TIS	0036-00006-KIT
3.00"	7"-5Thd 'B' Type	8 Feet	0037-00060-TIS	0037-00060-KIT
3.00"	7"-5Thd 'B' Type	8 Feet	0036-00061-TIS	0036-00061-KIT
3.00"	7"-5Thd 'B' Type	10 Feet	0036-00062-TIS	0036-00062-KIT
3.00"	7-1/2"-4Thd 'O' Type	6 Feet	0036-00063-TIS	0036-00063-KIT
3.00"	7-1/2"-4Thd 'O' Type	8 Feet	0036-00064-TIS	0036-00064-KIT
3.00"	7-1/2"-4Thd 'O' Type	10 Feet	0036-00065-TIS	0036-00065-KIT
4.00"	9-1/2"-4Thd 'O' Type	6 Feet	0016-00043-TIS	0016-00043-KIT
4.00"	9-1/2"-4Thd 'O' Type	8 Feet	0016-00044-TIS	0016-00044-KIT
4.00"	9-1/2"-4Thd 'O' Type	10 Feet	0016-00045-TIS	0016-00045-KIT
5-12"	12-1/4"-4Thd 'O' Type	6 Feet	0039-00045-TIS	0039-00045-KIT
5.12"	12-1/4"-4Thd 'O' Type	8 Feet	0039-00046-TIS	0039-00046-KIT
5.12"	12-1/4"-4Thd 'O' Type	10 Feet	0039-00047-TIS	0039-00047-KIT



Integral Lubricator

Crossovers & Tubing Adapters



TIS Quick union crossovers and tubing adapters are designed to provide a transition between different connections used in normal service and during completion operations. With regards to the pressure and service, they are always rated to the lowest rated connection.

Quick Union Crossovers

TIS Quick union crossovers are normally supplied with a pin and collar connection down by a box connection up.

Tubing Adapters

TIS Tubing adapters are designed to be primarily used during completion operations and they typically comprise of a premium or API pin connection down by a quick union box connection up. These types of crossover are normally rated for lower working pressures and require a torque connection on the pin to provide a seal.

The TIS quick union crossover and tubing adapter range is available with the following options

- 5,000 Psi, 10,000 Psi and 15,000 Psi working pressures.
- Standard or sour service.
- Service temperature range of -29 to +121 Degrees C.
- Choice of quick union connections.
- Choice of pin connections.

Technical features include

- Where applicable, on two piece crossovers, component parts are screwed together by means of a special TIS acme connection, which has a primary o-ring seal and secondary metal to metal seal.
- Variations to pin connections on tubing adapters, can be supplied within current API Specifications.



Quick Union Crossovers 5,000 psi & 10,000 psi

Thro' Bore	Working Pressure	Male & Collar Quick Union	Female Quick Union	Part Number	Redress Kit
3.00"	5,000 psi	5-1/2"-4x2 'B' Type	5"-4Thd 'O' Type	0059-00003-TIS	0059-00003-KIT
3.00"	5,000 psi	5-3/4"-4Thd 'O' Type	5-1/2"-4x2 'B' Type	0046-00023-TIS	0046-00023-KIT
3.00"	5,000 psi	5-3/4"-4Thd 'O' Type	5"-4Thd 'O' Type	0046-00024-TIS	0046-00024-KIT
3.00"	5,000 psi	6-5/16"-4Thd 'B' Type	5 1/2"-4X2 'B' Type	0061-00006-TIS	0061-00006-KIT
3.00"	5,000 psi	6-5/16"-4Thd 'B' Type	5"-4Thd 'O' Type	0061-00007-TIS	0061-00007-KIT
3.00"	5,000 psi	6-5/16"-4Thd 'B' Type	5-3/4"-4Thd 'O' Type	0061-00008-TIS	0061-00008-KIT
3.00"	5,000 psi	6-1/2"-4Thd 'O' Type	5-1/2"-4x2 'B' Type	0047-00011-TIS	0047-00011-KIT
3.00"	5,000 psi	6-1/2"-4Thd 'O' Type	5"-4Thd 'O' Type	0047-00012-TIS	0047-00012-KIT
3.00"	5,000 psi	6-1/2"-4Thd 'O' Type	6-5/16"-4Thd 'B' Type	0047-00014-TIS	0047-00014-KIT
3.00"	5,000 psi	6-1/2"-4Thd 'O' Type	5-3/4"-4Thd 'O' Type	0047-00013-TIS	0047-00013-KIT
3.00"	5,000 psi	7"-5Thd 'B' Type	5-1/2"-4x2 'B' Type	0063-00004-TIS	0063-00004-KIT
3.00"	5,000 psi	7"-5Thd 'B' Type	5"-4Thd 'O' Type	0063-00003-TIS	0063-00003-KIT
3.00"	5,000 psi	7"-5Thd 'B' Type	6-5/16"-4Thd 'B' Type	0063-00005-TIS	0063-00005-KIT
3.00"	5,000 psi	7"-5Thd 'B' Type	5-3/4"-4Thd 'O' Type	0063-00006-TIS	0063-00006-KIT
4.00"	5,000 psi	7"-5Thd 'B' Type	6-1/2"-4Thd 'O' Type	0063-00007-TIS	0063-00007-KIT
3.00"	5,000 psi	8-1/4"-4x2 'B' Type (10k)	5-1/2"-4x2 'B' Type	0065-00007-TIS	0065-00007-KIT
3.00"	5,000 psi	8-1/4"-4x2 'B' Type (10k)	5"-4Thd 'O' Type	0065-00006-TIS	0065-00006-KIT
3.00"	10,000 psi	8-1/4"-4x2 'B' Type (10k)	6-5/16"-4Thd 'B' Type	0065-00003-TIS	0065-00003-KIT
3.00"	10,000 psi	8-1/4"-4x2 'B' Type (10k)	5-3/4"-4Thd 'O' Type	0065-00005-TIS	0065-00005-KIT
4.00"	5,000 psi	8-1/4"-4x2 'B' Type (10k)	7"-5Thd 'B' Type	0065-00008-TIS	0065-00008-KIT
4.00"	5,000 psi	8-1/4"-4x2 'B' Type (10k)	6-1/2"-4Thd 'O' Type	0065-00009-TIS	0065-00009-KIT
3.00"	5,000 psi	8-3/8"-4Thd 'O' Type	5-1/2"-4x2 'B' Type	0053-00004-TIS	0053-00004-KIT
3.00"	5,000 psi	8-3/8"-4Thd 'O' Type	5"-4Thd 'O' Type	0053-00005-TIS	0053-00005-KIT
3.00"	10,000 psi	8-3/8"-4Thd 'O' Type	6-5/16"-4Thd 'B' Type	0053-00007-TIS	0053-00007-KIT
3.00"	10,000 psi	8-3/8"-4Thd 'O' Type	5-3/4"-4Thd 'O' Type	0053-00006-TIS	0053-00006-KIT
4.00"	5,000 psi	8-3/8"-4Thd 'O' Type	7"-5Thd 'B' Type	0053-00008-TIS	0053-00008-KIT
4.00"	5,000 psi	8-3/8"-4Thd 'O' Type	6-1/2"-4Thd 'O' Type	0053-00009-TIS	0053-00009-KIT
4.00"	10,000psi	8-3/8"-4Thd 'O' Type	8-1/4"-4x2 'B' Type (10k)	0053-00010-TIS	0053-00010-KIT

Quick Union Crossovers 5,000 psi & 10,000 psi

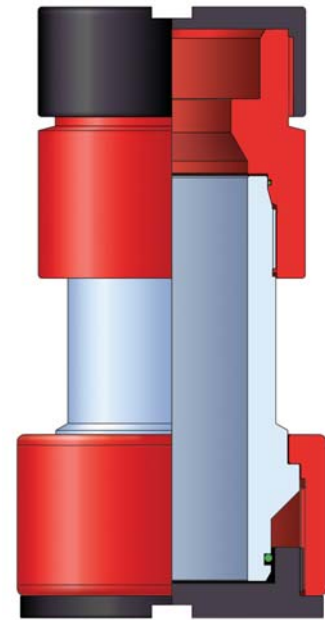
Thro' Bore	Working Pressure	Male & Collar Quick Union	Female Quick Union	Part Number	Redress Kit
3.00"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	5-1/2"-4x2 'B' Type	0064-00005-TIS	0064-00005-KIT
3.00"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	5"-4Thd 'O' Type	0064-00006-TIS	0064-00006-KIT
3.00"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	6-5/16"-4Thd 'B' Type	0064-00002-TIS	0064-00002-KIT
3.00"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	5-3/4"-4Thd 'O' Type	0064-00004-TIS	0064-00004-KIT
4.00"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	7"-5Thd 'B' Type	0064-00007-TIS	0064-00007-KIT
4.00"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	6-1/2"-4Thd 'O' Type	0064-00008-TIS	0064-00008-KIT
4.00"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	8-1/4"-4x2 'B' Type	0064-00009-TIS	0064-00009-KIT
3.00"	5,000 psi	8-1/4"-4Thd 'O' Type	5-1/2"-4x2 'B' Type	0052-00003-TIS	0052-00003-KIT
3.00"	5,000 psi	8-1/4"-4Thd 'O' Type	5"-4Thd 'O' Type	0052-00004-TIS	0052-00004-KIT
3.00"	5,000 psi	8-1/4"-4Thd 'O' Type	6-5/16"-4Thd 'B' Type	0052-00005-TIS	0052-00005-KIT
3.00"	5,000 psi	8-1/4"-4Thd 'O' Type	5-3/4"-4Thd 'O' Type	0052-00006-TIS	0052-00006-KIT
4.00"	5,000 psi	8-1/4"-4Thd 'O' Type	7"-5Thd 'B' Type	0052-00007-TIS	0052-00007-KIT
4.00"	5,000 psi	8-1/4"-4Thd 'O' Type	6-1/2"-4Thd 'O' Type	0052-00008-TIS	0052-00008-KIT
4.00"	5,000 psi	8-1/4"-4Thd 'O' Type	8-1/4"-4x2 'B' Type (10k)	0052-00009-TIS	0052-00009-KIT
4.00"	5,000 psi	8-1/4"-4Thd 'O' Type	8-3/8"-4Thd 'O' Type	0052-00010-TIS	0052-00010-KIT
5.12"	5,000 psi	8-1/4"-4Thd 'O' Type	8-1/4"-4x2 'B' Type (10k)	0052-00011-TIS	0052-00011-KIT
3.00"	5,000 psi	8-7/8"-4x2 'B' Type	5-1/2"-4x2 'B' Type	0078-00005-TIS	0078-00005-KIT
3.00"	5,000 psi	8-7/8"-4x2 'B' Type	5"-4Thd 'O' Type	0078-00006-TIS	0078-00006-KIT
3.00"	10,000 psi	8-7/8"-4x2 'B' Type	6-5/16"-4Thd 'B' Type	0078-00001-TIS	0078-00001-KIT
3.00"	10,000 psi	8-7/8"-4x2 'B' Type	5-3/4"-4Thd 'O' Type	0078-00003-TIS	0078-00003-KIT
4.00"	5,000 psi	8-7/8"-4x2 'B' Type	7"-5Thd 'B' Type	0078-00007-TIS	0078-00007-KIT
4.00"	5,000 psi	8-7/8"-4x2 'B' Type	6-1/2"-4Thd 'O' Type	0078-00008-TIS	0078-00008-KIT
4.00"	10,000 psi	8-7/8"-4x2 'B' Type	8-1/4"-4x2 'B' Type (10k)	0078-00009-TIS	0078-00009-KIT
4.00"	10,000 psi	8-7/8"-4x2 'B' Type	8-3/8"-4Thd 'O' Type	0078-00010-TIS	0078-00010-KIT
5.12"	5,000 psi	8-7/8"-4x2 'B' Type	8-1/4"-4x2 'B' Type (5k)	0078-00011-TIS	0078-00011-KIT
5.12"	5,000 psi	8-7/8"-4x2 'B' Type	8-1/4"-4Thd 'O' Type	0078-00012-TIS	0078-00012-KIT
3.00"	5,000 psi	9"-4Thd 'O' Type	5-1/2"-4x2 'B' Type	0054-00026-TIS	0054-00026-KIT
3.00"	5,000 psi	9"-4Thd 'O' Type	5"-4Thd 'O' Type	0054-00008-TIS	0054-00008-KIT

Crossovers & Tubing Adapters



Quick Union Crossovers 5,000 psi & 10,000 psi

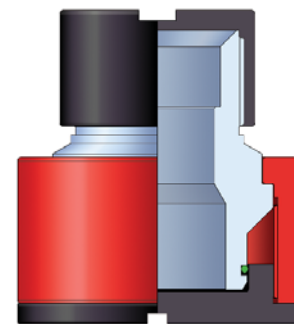
Thro' Bore	Working Pressure	Male & Collar Quick Union	Female Quick Union	Part Number
3.00"	10,000 psi	9"-4Thd 'O' Type	6-5/16"-4Thd 'B' Type	0054-00023-TIS
3.00"	10,000 psi	9"-4Thd 'O' Type	5-3/4"-4Thd 'O' Type	0054-00017-TIS
4.00"	5,000 psi	9"-4Thd 'O' Type	7"-5Thd 'B' Type	0054-00024-TIS
4.00"	5,000 psi	9"-4Thd 'O' Type	6-1/2"-4Thd 'O' Type	0054-00006-TIS
4.00"	10,000 psi	9"-4Thd 'O' Type	8-1/4"-4x2 'B' Type (10k)	0054-00005-TIS
4.00"	10,000 psi	9"-4Thd 'O' Type	8-3/8"-4Thd 'O' Type	0054-00025-TIS
5.12"	5,000 psi	9"-4Thd 'O' Type	8-1/4"-4x2 'B' Type (5k)	0054-00027-TIS
5.12"	10,000 psi	9"-4Thd 'O' Type	8-7/8"-4x2 'B' Type	0054-00028-TIS
3.00"	5,000 psi	9-1/2"-4Thd 'O' Type	5-1/2"-4x2 'B' Type	0055-00013-TIS
3.00"	5,000 psi	9-1/2"-4Thd 'O' Type	5"-4Thd 'O' Type	0055-00012-TIS
3.00"	5,000 psi	9-1/2"-4Thd 'O' Type	6-5/16"-4Thd 'B' Type	0055-00014-TIS
3.00"	5,000 psi	9-1/2"-4Thd 'O' Type	5-3/4"-4Thd 'O' Type	0055-00015-TIS
4.00"	5,000 psi	9-1/2"-4Thd 'O' Type	7"-5Thd 'B' Type	0055-00016-TIS
4.00"	5,000 psi	9-1/2"-4Thd 'O' Type	6-1/2"-4Thd 'O' Type	0055-00008-TIS
4.00"	5,000 psi	9-1/2"-4Thd 'O' Type	8-1/4"-4x2 'B' Type (10k)	0055-00019-TIS
4.00"	5,000 psi	9-1/2"-4Thd 'O' Type	8-3/8"-4Thd 'O' Type	0055-00020-TIS
5.12"	5,000 psi	9-1/2"-4Thd 'O' Type	8-1/4"-4x2 'B' Type (5k)	0055-00018-TIS
5.12"	5,000 psi	9-1/2"-4Thd 'O' Type	8-1/4"-4Thd 'O' Type	0055-00017-TIS
5.12"	5,000 psi	9-1/2"-4Thd 'O' Type	8-7/8"-4x2 'B' Type	0055-00010-TIS
5.12"	5,000 psi	9-1/2"-4Thd 'O' Type	9"-4Thd 'O' Type	0055-00001-TIS
3.00"	5,000 psi	9-7/8"-4X2 'B' Type	5-1/2"-4x2 'B' Type	0066-00017-TIS
3.00"	5,000 psi	9-7/8"-4X2 'B' Type	5"-4Thd 'O' Type	0066-00016-TIS
3.00"	5,000 psi	9-7/8"-4X2 'B' Type	6-5/16"-4Thd 'B' Type	0066-00015-TIS
3.00"	5,000 psi	9-7/8"-4X2 'B' Type	5-3/4"-4Thd 'O' Type	0066-00014-TIS



3 Piece Crossover

Quick Union Crossovers 5,000 psi & 10,000 psi

Thro' Bore	Working Pressure	Male & Collar Quick Union	Female Quick Union	Part Number
4.00"	5,000 psi	9-7/8"-4X2 'B' Type	7"-5Thd 'B' Type	0066-00013-TIS
4.00"	5,000 psi	9-7/8"-4X2 'B' Type	6-1/2"-4Thd 'O' Type	0066-00012-TIS
4.00"	5,000 psi	9-7/8"-4x2 'B' Type	8-1/4"-4x2 'B' Type (10k)	0066-00011-TIS
4.00"	5,000 psi	9-7/8"-4x2 'B' Type	8-3/8"-4Thd 'O' Type	0066-00010-TIS
5.12"	5,000 psi	9-7/8"-4x2 'B' Type	8-1/4"-4x2 'B' Type (5k)	0066-00009-TIS
5.12"	5,000 psi	9-7/8"-4x2 'B' Type	8-1/4"-4Thd 'O' Type	0066-00008-TIS
5.12"	5,000 psi	9-7/8"-4x2 'B' Type	8-7/8"-4x2 'B' Type	0066-00007-TIS
5.12"	5,000 psi	9-7/8"-4x2 'B' Type	9"-4Thd 'O' Type	0066-00004-TIS
6-5/8"	5,000 psi	9-7/8"-4x2 'B' Type	9-1/2"-4Thd 'O' Type	0066-00006-TIS
3.00"	5,000 psi	11-1/2"-4Thd 'O' Type	5-1/2"-4x2 'B' Type	0056-00022-TIS
3.00"	5,000 psi	11-1/2"-4Thd 'O' Type	5"-4Thd 'O' Type	0056-00021-TIS
3.00"	10,000 psi	11-1/2"-4Thd 'O' Type	6-5/16"-4Thd 'B' Type	0056-00020-TIS
3.00"	10,000 psi	11-1/2"-4Thd 'O' Type	5-3/4"-4Thd 'O' Type	0056-00019-TIS
4.00"	5,000 psi	11-1/2"-4Thd 'O' Type	7"-5Thd 'B' Type	0056-00018-TIS
4.00"	5,000 psi	11-1/2"-4Thd 'O' Type	6-1/2"-4Thd 'O' Type	0056-00017-TIS
4.00"	10,000 psi	11-1/2"-4Thd 'O' Type	8-3/8"-4Thd 'O' Type	0056-00016-TIS
4.00"	10,000 psi	11-1/2"-4Thd 'O' Type	8-1/4"-4x2 'B' Type (10k)	0056-00015-TIS
5.12"	5,000 psi	11-1/2"-4Thd 'O' Type	8-1/4"-4Thd 'O' Type	0056-00014-TIS
5.12"	5,000 psi	11-1/2"-4Thd 'O' Type	8-1/4"-4x2 'B' Type (5k)	0056-00013-TIS
5.12"	10,000 psi	11-1/2"-4Thd 'O' Type	8-7/8"-4x2 'B' Type	0056-00012-TIS
5.12"	10,000 psi	11-1/2"-4Thd 'O' Type	9"-4Thd 'O' Type	0056-00005-TIS
6-5/8"	5,000 psi	11-1/2"-4Thd 'O' Type	9-7/8"-4x2 'B' Type	0056-00010-TIS
6-5/8"	5,000 psi	11-1/2"-4Thd 'O' Type	9-1/2"-4Thd 'O' Type	0056-00011-TIS



2 Piece Crossover

Tooltraps



Hydraulic Tool Traps 5,000 & 10,000 psi

TIS Tool traps are positioned on the lubricator stack between the bottom lubricator section and the wireline valve assembly. Their function is to "Trap" the wireline tool string within the lubricator stack in the event of the wire / cable being accidentally stripped from the rope socket / cable head, preventing a possible fishing job or potential damage to the swab valve on the xmas tree.

Hydraulic Tooltrap

Hydraulic tool trap assembly with two internal flappers which are operated to the open and close position by means of a hydraulic piston. Hydraulic pressure is applied to open the gates allowing the tool string to pass, once the tool string is clear of the trap, hydraulic pressure is applied to close the gates. The gates are spring loaded and when the tools are retrieved from the well, the flappers open as the tool string passes through and close automatically.

The TIS tool trap range is available with the following options

- 5,000 Psi, 10,000 Psi and 15,000 Psi working pressures.
- Standard or sour service.
- Service temperature range of -29 to +121 Degrees C.
- Choice of quick union connections.

Technical features include

- Counter balance operating handle acts as a visual indicator on the manual tool trap.
- An external indicator rod, attached to the hydraulic piston, provides positive indication of flapper position on the hydraulic tool trap.

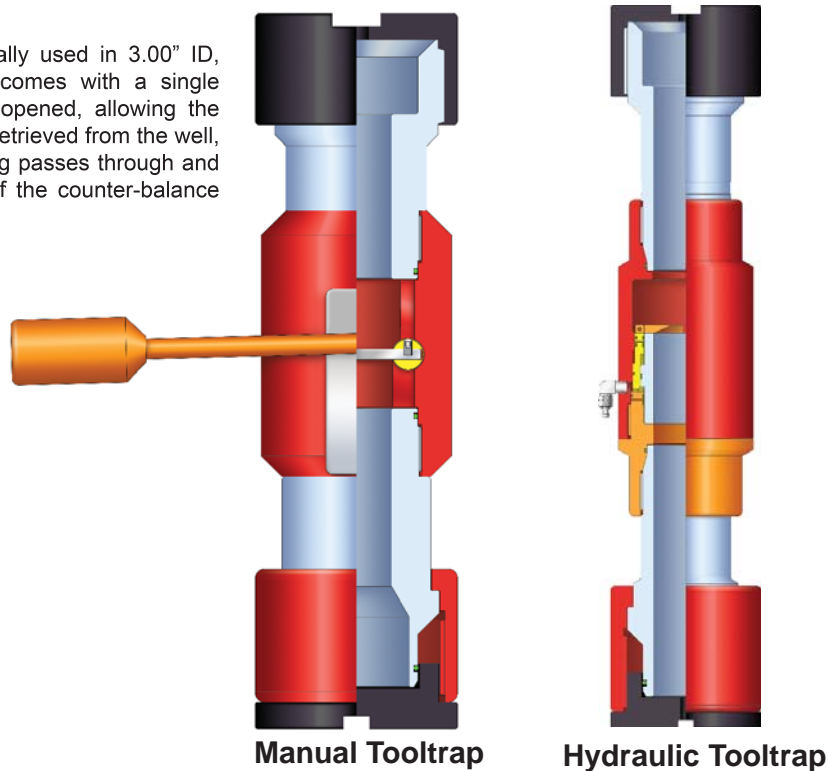
Manual Tooltrap

Manual tool trap assembly normally used in 3.00" ID, 5,000 Psi operations. The trap comes with a single flapper valve which is manually opened, allowing the tools to pass. When the tools are retrieved from the well, the flapper opens as the tool string passes through and closes automatically, by means of the counter-balance weight on the manual handle.

Thro' Bore	Working Pressure	Quick Union	Part Number	Redress Kit
3.00"	5,000 psi	5-1/2"-4x2'B' Type	0034-00002-TIS	0034-00002-KIT
3.00"	5,000 psi	5"-4Thd'O' Type	0034-00001-TIS	0034-00001-KIT
3.00"	10,000 psi	6-5/16"-4Thd'B'	0034-00009-TIS	0034-00009-KIT
3.00"	10,000 psi	5-3/4"-4Thd'O' Type	0034-00010-TIS	0034-00010-KIT
4.00"	5,000 psi	7"-5Thd'B' Type	0034-00003-TIS	0034-00003-KIT
4.00"	5,000 psi	6-1/2"-4Thd'O' Type	0034-00004-TIS	0034-00004-KIT
4.00"	10,000 psi	8-1/4"-4x2'B' Type (10k)	0034-00011-TIS	0034-00011-KIT
4.00"	10,000 psi	8-3/8"-4Thd'O' Type	0034-00012-TIS	0034-00012-KIT
5-1/8"	5,000 psi	8-1/4"-4x2'B' Type (5k)	0034-00005-TIS	0034-00005-KIT
5-1/8"	5,000 psi	8-1/4"-4Thd'O' Type	0034-00006-TIS	0034-00006-KIT
5-1/8"	10,000 psi	8-7/8"-4x2'B' Type	0034-00013-TIS	0034-00013-KIT
5-1/8"	10,000 psi	9"-4Thd'O' Type	0034-00014-TIS	0034-00014-KIT
6-5/8"	5,000 psi	9-7/8"-4x2'B' Type	0034-00007-TIS	0034-00007-KIT
6-5/8"	5,000 psi	9-1/2"-4Thd'O' Type	0034-00008-TIS	0034-00008-KIT
6-5/8"	10,000 psi	13"-4Thd'B' Type	0034-00015-TIS	0034-00015-KIT
6-5/8"	10,000 psi	11-1/2"-4Thd'O' Type	0034-00016-TIS	0034-00016-KIT

Manual Tool Traps 5,000 psi

Thro' Bore	Quick Union	Part Number	Redress Kit
3.00"	5-1/2"-4x2'B' Type	0034-00017-TIS	0034-00017-KIT
3.00"	5"-4Thd'O' Type	0034-00018-TIS	0034-00018-KIT



Hydraulic Tool Catchers



TIS Hydraulic tool catchers are installed below the stuffing box or grease injection control head and are designed to engage the fishing neck on the rope socket / cable head, in the event of the wire / cable being detached due to slamming. The fail safe design will automatically engage the rope socket / cable head requiring hydraulic pressure to release.

TIS offer two types of tool catcher assemblies;-

1. Conventional tool catcher with quick union connections.
2. Grease control head type with a flow tube connection and integral ball safety check.

The TIS hydraulic tool catcher range is available with the following options

- 5,000 Psi, 10,000 Psi and 15,000 Psi working pressures.
- standard or sour service.
- Service temperature range of -29 to +121 Degrees C.
- Choice of quick union connections.
- Choice of fishing neck engagement.

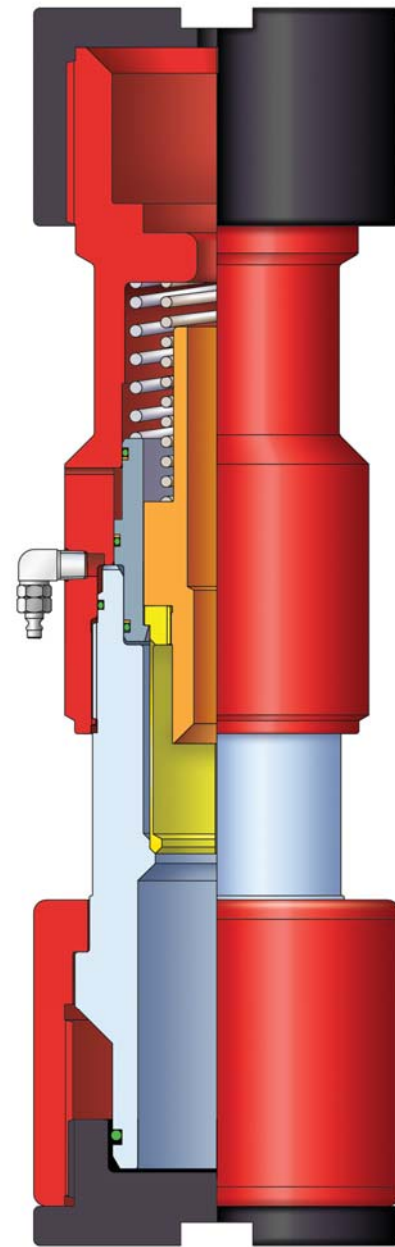
Technical features include

- Operator friendly, compact design.
- Can be set up to engage the following fishing necks:-
1.00" / 1.187" / 1.375" / 1.750" / 2.313".

Hydraulic Toolcatchers

5,000 & 10,000 psi

Working Pressure	Quick Union	Fish Neck	Part Number	Redress Kit
5,000 psi	5-1/2"-4x2 'B' Type	1"	0027-00012-TIS	0027-00012-KIT
5,000 psi	5-1/2"-4x2 'B' Type	1-3/16"	0027-00013-TIS	0027-00013-KIT
5,000 psi	5-1/2"-4x2 'B' Type	1-3/8"	0027-00014-TIS	0027-00014-KIT
5,000 psi	5-1/2"-4x2 'B' Type	1-3/4"	0027-00015-TIS	0027-00015-KIT
5,000 psi	5-1/2"-4x2 'B' Type	2-5/16"	0027-00016-TIS	0027-00016-KIT
5,000 psi	5"-4Thd 'O' Type	1"	0027-00017-TIS	0027-00017-KIT
5,000 psi	5"-4Thd 'O' Type	1-3/16"	0027-00018-TIS	0027-00018-KIT
5,000 psi	5"-4Thd 'O' Type	1-3/8"	0027-00019-TIS	0027-00019-KIT
5,000 psi	5"-4Thd 'O' Type	1-3/4"	0027-00020-TIS	0027-00020-KIT
5,000 psi	5"-4Thd 'O' Type	2-5/16"	0027-00021-TIS	0027-00021-KIT
10,000 psi	6-5/16"-4Thd 'B'	1"	0027-00007-TIS	0027-00007-KIT
10,000 psi	6-5/16"-4Thd 'B'	1-3/16"	0027-00008-TIS	0027-00008-KIT
10,000 psi	6-5/16"-4Thd 'B'	1-3/8"	0027-00009-TIS	0027-00009-KIT
10,000 psi	6-5/16"-4Thd 'B'	1-3/4"	0027-00010-TIS	0027-00010-KIT
10,000 psi	6-5/16"-4Thd 'B'	2-5/16"	0027-00011-TIS	0027-00011-KIT
10,000 psi	5-3/4"-4Thd 'O' Type	1"	0027-00006-TIS	0027-00006-KIT
10,000 psi	5-3/4"-4Thd 'O' Type	1-3/16"	0027-00005-TIS	0027-00005-KIT
10,000 psi	5-3/4"-4Thd 'O' Type	1-3/8"	0027-00003-TIS	0027-00003-KIT
10,000 psi	5-3/4"-4Thd 'O' Type	1-3/4"	0027-00001-TIS	0027-00001-KIT
10,000 psi	5-3/4"-4Thd 'O' Type	2-5/16"	0027-00004-TIS	0027-00004-KIT



Hydraulic Tool Catcher

Lift-Test and Lifting Caps



TIS Quick union lift – test and lifting caps are designed to lift heavy items of surface pressure control equipment in a safe and efficient manner.

Quick union lift – test caps are pressure retaining while, quick union lift caps are non pressure retaining. Each type of cap is designed to comply with current lifting Specifications.

TIS Quick union lift – test caps integrate the design features of a blanking cap and collar with a lifting cap. The cap comes with a standard lifting eye and a bleed port.

TIS Quick union lifting caps comprise of a lifting plate, quick union collar and a lifting eye.

The TIS lift – test and lifting cap range is available with the following options (where applicable)

- 5,000 Psi, 10,000 Psi and 15,000 Psi working pressures.
- Standard or sour service.
- Service temperature range of -29 to +121 Degrees C.
- Choice of quick union connections.
- Choice of safe working loads
- Choice of integral or standard lifting eye.
- Choice of bleed port thread.

Technical features include

- Lifting plate type caps, allows the operator to spin the collar on and off while still connected to the tugger.
- Standard lifting eyes are pinned in position to prevent them backing off while in service.



Lift Cap Assemblies



Blank Lift Cap Assemblies

Quick Union	Safe Working Load	Part Number
5-1/2"-4x2 'B' Type	3 Ton	0059-00007-TIS
	5 Ton	0059-00006-TIS
5"-4Thd 'O' Type	3 Ton	0045-00005-TIS
	5 Ton	0045-00006-TIS
6-5/16"-4Thd 'B'	3 Ton	0061-00011-TIS
	5 Ton	0061-00012-TIS
5-3/4"-4Thd 'O' Type	3 Ton	0046-00025-TIS
	5 Ton	0046-00020-TIS
7"-5Thd 'B' Type	3 Ton	0063-00010-TIS
	5 Ton	0063-00011-TIS
6-1/2"-4Thd 'O' Type	3 Ton	0047-00016-TIS
	5 Ton	0047-00006-TIS
8-1/4"-4x2 'B' Type (10k)	3 Ton	0065-00012-TIS
	5 Ton	0065-00013-TIS
8-3/8"-4Thd 'O' Type	3 Ton	0053-00014-TIS
	5 Ton	0053-00002-TIS
8-1/4"-4x2 'B' Type (5k)	3 Ton	0064-00012-TIS
	5 Ton	0064-00013-TIS
8-1/4"-4Thd 'O' Type	3 Ton	0052-00015-TIS
	5 Ton	0052-00016-TIS
8-7/8"-4x2 'B' Type	3 Ton	0078-00015-TIS
	5 Ton	0078-00016-TIS
9"-4Thd 'O' Type	3 Ton	0054-00031-TIS
	5 Ton	0054-00020-TIS
9-7/8"-4x2 'B' Type	3 Ton	0066-00019-TIS
	5 Ton	0066-00020-TIS
9-1/2"-4Thd 'O' Type	3 Ton	0055-00023-TIS
	5 Ton	0055-00005-TIS
13"-4Thd 'O' Type	3 Ton	0067-00006-TIS
	5 Ton	0067-00007-TIS
11-1/2"-4Thd 'O' Type	3 Ton	0056-00026-TIS
	5 Ton	0056-00008-TIS

Thro' Bore	Working Pressure	Quick Union	Safe Working Load	Part Number
3.00"	5,000 psi	5-1/2"-4x2 'B' Type	3 Ton	0059-00004-TIS
			5 Ton	0059-00005-TIS
3.00"	5,000 psi	5"-4Thd 'O' Type	3 Ton	0045-00003-TIS
			5 Ton	0045-00004-TIS
3.00"	10,000 psi	6-5/16"-4Thd 'B'	3 Ton	0061-00009-TIS
			5 Ton	0061-00010-TIS
3.00"	10,000 psi	5-3/4"-4Thd 'O' Type	3 Ton	0046-00018-TIS
			5 Ton	0046-00016-TIS
4.00"	5,000 psi	7"-5Thd 'B' Type	3 Ton	0063-00008-TIS
			5 Ton	0063-00009-TIS
4.00"	5,000 psi	6-1/2"-4Thd 'O' Type	3 Ton	0047-00015-TIS
			5 Ton	0047-00008-TIS
4.00"	10,000 psi	8-1/4"-4x2 'B' Type (10k)	3 Ton	0065-00010-TIS
			5 Ton	0065-00011-TIS
4.00"	10,000 psi	8-3/8"-4Thd 'O' Type	3 Ton	0053-00013-TIS
			5 Ton	0053-00012-TIS
5-1/8"	5,000 psi	8-1/4"-4x2 'B' Type (5k)	3 Ton	0064-00010-TIS
			5 Ton	0064-00011-TIS
5-1/8"	5,000 psi	8-1/4"-4Thd 'O' Type	3 Ton	0052-00013-TIS
			5 Ton	0052-00014-TIS
5-1/8"	10,000 psi	8-7/8"-4x2 'B' Type	3 Ton	0078-00013-TIS
			5 Ton	0078-00014-TIS
5-1/8"	10,000 psi	9"-4Thd 'O' Type	3 Ton	0054-00030-TIS
			5 Ton	0054-00002-TIS
6-5/8"	5,000 psi	9-7/8"-4x2 'B' Type	3 Ton	0066-00018-TIS
			5 Ton	0066-00003-TIS
6-5/8"	5,000 psi	9-1/2"-4Thd 'O' Type	3 Ton	0055-00022-TIS
			5 Ton	0055-00007-TIS
6-5/8"	10,000 psi	13"-4Thd 'B' Type	3 Ton	0067-00004-TIS
			5 Ton	0067-00005-TIS
6-5/8"	10,000 psi	11-1/2"-4Thd 'O' Type	3 Ton	0056-00025-TIS
			5 Ton	0056-00003-TIS

Test Caps and Stumps



TIS Quick union test cap sets and stumps are used for testing surface pressure control equipment. Each cap comes with a bleed port.

Test Cap Sets

TIS Quick union test cap sets comprise a blanking cap and collar and a mounting stump. Each cap comes with a bleed port.

TIS Quick union lifting caps comprise of a lifting plate, quick union collar and a lifting eye.

TIS test cap sets are available with the following options (where applicable)

- 5,000 psi, 10,000 psi and 15,000 psi working pressures.
- Standard or Sour Service.
- Service temperature range of -29 to +121 Degrees C.
- Choice of quick union connections.
- Choice of bleed port thread.

Stumps

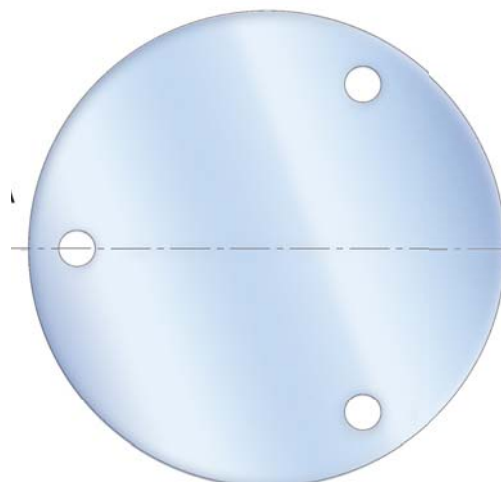
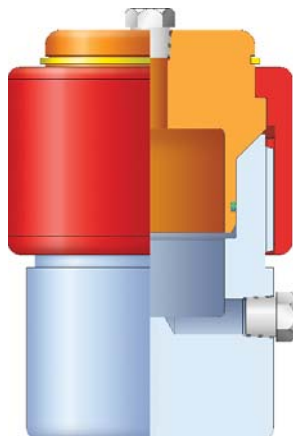
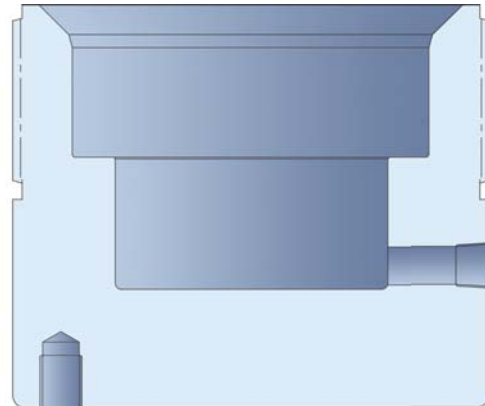
5,000 & 10,000 psi

Thro' Bore	Working Pressure	Quick Union	Part Number
3.00"	5,000 psi	5-1/2"-4x2'B' Type	0059-00010-C
3.00"	5,000 psi	5"-4Thd'O' Type	0045-00019-C
3.00"	10,000 psi	6-5/16"-4Thd'B'	0061-00015-C
3.00"	10,000 psi	5-3/4"-4Thd'O' Type	0046-00030-C
4.00"	5,000 psi	7"-5Thd'B' Type	0063-00013-C
4.00"	5,000 psi	6-1/2"-4Thd'O' Type	0047-00013-C
4.00"	10,000 psi	8-1/4"-4x2'B' Type (10k)	0065-00012-C
4.00"	10,000 psi	8-3/8"-4Thd'O' Type	0053-00010-C
5-1/8"	5,000 psi	8-1/4"-4x2'B' Type (5k)	0064-00021-C
5-1/8"	5,000 psi	8-1/4"-4Thd'O' Type	0052-00010-C
5-1/8"	10,000 psi	8-7/8"-4x2'B' Type	0078-00012-C
5-1/8"	10,000 psi	9"-4Thd'O' Type	0054-00008-C
6-5/8"	5,000 psi	9-7/8"-4x2'B' Type	0066-00022-C
6-5/8"	5,000 psi	9-1/2"-4Thd'O' Type	0055-00031-C
6-5/8"	10,000 psi	13"-4Thd'B' Type	0067-00006-C
6-5/8"	10,000 psi	11-1/2"-4Thd'O' Type	0056-00007-C

Test Cap Sets

5,000 & 10,000 psi

Thro' Bore	Working Pressure	Quick Union	Part Number
3.00"	5,000 psi	5-1/2"-4x2'B' Type	0059-00002-TIS
3.00"	5,000 psi	5"-4Thd'O' Type	0045-00001-TIS
3.00"	10,000 psi	6-5/16"-4Thd'B'	0061-00002-TIS
3.00"	10,000 psi	5-3/4"-4Thd'O' Type	0046-00022-TIS
4.00"	5,000 psi	7"-5Thd'B' Type	0063-00002-TIS
4.00"	5,000 psi	6-1/2"-4Thd'O' Type	0047-00010-TIS
4.00"	10,000 psi	8-1/4"-4x2'B' Type	0065-00004-TIS
4.00"	10,000 psi	8-3/8"-4Thd'O' Type	0053-00003-TIS
5-1/8"	5,000 psi	8-1/4"-4x2'B' Type (10k)	0064-00003-TIS
5-1/8"	5,000 psi	8-1/4"-4Thd'O' Type	0052-00002-TIS
5-1/8"	10,000 psi	8-7/8"-4x2'B' Type (5k)	0078-00004-TIS
5-1/8"	10,000 psi	9"-4Thd'O' Type	0054-00021-TIS
6-5/8"	5,000 psi	9-7/8"-4x2'B' Type	0066-00005-TIS
6-5/8"	5,000 psi	9-1/2"-4Thd'O' Type	0055-00009-TIS
6-5/8"	10,000 psi	13"-4Thd'B' Type	0067-00003-TIS
6-5/8"	10,000 psi	11-1/2"-4Thd'O' Type	0056-00009-TIS



Quick Union O-Rings and Thread Protectors



Quick Union O-Rings 5,000 & 10,000 psi

Thro' Bore	Working Pressure	Quick Union	Viton Seal Ring Part Number	HNBR Seal Ring Part Number
3.00"	5,000 psi	5-1/2"-4x2'B' Type	OR1A-GNJ-D-IMP	OR4A-GNJ-D-IMP
3.00"	5,000 psi	5"-4Thd'O' Type	OR1A-FMK-C-IMP	OR4A-FMK-C-IMP
3.00"	10,000 psi	6-5/16"-4Thd'B'	OR1A-FNG-C-IMP	OR4A-FNG-C-IMP
3.00"	10,000 psi	5-3/4"-4Thd'O' Type	OR1A-GNF-D-IMP	OR4A-GNF-D-IMP
4.00"	5,000 psi	7"-5Thd'B' Type	OR1A-HLL-E-IMP	OR4A-HLL-E-IMP
4.00"	5,000 psi	6-1/2"-4Thd'O' Type	OR1A-GNM-D-IMP	OR4A-GNM-D-IMP
4.00"	10,000 psi	8-1/4"-4x2'B' Type (10k)	OR1A-GPM-D-IMP	OR4A-GPM-D-IMP
4.00"	10,000 psi	8-3/8"-4Thd'O' Type	OR1A-HLL-E-IMP	OR4A-HLL-E-IMP
5-1/8"	5,000 psi	8-1/4"-4x2'B' Type (5k)	OR1A-HMM-E-IMP	OR4A-HMM-E-IMP
5-1/8"	5,000 psi	8-1/4"-4Thd'O' Type	OR1A-HMH-E-IMP	OR4A-HMH-E-IMP
5-1/8"	10,000 psi	8-7/8"-4x2'B' Type	OR1A-HML-E-IMP	OR4A-HML-E-IMP
5-1/8"	10,000 psi	9"-4Thd'O' Type	OR1A-HMM-E-IMP	OR4A-HMM-E-IMP
6-5/8"	5,000 psi	9-7/8"-4x2'B' Type	OR1A-HNG-E-IMP	OR4A-HNG-E-IMP
6-5/8"	5,000 psi	9-1/2"-4Thd'O' Type	OR1A-HNG-E-IMP	OR4A-HNG-E-IMP
6-5/8"	10,000 psi	13"-4Thd'B' Type	OR1A-HNL-E-IMP	OR4A-HNL-E-IMP
6-5/8"	10,000 psi	11-1/2"-4Thd'O' Type	OR1A-HNH-E-IMP	OR4A-HNH-E-IMP

Thread Protectors

Thro' Bore	Working Pressure	Quick Union	Male Part Number	Female Part Number
3.00"	5,000 psi	5-1/2"-4x2'B' Type	0059-00008-C	0059-00009-C
3.00"	5,000 psi	5"-4Thd'O' Type	0045-00004-C	0045-00005-C
3.00"	10,000 psi	6-5/16"-4Thd'B'	0061-00010-C	0061-00011-C
3.00"	10,000 psi	5-3/4"-4Thd'O' Type	0046-00005-C	0046-00004-C
4.00"	5,000 psi	7"-5Thd'B' Type	0063-00010-C	0063-00009-C
4.00"	5,000 psi	6-1/2"-4Thd'O' Type	0047-00007-C	0047-00008-C
4.00"	10,000 psi	8-1/4"-4x2'B' Type (10k)	0065-00002-C	0065-00003-C
4.00"	10,000 psi	8-3/8"-4Thd'O' Type	0053-00004-C	0053-00003-C
5.12"	5,000 psi	8-1/4"-4x2'B' Type (5k)	0064-00009-C	0064-00010-C
5.12"	5,000 psi	8-1/4"-4Thd'O' Type	0052-00004-C	0052-00003-C
5.12"	10,000 psi	8-7/8"-4x2'B' Type	0078-00006-C	0078-00005-C
5.12"	10,000 psi	9"-4Thd'O' Type	0054-00011-C	0054-00012-C
6-5/8"	5,000 psi	9-7/8"-4x2'B' Type	0066-00010-C	0066-00011-C
6-5/8"	5,000 psi	9-1/2"-4Thd'O' Type	0055-00004-C	0055-00005-C
6-5/8"	10,000 psi	13"-4Thd'B' Type	0067-00004-C	0067-00005-C
6-5/8"	10,000 psi	11-1/2"-4Thd'O' Type	0056-00004-C	0056-00005-C



Male Thread Protector



Female Thread Protector

(Nylon)

TIS thread protectors are precision moulded in hard wearing durable rubber, providing better thread protection, during transportation. When made up correctly to quick union connections, their superior design prevents accidental disengagement.

TIS Manufacturing LTD
TERMS and CONDITIONS of SALE

1. INTERPRETATION

- 1.1 In these conditions
- 'BUYER' means the person who accepts a quotation of the seller for the sale of the goods or whose order for the Goods is accepted by the seller.
- 'GOODS' means the goods (including any instalment of the goods or any parts for them) which the seller is to supply in accordance with these conditions.
- 'SELLER' means TIS Manufacturing Ltd of Kirkhill Place, Kirkhill Industrial Estate, Dyce, Aberdeen, AB21 0GU
- 'CONDITIONS' means the Standard terms and conditions of sale set out in this document and (unless the context otherwise requires) includes any special terms and conditions agreed in writing between the Buyer and the Seller.
- 'CONTRACT' means the contract for the purchase and sale of the Goods.
- 'WRITING' includes cable, facsimile, transmission and comparable means of communication.
- 1.2 Any reference in these conditions to any provision of a statute shall be construed as a reference to the provisions as amended, re-enacted or extended at the relevant time.
- 1.3 The headings in these Conditions are for convenience only and shall not affect their interpretation.

2. BASIS OF SALE

- 2.1 The Seller shall sell and the buyer shall purchase the Goods in accordance with any written quotation of the Seller's authorised representative which is accepted by the buyer, or any written order of the Buyer which is accepted by the Seller's authorised representative subject in either case to these Conditions, which shall govern the Contract to the exclusion of any other terms and conditions subject to which any such quotation is accepted or purported to be accepted, or any such order is made or purported to be made by the Buyer.
- 2.2 No variation to these Conditions shall be binding unless agreed in Writing between the authorised representative of the Buyer and the Seller.
- 2.3 The Seller's employees or agents are not authorised to make any representations concerning the Goods unless confirmed by the Seller's authorised representative in Writing. In entering into the Contract the Buyer acknowledges that it does not rely on, and waives any claim for breach of, any such representations which are not so confirmed.
- 2.4 Any advice or recommendation given by the Seller or its employees or agents as to the storage, application or use of the Goods which is not confirmed in Writing by the Seller's authorised representative is followed or acted upon entirely at the Buyer's own risk, and accordingly the Seller shall not be liable for any such advice or recommendation which is not so confirmed.
- 2.5 Any typographical, clerical or other error omission in any sales literature, quotation, price list, acceptance of offer, invoice or other document or information issued by the Seller shall be subject to correction without any liability on the part of the Seller.

3. ORDERS AND SPECIFICATION

- 3.1 No order submitted by the Buyer shall be deemed to be accepted by the Seller unless and until confirmed in Writing to the Buyer by the Seller's authorised representative.
- 3.2 The Buyer shall be responsible to the Seller for ensuring the accuracy of the terms of any order (including any applicable specification) submitted by the Buyer, and for giving the Seller any necessary information relating to the Goods within a sufficient time to enable the Seller to perform the Contract in accordance with its terms.
- 3.3 The quantity, quality and description of any specification for the Goods shall be those set out in the Seller's quotation (if accepted by the Buyer) or the Buyer's order (if accepted by the Seller).
- 3.4 If the Goods are to be manufactured or any process is to be applied to the Goods by the Seller in accordance with a specification submitted by the Buyer, the Buyer shall indemnify the Seller against all loss, damages, costs and expenses awarded against or incurred by the Seller in connection with or paid or agreed to be paid by the Seller in settlement of any claim for infringement of any patent, copyright design, trade mark or other industrial or intellectual property rights of any other person which results from the Seller's use of the Buyer's specification.
- 3.5 The Seller reserves the right to make any changes in the specification of the Goods which are required to conform with any applicable safety or other statutory requirements or, where the Goods are to be supplied to the Seller's specification, which do not materially affect their quality of performance.
- 3.6 No order which has been accepted by the Seller may be cancelled by the Buyer except with the agreement in writing of the Seller and on terms that the Buyer shall indemnify the Seller in full against all loss (including loss of profit), costs (including the cost of all labour and materials used), damages, charges and expenses incurred by the Seller as a result of cancellation.

4. PRICE OF THE GOODS

- 4.1 The price of the Goods shall be the Seller's quoted price aforesaid or, where no price has been quoted (or a quoted price is no longer valid), the price listed in the Seller's price list current at the date of acceptance of the order. Where the Goods are supplied for export from the United Kingdom, the Seller's published export price list shall apply. All prices quoted are valid for 30 days only or until earlier acceptance by the Buyer, after which time they may be altered by the Seller without giving notice to the Buyer.
- 4.2 The Seller reserves the right, by giving notice to the Buyer at any time before delivery, to increase the price of the Goods to reflect any increase in the cost to the Seller which is due to any factor beyond the control of the Seller (such as, without limitation any foreign exchange fluctuation, currency regulation, alteration of duties, significant increase in the costs of labour, materials, or other costs of manufacture), any change in delivery date, quantities or specifications for the Goods which is requested by the Buyer or failure of the Buyer to give the Seller adequate information or instruction.
- 4.3 Except as otherwise stated under the term of any quotation or in any price list of the Seller, and unless otherwise agreed in Writing between the Buyer and the Seller, all prices are given by the Seller on an ex works basis, and where the Seller agrees to deliver the Goods otherwise than at the Seller's premises, the Buyer shall be liable to pay the Seller's charges for transport, packaging and insurance.
- 4.4 The price is exclusive of any applicable Value Added Tax, which the Buyer shall be additionally liable to pay to the Seller.
- 4.5 The cost of pallets and returnable containers will be charged to the Buyer in addition to the price of the Goods, but full credit will be given to the Buyer provided they are returned undamaged to the Seller before the due payment date.

5. TERMS OF PAYMENT

- 5.1 Subject to any special terms agreed in Writing between the Buyer and the Seller, the Seller shall be entitled to invoice the Buyer for the price of the Goods on or at any time after the delivery of the Goods, unless the Goods are to be collected by the Buyer or the Buyer wrongfully fails to take delivery of the Goods, in which event the Seller shall be entitled to invoice the Buyer for the price at any time after the Seller has notified the Buyer that the Goods are ready for collection or (as the case may be) the Seller has tendered delivery of the Goods.
- 5.2 The Buyer shall pay the price of the Goods within 30 days of the date of the Seller's invoice, notwithstanding that delivery may not have taken place and the property in the Goods has not passed to the Buyer. The time of the payment of the price shall be the essence of the contract. Receipts for payment will be issued only upon request. All Goods remain the property of TIS Manufacturing Ltd until payment is made in full.
- 5.3 If the Buyer fails to make payment on the due date then, without prejudice to any other right or remedy available to the Seller, the Seller shall be entitled to:
- 5.3.1 Cancel the contract or suspend any further deliveries to the Buyer;
- 5.3.2 Appropriate any payment made by the Buyer to such of the Goods (or the Goods supplied under any other contract between the Buyer and the Seller) as the Seller may think fit (notwithstanding any purported appropriation by the Buyer); and
- 5.3.3 Charge the buyer interest (both before and after any judgement) on the amount unpaid, at the rate of three percent per annum above Bank of Scotland base rate from time to time until payment in full is made (a part of a month being treated as a full month for the purpose of calculating interest)

6. DELIVERY

- 6.1 Delivery of the Goods shall be made by the Buyer collecting the Goods at the Seller's premises at any time after the Seller has notified the Buyer that the Goods are ready for collection or, if some other place for the delivery is agreed by the Seller, by the Seller delivering the Goods to that place.
- 6.2 Any date quoted for delivery of the Goods are approximate only and the Seller shall not be liable for any delay in delivery of the Goods howsoever caused. Time for delivery shall not be of the essence unless previously agreed by the Seller in writing. The Goods may be delivered by the Seller in advance of the quoted delivery date upon giving reasonable notice to the Buyer.
- 6.3 Where the Goods are to be delivered in instalments, each delivery shall constitute a separate contract and failure by the Seller to deliver any one or more of the instalments in accordance with these conditions or any claim by the Buyer in respect of any one or more instalments shall not entitle the Buyer to treat the Contract as a whole as repudiated.

- 6.4 If the Buyer fails to take delivery of the Goods or fails to give the Seller adequate delivery instructions at the time stated for delivery (otherwise than by reason of any cause beyond the Buyer's reasonable control or by reason of the Seller's fault) then without prejudice to any right or remedy available to the Seller, the Seller may:
- 6.4.1 Store the Goods until actual delivery and charge the Buyer for the reasonable cost (including insurance) of storage; or
- 6.4.2 Sell the Goods at the best price readily obtainable and (after deducting all reasonable storage and selling expenses) account the Buyer for the excess over the price under the Contract or charge the Buyer for any shortfall below the price under the contract.
- 7. RISK AND PROPERTY**
- 7.1 Risk of damage to or loss of the Goods shall pass to the Buyer:
- 7.1.1 In the case of Goods to be delivered at the Seller's premises at the time when the Seller notifies the Buyer that the Goods are available for collection; or
- 7.1.2 In the case of Goods to be delivered otherwise than at the Seller's premises, at the time of delivery or, if the Buyer wrongfully fails to take delivery of the Goods, the time when the Seller has tendered delivery of the Goods.
- 7.2 Notwithstanding delivery and the passing of risk in the Goods, or any other provision of these conditions, the property in the goods shall not pass to the Buyer until the Seller has received in cash or cleared funds payments in full of the price of the Goods and all other goods agreed to be sold by the Seller to the Buyer for which payment is then due.
- 7.3 Until such time as the property in the Goods passes to the Buyer, the Buyer shall hold the Goods as the Seller's fiduciary agent and bailee, and shall keep the Goods separate from those of the Buyer and third parties and properly stored, protected and insured and identified as the Seller's property. Until that time the Buyer shall be entitled to resell or use the Goods in the ordinary course of its business, but shall account to the Seller for the proceeds of sale or otherwise of the Goods, whether tangible or intangible, including insurance proceeds, and shall keep all such proceeds separate from any moneys or property of the Buyer and third parties and, in the case of tangible proceeds, properly stored protected and insured.
- 7.4 Until such time as the property in the Goods passes to the Buyer (and provided the Goods are still in existence and have not been resold) the Seller shall be entitled at any time to require the Buyer to deliver up the Goods to the Seller and, if the Buyer fails to do so forthwith, to enter upon any premises of the Buyer or any third party where the Goods are stored and repossess the Goods.
- 7.5 The Buyer shall not be entitled to pledge or in any way change by way of security for any indebtedness any of the Goods which remain the property of the Seller, but if the Buyer does so all the moneys owing by the Buyer to the Seller shall (without prejudice to any other right or remedy of the Seller) forthwith become due and payable.
- 8. WARRANTIES AND LIABILITIES**
- 8.1 Subject to the conditions set out below the Seller warrants that the Goods will correspond with their specification at the time of delivery and will be free from defects in material and workmanship for a period of twelve months from delivery.
- 8.2 The above warranty is given by the Seller subject to the following conditions:
- 8.2.1 The Seller shall be under no liability in respect of any defect in the Goods arising from any drawing, design or specification supplied by the Buyer,
- 8.2.2 The Seller shall be under no liability in respect of any defect arising from fair wear and tear, wilful damage, negligence, abnormal working conditions, failure to follow the Seller's instructions (whether oral or in writing), misuse or alteration or repair of the Goods without the Seller's approval;
- 8.2.3 The Seller shall be under no liability under the above warranty (or any other warranty, condition or guarantee) if the total price for the Goods has not been paid by the due date for payment.
- 8.2.4 The above warranty does not extend to parts, materials or equipment not manufactured by the Seller, in respect of which the Buyer shall only be entitled to the benefit of any such warranty or guarantee as given by the manufacturer to the Seller
- 8.3 Subject as expressly provided in these conditions, and except where the goods are sold to a person dealing as a consumer (within the meaning of the Unfair Contract Terms Act 1977), all warranties, conditions or to the terms implied by statute or common law are excluded to the fullest extent permitted by law.
- 8.4 Where the Goods are sold under a consumer transaction (as defined by the Consumer Transactions (restrictions on Statements) Order 1976 the statutory rights of the Buyer are not affected by these Conditions.
- 8.5 Any claim by the Buyer which is based on any defect in the quality or conditions of the Goods or their failure to correspond with specification shall (whether or not delivery is refused by the Buyer) be notified to the Seller within 7 days from the date of delivery or (where the defect or failure was not apparent on reasonable inspection) within a reasonable time after the discovery of the defect or failure. If delivery is not refunded and the Buyer does not notify the Seller accordingly the Buyer shall not be entitled to reject the Goods and the Seller shall have no liability for such defect or failure, and the Buyer shall be bound to pay the price as if the goods had been delivered in accordance with the contract.
- 8.6 Where any valid claim in respect of any of the goods which is based on any defect in the quality or condition of the Goods or their failure to meet specifications is notified to the Seller in accordance with these Conditions, the Seller shall be entitled to replace the Goods (or part in question) free of charge or, at the Seller's sole discretion, refund to the Buyer the price of the Goods (or a proportionate part of the price), but the Seller shall have no further liability to the Buyer.
- 8.7 Except in respect of death or personal injury caused by the Seller's negligence, the Seller shall not be liable to the Buyer by reason of any representation, or any implied warranty, condition or other term, or any duty at common law, or under the express term of the Contract, for any consequential loss or damage (whether for loss or profit or otherwise), costs, expenses or other claims for consequential compensation whatsoever (and whether caused by the negligence of the Seller, its employees or agents or otherwise) which arise out of or in connection with the supply of the Goods or their use or resale by the Buyer, except as expressly provided in these conditions.
- 8.8 The Seller shall not be liable to the Buyer or be deemed to be in breach of the Contract by reason of any delay in performing, or any failure to perform, any of the Seller's obligations in relation to the Goods, if the delay or failure was due to any cause beyond the Seller's reasonable control. Without prejudice to the generality of the foregoing, the following shall be regarded as causes beyond the Seller's reasonable control:
- 8.8.1 Act of God, explosion, flood, tempest, fire or accident;
- 8.8.2 War or threat of war, sabotage, insurrection, civil disturbance or requisition;
- 8.8.3 Acts, retributions, regulations, by-laws, prohibitions or measures of any kind on the part of any governmental, parliamentary or local authority;
- 8.8.4 Import or export regulations or embargoes;
- 8.8.5 Strikes, lock-outs, or other industrial actions or trade disputes (whether involving employees of the Seller or a third party);
- 8.8.6 Difficulties in obtaining raw materials, labour, fuel parts or machinery;
- 8.8.7 Power failure or breakdown in machinery.
- 9. INSOLVENCY OF BUYER**
- 9.1 This clause applies if:
- 9.1.1 The Buyer makes any voluntary arrangement with its creditors or becomes subject to an administration order or (being an individual or firm) becomes bankrupt or (being a company) goes into liquidation (otherwise than for the purposes of amalgamation or reconstruction); or
- 9.1.2 An encumbrancer takes possession, or a receiver is appointed, of any of the property or assets of the Buyer; or
- 9.1.3 The Buyer ceases, or threatens to cease, to carry on business; or
- 9.1.4 The Seller reasonably apprehends that any of the events mentioned above is about to occur in relation to the Buyer and notifies the Buyer accordingly.
- 9.2 If this clause applies then, without prejudice to any other right or remedy available to the Seller, the Seller shall be entitled to cancel the Contract or suspend any further deliveries under the Contract without any liability to the Buyer, and if the Goods have been delivered but not paid for the price shall become immediately due and payable notwithstanding any previous agreement or arrangement to the contrary.
- 10. GENERAL**
- 10.1 Any notice required or permitted to be given by either party to the other under these Conditions shall be in Writing addressed to that other party at its registered office or principal place of business or such other address as may at the relevant time have been notified pursuant to this provisions to the party giving the notice
- 10.1.1 No waiver to the Seller of any breach of the Contract or the Buyer shall be considered as a waiver of any subsequent breach of the same or any other provision.
- 10.1.2 If any provision of these Conditions is held by any competent authority to be invalid or unenforceable in whole or part the validity of the other provisions of these Conditions and the remainder of the provisions in question shall not be affected thereby.
- 10.1.3 The contract shall be governed by applicable laws in the UK.

Quality Assurance

quality

TIS Manufacturing Limited recognises the need to meet the high standards expected by our customers and have a quality system in accordance with European Standard ISO-9001. All products manufactured by us are subject to stringent quality procedures ensuring compliance with customer and industry requirements.

The following forms part of our quality plan implemented to all our products:-

- **Mechanical Plant Equipment**
 - Designed, constructed and tested in accordance with BS 7072, BS-EN-12079 and DNV 2.7-1 specifications.
 - HSE offshore installations guidance on design, construction and certification.
 - Diesel engines supplied to satisfy OCMA MEC-1 and BP 200 specifications for Zone 2 operations.
 - Electrical equipment specifications for zone 1 operations.
 - Cabins, where applicable, can be supplied manufactured to SOLAS AO, A15, A30 or A60 specifications.
 - All parts are fully traceable and interchangeable (100% quality control).
 - All equipment for use in hazardous areas is ATEX compliant, where applicable.
- **Pressure Control Equipment**
 - Manufactured to comply with SI-913, API-6A and NPD regulations, with full design approval by certifying authority.
 - Where applicable NACE MR-01-75 (latest) specifications.
 - All parts are fully traceable and interchangeable (100% quality control).
- **Down Hole Tools and Accessories**
 - Tested and proven designs.
 - All parts are fully traceable and interchangeable (100% quality control).

After Sales Services

service

TIS Manufacturing Limited's products are backed up by a comprehensive stock of spare parts. Our head office and store are situated next to Aberdeen airport, so we are ideally positioned to respond to "hot shot" requirements. Our trained specialist service technicians are available 365 days a year to assist our clients with maintenance and repair of their well service products on a world-wide basis.

TIS offer the following services from our Aberdeen facility:-

- Annual and major re-certification of surface pressure control equipment.
- Pressure testing to 22,500 psi.
- Hydraulic flushing in accordance with NAS-6.
- Major refurbishment, service and repair of well service equipment and downhole tools.

Rental Equipment

rental

TIS Manufacturing Limited has equipment from all our products lines available, to our customers, on a rental basis. This modern fleet of rental equipment is based at our Aberdeen headquarters and can be quickly deployed to anywhere in the world. All rental equipment is subject to availability at the time of enquiry.

In 2007 TIS unveiled the TORQS System, a live online quotation system, TORQS allows rental customers to get quotes 24 hours a day every day of the year. TORQS speeds up the rental process considerably allowing for faster turnarounds. TORQS is available through the TIS Website: www.tis-manufacturing.com.

For further information on our products and services, please contact a TIS Representative at the following address:-

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