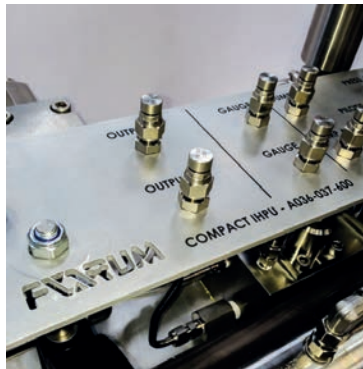
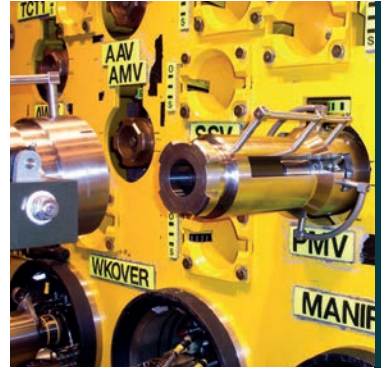
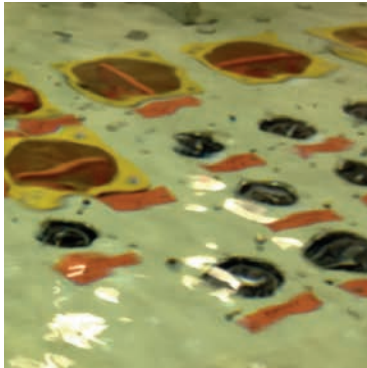




everything remotely possible™



Forum Subsea Technologies

SUBSEA TOOLING & COMPONENTS

everything remotely possible™

A wealth of experience, a wealth of tooling options.

Forum Subsea Technologies brings together a wealth of experience from the subsea industry to provide a single-source supplier for all your subsea tooling requirements. Our in-house engineering team encompass all key disciplines including electronics, hydraulics and mechanical design which when combined allow us to deliver innovative and state-of-the-art tooling applications to the subsea world.

Our team members are fully trained in their field of development. Our personnel has worked with a variety of ROV systems and numerous subsea tooling contracts in the past. We know and appreciate how difficult operations can be at times. We carefully design tools to be simple in their operation and rugged enough to continue to function time and again without fault.

A Comprehensive Range of Products

STANDARD TOOLING



Forum has produced innovative solutions for deepwater intervention problems for over 40 years – from manned submarines to Remotely Operated Vehicles (ROVs).

Our standard range of tooling includes industry-standard Torque Tools from Class 1 to 7 and beyond, ISO-class Hot Stabs, jetting and dredging systems, cutting equipment of 10" and more, isolated hydraulic power units, FLOTs, linear override tools and deck-based testing systems to shackles, hooks and every other subsea tool imaginable. Contact any one of our international centers and speak with our sales teams today.

TORQUE TOOLS



Forum produces every interface in ISO 13628-8 and API 17H. From the largest Class 7 at 25,000ft lbs to Class 1 at 50ft lbs Forum torque tools are made for robust service, but built for consistent, accurate torque and speed delivery.

Torque feedback options are available on most torque tools, as are a range of appropriate control manifolds and accessories.

Our current range includes:

- HT Torque Tool API 17K
- Class 1, 2, and LT Torque Tool
- Class 1-4 Torque Tool
- Torque Verification Units
- Forum Subsea Technologies Torque Tool Controller
- Subsea Torque Verification Unit
- Petrobras-style Torque Tool
- Class 5 Torque Tool
- Class 6/7 Torque Tool (17kN)

REMOTE INTERVENTION TOOLS



A range of catalogue-standard tools used for remote intervention:

- Class 1-4 Bucket Lift Tool
- Class 1-4 Gauging Tool
- Linear Actuator Override Tool
- Hydraulic Hot Stabs Type A & B
- TA17 Cable Gripper
- TA19 Hydraulic Cable Cutter
- High-Flow 1", 2" and 3" Bore Stabs

TOOL CONTROL SYSTEMS



Forum has a unique electronics-in-oil control system designed for ROVs of the future.

This design greatly reduces the need for pressure vessels and expensive wiring harnesses. The electronics-in-oil control system is already in service on our latest remote-control manifolds where the user controls torque tool speed and flow over a serial link from a surface PC.

RUNNING TOOLS



Running tools for change-out of control pods and chokes can be supplied in versions for diver operation, direct hydraulic, fly-to-place, and lift line. Forum supplies both ISO/API interface standards and client specials.

Forum provided the running tools and ROVs for the first diverless-operated subsea tree in the early 1990s, and has pioneered many of the technologies now adopted as industry standard.

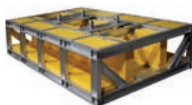
ROV INTERFACE PANELS



ROV panels provide robust interfaces for intervention by manipulators without risk of damage to small-bore pipe work and valves. Forum provides both individual valve assemblies for fitting to client structures and whole panels.

Forum has a range of subsea pressure gauges for permanent and temporary use, which are depth-compensated and specially configured for easy viewing by an ROV.

TOOL DEPLOYMENT AND SKIDS



Forum designs and manufactures tool deployment units (TDU). Commonly used in the North Sea and Atlantic region, a TDU fits to the rear of an ROV allowing the ROV to dock onto a subsea structure, and facilitates the controlled deployment of tools.

Work skids of various types are designed and delivered to meet clients' needs. A flying lead deployment skid typically includes fixed and variable buoyancy, torque tool, and flying lead orientation tool. We also supply skids for suction anchor operations, fluid injection and process sampling.

Related Services



BESPOKE TOOLING

When the standard equipment doesn't quite fit the bill, our bespoke design and development will!

When standard tools cannot perform the tasks you require, we provide a product development service to design and develop a tool which will do the job. Our team of specialists can rework current technologies, using the basis of our existing products or develop completely new concepts and innovative tools. Our goal is to keep you working, making the impossible possible.

Following our client's brief, design drawings and computer-aided testing takes place to prove our application will function as required. Once the design is approved, our team builds and tests the tooling. We welcome clients to visit our facility for the test phase. You can always rest assured when you require a bespoke tool we are the right people with the right skills to deliver your project on time.

SERVICING & REPAIRS



Had a breakdown or require the specialists to service your equipment?

Forum Subsea Technologies is often called upon by clients to undertake servicing and repair of a vast range of tooling, complete ROV systems and ancillary equipment.

Servicing can either take place at one of our main sites, clients' own sites or often in situ on board vessels and installations. No matter how large or small the service job is, Forum Subsea Technologies has the expertise to fault-find, repair and service to completion within clients' required time scales.

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Hydraulic
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LCDC
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Facilities



Hyperbaric Pressure Test Facility



Forum has a comprehensive hydrostatic pressure test facility including one of the largest horizontal vessels in Europe. The facility provides the opportunity for subsea equipment manufacturers to have their products pre-qualified at a fraction of the cost of actually conducting sea tests. The vessels have pressure ratings up to 8000 psi (550 bar)

The large chamber is pressurised and has an electrically driven water pump which can pressurise the chamber to a maximum rate of 58psi per minute. There are a maximum of twenty-two 25mm penetrations for electrical, hydraulic, pneumatic and instrumentation.

Forum have extensive experience in using these to operate client equipment in hyperbaric conditions. The horizontal loading system simplifies the installation and hookup of test equipment. A 20 Tonne overhead crane can be used for heavy test pieces. The hydrostatic pressure test vessel is fitted with a detachable semi-ellipsoidal end cap for easy loading of components. All testing is carried out to Health and Safety Executive Guidance GS4 Standard.



In addition to the hydrostatic pressure test facility, there is a 6m deep tank available for wet commissioning or full scale interface tests. The tank is 9 metres wide and 10 metres long enabling full ROV systems to be tested.

MODEL	CHAMBER						
	1	2	3	4	5	6	7
Model	PVW3500	PVW2000	PVW8000	PVW5000	PVO6000	PVO2000	PVO10000
Category	Large Pressure Chamber	Robertson & Ferguson	Penetrator Test Vessel	General Purpose Vessel	Insert Vessel	General Purpose Vessel	Insert Vessel
Working Fluid	Water	Water	Sea water	Oil/Water	Oil	Oil/Water	Oil
Max Working Pressure	241 bar (3500 psi)	138 bar (2000 psi)	550 bar (8000 psi)	349 bar (5000 psi)	414 bar (6000 psi)	138 bar (2000 psi)	690 bar (10000 psi)
Internal Diameter	2.3m	0.45m	0.35m	0.16m	0.16m	0.14m	0.07m
Max Parallel	8.1m	0.94m	1.7m	0.12m	0.21m	0.12m	0.11m

Components



Compensators



FEATURES

- Delrin Plastic Construction
- Grade 316 Stainless Steel Spring
- Pressure Relief Valve
- Mounting Feet
- Low Level Proximity Sensor Option

Sub-Atlantics range of compensators all for submerged systems to be flooded with incompressible fluid. They provide a positive pressure to a submerged oil filled component or system to protect against (sea) water ingress.

There are four sizes of rolling diaphragm, positive pressure compensators in corrosion resistant plastic suitable for ROV and tooling applications available with optional level sensors for volume monitoring.

The range of sizes available make these simple units particularly suitable for compensating thrusters, oil filled junction boxes, valve packs, etc.

COMPENSATOR SIZE	ACTUAL CAPACITY	PRESSURE (Bar)		MASS PROPERTIES (kg)	
		FULL CHARGE	NEAR EMPTY	IN-AIR OIL FILLED	IN-SEA WATER OIL
270cc	294cc	0.66	0.32	1.07	0.32
370cc	431cc	0.66	0.33	1.48	0.40
860cc	967cc	0.65	0.33	2.79	0.75
2700cc	2867cc	0.69	0.34	7.83	2.52
13.5 L	13.1L	0.48	0.24	28.3	7.6

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



FEATURES

- Extremely Lightweight
- Corrosion Resistant Materials
- Pressure Relief Valve
- Positive Pressure
- Two Pressure Options
- Level Sensor Option
- Integral Mounts
- SAE or BSPP versions

Sub-Atlantics 13.5 Litre / 3.6 USg positive pressure compensator is manufactured from plastic, stainless steel and aluminium alloy materials. It is available with an optional analogue level sensor.

Mean compensation pressure is 0.5 bar / 7 psi. An pressure relief valve, set at 1.3 bar, protects the unit from overfill and thermal expansion of the oil. Mounting feet are incorporated in the end caps. A compact analogue sensor that provides 0-100% level capacity feedback is available as a bolt-on option. Multiple compensators can be plumbed in parallel to increase total oil capacity using only a single level sensor. Ports are available in both SAE and BSPP versions.

SUB-ATLANTIC PART NUMBERS

SA-HC-0406-MAS	270cc Compensator BSPT (NPT)
0832-GA	Drawing Number
SA-HC-1043-MAS	370cc Compensator BSPT (NPT)
0662-GA	Drawing Number
SA-HC-0830-MAS	860cc Compensator BSPT (NPT)
0831-GA	Drawing Number
SA-HC-0745-MAS	2700cc Compensator BSPT (NPT)
0608-GA	Drawing Number
SA-HC-13500	13.5L Compensator BSPT (NPT)
2442-GA	Drawing Number

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Brushless AC Thrusters



FEATURES

- High reliability, rugged design
- Forward/Reverse Thrust within 5-10% band
- Two sizes available
- Direct Drive Reliability (no gearbox)
- Lightweight Design
- Various Connector Options

Sub-Atlantics range of brushless AC thrusters have low weight and enhanced reliability. They are currently available in two sizes. The first which is the CTE-01 has a 150mm propeller and the second which is a CTE-02 has a 178mm propeller.

These thrusters are perfect vehicles using AC power transmission systems. Both sizes of thruster are direct drive for mechanical reliability and are proportionally controlled by an external drive electronics board designed to fit inside an electronics bottle with a minimum inside diameter of 166 mm / 6.5 inches. Power requirements are 415-440 Vac 3 Phase + Neutral, Control is +/- 5Vdc. These thrusters are positively oil compensated and rated for full ocean depth.

MODEL		CTE-01 Mk1		CTE-01 Mk2		CTE-02 Mk1		CTE-02 Mk2	
	UNITS	Single	Double	Single	Double	Single	Double	Single	Double
Fwd Thrust @60Hz	N	285	285	285	285	442	481	442	481
Rev Thrust @60Hz	N	255	285	255	285	353	481	353	481
Electric Power	W	1.0	1.1	1.0	1.1	2.0	2.2	2.0	2.2
Voltage	Vac	440, 3 phase							
Weight in Air	Kg	8.5	9.8	8	9.3	13	15	12	14
Weight in Water	Kg	5.9	6.5	5	6.4	6.3	9.6	8.1	9.2
Connector	Sub-Atlantic 5 Pin Connector Whip in 500mm or 1000m length								
Depth Rating	Oil Filled, Full Ocean Depth								
Construction	Aluminium, Stainless Steel, Plastics & Ceramics								

Forward/Reverse Efficiency

Comparing input power to the output thrust, our forward and reverse curves fall within 5% band. This is important in a typical vectored configuration as the overall system performance will only be as good as the average forward/reverse thrust. For the same power input, performance exceeds other thrusters on the market.

Innovative Shaft Sealing

Thrusters incorporate our proven ceramic wear ring technology. The ceramic ring provides a durable hard surface that prevents wear to the shaft and the resultant seal damage and flooding.

Pressure Compensation

These thrusters must be externally compensated. A range of compensators can be bought from Sub-Atlantic.

Brush and HPU Options

Our brushless AC thrusters are also used to drive HPU's and there are cleaning brush options for both the CTE-01 and CTE-02 thrusters. Please ask for more details.

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Brushless DC Thrusters



FEATURES

- High reliability, rugged design
- Unique Statorshield™ technology
- Continued Operation in Event of Shaft Seal Failure
- Forward/Reverse Thrust within 5-10% band
- Three sizes available
- Direct Drive Reliability (no gearbox)
- Lightweight Design
- Integral Drive Electronics

Sub-Atlantics new direct drive range of brushless DC thrusters break new ground in thrust, low weight and enhanced reliability. They are currently available in three sizes, each incorporating Sub-Atlantics unique Statorshield™ technology.

Sub-Atlantics unique Statorshield system allows the thruster to continue running in the event of a shaft seal failure and subsequent flooding, without damage to the winding or electronic components. Integral electronic drives are oil filled and pressure compensated to 3000 metres / 10000 feet. Three sizes are available with propeller diameters up to 246mm / 9.7" and bollard thrusts up to 100 kgf / 220 lbf.

Integral Drive Electronics

All thrusters have integral drive electronics built into the housing. Electrical connections consist of main DC power input and a control signal. The control is analogue ($\pm 5\text{Vdc}$) but serial and CAN control is also available on some thrusters.

Depth Rating

Thrusters are rated to 3,000 metres / 10,000 feet which is currently limited by the integral oil compensated drive electronics. Rating can be increased to full ocean depth by placing the electronics in a one-atmosphere housing.

MODEL		SPE-75	SPE-180	SPE-250
	UNITS			
Propeller Diameter	mm	144	178	246
Max. Bollard Thrust	kgf	26	45	100
Supply Voltage (Std)	Vdc	300	300	600
Control	Vdc	±5	±5	±5 & CAN
Weight in Air	Kg	3.3	5.9	13
Weight in Water	Kg	2.0	3.8	8.0
Connector		Various		
Depth Rating	msw	300 & 3000	3000	3000
Construction		Aluminium, Stainless Steel, Plastics & Ceramics		

Statorshield Technology Relates to Reliability

Subsea thrusters are prone to water entering through the shaft seal and causing short circuit failure of the stator windings. Statorshield technology eliminates this problem by the introduction of an internal sealed diaphragm located between the rotor and stator, creating two separate isolated and sealed volumes (rotor cavity and stator cavity). Water cannot reach the stator and electronics through the shaft seal preventing catastrophic failure due to shaft seal leakage. Operation can continue until the machine is recovered when the rotor cavity can then be flushed, seals replaced and the unit refilled with oil.

Innovative Shaft Sealing

Thrusters incorporate our proven ceramic wear ring technology. The ceramic ring provides a durable hard surface that prevents wear to the shaft and the resultant seal damage and flooding.

Pressure Compensation

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General Function Valve Pack



FEATURES

- 6, 8, 12, 16 station versions
- Solenoid and/or Proportional valves
- Wandfluh NG3 Valve Reliability
- Extremely Compact and Lightweight
- Manual or Proportional Pressure Reduction
- Externally Adjustable Flow Control
- Externally Adjustable Line Relief
- Removable/Configurable PO Check Valves
- Powerful Serial Control System
- Hardware or GUI Control with Diagnostics
- Pressure Tolerant Electronics
- Pressure & Water Ingress Sensors
- Fully Captive Cover Screws
- Tested to 6000 m
- Various Connector Options

Sub-Atlantics General Function Valve Packs are the most compact and lightweight available. Loaded with functionality, solenoid, proportional or mixed valve configurations and driven by a powerful, fully configurable digital control system, these are the perfect choice for ROV and tooling applications.

The small size and weight of these valve packs are achieved by building most of the functionality directly into the manifold body, this avoiding many stacking 'sandwich' type valves. The heart of the system uses Sub-Atlantic's unique flow/PO check cartridge that combines a unidirectional flow controller and a pilot operated check valve. Typical operation includes manipulator functioning, adjustable torque tools, pan and tilt units, subsea robotics etc. The small size and weight of these units makes them additionally suitable for smaller electric ROV's where space and payload are a premium.

PRESSURE AND FLOW

- 280 bar max. input pressure @
40 Lpm max. input flow rate
- 15 Lpm max. per solenoid valve
- 8 Lpm max. per proportional valve

Pressure Reducing Valve

Input pressure on our valve packs is controlled between 0 to 280 bar by a Pressure Reducing Valve. This can be manually operated or proportionally controlled for remote pressure control. Pressure sensors can also be fitted to monitor the supply and return galleries.

Solenoid or Proportional Control Valves

Valve packs incorporate high reliability 'Wandfluh NG3 mini' 4 way/3 position solenoid or proportional spool valves (solenoid and proportional can be mixed in a single pack to customer specification)

Pilot Operated Check and Flow Control Valves

Each valve station incorporates two unique removable cartridges providing PO check and flow control functionality in both flow directions. The PO check provides leak-free load holding and the ball can be simply removed if a particular check function is not required (one or both directions). The externally adjustable, fine Flow Controllers provide precise flow control down to zero on each valve return line and free flow on the pressure line, allowing each function direction to be accurately set at different flow rates.

Cross Line Relief Valves

Each valve station incorporates two Cross-Line Relief valves fitted integrally in the valve pack body. These provide component and hose protection when using pilot operated checks as high pressure can be generated inside hoses, for instance, by external forces on a manipulator or during deep dive recovery. These are externally adjustable from 50 to 300 bar (280 standard setting)

Pressure Tolerant and Robust Electronics

The pressure tolerant electronics (tested to 700 bar / 10000 psi) that reside in the valve pack are interfaced via RS232 or RS485, half duplex, running @ 38.4k baud or CAN (controller area network) running @ 500k bits second. The printed circuit board (PCB) is protected on all its I/O from over voltage, reverse voltage and over current. This is achieved by utilising transient voltage suppressors, self-healing fuses and internally protected high side valve drivers.

Four Topside Control Options:

1. Complete Software Control and Diagnostic Feedback

A topside graphical user interface (GUI) can be used to provide complete control of the valve pack with on screen buttons and also displays the diagnostic information from the valve pack. The GUI is free as an executable and runs on a Windows PC.

2. Complete Hardware Control

Hardware topside controllers can be purchased to control the valve pack with physical joysticks and buttons

3. A Mixture of Hardware and Software Control with Diagnostic Feedback

If the hardware option is chosen the diagnostic feedback can still be displayed on a separate topside GUI

4. User Implemented Control

A document with a telemetry string format and content is available to valve pack customers in order to interface to the valve pack with their own system software.

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Generation 2 - General Function Valve Pack



FEATURES

- 6, 8, 12, 16 station versions
- Solenoid and/or Proportional valves
- Wandfluh NG3 Valve Reliability
- Extremely Compact and Lightweight
- Manual or Proportional Pressure Reduction
- Externally Adjustable Flow Control
- Externally Adjustable Line Relief
- Removable/Configurable PO Check Valves
- Powerful Serial Control System
- Hardware or GUI Control with Diagnostics
- Pressure Tolerant Electronics
- Pressure & Water Ingress Sensors
- Fully Captive Cover Screws
- Tested to 6000 m
- Various Connector Options

Sub-Atlantic's new General Function Valve Packs are as compact and lightweight as possible for the feature set. Loaded with functionality: fully proportional cartridge valves with single or dual operating pressure ranges from independent pressure reduction valves. All driven by a powerful, fully configurable digital control system that is compatible with Generation 1 units, these are the perfect choice for ROV and tooling applications.

The compact size and weight of these valve packs is achieved by building most of the functionality directly into the manifold body, thus avoiding many stacking 'sandwich' type valves. The heart of the system uses Sub-Atlantic's unique flow/PO check cartridge that combines a unidirectional flow controller and a pilot operated check valve. This design has been much enhanced to accommodate the high flow rates available on the valve pack.

PRESSURE AND FLOW

- 280 bar max. input pressure @ 60 Lpm max. input flow rate
- 23 Lpm max. per valve station
- Internal control manifold allows for easy configuration of stations running from each proportional pressure reducing control

Pressure Reducing Valve

Input pressure on our valve packs is controlled between 0 to 280 bar by a Pressure Reducing Valve. This can be manually operated or pro-portionally controlled for remote pressure control. Pressure sensors can also be fitted to monitor the supply and return galleries.

Solenoid or Proportional Control Valves

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Each valve station incorporates two Cross-Line Relief valves fitted integrally in the valve pack body. These provide component and hose protection when using pilot operated checks as high pressure can be generated inside hoses, for instance, by external forces on a manipulator or during deep dive recovery. These are externally adjustable from 50 to 300 bar (280 standard setting)

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4. User Implemented Control

A document with a telemetry string format and content is available to valve pack customers in order to interface to the valve pack with their own system software.

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Hydraulic Power Units



FEATURES

- High Reliability
- Outputs Shaft each end of the motor
- Shaft Powers from 15 to 280 kW
- Industry Proven Windings
- 1800 rpm Synchronous Speed
- Water ingress and temperature sensors
- Various voltage options (3000V standard)
- Interface kits for a range of hydraulic pumps
- Motor options for pump drives with 3600 rpm shaft speed
- Efficient Design requires no external cooler

Sub-Atlantics high efficiency submersible motors and HPU’s are the most reliable available in the marketplace. Available in sizes varying from 15 to 280 kW / 20 to 375 hp, they are the perfect power source supply for ROV’s, Trenchers, TMS and tooling applications.

Our motors and HPU’s are ideal for driving thruster systems, excavation and hydraulic tools requiring high power inputs. The submersible motor can also be used to drive other types of rotating machinery such as water pumps for trenching machines. The distinctive feature of our submersible motors is the finned end cap design that provides efficiency cooling due to the heat transfer surface area. This eliminates the need for forced external cooling on the larger motors. Motor winding temperature and water ingress sensors are included for connection to customers control systems.

kW Shaft	hp Shaft
15	20
93	125
112	150
150	200
280	385

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FEATURES

- Adjustable Pressure Relief Valve
- Low Cost Replacement Pumps
- 440Vac Operation
- Seal between Motor and Pump
- Starts under load

Sub-Atlantic's small Hydraulic Power Unit (HPU) delivers 4 Lpm / 1 US gpm at adjustable pressures up to 200 bar / 3000 psi and is suitable for powering manipulators, tools etc.

A gear pump is driven by a 3 phase, 440 Vac electric motor. This is the same type as used on Sub-Atlantic's reliable CTE-02 electric thrusters. An integral, externally adjustable pressure relief valve is used to set the system pressure and a quick change suction filter cartridge is fitted into the body.

SPECIFICATIONS

Hyd Power	1.3 kW
Pump Flow	4 Lpm
Max. Pressure	200 bar
Motor Voltage	440 Vac
Depth Rating	3000 msw
Weight in Air	14.5 kg
Oil Type (Motor)	Transformer DIALA GX or Tellus 22 (Motor draws less current with DIALA GX)
Oil Type (Pump)	Tellus 32 or 22 (temperature dependant)
Ports	3/8" BSPP

SUB-ATLANTIC PART NUMBERS

SA-H-3637-MA	1.3kW HPU
3806-GA	Drawing Number

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

6 Station Combined HPU/Valve Pack



FEATURES

- Integrated HPU/6 Station Valve Pack
- Integral Pressure Relief Valve
- Solenoid Valves
- Various Connector Options

Sub-Atlantics 6 station valve pack has been designed for use on small electric ROV’s using manipulators and/or tooling skids.

The unit incorporates a 220Vac electric motor driven pump, six Wand-fluh NG3 directional control valves, each with pilot operated checks and a mini control system linked back to a single electrical connector. The system provides smooth, reliable control over small hydraulic systems and any tool requiring low power input.

MODEL	STANDARD PRESSURE	DEPTH RATING	MAX. PRESSURE	MAX. FLOW RATE	VOLTAGE	WEIGHT IN AIR(FILLED/EMPTY)
AC Version	140 bar	3000 msw (6000optional)	180 bar	0.66 Lpm	220Vac	16.5 kg/
DC Version				0.31 Lpm	300Vdc	13.5 kg

SUB-ATLANTIC PART NUMBERS	
SA-HV-0978-MAS	6 Station Valve Pack (AC)
0934-GA	Drawing Number
SA-HV-2933-MAS	6 Station Valve Pack (DC)
0934-GA	Drawing Number

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



Sub-Atlantic Dirty Oil Pack is an Isolated Hydraulic Power Unit (IHPU) that can be easily incorporated into a ROV hydraulic system to provide an isolated hydraulic supply for driving tooling and equipment that may potentially otherwise cause contamination to the main ROV hydraulic supply.

The unit is a fully self-contained circuit incorporating hydraulic motor, pressure compensated pump, compensated reservoir, pressure and return line filters and multiple inlet/outlet connection points. Hook-up to the ROV is quick and simple by connecting a supply, return and drain line to a ROV valve pack function.

SPECIFICATIONS	
Depth Rating	Full Ocean Depth
Pump	Rexroth A10VSO 18cc Pressure Compensated
Motor	Parker F1-25cc Fixed Displacement
Safety Valve	Adjustable Pressure Relief
Weight in Air (Empty)	41.5 kg
Weight in Water	31.5 kg
Max. Output Pressure	200 bar
Max. Output Flow @ 200 bar	7.6 Lpm
Reservoir Capacity	2.7 L (additional compensators available)
Motor Operating Pressure Requirement	170 - 200 bar, Max.
Motor Operating Flow Requirement	up to 18 Lpm
Pressure Manifold Outlets	6 x 3/4" SAE (3/4-18 UNF) and 1 x 11/16" SAE (11/16-12 UNF)
Return Manifold Outlets	6 x 3/4" SAE (3/4-18 UNF) and 1 x 11/16" SAE (11/16-12 UNF)

SUB-ATLANTIC PART NUMBERS	
SA-H-4016-MA	Dirty Oil Pack
4038-GA	Drawing Number

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Hydraulic Thrusters



FEATURES

- Proven Reliability
- Efficient
- Forward Reverse Thrust within 5% band
- Quick-Change Seal Cartridge
- Reliable Ceramic Sealing Surfaces
- Lightweight
- DNV Witnessed Performance
- 4 Standard Propeller sizes
- Various Interchangeable Motor Options

Sub-Atlantics range of hydraulic thrusters has become the preferred propulsion for ROV's and cable burial/maintenance vehicles. Working in a highly aggressive environment, they have earned a reputation for reliability, efficiency and exceptional performance.

Sub-Atlantic thrusters are reliable due to a rugged, lightweight construction and a ceramic shaft sealing system. These thrusters also benefit from producing near equal forward/reverse efficiency within a 5% band. The data from our performance testing has been witnessed by DNV to ensure your system performs exactly as expected. These thrusters also benefit from the ability to fit any motor displacement size to any of the four thruster sizes due to the common, one size motor interface. This is advantageous when accurately matching to vehicle hydraulic parameters.

Available Sizes

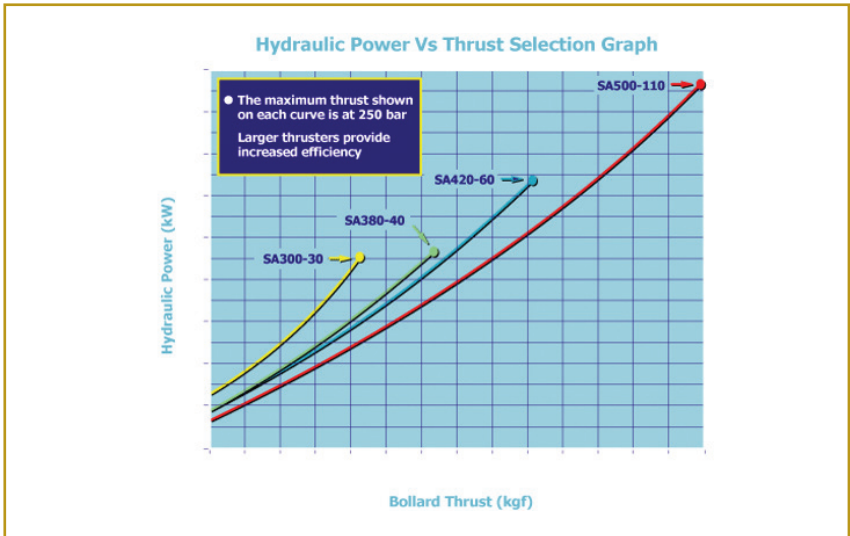
Standard range is available in four propeller sizes, SA300, SA380, SA420 & SA500, the design-nation represents the diameter of the propeller in millimetres. Standard motor sizes are 20, 30, 41, 61, 103 and 119cc. Our hydraulic motors all have identical mounting interfaces to the thruster body, regardless of the motor displacement.

Forward/Reverse Efficiency

Comparing input power to the output thrust, our forward and reverse curves fall within 5% band. This is important in a typical vectored configuration as the overall system performance will only be as good as the average forward/reverse thrust. For the same power input, performance exceeds other thrusters on the market.

Innovative Shaft Sealing

Thrusters incorporate our proven ceramic wear ring technology. The ceramic ring provides a durable hard surface that prevents wear to the shaft and the resultant seal damage and flooding.



PREFERRED RANGE						
Model	Propeller Diameter (mm)	Motor Displacement (cc)	Bollard Thrust @ 250bar (kgf)	Weight in Air (kg)	Weight in Water (kg)	Mount
SA-300-30	300	28.1	370	18	10	Flange
SA-380-40	385	37.7	460	27	14	Flange
SA-420-60	420	58.2	590	34	17	Flange
SA-500-110	500	110.1	850	59	31	Flange

Quick Change Seal Carrier and Easy Air Bleeding

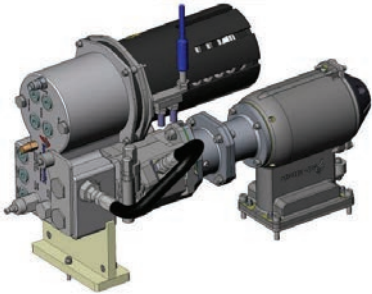
Seals are mounted in a carrier that can be changed in minutes to minimise vehicle down-time. Our thrusters also include 5 logically located bleed screws for quick and easy removal of air during commissioning and operation.

Thruster Guards

Economical, efficient and lightweight guards are available in strong injection and moulded plastic.

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

LCDC Brushless HPU



FEATURES

- IntegratedPositivePressureCompensator
- 2.7 Litre Reservoir
- Rexroth A10VSO 22cc Pump
- Low Oil Level Alarm
- Integrated Pressure Filter
- Multiple Connection Ports
- Integral Start-Up PRV valves

Sub-Atlantics Low Capacity Direct Current HPU unit is a pressure compensated 600V brushless DC hydraulic power unit, designed for subsea use. Powered by a Sub-Atlantic brushless DC drive motor it is designed to give reliable hydraulic power at depths of up to 3000m.

SPECIFICATIONS	
Hyd Power	1.3 kW
Flow Rate	6 Lpm
Hydraulic Pressure	200 bar
Electric Supply	600 vdc
Depth Rating	3000 msw
Weight in Air	32.8 kg

SUB-ATLANTIC PART NUMBERS	
SA-H-3582-MAS	2kW LCDC HPU
3907-GA	Drawing Number

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



FEATURES

- Integrated Positive Pressure Compensator
- 2.7 Litre Reservoir
- Rexroth A10VSO 22cc Pump
- Low Oil Level Alarm
- Integrated Pressure Filter
- Multiple Connection Ports
- Integral Start-Up PRV valves

Sub-Atlantics High Capacity Direct Current HPU unit is a pressure compensated 600V brushless DC hydraulic power unit, designed for subsea use. Powered by a Sub-Atlantic brushless DC drive motor it is designed to give reliable hydraulic power at depths of up to 6000m.

This unit is designed to give reliable hydraulic power on DC electric ROV's. Importantly if to be bought as a separate entity this unit requires a remote control unit.

SPECIFICATIONS

Hyd Power	15 kW
Max. Flow Rate	29 Lpm @ 207 bar
Ranging to	39 Lpm @ 150 bar
Max. Working Pressure	207 bar
Electric Supply	600 Vdc
Depth Rating	3000 msw (6000 optional)
Weight in Air (inc. Oil)	48.5 kg
Weight in Water (inc. Oil)	35.5 kg

SUB-ATLANTIC PART NUMBERS

SA-H-3618-MAS	15kW LCDC HPU
3924-GA	Drawing Number

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

1/2/3 Function Manipulators



FEATURES

- Driven from bipolar $\pm 24\text{Vdc}$ supply
- Motors current limited to 1A per function
- Various Grabber Options
- 300m depth rated

Sub-Atlantics 1, 2 or 3 Function Manipulators are simple, compact and electrically operated. They provide an alternative to the hydraulically operated manipulators, and can be fitted to a variety of ROVs.

The 3 function has 3 basic function; Jaw Open/Close, Arm Up/Down and Rotate Clockwise/ Anti-Clockwise. For the 2 function manipulator the rotate function is removed.

The 1 function manipulator utilises the Jaw Open/Close function.

SUB-ATLANTIC PART NUMBERS	
SA-T-2276-MAS	1 Function Manipulator
SA-T-5950-MAS-01	1 Function Manipulator (w/ 2 Jaw Grabber)
2336-GA	Drawing Number
SA-T-2264-MAS	2 Function Manipulator
SA-T-5965-MAS-01	2 Function Manipulator (w/ 2 Jaw Grabber)
SA-T-5965-MAS-02	2 Function Manipulator (w/ 3 Finger Grabber)
SA-T-5965-MAS-03	2 Function Manipulator (w/ 3 Finger Grabber & cutter)
2337-GA	Drawing Number
SA-T-2277-MAS	3 Function Manipulator
SA-T-5457-MAS	3 Function Manipulator (w/ cutter)
SA-T-5457-MAS-01	3 Function Manipulator (w/ 2 Jaw Grabber)
SA-T-5457-MAS-02	3 Function Manipulator (w/ 3 Finger Grabber)
SA-T-5457-MAS-03	3 Function Manipulator (w/ 3 Finger Grabber & cutter)
2338-GA	Drawing Number

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



FEATURES

- Dedicated 370cc compensator reducing risk of contamination
- Pressure gauge to indicate system pressure to pilot

Sub-Atlantic Water Jet Pump System provides water jetting capability without the need for hydraulic supply therefore can be fitted to a variety of electric ROV's.

SPECIFICATIONS

Supply Voltage	320Vdc @ 15A
Max. Output Flow @ 100 bar	12 Lpm

SUB-ATLANTIC PART NUMBERS

3023-MAS	Water Jetter
4388-GA	Drawing Number

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Pan & Tilt Units



FEATURES

- Pan angle—360° adjustable in 30° spacer increments
- Tilt angle—360° adjustable in 30° spacer increments
- 56Nm output Torque
- Made from Cast Anodised Aluminium Alloy and Stainless Steel
- Slotsonmountingbracketforbandclamps

Sub-Atlantics Hydraulic Pan & Tilt units are used on a wide range of work class vehicles. They provide a rugged and reliable support for most underwater industry standard cameras and lights.

Standard rotational movements are 360 degrees for both pan and tilt functions. Maximum sweep rotations can be reduced simply by fitting plastic spacers.

Flow controllers are incorporated which allow precise speed control of both pan and tilt function.

SUB-ATLANTIC PART NUMBERS	
SA-A-5735-MAS	Hydraulic Pan & Tilt
1367-GA	Drawing Number
SA-A-1128-MAS	24 Vdc version (standard)
1146-GA	Drawing Number
SA-A-1128-MAS-HT	24 Vdc version (High Torque)
1146-GA	Drawing Number
SA-A-1129-MAS	110 Vac version (standard only)
0846-GA	Drawing Number
SA-A-6475-MAS	24 Vdc, serial controlled (standard)
6475-GA	Drawing Number
SA-A-6475-MAS-HT	24 Vdc, serial controlled (High Torque)
6445-GA	Drawing Number

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



FEATURES

- 24V Volts DC or 100 Volts AC versions
- High Torque version
- Top Mounting Flange on Pan Shaft
- Low Backlash
- Position Feedback
- Robust Design
- Adjustable Limit Switches
- Integrated Positive Pressure Compensator
- Can be inverted

Sub-Atlantics Electric Pan & Tilt units are used on a wide range of vehicle sizes from electrical inspection class up to the largest cable plough. They provide a rugged and reliable alternative to hydraulic units and free up valuable hydraulic valve pack functions.

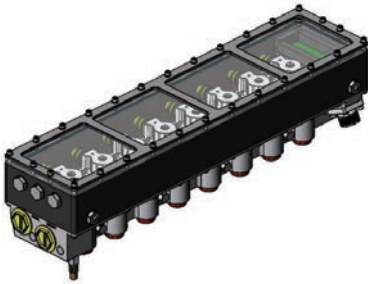
With feedback potentiometers and adjustable limit switches supplied as standard, these rugged units are the perfect choice for the positioning of industry standard cameras and sensors. The gearing system is overrated to resist damage due to impact damage. There is also a high torque version of the 24Vdc units.

Pan and Tilts are oil filled and positively compensated, making them suitable for operation at extreme depth and can be supplied with a range of electrical connector types.

MODEL	VOLTAGE	DEPTH RATING	OUTPUT TORQUE	NOMINAL SPEED	MAX. LOAD	WEIGHT IN AIR/WATER
5735-MAS	N/A	6000m	28 Nm @ 100bar 56 Nm @ 200bar		12kg	4.1 kg/3.1 kg
1128-MAS	24Vdc	3000m (6000m optional)	11 Nm	4.1 rpm	20 kg	6.5 kg/4.5 kg
1128-MAS-HT	24Vdc		21 Nm	1.4 rpm		
1129-MAS	110Vac		11 Nm	4.1 rpm		
6475-MAS	24Vdc		11 Nm	4.1 rpm		
6475-MAS-HT	24Vdc		21 Nm	1.4 rpm		

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8 Station Servo Valve Pack



FEATURES

- APCBcontrolledversionoftheServovalve pack is also available.

This extremely compact servo valve pack weighs only 15 kg in sea and provides precise control of propulsion thrusters on underwater vehicles.

The pack incorporates eight 77 Lpm (20 US gpm) rated servo-valves that provide low pressure drop on most standard ROV applications. The use of this pack in conjunction with Sub-Atlantic's efficient thrusters and Hydraulic Power Units will produce an unbeatable propulsion solution with regards to reliability, efficiency and cost. The valves can also be used to control any tool requiring a variable speed or reversible function.

SPECIFICATIONS

Max. Pressure	280 bar
Max. Input Flow Rate	350 Lpm
Weight in Air	32 kg
Weight in Water	15 kg
Depth Rating	6000 metres

SUB-ATLANTIC PART NUMBERS

SA-HVS77-U-B2412-1	8 Station Servo Valve Pack
6385-GA	Drawing Number

Soft Start or Pump Unloading Valve

Option 1—Soft start valve that opens the pressure and return galleries until the system pump is started at which point it automatically closes after a few seconds. This prevents the pump starting under load conditions that would result in excessive starting currents

Option 2—Solenoid operated poppet valve used for loading/unloading pump via control system. This option will require a 20-pin connector to accommodate the additional solenoid instead of the standard 12-pin.

Servo Control Valves

There are 8 'STAR' lightweight servo valves rated 77 Lpm full flow @ 70 bar pressure drop. In normal conditions, the valve should be operated with a maximum flow rate approx. 40 Lpm resulting in a pressure drop of only 19 bar.

For analysis, the relationship of the flow Q in Lpm versus pressure drop ΔP in bar, can be approximately modelled by the expression:
 $\Delta P = 0.0118 \times Q^2$.

As an option, Moog Ultra valves can be supplied instead of Star (each valve weighs 1.0 kg more than STAR)

Temperature Sensor

A PT100 sensor is fitted in the return gallery

Electrical Connector

The unit incorporates a Burton Type 5506-2412 12-pin bulkhead connector as standard. A mating connector plug will be required (not supplied).

Cover Oil Compensated

When used underwater, the valve pack cover must be filled with oil provided from a suitable positive pressure compensator. Hydraulic oil can be used if new, clean and free from moisture.

Compensators with a maximum sprung pressure of 1 bar and a minimum capacity of 10% of the oil volume are recommended. Sub-Atlantic can supply a compact 860cc sprung compensator for this purpose in corrosion resistant plastic.

Pressure Reducing Valve

There is an adjustable Pressure Relief Valve which provides system protection by venting to the return gallery in the event of compensated pump control failure. Unless specified otherwise, the standard setting for the valve is 230 bar (based on 210 system pressure)



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Rotator/Tilt Units



FEATURES

- 24Vdc
- Top Mounting Flange
- Low Backlash
- Position Feedback
- Robust Design
- Adjustable Limit Switches
- Integrated Positive Pressure Compensator
- Can be inverted
- Various Connector Options

Sub-Atlantics tilt/actuator unit is used on all our small electric ROV’s for camera positions but also as a latching actuator in our TMS systems.

With feedback potentiometers and adjustable limit switches supplied as standard, these rugged units are the perfect choice for the positioning of industry standard cameras and sensors. The gearing system is overrated to resist damage due to impact damage. There is also a high torque version of the 24Vdc units.

They are oil filled and positively compensated, making them suitable for operation at extreme depth and can be supplied with a range of electrical connector types.

SUB-ATLANTIC PART NUMBERS	
SA-A-0245-MAS	24Vdc Tilt Unit
0020-GA	Drawing Number
SA-A-1931-MAS	24 Vdc Rotary Actuator
2335-GA	Drawing Number

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



FEATURES

- 50 Nm / 37 lb.ft Output Torque
- Self-locking Power Down
- Worm Drive Gears
- Continuous Rotation
- 24Vdc @ 2.2 A
- Integrated Positive Pressure Compensator
- Tested to 3000 msw (6000 optional)
- Adjustable Slipping Clutch Option
- Various Connector Options

Sub-Atlantics electric rotary actuator delivers 50 Nm / 37 lb.ft torque from 24Vdc supply. It is suitable for a wide range of actuation tasks and is available with an over-torque protection clutch.

This rotary actuator can be put to many uses in subsea tooling, especially in small vehicles. One example is in our pipeline survey skid for inspection class ROV's where the actuator is used to raise and lower the camera boom and CP arms. The body is manufactured from lightweight black acetal plastic and shaft components are in stainless steel.

MODEL	VOLTAGE	DEPTH RATING	OUTPUT TORQUE	NOMINAL SPEED	MAX. LOAD	WEIGHT IN AIR/WATER
0245-MAS	24Vdc	3000 msw	15 Nm	3.6 rpm	40 kg	3.45 kg/2.6 kg
1931-MAS	24Vdc	(6000 optional)	50 Nm	2.3 rpm	50 kg	5.45 kg/3.16 kg

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Torque Tools



ISO 13628-8 Class 1-2 Utility



FEATURES

- ISO 13628-8 Fig 18 (API 17H) Class 1 & 2
- Max Torque 160Nm (120ft lbs)
- Dual Sensor Electronic Turns Counter
- Internal Strain Gauge
- Supplied in offshore-suitable transit case

The ISO 13628-8 Fig 18 (API 17D) Class 1 & 2 Torque Tool, above, has been specifically developed to provide the highest level of performance. It has integral torque and turns counting sensors. When matched with a Forum-supplied torque tool control manifold, it can provide precise feedback on torque response of any subsea operation. These can alternatively be utilized by connecting a Forum Universal Subsea Display, which would give a visual readout of live torque feedback and turns count. USD sold separately.

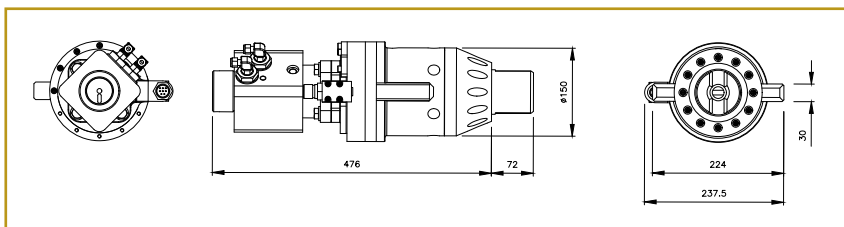
The tool conforms to the ISO 13628-8 Fig 18 Class 1 & 2 bucket interface used extensively in the subsea industry for valve overrides operated by ROV. The tool can also be supplied with a socket to operate paddle- and t-bar-style interfaces to ISO 13628-8 Fig 13 (a), (b), (c).

The sensor section directly measures the torque between the reaction lugs of the tool and the driven shaft. The sensor is a strain gauge bridge optimized for torsion measurement. When the tool is fitted with the paddle-type socket, the torque reaction is taken through the manipulator handle but still measured by the sensor.

Note: The utility tool does not deliver the full Class 2 torque (271Nm), there is a variant available (A019-158-002) that delivers up to 440Nm.

WHAT'S IN THE BOX?

- Torque Tool
- Class 1 & 2 Socket
- Paddle/T-Bar Socket
- Bladder-style compensator
- Fishtail Handle
- Operations & Maintenance Manual



SPECIFICATIONS

Torque interface	ISO 13628-8:2001 (E) Fig 18 & Fig 13
Torque range	30-160Nm (22-120ft lbs)
Typical repeatability	+/-6% (geroter variation at full load)
Socket sizes	11/16" Sq Class 1 & 2 Socket Paddler/T-bar to ISO Fig 13 Socket
Weight (air/water)	26/18kg
Electrical connector	8-Pin Burton
Sensors	Dual Sensor Inductive Turns count sensor Internal Strain Gauge
Hydraulic	Mineral Oil

PART NUMBERS & OPTIONS

A019-151-102/02	Class 1 & 2 Tool with Torque and Turns Feedback
A019-151-102/spares	Class 1 & 2 Tool with Torque and Turns Feedback Spares Kit
A019-958-152/2	Surface Verification Unit
A019-958-601	Subsea Verification Unit
A286-001-050/04	Torque Tool Control System
A019-901-102	3-Stage Manifold (use instead of TTCS)
A019-151-251	17H 1st Edition (High Torque) Nose Adaptor
A019-904-400/01	Subsea Torque and Turns Display
A019-151-002	Class 1 & 2 Tool with no Feedback
A019-151-002/RS	Remote Spares Kit for non-Feedback Tool

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

ISO 13628-8 Class 1-4 (API 17D)



FEATURES

- ISO 13628-8 Fig 18 (API 17H) Class 1-4
- Max Torque 2,700Nm (2,000ft lbs)
- Dual range
- Dual Sensor Electronic Turns Counter
- Internal Strain Gauge
- Latching Wings
- Supplied in offshore-suitable transit case

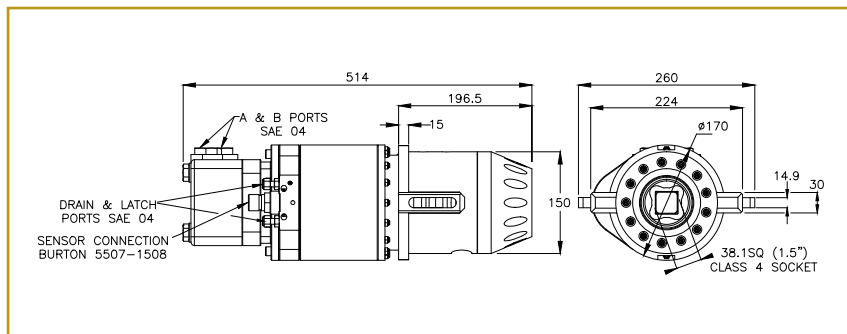
The ISO 13628-8 Fig 18 (API 17H) Class 1 – 4 has integral torque and turns counting sensors for closed loop control. When matched with a Forum-supplied torque tool control manifold, it can provide precise feedback on torque response of any subsea operation. These can alternatively be utilized by connecting a Forum Universal Subsea Display, which would give a visual readout of live torque feedback and/or turns counter. USD sold separately. This torque tool has been specifically developed to provide the highest level of performance.

The tool conforms to the ISO 13628-8 Fig 18 Class 1-4 bucket interface used extensively in the subsea industry for valve overrides operated by ROV. The tool has latching wings allowing the tool to hold on to the interface. The latching wings are hydraulically driven forward and spring retracted. Thus in the case of a loss of hydraulic power the wings will release. The tool uses a high specification drive motor for consistent torque output characteristics, even if used with direct hydraulic pressure control without the feedback sensor. The motor shares casing oil with the gearbox therefore avoiding the need for a separate compensator.

Note that for applying torques less than 108Nm (80ft lbs) the class 1&2 tool is recommended.

WHAT'S IN THE BOX?

- Torque Tool
- Class 1 & 2 socket (11/16" Sq)
- Class 3 socket (1-1/8" Sq)
- Class 4 socket (1-1/2" Sq)
- Fishtail handle
- Cage with USD mount
- Hose Set (JIC with Swagelok adaptors)
- Low-range convertor
- Operations & Maintenance Manual



SPECIFICATIONS

Torque interface	ISO 13628-8 Fig 18 Class 1-4
Torque range	540-2,700Nm (400-2,000ft lbs) (gearbox fitted) 108-540Nm (80-400ft lbs) (direct drive)
Motor size	236cc
Latching strength	1 tonne @ 160bar
Weight (air/water)	34/28kg (75/62lbs)
Hydraulic	Mineral Oil
Electrical connector	8-Pin Burton
Sensors	Dual Sensor Inductive Turns count sensor Internal Strain Gauge

PART NUMBERS & OPTIONS

A019-959-959/01	Torque Tool System with sockets, case, hoses, handle
A019-959-959/02	Torque Tool System with sockets, case, hoses, handle & USD
A019-959-201/S	Spares Kit
A019-958-152/2	Surface Verification Unit
A019-958-601	Subsea Verification Unit
TL 17-0000-00	Flying Lead Tool
A286-001-050/04	Torque Tool Control System (alternative to USD)
A019-901-102	3-Stage Manifold (alternative to TTCS)
A019-959-150	17H 1st Edition (High Torque) Nose Adaptor
A019-959-400	Petrobras Nose Adaptor Kit
A019-904-400/01	Subsea Torque and Turns Display

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

ISO 13628-8 Class 1-4 (API 17D) Heavy Duty



FEATURES

- ISO 13628-8 Fig 18 (API 17H) Class 1-4
- Max Torque 2,700Nm (2,000ft lbs)
- Dual range
- Dual Sensor Electronic Turns Counter
- Internal Strain Gauge
- Latching Wings
- Supplied in offshore-suitable transit case

This ISO 13628-8 Fig 18 (API 17H) Class 1-4 has been specifically developed to provide the highest level of performance. It has integral torque and turns counting sensors. When matched with a Forum-supplied torque tool control manifold, it can provide precise feedback on torque response of any subsea operation. These can alternatively be utilized by connecting a Forum Universal Subsea Display (supplied), which would give a visual readout of live torque feedback and turns count.

The tool conforms to the ISO 13628-8 Fig 18 Class 1-4 bucket interface used extensively in the subsea industry for valve overrides operated by ROV. The tool has latching wings allowing the tool to hold on to the interface. The latching wings are hydraulically driven forward and spring retracted. Thus in the case of a loss of hydraulic power the wings will release. The tool uses a high specification drive motor for consistent torque output characteristics, even if used with direct hydraulic pressure control without the feedback sensor. The motor shares casing oil with the gearbox therefore avoiding the need for a separate compensator.

Note that for applying torques less than 108Nm (80ft lbs) the class 1&2 tool is recommended.

WHAT'S IN THE BOX?

- Torque Tool
- Class 1 & 2 socket (11/16" Sq)
- Class 3 socket (1-1/8" Sq)
- Class 4 socket (1-1/2" Sq)
- Hose Set (JIC with Swagelok adaptors)
- Low-range motor
- Turns and Torque Display
- Operations & Maintenance Manual

SPECIFICATIONS

Torque interface	ISO 13628-8 Fig 18 Class 1-4
Torque range	405-2,700Nm (300-2,000ft lbs) (80cc motor fitted) 81-405Nm (60-300ft lbs) (12.5cc motor fitted)
Motor size	12.5cc nominal and 80cc nominal
Latching strength	1 tonne @ 160bar
Weight (air/water)	41/32kg (90/71 lbs)
Hydraulic	Mineral Oil
Electrical connector	8-Pin Burton
Sensors	Dual Sensor Inductive Turns count sensor Internal Strain Gauge

PART NUMBERS & OPTIONS

TX00100-580-00/0	Torque Tool System with sockets, case, hoses, handle
TX00100-170-00	Spares Kit
A019-958-152/2	Surface Verification Unit
A019-958-601	Subsea Verification Unit
TL0017-0000-00	Flying Lead Tool
A286-001-050/04	Torque Tool Control System (alternative to USD)
A019-901-102	3-Stage Manifold (alternative to TTCS)
A019-959-150	(High Torque) Nose Adaptor
A019-959-400	Petrobras Nose Adaptor Kit

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

ISO 13628-8 Class 5 (API 17D)



FEATURES

- ISO 13628-8 Fig 18 (API 17H) Class 5
- Max Torque 6,750Nm (5,000ft lbs)
- Dual Sensor Electronic Turns Counter
- Supplied in offshore-suitable transit case

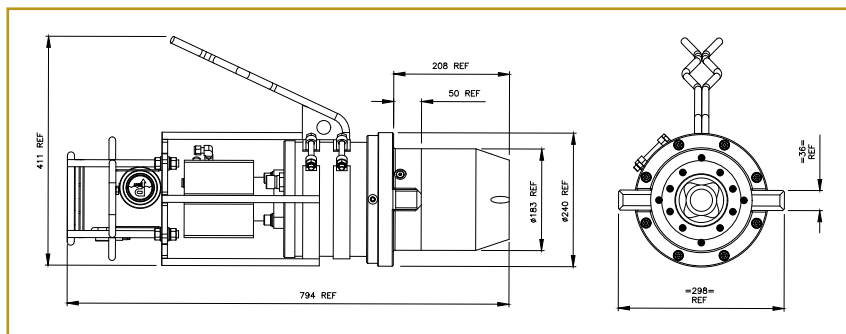
This ISO 13628-8 Fig 18 (API 17H) Class 5 torque tool has been specifically developed to provide the highest level of performance using a high specification motor and robust gearbox in an efficient, low-weight assembly. The socket is specially profiled for easy alignment. A range of control accessories is available including a precision surface torque verification unit for pre-dive testing.

The tool conforms to the ISO 13628-8 Fig 18 Class 5 interface used extensively in the subsea industry for pipeline valve operations by ROV. The tool uses a high specification drive motor for consistent torque output characteristics.

The tool is supplied with a rear mounted turns counter readout to display turns subsea.

WHAT'S IN THE BOX?

- Torque Tool
- Fishtail Handle
- Universal Subsea Display
- USD Battery Pack
- Interconnect Cables
- USD Charger
- Operations & Maintenance Manual



SPECIFICATIONS

Torque interface	ISO 13628-8 Fig 18 Class 5
Maximum torque	6,750Nm (5,000ft lbs)
Torque range	1,350-6,750Nm (1,000-5,000ft lbs)
Socket size	2" Square
Motor size	315cc
Weight (air/water)	54kg/41kg (119lbs/90lbs)
Hydraulic	Mineral Oil
Electrical connector	8-Pin Burton
Sensors	Dual Sensor Inductive Turns count sensor

PART NUMBERS & OPTIONS

A019-778-302/01	Class 5 Torque Tool, case hose and handle
A019-778-302/02	Class 5 Torque Tool, case hose and handle
A019-778-302/03	Class 5 Torque Tool, case, hoses, handle and USD
A019-778-306	Class 5 Spares Kit
A019-995-102/01	Class 5 Surface Verification Unit
A286-001-050/04	Torque Tool Control System (note will not work in conjunction with USD)
A019-901-102	3-Stage Manifold (use instead of Torque Tool Control System)

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

ISO 13628-8 17kNm



FEATURES

- API 17D 1st Edition Fig. C921.9 Class 6/7
- Max Torque 17,000Nm (12,600ft lbs)
- Dual Sensor Electronic Turns Counter
- Supplied in offshore-suitable transit case

API 17D 1st Edition Fig. C921.9 Class 6/7 torque tool has been specifically developed to address the increasing requirement for a 17kNm Tool. The interface is compatible with either ISO 13628-8 Fig. 18 or API 17H Fig. 12. The tool can be supplied with a Class 6 socket option.

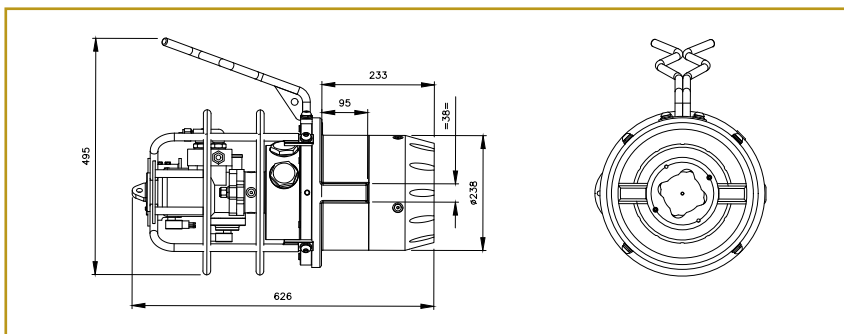
The tool can be supplied with a hot stab receptacle, electronic turns counter and integrated compensator unit, to allow the tool to be deployed to the subsea work site in a basket, separate from the ROV and then connections made with a hot stab.

A socket inset is used to allow Class 6-size socket or Class 7-size socket valves to be operated.

Note: The maximum torque available 17,000Nm is approximately half of the specified value for Class 7 operations (33,895Nm).

WHAT'S IN THE BOX?

- Torque Tool
- Class 6 Socket
- Class 7 Socket
- Universal Subsea Display
- USD Battery Pack
- Fishtail Handle
- Bladder-style compensator
- Operations & Maintenance Manual
- USD Charger



SPECIFICATIONS

Torque interface	API 17D 1st Edition Fig. C921.9
Maximum torque	17,000Nm (12,600ft lbs)
Socket sizes	3-1/2" Square & 2-5/8" Square
Weight in air/water	68/49kg (150/108lbs)
Electrical connector	8-Pin Burton
Sensors	Dual Sensor Inductive Turns count sensor
Hydraulic	Mineral Oil

PART NUMBERS & OPTIONS

A019-962-201	17kNm Torque Tool
A019-962-201/02	17kNm Torque Tool with USD
A019-962-201/S	17kNm Torque Tool Spares Kit
A019-962-151	Verification Unit
A286-001-050/04	Torque Tool Control System (note will not work in conjunction with USD)
A019-901-102	3-Stage Manifold (use instead of Torque Tool Control System)
A019-904-400/01	Subsea Torque and Turns Display

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

ISO 13628-8 Fig 14 High Torque



FEATURES

- ISO 13628-8 Fig 14 High Torque
- Max Torque 2,000Nm (1,500ft lbs)
- Dual Sensor Electronic Turns Counter
- Internal Strain Gauge
- Supplied in offshore-suitable transit case

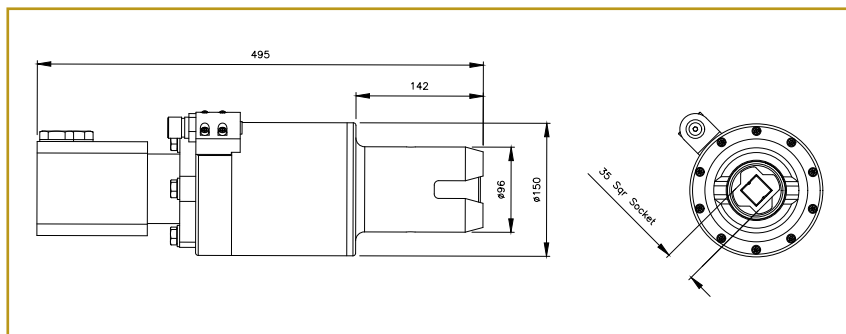
The ISO 13628-8 Fig 14 High Torque has integral torque and turns count sensors. When matched with a Forum-supplied control manifold, it can provide precise feedback on torque response of any subsea operation. This torque tool has been specifically developed to provide the highest level of performance.

The tool conforms to the ISO 13628-8 Fig 14 High Torque interface used extensively in the subsea industry for valve overrides operated by ROV. Most common applications are used with Tool Deployment Units (TDU).

The tool uses a high specification drive motor for consistent torque output characteristics under hydraulic pressure control.

WHAT'S IN THE BOX?

- Torque Tool
- Fishtail Handle
- Bladder-style Compensator
- Operations & Maintenance Manual



SPECIFICATIONS

Torque interface	ISO 13628-8 Fig 14
Maximum torque	2,000Nm (1,500ft lbs)
Socket size	35mm Square
Motor size	200cc
Weight in air/water	36/28kg (79/62lbs)
Electrical connector	8-Pin Burton
Sensors	Dual Sensor Inductive Turns count sensor
Hydraulic	Mineral Oil

PART NUMBERS & OPTIONS

A019-332-301/01	High Torque Tool
A019-332-301/01/RS	Remote Spares Kit
A019-332-301/01/S	Standard Spares Kit
A019-958-152/2	Surface Verification Unit
A019-958-601	Subsea Verification Unit
A286-001-050/04	Torque Tool Control System
A019-901-102	3-Stage Manifold (use instead of TTCS)
A019-958-174	High Torque Adaptor for verification unit
A019-904-400/01	Subsea Torque and Turns Display

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Petrobras Standard



FEATURES

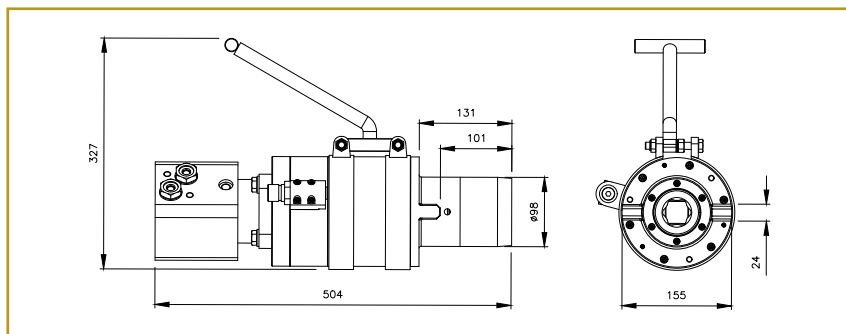
- Petrobras Interface
- Max Torque 2,700Nm (2,000ft lbs)
- Dual Sensor Electronic Turns Counter
- Internal Strain Gauge
- Supplied in offshore-suitable transit case
- Three torque ranges

The above torque tool has integral torque and turns count sensors. When matched with a Forum-supplied control manifold, it can provide precise feedback on torque response of any subsea operation. This torque tool has been specifically developed to provide the highest level of performance.

The tool conforms to the Petrobras-style interface used in the subsea industry for valve overrides operated by ROV. Most common applications are used with Tool Deployment Units (TDU). It can be configured in three ways to provide three torque ranges, with a maximum of 2,700Nm.

WHAT'S IN THE BOX?

- Torque Tool
- T-Bar Handle
- Bladder-style Compensator
- 1-1/16", 1-1/4", 1-3/8", 1-5/16", 1-7/16" A/F hex
- Socket 1-1/16" hex
- Socket 1-1/4" hex
- Socket 1-3/8" hex
- Socket 1-5/16" A/F hex
- Socket 1-7/16" A/F hex
- Burton Flying Lead



SPECIFICATIONS

Torque interface	Petrobras Standard
Torque range	–
High	445-2,700Nm (600-2,000ft lbs)
Med	90-445Nm (120-600ft lbs)
Low	20-90Nm (25-120ft lbs)
Weight (air/water)	34/28kg (75/62lbs)
Electrical connector	8-Pin Burton
Sensors	Dual Sensor Inductive Turns count sensor
Hydraulic	Mineral Oil
Socket sizes	1-1/16", 1-1/4", 1-3/8", 1-5/16", 1-7/16" A/F hex

PART NUMBERS & OPTIONS

A019-994-301/02	Petrobras Torque Tool
A019-994-301/S	Spares Kit
A019-958-152/2	Surface Verification Unit
A019-958-601	Subsea Verification Unit
A019-958-175	Petrobras Adaptor for verification unit
A286-001-050/04	Torque Tool Control System
A019-901-102	3-Stage Manifold (use instead of TTCS)
A019-904-400/01	Subsea Torque and Turns Display

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

ISO 13628-8 Class 1-4 (API 17H) Diver-Operated



FEATURES

- ISO 13628-8 Fig 18 (API 17H) Class 1-4
- Max Torque 2,700Nm (2,000ft lbs)
- Dual Sensor Electronic Turns Counter
- Internal Strain Gauge
- Latching Wings
- Complete Diver Control of Socket Torque, Direction of Rotation & Latching Wing
- Supplied in offshore-suitable transit case

The above ISO 13628-8 Fig 18 (API 17H) Class 1-4 torque tool has integral torque and turns counting sensors for accurate control. These can be utilized by connecting a Forum Universal Subsea Display, which would give a visual readout of live torque feedback and turns count, USD sold separately. This torque tool has been specifically developed to provide the highest level of performance.

The tool conforms to the ISO 13628-8 Fig 18 Class 1-4 bucket style used extensively in the subsea industry for valve overrides operated by a diver or ROV. The tool has a single lever control for the latching wings allowing the tool to hold on to the interface. The latching wings are hydraulically driven forward and spring retracted. Thus in the case of a loss of hydraulic power the wings will release. The tool uses a high specification drive motor for consistent torque output characteristics, even if used with direct hydraulic pressure control without the feedback sensor. The direction and torque generated by the tool is controlled by a 3-way proportional lever, providing clockwise, anti-clockwise or zero rotation. The motor shares casing oil with the gearbox therefore avoiding the need for a separate compensator.

WHAT'S IN THE BOX?

- Diver Operated Torque Tool
- Class 1 & 2 socket (11/16" Sq)
- Class 3 socket (1-1/8" Sq)
- Class 4 socket (1-1/2" Sq)
- Fishtail handle and cage
- Hose Set (JIC with Swagelok adaptors)
- Operations & Maintenance Manual

SPECIFICATIONS

Torque interface	ISO 13628-8 Fig 18 Class 1-4
Torque range	540-2,700Nm (400-2,000ft lbs) (gearbox fitted) 108-540Nm (80-400ft lbs) (direct drive)
Motor size	236cc
Latching strength	1 tonne @ 160bar
Weight (air/water)	41/32kg (90/71lbs)
Hydraulic	Mineral Oil
Electrical connector	8-Pin Burton
Sensors	Dual Sensor Inductive Turns count sensor
Hydraulic	Mineral Oil

PART NUMBERS & OPTIONS

A019-959-750/01	Diver Operated Torque Tool
A019-959-750/02	Diver Operated Torque Tool (with USD)
A019-958-152/2	Surface Verification Unit
A019-958-601	Subsea Verification Unit
A286-001-050/04	Torque Tool Control System
A019-901-102	3-Stage Manifold (use instead of Torque Tool Control System)
A019-904-400/01	Subsea Torque and Turns Display

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

4. Torque Tool Verification Units

Torque Tool Verification Units



ISO 13628-8 Class 1-4 (API 17H) Surface



FEATURES

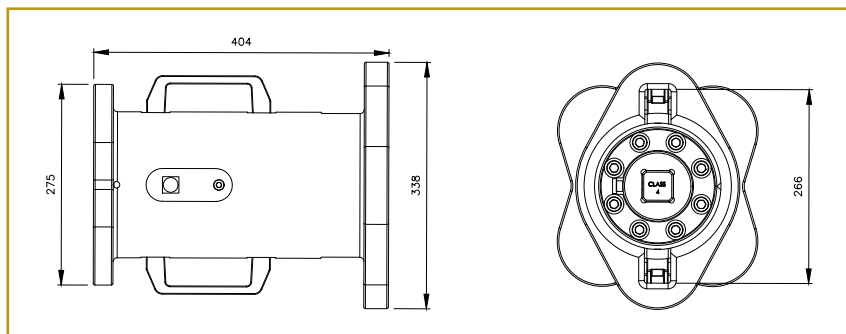
- ISO 13628-8 Fig 18 (API 17H) Class 1-4
- Max Torque 2,700Nm (2,000ft lbs)
- Handheld Digital Read Out
- USB output to Torque Tool Control System
- Includes easily Interchangeable Shafts to suit full range
- Supplied in offshore-suitable transit case

This ISO 13628-8 Fig 18 (API 17H) Class 1-4 torque tool unit is used to give pre-dive surface confirmation of the torque tool calibration. It consists of a standard ISO class 1-4 torque reaction bucket with sturdy base and built-in torque sensor. The unit comes complete with USB cable to connect to the Forum Torque Tool Control System for Auto Calibration.

WHAT'S IN THE BOX?

- Torque Tool Bucket inc sensor
- Class 1 & 2 Adaptor (11/16" Sq)
- Class 3 Adaptor (1-1/8" Sq)
- Class 4 Adaptor (1-1/2" Sq)
- Handheld Display
- Bucket-to-Display Cable
- Display-to-PC Cable





SPECIFICATIONS

Torque interface	ISO 13628-8 Fig 18 Class 1-4
Maximum torque	2,700Nm (2,000ft lbs)
Handheld unit	Battery Powered
Materials	Steel Shaft, Aluminum Housing

PART NUMBERS & OPTIONS

A019-958-152/2	Surface Verification Unit
A019-958-174	High Torque Tool Adaptor for Verification Unit (includes adaptor and 35mm A/F Square Shaft)
A019-958-175	Petrobras Torque Tool Adaptor for Verification Unit (includes adaptor and 1-3/8" A/F Hex Shaft)

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

ISO 13628-8 Class 1-4 (API 17H) Subsea



FEATURES

- ISO 13628-8 Fig 18 (API 17H) Class 1-4
- Max torque 2,700Nm (2,000ft lbs)
- 4,000m Rated
- Interchangeable Shafts
- Self-contained Unit
- Rechargeable Battery or ROV power
- Supplied in offshore-suitable transit case

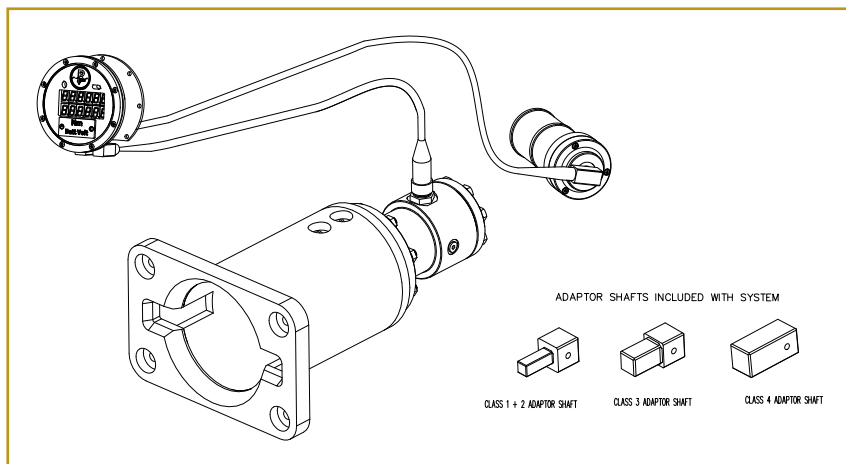
The above ISO 13628-8 Fig 18 (API 17H) Class 1-4 unit has been developed to give subsea confirmation of torque tool calibration. It consists of a standard class 1-4 torque reaction bucket with a compact torque sensor. To change shafts only one bolt has to be undone.

Torque is displayed on separate universal subsea display unit. The display contains a power-on indicator (green LED) and battery-low indicator (red LED). The unit can operate continuously for 30 hours, but if no activity is detected after 10 minutes the unit will go into 'sleep' mode and the display will power down. Sleep mode can be maintained for up to eight days. The display will 'wake up' as soon as there is a change in signal.

WHAT'S IN THE BOX?

- Dual-Line USD
- Battery Pack
- Subsea Verification Unit
- Battery Charger
- Connection Cables
- PC Calibration Software
- Class 1 & 2 Shaft
- Class 3 Shaft
- Class 4 Shaft
- Operations & Maintenance Manual





SPECIFICATIONS

Torque interface	ISO 13628-8 Fig 18 Class 1-4
Maximum torque	2,700Nm (2,000ft lbs)
Battery life	30 hours permanently on 200 hours in sleep mode (sleep mode auto on)
Materials	Aluminum Housing, Stainless Steel Shafts
Weight (air/water)	22/18kg

PART NUMBERS & OPTIONS

A019-958-601	Subsea Verification Unit
A019-958-174	High-torque Tool Adaptor for Verification Unit (includes adaptor and 35mm A/F Square Shaft)
A019-958-175	Petrobras Torque Tool Adaptor for Verification Unit (includes adaptor and 1-3/8" A/F Hex Shaft)

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

ISO 13628-8 Class 5 (API 17H) Surface



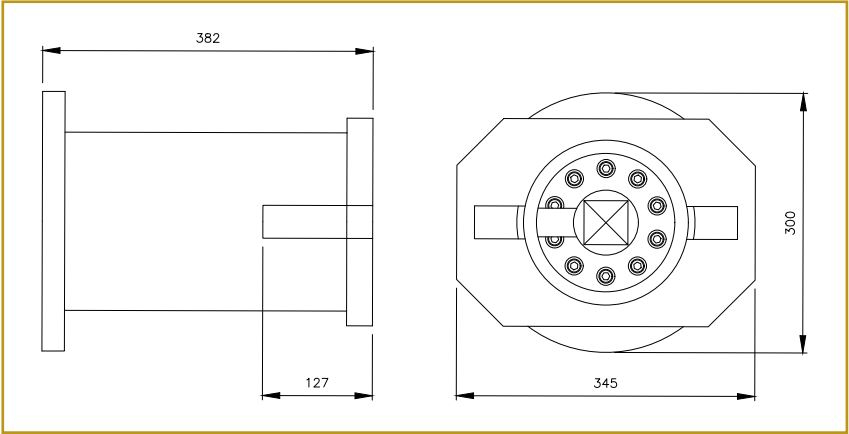
FEATURES

- ISO 13628-8 Fig 18 (API 17H) Class 5
- Max Torque 6,779Nm (5,000ft lbs)
- Handheld Digital Read Out
- USB Output to Torque Tool Control System
- Supplied in offshore-suitable transit case

The ISO 13628-8 Fig 18 (API 17H) Class 5 unit is used to give pre-dive surface confirmation of the torque tool calibration. It consists of a standard ISO class 5 torque reaction bucket with sturdy base and built-in torque sensor. The unit comes complete with USB cable to connect to the Forum Torque Tool Control System for Auto Calibration.

WHAT'S IN THE BOX?

- Torque Tool Bucket inc sensor
- Handheld Display
- Bucket-to-Display Cable
- Display-to-USB Cable
- Handheld Display Charger
- Power Adaptors for display charger
- Operations & Maintenance Manual



SPECIFICATIONS

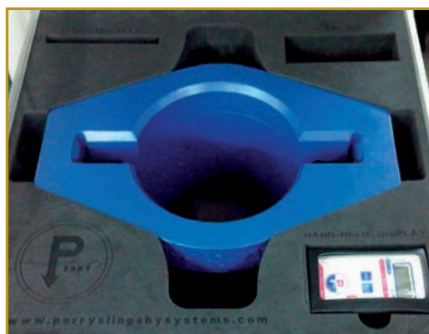
Torque interface	ISO 13628-8 Fig 18 Class 5
Maximum torque	6,779Nm (5,000ft lbs)
Handheld unit	Battery Powered
Materials	Steel Shaft, Aluminum Housing

PART NUMBERS & OPTIONS

A019-995-102/01	Surface Verification Unit
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The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

API 17D 1st Edition Class 6 & 7 Surface Verification Unit



FEATURES

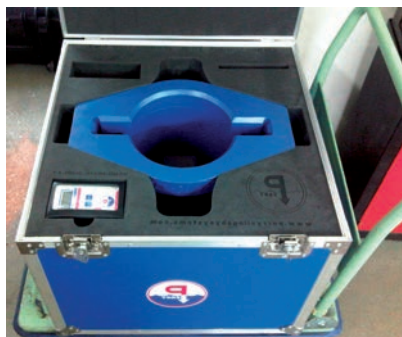
- API 17D 1st Edition Class 6 & 7 Dimensions
- Max Torque 20,000Nm (15,000ft lbs)
- Handheld Digital Read Out
- USB Output to Torque Tool Control System
- Supplied in offshore-suitable transit case

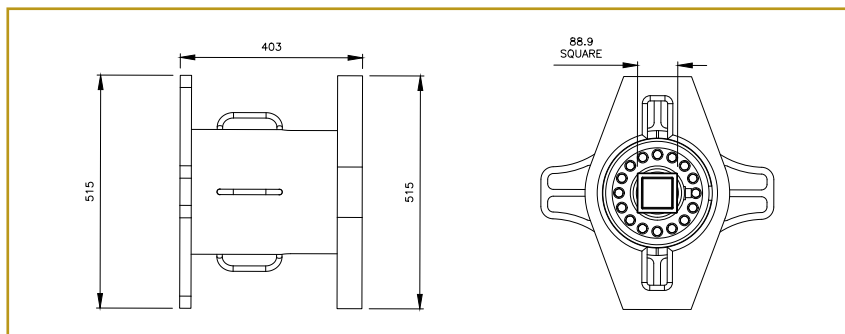
This API 17D 1st Edition Class 6 & 7 unit is used to give pre-dive surface confirmation of the torque tool calibration. It consists of a standard API 17D 1st Edition Class 6 & 7 torque reaction bucket with sturdy base and built-in torque sensor. The unit comes complete with USB cable to connect to the Forum Torque Tool Control System for Auto Calibration. The unit can be used up to 20kNm and has adaptor for both Class 6 and Class 7 tools.

Note: The maximum torque available 17,000Nm is approximately half of the specified value for Class 7 operations (33,895Nm).

WHAT'S IN THE BOX?

- Torque Tool Bucket inc sensor
- Handheld Display
- Bucket-to-Display Cable
- Display-to-USB Cable
- Operations & Maintenance Manual





SPECIFICATIONS

Torque interface	API 17D 1st Edition Class 6 & 7
Maximum torque	20,000Nm (15,000ft lbs)
Input square	Class 7 (3.5" Square) Class 6 (2-5/8" Square)

PART NUMBERS & OPTIONS

A019-962-151	Surface Verification Unit
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The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Torque Tool Accessories



Torque Tool 3-Stage Hydraulic Controller



FEATURES

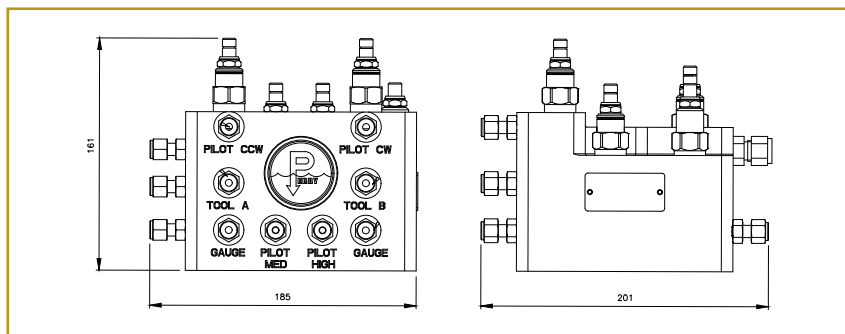
- 3 Pressure Settings
- Master Flow Setting
- Direction Control
- All Operations by Pilot Pressure
- Ideal for Torque Tool Operations
- Supplied in offshore-suitable transit case

Providing three preset control pressures with flow and directional control, this controller is ideal in situations when breakout, running and maximum torque settings must be controlled. This is ideal for torque tool control where the three pressures may represent breakout, running and maximum torque settings. The pressures are manually set on the surface then switched subsea by pilot pressure from spare hydraulic functions of the host ROV. The controller can be used with any torque tool supplied by Forum (and most non-Forum tools as well).

A high-pressure 345bar (5,000psi), sealed pilot version is available for water glycol applications including fluid injection systems.

WHAT'S IN THE BOX?

- Torque Tool 3-Stage Hydraulic Controller
- Operational Hoses
- Operations & Maintenance Manual



SPECIFICATIONS

Overall size	276 x 260 x 105mm
Max supply pressure	200bar (2,900psi)
Adjustable pressure 1	3.5-80bar (50-1,160psi)
Adjustable pressure 2	2-200bar (30-2,900psi)
Adjustable pressure 3	2-200bar (30-2,900psi)
Flow control	0-20lpm (0-5gpm)
Weight (air/water)	9.8/6.8kg
Hydraulic fluid	Mineral Oil
Materials	Anodized Aluminum and Steel

PART NUMBERS & OPTIONS

A019-901-102	Torque Tool 3-Stage Hydraulic Controller
A019-901-102/S	Torque Tool 3-Stage Hydraulic Controller Spares

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

ISO 13628-8 Class 1-4 (API 17D) Gauging Tool



FEATURES

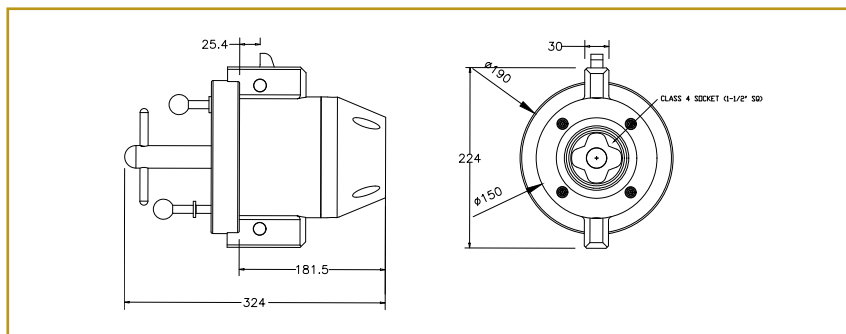
- Used to check ISO 13628-8 Class 1-4 Interface
- Manually operated Torque Tool
- Latching Wings
- Rotating Socket
- Lightweight
- Supplied in offshore-suitable transit case

The Class 1-4 Gauging Tool has been developed to test interfaces. The interfacing part of the tool is identical to the Class 4 Torque Tool and comes with a set of class 1-4 sockets as standard. This allows rapid interface checks without the weight and hydraulic requirements of using a real torque tool.

The tool can be turned by hand from a handle at the rear, or can be fitted with a shaft at the rear to accept a torque wrench, so that torque can be applied to the valve. Locking wings are provided to check the latching operation.

WHAT'S IN THE BOX?

- Gauging Tool
- Class 1 & 2 socket (11/16" Sq)
- Class 3 socket (1-1/8" Sq)
- Class 4 socket (1-1/2" Sq)
- Rotation Handle
- Socket for wrench input (1" square drive)



SPECIFICATIONS

Torque interface	ISO 13628-8 Fig 18 Class 1-4
Maximum torque	100Nm

PART NUMBERS & OPTIONS

A019-958-452	Gauging Tool
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The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Torque Tool Control System



FEATURES

- Torque Tool Control Unit
- 1 off Bi-Directional Pressure & Flow Control output
- 3 off Bi-Directional output
- Strain gauge and turns count input
- Rated to 4,000m
- Supplied in offshore-suitable transit case

The Torque Tool Control System allows the user, from the surface, to adjust the torque and speed. This system is particularly suitable for deepwater operations where torque required for a particular operation may be uncertain, or has multiple values for different operations on the same dive. The actual torque and speed is user-controlled and measured at all times and recorded as a signature of the subsea operation for future reference.

The controller can be used with any torque tool supplied by Forum (and most non-Forum tools). The system can also be used as a pressure/flow controller for tools not equipped with feedback sensors.



WHAT'S IN THE BOX?

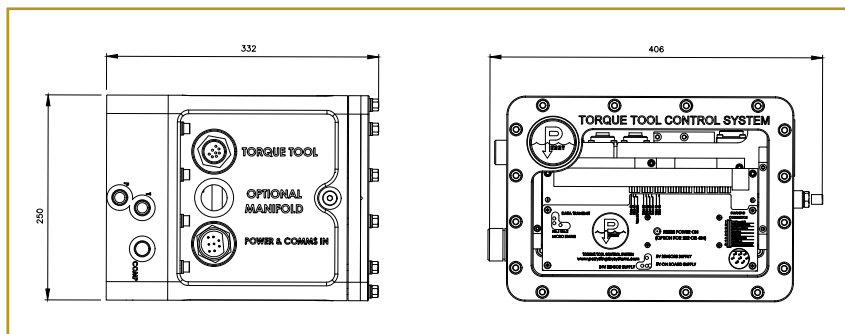
Box 1 of 2

- TTCS Hydraulic Manifold

Box 2 of 2

- Rugged Notebook control PC
- Interconnect cables
- KK485 Converter
- Operations & Maintenance Manual





SPECIFICATIONS

Outputs	3 off NG3mini 1 off Proportional Pressure & Flow
Pressure sensor	One on Proportional Pressure Line
Electrical inputs	Strain Gauge Turns Counter
Protection	Internal ground fault detection External pressure relief valve
Hydraulic input	20lpm @ 200bar (6gpm at 3,000psi)
Hydraulic output	8lpm at 200bar (per station)
Electrical supply	110VAC, 2A Maximum
Weight	18kg in air/14kg in water

PART NUMBERS & OPTIONS

A286-001-050/04	Standard Torque Tool Control System
A286-001-050/04RS	Remote Location TTCS spares kit (Incl PCBs)

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Universal Subsea Display (USD)



FEATURES

- Used to display electrical signals subsea
- Power input range 3.5v-35v
- User-Friendly Configuration Software
- Rugged Construction
- Rated to 4,000m
- Supplied in offshore-suitable transit case

The Universal Subsea Display (USD), displays information from a wide range of sensor types. It is viewed using ROV cameras or directly by divers. The USD is housed in a robust anodized aluminium alloy housing with an integrated compensator. The unit is available with a two-line display (6 digits per row) or a single line (4 digits and a minus sign). The two-line display can display information from two separate inputs.

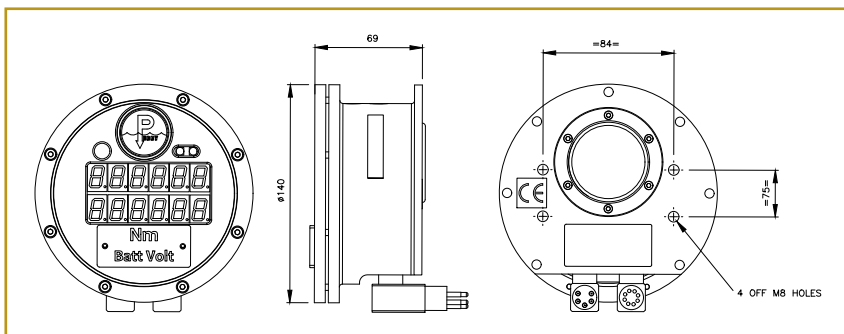
The USD readily interfaces to equipment through two subsea connectors. The first connects to a battery pack or a vehicle/tooling package with both power and communication. The second connects to the equipment to be monitored providing the interfaces for sensing and the supplies for powering the equipment sensors.

The USD uses ultra-efficient LED types, a very low power processor and sophisticated power switching regulators which, together, mean it can operate from a wide DC voltage input range, requiring very low current and equally able to operate from ROV supply or from battery. In addition, it has a software-configurable sleep mode with option to wake up on sensor activity or from the light sensor on the front face. The unit can be configured for a multitude of applications.

WHAT'S IN THE BOX?

- USD
- Battery Pack
- Battery Charger
- Programming Cable
- Programming Software
- Battery pack-to-USD Cable
- USD to Forum Torque Tool Cable
- USD to ROV Flying Lead (power)
- Operations & Maintenance Manual





SPECIFICATIONS

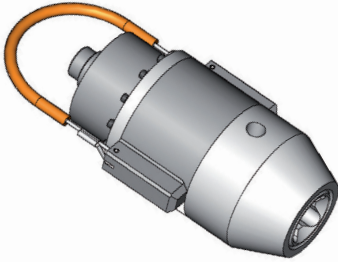
Depth rating	4,000m (13,000feet)
Available sensor inputs	Strain Gauge Bridge (full Wheatstone) 0-5V & 0-10V Analogue Voltage 4-20mA Analogue Current PNP or NPN-type contact/proximity Contact Closure – reed switch/digital
Sensor supplies	1 off 5V to 250mA 1 off 12V to 500mA
Sensor supply protection	Current Limited & short-circuit protected
Serial out	RS232 or RS485 (software selectable) (Forum Proprietary format)
Input voltage	3.5-35V DC (reverse polarity protected)

PART NUMBERS & OPTIONS

A019-904-400/01	Universal Subsea Display Kit
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The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

ISO 13628-8 Class 1-4 (API 17H) Hand-Operated Torque Tool



FEATURES

- ISO 13628-8 Fig 18 (API 17H) Class 1-4
- Max Torque 2,700Nm (2,000ft lbs)
- Manually operated Torque Tool
- Built in 5:1 Gearbox
- Integrated carrying loop
- Supplied in offshore-suitable transit case

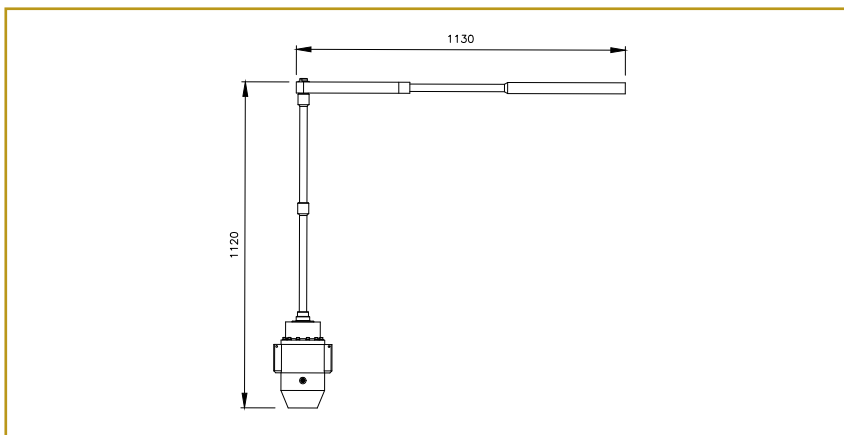
The Hand-Operated Torque Tool confirms to the ISO 13628-8 Fig 18 interface requirements. It is supplied with a Class 4 socket. Extra sockets can be supplied on request. The tool is intended for operation on the surface to verify the interfaces on subsea equipment and to operate valves without the need for an ROV and a hydraulic supply.

The tool has a built-in gearbox to supply torques up to 2,700Nm by hand. The tool is supplied with a torque wrench so torques can be accurately applied.

The tool is not recommended for use subsea, but can be used on a temporary basis if suitably packed with grease and cleaned when returned to the surface.

WHAT'S IN THE BOX?

- Gearbox Assembly
- 2 off 3/4" drive 400mm-long extensions
- 3/4" drive torque wrench



SPECIFICATIONS

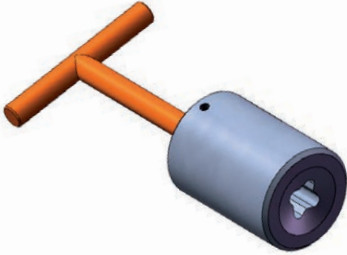
Torque interface	ISO 13628-8 Fig 18 Class 1-4
Torque range	30-2,700Nm
Socket size	38.1mm Sq, Class 4
Gearbox ratio	Five to one
Materials	Steel Motor and Gearbox Duplex Socket Aluminum Housing Acetal Nose

PART NUMBERS & OPTIONS

A292-107-101-SYS/01	Hand-Operated Torque Tool
A292-107-101-SYS/02	Hand Operated Torque Tool (with Torque Wrench)

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

ISO 13628-8 Class 1&2 (API 17H) Manipulator-Operated Torque Tool



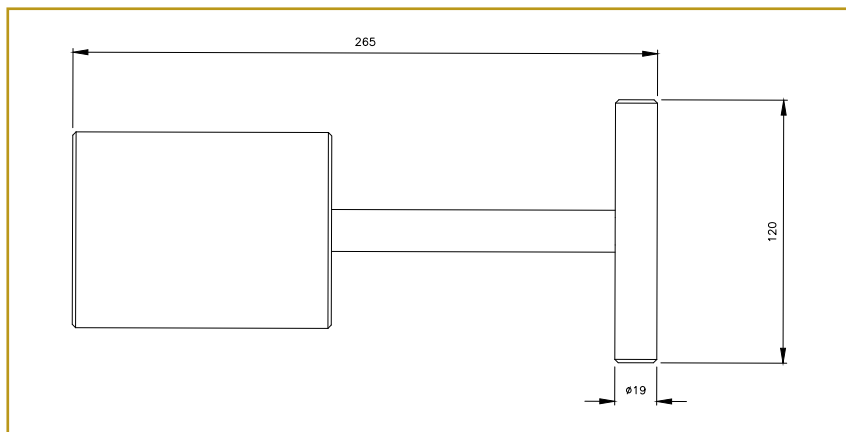
FEATURES

- ISO 13628-8 Fig 18 (API 17H); Class 1-2
- Direct Manipulator Operation
- Stainless steel construction

The tool is used to operate ISO Class 1-2 interfaces without the use of a torque tool. The tool utilizes the rotate function on the manipulator to generate the required torque.

WHAT'S IN THE BOX?

- Tool with socket



SPECIFICATIONS

Interface	ISO 13628-8 Fig 18 Class 1-2 Socket
Maximum torque	100Nm
Materials	Stainless Steel
Weight in air/water	3/2kg

PART NUMBERS & OPTIONS

A019-958-480/01	Manipulator-Operated Torque Tool (Class 1 & 2)
A019-958-480/02	Manipulator-Operated Torque Tool (Class 3)
A019-958-480/03	Manipulator-Operated Torque Tool (Class 4)

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

ISO 13628-8 (17H) Class 4 (Female) TO ISO 13628-8 (17H) High Torque (Male) Torque Tool Adaptor



FEATURES

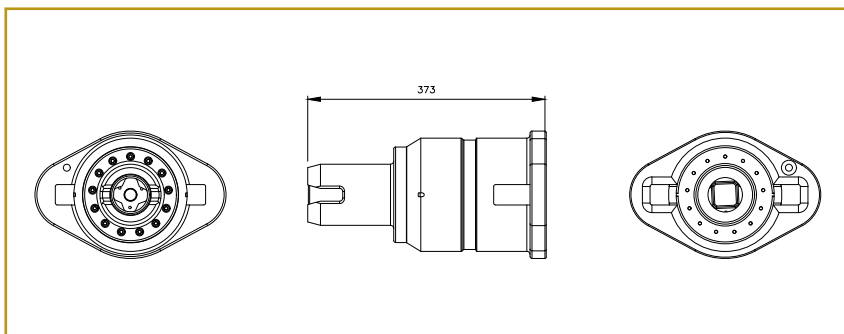
- ISO 13628-8 Class 4 Female Bucket
- API 17H Male interface 35mm A/F square
- Max Torque 2,700Nm (2,000ft lbs)
- Supplied with 900Nm and 2,700Nm Shear Pin
- Supplied in offshore-suitable transit case

The adaptor is used to convert from ISO 13628-8 Class 4 (API 17D) to API 17H High Torque interface. Shear pins are supplied with the tool to protect the high torque interface from over-torque.

WHAT'S IN THE BOX?

- Adaptor
- Shear Pins





SPECIFICATIONS

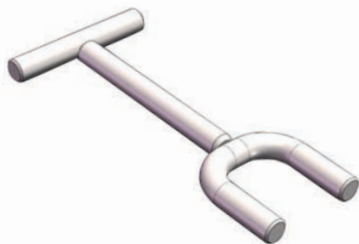
Female interface	ISO 13628-8 Fig 18 Class 1-4
Male interface	ISO 13628-8 Fig 14 High Torque
Maximum torque	2,700Nm (2,000ft lbs)
Weight in air/water	14/10kg

PART NUMBERS & OPTIONS

A019-959-450	ISO 13628-8 (17H) Class 4 to ISO 13628-8 (17H) High Torque Tool Adaptor
A019-958-152/02	Surface Verification Unit
A019-958-174	High Torque Tool Adaptor for Verification Unit (includes adaptor and 35mm A/F Square Shaft)

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

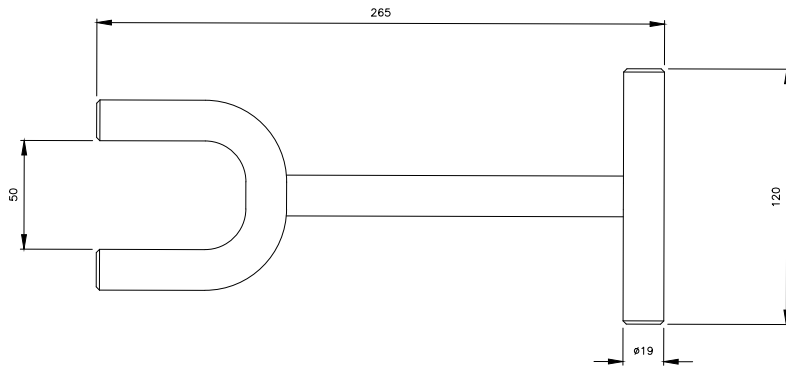
T-Bar Handle Fork Tool



FEATURES

- T-Bar Manipulator interface
- Fork Interface
- 316 Stainless Steel

The Fork Manipulator Handle is held in the jaws of a seven-function manipulator and is used to operate paddle-style ROV-operated valves.



SPECIFICATIONS

Material

Stainless Steel 316

PART NUMBERS & OPTIONS

TL0030-5000-00

T-Bar Handle Fork Tool

WHAT'S IN THE BOX?

- T-Bar Handle Fork Tool
(No box supplied with tool)

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



FEATURES

- Flexible Wire Rope Handle
- D-Type Handle
- Adjustable Torque Setting
- Class 1&2 socket
- Paddle Style Socket

The Torque Limited Valve Actuator has been developed to address the requirement of limiting torque whilst using a manipulator to operate valves. The unit is built around an adjustable torque unit that can be set from 40Nm (29.5lbf) to 100Nm (74lbf).

The tool is supplied with two sockets, a standard Class 1 & 2, and a low torque style paddle socket. These sockets mount with a 33.3mm square as standard on other Forum tools.

SPECIFICATIONS

Torque Range	40-100Nm (29.5-74 ft lbs)
Handle	D-Type
Weight in Air	5kg (10.5 lbs)

PART NUMBERS & OPTIONS

TX0163-6000-00	Torque Limited Valve Actuator
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WHAT'S IN THE BOX?

- Torque Limiter
- D-Type Handle
- Class 1 & 2 Socket
- Paddle Style Socket
- Operations & Maintenance Manual

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Pumping/Injection Systems



3-Stage IHPU



FEATURES

- 3 selectable pressures
- Directional control
- Suitable for mineral oils and glycols
- 414bar output
- 17 L/min

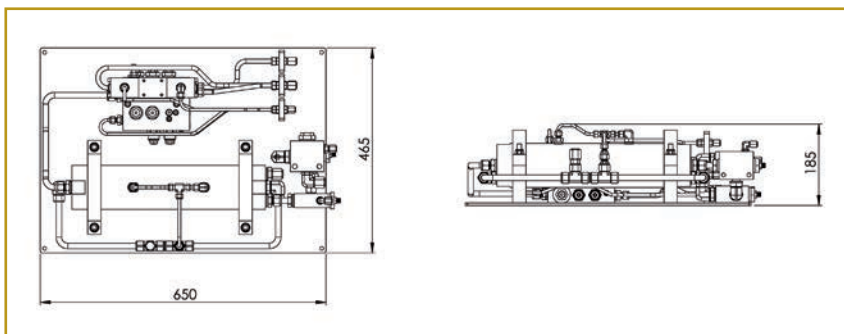
The 3-Stage IHPU can be used for numerous subsea applications including pressure testing, BOP operation, fluid transfer and hot stab operations with the capability for 3 selectable pressures each ranging from 0-5,000psi and is designed to be easily and simply reconfigured, with the minimum of hassle.

Connection can be made to any-sized fluid reservoir and operate using water/glycol and hydraulic mineral oils as suitable fluid media. The inbuilt depressurisation facility allows safe venting of pressure and pumping fluids back to reservoir avoiding any unwanted leakage to the subsea environment.

WHAT'S IN THE BOX?

- 3 Stage IHPU
- Operational hoses
- Operation manual





SPECIFICATIONS

Hydraulic input	Pressure 207bar (3,000psi)
	Flow 35 L/min
Hydraulic output	Pressure 207bar (3,000psi)
	Flow 17 L/min
General	3 Selectable Pressures
	Directional Control
	Supplied with all Hoses
	Supplied on ROV-Friendly Plate
Fluids	Seawater
	Glycol
	Mineral Oils

PART NUMBERS & OPTIONS

SRTS-04	3-Stage IHPU
SRTS-04-S	Remote location spares kit

- 15L, 30L, 40L, 50L, 100L, 200L Reservoir bags available from standard sizes
Contact directly for special size

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



10,000psi IHPU



FEATURES

- 690bar/10,000psi output
- Directional control
- Configurable for numerous subsea applications
- Simply connect reservoirs
- Can be configured with fluid reservoir skid

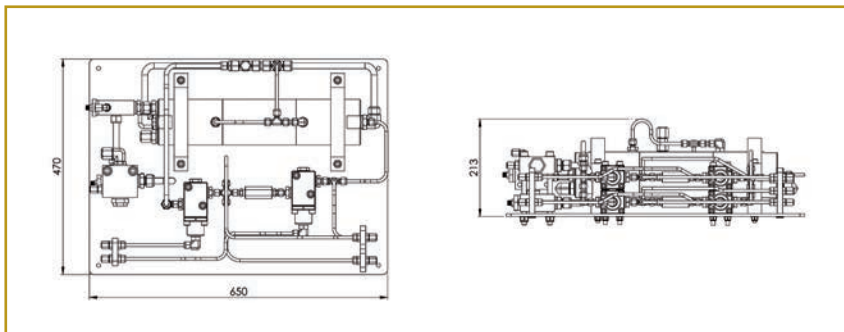
The 10,000psi IHPU can be used for numerous subsea applications including pressure testing, BOP operation, fluid transfer and hot stab operations with the capability of directional control up to 10,000psi. Designed to be easily and simply reconfigured, with the minimum of hassle.

Connection can be made to any-sized fluid reservoir and operate using water/glycol and hydraulic mineral oils as suitable fluid media.

WHAT'S IN THE BOX?

- IHPU
- Operational hoses
- Operation manual





SPECIFICATIONS

Hydraulic input	Pressure 176bar (2,565psi) Flow 40 L/min
Hydraulic output	Pressure 690bar (10,000psi) Flow 8.7L/min
General	Directional Control up to 10,000psi Pressure test capability with depressurisation valves Easily Reconfigured for Subsea applications
Fluids	Water/Glycol Hydraulic Mineral Oil

PART NUMBERS & OPTIONS

SRTS-036/01	10,000psi IHPU
SRTS-036/02	10,000psi IHPU with input pressure relief
SRTS-036/03	10,000psi IHPU with input pressure relief and provision for pressure transducer
A036-037-750/01	5,800psi 15L/min compact IHPU
A036-037-750/02	10,000psi 7L/min Compact IHPU
SRTS-36-S	Remote location spares kit

- 15L, 30L, 40L, 50L, 100L, 200L Reservoir bags available from standard sizes
Contact directly for special size

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



0-520bar Pressure Test Unit



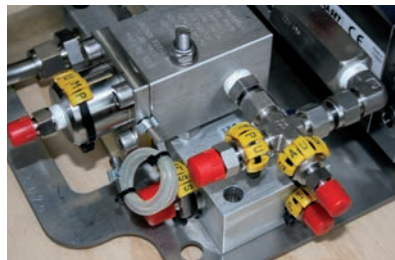
FEATURES

- Suitable for a range of subsea pressure test operations
- Depressurization valve
- Variety of sized reservoirs available
- Mounted to ROV-friendly plate
- Weighs 28kg
- Suitable for seawater, mineral oils and glycols

The 0-520bar Pressure Test Unit can be used for most subsea pressure testing applications. An Integral relief valve is adjustable to provide any pressure range desired from 50-520bar. Any subsea reservoir can be connected to the pump via the 3/4 suction port. When pressure testing is complete the depressurization valve is actuated and pressure is dissipated back to reservoir.

WHAT'S IN THE BOX?

- 0-520bar Pressure Test Unit
- Operational hoses
- Operation manual



SPECIFICATIONS

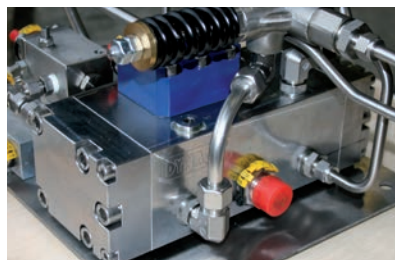
Hydraulic input	Pressure 250bar (3625psi) Max Flow 85 L/min Max
Output	Pressure 50-520bar (adjustable)
Unit supplied with	PO Check valve Flow control valve Integral relief valve (50-520bar) Depressurization valve
Dimensions	(L) 380mm x (B) 305mm x (H) 300mm
Weights	28kg in air
Fluids	Water Seawater Hydraulic oil Glycol

PART NUMBERS & OPTIONS

SRTS-034	0-520bar Pressure Test Unit
SRTS-034-S	Remote location spares kit

- 15L, 30L, 40L, 50L, 100L, 200L Reservoir bags available from standard sizes
Contact directly for special size

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



Methanol Injection System



FEATURES

- Methanol-capable system
- Directional control
- Supplied with transfer pump
- Supplied with methanol PPE kit
- Can be supplied with 2x90L reservoir fluid skid

The Forum Methanol Injection System has been designed to inject methanol at high pressures subsea through a hot stab connection at pressures up to 690bar. Due to the dangerous nature of methanol and its handling the Methanol Injection System is designed for maximum safety with zero leakage at any time. The methanol storage vessel is filled and bled of air at the same time without loss or the need of any manual handling of fluids. The Methanol Injection System is a passively compensated enclosure which keeps the pressure at ambient reducing the risk of leakage.

The Methanol Injection System is tested on deck with water and all adjustments are made whilst pumping water. At no time should the unit be run on deck with methanol in the system. For safety methanol is only added to system minutes before dive.

One of many safety features of the Methanol Injection System is that once the methanol fluid has been depleted from system, the flushing valve is then operated which flushes any remaining methanol from the system using seawater meaning there is no methanol residue recovered to deck and system is safe to be handled.

WHAT'S IN THE BOX?

- Methanol Injection System
- Transfer Pump
- PPE equipment supplied in separate Peli storage case



SPECIFICATIONS

Hydraulic input	Pressure 207bar (3,000psi) Flow 40 L/min max
Methanol output	690bar (10,000psi) max
Specifications	Pressure verification system Flushing valves to ensure methanol is vented and flushed with seawater Pressure testing with lock-in valves Depressurization valve to dump pressure Supplied with Fluid Transfer Pump for filling system Self-bleeding system Can be supplied with Skid and Adaptors to suit most ROVs

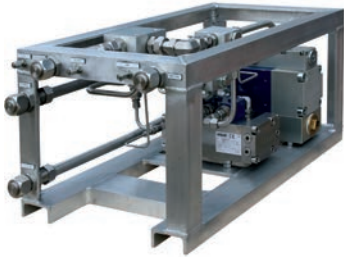
PART NUMBERS & OPTIONS

SRTS-019	Methanol Injection System
SRTS-019-S	Remote location spares kit
SRTS-019-PPE	PPE equipment c/w Peli storage case



The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

BOP Actuation Tool (BOP-AT150)



FEATURES

- Quickly Actuate BOP
- 150 L/min output
- Suitable for seawater, mineral oil and glycols
- Can be combined with 400L fluid reservoir skid

The BOP Actuation Tool, above, is used when a problem occurs; when subsea and underground pressure forces oil or gas into the wellbore the Blow Out Preventer (BOP) is required to operate quickly preventing damage to surface modules and the surrounding environment.

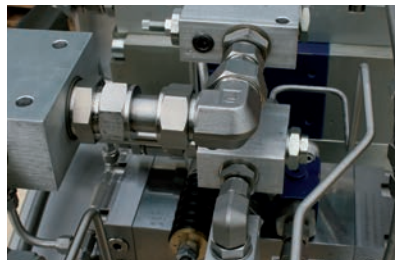
If the BOP cannot be operated remotely one of the few remaining options to actuate the BOP is by using ROV intervention. For this to occur quickly and safely the intervening ROV requires to deliver very high-flow fluids at high pressure.

Forum Blow Out Preventer Actuating Tool (BOP-AT) is designed to be operated by a work-class ROV, delivering 150Lmin of fluid and pressures of up to 5,000psi, fully actuating most BOPs in under 60 seconds.

The system can be supplied as an ROV backpack arrangement complete with 400L fluid capacity or with an underslung media skid.

WHAT'S IN THE BOX?

- BOP-AT150 Tool
- Operational hoses
- Operation manual



SPECIFICATIONS

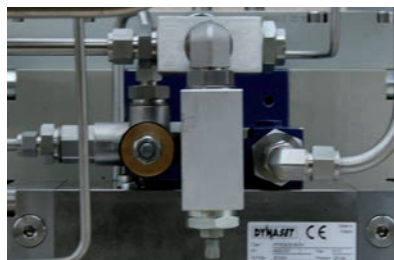
ROV input	Pressure 210bar (3,000psi) Flow 115 L/min
BOP-AT output	Low Pressure High Flow: Pressure 90bar (1300psi) Flow 150 L/min High Pressure Low Flow: Pressure 345bar(5000psi) Flow 50 L/min
Fluid	Seawater Mineral oils All water-based glycol fluids
Options	400L capacity skid

PART NUMBERS & OPTIONS

SRTS-073	BOP-AT150
SRTS-073-S	Remote location spares kit

- 15L, 30L, 40L, 50L, 100L, 200L Reservoir bags available from standard sizes
Contact directly for special size

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



BOP Actuation Tool (BOP-AT300)



FEATURES

- Actuate BOP quickly
- 300 L/min output
- Suitable for seawater, mineral oil and glycols
- Can be combined with 400L fluid reservoir skid

When a problem occurs subsea and underground pressure forces oil or gas into the wellbore the Blow Out Preventer (BOP) is required to operate quickly preventing damage to surface modules and the surrounding environment.

If the BOP cannot be operated remotely one of the few remaining options to actuate the BOP is by using ROV intervention. For this to occur quickly and safely the intervening ROV requires to deliver very high fluid flows and high pressures.

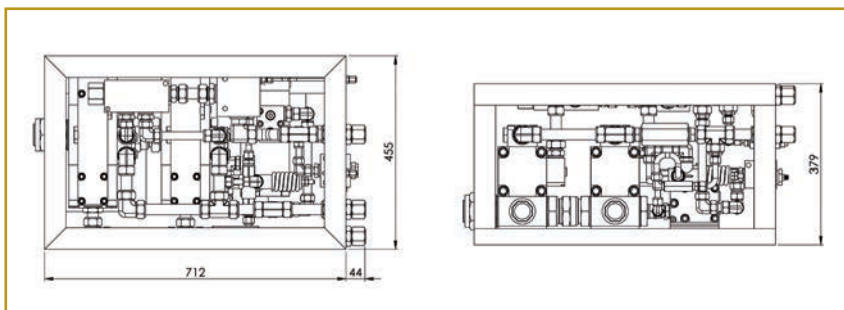
Forum Blow Out Preventer Actuating Tool (BOP-AT) is designed to be operated by a work-class ROV, delivering 300Lmin of fluid and pressures up to 5,000psi, fully actuating most BOPs in under 60 seconds, sealing the wellbore.

The system can be supplied as an ROV backpack arrangement complete with 400L fluid capacity or with an underslung media skid.

WHAT'S IN THE BOX?

- BOP-AT300 System
- Operational hoses
- Operation manual





SPECIFICATIONS

ROV input	Pressure 210bar (3,000psi) Flow 170 L/min
BOP-AT output	Low Pressure High Flow: Flow 300 L/min Pressure 90bar (1300psi) High Pressure Low Flow: Flow 50 L/min Pressure 345bar (5000psi)
Fluids	Seawater Mineral oils All water based glycol fluids
Options	400L capacity skid

PART NUMBERS & OPTIONS

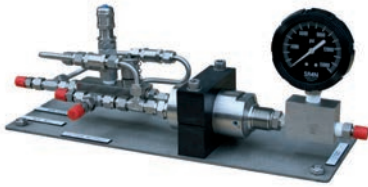
SRTS-66	BOP-AT300 System
SRTS-66-S	Remote location spares kit

- 15L, 30L, 40L, 50L, 100L, 200L Reservoir bags available from standard sizes
Contact directly for special size

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



Multifluid Intensifier



FEATURES

- Genuine minibooster intensifier
- 4:1 ratio as standard
- Suitable for hydraulic oil or water/glycol
- Mounted on ROV-friendly plate

Forum Multifluid Intensifier provides a multipurpose high-pressure intensifier circuit suitable for directly mounting onto a subsea skid or direct to an ROV.

Designed primarily for use with Shell Tellus 22- or 32-grade hydraulic oils, this intensifier can operate using hydraulic oil, glycol or a water/glycol mixture. The Intensifier should be completely flushed when reverting to hydraulic oils.

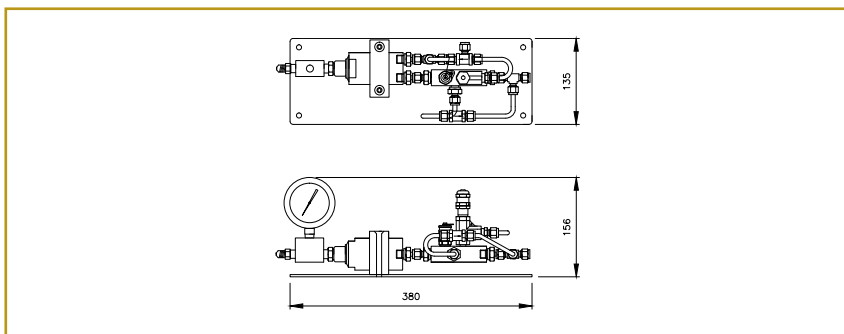
An optional spares package can be included and shipped with this unit.

Available with JIC or NPT connections.

WHAT'S IN THE BOX?

- Multifluid Intensifier
- Operational hoses
- Operation manual





SPECIFICATIONS

Hydraulic input	Pressure 210bar (3,000psi) Flow 14L/min
Hydraulic output	Pressure 690bar (10,000psi) max Flow 2 L/min max
Specifications	Standard Intensifier ratio 4:1 Genuine minibooster intensifier
Fluids	Oil Glycol Water-glycol mix
Dimensions	(L) 310mm x (B) 135mm x (H) 120mm
Weight	6kg

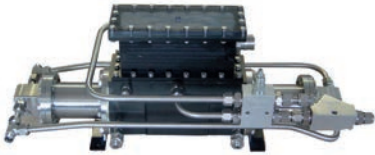
PART NUMBERS & OPTIONS

SRTS-016-000	Multifluid Intensifier
SRTS-016-S	Spares kit

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



Multifluid Pump



FEATURES

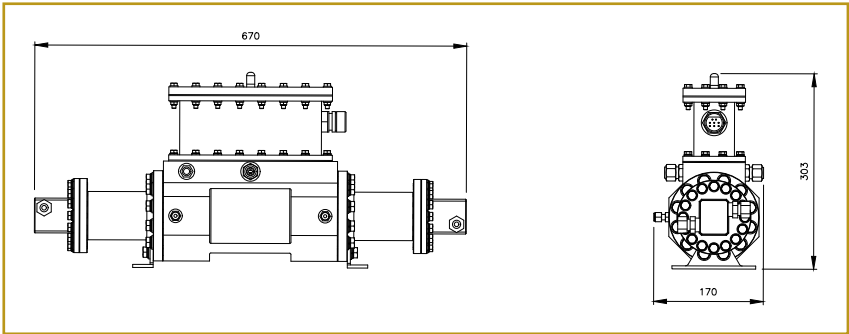
- 2:1 Intensification
Max Output 300bar
- 3,000m Rated

The multifluid pump is a self-cycling double piston hydraulic unit. The assembly includes an internal directional valve and a pressure-tolerant auto-reverse electrical timing circuit. It simply requires driving-oil supply and a 24V signal from the ROV. An alternative option is available for an all-hydraulic pump; this requires no electrical current to operate, only supply and return hydraulics.

The system was developed for the specific needs of both fluid injection and pumping out uncompensated ballast tanks that were filled at the surface. It has specific ROV details such as double barrier sealing with venting, debris tolerance and materials for seawater use. It can operate either as a normal pump to deliver high pressures or as a suction pump to deliver high relative suction in deepsea conditions.

WHAT'S IN THE BOX?

- Multifluid Pump
- Operations & Maintenance Manual



SPECIFICATIONS

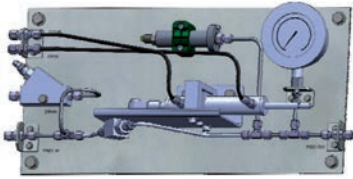
Hydraulic input	Pressure 210bar (3,000psi) Flow 30Lmin
Hydraulic output	Pressure 300bar Flow 10Lmin
Suitable for	Seawater Glycol Mineral oils
Weight in air	36kg
Weight in water	32kg

PART NUMBERS & OPTIONS

A063-033-151	Hydraulic Control Multifluid Pump
A063-033-002	Electrical Control Multifluid Pump

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Back Seal Test Unit



FEATURES

- Manually-Adjusted Pressure Relief Valve
- Ram-Operated Ball Valve (with reducing jet)
- Depth-Compensated Pressure Gauge
- Electronic Pressure Transducer
- Aluminum Mounting Plate
- Supplied in offshore-suitable transit case

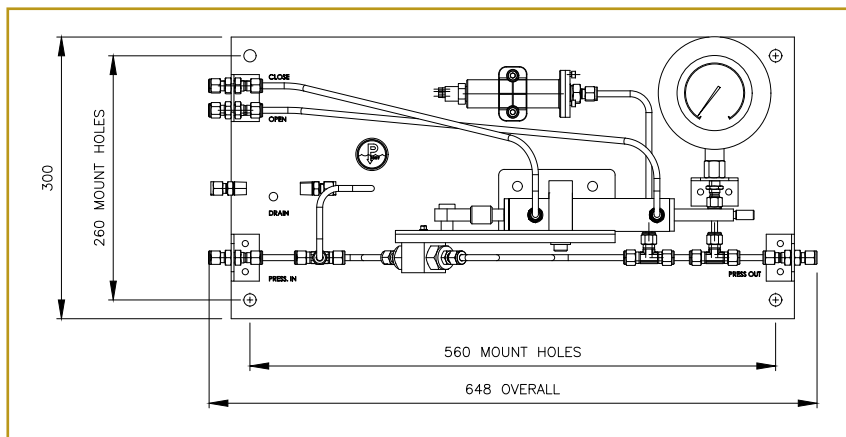
The BSTU controls the supplied pressure to between 7 and 210bar to be applied via the pressure-out connection. The pressure is monitored by a transducer which may be connected to the subsea control unit if required, and also a subsea gauge. The applied pressure may be switched off/locked in by means of the ram-operated ball valve.

All the components are mounted on an Aluminum base plate which should be secured to the host vehicle structure in an accessible location. There are no specific orientation requirements. Hydraulic connections are 1/4" Swagelok male thread. The ram is operated by an ROV spare bi-directional function (210bar max). The supply pressure may be acquired anywhere suitable from the host vehicle circuit (210bar max). The drain line should be connected as directly as possible to the ROV return circuit to minimize return line losses.

The tool is supplied in an offshore-suitable plastic case with foam insert.

WHAT'S IN THE BOX?

- Back Seal Test Unit
- Electrical cable to connect unit to special TTCS
- Operations & Maintenance Manual



SPECIFICATIONS

Hydraulic input	Pressure 210bar (3,000psi) Flow 15L/min
Hydraulic output	7-210bar (adjustable)
Electrical output	4-20mA
Electrical connector	Subconn MCBH6M

PART NUMBERS & OPTIONS

A036-059-101	Back Seal Test Unit
A036-059-017	Basic Spares Kit

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Modular IHPU



FEATURES

- 210bar / 3000 psi output
- Directional control on output
- Input Flow can be set depending on output required
- Can be supplied as part of skid tooling pack-age with reservoirs

A high capacity intermediate hydraulic power unit designed to give isolated hydraulic power with directional control. The IHPU consists of a hydraulic motor equipped with a flow control and pilot to open check, which drives a hydraulic pump.

A 3 stage manifold block can be fitted underneath the directional control valve making the unit ideal for applications needing three separate pressures i.e. Torque Tool operations.

The high pressure output of the pump is fed into a manifold that is equipped with a 20 micron filter, off load dump valve, a pressure relief valve and a directional control valve.

WHAT'S IN THE BOX?

- IHPU Unit
- Operational Hoses
- Operations & Maintenance Manual

SPECIFICATIONS

Max. Input Pressure	210bar (3000psi)
Max. Input Flow	150 Lpm (33 US Gpm)
Max. Output Pressure	210bar (3000psi)
Max. Output Flow	60 Lpm (16 US Gpm)
Suitable for	Hydraulic Oil

PART NUMBERS & OPTIONS

SRTS-052	Modular IHPU
SRTS-052-S	Modular IHPU Spares Kit

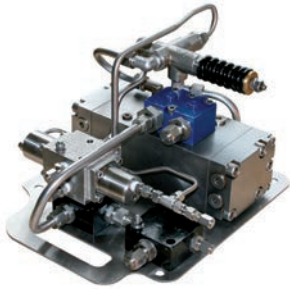
The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



Dredging/Jetting Tools



Dual Jetting System



FEATURES

- Max Jetting 400bar with standard nozzle
- Use as a Jetting System or IHPU
- Wide range of nozzle types
- Only 28kg in air

The Dual Jetting System has been designed to be easily mounted onto any work-class ROV and comes fitted as standard a turbo nozzle with a 25 degree spray pattern and a pencil jet nozzle for a more concentrated spray pattern.

This combination of nozzle types and the flexibility to switch between the two make this tool a versatile jetting solution. Nozzle type and patterns can be changed depending on the intended application. (Please speak with us to determine the best nozzle types for your application). The unit will work at a depth of up to 3000msw. Pressure can be monitored at all times via a gauge connected to the systems gauge port. This versatile tool can also be used as an IHPU.

WHAT'S IN THE BOX?

- Jetting System
- Operational Hoses
- User Manual

SPECIFICATIONS

Hydraulic input	Pressure 180-210bar Flow 30-60 L/min
Output	Maximum jetting pressure 400bar IHPU pressure 50-520bar (adjustable)
Unit supplied with	PO check valve Flow control valve Integral relief valve
Dimensions	(L) 380 x (B) 305 x (H) 300mm
Weight	28kg in air
Unit suitable for	Water Seawater Hydraulic oil Glycol

PART NUMBERS & OPTIONS

SRTS-081	Dual Jetting System
SRTS-081-S	Spares Kit

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Merlin Water Jet System



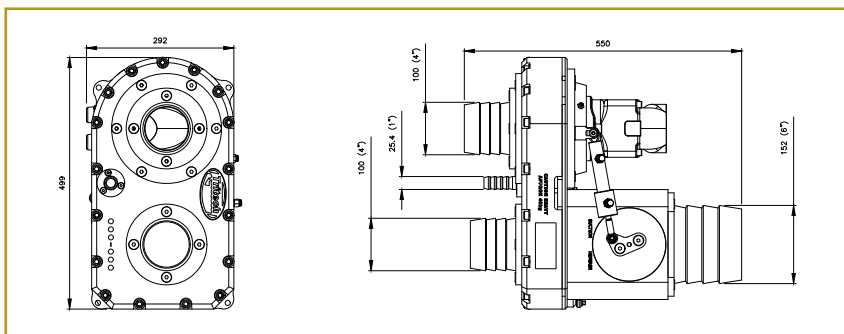
FEATURES

- Used for Jetting and Excavation
- 1" Jetting Hose
- 4" Excavation Hose
- 6" Exhaust for Excavation
- Supplied with fitting kit to suit XLX ROV
- Supplied in offshore-suitable transit case

The excavation pump will not block or jam because there are no moving parts in the suction flow path. The flow reversal valve can be operated to back-flush the suction nozzle should there be an obstruction. Power is derived from a stream of high-velocity fluid creating a low pressure region behind the suction nozzle. The pump may be rapidly switched from suction to jetting, or be configured to an intermediate position allowing jetting and excavation to be carried out simultaneously.

WHAT'S IN THE BOX?

- Merlin ROV Pump
- 1" Jetting Nozzle
- 4" Eductor Nozzle
- Clean Water Inlet Filter
- Full hose and fitting kit
- High-flow Pilot-operated valve
- Holsters for nozzles
- Operations & Maintenance Manual



SPECIFICATIONS

Hydraulic input	Pressure 170-250bar (2,450-3,600psi)
Flow input	65 to 110 L/min (17 to 29 USgpm)
Jetting	Up to 600 L/min @ 8bar (160US gpm @ 115psi)
Suction flow	2,000-4,000 L/min (500-1,000US gpm)
Solids removal rate	10-40 tonnes/hour (350-1,500lb/min)
Weight in air	40kg (90lb)
Weight in water	17kg (38lb)

PART NUMBERS & OPTIONS

A063-044-101/02	Merlin Water Jet System
A063-044-101/S	Spares Kit for Merlin Dredge Pump
A063-044-101/RS	Remote Spares Kit for Merlin Dredge Pump

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Low-Pressure Jetting System



FEATURES

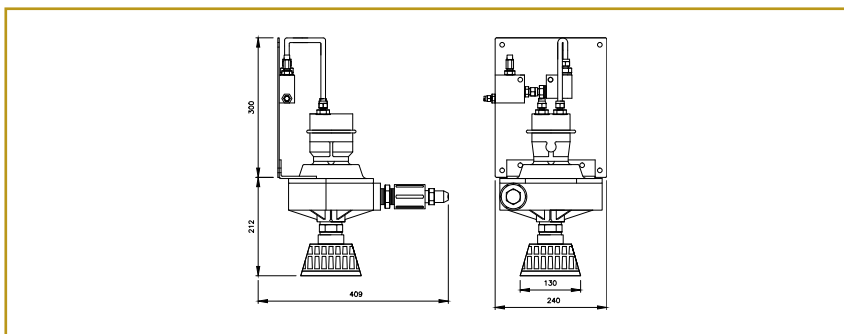
- 435Lmin output
- Simple and reliable jetting solution
- Range of jetting nozzles available

Designed for use when our high-pressure jetting system offers too much power for the application, the low-pressure system is as reliable, durable and simple to use providing a constant water jet stream at a maximum of 435 L/min.

Mounted on an ROV-friendly stainless steel plate this unit is shipped ready for immediate integration and operation.

WHAT'S IN THE BOX?

- Low-Pressure Jetting System
- Operational hoses
- Operation manual



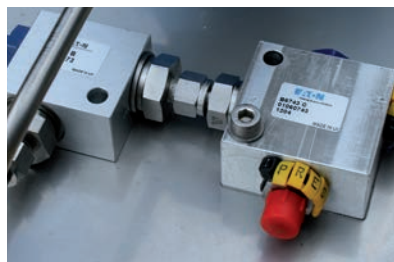
SPECIFICATIONS

Hydraulic input	Pressure 150bar (2,000psi) Flow 27 L/min
Output	Max 6.4bar Max 435 L/min
Specifications	Inlet 125 micron filter Outlet 12 JIC male

PART NUMBERS & OPTIONS

SRTS-015-001	Low-Pressure Jetting System
SRTS-015-001/S	Spares kit

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



SuperZip Water Jet System



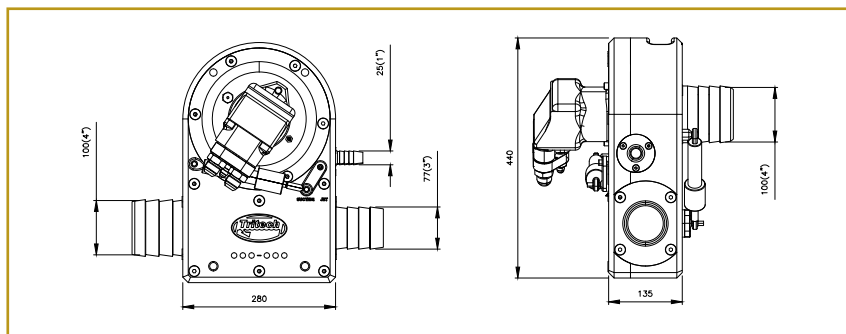
FEATURES

- Used for Jetting and Excavation
- 1" Jetting Hose
- 3" Excavation Hose
- 6" Exhaust for Excavation
- Supplied with fitting kit to suit XLX ROV
- Supplied in offshore-suitable transit case

The excavation pump will not block or jam because there are no moving parts in the suction flow path. The flow reversal valve can be operated to back-flush the suction nozzle should there be an obstruction. Power is derived from a stream of high-velocity fluid creating a low-pressure region behind the suction nozzle. The pump may be rapidly switched from suction to jetting, or be configured to an intermediate position allowing jetting and excavation to be carried out simultaneously.

WHAT'S IN THE BOX?

- SuperZip Jet Pump
- 1" Jetting Nozzle
- 3" Eductor Nozzle
- Clean Water Inlet Filter
- Full hose and fitting kit
- Holsters for nozzles
- Operations & Maintenance Manual



SPECIFICATIONS

Hydraulic input	Pressure 150-220bar (2,200-3,200psi)
Flow input	40 to 60 L/min (11-16US gpm)
Jetting	1000 L/min @ 2bar (270 US gpm)
Suction flow	500-1,000 L/min (135-270US gpm)
Solids removal rate	5-10 tonnes/hour (184-368 lb /min)
Weight in air	25kg (55lb)
Weight in water	11kg (24lb)

PART NUMBERS & OPTIONS

A063-044-001	SuperZip Water Jet System
A063-044-001/S	Spares Kit

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Dredge Pump



FEATURES

- Dredge 1,688 L/min
- Excavate up to 3" solids
- Run dry without damage
- Only 25kg in air

The Hydraulic Dredge Pump is the lightest, most efficient way to move large volumes of liquid with concentrations of solids up to 25% by volume.

The urethane bowl is virtually indestructible – tough, lightweight, abrasion resistant, resilient and impervious to petrochemical solvents. The pump pumps almost anything without damaging the bowl.

The efficient design places the urethane impeller above material flow, reducing blockage, jamming and overall pump wear while keeping liquids moving fast enough to pump high volumes of solids at a much higher head than non-submersible pumps.

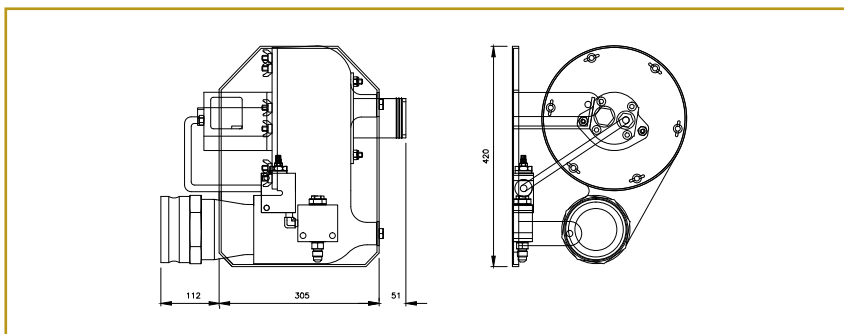
For easy maintenance and inspection, simply remove the top plate, clean out the bowl and replace the cover and nuts. You're back to work in less than 5 minutes.

No priming necessary. The pump can run dry without damaging motor or impeller, reducing the possibility of downtime.

WHAT'S IN THE BOX?

- Hydraulic Dredge Pump
- Operational hoses
- Operation manual





SPECIFICATIONS

Hydraulic input	Pressure 140bar (2,000psi) Flow 26-34 L/min
Specifications	Able to run dry without damage 4" discharge Can take up to 3" (76mm) solids 450 gallons per minute (1,688 L/min) water
Dimensions	(L) 440mm x (B) 450mm x (H) 400mm
Weight	25kg

PART NUMBERS & OPTIONS

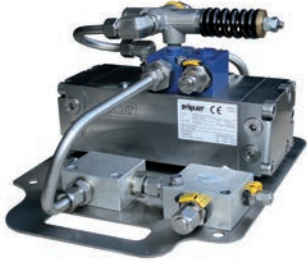
SRTS-013-SYS	Hydraulic Dredge Pump
SRST-013-S	Spares Kit
SRTS-013-003	Excavation nozzle

- This product can be combined with 0-520bar Jetting System to create a highly versatile excavations system

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



50-520bar Jetting System



FEATURES

- World renowned jetting system
- Huge range of nozzles and accessories available for different tasks
- Supplied with nozzle assembly
- Mounted on ROV-friendly plate
- Only 39kg in air
- Various handle styles

Forum 50-520bar Jetting System is widely recognized and used throughout the world due to its reliability and impressive pumping capabilities; no other system offers the same power and reliability.

The integral relief valve is adjustable to provide any pressure range desired from 50-520bar.

The pump is suitable for connection to any subsea reservoir via the 3/4 suction port.

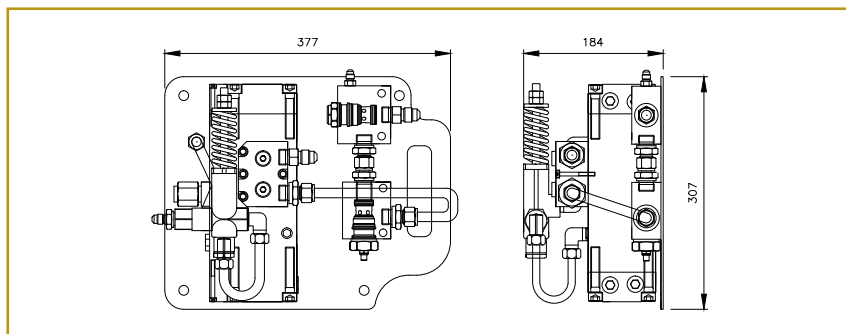
The system is designed to be capable of pumping water, sea water, hydraulic oil or glycol.

This highly versatile system can be used as either an IHPU or jetting system making it an invaluable and effective tool for any ROV system.

WHAT'S IN THE BOX?

- 50-520bar Jetting System
- Operational hoses
- Nozzle with ROV handle
- Turbo nozzle
- Suction Filter
- Operation manual





SPECIFICATIONS

Hydraulic input	Pressure 180-210bar (3,000psi) Flow 85L/min Max
Output	Pressure 5-520bar (7,500psi) Flow 30L/min Max
Specifications	Maximum Jetting 400bar (Standard Nozzle) Unit supplied with: PO Check valve Flow control valve Integral relief valve (50-520bar)
Dimensions	(L) 380mm x (B) 305mm x (H) 300mm at highest
Weight	39kg in air
Fluids	Water Seawater Hydraulic oil Glycol

PART NUMBERS & OPTIONS

SRTS-009-SYS/01	50-520bar Jetting System (400bar standard nozzle)
SRTS-009-SYS/02	50-520bar Jetting System (600bar nozzle)
SRTS-009-S	Spares Kit

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



150Lmin Cavitation Jetting System



FEATURES

- 150Lmin jetting capabilities
- Cavitation nozzle cleans without causing damage
- Three nozzle designs for different applications

Forum 150 L/min Jetting System is widely recognized and used throughout the world due to its reliability and impressive pumping capabilities; no other system offers the same cleaning power and reliability.

Utilising a specially designed nozzle to induce cavitation this unit has been proved to be a highly effective cleaning tool which does not cause damage to delicate surfaces.

The pump is suitable for connection to any subsea reservoir via the 3/4 suction port and is capable of pumping water, seawater, hydraulic oil or glycol.

The pump will operate at 3000m but cavitation will not occur below 25m.

WHAT'S IN THE BOX?

- 150 L/min Cavitation Jetting System
- Operational hoses
- Operation manual



SPECIFICATIONS

Hydraulic input	Pressure 180-210bar (3,000psi) Flow 30-75 L/min
Output	Pressure 100bar (1,500psi) Flow 15-150 L/min
Unit supplied with	PO check valve Flow control valve
Dimensions	(L) 400mm x (B) 390mm x (H) 350mm at highest
Weight	40kg in air
Fluids	Water Seawater Hydraulic oil Glycol

PART NUMBERS & OPTIONS

SRTS-041	150 L/min Cavitation Jetting System
SRTS-041-S	Spares Kit
HYD-1135	Twin Jet Cavitation Nozzle
HYD-1136	Triple Jet Cavitation Nozzle
HYD-1137	Quad Jet Cavitation Nozzle



The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

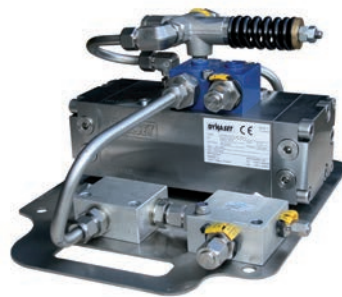
Excavation System



FEATURES

- Combines Jetting & Dredging in one simply deployed package
- Excavate solids up to 3" diameter
- Water jet at 400bar
- Dredge 1,688 L/min
- Combined weight 41kg in air

Combining Forum's world renowned Jetting System with their Dredge pump unit into a single manipulator-held nozzle assembly produces the Excavation System; providing sufficient power to break large solids and excavate any solid up to three inches in diameter. Dredging and Jetting operations can be used alternately or simultaneously.



WHAT'S IN THE BOX?

- Hydraulic Dredge Pump
- 0-520bar Jetting System
- Excavation Nozzle
- Operational hoses
- Operation manual



SPECIFICATIONS

Dredge pump unit	Hydraulic input Pressure 140bar (2,000psi) Flow 26-34 L/min 450 gallons per minute (1,688 L/min) water Able to run dry without damage 4" discharge Can take up to 3" (76mm) solids Discharge size 4" NPT female Dimensions (L) 440mm x (B) 450mm x (H) 400mm Weight 25kg
Jetting unit	Hydraulic input Pressure 180-210bar (3,000psi) Flow 30-60 L/min Output Pressure 520bar (7,500psi Max) Flow 30 L/min Maximum jetting pressure: 400bar (5,800psi) Unit suitable for: Water Seawater Hydraulic oil Glycol Dimensions (L) 380mm x (B) 305mm x (H) 300mm at highest Weight 39kg
Excavation nozzle	Constructed from 316 Stainless Steel Manipulator handle for ease of operation Combines Dredging with Jetting units

PART NUMBERS & OPTIONS

SRTS-012	Excavation System
SRTS-009-SYS	0-520bar Jetting System
SRTS-009-S	Spares kit (0-520bar Jetting System)
SRTS-013-SYS	Hydraulic Dredge Pump
SRTS-013-S	Spares kit (Dredge Pump)
SRTS-013-003	Excavation nozzle

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

200bar Jetting System



FEATURES

- 200bar Jetting system
- Various nozzles available for differing applications
- Mounted on ROV-friendly plate

Forum 0-200bar Jetting System is widely recognized and used throughout the world due to its reliability and impressive pumping capabilities; no other system offers the same power and reliability.

The integral relief valve is adjustable to provide any pressure range desired from 20-200bar.

The pump is suitable for connection to any subsea reservoir via the 3/4 suction port. The system is designed to be capable of pumping water, seawater, hydraulic oil or glycol.

This highly versatile system can be used as either an IHPU or Jetting system making it an invaluable and effective tool for any ROV system.

WHAT'S IN THE BOX?

- 0-200bar Jetting System
- Operational hoses
- T-Bar nozzle handle
- Turbo nozzle
- Suction filter
- Operation manual



SPECIFICATIONS

Hydraulic input	Pressure 180-210bar (3,000psi) Flow 40 L/min Max.
Output	Pressure 200bar (3,000psi) Flow 30 L/min Max.
Specifications	Maximum Jetting 200bar (standard nozzle) Integral relief valve (20-200bar)
Dimensions	(L) 250mm x (B) 160mm x (H) 200mm at highest
Weight	16kg in air
Fluids	Water Seawater Hydraulic oil Glycol

PART NUMBERS & OPTIONS

SRTS-044	20-200bar Jetting System
SRTS-044-S	Spares Kit

- Variety of nozzle types available

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



8. Cutters/Grinders

Cutters/Grinders



100mm Hydraulic Cable Cutter



FEATURES

- Cuts Cables up to Ø100mm
- Industry-Standard Tool
- Lightweight
- ROV-Deployed
- Supplied in offshore-suitable transit case

The Cable Cutter is designed to sever subsea umbilicals including armoring, up to 100mm in diameter. The cable is trapped by an anvil rod and then cut by a blade. The anvil and blade are driven hydraulically in both directions.

The cable cutter is fitted with a hydraulic connection to the host ROV for operation. An optional 'Emergency' disconnect mechanism can be supplied which will release it from the host ROV in case there is a loss of power.

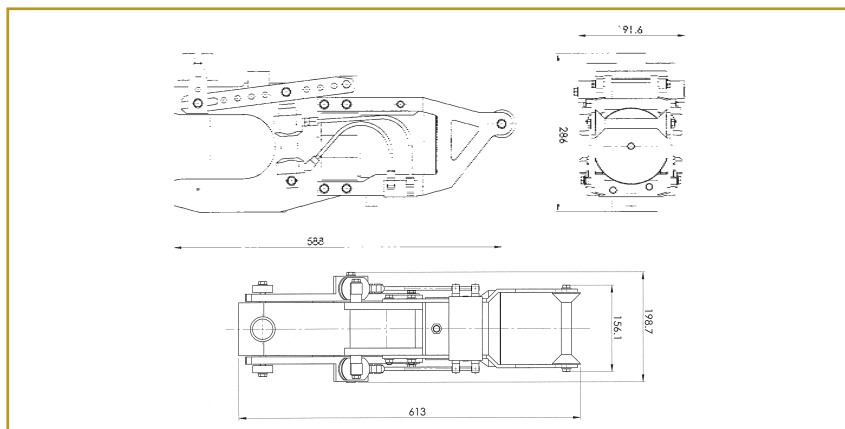
WHAT'S IN THE BOX?

TA019-00-001

- Cable Cutter
- ROV Handle
- Operations & Maintenance Manual

DWG-D66521-001

- Cable Cutter
- ROV Handle
- Intensifier
- QD System
- Operations & Maintenance Manual



SPECIFICATIONS

Cable diameter	100mm max
Cable type	Armored or lightweight
Max hydraulic pressure	640bar – Main Cut (requires pressure intensifier)
Hydraulic fluid	Mineral oil
Weight in air/water	30kg/23kg

PART NUMBERS & OPTIONS

TA019-00-001	Basic Cutter with Handle
DWG-D66521-001	Cutter with handle, intensifier, QD system
TA019-00-001/SK	Seal Kit
TA019-01-705010	Spare Blade
TA019-01-CC6378	Spare Anvil

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

38mm (1.5") Wire Rope Cutter



FEATURES

- Open sided design for easy positioning
- Light-weight
- Cuts up to 38mm wire rope
- Supplied in offshore-suitable transit case

Heavy duty wire rope cutter designed for use in severe working conditions

Open sided design allows for easy positioning of the cutter on the cable

Blade shaped anvil cuts higher grade cable

Corrosion resistant stainless steel body with Nitrotec coated alloy steel cylinder

Long blade and anvil life ensures that tool maintenance is kept to a minimum

Ideal for operation in confined spaces

Cutting capacity – Maximum Ø38mm wire rope of 1960N/mm² grade

Can be used at any water depth

Suitable for cutting wire rope, cables and umbilicals

220 bar maximum input pressure

Approx weight – 22kg

WHAT'S IN THE BOX?

- Cable Cutter
- Supply and return hoses
- ROV Handle
- Operations & Maintenance Manual



SPECIFICATIONS

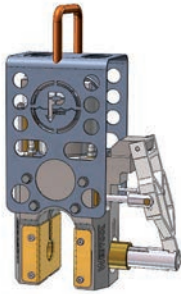
Cable diameter	38mm max
Cable type	Up to 1960N/mm ²
Max hydraulic pressure	206 Bar
Hydraulic fluid	Mineral oil
Weight in air	25kg
Hoses	Supplied with 3m hoses to connect to ROV

PART NUMBERS & OPTIONS

A860-408-100/01	38mm (1.5") Wire Rope Cutter
A860-408-100/5	Spares Kit

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

75mm (3") Wire Rope Cutter



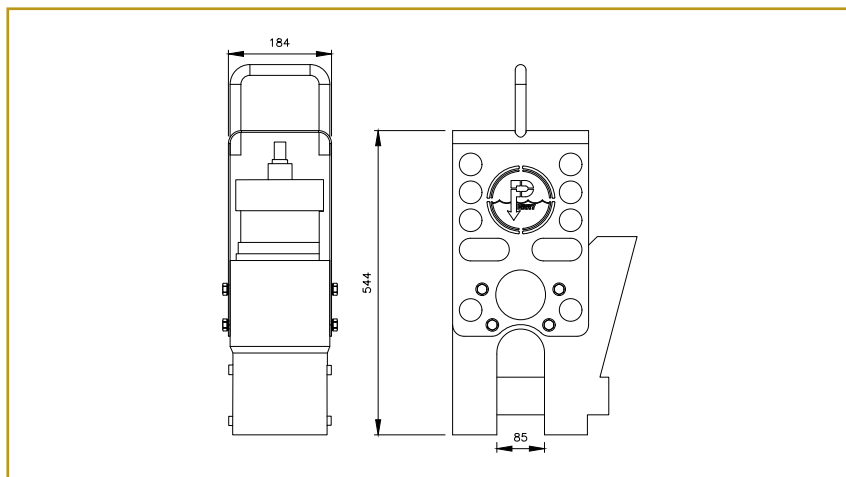
FEATURES

- Cuts up to 75mm 1,960N/mm² Wire
- Supplied with ROV handle
- Hydraulic Retract
- Supplied in offshore-suitable transit case

The 75mm Wire Rope Cutter is suitable for cutting grades up to 1960N/mm² and up to 75mm in diameter. Utilising a fully retractable anvil the cutter can be placed over continuous lengths of wire ropes for simplified cutting operations. The cutting cylinder is supplied complete with pressure intensifier from Webtool. This tool is suitable for local or remote operations in subsea environments (i.e. on an ROV) and due to its high-quality construction requires little or no maintenance throughout its operational life. Replacing the anvil or cutting blade is a simple task and spares kits comprising both components and all seals are available at any time. All spares provided are genuine Webtool components. The tool is supplied with ROV handle and separate cutter/anvil connection hoses.

WHAT'S IN THE BOX?

- Wire Rope Cutter
- ROV Handle
- Supply and return hoses
- Operations & Maintenance Manual



SPECIFICATIONS

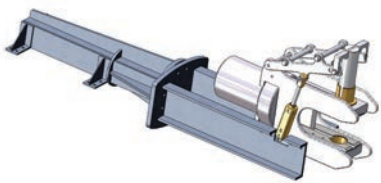
Cable Diameter	75mm Max
Wire Type	Up to 1960 N/mm ²
Max Hydraulic Pressure	210 Bar
Hydraulic Fluid	Mineral Oil
Hoses Supplied	wit 3m hoses to connect to ROV

PART NUMBERS & OPTIONS

A036-026-150	75mm (3") Wire Rope Cutter
A036-026-150/SK	Seal Kit

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

115mm (4") Wire Rope Cutter



FEATURES

- Cuts up to 115mm 1,770N/mm² Wire
- Supplied with ROV mount bracket
- Hydraulic Retract
- Supplied in offshore-suitable transit case

The cutter is a heavy duty wire tool designed for use in severe working conditions such as offshore. The RCV cutters feature stainless steel or lightweight aluminum construction and have been specifically designed with ROV applications in mind. The cutter features hydraulically powered anvil pins for remote actuation.

Note: the tool needs to be used in conjunction with an intensifier e.g. Intensifier Panel A036-081-001.

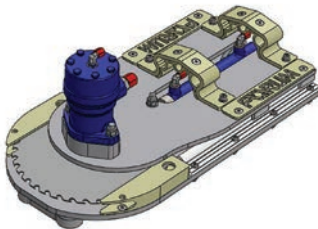
SPECIFICATIONS	
Operating pressure	690bar (10,000psi)
Max wire diameter	115mm
Max wire strength	1,770N/mm ²
Weight in air	145kg

PART NUMBERS & OPTIONS	
A036-026-190	115mm (4") Wire Rope Cutter
A036-026-190/spares	Spares Kit
SRT5-016-000	Intensifier Panel

WHAT'S IN THE BOX?

- Wire Rope Cutter
- ROV Mounting Bracket
- Supply and return hoses
- Operations & Maintenance Manual

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



FEATURES

- Suitable for cutting:
- Anchor Chain
- Wire Rope
- Drill String
- Various types of steel pipes
- Coflexip

Using a 12" saw blade the Manipulator-Mounted Saw cuts through a multitude of materials with absolute ease and dexterity. Specially designed to mount on any manipulator's wrist, using adaptor plates, the material to cut is simply grabbed with the manipulator's jaws, held in place and cut in seconds.

Designed to fit to, rather than being held to the manipulator retains full function of the manipulator's movements for further subsea tasks without limitation. Once a material is located in position the blade is switched on and fed towards the material on completion of a cut the blade retreats within the saw's body protecting it and the manipulator from entanglement or obstruction and allows the next target to be located in moments. A variety of saw blades are available for different cutting tasks.

SPECIFICATIONS

Hydraulic input	Pressure 175bar Flow 60 L/min
Suitable for cutting	Anchor Chain Wire Rope Drill String Various types of steel pipes Coflexip

PART NUMBERS & OPTIONS

SRTS-062	Manipulator Mounted Saw
SRTS-062-S	Spares Kit

WHAT'S IN THE BOX?

- Manipulator Saw
- Operational hoses
- Manual

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Rotary Grinder / Cutter / Buffer



FEATURES

- Rotary cutting, grinding, brush tool
- Wide range of brush types available
- Wide range of cutting and grinding discs available
- ROV handle
- Weight 8.5kg

The Rotary Grinder / Cutter / Buffer is a portable tool, designed for use by a diver or ROV. It is primarily used for top, face, and side grinding and cutting operations, but can also be fitted with rotary wire brushes and a variety of abrasive and polishing discs.

This unit is supplied with ROV-friendly handle and 2m whips with stainless steel fittings.

A wide variety of cleaning, cutting and grinding brushes and discs are available.

WHAT'S IN THE BOX?

- Rotary Grinder/Cutter/Buffer
- Operational hoses
- ROV handle
- Disc removal tool



SPECIFICATIONS

Hydraulic input	Pressure 70-175bar (2,500psi) Flow 45 L/min Max
Specifications	Capacity 7" or 9" Disc Speed 2,700rpm
Weight	8.5kg

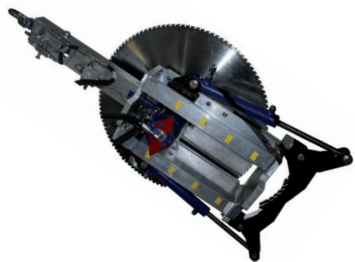
PART NUMBERS & OPTIONS

A036-063-001	GR29 Rotary Grinder/Cutter/Buffer
SRTS-023/ADAPTER	Brush mounting adaptor plate
SRTS-023/ABRASIVECUT	9" High-performance cutting disc
SRTS-023-003	9" High-performance grinding disc
SRTS-023/DIAMOND	9" Diamond cutting disc
A036-063-002/BRUSH	160mm Nylon Rotary Brush
SRTS-023/TKB	Twist knot wire brush
SRTS-023/CWB	Crimped wire brush

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



10" Rotary Cutter



FEATURES

- 10" Rotary cutter
- High-performance tungsten carbide blade
- Suitable for many different cutting operations

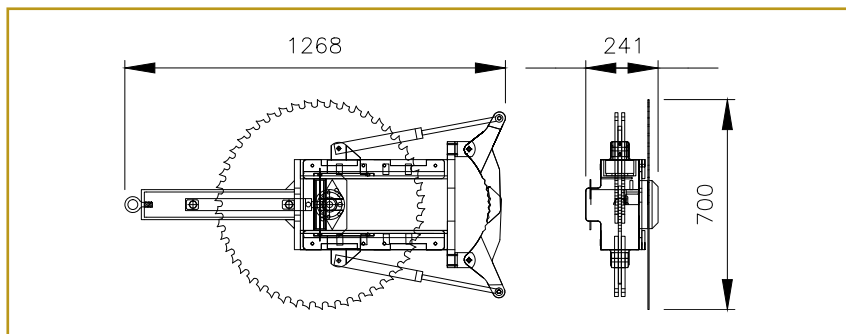
Forum's 10" Rotary Cutter has been designed to clamp onto structures and cut material up to 10 inches in diameter, using the standard high-quality tungsten carbide-tipped blades to cut ferrous and non-ferrous metals easily including high-tensile steels.

The cutter consists of an aluminum assembly, a clamp arrangement which is actuated by two rams to enable secure clamping onto structures more than 3" diameter and up to 10" diameter. The main motor is mounted on a slide to extend and retract the position of the blade. A counterbalance valve is set to stop the weight of the saw motor and blade from dropping when hydraulic pressure is removed.

A variety of blade sizes and blade types can be quickly and easily mounted onto the blade hub making this cutter not only light and simple to deploy but highly versatile in its cutting operations.

WHAT'S IN THE BOX?

- 10" Rotary Cutter
- 700mm High-performance blade
- Operational hoses
- Operation manual



SPECIFICATIONS

Cutting capability	Cuts up to 10" diameter
Main motor	Pressure 175bar (2,500psi) Max Flow 60 L/min Max
Clamp	Pressure 100bar (1,450psi) Max Flow 1 - 5 L/min
Motor extend cylinder	Pressure 100bar (1,450psi) Max Flow 0.1 L/min

PART NUMBERS & OPTIONS

SRTS-038	10" Rotary Cutter
HYD-0716 / 009-51-051	700mm High-performance blade
SRTS-038-S	Spares kit

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

55mm Softline Cutter



FEATURES

- Max. capacity 55mm fibre rope
- Weight 9.7kg
- Lightweight Construction

The open faced cutting tool has been designed specifically for cutting into long lengths of soft and fibre line in a crisp and simple action.

SPECIFICATIONS

Fibre Rope Diameter	55mm Max.
Max. Input Pressure	210bar (3000psi)
Weight in Air	9.7kg

PART NUMBERS & OPTIONS

A036-026-550/01	SL55 Softline Cutter Assembly
A036-026-550/5	Spares kit including seal, blade and anvil

WHAT'S IN THE BOX?

- SL55 Softline Cutter inc. handle
- Supply & Return hoses
- Operations & Maintenance Manual

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



FEATURES

- 16" Cutting Disc
- 3 position handle for ease of operation
- Supplied in offshore suitable transit case

The Super Grinder is a portable tool, designed for use by a diver or ROV. It is primarily used for cutting operations, but can also be fitted with a variety of suitable grinding, abrasive and polishing discs.

SPECIFICATIONS	
Weight in Air	55mm Max.
Disc Capacity	210bar (3000psi)
Weight in Air	9.7kg

PART NUMBERS & OPTIONS	
A036-026-550/01	SL55 Softline Cutter Assembly
A036-026-550/S	Spares kit including seal, blade and anvil

WHAT'S IN THE BOX?
• Super Grinder • Spin down block • Supply & Return hoses • Operations & Maintenance Manual • 2 off. Cutting Discs



The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Skids & TDU



Tool Deployment Unit



FEATURES

- ISO standard interface
- Full suite of supporting tools
- Robust and simple
- Twin-Point Docking
- Buoyancy Block
- Supplied with tooling/transport container

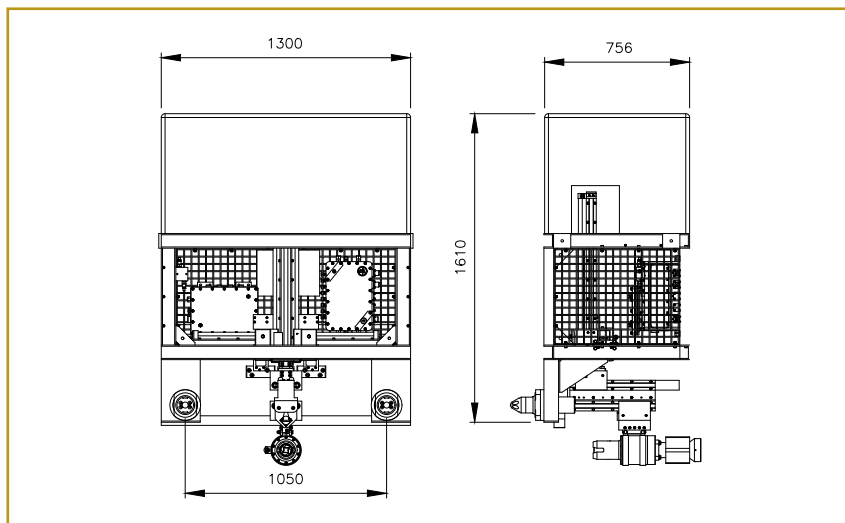
The Tool Deployment Unit (TDU) is used where subsea equipment has been designed around this ISO interface. TDU is sometimes referred to as an X-Y-Z unit. It has the advantage of reducing the space required on subsea structures and allows a high degree of precision when deploying tools.

The Forum unit conforms to the ISO interface requirements with the full range of supporting tools: including torque, gripper, stab plate and linear override.

The system is fitted to a host ROV, usually at rear, and is controlled over its own data link from a laptop computer. The operating software includes the Forum torque tool control suite with full turns and torque feedback as standard.

WHAT'S IN THE BOX?

- Workshop/transport Container
- Tool Deployment Unit
- High Torque Tool
- Class 1-2 Torque Tool
- LAOT
- LOT
- Surface Power Pack
- Operations & Maintenance Manual



SPECIFICATIONS

Host ROV requirements	RS485 data link
Hydraulic supply	20 - 70 L/min @ 207 bar Max
Standard working pressure	207bar (3,000psi)
Depth rating	Buoyancy block to client requirement, max 4,000m
Weight in air/water	562kg/0kg (with 1,500m buoyancy rating)
Cameras	4 off with zoom and focus control
Lights	2 off with dimmer control
Hydraulic functions	8 off NG3 switching DCV 1 off NG6 proportional DCV

PART NUMBERS & OPTIONS

A288-003-002	Tool Deployment Unit System
A288-083-002	Spares Kit

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Stab Plate Deployment Tool



FEATURES

- Stab Plate Deployment Tool
- ROV-mounted
- 1,500m Rated
- Twin-point docking
- Built-in Torque Tool
- Nut Release Mechanism

The Stab Plate Deployment Tool is a work skid suitable for fitting to the underside of an ROV of opportunity. The skid is primarily intended for the flying deployment of umbilical jumper bundles. A torque tool and gripper are mounted on a slide system in the tool. The front of the tool has twin docking latches for engagement to the destination. The skid includes all necessary pressure and control valves and is operated by direct functions from the host ROV.

SPECIFICATIONS

Hydraulic input	Pressure 210bar (3,000psi) Flow 8 L/min (2gpm)
Dimensions	1,530mm x 1,060mm x 600mm (60" x 42" x 24")
Weight in air/water	218/0kg (480/0lbs)
Depth rating	1,500m (4,900ft)
Max torque	Hex Socket 3,200Nm (2,400ft lbs)
Docking latches	Non-ISO Standard 100mm

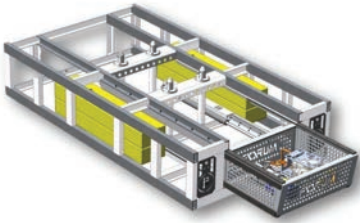
PART NUMBERS & OPTIONS

A036-058-002	Stab Plate Deployment Tool
A036-058-007	Basic Spares Kit

WHAT'S IN THE BOX?

- Deployment Tool
- Operations & Maintenance Manual

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



FEATURES

- Aluminium Frame Skid
- Hydraulically Operated Tool Drawer
- 2 off. LED Lights
- Buoyancy included

A skid design with the addition of a hydraulically operated drawer for storage of tools or soil samples. The frame is constructed from light-weight but durable aluminium sections. Also fitted are two LED lights in the front face of the skid.

SPECIFICATIONS	
Internal Drawer Dims	950mm x 750mm x 470mm
Mounting Interface	4-pin 795 x 428 to suit Forum & Schilling vehicles
Lights Fitted	6000m Sealite Sphere LED Light,
Overall Dimensions	3120mm x 1770mm x 606mm
Air/Water Weight	594 kg / -14 kg empty
Tooling Drawer Capacity	150 kg
Load Rating	24 tonnes compression on pins

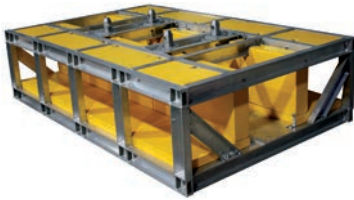
PART NUMBERS & OPTIONS	
A285-010-001/01	ROV Skid with Tooling Drawer
A285-010-001/S	ROV Skid with Tooling Drawer Spares Kit

WHAT'S IN THE BOX?

- ROV Skid with Tool Drawer

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

3,000m ROV Skid



FEATURES

- 3,000m rated skid
- Quick-load cartridge system to change skid function without hassle
- Suitable for most WROVs

Forum builds and designs skids for many applications and requirements suitable for direct connection to most WROVs. All skids are designed in-house, using our own reliable modular system of construction, providing a simple and easy skid that when required is not complex to service, repair or modify.

If your next skid requirement is not listed within our standard builds please contact us directly for your quotation.

WHAT'S IN THE BOX?

- 3,000m ROV Skid
- Fluid Transfer Pump



SPECIFICATIONS

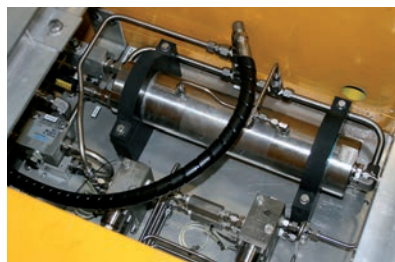
Specifications	3,000m rated skid 400L fluid capacity 118kg positive buoyancy Skid rated for 3T Can be supplied with adaptors to suit most WROVs
Skid can be supplied as	2-Stage Injection System Dual-Function Injection System BOP-AT Blowout Preventer Actuating System Multi-Function System c/w Intelligent Valve Pack

PART NUMBERS & OPTIONS

SRTS-037-120/01	3,000m ROV Skid
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- 15L, 30L, 40L, 50L, 100L, 200L Reservoir bags available from standard sizes to fit directly to skid
Contact directly for special size
- Reservoir bags suitable for methanol can be supplied
- Bespoke design options available please contact for details

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



Hot Stabs

Clarification of current and old standards.

There are several standards that are referred to in relation to:

API Spec 17D 1st edition 1992 (obsolete) covers 2 styles of Fluid Coupling (Hotstab) but does not give them any "Type" designations. The first one (figure C921.10) is a constant diameter 1.375" (35mm) and can be single or multi-port. The second one (figure C291.11) has a stepped profile starting at 1.25" (31.7mm) then stepping down to 1.0" (25.4mm) typically dual port but can be single, triple or quad. The current edition of API 17D contains no reference to hotstabs.

API 17H Second edition (current) has 4 styles Types A, B, C and D; Type A is a stepped profile (similar to but incompatible with the old API 17D second style) starting diameter 1.687" (42.85mm) then stepping down to 1.371" (34.92mm) typically dual port but can be single, triple or quad, Type B is a constant diameter 1.686" (42.82mm) (similar to but incompatible with the old API 17D first style) can be single or multi-port, Type C is a single port high flow hotstab 1.687" (42.85mm) with a 0.69" (17.5mm) drilling and Type D which comes in 3 nominal sizes 1.5" (38mm), 2.0" (51mm) and 3.5" (89mm) with correspondingly large drillings.

API 17TR 15 1st edition (current) has 3 types defined; Type 1 is a constant diameter style similar to API 17H Type B but with 4 possible diameters 1.125" (28mm), 1.375" (35mm), 1.75" (43mm) and 2.25" (55mm) can be single or multi-port, Type 2 is a dual port stepped profile similar to API 17H Type A but with 2 nominal sizes 1.125"/1.375" (28mm/35mm) and 1.375"/1.75" (35mm/43mm) the later would be compatible with API 17H Type A dual port, and Type 3 which is a high flow single port design with 10 nominal sizes the 2 preferred sizes are 1.7" (43mm) and 3.1" (80mm).

ISO 13628-8:2006 (current) defines 2 types, Type A which is identical to API 17H Type A and Type B which is identical to API 17H Type B.



207bar Type A Dual Port



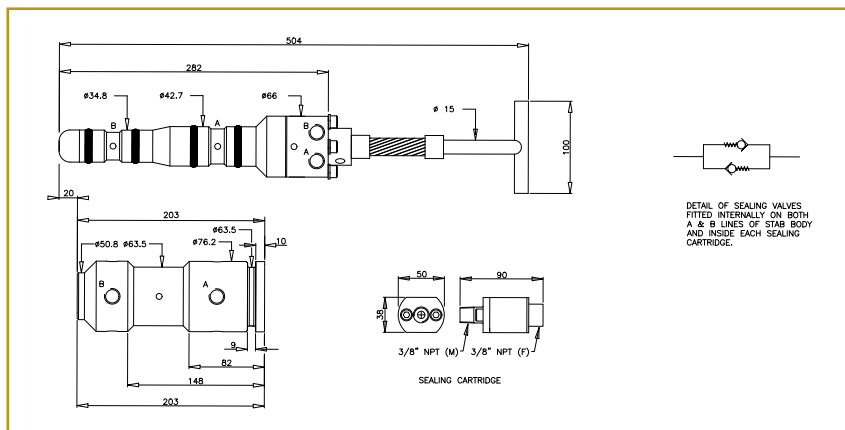
FEATURES

- Industry Standard
- ISO 13628-8 Type A
- 3,000psi (207bar)
- Integral Sealing Valves
- Pressure-Balanced

TheComplies with the dimensional requirements of ISO 13628-8 Type A and API 17H Type A.

The male has 4 check valves mounted in the body to minimize leakage from and water ingress into the stab

The female receptacle has two screw-in cartridges that do the same. The receptacle can be mounted by U-bolts around the body or flange; mounted by four bolts using a top-mounting interface plate.



SPECIFICATIONS

Working pressure	207bar (3,000psi)
Fluid	Most hydraulic fluids and gases to 207bar
Weight	4kg (male stab with handle)
Port sizes	All ports 3/8" NPT
Flow path	Nominal path 8mm diameter throughout
Materials	Stainless steel 316L and Duplex

PART NUMBERS & OPTIONS

A036-037-023	Male hot stab built-in checks no handle
A036-037-041	T-Bar-style Handle
A036-037-105	Fishtail-style Handle
A036-037-167	D-Type Handle
A036-037-030	Dummy Male Stab non-Pressure retaining
A036-037-013	Female receptacle
A036-037-025	Female receptacle mount plate
A036-037-042	Dummy receptacle non-pressure retaining
A036-037-018	Check valve to suit female receptacle (2 per receptacle req)

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

ISO Type A Dual Port



FEATURES

- Industry Standard
- ISO 13628-8 Type A
- 690bar (10,000psi)
- Integral Sealing Valves
- Pressure-Balanced
- Supplied in offshore-suitable transit case

The dual port conforms to ISO 13628-8, complete with integral sealing valves. The male has four check valves set inside the male body. These are 0.2bar inflow, 2.5bar outflow (i.e., will not dump the ROV compensator pressure). These minimize ROV oil leakage and water ingress.

The female receptacle has two screw-in cartridges that do the same, but are normally 0.2bar in/out. The female can be mounted by U-bolts around the body or flange; mounted by four bolts using a top-mounting interface plate.

SPECIFICATIONS

Working pressure	690bar (10,000psi)
Fluid	Most hydraulic fluids and gases
Weight in air	4.6kg (male stab with handle)
Port sizes	A and B ports 3/8" NPT
Flow path	Nominal path 7mm diameter throughout
Materials	Stainless steel UNS S31803 body Al Bronze nose piece
Handle	D-Type, Tee bar or Fishtail

PART NUMBERS & OPTIONS

A036-037-155/S	Male hot stab built-in checks D-Type Handle
A036-037-155/SK	Spares Kit

WHAT'S IN THE BOX?

- Hot stab fitted with D-Type Handle

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

2" Nominal Bore System





FEATURES

- 2" Nominal Bore
- Standard Working Pressure up to 415bar
- Pressure-Balanced

The 2" nominal bore hydraulic hot stab is a scaled-up version of the ISO 13628-8 Type A hot stab. Two styles of male stab are available offering either 2" NPT or Weco hammer union connections. Pressure ratings of up to 415bar available as standard.

Two styles of dummy are also available, a pressure dummy rated to 415bar and a plastic vented dummy. The pressure-rated male stabs can be securely locked into the female receptacle by rotating the handle, protruding pins on the male lock into corresponding slots on the female receptacle.

The full product range is detailed on Sales Drawing A001-360-011.

SPECIFICATIONS	
Working pressure	Up to 415bar
Fluid	415bar (duplex stainless steel)
Flow path	Most hydraulic fluids
Materials	Nominal path 50mm diameter throughout Xylan coated Stainless steel 316L and Duplex

PART NUMBERS & OPTIONS	
A001-360-011	2" Hot Stab Sales Drawing

WHAT'S IN THE BOX?

- 2" Nominal Bore Hot Stab

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

3" Nominal Bore System

	FEATURES • 10bar Operating Pressure in either Suction or Pumping • Pressure-Balanced • Low Weight for Easy Handling
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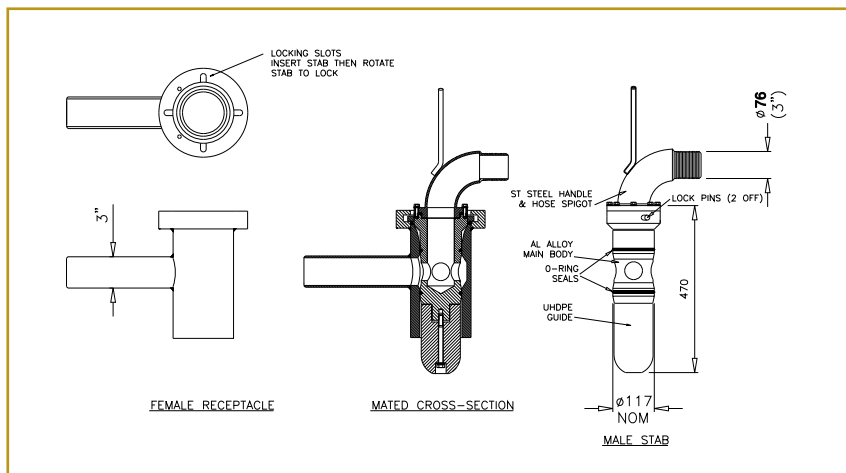
The 3" bore single-port stab is designed for use with high flows. It is ideal for suction anchor operations with a very low weight for its size. The male stab has an aluminum body and plastic hose. A pipe barb suits push-on 3" suction hose and clamps.

The receptacle can be supplied with a pipe weld stub, a flange, or for flush mounting. The flush-mounted version has a vent tube to prevent pressure lock. All can be supplied with or without locking pins – the stab is inserted and rotated 45 degrees to lock.

For full product range see sales drawing A001-360-012.

WHAT'S IN THE BOX?

- 3" Nominal Bore Hot Stab



SPECIFICATIONS

Maximum pressure	+/-10bar
Materials	Male-Aluminum Alloy Main Body, St Steel Handle and Hose Spigot, UHDPE Guide Nose
Fluids	Most Liquids

PART NUMBERS & OPTIONS

A036-048-072	3" Male Stab with D-Type Handle
A036-048-028	3" Male Stab dummy with D-Type Handle
A036-048-070	3" Female Receptacle with pipe weld stub
A036-048-075	3" Female Parking Receptacle

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Mini Hydraulic System



FEATURES

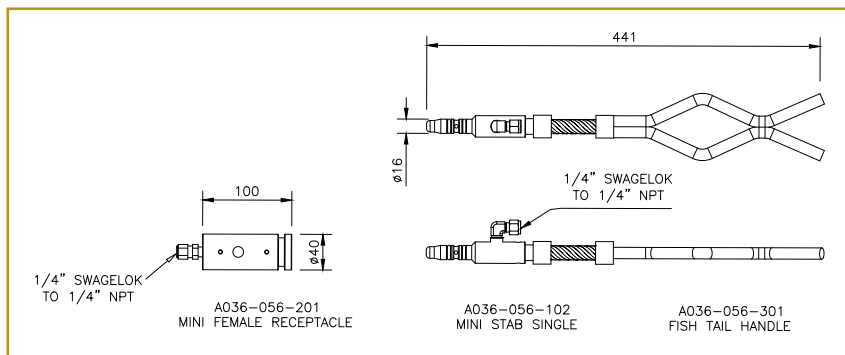
- 3,000psi (207bar)
- Pressure-Balanced
- Non ISO/API Standard

The mini hydraulic hot stab is ideal for situations where low weight and small size are required such as seal test ports on pipeline connectors.

The exit port on the female is on the main axis allowing receptacles to be mounted in tightly spaced groups.

WHAT'S IN THE BOX?

- Mini Hot Stab and/or Mini Receptacle



SPECIFICATIONS

Standard working pressure	207bar (3,000psi)
Fluid	Most hydraulic fluids and gases to 207bar
Weight	0.9kg (male stab with handle)
Port sizes	All ports 1/4" NPT
Flow path	Nominal path 4mm diameter throughout
Materials	Stainless steel 316L and Hiduron 130

PART NUMBERS & OPTIONS

A036-056-102	Mini Stab Male
A036-056-201	Mini Stab Receptacle Body
A036-056-301	Mini Stab Fishtail Handle

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Moffat Subsea Stab Connector™



The Moffat Subsea Stab Connector is a compact, light and cost-effective connector that allows a hose to be connected/disconnected subsea. The product has been in service since 1995 and has been refined and developed up until the present day as the demands of the subsea market have increased. It is now recognised by man operators as the 'best of breed' industry standard item for subsea pigging, chemical injection, gas injection, flooding and venting operations.

Ease of Use

The male and female components of the stab connector are easy to assemble in service. All that is required is for the ROV to align the male with the receptacle and push. Carefully shaped low friction guides on the two components correct any inaccuracies in the alignment of the initial makeup as the connection is made.

Pressure Balanced Design

The seal arrangement of the connector is such that all pressure forces are retained in the body of the male/female components. No net force acts along the axis of the stab or on the retaining mechanism. This means that in the case of an emergency the male stab connector can be disconnected under pressure.

Rotating Handle and Collar

The male stab handle is fitted with a rotating collar. The collar allows the stab body to rotate through a full 360° independent of the handle. This allows the ROV to manipulate the male stab whilst any torsion in the hose plays out during deployment.

WHAT'S IN THE BOX?

- Moffat Subsea Stab Connector™

'J' Slot Locking Mechanism

After insertion in the female receptacle the male stab handle can be rotated 30° inside a 'J' slot machined into the cap of the female receptacle. This serves two purposes: 1) it shows visually that the stab is located correctly inside the female receptacle and 2) provides a physical restraint against any axial force on the hose. As the assembly is pressure balanced there are no forces on the 'J' slot locking mechanism due to pressure.

Many Configuration Options

The Moffat Subsea Stab Connector has been deployed worldwide for many different uses. As such many standard configurations are already possible; some of which are shown with-in the datasheet.

Double Sided Solution

It is sometimes not possible to predict the orientation of the female receptacle when it is subsea (e.g. during pipe-lay operations). If this is a concern and there is a possibility that the female receptacle may be inaccessible then it is necessary to use a double-sided female receptacle. This receptacle is symmetrical and allows the male stab to enter from either side.

Surplussing Valve Solution

Male stabs can be fitted with a Moffat Surplussing Valve™. This option is typically used to prevent hose collapse due to external sea-water pressure for deepwater operations. A surplussing valve is a check valve that seals in one direction and allows flow after a pre-determined cracking pressure in the other. This allows a hose to be deployed with an inter-nal pressure applied to balance the external hydrostatic pressure. During operation the pressure is raised beyond the cracking pressure and the valve will open and allow flow. If the pressure drops below the cracking pressure the valve closes to protect the hose.

Rotating Handle and Collar

The male stab handle is fitted with a rotating collar. The collar allows the stab body to rotate through a full 360° independent of the handle. This allows the ROV to manipulate the male stab whilst any torsion in the hose plays out during deployment.

SPECIFICATIONS	
Design Code:	API 6A (ISO 10423), API 17D/H, ASME B31.8, ASME VII DIV. 2, PD 5500 and PED (Others available upon request)
Sizes:	3/4", 1", 2", 2.1/2", 3", 4", 6" and 8" Nominal Bore
Pressure Range:	6,000 psi (414 bar), 10,000 psi (690 bar) and 15,000 psi (1035 bar)
Max Water Depth:	3,000m
Material Selection:	316 St. Stl, Duplex UNS 31803, Super Duplex UNS 32760, Inconel 625, Nitronic 60 and Hiduron (Others available upon request)

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

ROV Tools



Upright Flying Lead Orientation Tool



FEATURES

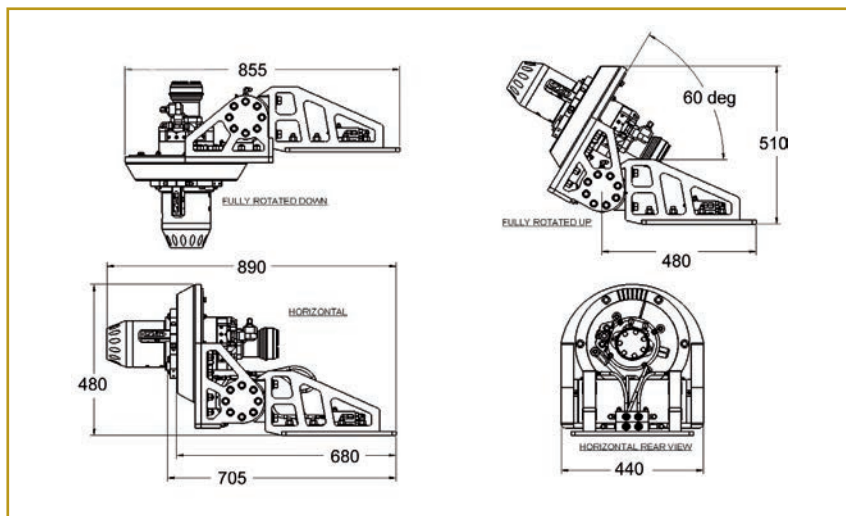
- ± 15 deg roll angle
- Plus 60 minus 90 deg pitch
- Counterbalance valve on both actuators
- 250kg payload
- Supplied in offshore-suitable transit case

The FLOT tool is designed to operate in conjunction with a torque tool and is used to orientate and guide flying leads into the stab plate connections. The FLOT tool is designed to take the Forum Class 1-4 torque tool, but can easily accommodate similar tools from other manufacturers. A rotary actuator allows a pitch alignment of plus 60 or minus 90 degrees with a load of up to 250kg attached. The tool is also equipped with a roll alignment function giving a rotation of plus or minus 15 degrees.

The FLOT tool is compact and the tool mounting base is supplied with a selection of mounting holes for mounting within the forward structure of the ROV. The pitch and roll actuators are controlled from the ROV's spare directional control valves.

WHAT'S IN THE BOX?

- Flying Lead Orientation Tool
- Adaptor to fit Forum Torque Tool
- Supply and return hoses
- Operations & Maintenance Manual



SPECIFICATIONS

Weight in air/water	77kg/57kg (169lbs/125lbs) (excl torque tool)
Pitch	+60, -90 degrees
Rotation	+/-15 degrees
Payload capacity	250kg (550lb) mounted on torque tool, through full range of travel
Hydraulic control from ROV	Two off bi-directional solenoid control valves plus drain
Operating fluid	Hydraulic oil
Operating pressure	207bar (3,000psi)
Hydraulic fittings	JIC or Swagelok

PART NUMBERS & OPTIONS

TL0017-0000-00	Upright Flying Lead Orientation Tool
TL0017-0800-00	Basic Spares Kit
TL0017-5000-00	Extending Deck for flying lead tool
A019-959-175	Adaptor to allow fitment of Oceaneering Tool
TL0017-3000-00	Adaptor to allow fitment of Petrobras Tool

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Underslung Flying Lead Orientation Tool



FEATURES

- Mounted under ROV or on Skid
- Forward Extension plus 500mm
- Plus 30 minus 30 deg roll angle
- Fits Forum Torque Tool and LAOT

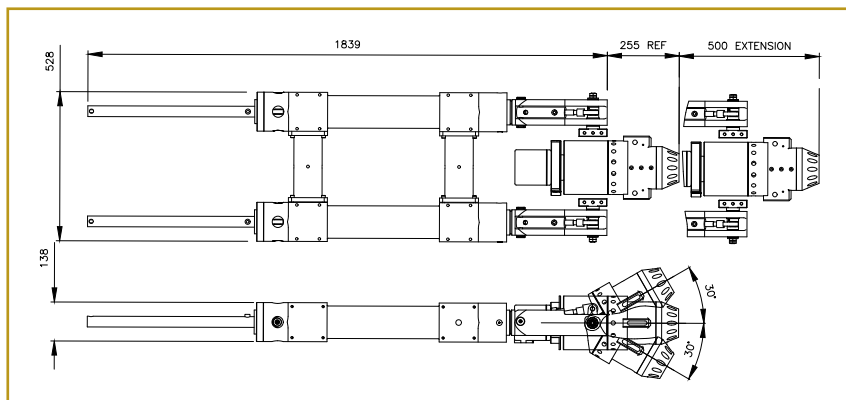
The Flying Lead Orientation Tool (FLOT) is a sliding carriage with a tilting head. It is normally fitted with a torque tool and used to collect and deploy umbilical flying leads.

It can be fitted with other tools including the Forum Linear Actuator Override Tool (LAOT).

The pitch rams have counterbalance valves for even operation regardless of load carried. The valve block also has a relieving-to-tank feature; so that if the pitch rams are subject to heavy external pitch torque from the ROV, they will relieve oil to tank and move within their stroke limits. This feature protects the FLOT from excess load.

WHAT'S IN THE BOX?

- Flying Lead Orientation Tool
- Adaptor to fit Forum Torque Tool
- Supply and return hoses
- Operations & Maintenance Manual



SPECIFICATIONS

Overall length	1,840mm (closed)
Weight in air/water	72KG/48kg
Forward extension stroke	500mm
Pitch angle	+/-30 degrees
Max load through full range of travel	195kg (430lbs) loaded onto torque tool bucket
Operating fluid	Hydraulic oil

PART NUMBERS & OPTIONS

A036-050-002	Underslung Flying Lead Orientation Tool
A036-050-002/S	Basic Spares Kit

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

ISO Docking Latch



FEATURES

- 3,000kg Capacity
- ISO 13628-8
- Positive Pull-in Action
- Spring Return
- Ideal for TDUs & Work Skids

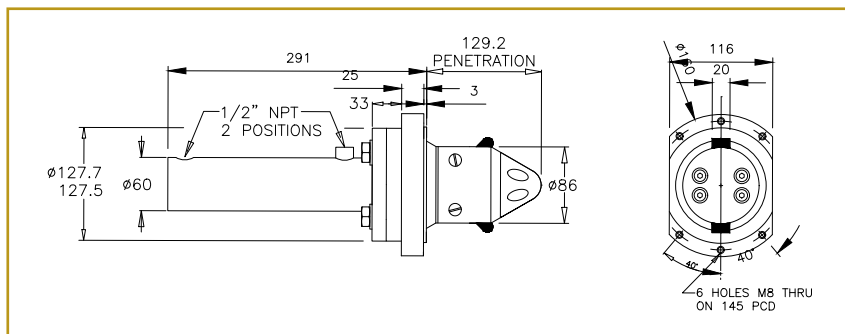
The docking latch is used to stabilize an ROV work skid to an interface. The most common applications are Tool Deployment Units (TDUs) to subsea wellheads and work-class ROV docking to subsea tooling packages such as pipeline connection systems. The unit is robust and has easily replaceable fingers and nose cones. The interface conforms to ISO 13628-8 Fig 7. The interface hole is 90mm diameter – this is the most common standard in use. (Forum also has a 104mm diameter latch to special order only.)

The latch is operated by a hydraulic cylinder, which strokes forward to push out two latch fingers. The latch fingers pivot on pins and positively pull the latch hard into the docking receptacle. The fingers can be driven in and out by hydraulics but there is also an internal spring to ensure that the latch fingers self-release if all hydraulic power is lost.

The latch will hold up to 3,000kg of axial load. The latch fingers will release beyond 3 tonnes, generally without any damage providing the hydraulic circuit is not blocked.

WHAT'S IN THE BOX?

- Docking Latch
- Note: item not supplied in packing case



SPECIFICATIONS

Maximum operating pressure	207bar (3,000psi)
Hydraulic fluid	Most fluids including oil and water glycol
Axial pull (max)	3,000kg
Weight in air/water	10kg/7kg

PART NUMBERS & OPTIONS

A036-009-029	Standard Docking Latch
A036-009-026/CS	Xylan-coated Carbon Steel receptacle
A036-009-026	Stainless Steel receptacle
A036-009-500	XLX Docking Beam
A036-009-351	Compact Docking Latch Spring Return

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Linear Actuator Override Tool



FEATURES

- Range of interfaces
- Up to 120-tonne Force
- Range of strokes
- Hydraulic Set, Mechanical Locked
- Manipulator- or TDU-deployed
- Supplied in offshore-suitable transit case

Forum has developed a range of tools to operate various linear actuator override tool interfaces. Interfaces available are ISO 13628-8 Type A, ISO 13628-8 Type C and adaptors for ISO 13628-8 Type B interface. Tools are available in a range of loads up to 120 tonnes. The tool supplied usually comprises two parts, the Locking Head, and the Actuator. The actuator contains a hydraulically operated piston powered by an intensifier. Actuators can be supplied with hot stabs and check valves. The locking head is a purely mechanical device and is left behind on a subsea interface when the valve is required to be let overridden. A range of strokes are available to suit specific applications.

Most of the tools are manipulator operated but tooling deployment versions of the tools are available that require no manipulator intervention.

For full product range see sales drawing A001-360-015.

SPECIFICATIONS

Interface	ISO 13628 Type A, B, C
Max load	Up to 120 tonnes

PART NUMBERS & OPTIONS

A001-360-015	LAOT and LOT Sales Drawing
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Note: Forum LOTs cannot to guaranteed to work with non-Forum LAOTs

WHAT'S IN THE BOX?

- Dependent on Part # Ordered

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



FEATURES

- Manipulator/TorqueTool/hydraulic interface
- Up to 20" Valve

ROV operable valves are available in a range of sizes from 1/4" to 20" bores and working pressures up to 10,000psi. They can be manipulator operated, torque tool operated, hydraulically operated or hydraulically operated with a torque tool back up. For a range of the available options see sales drawing A001-360-019. The different actuator systems can easily be adapted to fit other valve sizes and pressure ratings.

The design is available in sizes from 1" to 20" and working pressure ratings to 10,000psi (700bar).

For full product range see sales drawing A001-360-019.

PART NUMBERS & OPTIONS

A001-360-019

ROV-Operated Valves sales drawing

WHAT'S IN THE BOX?

- Dependent on Part # Ordered

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

ISO 13628-8 Bucket Lift Tool



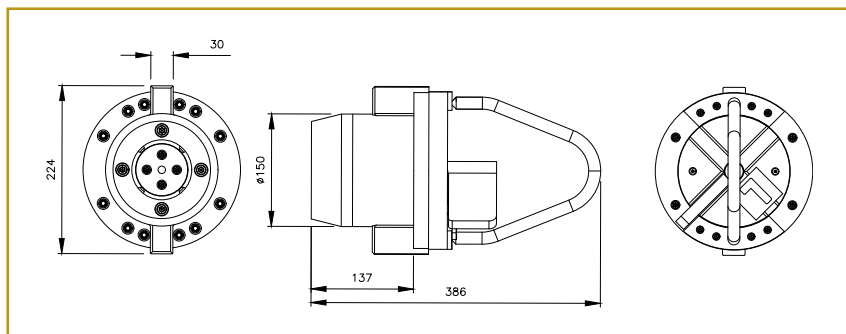
FEATURES

- ISO 13628-8 Class 1-4 Bucket
- 500kg Lift Capacity
- 3g Proof Tested
- Supplied in offshore-suitable transit case

The bucket lift tool is designed for subsea lifting operations on objects with vertical torque tool buckets. The tool is operated by turning the paddle handle by 90 degrees, this may be done manually or by a ROV manipulator. The handle has a detent mechanism to guard against accidental operation. Once a load has been picked up the handle cannot be turned, preventing accidental release of the load.

WHAT'S IN THE BOX?

- Bucket Lift Tool



SPECIFICATIONS

Interface	ISO 13628-8 (E) Fig 18 Class 1-4, Fig 13
Safe working load (SWL)	500kg
Proof Load	1,500kg
Weight in air/water	10kg/7kg
Materials	Marine grade aluminum, Stainless steel and acetal

PART NUMBERS & OPTIONS

A036-051-002	ISO 13628-8 Bucket Lift Tool
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The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

TA17 Cable Gripper



FEATURES

- Grips Cables up to Ø100mm
- 23-tonne maximum Line Pull
- Robust Construction
- Supplied in offshore-suitable transit case

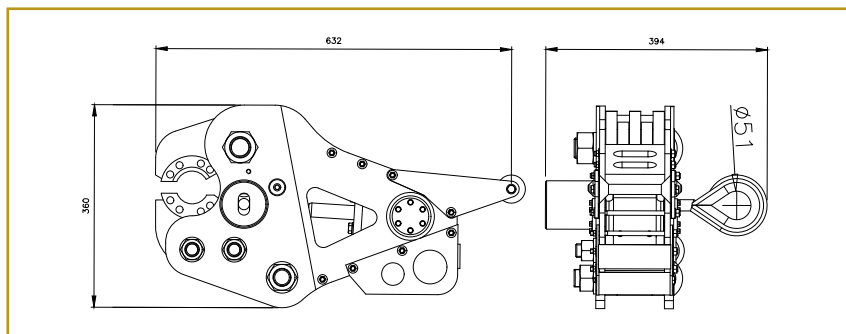
The Cable Gripper forms the link between a recovery line from the surface vessel and a submarine cable when the cable is to be brought to the surface. The cable gripper is a powerful jaw mechanism with a lifting eye. The jaw is set hydraulically and then remains mechanically locked (by an over-center mechanism) after the hydraulics are removed. It is therefore suitable for operation by Remotely Operated Vehicles (ROVs).

The gripper consists of one static and one hinged jaw. It is closed and opened by a hydraulic ram. A choice of jaw sets provides the necessary flexibility to enable the gripper to handle cable of varying sizes up to 100mm in diameter.

For exact jaw set part # required refer to TA017-000-013.

WHAT'S IN THE BOX?

- Cable Gripper
- Operations & Maintenance Manual
- Note no jaw sets are supplied as standard



SPECIFICATIONS

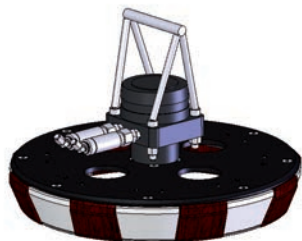
Pull (max)	23-tonne (this is line load – not SWL)
Cable type	Armored or lightweight
Cable diameter	17-100mm
Hydraulic fluid	Mineral oil
Weight in air/water	35kg/25kg

PART NUMBERS & OPTIONS

TA017-00-001/01	Cable Gripper
TA017-00-001/02	Cable Gripper with quick-disconnect system
TA017-00-001/03	Cable Gripper with Hot Stab
TA017-00-001/SK	Spares Kit

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Wellhead Cleaning Tool



FEATURES

- Stainless steel handle
- Simple scrubbing pad replacement
- Lightweight aluminium and plastic construction
- Supplied in offshore-suitable transit case

The Motorized Wellhead Cleaning Tool is designed to clean the seal surface of wellheads that use AX or VX gaskets. The ROV powers the tool and holds it in position to remove debris. Flow regulator valves limit the rotation speed while still allowing high torque.

SPECIFICATIONS

Input pressure	138 to 207bar (2,000 to 3,000psi)
Input flow	+5.7lpm (1.5+GPM)
Weight in air	37kg
Weight in water	16kg
Cleaning depth	Approximately 1-7/8" (48mm)
Materials	Aluminum, UHMW/HDPE, stainless steel, plastic abrasive pads
To suit	18-3/4" and 16-3/4" AX/VX wellhead interface

PART NUMBERS & OPTIONS

TX00103-400-00	Wellhead Cleaning Tool
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WHAT'S IN THE BOX?

- Gasket Ring Tool
- Pressure relief Valve
- ROV Handle
- Supply and return hoses
- Operations & Maintenance Manual

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

12" Suction Pile Venting System





FEATURES

- Pressure-tested to 10bar (150psi)
- J-Slot locking grooves
- Test fixture integral to receptacle
- Pivoted stainless steel handle

The 12" Suction Pile Venting System is designed to provide primary venting of suction piles during self penetration and sealing during pump-assisted penetration and extraction. The receptacles are welded to the top of the pile. The plug sits in the parking receptacle until it is needed to seal the receptacle (vent).

SPECIFICATIONS	
Suction Pile Plug	
Space envelope	Dia 306 x 306mm (Dia 12"-1/16 x 12"-1/16)
Weight in air	38kg
Weight in water	33kg
Test pressure	10bar (150psi)
Material	Stainless Steel. HDPE/UHMW
Suction Pile Receptacle	
Space envelope	Dia 356 x 620 (Dia 14" x 24-7/16")
Weight in air	73.2kg
Test pressure	10bar (150psi)
Material	Coated Carbon Steel

PART NUMBERS & OPTIONS	
TL0014-0100-00	12" Suction Pile Plug
TL0014-0200-00	12" Suction Pile Receptacle
TL0014-0300-01	12" Suction Pile Plug Parking Receptacle

WHAT'S IN THE BOX?

- Dependent on Part # Ordered

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

22.5" Suction Pile Venting System



FEATURES

- Pressure-tested to 10bar (150psi)
- J-Slot locking grooves
- Test fixture integral to receptacle
- Pivoted stainless steel handle

The 22.5" Suction Pile Venting System is designed to provide primary venting of suction piles during self penetration and sealing during pump-assisted penetration and extraction. The receptacles are welded to the top of the pile. The plug sits in the parking receptacle until it is needed to seal the receptacle (vent).

SPECIFICATIONS

Suction Pile Plug	
Space envelope	Dia 572 x 332mm (Dia22.5" x 13"-1/16)
Weight in air	80kg
Weight in water	45kg
Test pressure	10bar (150psi)
Material	Stainless Steel. HDPE/UHMW
Suction Pile Receptacle	
Space envelope	Dia 610 x 1,267mm (Dia 24" x 49"-7/8)
Weight in air	356kg
Test pressure	10bar (150psi)
Material	Coated Carbon Steel

PART NUMBERS & OPTIONS

TX00110-400-00	22.5" Suction Pile Plug
TX00110-160-00	22.5" Suction Pile Receptacle
TX00110-200-01	22.5" Suction Pile Plug Parking Receptacle

WHAT'S IN THE BOX?

- Dependent on Part # Ordered

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



FEATURES

- Removable end plate for full serviceability
- Double jointed compliant mounting
- T-Bar Handle
- Complete with processor to connect to ROV
- Supplied in offshore-suitable transit case

The Cygnus W1 Probe is designed for use on Work-Class ROVs. It can be held by a manipulator arm and is supplied with a T-bar handle. It is constructed from 316 stainless steel throughout. Ultrasonic probe alignment is provided by a double jointed coupling that provides 15 degrees of movement in both planes guided by four pins. A shock-absorbing spring reduces any impact loading on the unit. The design allows the manipulator arm to present the ultrasonic probe to the surface to be measured; any misalignment will be taken up by the coupling resulting in less movement of the manipulator arm position. The thickness measurer system includes ROV-mountable processor/data logger.

SPECIFICATIONS

Depth rating	4,000m
Spring force	15kg spring starts to compress
Accuracy	$\pm 0.1\text{mm}$ or $\pm 0.05\text{mm}$
Compliance	British Standard BS EN 15317:2000
Approx size	170 x 150 x 90mm (Excluding Handle)
Operating temp	-10°C to +50°C
Thickness range	3-250mm
Handle	T-Bar

PART NUMBERS & OPTIONS

A036-071-001	ROV Thickness Gauge System
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WHAT'S IN THE BOX?

• Measuring probe • Probe Handler • 5m Probe Cable	• Data processing and logging PV • Cable to connect processor to ROV • Operations & Maintenance Manual
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SPAN Subsea Gauge



FEATURES

- Suitable for depths of 3,000m
- Tough corrosion resistant
- Internal breathing diaphragm
- KEM-X Socket saver
- ANSI/ASME B40 Standard gauge

Tough, corrosion resistant, impact resistant, Zytel nylon case. Over 10,000lb tensile strength with removable bezel design allows repair or recalibration.

All SPAN 2-1/2", 3-1/2" and 4-1/2" stem and panel mount cases are uniform and match in appearance.

The internal 'breathing diaphragm' eliminates the need for an air bubble in the mid-range of the gauge, which can distort readings and looks unsightly. The ICD is standard on some 2-1/2" and all 3-1/2" and 4-1/2" models. (Available as an option when not standard.)

The ICD compensates the case (to 150°F) for changes in internal case pressure caused by fluctuations in ambient temperature. (Especially important in lower pressure and vacuum gauges.)

SPAN Gauges are built to ANSI/ASME B40 Standards. This is the easiest-reading gauge on the market.

WHAT'S IN THE BOX?

- SPAN Gauge
- Calibration Certificate



SPECIFICATIONS

Specifications	Tough, corrosion resistant, impact resistant, Zytel nylon case Removable bezel design allows repair or recalibration All SPAN 2-1/2", 3-1/2" and 4-1/2" stem and panel mount cases are uniform Internal 'breathing diaphragm' eliminates the need for an air bubble The LCD compensates the case (to 150°F) for changes in internal case pressure SPAN Gauges are built to ANSI/ASME B40 Standards Easiest-reading gauge on the market The KEM-X Socket Saver is an internal diaphragm seal to prevent freezing Standard fill: non-yellowing, crystal-clear glycerin (interlube) Used and trusted subsea by major ROV operators and oil companies
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PART NUMBERS & OPTIONS

LFS212	2.5" Dial Liquid-Filled Gauge (stem mount)
LFP212	2.5" Dial Liquid-Filled Gauge (panel mount)
LFS312	3.5" Dial Liquid-Filled Gauge (stem mount)
LFP312	3.5" Dial Liquid-Filled Gauge (panel mount)
LFS412	4.5" Dial Liquid-Filled Gauge (stem mount)
LFP412	4.5" Dial Liquid-Filled Gauge (panel mount)
LFC412	4.5" Dial Liquid-Filled Gauge (center mount)

- All gauges supplied as White lettering on Black background as standard; bespoke colours and designs are available upon request
- Calibration certificate can be supplied for individual gauge tracking
- 0-15, 0-30, 0-160, 0-300, 0-1000, 0-3000, 0-5000, 0-6000, 0-10000, 0-15000 available from stock -15/0/15, -30/0/30, -150/0/150 available from stock as 3.5" dial gauges

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



ROV Camera



FEATURES

- ROV-operated Inspection Camera
- Supplied with range of configurations
- Fishtail Handle
- Supplied in offshore-suitable transit case

The ROV camera is used for inspection of difficult locations. The camera is mounted in plastic outer casing to prevent damage to seal hubs. A colour camera with local ring LED light source is mounted in a plastic housing with a fishtail-style handle for manipulation by the ROV. The camera is supplied with three joints and two lengths of camera tube to suit the specific application.

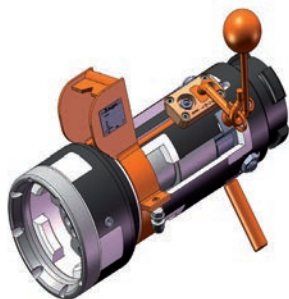
SPECIFICATIONS	
Horizontal resolution	470 TV Lines – PAL
Scanning	625 Line/50Hz – PAL
Video output	Composite, 1.0V peak to peak into 75ohm
Focus control	Fixed, 100mm to infinity
Field of view in water	50 Deg Diagonal
Power input	11-30VDC, 310 mA (max)
Electrical connector	Seacon BH-4-MP
Depth rating	4,000m
Cable	5.5m Seacon connecting cable
Camera material	Titanium Body

PART NUMBERS & OPTIONS	
A198-017-001/02	ROV Camera
A198-017-010	Spares Kit

WHAT'S IN THE BOX?
• Camera in mounting • ROV Handle • 5m Cable • Extension tube

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

2" & 5" Lock Out Tool



FEATURES

- ISO 13628-8 Dec 02 Figure 15 Type A
- Rated to 75-tonne Force
- 5" Stroke
- External stroke indicator
- Guide nose
- Lock to lock tool to tree
- Supplied in offshore-suitable transit case

Forum has developed a tool to lock out linear valve interfaces. The tool is designed to suit the ISO 13628-8 Type A interface. The tool supplied is usually used in conjunction with an actuator tool. The actuator contains a hydraulically operated piston powered by an intensifier. Actuators can be supplied with hot stabs and check valves. The locking head is a purely mechanical device and is left behind on a subsea interface when the valve is required to be left overridden. The tool is manipulator operated. The advantage of the mechanical lock is that it will hold its position indefinitely as opposed to hydraulic systems that creep over time.

SPECIFICATIONS

Weight in air	52kg
Materials	17-4PH body Acetal guide nose

PART NUMBERS & OPTIONS

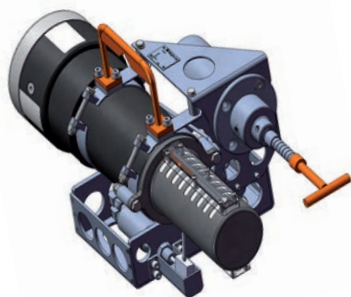
A036-049-701	2" Lock Out Tool
A036-049-501	5" Lock Out Tool
A036-049-950	Linear Actuator Override Tool

WHAT'S IN THE BOX?

- Lock Out Tool
- Operations & Maintenance Manual

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

LAOT 5"



FEATURES

- ISO 13628-8 Dec 02 Figure 15 Type A
- Rated to 75-tonne Force
- 5" Stroke
- Dual Port Hot stab interface
- External stroke indicator
- Supplied in offshore-suitable transit case

Forum has developed a tool to actuate linear valve interfaces. The tool is designed to suit the ISO 13628-8 Type A interface. The tool supplied is usually used in conjunction with a locking head. The actuator contains a hydraulically operated piston. The actuator is supplied with hot stab and check valves. The locking head is a purely mechanical device and is left behind on a subsea interface when the valve is required to be left overridden. The tool is manipulator operated. The advantage of the mechanical lock is that it will hold its position indefinitely as opposed to hydraulic systems that creep over time.

SPECIFICATIONS

Working pressure	690bar (10,000psi)
Fluid	Most hydraulic fluids
Weight in air	65kg (including male stab)
Materials	17-4 PH Body Acetal Guide nose

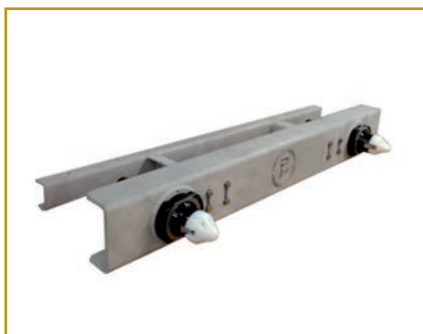
PART NUMBERS & OPTIONS

A036-049-701	2" Lock Out Tool
A036-049-501	5" Lock Out Tool
A036-049-950	Linear Actuator Override Tool

WHAT'S IN THE BOX?

- LAOT 5"
- Operations & Maintenance Manual

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



FEATURES

- Constructed from Aluminum
- Two off ISO 13628-8 Docking Latches
- Weight in air 25kg
- 210bar Working Pressure

The docking beam is bolted to the front of an XLX vehicle and is used to dock onto subsea structures. The beam is supplied complete with two ISO13628-8:2002 Fig 7 docking latches. The beam includes two anodes and all hoses to connect to an aux function on the ROV.

Also available is the docking plate assembly, this is bolted to the subsea structure to provide an interface for the docking beam.

SPECIFICATIONS

Interface	ISO 13628-8 Fig 7
Hydraulic input	Pressure 210bar (3,000psi)

PART NUMBERS & OPTIONS

A036-009-500	Docking Beam for XLX
A036-009-514	Docking Plate Assembly (complete with female receptacles)

WHAT'S IN THE BOX?

- Docking Beam
- 2 off ISO Docking Latches
- Supply and return hoses

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

C.P Probe



FEATURES

- Hard-wearing DELRIN body
- Stainless steel probe tip
- Lightweight design/easy to use
- Suitable for gripping in manipulator arm
- Data logging facility
- Supplied in offshore-suitable transit case

The Ocean Tools DigiCP 3000 contact probe is a lightweight and versatile instrument that provides a means of carrying out underwater cathodic protection potential measurements. Specially designed for use by Divers or Remotely Operated Vehicles (ROVs), this kit comes complete with a 3-metre cable. Each probe is supplied with a Certificate of Inspection and Conformity.

This product is extensively used in a wide range of applications including production and drilling platforms, ships' hulls, jetties and other marine works.

WHAT'S IN THE BOX?

- ROV II CP Probe
- A/D Converter
- Data Logging Bottle
- Probe-to-bottle cable
- Bottle-to-ROV cable
- Operations & Maintenance Manual

SPECIFICATIONS

Half cell type	Silver/Silver Chloride screw-in
Accuracy	+/-5mV (when used in seawater)
Temperature coefficient	+0.2mV per °C
Operating temperature range	0-30°C
Minimum load impedance	>10M ohms
Probe	Stainless steel (316)
Weight	0.5kg
Size	126mm x 39mm diameter
Underwater cable	3m long x 9mm
Operating depth	3000m

PART NUMBERS & OPTIONS

A036-064-001	C.P Probe System
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The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Gasket Replacement Tool



FEATURES

- 16 3/4" and 18 3/4" shoe sets supplied as standard
- 15" to 21"+ shoe sets available for greater functionality
- Rubberised edges protect gaskets
- Only 15kg in air

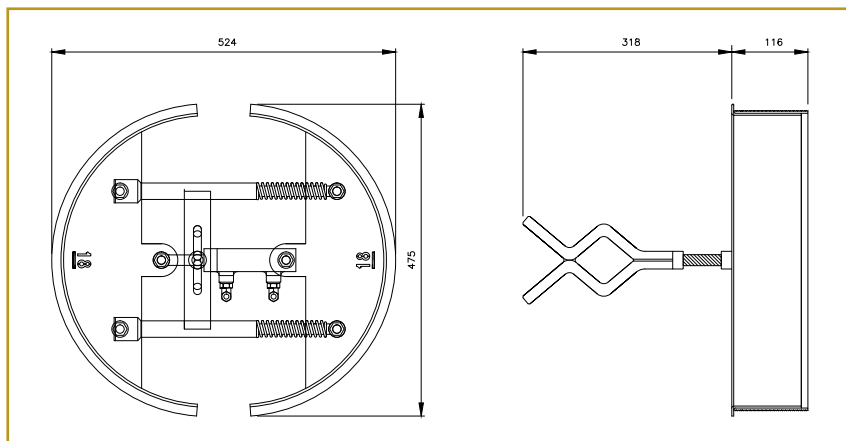
The Gasket Replacement Tool is designed to function with many industry standard seals. To provide a better, safer and highly versatile tool each kit ships with multiple rubberised shoe sets allowing easy and simple interchange for a variety of seal types.

Operating the tool is easy; after selecting the correct shoe set the tool is carefully guided into place and the cylinder deactivated causing the tool to expand and securely grip the seal bore. Should hydraulic systems fail the tool will remain fixed safely to the seal preventing unnecessary component loss.



WHAT'S IN THE BOX?

- Gasket Replacement Tool
- 16 3/4" Shoe Set
- 18 3/4" Shoe Set
- Operation manual
- Operational hoses



SPECIFICATIONS

Depth rating	3,000msw
Weight in air	15kg
Max pressure	210bar (3,000psi)
Media	Hydraulic Oil Grade 22/32
Shoe sets	16 3/4" and 18 3/4" (as standard) Other sizes available

PART NUMBERS & OPTIONS

TX00104-200-00	18-3/4" Gasket Replacement Tool
TX00104-300-00	16-3/4" Gasket Replacement Tool
TX00104-400-0	15" Gasket Replacement Tool

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Cleaning Tool



FEATURES

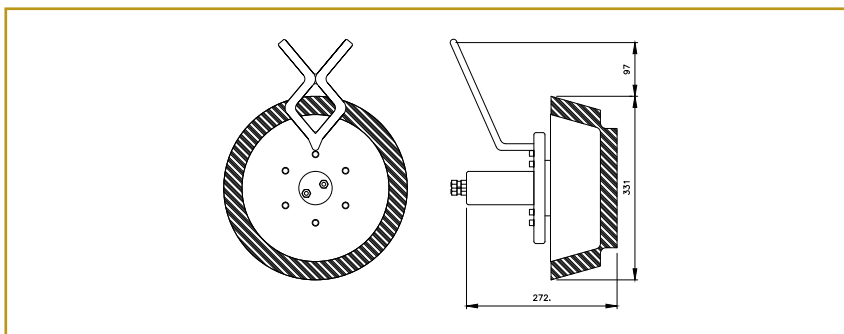
- Superior brush head
- Fishtail handle
- Weighs less than 10kg
- Can be used with acid injection system

Using Forum's Cleaning Tool, subsea cleaning and marine growth removal has never been easier. Designed to be simply attached to a manipulator and operated by an ROV system, this tool combines a plastic bristled brush head with an integrated injection system, delivering additional cleaning fluids when and where necessary.

WHAT'S IN THE BOX?

- Cleaning Tool
- Operational hoses
- Operation manual





SPECIFICATIONS

Hydraulic input	Pressure 140bar (2,000psi) Flow 20L/min
Depth rating	3,000msw
Brush size	12.5"
Weight in air	10kg

PART NUMBERS & OPTIONS

A036-045-001/01	Cleaning Tool
SRTS-024-003	12.5" Brush Head

- 13.5L Acid injection system can be purchased separately to combine with this tool

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Hydraulic-Operated Ball Valve



FEATURES

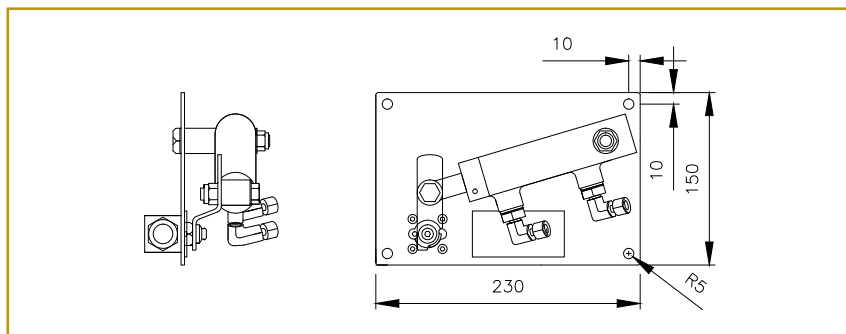
- 316 Stainless steel plate
- Available as single, dual and quad assemblies as standard
- Bespoke options available
- Wide range of valve sizes
- 10,000psi valve

Hydraulically Operated Ball Valve mounted on ROV-friendly 316 SS plate easily accommodated onto ROV, tooling skid or tooling assembly.



WHAT'S IN THE BOX?

- Hydraulically Operated Ball Valve



SPECIFICATIONS

Specifications

Ball valve pressure rating 10,000psi
 Hydraulic cylinder max pressure rating 3,000psi
 Can be used for many ROV tooling operations
 Depressurization valve on separate circuits
 Control of pressures on isolated circuits
 Shut-off valve on separate circuits
 High-pressure dump valve

PART NUMBERS & OPTIONS

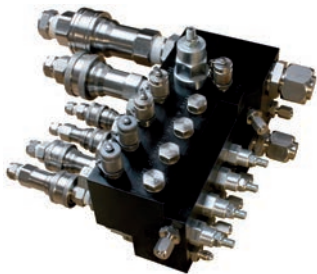
SRTS-021

Hydraulically operated ball valve

- Available as single, dual, quad ball valves on single plate
- Custom-designed plates and configurations made to order
- Available in a variety of porting options

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Tooling Manifold



FEATURES

- Quickly attach a variety of ROV tools
- Adjust pressure and flow of each function
- Flows up to 85L/min
- Minimize mobilisation time

The ROV Tooling Manifold is a solution for easily and quickly attaching tooling to an ROV system whilst having the ability to adjust pressure and flow on each function.

Suitable for flows up to 85L/min the Forum ROV Tooling Manifold may be used for a wide variety of operations.

Using this manifold reduces tooling mobilization down to a minimum.

SPECIFICATIONS

Specifications	Quickly and easily attach tooling to an ROV system Suitable for flows up to 85L/min Reduces tooling mobilization time
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PART NUMBERS & OPTIONS

SRTS-027	Tooling Manifold
SRTS-027-S	Spares kit

WHAT'S IN THE BOX?

- Tooling Manifold
- Operational Hoses

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



FEATURES

- 30-Litre capacity
- Low-pressure fluid injection
- Hydraulic Pilot Control fluid release
- Fully adjustable flow valve

The system provides a 30-litre reservoir with the on/off control supplied by a Pilot-operated hydraulic signal from the ROV.

An additional needle valve allows the flow of the liquid to be regulated as required, all of which is mounted on lightweight framework. All the connection hoses are included.

SPECIFICATIONS

Weight Filled	100kg in air / 70kg in water
Reservoir Capacity	30 Litres

PART NUMBERS & OPTIONS

A036-090-001/02	30L Fluid Injection System
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WHAT'S IN THE BOX?

- 30L Reservoir Assembly

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ROV Suction Foot



FEATURES

- High Level of Grip
- 300mm diameter suction cup
- Suction cup mounted on lockable swivel

The suction foot can hold an ROV to smooth surfaces such as ship hulls, submarines, platform tubulars and pipelines. The high level of grip makes it suitable for a wide range of inspection and cleaning ROV tasks.

The attachment arm is a three-function manipulator consisting of shoulder pitch, yaw and extend. The arm may be used in addition to standard ROV manipulators or as a low-weight substitute manipulator.

The foot has a flexible polyurethane moulded cup, tolerant of marine growth and crustaceans, and able to attach to curved surfaces down to 400mm (16") diameter. The cup is abrasion and tear resistant. The cup is mounted on a ball swivel joint to ease self-alignment on the target surface. The swivel can be hydraulically locked once suction is achieved, for greater rigidity.

WHAT'S IN THE BOX?

- Attachment Arm with foot
- Low-pressure pump
- Supply and return hoses
- Operations & Maintenance Manual

SPECIFICATIONS

Suction foot OD	300mm (11.8")
Workpiece diameter	Flat to 400mm diameter
Ball-joint resistance	1,100Nm @ 50bar
Suction force @ 1bar	720kgf
Weight in air/water	45/35kg
Lift at maximum reach	56kg
Maximum reach	1,680mm
Extend	330mm
Shoulder yaw & pitch	180 degrees

PART NUMBERS & OPTIONS

A760-284-001/02	Suction Foot System
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Flow Meter System



FEATURES

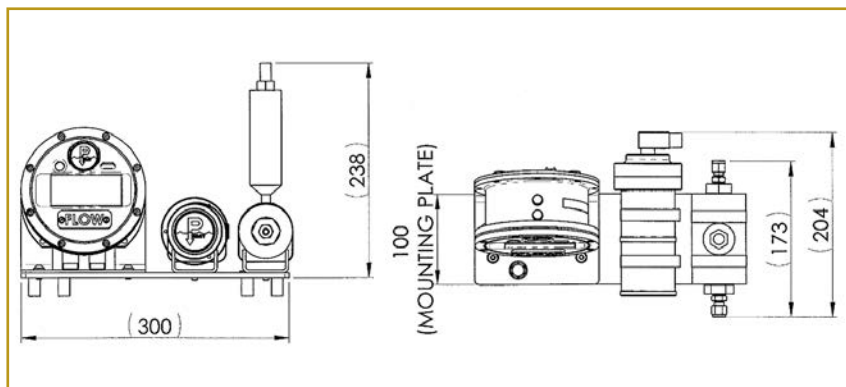
- Flow range 2-20 Lpm
- Pressure rating 690bar Max.
- Rated to 3000m depth
- Complete system mounted in compact unit
- Supplied in offshore suitable transit case

The 2-20 Lpm 690bar flow meter system combines a flow meter with a standard universal subsea display to locally display a flow value subsea. The flow meter is rated to a maximum of 690bar working pressure and 20 Lpm maximum flow. The system is supplied with a battery for powering the display, but the unit can also be supplied power direct from the ROV, there is a flying lead supplied in the kit to allow for this option.

The USD uses ultra-efficient LED types, a very low power processor and sophisticated power switching regulators which, together, mean it can operate from a wide DC voltage input range, requiring very low current and equally able to operate from ROV supply or from battery. In addition, it has software configurable sleep mode with option to wake up on sensor activity or from the light sensor on the front face.

WHAT'S IN THE BOX?

- USD
- Battery Pack
- Flowmeter & Transducer
- Flowmeter to USD cable
- Mounting plate for system
- Battery Charger
- Programming Cable and Software
- Battery Pack to USD cable
- USD to ROV Flying lead



SPECIFICATIONS

Depth Rating	3,000m (10,000 ft)
Flow Range	2-20 Lpm
Max. Pressure Rating	690bar (10,000psi)

PART NUMBERS & OPTIONS

A036-037-500/01	USD & Flowmeter mounting kit
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ROV Push Corer



FEATURES

- Stainless Steel and Plastic non-corrosive materials
- Pressure balanced for full ocean depth use
- Rugged—Robust—Reliable
- Two standard sizes available
- Simple operation

A skid design with the addition of a hydraulically operated drawer for storage of tools or soil samples. The frame is constructed from light-weight but durable aluminium sections. Also fitted are two LED lights in the front face of the skid.

SPECIFICATIONS

Material	ABS, PVC Glass Clear, Stainless Steel, Rubber
Max. Working Depth	6000m
EE-PC-1	Core Volume 0.665L
EE-PC-2	Core Volume 2.47L

PART NUMBERS & OPTIONS

EE-PC-1	ROV Push Corer 0.665L
EE-PC-2	ROV Push Corer 2.47L

WHAT'S IN THE BOX?

- ROV Push Corer

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.



FEATURES

- Lightweight Amalgon Body
- No Springs required
- Available with level sensor
- Suitable for variety of fluids
- Can be supplied with subsea display

The Forum piston style reservoir has been developed to fulfil the requirements of large volume fluid storage subsea. Typically the reservoirs will be mounted on a skid below an ROV, or on the ROV itself.

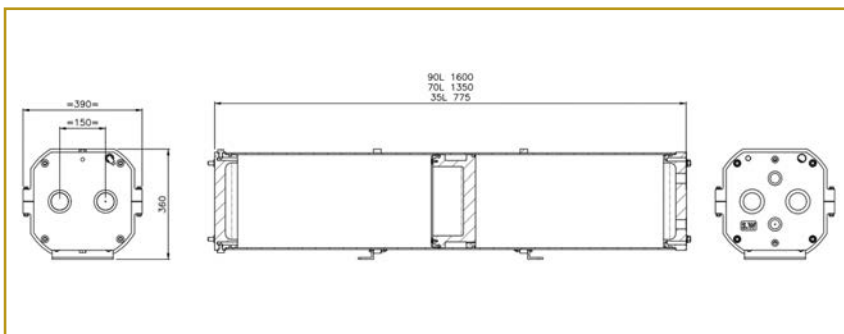
The body of the reservoir is constructed from a fibre-reinforced thermo-set epoxy matrix that is a lightweight corrosion-resistant alternative to steel, aluminium or brass cylinders. The units do not require springs commonly found on smaller reservoirs, instead utilise a small hydraulically powered boost pump (A285-005-302) to provide positive pressure on the reservoir via a piston in the reservoir.

The reservoir are available in a number of standard sizes, are supplied with a contents level sensor, additionally a methanol compatible variant is available. Forum also offer a kit that combines with a USD to provide subsea readout of volume.

Note—Sea water Boost Pump (A285-005-302) must be ordered separately

WHAT'S IN THE BOX?

- Reservoir



SPECIFICATIONS

Capacity Options	35L, 70L, 90L, 100L
Working Pressure	1bar (14psi)
Sensor Output	4-20mA
Seawater End Connections	2 x 2" BSPP
Oil/Methanol Connections	2 x 2" BSPP

PART NUMBERS & OPTIONS

A057-034-050	35L Oil Reservoir
A057-034-002/02	70L Oil Reservoir
A057-034-002/01	90L Oil Reservoir
A057-034-002/04	70L Methanol Reservoir
A057-034-002/03	90L Methanol Reservoir
A057-034-002/05	100L Methanol Reservoir
A057-034-060/01	Single 90L Methanol Reservoir with Subsea Display
A057-034-060/02	Two 90L Methanol Reservoirs with Subsea Display
A036-037-503/01	Single Reservoir and Boost Pump Fittings Kit
A036-037-503/02	Two Reservoir and Boost Pump Fittings Kit
A285-005-302	Sea Water Boost Pump

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Surface Units



22kW HPU



FEATURES

- Mounted in stainless steel offshore lifting frame
- CJC filtration and water separation unit
- 200L tank capacity
- 440VAC electrical supply
- Selectable output range

The 22kW Hydraulic Power Unit (HPU) is a complete power generation system designed to convert electrical input into a usable hydraulic power source for local supply to hydraulically operated tools and machinery. Primarily designed for the offshore industry to run an ROV system in power mode whilst additionally capable of function-testing a complete ROV package with any associated tooling requirements attached, the system can also be used for many other hydraulic power applications both onshore and offshore.

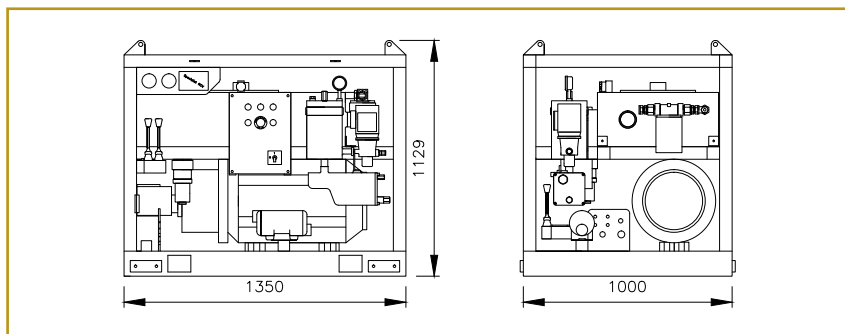
The hydraulic circuit is split into two separate systems. The main system allows output of a single pressure and flow to a maximum of 210 bar and 45 L/min. The Directional Control Valve system allows an additional 2 outputs at up to the maximum pressure set for the primary output. The maximum hydraulic power output of the system is 15kW.

The onboard CJC unit is designed to provide fine filtration and water separation capable of cleaning hydraulic oils to 3 microns absolute, ensuring trouble-free operation of ROV hydraulic systems where water ingress is a constant problem.

WHAT'S IN THE BOX?

- 22kW Hydraulic Power Unit
- Certified lifting slings
- Certified stainless steel frame with forklift pockets
- Operation manual

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SPECIFICATIONS

Specifications

Pressure 210 bar (3,600psi)
 Flow 45 L/min
 6micron Pressure filter (non-bypass)
 25micron Return filter
 Electrical power 22kW
 Hydraulic Power Output 15kW
 Electrical supply 440VAC
 1,000W Thermostatically controlled heater
 Reservoir capacity 200L
 Wired for Star/Delta with breakers & emergency stop c/w 10-meter flying lead
 Hydraulic soft start
 Relief valve
 Pressure gauges
 CJC oil/water separator
 Oil cooler
 Offshore certified lifting frame c/w fork lift pockets
 Frame and tank constructed from 316 stainless steel
 2 Bank Directional Control Valve (c/w mechanical detents) and separate pressure control
 Dimensions (L) 1,300mm x (B) 1,000mm x (H) 1,000mm
 Weight 1Te
 Can be supplied to operate with mineral oils or water/glycol mix
 Supplied with foot supply and return hoses

PART NUMBERS & OPTIONS

B201-721-002/01	22kW Hydraulic Power Unit with CJC
B201-721-002/02	22kW Hydraulic Power Unit without CJC
B201/721-002/01/SK	Spares Kit

Fluid Transfer Pump



FEATURES

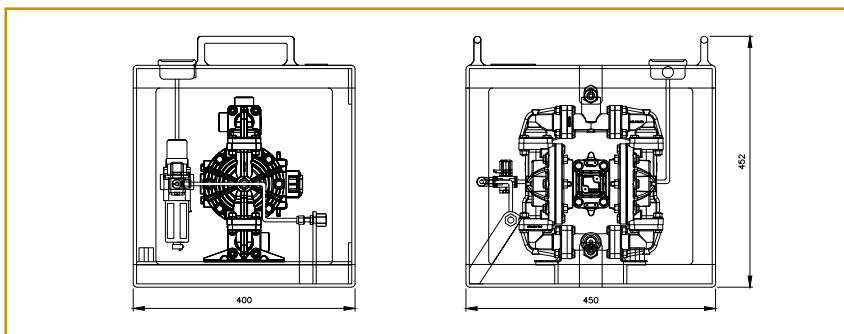
- Pump fluids up to heads of 7 Bar
- Max Suction head 7.5m of water.
- Self Priming.
- Supplied in carry frame
- Air supply shut-off

The Fluid Transfer Pump is used for the safe pumping of many fluids including oil, water, glycol and methanol. This simple tool is built-into a carry frame for easy positioning where it can pump fluid up to heads of 7 bar.

This pump requires no priming and comes complete with air supply shut-off valve and a pressure regulator for lower output pressures.

WHAT'S IN THE BOX?

- Fluid Transfer Pump
- Lifting frame
- Operational hoses
- Operation manual



SPECIFICATIONS

Specifications	Pump to heads of 7 bar Max Suction head 7.5m of water. Self Priming. Max Air Pressure 100psi Max Air Flow 16SCFM Max Fluid Flow 52L/min
Fluids	Oil Water Glycol Methanol

PART NUMBERS & OPTIONS

SRTS-006/01	Fluid Transfer Pump
SRTS-006-S	Spares kit
SRTS-006/02	Methanol Transfer Pump

The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

Product Enquiry Contact Details



Product	Telephone	Email
Perry Work-Class ROVs	(UK) +44 (0) 1751 431 751	rov.sales@f-e-t.com
Sub-Atlantic Observation ROVs	(UK) +44 (0) 1751 431 751	rov.sales@f-e-t.com
Dynacon Launch and Recovery Systems	(US) +1 (0) 979 823 2690	dynacon.sales@f-e-t.com
VMAX Subsea Simulation	(US) +1 (0) 713 329 8714 (UK) +44 (0) 1224 744 000 (BZ) +55 (0) 22 2210 0100	vmaxinfo@f-e-t.com
VisualSoft	(US) +1 (0) 713 329 8230 (UK) +44 (0) 1224 744 000 (SPG) +65 (0) 646 54 850	visualsoft.sales@f-e-t.com
Sub-Atlantic ROV Components	(US) +1 (0) 713 329 8734 (UK) +44 (0) 1751 431 751 (SPG) +65 (0) 646 54 850	pssl.partsales@f-e-t.com subsea.spares-ap@f-e-t.com
Forum Subsea Tooling	(US) +1 (0) 713 329 8734 (UK) +44 (0) 1751 431 751 (SPG) +65 (0) 646 54 850 (BZ) +55 (0) 22 2210 0100	pssl.partsales@f-e-t.com subsea.tooling-AP@f-e-t.com info.brasil@f-e-t.com
Moffat Subsea Engineering	(UK) +44 (0) 1670 840 850 (UK) +44 (0) 1224 744 000	moffat.sales@f-e-t.com

Headquarters

Telephone

Houston	+1 (0) 713 351 7900
Aberdeen	+44 (0) 1224 744 000
Kirkbymoorside	+44 (0) 1751 431 751
Rio de Janeiro	+55 (0) 21 2010 0121
Dubai	+971 (0) 4883 5266
Singapore	+65 (0) 646 54 850

www.f-e-t.com/subsea

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