

WACHS SUBSEA

Topside, Subsea and Deepwater Products



**WACHS
SUBSEA**
Subsea Cutting Solutions™

Wachs Subsea



**WACHS
SUBSEA®**
Subsea Cutting Solutions™

SUBSEA CUTTING SPECIALISTS

Wachs Subsea specializes in Subsea Cutting Solutions, manufacturing products to support the maintenance and repair activities of the nearshore and offshore oil and gas industries. This brochure highlights our topside, subsea and deepwater products used on rigs and platforms, in shallow water applications via diver or remote control operation, and ROV deployed and powered deepwater products. Wachs Subsea has a cutting solution available for a full range of depths down to 3,000 meters (10,000 sfw).

Products include our DWDWS deepwater diamond wire saw, our revolutionary CPT-3 combination prep tool that performs five pipe repair functions, standard diamond wire saws (DWS), split frame rotating ring cutters and platforms and the Guillotine® series of reciprocating saws. Other products include the ubiquitous Trav-L-Cutter® milling cutter, subsea specific drills, specialized offshore hydraulic power units (HPU), ECC and EICC casing cutters, shipping baskets and more.

All of our machines are designed for ease of operation and versatility - in fact many can be used topside and subsea. All are built to withstand the harsh extremes of the subsea environment. Each is hand assembled utilizing the latest in high strength, corrosion resistant materials, and individually tested before shipment.



Wachs Subsea products are ideal for repair and decommissioning of casing and platforms

Wachs Subsea specializes in Subsea Cutting Solutions, manufacturing products to support the maintenance and repair activities of the offshore oil and gas industries.

TOPSIDE, SUBSEA AND DEEPWATER

Wachs Subsea products are ideal for cutting and drilling tasks related to new construction, MRO maintenance and repair operations and decommissioning. We build machines designed for either precision or destructive cutting, with many capable of pulling double duty, working on casings, strings, legs and structures, both above the surface and below.

Staying with the industry trend of keeping divers away from potentially hazardous areas, Wachs Subsea products are available with manual, dual or remote control options. These control options range from manual control, topside monitoring, full topside control to deepwater ROV power and control.

Further expanding our capabilities ITW sister company E.H. Wachs offers the world's most complete line of portable weld prep machine tools for topside and onshore projects. Wachs Subsea and E.H. Wachs products are available for sale or rental at the Sales, Service and Rental Center nearest you. Contact your local representative or visit wachssubsea.com for additional details.



All Wachs Subsea products are built to withstand the rigors of operation in saltwater environments



Subsea Cutting Solutions

PROVEN CUTTING TECHNOLOGIES

Wachs Subsea products utilize proven offshore cutting solutions. Depending on your requirements for depth, speed, power supply and machining precision we offer machine tools that mill, lathe machine, abrasive cut or reciprocating cut, with multiple control and power supply options. Your Wachs product specialists are expert in recommending the right product for your specific application.

We understand the unique challenges of the subsea industry, that the financial and environmental stakes are high. We build our equipment to the highest standards to meet those challenges, and engineer them to work the first time and every time. Superb customer support is included with every machine we sell or rent. Help from a factory salesperson or product engineer is just a phone call away. Support includes spares and consumables stocked at select locations to minimize any potential downtime.

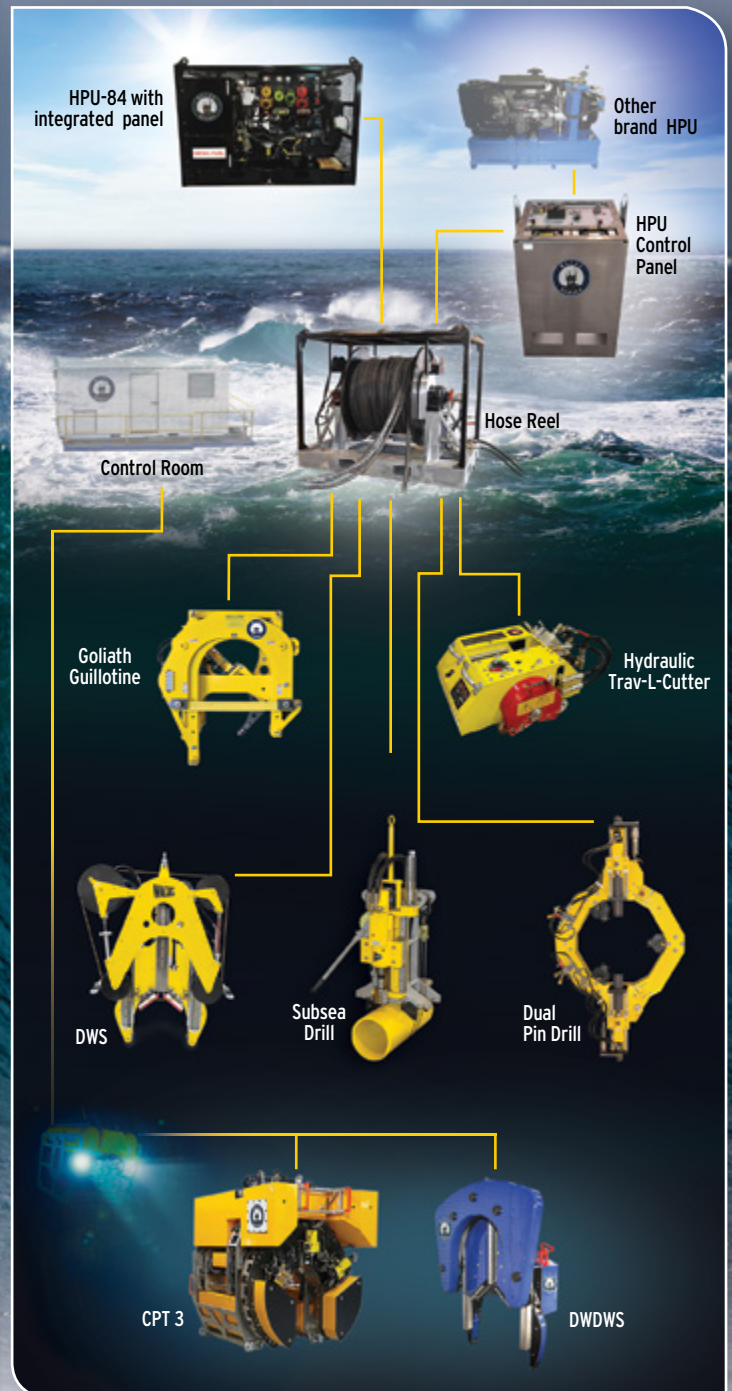
Depending on your requirements for depth, speed, power supply and machining precision we offer the right products for your specific application.

ITW OIL & GAS

When you partner with Wachs Subsea you gain access to the engineering, sales and product resources of the ITW Oil & Gas Group, a division of ITW, a Fortune 150 global company. Other related ITW companies include E.H. Wachs, the most respected name in portable machining, and Miller Electric, maker of advanced welding equipment. Like all ITW companies Wachs Subsea is committed to supplying products that are best in class, designed for subsea professionals working in some of the world's most challenging environments to fulfill the world's growing energy needs.



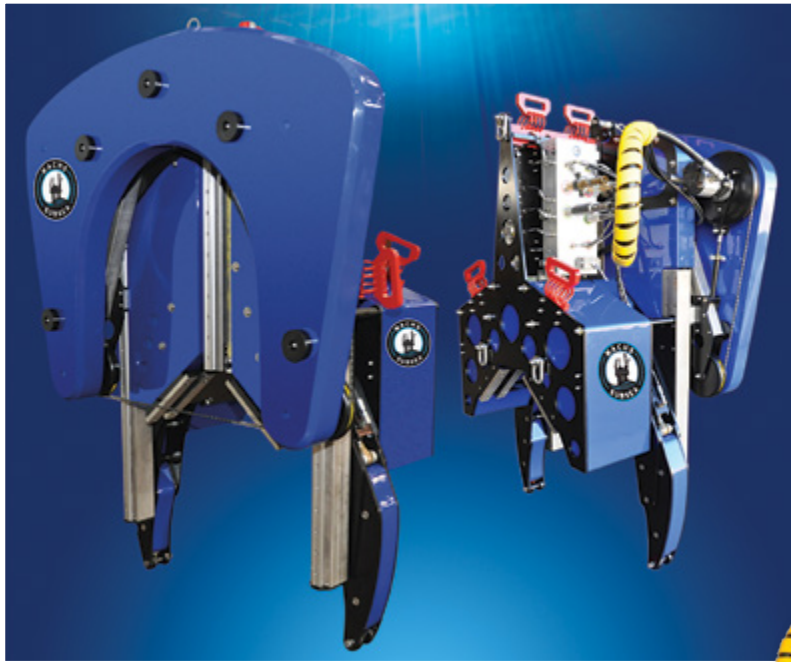
Wachs Subsea precision machines are available for sale or rental around the globe at the Sales, Service & Rental Center nearest you.



Simplified view of Wachs Subsea product families and technologies



Deepwater Diamond Wire Saw



The DWDWS Deepwater Diamond Wire Saw series is ideal for:

- DWERT (Deepwater Emergency Response Tool)
- Deepwater Cutting and Severing
- Shallow or Deepwater Platform Decommissioning
- Pipeline Repair and Maintenance
- Destructive Pipeline Decommissioning
- Cutting Mixed Material Such as Steel and Grout
- Cutting in Situations that Bind Traditional Saws

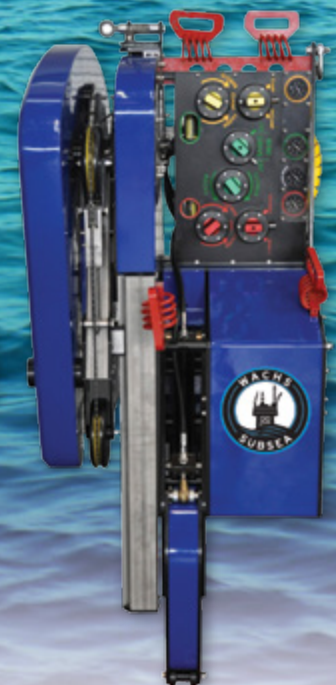
DEEPWATER CUTTING SPECIALISTS

The Wachs Subsea Deepwater Diamond Wire Saws (DWDWS) are designed for deepwater cutting of horizontal or vertical pipe, with three models available to cut from 4 - 52in O.D. (DN100-DN1300), rated to 3000msw (9843sfw). Running on hydraulic power, the DWDWS is controlled remotely using the Wachs Subsea TCP Topside Control Panel and your HPU (Hydraulic Power Unit), the Wachs Subsea HPU-84 with integrated TPC, or by ROV control and power via zero leak hot stabs. All Deepwater Diamond Wire Saws feature handles and controls conforming to industry standards.

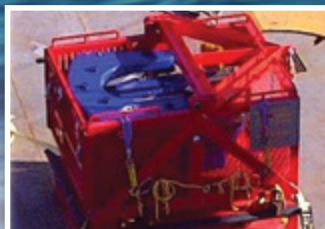
The Deepwater Diamond Wire Saw, like the DWS Diamond Wire Saw series, features a self-adjusting autofeed system to control wire bend that automatically matches the feed rate to the cutting rate or stops the feed entirely until the cutting action catches up. Wachs DWDWS delivers a more efficient cutting action with greatly extended wire life. The DWS series is equipped with Syntactic flotation designed to deliver near zero buoyancy at rated depths.



Left
Side View



Right
Side View



DWDWS Deployment basket, easy to use and includes compensation for the saw's hydraulics.



Combination Prep Tool



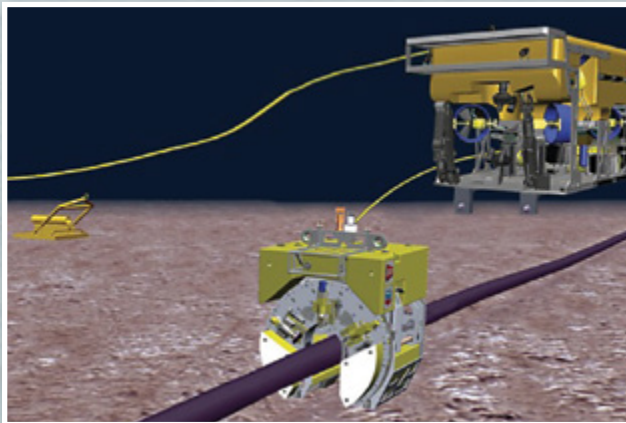
CPT-3 COMBINATION PREP TOOL

Wachs CPT-3 Combination Prep Tool is a hydraulically powered, remote controlled and ROV deployed subsea machining system with a 12in-24in (DN300-600) O.D. capacity. It is equipped with three modules that perform five functions: cutting, beveling, counterboring, weld seam removal and FBE removal.

The CPT is a multifunctional device that performs all of the machining functions required when replacing a damaged subsea pipeline section. In the past this usually required three different machines, multiple vendors, trained dedicated operators, multiple deployments, big ships, and lots of time and money. The CPT-3 changes all of that.

The CPT machine is comprised of a twin clamp, open "C" framed rotary machining platform with a universal mounting interface for the attachment of the three modules. Each module is equipped with a subsea camera for live monitoring. The CPT-3 features the ability to transit ("walk") the axis of the pipe, utilizing a caterpillar action of alternating clamps, pushing and pulling between the two. It's part of a cut, lift, remove and replace system designed to machine subsea pipelines from 12in-24in OD (DN300-600) at depths up to 3,000 meters (9843 sfw) prior to installation of the replacement spool.

Available soon is the CPT-4, utilizing the same technologies as the CPT-3 but scaled up in size and capabilities to accommodate pipelines in the 26in-44in OD (DN650-1050) range. Custom deployment frames are available to facilitate the storage and deployment of the platform and end effectors via a single point, swing arm skid.



- 12in - 24in Capacity
- Cutting
- Beveling
- Counterboring
- FBE Removal
- Weld Seam Removal



CPT-3 Severing Module Operation



Camera Controls Screen



CPT can transit the axis of the pipeline



Syntactic foam for neutral buoyancy at depths to 3,000 meters

Diamond Wire Saws

SELF ADJUSTING AUTO FEED SYSTEM AND HYDRODYNAMIC DESIGN

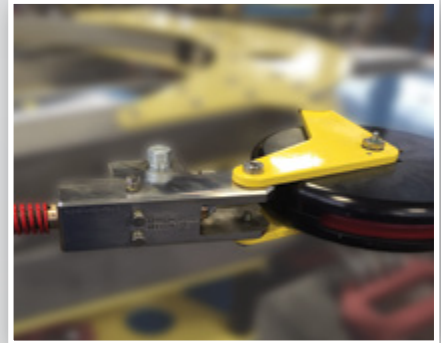


Wachs Subsea Diamond Wire Saws (DWS) are designed for underwater cutting of horizontal or vertical pipe or structures, with five models available to cut from 4in-84in O.D. (122-2134mm). Running on hydraulic power, the saws are controlled remotely with dedicated HPU controls, topside control panels or by ROV control operable via zero leak hot stabs.

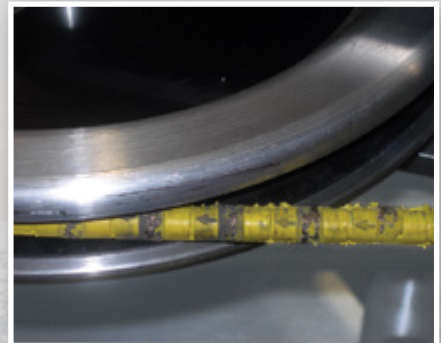
All Wachs Subsea DWS feature a unique hydrodynamic design that dramatically reduces centrifugal forces during operation, which means less power wasted in churning water and more power directed to cutting the workpiece.

SELF ADJUSTING AUTO FEED SYSTEM

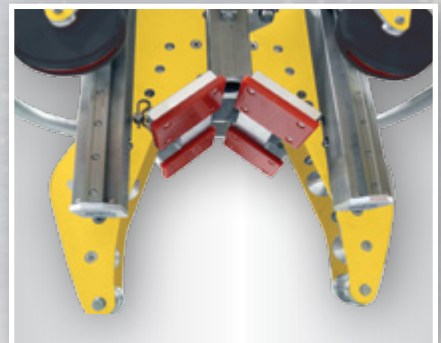
The Wachs Diamond Wire Saw is the only machine of its kind with a self adjusting auto feed system that controls wire tension, automatically matching the feed rate to the cutting rate. With the ability to adjust or stop the feed entirely until the cutting action catches up, it delivers a more efficient cutting action with minimal operator intervention and greatly extended wire life. All Wachs DWS are designed to allow less skilled operators to get great results, from the first cut to the last.



Self adjusting auto feed system controls wire tension, automatically matching the feed rate to the cutting rate



Diamond wire cutting element quickly and cleanly cuts pipe and structure of varying material and thicknesses without stalling



Fully adjustable power clamping system with hydraulically actuated arms that pivot inward to ensure square and secure clamping



Diamond Wire Saws

SYNCHRONIZED CLAMPING

Wachs DWS models are equipped with a fully adjustable power clamping system, designed to grasp the workpiece more accurately with fewer contact pads. It features two synchronized, hydraulically actuated clamping arms that pivot inward, providing easy and secure remote control mounting. Synchronized clamping arms ensure uniform, square and secure mounting and prevent damage to the arms from unequal forces. Because the machine mounts more accurately, less visual supervision is required.

COMPRESSION CUTS

The diamond wire saw is ideal where the possibility exists of a compression cut. The rapidly rotating diamond wire media has the ability to keep cutting if the workpiece move or shifts slightly during the operation. It's also the best choice for mixed materials such as steel combined with concrete, grout or aggregate.



The Wachs Diamond Wire Saw is the only machine of its kind with a self adjusting auto feed system that controls wire tension and automatically matches the feed rate to the cutting rate.



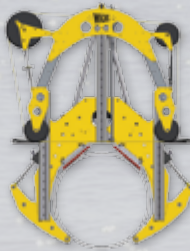
Wachs Diamond Wire Saw in position on a platform leg



DWS-1604



DWS-3012



DWS-3616



DWS-5230



DWS-8460

FEATURES

- Lightweight aluminum plate construction five models cut from 4in-84in O.D. (DN100-2100)
- Easily replaceable long-life diamond wire cutting assembly
- Corrosion resistant with anode protection
- Mounts vertically, horizontally or any position in between
- Hydraulically operated synchronized arms for square secure clamping
- Overload clutch for auto feed system protection



DWS saws are ideal for mixed materials and multi string casings

Split Frames



**"Split" for
Mounting**

**TOPSIDE
OR SUBSEA**



**Bolted
Together**

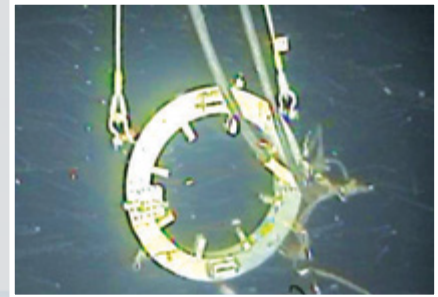
Wachs Split Frames are the world's most versatile and comprehensive line of lightweight, clamshell style portable machine tools on the market today. For subsea applications they can be split around inline pipe or structures, or used as a machining platform for various applications. Standard models mount to pipe, tube and structures ranging from 2in-120in O.D. (51-3048mm). Using a full bearing design they require power than ordinary bushing equipped machines, and are equally effective above the sea or below.

UNRIVALED VERSATILITY

Wachs split frames are ideal for all types of pipe cutting, beveling, counterboring, facing and flange facing when properly configured. Our split frames are named for their ability to split in half at the frame, or "break open" and bolt back together again. This allows them to open and mount around the O.D. of inline piping or structures, or they can be slipped closed over open ended pipe. They have been engineered to apply precise, consistently square cuts and bevels on pipe, tube and casing the first time, every time.



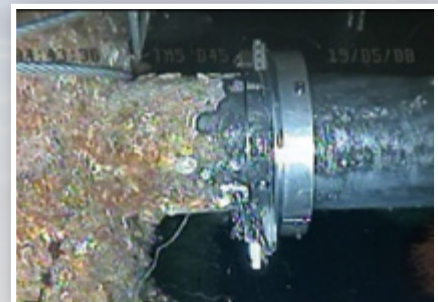
Split frames are equally versatile topside or subsea, serving double duty in or out of the water



Split frame lowered for diver placement



Diver positions split frame prior to cut



Split frame in position for precision cutting

Split Frames

SUPERIOR CONSTRUCTION

Designed with a compact cross section for low clearance applications, many of our split frames are constructed of steel and aluminum components - steel where strength is needed, aluminum where strength is less critical than weight. A major advantage; these machines typically can be set up by one operator without the need for additional lifting devices. When absolute rigidity is important, such as in large diameters or when serving as a machining platform, our larger split frames utilize a bigger cross section with larger gear sets and all steel construction for maximum durability.

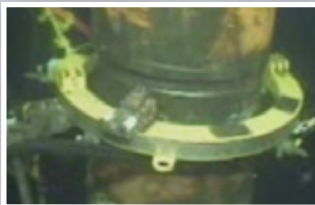
With a wide range of sizes, accessories and tooling available there's a Wachs split frame to fit your every need. For precision or destructive cutting, whether used topside or subsea, Wachs Subsea split frames are the most productive, best supported machines in the industry.



Heavy duty models feature all steel construction for maximum durability and pivot open for ease of positioning

FEATURES

- Machine quickly splits to mount around OD of inline pipe or structures
- Lightweight aluminum and steel construction with larger sizes all steel
- Cuts, bevels, counterbores and faces heavy wall and high alloy pipe
- Ideal for precision cutting and beveling, above the surface or below



Performing parting operation with milling module on an offshore platform



DYNAPREP MDSF

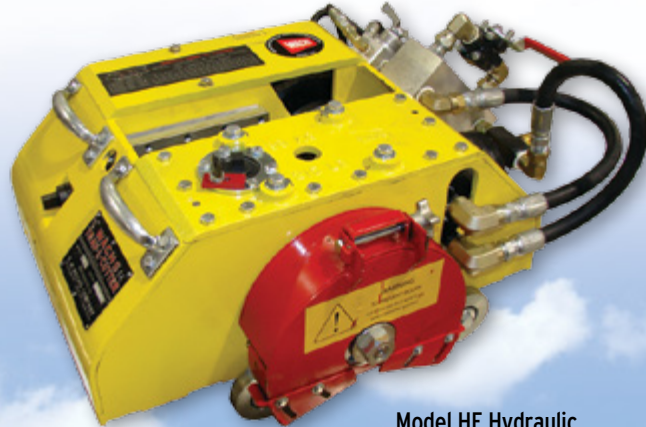
Wachs DynaPrep Modular Design Split Frame redefines the category for cold cutting split frame machine tools. Engineered to be strong yet lightweight its designed to accept more power for greater form tooling capability and unmatched productivity.

DynaPrep offers a host of new, innovative features to make it easier to use and faster to set up, including V-Lock mating surfaces, new tool slides with Rapid Advance and Retract for the tooling, and crash resistant dual trip mechanism. Ask your Wachs Subsea specialist for additional details.



Split frames can be used as cutters or as platforms

Trav-L-Cutter



Model HE Hydraulic

FEATURES

- Safe Cold Cutting
- Compact Design
- Easy Set-Up
- Horizontal and Vertical Cutting



Model HE Trav-L-Cutter operates topside or subsea with its closed loop hydraulic drive system



Wachs Trav-L-Cutters are in use all over the world, many operating in extreme environments

The Wachs Trav-L-Cutter is a portable milling machine capable of cold cutting and beveling simultaneously on pipe and circular structures ranging from 6in-72in O.D (152-1829mm). Secured by its own tensioning chain, the Trav-L-Cutter drives itself around the pipe on the mounting chain as it machines. Used all over world above and below the surface, the Trav-L-Cutter covers a wide range by simply ordering additional chain sections. Hydraulic Model HE with its powerful, closed loop hydraulic drive system is recommended for subsea applications.

HORIZONTAL OR VERTICAL

The Wachs Trav-L-Cutter can be mounted and operated horizontally, vertically or anywhere in between. Its self-propelled chain drive system maintains continuous out-of-round compensation while providing positive drive under all conditions (including zero visibility). Its milling process removes 3/16in of metal while cutting, leaving an accurate, machined finish. The lightweight, low profile design needs only 10in-12in (254-305mm) of clearance to operate.

The Wachs Trav-L-Cutter is a portable milling machine capable of cold cutting and beveling simultaneously while it drives itself on its tensioning chain.



Guillotine Saw



Goliath Guillotine

Powerful, closed loop hydraulic drive system for subsea use



Wachs Guillotine saws are versatile, reciprocating designs for cold cutting 2in-36in O.D. (51-914mm) pipe and vessels, as well as structures, solids, and multi-stranded casing strings. Our Guillotines, known throughout the industry as the "Wachs Saw", provide easy set up and fast accurate cuts. The steel mounting saddle assures square cuts at right angles. Optional mounting saddles are available for unusual or complex shapes such as I Beams.

MULTIPLE SIZES

Wachs Subsea offers five different Guillotine models, from smallest to largest the Super C, Model D, Super D, Goliath and Super Goliath. Every model utilizes an orbital cutting motion that lifts the blade on the return stroke for efficient cutting and dramatically extended blade life. Their compact design requires minimal operating clearances, and many configurations are suitable for both topside and subsea usage. Multiple control options are available ranging from fully manual to advanced topside control.

CORROSION RESISTANT

The Super Goliath is the largest in the series, and features a twin hydraulic drive with auto feed and auto trim for true remote operation. Subsea specific Guillotines incorporate corrosion treated steel components, heat treated ground stainless steel guide rods, self lubricated bushings and bearings plus wipers and seals to help protect moving parts from the corrosive and abrasive effects of subsea operation.

From simple to difficult, pipe to solids, carbon to stainless, safe to hazardous, above water or below, whatever the cutting task Wachs Subsea has a Guillotine saw for the job.

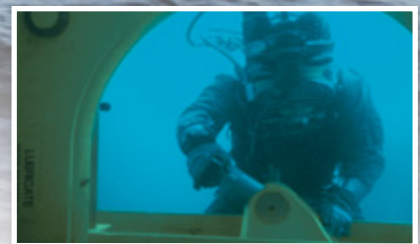
Wachs Guillotine Saws are designed to cold cut 2in-36in (51-914mm) pipe and vessels, as well as solids and multi-stranded casing strings.



Many models are available for both topside and subsea applications



Diver positioning Goliath Subsea Guillotine saw horizontally



Control options range from fully manual to advanced topside control

Dual Pin Drill

The Wachs Subsea Dual Pin Drill is designed to drill holes for pin insertion to facilitate removal and decommissioning in subsea structures such as multiple string casings. Utilizing two hydraulically powered opposed drills, each drill motor is powerful enough to drill up to a 5 1/2in (140mm) diameter hole drilled to center on a 36in (914mm) conductor.

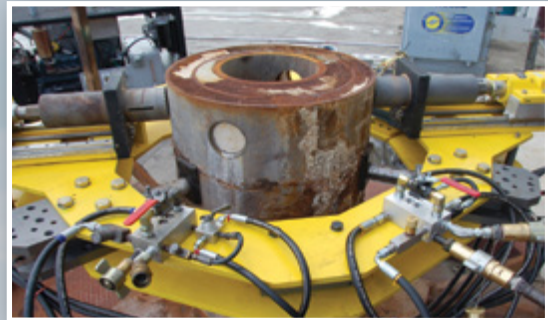
SINGLE OR DUAL DRILL OPERATION

The Wachs Subsea Dual Pin Drill is capable of single or dual operation of the drill motors, offering the user maximum flexibility. Each pin drill spindle motor and feed motor is operated separately to deliver independent, precise cutting tool loads. Multiple frame sizes are available to accommodate conductors up to 36in (914mm). Like all Wachs Subsea products the dual pin drill is built to withstand the harsh subsea environment, and rigid to resist twisting under high torque loads.

The Wachs Subsea Dual Pin Drill is designed to drill holes for pin insertion to facilitate removal and decommissioning.

FEATURES

- Auto-feed drill head system
- Single or dual drill head operation
- Hydraulically actuated clamshell frame
- Easily adjustable to different pipe sizes
- Heavy duty drill guide bushings
- Rugged construction for subsea environments



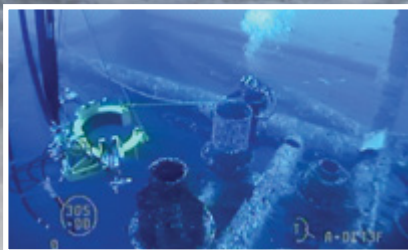
Single or dual drill motor operation for versatility



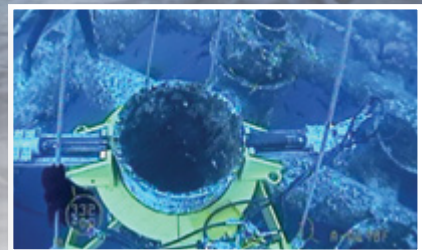
Pin drill spindle motor and feed motor operate separately



Wachs Dual Pin Drill is ideal for platform removal and decommissioning



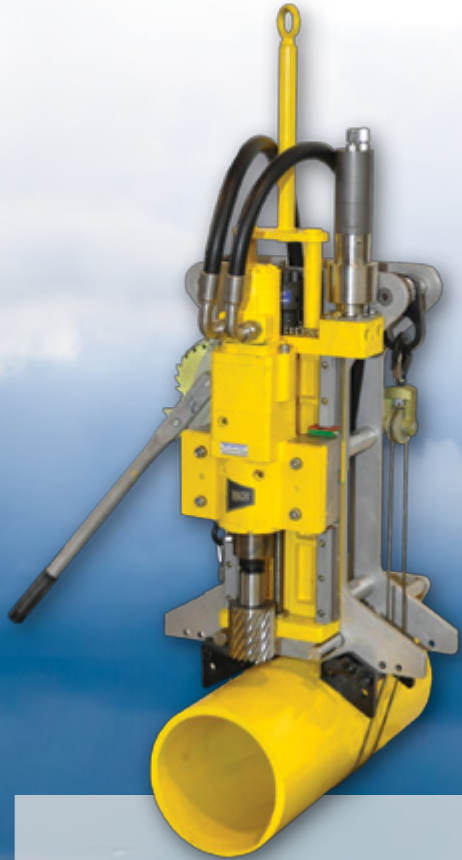
Diver friendly design with rugged construction to resist torque loads



Hydraulic motor is powerful enough to drill up to a 5 1/2in (140mm) diameter hole



Subsea Drill



The Wachs Subsea Drill is the ideal drill for subsea and decommissioning projects, and is engineered specifically for harsh and demanding subsea environments. Built of corrosion resistant materials, the subsea drill can be deployed to most working depths. This hydraulically powered, manual or auto feed variable speed tool is powerful enough to drill up to a 5in (127mm) diameter hole.

It features a reliable saddle mounting system that ensures a secure, square connection to the pipe, casing or structure, with other mounting adaptors available by special order. A Wachs multi-circuit control panel or offshore control panel equipped HPU is available for remote control of the drilling operation on auto feed models.

APPLICATIONS

- Rigging holes
- Inspection / Investigation holes
- Grouting / Grouting release holes
- Pinning holes for pulling multi-string conductors



Wachs Subsea drill features heavy duty construction and powerful hydraulic drive



Hydraulically driven variable speed drill is powerful enough to drill a 5in (127mm) diameter hole

FEATURES

- 5 inch (127mm) maximum hole diameter
- 11.6 inch (295mm) stroke
- Variable speed hydraulic drive (250 Max RPM)
- Max 15 GPM @ 1500PSI (Spindle Drive)
- 5 GPM @ 1500 PSI (auto-feed)
- Available hydraulic auto feed (0-.056 inch per min)
- Multiple feed configurations available
- Versatile mounting configurations



Wachs Subsea drill, like all our products, is built to withstand the rigors of the harsh offshore and subsea environments

Topside Products

CONTROL PANELS

Wachs Subsea three circuit panel remotely controls more complex machines such as our Guillotine auto feed and auto clamping reciprocating saws, with one circuit powering the drive, one circuit powering the auto feed and one circuit powering the auto clamping mechanism. A four circuit panel is available by special order for splitting and simultaneous control of four circuits, required in certain specialized applications.

These corrosion resistant, stainless steel units are built to perform under the most demanding conditions. They can be placed on a production platform or deck, in a control room with a live monitor feed or in the dive shack itself. Control panels require accessory hose sets or subsea hose reels, sold separately.



FEATURES

- Manifolds for splitting hydraulic flow
- Control panels available in three or four circuit designs
- Stainless steel construction to resist the elements
- Place on platform or deck, in a control room or dive shack

Control panels can be placed on a production platform, deck or in a control room with a live monitor feed as shown here



OFFSHORE HYDRAULIC POWER UNIT

Wachs Subsea Offshore Hydraulic Power Units (HPU) are specially designed and built to meet the unique needs of the offshore and subsea industry. Wachs HPU's are built with heavy duty industrial water cooled diesel engines and powder coated frames and skids for long life and ease of transport.

They include industry specific features such as air start with disc type spark arrestor and over speed shut down protection. Available in horsepower ratings and flow capacities to fit most topside and offshore applications, specific models are equipped with a built in three circuit control panel to eliminate the need for a free standing panel. Wachs Subsea HPUs are Class One, Zone D Rated.



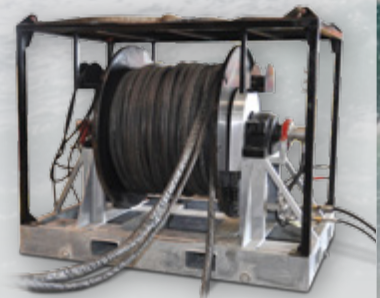
FEATURES

- Certified Lifting Padeyes
- Double Pass Hydraulic Cooling
- Up to 65 Gallon Steel Fuel Tank
- Up to 105 Gallon Steel Hydraulic Tank
- Variable Displacement Piston Pump
- Zinc Underlay Powder Coat Finish
- Stainless Steel Ultra-Quiet Muffler
- Delivers up to 45 gpm (170 lpm)
- Variable flow control assembly (up to 3,000 psi /207 bar)
- Standard safety bypass valve on hydraulic controls
- Air start with spark arrestor and ESD
- Over-speed shut down protection
- Three circuit control panel on select models

HOSE SETS & HOSE REELS

Wachs Subsea hydraulic hose set and hose reels are designed to make convenient, secure and leak free connections for hydraulically powered machines. All Wachs hose sets lines feature burst resistant construction with heavy duty fittings. Twin line hose assemblies are available in 300' (92M), 450' (137M), 600' (183M) and 750' (229M) lengths.

Hose reels are often specified to manage longer lengths, to reduce deck clutter and to prevent hose damage. Single and dual hose reels are offered with triples available by special order. All Wachs Subsea reels include hose assemblies and feature smooth operation, heavy duty construction, fork lift pockets, rugged hose connectors and powder coated finishes for greater durability.



Other Products



ECC/EICC CASING CUTTERS

Wachs ECC (External Casing Cutter) and EICC (External Internal Casing Cutter) provides a safe, fast and reliable method for onshore and topside cutting of the casing (or drive pipe/ conductor) during wellhead completion. Depending on the design of the BOP (Blowout Preventer), the manufacturer will specify either an external or an external and internal cut and chamfer.

ECC

Wachs ECC External Casing Cutter is a portable pneumatic or hydraulic powered machine tool used to simultaneously cut and chamfer the external casing conductor above the wellhead. Available in six standard ring sizes it features interchangeable tool slides and machine drives to cut all wellhead casing grades, sizes and weights from 4 1/2in-26in O.D. (114-660mm) with larger sizes available by special order. The ECC is portable, compact, lightweight and requires minimal axial and radial clearance. A single operator can setup and machine the casing quickly for minimal open time, and operate it inverted for cut lines close to the flange.

EICC

Wachs EICC External Internal Casing Cutter is a portable, pneumatic powered tool kit used in conjunction with the ECC to internally cut and chamfer the casing conductor below the wellhead, at various depths down to 60in (1524mm) below the wellhead. The EICC combines Wachs ECC split frame technology with a removable internal casing cutter to cut and chamfer a wide range of casings. The ECC severs the exposed casing O.D. above the wellhead, then serves as a rotating platform for the internal cutter. The internal cutter assembly is available in sizes to cut 7in-13 3/8in I.D. (178-340mm) casings.



Wachs ECC provides a fast and reliable method for simultaneous cutting and chamfering of the external casing, drive pipe or conductor

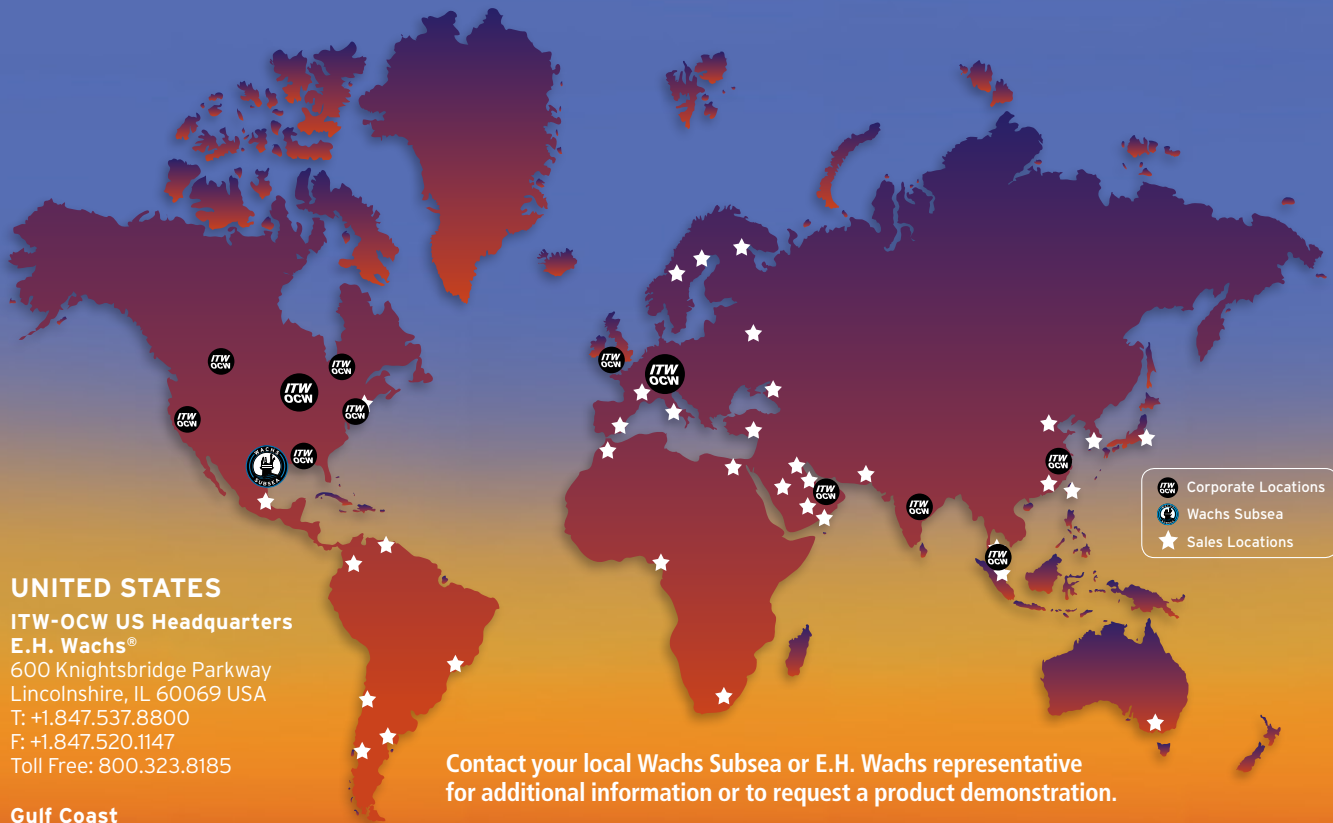
The EICC utilizes the ECC and an internal cutting assembly to cut and chamfer casings down to 60in (1524mm) below the wellhead




SUBSEA SHIPPING BASKETS

Wachs Subsea Shipping Baskets are made for surface shipment and storage, and are designed to survive tough subsea environments. They are used to safely and efficiently transport equipment to subsea locations, and are built with heavy gauge steel double galvanized to resist corrosion from repeated subsea immersion.

Available in three standard sizes, they offer excellent protection and a great working platform for deploying subsea equipment. Wachs shipping baskets are lift tested to five times maximum payload (up to 52,000 lbs / 23,000 kg) so you know your vital equipment is well protected.





 Corporate Locations
 Wachs Subsea
 Sales Locations

UNITED STATES

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