

UNDERWATER CUTTING AND WELDING

Broco Underwater devoted years of research to bring customers patented products and proprietary formulas that make underwater cutting and welding jobs safer, faster and more economical setting the world standard in underwater cutting and welding products.

Professional divers and underwater service companies trust our Broco Ultra-thermic cutting systems and underwater welding electrodes. More cutting offshore is done with Broco systems than with all competitors' products combined. Broco Underwater Softouch premium wet welding electrodes are the standard for commercially available mild and stainless steel wet welding electrodes, while EasyTouch wet welding electrodes are the highest quality economy electrodes on the market today.

Broco Underwater Cutting Systems:

Cut, pierce or gouge underwater, safer, faster and with lower operating costs using Broco Underwater Ultra-thermic cutting system.

Broco Underwater's patented Ultra-thermic Cutting System was developed nearly 30 years ago by a team who understood the needs and requirements of the working diver. Strong Welding Products - Broco Division remains committed to meeting those needs with updated technology and performance standards that ensure optimum cutting performance and maximum safety under all conditions.

Broco Underwater systems easily cut sheetpile, remove tubular supports, trim damaged propellers and more. Slag free gouging means safe and easy weld removal and edge preparation. ANU (Approved for Navy Use) designated and featured in the U.S. Navy's "Underwater Cutting and Welding" manual, the Broco Underwater Ultra-thermic Cutting System is used by navies around the world.



Broco Underwater Ultra-thermic Cutting Rods

Burning in excess of 10,000 degrees Fahrenheit at the tip, Broco Underwater Ultra-thermic Cutting Rods cut or melt virtually any known material. Broco's patented rod design features alloy core wires retained by circular crimps. The special design prevents burnback into the torch, making Broco Underwater Ultra-thermic Cutting Rods the safest on the market. Ultra-thermic Cutting Rods can be bent 90 degrees or more to access hard to reach places, without restricting oxygen flow or causing the insulation to split or flake off.

Ultra-thermic Cutting Rods may be used with a maximum of 150 amps to assist in the burning process but have no electrical requirement. Once ignited, they continue to burn as long as oxygen is supplied or until the rod is consumed. Broco Underwater Ultra-thermic Cutting Rods are available in 1/4 inch and 3/8 inch diameters. Standard length is 18 inches. Broco offers 36 inch Ultra-thermic Cutting Rods for heavier jobs to allow more burn time between rod changes.



BR-22 Cutting Torch

The BR-22 Cutting Torch is ergonomically designed for diver comfort and to reduce forearm fatigue. The torch is constructed from durable high-impact and corrosion resistant materials. All metal parts are brass. The non-conductive flexible coupler joining the oxygen control valve to the torch head is a key safety feature, unique in design and found only in Broco's torch. All connections are threaded for ease of maintenance. The solid brass flash arrestor with internal filter screen protects the diver and torch without restricting oxygen flow. The large collet nut is knurled to assure the diver of a solid grasp. Acme threads prevent binding from mud or other debris, insuring quick, reliable rod insertion and retention. Interchangeable collets accommodate 3/8 inch or 1/4 inch diameter cutting rods. The BR-22 can also be used as a welding electrode holder. The BR-22 Cutting Torch is built to deliver years of trouble-free performance at minimum cost. Spare parts kits are available.

Broco Underwater High-Volume Oxygen Regulator HVR-4401 and UW/KS Knife Switch

The Broco Underwater High-Volume Oxygen Regulator is a multi-stage unit delivering the constant flow and high volume required for underwater burning. Broco research demonstrates cutting efficiency depends more on oxygen flow than oxygen pressure. Broco's High-Volume Regulator is offered to meet this basic requirement. Designed and manufactured for ease of operation, maximum efficiency, and years of rugged use, the Broco Underwater High-Volume Oxygen Regulator is Underwriters Laboratories Listed.



Operational performance and diver safety both depend on the use of a high quality in-line knife switch. Broco offers the UW/KS, a single pole, single throw 400 amp switch built to the same high standards of all Broco products.

Broco Underwater Cutting System

Consisting of the BR-22 Torch, HVR-4401 Regulator, UW/KS Knife Switch, and Ultra-thermic Cutting Rods, the Broco Underwater system provides the fastest, most efficient and cost effective means of completing underwater tasks involving cutting, piercing, or gouging.

The Ultra-thermic Cutting Rod produces a temperature in excess of 10,000 degrees Fahrenheit; hot enough to quickly cut or melt through almost anything including cast iron, stainless steel, brass, other ferrous and non-ferrous metals and concrete. 10,000 degrees Fahrenheit means more cut per inch of rod than any other on the market. The Ultra-thermic Cutting Rod cuts through marine growth, rust and mill scale eliminating the need for pre-cleaning and helping lower operating costs and reducing bottom time.

The Broco Underwater Ultra-thermic Cutting System uses only oxygen and maximum of 150 amps. Other equipment may require as much as 500 amps to cut. Our Ultra-thermic Cutting Rod readily ignites from a spark generated by a 12 or 24 volt auto or marine battery and will continue to burn with electrical current removed until the flow of oxygen is stopped or the rod is consumed. The need for expensive support equipment is reduced while a safer diving environment is maintained.



Broco Underwater Welding

Quality wet welds mean less time and money spent on the job

Broco Underwater Softouch premium wet welding electrodes are the standard for commercially available mild and stainless steel wet welding electrodes, while EasyTouch wet welding electrodes are the highest quality economy electrodes on the market today. Broco Underwater electrodes produce quality wet welds done right the first time in any position and allow divers to make permanent repairs to offshore structures, harbor installations or ocean going vessels.

EasyTouch wet welding electrodes have also produced Type B certifiable welds in vertical and overhead positions. Slight porosity and hydrogen micro-presence make EasyTouch less suitable for structural welds. However they are ideal for almost all non-critical applications where a sound, visually aesthetic weld is required. Both Softouch and EasyTouch are all position, high deposition electrodes.

Broco Underwater offers the BR-20 or BR-21 Welding Stinger with Softouch premium or EasyTouch economy electrodes, to make wet welding is easy. Divers can use the self-consuming, drag, or manipulative technique; these smooth running electrodes require little or no pressure.



Broco Underwater Softouch Electrodes

Broco's flux enhancing proprietary formulation, BroCote, is the secret behind the reliability and ease of operation of the Softouch electrode. BroCote makes this electrode particularly impervious to water penetration and denigration and ensures certifiable underwater weld quality with less labor cost and time consumption.

Softouch electrodes are used for on-site repairs in many applications where steel must be joined underwater according to code specifications. Softouch welds consistently meet or exceed AWS D3.6-98 specifications for Type B welds, the American Welding Society's standard for certifying underwater welds. Softouch is designed to pass all AWS test requirements, including radiograph, bends and hardness and has become the wet welding electrode welding engineers and divers prefer.

Since 1989, Softouch electrodes have been specified in the U.S. Navy's Ships Husbandry Manual Chapter 11, "Underwater Wet and Dry Chamber Welding." U.S. and Navy diving commands, shipyards, and contractors use Softouch for repairs and maintenance on Naval

vessels worldwide.

Softouch electrodes are available in various sizes and alloys for both mild steel and stainless. Softouch mild steel electrodes are available in 1/8 inch, 5/32 inch and 3/16 inch diameters. Stainless electrodes are sold in 1/8 inch and 5/32 inch sizes.

Softouch wet welding electrodes are sealed in a Mil-Spec foil pouch to prevent contamination. The electrodes are then packaged in a rigid resealable plastic tube which provides maximum protection. The color-coded end cap denotes mild or stainless steel electrodes. Operating guidelines are printed on the label

Broco Underwater EasyTouch



For many non-structural repairs the resultant weld is allowed more leeway in terms of porosity, inclusions, integrity and appearance. To fill the void between to-code work and economy, Broco applied its significant experience and knowledge to the issue of designing a quality electrode specifically for the economy market. The result is EasyTouch, a moderately priced electrode that yields excellent results. It is easy to light, easy to run (a controllable puddle with rippled bead appearance) and easy to clean. Like Softouch, EasyTouch is a high deposition all-position electrode.

EasyTouch offers users advantages over other low priced rods that are more difficult to run, harder to clean, and often need to be grounded and rewelded - all adding to bottom time and increased operating costs. (with picture of Easytouch welding rods)

Broco Underwater BR-20 Welding Stinger

The BR-20 Welding Stinger is designed to hold the electrode at the optimum angle to the work piece delivering quality welds while reducing operator fatigue. The movable jaw design accepts a wide range of electrode diameters. The BR-20 Welding Stinger meets Mil-H-865D and is Approved for Navy Use (ANU). All brass parts last longer under extreme conditions.

Broco Underwater BR-21 Welding Stinger

This new generation compression type welding stinger is engineered with superior features. The BR-21 is lightweight, durable and designed to hold the electrode at the optimum angle to reduce diver fatigue.

Selected features of the BR-21 include:

- Index notch on the head helps divers find the hole, even in the dark. Improves rod insertion in low-vis environment.
- Beveled seat keeps electrode at ideal angle. Groove eliminates electrode "wobble."
- Over-sized head is easier to hold.
- Resistance O-ring on the shoulder ensures tension when head is tightened, increasing head life.
- Handle and head are from hexagonal stock for sure gripping by a gloved hand.

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