

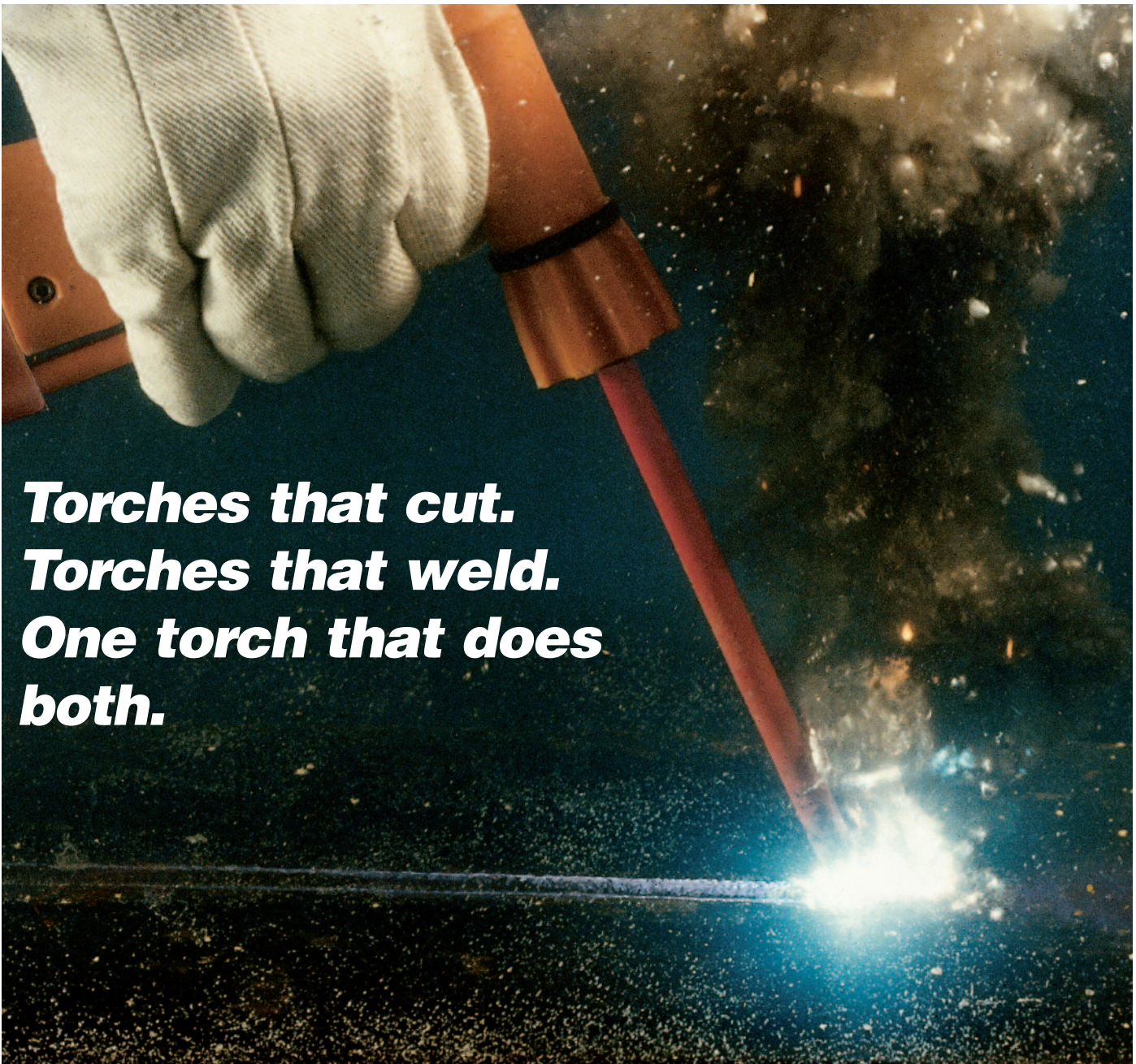


Arcair[®]
Professional

Underwater Products



www.tweco.com



**Torches that cut.
Torches that weld.
One torch that does
both.**

Arcair's selection of carefully tested and job-proven underwater products handle most any underwater cutting or welding application. Used on bridge caissons, pilings, river locks and dams around the world, Arcair products save time and money on salvage operations, docking facility construction and off-shore drilling rig repair. Arcair offers a wide variety of welding and cutting electrodes. . . even electrodes that will ***literally cut anything under the sea***. Also, available is a complete, self-contained, diesel-driven power system that includes everything you need for most underwater welding or cutting jobs.

Arcair®

UNDERWATER PRODUCTS
come out on top - under water

U.S. Customer Care: 800-426-1888 / FAX 800-535-0557

SEA TORCH® Combination Torch

Length: 8-3/4" (22.2 cm) **Weight:** 4.5 lbs. (2.04 kg) with cable

Equipped with 10 ft. (3.05 m) cable which can be disconnected from the torch.

The Sea Torch is an improved underwater cutting and welding torch with a one piece body construction. Fully insulated electrically for safety in normal operation, the Sea Torch is bright orange for high visibility to the diver. This torch can be used for oxygen-arc cutting and underwater welding.

The one piece body prohibits oxygen leakage in the torch body which can occur with torches having connections between the head and the handle. The tapered collet in the Sea Torch brings the bare surface of an electrode into contact for the entire length of the collet. This solid grip and increased contact area decreases the risk of arcing between the collet and the electrode, eliminating damage to the torch head. Sea Torch has a single external collet taper which forces the collet and electrode against a seal, ensuring a positive sealing of oxygen flow in that area.

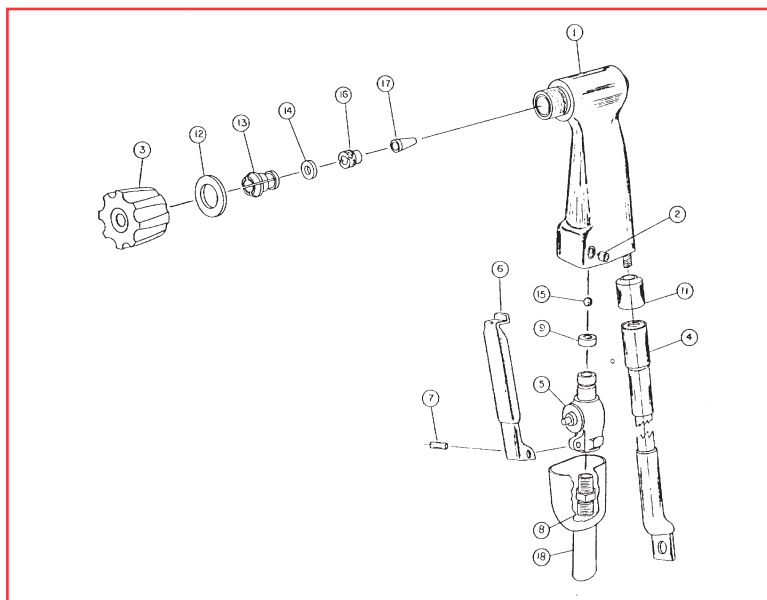
The oxygen path is metallic instead of plastic to avoid the possibility of damage by ignition of plastic. By loosening two set screws, the oxygen valve and lever can be rotated to different positions to provide easier oxygen flow control for the diver.

Sea Torch is equipped with a spark arrestor behind the collet chuck for safe operation. A ball check valve in the torch handle gives additional protection.



COLLET CHANGES

- Sea Torch Combination Torch, Catalog No. 14-050-124, has a 5/16" (7.9 mm) collet chuck for underwater cutting with Sea-Cut® I or Tuff Cote® underwater electrodes.
- Sea Torch Combination Torch, Catalog No. 14-050-126, has a 3/8" (9.5 mm) collet chuck for underwater cutting with Sea Dragon™ or Sea Jet® exothermic cutting rods.
- The 5/16" and 3/8" collets now come in the standard or long collet and the stubby collet which are comparable to other collets on the market. These stubby collets make it less confusing for the diver when making a collet change.
- To use the above torches for underwater welding, there are collet chucks available for use with the Sea Weld® underwater wet welding electrodes.



ORDERING INFORMATION

REF. NO.	DESCRIPTION	CATALOG NO.
	Sea Torch Complete (5/16" collet chucks)	14-050-124
	Sea Torch Complete (3/8" collet chucks)	14-050-126
1	Sea Torch Handle	94-370-157
2	Set Screw (2 required)	97-373-001
3	Molded Collet Ring	94-168-018
4	Cable Assembly	96-130-234
	Oxygen Valve/Lever Assembly	94-921-056
5	Oxygen Valve	94-921-057
6	Valve Lever	94-476-061
7	Lever Hinge	94-632-108
9	Washer	94-940-098
11	Cable Tip Insulator	94-433-177
12	Washer	94-940-097

REF. NO.	DESCRIPTION	CATALOG NO.
13	1/8" Collet Chuck (Optional)	94-158-047
13	5/32" Collet Chuck (Optional)	94-158-042
13	3/16" Collet Chuck (Optional)	94-158-044
13	5/16" Collet Chuck	94-158-043
13	3/8" Collet Chuck	94-158-045
13	5/16" Stubby Collet Chuck	94-158-051
13	3/8" Stubby Collet Chuck	94-158-050
14	Washer	94-940-099
14	Stubby Collet Washer	94-940-114
15	Ball Check Valve	94-071-003
16	Stubby Blowback Retainer	94-695-065
16	Std. Blowback Retainer	94-695-037
17	Spark Arrestor	94-305-009

ARCWATER® II Torch

Length: 9-3/4" (24.77 cm) **Weight:** 5.5 lbs. (2.5 kg) with cable
Equipped with 10 ft. (3.05 m) heavy-duty cable.

The Arcair® Arcwater® Torch is designed to gouge or cut steel, stainless steel and other metals underwater safely, easily and efficiently. Arcwater can also be converted to an underwater welding torch by simply changing collets. The unique Arcwater torch is **oxygen free**, eliminating the risk of hydrogen gas pocket explosions. Tests conducted at Arcair and by diving contractors prove the following: 1) **Arcwater Torch is easy to handle by right or left-handed users.** 2) **Arcwater can be used on out-of-position applications as well as on easy to reach jobs.** 3) **Arcwater's valve/lever assembly allows the operator to easily control water flow.** 4) **The replaceable collet means longer torch service life than ever before.**

Arcwater uses current from a DC power source, reverse polarity (DCEP) and a special Arcair Arcwater electrode. Fresh or sea water must be delivered to the torch at 90 psi (6.32 kg/cm² or 620 kPa) over the pressure at the depth of use. A minimum water flow rate of 3.5 gallons (13.25 liters) per minute is required. With the Arcwater process, the metal is made molten by the electrode coming in contact with the work piece, forming an arc. The molten metal is then removed by the high pressure water stream, leaving a clean slag-free gouge ready for welding.

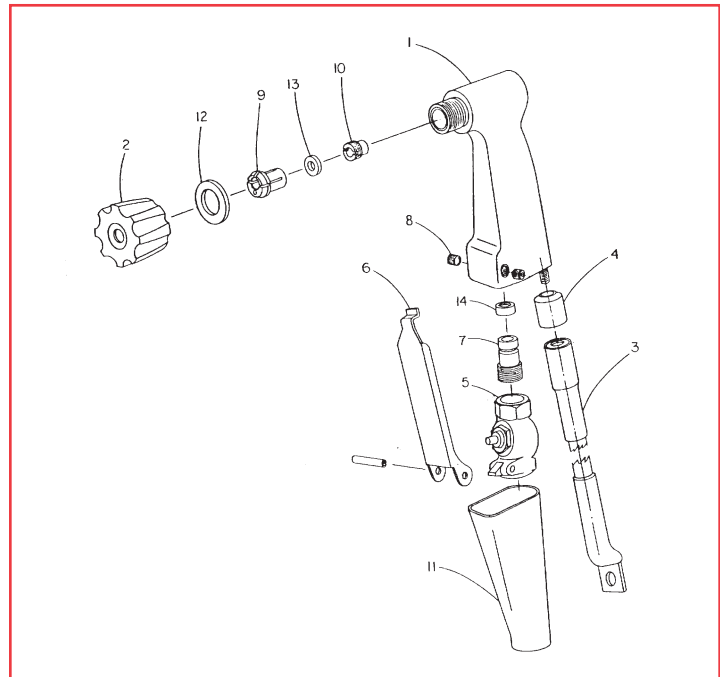


USES

- Arcwater Torch can be used to gouge or cut steel and other metals in underwater fabrication and salvage without the use of oxygen.
- Gouging: hold Arcwater at a 40° angle to the work with the water jet between the work and the electrode. Move Arcwater forward at a speed sufficient to maintain the arc and the desired depth of groove. The diver should not cut deeper than 5/16" (7.9 mm) in a single pass, preventing molten metal from blowing back at the diver.
- To sever a plate: hold Arcwater at a 75° angle with the water jet under the electrode. Care should be taken to prevent molten metal from blowing back at the diver. (See Underwater Manual, Form No. 89-250-054). Once a hole is pierced in the metal, it can be enlarged by using the torch in a slow sawing motion in the desired direction of cut.

COLLET CHANGES

- Arcwater is designed to be used with 5/16" x 9" (7.9 x 228.6 mm) electrodes, Catalog No. 42-059-006). The electrodes require 350 to 450 amperes for proper operation. Three special collets are available to adapt the Arcwater II Torch for underwater welding with 1/8" (3.2 mm), 5/32" (4.0 mm) or 3/16" (4.8 mm) Sea-Weld® electrodes.



ORDERING INFORMATION

REF. NO.	DESCRIPTION	CATALOG NO.
	Arcwater II Torch with 10' Cable	14-050-127
1	Torch Handle	94-370-174
2	Molded Collet Ring Assembly	94-168-018
3	Cable Assembly	96-130-234
4	Cable Tip Insulator	94-433-177
	Valve & Lever Assembly	94-921-063
5	Valve	94-922-009
6	Lever Assembly	94-476-075
7	Adaptor	94-013-106
8	Set Screw (2 Req'd)	97-373-001

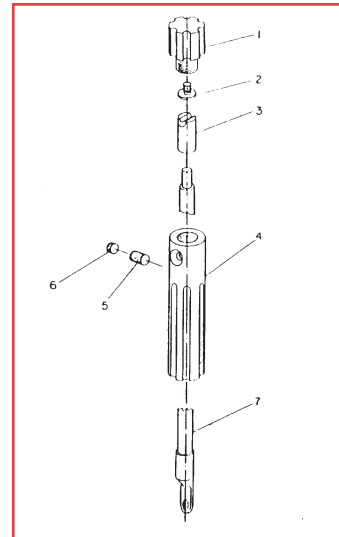
REF. NO.	DESCRIPTION	CATALOG NO.
9	Collet Chuck Assembly	94-158-049
	1/8" Collet Chuck (for welding)	94-158-047
	5/32" Collet Chuck (for welding)	94-158-042
	3/16" Collet Chuck (for welding)	94-158-044
10	Retainer	94-695-037
11	Boot	94-105-021
12	Washer	94-940-097
13	Washer	94-940-105
14	Washer	94-940-098

SEA-STINGER® II Underwater Electrode Holder

Length: 6" (15.24 cm) Weight: 3.65 lbs. (1.66 kg)



Arcair's Sea-Stinger II gives the Diver-Welder a lightweight, durable and easy to use electrode holder. The improved design has a replaceable cable and internal changes to extend its service life. Sea-Stinger II accepts 1/8" (3.2 mm), 5/32" (4.0 mm) and 3/16" (4.8 mm) diameter welding electrodes. For best results use Arcair Sea-Weld® Underwater Welding Electrodes.



ORDERING INFORMATION

REF. NO.	DESCRIPTION	CATALOG NO.
	Sea-Stinger II Holder	14-050-128
1	Head	94-378-351
2	Cap	94-131-067
3	Body	94-103-228
4	Handle	94-370-175
5	Set Screw	97-373-006
6	Plug	94-638-086
7	Cable Assembly	96-130-298

SEA DRAGON™ Cutting Electrodes

Catalog No. 42-075-005 (Orange)

Diameter: 3/8" (9.5 mm) Length: 18" (458 mm)



Patented underwater exothermic Sea Dragon cutting rods will burn most materials encountered in underwater cutting jobs. The Sea Dragon Rod can be used like other oxygen-arc cutting electrodes. A DC constant current welding power supply set on straight polarity (electrode negative) supplies current to the electrode. The workpiece is grounded. When the electrode touches the work, an electric arc ignites the electrode. Once ignited, the electrode will burn by the means of an exothermic reaction between the steel components of the electrode and the oxygen flowing through the electrode, thus enabling the cutting to be done **with or without** electrical power. **The Sea Dragon Rod will burn as long as the oxygen is flowing through the rod.** For ignition only, when cutting without power, a 12 VDC battery may be used. This presents an added safety margin against the possibility of electrical shock.



SEA-JET® Cutting Electrodes

Catalog No. 42-066-006 (Red)

Diameter: 3/8" (9.5 mm) Length: 18" (458 mm)



Patented underwater exothermic Sea Jet cutting electrodes will burn ferrous and melt non-ferrous materials such as concrete, rock, barnacles and other sea growth. The Sea-Jet electrode can be used like other oxygen-arc cutting electrodes. A DC constant current welding power supply on straight polarity (electrode negative), ground the workpiece and by touching the workpiece an electric arc ignites the electrode. Once ignited the electrode will continue to burn by the means of an exothermic reaction between the steel components of the electrode and the oxygen flowing through the electrode.

Remember, Sea-Jet Electrodes will burn as long as the oxygen is flowing through the electrode. For igniting the electrode only, a 12 VDC battery may be used. This presents an added safety margin against the possibility of electrical shock.

SEA-CUT® I Cutting Electrodes

Catalog No. 42-059-007 (Blue)

Diameter: Outside 5/16" (8 mm) Bore Hole .113" (3 mm)

Length: 14" (355.6 mm)



Sea Cut I electrodes are a tubular steel design used for oxygen-arc cutting. These electrodes are coated with a waterproof insulating material. They are **not flux coated**.

TUFF-COTE® Cutting Electrodes

Catalog No. 42-059-008 (White)

Diameter: Outside 5/16" (8 mm) Bore Hole .113" (3 mm)

Length: 14" (355.6 mm)



Tuff-Cote tubular steel oxygen-arc cutting electrodes are first coated with an arc stabilizing flux coating, then waterproofed, protecting the flux from moisture absorption and providing electrical insulation.

SEA-WELD® Welding Electrodes

Catalog No. see below (Yellow)

Diameters: 1/8" (3.2 mm), 5/32 (4.0 mm), 3/16" (4.8 mm)

Length: 14" (355.6 mm)



Arcair's improved Sea-Weld electrode is the answer to the need for structural fabrication and repairs requiring underwater wet welding. This all position, flux coated SMAW electrode has been developed to provide the following features:

- Welds with excellent bead contour.
- Fillet welds are flat with good base metal wetting, which helps keep undercut to a minimum.
- Easy slag removal which keeps chipping and grinding to a minimum, allowing faster welding time while providing welds with a lower risk of slag inclusions.
- The Sea-Weld electrode has produced welds which pass bend and X-ray requirements as defined by the AWS D3.6 specification for underwater welding.

ELECTRODE SIZE		CATALOG NO.	CURRENT AMPERES	BURN OFF TIME (SEC) 12" (305 mm)
INCH	MM			
1/8	3.2	42-024-002	150-180	40-46
5/32	4.0	42-984-004	170-210	44-56
3/16	4.8	42-034-007	190-230	59-66

ARCWATER® Gouging Electrodes

Catalog No. 42-059-006 (White)

Diameter: 5/16" (7.9 mm) Length: 9" (228.6 mm)



These copper coated carbon/graphite electrodes are especially made for the Arcwater process. Waterproofed with a white coating, Arcwater electrodes require 350 to 450 amperes for proper operation.



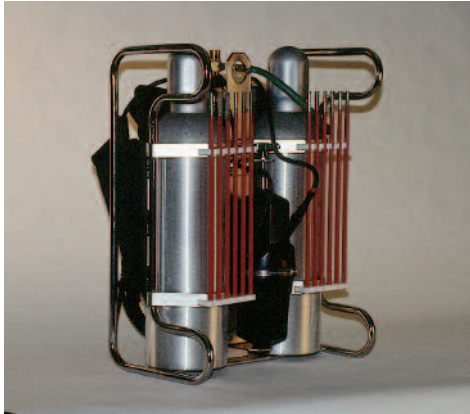
ARCAIR® UNDERWATER SELF-CONTAINED CUTTING PACKAGE

Catalog No. 14-100-000

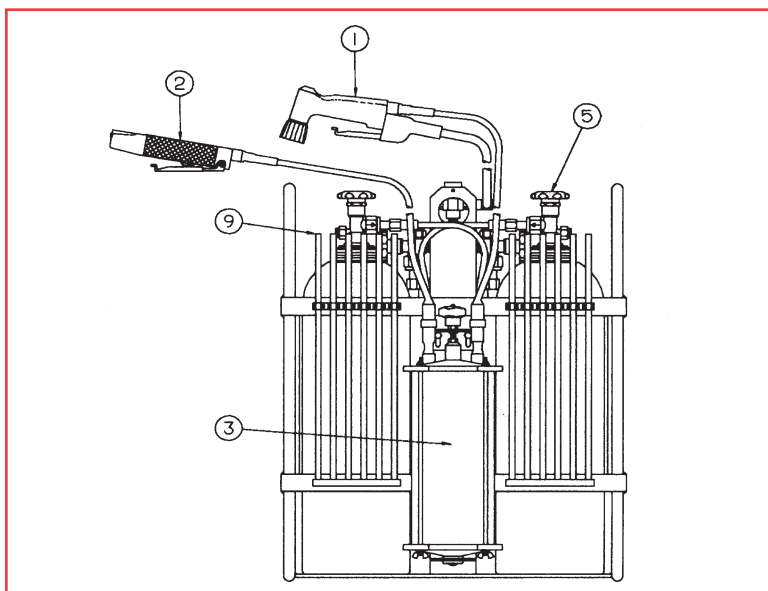
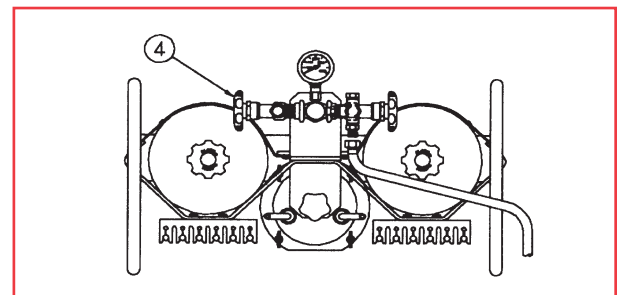
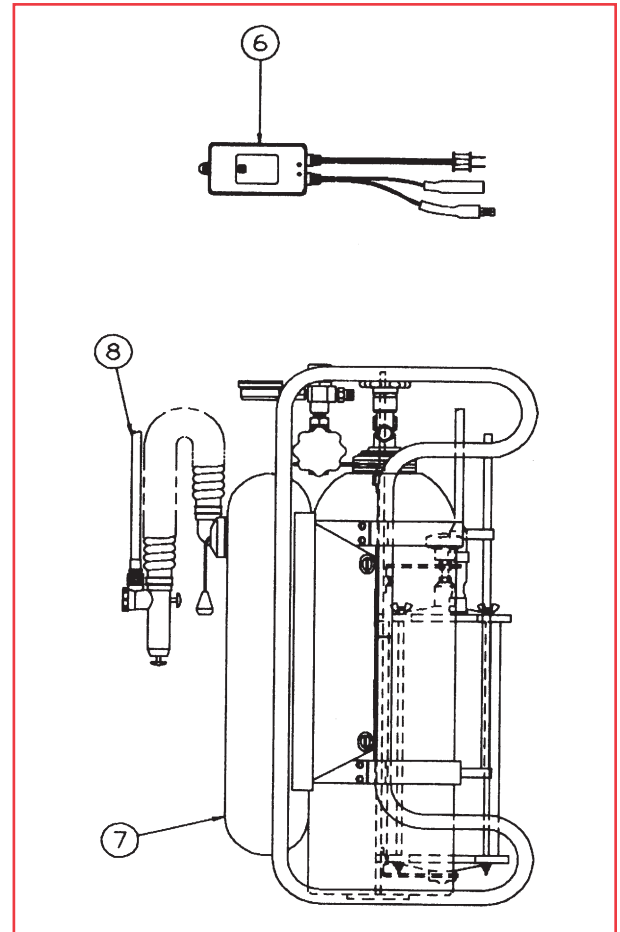
Weight (out of water): 149 lbs (67.6 kg) **Width:** 23" (58.4 cm)
Height: 28-1/2" (72.4 cm) **Depth:** 12-3/4" (32.4 cm)

Arcair's Underwater Self-Contained Cutting Package is designed to provide the trained diver with a portable self-contained unit for underwater exothermic cutting. The cutting package has been tested at a working depth of 60 feet.

The Underwater Self-Contained Cutting Package provides the diver with the necessary tools for cutting operations including:



- A **rechargeable** Battery Pack used for igniting approximately 20 cutting electrodes per charge. Re-charge time takes approximately 3 hours. (Pack comes with its own charging system.)
- An Arcair Sea-Torch® Combination Torch with a 3/8" collet chuck to accept the Sea-Jet® or Sea-Dragon® exothermic cutting electrodes.
- A specially designed Striker Assembly allowing the diver complete control of electrode ignitions. By squeezing the striker lever and touching the cutting electrode, with oxygen flowing, electrode ignition occurs and the cutting operation begins.
- **Two 60 cubic foot aluminum oxygen cylinders** providing enough oxygen to burn approximately ten cutting electrode. Also included is a pre-set oxygen regulator, set for 75 p.s.i., ensuring the best cutting rates with the Sea-Jet® electrodes.
- The Underwater Self-Contained Cutting Package has a **buoyancy device** used to control and stabilize the pack during descent, ascent and while the pack is at the cutting location.



ORDERING INFORMATION

REF. NO.	DESCRIPTION	CATALOG NO.
	Underwater Cutting Package	14-100-000
1	Sea Torch Assembly	14-050-132
2	Striker Assembly	72-012-008
3	Battery Pack Assembly	96-076-032
4	Manifold & Regulator Assembly	94-500-019
6	Battery Pack Charging System	96-156-005
7	Buoyancy Compensator	94-174-002
8	Low Pressure B.C. Inflator Hose	94-396-201
9	Sea Jet Electrodes (50 pc. box)	42-066-006
9	Sea Dragon Electrodes (50 pc. box)	42-075-005

ARCAIR® SEA-PAK® 400-A Power System

Catalog No. 73-101-024 Complete Package

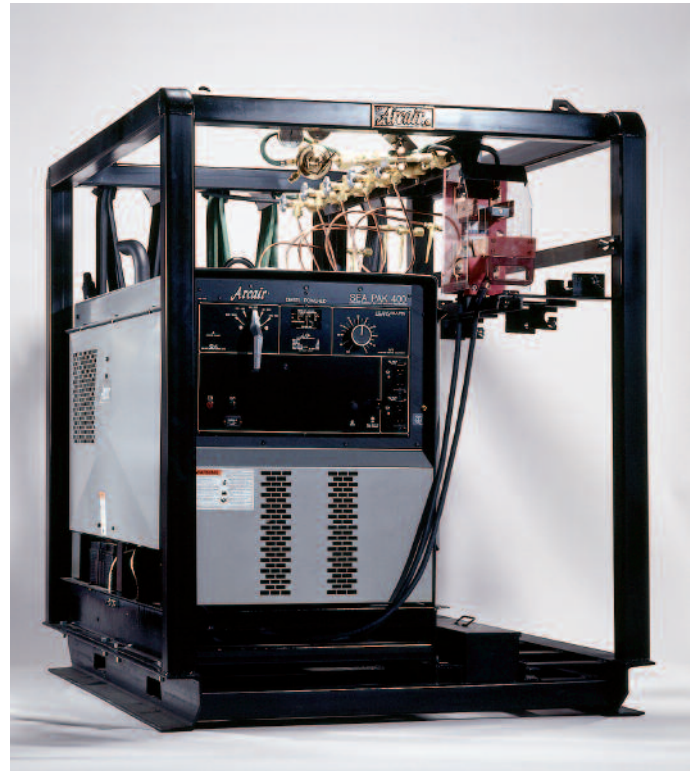
Height: 65" (165 cm) **Width:** 53" (135 cm) **Length:** 72" (183 cm)

The SEA-PAK 400-A Power System is a rugged, compact underwater cutting and welding power system complete with all the equipment and gear necessary for the welder/diver. SEA-PAK eliminates time spent gathering and handling individual components.

The Power Supply is a 400 ampere DC constant current machine, 100% duty cycle at 40 arc volts. A 3 KVA 120 volt, single phase, AC 50/60 Hertz auxiliary power outlet is provided. The diesel driven machine has a fuel capacity of 23 gallons (87 liters).

Arcair SEA-PAK has a five station oxygen manifold and space for five 277 cu. ft. (7.8 m³) capacity high pressure oxygen cylinders. It is equipped with individual shut-off valves to each cylinder, and includes a two stage, high pressure, high flow regulator. Removable safety bars in front of each oxygen cylinder prevent tipping during shipment or rough weather. The frame is a rugged 3" (7.6 cm) heavy wall square tube design welded into a single unit for maximum strength to handle stress from crane or forklift transportation as well as aboard ships.

The Complete SEA-PAK Power System package is designed for maximum safety. The 2 pole, single-throw knife switch together with all electrical fittings ensure against electrical faults. The plexiglass enclosure of the knife switch meets all OSHA requirements. The power supply is designed so that polarity cannot be changed except by changing cable leads. Arcair's Sea Torch® Combination Torch and Sea-Stinger® II Welding Electrode Holder completes the package which is designed for maximum safety, ruggedness and operator comfort.



SEA-PAK POWER SYSTEM BASIC INCLUDES

- Heavy wall all-welded frame
- Five cylinder rack with individual clamps for positive holding and easy replacement.
- Arcair Sea-Torch Combination Torch
- 5-Station heavy-duty manifold with individual valves and pigtails
- Power Source - 400 ampere rated at 40 volts, 100% duty cycle constant current DC output.
Auxiliary power outlet 3 KVA 120 volt single phase, AC 50/60 Hz (Diesel Driven)
- Heavy duty tool box

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