

# HTP Air Plasma Cutting System

## Owner's Manual

MicroCut 875S



## Introduction

Congratulations on your purchase of an HTP America Micro Cut 875S Air Plasma Cutting System. Your purchase of a Micro Cut 875S means you have purchased one of the most technologically advanced, safest and economical plasma cutters available today.

The owner's manual has been designed to instruct you on the safe operation of your Micro Cut 875S. If you read and follow the instructions in this manual, your plasma cutter will provide you with years of trouble free operation. If you fail to read and understand this manual, as well as correctly follow the operating instructions, you will significantly shorten the operating life of your plasma cutter.

Operation of your plasma cutting system without proper understanding of the facts contained within this manual or under unsafe or hazardous conditions, may lead to **SERIOUS INJURY OR DEATH!**

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## Limited Warranty

Subject to the terms and conditions hereof, HTP warrants to its Distributor/Dealer that all MicroCut 875S Plasma Cuffers furnished by HTP are free from defect in workmanship and material as of the time and place of delivery by HTP. No warranty is made by HTP with respect to trade accessories or other items manufactured by others. Such trade accessories and other items are sold subject to the warranties of their respective manufacturers, if any.

HTP shall be required to honor warranty claims on MicroCut 875S Plasma Cuffers in the event of failure resulting from a defect within the following periods from the date of delivery of MicroCut 875S to the original user:

1. Plasma cutters, power sources and components: 2 years.
2. All plasma torches: 90 days.
3. The electrode, cutting nozzle,

insulator, spring, and gas diffuser are consumable items, WHICH CARRY NO WARRANTY.

provided that HTP is notified in writing within thirty (30) days of the date of such failure.

As a matter of general policy only, HTP may honor claims submitted by the original user within the foregoing periods.

In the case of HTP's breach of warranty or any other duty with respect to the quality of any goods, the exclusive remedies therefore shall be, at HTP's option (1) repair or (2) replacement or, where authorized in writing by HTP in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized HTP service station upon return of the goods at Customer's risk and expense. HTP's option

of repair or replacement will be F.O.B., Factory at Arlington Heights, Illinois, therefore; no compensation for transportation costs of any kind will be allowed. Upon receipt of notice of apparent defect or failure, HTP shall instruct the claimant on the warranty claim procedures to be followed.

HTP America, Inc. has reserved the right to make changes in design or add any improvements to its products at any time without incurring any obligation to install same on equipment.

This warranty is null and void unless warranty card is sent to HTP America, Inc. within 15 days from date of purchase.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY HTP IS EXCLUDED AND DISCLAIMED BY HTP.

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## Safety Precautions

### Plasma Arc Cutting Hazards

- ▲ **The safety information given below is only a summary of the more complete safety information found in the Safety Standards listed in Section M. Read and follow all Safety Standards.**
- ▲ **Only qualified persons should install, operate, maintain, and repair this unit.**
- ▲ **During operation, keep everybody, especially children, away.**



#### ***Plasma Cutting can cause fire or explosion.***

Hot metal and sparks blow out from the plasma cutting arc. The flying sparks and hot metal, hot work pieces, and hot equipment can cause fires and burns. Check and be sure the area is safe before doing any cutting.

- ◆ Protect yourself and others from flying sparks and hot metal.
- ◆ Do not cut where flying sparks can strike flammable material.
- ◆ Remove all flammables within 35 ft of the plasma cutting arc. If this is not possible, tightly cover them with approved covers.
- ◆ Be alert that sparks and hot materials from cutting can easily go through small cracks and openings to adjacent areas.
- ◆ Watch for fire, and keep a fire extinguisher nearby.
- ◆ Be aware that cutting on ceiling, floor, bulkhead, or partition can cause fire on the opposite side.
- ◆ Connect ground cable to the work as close to cutting area as practical to prevent cutting current from traveling long, possibly unknown paths and causing electric shock and fire hazards.
- ◆ Do not cut pressurized cylinders, pipes, or vessels.
- ◆ Do not cut on closed containers such as tanks or drums.
- ◆ Never cut containers with potentially flammable materials inside- they must be emptied and properly cleaned first.
- ◆ Do not cut containers that have held combustibles.
- ◆ Do not cut in atmospheres containing explosive dust or vapors.
- ◆ Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
- ◆ Do not locate unit on or over combustible surfaces.
- ◆ Remove any combustibles, such as butane lighter or matches from your person before doing any cutting.



#### ***Electric Shock can kill***

Touching live electrical parts can cause fatal shocks or severe burns. The plasma torch and circuit are electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is

on. Plasma arc cutting requires higher voltages than welding to start and maintain the arc (100 -300 volts dc are common), but also uses torches designed with safety interlock systems which turn off the machine when the shield cup is loosened or if tip touches electrode inside the nozzle. Incorrectly installed or improperly grounded equipment is a hazard.

- ◆ Do not touch live electrical parts.
- ◆ Wear dry, hole-free insulating gloves and body protection.
- ◆ Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with work or ground.
- ◆ Do not touch torch parts if in contact with the work or ground.
- ◆ Turn off power before checking, cleaning, or changing torch parts.
- ◆ Disconnect input power before servicing this equipment. Lockout/tagout input power according to OSHA CFR 1910.147
- ◆ Properly install and ground this equipment according to the Owner's Manual and national, state, and local codes.
- ◆ Check and be sure that input power cord ground wire is properly connected to ground terminal in disconnect box or that cord plug is connected to properly grounded receptacle outlet-always verify the supply ground.
- ◆ When making input connections, attach proper grounding conductor first.
- ◆ Frequently inspect input power cord, plasma torch and ground cable for damage or bare wiring. Replace cord immediately if damaged. Bare wiring can kill.
- ◆ Turn off all equipment when not in use.
- ◆ Do not wrap torch cable around your body.
- ◆ Ground the work piece to a good electrical (earth) ground if required by codes.
- ◆ Use only well-maintained equipment. Repair or replace damaged parts at once.
- ◆ Wear a safety harness if working above floor level.
- ◆ Keep all panels and covers securely in place.
- ◆ Do not bypass or try to defeat the safety interlock systems.
- ◆ Use only the Plasma Torch specified in the Owner's Manual.
- ◆ Keep away from torch tip and pilot arc when the plasma torch trigger is pressed.
- ◆ Clamp work cable with good metal-to-metal contact to work piece (not piece that will fall away) or worktable as near the cut as practical.
- ◆ Insulate work clamp when not connected to work piece to prevent contact with any metal object.



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***SIGNIFICANT DC VOLTAGE exists on internal parts of inverter power sources AFTER the removal of input power.***

- ◆ Turn Off unit, disconnect input power, check voltage on input capacitors, and be sure it is near zero (0) volts before touching any parts. Check capacitors according to instructions in Maintenance Section of Owner's Manual or Technical Manual before touching any parts.



### ***Exploding Parts can injure.***

- ◆ On inverter power sources, failed parts can explode or cause other parts to explode when power is applied. Always wear a face shield and long sleeves when servicing inverters.



### ***Flying Sparks can cause injury.***

Sparks and hot metal blow out from the cutting arc. Chipping and grinding cause flying metal.

- ◆ Wear approved face shield or safety goggles with side shields.
- ◆ Wear proper body protection to protect skin.
- ◆ Wear flame-resistant ear plugs or ear muffs to prevent sparks from entering ears.



### ***Arc Rays can burn eyes and skin.***

Arc rays from the cutting process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin.

- ◆ Wear face protection (helmet or shield) with correct shade of filter to protect your face and eyes when cutting or watching. ANSI Z49.1 (see Safety Standards) suggests No. 9 shade (with No. 8 as minimum) for all cutting currents less than 300 amperes. Z49.1 adds that lighter filter shades may be used when the arc is hidden by the work piece. As this is normally the case with low current cutting, the shades suggested in Table 1 are provided for the operator's convenience.
- ◆ Wear approved safety glasses with side shields under your helmet or shield.
- ◆ Use protective screens or barriers to protect other from flash and glare; warn others not to watch the arc.
- ◆ Wear protective clothing made from durable, flame-resistant material (leather and wool) and foot protection.

Current Level In Amperes	Minimum Shade Number	
Below 20		#4
20 - 40		#5
40 - 60		#6
60 - 80		#7

Table 1. Eye Protection for Plasma Arc Cutting

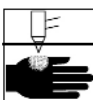


### ***Fumes and Gases can be hazardous.***

Cutting produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- ◆ Keep your head out of the fumes. Do not breathe the fumes.

- ◆ If inside, ventilate the area and/or use exhaust at the arc to remove cutting fumes and gases.
- ◆ If ventilation is poor, use an approved air-supplied respirator.
- ◆ Read the Material Safety Data Sheet (MSDS) and the manufacturer's instruction for metals to be cut, coating, and cleaners.
- ◆ Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Fumes from cutting and oxygen depletion can alter air quality causing injury or death. Be sure the breathing air is safe.
- ◆ Do not cut in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
- ◆ Do not cut on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the cutting area, the area is well ventilated, and if necessary, while wearing an air supplied respirator. The coatings and any metals containing these elements can give off toxic fumes when cut.
- ◆ Do not cut containers with toxic or reactive materials inside or containers that have held toxic or reactive material-they must be emptied and properly cleaned first.



### ***Plasma Arc cutting can cause serious injury.***

The heat from the plasma arc can cause serious burns. The force of the arc adds greatly to the burn hazard. The intensely hot and powerful arc can quickly cut through gloves and tissue.

- ◆ Keep away from the torch tip.
- ◆ Do not grip material near the cutting path.
- ◆ The pilot arc can cause burns-keep away from torch tip when trigger is pressed.
- ◆ Wear proper flame-retardant clothing covering all exposed body areas.
- ◆ Point torch away from your body and toward work when pressing the trigger. Caution - pilot arc comes on immediately.
- ◆ Turn off power source and disconnect input power before disassembling torch or changing torch parts.
- ◆ Use only the plasma torch specified in the Owner's Manual.



### ***Cylinders can explode if damaged.***

Gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of metalworking processes, be sure to treat them carefully.

- ◆ Protect compressed gas cylinders from excessive heat, mechanical shocks, slag, open flame, sparks, and arcs.
- ◆ Install and secure cylinders in an upright position by chaining them to a stationary support or equipment cylinder rack to prevent falling or tipping.
- ◆ Keep cylinders away from any cutting or other electrical circuits.

- ◆ Never allow electrical contact between a plasma arc torch and cylinder.
- ◆ Never cut on a pressurized cylinder. Explosion will result.
- ◆ Keep protective cap in place over valve except when cylinder is in use or connected for use.
- ◆ Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.



### ***Hot Parts can cause severe burns.***

- ◆ Do not touch hot parts bare handed.
- ◆ Allow a cooling period before disassembling the plasma torch.



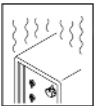
### ***Flying Metal can injure eyes.***

- ◆ Wear safety glasses with side shields or face shield.



### ***Magnetic Fields can affect pacemakers.***

- ◆ Pacemaker wearers keep away.
- ◆ Wearers should consult their doctor before going near plasma arc cutting operations.



### ***Overuse can cause Overheating.***

- ◆ Allow cooling period; follow rated duty cycle.
- ◆ Reduce amperage (thickness) or reduce duty cycle before starting to cut again.



### ***Exploding Hydrogen hazard.***

- ◆ When cutting aluminum underwater or with the water touching the underside of the aluminum, free hydrogen gas may collect under the work piece.
- ◆ See your cutting engineer and water table instructions for help.



### ***Plasma Arc Cutting can cause interference.***

- ◆ Electromagnetic energy can interfere with sensitive electronic equipment such as computers and computer-driven equipment such as robots.
- ◆ To reduce possible interference, keep cables as short as possible, close together, and down low, such as on the floor.
- ◆ Locate cutting operation 300 feet from any sensitive electronic equipment.
- ◆ Be sure this cutting power source is installed and grounded according to manual.
- ◆ If interference still occurs, the user must take extra measures such as moving the machine, using shielded cables, using line filter, or shielding the work area.

## ***M) Principal Safety Standards***

Safety in Welding and Cutting, ANSI standard A49.1 from American Welding Society, 550 N.W. LeJeune Rd, Miami FL 33126

Safety and Health Standards, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. government Printing Office, Washington, D.C. 20402.

Recommended Practices for Plasma Arc Cutting, American Welding Society Standard AWS C5.2 from American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202

Code for Safety in Welding and Cutting, CSA standard W117.2 from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices for Occupation and Educational Eye and Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 1430 Broadway, New York, NY 10018

Cutting and Welding Processes, NFPA Standard 51B, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

## ***N) EMF Information***

Considerations about Welding or Cutting and the Effects of Low Frequency Electric and Magnetic Fields.

Welding or cutting current, as it flows through the welding or cutting tables, will cause electromagnetic fields. There has been and still is some concern about such fields. However, after examining more than 500 studies spanning 17 years of research, a special blue ribbon committee of the Nation Research Council concluded that: "The body of evidence, in the committee's judgment, has not demonstrated that exposure to power-frequency electric and magnetic fields is a human health hazard." However studies are still going forth and evidence continues to be examined. Until the final conclusions of the research are reached, you may wish to minimize your exposure to electromagnetic fields when welding or cutting.

To reduce magnetic fields in the work place, use the following procedures:

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep cutting power source and cables as far away from operator as practical.
5. Connect work clamp to work piece as close to the cut as possible.

## ***About Pacemakers:***

Pacemaker wearers consult your doctor first. If cleared by your doctor, then following the above procedures is recommended.



## Inspection

After removing your plasma cutter from its shipping carton, inspect the plasma cutter for any concealed damage not seen upon receiving the unit. Any claims for loss or damage occurring during shipping must be filed by the purchaser with the freight company.

Check the inlet air supply at the rear of the cabinet to be sure no packing materials have gotten inside to obstruct the air flow to the plasma torch.

## Plasma/Cooling Gas Connection

Your Micro Cut 875S has been designed to use clean, dry compressed air as both the plasma and cooling gas. Water and/or oil in the air will significantly reduce the life of the electrode and the cutting nozzle, at the same time reducing the quality of the cut.

Safety sensing circuitry has been installed to eliminate arc-ignition if the pressure and volume are inadequate. The filter regulator is mounted on the back of your Micro Cut 875S. The inlet to the regulator is a standard 1/4" NPT female thread. Install a quick disconnect fitting which is compatible with your air line in the regulator.

Plasma/Cooling Gas Pressure	Volume
70 psi	3.2 cfm

To correctly set the air pressure, depress the purge button on the front of your Micro Cut 875S. While the air is flowing, lift up on the regulator adjusting knob, and set the air pressure to 70 psi. Push the regulator adjusting knob down to lock when finished.

Damage to your plasma cutter due to excessive water and/or oil in the air supply line is not covered under warranty. Your Micro Cut 875S comes equipped with a regulator/filter. In addition, HTP has 2 filters available for removing any impurities from the air. If you already have a drier on your compressor, we recommend the HTP Super Dry (Part # 25300) which is a disposable in-line filter. This filter uses a desiccant to completely remove all moisture from the air. The desiccant is blue when new and turns clear when the filter needs to be discarded.

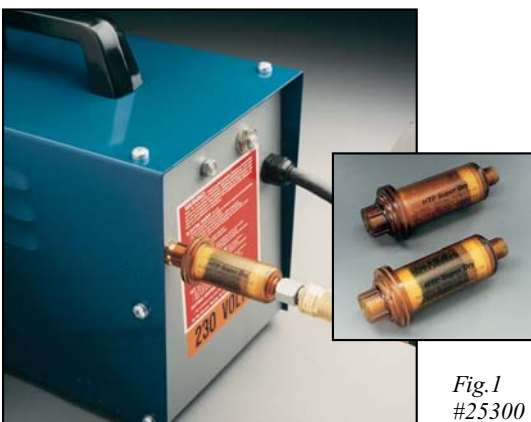


Fig.1  
#25300  
HTP Super Dry

If you do not have a drier on your compressor, we strongly recommend the HTP Max Dry (Part # 25310). This is a 3 stage



Fig.2 #25300  
HTP Super Dry

filter which completely removes all oil and water from the air. The first stage of the Max Dry removes the water which is present in the air. The second stage of the filter removes any oil which may be in the air along

with particulate down to .03 microns. The final stage is the desiccant drier, which removes the humidity from the air. The desiccant in the final stage is reusable. It is blue when it is fresh, and changes to pink when it has absorbed moisture. Just put the pink desiccant in the oven to bake the moisture out and reuse. This filter extends the life of your air tools and is great for painting also.

**WARNING: Check the air regulator set every day for proper pressure, volume and water/oil levels.**

## Electrical Connection

All electrical connections should be performed by a qualified electrician in accordance with the National Electrical Code and local codes and ordinances. When connecting your plasma cutter, the yellow-green wire **MUST BE CONNECTED TO GROUND, OR SERIOUS INJURY OR DEATH MAY RESULT!**

**ELECTRICAL SHOCK CAN KILL!** Do not connect an input wire to the ground terminal. Do not connect the ground (yellow-green or green) wire to an input (hot) line terminal. It is also strongly recommended that a fusible line disconnect switch be installed in the input power circuit to the plasma machine. This would provide a safe and easy method to remove all electrical power from your plasma system whenever it is necessary to perform internal inspection or servicing.

**BEFORE ATTEMPTING TO MAKE ANY PRIMARY POWER CONNECTIONS TO YOUR PLASMA CUTTER, BE SURE THAT ALL POWER IS OFF BY OPENING THE LINE DISCONNECT SWITCH.**

Your MicroCut 875S has been designed to operate from 220 volt single phase power wired for a minimum of 42 amps. The green or yellow-green wire must be connected to ground. The blue and brown wires must be connected to the hot legs of the 220-volt power.

## FRONT PANEL COMNTROLS

- 1) Input Power Light
- 2) Air Pressure Light
- 3) Thermo Switch Light
- 4) Safety Alarm
- 5) Cutting Power Adjustment
- 6) Reset Switch
- 7) Gas Purge Switch
- 8) Main Power Switch
- 9) Expanded Metal Switch
- 10) Plasma Torch Connection
- 11) Ground Cable Connection

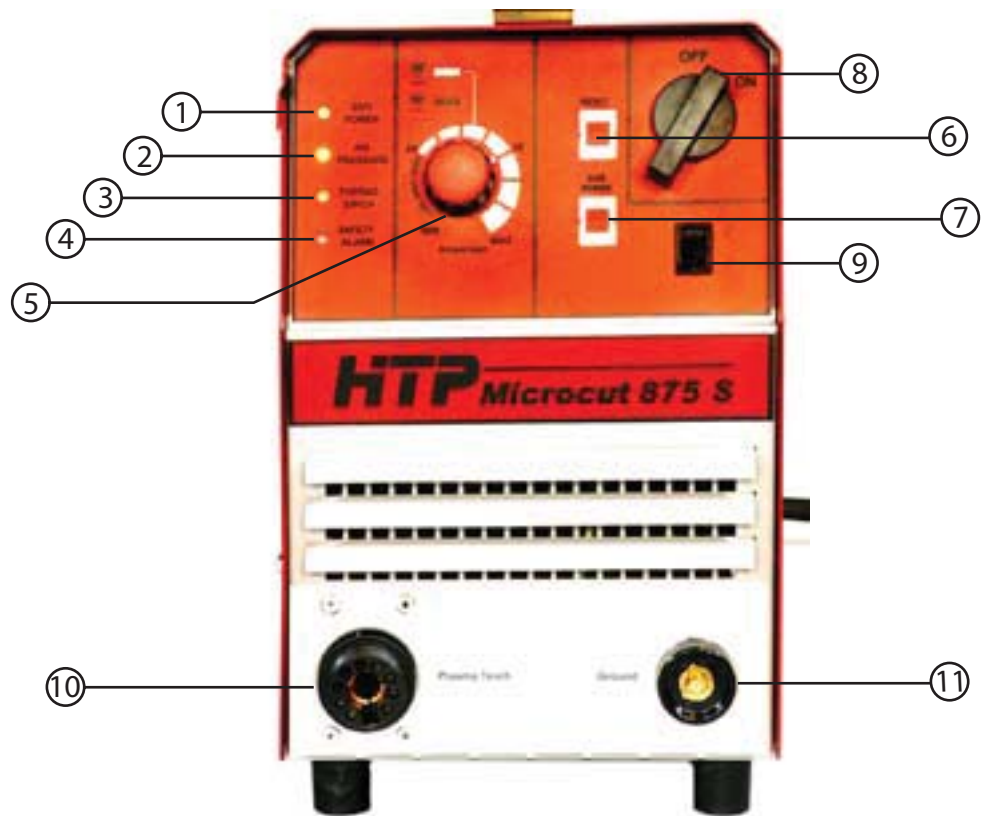


Fig. 3  
Micro Cut 875S Controls

1) **INPUT POWER LIGHT** - when the machine is correctly connected to a 220 volt input power supply, and the Main Power Switch (#8) is turned on, a green light will be illuminated, indicating your Micro Cut 875S is connected to the correct power supply.

2) **AIR PRESSURE LIGHT** - when the machine is correctly connected to an air supply and the regulator adjusted so the air pressure gauge reads above 40 psi, the green air pressure light will be illuminated. If the pressure falls below 40 psi, the green air pressure light will go out, and the Safety Alarm light will turn red.

It is important that the air pressure is set to 70 psi for the correct operation of the machine with the air pressure flowing.

3) **THERMO SWITCH LIGHT** - if the duty cycle of the machine is exceeded (40% at 60 amps) the yellow thermo switch light will be illuminated. If this happens, leave the machine on so the cooling fan

will continue to run, cooling the machine. When the machine has cooled down, the yellow light will go out.

4) **SAFETY ALARM LIGHT** - this lamp will illuminate red when the machine is first turned on. Pressing the reset button (# 6) turns the red Safety Alarm light off. If the red trouble light remains on, either the plasma torch is not installed correctly on the machine, the consumable parts are not installed correctly on the plasma torch or the air pressure is below 40 psi.

5) **CUTTING POWER ADJUSTMENT** - the cutting power adjustment controls the cutting amperage of your Micro Cut 875S. It is infinitely variable from 30 to 55 amps. At the lower power settings, the machine will throw fewer sparks - but will also cut slower. The maximum cutting power will give you the maximum cutting speed through all materials.



You can do drag cutting (resting the plasma torch on the work) when the amperage is set to 40 amps or less with the deflector and the 40 amp tip installed in the machine. For drag cutting over 40 amps, the drag shield cap and 60 amp cutting tip should be used.

6) **RESET SWITCH** - when the machine is turned on for the first time, the red trouble light will be illuminated. If the machine is connected to the correct power source, the correct air supply, and the torch is installed correctly; depressing the reset button will turn off the red trouble light and allow you to begin cutting.

7) **GAS PURGE SWITCH** - the gas purge switch allows you to purge air through the torch, allows you to manually cool the cutting torch after long periods of cutting, and allows you to set the air pressure while the air is flowing through the plasma torch.

To purge the torch, simply press the gas purge button. Air will start to flow. The air will stop flowing automatically.

8) **MAIN POWER SWITCH** – Turning the main power switch will supply 230 volt power to your Micro Cut 875S. When you are finished operating the machine, turn the power switch off.

9) **MANUAL/AUTOMATIC CUTTING SWITCH** - The manual/automatic selection switch allows you to select between manual cutting and

automatic cutting. In the manual mode, when the plasma arc loses contact with the material being cut, the arc will extinguish. To reestablish the arc, the trigger must be released and then depressed. The arc will then ignite. Manual cutting is designated by the solid line, or the upper switch position.

In the Automatic Cutting mode, the machine will automatically re-start the arc if contact is lost with the metal. This setting is good if you are trying to cut expanded metal. The Automatic mode is designated by the dashed line, or the lower position.

We recommend leaving the machine in the manual setting unless there is some need to have the arc automatically ignite once contact is lost with the metal.

10) **PLASMA TORCH CONNECTION** - the central adapter block is where the plasma torch connects to the front of your Micro Cut 875S. Your machine will not operate without the torch properly connected. (see page 5 - plasma torch connection)

11) **GROUND CABLE CONNECTION** - this is where the ground cable connects to the front of your Micro Cut 875S. Align the tab on the ground clamp with the notch in the connection. Insert the ground clamp and twist to lock in place. Be sure to connect the ground clamp to a clean freshly ground off spot on the work piece.

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## Ground Cable Connection

Assemble the ground cable as shown in Figure 3. The ground cable is connected to the front (See Fig 3, #11) of the machine. Plug the cable into the receptacle and twist clockwise until tight.

Connect the ground clamp as close to the workpiece as possible. This will reduce the possibility of current loss through stray paths. Always connect the clamp to clean, bare metal. Do not connect the ground clamp to the piece which will be cut off.

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## Plasma Torch Connection

Disconnect power from the machine. The plasma cutting torch on your Micro Cut 875S is a quick-disconnect design, allowing you to easily remove and install the cutting torch without any tools. This makes it very easy to transport your machine or service the cutting torch.

To install the cutting torch, insert the copper plug into the center of the adapter block mounted on the front of the plasma cutter. (See Fig 3, #10) Rotate the plasma torch until the male plastic tab on the plasma torch fits into the cutout on the bottom of the adapter block. Firmly push the plasma torch into the adapter block and secure it by tightening the adapter nut until snug.

## Operation

1. Be sure your Micro Cut 875S is connected to a clean, dry source of compressed air with a line pressure of at least 80 but not more than 140 psi.
2. Connect your Micro Cut 875S to a 230 volt power supply. (see electrical connection). Turn the On-Off switch on. The green 230 V light and the green air pressure light will turn on. The fan will begin to run. The red trouble light will be on. Press the reset switch to turn the trouble light off.
3. Refer to the safety suggestions to be sure the operator has the correct eye protection, gloves, clothing, and that all of the safety precautions have been followed.
4. Place the cutting torch on the edge of the material to be cut. Depress the trigger on the cutting torch. Pre-air flow will occur for about 1/2 second. The pilot arc will start immediately after that. Once the main arc is established, **KEEP THE PLASMA TORCH IN CONTACT WITH THE WORKPIECE** if you are using the drag cutting tip. Adjust the cutting speed based on the thickness and type of material you are cutting. Hold the plasma torch perpendicular to the work. Move the plasma torch at a speed which keeps the plasma arc bent anywhere from 5 to 15 degrees. (See Fig 4). When you release the trigger, the arc will stop, but air will continue to flow for about 30 seconds to cool the plasma torch. When using the drag cutting tip, the highest cutting efficiency is achieved by keeping the plasma cutting tip perpendicular and in contact with the work surface putting very little downforce on the plasma torch. If you move too fast, sparks will shoot up and you will not cut all the way through the work. If you are cutting correctly all the plasma sparks will go beneath the panel you are cutting.

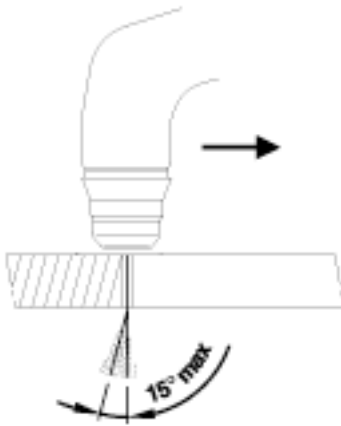


Fig. 4

5. When piercing a thicker sheet of steel (1/4" and greater) hold the torch at approximately a 45 degree angle and gradually roll the torch until it is perpendicular to the work piece (See Fig. 5) If the torch is held perpendicular to the

work to start, there will be no where for the slag to flow, and it will come straight up and damage the gas diffuser, cutting tip, and electrode.

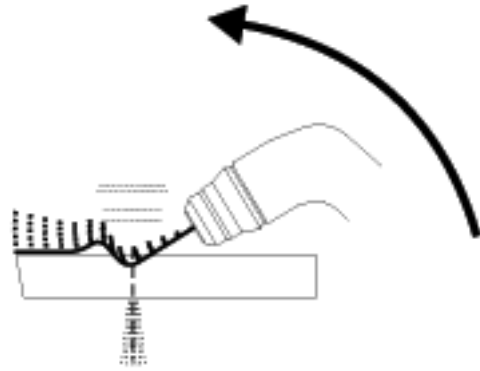


Fig. 5

**WARNING: Never disassemble the cutting torch unless the machine has been disconnected from its power supply.**

## Maintenance and Service

Always disconnect the machine from the main power source before performing any maintenance or service work.

### Consumable Parts:

1. Check nozzle and electrode often for excessive wear due to cutting. The electrode will develop a pit in the center of it. When the pit reaches approximately 1/16" deep, the electrode should be replaced. (See Fig. 6)

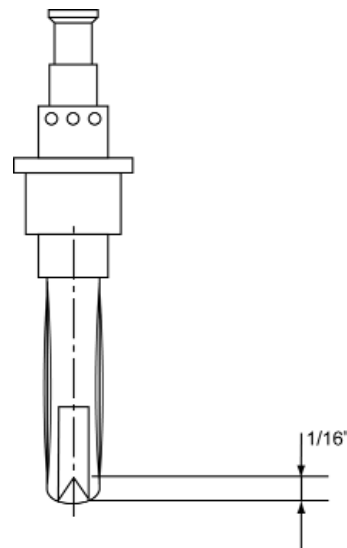


Fig. 6

Likewise, when the hole in the center of the cutting tip becomes enlarged to approximately 1/16" in diameter, the cutting efficiency will be reduced and the cutting tip should be replaced. (See Fig. 7)

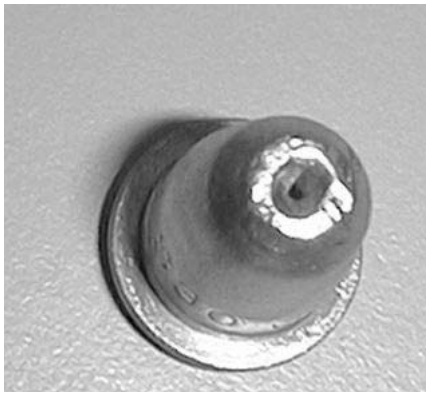


Fig. 7

2. Clean exposed torch consumables often. This will maintain their life.
3. Check nozzle and electrode often for proper installation.
4. Frequently check the air supply quality. This is the single most important factor in the maintenance of the plasma system.

**After Each Use:**

1. Check the cutting tip, electrode, and shield cap for wear.
2. Make sure the air is set to 70 psi while it is flowing.

**Every Week**

1. Check the parts in place safety circuit to make sure it is working

**Every 3 Months**

1. Remove the side panels and blow the dust out of the machine with compressed air.
2. Replace any cracked parts.
3. Check the torch handle for cracks and replace if necessary.
4. Frequently check the air supply quality. This is the single most important factor in the maintenance of the plasma system.
5. If any damage to the machine or torch is noticed, contact your local distributor or HTP America, Inc. directly at 1-800-USA-WELD.

IF ANY SERVICE OTHER THAN THE AFOREMENTIONED IS NECESSARY, IT SHOULD BE PERFORMED BY AUTHORIZED PERSONNEL ONLY.

## Cutting Tips

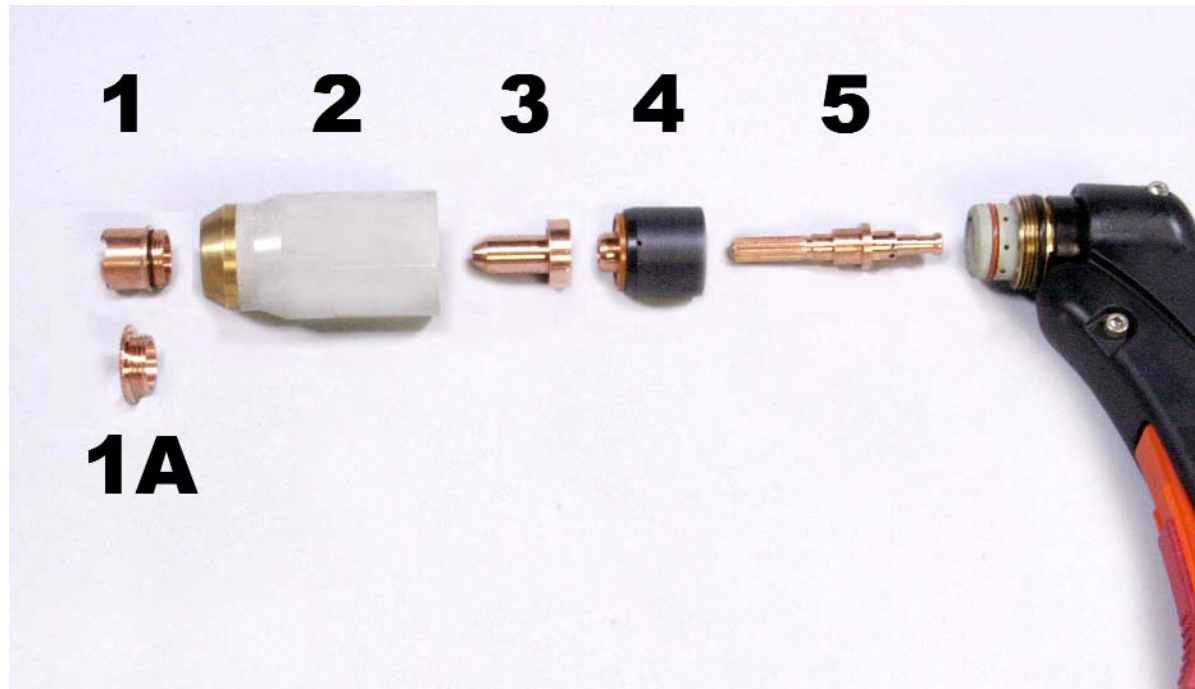
1. When making long, straight cuts, it may be easier to use a metal straight edge as a guide. Simply clamp it to the work piece to be cut. HTP America, Inc. also manufactures a complete Circle-Cutting and Straight-Line Traversing Assembly for frequent cutting of circles and lines.



Fig. 8 Circle Cutting Attachment

2. When cutting heavier gauge material (up to the machine capability) it is recommended to initiate the pilot arc off the edge of the material and dragging the pilot arc to the work piece.
3. When making rust repairs, it is possible to place the new metal over the rusted area and then cut your patch panel at the same time you cut the rust. This process works similarly when splicing a quarter panel.
4. Please note that sparks from cutting arcs can damage painted surfaces. The sparks will also pit glass. We recommend the use of a welding blanket to protect these surfaces.
5. The best cutting speed is achieved when the plasma arc penetrates the work piece at an angle of 5-15 degrees. The cutting speed is dependent on material thickness and composition as well as operator proficiency.
6. Never turn the machine off immediately after cutting. Always allow the post air flow circuitry to run its complete cycle to ensure proper cooling of the torch head.
7. It is highly recommended that piercing requirements be kept to a maximum of 75% of rated cutting thickness. This will greatly enhance the plasma torch's consumable life. When piercing thick pieces of metal, it is best to hold the cutting torch at a 45 degree angle to the work until the plasma arc has pierced the material. Holding the torch perpendicular to the work will result in sparks and slag firing back up into the plasma torch, greatly reducing consumable life.

# MicroCut 875S Torch Parts Breakdown



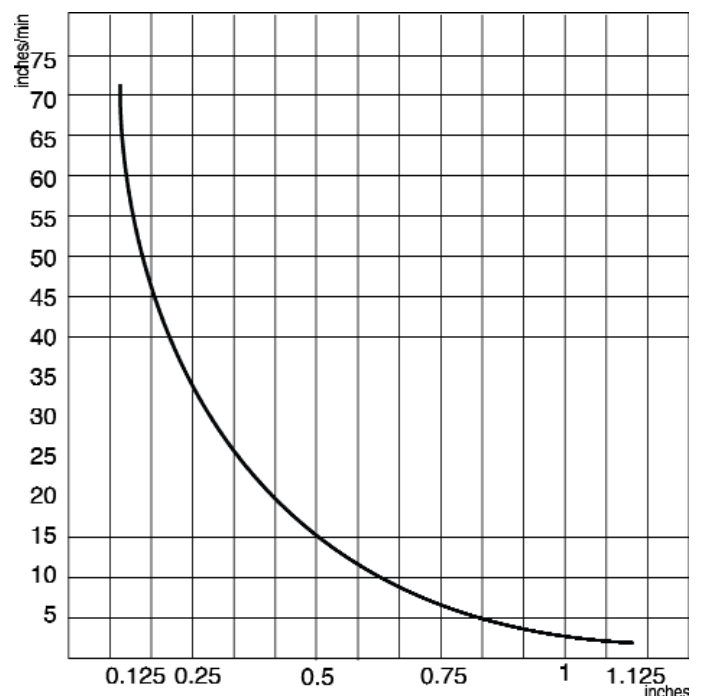
Ref #	Description	Part #	Ref #	Description	Part #
1	Shield Cap - Drag Cutting	87005D	3	Cutting Tip - 60 Amp	870030-60
1A	Shield Cap - Stand Off	87005SO		Cutting Tip - 40 Amp	870030-40
	Shield Cap - Gouging	87005G		Cutting Tip - Wide	870030-W
2	Safety Cup	87005		Cutting Tip - Medium	870030-M
			4	Start Cartridge	87058
			5	Electrode	87003

## HTP MICROCUT 875S SPECIFICATIONS:

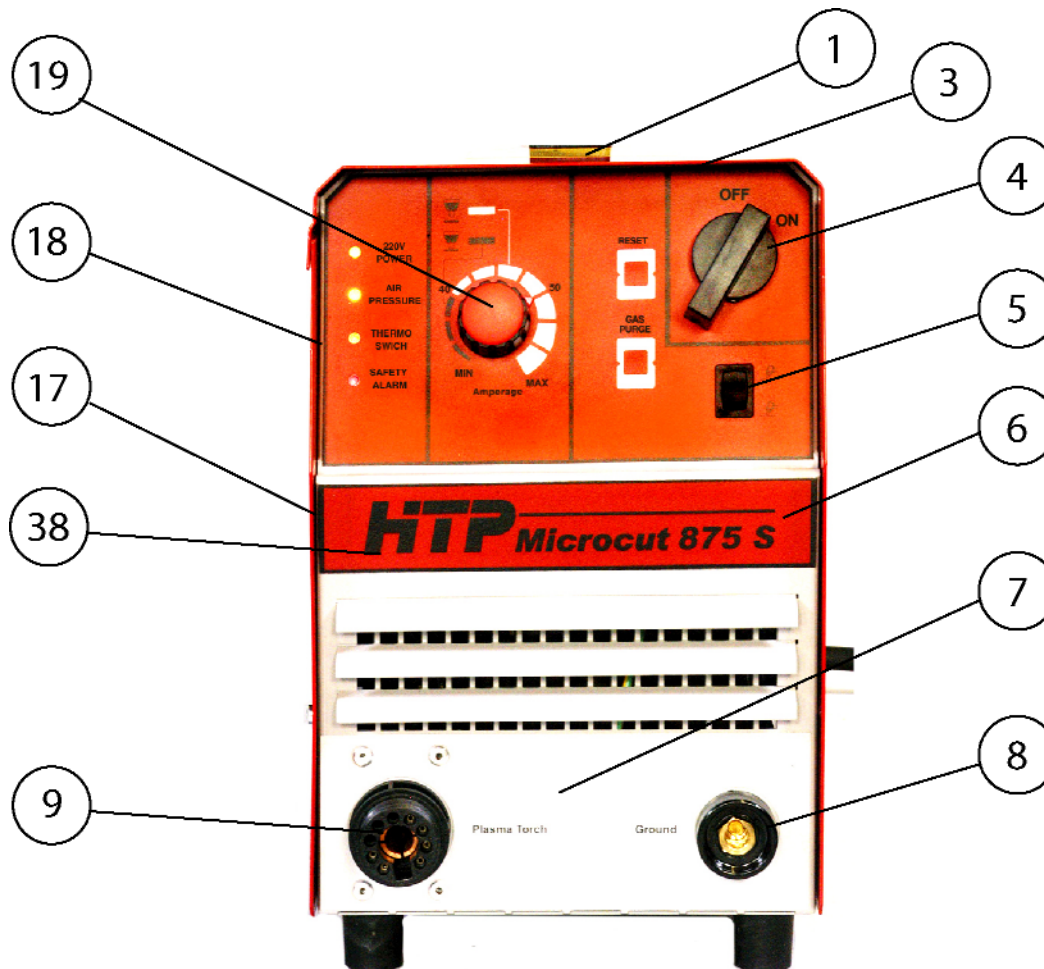
Primary Voltage	230 volts
Primary Amperage	40 amps
Cutting Current	30 to 55 amps
	Infinitely Variable
Open Circuit Voltage	320 Volts DC
Duty Cycle	40% @ 55 amps
	100% @ 45 amps
Cutting Voltage	102 VDC @ 55 amps
	96 VDC @ 45 Amps
Quality Cutting Capacity	_ " @ 7 _"/min
Severance Cutting Capacity	1 1/8" @ 3"/min
Weight	40 lbs.
Dimensions	22" L x 8" W x 11 1/2" H
Cutting Torch Length	20ft.
Ground Cable Length	10 ft.
Input power cord length	12 ft.
Plasma/Cooling Gas Pressure	70 psi
Plasma/Cooling Gas Volume	3.2 cfm

## Cutting Speed Chart

MicroCut 875S 40 amps



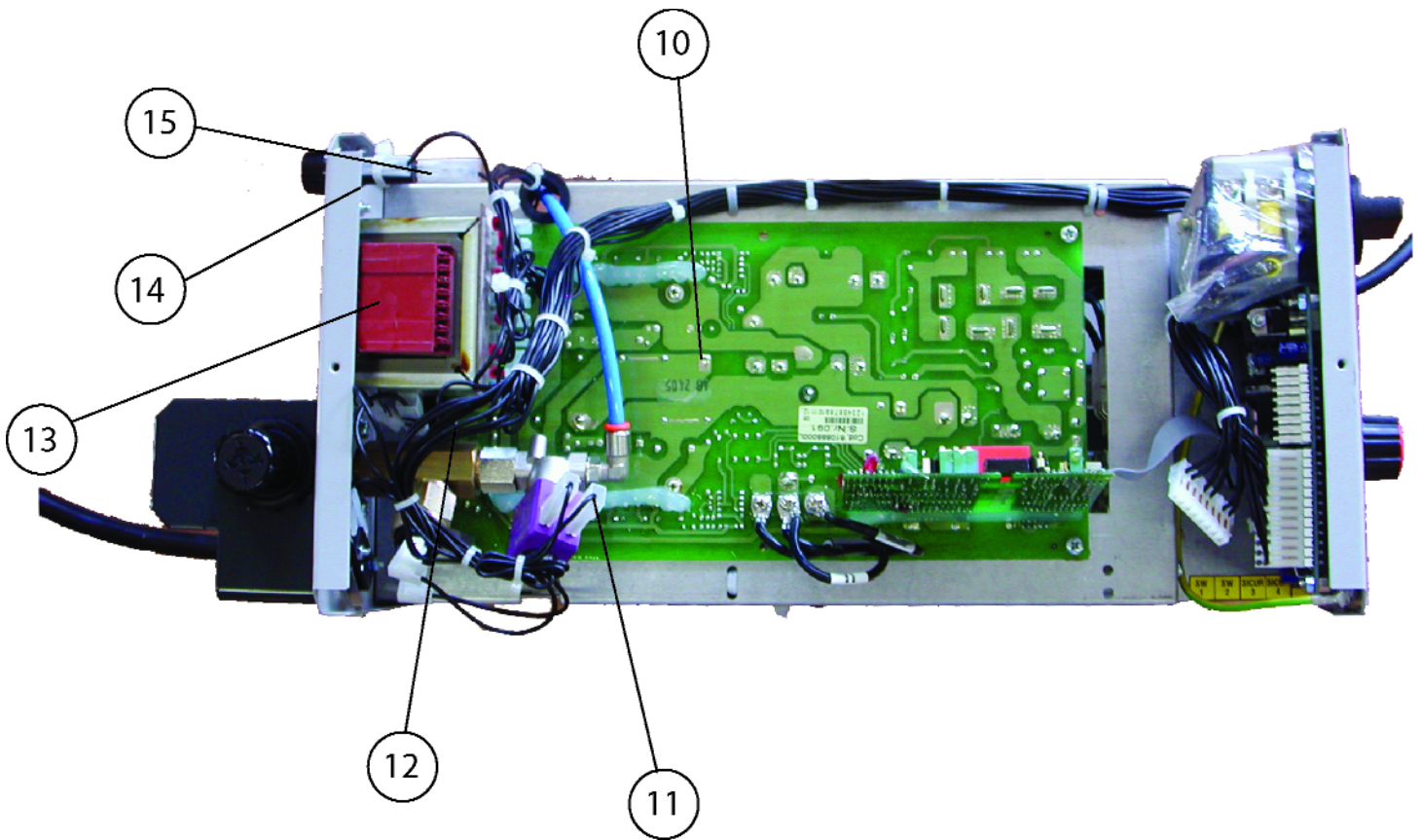
## MicroCut 875S Parts Breakdown part 1



Part #	Illus #	Description
66109	1	Handle
62019	3	Top Cover
66231	4	Knob - On-Off Switch
64188	5	Manual/Auto Switch
660554	6	ID Label
660555	7	Torch - Ground Label
20320	8	Female Ground Receptacle
22312		Male Ground Plug
22310		Ground Clamp Complete
61471	9	Female Torch Receptacle
660556	17	Decal - Side Panel
62020	18	Side Panel
66028	19	Knob - Amperage
660553	38	Front Panel Label

## MicroCut 875S Parts Breakdown part 2

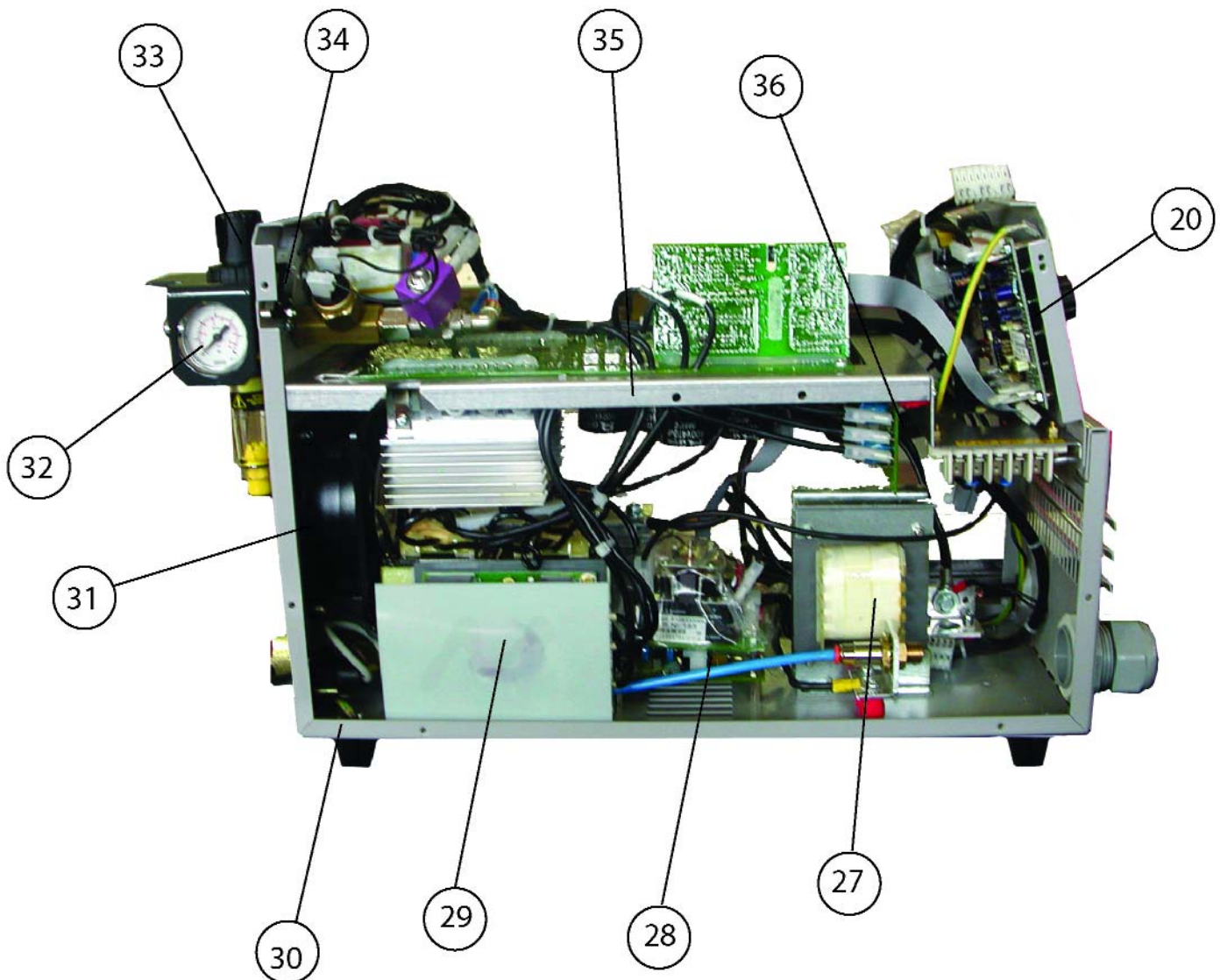
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<b>Part #</b>	<b>Illus #</b>	<b>Description</b>
610889	10	PCB - Primary Power
64393	11	Gas Solenoid Valve
64032	12	Pressure Safety Switch
650193	13	Control Transformer
64180	14	Fuse Holder
203335-2	15	Fuse



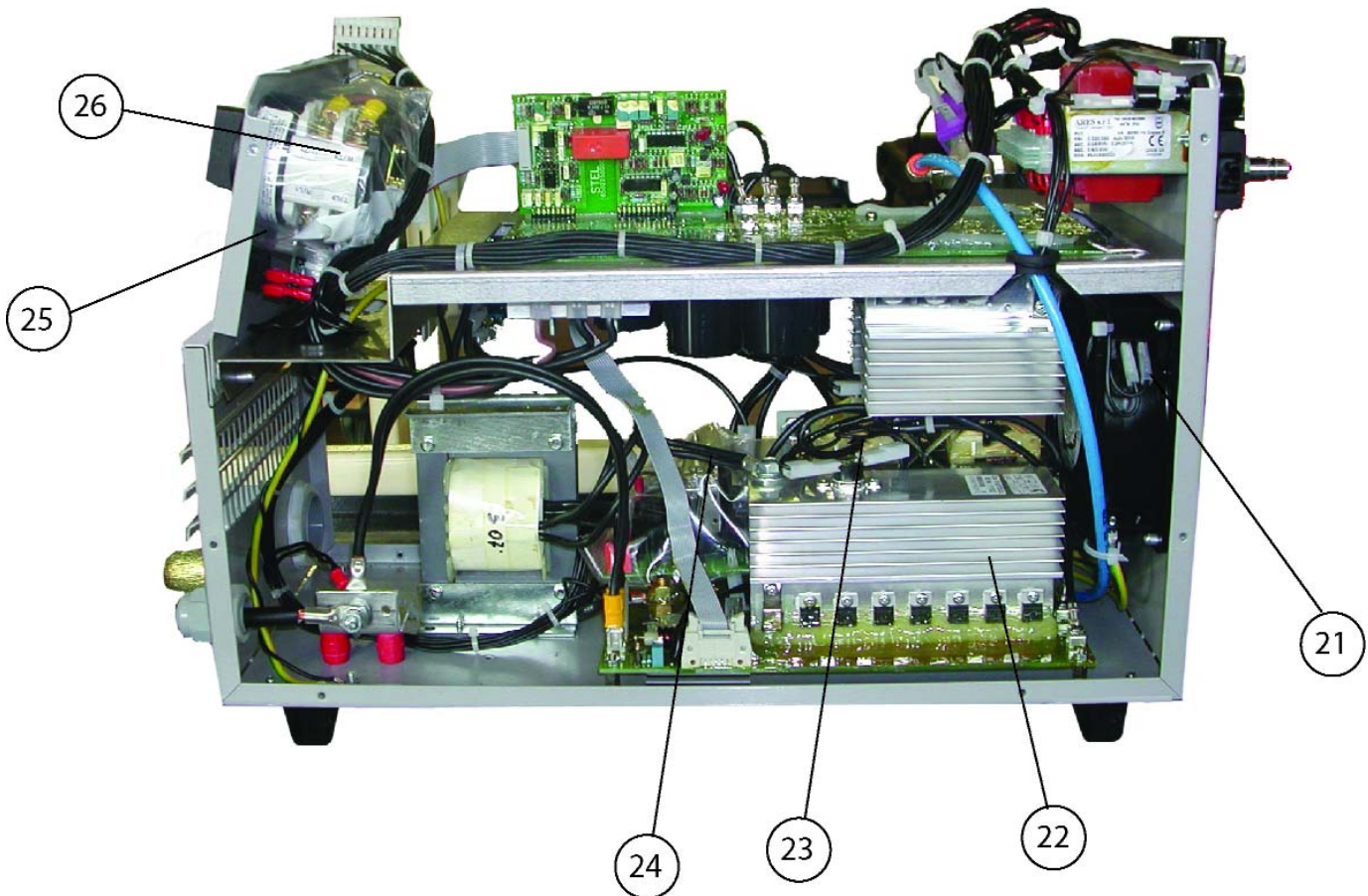
## MicroCut 875S Parts Breakdown part 3



Part #	Illus #	Description
611124	20	PCB - Front Panel
61307	27	Choke Coil
66160	28	Gas Hose
61733	29	PCB - Input Power
62018	30	Cabinet - Base
64215	31	Thermoswitch - 70°C
63053	32	Pressure Guage
63055	33	Regulator
64132	34	MicroSwitch - Safety
62639	35	Center Panel
62022	36	Regulator Bracket

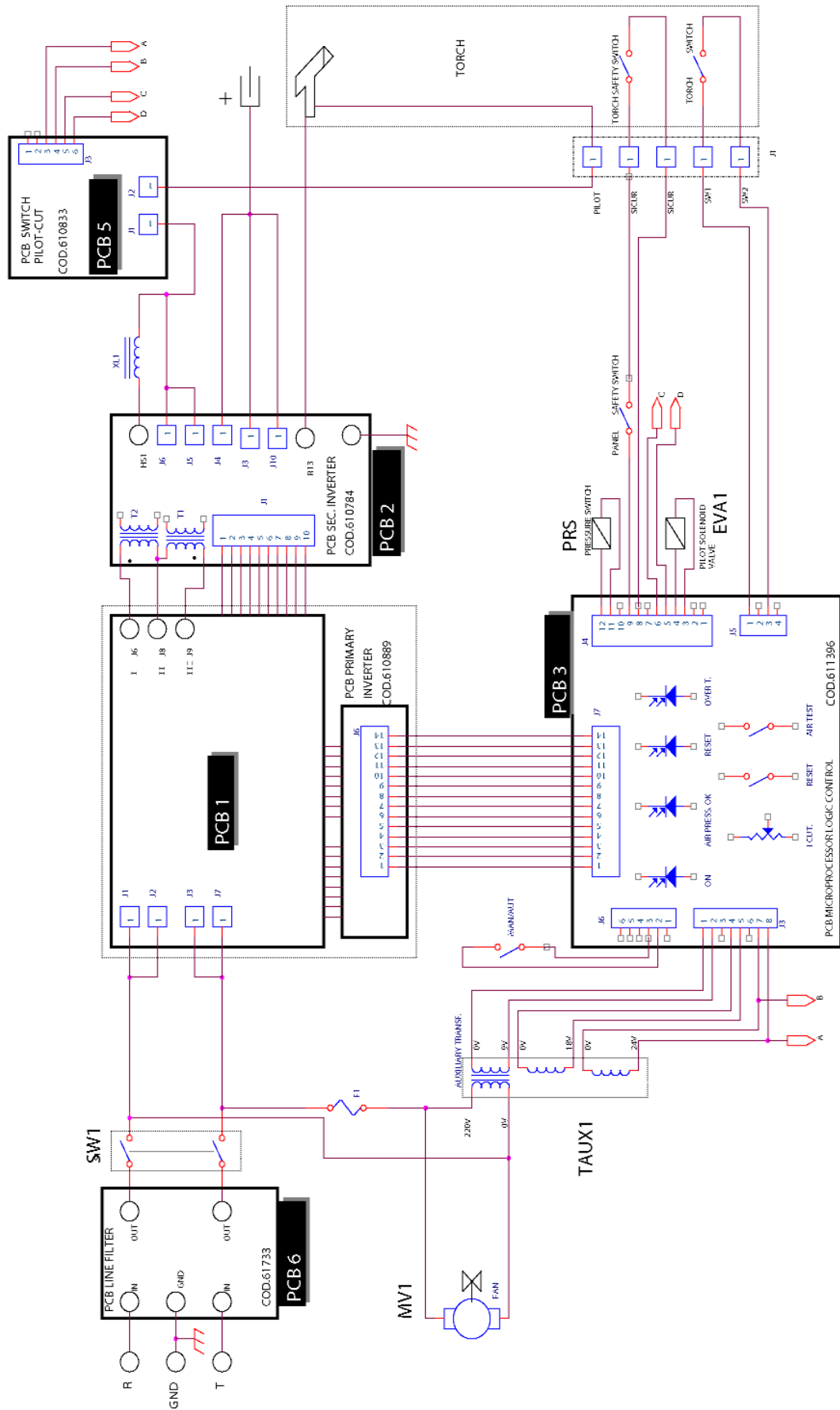
## MicroCut 875S Parts Breakdown part 4

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<b>Part #</b>	<b>Illus #</b>	<b>Description</b>
64182	21	Cooling Fan
610784	22	SPCB - Secondary Power
65775	23	Thermoswitch - 80°C
610833	24	PCB - Pilot Switchover
62572	25	Front Panel
64154	26	On-Off Switch

# MicroCut 875S Wiring Diagram



# MicroCut 875S Trouble Shooting Guide

