

Owner's Manual

HTP Micro Cut 500



HTP America Inc.

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Congratulations on your purchase of an HTP Micro Cut 500. Your Micro Cut 500 means that 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 500. 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, and correctly follow the operating instructions, you will significantly shorten the operating life of your plasma cutter.

Warning: 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 new and unused Equipment furnished by HTP is 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.

Except as specified below, HTP's warranty does not apply to components having normal useful life of less than one (1) year, such as relay and contactor points.

HTP shall be required to honor warranty claims on warranted Equipment in the event of failure resulting from a defect within the following periods from the date of delivery of Equipment to the original user:

1. Welders, power sources and components: 1 year.
2. All welding guns and 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 Palatine, 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.

Safety Precautions

WARNING: Before performing any installation or operating procedures read and follow the safety precautions listed below. Failure to observe these safety precautions can result in personal injury or death.

Personal Protection: Skin and eye burns resulting from body exposure to the electric-arc welding rays or hot metal can be more severe than sunburn:

- a. Use a proper face shield fitted with correct filter and cover plates to protect your eyes, face, neck and ears from sparks and rays of the cutting arc when cutting or observing cutting. WARN bystanders not to watch the arc or expose themselves to the welding-arc rays or hot metal.
- b. Wear flameproof gauntlet-type gloves, heavy long-sleeve shirt, cuffless trousers, high topped shoes and a welding helmet or cap for hair protection to protect the skin from arc rays and hot sparks or metal. A flameproof apron may also be desirable as protection against radiated heat and sparks.
- c. Hot sparks or metal can lodge in rolled up sleeves, trouser cuffs or pockets. Sleeves and collars should be buttoned, and pockets eliminated from the front of the clothing. Protect other nearby personnel from arc rays and sparks with a suitable non-flammable partition.
- d. Always wear safety glasses or goggles within the cutting area. Use safety glasses with side shields or goggles when chipping slag or grinding. Chipped slag is hot and can travel considerable distances. Bystanders should also wear safety glasses or goggles.

Fire Protection: Hot slag, or sparks, can cause serious fires when in contact with combustible solids, liquids or gases:

- a. Remove all combustible materials well away from the welding area or completely cover the materials with a non-flammable covering. Such combustible materials include wood, clothing, sawdust, gasoline, kerosene, paints, solvents, natural gas, acetylene, propane and similar combustible articles.
- b. Hot sparks or hot metals can fall into cracks in floors or wall openings and cause a hidden smouldering fire. Make certain that such openings are protected from hot sparks and metal. Do not weld, cut or perform other work on used barrels, drums, tanks or other containers until they have been completely cleaned.
- c. For fire protection, have fire extinguishing equipment handy for instant use. After completion of cutting, inspect the work area for hazardous hot sparks or metal.

Electrical Shock: Voltages in excess of 110V can cause severe burns or fatal shock. Severity of electrical shock is determined by the path and amount of current through the body:

- a. Never allow live metal parts to touch bare skin or wet clothing. When standing on metal or welding in a damp area you must be well-insulated. Wear dry gloves and rubber-soled shoes. Stand on a dry board or platform.
- b. Always ground the plasma cutter by connecting a ground wire between the machine and electrical ground. Do not use worn, damaged or overloaded welding cables. Use well maintained equipment.
- c. When not cutting, turn off the equipment. Accidental grounding can cause overheating and create a fire hazard. Do not coil or loop the welding cable around parts of your body. Be sure the ground cable is connected to the workpiece as close to the cutting area as possible. Ground connected to building framework or remote locations increase the possibility of the stray cutting current.
- d. Keep everything dry; clothing, work area, welding cables, electrode holder, and cutting machine. Fix water leaks immediately.

Ventilation: Cutting fumes, particularly in confined places, can cause discomfort and physical harm if breathed over an extended period of time:

- a. Provide adequate ventilation by natural or mechanical means. Do not cut on galvanized zinc, lead, beryllium, or cadmium materials unless positive mechanical ventilation is provided!
- b. Do not cut in locations close to chlorinated hydrocarbon vapors from degreasing or spraying operations. Heat or arc rays react with solvent vapors forming phosgene, a highly toxic gas.
- c. If you develop momentary eye, nose or throat irritation during cutting, ventilation is not adequate. Stop work and take necessary steps to improve ventilation. Discontinue cutting if physical discomfort persists.
- d. Refer to AWS Standard Z49.1 in Item 6 for specific ventilation recommendations.

Equipment Maintenance: Faulty or improperly maintained plasma cutting equipment results in poor cut-quality. It can cause physical injury or death through fires or electrical shock.

- a. Whenever possible, have a qualified person perform the installation, troubleshooting and maintenance work on the plasma cutter. Do not perform any electrical work on the plasma cutter unless qualified to perform such work. Before performing any maintenance work inside the plasma cutter, disconnect the machine from the main electrical power source.
- b. Maintain plasma cutting cables, grounding wire and connections, power cord and plasma cutter in safe working order. Do not operate the welding machine or accessory equipment in faulty condition. Keep the equipment away from heat sources such as furnaces, wet conditions such as water puddles, oil or grease, corrosive atmospheres and inclement weather.
- c. Keep all safety devices and cabinet covers in position and in good repair. Use the plasma cutter for its intended purpose and do not modify it in any manner. Unauthorized maintenance repair will result in loss of warranty coverage.

Additional Safety Information:

- a. "Safety in Welding and Cutting" - AWS Z49.1
- b. "Recommended Safe Practices for Gas-Shielded Arc Welding" - AWS A6.1
- c. "Safe Practices for Welding and Cutting Containers that Have Held Combustibles" - AWS A6.0
- d. "Recommended Safe Practices for Plasma Arc Cutting" - AWS A6.3
- e. "Recommended Safe Practices for Plasma Arc Welding" - AWS C5.1

Inspection

After removing your Microcut 500 from its shipping carton, inspect the plasma system 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 side of the cabinet to be sure no packing materials have gotten inside to obstruct the air flow to the plasma torch.

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 Micro Cut 500, the 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 (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 MICRO CUT 500, BE SURE THAT ALL POWER IS OFF BY OPENING THE LINE DISCONNECT SWITCH.

Your Micro Cut 500 has been designed to operate from 220 volt single phase power wired for a minimum of 36 amps. The green wire must be connected to ground.

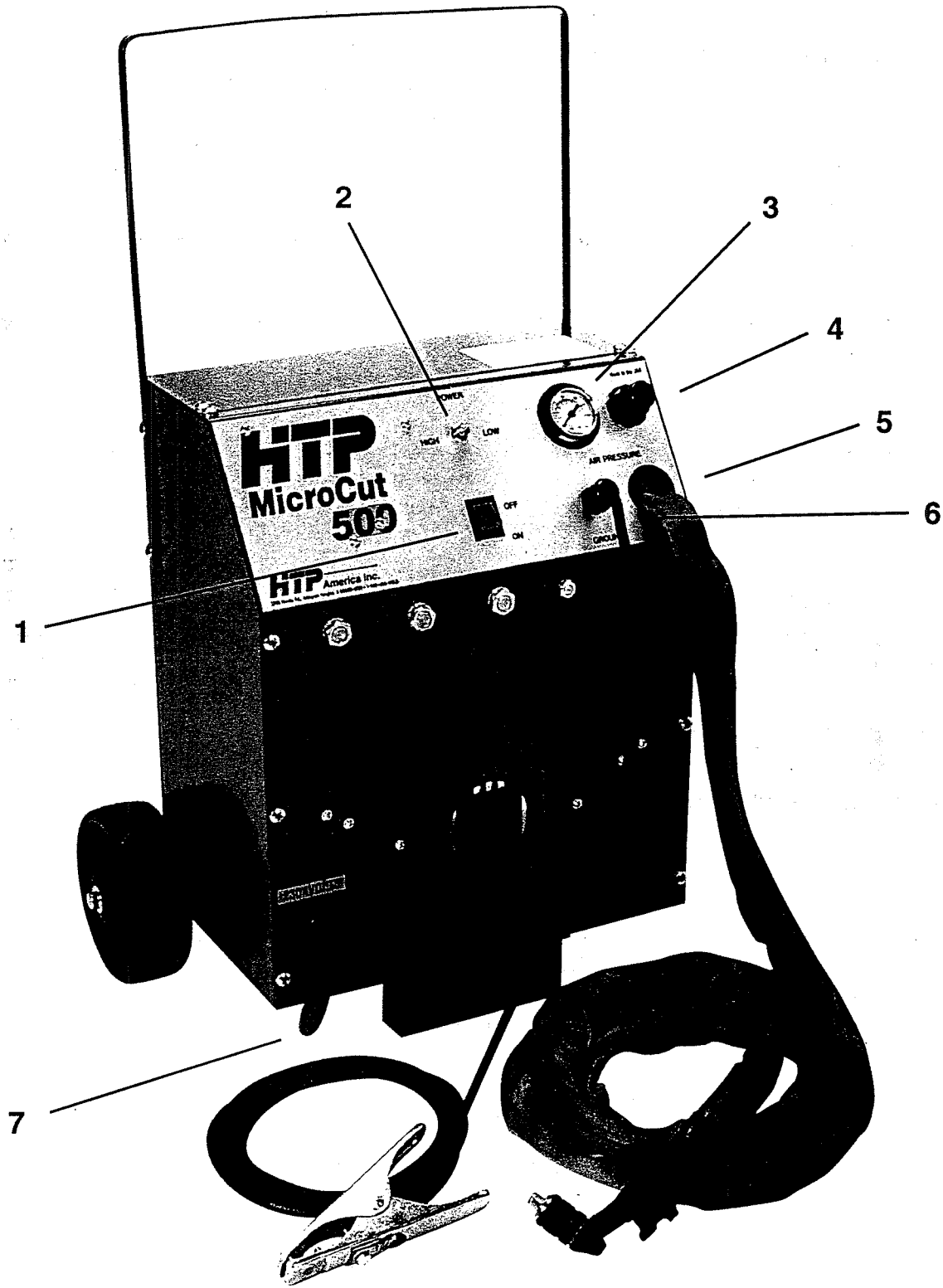
Plasma/Cooling Gas Connection

Your Micro Cut 500 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. The unit requires 3 1/2 cfm @ 60 psi.

Safety sensing circuitry has been installed to eliminate arc-initiation if the pressure and volume are inadequate. Set your air pressure to 60 psi with air flowing through the torch by adjusting the regulator on the front of the cutter.

Damage to your Plasma Cutter due to excessive water and/or oil in the air supply line is not covered under warranty. HTP recommends our #25300 Super Dry disposable filter or our #25310 Max Dry filter as a solution to excessive water or oil.

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



Front Panel Controls

1. **ON-OFF SWITCH** - This switch controls the input power to your plasma cutter. Turning the switch to the on position will illuminate an indicator lamp in the On-Off switch and activate the cooling fan.
2. **POWER SWITCH** - The power switch has 2 settings - "HIGH" which is 50 amps, and "LOW" which is 30 amps. When it is desirable not to throw alot of sparks and when working with materials under 3/16", use the low setting. When you are not concerned with sparks, and want the maximum cutting speed, with the best quality cut, use the high setting. When using the high setting, be sure to install the 1.4mm cutting tip (#23130-1.4).
3. **PRESSURE GAUGE** - The pressure gauge measures the plasma gas pressure and should be set at 60 psi with air flowing through the plasma torch.
4. **REGULATOR** - The regulator is used to adjust the plasma gas pressure. To adjust the pressure, pull the knob out to unlock the regulator, turn the knob clockwise to increase the pressure, counter-clockwise to decrease the pressure. When you have finished adjusting the pressure, push the knob in to lock.
5. **PLASMA TORCH** - This is where the plasma torch fits through the front panel of the machine. Your Micro Cut 500 uses the # 25512 plasma torch which uses a high frequency pilot arc to start the arc. This cutter should not be used on equipment which has any sensitive electronic equipment or computer modules.
6. **GROUND CLAMP** - connect the ground clamp as close to the area to be cut as possible. Always connect the clamp to clean bare metal. For maximum efficiency, always use a grinder to clean the metal where the ground clamp will be connected. Do not connect the ground clamp to the piece which will be cut off.
7. **INPUT POWER CORD** - connect your input power cord to a suitable 220 volt power supply - see electrical connection.

Operation

1. Be sure your Micro Cut 500 is connected to a clean, dry source of compressed air with a line pressure between 80 and 100 psi.
2. Connect your Micro Cut 500 to a 220 volt power supply. (see electrical connection). Turn the On-Off switch on. The indicator lamp will light and the fan will begin to turn.
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. Connect the ground clamp to a clean surface on the vehicle or the work piece that is as close as possible to the area to be cut. Make sure the ground clamp comes in contact with clean, bare metal. The Micro Cut 500 uses a high frequency pilot arc to initiate the arc. The use of this plasma cutter is not recommended for use on any vehicles or equipment which have on board computers or sensitive electrical equipment. If you are working on a vehicle, make sure the ignition is off, and disconnect the battery.
5. Select the correct power setting for your cutting application. If you select the "HIGH" power setting, be sure to install the 23130-1.4 cutting tip. If you select the "LOW" power setting, use the standard 23130 cutting tip. Also, your Gas Diffuser has a brass ring on the back. When the Gas Diffuser is correctly installed on the torch, the brass ring will contact 2 pins protruding from the torch head. This is a safety which disarms the trigger when the gas diffuser is removed.
6. Now we are ready to cut. When you depress the trigger on the cutting torch, the arc will immediately fire. Do not press the trigger unless all hands and body parts are clear of the cutting tip.

With the trigger depressed, bring the cutting torch in contact with the edge of the work. The highest cutting efficiency is achieved by keeping the plasma cutting nozzle perpendicular and in contact with the work surface putting very little downforce on the plasma torch. Slowly, begin to move the plasma torch where you want the metal to be cut. 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.

To stop cutting, simply release the trigger on the plasma torch, and the arc will extinguish. After you have stopped cutting, the cutting nozzle, electrode, and gas diffuser will be hot. There is a post air flow which will allow air to flow through the plasma torch without an arc for an additional 30 to 60 seconds to cool the torch.

WARNING - Never obstruct the plasma torch nozzle. Always point the torch head away from yourself and bystanders. Severe shocks and/or burns may occur if operated carelessly.

Maintenance and Service

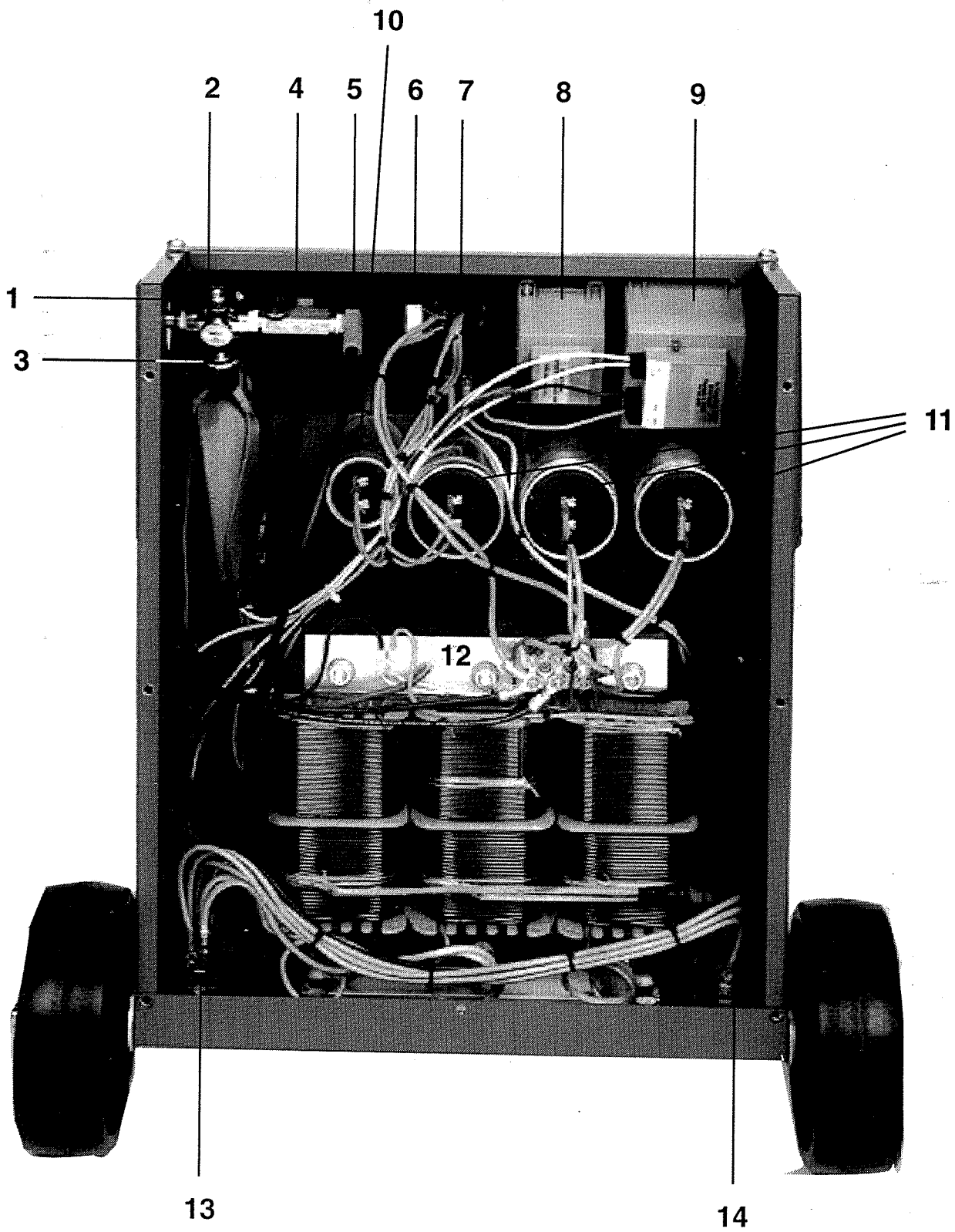
Always disconnect the machine from the main power source before performing any maintenance or service work.

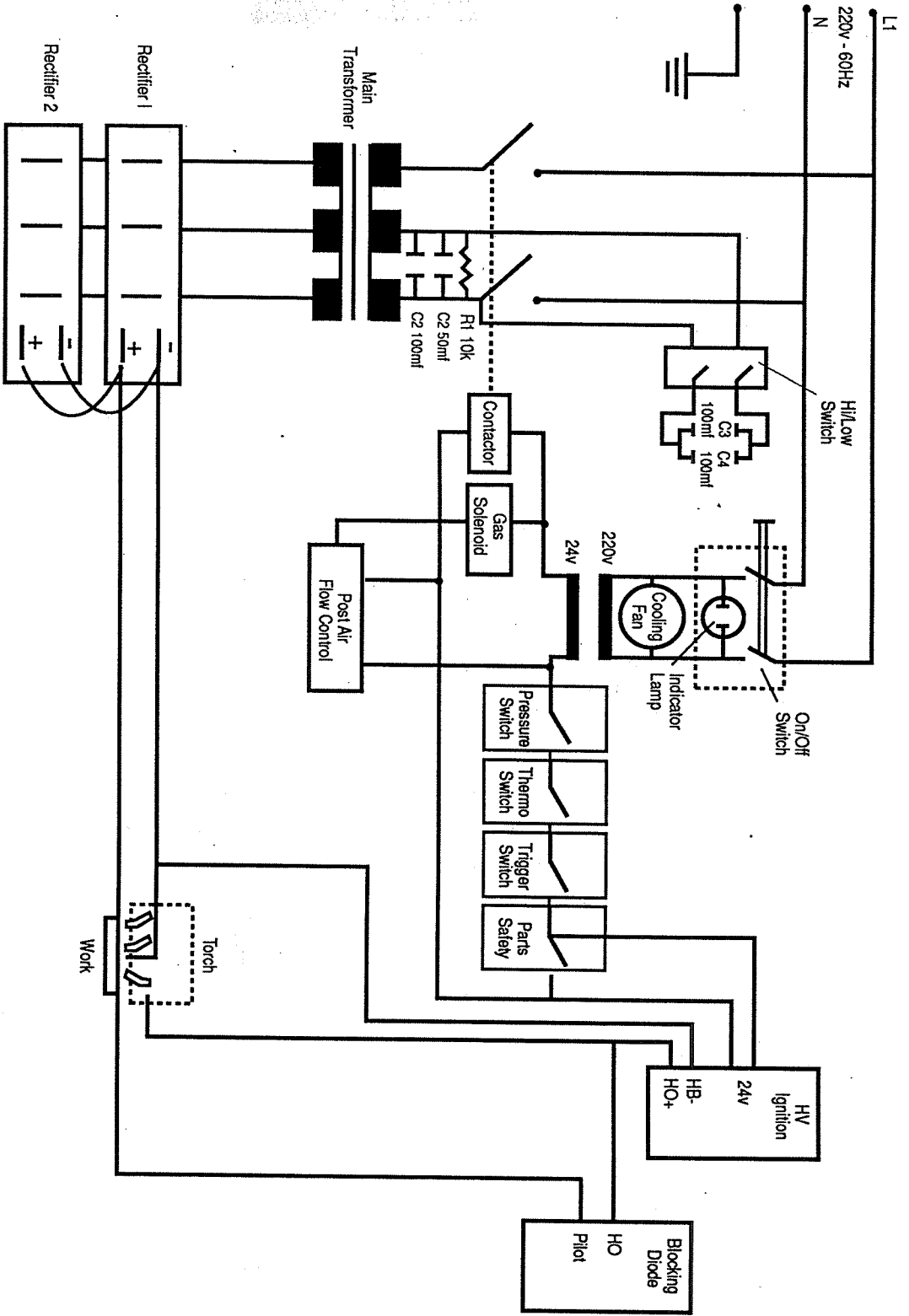
1. Remove machine housing frequently and blow residual material from inside of machine.
2. Check Nozzle and Electrode often for excessive wear due to cutting.
3. Clean exposed torch consumables often. This will maintain their life.
4. Check Nozzle and Electrode often for proper installation.
5. Frequently check the Air Supply quality. This is the single most important factor in the maintenance of the plasma system.
6. 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 workpiece to be cut. HTP America, Inc. also manufactures a complete Circle-Cutting and Straight-Line Traversing Assembly for frequent cutting of circles and lines.
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 workpiece.
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 workpiece at an angle of 5-10 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. Hold the torch at a 45° angle to the work. This will prevent the sparks from blowing back up into the torch head and will greatly enhance the plasma torch's consumable life. Be sure the sparks which are deflected will not hit anyone standing in the immediate area, or land on something which might catch fire.





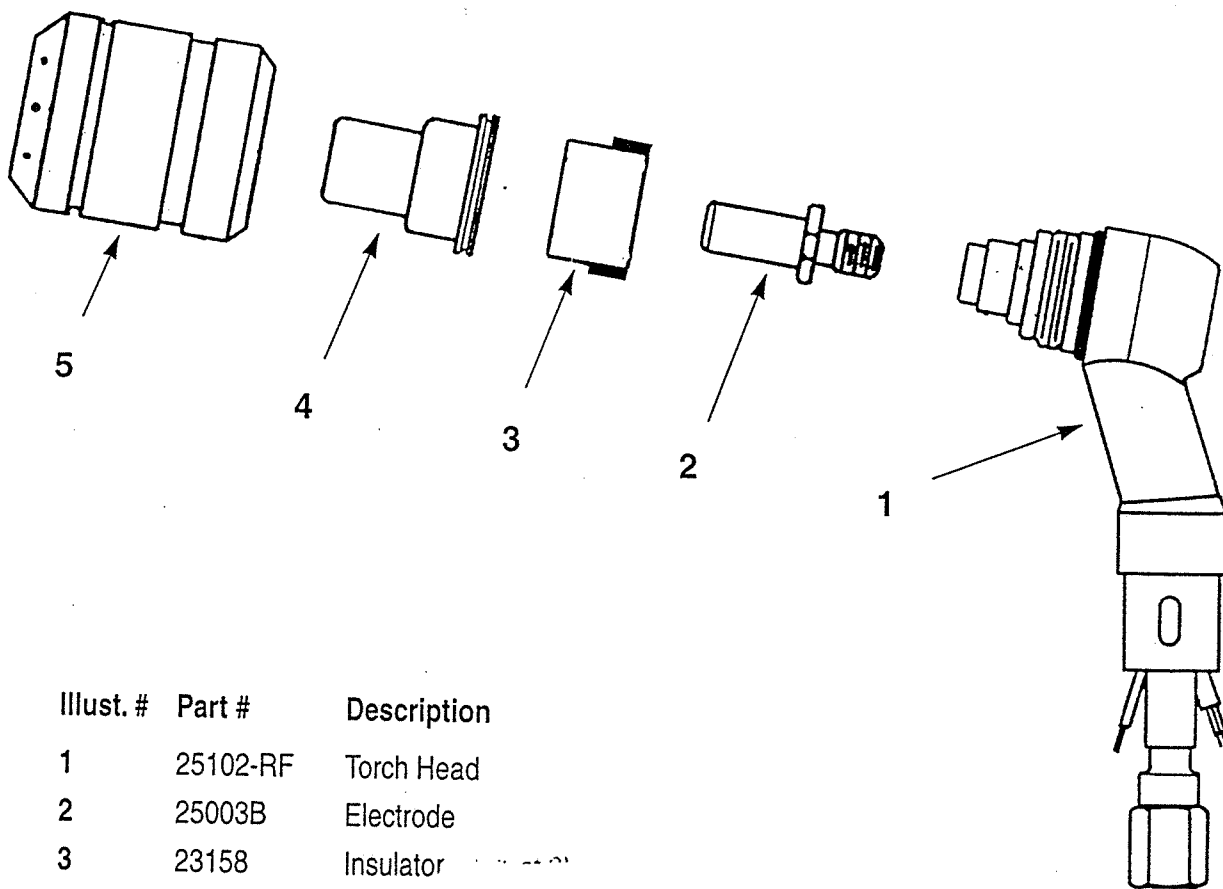
Wiring Diagram Micro Cut 500

MICRO CUT 500 - Parts Breakdown

Item #	Part #	Description
1	707.0139	1/4" x 1/4" Air Fitting
2	375.8393	Regulator
3	707.0112	Pressure Switch
4	707.9725	Pressure Gauge
5	707.2001	1/8" x 1/8" Air Fitting
6	707.0196	Varistor
7	707.0226	Power Switch
8	499.9367	Blocking Diode
9	499.9351	High Voltage Generator
10	707.0231	Capacitor 50 Mf
11	707.0231	Capacitor 100 Mf (3 ea)
12	712.0011	Main Transformer
13	707.0233,1	Rectifier (10 connector)
14	707.0233	Rectifier (5 connector)
	707.0115	Main Relay
	709.0116	Solenoid Valve
	700.0064	Cooling Fan
	707.0209	Post Flow Controller
	707.0136	Control Transformer
	707.0123	On-Off Switch
	707.5000	Cabinet Front
	707.5001	Cabinet Back
	707.5002	Cabinet Side, Right
	707.5003	Cabinet Side, Left
	707.5004	Handle
	560.9915	Wheel
	707.9400	Axle

not pictured

Plasma Torch Micro Cut 500



Illust. #	Part #	Description
1	25102-RF	Torch Head
2	25003B	Electrode
3	23158	Insulator
4	23130	Cutting Tip For Low Setting
	23130-1.4	Cutting Tip for Hi Settings
5	23005	Gas Diffuser



WARRANTY REGISTRATION

This is your Warranty Registration. No warranty work will be performed or parts shipped unless this form is in the possession of HTP America, Inc. within fifteen (15) days of the purchase date.

My signature below certifies that I (and all other operators) have read the operating manual for this machine and understand the procedures and safety measures described therein.

Owner's signature (required)

The Warranty is void unless the signed and completed registration is mailed within 15 days of the date of purchase to:

*HTP America, Inc.
261 Woodwork Lane
Palatine, IL 60067*

Please Print or Type

Serial Number _____ Machine Model _____

Date of Purchase _____

Name of Purchaser _____ Telephone Number _____

Address _____

City _____ State _____ ZIP _____

Purchased From _____ Telephone Number _____

Address _____ City _____ State _____ ZIP _____

