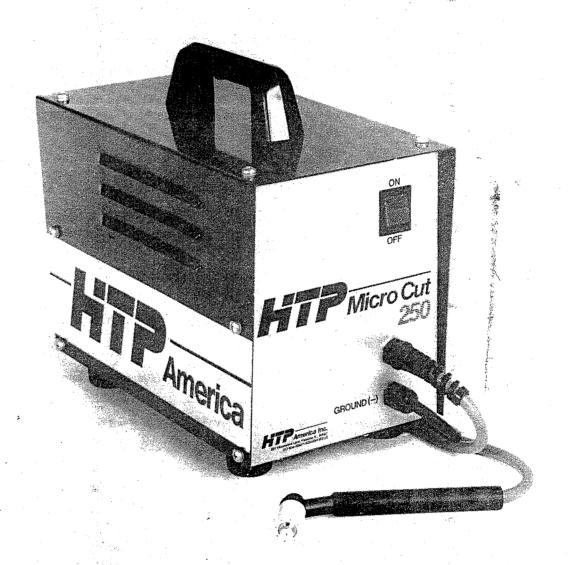
oldermodel

Owners Manual

HTP Micro Cut 250 P



HTP America Inc. 261 Woodwork Ln., Palatine, IL 60067 1-800-USA-WELD • 312-934-7060

Warranty

It is expressly agreed that there are no warranties, expressed or implied, made by either the Salesman, Dealer, or HTP America, Inc. on products or parts furnished hereunder, except the Manufacturer's Warranty against defective materials or workmanship as follows:

HTP America, Inc. warrants each new Plasma Cutting Machine to be free from defects in material and workmanship under normal use and service for one year after delivery to the original purchaser. HTP America, Inc. will repair and replace, at its factory, any part or parts thereof, products to be returned to HTP America, Inc. with transportation charges prepaid and which its examination shall disclose to its satisfaction to have been thus defective. This warranty being expressly in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on its part and it neither assumes nor authorizes any other person to assume for it any other liability in connection with the sale of its machines.

This warranty shall not apply to any welding machine which has been repaired or altered by unauthorized service departments in any way so as in the judgment of HTP America, Inc. to affect its stability and reliability, nor which has been subjected to misuse, negligence or accident.

HTP America, Inc. shall not be liable in any event, unless HTP America, Inc. receives notice of alleged breach of warranty within not more than 30 days after the discovery, actual or construction alleged breach or warranty specifying the claimed defect.

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.

Note: Exclusions to Warranty:

- 1. The Plasma Torch is warranted for a period of ninety (90) days against defects in material and workmanship.
- 2. The electrode, cutting nozzle, insulator, spring, and gas diffuser are consummable items, WHICH CARRY NO WARRANTY.

Introduction

Congratulations on your purchase of an HTP Micro Cut 250 plasma cutter. You have purchased one of the most technologically advanced and safest plasma cutters available today. Your new Micro Cut 250 will allow you to cut almost any material that conducts electricity, from thin sheet to a maximum thickness of 1/4". This owner's manual has been designed to instruct you on the safe operation and maintenance of your Micro Cut 250. If you read and follow the instructions in this manual your Micro Cut 250 will give you years of trouble-free operation. If you do not read and understand this owner's manual you will significantly shorten the operating life of your Micro Cut 250 and may also operate the unit under unsafe conditions which may result in SERIOUS INJURY OR DEATH! If you have any questions regarding the information contained in this manual contact your local distributor or HTP direct at 1-800-USA-WELD or 312-934-7060 in Illinois.

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PLEASE NOTE

Your Microcut 250 uses 220 volt single phase power. Because there are so many different 220 v plug patterns, your cutter is shipped without a plug. When installing whatever plug fits the outlet pattern in use in your shop, remember THE YELLOW-GREEN WIRE IS THE GROUND. Improper connection of the plug to the power cable can result in expensive damage to the plasma cutter.

The torch on your MicroCut 250 has been redesigned since the production of the video and owners manual. One of the many improvements is the addition of a black plastic Safety Clip which snaps on the torch where it makes a 90 degree bend between the handle and the cutting tip. The safety clip has a metal band running along its inside surface.

The band connects the two contact points which are visible on either side of the torch neck. The torch will become electrically inactivated when the clip is removed. The purpose of the clip is to protect the user from injury should he foolishly forget to unplug the cutter before starting to change the tip or electrode. (CLIP OR NO CLIP, ALWAYS UNPLUG THE PLASMA CUTTER FROM THE ELECTRICAL OUTLET BEFORE OPENING THE TORCH TIP OR THE PLASMA CUTTER CASING! It is a good practice to immediately unplug the cutter when you finish making the cut.)

Should your cutter fail to turn on when you attempt to strike an arc or should it suddenly stop during use, the likely cause is that the clip has been dislodged thus breaking contact. To prevent accidental dislodging of the clip during ordinary use some operators have taped it in place.

HOW TO STRIKE AN ARC AND START CUTTING: After connecting the cutter to a 220 v power source and connecting the airhose from your air compressor, turn the power switch to the ON position. When the trigger on the torch is depressed the air will start flowing. While continuing to depress the trigger place the tip of the torch against the surface you wish to cut and press down slightly. This will depress the tip and strike the arc. The arc will continue to burn regardless of whether the tip is in contact with the surface until the trigger is released.

HOW TO GET MAXIMUM LIFE FROM YOUR CUTTING TIP: When cutting sheet metal the arc may be started either in the center of the panel or at the edge. When cutting heavier material, if starting the cut in the center of a panel it will take a moment or two for the arc to burn through the panel. During that moment the panel will be reflecting the arc back at the cutting tip. This reflected plasma will enlarge the hole in the tip. It is eventual enlargement of the hole that causes the tip to become "dull." To ensure maximum tip life, when starting a cut in the

center of a heavy panel, drill a starter hole so the plasma will have an exit on the back side of the panel. In addition, try to keep the tip in contact with the surface and the long axis of the torch tip perpendicular to the surface being cut. These actions will maximize tip life; tips and electrodes, nonetheless, are consumable items and will have to be replaced. The thicker the material being cut, the faster the items will be consumed. HTP has all consumable parts available on our toll-free Hotline, 800-USA-WELD. In addition, we have engineers and technicians ready to answer any questions you may have.

We thank you for your purchase and look forward to serving you in the future.

Safety Suggestions

Plasma cutting produces magnetic fields that can affect pacemaker operation. Persons wearing any type of electronic life support equipment (pacemakers and other devices) should consult with their doctor before going near plasma cutting or MIG welding operations.

Plasma cutting and MIG welding operations produce ultra-violet radiation which are harmful to skin and eyes. NEVER LOOK AT THE ARC PRODUCED BY CUTTING OR WELDING OPERATIONS WITHOUT PROTECTION. This ultra-violet radiation can penetrate lightweight clothing and reflect from light-colored surfaces, SEVERELY BURNING THE SKIN AND EYES. Always wear a full face welding helmet with a minimum number nine or darker lens to protect the eyes and face from ultra-violet radiation. Always wear safety goggles or glasses with side shields underneath the welding helmet for further eye protection. Wear a cap to protect the hair from fire and the scalp from ultra-violet radiation. Wear flameproof welding gloves to protect the hands from ultra-violet radiation and burns from hot metal. Wear a heavy, pocketless, long-sleeve shirt, cuffless trousers, and high-topped work shoes to protect the body from ultra-violet radiation and burns from hot metal. Ear plugs should be worn when working overhead to prevent hot metal from falling into one's ear. Never wear oily or greasy clothing as a spark will ignite them. Never wear flammable hair preparations as a spark will ignite the hair and cause serious burns.

Always warn bystanders not to watch the arc, expose themselves to the ultra-violet rays or to hot metals.

CUTTING AND WELDING FUMES CAN BE TOXIC! Always provide adequate ventilation in the welding or cutting area by natural ventilation (opening up doors and windows), mechanical ventilation (use of fans and vacuum systems), or air supplied respirators. If you develop momentary eye, nose, or throat irritation while cutting or welding, stop immediately! This is an indication that ventilation is not adequate. Do not continue to cut or weld until ventilation is improved. Do not continue to cut or weld if physical discomfort persists.

Metals coated with materials that emit toxic fumes (paint, undercoating, etc.) should not be cut or welded unless the coating is heated and removed from the work surface, the operator wears an air supplied respirator, or the area is well-ventilated.

Metals bearing lead, zinc, cadmium, beryllium and similar materials produce hazardous concentrations of toxic fumes when cut or welded. Adequate LOCAL exhaust ventilation must be used, or each person in the area, as well as the operator, must wear an air supplied respirator. When cutting beryllium bearing materials, both local exhaust ventilation and air supplied respirators must be used.

Do not cut or weld in areas close to degreasing or spraying operations or any other areas where chlorinated hydrocarbon solvents may be present. The heat of the arc will decompose vapors from chlorinated hydrocarbon solvents to form highly toxic phosgene gas. The ultra-violet radiation will decompose trichloroethylene and perchlorethylene vapors and also form deadly phosgene gas.

CUTTING AND WELDING PRODUCES SPARKS AND HOT SLAG THAT WILL IGNITE COMBUSTIBLE MATERIALS. If combustible materials are in the area, do not weld or cut. Move the work to an area that contains no combustible materials. If the work can not be moved, protect against fire by using suitable, snug fitting, fire proof covers or shields.

Never cut or weld in an area where the air may contain flammable gas, dust or liquid vapors (such as paint or gasoline vapors).

Never cut or weld on drums, barrels, tanks or other empty containers that have held combustibles or that may produce toxic or flammable vapors when heated without first cleaning as described in AWS Standard A6.0. When dealing with a container having unknown contents, do not rely on sight or smell to decide whether it is safe to cut or weld. Always clean container as described in AWS Standard A6.0.

Hot sparks, slag, or hot metal produced from cutting or welding can fall into cracks in floors or wall openings and cause hidden smoldering fires. Be sure that these openings are properly protected from sparks.

When cutting or welding on vehicles, be sure that sparks or hot metal do not come in contact with combustible materials, or lodge in an area where it may come in contact with combustible materials. Do not cut near fuel tanks, batteries, fuel lines or brake lines.

Do not cut or weld on wood, plastic tile, or carpeted floors. Concrete or masonry floors are safest.

A fire watcher should always be standing by during and some time after cutting to be sure sparks and hot metal do not get near combustibles and ignite a fire. After work is done, check that the area is free from sparks, smoldering fires, and flames.

Always have fire extinguishing equipment (commercial fire extinguisher, water hose or bucket, sand bucket) available for immediate use.

ELECTRIC SHOCK CAN KILL! Plasma cutting equipment uses higher operating voltages than MIG welders. Therefore, never cut with broken or damaged cables or a broken or damaged handle on the cutting torch. Due to the high operating voltages found in plasma cutters, do not attempt to repair broken or damaged handles or cables. To additionally protect against a fatal shock, always wear welding gloves when cutting.

NEVER cut in a damp area or stand in a puddle while cutting. This increases the possibility of a lethal shock.

Exposed electrically hot conductors or any other bare metal in the cutting circuit, or ungrounded electrically hot equipment can fatally shock a person whose body becomes a conductor. Do not stand, sit, lie, lean on or touch a wet surface when welding.

Place the ground cable as close to the cutting area as possible. This will reduce the possibility of the cutting current taking a stray path.

Always ground the cutting machine by connecting a ground wire between the machine and a good electrical ground.

Never allow electrically hot conductors or any other bare metal in the cutting circuit to come in contact with bare skin or wet clothing.

Never operate the plasma cutter without all side panels in place.

When leaving the plasma cutter unattended, always turn off all power to the unit.

A power disconnect switch must be available near the plasma cutter's power source.

Always turn off all power to the unit whenever performing any maintenance to the plasma cutter, even to the cutting torch.

We STRONGLY RECOMMEND you consult the following standards booklets for additional information:

- 1. ANSI Standard Z49.1, SAFETY IN WELDING AND CUTTING, obtainable from the American Welding Society, 2501 NW 7th St., Miami, FL 33125.
- 2. ANSI Standard Z87.1, SAFE PRACTICES FOR OCCUPATION AND EDUCATIONAL EYE AND FACE PROTECTION, obtainable from American National Standards Institute, 1430 Broadway, New York, NY 10018.
- 3. ANSI Standard Z49.2, FIRE PREVENTION IN THE USE OF CUTTING AND WELDING PROCESSES, obtainable from the same as item 2.
- 4. ANSI Standard Z88.2, PRACTICE FOR RESPIRATORY PROTECTION, obtainable from the same as item 2.
- 5. American Welding Society Standard A6.0, WELDING AND CUTTING CONTAINERS WHICH HAVE HELD COMBUSTIBLES, obtainable from the same as item 1.
- 6. American Welding Society Standard AWSF4.1, RECOMMENDED SAFE PRACTICES FOR THE PREPARATION FOR WELDING AND CUTTING OF CONTAINERS AND PIPING THAT HAVE HELD HAZARDOUS SUBSTANCES, obtainable from the same as item 1.
- 7. OSHA SAFETY AND HEALTH STANDARDS, 29CFR 1910, obtainable from the U.S. Government Printing Office, Washington, D.C. 20402.
- 8. NIOSH SAFETY AND HEALTH IN ARC WELDING AND CUTTING, obtainable from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.
- 9. American Welding Society Standard A6.3, RECOMMENDED SAFE PRACTICES FOR PLASMA ARC CUTTING, obtainable from the same as item 1.
- 10. NFPA Standard 51, OXYGEN FUEL GAS SYSTEMS FOR WELDING AND CUTTING, obtainable from the National Fire Protection Association, 470 Atlantic Ave., Boston, MA 02210.
- 11. NFPA Standard 51B, CUTTING AND WELDING PROCESSES, obtainable from the same as item 10.
- 12. NFPA Standard 70-1978, NATIONAL ELECTRICAL CODE, obtainable from the same as item 10.

Inspection

After removing your HTP Micro Cut 250 from its shipping carton, inspect the plasma cutter for any concealed damage that you may not have seen upon receiving the unit. Any claims for loss or damage that may have occurred during shipping must be filed by the purchaser with the freight line. Your Micro Cut 250 is shipped completely assembled with a 12' Plasma Cutting Torch, 12' ground cable, and 12' input power cord.

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

Electrical Connection

Your HTP Micro Cut 250 has been designed to operate only from a 220 volt single phase power supply wired for a minimum of 35 amps. 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 250 plasma cutter, the yellow-green wire MUST BE CONNECTED TO GROUND OR SERIOUS INJURY OR DEATH MAY RESULT!

ELECTRIC SHOCK CAN KILL! Do not connect an input wire to the ground terminal. Do not connect the ground (yellow-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 cutter. This would provide a safe and easy method to remove all electrical power from your Micro Cut 250 whenever it is necessary to internally inspect or service your plasma cutter.

BEFORE ATTEMPTING TO MAKE ANY PRIMARY POWER CONNECTIONS TO YOUR MICRO CUT 250, BE SURE ALL POWER IS OFF BY OPENING THE LINE DISCONNECT SWITCH.

Electrical Specifications:

Input Power — 220 volts single phase Input Amperage — 35 amps Maximum Open Circuit Voltage — 250 volts DC Cutting Voltage — 75 volts DC Maximum Cutting Amperage — 28 amps Duty Cycle — 35% @ 28 amps (10 Min. Cycle)

Plasma Gas Connection

Your HTP Micro Cut 250 has been designed to use CLEAN, DRY, COMPRESSED AIR as both the plasma gas and the cooling gas. Water or oil in the air will significantly reduce the life of the electrode and the cutting nozzle while at the same time reducing the quality of the cut.

Clean, dry, compressed air must be supplied at a pressure of between 60 to 125 psi with a flow rate of 2-1/2 cfm. Depending on your machine, screw the proper fitting into the outlet of the back of the machine to match up with the air fittings in your shop. If your unit has been supplied with a brass quick disconnect, connect the gas hose directly to the barbed fitting on the end of the quick disconnect.

Your HTP Micro Cut 250 has a pressure sensing safety circuit that will not allow the plasma cutting voltage to start unless the air pressure is 50 psi. If during cutting, the air pressure falls below 50 psi the pressure sensing safety circuit will automatically shut off the plasma cutting voltage, preventing any damage to the plasma torch from loss of cooling gas.

Your HTP Micro Cut 250 has a self-draining air dryer/regulator built into the machine that is preset at the factory. If your shop has a problem with water or oil in the air lines, then we highly recommend the use of a second air dryer in the air supply line to your Micro Cut 250 to prevent damage to the electrode and cutting nozzles from oil or water in the air lines. Damage to your Micro Cut 250 from oil or water in the air supply line is not covered in any way, shape or form under warranty.

Operating Controls (see Fig. 1)

- 1. On-Off Switch This switch controls the input power to your Micro Cut 250. When the rocker switch is in the on position, it will become illuminated. When the On-Off Switch is in the on position and you are not cutting with your Micro Cut 250, power is only supplied to the cooling fan and the circuit board, consuming very little electrical energy.
- 2. Plasma Torch Connection This is where the plasma torch-passes through the front panel of your Micro Cut 250. It is connected to the power supply inside the machine. Whenever performing any service work to the plasma torch, always disconnect the input power to the machine.
- 3. Ground Cable The ground cable of your Micro Cut 250 should be connected as close as possible to the cutting area. This will reduce the possibility of the cutting current taking stray paths. Always be sure to connect the cable to a good clean surface.

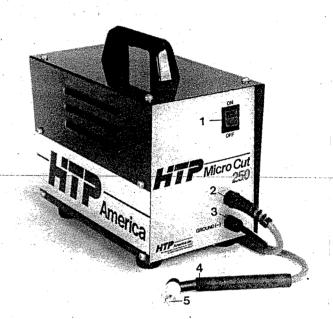


Fig. 1

4. Plasma Torch - The plasma torch on your Micro Cut 250 is a very important and critical part of your machine. The cutting nozzle (5) of the plasma torch is spring loaded. When the cutting nozzle is depressed cooling air will start to flow. (Never depress the cutting nozzle with your finger!) To initiate the plasma arc, the cutting nozzle must be depressed against the work, while the trigger is being pulled. Once the plasma arc has been initiated, it is no longer necessary to keep the cutting tip depressed. Always disconnect the input power to your Micro Cut 250 before performing any service work on the plasma torch.

OPERATING YOUR MICROCUT 250

- 1) Be sure your Micro Cut 250 is connected to a clean, dry source of compressed air with a line pressure between 80 and 100 psi.
- 2) Plug your Micro Cut 250 in to a 220 volt power supply. (see electrical connection). Turn the On-Off switch on. The indicator lamp will light, the fan will begin to turn, and compressed air will flow out the plasma torch. This flow of compressed air purges any impurities that may be in the plasma torch and can be stopped at any time by depressing the trigger on the plasma cutting torch.
- 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 that is as close as possible to the area to be cut. Make sure the ground clamp comes in contact with clean, bare metal. If you are working on an automobile, make sure the ignition is off, and possibly disconnect the battery. Many automanufacturers recommend the removal of on-board computers if you have any questions, check with the vehicle manufacturer.
- So Now we are ready to cut. First, depress the cutting nozzle against the work surface. Cooling air will start to flow. This will purge the lines and get any impurities out of the system. Next while keeping the cutting nozzle depressed against the work surface, depress the trigger on the plasma torch and lift up the plasma torch slightly, the plasma arc will start. The highest cutting effeciency is acheived by keeping the plasma cutting nozzle perpendicular and in contact with the work surface putting very little downforce on the plasma torch. 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 tip, electrode, and gas diffuser will be hot. To help cool them off, air will automatically continue to flow through the torch. Once the torch is cool, simply depress the trigger on the plasma torch without depressing the cutting tip and the post air flow will stop. This last step will help lengthen the life of these consumable parts.

Plasma Cutting Tips

1. Your Micro Cut 250 is capable of cutting steel to a thickness of 1/4", and piercing steel that is 1/8" thick. When piercing materials that are 1/8" thick, it is a good idea to angle the plasma torch at a 45 degree angle until the plasma arc pierces the material. This will allow the stream of arcs to shoot off at a 45 degree angle, away from the gas diffuser. If the plasma torch is held perpendicular to the work when piercing heavy gauge material, then the sparks will shoot back up at the gas diffuser. The molten metal will then collect on the gas diffuser, plugging the air holes and greatly shortening the life of the gas diffuser.

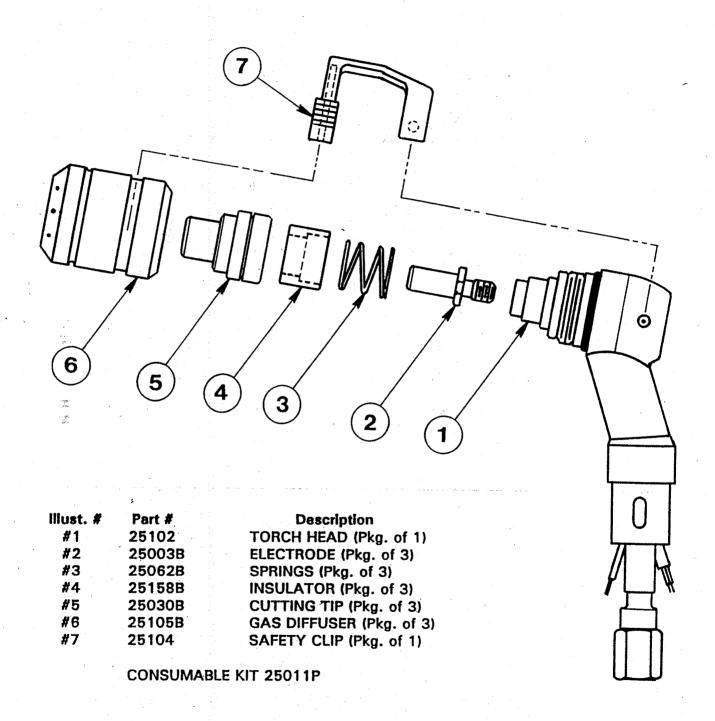
IMPORTANT — When angling the torch, be aware of the fact that the sparks will shoot off as far as 20 feet away. Be sure that there are no combustibles or bystanders in the area that may be ignited or hurt by the sparks.

- 2. When making long straight cuts, it may be easier to use a metal straight edge as a guide. Simply clamp it to the work to be cut.
- 3. When cutting 1/4" materials, it is beneficial to start your cut at the edge of the material.
- 4. 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 are cutting the rust out.

This process also works when you are splicing in a quarter panel.

5. Be aware of the fact that the sparks from the cutting arc can damage painted surfaces. The sparks will also pit glass. We recommend the use of the HTP Welding Blanket (Part #12060) to protect these surfaces.

PLASMA TORCH-MICRO CUT 250 P





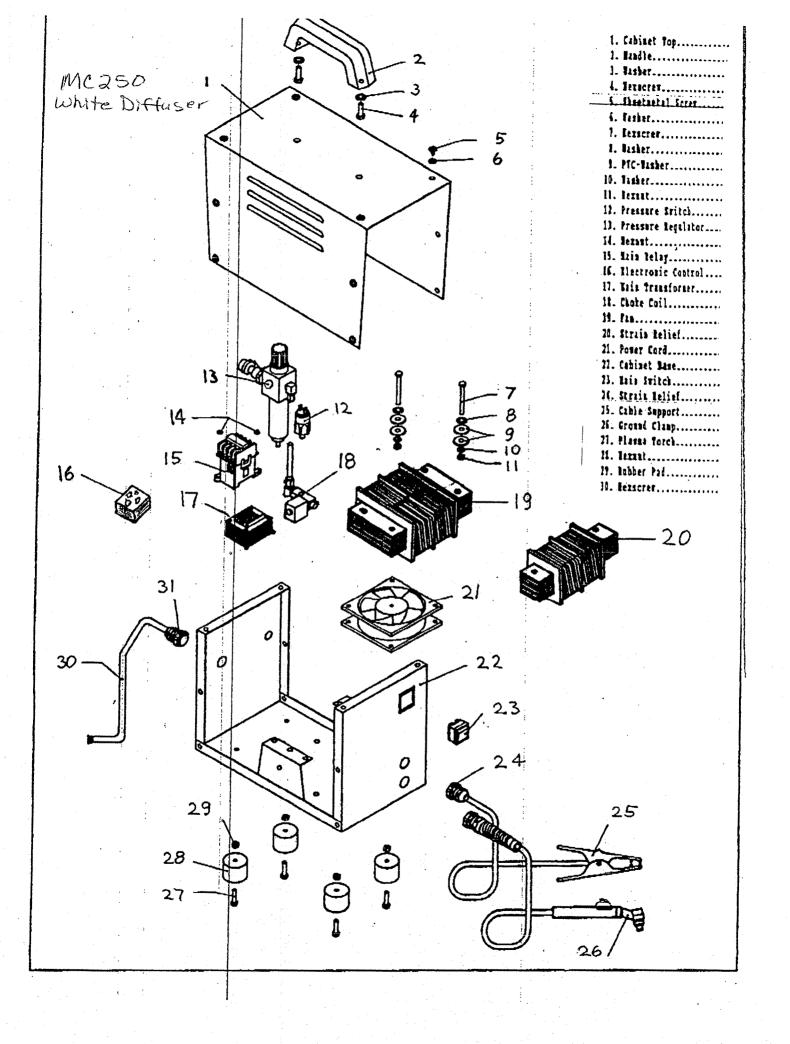
Maintenance and Service

Your HTP Micro Cut 250 is a very hard-working piece of equipment and is very simple to maintain. In order to keep it at its peak performance it is very important that you follow these simple maintenance procedures. IMPORTANT — whenever you perform any maintenance on your Micro Cut 250, even minor plasma torch service, always disconnect it from the input power source. ELECTRIC SHOCK CAN KILL!

- 1. Your Micro Cut 250 uses a forced air cooling system. When operated in a dusty environment such as a body shop, the cooling fan will have a tendency to introduce dust into the inside of the cabinet. To keep the cooling system operating at peak efficiency, the side panels should be removed monthly and the inside of the machine blown out with compressed air.
- 2. The orifice in the cutting nozzle (#25030) will increase in diameter as the plasma stream passes through it. When the orifice increases in size the cutting efficiency of the machine will decrease. When the cutting efficiency falls off, the cutting nozzle should be the first part to be inspected. If the orifice size has enlarged substantially, replace the cutting nozzle.
- 3. The electrode (#25003) is directly exposed to the heat of the plasma arc. It has a special zirconium insert to substantially increase its life. However, a pit will tend to develop in the center of the electrode. As this pit grows, the cutting efficiency will have a tendency to fall off. The electrode should be the second part to be inspected. If the pit is found to be excessive, or the electrode appears to be otherwise worn, replace the electrode.
- 4. As the gas diffuser (#25005) wears, it will have a tendency to distort, and cause the cutting tip to bind. When this occurs, the spring will not allow the cutting tip to return to its original position. The cutting tip will then remain in contact with the electrode, creating a direct short. The gas diffuser should then be replaced immediately.

The gas diffuser also has a ring of air holes around it. These air holes may become closed by slag. Periodically check to be sure that these air holes remain clear. If the air holes can not be cleared, replace the gas diffuser immediately or further damage to the plasma torch may occur.

- 5. Should the electrode become loose from the torch head, it will gradually unscrew itself until it comes in contact with the cutting nozzle. This will result in the plasma arc starting as soon as the cutting nozzle is brought in contact with the work. Should this condition occur, it is important that the electrode be tightened immediately.
- 6. Your Micro Cut 250 has a duty cycle of 35% at its rated output of 28 amps. The duty cycle is measured over a ten-minute period. This means that you can cut for 3-1/2 minutes and then the machine should be allowed to sit idle for 6-1/2 minutes. Should the duty cycle be exceeded, the main transformer has a thermoswitch that will automatically shut the machine down before any damage occurs. When this happens, the indicator lamp will remain on, however, depressing the plasma torch will no longer initiate the arc. You will then have to wait approximately 10 minutes for the thermoswitch to reset itself.





Wiring Diagram - Microcut 250 White

Symbol		Designation
L1, L2 PE	***************	Line Voltage
S	*************	On - Off Switch
K	********	Contactor
P		Pressure Switch
F		Fan Motor
C		Air Solenoid Choke Coil

