MANUFACTURER’S LIMITED WARRANTY

This equipment is warranted against defects in materials and workmanship for a period of two years from the date of purchase.

EXCEPTION: THE MIG TORCH OR PLASMA TORCH IS WARRANTED FOR A PERIOD OF 30 DAYS FROM THE DATE OF PURCHASE.

Should the equipment become defective for such reason, the Manufacturer will repair it without charge, if it is returned to the Manufacturer’s factory, freight prepaid. This warranty does not cover: (1) failure due to normal wear and tear; (2) consumable parts, such as, but not limited to, torch contact tips, gas cups, insulating bushings, electrodes, swirl rings, and diffusers; (3) damage by accident, force majeure, improper use, neglect, unauthorized repair or alteration; (4) anyone other than the original purchaser.

THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. THE MANUFACTURER SHALL NOT BE LIABLE FOR ANY INJURY TO PERSONS, INCLUDING DEATH; OR LOSS OR DAMAGE TO ANY PROPERTY, DIRECT OR CONSEQUENTIAL, INCLUDING, BUT NOT LIMITED TO, LOSS OF USE, ARISING OUT OF THE USE, OR THE INABILITY TO USE, THE PRODUCT. THE USER ASSUMES ALL RISK AND LIABILITY WHATSOEVER IN CONNECTION WITH THE USE OF THE PRODUCT, AND BEFORE DOING SO, SHALL DETERMINE ITS SUITABILITY FOR HIS INTENDED USE, AND SHALL ASCERTAIN THE PROPER METHOD OF USING IT.

SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY Lasts, OR THE EXCLUSIONS OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES. SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY HAVE OTHER RIGHTS OF WHICH MAY VARY FROM STATE TO STATE.

FOR INFORMATION CONCERNING USE, WARRANTY SERVICE, OUT OF WARRANTY SERVICE OR PRODUCT INFORMATION, CONTACT:

WELDER / PLASMA SERVICE
1025 SAUNDERS LANE
WEST CHESTER, PA 19380
(800) 222-9353
HOURS: MON - FRI 8:00 A.M. TO 4:30 P.M. EASTERN TIME
DANGER
- Electric welding or plasma cutting cause ultraviolet rays and weld spatter. Bystanders will be exposed to ultraviolet rays and weld spatter.
Wear welding helmet with appropriate shade lens while using electric welders or plasma cutters.
Do not allow bystanders while welding or cutting.
Wear safety shield and protective clothing (user and bystanders).
Read and follow instructions.
Ultraviolet rays will burn eyes; weld spatter can cause injury.

WARNING
- Acetylene gas does not burn safely with YA1500 or YA1550 torches.
Do not use YA1500 or YA1550 torches with acetylene gas.
Read and follow instructions.
Uncontrolled burning can cause injury.
- Materials can cause sparks or flying metal when heated which can cause fire.
Wear safety shield and protective clothing (user and bystanders).
Sparks, fire and flying metal can cause injury.

WARNING
- Electrical shock can result from absence of grounding prong.
Do not remove or bypass the grounding prong in any electrical plug.
Electrical shock can cause injury.
- Smoke, fumes and gases are created by the welding process.
Use only in well ventilated area.
Avoid breathing smoke, fumes and gases.
Smoke, fumes and gases can cause injury.
INSTRUCTIONS FOR PLASMA ARC CUTTER

1. BASIC SAFETY PRECAUTIONS

1.1 ELECTRIC SHOCK

WARNING!

WARNING: Disconnect power source before disassembly of the torch.

Electric shock can kill. All electric shocks are potentially fatal.

This plasma cutter requires high voltages for arc spark starting (approx. 250 - 350V). The following safety rules must be observed when using the unit:

- Do not touch live parts.
- Insulate yourself from the piece to be cut and from ground by wearing insulating gloves and clothing.
- Keep your clothing (gloves, shoes, hats, dresses) and body dry.
- Do not work in humid or wet areas.
- Avoid touching or holding by hand the piece to be cut.
- Always arrange for a proper insulation against electric shock.

Should you work close to or in a dangerous area use all possible precautions.

- If you feel even the slightest electric shock sensation, stop cutting at once. Do not use the machine until the problem is identified and solved.
- Have an emergency disconnect switch as close to the machine as possible and make sure all personnel are aware of the switch's location.
- Check cable assemblies often (power, torch, ground and the torch assembly). Replace defective parts immediately with only approved replacement parts.
- Disconnect power cable from power source before removing unit covers or replacing cables.
- Always switch the unit off or disconnect fit before replacing nozzle, swirl ring, electrode or nozzle holder.
- Do not use the unit without protecting covers.
- Always replace any damaged parts of the unit, torch and cables with original material.
- Never remove torch or unit safety devices.
- Make sure that the power supply has an approved ground source. If the outlet is not equipped with the proper ground then have the outlet replaced by a qualified electrician.
- Insure that the worktable is connected to a good earth ground.
- Any maintenance should be only carried out by qualified personnel aware of the risks due to dangerous voltages necessary to make the unit work.

WARNING!

Never screw nozzle holder D (see pict. 3) to torch body without fitting consumables electrode A, diffuser B, nozzle C. The absence of such parts jeopardizes the machine working and particularly the operator's safety.

1.2 RADIATION

MANDATORY PROTECTIVE CLOTHING, HELMET & EYE PROTECTION.

- Wear proper clothing and helmets.
- The intense heat coming from the unit may stick them on the cornea.
- Use masks with grade DIN 7 or 8 safety lenses, at least.
- Protect people surrounding the cutting area.

1.3 FUMES

MANDATORY BREATHING APPARATUS.

Cutting operations give off fumes and harmful metal dusts which may damage health.

- Do not work in areas without proper ventilation.
- Keep your head out of fumes.
- In closed rooms use suitable exhaust fans, placed under the cutting area, if possible.
- If ventilation is not enough, use breathing apparatus approved for this procedure.
- Clean the material to be cut of any solvent or degreasers before cutting. Fumes emitted from these materials may be toxic.
- Do not cut plated metals or metals containing lead, graphite, cadmium, zink, chrome, quicksilver or beryllium unless you have a proper breathing apparatus.
- The electric arc creates ozone. After long exposure to high concentrations of ozone you may have headache, nose, throat and eyes irritation, as well as serious congestion and chest pains.

IMPORTANT: DO NOT USE OXYGEN FOR VENTILATION.

1.4 FIRE

- Use extreme caution when using the plasma cutter to avoid the starting of fires. Sparks and hot metal can cause fires.
- Make sure that a fire extinguisher is readily available when using the plasma cutter.
- Remove from cutting area and surrounding area (33 feet at least) all inflammable and combustible material.
- Do not cut containers of combustible or lubricating material, even when empty.
- Let the material cut cool down before touching fit or putting fit in contact with combustible or inflammable material.
- Do not cut with hollow spaces including inflammable material.
- Do not work under conditions of high concentration of combustible fumes, gases or inflammable dust.
- Check work area 1/2 hour after the last cut to insure that a fire hasn't started.

1.5 BURNS

MANDATORY PROTECTIVE CLOTHING.

- Wear fire-proof clothes to protect against burns caused by ultraviolet radiation from the arc, from sparks and hot metal.
- Do not wear pants with cuff's or turned up legs to pre-
vent metal from depositing in them.
- Turn the unit off and wait for it to cool down before touching the torch.
- Torch is provided with a pilot arc, then as soon as you press the button, the plasma spark starts even if earth cable is not connected. Avoid directing jet towards your own body or towards other people surrounding the cutting area.
- To prevent accidental arcing always turn unit off before putting the torch down.
- Do not carry combustible material, such as lighters or matches in pockets.

1.6 EXPLOSIONS
- Do not cut above or near containers under pressure.
- Do not cut in environments containing explosive dusts, gases or vapors.

This plasma cutter uses compressed air to work; should you use compressed air bottles follow suitable precautions:

A) CYLINDERS
- When using compressed air cylinders make sure that the proper size regulator is used. Under sized regulators may explode causing damage and injuries.
- Maximum input air pressure is 120 PSI (8 Bar).
- Handle or use pressure cylinders in conformity with the existing rules.
- Do not use leaking or damaged cylinders.
- Do not use cylinders which are not properly secured.
- Do not carry cylinders whose contents not clearly identified.
- Never lubricate cylinder valves with oil or grease.
- Never strike an arc on gas/air cylinders.
- Do not expose cylinders to excessive heat, sparks, hot metal or flames.
- Do no tamper with cylinder valves.
- Use proper tools when loosening and tightening valves and gauges. Never use a cheater bar or strike with a hammer.

B) PRESSURE-REGULATORS
- Keep pressure regulators in good condition. Damaged regulators may cause damage or injuries. Regulators must be repaired only by qualified personnel.
- Do not use regulators for gases other than those they are manufactured for.
- Never use a leaking or damaged regulator.
- Never lubricate regulators with oil or grease.

C) AIR HOSES
- Replace air hoses if damaged.
- Keep excess hose wound and keep it out of the working area to avoid any damage.

1.7 NOISE
Cutting with the plasma cutter may produce noise levels above 80db. Proper hearing protection should be worn.

1.8 PACEMAKER
Magnetic fields created by the high currents in the cutting circuit can affect pacemaker operation. Persons wearing electronic life support equipment (pacemakers) should consult their doctor before going near any arc welding, gouging, cutting, or spot welding equipment in operation.

2 PUBLICATIONS
The following publications provide additional information on safety precautions:
A) Bulletin No. C5.2-83 "Recommended Safe Practices for Plasma Arc Cutting"
B) American National Standard ANSI Z49.1-83 "Safety in Welding and Cutting"
Both are available from: American Welding Society Inc., 2501 Northwest 7th Street, Miami, Florida 33125.
- Telephone (305) 547-9700

3 SAFETY DEVICES
The equipment is provided with the following safety devices:

Thermie: Located on the transformer windings to avoid overheating.

Pneumatic: Located in the torch feed. To prevent operation with insufficient air pressure.

Electric: Located on torch body to prevent the presence of dangerous voltages in the event of removal of nozzle holder.

4 INSTALLATION AND OPERATION
Install the plasma cutter in an adequately ventilated area, making sure there are no obstructions that might prevent free airflow in and out of the cutter.
Connect power cord A to a three wire, grounded, outlet only. If the outlet does not match the plug, then have the outlet replace by a qualified electrician.
Extension cord use is not recommended. If an extension cord is used then make sure it is of proper gage wire for the length used.
Connect air feed to connector B and ensure that the pressure is at least 90 PSI with a minimum yield of 250 SCFH. A pre-air filter is recommended to reduce condensation for best results.
Lift the pressure regulator knob E up and adjust the press-
Sure, shown by gauge, to approx. 80-88 PSI (5.5 - 6 bar). Turn the device on by activating switch C.

The emission of the compressed air flow is controlled by pressing the torch button. Make sure that at this stage pressure shown by the gauge F is between 60 and 70 PSI (4 and 4.7 bar); if not, adjust the pressure by means of the pressure regulator knob E and then lock the knob by pressing it downwards.

Connect ground clamp H to part to be cut, ensuring that there be a good electrical contact, especially in the case of painted or oxidised sheet metal or sheet metal with insulating coatings.

Bring the nozzle against the workpiece to be cut and exert a firm pressure (A) on the torch while pressing (Fig. 2) the push button.

Keeping the push button pressed, immediately release the pressure (B) by a quick movement without moving the nozzle away from the workpiece.

The ignition of cutting arc must occur within about 2 seconds from the moment in which the torch push-button is pressed; in case of no-ignition you will have to let the pushbutton go and then press it again repeating the operation until arc ignites.

Carry out the cutting by sliding the nozzle on the workpiece. Flowability of the nozzle holder should be checked manually every time the machine is used. Of course this operation must be carried out when the machine is switched off.

N.B. To avoid useless consumption of electrode, nozzle and diffuser avoid pushing the button with the torch in open air.

Should the air in the system contain considerable quantities of humidity or oil, we suggest using a special dryer to avoid excessive wear of consumable parts and damage to the torch.

5 TORCH MAINTENANCE

Power to the equipment must be turned off and the cord unplugged before any work is done to the plasma cutter.

1) Replacement of consumable parts (Fig. 3).

Parts subject to wear are the electrode A, the diffuser B and the nozzle C. Nozzle holder D must first be unscrewed before any of these parts can be replaced.

The electrode A must be replaced when it has a crater in the middle approx. 1.5 mm. deep (see fig. 4). The nozzle C must be replaced when the central hole is too large compared to that of the new or worn out workpiece (see fig. 5).

When the electrode is worn out the nozzle wears very rapidly. When the electrode is worn out the machine loses its cutting power.

A delayed replacement of electrode and nozzle causes an excessive overheating of parts and shortens the life of diffuser B.

Electrode A is held in place by a setscrew. When the electrode is replaced make sure that the setscrew is sufficiently tightened. If the setscrew comes loose during use it can cause serious damage. Take care when tightening not to over tighten and strip the setscrew.

Nozzle holder D should be sufficiently tightened after parts replacement and a manual check be done to ensure that nozzle C does not rotate.

6 CUTTING PROBLEMS

1) Insufficient penetration

This problem may be caused by:
- high speed. Always ensure that arc fully goes through the workpiece to be cut and that its inclination is never higher than 10-15° (see fig. 6). This will prevent damage of nozzle (see fig. 7) as well as burning to nozzle holder (see fig. 8).
- excessive thickness of part;
- low power voltage;
- ground clamp \( H \) not in good electrical contact with part.

When arc does not cut, molten metal slag can obstruct the nozzle.

2) Cutting arc keeps going out
This problem may be caused by:
- worn nozzle, electrode or diffuser;
- excessive air pressure.

3) Angled cut.
Should the cut be at an angle (see fig. 9) loosen the nozzle holder \( D \) and rotate nozzle \( C \) one fourth of a turn, then tighten it.

Repeat this operation until the cut is straight (see fig. 10).

4) Troubleshooting
Listed below are problems and possible solutions you may encounter while using your plasma cutter.

All solutions are with the understanding that the plasma cutter is connected to the proper power source and air supply and that the supplies are turned on. When opening the unit or making any adjustments the plasma cutter must be turned off and disconnected from the power and air source.

A) Pushing the button no air comes out from the torch.
Verify:
- that there is pressure in the air supply system
- the operation of pushbutton and of safety-contacts on the torch
- the correct working of the solenoid valve on air circuit
- the operation of the printed circuit board.

B) Pushing the button air comes out from the torch but you cannot light the cutting arc.
Verify:
- that air pressure is sufficient
- the operation of the pressure switch
- the operation of the power main contactor
- the operation of the rectifier
- that the thermostat on transformer is not momentarily open because of machine overload or is interrupted because of a fault.
- the operation of the printed circuit board
- that condensers do not present any anomalous swelling
- the circuit breaker tripped.

C) Cutting power is insufficient
After having checked that the trouble does not depend from a cause listed in paragraph "Cutting problems", verify:
- the operation of the main contactor on ground return wire \( H \) and its working with a lit cutting arc
- the operation of the printed circuit board
- that condenser does not present any anomalous swelling.

7. MAINTENANCE AND CHECK-UP

Any slags must be removed from the nozzle; for this operation simply use a steel brush. Pointed bodies should not be used as they could cause damage to nozzle hole.

Although the equipment is provided with an automatic device for the removal of moisture from the supply air, the pressure regulator (fig. 1) should be periodically checked and drained if needed. From time to time the inside of the plasma cutter must be cleaned. Steel dust from use can accumulate inside of the machine and must be removed. Turn off the power and disconnect the power cord from the outlet before cleaning. Simple low-pressure compressed air can be used for blowing the steel dust from the inside of the unit.

Remember: correct operation and good maintenance of your PLASMA CUTTER will ensure best results.
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<th>No.</th>
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* THESE ITEMS ARE NOT NORMAL STOCK ITEMS BUT CAN BE MADE AVAILABLE ON AN AS NEEDED REQUIREMENT.
** THESE ITEMS ARE NOT ON THE DETAIL.

ALL CONSUMABLES AND REPAIR PARTS SHOULD BE ORDERED THROUGH YOUR SNAP-ON DEALER.