



Manual Guide

PLASMA CUT 65 CNC

65A PLASMA CUTTER



PROLOGUE

THANK YOU FOR CHOOSING A TOPGUN WELDING AUSTRALIA PRODUCT

PLEASE READ AND UNDERSTAND THIS MANUAL BEFORE OPERATING THE PLASMA UNIT.

PLEASE ONLY USE AUTHORIZED ACCESSORIES AND CHECK FOR CORRECT FITMENTS BEFORE USE.

PLEASE DO NOT MODIFY MACHINE IN ANY MANNER AS THIS MAY VOID WARRANTY AND INCREASE CHANCES OF SERIOUS INJURY OR DEATH.



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Safety Info

SAFETY INFO AND TIPS

OPERATION AND MAINTENANCE OF PLASMA ARC EQUIPMENT CAN BE DANGEROUS TO YOUR HEALTH

- Plasma arc cutting produces intense electric and magnetic emissions that may interfere with the proper function of cardiac pacemakers, hearing aids, or other electronic health equipment. Persons who work near plasma arc cutting applications should consult their medical health qualified technician and the manufacturer of the health equipment to determine whether a hazard exists.
- To prevent possible injury, read, understand and follow all warnings, safety precautions and instructions before using the equipment.

GASES AND FUMES

Gases and fumes produced during the plasma cutting process can be dangerous and hazardous to your health.

- Keep all fumes and gases from the breathing area. Keep your head out of the cutting fume plume.
- Use an air-supplied respirator if ventilation is not adequate to remove fumes and gases.
- The kinds of fumes and gases from the plasma arc depend on the kind of metal being used, coatings on the metal, and the different processes. You must be very careful when preparing or cutting any metals which may contain one or more of the following:

| | | |
|-----------|-----------|----------|
| Antimony | Chromium | Mercury |
| Beryllium | Arsenic | Cobalt |
| Nickel | Lead | Barium |
| Copper | Selenium | Silver |
| Cadmium | Manganese | Vanadium |

Always read the Material Safety Data Sheets (MSDS) that should be supplied with the material you are using.

These MSDSs will give you the information regarding the kind and amount of fumes and gases that may be dangerous to your health.

- Use special equipment, such as water or downdraft cutting tables, to capture fumes and gases.
- Do not use the plasma torch in an area where combustible or explosive gases or materials are located.
- Phosgene, a toxic gas, is generated from the vapors of chlorinated solvents and cleansers. Remove all sources of these vapors.

ELECTRIC SHOCK

Electric Shock can injure or kill. The plasma arc process uses and produces high voltage electrical energy. This electric energy can cause severe or fatal shock to the operator or others in the workplace.

- Never touch any parts that are electrically “live” or “hot.”
- Wear dry gloves and clothing. Insulate yourself from the workpiece or other parts of the cutting circuit.
- Repair or replace all worn or damaged parts.
- Extra care must be taken when the workplace is moist or damp.
- Disconnect power source before performing any service, maintenance or repairs.
- Read and follow all the instructions in the Operating Manual.

FIRE AND EXPLOSION

- Fire and explosion can be caused by hot slag, sparks, or the plasma arc.
- Be sure there is no combustible or flammable materials in the workplace. Any material that cannot be removed must be protected.
- Ventilate all flammable or explosive vapors from the workplace.
- Do not cut or weld on containers that may have held combustibles.
- Provide a fire watch when working in an area where fire hazards may exist.
- Hydrogen gas may be formed and trapped under aluminum workpieces when they are cut underwater or while using a water table. DO NOT cut aluminum alloys underwater or on a water table unless the hydrogen gas can be eliminated or dissipated. Trapped hydrogen gas that is ignited will cause an explosion.

NOISE

Noise can cause permanent hearing loss. Plasma arc processes can cause noise levels that potentially exceed safe limits. You must protect your ears from loud noise to prevent permanent loss of hearing.

- To protect your hearing from loud noises, wear protective ear plugs and/or ear muffs. Protect others in the workplace.
- Noise levels should be measured to be sure the decibels (sound) do not exceed safe levels.

PLASMA ARC RAYS

Plasma Arc Rays can injure your eyes and burn your skin. The plasma arc process produces very bright ultraviolet and infrared light. These arc rays can cause damage to your eyes and burn your skin if you are not properly protected.

- To protect your eyes, always wear a cutting helmet or shield with the appropriate shade lens. Also always wear safety glasses with side shields, goggles or other protective eyewear.
- Wear cutting gloves and suitable clothing to protect your skin from arc rays and sparks.
- Keep helmet and safety glasses in good condition. Replace lenses when cracked, chipped or dirty.
- Protect others in the work area from the arc rays. Use protective booths, screens or shields.

OVERVIEW

FEATURES

- IGBT inverter technology for smooth, stable output and
- Increased reliability .
- Multi-voltage input means the unit can even be used with long extension leads reliably.
- Protected external air regulator with water trap/ filter for easy adjustment & servicing.
- Euro connect torch system with safe & robust connection to machine.
- Advanced strata IPT60 plasma torch with European torch head for superior cutting performance and consumable life.
- Non HF arc starting system for increased reliability and low EMF pollution.
- Automatic pilot arc control system for increased cutting capability and speed, especially for short intervals in the cutting process.
- Strong environmental protection against moisture, salt spray and corrosion.
- Intelligent protection system protects plasma torch from damage/ incorrect/ air pressure, consumables not in place and/ or excessive pilot arc use.
- Air flow manual activation switch to set & test air pressure without the need to trigger the torch.
- Lightweight & compact design, ideal for portable applications.

SPECIFICATIONS

MACHINE SPECS

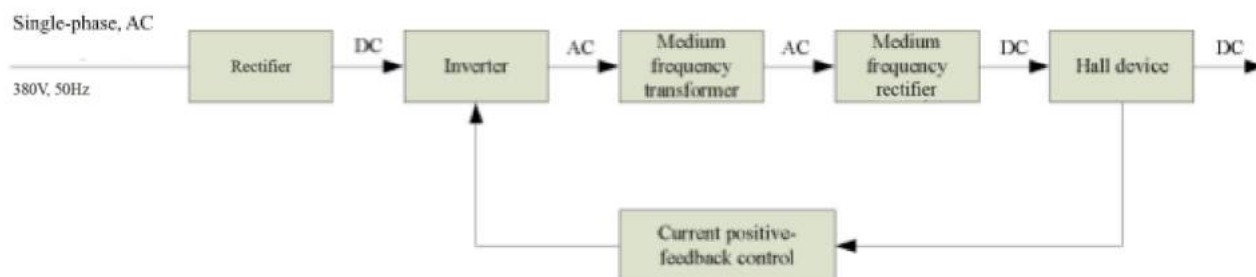
PLASMA CUT 65 CNC

| | | |
|-------------------------------------|-----------------|-------------------------|
| Input Voltage (V) | | 380V A/C |
| Rated Input Current (A) | | 18A |
| Rated Input Power (KW) | | 7.8 |
| Output Current Range (A) | | 20 - 65 A |
| Max No-Load Voltage (V) | | 450 |
| Rated Duty Cycle (%) | | 90% @ 65A 100% @ 61A |
| Severance Cut for Carbon Steel (mm) | | ≤ 35 |
| Optimal Cutting Thickness (mm) | Carbon Steel | ≤ 25 |
| | Stainless Steel | ≤ 25 |
| | Aluminium | ≤ 20 |
| | Copper | ≤ 14 |
| Dimensions (mm) | | 640X240X445 |
| Protection Class | | IP23 |
| Insulation Class | | H |
| Net Weight (Kg) | | 24kg |
| Cooling Method | | AF |
| Power Factor | | 0.99 |

WORKING PRINCIPLE

The working principle of The TOPGUN CUT series of Air Plasma Cutting machines is shown in the below diagram. Three-phase 380V line frequency (50/60 Hz) AC is rectified into DC, then it is converted to medium frequency AC by inverter device (discrete IGBT), after reducing voltage by medium transformer (the main transformer) and rectified by medium frequency rectifier (fast recovery diode), and is outputted by inductance filtering. The circuit adopts current feedback control technology to ensure current output stably.

Meanwhile, the cutting current parameters can be adjusted continuously and steplessly to meet the requirements of the specific cutting requirements.

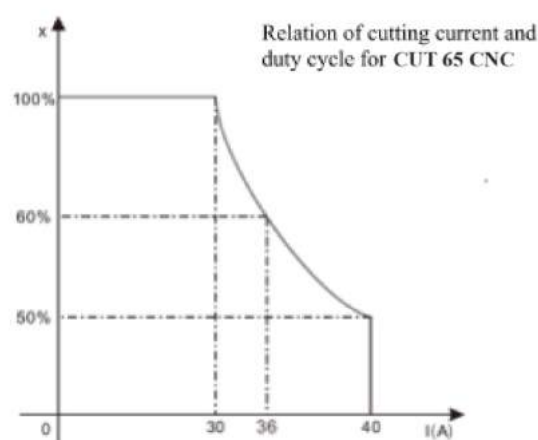


DUTY CYCLE AND OVER HEAT

The letter “X” stands for Duty Cycle, which is defined as the portion of the time an air plasma cutting machine can cut continuously with it’s rated output current within a certain time cycle (10 minutes).

The relation between the duty cycle “X” and the output cutting current “I” is shown as the right figure.

If the plasma cutter is overheating, the IGBT overheat protection sensor will send a signal to the plasma cutter control unit to cut the output cutting current OFF and illuminate the over-heat pilot L.E.D on the front panel. Once triggered, the machine should not cut for 10-15 minutes to cool down with the fan running. When operating the machine after this, the cutting output current or the duty cycle should be reduced.

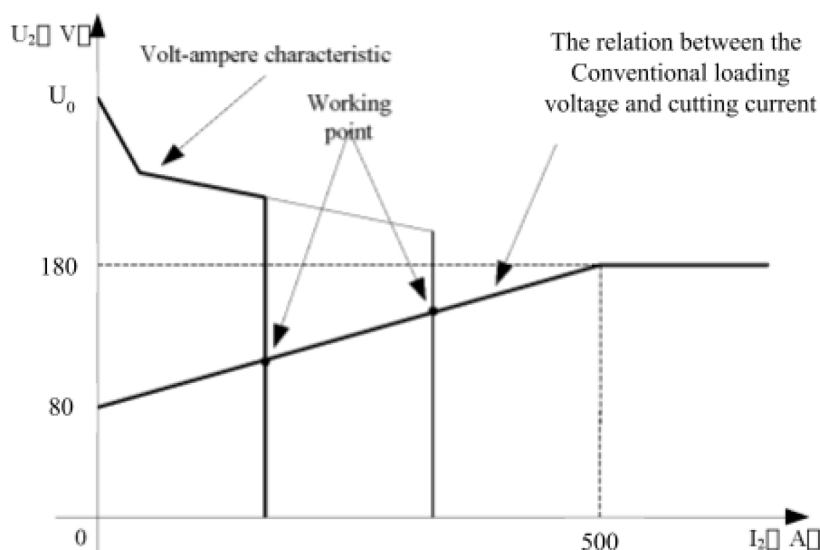


VOLT-AMPERE CHARACTERISTIC

The TOPGUN CUT series of Air Plasma Cutting machines has excellent volt-ampere characteristics. Refer to the following graph. The relation between the rated loading voltage U_2 and welding current I_2 is as follows:

When $I_2 \leq 600A$, $U_2 = 80 + 0.4 I_2$ (V) When $165A < I_2 \leq 500A$, $U_2 = 130 + 0.1 I_2$ (V) ;

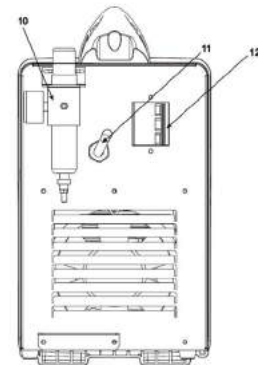
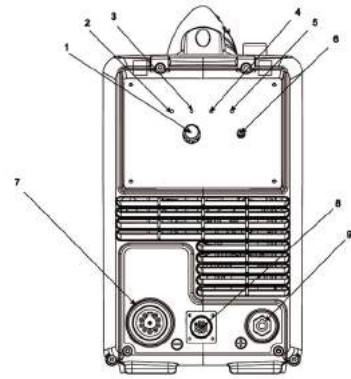
When $I_2 > 500A$ $U_2 = 180$ (V)



INSTALLATION & OPERATION

1. Cutting current dial: Used to regulate the current when cutting.
2. Power pilot lamp: Indicates if machine is powered ON
3. Alarm pilot lamp: This pilot lamp indicates when lit that the protection circuit of the machine has been activated.
4. Cutting gun improper installation and air pressure low alarm
 - (1) When a short circuit occurs between the electrode and the nozzle, the lamp illuminates, air feeds intermittently.
 - (2) When a cutting gun has no electrode and or nozzle installed, the lamp illuminates, air feeds intermittently.
 - (3) When the Shield Cup is not installed, the lamp flashes.
 - (4) When the air is low, the lamp illuminates.
5. READY (DC Indicator): Indicator is ON when DC output circuit is active.
6. RUN/SET: When cutting the workpiece, switch to the "RUN" position; When doing a gas test, Switch to the "SET" position.
7. Cutting gun connector: Connect to the cutting machine
8. CNC Connection: Connector for CNC interface/plug.
9. Positive output cable: Connect to the workpiece
10. Barometer : Ensure there are no impurities or moisture in the compressed air supply.
11. Mains cable: Connected to the 3 PHASE Mains power supply
12. Power switch: Turns the power source 'ON' or 'OFF'

*Denotes more detailed explanation of function to follow.



FURTHER CONTROLS EXPLAINED

Compressed Air Testing/Setting Switch (3)

When positioned in the 'SET' position, compressed air control solenoid is open continuously. This is useful for testing and setting the air pressure without having to activate the trigger circuit. 'RUN' position is for normal operation.

Torch System Error Indicator (5)

Lights when an issue with torch system or air supply is detected and cutting output is disabled as a result. A Flashing light means that the torch shield cap is not installed properly. Continuous light could indicate a damaged torch or missing torch consumables or insufficient air pressure supply to the torch.

Alarm Indicator (6)

Lights when over voltage, over current or electrical overheating (due to exceeding the duty cycle) is detected and protection is activated. When protection is activated, cutting output will be disabled until the safety system senses the overload has reduced sufficiently and the indicator L.E.D goes out. May also trigger if the machine experiences an internal power circuit failure.

Air Regulator Pressure Adjustment

Correct air pressure is critical for plasma cutting. An Incorrect air pressure will cause poor cut quality, lack of cutting power, damage to the plasma torch and consumables and potentially damage the power source. The Optimum air pressure is between 0.45 and 0.5MPa (65-75psi). Air pressure should be set with the air flowing through the torch(SET MODE), as the pressure with the air flowing will normally be less than static pressure, due to flow losses through the torch system. To unlock the pressure regulator dial in order to adjust it, pull the dial upwards. Once the pressure is set correctly, push the dial down again to lock it into place.

Air Filter/ Water Separator

As with correct air pressure, clean, dry air is also critical for plasma cutting machine performance and reliability. The TOPGUN CUT series of Air Plasma Cutting machines is supplied with an air filtration/moisture separator to assist with providing a suitable air supply. The moisture separator is self-draining, the water drain tube exits out the bottom of the clear condensate bowl. It is normal to see moisture coming from this tube periodically. If excessive amounts of water or oil are being produced in the condensate bowl and drain line, the compressed air supply should be checked for issues.

~ It is very important to recognize that plasma torch consumables wear as part of normal operation and should be replaced regularly and as required. Operating a torch with worn consumables will cause poor cutting results and possible damage to the torch and machine itself. Damage caused by non-genuine, worn, damaged or incorrectly fitted consumables will not be covered by warranty. ~

Use the following guidelines to determine when consumables should be replaced:

Cutting Tips:

The cutting tip has a small calibrated orifice that the plasma passes through. If the orifice becomes partially blocked, deformed or enlarged, the cutting tip should be replaced.

Electrodes:

The electrode has a small silver 'hafnium' insert at the end of the tip. This is what generates the plasma ions. Once the hafnium insert is gone or is damaged the tip must be replaced.

Swirl Ring/Retaining Cap:

These should be replaced if broken, chipped, cracked or badly heat damaged.

Tips and electrodes:

These should wear reasonably evenly and it is normal practice to replace them both together. If a new tip is inserted and used with a worn electrode the tip will wear much more quickly than if the electrode was also replaced at that same time. If tips or electrodes are wearing much faster than the other component it is likely to be caused by one of the following: poor operator technique, incorrect air supply or pressure, or a damaged torch head.

It is also very important to only use genuine TOPGUN Plasma consumables and parts for the IPT60 torch. They are engineered to suit the machine and non-genuine items may cause lack of performance, short life span, torch and machine damage and void warranty.

INSTALLATION AND OPERATION

Electrical Connection

The TOPGUN CUT series is designed to operate on a 3 phase 380V AC power supply.

When the power supply voltage is over the safe work voltage, there are over voltage and under voltage protection circuits inside the plasma, the alarm light will illuminate, at the same time, the current output will be cut off.

If the power supply voltage continually goes beyond the safe work voltage range, it will shorten the plasma life-span. The below measures can be used:

- Change the power supply input circuit. By connecting the plasma unit to a stable power supply as per the manufacturer's instructions;
- Install a voltage stabilization device between the power input for the machine and the power source.

Compressed Air Requirements

A reliable and consistent supply of clean and dry compressed air is essential for proper operation. Although the machine contains its own internal air supply filtration system it is recommended the compressed air supply should have additional and external filtration in the line feeding into the machine and include both a standard water trap (sintered bronze filter) and also a coalescing filter (for oil in the air). The air requirement is a minimum of 120 l/min (4.5cfm) Free Air Delivery (FAD) at 75psi pressure. This normally means the compressor must be a belt drive model or if a direct drive it must have a motor power of 2.5HP or greater.

The air must be dry and free of oil and moisture (normally a symptom of older, worn out compressors). The air hose must also be of sufficient size (3/8"/10mm minimum) to supply the machine.

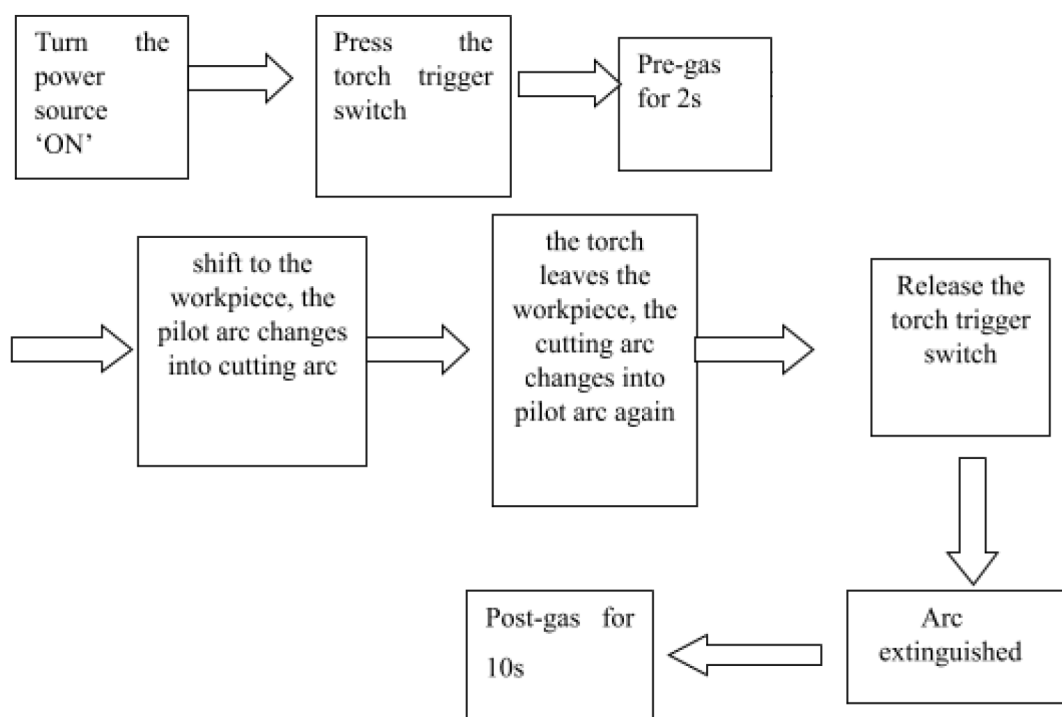
Basic Operation

1. Connect the earth cable quick connector to the earth connection socket (2) Connect the earth clamp to the work piece. Contact with the workpiece must be firm and contact with clean, bare metal, with no corrosion, paint or scale at the contact point.
2. Connect the plasma torch to the machine central connector (1) ensuring the collar is done up firmly by hand.
3. Connect the machine to suitable mains power using the mains input power lead. Switch the mains power switch to 'ON' to power up the machine.
4. Connect the compressed air supply to the filter/ regulator inlet (10). Check the air pressure (11). Trigger the air flow using the 'set' function (3), check the air pressure again and adjust if necessary. Return the switch to the 'RUN' position.
5. Select the output current using the current control Dial (8). You are now ready to plasma cut!

Cutting Operation

After turning the Power Switch to the ON position and making control and air pressure adjustments, proceed as follows:

1. Hold the tip of the Torch within 3-4mm the workpiece, at about 15-30° angle to avoid damaging the tip.
2. Depress the torch trigger switch. (Air flow and the high frequency spark should initiate).
3. As the high frequency spark jumps to the work piece, the main plasma arc will ignite and start cutting.
4. After starting the cut, The tip can be dragged along the workpiece if cutting under 3mm thick material. When cutting material greater than 3mm, maintain a 3.2mm tip-to-work (standoff) distance.
5. When ending a cut, the torch trigger switch should be released and lifted off the workpiece just before the end of the cut to minimize double-arcing which can damage the tip. This is to prevent the high frequency arc starting from reigniting after cutting arc extinguishes.
6. In the post-flow mode, the arc can be restarted immediately by depressing the torch trigger switch.

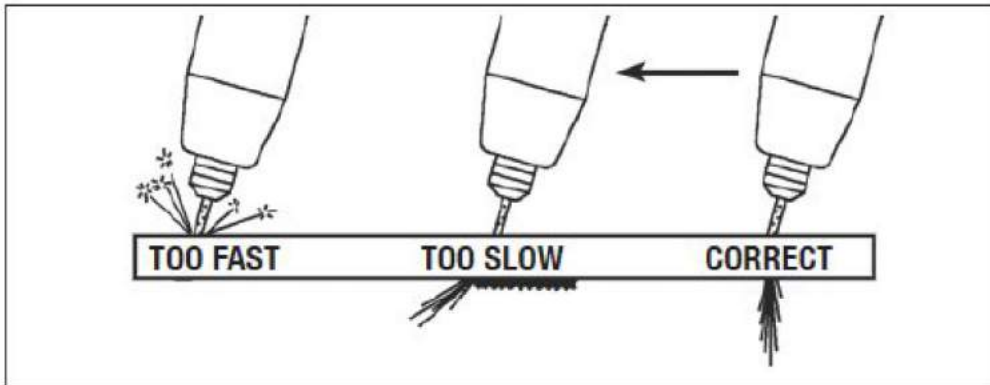


Note:

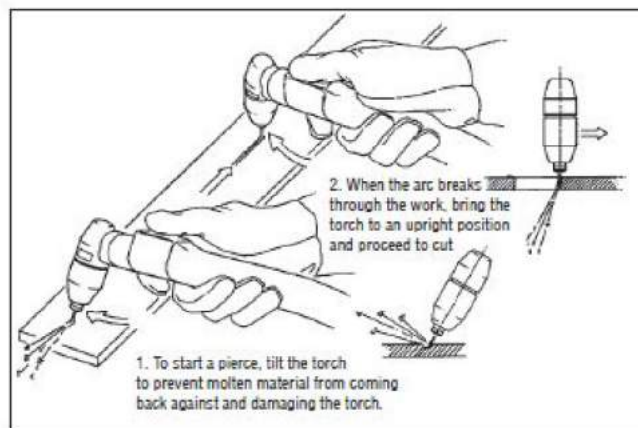
- If the alarm indicator is on when cutting, Release the torch trigger and wait until the alarm indicator goes out, then press the switch to start cutting again.
- In automatic gas test mode, when the trigger is pressed, there will be no arc initiation.
- After a long cut, the surface of the electrode and nozzle will have an Oxidation reaction on the surface. Please replace the electrode and nozzle, Otherwise The alarm indicator L.E.D will light up when installing the shield cup, and prevent it from working,

Cutting Guide

Effect of Cutting Speed



Piercing Technique



NOTE: Keep moving while cutting. Cut at a steady speed without pausing. Maintain a constant cutting speed so that the arc lag is 10° to 20° behind the travel direction. Use a 5° - 15° leading angle in the direction of the cut.

OPERATING TECHNIQUES

1. Piercing

Materials (up to 3.2mm thick) work. When piercing thicker materials (up to 4.8mm stainless or carbon steel) at an angle, position the torch 0.5mm above the workpiece.

It is advisable when piercing thicker materials to drill a small pilot/starting hole in the workpiece which makes it a lot easier and gives increased tip life. Start the cutting arc, then immediately raise the torch to 1.6mm stand-off height and move the torch along the cut path. This will reduce the chance of spatter from entering the torch and prevent or lower the possibility of welding the tip to the plate. The torch should be angled at about 30° when starting to pierce, and then straightened after accomplishing the pierce.

2. Grate Cutting

For rapid restarts, such as grate or heavy mesh cutting, do not release the torch switch. This avoids the 2 second pre-flow portion of the cutting cycle.

3. Edge Starting

For edge starts, hold the torch perpendicular to the workpiece with the front of the tip near (not touching) the edge of the workpiece at the point where the cut is to start. When starting at the edge of the plate, do not pause at the edge and force the arc to 'reach' for the edge of the metal.

| Cutting Speed Guide | | |
|----------------------------|----------------|----------------------|
| Material | Thickness (mm) | Cutting Speed (mm/s) |
| Carbon Steel (AISI 1020) | 1.6 | 150 |
| | 3.2 | 50 |
| | 6.4 | 20 |
| Stainless Steel (AISI 304) | 1.6 | 140 |
| | 3.2 | 40 |
| | 6.4 | 15 |
| Aluminium (6061) | 1.6 | 190 |
| | 3.2 | 85 |
| | 6.4 | 30 |

Note: The speeds given here are typical for best quality cuts. Your actual speeds may vary depending on material composition, surface condition, operator technique, etc. If the cutting speed is too fast, you may lose the cut. With slower speeds excessive dross may accumulate. If speed is too slow, the arc may extinguish. Air cutting typically produces a rough face on stainless steel and aluminium.

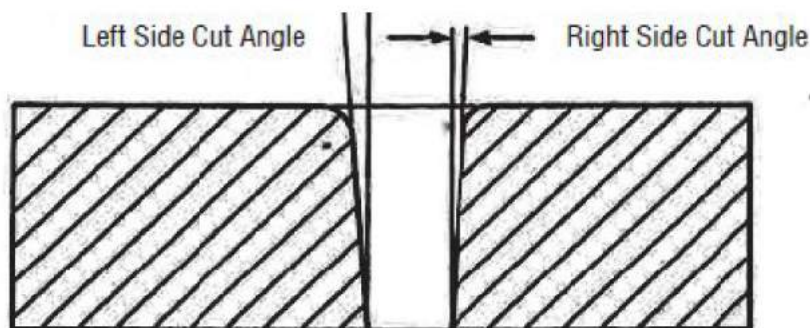
ESTABLISHING THE CUTTING ARC AS QUICKLY AS POSSIBLE

Drag Cutting

Position the torch tip slightly above the workpiece, press torch trigger and lower torch tip forwards, towards the workpiece until contact is made and the cutting arc is established. After the cutting arc is established, move the torch in the desired direction keeping the torch tip slightly angled, maintaining contact with the work piece. Avoid moving too fast as would be indicated by sparks radiating from the topside of the workpiece. Move the torch just fast enough to maintain the spark concentration on the underside of the workpiece and making sure the material is completely cut through before moving on. Adjust drag speed as desired/required.

Direction Of Cut

The plasma gas stream swirls as it leaves the torch to maintain a smooth column of gas. This swirl effect results in one side of a cut being more square than the other. Viewed along the direction of travel, the right side of the cut is more square than the left.



To make a square-edged cut along an inside diameter of a circle, the torch should move counterclockwise around the circle. To keep the square edge along an outside diameter cut, the torch should travel in a clockwise direction.

Quality Cuts

Dross (slag) is the excess material that spatters and builds up on the underside of the workpiece as you cut. Dross occurs when the operating procedure and technique is less than optimal. It will require practice and experience to obtain cuts without dross. Although less than optimal cuts will contain dross, it is relatively easy to remove by breaking it off using pliers or chipping off with a chisel or scraping or grinding the finished cut as needed and is generally only a minor inconvenience.

A combination of factors contributes to the build-up of dross. They include: material type, material thickness, amperage used for the cut, speed of the torch across the work-piece, condition of the torch tip, input line voltage, air pressure, etc. Generally there is an inversely proportional relationship between output current and speed of cut. Do not use more output current than is necessary and adjust speed of cut toward minimizing dross build-up on the underside of the cut. Experiment with adjusting current and speed to minimize dross.

When dross is present on carbon steel, it is commonly referred to as either 'high speed, slow speed, or top dross'. Dross present on top of the plate is normally caused by too great a torch to plate distance.

'Top dross' is normally very easy to remove and can often be wiped off with a welding glove. 'Slow speed dross' is normally present on the bottom edge of the plate. It can vary from a light to heavy bead, but does not adhere tightly to the cut edge, and can be easily scraped off. 'High speed dross' usually forms a narrow bead along the bottom of the cut edge and is very difficult to remove. When cutting troublesome steel, it is sometimes useful to reduce the cutting speed to produce 'slow speed dross'. Any resultant clean up can be accomplished by scraping, not grinding.

Fixes and Faults

TROUBLESHOOTING

| Trouble | Possible Reason | Suggested Remedy |
|--|---|---|
| Torch will not activate | <ol style="list-style-type: none"> 1. Power switch OFF 2. Air supply is not of sufficient volume or pressure 3. Work piece ground clamp not attached. | <ol style="list-style-type: none"> 1. Turn power switch to the ON position 2. Check air supply (60-80 PSI, 3.5cfm required) 3. Attach to work piece or to steel table with work piece securely clamped to table |
| Sparks are shooting upward instead of down through the material. | <ol style="list-style-type: none"> 1. Plasma torch is not piercing the material 2. Torch may be too far away from the workpiece 3. Material may not be earthed properly 4. Travel speed too fast. | <ol style="list-style-type: none"> 1. Increase current 2. Decrease the distance of your torch to the work piece 3. Check connections for a consistent earth 4. Reduce speed |
| Beginning of cut not completely pierced | Possible earth/connection problem | Check all connections |
| Dross build-up on parts of cuts | <ol style="list-style-type: none"> 1. Tool/material building up heat 2. Cutting speed too low or current too high 3. Worn torch parts | <ol style="list-style-type: none"> 1. Allow material to cool then continue to cut. 2. Increase speed and/or reduce current until dross is reduced to minimum 3. Inspect and repair or replace worn parts |
| Arc stops while cutting | <ol style="list-style-type: none"> 1. Cutting speed too slow 2. Torch is too high, away from material 3. Worn torch parts 4. Workpiece earth cable disconnected | <ol style="list-style-type: none"> 1. Increase speed until problem resolved 2. Lower torch to the recommended height 3. Inspect and clean or replace worn parts 4. Connect workpiece earth clamp to a workpiece or steel table. |
| Insufficient penetration | <ol style="list-style-type: none"> 1. Cutting speed too fast 2. Torch tilted too much 3. Metal too thick for plasma capacity 4. Worn torch parts | <ol style="list-style-type: none"> 1. Slow down travel speed 2. Adjust tilt/angle 3. Several passes may be necessary 4. Inspect and clean or replace worn parts |
| Arc sputters/flares | Water in the air supply | Install air drier or additional filtration |
| Consumables wear quickly | <ol style="list-style-type: none"> 1. Exceeding unit capability 2. Excessive ARC starting HF use 3. Improperly assembled torch 4. Inadequate air supply, pressure too low 5. Faulty air compressor | <ol style="list-style-type: none"> 1. Material too thick, increase angle to prevent blow back into torch tip 2. Do not operate HF ARC starting for more than 3 seconds - you can also start with torch in contact with metal or within 1.6mm of metal 3. See section 'Replacing Consumables' 4. Check air filters, increase air pressure 5. Check air compressor operation and make sure input air pressure is at least 100PSI |
| Circuit breaker/fuse trips while operating | Extension cord being used is not appropriate for use | Use a heavy duty extension cord (min 2.5mm diameter) |

OPERATING ENVIRONMENT

- Height above sea level ≤ 1000 M
- Operation temperature range $-10 \sim +40^{\circ}\text{C}$
- Air relative humidity is below 90% (20°C)
- Preferably sit the machine some angles above the floor level, and ensure the maximum angle does not exceed 15°C .
- Protect the machine against heavy rain AND against direct sunshine.
- The amount of dust, acid, corrosive gas in the surrounding air or substance cannot exceed normal levels.
- Please ensure there is sufficient ventilation during cutting. There must be at least 30cm free distance between the machine and wall.

OPERATION NOTICES

- Read Section §1 carefully before starting to use this equipment.
- Connect the ground wire with the machine directly.
- Ensure that the input is three-phase: 50/60Hz, 380V $\pm 10\%$.
- Before operation, People that are not involved directly should not be around the working area and especially children. Do not watch the arc without suitable eye protection.
- Ensure good ventilation of the machine to improve Duty Cycle.
- Turn the machine off when the operation is finished to conserve power.
- When the power switch turns 'OFF' protectively because of failure, Do not restart it until the problem is resolved. Otherwise, the range of problems may be extended.
- In case of issues or faults with the machine, contact your local dealer if no authorized maintenance staff is available!

*MACHINE NOT TO BE OPENED/WORKED ON UNLESS BY AN AUTHORIZED/CERTIFIED REPAIR AGENT.

**NOT COMPLYING WITH THE ABOVE WILL RESULT IN A VOID OF WARRANTY.

Maintenance

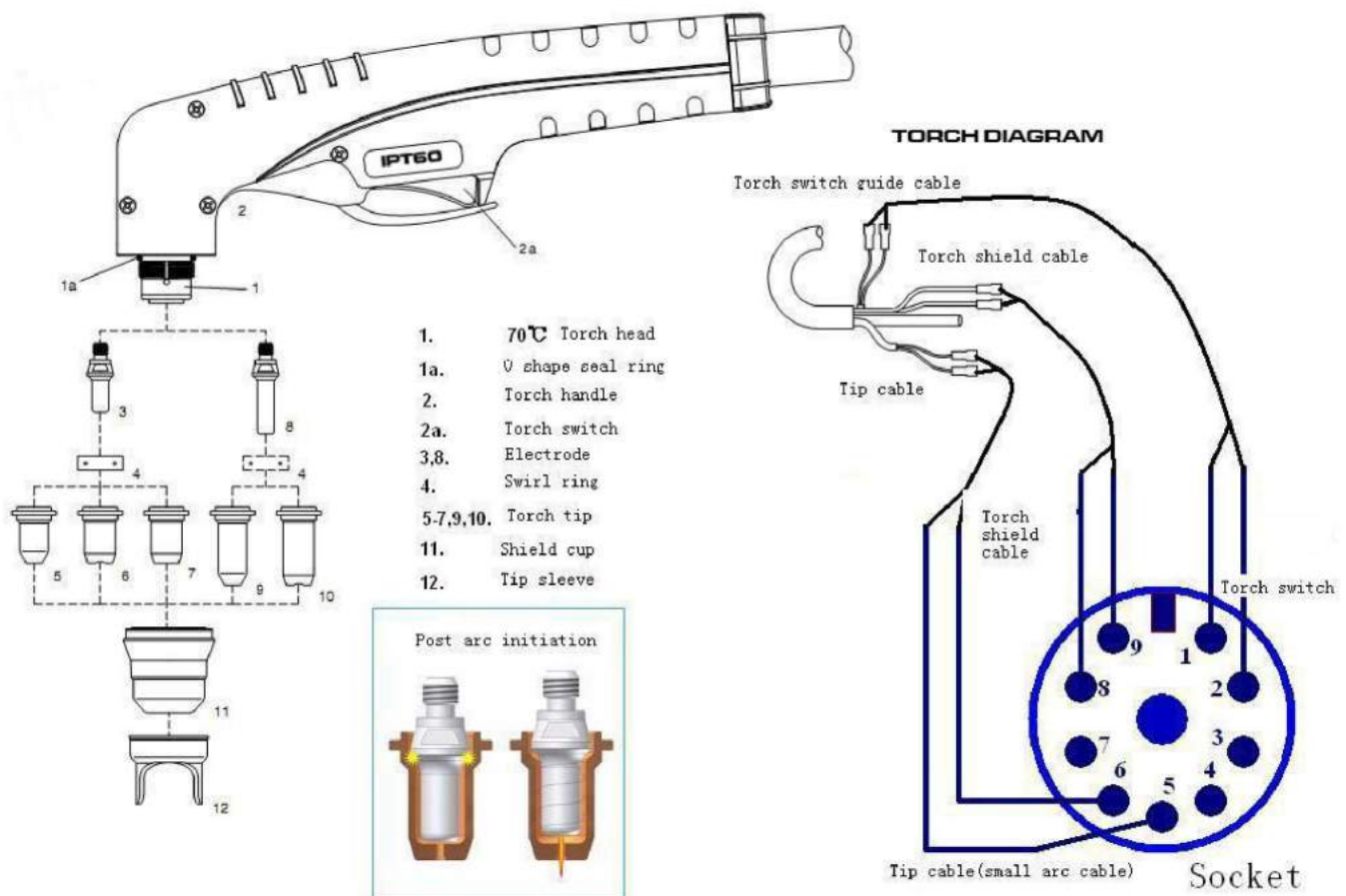
AND TROUBLESHOOTING

CUTTING GUN MAINTENANCE

- Warning :**
1. Check the consumable parts for damage, if worn, replace them (use only genuine TOPGUN parts).
 2. Turn off the power source before checking or removing torch parts.

Note: When operating the torch under normal conditions, a small amount of gas vents through the gap between the shield cup and the torch handle, Do not attempt to over tighten the shield cup as irreparable damage to internal components may result.

TOPGUN IPT60 TORCH



There are extremely dangerous voltages and power levels present inside this unit. Do not attempt to diagnose or repair unless you have had training in power electronics measurement and troubleshooting techniques.

***MACHINE NOT TO BE OPENED/WORKED ON UNLESS BY AN AUTHORIZED/CERTIFIED REPAIR AGENT.**

****NOT COMPLYING WITH THE ABOVE WILL RESULT IN A VOID OF WARRANTY.**

**WARNING****A. Power lamp and temperature lamp on.**

1. Air flow blocked, check for blocked air flow on the unit and correct.
2. Fan blocked, check and correct.
3. Unit is overheated, let the unit cool down for at least 5 minutes. Make sure the unit has not been operated beyond Duty Cycle limit, refer to technology parameters in Section 2.
4. Faulty components in the unit, return for repair or have qualified technician repair per Service Manual.

B. Torch fails to ignite the arc when the torch trigger is activated

1. System is in 'SET' mode change it to 'RUN' mode.
2. Faulty torch parts, inspect torch parts and clean or replace if necessary.
3. Gas/ air pressure too high or too low, adjust to correct pressure range.
4. Faulty components in the unit, return for repair or have qualified technician repair per Service Manual.

C. No cutting output: Torch trigger activated, power source on; Gas flows; Fan operates

1. Torch not properly connected to power supply, check that torch leads are properly connected to the power supply.
2. Work cable not connected to the workpiece, or connection is poor, make sure that work cable has a proper connection to a clean, dry area of the workpiece.
3. Faulty components within the unit, return for repair or have qualified technician repair per Service Manual.
4. Faulty Torch, return for repair or have qualified technician repair.

D. Low cutting output

1. Incorrect setting of CURRENT (A) control, check and adjust to correct setting.
2. Faulty components in the unit, return for repair or have an approved, qualified technician repair.

E. Difficult Starting

1. Worn torch parts (consumables), shut off input power. Remove and inspect torch shield cup, tip and electrode. Replace electrode or tip if worn; replace shield cup if excessive spatter adheres to it.

F. Arc shuts off during operation; arc will not restart when torch switch is activated.

1. Power Supply is overheated, let the unit cool down for at least 5 minutes. Make sure the unit has not been operated beyond the Duty Cycle limit. Refer to Section 2 for duty cycle specifications.
2. Gas pressure too low, check source for at least 4bar/60psi; adjust as needed.
3. Torch consumables worn, check torch shield cup, tip, starter element, and electrode; replace as needed.
4. Faulty components within the unit; Return for repair or have an authorized, qualified technician repair per Service Manual.

G. No gas flow; the power lamp on; Fan operates

1. Gas not connected or pressure too low, check gas connections. Adjust gas pressure to correct setting.

H. Torch cuts but cut is of low quality

1. Current (A) control set is too low, increase the current setting.
2. Torch is being moved too fast across the workpiece, Reduce the cutting speed.
3. Excessive oil or moisture in torch, hold torch 3 mm from clean surface while purging and observe oil or moisture buildup (do not activate torch). If there are contaminants in the air, additional filtering may be needed.

Accessories and Consumables

PARTS AND SPARES

CONSUMABLES



| | |
|-----------------------------------|-----------|
| Circle Cutting Guide to suit PT60 | TGWP41KIT |
|-----------------------------------|-----------|

HELMETS



| Model | Part No. |
|--|---|
| Topgun Warrior Series Auto Darkening Welding Helmet | Gloss Black - TGHWARGBLK Blue Inferno - TGHWARBLUINF Red Inferno - TGHWARINFerno Carbon Fibre - TGHWARCFIBRE |
| Warrior Helmet Harness | TGTHH |
| Warrior Helmet Inner Lens Pk5 | TGHLWI |
| Warrior Helmet Outer Lens Pk5 | TGHLWO |



| Model | Part No. |
|--|--|
| Topgun TITAN Series Auto Darkening Welding Helmet | Shadow - TGHTSHAD Cold Carbon - TGHTCCARB Bionix - TGHTBION Envious - TGHTENVI Robot - TGHTROBO Rich Smoke - TGHTRICH |
| TITAN Helmet Harness | TGTHH |
| TITAN Helmet Inner Lens Pk5 | TGHLTI |
| TITAN Helmet Outer Lens Pk5 | TGHLTO |

APPAREL

| | | |
|-----------------|-------------------------------------|--|
| Welding Jackets | Hi-Vis Welding Jacket | TGACWJHVL TGACWJHVXL TGACWJHVXXL TGACWJHVXXXL |
| | Professional Leather Welding Jacket | TGACWJRBL TGACWJRBXL TGACWJRBXXL TGACWJRBXXXL |
| Gloves | Blue/Yellow Welding Gloves | TGACGBY |
| | Gold/Red Welding Gloves | TGACGRG |
| | Premium Black/White | TGACGBWP |
| | Premium Black/Red | TGACGBRP |
| | Alumized | TGACGAL |
| Welding Sleeves | | TGACSL1 |
| Welding Apron | | TGACAP1 |
| Welding Spats | | TGACSP1 |
| Welding Hoods | Leather | TGACLHOOD |
| | Fire retardant cotton | TGACPBHOOD |

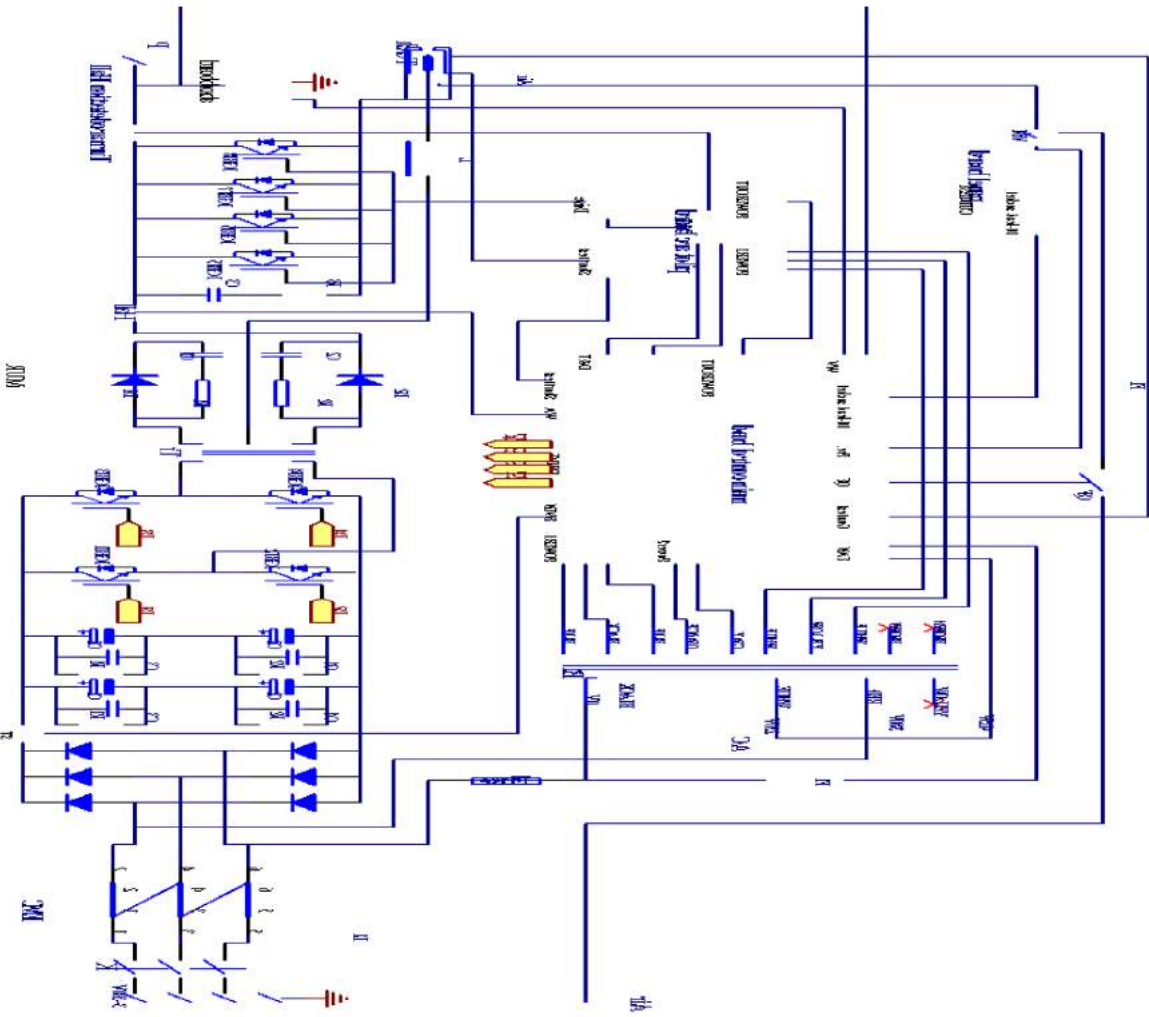


Diagram of a power distribution system showing the connection between a transformer, generator, and various electrical components.

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