

**turned off, then turned on again. If an over temperature condition occurs, the fans will continue to run while the condition exists and for a 10 minute period once the condition is cleared.**

**To set operating pressure** place the Function Control to the **SET** position. Gas will flow. For Standoff cutting, adjust gas pressure from 70 - 85 psi / 4.8 - 5.9 bar (LED's in center of control panel).

**To select current output level** place the Function Control knob in one of the three operating positions available - **RUN, RAPID AUTO RESTART** or **LATCH**. Gas flow will stop. Set the output current to desired amperage with the Output Current Control knob.

**CUTTING OPERATION**

When the torch leaves the workpiece during cutting operations with the Function Control Knob in the **RUN** position, there is a brief delay in restarting the pilot arc. With the knob in the **RAPID AUTO RESTART** position, when the torch leaves the workpiece the pilot arc restarts instantly, and the cutting arc restarts instantly when the pilot arc contacts the workpiece. (Use the 'RAPID AUTO RESTART' position when cutting expanded metal or gratings, or in gouging or trimming operations when an uninterrupted restart is desired). And with the knob in the **LATCH** position the main cutting arc will be maintained after the torch switch is released.

Note that cutting speeds vary according to torch output amperage, the type of material being cut, and operator skill. Output current setting or cutting speeds may be reduced to allow slower cutting when following a line, or using a template or cutting guide while still producing cuts of excellent quality. Release the trigger **to stop the cutting arc**. Gas continues to flow for approximately 20 seconds. During postflow, if the user moves the trigger release to the rear and presses the trigger, the pilot arc starts. The main arc transfers to the workpiece if the torch tip is within transfer distance to the workpiece.

**TORCH OPERATION**  
There are 3 types of operation: **Drag cutting, standoff cutting and gouging.**

For **STANDOFF CUTTING** the torch can be comfortably held in one hand or steadied with two hands. Position the hand to press the Trigger on the torch handle. With the hand torch, the hand may be positioned close to the torch head for maximum control or near the back end for maximum heat protection. Choose the holding technique that feels most comfortable and allows good control and movement.  
**Note: The tip should never come in contact with the workpiece except during drag cutting operations.**

Depending on the cutting operation, do one of the following:

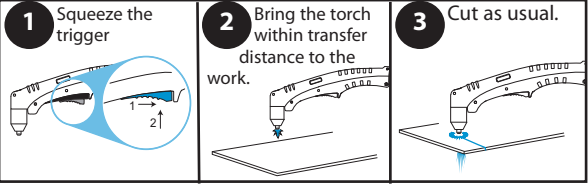
- For edge starts, hold the torch perpendicular to the

workpiece with the front of the tip on the edge of the workpiece at the point where the cut is to start.

- For standoff cutting, hold the torch 3-9 mm from the workpiece.

Then hold the torch away from your body. Slide the trigger release toward the back of the torch handle while simultaneously squeezing the trigger. The pilot arc will start. Bring the torch within transfer distance to the work. The main arc will transfer to the work, and the pilot arc will shut off.

**Note: The gas preflow and postflow are a characteristic of the power supply and not a function of the torch.**



Cut as usual. Simply release the trigger assembly to stop cutting. Follow normal recommended cutting practices as provided in the power supply operator's manual.

**Note: When the shield cup is properly installed, there is a slight gap between the shield cup and the torch handle. Gas vents through this gap as part of normal operation. Do not attempt to force the shield cup to close this gap. Forcing the shield cup against the torch head or torch handle can damage components.**

**For a consistent standoff height from the workpiece, install the standoff guide** by sliding it onto the torch shield cup. Install the guide with the legs at the sides of the shield cup body to maintain good visibility of the cutting arc. During operation, position the legs of the standoff guide against the workpiece.

The drag shield cup can be used with a **non-conductive straight edge** to make straight cuts by hand. **The straight edge must be non-conductive.**

The crown shield cup functions best when cutting 4.7 mm solid metal with relatively smooth surface.

**DRAG CUTTING** works best on metal 6 mm thick or less. Drag cutting can only be performed at 60 amps or less. Start drag cutting by installing the drag cutting tip and setting the output current. The torch can be comfortably held in one hand or steadied with two hands. Position the hand to press the Trigger on the torch handle. With the hand torch, the hand may be positioned close to the torch head for maximum control or near the back end for maximum heat protection. Choose the holding technique that feels most comfortable and allows good control and movement. Keep the torch in contact with the workpiece during the cutting cycle.

Hold the torch away from your body. Slide the trigger release toward the back of the torch handle while simultaneously squeezing the trigger. The pilot arc will start. Bring the torch within transfer distance to the work. The main arc will transfer to the work, and the pilot arc will shut off. Cut as usual. Simply release the trigger assembly to stop cutting. Follow normal recommended cutting practices as provided in the power supply operator's manual.

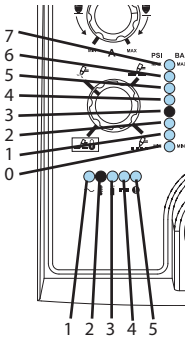
For **GOUGING** hold the torch comfortably in one hand or steady with two hands. Position the hand to press the Trigger on the torch handle. With the hand torch, the hand may be positioned close to the torch head for maximum control or near the back end for maximum heat protection. Choose the technique that feels most comfortable and allows good control and movement. Angle the torch slightly to direct blowback particles away from the torch tip (and operator) rather than directly back into it until the pierce is complete.

In a portion of the unwanted metal start the pierce off the cutting line and then continue the cut onto the line. Hold the torch perpendicular to the workpiece after the pierce is complete. Hold the torch away from your body. Slide the trigger release toward the back of the torch handle while simultaneously squeezing the trigger. The pilot arc will start. Bring the torch within transfer distance to the work. The main arc will transfer to the work, and the pilot arc will shut off. Clean spatter and scale from the shield cup and the tip as soon as possible. Spraying the shield cup in anti-spatter compound will minimize the amount of scale which adheres to it.

**SHUTTING DOWN**  
Turn the machine off by setting power switch to OFF position. All Power Supply indicators shut off. Unplug the input power cord or disconnect input power. Power is removed from the system.

**FAULT INDICATOR**  
At initial power up, two lights will temporarily illuminate for 2-3 seconds to show the version of software used. To determine the first digit, count the function indicators left to right, 1 through 5. To determine the second digit count the pressure indicators, reading from bottom to top, 0 through 7. In the example below the Temp indicator and 75 psi indicators are on indicating the version would be 2.3.

When the "Fault" indicator is on or blinking it will be accompanied by one of the pressure indicator lights depending on what the Fault is. The following table explains each of those Faults.



Pressure Indicator	Fault
Max	Over Pressure
90	Internal Error
85	Shorted Torch
80	Consumables Missing
75	Start Error
70	Parts in Place
65	Input Power
Min	Under Pressure

**EQUIPMENT CARE**

**Never push the equipment beyond its design limits.** If it will not do what you want with reasonable ease and speed, assume you have the wrong equipment for the job. Contact your local HSS Hire for advice.  
**Keep the equipment clean** - you will find this less of a chore if you clean it regularly, rather than wait until the end of the hire period.  
**When not in use, store the equipment somewhere clean, dry and safe from thieves.**

**FINISHING OFF**

**Turn the machine off** by setting power switch to OFF position. **Unplug the input power cord or disconnect input power. Remove the clamp from the material.** Give the unit a final clean up ready for return, to your local HSS Hire.

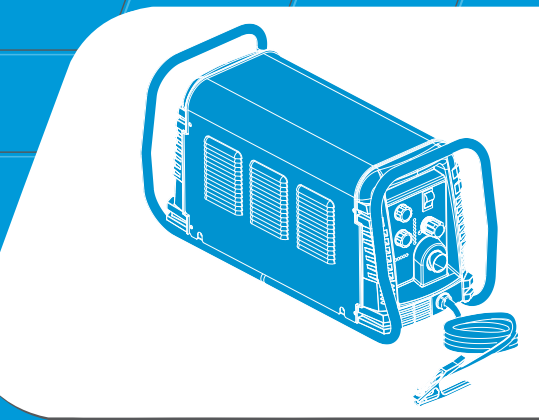


**... have you been trained**  
The law requires that personnel using this type of equipment in the workplace must be competent and qualified to do so. Training is available at HSS Training Solutions 0845 766 7799

**...any comments?**  
If you have any suggestions to enable us to improve the information within this guide please e-mail your comments or write to the Safety Guide Manager at the address below e-mail: safety@hss.com

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**Operating & Safety Guide HW012**



**40mm Plasma Cutter**

**A plasma cutting system for cutting material up to 40mm thick. Requires 415V, 3 phase power supply and minimum 10cfm compressed air supply.**





## GENERAL SAFETY

**For advice** on the safety and suitability of this equipment **contact your local HSS Hire.**


**There is a serious risk of personal injury if you do not follow all instructions laid down in this guide.**

**The hirer has a responsibility to ensure that all necessary risk assessments have been completed prior to the use of this equipment.**

**This equipment should only be used by an operator who has been deemed competent to do so by his/her employer.**

**This equipment should be used by an able bodied, competent adult** who has read and understood these instructions. Anyone with either a temporary or permanent disability, should seek expert advice before using it.


**Keep children, animals and bystanders away from the work area. Cordon off a NO GO area using cones and either barriers or tape, available for hire from your local HSS Hire.**


 **Never use** this equipment if you are **ill, feeling tired,** or **under the influence of alcohol or drugs.**


### WARNING


**If you are wearing an electronic life support device (a heart Pacemaker) you must consult your doctor before going near or working with this equipment. Magnetic fields associated with high currents may affect these devices.**

**When switched ON the cutting torch emits a cutting stream, which can burn flesh, even if the earth clamp is not connected.**

 **This equipment generates potentially harmful noise levels.** To comply with health and safety at work regulations, **ear defenders must be worn** by everyone in the vicinity.

 **Fumes produced by the cutting process, if inhaled, can be harmful to health.** A suitable mask must be worn when using this equipment. Respiratory protective equipment is available for hire, contact your local HSS Hire for details.

 **Wear practical, protective clothing, gloves and footwear.** Avoid loose garments and jewellery that could catch in moving parts, tie back long hair.

 **This equipment is heavy (29 kg), never attempt to lift it on your own, always get help.**

 **A head shield with a suitable protection shade must be worn by anyone in the work area - goggles are not suitable.**

Avoid loose garments and jewellery that could interfere with the work.

If the head shield or lens becomes damaged, return it to your local HSS Hire.

**Do not work near flammable gases or liquids,** petrol or paint thinner fumes for example. **Keep combustible materials at a safe distance** - at least 5m.

**Never touch any parts** that are electrically **“live” or “hot.”**

**Wear dry clothing.** Insulate yourself from the work piece or other parts of the welding circuit.

**Never use this equipment near computers or any sensitive electronic equipment.**

### LET IT COOL

**Handle cutting equipment and work with care – it will be hot. Leave equipment to cool before changing position, moving earth clamps, and so on.**

**Extra care** must be taken when the **workplace is moist or damp.**

**Always transport, store and operate the machine in an upright position.**

**Keep the power unit’s air vents clear of all obstructions. Always switch equipment OFF before making any adjustments to it. Never leave it switched ON and unattended.**

**Ensure the work area is well lit and ventilated,** a fume extractor or smoke eliminator should be used. If in doubt, ask about lighting and ventilation equipment at your local HSS Hire.

**Make sure you know how to switch this machine OFF before you switch it ON** in case you get into difficulty.

**Check the condition of the equipment before use.** If it shows signs of damage or excessive wear, return it to your local HSS Hire.

**Never try to repair the equipment.**

## ELECTRICAL SAFETY

### WARNING

**Electric Shock can injure or kill. The plasma 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.**


**The HSS 40mm Plasma Cutter is powered by a 415V 3 phase mains supply,** and all mains connections may only be made by a qualified electrician.

**Extension leads used MUST be protected by armoured cable.**

**Keep power supply cables and leads out of harm’s way. Never run them through water, over sharp edges, or where they could trip someone.**

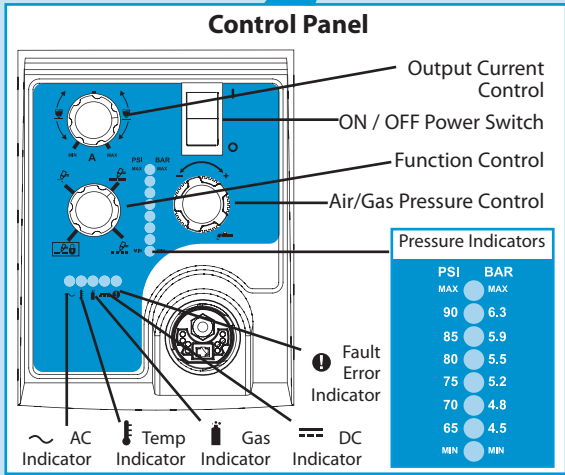
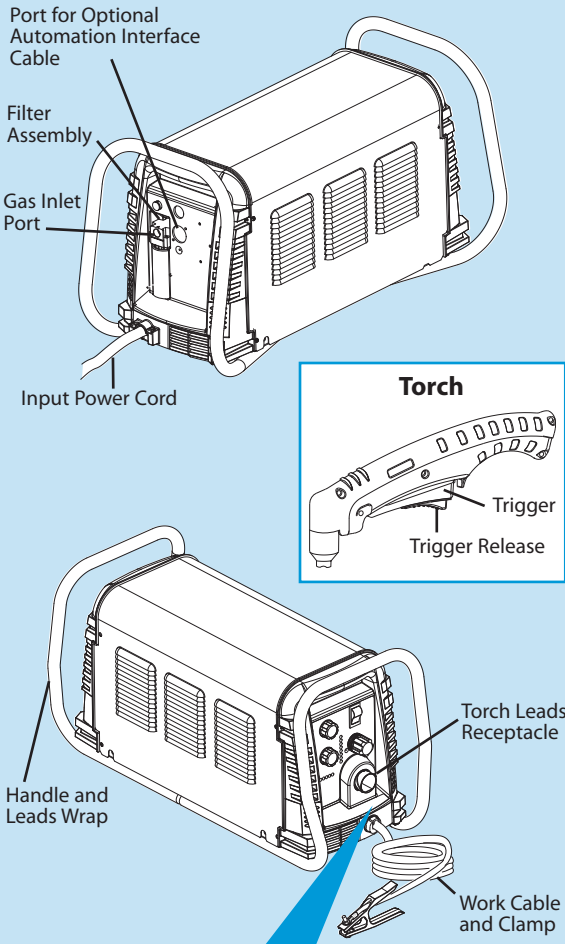
**If the equipment fails, or if its power supply cable or plug (if fitted) gets damaged, return it. Never try to repair it yourself.**

**Do not use electrical equipment in very damp or wet conditions, it can be dangerous.**

 **To reduce the risk of electric shock, always use a Red suitable RCD** (Residual Current-Operated Device) available from your local HSS Hire, or power the equipment from a mains circuit with a built-in RCD.

**If the AC light does not illuminate with the power switched ON, contact your local HSS Hire.**

## IDENTIFIER



## GETTING STARTED

**Never use the Plasma Cutter until you have fully read and understood this User Guide and the machine has been properly set up using the information it contains.**

### CONNECTING GAS SUPPLY TO UNIT

The connection is the same for compressed air or high pressure gas cylinders. Connect the gas line to the inlet port (see illustration).

**NOTE: For a secure seal, apply thread sealant to the fitting threads, according to manufacturer's instructions. Do Not use Teflon tape as a thread sealer, as small particles of the tape may break off and block the small gas passages in the torch.**

When **using high pressure gas cylinders as the gas supply,** refer to the **manufacturer's specifications for installation and maintenance procedures** for high pressure gas regulators.

Before connection **examine the cylinder valves** to be sure they are clean and free of oil, grease or any foreign material. Briefly **open each cylinder valve to blow out any dust** which may be present.

The cylinder must be equipped with an adjustable high-pressure regulator capable of outlet pressures up to 100 psi (6.9 bar) maximum and flows of at least 300 scfh (141.5 lpm). Connect gas supply hose to the cylinder.

**NOTE: Pressure should be set at 100 psi (6.9 bar) at the high pressure gas cylinder regulator. Supply hose must be at least 6 mm I.D.**

### TORCH CONNECTIONS

If necessary, connect the torch to the Power Supply. **Disconnect primary power at the source before connecting the torch.**

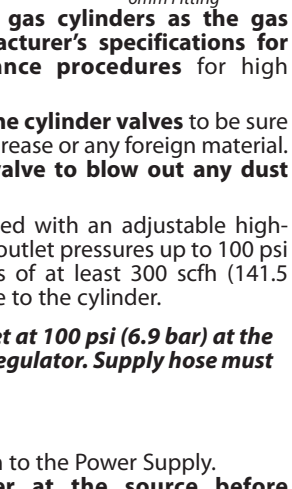
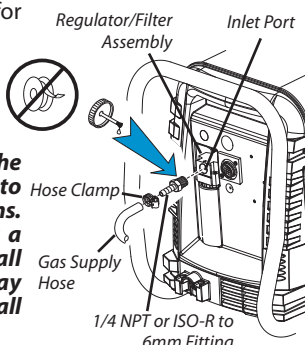
Align the male connector (on the torch lead) with the female receptacle. Push the male connector into the female receptacle. The connectors should push together with a small amount of pressure.

Secure the connection by turning the locking nut clockwise until it clicks. **Do not use the locking nut to pull the connection together. Do not use tools to secure the connection.**

Now test the quality of air. Switch the machine on.

Put the Function Control switch in the SET position. Place a welding filter lens in front of the torch and turn on the air. Any oil or moisture in the air will be visible on the lens.

**Do not start an arc!**



### SELECTING AND FITTING THE TORCH

Depending on the type of operation to be done determines the torch parts to be used.

There are 3 types of operation: **Drag cutting, standoff cutting and gouging.**

To change the torch parts for a different operation **first disconnect primary power at the source.**

Unscrew and remove the shield cup assembly from the torch head.

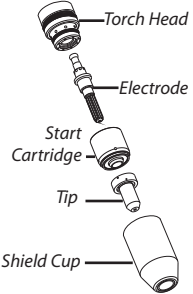
**NOTE: The shield cup holds the tip and starter cartridge in place. Position the torch with the shield cup facing upward to keep these parts from falling out when the cup is removed.**

Then remove the Electrode by pulling it straight out of the Torch Head.

Install the replacement Electrode by push- ing it straight into the torch head until it clicks.

Install the starter cartridge and desired tip for the operation into the torch head.

Hand tighten the shield cup assembly until it is seated on the torch head. If resistance is felt when installing the cup, check the threads before proceeding.



## BASIC TECHNIQUES

### PREPARATIONS FOR OPERATING

Check the torch for proper assembly and appropriate torch parts. The torch parts must correspond with the type of operation, and with the amperage output of this Power Supply (120 amp maximum).

Connect the torch and make sure it is done properly.

### WARNING

**Disconnect primary power at the source before assembling or disassembling power supply, torch parts, or torch and leads assemblies.**

Check the power source for proper input voltage. Make sure the input power source meets the power requirements for the unit.

Connect the input power cable (or close the main disconnect switch) to supply power to the system.

Check connections and turn air supply on.

**To connect work cable** clamp the work cable to the workpiece or cutting table. The area must be **free from oil, paint and rust.** Connect only to the main part of the workpiece; do not connect to the part to be cut off.

Switch the unit on. AC indicator turns on. Gas indicator turns on if there is sufficient gas pressure for power supply operation and the cooling fans turn on.

**NOTE: Minimum pressure for power supply operation is lower than minimum for torch operation.**

**NOTE: The cooling fan will turn on as soon as the torch switch is activated. After the unit is idle for 10 minutes the fans will turn off. The fans will come back on as soon as the torch switch is activated or if the unit is**