

FITTING THE WIRE SPOOL AND INSERTING WIRE

**DANGER!**

**ALWAYS MAKE SURE THE MAINS POWER SUPPLY IS SWITCHED OFF BEFORE UNDERTAKING ANY TYPE OF INTERVENTION ON THE WELDER**

Open the wire feed compartment lid on the machine or wire-feed case and un-screw the nut from the wire support coil hub.

Place wire spool on the hub and ensure that the drive dog-pin engages the mating hole in the wire spool.

Press then release the inch switch (located on the control panel) to adjust the brake, the wire spool should not continue to run on when the feed motor stops.

To insert the wire first unscrew the contact tip in the MIG torch. Then open the wire feed compartment lid on the machine or wire-feed case.

Cut off the curved or damaged end of welding wire and feed it through the inlet guide. The diameter of the wire should correspond to the diameter of the feedrolls. The wire size is on the face of the feedrolls.

Open the pressure lever and thread the wire through the inlet guide past the rollers and then through the outlet guide.

Put the pressure roll down ensuring that the teeth of the gears fit together and fix by setting the lever into vertical position.

Adjust the pressure so that it provides constant movement. Do not over tighten pressure arm setting as damage to motor gearbox may occur.

Switch ON machine at main ON/OFF switch, stretch torch cable out straight and press the inch button switch on the wire feed front panel. Adjust the pressure at the pressure adjustment screws so the wire-feed rolls drive the wire consistently without slipping. The wire should not be deformed.

Adjust the pressure adjustment next to the inlet guide to a lower pressure less then the pressure adjustment next to the outlet guide, this will ensure that the wire will be locate correctly in the wire-feed unit.

Press the inch switch till the wire appears approximatley 20 mm out of the torch neck. Screw in the contact tip corresponding to the wir e diameter and cut off the wire stick out.

CONNECTING THE GAS CYLINDER

If the Power Source Wheel Kit is fitted, position a gas cylinder on the rear tray and lock securely to the Power Source cylinder bracket with the chains provided. If this arrangement is not used then ensure that the gas cylinder is secured to a building pillar, wall bracket or otherwise **securely fixed in an upright position.**

Open the gas valve once to blow out possible dirt particles, then connect the gas regulator to the gas cylinder valve and connect the gas hose to the gas regulator.

Open the gas cylinder valve and adjust the gas flow on the gas regulator while pressing the gas test button on the wire feeder control panel, The flow rate will be shown at the flowmeter. This should be approximately wire diameter x 10 l/min.

CONFIGURE FOR ALUMINIUM WELDING

Change the feedrolls to U groove for aluminium wire. Change the torch liner to a nylon or teflon liner. Remove the capillary tube at the central connection. Cut the teflon liner close to the end of the feedroll and pull the brass tube over the teflon liner with the corresponding length to stabilise it. Fasten the torch and thread in the wire electrode.

TRANSPORTING METHODS

These units are equipped with handles mounted on the front panel of power source.

If using a fork lift vehicle, place and secure unit on a suitable pallet before transporting. If using an overhead crane, ensure correct slings are used before lifting.

BEFORE OPERATION

When the wire had been installed and gas had been set it is possible to start welding. Plug the unit to the mains and switch it on. The green LED will illuminate.

Select the voltage and current. To set the current use potentiometer encoder (on the control panel).

This HSS Mig Welder controls work in four modes: Continuous two stroke (2T),

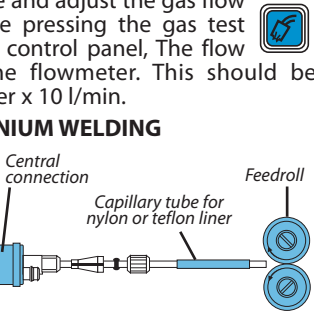
Continuous four stroke (4T), Spot welding and Interval welding. In order to choose require mode press welding mode selector then select either the LED for 2 stroke or for 4 stroke. By pressing and holding welding mode selector for 3 seconds, this will initiate spot / interval mode. When using 2 stroke the welding procedure starts by pressing the button in the torch handle. It is necessary to keep the torch button pressed all the time during welding. The welding stops by releasing the torch button.

The four stroke mode is being used mostly for long welds, when there is no need to hold the torch button pressed. The welding procedure start by pressing the torch button; after releasing the torch button the welding continues. The welding stops after the second pressing and releasing the torch button then.

--- If spot / interval mode LED continuously lights the  
... spot mode has been selected. If led flashes the  
■ interval mode has been selected.

You can have spot or interval welding in both 2 troke and in 4 stroke mode (by means of short pressing the welding mode selector and either LED for 2 stroke or 4 stroke mode.)

To get out of this mode, keep pressing the spot or interval welding button for more than 3 seconds.



The spot welding mode is being used for welding short welds of the same length. The pressing the torch button activates the time circuit that starts and end the welding procedure. This mode is available in 2T or 4T mode.

BASIC TECHNIQUES

Place the unit on **stable, levelled ground at a distance of 300mm or more from the walls or similar that could restrict natural air flow for cooling. Make sure the area is free from moisture, dust, oil, steam and corrosive gases. It is important to operate the machine in ambient temperature** between 0° C and 40° C.

**Place yourself in a comfortable position** before beginning to work.

The unit has two control settings that have to balance. These are the Wirespeed control and the Voltage Control switches. The welding current is determined by the Wirespeed control, the current will increase with increased Wirespeed, resulting in a shorter arc. Less wire speed will reduce the current and lengthen the arc. Increasing the welding voltage hardly alters the welding current level, but lengthens the arc. By decreasing the voltage, a shorter arc is obtained with little change in welding current.

When changing to a different electrode wire diameter, different control settings are required, a thinner electrode wire needs more Wirespeed to achieve the same current level.

A satisfactory weld cannot be obtained if the wirespeed and voltage switch settings are not adjusted to suit the electrode wire diameter and dimensions of the work piece. If the Wirespeed is too high for the welding voltage, “stubbing” will occur as the wire dips into the molten pool and does not melt. Welding in these conditions normally produces a poor weld due to lack of fusion. If, however, the welding voltage is too high, large drops will form on the end of the electrode wire, causing spatter. The correct setting of voltage and Wirespeed can be seen in the shape of the weld deposit and heard by a smooth regular arc sound.

MIG torch angle to the weld has an effect on the width of the weld run.

The electrode stick out from the MIG Torch nozzle should be between 2.0mm (5/64”) and 5.0mm. (13/64”). This distance may vary depending on the type of joint that is being welded.

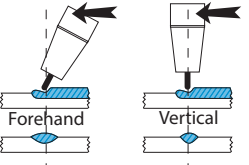
Speed at which a weld travels influences the width of the weld and penetration of the welding run.

If you have not yet done any welding, **practice on a piece of scrap plate before going on to more serious work.** You may at first experience difficulty.

SWITCHING OFF

**After completion of welding the Power Source should be left turned ON for 5 minutes.** This allows the fan to run and cool the internal components.

Switch the ON/OFF Switch (located in front of the unit) to the O position.



TECHNICAL SPECIFICATIONS	
Mains Input Voltage	3ph 400V 50Hz
Maximum power consumption	16.7 kVA
Current range I2	55A - 420A
Welding output	420A @ 30% 320A @ 60% 260A @ 100%
Weight	133kg
Dimensions H x W x D (assembled)	1360 x 380 x 870 mm
Supply voltage of wire feeder	24Vac
Speed of wire feeder	1-19 m/min
Number of feed rolls	4

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 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 secure.**

FINISHING OFF

**Switch OFF wait for 5 minutes and unplug the unit. Leave everything to cool then take the earth clamp off the work.**

**Disconnect all leads and coil them up neatly. Collect all parts together and give them a final clean up ready for return, to HSS Hire.**



**... have you been trained**

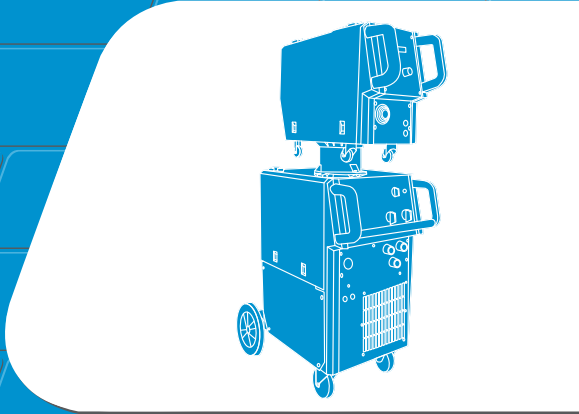
The law requires that personnel using this type of equipment in the workplace must be competent and qualified to do so. Training is available at HSS Training 0845 766 7799

**...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](mailto:safety@hss.com)

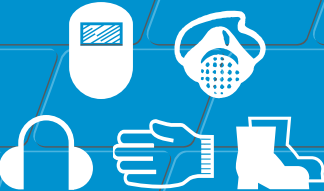
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Group Office: 25 Willow Lane, Mitcham, Surrey CR4 4TS  
Web Site: <http://www.hss.com>

Operating & Safety Guide HW054



400 amp Mig Welder

Offers excellent performance on mild steel, stainless steel, aluminium, silicon bronze and some hard facing wires with Argon based shielding gases.



GENERAL SAFETY

For advice on the safety and suitability of this equipment contact 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.

Most welding tasks may be considered as hot work in site situations and may be subject to specific permits to work.

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 a 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 HSS Hire.

Welding screens are also available for hire from your local HSS Hire.

**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.

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

Cover your skin. Wear practical, dry, hole-free insulating gloves, protective clothing and footwear. Avoid loose garments and jewellery that could catch in moving parts, tie back long hair. Insulate yourself from work and ground using dry insulating mats or covers.

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 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.

Watch for fire, and keep a fire extinguisher nearby.

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.

A head shield with suitable shading 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 headshield or lens becomes damaged, return it to HSS Hire.

Fumes produced by the welding 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 HSS Hire for details. Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapours to form highly toxic and irritating gases.

Do not weld on coated metals, such as galvanized lead, or cadmium plated steel, unless the coating is re moved from the weld area, the area is well ventilated, and if necessary, while wearing an air supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

Never use welding equipment near computers or any sensitive electronic equipment. Observe potential electromagnetic problems in the surrounding area.

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

If working above floor level, wear a safety harness to prevent falling.

Always switch equipment OFF before making any adjustments to it. Never leave it switched ON and unattended.

Keep the power unit's air vents clear of all obstructions.

**LET IT COOL**

HANDLE WELDING EQUIPMENT AND WORK WITH CARE – IT WILL BE HOT. LEAVE EQUIPMENT TO COOL BEFORE CHANGING WELDING RODS, MOVING EARTH CLAMPS, AND SO ON.

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

Never dip electrode holder in water to cool it or lay it down on the ground or the work surface. Do not touch holders connected to two welding machines at the same time or touch other people with the holder or electrode. Do not wrap cables around your body.

Always ground the workpiece to a good electrical (earth) ground.

Do not touch electrode while in contact with the work (ground) circuit.

Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.

**VEHICLE SAFETY**

BEFORE CARRYING OUT WELDING WORK ON CARS/LORRIES AND SIMILAR VEHICLES... REMOVE THE VEHICLE'S BATTERY AND DISCONNECT THE ALTERNATOR. REMOVE ALL COMBUSTIBLE MATERIAL AND OTHER FIRE/EXPLOSION HAZARDS.

Turn off all equipment when not in use. Disconnect power to equipment if it will be left unattended or out of service.

Do not touch live electrical parts.

Check the condition of the equipment before use.

If it shows signs of damage or excessive wear, return it to HSS Hire.

**GAS CYLINDERS**

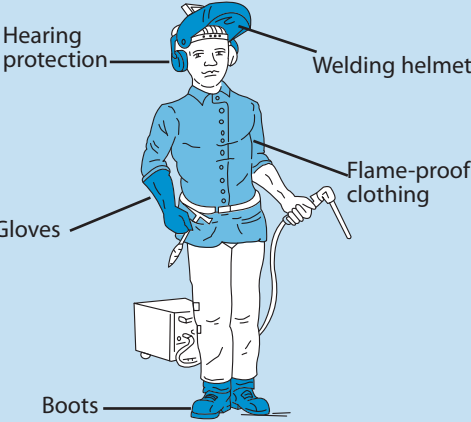
HANDLE GAS CYLINDERS WITH CARE. IF DAMAGED, A CYLINDER CAN EXPLODE.

PROTECT COMPRESSED GAS CYLINDERS FROM EXCESSIVE HEAT, MECHANICAL SHOCKS, AND ARCS. INSTALL AND SECURE CYLINDERS IN AN UPRIGHT POSITION BY CHAINING THEM TO A STATIONARY SUPPORT OR EQUIPMENT CYLINDER RACK TO PREVENT FALLING OR TIPPING.

KEEP CYLINDERS AWAY FROM ANY WELDING OR OTHER ELECTRICAL CIRCUITS.

NEVER ALLOW A WELDING ELECTRODE TO TOUCH ANY CYLINDER.

**SAFETY OUTFIT**



ELECTRICAL SAFETY

The HSS 400 Amp MIG Welding unit must be powered from a 415V 3 phase mains supply, all mains connections must only be made by a qualified Electrician.

Extension leads must always be protected by armoured cable.

Keep flexes and leads out of harm's way. Never run them through water, over sharp edges, or where they could trip someone.

If the welder fails, or if its flex 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.

The ON/OFF switch (front panel) is the main circuit breaker. The Power Indicator display illuminates when the power switch is in the ON position.

**WARNING**

TOUCHING LIVE ELECTRICAL PARTS CAN CAUSE FATAL SHOCKS OR SEVERE BURNS.

THE INPUT POWER CIRCUIT AND MACHINE INTERNAL CIRCUITS ARE LIVE WHEN POWER IS ON.

GETTING STARTED

The HSS 400 amp Mig Welder offer excellent performance on mild steel, stainless steel, aluminium, silicon bronze and some hard facing wires with Argon based shielding gases. The welder also gives excellent results on mild steel using Carbon Dioxide shielding gas.

**WARNING**

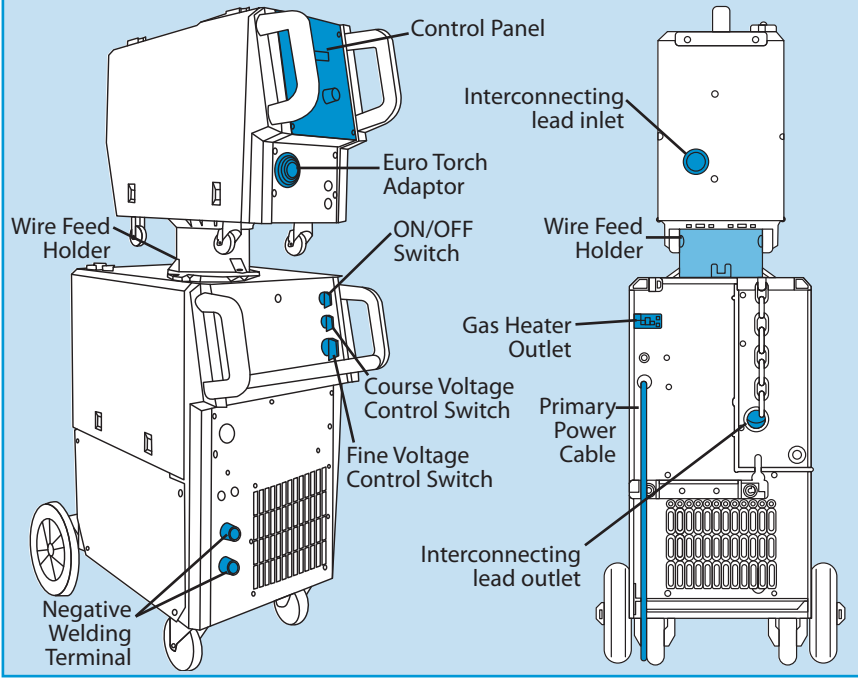
WELDING PRODUCTS AND WELDING PROCESSES CAN CAUSE SERIOUS INJURY OR DEATH, OR DAMAGE TO OTHER EQUIPMENT OR PROPERTY, IF THE OPERATOR DOES NOT STRICTLY OBSERVE ALL SAFETY RULES AND TAKE PRECAUTIONARY ACTIONS.

Never use the HSS 400 amp Mig Welder until you have fully read and understood this User Guide and the machine has been properly set up using the information it contains.

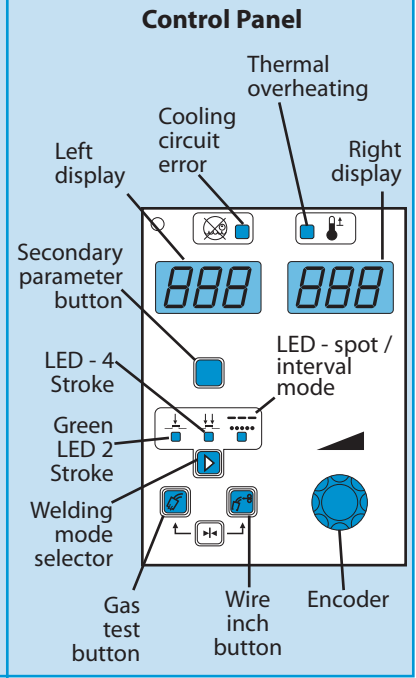
It is important that the equipment duty cycle is taken into consideration when in use.

The rated duty cycle of a welding Power Supply is the operating time it may be used at its rated output current without exceeding the temperature limits of the insulation of the component parts. To explain the ten minute duty cycle period the following example is used. Suppose a welding Power Supply is designed to operate at 50% duty cycle, 250 amperes at 28 volts. This means that it has been designed and built to provide the rated amperage (250A) at the rated load voltage (28V), for 5 minutes out of every

**IDENTIFIER**



**Control Panel**



10 minute period (50% of 10 minutes is 5 minutes). During the other 5 minutes of the 10 minute period the Power Supply must idle and be allowed to cool. The thermal cut out will operate if the duty cycle is exceeded.

**CONNECTION**

To connect the torch fit the MIG Torch to the Euro adaptor by pushing the torch connector into the brass torch adaptor and screwing the plastic torch nut clockwise to secure the torch to the torch adaptor. Remove the contact tip from the torch handset.

Connect the work lead to one of the two Negative connections and fasten it by turning the connector to the right. Connect the Work clamp to the work piece or at the welding table.

Fasten the Work clamp near the welding location, this avoids stray current flow through mains earthing system. Connect the Work clamp tightly to the welding bench or to the work piece.

**WARNING**

DO NOT PLACE THE WORK CLAMP ON THE WELDING MACHINE OR GAS CYLINDER AS WELDING CURRENT MAY CONDUCTED VIA THE MAINS EARTH AND COULD CAUSE THE PRIMARY POWER CABLE TO BURN OUT.