



**THERMOCOUPLE & FINE WIRE WELDER,
MODEL: L60+**



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THERMOCOUPLE AND FINE WIRE WELDER MODEL L60+

Operating Instructions

The L60+ welder is designed for sensor manufacturers to produce commercial grade thermocouple junctions, and by users of large numbers of exposed junction thermocouples such as test and development laboratories where multipoint temperature sensing of test pieces is required.

No special skills are required and most people will be capable of producing quality work with minimal practice. A satisfactory thermocouple junction is produced without using argon, but where argon is available a momentary purge is automatically triggered immediately prior to the weld to give optimum weld integrity.

Safety Note

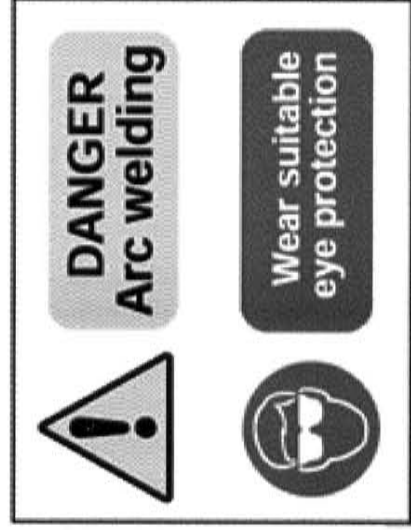
1. Always protect the eyes with a suitable filter during welding – never view the weld discharge with the naked eye.
2. Avoid touching the rear of the welder during operation – the power switch heat sink may run hot. This is a normal operating condition.
3. Do not allow the hand to directly contact the welding electrode during operation.



Accessories

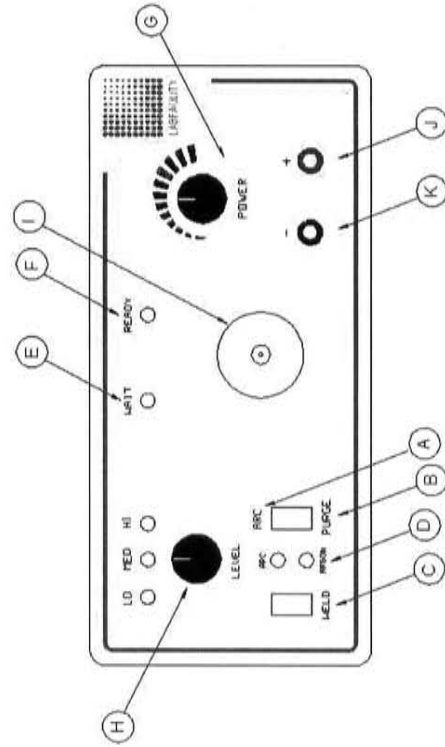
Standard: Wire Holding Pliers With Lead
Safety Glasses
Magnifying Eyeglass
Carbon Electrodes
Spare 2A Fuse
Argon Hose
Hexagon key (for electrode change)
Mains Lead
Footswitch (Allows One Handed Operation)

Optional: Spare Carbon Electrodes
Gas Flow Meter & Valve
Resistance Welding Kit



Front Panel Controls

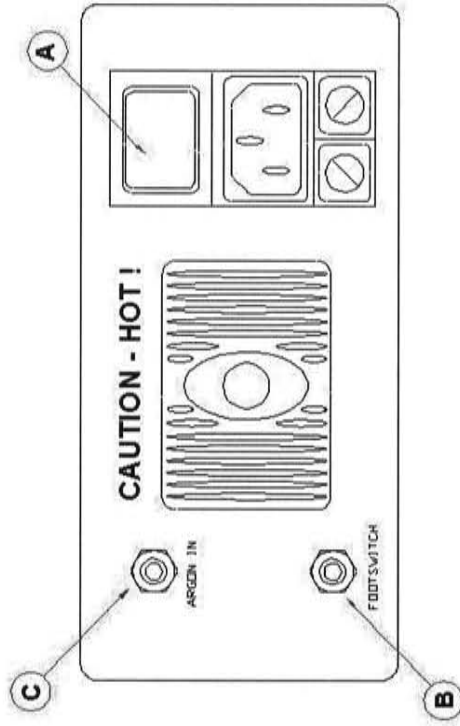
- A. Arc
Argon gas and weld current controlled by the "Weld" switch. LED indication.
- B. Purge
Allows the gas line and electrode shield to be purged of air prior to a new welding period.
- C. Weld Switch:
Initiates a welding operation (in "arc" mode also opens the Argon valve).
- D. Argon LED
Indicates when the Argon control valve is open and gas is flowing.
- E. Wait LED
Glows when weld charge is building.
- F. Ready LED
"Ready to Weld" indication.
- G. Power
Rotary control of the capacitor charge voltage.
- H. Level selector
Selects the total capacitance available giving the following values with LED indication.
"LO" = 0 to 6 Joules
"MED" = 0 to 28 Joules
"HI" = 0 to 64 Joules
- I. Electrode Holder
Holds the replaceable carbon electrode
Which is accessible by removing the outer Argon Shield. Also holds the red filter in place.
- J. Red socket
Output socket for using the pliers supplied or the Optional resistance welding pen.
- K. Black socket
Output socket, this is only used with the resistance welding plate in conjunction with the welding pen



- 6 -

Rear Panel Controls

- A. ON/OFF switch
Power to instrument ON/OFF
- B. Weld jack socket
Footswitch connection
- C. Argon inlet
For connection to Argon supply.



Setting Up

1. Using a suitable connector fused at 5 amps, connect to mains supply.
2. If Argon is to be utilised, couple argon hose to rear of welder. Do not over-tighten as a good seal will be made with the nut slightly more than finger tight.
3. Connect free end of argon hose to the argon supply via an argon flow regulator.
4. Switch on.
5. Hold welding mode switch in "purge" position and adjust argon flow to 8 litres per min.

The apparatus is now ready for use.



- 7 -

Welding

Arc Welding

1. Connect the work-holding pliers to the red output socket.
2. Depress the purge switch for 3 or 4 seconds to rid the system of air.
3. Reset the mode to "Arc".
4. Set the energy level to the desired value.
5. Prepare the wires to be welded and grip in the pliers, leaving about 1mm or more protruding.
6. Position the wires 5 or 6mm in front of the carbon, whilst steadying the hand.
7. Press the "weld" switch or foot switch and slowly move the work towards the carbon until the arc is struck.
8. Release the switch and remove the work for examination.

Preparation of Wires for Arc welding

For small diameter wires, strip off about 12mm of insulation and twist together. Then, with side cutters or scissors cut the wire off square leaving sufficient uninsulated material to give approximately 1mm protruding when gripped in the welding pliers. Larger diameter wires may be held side by side in the welding pliers, but ensure that they are in firm contact with each other and trimmed off square. This method will be found useful for attaching solid leads to resistance thermometer detectors. However, when attaching stranded leads, it will be found more convenient to use the twisting method and then to carefully untwist after welding.

Energy Settings

Arc Welding

The following settings may be used as a guide. The correct setting for a particular metal combination and wire gauge will produce a spherical bead. A flattened bead indicates that the energy setting is too high.

Wire Diameter (mm)

Switch at "LOW"	0.1	Switch at "HIGH"	0.3
	0.15		0.5
	0.2		0.7
	0.25		0.8

Resistance Welding

Using scrap material, use the "Medium" range and try a weld. Increase or decrease the setting incrementally until a strong weld is achieved without undue thinning of the ribbons. Should the pen tend to stick, trim the end of the electrode by gently stroking it on the slipstone, making sure that the end is kept flat and square to the axis of the pen. Should the plate become discoloured, it may be cleaned using fine wire wool or metal polish.

Electrodes

To replace or adjust carbon electrode, first turn the welder on its side and slacken screw on base of argon shield, which may be then pulled off. Revealing grub screw which holds carbon electrode in place.

TUNGSTEN: The tungsten electrode is crimped into a screwed brass bush which may be unscrewed from the pen assembly for replacement.



Maintenance

Apart from keeping the electrode in good order, no other maintenance is required.

Specifications

General

Energy Output 0-60 Joules
Welding Capacity Wires up to 1.1mm diameter
Duty Cycle Minimum 5-10 welds/min

Mechanical

Physical Dimensions 220mm Wide x 120mm High x
250mm Depth
Weight 4kg

Electrical

Power Supply 110-120 Vac or 220-250 Vac,
50-60Hz
Power Consumption Max 170VA dropping to 20VA during charging

*All information given is correct at time of going to press.
Please note that specifications and availability of certain items may be subject to change.*

