1 YEAR
WARRANTY

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User's Guide

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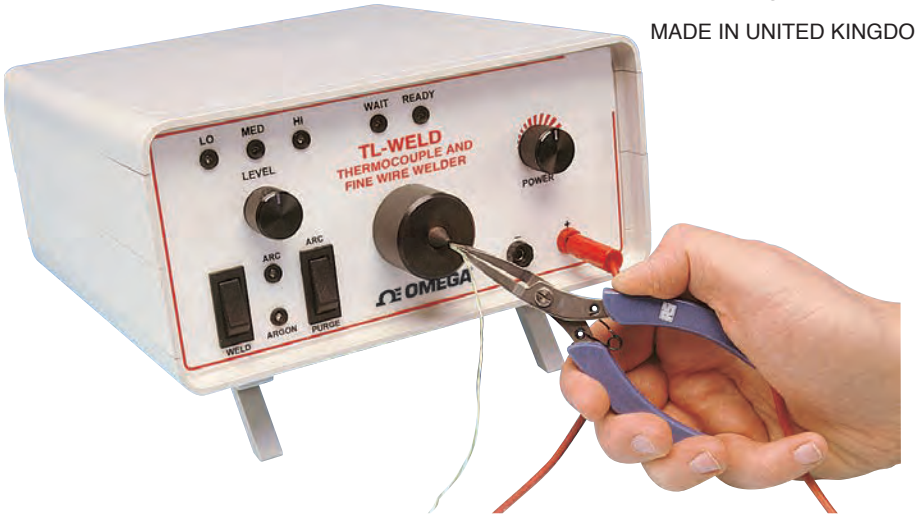

TL-WELD
Thermocouple and Fine Wire Welder

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CONTENTS

THERMOCOUPLE AND FINE WIRE WELDER
TL-WELD

Operating Instructions

The TL-WELD 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 as 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.

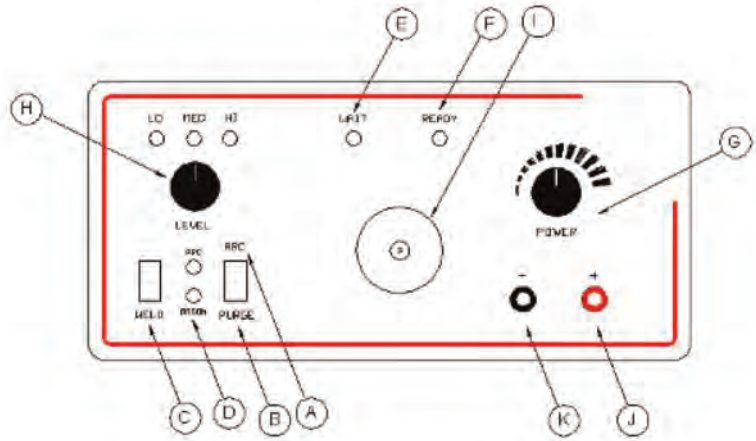
Accessories

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

Optional: Spare Carbon Electrodes

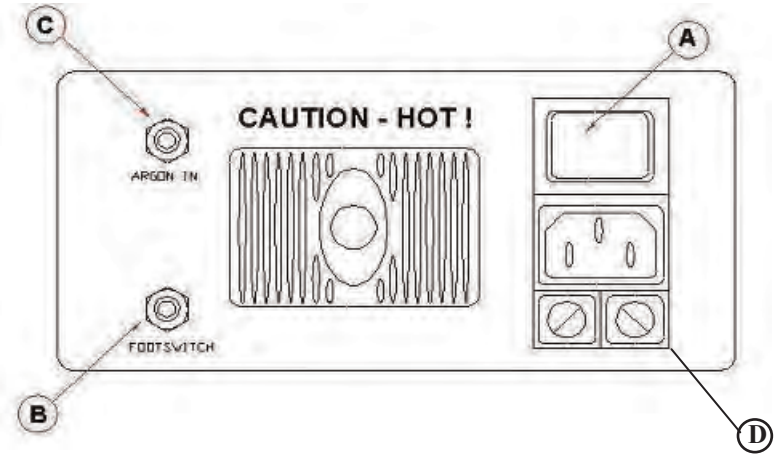
Front Panel Controls

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.
J. Red socket	Output socket for using the pliers supplied.
K. Black socket	Output socket, this provides an additional earth. point if required.



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
D.	IEC power inlet module	For selection of 110-120 Vac or 220-250 Vac power supply. Factory default setting 220-250 Vac.



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.

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 un-insulated 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

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. This reveals grub screw which holds carbon electrode in place.

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
Weld Voltage	49 V

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
Fuse Characteristics	12A/250V

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.

EC DECLARATION OF CONFORMITY

in accordance with the following Directive(s):

2004/108/EEC	Electromagnetic Compatibility directive, as applicable to arc welding equipment.
2014/35/EU	Low Voltage Equipment Directive.
hereby declare that:	TL-WELD Fine Wire Welder

is in conformity with the applicable requirements of the following documents

BS EN 61000-6-1: 2007	Electromagnetic compatibility (EMC). Generic standards. Immunity for residential, commercial and light-industrial environments.
BS EN 61000-6-3: 2007 + A1: 2011	Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments

The basis on which Conformity is being declared
The manufacturer / distributor hereby declares that the products identified above comply with the protection requirements of the EMC directive and with the principal elements of the safety objectives of the Low Voltage Equipment directive.

Note:
Installation compliance aspects
The attention of the specifier, purchaser, installer or user is drawn to special measures and limitations to use which must be observed when these products are put into service to maintain compliance with the above directives.
The recommendations and connection configurations indicated in the Installation & Operating Instructions relevant to each product must be observed and applied during the installation of the product (with particular regard to wiring & connections and precautions when operating the equipment).

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WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of theproduct, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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