



TCW

Thermocouple Welder

- Welds fresh thermocouples on demand consistent in size and quality, and without detrimental oxide layers.
- Perfect for medical applications to anchor arthroscopic tools.
- May also be used to aid in the normal resistance welding of very small wires; by forming a ball on the end of the wire, more mass is given to weld the wire to something else.

The TCW will make thermocouples of all commercially available thermocouple alloys including:

- B** Platinum 30 Rh - Platinum 6 Rh
- C** Tungsten 5 Re - Tungsten 26 Re
- E** Chromel – Constantan
- J** Iron – Constantan
- K** Chromel – Alumel
- R** Platinum 13 Rh - Platinum
- S** Platinum 10 Rh - Platinum
- T** Copper – Constantan

TCW features an argon gas weld chamber for joining most thermocouple wire from 38 AWG (.004 inch/.102 mm diameter) to 20 AWG (.032 inch/.813 mm diameter).

Easy As 1-2-3

TCW is easy to use and designed to operate either in a production or laboratory environment. First, select the wire gauge using the selector knob on the front panel. Then, simply load

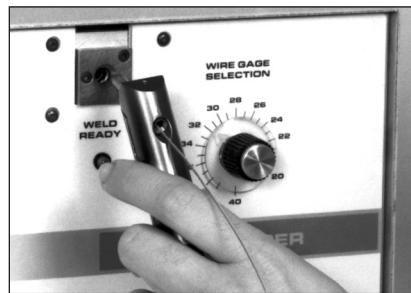
the stripped wire (1), insert the handpiece (2), and remove the welded thermocouple (3). Operators should average 5 to 10 welds per minute on a production basis, if wires are prestripped and the control is preset.

Free Offer

Send us sample lengths of thermocouple wire. We will weld the thermocouple junctions with the TCW and return them for your evaluation.



(1) Load stripped wire



(2) Insert handpiece



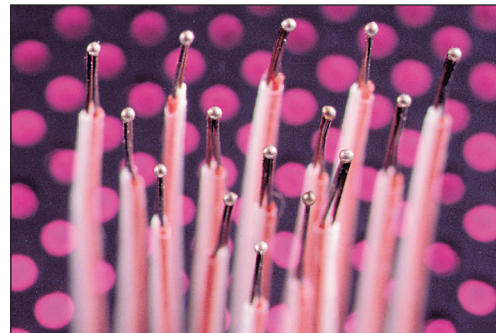
(3) Remove welded thermocouple

SPECIFICATIONS

Quality Control Features			
<i>Weld Chamber</i>	Argon gas flowing through the weld chamber ensures a reliable, oxide-free weld.		
<i>Firing Circuit</i>	Prestripped wire must be properly loaded into the handpiece and the handpiece correctly inserted into the weld chamber to initiate firing. This loading sequence ensures that the handpiece is double earth grounded for maximum operator safety. Internal filtering prevents false firing due to radio frequency interference.		
<i>Weld Fire Lockout</i>	Prevents poor welds caused by attempting a weld before the capacitors recharge. This condition exists immediately after a weld has been made or the control has been reset.		
<i>Line Voltage Regulator</i>	Maintains the capacitor bank voltage within $\pm 0.25\%$ of setting for a $\pm 13\%$ change in line voltage. This feature ensures consistent thermocouple weld quality.		
<i>Line Failure Turndown</i>	Welder automatically activates the turndown circuit, discharging the capacitor bank when the line voltage is interrupted. This circuit ensures consistent welds and protects the operator from inadvertent discharge.		
Controls			
<i>Power Switch</i>	Disconnects both sides of the input power line when switched to the "OFF" position.		
<i>Weld Ready</i>	Indicates that the capacitor bank has fully recharged and is ready to make a weld.		
<i>Wire Gauge Selection</i>	Controls the level of stored energy necessary to make a thermocouple weld. Energy levels are indicated for each American Wire Gauge (AWG) from 38 AWG to 20 AWG. Because of variations in the melting characteristics of thermocouple alloys, it may be necessary to increase or decrease the Wire Gauge Selection setting to produce the optimal thermocouple weld. This control may also be used to increase or decrease the size of the weld bead to suit specific requirements. Four Wire Clamp Jaw Assemblies are available for use with different gauge wires. Specify wire gauge range upon ordering.		
Specifications			
<i>Solid State Circuitry</i>	Components conservatively rated when used within the maximum specified repetition rates. The charging circuit uses thyristors in a unique manner to provide high reliability and precise charging intervals.		
<i>Operating Voltages and Currents</i>	115V/0.5A, 230V/0.3A, or 100V/0.5A at 50/60 Hz		
<i>Standby Power</i>	Approximately 15 watts		
<i>Stored Energy Rating</i>	Range 3 to 190 watt-seconds (joules)		
<i>Capacitor Bank</i>	18,300 MFD $\pm 10\%$ at 20° C. Three capacitors are grouped in a single bank. At full rating, the capacitor bank is operated at 144 volts.		
<i>Welding Speed</i>	As a manual feed thermocouple welder, the maximum number of welds per minute is determined by how fast the handpiece can be loaded and inserted into the weld chamber. The actual weld time is less than .1 seconds, and the time for the circuitry to recharge is 3 seconds maximum.		
<i>Argon Gas Flow</i>	Recommended flow rate is 3 cubic feet per hour.		
<i>Argon Gas Shutoff</i>	Blocks the flow of argon gas to the weld chamber when line voltage is turned off.		
Physical Characteristics			
Power Supply	Inches (cm)	Handpiece	Inches (cm)
<i>Height:</i>	6.875 (17.5)	Body Length:	4 (10.16)
<i>Width:</i>		10.25 (26.0)	Body Diameter: 0.75 (1.91)
<i>Depth:</i>		10 (25.4)	Wire Clamp Length: 0.75 (1.91)
		Wire Clamp Diameter:	0.25 (.064)
<i>Weight:</i>	16.2 lbs (7.3 kg) (Includes handpiece)	Weight:	0.2 lbs (91 gm)

ORDERING GUIDE

Power Supply	Description	Electrical
TCW	Thermocouple Welder with Handpiece, 115VAC	0.5A, Single Phase, 50/60Hz
TCW/230	Thermocouple Welder with Handpiece, 230VAC	0.3A, Single Phase, 50/60Hz
TCW/100	Thermocouple Welder with Handpiece, 100VAC	0.5A, Single Phase, 50/60Hz
Wire Clamps		
TCWCS22	Wire Clamp for TCW, 20 to 22 gauge wire	
TCWCS26	Wire Clamp for TCW, 23 to 26 gauge wire	
TCWCS31	Wire Clamp for TCW, 27 to 31 gauge wire	
TCWCS38	Wire Clamp for TCW, 32 to 38 gauge wire	
Additional Equipment Requirements (not supplied by Amada Miyachi America)		
Regulated Compressed Argon Supply – 0 to 4000 psi pressure, 1-10 cfm flow control valve		



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