



A THERMADYNE® Company

PLASMA WELDING . . .

**PERFORMANCE
AGAIN
&
AGAIN
&
AGAIN**

Reliable, easy-to-operate Thermal Arc Plasma Welding Systems boost profits and productivity by helping you achieve consistently high quality repeatable welds – manually or automatically. Whatever your application needs, the broad, versatile line of Thermal Arc consoles, torches, power supplies, and accessories provide the right tools for the job. All have been carefully designed to work together in producing high quality welds in most metals such as stainless steels, high-nickel alloys, high-strength alloys, carbon steels, copper, copper/nickel alloys and brass alloys.

Definition of Plasma: Plasma is a gas which has been heated to an extremely high temperature and ionized so that the gas becomes electrically conductive. The plasma welding process uses this plasma to transfer an electric arc to the workpiece and to constrict the arc during the welding.

Got Power...?



WC 100B WELDING CONSOLE

Automatic / Manual Operation, Pilot Arc

Usable with any of the Thermal Arc line of plasma welding torches, the WC 100B features reliable arc starting by means of a pilot arc. It offers advantages in low-current welding operations, and in repetitive, high-duty-cycle, automatic applications.

The pilot arc can be used in either the interrupted or continuous mode. The latter provides greater arc stability along with instant arc starting at low currents or in high-duty-cycle, fast cycling welding.

Among other WC 100B features are: LED amperage/voltage display; large, readable plasma and shield gas flowmeters; internal torch leads connections for increased safety; Hi/Lo pilot current switch to provide the best arc starting characteristics at various main arc current levels; plug-in enclosed relays; and auxiliary control receptacle for automatic or manual operation.

Dimensions: 15" x 18 5/8" x 19 5/8" (38.1 cm x 47.3 cm x 49.8 cm)

Shipping Weight: 125 lbs. (56.7 kg)

You can complete your Thermal Arc plasma welding system with a plasma welding torch, Thermal Arc power supply or any DC constant current power supply, coolant source and supply of gases. A Thermal Arc coolant recirculator is a recommended option.



THERMAL ARC WELD CONTROLLER

The Thermal Arc WC-1 Controller allows a compact packaged micro-processor system to be added onto a Thermal Arc Ultima-150™ or WC-100B component plasma welding package to provide accurate and repeatable parameter control over the entire welding system. The Controller provides a full-featured current Pulser to aid in controlling warpage, penetration and weld puddle. The Sloper function is designed to permit the development of a complete sequence of operation for a specific welding job. Two programmable outputs are featured: one is used to control the Plasma power source, and the second controls a Cold Wire Feed Motor Drive Control. The Controller provides 32 user selectable weld schedules.



HE 100A COOLANT RECIRCULATOR

For All Thermal Arc Torches to 300 Amps

High efficiency and completely non-ferrous internal construction (including a reusable metal filter) make the HE 100A a useful, dependable companion for any Thermal Arc plasma welding system to 300 amps.

A positive displacement, rotary vane pump delivers a maximum of 2.3 gpm (8.7 lpm) at 100 psi (.9 lpm at 7 kg/cm²). The pressure is adjustable. Maximum rating is 20,000 BTU/hr (5040 K/Cal/hr) (based on 100°F [38.8°C] difference between ambient air and high coolant temperature, and 40°F [4°C] difference between high and low coolant temperature).

Coolant Capacity: 1 3/4 gal (6.61)

Input: 110 or 220 volts, 60 Hz, or 220 volts, 50 HZ single phase

Dimensions: 24" x 20" x 20" (61 cm x 50.8 cm x 50.8 cm)

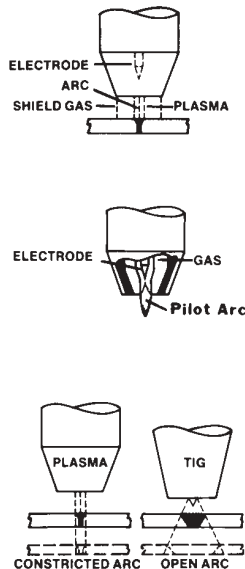
Shipping Weight: 125 lbs. (56.7 kg)

PLASMA WELDING OFFERS MANY FEATURES

Protected Electrode – The tungsten electrode, which is secured inside of the plasma torch and behind the orifice, is constantly protected from outside impurities that would normally attack its hot surface.

Pilot Arc – The pilot arc is a low current DC arc that is sustained in the tip area of the torch to ionize a gas as it passes around the electrode and through the orifice.

Constricted, Columnated Arc – The placement of a small orifice into the front end of the torch provides for the laminar flow of the plasma gas and constriction of the welding arc.



AND BENEFITS

Protected Electrode – When welding materials such as motor laminations, stampings or formed parts, the surface contaminants (stamping or forming oils, oxides or degreasers) can constantly attack an “exposed” electrode. This contamination can require the changing of the electrode on a repetitive basis. The protected electrode in the plasma welding torch normally requires a change approximately every 8 hours of operation. This reduction in electrode change allows for increased productivity and less part rejects.

Pilot Arc – The use of a pilot arc instead of conventional high frequency circuitry provides extremely reliable arc starting. This repeatable arc initiation minimizes the number of rejects or reworks.

Constricted, Columnated Arc – Delivers high heat concentration and arc directability to work segment allowing for greater penetration and reduction in current levels in many applications. The columnar arc also permits a greater standoff between the torch and workpiece.

PLASMA WELDING OFFERS PERFORMANCE

1. AUTOMOTIVE

- Steering Columns Assembly
- Transmission Parts
- Torque Converters
- Carburetor Parts
- Ignition Components
- Alternator Assemblies
- Small Motors
- Electronic Components
- Batteries

2. APPLIANCE MANUFACTURING

- Refrigerators (Doors, Compressors)
- Freezers (Doors, Compressors)
- Washing Machines (Motors)

3. METAL FURNITURE MANUFACTURING

- Filing Cabinets (Drawers, Top File)
- Shelving
- Desks
- Cabinets
- Chairs
- Room Dividers

4. ELECTRICAL MANUFACTURING

- Shading Coil Motors
- Generator/Motors (Shading Coils)
- Servo Motors (Laminations)
- Power Tools (Motors, Batteries)
- Switching Boxes

5. AEROSPACE/AIRCRAFT

- Jet Engines - Build/Repair
- Aircraft Manufacturing
- Electrical Components
- Guidance Systems • Defense Systems

6. COMPUTER/OFFICE EQUIPMENT

- Motors
- Processing Equipment
- Cabinetry

7. MEDICAL SERVICES

- Medical Instruments
- Electrical Components
- Batteries

8. FABRICATION

- Tanks
- Piping/Fittings
- Cylinder Vessels

TYPICAL PLASMA WELDING CRITERIA

1. APPLICATION

- Automated operation
- Volume Parts (Per Hour/Per Day)
- Short Duration in Weld Time
- Repeated Parts/Parameters

2. PARTS

- Material Thickness (Joint) .005-.312"
- Repeated Fit-Up

3. WELD TYPE

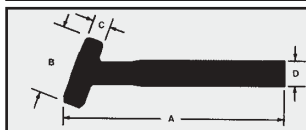
- Circumferential
- Outside Edge/Corner
- Spot/Stitch Fusion
- Surface Fusion (Laminations)
- Longitudinal

4. JOINT GEOMETRY

- Square Butts
- Outside Edge (Hermetic Seals)
- Flanged
- Lap Fillet
- Prepared Grooves

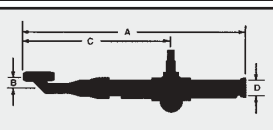
Thermal Arc® Plasma Welding Torch Selector Chart

	Type	Current Rating	Coolant Requirements	Torch Dimensions				
				A	B	C	D	E
	PWH-2A (70°)	75 Amps (DCSP)	2,000 BTU/hr (504 K/Cal/hr) 1/4 gpm coolant flow @ 50 PSI (0.9 lpm @ 3.7 kg/cm²)	7-15/16" (202 mm)	1-11/16" (43 mm)	5/8" (16 mm)	7/8" (22 mm)	
	PWH-2A (90°)			7-3/4" (196 mm)	1-11/16" (43 mm)	5/8" (16 mm)	7/8" (22 mm)	
	PWM-2A (Mach)			18-1/4" (463 mm)	13/16" (21 mm)	Min. 7-1/8" (181 mm) Max. 15" (381 mm)	1-3/8" (35 mm)	
	PWH-3A (70°)	150 Amps (DCSP)	6,000 BTU/hr (1513 K/Cal/hr) 1/3 gpm coolant flow @ 50 PSI (1.25 lpm @ 3.7 kg/cm²)	8-3/4" (222 mm)	2-5/8" (67 mm)	7/8" (22 mm)	1-1/16" (27 mm)	
	PWH-3A (90°)			8-1/2" (216 mm)	2-5/8" (67 mm)	7/8" (22 mm)	1-1/16" (27 mm)	
	PWM-3A (180°C)			9-3/4" (248 mm)	1" (25 mm)	—	1-1/16" (27 mm)	
	PWM-3A (Mach)			19-1/4" (489 mm)	1" (25 mm)	Min. 9-1/4" (235 mm) Max. 16-3/4" (425 mm)	1-3/8" (35 mm)	
	PWH-4A (70°)	220 Amps (DCSP)	8,000 BTU/hr (2017 K/Cal/hr) 1/2 gpm coolant flow @ 50 PSI (1.9 lpm @ 3.7 kg/cm²)	12-1/2" (318 mm)	3-3/16" (81 mm)	1-1/4" (32 mm)	1-3/8" (35 mm)	
	PWH-4A (90°)			12-1/4" (311 mm)	3-3/16" (81 mm)	1-1/4" (32 mm)	1-3/8" (35 mm)	
	PWM-4A (mach)			18" (457 mm)	1-3/4" (44 mm)	Min. 8-1/4" (209 mm) Max. 16" (406 mm)	1-3/8" (35 mm)	1-1/4" (32 mm)
	PWM-4A1 (Mach)			21" (53 mm)	1-3/4" (44 mm)	Min. 11-1/4" (286 mm) Max. 19" (483 mm)	1-3/8" (35 mm)	1-1/4" (32 mm)
	PWM-300	300 Amps (DCSP)	12,000 BTU/hr (3025 K/Cal/hr) 3/4 gpm coolant flow @ 100 PSI (3.4 lpm @ 7.03 kg/cm²)	22-3/16" (56 mm)	2-1/2" (64 mm)	Min. 12-7/16" (316 mm) Max. 20-3/16" (51 mm)	1-3/8" (35 mm)	1-5/8" (41 mm)
	PWM-6A	500 Amps (DCSP)	20,000 BTU/hr (5042 K/Cal/hr) 2 gpm coolant flow @ 50 PSI (15.2 lpm @ 3.7 kg/cm²)	13-1/2" (343 mm)	1-1/8" (29 mm)	Min. 6-1/2" (165 mm) Max. 11-1/2" (292 mm)	2-1/4" (57 mm)	



STANDARD TORCH EQUIPMENT

Thermal Arc Welding Torches are normally furnished with 121/2 foot or 25 foot leads, pinion assembly (machine mounted models only) when ordered with leads, and instruction manual.



ACCESSORIES

An initial supply of a variety of consumable parts is recommended to increase the efficiency and versatility of your Thermal Arc plasma welding system.

WORLD HEADQUARTERS: Suite 300, 16052 Swingley Ridge Road • St. Louis, MO 63017 • 636-728-3000

THERMAL ARC

International Customer Service
Oakville, Ontario, Canada
Ph: (1) 905-827-9777
Fax: (1) 905-827-9797

Thermadyne Victor Brasil
Rio de Janeiro, Brazil
Ph: (55) 21-2-485-8990
Fax: (55) 21-2-485-8735

Thermadyne Canada
Oakville, Ontario Canada
Ph: (1) 905-827-1111
Fax: (1) 905-827-3648

Thermadyne Middle East
Dubai, United Arab Emirates
Ph: (971) 4-332-9060
Fax: (971) 4-332-5484

Thermadyne UK
Chorley, England
Ph: (44) 1257-261755
Fax: (44) 1257-224800

Thermadyne de Mexico
Mexico City, Mexico
Ph: (52) 55-5657-9494
Fax: (52) 55-5648-8805

Thermadyne Asia Sdn. Bhd.
Kuala Lumpur, Malaysia
Ph: (603) 6092-2988
Fax: (603) 6092-1085

Thermadyne Japan
Osaka, Japan
Ph: (81) 6-4809-8411
Fax: (81) 6-4809-8412

Cigweld Australia
Melbourne, Australia
Ph: (61) 3-9474-7400
Fax: (61) 3-9474-7510

Thermadyne Italia
Milan, Italy
Ph: (39) 039-204-991
Fax: (39) 039-204-9922

Unique Welding Alloys
Johannesburg, South Africa
Ph: (27) 11-917-3600
Fax: (27) 11-917-8580

Thermadyne Chile
Santiago, Chile
Ph: (56) 2-557-2465
Fax: (56) 2-557-5349



2200 Corporate Drive • Troy, OH 45373
CUSTOMER SERVICE: 800-255-5846 • FAX 800-332-0946