

Product Information

MODEL HWP-50F Hot Wire Process

- Contoured Wave AC
- High Capacity Feed Head
- Increased Deposition Rate
- Controls Dilution
- Controls hot & cold wire feed
- Dual-Axis Wire Positioner

Introduction

The hot wire process is used in applications where a high deposition of the filler wire is desired. It is used primarily with the GTAW (TIG) or the PAW (Plasma) welding process. The HWP-50F is capable of controlling both hot and cold wire feed.

Hot wire welding provides deposition rates more normally associated with the GMAW (MIG) welding process but with the added advantages offered by GTAW (TIG) and PAW (Plasma) welding.

These advantages include better control of the heat input because the welding current is independent of the wire feed speed. This leads to reduced dilution in overlay welds and better side wall fusion in deep groove welds.

The hot wire process is capable of working in conjunction with Jetline's 9900 computer controlled systems.

Description

A complete Jetline hot wire system consists of:

- Contoured-wave hot wire power supply
- Hot wire power control
- Heavy-duty wire drive unit
- Wire feed speed control
- Hot wire torch
- Hot wire torch positioner assembly
- Wire accessory kits for .045" (1.2 mm) and .062" (1.6 mm) wire; .035" (0.9 mm) on request

The hot wire system is supplied as a completely integrated package with all the necessary inter-connecting cables and hoses. The system has



Standard Hot Wire System

universal fittings to allow it to fit on any GTAW (TIG) or Plasam (PAW) torch and is supplied in a "ready-to-weld" condition.

Contoured-Wave Hot Wire Power Supply

The system features a contoured-wave, AC output. Experience has shown that the use of an AC power supply enhances the hot wire deposition and reduces arc-blow problems experienced with conventional hot wire systems using DC hot wire power.

The output of the power supply is controlled using a solid-state control module. This module contours the AC waveform to create one which closely simulates a sine wave. The use of sinusoidal AC voltage greatly improves the flow of the hot wire into the weld pool. Frequency is adjustable from 50 to 200 Hz. This waveform permits higher wire feed speeds and currents leading to increased deposition rates and welding speeds.

The power supply provides up to 200 amps of hot wire current at voltages which are adjustable from 2 to 15 VAC. The voltage is regulated by a potentiometer on the hot wire power control or may be controlled by a remote 0 to 10 VDC signal. Meters are provided to indicate hot wire voltage and current, and a gas purge button is supplied.

Heavy-Duty Wire Drive Unit

The wire drive unit consists of a four-roll feedhead driven by a high capacity, DC motor. The wire drive unit is mounted on a base which also supports the wire reel holder. A wire straightener is supplied as standard with the system.

The wire feed speed is regulated by the 9700W microprocessor control and is adjustable from 12 to 600 IPM (30 to 1,525 cm/min). This control permits wire inching, wire speed ramp up at the start, and wire retract at the end of the weld.

HWP-50F HOT WIRE PROCESS

Hot Wire Torch

The hot wire torch is designed to guide the wire into the weld pool and to conduct the AC hot wire current to it. The torch includes gas shielding; this serves to protect the heated wire as it enters the weld pool. The torch is rated at 200 amps AC.



Hot Wire Torch Positioner Assembly

Correct entry of the wire into the weld pool is critical in the hot wire process. This positioner is designed to fit onto the welding torch. It is fitted with three axes of movement. One axis is pre-settable; this sets the angle at which the wire enters the weld pool. The other two axes have adjustment screws which permit them to be moved during welding. One screw adjusts the cross seam position of the wire relative to the weld pool, the other sets the entry position of the wire closer or further away from the welding electrode.

The hot wire process is designed to combine the quality of GTAW (TIG) or Plasma (PAW) welding with a high deposition rate and a smaller heat affected zone.

Principle

The hot wire process produces a high quality weld at a high deposition rate. The system uses higher wire feed speeds than those used in conventional cold wire feeding. For the wire to enter the weld pool without undesirable chilling of the pool, it is

electrically preheated. The preheat is created by applying an AC current to the wire prior to its entering the weld pool. Current is applied as the wire passes through a contact tip in the hot wire torch. Because the wire is preheated, the hot wire torch provides gas coverage for the wire. This gas coverage is additional to the gas shielding of the welding arc.

For optimum results, the wire is fed into the weld pool at a steep angle, approximately 50° to 60° from the horizontal and 0.15" to 0.2" (4 to 5 mm) behind the tungsten electrode. Wire stick out from the torch would normally be set at about ¾" to 1" (19 to 25 mm). This distance combines optimum heating of the wire and wire position control.

Specifications

Power

Output: 200 amps, 50 to 200 Hz AC at 15 volts, 100% Duty Cycle

Input: HWP-200E-1-A1000 Power Supply:
380/415/440/460 volts ±5%
Three phase, 50/60 Hz, 3.5Kva
HWP-200E-1-220-A100 Power Supply:
220 volts ±10%
Three phase, 50/60 Hz, 3.5Kva

Dimensions

HWP-200E Power Supply

Height: 16" (400 mm)
Width: 16" (400 mm)
Depth: 22" (560 mm)
Weight: 145 lbs (66 Kg)

WF-50 Wire Feeder

Height: 8" (200 mm)
Width: 8" (200 mm)
Depth: 22" (560 mm)
Weight: 20 lbs (9 Kg)

9700W Control

Height: 8" (125 mm)
Width: 10" (250 mm)
Depth: 6" (150 mm)
Weight: 7 lbs (3 Kg)

Contact Jetline for complete ordering information

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