

# Product Information

## Circumferential Welders

- Microprocessor Control
- Three Models
- For all Welding Processes
- Large Weight Capacities
- Operator Friendly
- Various Part Lengths

### Introduction

Jetline offers a unique range of circumferential welding systems which have been designed for use with any arc welding process and for a multitude of industrial circumferential welding applications.

All Jetline circumferential systems include a sturdy base unit, a powered headstock and a tailstock which can be moved along the bed to accommodate differing part lengths.

A complete range of accessories and controls manufactured by Jetline Engineering complement the range of circumferential fixtures to permit them to be made into a fully integrated welding solution.

### Description

There are three models of circumferential fixtures available:

The **CWB** style is suitable for light duty work. It features an integrated welding head support column and is best suited for applications where the welding is carried out one weld at a time. This style consists of two models, the CWB3 has a maximum part load of 400 lbs (180 kg), the CWB5 has a maximum part load of 1,000 lbs (450 kg). The maximum part length for both models is 240" (6 m).

The **CWL** style is suitable for medium duty applications. The head and tailstock part of the fixture is supplied with a separate track and carriage system. This makes it simple to carry multiple welding heads to carry out two or more welds at the same time. Optional powered carriages allow motorized linear movement. The circumferential unit has a weight carrying capacity of 2,000 lbs (900 kg) and can carry parts up to 240" (6 m) long.



*Typical CWL-48 Circumferential Welding System*

The **CW5** style is a heavy duty type with a standard weight carrying capacity of 5,000 lbs (2,250 kg). As an option, it can be supplied in a super duty version carrying up to 10,000 lbs (4,500 kg). Although the standard range carries parts up to 240" (6 m) long, there is virtually no limit to the maximum length to which this fixture can be manufactured.

### Standard Features

All Jetline circumferential welding fixtures include a machined base. This permits the tailstock and the welding head to be easily relocated for different parts or for welding at a different position on the same part.

All tailstocks are air-operated to apply a constant clamping pressure to the part throughout the welding cycle.

The rotation of the headstock on all systems is controlled by a Jetline 9700T microprocessor controller. This can provide closed loop control of the welding speed as well as control of the complete weld sequence.

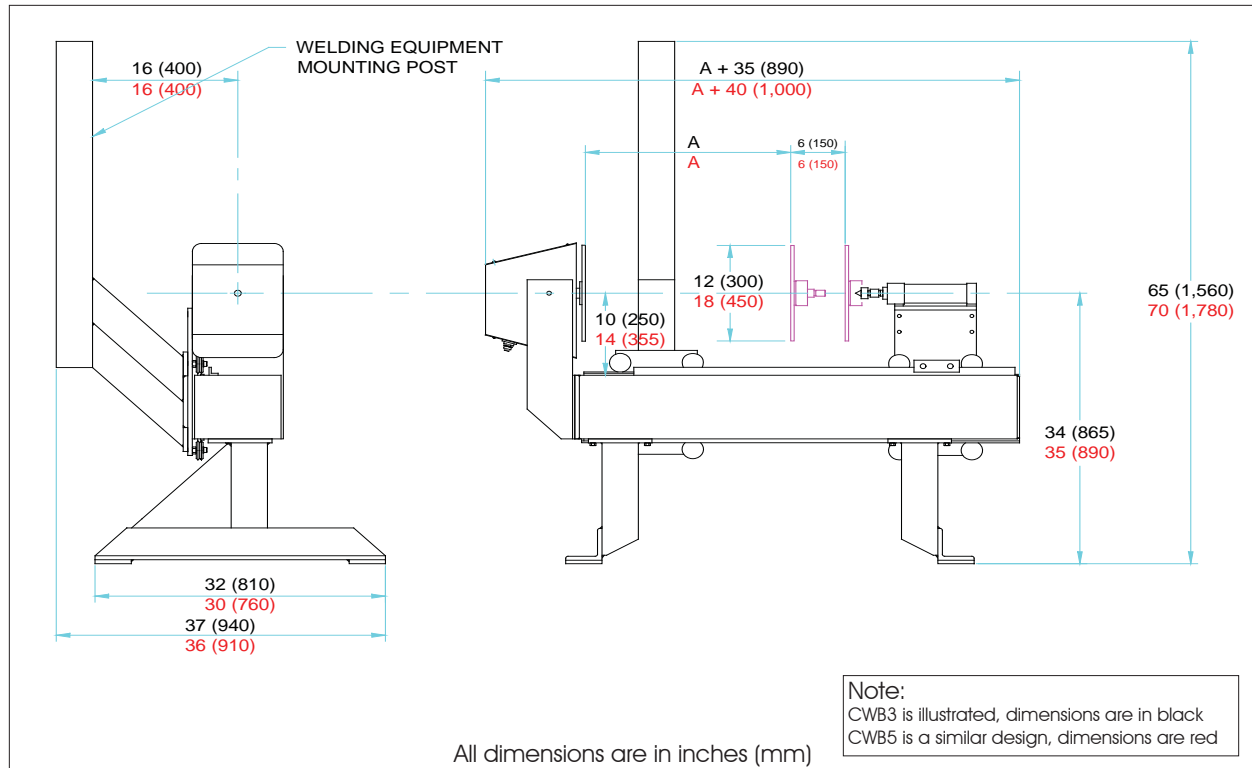
### Optional Items

Cradle lifts are available on all models. The cradle lift assists in loading the part to the centerline of the machine. Cradle lifts are manufactured specifically to suit the diameter of the part to be welded.

Expanding tooling can be provided to provide support and gas backing to the weld. This tooling is customized for the specific part diameter being welded and incorporates copper back up segments.

A slide-away tailstock can be provided to be used in conjunction with the expanding tooling. It assists in the loading and unloading of the parts.

# CWB LIGHT DUTY STYLE



Jetline's light duty style circumferential welders consist of two models. The CWB3 has a part weight carrying capacity of 400 lbs (180 kg) and the larger CWB5 model can carry parts weighing up to 1,000 lbs (450 kg).

Both models are of similar construction and consist of the following parts:

## Bed

The bed is designed to carry the headstock, tailstock and equipment mounting post. It is machined and has a vee-way track along its length.

## Headstock

The headstock is mounted at the left hand end of the bed and is powered. Speed is controlled by a 9700T control which provides speed adjustment and sequencing capabilities (see separate brochure describing the 9700T microprocessor rotation speed control in more detail). If the optional tach-generator is selected, the speed will be controlled using closed loop control for speed holding accuracy better than  $\pm 1\%$  of the rated speed.

MODEL NUMBER	PART LENGTH Inches (mm)	SHIPPING WEIGHT Lbs (kg)	SPEED RANGE (RPM)
CWB3-24	24 (600)	1,700 (770)	
CWB3-36	36 (900)	1,750 (800)	
CWB3-48	48 (1,220)	1,800 (815)	0.2
CWB3-60	60 (1,525)	1,850 (840)	to
CWB3-72	72 (1,830)	1,900 (860)	10.0
CWB3-84	84 (2,130)	1,950 (885)	
CWB3-96	96 (2,440)	2,000 (900)	or
CWB3-120	120 (3,150)	2,100 (950)	
CWB3-144	144 (3,660)	2,200 (1,000)	0.07
CWB3-168	168 (4,270)	2,300 (1,045)	to
CWB3-192	192 (4,880)	2,400 (1,090)	3.3
CWB3-216	216 (5,490)	2,500 (1,130)	
CWB3-240	240 (6,100)	2,600 (1,180)	

Other speed ranges available - consult factory for details.

## Tailstock

The tailstock is mounted on vee-way wheels which allow it to be moved along the bed to accommodate varying part lengths. A manual lock secures the tailstock in the desired position. The tailstock spindle, which is freely rotating, moves forward under air pressure to clamp the part being welded. The clamping pressure is adjustable up to a maximum of 250 lbs (110 kg) on the CWB3 and 500 lbs (225 kg) on the CWB5. The CWB3 tailstock is supplied with a live center, the CWB5 is supplied as standard with a faceplate (this is optional on the CWB3).

## Equipment Mounting Post

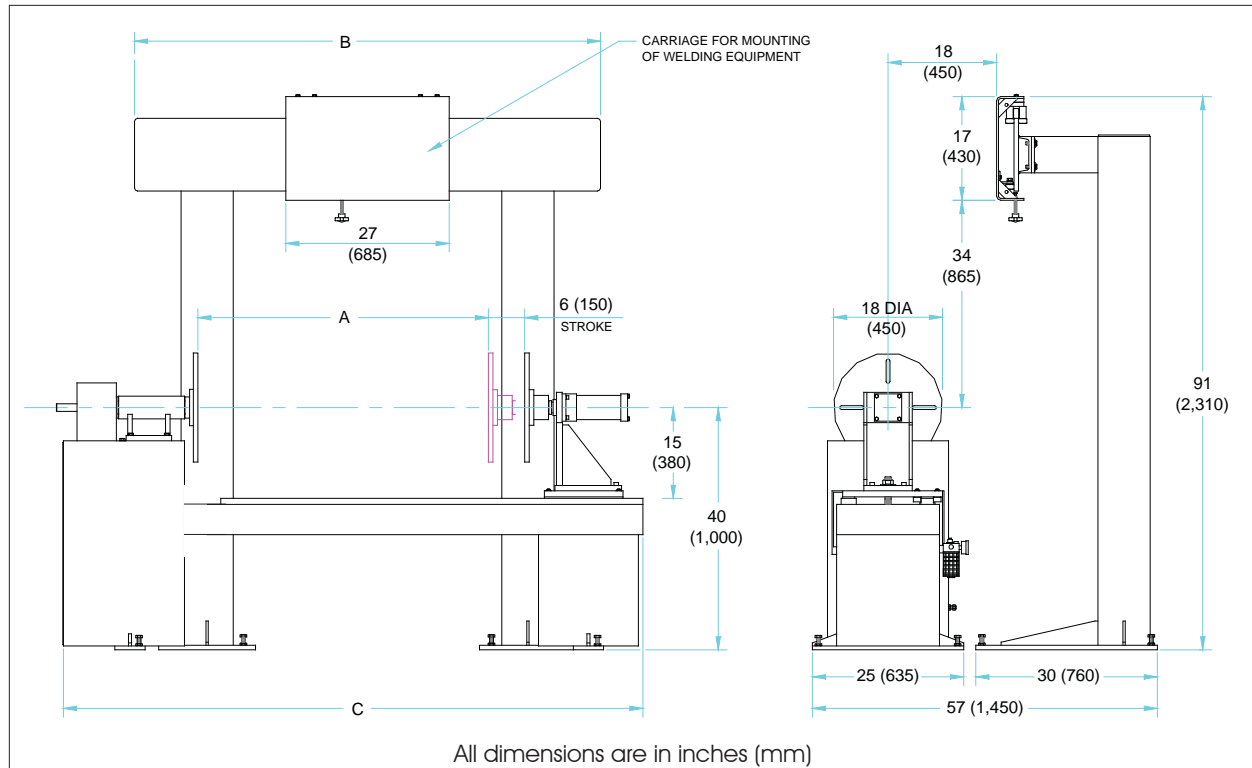
The equipment mounting post rolls along the bed and can be locked at any point to position the welding equipment. The post can carry most types of welding heads having a weight not exceeding 200 lbs (90 kg).

With a wide range of standard lengths, the CWB range is ideally suited for a light duty applications and can be fitted with all Jetline controls and accessories including chucks, collets, expanding and special tooling.

MODEL NUMBER	PART LENGTH Inches (mm)	SHIPPING WEIGHT Lbs (kg)	SPEED RANGE (RPM)
CWB5-24	24 (600)	2,100 (950)	
CWB5-36	36 (900)	2,150 (975)	
CWB5-48	48 (1,220)	2,200 (1,000)	0.22
CWB5-60	60 (1,525)	2,250 (1,020)	to
CWB5-72	72 (1,830)	2,300 (1,045)	10.8
CWB5-84	84 (2,130)	2,350 (1,065)	
CWB5-96	96 (2,440)	2,400 (1,090)	or
CWB5-120	120 (3,150)	2,500 (1,130)	
CWB5-144	144 (3,660)	2,600 (1,180)	0.07
CWB5-168	168 (4,270)	2,700 (1,225)	to
CWB5-192	192 (4,880)	2,800 (1,270)	3.6
CWB5-216	216 (5,490)	2,900 (1,315)	
CWB5-240	240 (6,100)	3,000 (1,360)	

Other speed ranges available - consult factory for details.

# CWL MEDIUM DUTY STYLE



The CWL style circumferential welding fixture is suitable for a wide range of applications. It is capable of carrying part weights up to 2,000 lbs (900 kg) and can rotate parts with a diameter up to 30" (760 mm).

The design of the CWL system is in two parts, the circumferential part which holds and rotates the part to be welded and a separate track and carriage system which is designed to support, move and position the welding head.

## Circumferential Fixture

This includes the bed, the headstock and the tailstock.

### Bed

This is a fabricated base made from sturdy, structural steel members. Following its fabrication, the upper part of the bed is machined to form two ways on which the tailstock can be moved. These ways provide a headstock to tailstock alignment better than 0.015" (0.4 mm).

### Headstock

The headstock is powered and rotates on pre-loaded, tapered roller bearings which carry up to 600 amps of welding current. A 1 3/8" (35 mm) diameter through-hole in the spindle permits gas to be fed to the part tooling or for an expanding tool to be fitted. Speed is controlled by a 9700T control which provides speed adjustment and sequencing capabilities (see separate brochure describing the 9700T microprocessor rotation speed control in more detail). If the optional tach-generator is selected, the speed will be controlled using closed loop control for speed holding accuracy better than  $\pm 1\%$  of the rated speed. A machined faceplate is provided as standard.

## Tailstock

The tailstock slides along the bed and can be securely locked into position. It carries a freely-rotating faceplate on a spindle which is moved forward under air pressure to clamp the parts together. The clamping force is adjustable up to a maximum of 1,000 lbs (450 kg).

## Track and Carriage

### Track

The TKL style flatway track extends the length of the fixture and is supported by columns which have adjustment facilities to align the track accurately with the fixture. It normally carries one carriage but is capable of supporting multiple carriages to provide multiple welding head capabilities.

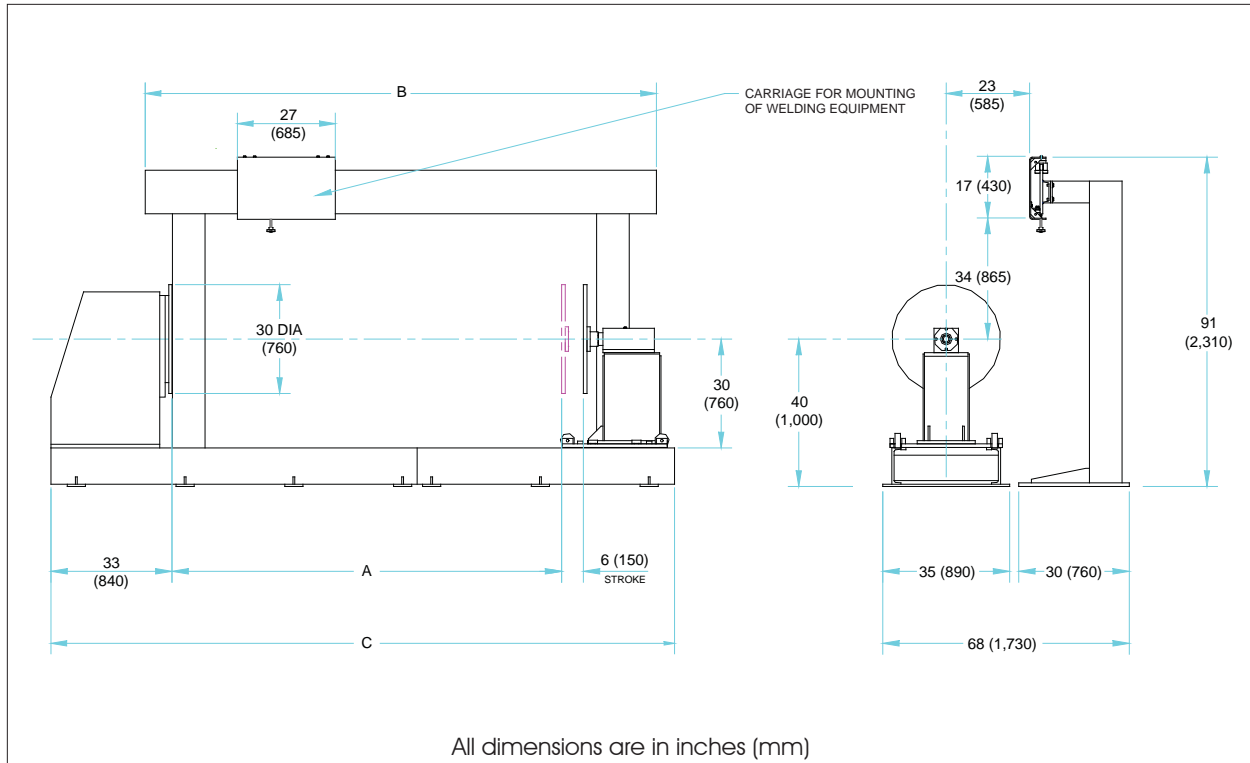
### Carriage

The SWC-2 carriage rolls on the track to hold and position the welding head. The carriage has a generous mounting face and can carry loads up to 300 lbs (135 kg).

MODEL NUMBER	PART LENGTH		SHIPPING WEIGHT		SPEED RANGE (RPM)
	Inches	(mm)	Lbs	(kg)	
CWL-24	24	(600)	3,000	(1,360)	0.1 to 2.0
CWL-36	36	(900)	3,100	(1,405)	
CWL-48	48	(1,220)	3,200	(1,450)	
CWL-60	60	(1,525)	3,300	(1,500)	
CWL-72	72	(1,830)	3,400	(1,540)	
CWL-84	84	(2,130)	3,500	(1,590)	0.2 to 4.0
CWL-96	96	(2,440)	3,600	(1,630)	
CWL-120	120	(3,150)	3,800	(1,725)	
CWL-144	144	(3,660)	4,000	(1,815)	
CWL-168	168	(4,270)	4,200	(1,905)	
CWL-192	192	(4,880)	4,400	(1,995)	0.2 to 4.0
CWL-216	216	(5,490)	4,600	(2,085)	
CWL-240	240	(6,100)	4,800	(2,180)	

Other speed ranges available - consult factory for details.

# CW5 HEAVY DUTY STYLE



The CW5 style circumferential welding fixture is designed for heavy-duty applications. It is capable of carrying part weights up to 5,000 lbs (2,250 kg) and can rotate parts with a diameter up to 60" (1,525 mm). An optional super duty version carries 10,000 lbs (4,500 kg).

The design of the CW5 system is in two parts, the circumferential part which holds and rotates the part to be welded and a separate track and carriage system which is designed to support, move and position the welding head.

## Circumferential Fixture

This includes the bed, the headstock and the tailstock.

### Bed

This is a fabricated base made from sturdy, structural steel members. Following its fabrication, the upper part of the bed is machined to form two ways on which the tailstock can be moved. These ways provide a headstock to tailstock alignment better than 0.030" (0.8 mm).

### Headstock

The headstock is powered and rotates on pre-loaded, tapered roller bearings which carry up to 1,000 amps of welding current. A 1" (25 mm) diameter through-hole in the spindle permits gas to be fed to the part tooling or for an expanding tool to be fitted. Speed is controlled by a 9700T control which provides speed adjustment and sequencing capabilities (see separate brochure describing the 9700T microprocessor rotation speed control in more detail). If the optional tach-generator is selected, the speed will be controlled using closed loop control for speed holding accuracy better than  $\pm 1\%$  of the rated speed. A machined faceplate is provided as standard.

## Tailstock

The tailstock rolls along the bed and can be securely locked into position. It carries a freely-rotating faceplate on a spindle which is moved forward under air pressure to clamp the parts together. The clamping force is adjustable up to a maximum of 1,500 lbs (680 kg).

## Track and Carriage

### Track

The TKL style flatway track extends the length of the fixture and is supported by columns which have adjustment facilities to align the track accurately with the fixture. It normally carries one carriage but is capable of supporting multiple carriages to provide multiple welding head capabilities.

### Carriage

The SWC-2 carriage rolls on the track to hold and position the welding head. The carriage has a generous mounting face and can carry loads up to 300 lbs (135 kg). It is suitable to carry any welding process equipment.

MODEL NUMBER	PART LENGTH		SHIPPING WEIGHT		SPEED RANGE (RPM)
	Inches	(mm)	Lbs	(kg)	
CW5-48	48	(1,220)	3,900	(1,770)	0.02 to 1.0
CW5-60	60	(1,525)	4,100	(1,860)	
CW5-72	72	(1,830)	4,500	(2,040)	
CW5-84	84	(2,130)	4,900	(2,220)	
CW5-96	96	(2,440)	5,300	(2,400)	or 0.1 to 2.0
CW5-120	120	(3,150)	6,500	(2,950)	
CW5-144	144	(3,660)	7,400	(3,360)	
CW5-168	168	(4,270)	8,300	(3,765)	
CW5-192	192	(4,880)	9,000	(4,080)	0.1 to 2.0
CW5-216	216	(5,490)	10,000	(4,535)	
CW5-240	240	(6,100)	11,000	(4,990)	

Other speed ranges available - consult factory for details.

# APPLICATIONS

## FOOD PROCESSING EQUIPMENT

This CWB5 system is designed for the manufacturing of copper and stainless steel cooking vessels used in the preparation of candy. Food industry standards are very demanding, in particular, regarding the smoothness of the weld underbead. The required weld quality is assured by the use of expanding tooling incorporating gas back-up facilities. The system utilizes GTAW (TIG) welding and is equipped with tailstock tooling, automatic arc length control, cold wire feed and complete weld sequence control facilities.



## ROAD TRANSPORTATION

The CWL-96 illustrated has been designed for the manufacturing of gas tanks for trucks. The tanks are made of aluminum and consist of a cylinder to which are welded two dished heads. The GMAW (MIG) process is used on a joggle-type joint. To ensure the accurate placement of the welds, the system is fitted with two tactile seamtrackers. Prior to welding, they "find" the two joints and then maintain the correct position throughout the welding operation. Two Jetline 9500 microprocessor controllers use closed-loop control to control the travel speed and all the other welding parameters.



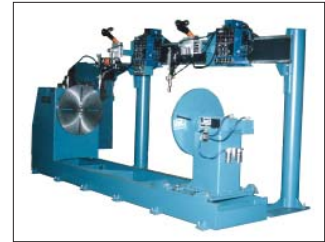
## GENERAL PURPOSE

This CWL-120 system is suitable for the welding of tubes and vessels made of stainless steel and nickel alloys. The movement of the tailstock is powered to permit it to be easily and quickly moved along the bed to accommodate different part lengths. The carriage, which rolls along the track behind the circumferential fixture, carries a set of GTAW (TIG) welding equipment. The welding equipment includes a mechanized weld oscillator, an automatic arc length control with weld sequence control and a cold wire feeder. Hot wire feed is an option with this type of welding system.



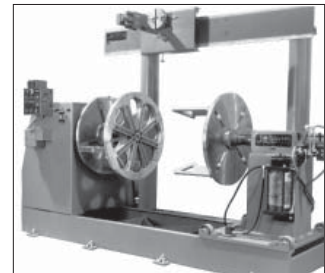
## PRESSURE VESSELS

The weight carrying capacity of the CW5-96 makes it ideally suited for the welding of pressure vessels and similar parts. The system shown is equipped with two sets of welding equipment. This is made easy by the system's ability to carry multiple carriages on the track. Each carriage carries a GMAW (MIG) welding head with wire feeder and gun. Different part diameters are accommodated using adjustable vertical slides which lift and lower the welding head. Similar systems have been built using the submerged arc welding process. In this case, the systems are equipped with flux delivery and recovery equipment.



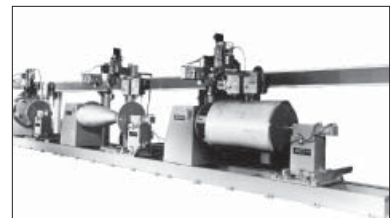
## CHEMICAL STORAGE VESSELS

The transportation and storage of caustic chemicals demands the use of stainless steel containers which have been welded with the highest integrity weld possible. The CW5-48 circumferential welding fixture shown is ideally suited for this type of application. It is fitted with large diameter, expanding tooling on the headstock and support tooling on the tailstock. The headstock tooling has gas back-up capabilities to ensure a clean, well formed weld underbead. The tailstock has automatic clamping which uses a hydraulically-operated lock to secure the tailstock once it is in position. The unit has a single carriage for the mounting of the weld head.



## AEROSPACE

The system illustrated consists of three CW5 fixtures which have been mounted on a common base with a track extending over the complete length. The system is designed for the welding of elliptical flight refuelling tanks used on fighter aircraft. The tanks are made of aluminum and are welded using the GTAW (TIG) welding process. Each carriage carries a weld head with multi-axis slides which follow the elliptical shape and maintain correct torch position at all times. Automatic arc length control and cold wire feed facilities are mounted on each carriage and the whole weld sequence is controlled by the system.





# OPTIONAL ITEMS AND ACCESSORIES



## 9900 Controller

The Jetline 9900 Controller is an industrial computer using simple interfaces to control the full range of accompanying weld hardware modules. Up to 15 parameters or channels can be simultaneously controlled in closed loop format. Due to the modular design, the system can easily be expanded or changed as new requirements arise.

USB ports are available for connection of peripherals. Because the 9900 runs Windows XP® operating system, virtually unlimited program storage is available. The touch screen is of a robust design to give a long service life.

System parameters and variables are incorporated in the welding programs offering simplicity and efficiency for basic welding applications or full control of the most demanding ones.

For further details, request our separate 9900 Controller product brochure.

## Flexible Cable Carrier

Any track can be fitted with a flexible cable carrier to carry all the supply hoses and cables.

## Mounting Brackets

A complete range of brackets to mount the welding head to the carriage is available. The brackets are fitted with cross slides to adjust the torch position relative to the weld joint, these include X, X-Y, X-Y-Z and combinations with rotation and tilt facilities.



## Cold and Hot Wire Feeders

A full range of wire feeders, both for cold and hot wire feeding, are available. Wire sizes from 0.020 to 3/32" (0.5 to 2.4 mm) can be accommodated. Models include both two and four drive roll varieties.



## Arc Length Control

Jetline's Model 401 microprocessor-controlled arc length control is used for GTAW (TIG) and Plasma (PAW) welding. It is designed to maintain a precise and consistent arc length throughout the weld process. The unit includes a touch retract facility to preset the arc length prior to welding.

The microprocessor design provides easy-to-use setup screens and an uncluttered front panel for operator convenience. The menu-driven software provides ease of use.

Two arc length control actuators are available, one with 6" (150 mm) stroke, the other with 12" (300 mm) stroke. This extended stroke is ideal for circumferential applications to accommodate different part diameters.



## Seamtrackers

Jetline manufactures and supplies a full range of equipment for the tracking of the weld joint.

The microprocessor-based tactile seam tracker uses the latest control technology to assure consistent, accurate tracking of the weld seam. This is achieved by the use of a tactile probe which senses the position of the seam relative to the welding head. A signal is sent through the control to the cross-slide motors which drive the slides up or down and left or right to maintain the correct welding torch position.

For applications where it is not possible to use a tactile probe, the optical seam tracking system is available. This system uses a sensor which "paints" the part with a laser stripe. The resulting image is received, analyzed, and corrective signals sent to the cross slides.

A large range of cross-slides with different weight capacities and stroke lengths is available from Jetline for virtually any welding application.

## Welding Gear

Jetline can interface the welding power supply and other welding gear with any circumferential welding fixture to provide a completely integrated welding system. Equipment for any welding process can be fitted including GTA, Plasma, GMA and submerged arc welding. All necessary cables and hoses will be supplied to provide a system which can be introduced into production immediately following delivery.



See Jetline price list for complete ordering information

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**jetline®**  
engineering  
An Illinois Tool Works Company

15 Goodyear St., Irvine, California 92618 USA  
Tel: (949) 951-1515 • Fax: (949) 951-9237 • E-mail: sales@jetline.com

Web Page: [www.jetline.com](http://www.jetline.com) • [www.cyclomatic.com](http://www.cyclomatic.com)