Product Information

Jetline® engineering, inc.

MODEL WHL
Weld Head Locators

- Powered Vertical Lift
- Precision Boom Track
- All Arc Welding Processes
- Choice of Three Models
- Optional King Pin Base
- Optional Travel Car

Introduction

For all arc welding processes, it is important that the welding head be rigidly mounted over the part to be welded to obtain the highest quality weld results. Any vibration or instability of the weld head mounting will have an effect upon the arc length and produce inferior results.

The parts which are presented for welding in the average workshop vary in size and shape. The weld point varies and it is therefore necessary to locate the welding head accordingly. The welding head locator provides a universal solution as the boom can be lifted and lowered on the mast and can be extended or retracted as required by the geometry of the part.

Further capability is provided by the use of a kingpin base and a travel car, both of which extend the area in which the system can operate.

Jetline weld head locators have been developed to be strong enough the carry a complete submerged arc welding head with all the associated wire and flux handling equipment without droop or vibration. All Jetline weld head locators use case hardened tracks, because of this, their movement is smooth and very precise, rendering them suitable for use with the gas tungsten arc welding process. They are even accurate enough for use with a micro-plasma welding head.

All systems are supplied complete with powered lift which has variable speed control. The standard

WHL-3C4X3K with fixed kingpin base and powered boom

model can be used for vertical welding purposes if desired. Welding in the flat position is achieved by the use of the optional power movement of the boom.

Description

The system consists of a crosshead which rides up and down a vertically orientated mast. The crosshead carries a boom which can extend out horizontally from the mast.

The mast can be mounted to a fixed base, the base can be fitted with a kingpin to permit rotary swivelling of the mast. Either the fixed or kingpin base can be mounted on a travel car to carry the weld head locator along a floor mounted track to various points along a large part.

Mast

The mast is mounted vertically on the base and consists of a heavy wall, rectangular box section tube with machined ways for the tracks. On the smallest model, the track is a case hardened vee-way, on the larger models, the track consists of case hardened and ground roundways. The stress relieving and the subsequent machining of the mast guarantees precision vertical movement of the crosshead on the mast.

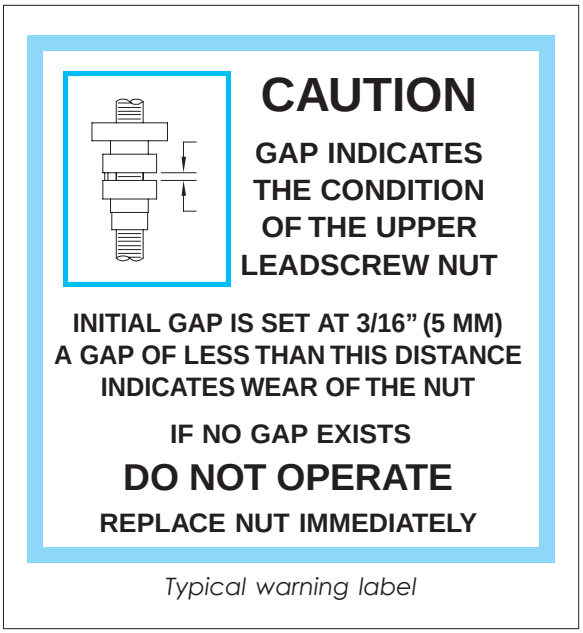
15 Goodyear St, Irvine, California, 92618 U.S.A. • Tel: (949) 951-1515 • Fax: (949) 951-9237
P O Box 208, Huntingdon, Cambridgeshire, PE29 7FE, UK • Tel: +44(0)1480-433366 • Fax: +44(0)1480-433377

WELD HEAD LOCATORS

Safety is of the utmost importance in the design of a weld head locator. To avoid the danger inherent in manipulators which use a chain lift with a motor at the top of the mast (even when fitted with an "anti-fall device"), Jetline weld head locators are designed to use an Acme style leadscrew for elevation of the crosshead and boom. The design of the bronze nut which rides on the leadscrew is unique and provides three distinct levels of safety, all three would have to fail simultaneously to create a dangerous situation. This will never happen if correct maintenance procedures are observed and carried out.

1 The Acme screw operates under tension and two nuts are provided, the lower nut carries the load, the second nut is employed as a backup.

2 A limit switch is fitted which monitors the gap between the two nuts. When the lower nut starts to wear, the gap closes and, at a preset distance, the limit switch operates and inhibits the power to the lift motor thus disabling operation of the unit until the nut is replaced.



Typical warning label

3 A warning label is affixed in close proximity to the nut, this states the minimum distance acceptable between the nuts. If the limit switch has been sabotaged or fails to operate, regular inspection of the nuts will indicate any problem at an early stage.

Boom

The boom provides horizontal movement in and out from the mast. It is made of rectangular box section tubing and, after stress-relieving, is machined to accommodate hardened ways identical to those used on the mast. The boom rides on hardened guide wheels with sealed bearings, these wheels are located on the crosshead.

At each end of the boom there is a machined mounting plate, this plate is used for the mounting of the welding head. Welding equipment can be mounted on both ends of the boom providing that the total weight of the two sets of welding equipment does not exceed the maximum rating of the system.

As the boom is hollow, cables and hoses can be fed to the welding head through the boom. An access hole is provided at each end for this purpose.

Movement of the boom is manual, motorized travel is available as an optional feature (standard on the WHL-5C). The use of hardened tracks minimizes friction and permits movement to be made with little effort. A manual locking screw secures the boom when its desired position has been reached.

Optional Items

Motorized Boom

Especially on the larger sizes of weld head locators, manual movement of the boom is inconvenient, particularly when the boom is at a higher elevation. In these circumstances, motorized boom movement is desirable. There are also other applications where powered boom movement can be used to carry out linear welding. In this case, smooth, consistent movement of the boom is vital and the Jetline design has been developed to provide this.

On the WHL-3C system, powered boom movement is provided by a linear drive system powered by a variable speed DC gearmotor. This drive results in zero backlash and smooth movement.

On the larger systems, the boom is driven through a rack and pinion drive using a variable speed DC motor. A pendant with a joystick control allows the operator to position the weld head both vertically and horizontally.

Where the boom is being used to provide weld travel, the standard motor can be replaced with a precision drive. The standard motor has a speed holding accuracy of ±2% while the precision drive holds the speed to within ±0.1% of the rated output speed. For weld travel, the drive motor can be connected to any of Jetline's extensive range of motor controls and can be interconnected with the 9500 microprocessor control or the Jetstar computer controller.

Kingpin

This option allows the mast to be rotated through 360°. This is a useful feature when welding equipment is mounted on both ends of the boom, the kingpin allows the system to be swivelled to locate either welding head over the part being welded.

WELD HEAD LOCATORS

The kingpin rotates on pre-loaded, tapered roller bearings to ensure easy rotation of the mast, even on the largest model. The bearings are designed to allow smooth mast rotation even when the boom is fully loaded and at its maximum extension from the mast. There is no need to retract the boom to try to balance the load on the kingpin to permit rotation.

A friction brake is supplied to lock the mast when it is in position. Positive, no-slip locking is operated by a manual lever, no tools are required.

The kingpin is available in two versions. The standard model is mounted in a fixed base. For applications requiring more versatility, the kingpin is mounted in a travel car.

Powered Kingpin

A powered kingpin is available for all the models. It is particularly suited for use with the larger models of weld head locator where manual movement and locking is difficult. The basic design of the kingpin is the same as that for the standard unit but incorporates a motor and gearbox which provide powered rotation.

A power lock is provided which is engaged when the rotation stops, this firmly locks the unit in its desired position. When the signal is given to rotate the unit, the brake is automatically released.

WHL-4C6X6KC with kingpin car
Equipped with 9500 microprocessor-controlled plasma welding system

Travel Car

Various types of travel cars are available to provide movement of the weld head locator along a track. Travel cars can be customized for your particular application but are almost always based upon standard designs. Some of the standard designs are described below.

Basic, non-powered

This type of car is used primarily for use with the smaller sizes of weld head locators. It consists of a base riding on wheels which rides along a fabricated track. The base is large enough to carry the weld head locator but does not normally carry anything else. Using this type of car, the welding power supply and other associated equipment is mounted at the end of the track. A flexible cable track can be supplied to route all the cables and hoses to the car. The fabricated track is not machined as this type of car and track are used primarily for positioning of the weld head locator. Facilities are provided on the track for fixing it to the floor and the car is fitted with a safety device to avoid the weld head locator overbalancing. Fixing of the track to the floor is very important if the weld head locator is to carry heavy loads at full boom extension.

Basic, powered

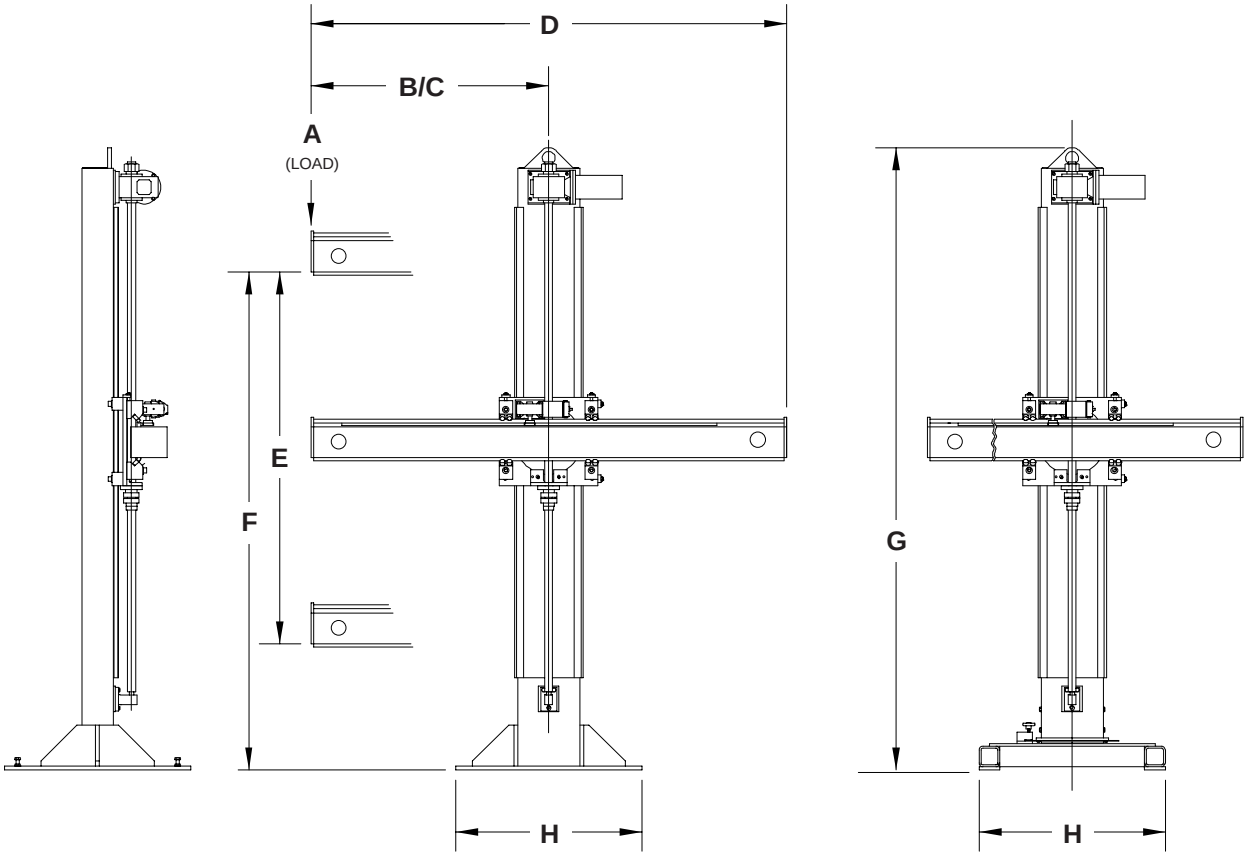
The car described above can be fitted with powered movement. In this case the unit is driven either by a constant speed or variable speed motor. Because the track is not machined, the power movement is primarily used to aid repositioning of the weld head locator, but it can also be used to provide a linear welding capability where linear alignment is not critical or where a seamtracker is employed.

Powered Travel Car

This type of car is used in conjunction with the larger sizes of weld head locators. It consists of a large platform on which the weld head locator, with or without the kingpin, is mounted. Provision is made on the platform to locate the welding equipment and other ancillary equipment such as flux recovery or wire pay-off packs. The platform is large and robust enough to carry the operator control station, This permits the operator to travel on the car along with the equipment as the weld takes place.

The floor mounted track comprises rail sections which are welded to cross members to retain the correct track width. Mounting holes are provided to fix the track to the floor. Flanged wheels on the car ride on the track and are power driven using a variable speed motor and control. It is therefore possible to use this car for accurate longitudinal as well as for positioning the welding head for circumferential welding applications. A flexible cable track can be optionally provided to carry and organize all the hoses and cables to the travel car.

WELD HEAD LOCATORS



Specifications

MODEL	A	B	C		D	E		F	G	H (sq)
	Maximum Load lb/kg	Maximum Reach inch (mm)	Boom Travel inch (mm)	Boom Speed IPM(mm/min)	Boom Length inch (mm)	Vertical Travel inch (mm)	Vertical Speed IPM(mm/min)	Max. Boom Height inch (mm)	Overall Height inch (mm)	Base Size inch (mm)
WHL-3C4X3F	300 (135)	48 (1,220)	36 (915)	30 (750)	58 (1,475)	48 (1,220)	35 (900)	72 (1,825)	95 (2,415)	30 (750)
WHL-3C4X3K	As WHL-3C4X3Fbut with rotatable kingpin base with 360 degree rotation									
WHL-3C4X3KC	As WHL-3C4X3K but mounted on a travel car, 39" x 30" (1,000 x 750 mm). Increases overall height (G) to 103" (2,615 mm).									
WHL-4C6X6F	400 (180)	82 (2,080)	72 (1,825)	A: 70 (1,780) B:120 (3,050)	92 (2,340)	72 (1,825)	30 (750)	96 (2,440)	120 (3,050)	36 (915)
WHL-4C6X6K	As WHL-4C6X6Fbut with rotatable kingpin base with 360 degree rotation									
WHL-4C6X6KC	As WHL-4C6X6K but mounted on a travel car, 60" x 46" (1,525 x 1,170 mm). Increases overall height (G) to 130" (3,300 mm).									
WHL-5C10X10F	400 (180)	131 (3,325)	120 (3,050)	36 (915)	143 (3,630)	120 (3,050)	30 (750)	151 (3,835)	176 (4,470)	64 (1,625)
WHL-5C10X10K	As WHL-5C10X10Fbut with rotatable kingpin base with 360 degree rotation									
WHL-5C10X10KC	As WHL-5C10X10K but mounted on a travel car, 80" x 68" (2,030 x 1,725 mm). Increases overall height (G) to 179" (4,550 mm).									

See Jetline pricelist for complete ordering information

Distributed by:

Jetline® engineering, inc.

15 Goodyear St., Irvine, California 92618 USA

Tel: (949) 951-1515 • Fax: (949) 951-9237 • E-mail: sales@jetline.com

P O Box 208, Huntingdon, Cambridgeshire, PE29 7FE, UK

Tel: +44(0)1480-433366 • Fax: +44(0)1480-433377 • E-mail: JetlineUK@aol.com

Web Page: www.jetline.com

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