

Product Introduction

Circumferential Weld Lathes – Standard

AMET is pleased to provide the following product introduction to our standard model of circumferential weld lathes. These weld lathes are designed to compliment our T2 and QII controls. The CWL is produced in a full range of weld lengths and in several different models in order to meet your application requirements. AMET will also consider your special requests for weld lathes and features as well.

Purpose:

Circumferential lathe welders are used to produce high-quality welds with minimum distortion on circumferential (girth) weld joints on a wide variety of parts and part shapes. The weld joints can have various joint configurations including butt, fillet, overlap, and joggle. Welding is performed from the external (top) side of weld joint. (Internal welding is possible with special adaptations.) Single and multi-pass welding can be performed using GTAW, PAW, GMAW, FCAW, SAW or YAG Laser welding. The joint is firmly clamped into position and the weld head is precisely moved along the length of the weld joint. The weld lathe can be optionally fitted with two or more weld heads so multiple welds can be performed simultaneously or sequentially.

Benefits:

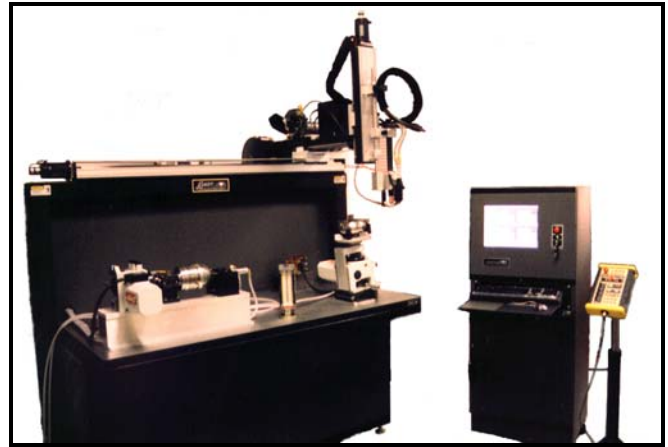
The circumferential weld lathes have several benefits over welding the part manually or by using just a motorized carriage or “buggy” with a portable track approach including:

- Able to achieve consistent 100% penetration welds with even weld bead, both top and bottom
- Able to adjust part dimensions and design for accuracy due to consistent distortion and weld shrinkage
- With clamping tailstock, eliminates or reduces tack welding and weld quality issues related to tack welds
- Provides ability to hold edges of weld joint firmly in place over entire length of part
- Provides tooling point for internal tooling requirements, including gas purge devices
- Eliminates or reduces time to remove or handle portable track, thus increasing production rates
- Increased weld (arc-on) time
- Reduced operator fatigue and involvement
- Reduced consumable costs

These benefits greatly reduce the time to prepare a part for welding, the time to finish a part after welding, and for preparing the system for welding. Also, rework time will be reduced and part scrap will be cut.

AMET can include optional features such as part lifts, part loading and unloading devices, pneumatic internal/external

expanding tooling, end tooling, and gas shield devices to increase the productivity or weld quality of the standard weld lathes.



Precision Weld Lathe with ADVENT for Carleton Technologies

Capacities:

As standard, AMET can produce circumferential welder lathes with a weld length capacity from 600 to **6000 mm** (24” to **236”**) with diameters up to 1500 mm (60”) and weight capacity to 10 ton.

All standard weld lathes have the following general capacities and specifications:

- Head/Tail stock TIR is less than 0.4 mm (.015”)
- Base (machining) accuracy is +/- 0.4 mm per 3 meters (.015” per 10 feet)
- Pneumatic tail stock clamping has 150 mm (6”) stroke.
- Carriage is manually adjusted and locked into position with weight capacity of 150 kgs (330 lbs)
- Following specifications depend on the model you select:
 - Diameter capacity
 - Maximum part length
 - Weight capacity
 - Clamping force



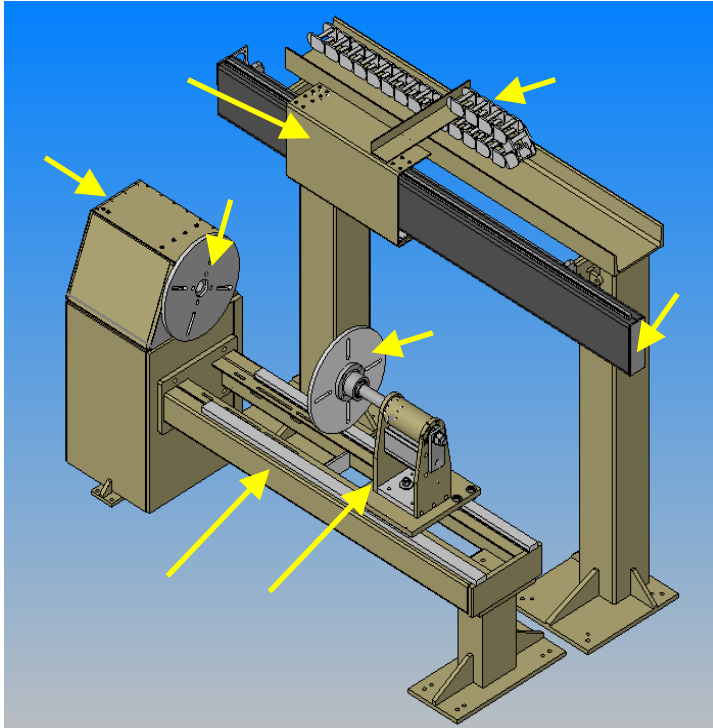
Lathe with XM - Solar Turbines

Circumferential Weld Lathes

Product Introduction



STANDARD FEATURES on Circumferential Weld Lathes



1. Machined flat-way style track with two track supports, height based on customer's application. Track and supports are adjustable to insure proper alignment.
2. Non-motorized travel carriage using bearing assemblies to ride along flat-way style track. Includes manually operated brake to allow for manual movement (motorized version is optional).
3. Motorized head stock assembly (tilting headstock is optional). Uses DC motor with adjustable speed, offered in two speed ranges.
4. Head stock drive uses precision gearbox driving spur gear to obtain torque and speed requirements. Nominal backlash is guaranteed. (High precision headstock is optional.)
5. Clamping tailstock, manually adjusted along length of base and locked into position. Activate tailstock clamping by hand valve. Using double bearing cylinder to avoid droop when extended.

6. Welded base assembly, stress-relieved and machined for proper tailstock alignment along its length. Base machined to TIR of .015" (.4 mm) per 10 ft (3 M) Includes necessary mounting and level pads.
7. Faceplates on head and tail stocks with 4 t-slots for mounting customer's tooling.
8. Includes flexible cable carrier and track support.
9. T2 rotation control included as standard. The T2 control is based on DSP technology and able to sequence the weld and control the welding speed. The control includes encoder feedback on rotation speed. Speed holding accuracy is +/- 2% of set speed. See T2 technical specification for more details.
10. Thru-hole on head stock, minimum 25 mm (1") on all models.
11. Limit switches – fixed home position and adjustable end of weld/next pass (not shown).

AMET's weld lathes are designed to typically weld the part near Top Dead Center (TDC, 12 o'clock, or 1 G) position. Special torch positions can be designed into system as an option.

Circumferential Weld Lathes

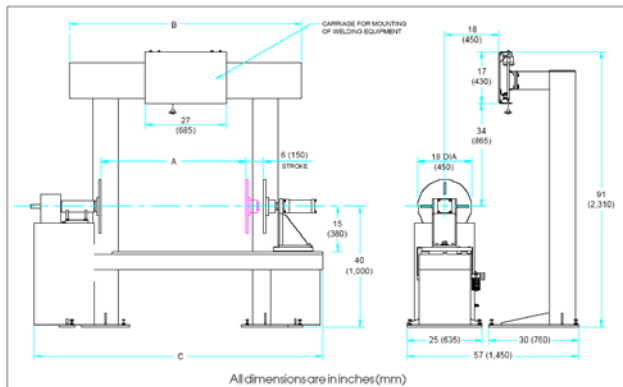


Product Introduction

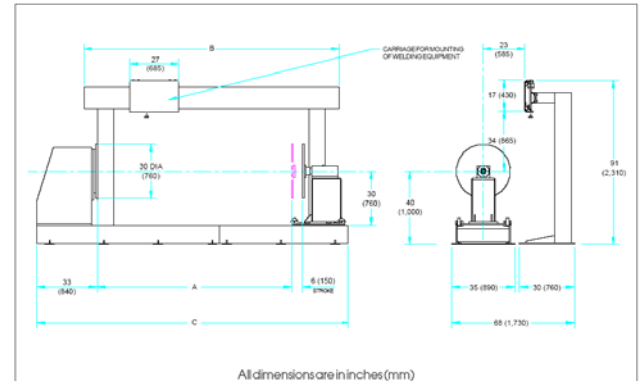
Six Models of the CWLS to meet your project requirements!

CWLS5 & CWLS10 - Standard Medium Duty

These two standard circumferential weld lathes are shown below. Their standard design includes a base that is raised 600 mm (24") from the factory floor and has a combined weight capacity* of 500 kgs or 1000 kgs (1,100 or 2,200 lbs) respectively. They are designed for a maximum part outer diameter of 910 mm (36").

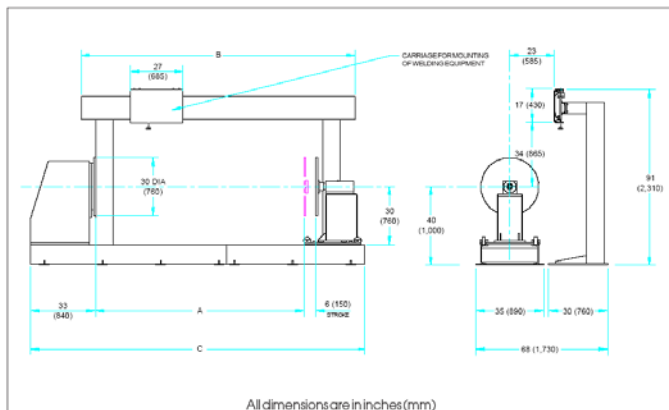


weight capacity* of 7500 kgs or 10,000 kgs (16,500 or 22,000 lbs) respectively. They are designed for a maximum part outer diameter of 1500 mm (60").



CWLS25 & CWLS50 - Standard Heavy-Duty

These two standard heavy-duty circumferential weld lathes are shown below. Their standard design includes a base that is mounted to the factory floor and has a combined weight capacity* of 2500 kgs or 5000 kgs (5,500 or 11,000 lbs) respectively. They are designed for a maximum part outer diameter of 1500 mm (60").



Precision Weld Lathes

Please note that AMET can also offer the customer the above weld lathes in our "precision" version. The precision units include a precision rotational drive (using a planetary gearbox drive – such as a Harmonic drive or SEW drive) and a ball screw driven linear carriage for precise movement with near zero backlash. Both axis of motion use servo motors with encoder feedback. These units are designed to work with the XM and ADVENT line of controls, which are precise position-based control packages. These units are prepared for both rotational and linear welding.

In the "precision" version of circumferential weld lathes, we also offer the following model:

Q/X-Lathe – Precision Weld Lathes

Designed for precise production applications, as seen in instrumentation, bellows, medical and electronics applications. These lathes use Harmonic drives for precise rotational control and bases made with linear round-rail for exceptional head-to-tail stock alignment. These units can handle part weights up to 250 kgs (550 lbs), a maximum part diameter of 500 mm (20"), and a maximum part length of 1800 mm (72"). Please see separate literature and technical specification on this product.

CWLS75 & CWLS100 - Standard Extra Heavy Duty

These two standard extra heavy-duty circumferential weld lathes are shown below. Their standard design includes a base that is mounted to the factory floor and has a combined

* Combined weight capacity is when head and tail stocks are supporting the part at the same time.

NOTE: Please see the Technical Specification Data Sheet on each product for more details and information.

Product Introduction

Optional Features for a CWL Circumferential Weld Lathe

Q2 System Control

Allows operator to control four welding parameters at one time with one weld program, including the weld sequence. See QII Literature for details.



Pneumatic Part Lift

The base on CWL05 thru CWL15 can be fitted with a pair of pneumatically driven part lifts. The standard lifts have a standard stroke of 200 mm (8"), which can be manually adjusted for a different range of diameters.

Automated Feed Rails

The CWL05 and CWL10 can be equipped with gravity feed rails, ideal for high production environments. The feed rails include pneumatically-driven gates that control the part flow sequence. The feed rail option includes the part lift feature (enhanced with part stop and eject features) and the necessary control circuitry to complete the proper part flow sequence.



Motorized Tail Stock

If desired, the tailstock can be motorized. We will fit the base section with a precision gear rack and include a motor, gearbox, and pinion gear with the tailstock assembly. The operator

will have a forward/reverse button to press. An automatic brake system is included. When the tailstock is moving, the brake will automatic activate, allowing the tailstock to move along the base.

Tailstock Side-Shift

This feature is ideal when internal expanding tooling is used on the headstock. This feature allows the operator to shift the tailstock perpendicular to the base, allowing it to clear the part. Thus the operator can remove the part from the headstock tooling without having to move the tailstock along the base.

Tooling

The headstock and tailstock come with a faceplate as standard. AMET can provide standard or made-to-fit tooling for the head and tail stocks to allow the part to be clamped on centerline easily. We can provide self-centering 3 and 4 jaw chucks and grippers as well.

Internal Expanding Tooling

The headstock can be fitted to a tooling assembly to allow the operator to clamp the part from the inside. This tooling is ideal when welding a butt joint and little, if any, tack welding is required. The tooling typically includes the tool mounting assembly with adjustable faceplate, one expanding segment with pneumatic draw bar, and one set of copper inserts. (Optional gas backup inserts and water-cooled inserts are also available at additional cost.)

External Expanding Tooling

This tooling is dedicated tooling to clamping a specific part from the outside since there is not enough of an opening for internal tooling to operate. The tooling contacts the part equally from the outside, on both sides of the joint, forming it to specific diameter or shape. Joint design and consistency is

critical for this tooling to work successfully. (A typical application is beverage containers.)

Synchronized Headstocks

On some special and/or larger applications, the customer needs to replace the tailstock with a second headstock in order to drive the part from both ends. AMET can provide dual headstocks with synchronized driven motors to accommodate this demand.

Idler Supports

On some applications, the customer needs an adjustable idler support instead of tailstock. The idler support can be adjusted for different diameters and can be moved along the base to handle different part lengths.

Linear Welding

On some applications, for example spiral welding, the carriage needs to be upgraded for linear welding. On these applications, we upgrade track and carriage, a cable carrier, and provide either a standard or precision motorized drive system for linear welding (depending on your application).

Mounting Brackets & Slides

AMET has a full range of brackets and slides to complete the system. We offer manually adjusted slides, air slides, torch pivot and tilting, and motorized slides, allowing the operator to move the weld head over the joint as desired. Brackets can be made to allow you to mount welding components to carriage as required. (See Bracket & Slide Literature.)

Process Controls & Accessories

AMET can add arc voltage controls, hot/cold wire feeders, seam trackers, arc monitoring systems and the desired weld process to our circumferential welders to meet the demands of your application.

Circumferential Weld Lathes



Product Introduction

Typical Applications for a CWL Circumferential Weld Lathe

Air Cylinders

Welding end caps on air cylinders used for truck brakes, receiving tanks and air compressors.



Tanker Truck & Rail Trailers

Tanks associated with truck hauling and trailers.



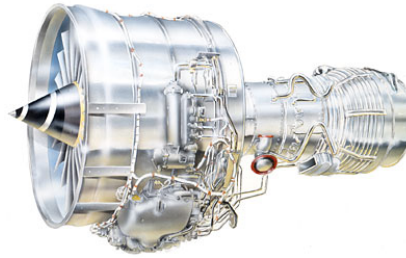
Hot Water Tanks

Hot water tanks heated by gas, electric and solar.



Aero-engine

Components used on jet engines (and other areas on aircraft)



Food Preparation

Filters, storage vessels, cooking vessels and other items used in the food industry have linear welds.



Fuel Containers

Fuel storage containers, including truck tanks, LPG tanks, propane tanks.



Medical/Pharmaceutical

Cryogenic containers and autoclaves require excellent quality linear welds.



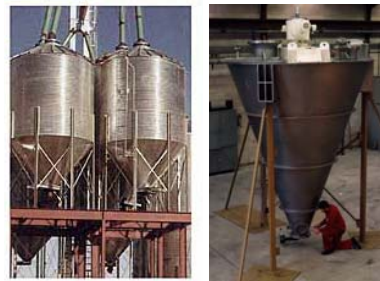
Petrol-Chemical Industry

Typical for stainless and special alloy vessels and pipe (pipe to pipe, pipe to fitting, pipe to flange).



Conical shapes (Silos)

Many shapes are conical, not cylindrical. Silos are an example.



Cladding/Hardsurfacing Industry

Used for resurfacing on rollers, journals and shafts.

Beverage Industry

Stainless Steel and copper holding tanks.

Aerospace

Fuel cells, compartment sections and other critical components used in this industry.