



Integrated Pipe Spool Welding Station

Advanced Automated Welding Systems

The AMET Integrated Pipe Spool Welding Station is a complete solution for the production welding of pipe spools: including the attachment of flanges, fittings, and valves. This system has been specifically engineered for ease-of-use and high productivity in a shop environment. Our standard system utilizes the “hotwire TIG” process and can operate at high deposition rates while maintaining an extremely high-quality weld finish.

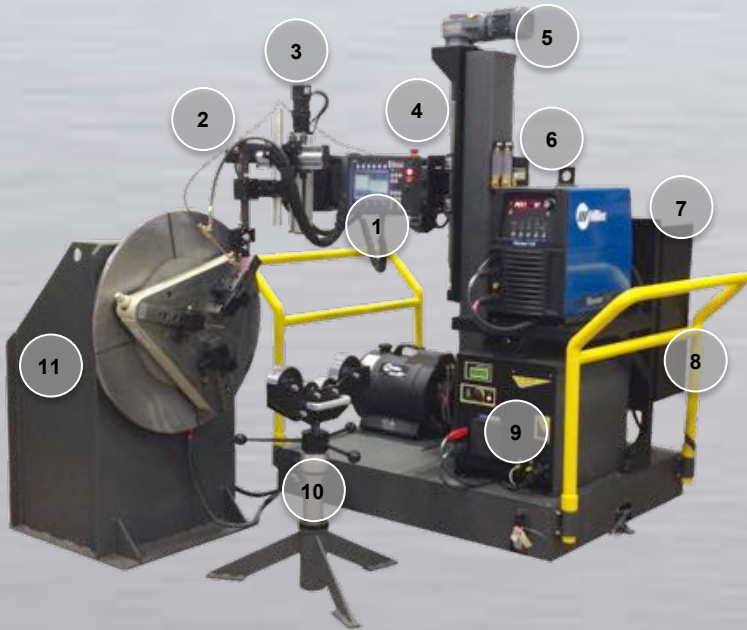


Advantages

- Quality & Precision:** The Integrated Pipe Spool Welding Station is purpose-built to increase productivity with an easy-to-use, yet powerful interface featuring AMET’s precision motion and welding controls.
- Turnkey:** The Integrated Pipe Spool Welding Station is a turnkey pipe welding system, ready for operation within hours.
- Increased Productivity:** The hotwire feeder provides significantly increased deposition rates over a conventional coldwire GTAW system and can operate near GMAW deposition rates with lower fume emissions and no spatter, which increases productivity and efficiency.
- Improved Weld Quality:** The hotwire GTAW process utilized by the Integrated Pipe Spool Welding Station results in a higher quality weld that is less prone to defects, requiring less rework compared to alternative weld processes.



Standard Features



1. The SX Controller is the center of this turnkey welding system. The SX uses digital controls for integration with the welding power supply, hotwire feeder, AVC, and oscillator. The user interface offers an intuitive and logical layout to quickly and easily create, edit, and store weld programs.

2. The system features several manual torch adjustments, creating a versatile system. The torch has +/- 20 degrees of lead and lag (Y-Axis) adjustment, +/- 45 degrees of tilting (X-Axis) capability, and 5.5 in (140 mm) over-center adjustment.

3. Two (2) precision ball screw slides, driven by servo motors with encoder feedback, are included for programmable motion of the torch in the X-axis and Z-axis. The X-axis includes mechanical oscillation capability and the Z-axis is equipped with AVC. Both axes include velocity and position control.

4. A 4-roll wire drive assembly driven by a servo motor with encoder feedback provides wire delivery. Wire feed speed, start delay, and wire retract are programmable. The wire feeder offers high-precision wire delivery with accuracy of +/- 1% of the programmed speed.

5. The welding manipulator is constructed using thick-wall steel tubing. It features a fixed-boom with motorized jog motion height adjustment controlled from the SX control pendant and manual over center adjustment. Precision rails and bearings ensure longevity and smooth operation.

6. A GTAW sensor box is included to provide integration of the gas and water sensors. A solenoid and manual flow meter are incorporated for programmable on/off control of the ID purge and torch shield gas. Gas and water sensors detect the presence of gas / water flow.

7. An electrical control cabinet provides a central location for all process controls and electrical components. Included in this package is a single point power distribution that provides fuse-protected power to the entire system from a single primary power circuit (provided by client).

8. The manual travel cart provides a secure platform for the welding equipment (power supply, hotwire power supply, and water circulator), manipulator, and electrical control cabinet. The travel cart can be easily pushed or pulled to the desired position along a set of travel rails and locked into place with a manual brake.

9. The AMET Hotwire power supply provides a true high precision RMS output of up to 200 amps at up to 20 volt AC. This reduces arc deflection (arc-blow) commonly found in DC hot wire units.

10. One (1) pipe support stand is included with the system to provide part support opposite the headstock. The idler wheels are capable of safely supporting pipes from 2 to 48 in (50.8 to 1219 mm) OD. The stand height is manually adjustable from 24" – 36" (609 to 914 mm).

11. Precision and programmable rotation is performed by the headstock. A servo motor with encoder feedback drives the headstock for precise control of the pipe rotation. The headstock includes a three-jaw gripper for holding/clamping parts.

Optional Features

-  AMET X-View Arc Viewing Camera
-  Travel Cart Rail Extensions (5 ft. Lengths)
-  Magnetic Oscillators
-  Grippers for Smaller Pipe Sizes
-  Optional Pipe Support Idlers
-  Integrated ID Gas Purging Systems
-  Upgraded Push Cart Handles
-  Trailing Shield Purging Systems
-  GMAW / FCAW Welding Processes & Controls
-  Powered Travel Cart Drive (Pendant Control)
-  Data Acquisition & Tolerance Checking
-  Specialized Torches
-  Wire Feed Straighteners



Capacities

- FA** Precision Headstock Rotation: 1,000 lb. (450 kg) weight capacity at 6 in (150mm) from the faceplate.
- FA** Manually adjustable gripper capable of clamping pipes within the following ranges:
 - 2 to 24 in (50 to 610 mm) OD
 - 6 to 30 in (152 to 762 mm) ID
- FA** Free-standing Pipe Support Stand: Weight capacity of 4,000 lb. (1800 kg).
- FA** Manual Torch Lead/Lag: Adjustable up to +/- 20 degrees.
- FA** Manual Torch Tilt: Adjustable up to +/- 45 degrees.
- FA** Manual Torch Over Center: Adjustable with 5.5 in (140 mm) total stroke.
- FA** Programmable AVC (Arc Voltage Control) Vertical axis with 7 in (178 mm) of total stroke.
 - Arc Voltage Range: 5 to 40 Volts
 - Arc Start/Stop Delays: 0 to 99 seconds
- FA** Programmable Mechanical Oscillator / Cross Seam Axis: 5 in (127 mm) of total stroke.
- FA** Manual Travel Cart: 20 ft. (6096 mm) of rails – 16 ft. (4876 mm) of travel with a manual brake to lock the travel cart in place. (Additional rail extensions (5 ft. length) are optionally available)
- FA** Hotwire Power Supply: Up to 200 amps at up to 20 volts AC
- FA** 400 amp GTAW Welding Power Supply (300 A 60% Duty Cycle) (Alternative Power Supplies available).
- FA** Wire Feeder: 1 to 500 in/min (25 to 12700 mm/min) programmable wire feed speed.
- FA** Motorized Fixed Boom Manipulator:
 - 14 in (355 mm) of motorized vertical adjustment

SX Controller

The SX Controller integrates with the programmable components of the system.

- FA** Simple User Interface and programming
 - Extensive library facility for weld program storage.
 - Programming and library functions in easy to understand “plain” language.
- FA** Integrated Programmable control of:
 - Welding Current and Pulsation
 - Arc Voltage / Length
 - Wire Feed Speed
 - Hotwire Voltage
 - Travel Speed
 - Torch Weaving / Oscillation

Benefits

- FA** AVC (Z-Axis): AVC provides automatic height adjustments to maintain a consistent arc voltage throughout the entire weld, including automatic adjustments on multi-pass welds. The AVC also features touch retract, home capability, and after-weld retract to facilitate part loading and unloading.
- FA** Mechanical Oscillation (X-Axis): A precision slide provides programmable oscillation for sidewall tie-in on larger joints as well as cross-seam adjustment. This helps eliminate the need to reposition the entire travel cart to account for minor variations in the weld joint.
- FA** Headstock Rotation: Integrated into the welding controls to provide precise velocity and positioning control for single or multi-pass welds.
- FA** The combination of the 1,000 lb. (450 kg) capacity headstock, 16 ft. (4876 mm) of manual travel, and large clamping capacity offers the capability of welding a large range of pipes.





Integrated Pipe Spool Welding Station Layout

