



Column & Boom Manipulator Systems

AMET's Column and Boom Manipulator systems offer versatility for a wide range of applications and weld processes including GMAW, GTAW, Hotwire GTAW, SAW, and PAW. We offer a full line of part supporting equipment including turning rolls, turn tables, positioners, and travel carts. With our XM® or XPro Controller being able to integrate with and control the supporting equipment, we provide a seamless and complete welding system for virtually any application.

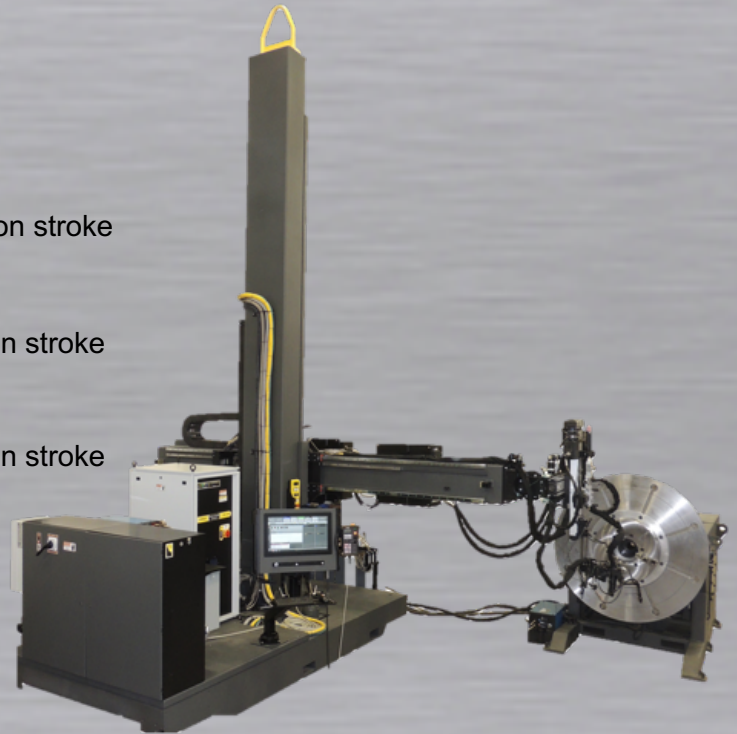
At the core of these systems is AMET's manipulators. Our manipulators are specifically designed for rigidity and precise motion. High strength materials and precision rails are used on both axes to provide a rigid and proven system for years of reliable operation. AMET® standard manipulators are offered in four different series with maximum load from 150 - 600 kg (330 - 1,300 lbs.) and stroke lengths from 1m – 7m (3.2 ft – 22.9 ft).

Series

- FA** Ultra-light duty series (AMU)
 - Boom Stroke: 1m and 1.5m
 - Boom Load Capacity: 150 kg
- FA** Light-duty series (AML), Stroke 1.2m, 2m, 2.5m
 - Boom Stroke: 1m and 1.5m
 - Boom Load Capacity: 200 – 250 kg depending on stroke
- FA** Standard-duty series (AMS), Stroke 2m, 3m, 4m
 - Boom Stroke: 1m and 1.5m
 - Boom Load Capacity: 400 – 600kg depending on stroke
- FA** Heavy-duty series (AMH), Stroke 4m, 5m, 6m, 7m
 - Boom Stroke: 1m and 1.5m
 - Boom Load Capacity: 300 – 650kg depending on stroke

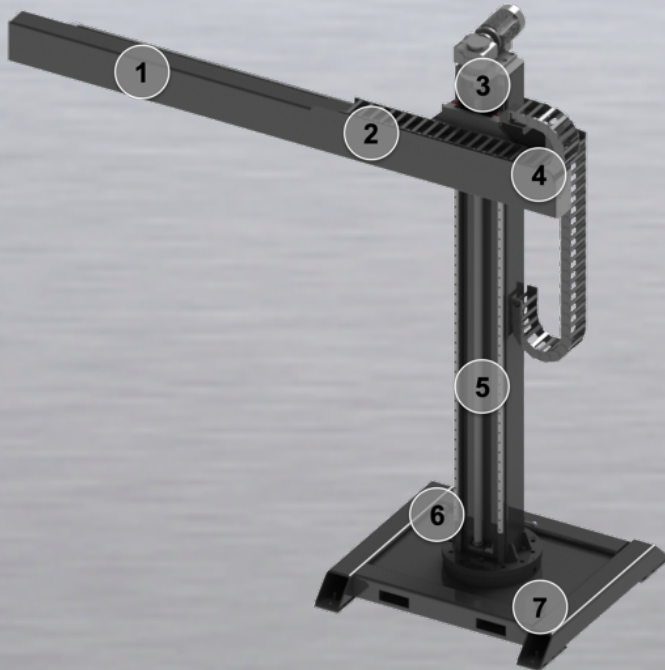
Key Features

- FA** Acme Screw for Column Lift provides safe and stable lifting motion that provides increased stability and rigidity of the weld head. For robotic applications, a ball screw is utilized to provide high precision servo programmable column lift.
- FA** Precision hardened linear rails with recirculating ball bearings provide smooth linear motion for consistent welds with an even bead.
- FA** A precision slew ring bearing provides column rotation. A brake is included to lock the column in position.
- FA** The boom and column are fully thermally stress relieved before machining
- FA** The free-standing base / travel cart feature forklift pockets for easy handling.
- FA** Redundant safety features include a double nut drive system with one work nut & one safety nut. Should the work nut fail or not operate properly due to a failure, the safety nut will support the load of the boom.
- FA** Self-locking Acme screw provides further protection from boom fall.
- FA** A Durable Powder Coated finish that is better suited for industrial environments is more resistant to chipping, scratching, and normal wear.





Standard Features



1. The manipulators feature thick-wall steel construction that is thermally stress relieved prior to machining, which extends the life and increases the rigidity.

2. The boom is driven by a variable speed AC motor with a rack and pinion gear drive for smooth in/out motion. Boom speed is 300 – 3000 mm/min (12 – 118 in/min) and is upgradable to a servo motor drive for programmable motion control.

3. Vertical boom motion is delivered by a fixed speed AC motor and ACME screw drive with dual ACME nuts. One nut is used to drive and support the load of the boom. The second nut is included as a backup and works in conjunction with electrical sensors to lock the boom in place in the unlikely event that the first nut fails. The ACME screw and dual nuts ensure smooth up/down motion while also providing a very high level of safety. This drive is upgradable to variable speed or precision motion with a servo motor for programmable control.

4. Cable carriers are included on both axes to extend the life of the cables and hoses. The carriers also keep the cables organized and prevent entanglement during operation.

5. Precision hardened linear rails are included for the entire length of the column and boom motions. The rails coupled with recirculating ball bearing blocks ensure smooth operation throughout the life of the manipulator.

6. The column features a kingpin for 360 degrees of manual rotation with manual brakes to lock the column into position. A handle is included on larger manipulators to aid in rotation.

7. A sturdy freestanding base with forklift pockets supports the manipulator fixture. Each leg of the base includes a hole that can be used for anchoring the manipulator to the factory floor for additional stability.

Optional Features

Manipulator Options

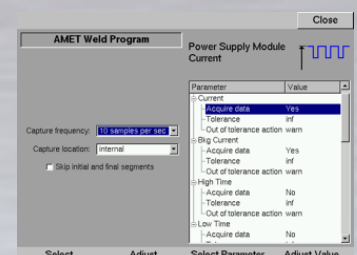
- ☒ Equipment Platform
- ☒ Manual Travel Cart
- ☒ Fixed Speed Travel Cart
- ☒ High / Low Speed Travel Cart
- ☒ Servo Grade Travel Cart
- ☒ Precision Base Rail
- ☒ Precision Servo Boom Motion
- ☒ High / Low Speed Column Motion
- ☒ Precision Servo Column Motion
- ☒ Handcrank Column Rotation
- ☒ Motorized Column Rotation

Support Equipment

- ☒ Manual Torch Swivel
- ☒ Manual Torch Pivot
- ☒ Torch Lead / Lag Adjustment
- ☒ Manual Cross Slide Assembly
- ☒ Motorized Cross Slide Assembly
- ☒ Turning Rolls
- ☒ Rotary Turn Table
- ☒ Fit-up Station
- ☒ Rotary Welding Positioner
- ☒ Rotary Headstock
- ☒ Pipe Idler Support Stand

Process Support Features

- ☒ Mechanical Oscillation
- ☒ Magnetic Oscillation
- ☒ Arc Voltage Control (AVC)
- ☒ Flux Delivery and Recovery System
- ☒ Data Acquisition and Tolerance Checking
- ☒ Virtual Alignment Capability
- ☒ Multiple Process Weld Heads
- ☒ Offline Programming
- ☒ Arc Viewing Camera System
- ☒ Laser Seam Tracking System





AMET® Column & Boom Solution Examples



Dab Style GTAW Welding System with Tilting Positioner for Jet Engine Component Repair



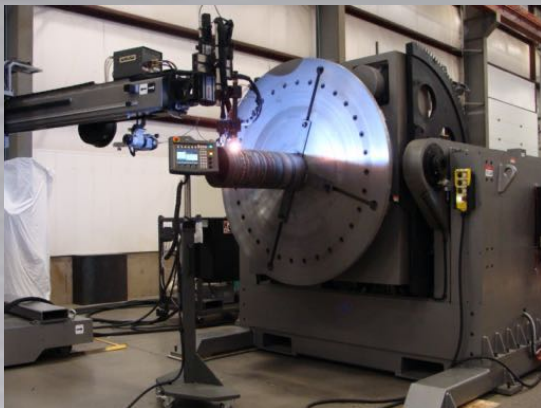
Variable Polarity Arc Welding System With 15 Tonne Tilting Positioner for Aluminum Cryogenic Tank Manufacturing.



Tandem SAW Windtower Welding System with Telescoping Boom Manipulator



Tandem SAW Windtower Welding System with 90 Tonne Turning Rolls & Fit-up Station



Hotwire GTAW Welding System with 10 Tonne Tilting Positioner



Hotwire GTAW Welding System with Tilting Positioner for Manufacturing On-Board Piping

End Use Examples

-  Wind Towers
-  Oil Rig Components
-  Blowout Preventers
-  Bridge Girders
-  Chemical Tanks

-  Structural Steel Components
-  Aluminum Cryogenic Tanks
-  Large Dry Storage Tanks
-  Thick Wall Section Weldments
-  Jet Engine Components

-  Pipe Cladding
-  Rail Cars
-  Fuel Tanks
-  Pipe Manufacturing
-  Gas Valves



Pre-Engineered Column & Boom Solutions

Integrated Pipe Spool Welding Station



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.

Coordinated Motion Cladder (CMC-66)



Unlike standard cladding systems that use a positioner to rotate the part around a bore torch, AMET’s Coordinated Motion Cladder features a continuous rotating weld head. The precision motions of the weld head, boom, column lift, and column rotation, allow us to perform cladding, overlay, or hard-surfacing on cylindrical and non-cylindrical part geometries without a positioner. The CMC-66 is available in three versions: S, SB, and LX.

Advanced System Controls

AMET® Column & Boom Manipulator Welding Systems feature our advanced control systems. The XM® or XPro control system can be utilized depending on the project specifications.

The XM® control platform allows the user to program multiple parameters of the weld process including (but not limited to) motion and power supply function and automate up to 20 pre-weld and 20 post-weld tasks, such as part loading, gas flow enable/disable, and touch retract torch positioning.

The XPro control platform is the most powerful and capable weld Controller in the AMET® lineup. The proven XM® architecture is expanded and given a large touchscreen interface along with a keyboard and touchpad to navigate and program the XPro more quickly and easily. The XPro also includes a handheld pendant with joysticks and buttons for tactile feedback to make adjustments for welding.



*XM® Controller and
XM® Control Module*



XPro Controller

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