

Magnetic Arc Control

AP Automation Magnetic Arc Control Systems

position, weave, and stabilize the welding arc in any pattern you require—the perfect solution for thick-to-thin material, wide weld joints, and high-speed TIG welding.



Wide TIG Oscillation

The MA-20 and MP-100 control a 350-amp arc, producing a 1"-wide weave pattern across the weld seam. Uniform sidewall penetration is achieved, even across this heavy walled tube-to-tube with a wide v-prep.

Magnetic Arc Control Systems immediately improve weld quality and productivity by:

- Controlling Heat Distribution
- Minimizing Undercuts
- Reducing Porosity
- Improving Penetration
- Stirring the Weld Puddle to Refine Grain Structure
- Enabling Exceptional Welds of Difficult Joints

Used for TIG, Spray MIG, Plasma and Sub-Arc welding, controlling both magnetic and nonmagnetic metal in these typical industries:

- Tube and Pipe Mills
- Fuel Tanks & Pressure Vessels
- Aviation/Aerospace
- Multi-pass Pipe Welding
- Repetitive TIG or Plasma Manufacturing



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MA-40 ARC PATTERN CONTROL

This unit adds a new dimension to magnetic arc control: pattern control. With the MA-40, the welding arc can be shaped, widened or narrowed as required. The rapid, controlled motion of the arc stirs the molten puddle for a noticeable reduction in porosity and improvement of the grain

structure in the weld. The MA-40 Control Unit provides two-axis magnetic arc control with independent amplitude and position control for each axis. A stabilize mode with amplitude and position control adjustments is also available for one-axis oscillation.



MA-20 ARC CONTROL

Our most popular controller, the MA-20 features a PWM power supply and adjustable oscillation speeds from 7 per minute to 30 per second. Independently controlled left and right dwell settings create a weave effect, allowing maximum flexibility when working with an uneven work piece. A Stabilize/Oscillate switch

allows you to disable the speed and dwell controls while the controls while the position and amplitude controls remain operative. Final Taper gradually reduces magnetic field during welding down-slope.

MP-100 PROBE

The MP-100 probe incorporates the latest magnetic technologies. Though similar to the MP-1 probe, the new MP-100 probe has a much higher gauss strength and three times the efficiency of the MP-1. The MP-100 features connections for optional

water cooling. It also features a detachable control cable. This single-axis probe adapts to conventional torches. A variety of return rings and tips are available for different configurations.



MP-1 PROBE

The MP-1 is a single-tip, water-cooled probe that adapts to conventional torches. The MP-1 works well in tight clearances and is primarily used to weave the arc across the seam or to stabilize the arc.



MP-22 PROBE

Use the MP-22 probe with the MA-20 control unit only. This twin-tip side-mount unit is capable of delivering the full 600 gauss magnetic field to the welding arc area. Though normally used in an air-cooled mode, if necessary, the MP-22 can be water-cooled.



MP-2 PROBE

The twin-tip MP-2 slips over a conventional TIG torch and can be used either for cross-seam weaving or in-line weaving. In-line weave is primarily used in tube mills to preheat the tube, giving increased weld travel speeds.










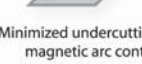


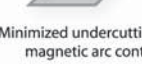







MP-4 PROBE

With four independently controlled magnetic coils, the MP-4 probe has the highest capacity for multiple arc and weld bead profiles. It is used with the MA-40 control unit only.



Magnetic Arc Control--Problem Solver

AP Automation Magnetic Arc Control Systems solve the five main problem areas of automatic arc welding. The sound welds achieved by magnetic arc control are particularly essential when fabricating exotic alloys, and when the end product is subjected to elevated temperature, high pressure, and unusual stress or vibration.

Problem	Solution	
 Arc blow or wander causes mis-placed bead and lack of penetration.	  Uniform penetration achieved with magnetic arc control.	Magnetic arc control directs and shapes the arc, controlling heat distribution and penetration between the segments being joined to yield consistent, uniform welds.
 Large gap causes excessive drop-through and root-side undercut.	 Uniform penetration achieved with magnetic arc control.	
 Sharp crevices in butt weld.	  Minimized undercutting with magnetic arc control.	Magnetic arc control sweeps the arc back and forth across the weld line, directing the required amount of heat to the weld edges, and both widening and flattening the head.
 Flat fillet with sharp crevices on both members.	  Uniform sidewall fusion achieved with magnetic arc control.	
 Lack of fusion in V and U-grooves.	  Uniform sidewall fusion achieved with magnetic arc control.	In multi-pass groove joints, magnetic arc control oscillates the arc in the groove, directing the heat to the desired position for uniform sidewall fusion.
 Typical porosity caused by gases generated in melted base metal.	 Sound welds achieved with magnetic arc control.	Magnetic arc control stirs the arc, helping to eliminate bubbles and porosity in the weld.
 Insufficient heat on thick member prevents proper penetration and fusion to thin member.	 Uniform penetration on thick and thin members, no undercutting with magnetic arc control.	With Magnetic arc control, you can specify the proportion of time the arc spends on either side of the weld seam. When joining members of different cross sections, magnetic arc control makes it easy to place the arc exactly where it is needed -- penetrating the thick wall adequately while preventing undercutting on the thin wall.



AP Automation offers advanced, rugged, and affordable welding equipment and systems.

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