

ID Pressurization to Control Weld Profile in UHP Process Gas Lines

Application:

- Semiconductor ultra-high purity process gas lines

Material:

- 1/4" up to 3/4" OD stainless steel tubes with 0.035" wall thickness

Welding Equipment:

Power Supply:

- **Model 207**

Weld Head:

- **Model 9-500**

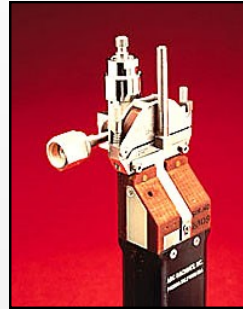
Benefits:

- ✓ Smoother ID surface to reduce contamination
- ✓ Consistently uniform welds
- ✓ 50% fewer rejects and better productivity

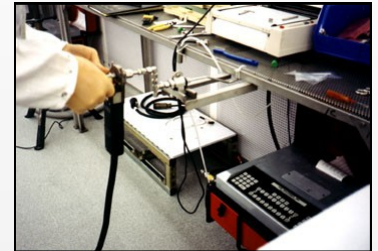
For further information, call AMI at 1-818-896-9556 or e-mail sales@arcmachines.com



Model 207



Model 9-500



Welding of high-purity process gas lines for the semiconductor industry is the largest single application of automatic orbital GTA welding. Millions of welds have been done using this technique. However, there are still differences in methods and techniques among users to achieve the goal of an ultra-high purity gas delivery system.

Dynamic Systems, Inc., a mechanical contractor that installs high-purity piping systems for semiconductor process gas lines, experimented and succeeded with the use of pressurization during welding to control the inner weld bead profile using Arc Machines' **Model 207** tube welding power supply and **Model 9-500** weld head.

The standard weld for 1/4" diameter (OD) tubing is a single-pass weld with pulsed current. Automatic tube welding consistency is enhanced through the use of controlled internal ID pressurization during the welding process.

The difference between a single-pass weld and a multi-pass weld is simply a matter of programming the power supply to turn the weld head rotor a sufficient amount of times to complete either one, two, or more passes at the desired RPM. In general, a multi-pass weld would be done at a faster travel speed. In pulsed-current welds, the primary amps are higher than for non-pulsed welds because of the cooling effect provided by pulsation. Non-pulsed welds are not recommended for larger diameters and heavier wall thicknesses.

In order to achieve consistently high standards with any welding technique, a well-defined set of weld criteria should be in place. It is also important that welding personnel are trained and experienced with the particular welding technique. Finally, good quality control is essential.

To read the full story, visit www.arcmachines.com



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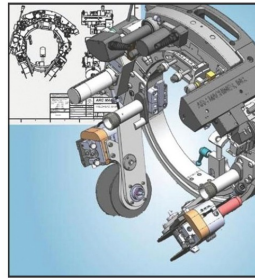
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Around the world, leading manufacturers and contractors rely on AMI for their expertise in automated orbital welding and to develop customized solutions for new welding challenges.

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AMI

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M207 Power Supply

QUICK SPECS

Input Power

100 - 240 VAC service
single-phase
50/60 Hz

Weld Current

100 - 150 A DC
100% Duty Cycle

I/O Device

M-207EMM

Memory Capacity

100 weld schedules maximum,
100 levels per schedule maximum

Water Cooler

Optional

Dimensions

11" x 22.75" x 18.75"
(279 mm x 578 mm x 476 mm)

Weight

79 lbs.
(36 kg)



M9-500 Weld Head

OD Range

0.093" - 0.500"
(2,3 mm - 12,7 mm)

Travel Motor

Tachometer feedback, D.C.

Head Weight

1.75 lbs.
(0,8 kg)

Electrode Size

0.04" (1,0 mm)

Rotor RPM

0.1 to 20.0

Cable Length

20 ft. (6,1 m)

➡ Air-cooled; Optional water-cooled (Model 9-500C)

