

Orbital Welds Safeguard Plutonium-Bearing Containers

Application:

- Hartford PFP 3013 outer containers

Material:

- 5" (127 mm) OD and 10" (254 mm) in length, 316/316L stainless steel 3013 container/lid

Welding Equipment:

Power Supply:

- Model 227

Weld Heads:

- Model 9 series
- Model 9-7500

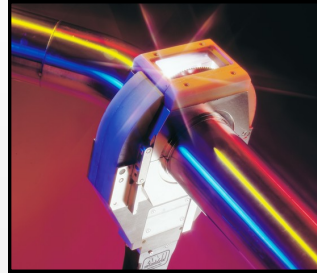
Benefits:

- ✓ Successfully developed the process to meet ASME Section VIII
- ✓ Qualified target welding parameter
- ✓ Passed for reliability and customer acceptance testing

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



Model 227



Model 9 Series



Modified M9-7500

The key element in the Department of Energy (DOE) strategy for the stabilization, packaging, and storage of plutonium-bearing materials involves closure welding of DOE-STD-3013 outer containers. The 3013 container provides the primary barrier and pressure boundary for preventing release of plutonium-bearing materials to the environment. The final closure weld of the 3013 container must be leak tight, structurally sound, and meet DOE-STD 3013-specified criteria.

When the Savannah River Technology Center (SRTC) supplied an Arc Machines welding system to the Hanford Plutonium Finishing Plant (PFP), located near Richland, Wash., for the closure of 3013 containers, the efforts to supply this system included development, qualification, and demonstration of an automatic gas tungsten arc welding (GTAW) process for making the closure weld. GTAW was chosen for its demonstrated effectiveness in critical applications, ease of remote operation, and ability to make high-integrity welds.

The 3013 container, made of Type 316/316L stainless steel and measuring almost 5 inches in diameter and approximately 10 inches in length, is closure-welded at the lid/container interface. The corner joint is formed by pressing an interference-fit lid into the 3013 container, creating a square groove weld preparation. The closure is made autogenously (without filler) using a modified **AMI Model 9-7500** orbital weld head with a **Model 227** power supply. The modified weld head includes an integral chill block.

An encoder and shunt were added for weld travel speed and arc current measurements. In addition, the weld head rotor was adapted to receive a specially designed snap-in tungsten electrode for ease of replacement.

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



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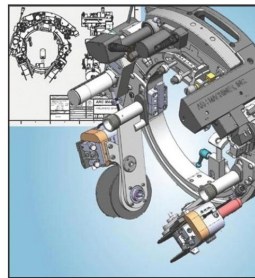
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With over 3000 customer relationships in over 50 countries, Arc Machines, Inc. has set the standard for Automated Orbital Welding Equipment for over 30 years, combining Quality and Durability with Innovative Engineering and Design. Around the world, leading manufacturers and contractors rely on AMI for their expertise in automated orbital welding and to develop customized solutions for new welding challenges.

www.arcmachines.com

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M227 Power Supply

QUICK SPECS

Input Power

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

Weld Current

3 - 100 A DC @ 100/120 VAC
input, 3 - 225 A DC @
200/240 VAC input, 100% Duty Cycle

Memory Capacity

100 weld schedules maximum,
100 levels per schedule maximum,
100 different passes per level

I/O Device

M-227EMM

Water Cooler

Optional

Dimensions

15" x 23" x 20"
(381 mm x 584 mm x 508 mm)

Weight

88 lbs.
(40 kg)



M9 Series Weld Heads

OD Range

0.093" to 7.500"
(2,362 mm - 190,500 mm)

Travel Motor

D.C., P.M., D.C. Tachometer

Head Weight

11 lbs. - 35 lbs.
(4,9 kg - 15,9 kg)

Electrode Size

0.040", 1/16", 3/32"
(1 mm, 1,6 mm, 2,3 mm)

Rotor RPM

0.1 - 20

Cable Length

25 ft. (7,6 m) when connected to adapter cable
(extensions available)

➡ Removable tube clamps

➡ Pre-plumbed for water-cooling

➡ Compatible with all AMI Power Supplies