

ultrasonic spot welding systems

ACTUATORS

FEATURES

- Pneumatic Actuation
- Rigid I-Beam Cast Center Frame
- Patented 90° Self-Orienting Keyed Horns and Tips
- Single Piece, Dual Nodal Mount Horn and Booster Stack
- Precision Micrometer Stack Up and Down Stops
- Independent Horn and Converter Air Cooling Flow Control
- Pre-Lubricated and Sealed Linear Bearings



MWB15 Actuator
on Integral Base



MWP15 Actuator
on Plate



MWA15
Actuator

Sonics' 15 kHz ultrasonic metal welding systems consist of an actuator (available as a stand-alone unit or on a plate or a base, as shown above) and a power supply, the MX or MSC series, as shown below.

POWER SUPPLIES

MODELS

- MXC** Remote Impulse Actuation
- MXT** Time Based Weld Mode
- MXE** Time and Energy Based Weld Modes
- MSC** *SmartControl* with Time, Energy and Height-Based Weld Modes



MX Series High Profile



MSC High Profile

Sonics' 15 kHz power supplies come in 2 versions, the MX Series, with standard keypad operation and the *SmartControl* (MSC) Series with full color touch screen controls. The features of the models are compared below.

POWER LEVELS

- 3000 Watts Peak Power
- 6000 Watts Peak Power

POWER SUPPLY FEATURES	MXC	MXT/ MXE	MSC
Microprocessor Controlled	■	■	■
Automatic Frequency Tuning	■	■	■
Digital Amplitude Control	■	■	■
Digital Force Triggering		■	■
Weld Time Delay Setting		■	■
Afterburst Time Setting		■	■
Multiple Job Storage		■	■
Digital Stack Wattage Display	■	■	■
Digital Stack Frequency Display	■	■	■
Weld Cycle Counter	■	■	■
Upper and Lower Weld Mode Limit Settings		■	■
Soft Start Overload Protection Circuitry	■	■	■
Load Regulation Circuitry	■	■	■

POWER SUPPLY FEATURES	MXC	MXT/ MXE	MSC
Color Touch Panel Operator Screen			■
Weld Cycle Graph Chart Screen			■
Weld Teach Mode			■
Weld Sequence Mode			■
Amplitude and Pressure Ramping			■
Timed Converter and Horn Air Cooling Cycle			■
English and Metric Weld-to-Height Settings			■
Password Protected Four-Level User Access			■
Serial Printer Port Connection		■	
PLC I/O Interface Connection	■	■	■
PC Interface Connection			■
Bar Code Scanner Connection			■

system options

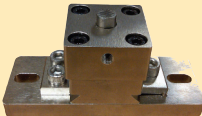
EKIT:
SmartControl
Electronic
Pressure
and Height
Control



**Foot Pedal
Switch with
Emergency Stop**



**X-Y Adjustable
Fixture Anvil**



**SmartControl
Bar Code
Scanner**



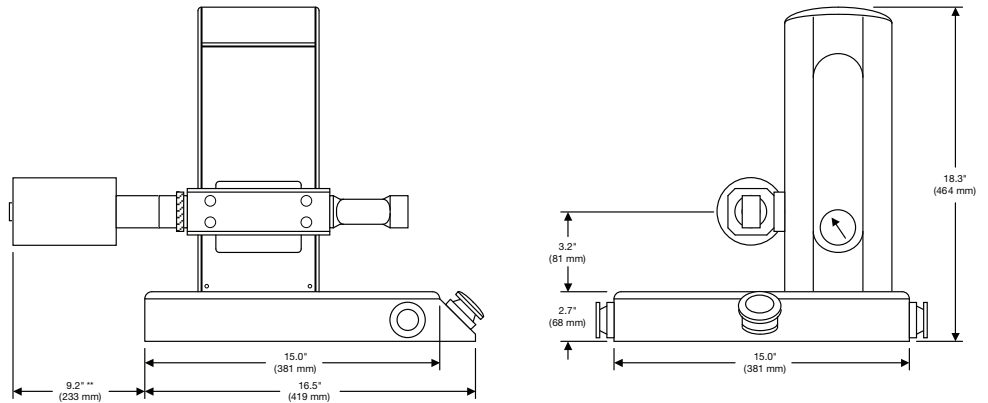
Secondary Booster:
Aluminum or
Titanium
Secondary
Booster



Smart Program:
SmartControl
System PC
Interface
Program



MWB15 dimensional data



** Add Approximately 7.5" (190 mm) for Secondary Booster

specifications

Actuator Data:

MWA15 Actuator Weight: 50 Lbs. (27.7 kg)
 MWP15 Actuator on Plate Weight: 62 Lbs. (28.1 kg)
 MWB15 Actuator on Integral Base Weight: 90 Lbs. (40.8 kg)
 Pneumatic Requirement: 80 PSI Clean and Dry Air Service

High Profile Power Supply Data:

Peak Output Power: 3000 Watts (3.0 kW) or 6000 Watts (6.0 kW)
 Power Supply Weight: 70 Lbs. (31.7 kg)
 Power Supply Dimensions: 17.6" (447 mm) Wide x 10.7" (272 mm) High x
 22.5" (571 mm) Deep
 Power Requirement: 220 VAC Single Phase

ultrasonic spot welding systems

ACTUATORS

FEATURES

- Pneumatic Actuation
- Rigid I-Beam Cast Center Frame
- Patented 90° Self-Orienting Keyed Horns and Tips
- Single Piece, Dual Nodal Mount Horn and Booster Stack
- Precision Micrometer Stack Up and Down Stops
- Independent Horn and Converter Air Cooling Flow Control
- Pre-Lubricated and Sealed Linear Bearings

Sonics' 20 kHz ultrasonic metal welding systems consist of an actuator (available as a stand-alone unit or on a plate or a base, as shown above) and a power supply, the MX or MSC series, as shown below.



MWB20 Actuator
on Integral Base



MWP20 Actuator
on Plate



MWA20
Actuator

POWER SUPPLIES



MX Series Low Profile



MX Series High Profile



MSC Low Profile



MSC High Profile

MODELS

- MXC** Remote Impulse Actuation
- MXT** Time Based Weld Mode
- MXE** Time and Energy Based Weld Modes
- MSC** *SmartControl* with Time, Energy and Height-Based Weld Modes

POWER LEVELS

- 1500 Watts Peak Power
- 2500 Watts Peak Power
- 4500 Watts Peak Power

Sonics' 20 kHz power supplies come in 2 versions, the MX Series, with standard keypad operation and the *SmartControl* (MSC) Series with full color touch screen controls. The features of the models are compared below.

POWER SUPPLY FEATURES	MXT/		
	MXC	MXE	MSC
Microprocessor Controlled	■	■	■
Automatic Frequency Tuning	■	■	■
Digital Amplitude Control	■	■	■
Digital Force Triggering		■	■
Weld Time Delay Setting		■	■
Afterburst Time Setting		■	■
Multiple Job Storage		■	■
Digital Stack Wattage Display	■	■	■
Digital Stack Frequency Display	■	■	■
Weld Cycle Counter	■	■	■
Upper and Lower Weld Mode Limit Settings		■	■
Soft Start Overload Protection Circuitry	■	■	■
Load Regulation Circuitry	■	■	■

POWER SUPPLY FEATURES	MXC	MXT/	
		MXE	MSC
Color Touch Panel Operator Screen			■
Weld Cycle Graph Chart Screen			■
Weld Teach Mode			■
Weld Sequence Mode			■
Amplitude and Pressure Ramping			■
Timed Converter and Horn Air Cooling Cycle			■
English and Metric Weld-to-Height Settings			■
Password Protected Four-Level User Access			■
Serial Printer Port Connection		■	
PLC I/O Interface Connection	■	■	■
PC Interface Connection			■
Bar Code Scanner Connection			■

system options

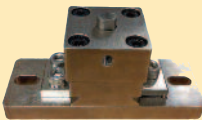
EKIT:
SmartControl
 Electronic
 Pressure
 and Height
 Control



**Foot Pedal
 Switch with
 Emergency Stop**



**X-Y Adjustable
 Fixture Anvil**



**SmartControl
 Bar Code
 Scanner**



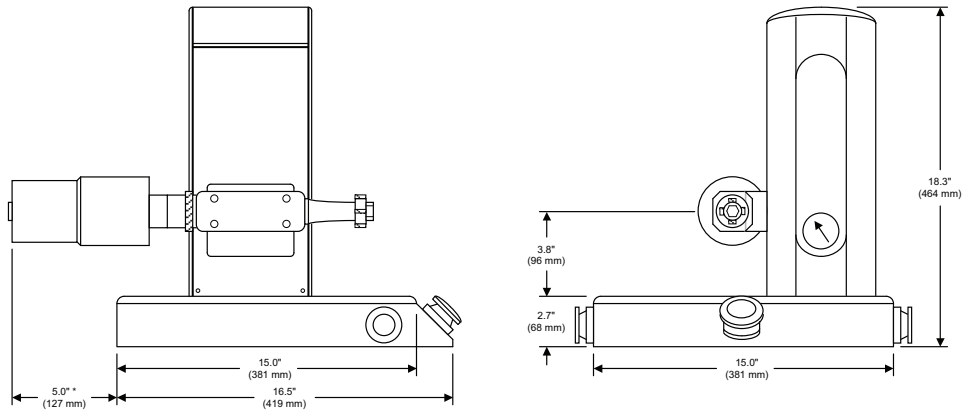
**Secondary Booster:
 Aluminum or
 Titanium
 Secondary
 Booster**



**Smart Program:
SmartControl
 System PC
 Interface
 Program**



MWB20 dimensional data



* Add Approximately 5.5" (140 mm) for Secondary Booster

specifications

Actuator Data:

MWA20 Actuator Weight: 44 Lbs. (19.9 kg)
 MWP20 Actuator on Plate Weight: 56 Lbs. (25.4 kg)
 MWB20 Actuator on Integral Base Weight: 85 Lbs. (38.5 kg)
 Pneumatic Requirement: 80 PSI Clean and Dry Air Service

Low Profile Power Supply Data:

Peak Output Power: 1500 Watts (1.5 kW) or 2500 Watts (2.5 kW)
 Power Supply Weight: 21 Lbs. (9.5 kg)
 Power Supply Dimensions: 15.2" (386 mm) Wide x 7.0" (178 mm) High x
 18.7" (476 mm) Deep
 Power Requirement: 220 VAC Single Phase

High Profile Power Supply Data:

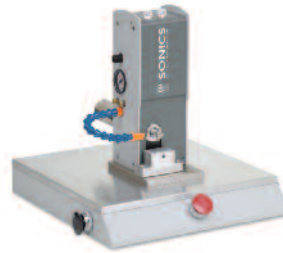
Peak Output Power: 4500 Watts (4.5 kW)
 Power Supply Weight: 70 Lbs. (31.7 kg)
 Power Supply Dimensions: 17.6" (447 mm) Wide x 10.7" (272 mm) High x
 22.5" (571 mm) Deep
 Power Requirement: 220 VAC Single Phase

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ACTUATORS

FEATURES

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- Single Piece, Dual Nodal Mount Horn and Booster Stack
- Precision Micrometer Stack Up and Down Stops
- Independent Horn and Converter Air Cooling Flow Control
- Pre-Lubricated and Sealed Linear Bearings



MWB40 Actuator
on Integral Base



MWP40 Actuator
on Plate



MWA40
Actuator

Sonics' 40 kHz ultrasonic metal welding systems consist of an actuator (available as a stand-alone unit or on a plate or a base, as shown above) and a power supply, the MX or MSC series, as shown below.

POWER SUPPLIES

MODELS

MXC Remote Impulse Actuation

MXT Time Based Weld Mode

MXE Time and Energy Based Weld Modes

MSC *SmartControl* with Time, Energy and Height-Based Weld Modes



MX Series Power Supplies



MSC *SmartControl*
Power Supplies

Sonics' 40 kHz power supplies come in 2 versions, the MX Series, with standard keypad operation and the *SmartControl* (MSC) Series with full color touch screen controls. The features of the models are compared below.

POWER LEVELS

- 400 Watts Peak Power
- 800 Watts Peak Power

POWER SUPPLY FEATURES	MXC	MXT/ MXE	MSC
Microprocessor Controlled	■	■	■
Automatic Frequency Tuning	■	■	■
Digital Amplitude Control	■	■	■
Digital Force Triggering		■	■
Weld Time Delay Setting		■	■
Afterburst Time Setting		■	■
Multiple Job Storage		■	■
Digital Stack Wattage Display	■	■	■
Digital Stack Frequency Display	■	■	■
Weld Cycle Counter	■	■	■
Upper and Lower Weld Mode Limit Settings		■	■
Soft Start Overload Protection Circuitry	■	■	■
Load Regulation Circuitry	■	■	■

POWER SUPPLY FEATURES	MXC	MXT/ MXE	MSC
Color Touch Panel Operator Screen			■
Weld Cycle Graph Chart Screen			■
Weld Teach Mode			■
Weld Sequence Mode			■
Amplitude and Pressure Ramping			■
Timed Converter and Horn Air Cooling Cycle			■
English and Metric Weld-to-Height Settings			■
Password Protected Four-Level User Access			■
Serial Printer Port Connection		■	
PLC I/O Interface Connection	■	■	■
PC Interface Connection			■
Bar Code Scanner Connection			■

system options

EKIT:

SmartControl
 Electronic
 Pressure
 and Height
 Control



**Foot Pedal
 Switch with
 Emergency Stop**



**X-Y Adjustable
 Fixture Anvil**



**SmartControl
 Bar Code
 Scanner**



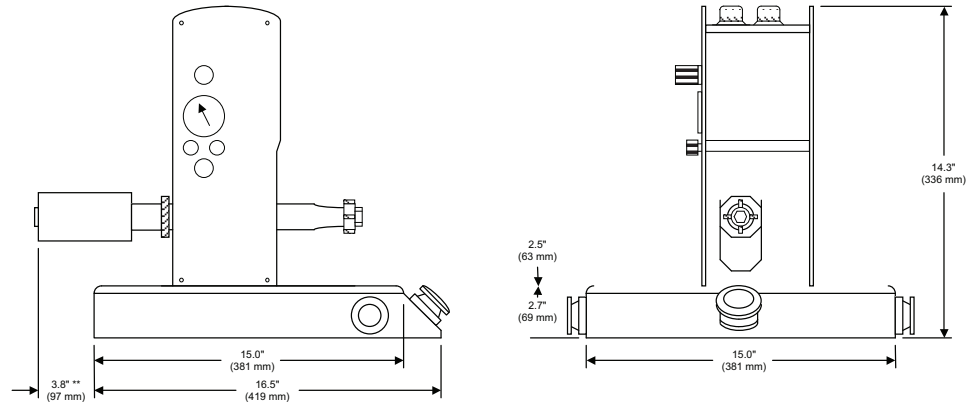
Secondary Booster:
 Aluminum or
 Titanium
 Secondary
 Booster



Smart Program:
SmartControl
 System PC
 Interface
 Program



MWB40 dimensional data



* Add Approximately 2.5" (63 mm) for Secondary Booster

specifications

Actuator Data:

MWA40 Actuator Weight: 28 Lbs. (12.7 kg)
 MWP40 Actuator on Plate Weight: 40 Lbs. (18.1 kg)
 MWB40 Actuator on Integral Base Weight: 69 Lbs. (31.2 kg)
 Pneumatic Requirement: 80 PSI Clean and Dry Air Service

Low Profile Power Supply Data:

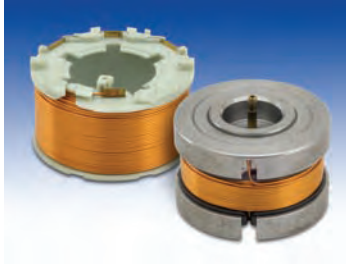
Peak Output Power: 400 Watts (0.4 kW) or 800 Watts (0.8 kW)
 Power Supply Weight: 21 Lbs. (9.5 kg)
 Power Supply Dimensions: 15.2" (386 mm) Wide x 7.0" (178 mm) High x
 18.7" (476 mm) Deep
 Power Requirement: 220 VAC Single Phase



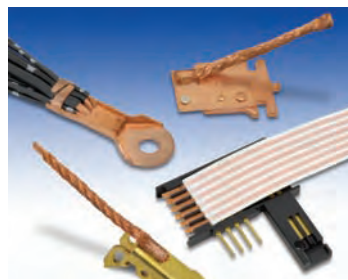
SONICS®

40 kHz **20 kHz** **15 kHz**

Sonics & Materials, Inc.



Ultrasonic Metal Welding



Features and Benefits

- Ultrasonic Metal Welding is the ideal process for bonding conductive materials such as copper, aluminum, brass, gold and silver.
- Excellent welds are achieved with otherwise difficult applications, such as welding materials that are dissimilar in thickness and composition.
- The process is environmentally green as no solders, flux or braze material are required.
- Very little energy is expended. A typical weld uses under 2000 watts and is completed in under one-half second.
- The process is a cold weld so that components are not annealed and no harmful intermetallics are formed during welding.
- The ultrasonic weld is extremely reliable with built-in process monitoring to help assure zero rejects.
- Weld tooling typically lasts for several hundred-thousand cycles with no maintenance.
- Large weld areas of up to 150 mm sq. can be produced with our 6000 watt power supply.

Sonics and Materials, Inc. manufactures ultrasonic metal welding systems in frequencies of 40 kHz, 20 kHz and 15 kHz with available power ranging from 700 to 6000 watts.

A typical metal welding bench-top system consists of an ultrasonic power supply, converter, booster, horn, pneumatic press/actuator and holding fixture.

Sonics also designs and develops custom ultrasonic welding systems, both fully automated and semi-automated, to customer production requirements.

In addition to complete ultrasonic metal welding systems, Sonics manufactures a full range of custom tooling in a variety of materials, as well as holding fixtures and components.

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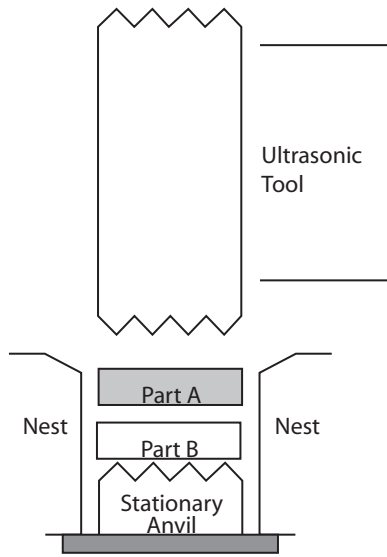
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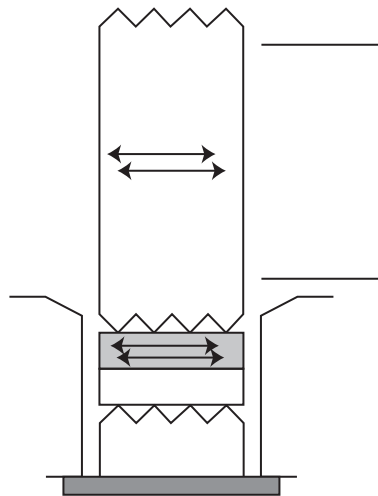


How Ultrasonic Metal Welding Works



The parts to be welded are placed into a locating nest.

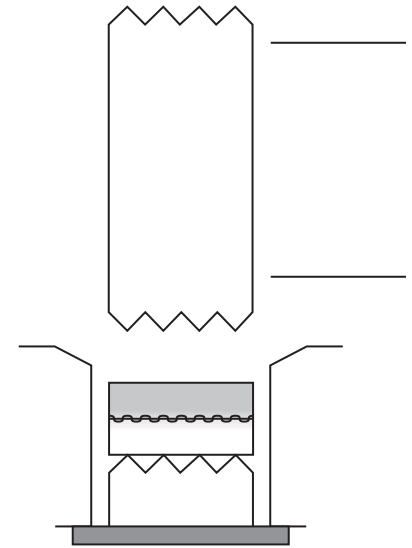
One component rests on a stationary anvil, that is serrated to grip the component and hold it still.



The ultrasonic tool descends to apply a clamping pressure between the weld parts.

The tool then vibrates at a frequency of twenty or forty kilohertz.

The weld parts are thus scrubbed together under pressure causing surface oils and oxides to be dispersed.



The base metals are then mechanically mixed causing a metallurgical bond between the parts.

The parts are immediately welded; there is no hold time or curing time.

Ultrasonic Metal Welding Equipment

Sonics has been a world leader and innovator in ultrasonic welding for over four decades. Our presses and power supplies feature cutting edge technology backed by 40 years of specialized ultrasonic experience. State-of-the-art micro-processor controls provide superior precision and consistent reliability for every application.

Standard Feature Highlights

- Automatic Frequency Tuning
- Digital Amplitude Control
- Soft-start Overload Protection
- Upper and Lower Weld Limit Settings
- Smart-logic Navigation

Sonics also offers free application evaluation and analysis in our fully-equipped applications laboratory.



Typical Applications

- Wire Splicing
- Wire Termination
- Flex Cable Termination
- Tube Sealing
- Batteries
- Heat Sinks
- Solar Panels
- Coils
- Contacts
- Switches



SONICS®

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A3787 REGISTERED FIRM ISO 9001

Sonics & Materials, Inc.