Sonics’ 15 kHz ultrasonic metal welding systems consist of an actuator, available versions shown above, and a power supply, the MX or MSC series, 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

**POWER LEVELS**
- 3000 Watts Peak Power
- 6000 Watts Peak Power

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

**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 W or 6000 W
- 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:
  - 3000 W - 220 VAC @ 20A
  - 6000 W - 220 VAC @ 30A
Sonics’ 20 kHz ultrasonic metal welding systems consist of an actuator, available versions shown above, and a power supply, the MX or MSC series, shown below.

**ACTUATORS**

**FEATURES**
- 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
- Pneumatic Actuation

Sonics’ 20 kHz ultrasonic metal welding systems are available 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 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

**POWER LEVELS**
- 1500 Watts Peak Power
- 2500 Watts Peak Power
- 4500 Watts Peak Power

Sonics’ 20 kHz power supplies are available 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**

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<tr>
<td>Color Touch Panel Operator Screen</td>
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<td>Weld Cycle Graph Chart Screen</td>
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<td>Weld Teach Mode</td>
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<td>Weld Sequence Mode</td>
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<tr>
<td>Amplitude and Pressure Ramping</td>
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<td>Timed Converter and Horn Air Cooling Cycle</td>
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<td>English and Metric Weld-to Height Settings</td>
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<td>Password Protected Four-Level User Access</td>
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<td>Serial Printer Port Connection</td>
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<td>PLC I/O Interface Connection</td>
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<tr>
<td>Bar Code Scanner Connection</td>
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</tbody>
</table>

for more information: 1-800-745-1105  www.sonics.com
**System Options**

- 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 W or 2500 W
- 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 @ 20A

### High Profile Power Supply Data:

- Peak Output Power: 4500 W
- 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 @ 30A
ultrasonic spot welding systems

ACTUATORS

FEATURES
- 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
- Pneumatic Actuation

Sonics’ 40 kHz ultrasonic metal welding systems consist of an actuator, available versions shown above, and a power supply, the MX or MSC series, 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

POWER LEVELS
- 400 Watts Peak Power
- 800 Watts Peak Power

Sonics' 40 kHz power supplies are available 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.
**system options**

- **SmartControl**
  - Electronic Pressure and Height Control
- Foot Pedal Switch with Emergency Stop
- X-Y Adjustable Fixture Anvil
- **SmartControl**
  - Bar Code Scanner

**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 W or 800 W
- 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 @ 20A
Ultrasonic Metal Welding

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.

For more information: 1.800.745.1105 • www.sonics.com
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 Tool**

**Nest**

**Part A**

**Part B**

**Stationary Anvil**

**Part A**

**Part B**

**Nest**

**Sonics**

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 microprocessor 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

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