



orion

Orion™ 100c

Pulse Arc Welder Users Guide

20220111 • ITEM #1259



sunstone™

The Micro Welder Experts



ATTENTION: Read the Safety Guide before operating this welder!
Operator assumes all liability.



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REVISION	DATE	VERSION NO.	DESCRIPTION OF CHANGES
1	08/2021		New Formatting; Software Refresh
2	01/2022	20220111	Minor Revisions and Updates

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Orion™ 100c Series Users Guide



Chapter 1: Welder Setup & Assembly

What is in the Box

BOX 1 CONTENTS:

- | | |
|--|-----------------------------|
| (2) Alligator Grounding Clips | (1) Orion 100c Power Supply |
| (1) Foot Pedal | (1) Shielding Gas Hose |
| (1) Electrode Vial (5 1.0 mm Electrodes and 1 Diamond Sharpening Disk) | |

BOX 2 CONTENTS

- | | |
|-------------------------|--------------------------------------|
| (1) Fiberglass Brush | (1) Sunstone Microscope Arm Assembly |
| (1) Cross Lock Tweezers | (1) Sunstone Safety Guide |
| (1) System Cover | (1) Flat Peaked Plier |

ACCESSORIES BOX (Located in Box 2)

- | | |
|--------------------------------------|---------------------------------------|
| (1) Microscope Arm Mounting Hardware | (1) Pair Microscope Eye Piece Shields |
| (1) Welder Power Cord | (1) Loop Closing Pliers |
| (1) Welding Stylus Hand Piece | (1) Set Allen Wrenches |
| (1) Shutter Cable (RJ45 ends) | |

Microscope Arm Assembly Setup

- Remove the Microscope Arm Assembly from the box and place it on your table.
- There are three available options for mounting the Arm Assembly to your table. Select one of the following methods and use the required mounting hardware from the accessories box as outlined.

MOUNTING OPTIONS

Mounting Option 1 - Clamp to Table

This option is best for tables with accessible edges and for mounting without drilling holes in the table.

Note: If your table is thicker than 3-1/2" (9cm), follow the instructions for mounting options 2 or 3 on the next page.

Hardware required from Box 2:

(1) Angled Bracket (C)

(1) Sunstone Microscope Arm Assembly (A)

(1) Clamp Mechanism (D)

(5) Flat Head Hex Screws (G)

- Lay the arm assembly down on the tabletop.
- As shown in Figure 2.1, attach the angled bracket (C) to the bottom of the arm using three (3) of the included flat head hex screws (G) using a 4mm (5/16") Allen wrench (L).
- Attach the clamp mechanism (D) to the angled bracket using two (2) of the included flat head hex screws (G). See Figure 2.2. For thicker tables, attach the clamp mechanism D to the two lower holes in the angled bracket C.
- Adjust the knob on the clamp mechanism (D) until the gap is sufficient for the thickness of your tabletop.
- Lock the arm into place by turning the knob on the clamp mechanism until the clamp is pressing firmly against the bottom of the table.
- Lift the Arm Assembly up and slide the arm onto the table as shown in Figure 2.3.
- A plastic cable guide cover (E) can be clipped on over the angled bracket if desired. See Figure 2.4

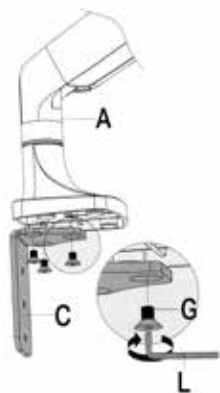


Figure 2.1. Attach angled bracket (C) to (A).

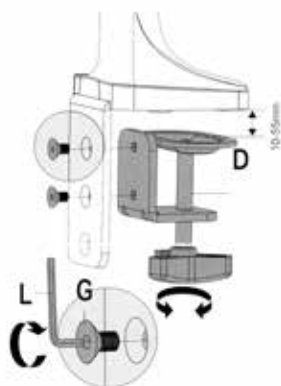


Figure 2.2. Attach clamp mechanism (D) to angled bracket (C).



Figure 2.3. Lift Arm Assembly up and slide onto the table.

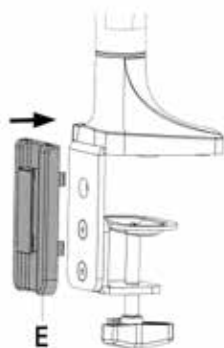


Figure 2.4. Cover the clamp mechanism (D) with the plastic cable guide cover (E).

Mounting Option 2 - Bolt through Table

Mounting Option 2 is best for tables without accessible edges. Hardware required from Box 2:

- (1) Flat Mounting Plate (H)
- (3) Flat Head Hex Screws (G)
- (1) Long Carriage Bolt (F)
- (1) Flat Pressure Plate (I)
- (1) Adjustment Knob (J)

- As shown in Figure 3.1, using a 4mm (5/32") Allen wrench, unscrew the flat head hex screws (G) holding the mounting plate (H) to the arm.
- Run the included 8mm (5/16") carriage bolt (F) through the included mounting plate (H).
- Attach mounting plate (H) to the bottom of the arm using (3) flat head hex screws (G).
- Drill a 3/8" (9.5mm) hole through the tabletop.
- Lower the arm so the bolt goes through the hole in the tabletop. See Figure 3.2.
- Slide the flat pressure plate (I) onto the bolt. Turn the adjustment knob (J) clockwise to tighten the plate to the underside of the table.

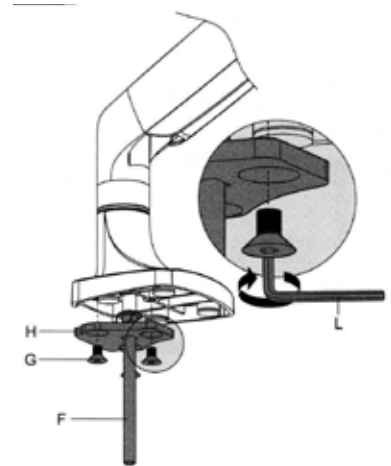


Figure 3.1. Remove the plate from the arm, run the carriage bolt through the plate, then re-attach the plate to the arm.



Figure 3.2. Lower the arm so the bolt goes through the hole in the table. Turn the twist knob clockwise to tighten the plate to the table.

Mounting Option 3 - Screw to Table (vertical surface)

Required hardware from Box 2:

- (1) Angled Mount Bracket (A)
- (3) Flat Head Screws (G)
- (2) Wood Screws (**not included**)

- Attach the angled bracket (A) to the bottom of the arm assembly using three (3) of the included flat head hex screws (G) as shown in Figure 2.1.
- Lift and position the arm assembly onto the table in the desired location.
- Run wood screws through the bracket (A) and into vertical surface of the table, as shown in Figure 3.3.

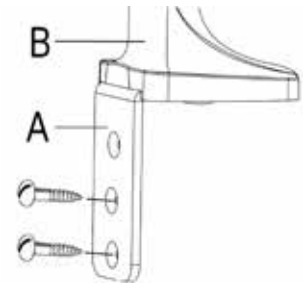


Figure 3.3. Use wood screws (not included) to attach the angled bracket (A) to the table.



Figure 4.1. Adjust the tension of the Arm Assembly for more loose or more tight movement.



Figure 4.2 After installing the rubber eyepiece covers, use the Shutter Cable to connect the welder to the bottom of the microscope head.



Figure 4.3. Mount the Welding Stylus to the holder below the microscope.

Arm Tension Adjustment

The spring tension is factory pre-set, but should changes be desired, the tension can be adjusted by turning a hex screw located on the arm joint, as shown in Figure 4.1. Use the included 6mm Allen wrench to make adjustments.

- Turn the hex screw counterclockwise (in the direction of the "+" symbol on the arm) if the arm does not hold the microscope up.
- Turn the hex screw clockwise (in the direction of the "-" symbol) if the arm does not allow the microscope to be lowered easily.

Microscope Setup

- Install the rubber eyepiece covers onto the microscope lenses.
- Plug the included Shutter Cable into the RJ45 port on the microscope (the bottom of the microscope head). See Figure 4.3.
- Plug the other end of the Shutter Cable into the Shutter Port on the welder's back panel.

Note: Connecting other RJ45 compatible devices to the Sunstone shutter RJ45 port may damage the welder and/or the other devices.

Welding Stylus Setup

- Remove the Welding Stylus from the accessories box.
- Insert the Welding Stylus into the holder at the bottom of the arm assembly. See Figure 4.3.
- The tubing can be routed up and through the removable cable guide portion of the arm if desired. See Figure 5.1.
- For now, position the Welding Stylus such that only the smaller diameter portion protrudes from the holder. Then, tighten the thumb screw on the bottom of the stylus holder to hold it in place.

- Rotate the stylus holder to approximately a 45-degree angle as shown in Figure 4.3 (the stylus should be angled down).
- Fine tune the position of the Welding Stylus while looking through the microscope: Loosen the thumb screw on the bottom side of the stylus holder and slide the Welding Stylus forward and backward until the tip of the Welding Stylus is in the center of your focus. See the example in Figure 5.2.
- Now securely tighten the Welding Stylus in place by tightening the thumb screw on the bottom of the stylus holder, which you can see in Figure 4.3.



Figure 5.1. Tubing and other cables can be routed up and through the removable cable guide portion of the arm.

Electrode Setup

The Orion 100c pulse arc welder comes standard with a 1.0mm electrode collet and five (5) 1.0 mm electrodes. The 1.0 mm electrodes are a good multipurpose electrode for most welding applications. Also included are five (5) 0.5 mm electrodes, which are more suited for very small applications (less than 5 Ws of energy).

INSTALL THE TUNGSTEN ELECTRODE ONTO THE WELDING STYLUS

See the Stylus Components Chart (Figure 6.4) to install the tungsten electrode (D).

- Remove the stylus hull (E) by pulling it away from the stylus shaft (A). See Figure 5.3.
- Loosen the collet cap (C) by twisting it counter-clockwise.
- The welder accommodates 0.5mm and 1.0mm electrodes. The electrode stylus will be shipped with the 1.0mm electrode collet (B) installed.
- Insert a 1.0mm electrode (D) into the collet.
Helpful Tip: There is a groove on the side of the stylus hull (E) that helps measure the electrode length. Place the end of the stylus



Figure 5.2. Only a small portion of the electrode should extrude from the holder.



Figure 5.3. To install the electrode, first remove the stylus shaft (A) from the stylus hull (E) by pulling them apart.

Stylus Components

Figure 6.4



Figure 6.2. Use the grooves engraved on the side of the stylus hull (E), marked in red in this image, for proper electrode (D) positioning.



Figure 6.3. The electrode should protrude past the stylus hull (E) 1/8 to 1/4 inch (3.175 to 6.35mm).

hull (E) against the collet cap, then make sure the electrode extends to the groove as indicated. See Figure 6.2.

- There should be between 0.6 - 0.7 inch (1.5 – 2cm) of the electrode (D) protruding from the stylus shaft (A). This will allow the electrode enough room to stick out from the stylus once the stylus hull (E) is placed back on the stylus.
- Lock the electrode (D) into place by hand tightening the collet cap (C) in a clockwise direction.
- Replace the stylus hull (E) by pushing it in until you feel it snap back into place. The electrode (D) should stick out between 1/8 – 1/4 inch (3.175 – 6.35mm after the stylus hull is snapped back into place). See Figure 6.3.

When to Sharpen the Electrode

Refer to Chapter 3 for more information on electrodes.

The majority of applications are best accomplished using a sharp electrode tip. A sharp tip improves arc initiation and helps focus the arc properly. It is recommended that you pay close attention to the electrode condition. An electrode that appears to be dark colored or covered with material from previous welds can lead to inconsistent welding and poor ignition of the weld arc. When this occurs, simply sharpen the electrode with the included diamond disk. The diamond disk can be attached to a rotary tool. Follow these steps for sharpening the electrode:

- Completely remove the electrode from the stylus.

- Pinch the electrode between the thumb and index and/or middle finger with the shaft going perpendicular to the fingers. See Figure 7.1.
- Power on the rotary tool then hold it with the opposite hand.
- Place the electrode tip on the diamond disc so the grit of the disk is moving parallel with the electrode shaft and moving towards the tip. See Figure 7.2. Sharpening the electrode in a way other than explained here will affect the quality of the weld.
- Set the electrode on the diamond disk at a 10-degree angle and begin to spin the electrode with the thumb and middle finger. **Tip: A helpful way to get a sharp electrode is to push down on the electrode with your index finger while twisting the electrode with the thumb and middle finger. See Figure 7.2**
- Once the electrode is sharp and clean, turn off the rotary tool and insert the electrode back into the stylus as explained above.



Figure 7.1. A sharp electrode tip improves arc initiation and results in a better overall weld.

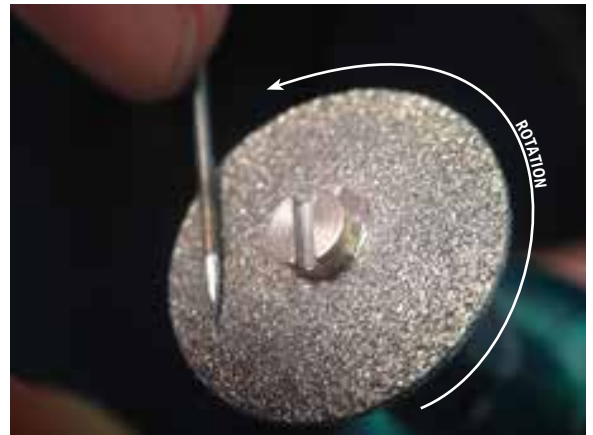


Figure 7.2. Use a rotary tool to sharpen the electrode.

Note: As a rule of thumb, Sunstone recommends a sharpened electrode anytime a new workpiece is being welded.

WHEN TO FLATTEN/ BLUNT THE ELECTRODE

- When working with silver, copper, and other highly conductive metals in energy levels above 20 Ws, it can be helpful to blunt the electrode instead of sharpening it, as shown in Figure 7.3.
- Follow the “When to Sharpen the Electrode” instructions noted earlier.
- Once the electrode is sharp and clean, turn the electrode to a 90-degree angle and push it against the diamond disk in order to place a flat/blunt tip on the electrode. Cleaning the edge of a blunt tip electrode assists in preventing the electrode from sticking to the weld surface.



Example of a Sharp Electrode Tip

Example of a Flat Electrode Tip

Figure 7.3.. When working with silver, copper, and other highly conductive metals, a flat or blunt electrode can provide better results.

- Once the electrode has a flat/blunt tip, turn off the rotary tool and insert the electrode back into the stylus as explained earlier.

Shield Gas Setup

During the pulse-arc welding process high temperature plasma quickly melts metal into a molten pool. As the weld is performed, a small amount of shielding gas is released through the weld stylus to prevent oxygen from entering the molten pool. After the weld has occurred the protective gas turns off.

If oxygen from the air enters this molten pool, the result is a metal oxide that is brittle, porous, and burnt-looking. Protective shielding gas is used, such as 99.996% pure argon (Argon 4.6), to prevent these effects.

PRESSURIZED GAS SAFETY

There are several important rules that should be followed when using a compressed shielding gas such as argon:



Always secure the pressurized gas tank to a fixed location (such as a sturdy table leg). If the pressurized gas cylinder were to tip and become damaged there is possibility that the tank could become a projectile, expelling the high-pressure shielding gas as propellant.

Always turn off the shielding gas at the main valve when finished. This will help your shielding gas supply last longer in case there is a small leak in the tubing. This is also a good safety practice. If the tube becomes dislodged shielding gas could fill the room and displace oxygen, which can lead to suffocation. Argon is heavier than air and will fill the room from the bottom upward. If you experience a large shielding gas leak, open all of the doors and windows in the room.

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SHIELDING GAS TANK AND REGULATOR SETUP

- Ensure that your shielding gas tank is securely fastened to a stationary point near the welding area.
- Turn the regulator dial COUNTERCLOCKWISE (closed) until it is fully backed out, meaning the dial becomes loose, to prevent over-pressurization of the line. See Figure 9.1.
- Screw the gas regulator (A) onto the shielding gas tank (B) and tighten fully using a wrench.
- If not already done, insert one end of the included 1/4" OD gas tubing into the gas port on the back of the power supply. Tug gently on the tube to verify a tight fit.
- Connect the other end of the gas tubing (E) to the gas regulator (D), as shown in Figure 9.2.
- Open the gas tank at the main valve slowly (F) as shown in Figure 9.3. The dials attached to the regulator should respond as the valve is opened. The right dial should measure and show pressure inside the tank; the dial on the left, which measures pressure in the hose, should remain at zero (when the regulator dial is fully backed out).
- Slowly turn the regulator dial CLOCKWISE until the dial on the left shows gas pressure between 7-10 liters per second.



Figure 9.1. First, turn the regulator dial (C) counterclockwise to close the regulator valve. Screw the gas regulator (A) to the top of the shielding gas tank (B).



Figure 9.2. Connect the OD gas tube (E) from the power supply to the gas regulator port (D).



Figure 9.3. Open the shielding gas tank main valve (F) slowly clockwise until the left dial on the regulator port indicates gas pressure of 7-10 liters per second.



Figure 10.1. Rest your hands on the table and position the workpiece close to, but not touching the electrode., then look through the microscope.



Figure 10.2. Turn this knob to adjust microscope focus. You'll find one knob on each side of the microscope arm.

Become Familiar with the Microscope

The Sunstone microscope has been designed to provide maximum visual clarity, eye protection, and ease of use. One challenge using the microscope is getting used to bringing the workpiece to the welding electrode while looking through the microscope. This is an easy challenge to overcome.

To begin, follow the suggested practices below while the welder is in Weld Off Mode. While the welder is in Weld Off Mode, it will not be able to make a weld when the workpiece touches the electrode.

- Rest your hands on the table and position the workpiece close to the welding electrode before looking into the microscope, as shown in Figure 10.1.
- To adjust focus, turn the adjustment knob located behind and slightly below the eyepiece. See Figure 10.2. Make sure your focus is at the tip of the electrode.
- Use slow, controlled movements.
- It is helpful to have your hands resting on the table and to only use your fingers to move the workpiece up to the electrode. See Figure 10.1.
- Place the workpiece surface perpendicular to the point of the electrode. **As discussed in later chapters, the angle of the electrode tip relative to the workpiece surface is very important and will take practice.**
- Now practice making soft contact with the workpiece to the electrode.
- Once you feel comfortable, attach the alligator clip to the workpiece and enable welds (switching the unit to Weld On Mode) to begin welding. **Be mindful of your energy setting: Too much power may damage the workpiece.**

Microscope LCD Filter Shutter System

The Microscope LCD Filter Shutter System provides an unobstructed working view before welding and com-

pletely protects your eyes during the welding process. The Orion 100c verifies the Microscope LCD Filter Shutter System has been closed before allowing the weld to take place. Should the shutter not close, the microscope lens is equipped with >UV 16 and >IR 16 for maximum eye protection.

Cable Connections

Attach all cables as follows and as indicated in Figure 11.1:

Power Cable. Plug the female end of the power cable into the 90-240 VAC port (G) and the male end to a 90-240 VAC power outlet.

Shield Gas. Insert the 1/4" gas tube firmly into the Shield Gas Port (C). To remove the tube, push in the white quick release and then pull back on the tube at the same time.

Foot Pedal. Connect the foot pedal cable to the Foot Pedal port (F)

Microscope Cable. Connect the RJ45 cable coming from the microscope or ADL to the Shutter Port (E).

Weld Stylus. Connect the stylus cable coming from the stylus into the Weld Stylus Port (F). Be sure the white indicator on the stylus cable lines up with the white indicator on the stylus port before connecting. When removing the stylus cable, only pull back on the black section of the connector where the white dot is located.

Pulse Arc and Tack +. For tack welding, attach one ground to the Tack + terminal (A). See page 17 for tack welding instructions.

Tack -. For tack welding, attach another ground to the Tack - terminal (B). See page 17 for tack welding instructions.



Figure 11.1. Cable connection guide for the Orion 100c. Power Cable (G); Shield Gas (C); Foot Pedal (F); Microscope Cable (E); Weld Stylus (F); Pulse Arc and Tack + (A); Tack - (B).

Chapter 2: How to Weld

At the front of the Orion 100c pulse arc welder is a digital touchscreen display. You'll use the software interface that appears on the display to control how much power the 100c delivers, how the power is delivered, make adjustments to agitation, among others.

Before you begin welding, make sure you have carefully reviewed Chapter 1 and all installation steps have been completed. Also carefully review the Safety Guide that accompanied this users guide.

Follow these instructions to weld:

Power On the Welder

On the front of the welder, in the lower left corner, press the Power Button (A) as shown in Figure 12.1. Wait for the welder's software to load.

When the Power Button (A) is pressed and the welder is turned on, the Power Button lights up, as shown in Figure 12.2.

Wait for the welder's software to fully load before continuing.



Figure 12.1. Turn the power on by pressing the Power Button (A).



Figure 12.2. The Power Button lights up when the welder is on. Wait for the software to load, as shown here.



Figure 12.3. Insert the alligator clip to the front of the welder, as shown here.

Attach the Alligator Clip

Insert the alligator clip, which acts as a ground, to the front of the welder as shown in Figure 12.3.

Choose a Welding Mode: Arc vs Tack

With the welder on and the software loaded you should see the Arc Mode screen, as shown in Figure 13.1. With the 100c you can use the welder in two ways:

Arc Mode. The normal welding mode is the Arc Mode. In the Arc Mode, you'll use the electrode to place a weld where the electrode makes contact with the workpiece.

Tack Mode. In Tack Mode, you'll connect an additional ground (whether as an alligator clip, plier, or other type of ground) to the back of the welder. With two pieces of the workpiece grounded, a weld will occur where the two pieces make contact. In Tack Mode, you won't use the electrode.

To choose **Arc Mode**, press the Weld Mode icon (B) and select Arc in the drop down menu. The Arc Mode is the default weld mode.

To choose **Tack Mode**, press the Weld Mode icon (B) and select Tack in the drop down menu. Make sure you attach a secondary ground to the rear of the welder before continuing.

Note: The selected Weld Mode, whether Arc or Tack, is displayed above the white power selection wheel.

Jump to page 17 for Tack Mode welding instructions.

Continue if you wish to weld in Arc Mode.

Select Metal Type

Press the Metal Button (C) as shown in Figure 13.2 and choose the type of metal you're working with. If the metal you see is not listed, for now, choose the most similar or choose Generic. Metal types are listed by name and the element symbol, such as Ag for silver.

Once you select the metal type, the 100c will automatically adjust all welding parameters to optimum levels for that particular metal. You can always manually adjust these settings later.



Figure 13.1. To get started, choose the Weld Mode icon (A) and choose Arc or Tack from the drop down menu. The selected weld mode is displayed above the white power selection wheel.

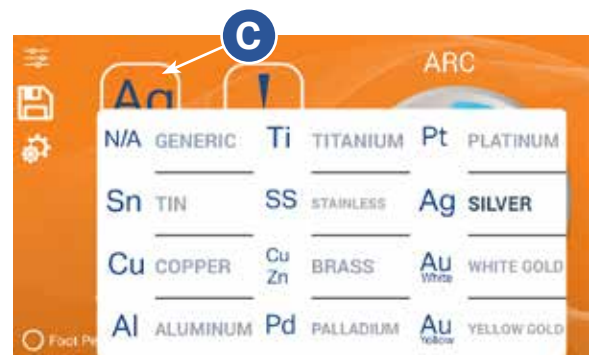


Figure 13.2. Press the Metal Button (C) and choose the type of metal you're working with, or choose the most similar.

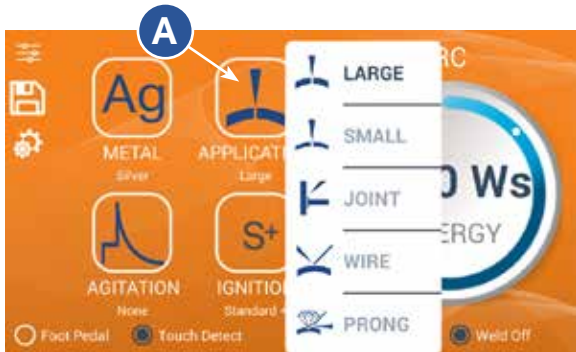


Figure 14.1. Press the Application Button (A) and choose the application the best fits the type of weld you wish to accomplish.

Select Application Type

Select the Application Button (A) as shown in Figure 14.1 and choose the application the best fits the type of weld you wish to accomplish.

You can choose from the following:

- **Large.** Select this Application Type if you have a large gap to fill or working with a thick material.
- **Small.** Select this Application Type for smaller gaps or for thinner materials.
- **Joint.** Select this application Type when joining two pieces together in a 90° or less angle.
- **Wire.** Select this Application Type when adding filler wire to a workpiece.
- **Prong.** Select this Application Type when extending or repairing a prong.

If you don't see an applicable Application Type, choose the one most similar to your needs. You can always make adjustments to all weld settings later.

Select Agitation

Note: The welder will automatically adjust the Agitation based on the metal and application types selected. You can choose to accept the welder's recommendations for agitation or make manual adjustments.

Agitation defines how the weld pool is allowed to cool. By agitating the power as it is delivered to the weld, you can affect how the weld may appear.

You can select from three different agitation types:

- **None.** With no agitation, the energy dissipates evenly, leaving a smooth weld nugget.
- **Sloped.** With sloped or sustained agitation, high levels of agitation improve weld spot strength in some metals. The high levels of agitation energy will affect the spot size because of the extra energy used in this option. To compensate for this addition of agitation energy, it's recommended to lower the overall



Figure 14.2. To adjust the agitation, press the Agitation Button (B) and choose the desired agitation type.

weld energy slightly to maintain the same melt spot size.

- **Negative.** A negative agitation pulses the energy in the opposite direction of sustained agitation, but the peaks of energy are removed rather than added. This works in reverse of other agitation options in that it makes a smaller spot, and de-focuses the weld arc.

As noted, the welder will automatically adjust the agitation based on the type of metal and application chosen. You can choose to accept the recommendations or make manual adjustments.

To adjust the agitation, press the Agitation Button (B) (see Figure 14.2) and choose the desired agitation type.

Select Ignition

Note: The welder will automatically adjust the Ignition based on the metal and application types selected. You can choose to accept the welder's recommendations for ignition or make manual adjustments.

Ignition defines how the weld is started. You can select two different types of ignition types;

Standard. The weld is ignited when the electrode is still in contact with the workpiece using the Standard Ignition Mode. The Standard Mode is ideal if you are welding in a groove or channel as it helps prevent the arc from igniting on the sides of the workpiece rather than the bottom, as desired.

Standard Plus. The weld is ignited after the electrode contacts the workpiece. In the Standard Plus Ignition Mode or S+, you may find it easier to weld. Electrode life is also prolonged in this mode. Standard Plus is recommended for most applications.

As noted, the welder will automatically adjust the ignition based on the type of metal and application chosen. You can choose to accept the recommendations or make manual adjustments.

To adjust the ignition, press the Ignition Button (C) as shown in Figure 15.1 and choose the desired ignition type.



Figure 15.1. To adjust the agitation, press the Agitation Button (B) and choose the desired agitation type.



Figure 16.1. To choose one mode over the other, touch the radio button (A) next to the mode you wish to use.



Figure 16.2. The Energy Wheel.



Figure 16.3. Touch the Weld On radio button to begin welding. Touch the Weld Off radio button to avoid an unintentional discharge of energy.

Select Foot Pedal or Touch Detect

You can choose for the welder to initiate the weld in two ways:

Foot Pedal. In Foot Pedal Mode a weld will only occur when you depress the pedal. Place the pedal on a floor that is flat, devoid of debris, and away from traffic areas. In this mode, you place the electrode against the workpiece in the desired location and then depress the foot pedal to initiate the weld.

Touch Detect. The Touch Detect mode is the default mode. The welder will initiate a weld when the electrode touches a grounded workpiece.

To choose a mode, touch the radio button (A) next to the mode you wish to use. See Figure. 16.1.

Adjust Energy as Needed

The amount of energy to be delivered is displayed in the center of the white Energy Wheel (B) as shown in Figure 16.2. You can adjust the energy amount as needed.

As noted earlier, the welder will automatically adjust the energy for optimum results given the metal and application already selected. However, you can make manual adjustments.

To manually adjust the energy level, touch the small white circle in the curved slider bar (C) and move your finger counter-clockwise to reduce energy or clockwise to increase energy. As you move your finger, the amount of energy selected will change in one-tenths of a watt second (Ws).

Once you remove your finger, the energy level displayed in the Energy Wheel is the amount of energy to be delivered.

Press Weld On Radio Button.

At this point, touch the Weld On radio button (D) as shown in Figure 16.3.

As an additional safety measure, the welder incorporates a digital switch that must be in the on position before energy will be released. When the welder is not

being used, you should press the Weld Off radio button to avoid an unintentional discharge of energy.

Attach the Alligator Ground to the Workpiece

Attach the alligator clip ground to the workpiece at a spot that ensures the best contact between ground and workpiece. See Figure 17.1.

Touch the Electrode to the Workpiece

Looking through the provided microscope or ADL (automatic darkening lens), slowly touch the workpiece to the tip of the electrode. When contact is made energy is released and a weld is created.

Tip: Don't pull the workpiece away from the electrode when the weld initiates. The welder will automatically retract the electrode tip away from the workpiece when they come into contact, resulting in a better weld.

Inspect. Adjust. Repeat.

After the weld, inspect the results. If you need to make adjustments to power, agitation, or ignition, do those now. Then, complete another weld to see how your adjustments affected the weld.

Using the Tack Mode to Weld

To weld using the Tack Mode, follow these instructions:

Choose Tack Mode

To choose **Tack Mode**, press the Weld Mode icon (E) as shown in Figure 17.2 and select Tack in the drop down menu. The Tack Mode Screen will appear with different options than those that appear in the Arc Mode Screen.

Attach Grounds to Back Panel

Tack Mode requires two grounds to be attached to the back panel of the welder, one attached to the Pulse Arc Tack + (positive) terminal (F) and the other attached to the Tack - (negative) terminal (G) as shown in Figure 17.3. In Tack Mode, the front ground is not operational.



Figure 17.1. Attach the alligator clip ground to the workpiece at a spot that ensure the best contact between ground and workpiece.



Figure 17.2. Press the Weld Mode icon (E) and choose Tack from the drop down menu.



Figure 17.3. Tack Mode requires two grounds attached to the back of the welder, one attached to the Pulse Arc Tack + terminal (F) and the other attached to the Tack - terminal (G).

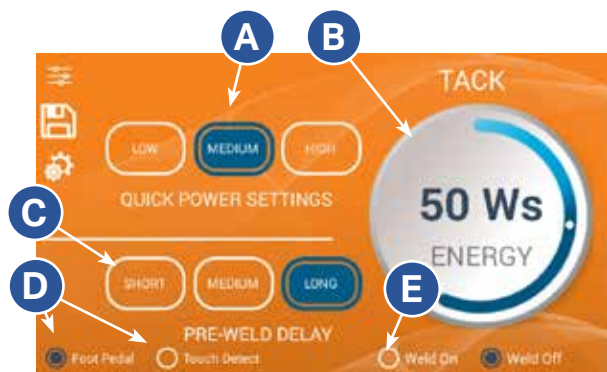


Figure 18.1. In Tack Mode, choose a Quick Power Setting (A), Pre-Weld Delay setting (C), Foot Pedal or Touch Detect (D), and then press the Weld On radio button (E).

Select Power Setting

For convenience, the welder allows you to choose a Low, Medium, or High power setting. Select the desired energy level (start with a lower energy level and work up) by pressing the Low, Medium, or High Quick Power Setting buttons (A) as shown in Figure 18.1

To manually adjust the energy level, touch the small white circle in the curved slider bar (B) and move your finger counter-clockwise to reduce energy or clockwise to increase energy.

Once you remove your finger, the energy level displayed in the Energy Wheel is the amount of energy to be delivered.

Select Pre-Weld Delay

One of the benefits of tack welding is being able to hold a workpiece in one hand and another workpiece in another hand, position them as desired, and then have them welded together. A pre-weld delay provides you with the opportunity to make sure you've positioned the pieces correctly before the weld occurs.

For convenience, the welder allows you to choose a Short, Medium, and Long pre-weld delay (C) as shown in Figure 18.1 You may wish to experiment with each setting to find one that works for you.

Press one of Pre-Weld Delay Buttons to continue.

Select Foot Pedal or Touch Detect

If you're using a foot pedal to initiate the weld, press the Foot Pedal radio button (D). Make sure you have a foot pedal connect to the rear of the welder. If you want the weld to initiate the weld automatically when the workpieces touch, press the Touch Detect radio button (D). When using a foot pedal, it is recommended you use the Tack Mode.

Press Weld On Radio Button.

At this point, touch the Weld On radio button (E) as shown in Figure 18.1.

As an additional safety measure, the welder incorporates a digital switch that must be in the on position before energy will be released. When the welder is not being used, you should press the Weld Off radio button to avoid an unintentional discharge of energy.

Attach the Grounds to the Workpieces

Attach the grounds to the workpieces at spot that ensures the best contact between ground and workpiece.

Touch the Two Workpieces Together

Looking through the provided microscope or ADL (automatic darkening lens), slowly bring the two workpieces together (one in each hand as shown in Figure 19.1). In Touch Detect Mode, the welder will initiate a weld when the two pieces connect (and in accordance with the selected Pre-Weld Delay setting). In Foot Pedal Mode, you'll want to connect the two pieces together and then depress the foot pedal and then release.

Inspect. Adjust. Repeat.

After the weld, inspect the results. If you need to make adjustments to power, do that now. Then, complete another weld to see how your adjustments affected the weld.



Figure 19.1. To connect the two pieces in Tack Mode, slowly bring the two pieces together. If using a foot pedal, when the two pieces connect, depress the foot pedal and release. If using the Touch Detect Mode, when the two pieces connect a weld will be initiated.

Chapter 3: Systems Settings

To adjust the Orion 100c's interface, gas, timing, and other systems, press the Systems Settings icon on the left side of the screen, as shown in Figure 20.1. A drop down menu will appear with the following options:



Figure 20.1. To make adjustments to the welder's systems, press the System Settings icon (A) and then choose an option from the sub-menu.



Figure 20.2. Access the Settings-Interface Screen to adjust volume (C), microscope brightness (D), screen brightness (E), and language preferences (F).

- **Interface.** Choose the Interface option to make adjustments to Volume, Microscope Brightness, Screen Brightness, or Language preferences.
- **Gas.** Choose the Gas option to make adjustments to the flow of shield gas.
- **Timing.** Choose the Timing option to make adjustments to pre-weld delays, post-weld shutter delays, and lift-off delays.
- **System.** Choose the System option to restore factory defaults to the software, clear all memory, update the welder's software, enter a test suite (for diagnostic purposes only), or to access software version information.

Interface Options

VOLUME

To adjust the volume, follow these steps:

- Press the System Setting icon (A).
- From the sub-menu, press the Interface option (B).
- In the Settings-Interface Screen as shown in Figure 20.2, press your finger to the Volume slider bar (C) and move to the right to increase

the volume; move to the left to decrease the volume.

- Press any icon on the left to exit.

MICROSCOPE BRIGHTNESS

To adjust microscope brightness, follow these steps:

- Press the System Setting icon (A).
- From the sub-menu, press the Interface option (B).
- In the Settings-Interface Screen as shown in Figure 20.2, press your finger to the Microscope Brightness slider bar (D) and move to the right to increase the brightness; move to the left to decrease the brightness.
- Press any icon on the left to exit.

SCREEN BRIGHTNESS

To adjust screen brightness, follow these steps:

- Press the System Setting icon (A).
- From the sub-menu, press the Interface option (B).
- In the Settings-Interface Screen as shown in Figure 20.2, press your finger to the Screen Brightness slider bar (E) and move to the right to increase the brightness; move to the left to decrease the brightness.
- Press any icon on the left to exit.

LANGUAGE PREFERENCES

To change language preferences, follow these steps:

- Press the System Setting icon (A).
- From the sub-menu, press the Interface option (B).
- In the Settings-Interface Screen as shown in Figure 20.2, press the blue Language button (F) and then selected the desired language.
- Press any icon on the left to exit.

Gas Options

As explained on page 8, a shield gas is released during a weld to shield to prevent oxidation. Usually, argon is a suitable choice as a shield gas, which you can purchase directly from Sunstone at www.sunstonewelders.com/gas. See page 9 to set the gas pressure.

You can control two key settings in the Setting-Gas Screen: pre-flow delay and post-flow delay in milliseconds. Pre-flow delay is the amount of time the gas flows before the weld is initiated. The longer the time, the more opportunity for shielding gas to cover the workpiece and prevent oxidation. Post-flow delay is the amount of time the gas flows after the weld is initiated, providing additional coverage as the weld pool cools. Keep in mind that



Figure 22.1. To make adjustments to the welder's systems, press the System Settings icon (A) and then choose an option from the sub-menu.



Figure 22.2. Access the Settings-Gas Screen to make adjustments to Pre- and Post-Flow Delays (C and D), to purge gas from the system (F), to calibrate the gas system (E), or to monitor gas pressure (G).

longer pre- and post-flow delays require more shielding gas, subsequently drawing more often on your supply. Note that delays extend the time required for a weld to be completed; therefore, the longer the delay the less number of welds you'll be able to complete within a given time.

HOW TO ADJUST PRE-FLOW DELAY

- Press the System Setting icon (A) as shown in Figure 22.1.
- From the sub-menu, press the Interface option (B).
- In the Settings-Gas Screen as shown in Figure 22.2, press your finger to the Pre-Flow Delay slider bar (C). Move your finger to the right to increase the amount of time gas flows before the weld; move your finger to the left to decrease the amount of time gas flows before the weld.
- Press any icon on the left to exit.

HOW TO ADJUST POST-FLOW DELAY

- Press the System Setting icon (A) as shown in Figure 22.1.
- From the sub-menu, press the Interface option (B).
- In the Settings-Gas Screen as shown in Figure 22.2, press your finger to the Post-Flow Delay slider bar (D). Move your finger to the right to increase the amount of time gas flows after the weld; move your finger to the left to decrease the amount of time gas flows after the weld.
- Press any icon on the left to exit.

HOW TO PURGE GAS

If you adjust gas pressure on the regulator (see page 9), either increase or decrease, that adjustment in gas is not immediately registered at the electrode tip. Purging the gas line (or allowing the gas to flow unrestricted for a short amount of time) will set the flow of gas to what-

ever changes you made to the regulator. To purge the gas line, follow these steps:

- Press the System Setting icon (A) as shown in Figure 22.1.
- From the sub-menu, press the Interface option (B).
- In the Settings-Gas Screen as shown in Figure 22.2, press the Purge Gas Button (F). You'll briefly hear gas exit the gas line. Subsequently, the line has been purged.
- Press any icon on the left to exit.

HOW TO CALIBRATE GAS

If the regulator valve and the digital gas dial (G) indicate different pressure readings, you'll want to calibrate the digital gas dial.

To calibrate the digital gas dial, follow these steps:

- Press the System Setting icon (A) as shown in Figure 22.1.
- From the sub-menu, press the Interface option (B).
- In the Settings-Gas Screen as shown in Figure 22.2, press the Calibrate Gas Button (E). You'll briefly hear gas exit the gas line. Now, the digital gas dial (G) and the regulator should indicate the same pressure readings.
- Press any icon on the left to exit.

Timing Options

To make adjustments to weld timings (pre-weld delays, shutter delays, and lift-off delays), choose Timing from the Systems Settings (A) sub-menu as shown in Figure 24.1. Note that the factory settings are optimized to produce satisfactory results for most operators. Timing adjustments can cause the welder to cease operating. Should that happen, use the Restore Defaults feature to set all timing options to factory specifications, as described on page 25. Only make adjustments for fine tuning.

In the Settings-Timing Screen (see Figure 24.2), you make adjustments to the following:

- **Pre-Weld Delay.** The Pre-Weld Delay is the time that elapses between the weld trigger and the weld ignition, measured in milliseconds. When welding in Touch Detect Mode, the Pre-Weld Delay is the time that elapses from when the electrode touches the workpiece to when the weld ignition starts.
- **Post-Weld Shutter Delay.** The microscope optics utilize a physical shutter that closes during the weld, to protect the eyes. The Post-Weld Shutter Delay is the amount of time that elapses after the weld ends to when the shutter opens, measured in milliseconds. The delay provides an additional layer of safety in blocking residual, harmful light from reaching your eyes.
- **Lift-Off Delay.** In Arc Mode, when the electrode contacts the workpiece (or when the foot pedal is depressed), the welder will retract the electrode slightly and then release energy through the electrode when the electrode reaches the apex of the retraction, a motion that improves weld strength. The Lift-Off Delay is the amount of time that elapses between when the weld is initiated and when the electrode begins to retract. Lengthening the delay means the electrode will stay in contact with the workpiece longer. Shortening the delay means the electrode will stay in contact with the workpiece for

a shorter period of time. The Lift-Off Delay is a user preference setting; weld quality is not necessarily affected by the Lift-Off Delay. You may prefer a longer delay, which may provide you with a bit more time to make sure the electrode is placed exactly where you want it. Or, you may prefer a shorter delay.

HOW TO ADJUST PRE-WELD DELAY

- Press the System Setting icon (A) as shown in Figure 24.1.
- From the sub-menu, press the Timing option (B).
- In the Settings-Timing Screen as shown in Figure 24.2, press your finger to the Pre-Weld Delay slider bar (C). Move your finger to the right to increase the delay that elapses between the weld trigger and the weld ignition, measured in milliseconds; move your finger to the left to decrease the delay.
- Press any icon on the left to exit.

HOW TO ADJUST POST-WELD SHUTTER DELAY

- Press the System Setting icon (A) as shown in Figure 24.1.
- From the sub-menu, press the Timing option (B).
- In the Settings-Timing Screen as shown in Figure 24.2, press your finger to the Post-Weld Shutter Delay slider bar (D). Move your finger to the right to increase the amount of time that elapses after the weld and when the shutter opens, measured in milliseconds; move your finger to the left to decrease the delay.
- Press any icon on the left to exit.

HOW TO ADJUST LIFT-OFF DELAY

- Press the System Setting icon (A) as shown in Figure 24.1.



Figure 24.1. To make adjustments to the specific timings, press the System Settings icon (A) and then choose Timing (B) from the sub-menu.

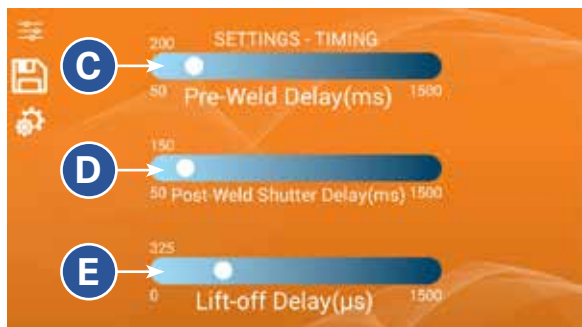


Figure 24.2. In the Settings-Timing Screen, you can adjust Pre-Weld Delay (A), Post-Weld Shutter Delay (B), and Lift-Off Delay (C).

- From the sub-menu, press the Timing option (B).
- In the Settings-Timing Screen as shown in Figure 24.2, press your finger to the Lift-Off Delay slider bar (E). Move your finger to the right to increase the delay is the amount of time that elapses between when the weld is initiated and when the electrode begins to retract, measured in milliseconds; move your finger to the left to decrease the delay.
- Press any icon on the left to exit.

System Settings

In the Settings-System Screen, see Figure 25.2, you can access the following system-wide controls:

- **Restore All Defaults.** This feature will restore all welder settings to factory defaults.
- **Clear All Memory.** The welder can store certain welding schedules. This feature will clear the on-board memory.
- **Update Welder.** From time to time, Sunstone will make improvements and changes to the welder’s software. This feature allows you to upgrade the software.
- **Enter Test Suite.** While working with Sunstone’s customer service team, you may be asked to place the welder in a test suite. Use this button to begin that process.

Note: Sunstone strongly recommends you only utilize these features when working closely with the Sunstone customer service team. Call or text +1 801-658-0015 to contact us.

HOW TO RESTORE ALL DEFAULTS

- Press the System Setting icon (F) as shown in Figure 25.1.
- From the sub-menu, press the System option (G).



Figure 25.1. To make system-wide changes, press the System Settings icon (F) and then choose System (G) from the sub-menu.

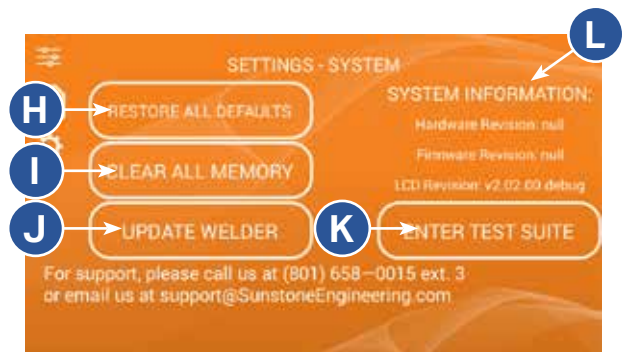


Figure 25.2. In the Settings-System Screen, you can restore the welder to factory defaults (H); clear the welder’s memory (I); update the welder’s software (J); enter a test suite for diagnostic purposes (K); view system version information (L).

- In the Settings-System Screen as shown in Figure 25.2, press the Restore All Defaults Button (H).
- A blue warning screen will appear asking you to confirm. Press the Yes button to continue; press the No button to cancel and go back.

Warning: Restoring defaults can not be undone.

- Press any icon on the left to exit.

HOW TO CLEAR ALL MEMORY

- Press the System Setting icon (F) as shown in Figure 25.1.
- From the sub-menu, press the System option (G).
- In the Settings-System Screen as shown in Figure 25.2, press the Clear All Memory Button (I).
- A blue warning screen will appear asking you to confirm. Press the Yes button to continue; press the No button to cancel and go back.

Warning: This action will permanently erase all current weld settings, saved user welds, and any user preferences.

- Press any icon on the left to exit.

HOW TO UPDATE THE SOFTWARE

- Press the System Setting icon (F) as shown in Figure 25.1.
- From the sub-menu, press the System option (G).
- Insert a USB thumb drive into the USB slot (A) on the left side of the welder, as shown in Figure 26.1. Make sure the latest software update file is loaded on the thumb drive's root directory—do not place the file in a folder. Do not rename the file.
- In the Settings-System Screen as shown in Figure 25.2, press the Update Welder Button (J).



Figure 26.1. To begin to update the welder's software, insert a USB thumb drive containing the software update file in the USB port (A) found on the left side of the welder. Then press the Update Welder Button and follow the on-screen instructions.

- Carefully follow the on-screen instructions to complete the update procedure.
- Once the update is completed, the welder will display the Arc Screen.

HOW ENTER THE TEST SUITE

- Press the System Setting icon (B) as shown in Figure 27.1.
- From the sub-menu, press the System option (C).
- In the Settings-System Screen as shown in Figure 27.2, press the Enter Test Suite Button (D).
- A blue warning screen will appear asking you to enter a custom password only available from Sunstone. To receive your custom password, call Sunstone's customer service team at +1 801-658-0015 and provide them with the password displayed on the welder.
- Follow the instructions provided by Sunstone's customer service team to complete this process.

HOW TO VIEW SYSTEM INFORMATION

- Press the System Setting icon (B) as shown in Figure 27.1.
- From the sub-menu, press the System option (C).
- In the Settings-System Screen as shown in Figure 27.2, you'll see all system information in the upper right side (E).
- Press any icon on the left to exit.



Figure 27.1. To make system-wide changes, press the System Settings icon (B) and then choose System (C) from the sub-menu.



Figure 27.2. In the Settings-System Screen, press the Enter Test Suite Button (D) to enter the test suite for diagnostic purposes.

Chapter 4: How to Save and Load Weld Schedules

The welder has the ability to save weld schedules, which you can then access and load later, saving you the time it may otherwise require to enter the desired weld parameters manually.

A weld schedule is a set of weld parameters. In other words, if you have discovered that for a particular job, 43 Ws of energy, using the Joint application, with negative agitation, and S+ ignition produces the best results, you can save those parameters as a weld schedule. Then you can load that weld schedule for the next time you encounter that particular type of job.



Figure 28.1. To save or load a weld schedule, press the Save/Load icon (A).



Figure 28.2. To save a weld schedule, press any weld schedule box labeled "Empty" (B) and then press the Save Button (C). Press the Exit Button (D) to return to the previous screen.

How to Save a Weld Schedule

- Make sure all weld parameters (energy, application, agitation, and ignition) are in the desired configuration.
- Press the Save/Load icon (A) as shown in Figure 28.1. The Save/Load Screen will appear.
- In the blue Save/Load Screen you'll see rectangular boxes with a white outline in numerical order. Each of the boxes represents a weld schedule. Some weld schedule boxes are empty and you can save parameters to each schedule. Find any weld schedule box labeled "Empty"; you may need to scroll down the list of saved weld schedules by placing your finger at the bottom of the screen and sliding up. See (B) in Figure 28.2 as an example of an empty weld schedule box.
- Touch the empty weld schedule box. The box will turn a lighter blue when selected. The welder will enter an abbreviated weld schedule name based on the current weld parameters.

That abbreviated name becomes the name of the weld schedule.

- Press the Save Button (C) to save.
- Press the Exit Button (D) to exit to the previous screen.

How to Load a Weld Schedule

- Press the Save/Load icon (E) as shown in Figure 29.1. The Save/Load Screen will appear.
- In the blue Save/Load Screen, as shown in Figure 29.2, you'll see rectangular boxes with a white outline in numerical order. Each of the boxes represents a weld schedule. Find the weld schedule you wish to load (for example, F); you may need to scroll down the list of saved weld schedules by placing your finger at the bottom of the screen and sliding up.
- Touch the weld schedule you wish to load. The box will turn a lighter blue when selected.
- Press the Load Button (G) to load the weld schedule.
- Press the Exit Button (H) to exit to the previous screen. All weld parameters will now reflect the weld schedule you just loaded.



Figure 29.1. To save or load a weld schedule, press the Save/Load icon (A).



Figure 29.2. To load a weld schedule, find and press the weld schedule you wish to load (for example, F) and then press the Load Button (G). Press the Exit Button (H) to return to the previous screen.

How to Save Over an Existing Weld Schedule

- Make sure all weld parameters (energy, application, agitation, and ignition) are in the desired configuration.
- Press the Save/Load icon (E) as shown in Figure 29.1. The Save/Load Screen will appear.
- In the blue Save/Load Screen, as shown in Figure 29.2, you'll see rectangular boxes with a white outline in numerical order. Each of the boxes represents a weld schedule. Find the weld schedule you wish to save over (for

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example, F); you may need to scroll down the list of saved weld schedules by placing your finger at the bottom of the screen and sliding up.

- Touch the weld schedule you wish to save over. The box will turn a lighter blue when selected.
- The welder will enter a new abbreviated weld schedule name.
- Press the Save Button to save the weld schedule over the previous weld schedule. You can cancel this operation by pressing the Exit Button (H) PRIOR to pressing the Save Button.
- Press the Exit Button (H) to exit to the previous screen. All weld parameters will now reflect the weld schedule you just loaded.

Appendix 1: Product Specifications

Welder Type	Pulse-Arc & Resistance
Weld Modes	2
Pre-Programmed Metal Settings	12
Customizable Save Settings	5
Languages	Multiple
Display	4" Touch Screen
Energy (Ws)	3-100 Ws
Switching Power Supply	110/240VAC (Auto Detected)
Weld Spot Diameter	0.75 - 2.5mm
Footprint	9.25" x 5.75" x 6.5" (23.5 x 14.6 x 16.5 cm)
Weight	7.5 lbs (3.4 kg)
Stereo Microscope Magnification	5x
Shutter/Auto Darkening	Shutter System

Appendix 2: General Weld Parameters

The following charts are intended to help you determine appropriate energy settings for various applications and metal. Remember to start at a lower power and work up.

26 AWG wire/chain/jump ring			
Metal	Tip Shape	Energy	Agitation
14k Gold	Sharp	9 ws	Off
24k Gold	Sharp	8 ws	Off
Silver	Sharp	10 ws	Off
Platinum	Sharp	10 ws	Off
Stainless	Sharp	8 ws	On
Palladium	Sharp	8 ws	On
Titanium	Sharp	10 ws	Off
Brass	Sharp	9 ws	Off

Earring Post			
Metal	Tip Shape	Energy	Agitation
14k Gold	Sharp	11 ws	Off
24k Gold	Sharp	10 ws	Off
Silver	Sharp	12 ws	Off
Platinum	Sharp	12 ws	Off
Stainless	Sharp	8 ws	On
Palladium	Sharp	8 ws	On
Titanium	Sharp	12 ws	Off
Brass	Sharp	11 ws	Off

0.5 mm thick Ring			
Metal	Tip Shape	Energy	Agitation
14k Gold	Sharp	12 ws	Off
24k Gold	Sharp	11 ws	Off
Silver	Sharp	17 ws	Off
Platinum	Sharp	15 ws	Off
Stainless	Sharp	14 ws	On
Palladium	Sharp	14 ws	On
Titanium	Sharp	15 ws	Off
Brass	Sharp	15 ws	Off

1 mm thick Ring			
Metal	Tip Shape	Energy	Agitation
14k Gold	Sharp	22 ws	Off
24k Gold	Sharp	20 ws	Off
Silver	Semi Blunt	45 ws	Off
Platinum	Sharp	24 ws	Off
Stainless	Sharp	22 ws	On
Palladium	Sharp	20 ws	On
Titanium	Sharp	26 ws	Off
Brass	Sharp	26 ws	Off

2 mm thick Ring			
Metal	Tip Shape	Energy	Agitation
14k Gold	Semi Blunt	50 ws	Off
24k Gold	Semi Blunt	45 ws	Off
Silver	Blunt	80 ws	Off
Platinum	Sharp	60 ws	Off
Stainless	Sharp	45 ws	On
Palladium	Sharp	40 ws	On
Titanium	Sharp	55 ws	Off
Brass	Blunt	55 ws	Off

Add Material (30 AWG laser wire)			
Metal	Tip Shape	Energy	Agitation
14k Gold	Sharp	13 ws	Off
24k Gold	Sharp	12 ws	Off
Silver	Sharp	14 ws	Off
Platinum	Sharp	14 ws	Off
Stainless	Sharp	10 ws	On
Palladium	Sharp	10 ws	On
Titanium	Sharp	14 ws	Off
Brass	Sharp	13 ws	Off

Retip Prong (26 AWG wire)			
Metal	Tip Shape	Energy	Agitation
14k Gold	Sharp	9 ws	Off
24k Gold	Sharp	8 ws	Off
Silver	Sharp	10 ws	Off
Platinum	Sharp	10 ws	Off
Stainless	Sharp	8 ws	On
Palladium	Sharp	8 ws	On
Titanium	Sharp	10 ws	Off
Brass	Sharp	9 ws	Off

Add Material (24 AWG wire)			
Metal	Tip Shape	Energy	Agitation
14k Gold	Sharp	17 ws	Off
24k Gold	Sharp	16 ws	Off
Silver	Sharp	18 ws	Off
Platinum	Sharp	18 ws	Off
Stainless	Sharp	14 ws	On
Palladium	Sharp	14 ws	On
Titanium	Sharp	18 ws	Off
Brass	Sharp	17 ws	Off



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Enjoy a "forever" warranty
starting as low as \$15/month!

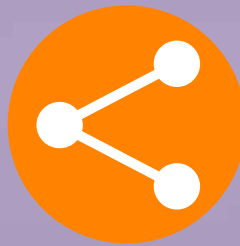
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sunstone circle PROTECTION PLAN



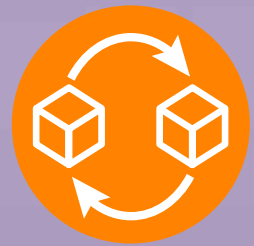
"Forever Warranty"

For as long as your welder is covered by the Sunstone Circle your warranty never expires. You'll never deal with lifeless warranty extensions, but rather enjoy a forever warranty. And that's a big circle of protection!



Complimentary Loaner

If you need a loaner unit while your welder is being repaired, we'll send one. We're going to do all we can to keep your production levels up. If you're in the circle, we'll take care of you!



Free Replacement

Sometimes it makes more sense to replace a broken welder with a current or refurbished model, or offer a discount on the latest model rather than make a repair. At our discretion, we'll do what we can to keep your shop productive!

sunstone circle PROTECTION PLAN

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You Purchased an Extra Special Welder.

Get Extra Special Treatment!

Here's how a small monthly subscription delivers royal treatment:



Free Software Upgrades

When your welder is powered by the latest software improvements your shop becomes more productive and capable. You'll have access to all software upgrades when you join the Sunstone Circle!



Complimentary Shipping

Should your Sunstone welder ever need repair, we'll cover the shipping costs for ground service within the United States. If you need it faster, simply pay the difference. Need it shipped internationally? Give us a call!



Expedited Customer Service

At Sunstone every customer is a VIP, but when you're part of the circle your request for customer service gets moved to the front of the line. You get extra attention! Just another perk when you subscribe today.



More Valuable Member Benefits!

You'll receive snazzy Sunstone swag, a subscription to *Micro Welding Today* magazine, invitations to VIP events, *Inside the Circle* e-newsletter, and new product trial opportunities. Call now to join the circle!

To Learn More
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