orion

Orion™ mPulse

Users Guide

Version 20231006 • Part #1227

Permanent Jewelry Training Video

Watch this video for permanent jewelry training, setup recommendations, time-saving tips and tricks, and more!

TRAINING VIDEO
SCAN ME

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The Micro Welder Experts

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

LIMITATION OF LIABILITY

REVISION	DATE	VERSION NO.	DESCRIPTION OF CHANGES
1	04/2021	20210407	Reformatting
2	01/2022	20220111	Minor Corrections and Revisions
3	05/2022	20220503	Software and Copy Revisions, Perm Jwr, MicroWeld
4	11/2022	20221110	Software and Copy Revisions, Idle Mode Screen

Contents

Orion mPulse with basic ADL.

Orion mPulse with upgraded ADL.

Orion mPulse with Optics

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TRAINING VIDEO

Permanent Jewelry Training Video

Watch this video for permanent jewelry training, setup recommendations, time-saving tips and tricks, and more!

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WORKBOOK

Pulse Arc Welding Workbook and Safety Guide

Download this document to access advanced welding techniques and safety information.

Welder Setup & Assembly

What is in the Box

(1) Orion mPulse Welder/Power Supply and Stylus Hand Piece

(1) Orion mPulse Welder Power Cord (2 pieces)

(2) Alligator Clips

(1) Shielding Gas Hose

(1) Electrode Vial (five 1.0 mm Electrodes)

(1) Fiberglass Brush

If You Purchased the Darkening Lens System:

(1) Darkening Lens System (lens and stand) with attached RJ45 Cable

If You Purchased the Microscope System:

(1) Orion Microscope Arm

(1) Microscope Arm Table Mount

(1) Microscope Arm Support Bar

How to Connect the Basic Cables

The Orion mPulse cable connections vary. **If you purchased the darkening lens or the microscope, cabling needs change slightly.** The darkening lens or microscope will automatically darken when the weld takes place, which allows the operator to have a view of the work piece and remain protected from the flash during the welding process. Reference Figure 2.1 on the next page and follow these instructions for easy setup:

- Remove the welder and Darkening Lens System from the box and place them on a flat workspace.
- Plug the female end of the power cable into the AC Power port (D) on the back of the power supply. Then connect the male end into an AC power supply. **The Orion mPulse has an internal switching power supply that can accept both 120 and 240VAC.**
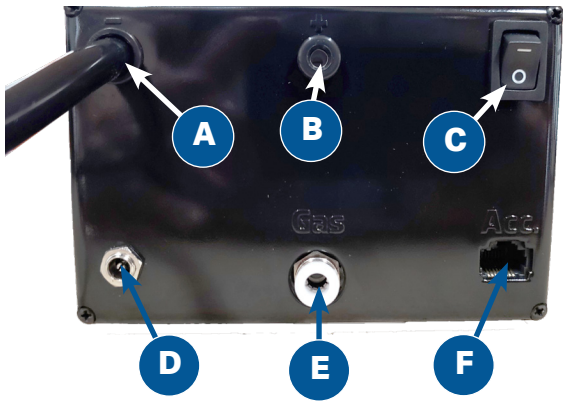
Orion™ mPulse User Manual

Figure 2.1. The back panel of the Orion mPulse. (A) Stylus Cable. (B) Grounding port. (C) Power switch. (D) AC Power port. (E) Argon gas port. (F) Darkening Lens System port.

Figure 2.2. Upgraded Auto Darkening Lens (Left) and Regular Auto Darkening Lens (Right).

Figure 2.3. Attach Angled Bracket (C) to Microscope Arm Assembly (A).

Figure 2.4. Attach Clamp Mechanism (D) to Angled Bracket (C).

- Insert the 1/4" gas tube firmly into the Gas port (E) on the back of the welder. It may wiggle when connected, but should not come out if pulled on.

- Insert the RJ45 Darkening Lens cable (from the back of the Darkening Lens System or "ADL") into the ACC port (F) on the back of the welder. If using a microscope, see page 5 for instructions.

- Connect the alligator clip to the Grounding port (B).

- Place the Welding Stylus (A), which is already connected to the back of the welder, to the side for now.

- Adjust the Darkening Lens Shade by turning the Shade dial above the Darkening Lens Screen. Turn clockwise for a lighter shade and counter-clockwise for darker shade.

- Power on the welder by flipping the Power switch (C) on the back of the welder.

Microscope Arm Mounting Options

If you purchased the Orion mPulse with a microscope, carefully follow these instructions.

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 mounting option instructions 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 a flat surface.

- As shown in Figure 2.3, attach the Angled
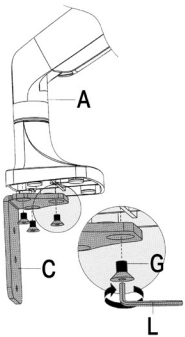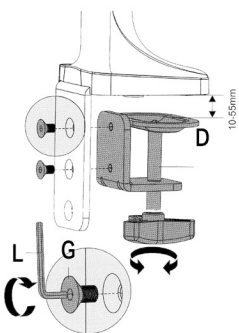
Bracket (C) to the bottom of the Microscope Arm Assembly using three (3) of the included flat head hex screws (G) using a 4mm (5/16") Allen wrench (L).

- Attach the Clamp Mechanism (D) to the Angled Bracket using two (2) of the included flat head hex screws. See Figure 2.4. 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 (D) until the clamp is pressing firmly against the bottom of the table.

- Lift the Microscope Arm Assembly (A) up, slide the arm onto the table as shown in Figure 3.1.

- A plastic cable guide cover (E) can be clipped on over the angled bracket if desired. See Figure 3.2.

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 3.3, using a 4mm (5/32") Allen wrench, unscrew the flat head hex screws (G) holding the Flat Mounting Plate (H) to the arm.

- Run the included 8mm (5/16") Long Carriage Bolt (F) through the included Flat Mounting Plate (H).

- Attach Flat Mounting Plate (H) to the bottom of the arm using (3) flat head hex screws (G).

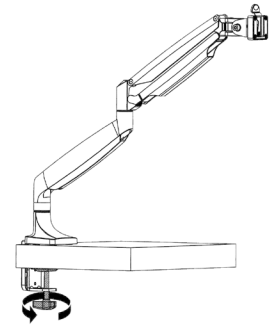*Figure 3.1. Attach Clamp Mechanism (D) to angled bracket (C).*
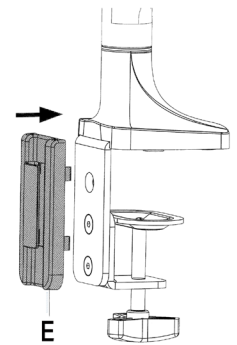
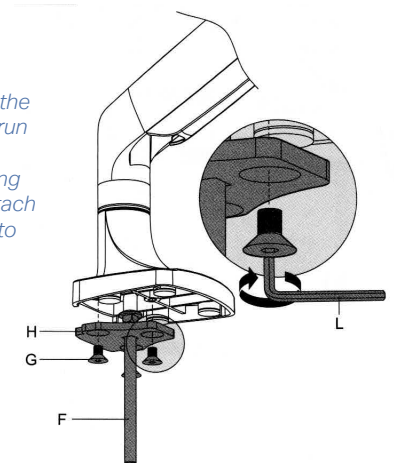*Figure 3.2. Cover the Clamp Mechanism (D) with the plastic cable guide cover (E).*

Figure 3.3. Remove the plate from the arm, run the carriage bolt (F) through the mounting plate (H), then re-attach the mounting plate to the arm.
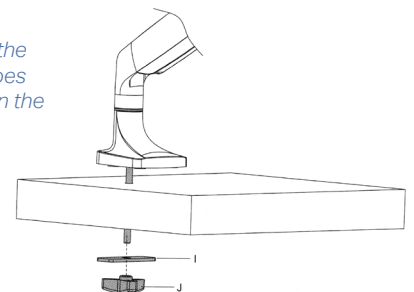
Figure 3.4. Lower the arm so the bolt goes through the hole in the table.

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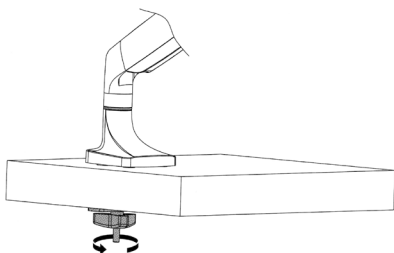
Figure 4.1. Turn the Adjustment knob (J) clockwise to tighten the plate to the table.
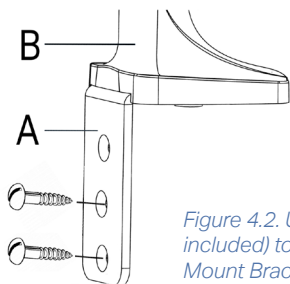
Figure 4.2. Use wood screws (not included) to attach the Angled Mount Bracket (A) to the table.

Figure 4.3. Adjust the tension of the Microscope Arm Assembly for more loose or more tight movement.

Figure 4.4. Tubing and other cables can be routed up and through the removable cable guide portion of the arm.

- Drill a 3/8" (9.5mm) hole through the tabletop.

- Lower the arm so the Long Carriage Bolt (F) goes through the hole in the tabletop. See Figure 3.4.

- 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. See Figure 4.1.

Mounting Option 3 - Screw to Table (vertical surface)

Required hardware from Box 2:

(1) Angled Mount Bracket

(3) Flat Head Screws

(2) Wood Screws **(not included)**

- Attach the Angled Bracket (A) to the bottom of the Microscope Arm Assembly (B) using three (3) of the included flat head hex screws (G) as shown in Figure 2.2.

- Lift and position the arm assembly onto the table in the desired location.

- Run wood screws through the Mounting Bracket (A) and into a vertical surface of the table, as shown in Figure 4.2.

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 4.3. 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.

For cable management, tubes and cables can be routed through a removable guide as shown in Figure 4.4.

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 5.1.

- Plug the other end of the Shutter Cable into the Auto Darkening Lens (F) port on the back of the welder.

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

How to Adjust Microscope Focus

- Twist the knob on the microscope forward and backward to lower and raise the head. This will allow you to focus the microscope on the welding stylus. See Figure 5.2.

- Place your finger under the welding electrode to help judge the correct focus location. Focus the microscope until the texture on the skin of your finger is clearly visible.

How to Place the Welding Stylus

- **If using a microscope** with the Orion mPulse, insert the Welding Stylus into the holder at the bottom of the Microscope Arm Assembly as shown in Figure 5.3 (Left).

- **If using the Lens Darkening System or ADL,** insert the Welding Stylus into the holder located behind the screen. See Figure 5.3 (Right).

- The tubing can be routed up and through the removable cable guide portion of the Microscope Arm Assembly if desired. See Figure 4.5.

- For now, position the Welding Stylus such that
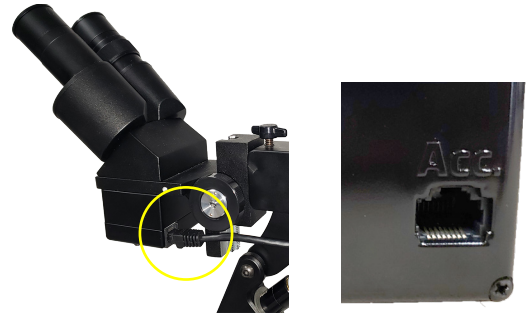
Figure 5.1 After installing the rubber eyepiece covers, use the RJ45 Shutter Cable to connect the welder to the back and bottom of the microscope head. The other end of the cable connects to the (F) port in the back of the Orion mPulse. (See Figure 2.1)

Figure 5.2. Turn this knob to adjust microscope focus. You'll find one knob on each side of the microscope arm.

Figure 5.3. Styling mounting for microscope (Left) and for the Darkening Lens System (Right).

Figure 5.4. Only a small portion of the electrode should extrude from the holder.

only the smaller diameter portion protrudes from the holder, as shown in Figure 5.4. Then, tighten the thumb screw on the bottom of the stylus holder to hold it in place. See page 6 for detailed electrode setup.

- Rotate the stylus holder to approximately a 45-degree angle as shown in Figure 5.3 (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 5.4.

- Now securely tighten the Welding Stylus in place by tightening the thumb screw on the bottom of the stylus holder.

Stylus Components

Figure 6.1

| Stylus Shaft A | Collet B | Collet Cap C | Electrode D | Stylus Hull E |

Electrode Setup

The Orion mPulse comes standard with a 1.0mm electrode collet and five (5) 1.0mm electrodes. The 1.0mm electrodes are a good multipurpose electrode for most welding applications. Available separately, Sunstone offers 0.5mm electrodes, which are more suited for very small applications (less than 5 Ws of energy).

Figure 6.2. To install the electrode, first remove the Stylus Shaft (A) from the Stylus Hull (E) by pulling them apart.

INSTALL THE TUNGSTEN ELECTRODE ONTO THE WELDING STYLUS

Refer to the Stylus Components Chart (Figure 6.1) to install the tungsten electrode (D).

- Remove the stylus hull (E) by pulling it away from the Stylus Shaft (A). See Figure 6.2.

- 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.

Figure 6.3. Use the guide engraved on the side of the Stylus Hull (E) for proper Electrode (D) positioning.

- Insert a 1.0mm electrode (D) into the Collet (B). **Helpful Tip: There is a engraved guide on the side of the Stylus Hull (E) that helps measure**

the electrode length. Place the end of the Stylus Hull (E) against the Collet Cap (C), then make sure the Electrode (D) extends as indicated. See Figure 6.3.

- 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 Shaft once the Stylus Hull (E) is placed back on the Stylus Shaft.

- 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 protrude from the Stylus Hull (E) by 1/8 – 1/4 inch (3.175 – 6.35mm after the Stylus Hull is snapped back into place). See Figure 7.1.

Figure 7.1. Electrodes should protrude past the stylus hull 1/8 to 1/4 inch (3.175 to 6.35mm).

Electrode Care

WORKPIECE ELECTRODE PRESSURE

Touch the workpiece to the electrode with very light pressure. Too much pressure will cause the workpiece to stick to the electrode and cause the electrode to become contaminated (workpiece material on the electrode). Sunstone recommends cleaning or changing the electrode when it sticks to the workpiece.

WHEN TO SHARPEN THE ELECTRODE

The majority of applications are best accomplished using a sharp electrode tip. See Figure 7.2. 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:
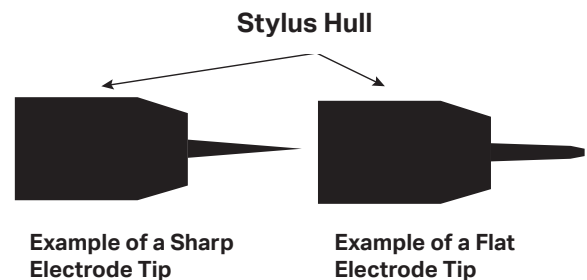

Stylus Hull

Example of a Sharp Electrode Tip

Example of a Flat Electrode Tip
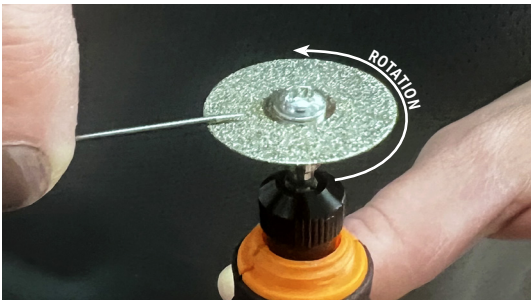
Figure 7.2.

Figure 8.1. A sharp electrode tip improves arc initiation and results in a better overall weld.

Figure 8.2. Use a rotary tool to sharpen the electrode.

PILOT™

ELECTRODE SHARPENER

Need that perfect angle on your electrode? Get our new Pilot: an attachable guide to make sure your electrodes are sharp and ready for welding. Call Sunstone for immediate delivery: +1 801-658-0015 or scan the QR code below.

SHOP

- 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 8.1.

- 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 8.2. 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 8.2**

- Once the electrode is sharp and clean, turn off the rotary tool and insert the electrode back into the stylus as explained above.

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 is recommended to blunt the electrode instead of sharpening it. Follow the "When to Sharpen the Electrode" instructions on the previous page.

- 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.

- 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.

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- Delivered directly to your door!
- Right-sized tank fits almost anywhere!
- Premium argon gas for your Orion mPulse!

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

GET GAS!

Need argon gas? Sunstone will ship a right-sized tank to your doorstep. No more adventurous trips to the gas store! Call Sunstone for immediate delivery: +1 801-658-0015 or scan the QR code above.

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.

SHIELDING GAS TANK AND REGULATOR SETUP

The following instructions are specific for a Sunstone argon regulator. Other regulators may operate differently. Consult instructions that may have come with other regulators.

- Ensure that your shielding gas tank is securely fastened to a stationary point near the welding area.

- Turn the argon regulator dial (not to be confused with the main argon tank valve) COUNTERCLOCKWISE (closed) until it is fully backed out, meaning the dial becomes loose, to prevent over-pressurization of the line.

- Screw the gas regulator onto the shielding gas tank and tighten fully using a wrench.

- If not already done, insert one end of the included ¼" 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 to the gas regulator.

- Open the gas tank at the main valve slowly. 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 7-11 PSI or 6-8 L/min.

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.

Microscope Tips

The Orion mPulse 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 paused. While the welder is in paused, it will not 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.

- 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 (by touching the Weld On/Off button) to begin welding.

Note: 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 completely protects your eyes during the welding process. The PA250i's internal computer 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.

Warning: Avoid direct view of the welding area without protective lenses.

How to Use the Touchscreen Interface

The Orion mPulse touch screen interface is very user friendly. Users have access to every welding parameter with one touch. Below is an explanation of the various buttons and options found on the Orion mPulse interface. *Orion touch screens are resistive touch screens. This means they respond best to a little bit of pressure. The end of your fingernail or the tip of the alligator clip works best when touching the screen.

E

Plus Button. *Tap this button to increase the weld energy level by 1 Joule. The Weld Energy Level (A) will change as this button is tapped.*

D

Weld On/Off Button. *This button alternates between On and Off as it is tapped. The welder will operate when in the On mode; the welder will not operate in the Off mode.*

C

Minus Button. *Tap this button to reduce the weld energy level by 1 Joule. The Weld Energy Level (A) will change as this button is tapped.*

A

Weld Energy Level. *This number represents the amount weld energy level, in Joules, ready to be released through the electrode.*

B

Energy Wheel. *Use a finger and slide clockwise to increase power, counterclockwise to decrease power, in Joules. The Weld Energy Level (A) will change as you move your finger around the Energy Wheel.*

Weld Energy Level

The Orion mPulse has weld energy range of 3 to 30 Joules (or Ws). The larger the number the more energy released through the electrode and, generally speaking, the larger the weld spot. The current Weld Energy Level (A) is prominently displayed in the center of the Energy Wheel (B) as shown on the opposite page.

Energy Wheel

The Energy Wheel (B) is used to adjust the Weld Energy Level up or down. Touch and move your finger clockwise to increase the Weld Energy Level; move your finger counter-clockwise to reduce the Weld Energy Level.

Weld On/Off Button

When the Orion mPulse is initially powered on, the Weld On/Off Button (D) will be in the off mode (the power symbol is gray). The welder will not operate while in the off mode.

To operate the welder, tap once on the Weld On/Off Button to switch to the on mode (the power symbol turns orange). Once in the on mode, the Orion mPulse will operate.
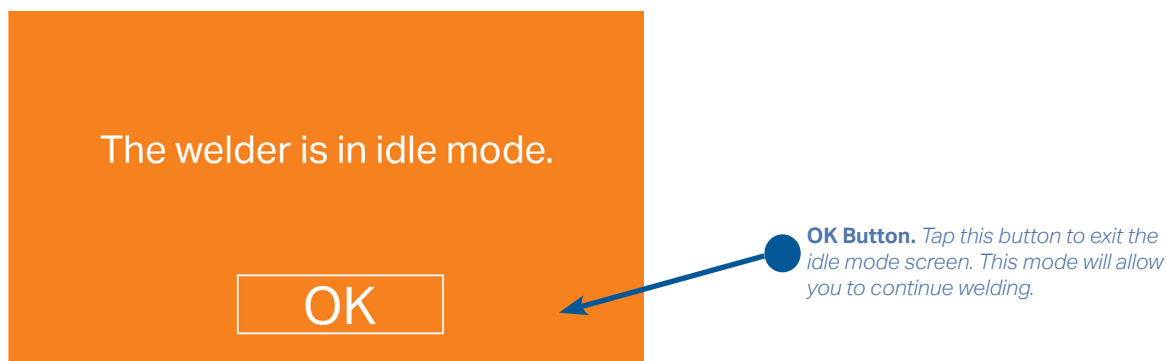
Minus Button

While the Energy Wheel allows rapid change of the Weld Energy Level, the Minus Button (C) will alter the Weld Energy Level by one Joule per tap. This button is used for precision adjustment of the Weld Energy Level.

Plus Button

Like the Minus Button, the Plus Button (E) will alter the Weld Energy Level by one Joule per tap. For precision adjustment of the Weld Energy Level, the Plus and Minus Buttons can be more precise than the Energy Wheel.

Idle Mode Screen

If your welder has been sitting unused, then the welder will go into "idle mode". If you attempt to weld while in idle mode, the idle screen (as shown below) will appear. To exit idle mode and set your welder back to weld mode, the user will need to tap the "START" button at the bottom of the screen.

The welder is in idle mode.

OK

OK Button. *Tap this button to exit the idle mode screen. This mode will allow you to continue welding.*

How to Make a Weld

If you've never used the Orion mPulse or other Orion pulse arc welder, you should practice first on the provided

Figure 14.1 Set the Weld Energy Level to 7 ws and then tap the Weld On/Off button so the power icon changes color from gray to orange.

Figure 14.2 Attach the alligator clip to the welding plate. With proper eye protection, hold the welding plate with both hands and lightly touch the electrode to the welding plate. When the electrode contacts the welding plate, the welder will release energy and create a weld.

welding plate. After careful setup and familiarization of how the welder operates, follow these instructions using the welding plate.

- On the touch screen select 6 Ws on the Energy Wheel. Touch a finger to the Energy Wheel and move clockwise until the Weld Energy Level is 6 Use the Plus or Minus Buttons for more precise selection. See Figure 14.1.

- Tap the Weld On/Off Button. The power icon changes color from gray to orange. When the power icon is gray the welder will not release energy. When the power icon is orange the welder will release energy. See Figure 14.1. With the welder in the on mode the welder will release energy, **but only when the electrode touches the welding plate AND the alligator clip is attached to the welding plate (or any workpiece).** Don't worry about the alligator clip yet.

- Make sure your eyes are protected by properly using the darkening lens or microscope. Never operate the welder without eye protection.

- Attach the alligator clip to the Stainless Steel Weld Plate as shown in Figure 14.2.

- Rest your arms on the table or workbench, holding the metal plate with both hands.

- Make sure you have a clear view of the metal plate through the darkening lens or microscope.

- The Stainless Steel Weld Plate is organized into two major columns. The Agitation column, specific to the Orion mPulse, is not applicable, so pay more attention to the right column showing an increase in energy from mininum to maximum. For this exercise, lightly touch the welding plate (or workpiece) to the electrode in the first minimum column. When the electrode makes contact with the welding plate, the welder will release energy and a weld will occur.

Tip: When the electrode touches the workpiece, don't back away from electrode until after the weld is completed. The Orion mPulse will automatically retract the electrode away from the workpiece by a few millimeters when the weld occurs. This retraction assists in forming a more desirable weld spot. If you move the workpiece away from the electrode just before or during the weld, the weld will not occur.

- Next, adjust the Weld Energy Level to 12 ws using the Energy Wheel and/or Plus and Minus buttons. Then touch the electrode to the second minimum column You will see a difference between the 6 ws weld and the 12 ws weld. The spot size will be larger and the weld will be deeper.

- Repeat the process of increasing the energy level and then touching the plate in the next box. And then repeat again until you've placed a weld in every box. Eventually, you should reach the maximum amount of power (30 ws).

- Again, disregard the agitation labels on the welding plate. Other Orion pulse arc welders have higher agitation features which the mPulse does not. See your Sunstone dealer to learn more about more advanced models and the features they provide.

Read the Safety Guide & Pulse Arc Welding Workbook

Proficiency in using the Orion mPulse pulse arc welder can be achieved in two ways:

First, use the welder often and experiment with different power settings, different types of metal, and the angle at which you touch the electrode to the workpiece.

Second, carefully read the Safety Guide & Pulse Arc Welding Workbook to more fully understand the science behind the weld. The workbook also provides useful tips specific to different types of metals and how to use the welder in different applications. The workbook can be found together with this user manual. If the workbook is missing, call Sunstone for a complimentary replacement copy at +1 801-658-0015.

PERMANENT JEWELRY
If you plan to use your Orion mPulse for permanent jewelry, watch this video for specific training, setup recommendations, time-saving tips and tricks, and more.

GET ADVANCED TRAINING AT PJX
MicroWeld is the premier welding conference for bench jewelers. Visit **www.sunstonewelders.com/pjx** for dates and locations.

Recommended Welder Settings & Welder Specifications

Refer to these general setting recommendations to get started. Preferred settings will be found by adjusting energy settings up and down.

Electrode Placement Types

Butt Weld   T-Joint Weld   Add Metal Weld   Add Metal Weld   Add Metal Weld

26 AWG Wire/Chain/Jump Ring

Metal	Tip Shape	Energy	Notes
14k Gold	Sharp	10 ws	Butt weld with 90º electrode angle
24k Gold	Sharp	7 ws	
Silver	Sharp	10 ws	
Platinum	Sharp	10 ws	**Butt Weld**
Stainless Steel	Sharp	7 ws	
Palladium	Sharp	7 ws	
Titanium	Sharp	10 ws	
Brass	Sharp	10 ws	

Earring Post

Metal	Tip Shape	Energy	Notes
14k Gold	Sharp	10 ws	T-Joint weld with 45º electrode angle
24k Gold	Sharp	10 ws	
Silver	Sharp	12 ws	
Platinum	Sharp	12 ws	**T-Joint Weld**
Stainless Steel	Sharp	7 ws	
Palladium	Sharp	7 ws	
Titanium	Sharp	12.5 ws	
Brass	Sharp	10 ws	

0.5mm Thick Ring

Metal	Tip Shape	Energy	Notes
14k Gold	Sharp	12 ws	Butt weld with 90º electrode angle
24k Gold	Sharp	10 ws	
Silver	Sharp	17 ws	
Platinum	Sharp	15 ws	**Butt Weld**
Stainless Steel	Sharp	15 ws	
Palladium	Sharp	15 ws	
Titanium	Sharp	15 ws	
Brass	Sharp	15 ws	

1.0mm Thick Ring

Metal	Tip Shape	Energy	Notes
14k Gold	Sharp	22 ws	Butt weld with 90º electrode angle
24k Gold	Sharp	20 ws	
Silver	Semi Blunt	30 ws	
Platinum	Sharp	25 ws	**Butt Weld**
Stainless Steel	Sharp	22 ws	
Palladium	Sharp	20 ws	
Titanium	Sharp	25 ws	
Brass	Sharp	25 ws	

2.0mm Thick Ring

Metal	Tip Shape	Energy	Notes
14k Gold	Sharp	30 ws	Butt weld with 90º electrode angle
24k Gold	Sharp	30 ws	
Silver	Blunt	30 ws	
Platinum	Sharp	30 ws	**Butt Weld**
Stainless Steel	Sharp	30 ws	
Palladium	Sharp	30 ws	
Titanium	Sharp	30 ws	
Brass	Sharp	30 ws	

Add Material (30 AWG Laser Wire)

Metal	Tip Shape	Energy	Notes
14k Gold	Sharp	12 ws	T-Joint weld with 45º electrode angle
24k Gold	Sharp	12 ws	
Silver	Sharp	15 ws	
Platinum	Sharp	15 ws	**T-Joint Weld**
Stainless Steel	Sharp	10 ws	
Palladium	Sharp	10 ws	
Titanium	Sharp	15 ws	
Brass	Sharp	12 ws	

2.0mm Thick Ring

Metal	Tip Shape	Energy	Notes
14k Gold	Sharp	17 ws	Wire at 45º angle; Electrode touching work piece next to wire
24k Gold	Sharp	15 ws	
Silver	Sharp	20 ws	
Platinum	Sharp	20 ws	**Add Metal Weld**
Stainless Steel	Sharp	15 ws	
Palladium	Sharp	15 ws	
Titanium	Sharp	20 ws	
Brass	Sharp	17 ws	

Retip Prong (26 AWG Wire)

Metal	Tip Shape	Energy	Notes
14k Gold	Sharp	10 ws	Wire at 45º angle; Electrode touching work piece next to wire
24k Gold	Sharp	7 ws	
Silver	Sharp	10 ws	
Platinum	Sharp	10 ws	**Add Metal Weld**
Stainless Steel	Sharp	7 ws	
Palladium	Sharp	7 ws	
Titanium	Sharp	10 ws	
Brass	Sharp	10 ws	

Orion mPulse Welder Specifications

Weld Technology Type	Pulse Arc
Weld Modes	1
Pre-Programmed Metal Settings	0
Customizable Save Setting	0
Languages	Not Applicable
Display	4.4" Touchscreen
Energy	3-30 Ws
Weld Spot Diameter	1.0-1.25mm
Footprint	5.5"x5.25"x3.625"/13.79x13.34x9.21cm
Weight	2 lbs. 6 oz./1.07kg
Pulse Frequency	0.5 Hrz
Microscope Magnification	5X (>IR 16/>UV 16)
Darkening Shutter	Visibility: Shade 3 to Shade 12

Meet the Whole Family of Orion™

We've got the perfect welder for your shop!

Orion mPulse

The welder for beginners or small shops. Right-sized and right-priced!

3-30 Joules

1.0-1.5 mm Spot Size

1 weld every 2 seconds

Orion 100c

When you need a bit more power, a bit more energy control, try the 100c!

3-100 Joules

0.75-2.5 mm Spot Size

1 weld every 0.7 seconds

Pulse Arc Welders

Orion 100s

*The world's bestselling pulse arc welder!
Most of the features and power you'll need.*

1-150 Joules

0.5-3.5 mm Spot Size

1 weld every 0.2 seconds

Orion 200i

*For large shops who value production
efficiencies—or for the master welders
who deserve it all!*

0.2-200 Joules

0.1-4.5 mm Spot Size

1 weld every 0.2 seconds

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