

Sunstone Welders

WH2 Weld Head – User Manual



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Sunstone Welders

WH1 Weld Head – User Manual

Chapter 1: Introduction:

Thank you for choosing Sunstone Welders and congratulations on your purchase!

You are now the proud owner of a Sunstone Weld Head. This manual was designed to have you welding safely within minutes of unpacking your new weld head. Please read and follow all safety precautions before proceeding with the welding process.

At Sunstone Engineering we are committed to producing quality products and ensuring complete owner satisfaction. If you require assistance after reading this manual please contact us with the information provided below.

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NOTE: The information contained in this manual is subject to change as improvements are made to our products. Visit www.SunstoneWelders.com for the latest version of this document.



Quick Look

PRESSURE KNOBS

Adjust weld head pressure here.

Screw counter-clockwise to decrease the electrode pressure or clockwise to increase pressure.

WELD CABLE HOOKUP

Run weld head cables from here to (-) and (+) terminals on welder.

WELD HEAD BASE

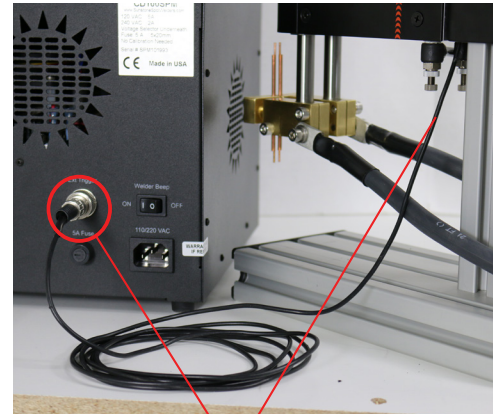
Base supports the weld head, but can be bolted to table if desired.

MAC VALVE

The MAC Valve regulates the amount of air pressure coming in to the weld head from the air compressor. We recommend that the MAC Valve air pressure be set between 60–80 PSI.

FLOW CONTROL VALVES

The flow control valves adjust the air flow that is raising and lowering the weld head after stepping on the MAC Valve foot pedal. They control how quickly or slowly the weld head raises or lowers.



SWITCH CABLE

The switch cable connects to the back of the welder. This cable sends a signal to the welder to let it know when to initiate the weld.

HEIGHT ADJUST

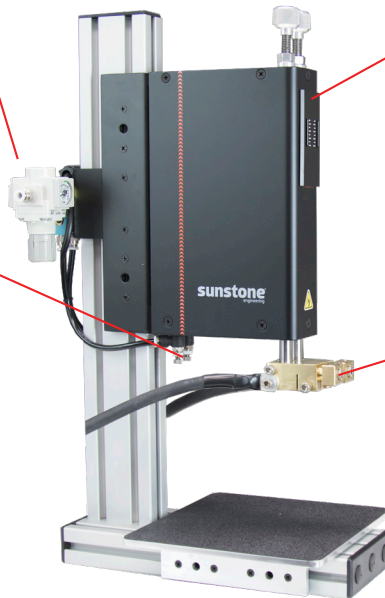
Loosen these knobs to move the weld head up and down when positioning the electrodes above the work piece. We suggest (1/8" (0.125") gap above work piece.

MOVABLE ELECTRODE GAP SCALE

Use this scale when setting up the electrode gap. Follow the steps in the electrode pressure section.

ELECTRODES

The weld head comes with (1/8" (0.125") electrodes. Adjust electrodes to desired height above work piece. We suggest (1/8" (0.125") gap above work piece.



Chapter 2: Getting Started

Before Installing

WHAT IS IN THE BOX

Carefully open the weld head package. Remove and place the contents on a clear and clean workbench.

Inside the box:

- Safety Manual
- Weld Head Unit
- *1/4' MAC Valve air hose (for WH 2125A and WH 2250A versions)
- *Mac Valve Foot Pedal (for WH 2125A and WH 2250A versions)
- *Manual Foot Pedal system (for WH 2125M and WH 2250M versions)
- Quick Start Guide
- Mounting Template

SPACE REQUIREMENTS

The Weld Head has a 10.25"x8" footprint. Be sure to provide enough space to connect the weld head to a welding unit.

Precautions

HANDLING PARTS BEING WELDED

Caution: Pieces that have been welded can be HOT. Always use caution when handling welded pieces.

ELECTRODE CARE

For best results sand (shape) and clean the electrodes prior to performing welds and after electrode tip wear; smoother electrodes will provide better results.

Weld Head Connections

1AWG WELD HEAD CABLES

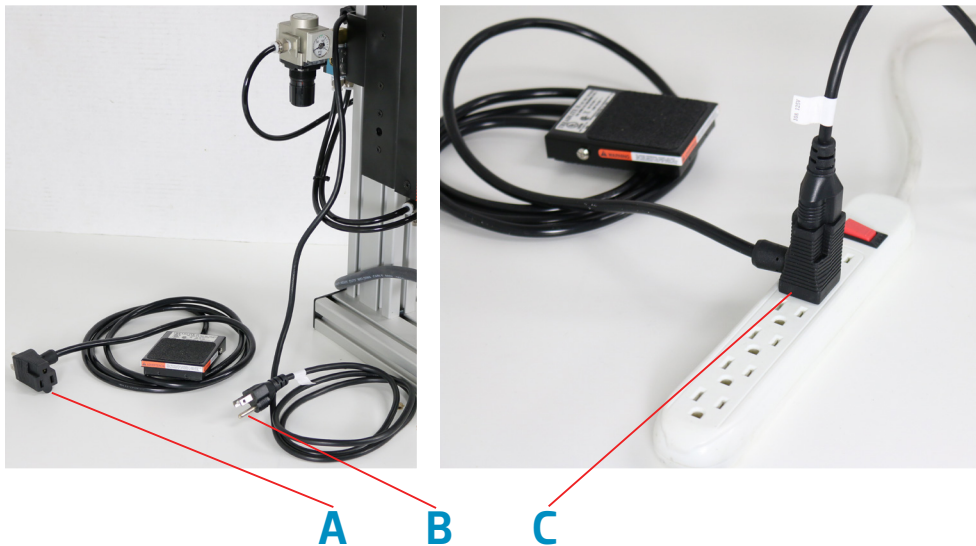
The weld head cables connected to the weld head electrode blocks will connect to the (-) and (+) terminals on the welding unit.

Trick/Tip: The cable connected to the (+) terminal on the welder will put a little bit more heat to the respected electrode on the weld head. If you are welding a coated part or a thick to thin piece, try setting up the welding process so that the (+) electrode goes to the coated part or to the thick piece.



MAC VALVE POWER CABLE AND FOOT PEDAL

The MAC Valve AC Inlet can accept a 50-60Hz AC signal from 90VAC to 250VAC. The power cable extending from the MAC Valve (B) will connect to the female connection on the included foot pedal (A). The foot pedal will then plug into AC power (C).



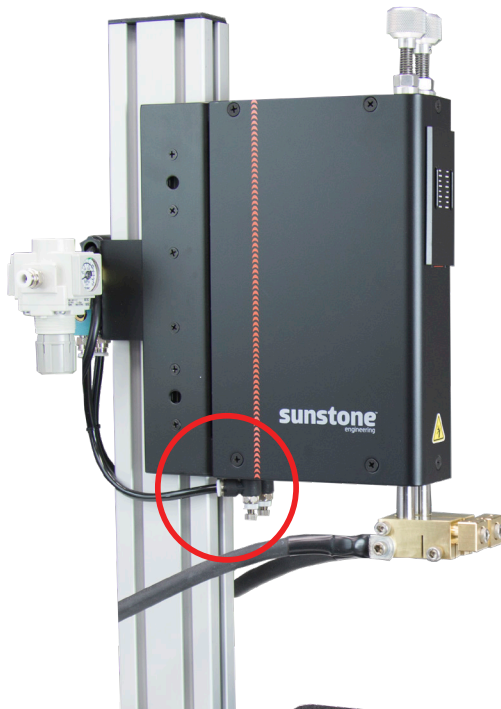
MAC VALVE AIR PORT

Air from your air compressor will connect here.



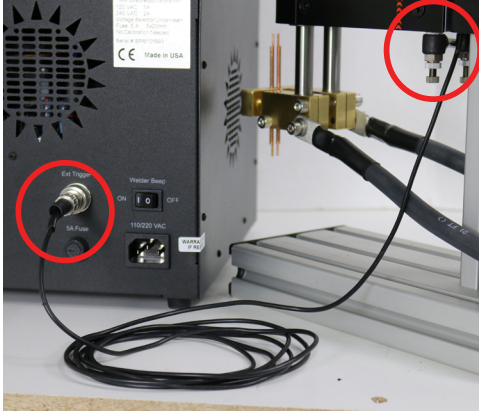
MAC VALVE AIR HOSE PORTS AND VALVES

There are two air ports and valves located under the weld head body. If you are looking at the front of the weld head, the port and valve on your left will control the up speed of the weld head. The port and valve on your right will control the down speed. *Be sure that the tube running from the right side port is connected to the left side port on the MAC Valve box and that the left side port is connected to the right side port on the MAC Valve box.



WELD ACTUATION CABLE

This is the cable located under the weld head body. This cable will plug into the trigger port on your welder. The actuation cable sends the signal that tells the welder when to initiate the weld. *If you desire to actuate the weld manually, you will not plug the actuation cable into the welder. Instead you will plug the welder foot pedal cable into the trigger port on your welder and leave this cable unplugged.



Chapter 3: MAC Valve Weld Head Setup (WH 2125A & WH 2250A)

NOTE: For Manual Weld Head setup (WH 2125M and WH 2250M) see Manual Weld Head setup chapter.

Section 1: Bolt the Weld Head to the Table

BOLTING INSTRUCTIONS

Mounting template on last page of manual

Tape the mounting template to the table where you are bolting the weld head. When instructed to drill out a hole, simply drill through the hole on the mounting template.

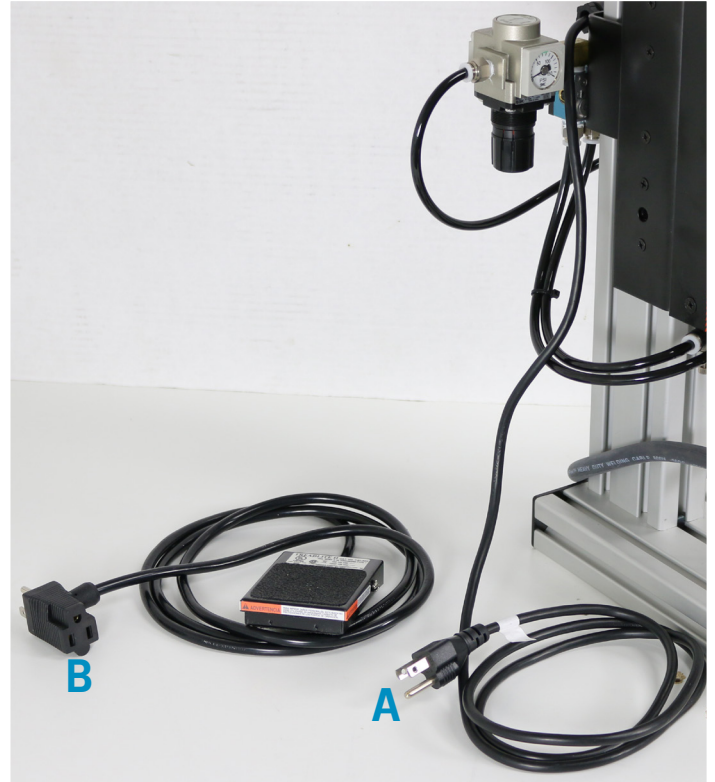


1. Drill out the four holes numbered 1, 2, 3, and 4 with a 0.315 drill bit.
2. Ensure that the provided 5/16-18 T-Slot Bolts for holes 1, 2, 3, and 4 will go through your table.
3. Slide the provided 5/16-18 T-Slot Bolts into the channels on the underside of the weld head as seen in the image.
4. Remove the taped mounting template from the table.
5. Align the bolts with the holes that have been drilled through the mounting template into the table.
6. Lower the bolts into the holes.

Section 2: Set up MAC Valve Foot Pedal (WH-2125A and WH-2250A)

CONNECT FOOT PEDAL

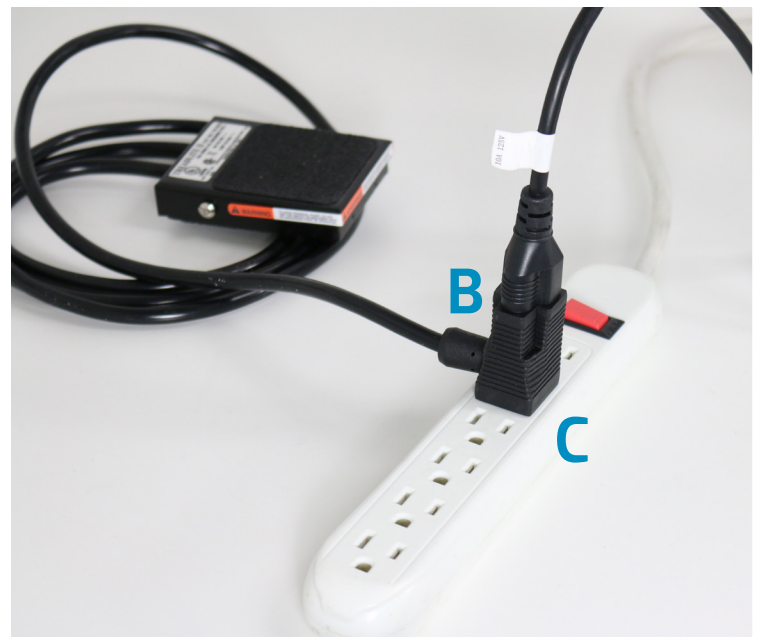
1. Connect the MAC Valve power cable (A) into the female end of the included MAC Valve foot pedal (B).



CONNECT AC POWER

1. Plug the male end of the MAC Valve foot pedal (B) (with the MAC Valve power cable connected to it) into AC power (C).

*The MAC Valve AC Inlet can accept a 50-60Hz AC signal from 90VAC to 250VAC.



Section 3: Set up MAC Valve Air (WH-2125A and WH-2250A)

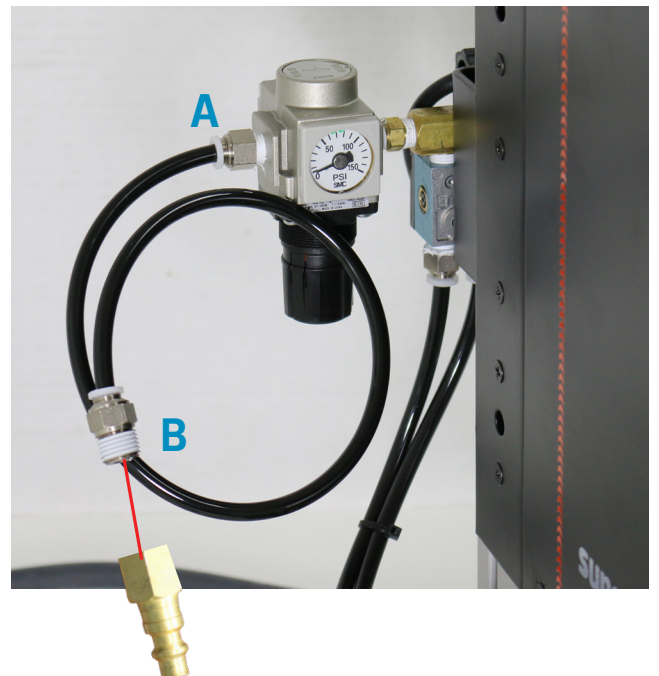
VERIFY MAC VALVE AIR HOSES

1. Verify that your air hoses are securely fastened.
2. Verify that your air hoses are in the correct ports.



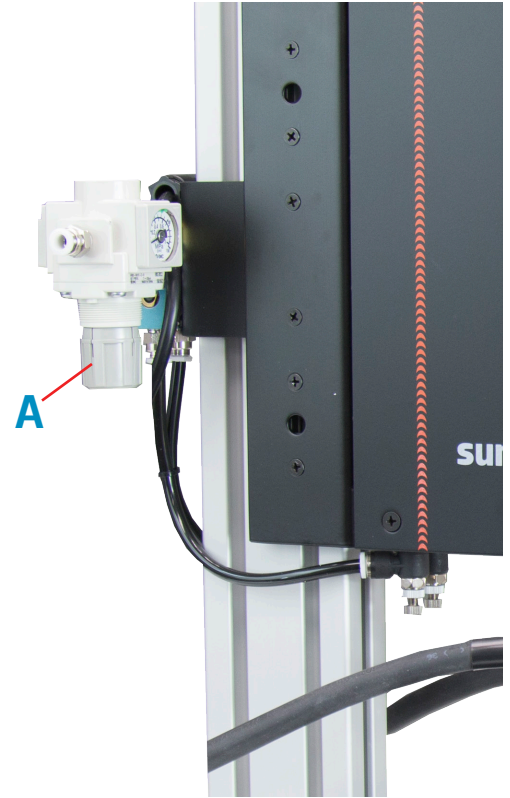
CONNECT AIR IN

1. Connect the included 1/4' air hose to the MAC Valve air hose port (A).
2. Screw an air compressor connector onto the threaded end of the air hose (B).
3. Connect air compressor connector (B) to an air compressor hose.
4. Set your air compressor pressure between at least 80 and 100 PSI.



SET THE MAC VALVE AIR PRESSURE

1. Pull down on the black regulator adjustment knob (A).
2. Turn the knob to the right (clockwise) to increase the amount of air pressure coming into the weld head from the air compressor or counterclockwise to decrease the air pressure coming into the weld head.
3. Set the MAC Valve pressure between 60 and 80 PSI.
4. Push the regulator adjustment knob back in to lock the air pressure setting in place.

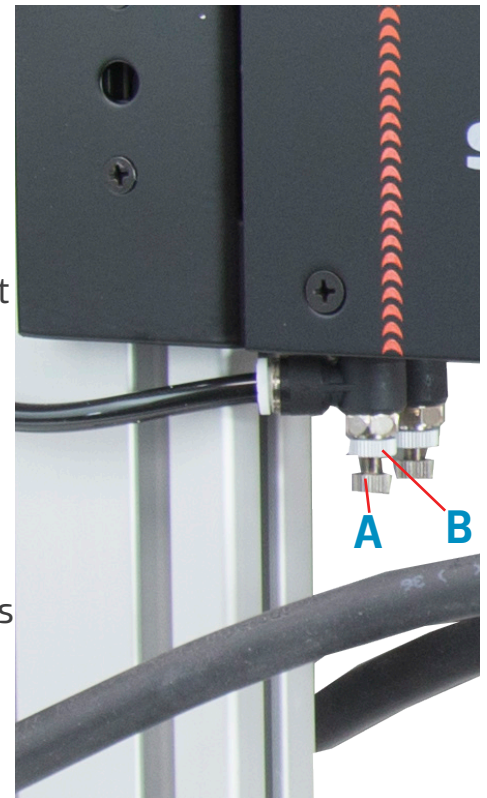


ADJUST THE AIR VALVES

The air valves adjust the up and down speed of the weld head.

NOTE: The air valve on the left controls the up speed and the air valve on the right controls the down speed.

1. Turn the air valve lock (B) counter clockwise in order to adjust the air valve adjustment knob (A).
2. Turn the air valve adjustment knob (A) clockwise to limit the airflow and slow down how fast the weld head goes up or down.
3. Turn the air valve adjustment knob (A) counter clockwise to allow more airflow and speed up how fast the weld head goes up or down.
4. Turn the air valve lock (B) clockwise to lock the air valve adjustment knob at your desired airflow setting.



Section 4: Connect the Weld Head to the Welder

CONNECT WELD HEAD CABLES

The 1AWG weld head cables will come attached to the electrode blocks on the weld head.

1. Bolt the 1AWG weld head cables to the positive and negative terminals on the welder with the provided nuts & bolts.
2. Verify connections on both the welder and the weld head are securely fastened.

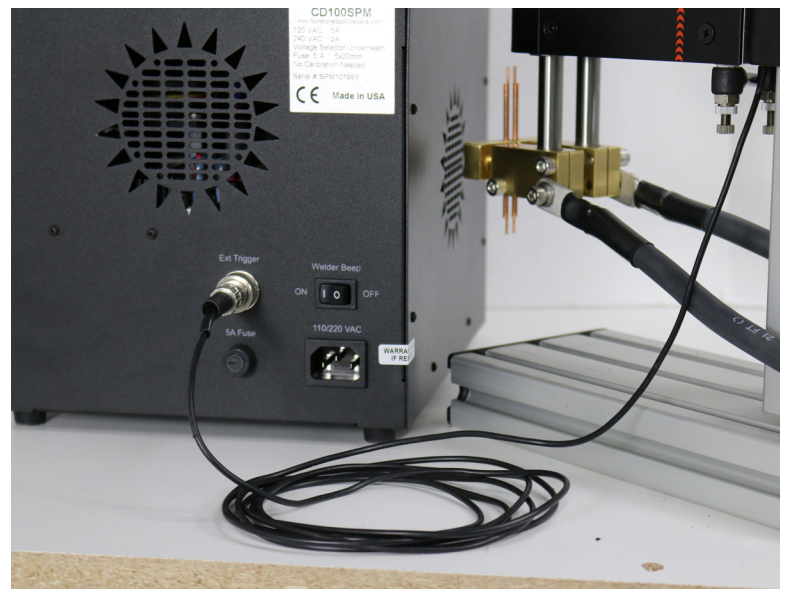


Section 5: Set up Weld Head Triggering

NOTE: There are two options for triggering the weld – automatic triggering or a foot pedal triggering.

AUTOMATIC TRIGGERING (OPTION 1)

1. Before attaching the 3-pin weld head trigger cable from the weld head to the back of the welder, press and hold the MAC Valve foot pedal that lowers the weld head and verify that the electrodes are in the correct location on the work piece. *See electrode setup section for further information on electrode placement.
2. Now attach the 3-pin weld head trigger cable from the weld head to the back of the welder.



How automatic triggering works:

1. Press and hold the MAC Valve foot pedal that lowers the weld head.
2. As the weld head is lowering it will reach a sensor that will send a signal to the welder through the weld head triggering cable to tell the welder to initiate the weld
3. Once the weld has triggered, release the MAC Valve foot pedal.

Advantages:

- Increases production speeds
- Only one foot pedal is needed

NOTE: If you want to use the foot pedal option to trigger the weld instead of using automatic triggering see the foot pedal triggering option below.

FOOT PEDAL TRIGGERING (OPTION 2)

With this option the weld head will be triggered by using a second foot pedal (separate from the MAC Valve foot pedal or manual foot pedal that lowers the weld head).

1. Disconnect the weld head automatic triggering cable (if it is connected to the back of the welder) from the "trigger" port on the back of the welder.
2. Connect the 3-pin foot pedal triggering cable to the "trigger" port on the back of the welder (this is the foot pedal that came with the Sunstone welder).



How foot pedal triggering works:

1. Press and hold the MAC Valve foot pedal that lowers the weld head.
2. Verify electrodes are in the correct location on the work piece.
3. Now press the trigger foot pedal.

4. Once the weld has triggered, release both foot pedals.

NOTE: The trigger foot pedal does not need to be held down, a single press will suffice to trigger a weld.

Advantages:

- You have more control by deciding when to trigger the weld.
- You have the ability to decide exactly when the weld is triggered.

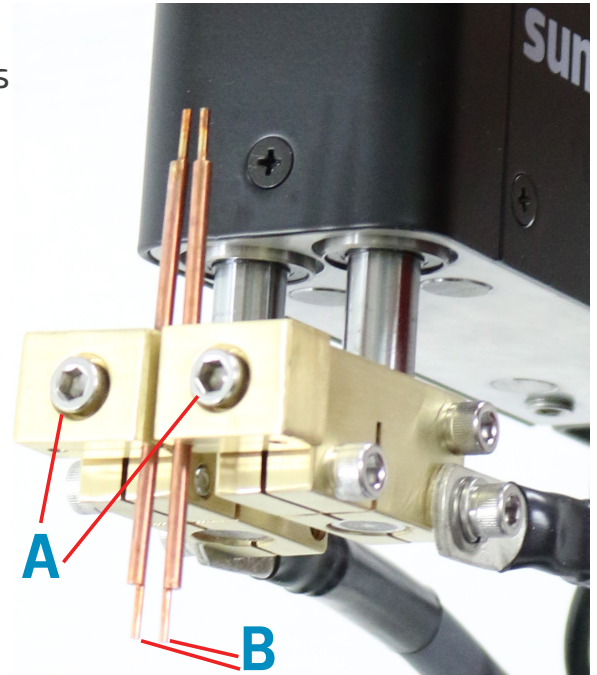
NOTE: If you want to use automatic triggering instead of using the foot pedal to trigger the weld, see the automatic triggering section above.

Section 6: Set up Your Electrodes

NOTE: Be sure to follow the steps below in the same order every time you adjust your electrodes.

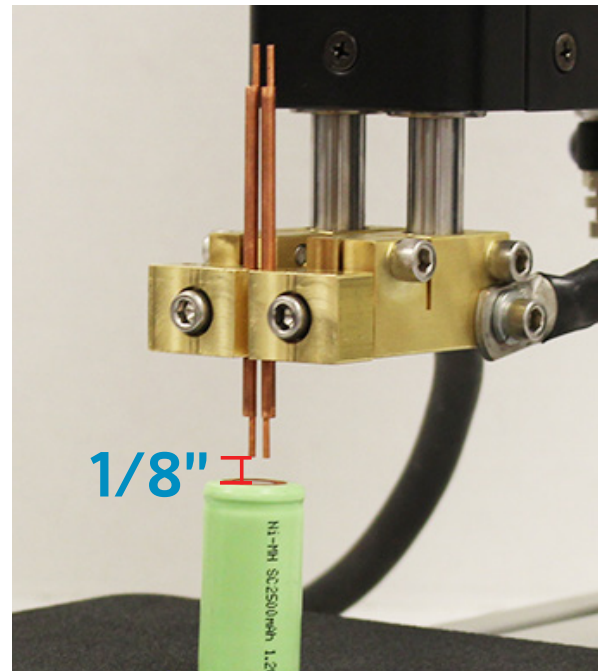
INSERT ELECTRODES INTO THE ELECTRODE HOLDERS

1. Loosen the bolts on the front of the electrode holders (A).
2. Insert electrodes and make sure the tips are in line with each other (B).
3. Tighten the electrodes into their holders (A).



ADJUST ELECTRODE GAP

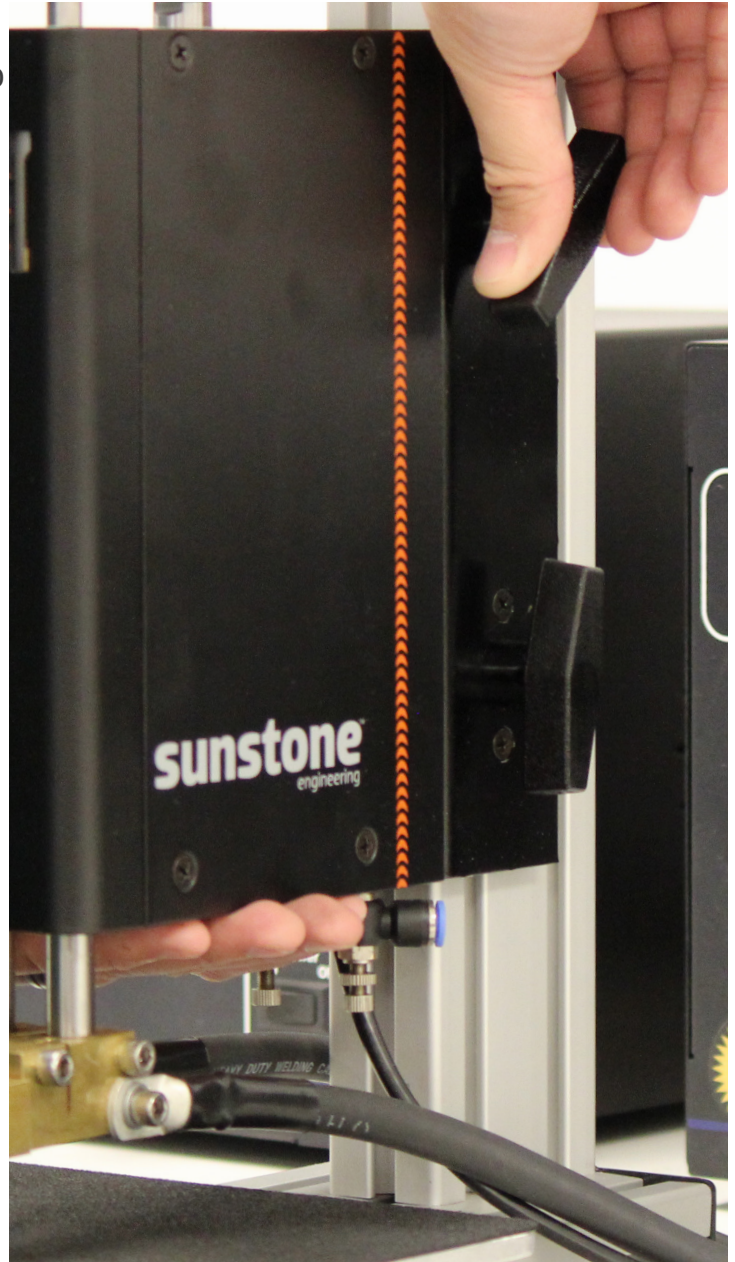
1. Move the weld head up or down as described in the Weld Head Height Adjustment section. We recommend that the weld head be set to a height where the electrode are an 1/8" (0.125") above the work piece.
2. For best results sand (shape) and clean your electrodes prior to performing welds and after electrode tip wear.



Section 7: Weld Head Height Adjustment

WELD HEAD HEIGHT

1. Place one hand under the weld head body to support the weight as the weld head height adjustment knobs are being loosened.
2. Use your other hand to loosen the weld head height adjustment knobs.
3. Now move the weld head up or down.
4. Tighten the weld head adjustment knobs once the desired height is reached.
5. We recommend that the weld head be set to a height where the electrodes are an $\frac{1}{8}$ " (0.125") above the work piece.

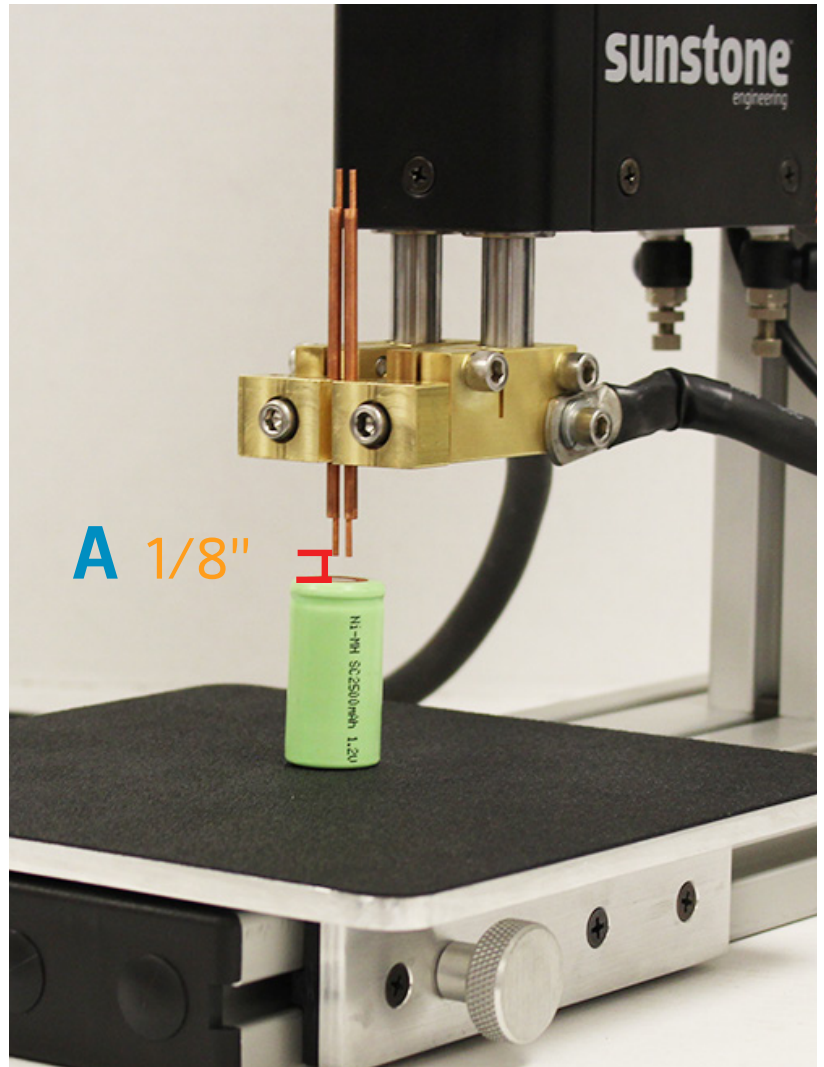


Section 8: Set up the Electrode Spring Pressure

NOTE: The spring pressure on the weld head is user adjustable to help achieve desired weld characteristics. An adjustment knob at the top of the weld head is used to change the amount of compression the spring will experience. The scale on the front of the weld head is movable and should be at the most upward position, which represents an 1/8" gap between the work piece and the electrodes. This is the default movable scale setting location. The scale is movable to compensate for welding situations in which the gap between the part being welded and the electrodes is larger than an 1/8" (0.125").

SET THE ELECTRODE GAP

1. Adjust the weld head height as described in the weld head height adjustment section.
2. We recommend an 1/8" (0.125") gap between the work piece and the electrodes (A).



SET THE MOVABLE SCALE

1. Slide the movable scale up as high as it will go. This represents an $1/8"$ (0.125") gap between the part being welded and the electrodes. *The bottom of the movable scale will be at the orange 0.125 line (A). This is the default position.
2. If there is a $1/2"$ (0.5") gap between the part being welded and the electrodes, adjust the movable scale down to the 0.5" orange line (B). This process will ensure that the spring is compressed the same amount regardless of the gap distances.

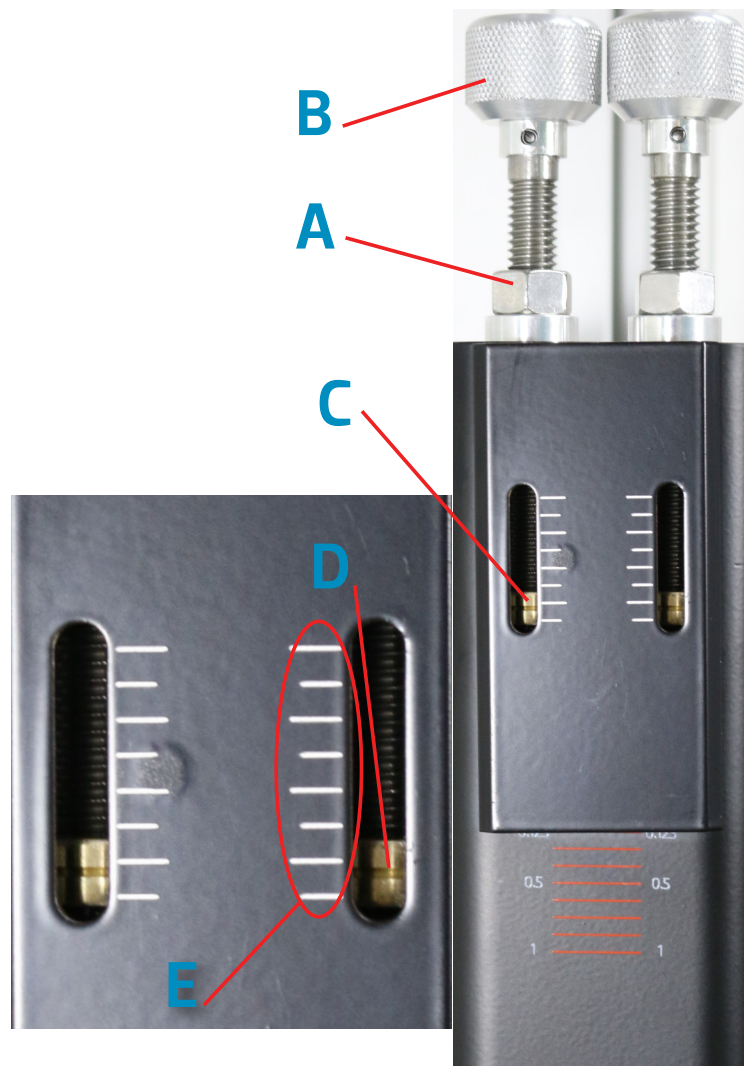
A. $1/8$ IN (0.125) GAP
The bottom of the movable scale is at the 0.125 line

B. $1/2$ IN (0.5) GAP
The bottom of the movable scale is at the 0.5 line



ADJUST THE ELECTRODE SPRING PRESSURE

1. Loosen the hex nuts on the threaded adjustment rod (A).
2. Rotate the knob (B) clockwise to increase spring compression (electrode pressure).
3. Rotate the knobs counter-clockwise to decrease spring compression.
4. Look through the opening on the movable scale (C). There is a brass piece with a line carved into the middle of the brass piece. This brass piece will move up and down as you adjust the pressure knob up and down.
5. Adjust the pressure knob (B) until the line on the brass piece (D) corresponds to your desired mark on the movable scale (E). Each mark represents a pressure value. The values are listed in the next section.
6. Once the brass piece is at your desired pressure mark (E), tighten the hex nut (A) to lock the spring pressure in place.



SPRING PRESSURE VALUES

The weld head comes standard with light duty springs that range between 1–15lbs of compression force. The 8 notches on the movable scale divide the compressible distance into quantifiable sections. Each section represents an approximate amount of force that will be applied to the electrode. The table below shows these values.

1/8" (0.125) Electrode Gap				
Electrode to Work Piece Gap	Electrode to Work Piece Gap Marker	Spring Force Marker	lbs / ONE electrode	Kg / ONE electrode
1/8" (0.125)	1/8" (0.125)	1st Notch (top)	1	.45
1/8" (0.125)	1/4" (0.250)	2nd Notch	3	1.4
1/8" (0.125)	3/8" (0.375)	3rd Notch	5	2.3
1/8" (0.125)	1/2" (0.5)	4th Notch	7	3.2
1/8" (0.125)	5/8" (0.625)	5th Notch	9	4.1
1/8" (0.125)	3/4" (0.750)	6th Notch	11	5
1/8" (0.125)	7/8" (0.875)	7th Notch	13	5.9
1/8" (0.125)	1" (1)	8th Notch	15	6.8

1/2" (0.5) Electrode Gap

Electrode to Work Piece Gap	Electrode to Work Piece Gap Marker	Spring Force Marker	lbs / ONE electrode	Kg / ONE electrode
1/2" (0.5)	1/8" (0.125)	1st Notch (top)	1	.45
1/2" (0.5)	1/4" (0.250)	2nd Notch	3	1.4
1/2" (0.5)	3/8" (0.375)	3rd Notch	5	2.3
1/2" (0.5)	1/2" (0.5)	4th Notch	7	3.2
1/2" (0.5)	5/8" (0.625)	5th Notch	9	4.1
1/2" (0.5)	3/4" (0.750)	6th Notch	11	5
1/2" (0.5)	7/8" (0.875)	7th Notch	13	5.9
1/2" (0.5)	1" (1)	8th Notch	15	6.8

The force at the electrode can play a very large role in achieving successful resistance welds. It is important to find the correct balance between the weld energy being applied and the amount of force being applied. Too much force can decrease the amount of resistive heat being generated at the weld site and lead to weaker welds. Sometimes the part may deform (bend) if too much force is used. Too little force can cause arcing, blowouts, and inconsistent weld results. As a general rule of thumb, the more energy being released by the welding power supply, the more electrode force will be required.

Chapter 4: Manual Weld Head Setup (WH 2125M & WH 2250M)

Bolt the Weld Head to the Table

BOLTING INSTRUCTIONS

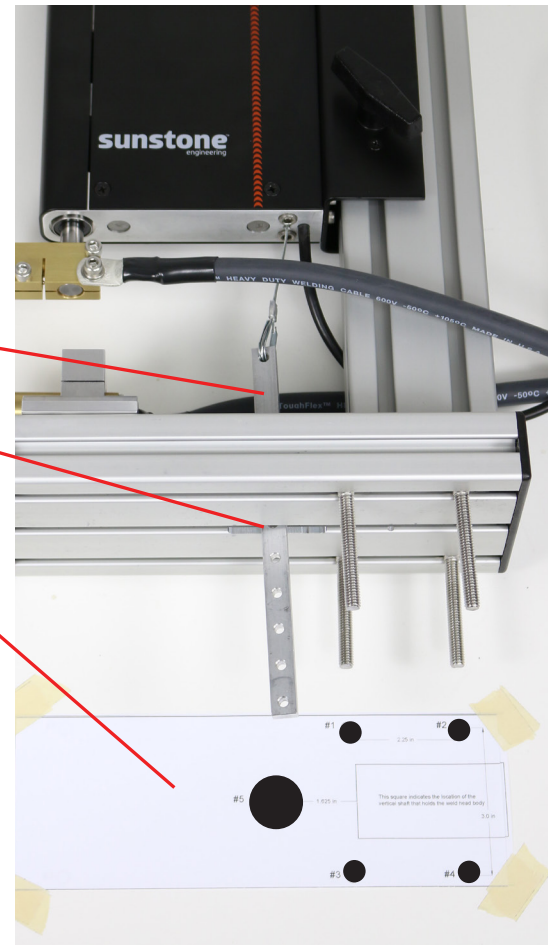
Mounting template on last page of manual

Tape the mounting template to the table where you are bolting the weld head. When instructed to drill out a hole, simply drill through the hole on the mounting template.



1. Drill out hole number 5 with a 1.0" drill bit.
2. Drill out the four holes numbered 1, 2, 3, and 4 with a 0.315 drill bit.
3. Ensure that the provided 5/16-18 T-Slot Bolts for holes 1, 2, 3, and 4 will go through your table.
4. Slide the provided 5/16-18 T-Slot Bolts into the channels on the underside of the weld head as seen in the image.
5. Be sure to run the manual foot pedal rod (A) through the hole in the weld head base (B).
6. Remove the taped mounting template from the table.
7. Align the bolts and the rod with the holes that have been drilled through the mounting template into the table (C).
8. Lower the bolts and rod into the holes.
9. The manual foot pedal will connect into the bolts on the under side of the table. This process is described in the next section on setting up the manual foot pedal.

A
B
C



Set up Manual Foot Pedal (WH-2125M and WH-2250M)

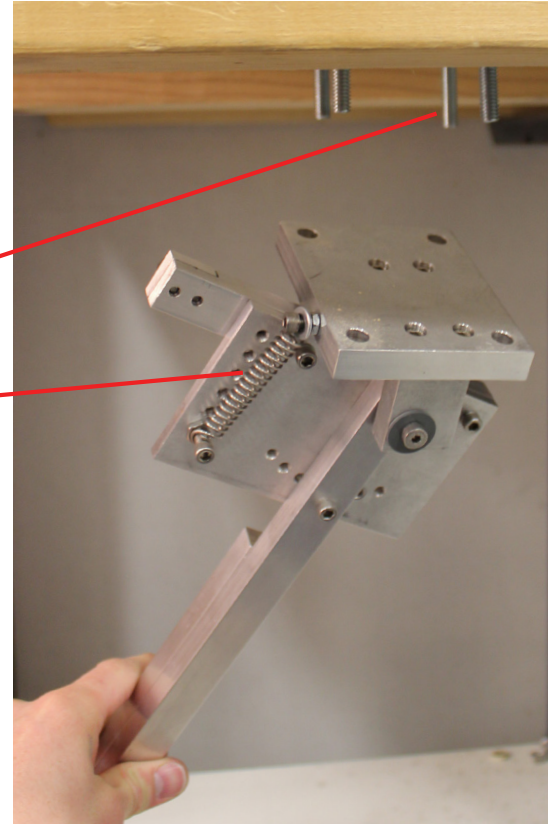
The manual foot pedal system will connect to the bolts running from the weld head base through the table.

ATTACH THE MANUAL FOOT PEDAL SYSTEM TO THE TABLE

1. Line the manual foot pedal holes up with the bolts going through the table (A).
2. Be sure that the spring on the manual foot pedal base is facing forward (B) (the same direction as the front of the weld head).

A

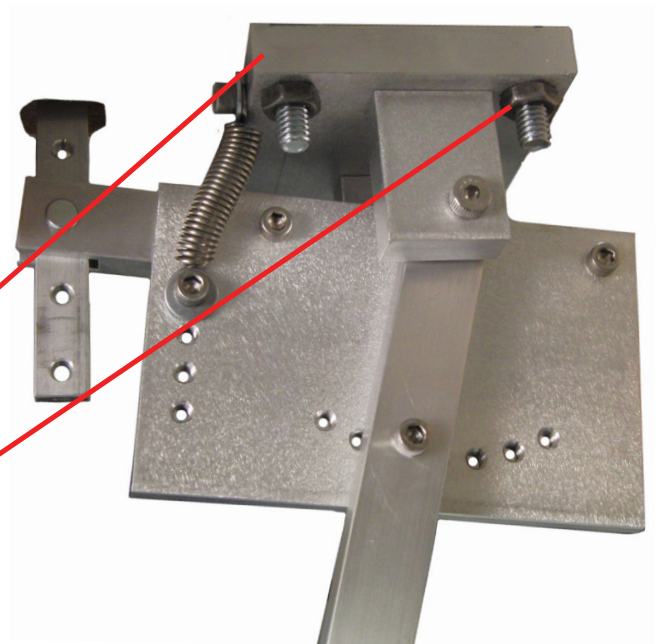
B



3. Insert the manual foot pedal base into the bolts (C).
4. Secure the manual foot pedal to the table by tightening the four provided 5/16-18 nuts onto the four bolts (D) running through the table/manual foot pedal base.

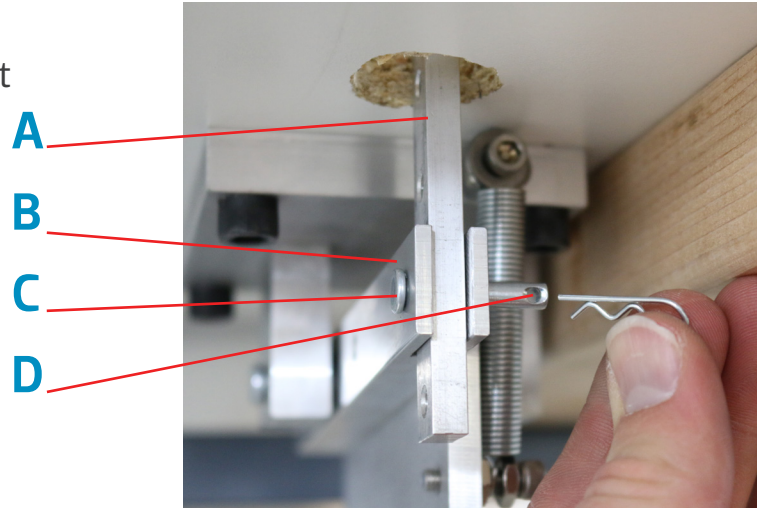
C

D



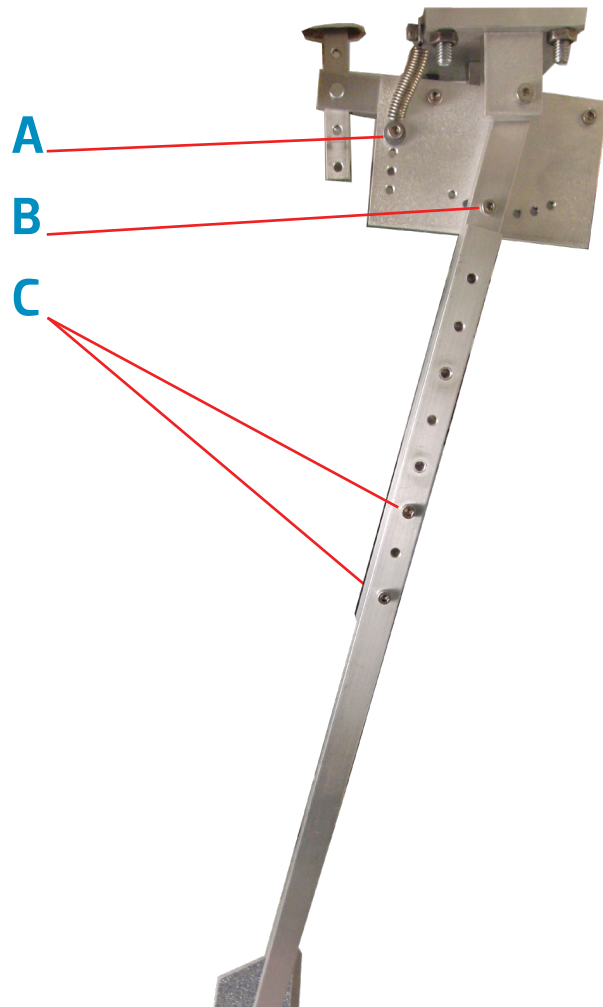
CONNECT THE WELD HEAD ROD TO THE MANUAL FOOT PEDAL

1. Connect the manual foot pedal rod (A) that is running through the 1" center hole to the manual foot pedal table mount (B).
2. Insert the connection pin (C) and attach the safety clip (D).



SETUP FOOT PEDAL

1. Attach the manual foot pedal leg to the arm of the manual foot pedal system (C).
2. Users can adjust the angle and pressure of the manual foot pedal by changing the pin locations in (A) and (B).



****See sections 4 – 8 in chapter 3 to finish manual weld head setup****

Chapter 5: Start Welding

Perform a Weld

BASIC WELDING STEPS

1. Ensure that the weld head cables are connected correctly and tightly to the (-) and (+) terminals.
2. Verify the electrodes have an 1/8" (0.125") above the work piece.
3. Verify that the movable scale is set to the 1/8" (0.125") position.
4. With the weld pulses off or at the lowest energy setting, lower the weld head and verify electrode placement on the work piece.
5. Set the air pressure (Pneumatic Versions): Between 60–80 PSI standard.
6. Set the spring force on the weld head if equipped (half of max force is often a good starting point).
7. See welder user manual for setting the welding parameters.
8. Lower the weld head.
9. If using a separate foot pedal to trigger the weld, press the foot pedal to trigger a weld output from the welder.
10. Inspect the weld and adjust weld parameters accordingly.
11. Once acceptable weld settings have been established, a pull test can be performed to establish a statistical tracking value.

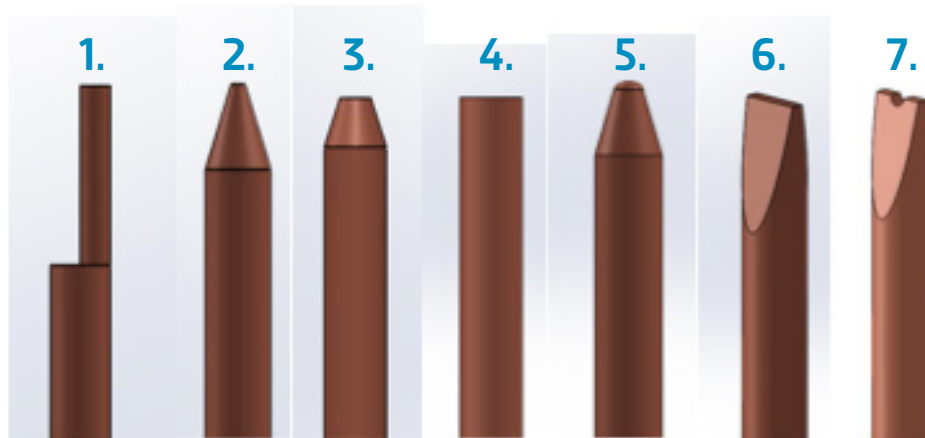
Chapter 6: Electrode Care

ELECTRODE TIP SHAPES AND POSITIONING

Electrode tip shape can play an important role in achieving desired weld characteristics. Several different sizes and shapes can be used to manipulate weld results in your favor. Experimentation with size, orientation, and geometry can often lead to increased weld strength and longer times between necessary electrode cleaning. Below are some electrode tip shape examples:

1. The stepped down eccentric tip is often used for battery pack tabs and other series welding applications that require the electrode tips to be close together.

2. Tapered tips can be used if the distance between tips isn't as critical. As the tip diameter is made smaller in relation to the shank diameter, the weld energy will become more focused and penetrate more fully, but the weld spot diameters will be smaller.
3. As the tip diameter is made larger, sticking is less likely at higher energies and the weld nugget will be larger in diameter, but more weld energy will be required to achieve strong welds.
4. At higher energies and for difficult geometries, it can sometimes be helpful to have a non-tapered tip (the tip is the same as the shank).
5. A hemispherical (rounded) tip may help reduce weld splash and create a smoother weld spot, but flat tips are easier to maintain/create and will suffice in most situations.
6. Wedge shaped tips can be used for welding wires and tubes when access to the bottom surface is limited or isolated. The long narrow surface of the wedge tips helps ensure that contact will be made with the wire and makes it easier to position for welding.
7. A notch can be cut into the wedge tips to help alleviate the necking that can occur when welding solid wires. The notch also helps gather all the strands when welding stranded wires.



ELECTRODE MATERIAL CHOICE

Spot welding electrodes are typically made of conductive metals such as a copper alloy, or of resistive metals such as tungsten or molybdenum.

If the material you want to weld is resistive (stainless steel, nickel, platinum, etc.), the typical electrode used would be copper.

If the material you want to weld is conductive (copper, wires, etc.), the typical electrode material choice would be tungsten or moly. Keep in mind that tungsten is more brittle than moly and harder

to shape.

ELECTRODE SHAPING

Always be sure to clean and sand your electrodes prior to performing welds and after electrode tip wear. Dirty electrodes can cause sticking, weld splash, and inconsistent weld results.

The contact surfaces between the electrodes and your parts should be as clean and flat as possible for best results (the better the contact, the more energy can be transferred into the weld nugget area without being lost at the electrode tips).

A fine 600 grit sand paper can be used to clean the tips and ensure smooth surfaces.

Chapter 7: Resistance Welding Basics

Overview

SINGLE AND DUAL PULSE DESCRIPTION

Single pulse welds are typically used where the work pieces are fairly clean. Single pulse welds are often beneficial when welding small parts such as fine wires where very low heat is required. Dual pulse welds are helpful when the piece is dirty, or has oxides/plating on it. The first pulse preheats the part, and burns off any oxides, helping the second pulse to perform the weld accurately and consistently.

WELD FORMATION

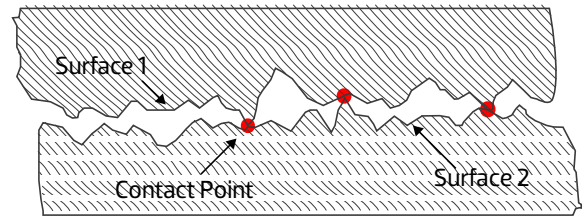
Spot welding relies on metal resistivity (resistance) to heat and fuse metal. A large current is passed through the workpiece metal. Energy is dissipated due to metal resistance in the form of heat which melts and fuses the weld materials. There are two phases to the melting process. The welder must overcome both the material contact resistance and the bulk resistance of the material.

The figure below shows an example of a micro-scale surface profile. On the micro-scale, material surfaces are rough and only contact in a limited number of locations. In the first few milliseconds of weld formation, the high-resistance metal bridges melt, allowing other bridges to come into contact to continue the melting process. When all of the bridges have fused, the contact

resistance is zero. The bulk resistance of the metal then plays the final role in the weld formation.

WELD PRESSURE

Several other factors play a part in the contact resistance. The larger the contact resistance the hotter the resultant weld. On the micro-scale, contact resistance is reduced when more metal bridges or contact points are formed. Using more electrode pressure creates more metal bridges. This results in a lower contact resistance and a cooler weld. Conversely, light electrode pressure results in less metal contact, higher resistance, and a hotter weld. An appropriate amount of pressure should be used to insure good weld strength.

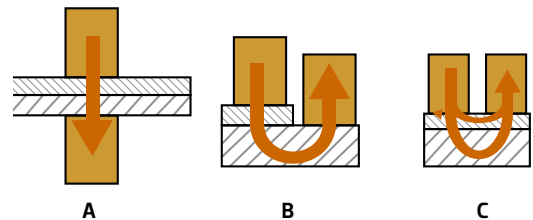


WELDING ATTACHMENTS

Weld heads or welding hand attachments will be chosen based on electrode access, and the type of application. When both sides (top and bottom) of the work piece can be accessed, an OPPOSED type weld head or welding hand attachment is ideal. When the user only has access to one side of the work piece, either a PARALLEL weld head or a welding hand attachment can be used. Weld heads are typically the best option, as the welding force is consistent from weld to weld, and is not dependent on the user.

ELECTRODE CONFIGURATIONS

This figure shows several electrode configurations used in resistance welding. Example A is called a direct weld. Current is passed from one electrode through both workpieces and out an opposing electrode. Example B shows a step electrode configuration. This configuration is used when there is access to only one side of the workpiece and an electrode can be placed on both materials. Example C is a series configuration. Electrodes can only be placed on one metal surface from one side. Current is divided between the two parts. This weld configuration requires more weld energy.



Chapter 8: Technical Assistance

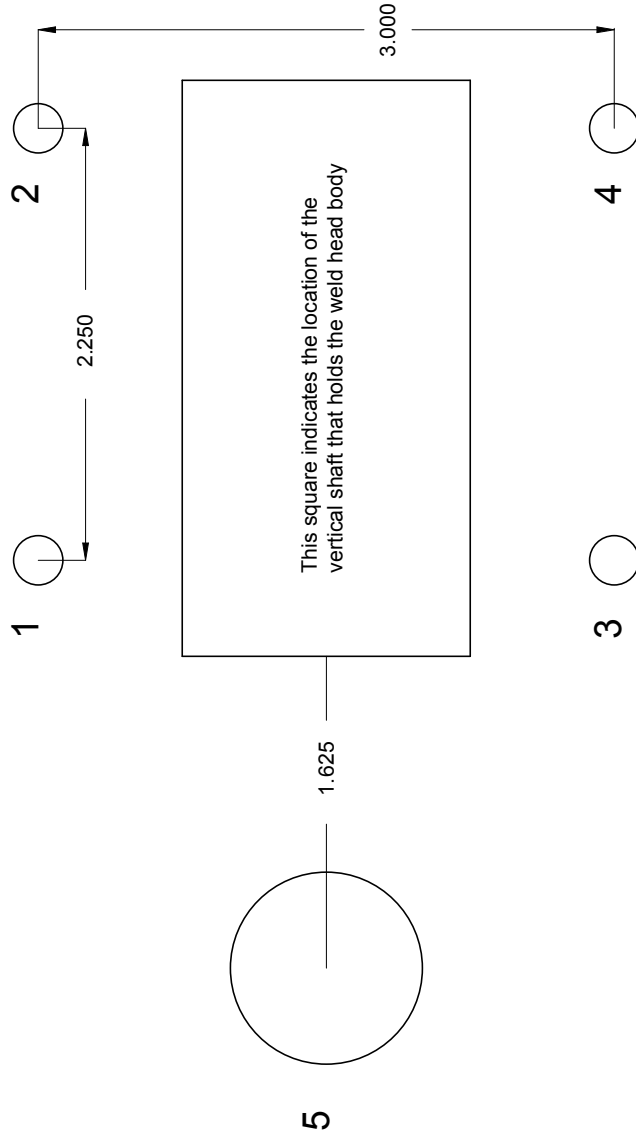
HARDWARE

In rare circumstances the unit may become inoperable. If this happens turn the unit off and back on. If the issue continues to happen, please contact support and we will gladly help resolve the issue. If the unit is visibly having issues, please disconnect unit from power and call support immediately.

Chapter 9: Data Specifications

WH2 – Opposed Weld Head	
Weld Force	1 – 15 lbs (Per Electrode)
Max Electrode Stroke	1 in
Electrode Diameter	1/8 in
Electrode Diameter Upgrades	3/16, 1/4 in
Electrode Configuration	Parallel/Step
Electrode Holder Type	Offset
Electrode Min/Max Gap	0.05 – 1.5 in
Weld Cable Size/Length	1 AWG / 24 in
Foot Pedal Type	Pneumatic or Manual Foot Pedal Options
Air Pressure for Max Force	80–100 PSI
Air Cylinder Inside Diameter Bore	1.5 in
Cycle Rate (Stroke)	1 in
Dimensions (L x W x H) Weight	10.5 x 8 x 22.5 in 25lbs (11.35kg)

Weld Head Mounting Template



Instructions:

Tape this template to your workbench. When you are ready to drill, simply drill through the holes on this paper.

(a) Air/Pneumatic Versions:

- Drill out the four holes numbered 1, 2, 3, & 4 with a 5/16 (0.3125) Drill Bit.
- Slide the provided 5/16-18 T-Slot Bolts into the channels on the underside of the weld head.
- Line the bolts up with the holes drilled into the table, then slowly lower the weld head down into the holes.
- Now screw the nuts onto the bolts on the under-side of the table.

(b) Manual Versions:

- Drill out the four holes numbered 1, 2, 3, & 4 with a 5/16 (0.3125) Drill Bit.
- Drill out hole #5 with a 1.0" Drill Bit.
- Slide the provided 5/16-18 T-Slot Bolts into the channels on the underside of the weld head.
- Line the bolts up with the holes drilled into the table, then slowly lower the weld head down into the holes.
- Feed the rod through hole #5 then attach the cable to the weld head and then to the lever arm below the table.



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