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AC 1025 Welder

User Manual



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AC 1025 Welder

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Table of Contents

SAFETY:	1
Product Data Sheet	2
Features	3
Chapter 1: Installation and Setup	4
Positioning Guidelines	4
Foot Switch Setup	5
Power Cord, Power Source, Fuse	5
Cabling Guidelines	5
Heat Considerations	5
The User Interface	6
Jobs and Schedules	7
Chapter 2: Spot Weld Function	8
Theory of Operation	8
Weld Parameter Definitions	9
Example Walk-through	10
Chapter 3: Rolling Spot Weld Function	11
Theory of Operation	11
Weld Parameter Definitions	12
Example Walk-through	13
Chapter 4: Seam Weld Function	14
Theory of Operation	14
Weld Parameter Definitions	14
Example Walk-through	15
Chapter 5: Pulsating Spot Weld Function	16
Theory of Operation	16
Weld Parameter Definitions	17
Example Walk-through	18
Chapter 6: Making a Weld	19
Beep Toggle	19
Add a Schedule	19
Lock a Schedule	19
Copy a Schedule	19
Restart the Schedule Counter	19
Restart Current Job	20

Tempering Function.....	20
View the Internal Temperature	20
View the Lifetime Weld Counter	20
View Welder Information.....	20
Chapter 7: Job Menu Functions and Chaining	21
Chain and Unchain Schedules	21
Link a Schedule to the Chain.....	21
Remove Last Link from the Chain	21
Change the Number of Welds for a Link.....	22
Chapter 8: Other Welder Functions.....	23
Resetting to Factory Defaults	23
Appendix A: Cable Resistance Chart.....	24
Appendix B: Troubleshooting.....	25
Main Menu.....	25
Job Menu.....	26
Appendix C: Glossary	27
Appendix D: Warranty and Contact Information	28
Sample Job Documentation Layout	29

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

The AC1015 AC Spot Welder

At Sunstone 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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Safety Procedures and Precautions

- **Never** open welder to perform any maintenance operation inside the unit.
- Wear appropriate eye protection at all times while using the welder.
- Care should be taken not to short across the positive and negative terminals. At full power, the weld current is many thousands of amps and is dangerous if the terminals are accidentally bridged.
- Do not wear metal jewelry when welding. The terminals are safe to touch without fear of arcing as long as no metal is on your hands.
- Welding cables can become extremely hot. After extended use, be cautious when removing the weld cables.
- When altering any part of the welding path (such as swapping electrodes or cables), turn the unit off or enter the menu to ensure no accidental triggering of a weld occurs.
- The AC1025 was designed for indoor use only.

WELDING BASICS

Principal Safety Standards

Safety in Welding, Cutting, and Allied Processes, [ANSI Standard Z49.1](#), from [Global Engineering Documents](#) (phone: 1-877-413-5184, [website:www.global.ihc.com](http://www.global.ihc.com)).

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, from U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 5250-7954 (phone: 1-866-512-1800) (there are 10 Regional Offices—phone for Region 5, Chicago, is 312-353-2220, [website: www.osha.gov](http://www.osha.gov)).

National Electrical Code, [NFPA Standard 70](#), from [National Fire Protection Association](#), P.O. Box 9101, Quincy, MA 02269-9101 (phone: 617-770-3000, [website: www.nfpa.org](http://www.nfpa.org) and www.sparky.org).

Canadian Electrical Code Part 1, [CSA Standard C22.1](#), from [Canadian Standards Association](#), Standards Sales, 5060 Mississauga, Ontario, Canada L4W 5NS (phone: 800-463-6727 or in Toronto 416-747-4044, [website: www.csa-international.org](http://www.csa-international.org)).

Safe Practice For Occupational And Educational Eye And Face Protection, [ANSI Standard Z87.1](#), from [American National Standards Institute](#), 25 West 43rd Street, New York, NY 10036-8002 (phone: 212-642-4900, [website: www.ansi.org](http://www.ansi.org)).

Product Data Sheet

<u>AC1025</u>	
Internal Transformer Rating	2500 kVA
Welding Duty Cycle	50%
Total Number of Savable Schedules	100
Total Number of Jobs	10
Maximum Internal Operating Temperature	75 °C
Fuse Rating	20A
Power Supply Requirements	220-240VAC 50-60Hz
Weight	32 lbs (14.5 kg)
Case Dimensions (L X W X H without terminals, with feet)	13¼" X 10" X 5½" (33.6 cm X 25.4 cm X 13.9 cm)
Power Cord Length	5½' (168 cm)
Minimum Pulse Length	16.67 ms
Maximum Pulse Length	1.65 sec
Maximum Welds Per Minute	180

The AC 1025 Spot Welder

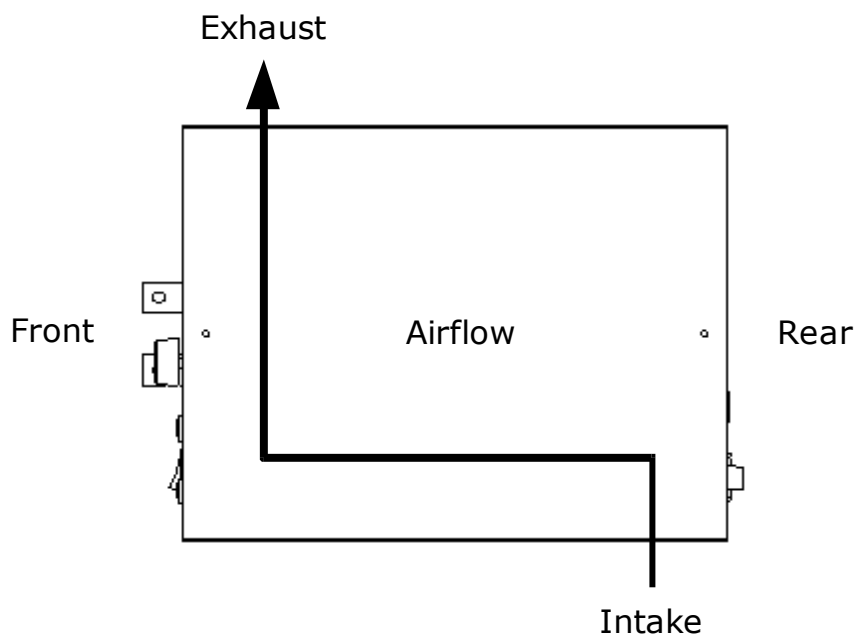
FEATURES

- Embedded digital microprocessor with internal memory space for 100 user programmable welding schedules.
- Ability to link multiple schedules together into a job chain.
- Five welding types:
 1. Single Pulse Spot Weld
 2. Dual Pulse Spot Weld
 3. Auto-Repeating Roll Spot Weld
 4. Seam Weld
 5. Multi-Pulse Spot Weld
- Internal 2.5 kVA welding transformer means no costly external equipment.
- Automatic internal thermal protection with audible alarm.
- Simple digital user interface with short learning curve.
- Tempering function to slowly cool completed welds.
- On-Screen weld counter keeps track of how many welds have been completed and can automatically switch schedules after the programmed number of welds.
- Automatic lifetime weld counter will help keep track of daily, monthly, or yearly weld output.
- Included foot switch for weld firing control.
- Accidental schedule overwrite protection through lock-out feature.
- Small enclosure footprint means more mobility and less table-top space required.

Chapter 1: Installation and Setup

POSITIONING GUIDELINES

The goal when deciding the location of the unit is to minimize welding cable length. Place the unit on a tabletop or workbench directly behind your workspace with the welding terminals facing your workspace. Keep the unit away from edges to avoid the risk of the welder falling to the floor. Be sure there is at least 6" of space on all sides and on top of the welder to ensure adequate cooling throughout the case. The diagram below shows the airflow direction inside the unit.



FOOT SWITCH SETUP

The included foot switch can be plugged into the rear panel of the welder into the Ext. Trigger port. To attach the coupling, push it into the port and then secure it by twisting the ring clockwise until tight. Do not force the coupling as it can only be inserted in one orientation.

When using the foot switch to trigger a weld, keep in mind that some of the welding functions require the switch to be simply depressed and released, while others require a prolonged depression corresponding with desired weld time. See the chapters on each specific weld function for more information (Chapters 2-5).

POWER CORD, POWER SOURCE, FUSE

The power cord on the AC1025 can only be connected to 220-240VAC, 50-60Hz electricity. NEVER use a power strip or extension cords with the AC1025. The welder is protected with a 250VAC, 20A time-lag fuse. Replace the fuse with a compatible device only. The rear of the unit also has a 250VAC circuit breaker as added user protection. Make sure it is switched into the up position before using.

CABLING GUIDELINES

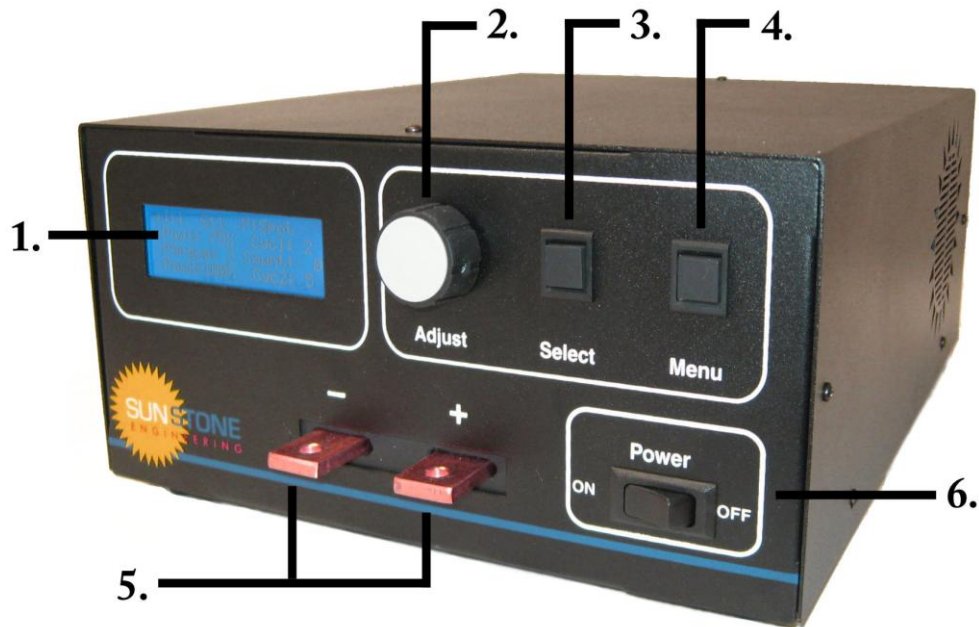
For maximum power output, the cabling between the terminals and the work piece should be as short as possible. The optimal resistance for the complete weld path is .3mΩ - .5mΩ. The internal resistance from the secondary transformer winding to the terminals is .02mΩ. A recommended cable configuration that has been thoroughly tested with a weld head is to use 1.5' 1AWG cable lengths on both terminals. A chart of cable resistances and gages can be found in **Appendix A**.

HEAT CONSIDERATIONS

After extended use, the welding cable and terminals will become extremely hot. While the unit monitors the internal transformer and relay temperature it cannot monitor the external cables. Be sure to use cables with a suitable temperature rating for your application to avoid cable failure.

In the event of internal overheating, the unit will beep three times and display a status message with the internal temperatures. During this time, none of the welder's functions will operate. Once the heat levels have fallen to acceptable levels, the unit will beep twice and resume normal operation. If the heat alarm occurred during a weld, the remainder of the weld will be canceled.

THE USER INTERFACE

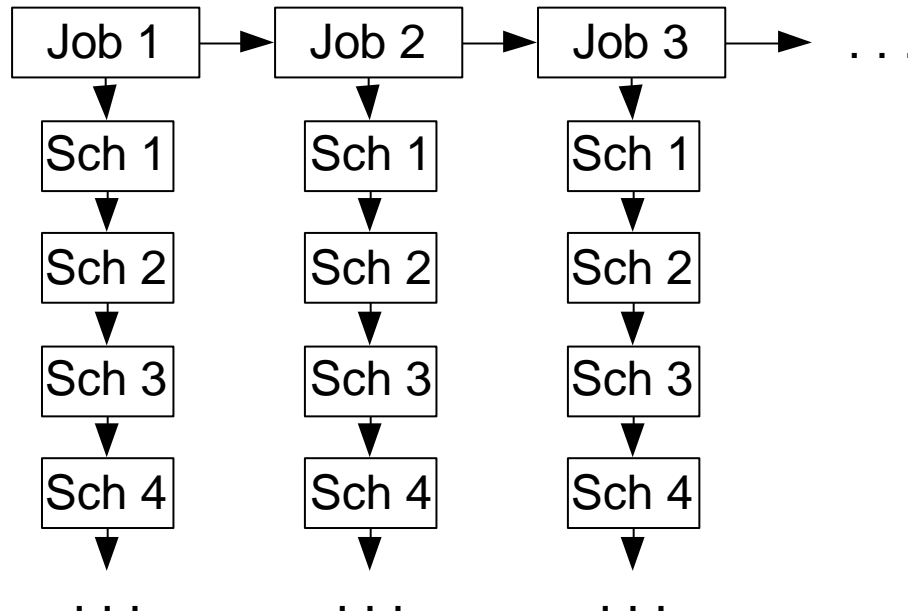


1. **LCD:** This displays all welding parameters and interface items.
2. **ADJUST WHEEL (OR CURSOR):** Turn this to move the on-screen cursor and to change welding parameters when a field has been selected.
3. **SELECT BUTTON:** Press this to select welding parameters to change or to confirm menu selections.
4. **MENU BUTTON:** Press this to access the main menu from the run screen. In all other instances press this to cancel or to exit menus.
5. **WELDING TERMINALS:** Connect welding cable to these terminals using the included fasteners.
6. **MAIN POWER SWITCH:** This switch powers the unit.

*For more detailed information on the run screen, see the chapter corresponding to the weld function you wish to use (Chapters 2-5). For more information on the menus, see Chapters 6-7.

JOBS AND SCHEDULES

When the welder arrives from the factory, it is configured with 10 jobs numbered 0-9. Each job has schedule 0 activated. Schedule 0 is the “scratch-pad” schedule that you can use to develop weld configurations that work with your applications. Each job can have up to 9 additional schedules added to it for a total of 100 schedules. You must use the menu function Add a Schedule to add schedules to the current job. The current job and current schedule are displayed in the upper left portion of the run screen. Any changes made to a schedule's parameters are immediately saved to memory. A visual representation of a sample job/schedule architecture is given below.



Chapter 2: Dual Pulse Spot Weld Function

THEORY OF OPERATION

The Dual Pulse Spot Weld Function is the default function for newly added schedules and provides the most flexible welding option. Two pulses are desirable in many applications because a pre-welding pulse can reduce splash as well as remove any surface impurities that might hamper the main welding pulse. On the AC1025, the two pulses can be programmed to whatever power level and length is desired and can even be shut off for single pulse operation.

The initial pulse's power is controlled by the Pow1 parameter and is displayed as a percentage of maximum power. Its length is governed by the Cyc1 parameter and is given in units of AC cycles where:

$$1 \text{ AC cycle} = \frac{1}{60\text{Hz}} = 16.67\text{ms}$$

The time between pulses is represented by the Pspace parameter and is also given in units of AC cycles. The second pulse operates similarly to the first and its power and length are controlled by the Pow2 and Cyc2 parameters respectively.

Either pulse can be any percentage of maximum power you choose and at most, 99 AC cycles long. Additionally, the spacing between pulses can be any length you choose up to 99 AC cycles. To deactivate a pulse, set either its power or cycle length to 0 and that pulse will be ignored.

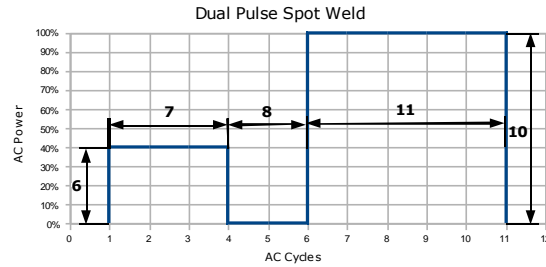
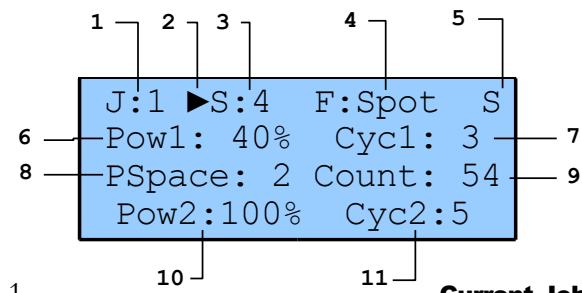
To initiate the weld, be sure the run screen is displayed and not any of the menu screens. Depress the foot switch and then release it to make the weld. As part of the unit's heat management protocols, a waiting period equal to the total welding time begins immediately after each weld during which another weld cannot be initiated. For example:

$$8 \text{ cyc for pulse1} \times 35 \text{ cyc for pulse2} = 43 \text{ cyc total wait time}$$

If audible beeps are activated, a short chirp will signal that the unit is ready to weld again.

CHAPTER 4: DUAL PULSE SPOT WELD FUNCTION

WELD PARAMETER DEFINITIONS



1. **Current Job:** Displays the current job number.
2. **Cursor:** The cursor indicates the current changeable parameter.
3. **Current Schedule:** Displays the current schedule number.
4. **Weld Function:** Displays the current weld function.
5. **Select Toggle Indicator:** 'S' indicates that turning the Adjust Wheel will adjust the currently selected parameter. A blank space indicates that turning the Adjust Wheel will move the cursor.
6. **Pulse One Power:** Percentage of maximum power for pulse one.
7. **Pulse One Length:** Length in AC cycles for pulse one.
8. **Pulse Spacing:** Space in AC cycles between pulses one and two.
9. **Current Weld Count:** Displays the number of welds that have been made with the current job. Can be reset to zero by selecting the Reset Schedule Counter option from the main menu.
10. **Pulse Two Power:** Percentage of maximum power for pulse two.
11. **Pulse Two Length:** Length in AC cycles for pulse two.

EXAMPLE WALKTHROUGH

This walkthrough will provide a step-by-step guide for making a dual pulse spot weld with some common weld parameters.

- Press the Menu Button to access the main menu
- Move the cursor down to Add Schedule and press Select
- Press the Menu Button to exit the main menu
- Move the cursor to Pow1 and press Select
- Adjust Pow1 to 50% and then press Select
- Move the cursor to Cyc1 and press Select
- Adjust Cyc1 to 5 cycles and press Select
- Move the cursor to PSpace and press Select
- Adjust PSpace to 2 cycles and press Select
- Move the cursor to Pow2 and press Select
- Adjust Pow2 to 100% and press Select
- Move the cursor to Cyc2 and press Select
- Adjust Cyc2 to 15 cycles and press Select
- When the workpiece is in position, and the LCD appears as shown, depress the foot switch to make the weld.

```
J:0 S:1 F:Spot  
Pow1: 50% Cyc1: 5  
Pspace: 2 Count: 0  
Pow2:100% ►Cyc2:15
```

Chapter 3: Rolling Spot Weld Function

THEORY OF OPERATION

The Rolling Spot Weld Function provides a way to repeat single pulses of welding current for as long as the user depresses the foot switch, subject only to internal temperature limits. This function would typically be used in conjunction with specialized rolling weld heads.

The pulse power is controlled by the Pow parameter and is given as a percentage of maximum power. The pulse length is controlled by the Cycles On parameter and is given in units of AC cycles where:

$$1 \text{ AC cycle} = \frac{1}{60\text{Hz}} = 16.67\text{ms}$$

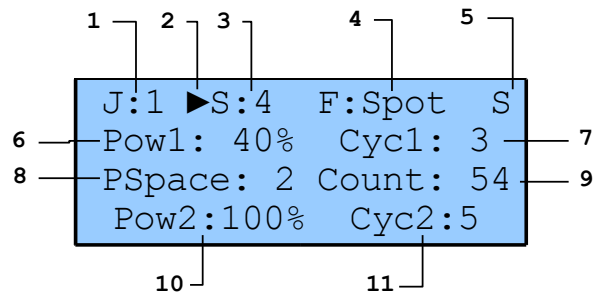
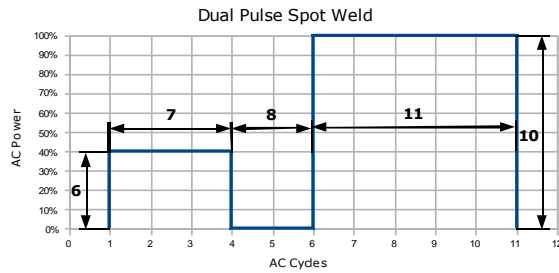
The time between successive pulses is governed by the Cycles Off parameter and is also given in units of AC cycles.

The power of the repeated pulse can be any percentage of maximum power and up to 99 AC cycles long. The time between cycles can be between 1 and 99 AC cycles.

To initiate the weld, be sure the run screen is displayed and not any of the menu screens. Depress the foot switch for as long as you want the pulses to continue. Release the foot switch to end the welding pulses. As part of the unit's heat management protocols, the welding pulses may end unexpectedly if the internal temperature exceeds the predefined limits. In such an event, an audible alarm will sound. To resume welding, release the foot switch and wait until the internal temperature falls into a normal range. If audible beeps are activated, a short chirp will signal that the unit is ready to weld again.

CHAPTER 4: DUAL PULSE SPOT WELD FUNCTION

WELD PARAMETER DEFINITIONS



1. **Current Job:** Displays the current job number.
2. **Cursor:** The cursor indicates the current changeable parameter.
3. **Current Schedule:** Displays the current schedule number.
4. **Weld Function:** Displays the current weld function.
5. **Select Toggle Indicator:** 'S' indicates that turning the Adjust Wheel will adjust the currently selected parameter. A blank space indicates that turning the Adjust Wheel will move the cursor.
6. **Pulse One Power:** Percentage of maximum power for pulse one.
7. **Pulse One Length:** Length in AC cycles for pulse one.
8. **Pulse Spacing:** Space in AC cycles between pulses one and two.
9. **Current Weld Count:** Displays the number of welds that have been made with the current job. Can be reset to zero by selecting the "Reset Schedule Counter" option from the main menu.
10. **Pulse Two Power:** Percentage of maximum power for pulse two.
11. **Pulse Two Length:** Length in AC cycles for pulse two.

CHAPTER 4: DUAL PULSE SPOT WELD FUNCTION

EXAMPLE WALKTHROUGH

This walkthrough will provide a step-by-step guide for making a dual pulse spot weld with some common weld parameters.

- Press the Menu Button to access the main menu
- Use the dial to move the cursor down to Add Schedule and press Select
- Press the Menu Button to exit the main menu
- Using the dial, move the cursor to Pow1 and press Select
- Using the dial, adjust Pow1 to 50% and then press Select
- Using the dial, move the cursor to Cyc1 and press Select
- Using the dial, adjust Cyc1 to 5 cycles and press Select
- Using the dial, move the cursor to PSpace and press Select
- Using the dial, adjust PSpace to 2 cycles and press Select
- Using the dial, move the cursor to Pow2 and press Select
- Using dial adjust Pow2 to 100% and press Select
- Using dial, move the cursor to Cyc2 and press Select
- Using dial, adjust Cyc2 to 15 cycles and press Select
- When the workpiece is in position, and the LCD appears as shown, depress the foot switch to make the weld.

```
J:0  S:1  F:Spot  
Pow1: 50%  Cyc1: 5  
Pspace: 2  Count: 0  
Pow2:100%  ►Cyc2:15
```



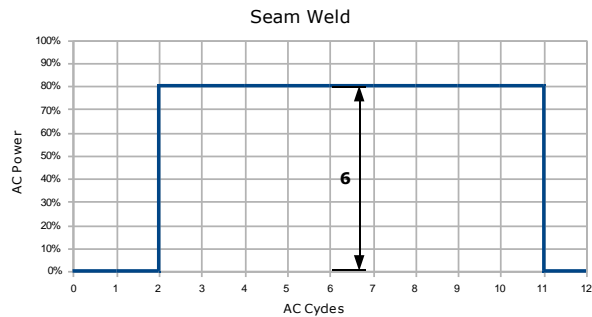
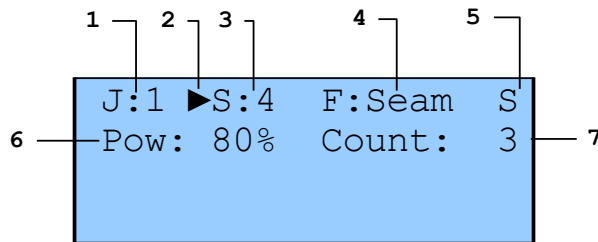
Chapter 4: Seam Weld Function

THEORY OF OPERATION

The Seam Weld Function provides a non-stop pulse of welding current for as long as the user depresses the foot switch. Like the Rolling Spot Function, the length of the pulse is subject only to internal temperature controls and is typically used with specialized rolling weld heads. The purpose of the Seam Weld Function is to create a linear shaped weld nugget on the faying surfaces.

The pulse power is controlled by the Pow parameter and is given as a percentage of maximum power. The pulse length is controlled entirely by the depression of the foot switch and will end only when the switch is released or if the internal temperature protocols engage. The weld can only be initiated from the run screen and not in a menu. If audible beeps are activated, a short chirp will signal that the unit is ready to weld again.

WELD PARAMETER DEFINITIONS



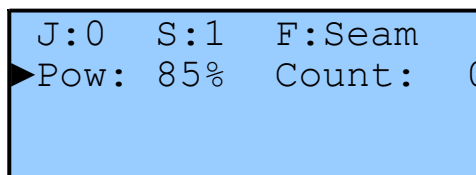
CHAPTER 4: DUAL PULSE SPOT WELD FUNCTION

1. **Current Job:** Displays the current job number.
2. **Cursor:** The cursor indicates the current changeable parameter.
3. **Current Schedule:** Displays the current schedule number.
4. **Weld Function:** Displays the current weld function.
5. **Select Toggle Indicator:** 'S' indicates that turning the Adjust Wheel will adjust the currently selected parameter. Nothing indicates that turning the Adjust Wheel will move the cursor.
6. **Pulse Power:** Percentage of maximum power for pulse.
7. **Current Weld Count:** Displays the number of welds that have been made with the current job. Can be reset to zero by selecting the Reset Schedule Counter option from the main menu.

EXAMPLE WALKTHROUGH

This walkthrough will provide a step-by-step guide for making a seam weld with some common weld parameters.

- Press the Menu Button to access the main menu
- Use the dial to move the cursor down to Add Schedule and press Select
- Press the Menu Button again to exit the main menu
- Using the dial, move the cursor to Pow and press Select
- Using the dial, adjust Pow to 85% and then press Select
- When the workpiece is in position, and the LCD appears as shown, depress the foot switch for as long as is desired, then release to end the weld.



J:0 S:1 F:Seam
▶ Pow: 85% Count: 0



Chapter 5: Pulsating Spot Weld Function

THEORY OF OPERATION

The Pulsating Spot Weld Function is similar in operation to the Rolling Spot Function. Unlike the Rolling Spot though, this function adds the ability to precisely control the number of weld pulses generated.

Each pulse's power is controlled by the Pow parameter and is displayed as a percentage of maximum power. Each pulse's length is governed by the Cyc parameter and is given in units of AC cycles where:

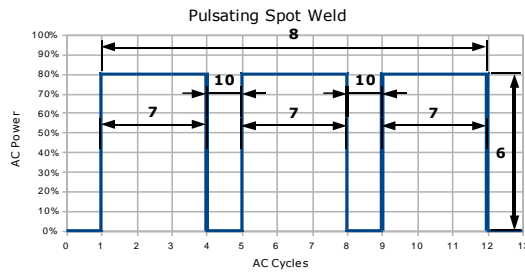
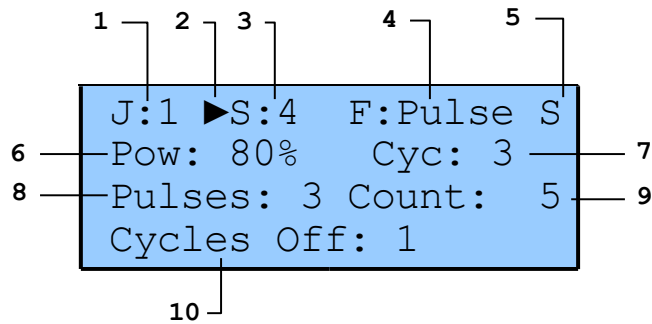
$$1 \text{ AC cycle} = \frac{1}{60\text{Hz}} = 16.67\text{ms}$$

The time between pulses is represented by the Cycles Off parameter and is also given in units of AC cycles. Lastly, the total number of pulses is controlled by the Pulses parameter and is unit-less.

The pulses can be any percentage of maximum power you choose and at most, 99 AC cycles long. Additionally, the spacing between pulses can be any length you choose up to 99 AC cycles. The maximum number of pulses that can be generated is 99.

To initiate the weld, be sure the run screen is displayed and not any of the menu screens. Depress the foot switch and then release to make the weld. If audible beeps are activated, a short chirp will signal that the unit is ready to weld again.

WELD PARAMETER DEFINITIONS

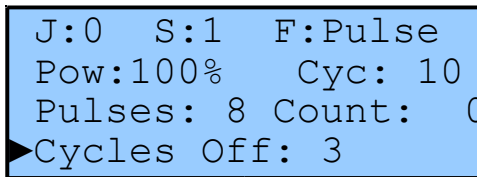


1. **Current Job:** Displays the current job number.
2. **Cursor:** The cursor indicates the current changeable parameter.
3. **Current Schedule:** Displays the current schedule number.
4. **Weld Function:** Displays the current weld function.
5. **Select Toggle Indicator:** 'S' indicates that turning the Adjust Wheel will adjust the currently selected parameter. A blank space indicates that turning the Adjust Wheel will move the cursor.
6. **Pulse Power:** Percentage of maximum power for each pulse.
7. **Pulse Length:** Length in AC cycles for each pulse.
8. **Number of Pulses:** The number of pulses for each weld.
9. **Current Weld Count:** Displays the number of welds that have been made with the current job. Can be reset to zero by selecting the Reset Schedule Counter option from the main menu.
10. **Pulse Spacing:** Spacing in AC cycles between each pulse.

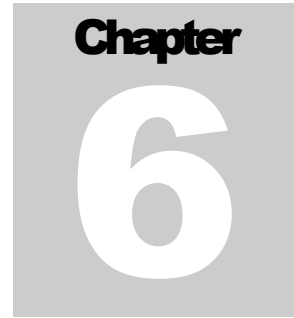
EXAMPLE WALKTHROUGH

This walkthrough will provide a step-by-step guide for making a pulsating spot weld with some common weld parameters.

- Press the Menu Button to access the main menu
- Move the cursor down to Add Schedule and press Select
- Press the Menu Button to exit the main menu
- Move the cursor to Pow and press Select
- Adjust Pow to 100% and then press Select
- Move the cursor to Cyc and press Select
- Adjust Cyc to 10 cycles and press Select
- Move the cursor to Pulses and press Select
- Adjust Pulses to 8 and press Select
- Move the cursor to Cycles Off and press Select
- Adjust Cycles Off to 3 cycles and press Select
- When the workpiece is in position, and the LCD appears as shown, depress the foot switch to make the weld.



```
J:0 S:1 F:Pulse
Pow:100% Cyc: 10
Pulses: 8 Count: 0
▶Cycles Off: 3
```



Chapter 6: Main Menu Functions

BEEP TOGGLE

By default, the AC1025 comes with all audible beeps enabled. To disable all beeps except for alarm signals, select Beep Toggle from the Main Menu. Likewise, to re-enable audible beeps repeat the same procedure. .

ADD A SCHEDULE

By default, the AC1025 comes with only Schedule 0 activated in all 10 jobs. To use additional schedules they will need to be added by selecting the Add a Schedule function from the main menu. Once selected, a notification will appear displaying the schedule number that was added. When the menu is exited, the newly created schedule will be active on the run screen with the default schedule parameters. After schedules 1 through 9 have been added into a given job, no additional schedules may be added.

LOCK A SCHEDULE

When schedules are created, all parameters are modifiable. Once a schedule has been programmed precisely as desired, it can be locked to guard against any accidental changes such as overwriting. Once locked, a schedule cannot be copied to and none of the schedule's weld parameters can be modified. To lock a schedule, make sure it is active on the run screen and then select the Lock a Schedule option from the main menu. Likewise, to unlock a previously locked schedule repeat the same procedure..

COPY A SCHEDULE

To copy a schedule's contents to another schedule, make sure that there is at least one schedule available besides Schedule 0 and the schedule you wish to copy. To add additional schedules see the Add a Schedule section. To create a copy, display the schedule to be copied from on the run screen. Then select the Copy a Schedule option from the Main Menu and choose the schedule to copy to with the adjust wheel. To confirm the choice push the Select Button, or to cancel the action, push the Menu Button. A schedule cannot be copied to another schedule that has been locked. .

RESTART THE SCHEDULE COUNTER

The run screen displays a count of how many welds have been done with the current job. It rolls over automatically at 250, but can be manually reset by selecting the Restart Sch Counter option from the Main Menu.

.RESTART CURRENT JOB

When schedules are linked together within a chain, the schedules will automatically change based on their weld number settings(see Chapter 7). It may be necessary to disrupt the chain sequence and restart the chain at its first link. This is accomplished by selecting the Restart Current Job option from the Main Menu. If the current job on the run screen is not chained, this function will have no effect. .

TEMPERING FUNCTION

The Tempering Function can be enabled for any of the welding types(Spot, Roll, Seam, Pulse). This function adds a gradual cool down to the end of a weld. When the Tempering function is selected from the Main Menu, a dialog will appear asking from the initial power of the temper. Use the Adjust Wheel to change the power and confirm with the Select Button. Another dialog will appear asking for the length of the temper in AC cycles. Once again, use the Adjust Wheel to change the time and confirm with the Select Button. The Menu Button can be pushed at any time to cancel the temper programming. Each individual schedule can be set to temper or not in this manner, however there is only one temper setting at a time. To alter the temper settings, select Tempering from the Main Menu to disable the temper, and select it again to reprogram the settings. Be cautious when using this function because it can add considerable length to a short weld schedule.

VIEW THE INTERNAL TEMPERATURE

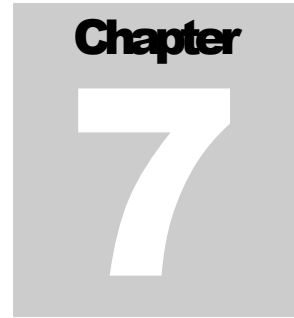
As part of the automatic internal thermal protection, there are two temperature sensors inside the case. One is attached to the weld transformer and another to the 120VAC switching relay. To view their current readings, select the View Internal Temp option from the Main Menu. To exit press the Menu Button.

VIEW THE LIFETIME WELD COUNTER

The AC1025 keeps track of every weld performed once it leaves the factory. To access this counter select the View Lifetime Welds option from the Main Menu. To exit, press the Menu Button. The lifetime counter provides a convenient way to track the number of daily, monthly, or yearly welds if viewed on a regular basis and recorded. This counter cannot be reset, even when resetting to factory default.

VIEW WELDER INFORMATION

When the Welder Information option is selected from the Main Menu, a screen appears displaying the manufacturer, the model and version number, the manufacture date, and the telephone number for support.



Chapter 7: Job Menu Functions and Chaining

CHAIN AND UNCHAIN SCHEDULES

The AC1025 provides the ability to link schedules together into a job chain. This allows the welder to automatically switch schedules after a programmed number of welds and also restart the job chain after the final link. To begin the chaining process select the Chain/Unchain Sch option from the Job Menu. You now have an empty chain with no links. If you wish to cancel the chaining process, you must first select the Chain/Unchain Sch option from the Job Menu to unchain the job and then press the Menu Button to exit. If you wish to continue the chaining process, select Add to Chain from the Job Menu to add the first link. If a chain is already established and you unchain the job, the same chain will be restored again when you re-chain the job. After a job has been chained and the menu is exited, the current schedule is set to the first link of the chain. The current schedule cannot be changed without first unchaining the job by using the job menu.

LINK A SCHEDULE TO THE CHAIN

Once a job has been chained, schedules may be linked in up to a maximum of 9 links. To add a link to the chain, select the Add to Chain option from the Job Menu. A prompt will appear asking for the schedule you wish to link. Use the adjust wheel and press the Select button to confirm your choice, or press the Menu Button to cancel. Once a schedule has been selected, you will be prompted to choose the number of welds for that particular link. Use the adjust wheel and press the Select Button to confirm your choice, or press the Menu Button to cancel. The number of welds for a link can be changed at any time by selecting the Change Weld Numbers option from the Job Menu. Schedule 0 cannot be used in chains because of its “scratch-pad” designation. You will continue to be prompted to add additional links until the chain is ended by pressing the Menu Button or the chain becomes full. .

REMOVE LAST LINK FROM THE CHAIN

When a job is chained, the last link can be removed from the chain by selecting the Remove from Chain option from the Job Menu.

CHANGE THE NUMBER OF WELDS FOR A LINK

Once a job has been chained and links added to it, the number of welds for a particular link can be modified by selecting the Change Weld Numbers option from the Job Menu. A prompt will appear asking for the link number to modify. Use the adjust wheel and press the Select Button to confirm, or press the Menu Button to cancel. Once a link has been selected, you will be prompted to choose the new number of welds for that link. Use the adjust wheel and press the Select Button to confirm, or press the Menu Button to cancel.



Chapter 8: Other Welder Functions

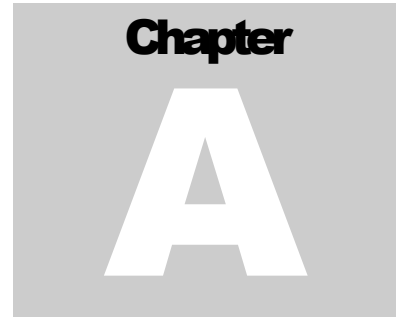
RESETTING TO FACTORY DEFAULTS

It is always a good idea to keep written documentation of weld schedules and job chains in case of unforeseen malfunctions. The last page of this manual includes a sample documentation layout that may be photocopied and used for this purpose.



WARNING: The following procedure will erase all user memory and reset the unit to factory defaults!

To completely reset the welder's memory, start with the unit turned off. While pushing both the Menu Button and the Select Button, turn the unit on. Continue pushing both buttons in for 5 seconds until a warning screen is displayed. After reading the warning, push the Select Button to confirm or the Menu Button to cancel.



Appendix A: Cable Resistance Chart

AWG	r (m Ω /ft)	$1/r$ (ft/m Ω)
0000	0.0490	20.4020
000	0.0618	16.1800
00	0.0779	12.8310
0	0.0983	10.1750
1	0.1239	8.0695
2	0.1563	6.3994
3	0.1970	5.0750
4	0.2485	4.0247
5	0.3133	3.1917
6	0.3951	2.5311
7	0.4982	2.0073
8	0.6282	1.5918
9	0.7921	1.2624
10	0.9989	1.0011

To calculate the proper cable lengths from the desired total resistance, use this equation:

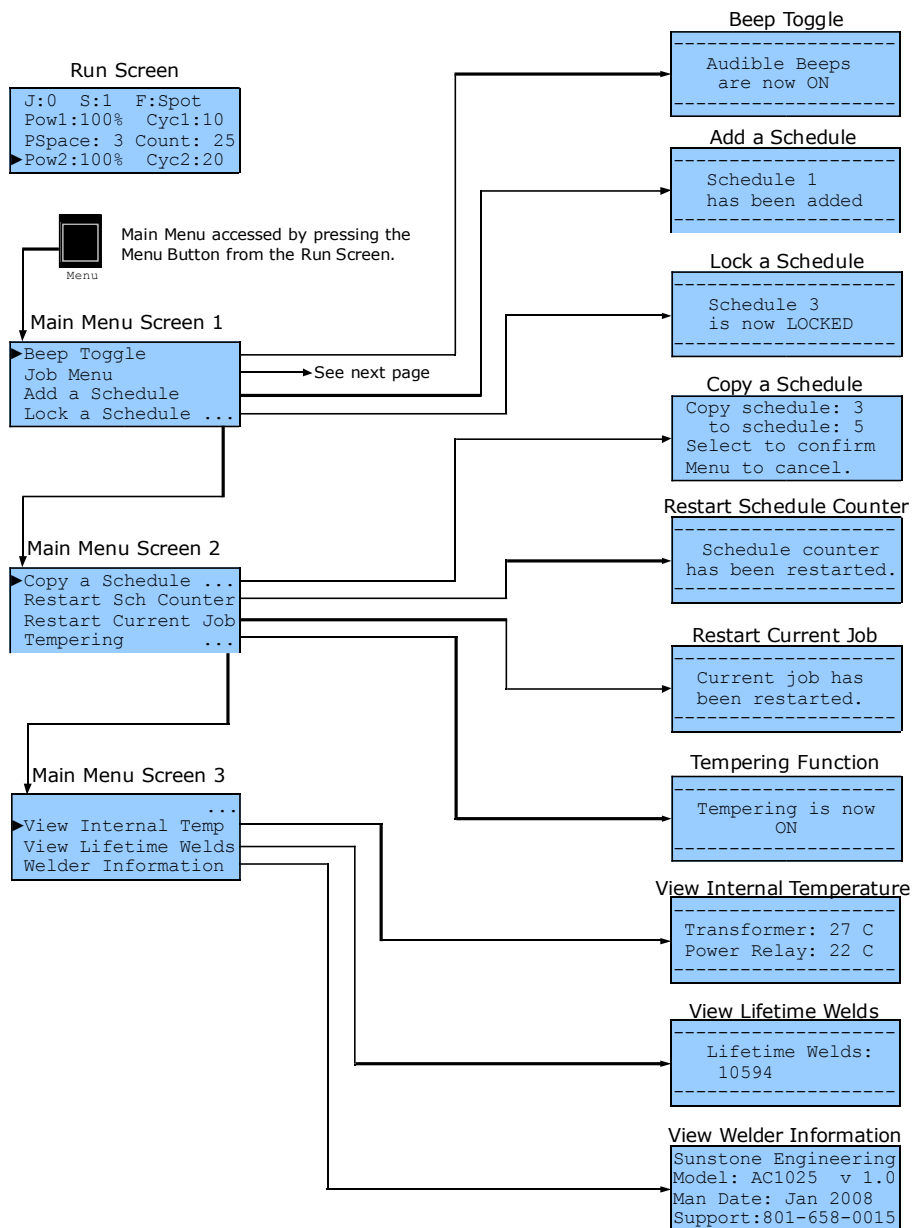
$$R_{total} = l \cdot r + R_{internal}$$

where: $R_{internal} = .062 m \Omega$, $l =$ total external cable length, $r =$ cable $m \Omega$ per foot

***NOTE:** Exact cable resistances will vary by manufacturer. Use this chart for estimation purposes only.

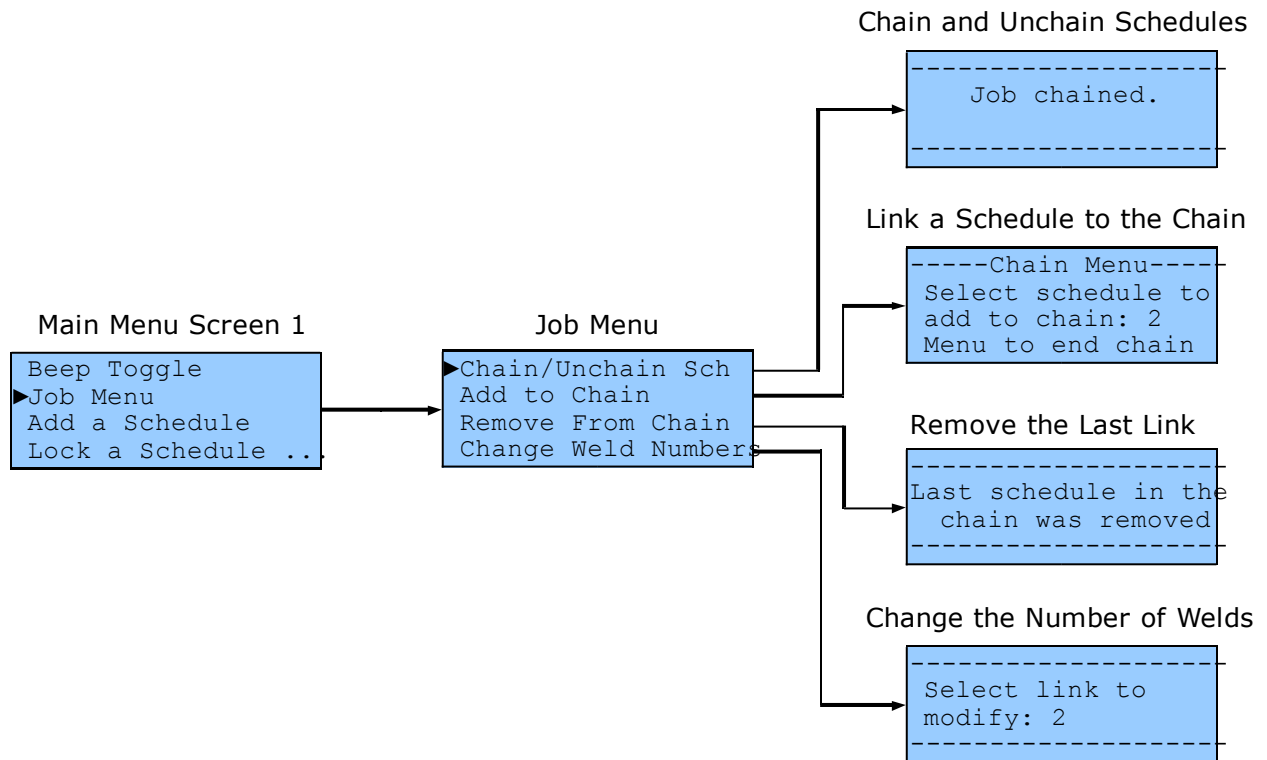


Appendix B : Menu Flowcharts



APPENDIX A: MENU FLOWCHARTS

JOB MENU





Appendix C: Glossary

AWG: American Wire Gauge is the standardized wire gauge system.

CHAIN: On the AC 1025, a chain is a programmed collection of schedules that form a regular sequence. For instance, a two-link chain consisting of Schedule 7 for 3 welds and then Schedule 2 for 18 welds will switch from Schedule 7 to Schedule 3 after 3 welds and will restart after 18 more.

FAYING Faying surfaces are those that have been joined by a weld.

LINK: A link is a Schedule that has been programmed into a chain

PULSE: A burst of electrical energy.

RESISTANCE: The AC 1025 relies on a resistance between its terminals to generate the heat needed to melt metals. Ohm's law states that Voltage = Current X Resistance.

RMS: Root Mean Square is a mathematical average for a sinusoidal signal. The 120V from electrical outlets is not 120V constantly, but its RMS value is 120VAC RMS.

SCHEDULE: On the AC 1025, a schedule is the name given to a collection of weld parameters that is part of a job. The Run Screen is always displaying a schedule.

SPOT WELD: A small weld done with two electrodes that leaves a circular (or spot) shaped weld nugget.

TERMINALS: The copper bars protruding from the case marked with a '+' and '-' are the terminals.

Appendix D: Warranty and Contact Information

All Sunstone Products come with a 90 day repair warranty. Sunstone Engineering will repair all defects in craftsmanship without charge during this time period (excluding the cost of shipping). This warranty does not cover damage caused by improper use of Sunstone products. This warranty does not include consumable items, such as welding electrodes. Sunstone Engineering is dedicated to keeping our products operating at peak performance for years to come. Any repairs needed after the 90 day warranty period are performed at cost, typically less than \$50 USD.

Sunstone Engineering offers a 30 day return policy on all of our products. Before sending a product back please contact Sunstone Engineering to receive an RMA number. The RMA number should appear clearly on the outside of the package. Customer refunds are accomplished via check. Please note that a 3% restocking fee will apply to all returns. Equipment damaged by improper use or insufficient shipping precautions will be charged additional fees.

Sunstone Engineering is dedicated to providing quality products and support. Please feel free to call with any questions before or after purchasing our products.

CONTACT INFORMATION:

Phone: 1-801-658-0015

Fax: 1-866-701-1209

E-mail:

Sales: sales@sunstoneengineering.com

Technical Support: tech@sunstoneengineering.com

Customer Service: custservice@sunstoneengineering.com

Web: www.SunstoneSpotWelders.com

Mail: Sunstone Engineering R&D Corporation
1693 W. American Way, Unit 5
Payson, UT 84651

Job Number: _____ Job Name: _____

Schedules

#0 Func: _____ Pow1: _____ % Cyc1: _____ Cycles Off: _____ Pow2: _____ % Cyc2: _____	#1 Func: _____ Pow1: _____ % Cyc1: _____ Cycles Off: _____ Pow2: _____ % Cyc2: _____	#2 Func: _____ Pow1: _____ % Cyc1: _____ Cycles Off: _____ Pow2: _____ % Cyc2: _____	#3 Func: _____ Pow1: _____ % Cyc1: _____ Cycles Off: _____ Pow2: _____ % Cyc2: _____	#4 Func: _____ Pow1: _____ % Cyc1: _____ Cycles Off: _____ Pow2: _____ % Cyc2: _____
#5 Func: _____ Pow1: _____ % Cyc1: _____ Cycles Off: _____ Pow2: _____ % Cyc2: _____	#6 Func: _____ Pow1: _____ % Cyc1: _____ Cycles Off: _____ Pow2: _____ % Cyc2: _____	#7 Func: _____ Pow1: _____ % Cyc1: _____ Cycles Off: _____ Pow2: _____ % Cyc2: _____	#8 Func: _____ Pow1: _____ % Cyc1: _____ Cycles Off: _____ Pow2: _____ % Cyc2: _____	#9 Func: _____ Pow1: _____ % Cyc1: _____ Cycles Off: _____ Pow2: _____ % Cyc2: _____

Chain Sequence

Link 1 Schedule #: _____ # of Welds: _____	Link 2 Schedule #: _____ # of Welds: _____	Link 3 Schedule #: _____ # of Welds: _____	Link 4 Schedule #: _____ # of Welds: _____	Link 5 Schedule #: _____ # of Welds: _____	Link 6 Schedule #: _____ # of Welds: _____	Link 7 Schedule #: _____ # of Welds: _____	Link 8 Schedule #: _____ # of Welds: _____	Link 9 Schedule #: _____ # of Welds: _____
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