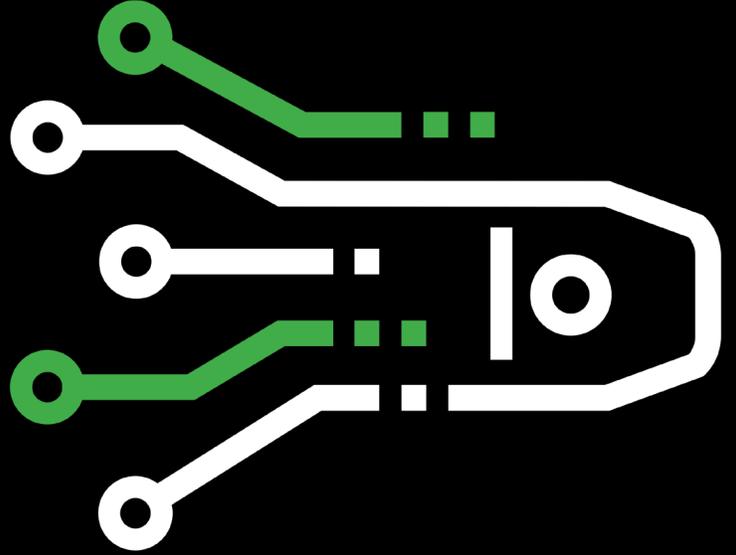




RAW DATA. REFINED RESULTS.

OPERATIONS MANUAL

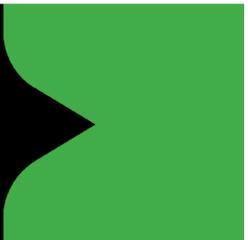
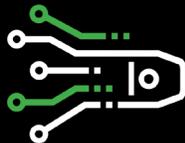


TOOLS

S100 STINGER™ – RAPID CAPACITIVE DISCHARGE BONDER



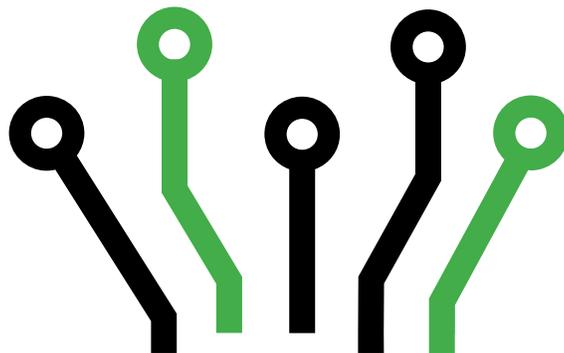
SCAN TO VISIT
THE S100 PAGE



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1. WARRANTY INFORMATION

BDI warrants its products to be free from defects in materials and workmanship under normal use and service for thirty-six (36) months from date of shipment. This warranty shall be void if any products have been subjected to modification, misuse, neglect, accidents of nature, or shipping damage. Batteries have no warranty.

All equipment manufactured by BDI is intended for use by a qualified professional only. Under this warranty BDI's obligation is limited to repairing or replacing (at BDI's option) of defective products. In no event shall BDI be liable for punitive, exemplary, special, indirect, incidental, or consequential damages; and the customer shall assume all costs of removing, reinstalling, and shipping of defective products. EXCEPT AS STATED HEREIN, BDI MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, AND SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY.

Before returning any product, BDI technical support must be contacted at +1.303.494.3230, or by visiting BDITEST.COM/contact and submitting a request. A technician will help determine the nature of the problem and if it cannot be resolved, authorization will be given to return the item. A return merchandise authorization (RMA) will be sent to the customer to be filled out and shipped back with the equipment. BDI will not accept shipment of any product without prior authorization as provided herein.

Ship all equipment to:

BDI

ATTN: TECHNICAL SUPPORT

740 S PIERCE AVE UNIT 15

LOUISVILLE CO 80027

+1.303.494.3230

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2. WARNINGS & PRECAUTIONS



BEFORE USING THE BATTERY PACK AND CHARGER, READ THIS STINGER™ USER'S MANUAL, MILWAUKEE® LITHIUM-ION BATTERY INSTRUCTIONS, AND ALL LABELS ON THE BATTERY PACK AND CHARGERS. Please see Milwaukee tools website for safe use, handling, and charging of batteries and chargers: <https://www.milwaukeetool.com>.



Warning – The S100 Stinger™ Rapid Capacitive Discharge Bonder generates a significant amount of electrical energy – up to 60 Joules (60 Watt-Seconds) of energy may be stored in the internal capacitors.



Shock Hazard – Use caution to avoid contacting the handle electrode during discharge or any time the trigger is pulled.



Shock Hazard – The S100 Stinger™ is not intended for use in a wet environment.



Arc Hazard - The S100 Stinger™ creates high energy sparks when in use. Do not use the S100 Stinger™ in a potentially explosive environment, or where flammable gases may be present. Do not use the S100 Stinger around combustible material.



No user serviceable parts are inside the S100 Stinger™ case. Do not open the case or attempt to service the unit. Return to the factory, or your distributor for all needed service.



Shock Hazard – Significant amounts of energy may be stored in the capacitor bank inside the case for up to 8 hours after the battery is removed.



Use appropriate Personal Protective Equipment (PPE) when using the S100 Stinger™ – safety glasses and gloves are recommended.



The discharge tip is sharp and may cause injury. Use caution when handling.



Do not hang the unit by its cables.



Store your battery pack and charger in a cool, dry place, do not charge battery in wet or damp locations. Do not store battery in direct sunlight, or any location that may cause the battery pack to reach temperatures greater than 120° F.



Cold batteries will have lower performance than those stored at room temperature. It is recommended that when used in cold climates, batteries be stored in a climate-controlled location when not in use to maximize their performance.



BDI wants to ensure that our customers are aware that the external Lithium-ion battery (Li-ion) units utilized in Rapid Capacitive Discharge Bonder systems are considered Dangerous Goods/Hazardous Materials for shipping purposes. There are certain strict rules governing the transportation of Li-ion batteries and products powered by Li-ion batteries. These rules, imposed by federal and international regulatory agencies, can be very complex and will vary depending on transport mode and battery type.



Stinger™ has been designed and tested using the Milwaukee® M12™ line of battery packs. Do not use any other brands of batteries, chargers, or combinations thereof which may result in dangerous incompatibility within the various components and systems.

If you are uncertain on applicable Lithium-ion battery transport rules, BDI recommends you visit the DOT's website for further information: <https://www.phmsa.dot.gov/lithiumbatteries>

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3. INTRODUCTION

3.1 ABOUT THE S100 STINGER™

The S100 Stinger™ (Rapid Capacitive Discharge Bonder) has been designed and developed for the application of weldable sensors to a base material but can also be used for many other spot bonding applications. The bonder mechanically attaches sensors to any ferrous base material.

The S100 Stinger™ functions through the use of pen-head, surface-level spot bonds. When used in large, tight groupings, this method of adhesion serves to rigidly fuse the elastic strain surface directly to the medium through which strain is being measured.

With less than a second of charge time between spot bonds, the S100 Stinger™ creates bonds as fast as the user can place the tip and pull the trigger. The bonder is powered by readily sourced and rechargeable Milwaukee® M12™ REDLITHIUM™¹ Li-ion 3.0 Ah battery packs and chargers used to power common power tools, making it lightweight, maneuverable, and greatly increasing its duty cycle.

3.2 ABOUT THIS MANUAL

This is a comprehensive document that explains the functions and features of the S100 Stinger™. The following highlighted message blocks may periodically appear and contain important information that the user should be aware of.



STOP: This symbol and corresponding message represents information regarding the device that if not followed could lead to damaging the device! Pay close attention to this message.



WARNING: This symbol and corresponding message represents vital information and is critical for the device operation and/or the operational settings/configuration.



INFORMATION: This symbol and corresponding message represents general information and/or tips on successfully operating/configuring the device.

¹ Milwaukee, M12, and REDLITHIUM are registered trademarks to the Milwaukee Electric Tool Corporation and will be referenced throughout this manual.

4. SYSTEM CHARACTERISTICS

4.1 TECHNICAL SPECIFICATIONS

The S100 Stinger™ consists of a bank of high-performance capacitors to discharge bond energy to the work area. These capacitors are powered by a Lithium-Ion battery attached to the bottom of the handle of the electrode assembly. Bond energy can be controlled through the soft buttons on the top of the case.

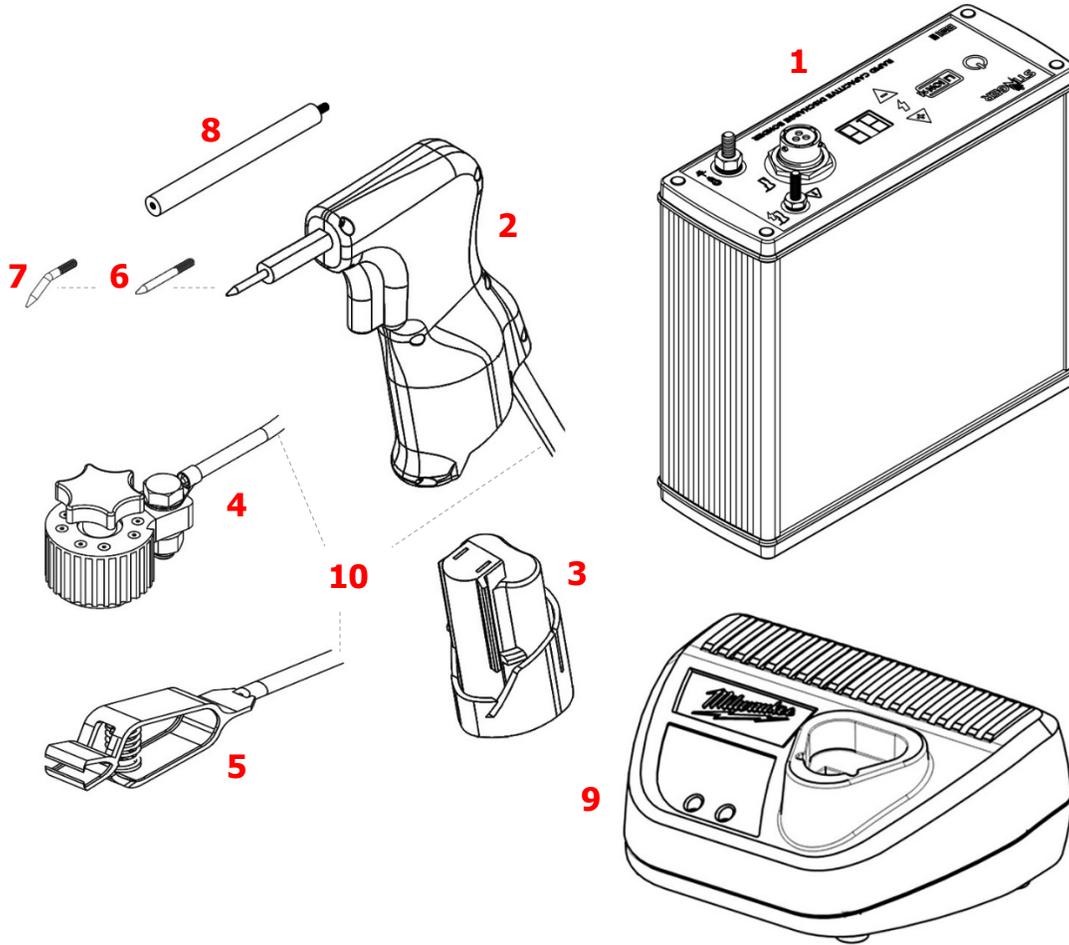


Figure 1. S100 Stinger™ Components

Table 1: S100 Stinger™ Component Dimensions and Weights

Item	Component	Dimensions (LxWxH)	Weight
1	S100 Unit	8.25 x 3 x 7.5 in (210 x 76.2 x 191 mm)	4.6 lb (2.09 kg)
2	Handle	6.25 x 1.85 x 3.3 in (159 x 47 x 84 mm)	0.57 lb (0.26 kg)
3	Li-ion Battery	1.9 x 1.2 x 3.4 in (48 x 30 x 86 mm)	0.4 lb (0.182 kg)
4	Magnetic Ground Clamp	3.27 x 2.30 x 2.40 in (83 x 58 x 61 mm)	0.7 lb (0.32 kg)

5	Mechanical Ground Clamp	4.30 x 0.78 x 1.52 in (109 x 20 x 39 mm)	0.16 lb (0.07 kg)
6	Straight Bonding Tip	1.25 x 0.13 x 0.13 in (32 x 3.1 x 3.1 mm)	0.004 lb (0.002 kg)
7	Curved Bonding Tip	1.05 x 0.13 x 0.40 in (27 x 3.1 x 10 mm)	0.004 lb (0.002 kg)
8	Extension Rod	4.31 x 0.38 x 0.38 in (110 x 9.7 x 9.7 mm)	0.14 lb (0.06 kg)
9	Battery Charger	4.5 x 1.85 x 1.28 in (114 x 47 x 32 mm)	0.5 lb (.23 kg)
10	Cables	60 x 0.31 x 0.31 in (1524 x 7.9 x 7.9 mm)	0.63 lb (0.29 kg)

The battery and charger specifications are provided in [Table 2](#) and [Table 3](#). While the battery and charger specified in the tables below are the models that are supplied with the S100 Stinger™, Milwaukee® manufactures several M12™ battery types ranging in capacity as well as several M12™ compatible chargers. Any of Milwaukee® M12™ batteries or compatible chargers can be used with the S100 Stinger™.

Table 2: Lithium-ion Battery Specifications

Manufacturer	Milwaukee
Model	Milwaukee® M12™ REDLITHIUM™ Li-ion 3.0 Ah battery
Chemistry	Lithium-ion
Equivalent Lithium Content	2.5 g
Capacity/Energy	3 Ah
Voltage Range	7.6 – 12.6 Vdc, (10.8 Nominal)
Temperature Range	-4° to 175 °F (-20° to 80 °C)
Shelf Life @ Optimal Temperature	6 months
Dimensions	5.9 x 2.4 x 0.9 in (150 x 58.9 x 22.3 mm)
Weight	0.77 lb (349 g)

Table 3: Battery Charger Specifications

Max Output Power	36 W
Input	90~264 VAC, 47-63 Hz, 1.5A
Output	+12 Vdc, 3A
Operating Temp.	40° to 105 °F (5 to 40 °C)
Dimensions	4.5 x 1.85 x 1.28 in (114 x 47 x 32 mm)
Weight	0.5 lb (230 g)

4.2 SHIPPING REQUIREMENTS

BDI wants to ensure that our customers are aware that the removable Lithium-ion batteries utilized in S100's are considered Dangerous Goods/Hazardous Materials for shipping purposes. There are rules governing the transportation of Lithium-ion batteries and products powered by Lithium-ion batteries. These rules, imposed by federal and international regulatory agencies, can be very complex and will vary depending on transport mode and battery type.

If you are uncertain on applicable Lithium-ion transportation rules, BDI recommends you visit the DOT's website for further information: <https://www.phmsa.dot.gov/lithiumbatteries>



WARNING: Safety requirements for shipping Li-ion batteries by both ground and air are continuously updated. Anyone handling shipments that involve Li-ion batteries should receive the appropriate Dangerous Goods/Hazardous Materials shipping training which is offered by many vendors.



STOP: Significant criminal and civil penalties may be applied to individuals who improperly ship hazardous materials.

In addition to recommended training, three primary sources for shipping guidelines are:

- + **Ground:** In the United States, ground shipment regulations for Lithium-ion batteries are provided by the U.S. Department of Transportation (USDOT). Refer to [phmsa.dot.gov/lithiumbatteries](https://www.phmsa.dot.gov/lithiumbatteries) for further information.
- + **Air:** Air shipment requirements are provided by the International Air Transport Association (IATA) which the user should refer to at [iata.org](https://www.iata.org).
- + **Manufacturer:** Another excellent source for shipping information is provided by the battery manufacturer, Milwaukee® Electric Tool at <http://documents.milwaukeetool.com/eService/005d41776d4b410d8974e0eadc64021c.pdf>.

BDI complies with the latest hazmat delivery guidelines when shipping S100 Stinger™ with Lithium-ion batteries to and from our facilities. Users are responsible for complying with all current shipping regulations. Contact BDI to request the latest copy of our shipping policy.

4.3 S100 ASSEMBLY



INFORMATION: The S100 Stinger™ has two different sized terminals—a smaller one for the positive handle lead and the larger for the ground cable. Wing nuts are used for convenience in removing the leads. If the user prefers the cable to remain installed, we recommend using the supplied nylon-insert hex nuts.

Assembly of the unit is very fast and self-explanatory. [Figure 4](#) illustrates the connection points for the integral cables.

1. Begin by connecting the grounding cable assembly; remove the wing nuts from the two studs located on the right side of the top of the S100 Stinger™ case.
2. First connect the grounding cable (BLACK) to the larger stud (¼-20 imperial thread), stacking the cable lug and then replacing the ¼-20 imperial wing nut.
3. Hand tighten this stack so that nothing can rattle or shake loose.
4. Follow the same steps, 1 through 3, with the red cable and the smaller stud (#10-32 imperial thread), by placing the cable lug on the #10 imperial threaded stud and then tightening on the #10 imperial wing nut.



WARNING: Do not over tighten the wing nuts as that may result in loosening the stud on the S100 unit.

5. Next, connect the black, 3-pin connector leading from the yellow cable of the electrode handle assembly to the 3-pin receptacle on the connector panel. Be certain to lock the retaining ring on the connector.
6. Once all connections are properly engaged, place the battery in the bottom of the electrode handle assembly as shown in [Figure 1](#) until it clicks in position.

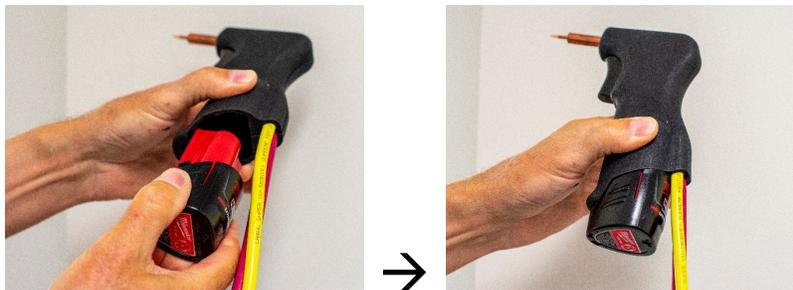


Figure 2: Lithium-ion Battery Installation

When the battery pack needs to be changed, press and hold the tabs on the sides of the pack then pull the pack out of the handle. This is shown in [Figure 3](#) below.

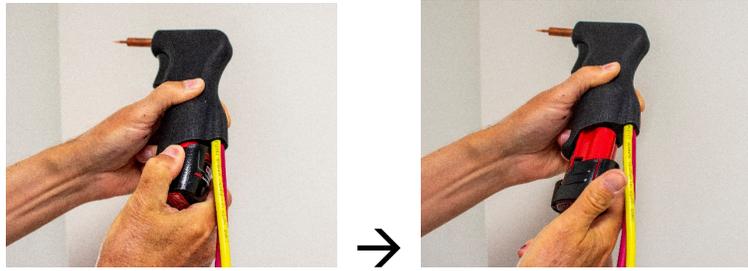


Figure 3: Lithium-ion Battery Removal

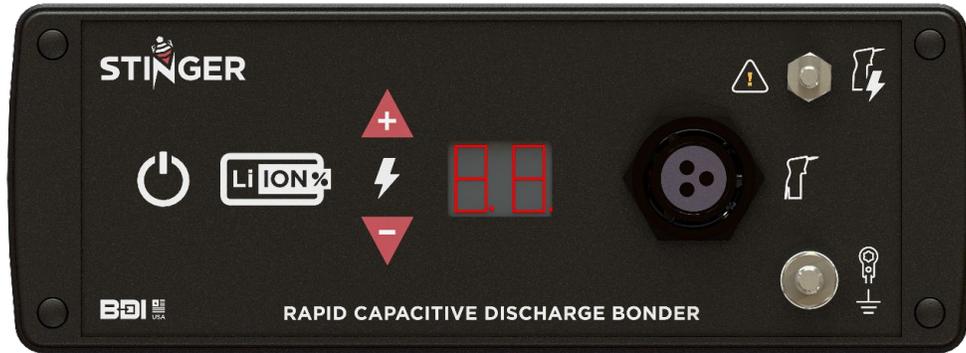


Figure 4: S100 Stinger™ Top View

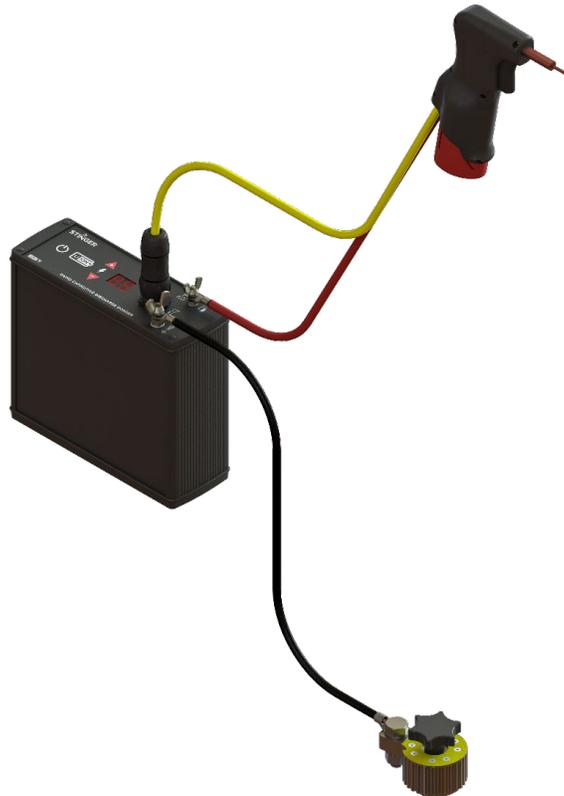


Figure 5: Fully Assembled S100 Handle and Clamp Cables

5. POWER

5.1 POWERING ON/OFF & BATTERY STATUS

To turn the S100 Stinger™ on, make sure the battery is correctly connected within the electrode handle assembly, and then press the power button (left most) on the top panel, see Figure 8. Battery status can be checked, once the device is powered on, by pressing the  button. This will cause the display to display the current charge remaining percentage estimate of the battery. Display will show  followed by the battery percentage. Table 1 outlines the estimated battery capacity based on the display.

i **INFORMATION:** The battery charge percentage remaining estimate is updated once every 5 minutes during use.

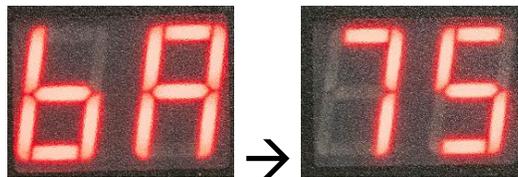


Figure 6: Display showing the current charge percentage of the battery

Table 4: Battery Display

Battery Display	Estimated Remaining Charge
	0%
	0-25%
	26-50%
	51-75%
	76-99%

The Stinger™ will display when the battery is too low to continue bonding. The display will sequence  then  as seen below. This is displayed when battery charge is below 10%.

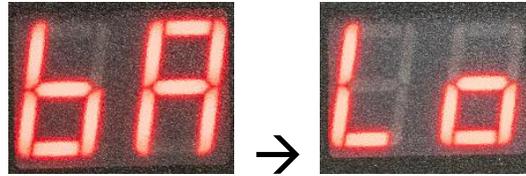


Figure 7: Display showing the low battery charge, too low to continue bonding



Figure 8: Power Button on the left and Battery Indicator Button on the right

To power off the Stinger™ press the On/Off button, the display will indicate the unit is powering down with the **PD** symbol.

BATTERY CHARGER

The battery charger for the Lithium-ion batteries used in the S100 Stinger™ must be of the Milwaukee® M12™ line of compatible battery chargers.

X

STOP: The Milwaukee® M12 battery charger supplied with the S100 is either for 110 VAC power sources (M12-CH-110), or 220VAC power sources (M12-CH-220). If the charger is plugged into the incorrect power source, the charge could be permanently damaged.



Figure 9: Typical battery charger

6. USER INTERFACE FUNCTIONALITY

6.1 ESTABLISHING BOND ENERGY

The S100 Stinger™ has a spot-bonding energy range of 10-60 joules (10-60 Watt-Seconds). This number is displayed by default (unless actively displaying other information). Whenever the dot in the bottom right hand corner of the display is illuminated, this signifies that the capacitor bank is fully charged and ready to discharge energy for a spot-bond.

When increasing or decreasing the level of bond energy (respectively), use the  and  buttons located to the left of the display. Pressing either button once will increase/decrease the level of the bond energy by an increment of one joule. Pressing and holding either button will increase/decrease the level of bond energy by an increment of five joules until the button is released.



Figure 10: Bond energy level controls

Increase the bonding energy level with the  button and decrease it with the  button. Pressing the  button once will increase the level of the bond energy by an increment of **one** joule and pressing and holding the same button will increase the level by an increment of **five** joules until the button is released.

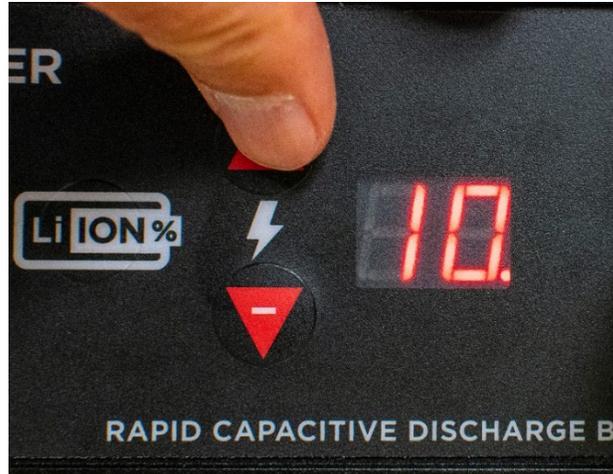


Figure 11: How to use bond energy controls

6.2 SAFETY FEATURES

The S100 Stinger™ has a built-in safety feature to prevent discharge of the capacitor bank when there is not an adequate ground path from the positive handle electrode through to the ground cable. The S100 Stinger™ estimates the resistance to ground through the positive handle electrode each time the trigger is pressed. If the resistance is greater than 1 ohm the S100 Stinger™ will not discharge the capacitor bank and instead will display the error message **FE** while the trigger is pressed. This feature ensures the correct electrical path for the bonding energy.

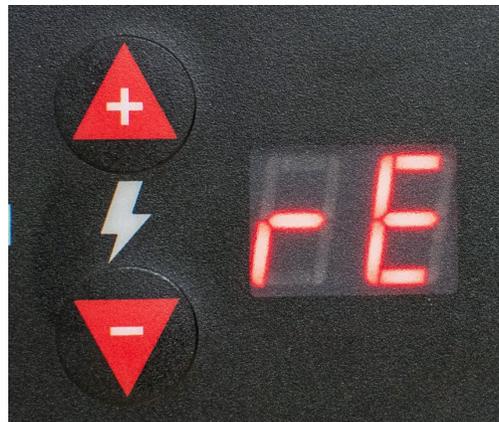


Figure 12: Resistance error on display

6.3 FIRMWARE VERSION

The current operating firmware version can be obtained by simultaneously pressing and holding the **Li ION%** button and the  button. This will cause the display to show the current firmware version. The display will show **FE** then the firmware version 1.0-99. The figure below shows an example of the display sequence for firmware version **10.**

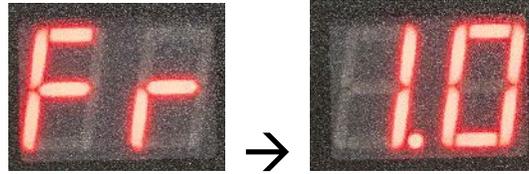


Figure 13: Firmware display example showing the current operating firmware is version 1.0

6.4 SOUND OPTIONS

The Stinger™ has an option for turning the sound on or off. This controls whether, or not, there is an audible tone as the

system charges the capacitors for the next bond. This option is accessed by simultaneously pressing and holding the  button and the  button to turn the sound on  or off .

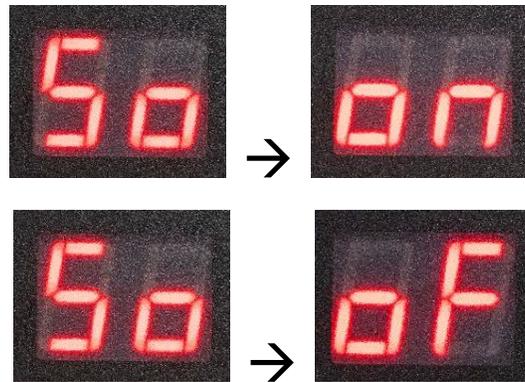


Figure 14: The sound on/off option shown on display

7. CREATING SPOT BONDS



STOP: The rapid discharge of stored energy through a work specimen can produce sparks. Use proper Personal Protective Equipment when operating the S100.

The stated purpose of this device is to create localized spot-bonds between a base material and shim stock.

It is crucial to the integrity of the spot-bonded connection that both surfaces be clean of paint, rust, dirt, dust, or any other contaminant that may reduce the adhesion of the surface to the shim. Please refer to the sensor instructions for proper surface preparation techniques and bond requirements.

Once the S100 Stinger™ has been assembled and the desired bond energy reached, the steps are as follow:

1. Attach the grounding lead to a bare spot of the medium near the area of work (usually a foot or so, the grounding area must be electrically continuous with the work area). Depending on the purchased equipment, the grounding lead will terminate with either a clamp or a magnetic plug. To activate the magnetic plug, simply hold the plug against the ground area and turn the knob on the top of the plug—it should magnetically hold itself against the work.
2. Place the sensor in the appropriate position on the medium it is to be attached to.

3. Press the shim firmly against the medium with the copper bonding tip of the handle.
4. Pull the trigger, the S100 will discharge bond energy through shim and create a localized spot-bond. Then it will automatically recharge its capacitor bank in preparation for the next spot-bond. During this recharging cycle, the unit will produce an audible beep until recharging is complete. Once the beep has stopped, the spot-bonder is ready for its next discharge. Depending on the energy setting, the unit will recharge in 0.5-1 second; however, this process may take longer in colder temperatures and with older batteries.
5. Continue repeating steps 2 and 3 until the appropriate number of spot-bonds has been created.

7.1 VERIFYING THE STRENGTH OF A SPOT-BOND²

To determine if a spot-bond is an appropriate strength for bonding, the bond energy must be sufficient to create localized joining of the materials (shim and medium). In most applications, 20-40 Joules of energy is required to ensure proper bonding. This can be evaluated by ensuring a test strip remains on the medium when the body of a shim has been pulled from the medium and the bonds remain. The following steps can be used to validate proper bonding energy is being used:

1. Clean and prepare the medium surface per sensor manufacturer's instructions.
2. Create three or six spot-bonds in a line on the shim, about 1/8" apart from one another.
3. Using either pliers or gloves to avoid the sharp edges of the shim, completely separate the shim and the medium. Figure 15 illustrates the peel testing using pliers. If the shim has holes where the spot-bonds were, then the bond energy is sufficient. If there are no visible holes on the shim where the spot-bonds were, or if there is no residual shim material on the medium, then the bond energy is not great enough.
4. Repeat steps 1 and 2, while gradually increasing the bond energy, until shim material is left behind on the medium when the shim is torn off.

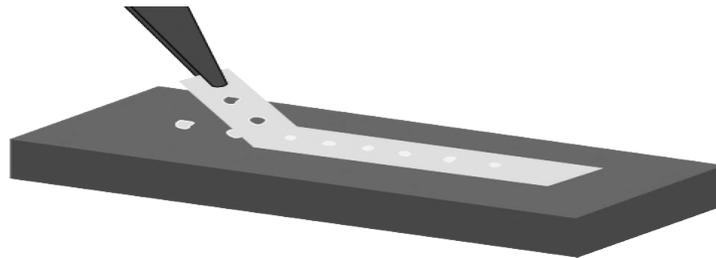


Figure 15: Peel test to ensure proper gage bonding

² Special thanks to Geokon, Inc. for allowing BDI to use this information to ensure proper gage bonding.

8. CHANGING S100 STINGER™ TIPS



STOP: Use proper Personal Protective Equipment when discharging the S100 Stinger™.



WARNING: The discharge tip is sharp and may cause injury. Use caution when handling.



WARNING: The S100 Stinger™ generates a significant amount of electrical energy – up to 60 Joules (60 Watt-Seconds) of energy may be stored in the internal capacitors.

8.1.1 General Recommendations:

The S100 Stinger™ tips are replaceable in the field. The user may want to change tips in the event they need a different tip or extension to allow the tip better access to the sensor being attached. In other cases, the user may want to replace a worn tip. In the bonding process, material is lost from the Stinger tip electrode. These tips are designed to be replaceable without hand tools.

The tip should be kept clean which can be performed with a 400-grit sandpaper. Sanding will clean debris and pits from the tip, and can help maintain a sharp point for accurate spot-welds.



Shock Hazard – Significant amounts of energy may be stored in the capacitor bank inside the case for up to 8 hours after the battery is removed.



Figure 16. Handle with Straight Bonding Tip

Before attempting to change the bonding tip, be sure the system is powered off and remove the battery from the Handle.

8.1.2 Straight Tip Replacement:

Figure 17. Straight Bonding Tip

To replace the straight tip simply twist off the current tip then thread in a new tip.



Figure 18. Threaded Bonding Tip Assembly

8.1.3 Curved Tip Replacement:

Figure 19. Curved Bonding Tip

Remove the existing tip as above. The next step will require screwing on a #6-32 machine screw nut onto the curved tip's threaded end. This nut is used to help align the curved tip to the optimal tip angle while maintaining ergonomic hand position. With the hex nut installed on the tip screw the tip back into the handle electrode.

8.1.4 Tip Extension Rod Installation:

Figure 20. Bonding Extension Rod

The Bonding Tip Extension can be installed between the handle electrode and the tip. Note the handle electrode cannot be removed from the handle.

To install the Tip Extension, remove the existing tip, screw in the extension, and then thread in the desired tip as above.

9. MAINTENANCE & TROUBLESHOOTING

9.1 ERROR CODES & SOLUTIONS

9.1.1 Resistance Error Code:



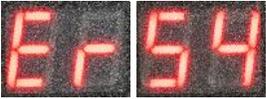
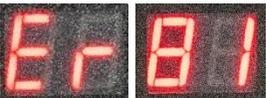
Cause: Device has determined too large of a resistance (greater than 1 ohm) between electrodes. Discharge will not occur if this sensed resistance in the discharge path is greater than 1 ohm. This error is shown when the trigger is pressed with more than 1 ohm in the discharge path, or when the tip is not in contact with the material to be bonded, or when the ground clamp is not in direct contact with the base material to be bonded.

Solution: Ensure all connections are properly made and tight; check all wingnuts and cables.

- + Ensure grounding lead is connected to the base material that is being spot-bonded. Clean contact is required with the ground clamp, either mechanical jaw or magnetic.
- + Paint, excess surface rust, and any other contaminants must be removed from base material at ground lead location.
- + Ensure proper surface prep at gage location.
- + Ensure proper contact between the bonder-to-gage and gage-to-specimen.
- + Place the discharge tip firmly in contact with the material to be bonded before pressing the trigger.

Table 5: Display Error Codes

Error Code	Cause	Solution
	Very low battery Charge less than 10%	<ul style="list-style-type: none"> ▪ Check battery charge level ▪ Change to battery with full charge ▪ If ambient temperature is cold, make sure the battery itself is warm
	Resistance error	<ul style="list-style-type: none"> ▪ Bonding resistance greater than 1 ohm ▪ Ensure all connections are properly made and tight ▪ Check all wingnuts and cables ▪ Ensure proper surface prep at gage location ▪ Ensure proper contact between the bonder-to-gage and gage-to-specimen ▪ Place the discharge tip firmly in contact with the material to be bonded before pressing the trigger
	Capacitor bank reading on power on was outside limits	<ul style="list-style-type: none"> ▪ Cycle power and retry ▪ Remove battery from handle and replace it
	Current reading at power on was outside limits	<ul style="list-style-type: none"> ▪ Cycle power and retry ▪ Remove battery from handle and replace it
	Battery reading at power on was outside limits	<ul style="list-style-type: none"> ▪ Cycle power and retry ▪ Remove battery from handle and replace it

	ADC unit failed	<ul style="list-style-type: none"> ▪ Cycle power and retry ▪ Remove battery from handle and replace it
	Display unit failed	<ul style="list-style-type: none"> ▪ Cycle power and retry ▪ Remove battery from handle and replace it
	Capacitor bank charging timeout	<ul style="list-style-type: none"> ▪ More than 5 seconds to recharging the capacitor bank ▪ Check battery charge level ▪ Cycle power and retry ▪ Check ambient temperature for a cold battery ▪ Charge battery ▪ If error persists, possible internal error of device; return for service
	Keypad button stuck	<ul style="list-style-type: none"> ▪ Cycle power and retry ▪ If error persists, possible internal error of device; return for service
	Trigger on Handle stuck	<ul style="list-style-type: none"> ▪ Be sure the trigger button is free to move ▪ Cycle power and retry ▪ If error persists, possible internal error of device; return for service
	Capacitor bank charge readback error	<ul style="list-style-type: none"> ▪ Cycle power and retry ▪ If error persists, possible internal error of device; return for service

9.2 GENERAL TROUBLESHOOTING

User Interface buttons do not respond to presses, or display locks up—remove the battery from the handle temporarily and replace it. Press the Power button on the unit to power up the unit. If condition persists, return for service.



No user serviceable parts are inside the S100 Stinger™ case. Do not open the case or attempt to service the unit. Return to the factory or your distributor for all needed service.

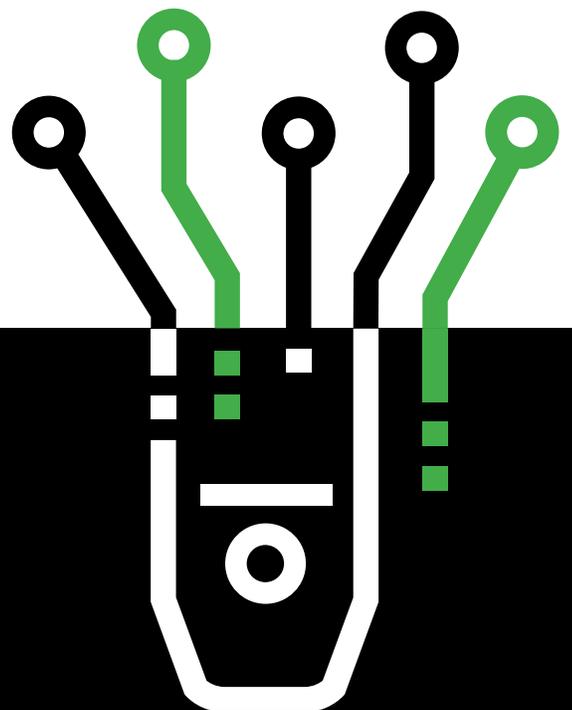


Shock Hazard - Significant amounts of energy may be stored in the capacitor bank inside the case for up to 8 hours after the battery is removed.



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