



**MIDWEST**  
**FASTENERS, INC.**

# ***SURE* *I* *SHOT***

Hand Held – Capacitor Discharge  
**Welding System**

**Owner's Manual**

# **SureShot II**

## **CD Stud Welding System**

# **Owner's Manual**

- **Installation**
- **Operation**
- **Maintenance**

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**FOREWORD:** Your new stud welding equipment is carefully constructed of the finest components and materials available. Used properly, this equipment will give you years of profitable, efficient Service. The system incorporates the latest in engineering advances for completely reliable welding of mild steel, stainless steel and aluminum. The electrical and mechanical components of the stud welder are thoroughly performance inspected prior to assembly in the welder. The assembled unit is completely performance checked. The welder is delivered to you in functional electromechanical condition.

A careful study of this manual will enable you to understand how the welder operates to insure proper performance under all operating conditions.

**WARRANTY:** All parts used in the assembly of your MIDWEST FASTENERS SureShot II Welding System are fully guaranteed for three (3) years from factory shipment date.

Under this warranty, MIDWEST FASTENERS reserves the right to repair or replace, at its option, defects in material or workmanship which occur during the warranty period. Notice of any claim for warranty repair must be furnished to MIDWEST FASTENERS within ten (10) days after the defect is discovered. MIDWEST FASTENERS does not assume liability for shipping, or liability for any labor or material related to use of this system unless such costs are expressly authorized in writing by MIDWEST FASTENERS.

MIDWEST FASTENERS, INC. does not warrant defects in welders, parts or accessories resulting, from abuse, improper installation, or for reasons beyond its control.

This warranty is valid only when welding pins and/or studs approved by or purchased from MIDWEST FASTENERS.

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## WELDING SAFETY PRECAUTIONS AND WARNINGS

### INSTALLATION AND SERVICING SAFETY

Improperly installed or improperly grounded equipment is a hazard. Always have qualified personnel perform the installation, trouble-shooting, and maintenance. Do not perform any electrical work unless you are qualified to do the work. Be sure the system is properly grounded.

Maintain this unit according to the manual. Disconnect input power before servicing this equipment and use lockout tags. Significant DC voltage can still exist in this equipment after removal or shut down of the input power. Turn off all equipment when not in use.

### ELECTRICAL SHOCK HAZARD

Contact with live electrical parts and ground can cause severe injury or death. DO NOT weld in damp areas or while equipment or clothing are damp or wet. Do not touch the stud if you are in contact with the work, ground, or another electrode from a different machine. Don't stand directly on metal or the earth; stand on dry boards, insulating mats or an insulating platform.

Before turning on power, be sure you are wearing appropriate protective clothing:

- high-topped, heavy rubber-soled shoes
- long (gauntlet style), dry, flameproof, hole-free insulated gloves
- heavy, long-sleeve, cuffless shirt
- heavy, cuffless trousers and
- a welding helmet or cap.

### GENERAL WELDING JOB SAFETY

Use this equipment only for its intended purpose. Use well-maintained equipment. Replace worn or damaged cables or parts immediately; bare wiring can kill. Do not drape cables over your body. Keep all panels and covers securely in place. Do not overload electrical wiring, be sure power supply system is properly sized, rated and protected to handle the unit. Don't connect multiple guns or work cables to a single weld output terminal. Follow rated duty cycle and allow overheated equipment adequate cooling periods. Do not block or filter airflow to unit.

DO NOT weld if movement is confined or if there is danger of falling. Wear a safety harness if working above floor level. Shut unit down and remove weld stud from the stud weld gun when not in use.

### ELECTROMAGNETIC FIELDS AND EMF

Electric and magnetic fields may be dangerous. Welder operators having pacemakers should consult their physician before welding. EMF may interfere with some pacemakers. Exposure to EMF may have other health effects which are unknown. Connect the work cable to the work piece as close as possible to the area being welded. Keep welding power source and cables as far away from your body as possible. Electromagnetic energy can interfere with sensitive electronic equipment such as computers and computer-driven equipment such as robots.

### FUMES HAZARDS

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health, particularly in confined spaces. Do not breathe fumes and gases. Always ventilate confined spaces or use approved air-supplied respirator. Welding on coated metals such as galvanized, lead or cadmium plated steel can be hazardous, in terms of fumes produced, unless the coating is removed from the weld area. Don't weld near degreasing, cleaning or spraying operations.

### FIRE SAFETY AND BURN PREVENTION (ARC RAYS CAN BURN EYES AND SKIN)

Always wear safety glasses with side shields in any work area. Even if wearing a welding helmet, face shields and goggles are also required. Wear goggles over safety glasses when chipping, wire brushing or grinding slag. Chipped slag may be hot and can fly far. Bystanders should also wear goggles over safety glasses. Use protective non-flammable screens or barriers to protect others from flash and glare. Warn bystanders not to watch the arc and not to expose themselves to the rays of the electric-arc or hot metal.

Welding on closed containers, such as tanks, drums or pipes, can cause them to blow up. Do not weld where flying sparks can strike flammable material. Remove all combustible materials a minimum of 35-ft. away from the welding arc or cover the materials with a protective nonflammable covering.



Hot sparks or hot metal can fall through cracks or crevices in floors or wall openings and cause a hidden smoldering fire or fires on the floor below. Make certain that such openings are protected from hot sparks and metal. Be aware that welding on a ceiling, floor, bulkhead or partition can cause fire on the hidden side.

Have appropriate fire extinguishing equipment handy such as a garden hose, water pail, sand bucket or portable fire extinguisher. Be sure you are trained for proper use. After completing operations, inspect the work area to make certain there are no hot sparks or hot metal which could cause a later fire. Use fire watchers when necessary.

### **NOISE CAN DAMAGE HEARING**

Noise from some processes or equipment can damage hearing. Therefore wear approved ear protection.

### **ADDITIONAL SAFETY INFORMATION**

The following organizations can provide detailed information on safe practices for electric arc welding:

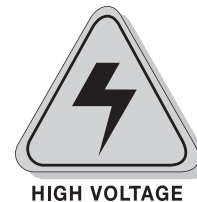
American Welding Society  
550 NW LeJuene Road, Miami, FL 33126,  
305-443-9353, [www.aws.org](http://www.aws.org)

National Fire Protection Association  
1 Battery March Park, Quincy, MA 02269-9101  
617-770-3000, [www.nfpa.org](http://www.nfpa.org) and [www.sparky.org](http://www.sparky.org)

Canadian Standards Association  
178 Rexdale Blvd, Rexdale, Ontario, CAN M9W 1R3  
800-463-6727, [www.csa-international.org](http://www.csa-international.org))

American National Standards Institute  
11 W 42nd Street, New York, NY 10036-8002  
212-642-4900, [www.ansi.org](http://www.ansi.org)

U.S. Government Printing Office  
Superintendent of Documents  
P.O. Box 371954, Pittsburgh, PA 15250  
312-353-2220, [www.osha.gov](http://www.osha.gov)

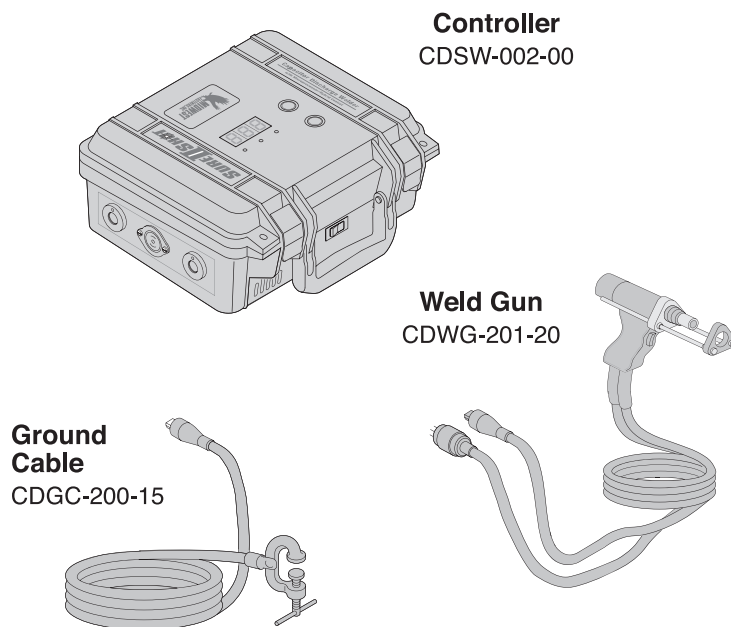


## WHAT IS STUD WELDING?

Stud welding is a welding process where a “stud” (or similar metal part) is instantaneously end-joined to a metal workpiece. This process involves the same basic principles and metallurgical aspects as any other welding process.

The equipment required to stud weld is composed of a direct current power supply, a controller, a weld gun and cables to tie the system components together. In most systems the power supply and controller are combined into one unit called the “Welder.”

### SURE SHOT II STUD WELDING SYSTEM (P/N: CDSW-002-01)



The stud welding process is as follows. The stud is placed in the collet of the “Weld Gun” and then positioned against the workpiece. The weld gun trigger is depressed and through operation of the stud welding controller and the design of the stud, an arc is drawn which melts the base of the stud and a proportionate area of the workpiece. The stud is then forced by the weld gun into the molten pool and held in place until the metals resolidify. This high quality fusion weld is completed in milliseconds.

## HOW DOES CD STUD WELDING DIFFER FROM ARC STUD WELDING?

There are two different stud welding processes:

- **Capacitor Discharge** (called “CD” for brevity) and
- **Arc.**

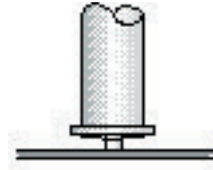
The difference between these two methods involves the power source used to provide the welding current, the workpiece size, base material and the stud design.

## CD STUD WELDING

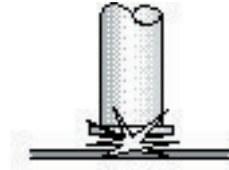
The CD stud welding process produces weld power through a rapid discharge of the stored energy in capacitors. This stored energy is usually derived from a standard 115 volt AC source. CD stud welding, as a general rule, is used for studs  $\frac{3}{8}$ " and less in diameter, (or where thin base metals or dissimilar metals are to be joined).

### "CD" STUD WELDING PROCESS

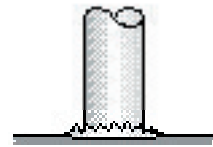
1. Stud is placed against workpiece and weld gun trigger depressed



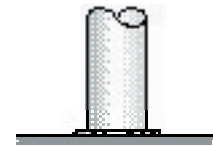
2. Stored energy is discharged through special tip



3. Weld gun forces stud into molten metal



4. Weld solidifies in milliseconds

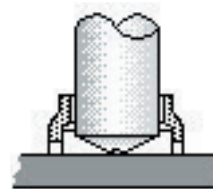


## ARC STUD WELDING

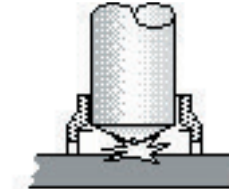
The ARC stud welding process produces weld power through one of three standard DC welding power sources. These are Transformer-Rectifier type, Motor/Generator type, or Storage Battery type. A ceramic ferrule is required in ARC stud welding to maintain the proper atmosphere in the weld area. ARC stud welding is generally used for studs over  $\frac{1}{4}$ " in diameter or where heavier base metals are involved.

### "ARC" STUD WELDING PROCESS

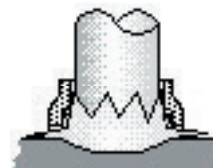
1. Stud is placed against workpiece and weld gun trigger depressed



2. Stud is lifted by weld gun and initiating arc is drawn



3. Weld gun forces stud into molten metal



4. Weld solidifies and ferrule is removed



## SURESHOT II OVERVIEW

The SureShot II is a capacitor discharge stud welder. The weld energy is stored in a capacitor located inside the control unit. The amount of stored energy can be controlled by the UP or Down digital control pushbuttons located on the front panel as indicated by the digital display.

CD weld studs, or pins, used with the SureShot II must have a specially designed projection at the weld end. When the stud is inserted into the weld gun and placed against the workpiece, and the trigger switch is depressed, the following occurs:

1. The energy stored in the capacitors travels through the weld cables to the stud.
2. The rapid rise in current ignites the projection and allows a welding arc to be established between the stud and the workpiece.
3. The arc melts the base of the stud and a portion of the workpiece.
4. The spring pressure inside the welding gun forces the stud into the molten metal pool created by the arc.
5. The cycle ends upon contact of the stud to the workpiece.
6. The welding gun is then removed. Upon removal, the controller will automatically recharge to the set voltage.



### CAUTION

The noise generated by stud welding may exceed allowable levels established by O.S.H.A. For this reason it is recommended that proper ear protection be worn by the operator and anyone working in the immediate area.



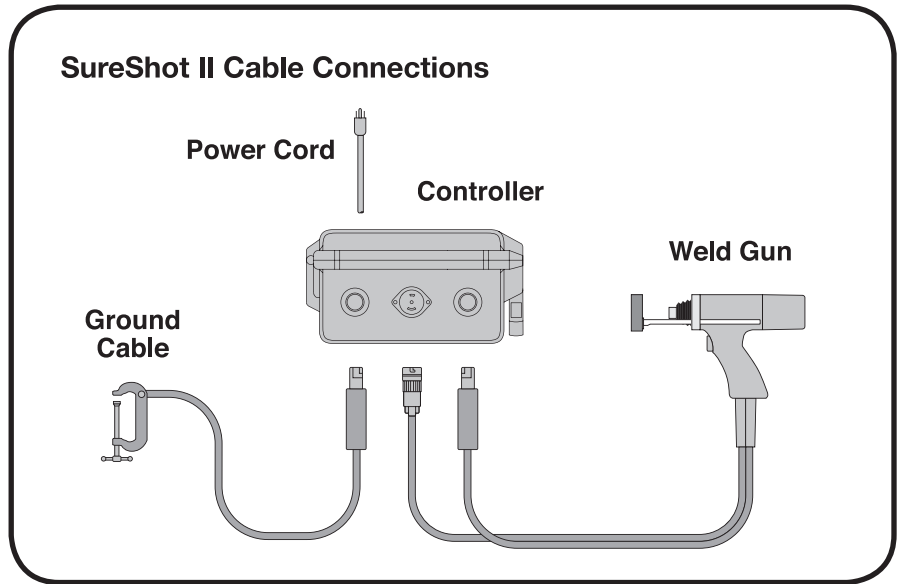
### WARNING

Voltages inside the unit can reach 200 volts D.C. even if the unit is turned off. All repair work should be handled by factory trained personnel.

## SURESHOT II INSTALLATION

Follow the process below to properly install your SureShot II stud welder.

NOTE: All cables should be laid out straight or in large loops. Poor welds may result if welding cables are closely coiled or stacked up.



1. Carefully remove the controller, cables and weld gun from the shipping packaging.
2. Set the Controller on a clean, dry, sturdy surface near an appropriate voltage supply and the workpiece.
3. Connect the Ground Cable male cam-lok connector to the controller connector marked "GROUND."
4. Clamp the Ground Cable C-clamp firmly to a clean (free from paint, rust, scale, grease or oil) area on the workpiece.
5. Connect the Gun Cable Set male cam-lok connector to the controller connector marked "GUN."
6. Connect the Gun Cable Set control connector to the controller connector marked "CONTROL."
7. Plug the Controller Power Cord into a grounded 110 VAC power source.

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## **SURESHOT II SETUP**

After installation, two setup phases must be completed before welding can begin. These phases are:

- Weld Gun Setup, and
- Controller Adjustment.

## **WELD GUN SETUP**

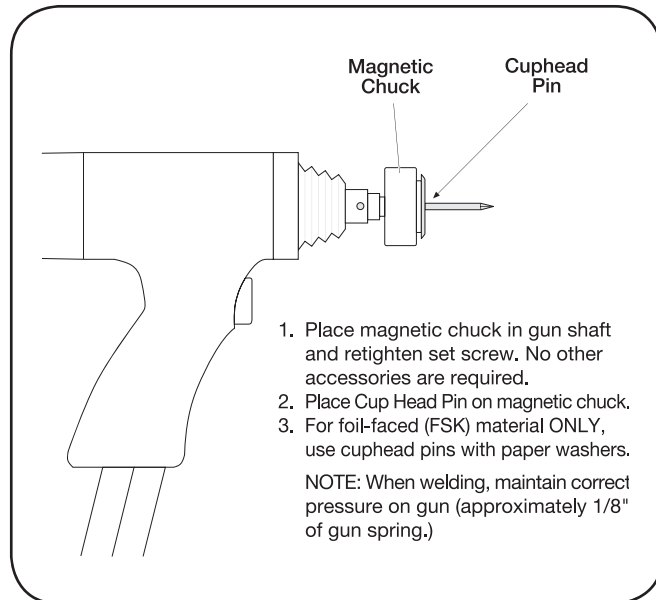
Your weld gun setup will depend on your application and the particular pin or stud to be welded. Setting up the gun consists of the following:

1. Locate the pins (or studs) that were shipped for your job and load a pin to the weld gun, with tipped-flange out, until stop is reached.
2. Make sure that the gun “setup” accessories that came with the Talon weld gun are adjusted properly and fastened tightly. Illustrations on the following pages for:
  - Cuphead Pins (Fig. 1)
  - Insulation Pins (Fig. 2)
  - Insulation Pins with Collet Protector (Fig. 3)
  - Insulation Pins with Internal Stop (Fig. 4)

NOTE: These components may need to be readjusted, or changed, as your job requirements change, or as arcing or wear begins to affect performance of the accessory.

## SURESHOT II / TALON GUN SETUP

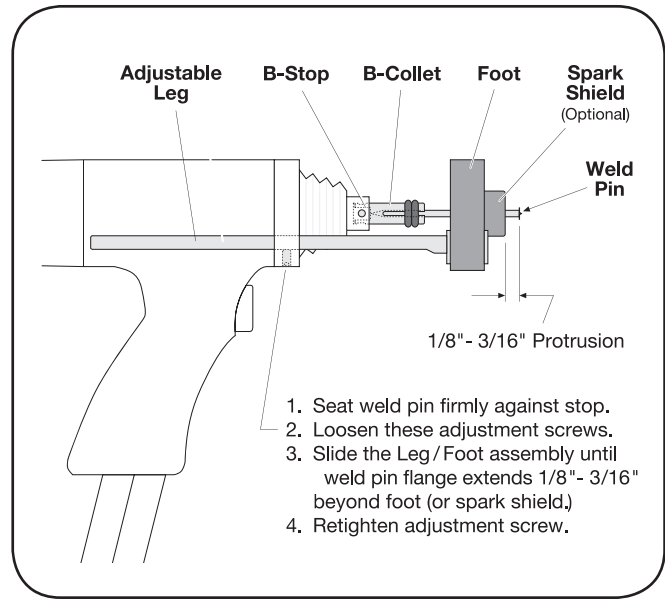
### CUPHEAD PINS



(Fig. 1)

## SURESHOT II / TALON GUN SETUP

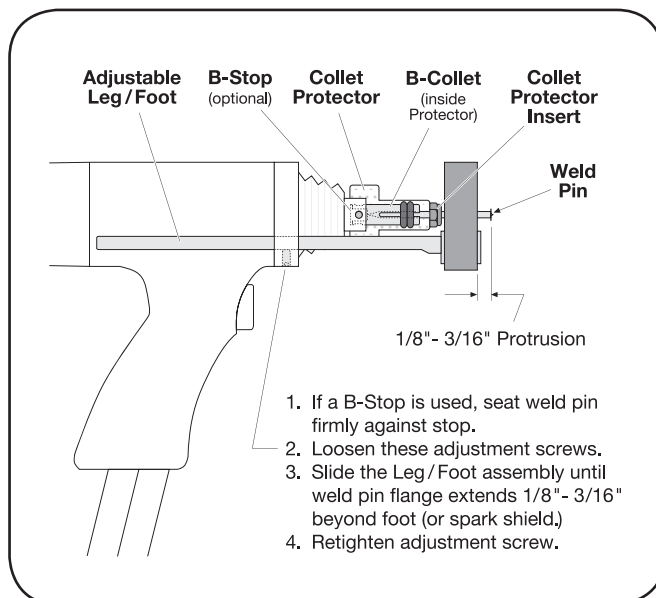
### INSULATION PINS



(Fig. 2)

## SURESHOT II / TALON GUN SETUP

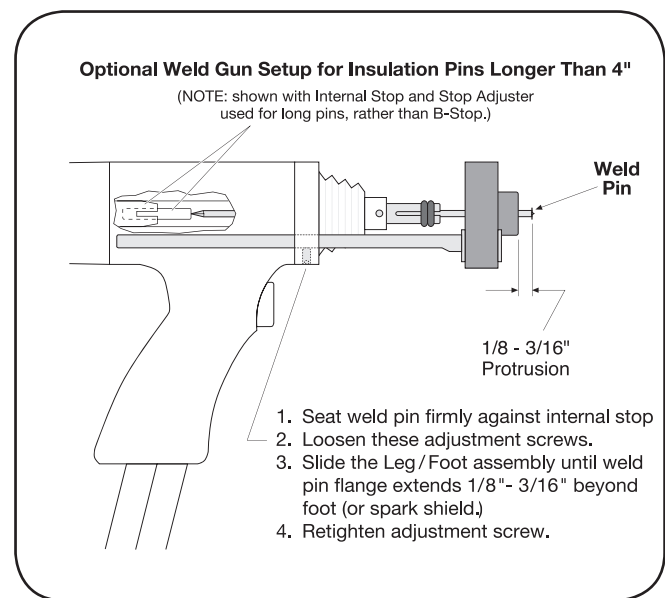
### INSULATIONS PINS WITH COLLET PROTECTOR



(Fig. 3)

## SURESHOT II / TALON GUN SETUP

### INSULATIONS PINS WITH INTERNAL STOP



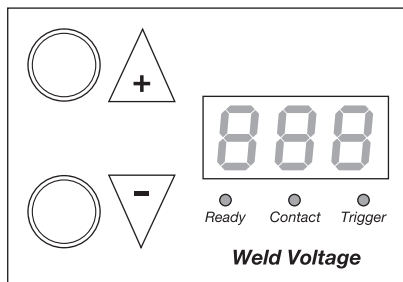
(Fig. 4)

## WELD POWER ADJUSTMENT

After verifying that the welding system is installed and your weld gun is setup properly for your application, the final step is to adjust your stud welding controller to the proper settings.

1. Turn the controller ON/OFF switch to "ON." Verify by observing "READY" lamp.
2. Using the chart below, adjust the weld voltage using the UP or DOWN pushbuttons until the LEDs reads the desired value.

The chart settings shown below are "reference" settings to be used as starting points. Actual voltage settings may vary depending upon the conditions or each application and use. The voltages shown also assume that the following are in use (as described in previous Installation and Setup sections of this manual.)



Control Panel

- A) Straight polarity cable set ups in use (Gun = Negative, Ground = Positive.)
- B) Ground connection directly to the part to be welded and connected in a clean, solid manner.
- C) 1/8" protrusion of pin/stud onto work (3/16" for Aluminum) causing an equal amount of spring pressure in the gun - or - cup of cuphead pins centered on a magnetic chuck.
- D) SILVER gun spring for Mild Steel or Stainless Steel pins or studs. BLACK gun spring for Aluminum pins or studs. SILVER gun spring for cuphead pins.
- E) Good, clean accessories and work surface to be welded, with proper setup of all accessories.

| Pin/Stud Type           | Pin/Stud Dia               | Pin/Stud Mat'l.            | Voltage Setting            |
|-------------------------|----------------------------|----------------------------|----------------------------|
| Cuphead Pin             | 12 GA                      | Mild Steel                 | 80-90                      |
| Insulation Pin          | 12 GA<br>10 GA             | Mild Steel<br>or Stainless | 65-75<br>80-90             |
|                         | 12 GA<br>10 GA             | Aluminum                   | 75-85<br>80-90             |
| Weld Studs<br>(Flanged) | #8<br>#10 or 3/16"<br>1/4" | Mild Steel<br>or Stainless | 85-95<br>90-100<br>125-135 |
|                         | #8<br>#10 or 3/16"         | Aluminum                   | 80-90<br>120-130           |

NOTE: Be sure that proper observation of all safety precautions are in place before performing the next step.

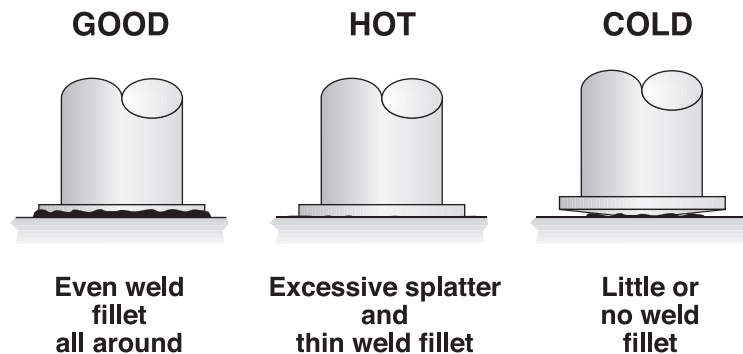


## MAKING TEST WELDS

3. Pick up the weld gun and place the stud firmly against the workpiece (The test workpiece should be a material that is similar to the workpiece to be welded to in actual production.)
4. Depress the weld gun trigger, wait momentarily, and then pull the gun straight back off the stud.
5. Test the weld integrity (see below.)

## VERIFYING WELD JOINT QUALITY

### Stud Welded Joint Quality



- A GOOD weld is determined by bending the stud back and forth. Failure should occur in the stud shank or workpiece, not in the weld.
  - HOT weld shows excessive splatter — adjust voltage downward
  - COLD weld shows little or no splatter and may have a void between the stud and workpiece — adjust voltage upwards.
6. Adjust the weld voltage up or down until a satisfactory weld is consistently achieved, using the UP and DOWN pushbuttons.

If you need assistance with setup, or operation, call MIDWEST FASTENERS Technical Support at (800) 852-8352 Monday through Friday between 8am and 5pm Eastern time.

When weld quality is consistently satisfactory, the SureShot II is properly installed and setup.

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## PREVENTIVE MAINTENANCE

Your MIDWEST FASTENERS welder is designed for long service with minimal care. Ordinary common sense maintenance will keep it operating efficiently. The following are a few tips on preventive maintenance.

1. Treat the cables with respect. Avoid sharp bends or kinks which may break the cables. DO NOT use the cables as a “towline” to drag or lift the controller. Avoid damaging or straining the cables where they enter the gun or controller.
2. Louvers on the sides of the controller should be free from obstructions at all times to prevent overheating.
3. Keep the controller and gun clean and dry, free of grease, water, dust and dirt. Do not lubricate any part of your CD 2 weld gun.
4. The weld gun is for welding studs only. Do not use the weld gun as a multipurpose tool (i.e., Hammer—banging studs to test welds or break ferrules, Scraper—removing rust, scale or weld splatter, etc.)
5. When storing or shipping the System, disconnect all cables. Remove the connector from the receptacle for the Ground, both Gun Cables and the Power Cord.

## TROUBLESHOOTING

When troubleshooting the sureShot II, the following precautions must be observed.



HIGH VOLTAGE

1. Controller power must be TURNED OFF!

NOTE: Dangerous voltage levels can still be present in the controller—even after power is disconnected.

2. The use of a volt/ohmmeter is recommended to verify where any voltage may, or may not, be present.
3. The use of a continuity tester (or trouble shooting light) can be used for continuity checking (disconnected) cables only.

The troubleshooting chart on the following pages can assist in locating and fixing problems with the SureShot II.

## TROUBLESHOOTING CHART

| PROBLEM                                                                                        | POSSIBLE CAUSE                                                    | CORRECTIVE ACTION                                                                                                                                                     |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Welder does not turn on and will not weld.                                                  | A. Power cable connection at welder or power source not complete. | Inspect power cable connections. Repair if loose.                                                                                                                     |
|                                                                                                | B. Power cables/connectors damaged.                               | Inspect for damage. Repair or replace power cord as needed.                                                                                                           |
|                                                                                                | C. Wrong power cord.                                              | Ensure that correct power cord for incoming voltage is being used. SureShot II offers 110V and 220V power cords. Ensure power cord in use matches electrical service. |
|                                                                                                | D. Open circuit breaker or damaged wall outlet.                   | Reset breaker, replace outlet or relocate connection to available power. Contact qualified Electrician if power is still not available.                               |
| 2. Circuit breaker on welder trips each time the welder is turned on.                          | A. Faulty circuit breaker.                                        | Check with ohmmeter and replace if defective.                                                                                                                         |
|                                                                                                | B. Shorted transformer.                                           | Replace if defective.                                                                                                                                                 |
|                                                                                                | C. Shorted rectifier.                                             | Replace if defective.                                                                                                                                                 |
|                                                                                                | D. Shorted weld capacitor.                                        | Check with ohmmeter and replace if defective.                                                                                                                         |
|                                                                                                | E. Wrong power cord.                                              | Ensure that correct power cord for incoming voltage is being used. SureShot II offers 110V and 220V power cords. Ensure power cord in use matches electrical service. |
| 3. Circuit breaker welder trips after weld is made.                                            | A. Faulty printed circuit board.                                  | Repair or replace if defective.                                                                                                                                       |
|                                                                                                | B. Shorted flyback diode.                                         | Repair or replace if defective.                                                                                                                                       |
| 4. Welder turns on and display does not show revision level and diagnostic LED's do not flash. | A. Faulty printed circuit board.                                  | Repair or replace if defective.                                                                                                                                       |
|                                                                                                | B. Fuse blown on printed circuit board.                           | Check with ohmmeter and replace if defective.                                                                                                                         |
| 5. Welder turns on and displays revision level and diagnostics, but does not charge capacitor. | A. "Contact" between gun and work.                                | Ensure that no contact is made between gun and workpiece for charging to occur.                                                                                       |
|                                                                                                | B. Voltage set at minimum.                                        | Adjust for proper welding.                                                                                                                                            |
|                                                                                                | C. Trigger is depressed.                                          | Release trigger to allow charging. Inspect gun microswitch. Check with ohmmeter. Replace if defective.                                                                |

## TROUBLESHOOTING CHART

| PROBLEM                                                                         | POSSIBLE CAUSE                                                      | CORRECTIVE ACTION                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5. (continued).                                                                 | D. Faulty printed circuit board.                                    | Replace if defective.                                                                                                                                                                                                                                                                                  |
|                                                                                 | E. Faulty charge triac (open).                                      | Repair or replace if defective.                                                                                                                                                                                                                                                                        |
|                                                                                 | F. Faulty discharge relay.                                          | Repair or replace if defective.                                                                                                                                                                                                                                                                        |
| 6. Welder turns on, displays revision level and diagnostics, but will not weld. | A. Open circuit in weld or ground cables.                           | Check for “Contact” (yellow) light while stud is held against work. If light does not come on, check the weld cable and ground cable. Repair or replace defective cables as needed. Check for clean, solid ground connection and correct if necessary.                                                 |
|                                                                                 | B. Damaged control cable/trigger switch.                            | While holding the gun away from the workpiece, depress the trigger switch. The “Trigger” (green) light should come on. If not, repair/replace trigger switch and or control cable.                                                                                                                     |
|                                                                                 | C. Faulty weld SCR.                                                 | Repair or replace if defective.                                                                                                                                                                                                                                                                        |
|                                                                                 | D. Faulty printed circuit board.                                    | Replace if defective.                                                                                                                                                                                                                                                                                  |
| 7. Welder does not retain the voltage setting when powered off and back on.     | A. Weld not performed after voltage adjustment was made.            | The unit will remember the voltage of the last weld made. If the voltage setting is changed, a weld must be made in order to store the setting in memory. Alternatively, the trigger can be depressed, while holding the gun away from the workpiece to store a new setting without performing a weld. |
|                                                                                 | B. Voltage reverts to minimum setting when the welder is turned on. | The voltage will automatically revert to the minimum setting, if the welder is shut down while operating at the maximum voltage setting for safety.                                                                                                                                                    |
| 8. Weld voltage cannot be increased and/or lowered.                             | A. “Trigger” or “Contact” made.                                     | Ensure that contact between the stud and the workpiece is not being made and that the trigger switch is not depressed while adjusting the voltage. Inspect gun microswitch. Check with ohmmeter. Replace if defective.                                                                                 |
|                                                                                 | B. Faulty printed circuit board.                                    | Replace if defective.                                                                                                                                                                                                                                                                                  |
|                                                                                 | C. Defective Up/Down pushbutton switch.                             | Replace if defective.                                                                                                                                                                                                                                                                                  |

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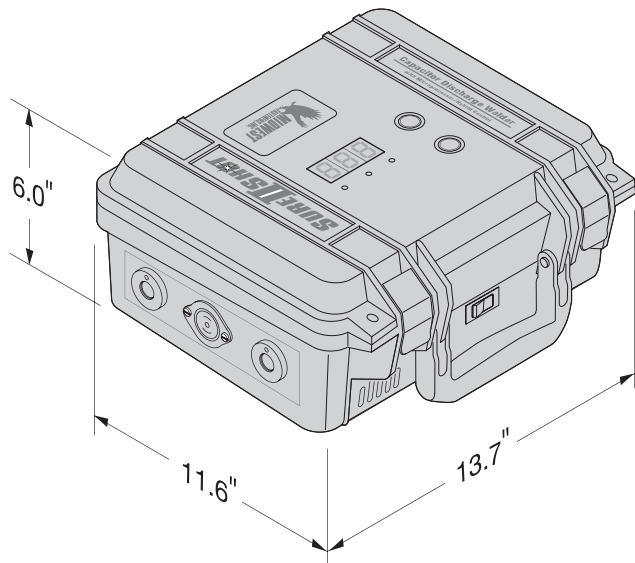
## TROUBLESHOOTING CHART

| PROBLEM                                      | POSSIBLE CAUSE                                                   | CORRECTIVE ACTION                                                                                                                   |
|----------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 9. Consistently poor welds or erratic welds. | A. Improper gun setup.                                           | Check gun for proper setup (Pg. 10).                                                                                                |
|                                              | B. Improper grounding, cable installation or incorrect polarity. | Check ground and gun cables for proper installation and setup (Pg. 8).                                                              |
|                                              | C. Weld cables coiled.                                           | Do not coil cables at, or near, weld area. Loose, or random, loops are acceptable. Straighten out or rearrange cables as necessary. |
|                                              | D. Incorrect weld voltage.                                       | Adjust as necessary (Pg. 11)                                                                                                        |
|                                              | E. Stud (or Pins) not perpendicular to workpiece.                | Adjust gun setup as necessary. Repair or replace worn or damaged legs and feet as needed (Pg. 10).                                  |

For safety and security, your SureShot II weld Controller was "factory sealed" at manufacture. To maintain warranty, and ensure proper servicing, your SureShot II may be returned to MIDWEST FASTENERS, Ohio, USA, for service or repair. Call (800) 852-8352 Monday through Friday between 8am and 5pm Eastern time.

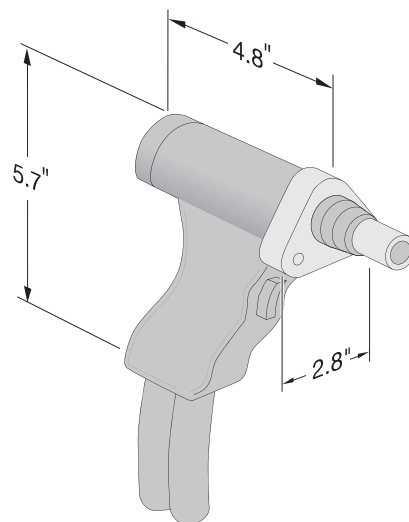
## SURESHOT II STUD WELDING SYSTEM SPECIFICATIONS

|                          |                                                     |
|--------------------------|-----------------------------------------------------|
| Weight .....             | 18 pounds                                           |
| Power Requirement.....   | 110/220 VAC,<br>50/60 Hz, 15/7.5 Amp                |
| Pin/Stud Range.....      | 14 ga. – 5/16" dia. weld<br>base                    |
| Weldable Materials ..... | Mild Steel, Stainless,<br>& Aluminum                |
| Weld Mode .....          | Capacitor Discharge,<br>Contact                     |
| Weld Rate .....          | 24/minute (maximum)*<br>(* Dependent on stud size.) |
| Weld Voltage.....        | 35–160 VDC                                          |
| Capacitance .....        | 100,000 mfd                                         |



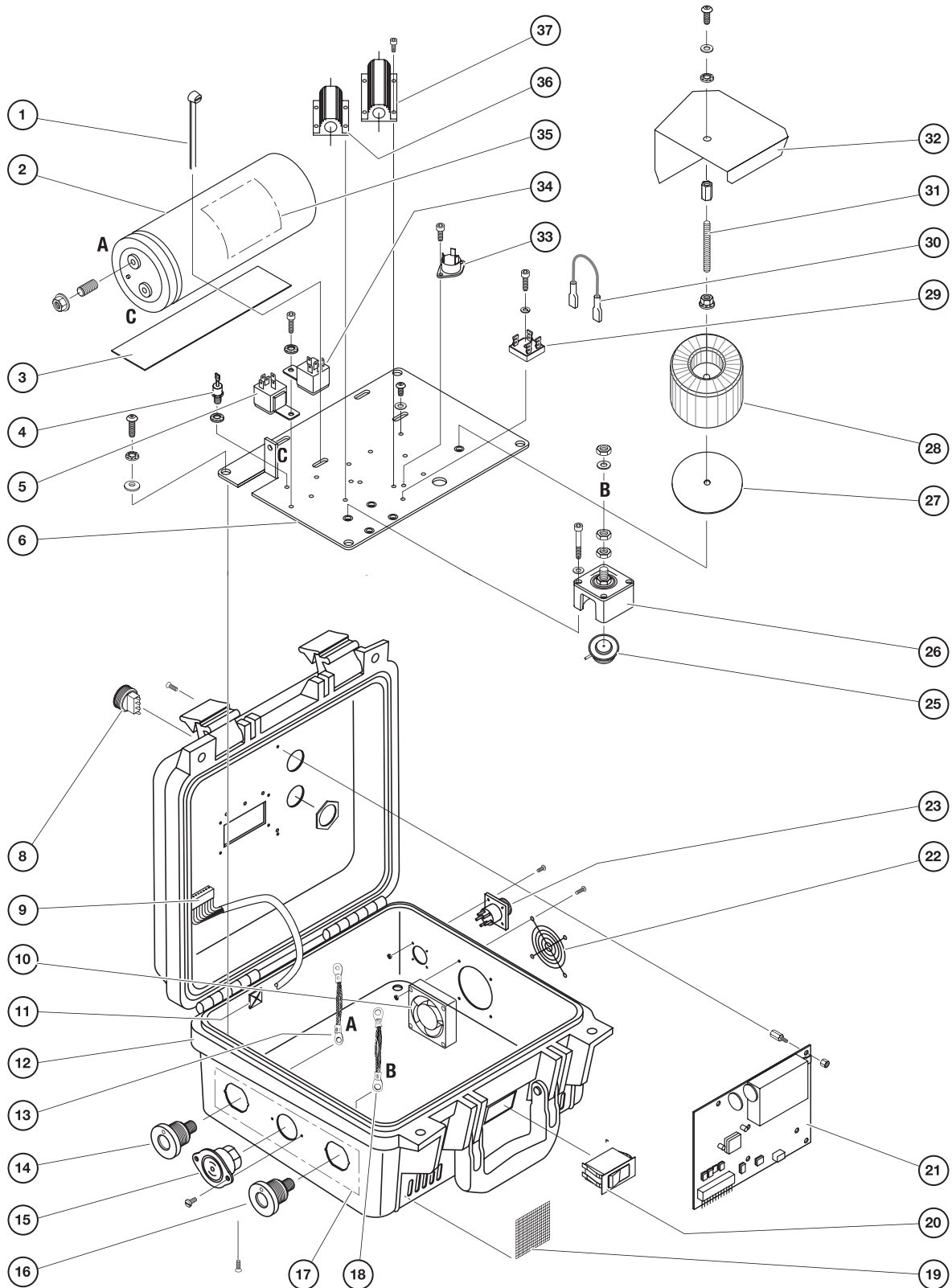
## CD 2 TALON/SURESHOT II STUD WELDING GUN SPECIFICATIONS

|                          |                                                   |
|--------------------------|---------------------------------------------------|
| Weight .....             | 1.6 pounds<br>(not including cables)              |
| Pin/Stud Range .....     | 14 ga. – 5/16" dia.                               |
| Weldable Materials ..... | Mild Steel, Stainless,<br>& Aluminum              |
| Material.....            | High strength, impact<br>resistant, polycarbonate |
| Gun Cable Length .....   | 20' dual                                          |



**Cables.....**15' Ground Cable

# **SURESHOT II** **STUD WELDING SYSTEM** **EXPLODED VIEW DIAGRAM**



## SURESHOT II - PARTS LIST

| Item | Qt'y. | Part No.    | Description                    |
|------|-------|-------------|--------------------------------|
| 1    | 2     | 050-3005-01 | Ty-Rap                         |
| 2    | 1     | 050-3005-02 | Weld Capacitor                 |
| 3    | 2     | 050-3005-03 | Rubber Capacitor Pad           |
| 4    | 1     | 050-3005-04 | Flyback Diode                  |
| 5    | 1     | 050-3005-05 | Discharge Relay                |
| 6    | 1     | 050-3005-06 | Chassis Plate                  |
| 8    | 2     | 050-3005-08 | Control Pushbutton             |
| 9    | 1     | 050-3005-09 | Wiring Harness                 |
| 10   | 1     | 050-3005-10 | Cooling Fan                    |
| 11   | 5     | 050-3005-11 | S/A Wire-Tie Retainer          |
| 12   | 1     | 050-3005-12 | SureShot II Case               |
| 13   | 1     | 050-3005-13 | Ground Buss Cable              |
| 14   | 1     | 060-3068-00 | Cam-lok Receptacle, Ground (+) |
| 15   | 1     | 050-1002-35 | Control Receptacle             |
| 16   | 1     | 060-3068-00 | Cam-lok Receptacle, Gun (-)    |
| 17   | 1     | 050-3005-17 | Connections Decals Kit         |
| 18   | 1     | 050-3005-18 | Gun Buss Cable                 |
| 19   | 2     | 050-3005-19 | Inlet Filter Mesh              |
| 20   | 1     | 050-3005-20 | Power Switch/Breaker           |
| 21   | 1     | 050-3005-21 | PC Board                       |

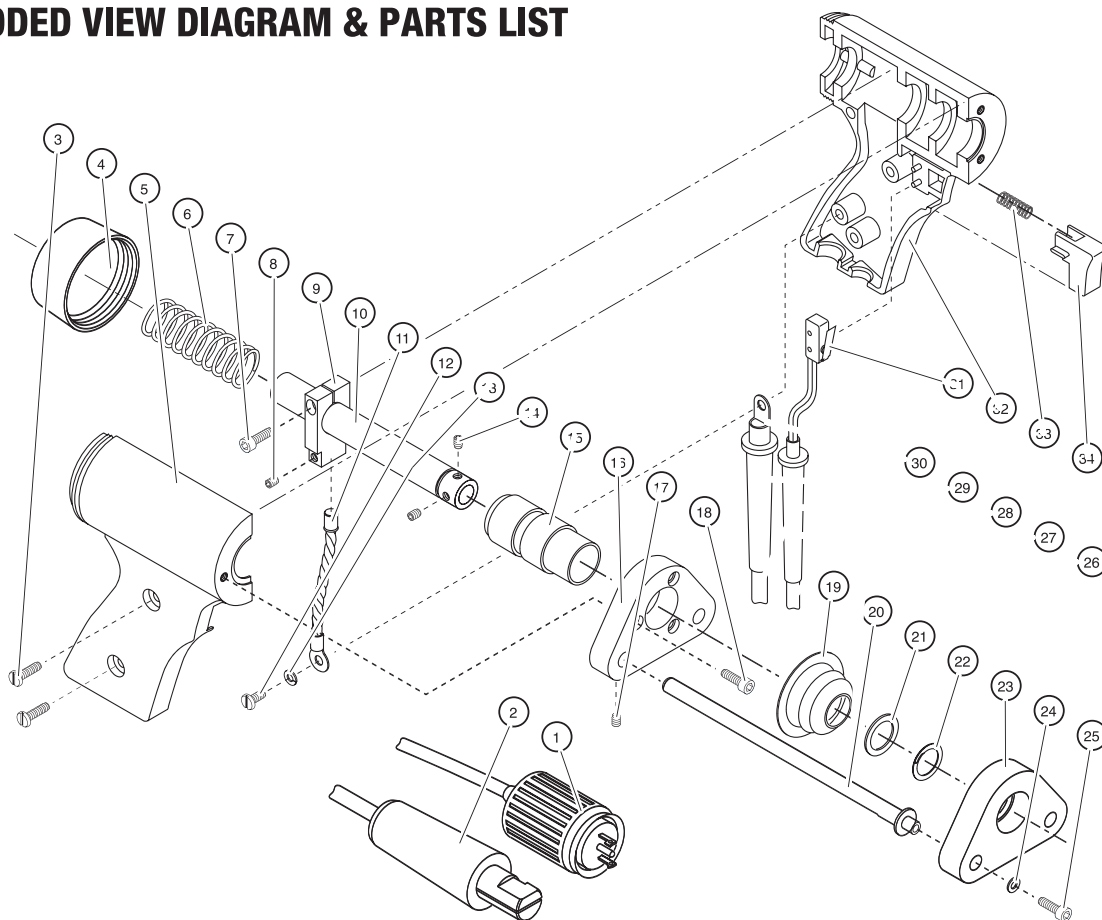
| Item | Qt'y. | Part No.    | Description             |
|------|-------|-------------|-------------------------|
| 22   | 1     | 050-3005-22 | Fan Guard               |
| 23   | 1     | 050-3005-23 | Power Cord Connector    |
| 25   | 1     | 050-1001-29 | Weld SCR                |
| 26   | 1     | 050-1001-30 | SCR Mount Box-Clamp     |
| 28   | 1     | 050-3005-28 | Transformer             |
| 29   | 1     | 060-1009-01 | Bridge Rectifier        |
| 30   | 1     | 050-3005-30 | Jumper                  |
| 32   | 1     | 050-3005-32 | Transformer Shield      |
| 33   | 1     | 050-3005-33 | Triac Switch            |
| 34   | 1     | 050-3005-34 | Reduction Relay         |
| 35   | 1     | 050-3005-35 | Capacitor Warning Decal |
| 36   | 1     | 050-3005-36 | Discharge Resistor      |
| 37   | 1     | 050-3005-37 | Reduction Resistor      |
| ~~   | 1     | 050-3005-38 | Padded Shoulder Strap   |
| ~~   | 1     | 050-3005-39 | Control Panel decal Kit |
| ~~   | 1     | 102-0100-02 | Security Key            |
| ~~   | 1     | 050-3005-31 | Xfmr Mount Hdw Kit      |



# TALON / SURESHOT II

## CD STUD WELDING GUN

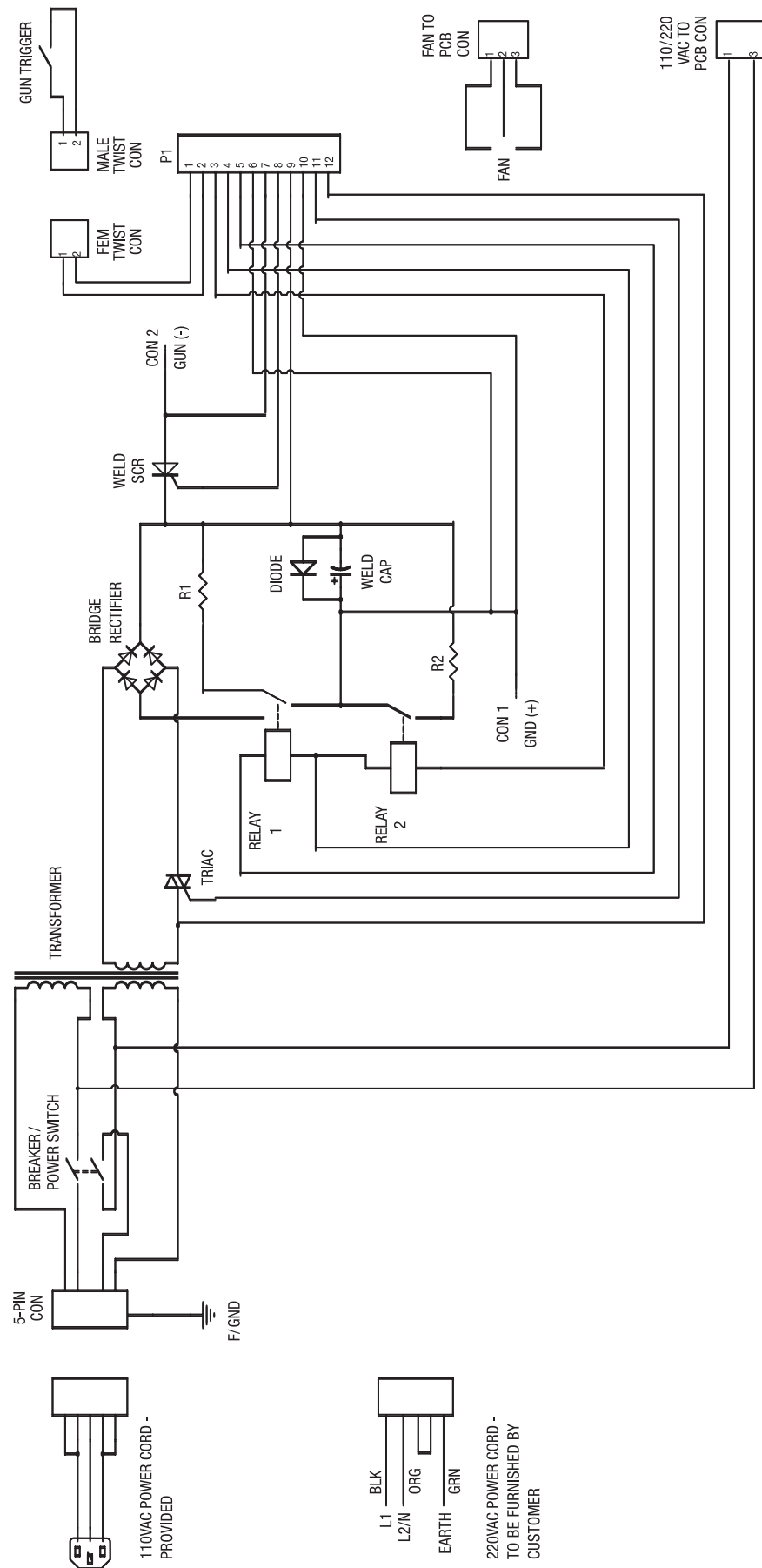
### EXPLODED VIEW DIAGRAM & PARTS LIST



| Item | Qt'y. | Part No.    | Description                |
|------|-------|-------------|----------------------------|
| 1    | 1     | 050-1002-36 | Male Control Connector     |
| 2    | 1     | 060-3046-00 | Male Weld Connector        |
| 3    | 2     | 181-3029-01 | 10-32 x 5/8 Pan Head Screw |
| 4    | 1     | 060-3005-01 | Rear Body Cap - Talon      |
| 5    | 1     | 050-1005-65 | Right Gun Body Half        |
| 6    | 1     | 060-3010-01 | Shaft Spring (Silver)      |
| 7    | 1     | 181-3029-19 | 10-32 x 5/8 Soc Head Screw |
| 8    | 1     | 181-3029-20 | 10-32 x 3/16 Set screw     |
| 9    | 1     | 060-3028-00 | Gun Shaft Block            |
| 10   | 1     | 060-3029-00 | Gun Shaft                  |
| 11   | 1     | 060-1004-01 | Pig-Tail Weld Cable        |
| 12   | 1     | 181-3029-05 | 10-32 x 1/2 pan Head Screw |
| 13   | 1     | 181-1260-01 | #10 Split Lock Washer      |
| 14   | 2     | 181-3029-20 | 10-32 x 3/16 Set Screw     |
| 15   | 1     | 050-1003-94 | Shaft Bearing              |
| 16   | 1     | 101-0601-00 | Standard Faceplate         |
| 17   | 2     | 181-3029-20 | 10-32 x 3/16 Set Screw     |
| 18   | 3     | 181-3029-18 | 8-32 x 3/4 Soc Head Screw  |
| 19   | 1     | 060-3221-00 | Shaft Boot                 |
| 20   | 2     | 101-0801-11 | Weld Gun Leg (Optional)    |
| 21   | 1     | 060-3222-07 | Boot Retainer              |

| Item      | Qt'y. | Part No.    | Description                  |
|-----------|-------|-------------|------------------------------|
| 22        | 1     | 060-3222-06 | Boot Retainer Split Ring     |
| 23        | 1     | 101-0701-00 | Weld Gun Foot (Optional)     |
| 24        | 2     | 181-1200-52 | #10 Flat Washer (Optional)   |
| 25        | 2     | 181-3029-12 | 10-32 x 5/8 SHC Screw (Opt.) |
| 26        | 1     | 050-1005-48 | Control Cable                |
| 27        | 1     | 050-1005-70 | Rubber Cable Sleeve, Small   |
| 28        | 1     | 050-1005-71 | Weld Cable                   |
| 29        | 1     | 050-1005-55 | Rubber Cable Sleeve, Large   |
| 30        | 1     | 060-3311-46 | Weld Cable Lug               |
| 31        | 1     | 060-3053-00 | Trigger Micro Switch         |
| 32        | 1     | 050-1005-66 | Left Gun Body Half           |
| 33        | 1     | 060-3003-00 | Trigger Button Spring        |
| 34        | 1     | 050-1005-35 | Trigger Button               |
| Not Shown |       |             |                              |
|           |       | 060-3010-04 | Shaft Spring (Copper)        |
|           |       | 060-3010-02 | Shaft Spring (Gold)          |
|           |       | 060-3010-03 | Shaft Spring (Black)         |
|           |       | 060-3010-05 | Shaft Spring (Red)           |

# **SURESHOT II STUD WELDING SYSTEM ELECTRICAL SCHEMATIC**





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