

HYBRID WELDING STATION

SQUEEZE TYPE RESISTANCE SPOT WELDER

OWNER'S MANUAL

WARRANTY INFORMATION





1419 N. Thierman Road | Spokane Valley, WA 99212 | PH: 1-800-644-2730 | FX: 509-244-2721

THANK YOU for purchasing an A.I.M. product. This Manual has been prepared to ensure that you experience years of trouble free use of you new welder. Please read this manual and share it with any personnel that will be involved with the use and care of this equipment. Please call us if you have any questions concerning your equipment. We at American Innovative Manufacturing believe this equipment and our other products will help you to be successful. It is our goal to help you make that happen.

This manual contains valuable information concerning how to operate and maintain your new equipment properly and safely. <u>Please read it carefully.</u>

Always follow vehicle manufacturer's recommendations on resistance spot welding for collision repairs.

Also, please complete and mail the enclosed warranty registration card. You must send in your warranty registration card within 30 days or your warranty may be void.

SERVICE				
For factory assistance or service please call;				
Inside the USA and C	Canada call toll free 1-800-644-2730			
If you need assistance or service, first see the "Troubleshooting" section of this book. When calling – you will need your model and serial numbers. This information can be found on the back of the main unit.				
Model:	HYBRID WELDING STATION			
Serial Number:				
Purchase Date:				

Local Representative:

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IMPORTANT SAFETY INSTRUCTIONS:

WARNING — When operating this equipment, please follow basic precautions, including the following:

- Read all instructions before using this machine and its attachments.
- Use this equipment only for its intended use.
- All electrical service connections must be made by a qualified electrician. Risk of electrical shock.
- All service and maintenance must be carried out by A.I.M service personnel or factory approved service facilities. Risk of electrical shock
- **IMPORTANT!** The welder may only be used by qualified personnel.
- Do not touch the copper connectors or electrodes during or immediately after use. Electrodes become hot and may cause severe burns.
- Make sure to use appropriate eye protection and other PPE when spot welding. The sparks can injure eves and unprotected skin.
- Do not weld near flammable materials. Sparks from welding could start a fire.
- Do not operate equipment unless all enclosure panels are properly installed and electrical cords are in good condition. Risk of electrical shock.
- Always wear protective face shield and other PPE when working with batteries and other equipment. Risk of chemical burns
- Before using a resistance welder consult your physician if you have a pacemaker or other medical conditions. Risk of death or personal injury.
- Failure to take basic safety precautions can result in serious injury and/or property damage
- Provide covers or other protection for items near the work area to prevent damage from sparks, lead jumping or accidental contact.
- Batteries must be properly maintained; improperly maintained batteries may short out or
- Contact Factory Service for all repairs or service to unit.

WARNING - Machine must remain in upright position at all times!

- Shut down unit, and disconnect input power before inspecting, maintaining or servicing.
- Unplug the welder from the wall outlet before servicing, cleaning, or maintenance. Risk of electrical shock.
- Cigarettes, sparks or other ignition sources could cause battery to explode. Always shield eyes and face from battery. Do not charge, use booster cables or adjust post connections without proper instructions and training. Keep vent caps tight and batteries level.
- Do not place the welder on unstable or uneven ground. The welder might tip causing personal injury or serious damage to the welder and other property.
- Do not operate this equipment unless user is fully trained in the safe use of welders and related accessories.

FIRST TIME USE

IMPORTANT---BEFORE YOU USE THE UNIT—CHARGE IT!

CHARGING THE UNIT

Upon receiving you're **A.I.M.** equipment, you *must charge* the unit before operating.

The HYBRID WELDING STATION is a battery operated unit that comes with a specially designed charger to ensure the power needed to operate the machine.

The A.I.M. charger is designed to automatically regulate the battery voltage level and should be charging when the machine is not in use. However, you may unplug the charger unit for any period of time as long as you plug the unit in at least one hour before operation. Refer to battery manufacturer recommendations if storing the machine for extended periods.

Extended Storage:

- If the welder is to be stored for periods longer than two weeks, make provision to allow charging the batteries to full charge weekly.
- For extended storage disconnect the batteries and/or remove them from the welder

INDICATOR LIGHTS

There are four sets of three indicator lights displayed on the front panel of the machine; a set for each of the four batteries.

The **RED** light indicates there is power to the charger.

The **YELLOW** light indicates the charger is connected to the battery and charging when plugged into the 110V-20 amp power source.

The GREEN light indicates high voltage level of the battery – full charge.

When the GREEN light flashes with the YELLOW charge light – this signals the battery is approaching a full charge.

When the GREEN light is on almost continuously – this indicates maximum charge.

- > Green light should always alternate with yellow light.
- The alternating GREEN/YELLOW mode is maintaining the battery at peak voltage
- It is recommended that units in daily use be kept plugged in to the power source to maintain the batteries
- > If storing the unit for long periods please refer to the battery manufacturer's guidelines for battery storage

The voltage required for your charger's power source is indicated on the back label of the charger.

Voltages Available:

110 / 120 Volt 60 HZ

Other voltages are available on special order contact A.I.M. for information.

Special Note: Proper collision repair requires special knowledge and training; the guidelines that follow are general in nature and not intended to replace professional training. I-CAR, SCRS, Technical Schools and OEM's offer a variety of training opportunities. AIM supports these programs through financial support, demonstration equipment and other support. Collision repair technicians trained through these programs will maximize the investment made in A.I.M. Welders and Dent Pullers

PANEL PREPARATION

Carefully examine the surface, looking for defects; cracks, contamination and rust.

When preparing a panel for welding, the area to be welded on the parent panel must be cleared to the bare metal.

Next, weld-through-primer or panel adhesive can be applied for corrosion protection.

Allow the weld-through-primer to dry before welding.

When using a panel adhesive, be sure to weld the panel prior to the glue drying.

When using a panel with transport coatings applied, initially clean all sides.

The panels need to be free of all coatings – only in an area large enough to do one weld.

For the remaining welds, only clean an area on the outside of the panel large enough for the weld to be applied. This procedure allows for good continuity through the panels.

When single side welding clean one side of the panel. Please consult OEM repair specifications before single side welding to ensure that single side welding is appropriate in your application.

When double side welding it will be necessary to clean both outside panels where the weld is to be applied.

Special Note: Preparation is very important. It could be the difference in a successful weld and an unsuccessful weld. Take the extra time necessary to prepare the panel properly. Consult OEM specifications as needed.

Special Note: Test welds with sample coupons made from the same material and thickness to be repaired should be welded and tested.

<u>Safety Hazard:</u> When welding test coupons use a bench mounted vice to securely hold the test material during welding. There is a risk of personal injury and damage to the equipment if the material is not properly secured.

QUICK REFERENCE SETTINGS GUIDE

NOTE: There is a 2-second delay when weld button is pushed to allow for pressure buildup.

Double Sided Welding - Pneumatic Handle

Combined Thickness	Pulse Mode	Settings
1/16 in. or 1mm + 1mm	NO	8-10
1/8 in. or 1.5mm + 1.5mm	NO	9-11
3/16 in. or 2mm + 2mm	NO	11-13
SA-276 Bullet Style Cap MUST Be Used		
¹ / ₄ in. or 3mm + 3mm	NO	12-14
3/8 in or 3mm +3mm +3mm	Pulse	13-15
Boron or other High Strength Steels	Pulse	

Single Sided Welding

NOTE: Must still use Air Source (cap airline to handle with accessory cap or leave connected to double side gun in holster.

Thin to Thin	Press Firmly	NO	3-5
Thin to Thick	Press Firmly	NO	5-10

These are recommended settings. Conditions may vary. Therefore a tear test must be performed on like material. Do not over weld. Always maintain a tip size. *Unmaintained tip size will cause overheating and weld failure.*

Spot Welding Aluminum

Please refer to the supplemental manual that accompanies the Aluminum Spot Welding Accessory Packet.

QUICK REFERENCE OPERATIONS & CARE INSTRUCTIONS

CHARGING

It is recommended that the machine be plugged into a 110V circuit when not in use, in order to keep the batteries charged, for optimum power. The charging system will not overcharge and will prolong the life of your batteries. It is also required that this machine be plugged into a 110V circuit during any welding procedure.

COOLING

It is essential that the welding electrodes be kept cool. DO NOT OVERWELD. Use the proper settings as recommended. Failure to do so will result in premature failure of the electrodes. You will achieve top performance from the welding electrodes when they are cooled. It is also necessary to keep the air source connected to the machine while performing any welding task. This allows for the cooling of the cables, as well as the internal parts of the machine. It is highly recommended that auxiliary air-water separators be installed in the air source as damp air will cause premature wear on the components and reduce the life of the unit.

CLEANING

All electrodes should be kept looking like new. This is easily accomplished by simply dressing the tips periodically. A dressed tip will offer optimum performance. Use a fine flat file to trim the taper and dress the end of the electrode. Care should be taken to keep the taper and tip surface as close to new as possible. All molten metal must be removed from copper electrodes prior to welding. All copper fittings and electrodes should be periodically cleaned with "00" fine steel wool. Never use sandpaper on the copper!

DOUBLE SIDE SQUEEZE TYPE SPOT WELDING

Always keep machine plugged into proper power source during double sided welding.

See reference Setting Guide enclosed with your machine for proper setting. Consult OEM specifications as needed.

Connect the SA-50 EZ-Change High Force Handle to the positive and negative cable leads. The positive cable is connected to the lug located on the air cylinder side of the handle. The negative cable is connected to the fixed lug on the upper side of the handle. The positive lead and positive lug are color coded **red** to help with proper connection.

NOTE: Fasten cable arm holding strap and spring to leads and **Boom Bar** for weight support.

To connect the air to the handle, push the hose into the fitting. Note: the air fitting slide collar is pushed back during hose insertion and removal to release the locking feature on the quick connect fitting.

Connect the other end of the hose to the air fitting on the welder control head face panel. To remove the hose, push the ring on the fitting forward.

Properly align the panels and clamp the panels together after preparing the metal as described in the Panel Preparation section.

A Shunt Clamp may be needed to ensure a proper weld especially on the first weld of a panel project.

Place the stationary electrode against the backside of the panels to be welded together and pull towards you. To weld, squeeze the air-trigger with your index finger and push the button with your thumb.

Keep the air-trigger pressed to hold pressure on the panels for a short time after the weld cycle while the metal cools.

The weld will automatically turn off in accordance to the settings on the timer. Squeeze time and post weld clamping time are automatically controlled.

NOTE: There is a two second delay between activating the weld trigger and the start of the weld cycle in order to ensure proper clamping force is generated.

NOTE: Always keep electrode tips and welding unit cool. The HYBRID WELDING STATION is equipped with a tip cooling system, however to ensure proper welding and maximize tip life the technician must monitor the tip condition for over heating and metal build up.

Never blue the electrodes. This will cause resistance and require electrode replacement.

Maintaining the alignment and shape of the electrode tips is very important.

The 10" extension arm SA-54 and 20" extension arm SA-55 is available for long reach areas. To change extension arms loosen the coupling collar, remove the existing arm and insert the selected arm and align the electrodes.

Use a fine file to dress the tip and/or remove any foreign material. Electrode tip shape should be maintained to match the original shape of the tip.

Clean all copper ends with "00" steel wool or scotch-brite pad. This will ensure good conductivity and proper fit of the cables and attachments.

Squeeze Pressure Reference: EZ-Change Handle

Squeeze Force @ 120 psi 1060 Pounds Force

Squeeze Force @ 110 psi 935 Pounds Force

Squeeze Force @ 100 psi 830 Pounds Force

Squeeze Force @ 90 psi 725 Pounds Force

Pounds Force measured 8/6/2014

SINGLE SIDE RESISTANCE SPOT WELDING

Keep the machine plugged into a power source during this operation.

This will increase usage time and will slow heat build up.

Compressed air must be connected to the back of the unit to aid in cooling internal parts.

Connect the ground attachment to the ground cable lead.

Grounding lead is to be clamped to the *parent panel* (the panel being welded to) in all cases.

Connect the SA-109 "Quick Spot Handle" to the positive cable lead.

Insert the SA-113 "Single Side Spot Welding Electrode".

Properly prepare the panels to be welded (see **panel preparation** section) and clamp the panels together.

Panels must be clamped while welding to avoid gaps between the metal.

Hold electrode tight against the panel, then press the control switch to weld. Keep electrode pressure applied for a couple seconds while the panel is cooling.

Holding down on the switch button will allow machine to automatically shut off when the welding cycle is complete.

Test weld and adjust the timer as necessary.

Allow for proper cooling of the electrodes. This will aid the unit in staying cool and will increase the number of welds.

Maintaining the shape of the electrode tip is very important.

Use a fine file to dress the tip and/or remove any foreign material that may have melted on the tip of the electrode.

Electrode tips should be kept with a 1/4" (6mm) tip surface. All tips need to be tapered.

Do Not Use a Grinder on Any Copper Surface

Clean all copper ends with "00" steel wool. This will insure good conductivity and proper fit of the cables and attachments.

GENERAL INSTRUCTIONS

Refer to quick reference guide for spot controller settings.

Do not try to weld with low batteries. This will cause a substandard weld and rapid heat build-up in cables. The charge indicator lights and/or analog voltage meters provide an indication of the battery charge condition. Monitor those indicators regularly to ensure proper weld performance.

The **HYBRID WELDING STATION** is equipped with a low voltage protection system. If the system voltage drops below a level that provides proper weld performance, an alarm will sound and the weld cycle will not be allowed to occur.

Do not overheat the machine. Periodic cooling is suggested.

ATTACHING CAPTIVE NUTS & BOLTS

Set the spot controller as per the quick reference guide.

Connect the SA-109 "Quick Spot Handle" into the positive lead.

Connect the SA-105 "Grounding Attachment", insert in the negative lead for grounding purposes.

Attach the ground to the panel.

Using the proper attachment for the task to be done is required.

Example: SA-180 6mm Nut Welding Tool & SA-181-6 6mm Nut Weld (Contact the Factory for the specific attachment needed for you application)

REPLACING WELDING CAPS

Worn Caps need to be replaced when shaping is no longer possible or clamping pressure is reduced by the fit of the electrodes.

Always clean copper surfaces of any oils or contamination before installing new electrode.

Use "00" Steel Wool to clean the copper surfaces. Oils or contamination could interfere with the welding process.

Warning: Never Change or Adjust Electrodes With Air Supply On.

BATTERY CARE AND MAINTENANCE

Note: This machine is equipped with maintenance free batteries.

Equipment needed

- Gloves and Goggles
- > Insulated wrench
- ➤ Baking soda
- > Terminal protector spray
- > Voltmeter
- Discharge tester(if available)

Safety

- ➤ Always wear protective clothing, goggles and gloves when handling batteries
- **▶** Do not smoke or allow open flames near batteries
- ➤ Avoid skin contact with battery electrolyte
- **➤** Use insulated wrenches and tool to avoid shorting batteries
- > In case of contact with electrolyte flush with water immediately, seek medical treatment
- > Charge batteries in ventilated area
- **Keep you machine and battery upright at all times.**
- > Do not allow a battery to freeze, do not attempt to charge a frozen battery
- ➤ Avoid charging at temperatures over 120 degrees F.

Battery Connections

Faulty connections can lead to poor performance and property damage, meltdown or fire. Do not change the cable size that your machine was equipped with at the factory. Tighten battery connections properly using an insulated wrench. Use terminal protection to prevent corrosion.

Battery Ventilation

Do not block or cover ventilation panels. Always charge your machines battery in a properly vented area away from open flame or other ignition source.

Inspection

Periodically inspect your battery. The battery case must not be swollen or damage, replace the battery if physical damage is evident. Clean battery top and terminal connections if needed. Check batter connections and cables; tighten connections if necessary and replace any worn or damaged cables.

Cleaning

Clean the top of your battery with a cloth or brush and a solution of baking soda and water. **Do not allow cleaning solution to get inside the battery.** Keep the battery cabinet clean and dry.

Charging

Use the charger attached to the machine, this charger is designed to not over charge the battery. If other charging equipment is used please refer to the charger and battery manufactures' recommendations to ensure compatibility. Fully charge your battery after each use.

Storage

- > Fully charge battery before storing
- > Store in a cool dry location, indoors or under cover
- > If storing for long periods (greater than one month) disconnect battery from machine
- ➤ Batteries will self discharge and should be fully charged every 4-6 weeks
- Fully charge battery when removed from storage before using
- Avoid direct exposure to heat sources, batteries self discharge faster in hot weather.
- > Do not allow battery to freeze. Batteries that are not fully charged can freeze during cold weather.

Battery Recycling

97% of a lead acid battery can be recycled. When it is time to replace your battery properly dispose of the old one at a licensed battery recycler and help keep the environment clean.

Material Safety Data Sheet

The MSDS sheet for your battery is attached to this manual.

HYBRID WELDING STATION PERIODIC MAINTENANCE

Note: Follow safety instructions before performing maintenance

DAILY

Drain exterior air dryer/filter.

FAILURE TO PROPERLY SERVICE THE AIR DRYER/FILER MAY VOID WARRANY

MONTHLY

Inspect cables for cuts or damage.

Use fine steel wool on copper connections.

EVERY 6 MONTHS

Check and inspect air filter. Check and inspect batteries

Check and tighten all electrical connections

ANNUALLY

Remove dust from charging unit. Use low pressure dry compressed air to

blow out dust

USEFUL OPERATING INFORMATION

Keeping your battery **fully charged** after use will increase the life of your battery.

Keep welding tips cool.

A low battery will cause excessive cable heat and an alarm will sound.

Gases from battery vent out of the machine.

Baking soda should be used to neutralize battery acid in the event of a spill. Refer to MSDS from battery manufacturer for additional information

Keep tips shaped and clean all copper ends with "00" steel wool.

Always keep air connected to unit during use.

TROUBLE SHOOTING

Problem

Unit does not charge-Red light

Check the following:

supply.

Is the charger output cord disconnected or Yellow light does not come on.

damaged?

Check charger output cord for damages; and a solid

Make sure power cord is plugged in. Check power

connection. **Check Battery**

Green light does not come on. Call for service.

Green light flashes rapidly and does not slow (flutter).

Possible defective battery (call Factory Service)

Power appears to be weak and welds are not holding.

- Check accessory connections.
- Make sure electrodes are trimmed and properly shaped.
- Allow power cables to cool.
- Assure grounding cable ends are clean and attached to the proper panel.
- Adjust timer according to quick reference guide.
- Is there an air gap between metals?
- Be sure electrodes clamp tightly.

LIMITED WARRANTY

American Innovative Manufacturing LLC (AIM) of Spokane, WA, subject to the terms and conditions described below, warrants to its original retail purchaser that new AIM equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by AIM. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

AIM PRODUCTS ARE INTENDED FOR PURCHASE AND USE BY COMMERCIAL/INDUSTRIAL USERS AND PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF THE EQUIPMENT.

AIM shall honor valid warranty claims on warranted equipment for a period of **ONE YEAR** in the event of such a failure within the warranty time period. All warranty time periods start on the delivery date of the equipment to the original end-user purchaser, and not to exceed one year after the equipment is shipped to a distributor or retail customer.

Within the applicable warranty period AIM will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. AIM must be notified in writing within thirty (30) days of such defect or failure, at which time AIM will provide instructions on the warranty claim procedures to be followed.

AIM's Limited Warranty shall NOT apply to:

- 1. Consumable components or parts that fail due to normal wear.
- 2. Items furnished by AIM, but manufactured by others. These items are covered by the manufacturer's warranty, if any.
- 3. Equipment that has been modified by any party other than AIM, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at AIM's option:

- 1. Repair,
- 2. Replacement,
- 3. The reasonable cost of repair or replacement by an authorized AIM service representative (where authorized in writing by AIM in appropriate cases), or
- 4. Payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at customer's risk and expense. AIM's option of repair or replacement will be F.O.B., Factory at Spokane, WA, or F.O.B. at an AIM authorized service representative as determined by AIM. Therefore no compensation or reimbursement for transportation costs of any kind will be allowed.

Some states in the U.S.A. do not allow limitations of how long an implied warranty lasts, or the exclusion of incidental, indirect, special or consequential damages, so the above limitation or exclusion may not apply to you. This warranty provides specific legal rights, and other rights may be available, but may vary from state to state.

In Canada, legislation in some provinces provides for certain additional warranties or remedies other than as stated herein, and to the extent that they may not be waived, the limitations and exclusions set out above may not apply. This Limited Warranty provides specific legal rights, and other rights may be available, but may vary from province to province.

TO THE EXTENT PERMITTED BY LAW, THE REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL AIM BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT), WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT TORT OR ANY OTHER LEGAL THEORY WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY AIM IS EXCLUDED AND DISCLAIMED BY AIM.

WARRANTY QUESTIONS? Call Customer Service 1-800-644-2730

The Panel Beater is a Registered Trademark of American Innovative Manufacturing US Patent Nos. 5,516,997 / 5,917,394 & Other Patents Pending

REPLACEMENT PARTS & ACCESSORIES

(Available through your dealer or at www.ai-mfg.com)

Electrode

Other parts and accessories available please visit our website: www.ai-mfg.com

SHIPPING & HANDLING PROCEDURES

HYBRID WELDING STATION

This machine contains lead-acid storage batteries. Each battery is liquid tight when kept in the upright position. However, in the event the battery is tipped over and some acid spillage does occur, neutralize the acid with baking soda. Refer to the battery manufacturer MSDS sheet for additional information

Should acid get on your skin, immediately flush the area with a large quantity of water.

This machine is designed for indoor environments protected from weather, dust and high temperatures.

The machine should be properly packaged and protected from damage during shipping.

Hazardous material notifications may be required when shipping this machine.

Follow all A.I.M. guidelines and use proper safety procedures when handling this machine.



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