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THANK YOU & WARRANTY

Thank you for your purchase of a machine from Baileigh Industrial. We hope that you find it productive and useful to you for a long time to come.

Inspection & Acceptance. Buyer shall inspect all Goods within ten (10) days after receipt thereof. Buyer's payment shall constitute final acceptance of the Goods and shall act as a waiver of the Buyer's rights to inspect or reject the goods unless otherwise agreed. If Buyer rejects any merchandise, Buyer must first obtain a Returned Goods Authorization ("RGA") number before returning any goods to Seller. Goods returned without a RGA will be refused. Seller will not be responsible for any freight costs, damages to goods, or any other costs or liabilities pertaining to goods returned without a RGA. Seller shall have the right to substitute a conforming tender. Buyer will be responsible for all freight costs to and from Buyer and repackaging costs, if any, if Buyer refuses to accept shipment. If Goods are returned in unsalable condition, Buyer shall be responsible for full value of the Goods. Buyer may not return any special-order Goods. Any Goods returned hereunder shall be subject to a restocking fee equal to 30% of the invoice price.

Specifications. Seller may, at its option, make changes in the designs, specifications or components of the Goods to improve the safety of such Goods, or if in Seller's judgment, such changes will be beneficial to their operation or use. Buyer may not make any changes in the specifications for the Goods unless Seller approves of such changes in writing, in which event Seller may impose additional charges to implement such changes.

Limited Warranty. Seller warrants to the original end-user that the Goods manufactured or provided by Seller under this Agreement shall be free of defects in material or workmanship for a period of twelve (12) months from the date of purchase, provided that the Goods are installed, used, and maintained in accordance with any instruction manual or technical guidelines provided by the Seller or supplied with the Goods, if applicable. The original end-user must give written notice to Seller of any suspected defect in the Goods prior to the expiration of the warranty period. The original end-user must also obtain a RGA from Seller prior to returning any Goods to Seller for warranty service under this paragraph. Seller will not accept any responsibility for Goods returned without a RGA. The original end-user shall be responsible for all costs and expenses associated with returning the Goods to Seller for warranty service. In the event of a defect, Seller, at its sole option, shall repair or replace the defective Goods or refund to the original end-user the purchase price for such defective Goods. Goods are not eligible for replacement or return after a period of 30 days from date of receipt. The foregoing warranty is Seller's sole obligation, and the original end-user's exclusive remedy, with regard to any defective Goods. This limited warranty does not apply to: (a) die sets, tooling, and saw blades; (b) periodic or routine maintenance and setup, (c) repair or replacement of the Goods due to normal wear and tear, (d) defects or damage to the Goods resulting from misuse, abuse, neglect, or accidents, (e) defects or damage to the Goods resulting from improper or unauthorized alterations, modifications, or changes; and (f) any Goods that has not been installed and/or maintained in accordance with the instruction manual or technical guidelines provided by Seller.

EXCLUSION OF OTHER WARRANTIES. THE FOREGOING LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. ANY AND ALL OTHER EXPRESS, STATUTORY OR IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED. NO WARRANTY IS MADE WHICH EXTENDS BEYOND THAT WHICH IS EXPRESSLY CONTAINED HEREIN.

Limitation of Liability. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER OR ANY OTHER PARTY FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR DOWN TIME) ARISING FROM OR IN MANNER CONNECTED WITH THE GOODS, ANY BREACH BY SELLER OR ITS AGENTS OF THIS AGREEMENT, OR ANY OTHER CAUSE WHATSOEVER, WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY OF LIABILITY. BUYER'S REMEDY WITH RESPECT TO ANY CLAIM ARISING UNDER THIS AGREEMENT IS STRICTLY LIMITED TO NO MORE THAN THE AMOUNT PAID BY THE BUYER FOR THE GOODS.



Force Majeure. Seller shall not be responsible for any delay in the delivery of, or failure to deliver, Goods due to causes beyond Seller's reasonable control including, without limitation, acts of God, acts of war or terrorism, enemy actions, hostilities, strikes, labor difficulties, embargoes, non-delivery or late delivery of materials, parts and equipment or transportation delays not caused by the fault of Seller, delays caused by civil authorities, governmental regulations or orders, fire, lightening, natural disasters or any other cause beyond Seller's reasonable control. In the event of any such delay, performance will be postponed by such length of time as may be reasonably necessary to compensate for the delay.

Installation. If Buyer purchases any Goods that require installation, Buyer shall, at its expense, make all arrangements and connections necessary to install and operate the Goods. Buyer shall install the Goods in accordance with any Seller instructions and shall indemnify Seller against any and all damages, demands, suits, causes of action, claims and expenses (including actual attorneys' fees and costs) arising directly or indirectly out of Buyer's failure to properly install the Goods.

Work By Others; Safety Devices. Unless agreed to in writing by Seller, Seller has no responsibility for labor or work performed by Buyer or others, of any nature, relating to design, manufacture, fabrication, use, installation or provision of Goods. Buyer is solely responsible for furnishing, and requiring its employees and customers to use all safety devices, guards and safe operating procedures required by law and/or as set forth in manuals and instruction sheets furnished by Seller. Buyer is responsible for consulting all operator manuals, ANSI or comparable safety standards, OSHA regulations and other sources of safety standards and regulations applicable to the use and operation of the Goods.

Remedies. Each of the rights and remedies of Seller under this Agreement is cumulative and in addition to any other or further remedies provided under this Agreement or at law or equity.

Attorney's Fees. In the event legal action is necessary to recover monies due from Buyer or to enforce any provision of this Agreement, Buyer shall be liable to Seller for all costs and expenses associated therewith, including Seller's actual attorney fees and costs.

Governing Law/Venue. This Agreement shall be construed and governed under the laws of the State of Wisconsin, without application of conflict of law principles. Each party agrees that all actions or proceedings arising out of or in connection with this Agreement shall be commenced, tried, and litigated only in the state courts sitting in Manitowoc County, Wisconsin or the U.S. Federal Court for the Eastern District of Wisconsin. Each party waives any right it may have to assert the doctrine of "forum non conveniens" or to object to venue to the extent that any proceeding is brought in accordance with this section. Each party consents to and waives any objection to the exercise of personal jurisdiction over it by courts described in this section. Each party waives to the fullest extent permitted by applicable law the right to a trial by jury.

Summary of Return Policy.

- 10 Day acceptance period from date of delivery. Damage claims and order discrepancies will not be accepted after this time.
- You must obtain a Baileigh issued RGA number PRIOR to returning any materials.
- Returned materials must be received at Baileigh in new condition and in original packaging.
- Altered items are not eligible for return.
- Buyer is responsible for all shipping charges.
- A 30% re-stocking fee applies to all returns.

Baileigh Industrial makes every effort to ensure that our posted specifications, images, pricing and product availability are as correct and timely as possible. We apologize for any discrepancies that may occur. Baileigh Industrial reserves the right to make any and all changes deemed necessary in the course of business including but not limited to pricing, product specifications, quantities, and product availability.

For Customer Service & Technical Support:

Please contact one of our knowledgeable Sales and Service team members at:
(920) 684-4990 or e-mail us at sales@baileigh.com



INTRODUCTION

The quality and reliability of the components assembled on a Baileigh Industrial machine guarantee near perfect functioning, free from problems, even under the most demanding working conditions. However, if a situation arises, refer to the manual first. If a solution cannot be found, contact the distributor where you purchased our product. Make sure you have the serial number and production year of the machine (stamped on the nameplate). For replacement parts refer to the assembly numbers on the parts list drawings.

Our technical staff will do their best to help you get your machine back in working order.

In this manual you will find: (when applicable)

- Safety procedures
- Correct installation guidelines
- Description of the functional parts of the machine
- Capacity charts
- Setup and start-up instructions
- Machine operation
- Scheduled maintenance
- Parts lists

GENERAL NOTES

After receiving your equipment remove the protective container. Do a complete visual inspection, and if damage is noted, **photograph it for insurance claims** and contact your carrier at once, requesting inspection. Also contact Baileigh Industrial and inform them of the unexpected occurrence. Temporarily suspend installation.

Take necessary precautions while loading / unloading or moving the machine to avoid any injuries.

Your machine is designed and manufactured to work smoothly and efficiently. Following proper maintenance instructions will help ensure this. Try and use original spare parts, whenever possible, and most importantly; **DO NOT** overload the machine or make any modifications.



Note: *This symbol refers to useful information throughout the manual.*



IMPORTANT

PLEASE READ THIS OPERATORS MANUAL CAREFULLY

It contains important safety information, instructions, and necessary operating procedures. The continual observance of these procedures will help increase your production and extend the life of the equipment.



SAFETY INSTRUCTIONS

LEARN TO RECOGNIZE SAFETY INFORMATION

This is the safety alert symbol. When you see this symbol on your machine or in this manual, **BE ALERT TO THE POTENTIAL FOR PERSONAL INJURY!**



Follow recommended precautions and safe operating practices.

UNDERSTAND SIGNAL WORDS

A signal word – **DANGER**, **WARNING**, or **CAUTION** – is used with the safety alert symbol. **NOTICE**, which is not related to personal injury, is used without a symbol.

DANGER: Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING: Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION: Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE: Indicates a situation which, if not avoided, could result in property damage.

DANGER

WARNING

CAUTION

NOTICE

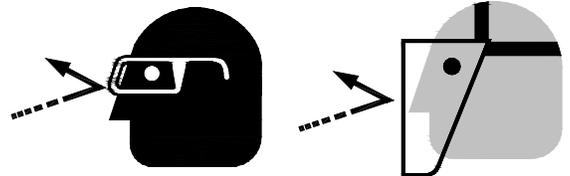


SAVE THESE INSTRUCTIONS.
Refer to them often and use them to instruct others.



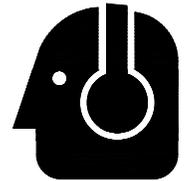
PROTECT EYES

Wear safety glasses or suitable eye protection when working on or around machinery.



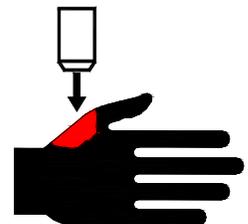
PROTECT AGAINST NOISE

Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear suitable hearing protective devices such as ear muffs or earplugs to protect against objectionable or uncomfortable loud noises.



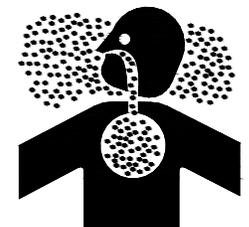
PROTECT SKIN

Keep hands and body protected from the weld arc and hot sparks. The heat from the weld arc is very intense and can pierce the skin resulting in serious burns. Always wear gloves and suitable clothing. **DO NOT** touch hot workpiece without gloves.



FUMES AND GASES

The welding process produces fumes and gases that can be hazardous to your health. If the area is not properly ventilated to remove them, use an air supplied respirator.





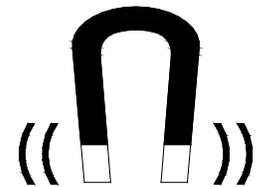
ELECTRICAL SHOCK CAN KILL

The welding arc process uses and produces high voltages that can **severely injure or kill**. Disconnect power source before performing service or repairs. Insulate yourself from the workpiece or other components in the weld circuit.



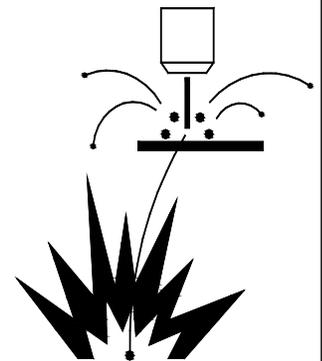
ELECTRICAL AND MAGNETIC FIELDS

Electric current and magnetic fields (EMF). These magnetic fields can influence pacemakers, medical implant, sensitive electronic equipment, and loose metallic objects. Persons with a pacemaker or medical implant must stay back at least 12 inches (30cm). Prolonged exposure to EMF may have other health effects which are not yet known.



WELDING SPARKS

A spark or piece of hot metal can fly out of the arc while welding. Remove all flammable materials from the welding area. Wear approved eye protection, and proper hand and body protection.



HIGH VOLTAGE

USE CAUTION IN HIGH VOLTAGE AREAS. DO NOT assume the power to be off.
FOLLOW PROPER LOCKOUT PROCEDURES.



Hazard



Arc Flash Hazard



Heat/Hot Surface



SAFETY PRECAUTIONS



Metal working can be dangerous if safe and proper operating procedures are not followed. As with all machinery, there are certain hazards involved with the operation of the product. Using the machine with respect and caution will considerably lessen the possibility of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator may result.

Safety equipment such as guards, hold-downs, safety glasses, dust masks and hearing protection can reduce your potential for injury. But even the best guard will not make up for poor judgment, carelessness or inattention. **Always use common sense** and exercise **caution** in the workshop. If a procedure feels dangerous, don't try it.

REMEMBER: Your personal safety is your responsibility.



WARNING: FAILURE TO FOLLOW THESE RULES MAY RESULT IN SERIOUS PERSONAL INJURY

Dear Valued Customer:

- All Baileigh machines should be used only for their intended use.
- Baileigh does not recommend or endorse making any modifications or alterations to a Baileigh machine. Modifications or alterations to a machine may pose a substantial risk of injury to the operator or others and may do substantial damage to the machine.
- Any modifications or alterations to a Baileigh machine will invalidate the machine's warranty.

PLEASE ENJOY YOUR BAILEIGH MACHINE!PLEASE ENJOY IT SAFELY!

1. **FOR YOUR OWN SAFETY, READ INSTRUCTION MANUAL BEFORE OPERATING THE MACHINE.** Learn the machine's application and limitations as well as the specific hazards.
2. **Only trained and qualified personnel can operate this machine.**
3. **Make sure guards are in place and in proper working order before operating machinery.**
4. **Remove any adjusting tools.** Before operating the machine, make sure any adjusting tools have been removed.
5. **Dressing material edges.** Always chamfer and deburr all sharp edges.
6. **Do not force tool.** Your machine will do a better and safer job if used as intended. **DO NOT** use inappropriate attachments in an attempt to exceed the machine's rated capacity.
7. **Use the right tool for the job. DO NOT** attempt to force a small tool or attachment to do the work of a large industrial tool. **DO NOT** use a tool for a purpose for which it was not intended.



8. **Dress appropriately.** **DO NOT** wear loose fitting clothing or jewelry as they can be caught in moving machine parts. Protective clothing and steel toe shoes are recommended when using machinery. Wear a restrictive hair covering to contain long hair.
9. **Use eye and ear protection.** Wear a full coverage helmet with appropriate shade (see ANSI Z87.1 safety standard) and safety glasses while welding. Keep harmful arc rays shielded from the view of others.
10. **Do not overreach.** Maintain proper footing and balance at all times. **DO NOT** reach over or across a running machine.
11. **Stay alert.** Watch what you are doing and use common sense. **DO NOT** operate any tool or machine when you are tired.
12. **Check for damaged parts.** Before using any tool or machine, carefully check any part that appears damaged. Check for alignment and binding of moving parts that may affect proper machine operation.
13. **Keep work area clean.** Cluttered areas invite injuries.
14. **Observe work area conditions.** **DO NOT** use machines or power tools in damp or wet locations. Do not expose to rain. Keep work area well lighted. **DO NOT** use electrically powered tools in the presence of flammable gases or liquids.
15. **Keep children away.** Children must never be allowed in the work area. **DO NOT** let them handle machines, tools, or extension cords.
16. Keep visitors a safe distance from the work area.
17. **Store idle equipment.** When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep them out of reach of children.
18. **DO NOT operate machine if under the influence of alcohol or drugs.** Read warning labels on prescriptions. If there is any doubt, **DO NOT** operate the machine.
19. **Sparks and hot material** from welding can easily go through small cracks and openings into adjacent areas.
20. **Do not** weld where the atmosphere might contain flammable dust, gas, or liquid vapors such as from gasoline.
21. Wear oil-free protective garments such as leather gloves, heavy shirt, high shoes or boots, cuffless trousers, and a cap.
22. Watch for fire and keep a fire extinguisher close by.
23. **Turn off** power before checking, cleaning, or replacing any parts.
24. Be sure **all** equipment is properly installed and grounded according to national, state, and local codes.
25. Keep **all** cords dry, free from grease and oil, and protected from sparks and hot metal.



26. Inspect power and control cables periodically. Replace if damaged or bare wires are exposed. **Bare wiring can kill!** **DO NOT** touch live electrical components or parts.

WELDING SPECIFIC PRECAUTIONS

Welder Usage

- Connect ground lead as close to the area being welded as possible to ensure a good ground.
- Do not allow any body part to come in contact with the welding electrode or wire if you are in contact with the material being welded, ground or electrode from another welder.
- Do not weld if you are in an awkward position. Always have a secure stance while welding to prevent accidents. Wear a safety harness if working above ground.
- Do not drape cables over or around your body.
- Wear a full coverage helmet with appropriate shade (see ANSI Z87.1 safety standard) and safety glasses while welding.
- Wear proper gloves and protective clothing to prevent your skin from being exposed to hot metals, UV and IR rays.
- Do not overuse or overheat your welder. Allow proper cooling time between duty cycles.
- Keep hands and fingers away from moving parts.
- Do not point torch at any body part of yourself or anyone else.
- Always use this welder in the rated duty cycle to prevent excessive heat and failure.



WARNING: Electrical Shock!

Electric arc welders can produce a shock that can cause injury or death. Touching electrically live parts can cause fatal shocks and severe burns. While welding, all metal components connected to the wire are electrically hot. Poor ground connections are a hazard, so secure the ground lead before welding.

- Wear dry protective apparel: coat, shirt, gloves and insulated footwear.
- Insulate yourself from the work piece. Avoid contacting the work piece or ground.
- Do not attempt to repair or maintain the welder while the power is on.
- Inspect all cables and cords for any exposed wire and replace immediately if found.
- Use only recommended replacement cables and cords.



- Always attach ground clamp to the work piece or work table as close to the weld area as possible.
- Do not touch the welding wire and the ground or grounded work piece at the same time.
- Do not use a welder to thaw frozen pipes.



WARNING: Fumes and Gases!

- Fumes emitted from the welding process displace clean air and can result in injury or death.
- Do not breathe in fumes emitted by the welding process. Make sure your breathing air is clean and safe.
- Work only in a well-ventilated area or use a ventilation device to remove welding fumes from the environment where you will be working.
- Do not weld on coated materials (galvanized, cadmium plated or containing zinc, mercury or barium). They will emit harmful fumes that are dangerous to breathe. If necessary use a ventilator, respirator with air supply or remove the coating from the material in the weld area.
- The fumes emitted from some metals when heated are extremely toxic. Refer to the material safety data sheet for the manufacturer's instructions.
- Do not weld near materials that will emit toxic fumes when heated. Vapors from cleaners, sprays and degreasers can be highly toxic when heated.



WARNING: UV and IR Arc Rays!

The welding arc produces ultraviolet (UV) and infrared (IR) rays that can cause injury to your eyes and skin. Do not look at the welding arc without proper eye protection.

- Always use a helmet that covers your full face from the neck to top of head and to the back of each ear.
- Use a lens that meets ANSI standards and safety glasses. For welders under 160 Amps output, use a shade 10 lens; for above 160 Amps, use a shade 12. Refer to the ANSI standard Z87.1 for more information.
- Cover all bare skin areas exposed to the arc with protective clothing and shoes. Flame-retardant cloth or leather shirts, coats, pants or coveralls are available for protection.
- Use screens or other barriers to protect other people from the arc rays emitted from your welding.



- Warn people in your welding area when you are going to strike an arc so they can protect themselves.



WARNING: Fire Hazards!

Do not weld on containers or pipes that contain or have had flammable, gaseous or liquid combustibles in them. Welding creates sparks and heat that can ignite flammable and explosive materials.

- Do not operate any electric arc welder in areas where flammable or explosive materials are present.
- Remove all flammable materials within 35 feet of the welding arc. If removal is not possible, tightly cover them with fireproof covers.
- Take precautions to ensure that flying sparks do not cause fires or explosions in hidden areas, cracks or areas you cannot see.
- Keep a fire extinguisher close in the case of fire.
- Wear garments that are oil-free with no pockets or cuffs that will collect sparks.
- Do not have on your person any items that are combustible, such as lighters or matches.
- Keep work lead connected as close to the weld area as possible to prevent any unknown, unintended paths of electrical current from causing electrical shock and fire hazards.
- To prevent any unintended arcs, cut wire back to ¼" stick out after welding.



CAUTION: Hot Materials!

Welded materials are hot and can cause severe burns if handled improperly.

- Do not touch welded materials with bare hands.
- Do not touch TIG gun nozzle after welding until it has had time to cool down.



CAUTION: Sparks/Flying Debris!

Welding creates hot sparks that can cause injury. Chipping slag off welds creates flying debris.

- Wear protective apparel at all times: ANSI-approved safety glasses or shield, welder's hat and ear plugs to keep sparks out of ears and hair.



 **CAUTION: Electromagnetic Field!**

- Electromagnetic fields can interfere with various electrical and electronic devices such as pacemakers.
- Consult your doctor before using any electric arc welder or cutting device
- Keep people with pacemakers away from your welding area when welding.
- Do not wrap cable around your body while welding.
- Wrap TIG gun and ground cable together whenever possible.
- Keep TIG gun and ground cables on the same side of your body.

 **WARNING: Shielding Gas Cylinders Can Explode!**
High pressure cylinders can explode if damaged, so treat them carefully.

- Never expose cylinders to high heat, sparks, open flames, mechanical shocks or arcs.
- Do not touch cylinder with TIG gun.
- Do not weld on the cylinder
- Always secure cylinder upright to a cart or stationary object.
- Keep cylinders away from welding or electrical circuits.
- Use the proper regulators, gas hose and fittings for the specific application.
- Do not look into the valve when opening it.
- Use protective cylinder cap whenever possible



TECHNICAL SPECIFICATIONS

Rated Input Voltage	120V±10%, 50/60Hz	230V±10%, 50/60Hz
Maximum Input Current	20A	31A
Rated Input Capacity	2.4kVA	7.1kVA
Output No-load Voltage	65V	
Rated load Sustained Rate	40% (@40°C)	35% (@40°C)
Power Factor	≥0.80	
Effectiveness	80%	
Insulation Level	F	
Enclosure Rating	IP21S	
Cooling Method	Cold wind	
Dimensions	19.68" x 9.45" x 16.14" (500 x 240 x 410mm)	
Net Weight	42.8lbs (19.4kg)	

Welding Parameters

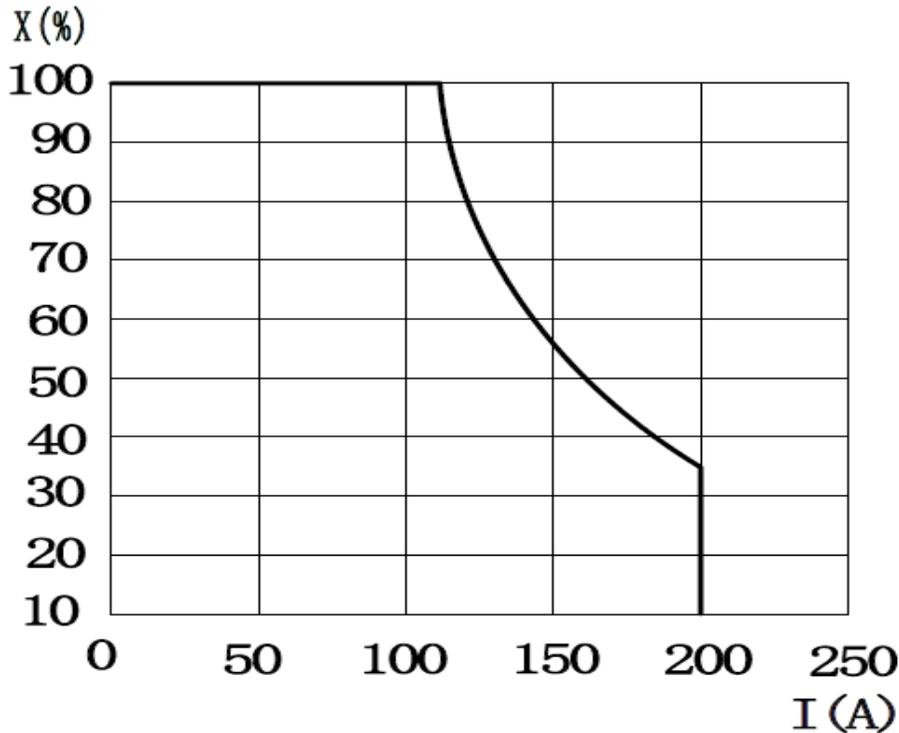
Operation Voltage	120V	230V
	MMA	
Rated Current	20A~65A	20A~160A
	TIG	
Arc Way	HF	HF
	DC TIG	
Rated Current	10A~95A	10A~200A
	DC PULSE TIG	
Peak Current	10A~95A	10A~200A
Base Current	50% Peak current	50% Peak current
Pulse Frequency	0.2Hz~200Hz	0.2Hz~200Hz
Duty Cycle	40%	35%
	AC TIG	
Rated Current	20A~95A	20A~200A
AC Frequency	50Hz~150Hz	50Hz~150Hz
AC Balance	50%~85%	50%~85%
	AC PULSE TIG	
Peak Current	20A~95A	20A~200A
Base Current	50% Peak current	50% Peak current
AC Frequency	50Hz~150Hz	50Hz~150Hz
AC Balance	50%~85%	50%~85%
Pulse Frequency	0.2Hz~20Hz	0.2Hz~20Hz
Duty Cycle	40%	35%



Duty Cycle

NOTICE: Working in overload will damage the welder! This is not covered by warranty!

Current Load Continuation Rate Curve Table

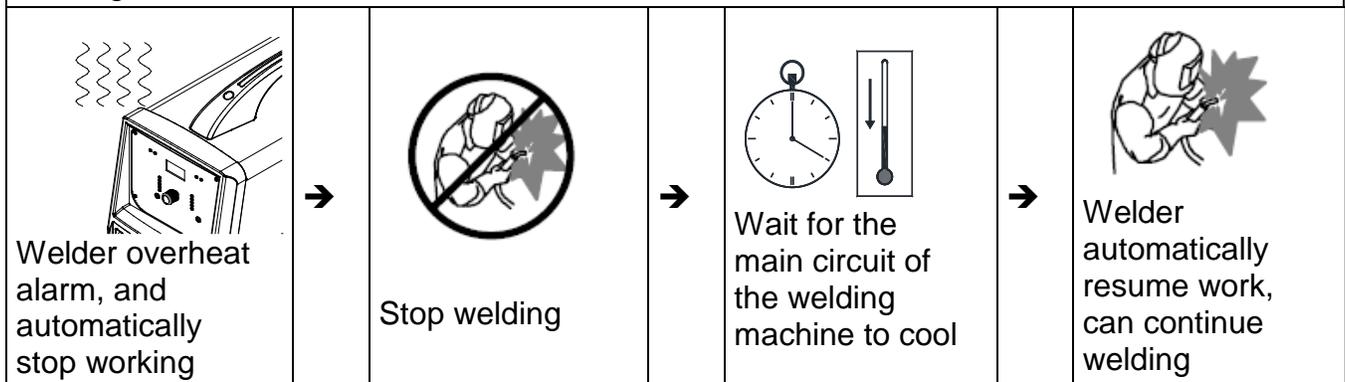


Use the welder within the range of duty cycle.
The welder rated load sustained rate of 35%.

Rated load duration 35%		<p>The duty cycle refers to the welder can be continuous welding within 10 minutes as a percentage of time. Rated duty cycle refers to the welder at rated output current load sustained rate. When the current decreases the load, the sustained rate will increase.</p>			
Working for 3.5 minutes	Rest 6.5 minutes				



When welding for a long period of time at or above the rated load sustained rate (duty cycle), the welder will encounter an overheating alarm. The welder digital display will show "E01", while overheating warning light (yellow) will illuminate and the welder will stop working.



TECHNICAL SUPPORT

Our technical support department can be reached at 920.684.4990, and asking for the support desk for purchased machines. Tech Support handles questions on machine setup, schematics, warranty issues, and individual parts needs: (other than die sets and blades).

For specific application needs or future machine purchases contact the Sales Department at: sales@baileigh.com, Phone: 920.684.4990, or Fax: 920.684.3944.



Note: The photos and illustrations used in this manual are representative only and may not depict the actual color, labeling or accessories and may be intended to illustrate technique only.



Note: The specifications and dimensions presented here are subject to change without prior notice due to improvements of our products.



UNPACKING AND CHECKING CONTENTS

Your Baileigh machine is shipped complete. Separate all parts from the packing material and check each item carefully. Make certain all items are accounted for before discarding any packing material.



WARNING: SUFFOCATION HAZARD! Immediately discard any plastic bags and packing materials to eliminate choking and suffocation hazards to children and animals.

If any parts are missing, **DO NOT** place the machine into service until the missing parts are obtained and installed correctly.

Remove cartons, bags or Styrofoam containing the welder and accessories. Check the contents with the packing list below.

Item	Qty.
Dc Inverter Welder	1 unit
Ground Cable with Clamp	1pcs
TIG Torch	1pcs
Foot Pedal	1pcs
Welding Cable with Electrode Holder	1pcs
Gas Regulator	1pcs
Gas Hose	1pcs
Operator's Manual	1pcs

After unpacking unit, inspect carefully for any damage that may have occurred during transit. Check for loose, missing, or damaged parts. Shipping damage claim must be filed with carrier.



INSTALLATION

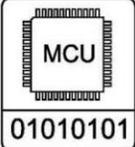
IMPORTANT:

Consider the following when looking for a suitable location to place the machine:

- Overall weight of the machine.
- Weight of material being processed.
- Sizes of material to be processed through the machine.
- Space needed for auxiliary stands, work tables, or other machinery.
- Clearance from walls and other obstacles.
- Maintain an adequate working area around the machine for safety.
- Have the work area well illuminated with proper lighting.
- Keep the floor free of oil and make sure it is not slippery.
- Remove scrap and waste materials regularly, and make sure the work area is free from obstructing objects.
- If long lengths of material are to be fed into the machine, make sure that they will not extend into any aisles.
- Do not expose the machine to direct sunlight. This can cause artificial heating of the operating system.
- Mount the welder on a secure bench or cart that will keep the welder secure and prevent it from tipping over or falling.
- **WORKING CLEARANCES:** Take into consideration the size of the material to be processed. Make sure that you allow enough space for you to operate the machine freely.
- **POWER SUPPLY PLACEMENT:** The power supply should be located close enough to the machine so that the power cord is not in an area where it would cause a tripping hazard. Be sure to observe all electrical codes if installing new circuits and/or outlets.



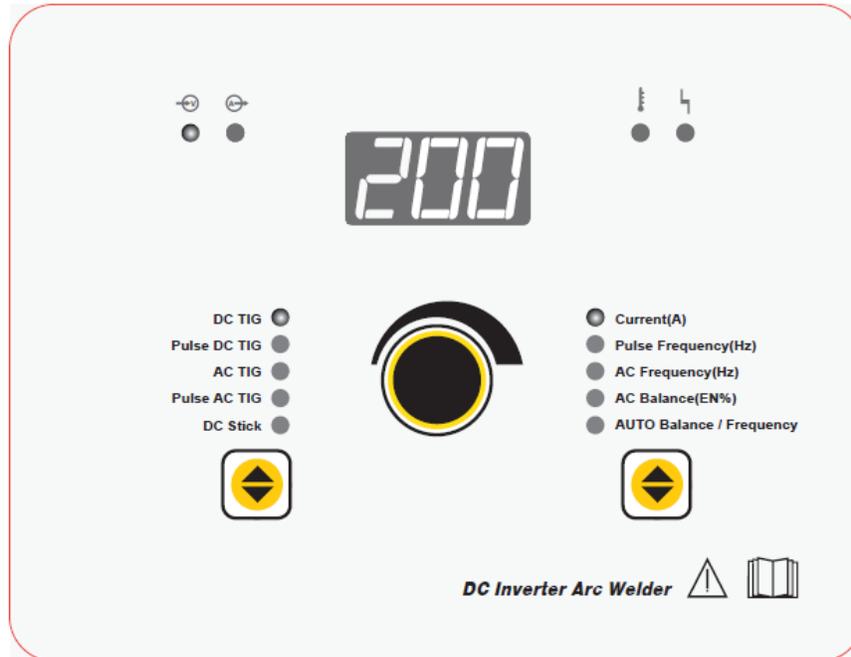
DESCRIPTION

	<p>The BW-200T is an inverter AC / DC TIG welding machine. Using an MCU as the core processor for the welding machine and the entire welding process. This efficiently coordinates the state of the welding machine and welding process real-time monitoring and adjustment, thus ensuring that every welding Machine has a high degree of consistency, and access to reliable and stable welding results. The BW-200T uses real-time control of each waveform by the MCU during AC square wave welding which greatly reduces sharp arc noise during AC welding and drastically reduces ac-commutation noise of the arc thus reducing noise damage to the welder's ears while also reducing tungsten loss.</p> <p>Using a special high-frequency arc ignition method, greatly improves the success rate of non-contact high-frequency arc ignition, whether the tungsten is cold or hot. This provides an almost 100% successful results of arc ignition.</p> <p>In the process of adjusting the welding parameters, the accurate welding parameter values and the WYSIWYG values are displayed on the digital display table in real time to accurately adjust the welding parameters. Precisely set the welding process and finally obtain the excellent welding results.</p> <p>Using a simple operation panel design, simple man-machine interface, allows easy user operation. The welding process is coordinated by the MCU, allowing the user to easily weld with just a simple operation. The AC TIG / Pulse AC TIG has an optional AC frequency and automatic cleaning width matching function. The MCU automatically matches AC frequency and cleaning width parameters based on the current welding current.</p>
	<p>The use of improved IGBT inverter technology, reducing the size of the main transformer and reactor, thereby reducing the size and weight of the power supply machine, greatly reducing the copper loss, improve the power efficiency and power factor, the energy saving effect is very significant.</p>
<p>Welding Options</p>	<p>DC welding (DC-TIG) AC TIG welding (AC-TIG) DC pulse welding (DC-PTIG) AC pulse TIG (AC-PTIG) DC welding electrode manual welding (DC-MMA)</p> <p>A variety of welding functions can be applied to almost all welding materials, including a variety of nonferrous metals such as carbon steel, cast iron, stainless steel, copper and their alloys, as well as various aluminum and magnesium alloys for welding.</p>



KNOW YOUR WELDER

Front Panel Control Board



Weld Type Selection

<ul style="list-style-type: none"> DC TIG <input type="radio"/> Pulse DC TIG <input type="radio"/> AC TIG <input type="radio"/> Pulse AC TIG <input type="radio"/> DC Stick <input type="radio"/> 	<p>DC manual electrode welding method (DCMMA) Can use for welding alkaline, acidic, low hydrogen type and other electrodes, for welding a variety of demanding welding occasions.</p>
<ul style="list-style-type: none"> DC TIG <input type="radio"/> Pulse DC TIG <input type="radio"/> AC TIG <input type="radio"/> Pulse AC TIG <input type="radio"/> DC Stick <input type="radio"/> 	<p>DC TIG welding method (DCTIG) Can be used in addition to Al-Mg and its alloys other than the vast majority of metal welding, the DC-positive method is generally used.</p>
<ul style="list-style-type: none"> DC TIG <input type="radio"/> Pulse DC TIG <input type="radio"/> AC TIG <input type="radio"/> Pulse AC TIG <input type="radio"/> DC Stick <input type="radio"/> 	<p>AC TIG welding method (ACTIG) Generally used for welding aluminum and magnesium alloys.</p>



<ul style="list-style-type: none"> DC TIG ● Pulse DC TIG ● AC TIG ● Pulse AC TIG ● DC Stick ● 	<p>DC pulse welding method (DCPTIG) Can be used in addition to Al-Mg and its alloys other than the vast majority of metal welding commonly used DC positive connection. The lower frequency used in sheet metal welding can reduce the heat input; the higher frequency used in plate welding facilitates the double-sided forming of single-sided welding.</p>
<ul style="list-style-type: none"> DC TIG ● Pulse DC TIG ● AC TIG ● Pulse AC TIG ● DC Stick ● 	<p>Pulse AC TIG welding method (ACPTIG) Generally used for welding aluminum and magnesium alloys. Generally used to reduce the welding heat input, and obtain a better weld molding.</p>

Current Regulation Method

<p>PANEL</p>	<p>Panel adjustment method No external controller, panel encoder to adjust the welding current. The default is the panel adjustment mode after power on, other methods need to be automatically selected by the external controller.</p>
<p>REMOTE</p>	<p>Remote adjustment method This method is suitable for all this machine of argon arc welding. In this mode, the panel encoder only adjusts the welding current output maximum value, the remote controller controls the actual output current, the maximum output value is the panel setting value.</p>

Panel button pressed immediately released as a valid operation, within 0.5 seconds if not released is considered to be misuse and was abandoned.

Welder Status Indication

	<p>Welder in normal working condition After the welder starts, all the indicators of the panel are all on, and after 2 seconds, it enters the normal display state, the power indicator light is on, and the current output indicator light is on when the welder is welding normally.</p>
	<p>Overheating alarm Welder in overload condition, the main power device temperature is too high, then cut off the output of the welder, and display the alarm.</p>



Parameter Display



Digital display is used to display the various welding parameters. Under the selected welding mode, when the parameter selection key is pressed, the digital display will automatically display the corresponding parameter value of this option. After the adjustment is completed, no further adjustment within 5 seconds, the welding current parameters are automatically displayed.

Output Panel



1—MMA “+” /TIG earth cable connector	2—Torch aviation socket
3—Remote aviation socket	4—Gas connector
5—MMA “-” /TIG torch connector	



Back Panel



1—Power switch	2—Protect the gas input connector
3—Power cable	



ELECTRICAL

 **CAUTION:** HAVE ELECTRICAL UTILITIES CONNECTED TO MACHINE BY A CERTIFIED ELECTRICIAN!
Check if the available power supply is the same as listed on the machine nameplate.

 **WARNING:** Make sure the grounding wire (green) is properly connected to avoid electric shock. DO NOT switch the position of the green grounding wire if any electrical plug wires are switched during hookup.

Power Specifications

Your machine is wired for 120/230 volts, 50/60hz alternating current. Before connecting the machine to the power source, make sure the power source is OFF.

Before switching on the power, you must check the voltage and frequency of the power to see if they meet with the requirement, the allowed range for the voltage is $\pm 10\%$.

Considerations

- Observe local electrical codes when connecting the machine.
- The circuit should be protected with a time delay fuse or circuit breaker with an amperage rating slightly higher than the full load current of machine.
- A separate electrical circuit should be used for your machines. Before connecting the motor to the power line, make sure the switch is in the "OFF" position and be sure that the electric current is of the same characteristics as indicated on the machine.
- All line connections should make good contact. Running on low voltage will damage the motor.
- In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This machine is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.

 **WARNING:** In all cases, make certain the receptacle in question is properly grounded. If you are not sure, have a qualified electrician check the receptacle.



- Improper connection of the equipment-grounding conductor can result in risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.
- Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the machine is properly grounded.
- Repair or replace damaged or worn cord immediately.

Extension Cord Safety

Extension cord should be in good condition and meet the minimum wire gauge requirements listed below:

	LENGTH		
AMP RATING	25ft	50ft	100ft
1-12	16	16	14
13-16	14	12	12
17-20	12	12	10
21-30	10	10	No
	WIRE GAUGE		

An undersized cord decreases line voltage, causing loss of power and overheating. All cords should use a ground wire and plug pin. Replace any damaged cords immediately.

Power cord connection:

1. Turn the main disconnect switch on the control panel to the OFF position.
2. Unwrap the power cord and route the cord away from the machine toward the power supply. It is recommended to use a time delay fuse or circuit breaker.
 - a. Route the power cord so that it will NOT become entangled in the machine in any way.
 - b. Route the cord to the power supply in a way that does NOT create a trip hazard.
3. Connect the power cord to the power supply and check that the power cord has not been damaged during installation.
4. When the machine is clear of any obstruction. The main power switch may be turn ON to test the operation. Turn the switch OFF when the machine is not in operation.



WORK PIECE SET UP

Welding positions

There are two basic positions, for welding: Flat and Horizontal. Flat welding is generally easier, faster, and allows for better penetration. If possible, the work piece should be positioned so that the bead will run on a flat surface.

Preparing the Joint

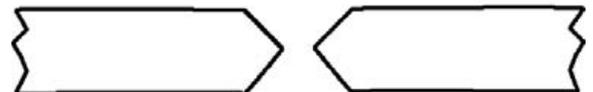
Before welding, the surface of the work piece needs to be free of dirt, rust, scale, oil or paint. If it is dirty it will create brittle and porous weld.

If the base metal pieces to be joined are thick or heavy, it may be necessary to bevel the edges with a metal grinder. The correct bevel should be around 60 degrees.

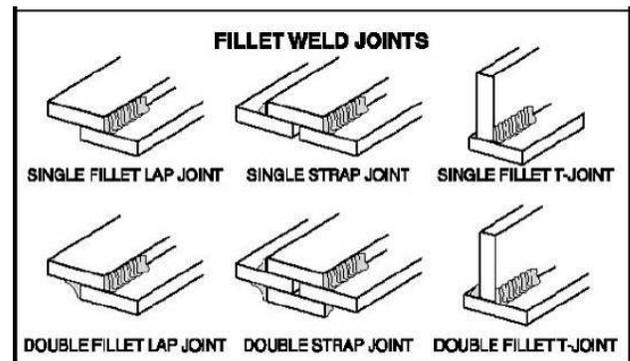
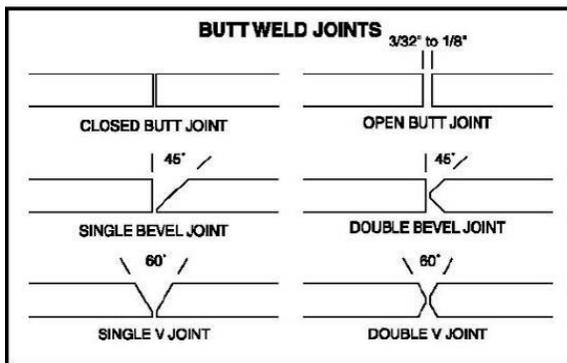
INCORRECT



CORRECT



Based on different welding position, there are different welding joint, see following images for more information:



Ground Clamp Connection

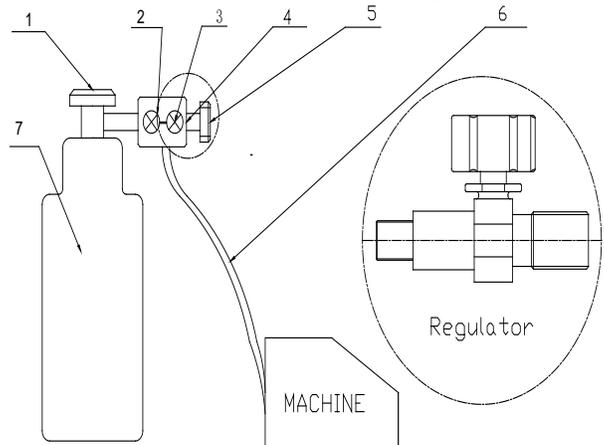
Clear any dirt, rust, scale, oil or paint on the ground clamp. Make certain you have a good solid ground connection. A poor connection at the ground clamp will waste power and heat. Make sure the ground clamp touches the metal.



Gas Hose, Regulator and Gas Cylinder Connection

Attach one end of the gas hose to the gas solenoid valve (gas inlet) located on the back panel of the welder. Attach the other end to the gas regulator which is attached to the shielding gas cylinder. See illustration.

1	Cylinder valve: Controls gas cylinder gas flow.
2	Cylinder pressure gauge
3	Gas flow gauge, set at 20 CFM
4	Regulator
5	Adjustment knob controls gas pressure to the welder.
6	Gas hose
7	Gas cylinder



Note: Slowly open the cylinder valve by turning it counterclockwise until the cylinder pressure gauge registers on the first gauge of the regulator. Turn the adjustment knob clockwise (right) slowly to increase gas flow to 20 cfm. To reduce the gas flow turn the adjustment counterclockwise (left). The gas valve is located on the back panel of the welder and activated by the trigger. Gas flow should be heard when the trigger is activated. No gas flow will result in a harsh arc with excessive spatter, a smooth weld bead will be difficult to obtain. Avoid unnecessary gas loss by closing the tank valve when finished welding.

Gas Selection

Different materials require different shielding gas when TIG welding, refer to the set up chart.

- Mild steel: Use 75% Argon and 25% CO₂ for reduced spatter and reduced penetration for thinner materials. Do NOT USE Argon gas concentrations higher than 75% on steel. The result will be extremely poor penetration, porosity, and brittleness of weld.
- Mild Steel: Use CO₂ for deeper penetration but increased spatter.
- Stainless steel: Use a mixed gas consisting of Helium, Argon and CO₂.



OPERATION

⚠ WARNING: High voltage danger from power source! Consult a qualified electrician for proper installation of receptacle at the power source. This welder must be grounded while in use to protect the operator from electrical shock. If you are not sure if your outlet is properly grounded, have it checked by a qualified electrician. Do not cut off the grounding prong or alter the plug in any way and do not use any adapters between the welder's power cord and the power source receptacle. Make sure the POWER switch is OFF before connecting your welder's power cord to a properly grounded 230VAC, 50/60Hz, single phase, power source.

⚠ WARNING: EXPOSURE TO A WELDING ARC IS EXTREMELY HARMFUL TO THE EYES AND SKIN! Prolonged exposure to the welding arc can cause blindness and burns. Never strike an arc or begin welding until you are adequately protected. Wear flameproof welding gloves, a heavy long-sleeved shirt, trousers without cuffs, high topped shoes and an ANSI approved welding helmet.

ELECTRIC SHOCK CAN KILL! To prevent ELECTRIC SHOCK, do not perform any welding while standing, kneeling, or lying directly on the grounded work.

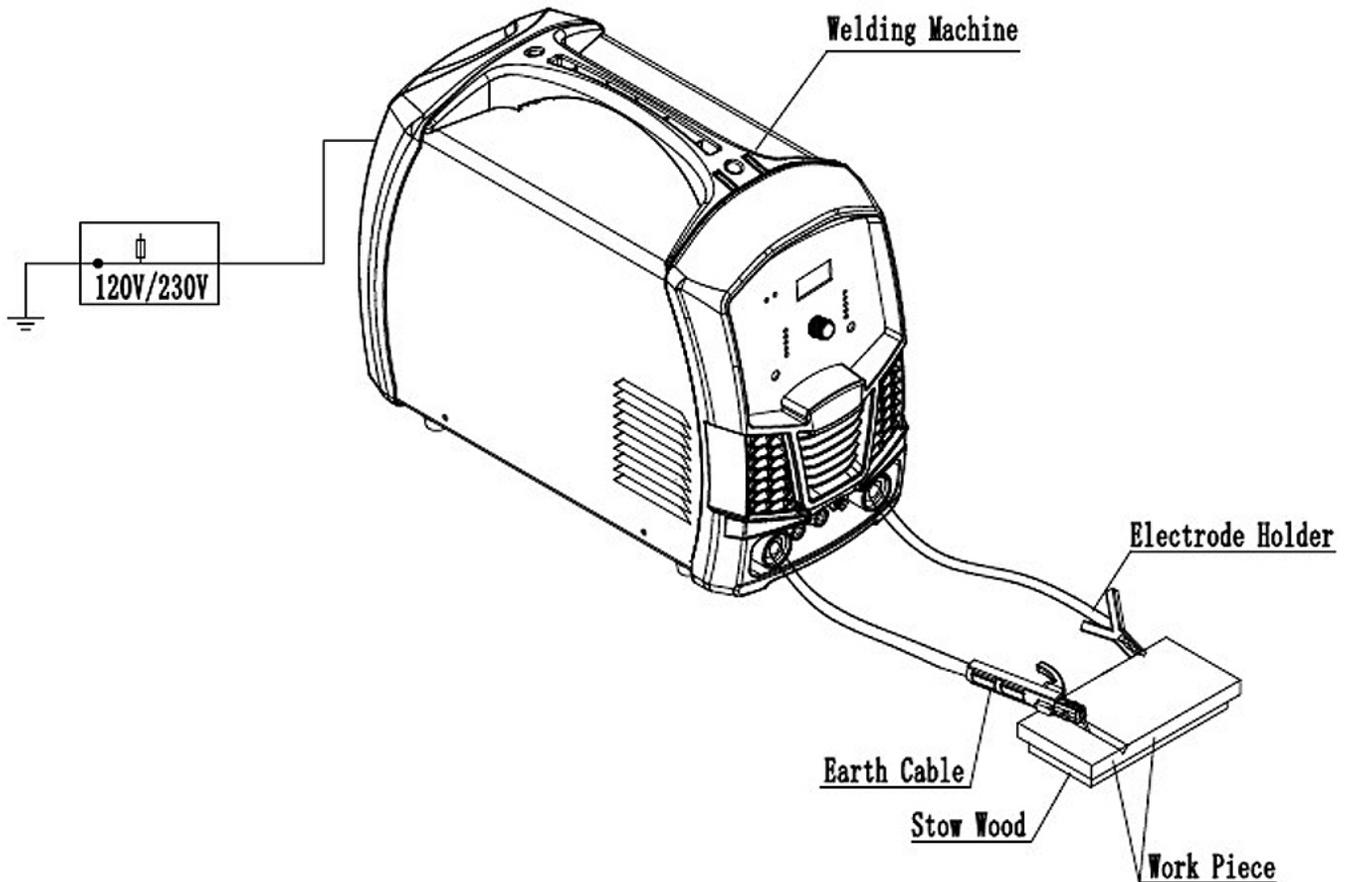
INERT GASES HARMFUL TO BODY! Inert gases harmful to body even make the person suffocate, so please welding in a well-ventilated environment. When not in use, close the cylinder valve.

SHIELDING GAS CYLINDERS CAN EXPLODE! Never expose cylinders to high heat. Keep cylinders away from welding or electrical circuits and fixed good.

Keep people with pacemakers away from your welding area when welding. Consult your doctor before using any electric arc welder or cutting device. It may interfere with radio, computers, communications equipment and other electronic equipment.



MMA Flux-Coated Electrode Wire Connection



Process reference

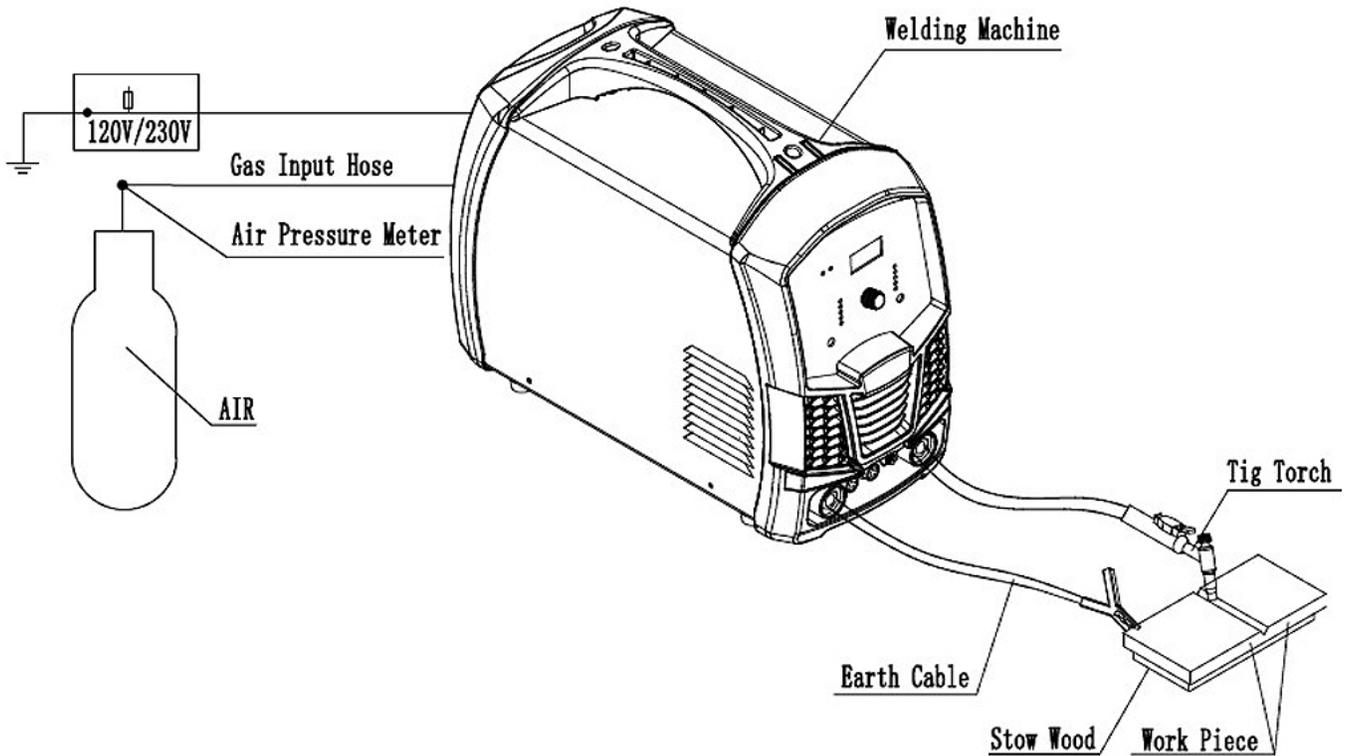
The following table is a manual welding rod electrode reference table, the table is for reference only.

Electrode diameter (mm)	Recommended welding current (A)	Electrode diameter (mm)	Recommended welding current (A)
1.0	20~60	3.2	108~148
1.6	44~84	4.0	140~180
2.0	60~100	4.8	180~220
2.4	80~120	6.0	220~260

This table is suitable for low carbon steel welding, other materials can refer to the relevant materials and process manuals.



TIG Welding Wire Connections



Process reference

The following Table is TIG welding process reference table, the table is for reference only.

	material	Connector	Work piece Thickness (mm)	Wire Diameter Φ (mm)	Weld current (A)	polarity	Argon flow rate (l/min)	Tungsten rods Diameter Φ (mm)	Cone angle	Flat top diameter Φ (mm)
DC	Not aluminum magnesium and its alloys	Straight edge docking	1.6~3.0	1.6~2.5	50~90	DC is positive	8~12	1.0	12~20°	0.12~0.25
		V-shaped groove	>3.0~6.0		70~120			1.6	25~30°	0.50~0.75
		X-shaped groove	>6.0~12	2.5~3.2	100~150			2.4	35~45°	0.75~1.10
AC	Aluminum magnesium and its alloys	Butt welding	1~2.5	1.6~2.5	45~90			2~3	90°	1.50
		V-shaped groove	3~6	2~4	90~180			3~4		
		X-shaped groove	8~12	4~5	150~220			4~5		

This table is for reference only. The specific use of the welding process card shall prevail, or determined according to the process test.



1. Poor arc start success rate. Use the following steps to solve:
 - a. Check if the tungsten surface has been oxidized. If it has been oxidized, clean off the oxide layer.
 - b. Increase the argon flow slightly.
 - c. Call the electrician to adjust the spark gap on the high-frequency arc-striking plate until the success rate of arc-striking is increased.
2. The welding machine with TIG welding non-contact arc ignition ability, do not short-circuit the tungsten arc with the work piece, so as not to burn the tungsten and add tungsten in the weld defects.

Parameter Adjustment

Turn on the machine and select the welding method.

Adjust the welding parameters

<p>DC TIG ● Pulse DC TIG ● AC TIG ● Pulse AC TIG ● DC Stick ●</p>  <p>DC TIG</p>	 <p>Adjust this knob to preset the welding current value.</p>	<p>● Current(A) ● Pulse Frequency(Hz) ● AC Frequency(Hz) ● AC Balance(EN%) ● AUTO Balance / Frequency</p> 
<p>DC TIG ● Pulse DC TIG ● AC TIG ● Pulse AC TIG ● DC Stick ●</p>  <p>Pulse DC TIG</p>	 <p>Adjust this knob to preset the welding current value and pulse frequency.</p>	<p>● Current(A) ● Pulse Frequency(Hz) ● AC Frequency(Hz) ● AC Balance(EN%) ● AUTO Balance / Frequency</p>  <p>Press the key welding parameter to cycle through.</p>



<ul style="list-style-type: none"> DC TIG ● Pulse DC TIG ● AC TIG ● Pulse AC TIG ● DC Stick ●  <p>AC TIG</p>	 <p>Adjust this knob to preset the welding current value and AC frequency cleaning width and AC frequency, cleaning width automatic matching function.</p>	<ul style="list-style-type: none"> ● Current(A) ● Pulse Frequency(Hz) ● AC Frequency(Hz) ● AC Balance(EN%) ● AUTO Balance / Frequency  <p>Press the key welding parameters cycle switch.</p>
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EN
Tungsten electrode
Workpiece alignment

BALANCE

EP
Tungsten electrode negative
Reverse workpiece

AC TIG welding, the welding current alternating positive and negative current. When the tungsten is negative, the work piece is positive, that is, DC positive or negative polarity of the tungsten (EN), when the arc energy gathered in the work piece, the arc is more concentrated, weld penetration is larger, the weld is narrow, this stage is welding stage. When the tungsten is positive, the work piece is negative, that is, DC reverse polarity or tungsten positive (EP), this time to break the oxide film stage, the arc is scattered, shallow penetration, higher tungsten temperature. This phase is the cleaning time. Appropriate to adjust the cleaning width can reduce the weld inclusions, weld surface dark and other defects, but easy to burn tungsten, reducing the service life of tungsten. EN + EP is a welding cycle, the cycle length can be set by adjusting the AC frequency. Higher frequency and smaller cleaning width can increase the AC arc stiffness, but the cleaning effect will be reduced. AC TIG welding recommended cerium tungsten.

<ul style="list-style-type: none"> DC TIG ● Pulse DC TIG ● AC TIG ● Pulse AC TIG ● DC Stick ●  <p>Pulse AC TIG</p>	 <p>Adjust this knob to preset welding power Flow value, pulse frequency and AC frequency cleaning width and AC frequency, cleaning width automatic matching function.</p>	<ul style="list-style-type: none"> ● Current(A) ● Pulse Frequency(Hz) ● AC Frequency(Hz) ● AC Balance(EN%) ● AUTO Balance / Frequency  <p>Press the key welding parameters cycle switch.</p>
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Open the cylinder valve, adjust the appropriate gas flow, start welding.



ELECTRODE

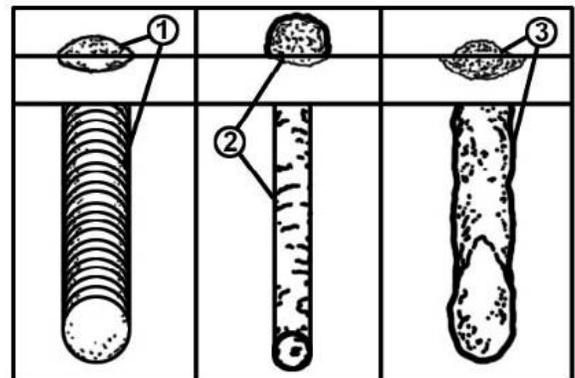
The welding electrode is a rod coated with a layer of flux. When welding, electrical current flows between the electrode (rod) and the grounded metal work piece. The intense heat of the arc between the rod and the grounded metal melts the electrode and the flux. The most popular electrodes are:

- E6011 60,000 PSI tensile strength deep penetrating applications.
- E6013 60,000 PSI tensile strength used for poor fit up applications
- E7014 70,000 PSI tensile strength used for high deposition and fast travel speeds with light penetration
- E7018 70,000 PSI tensile strength, Used for out of position and tacking.

Selecting the proper electrode

There is no golden rule that determine the exact rod or heat setting required for every situation. The type and thickness of metal and the position of the work piece determine the electrode type and the amount of heat needed in the welding process. Heavier and thicker metals required more amperage. It is best to practice your welds on scrap metal which matches the metal you intend to work with to determine correct heat setting and electrode choice. Follow some helpful trouble shooting tips to determine if you are using a correct electrode.

1. When proper rod is used:
 - a. The bead will lay smoothly over the work without ragged edges.
 - b. The base metal puddle will be as deep as the bead that rises above it.
 - c. The welding operation will make a crackling sound similar to the sound of eggs frying.
2. When a rod too small is used:
 - a. The bead will be high and irregular.
 - b. The arc will be difficult to maintain.
3. When the rod is too large:





- a. The arc will burn through light metals.
- b. The bead will undercut the work.
- c. The bead will be flat and porous.
- d. Rod may be freeze or stick to work piece.



Note: Rate of travel over the work also affects the weld. To ensure proper penetration and enough deposit of rod, the arc must be moved slowly and evenly along the weld seam.

Operation

Amperage Control Settings

The welder has an infinite output current control. It is capable of welding with 1/16" and 5/64" and 3/32" electrodes.

There is no golden rule that determines the exact amperage required for every situation. It is best to practice your welds on scrap metal which matches the metals you intend to work with to determine correct setting for your job. The electrode type and the thickness of the work piece metal determine the amount of heat needed in the welding process. Heavier and thicker metals require more voltage (amperage), whereas lighter and thinner metals require less voltage (amperage).

Welding Techniques

The best way to teach yourself how to weld is with short periods of practice at regular intervals. All practice welds should be done on scrap metal that can be discarded. Do not attempt to make any repairs on valuable equipment until you have satisfied yourself that your practice welds are of good appearance and free of slag or gas inclusions.

Holding the Electrode

The best way to grip the electrode holder is the way that feels most comfortable to you. To Position the Electrode to the work piece when striking the initial arc, it may be necessary to hold the electrode perpendicular to the work piece. Once the arc is started the angle of the electrode in relation to the work piece should be between 10 and 30 degrees. This will allow for good penetration, with minimal spatter.

Striking the Arc - TIG



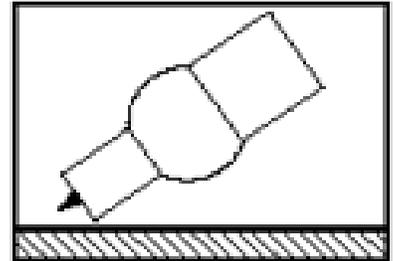
WARNING: EXPOSURE TO A WELDING ARC IS EXTREMELY HARMFUL TO THE EYES AND SKIN!

- Never strike an arc or begin welding until you have adequate protection.
- Wear flameproof welding gloves, heavy long-sleeved shirt, cuffless trousers, high-topped shoes and a welding helmet or shield.

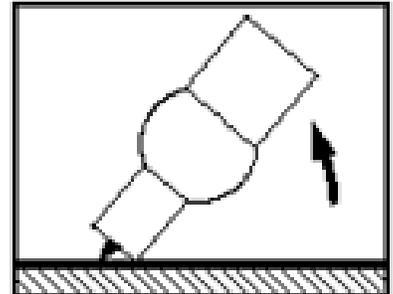


Striking the arc method following step:

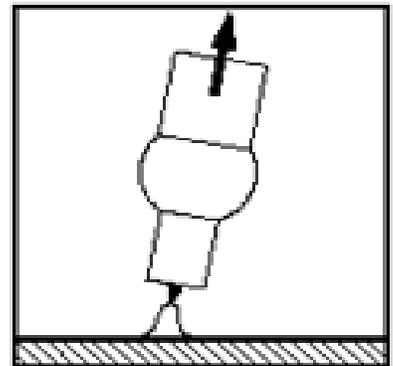
A. Turn on the welding torch's built-in air valve.
B. Approach the arc strike spot with the spray nozzle positioned to cause the tungstic electrode and the work piece is separated $5/64''$ ~ $1/8''$ (2~3mm).



C. Slowly lift/rotate the welding torch to cause the tungstic electrode contact work piece.

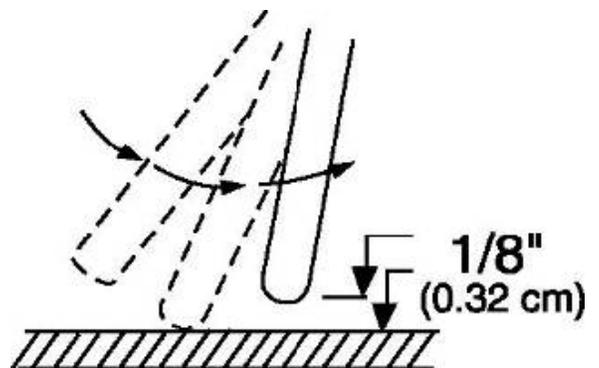


D. Lift the welding torch to the normal position (gap), start to weld.



Striking the Arc - Stick

Scratch the work piece with the end of electrode to start arc and then raise it quickly to create about $1/8$ inch gap between the rod and the work piece.





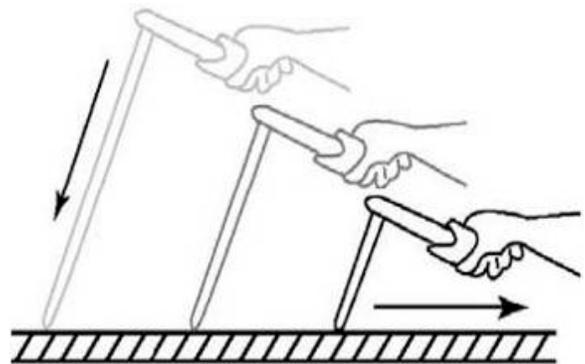
It is important that the gap be maintained during the welding process and it should be neither too wide or too narrow. If too narrow, the rod will stick to the work piece. If too wide, the arc will be extinguished.

It needs much practice to maintain the gap. Beginners may usually get sticking or arc extinguishing.

When the rod sticks to the work piece, gently rock it back and forth to make them separate. If not, the circuit is in a short connection. This will overload the welder.

A good arc is accompanied by a crisp, cracking sound. The sound is similar to that made by eggs frying.

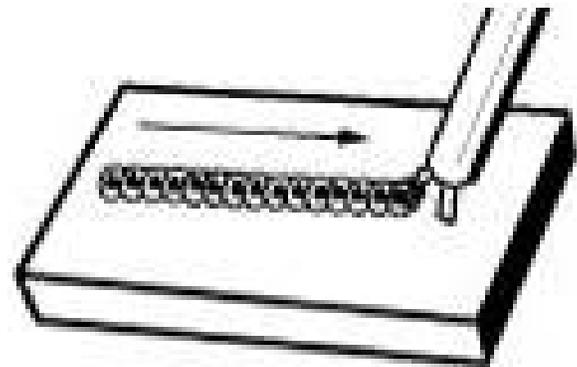
To lay a weld bead, only 2 movements are required; downward and in the direction the weld is to be laid.



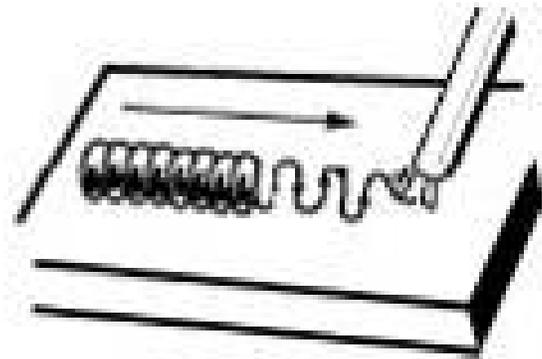
Types of Weld Bead

The following paragraphs discuss the most commonly used arc welding beads.

The Stringer bead is formed by traveling with the electrode in a straight line while keeping it centered over the weld joint.



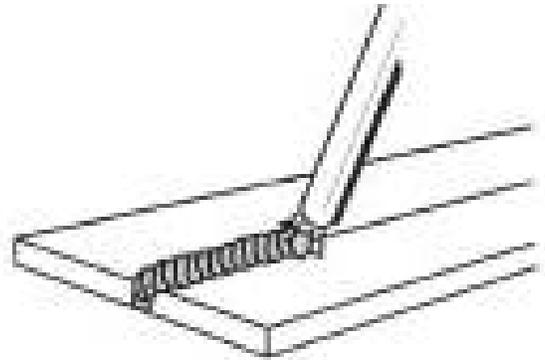
The Weave bead is used when you want to deposit metal over a wider space than would be possible with a stringer bead. It is made by weaving from side to side while moving with the electrode. It is best to hesitate momentarily at each side before weaving back the other way to improve penetration.



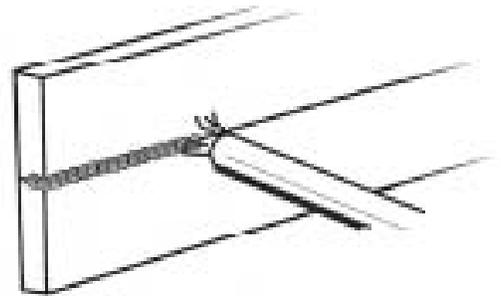


Welding Position

Flat position is the easiest of the welding positions and is most commonly used. It is best if you can weld in the flat position if possible as good results are easier to achieve.



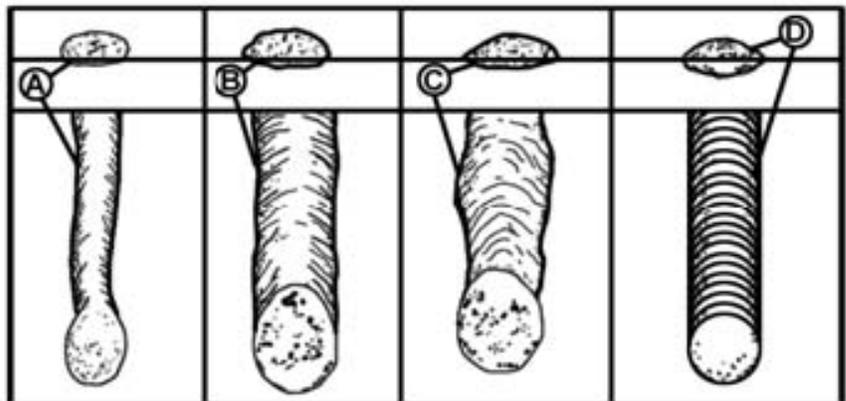
The Horizontal position is performed very much the same as the flat weld except that the angle is different such that the electrode, and therefore the arc force, is directed more toward the metal above the weld joint. This more direct angle helps prevent the weld puddle from running downward while still allowing slow enough travel speed to achieve good penetration. A good starting point for your electrode angle is about 30 degrees DOWN from being perpendicular to the work piece.



Judge a Good Weld Bead

When the trick of establishing and holding an arc has been learned, the next step is learning how to run a good bead. The first attempts in practice will probably fall short of acceptable weld beads. Too long of an arc will be held or the travel speed will vary from slow to fast.

- A. Weld speed is too fast.
- B. Weld speed is too slow.
- C. Arc is too long.
- D. Ideal weld.



A solid weld bead requires that the electrode be moved slowly and steadily along the weld seam. Moving the electrode rapidly or erratically will prevent proper fusion or create a lumpy, uneven bead.

To prevent ELECTRIC SHOCK, do not perform any welding while standing, kneeling, or lying directly on the grounded work.



Finish the Bead

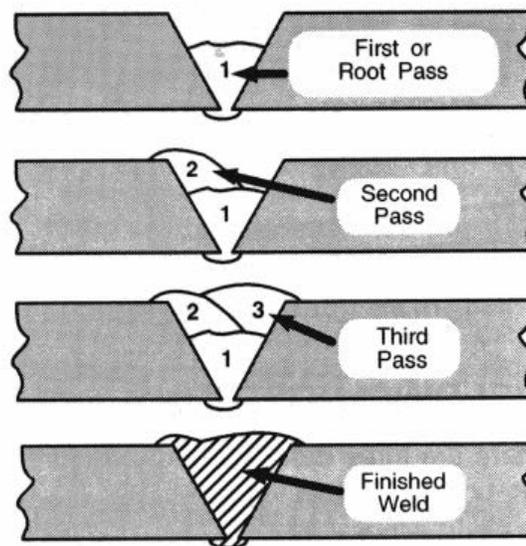
As the coating on the outside of the electrode burns off, it forms an envelope of protective gasses around the weld. This prevents air from reaching the molten metal and creating an undesirable chemical reaction. The burning coating, however, forms slag. The slag formation appears as an accumulation of dirty metal scale on the finished weld. Slag should be removed by striking the weld with a chipping hammer.

Multiple Pass Welding

Butt Weld Joints When butt welding thicker materials you will need to prepare the edges of the material to be joined by grinding a bevel on the edge of one or both pieces of the metal being joined. When this is done, a "V" is created between the two pieces of metal that will have to be welded closed. In most cases more than one pass or bead will need to be laid into the joint to close the "V".

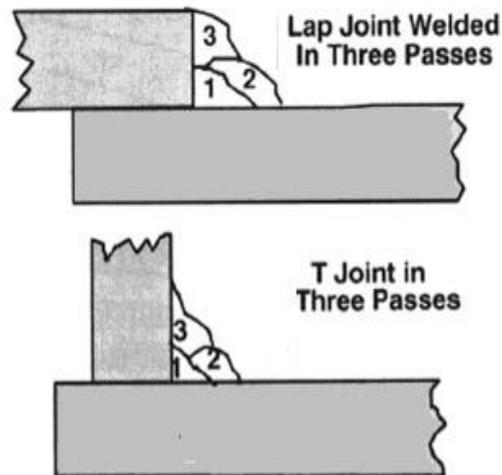
Laying more than one bead into the same weld joint is known as a multiple-pass weld.

The illustrations in following figure show the sequence for laying multiple pass beads into a single "V" butt joint.



Note: WHEN USING SELF-SHIELDING FLUX-CORE WIRE it is very important to thoroughly chip and brush the slag off each completed weld bead before making another pass or the next pass will be of poor quality.

Fillet Weld Joints. Most fillet weld joints, on metals of moderate to heavy thickness, will require multiple pass welds to produce strong joint. The illustrations show the sequence of laying multiple pass beads into a T fillet joint and a lap fillet joint.





LUBRICATION AND MAINTENANCE



DANGER! Electric shocks can be hurtful and deadly!

Do not touch the bare electric connection parts in the machine.

Shut down the machine and distribution box power before open the machine case.



WARNING: Make sure the electrical disconnect is OFF before working on the machine.

Maintenance should be performed on a regular basis by qualified personnel.

Always follow proper safety precautions when working on or around any machinery.



IMPORTANT: Proper handling is required!

- Do not touch or handle PC board without being properly grounded with a wrist strap. Put PC board in static proof bag to move or ship.
- Do not put hands or fingers near moving parts such as drive rolls of fan

Daily

- Check daily for any unsafe conditions and fix immediately. Always check of damaged or worn out parts before using the BW-200T SERIES. Broken parts will affect the BW-200T operation. Replace or repair damaged or worn parts immediately.
- Check that all nuts and bolts are properly tightened.
- Check and verify that there is air movement across the vent openings of the welder.

Weekly

- On a weekly basis clean the machine and the area around it.
- Inspect and replace power cord, ground cable, ground clamp, or electrode assembly when damaged or worn.
- Regularly check all the electrical connections in the welding machine for loose parts or connections. Tighten all loose connections and parts.



Semi- Annually

- Every six months, or as necessary, remove the cover panel from the welder and air-blow any dust and dirt that may have accumulated inside the welder. Welder should be used in a well-ventilated environment. The cabinet should be opened every six months and the internal dust and metal scraps should be cleaned with dry compressed air or a vacuum cleaner.

Storing Machine for Extended Period of Time

If this machine is to be inactive for a long period of time, prepare the machine as follows:

- Store in a clean dry facility free from corrosive gas, excess dust and high humidity. Temperature range from 10°F~120°F and the relative humidity not more than 90%.
- When transporting or storing the welder after use, it is recommended to repack the product as it was received for protection. (Cleaning is required before storage and you must seal the plastic bag in the box for storage.)



Note: *Proper maintenance can increase the life expectancy of your machine.*



IMPORTANT: If the welder continues to work too long time, the Heat Protection Indicator on the panel would be on, indicating that the inner temperature rise inside the welder had exceed the designed permitted temperature. At this time, stop the welding work, wait until the welder cooled inside and the Heat Protection Indicator turned off. Then work may resume.

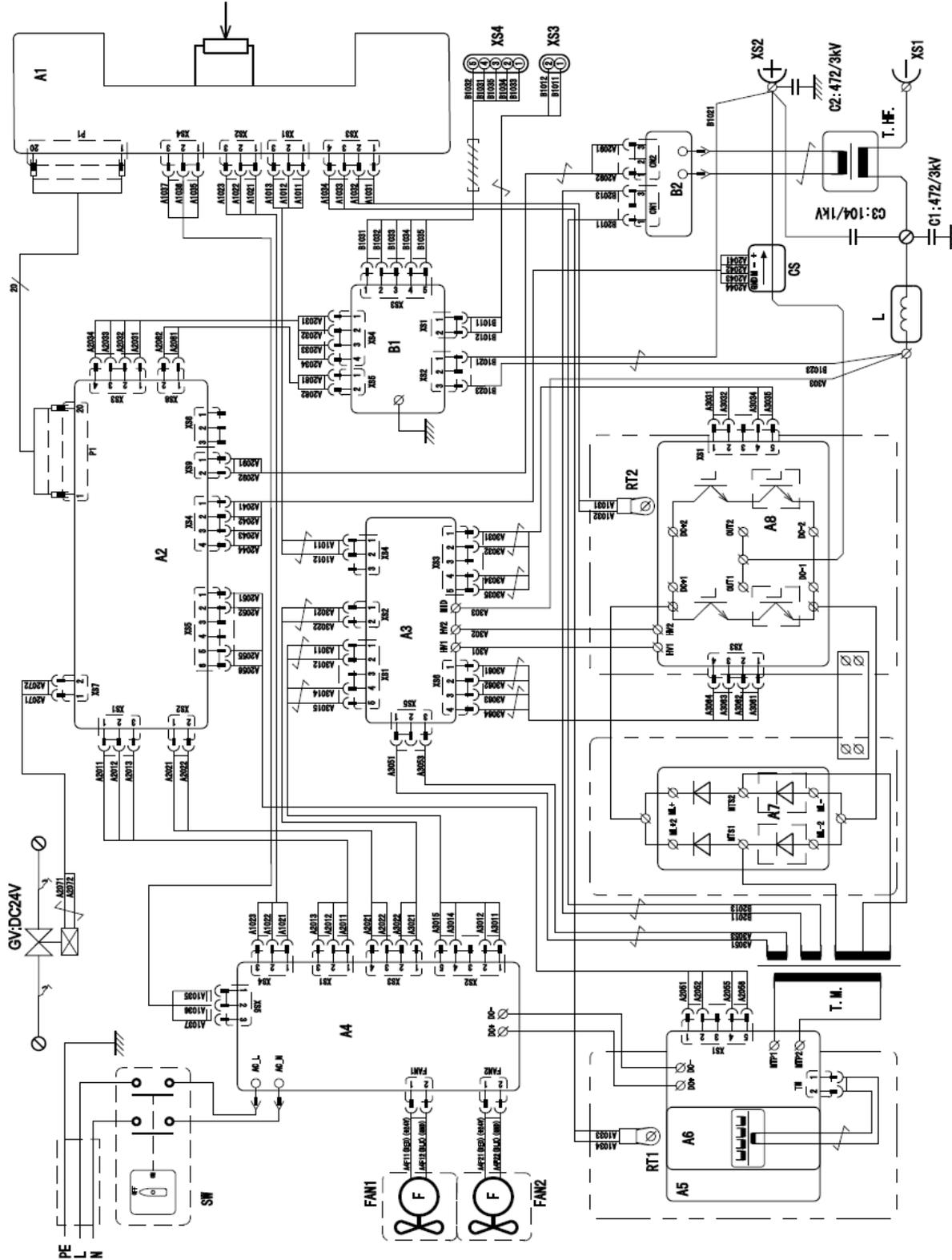
- Cut off the power switch and Argon valve, before leaving the welding place temporarily or after the welding worked finished.
- Welders should wear canvas work clothes and welding face shield to prevent arc light and heat radiation.
- Put light-proof screen around the work area to prevent others influenced by the arc lights.
- Flammable, explosive items could not be put near the welding area.
- Every outlet of the welder should be connected and earthed correctly.



IMPORTANT: The cover protection degree of the BW-200T SERIES inverter TIG welder is IP21S. When the welder is operated, do not insert finger or round stick diameter less than 12.5mm (especially metal stick) into the welder; Do not allow to press heavily onto the welder.



MAIN CIRCUIT CHART



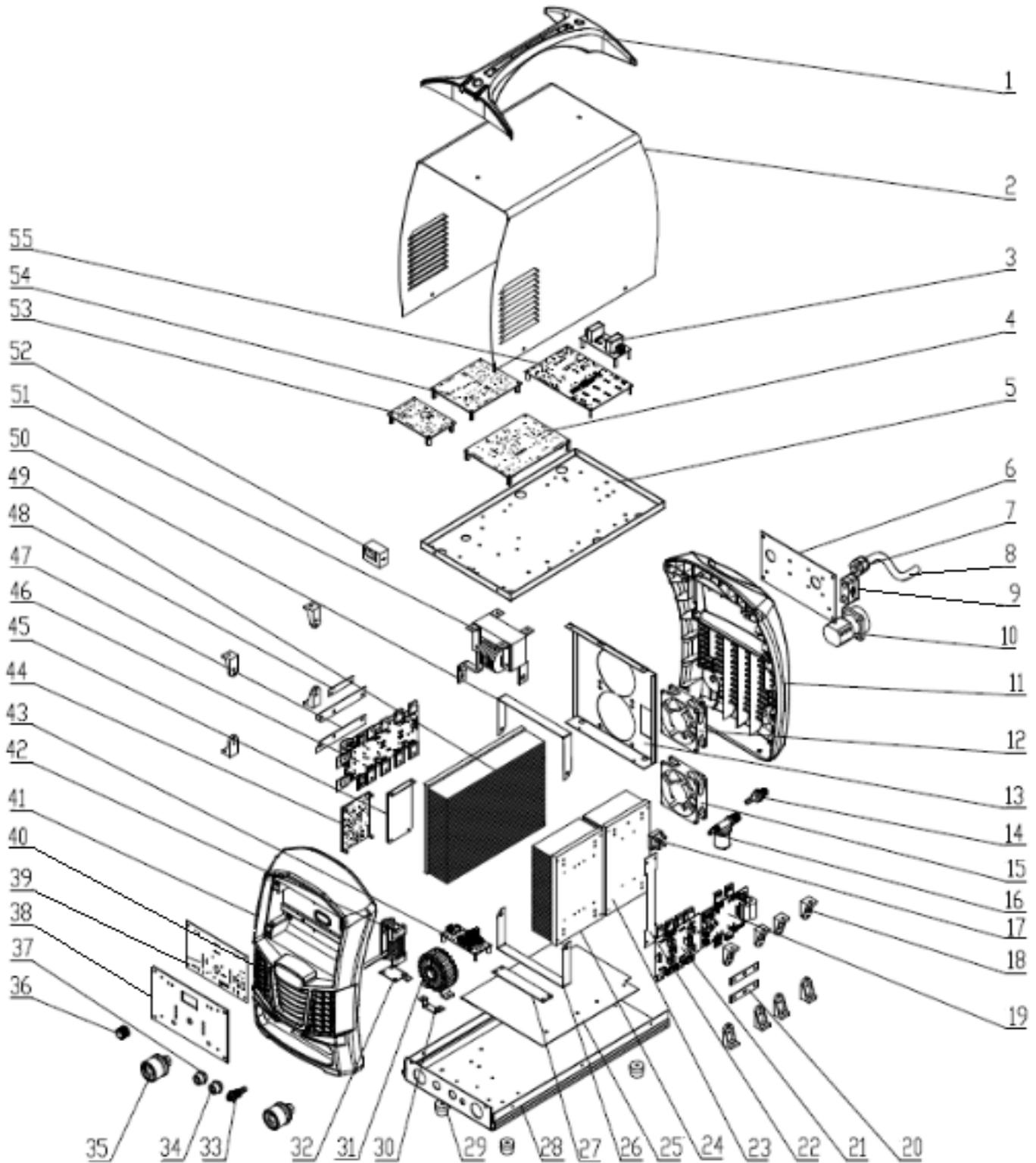


Wiring Diagram Parts

Number	Description
A1	Panel B
A2	Main Control B
A3	Secondary Inverter Board
A4	Power Board
A5	Once Inverter Board
A6	A Drive Plate
A7	Secondary Rectifier
A8	Secondary Inverter Board
B1	Filter Board
B2	Arc Plate
FAN1	Fan 1
FAN2	Fan 2
SW	Power Switch
GV	Electromagnetic Valve (DC24V)
CS	300A Hall Current Sensor
L	Reactor
RT1, RT2	Temperature Sensor
T.M.	IF Main Transformer
T.HF.	High-Frequency Coupling Transformer
XS1	Quick Socket (Negative)
XS2	Quick Socket (Positive)
XS3	Torch Switch Air Outlet
XS4	Foot Switch / Remote Control Air Outlet



SPARE PART DIAGRAM





Spare Parts List

Item	Part Number	Description	Qty.
1	20050080018	Handle	1
2	11010010440	Enclosure	1
3	11050110564	EMC board	1
4	11050020060	Main control PC board	1
5	11010050017	Mounting plate	1
6	11010030461	Back panel	1
7	20040300008	Fixed cable holder	1
8	11110340057	Power cable	1
9	20050170013	Tension disc	2
10	20070800378	Switch	1
11	11010030402	Plastic back panel	1
12	11120340001	Fan	1
13	11020010530	Fixed fan board	1
14	20070660011	Gas valve	1
15	11120340002	Fan	1
16	11120340003	Gas valve cable	1
17	20070370001	Rectifier	1
18	20050050194	Radiator support	12
19	11050050030	Inverter assembly	1
20	11020010447	Busbar	2
21	12010100032	Output current plate	1
22	11020010455	Radiator connector	1
23	20070430262	Radiator	1
24	20070430261	Radiator	1
25	11020014586	Radiator insulating plate	1
26	11020010438	Busbar	1
27	11020010472	Conducting bar	1
28	11010040319	Baseplate	1
29	20050050542	foot	4
30	11020010625	Fixed transformer board	1
31	20070250666	Main transformer	1
32	11020014713	Coupling fixed board	1
33	20070660003	Argon connector	1



Item	Part Number	Description	Qty.
34	20030304561	Trigger switch	1
35	20070570197	Rapid socket	2
36	20070110069	Potentiometer knob	1
37	20030304556	Gun switch	1
38	11020010772	Support board	1
39	11050110102	Front panel	1
40	20050050765	Window	1
41	20050050766	Plastic front panel	1
42	11040050009	Coupling transformer assemble	1
43	11050110048	Output absorbing board	1
44	11050100049	Run-on board	1
45	11020010454	Fixed run-on board	1
46	12010100024	Inverter assembly	1
47	11020010450	Busbar	2
48	11020010473	Busbar	1
49	20070430263	Radiator	1
50	11020010448	Busbar	1
51	20070500036	Output reactance	1
52	11120340006	Hall wiring harness	1
53	11050110079	Filter band	1
54	11050030010	Driver board	1
55	11050010014	Power board	1



ACCESSORY PARTS



1



2



3



4



5



6



7

Item	Part Number	Description
1	BW200T-A-1	Gas Hose - 12080030043
2	BW200T-A-2	Ground Cable with Clamp - 12080010307
3	BW200T-A-3	Foot Pedal - 80590070016
4	BW200T-A-4	Power Cord - 20070570022
5	BW200T-A-5	Welding Cable with Electrode Holder - 12080010055
6	BW200T-A-6	Regulator - 20070460041
7	BW200T-A-7	TIG torch assembly - 12080040157



TROUBLESHOOTING



WARNING: Make sure the electrical disconnect is **OFF** before working on the machine.

No	Breakdown	Analysis	Solutions
1	Alarm interface	Voltage is too high ($\geq 15\%$)	Switch off power source; Check the main supply; Restart welder when power recovers to normal state.
		Voltage is too low ($\leq 15\%$)	
		Bad power ventilation lead to over-heat protection	Improve the ventilation condition.
		Circumstance temperature is too high.	It will automatically recover when the temperature low down.
		Using over the rated duty-cycle.	It will automatically recover when the temperature low down.
2	Wire feeding motor does not work	Potentiometer not in the proper status	Change potentiometer
		Nozzle is blocked up	Change nozzle
		Feed roller is loose	Tighten the bolts
3	Cooling Fan Not Working or Turning Very Slowly	Switch broken	Replace the switch
		Fan broken	Replace or repair the fan
		Wire broken or falling off	Check the connection
4	Arc Is Not Stable and Splash Is Large	Too large contact tip makes the current unsteady	Change the proper contact tip or roller
		Too thin power cable makes the power astaticism	Change the power cable
		Too low input voltage	Enhance the input voltage
		Wire feeding resistance is too large	Clean or replace the liner and the torch cable had better in the line direction.
5	Arc cannot be pilot	Earth cable break	Connect earth cable
		Work piece has much greasy dirty or rusty stain	Clean greasy dirty or rusty stain
6	No shielded gas	Torch is not connected well	Connect the torch again
		Gas pipe is pressed or blocked up	Check gas system
		Gas system rubber pipe break	Connect gas system and bind firmly



NOTES

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