CIGWELD

AN ESAB BRAND

DESIGNED & TESTED IN AUSTRALIA FOR OVER 100 YEARS

BLUEVENOM SV135

STICK WITH STICK PULSE

DC LIFT TIG WITH TIG PULSE

STICK & TIG WELDER WITH PULSE

OPERATING MANUAL

BLUEVENOM SV135, P/N: W1500135

135A POWER	VRD STICK WITH PULSE	DC LIFT TIG WITH PULSE	230/240V 10A PLUG & PLAY	2 YEAR WARRANTY

CIGWELD
AN ESAB BRAND

WE APPRECIATE YOUR BUSINESS!

Congratulations on your new CIGWELD product. We are proud to have you as our customer and will strive to provide you with the best service and reliability in the industry. This product is backed by our extensive warranty and world-wide service network.

This Operating Manual has been designed to instruct you on the correct use and operation of your CIGWELD product. Your satisfaction with this product and its safe operation is our ultimate concern. Therefore please take the time to read the entire manual, especially the Safety Precautions. They will help you to avoid potential hazards that may exist when working with this product.

We have made every effort to provide you with accurate instructions, drawings, and photographs of the product(s) while writing this manual. However errors do occur and we apologize if there are any contained in this manual.

Due to our constant effort to bring you the best products, we may make an improvement that does not get reflected in the manual. If you are ever in doubt about what you see or read in this manual with the product you received, then check for a newer version of the manual on our website or contact our customer support for assistance.

YOU ARE IN GOOD COMPANY!

The Brand of Choice for Contractors and Fabricators Worldwide.

CIGWELD is a Market Leading Brand of Arc Welding Products for ESAB. We are a mainline supplier to major welding industry sectors in the Asia Pacific and emerging global markets including; Manufacturing, Construction, Mining, Automotive, Engineering, Rural and DIY.

We distinguish ourselves from our competition through market-leading, dependable products that have stood the test of time. We pride ourselves on technical innovation, competitive prices, excellent delivery, superior customer service and technical support, together with excellence in sales and marketing expertise.

Above all, we are committed to develop technologically advanced products to achieve a safer working environment for industry operators.

DESIGNED
& TESTED
IN AUSTRALIA
FOR OVER 100 YEARS

WARNING
Read and understand this entire Manual and your employer's safety practices before installing, operating, or servicing the equipment. While the information contained in this Manual represents the Manufacturer's best judgement, the Manufacturer assumes no liability for its use.

CIGWELD BLUEVENOM SV135 WELDING INVERTER OPERATING MANUAL NUMBER 0-5704 FOR:

PART NUMBER W1500135

Published by:

ESAB

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Publication Date: 20-03-2024

Revision Date:

RECORD THE FOLLOWING INFORMATION FOR WARRANTY PURPOSES:

Where Purchased:

Purchase Date:

Equipment Serial #:

BE SURE THIS INFORMATION REACHES THE OPERATOR. YOU CAN GET EXTRA COPIES FOR FREE BY DOWNLOADING FROM THE CIGWELD WEBSITE.

CAUTION

These INSTRUCTIONS are for experienced operators. If you are not fully familiar with the principles of operation and safe practices for arc welding and cutting equipment, we urge you to read our booklet, "Precautions and Safe Practices for Arc Welding, Cutting, and Gouging," Booklet 0-5407. Do NOT permit untrained persons to install, operate, or maintain this equipment. Do NOT attempt to install or operate this equipment until you have read and fully understand these instructions. If you do not fully understand these instructions, contact your supplier for further information. Be sure to read the Safety Precautions before installing or operating this equipment.

USER RESPONSIBILITY

This equipment will perform in conformity with the description thereof contained in this manual and accompanying labels and/or inserts when installed, operated, maintained and repaired in accordance with the instructions provided. This equipment must be checked periodically. Malfunctioning or poorly maintained equipment should not be used. Parts that are broken, missing, worn, distorted or contaminated should be replaced immediately. Should such repair or replacement become necessary, the manufacturer recommends that a telephone or written request for service advice be made to the Authorized Distributor from whom it was purchased.

This equipment or any of its parts should not be altered without the prior written approval of the manufacturer. The user of this equipment shall have the sole responsibility for any malfunction which results from improper use, faulty maintenance, damage, improper repair or alteration by anyone other than the manufacturer or a service facility designated by the manufacturer.

READ AND UNDERSTAND THE OPERATING MANUAL BEFORE INSTALLING OR OPERATING. PROTECT YOURSELF AND OTHERS!

NOTE

This machine is a DC LIFT TIG Welder with Pulse, it is NOT suitable for TIG Welding Aluminium and Aluminium Alloys.

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DECLARATION OF CONFORMITY

According to AS/NZS 3820:2020, Essential Safety Requirements for Electrical Equipment Radiocommunications Labelling (Electromagnetic Compatibility) Notice 2017

TYPE OF EQUIPMENT

Arc welding power source

TYPE DESIGNATION

BLUEVENOM SV135 with serial number from: WC413 XXX XXXX

BRAND NAME OR TRADEMARK

CIGWELD

MANUFACTURER OR HIS AUTHORIZED REPRESENTATIVE ESTABLISHED WITHIN THE EEA NAME, ADDRESS, AND TELEPHONE NO:

CIGWELD Pty Ltd 71 Gower Street
Preston, Victoria, Australia, 3072
Phone: +61 3 9474 7400;
www.cigweld.com.au

THE FOLLOWING HAS BEEN USED IN THE DESIGN:

AS 1674.2:2007	Safety in welding and allied processes, Part 2: Electrical
AS 60974.1:2020	Arc Welding Equipment, Part 1: Welding Power Sources
AS/NZS 3760-2010	In-service Safety Inspection and Testing of Electrical Equipment EN IEC 60974-1: 2018/A1:2019 Arc Welding Equipment, Part 1: Welding Power Sources
EN 60974-10: 2014/A1:2015	Arc Welding Equipment, Part 10: EMC requirements

ADDITIONAL INFORMATION:

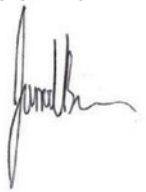
Restrictive use, Class A equipment, intended for use in location other than residential. This equipment is also in compliance with the essential requirements of EU Directives 2014/30/EU and 2014/35/EU.

BY SIGNING THIS DOCUMENT, THE UNDERSIGNED DECLARES AS MANUFACTURER, OR THE MANUFACTURER'S AUTHORIZED REPRESENTATIVE, THAT THE EQUIPMENT IN QUESTION COMPLIES WITH THE SAFETY REQUIREMENTS STATED ABOVE.

PLACE/DATE

Preston
2024-03-20

SIGNATURE



Jarrod Brennan
General Manager

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SECTION 1:
ARC WELDING SAFETY INSTRUCTIONS AND WARNINGS

WARNING

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS KEEP AWAY UNTIL CONSULTING YOUR DOCTOR. DO NOT LOSE THESE INSTRUCTIONS. READ OPERATING/ INSTRUCTION MANUAL BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

Welding products and welding processes can cause serious injury or death, or damage to other equipment or property, if the operator does not strictly observe all safety rules and take precautionary actions.

Safe practices have developed from past experience in the use of welding and cutting machinery/equipment. These practices must be learned through study and training before using this equipment. Some of these practices apply to equipment connected to power lines; other practices apply to engine driven equipment. Anyone not having extensive training in welding and cutting practices should not attempt to weld.

Safe practices are outlined in the Australian Standard AS1674.2-2007 entitled: Safety in welding and allied processes Part 2: Electrical. This publication and other guides as to what you should learn before operating this equipment are listed at the end of these safety precautions.

HAVE ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK PERFORMED ONLY BY QUALIFIED PEOPLE.

1.01 ARC WELDING HAZARDS

WARNING

ARC RAYS can burn eyes and skin;
NOISE can damage hearing.

Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some processes can damage hearing.

ARC RAYS AND NOISE

1. Use a Welding Helmet or Welding Faceshield fitted with a proper shade of filter (see ANSI Z49.1 and AS 1674 listed in Safety Standards) to protect your face and eyes when welding or watching the welding operation.
2. Wear approved safety glasses. Side shields recommended.
3. Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
4. Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection.
5. Use approved ear plugs or ear muffs if noise level is high.
6. Never wear contact lenses while welding.

WARNING

ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on.

In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

ELECTRIC SHOCK

1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and body protection.
3. Insulate yourself from work and ground using dry insulating mats or covers.
4. Disconnect input power or stop engine before installing or servicing this equipment. Lock input power disconnect switch open, or remove line fuses so power cannot be turned on accidentally.
5. Properly install and ground this equipment according to its Operating Manual and national, state, and local codes.
6. Turn off all equipment when not in use. Disconnect power to equipment if it will be left unattended or out of service.
7. Use fully insulated electrode holders. Never dip holder in water to cool it or lay it down on the ground or the work surface. Do not touch holders connected to two welding machines at the same time or touch other people with the holder or electrode.
8. Do not use worn, damaged, undersized, or poorly spliced cables.
9. Do not wrap cables around your body.
10. Ground the workpiece to a good electrical (earth) ground.
11. Do not touch electrode while in contact with the work (ground) circuit.
12. Use only well-maintained equipment. Repair or replace damaged parts at once.
13. In confined spaces or damp locations, do not use a welder with AC output unless it is equipped with a voltage reducer. Use equipment with DC output.
14. Wear a safety harness to prevent falling if working above floor level.
15. Keep all panels and covers securely in place.

RECOMMENDED PROTECTIVE FILTERS FOR ELECTRIC WELDING

Description of Process	Approximate Range of Welding Current in Amps	Minimum Shade Number of Filter(s)
Manual Metal Arc Welding - covered electrodes (MMAW)	Less than or equal to 100	8
	100 to 200	10
	200 to 300	11
	300 to 400	12
	Greater than 400	13
Gas Metal Arc Welding (GWAW) (MIG) other than Aluminium and Stainless Steel	Less than or equal to 150	10
	150 to 250	11
	250 to 300	12
	300 to 400	13
	Greater than 400	14
Gas Metal Arc Welding (GMAW) (MIG) Aluminium and Stainless Steel	Less than or equal to 250	12
	250 to 350	13
Gas Tungsten Arc Welding (GTAW) (TIG)	Less than or equal to 100	10
	100 to 200	11
	200 to 250	12
	250 to 350	13
	Greater than 350	14
Flux-cored Arc Welding (FCAW) - with or without shielding gas	Less than or equal to 300	11
	300 to 400	12
	400 to 500	13
	Greater than 500	14
Air - Arc Gouging	Less than or equal to 400	12
Plasma - Arc Cutting	50 to 100	10
	100 to 400	12
	400 to 800	14
Plasma - Arc Spraying	–	15
Plasma - Arc Welding	Less than or equal to 20	8
	20 to 100	10
	100 to 400	12
	400 to 800	14
Submerged - Arc Welding	–	2(5)
Resistance Welding	–	Safety Spectacles or eye shield

Refer to standard AS/NZS 1338.1:2012 for comprehensive information regarding the above table.

FUMES AND GASES

WARNING

FUMES & GASES CAN BE HAZARDOUS TO YOUR HEALTH.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

1. Keep your head out of the fumes. Do not breathe the fumes.
2. If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
3. If ventilation is poor, use an approved air-supplied respirator.
4. Read the Material Safety Data Sheets (MSDSs) and the manufacturer's instruction for metals, consumables, coatings, and cleaners.
5. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Shielding gases used for welding can displace air causing injury or death. Be sure the breathing air is safe.
6. Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapours to form highly toxic and irritating gases.
7. Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

WELDING

WARNING

WELDING CAN CAUSE FIRE OR EXPLOSION.

Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, weld spatter, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, or fire.

1. Protect yourself and others from flying sparks and hot metal.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
4. Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
5. Watch for fire, and keep a fire extinguisher nearby.
6. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
7. Do not weld on closed containers such as tanks or drums.
8. Connect work cable to the work as close to the welding area as practical to prevent welding current from travelling long, possibly unknown paths and causing electric shock and fire hazards.
9. Do not use welder to thaw frozen pipes.
10. Remove stick electrode from holder or cut off welding wire at contact tip when not in use.

FLYING SPARKS AND HOT METAL

WARNING

FLYING SPARKS & HOT METAL CAN CAUSE INJURY.

Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, weld spatter, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, or fire.

1. Wear approved face shield or safety goggles. Side shields recommended.
2. Wear proper body protection to protect skin.

CYLINDERS

WARNING

CYLINDERS CAN EXPLODE IF DAMAGED.

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

1. Protect compressed gas cylinders from excessive heat, mechanical shocks, and arcs.
2. Install and secure cylinders in an upright position by chaining them to a stationary support or equipment cylinder rack to prevent falling or tipping.
3. Keep cylinders away from any welding or other electrical circuits.
4. Never allow a welding electrode to touch any cylinder.
5. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
6. Turn face away from valve outlet when opening cylinder valve.
7. Keep protective cap in place over valve except when cylinder is in use or connected for use.
8. Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.

MOVING PARTS

WARNING

MOVING PARTS CAN CAUSE INJURY.

Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing.

1. Keep all doors, panels, covers, and guards closed and securely in place.
2. Stop engine before installing or connecting unit.
3. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.
4. To prevent accidental starting during servicing, disconnect negative (-) battery cable from battery.
5. Keep hands, hair, loose clothing, and tools away from moving parts.
6. Reinstall panels or guards and close doors when servicing is finished and before starting engine.

WARNING

This product, when used for welding or cutting,produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety code Sec. 25249.5 et seq.)

NOTE

Considerations About Welding And The Effects of Low Frequency Electric and Magnetic Fields.

WARNING

The procedures below are among those also normally recommended for pacemaker wearers. Consult your doctor for complete information.

The following is a quotation from the General Conclusions Section of the U.S. Congress, Office of Technology Assessment, Biological Effects of Power Frequency Electric & Magnetic Fields - Background Paper, OTA-BP-E-63 (Washington, DC: U.S. Government Printing Office, May 1989): "...there is now a very large volume of scientific findings based on experiments at the cellular level and from studies with animals and people which clearly establish that low frequency magnetic fields and interact with, and produce changes in, biological systems. While most of this work is of very high quality, the results are complex. Current scientific understanding does not yet allow us to interpret the evidence in a single coherent framework. Even more frustrating, it does not yet allow us to draw definite conclusions about questions of possible risk or to offer clear science- based advice on strategies to minimize or avoid potential risks."

To reduce magnetic fields in the workplace, use the following procedures:

1. Keep all doors, panels, covers, and guards closed and securely in place.
2. Stop engine before installing or connecting unit.
3. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.
4. To prevent accidental starting during servicing, disconnect negative (-) battery cable from battery.
5. Keep hands, hair, loose clothing, and tools away from moving parts.
6. Reinstall panels or guards and close doors when servicing is finished and before starting engine.

1.02 PRINCIPAL SAFETY STANDARDS

Safety in welding and allied processes Part 1: Fire Precautions, AS 1674.1-1997 from SAI Global Limited, www.saiglobal.com.

Safety in welding and allied processes Part 2: Electrical, AS 1674.2-2007 from SAI Global Limited, www. saiglobal.com.

Filters for eye protectors - Filters for protection against radiation generated in welding and allied operations AS/NZS 1338.1:2012 from SAI Global Limited, www.saiglobal.com.

Welding Processes, Code of Practice, JULY 2020 - Safe Work Australia. This document provides "Practical guidance on how to manage health and safety risks associated with welding". **The latest version is available free of charge at: https://www.safeworkaustralia.gov.au/doc/model-code-practice-welding-processes.**

Other International Standards and Codes of Practice

Safety in Welding and Cutting, ANSI Standard Z49.1, from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126.

Safety and Health Standards, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, American Welding Society Standard AWS F4.1, from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126.

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices for Occupation and Educational Eye and Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting and Welding Processes, NFPA Standard 51B, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

SECTION 2: INTRODUCTION

2.01 HOW TO USE THIS MANUAL

This Operating Manual only applies to the Part Numbers listed on page 3. To ensure safe operation, read the entire manual, including the chapter on safety instructions and warnings.

Throughout this manual, the words WARNING, CAUTION, and NOTE may appear. Pay particular attention to the information provided under these headings. These special annotations are easily recognized as follows:

NOTE
An operation, procedure, or background information which requires additional emphasis or is helpful in efficient operation of the system.

CAUTION
A procedure which, if not properly followed, may cause damage to the equipment.

WARNING
An operation, procedure, or background information which requires additional emphasis or is helpful in efficient operation of the system.

ELECTRICAL WARNING
Gives information regarding possible electrical shock injury. Warnings will be enclosed in a box such as this.

DANGER
Means immediate hazards which, if not avoided, will result in immediate, serious personal injury or loss of life.

Additional copies of this manual may be purchased by contacting CIGWELD at the address and phone number for your location listed in the inside back cover of this manual. Include the Operating Manual number and equipment identification numbers.

Electronic copies of this manual can also be downloaded at no charge in Acrobat PDF format by going to the CIGWELD web site listed below and clicking on the Literature Library link: **www.cigweld.com.au**

2.02 EQUIPMENT IDENTIFICATION

The unit's identification number (specification or part number), model, and serial number are located on the Data Plate which is fixed to the bottom of the welding machine. In some cases, the Data Plate may be attached to the rear panel. Equipment which does not have a control panel such as cable assemblies are identified only by the specification or part number printed on the shipping container. Record these numbers on the bottom of page 3 for future reference.

2.03 RECEIPT OF EQUIPMENT

When you receive the equipment, check it against the invoice to confirm it is complete and inspect the equipment for possible damage due to shipping. If there is any damage, notify the carrier immediately to file a claim. Furnish complete information concerning damage claims or shipping errors to the location in your area listed in the inside back cover of this manual. Include all equipment identification numbers as described above along with a full description of the parts in error.

Move the equipment to the installation site before unboxing the unit. Use care to avoid damaging the equipment when using knives, breaker bars, hammers, etc, to unbox the machine and its accessories.

2.04 SYMBOL CHART

Note that only some of these symbols will appear on your model.

ON	THREE PHASE	PURGING OF GAS
OFF	THREE PHASE STATIC FREQUENCY CONVERTER-TRANSFORMER-RECTIFIER	CONTINUOUS WELD MODE
DANGEROUS VOLTAGE	REMOTE	SPOT WELD MODE
INCREASE/DECREASE	DUTY CYCLE	SPOT TIME
CIRCUIT BREAKER	PERCENTAGE	PREFLOW TIME
AC AUXILIARY POWER	SHIELDED METAL ARC WELDING (SMAW)	POSTFLOW TIME
FUSE	GAS METAL ARC WELDING (GMAW)	QUICKSET PLATE THICKNESS PRE-SETS
AMPERAGE	GAS TUNGSTEN ARC WELDING (GTAW)	OUTPUT CURRENT
VOLTAGE	AIR CARBON ARC CUTTING (CAC-A)	2-YEAR WARRANTY
HERTZ (CYCLES/SEC)	CONSTANT CURRENT	BURNBACK TIME
FREQUENCY	CONSTANT VOLTAGE OR CONSTANT POTENTIAL	DISTURBANCE IN GROUND SYSTEM
NEGATIVE	HIGH TEMPERATURE	INCHES PER MINUTE
POSITIVE	FAULT INDICATION	METRES PER MINUTE
DIRECT CURRENT (DC)	ARC FORCE	SPOOL GUN
PROTECTIVE EARTH (GROUND)	TOUCH START (GTAW)	QUICKSET FOR MIG
LINE	VARIABLE INDUCTANCE	SINGLE PULSE
LINE CONNECTION	VOLTAGE INPUT	DOUBLE PULSE
AUXILIARY POWER	WIRE FEED FUNCTION	PULSES PER SECOND (PULSE FREQ.)
RECEPTACLE RATING-AUXILIARY POWER	WIRE FEED TOWARDS WORKPIECE WITH OUTPUT VOLTAGE OFF	PULSE BACKGROUND CURRENT
SINGLE PHASE	WELDING GUN	PULSE WIDTH

2.05 DESCRIPTION

The CIGWELD BLUEVENOM SV135 is here and is loaded with Xtra Functions that pack a serious sting to help you get your job done right.

30% smaller than some other machines in its class and lighter in weight at only 2.7kg's, the SV135 is a Advanced STICK-TIG welder that includes Pulse for the best heat control and welding characteristics!

The BLUEVENOM SV135 is the perfect solution for light fabrication, maintenance, repairs and the DIY enthusiast, CIGWELD has designed a machine that is capable of delivering an excellent result for the professional and novice welder!

Navigate with ease through the bright blue LED panel for superior clarity and 'Plug n' Weld' using a 230/240V 10Amp plug to get you striking that arc in no time!

Backed by a 2 Year Warranty, the SV135 can deliver awesome arc characteristics in the most popular processes of, STICK (MMAW for Electrodes with VRD for extra safety) and TIG (DC LIFT TIG) welding modes.

2.06 USER RESPONSIBILITY

This equipment will perform as per the information contained herein when installed, operated, maintained and repaired in accordance with the instructions provided. This equipment must be checked periodically. Defective equipment (including welding leads) should not be used. Parts that are broken, missing, partly worn, distorted or contaminated, should be replaced immediately. Should such repairs or replacements become necessary, it is recommended that such repairs be carried out by appropriately qualified persons approved by CIGWELD. Advice in this regard can be obtained by contacting an accredited CIGWELD Distributor/service agent.

This equipment or any of its parts should not be altered from standard specification without prior written approval of CIGWELD. The user of this equipment shall have the sole responsibility for any malfunction which results from improper use or unauthorised modification from standard specification, faulty maintenance, damage or improper repair by anyone other than appropriately qualified persons approved by CIGWELD.

NOTE
This machine is a DC LIFT TIG Welder with Pulse, it is NOT suitable for TIG Welding Aluminium and Aluminium Alloys.

2.07 WHAT'S IN THE BOX

BLUEVENOM SV135 (Part No. W1500135)

- BLUEVENOM SV135 Power Source
- Work Clamp 200A with 1.5m Lead
- Twist Lock Electrode Holder with 1.5m Lead
- Carry Case
- Carry Strap
- Operating Manual

NOTE
Refer to the complete Warranty Schedule at the back of the manual.

2.08 TRANSPORTING METHODS

This unit is equipped with a Carry Strap for carrying purposes.

ELECTRICAL WARNING
ELECTRIC SHOCK can kill.
DO NOT TOUCH live electrical parts.
Disconnect input power conductors from de-energized supply line before moving the welding power source.

WARNING
FALLING EQUIPMENT can cause serious personal injury and equipment damage

2.09 DUTY CYCLE

The rated duty cycle of a Welding Power Source, is a statement of the time it may be operated at its rated welding current output without exceeding the temperature limits of the insulation of the component parts. To explain the 10 minute duty cycle period the following example is used. Suppose a Welding Power Source is designed to operate at a 15% duty cycle, 90 amperes at 23.6 volts. This means that it has been designed and built to provide the rated amperage (90A) for 1.5 minutes, i.e. arc welding time, out of every 10 minute period (15% of 10 minutes is 1.5 minutes). During the other 8.5 minutes of the 10 minute period the Welding Power Source must idle and allowed to cool.

2.10 SPECIFICATIONS

DESCRIPTION	BLUEVENOM SV135
Packaged Part Number	W1500135
Power Source Dimensions	(L) 255mm x (W) 105mm x (H) 142mm
Power Source Weight	2.7kg
Cooling	Fan Cooled
Welder Type	Stick and Lift TIG with Pulse Inverter Power Source
Standards	AS 60974.1:2020 / IEC 60974-1:2019 EN 60974-10:2014/A1:2015
Number of Phases	Single Phase
Nominal Supply Voltage	230/240 VAC ± 10%
Nominal Supply Frequency	50/60Hz
Welding Current Range (STICK mode)	10-135A
Welding Current Range (TIG)	10-135A

DESCRIPTION	BLUEVENOM SV135
Open Circuit Voltage (VRD On) Stick Mode	<35V
Open Circuit Voltage (VRD Off) Stick Mode	65V
Effective Input Current (I1eff) refer Note 2	9.8 Amps (230VAC) 9.5 Amps (240VAC)
Maximum Input Current (I1max)	31 Amps (230VAC) 30 Amps (240VAC)
Minimum Single Phase Generator Recommendation (refer Note 4)	8KVA@0.8PF
STICK (MMAW) Welding Output, 40°C, 10 min	135A @ 10%, 25.4V 55A @ 60%, 22.2V 43A @ 100%, 21.7V
LIFT TIG (GTAW) Welding Output, 40°C, 10 min	135A @ 10%, 15.4V 55A @ 60%, 12.2V 43A @ 100%, 11.7V
Protection Class	IP21S

NOTE 1 Due to variations that can occur in manufactured products, claimed performance, voltages, ratings, all capacities, measurements, dimensions and weights quoted are approximate only. Achievable capacities and ratings in use and operation will depend upon correct installation, use, applications, maintenance and service.

NOTE 2 The Effective Input Current should be used for the determination of cable size & supply requirements.

NOTE 3 Motor start fuses or thermal circuit breakers are recommended for this application. Check local requirements for your situation in this regard.

NOTE 4 Minimum Generator Recommendation at the Maximum Output Duty Cycle. Due to large variations in performance and specifications of different brands and types of generators, CIGWELD cannot guarantee full welding output power or duty cycle on every brand or type of generator. Some small generators incorporate low cost circuit breakers on their outputs. These circuit breakers usually will have a small reset button, and will trip much faster than a switchboard type circuit breaker. This may result in not being able to achieve full output or duty cycle from the power source / generator combination. For this reason we recommend a generator that incorporates switchboard type circuit breakers. CIGWELD recommends that when selecting a generator, that the particular power source / generator combination be adequately trialled to ensure the combination performs to the users expectations.

NOTE 5 CIGWELD reserves the right to change product performance and specifications without notice.

NOTE 6 If an extension lead is required to be used it is recommended to use a minimum size of 1.5mm2 Heavy Duty Extension Lead. Longer extension leads may impact welding performance and operation.

2.11 OPTIONAL ACCESSORIES

We recommend genuine CIGWELD products. The biggest range and best quality with guaranteed performance.

PART NUMBER	DESCRIPTION
W7003006	TIG Torch 17V, 3m lead - Gas Valve - Dinse 25mm
CT1726K1	TIG Starter Kit 1 17/18/26 TIG Torches
699861	TIG Tungsten's 1.6mm 3T Rare Earth Purple Tip for AC/DC Welding Packet 10
699862	TIG Tungsten's 2.4mm 3T Rare Earth Purple Tip for AC/DC Welding Packet 10
W4013010	Argon Mini-Regulator and Gas Hose Kit includes CutSkill Regulator/Flowmeter Side Inlet, Gas Hose 2m and Hose Clamp.
210254	WeldSkill Argon Regulator / Flowmeter, 55LPM, 2 Gauge
201031	CutSkill Preset Argon Regulator / Flowmeter Side Inlet

PART NUMBER	DESCRIPTION
CWPLIER	MIG Pliers 8-Function, Cut Wire, Clean Nozzle, Remove Hot Nozzle, Pick up & hold hot welding jobs/pieces, Remove Contact Tip, Cut/Trim Spring Steel Liner, Long Nose Pliers, Mini Hammers to tap out spatter in the nozzle.
W4011502	ARC Trolley - S Welding Equipment Trolley
WS41625	Electrode Holder + Work Lead Set 250A, 4m Cable 16mm^2, 25mm DINSE Connector, Twist Lock Holder
WS42525	Electrode Holder + Work Lead Set 250A, 4m Cable 25mm^2, 25mm DINSE Connector, Twist Lock Holder

2.12 RELATED PRODUCTS

PART NUMBER	DESCRIPTION
646766	WeldSkill Heavy Duty Welding Gloves - Medium
646755	WeldSkill Heavy Duty Welding Gloves - Large
646767	WeldSkill Heavy Duty Welding Gloves – XL
646771	WeldSkill Welding Jacket - Medium
646772	WeldSkill Welding Jacket - Large
646773	WeldSkill Welding Jacket - XL
646774	WeldSkill Welding Jacket - XXL
W4018001	CIGWELD Heavy Duty Backpack
WHAMXC110	Arcmaster XC10 The Reaper Welding Helmet - Variable Shade 4/5 - 13

PART NUMBER	DESCRIPTION
WHAMXC120	Arcmaster XC20 Torque Welding Helmet - Variable Shade 4/5 - 13
646764	WeldSkill Magnetic Welding Clamp/Holder - Medium
646765	WeldSkill Magnetic Welding Clamp/Holder - Large
646770	WeldSkill Welding Curtain – Dark Green, 1.74m x 1.74m
646777	WeldSkill Welding Curtain – Red, 1.74m x 1.74m
646776	Welding Curtain Frame, 1.8m x 1.8m
646778	Welding Blanket, 1.8m x 1.8m

CIGWELD Chipping Hammer
P/N: 646215

WELDSKILL TIG Welding Gloves
P/N: 646754 (Large)
P/N: 646769 (Extra Large)

Arcmaster XC50 Welding Helmet (Delta) - Variable Shade 4/5 - 13
P/N: WHAMXC150

Arcmaster XC30 Welding Helmet (Cyberskull)
P/N: WHAMXC230

SECTION 3: INSTALLATION

3.01 ENVIRONMENT

These units are designed for use in environments with increased hazard of electric shock.

A. Examples of environments with increased hazard of electric shock are:

1. In locations in which freedom of movement is restricted, so that the operator is forced to perform the work in a cramped (kneeling, sitting or lying) position with physical contact with conductive parts.
2. In locations which are fully or partially limited by conductive elements, and in which there is a high risk of unavoidable or accidental contact by the operator.

B. Environments with increased hazard of electric shock do not include places where electrically conductive parts in the near vicinity of the operator, which can cause increased hazard, have been insulated.

3.02 LOCATION

Be sure to locate the welder according to the following guidelines:

A. In areas, free from moisture and dust.

B. Ambient temperature between -10° C to 40° C.

C. In areas, free from oil, steam and corrosive gases.

D. In areas, not subjected to abnormal vibration or shock.

E. In areas, not exposed to direct sunlight or rain.

F. Place at a distance of 300mm or more from walls or similar that could restrict natural air flow for cooling.

3.03 VENTILATION

Since the inhalation of welding fumes can be harmful, ensure that the welding area is effectively ventilated.

3.04 MAINS SUPPLY VOLTAGE REQUIREMENTS

The Mains Supply Voltage should be within ± 15% of the rated Mains Supply Voltage. If actual Mains Supply Voltage is outside this range Welding Current may not be available and may cause internal components to fail.

Refer to Specifications on page 17 for Supply Voltage information.

The Welding Power Source must be:

- Correctly installed, if necessary, by a qualified electrician.
- Correctly earthed (electrically) in accordance with local regulations.
- Connected to the correct size power point and fuse as per the Specifications on page 17.

IMPORTANT NOTE!
This product has been fitted with a supply plug as indicated in Section 2.10. Note that the welding output range applicable with the fitted supply plug is detailed in Section 2.10.

WARNING
Any electrical work must be carried out by a qualified Electrical Tradesperson

3.05 GENERATORS

Refer to Note 4 on page 17 for recommendations when using with a Generator.

3.06 EXTENSION LEADS

If an extension lead is required to be used it is recommended to use a minimum size of 1.5mm^2 Heavy Duty Extension Lead. Longer extension leads may impact welding performance and operation.

3.07 ELECTROMAGNETIC COMPATIBILITY

WARNING
Extra precautions for Electromagnetic Compatibility may be required when this Welding Power Source is used in a domestic situation.

A. INSTALLATION AND USE - USERS RESPONSIBILITY

The user is responsible for installing and using the welding equipment according to the manufacturer's instructions. If electromagnetic disturbances are detected then it shall be the responsibility of the user of the welding equipment to resolve the situation with the technical assistance of the manufacturer. In some cases this remedial action may be as simple as earthing the welding circuit. In other cases it could involve constructing an electromagnetic screen enclosing the Welding Power Source and the work, complete with associated input filters. In all cases, electromagnetic disturbances shall be reduced to the point where they are no longer troublesome.

B. ASSESSMENT OF AREA

Before installing welding equipment, the user shall make an assessment of potential electromagnetic problems in the surrounding area. The following shall be taken into account

1. Other supply cables, control cables, signalling and telephone cables; above, below and adjacent to the welding equipment.
2. Radio and television transmitters and receivers.
3. Computer and other control equipment.
4. Safety critical equipment, e.g. guarding of industrial equipment.
5. The health of people around, e.g. the use of pacemakers and hearing aids.
6. Equipment used for calibration and measurement.
7. The time of day that welding or other activities are to be carried out.
8. The immunity of other equipment in the environment: the user shall ensure that other equipment being used in the environment is compatible: this may require additional protection measures.

   The size of the surrounding area to be considered will depend on the structure of the building and other activities that are taking place. The surrounding area may extend beyond the boundaries of the premises.

C. METHODS OF REDUCING ELECTROMAGNETIC EMISSIONS

1. **Mains Supply**
   Welding equipment should be connected to the mains supply according to the manufacturer's recommendations. If interference occurs, it may be necessary to take additional precautions such as filtering of the mains supply. Consideration should be given to shielding the supply cable of permanently installed welding equipment in metallic conduit or equivalent. Shielding should be electrically continuous throughout it's length. The shielding should be connected to the Welding Power Source so that good electrical contact is maintained between the conduit and the Welding Power Source enclosure.

1. **Maintenance of Welding Equipment**
   The welding equipment should be routinely maintained according to the manufacturer's recommendations. All access and service doors and covers should be closed and properly fastened when the welding equipment is in operation. The welding equipment should not be modified in any way except for those changes and adjustments covered in the manufacturer's instructions. In particular, the spark gaps of arc striking and stabilising devices should be adjusted and maintained according to the manufacturer's recommendations.

2. **Welding Cables**
   The welding cables should be kept as short as possible and should be positioned close together, running at or close to the floor level.

3. **Equipotential Bonding**
   Bonding of all metallic components in the welding installation and adjacent to it should be considered. However Metallic components bonded to the work piece will increase the risk that the operator could receive a shock by touching the metallic components and the electrode at the same time. The operator should be insulated from all such bonded metallic components.

4. **Earthing of the Workpiece**
   Where the workpiece is not bonded to earth for electrical safety, nor connected to earth because of it's size and position, e.g. ship's hull or building steelwork, a connection bonding the workpiece to earth may reduce emissions in some, but not all instances. Care should be taken to prevent the earthing of the workpiece increasing the risk of injury to users, or damage to other electrical equipment. Where necessary, the connection of the workpiece to earth should be made by direct connection to the workpiece, but in some countries where direct connection is not permitted, the bonding should be achieved by suitable capacitance, selected according to national regulations.

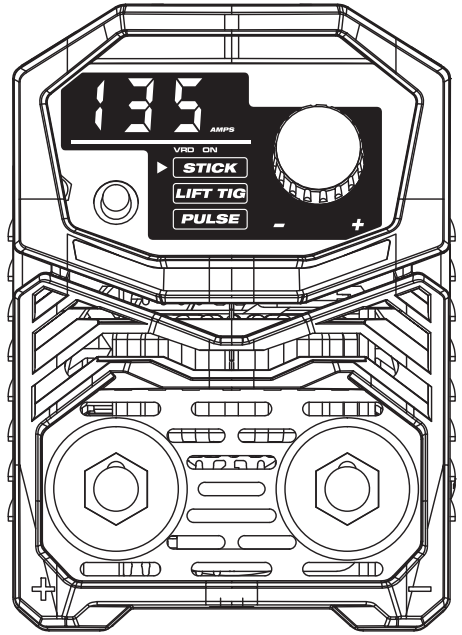
5. **Screening and Shielding**
   Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening the entire welding installation may be considered for special applications.

SECTION 4: OPERATION

The BLUEVENOM SV135 Inverter machine is easy to use and versatile and is well suited for Manual Metal Arc Welding - MMAW (STICK) and Tungsten Inert Gas Welding (LIFT-TIG). The machine is lightweight & portable and can weld most types of metals (but NOT Aluminium in TIG Mode) - with the appropriate STICK electrodes or TIG Torch, Argon Gas and Filler Metals. It can operate with Pulse in both STICK and TIG modes, with user settable Background Current and Pulses Per Second adjustments to best suit your individual welding conditions.

The BLUEVENOM SV135 can be used indoors or outdoors, with Stick electrodes being the best option for welding out in the elements or in windy conditions. Always check the CIGWELD electrode packaging for the correct operating amperage range for the chosen electrode you are using. www.cigweld.com.au

Standard operating procedures apply when using these Welding machines, i.e. connect work lead directly to workpiece with the spring loaded clamp.



4.01 POWER SOURCE CONTROLS, INDICATORS AND FEATURES

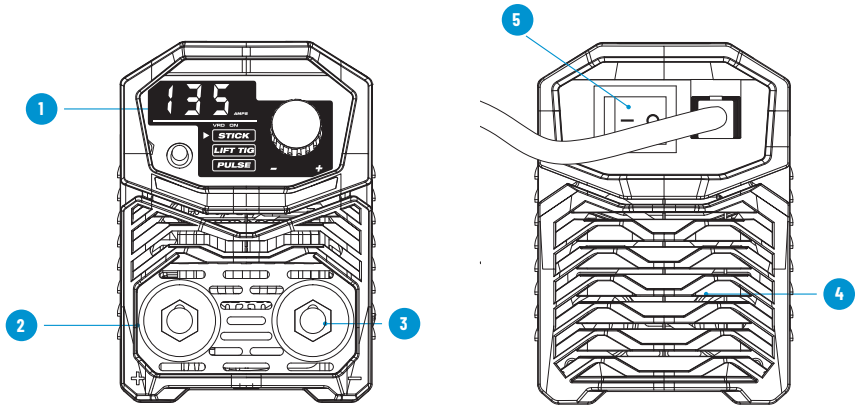


Figure 4-1: Power Source Controls, Indicators and Features

1. Digital Display
2. Positive Output Welding Terminal
3. Negative Output Welding Terminal
4. Fan
5. Power ON/OFF Switch

1 DIGITAL DISPLAY

The BLUEVENOM SV135 is equipped with a bright blue Sharp LED display which provides optimal clarity both indoors and outdoors. Easy press push button and knob for selection of features to toggle through Process Modes.

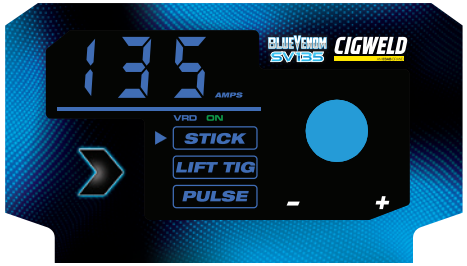


Figure 4-2: Digital Display

2 POSITIVE OUTPUT WELDING TERMINAL

The positive welding terminal is used to connect the welding output of the power source to the electrode holder lead. Most General Purpose electrodes are connected with electrode to positive. Consult the electrode manufacturer's information for the correct polarity.

Positive welding current flows from the power source via this Dinse type terminal. It is essential, however, that the male Dinse type plug is inserted and turned securely to achieve a sound electrical connection. Do not over tighten. When TIG Welding the Work Return Cable and Clamp should be connected to this terminal.

3 NEGATIVE OUTPUT WELDING TERMINAL

The negative welding terminal is used to connect the welding output of the power source to the work lead. Most General Purpose electrodes are connected with work lead (with Clamp) to negative. Consult the electrode manufacturer's information for the correct polarity. When TIG Welding the TIG Torch should be connected to this terminal.

Negative Welding current flows from the workpiece via this twist & lock terminal, known as a DINSE Connector to the power source. It is essential, that the male DINSE type plug is inserted and turned securely to achieve a sound electrical connection. Do not over Tighten.

CAUTION

Loose welding terminal connections can cause overheating and result in the male plug being fused in the DINSE terminal.

4 FAN

The BLUEVENOM SV135 is fitted with a fan to provide adequate cooling to the power source. To ensure a correct operation, make sure to keep the fan vent unobstructed and away from water, dust and other environmental factors that could impede the correct functioning of the machine.

5 POWER ON/OFF SWITCH

This switch is used to turn the unit ON/OFF. When this switch is turned ON the LED Digital Display on the front panel will illuminate.

NOTE

If the Power Source is repeatedly switched On then Off rapidly or the supply to the power source is turned On and Off rapidly it may not turn On due to inbuilt protective devices acting. If this occurs leave the Power Source ON/OFF Switch turned to the OFF position for several minutes to allow for the protective devices to reset.

4.02 INTRODUCTION TO PULSE WELDING

Pulse STICK (MMA) and TIG welding techniques have gained relevance in the welding industry, offering a multitude of advantages that cater to diverse welding scenarios. Please read the text below to better understand the benefits of introducing Pulse in welding.

BENEFITS OF PULSE MMA & TIG WELDING:

1. **Improved Control and Precision:**

   The Pulse feature provides welders with enhanced control over the heat input and arc stability. This precision is particularly beneficial when working with thin or delicate materials, allowing for meticulous weld bead formation and minimizing the risk of distortion.

2. **Enhanced Penetration and Fusion:**

   The Pulse waveform facilitates better penetration and fusion in the welding process. This is crucial for creating strong, durable weld joints, ensuring the integrity of the weld and contributing to the overall structural integrity of the fabricated components.

3. **Reduced Heat-Affected Zone (HAZ):**

   Pulse technology helps in minimizing the heat-affected zone, reducing the likelihood of material distortion or metallurgical changes. This is especially advantageous when working with heat-sensitive materials or when precise control over the thermal effects on the base metal is required.

4. **Minimized Spatter:**

   Pulse MMA welding significantly reduces spatter, which is a common issue in traditional Stick welding. The controlled pulsing action helps create a stable arc, preventing excessive spatter and minimizing the need for post-weld cleanup. This not only saves time but also contributes to a cleaner and more efficient welding environment.

5. **Additional advantages of MMA Pulse:**

   Additional advantages of MMA Pulse include; bridging gaps in poor fit-up weld joints, completing full penetration welds in single sided butt-weld joints, helps to reduce side-wall undercut on vertical-up fillet welds and helps to keep weld metal in place (hold-up) overheads welds.

6. **Versatility in Welding Applications:**

   Pulse MMA and TIG welding are versatile techniques suitable for a wide range of materials, including stainless steel, carbon steel, and various steel alloys. This versatility makes these welding methods suitable for diverse industries, from automotive manufacturing to aerospace, providing welders with flexibility in their applications.

In conclusion, the advantages of Pulse MMA and TIG welding encompass precise control, improved penetration, reduced HAZ, increased efficiency, and versatile application, makingThe SV135 Pulse Welder an indispensable tool for welders seeking superior welding outcomes.

SECTION 5:
STICK (MMA) WELDING

5.01 STICK (MMA) MODE AND SETUP

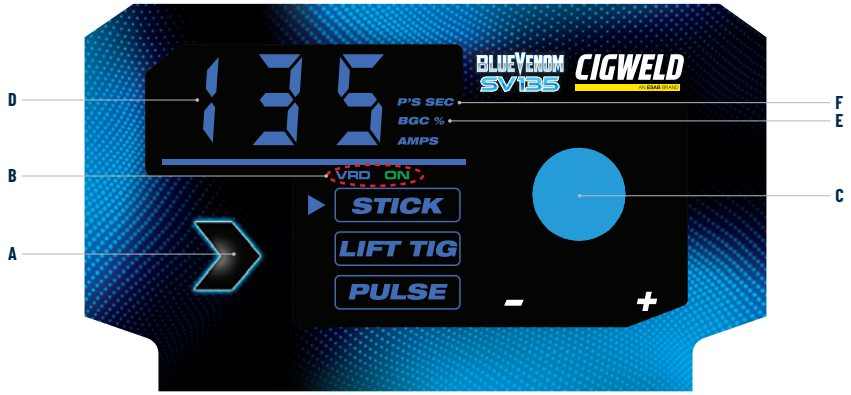


Figure 5-1: STICK (MMA) Mode

A. Process Selection Button.

Press Process Selection Button to select STICK (MMA) mode. Press Process Selection Button again to select STICK (MMA) with PULSE mode. Select STICK (MMA) or STICK (MMA) and PULSE for Pulse STICK Welding.

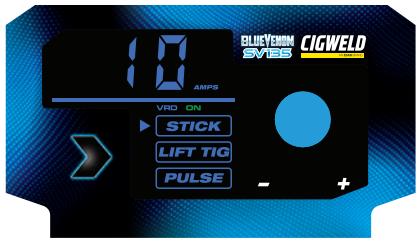


Figure 5-2: VRD ON

B. VRD ON/OFF Indicator (MMA/STICK MODE)

The green VRD light illuminates when the VRD is active. Under this condition the open circuit voltage of the unit is less than 35 VDC, thus reducing the potential of serious electric shock (such as when changing electrodes).

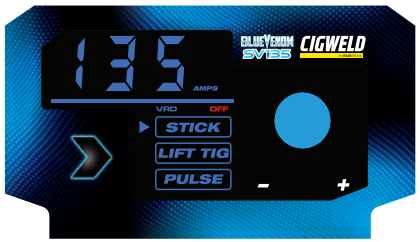


Figure 5-3: VRD OFF

The red VRD indicator illuminates when the VRD is inactive during welding operation. Under this condition the output voltage of the unit will be at welding potential which in most cases exceeds 35 VDC.

C. Control Knob.

Turn clockwise to increase the value;
Turn counter-clockwise to decrease the value;
Turn slowly in order to adjust value in small increments.
Turn quickly in order to adjust value in larger increments.

D. Digital Meter

In STICK (MMA) Mode the digital meter will display the Set Amperage (adjustable) when not welding. Whilst welding the digital meters display the actual welding Amperage of the power source.

At the completion of welding digital meters hold the last recorded welding voltage and amperage for 10 seconds. The amperage meter will hold the value until; (1) any of the front panel controls are adjusted in which case the unit will revert to viewing mode, (2) welding is recommenced, in which case actual welding amperage will be displayed, or (3) a period of 10 seconds elapses following the completion of welding in which case the unit will return to viewing mode.

E. BackGround Current (BGC%)
(Only available in Stick (MMA) with Pulse Mode)

Press the Control Knob (Quick press) to cycle through the settings until reaching BackGround Current (or Base Current, It will highlight as shown on image below). Use the Control Knob to adjust to the desired level. Pulse Base Current Range is 60 – 80%. Factory setting is 70%.

Figure 5-4: BackGround Current

Note: If no adjustment is made after 5 seconds it will return to the primary adjustment screen (Current – AMPS).

It's the percentage of current that your Pulse will have at the Bottom (base). This percentage is calculated from your peak current, which is set with the Control Knob (See Section 5.01 C. Control Knob). It is the low-current pulse that follows the peak current. It helps maintain the arc stability and keeps the weld pool in a controlled state while minimizing heat input. The background current is usually set at a lower value compared to the peak current.

For example, if a Pulse Base Current of 60% is set, the variation will be 40% between Peak and Base. This will make the weld much hotter when the pulse is at the Top compared to the Bottom.

F. Pulses Per Second (P'S SEC)
(Only available in Stick (MMA) with Pulse Mode)

Press the Control Knob (Quick press) to cycle through the settings until reaching Pulses Per Second (It will highlight as shown on image below). Use the Control Knob to adjust to the desired level. Pulses Per Second Range is 0.2 – 5Hz. Factory setting is 1Hz.

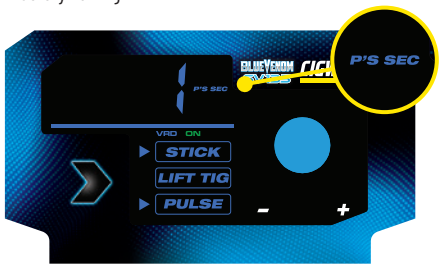


Figure 5-5: BackGround Current

Note: If no adjustment is made after 5 seconds it will return to the primary adjustment screen (Current – AMPS).

It is the number of times per second that a pulse (also known as cycle) will take place. The unit of measurement is Hertz (Hz). A Pulse cycles between Pulse Base current (bottom of the pulse) and the Peak Current (top of the pulse). This allows you to control the overall heat input, maintain arc stability and have a better-looking weld by improving control over the weld pool.

Higher frequencies result in more rapid cycling between the two current levels. As an example, if the Pulse Frequency is set for 2 Hz, you will observe 2 pulses per second (10 pulses every 5 seconds).

Anti Stick Feature (Not Shown)

This feature operates in STICK (MMA) mode. The anti stick feature senses when the electrode sticks and automatically reduces the current to prevent the Stick Electrode from sticking to the work piece. This is a preset feature and is not adjustable.

NOTE ON STICK MACHINES WITH VRD

To strike an arc with this machine which has VRD enabled, it is easier, to use the Touch and Lift technique, rather than trying to strike the electrode like lighting a match. Touch & Lift, means you lightly touch the electrode to the steel, and drag the rod a couple of millimeters in the direction you intend to weld, then lift the electrode and the arc will initiate easily.

5.02 SETUP FOR STICK (MMA) WELDING

A. Ensure that the Power Source ON/OFF Switch located on the rear of the Power Source is in the OFF position.

B. Connect the Electrode Holder lead to the positive welding terminal (+). If in doubt, consult the electrode manufacturer. Welding current flows from the Power Source via DINSE type terminals. It is essential, that the male plug is inserted and turned securely to achieve a sound electrical connection.

C. Connect the work lead to the negative welding terminal (-). If in doubt, consult the electrode manufacturer. Welding current flows from the power source via DINSE type terminals. It is essential, that the male plug is inserted and turned securely to achieve a sound electrical connection.

D. Switch the Power Source ON/OFF Switch located on the rear of the Power Source to the ON position and ensure the LED screen on the Front Panel lights up.

E. Select STICK (MMA) mode with the process selection control. Refer to Section 5.01 - **A**

F. Adjust the Current (Amps) with the Control Knob to the desired level. Refer to Section 5.01 - **C**. Control Knob for further information.

Figure 5-6: Select STICK (MMA) Mode

NOTE ON STICK MACHINES WITH VRD
To strike an arc with this machine which has VRD enabled, it is easier, to use the Touch and Lift technique, rather than trying to strike the electrode like lighting a match. Touch & Lift, means you lightly touch the electrode to the steel, and drag the rod a couple of millimeters in the direction you intend to weld, then lift the electrode and the arc will initiate easily.

5.03 SETUP FOR STICK (MMA) WITH PULSE

See Section 5.02, paragraphs **A** to **D**.

E. Select STICK (MMA) with PULSE mode with the process selection control. Refer to Section 5.01 - **A**

F. Adjust the Current (Amps) with the Control Knob to the desired level. Refer to Section 5.01 - **C**. Control Knob for further information.

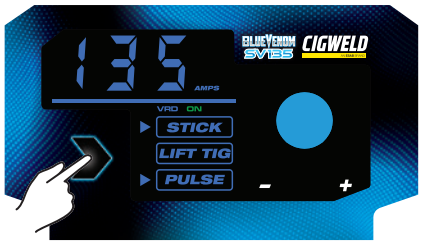


Figure 5-7: Select STICK (MMA) with PULSE

G. Quick-Press the Control Knob to adjust BackGround Current (BGC %). Refer to Section 5.01 – **E**. BackGround Current (BGC %)

H. Quick-Press the Control Knob to adjust Pulses Per Second (P'S SEC). Refer to Section 5.01 – **F**. Pulses Per Second (P'S SEC)

CAUTION
Remove any packaging material prior to use. Do not block the air vents at the front or rear of the Welding Power Source.

NOTE
Consult electrode manufacturer's information for correct polarity

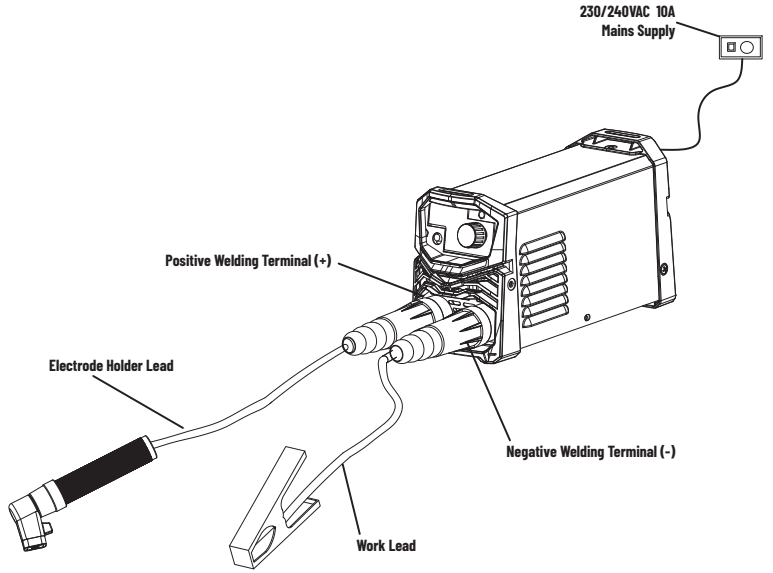


Figure 5-6: Setup for STICK (MMA) Welding

5.04 ARC WELDING ELECTRODES

Manual Metal Arc Welding (MMA) electrodes consist of a core wire surrounded by a flux coating. The flux coating is applied to the core wire by an extrusion process. The coating on arc welding electrodes serves a number of purposes:

A. To provide a gaseous shield for the weld metal, and preserve it from contamination by the atmosphere whilst in a molten state.

B. To give a steady arc by having 'arc stabilisers' present, which provide a bridge for current to flow across.

C. To remove oxygen from the weld metal with 'deoxidisers'.

D. To provide a cleansing action on the work piece and a protective slag cover over the weld metal to prevent the formation of oxides while the metal is solidifying. The slag also helps to produce a bead of the desired contour.

E. To introduce alloys into the weld deposits in special type electrodes.

5.05 CLASSIFICATION OF ELECTRODES

Arc Welding electrodes are classified into a number of groups depending on their applications. There are a great number of electrodes used for specialised industrial purposes which are not of particular interest for everyday general work. These include some low hydrogen types for high tensile steel, etc.

The range of electrodes dealt with in this publication will cover the vast majority of applications likely to be encountered; are all easy to use and all will work on even the most basic of welding machines

CIGWELD ELECTRODE SELECTION CHART

DESCRIPTION	CLASS. AUS/ NZ STD (NEW)	CLASS. AWS STD	DIA.	PACK	PART NO	APPLICATION
SATINCRAFT 13	B E4313 A	E6013	2.5mm	1kg Pack	322135	A high performance General Purpose (GP) welding electrode suitable for all positional welding, except vertical-down, for use on, mild and galvanised steel pipes, plates, angle iron, RHS, tubes and grid mesh.
			2.5mm	2.5kg Pack	612182	
			3.2mm	1kg Pack	322136	
			3.2mm	2.5kg Pack	612183	
WELDSKILL GP GENERAL PURPOSE WELDING	B E4313 A	E6013	2.0mm	25 Rod Handypack	WEG0220	A user-friendly General Purpose (GP) electrode offering a quiet, smooth arc action with a 6013 classification (min. strength rating of 60,000PSi). Ideal for welding thin section mild, galvanised and rusty steels and weld joints with poor fit-up. Great for use on vertical down fillet welding applications. Weldskill GP produces smooth professional mitre fillet welds in all positions with very low spatter levels, it features positive re-strike (hot or cold) and a self-releasing slag.
			2.0mm	1.0Kg Pack	WEG1020	
			2.0mm	2.5Kg Pack	WEG2520	
			2.5mm	20 Rod Handypack	WEG0225	
			2.5mm	1.0Kg Pack	WEG1025	
			2.5mm	2.5Kg Pack	WEG2525	
			2.5mm	5.0Kg Pack	WEG5025	
			3.2mm	15 Rod Handypack	WEG0232	
			3.2mm	1.0Kg Pack	WEG1032	
			3.2mm	2.5Kg Pack	WEG2532	
			3.2mm	5.0Kg Pack	WEG5032	
WELDSKILL HS HIGHER STRENGTH	B E4916 U A H10	E7016 H8	2.5mm	10 Rod Handypack	WEL0225	Higher Strength (HS) Hydrogen Controlled welding electrodes with a 7016 classification (min. strength rating of 70,000 PSi), well suited to welding steels under stress or with higher load bearing. The full covering slag is easy to control and remove.
			2.5mm	1.0Kg Pack	WEL1025	
			3.2mm	10 Rod Handypack	WEL0232	
			3.2mm	1.0Kg Pack	WEL1032	
WELDSKILL WELDIT ALL DISSIMILAR STEEL WELDING	B ES312-17	E312-17	2.5mm	10 Rod Handypack	WEW0225	WELDiT ALL is a highly alloyed stainless steel electrode that is extremely resistant to cracking (min. strength of 110,000PSi) it provides smooth, stable running in all positions (except vertical down) especially on low current settings. WELDit ALL is recommended for the repair and maintenance of all steels, particularly those of unknown composition. It is suitable for; Joining dissimilar steels, such as stainless steel to carbon steel, Repairing die or tool steels, as a protective overlay against corrosion and as an intermediate or buffer layer prior to hard surfacing. Not Recommended for Welding Cast Irons
			2.5mm	1.0Kg Pack	WEW1025	
			3.2mm	10 Rod Handypack	WEW0232	
			3.2mm	1.0Kg Pack	WEW1032	

CIGWELD ELECTRODE SELECTION CHART

DESCRIPTION	CLASS. AUS/ NZ STD (NEW)	CLASS. AWS STD	DIA.	PACK	PART NO	APPLICATION
WELDSKILL HARDA HARDFACING	1855-A4	––	3.2mm	10 Rod Handypack	WEH0232	HARDA is designed for hard surfacing of steel components subjected to wet or dry hard particle abrasion and low to moderate impact loading. The air hardening (~55RHc), low alloy steel deposit of WELDSKILL HARDA remains crack free on most steels and is therefore recommended for hard surfacing components subject to flexing during service. Typical applications include the surfacing of agricultural points, shears and tynes, grader and dozer blades, conveyor screws and post hole augers etc
			3.2mm	1.0Kg Pack	WEH1032	
WELDSKILL CAST2STEEL CAST IRONS & CAST TO STEEL	––	ENiFe-CI	2.5mm	10 Rod Handypack	WEC0225	CAST2STEEL is a Nickel-Iron electrode designed for higher strength repair and maintenance welding of SG, Austenitic, Meehanites and Grey cast irons. It produces a soft stable arc with minimal penetration and spatter. The ductile Nickel-Iron weld deposit is machinable with the higher strength required for welding S.G. irons. Cast2Steel is also used to weld Cast Iron to Mild and Low Alloy Steels.
			2.5mm	1.0Kg Pack	WEC1025	
			3.2mm	10 Rod Handypack	WEC0232	
			3.2mm	1.0Kg Pack	WEC1032	

Refer to **cigweld.com.au** for further STICK (MMA) Welding information

5.06 SIZE OF ELECTRODE

The electrode size is determined by the thickness of metals being joined and can also be governed by the type of welding machine available. Small welding machines will only provide sufficient current (amperage) to run the smaller size electrodes.

For most work, a 2.5mm or 3.2mm electrode will be quite sufficient. A 2.5mm electrode will give just as strong a joint but may require a few more weld runs to be put down to fill the joint. For thin sections, it is necessary to use smaller electrodes otherwise the arc may burn holes through the job. A little practice will soon establish the most suitable electrode for a given application.

5.07 STORAGE OF ELECTRODES

Always store electrodes in a dry place and in their original containers.

5.08 ELECTRODE POLARITY

Electrodes are connected to the Electrode Holder, and the Work Lead is connected to the work piece. Most MMA Coated Welding Electrodes run on DC+ polarity, unless otherwise noted.

SECTION 6:
LIFT TIG (GTAW) WELDING

6.01 LIFT TIG MODE AND SETUP

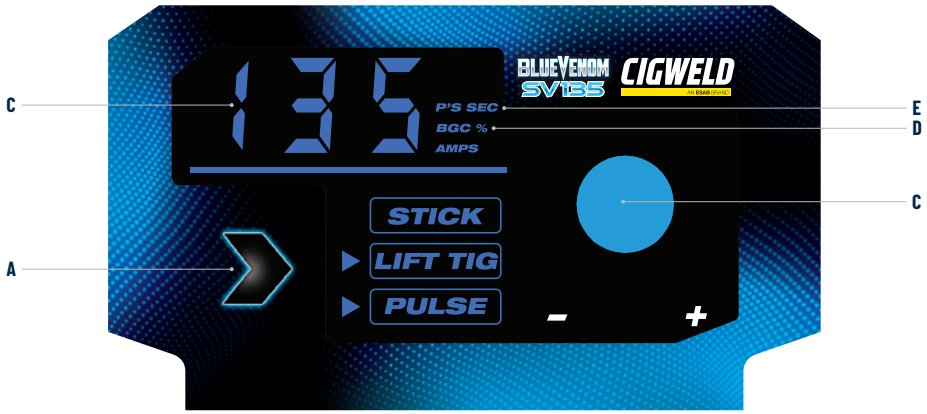


Figure 6-1: LIFT TIG Mode

A. Process Selection Button.

Press Process Selection Button to select LIFT TIG mode. Press Process Selection Button again to select LIFT TIG with PULSE mode.

Select LIFT TIG or LIFT TIG and PULSE for Pulse LIFT TIG Welding.

B. Control Knob.

Turn clockwise to increase the value;

Turn anti-clockwise to decrease the value;

Turn slowly in order to adjust value in small increments.

Turn quickly in order to adjust value in larger increments.

C. Digital Meter

In LIFT TIG Mode the digital meter will display the Set Amperage (adjustable) when not welding. Whilst welding the digital meter will display the actual welding Amperage of the power source.

At the completion of welding digital meters hold the last recorded welding voltage and amperage for 10 seconds. The amperage meter will hold the value until; (1) any of the front panel controls are adjusted in which case the unit will revert to viewing mode, (2) welding is recommenced, in which case actual welding amperage will be displayed, or (3) a period of 10 seconds elapses following the completion of welding in which case the unit will return to viewing mode.

D. BackGround Current (BGC%)
(Only available in TIG (GTAW) with Pulse Mode)

Press the Control Knob (Quick press) to cycle through the settings until reaching BackGround Current (It will highlight as shown on image below). Use the Control Knob to adjust to the desired level. Pulse Base Current Range is 25 – 75%. Factory setting is 50%.

Figure 6-2: BackGround Current

Note: If no adjustment is made after 5 seconds it will return to the primary adjustment screen (Current – AMPS).

It's the percentage of current that your Pulse will have at the Bottom (base). This percentage is calculated from your peak current, which is set with the Control Knob (See Section 6.01 B. Control Knob). It is the low-current pulse that follows the peak current. It helps maintain the arc stability and keeps the weld pool in a controlled state while minimizing heat input. The background current is usually set at a lower value compared to the peak current.

For example, if a Pulse Base Current of 60% is set, the variation will be 40% between Peak and Base. This will make the weld much hotter when the pulse is at the Top compared to the Bottom.

E. Pulses Per Second (P'S SEC)
(Only available in TIG (GTAW) with Pulse Mode)

Press the Control Knob (Quick press) to cycle through the settings until reaching Pulses Per Second (It will highlight as shown on image below). Use the Control Knob to adjust to the desired level. Pulse Frequency Range is 0.5 – 100Hz. Factory setting is 1Hz.

Figure 6-3: Pulses Per Second (P'S SEC)

Note: If no adjustment is made after 5 seconds it will return to the primary adjustment screen (Current – AMPS).

It is the number of times per second that a pulse (also known as cycle) will take place. The unit of measurement is Hertz (Hz). A Pulse cycles between a Pulse Base current (bottom of the pulse) and the Peak Current (top of the pulse). This allows you to control the overall heat input, maintain arc stability and have a better-looking weld by improving control over the weld pool.

Higher frequencies result in more rapid cycling between the two current levels. As an example, if the Pulse Frequency is set for 2 Hz, you will observe 2 pulses per second (10 pulses every 5 seconds).

NOTE
This machine is a DC LIFT TIG Welder with Pulse, it is NOT suitable for TIG Welding Aluminium and Aluminium Alloys.

6.02 SHIELDING GAS REGULATOR/FLOWMETER OPERATING INSTRUCTIONS

WARNING
This equipment is designed for use with welding grade (Inert) shielding gases only.

SHIELDING GAS CONNECTION

Connect the BlueJet Preset Argon Regulator/Flowmeter onto the gas cylinder/bottle by hand, keeping the round sight gauge in the vertical position. Then tighten the nut with a spanner, but do-not over tighten. Connect the TIG Torch gas line hose fitting to the right hand side of the regulator and tighten with a spanner. Check for any leaks with soapy water in a squeeze bottle, and look for bubbles (when the gas is on), this will highlight any gas leaks.

The gas flow (in Litres Per Minute) for shielding the molten weld metal from the atmosphere is adjustable and depends on the job and atmospheric conditions you encounter when welding.

Gas flow rate from the Regulator is based on the Gas Nozzle Inside Diameter (ID). The rule is 1/LPM flow based on ID Size of the Nozzle, e.g. ID of Nozzle = 9mm, Gas Flow = 9/LPM

Finished TIG welds that have a black, dark grey or grey surface finish are not good welds – you need more gas. Welds should be shinny, silver or Gold.

The flow rate is measured at the middle of the float ball.

SHIELDING GAS REGULATOR/ FLOWMETER SAFETY

This regulator/flowmeter is designed to reduce and control high pressure gas from a cylinder to the working pressure required for the equipment using it.

If the equipment is improperly used, hazardous conditions are created that may cause accidents. It is the users responsibility to prevent such conditions. Before handing or using the equipment, understand and comply at all times with the safe practices prescribed in this instruction.

SPECIFIC PROCEDURES for the use of regulators/flowmeters are listed below.

1. **NEVER** subject the regulator/flowmeter to an inlet pressure greater than its rated inlet pressure.
2. **NEVER** pressurize a regulator/flowmeter that has loose or damaged parts or is in a questionable condition. NEVER loosen a connection or attempt to remove any part of a regulator/flowmeter until the gas pressure has been relieved. Under pressure, gas can dangerously propel a loose part.
3. **DO NOT** remove the regulator/flowmeter from a cylinder without first closing the cylinder valve and releasing gas in the regulator/flowmeter high and low pressure chambers.
4. **TURN OFF** when equipment is not in use for extended periods of time, shut off the gas at the cylinder valve and release the gas from the equipment.
5. **OPEN** the cylinder valve SLOWLY. Close after use.

USER RESPONSIBILITIES

This equipment will perform safely and reliably only when installed, operated and maintained, and repaired in accordance with the instructions provided. Equipment must be checked periodically and repaired, replaced, or reset as necessary for continued safe and reliable performance. Defective equipment should not be used. Parts that are broken, missing, obviously worn, distorted, or contaminated should be replaced immediately.

The user of this equipment will generally have the sole responsibility for any malfunction, which results from improper use, faulty maintenance, or by repair by anyone other than an accredited repairer.

CAUTION
Match regulator/flowmeter to cylinder. NEVER CONNECT a regulator/flowmeter designed for a particular gas or gases to a cylinder containing any other gas.

INSTALLATION

1. Remove cylinder valve plastic dust seal. Clean the cylinder valve outlet of impurities that may clog orifices and damage seats before connecting the regulator/flowmeter. Crack the valve (open then close) momentarily, pointing the outlet away from people and sources of ignition. Wipe with a clean lint free cloth.
2. Match regulator/flowmeter to cylinder. Before connecting, check that the regulator/flowmeter label and cylinder marking agree and that the regulator/flowmeter inlet and cylinder outlet match. NEVER CONNECT a regulator/ flowmeter designed for a particular gas or gases to a cylinder containing any other gas.
3. Connect the regulator/flowmeter inlet connection to cylinder or pipeline and tighten it firmly but not excessively, with a suitable spanner.
4. Connect and tighten the TIG torch gas hose to the flow meter outlet. Ensure no gas leakage. The flow meter must be in the vertical position to read accurately. Ensure no gas leakage. The flowmeter must be in the vertical position to read accurately.

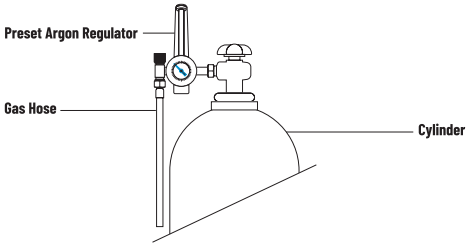


Figure 6-2: Fit Regulator/flowmeter to Cylinder

OPERATION

With the regulator/flowmeter connected to cylinder or pipeline:

1. Stand to one side of regulator/flowmeter and slowly open the cylinder valve. If opened quickly, a sudden pressure surge may damage internal regulator/flowmeter parts.
2. Since the regulator is a preset type, no adjustments to the regulator are necessary. Before opening the cylinder valve, be sure that the flow adjusting valve is in a finger-tight "OFF" position (clockwise).
3. Slowly and carefully, open the cylinder valve until the maximum pressure registers on the high pressure gauge.

CAUTION
DO NOT purge oxidising or flammable gases in the presence of flame, lit cigarettes, or other sources of ignition or in a confined space.

ADJUSTING FLOW RATE

With the regulator/flowmeter ready for operation, adjust working flow rate as follows:

1. Slowly turn adjusting valve in anti-clockwise direction to open and increase until the bobbin in the flow tube indicates the required flow rate.

NOTE
It may be necessary to re-check the shielding gas regulator/flowmeter flow rate following the first weld sequence due to back pressure present within shielding gas hose assembly

2. To reduce flow rate, allow the welding grade shielding gas to discharge from regulator/flowmeter by opening the gas valve on the TIG Torch. Bleed welding grade shielding gas into a well ventilated area and away from any ignition source. Turn adjusting screw clockwise, until the required flow rate is indicated on the gauge. Close downstream valve.
3. The correct flow rate will depend on the place and conditions you are working in. For indoors work shielding gas flow rate can be from 8L/Min for welding thin metals (0.6-1.0mm). The tell tale sign is to ensure your finished welds do-not have porosity holes in the surface.

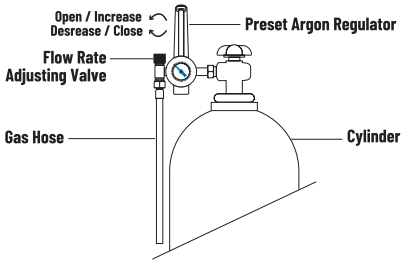


Figure 6-3: Adjust Flow Rate

WARNING
Before connecting the work clamp to the work make sure the mains power supply is switched off.

CAUTION
Secure the welding grade shielding gas cylinder in an upright position by chaining it to a suitable stationary support to prevent falling or tipping.

CAUTION
Loose welding terminal connections can cause overheating and result in the male plug being fused in the terminal. Remove any packaging material prior to use. Do not block the air vents at the front or rear of the Welding Power Source.

SHUTDOWN

Close cylinder valve whenever the regulator/flowmeter is not in use. To shut down for extended periods (more than 30 minutes).

1. Close cylinder valve tightly.
2. Bleed Gas into a well ventilated area.
3. After gas is drained completely, turn off the machine.
4. Before transporting cylinders that are not secured on a cart designed for such purposes, remove regulators/flowmeters.

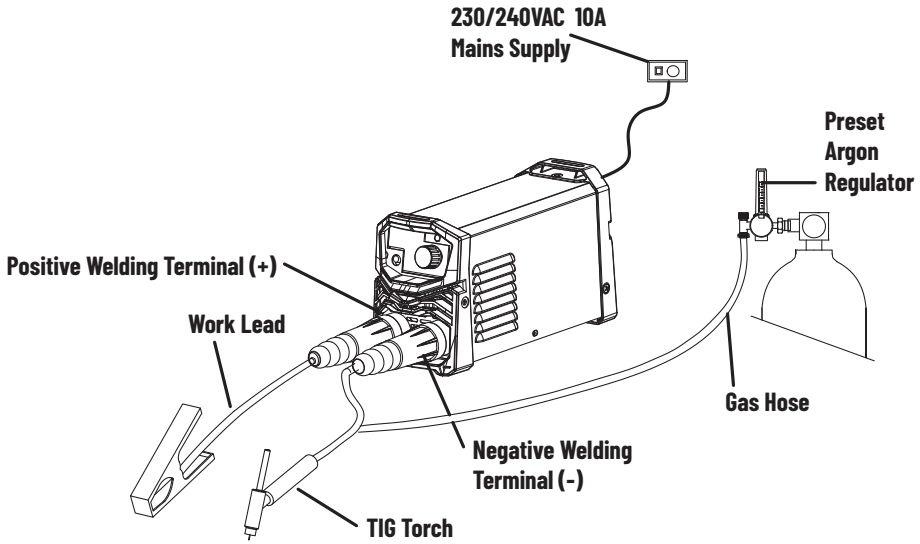


Figure 6-4: Setup for LIFT TIG (GTAW) Welding

6.03 SETUP FOR LIFT TIG (GTAW) WELDING

A. Ensure that the Power Source ON/OFF Switch located on the rear of the Power Source is in the OFF position.

B. Connect the TIG Torch to the negative welding terminal (-). Welding current flows from the power source via DINSE terminals.
Connect Work Lead to the positive welding terminal (+). It is essential, however, that the male plug is inserted and turned securely to achieve a sound electrical connection.

C. Fit the welding grade shielding gas regulator/flowmeter to the shielding gas cylinder (refer to Section 6.02) then connect the shielding gas hose from the TIG torch to the regulator/flowmeter outlet. Note that the TIG torch shielding gas hose is connected directly to the regulator/flowmeter. Refer to section 6.02 for recommended Shielding Gas flow rates and other TIG Welding information

D. Switch the Power Source ON/OFF Switch located on the rear of the Power Source to the ON position and ensure the LED screen on the Front Panel lights up.

E. Select LIFT TIG mode with the process selection control (refer to section 6.01 for further information). Connect the work lead to the positive welding terminal (+). Welding current flows from the Power Source via DINSE terminals. It is essential, however, that the male plug is inserted and turned securely to achieve a sound electrical connection.

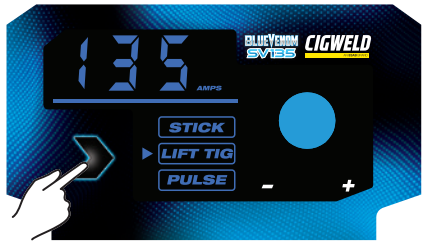


Figure 6-5: Select LIFT TIG (GTAW) Mode

6.04 SETUP FOR LIFT TIG (GTAW) & PULSE WELDING

See Section 6.03, paragraphs **A** to **D**.

E. Select LIFT TIG and PULSE mode with the process selection control (refer to section 6.01 – **B**. Control Knob for further information).

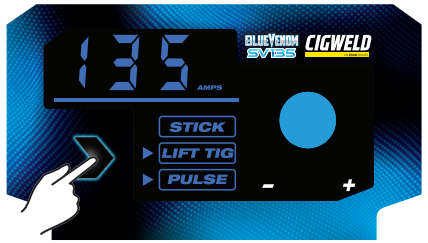


Figure 6-6: Select LIFT TIG with PULSE Mode

F. Adjust the Current (Amps) with the Control Knob to suit. Refer to Section 6.01 - **B**. Control Knob for further information.

G. Quick-Press the Control Knob to adjust BackGround Current (BGC %). Refer to Section 6.01 – **D**. BackGround Current (BGC %)

H. Quick-Press the Control Knob to adjust Pulses Per Second (P'S SEC). Refer to Section 6.01 – **E**. Pulses Per Second (P'S SEC)

6.04 TIG TUNGSTEN ELECTRODES AND FILLER RODS

ELECTRODE DIAMETER	DC CURRENT (AMPS)
0.040" (1.0mm)	30-60
1/16" (1.6mm)	60-115
3/32" (2.4mm)	100-165
1/8" (3.2mm)	135-200
5/32" (4.0mm)	190-280
3/16" (4.8mm)	250-340

GUIDE FOR SELECTING FILLER WIRE DIAMETER

FILLER WIRE DIAMETER	DC CURRENT RANGE (AMPS)
1/16" (1.6mm)	20-90
3/32" (2.4mm)	65-115
1/8" (3.2mm)	100-165
3/16" (4.8mm)	200-350

TUNGSTEN ELECTRODE TYPES

ELECTRODE TYPE (GROUND FINISH)	WELDING APPLICATION	FEATURES	COLOUR CODE
3T Rare Earth	Suitable for AC and DC LIFT TIG welding	Excellent ignition characteristics and consistent welding properties. Long service life compared to Thoriated Electrodes. Non Radioactive to improve health and safety for operator and environment.	Purple

BLUEVENOM SV135 TIG WELDING FILLER RODS SELECTION CHART

DESCRIPTION	CLASS. AUS/ NZ STD (NEW)	CLASS. AWS STD	DIA.	PACK	PART NO	APPLICATION
COMWELD SUPER STEEL	R2	ER70S-2	1.6mm	5kg Pack	321370	Comweld Super Steel is a copper coated 'triple deoxidised' steel welding rod recommended for the high quality Gas Tungsten Arc (TIG) welding of carbon and carbon-Manganese steels. Comweld Super Steel is deoxidised with Titanium, Aluminium and Zirconium in addition to Manganese and Silicon for improved weld deposit quality. It is the ideal choice for TIG welding rusty or mill scaled plates and pipes and the root pass welding of pipes, tanks and heavy walled root toughness and radiographic soundness are achieved under high dilution.
			2.4mm	5kg Pack	321373	

BLUEVENOM SV135 TIG WELDING FILLER RODS SELECTION CHART

DESCRIPTION	CLASS. AUS/ NZ STD (NEW)	CLASS. AWS STD	DIA.	PACK	PART NO	APPLICATION
COMWELD LW1	R4	ER70S-4	1.6mm	5kg Pack	321411	Comweld LW1 is a copper coated, double de-oxidised low carbon steel filler rod suitable for the oxy-acetylene (fusion) welding and Gas Tungsten Arc (TIG) welding of a wide range of mild and medium strength steels. Comweld LW1 is recommended for the TIG welding of steel pipes, plates and castings with a tensile strength in the 500 MPa class. It is tolerant to surface rust and mill scale and is ideal for root pass welding applications where tough and ductile welds are produced. When using Comweld LW1 for gas welding applications a neutral to slightly reducing flame setting is recommended.
			2.4mm	5kg Pack	321412	
COMWELD LW1-6	R6	ER70S-6	1.6mm	5kg Pack	321417	Comweld LW1-6 is a copper coated, low carbon steel filler rod suitable for Gas Tungsten Arc (TIG) welding of a wide range of mild and medium strength steels. Comweld LW1-6 is recommended for the TIG welding of steel pipes, plates and castings with a tensile strength in the 500 MPa class. It is tolerant to surface rust and mill scale and is ideal for root pass welding applications where tough and ductile welds are produced. Please Note: A suitable shielding gas is required
			2.4mm	5kg Pack	321418	
COMWELD CRM01	RB2	ER80S-B2	2.4mm	5kg Pack	321379	Comweld CrMo1 is a copper coated steel TIG welding rod alloyed with nominally 1.25% Chromium (Cr) and 0.50% Molybdenum (Mo). It is recommended for the TIG welding of 1/2Cr-1/2Mo, 1Cr1/2Mo and 1 1/4Cr-1/2Mo steel pipes, plates and castings used at elevated service temperatures (up to 550°C) in the power and petrochemical industries etc. Comweld CrMo1 is also suitable for the dissimilar TIG welding of Cr-Mo steel to carbon steel and for the welding of case hardenable steels or steels which can be subsequently heat treated.

BLUEVENOM SV135 TIG WELDING FILLER RODS SELECTION CHART

DESCRIPTION	CLASS. AUS/ NZ STD (NEW)	CLASS. AWS STD	DIA.	PACK	PART NO	APPLICATION
COMWELD CRM02	RB3	ER90S-B3	2.4mm	5kg Pack	321383	Comweld CrMo2 is a copper coated steel TIG welding rod alloyed with nominally 2.5% Chromium (Cr) and 1.0% Molybdenum (Mo).It is recommended for the TIG welding of 2 1/4Cr - 1 Mo and CrMo-V steel pipes, plates and castings used at elevated service temperatures (up to 600°C) in the power and petrochemical industries etc. Comweld CrMo2 is also suitable for the dissimilar TIG welding of selected Cr-Mo steels to carbon steel and for the TIG welding of heat treatable steels and case hardenable steels with up to 3% Chromium content.
COMWELD 308L	R308L	ER308L	1.6mm	5kg Pack	321406	Comweld 308L stainless steel is a high quality low carbon rod for the Gas or Gas Tungsten Arc (TIG) welding of a wide range of low carbon and stabilised 300 series stainless steels. It is recommended for the critical welding of 304 and 304L stainless steels in corrosion resistant and cryogenic applications.
			2.4mm	5kg Pack	321407	
COMWELD 309L	R309L	ER309L	1.6mm	5kg Pack	321403	Comweld 309L stainless steel is a high quality low carbon rod for the Gas or Gas Tungsten Arc (TIG) welding of highly alloyed 309 or 309L type stainless steels. Comweld 309L is also suitable for the dissimilar joining of other 300 series austenitic stainless steels to ferritic steels.
			2.4mm	5kg Pack	321404	
COMWELD 316L	R316L	ER316L	1.6mm	5kg Pack	321400	Comweld 316L stainless steel is a high quality low carbon rodfor the Gas or Gas Tungsten Arc (TIG) welding of Molybdenum bearing stainless steels; in particular matching 316 and 316L alloys. Comweld 316L is also suitable for the general welding of other 300 series stainless steels including 302 and 304; as well as ferritic stainless steels grades such as 409, 444 and 3Cr12.
			1.6mm	25 Rod Handypack	322054	
			2.4mm	5kg Pack	321401	

TIG WELDING SETUP CHART

BASE METAL THICKNESS	DC CURRENT FOR MILD STEEL	DC CURRENT FOR STAINLESS STEEL	TUNGSTEN ELECTRODE DIAMETER	FILLER ROD DIAMETER (IF REQUIRED)	ARGON GAS FLOW RATE LITRES/MIN	JOINT TYPE
0.040" 1.0mm	35-45 40-50	20-30 25-35	0.040" 1.0mm	1/16" 1.6mm	5-7	Butt/Corner Lap/Fillet
0.045" 1.2mm	45-55 50-60	30-45 35-50	0.040" 1.0mm	1/16" 1.6mm	5-7	Butt/Corner Lap/Fillet
1/16" 1.6mm	60-70 70-90	40-60 50-70	1/16" 1.6mm	1/16" 1.6mm	8	Butt/Corner Lap/Fillet
1/8" 3.2mm	80-100 90-115	65-85 90-110	1/16" 1.6mm	3/32" 2.4mm	8	Butt/Corner Lap/Fillet
3/16" 4.8mm	115-135 135-160	100-125 125-150	3/32" 2.4mm	1/8" 3.2mm	12	Butt/Corner Lap/Fillet

TIG Welding is generally regarded as a specialised process that requires operator competency. While many of the principles outlined in the previous section are applicable a comprehensive outline of the TIG Welding process is outside the scope of this Operating Manual. For further information please refer to www.cigweld.com.au or contact CIGWELD.

HANDY HINT

Welding Amperage Rule for Stainless and Steel; for every 1mm in Thickness allow 25Amps, e.g. 1.6mm = 40Amps | 3mm = 75Amps | 6mm = 150Amps etc

6.05 LIFT TIG (GTAW) WELDING PROBLEMS

	FAULT	CAUSE	REMEDY
1	Excessive bead build up or poor penetration or poor fusion at edges of weld.	Welding current is too low	Increase weld current and/or faulty joint preparation.
2	Weld bead too wide and flat or undercut at edges of weld or excessive burn through.	Welding current is too high	Decrease weld current.
3	Weld bead too small or insufficient penetration or ripples in bead are widely spaced apart.	Travel speed too fast	Reduce travel speed.
4	Weld bead too wide or excessive bead build up or excessive penetration in butt joint.	Travel speed too slow	Increase travel speed.
5	Uneven leg length in fillet joint	Wrong placement of filler rod	Re-position filler rod.

	FAULT	CAUSE	REMEDY
6	Electrode melts or oxidises when an arc is struck.	**A** Torch lead connected to positive welding terminal. **B** No gas flowing to welding region. **C** Torch is clogged with dust or dirt. **D** Gas hose is cut. **E** Gas passage contains impurities. **F** Gas regulator turned off. **G** Torch valve is turned off. **H** The Tungsten is too small for the welding current. **I** Power source is set for STICK welding.	**A** Connect torch lead to negative welding terminal. **B** Check the gas lines for kinks or breaks and gas cylinder contents. **C** Clean torch. **D** Replace gas hose. **E** Blow out the impurities. **F** Turn on. **G** Turn on. **H** Increase Tungsten diameter or reduce the welding current. **I** Set Power Source to TIG mode.
7	Dirty weld pool	**A** Tungsten contaminated by contact with work piece or filler rod material. **B** Work piece surface has foreign material on it. **C** Gas contaminated with air.	**A** Clean the Tungsten by grinding off the contaminates. **B** Clean surface. **C** Check gas lines for cuts and loose fitting or change gas cylinder.
8	Poor weld finish	Inadequate shielding gas.	Increase gas flow or check gas line for gas flow problems.
9	Arc start is not smooth.	**A** Tungsten electrode is too large for the welding current. **B** The wrong Tungsten is being used for the welding job. **C** Gas flow rate is too high. **D** Incorrect shielding gas is being used. **E** Poor work clamp connection to work piece.	**A** Select the right size Tungsten. Refer to section 6.04 for TIG Tungsten Electrodes Current Ranges. **B** Select the right Tungsten type. Refer to section 6.04 TIG Welding Setup Chart. **C** Select the correct Gas Flow rate for the welding job. Refer to section 6.04 TIG Welding Setup Chart. **D** Select the right shielding gas. **E** Improve connection to work piece.
10	Arc flutters during TIG welding.	Tungsten electrode is too large for the welding current.	Select the right size electrode. Refer to Section 6.04 TIG Welding Setup Chart.

Refer to **cigweld.com.au** for further LIFT TIG (GTAW) Welding information

SECTION 7: ROUTINE SERVICE REQUIREMENTS AND POWER SOURCE PROBLEMS

7.01 ROUTINE MAINTENANCE & INSPECTION

ELECTRICAL WARNING

There are extremely dangerous voltage and power levels present inside this product. Do not attempt to open or repair unless you are a qualified electrical tradesperson. Disconnect the Welding Power Source from the Mains Supply Voltage before disassembling.

Welding equipment should be regularly checked by a qualified electrical tradesperson to ensure that:

- The main earth wire of the electrical installation is intact.
- Power point for the Welding Power Source is effectively earthed and of adequate current rating.
- Plugs and cord extension sockets are correctly wired.
- Flexible cord is of the 3-core tough rubber or plastic sheathed type of adequate rating, correctly connected and in good condition.
- Welding terminals are shrouded to prevent inadvertent contact or short circuit.
- The frame of the Welding Power Source is effectively earthed.
- Welding leads and electrode holder are in good condition.
- The Welding Power Source is clean internally, especially from metal filing, slag, and loose material. If any parts are damaged for any reason, replacement is recommended.

7.02 CLEANING THE WELDING POWER SOURCE

To clean the Welding Power Source, open the enclosure and use a vacuum cleaner to remove any accumulated dirt, metal filings, slag and loose material. Keep surfaces clean as accumulated foreign material may reduce the welders output welding current.

CAUTION

Do not use compressed air to clean the Welding Power Source. Compressed air can force metal particles to lodge between live electrical parts and earthed metal parts within the Welding Power Source. This may result in arcing between this parts and their eventual failure.

7.03 BASIC TROUBLESHOOTING

ELECTRICAL WARNING

There are extremely dangerous voltage and power levels present inside this product. Do not attempt to open or repair unless you are a qualified electrical tradesperson and you have had training in power measurements and troubleshooting techniques.

If major complex subassemblies are faulty, then the Welding Power Source must be returned to an Accredited CIGWELD Service Agent for assessment.

The basic level of troubleshooting is that which can be performed without special equipment or knowledge.

7.04 RESTORE FACTORY DEFAULT SETTINGS

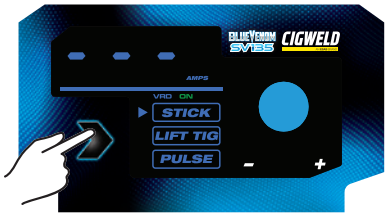


Figure 7-1: Restore Factory Default Settings

The BLUEVENOM SV135 can have Factory Default Settings restored.

To reset to factory settings switch the Power Source ON/OFF Switch on the rear panel to the OFF position.

Once the Power Source has turned Off hold the settings button on the front panel depressed whilst switching the ON/OFF Switch to the ON position.

A series of dashes will briefly display on the Front Digital Display indicating that a Factory Reset has been completed.

7.05 BLUEVENOM SV135 ERROR CODE

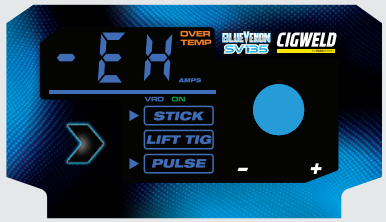
ERROR CODE	CAUSE	REMEDY
_EH 	Over Temperature	**A** Duty cycle of the Power Source has been exceeded. Leave the power source switched ON with the fan running and allow it to cool. **B** Check front and rear Panel Air Louvres are clean and not blocked by any dirt or obstacles. If damaged they should be replaced by an Accredited CIGWELD Service Provider. **C** Check that the fan is running normally during welding. If the fan is not running during welding it may be faulty and need replacing. Contact an Accredited CIGWELD Service Provider. Note this unit has a Continuous Operation Fan Fitted. Refer to Section 4 for further details.

Figure 7-2: Over Temperature

SECTION 8:
KEY SPARE PARTS

8.01 BLUEVENOM SV135 KEY SPARE PARTS

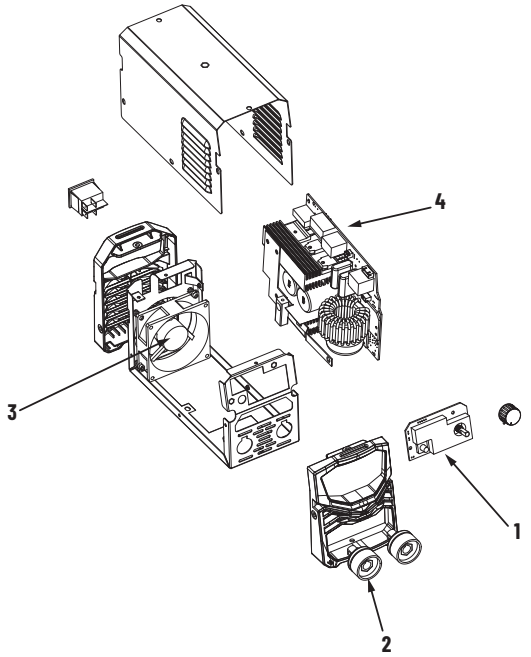


Figure 8-1: BLUEVENOM SV135 Key Spare Parts

BLUEVENOM SV135 POWER SOURCE KEY SPARE PARTS

ITEM	PART NUMBER	DESCRIPTION	ITEM	PART NUMBER	DESCRIPTION
1	W7007501	PCB Display	3	W7007502	Fan Assembly
2	W7007503	DINSE Socket 25mm²	4	W7007500	PCB Power Inverter

APPENDIX 1:
BLUEVENOM SV135 CIRCUIT DIAGRAM

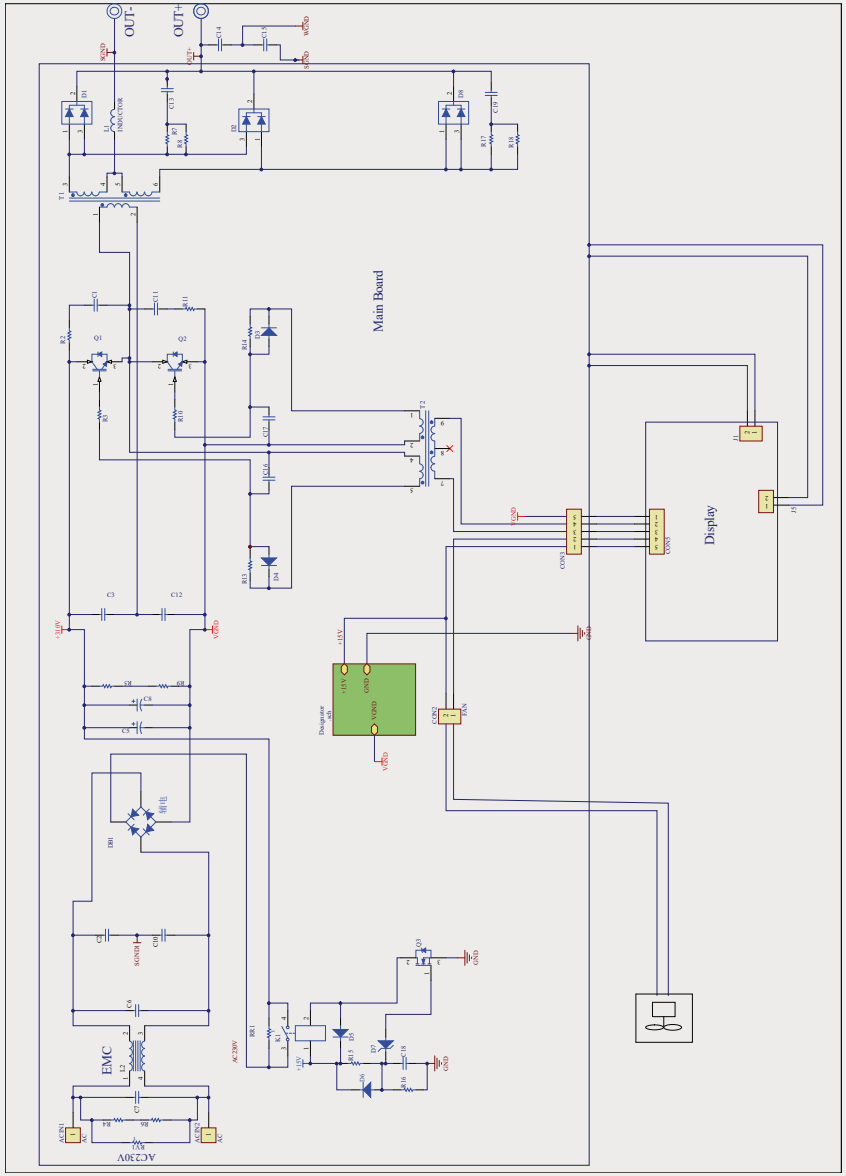


Figure 9-3 BLUEVENOM SV135 Circuit Diagram

CIGWELD
AN ESAB BRAND

LIMITED WARRANTY TERMS

LIMITED WARRANTY: CIGWELD Pty Ltd, An ESAB Brand, hereafter, "CIGWELD" warrants to customers of its authorized distributors hereafter "Purchaser" that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within the time period applicable to the CIGWELD products as stated below, CIGWELD shall, upon notification thereof and substantiation that the product has been stored, installed, operated, and maintained in accordance with CIGWELD's specifications, instructions, recommendations and recognized standard industry practice, and not subject to misuse, repair, neglect, alteration, or accident, correct such defects by suitable repair or replacement, at CIGWELD's sole option, of any components or parts of the product determined by CIGWELD to be defective.

CIGWELD MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHERS, INCLUDING, BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

LIMITATION OF LIABILITY: CIGWELD SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, SUCH AS, BUT NOT LIMITED TO, LOST PROFITS AND BUSINESS INTERRUPTION.

The remedies of the Purchaser set forth herein are exclusive and the liability of CIGWELD with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of any goods covered by or furnished by CIGWELD whether arising out of contract, negligence, strict tort, or under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the goods upon which such liability is based. No employee, agent, or representative of CIGWELD is authorized to change this warranty in any way or grant any other warranty.

PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF REPLACEMENT PARTS OR ACCESSORIES ARE USED WHICH IN CIGWELD'S SOLE JUDGEMENT MAY IMPAIR THE SAFETY OR PERFORMANCE OF ANY CIGWELD PRODUCT. PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF THE PRODUCT IS SOLD TO PURCHASER BY NON-AUTHORIZED PERSONS.

The warranty is effective for the time stated below beginning on the date that the authorized distributor delivers the products to the Purchaser. Notwithstanding the foregoing, in no event shall the warranty period extend more than the time stated plus one year from the date CIGWELD delivered the product to the authorized distributor.

Any claim under this warranty must be made within the warranty period which commences on the date of purchase of the product. To make a claim under the warranty, take the product (with proof of purchase from a CIGWELD Accredited Seller) to the store where you purchased the product or contact CIGWELD Customer Care 1300 654 674 for advice on your nearest Service Provider. CIGWELD reserves the right to request documented evidence of date of purchase. CIGWELD or our Accredited Distributor must be notified in writing of its claim within seven (7) days of becoming aware of the basis thereof, and at its own expense returning the goods which are the subject of the claim to CIGWELD or nominated Accredited Distributor/Accredited Service Provider

This warranty is given.
CIGWELD Pty Ltd A.B.N. 56007226815
71 Gower Street, Preston Victoria, Australia, 3072
Phone: 1300 654 674
Email: enquiries@cigweld.com.au
Website: www.cigweld.com.au

This warranty is provided in addition to other rights and remedies you have under law: Our goods come with guarantees which cannot be excluded under the Australian Consumer Law. You are entitled to replacement or refund for a major failure and to compensation for other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Please note that the information detailed in this statement supersedes any prior published data produced by CIGWELD.

WARRANTY SCHEDULE – BLUEVENOM SV135 INVERTER

WARRANTY	WARRANTY PERIOD (PARTS AND LABOUR)
BLUEVENOM SV135 Power Source	2 Years

ACCESSORIES	WARRANTY PERIOD
Electrode Holder and Work Lead	3 Months

CIGWELD LIMITED WARRANTY DOES NOT APPLY TO;

- Obsolete goods sold at auction, second-hand goods and prototype goods.
- Consumable Parts for MIG, Plasma welding, Plasma cutting and Oxy fuel torches, O-rings, fuses, filters or other parts that fail due to normal wear.

Notes:

* No employee, agent, or representative of CIGWELD is authorized to change this warranty in any way or grant any other warranty, and CIGWELD shall not be bound by any such attempt. Correction of non-conformities, in the manner and time provided herein, constitutes fulfilment of CIGWELD's obligations to purchaser with respect to the product.

* This warranty is void, and seller bears no liability hereunder, if purchaser used replacement parts or accessories which, in CIGWELD's sole judgment, impaired the safety or performance of any CIGWELD product and if the unit is altered or serviced by an unauthorised CIGWELD Service Provider. Purchaser's rights under this warranty are void if the product is sold to purchaser by unauthorized persons.

NOTES:

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Version: AA **Issue Date: 20-03-2024** **Manual No: 0-5704**

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