

CIGWELD

AN ESAB BRAND



DESIGNED
& TESTED
IN AUSTRALIA
FOR OVER 100 YEARS

BLUEVENOM XF353

MULTI PROCESS WELDING INVERTER

MIG

SINGLE AND DOUBLE PULSE WITH
OPTIONAL PULSEMATE

STICK

TIG DC LIFT



OPERATING MANUAL

XF353, P/N: W1400353

**350A
POWER**

**SYNERGIC MIG
SINGLE & DOUBLE PULSE#**

**QUICKSET
PLATE THICKNESS CONTROL**

**3 PHASE (400V)
INPUT SUPPLY**

**3 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 If you are ever in doubt about what you see or read in this manual with the product you received, then check for a newer version of the manual on our website or contact our customer support for assistance.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. Disclaimer: The images and values depicted in this manual are for illustration purposes only and may vary to actual values.

CIGWELD BLUEVENOM XF353 WELDING INVERTER OPERATING MANUAL NUMBER 0-5708 FOR:

PART NUMBER W14-00353

Published by:



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Publication Date: 27-03-2024

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!

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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 XF353 with serial number
from: GC233 XXXX 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

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
2023-27-03

SIGNATURE

Jarrod Brennan
Managing Director

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.

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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 (GMAW) (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 35ft (10.7m) 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 units 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)		200A DC 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		IPM INCHES PER MINUTE
	POSITIVE		FAULT INDICATION		MPM 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		PULSE FREQ. (PULSE SPEED)
	RECEPTACLE RATING-AUXILIARY POWER		WIRE FEED TOWARDS WORKPIECE WITH OUTPUT VOLTAGE OFF		PULSE BASE CURRENT
	SINGLE PHASE		WELDING GUN		PULSE WIDTH

2.05 DESCRIPTION

It's time to start playing with some serious welding power!

The new BlueVENOM™ XF353 is a 3in1 multi-process welding inverter that has been specifically engineered to be narrower in size for easy access in tight and constrained areas but also as a modular arc station!

As a compact unit you will have access to Xtra Functions that allows the machine to be used for standard MIG / STICK / DC Lift-TIG processes, or as a Synergic MIG with Plate Thickness Selection as standard.

To take it a step further, the XF353 can connect to the All-New 4R-Rover® remote wirefeed system (sold separately) – a plug n' play, 4 Roll geared wire drive unit that you can setup where you need it. Need it on a gantry? No problem, with the 8m interconnection cable and in-built hanging mount, you can! PLUS, its designed specifically with a low mount handle this little gem is as compact a 300mm wire spool system can be!

Here's the kicker – want Pulse? Of course you do! Turn your XF353 arc station into a single and double pulse work horse! Simply plug in the hand-held PulseMate® pendant (sold separately) equipped with 8m of lead into the XF353 Machine or 4R-Rover® and start getting TIG like looking welds through a simple yet intuitive Pulse MIG system!

The BlueVENOM™ XF353 is the perfect solution for light to medium fabrication, maintenance and industrial repairs in the workshop, worksite, shipyard, or marina without compromising on quality or professional performance! Use it with the premium included BZ36 MIG Gun or swap it out for a Push-Pull or Spool Gun (each sold separately) for more precise control.

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.

2.07 WHAT'S IN THE BOX

BLUEVENOM XF353 (Part No. W1400353)

- BLUEVENOM XF353 Power Source
- MIG Gun BZ36 "Style", 4m, Euro
- Work Clamp 300A with 4m Lead
- Twistlock Electrode Holder 400A with 4m Lead
- Feed Rolls: 0.9/1.2mm V Groove (fitted), 1.0/1.2mm U Groove, 0.9/1.2mm Gasless Knurled
- Gas Regulator/Flowmeter
- Quick Connect Gas Hose 3m
- Operating Manual



NOTE

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

2.08 TRANSPORTING METHODS

This unit is equipped with 4 wheels and two grab handles for easy maneuverability. Additionally 4 lifting eyelets allowing for rigging and tie down points.



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 XF353	DESCRIPTION	BLUEVENOM XF353
Plant Part Number	W1400353	Open Circuit Voltage (VRD Off) Stick Weld Mode	85V
Power Source Dimensions	(L) 1075mm x (W) 460mm x (H) 865mm	Effective Input Current (I _{1eff}) refer Note 2	12.4 Amps
Power Source Weight	62kg	Maximum Input Current (I _{1max})	19.6 Amps
Cooling	Fan Cooled	Minimum Three Phase Generator Requirement for Maximum Output (refer Note 4)	16kVA@0.8PF
Welder Type	Multi Process Inverter Power Source	MIG (GMAW) Welding Output, 40°C, 10 min	350A @ 40%, 31.5V 285A @ 60%, 28.3V 221A @ 100%, 25.1V
Standards	AS 60974.1:2020 / IEC 60974-1:2019 EN 60974-10:2021	Stick (MMAW) Welding Output, 40°C, 10 min	300A @ 40%, 32.0V 245A @ 60%, 29.8V 190A @ 100%, 27.6V
Number of Phases	Three Phase	TIG DC Lift (GTAW) Welding Output, 40°C, 10 min	350A @ 40%, 24.0V 285A @ 60%, 21.4V 221A @ 100%, 18.9V
Nominal Supply Voltage	400 VAC ± 15%	Protection Class	IP21
Nominal Supply Frequency	50/60Hz		
Welding Current Range (MIG mode)	30-350A		
Welding Current Range (Stick mode)	20-300A		
Welding Current Range (TIG DC Lift)	20-350A		
Nominal DC Open Circuit Voltage MIG Weld Mode	86V		
Open Circuit Voltage (VRD On) Stick Weld Mode	<35V		

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.

2.11 OPTIONAL ACCESSORIES

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

P/N:	DESCRIPTION
W3200401	BlueVenom 4R-Rover Wirefeeder with 8m Interconnection Lead
W4016008	8m Interconnection Lead, 10 Pin with Joiner Kit*
W4200PM1	BlueVenom PulseMate suits XF353
W52BS24E6	CIGWELD SGBZ24E6 Spool Gun BZ24, 6m, Euro
W52BP36E8	CIGWELD PPBZ36E8 Push Pull Gun BZ36 8m, Euro
W52BR36E3	CIGWELD Flame MIG Gun BZ36 Euro, 3m
W52BR40E3	CIGWELD Flame MIG Gun BZ40 Euro, 3m
W52BR36E4	CIGWELD Flame MIG Gun BZ36E4, 4m, (Mixed Gas - 280A @ 60%, CO2 - 320A @ 60%)
W52BR40E4	CIGWELD Flame MIG Gun BZ40E4, 4m, (Mixed Gas -370A @ 60%, CO2- 400A @ 60%)
BZN3612	Nozzle Tapered, 12mm, Pack of 2
BZN3616	Nozzle Conical, 16mm, Pack of 2
BZN3620	Nozzle Cylindrical, 20mm, Pack of 2
BZN3620S	Nozzle Spot Weld, 20mm, Pack of 2
BZT81008	Contact Tip 0.8mm M8 Pack of 10
BZT81009	Contact Tip 0.9mm M8 Pack of 10
BZT81010	Contact Tip 1.0mm M8 (Suitable for 0.9mm AL Wires) Pack of 10
BZT81012	Contact Tip 1.2mm M8 (Suitable for 1.0mm AL Wires) Pack of 10
BZT81014	Contact Tip 1.4mm M8 (Suitable for 1.2mm AL Wires) Pack of 10
BZT81016	Contact Tip 1.6mm M8 Pack of 10
BZH36M8	Tip Holder, M8, Pack of 2
BZD36C	Diffuser Ceramic, Pack of 2
BZD36	Diffuser Standard, Pack of 2
CML50609	MultiLiner 0.6-0.9mm Steel 5.1m (No collet), Pack of 1
CML50912	MultiLiner 0.9-1.2mm Steel 5.1m (No collet), Pack of 1
CML51216	MultiLiner 1.2-1.6mm Steel 5.1m (No collet), Pack of 1
CML50916A	MultiLiner 0.9-1.6mm Aluminium 4.5m (No collet), Pack of 1
CML80916A	MultiLiner 0.9-1.6mm Aluminium 8.5m (No collet), Pack of 1
CMLCBZ	MultiLiner Collet suit Binzel, Pack of 1
CMLBZA	MultiLiner Collet Alloy suit Binzel, Pack of 1
7977729	Feed Roll 0.6/0.8mm V groove (hard)

P/N:	DESCRIPTION
7977703	Feed Roll 0.9/1.2mm V groove (hard) (fitted)
7977346	Feed Roll 1.2/1.6mm V groove (hard)
7977733	Feed Roll 0.8/0.9mm U groove (soft)
7977730	Feed Roll 1.0/1.2mm U groove (soft)
7977348	Feed Roll 1.2/1.6mm U groove (soft)
7977734	Feed Roll 0.8/0.9mm V groove knurled (flux cored)
7977347	Feed Roll 1.2/1.6mm V groove knurled (flux cored)
W7007487	200mm Spool Adaptor
W7007437	Spring Steel Inlet Guide (Steel and Stainless Steel Wires)
W7007384	Nylon Inlet Guide (Soft Wires)
W7004913	Shielding Gas Hose Assembly
W4013801	TIG Torch 17V with 4m lead and gas valve (200A@20%)
W4013800	TIG Torch 17V with 4m lead and gas valve and remote control (200A@20%)
W4014601	TIG Torch 26FV with 4m lead and gas valve (240A@20%)
CT1726K1	TIG Starter Kit 1 17/18/26 TIG Torches
W4015825	TIG Foot Control with 7m Lead
210254	BlueJet Argon Regulator/Flowmeter, 55LPM, 2 Gauge
201031	BlueJet Preset Argon Regulator/Flowmeter Side Inlet
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.
WS53550	WeldSkill Welding Leadset 5m, 35mm ² cable, 50mm ² DINSE, 400A Twistlock Electrode Holder

See page 54 for add on devices

Note: For Aluminium Welding it is recommended to use a 3 metre long MIG Gun.
*Extending the Interconnection Cable from 8m to 16m: The BlueVenom 4R-Rover Feeder is supplied standard with an 8m Interconnection lead set. An additional 8m Interconnection Lead with Joiner Kit can be purchased as an optional accessory, which simply adds-on to the existing 8m Interconnect Lead.

Please Note, longer Interconnection leads equalling 16m will on average have a slight decrease in welding output. Furthermore, if you add on an 8m Push-Pull MIG Gun (so extend your reach to 24m) then you should expect to also decrease welding output.



CAUTION

It is not recommended to extend the Interconnection Lead Length any longer than 16m or it could compromise the welding performance.

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
WHAMXC160	Auto Darkening Welding Helmet Variable Shade 9-13 - ArcMaster XC60

PART NUMBER	DESCRIPTION
WHAMXC170	Auto Darkening Welding Helmet Variable Shade 4-8 / 9-14 - Mayhem
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



MIG Pliers
P/N: CWPLIER



Magnetic Clamps
P/N: 646764 (Medium)
P/N: 646765 (Large)



WELDSKILL Heavy Duty Leather Welding Gloves
P/N: 646755 (Large)
P/N: 646767 (XL)



Arcmaster XC70 Welding Helmet (Mayhem)
P/N: WHAMXC170



WeldSkill Welding Jacket
P/N: 646772 (Large)



Nozzle Conical 16mm
P/N: BZN3616



Contact Tip 1.2mm M8
P/N: BZT81012



Tip Holder M6
P/N: BZH36M8

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 $\pm 15\%$ 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.



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 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 its 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.

2. 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.

3. 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.

4. 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.

5. Earthing of the Workpiece

Where the workpiece is not bonded to earth for electrical safety, nor connected to earth because of its 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.

6. Screening and Shielding

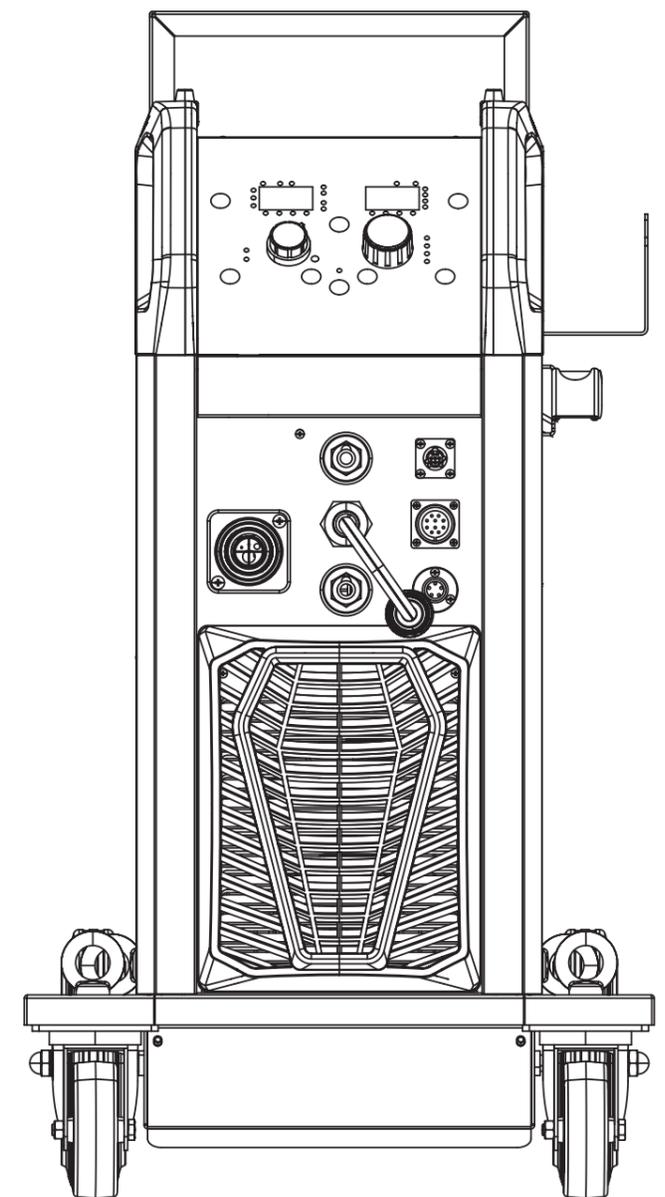
Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening the entire welding installation may be considered for special applications.

SECTION 4: XF353 POWER SOURCE OPERATION

Standard operating procedures apply when using these Welding machines, i.e. connect work lead directly to workpiece with the spring loaded clamp. The MIG wire is fed from the spool through the feed roller system and into the MIG Gun (consult CIGWELD or the electrode wire manufacturers information for the correct polarity).

The welding amperage range (plate thickness pre-set) values should be used as a guide only. Current delivered to the arc is dependent on the Wire Feed Speed and welding arc voltage, and as welding arc voltage varies between different classes of MIG wire and different mixtures of Shielding Gas/es. Welding current at given settings could vary accordingly to the type of MIG wire and Shielding Gas in use.

The operator should use the plate thickness pre-set welding current values as a guide, then finally adjust the current setting to suit the application, by fine tuning the WFS / Amps and Volts / Trim settings.



4.01 POWER SOURCE CONTROLS, INDICATORS AND FEATURES

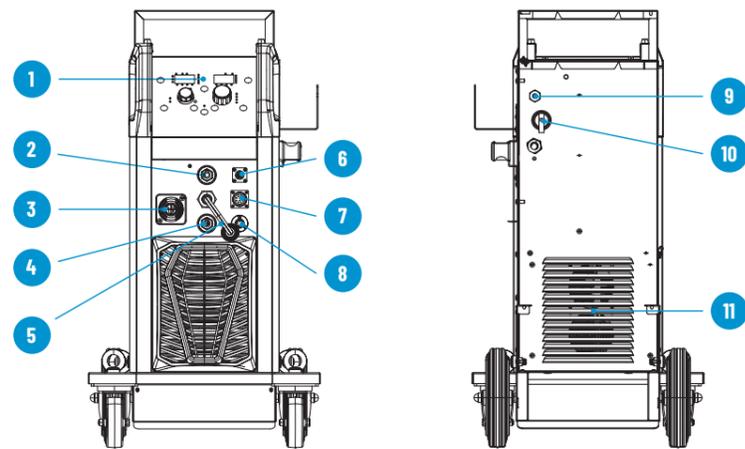


Figure 4-1: Power Source Controls, Indicators and Features

- 1 Control Panel. Refer to pages 24 and 26 to 32
- 2 Positive Output Welding Terminal. Refer to page 24
- 3 MIG Gun Adaptor (Euro Style). Refer to page 24
- 4 Negative Output Welding Terminal. Refer to page 24
- 5 MIG Gun Polarity Lead. Refer to page 24
- 6 Remote Control Socket 8 Pin. Refer to page 25
- 7 Wirefeeder Control Socket 10 Pin. Refer to page 25
- 8 PulseMate Socket 5 Pin. Refer to page 25
- 9 Shielding Gas Inlet. Refer to page 25
- 10 Power On/Off Switch. Refer to page 25
- 11 Fan On Demand. Refer to page 25

1 CONTROL PANEL

The BLUEVENOM XF353 is equipped with bright blue Sharp LED displays which provide optimal clarity both indoors and outdoors. Easy press push buttons for selection of features to toggle through settings including: Process Modes, Gas Type, Trigger Modes, Quickset MIG, Memory Feature, Gas Purge, Wire Inch & other Advanced Settings

2 POSITIVE OUTPUT WELDING TERMINAL

The positive welding terminal (+) is used to connect the welding output of the power source to the appropriate welding accessory such as the MIG Gun (via the MIG Gun polarity lead), electrode holder lead or work lead. Positive welding current flows from the power source via this twist & lock terminal, known as a DINSE Connector. It is essential, that the male plug is inserted and turned securely to achieve a sound electrical connection.

3 MIG GUN ADAPTOR (EURO STYLE)

The MIG Gun adaptor is the connection point for the MIG welding gun. Connect the gun by aligning and pushing the connector into the brass gun adaptor firmly and screwing the plastic nut clockwise to secure in position. To remove the MIG Gun simply reverse these directions. Refer to Section 5.02.

4 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. 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.

5 MIG GUN POLARITY LEAD

The polarity lead is used to connect the MIG Gun to the appropriate positive or negative output terminal (allowing polarity reversal for different welding applications). The polarity lead should be connected in to the positive welding terminal (+) when using solid steel, stainless steel or aluminium MIG wire. When using gasless wire, the polarity lead is connected to the negative welding terminal (-). If in doubt, consult the manufacturer of the electrode wire for the correct polarity. It is essential, that the male plug is inserted and turned securely to achieve a sound electrical connection.

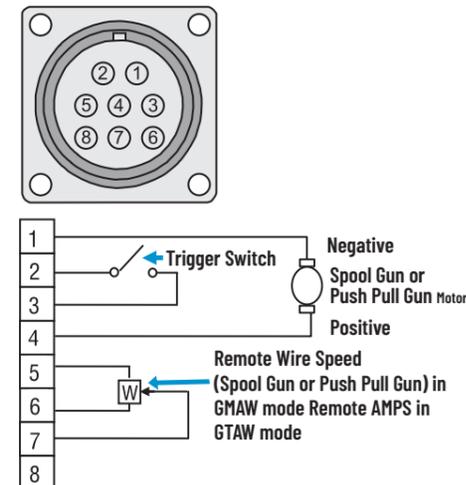


CAUTION

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

6 REMOTE CONTROL SOCKET 8 PIN

The 8 pin Remote Control Socket is used to connect remote control devices (i.e. Spool Gun, Push Pull Gun or TIG Torch) to the welding power source. To make connections, align keyway, insert plug, and rotate threaded collar fully clockwise.



Socket

Pin	Description
1	Spool gun motor negative
2	Trigger Switch Input
3	Trigger Switch Input
4	Spool gun motor positive
5	5k ohm (maximum) connection to 5k ohm remote control potentiometer.
6	Zero ohm (minimum) connection to 5k ohm remote control potentiometer.
7	Wiper arm connection to 5k ohm remote control Wire Speed MIG (GMAW) mode potentiometer. Wiper arm connection to 5k ohm remote control Amps TIG (GTAW) mode potentiometer.
8	Not connected

Note: If the unit is in TIG mode and a TIG Torch with Remote Current Control is connected to the 8 Pin Control Socket on the front panel the power source will automatically detect the TIG Torch.

Figure 4-2: Remote Control Socket 8 Pin

7 WIREFEEDER CONTROL SOCKET 10 PIN

This 10 Pin Wirefeeder Control Socket is used to connect the Optional BlueVenom 4R Rover Wirefeeder.

If further details are required refer to an Accredited CIGWELD Service Provider.

Socket

Pin	Description
A	CAN H
B	CAN Common
C	CAN L
D	NC
E	+24V
F	+40V
G	+24V & +40V Common
H	NC
I	NC
J	NC

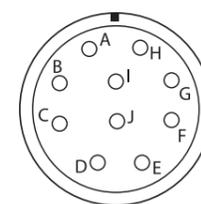


Figure 4-3: Wirefeeder Control Socket 10 Pin

8 PULSEMATE CONTROL SOCKET 5 PIN

This 5 Pin PulseMate Control Socket is used to connect the Optional BlueVenom PulseMate.

If further details are required refer to an Accredited CIGWELD Service Provider.

Socket

Pin	Description
1	TX
2	Common
3	RX
4	NC
5	+15V

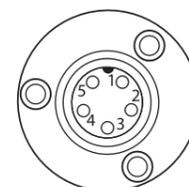


Figure 4-4: Pulsemate Control Socket 5 Pin

9 SHIELDING GAS INLET (MIG MODES ONLY)

The Shielding Gas Inlet connection is a Quick Connect inlet fitting located on the rear of the machine which is used to supply the appropriate MIG welding gas to the unit. Refer to section 5.01.



WARNING

Only Inert Shielding Gases specifically designed for welding applications should be used.

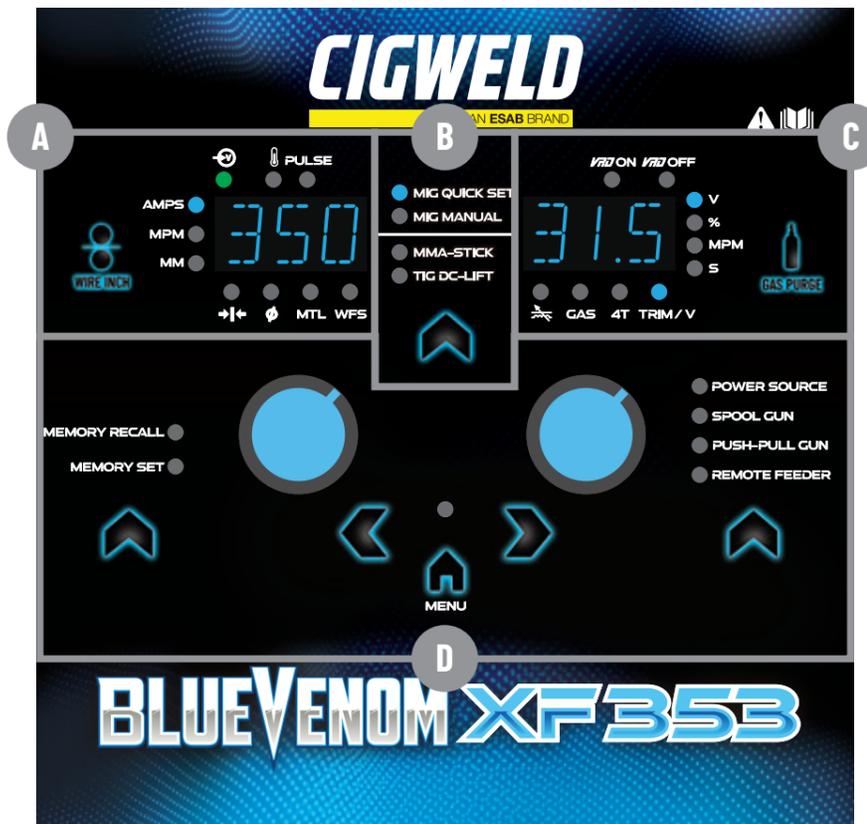
10 POWER ON/OFF SWITCH

When this switch is turned ON the Power On  on the front panel will illuminate.

11 FAN ON DEMAND

The BLUEVENOM XF353 is fitted with a fan on demand feature. Fan on demand automatically switches the cooling fan off when it is not required. This has two main advantages; (1) to minimize power consumption, and (2) to minimise the amount of contaminants such as dust that are drawn into the power source. Note that the fan will only operate when required for cooling purposes and will automatically switch off when not required.

4.02 INDICATORS AND CONTROLS



POWER ON INDICATOR

When illuminated when the correct mains power is applied to the power source and when the ON/OFF switch located on the rear panel is in the ON position.

OVER TEMPERATURE INDICATOR

This welding power source is protected by a self resetting thermostat. The Over Temp indicator will illuminate if the duty cycle of the power source has been exceeded. Should the Over Temp indicator illuminate the output of the power source will

be disabled. Once the power source cools down this Over Temp indicator will go OFF and the over temperature condition will automatically reset. Note that the mains power switch should remain in the On position such that the fan continues to operate thus allowing the unit to cool sufficiently.

PULSE PULSE INDICATOR

When illuminated the PulseMate (Sold Separately) has been connected and Single and Double Pulse Functions are available. Pulse Settings can be set via the Remote PulseMate.



LEFT DIGITAL DISPLAY

At times of non-welding this digital meter shows QuickSet Plate Thickness (Symbol), Wire Diameter (symbol), Material (MTL), and Wire Feed Speed (WFS). Press the Left Control Knob to step through functions. Process functions can be adjusted by turning the Left Control Knob.

When welding this digital meter will display the MIG Welding Amps.

At the completion of welding, the digital meter will hold the last recorded amperage value for a period of approximately 10 seconds in all modes. 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 preview mode, (2) welding is recommenced, in which case actual welding amperage will be displayed, or (3) a period of 10 seconds lapses following the completion of welding in which case the unit will return to preview mode.

MIG MANUAL MODE

When not welding this digital meter shows pre-set (preview) Wirefeed Speed (WFS) in Metres Per Minute (MPM). This Wire Feed Speed (WFS) value can be adjusted by turning the Left Control Knob. When welding this digital meter will display the MIG Welding Amps.

MMA/STICK (VRD) AND DC LIFT TIG MODES

When not welding, the digital meter will display a pre-set (preview) Amps value in both STICK and LIFT TIG modes. This Amps value can be adjusted by turning the Left Control Knob.

When welding, this digital meter will display the welding Amps.

ADVANCED FEATURES MENU MODE

In the Advanced Settings Menu the Left Digital Display is also used to show the Advanced Setting selected.

AMPS AMPS INDICATOR

The Value showing on the Left Hand Display is in Amps. Displays actual Welding Amps whilst welding in all modes. In MMA/Stick and DC Lift TIG modes the preview Amps are also able to be set and displayed on the left Digital Display prior to Welding.

MPM MPM INDICATOR (MIG MODE)

When WFS (Wire Feed Speed) is selected the Value showing on the Left Hand Digital Display is MPM (Metres Per Minute).

MM MM INDICATOR (MIG MODE)

Will illuminate when either Plate Thickness or Wire Diameter is selected. The display will show the Plate Thickness or Wire Diameter in Millimetres (MM).

QUICKSET PLATE THICKNESS INDICATOR (MIG QUICKSET MODE ONLY)

When illuminated the Material Plate Thickness is able to be selected. Available Plate Thicknesses are shown on the Digital Display and are determined by the MIG Wire Diameter and Material Type Selected. Refer QuickSet Programme Table Page 46.

WIRE DIAMETER INDICATOR (MIG QUICKSET MODE ONLY)

When illuminated the MIG QuickSet Wire Diameter is able to be selected. Available Wire Diameters are shown on the Digital Display. QuickSet wire diameters available depend on Plate Thickness and Material type selected. Refer QuickSet Programme Table Page 46.

MTL WELDING MATERIAL INDICATOR (MIG QUICKSET MODE ONLY)

When illuminated the type of Welding Material is able to be selected. Material Types are displayed across both Digital Displays.

WFS WIRE FEED SPEED INDICATOR (MIG MODES)

When illuminated the Wire Feed Speed is able to be set or adjusted. Wire Feed Speed is displayed in Metres Per Minute (MPM) on the Left Digital Display. In MIG Manual Mode, the WFS range goes from 2 to 18 MPM (Metres Per Minute).

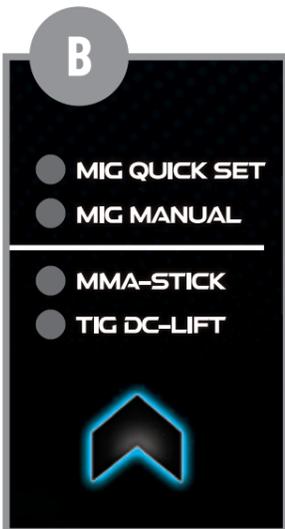


WIRE INCH BUTTON (MIG MODES ONLY)

Hold button depressed to Feed the MIG Wire through the MIG Gun. When Wire Inch Button depressed INC will appear on the Left Digital Display and Wire Speed will appear on the Right Digital Meter in MPM (Metres Per Minute). Whilst button is held depressed wire speed will start at minimum speed and ramp up to maximum speed and maintain maximum speed whilst the button is depressed.

Note 1: When the Optional 4R-Rover Wirefeeder is being used, use the Wire Inch button located on the 4R-Rover Front Panel.

Note 2: When the Optional PulseMate Pendant is being used, use the Wire Inch button located on the PulseMate Pendant.



**MIG QUICK SET
MIG QUICKSET INDICATOR**

When illuminated MIG QuickSet is selected. This allows the user to simply select the Material Plate Thickness $\rightarrow \leftarrow$, Wire Diameter ϕ , and Material Type **MTL** and determined welding parameters are set and ready to weld. Wire Feed Speed **WFS** and Voltage **TRIM/V** settings can be adjusted if desired. Refer to Section 5.13 MIG QuickSet Welding.

MIG MANUAL MIG MANUAL INDICATOR

When illuminated MIG Manual Mode is selected. Wirefeed Speed **WFS** and Volts **V** are shown on the digital displays. Refer to Section 5.10 MIG Manual Welding.

**MMA-STICK
MMA/STICK MODE INDICATOR**

When illuminated MMA/Stick Mode is selected. Refer to Section 7 MMA/Stick Welding.

**TIG DC-LIFT
TIG DC LIFT MODE INDICATOR**

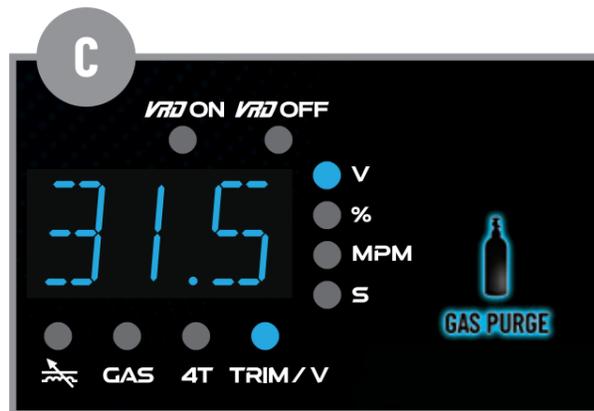
When illuminated TIG DC Lift Mode is selected. Refer to Section 6, TIG DC-Lift Welding.

PROCESS SELECTION BUTTON

Press to select desired Process Mode. Select either MIG QuickSet, MIG Manual, MMA/Stick or TIG DC Lift mode.

CAUTION

Loose welding terminal connections can cause overheating and result in the male plug being fused in the twist & lock terminal, known as a DINSE Connector.



**VRD ON (GREEN) INDICATOR
(MMA/STICK MODE ONLY)**

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

**VRD OFF (RED) INDICATOR
(MMA/STICK MODE ONLY)**

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 35VDC.

V VOLTS INDICATOR

When illuminated the Value showing on the Right Hand Digital Display is Volts.

% PERCENTAGE % INDICATOR

When illuminated the MIG Wire Run In Speed as a Percentage % of Wire Feed Speed is able to be set. Refer to Section 5.15 or 5.16.

MPM MPM INDICATOR

When illuminated WFS (Wire Feed Speed) is selected and the value showing on the Right Hand Digital Display is MPM (Metres Per Minute).

S SECONDS INDICATOR

When illuminated indicates the value on the Right Digital Display is in Seconds.

**TRIM/V VOLTS TRIM INDICATOR
MIG QUICKSET MODE**

Volts Trim (TRIM/V) can be selected by pressing the Right Control Knob until the TRIM/V (Volts Trim) indicator is illuminated. The LED Display will show Syn for QuickSet value for the selected Wire and Plate Thickness. Volts Trim has a range of -5.0 to +5.0 Volts. If the value has been changed, to return to the factory parameters simply return the Volts Trim to display SYN to return to the QuickSet Voltage Value. For example, if the Pre-set Voltage is 20V and in volts trim V+/- mode the setting is changed to -2.0 then the Pre-set voltage will now be 18V. If the Volts Trim V+/- is changed to +3.0 then the Pre-set Voltage will be 23V.

MIG MANUAL MODE

Volts Trim (TRIM/V) can be selected by pressing the Right Control Knob until the TRIM/V (Volts Trim) indicator is illuminated. In MIG Manual Mode the Preview Welding Volts are displayed on the Right Digital Display. It is different to QuickSet mode and is not adjusted in Volts Trim format but is able to be adjusted for the full MIG Voltage Range of 13 to 40V.

**4T TRIGGER MODE 2T/4T INDICATOR
(MIG AND TIG DC LIFT MODES ONLY)**

The trigger mode control is used to switch the functionality of the torch trigger between 2T (normal) and 4T (latch mode)

2T NORMAL MODE (WHEN 4T INDICATOR NOT ILLUMINATED)

In this mode, the torch trigger must remain depressed for the welding output to be active. Press and hold the torch trigger to activate the power source (weld). Release the torch trigger switch to cease welding.

4T LATCH MODE (ACTIVE WHEN 4T INDICATOR ILLUMINATED)

This mode of welding is mainly used for long welding runs to reduce operator fatigue. In this mode the operator can press and release the torch trigger and the output will remain active. To deactivate the power source, the trigger switch must again be depressed and released, thus eliminating the need for the operator to hold the torch trigger.

**GAS SHIELDING GAS INDICATOR
(MIG QUICKSET MODE ONLY)**

When this indicator is illuminated the Digital Displays will show the Shielding Gas setting available depending on the MIG Wire Diameter and Material Type selected.

INDUCTANCE INDICATOR

When illuminated the Inductance value can be adjusted. The Inductance (arc) control operates in MIG (GMAW) modes only and is used to adjust the intensity of the welding arc. Higher Arc Control settings make the arc softer with less weld spatter. Lower Arc Control settings give a stronger driving arc which can increase weld penetration. This parameter has an adjustment range of -10 to 10. Factory setting for Inductance is 0.



**RIGHT DIGITAL DISPLAY
MIG QUICKSET MODE**

When not welding this digital meter shows Inductance, GAS Shielding Gas, 4T Trigger Mode (2T/4T), and TRIM/V Volts Trim. Press the Right Control Knob to step through functions. Process functions can be adjusted by turning the Right Control Knob.

When welding this digital meter will display the MIG Welding Volts.

At the completion of welding, this digital meter will hold the last recorded Volts value for a period of approximately 10 seconds in all modes. The Volts meter will hold the value until: (1) any of the front panel controls are adjusted in which case the unit will revert to preview mode, (2) welding is recommenced, in which case actual welding Volts will be displayed, or (3) a period of 10 seconds lapses following the completion of welding in which case the unit will return to preview mode.

MIG MANUAL MODE

When not welding this digital meter shows Inductance, Trigger Mode (2T/4T) and Volts (TRIM/V). Press the Right Control Knob to step through functions. Process functions can be adjusted by turning the Right Control Knob.

When welding this digital meter will display the MIG Welding Volts.

At the completion of welding, this digital meter will hold the last recorded Volts value for a period of approximately 10 seconds in all modes. The Volts meter will hold the value until; (1) any of the front panel controls are adjusted in which case the unit will revert to preview mode, (2) welding is recommenced, in which case actual welding Volts will be displayed, or (3) a period of 10 seconds lapses following the completion of welding in which case the unit will return to preview mode.

MMA/ STICK MODE (VRD)

When not welding, the digital meter will display a set Volts value. This Volts value is not adjustable.

When welding this digital meter will display the welding Volts.

At the completion of welding, the digital meter will hold the last recorded Volts value for a period of approximately 10 seconds in all modes. The Volts meter will hold the value until;

1. any of the front panel controls are adjusted in which case the unit will revert to preview mode,
2. welding is recommenced, in which case actual welding Volts will be displayed, or
3. a period of 10 seconds lapses following the completion of welding in which case the unit will return to preview mode.

TIG DC LIFT MODE

When not welding, the digital meter will display either Trigger Mode (2T/4T) or Volts. This Volts value is not adjustable. Press the Right Control Knob to select Trigger Mode 2T or 4T. by using the Right Control Knob or press the Right Control Knob again to display set Volts value.

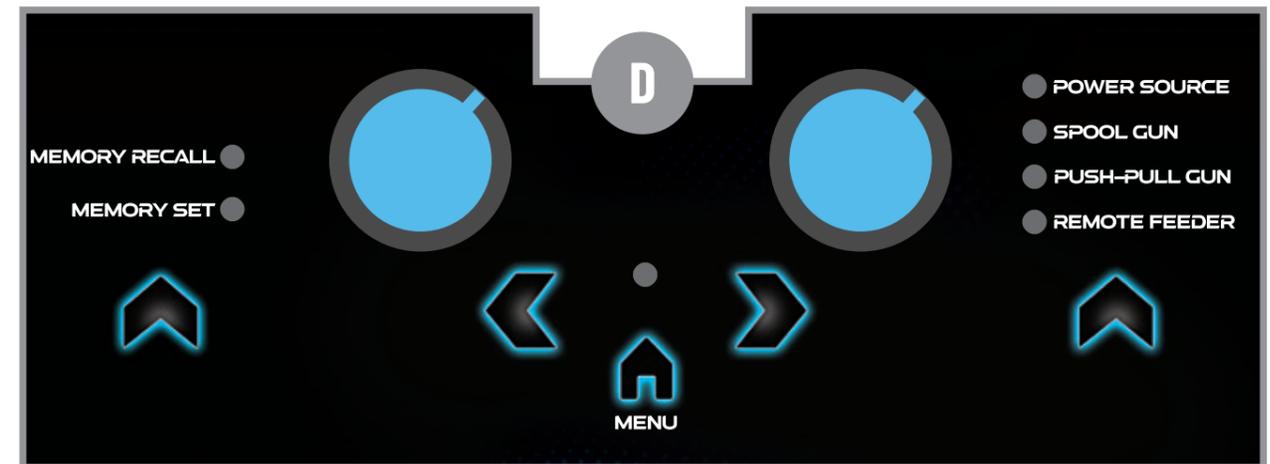
When welding this digital meter will display the welding Volts.

At the completion of welding, the digital meter will hold the last recorded Volts value for a period of approximately 10 seconds in all modes. The Volts meter will hold the value until;

1. any of the front panel controls are adjusted in which case the unit will revert to preview mode,
2. welding is recommenced, in which case actual welding Volts will be displayed, or
3. a period of 10 seconds lapses following the completion of welding in which case the unit will return to preview mode.

 **GAS PURGE BUTTON**
(MIG MODES ONLY)

This purges Shielding Gas (MIG) through the MIG Gun when pressed. When the button is pressed and released it will purge the Shielding Gas for 15 seconds. If during that time the Gas purge is required to be stopped press the button again.



MEMORY RECALL ●
MEMORY SET ●



MEMORY FUNCTION

MEMORY RECALL

To recall welding parameters from the stored Memory, press the Memory button to select Memory Recall. The Memory Recall indicator will illuminate when selected. The Left Digital Display shows RCL and the Right Digital Display shows the Memory location.

Turn the Right Control Knob to select a Memory location from 1 to 5 that can be recalled. Confirm by pressing the Right Control Knob to Recall the stored Memory from that location.

MEMORY SET

To store welding parameters to Memory press the Memory button to select Memory Set. The Memory Set indicator will illuminate when selected. The Left Digital Display shows SET and the Right Digital Display shows the Memory location.

Turn the Right Control Knob to select a Memory location from 1 to 5 that can be loaded or overwritten. Confirm by pressing the Right Control Knob to Save to that Memory location.

Note: Initial factory settings are loaded into the Memory Locations which can be overwritten when new user settings are required.



LEFT CONTROL KNOB

Press to step through available options in each Process;

Once desired function selected turn Left Control Knob clockwise to increase or counterclockwise to decrease value

- Turn the Left Control Knob to make selection or change values and press to confirm. To select an option from the displayed menu:
- Options will be highlighted in sequence at every turn;
- Turn clockwise or anti-clockwise to change selection;
- Press Control Knob to confirm the selection or to enter the next option on menu.

MIG Quickset Mode: →|← QuickSet Plate Thickness, ⌀ Wire Diameter, **MTL** Material, and **WFS** Wire Feed Speed

MIG Manual Mode: **WFS** Wire Feed Speed only

MMA/STICK: **AMPS** Amperage only

TIG DC-Lift: **AMPS** Amperage only



RIGHT CONTROL KNOB

Press to step through available options in each Process;

Once desired function selected turn clockwise to increase or counterclockwise to decrease value

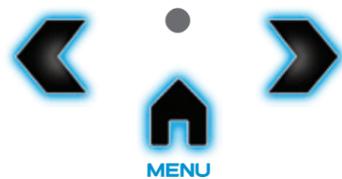
- Turn the Right Control Knob to make selection or change values and press to confirm. To select an option from the displayed menu:
- Options will be highlighted in sequence at every turn;
- Turn clockwise or anti-clockwise to change selection;
- Press Control Knob to confirm the selection or to enter the next option on menu.

MIG Quickset Mode: Inductance, GAS Shielding Gas, 4T Trigger Mode (2T/4T), and TRIM/V Volts Trim.

MIG Manual Mode: Inductance, 4T Trigger Mode (2T/4T), and TRIM/V Volts.

MMA-Stick Mode: N/A

TIG DC-Lift: Press the Right Control Knob to select 4T Trigger Mode 2T/4T. Rotate knob to select 2T or 4T Trigger mode. For 2T mode selection "2T" will show on the Right Digital Display. If 4T Mode is selected it will display "4T" on the Right Digital Display and the 4T indicator will be illuminated. Press the Right Control Knob again to step to display the set Volts value.



ADVANCED SETTINGS MENU

In the Advanced Features Menu the Left Digital Display is used to show the Advanced Setting selected. The Right Digital Display shows the Advanced Setting value.

Once desired function selected use the Right Control Knob to select or turn clockwise to increase or counterclockwise to decrease value

- Turn the Right Control Knob to make selection or change values and press to confirm. To select an option from the displayed menu:
- Options will be highlighted in sequence at every turn;
- Turn clockwise or anti-clockwise to change selection;
- Press Control Knob to confirm the selection or to enter the next option on menu.



MENU BUTTON

Press to access Advanced Settings

MIG Modes: Pre Gas (PEG), Post Gas (PTG), Crater Fill On/Off (CFR), Crater Fill Time (CFT), Crater Fill Wire Feed Speed (CFW), Crater Fill Voltage (CFU), Burnback (BBT), Run In (RIN) and Spot (SPT) (2T only)

Note: Crater Fill must be turned ON to set (CFT) Crater Fill Time, (CFW) Crater Fill Wire Feed Speed and (CFU) Crater Fill Voltage.

MMA/Stick Mode: Hot Start (HOT), Arc Force (ARC)

DC Lift TIG: Not Applicable

Press Forward Button to Scroll Forward in Advanced Features and make selection

Press Back Button to Scroll Backward in Advanced Features and make selection

Menu Button Indicator

When illuminated the Menu for Advanced Features is activated and the Advanced Feature is shown on the Left Digital Display and its value on the Right Digital Display. Right Control Knob adjusts the Advanced Feature Value selected.



DEVICE SELECTION BUTTON

Press button to select device connected.

POWER SOURCE

POWER SOURCE INDICATOR

When illuminated the Power Source has been selected.

SPOOL GUN

SPOOL GUN INDICATOR

When illuminated the Spool Gun has been selected. Refer to Sections 5.12 and 5.13 for Spool Gun Setup

PUSH-PULL GUN

PUSH PULL GUN INDICATOR

When illuminated the Push Pull Gun has been selected. Refer to Section 5.14 for Push Pull Gun Setup

REMOTE FEEDER

REMOTE FEEDER (4R-ROVER) INDICATOR

When illuminated the Remote Feeder (4R Rover) has been selected. Refer to the 4R-Rover Wirefeeder Operating Manual for further information.

SECTION 5: MIG (GMAW/FCAW) WELDING

5.01 SHIELDING GAS REGULATOR/FLOWMETER OPERATING INSTRUCTIONS

SHIELDING GAS CONNECTION



WARNING

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

A Preset Argon Regulator/Flowmeter and Gas Hose Kit comes with the Power Source Plant. Connect the gas regulator 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 gas hose to the threaded outlet on the right-hand side of the regulator (Picture A) and tighten with a spanner. Connect the other end of the gas hose to gas inlet fitting on the rear panel of the welding machine using the supplied Quick Connect fittings. 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. As a general rule for MIG Welding, always use a minimum of 12 LPM when welding with an amperage range of under 100Amps, a min. of 15 LPM when the amperage is under 180Amps and a minimum of 18 LPM for welding amperages over 200Amps. A lower gas flow will affect the welding quality and cause a porous weld while high gas flow results in bigger consumption of gas.

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

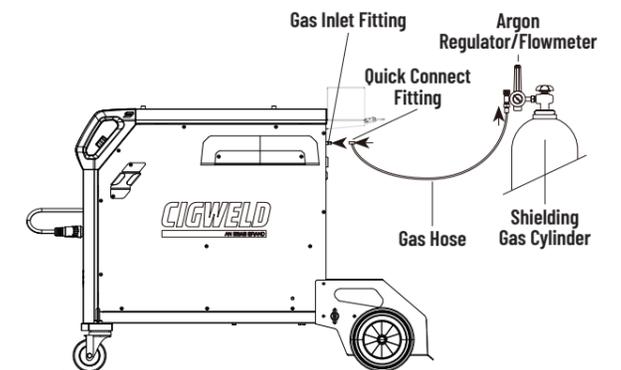


Figure 5-1: Shielding Gas Connection

SHIELDING GAS REGULATOR/ FLOWMETER SAFETY

An Argon Regulator/Flowmeter and Gas Hose comes with the machine plant.

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 handling 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.

- 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.
- 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.
- 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.
- OPEN** the cylinder valve SLOWLY. Close after use.

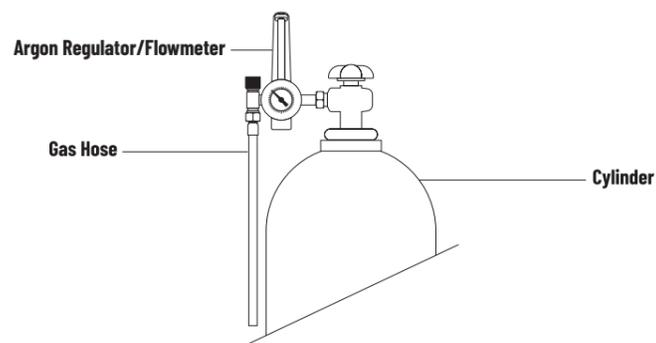


Figure 5-2: Fit Regulator/flowmeter to Cylinder

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.

INSTALLATION

- 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.
- 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.
- Connect the Regulator/Flowmeter inlet connection to cylinder or pipeline and tighten it firmly but not excessively, with a suitable spanner.
- Connect and tighten the outlet hose firmly and attach the hose to the welding machine with the Quick Connect fitting. Ensure no gas leakage. The flowmeter must be in the vertical position to read accurately.

OPERATION

With the Regulator/Flowmeter connected to cylinder or pipeline:

- 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.
- 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).
- Slowly and carefully, open the cylinder valve until the maximum pressure registers on the high pressure gauge.



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.



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.

Close equipment valve(s) after purging, and test all connections for leaks with a suitable leak detection solution or soapy water. Never use a flame when testing for leaks.

ADJUSTING FLOW RATE

With the Regulator/Flowmeter ready for operation, adjust working flow rate as follows:

- 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.

- To reduce flow rate, allow the welding grade shielding gas to discharge from Regulator/Flowmeter by pressing the Gas Purge button on the front of the machine, or by pressing the trigger on the MIG Gun. Bleed welding grade shielding gas into a well ventilated area. Turn adjusting screw clockwise, until the required flow rate is indicated on the gauge.
- 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 12L/min for welding thin metals (0.6-1.0mm) when using 0.6mm MIG wire, up to 15L/min when using thicker metals and using 0.8mm MIG wire. When welding near draughty doorways then the gas flow rate can go up to 18-20L/min. The tell tale sign is to ensure your finished welds do-not have porosity holes in the surface.

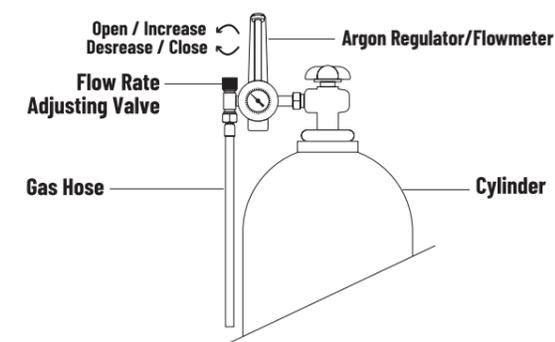


Figure 5-3: Adjust Flow Rate

SHUTDOWN

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

- Close cylinder valve tightly.
- Remove the gas from the machine and hose by pressing the Gas Purge button on the front of the machine, or by pressing the trigger on the MIG Gun. Bleed gas into a well ventilated area.
- After gas is drained completely turn off the machine.
- Before transporting cylinders that are not secured on a cart designed for such purposes, remove regulators/flowmeters.



WARNING

Moving Parts can cause injury!

5.02 ATTACHING THE MIG GUN (EURO)

Fit the MIG Gun to the power source by pushing the MIG Gun connector into the MIG Gun adaptor and screwing the plastic nut clockwise to secure the MIG Gun to the MIG Gun adaptor as shown in Figure 5-4.

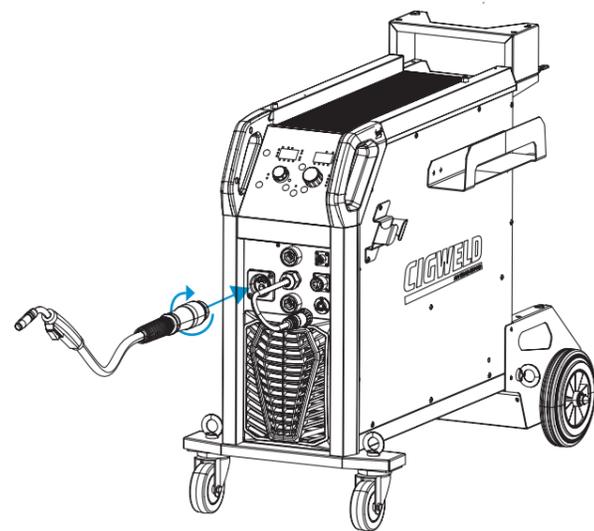


Figure 5-4: Attaching the Euro MIG Gun

5.03 INSTALLING HANDISPOOL (200mm DIAMETER)

In order to fit a Handi Spool of 200mm diameter the supplied 200mm Spool Adaptor is to be used.

Remove the Wire Spool Retaining Nut as shown. With the 200mm Spool Adaptor in place ensure the locating hole in the 200mm Spool Adaptor aligns with the alignment pin on the Spool Hub as shown in Figure 5-5

Install the 200mm wire spool over the spool hub locating the hole in the 200mm Wire Spool with the alignment pin on the 200mm Spool Hub adaptor.

Replace the Wire Spool Retaining nut tightening firmly to secure the Wire Spool in Place.

5.04 INSTALLING 300mm SPOOL

In order to fit a 300mm wire spool the supplier adaptor for 200mm Wire Spools is NOT required to be used.

Remove the Wire Spool Retaining Nut by turning in a counter clockwise direction. Install the 300mm Wire Spool over the Spool Hub, locating the hole in the Wire Spool with the alignment pin on the Spool Hub as shown in Figure 5-6. Replace the Wire Spool Retaining Nut by turning in a clockwise direction until firmly tightened to secure the Wire Spool in place.

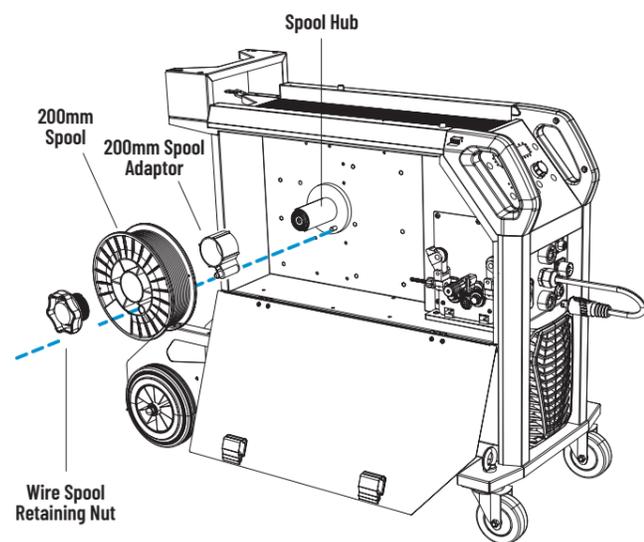


Figure 5-5: 200mm Wire Spool Installation

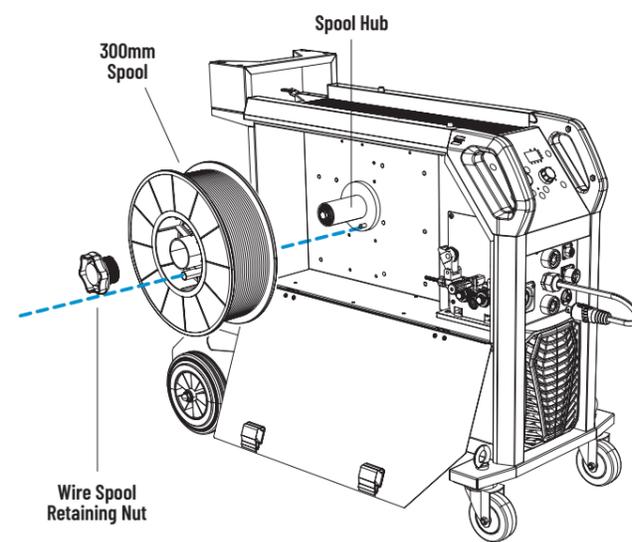
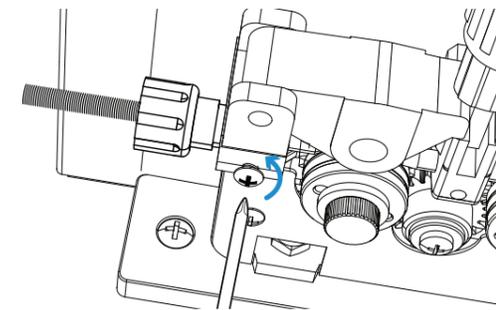


Figure 5-6: 300mm Wire Spool Installation

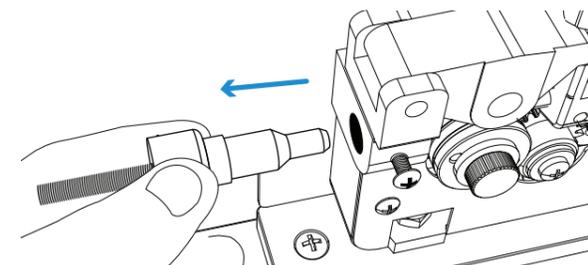
5.05 CHANGING INLET GUIDE FOR ALUMINIUM AND OTHER SOFT WIRES

The Optional PulseMate Kit (P/N: W4200PM1) contains a Nylon Inlet Guide. It is recommended to use this with Aluminium and soft wires. Before changing the Inlet Guide ensure wire is removed from the MIG Gun and Wire Drive system.

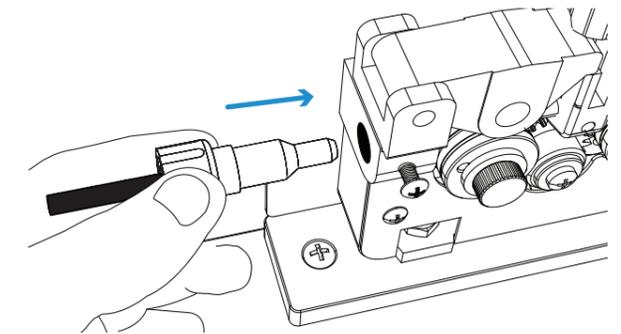
A. Loosen Inlet Guide retaining screw as shown.



B. Remove the Steel Inlet Guide as fitted to the machine from factory from the Wire Drive Assembly.



C. Fit the Nylon Inlet Guide into the Wire Drive Assembly as shown and tighten the retaining screw.



D. Fit the appropriate feed roll to suit the Aluminium or Soft wire being used. Refer to sections 5.09 Changing Feed Roll and section 2.11 Optional Accessories.

E. Install the wire spool and carefully without bending or kinking the wire feed the Aluminium or Soft wire into the feed mechanism. Refer to sections 5.03, 5.04, 5.05 and 5.07 for further information..

A replacement Nylon Inlet Guide is available. Refer to section 2.11 Optional Accessories.

5.06 SPOOL HUB BRAKE

When fitting the Wire Spool, the adjustment of the Wire Reel Brake Adjustment Nut will control the MIG Wire Spool Brake. Rotating the Wire Reel Brake Adjustment Nut clockwise increases the brake and rotating the Wire Reel Brake Adjustment Nut counterclockwise reduces the brake. To access the Wire Reel Brake Adjustment Nut remove the Wire Spool Retaining Nut. Brake is correctly adjusted when the spool stops within 10 to 20mm (measured at the outer edge of the spool) after MIG Gun trigger is released. Wire should be slack without becoming dislodged from the spool.

WARNING
Moving Parts can cause injury!

WARNING
Overtension of brake will cause rapid wear of mechanical WIREFEED parts, overheating of electrical componentry and possibly an increased incidence of electrode wire Burnback into contact tip.

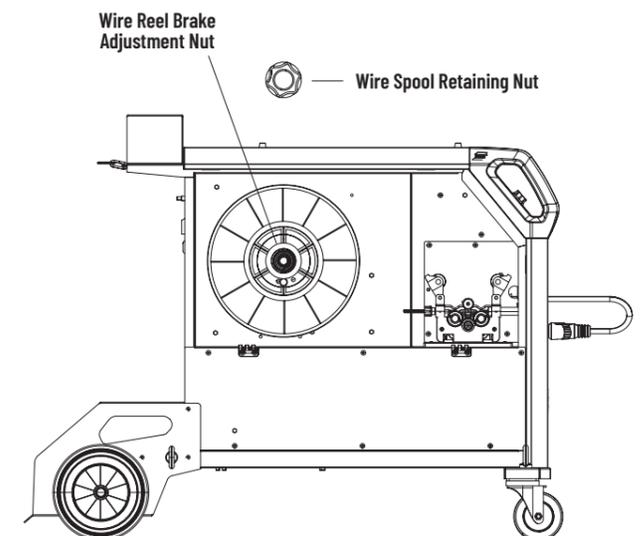


Figure 5-7: Wire Reel Brake

5.07 INSERTING WIRE INTO THE WIRE FEED MECHANISM

Release the tension from the pressure roller by turning the adjustable wire drive tension screw in an anticlockwise direction. Then to release the pressure roller arm, pull the wire drive tension screw outward to release the pressure roller arms (Figure 5-8). With the MIG welding wire feeding from the bottom of the spool (Figure 5-9) pass the wire through the inlet guide, between the rollers, through the outlet guide and into the MIG Gun. Do not release the MIG wire until the Pressure Arm is secured back into place. Adjust the wire drive tension screw accordingly. (Refer to Section 5.08) Remove the nozzle and contact tip from the MIG Gun. With the MIG Gun lead reasonably straight, feed the wire through the Gun by pressing the Wire Inch button on the front Control Panel, or by depressing the trigger switch. Fit the appropriate contact tip and replace the nozzle.

WARNING
 Keep hands clear of the contact tip holder while feeding wire through to the gun. The wire can easily pierce you skin resulting in injury.
 Keep MIG Gun away from eyes and face.

WARNING
 Moving parts can cause injury!

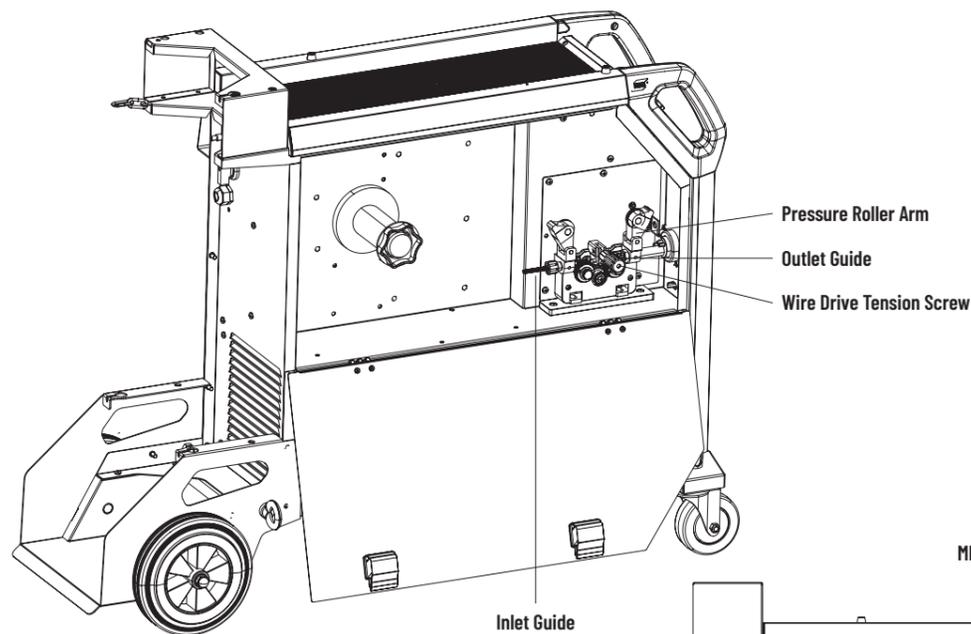


Figure 5-8: Wire Drive Assembly Components

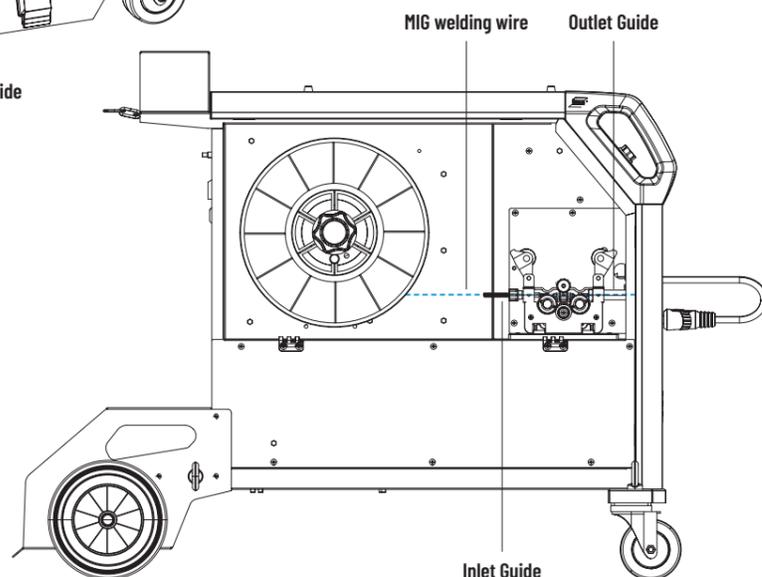
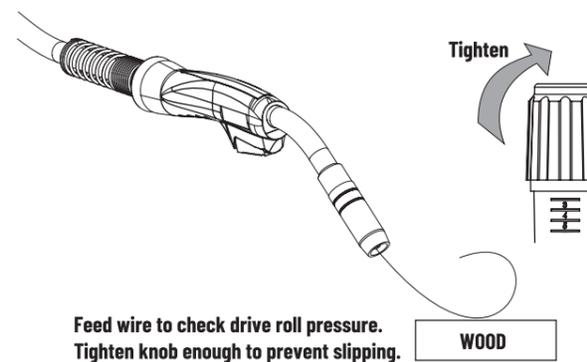


Figure 5-9 Inserting Wire into the Wire Feed Mechanism

5.08 FEED ROLL PRESSURE ADJUSTMENT

The pressure (top) roller applies pressure to the grooved feed roll via an adjustable pressure screw. These devices should be adjusted to a minimum pressure that will provide satisfactory WIREFEED without slippage. If slipping occurs, and inspection of the wire contact tip reveals no wear, distortion or burn back jam, the conduit liner should be checked for kinks and clogging by metal flakes and swarf. If it is not the cause of slipping, the feed roll pressure can be increased by rotating the pressure screw clockwise.

A simple check for the correct drive tension is to bend the end over of the wire (once out the end of the MIG Gun) and hold it about 50mm from a piece of wood (an insulated object) and let it run into the wood. The wire should coil up without stopping and slipping at the drive rollers, tighten the pressure/tension adjustment screw if it slips.



Feed wire to check drive roll pressure. Tighten knob enough to prevent slipping.

Figure 5-10 Feed Roll Pressure Adjustment

WARNING
 Keep hands clear of the contact tip holder while feeding wire through to the gun. The wire can easily pierce you skin resulting in injury.
 Keep MIG Gun away from eyes and face.

WARNING
 Before changing the feed roll ensure that the mains supply to the power source is switched off.

CAUTION
 The use of excessive pressure may cause rapid wear of the feed rolls, shafts and bearing.

5.09 CHANGING THE FEED ROLL

To change the feed roll, release the Wire Drive Tension Screw and lift the Pressure Roller Arm (top roller) up and out of the way. Loosen off and remove the feed roll retaining screw by turning in an anticlockwise direction.

Once the feed roll is removed then replace feed roll, ensuring you have the correct groove size matching the wire size you are using in the the welder. Ensure the wire size required is the number facing outward on the feed roll when feed roll is installed. Re-install by following these instructions in reverse.

A dual V groove feed roll is fitted as standard. It can accommodate 0.9/1.2mm (Steel or Stainless Steel Wires). Markings are indicated on the side edge of the feed roll, for example 0.9V, 1.2V.

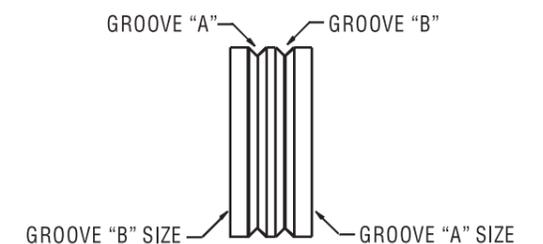


Figure 5-11: Dual Groove Feed Roll

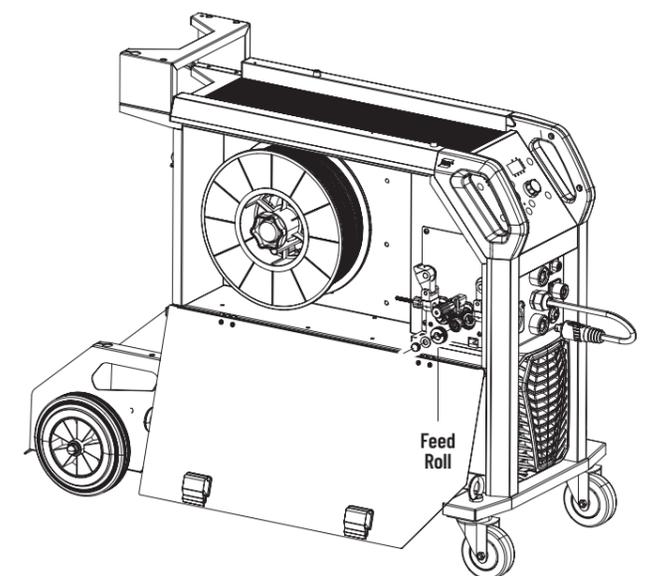


Figure 5-12: Changing the Feed Roll

WARNING
 Moving Parts can cause injury!

5.10 SETUP FOR MIG (GMAW) WELDING WITH GAS SHIELDED MIG WIRE

- A. Ensure that the Power Source On/Off switch located on the rear of the Power Source is in the Off position.
- B. Fit the MIG Gun to the Power Source. (Refer to section 5.02 Attaching the MIG Gun).
- C. Connect the MIG Gun Polarity Lead (8) to the positive welding terminal (+). If in doubt, consult the wire manufacturer. Welding current flows from the Power Source via DINSE terminals. It is essential, that the male DINSE plug is inserted and turned securely to achieve a sound electrical connection.
- D. Fit the correct Feed Roll for the Gas Shielded MIG wire being used. Refer to section 2.11 Options and Accessories for Feed Roll types and Part Numbers.
- E. Place the MIG wire spool onto the spool holder. Refer to sections 5.03 for 200mm diameter spools or 5.04 for 300mm diameter spools.
- F. Switch the Power Source On/Off switch located on the rear of the Power Source to the On position and ensure the Power indicator on the Front Display is illuminated.
- G. Select the Gas Shielded MIG Mode for the application. Refer to Section 4.02 (B).
- H. Feed wire through the wire drive mechanism. Refer to section 5.07.

- I. Connect the work lead to the negative welding terminal (-). If in doubt, consult the wire manufacturer. Welding current flows from the Power Source via DINSE terminals. It is essential, that the male plug is inserted and turned securely to achieve a sound electrical connection.
- J. Fit the welding grade shielding Gas Regulator/Flowmeter to the shielding gas cylinder. Ensure that the shielding gas hose connection is sufficiently tight at the regulator connection. Refer to section 5.01 for the connection and instruction of shielding Gas Regulator/Flowmeter.

NOTE
Power Source settings are adjusted using the front panel controls. Refer to section 5.10.

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

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.

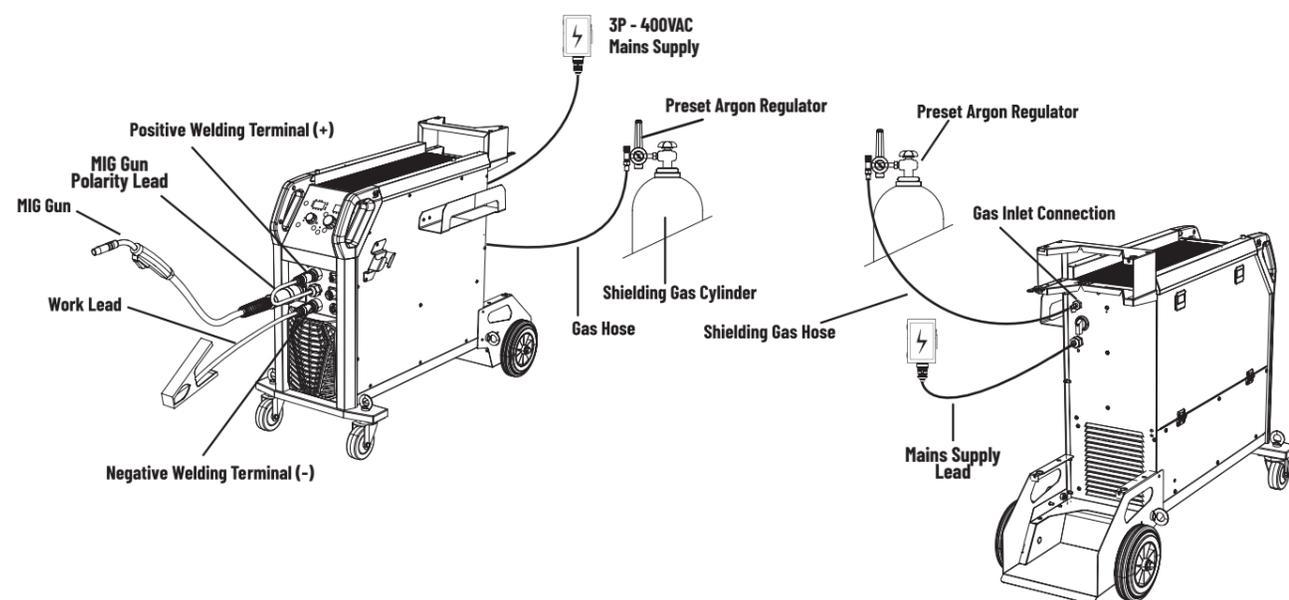


Figure 5-13: Setup for MIG Welding with Gas Shielded MIG Wire

5.11 SETUP FOR MIG (FCAW) WELDING WITH GASLESS MIG WIRE

- A. Ensure that the Power Source On/Off switch located on the rear of the Power Source is in the Off position.
- B. Fit the MIG Gun to the Power Source. (Refer to section 5.02 Attaching the MIG Gun).
- C. Connect the MIG Gun Polarity Lead (8) to the negative welding terminal (-). If in doubt, consult the wire manufacturer. Welding current flows from the Power Source via DINSE terminals. It is essential, that the male DINSE plug is inserted and turned securely to achieve a sound electrical connection.
- D. Fit the correct Feed Roll for the Gasless MIG wire being used. Refer to section 2.11 Options and Accessories for Feed Roll types and Part Numbers.
- E. Place the MIG wire spool onto the spool holder. Refer to sections 5.03 for 200mm diameter spools or 5.04 for 300mm diameter spools.
- F. Switch the Power Source On/Off switch located on the rear of the Power Source to the On position and ensure the Front Panel Display is illuminated.
- G. Select the Gasless MIG Mode for the application. Refer to Section 4.02 (B).

- H. Feed wire through the wire drive mechanism. Refer to section 5.07.
- I. Connect the work lead to the positive welding terminal (+). If in doubt, consult the wire manufacturer. Welding current flows from the Power Source via DINSE terminals. It is essential, that the male plug is inserted and turned securely to achieve a sound electrical connection.

WARNING
Moving Parts can cause injury!

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

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.

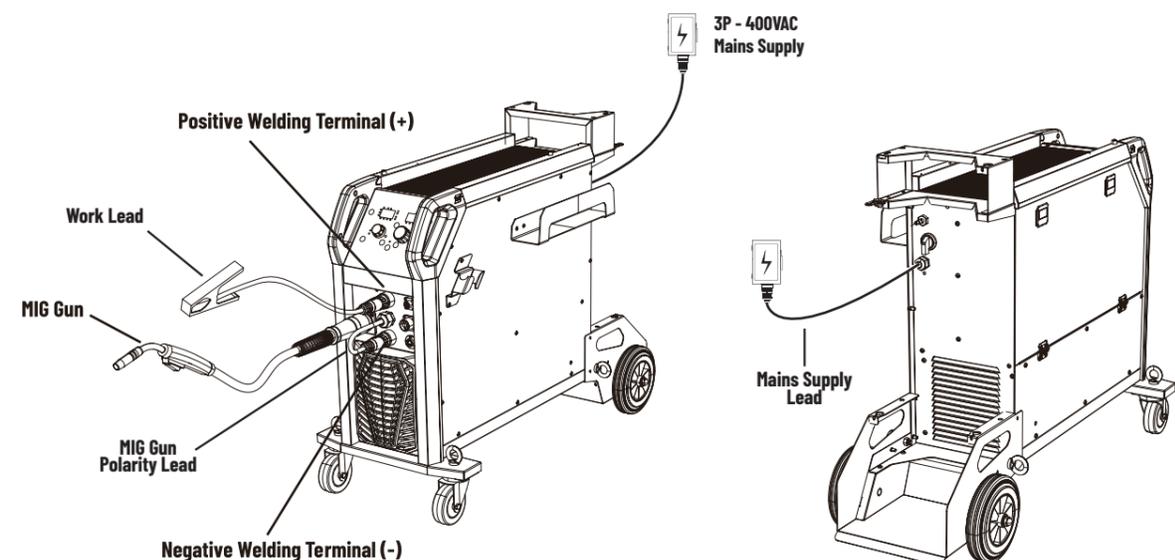


Figure 5-14: Setup for MIG Welding with Gasless MIG Wire

5.12 SETUP WITH SPOOL GUN FOR GAS SHIELDED MIG WIRE

- A. Ensure that the Power Source On/Off switch located on the rear of the Power Source is in the Off position.
- B. Fit the Euro Spool Gun to the Power Source using the front panel EURO torch adaptor (refer also to section 5.02 Attaching the MIG Gun). Connect the 8 pin Remote Control Plug to the 8 pin Remote Control Socket on the power source. Ensure 8 pin plug is correctly fitted to the 8 pin socket on front panel and collar on plug is tightened firmly.
- C. Connect the MIG Gun Polarity Lead (8) to the positive welding terminal (+). If in doubt, consult the wire manufacturer. Welding current flows from the Power Source via DINSE terminals. It is essential, that the male DINSE plug is inserted and turned securely to achieve a sound electrical connection.
- D. Fit the correct Feed Roll in Spool Gun for the Gas Shielded MIG wire being used.
- E. Switch the Power Source On/Off switch located on the rear of the Power Source to the On position and ensure the Digital Display on the Front Panel is illuminated.
- F. Select Spool Gun Mode. Refer to Section 4.02 (D).
- G. Feed wire through the wire drive mechanism in the Spool Gun.

- H. Connect the work lead to the negative welding terminal (-). If in doubt, consult the wire manufacturer. Welding current flows from the Power Source via DINSE terminals. It is essential, that the male plug is inserted and turned securely to achieve a sound electrical connection.
- I. Fit the welding grade shielding Gas Regulator/Flowmeter to the shielding gas cylinder. Ensure that the shielding gas hose connection is sufficiently tight at the regulator connection. Refer to section 5.01 for the connection and instruction of shielding Gas Regulator/Flowmeter.



WARNING

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



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. 5.16

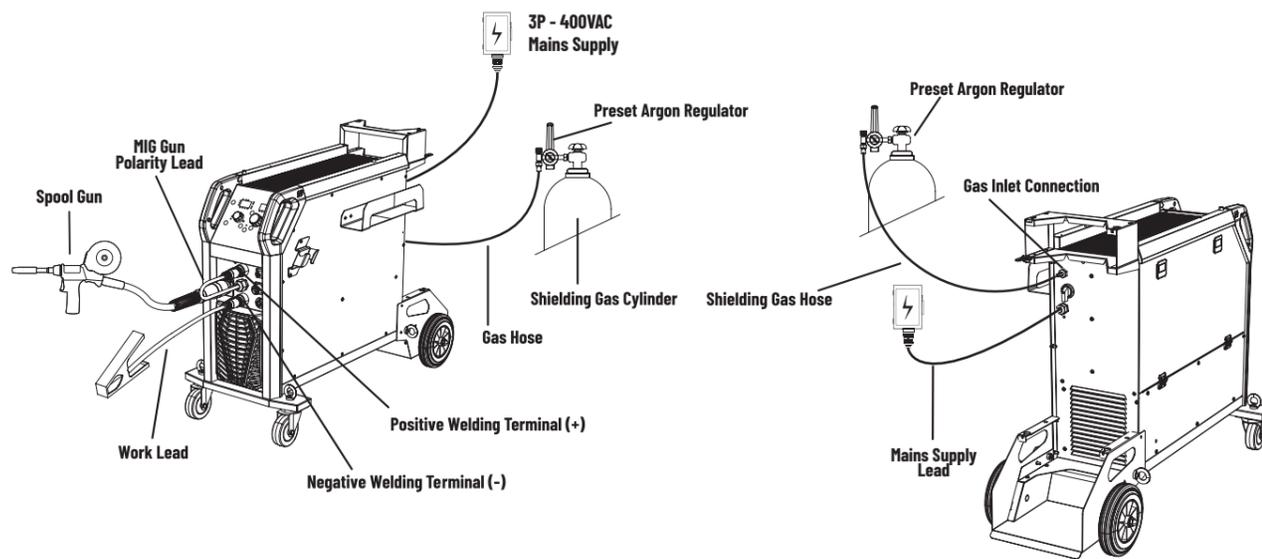


Figure 5-15: Setup with Spool Gun for Gas Shielded MIG Wire

5.13 SETUP WITH SPOOL GUN FOR GASLESS MIG WIRE

- A. Ensure that the Power Source On/Off switch located on the rear of the Power Source is in the Off position.
- B. Fit the Euro Spool Gun to the Power Source using the front panel EURO torch adaptor (refer also to section 5.02 Attaching the MIG Gun). Connect the 8 pin Remote Control Plug to the 8 pin Remote Control Socket on the power source. Ensure 8 pin plug is correctly fitted to the 8 pin socket on front panel and collar on plug is tightened firmly.
- C. Connect the MIG Gun Polarity Lead (8) to the negative welding terminal (-). If in doubt, consult the wire manufacturer. Welding current flows from the Power Source via DINSE terminals. It is essential, that the male DINSE plug is inserted and turned securely to achieve a sound electrical connection.
- D. Fit the correct size Gasless V Knurled Feed Roll in Spool Gun for the Gasless MIG wire being used.
- E. Switch the Power Source On/Off switch located on the rear of the Power Source to the On position and ensure the Digital Display on the Front Panel is illuminated.

- F. Select Spool Gun Mode. Refer to Section 4.02 (D).
- G. Feed wire through the wire drive mechanism in the Spool Gun.
- H. Connect the work lead to the positive welding terminal (+). If in doubt, consult the wire manufacturer. Welding current flows from the Power Source via DINSE terminals. It is essential, that the male plug is inserted and turned securely to achieve a sound electrical connection.



WARNING

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



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. 5.16

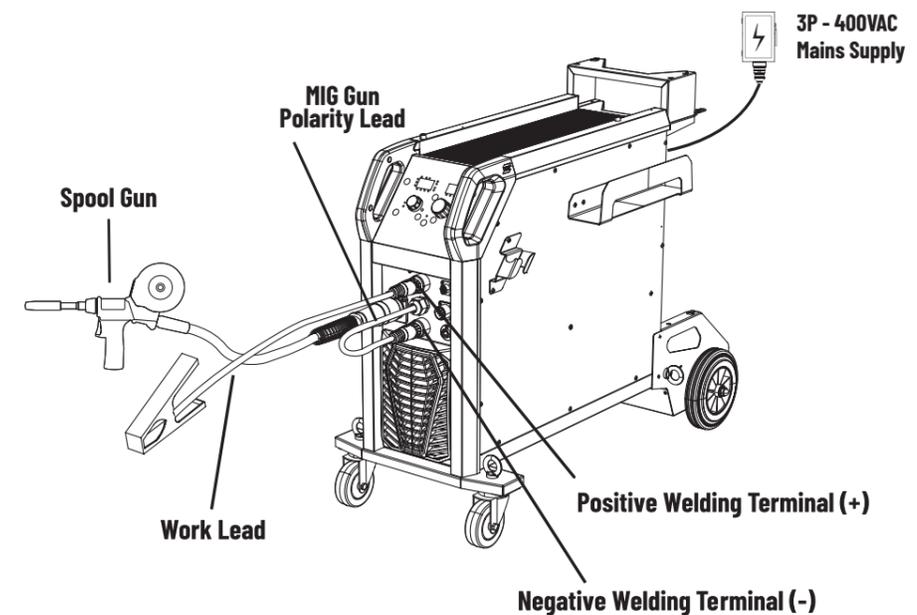


Figure 5-16: Setup with Spool Gun for Gasless MIG wire

5.14 SETUP WITH PUSH PULL GUN FOR GAS SHIELDED MIG WIRE

- A.** Ensure that the Power Source On/Off switch located on the rear of the Power Source is in the Off position.
- B.** Fit the Euro Push Pull Gun to the Power Source using the front panel EURO torch adaptor (refer also to section 5.02 Attaching the MIG Gun). Connect the 8 pin Remote Control Plug to the 8 pin Remote Control Socket on the power source. Ensure 8 pin plug is correctly fitted to the 8 pin socket on front panel and collar on plug is tightened firmly.
- C.** Connect the MIG Gun Polarity Lead (5) to the positive welding terminal (+). If in doubt, consult the wire manufacturer. Welding current flows from the Power Source via DINSE terminals. It is essential, that the male DINSE plug is inserted and turned securely to achieve a sound electrical connection.
- D.** Fit the correct Feed Roll in the Power Source and the Push-Pull Gun for the MIG wire being used.
- E.** Switch the Power Source On/Off switch located on the rear of the Power Source to the On position and ensure the Digital Display on the Front Panel is illuminated.
- F.** Select Push-Pull Gun Mode. Refer to Section 4.02 (D).
- G.** Feed the MIG wire through the wire drive mechanism in the Power Source and Push-Pull Gun. (When using the Push-Pull Gun from the Optional Add-On 4R Rover Wire Feeder refer to the 4R Rover Wirefeeder Operating Manual for Operation and Setup details.)
- H.** Connect the work lead to the negative welding terminal (-). If in doubt, consult the wire manufacturer. Welding current flows from the Power Source via DINSE terminals. It is essential, that the male plug is inserted and turned securely to achieve a sound electrical connection.

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

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. 5.16.

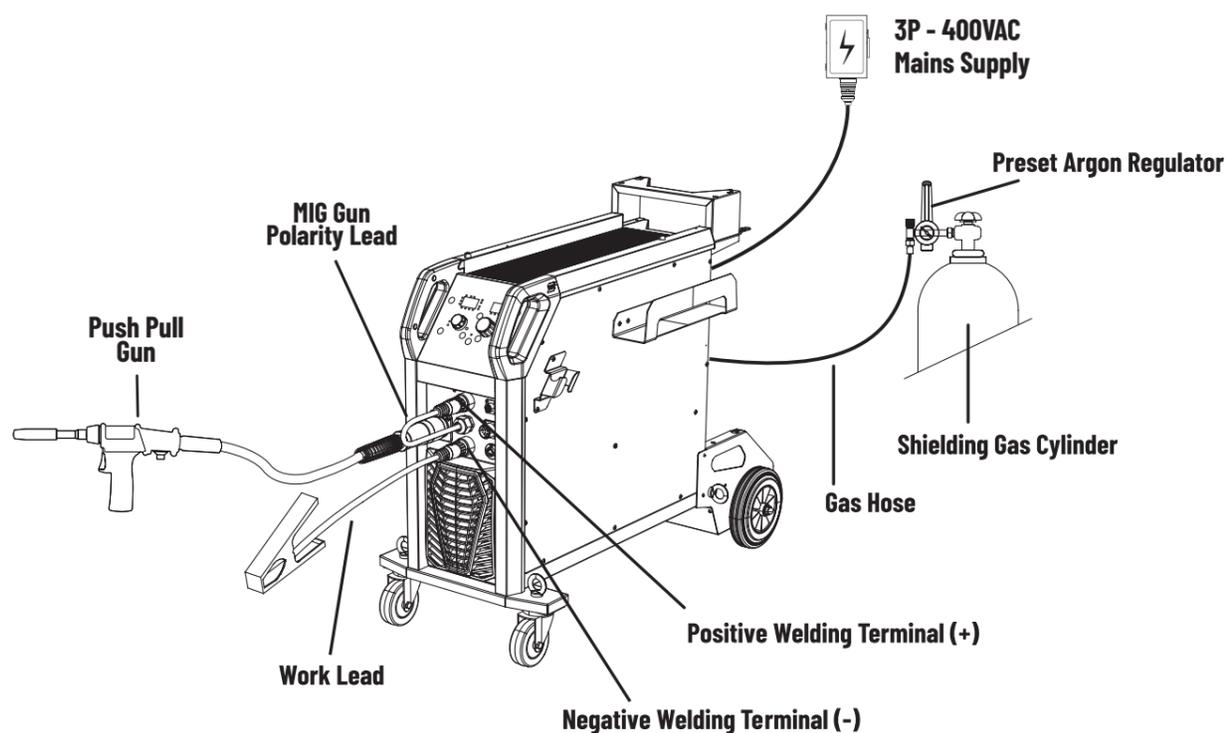


Figure 5-17: Setup with Push Pull Gun for Gas Shielded Wire

5.15 MIG QUICKSET MODE



A DEVICE SELECTION BUTTON

Select Power Source.

B PROCESS SELECTION BUTTON

SELECT MIG QUICKSET MODE

QuickSet Plate Thickness, Wire Diameters or Gases available depend on options selected.

C LEFT CONTROL KNOB

PRESS TO STEP THROUGH AND SELECT OPTIONS IN MIG QUICKSET MODE

→|← QuickSet Plate Thickness (mm), ∅ Wire Diameter (mm), MTL Material Type (MTL), and WFS Wire Feed Speed (WFS)

Once desired function is selected use the Left Control Knob to select or turn clockwise to increase or counterclockwise to decrease value.

D →|← QUICKSET PLATE THICKNESS INDICATOR

When illuminated the Material Plate Thickness is able to be selected. Plate Thicknesses are shown on the Digital Display. Use the Left Control Knob to select and adjust. Available Plate Thicknesses will be determined by the MIG Wire Diameter and Material Type Selected. Refer to QuickSet Programme Table Page 46.

E ∅ WIRE DIAMETER INDICATOR

QuickSet wire diameters available depend on Plate Thickness and Material type selected.

F MTL MATERIAL TYPE INDICATOR

When illuminated the type of Welding Material is able to be selected. Material Types are displayed across both Digital Displays. QuickSet Programme Table below.

QUICKSET PROGRAMME TABLE

(MTL) MATERIAL TYPE & DIGITAL DISPLAY NAME	WIRE CLASSIFICATION	(GAS) SHIELDING GAS TYPE & DIGITAL DISPLAY NAME	WIRE DIAMETER (mm)	PLATE THICKNESS RANGE (mm)
Carbon Steel CS-MTL	ER70S-6	Argon 90% - CO2 10% AR 9010	0.6	0.6-6.0
			0.8	0.8-11.0
			0.9	0.9-13.0
			1.0	1.0-14.0
			1.2	1.2-16.0
			1.2	1.2-16.0
	ER70S-6	Argon 82% - CO2 18% AR 8218	0.8	0.8-11.0
			0.9	0.9-13.0
			1.0	1.0-14.0
			1.2	1.2-16.0
			1.2	1.2-16.0
			1.2	1.2-16.0
Carbon Steel Gasless NO-GAS	E71T-11	NO-GAS	0.8	0.8-10.0
			0.9	0.9-12.0
			1.2	1.2-16.0
			1.2	1.2-16.0
			1.2	1.2-16.0
			1.2	1.2-16.0
Carbon Steel Flux Cored FLX GAS	E71T-1M	Argon 82% - CO2 18% (AR8218)	0.8	0.8-10.0
			0.9	0.9-13.0
			1.0	1.0-14.0
			1.2	1.2-16.0
			1.2	1.2-16.0
			1.2	1.2-16.0
Stainless Steel SS-MTL	ER316LSi	Argon 98% - CO2 2% (AR982)	0.9	0.9-10.0
			1.0	1.0-13.0
			1.0	1.0-14.0
			1.2	1.2-16.0
			1.2	1.2-16.0
			1.2	1.2-16.0
Aluminium 5356 AL5XXX*	ER5356	Argon 100% (AR-100)	0.9	0.9-10.0
			1.0	1.0-13.0
			1.2	1.2-14.0
			1.2	1.2-14.0
			1.2	1.2-14.0
			1.2	1.2-14.0
Aluminium 4043 AL40XX*	ER4043	Argon 100% (AR-100)	1.0	1.0-13.0
			1.2	1.2-14.0
			1.2	1.2-14.0
			1.2	1.2-14.0
			1.2	1.2-14.0
			1.2	1.2-14.0
Silicon Bronze SI-BRZ	ERCuSi-A	Argon 100% (AR-100)	0.9	0.9-13.0
			1.0	1.0-14.0
			1.2	1.2-16.0
			1.2	1.2-16.0
			1.2	1.2-16.0
			1.2	1.2-16.0
Silicon Bronze SI-BRZ	ERCuSi-A	Argon 90% - CO2 10% (AR9010)	0.9	0.9-13.0
			1.0	1.0-14.0
			1.2	1.2-16.0
			1.2	1.2-16.0
			1.2	1.2-16.0
			1.2	1.2-16.0

*Note: AL5XXX refers to AL5356 and AL5183 and other usable AL5000 series wires available on the market.

*Note: AL40XX refers to AL4043 and AL4047 and other usable AL4000 series wires available on the market.

G WFS WIRE FEED SPEED

If the Welding Current is found to be too High or too Low for the application the Wire Feed Speed can be adjusted to the desired value within a 10% range, based on the synergic setting being used. Once WFS function is selected by pressing the Left Control Knob, the setting can be adjusted by turning the Left Control Knob Clockwise to increase value or turning the Control Knob Anti-clockwise to decrease the value.

If the Control Knob is turned slowly it will adjust in small increments, if turned quickly, adjust in larger increments.

Note 1: Adjusting Wire Feed Speed (WFS) may also change the Voltage Value Synergically.

Note 2: In MIG Quickset when Spool Gun or Push Pull Gun are connected only Plate Thickness is adjustable from the Spool Gun or Push Pull Gun. Other parameters are adjustable from the Power Source or Wirefeeder whichever is selected.



H RIGHT CONTROL KNOB

PRESS TO STEP THROUGH SELECTIONS AND SELECT OPTIONS IN MIG QUICKSET MODE MIG QUICKSET MODE

Inductance, GAS Shielding Gas, 4T Trigger Mode (2T/4T), and TRIM/V Volts Trim.

I INDUCTANCE

The Inductance (arc) control operates in MIG (GMAW) modes only and is used to adjust the intensity of the welding arc. Lower arc control settings make the arc softer with less weld spatter. Higher arc control settings give a stronger driving arc which can increase weld penetration. This parameter has an adjustment range of -10 to 10.

Factory setting for Inductance is 0.

J GAS SHIELDING GAS (GAS)

SELECT SHIELDING GAS TYPE OR GASLESS MODE

Select the correct Shielding Gas Type depending on the MIG Wire Diameter and Material Type selected or (NO-GAS) for Gasless mode. If in doubt, consult the MIG wire manufacturer.

K 4T TRIGGER MODE

SELECT TRIGGER MODE BUTTON

The trigger mode control is used to switch the functionality of the MIG Gun trigger between 2T (normal) and 4T (latch mode).

2T NORMAL MODE

In this mode, the MIG Gun trigger must remain depressed for the welding output to be active. Press and hold the MIG Gun trigger to activate the power source (weld). Release the MIG Gun trigger switch to cease welding.

4T LATCH MODE

This mode of welding is mainly used for long welding runs to reduce operator fatigue. In this mode the operator can press and release the MIG Gun trigger and the output will remain active. To deactivate the power source, the MIG Gun trigger switch must again be depressed and released, thus eliminating the need for the operator to hold the MIG Gun trigger.

L TRIM/V VOLTS TRIM

Volts Trim format is not available in MIG Manual Mode. The LED Display will show Syn for QuickSet value for the selected Wire and Plate Thickness. Volts Trim has a range of -5.0 to +5.0 Volts. If the value has been changed, to return to the factory parameters simply return the Volts Trim to display Syn to return to the QuickSet Voltage Value.

For example, if the Pre-set Voltage is 20V and in volts trim V+/- mode the setting is changed to -2.0 then the Pre-set voltage will now be 18V. If the Volts Trim V+/- is changed to 3.0 then the Pre-set Voltage will be 23V.



PRESS THE MENU BUTTON TO ACCESS ADVANCED SETTINGS PRE GAS (PEG)

Shielding Gas flows for the time specified before an arc is initiated

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Pre Gas (PEG). Once selected use the

Right Control Knob to set the desired value. This parameter has an adjustment range of 0 - 20 seconds. Factory setting for Pre Gas is 0 seconds.

Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

POST GAS (PTG)

Shielding Gas flows for the time specified after an arc has extinguished.

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Post Gas (PTG). Once selected use the

Right Control Knob to set the desired value. This parameter has an adjustment range of 0 - 20 seconds. Factory setting for Post Gas is 0.5 seconds.

Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

BURNBACK (BBT)

The Burnback Control is used to adjust the amount of MIG wire that protrudes from the MIG Gun after the completion of MIG welding (commonly referred to as stick out).

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Burnback (BBT). Once selected use the

Right Control Knob to set the desired value. This parameter has an adjustment range of 0.00 - 0.50 seconds.

Factory setting for Burnback is 0.01 seconds.

Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

CRATER FILL (CRF)

The Crater Fill reduces the Welding Current (Wire Feed Speed and Voltage) at the end of the weld over a period of time (user adjustable) to fill and finish the end of the weld eliminating craters from the weld.

Craters at weld ends can be a starting point for cracking.

Note: If crater fill function is active, but no crater fill is required, when the trigger is released, welding will continue for 0.4 seconds after the trigger is released. The purpose of this is to give the operator time to double click in case of the need to utilize crater fill.

CRATER FILL IN 2T TRIGGER MODE

When Crater Fill is turned On the operator is able to use Crater Fill to complete the weld. In Trigger 2T mode the operator can engage Crater Fill by following this procedure. Press and hold trigger to weld then release the trigger to finish the weld and within 0.4 (press-release, press-hold trigger) to enable Crater Fill. Whilst the trigger is held depressed the weld will continue with the set Crater Fill parameters and will stop once the trigger is released. If Crater Fill is not required simply finish your weld by releasing the Trigger.

Note: If Crater Fill is turned ON and the weld is finished without engaging the Crater Fill trigger sequencing it will continue to weld for a period of 0.4 seconds. This time allows for Crater Fill Trigger sequencing to be engaged.

CRATER FILL IN 4T TRIGGER MODE

When Crater Fill is turned On the operator is able to use Crater Fill to complete the weld. In Trigger 4T mode the operator can engage Crater Fill by following this procedure. Press and release trigger to weld then (press-release, press-hold trigger) to enable Crater Fill. Whilst the trigger is held depressed the weld will continue with the set Crater Fill parameters and will stop once the trigger is released. If Crater Fill is not required simply finish your weld by pressing and releasing the Trigger.

Note: If Crater Fill is turned ON and the weld is finished without engaging the Crater Fill trigger sequencing it will continue to weld for a period of 0.4 seconds. This time allows for Crater Fill Trigger sequencing to be engaged.

CRATER FILL TIME (CFT)

Crater Fill Time is the time in seconds that the Crater Fill parameters ramp down to achieve Crater Fill finish at the end of the weld.

Crater Fill Time operates when Crater Fill (CRF) is ON (refer above).

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Crater Fill Time (CFT). Once selected use the Right Control Knob to set the desired value. This parameter has an adjustment range of 0.1 - 9.9 seconds.

Factory setting for Crater Fill Time is 0.5 seconds.

Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

CRATER FILL WIRE FEED SPEED (CFW)

Crater Fill Wire Feed Speed is used to set the finish wire feed speed for MIG.

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Crater Fill Wire Feed Speed (CFW). Once selected use the Right Control Knob to set the desired value. This parameter has an adjustment range of 2.0 - 18.0 metres per minute.

Factory setting for Crater Fill Wire Feed Speed is 2.5 metres per minute.

Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

CRATER FILL VOLTAGE (CFV)

Crater Fill Voltage is used to set the finish voltage for MIG.

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Crater Fill Voltage (CFV). Once selected use the Right Control Knob to set the desired value. This parameter has an adjustment range of 13.0 - 40.0 Volts.

Factory setting for Crater Fill Voltage is 14.0 Volts.

Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

RUN IN (RIN)

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching

Run In (RIN). Once selected use the Right Control Knob to set the desired value. This parameter is adjusted as a Percentage % of the Set Wire Feed Speed.

Adjustment Range is 1 - 100%.

Factory setting for Run In is 100%, if you need a slower softer start then, set to 80% and this will slow the WFS down and reduce the build-up of metal at the start of the weld.

Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

The user can set the MIG wire Run In speed before the Arc is initiated. Once the Arc is initiated the MIG Wire Speed will revert to the user set Wire Feed Speed (WFS) setting.

SPOT WELDING MODE (SPT)

Spot welding is used to weld two thin plates together at a desired location by melting the top and bottom plates together to form a nugget between them.

Operates in Trigger 2T mode only.

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Spot Welding Mode (SPT). Once selected use the Right Control Knob to set the desired value. This parameter has an adjustment range of 0 - 5.0 seconds.

Factory setting for Spot Time is 0 seconds.

Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

5.16 MIG MANUAL MODE



A **DEVICE SELECTION BUTTON**

Select Power Source.

B **PROCESS SELECTION BUTTON**

Select MIG Manual Mode.

C **LEFT CONTROL KNOB**

Turn clockwise to increase or counterclockwise to decrease **WFS** Wire Feed Speed (WFS) value.

D **RIGHT CONTROL KNOB**

PRESS TO STEP THROUGH SELECTIONS AND SELECT OPTIONS IN MIG MANUAL MODE

Inductance, **4T** Trigger Mode (2T/4T), and **TRIM/V** Volts.

INDUCTANCE

The Inductance (arc) control operates in MIG (GMAW) modes only and is used to adjust the intensity of the welding arc. Higher arc control settings make the arc softer with less weld spatter. Lower arc control settings give a stronger driving arc which can increase weld penetration. This parameter has an adjustment range of -10 to 10.

Factory setting for Inductance is 0.

4T TRIGGER MODE
SELECT TRIGGER MODE BUTTON

The trigger mode control is used to switch the functionality of the MIG Gun trigger between 2T (normal) and 4T (latch mode).

2T NORMAL MODE

In this mode, the MIG Gun trigger must remain depressed for the welding output to be active. Press and hold the MIG Gun trigger to activate the power source (weld). Release the MIG Gun trigger switch to cease welding.

4T LATCH MODE

This mode of welding is mainly used for long welding runs to reduce operator fatigue. In this mode the operator can press and release the MIG Gun trigger and the output will remain active. To deactivate the power source, the MIG Gun trigger switch must again be depressed and released, thus eliminating the need for the operator to hold the MIG Gun trigger.

V VOLTS INDICATOR

When illuminated the Value showing on the Right Hand Digital Display is Volts.

MPM MPM INDICATOR

When illuminated WFS (Wire Feed Speed) is selected and the value showing on the Left Hand Digital Display is MPM (Metres Per Minute).

E MENU BUTTON

PRESS THE MENU BUTTON TO ACCESS ADVANCED SETTINGS

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings. Use the Right Control Knob to set values.

PRE GAS (PEG)

Shielding Gas flows for the time specified before an arc is initiated.

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Pre Gas (PEG). Once selected use the Right Control Knob to set the desired value. This parameter has an adjustment range of 0 - 20 seconds.

Factory setting for Pre Gas is 0 seconds.

Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

POST GAS (PTG)

Shielding Gas flows for the time specified after an arc has extinguished.

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Post Gas (PTG). Once selected use the Right Control Knob to set the desired value. This parameter has an adjustment range of 0 - 20 seconds.

Factory setting for Post Gas is 0.5 seconds.

Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

BURNBACK (BBT)

The Burnback Control is used to adjust the amount of MIG wire that protrudes from the MIG Gun after the completion of MIG welding (commonly referred to as stick out).

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Burnback (BBT). Once selected use the Right Control Knob to set the desired value. This parameter has an adjustment range of 0.00 - 0.50 seconds.

Factory setting for Burnback is 0.01 seconds.

Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

CRATER FILL (CRF)

The Crater Fill reduces the Welding Current (Wire Feed Speed and Voltage) at the end of the weld over a period of time (user adjustable) to fill and finish the end of the weld eliminating craters from the weld.

Craters at weld ends can be a starting point for cracking.

Note: If crater fill function is active, but no crater fill is required, when the trigger is released, welding will continue for 0.4 seconds after the trigger is released. The purpose of this is to give the operator time to double click in case of the need to utilize crater fill.

CRATER FILL IN 2T TRIGGER MODE

When Crater Fill is turned On the operator is able to use Crater Fill to complete the weld. In Trigger 2T mode the operator can engage Crater Fill by following this procedure. Press and hold trigger to weld then release the trigger to finish the weld and within 0.4 seconds (press-release, press-hold trigger) to enable Crater Fill. Whilst the trigger is held depressed the weld will continue with the set Crater Fill parameters and will stop once the trigger is released. If Crater Fill is not required simply finish your weld by releasing the Trigger.

Note: If Crater Fill is turned ON and the weld is finished without engaging the Crater Fill trigger sequencing it will continue to weld for a period of 0.4 seconds. This time allows for Crater Fill Trigger sequencing to be engaged.

CRATER FILL IN 4T TRIGGER MODE

When Crater Fill is turned On the operator is able to use Crater Fill to complete the weld. In Trigger 4T mode the operator can engage Crater Fill by following this procedure. Press and release trigger to weld then (press-release, press-hold trigger) to enable Crater Fill. Whilst the trigger is held depressed the weld will continue with the set Crater Fill parameters and will stop once the trigger is released. If Crater Fill is not required simply finish your weld by pressing and releasing the Trigger.

Note: If Crater Fill is turned ON and the weld is finished without engaging the Crater Fill trigger sequencing it will continue to weld for a period of 0.4 seconds. This time allows for Crater Fill Trigger sequencing to be engaged.

CRATER FILL TIME (CFT)

Crater Fill Time is the time in seconds that the Crater Fill parameters ramp down to achieve Crater Fill finish at the end of the weld.

Crater Fill Time operates when Crater Fill (CRF) is ON (refer above).

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Crater Fill Time (CFT). Once selected use the Right Control Knob to set the desired value. This parameter has an adjustment range of 0.1 – 9.9 seconds.

Factory setting for Crater Fill Time is 0.5 seconds.

Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

CRATER FILL WIRE FEED SPEED (CFW)

Crater Fill Wire Feed Speed is used to set the finish wire feed speed for MIG.

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Crater Fill Wire Feed Speed (CFW). Once selected use the Right Control Knob to set the desired value. This parameter has an adjustment range of 2.0 – 18.0 metres per minute.

Factory setting for Crater Fill Wire Feed Speed is 2.5 metres per minute.

Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

CRATER FILL VOLTAGE (CFU)

Crater Fill Voltage operates in Trigger 4T mode only and is used to set the finish voltage for MIG.

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Crater Fill Voltage (CFU). Once selected use the Right Control Knob to set the desired value. This parameter has an adjustment range of 13.0 – 40.0 Volts.

Factory setting for Crater Fill Voltage is 14.0 Volts.

Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

RUN IN (RIN)

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Run In (RIN). Once selected use the Right Control Knob to set the desired value. This parameter is adjusted as a Percentage % of the Set Wire Feed Speed.

Adjustment Range is 1 – 100%.

Factory setting for Run In is 100%, if you need a slower softer start then, set to 80% and this will slow the WFS down and reduce the build-up of metal at the start of the weld.

Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

The user can set the MIG wire Run In speed before the Arc is initiated. Once the Arc is initiated the MIG Wire Speed will revert to the user set Wire Feed Speed (WFS) setting.

SPOT WELDING MODE (SPT)

Spot welding is used to weld two thin plates together at a desired location by melting the top and bottom plates together to form a nugget between them.

Operates in Trigger 2T mode only.

Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Spot Welding Mode (SPT). Once selected use the Right Control Knob to set the desired value. This parameter has an adjustment range of 0 – 5.0 seconds.

Factory setting for Spot Time is 0 seconds.

Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

5.17 QUICKSET MIG AND MANUAL MIG MODES

QuickSet MIG Mode in 4 Steps

With QuickSet Pre-Sets installed the guess work is now taken out of the setup, to allow excellent welding results. All you need to set is the Material Type, Shielding Gas Type or Gasless (if applicable), MIG Wire Diameter and Plate Thickness..

Plate thickness setting allows you to set up in a flash. There is no guessing the welding parameters. Use the QuickSet feature to set the machine to the correct plate thickness you are welding. You can check the plate thickness with a measuring device, such as a ruler or vernier caliper. If two different plate thickness are to be joined then, add the two together and divide by 2 and use the average plate thickness as your setting guide

Manual MIG Mode

In Manual MIG Mode, Voltage and  WFS Wire Feed Speed must be manually set. Refer to Section 5.16.

5.18 CONNECTIONS FOR SOLID MIG WIRES WITH SHIELDING GAS AND GASLESS FLUX CORED WIRES

Changing MIG Gun Polarity in MIG Mode.

The MIG Gun Polarity Lead is located at the centre on the machine front. It can be connected to either of the Positive (+) or Negative (-) Dinse Sockets on the machine front panel.

These terminals determine the polarity of the MIG Gun and the Work Lead connection.

MIG Gun Polarity Lead Connection for Solid MIG Wire with Shielding Gas.

1. The MIG Gun Polarity Lead must be connected to the Positive (+) Terminal on the front of the Power Source as shown. This makes the MIG Gun electrode positive, which supplies 2/3 heat to the welding wire and weld deposit. Polarity electrode/wire Positive (+)



2. The Work Return cable and clamp must be connected to the negative (-) terminal by inserting the twist connector into the front panel socket and then tighten it clockwise. Connect the clamp to the work piece.

MIG Gun Polarity Lead Connection for Gasless Flux Cored MIG Wire.

1. The MIG Gun Polarity Lead must be connected to the Negative (-) Terminal on the front of the Power Source as shown. This makes the MIG Gun electrode negative, which supplies 1/3 heat to the welding wire and weld deposit. Polarity electrode/wire Negative (-)



2. The Work Return cable and clamp must be connected to the positive (+) terminal by inserting the twist connector into the front panel socket and then tighten it clockwise. Connect the clamp to the work piece.

MANUAL SETTINGS IN MIG (VOLTAGE & WIRE FEED SPEED)

Power source setting requires some practice by the operator, (however with the QuickSet feature of the BLUEVENOM XF353, setting up the correct parameters is a very simple procedure - refer to section 5.10 and 5.11), as the welding plant has two control settings that have to balance. These are the Wire Feed Speed control and the welding Voltage Control. The welding current is determined by the Wire Feed Speed control, the current will increase with increased Wire Feed Speed, resulting in a shorter arc. Less Wire Feed Speed will reduce the current and lengthen the arc. Increasing the welding voltage slightly alters the current level, but mainly lengthens the arc. By decreasing the voltage, a shorter arc is obtained with a little change in current level

When changing to a different MIG wire diameter, different control settings are required. A thinner electrode wire needs more Wire Feed Speed to achieve the same current level.

A satisfactory weld cannot be obtained if the Wire Feed Speed and Voltage settings are not adjusted to suit the MIG wire diameter and the thickness of the work piece.

If the Wire Feed Speed is too high for the welding voltage, "stubby" will occur as the wire dips into the molten pool and does not melt. Welding in these conditions normally produces

a poor weld due to lack of fusion. If, however, the welding voltage is too high, large drops will form on the end of the wire, causing spatter. The correct setting of voltage and Wire Feed Speed can be seen in the shape of the weld deposit and heard by a smooth regular arc sound (which sounds like sizzling steak on a barbecue). Refer to the Weld Guide located on the inside of the wirefeed compartment door for setup information.

MIG WIRE SIZE SELECTION

The choice of MIG wire size and shielding gas used depends on the following:

- Thickness of the metal to be welded
- Type of joint
- Capacity of the wire feed unit and Power Source
- The amount of penetration required
- The deposition rate required
- The bead profile desired
- The position of welding
- Cost of the wire

5.19 OPTIONAL ADD-ON DEVICES

Refer to Section 2.11 Optional Accessories for Part Numbers.

For further information on these Add-On Devices refer to their respective Operating Manuals or Cigweld.com.au



Figure 5-18: Optional Add-on Devices

5.20 CIGWELD MIG WIRE SELECTION CHART

CLASS. AUS/ NZ STD (NEW)	CLASS. AWS STD	DESCRIPTION	DIA (mm)	PACK	P/N:	APPLICATION
B G 49A 3U C1/M21/M24 S6	ER70S-6	WELDSKILL SOLID WELDING WIRE	0.6	Handispool 5kg	WS5006	General purpose solid welding wire suitable for the all positional Gas Metal Arc Welding (GMAW) of mild and low alloy steels, used in general fabrication and for welding of light to medium gauge sheet and tubular steel sections. Please Note: A suitable shielding gas is required.
			0.8	Handispool 5kg	721109	Autocraft LW1-6 is a high quality copper coated welding wire suitable for the all positional Gas Metal Arc Welding (GMAW) of mild and low alloy steels, used in general fabrication and structural work. The high quality copper coating ensures problem free feeding, smooth current pick-up and minimal contact tip wear. The higher silicon content of Autocraft LW1-6 ensures excellent operator appeal, improved fillet shape / side wall wash at weld toes and very low spatter levels important for welding light to medium gauge sheet and tubular steel sections.
		0.8	Spool 15kg	720114		
		0.9	Handispool 5kg	720161		
		0.9	Spool 15kg	720090		
		B T 49 Z T11 1 NA	E71T-11	WELDSKILL GASLESS WELDING WIRE	0.8	Handispool 5kg
0.9	Handispool 5kg				WG4509	
1.2	Handispool 5kg				WG4512	
B T 49 2 T1 C A U H10; B T 49 2 T1 M A U H10	E71T-1M H8; E71T-1 H8	VERTI-COR XP	1.2	Spool 15kg	720915	Low cost and great quality, Verti-Cor XP is a versatile rutile type flux cored wire designed for all positional fillet and butt welding applications using Argon + 18-25% CO2 and CO2 shielding gases. Verti-Cor XP is characterised by its smooth transfer arc characteristic and all positional capabilities while offering smooth genuine mitre fillets in all positions. Vacuum packed
			B T 49 3 T12 1 C A U H10; B T 49 3 T12 1 M A U H10	E71T-1 H8	VERTI-COR 3XP H4	1.2
B T 49 3 T15 O M A U H5; A T 42 3 M M21 3 H5	E70C-6M H4	METAL-COR 3				1.2

CLASS. AUS/ NZ STD (NEW)	CLASS. AWS STD	DESCRIPTION	DIA (mm)	PACK	P/N:	APPLICATION
B SS309LSi	ER309LSi	AUTOCRAFT 309LSi	0.9	Spool 15kg	721276	Autocraft 309LSi is a premium quality, low carbon 24% Cr/13% Ni stainless steel wire for the Gas Metal Arc Welding (GMAW) of matching 309L type stainless steel. Autocraft 309LSi is also suitable for a wide range of other welding applications including: The dissimilar joining of "300 series" and selected "400series" stainless steel grades to mild or low alloy steels, An intermediate or buttering layer in the butt welding of clad steels, A stainless steel overlay on mild or low alloy steel, A 'buttering' layer prior to hardfacing.
			1.2	Spool 15kg	721277	
B SS316LSi	ER316LSi	AUTOCRAFT 316LSi	0.8	Handispool 5kg	720288	Autocraft 316LSi is a premium quality, low carbon 19% Cr/13% Ni / 2.5Mo stainless steel wire for the Gas Metal Arc Welding (GMAW) of Molybdenum bearing stainless steels; in particular 316, 318 and 316L alloys. Autocraft 316LSi is also suitable for the general welding of other 300 and 400 series stainless steels including 301, 302, 304/304L, 321, 347, 410 and 430.
			0.9	Handispool 5kg	720283	
			0.9	Spool 15kg	721286	
			1.2	Spool 15kg	721287	
S Al 5183	ER5183	AUTOCRAFT 5183	1.0	Spool 7kg	722239	Autocraft AL5183XP is a premium quality Aluminium welding wire that is typically used in the marine and structured industries, where higher strength and good fracture toughness is required. Autocraft AL5183XP is ideally suited to the welding of Alloy 5083. Autocraft AL5183XP is not suitable for heat treatment.
		AUTOCRAFT 5183XP	1.2	Spool 7kg	722240	
			1.2	Spool 7kg	722245	
S Al 5356	ER5356	AUTOCRAFT AL5356	0.9	Spool 7kg	722226	Autocraft AL5356 is a premium quality, Aluminium - nominal 5% Magnesium alloy suitable for the Gas Metal Arc Welding (GMAW) of a wide range of cast and wrought Aluminium alloys. Autocraft AL5356 is the most popular Aluminium alloy in the CIGWELD range. It produces intermediate deposit strength and good ductility and corrosion resistance for the GMA welding of a wide range of 3XXX, 5XXX, 6XXX and 5XX Aluminium alloys.
			1.0	Handispool 2kg	723224	
			1.0	Spool 7kg	722224	
			1.2	Spool 7kg	722227	
—	ERCuSi-A	AUTOCRAFT SILICON BRONZE	0.8	Handispool 5kg	720159	Autocraft Silicon Bronze is a Copper based wire recoended for the Gas Metal Arc Welding (GMAW) of Copper-Silicon alloys used extensively in hot water systems, heat exchangers, calorifiers and marine components for their corrosion resistance. Autocraft Silicon Bronze is highly recoended for the fillet welding of galvanised steels and irons and for the lower strength 'brazing' of light gauge steel sections as used in the automotive industry. It is also suitable for the MIG welding of Copper-Zinc alloys to themselves and to steels.
			0.9	Spool 13kg	720015	
			1.2	Spool 13kg	720255	

5.21 MIG (GMAW/FCAW) WELDING TROUBLESHOOTING

SOLVING PROBLEMS BEYOND THE WELDING TERMINALS

The general approach to fix Gas Metal Arc Welding (GMAW) problems is to start at the wire spool then work through to the MIG Gun. There are two main areas where problems occur with GMAW, Porosity and Inconsistent wire feed.

SOLVING PROBLEMS BEYOND THE WELDING TERMINALS - POROSITY

When there is a gas problem the result is usually porosity within the weld metal. Porosity always stems from some contaminant within the molten weld pool which is in the process of escaping during solidification of the molten metal. Contaminants range from no gas around the welding arc to dirt on the work piece surface. Porosity can be reduced by checking the following points.

FAULT	CAUSE
1 Shielding gas cylinder contents and flow meter.	Ensure that the shielding gas cylinder is not empty and the flow meter is correctly adjusted to 15 litres per minute.
2 Gas leaks.	Check for gas leaks between the regulator/cylinder connection and in the gas hose to the Power Source.
3 Internal gas hose in the Power Source.	Ensure the hose from the solenoid valve to the gun adaptor has not fractured and that it is connected to the gun adaptor.
4 Welding in a windy environment.	Shield the weld area from the wind or increase the gas flow.
5 Welding dirty, oily, painted, oxidised or greasy plate.	Clean contaminates off the work piece.
6 Distance between the MIG Gun nozzle and the work piece.	Keep the distance between the MIG Gun nozzle and the work piece to a minimum. Refer to cigweld.com.au for further MIG (GMAW/FCAW) Welding information
7 Maintain the MIG Gun in good working order.	A Ensure that the gas holes are not blocked and gas is exiting out of the gas diffuser. B Do not restrict gas flow by allowing spatter to build up inside the gun nozzle. C Check that the MIG Gun O-rings are not damaged.



WARNING

Disengage the feed roll when testing for gas flow by ear.

Refer to cigweld.com.au for further MIG (GMAW/FCAW) Welding information

SOLVING PROBLEMS BEYOND THE WELDING TERMINALS - INCONSISTENT WIRE FEED

Wire feeding problems can be reduced by checking the following points

FAULT	CAUSE
1 Feed roll driven by motor in the wire-feed compartment slipping.	<p>A Spool Hub Brake is too tight. (Refer 5.06).</p> <p>B Incorrect feed roll fitted for wire used, or incorrect pressure set on wire feed pressure roller. Check and change to correct feed roll if necessary. (Refer options and accessories table 2.11 for feed roll options)</p>
2 Wire spool unwound and tangled.	Spool Hub Brake is too loose. (Refer 5.06)
3 Worn or incorrect feed roll size.	<p>A Use a feed roll matched to the size wire you are using.</p> <p>B Replace feed roll if worn.</p>
4 Wire rubbed against the mis-aligned guides and reduced wire feedability.	Mis-alignment of inlet/outlet guides.
5 Liner blocked with swarf	<p>A Increased amounts of swarf are produced by the wire passing through the feed roll when excessive pressure is applied to the pressure roller adjuster.</p> <p>B Swarf can also be produced by the wire passing through an incorrect feed roll groove shape or size.</p> <p>C Swarf is fed into the conduit liner where it accumulates thus reducing wire feedability.</p>
6 Incorrect or worn contact tip.	<p>A The contact tip transfers the weld current to the electrode wire. If the hole in the contact tip is too large then arcing may occur inside the contact tip resulting in the wire jamming in the contact tip.</p> <p>B When using soft wire such as aluminium it may become jammed in the contact tip due to expansion of the wire when heated. A contact tip designed for soft wires should be used.</p>
7 Poor work lead contact to work piece.	If the work lead has a poor electrical contact to the work piece then the connection point will heat up and result in a reduction of power at the arc
8 Bent liner.	This will cause friction between the wire and the liner thus reducing wire feedability.

BASIC MIG (GMAW) WELDING TROUBLESHOOTING

FAULT	CAUSE	REMEDY
1 Undercut	<p>A Welding arc voltage too high</p> <p>B Incorrect gun angle</p> <p>C Excessive heat input</p>	<p>A Decrease voltage or increase the Wire Feed Speed.</p> <p>B Adjust angle.</p> <p>C Increase the gun travel speed and/or decrease welding current by decreasing the voltage or decreasing the Wire Feed Speed.</p>
2 Lack of penetration	<p>A Welding current too low</p> <p>B Joint preparation too narrow or gap too tight</p> <p>C Incorrect shielding gas</p>	<p>A Increase welding current by increasing Wire Feed Speed and increasing voltage.</p> <p>B Increase joint angle or gap.</p> <p>C Change to a gas which gives higher penetration.</p>
3 Lack of fusion	Voltage too low	Increase voltage.
4 Excessive spatter	<p>A Voltage too high</p> <p>B Voltage too low</p>	<p>A Decrease voltage or increase the Wire Feed Speed control.</p> <p>B Increase the voltage or decrease Wire Feed Speed.</p>
5 Irregular weld shape	<p>A Incorrect voltage and current settings. Convex, voltage too low. Concave, voltage too high.</p> <p>B Wire is wandering.</p> <p>C Incorrect shielding gas</p> <p>D Insufficient or excessive heat input</p>	<p>A Adjust voltage and current by adjusting the voltage control and the Wire Feed Speed control.</p> <p>B Replace contact tip.</p> <p>C Check shielding gas.</p> <p>D Adjust the Wire Feed Speed control or the voltage control.</p>
6 Weld cracking	<p>A Weld beads too small</p> <p>B Weld penetration narrow and deep</p> <p>C Excessive weld stresses</p> <p>D Excessive voltage</p> <p>E Cooling rate too fast</p>	<p>A Decrease travel speed.</p> <p>B Reduce current and voltage and increase MIG Gun travel speed or select a lower penetration shielding gas.</p> <p>C Increase weld metal strength or revise design</p> <p>D Decrease voltage.</p> <p>E Slow the cooling rate by preheating part to be welded or cool slowly.</p>
7 Cold weld puddle	<p>A Loose welding cable connection.</p> <p>B Low primary voltage</p> <p>C Fault in power source</p>	<p>A Check all welding cable connections.</p> <p>B Contact supply authority.</p> <p>C Have an Accredited CIGWELD Service Provider to test then replace the faulty component.</p>
8 Arc does not have a crisp sound that short arc exhibits when the Wire Feed Speed and voltage are adjusted correctly.	The MIG Gun has been connected to the wrong voltage polarity on the front panel.	Connect the MIG Gun to the positive (+) welding terminal for most solid wires and gas shielded flux cored wires. Connect MIG Gun to the negative (-) welding terminal for most Gasless Wires. Refer to the electrode wire manufacturer for the correct polarity.

5.22 MIG (GMAW) WELDING PROBLEMS

PROBLEM	POSSIBLE CAUSE	REMEDY
1 Mains Supply Voltage is On, the On/Off switch on the rear panel is in the On position and the Front Control Panel Digital Displays are illuminated however the power source will not MIG weld.	A Power source is not in the correct mode of operation.	A Set the power source to MIG mode. Refer to Section 5.10.
	B MIG Gun Polarity Lead is not connected.	B Connect the MIG Gun Polarity Lead to the positive or negative output terminal. Refer to Section 4.10.3.
	C Work Lead is not connected to the work piece.	C Ensure that the Work Lead is connected to the work piece and has a good connection to the work piece. Refer to Set Up for MIG Section 5.13 or 5.14.
	D MIG Gun is not correctly connected to the Euro Style MIG Gun Adaptor.	D Ensure that the MIG Gun is correctly connected to the Euro Style MIG Gun Adaptor. Refer to Section 4.01 & 5.02.
2 When welding at maximum output (WFS and Volts) the machine stops welding.	A When output amperage exceeds the rated maximum output of the machine the welding machine will sense this and initiates a safety circuit which stops the output current and displays an Output Over Current Error Code 08. Refer to Section 8.06 Error Codes for further detail.	A Reduce output amperage (WFS and Volts) according to the Rating Label.
	B Contact Tip of the MIG gun is too close to the work piece.	B Increase distance between the Contact Tip of the MIG gun and the work piece.
	C The Pre-set voltage is too high.	C Decrease the Pre-set voltage.
	D In Quickset MIG Mode the MIG Welding Wire in use is not consistent with the selected MIG wire diameter, e.g. 0.8mm wire is selected but 0.9mm wire is used.	D Ensure that the correct MIG Welding Wire Diameter is selected for MIG Wire being used. Refer to Section 4.02
3 The power source will not commence welding when the gun trigger switch is depressed and Over Temperature Error Code 01 or the Over Temperature Indicator is illuminated on the Front Panel Display. This indicates an Over Temperature condition has occurred. Refer to Section 8.06 Error Codes for further detail.	Duty cycle of power source has been exceeded.	Leave the power source switched ON and allow it to cool. Note that Over Temperature Error Code must be cleared and Over Temperature Indicator not illuminated on the Front Panel Display prior to commencement of welding.
4 Unit will not feed wire in MIG mode.	A Incorrect Feed Roll fitted for wire type being used.	A Fit the correct feed roll for MIG wire type being used. Refer to section 2.11 for optional feed rolls available and Section 5.09 for feed roll fitting details.
	B Pressure Roller Arm is not secured in the correct position or not correctly adjusted.	B Secure Pressure Roller in the correct position and ensure that it is correctly adjusted. Refer to Section 5.07 and 5.08.
	C Electrode wire stuck in conduit liner or contact tip (burn-back jam).	C Check for clogged / kinked MIG Gun conduit liner or worn contact tip. Replace faulty components.
	D Internal fault in power source	D Have an Accredited CIGWELD Service Provider investigate the fault.

PROBLEM	POSSIBLE CAUSE	REMEDY
5 Welding wire continues to feed when MIG Gun trigger is released.	A MIG Gun Trigger in 4T Mode	A Change MIG Gun Trigger Mode to 2T.
	B MIG Gun trigger leads shorted, or faulty MIG Gun Trigger.	B Repair or replace MIG Gun trigger switch/lead.
6 Welding arc cannot be established in MIG mode.	A MIG Gun polarity lead is not connected into a welding output terminal.	A Connect the MIG Gun polarity lead to either the positive welding output terminal or the negative welding output terminal as required. Refer to Section 4.01.3.
	B Poor or no work lead contact.	B Clean work clamp area and ensure good electrical contact.
	C Spot Welding Mode is Active	C Check that the Spot Welding Mode (SPT) value is 0. Refer to section 5.15 and 5.16
7 Inconsistent wire feed.	A Worn or dirty contact tip.	A Replace if necessary.
	B Incorrect or worn feed roll.	B Replace if necessary.
	C Excessive brake tension on wire reel hub.	C Reduce brake tension on spool hub.
	D Worn, kinked or dirty conduit liner	D Clean or replace conduit liner.
	E Pressure Roller Arm is not secured in the down position or not correctly adjusted.	E Secure Pressure Roller in the down position and ensure that it is correctly adjusted. Refer to Section 5.07 and 5.08.
8 No gas flow in MIG mode.	A Gas hose is damaged.	A Replace or repair.
	B Gas passage contains impurities.	B Disconnect gas hose from the rear of power source and blow out impurities.
	C Machine set in MIG Gasless mode.	C Set Machine to MIG Gas mode.
	D Empty gas cylinder.	D Replace gas cylinder.
	E Cylinder Valve not turned on.	E Turn Cylinder valve in anticlockwise direction until gas is flowing.
9 Gas flow continues after the MIG Gun trigger switch has been released (MIG Gas Solid mode).	Gas valve has jammed open due to impurities in the gas or the gas line.	Have an accredited CIGWELD service provider repair or replace gas valve.

SECTION 6: TIG (GTAW) WELDING

6.01 TIG DC-LIFT MODE AND SETUP

- A.** Connect the TIG Torch to the negative 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.
- B.** Connect the TIG torch trigger switch via the 8 pin socket located on the front of the power source as shown below. The TIG torch will require a trigger switch to operate in TIG DC-Lift Mode.
- C.** Switch the Power Source ON/OFF switch located on the rear of the Power Source to the ON position and ensure the Power indicator on the Front Panel is illuminated.
- D.** Select TIG DC-Lift mode with the Process Selection Button. Refer to section 4.02 (B).
- E.** 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.

- F.** 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 6.04 for recommended Shielding Gas flow rates and other TIG Welding information.

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.

Refer to Section 2.11 Optional Accessories for Optional TIG Torches and their Ratings.

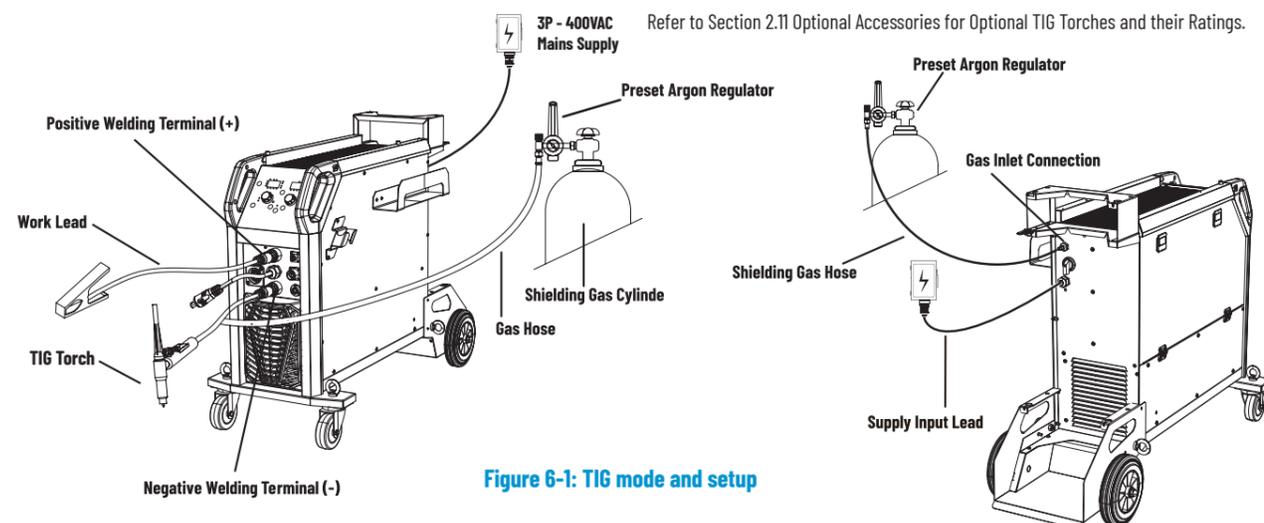
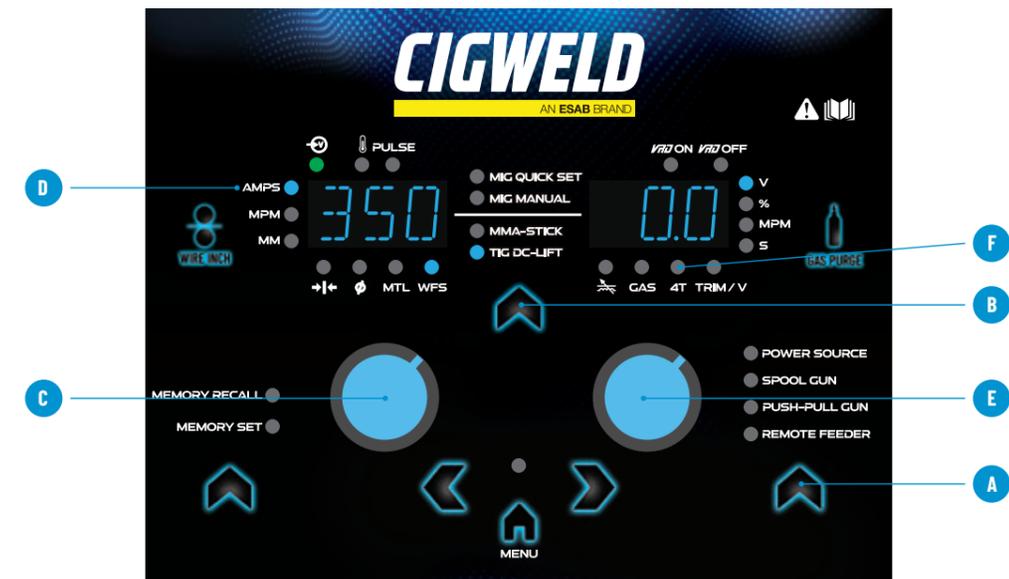


Figure 6-1: TIG mode and setup



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.



A DEVICE SELECTION BUTTON
Select Power Source.

B PROCESS SELECTION BUTTON
Select TIG DC-Lift.

C LEFT CONTROL KNOB
USE THIS TO SET THE AMPS VALUE
Turn Left Control Knob clockwise to increase or counterclockwise to decrease AMPS value.

D AMPS AMPS
In TIG DC-Lift Mode the pre-set (preview) Welding AMPS are able to be set. Welding Current (AMPS) Range is 20-350 AMPS.

E RIGHT CONTROL KNOB
PRESS TO STEP THROUGH SELECTIONS AND SELECT OPTIONS IN TIG DC-LIFT MODE
Selections are: **4T** Trigger Mode (2T/4T) and **TRIM/V** Volts. Note Volts are not able to be adjusted.

F 4T TRIGGER MODE
The trigger mode control is used to switch the functionality of the TIG Torch trigger between 2T (normal) and 4T (latch mode).

2T NORMAL MODE
In this mode, the TIG Torch trigger must remain depressed for the welding output to be active. Press and hold the TIG Torch trigger to activate the power source (weld). Release the TIG Torch trigger switch to cease welding.

4T LATCH MODE
This mode of welding is mainly used for long welding runs to reduce operator fatigue. In this mode the operator can press and release the TIG Torch trigger and the output will remain active. To deactivate the power source, the TIG Torch trigger switch must again be depressed and released, thus eliminating the need for the operator to hold the TIG Torch trigger.

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.

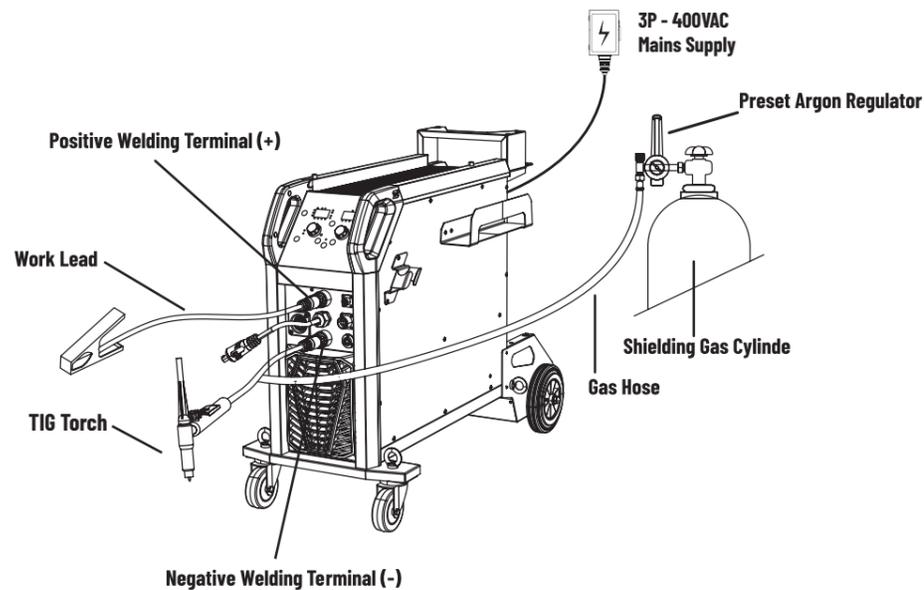


Figure 6-2: Shielding Gas Connection

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

Post Flow Gas should be set at a **minimum of 5-seconds** for every "mm" thickness of the **tungsten electrode** being used for the welding.

1.6mm Tungsten = 8/Sec | 2.4mm Tungsten = 12/Sec | 3.2mm Tungsten = 16/Sec

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

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 handling 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.

- NEVER** subject the Regulator/Flowmeter to an inlet pressure greater than its rated inlet pressure.
- 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 safely released. Under pressure, gas can dangerously propel a loose part.
- 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.
- 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.
- 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.

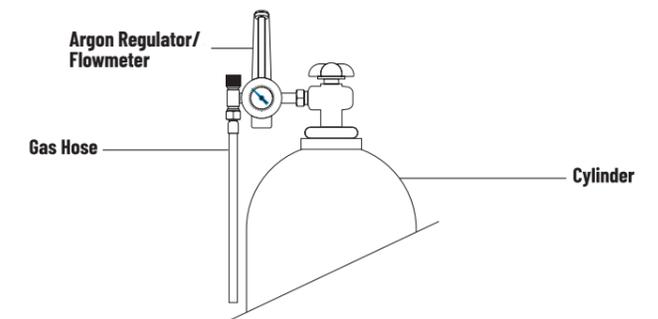


Figure 6-3: Fit Regulator/flowmeter to Cylinder



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

- 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.
- 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 outlet hose firmly and attach the hose to the welding machine with a suitable hose clamp. Ensure no gas leakage. The flowmeter must be in the vertical position to read accurately.

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.

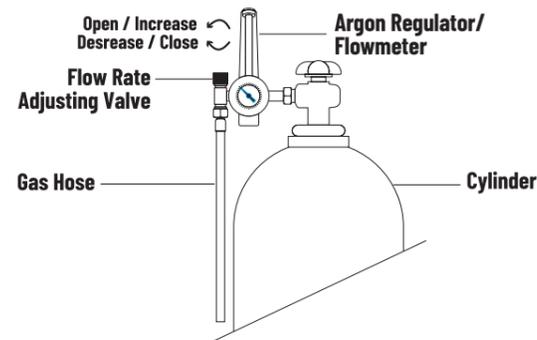


Figure 6-4: Adjust Flow Rate

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 shielding gas to discharge from Regulator/Flowmeter by opening the TIG Torch Gas Valve. Bleed welding grade shielding gas into a well ventilated area. Turn the Flow Rate Adjusting Valve clockwise, until the required flow rate is indicated on the gauge.
3. **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
4. **Post Flow Gas** should be set at a minimum of 5-seconds for every "mm" thickness of the tungsten electrode being used for the welding. 1.6mm Tungsten = 8/Sec | 2.4mm Tungsten = 12/Sec | 3.2mm Tungsten = 16/Sec Finished TIG welds that have a black, dark grey or grey surface finish are not good welds - you need more gas. Welds should be shiny, silver or gold appearance. The flow rate is measured at the middle of the float ball.

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.



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.

6.03 TIG TUNGSTEN ELECTRODES AND FILLER RODS

ELECTRODE DIAMETER		DC CURRENT (AMPS)	GUIDE FOR SELECTING FILLER WIRE DIAMETER	
			FILLER WIRE DIAMETER	DC CURRENT RANGE (AMPS)
0.040" (1.0mm)		30-60	1/16" (1.6mm)	20-90
1/16" (1.6mm)		60-115	3/32" (2.4mm)	65-115
3/32" (2.4mm)		100-165	1/8" (3.2mm)	100-165
1/8" (3.2mm)		135-200		

TUNGSTEN ELECTRODE TYPES

ELECTRODE TYPE (GROUND FINISH)	WELDING APPLICATION	FEATURES	COLOUR CODE
3T Rare Earth	Suitable for AC and DC 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 XF353 TIG WELDING FILLER RODS SELECTION CHART

DESCRIPTION	CLASS. AUS/ NZ STD (NEW)	CLASS. AWS STD	DIA (mm)	PACK	P/N:	APPLICATION
Comweld LW1-6	R6	ER70S-6	1.6	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 recoended 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
			2.4	5kg Pack	321418	
Comweld LW1	R4	ER70S-4	1.6	5kg Pack	321411	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 recoended 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
			2.4	5kg Pack	321412	
Comweld Super Steel	R2	ER70S-2	1.6	5kg Pack	321370	Comweld Super Steel is a copper coated 'triple deoxidised' steel welding rod recoended 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.
			2.4	5kg Pack	321373	
Comweld CrMo1	RB2	ER80S-B2	2.4	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 recoended 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 XF353 TIG WELDING FILLER RODS SELECTION CHART

DESCRIPTION	CLASS. AUS/ NZ STD (NEW)	CLASS. AWS STD	DIA (mm)	PACK	P/N:	APPLICATION
Comweld CrMo2	RB3	ER90S-B3	2.4	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 recoended 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	1.6	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 recoended for the critical welding of 304 and 304L stainless steels in corrosion resistant and cryogenic applications.
			2.4	5kg Pack	321407	
Comweld 309L	R309L	ER309L	1.6	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.
			2.4	5kg Pack	321404	
Comweld 316L	R316L	ER316L	1.6	5kg Pack	321400	Comweld 316L stainless steel is a high quality low carbon rod for 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.
			1.6	25 Rod Handypack	322054	
			2.4	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"	35-45	20-30	0.040"	1/16"	5-7	Butt/Corner Lap/Fillet
1.0mm	40-50	25-35	1.0mm	1.6mm		
0.045"	45-55	30-45	0.040"	1/16"	5-7	Butt/Corner Lap/Fillet
1.2mm	50-60	35-50	1.0mm	1.6mm		
1/16"	60-70	40-60	1/16"	1/16"	8	Butt/Corner Lap/Fillet
1.6mm	70-90	50-70	1.6mm	1.6mm		
1/8"	80-100	65-85	1/16"	3/32"	8	Butt/Corner Lap/Fillet
3.2mm	90-115	90-110	1.6mm	2.4mm		
3/16"	115-135	100-125	3/32"	1/8"	12	Butt/Corner Lap/Fillet
4.8mm	140-165	125-150	2.4mm	3.2mm		
1/4"	160-175	135-160	1/8"	5/32"	16	Butt/Corner Lap/Fillet
6.4mm	170-200	160-180	3.2mm	4.0mm		

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.

6.04 TIG (GTAW) WELDING PROBLEMS

PROBLEM	POSSIBLE CAUSE	REMEDY
1 Mains Supply Voltage is On, the On/Off switch on the rear panel is in the On position and the Front Control Panel Digital Displays are illuminated however the power source will not weld in TIG DC-Lift.	<p>A Power source is not in the correct mode of operation.</p> <p>B Work Lead is not connected to the work piece.</p>	<p>A Set the power source to TIG DC-Lift mode. Refer to Section 6.01.</p> <p>B Ensure that the Work Lead is connected to the work piece and has a good connection to the work piece.</p> <p>C Ensure that the Work Lead is connected to the positive welding terminal (+). If in doubt, consult the electrode manufacturer. It is essential, that the male DINSE type plug is inserted and turned securely to achieve a sound electrical connection.</p> <p>D Ensure that the TIG Torch is connected to the negative welding terminal (-). If in doubt, consult the electrode manufacturer. It is essential, that the male DINSE type plug is inserted and turned securely to achieve a sound electrical connection.</p>
2 The power source will not commence welding when the Torch Trigger switch is depressed and Over Temperature Error Code 01 is showing on the Front Panel Displays.	This indicates an Over Temperature condition has occurred. Refer to Section 8.06 Error Codes for further detail. Duty cycle of power source has been exceeded.	Leave the power source switched ON and allow it to cool. Note that Over Temperature Error Code must be cleared from the Front Panel Displays prior to commencement of welding.
3 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.
4 Weld bead too wide and flat or undercut at edges of weld or excessive burn through.	Welding current is too high	Decrease weld current.
5 Weld bead too small or insufficient penetration or ripples in bead are widely spaced apart.	Travel speed too fast	Reduce travel speed.
6 Weld bead too wide or excessive bead build up or excessive penetration in butt joint.	Travel speed too slow	Increase travel speed.
7 Uneven leg length in fillet joint	Wrong placement of filler rod	Re-position filler rod.

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

SECTION 7: STICK (MMAW) WELDING

7.01 SETUP FOR STICK (MMAW) 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.** Select MMA-Stick mode with the Process Selection Button. Refer to section 4.02 (B).

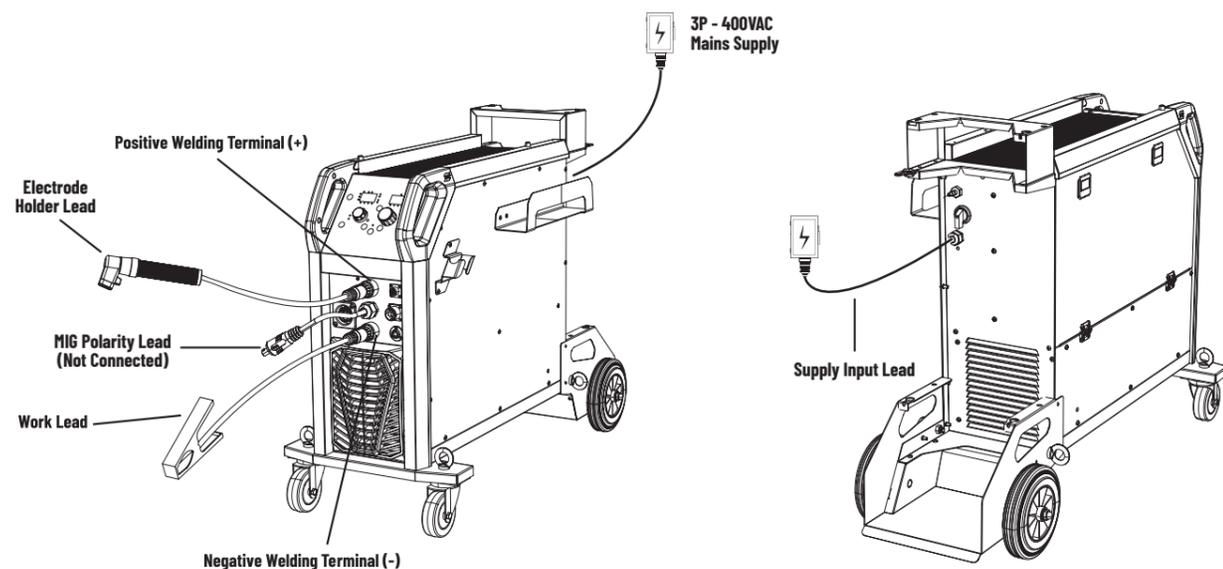
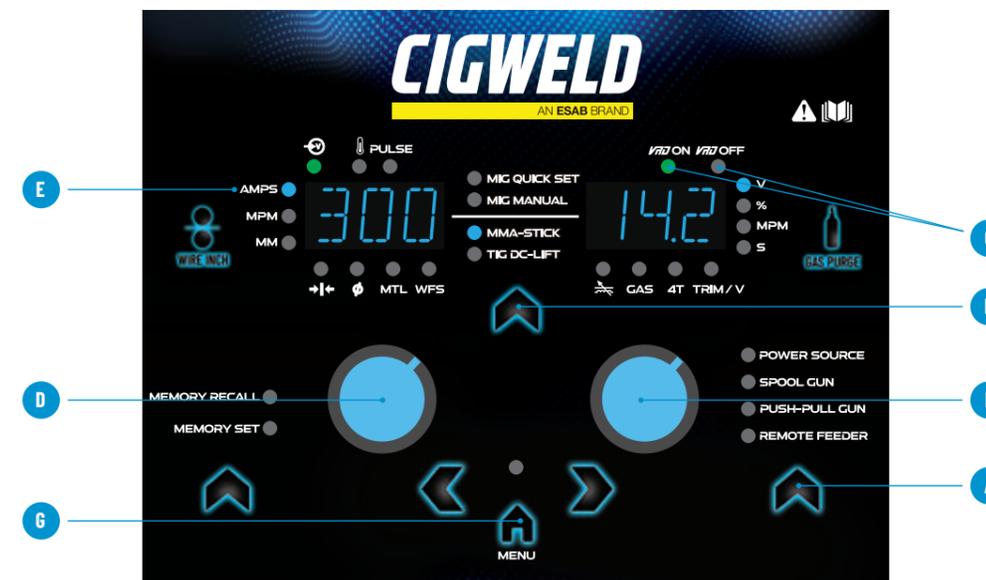


Figure 7-1: Setup for STICK (MMAW) Welding



A **DEVICE SELECTION BUTTON**
Select Power Source.

B **PROCESS SELECTION BUTTON**
Select **MMA-STICK** MMA-Stick Mode.

C **VRD ON/OFF INDICATORS (MMA-STICK MODE)**

VRD ON VRD ON

The green VRD ON indicator illuminates when the VRD is active. Under this condition the open circuit voltage of the unit is limited to below 35V DC, thus reducing the potential of serious electric shock (such as when changing electrodes).

VRD OFF VRD OFF

The red VRD OFF 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 35V DC.

D **LEFT CONTROL KNOB**
USE THIS TO SET THE AMPS VALUE

Turn Left Control Knob clockwise to increase or counterclockwise to decrease AMPS value.

E **AMPS AMPS**

In MMA-Stick Mode the pre-set (preview) Welding AMPS are able to be set. Welding Current (AMPS) Range is 20-300 AMPS.

F **RIGHT CONTROL KNOB**
ADVANCED SETTINGS VALUES ARE ABLE TO BE SET.

Turn Right Control Knob clockwise to increase or counterclockwise to decrease value.

G **MENU BUTTON**

PRESS THE MENU BUTTON TO ACCESS ADVANCED SETTINGS MENU

HOT START (HOT)

This feature operates in MMA-STICK mode.

- Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Hot Start (HOT). Once selected use the Right Control Knob to set the desired value.

- The Hot Start feature improves the arc start characteristics by momentarily increasing the welding current to a level above the preset amperage (Welding Current). This parameter has an adjustment range of AUT, 0- 10. Factory setting for Hot Start is Auto (AUT).
- Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

ARC FORCE (ARC)

This feature operates in MMA-STICK mode.

- Press the Menu Button then the Forward and Back Menu Arrow Buttons to cycle through the Advanced Settings until reaching Arc Force (ARC). Once selected use the
- Right Control Knob to set the desired value.
- The Arc Force can be particularly beneficial in providing the operator the ability to compensate for variability in poor joint fit-up in certain situations. The Arc Force allows greater penetration control to be achieved. Arc Force is automatically increased depending on the welding amperage.
- This parameter has an adjustment range of AUT, 0- 10. Factory setting for Arc Force is Auto (AUT).
- Once set exit Advanced Settings by pressing the Menu Button and the Menu indicator will turn off.

ANTI STICK (PRE-SET AND NOT ADJUSTABLE)

This feature operates in MMA-STICK 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.

7.02 ARC WELDING ELECTRODES

Manual Metal Arc Welding (MMAW) 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.

7.03 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, cellulose types for welding large diameter pipes, 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 (mm)	PACK	P/N:	APPLICATION
Satincraft 13	B E4313 A	E6013	2.5	2.5kg Pack	612182	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.
			3.2	2.5kg Pack	612183	
			4.0	5kg Pack	611184	
WeldSkill GP General Purpose Welding	B E4313 A	E6013	2.0	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.
			2.0	1.0Kg Pack	WEG1020	
			2.0	2.5Kg Pack	WEG2520	
			2.5	20 Rod Handypack	WEG0225	
			2.5	1.0Kg Pack	WEG1025	
			2.5	2.5Kg Pack	WEG2525	
			2.5	5.0Kg Pack	WEG5025	
			3.2	1.0Kg Pack	WEG1032	
			3.2	2.5Kg Pack	WEG2532	
			3.2	5.0Kg Pack	WEG5032	
FERROCRAFT 61	B E4918 A U H10	E7018	2.5	5.0Kg Pack	611342	Ferrocraft 61 is the latest smooth running, user friendly hydrogen controlled electrode from CIGWELD. Ferrocraft 61 gives improved side wall wash and reduced undercut at weld toes and produces very low spatter levels for an electrode of its type. Fillet weld shape is excellent and exhibits a true mitre to slightly convex profile. Improved arc characteristics and stability on low Open Circuit Voltage welding machines (≥55 O.C.V.) ensure Ferrocraft 61 has the high operator appeal Welders demand from today's manual arc electrodes.
			3.2	5.0Kg Pack	611343	
			4.0	5.0Kg Pack	611344	
			5.0	5.0Kg Pack	611345	
OK 53.16 Spezial	B E4916 A U H10	E7016	2.5	1.8Kg Pack	53162534G1	OK 53.16 is a double-coated electrode combining the running characteristics of a rutile electrode with the mechanical properties of a basic electrode. OK 53.16 welds on both AC and DC and the spatter loss is minimal.
			3.2	1.6Kg Pack	53163234G0	
			4.0	2.2Kg Pack	53164044G0	
WeldSkill WELDIT ALL Dissimilar Steel Welding	B ES312-17	E312-17	2.5	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 recoended 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 Recoended for Welding Cast Irons
			2.5	1.0Kg Pack	WEW1025	
			3.2	10 Rod Handypack	WEW0232	
			3.2	1.0Kg Pack	WEW1032	

CIGWELD ELECTRODE SELECTION CHART

DESCRIPTION	CLASS. AUS/ NZ STD (NEW)	CLASS. AWS STD	DIA (mm)	PACK	P/N:	APPLICATION
WELDSKILL 316L STAINLESS STEEL WELDING	E316L-16	E316L-16	2.0	1.0Kg Pack	WES316120	WELDSKILL 316L stainless steel electrode has been formulated for the all positional (except verticaldown) fillet and butt welding of stainless steels. 316L produces low spatter levels with a smoothrunning bead. Weldskill 316L is suitable for a wide range of Molybdenum bearing stainless steels, suitable for the general-purpose welding of other Austenitic stainless steels including 301, 302, 303 and 304/304L, 305, 3CR12 types. WeldSkill 316L is also suitable for the general welding of 400 series stainless steels including 410 and 430.
			2.5	1.0Kg Pack	WES316125	
			3.2	1.0Kg Pack	WES316132	
WeldSkill HARDA Hardfacing	1855-A4	-	3.2	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 recoended 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"
			3.2	1.0Kg Pack	WEH1032	
WeldSkill CAST2STEEL Cast Irons & Cast to Steel	-	ENiFe-CI	2.5	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."
			2.5	1.0Kg Pack	WEC1025	
			3.2	10 Rod Handypack	WEC0232	
			3.2	1.0Kg Pack	WEC1032	

Refer to cigweld.com.au for further Stick (MMAW) Welding information

7.04 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.

7.05 STORAGE OF ELECTRODES

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

7.06 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.

7.07 STICK (MMAW) WELDING PROBLEMS

PROBLEM	POSSIBLE CAUSE	REMEDY
1 Mains Supply Voltage is On, the On/Off switch on the rear panel is in the On position and the Front Control Panel Digital Displays are illuminated however the power source will not weld in MMA-Stick Mode.	A Power source is not in the correct mode of operation.	A Set the power source to MMA-Stick mode. Refer to Section 7.01.
	B Work Lead is not connected to the work piece.	B Ensure that the Work Lead is connected to the work piece and has a good connection to the work piece.
2 The power source will not commence welding and Over Temperature Error Code 01 is showing on the Front Panel Displays.	A This indicates an Over Temperature condition has occurred. Refer to Section 8.06 Error Codes for further detail. Duty cycle of power source has been exceeded.	A Leave the power source switched ON and allow it to cool. Note that Over Temperature Error Code must be cleared from the Front Panel Displays prior to commencement of welding.
	3 Gas pockets or voids in weld metal (Porosity)	A Electrodes are damp B Welding current is too high C Surface impurities such as oil grease, paint, etc
4 Crack occurring in weld metal soon after solidification commences	A Rigidity of joint	A Redesign to relieve weld joint of severe stresses or use crack resistance electrodes
	B Insufficient throat thickness	B Travel slightly slower to allow greater build-up in throat
	C Cooling rate is too high	C Preheat plate and cool slowly
5 A gap is left by failure of the weld metal to fill the root of the weld	A Welding current is too low	A Increase welding current
	B Electrode too large for joint	B Use smaller diameter electrode
	C Insufficient gap	C Allow wider gap
	D Incorrect sequence	D Use correct build-up sequence
6 Portions of the weld run do not fuse to the surface of the metal or edge of the joint	A Small electrodes used on heavy cold plate	A Use larger electrodes and preheat the plate
	B Welding current is too low	B Increase welding current
	C Wrong electrode angle	C Adjust angle so the welding arc is directed more into the base metal
	D Travel speed of electrode is too high	D Reduce travel speed of electrode
	E Scale or dirt on joint surface	E Clean surface before welding

SECTION 8: ROUTINE SERVICE REQUIREMENTS AND POWER SOURCE PROBLEMS

8.01 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.

8.02 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.

8.03 CLEANING THE FEED ROLLS

Clean the grooves in the drive rolls frequently. This can be done by using a small wire brush. Also wipe off or clean the grooves on the upper feed roll. After cleaning, tighten the feed roll retaining knobs.

8.04 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 repair.

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

8.05 RESTORE FACTORY DEFAULT SETTINGS

The BLUEVENOM XF353 can have Factory Default Settings restored.

To reset to factory settings hold the Memory and Device Buttons depressed at the same time until a series of dashes display on both of the Front Digital Displays indicating that a Factory Reset has been completed.

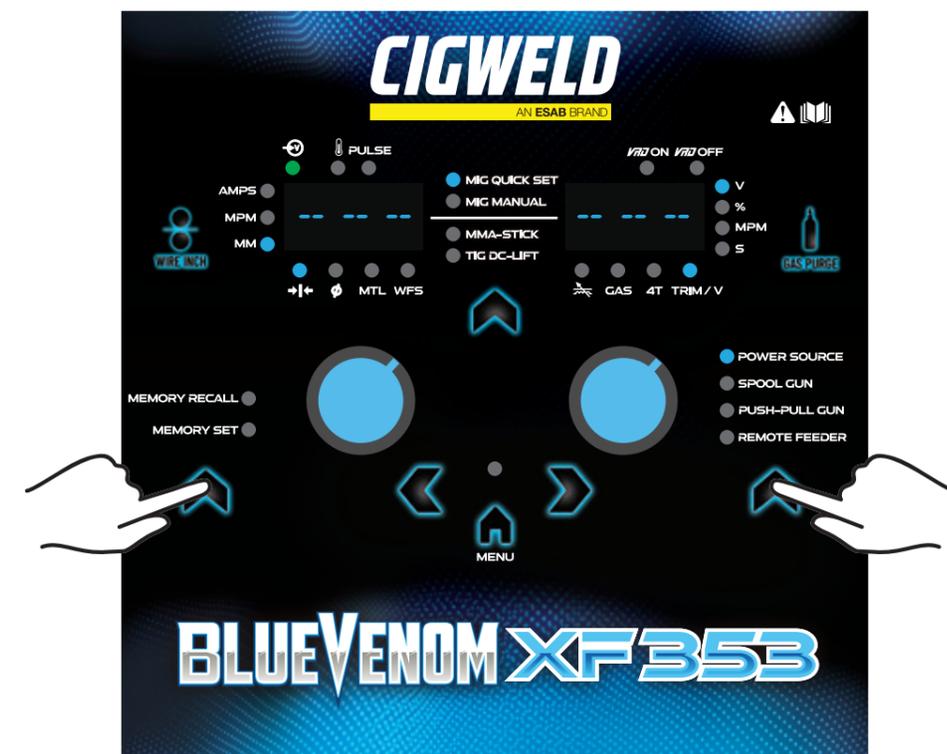
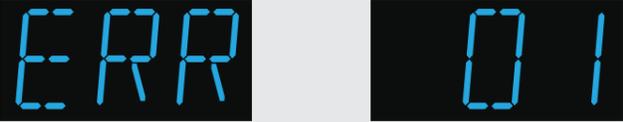
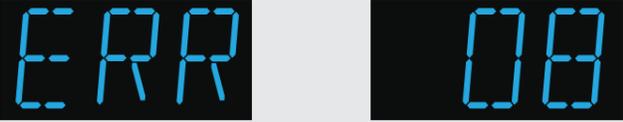
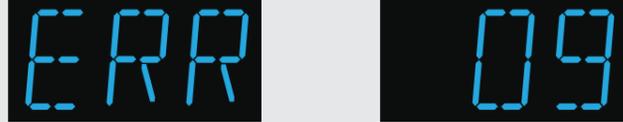
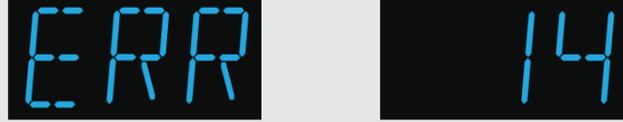


Figure 8-1: Restore to Factory Default Settings

8.06 BLUEVENOM XF353 ERROR CODES

ERROR CODE	CAUSE	REMEDY
<p>OVER TEMPERATURE</p> 	Over Temperature	<p>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.</p> <p>B Check front and rear Panel Air Louvers are clean and not blocked by any dirt or obstacles. If damaged they should be replaced by an Accredited CIGWELD Service Provider.</p> <p>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 Fan on Demand fitted. Refer to 4.01 For further details.</p>
<p>TORCH TRIGGER SIGNAL ISSUE</p> 	Mig Gun or TIG Torch Trigger Switch Issue	<p>A Depending on Welding Mode Selected check that the MIG Gun Trigger Switch or TIG Torch Trigger Switch is not pressed.</p> <p>B MIG Gun or TIG Torch Trigger leads or switch shorted. Turn Off the Power Source and repair or replace Trigger Lead lead or switch.</p> <p>C If Error Code is still present on the Display contact an Accredited CIGWELD Service Provider</p>
<p>OUTPUT OVER CURRENT</p> 	Output Over Current	<p>A Set the Output current according to the XF353 Power Source rating label located on the Rear Panel.</p> <p>B If Error Code is still present on the Display contact an Accredited CIGWELD Service Provider.</p>

ERROR CODE	CAUSE	REMEDY
<p>OUTPUT SHORT CIRCUIT</p> 	Output Short Circuit	<p>A Depending on the Welding Mode selected check that output is not short circuited.eg. MIG Wire Shorted to Workpiece, TIG Torch Tungsten shorted to Workpiece or Stick Electrode shorted to workpiece.</p> <p>B If Error Code is still present on the Display contact an Accredited CIGWELD Service Provider.</p>
<p>WIREFEED MOTOR OVERLOAD</p> 	Wirefeed Motor Overload	<p>A MIG wire jammed in conduit liner or contact tip. (burn-back jam). Check for clogged / kinked MIG torch conduit liner or worn contact tip. Replace faulty components.</p> <p>B Check Feed Roll Pressure adjustment and adjust if necessary. Refer to Section 5.07</p> <p>C Check Wire Reel Brake setting and adjust if necessary. Refer to Section 5.06.</p> <p>D If Error Code is still present on the Display contact an Accredited CIGWELD Service Provider.</p>
<p>LOSS OF SUPPLY PHASE</p> 	Loss of Supply Phase	<p>A Check Supply Plug is correctly connected to Socket.</p> <p>B Check Supply Lead or Plug is not damaged. If damaged turn Off the supply immediately and contact an Accredited CIGWELD Service Provider</p> <p>C If Error Code is still present on the Display contact an Accredited CIGWELD Service Provider.</p>

SECTION 9: KEY SPARE PARTS

9.01 BLUEVENOM XF353 KEY SPARE PARTS

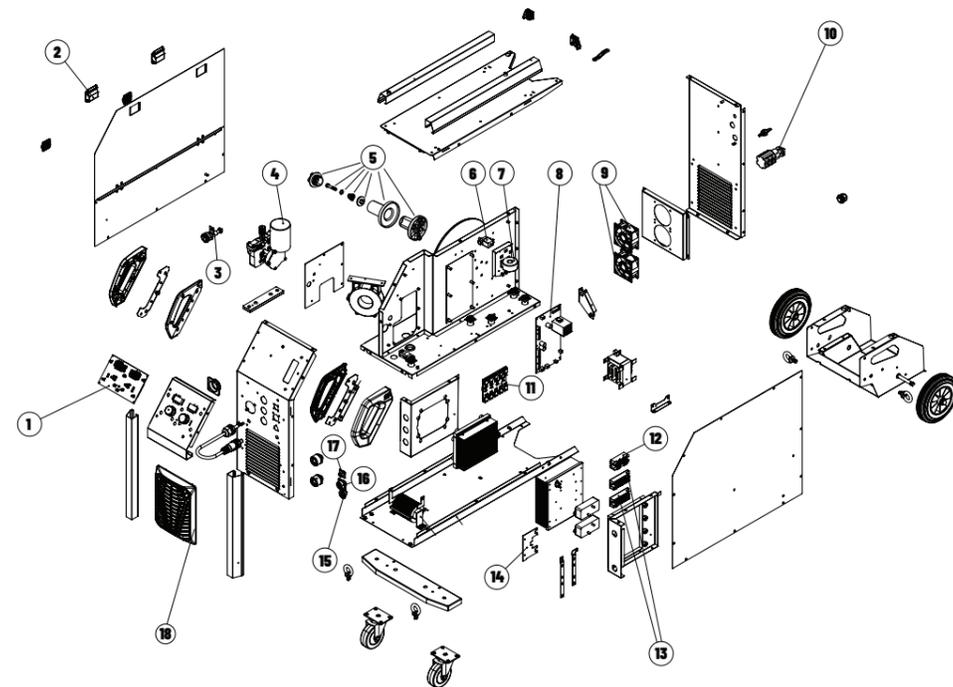
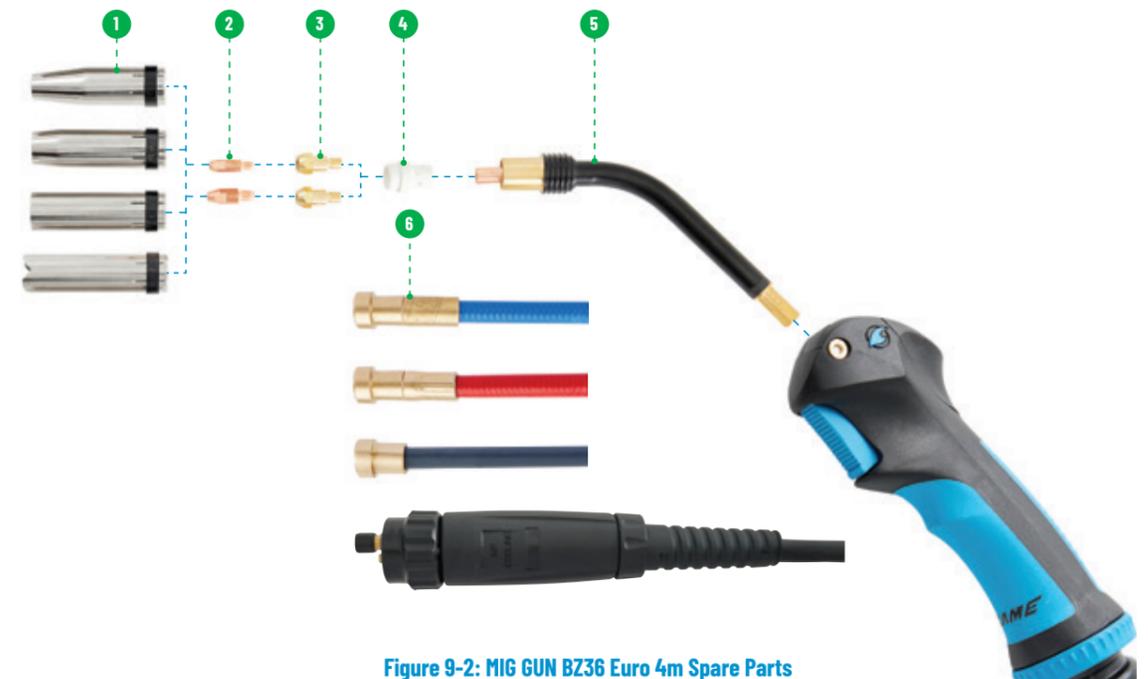


Figure 9-1: BLUEVENOM XF353 Key Spare Parts

BLUEVENOM XF353 POWER SOURCE KEY SPARE PARTS

ITEM	P/N	DESCRIPTION	ITEM	P/N	DESCRIPTION
1	W7007470	PCB Display	10	W7007478	Input Supply On/Off Switch
2	W7007471	Door Latch	11	W7007479	Output Rectifier Module
3	W7007472	Euro MIG Adaptor	12	W7007480	Input Rectifier Module
4	W7006662	Wire Drive Assembly	13	W7007481	IGBT Module
5	W7007473	Spool Hub Assembly	14	W7007482	PCB Driver
6	W7007474	Gas Solenoid Valve	15	W7007483	Control Socket 5 Pin c/w wiring
7	W7007475	PCB EMC	16	W7007484	Control Socket 10 Pin c/w wiring
8	W7007476	PCB Control	17	W7007485	Control Socket 8 Pin c/w wiring
9	W7007477	Fan	18	W7007486	Front Louvre Panel

9.02 MIG GUN BZ36 EURO 4m SPARE PARTS



BINZEL® COMPATIBLE (BZ)

Figure 9-2: MIG GUN BZ36 Euro 4m Spare Parts

MIG GUN BZ36 EURO 4m SPARE PARTS

ITEM	P/N	DESCRIPTION	ITEM	P/N	DESCRIPTION
NOZZLES					
1	BZN3612	Nozzle Tapered, 12mm, Pack of 2	TIP HOLDERS		
	BZN3616	Nozzle Conical 16mm, Pack of 2	3	BZH36M6	Tip Holder M6, Pack of 2
	BZN3620	Nozzle Cylindrical, 20mm, Pack of 2		BZH36M8	Tip Holder M8, Pack of 2
	BZN3620S	Nozzle Spot Weld 20mm, Pack of 2	DIFFUSERS		
CONTACT TIPS M6					
2	BZT6806	Contact Tip 0.6mm M6, Pack of 10	4	BZD36C	Diffuser Ceramic, Pack of 2
	BZT6808	Contact Tip 0.8mm M6, Pack of 10		BZD36	Diffuser Standard, Pack of 2
	BZT6809	Contact Tip 0.9mm M6, Pack of 10	SWAN NECK		
	BZT6810	Contact Tip 1.0mm M6, (Suitable for 0.9mm AL Wires), Pack of 10	5	BZS36	Swan Neck, Pack of 1
	BZT6812	Contact Tip 1.2mm M6, (Suitable for 1.0mm AL Wires), Pack of 10	MULTILINERS		
	BZT6814	Contact Tip 1.4mm M6, (Suitable for 1.2mm AL Wires), Pack of 10	6	CML50609	MultiLiner 0.6-0.9mm Steel 5.1m (No collet), Pack of 1
	BZT6816	Contact Tip 1.6mm M6, Pack of 10		CML50912	MultiLiner 0.9-1.2mm Steel 5.1m (No collet), Pack of 1
CONTACT TIPS M8					
2	BZT81008	Contact Tip 0.8mm M8, Pack of 10		CML51216	MultiLiner 1.2-1.6mm Steel 5.1m (No collet), Pack of 1
	BZT81009	Contact Tip 0.9mm M8, Pack of 10		CML50916A	MultiLiner 0.9-1.6mm Aluminium 4.5m (No collet), Pack of 1
	BZT81010	Contact Tip 1.0mm M8, (Suitable for 0.9mm AL Wires) Pack of 10		CML80916A	MultiLiner 0.9-1.6mm Aluminium 8.5m (No collet), Pack of 1
	BZT81012	Contact Tip 1.2mm M8, (Suitable for 1.0mm AL Wires) Pack of 10		CMLCBZ	MultiLiner Collet suit Binzel, Pack of 1
	BZT81014	Contact Tip 1.4mm M8, (Suitable for 1.2mm AL Wires) Pack of 10		CML5K0609	MultiLiner Kit 0.6-0.9mm Steel 5.1m includes TWE, BZL, BND, ESAB Collets, Pack of 1
	BZT81016	Contact Tip 1.6mm M8, Pack of 10		CML5K0912	MultiLiner Kit 0.9-1.2mm Steel 5.1m includes TWE, BZL, BND, ESAB Collets, Pack of 1
	BZT81018	Contact Tip 1.8mm M8, Pack of 10		CML5K1216	MultiLiner Kit 1.2-1.6mm Steel 5.1m includes TWE, BZL, BND, ESAB Collets, Pack of 1
	BZT81020	Contact Tip 2.0mm M8, Pack of 10		CML5K0916A	MultiLiner Kit 0.9-1.6mm Aluminium 4.5m includes TWE, BZL, BND, ESAB Collets, Pack of 1
	BZT81024	Contact Tip 2.4mm M8, Pack of 10		CML8K0916A	MultiLiner Kit 0.9-1.6mm Aluminium 8.5m includes TWE, BZL, BND, ESAB Collets, Pack of 1

Note: If a replacement MIG Gun for BlueVenom XF353 is required, then please use BZ36E4 MIG Gun for a Standard Duty option (Part No W52BR36E4), or BZ40E4 for a Heavy Duty option (Part No W52BR40E4). Please refer to our website for more information.



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. Not with standing 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 XF353 INVERTER**

WARRANTY	WARRANTY PERIOD (PARTS AND LABOUR)
BLUEVENOM XF353 Power Source	3 Years
ACCESSORIES	WARRANTY PERIOD
MIG Gun, electrode holder lead and work lead	3 Months
MIG Gun consumable items	NIL
Gas Regulator/Flowmeter (excluding seat assembly, pressure gauges, elastomer seals and "O" rings	1 Year
Regulator seat assemblies and pressure gauges	6 Months
Elastomer seals and "O" rings used in the equipment	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.

CIGWELD

AN **ESAB** BRAND



Version No: AC Issue Date: 27-03-2024 Manual No: 0-5708



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Email: enquiries@cigweld.com.au



CIGWELD.COM.AU

In the interest of continuous improvements, CIGWELD Pty Ltd ABN 56 007 226 815 (An ESAB Brand) reserves the right to change specifications or design on any of its products without prior notice.