FABRICATOR

MIG Power Supplies

250C III
320C III
320S III C/W VFE 4C III
400S III C/W VFE 4C III
500S III C/W VFE 4C HS III

Operation Manual

Version No: AW-02 **Issue Date: July 13th, 2012**

Operating Features

WE APPRECIATE YOUR BUSINESS!

Congratulations on your new Thermal Arc 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. To locate your nearest distributor or service agency call Thermadyne Customer Service on (44) 01257 224824.

This Operating Manual has been designed to instruct you on the correct use and operation of your Thermal Arc 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.

YOU ARE IN GOOD COMPANY!

The Brand of Choice for Contractors and Fabricators Worldwide.

Thermal Arc is a Global Brand of Arc Welding Products for Thermadyne Industries. We manufacture and supply to major welding industry sectors worldwide including; Manufacturing, Construction, Mining, Automotive, Aerospace, Engineering, Rural and DIY/Hobbyist.

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 within the welding industry.

WARNINGS

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.

Fabricator 250C III MIG Welding Machine, Part Number - FAB250C
Fabricator 320C III MIG Welding Machine, Part Number - FAB320C
Fabricator 320S III MIG Welding Machine, Part Number - FAB320S
Fabricator 400S III MIG Welding Machine, Part Number - FAB400S
Fabricator 500S III MIG Welding Machine, Part Number - FAB500S

Published by:
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Chorley North Industrial Park
Chorley
Lancashire
PR6 7BX
England

www.thermadyne.com

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Record the following information for Warranty purposes:

Where Purchased: _____

Purchase Date: _____

Equipment Serial #: _____

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SECTION 1: Safety Instructions and Warnings

WARNING

ARC WELDING can be hazardous.
Protect yourself and others from possible serious injury or death. Keep children away. Pace maker wearers keep away until consulting your doctor. Do not lose these instructions. Read operating / instruction manual before installing, operating or servicing this equipment.

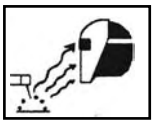
Welding products and welding processes can cause serious injury or death, or damage to other equipment or property, if the operator does not strictly observe all safety rules and take precautionary actions.
Safe practices have developed from past experience in the use of welding and cutting. These practices must be learned through study and training before using this equipment. Anyone not having extensive training in welding and cutting practices should not attempt to weld. Certain practices apply to equipment connected to power lines; other practices apply to engine driven equipment.
Safe practices are out lined in the American National Standard Z49.1 entitled: SAFETY IN WELDING AND CUTTING. This publication and other guides 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.

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 terminal 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.

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 Owner's Manual and national, state, and 10 cal 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, under sized 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.



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.

1. Wear a welding helmet fitted with a proper shade of filter (see ANSI 249.1 listed in Safety Standards) to protect your face and eyes when welding or watching.
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 earplugs or earmuffs if noise level is high.

Eye protection filter shade selector for welding or cutting (goggles or helmet), from AWS A 8.2-73

Welding or Cutting operation	Electrode size Metal Thickness or Welding Current	Filter shade no.	Welding or Cutting operation	Electrode size Metal Thickness or Welding Current	Filter shade no.
Torch soldering	All	2	Gas metal arc welding		
Torch brazing	All	2 or 3	Non Ferrous base metal	All	11
Oxygen cutting			Ferrous base metal	All	12
Light	Under 1 in., 25 mm	3 or 4	Gas tungsten arc welding (TIG)	All	12
Medium	1 – 6 in., 25 – 150 mm	4 or 5	Atomic Hydrogen welding	All	12
Heavy	Over 6 in., 150 mm	5 or 6	Carbon Arc welding	All	12
Gas welding			Plasma arc Welding	All	12
Light	Under 1/8 in., 3 mm	4 or 5	Carbon Arc Gouging		
Medium	1/8 – 1/2 in., 3 – 12 mm	5 or 6	Light		12
Heavy	Over 1/2 in., 12 mm	6 or 8	Heavy		14
Shielded metal-arc welding (stick) electrodes			Plasma arc cutting		
	Under 5/32 in., 4 mm	10	Light	Under 300 Amp	9
	Under 5/32 to ¼ in., 4 to 6.4mm	12	Medium	300 to 400 Amp	12
	Over ¼ in., 6.4 mm	14	Heavy	Over 400 Amp	14

FUMES AND 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 (MSDS) 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 re moved 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 can cause fire or explosion.

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

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

Flying sparks and hot metal can cause Injury

Chipping and grinding cause flying metal. As welds cool, they can throw off slag.

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

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.

WARNING

ENGINES can be dangerous.

ENGINE EXHAUST GASES can kill.

Engines produce harmful exhaust gases

1. Use equipment outside in open, well-ventilated areas.
2. If used in a closed area, vent engine exhaust outside and away from any building air intakes.

ENGINE FUEL can cause fire or explosion.

Engine fuel is highly flammable

1. Stop engine before checking or adding fuel.
2. Do not add fuel while smoking or if unit is near any sparks or open flames.
3. Allow engine to cool before fuelling. If possible, check and add fuel to cold engine before beginning job.
4. Do not overfill tank - allow room for fuel to expand away from any building air intakes.

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. Re-install panels or guards and close doors when servicing is finished and before starting engine.

SPARKS can cause BATTERY GASES TO EXPLODE; BATTERY ACID can burn eyes and skin.

Batteries contain acid and generate explosive gases

1. Always wear a face shield when working on a battery.
2. Stop engine before disconnecting or connecting battery cables.
3. Do not allow tools to cause sparks when working on a battery.
4. Do not use welder to charge batteries or jump start vehicles.

STEAM AND PRESSURIZED HOT COOLANT can burn face, eyes, and skin.

The coolant in the radiator can be very hot and under pressure

1. Do not remove radiator cap when engine is hot. Allow engine to cool.
2. Wear gloves and put a rag over cap area when removing cap.
3. Allow pressure to escape before completely removing cap.

NOTE: Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields

To reduce magnetic fields in the work place, use the following procedures:

1. Keep cables close together by twisting or taping them.
2. Do not coil or drape cables around the body.
3. Arrange cables to one side and away from the operator.
4. Keep welding power source and cables as far away from body as practical.

About Pacemakers: The above procedures are among those also normally recommended for pacemaker wearers. Consult your doctor for complete information.

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1.02 DECLARATION OF CONFORMITY

Manufacturer and Merchandiser of Quality Consumables and Equipment: Thermal Arc
Address: Thermadyne Europe
Europa Building
Chorley North Industrial Park
Chorley
Lancashire
England
PR6 7BX

CE

Description of equipment:
Welding Equipment (GMAW) Thermal Arc Fabricator 250C III, 320CIII, 320S III, 400S III & 500S III and associated accessories.

The equipment described in this manual conforms to all applicable aspects and regulations of the “Low Voltage Legislation“ (Low Voltage Directive (LVD) 2006/95/EC) and to the National legislation for the enforcement of this Directive.

The equipment described in this manual conforms to all applicable aspects and regulations of the “Electromagnetic Compatibility (EMC) Legislation” (Directive 2004/108/EC) and to the National legislation for the enforcement of this Directive.

Serial numbers are unique with each individual piece of equipment and details description, parts used to manufacture a unit and date of manufacture.

National Standard and Technical Specifications:
The product is designed and manufactured to a number of standards and technical requirements. Among them are:

• CENELEC EN50199 EMC Product Standard for Arc Welding Equipment.

• ISO/IEC.60974-1 (BS.638-PT10) (EN.60.974-1) (EN50192) (EN50078) applicable to welding equipment and associatedaccessories.

• For environments with increased hazard of electrical shock, Power Supplies bearing the 'S' mark conform to EN50192 when used in conjunction with hand torches with exposed cutting tips, if equipped with properly installed standoff guides.

• Extensive product design verificatio is conducted at the manufacturing facility as part of the routine design and manufacturing process. This is to ensure the product is safe, when used according to instructions in this manual and related industry standards, and performs as specifed. Rigorous testing is incorporated into the manufacturing process to ensure the manufactured product meets or exceeds all design specifications.

Thermadyne has been manufacturing products for more than 30 years, and will continue to achieve excellence in our area of manufacture.

Manufacturers responsible representative:
Steve Ward
Operations Director,
Thermadyne Europe,
Europa Building,
Chorley N Industrial Park,
Chorley, Lancashire,
England, PR6 7BX.

1.03 STATEMENT OF WARRANTY

In accordance with the warranty periods stated below, Thermadyne guarantees the proposed product to be free from defects in material or workmanship when operated in accordance with the written instructions as defined in this operating manual.

Thermadyne welding products are manufactured for use by commercial and industrial users and trained personnel with experience in the use and maintenance of electrical welding and cutting equipment.

Thermadyne will repair or replace, at its discretion, any warranted parts or components that fail due to defects in material or workmanship within the warranty period. The warranty period begins on the date of sale to the end user.

Thermal Arc Fabricator 250C III, 320C III, 320S III, 400S III & 500S III	
Component	Warranty Period
Power Source	2 Years
Wire Feed Unit	2 Years
Optional Cooler	2 Years

If warranty is being sought, Please contact your Thermadyne product supplier for the warranty repair procedure.

Thermadyne warranty will not apply to:

- Equipment that has been modified by any other party other than Thermadyne's own service personnel or with prior written consent obtained from Thermadyne Service Department.
- Equipment that has been used beyond the specifications established in the operating manual.
- Installation not in accordance with the installation/operating manual.
- Any product that has been subjected to abuse, misuse, negligence or accident.
- Failure to clean and maintain (including lack of lubrication, maintenance and protection), the machine as set forth in the operating, installation or service manual.

Within this operating manual are details regarding the maintenance necessary to ensure trouble free operation.

This manual also offers basic troubleshooting, operational and technical details including application usage.

You may also wish to visit our web site www.thermadyne.com select your product class and then select literature. Here you will find documentation including:

- Operator manuals
- Service manuals
- Product guides

Alternatively please contact your Thermadyne distributor and speak with a technical representative.

NOTE

Warranty repairs must be performed by either a Thermadyne Service Centre, a Thermadyne distributor or an Authorised Service Agent approved by the Company

1.04 SYMBOL LEGEND

	On
	Off
	Dangerous Voltage
	Increase/Decrease
	Circuit Breaker
	AC Auxiliary Power
	Fuse
A	Amperage
V	Voltage
Hz	Hertz (cycles/sec)
f	Frequency
	Negative
	Positive
	Direct Current (DC)
	Protective Earth (Ground)
	Line
	Line Connection
	Auxiliary Power
115V 15A	Receptacle Rating- Auxiliary Power

1 ~	Single Phase
3 ~	Three Phase
	Three Phase Static Frequency Converter-Transformer-Rectifier
	Remote
X	Duty Cycle
%	Percentage
	Panel/Local
	Shielded Metal Arc Welding (SMAW)
	Gas Metal Arc Welding (GMAW)
	Gas Tungsten Arc Welding (GTAW)
	Air Carbon Arc Cutting (CAC-A)
	Constant Current
	Constant Voltage Or Constant Potential
	High Temperature
	Fault Indication
	Arc Force
	Touch Start (GTAW)
	Variable Inductance
V	Voltage Input

	Wire Feed Function
	Wire Feed Towards Workpiece With Output Voltage Off.
	Welding Gun
	Purging Of Gas
	Continuous Weld Mode
	Spot Weld Mode
t	Spot Time
t1	Preflow Time
t2	Postflow Time
	2 Step Trigger Operation Press to initiate wirefeed and welding, release to stop.
	4 Step Trigger Operation Press and hold for preflow, release to start arc. Press to stop arc, and hold for preflow.
t	Burnback Time
IPM	Inches Per Minute
MPM	Meters Per Minute
	Art # A-04130

Figure 2.

SECTION 2: INTRODUCTION AND DESCRIPTION

2.01 How to use this Manual

This Operator owner's manual applies to Part Numbers: FAB250C III, FAB320CIII, FAB320S III, FAB400S III & FAB500S III

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:

WARNING

A WARNING gives information regarding possible personal injury

CAUTION

A CAUTION refers to possible equipment damage

NOTE

A NOTE offers helpful information concerning certain operating procedures

Additional copies of this manual may be purchased by contacting Thermal Arc at the address and phone number given below:

Thermadyne Customer Service
Thermadyne Industries Ltd
Europa Building
Chorley North Industrial Park
Chorley, Lancashire
England, PR6 7BX.
Phone: (44) 01257 261755
Fax: (44) 01257 224842

Include the Owner's Manual number and equipment identification numbers.
Electronic copies of this manual can also be emailed to you at no charge in Acrobat PDF format by contacting Thermadyne Customer Service on (44) 01257 261755.

2.02 Equipment Identification

The unit's identification number (specification or part number), model, and serial number appear on a nameplate fixed to the rear panel. In some cases, equipment which does not have a control panel such as gun and cable assemblies is identified only by the specification or part number printed on the shipping container.
Record the number for future reference.

2.03 Receipt of Equipment

When you receive the equipment, check it against the invoice to make sure 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 distributor you purchased the equipment from.
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 unpacking the unit. Use care to avoid damaging the equipment when using bars, hammers, etc, to unpack the unit.

2.04 Description

The Thermal Arc Fabricators are 400Volt 3 phase MIG machines which offer great performance, A 250A & 320Amp option also a 420Amp output @ 30% duty cycle unit and a 530Amp maximum output @ 25% duty cycle with 30 voltage steps along with separate WFU's, digital meters and cylinder racks. The wire feed unit system has an option of up to 10m interconnection cables. The Wirefeeder has touch panel control pad incorporating spot/stitch timers. The Wirefeeder also benefits from fitted wheels and conveniently fits on a swivel mount on top of the power source or can be lifted off the pivot and carried up on top of equipment or machinery up to 10m away. The Thermal Arc Fabricator range are extremely versatile all round performers that offer excellent performance on mild steel, stainless steel, aluminium, silicon bronze and some hard facing wires with Argon based shielding gases. The Fabricators also gives excellent results on mild steel using Carbon Dioxide shielding gas.
The following instructions detail how to correctly set up the welder and give guidelines on gaining the best production efficiency from the Fabricator. Please read these instructions thoroughly before using your Fabricator welder.

2.05 Safety

The following basic safety rules should always be followed:

- Ensure the machine is correctly installed, if necessary, by a qualified electrician.
- Ensure the Power Supply is grounded correctly (electrically) in accordance with local regulations.
- Excessive heat in the welding cables may cause fire. Never weld with poor electrical connections, damaged welding cables or exceed the welding cable current rating as this will produce excessive heat and may cause a fire.
- Always wear the correct protective clothing for protection from sparks, molten particles and arc rays.
- When welding in confined spaces, always ensure adequate ventilation and constant observation of the operator.
- Keep combustible materials away from the welding area. Have a suitable fire extinguisher close by.
- Never watch the welding arc with naked eyes. Always use and wear a welding mask fitted with the correct filter lens.
- Do not stand on damp ground when welding. For more complete safety advice please read section 1.

2.06 Transporting Methods

These units are equipped with handles mounted on the front panel of power source.
If using a fork lift vehicle, place and secure unit on a suitable pallet before transporting.
If using an overhead crane, ensure correct slings are used before lifting.

2.07 Protective Filter Lenses

Protective filter lenses are provided to reduce the intensity of radiation entering the eye thus filtering out harmful infrared, ultraviolet radiation and a percentage of the visible light. Such filter lenses are incorporated within face shields. To prevent damage to the filter lenses from molten or hard particles an additional hard clear glass or special plastic external cover lens should be used. This cover lens should always be kept in place and replaced before the damage impairs your vision while welding.

Approximate range of welding current	Filter lens required for MIG
Up to 150	Shade 10
150-250	Shade 11
250-300	Shade 12
300-350	Shade 13
Over 350	Shade 14

2.08 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, plainly 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 Thermal Arc. Advice in this regard can be obtained by contacting Thermal Arc.

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

2.09 Duty Cycle

The rated duty cycle of a welding Power Supply is the operating time it may be used at its rated output current without exceeding the temperature limits of the insulation of the component parts. To explain the ten minute duty cycle period the following example is used. Suppose a welding Power Supply is designed to operate at 50% duty cycle, 250 amperes at 28 volts. This means that it has been designed and built to provide the rated amperage (250A) at the rated load voltage (28V), for 5.0 minutes out of every 10 minute period (50% of 10 minutes is 5.0 minutes). During the other 5.0 minutes of the 10 minute period the Power Supply must idle and be allowed to cool. The thermal cut out will operate if the duty cycle is exceeded.

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.

SECTION 3: INSTALLATION RECOMMENDATIONS

3.01 Environment

The Fabricator 250C III, 320C/S III, 400S III & Fabricator 500S III are NOT designed for use in environments with increased hazard of electric shock.
Examples of environments with increased hazard of electric shock are:-

- 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.
- 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.
- Wet or damp hot locations where humidity or perspiration considerably reduces the skin resistance of the human body and the insulation properties of accessories.

3.02 Location

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

- In areas, free from moisture and dust.
- Ambient temperature between 0 degrees C and 40 degrees C.
- In areas, free from oil, steam and corrosive gases.
- In areas, not subjected to abnormal corrosive gases, vibration or shock.
- In areas, not exposed to direct sunlight or rain.
- Place at a distance of 300mm or more from the walls or similar that could restrict natural air flow for cooling.
- The minimum ground clearance for these products is 130mm.

WARNING

Thermal Arc advises that this equipment be electrically connected by a qualified electrician.

3.03 Electrical Input Connections

WARNING

ELECTRIC SHOCK can kill; SIGNIFICANT DC VOLTAGE is present after removal of input power.

DO NOT TOUCH live electrical parts
SHUT DOWN welding power source, disconnect input power employing lockout/tagging procedures.
Lockout/tagging procedures consist of padlocking line disconnect switch in open position, removing fuses from fuse box, or shutting off and red-tagging circuit breaker or other disconnecting device.

3.04 Electrical Input Requirements

Operate the welding power source only from a three-phase 50/60 Hz, AC power supply. The input voltage must match the electrical input voltage shown on the input data label on the unit nameplate. Contact the local electric utility for information about the type of electrical service available, how proper connections should be made, and inspection required.

The line disconnect switch provides a safe and convenient means to completely remove all electrical power from the welding power supply whenever necessary to inspect or service the unit.

Note

This unit is equipped with a three-conductor with earth power cable that is connected at the welding power source end for three-phase electrical input power.

Do not connect an input (BROWN, BLUE or RED) conductor to the ground terminal.
Do not connect the ground (YELLOW/GREEN) conductor to an input line terminal.
Refer to Figure 3:

1 Connect end of ground (YELLOW/GREEN) conductor to a suitable ground. Use a grounding method that complies with all applicable electrical codes.
2 Connect primery power cable ends; line 1, line 2 and line 3 input conductors to the de-energized line disconnect switch.
3 Use the below table as a guide to select line fuses for the disconnect switch.

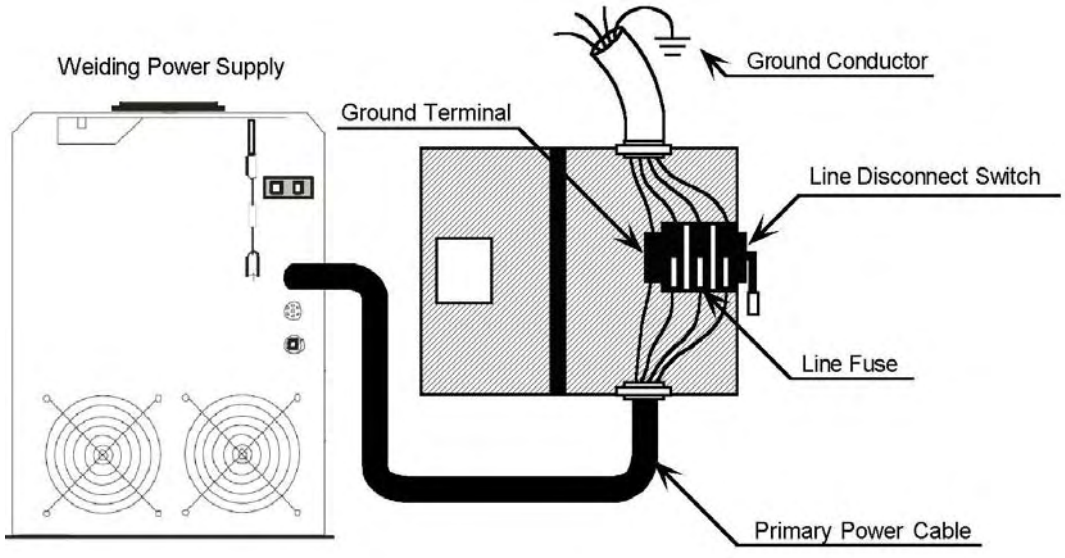
Input Voltage	Fuse Size
3Phase 400 VAC	32 Amps

Electrical Input Connections

Note

Fuse size are based on not more than 200 percent of the rated input amperage of the welding power source (please refer beck to the local Electrical Codes).

Figure 3.



Electrical Input Connections

3.05 Input Power

Note

Note the available input power. Damage to the machine could occur if 460VAC or higher is applied.

The following 400V Primary Current recommendations are required to obtain the maximum welding current and duty cycle from this welding equipment:

Model	Primary Supply Lead Size (Factory Fitted)	Primary Current Circuit Size (Vin/Amps)	Max Current & Duty Cycle
Fabricator 250C III	4 core 2.5mm sq	400 / 14A	250 @ 30%
Fabricator 320C III	4 core 2.5mm sq	400 / 17.5A	340 @ 25%
Fabricator 320S III	4 core 2.5mm sq	400 / 17.5A	340 @ 25%
Fabricator 400S III	4 core 4mm sq	400V / 24A	420 @ 30%
Fabricator 500S III	4 core 4mm sq	400V / 43A	530 @ 25%

WARNING

Exceeding the duty cycle ratings will cause the thermal overload protection circuit to become energized and shut down the output until the unit has cooled to normal operating temperature.

CAUTION

Continually exceeding the duty cycle ratings can cause damage to the welding power source and will void the manufactures warranty.

NOTE

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.

3.06 Specifications

	FABRICATOR 250C III		FABRICATOR 320C / 320S III	
PRIMARY				
Mains Input Voltage	3ph 400V 50Hz		3ph 400V 50Hz	
Mains protection rating	16A slow blow		16A slow blow	
Maximum power consumption	11.76 kVA		14.8 kVA	
Power factor cos φ	0.9		0.9	
SECONDARY				
Current range I2	40A - 250A		40A - 340A	
Open circuit voltage U20	19.4 - 45.4V		18.2 - 44.9V	
Welding current I2	250A	Duty Cycle 30%	340A	Duty Cycle 20%
Output Voltage U2	26.5V		31V	
Welding current I2	200A	Duty Cycle 60%	230A	Duty Cycle 60%
Output Voltage U2	24V		25.5V	
Welding current I2	170A	Duty Cycle 100%	200A	Duty Cycle 100%
Output Voltage U2	22.5V		24V	
Selection range (switched steps)	10		12	
WIRE FEEDER				
Supply voltage	N/A		24Vac	
Speed	1-19 m/min		1-19 m/min	
Number of feed rolls	2		4	
Spool + Spool weight	max 300mm + 18 kg		max 300mm + 18 kg	
Dimensions H x W x D	N/A		510 x 270 x 700 mm	
SAFETY				
Protection	IP 23S		IP 23S	
Insulation class	F		F	
Standards	CE / EN 60 974-1 / EN 51099		CE / EN 60 974-1 / EN 51099	
Weight	76kg		C=99kg S=120kg	
Dimensions H x W x D (fully assembled)	800 x 380 x 870 mm		800 / 1360 x 380 x 870 mm	

Thermal Arc continuously strives to produce the best product possible and therefore reserves the right to change, improve or revise the specifications or design of this or any product without prior notice. Such updates or changes do not entitle the buyer of equipment previously sold or shipped to the corresponding changes, updates, improvements or replacement of such items.

Specifications

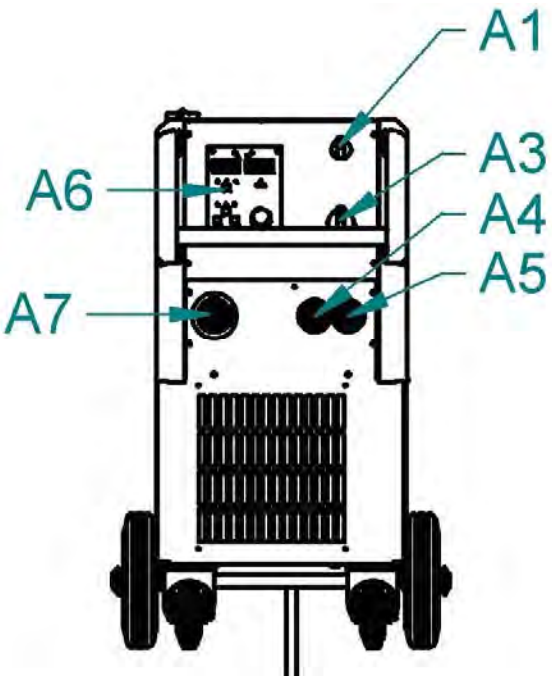
	FABRICATOR 400S III		FABRICATOR 500S III	
PRIMARY				
Mains Input Voltage	3ph 400V 50Hz		3ph 400V 50Hz	
Mains protection rating	32A slow blow		32A slow blow	
Maximum power consumption	16.7 kVA		28.5 kVA	
Power factor cos φ	0.9		0.9	
SECONDARY				
Current range I2	55A - 420A		70A - 520A	
Open circuit voltage U20	19.3 - 48.0V		20.2 - 59.8V	
Welding current l2	420A	Duty Cycle 30%	530A	Duty Cycle 25%
InputS1 / current I1	16,7kVA/24,2A		25.5kVA/43.4A	
Welding current l2	320A	Duty Cycle 60%	400A	Duty Cycle 60%
InputS1 / current I1	12,4kVA/18,0A		16.8kVA/24.7A	
Welding current l2	260A	Duty Cycle 100%	320A	Duty Cycle 100%
InputS1 / current I1	9,5kVA/13,6A		12.0kVA/17.8A	
Selection range (switched steps)	2 & 10		3 & 10	
WIRE FEEDER				
Supply voltage	24Vac		24Vac	
Speed	1-19 m/min		1-25 m/min	
Number of feed rolls	4		4	
Spool + Spool weight	max 300 mm + 18 kg		max 300mm + 18 kg	
Dimensions H x W x D	510 x 270 x 700 mm		510 x 270 x 700 mm	
SAFETY				
Protection	IP 23S		IP 23S	
Insulation class	F		F	
Standards	CE / EN 60 974-1 / EN 51099		CE / EN 60 974-1 / EN 51099	
Weight	133kg		161kg	
Dimensions H x W x D (fully assembled)	1360 x 380 x 870 mm		1430 x 440 x 870 mm	

Thermal Arc continuously strives to produce the best product possible and therefore reserves the right to change, improve or revise the specifications or design of this or any product without prior notice. Such updates or changes do not entitle the buyer of equipment previously sold or shipped to the corresponding changes, updates, improvements or replacement of such items.

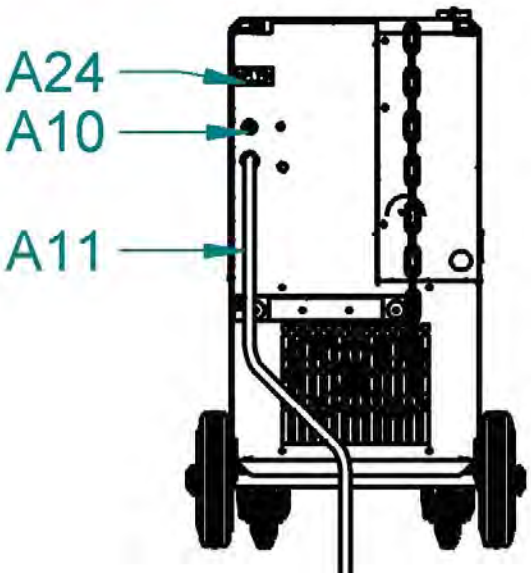
SECTION 4: OPERATOR CONTROLS

4.01 Fabricator Layout – 250C III & 320C III Compact Unit

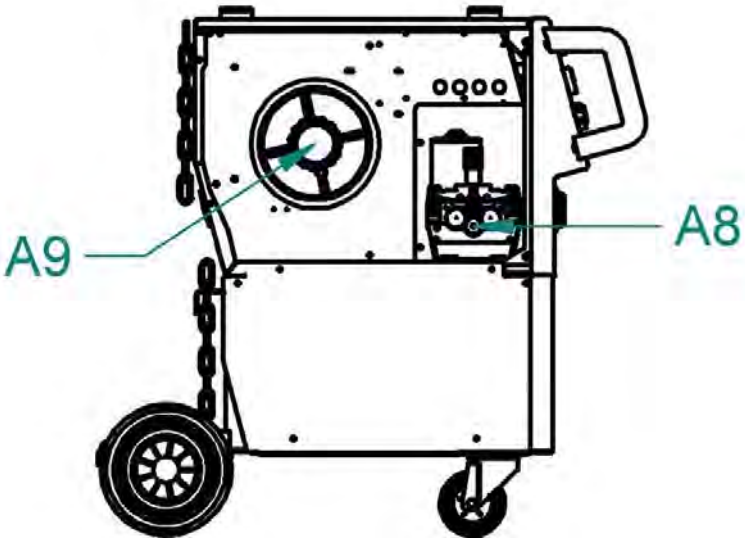
Figure 4.



Power Source Front



Power Source Back



Power Source WFU Side

A1. ON/OFF Switch This switch connects the Primary supply voltage to the power supply when in the 'ON' position. This enables the Power Supply.

A3. Voltage Control Switch The Voltage Control switch increases the voltage as it is rotated in the clockwise direction. (10 position switch on the Fabricator 250C III and a 12 position switch on the 320C III)

A4. Negative Welding Terminal The negative welding current flows from the Power Source via the heavy duty DINSE terminals to the Metal plate via an earth lead. It is essential, that the male plug is inserted and turned securely to achieve a sound electrical connection. (Compact 250C & 320C, maybe located in different position on front panel)

A5. Negative Welding Terminal A second negative polarity output from the Power Source that offers two inductances of different values to the Metal plate via an earth lead. It is essential, that the male plug is inserted and turned securely to achieve a sound electrical connection. (Compact 320C only, maybe located in different position on front panel)

 ***WARNING***

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

A6. Control Panel see section 5.01 for further information

A7. Euro Torch Adaptor Euro torch connection that accepts Euro style MIG torches.

A8. Wire Feed Motor & Feed Roll Assembly

A9. Wire Spool Holder

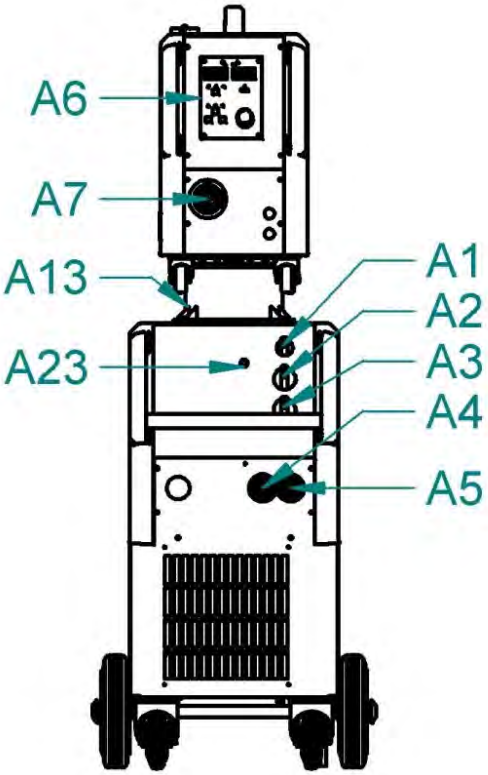
A10. Gas inlet The Gas Inlet connections is a 3/8 BSP male gas fitting supplied via the gas hose..

A11. Primary Power Cable The input cable connects the Primary supply voltage to the equipment, see Section 3.04 for electrical input requirements.

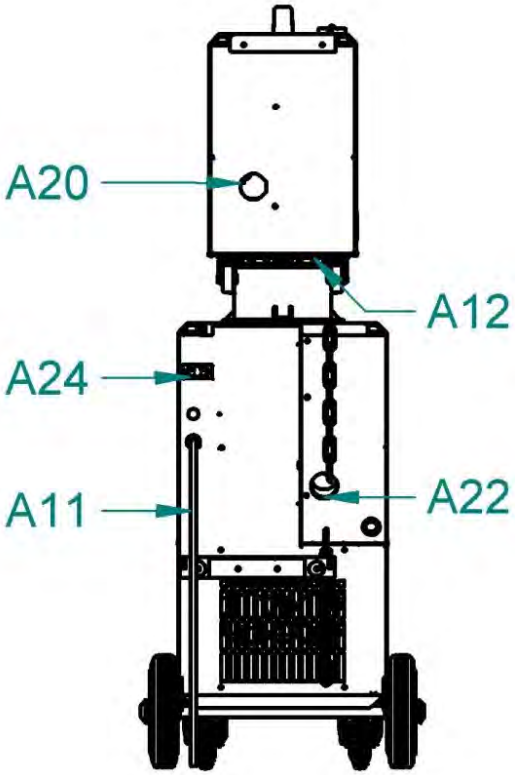
A24. Gas Heater Outlet – An option that is not installed on this unit.

4.02 Fabricator Layout – 320S III & 400S III C/W VFE 4C III Wire Feed Unit

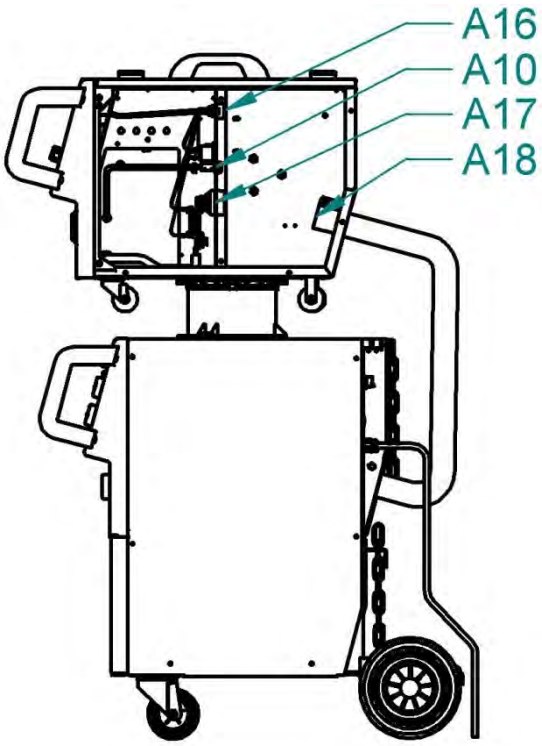
Figure 5.



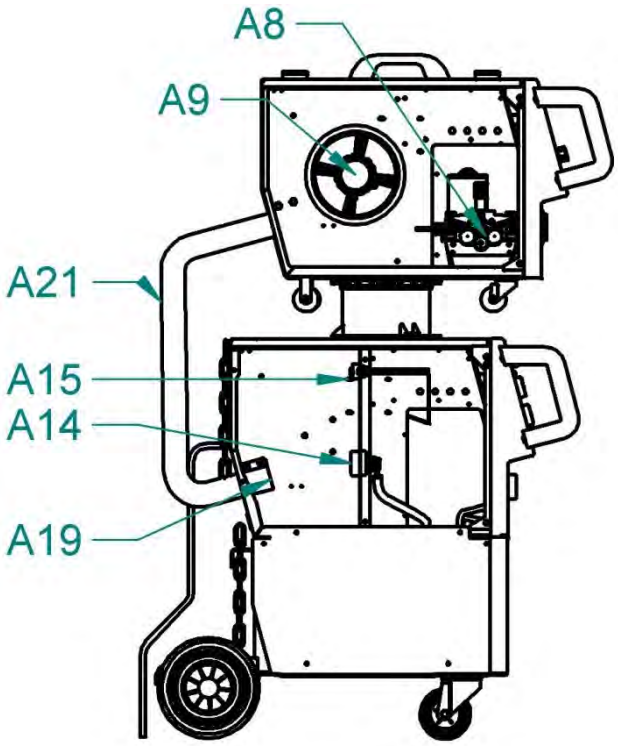
Power Source Front



Power Source Back



Power Source Connection Side



Power Source WFU Side

A1. ON/OFF Switch This switch connects the Primary supply voltage to the power supply when in the 'ON' position. This enables the Power Supply.

A2. Course Voltage Control Switch This Voltage Control switch increases the voltage as it is rotated in the clockwise direction. (2 position switch on the Fabricator 400S III Only)

A3. Fine Voltage Control Switch The Voltage Control switch increases the voltage as it is rotated in the clockwise direction. (10 position switch on the Fabricator 400S III and 12 position switch on the 320S III)

A4. Negative Welding Terminal The negative welding current flows from the Power Source via the heavy duty DINSE terminals to the Metal plate via an earth lead. It is essential, that the male plug is inserted and turned securely to achieve a sound electrical connection. (maybe located in different position on front panel)

A5. Negative Welding Terminal A second negative polarity output from the Power Source that offers two inductances of different values to the Metal plate via an earth lead. It is essential, that the male plug is inserted and turned securely to achieve a sound electrical connection. (maybe located in different position on front panel)

A6. Control Panel see section 5.01 for further information

A7. Euro Torch Adaptor Euro torch connection that accepts Euro style MIG torches.

A8. Wire Feed Motor & Feed Roll Assembly

A9. Wire Spool Holder

A10. Gas inlet The Gas Inlet connections is a 3/8 BSP male gas fitting supplied via the gas hose on the interconnecting lead.

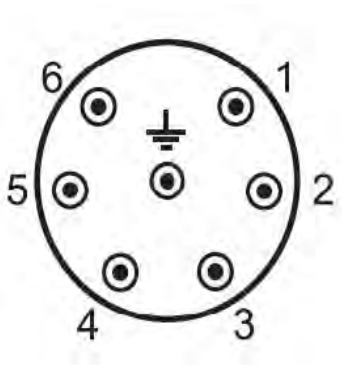
A11. Primary Power Cable The input cable connects the Primary supply voltage to the equipment, see Section 3.04 for electrical input requirements.

A12. Wire Feed Holder Bolts to underside of WFU to support the WFU

A13. Wire Feed Holder Bolts to top of Power Source to support the WFU

A14. Positive Welding Terminal The Positive welding current flows from the Power Source via the heavy duty DINSE terminals to the WFU via the interconnecting lead. It is essential, that the male plug is inserted and turned securely to achieve a sound electrical connection.

A15. Wirefeeder Control Socket outlet This Female 7 pin receptacle is used to connect a Wirefeeder to the welding power Source circuitry: To make connections, align keyway, insert plug, and rotate threaded collar fully clockwise. The socket information is included in the event the supplied cable is not suitable and it is necessary to rewire a plug.



Pin 1 - 24Vac supply to WFU
Pin 2 - 0Vac
Pin 3 - Contactor return
Pin 4 - Thermal overload Signal
Pin 5 - Cooling error signal
Pin 6 - Welding volt age +
Pin 7 - Ground connection

A16. Wirefeeder Control Socket inlet, This male 7 pin receptacle is used to connect a Wirefeeder from the welding power source circuitly.

A17. Gas inlet The Gas Inlet connections, a quick fit connector supplied via the gas hose from the interconnecting lead.

A18. Interconnecting lead Clamp WFU

A19. Interconnecting lead Clamp Power Source

A20. Interconnecting lead inlet WFU

A21. Air Cooled Interconnecting Lead

A22. Interconnecting lead outlet Power Source

A23. Thermal Overload Indicator An indicator to inform the operator if the power source overheats.

A24. Gas Heater Outlet – An option that is not installed on this unit.

WARNING

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

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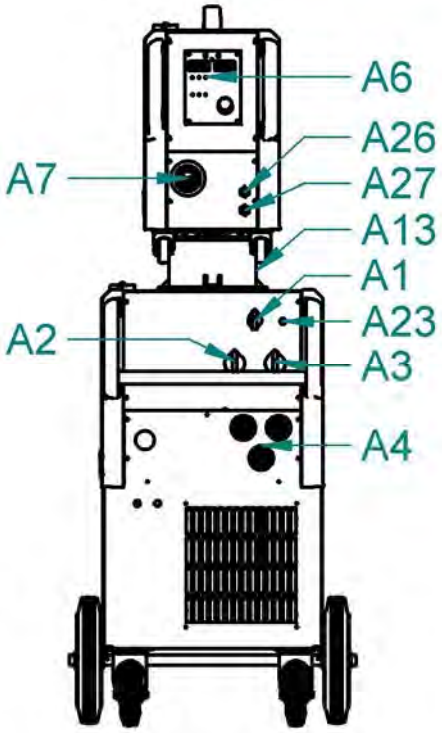
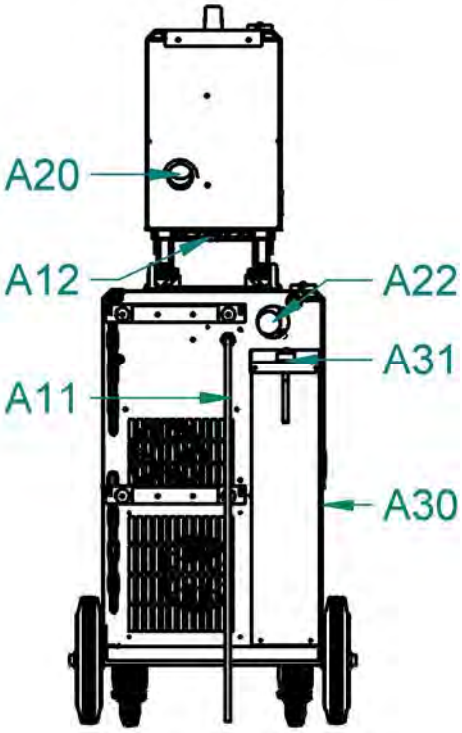
4.03 Fabricator Layout – 500S III C/W VFE 4C III Wire Feed Unit (Inc Cooler Option)

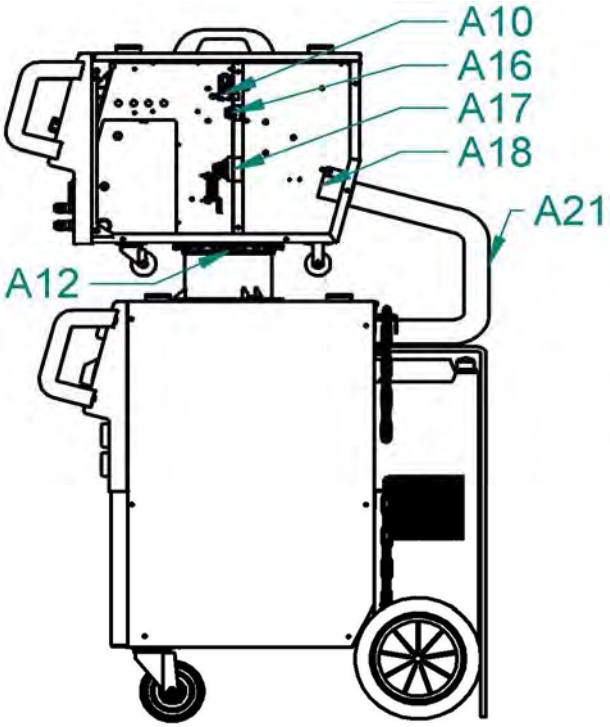
Figure 6.



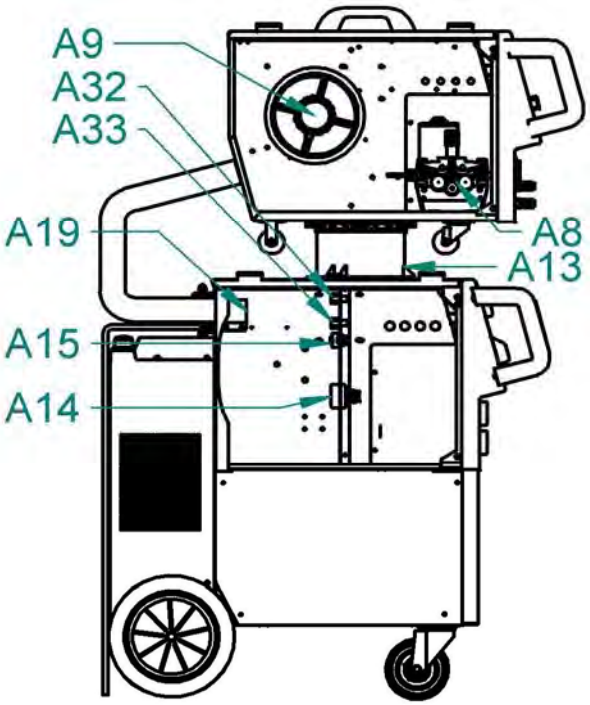
Power Source Front



Power Source Back



Power Source Connection Side



Power Source WFU Side

A1. ON/OFF Switch This switch connects the Primary supply voltage to the power supply when in the 'ON' position. This enables the Power Supply.

A2. Course Voltage Control Switch A 3 position Voltage Control switch, which increases the voltage as it is rotated in the clockwise direction. (please ensure this switch is not turned when the machine is under load).

A3. Fine Voltage Control Switch A 10 position Voltage Control switch increases the voltage as it is rotated in the clockwise direction. (please ensure this switch is not turned when the machine is under load).

A4. Negative Welding Terminals Three outlet terminals which offers negative polarity from the Power Source via three inductances of different values through these heavy duty DINSE terminals to the Metal plate via an earth lead. It is essential, that the male plug is inserted and turned securely to achieve a sound electrical connection.

A6. Control Panel see section 5.01 for further information

A7. Euro Torch Adaptor Euro torch connection that accepts Euro style MIG torches.

A8. Wire Feed Motor & Feed Roll Assembly

A9. Wire Spool Holder

A10. Gas inlet The Gas Inlet connections is a 3/8 BSP male gas fitting supplied via the gas hose on the interconnecting lead.

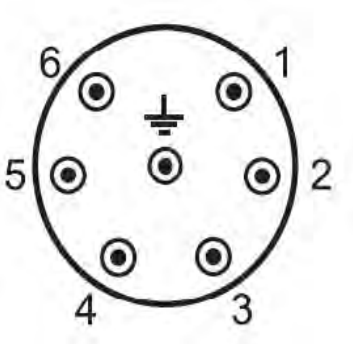
A11. Primary Power Cable The input cable connects the Primary supply voltage to the equipment, see Section 3.04 for electrical input requirements.

A12. Wire Feed Holder Bolts to underside of WFU to support the WFU

A13. Wire Feed Holder Bolts to top of Power Source to support the WFU

A14. Positive Welding Terminal The Positive welding current flows from the Power Source via the heavy duty DINSE terminals to the WFU via the interconnecting lead. It is essential, that the male plug is inserted and turned securely to achieve a sound electrical connection.

A15. Wirefeeder Control Socket outlet This Female 7 pin receptacle is used to connect a Wirefeeder to the welding power Source circuitry: To make connections, align keyway, insert plug, and rotate threaded collar fully clockwise. The socket information is included in the event the supplied cable is not suitable and it is necessary to rewire a plug. (See following page).



Pin 1 - 24Vac supply to WFU
Pin 2 - 0Vac
Pin 3 - Contactor return
Pin 4 - Thermal overload Signal
Pin 5 - Cooling error signal
Pin 6 - Welding voltage +
Pin 7 - Ground connection

A16. Wirefeeder Control Socket inlet This male 7 pin receptacle is used to connect a Wirefeeder from the welding power source circuitly.

A17. Gas inlet The Gas Inlet connections, a quick fit connector supplied via the gas hose from the interconnecting lead.

A18. Interconnecting lead Clamp WFU

A19. Interconnecting lead Clamp Power Source

A20. Interconnecting lead inlet WFU

A21. Water Cooled Interconnecting Lead

A22. Interconnecting lead outlet Power Source

A23. Thermal Overload Indicator An indicator to inform the operator if the power source overheats.

A26. Quick Fit water outlet Connector Female (red) outlet Quick fit connections for water return from a water cooled MIG torch

A27. Quick Fit water outlet Connector Female (blue) outlet Quick fit connections for water outlet for a water cooled MIG torch

A30. Water Cooling Unit Circulates and supplies water for the water cooled Mig Torch. See section ? for further details.

A31. Water Cooling Unit Filler Cap Remove to fill water cooling tank.

A32. Quick Fit water outlet Connector Female (red) outlet Quick fit connections for water return from the WFU via the Interconnecting lead.

A33. Quick Fit water outlet Connector Female (blue) outlet Quick fit connections for water supply to the WFU via the Interconnecting lead.

WARNING

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

SECTION 5: UNDERSTANDING & SETTING UP FOR WELDING

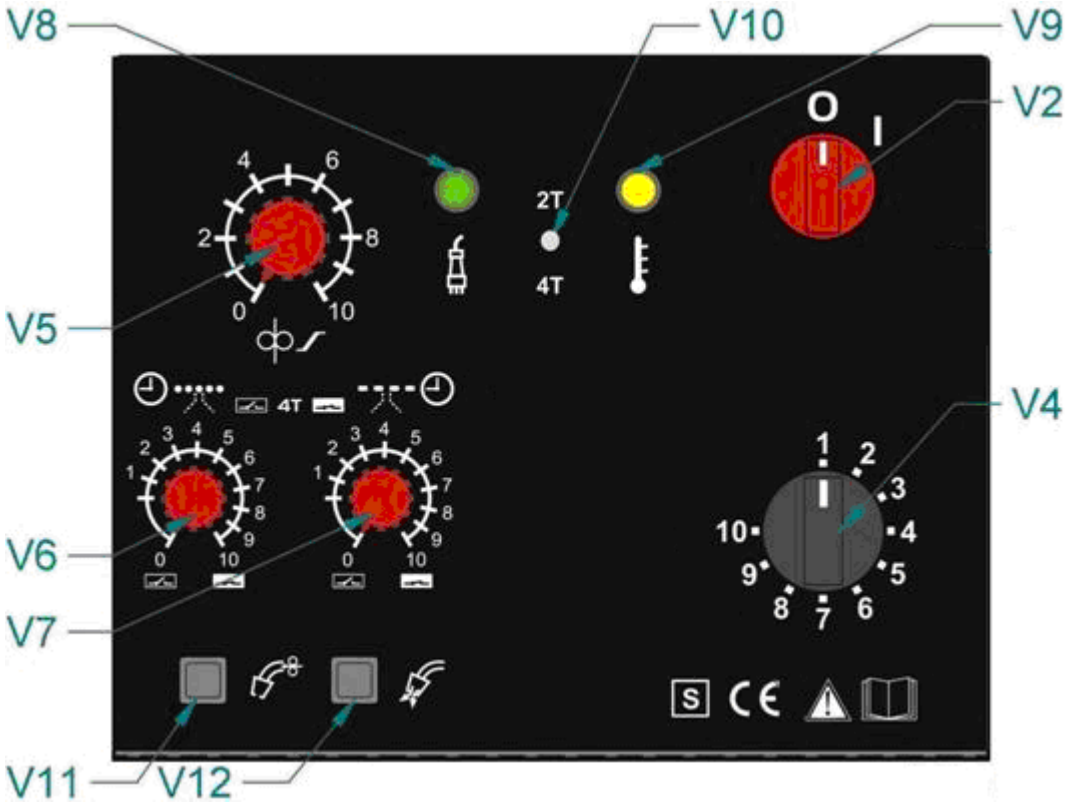
5.01 POWER SOURCE FEATURES

FEATURES	Description
Digital Control panel	All welding parameters are adjustable
Touch Panel Switches	Touch switches eliminates mechanical damage
Control Knob Encoder	For the selected parameter, rotating the knob clockwise or anticlockwise increases or decreases the parameter.
Digital Volt and Ammeter	Displays selected weld parameter values - Displays welding current when welding - Displays welding voltage when welding - Displays wire feed speed prior to welding
ON/OFF Switch	Primary voltage supply ON/OFF switch located on front panel.

-

5.02 BASIC CONTROL PANEL - OVERVIEW

Figure 7.

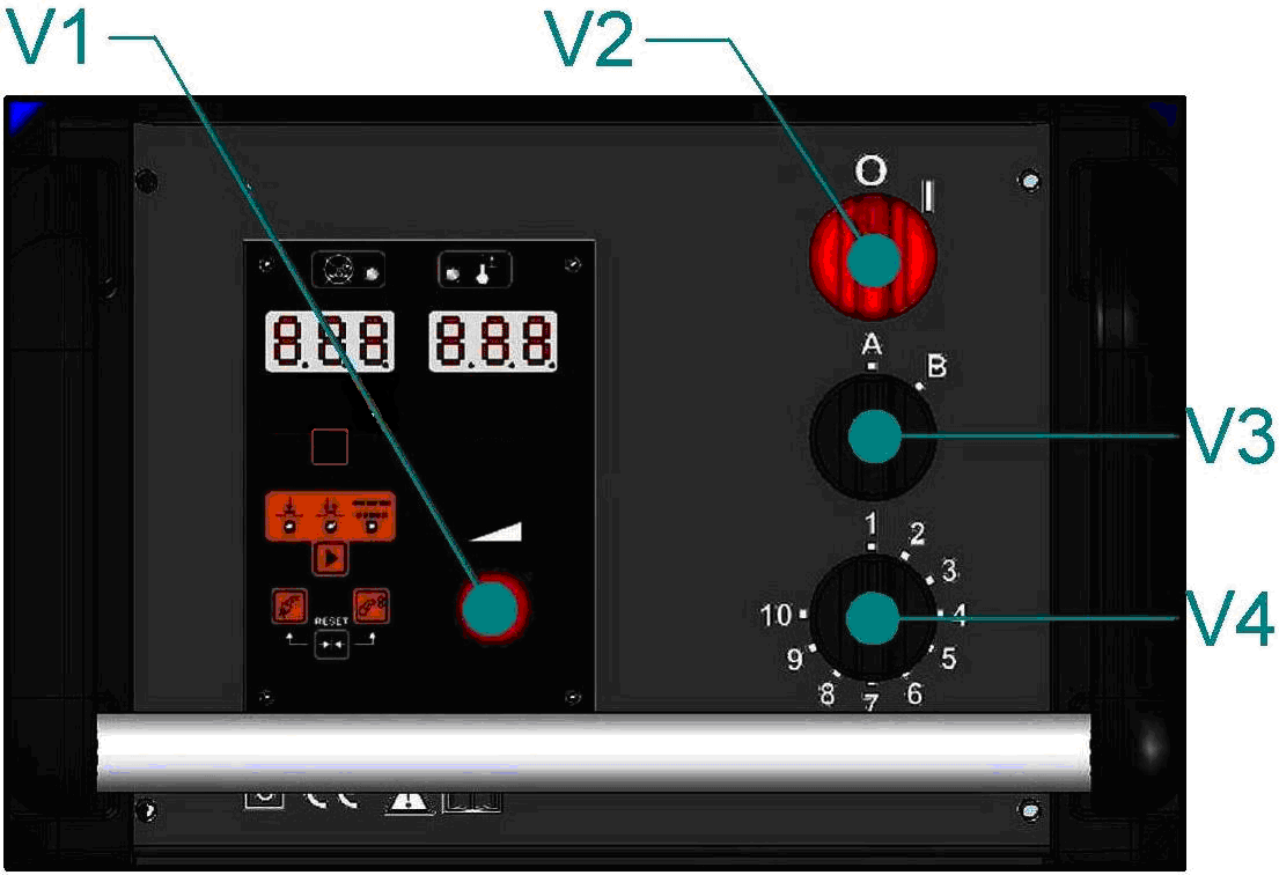


Basic control panel – 250C III Compact Only

V2	Machine On/Off Switch
V4	Voltage Control Switch (250II = 10 Position switch)
V4	Voltage Control Switch (320III = 12 Position switch)
V5	Wire Speed Dial
V6	Spot Time Dial
V7	Interval Time Dial
V8	Power LED
V9	Thermal Protection LED
V10	Switch 2T/4T (optional)
V11	Wire Inch Button
V12	Gas Test Button

5.03 DIGITAL CONTROL PANEL – OVERVIEW

Figure 8.



Digital control panel – Compact Model shown above

Please Note: On the 320S III, 400S III & 500S III Separate the Digital Control PCB is fitted on the separate Wire Feed Unit.

V1	Control PCB, C/W Digital Display and Encoder
V2	Machine ON / OFF Switch
V3	Voltage Control Switch – Coarse (320C III = N/A)
V3	Voltage Control Switch – Coarse (400S III = 2 position switch)
V3	Voltage Control Switch – Coarse (500S III = 3 position switch)
V4	Voltage Control Switch – Smooth (320S III = 12 position switch)
V4	Voltage Control Switch – Smooth (400S III = 10 position switch)
V4	Voltage Control Switch – Smooth (500S III = 12 position switch)

5.04 DIGITAL CONTROL PANEL DESCRIPTION

Figure 9.

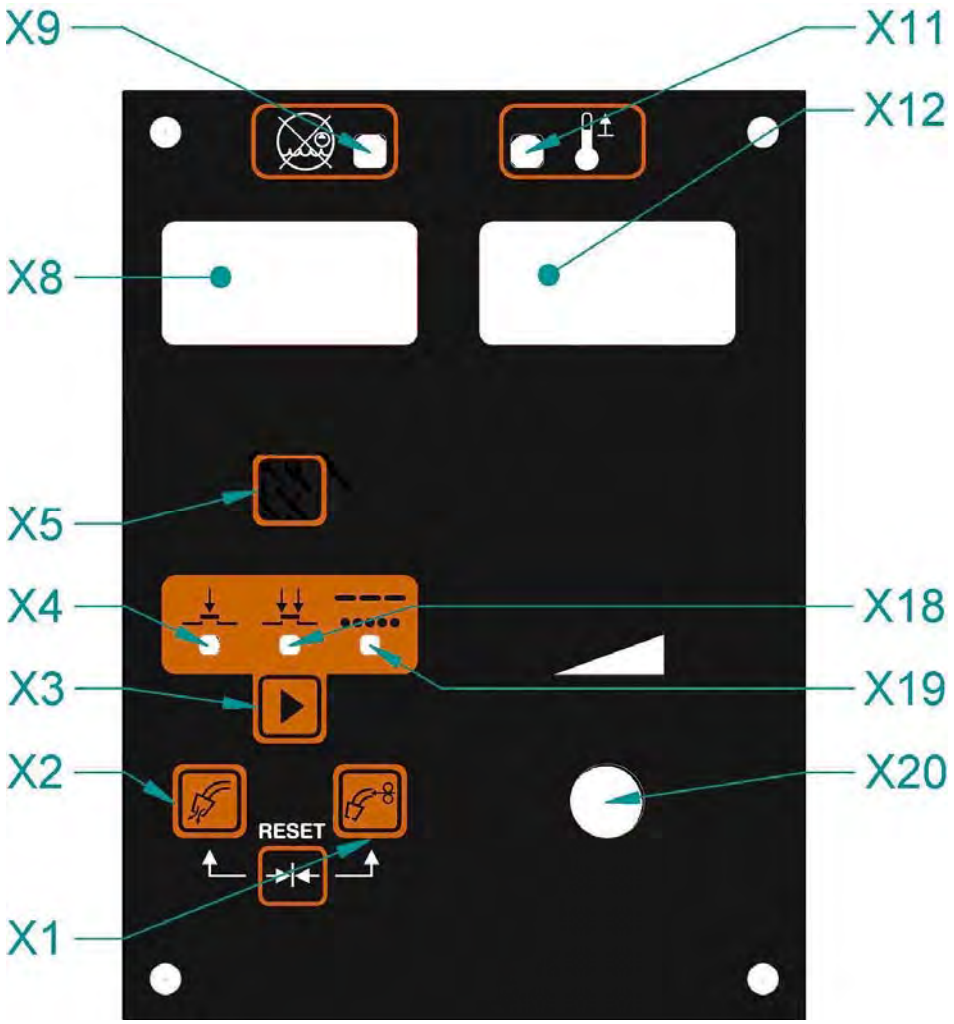


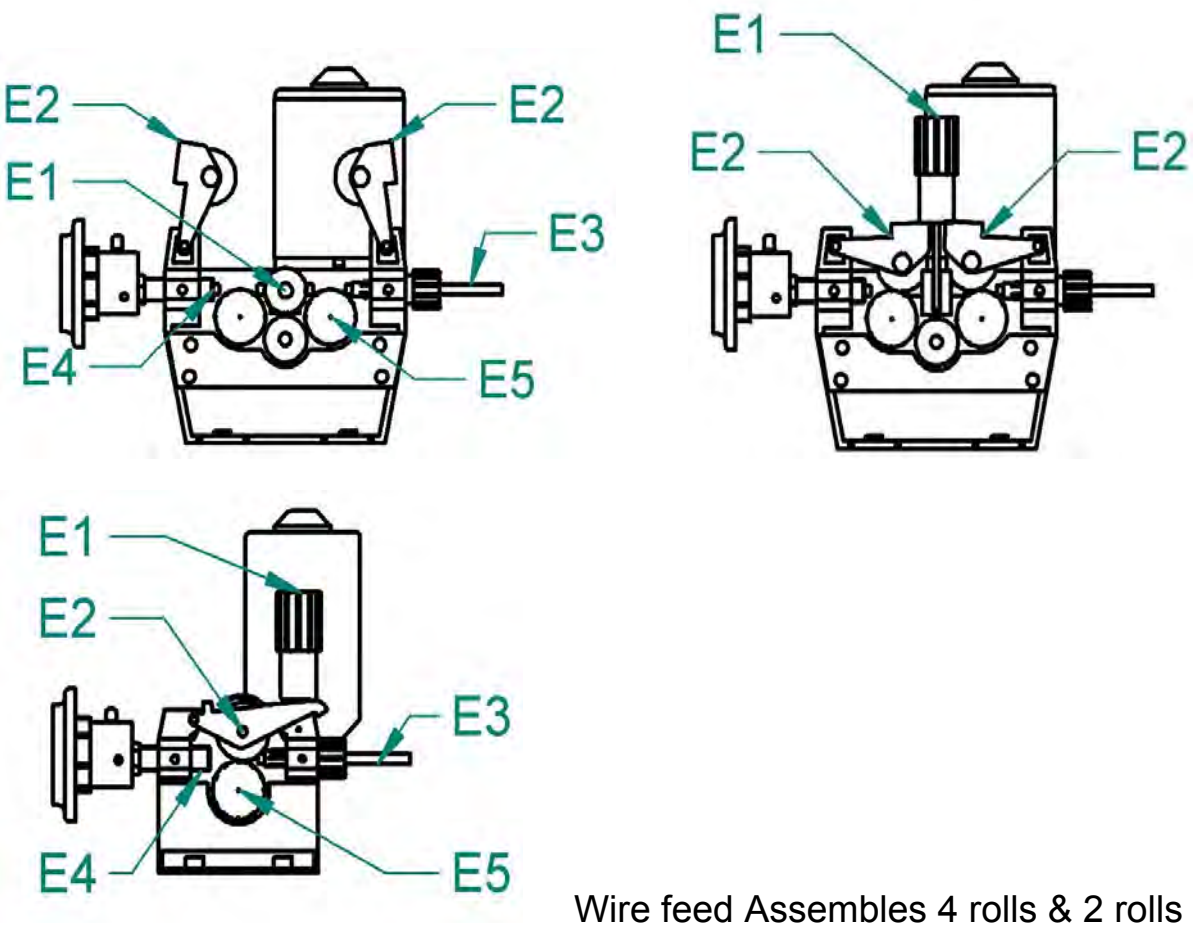
Fig. 1 – Digital Control Panel

Pos.	Symbol	Description
X1		Button • Wire inch • Default RESET (together with button X2)
X2		Button • Gas test • Default RESET (together with button X1)
X3		Button • Switches between 2T or 4T, • Press & hold for 3 seconds, this will initiate spot / interval mode • Enters secondary parameters (together with button X5)
X4		Green LED 2 Stroke
X5		Button • Enters secondary parameters (together with button X3)

X8		Left Display - X8 shows: • Amperage (real or required) • Wire speed • Secondary parameters: - ISP – initial speed (soft start) [%] - PrG – Pre gas time [s] - PoG – Post gas time [s] - brn – Burn back time [s] - SPo – Time of tack welding [s] - Int – Time of interval [s]
X9		LED - Cooling circuit error (if cooler system fitted)
X11		LED - Thermal overheating. Leave the machine on to cool down by means of the fans.
X12		Right Display • Voltage (actual) • Values of the secondary parameters
X18		LED - 4 Stroke
X19		LED • Flashes – Spot Welding mode • Illuminated – Interval welding mode
X20		Encoder • Sets wire speed • Sets secondary parameters

5.05 WIRE FEEDER MOTOR & FEEDROLL ASSEMBLY

Figure 10.

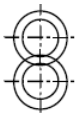
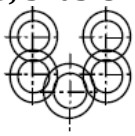
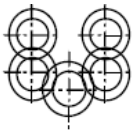
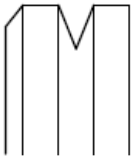
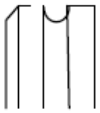
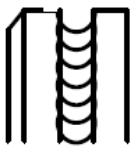


Wire feed Assembles 4 rolls & 2 rolls

Pos.	Description
E1	Fixing shaft
E2	Pressure arm
E3	Liner- Feeder
E4	EURO connector
E5	Roll, Plastic cup

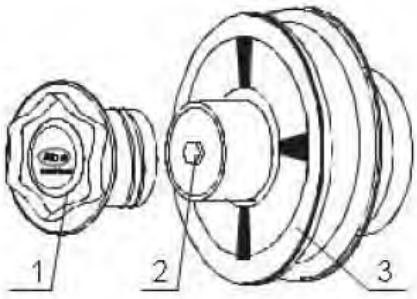
5.06 WIRE FEED ROLLERS (250C, 320C, 320S, 400S & 500S)

Figure 11.

		2 Roll (30mm) 250C  a = 22mm B = 30mm	4 Roll (30mm) 320C, 320S & 400S  a = 22mm B = 30mm	4 Roll (40mm) 500S  a = 32mm B = 40mm
Grove Type	**Wire Diameter**	**Item Number**	**Item Number**	**Item Number**
Steel 	0.6 - 0.8	2187	2187	1657
	0.8 - 1.0	2188	2188	2150
	1.0 - 1.2	2189	2189	2062
	1.4 - 1.6	2176	2176	1656
	1.2 - 1.6	2511	2511	1729
	2.0 - 2.4	2512	2512	1842
Aluminium 	0.8 - 1.0	2270	2270	2239
	1.0 - 1.2	2269	2269	1829
	1.4 - 1.6	2315	2315	2305
	1.2 - 1.6	2316	2316	2313
	1.6 - 2.0	2513	2513	2314
Flux core 	0.8 - 1.0	2318	2318	2297
	1.0 - 1.2	2319	2319	2298
	1.2 - 1.4	2320	2320	2299
	1.2 - 1.6	2321	2321	2278
	1.6 - 2.0	2514	2514	2300
	2.0 - 2.4	2515	2515	2208

5.07 SPOOL HOLDER DESCRIPTION (250C, 320C, 320S, 400S & 500S)

Figure 12.



Pos. Description

1. Fixing Nut
2. Brake Bolt
3. Inlet (optional)

SECTION 6: GETTING STARTED

6.01 Torch Connection

Fit the MIG Torch **(2)** to the Euro adaptor **(1)** by pushing the torch connector into the brass torch adaptor and screwing the plastic torch nut clockwise to secure the torch to the torch adaptor. Remove the contact tip from the torch handset.

If a water cooled system is in use then connect the coolant connections **(5)** of the torch with the sockets **(3)** and **(4)**. Connect the red fitting together and the blue fittings together.

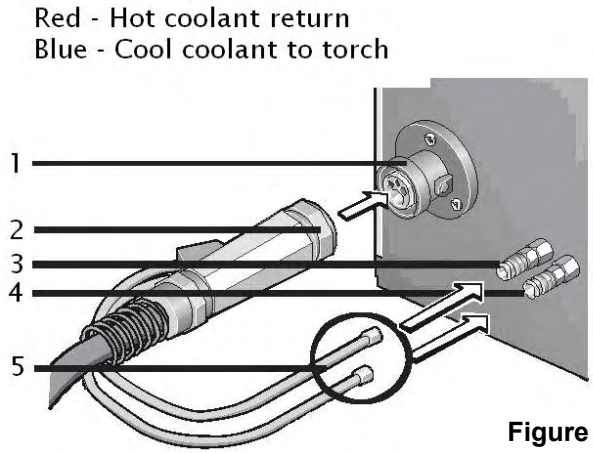


Figure 13.

6.02 How to connect the work lead

Connect the work lead **(7)** to one of the two Negative connections **(6)** and fasten it by turning the connector to the right. Connect the Work clamp **(2 - figure 13)** to the work piece or at the welding table.

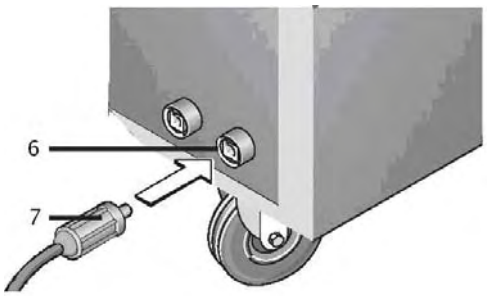


Figure 14.

6.03 Where to connect the work clamp

Fasten the Work clamp near the welding location, this avoids stray current flow through mains earthing system.

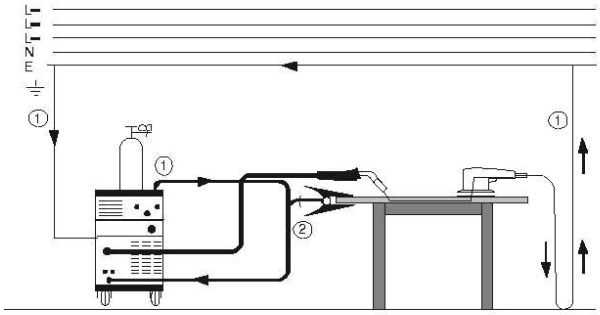


Figure 15.

Connect the Work clamp tightly to the welding bench or to the work piece.

WARNING

Do not place the Work clamp on the welding machine or gas cylinder as welding current may conducted via the mains earth and could cause the primary power cable to burn out.

6.04 How to connect to the mains

Insert the mains plug into a suitable 3x400 V mains socket. The supply fuses or circuit breaker should correspond to the technical data in section 3.
Switch the machine on by the main switch (Fig. 4, pos. A1)
The machine will then enter the manual program and on the left display will be the wire speed in m/min.

6.05 How to fit the wire spool

Open the wire feed compartment lid on the machine or wire-feed case and un-screw the nut **(11)** from the wire support coil hub **(9)**.
Place wire spool on the hub **(9)** and ensure that the drive dog-pin **(8)** engages the mating hole in the wire spool.
Press then release the inch switch (located on the control panel) to adjust the brake **(10)**, the wire spool should not continue to run on when the feed motor stops.

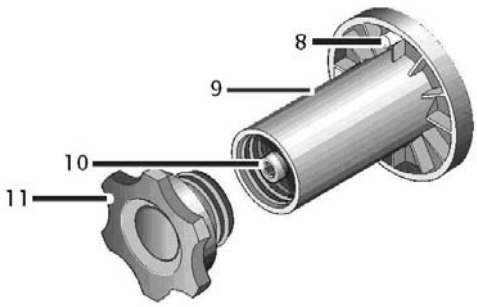


Figure 16.

6.06 Inserting the wire

Un-screw the contact tip in the MIG torch
Open the wire feed compartment lid on the machine or wire-feed case.
Cut off the curved or damaged end of welding wire and feed it through the inlet guide (Fig. 17, pos. 14). The diameter of the wire should correspond to the diameter of the feedrolls. The wire size is on the face of the feedrolls.

Open the pressure lever **(12)** and thread the wire through the inlet guide **(14)** past the rollers and then through the outlet guide **(15)**.
Put the pressure roll down ensuring that the teeth of the gears fit together and fix by setting the lever **(12)** into vertical position.
Adjust the pressure so that it provides constant movement. Do not over tighten pressure arm setting as damage to motor gearbox may occur.

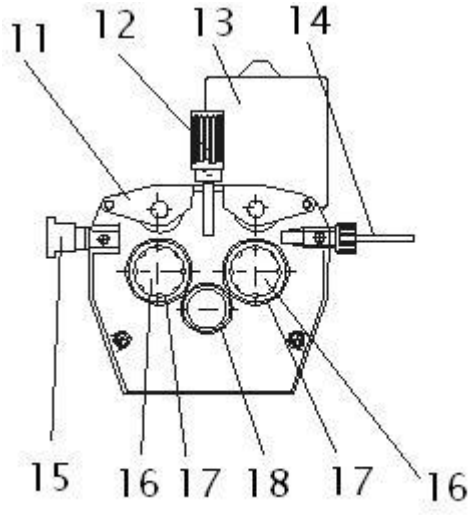


Figure 17.

Switch ON machine at main ON/OFF switch, stretch torch cable out straight and press the inch button switch on the wire feed front panel. Adjust the pressure at the pressure adjustment screws **(12)** so the wire-feed rolls drive the wire consistently without slipping. The wire should not be deformed.

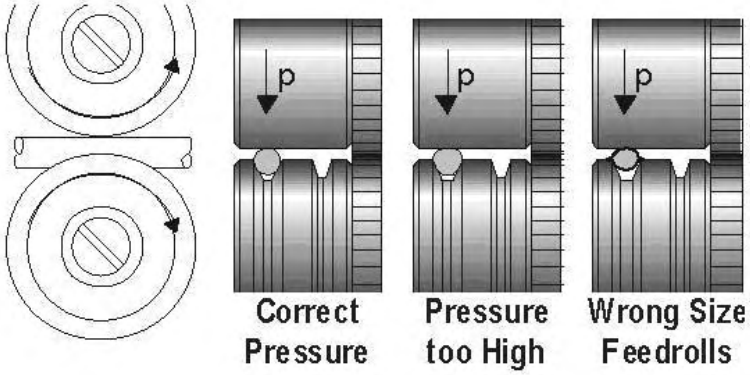


Figure 18.

Adjust the pressure adjustment **(12)** next to the inlet guide **(14)** to a lower pressure less then the pressure adjustment **(12)** next to the outlet guide **(15)**, this will ensure that the wire will be locate correctly in the wire-feed unit.

Press the inch switch till the wire appears approximatley 20 mm out of the torch neck. Screw in the contact tip corresponding to the wire diameter and cut off the wire stick out.

6.07 How to connect the gas cylinder

If the Power Source Wheel Kit is fitted, position a gas cylinder on the rear tray and lock secruely to the Power Source cylinder bracket with the chains provided. If this arrangement is not used then ensure that the gas cylinder is secured to a building pillar, wall bracket or otherwise securely fixed in an upright position.
Open the gas valve once to blow out possible dirt particles.
Connect the gas regulator to the gas cylinder valve.
Connect the gas hose to the gas regulator.
Open the gas cylinder valve and adjust the gas flow on the gas regulator while pressing the gas purge button on the wire feeder control panel, The flow rate will be shown at the flowmeter. This should be approximately wire diameter x 10 l/min.

6.08 How to configure the machine for aluminium welding

Change the feedrolls to U groove for aluminium wire.
Change the torch liner to a nylon or teflon liner.
Remove the capillary tube (23) at the central connection.
Cut the teflon liner close to the end of the feedroll and pull the brass tube over the teflon liner with the corresponding length to stabilise it.
Fasten the torch and thread in the wire electrode.

NOTE

The parts required for the torch depends on the type torch and wire diameter. Please refer to the torch spare list.

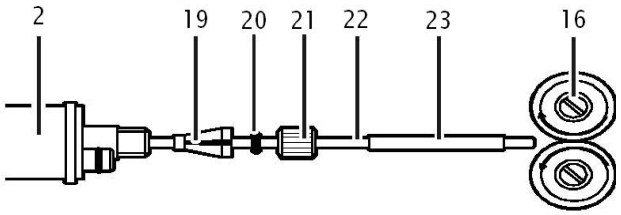


Figure 19.

Pos	Description
2	Central connection
19	Nipple for 4.0 mm and 4.7 external diameter
20	O-ring 3,5 x 1.5 mm to prevent gas outlet
21	liner nut
22	Nylon or Teflon liner
23	Support tube for nylon or teflon liner with 4 mm OD, it substitute the outlet guide in the central connection (16). A 4.7 mm diameter liner does not require the support tube is required.
16	Feedroll

SECTION 7: OPERATION

7.01 Setting welding current and voltage

When the wire had been installed and gas had been set it is possible to start welding. The appliance must be plugged into the mains, the main switch (Fig. 4, Page 16) in the "I" position, and the green LED will illuminate.
To select the voltage use step switches (Fig. 4, Page 16).
To select the current (that is linked to the wire speed) use potentiometer encoder (Fig. 7, Page 16).

7.02 Welding modes

The Fabricator torch operator controls work in four modes:

- Continuous two stroke (2T)
- Continuous four stroke (4T)
- Spot welding
- Interval welding

7.03 Secondary parameters

If necessary, it is possible to change the secondary parameters:

Initial wire speed (soft start)	ISP
Pre gas time	PrG
Post gas time	PoG
Burn back time	brn
Time of spots (tack or interval welding)	SPo
Time of intervals (interval welding)	Int

Press buttons 3 and 5 at the same time for at least (3s) 
On left display will appear ISP. On the right display will appear value of the chosen parameter.
By means of the Encoder you can change the parameter.

Use the button 3  to select the next parameter. When you press the button 3, the value of the previous parameter had been stored.

7.04 Two stroke

Press the button 3 (2T/4T) and select the LED 4 . Welding procedure starts by pressing the button in the torch handle. It is necessary to keep the torch button pressed all the time during welding. The welding stops by releasing the torch button.

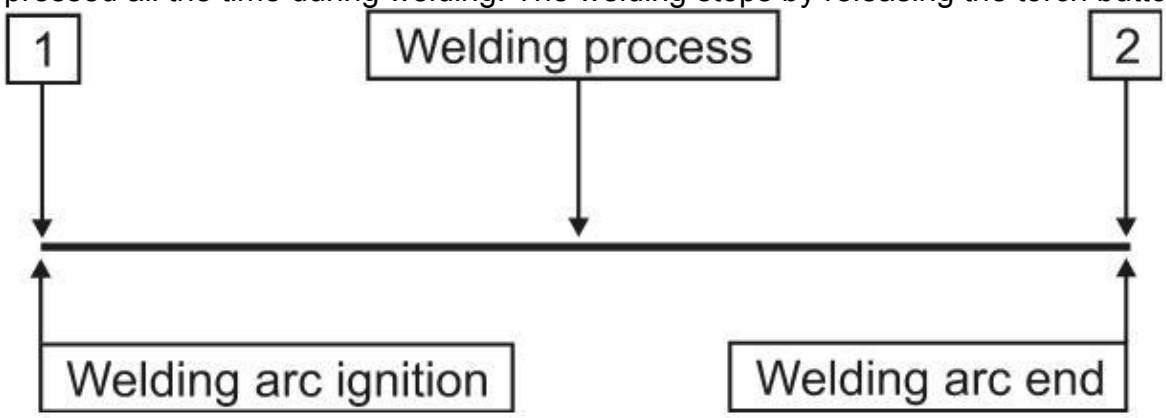


Figure 20.

1 - 1st stroke – pressing the torch button
2 - 2nd stroke – releasing the torch button

7.05 Four stroke

Press the button 3 (2T/4T) and select the LED 4 The four stroke mode is being used mostly for long welds, when there is no need to hold the torch button pressed. The welding procedure start by pressing the torch button; after releasing the torch button the welding continues. The welding stops after the second pressing and releasing the torch button then.

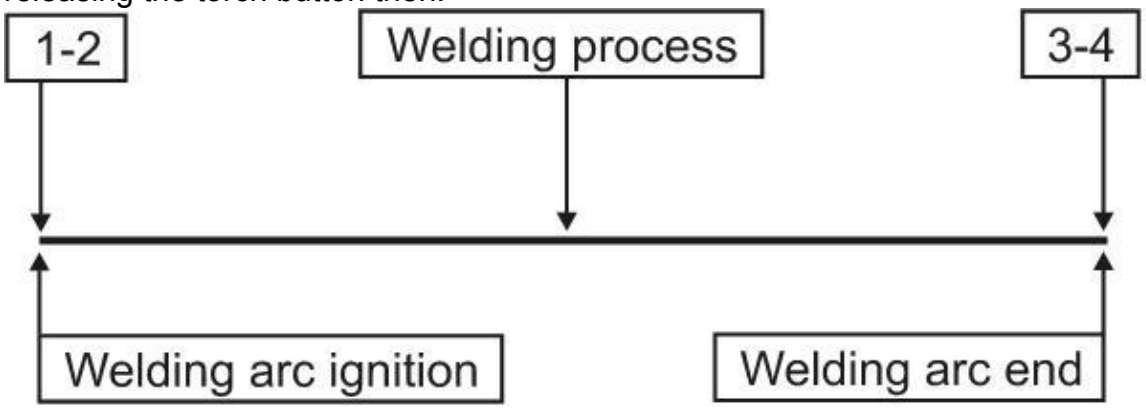


Figure 21.

1 - 1st stroke – pressing the torch button
2 - 2nd stroke – releasing the torch button
3 - 3rd stroke – pressing the torch button
4 - 4th stroke – releasing the torch button

7.06 Spot and stitch welding

Keep pressing the button 3 for at least (3s) (2T/4T)

If led LED 12 continuously lights the spot mode has been selected. If led 12 flashes the interval mode has been selected.
You can have spot or interval welding both in stroke and in 4 stroke mode (by means of short pressing the button 3 - LEDs 4 and 11 indicate the mode.
To get out of this mode, keep pressing the button '3' for more than 3 seconds.
The spot welding mode is being used for welding short welds of the same length. The pressing the torch button activates the time circuit that starts and end the welding procedure. This mode is available in 2T or 4T mode.

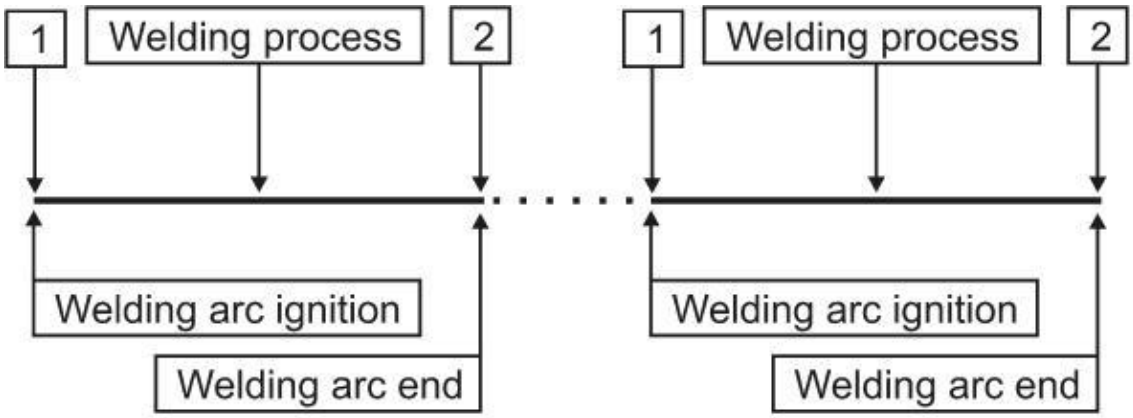


Figure 22.

1 - 1st stroke – pressing the torch button 2 - 2nd stroke – releasing

The interval welding mode is being used for welding repeated short welds of the same length of welding time and the pause time. By pressing the torch button activate the time circuit that starts and end the welding procedure. This mode is available in 2T or 4T mode.

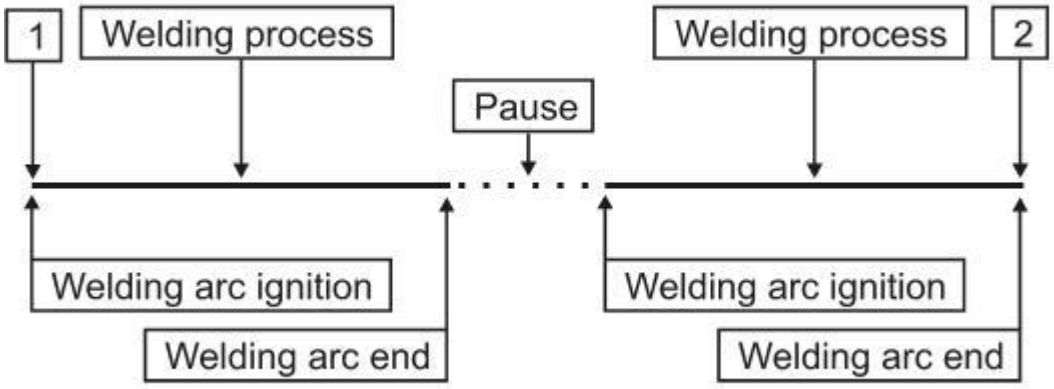


Figure 23.

1 - 1st stroke – pressing the torch button 2 - 2nd stroke – releasing the torch button

SECTION 8: BASIC WELDING TECHNIQUE

8.01 Setting of the Fabricator

The Fabricators Power Source has two control settings that have to balance. These are the Wirespeed control and the Voltage Control switches. The welding current is determined by the Wirespeed control, the current will increase with increased Wirespeed, resulting in a shorter arc. Less wire speed will reduce the current and lengthen the arc. Increasing the welding voltage hardly alters the welding current level, but lengthens the arc. By decreasing the voltage, a shorter arc is obtained with little change in welding current.
When changing to a different electrode wire diameter, different control settings are required, a thinner electrode wire needs more Wirespeed to achieve the same current level.
A satisfactory weld cannot be obtained if the wirespeed and voltage switch settings are not adjusted to suit the electrode wire diameter and dimensions of the work piece.

If the Wirespeed is too high for the welding voltage, “stubbing” 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 electrode wire, causing spatter. The correct setting of voltage and Wirespeed can be seen in the shape of the weld deposit and heard by a smooth regular arc sound.

8.02 Position of MIG Torch

MIG torch angle to the weld has an effect on the width of the weld run. Refer to figure 17.

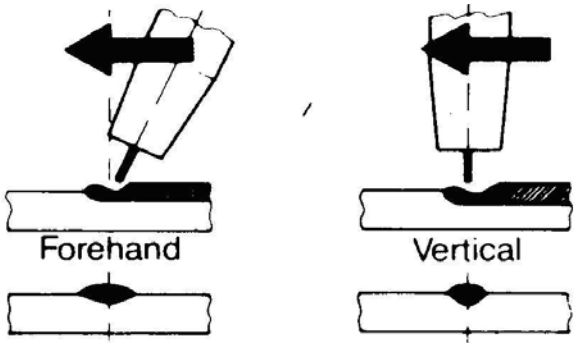


Figure 24.

8.03 Distance of the MIG Torch Nozzle to the Work Piece

The electrode stick out from the MIG Torch nozzle should be between 2.0mm (5/64”) and 5.0mm. (13/64”) This distance may vary depending on the type of joint that is being welded.

8.04 Travel Speed

Speed at which a weld travels influences the width of the weld and penetration of the welding run.

8.05 Electrode Wire Size Selection

The choice of electrode wire size in conjunction with shielding gas used depends on:
a) Thickness of the metal to be welded,
b) Type of joint,

c) Capacity of the wire feed unit and Power Source,
d) The amount of penetration required,
e) The deposition rate required,
f) The bead profile desired,
g) The position of welding and
h) Cost of the electrode wire.

Weld metal deposition rate is proportional to current density. Current density is defined as the current per cross sectional area of the electrode wire and is normally expressed as amps per mm2. An example is tabled below.

Electrode Wire Size	Current (Amps)	Current Density (Amps/mm2)	Deposition Rate (kg/hour)
0.9mm (.035”)	200	314	3.2
1.2mm (.045”)	200	177	2.8

The table above - 0.9mm (.035”) / 1.2mm (.045”) wire deposition rate
This demonstrates that where the upper limit of current is limited by machine capacity and duty cycle, higher deposition rates and therefore greater productivity will be achieved by using smaller electrode wire. The Fabricator is a particularly efficient MIG welder with 0.9mm steel wire in spray tranfer mode.
Higher current density (or smaller diameter wire) also gives deeper penetration as shown Figure 25.

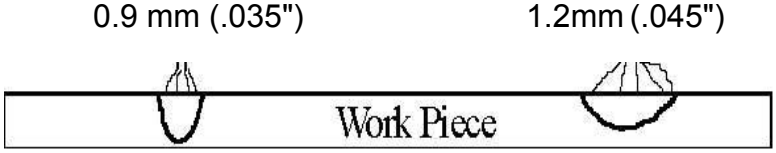


Figure 25.

Penetration comparison using the same current (200A) for both electrodes Figure 25 - Wire penetration comparison

8.06 Stitch Welding Operation

Stitch welding is normally used to bridge excessive gaps between panels or when welding very thin material to prevent heat build up and distortion.
Please refer to section 7.06 for Stitch function control.

8.07 Spot Welding Operation

Fit a spot welding nozzle to the MIG Torch for consistent spot welding operations. The Fabricator will operate effectively using 0.8mm welding wire when spot welding. Penetration depth is limited when using 0.6mm welding wire for spot welding.
Please refer to section 7.06 for Spot welding control.

SECTION 9: ROUTINE MAINTENANCE & INSPECTION

The only routine maintenance required for the Fabricator range of machines is a thorough cleaning and inspection, with the frequency depending on the usage and the operating environment.

WARNING

Disconnect the FABRICATOR from the Mains supply voltage before disassembling.

Special maintenance is not necessary for the control unit parts in the Power Source and Wirefeeder. If these parts are damaged for any reason, replacement is recommended.

CAUTION
Do not blow air into the Power Source / Wirefeeder during cleaning. Blowing air into the Power Source / Wirefeeder can cause metal particles to interfere with sensitive electronic components and cause damage to the Power Source / Wirefeeder.

To clean the Power Source / Wirefeeder, disconnect it from the mains supply voltage then open the enclosure and use a vacuum cleaner to remove any accumulated dirt and dust. The Power Source / Wirefeeder should also be wiped clean. If necessary, solvents that are recommended for cleaning electrical apparatus may be used.

WARNING

Do not attempt to diagnose or repair unless you have had training in electronic measurement and troubleshooting techniques.

Troubleshooting and repairing of the Fabricator III range of welding equipment should only be carried out only by suitably qualified or competent person.
A ‘competent person’ must be a person who has acquired through training, qualification or experience, or a combination of them, the knowledge and skills enabling that person to safely carry out a risk assessment and repairs to the electrical equipment in question. The person carrying out the servicing needs and repairs must know what to look at, what to look for and what to do.

SECTION 10: BASIC TROUBLESHOOTING

Basic level of troubleshooting is that which can be performed without special equipment or knowledge, and without removing the covers from the Power Source / Wirefeeder.
If major components are faulty, then the Power Source / Wirefeeder should be returned to your local THERMAL ARC Distributor for repair.

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 torch. There are two main areas where problems occur with MIG Equipment:-

10.01 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:

1	Gas cylinder contents and flow meter.	Ensure that the 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	Ensure the hose from the solenoid valve to Source. The Mig torch adaptor has not fractured and that it is connected to the Mig torch 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 plate
6	Distance between the MIG torch nozzle and the work piece	Keep the distance between the MIG torch nozzle and the work piece to a minimum.
7	Maintain the MIG torch in good working order	Ensure that the gas holes are not blocked. and gas is exiting out of the torch nozzle. Do not restrict gas flow by allowing spatter to build up inside the Mig torch nozzle. Check that the MIG torch O-rings are not damaged

WARNING

DISENGAGE THE DRIVE ROLL WHEN TESTING FOR GAS FLOW BY EAR.

10.02 Inconsistent wire feed

Wire feeding problems can be reduced by checking the following points:

1	Wire spool brake is too tight	Feed roller driven by motor in the cabinet will slip.
2	Wire spool brake is too loose	Wire spool can unwind and tangle.
3	Worn or incorrect feed roller size	Use 'U' groove drive feed roller matched to the aluminium wire size you are welding. Use 'V' groove drive feed roller matched to the steel wire size you are welding. Use ‘knurled V’ groove drive feed roller matched to the flux cored wire size you are welding.
4	Mis-alignment of inlet/outlet guides	Wire will rub against the mis-aligned guides and reduces wire feedability.
5	Liner blocked with swarf	Swarf is produced by the wire passing through the feed roller, if excessive pressure is applied to the pressure roller adjuster. Swarf can also be produced by the wire passing through an incorrect feed roller groove shape or size. Swarf is fed into the liner where it accumulates thus reducing wire feedability
6	Incorrect or worn contact tip	The contact tip transfers the weld current to the electrode wire. If the hole in the contact tip is to large then arcing may occur inside the contact tip resulting in the electrode wire jamming in the contact tip When using soft electrode 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 electrode wires should be used.
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 or Mis-Shaped liner	This will cause friction between the wire and the liner thus reducing wire feedability

10.03 Welding Problems

	FAULT	CAUSE	REMEDY
1	Undercut.	A. Welding arc voltage too high. B. Incorrect torch angle C. Excessive heat input	A. Reduce voltage by reducing the voltage selection switches position or increase the wire feed speed. B. Adjust angle C. Increase the torch travel speed and/or reduce welding current by reducing the voltage selection switches position or reducing the wire feed speed.
2	Lack of penetration.	A. Welding current too low B. Joint preparation too narrow or gap too tight C. Shielding gas incorrect	A. Increase welding current by increasing wire feed speed and increasing voltage selection switch position. B. Increase joint angle or gap C. Change to a gas which gives higher penetration
3	Lack of fusion.	Voltage too low	Increase voltage by increasing voltage selection switches position.
4	Excessive spatter.	A. Voltage too high B. Voltage too low	A. Lower voltage by reducing the voltage selection switches or increase wirespeed control. B. Raise voltage by increasing the voltage selection switches or reduce wirespeed control.
5	Irregular weld shape.	A. Incorrect voltage and current settings. Convex, voltage too low. Concave, voltage too high. B. Wire is wandering C. Incorrect shielding gas D. Insufficient or excessive heat input	A. Adjust voltage and current by adjusting the voltage selection switches and the wirespeed control. B. Replace contact tip C. Check shielding gas. D. Adjust the wirespeed control or the voltage selection switches.

10.03 Welding Problems (continued)

	FAULT	CAUSE	REMEDY
6	Weld cracking.	A. Weld beads too small B. Weld penetration narrow and deep C. Excessive weld stresses D. Excessive voltage E. Cooling rate too fast	A. Decrease travel speed B. Reduce current and voltage and increase Mig torch travel speed or select a lower penetration shielding gas. C. Increase weld metal strength or revise design D. Decrease voltage by reducing the voltage selection switches. E. Slow the cooling rate by preheating part to be welded or cool slowly.
7	Cold weld puddle.	A. Faulty rectifier unit B. Loose welding cable connection. C. Low Primary Voltage	A. Have an Accredited THERMAL ARC Service Agent to test then replace the faulty component. B. Check all welding cable connections. C. Contact supply authority
8	Arc does not have a crisp sound that short arc exhibits when the wirefeed speed and voltage are adjusted correctly.	The MIG torch has been connected to the wrong voltage polarity on the front panel.	Connect the MIG torch to the positive (+) welding terminal for solid wires and gas shielded flux cored wires. Refer to the electrode wire manufacturer for the correct polarity.

10.04 Power Source Problems

	FAULT	CAUSE		REMEDY
1	Indicator light is ON but welding arc can not be established.	Voltage switch in standby position.		Switch the voltage selection switches to a welding setting.
2	Mains supply voltage is ON. Indicator light is not lit and welding arc can not be established.	A. Primary fuse is blown. B. Broken connection in primary circuit.	A B	Replace primary fuse. Have an Accredited THERMAL ARC Service Agent check primary circuit.
3	Mains indicator light is not lit but welding arc can be established.	Indicator light is open circuit.		Have an Accredited THERMAL ARC Service Agent replace Indicator light.

10.04 Power Source Problems (continued)

FAULT	CAUSE	REMEDY
4 Mains supply voltage is ON and Indicator light is lit but when the torch trigger switch is depressed nothing happens.	Torch trigger switch leads are disconnected.	Reconnect.
5 Mains supply voltage is ON, no wire feed but gas flows from the MIG Torch when the torch trigger switch is depressed.	A. Electrode wire stuck in conduit liner or contact tip (burn-back jam). B. Faulty control PCB	A. Check for clogged / kinked MIG Torch conduit or worn contract tip. Replace faulty component(s). B. Have an Accredited THERMAL ARC Service Agent investigate the fault.
6 Wire feeds when the torch trigger switch is depressed but arc can not be established.	Poor or no work lead connection.	Clean work clamp area and ensure good electrical contact.
7 Wire continues to feed when the torch trigger switch is released.	The Mode Selection has been set to 4T (latch operation).	Set the Mode Selector Switch has been set to 2T (normal operation).
8 Jerky wire feed	A. Worn or dirty contact tip B. Worn feed roll. C. Excessive back tension from wire reel hub. D. Worn, kinked or dirty conduit liner	A. Replace contact tip B. Replace feed roll C. Reduce brake tension on spool hub D. Clean or replace conduit liner
9 No gas flow	A. Gas hose is cut. B. Gas passage contains impurities. C. Gas regulator turned off.	A Replace or repair. B Disconnect gas hose from the rear of FABRICATOR or wirefeeder then raise gas pressure and blow out the impurities. C Turn on.
10 Gas flow continues after the torch trigger switch has been released.	Gas valve has jammed open due to impurities in the gas or the gas line.	Have an Accredited THERMAL ARC Service Agent repair or replace gas valve.

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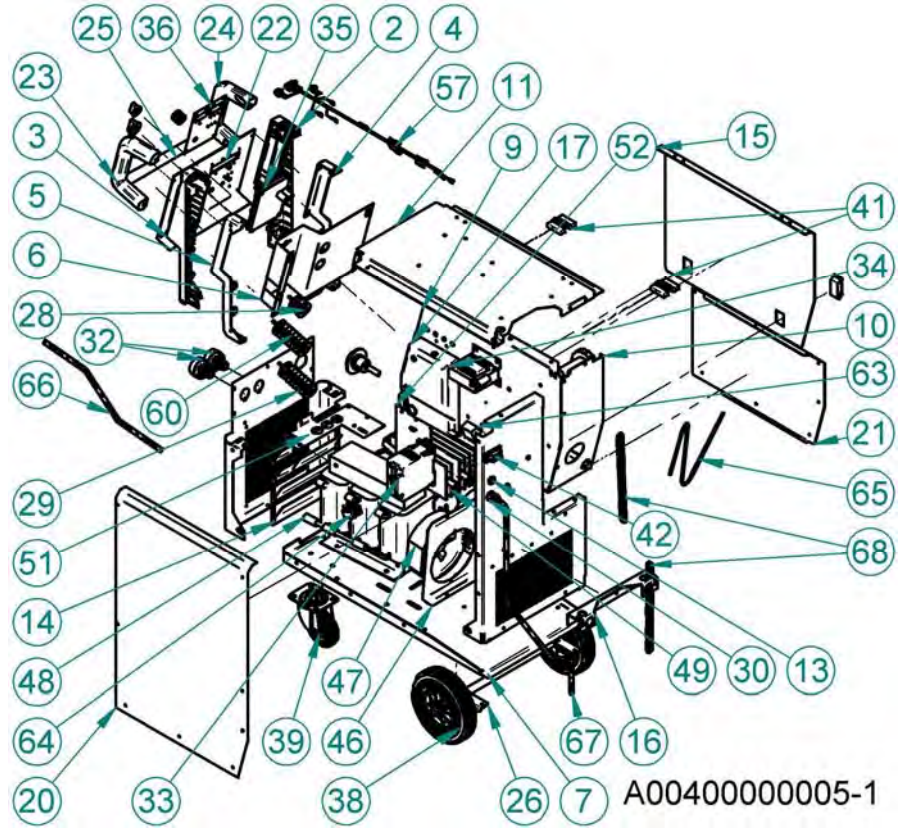
SECTION 11: SPARE PARTS

11.01 Parts Description Fabricator 250C & 320C



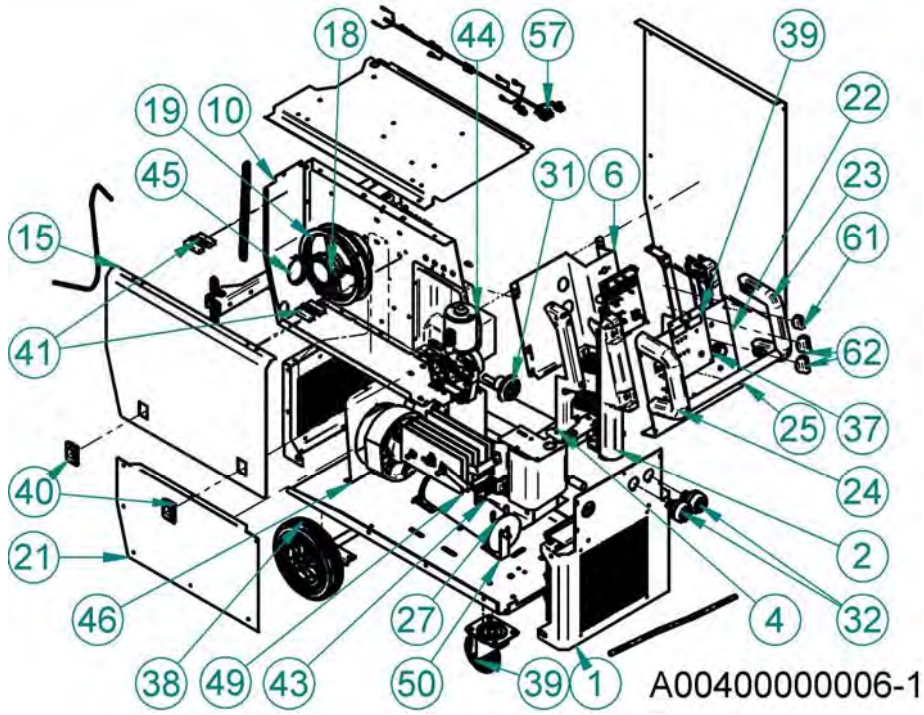


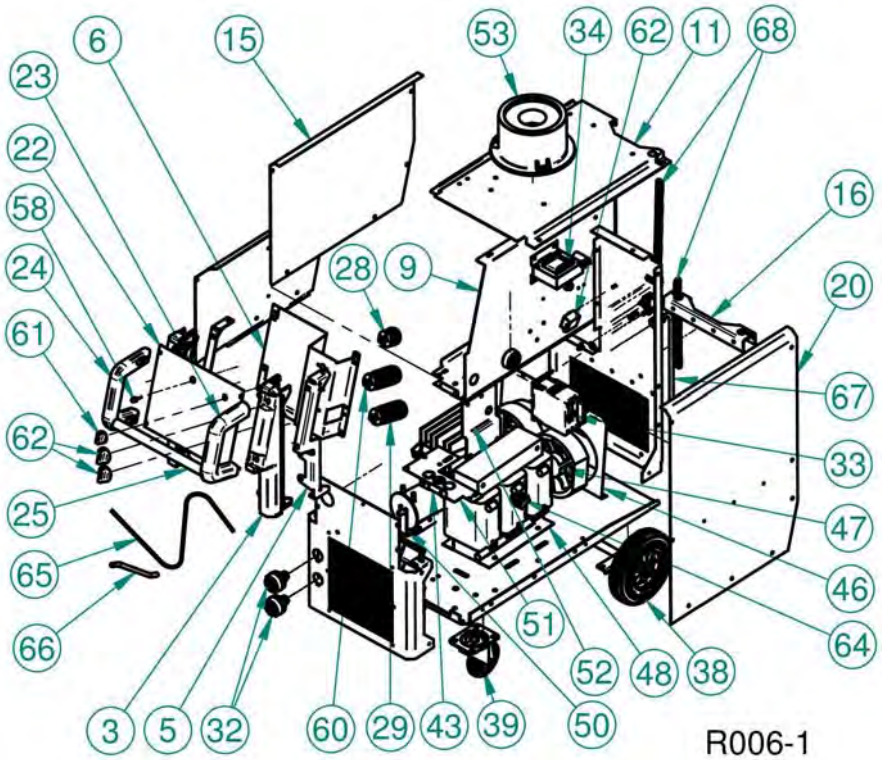
Figure 26.

11.01 Spare Part Numbers Fabricator 250C & 320C

Pos	Item No	Title	Quantity
		Thermal Arc 250C III & 320C III	
1	FABV20214-5A	Facia panel	1
2	FABV0316	Corner Right	1
3	FABV0317	Corner Left	1
4	FABV10014-2	Corner support right galvanized	1
5	FABV10015-2	Corner support left galvanized	1
6	FABV20219-2	PCB cover galvanized	1
7	FABV20001-7	Bottom galvanized	1
8	FABV20232-6	Rear panel galvanized	1
9	FABV20004-9	Support vertical galvanized	1
10	FABV20002-7	Support horizontally galvanized	1
11	FABV20008-3A	Cover upper matt	1
13	FAB2557	Solenoid Valve 24V 50Hz AC	1
14	FABV10231-2	Fan shutter galvanized	1
15	FABV10007-3B	Side cover (Door) right upper	1
16	FABV10237-2	Holder gas bottle galvanized	1
17	FABV0318	Feeder Cover Plastic	1
18	FAB1627	Spool Holder Black	1
19	FABK910	Adapter up to 18 kg	2
20	FABV20206-3B	Side cover left	1
21	FABV20210-3B	Side cover right lower	1
22	FABV20216-5B	Front panel Analog 250C matt	1
22	FABV20213-4B	Front panel Digital 320C matt	1
23	FAB3598	Handle - Holder Left	1
24	FAB3599	Handle - Holder Right	1
25	FABV10552-1A	Handle bar matt 9005	1
26	FABV0005-3B	Carriage unit matt 9005	1
27	FAB2523-1	Choke 250	1
27	FAB4164	Choke 320	1
28	FAB1005	Switch ON/OFF	1
29	FAB2626	Switch VS16 250/400	1
29	FAB3678	Switch VS16 320	1
30	FAB805.3342	Outlet PG11	1
31	FABBG-90625,3440	Connector EURO Body	1
32	FABAO-20610	Dinse Connector 35-70 Panel Socket	2
33	FAB276834	Contactor (24V/50Hz) 250	1
33	FAB277008	Contactor (24V/50Hz) 320	1
34	FAB3270-4Z	Transformer Aux (with filter)	1
35	L93322	Control PC Board - BASIC	1
35	FAB3979.d	Control PC Board - DIGITAL	1
36	FAB3505	Film Front	1

		Thermal Arc 250C III & 320C III (Continued)	
37	FAB2164	Knob + Red Cap	1
38	FAB2446	Rear wheel	2
39	FAB3253-1	Front Wheel	2
40	FAb2681	Door Lock	2
41	FAB4121	Door Hinge	2
42	FAB1812	Gas heater connector	1
43	FAB2917	Shunt 400A 60mV	2
44	FAB4316	Wire Feed Motor C/W Gearbox 2 roll 250C	1
44	FAB4322-1	Wire Feed Motor C/W Gearbox 4 roll 320C	1
45	FAB467434/467594	Cover for PG36/Nut for PG 36	1
46	FABV20005-3	Holder of ventilator 250 galvanized	1
46	FABV20006-2	Holder of ventilator 320 galvanized	1
47	FAB4172	Fan 250 & 320	2
48	FABT25.TERP	Transformer 250 + Switch + TERMINAL	1
48	FABT32WSK.TERP	Transformer 320 + Switch + TERMINAL	1
49	FAB1195-1	Rectifier 250	1
49	FAB1538-1	Rectifier 320	1
50	FABV20009-1	Holder of choke galvanized	2
51	FABV20215-3	Support of facia panel galvanized	1
52	FABV20010-3	Holder of rectifier 250-320 galvanized	1
61	FAB4263	Knob arrow 250 RED	3
61	FAB1343	Knob arrow 320 RED	3
62	FAB4262	Knob arrow 250 Black	1
62	FAB2015	Knob arrow 320 Black	1
63	FAB4236	Filter FC 61113	1
64	FAB3252	Filter FZ 730 43	3
65	FAB302P010000	Gas Hose	1
66	FABVM0313	Cables 250 (Quick Connector 12mm)	1
66	FABVM0348	Cables 320C	1
67	FABVM0049	Mains Cable 16A 4x1.5mm 250	1
67	FABVM0048	Mains Cable 4x2.5mm 320/400	1
68	FABVS040258	Chain 70 cm	2

11.02 Parts Description Fabricator 320S & 400S



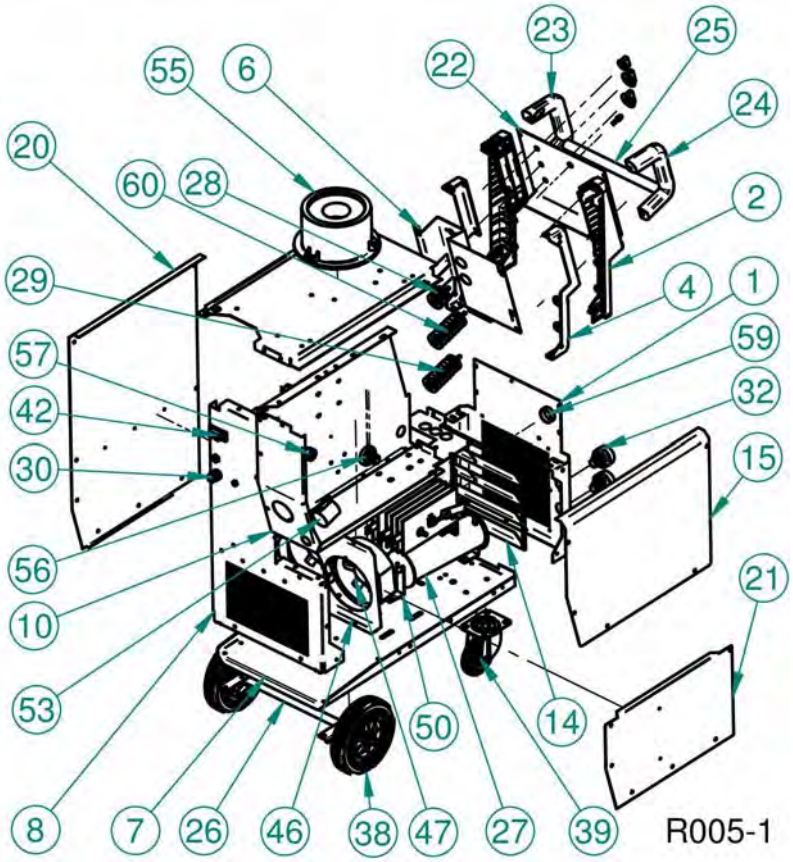


Figure 27.

11.02 Spare Part Numbers Fabricator 320S & 400S

Pos	Item No	Title	Quantity
		Thermal Arc 320S III & 400S III	
1	FABV20214-5A	Facia panel matt	1
2	FABV0316	Corner Right	1
3	FABV0317	Corner Left	1
4	FABV10014-2	Corner support right galvanized	1
5	FABV10015-2	Corner support left galvanized	1
6	FABV20219-2	PCB cover galvanized	1
7	FABV20001-7	Bottom galvanized	1
8	FABV20232-6	Rear panel galvanized	1
9	FABVA2004-14	Support vertical galvanized	1
10	FABVA2002-12	Support horizontal galvanized	1
11	FABV20008-3A	Cover upper MATT	1
14	FABV10231-2	Fan shutter rear galvanized	1
15	FABV20208-1B	Lateral cover right upper gloss	1
16	FABV10237-2	Holder gas bottle galvanized	1
20	FABV20206-3B	Lateral cover left	1
21	FABV20210-3B	Lateral cover right lower	1
22	FABV20217-9B	Front panel matt	1
22	FABV20221-3B	Front panel Digital RAL matt 9005	1
23	FAB3598	Handle - Holder L	1
24	FAB3599	Handle - Holder R	1
25	FABV10552-1A	Handle bar matt	1
26	FABV0005-3B	Carriage unit matt	1
27	FAB4164	Choke ALF 320S/400S	1
28	FAB1005	Switch ON/OFF 320S	1
28	FAB1005-2	Switch ON/OFF 400S	1
29	FAB2626	Switch VS16 250/400	1
29	FAB3678	Switch VS16 320	1
30	FAB805.3342	Outlet PG11	1
32	FABAO-20610	Quick Connector 35-70 Panel Socket	2
33	FAB277008	Contactor 320S	1
33	FAB1250034900	Contactor 400S	1
34	FAB3270-4Z	Transformer AUX with filter	1
38	FAB2446	Rear wheel	2
39	FAB3253-1	Front Wheel	2
43	FAB2917	Shunt 400A 60mV	2
46	FABV20005-3	Holder of ventilator galvanized	1
46	FABV20006-2	Holder of ventilator galvanized	1
47	FAB4172	Fan 320S	2
47	FAB3624	Fan 400S/500S	2
48	FABT32WSK.TERP	Transformer 320S + Switch + TERMINAL	1

		Thermal Arc 320S III & 400S III (Continued)	
48	FABT40WSK.TERP	Transformer 400S + Switch + TERMINAL	
49	FAB1538-1	Rectifier 320S & 400S	1
50	FABV20009-1	Holder of choke galvanized	2
51	FABV20215-3	Support of facia panel galvanized	1
52	FABV20010-3	Holder of rectifier 320S & 400S galvanized	1
53	FABVS040372	Clamp for the cable Bundle	1
55	FAB3467B	Wire Feed holder	1
56	FABAO-20610	Quick Connector 35-70 Panel Socket	1
57	FABVM0344	Bundle clamp	1
58	FAB2115	Diode LED 10mm green	1
59	FAB4298	Packing 6.35-38mm	1
60	FAB2036	Switch VS16 400S	1
61	FAB4263	Knob arrow 34mm/6 red 400S	3
61	FAB1343	Knob arrow OM-R/5 Red 320S	3
62	FAB4262	Knob arrow 34mm/6 Black 400S	1
62	FAB2015	Knob arrow OM-C/5 Black 320S	1
63	FAB4236	Filter FC 61113 + R	1
64	FAB3252	Filter FZ 730 43	3
65	FAB302P010000	Gas hose	1
66	FABVM0348	Cables 320S	1
66	FABVM0349	Cables 400S	1
67	FABVM0048	Mains Cable 4x2.5mm 320/400	1
68	FABVS040258	Chain 70 cm	2

11.03 VFE 4C III Wire Feed Unit Parts Description + Spare Part Numbers

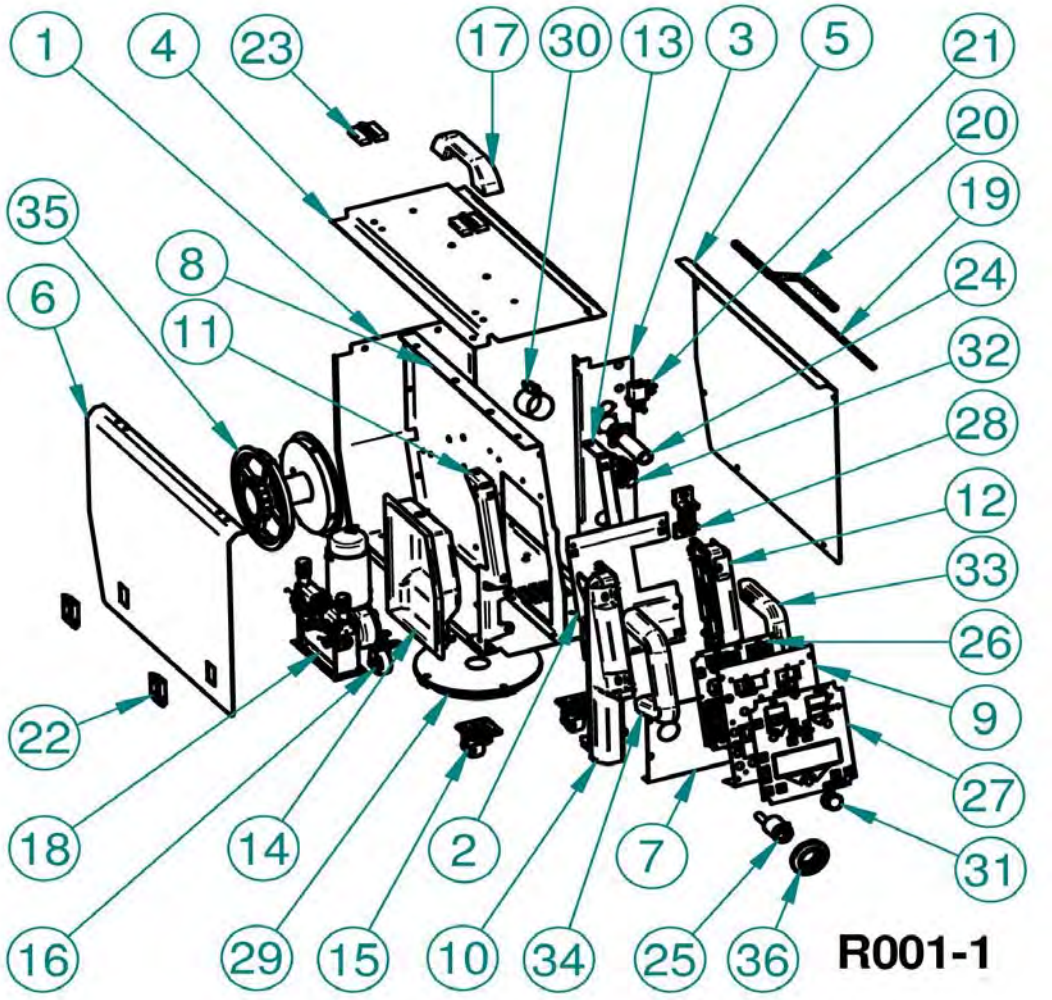


Figure 28.

Pos	Item No	Title	Quantity
		VF E4C III Wire feed unit	
1	FABV10001-5	Bottom galvanized WFU	1
2	FABV10019-2	PCB cover galvanized WFU	1
3	FABV10004-6	Barrier of connectors galvanized	1
4	FABV10002-3	Cover upper PS matt	1
5	FABV10006-4	Cover left Gloss	1
6	FABV10007-4	Cover right Gloss	1
7	FABVA0011-4A	Facia panel matt	1
8	FABVA0004-15	Support vertical compact galvanized	1
9	FABV10013-3A	Front panel matt	1
10	FABV0316	Corner Right	1
11	FABV10014-2	Corner support right galvanized	1
12	FABV0317	Corner Left	1
13	FABV10015-2	Corner support left galvanized	1
14	FABV0318	Feeder Cover Plastic	1

		VF E4C III Wire feed unit (Continued)	
15	FAB2927	Front Wheel	2
16	FAB2928	Rear Wheel	2
17	FAB4220	Handle	1
18	FAB4322-1	Feed Motor / Gearbox (VF E4C III Fab 320S/400S)	1
19	FAB302P010000	Gas hose	0.75
20	FABV9040157.Y	Cables PS4W mont. cas. 0.34m 70mm DIGITAL	1
21	FAB2557	Solenoid Valve 24V 50Hz AC	1
22	FAB7.686.300	Door Lock	2
23	FAB4121	Door Hinge	2
24	FABVM0112.YQ	Bundle PS.Y DIGITAL	1
25	FABBG-90625	Connector EURO Body	1
26	FAB3979.d	Control PC Board - Digital	1
27	FAB3505	Film PCB PANEL	1
28	FAB2917-1	Shunt 400A 60mV	1
29	FAB3467A	Feeder holder	1
30	FABVS040372	Clamp for the cable Bundle	1
31	FAB4476	Knob 25,0 2004-2 Without and arrow, Without a Line	1
32	FAB711P001206	Connector TKB 50-70	1
33	FAB3598	Handle - Holder L	1
34	FAB3599	Handle - Holder R	1
35	FAB1627	Spool Holder Standard 2 (30 kg)	1
36	FAB3440	Cover Connector EURO Body	1

11.04 Parts Description Fabricator 500S

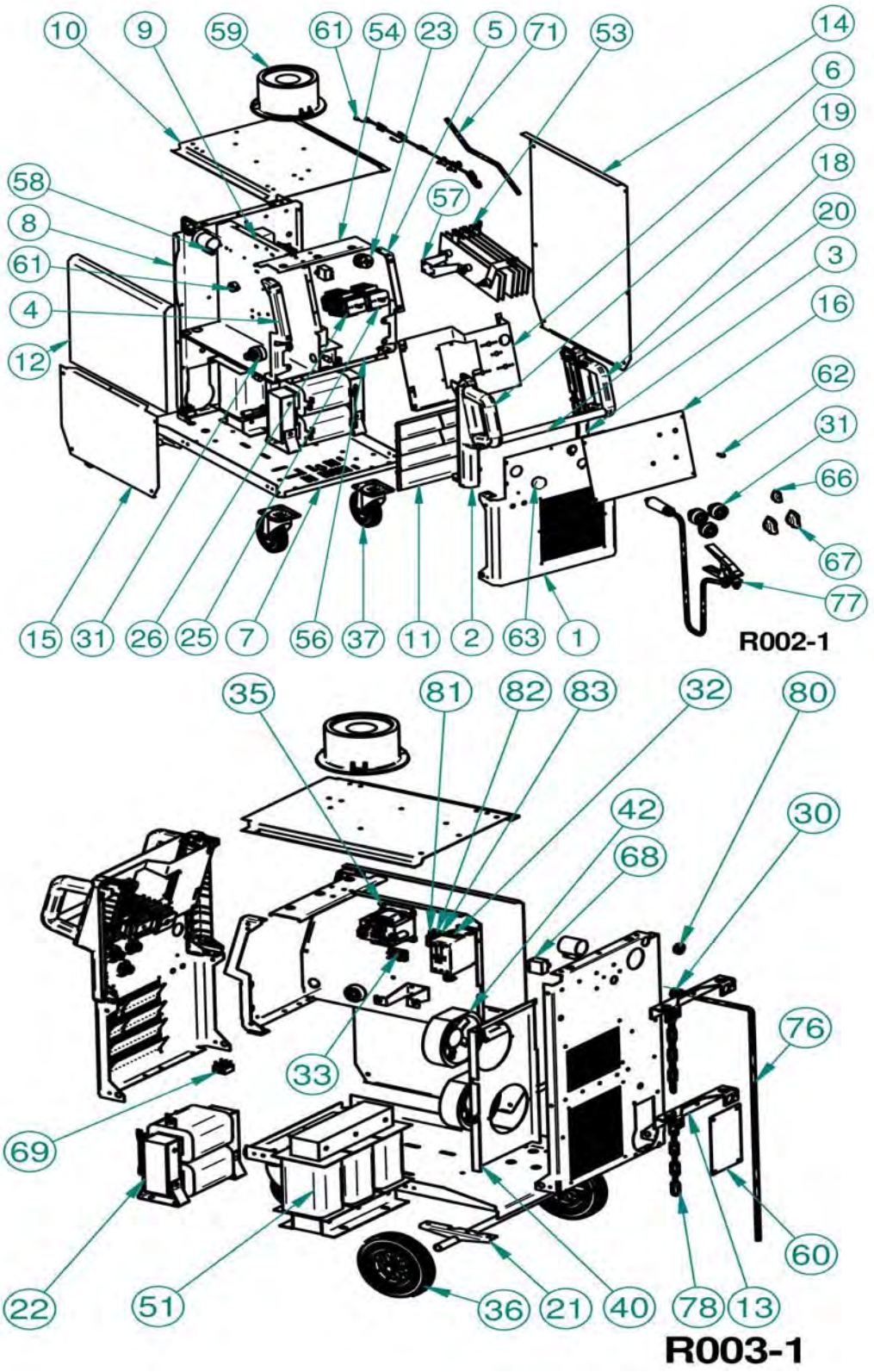


Figure 29.

11.04 Spare Part Numbers Fabricator 500S

Pos	Item No	Title	Quantity
		Thermal Arc 500S III	
1	FABVA0237-6A	Facia panel matt	1
2	FABV0316	Corner Right	1
3	FABV0317	Corner Left	1
4	FABV10014-4	Corner support right galvanized	1
5	FABV10015-4	Corner support left galvanized	1
6	FABV10219-4	PCB cover galvanized	1
7	FABVA0201-6	Bottom galvanized	1
8	FABVA0232-10	Rear panel galvanized	1
9	FABVA2238-5	Support vertical galvanized	1
10	FABVA0202-6A	Cover upper matt	1
11	FABV10231-3	Fan shutter galvanized	1
12	FABV30209-1B	Lateral cover right upper gloss	1
13	FABV10237-3A	Holder gas bottle matt	2
14	FABV30206-4B	Lateral cover left gloss	1
15	FABV30210-6B	Lateral cover right lower gloss	1
16	FABV30220-6A	Front panel Generator matt	1
18	FAB3598	Handle - Holder L	1
19	FAB3599	Handle - Holder R	1
20	FABV10551-4N	Handle bar galvanized	1
21	FABV10300-1A	Carriage compact matt	1
22	FAB4273	Choke 500S	1
23	FABVM0353	Switch VS16 ON/OFF	1
25	FAB2631-1	Switch 500S FINE	1
26	FAB1831-1	Switch 500S COARSE	1
30	FAB2549	Outlet GP16	1
31	FABAO-20610	Quick Connector 35-70 Panel Socket	4
32	FAB1336000100	Contactor 500S	1
33	FAB3293	Terminal board 1916	1
35	FAB4142-1Z	Aux Transformer with filter	1
36	FAB4122	Rear wheel	2
37	FAB3254-1	Front Front Wheel	2
40	FABV30204-5	Holder of ventilator galvanized	1
42	FAB3624	Fan 400S/500S	2
51	FABT51WSK.TERP	Transformer 500S + Switch + TERMINAL	1
53	FAB2671-1	Rectifier 500S	1
54	FABV10235-4	Support of front eye galvanized	1
56	FABV10234-4	Support of facia panel galvanized	1
57	FABV30211-2	Holder of rectifier galvanized	1
58	FABVS040372	Clamp for the cable Bundle	1
59	FAB3467B	Wire Feed holder	1
60	FABV30230-3	Cover galvanized	1

		Thermal Arc 500S III (Continued)	
61	FABVM0364	Bundle Generator	1
62	FAB2073	LED Sleeve 10mm RTF-1090	1
63	FAB4298	Packing HP208/6,35-38mm	1
66	FAB1343	Knob arrow OM-R/5 Red	1
67	FAB1141	Knob arrow OS-C/6 Black	2
68	FAB4236	Filter FC 61113 + R	1
69	FAB3252	Filter FZ 730 43	3
71	FABVM0370	Cables 500S	1
76	FABVM0104	Mains Cable 4x4mm	1
78	FABVS040258	Chain 70 cm	2
80	FAB4458	Bushing 2879	1
81	FAB3235	RSA4 clip	1
82	FAB3260	RSA4 White	1
83	FAB3234	Clamp White	2

11.05 VFE 4C HS III Wire Feed Unit Parts Description + Spare Part Numbers

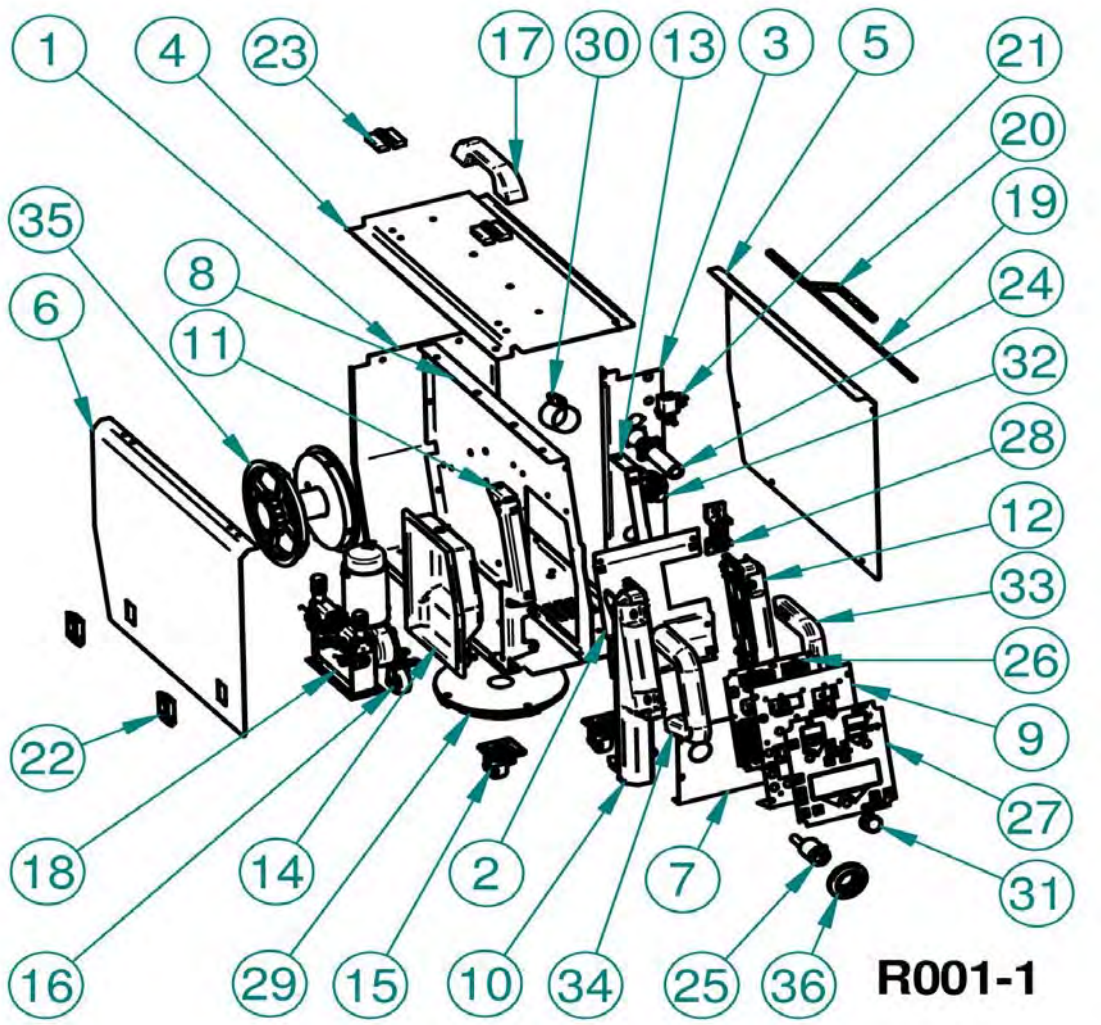


Figure 30.

Pos	Item No	Title	Quantity
		VF E4C III Wire feed unit	
1	FABV10001-5	Bottom galvanized WFU	1
2	FABV10019-2	PCB cover galvanized WFU	1
3	FABV10004-6	Barrier of connectors galvanized	1
4	FABV10002-3	Cover upper PS matt	1
5	FABV10006-4	Cover left Gloss	1
6	FABV10007-4	Cover right Gloss	1
7	FABVA0011-4A	Facia panel matt	1
8	FABVA0004-15	Support vertical compact galvanized	1
9	FABV10013-3A	Front panel matt	1
10	FABV0316	Corner Right	1
11	FABV10014-2	Corner support right galvanized	1
12	FABV0317	Corner Left	1
13	FABV10015-2	Corner support left galvanized	1

		VF E4C III Wire feed unit (Continued)	
14	FABV0318	Feeder Cover Plastic	1
15	FAB2927	Front Wheel	2
16	FAB2928	Rear Wheel	2
17	FAB4220	Handle	1
18	FAB4322-1	Feed Motor / Gearbox (VF E4C III Fab 320S/400S)	1
19	FAB302P010000	Gas hose	0.75
20	FABV9040157.Y	Cables PS4W mont. cas. 0.34m 70mm DIGITAL	1
21	FAB2557	Solenoid Valve 24V 50Hz AC	1
22	FAB7.686.300	Door Lock	2
23	FAB4121	Door Hinge	2
24	FABVM0112.YQ	Bundle PS.Y DIGITAL	1
25	FABBG-90625	Connector EURO Body	1
26	FAB3979.d	Control PCB	1
27	FAB3505	Film PCB PANEL	1
28	FAB2917-1	Shunt 400A 60mV	1
29	FAB3467A	Feeder holder	1
30	FABVS040372	Clamp for the cable Bundle	1
31	FAB4476	Knob 25,0 2004-2 Without and arrow, Without a Line	1
32	FAB711P001206	Connector TKB 50-70	1
33	FAB3598	Handle - Holder L	1
34	FAB3599	Handle - Holder R	1
35	FAB1627	Spool Holder Standard 2 (30 kg)	1
36	FAB3440	Cover Connector EURO Body	1

11.06 Water Cooler Parts Description + Spare Part Numbers

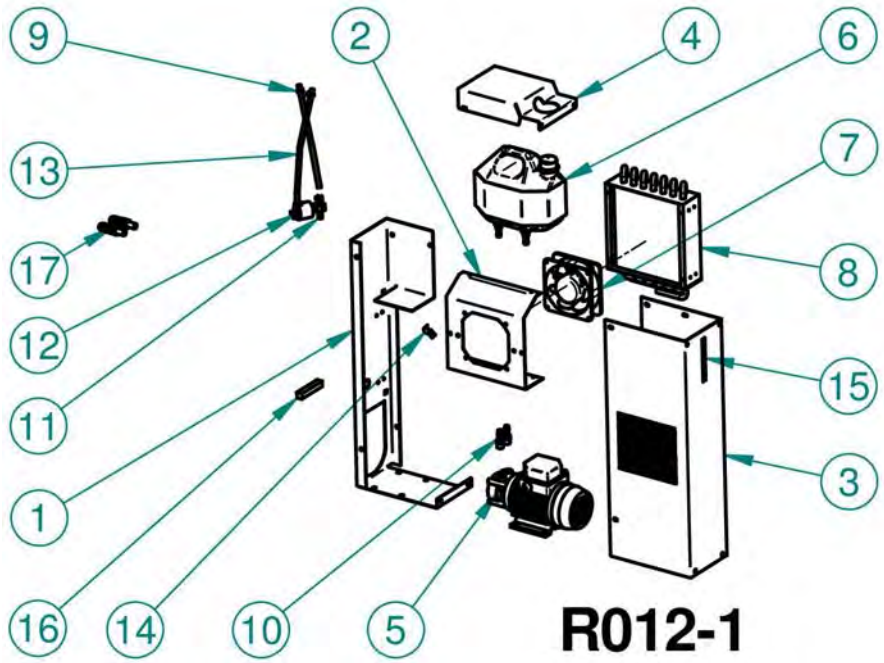


Figure 31.

Pos	Item No	Title	Quantity
		Cooler for 500S III	
1	FABV10241-6	Body Panel galvanized	1
2	FABV10503-4	Holder of ventilator galvanized	1
3	FABV10243-7A	Cover matt	1
4	FABV10245-6A	Cover upper matt	1
5	FAB2457	Pump MTP-600 with plastic cover	1
6	FABVM0373	Tank Water cooling	1
7	FAB4172	Fan 500S Cooler	1
8	FAB4131	Heat Exchanger	1
9	FAB2546	Clamp 8-12	10
10	FAB3490	Fitting GES 8/R 1/4	2
11	FABVS040375	Adaptor FEMALE for flow sensor FL-2000	1
11	FABVS040376	Adaptor MALE for flow sensor FL-2000	1
12	FAB4260	Flow sensor FL-2000	1
13	FABVM0371	Hose Set	1
14	FABV9040040	Cable clamp S12	1
15	FAB2705	Film PLEXI 140x50mm; 1,5mm	1
16	FAB0545002	Profile A1010 6x9mm	0.1
17	FABBD-80225	Water Quick Connector 10mm	2
18	FABVM0400	Fixing Kit for fitting to 500S	1

SECTION 12: MACHINE SCHEMATICS

12.01 Power Source Schematic Fabricator 250C III & 320C III

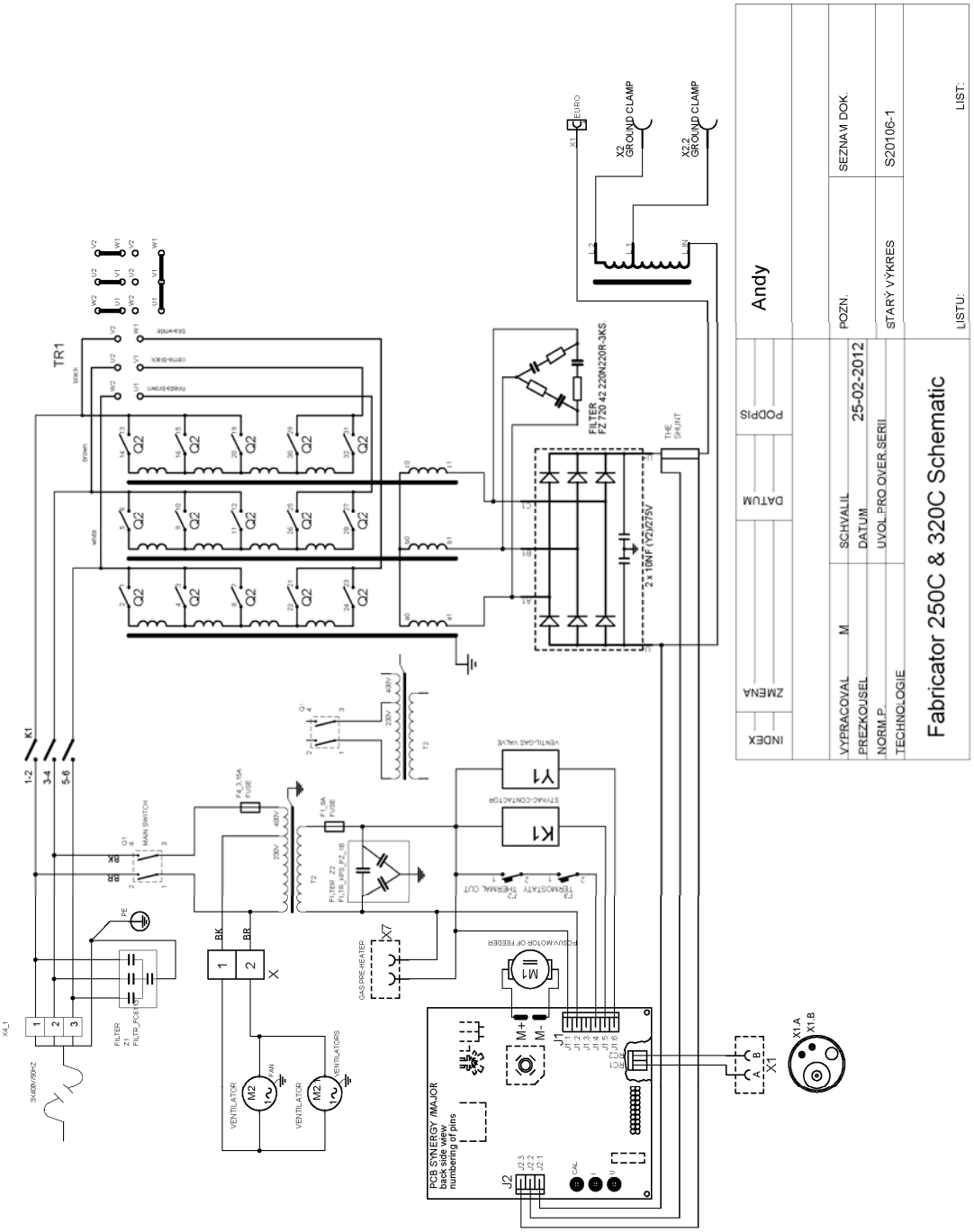


Figure 32.

12.02 Power Source Schematic Fabricator 320S III & 400S III

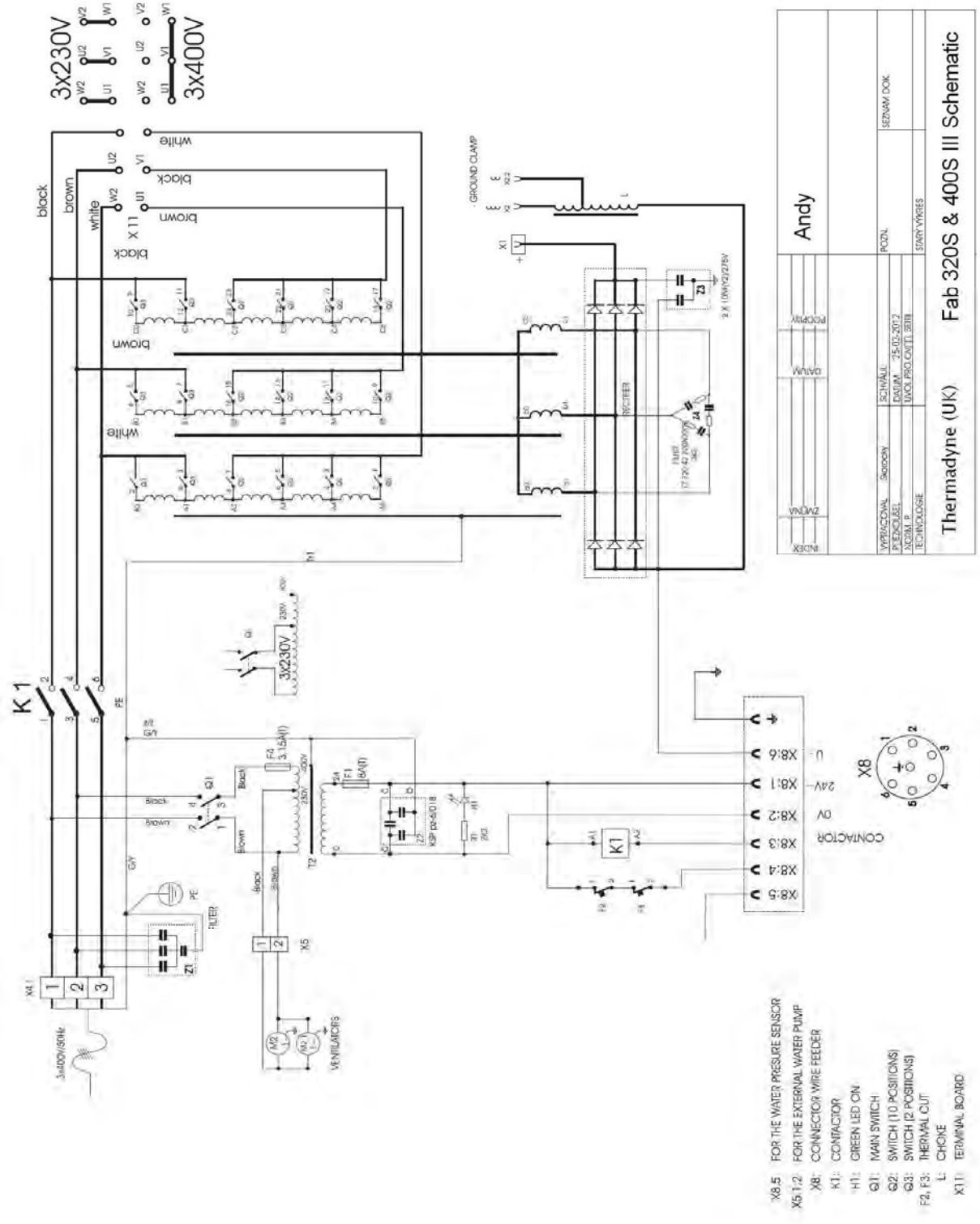


Figure 33.

12.03 Power Source Schematic Fabricator 500S III

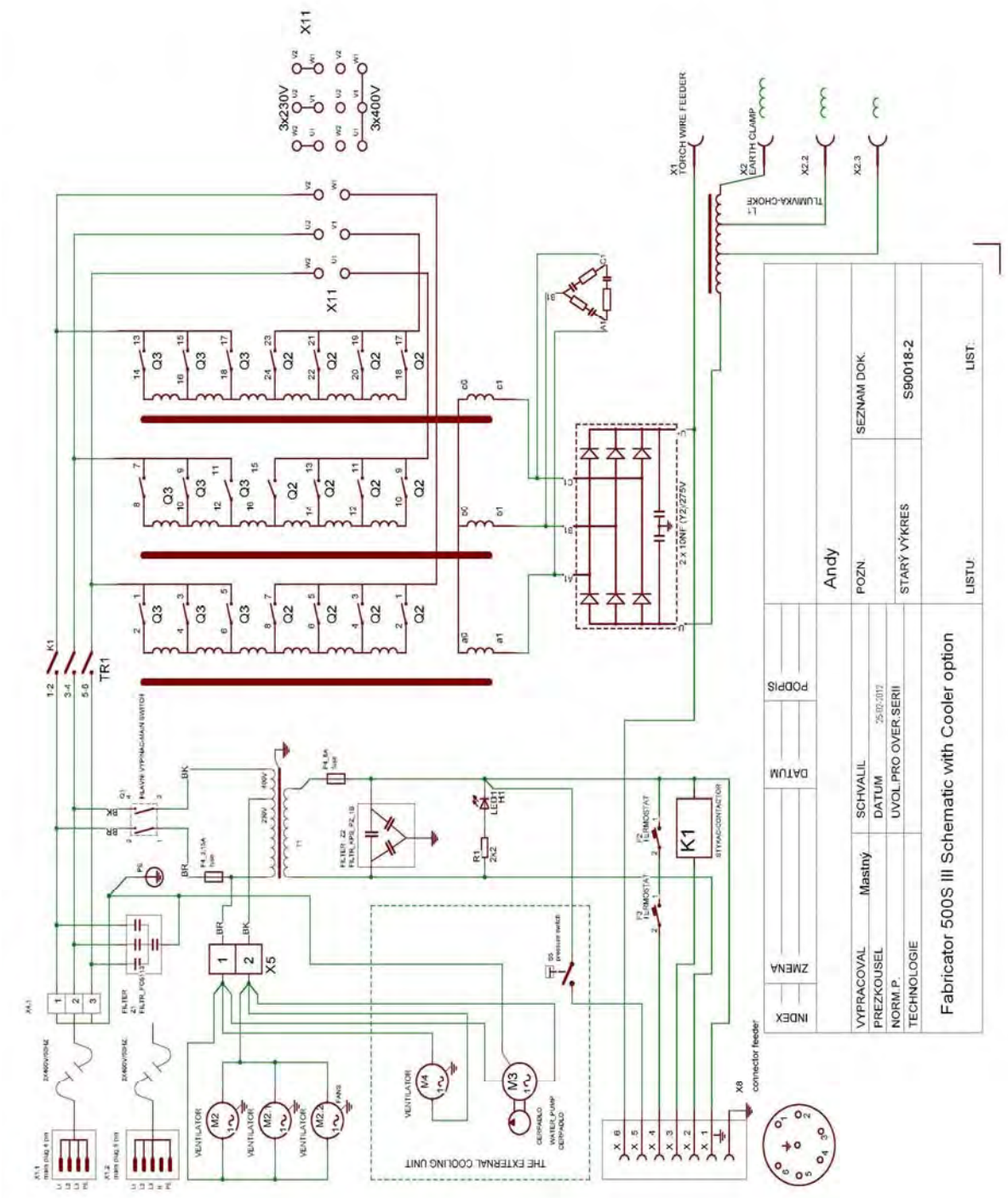


Figure 34.

12.04 Wire Feed Unit Schematic (VFE 4C III & VFE 4C HS III WFU)

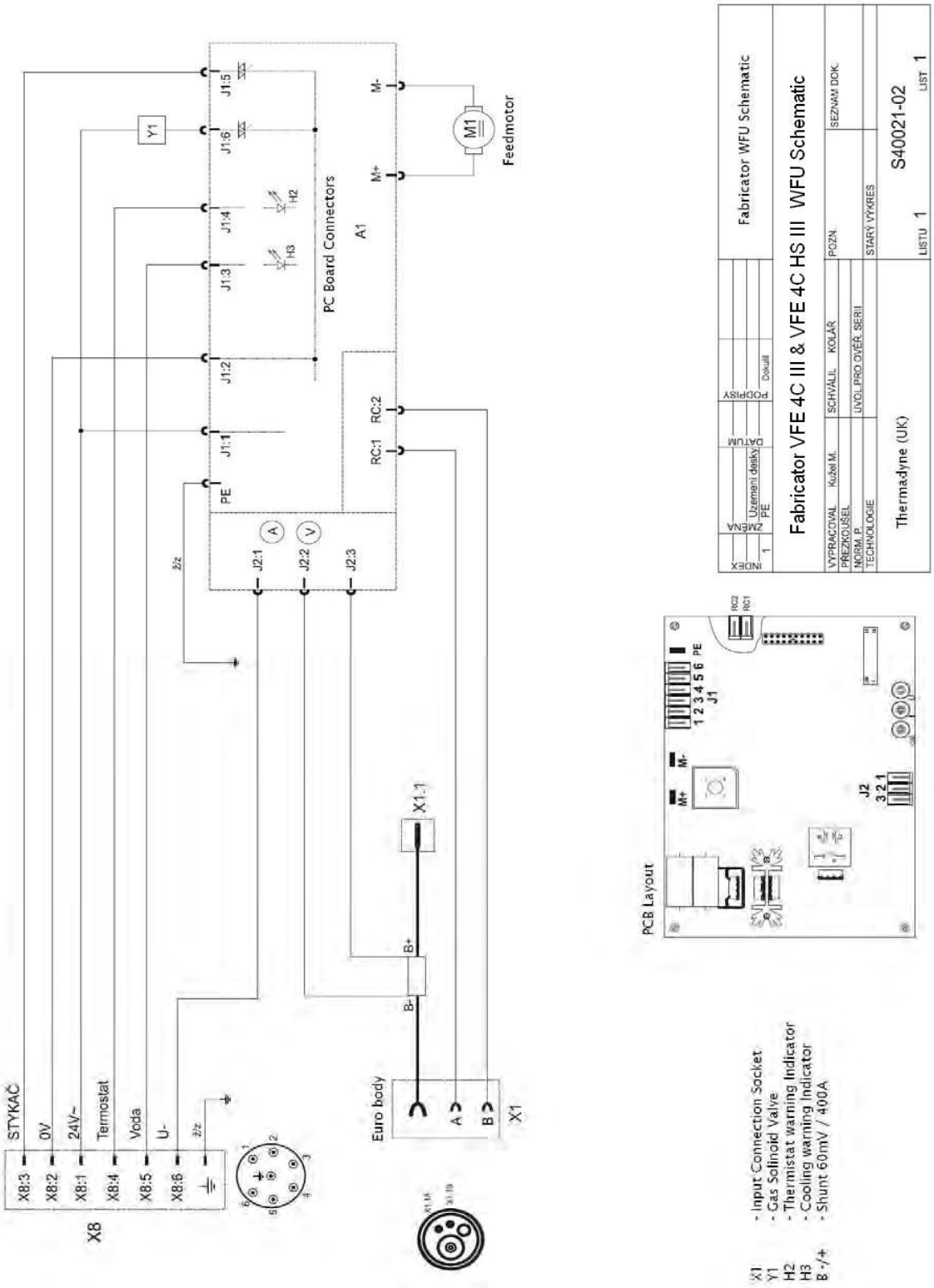


Figure 35.

SECTION 13: OPTIONAL ACCESSORIES

Part No	Description
A.028E	Water Cooler c/w fittings (500S Only)
VM0391E	1.6M Interconnecting Cable Assy (air Cooled) 320S
VM0393E	5M Interconnecting Cable Assy (air Cooled) 320S
VM0394E	10M Interconnecting Cable Assy (air Cooled) 320S
VM0263E	1.6M Interconnecting Cable Assy (air Cooled) 400S/500S
VM0266E	5M Interconnecting Cable Assy (air Cooled) 400S/500S
VM0267E	10M Interconnecting Cable Assy (air Cooled) 400S/500S
VM0264E	1.6M Interconnecting Cable Assy (Water Cooled) 500S
VM0265E	5M Interconnecting Cable Assy (Water Cooled) 500S
VM0268E	10M Interconnecting Cable Assy (Water Cooled) 500S
	Feed Rolls for Fabricator 250C/320C/320S/400S:
2187	0.6/0.8mm Hard Wire V Groove Feed Roll
2189	1.0/1.2mm Hard Wire V Groove Feed Roll
2511	1.2/1.6mm Hard Wire V Groove Feed Roll
2269	10/1.2mm Soft Wire U Groove Feed Roll
2316	1.2/1.6mm Soft Wire U Groove Feed Roll
2513	1.6/2.0mm Soft Wire U Groove Feed Roll
2319	1.0/1.2mm Cored Wire V Groove Feed Roll
2321	1.2/1.6mm Cored Wire V Groove Feed Roll
	Feed Rolls for Fabricator 500S:
1657	0.6/0.8mm Hard Wire V Groove Feed Roll
2062	1.0/1.2mm Hard Wire V Groove Feed Roll
1729	1.2/1.6mm Hard Wire V Groove Feed Roll
1829	10/1.2mm Soft Wire U Groove Feed Roll
2313	1.2/1.6mm Soft Wire U Groove Feed Roll
2314	1.6/2.0mm Soft Wire U Groove Feed Roll
2298	1.0/1.2mm Cored Wire V Groove Feed Roll
2278	1.2/1.6mm Cored Wire V Groove Feed Roll
	2 Roll Drive = 250C **4 Roll Drive = 320C/320S/400S/500S**

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