

Jefferson®

PROFESSIONAL TOOLS & EQUIPMENT

160A **ARC TIG** **INVERTER WELDER**
230V ~ 50Hz • 16A



JEFTARC160-230

User Manual
v.1.1



DESCRIPTION

A powerful, versatile inverter welder with variable output current range and equipped with the latest IGBT technology:

Summary of Features:

- Lift TIG Function
- Digital LED Display
- Hot Start
- Arc Force
- Overheat Protection
- Generator Friendly
- Duty Cycle: 40% @ 160A
- Compatible with 2.5, 3.2, 4.0mm Electrodes

SPECIFICATIONS

Model Number:	JEFTARC160-230
Voltage:	230V
Frequency:	50Hz
Rated Input Current:	16A
No-Load Voltage:	60V
No Load Loss:	50W
Output Current Range:	30-160A
Duty Cycle:	160A @ 40%
Efficiency:	85%
Power Factor:	0.73
Cable Connections:	35x50mm
Insulation Class:	F
Protect Class:	IP21S
Weight:	8kg
Dimensions (mm)	430 x 150 x 390mm

UNPACKING

Upon receipt of the equipment, ensure all components are present and have remained undamaged in transit. Retain the packing materials and packaging in case future transportation of the equipment is necessary.

We recommend that the packaging is kept, at least within the period of the guarantee.

SAFETY GUIDELINES



Please read and ensure that you understand all of the operating instructions, safety precautions and warnings in this Instruction Manual before operating or maintaining this equipment. An accident can often be avoided by recognizing a potentially hazardous situation before it occurs, and by observing appropriate safety procedures. Hazards that must be avoided to prevent bodily injury or machine damage are identified by warnings on the equipment and in this Instruction Manual. Never use this equipment or modify it in any way that has not been specifically recommended by the manufacturer. Contact Jefferson Tools for all information relating to the repair and maintenance of this equipment. Contact a qualified electrician for advice on any issues relating to electrical safety in your working environment.

ELECTRICAL SAFETY



Ensure that you check the equipment thoroughly to ensure it is safe and fit for purpose before each use. It is important that you inspect all plugs, sockets, power cables and electrical fittings for wear and damage and repair or replace any defective components. The risk of electric shock can be minimised by the correct use of the appropriate electrical safety devices.

- We recommend that you fit a **Residual Current Circuit Breaker (RCCB)** in the main distribution board and that a **Residual Current Device (RCD)** is used when operating this equipment.
- The **Electricity at Work Act 1989** includes legislation that places legal implications on employers to ensure the safety of electrical devices in the workplace. The regulations dictate that all portable equipment must be inspected regularly and tested to ensure that it is safe for use. 'Portable equipment' means any electrical item that can be moved and this is often referred to as **Portable Appliance Testing (PAT)**. PAT testing should be carried out regularly on this equipment by trained, authorised personnel, as required by the legislation.
- The **Health and Safety at Work Act 1974** states that it is the responsibility of the owner of electrical appliances to ensure that both the equipment and working environments are maintained to ensure safe operation at all times.
- Check that all equipment cables are secure, correctly insulated, free from damage, and protected against short circuit and overload before connecting to the power supply. Do not use worn or damaged cables, plugs, sockets or other fittings.
- Ensure that the power supply matches voltage requirements specified on the equipment.
- Ensure the power cable is kept away from heat, oil and sharp edges.
- Always disconnect the equipment from the power source before servicing, inspecting, maintaining, cleaning, replacing or checking any parts.
- Do not carry the equipment while it is connected to its power source.
- Do not use this equipment in damp or wet conditions or environments with high condensation.
- Do not touch live electrical parts.
- Wear dry protective clothing (free from oil or other flammable residues).
- Avoid contact with work piece or ground during welding.
- Do not touch the work piece & welding wire at the same time.
- Use only the cables and rods recommended by the manufacturer.
- Always disconnect from the mains before carrying out any service or maintenance on this equipment.
- Use AC output ONLY if required for the welding process. If AC output is required, use remote output control if present on unit.
- Protect yourself from electric shock by insulating yourself from work and ground using dry rubber mats, dry wood or plywood, or other dry insulating material big enough to cover the full working area.

GENERAL EQUIPMENT SAFETY

The welding process can be dangerous if the correct safety procedures are not followed. It is important that anyone operating this equipment is fully-trained and wearing the appropriate personal protection equipment. Please read these instructions carefully and store them in a safe place for future reference.

ARC Rays can injure eyes and cause burns:

- Always wear a helmet with full face and neck protection with shade #10 Lens.
- Ensure that you use the appropriate eye, ear and body protection equipment.
- Do not touch work piece & welding wire at the same time.
- Use only the cables and rods recommended by the manufacturer.
- Always disconnect from the mains before carrying out any service or maintenance on this equipment.

Fire Hazards:

- Remove all flammable materials from within 35ft of the welding arc.
- Never carry out welding near pets or small children.
- Ensure that a fire extinguisher is available when welding.
- Wear oil free garments without pockets or cuffs.
- Do not weld on closed containers.

Toxic Fumes and Gases:

- Do not breathe fumes emitted by the welding process.
- Wear appropriate breathing apparatus.
- Ensure that you are working in a well-ventilated environment and that there is suitable exhaust at the arc.
- Do not cut coated, galvanised or plated materials (for example zinc, cadmium, mercury, barium) to avoid the risk of poisoning.
- Use a ventilator when necessary.
- Always refer to the MSDS for all welding materials used.

Magnetic Fields:

- Keep people with pacemakers away from the area when the welder is in use.

FIRST USE / SET UP

1. Make sure the air intake is clean and clear to ensure the cooling system can operate at optimum performance levels.
2. Ensure that the housing is earthed using cable not less than 4mm².
3. Connect the electrode holder and earth clamp.
4. Check that the polarity is correct for the welding process to ensure safety, a stable arc and avoid weld spatter.
5. Check that the power supply is compatible with welder specifications and that all cables and plugs are correct and free from damage.

Note: The induction power is equipped with a power voltage compensation function. When rated output voltage moves within +/- 15%, the supply will be adjusted to allow the welder to operate normally.

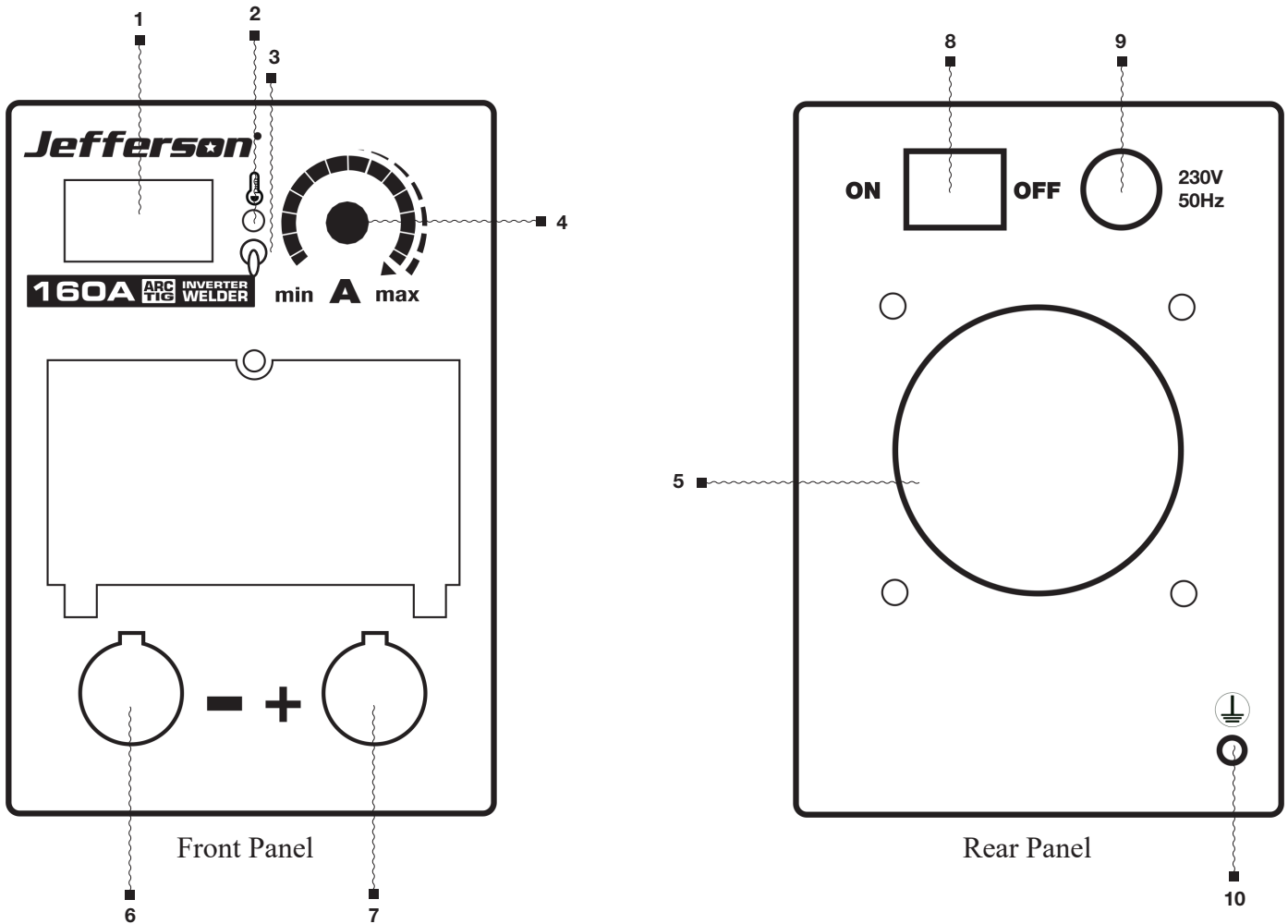
When using extension cables ensure that the length of cable is sufficient to carry the required voltage as any voltage drop will deplete safety and performance. Do not wrap the cable around any part of your body while welding.

Personal Protection Equipment:

- Anyone in the general area of the welding process should wear ear defenders to protect hearing.
- Wear approved safety glasses with side shields under your welding helmet or face shield and at all times in the work area.
- Wear complete body protection. Wear oil-free protective clothing such as leather gloves, heavy shirt, cuffless pants, and high boots.

Fig1: Welder Setup

EQUIPMENT IDENTIFICATION



1	Digital Display
2	Temperature / Current Overload Warning
3	Lift TIG / MMA switch
4	Current Control
5	Cooling Fan / Guard
6	Output Socket (Negative End)
7	Output Socket (Positive End)
8	Power Switch
9	Power Cable
10	Earth Connection

OPERATION

1. Turn the power switch to “**ON**” on the front panel. The digital screen will be activated to display the current welding current. Check that the cooling fan is operating to ensure the welder is working correctly.
2. Select the welding mode you require using the control switch (Lift TIG / MMA)
3. Adjust the welding current according to the thickness of the welding work piece, the diameter of the electrode (refer to table below for guidelines).
4. Clip the electrode to the electrode holder.

Working Environment

1. Welding should be done in relatively dry environments, with air humidity less than 90%.
2. Avoid welding in strong sunshine or damp conditions, welder and all working materials should remain dry at all times.
3. Avoid welding operation in dusty environments and corrosive air environment.
4. Avoid welding in windy and drafty areas.

Welder

1. Ensure that the air inlet is kept clear to allow the fan and cooling system to perform as required.
2. Prevent overloading - keep the welding current less than the maximum overload current. Overloading the current will reduce the performance and lifespan of this equipment and is potentially dangerous.
3. Ensure that the voltage is kept to recommended levels as indicated on the specification plate.
4. Ensure that the welder is earthed using a minimum of 6mm square cable before operation.
5. Ensure that the equipment operates within the recommended duty cycle. Failure to operate within the specified duty cycle will result in thermal cut-out. The temperature light will be activated when the equipment becomes too hot. In the event of thermal cut-out leave the welder running and allow the fan and cooling system to reduce the equipment to the required temperature before resuming any welding work.

Welding Electrode / Current Guidelines

Electrode	Ø2.5	Ø3.2	Ø4.0
Current	70-100A	110-130A	130-160A

MAINTENANCE



WARNING:

Ensure that the power supply is disconnected before opening the casing and ensure that all maintenance and repairs are carried out by qualified technicians.

1. Remove any dust and particle debris from the welder, air inlet and fan regularly. Keep all welding equipment clean and dry.
2. Use a mild air flow to remove dust and particles avoid using water or steam on any part of the equipment.
3. Check the insulation regularly using an ohmmeter.
4. Store all welding equipment in a safe, mild and dry environment when not in use.

Important:

During warranty period all repairs and maintenance must be carried out by an authorized Jefferson engineer. Any unauthorized maintenance and repairs will invalidate the warranty. Contact Jefferson Tools for any enquiries.

When not in use place the fan in its original box or otherwise cover to protect from dust, and store in a safe, dry, environment and safe from children and animals.

TROUBLESHOOTING

PROBLEM	CAUSE / SOLUTION
Difficulty starting arc / Intermittent arc	<ol style="list-style-type: none"> 1. Ensure that the welding electrode is of sufficient quality for the work at hand. 2. Ensure that the electrode is not damp. 3. Check cabling for damage and ensure that the cables are the correct length for the welding process.
Output current cannot meet the rated value	<ol style="list-style-type: none"> 1. Incorrect power supply. Check and correct.
Unstable current during the welding process	<ol style="list-style-type: none"> 1. Issues with supply voltage. Check and correct.
Excessive sparking	<ol style="list-style-type: none"> 1. Electrode is too small or current too high for the welding process. 2. The output polarity is incorrect: Under normal conditions, the electrode holder connects to the negative pole, and the work-piece connects to the positive pole.

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Parts & Servicing

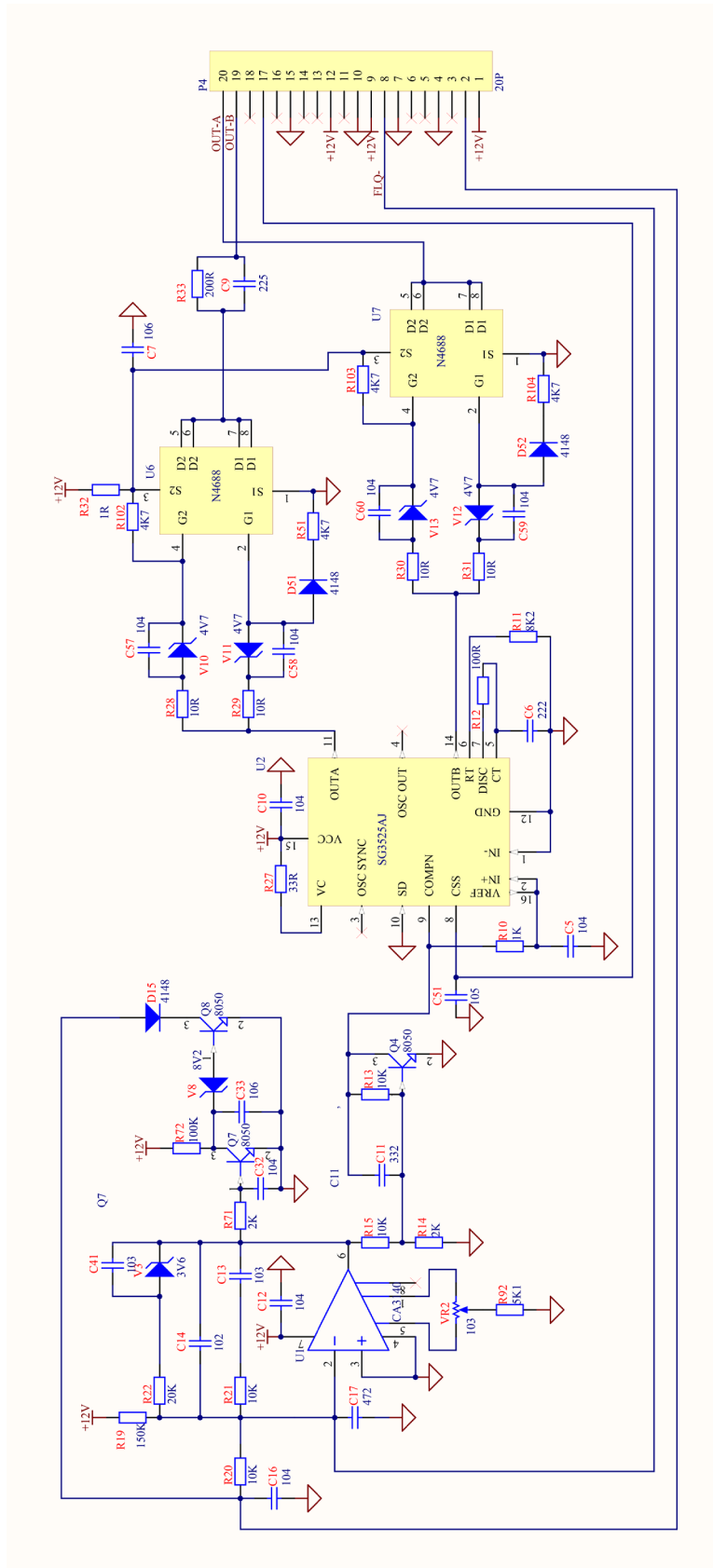
For Jefferson approved replacement parts contact your nearest dealer or contact Jefferson tools

Telephone: +44 (0)1244 646 048

Fax: +44 (0)1244 241 191

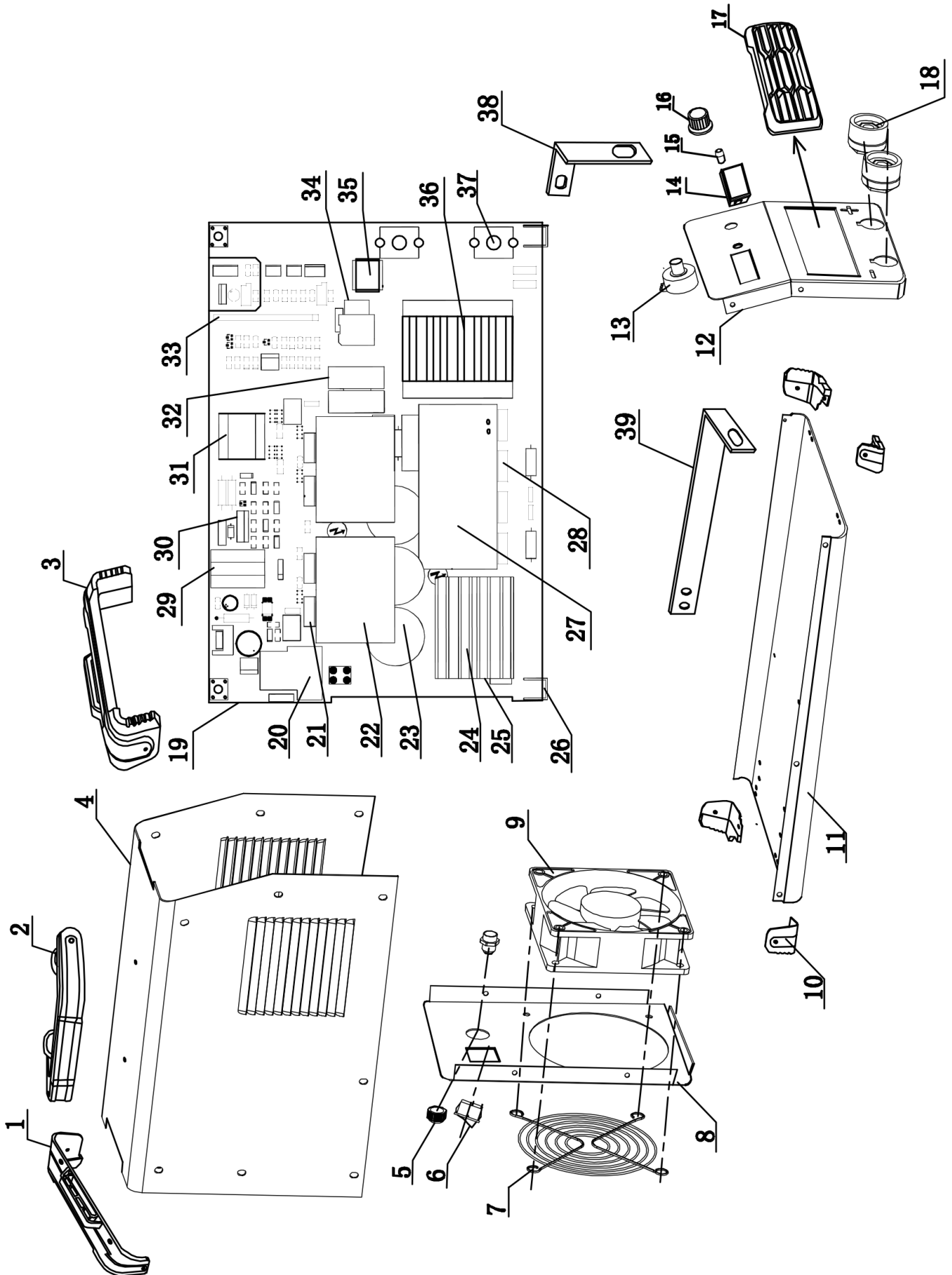
Email: warranty@jeffersonstools.com

ELECTRICAL WIRING DIAGRAM



PARTS LIST & DIAGRAM

1	Wrap Angle Back
2	Handle
3	Wrap Angle Front
4	Cover
5	Water Joint
6	Power Switch
7	Guard
8	Back Panel
9	Fan
10	Wrap Angle 1
11	Bottom Panel
12	Front Panel
13	Current Adjuster
14	Current Meter
15	O.C Light
16	Adjuster
17	Plastic Front Panel
18	Quick Connector
19	Main Control Board
20	Relay
21	IGBT
22	Inverter Radiator
23	Capacitor
24	Rectifier Bridge Radiator
25	Rectifier Bridge
26	Fixed Terminal
27	Radiator
28	Diode
29	Drive Transformer
30	Mosfet
31	Transformer
32	CBB Capacitor
33	Power Board
34	Mutual Inductor
35	Shunt
36	Main Transformer
37	Output
38	Output Strips (-)
39	Output Strips (+)



ENVIRONMENTAL PROTECTION



Recycle any packaging and unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment.

When the product becomes completely unserviceable, reaches the end of its working life and requires disposal, drain off any fluids (if applicable) into approved containers and dispose of the product and the fluids according to local regulations.

WEEE Waste Electrical and Electronic Equipment Statement



Information on Disposal for Users of Waste Electrical & Electronic Equipment

This symbol on the product(s) and / or accompanying documents means that used electrical and electronic products should not be mixed with general household waste. For proper treatment, recovery and recycling, please take this product(s) to designated collection points where it will be accepted free of charge.

For private households:

Dispose of this product at the end of its working life and in compliance with the EU Directive on Waste Electrical and Electronic Equipment (WEEE). Contact your local solid waste authority for recycling information for this equipment.

Disposing of this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling.

Please contact your local authority for further details of your nearest designated collection point.

Penalties may be applicable for incorrect disposal of this waste, in accordance with your national legislation.

For business users in the European Union:

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

Information on Disposal in other Countries outside the European Union:

This symbol is only valid in the European Union. If you wish to discard this product please contact your local authorities or dealer and ask for the correct method of disposal.

RoHS Directive 2011/65/EU

We hereby declare that this equipment has been tested and found to be compliant to RoHS Directive 2011/65/EU of the European Parliament and the Council from 08/06/2011 on restriction of the use of certain hazardous substances in electrical and electronic appliances.

Determination of levels of regulated substances in electrotechnical products, elements of Cadmium (Cd), Lead (Pb), Mercury (Hg), Chromium (Cr) and Bromine (Br) contents were measured by XRF Spectroscopy and chemical confirmation test for RoHS restricted substances.

EC DECLARATION OF CONFORMITY

We, Jefferson Tools as the authorised European Community representative of the manufacturer, declare that the following equipment conforms to the requirements of the following directives and / or standards:

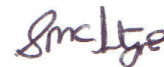
Directive / Standard:	Description:	Notified Body:
2014/30/EU	Electromagnetic Compatibility	ISET S.r.l. Via Donatori del Sangue, 9 46024 - Moglia (MN) Country : Italy
2014/35/EU	Low Voltage Directive	
2011/65/EU (as amended)	RoHS Directive	TÜV Nord Hangzhou Co. Ltd

Equipment Category: ARC/TIG Inverter Welder

Model Number • Description: JEFTARC160-230 • 160A ARC/TIG Inverter Welder

Signed by:

Stephen McIntyre



Position in the company:

Operations Director

Date:

22 February 2019

Name and address of manufacturer or authorised representative:

Jefferson Tools, Herons Way, Chester Business Park, Chester, United Kingdom, CH4 9QR
Telephone: +44 (0)1244 646 048
Fax: +44 (0)1244 241 191
Email: enquiries@jeffersonstools.com

LIMITED WARRANTY STATEMENT

Jefferson Professional Tools & Equipment, or hereafter "Jefferson" warrants its customers that its products will be free of defects in workmanship or material. Jefferson shall, upon suitable notification, correct any defects, by repair or replacement, of any parts or components of this product that are determined by Jefferson to be faulty or defective.

This warranty is void if the equipment has been subjected to improper installation, storage, alteration, abnormal operations, improper care, service or repair.

Warranty Period

Jefferson will assume both the parts and labour expense of correcting defects during the stated warranty periods below.

All warranty periods start from the date of purchase from an authorised Jefferson dealer. If proof of purchase is unavailable from the end user, then the date of purchase will be deemed to be 3 months after the initial sale to the distributor.

1 Year:

JEFTARC160-230 • 160A ARC/TIG Inverter Welder

90 Days

- All replacement parts purchased **outside** of the warranty period

Important: All parts used in the repair or replacement of warranty covered equipment will be subject to a minimum of 90 days cover or the remaining duration of the warranty period from the original date of purchase.

Warranty Registration / Activation

You can register and activate your warranty by visiting the Jefferson Tools website using the following address:

www.jeffersontools.com/warranty and completing the online form. Online warranty registration is recommended as it eliminates the need to provide proof of purchase should a warranty claim be necessary.

Warranty Repair

Should Jefferson confirm the existence of any defect covered by this warranty the defect will be corrected by repair or replacement at an authorized Jefferson dealer or repair centre.

Packaging & Freight Costs

The customer is responsible for the packaging of the equipment and making it ready for collection. Jefferson will arrange collection and transportation of any equipment returned under warranty. Upon inspection of the equipment, if no defect can be found or the equipment is not covered under the terms of the Jefferson warranty, the customer will be liable for any labour and return transportation costs incurred.

These costs will be agreed with the customer before the machine is returned.

* Jefferson reserve the right to void any warranty for damages identified as being caused through misuse

Warranty Limitations

Jefferson will not accept responsibility or liability for repairs made by unauthorised technicians or engineers. Jefferson's liability under this warranty will not exceed the cost of correcting the defect of the Jefferson products.

Jefferson will not be liable for incidental or consequential damages (such as loss of business or hire of substitute equipment etc.) caused by the defect or the time involved to correct the defect. This written warranty is the only express warranty provided by Jefferson with respect to its products.

Any warranties of merchantability are limited to the duration of this limited warranty for the equipment involved.

Jefferson is not responsible for cable wear due to flexing and abrasion. The end user is responsible for routine inspection of cables for possible wear and to correct any issues prior to cable failure.

Claiming Warranty Coverage

The end user must contact Jefferson Professional Tools & Equipment (Tel: +44 (0) 1244 646 048) or their nearest authorised Jefferson dealer where final determination of the warranty coverage can be ascertained.

Step 1 - Reporting the Defect

Online Method:

- Visit our website www.jeffersonstools.com/warranty and complete the Warranty Returns form. You can complete the form online and submit it to us directly or download the form to print out and return by post.

Telephone Method:

Contact your Jefferson dealer or sales representative with the following information:

- Model number
- Serial number (usually located on the specification plate)
- Date of purchase

A Warranty Returns form will be sent to you for completion and return by post or fax, together with details of your nearest authorised Jefferson repair centre. On receipt of this form Jefferson will arrange to collect the equipment from you at the earliest convenience.

Step 2 - Returning the Equipment

It is the customer's responsibility to ensure that the equipment is appropriately and securely packaged for collection, **together with a copy of the original proof of purchase**. Please note that Jefferson cannot assume any responsibility for any damage incurred to equipment during transit. Any claims against a third party courier will be dealt with under the terms & conditions of their road haulage association directives.

Please note: Jefferson will be unable to collect or process any warranty requests without a copy of the original proof of purchase.

Step 3 - Assessment and Repair

On receipt, the equipment will be assessed by an authorised Jefferson engineer and it will be determined if the equipment is defective and in need of repair and any repairs needed are covered by the warranty policy. In order to qualify for warranty cover all equipment presented must have been used, serviced and maintained as instructed in the user manual.

Where repair is not covered by the warranty a quotation for repair, labour costs and return delivery will be sent to the customer (normally within 7 working days).

Note: If the repair quotation is not accepted Jefferson Professional Tools & Equipment will invoice **1 hour labour time at £30 per hour plus return carriage costs (plus VAT)**.

In cases where no fault can be found with the equipment, or, if incorrect operation of the equipment is identified as the cause of the problem, a minimum of 1 hour labour at **£30 per hour plus carriage costs** will be required before the equipment will be despatched back to the customer.

Any equipment repaired or replaced under warranty will normally be ready for shipment back to the customer within 7 working days upon receipt of the equipment at an authorised Jefferson Repair centre (subject to part availability). Where parts are not immediately available Jefferson will contact you with a revised date for completion of the repair.

General Warranty Enquiries

For any further information relating to Jefferson warranty cover please call **+44 (0) 1244 646 048** or send your enquiry via email to warranty@jeffersonstools.com

Disclaimer:

The information in this document is to the best of our knowledge true and accurate, but all recommendations or suggestions are made without guarantee. Since the conditions of use are beyond their control, Jefferson Tools® disclaim any liability for loss or damage suffered from the use of this data or suggestions. Furthermore, no liability is accepted if use of any product in accordance with this data or suggestions infringes any patent. Jefferson Tools® reserve the right to change product specifications and warranty statements without further notification. All images are for illustration purposes only.



IMPORTANT! SAFETY FIRST!

Before attempting to use this product please read all the safety precautions and operating instructions outlined in this manual to reduce the risk of fire, electric shock or personal injury.



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