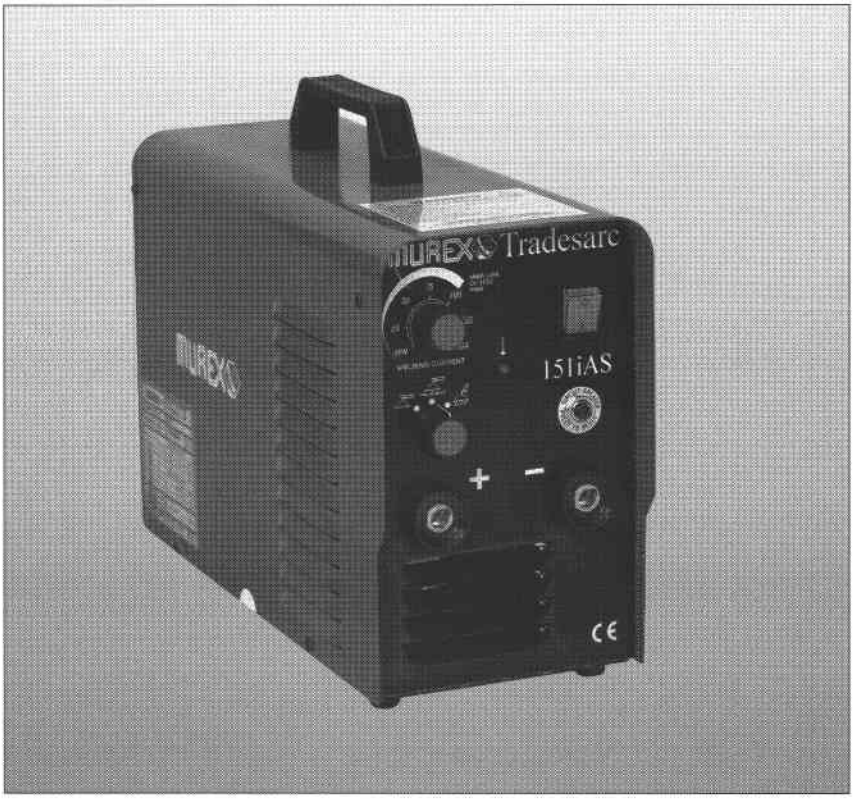
MUREX

Operating Manual

Tradesarc 151iAS



Please ensure that this Instruction Manual and Parts List is made available to the user of the equipment

DECLARATION OF CONFORMITY

Murex Welding Products Ltd.

Declare hereby that:

Murex Tradesarc 151iAS Power Source

Part No: 1416291

- is manufactured in accordance with the Council Directive 73/23/EEC (1973-02-19) and 89/336/EEC (1989-05-03) amended by Council Directive 93/68/EEC relating to electrical equipment designed for use within certain voltage limits.
- conforms with the protection requirements of Council Directive 89/336/EEC, amended by Council Directives 91/263/EEC, 92/31/EEC and 93/68/EEC relating to electromagnetic compatibility.
- is manufactured in accordance with EN60974-1 Safety Requirements for Arc Welding Equipment.
- is manufactured in accordance with EN50199 Electromagnetic Compatibility for Arc Welding Equipment.

On behalf of Esab Group (UK) Ltd
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Managing Director
Esab Group (UK) Ltd
1st September 2003

MUREX

Contents

WARNING

This welding equipment has been designed, manufactured and tested to the highest standards to ensure long and trouble free life. However, regular maintenance is an essential part of keeping the machine operating in a reliable and safe manner and your attention is drawn to any maintenance instructions that are contained in this manual.

In general, all welding equipment should be thoroughly inspected, tested and serviced at least annually. More frequent checking will be required when the equipment is heavily used.

Wear and tear, particularly in electro-mechanical and moving components, are gradual processes. Caught in time, repair costs are small and the benefits in performance reliability and safety are significant. Left alone, they can put the equipment, and you, at risk.

Have this equipment regularly inspected and maintained by an approved service centre.

WARNING

ARC WELDING AND CUTTING CAN BE INJURIOUS TO YOURSELF AND OTHERS. TAKE PRECAUTIONS WHEN WELDING. ASK FOR YOUR EMPLOYER'S SAFETY PRACTICES WHICH SHOULD BE BASED ON MANUFACTURERS' HAZARD DATA.

ELECTRIC SHOCK - Can Kill

- Install and earth the welding unit in accordance with applicable standards.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves, or wet clothing.
- Insulate yourself from earth and work.
- Ensure your working position is secure.

FUMES AND GASES – Can be Dangerous to Health

- Keep your head out of the fumes.
- Use ventilation, extraction at the arc, or both, to keep fumes and gases from your breathing zone and the general area.

ARC RAYS – Can Injure Eyes and Burn Skin

- Protect your eyes and body. Use the correct welding screen and filter lens and wear protective clothing.
- Protect bystanders with suitable screens or curtains.

NOISE– Excessive noise can damage hearing

- Protect your ears. Use ear defenders or other hearing protection.
- Warn bystanders of the risks.

READ AND UNDERSTAND THE INSTRUCTION MANUAL BEFORE INSTALLING OR OPERATING AND SEE 18 PUBLICATION 237 'The arc welder at work' AVAILABLE FROM THE MANUFACTURER.

PROTECT YOURSELF AND OTHERS

SAFETY

In any arc welding or gouging operation, it is the responsibility of the user to observe certain safety rules to ensure his personal safety and to protect those working near him.
Read all safety articles relevant to arc welding published by the 18. Pay particular attention to any CAUTION or WARNING Notes included in this manual. CAUTION indicates possible equipment damage. WARNING indicates possible hazard to life.

> ⚠ WARNING ⚠
>
> *The ON/OFF switch on this equipment does not isolate the unit from the mains electrical supply.* ***AC POWER IS PRESENT ON THE ON/OFF SWITCH TERMINALS.***
> *The On/Off lamp is an indication that the supply is switched on and does not imply that the unit is isolated from the supply.* ***BEFORE REMOVING THE COVERS FOR MAINTENANCE, ISOLATE THE UNIT FROM THE MAINS ELECTRICAL SUPPLY.***

1. Electrical

⚠ Treat electricity with respect. Even the open circuit voltage of this equipment can be dangerous. Adjustments to the torch or replacement of torch parts should be undertaken with the mains supply isolated from the unit.

If damaged torch cables or torch components are found, the unit must be disconnected from the mains and defective parts must be replaced using only Murex spare parts.

⚠ Do not work on live circuits or cables. Disconnect the main power supply before checking the machine or performing any maintenance operation.

⚠ Be sure the case of the welding machine is properly connected to a good electrical earth.

⚠ Have the wiring for the welding machine installed by a qualified electrician. All connections must be made according to specifications in force and to general safety standards.

⚠ Do not stand in water or on damp floors while using an arc welder or cutter. Do not use in the rain.

⚠ Do not operate with worn or poorly connected cables. Inspect all cables frequently for insulation failure, exposed wires and loose connections.

⚠ Do not overload cables or continue to operate with overheating cables. Cables which are too small for the current carried will overheat, causing rapid deterioration of the insulation.

⚠ Pay attention that live parts of the torch do not touch any metal which is connected to the earth cable. Fix an insulated hook to hang the torch on when it is not in use.

1. Ventilation

⚠ Do not weld or cut on containers which have held combustible or flammable materials, or materials which give off flammable or toxic vapours when heated, without proper cleaning.

⚠ Locate the welding/cutting operation far enough from any vapour-type degreaser using trichlorethylene or other chlorinated hydrocarbons as solvents. The ultraviolet light from the arc can decompose these vapours into toxic gases at a considerable distance from the arc, even though the concentration of the gases is low enough to be undetectable by smell.

⚠ Be sure to provide adequate ventilation for removal and dilution of fume and gases. Fume exhaust facilities near the arc, or a ventilated helmet should be used when cutting in confined spaces or on toxic material.

2. Glare

⚠ Never look at the arc without wearing eye protection.
Always use the proper protective clothing, filter glasses, and gloves. Be careful to avoid exposed skin areas. Do not use cracked or defective helmets or shields.

⚠ Never strike an arc when there is someone near who is not protected from the strong light of the arc.

⚠ Warn bystanders who are not aware of the dangers of ultra-violet light.

3. General

⚠ Take care when lifting the unit.

⚠ Ensure that cylinders are secured by chains.

⚠ Locate the unit so that there is adequate air flow to the ventilation louvres.

⚠ Always dress correctly to protect against glare, radiation and spatter.

4. Fire

⚠ Ensure that the correct type of fire extinguisher is available in the welding area.

⚠ Do not weld near flammable materials or liquids, in or near explosive atmospheres, or on pipes carrying explosive gases.

5. Vehicle Electrics

⚠ When working on motor vehicles, remove the battery and any circuitry which may be damaged by the arc.

⚠ Whilst welding be aware of the possibility of 'hidden wires' behind panels or bulkheads.

INTRODUCTION

The Murex Tradesarc 151iAS is a small, portable, inverter based power source for MMA or TIG welding using the lift-arc method. The unit provides up to 150A welding current and operates from either 230V or 110V single phase AC electricity supplies. The unit contains automatic supply voltage sensing circuitry so that no tap changes are required. The 151iAS is housed in an all metal enclosure, a small fan at the rear providing cooling for the internal semiconductor components. A thermal sensor built into the unit prevents excessive temperatures should the unit be overdutied and output is disabled and a front panel warning light illuminated under such circumstances.

In combination with an optional TG123V TIG torch and Argon gas supply the 151iAS can be used for TIG welding of stainless components and the like.

SPECIFICATION

Input	**240V 1Ph 50/60Hz**	**110V 1Ph 50/60Hz**
Fuse (for full rating)	16A slow	32A slow (3000VA required)
Output		
Current range	10-150A continuous	10-110A continuous
Rating	140A at 60% duty	85A at 60% duty
OCV	80Vdc	80Vdc
Dimensions		
Length	380mm	
Width	145mm	
Height	280mm	
Weight	8Kg	
Standards	EN60974-1 EN50199	

INSTALLATION

Radio Interference

Murex welding power sources have been designed to high standards of electromagnetic compatibility. However, arc welding, by its very nature, generates radio-frequency energy and may cause interference. By installing and using the equipment correctly, in accordance with these instructions, the problems of interference may be minimised.

This equipment satisfies the requirements of the EU Directive 89/336/EC on EMC and complies with the limits in EN 50 199, 'EMC product standard for arc welding equipment'. These limits are designed to provide reasonable protection against interference in heavy industrial areas.

If this equipment is used in domestic areas, eg. for repair or maintenance, particular care should be taken. The time of day should be chosen and the duration of welding limited, to minimise any potential problems.

If this equipment caused interference the guidance given below should be considered. If a solution cannot be found please contact your distributor or the manufacturer.

Before installing this welding equipment an assessment should be made of potential EMC problems that may occur. It is good practice not to install welding equipment next to computers or safety critical control circuits, eg electronic machine guards, unless they have been suitably protected.

This equipment should be connected to the primary supply using the cable provided. However, for permanent installation, if interference problems occur, shielded cable or conduit should be considered. The primary cabling and welding cables should be kept separate to other mains wiring and control, signalling or communications leg telephone) cables. If interference occurs then greater separation or re-routing should be considered. Welding cables should be kept as short as practically possible.

Interference may also be reduced by separating the welding equipment from the other equipment affected. A partition, brick wall or particularly, a metal screen will also reduce interference. Earthing and equi-potential bonding should also be considered but guidance should be sought from a competent person, the distributor or manufacturer.

To ensure continued compliance to the EMC Directive this equipment should be routinely maintained according to the manufacturers instructions and using only approved spare parts. In particular, the spark gaps of HF units should be adjusted and maintained according to the manufacturers recommendations.

All access and service door and covers should be closed and properly fastened when the equipment is being used. This equipment should not be modified in any way except for those changes and adjustments approved by the manufacturer.

Connection to the Mains

The Tradesarc 151iAS can be used on 230V or 110V single phase electricity supplies.

On 230V a standard 13A fuse is adequate for many MMA or TIG welding applications. For higher duty work, with 3.2mm electrodes at 140A for example, A 16A slow fuse must be used.

On 110V supplies a 32A fuse must be used corresponding with a supply of not less than 3KVA.

The unit contains sensing circuiting which automatically sets itself to match the mains input supply, 230V or 110V as necessary. No internal adjustments are required.

IMPORTANT!

The green/yellow earth lead must be connected to a good earth ground.

Mains extension leads

Care must be taken when supplying the unit via long mains extension cables. On 230V supplies the recommended cross section of such cables is 2.5mm^2. On 110V supplies extension cables are not recommended.

Siting the unit

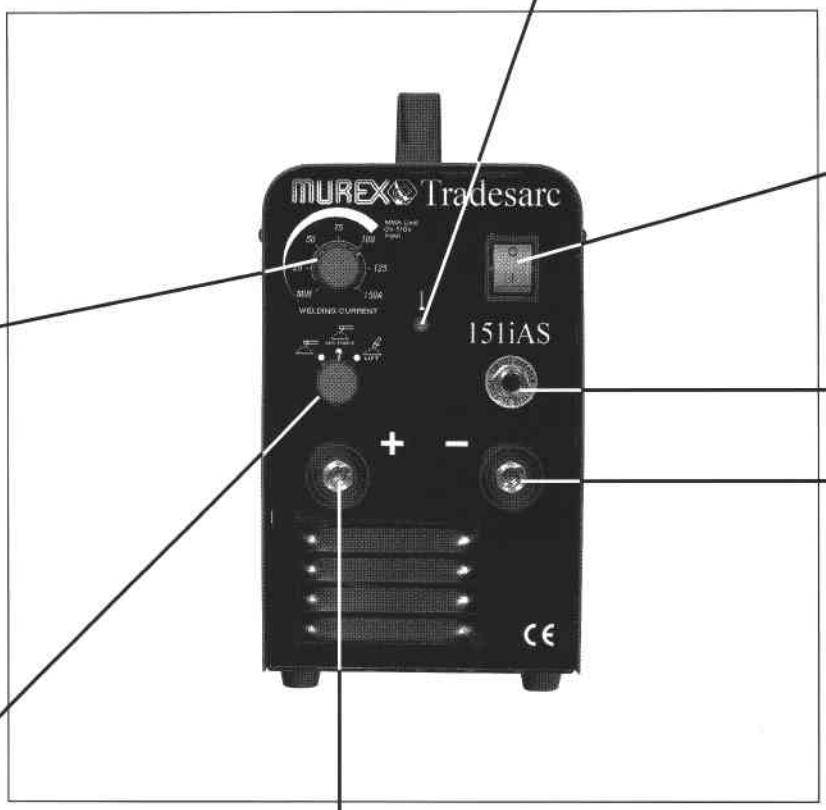
Position the unit to give good all-round ventilation. Do not block the air inlet on the rear panel or the front or side panel louvers. Preferrably choose an off-floor location away from dust, dirt or damp.

Welding Cables

The recommended cross-sectional area of each welding cable should be not less than 15mm^2. If using welding cables over 5m long, 25mm^2 cable should be used to prevent voltage losses.

CONTROLS & FACILITIES

THERMAL OVERLOAD INDICATOR
Indicates 'overload' condition. If the lamp lights, leave the unit switched on with the fan running and allow to cool. Reset is automatic after the unit cools.



POWER ON/OFF SWITCH

WELDING CURRENT CONTROL
Output current can be set in the range 10 to 150A

NOTE:
On 110V supply settings over 110A may cause Circuit Breaker to trip

35A Circuit Breaker
(press to reset)

Connection for work return
(electrode +ve mode)

PROCESS/MODE SELECTOR SWITCH
– MMA
– MMA with Arc Force
– TIG Lift-arc

Connection for MMA electrode holder
(electrode +ve mode)

OPERATION
MMA Welding

WARNING!
The Power/Input Voltage Selector switch on this equipment does not isolate the unit from the mains electrical supply. AC POWER IS PRESENT ON THE SWITCH TERMINALS.

BEFORE REMOVING THE COVER FOR MAINTENANCE, ISOLATE THE UNIT FROM THE MAINS SUPPLY.

Whilst welding try to adopt a relaxed attitude

1. Always commence with a last minute check for safety and protection.
2. Check that the electrode holder and work return lead connections are secure.
3. Fit the appropriate size of electrode
4. Using the current control, set the welding current.
5. Set the Process Mode Selector Switch to MMA or MMA with Arc-force according to electrode type.
6. Hold the electrode away from the work, trailing the welding lead over the shoulder to reduce the weight on the hand doing the welding.
7. Keeping the electrode clear of any exposed metal surface, switch on the unit.
8. Position the electrode close to the point where welding is to commence, without actually touching the work.
9. Cover the eyes with a headscreen or handshield and warn bystanders.
10. (a) Scrape the electrode on the work surface at the start point (as though striking a match).
The arc should strike.

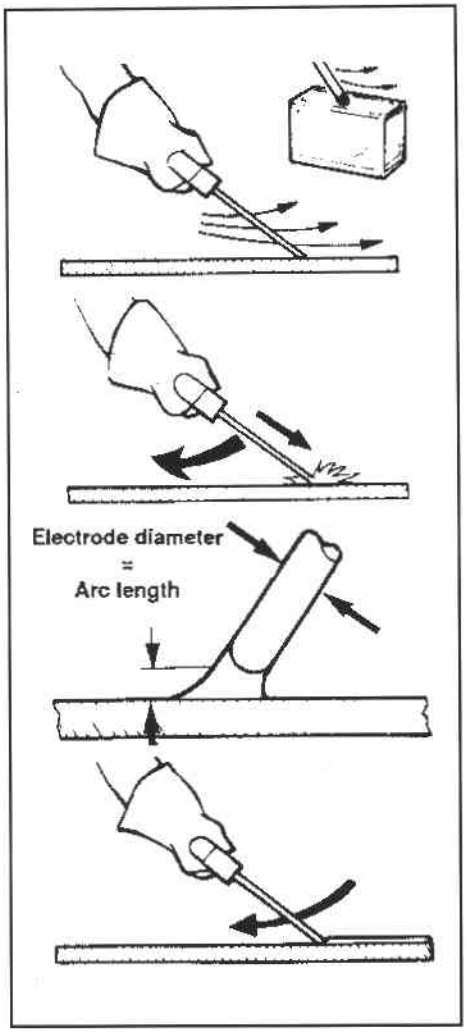
(b) Carry on scraping the electrode across the surface of the workpiece until the arc is almost continuous, then feed the electrode into the hot pool of molten metal keeping the electrode at approximately 65-80° to the workpiece.
If the electrodes 'freezes', i.e. sticks to the workpiece, gently twist the electrode and pull it free. If this is not possible, switch off the supply, release the electrode from the holder, and cut the electrode free with a chisel. Freezing will occur if heavy contact is made with the workpiece at too low a current setting.

(c) Once the arc is successfully struck adjust the arc length to about the size of the electrode diameter.

(d) The correct length of arc, (size of weld 'bead') is acquired by feeding the electrode backwards and downwards into the weld.

This combination of backward and downwards movement requires a little skill which will be acquired after a few practice welds.

11. Allow the weld to cool.



MANUAL METAL ARC ELECTRODES

Electrode Type	dia. (mm)	Materials
Zodian Universal	2.5 to 3.2	Mild steel, general purpose work
Satinex	2.5 to 3.2	Mild steel, medium tensile steels
Fortrex 7018	2.5 to 3.2	Carbon and low alloy, mild steel and medium tensile steels
Ferex 7018LT	2.5 to 3.2	Medium tensile steels and mild steels
Nicrex E316L-17	2.0 to 4.0	Stainless steels
Armoid 1	2.5 to 3.2	High tensile stainless steels. Dissimilar

This chart is given as a general guide to the MUREX electrodes for the Tradesarc 151iAS.
For more detailed information, contact your local MUREX distributor

TIG WELDING

Preparation

Read again the Safety Notes at the front of this manual

1. Connect the work return lead to the positive socket.

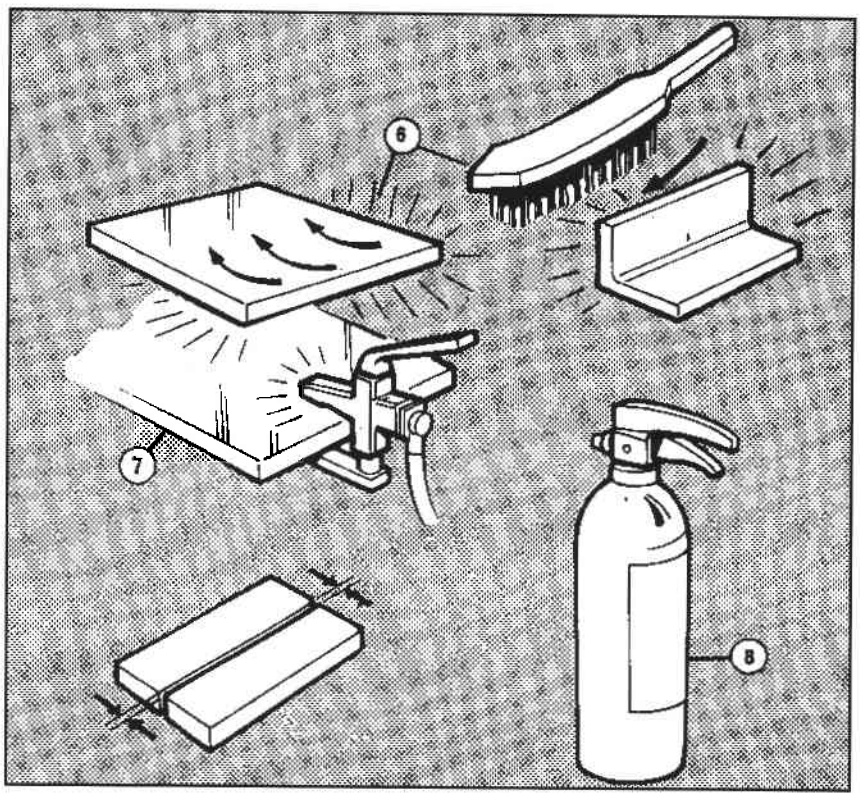
2. Connect the torch power lead to the negative 'work' socket.

3. Fit the regulator and gas flow meter to the gas cylinder and, using a cylinder key, turn on the gas and adjust the gas flow for a 6 to 7.5 litres/minute (12-15cu.ft/hr.) indication on the flow meter.

4. Connect the torch gas lead to the regulator, and turn on the gas supply.

5. Fit an appropriate sized 2% thoriated electrode to the torch - see 'Electrode Guide' and set the electrode 'stickout' to between 4-7mm. Check the electrode is correctly ground.,

6. Clean the material to be welded with a wire brush or grinder.



7. Clamp the work return lead to the work piece ensuring good electrical contact.

8. Clear the welding area and check that a fire extinguisher is available.

Technique

1. Set the output current control as required. Set the Process/Mode Sector to TIG with Lift-arc.

2. Switch on the unit

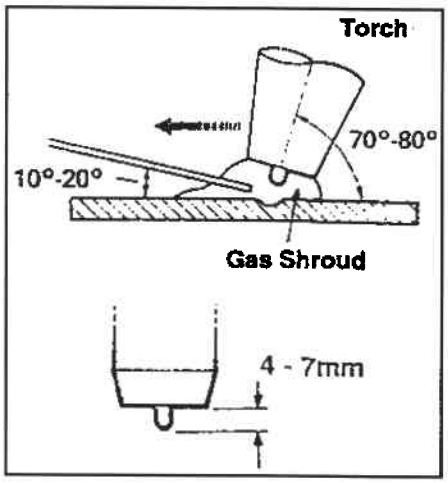
3. Switch on the gas flow to 'purge' the gas lines, adjust the gas flow for a 6-7.5 ltrs/per min. (12-15 cu.ft/hr) indication on the flow meter.

4. Adopt a good welding position and hold the torch and filler rod at the correct angles. Holding the rod and torch at these angles is necessary to ensure satisfactory results.

5. Position the torch over the welding area (about 25mm above) warn bystanders to shield their eyers and lower your headscreen.

6. Strike the arc by touching the tungsten electrode tip gently on the workpiece and then raising it slightly.

7. Wait for a pool to form and, when the edges of the molten material flow together, move the torch from right to left (right handed welder) adding filler wire as necessary. (Keep the filler rod tip inside the gas shroud).



Torch and filler rod angles and Electrode stick-out