



# Operating Manual

## Transtig AC/DC 201iS, 203iS & 353iS



**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 Transtig AC/DC 201iS, 203iS & 353iS Power Sources**

Parts Nos: 1416271, 1416273, 1416275

- are 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.
- conform 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.
- are manufactured in accordance with EN60974-1 Safety Requirements for Arc Welding Equipment.
- are manufactured in accordance with EN50199 Electromagnetic Compatibility for Arc Welding Equipment.

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



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## 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.

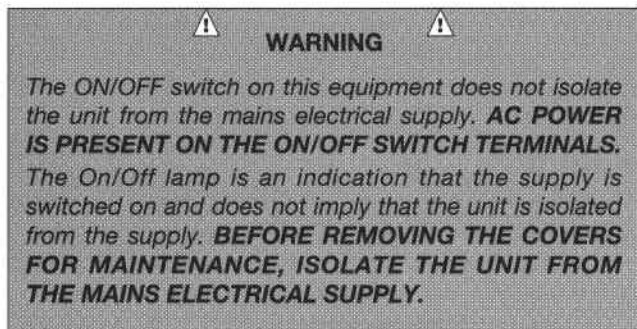
**READ AND UNDERSTAND THE INSTRUCTION MANUAL  
BEFORE INSTALLING OR OPERATING AND SEE 18 PUBLICATION 237  
'The arc welder at work' AVAILABLE FROM THE MANUFACTURER.**

**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.



### 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 Transtig AC/DC 201iS, 203iS and 353iS are state of the art DC and squarewave AC power sources for MMA or TIG welding. They utilise inverter based technology in combination with microprocessor control. The 201iS and 203iS models are rated up to 200A at 40% duty and the more powerful 353iS model up to 350A also at 40% duty.

The common operator control panel comprises both encoder type rotary controls together with membrane press-key switches to enable the precise setting of the required welding parameters. Two easy to read digital displays provide a precise and clear readout of the various welding data, both preset and actual.

For DC TIG welding applications the units feature both non-contact electronic arc ignition as well as non-HF lift arc facilities. HF starting is employed for AC TIG but, unlike with other AC TIG systems, the HF is switched off once the arc is established. This fact means that the possibility of electrical interference from the equipment is greatly reduced.

The AC/DC201iS operates from 1Ph 240V supplies on a 16A slow fuse (30A slow for full current MMA duty). The AC/DC203iS and 353iS require balanced 3Ph 415V industrial electricity supplies fused at 16/32A slow respectively, see specification below.

The power sources are constructed in rugged all metal enclosures incorporating convenient carrying handles. Multiple fans at the rear provide cooling for the internal components. Full thermal overload protection is standard.

A 230Vac auxiliary supply is available, accessed through the rear panel, when using the units with the Transtig TWCU torch water-cooling unit. A trolley unit is another option available for these power sources.

The Transtig AC/DC 201iS, 203iS and 353iS are designed, manufactured and tested to meet the requirements of EN60974-1 "Safety Requirements for Arc Welding Power Sources" and EN50199 covering Electromagnetic Compatibility Requirements.

## SPECIFICATION

	AC/DC201iS	AC/DC203iS	AC/DC353iS
<b>Input</b>			
Mains Supply	220-240V 1Ph 50/60Hz	400-440V 3Ph 50/60Hz	400-440V 3Ph 50/60Hz
Fusing	16A slow (30A for full MMA)	3x16A slow	3x32A slow
KVA	5.6 (4.5kW)	6 (5.4kW)	14 (13kW)
PF	0.9	0.9	0.9
<b>Output</b>			
Current Range	4-200A	4-200A	4-350A
TIG Rating	200A 40% duty 160A 60% 135A 100%	200A 40% duty 160A 60% 135A 100%	350A 40% duty 300A 60% 250A 100%
MMA Rating	190A 35% duty 150A 60%	190A 35% duty 150A 60%	320A 35% duty 250A 60%
OCV (max)	65V	65V	65V
AC Frequency	20 – 200Hz	20 – 200Hz	20 – 200Hz
AC Balance	10 – 90%	10 – 90%	10 – 90%
Pulse Mode Frequency	0.4 – 300Hz DC 0.4 - 2Hz AC	0.4 – 300Hz DC 0.4 - 2Hz AC	0.4 – 300Hz DC 0.4 - 2Hz AC
Pulse Duty (mark:space)	30 to 65% (in 5% steps)	30 to 65% (in 5% steps)	30 to 65% (in 5% steps)
Background Current	10 - 90% of main current	10 - 90% of main current	10 - 90% of main current
Slope Down Time	0.1 - 10 Seconds	0.1 - 10 Seconds	0.1 - 10 Seconds
Start/Crater Current (4T)	10 - 90% of main current	10 - 90% of main current	10 - 90% of main current
Post Purge Time	0.5 - 30 Seconds	0.5 - 30 Seconds	0.5 - 30 Seconds
Remote Start Point Current	4-100A	4-100A	4-100A
<b>Dimensions (Power Source)</b>			
Height	510mm	510mm	520mm
Width	240mm	240mm	290mm
Depth	500mm	500mm	540mm
Weight (Net)	30Kg	30Kg	40Kg
<b>Standards</b>	EN60974-1 & EN50199	EN60974-1 & EN50199	EN60974-1 & EN50199

## INSTALLATION

### 1. 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 EN50199, '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, e.g. 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 causes 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, e.g. 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 manufacturer's instructions and using only approved spare parts. In particular, the spark gaps of HF units should be adjusted and maintained according to the manufacturer's recommendations.

All access and service doors 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.

### 2. Trolley Unit

Assemble the trolley/cylinder carrier unit if supplied. Refer to Figure 2. for assembly details. Locate the power source on the sloping shelf; temporarily removing the gas cylinder support/chain holder bracket makes this easier.

#### WARNING!

Do not let the power source slide backwards off the shelf when the cylinder support bracket is not fitted.

### 3. Connection to the Supply

The Transtig AC/DC 201iS requires a single phase 240V 50Hz electricity supply fused at 16A slow for all TIG welding applications. When MMA welding at 150A to 200A (4 to 5mm electrodes) a 30A slow fuse is recommended.

The 203iS and 353iS need a standard 3 phase 415V 50Hz electricity supply, note no neutral connection is required. Supplies should be fused at 16A for the 203iS and 32A for the 353iS, using HRC type fuses.

If circuit breaker protection, rather than fuses, is to be used for any of the 3 machines, type D/4 breakers should be used.

Ensure the green/yellow earth conductor is securely connected to a good mains earth.

### 4. T.W.C.U. Torch Water Cooler (Pt. No. 1415509)

If supplied install the T.W.C.U. on the base of the trolley, the 4 moulded feet should sit inside the retaining corner angles.

#### WARNING!

Ensure power source is isolated from the mains supply.

Remove the 8 retaining screws and lift the top lid off the power source. Locate the 230Vac auxiliary access hole/strain relief in the upper RH corner of the rear panel. Loosen the 2 screws that mount the strain relief moulding and feed the T.W.C.U. primary cable through the hole/strain relief.

The 230Vac auxiliary supply 3 way terminal block is located next to the access hole on the inside of the rear panel, see Figure 1. Install the 3 insulated push-on connectors as shown. Ensure the green/yellow earth wire connection is made to the LH terminal as viewed from the front of the machine. The position of the other 2 connections is not important.

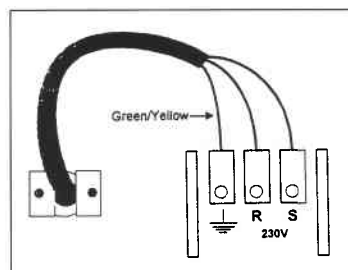


Figure 1. 230V ac Auxiliary Connection

## Assembly Instructions

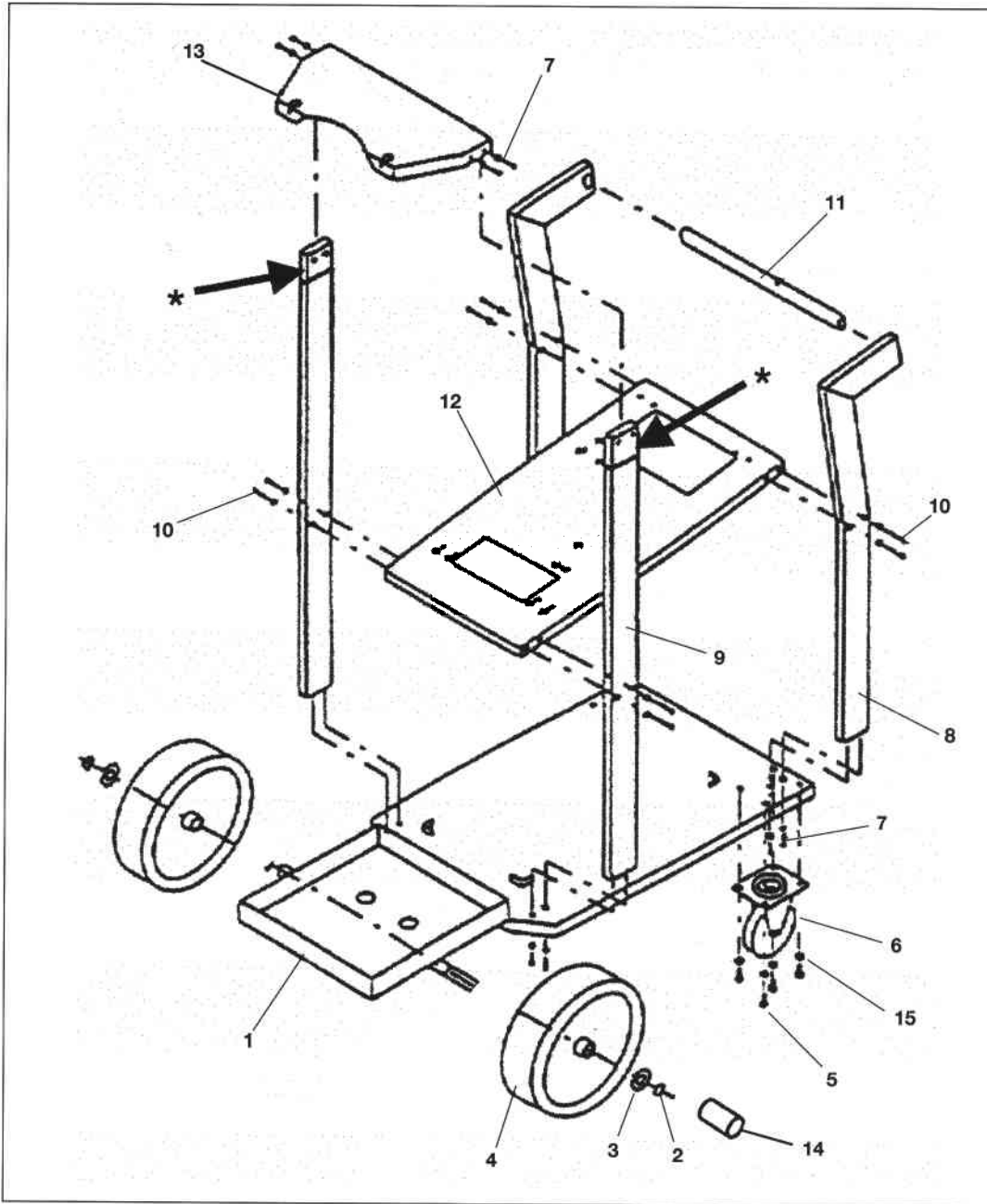


Figure 2. Transtig AC/DC Trolley Pt. No. 1415510

1. Fix rear uprights (9) to upper tray (12) using M6 x 30 bolts and washers (10). Ensure the uprights are correctly oriented so that the upper tray slopes up towards the front and the bolts attaching the upright extension pieces are on the outsides.
2. Fit front uprights (8) to upper tray (12) using M6 x 30 bolts and washers (10). Ensure the handle bar (11) is inserted between the uprights before fastening.
3. Fit the upper cylinder plate (13) to the rear uprights (9) using M6 x 15 bolts and washers (7).
4. Fit the cylinder/lower tray assembly (1) to the bottoms of the 4 uprights using M6 x 15 bolts and washers (7).
5. Fit the 2 front castor wheels (6) to the underside of (1) using M8 x 12 bolts and washers (15).
6. Slide the rear wheels (4) onto the axle stubs. Fit a large washer (3) onto each axle and then fit the hammer-on internal star-clips (2) to retain them using the special sleeve tool (14) provided in the kit.

**WARNING!**  
Remove upper extension pieces \* for 201iS & 203iS.

**WARNING!**  
Ensure the green/yellow earth wire is correctly connected to the LH terminal.

Tighten the 2 strain relief mounting screws so as to retain the T.W.C.U. primary cable. Refit the lid of the power source ensuring star washer(s) are properly refitted. Before energising the cooler ensure it is correctly filled with coolant, refer to T.W.C.U. Instruction Sheet, and connect the TIG torch cooling hoses to its front panel.

**IMPORTANT!**  
Ensure the T.W.C.U. is correctly filled with coolant and that the TIG torch water hoses are connected before switching on. Failure to do so may damage the motor and pump.  
When MMA welding ensure the T.W.C.U. is switched off using its front panel on/off switch.

After running the cooler for a few minutes the coolant level should be checked and topped-up if necessary.