



**Tradestig *Dual* 151i**

**SERVICE MANUAL**

1.5.99



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## INTRODUCTION

The Tradestig Dual 151i is an inverter based DC power source suiting both TIG and MMA welding methods. The unit can operate from either 230V or 110V single phase electricity, see specification, and supplies up to 150A welding output. Mains voltage selection is automatic, the 151i reads the supply voltage and sets the internal circuitry automatically.

Front panel controls enable the operator to set welding current and slope down time. The unit incorporates a gas solenoid and a post purge time control is available on the control panel.

Inbuilt into the unit is an electronic non-contact TIG arc ignition system. Either 2 or 4 stroke torch switch TIG modes can be selected as well as MMA. A 14 pin remote control socket enables an FC-5B foot control to be used for bench work and the like. A fan mounted in the rear of the housing cools the internal components. A thermal sensor protects the components from excessive temperatures if the duty is exceeded. A manually resettable circuit breaker on the front panel protects the unit against excessive primary current.

## RADIO INTERFERENCE

1. 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.

2. 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.

3. 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.

4. 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.

5. 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.

6. Primary cabling and welding cables should be kept separate to other mains wiring and control, signalling or communications (eg telephone) cables. If interference occurs then greater separation or re-routing should be considered. Welding cables should be kept as short as practically possible.

7. 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.

8. 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.

9. 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.



## SPECIFICATION

### Input

Mains Supply	230V/110V 1 phase 50/60Hz
Power (max)	4.8 KW (efficiency = 80%)
KVA (max)	6 KVA (power factor = 0.8)
Fuse 230V	16A slow (13A for most applications)
Fuse 110V	32A slow

### Output

	230V Supply	110V Supply
Current Range	10 - 150A	10 - 120A
Rating 25% duty	-	120A
Rating 60% duty	150A	85A
Rating 100% duty	100A	65A
OCV	70V	70V

### Dimensions

Length	360mm
Width	155mm
Height	320mm
Weight	11Kg (net)

### Standards

EN60974-1 & EN50199

## INSTALLATION & CONTROLS, see Fig 1

### 1. Mains Input Cable (rear panel)

Connect to a suitable 230V or 110V single phase electricity supply, see specification. The green/yellow earth lead must be securely connected to earth. A switched outlet containing suitable fusing should be used, refer to specification for fusing details. If in doubt consult a qualified engineer/electrician.

#### IMPORTANT!

Site the unit in a safe position free from dust, dirt, moisture or corrosive vapours. Locate it where there is free movement of air to the rear panel air intakes, side and front panel louvres. An off floor position is recommended.

### 2. Gas Inlet Hose (rear panel)

Connect to the Argon cylinder regulator/flowmeter outlet using the 3/8 BSP RH nut & nipple supplied with the package. The regulator must be set to deliver Argon at 30 psi (otherwise the flowmeter will not read accurately).

### 3. +Ve Outlet

For TIG welding applications connect to the work using a suitable work return lead and clamp. For MMA this is usually the connection point for the electrode holder (+ve electrode).

### 4. -Ve Outlet

For TIG welding this is the power connection point for the TIG torch. For MMA welding this is usually the work connection (+v electrode).

### 5. Gas Outlet to Torch

Connect the TIG torch gas hose to this fitting using a 1/4" BSP RH coupling.

### 6. Torch Switch Socket (2 pin)

If a torch mounted switch is being used connect it here using the matching 2 pin amphenol plug.

### 7. Remote Control Socket (14 pin)

For connection of a remote control device like the FC-5B foot control unit. Connection of a remote control disables both start and main current settings. The remote control provides full range control up to 150A.

### 8. Power Switch

Setting the power switch to on energises the internal circuitry. The 151i automatically sets itself for either 110 or 230V as necessary.

### 9. Process Mode Selector Switch

Two different TIG operating modes are provided as well as MMA. The TIG modes are as follows:

a) 2 stroke (with HF) - The normal method for TIG welding using non-contact arc striking. Press the torch switch (or foot control) to start welding. Release the torch switch to initiate the down-slope and stop welding.

b) 4 stroke (with HF) - For long duration welds the torch switch can be electronically latched. Press to initiate the TIG arc, once the arc is struck the switch can be released. Re-pressing and holding the switch initiates the current slope down. Provided the torch switch is held the welding current will remain at minimum after the slope down is completed. Releasing the torch switch at any time during or after the slope down immediately turns off the arc.

c) MMA - When MMA is selected open circuit voltage is immediately available at the output terminals and the HF and gas control circuitry are disabled.

### 10. Welding Current Control

Sets the main welding current in the range 10 to 150A. When using the unit on 110V supplies, MMA welding at currents in excess of 100-120A may cause the mains circuit breaker, see 14 below, to trip.



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#### **11. Slope Down Time Control**

In order to allow the welder crater to fill-up before extinguishing the TIG arc, current can be reduced slowly to background level before arc off. This control sets the time for the down slope in the range 0-10 seconds. Set it to a minimum when using a foot control unit.

#### **12. Post Gas Purge Time Control**

Sets the duration of the shielding gas flow after the TIG arc is extinguished. Postflow time can be set up to 20 seconds.

#### **13. Over Temperature Light**

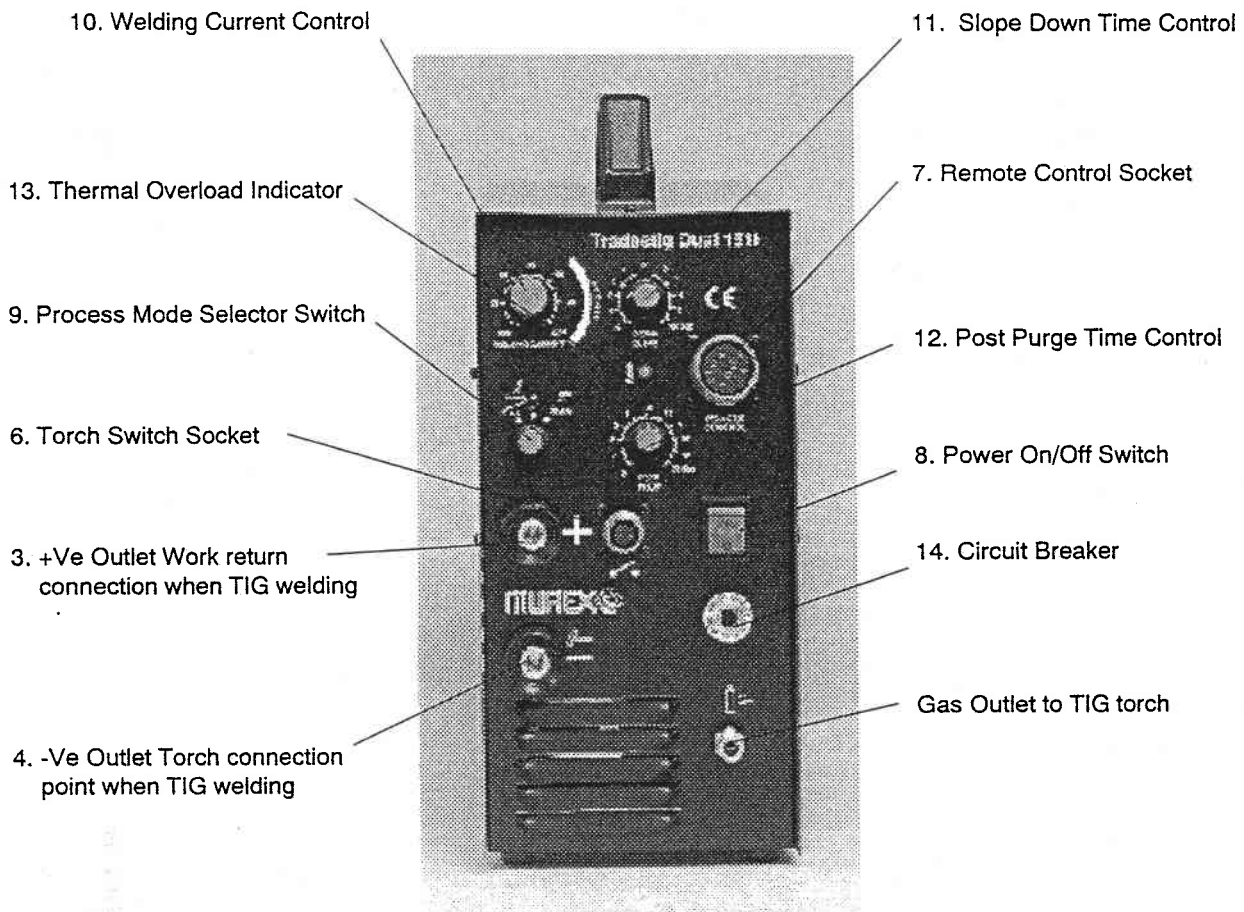
In the event the unit is over-dutied an internal temperature sensor will switch off welding output and the over temperature light will illuminate. In this event leave the unit switched on with the fans running. Reset is automatic after the unit has cooled.

#### **14. Circuit Breaker (25A)**

In the event that the mains input supply current exceeds safe levels the front panel mounted circuit breaker will trip. To reset the breaker switch off the unit and depress the black reset button.



Fig 1. CONTROLS AND CONNECTIONS



Rear Panel Not Shown:

- 1. Mains Input Cable
- 2. Gas Inlet Hose