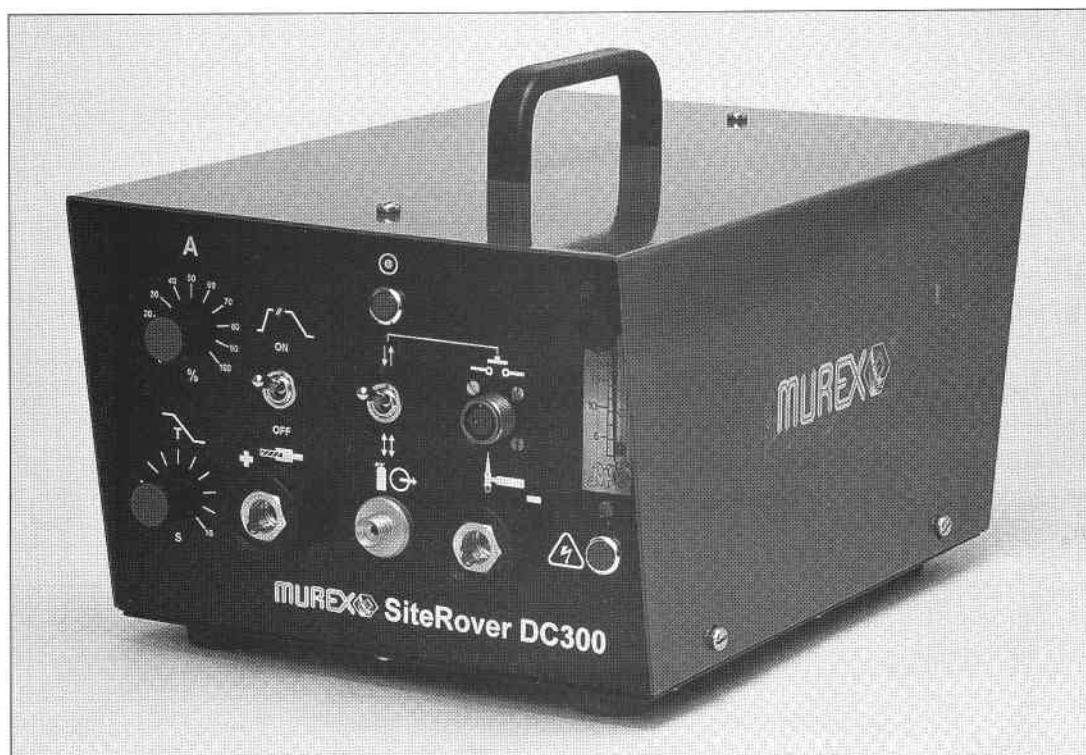




Operating Manual

SiteRover DC300



**Please ensure that this
Instruction Manual is made
available to the user of
the equipment**



DECLARATION OF CONFORMITY

Murex Welding Products Ltd.

Declare hereby that:

Murex SiteRover DC300

Part No: 1415415

- 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 the relevant parts of 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
Hertford Road
Waltham Cross
Herts. EN8 7RP
England

A handwritten signature in black ink, appearing to read "P.G. Dodd".

P.G. Dodd
Managing Director
Esab Group UK Ltd
1st July 1997



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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.

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 ultraviolet 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 SiteRover DC 300 is an in-line dc TIG add-on unit for use with a suitable dc Manual Metal Arc rectifier/power source or engine driven generator and is ideal for site applications. It enables the power source to be used for dc TIG welding up to 300A (or up to the maximum power source rating where this is less than 300A).

The SiteRover has two distinct modes of operation:

1. As a simple in-line dc TIG add-on unit the SiteRover requires no auxiliary power and operates from the open-circuit/arc voltage. In this

“non-slope” mode the unit provides fixed pre and variable post shielding gas flow control, contactor function and non-contact HF arc initiation. Note that welding current is set by the control on the associated rectifier/power source or generator.

2. In combination with an appropriate electronic remote controllable power source eg. the Murex Transmig 350i or 450i, or Transarc DC 400E, 630 or 800, which can source a suitable low voltage auxiliary supply, the SiteRover DC

300 creates a more sophisticated TIG facility. In this mode the unit provides a complete welding programme with slope up, slope down and current level settable at the SiteRover without the need to return to the rectifier/power source. Front panel controls enable the operator to continuously vary welding current and slope down time. Internal controls permit the presetting of start current, slope up time and final current value prior to arc-off.

Other facilities include 2 or 4 stroke latching torch switch modes and gas flow adjustment from the front panel mounted flowmeter.

SPECIFICATIONS

Power Source OCV:	50 - 100Vdc (120V pk)
Arc Voltage:	6 - 25Vdc
Current Rating:	300A max at 35% duty, 200A 100%
Gas Preflow:	1 sec
Gas Postflow:	10 sec * (int. adj.)
Aux Input Requirement:	18 - 50Vac 20VA
DC Reference Output Range:	± 0 - 6.6Vdc * (2-10V full scale int. adj.)
Start Current:	20% * (0-100% int. adj.)
Slope Up Time:	2 sec * (0-10 sec int. adj.)
Current Control:	0 -100%
Slope Down Time:	0 - 10 secs
Final Current:	10% * (0-100% int. adj.)
Dimensions l x w x h:	395 x 260 x 195mm (excl. handle)
Weight:	14Kg (nett)



For use with suitable electronic controlled power sources

* Factory preset values

INSTALLATION

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.

Interconnections, See Fig. 1.

WARNING!

Ensure the power source is switched off before commencing installation. The unit should not be operated without the cover.

Power - Connect the rear panel dins plugs to the dc power source output terminals using suitable welding cables. Remember to observe correct polarity +ve to +ve, -ve to -ve. (Accidental reverse connection will not damage the unit).

Gas - Connect the rear panel gas inlet (1/4" BSP RH) to the argon supply regulator. A pressure setting of 30 psi is correct.

TIG Torch and Work Return, See Fig. 2.

Power - Connect the torch power dins plug to the front panel -ve dins socket.

Gas - Connect the torch gas hose to the front panel gas outlet (1/4" BSP RH).

Switch - Connect the torch (foot) switch to the front panel 2 pin socket.

Work Return - Connect the work return lead dins plug to the front panel +ve dins socket.

Power Source Remote Control, See Fig. 3.

If the power source is suitable (refer to SPECIFICATION section) connect the rear panel 12 pin Burndy socket to the power source remote control input using a suitable screened 4 core + earth braid control cable. Note that the power source must provide an isolated auxiliary supply in the range 18 to 50Vac for the slope control to operate. Standard control cables are available for applicable Murex machines. Other cables can be supplied to order, consult Murex Technical Department.

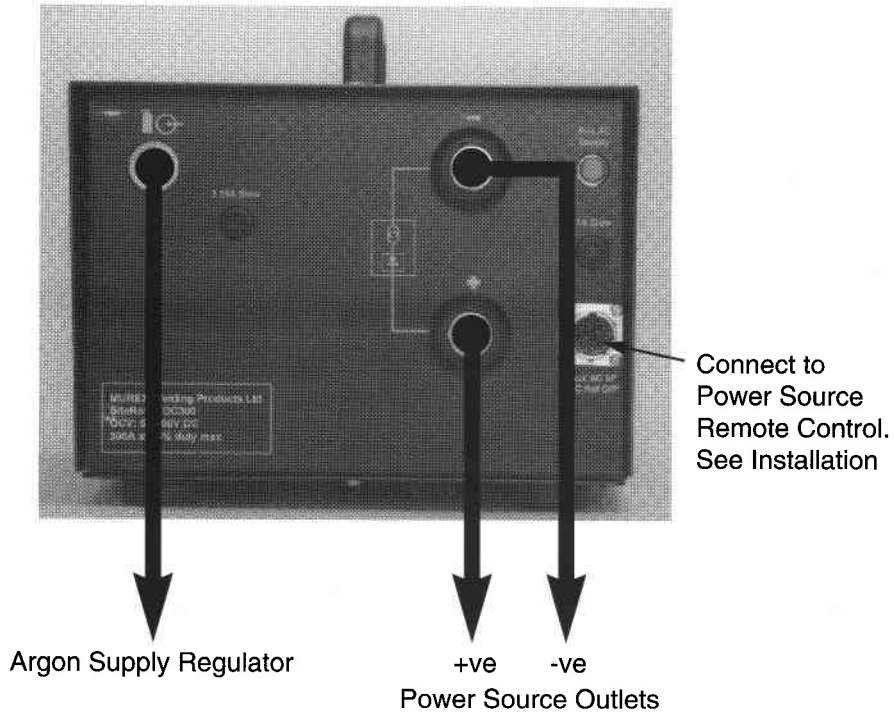


Figure 1. SiteRover Rear Panel Connections

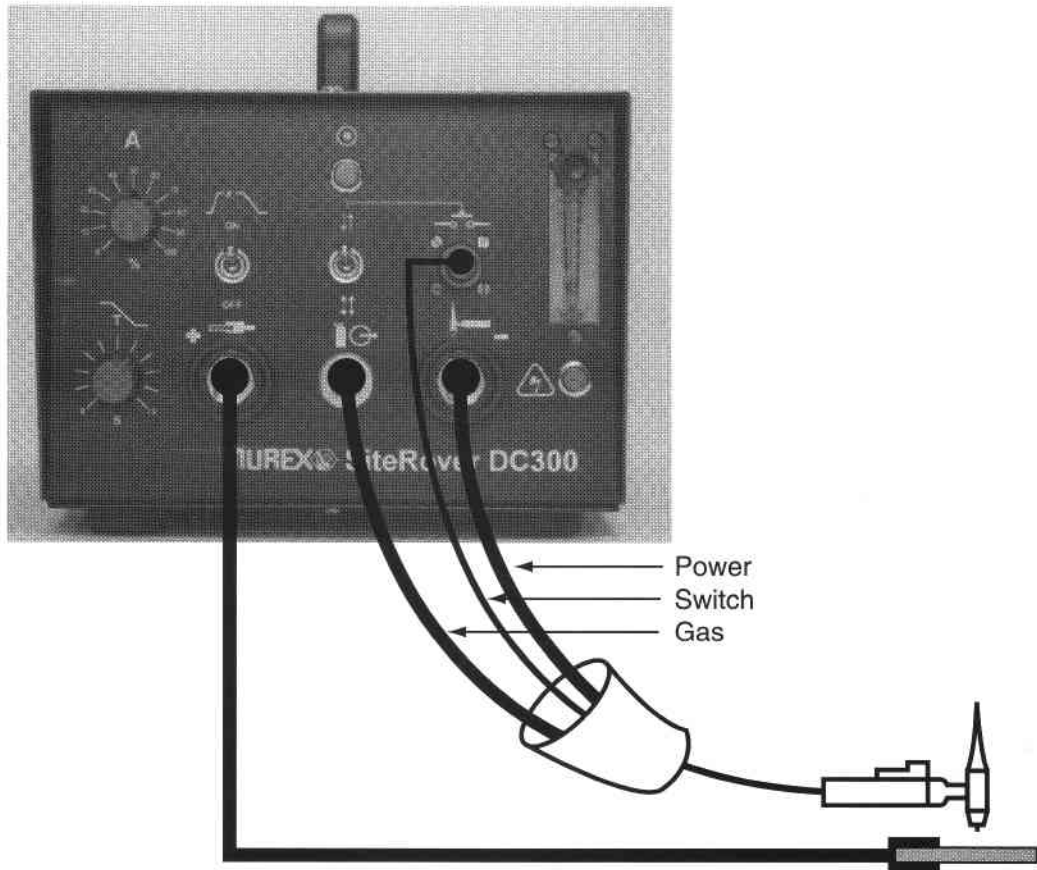


Figure 2. SiteRover Front Panel Connections

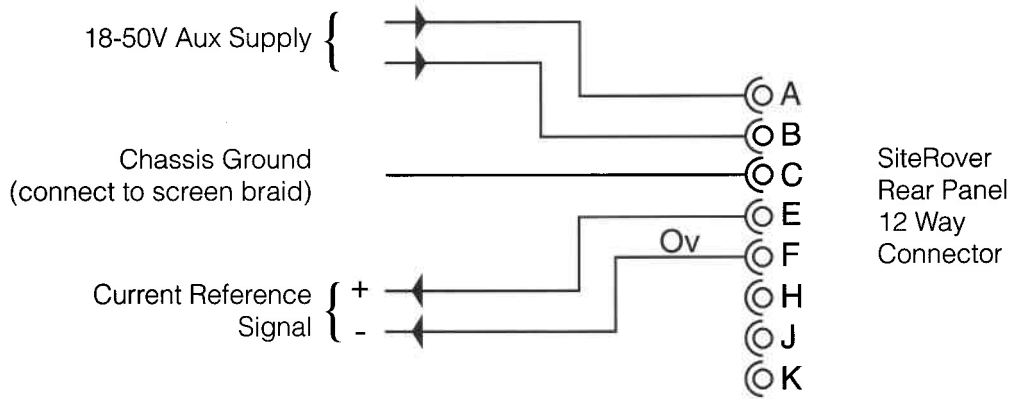


Figure 3. Power Source Remote Control Connections

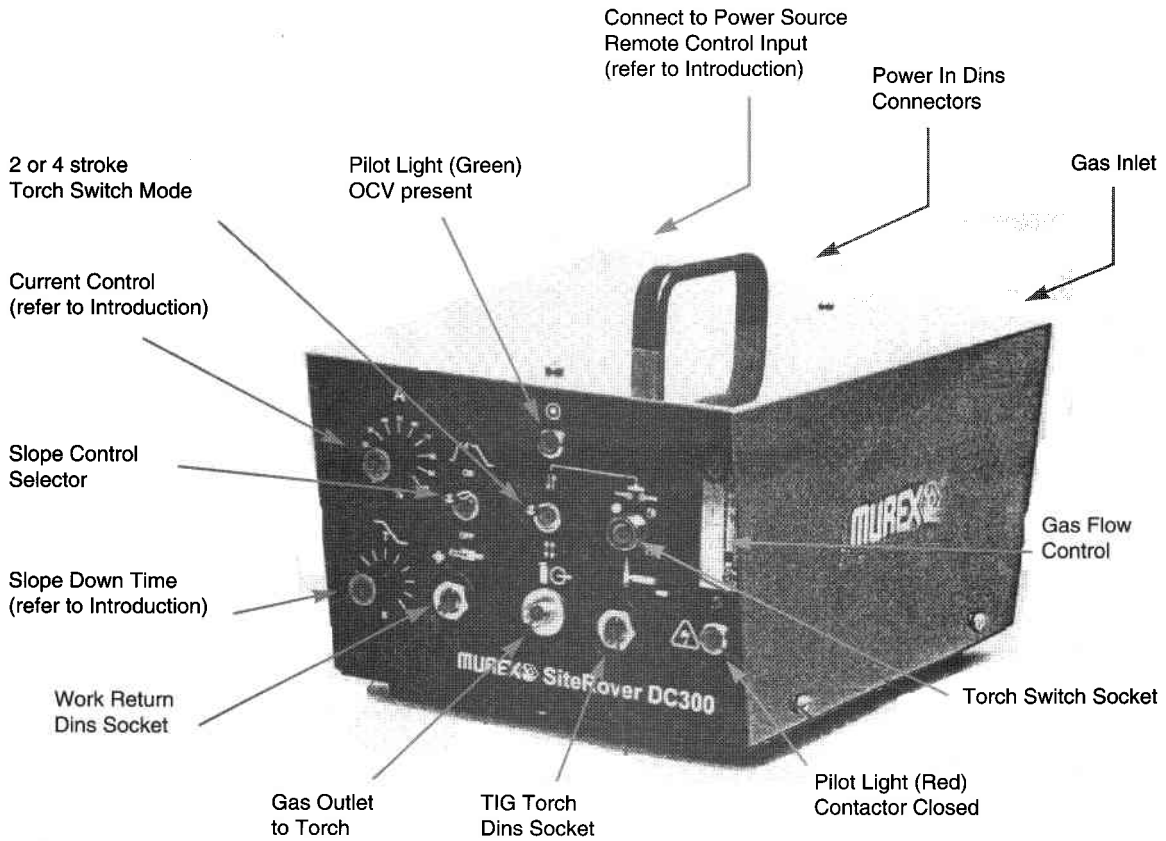


Figure 4. SiteRover Controls

OPERATION

WARNING!

Read and observe all relevant safety instructions.

1. Use as a Simple In-line TIG Add-on Unit (No remote power source control)

1.1 Switch on the power source (or rectifier/engine drive).

1.2 Ensure OCV is present at the power source output, the green light on the SiteRover front panel should be on. Set the desired welding current on the power source controls.

1.3 Set the slope control on/off switch on the SiteRover front panel to off.

1.4 Select the desired torch switch operation mode, 2 or 4 stroke, on the SiteRover front panel.

1.5 Turn on the shielding gas supply, ensure the regulator is set at 30 psi.

1.6 Holding the torch away from the work, operate the torch switch to initiate the gas flow. Check and adjust the flow rate using the SiteRover flowmeter control. In the 4 stroke mode the torch switch will need reoperating to open the welding contactor - the contactor is closed when the front panel red light is on.

1.7 Hold the torch over the work (3-4mm away) and operate the torch switch to strike the arc.

1.8 Release (repress and release in 4 stroke mode) the torch switch to turn off the contactor and initiate the post gas purge cycle.

2. Use with Murex Transmig 350i, 450i etc with Remote Control facility.

2.1 Ensure power source remote control socket (2 on 350i/450i) are correctly connected to the rear panel 12 way connector on the SiteRover using a suitable control cable assembly.

2.2 Switch on the power source.

2.3 Ensure the power source controls are correctly set for remote control mode and that the contactor on/off switch if present is set to on.

2.4 Check that the SiteRover front panel on light (green) and rear panel auxiliary supply light (green) are both on.

2.5 Set the slope control on/off switch on the SiteRover to on.

2.6 Select the desired torch switch operation mode, 2 or 4 stroke, on the SiteRover front panel.

2.7 Turn on the shielding gas supply, ensure the regulator is set at 30 psi.

2.8 Holding the torch away from the work, operate the torch switch to initiate the gas flow. Check and adjust the flow rate using the SiteRover flowmeter control. In the 4 stroke mode the torch switch will need reoperating to open the welding contactor - the contactor is closed when the front panel red light is on.

2.9 Set the current and slope down time controls on the SiteRover front panel as desired. Note current is a percentage of the full scale setting.

3. Hold the torch over the work (3-4mm away) and operate the torch switch to strike the arc.

3.1 Release (repress and release in 4 stroke mode) the torch to initiate the slope down function.

INTERNAL SETTINGS

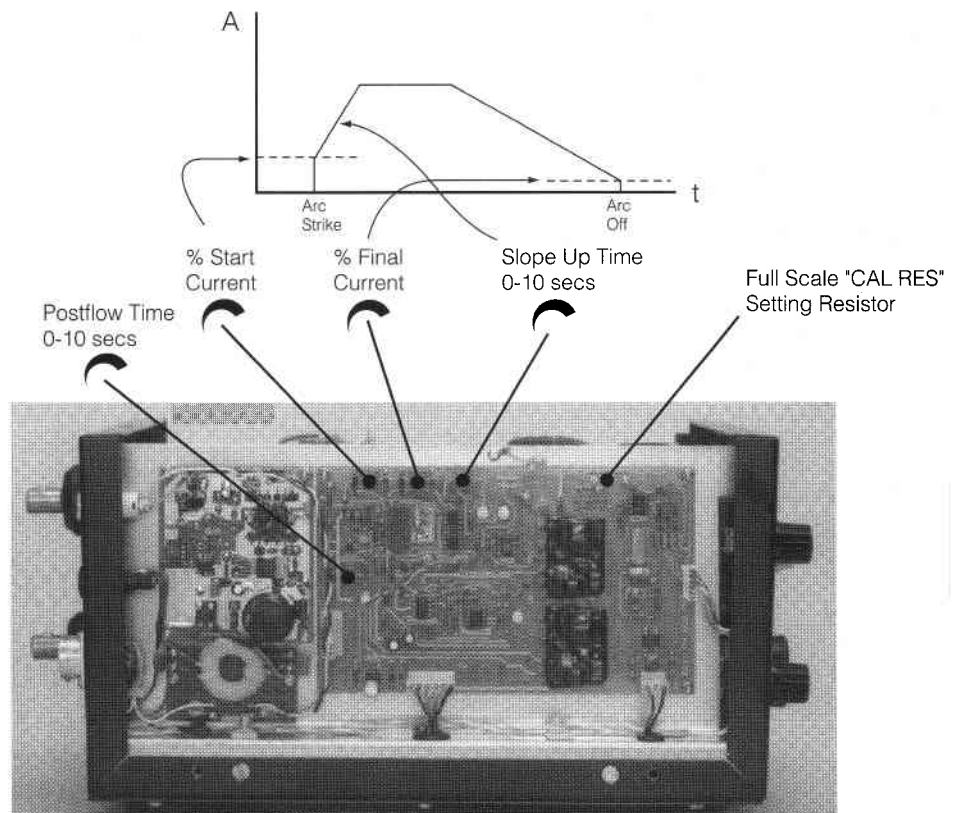
Finger adjustable pcb mounted potentiometers inside the SiteRover see Fig. 5. enable the presetting of the following parameters:

- Start current (as a % of welding current)
- Slope-up time, 0-10 seconds
- Final current (as a % of welding current)
- Gas post flow time, 0-10 seconds (slope control mode only)

To access remove the SiteRover top cover, the pcb is located vertically at the LHS of the unit.

WARNING!

Ensure the power source is switched off before removing the lid from the SiteRover



FULL SCALE REFERENCE ADJUSTMENT

The SiteRover can provide a DC reference voltage suitable for driving the remote control input of many electronic controlled MMA rectifiers. Note that the SiteRover requires an AC auxiliary supply of between 18 and 50V to enable this function and the front panel slope on/off switch must be set to on.

The full-scale value of this reference (corresponding with the SiteRover current control set to 100%) can be set inside the unit to anywhere between 2 and 10V DC. So for example for a 300A MMA rectifier requiring a 10V remote control input to provide 300A output, the current range provided by the SiteRover current control can be limited to 200A by internally setting the full-scale reference value to 6.6V (2/3 of 10V equivalent to 2/3 of 300A). A further example might be a 400A rectifier operating on a 12V remote control system. Internally setting the SiteRover to provide a 9V maximum reference would enable the SiteRover current control to provide a TIG welding range up to 300A (9/12 of 400A).

To this end a resistor link "CAL RES" on the slope control pcb can be substituted as necessary to achieve the required full scale reference voltage, see Fig. 5. At the factory a resistor of 5.1 KΩ is fitted providing a maximum reference output of 6.6V. Other values can be substituted as follows:

$$\text{CAL RES K}\Omega = \frac{100}{V_{\text{max}}} - 10$$

Where CAL RES is given in Kohms (0.5 Watt) and Vmax is the maximum reference voltage required.

MAINTENANCE & FAULT FINDING

Maintenance

Periodically inspect and clean the contact points of the main contactor. The spark gap points should also be inspected for signs of erosion. The factory spark gap setting is 0.044" (1.1 mm) between the opposing pair of electrodes. Contact points and/or spark gap points should be replaced when excessive wear is detected.

Check also for any evidence of deterioration or wear in the cable and gas hose connections to the unit. If signs of overheating are detected examine the connectors and replace if necessary.

Fault Finding

Should the unit fail to operate carry out the following checks:

1. Confirm the green front panel "on" light is illuminated. If not check that the unit is properly connected to the power source and that open circuit voltage is present. Switch off the power source and then switch it back on again to allow the SiteRover Circuitry to reset. Check the rear panel 3.15A fuse is intact.

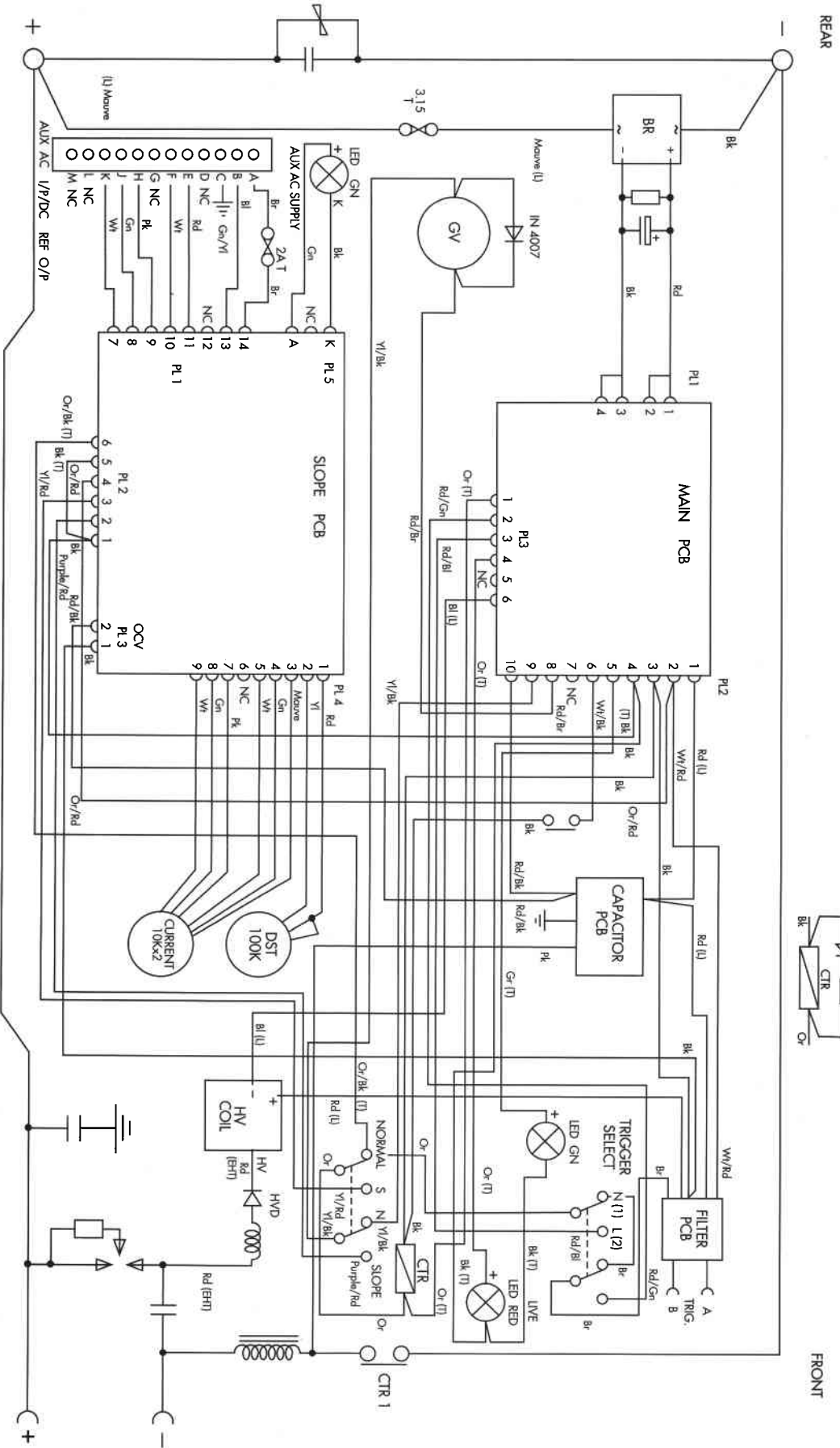
2. If the unit is being used in remote controlling mode (eg. with a Murex 350i, 450i or 400E) check the green "Aux" light on the rear panel is illuminated. Check the rear panel 2A Fuse.

3. A fast acting voltage clamping circuit is present on the contactor/HF pcb to clip any unwanted voltage spikes in the supply. The clip-cell is mounted on a black aluminium heatsink and operates together with a 3AFF (fast acting) fuse. Both components are mounted at the top LH corner of the contactor/HF pcb.

If the 3AFF fuse fails always check the clip-cell by doing an ohmmeter check (diode function) on it before replacing the fuse. Note remove the fuse before checking the clip-cell. The 3AFF fuse must on no account be replaced with another (eg. slow) type.

4. The torch switch circuit is protected by a 2AFF (fast acting) fuse located on the filter pcb behind the torch

switch socket. Again, never replace an FF fuse with a slow type.



SiteRover Circuit Diagram

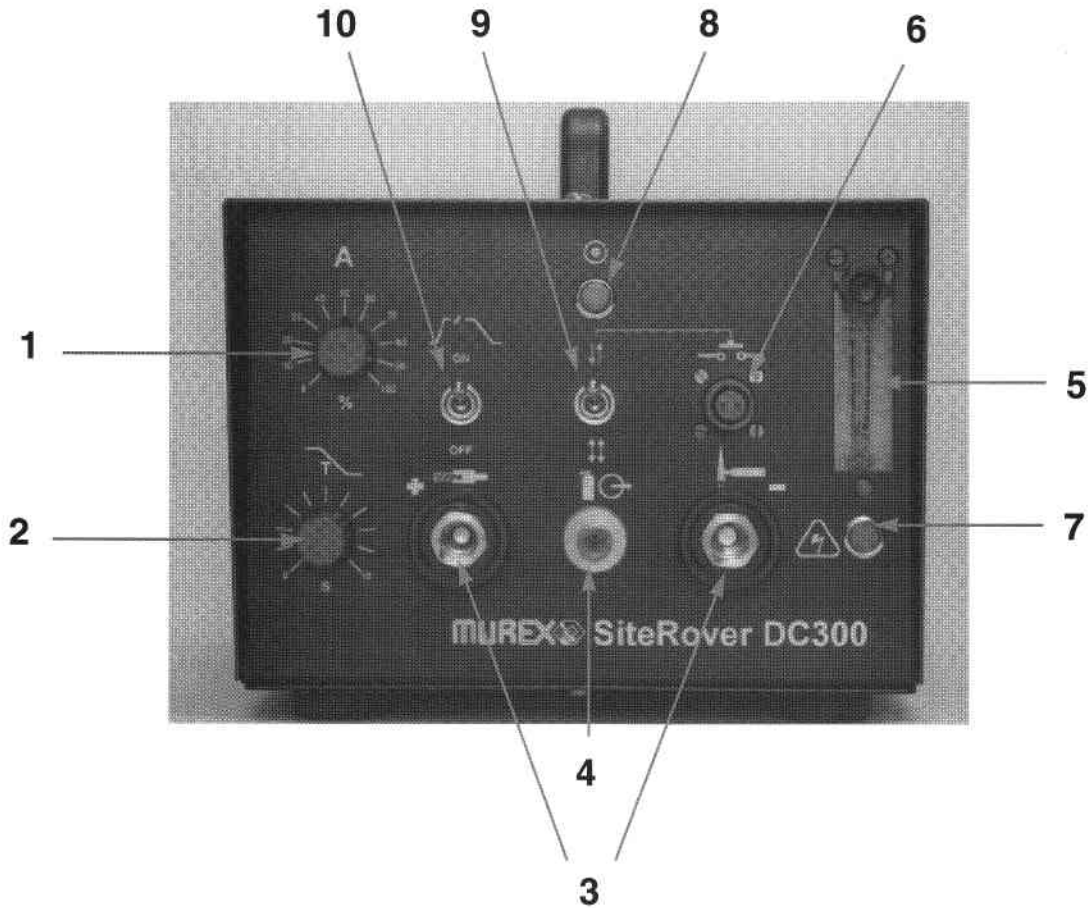
SiteRover DC300 OPTIONS

Part No	Description
606503	Gas Hose 3m
1409320	Work Return Lead 3.5m
1415299	Welding Cable 5m (2 required)
1380437	Dins Plug 35/50
1380053	Welding Cable 35mm ²
1415291	TG153 TIG Torch 3.8 m
1410208	TG153 Accessory Kit
1415022	TG203 TIG Torch 3.8m
1410207	TG203 Accessory Kit
1415416	5m Remote Control Cable 350i, 450i*
TBA	5m Remote Control Cable 400E*

*Other lengths available on request

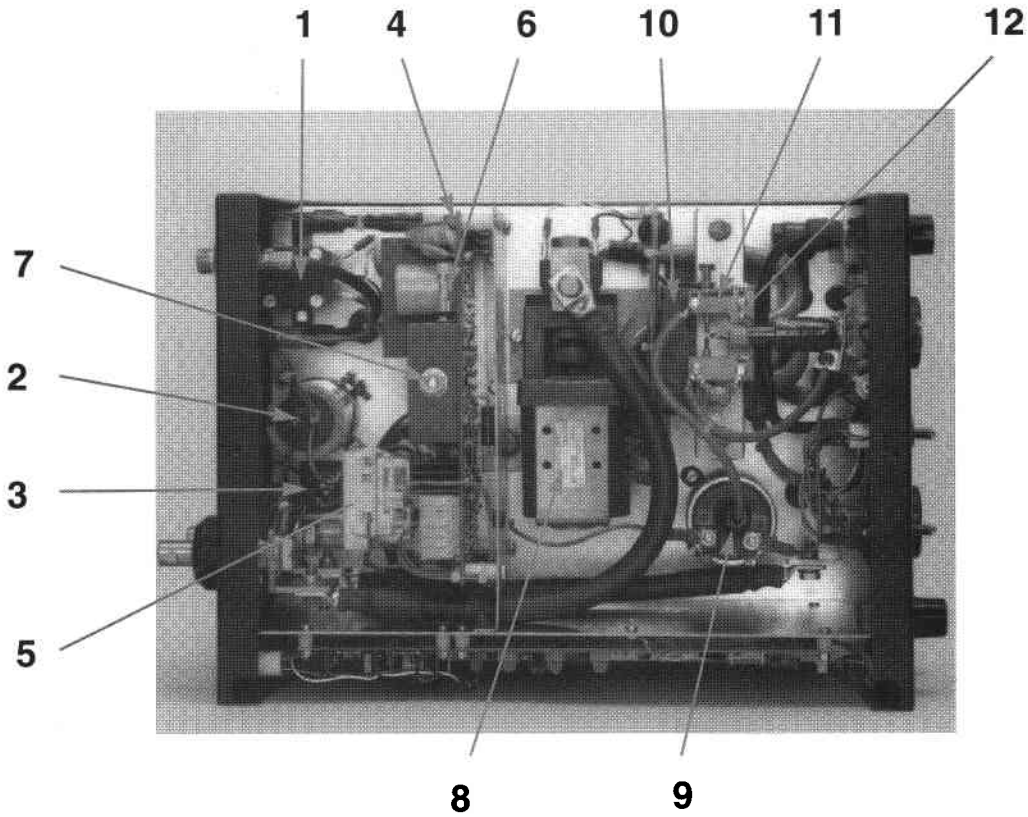
SiteRover PARTS LIST

FRONT PANEL VIEW



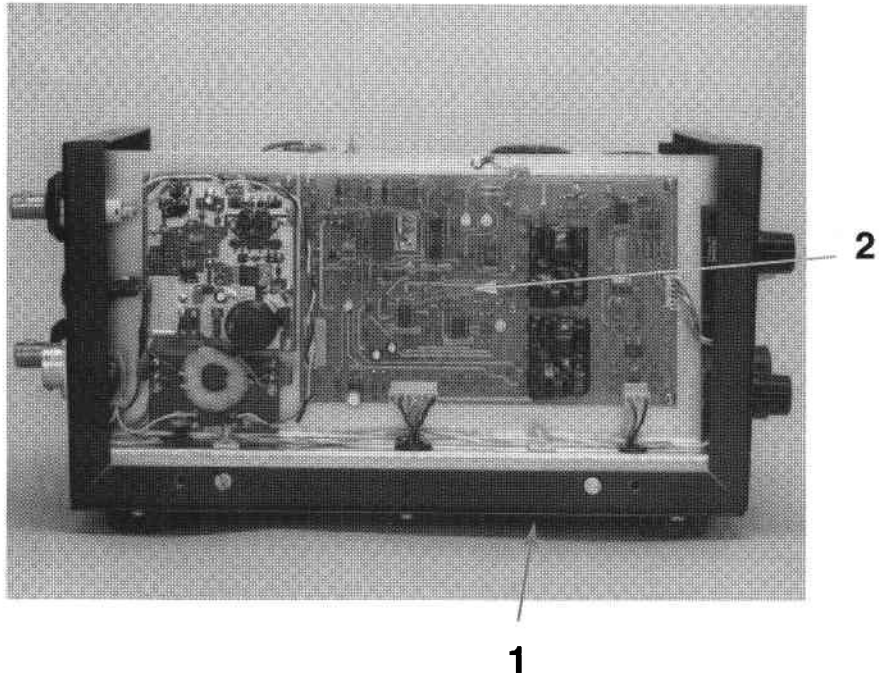
Item	Pt. No.	Description
1	1415440	Potentiometer Current
	1415441	Knob for item 1
2	1415442	Potentiometer Slope
	1415443	Knob for item 2
3	17242	Dins Socket 35/50
4	1415444	1/4" BSP Bulkhead Fitting
5	1415445	Gas Flowmeter
6	538500902	2 Way Socket
-	1415446	Filter pcb
-	1415447	Fuse 2AFF 20mm
7	1415448	Red LED
8	1415449	Green LED
9	1415450	Switch 2/4 Stroke
10	1415451	Switch Slope On/Off

TOP VIEW



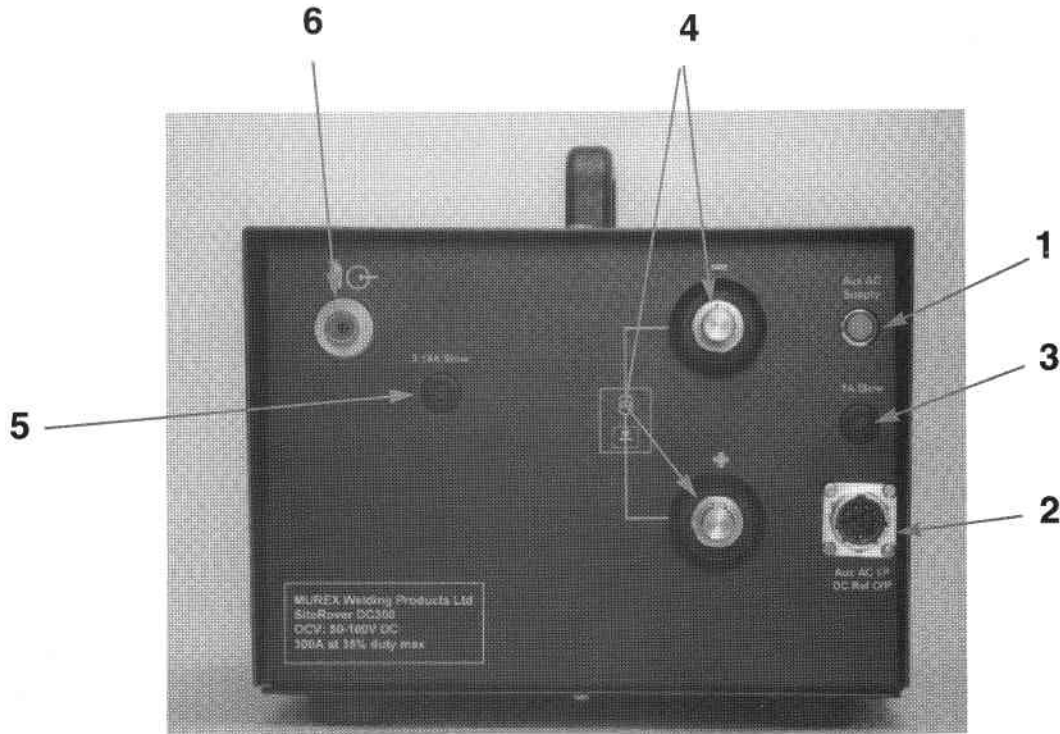
Item	Pt. No.	Description
1	1415455	Gas Solenoid Valve
2	1415456	Capacitor (large electrolytic)
3	1415457	Bridge Rectifier
4	1415458	Contactor/HF pcb
5	1415459	Latching Relay
6	1415460	Fuse 3AFF 20mm
7	1415461	Clip Cell
8	1415462	Contactor
-	1413048	Contactor Contact
9	1415463	6V Lucas Coil
10	1415464	Blocking Coil
11	1415465	Spark Gap Ass'y
12	1415466	Spark Gap Point

LHS VIEW



Item	Pt. No.	Description
1	1415467	Capacitor pcb (remove base panel to access)
2	1415452	Slope Control pcb

REAR VIEW



Item	Pt. No.	Description
1	1415449	Green LED
2	368543003	12 Way Burndy Socket
-	367972005	Pin Contact (8)
3	1415453	Fuseholder 20mm
-	-	Fuse 2A Slow 20mm
4	678339	Dins Plug 35/50
5	1415453	Fuseholder 20mm
-	-	Fuse 3.15A Slow 20mm
6	1415444	1/4" BSP Bulkhead Fitting



NOTES



NOTES



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