NEWARC

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www.newarc.co.uk
Newcastle Upon Tyne
Tel. 0191 295 0111
sales@newarc.co.uk

Newarc T300

Operational Manual

NA9910309

DECLARATION OF CONFORMITY

The Low voltage Directive 2014/35/EU
The EMC Directive 2004/108/EC, entering into force 20 July 2007
The RoHS Directive 2011/65/EU, entering into force 2 January 2013

Type of Equipment
Welding power source for TIG

Brand name or trade mark
Newarc

Type designation etc.
T300

Manufacturer or his authorised representative established within the EEA Name, address, telephone no

Newarc
Newcastle upon Tyne
Phone: +44 (0)191 295 0111

The product has been designed to comply with the following harmonised standards:
IEC 60974-1 - Arc welding Equipment Arc striking and stabilizing devices
EN 60974-10 - Arc Welding Equipment Electromagnetic compatibility

Additional information: restrictive use, Class A equipment, intended for use in locations other than residential

We declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with applicable essential requirements of the directives.

Place and Date
Newcastle upon Tyne, UK
14/06/2016

WEEE Directive & Product Disposal

At the end of its serviceable life, this product should not be treated as household or general waste. It should be handed over to the applicable collection point for the recycling of electrical and electronic equipment, or returned to the supplier for disposal.

Safety Guidelines

These general safety guides cover both arc welding machines and plasma cutting machines unless otherwise noted. The equipment must only be used for the purpose it was designed for. Using it in any other way could result in damage or injury and in breach of the safety rules. Only suitably trained and competent persons should use the equipment. Operators should respect the safety of other persons.

Prevention against electric shock

The equipment should be installed by a qualified person and in accordance with current standards in operation. It is the user's responsibility to ensure that the equipment is connected to a suitable power supply. Consult with your utility supplier if required. If earth grounding of the work piece is required, ground it directly with a separate cable. Do not use the equipment with the covers removed. Do not touch live electrical parts or parts which are electrically charged. Turn off all equipment when not in use. Cables (both primary supply and welding) should be regularly checked for damage and overheating. Do not use worn, damaged, under sized or poorly jointed cables. Ensure that you wear the correct protective clothing, gloves, head and eye protection. Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work ground. Never touch the electrode if you are in contact with the work ground, or another electrode from a different machine.

Do not wrap cables over your body. Ensure that you take additional safety precautions when you are welding in electrically hazardous conditions such as damp environments, wearing wet clothing, and metal structures. Try to avoid welding in cramped or restricted positions. Ensure that the equipment is well maintained. Repair or replace damaged or defective parts immediately. Carry out any regular maintenance in accordance with the manufacturer's instructions.

Safety against fumes and welding gases

Locate the equipment in a well-ventilated position. Keep your head out of the fumes. Do not breathe the fumes. Ensure the welding zone is in a well-ventilated area. If this is not possible, provision should be made for suitable fume extraction. If ventilation is poor, wear an approved respirator. Read and understand the Material Safety Data Sheets (MSDS's) and the manufacturer's instructions for metals, consumable, coatings, cleaners, and de-greasers. Do not weld in locations near any de-greasing, cleaning, or spraying operations. Be aware that heat and rays of the arc can react with vapours to form highly toxic and irritating gases. Do not weld on coated metals, unless the coating is removed from the weld area, the area is well ventilated, and while wearing an air-supplied respirator. The coatings on many metals can give off toxic fumes if welded.

Prevention against burns and radiation

Arc rays from the welding process produce intense, visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Wear an approved welding helmet fitted with a proper shade of filter lens to protect your face and eyes when welding or watching. Wear approved safety glasses with side shields under your helmet. Never use broken or faulty welding helmets. Always ensure there are adequate protective screens or barriers to protect others from flash, glare and sparks from the welding area. Ensure that there are adequate warnings that welding or cutting is taking place.

Wear suitable protective flame resistant clothing. The sparks and spatter from welding, hot work pieces, and hot equipment can cause fires and burns. Welding on closed containers, such as tanks, drums, or pipes, can cause them to explode. Accidental contact of electrode to metal objects can cause arcs, explosion, overheating, or fire. Check and be sure the area is safe and clear of inflammable material before carrying out any welding.

Protection against noise
Some welding and cutting operations may produce noise. Wear safety ear protection to protect your hearing.

Protection from moving parts
When the machine is in operation, keep away from moving parts such as motors and fans. Moving parts, such as the fan, may cut fingers and hands and snag garments. Protections and coverings may be removed for maintenance and controls only by qualified personnel, after first disconnecting the power supply cable. Replace the coverings and protections and close all doors when the intervention is finished, and before starting the equipment. Take care to avoid getting fingers trapped when loading and feeding wire during set up and operation. When feeding wire be careful to avoid pointing it at other people or toward your body. Always ensure machine covers and protective devices are in operation.

Precautions against fire and explosion
Avoid causing fires due to sparks and hot waste or molten metal. Ensure that appropriate fire safety devices are available near the cutting / welding area. Remove all flammable and combustible materials from the cutting / welding zone and surrounding areas. Do not cut/weld fuel and lubricant containers, even if empty. These must be carefully cleaned before they can be cut/welded. Always allow the cut/welded material to cool before touching it or placing it in contact with combustible or flammable material. Do not work in atmospheres with high concentrations of combustible fumes, flammable gases and dust. Always check the work area half an hour after cutting to make sure that no fires have begun.

Risks due to magnetic fields
The magnetic fields created by high currents may affect the operation of pacemakers or electronically controlled medical equipment. Wearers of vital electronic equipment should consult their physician before beginning any arc welding, cutting, gouging or spot welding operations. Do not go near welding equipment with any sensitive electronic equipment as the magnetic fields may cause damage.

RF Declaration
Equipment that complies with directive 2004/108/EC concerning electromagnetic compatibility (EMC) and the technical requirements of EN60974-10 is designed for use in industrial buildings and not those for domestic use where electricity is provided via the low voltage public distribution system. Difficulties may arise in assuring class A electromagnetic compatibility for systems installed in domestic locations due to conducted and radiated emissions. In the case of electromagnetic problems, it is the responsibility of the user to resolve the situation. It may be necessary to shield the equipment and fit suitable filters on the mains supply.

LF Declaration

Consult the data plate on the equipment for the power supply requirements. Due to the elevated absorbency of the primary current from the power supply network, high power systems affect the quality of power provided by the network. Consequently, connection restrictions or maximum impedance requirements permitted by the network at the public network connection point must be applied to these systems. In this case the installer or the user is responsible for ensuring the equipment can be connected, consulting the electricity provider if necessary.

Materials and their disposal

The equipment is manufactured with materials, which do not contain any toxic or poisonous materials dangerous to the operator. When the equipment is scrapped, it should be dismantled separating components according to the type of materials. Do not dispose of the equipment with normal waste. The European Directive 2002/96/EC on Waste Electrical and Electronic Equipment states the electrical equipment that has reached its end of life must be collected separately and returned to an environmentally compatible recycling facility.

Handling of compressed gas cylinders and regulators

All cylinders and pressure regulators used in welding operations should be handled with care. Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve. Always secure the cylinder safely. Never deface or alter any cylinder.

The following signs and explanations are to remind the user of the potential risks involved and the dangers of misuse or mistreatment of the welding machine.

RUNNING PARTS MAY BE DANGEROUS!
Keep away from running components, including the fan.

ELECTRIC SHOCKS CAN KILL!
Never touch electrical parts. Keep the equipment in good condition, replace damaged parts, undertake regular maintenance according to the instructions.

BE AWARE OF SPARKS AND SPATTER
Wear protective clothing, such as leather gloves, Flame retardant overalls, boots and eyewear.

DO NOT TOUCH THERMAL COMPONENTS!
Thermal components may cause severe burns when in contact with unprotected skin.

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Contents

1. Preface

1.1 General

Congratulations on choosing your Newarc T300 Inverter.
Used correctly, our products can significantly increase the productivity of your welding, and provide years of economical service. This operating manual contains important information on the use, maintenance and safety of your Newarc product. Please read the manual carefully before using the equipment for the first time. For your own safety and that of your working environment, pay particular attention to the safety instructions in the manual.

For more information on Newarc products, contact an authorised Newarc dealer, or visit the Newarc website at www.newarc.co.uk. The specifications presented in this manual are subject to change without prior notice.

Important notes
Items in the manual that require particular attention in order to minimise damage and personal harm are indicated with the **'NOTE!'** notation. Read these sections carefully and follow the instructions.

Disclaimer
While every effort has been made to ensure that the information contained in this guide is accurate and complete, no liability can be accepted for any errors or omissions. We reserve the right to change the specification of the product described at any time without prior notice. Do not copy, record, reproduce or transmit the contents of this guide without prior permission.

1.2 Introduction

The TIG300 is a control unit designed to permit TIG welding to be carried out up to 100 metres from the DC welding power source. It allows microprocessor control of HF ignition of the arc and control of current both slope up and down, as well as TIG/MMA switching. The TIG 300 is fitted with a digital display as standard and can be used with the following power sources:

R5000CC/CCCV
R4000CC/CCCV
R4500/MP
R3000/MP

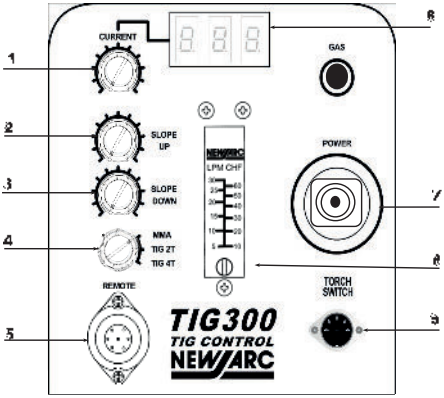
Accessories
Pulse Control Unit RPC300. This may be plugged into the remote control socket of the TIG 300 to allow pulse control of the TIG welding function. Pulse welding has a number of advantages over conventional TIG welding that weld pool size and penetration can be controlled far more easily.

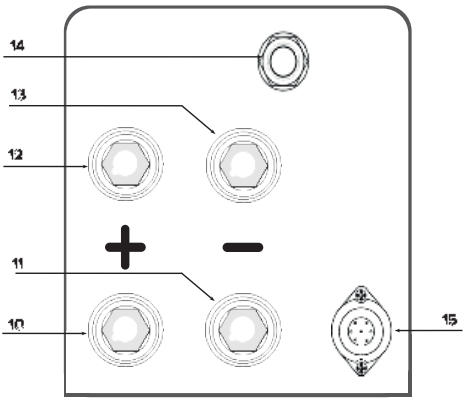
Remote Control Unit RC300
This remote current unit can be plugged into the remote control socket of the TIG 300 to give remote control of the current setting. The TIG 300 automatically senses when the RC300 is connected to it.

1.3 Technical Specifications

Newarc T300	
Input voltage range	60 – 90V
Maximum Output Current	300A
Duty Cycle	100 % @ 300amps
Degree of Protection	IP23
Dimensions (L x W x H) (mm)	430 x 180 x 320
Weight (kg)	9

1.4 Overview of Machine





Front View

Power source front panel layout

1. Current demand
2. Slope up
3. Slope down
4. Mode switch
5. Remote socket
6. Digital display
7. Power gas connector
8. Flow meter
9. Torch switch socket

Rear View

Power source back panel layout

10. Positive welding power in
11. Negative welding power in
12. Positive welding power out
13. Negative welding power out
14. Gas connector
15. Control socket

1. Current demand Adjusts the machines output current. (Maximum of 300A in TIG mode).

2. Slope up With the slope up control set at minimum, when the arc is struck the initial start current will be approxi-mately 30 Amps. The current will then rapidly ramp up to the set current in about 1/2second. Adjusting the slope up control to maximum will increase the ramp up period to approximately 3.5 seconds.

3. Slope down With the slope down control set at minimum the arc will extinguish immediately when the torch switch is released. With the slope down control set at maximum the current will gradually ramp down from the set current to the TIG300 minimum current of 5A over a period of approximately 15 seconds before the arc extinguishes.

4. Mode switch The mode switch has three settings. The MMA position is for manual welding using coated electrodes. (make sure TIG 300 is connected correctly for MMA operation) The TIG 2T setting is for normal TIG operation and the TIG 4T (latch) setting is also for use in TIG welding. When in latch mode, pressing the torch switch and releasing it will initiate and maintain the arc, pressing the torch switch again and releasing it will cause the arc to extinguish. You can control the TIG 300 current either by using the current control or by using the optional RC300 remote control. Turning either the TIG300 current demand knob(1) or the RC300 will cause the digital display to rise or fall. You can now set the TIG 300 to the welding current you desire.
Note: Inserting the remote control cable into the remote control socket(5) will automatically disable the TIG 300 current control. Connecting the RC300 to the other end of this remote control cable will allow remote control of the current setting of the TIG 300 using the RC300 demand knob.

5. Remote socket For external demand operation with the use of the RC300 Remote control.

6. Digital display Indicates welding current in Amps. Displays HU (High voltage) when HF spark is activated. Display the set value of post-gas P#. The display also displays the setting values of slope up & slope down when been adjusted.

7. Power gas connector Connection point for TIG Torch. Separate gas connection is optional.

8. Flow meter The argon flow rate can be adjusted by altering the control screw on the flow meter.

9. Torch switch socket Connection for TIG torch trigger switch.

10. Positive welding power in Positive connection from power source.

11. Negative welding power in Negative connection from power source.

12. Positive welding power out Positive connection for earth (TIG Mode) and for torch holder (MMA mode).

13. Negative welding power out Negative connection for earth in MMA mode..

14. Gas connector 3/8" BSP gas connector.

15. Control socket Control cable connection from power source.

2. Installation

Positioning the T300

• Site the T300 on a clean dry surface, preferably above ground level.
• Make sure there is at least 20cm clearance at the front, rear and sides of the machine to allow good circulation of the cooling air.
• Protect the machine from heavy rain and if used in hot climates, against direct sunlight.
• Ensure that the machine is positioned in such a way that particles created by grinding and cutting operations do not enter the machine.

NOTE! Damage caused by metal particles and water entering the machine is not covered under warranty.

Connecting to mains supply

WARNING! All electric shocks are potentially fatal; a competent electrician should undertake the fitting of the mains plug.

NOTE! The Dual Voltage version of the machine is fitted with circuitry that senses the mains input voltage and automatically configures the machine. This requires no changing of tapping points inside the machine or intervention on the operator's part; just fit the relevant type of mains plug for the supply the machine is to be used on.
• Make sure that the mains supply is of the correct voltage and current capability for the machine.
• Make sure that the mains cable and any extension cables used are of sufficient current carrying capacity.
• Make sure that the mains plug and socket (if fitted) are in good condition. If the machine is wired directly to the mains supply then an isolator switch must be fitted.

Primary cable length

Long extension cable lengths may reduce the performance of the machine; the welding arc may become unstable especially at higher currents. Ensure that the mains cable is not coiled up when you are welding.

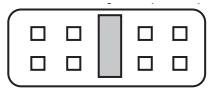
NOTE! See the technical specifications page for correct supply information

The TIG 300 should be set up to match the output of the power source. The following explains the steps required to perform the alignment:

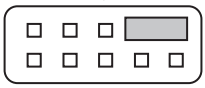
TIG PCB Version 200809 and 030914

Open up the tig unit and change the jumper setting on P3 from 5,6 to 1,3.

- Power up the unit and the display should read -S-.
- Referring to the table below, press the torch trigger until the desired program is selected.
- Reset the jumper position on P3 to 5,6.



P3 - Position 5,6



P3 - Position 1,3

Setting	Inverter Model
200	RT2000
250	R2500 / RT2500
300	RT3000
400	R4000 (2016+)
450	R4500
500	R5000 (2016+)
401	R4000 (<2016)
501	R5000 (<2016)

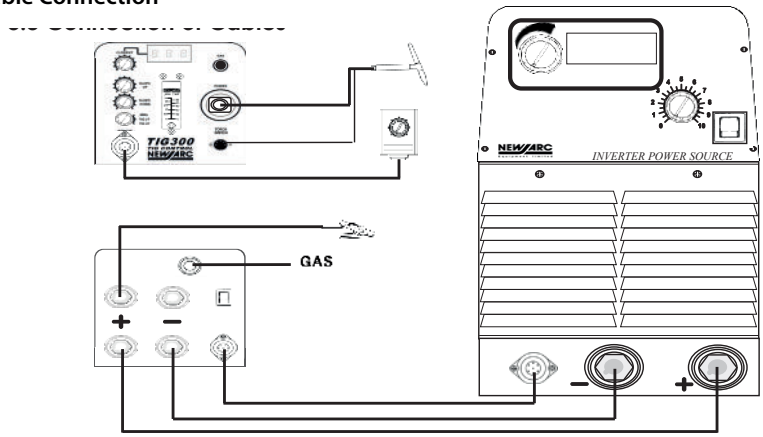
TIG PCB Version 201114

- Open up the TIG unit and change the jumper setting on CN2 from 3,4 to 2,3.
- Power up the unit and the display should read -S-.
- Referring to the table on the right, press the torch trigger until the desired program is selected.
- Reset the jumper position on CN2 to 3,4.

Examples

If the unit is to be powered by an R4000CC or R4000CCCV, the TIG300 should be set to 401 as shown in the table for a R4000.

Cable Connection



3. Operation

Pre-Gas Control
This is pre-set at the factory to approximately ¼ of a second. Pressing the torch switch initially will cause gas to flow for this pre-set time before the weld will strike, this is to en-sure that the argon lines are purged of air before welding commences.

HF Ignition
After the pre-gas period the arc will be initiated by a high voltage spark (HV) (the display displays (HU) to show high voltage is present), if the arc does not strike within 1.5 seconds the HV will be cut off, to restart the HV the torch switch must be pressed again. This is to prevent electrical interference to other systems in the vicinity.

Post Gas Control
Post gas time. For a 5 seconds period after powering up the TIG300 or when switching from MMA to TIG modes. The post gas value is displayed as P# (The # value is the set post-gas time) with the possibility to change the post-gas time by repeatedly pressing the torch switch button. Every torch switch press the post gas time is incremented by 1 sec-ond (from 0-30 seconds).
This setting is saved therefore it does not need re-setting each time the machine is switched on.
To stop the post gas procedure after welding

4. Fault finding

Machine operation
Most problems with the operation of the R1500 can be overcome by following the procedures below.

No digital display on switch on
Check that the machine is attached to a working mains supply and that it is correctly plugged in and any isolator switch is closed. Have a competent electrician check that there are no fuses or overload devices interrupted, that the mains plug is fitted correctly and that there are no loose wires or connections, check that there are no breaks in the mains cable.

In the unlikely event of the TIG 300 failing to work correctly, first check that the TIG 300 is connected correctly for the mode of welding that you are using. If the TIG 300 is totally dead, check the fuse in the power source protecting its auxiliary external supply.

5. Maintenance

Note!
All Electric shocks are potentially fatal, switch the machine off and disconnect from the power supply before undertaking out any maintenance work.

It is very important that the T300 is regularly maintained. The amount of use and the working environment must be taken into account when scheduling the maintenance periods. Careful use and regular preventative maintenance will prolong the life of the machine and ensure trouble free operation.

Weekly
- Clean the exterior of the machine
- Inspect the machines exterior for obvious signs of damage.
- Check the condition of the welding cable, earth clamp and welding output connectors for damage and any sign of over-heating.
- Check the condition of the mains cable an plug.

6. Warranty

Guarantee

Newarc Ltd warrants that its goods and services are guaranteed to meet the specific performance under the stated conditions of use. Newarc cannot be held responsible for general wear and tear or for failure occurring due to misuse or abuse arising out of circumstances outside the stated condi-tions of use. The stated conditions of use are that considered normal industrial practice and are not exhaustive. Each machine is identified with a unique serial number and accompanied with the guarantee. Newarc reserve the right to a) Repair. b)Replace. c)Authorise the reasonable cost of repair or replacement at an approved Newarc service agent. d)Credit for any purchased equip-ment (less reasonable depreciation for actual use and condition) at its entire discretion. This in no way affects your rights as a consumer. The guarantee is enclosed with each machine.

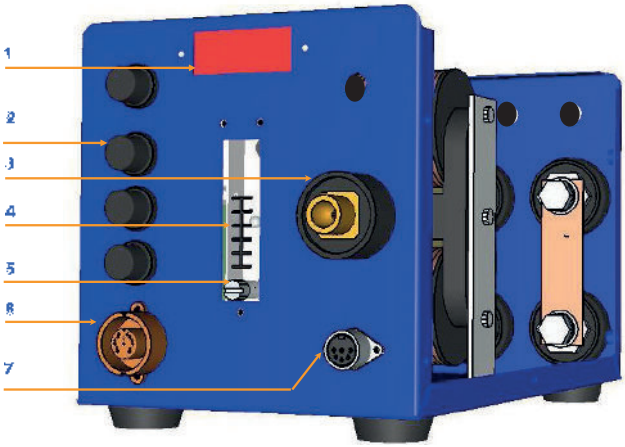
PLEASE NOTE

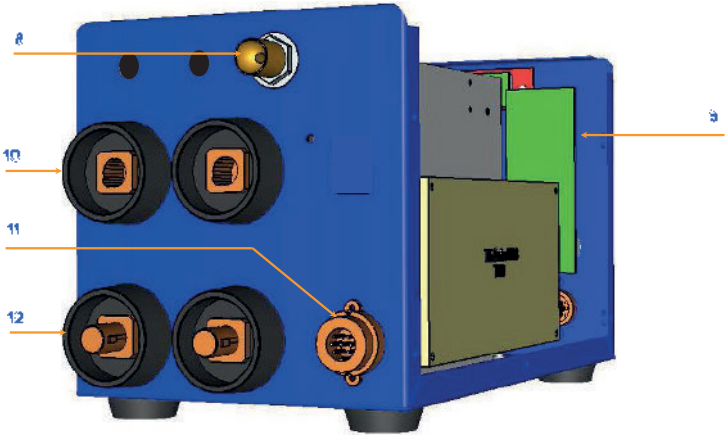
The manufacturer reserves the right to change and alter the equipment without prior notice. This includes but is not limited to: operating procedures, technical specifications, technical schematics and manuals

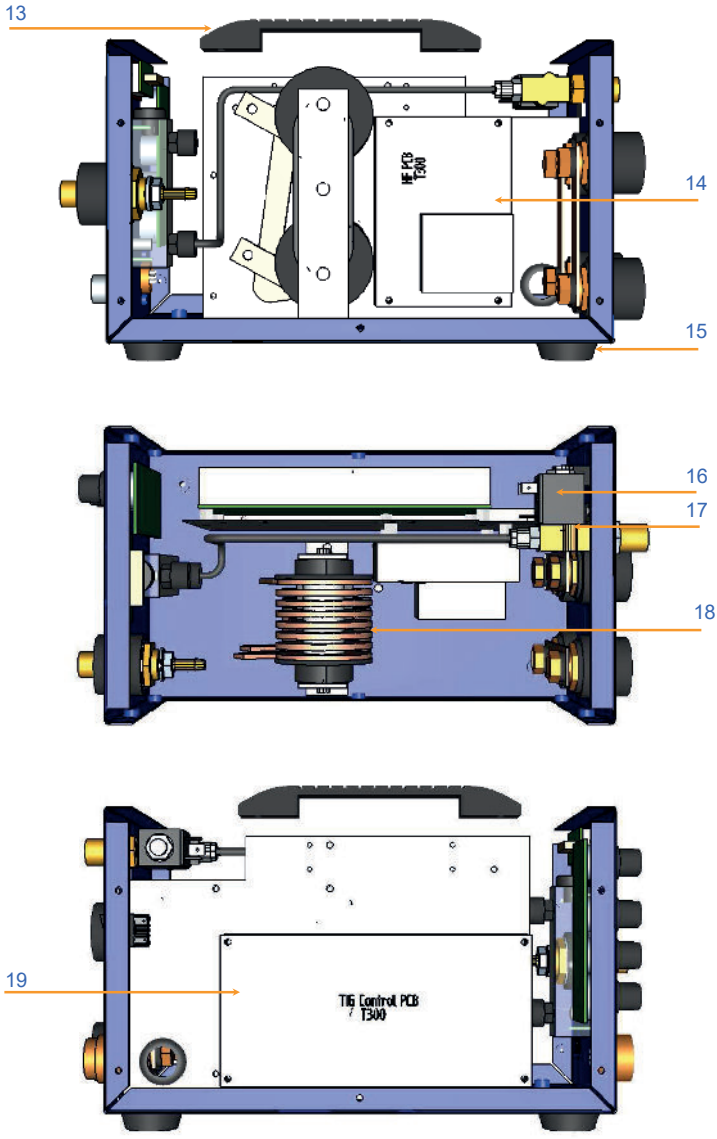
CAUTION

- There are no user serviceable parts/modules inside this equipment.
- Removing lids or covers will/may expose hazardous voltages
- Removal of lids or covers WILL invalidate the warranty on this equipment.

7. Parts



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HF PCB
T300
TIG Control PCB
T300

Ordering information

Item	Description	Part number
1	Digital display non multiplexed	**NAM90003**
2	20mm knob	**NAM00033A**
3	Power gas connector 3/8" BSP	**NAM00041**
4	Flow meter	**NAM00018**
5	Flow meter knob	**NAM00019B**
6	7 Pin Panel Mounted Socket Assembly	**NAM90112**
7	Torch switch socket Assembly	**NAM90098/NEWTIG**
8	Gas Inlet Stem	
	Up to serial number NCL0009811	**NAM00022B**
	From serial number NCL0009812	**AM00022C**
9	Switch PCB	**NAM90080**
10	Panel mounted DIX type socket	**EW3550PSW**
11	7 Pin Panel Mounted Plug Assembly	**NAM90090**
12	Panel mounted DIX type plug	**NW3550PPW**
13	7" Moulded handle	**NAM00026**
14	HF PCB	**NAM90193-T300**
15	T300 37mm case feet	**NAM00096**
16	Gas Solenoid 24V DC	**NAM00024**
17	Gas Valve assembly	
	Up to serial number NCL0009811	**NAM90183**
	From serial number NCL0009812	**NAM90176**
18	HF Choke	**NAM01126**
19	TIG PCB	**NAM90132/NEW-T300**

Notes

NEWARC

Unit 1, Whitehouse Industrial Estate, Whitehouse Road
Newcastle upon Tyne NE15 6LN
Tel: +44 (0)191 295 0111| Email: sales@newarc.co.uk | www.newarc.co.uk