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Powered by Weldability sif

Newarc RT2000

Operational Manual

NA9910303

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, MMA

Brand name or trade mark
Newarc

Type designation etc.
RT2000
Manufacturer or his authorised representative established within the EEA Name, address, telephone no

Newarc
Newcastle upon Tyne
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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.

NEWARC

Contents

1. Preface

1.1 General

Congratulations on choosing your Newarc RT2000 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 RT2000 is a 200 amp (150 amp on MMA) constant current TIG welding machine based on IGBT technology. The inverter drive circuitry operates above the audio frequency spectrum making the RT2000 virtually silent in operation.

The high operational frequency also means that the RT2000 is able to respond quickly to changing arc dynamics, making for a very smooth stable arc.

As well as TIG welding the RT2000 is capable of MMA welding with all types of electrodes within the current rating of the machine, normally up to 4mm. The RT2000 is available in three versions, a 230v only, a 110v only and a 115/230v auto switching Dual Voltage version.

You may select either HF or contact ignition and 2T or 4T torch switch operation. The unit has an excellent duty cycle in high ambient temperatures, and is designed to meet all types of environmental conditions. It is ideal for production, site and maintenance applications.
#

Features

- TIG DC Welding
- Pre and post gas flow
- Adjustable slope up and down timing
- HF or Contact Ignition
- 2T or 4T torch switch operation
- Digital current display
- Protected against overload and short circuits
- Robust external casing to meet harsh operating conditions
- Extremely good duty cycle in high ambient temperatures

1.3 Technical Specifications

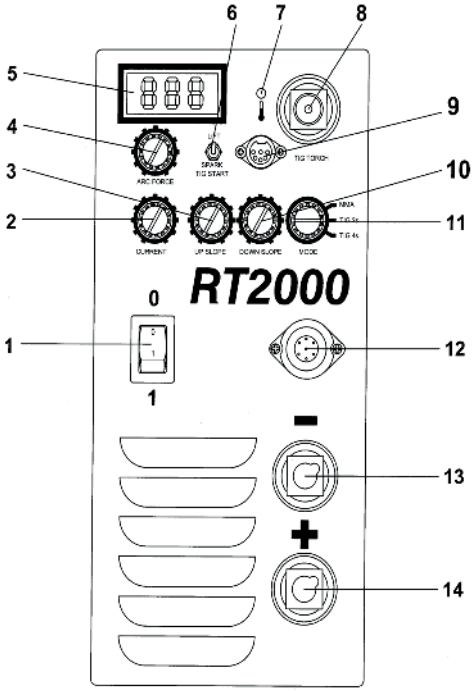
Newarc TS2000		
Power voltage (V)	230 volts single phase (230V, or DV version) 115 volts single phase (115V or DV version)	
Power Consumption	5.1 KVA	
Supply Current	230v	27.5 amps
	115v	44 amps
Mains Input Fuse	230v	28 amp s slow blow or type C MCB
	115v	45 amps slow blow or type C MCB
Mains Cable	230v	3 x 2.5mm^2 flexible cable
	115v	3 x 4mm^2 flexible cable
Output Current Range	TIG	5-200 amps
	MMA	5-150 amps
Duty Cycle at 40ºC	TIG	70%
	MMA	100%
Insulation Class	F	
Degree of Protection	IP21	
Dimensions (L x W x H) (mm)	420 x 150 x 350	
Weight (kg)	19	

1.4 Overview of Machine

Front View

Power source front panel layout

1. On-Off switch
2. Current control
3. Slope up control
4. Arc-force control
5. Digital display
6. Lift/Spark start selector switch
7. Thermal cut-out indicator
8. Power/Gas outlet connector
9. TIG torch switch connector
10. Slope down control
11. Mode switch
12. Remote control socket
13. Negative weld out connector.
14. Positive weld out connector



1. On-Off switch

Switches the machine on and off. When switching on the overload indicator will light and the machines output will be inhibited, after 15 seconds the overload indicator will extinguish and the machine ready for use.
Note: Post gas time. For a 5 seconds period after switching on 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 second (from 0-30 seconds). This setting is saved therefore it does not need re-setting each time the machine is switched on.

2. Current control

Use this to set the output current of the RT2000.

3. Slope up control

With the slope up control set to minimum the RT2000 will strike at the current set by the current control. With the slope up control set to anywhere but minimum the RT2000 will strike at 5A and then gradually increase the current to the setting on the current control, the time this takes is determined by the position of the slope up control.

4. Arc-force control
Operates in MMA mode only. This control alters the welding dynamics of the machine to facilitate welding with different types of welding electrodes (e.g. general purpose, celulosic, low hydrogen and iron powder). Turning towards maximum will increase penetration at the expense of increased welding splatter, turning towards minimum will reduce penetration but the arc will be smoother and less fierce.

5. Digital display
Gives an accurate indication of the welding current. Displays HU (High voltage) when HF spark start 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.

6. Lift/Spark start selector switch
Switches the machine into either 'HF start' or 'lift TIG' operation. In HF start the arc is initiated by a high voltage spark at the Tungsten's tip. In lift TIG touch the Tungsten to the workpiece, press the torch switch then lift the Tungsten to the welding position, the arc will initiate.

7. Thermal cut-out indicator
Indicates that the thermal cut-out in the machine has operated.

8. Power/Gas outlet connector
For connection of a TIG torch with a combined power and gas lead. If a TIG torch with a separate power lead and gas hose is used, an adapter must be used to connect to this outlet.

9. TIG torch switch connector
For connecting the TIG torch switch lead.

10. Slope down control
With the slope down control set to minimum the current will shut down immediately the torch switch is released. With the slope down control set to anywhere but minimum and the torch switch released, the current will gradually decrease from the setting on the current control to 5 amps, whereby the current will extinguish, the time this takes is determined by the position of the slope down control.

11. Mode switch
This control switches the RT2000's welding mode. MMA sets the machine in MMA mode. TIG 2s sets the machine in 'normal' TIG mode, whereby pressing the TIG torch switch initiates the arc and releasing it will extinguish the arc (at the end of any slope down period set). TIG 4s sets the machine in 'latch' TIG mode, whereby pressing the torch switch and releasing it initiates the arc, pressing and releasing it again will extinguish the arc (at the end of any slope down period set).

12. Remote control socket
For connecting external remote control units, these are the RC300 remote control, the RPC300 pulse unit and the RFP300 foot pedal. There is no switch for remote operation, plugging an external unit into the socket automatically selects remote operation and disables the internal current control.

13. Negative weld out connector.
Main welding power output connector, negative polarity.

14. Positive weld out connector

2. Installation

Unpacking
Check the packaging for any signs of damage. Carefully remove the machine and retain the packaging until the installation is complete.

Positioning of the machine
Place the machine on a firm, dry and level surface. Where possible, do not allow dust or other impurities to enter the machines cooling air flow. Preferably site the machine above floor level; for example on a suitable carriage unit.
Notes for positioning the machine
• 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.
•Ensure that the machine is positioned in such a way that particles created by grinding and cutting operations do not enter the machine.

NOTE! Protect the machine from heavy rain and if used in hot climates, against direct sunlight.

WARNING! All electric shocks are potentially fatal, a competent electrician should under-take the fitting of the mains plug.

Input connection
The Dual Voltage version of the machine is fitted with circuitry that 'senses' the mains voltage it is connected to and automatically configures the machine. This requires no changing of tapping points inside the machine or intervention on the operators part, just fit the relevant type of mains plug for the supply the machine is to be used on.

Assure 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.
Check 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 the mains cable is not coiled up when you are welding as this will reduce the input voltage to the machine and may cause overheating and degradation of the cable.

3. Operation

MMA Welding

• For straight polarity welding, connect the electrode holder to the positive weld terminal and the earth return lead to the negative weld terminal. For reverse polarity welding, reverse these connections.
• Turn the mode switch to 'MMA', the machine is now in MMA mode.
• Turn the mains switch to the on position, the digital display and the overload indicator will light. After approximately 15 seconds the overload indicator will extinguish and the machine is ready to weld.
• While reading the digital display, adjust the current control to the recommended setting for the size and type of welding electrode to be used.
• When welding, adjust the Arc-force control to achieve the arc condition you require.
• The RT2000 is suitable for welding all types of electrodes within the current rating of the machine, normally up to 3.2 or 4mm depending on the type of rod.
The RT2000 should never be used with arc-air gouging or cutting electrodes.

TIG Welding

• Connect a hose suitable for use with pure Argon at a pressure of up to 10 bar (150psi) between the regulator on the gas cylinder and the gas in connection on the rear panel of the machine. Turn the gas cylinder valve and the regulator on and adjust the regulator to give a working pressure between 3 and 5 bar. (see page 4 for more information).
• Connect the TIG torch power/gas lead to the TIG torch power/gas connector and the switch lead to the torch switch socket.
• Connect the earth return lead to the +ve weld terminal.
• Turn the mode switch to '2s' or '4s'.(see relevant paragraph in section 4.2 Description of controls for more information on the setting of this control).
• Turn the Up slope and Down slope controls to the settings required. (see relevant paragraph in section 4.2 Description of controls for more information on the setting of this control).
• Turn the on/off switch to the on position, the digital display and the overload indicator will light up. After approximately 15 seconds the overload indicator will extinguish and the machine is ready to weld.
• While reading the digital display,

4. Fault finding

Machine operation
Most problems with the operation of the RT2000 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, that it is correctly plugged in and any isolator switches are turned on. 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. If all the above appear satisfactory have a competent maintenance engineer check the fuses inside the machine. The relevant one in this case is on the TIG control PCB. This PCB is located at the top left hand side of the machine. The fuse is located on the bottom of the PCB towards the rear of the machine. The fuse rating is 2 amp.

Digital display lit but no output on MMA.
Make sure the mode switch is in the MMA position. Ensure that the overload indicator goes off after 15 seconds. If all the above appear satisfactory, have a competent maintenance engineer check the fuses inside the machine. The relevant one is on the Main control PCB. This PCB is located at the top right hand side of the machine. The fuse is located on the top of the PCB halfway along its length.

Output on MMA but not on TIG.
Check to see if gas flows when the torch switch is pressed, if not, check that the torch switch lead is in good condition, that there are no breaks in the cable and the wires in the plug and torch switch are still securely attached. Check that the torch switch plug is connected properly. If gas flow is present, check the machine works in 'lift TIG' mode to determine whether the problem is in the TIG welding mode or that just the HF is not working.

No HF operation.
Have a competent maintenance engineer check the fuse on the HF PCB. This PCB is located in the 'U' channel on the top of the machine. The fuse is located near the top of the PCB toward the front of the machine.

Thermal cut-out indicator lit
This indicator must be off for normal operation. If on it indicates that the RT2000 has overheated and the power stages of the RT2000 have been shut down so you will get no current output.
In normal climate conditions (below 25°C) the RT2000 has a 100% duty cycle, so operation of the thermal cut out indicates that the inside of the machine is likely choked with dust and therefore not being cooled properly. In Hot climates (above 25°C) It indicates that you are exceeding the duty cycle of the RT2000, leave switched on for a few minutes and the RT2000 will return to normal operation. In this circumstance, do not switch the RT2000 off as this will stop the operation of the cooling fan and greatly extend the cool down period. Frequent tripping of the thermal cut-out, especially at low current settings is indicative that the inside of the machine is probably choked with dust.

Any operating problems not covered above means the RT2000 must be checked by a trained Newarc service engineer or returned to the factory for repair.

4.1 Welding problems

MMA Welding Problems

If problems with the RT2000s operation while MMA welding are experienced, first refer to the information in paragraphs 3.2 in the installation section, paragraph 4.3.1 in the operating section and the fault finding procedure earlier in this section. Most problems with the MMA welding procedure are the result of not setting the correct welding parameters for the welding rod being used. All welding rod packets have information on them in symbolic format , giving suitable current range, polarity and type of weld (normally called 'position'). If you are in doubt about what these symbols mean, ask your welding rod supplier to explain them. Choose an initial current setting towards the middle of the quoted range and if necessary practice on a piece of waste material the same type and thickness as the job to be welded.

TIG Welding problems

If problems with the RT2000s operation while TIG welding are experienced, first refer to the information in paragraphs 3.2 in the installation section, paragraph 4.3.2 in the operating section and the fault finding procedure earlier in this section. The common problems with TIG welding are poor striking, porosity and poor appearance of the weld. If you are experiencing any problems with TIG welding follow the check list below, this will cure most problems:

• If the RT2000 is suffering from poor striking, check that all power leads are connected properly, check that there is sufficient gas flow and that the correct gas is being used, check that the earth clamp is making a good connection to the work-piece.
• If there is porosity in the weld or the final weld is of poor appearance, check that there is sufficient gas flow and that the correct gas is being used, check the condition of the TIG torch, particularly the gas hose. Make sure that the collet or gas lens in the torch head is not blocked in anyway. Check all gas connections are secure and that there are no leaks, use a leak detecting spray on all connections if necessary. Any welding problems not covered above must be brought to the attention of a qualified Welding Engineer.

if the problem still persists have the RT2000 checked by a trainedNewarc service engineer.

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 RT2000 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, welding output and power in connectors for damage and any sign of over-heating.
- Check the condition of the mains lead and 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.

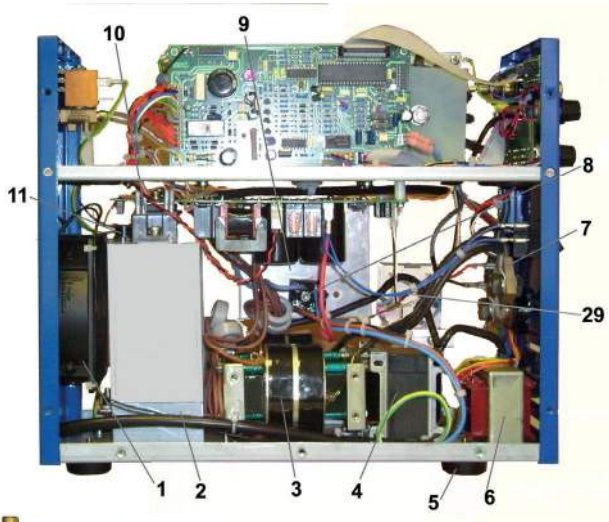
PLEASE NOTE

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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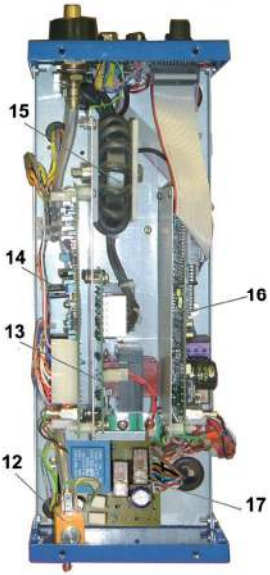
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RT2000
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Ordering information

Item	Description	Part number
1	Cooling fan (230Vac)	**NAM00311A**
2	Diode modules (behind bracket) (2 per machine)	**NAM60121**
3	Main Transformer	**NAM90136B**
4	Secondary Inductor	**NAM90133**
5	Plastic feet (4 per machine)	**NAM00096**
6	Auxiliary transformer	**NAM00305C**
7	200A Shunt	**NAM00309NC**
8	Diode Bridge (2 per machine)	**NAM60079**
9	Main Power PCB 230V model only	**NAM90125/1**
	Main Power PCB 110V & Dual voltage models	**NAM90148/1**
10	IGBT Module	**NAM60074**
11	Thermostat	**NAM00332/80**
12	Gas solenoid valve	**NAM00024A**
13	HF PCB	**NAM90193-RT2000**
14	Control PCB	**NAM90127-RT2000**
15	HF Inductor	**NAM90544**
16	TIG PCB	**NAM90132/New-RT2000**
17	Auto-switching PCB (Dual voltage model only)	**NAM90691**
18	Rocker switch	**NAM70069A**
19	Control/switch PCB	**NAM90080-RT2000**
20	Arc force control potentiometer	**NAM20099**
21	Control knobs (5 per machine)	**NAM00033A**
22	Digital display assembly	**NAM90003-RT2000**
23	Lift/HF selector switch	**NAM70057**
24	TIG torch power/gas connector	**NAM00041**
25	TIG torch switch socket assembly	**NAM90098/NEWTIG**
26	Remote control socket assembly	**NAM90130**
27 & 28	Panel mount Dix type socket (2 per machine)	**EW3550PSW**
29	24v relay (dual voltage model only)	**NAM70026**
Misc	2 amp, 20mm fuse links (Quick blow)	**NAM00274**

NEWARC

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