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MODEL: RE ARC315
User's Manual
Welding Machine MMA&LIFT TIG
(2 in 1)



PLEASE READ THE USER MANUAL BEFORE USE

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1 SAFETY



WARNING!

Before use, read and understand the instruction manual and follow all labels, employer's safety practices and Safety Data Sheets (SDSs).

1.1 Safety Precautions



WARNING!

Arc welding and cutting may cause injury to yourself and others. Take precautions when welding and cutting.



ELECTRIC SHOCK - Can kill

- Install and ground the unit in accordance with instruction manual.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves, or wet clothing.
- Insulate yourself from work and ground.
- Ensure your working position is safe



ELECTRIC AND MAGNETIC FIELDS - Pose health risks

- Welders with pacemakers fitted should consult their doctor before welding. EMF may interfere with some pacemakers.
- Exposure to EMF may have other health effects which are unknown.
- Welders should follow these steps to reduce their exposure to EMF:
 - Route the electrode and work cables together on the same side of your body. Secure them with tape when possible. Never coil the torch or work cable around your body. Keep the welding power source and cables as far away from your body as possible.
 - Connect the work cable to the work piece as close as possible to the area being welded.



FUMES AND GASES - Can be dangerous to your health

- Keep your head out of the fumes.
- Use ventilation, extraction at the arc, or both, to take fumes and gases away 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



MOVING PARTS - Can cause injuries



- Keep all doors, panels and covers closed and securely in place. Have only qualified people remove covers for maintenance and troubleshooting as necessary. Reinstall panels or covers and close doors when service is finished and before starting engine.
- Stop engine before installing or connecting unit.
- Keep hands, hair, loose clothing and tools away from moving parts.



FIRE HAZARD

- Sparks (spatter) can cause a fire. Make sure there are no inflammable materials nearby.
- Do not use on closed containers.

**MALFUNCTION - Call for expert assistance in the event of malfunction.
PROTECT YOURSELF AND OTHERS!**



WARNING!

Do not use the power source for thawing frozen pipes.



CAUTION!

This product is solely intended for arc welding.

1.2 User Responsibility

Users of AWT equipment have the ultimate responsibility for ensuring that anyone who works on or near the equipment observes all the relevant safety precautions. Safety precautions must meet the requirements that apply to this type of equipment. The following recommendations should be observed, in addition to the standard regulations that apply to the workplace.

All work must be carried out by trained personnel well-acquainted with the operation of the equipment. Incorrect operation of the equipment may lead to hazardous situations, which could result in injury to the operator and damage to the equipment.

1. Anyone who uses the equipment must be familiar with:
 - its operation
 - the location of emergency stops
 - its function
 - the relevant safety precautions
 - welding and cutting or other applicable operation of the equipment
2. The operator must ensure that:
 - no unauthorized person is within the working area of the equipment when it is started up
 - no-one is unprotected when the arc is struck or work is started with the equipment
3. The workplace must:
 - be suitable for the purpose
 - be free from
4. Personal safety equipment:
 - Always wear recommended personal safety equipment, such as safety glasses, flame-proof clothing, safety gloves
 - Do not wear loose-fitting items, such as scarves, bracelets, rings, etc., which could become trapped or cause burns
5. General precautions:
 - Make sure the return cable is connected securely
 - Work on high voltage equipment **may only be carried out by a qualified electrician**
 - Appropriate fire extinguishing equipment must be clearly marked and close at hand
 - The equipment should not be lubricated or maintained during operation.

2 INTRODUCTION

The **RE ARC315** is a Powerful and Easy-to-handle **1P/3P 220V/380V/440V Heavy duty cycle and Heavy OCV** welding machine with MMA/LIFT TIG 2 in 1 model

【Digital IGBT Inverter Technology】 This ARC welder come with advanced unique IGBT control mode improves the reliability of welding machine. Powerful Arc-force provide smoother welding and deeper penetration, keep arc stability, consistent welding current, the pretty nice beads, specially when in small welding current.

【Suitable for Series Welding Rod】 The welder has amazing hot-start, is ideal for the rods AWS E6013 E7018(1.6mm-6.0mm), you just take the rod touching the work piece, arc striking immediately, capable of welding mild steel, carbon steel, stainless steel and cast iron.

【Safe and Stable】 This welding machine has Anti-stick function easy the electrode removal from the work piece, and closed-loop feedback control and multiple protection functions set internally, to prevent over heat, over current, over-voltage, under-voltage and short circuit damage to make sure safely operation

【Easy to Operate】 The inverter welder **1P/3P 220V/380V/440V Heavy duty cycle and Heavy OCV** equipped with digital display and trouble indicate, the real welding current be shown, is so easy to use that it can be used by novice or master welder.

【Portable and Support】 **RE ARC315** with a easy carrying handle, compact design, light weight, easy for carrying and storage, can be used anywhere you need.

3 TECHNICAL DATA

Parameters \ Model	RE ARC315
Power voltage (v)	3~380V/440V 1~380V 1~220V
Frequency (HZ)	50/60 Hz
No-load voltage (V)	80 V
current range (A) 220V	20-315A
current range (A) 380V	20-315A
Rated input current (A)	60 A
Rated output voltage (V)	32.6 V
Duty cycle%	60%
Efficiency	85 %
Power factor	0.75 cos ϕ
Insulation class	H
Protection class	IP21S
Weight (KG)	10.5 kg
Dimensions (MM)	495x 250 x 347mm

Duty cycle

The duty cycle refers to the time as a percentage of a ten-minute period that you can weld or cut at a certain load without overloading.

Enclosure class

The **IP** code indicates the enclosure class, i.e. the degree of protection against penetration by solid objects or water.

4 INSTALLATION

The installation must be carried out by a professional.

4.1 Location

Position the power source so that its cooling air inlets and outlets are not obstructed, otherwise the cooling system could not work

4.2 Welding Parameter

Prepare correct diameter for work piece thickness.

TABLE FOR SELECTION OF THE WELDING CURRENT MMA			
Diameter Electrodes E6013	plate Thickness	Minimum Current(A)	Maximum Current(A)
2.5MM	2.00-4.00 MM	60	100
3.2MM	4.00-6.00 MM	100	130
4.0MM	6.00-7.00 MM	120	170
4.0MM	7.00-8.00 MM	140	180
4.0MM	8.00-10.00 MM	160	200
5.0MM	10.00- 15.00 MM	180	250

TABLE FOR SELECTION OF THE WELDING CURRENT TIG			
Tungsten needle Diameter	plate Thickness	Minimum Current(A)	Maximum Current(A)
1.0MM	0.5-1.0mm	10	70
1.6MM	1.0-2.0mm	60	150
2.0MM	1.5-3.0mm	100	200
2.5MM	2.0-4.0mm	160	250
3.2MM	3.0-6.0mm	200	300

Note:For different type of welding material(like carbon steel, stainless steel or Aluminum) ,the corresponding relationship between welding current and plate thickness will also be different.



When the distance of work piece is far from the machine, and the cables (torch cable and earth cable) are long, please choose cable of bigger section to minimize the reduction of the voltage.

4.3 Power Supply

The machine is equipped with power voltage compensation equipment. When the power voltage fluctuates between ± 15 of rated voltage, it still can work normally.

The power source can be supplied from different types of generators. However, some generators may not provide sufficient power for the welding power source to operate correctly. Select input voltage grade in the permission range.

5 OPERATION

5.1 Overview

General safety regulations for handling the equipment can be found in the chapter "Safety." Read it before you start using the equipment.



NOTE!

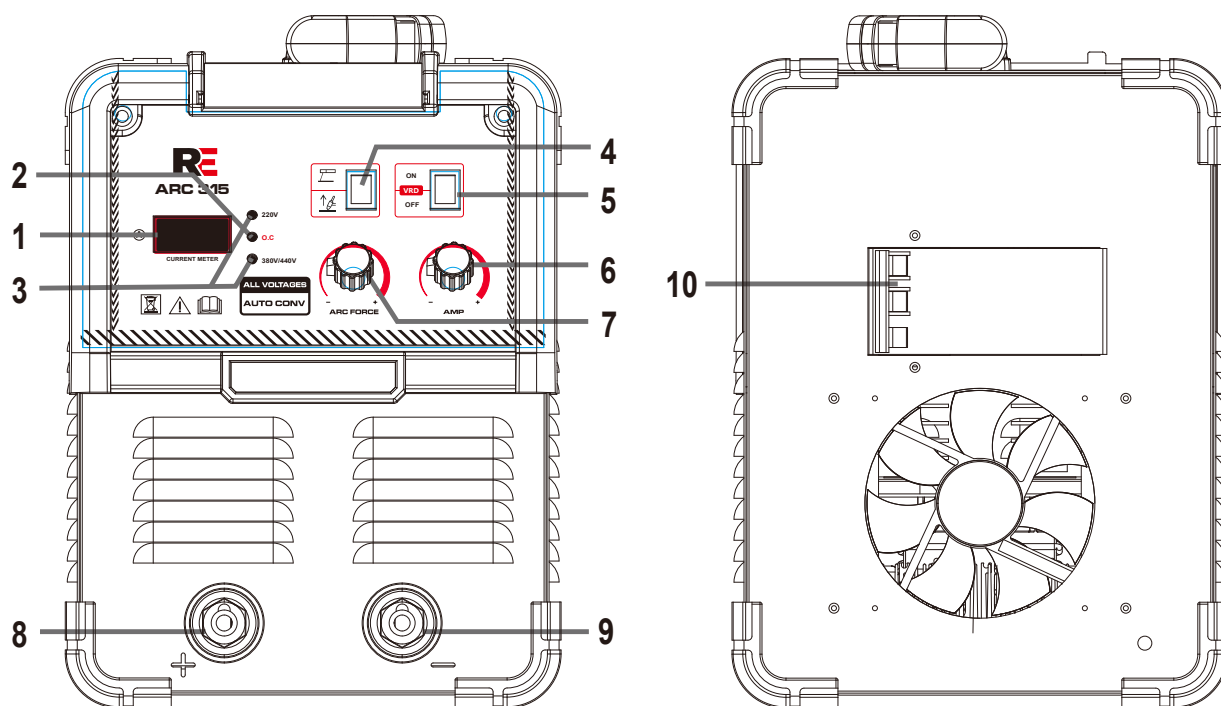
When moving the equipment, use the handle. Never pull the cables.



WARNING!

Electric shock! Do not touch the workpiece or the welding head during operation!

5.2 Panel and backboard introduction



NO.	Object	NO.	Object
1	LED display screen	6	Welding current adjustment knob
2	O.C light	7	Arc force adjustment knob
3	Power light	8	Positive electrode(+)
4	MMA/LIFT TIG switch	9	Negative electrode(-)
5	VRD switch	10	Power switch

5.3 Connecting Welding and Return Cables

The power source has two outputs, a positive welding terminal (+) and a negative welding terminal (-), for connecting welding and return cables. For stick (SMAW) welding, connect the the earth clamp (-) and electrode holder (+) to the respective outlet, fasten it clockwise tightly.

Connect the return cable to the other output on the power source. Secure the return cable's contact clamp to the work piece, and make sure that there is a good contact between the Work piece and the output for the return cable on the power source.

- For TIG (GTAW) welding, the negative welding terminal (-) is used for the welding torch and the positive welding terminal (+) is used for the return cable.
- For stick (SMAW) welding, the welding cable can be connected to the positive welding terminal (+) or negative welding terminal (-), depending on the type of electrode used. The connection polarity is stated on the electrode packaging.

5.4 Turning the Power On/Off

Turn on the power by turning the switch to the "ON" (I) position.

Turn the unit off by turning the switch to the "O" position.

Whether the power supply is interrupted or the power source is switched off in the normal manner, weld programs are stored so that they are available the next time the unit is started.



CAUTION!

Do not turn off the power source during welding (with load).

5.5 Thermal Protection



The power source includes thermal protection against overheating. When overheating occurs, welding stops, the overheating indicator on the panel illuminates, and an error message appears on the display screen. The protection is automatically reset once the temperature has decreased to a safe level.

5.6 Functions



MMA (STICK) welding--- turning the switch to the MMA position

Stick (SMAW) welding can also be referred to as welding with coated electrodes. Striking the arc melts the electrode, and its coating forms protective slag.

For Stick (SMAW) welding, the power source must be supplemented with the following:

- Welding cable with electrode holder
- Return cable with clamp



TIG (GTAW) welding--- turning the switch to the TIG position

TIG welding, also called gas tungsten arc welding (GTAW), melts the metal of the workpiece using an arc struck from a tungsten electrode that does not melt. The weld pool and electrode are protected by shielding gas.

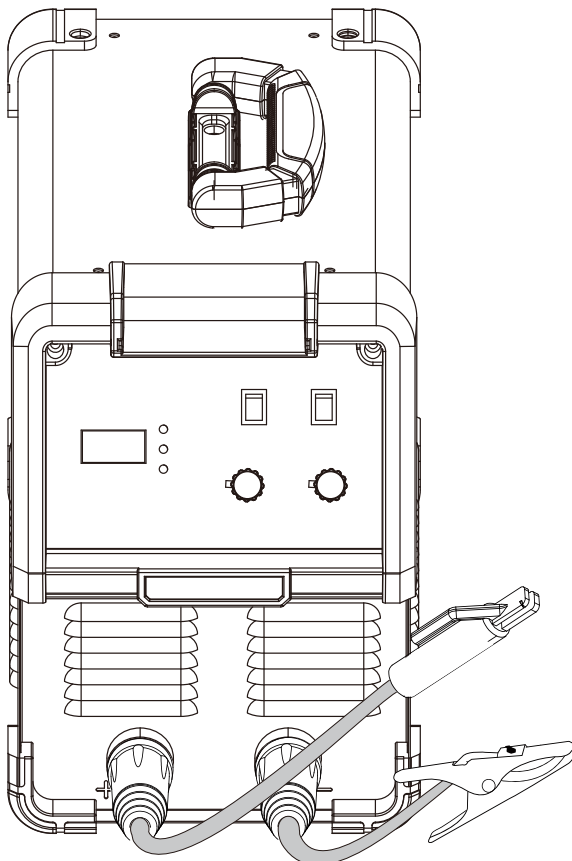
For TIG (GTAW) welding, the welding power source must be supplemented with the following:

- TIG (GTAW) torch with gas valve
- Argon gas cylinder
- Argon gas regulator
- Tungsten electrode

5.7 Operation and Welding diagram

MMA (STICK) welding

1. Switch from TIG to MMA using MMA/TIG SELECTION switch.
2. Correctly connect the the earth clamp (-) and electrode holder(+) to the respective outlets according to the sketch
3. Connect the Earth Clamp to the work piece
4. Press the electrode release button and insert the electrode
5. Select correct electrode diameter according to work piece thickness
6. Rotate knob to get desired amps for welding, start small and work your way up.

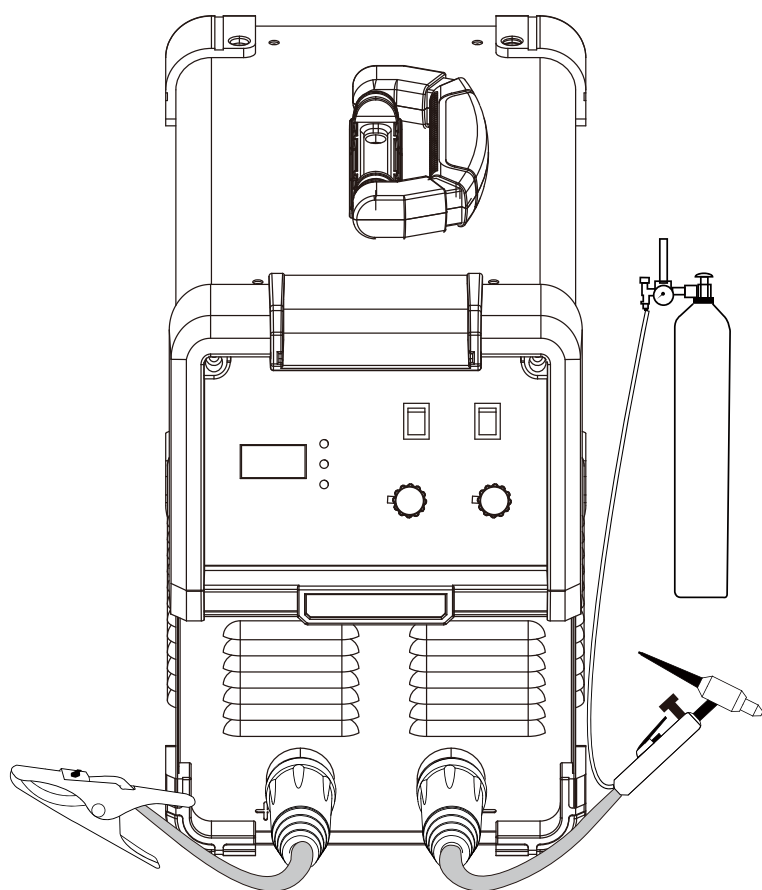


TIG (GTAW) welding

1. Switch from MMA to TIG using MMA/TIG SELECTION switch.
2. Correctly connect the the earth clamp (+) and TIG Torch to the respective outlets according to the sketch

ATTENTION:The earth clamp must be connect into positive terminal(+) in TIG working process, otherwise will damage the tungsten electrode.

3. Connect the Grounding Clamp to the work piece
4. Ensure flow meter is connected to argon bottle
5. Press the button on the TIG torch begin to TIG welding



RE SMART welder has built in functions and safety features to assist you on all your welding projects, big or small. Listed below are all features and a guide to assist you in operation

ANTI STICK

-----anti-sticking function of the welding machine mainly aims to prevent the welding electrode from sticking to the workpiece. It enables the welding rod to be easily detached from the workpiece, which not only protects the welding equipment but also improves the efficiency and continuity of welding..

HOT START

-----Hot Start is a feature for MMA welding where the machine delivers a peak of current when striking the arc. Allows the metals to fuse together easier at the very beginning. Ideal for welding on colder days.

ARC FORCE

-----Arc force is a temporary increase of the output current during welding when the arc is too short. This feature supports production with consistently excellent arc performance. It also enhances simple position welding, making the job easier. Arc force detects the arc length shortening and increases the amperage to keep the heat high enough to maintain the arc and prevent sticking the rod. Some stick welders might mention arc force as dig or arc control.

VRD

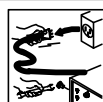
——VRD is the abbreviation of **Voltage Reduction Device**, which refers to a voltage reduction device. The main function of the VRD feature in welding machines is to lower the no-load voltage and prevent electric shock.

6 MAINTENANCE



WARNING!

Disconnect power before maintaining.



NOTE!

Regular maintenance is important for safe and reliable operation.



NOTE!

Perform maintenance more often during severe dusty conditions.



NOTE!

Ensure welding lead plugs are connected tightly.



NOTE!

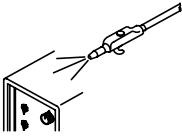
Check welding leads and power cord for damage. If damaged replace parts.

Before each use, make sure that the:

- Product and cables are undamaged
- The torch is clean and undamaged.

6.1 Routine Maintenance

Maintenance schedule during normal conditions. Check equipment before every use.

Interval	Area to maintain		
Every 3 months	 <p>Clean or replace unreadable labels.</p>	 <p>Clean weld terminals.</p>	 <p>Check or replace weld cables.</p>
Every 6 months	 <p>Clean inside unit with reduced compressed air</p>		

6.2 Cleaning Instructions

To maintain the performance and increase the lifetime of the power source, it is mandatory to clean it regularly. How often depends on:

- The welding process,
- The arc time, and
- The working environment.



CAUTION!

The repair and maintenance work must be performed by authorized personnel.



CAUTION!

The cleaning procedure should be done in a suitable workspace.



CAUTION!

Always wear recommended personal protective equipment, including earplugs, safety glasses, masks, gloves and safety shoes during cleaning.

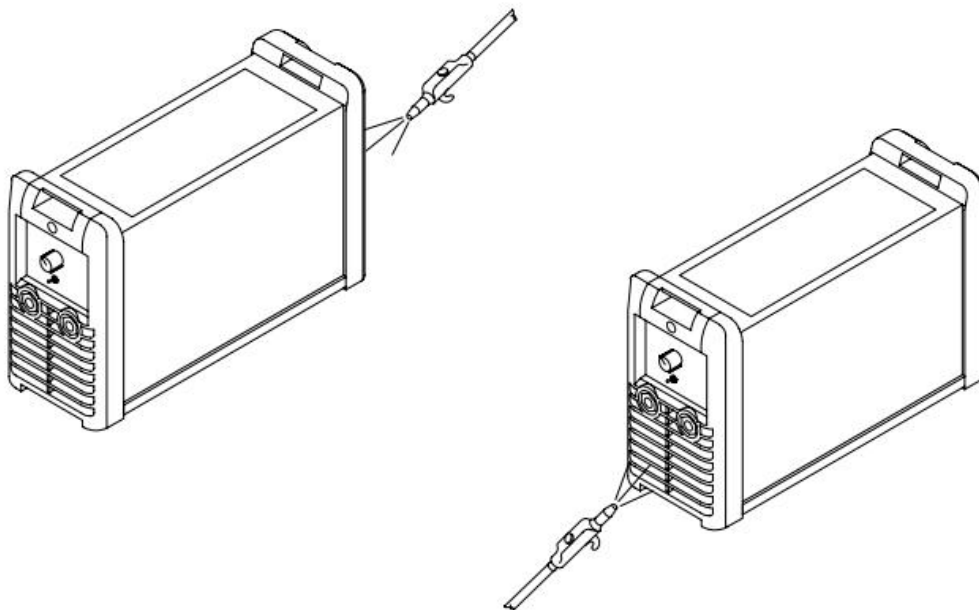
1. Disconnect the power source from the power supply.



WARNING!

Wait for 4 minutes until the capacitors have discharged!

2. Do not remove case when blowing out inside of unit.
Blow out inside. During heavy service clean monthly.



7 TROUBLESHOOTING

Perform these checks and inspections before contacting an authorized service technician.

Trouble	Remedy
No weld output; unit completely inoperative.	Place line disconnect switch in On position.
	Check that the welding and return cables are correctly connected to the power source.
	Be sure power cord is plugged in and that receptacle is receiving input power.
No weld output; unit is on.	Check and secure loose weld cable(s) into receptacle(s).
	Check and correct poor connection of work clamp to workpiece.
Erratic or improper welding arc or output.	Use proper size and type of weld cable (see your Distributor).
	Clean and tighten weld connections.
	Verify electrode polarity; check and correct poor connections to work piece.
Fan not operating.	Unit not warmed up enough to require fan cooling.
	Check for and remove anything blocking fan movement.
	The fan is faulty, reconnect the cable
Stick welding problems: Hard starts; poor welding characteristics; unusual spattering.	Check that the correct electrodes and polarity are being used.
	Verify electrode polarity; check and correct poor connections.
	Check that the correct Welding current (A) is set.