

# **INVERTER DC TIG ARC WELDER**

**LONGRUN 500LT3**



## **OPERATION MANUAL**

**DO NOT INSTALL, OPERATE OR MAINTAIN THIS MACHINE WITHOUT READING THIS MANUAL AND PLEASE ALWAYS THINK BEFORE YOU ACT.**

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## ■ TECHNICAL SPECIFICATIONS

- **SUFFICIENT CAPACITY** of main transformer by self-manufacturing
- **ELECTRIC SHOCK PROTECTOR** reduces No load voltage to 14VDC for user safety when welder is not in use.
- Easy to verify welding current during welding by **DIGITAL AMMETER**.
- Optional **REMOTE CONTROL BOX** is available for adjusting output current without going back to power source.

ITEM		UNIT	SPECIFICATION	
Rated Input Voltage		V	220/380/440, 50/60Hz	
			3 Phase	
Process		—	TIG	STICK
Rated Output Current		A	500	340
Input Current @ rated output	380V	A	21	15
No Load Voltage		V	63 (380V)	
Output Current Range		A	15~500	20~340
Output Voltage @ rated output		V	30	33.6
Duty Cycle @ rated output		%	60	
Dimension (W×D×H)		mm	385 × 770 × 610	
Weight		kg	58	

Crater Current Range	A	15 ~ 500
Start Current Range	A	15 ~ 500
Down slope Time Range	sec	0.1 ~ 5
Gas After Flow	sec	0.5 ~ 15
Cooling Method	—	Air cooling / Water cooling

## **General Safe Practices**

- Wear approved safety glasses with side shields under your welding helmet or face shield and at all times in the work area.
- When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.
- Do not install or place machine on or over combustible surfaces.
- Be sure that all installation, operation, maintenance and repair procedures are performed only by qualified persons.

## **Electric shock can kill.**

- Wear Dry, hole-free insulating gloves and body protection. Do not touch electrode with bare hand. Do not wear wet or damaged gloves.
- Do not touch live electrical parts.
- Never dip the electrode in water for cooling.
- Properly install and ground all equipment.
- Protect yourself from electric shock by insulating yourself from work and ground. Use non-flammable, dry insulating material if possible, or use dry rubber mats, dry wood or plywood, or other dry insulating material big enough to cover your full area of contact with the work or ground, and watch for fire.
- Turn off input power using the disconnect switch at the fuse box before working on the equipment.
- Frequently inspect input power cord for damage or bare wiring and repair or replace cord immediately if damaged.

## **Fumes and gases can be dangerous.**

- Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone.
- Use enough forced ventilation or local exhaust (forced suction) at the arc to remove the fumes from your breathing area.
- Use a ventilating fan to remove the fumes from the breathing zone and welding area.

## **Arc rays can burn eyes and skin.**

- Use welding helmet with correct shade of filter to protect your eyes from sparks and the rays of the arc.
- Wear welders cap and safety glasses with side shields. Use ear protection when welding out of position or in confined spaces. Button shirt collar.
- Wear complete body protection. Wear oil-free protective clothing such as leather gloves, heavy shirt, cuffless pants and high boots.

## **Welding sparks can cause fire or explosion.**

- Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and opening to adjacent areas. Avoid welding near hydraulic lines.
- When not welding, make certain no part of the electrode circuit is touching the work or ground.

Accidental contact can cause overheating and create a fire hazard.

- Do not weld on drums, tanks, or any closed containers unless a qualified person has tested it and declared it or prepared it to be safe.
- Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.

## ■ INSTALLATION

### ● The welding machine shall be installed at a place ;

- free from the inflammables
- less humidity, dirt and dust
- protecting from influence of direct sunlight, wind and rain
- not generated oil vapor and corrosive gas
- operating temperature range is from -10°C to 40°C
- least 30cm away from wall and other welding machine

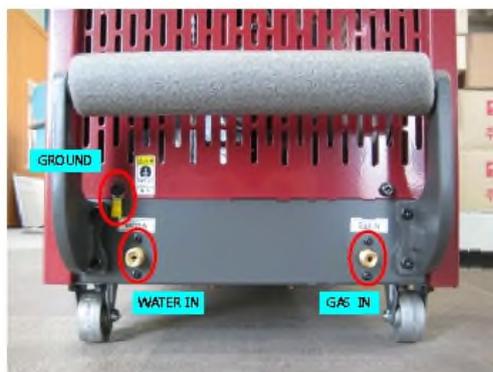
### ● Input Connection (Rear of the machine)

**Be sure the voltage, phase and frequency of the input power is as specified on the name plate located on the rear panel of the machine.**

- To connect the power cables, turn the power switch OFF
- Verify the voltage to be supplied from main power.



- Open the cover of terminal plate and connect the power cable to the power input terminal on the rear of the machine and close the cover of terminal plate.
- √ If the input power is single phase, connect two cables on left and right terminal without center.
- For grounding the machine, connect a ground wire to the ground terminal marked with the symbol is located on the rear panel of the machine.



- Connect the gas hose to the gas input terminal.
- If you want to connect the water cooling unit, connect the water hose to WATER IN terminal.

## ※ Input voltage selection

- Verify the connection of voltage selection terminal.

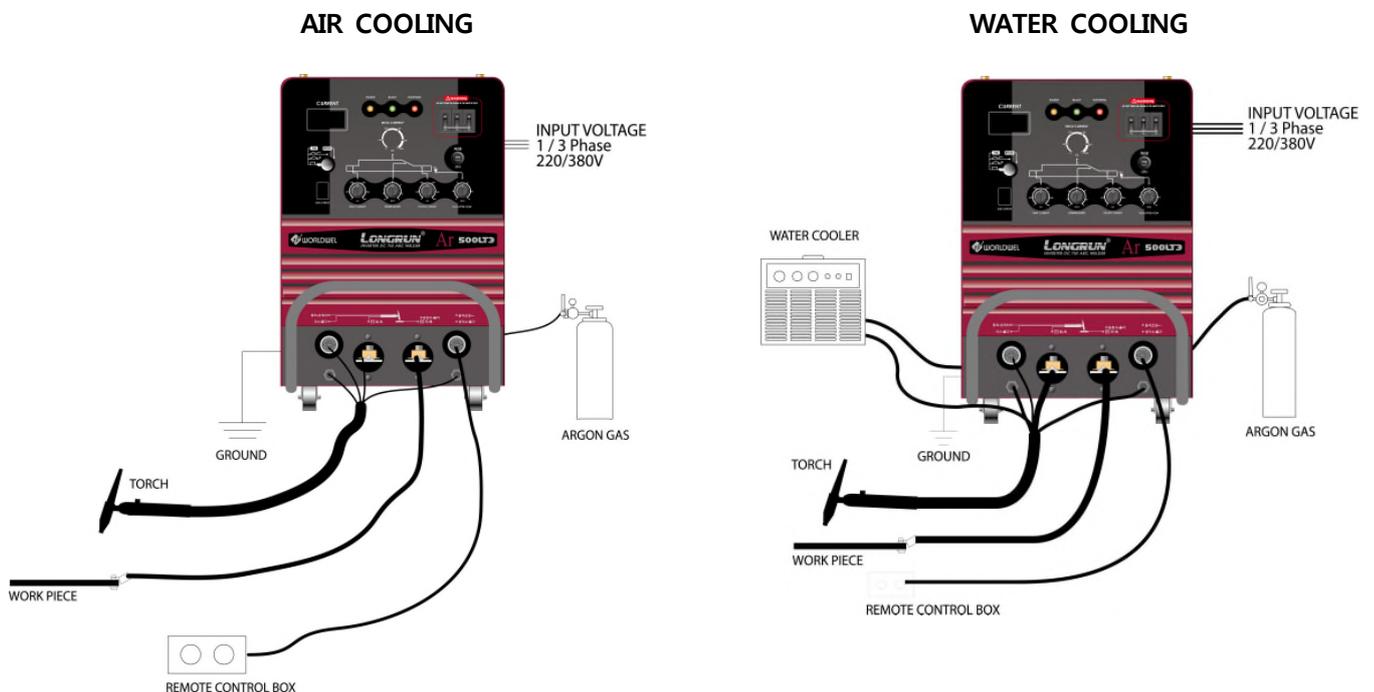
### √ If necessary to change it,

- Remove the cover of input voltage selection plate.
- Position the wires for the voltage to be supplied from main power.
- For 380V and 440V input, position a switch for the voltage would be used which is rear.



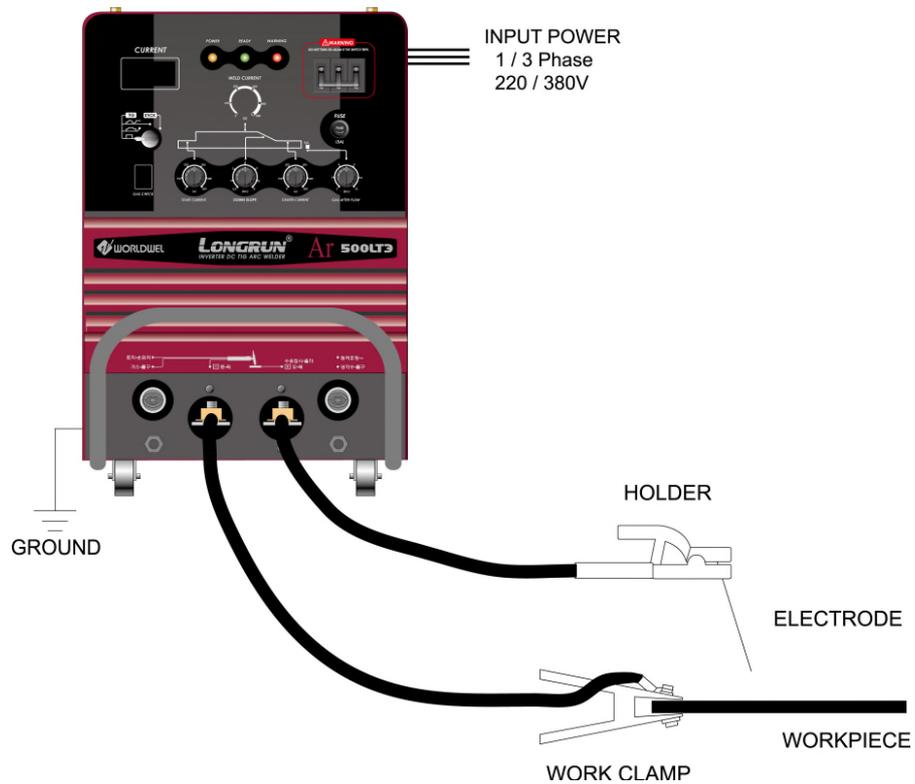
## ● Output Connection (Front of the machine)

- Connect the work cable (which is connected to the work clamp) to the ⊕ METAL terminal.
- To connect the TIG torch, connect a electrode cable to the ⊖ TORCH terminal and a torch switch connector to the torch switch receptacle and a gas connector to the output gas receptacle.
- If you want to connect the remote controller, connect the connector of remote controller to REMOTE CONTROL terminal.
- If the water cooling unit is installed, connect the water input hose of water cooled torch to WATER OUT terminal of welder.

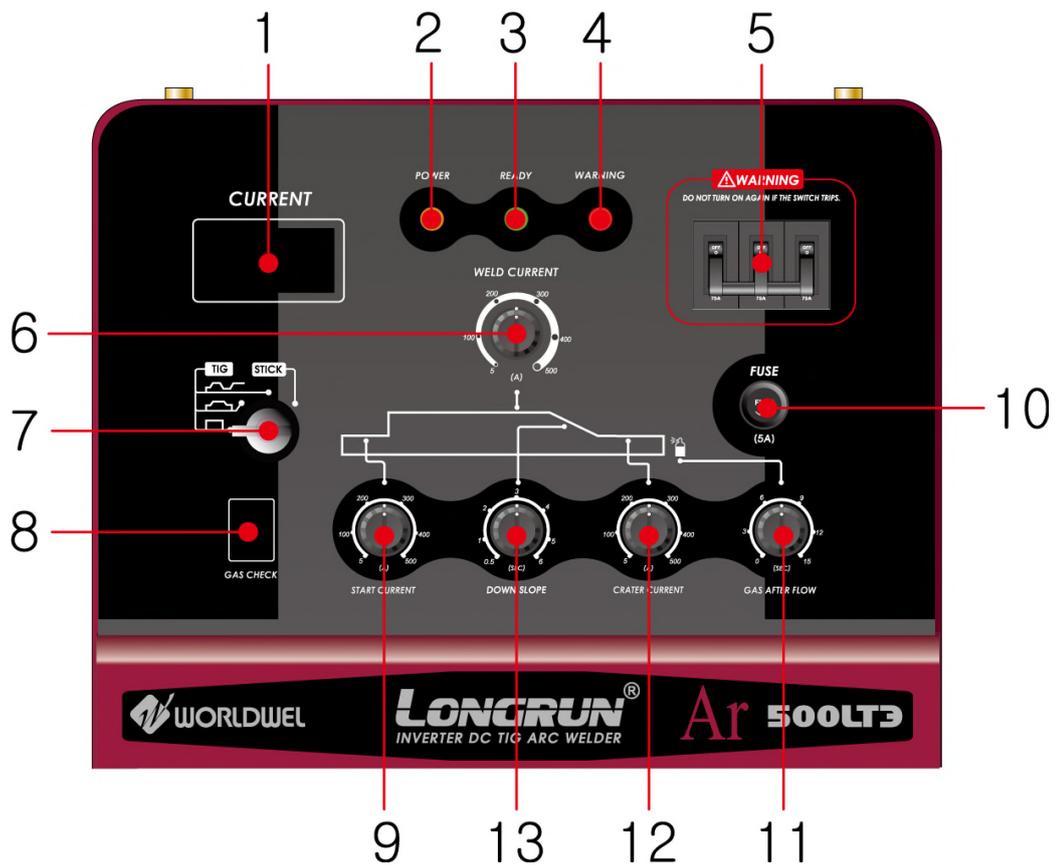


## Output connection for stick welding

- Connect the work cable (which is connected to the work clamp) to the  $\square$  TORCH terminal.
- Connect the electrode cable (which is connected to the electrode holder) to the  $\oplus$  METAL terminal.



## FRONT PANEL



1	Ammeter	Displays the welding current
2	Power Lamp	It indicates that the machine is on and input voltage is within acceptable range.
3	Ready Lamp	It indicates that the machine is ready to run. If the warning lamp is turn on, then it will be off.
4	Warning Lamp	It indicates the thermal over load or output disabled by any electrical problems or the water pressure. When it is on, the machine will not supply power at the output. - If over-heating occurs, it will blinking on until the machine has sufficiently cooled by cooling fan or water. - If the output is disabled by any electrical problems or the insufficiency of water supply pressure, it will stay on.
5	Power Switch	When it is turn on, the cooling fan and all of electrical circuit inside the machine will be operated.
6	Welding Current Control	Adjust the welding current
7	Welding Mode Selector	It has four welding modes - Crater Off, Crater On, Crater Repeat and Stick.
8	Gas Check Switch	It is for checking the flow of the gas. If this switch is ON, then the gas is flowed by opening the solenoid valve inside the machine.
9	Start Current Control	Adjust the start current
10	FUSE	3A
11	Gas after flow time control	The output current of the machine will turn OFF and then the gas valve will remain open to continue the flow of the gas. It adjusts the duration of this after-flow time.
12	Crater current control	It controls the crater current. It is important to get the good welding quality.
13	Down slope time control	It controls the time to reach to the crater current from the welding current. It is important to carefully control the downslope of current to get the good welding bead.

## ■ Start Up

### Stick Welding



Turn On the main power supplied to welder



Select "STICK" from the welding mode selector



Connect the remote controller to "REMOTE CONTROL" terminal if necessary



Turn On the power switch of welder, and then verify that the power lamp and ready lamp are On and the cooling fan is running



Start to weld with adjusting the proper welding current

### TIG Welding



Turn On the main power supplied to welder



Select Crater Off or Crater On or Crater Repeat from welding mode selector



Adjust properly the pulse frequency, pulse width, start current, crater current, upslope time, downslope time, gas after-flow time



Connect the remote controller to "REMOTE CONTROL" terminal if necessary



Open the valve of gas tank



Turn On the power switch of welder, and then verify that the power lamp and ready lamp are On and the cooling fan is running



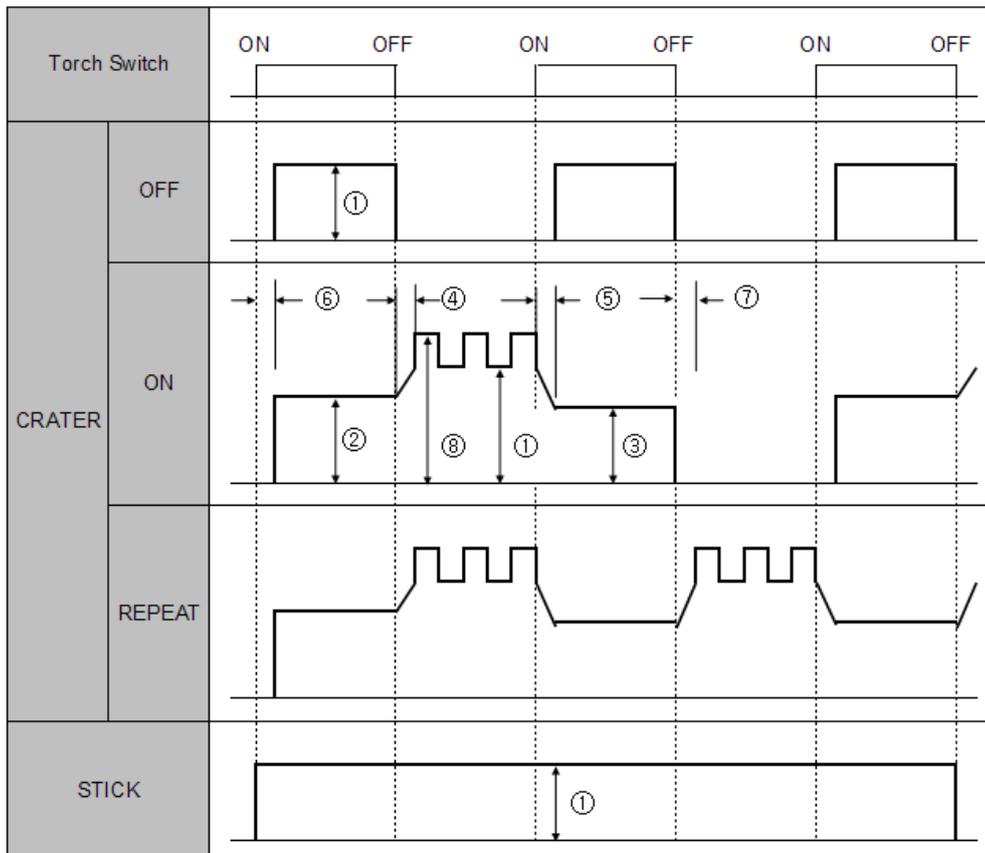
Regulate the gas flowed with pressing the torch switch



Start to weld with adjusting the proper welding current and crater current

## ■ Welding Mode

 <p>Crater Off</p>	<p>Press and hold the torch switch, the machine will open the gas valve to start the flow of the shielding gas during the pre-flow time and then the arc is started at welding current. When finish to weld, release the torch switch, then the arc is off and flow the gas during the gas after-flow time.</p>
 <p>Crater On</p>	<p>Press and hold the torch switch, the machine will open the gas valve to start the flow of the shielding gas during the pre-flow time and the arc is started at the crater current. At this time release the torch switch, the output current will be increased from the crater current to the welding current during the up slope time. When finish to weld, press and hold the torch switch, the output current will be decreased from the welding current to the crater current during the down slope time. At this time release the torch switch, the arc is off and flow the gas during the after-flow time.</p>
 <p>Crater Repeat</p>	<p>Press and hold the torch switch, the machine will open the gas valve to start the flow of the shielding gas during the pre-flow time and the arc is started at the crater current. At this time release the torch switch, the output current will be increased from the crater current to the welding current during the up slope time. At this time Press and hold the torch switch, the output current will be decreased to crater current and then release the torch switch, the output current will be increased to welding current. When finish to weld, press and hold the torch switch, the output current will be decreased from the welding current to the crater current during the down slope time. At this time just release the torch from the metal to be welded and then the arc is off and flow the gas during the after-flow time.</p>



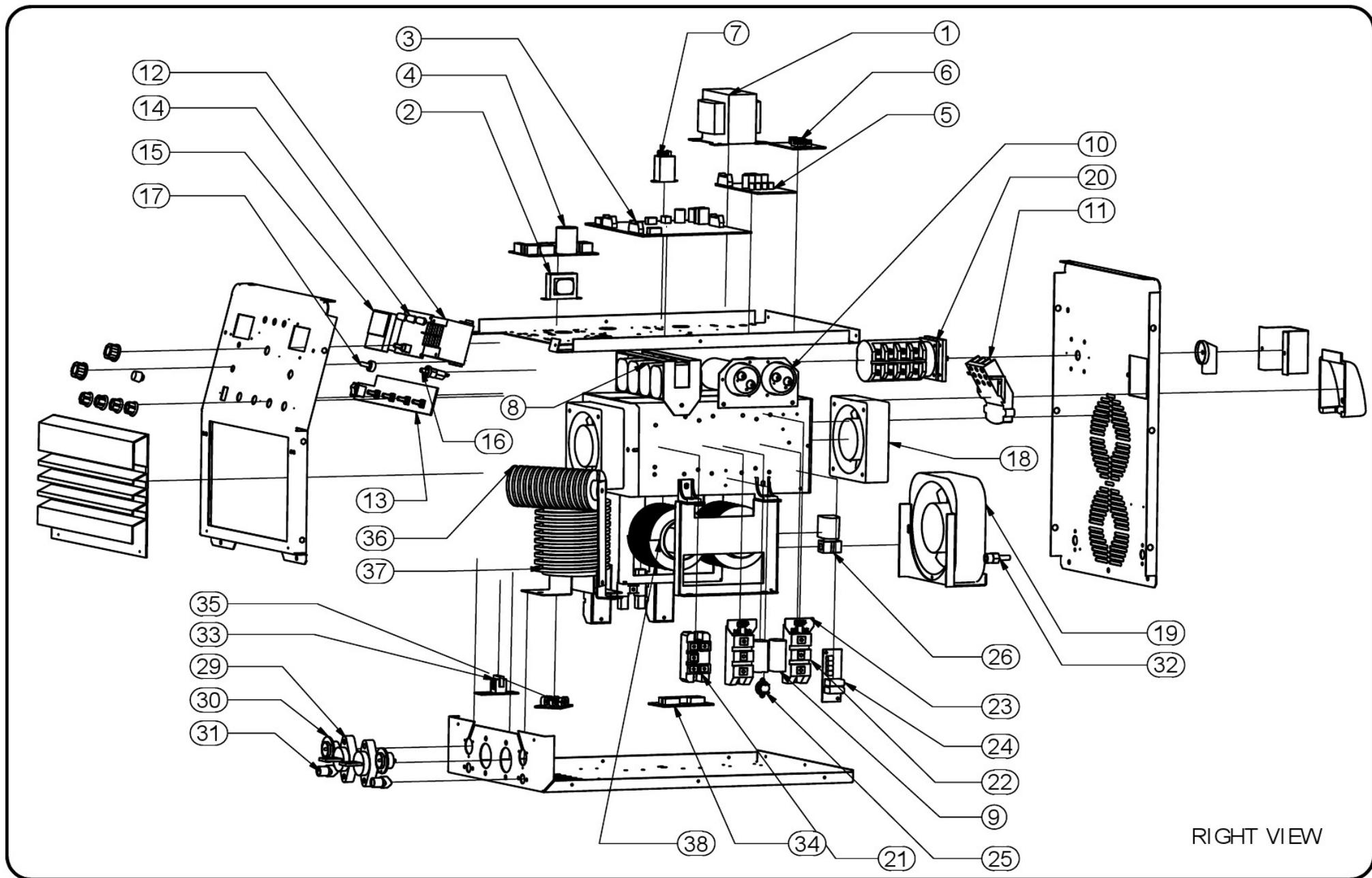
①	Welding current
②	Start current
③	Crater current
⑤	Down slope time
⑦	Gas after-flow time

## ■ TROUBLESHOOTING

SYMPTOMS		REASON	RECOMMENDED ACTION
Cooling fan does not run when the power switch is turn on.		<ul style="list-style-type: none"> <li>· No input voltage</li> <li>· Fuse (3A) is blown</li> <li>· Power switch broke down</li> <li>· Cooling fan broke down</li> </ul>	<ul style="list-style-type: none"> <li>· Verify input voltage</li> <li>· Replace Fuse (3A)</li> <li>· Replace Power switch</li> <li>· Replace Cooling fan</li> </ul>
Gas does not flow from torch	Gas does not flow from torch when the GAS CHECK switch is "CHECK" position	<ul style="list-style-type: none"> <li>· Close the valve of gas tank</li> <li>· Gas check switch broke down</li> </ul>	<ul style="list-style-type: none"> <li>· Open the valve of gas tank</li> <li>· Replace Gas check switch</li> </ul>
	Gas does not flow from torch when pressing the torch switch	<ul style="list-style-type: none"> <li>· Torch switch connector does not connect perfectly</li> <li>· Torch switch broke down</li> <li>· Control PCB broke down</li> </ul>	<ul style="list-style-type: none"> <li>· Reconnect Torch switch connector</li> <li>· Replace Torch</li> <li>· Replace Control PCB</li> </ul>
Gas flows continuous at "Off" position of GAS CHECK switch		<ul style="list-style-type: none"> <li>· GAS CHECK switch broke down</li> <li>· Torch broke down</li> <li>· Control PCB broke down</li> </ul>	<ul style="list-style-type: none"> <li>· Replace GAS CHECK switch</li> <li>· Replace Torch</li> <li>· Replace Control PCB</li> </ul>
It does not adjust the welding current and crater current on the remote controller		<ul style="list-style-type: none"> <li>· Remote control connectors of remote controller does not connect perfectly</li> <li>· Volume broke down</li> <li>· Control PCB broke down</li> </ul>	<ul style="list-style-type: none"> <li>· Reconnect Remote control connectors of remote controller</li> <li>· Replace Volume</li> <li>· Replace Control PCB</li> </ul>
Arc does not started		<ul style="list-style-type: none"> <li>· Torch cable is broke</li> <li>· Torch switch connector does not connect perfectly</li> <li>· Work cable does not connect perfectly</li> <li>· Torch broke down</li> <li>· Control PCB broke down</li> </ul>	<ul style="list-style-type: none"> <li>· Repair Torch cable</li> <li>· Reconnect Torch switch connector</li> <li>· Reconnect Work cable</li> <li>· Replace Torch</li> <li>· Replace Control PCB</li> </ul>
Crater does not work		<ul style="list-style-type: none"> <li>· Crater select switch broke down</li> <li>· Control PCB broke down</li> </ul>	<ul style="list-style-type: none"> <li>· Contact our service center</li> </ul>

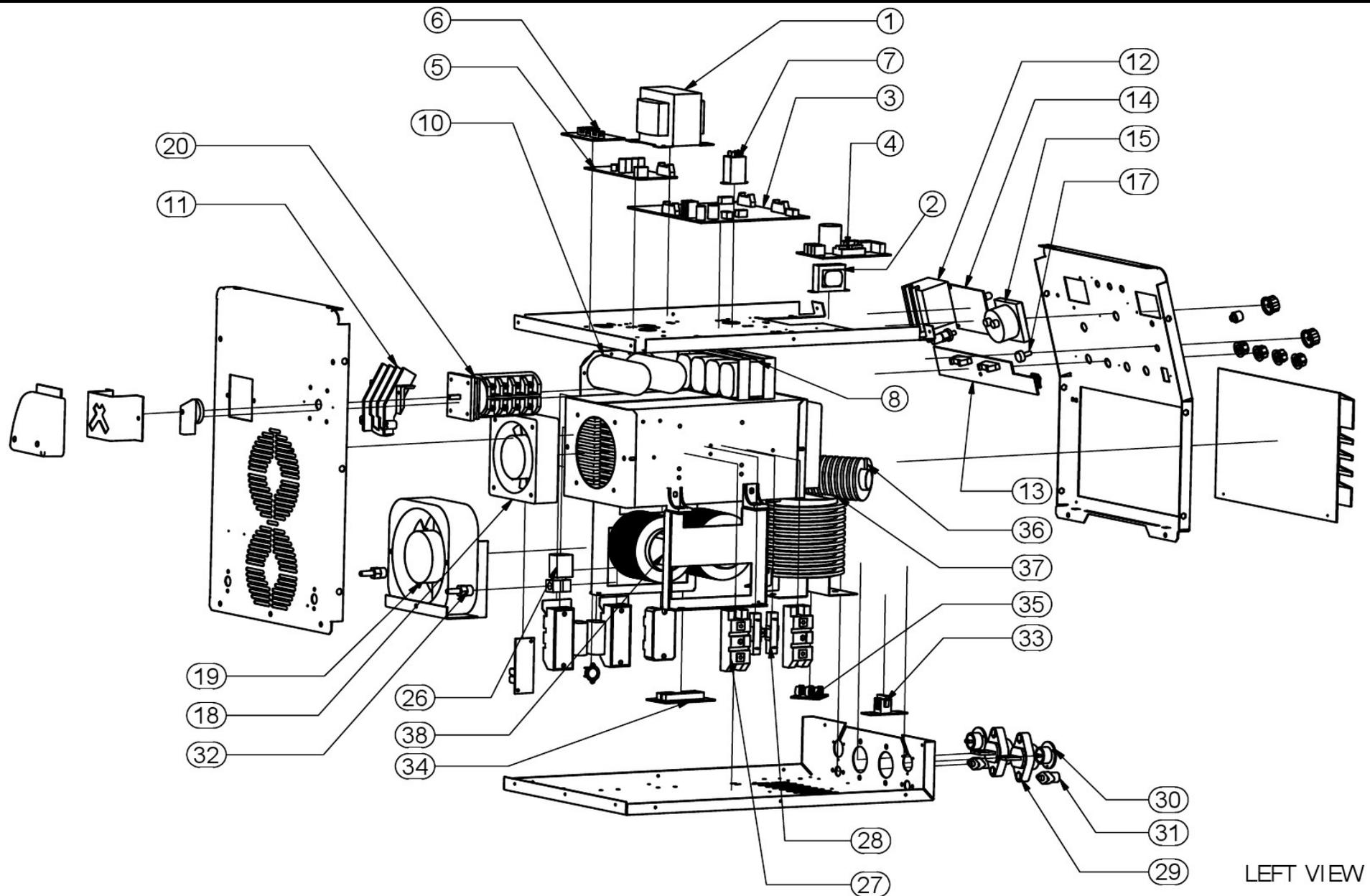
√ If all recommended action have been checked and the problem persists, please contact our service center

# INVERTER DC TIG 500LT3



RIGHT VIEW

# INVERTER DC TIG 500LT3



LEFT VIEW

# 500LT3 PARTS LIST

\*Description can be changed by LOT number

NO.	PART NAME	DESCRIPTION	QTY.
1	Control Transformer	9645	1
2	Control Transformer	4114	1
3	Main PCB	WNLT-01	1
4	HF PCB	TMD-45A89	1
5	Control Transformer PCB	VAC-02	1
6	PWM PCB	WAPD-01	1
7	Relay	HR710-2PB DC24V	1
8	MF Condensor	20 $\mu$ F/800V	4
9	MF Condensor	10 $\mu$ F/800V	2
10	Condensor	2700UF/400V	2
11	Input Terminal	6M/M	1
12	NFB	3P-80A NDB3-100J4 80/3LTS	1
13	Front PCB	500LT3-VR	1
14	Front PCB	500LT3-LED	1
15	META PCB	KSM-7B	1
16	FUSE	5A	1
17	Selecto Switch	XK5378	1
18	FAN	120T	2
19	FAN	150T	1
20	CapSwitch	SZW26-63/D344.424	1
21	InputDiode	6RI 100E-080	1
22	IGBT	200A/600V	2
23	IGBT Drive PCB	WGE-01	2
24	TIG IGBT Snubber	WSB-01	1
25	Temp. Switch	N85	1
26	Solenoid Valve	DC24V, 3.0 $\Phi$	1
27	OutputDiode	300A/600V	2
28	Resistor, Discharge	20W10 $\Omega$	2
29	Terminal,MID	MID	2
30	Connector	K25-2R	2
31	Nipple	9/16* 6 $\Phi$	2
32	Nipple	9/16*1/4	2
33	Noise Filter PCB	WTF-02	1
34	Pilot Surge PCB	WNF-01	1
35	Remote PCB	WRM-01	1
36	Induction coil	500LT3	1
37	Choke Transformer	500LT3	1
38	Main Transformer	500LT3	1

## Thank you very much for choosing our machine

Please record your machine identification information below for future reference. This information can be found on the nameplate of your machine.

Product Name	<b>INVERTER DC TIG ARC WELDER</b>
Model Number	<b>LONGRUN 500LT3</b>
Date Manufactured	
Serial Number	
Date Purchased	
Where Purchased	
Where you use	

Whenever you request replacement parts or information on this machine, always supply the information you have recorded above. The date number is especially important when identifying the correct replacement parts.

Complete this form, please fax it to our selling agency in your country or us for warranty statement.



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