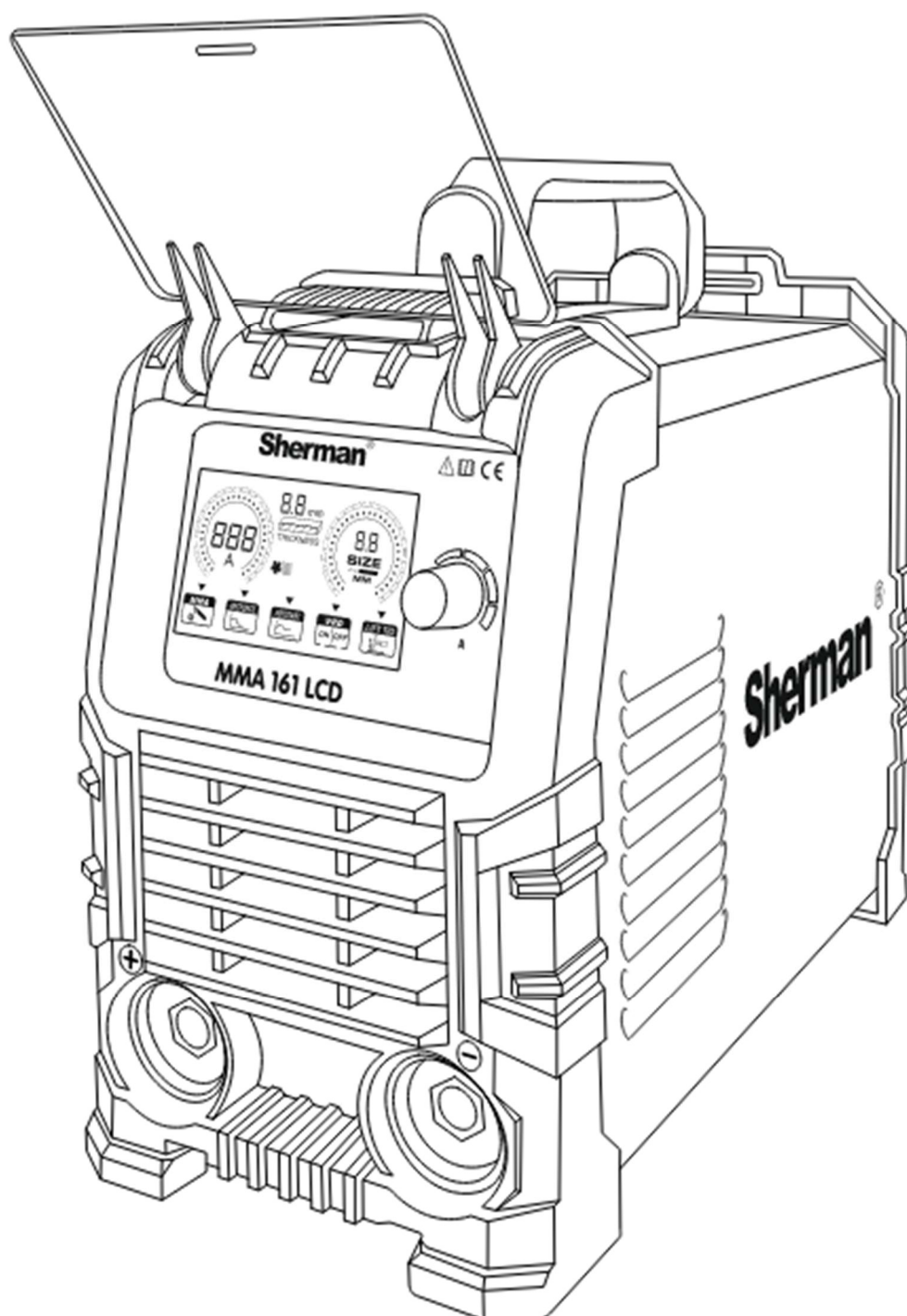


Sherman

ENG V1_2 06-08-2026

USER MANUAL

MMA INVERTER WELDER 161 LCD



CE



WARNING!

Before installing and starting the appliance, please refer to this manual

1. GENERAL COMMENTS

The device can only be commissioned and operated after carefully reading these Operating Instructions.

Due to the continuous technical development of the device, some of its functions may be modified and their operation may differ in detail from the descriptions in the manual. This is not a fault of the device, but the result of progress and continuous modification work of the device.

Damage to the device caused by improper operation will void your warranty rights.
Any modifications to the welder are prohibited and will void the warranty.

2. SAFETY

Employees operating the device should have the necessary qualifications to perform welding work:

- they should have an electric welder license in the field of welding in gas shields,
- know the health and safety rules in the operation of electric power equipment, such as welding equipment and auxiliary equipment powered by electricity,
- know the rules of health and safety when operating cylinders and installations with compressed gas (argon),
- Be familiar with the contents of this manual and operate the appliance for its intended purpose.



WARNING



Welding may endanger the safety of the operator and other people in the vicinity. Therefore, special precautions must be taken when welding. Before starting welding, you should familiarize yourself with the health and safety regulations applicable at the workplace.

The following hazards exist during MMA and MIG/MAG electric welding:

- **ELECTRIC SHOCK**
- **NEGATIVE EFFECTS OF THE ARC ON HUMAN EYES AND SKIN**
- **EXPOSURE TO WELDING FUMES AND GASSES**
- **BURNS**
- **EXPLOSION AND FIRE HAZARDS**
- **NOISE**

Electric shock prevention:

- connect the device to a technically efficient electrical system with proper protection and zeroing efficiency (additional protection against electric shock); other devices at the welder's workplace should also be checked and correctly connected to the network,
- install power cables when the device is switched off,
- Do not touch the non-insulated parts of the electrode holder, electrode and welded object at the same time, including the device housing,
- do not use torch and power cords with damaged insulation,
- in conditions of particular risk of electric shock (work in environments with high humidity and closed tanks), work with an assistant supporting the welder's work and watching over safety, use clothing and gloves with good insulating properties,
- if you notice any irregularities, you should contact competent people to remove them,
- It is forbidden to operate the device with the covers removed.

Preventing the negative effects of the electric arc on the eyes and skin of a person:

- Wear protective clothing (gloves, apron, leather shoes),
- Use protective shields or visors with a properly selected filter,
- Use protective curtains made of non-flammable materials and properly choose the colors of the walls that absorb harmful radiation.

Prevention of poisoning by vapours and gases emitted during welding from the electrode coating and metal evaporation:

- Use ventilation devices and exhausts installed in positions with limited air exchange,
- Blow fresh air when working in confined spaces (tanks),

- Use masks and ventilators.

Burn prevention:

- Wear appropriate protective clothing and footwear to protect against burns caused by arc radiation and spatter,
- Avoid staining the garment with greases and oils that may lead to its inflammation.

Explosion and fire prevention:

- It is forbidden to operate the device and weld in rooms at risk of explosion or fire,
- The welding station should be equipped with fire-fighting equipment,
- The welding station should be located at a safe distance from flammable materials.

Preventing the negative effects of noise:

- Use earplugs or other noise protection equipment,
- Warn of danger to people nearby.

**WARNING!**

Do not use a power source to defrost frozen pipes.

Before starting the device, you should:

- Check the condition of electrical and mechanical connections. It is forbidden to use torches and power cords with damaged insulation. Improper insulation of torches and power wires may result in electric shock,
- Ensure proper working conditions, i.e. ensure proper temperature, humidity and ventilation in the workplace. Outside closed rooms, protect against precipitation,
- Place the welder in a place that allows it to be easily operated.

Welding machine operators should:

- have a license for electric welding using the MMA and MIG/MAG methods,
- know and comply with health and safety regulations applicable when performing welding work,
- use appropriate, specialized protective equipment: gloves, apron, rubber shoes, welding shield or visor with a properly selected filter,
- Know the contents of this instruction manual and operate the welding machine as intended.

Any repairs to the appliance may only be carried out by unplugging the plug from the power socket.

When the appliance is connected to the mains, it is not allowed to touch any components that make up the welding current circuit with your bare hand or through damp clothing.

It is forbidden to remove the external covers when the device is plugged in.

Any modifications to the welder on your own are prohibited and may impair safety conditions.

All maintenance and renovation work may only be carried out by authorized persons in compliance with the occupational safety conditions applicable to electrical equipment.

It is forbidden to operate the welding machine in rooms with a risk of explosion or fire!

The welding station should be equipped with fire-extinguishing equipment.

When you have finished working, the power cord of the appliance must be unplugged.

The hazards and general health and safety rules presented above do not exhaust the issue of welder's work safety, as they do not take into account the specifics of the workplace. An important complement to them are workplace health and safety instructions as well as training and instructions provided by supervision employees.

3. GENERAL DESCRIPTION

The MMA 161 LCD welding machine is used for manual welding with direct current of structural steel with coated electrodes (MMA method) and a non-meltable electrode in argon shielding with arc ignition by rubbing (TIG Lift method). It is an inverter device, manufactured from the most technologically advanced components made in IGBT technology, digitally controlled. The welding machine is equipped with adjustable HOT START functions for easy ignition and ARC FORCE for adjusting arc dynamics. The device also has an optional VRD function to reduce the voltage in the no-load state and minimize the risk of electric shock.

The welding machine is designed for use indoors or outdoors, without exposure to direct weather conditions.

4. TECHNICAL PARAMETERS

4.1 Welding Machine

Supply Voltage:	AC 230V 50Hz
Rated Welding Current:/ Duty Cycle	150A / 60%
Rated no-load voltage	58 V (21 V with VRD)
Maximum power consumption:	MMA: 27.9 A; TIG: 16.8 A
Fuse protection.	20 A
Weight (without attachments):	2.4 kg
Dimensions [mm]:	270 x 108 x 193
Degree of protection:	IP21S

4.1.1 Parameter control ranges

Welding Current:	MMA: 20 – 150 A; TIG: 15 – 150 A
ARC FORCE (MMA):	0 – 10
HOT START (MMA)	0 – 10
VRD	appendix – excluded

Duty cycle

The duty cycle is based on a 10-minute period. A 60% duty cycle means that a 4-minute break is required after 6 minutes of operation of the device. A 100% duty cycle means that the device can operate continuously, without interruptions.

Degree of protection

IP determines the degree to which a device is resistant to solid and water contaminants entering the interior. IP21S means that the device is suitable for indoor use.

Overheating protection

The IGBT module is protected from overheating by a protective installation that shuts off the power supply to the welder. After a few minutes, the device is cooled down to a temperature that allows it to be switched on again automatically. Do not disconnect the power supply during this time, as the continuously running fan cools the internal heatsinks of the device to reduce the temperature faster. After restarting, remember to limit the welding parameters in order to continue to operate the device continuously.

VRD function

The VRD function lowers the voltage in the no-load state. The correct voltage value is only restored just before the arc is ignited. This minimizes the risk of electric shock, but in some cases it can make it difficult to ignite the arc.

ARC FORCE function

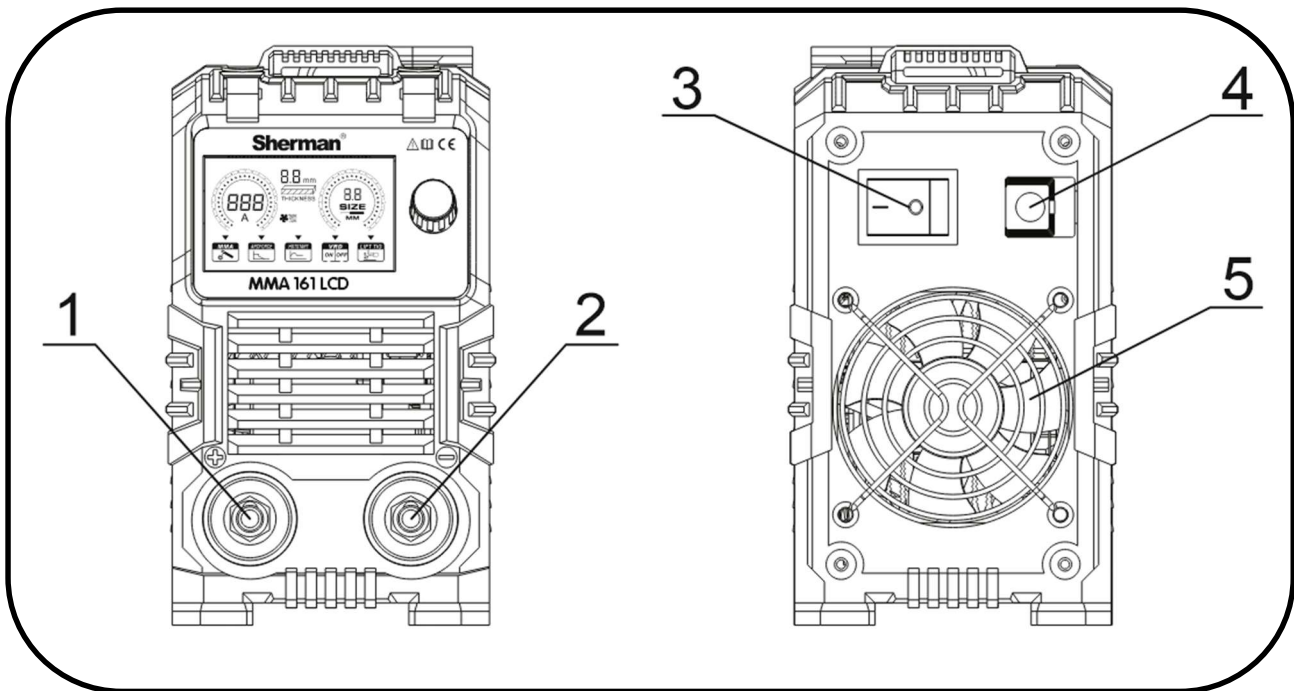
The ARC FORCE function allows you to adjust the arc dynamics. The shortening of the arc length is accompanied by an increase in the welding current, which stabilizes the arc. A decrease in value results in a soft arc and a shallower penetration depth, while an increase in value results in deeper penetration and the possibility of short arc welding. With a high value of the ARC FORCE function, it is possible to weld while maintaining a minimum arc length and a high melting speed of the electrode

HOT START function

The HOT START It operates when the arc ignites, causing the welding current to temporarily increase above the value set by the welder. HOT START is designed to prevent the electrode from sticking to the material and is a great facilitator of the arc ignition. In the case of welding small components, it is recommended to disable this function, as it may cause the weld material to burn out.

5. PREPARING THE DEVICE FOR OPERATION

If the device is stored or transported in freezing conditions, bring the device to a temperature above zero before starting work.

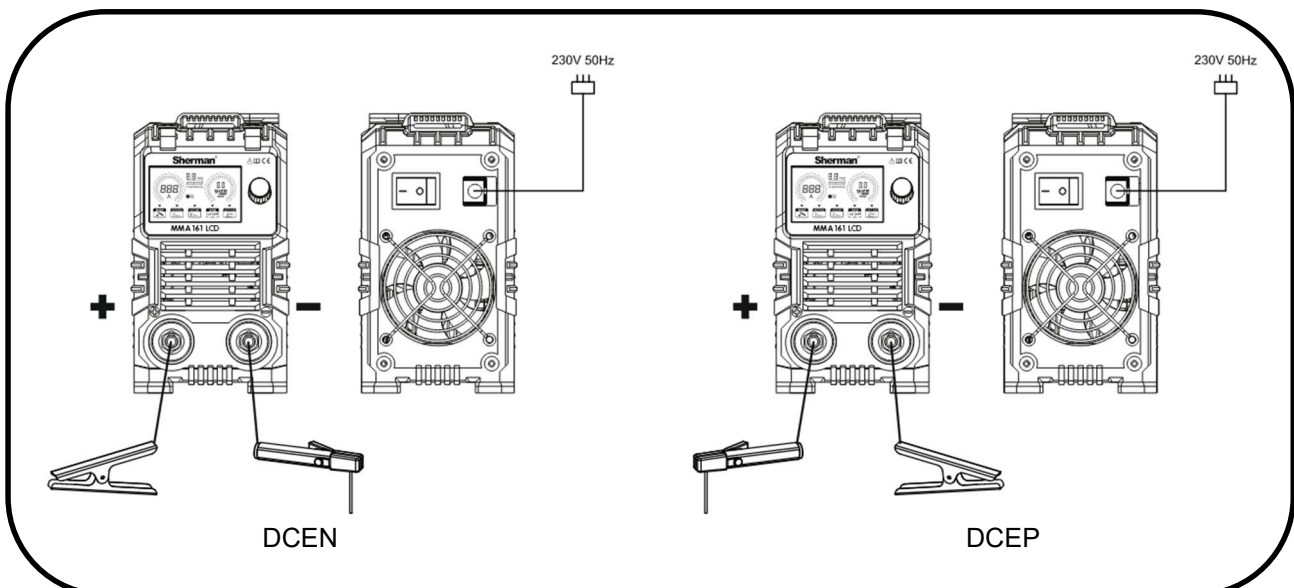


- | | |
|-----------------|---------------|
| 1. "+" socket | 4. Power cord |
| 2. Socket "-" | 5. Fan |
| 3. Power Switch | |

5.1 Connecting the Wires

5.1.1 MMA method

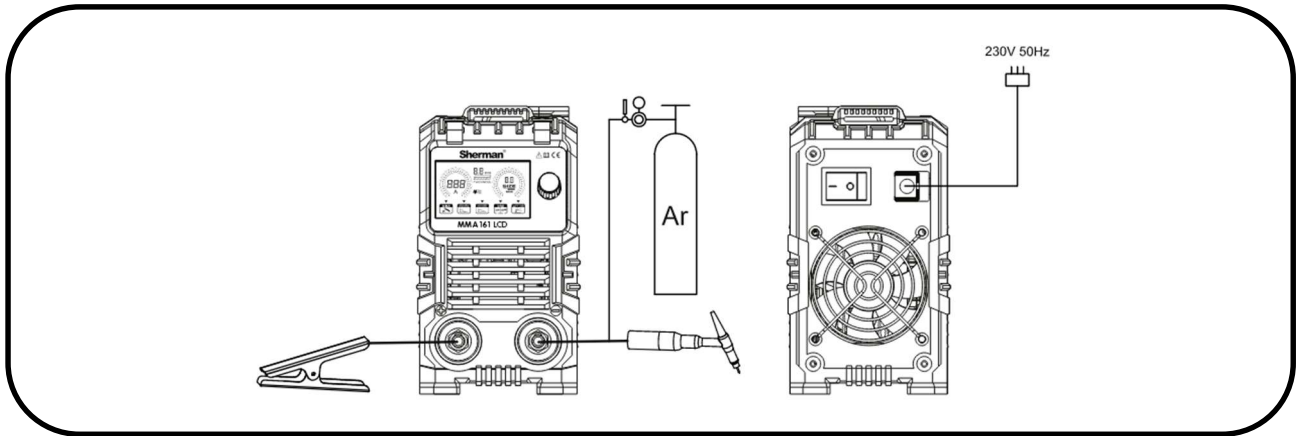
Connect the ends of the welding wires to the sockets (1) and (2) on the faceplate so that the electrode holder has the correct electrode pole. The polarity of the connection of the welding wires depends on the type of electrode used and is indicated on the electrode packaging (DCEN negative polarity or DCEP positive polarity). The return wire clamp must be carefully fixed to the welded material. Connect the appliance plug to a 230V 50Hz mains socket.



5.1.2. TIG method

To weld with this method, it is necessary to use an additional TIG torch. A gas-cooled torch with a current capacity of 150A, equipped with a shielding gas control valve, is required.

The current terminal of the torch must be connected to the negative polarity socket (2) and the gas line to the reducer on the gas cylinder. Connect the positive pole of the source (1) to the welded material using a clamp cable. Connect the appliance plug to a 230V 50Hz mains socket.



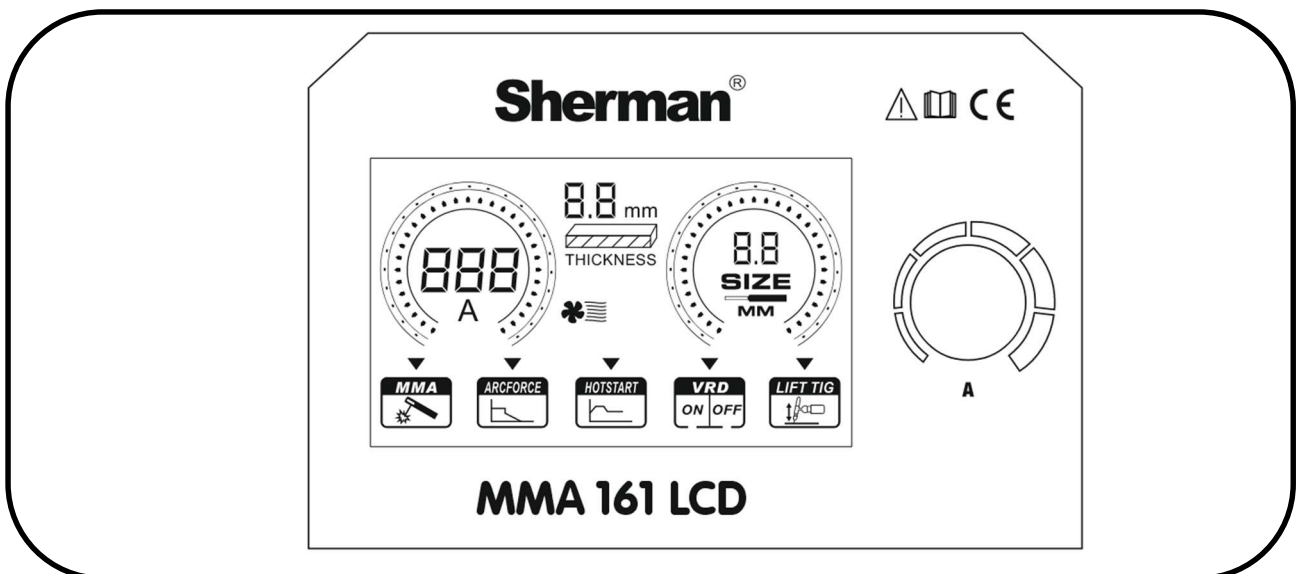
5.2 Shielding Gas Connection (TIG Method Only)

1. Fix the cylinder and secure it from tipping over.
2. Unscrew the cylinder valve for a moment to remove any debris.
3. Install the reducer on the cylinder.
4. Connect the reducer with the TIG torch gas hose with a hose.
5. Unscrew the cylinder and reducer valve.

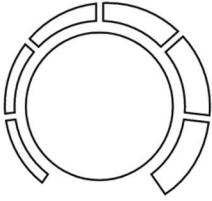
5.3 Connecting to the power supply

1. The appliance should only be used in a single-phase, three-wire, grounded zero point power supply system.
2. The MMA 161 LCD inverter rectifier is designed to work with a 230V50 Hz network protected by 20 A delay-acting fuses. The power supply should be stable, with no voltage drops.
3. Before connecting the power supply, make sure that the power switch (3) is in the OFF position.

6. CONTROL PANEL



6.1 Multi-Function Knob

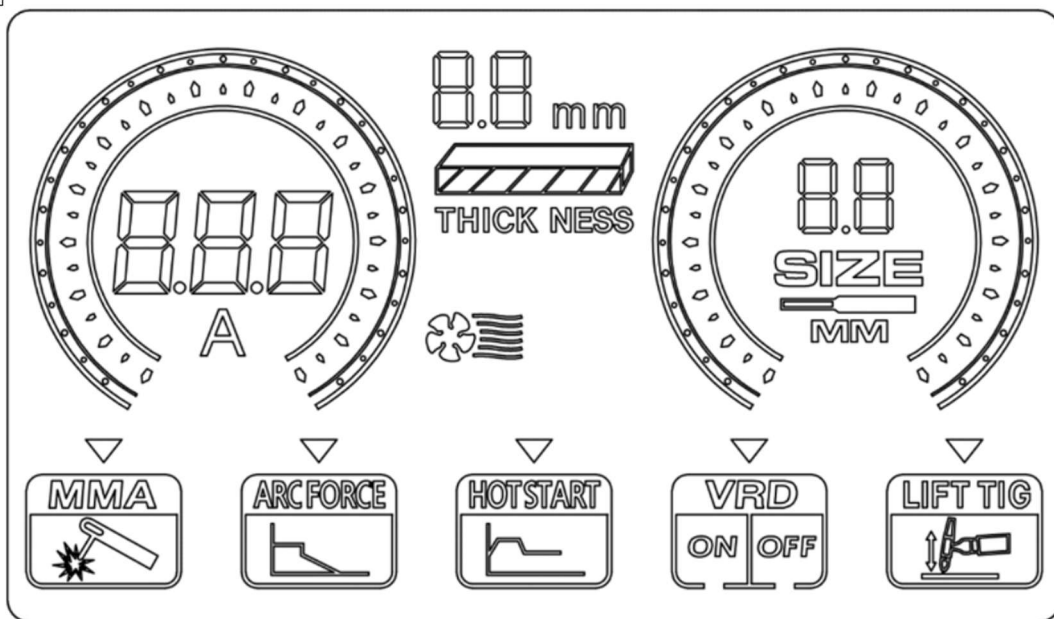


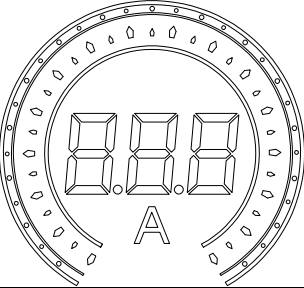
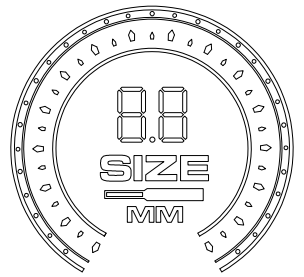
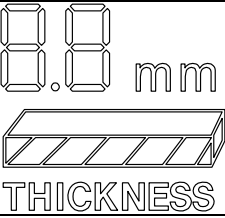
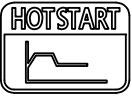
A

The multi-function knob is used to select the welding process, function, and adjust the function value and current of the welded object. Pressing the knob makes a transition between welding process and functions. Turning the knob changes the current or function value.

6.2 Display

The display indicates the welding current and function values. It also suggests the diameter of the electrode to be used and the thickness of the material for the set value of the welding current.



	A display section that indicates the value of the welding current, and when adjusting the ARC FORCE and HOT START functions, the values of these functions.
	A section of the display suggesting the use of an electrode of a given diameter for the currently set value of the welding current.
	A display section suggesting the thickness of the welded material for the currently set welding current value.
	MMA welding When welding with the MMA (coated electrode) method, it is possible to adjust the welding current in the range of 20-150 A. ARC FORCE, HOT START and VRD functions are also available.
	ARC FORCE function Only available for MMA welding. Allows you to adjust the arc dynamics. The shortening of the arc length is accompanied by an increase in the welding current, which stabilizes the arc. Adjustment range 0 – 10
	HOT START function The HOT START function it operates when the arc ignites, causing the welding current to temporarily increase above the value set by the welder. HOT START is designed to prevent the electrode from sticking to the material and is a great help when igniting the arc. Adjustment range 0 – 10
	TIG Lift welding When welding with the TIG Lift method, it is possible to adjust the welding current in the range of 15 – 150 A
	LED indicating the operation of the cooling fan

6.3 Overheating Protection

When the temperature of the welding machine is too high, the protection will disconnect the welding current. When the temperature drops, the circuit breaker will automatically reset. **ATTENTION!** Do not disconnect the appliance from the mains when the LED is on. Unplugging will turn off the cooling fan and may cause damage to the unit.

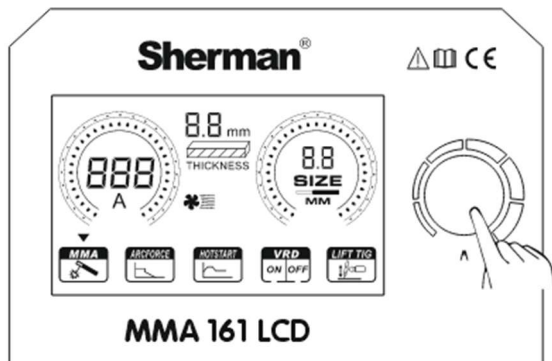
6.4 Settings Memory

The device is equipped with a memory of the last settings – after turning off the welding machine and restarting it, the last used parameters will be restored.

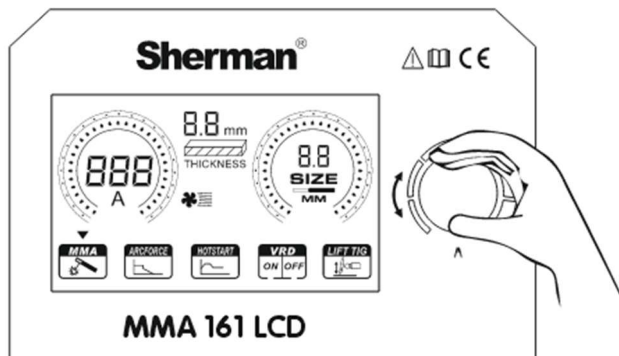
7. PARAMETER SETTINGS

7.1 MMA method

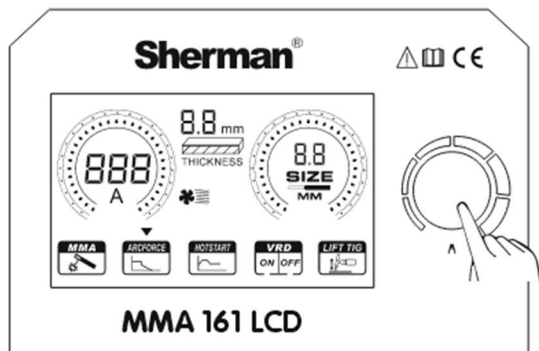
After selecting the MMA method, it is possible to adjust the welding current, Hot Start and Arc Force functions, and turn the VRD function on/off.



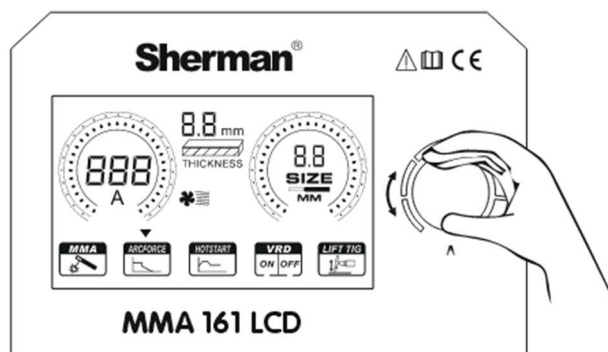
Press the knob to select MMA mode



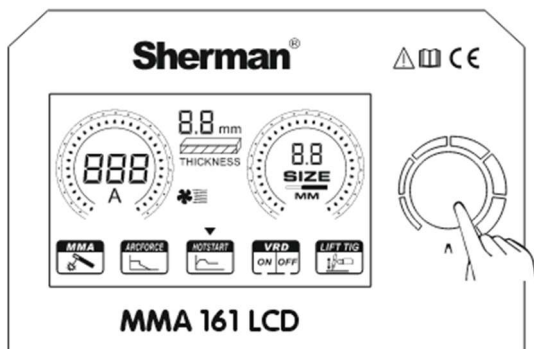
Turn the knob to set the welding current



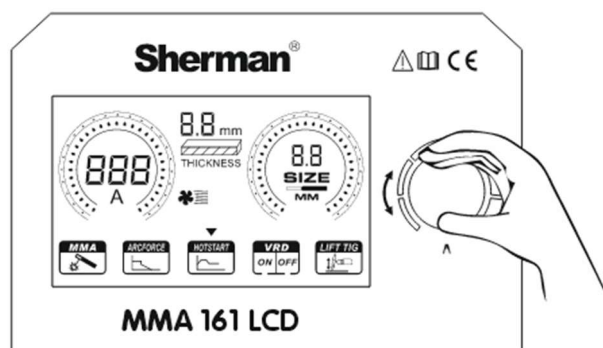
Press the knob to select the Arc Force function



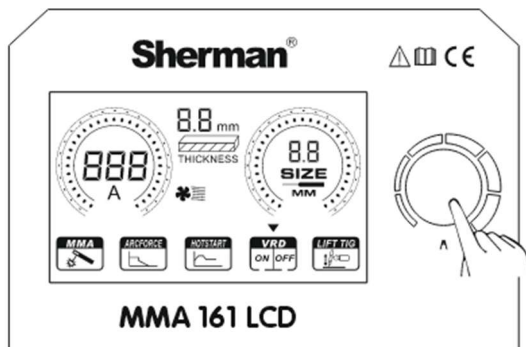
Turn the knob to set the Arc Force value



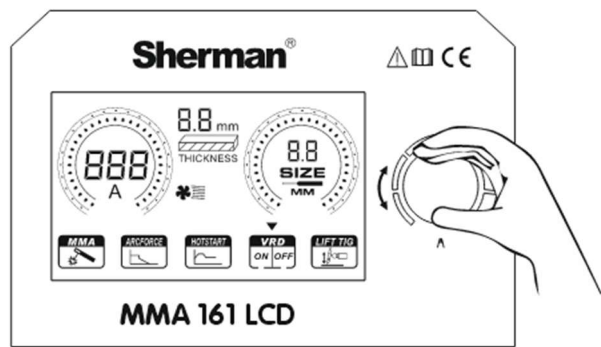
Press the knob to select the Hot Start function



Turn the knob to set the Hot Start value



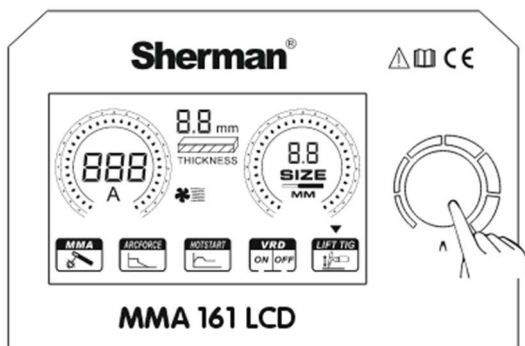
Press the knob to select the VRD function



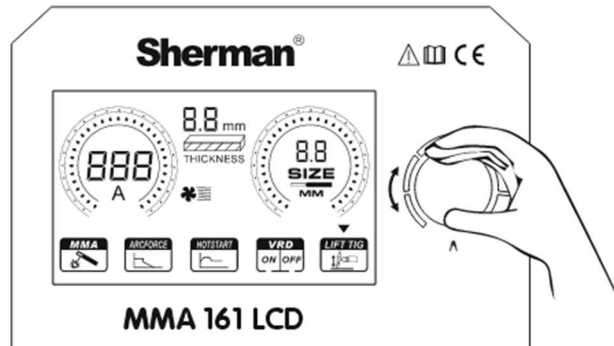
Turn the knob to turn the VRD function on or off

7.2 TIG method

After selecting the TIG method, it is possible to adjust the welding current.



Press the knob to select TIG mode



Turn the knob to set the welding current

8. ARC INITIATION

8.1 MMA method

1. Touch the electrode to the welded material, rub briefly and tear off.
2. In the case of arc initiation with electrodes, the coating of which forms non-conductive slag after solidification, pre-clean the tip of the electrode by hitting the hard surface several times until metallic contact with the welded material is achieved.

8.2 TIG method

1. Unscrew the valve in the TIG torch to allow the shielding gas to escape.
2. Lightly touch the welded material with the electrode, detach the electrode from the welded material by tilting the torch so that the gas nozzle touches the material.
3. Once the arc is ignited, straighten the torch and start welding.

9. BEFORE YOU CALL FOR SERVICE

In the event of malfunction, open the housing and remove dust and metallic deposits from the inside of the welder with dry, compressed low-pressure air before sending the welder for service. Then check the list of basic failures and try to fix them yourself.

Any repairs to the appliance may only be carried out by unplugging the plug from the power socket.

Attention! The device is not sealed and the user can remove the welding machine housing to remove minor malfunctions.

Symptoms	Cause	Procedure
Lack of power, malfunction signal, or malfunction of the device	No connection or loose plug inside the device	Check and correct the connections of all electrical plugs inside the device
The arc does not ignite	Lack of proper contact of the ground cable terminal	Improve the contact of the ground terminal
When the power is turned on, the displays and LEDs do not light up	No supply voltage	Check the fuses on the mains connection
Fan not working	The fan has been blocked by a bent cover	Straighten the fan cover
Unsatisfactory weld quality in MMA welding, the electrode sticks to the welded material	Incorrect polarity of the connection of welding cables	Connect the welding wires correctly
	Damp electrode.	Replace the electrode
	The welding machine is powered by a generator or through a long extension cord with too small a cable cross-section	Connect the device directly to the mains
Unsatisfactory weld quality in TIG welding	Check the quality of the materials and consumables used, especially the tungsten electrode and shielding gas	Replace consumable parts, replace shielding gas with higher quality
	Shielding gas does not flow out or flows out with insufficient intensity	Check the cylinder reducer, gas supply hose, improve the connection of the hose with the fittings and the condition of the quick connectors

List of error codes

E02	If the device overheats, wait for the temperature of the device to drop. Attention! Do not unplug the welding machine!
E05	Incorrect mains voltage.
E09	Communication error code

10. OPERATING INSTRUCTIONS

The MMA 161 LCD should be operated in an atmosphere free of corrosive components and high dust. Do not place the appliance in dusty areas, near running grinders, etc. Dust and metallic swarf contamination of control boards, cables and connections inside the device can lead to an electrical short circuit and, as a consequence, damage to the welding machine.

Avoid use in environments with high humidity, especially in situations where dew occurs on metal components. In the event of dew on metal elements, e.g. after introducing a cold device into a warm room, wait until it is completely dry and the device warms up to ambient temperature. Running a cold welding machine under these conditions may cause damage to the welder. It is recommended that the welding machine be placed under a roof in order to protect it from adverse weather conditions.

The MMA 161 LCD device should be operated under the following conditions:

- changes in the rms value of the supply voltage not greater than 10%
- ambient temperature from -10°C to $+40^{\circ}\text{C}$
- atmospheric pressure 860 to 1060 hPa
- relative humidity of atmospheric air not exceeding 80%
- altitude up to 1000m above sea level

11. MAINTENANCE INSTRUCTIONS

Before each start-up

- Check the power cord for abrasions and loose plug
- Inspect the enclosure – pay attention to signs of overheating in the area of the ventilation openings. Make sure that the air inlet and outlet are not obstructed
- Check that the ground cable is connected correctly

Post-work activities

- Allow the fan to cool down completely (do not disconnect the power supply before if the fan is still running)
- Unplug the welding machine from the panel and disconnect it from the mains
- Put down wires without tight turns

Every week or every approx. 20-30 hours of work

- Clean the ventilation grilles with dry, low-pressure compressed air
- Check power outlets – no backlash or burns

Monthly maintenance

- Open the housing and remove dust and metallic deposits from the inside of the welding machine with compressed air
- Check the fan – no noise, clear airflow
- Check the internal wires and connectors (whether they are loose due to vibrations)

Maintenance every 6 months

- Check the device's response to thermal protection
- Check the insulation condition of the power cord (especially when working in the workshop)

Maintenance once a year

- Recommended inspection at a Sherman authorized service center
- Control electronics diagnostics
- Checking the current output parameters
- Condition control of power components and cooling systems

Symptoms requiring immediate service response

- Automatic switch-off of the welding machine under normal load
- Burning smell or a marked increase in fan volume

Damage resulting from operating the welding machine under improper conditions and failure to follow maintenance recommendations are not covered by warranty repairs.

12. STORAGE AND TRANSPORT INSTRUCTIONS

Store the appliance at a temperature of -10°C to $+40^{\circ}\text{C}$ and a relative humidity of up to 80% free of corrosive fumes and dust. Transport of packaged equipment should be carried out by covered means of transport. During transport, the packaged device should be protected against movement and provided with the correct position.

13. SET SPECIFICATION

1. Welding Machine	1 pc.
2. Clamp Clamp Ground Wire	1 pc.
3. Electrode wire	1 pc.
4. User Manual	1 pc.
5. Packaging	1 pc.

14. WARRANTY

The warranty is granted for a period of 12 months for business entities, but excluding warranty claims, or 24 months for consumers from the date of sale.

The warranty will be respected upon presentation by the complainant of proof of purchase (invoice or receipt) and a warranty card with the product name, serial number, date of sale and stamped point of sale.

To order a warranty repair, you need to fill in the form on the www.tecweld.pl website in the SERVICE tab. On the basis of the notification, the device will be transported to the service by a courier company. Devices sent in any other way at TECWELD's expense will not be accepted!

The welding machine must be supplied with the welding torch. Complaints about a device without a welding torch will not be considered.

The device sent for complaint must be packed in the original cardboard box, secured with original polystyrene fittings. TECWELD is not responsible for damage to the welding machine resulting from transport.



If you are going to dispose of this product, do not throw it away with ordinary household waste. According to the WEEE Directive (Directive 2012/19/EU) in force in the European Union, separate disposal methods must be used for used electrical and electronic equipment.

In Poland, in accordance with the provisions of the Act of 11 September 2015 on Waste Electrical and Electronic Equipment, it is prohibited to place waste equipment marked with the crossed-out bin symbol together with other waste.

The user who intends to dispose of this product is obliged to take the waste electrical and electronic equipment to a waste equipment collection point. Collection points are run, m.in., by wholesalers and retailers of this equipment and by municipal organizational units conducting waste collection activities.

The above statutory obligations have been introduced in order to reduce the amount of waste generated from waste electrical and electronic equipment and to ensure an appropriate level of collection, recovery and recycling of waste equipment. The correct implementation of these obligations is especially important when there are hazardous components in used equipment that have a particularly negative impact on the environment and human health.

TECWELD Piotr Polak
41-943 Piekary Śląskie, 21/3/6 Szmaragdowa St.

Branch:
41-909 Bytom, 1G Krzyżowa Street
Tel. +48 32 386 94 28
E-mail: info@tecweld.pl, www.tecweld.pl

15. ELECTRICAL DIAGRAM

