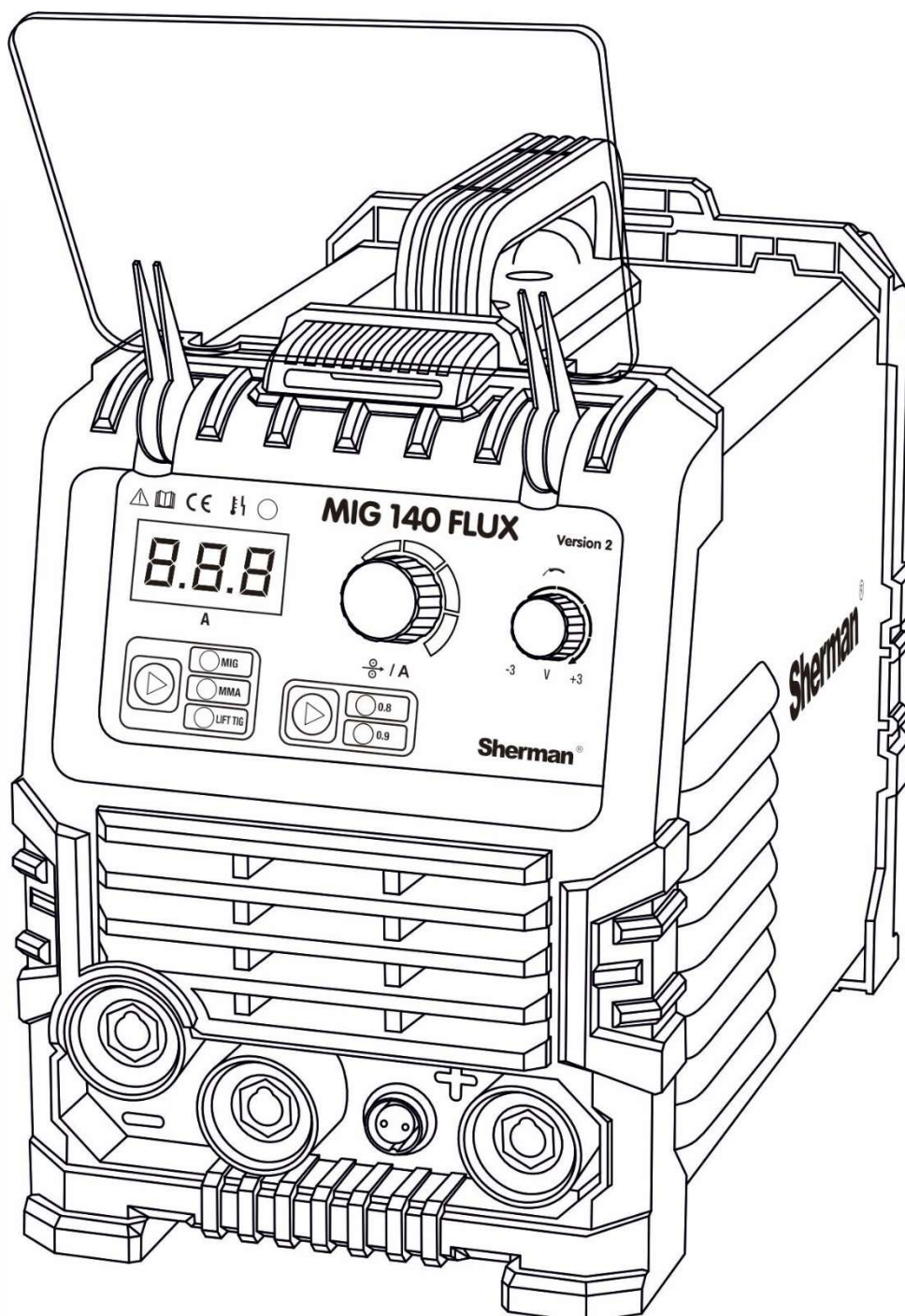


Sherman

ENG V2.5 14/09/26

USER MANUAL

SYNERGIC INVERTER WELDER DIGIMIG 140 FLUX



CE



ATTENTION!

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 MIG/MAG electric welding:

- **ELECTRIC SHOCK**
- **NEGATIVE EFFECTS OF THE ARC ON HUMAN EYES AND SKIN**
- **VAPOR AND GAS POISONING**
- **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 torch and power cords with damaged insulation. Improper insulation of torch 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 MIG/MAG process,
- 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 MIG 140 FLUX semi-automatic welding machine is a multifunctional device for MIG, MMA and TIG Lift welding.

In MIG mode, the welding machine is designed to weld with self-shielding self-shielding wire, which eliminates the need for shielding gas and simplifies the entire process. The device works synergically – it automatically selects the wire feed speed to the set welding voltage, which makes the work easier for beginners. The welder supports D100 wire spools.

In addition, the MIG 140 FLUX enables coated electrode welding (MMA) and TIG welding with arc ignition by rubbing.

When MMA mode is enabled, the welding machine allows activation of the VRD function, which enhances operator safety by reducing the welder's open-circuit voltage.

The welding machine is designed for use in enclosed or covered spaces, not exposed to direct atmospheric influences.

4. TECHNICAL PARAMETERS

4.1 Welding Machine

	MIG 140 FLUX
Supply Voltage:	AC 230V 50Hz
Rated welding current / duty cycle	130 A / 60%
Welding current adjustment range	MIG: 30 – 130 A; MMA: 20 – 130 A; TIG: 15 – 130 A
Welding Voltage Control Range (MIG)	15.5 – 20.5 V
Diameter of wire spool:	100 mm
Maximum power consumption	26.8 A
Fuse protection	16 A
Weight:	3.6 kg
Dimensions:	280 x 165 x 227 mm
Degree of protection	IP21S

4.2 MIG Torch

Torch Type	TW-14
Maximum current carrying capacity	150 A
Cooling Type	Shielding gas
Shielding gas Flow	10-18 l/min
Length	2.2 m

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.

Attention! Heating tests were carried out at the temperature of the surrounding air. The duty cycle at 40°C was determined by simulation.

Degree of protection

IP determines the extent to which the device is resistant to the ingress of solid and water contaminants. IP21S means that the device is suitable for indoor use and is not suitable for use in rain and snow.

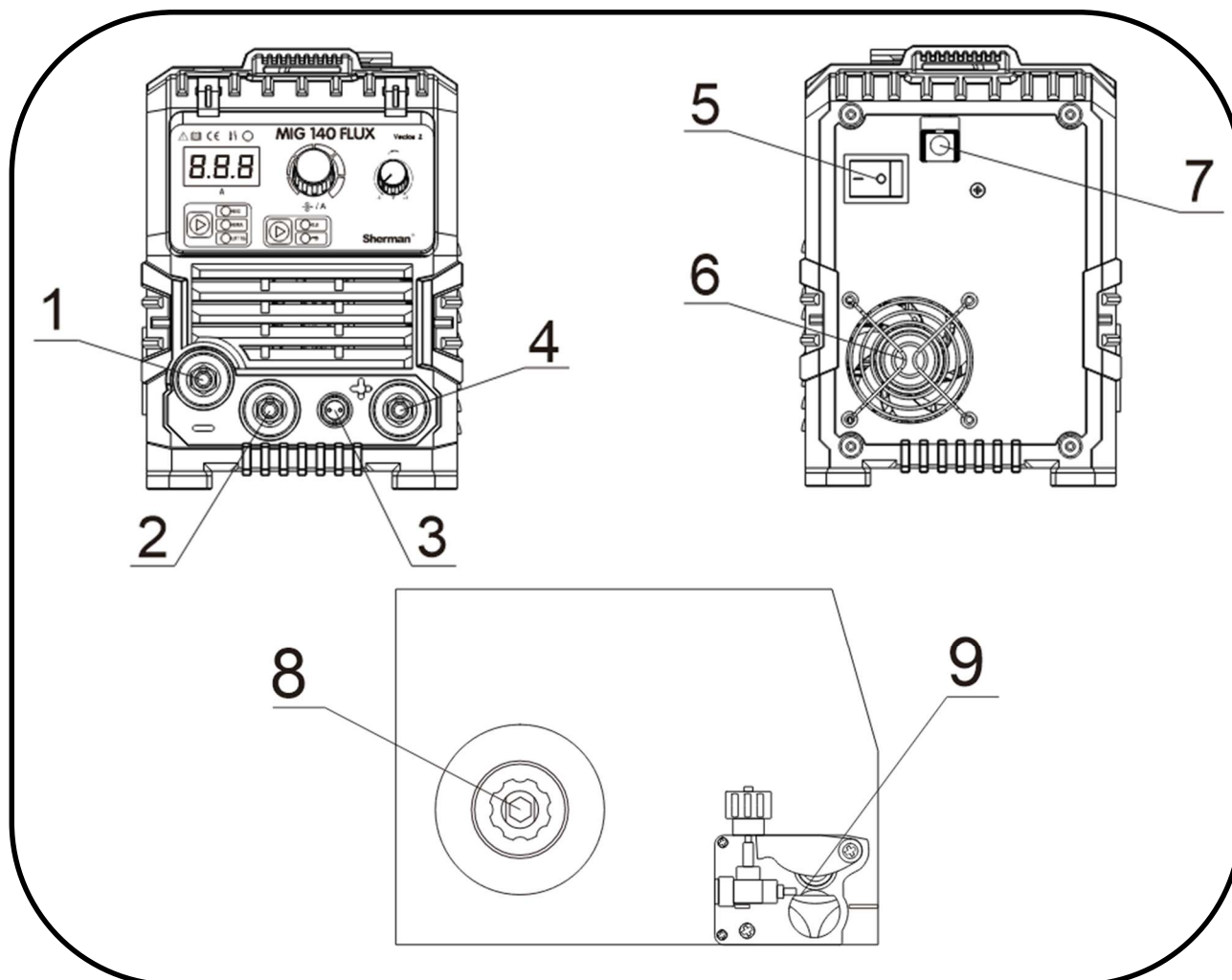
Overheating protection

The IGBT module is protected from overheating by a protective installation that shuts off the power supply to the welder. The message Err-02 appears on the display. 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 (Voltage Reduction Device) reduces the welder's output voltage when no load is present, increasing operator safety by reducing the risk of electric shock. The function is available only when using the MMA (Shielded Metal Arc Welding / Stick Welding) process.

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.

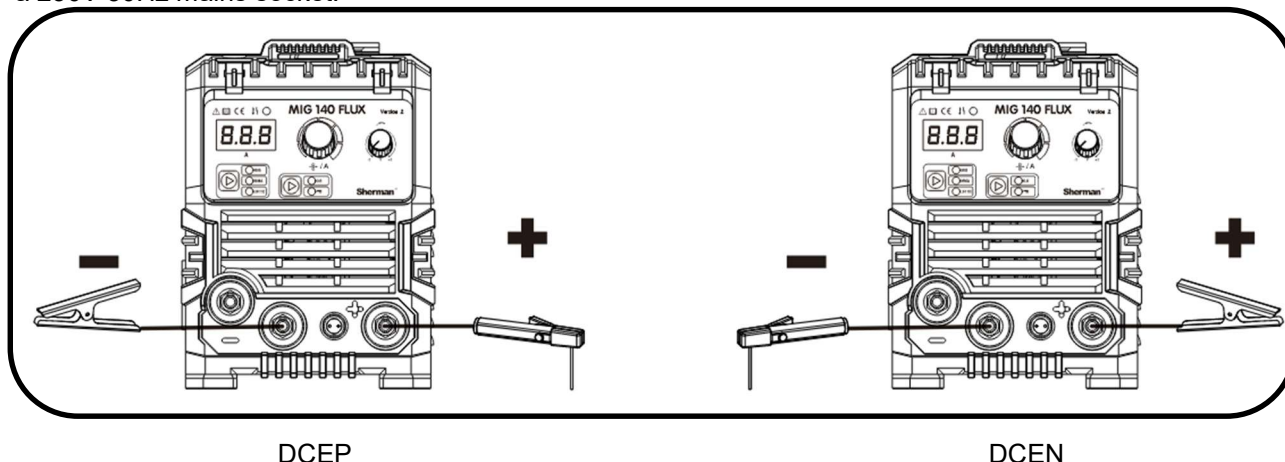


1. MIG Current Socket
2. "-" socket
3. MIG Torch Control Socket
4. "+" socket
5. Power Switch
6. Fan
7. Power cord
8. Wire spool shank
9. Wire feeder

5.1 Connecting the Wires

5.1.1 MMA process

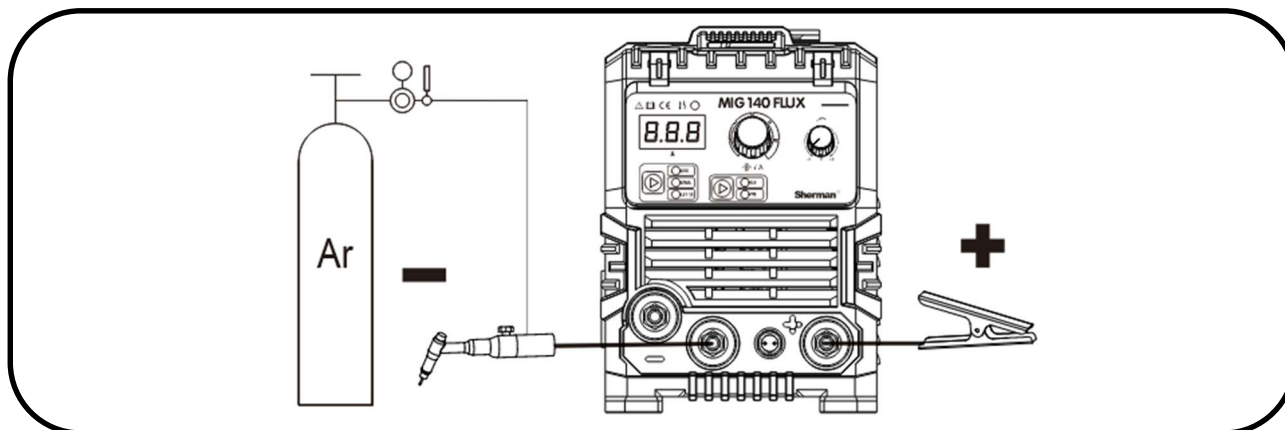
Connect the ends of the welding wires to the sockets (2) and (4) on the faceplate so that the electrode holder has the correct pole for the electrode. The polarity of the connection of the welding wires depends on the type of electrode used and is indicated on the electrode packaging (DCEN negative polarity 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 process

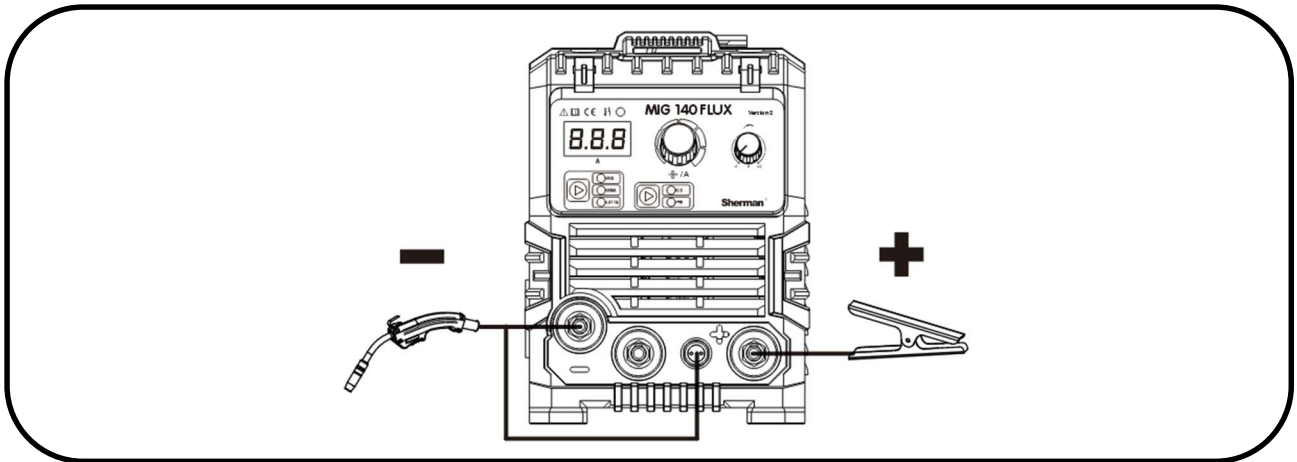
To weld with this process, it is necessary to use an additional TIG torch. A gas-cooled torch with a current capacity of 130A, equipped with a shielding gas control valve, is required.

The contact tip 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 (4) to the welded material using a clamp cable. Connect the appliance plug to a 230V 50Hz mains socket.



5.1.3 MIG process

The contact tip of the torch must be connected to the socket (1). Place the torch control plug in the socket (3). Connect the positive pole of the source (4) to the welded material using a clamp cable. Connect the appliance plug to a 230V 50Hz mains socket.



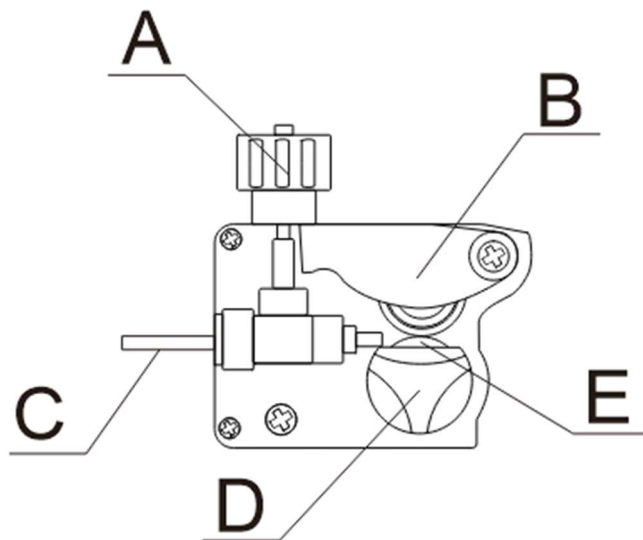
5.3 Connecting to the power supply

1. The appliance should only be used in a single-phase, three-wire, grounded zero point power supply system.
2. The DIGIMIG 140 FLUX welding machine is designed to work with a 230V50 Hz network protected by 16 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 (5) is in the OFF position.

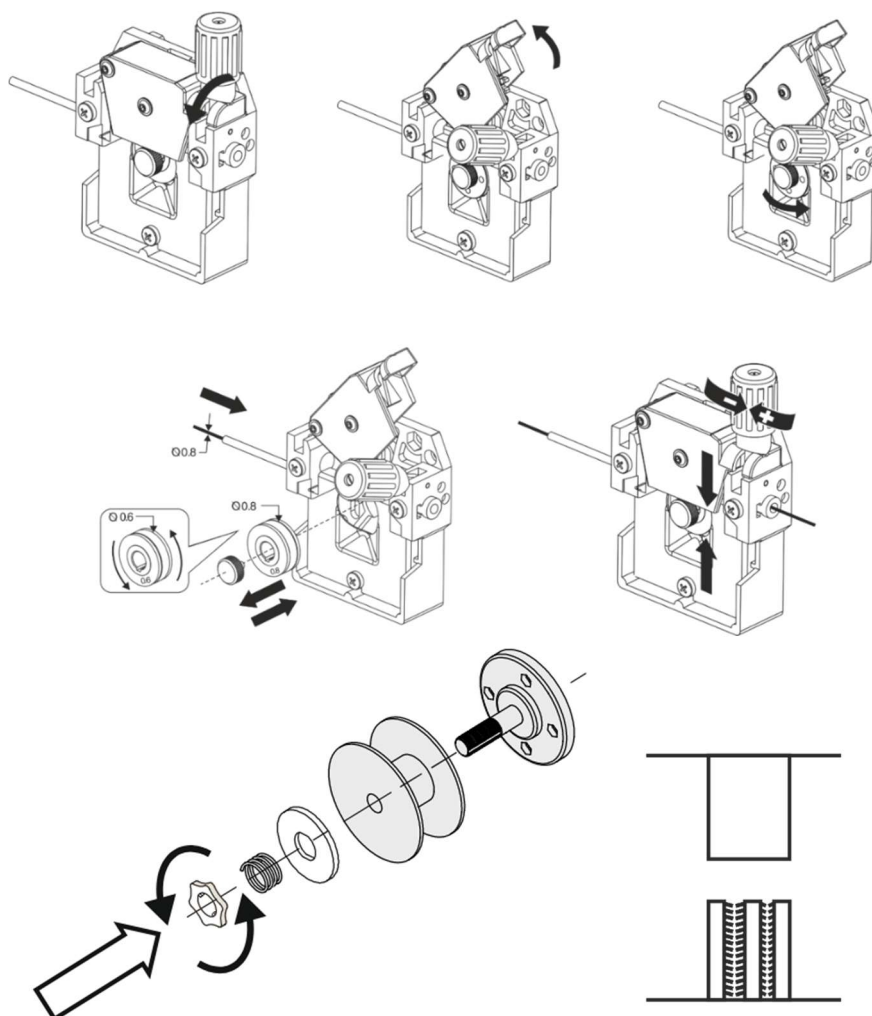
5.4 Fitting the Electrode Wire Spool

1. Open the side cover of the case.
2. Check that the drive roller is suitable for the type and diameter of the wire. It is recommended to use a knurled roller for self-shielding wire.
3. Push and turn the spool stem lock nut to the left, then remove the spring and pressure washer
4. Place the electrode wire spool on the mandrel.
5. Replace the pressure washer and spring, then push and turn the lock nut clockwise, making sure that the nut tabs are properly inserted into the grooves of the stem.
6. Release the feed roller pressure by deflecting the tension screw (A) and lifting the pressure roller arm (B).
7. Blunt the end of the electrode wire.
8. Feed the wire through the guide tube (C) and the feed guide roller (E) into the holder.
9. Press the wire into the grooves of the drive roller.
10. Remove the contact tip from the torch, turn on the power to the welding machine and press the control button of the torch.
11. When the electrode wire appears in the outlet of the holder, release the button and screw on the current amplifier.
12. Adjust the pressure force of the feeder roller by turning the pressure knob. Too little clamping force will result in the drive roller slipping, too much clamping force will cause the feeding resistance to increase, which may lead to wire deformation and damage to the feeder.

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- A Tension Screw
- B Pressure roller arm
- C Electrode wire guide tube
- D Guide roller fixing screw
- E Guide Roller



5.5 Preparing the MIG Torch for Operation

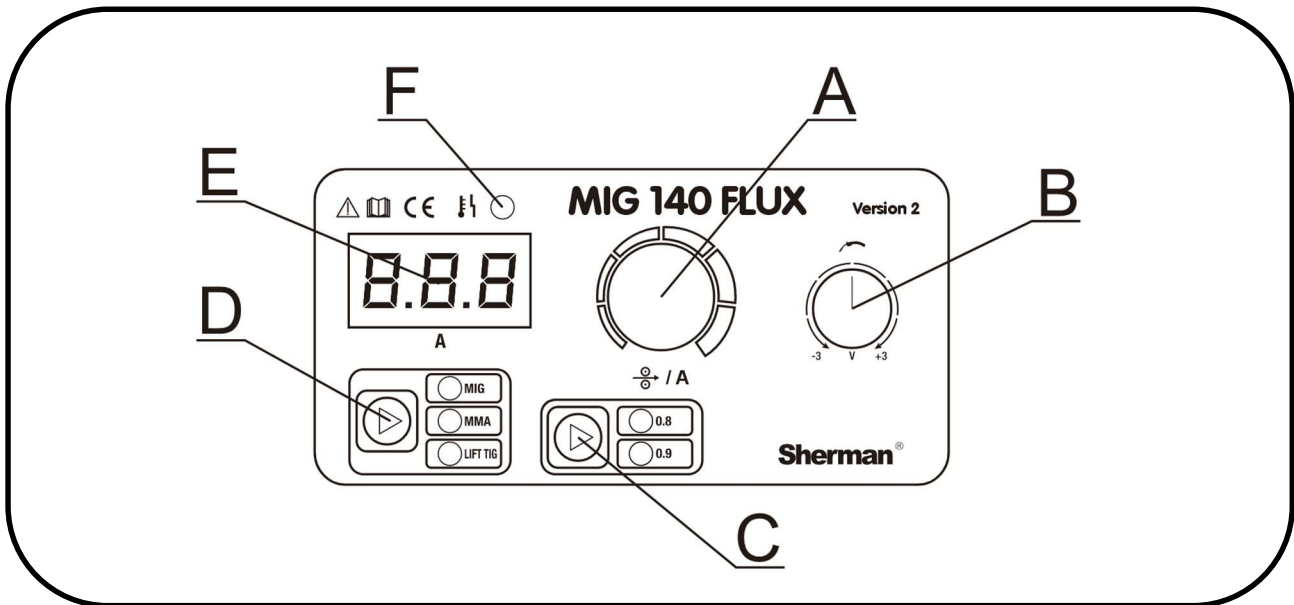
Depending on the type of material to be welded and the diameter of the electrode wire, fit the appropriate contact tip and wire guide insert to the MIG holder.

5.5.1 Quick wire extension

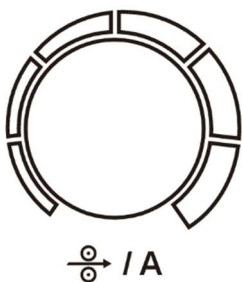
The device has a quick wire extension function. Pressing and holding the button on the MIG holder for a few seconds causes the wire to be quickly ejected for easy insertion into the holder.

6. OPERATION

6.1 Front Panel



A – Multi-function knob



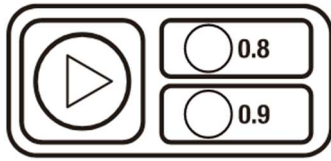
The knob is used to adjust the welding parameters.

B – Welding Correction Knob



Knob active only during MIG welding. It allows the correction of the welding voltage selected by the synergy program in the range of -3V – +3V. The correction value is not indicated on the display.

C – Electrode wire diameter selection button

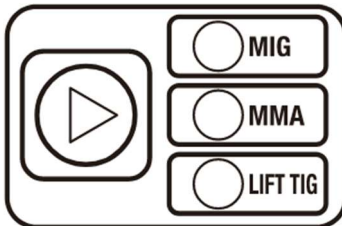


The button is used to select the electrode wire diameter in MIG mode. The selected diameter is confirmed by the corresponding indicator light illuminating.

In MMA mode, the wire diameter selection button is used to enable or disable the VRD function.

VRD Function – To activate the VRD function, press and hold the electrode wire diameter selection button (C). The display (E) will show the current status: (ON – enabled) or (OFF – disabled). Turn the control knob (A) to select the desired status, then press the control knob (A) to confirm your selection. The VRD mode is available only when using the MMA (Shielded Metal Arc Welding / Stick Welding) process.

D – Welding process selection button



The button is used to select the welding process:

MIG	MIG welding using synergic settings. The device selects welding parameters depending on the set welding current. The user has the ability to correct the welding voltage
MMA	MMA (coated electrode) welding.
LIFT TIG	Friction arc ignition TIG welding

E – Parameter display



The display indicates the welding current, and status of VRD function in the selection

F – Superheat LED



The LED indicates that the device is overheating or malfunctioning.

7. ARC INITIATION

7.1 MMA process

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.

7.2 TIG process

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.

7.3 MIG Process

1. Bring the torch closer to the welded workpieces so that the distance between the nozzle and the welded workpieces is approx. 10 mm.
2. Press the button on the welding torch and start welding.

8. BEFORE YOU CALL FOR SERVICE

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

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

ATTENTION! The machine is not sealed and the user can remove the welding machine housing for removal minor failures.

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
	Dirty interior of the device	Remove the housing and clean the unit inside by blowing with compressed air to remove dust and metal filings from the control boards and wiring and electrical connections.
No electrode wire feeding (feeder motor running)	Too little roller pressure	Set the correct pressure
	Incorrect diameter of guide roller groove	Fit the correct guide roller
	Contaminated chain in the holder	Clean the electrode wire guide
	Blocked electrode wire in the contact tip	Replace the current adapter
Irregular electrode wire feed	Damaged contact tip	Replace the current adapter
	The groove of the feed roller is dirty or damaged	Clean the roller groove or replace the roller
	The wire spool rubs against the walls of the welding machine cover	Fix the wire spool correctly

The arc does not ignite	Lack of proper contact of the ground cable terminal	Improve the contact of the ground terminal
	Damaged switch in MIG holder	Replace the switch
	Improper connection of the MIG mount to the device	Check the condition of the electrical connections of the torch, check that the pins in the socket are not broken or jammed
The display indicates Err-02	The device has overheated.	Wait a few minutes for the message to go out and continue welding.
Curve too long and irregular	Welding Voltage Too High	Reduce welding voltage
	Wire feed speed too low	Increase wire feed speed
Arc too short	Welding Voltage Too Low	Increase welding voltage
	Wire feed speed too high	Reduce wire feed speed
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 MIG welding	Inadequate or poor-quality materials or consumables used,	Replace consumable parts. Change the welding wire or gas cylinder to suitable or higher quality materials
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 errors indicated on the display

Error code	Description
Err-02	Overheating protection. Wait a few minutes for the appliance to cool down to a temperature that allows it to switch on again on its own. 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.
Err-03	Wire feeder error.
ERR-05	Improper supply voltage. Check the condition and voltage in the power supply network
Err-09	Error connecting the motherboard to the display. Check the condition of the cable and plugs that connect the motherboard to the front panel.

9. OPERATING INSTRUCTIONS

The DIGIMIG 140 FLUX 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 DIGIMIG 140 FLUX 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

List of consumable parts:

1	Feeder roller 25x8 (7x7) mm
2	TW-14 M6x25 Contact tip
3	TW-14 contact tip
4	Gas nozzle TW-14
5	Steel insert 2m

A full list of consumables and spare parts is available on the www.tecweld.pl website and at TECWELD. It is possible to purchase these parts directly.

10. MAINTENANCE INSTRUCTIONS

Daily	Weekly (once a week)
- Remove external dirt on the appliance - Check the correct operation of the control panel and security elements - Check the cooling fans for good operation	- Check the condition of the wire feeder rollers, - Check the wear of the torch gas terminals and gas nozzles - Remove internal dirt with dry air under the appliance housing - Check the condition of welding cable connections
Quarterly (every three months)	Periodically (once a year)
- Carry out a general technical inspection of the device - Check the insulation condition of wires and electrical components - Check the condition of the fans	- Perform a full service inspection - Perform a full inspection of the wire feeding system - Check the condition of contactors, connectors, screw connections, and internal wires - perform electrical measurements

Additional operating recommendations

- Maintaining the optimum operating temperature – especially important for long hours of cycles.
- Quick replacement of worn tips, nozzles and feeder rollers to avoid damage to the torch.
- Regular inspection of the regulator and gas pipes – especially for leaks.

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

11. 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.

12. SET SPECIFICATION

1. Source	1 pc.
2. TW-14 welding torch	1 pc.
3. Clamp Clamp Ground Cable	1 pc.
4. Electrode wire	1 pc.
5. Shielding gas hose	1 pc.
6. User Manual	1 pc.
7. Packaging	1 pc.

13. 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 processes 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.

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14. ELECTRICAL DIAGRAM

