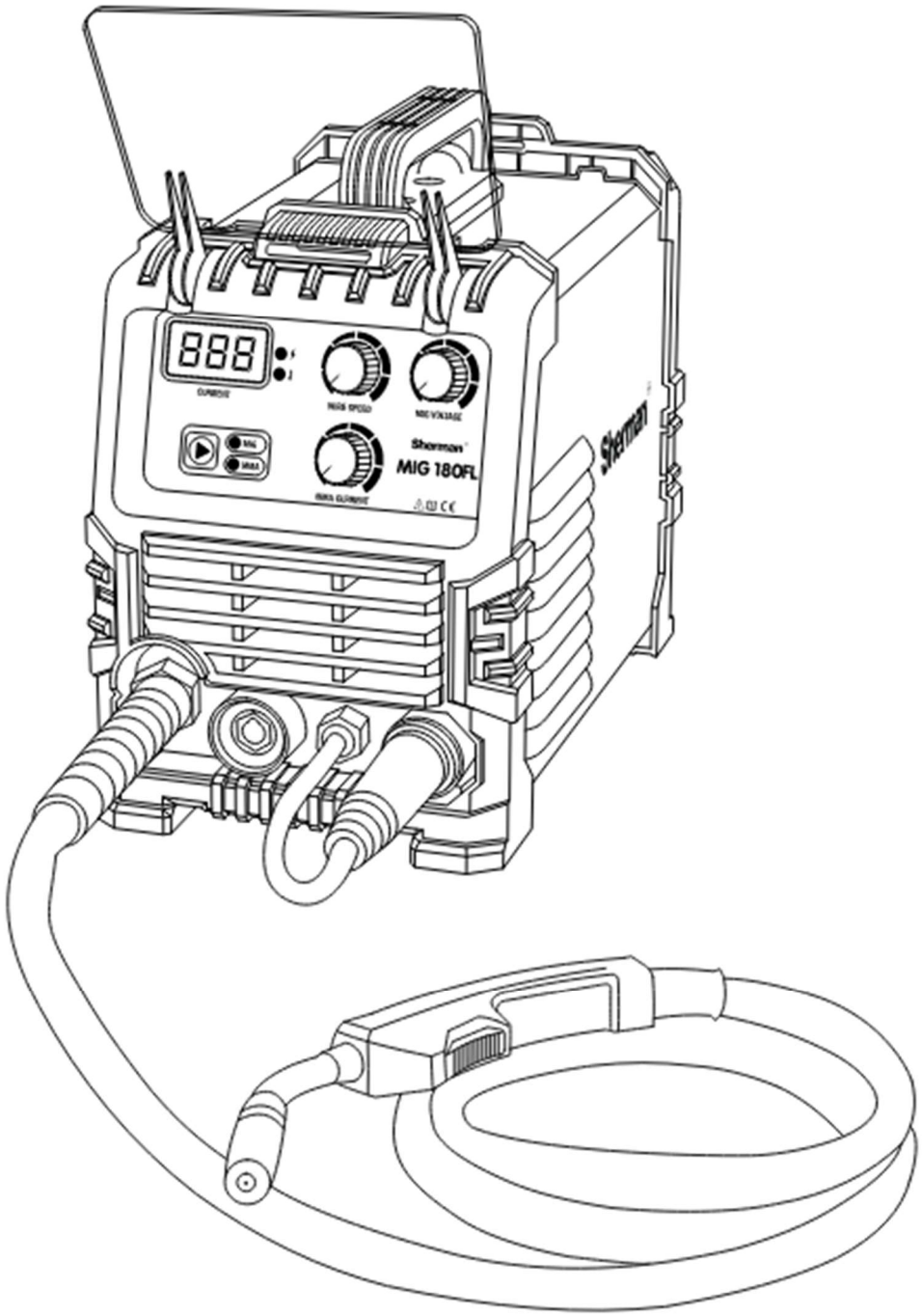
Sherman

ENG V3.2 2026-08-07

USER MANUAL

SEMI-AUTOMATIC INVERTER WELDING MACHINE
MIG 180FL



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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 BOW 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 torch, 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 180FL semi-automatic welding machine is an inverter welding device designed for manual welding of steel and non-ferrous metal components. It enables MIG/MAG (shielded gas welding using electrode wire) and MMA (coated electrode welding) process. The welding machine allows you to quickly change the polarity (+/−). This allows welding with both standard solid wires (requiring an external gas shield, e.g. Ar/CO_2) and self-shielding powder wires (FLUX), which do not require an external gas source. The device is designed to work with D100 type wire spools (weight up to 1 kg). The welding machine is used in closed or covered rooms, not exposed to direct weather conditions. It is designed for amateur and hobby work as well as casual workshop work.

4. TECHNICAL PARAMETERS

4.1 Welding Machine

	MIG 180FL
Supply Voltage:	AC 230V 50Hz
Rated welding current / duty cycle	MIG: 180 A / 60%; MMA: 160 A / 60%
Diameter of wire spool:	100 mm
Maximum power consumption	32.3 A
Fuse protection	20 A
Weight:	6.1 kg
Dimensions:	336 x 165 x 227 mm
Degree of protection	IP21S

4.1.1 Parameter control ranges

Welding Current:	MIG: 30 – 180 A; MMA: 20 – 160 A
Welding Voltage:	MIG: 15.5 – 22 V
Wire Feeding Speed:	2 – 12 m/min

4.2 MIG Torch

Torch Type	TW-14
Maximum current carrying capacity	180 A
Cooling Type	Shielding gas
Refrigerant Gas Flow	10-18 l/min
Length	2 m

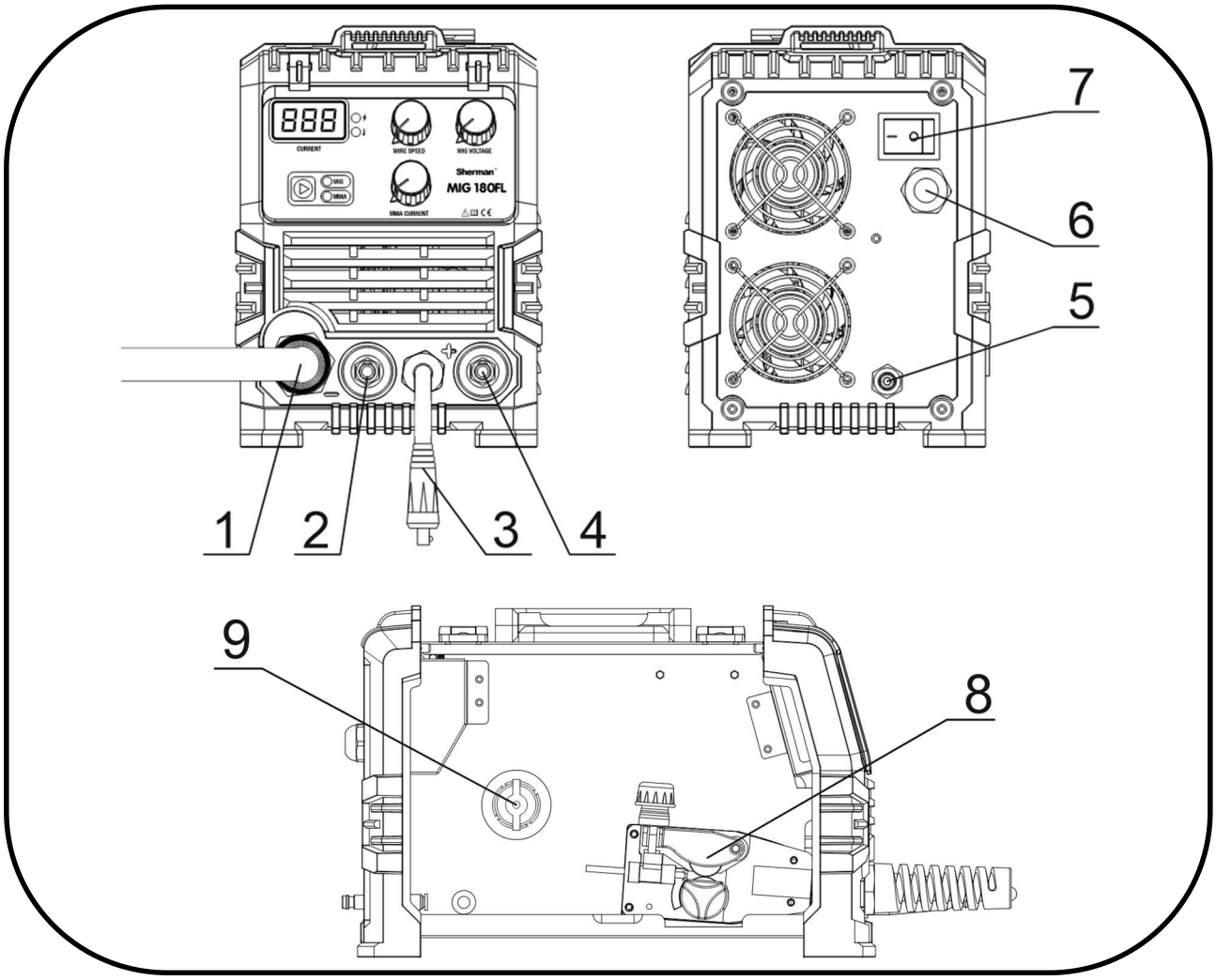
Duty cycle
The duty cycle is based on a 10-minute period. A 60% duty cycle means that a 4-minute break is required after 6 minutes of operation of the device. A 100% duty cycle means that the device can operate continuously, without interruptions.
Attention! Heating tests were carried out at the temperature of the surrounding air. The duty cycle at 40ºCwas 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.

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.

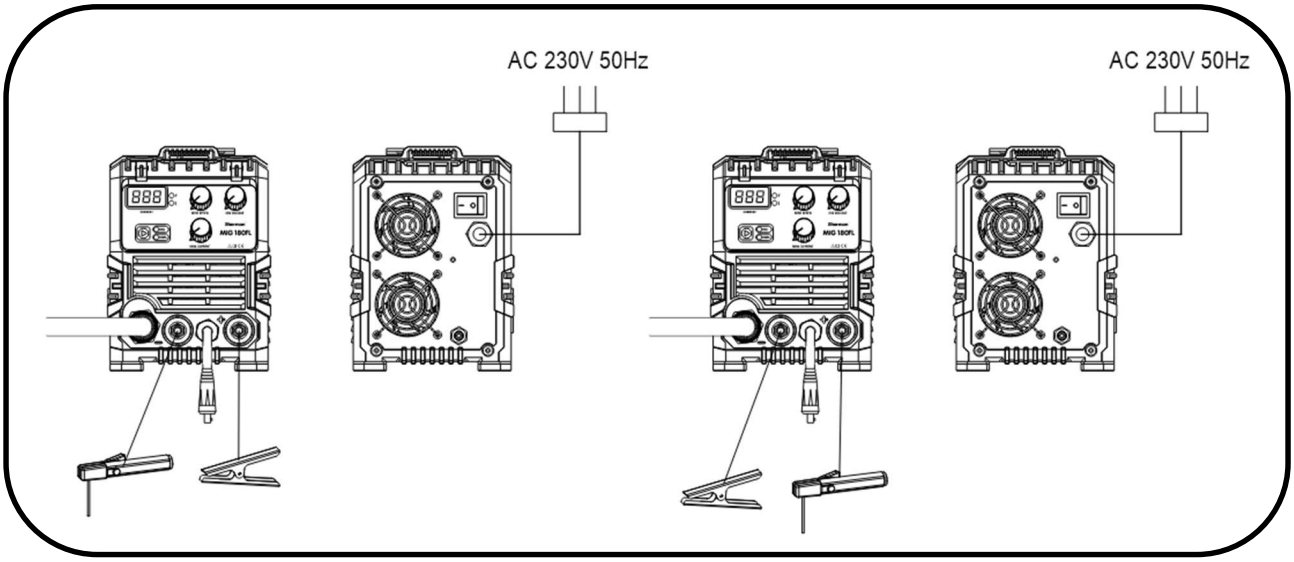


1. MIG Torch Cable
2. Socket "-"
3. Polarity change plug
4. "+" socket
5. Shielding gas connector
6. Power cord
7. Power Switch
8. Wire feeder
9. Wire spool shank

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 torch 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.

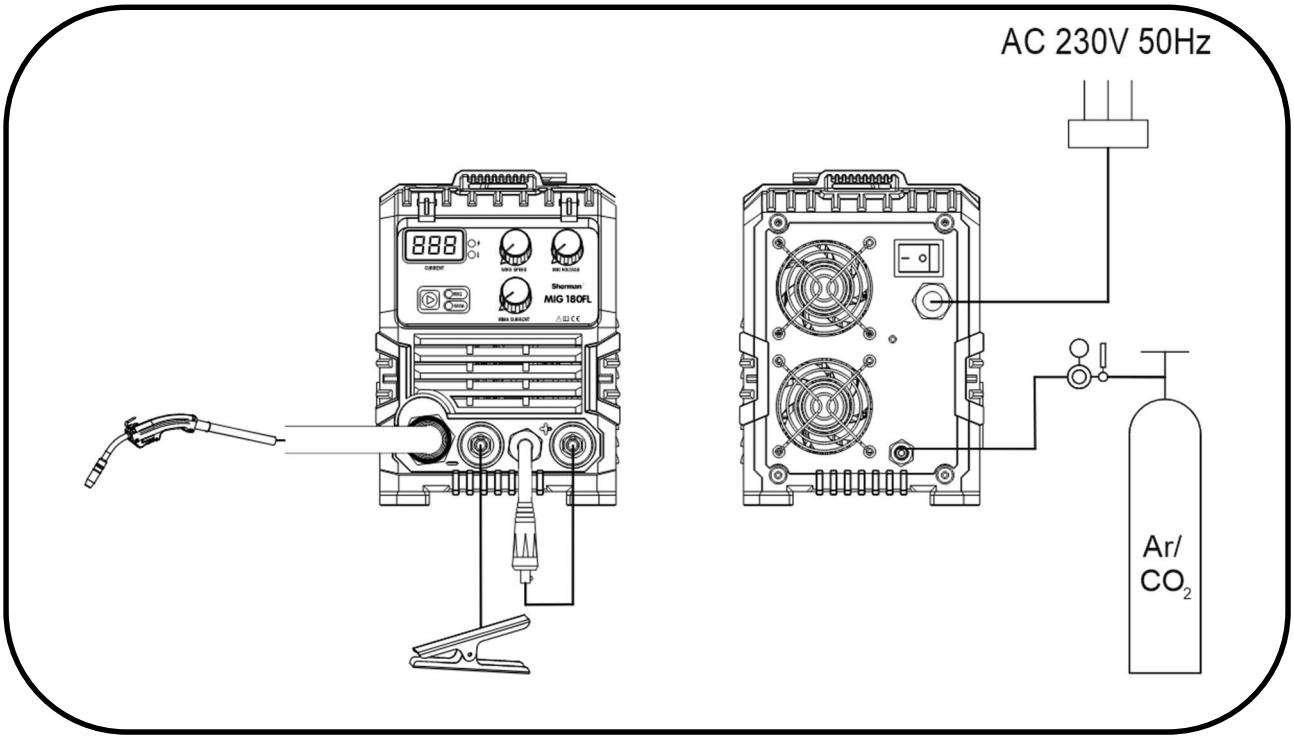


DCEN DCEP

5.1.2 MIG process

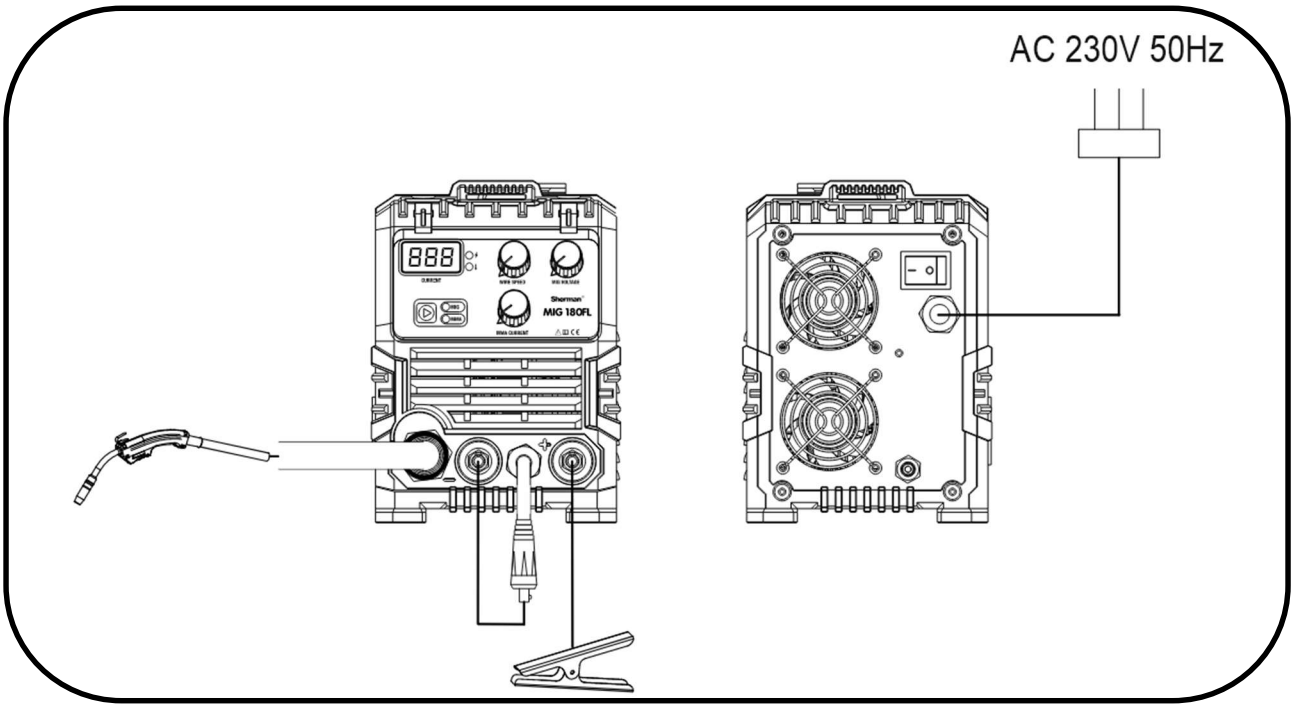
5.1.2.1 Shielded Gas Welding

The gas hose from the reducer must be routed and secured to the gas connector (5) located on the back of the appliance. Place the polarity change plug (3) in the "+" slot (3). Connect the negative pole of the source (2) to the welded material using a clamp cable. Connect the appliance plug to a 230V 50Hz mains socket.



5.1.2.2 Welding with Steel Self-Shielding Wire

Place the polarity change plug (3) in the "-" slot (2). 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.



5.2 Shielding Gas Connection

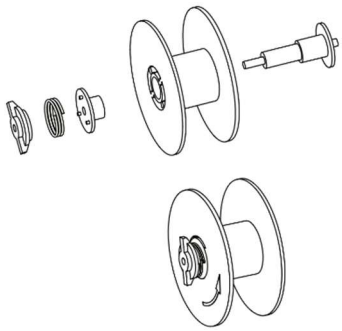
1. Fix the cylinder and secure it from tipping over.
2. Unscrew the cylinder valve for a moment to remove any debris.
3. Install the reducer on the cylinder.
4. Connect the reducer to the gas connector (5) on the back of the welding machine with a hose.
5. Unscrew the cylinder and reducer valve.

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 MIG 180FL welding machine is designed to work with a 230V 50Hz 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 (7) is in the OFF (off) position.

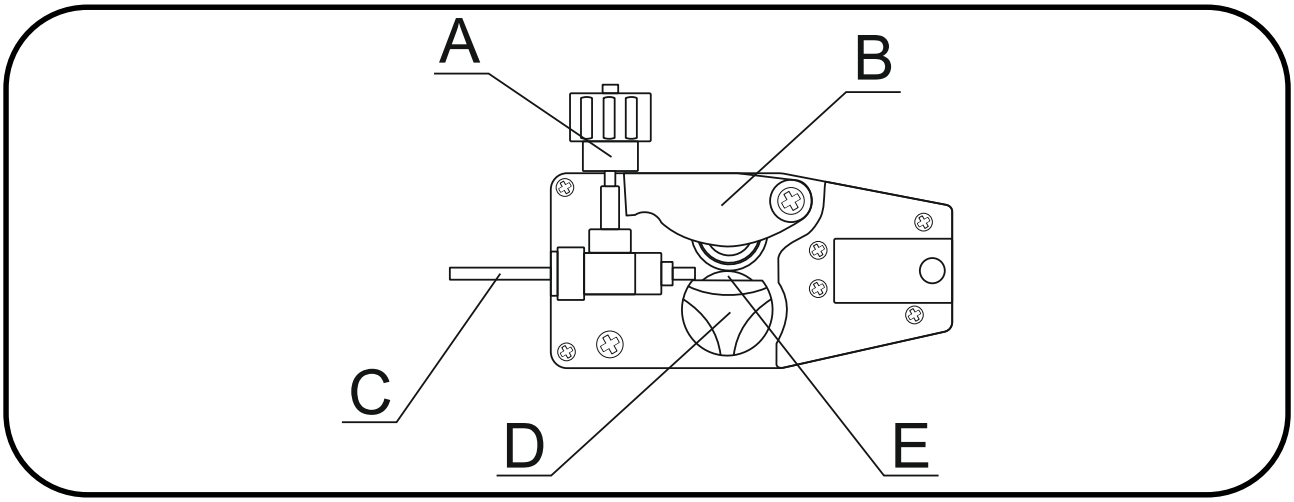
5.4 INSTALLING THE ELECTRODE WIRE SPOOL

1. Open the side cover of the case.
2. Check that the drive roller is suitable for the type and diameter of the wire.
3. Place the electrode wire spool on the mandrel.
4. Protect the spool from falling.
5. Release the feed roller pressure by deflecting the tension screw (A) and lifting the pressure roller arm (B).
6. Blunt the end of the electrode wire.
7. Feed the wire through the guide tube (C) and the feed guide roller (E) into the torch.
8. Press the wire into the grooves of the drive roller.
9. Remove the contact tip from the torch, turn on the power to the welding machine and press the control button of the torch.
10. When the electrode wire appears in the outlet of the torch, release the button and screw on the current amplifier.

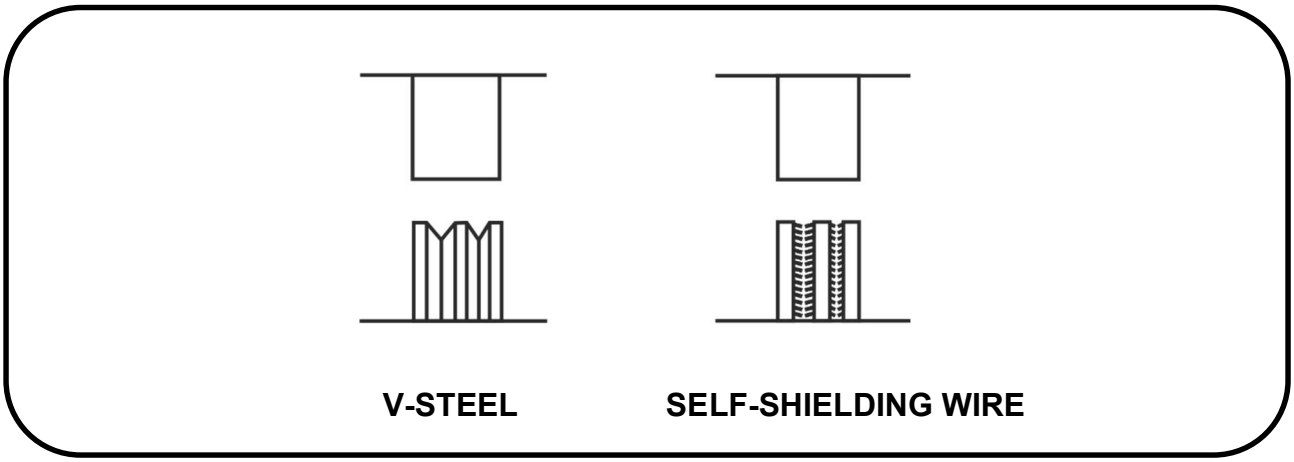


5.5 REPLACING THE GUIDE ROLLER

1. Open the side cover of the case
2. Tilt the tension screw (A)
3. Lift the pressure roller arm (B)
4. Turn the guide roller screw (D) counterclockwise and remove it
5. Remove the guide roller (E).
6. Install the guide roller (E) so that the groove of the correct diameter is in the axis of the wire feeder.
7. Install the guide roller torching screw and lock it by turning it clockwise.
8. Lower the pressure roller arm (B) and lock with the tension screw (A).
9. Adjust the pressure force of the roller by turning the tension screw.



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



5.6 Preparing the MIG Torch for Operation

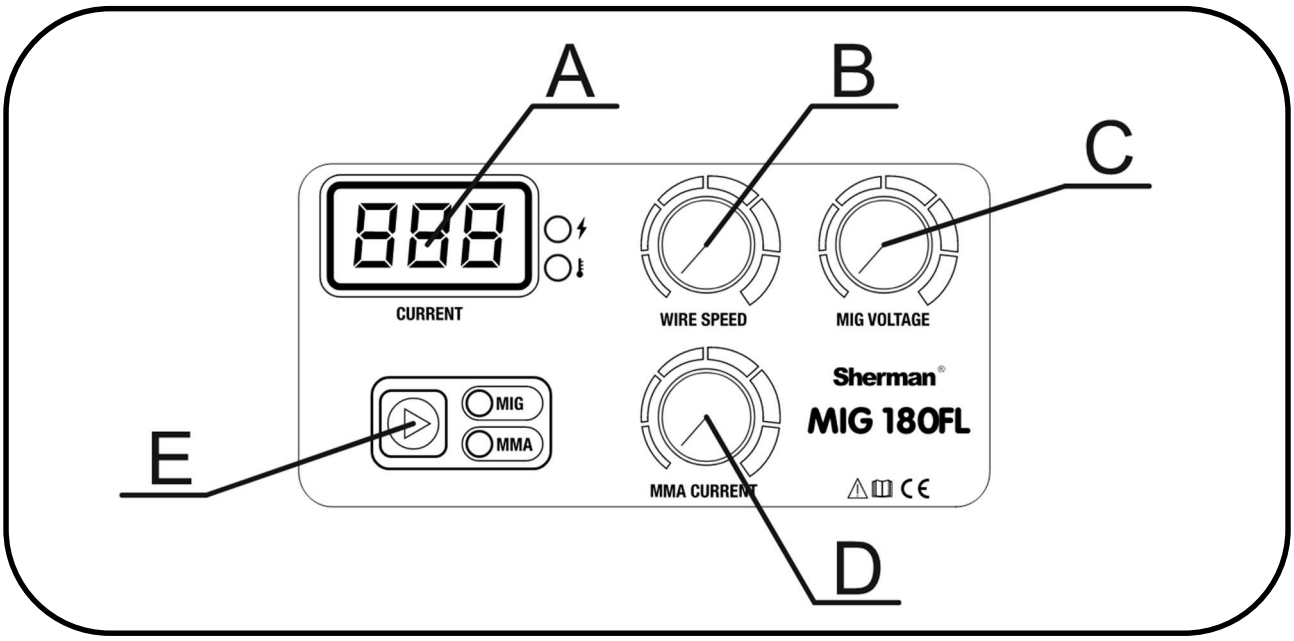
Depending on the type of material to be welded and the diameter of the electrode wire, fit the appropriate current terminal and wire guide insert to the MIG torch.
For steel welding, use steel welding current terminals and a steel cartridge.

5.7 Quick wire extension

The device has a quick wire extension function. Pressing the button in the torch of the torch for 3 seconds without igniting the arc causes a quick extension of the wire allowing it to be easily inserted into the torch.

6. OPERATION

6.1 Front Panel

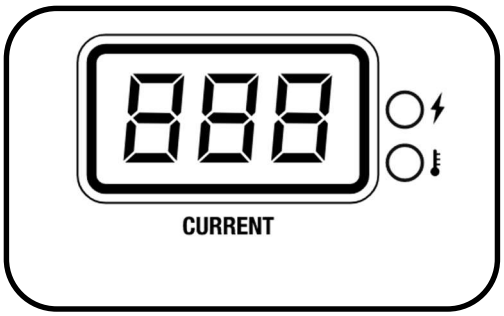


A – Welding current display and indicator LEDs

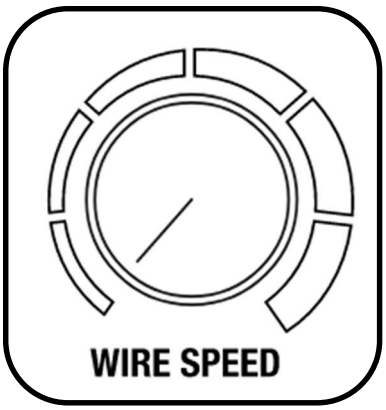
The display indicates the welding current.

Signalling LEDs:

⚡	Power On Indication
🌡	Activated thermal protection

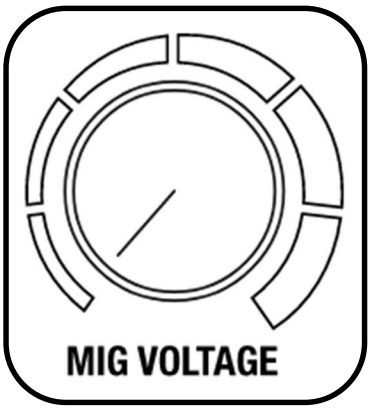


B – Wire feed speed control knob



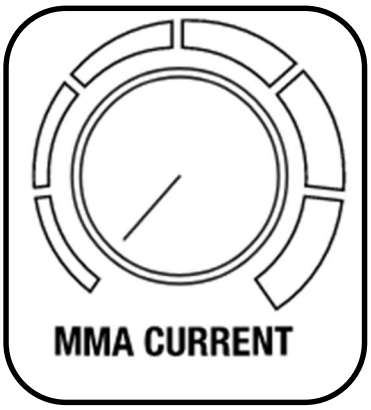
The knob is used to adjust the wire feed speed during MIG welding.
Adjustment range: 2 – 22 m/min

C – Welding tension adjustment knob.



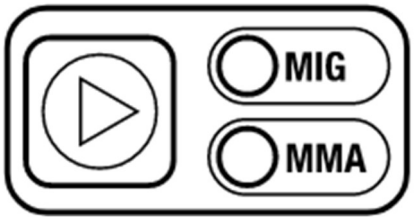
The knob is used to adjust the welding voltage during MIG welding.
Adjustment range: 15.5 – 22 V

D – Welding current control knob



The knob is used to adjust the welding current during MMA welding.
Adjustment range: 20 – 160 A

E – Welding process selection button



The button is used to select the welding process:

MMA	MMA (Manual Metal Arc Welding): Direct current (DC) welding of structural steels.
MIG	MIG/MAG process - welding with an electrode wire in a shielded gases (Metal Inert Gas – welding in an inert gas shield; Metal Active Gas – welding in the shield of active gases

7. ARC IGNITION

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 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, you should 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
When the power is turned on, the displays and LEDs do not light up	No supply voltage	Check the fuses on the mains connection
The display indicates error Err-02	The device has overheated	Wait a few minutes for the device to cool down and the error message disappears.
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 torch	Clean the electrode wire guide
	Blocked electrode wire in the current tip	Replace the contact tip
Irregular electrode wire feed	Damaged current terminal	Replace the contact tip
	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 bow does not ignite	Lack of proper contact of the ground cable terminal	Improve the contact of the ground terminal
	Damaged switch in MIG torch	Replace the switch
	Improper connection of the MIG torch 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
Curve too long and irregular	Welding Voltage Too High	Reduce welding tension
	Wire feed speed too low	Increase wire feed speed
Arc too short	Welding Voltage Too Low	Increase welding tension
	Wire feed speed too high	Reduce wire feed speed
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
	The shielding gas comes out with the wrong intensity.	Check the gas supply hose, improve the hose connection to the fittings and the condition of the quick connectors Check Cylinder Reducer
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

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 damage

9. OPERATING INSTRUCTIONS

The MIG 180FL 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 MIG 180FL 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°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:

Lp.	Name
1	Feeder roller 25x8mm (7x7mm)
2	TW-14 M6x25 Contact tip
3	TW-14 contact tip
4	Gas nozzle TW-14
5	Steel Insert

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

As part of daily operation, keep the welding machine clean, check the condition of external connections, and the condition of electrical wires and cables.
Replace consumable parts regularly.
Periodically (depending on the operating conditions), remove the housing and clean the device inside by blowing with compressed air to remove dust and metal swarf from the control boards and electrical cables and connections.
At least once every six months, a general inspection and condition of electrical connections should be carried out, in particular:

- state of protection against electric shock
- isolation status
- security system status
- correct operation of the cooling system

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°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. Welding source with MIG TW-14 chuck	1 pc.
2. Clamp Clamp Ground Wire	1 pc.
3. Electrode wire	1 pc.
4. Gas hose	1 pc.
5. User Manual	1 pc.
6. 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 process 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 atorch 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