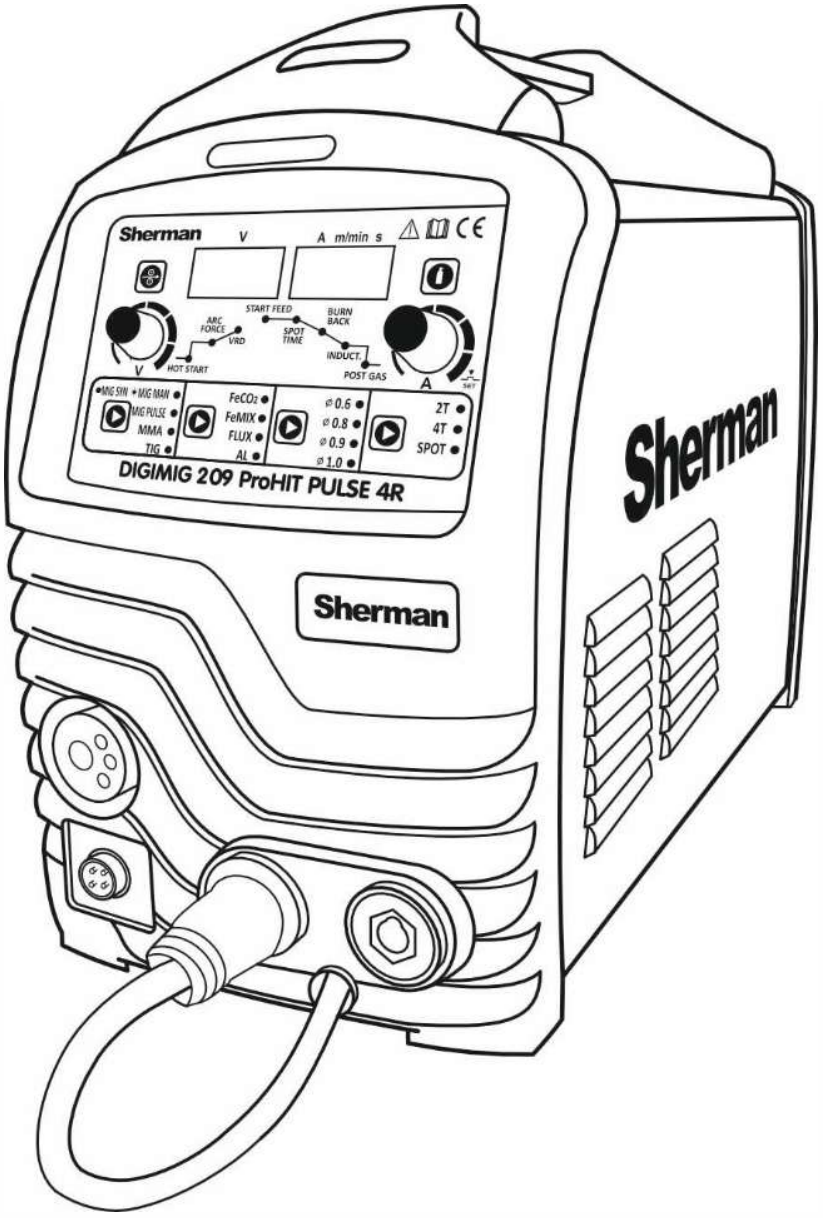
Sherman

V2 06.07.26

USER MANUAL

SYNERGIC SEMI-AUTOMATIC WELDING MACHINE
DIGIMIG 209 ProHIT Pulse 4R



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 welding machine 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 torch, electrode and welded object at the same time, including the device housing,
- do not use torchs 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,

- Ensure adequate fresh-air ventilation 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 torchs and power cords with damaged insulation. Improper insulation of torchs 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 welding machine 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 welding machine 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 DIGIMIG 209 ProHIT Pulse 4R synergic welding machine is used for manual welding of steel and non-ferrous metals. It allows welding using MMA (coated electrode), TIG and MIG/MAG processs. The MIG/MAG process can be used in manual and synergic modes, simplifying its operation and allowing the welding machine to be used by people with less experience and hobbyists. Thanks to the change in polarity, the device allows you to weld using the MIG/MAG process using both standard shielded gas wires and self-shielding powder wires.
The device supports welding in 2T, 4T and Pulse modes and is compatible with a Spool Gun (SG) equipped with a mini wire feeder and a D100 spool.
The welding machine allows you to connect a Spool Gun (SG) with a mini wire feeder mounted in it and a D100 spool of steel or colored wire.

The device is made in IGBT technology, which allows for a significant reduction in the weight and dimensions of the welding machine and an increase in efficiency while reducing energy consumption.
The welding machine is used in closed or covered rooms, not exposed to direct atmospheric influences.
The device is equipped with a Fan Stop function that turns off the fan when the welding machine is loaded low, which reduces noise and improves the comfort of using the device.

4. TECHNICAL PARAMETERS

4.1 Welding Machine

Supply Voltage:	AC 230V 50Hz
Rated Welding Current:/ Duty Cycle	MIG: 200A / 60%; MMA: 170A / 60%; TIG: 200A/60%
Rated no-load voltage	65 V (17V from VRD)
Wire spool diameters:	100 mm, 200 mm
Maximum power consumption:	32.6 A
Network security	25 A
Weight (without attachments):	12 kg
Dimensions [mm]:	490 x 220 x 375 mm
Degree of protection:	IP23S

4.1.1 Parameter control ranges

Welding Current:	MIG: 30 – 200 A; MMA: 25 – 170 A; TIG:15 – 200 A
Welding Voltage:	MIG: 15 – 24 V
Welding Voltage Correction	-3 to +3 V
Wire Feeding Speed:	2.5m/min – 22m/min
Inductance:	-10 to +10
Spot welding time:	0 – 1 s
Burn Back	0 – 10
Wire Feeder Travel Speed	0 - 10
Post gas	0 – 1 s
Arc Force (MMA):	0 – 10
Hot Start (MMA):	0 – 10
VRD (MMA):	On / Off

4.2 MIG Torch

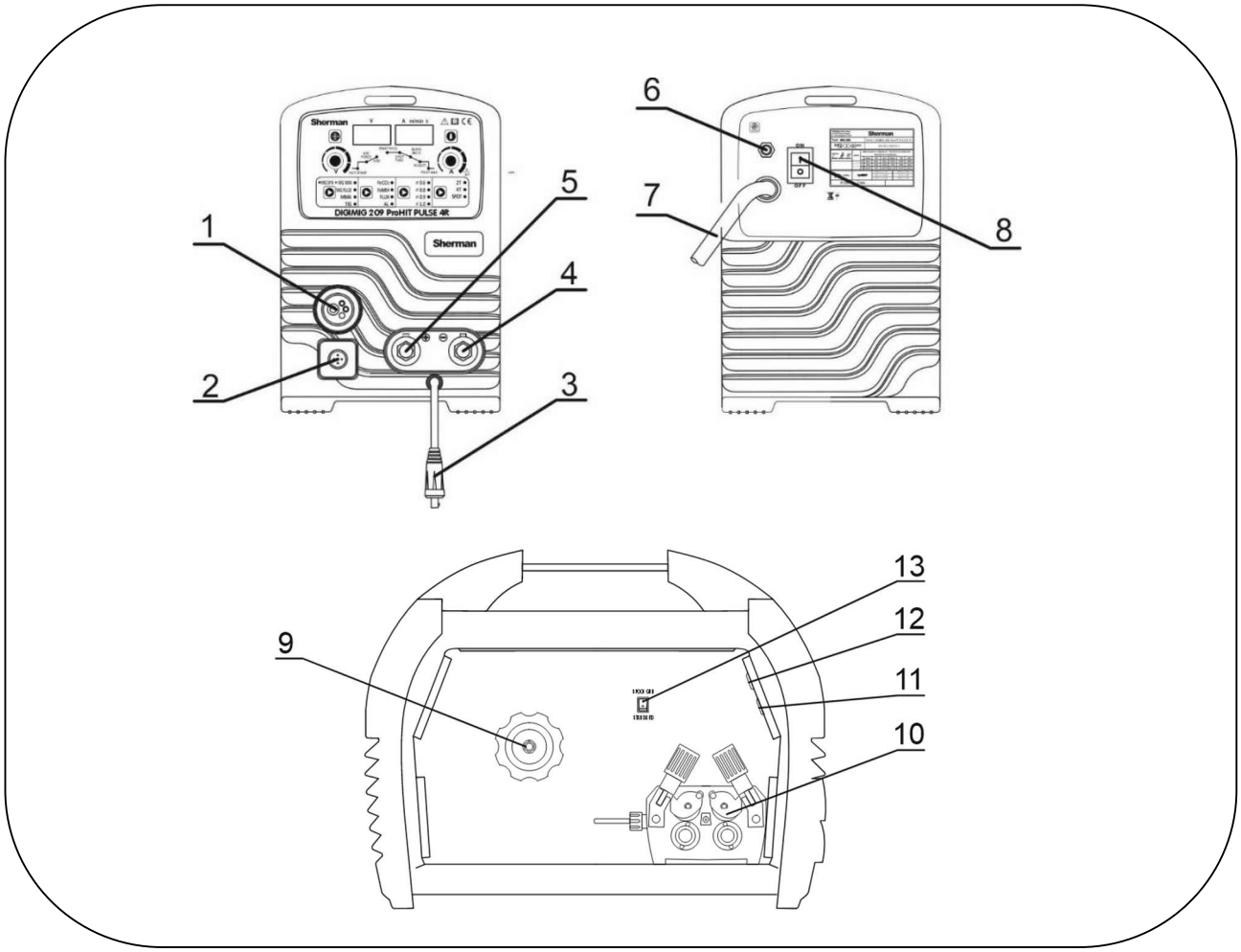
Torch Type:	TW-25
Maximum current carrying capacity:	200 A (CO2)
Cooling Type:	gas
Cooling Gas Flow:	10-18 l/min
Length:	3 m

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 degree to which a device is resistant to solid and water contaminants entering the interior. IP23S means that the device is suitable for indoor use.

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.

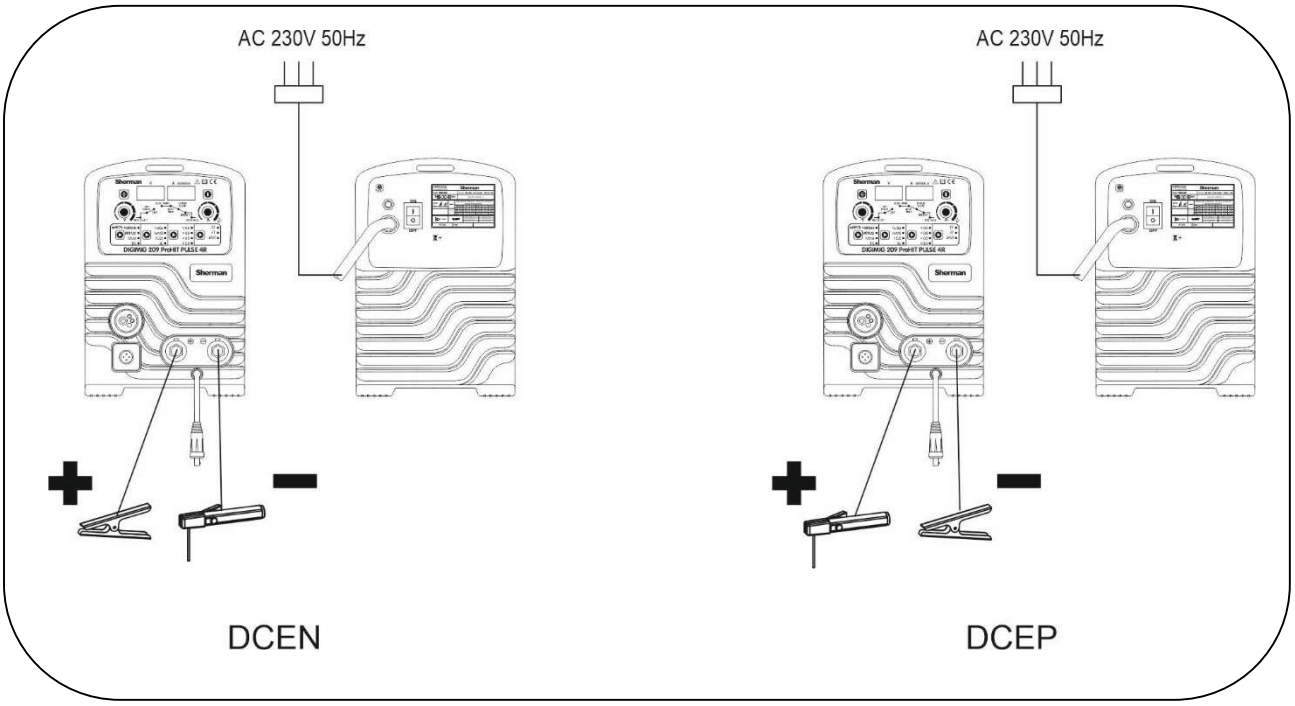
5.1 Connecting the Wires



1. MIG Torch Socket
2. Spool Gun Chuck Control Socket
3. Polarity change plug
4. Socket "-"
5. "+" socket
6. Shielding gas connection connector
7. Power cord
8. Power Switch
9. Wire spool shank
10. Wire feeder
11. Feeder chamber lighting
12. Feeder compartment light switch
13. Spool Gun Torch Switch

5.1.1 MMA process

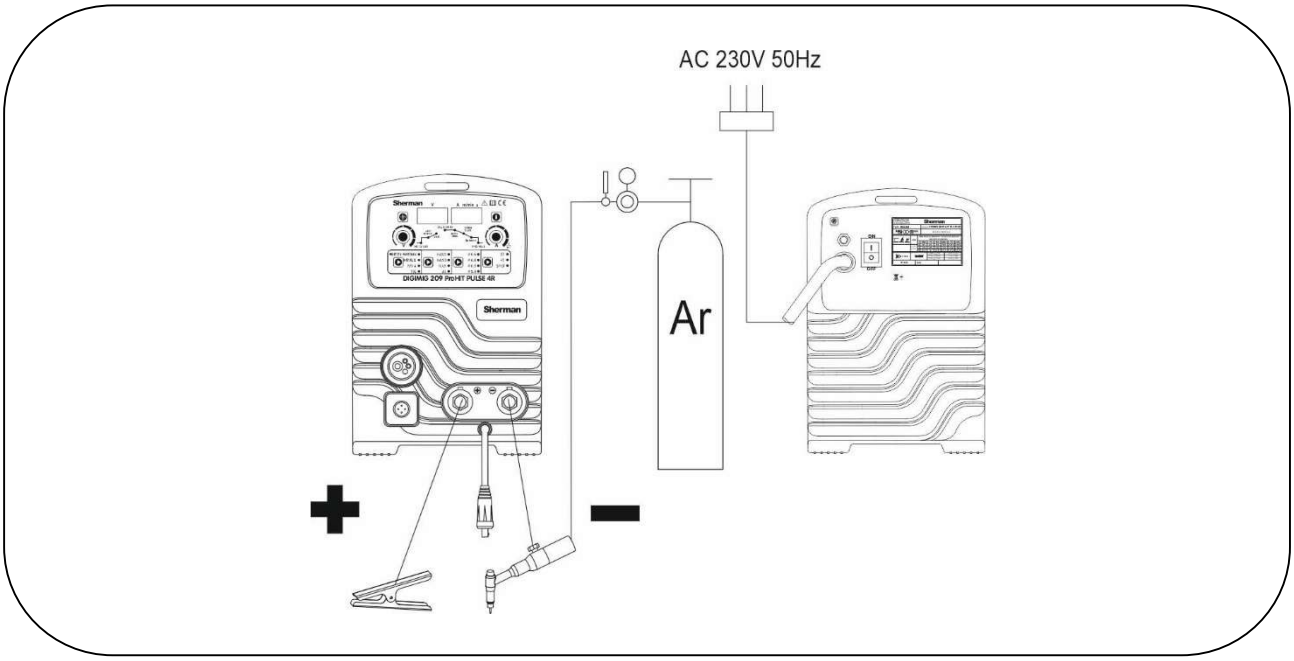
Connect the ends of the welding wires to the sockets (4) and (5) on the faceplate so that the electrode torch has the correct pole for the electrode. The polarity of the connection of the welding wires depends on the type of electrode used and is indicated on the electrode packaging (DCEN negative polarity 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.



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 200A is required, equipped with a shielding gas control valve.

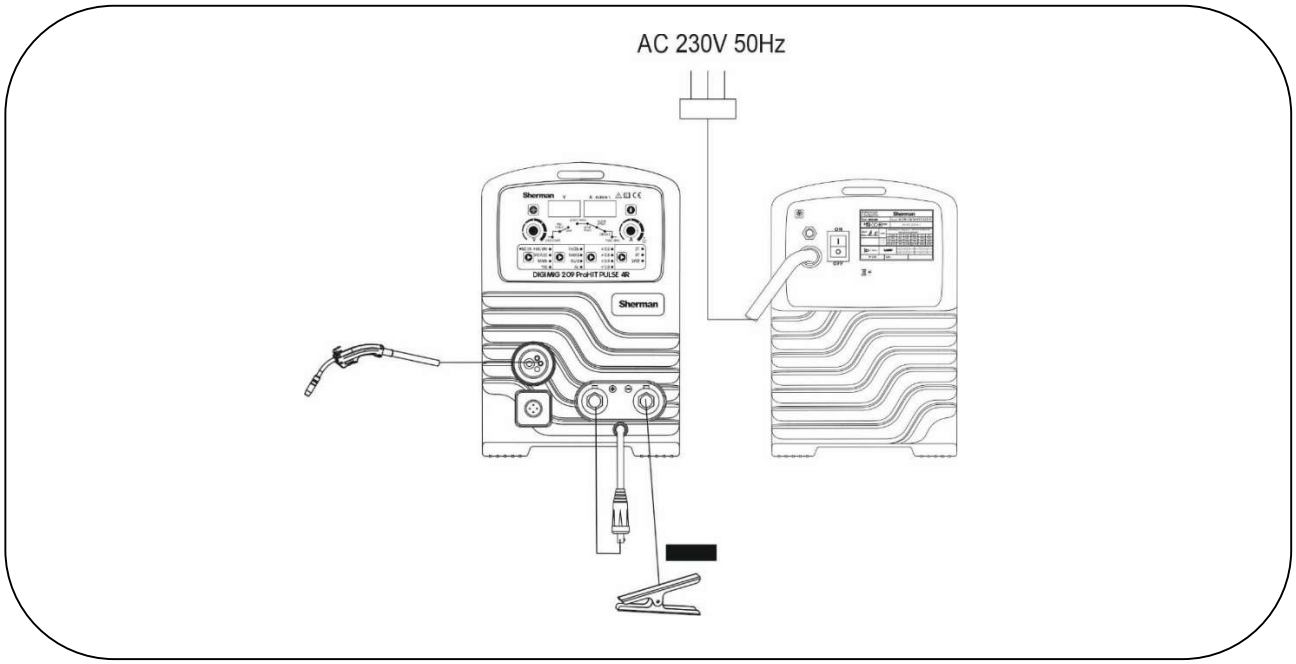
The torch of the torch must be connected to the negative bias socket (4) and the gas line to the reducer on the gas cylinder. Connect the positive pole of the source (5) to the welded material using a clamp cable. Connect the appliance plug to a 230V 50Hz mains socket.



5.1.3 MIG Process and Brazing

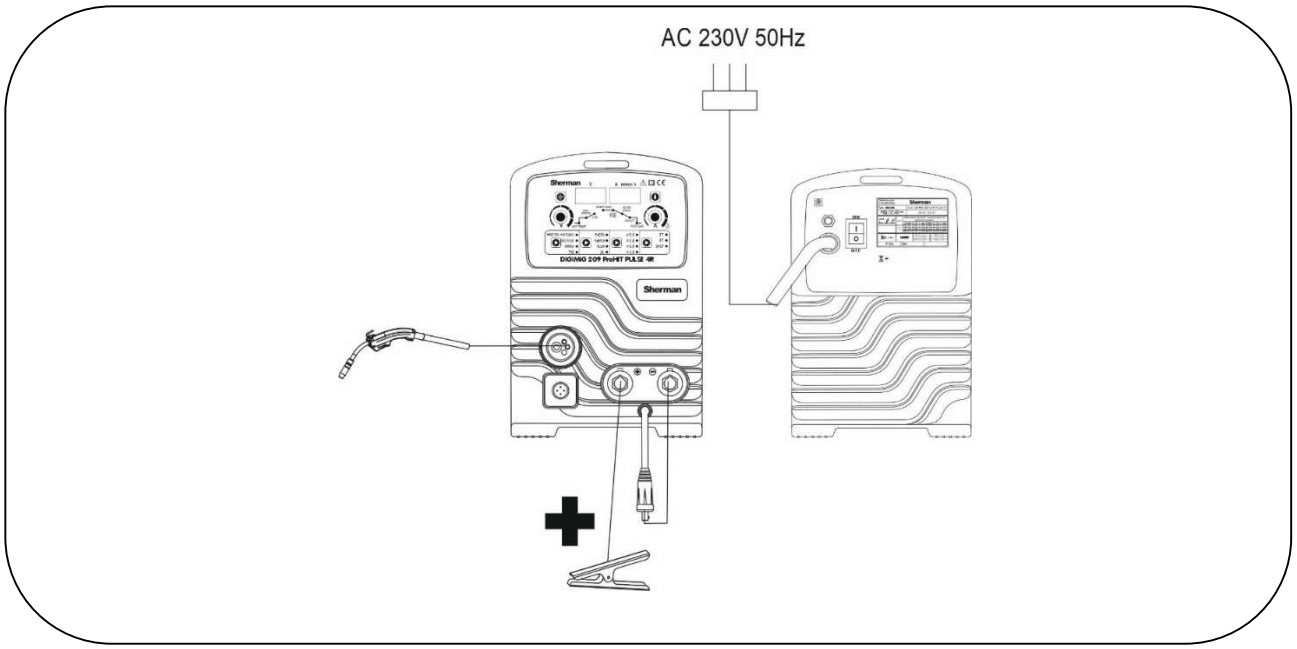
5.1.3.1 Shielded Gas Welding and Brazing

The current clamp of the torch must be connected to the MIG socket (1). The gas hose from the reducer must be routed and secured to the gas connector (6) located on the back of the appliance. Place the polarity change plug (3) in the "+" slot (5). Connect the negative pole of the source (4) to the welded material using a clamp cable. Connect the appliance plug to a 230V 50Hz mains socket.



5.1.3.2 Welding with steel self-shielding wire

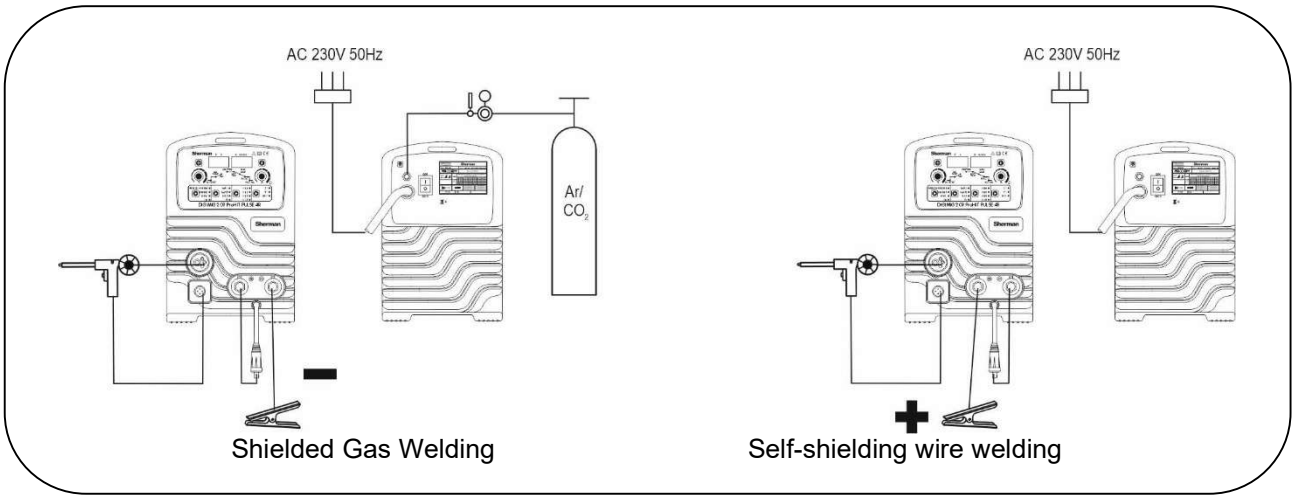
The current clamp of the torch must be connected to the MIG socket (1). Place the polarity change plug (3) in the "-" slot (4). Connect the positive pole of the source (5) to the welded material using a clamp cable. Connect the appliance plug to a 230V 50Hz mains socket.



5.1.3.3 Spool Gun Welding (Optional)

The welder allows you to connect a Spool Gun with a mini wire feeder and a D100 spool of steel or colored wire, so you can weld with two different wires without having to retool. To put the appliance in Spool Gun mode, set the switch (13) inside the feeder compartment to the Spool Gun position.

The cables should be connected in the same way as for a traditional MIG torch, additionally connecting the control plug of the Spool Gun torch to the control socket (2).



Shielded Gas Welding

Self-shielding wire welding

5.2 Shielding Gas Connection

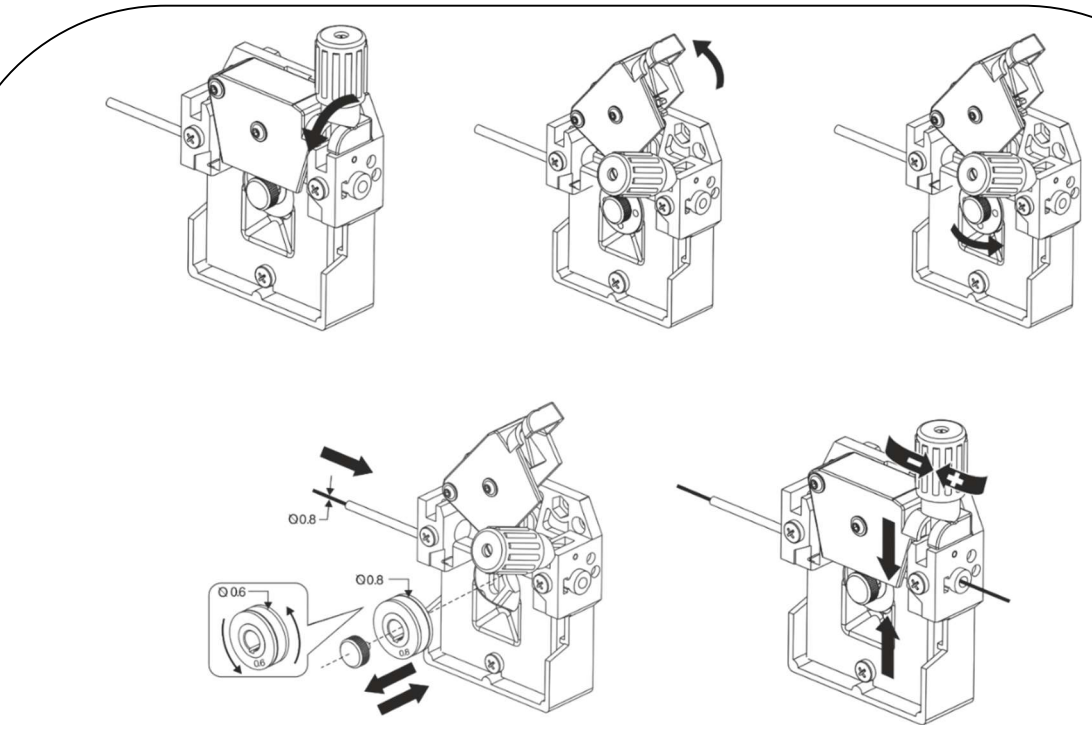
1. Fix the cylinder and secure it from tipping over.
2. Unscrew the cylinder valve for a moment to remove any debris.
3. Install the reducer on the cylinder.
4. Connect the reducer with the gas connector (6) on the back of the welding machine with a hose.
5. Unscrew the cylinder and reducer valve.

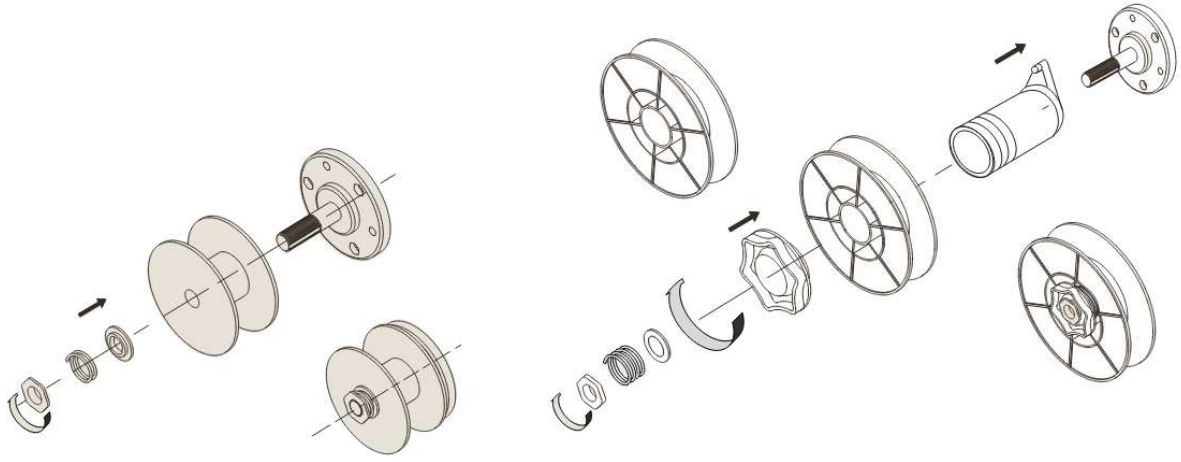
5.3 Connecting to the power supply

1. The appliance should only be used in a single-phase, three-wire, grounded zero point power supply system.
2. The DIGIMIG 209 ProHIT Pulse 4R inverter rectifier is designed to work with a 230V50 Hz network protected by 25 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 (8) is in the OFF position.

5.4 Fitting the Electrode Wire Spool

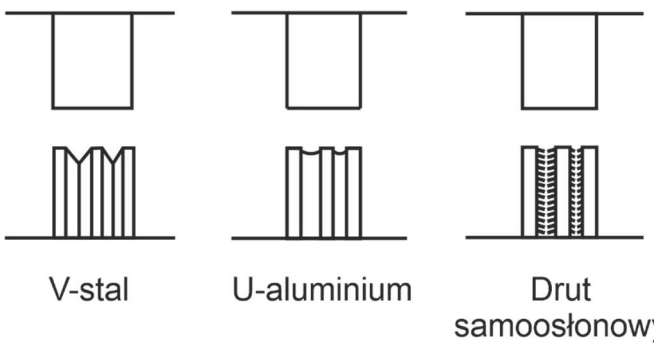
1. Open the side cover of the case.
2. Place the electrode wire spool on the mandrel.
3. Protect the spool from falling.
4. Release the pressure of the feed rollers.
5. Check that the drive rollers are suitable for the type and diameter of the wire. Put on the correct roller if necessary. For steel wires, use rollers with V-grooves, and for aluminum wires with U-grooves.
6. Blunt the end of the electrode wire.
7. Feed the wire through the feeder drive roller into the torch.
8. Press the wire into the grooves of the drive roller.
9. Unscrew the contact tip from the torch, turn on the power to the welding machine and pull the wire into the welding machine torch by pressing the button in the torch of the welding torch or using the wire eject button (H) on the machine panel.
10. When the wire appears in the outlet of the torch, release the button and screw on the contact tip.
11. 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.





D100 spool

D200 spool



5.5 Preparing the MIG Torch for Operation

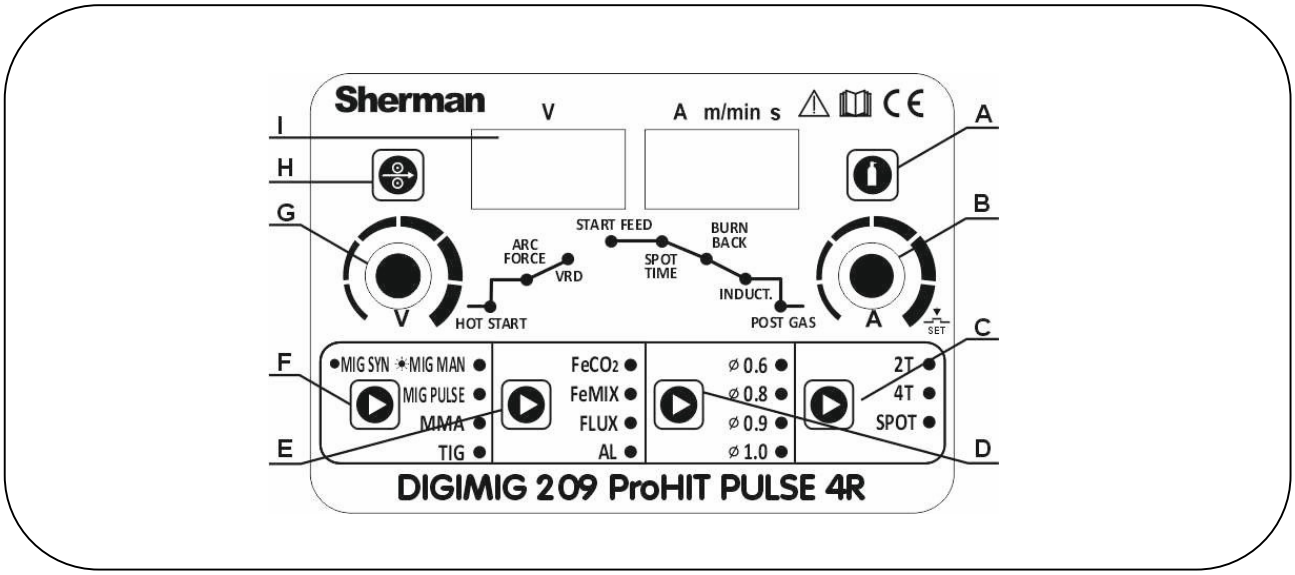
Depending on the type of material to be welded and the diameter of the electrode wire, fit the appropriate contact tip and wire guide insert to the MIG torch.
For steel welding, use steel welding contact tips and a steel cartridge. For aluminum welding, use aluminum welding terminals and a Teflon cartridge.

5.5.1 Quick wire extension

The device has a quick wire extension function. Pressing the button (H) causes the wire to be quickly ejected for easy insertion into the torch.

6. OPERATION

Front panel

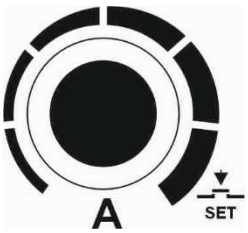


A – Gas Test Button



The button is used to test the flow of shielding gas and to prophylactically blow the MIG torch before welding. Pressing the button will start the gas flow, releasing the pressure on the button will stop it.

B – Control Knob



The knob is used to adjust the welding parameters.
In **MIG** mode, pressing the knob illuminates one of five parameters: **Start Feed, Spot Time, Burn Back, Induct., Post Gas**. Each subsequent press selects the next parameter, and the rotation of the knob changes its value. In addition to the parameter selection mode, the rotation of the knob regulates the welding current.
In **MMA** mode, pressing the knob highlights one of three parameters: **Hot Start, Arc Force, VRD**. Each subsequent press selects the next parameter, and the rotation of the knob changes its value or activates the selected function. In addition to the parameter selection mode, the rotation of the knob regulates the welding current.

In **TIG mode,** the rotation of the knob regulates the welding current.

Start Feed (wire feeder approach speed) - a function of adjusting the wire feed speed during ignition of the arc. Allows you to set the initial speed of the wire to facilitate the start of welding and improve ignition stability

Spot Time – Spot welding time adjustment.

Burn Back - the time for which the wire feed continues after the arc is extinguished

Induct. (inductance) - control of welding inductance. The function affects the arc dynamics. A higher inductance value provides a softer and more stable arc and reduces spatter, while a lower value increases arc dynamics and heat concentration.

Post Gas - the time from arc extinguishing to closing the gas valve to shield the solidifying weld pool from air and to cool the wire. Too short a time after the outflow may result in oxidation of the weld.

Hot Start - 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 facilitator of the arc jammer. In the case of welding small components, it is recommended to disable this function, as it may cause the weld material to burn out.

Arc Force - The Arc Force function allows you to adjust the dynamics of the arc. 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, you can weld while maintaining a minimum arc length and a high electrode melting speed

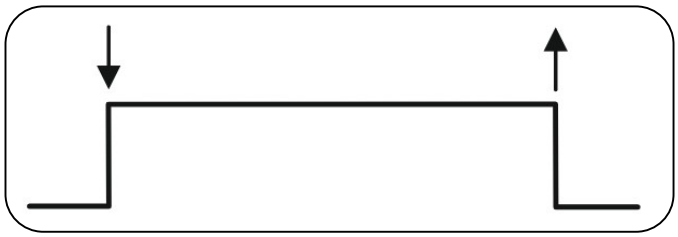
VRD - This function lowers the voltage in the no-load state. The correct voltage value is only restored just before the arc is ignited. This minimizes the risk of electric shock, but in some cases it can make it difficult to ignite the arc.

C – Source Control Button

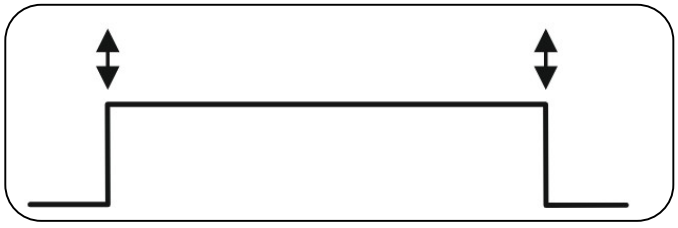


The button allows you to change the welding function, the selection is illuminated by a red indicator LED.

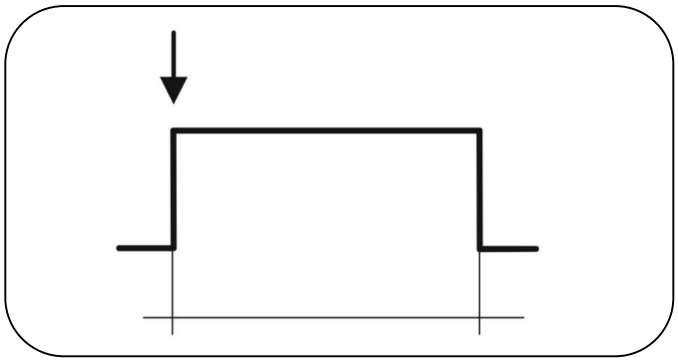
2T – Press and hold the torch trigger to start welding. Releasing the trigger stops the welding process.



4T – Press and release the torch trigger to start welding. Press and release the trigger again to stop welding.



SPOT – Spot welding. Pressing the torch button will ignite the arc. After the set time has elapsed, the arc will be extinguished. Releasing the torch button earlier will immediately extinguish the arc.



D – Welding wire thickness selection button



Button active only during MIG/MAG welding in synergic mode. It is used to select the diameter of the electrode wire. The selection is illuminated by a red indicator LED.

There are four options to choose from Welding wire thickness



E – Material selection button



Button active only during MIG/MAG welding in synergic mode Used to select the weld material. The selection of the appropriate mode is confirmed by the illumination of the control diode.

FeCO2	welding of carbon steels in CO2 shielding.
FeMIX	welding of carbon steels in the Ar / CO2 mixture casing. The recommended mixture ratio is 82% Ar 18% CO2.
FLUX	Powder wire welding (without shielding gas)
Al	welding of aluminum alloys with AlSi5 ER 4043 and Al-Mg5 ER 5356 wire

F – Welding mode change button



The button allows you to change the welding mode.

MIG SYN - welding in MIG/MAG mode with automatic parameter selection. Welding voltage correction is possible. The selection is indicated by a red LED with a continuous light.

MIG MAN - welding in MIG/MAG mode with manual setting of welding current and wire feed speed. The selection is indicated by a red indicator LED with a flashing light.

MIG Pulse – welding in MIG/MAG mode with Pulse and automatic parameter selection. Welding voltage correction is possible. The selection is indicated by a red LED with a continuous light.

MMA - arc welding with the use of a coated hot melt electrode. The selection is indicated by a red LED with a continuous light.

TIG – welding in TIG mode (with tungsten electrode) with arc ignition by rubbing (Lift). The selection is indicated by a red LED with a continuous light.

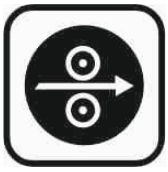
G – Voltage Control Knob



The knob is used to adjust the welding voltage. The rotation of the knob allows precise setting and editing of the arc voltage.

.

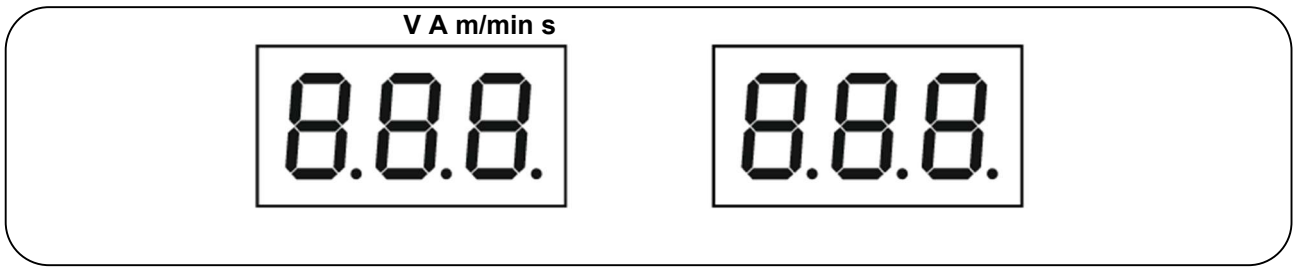
H – Wire feeding



button allows the electrode wire to be ejected quickly. It can be used to set up a wire spool to quickly feed it into the welding torch.

I – Displays

The device has two displays indicating the values of welding parameters.
The left display indicates the value of the welding voltage in volts (V)
The right display shows, depending on the selected mode, the welding current in amperes (A), wire feed speed, or function time in seconds



7. PARAMETER SETTINGS

7.1 MMA process

After choosing the MMA process, it is possible to adjust the parameters according to the table below.

Parameter/Function	Adjustment Range
Welding Current	25 – 170 A
Hot Start	0-10
Arc Force	0-10
VRD	On/Off

7.2 TIG process

If the TIG process is selected, only the welding current can be adjusted.

Parameter/Function	Adjustment Range
Welding Current	15 – 200 A

7.3 MIG MAN AND SYN MIG and MIG PULSE process

During MIG welding, the device can operate in synergic (SYN MIG) and manual (MIG) modes. The synergic mode allows less experienced users to select welding parameters. In this mode, the device automatically selects the welding current and wire feed speed depending on the type of material to be welded and the diameter of the electrode wire. It is possible to correct the welding tension.
The manual mode allows the user to select the welding voltage and wire feed speed according to their needs. MIG PULSE mode operates exclusively with synergic parameter selection.

In both modes, it is also possible to adjust the following parameters:

Parameter	Adjustment Range
Welding Current	30-200 A
Start feed	0 - 10
Spot time	0 - 1s
Burn back	0 - 10
Induct.	-10 to 10
Post gas	0-1

Welding voltage correction in synergic modes
When the welding current is set in synergic modes, the welding voltage can be corrected by pressing the knob (A).

Inductance control
The inductance control allows the arc characteristics to be optimized depending on the thickness of the component to be welded and the welding process and conditions. This function is useful when welding thin components with the MIG/MAG process, preventing them from burning through, and when brazing galvanized components.
A change in the inductance value also reduces the amount of welding spatter during welding in a CO2 shield. The higher the inductance value (+), the number of spatters decreases, when the value is negative (-), the number of spatters increases. The optimal setting of the inductance value depends on several factors and may differ from standard recommendations, so it should be selected experimentally during welding tests.
Adjusting this parameter also makes it possible to solder thin (up to 3 mm) elements galvanized with wires made of copper alloy CuSi3 in a sheath of pure argon or, in some cases, an Ar/CO2 mixture in a ratio of (82/18).

The welding machine has built-in synergic programs for selected materials, wire diameters and shielding gases.

- Argon of high quality class should be used: recommended 4.8 and higher

In addition, depending on the operating conditions, the inductance value can be set, which affects the shape of the weld, the depth of penetration and the amount of spatter during welding. **It should be taken into account that the recommended parameters of welding in the synergic mode apply to typical welding materials from the selected group and the recommended shielding gases. When welding different alloy materials, the operating parameters may not be optimal and may require adjustment of the settings. For this reason, the synergic mode should not be treated as a universal parameterization proposal, but as a starting point for precise adjustment of settings**.

The manual MIG mode, i.e. manual parameter selection, is particularly useful for brazing. Using the three welding parameters, you need to set the optimal set to obtain the right weld. When selecting parameters, low voltage values and high wire feed speeds should be selected. It is recommended to use argon as a shielding gas, but the use of a mixture of argon and CO2 (82/18) also gives good results. Due to the required shape of the weld, the inductance should be selected experimentally depending on the thickness and type of material to be welded.
Copper-based binders are most often used as an additional material. These are wires marked as CuSi3 or SG –CuAl.
It is recommended to use a torch with a length of no more than 3 m equipped with a Teflon insert.

8. WELDING OF ALUMINUM ALLOYS

In synergy mode, you can select the program for aluminum welding. The program has been selected for welding with AlMg5 wire type ER 5356 and AlSi5 type ER 4043, which are suitable for welding all types of structures and sections.
Welding aluminum is not a simple activity, it requires experience, knowledge and certain practices from the welder that will facilitate the execution of welds on aluminum elements.
In the synergy program, the device selects the output parameters for the appropriate type of materials and types of wires. Depending on the needs, appropriate voltage and inductance adjustments should be made to achieve the desired effect.
First of all, it is important to remember about a few important things that significantly affect the appearance of the weld and affect the correct course of the welding process.
Before starting welding work on aluminum components, the following steps should be performed:

Device:

- Make sure that the feed rollers are designed to work with aluminium: the groove is U-shaped and is dedicated to the correct diameter of the welding wire. Using the wrong rollers will cause wire deformation and problems in the welding process.
- Make sure that the feed rollers are not positioned too tightly. Excessive wire tension can cause a feeding problem.
- Make sure the torch is equipped with a Teflon guide cartridge designed for aluminium. Using steel components used to feed steel wire will cause feeding problems.
- Make sure the contact tip is the correct size and is designed for aluminum wire
- It is worth replacing the wire guide insert in the feeder with a Teflon version, which improves wire feeding as it does in the welding torch.

Job position:

- Attention should be paid to the proper preparation of the welding site: the hall should be clean, have good ventilation and low air humidity should be maintained. The presence of iron oxide dusts or dust after electro-air gouging of steel is unacceptable.
- Aluminum welding stations should be vacuumed with industrial vacuum cleaners once a day, after work.
- Welders' clothes should be clean, gloves must not be greasy.

Material preparation:

- The welding site should be cleaned and degreased just before welding,
- Degrease the aluminium elements by wiping them with a clean cloth soaked in a degreasing agent, e.g. acetone (Alcohol is not a good degreasing agent, we advise against using it when cleaning aluminium).
- Remove heavy oxide residues before welding. As a standard, this is done manually or mechanically with a steel wire brush. If the material has been heavily contaminated, it may be necessary to use a grinder.
- Once the surface has been properly prepared, the welding process should be carried out as quickly as possible.
- If the part has to remain unwelded for a long period of time, it must be protected with brown kraft paper and covered with adhesive tape.

Proper storage of welding wire

- Aluminum welding wire should be stored in a clean, dry environment, preferably in its original packaging.
- The wire does not need to be stored in air-conditioned rooms, it works best to store it in conditions with low humidity. Do not soak the wire in water.
- If a wire that is relatively cold is brought into the room on a hot, humid day and opened immediately, it is possible that the humid air will pollute the wire. Therefore, when storing the wire in an air-conditioned room, remember not to unpack the wire until it is heated and adapted to the ambient temperature.
- When the work is complete, the wire should be removed from the feeder and secured in a plastic bag for the next use.

Pure argon with a high quality class, recommended not less than 4.8 should be used for welding aluminum alloys as shielding gas. The gas flow should be selected according to the thickness and speed of the welding. Good welding results are achieved when the direction of the process overlaps to the left.

9. ARC INITIATION

9.1 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.

9.2 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.
4.

9.3 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.

10. BEFORE

CALLING FOR SERVICE If the appliance malfunctions, 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.

ATTENTION! The welding machine is equipped with a Fan Stop function that turns off the fan a few minutes after welding is finished and the device has cooled down. The fan restarts under load.

List of basic 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
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 contact tip	Replace the contact tip
No electrode wire feeding (feeder motor not running)	Device switched to Spool Gun mode	Switch the machine to standard MIG torch mode (switch (13) in the feeder compartment)
Irregular electrode wire feed	Damaged contact tip	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 arc 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 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
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
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 does not work under load	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
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
E01	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.
E02	Activated overload protection. Make sure that the welding current and/or wire feed speed are not too high.
E03	Overload protection and thermal protection activated at the same time. Stop welding and wait a few minutes until the machine has cooled down. After restarting, the welding parameters, in particular the welding current and/or wire feed speed, must be reduced to prevent the error from occurring again.
E4	Undervoltage protection activated. Check that the device is connected to the mains and that the supply voltage is within the permissible operating range of the device.
E5	Thermal protection and undervoltage protection activated at the same time. Wait for the device to cool down and then check the power supply for regularity and parameters. Once the cause is removed, the device will restart and be ready to go.

Overheating protection

The IGBT module is protected from overheating by a protective installation that shuts off the power supply to the welder. The message E01 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.

11. OPERATING INSTRUCTIONS

The DIGIMIG 209 ProHIT Pulse 4R 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 209 ProHIT Pulse 4R 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.	For steel wires	For aluminum wires
1	Feeder roller 30x22x10mm	Feeder roller Al 30x22x10mm
2	TW-25 M6x28 Current Connector	Al TW-25 M6x28 Current Connector
3	TW-25 current connector	
4	Gas nozzle TW-25	
5	3m steel insert	3m Teflon Cartridge

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.

12. MAINTENANCE INSTRUCTIONS

Daily maintenance

1. Visual Inspection:
   - Inspect the condition of the MIG torch, power cord, gas line and connector for damage and abrasion.
   - Check the condition of the contact tip and gas nozzle – whether they are excessively worn or dirty.

2. Cleaning:
   - Remove dust and swarf from the housing and air vents with compressed air (low force so as not to damage the electronics).
   - Clean the MIG torch of welding spatter, especially the gas nozzle and the contact tip.

Weekly maintenance

1. Checking the electrical connections:
   - Check that all connectors are securely tightened and there are no signs of overheating.
2. Checking the feeder and MIG torch:
   - Check the condition of the wire feeder rollers and their pressure.
   - Inspect the liner to make sure it is not contaminated or worn.
   - Check the tightness of the gas line and the correct gas flow.

Monthly maintenance

1. MIG Torch Control:
    - Check the hoses and quick couplings for leaks.
    - Inspect the condition of the MIG torch, power cord, gas line and connector for damage and abrasion.
    - Check the condition of the contact tip and gas nozzle – whether they are excessively worn or dirty.
2. Welding Machine Parameter Test:
    - MIG: Check the wire feeding stability and weld quality.
3. Cleaning:
    - Remove the housing, remove dust and swarf from the control boards and wiring and electrical connections from inside the device with compressed air. (low force so as not to damage the electronics).
    - Clean the wire feeder mechanism and check the condition of the liner.

Six-month maintenance

1. Checking the condition of electrical connections:
    - Check the condition of the electric shock protection, insulation, protection system, tightness of hoses and quick couplings.
2. MIG Torch Control:
    - Replace the wire guide if it shows signs of wear.
    - Check the condition of the MIG torch and replace worn components (contact tips, gas nozzles).

Annual maintenance (or every 1000 hours of operation)

1. Electronics Overview:
    - Inspect power blocks, capacitors, and control boards for dirt and corrosion.
2. Wire Feeder Overview:
    - Perform a full inspection of the wire feeder, replace worn rollers.
    - Check the tightness of the gas system and the condition of the pipes.

Additional recommendations

- Never use water instead of coolant – there is a risk of corrosion and damage to the pump.
- Store the welding machine in a dry, ventilated place, away from dust and moisture.
- Regularly apply SPAWMIX anti-splinter formulations to the gas nozzle and contact tip to prevent spatter from sticking.

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

13. 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.

14. SET SPECIFICATION

1. Source	1 pc.
2. TW-25 welding torch	1 pc.
3. Clamp Clamp Ground Cable	1 pc.
4. Electrode wire	1 pc.
5. Gas hose	2 m
6. User Manual	1 pc.
7. Packaging	1 pc.

15. 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 processs 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

16. ELECTRICAL DIAGRAM

