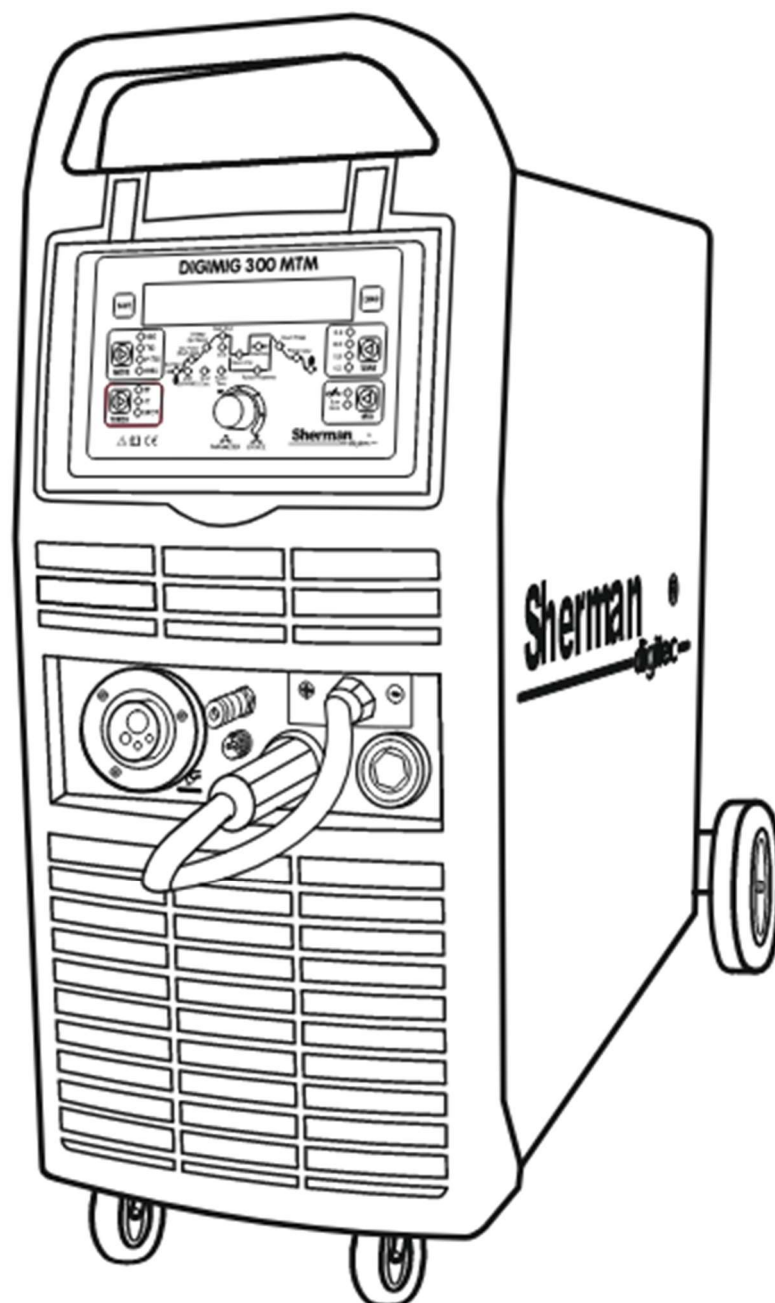


USER MANUAL

SYNERGIC INVERTER WELDER DIGIMIG 300 MTM





ATTENTION!

Before installing and starting the welder, 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, the external appearance and some of its functions may be modified and their operation may differ in detail from the descriptions in the manual and on the cardboard. This is not a fault of the device, but the result of progress and continuous modification work of the device. The standard equipment of the device may also change.

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 welder for its intended purpose.



WARNING



Welding can endanger the safety of the operator and other people in the vicinity. Therefore, special precautions should be taken when welding. Before welding, you should familiarize yourself with the health and safety regulations of 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); check and correctly connect other devices at the welder's workplace 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 the electrical and mechanical connections. It is forbidden to use torch and power cables with damaged insulation. Improper insulation of torch and power cables may result in electric shock,
- Take care of proper working conditions, i.e. ensure proper temperature, humidity and ventilation in the workplace. Protect against precipitation outside closed spaces,
- 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 welder may only be carried out by unplugging the plug from the power socket.

When the welder 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 welder must be unplugged.

The hazards and general OHS 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. They are an important complement to on-the-job OHS instructions and training and instruction provided by supervision employees.

3. GENERAL DESCRIPTION

The synergic DIGIMIG 300 MTM welding machine is used for manual welding of steel and non-ferrous metals. It allows welding using MMA (coated electrode), TIG, TIG with pulse, and MIG/MAG processes. The inductance control also allows for brazing thin sheets. In TIG and MIG processes, spot welding is possible. During MIG/MAG welding, synergic settings are used, which simplify operation and allow the welding machine to be used by people with less experience and hobbyists. A wide range of welding voltage correction allows you to use your own settings.

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 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.

4. TECHNICAL PARAMETERS

4.1 Welding Machine

Supply Voltage:	AC 3x400V 50Hz
Maximum power consumption:	MIG: 11.3 kVA / TIG: 8.3 kVA / MMA: 10.5 kVA
Rated welding current / duty cycle	MIG: 300 A / 60%; MMA: 280 A / 60%; TIG: 300 A / 60%
Rated no-load voltage	65 V
Wire spool diameters:	200mm, 300mm
Maximum power consumption:	16 A
Fuse protection	16 A
Weight:	34 kg
Dimensions:	935 x 402 x 775
Degree of protection:	IP23S

4.1.1 Parameter control ranges

Welding Current	MIG: 30 – 300 A; MMA: 20 – 280 A; TIG: 10 – 300 A
Welding Voltage	MIG: 15.5 – 29.0 V
Inductance	0 – 10
Welding Voltage Correction	-20 – +20 %
Burn back time	0 – 1 s
Gas pre-outflow (TIG)	0 – 3 s
Gas outflow	0 - 9.9 s
Upslope time	0 - 9.9 s
Downslope time	0 - 9.9 s
Crater fill current	10 – 300 A
Pulse width	10 – 90 %
Pulse frequency	0.2 – 99 Hz
Spot welding time	TIG: 0.01 – 5 s; MIG 0.5 – 5 s
Break time during spot welding	TIG: 0.1 - 5 s; MIG 0.5 - 5 s
ARC FORCE	0 – 100 A
HOT START (MMA)	0 – 100 A

4.2 MIG Torch

Torch Type:	TW-25
Maximum current carrying capacity:	300 A (CO ₂)
Cooling Type:	gas
Cooling Gas Flow:	10-18 l/min
Length:	4 m

4.3 TIG Torch

Torch Type:	T-26
Maximum current carrying capacity	200 A
Gas Flow	10-20 l/min
Ignition of the arc	Non-contact (HF)
Length	4 m

Attention! The welding machine is equipped with a gas-cooled TIG torch with a maximum current capacity of 200 A. In the case of welding with higher currents, a liquid-cooled TIG torch and a cooler should be used.

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 machine. A 100% duty cycle means that the unit can operate continuously, without interruptions.

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

Degree of protection

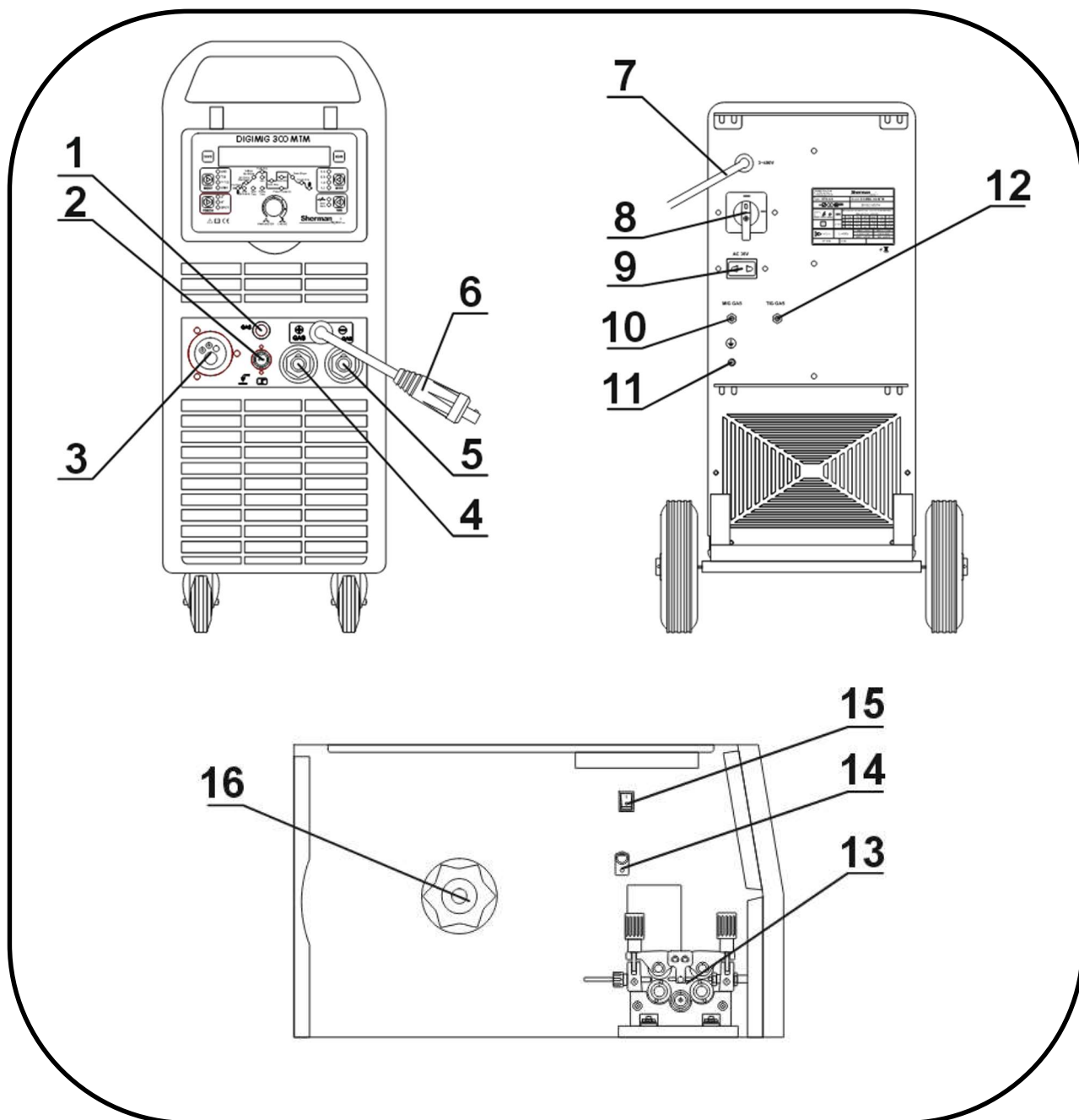
IP determines the degree to which the device is resistant to the ingress of solid and water contaminants. IP23S means that the device is suitable for indoor use.

Overheating protection

The IGBT module is protected against overheating by a protective system that switches off the welding circuit of the device. The activation of the protection is signaled by the appearance of the Err inscription on the display. After a few minutes, the welding machine is cooled down to a temperature that allows it to be switched on again. Do not disconnect the power supply during this time, as the continuously operating fan cools the internal heat sinks of the device in order to reduce the temperature faster. After restarting, remember to limit the welding parameters in order to continue the continuous operation of the device.

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.



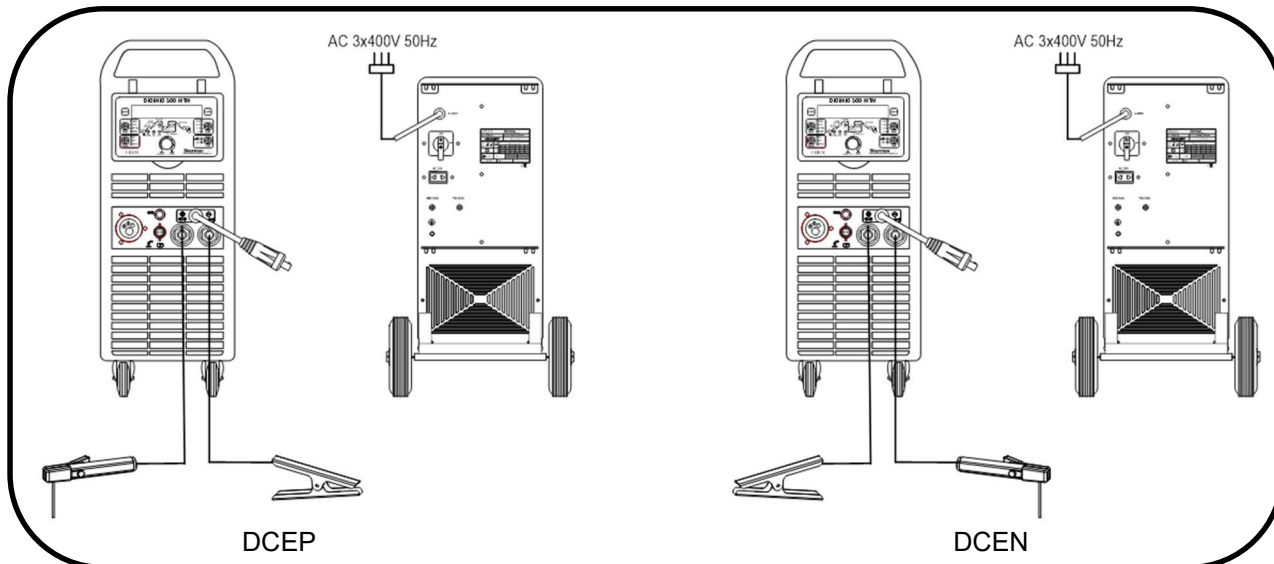
1. Shielding Gas Socket (TIG)
2. TIG Torch Control Socket
3. MIG Holder Socket
4. "+" socket
5. Socket "-"
6. Polarity change plug
7. Power cord
8. Power Switch
9. AC 36V Gas Heater Socket
10. MIG shielding gas connector connector
11. Work clamp

12. TIG shielding gas connector connector
13. Wire feeder
14. Roller hanger
15. Lighting switch
16. Wire spool shan

5.1 Connecting the Wires

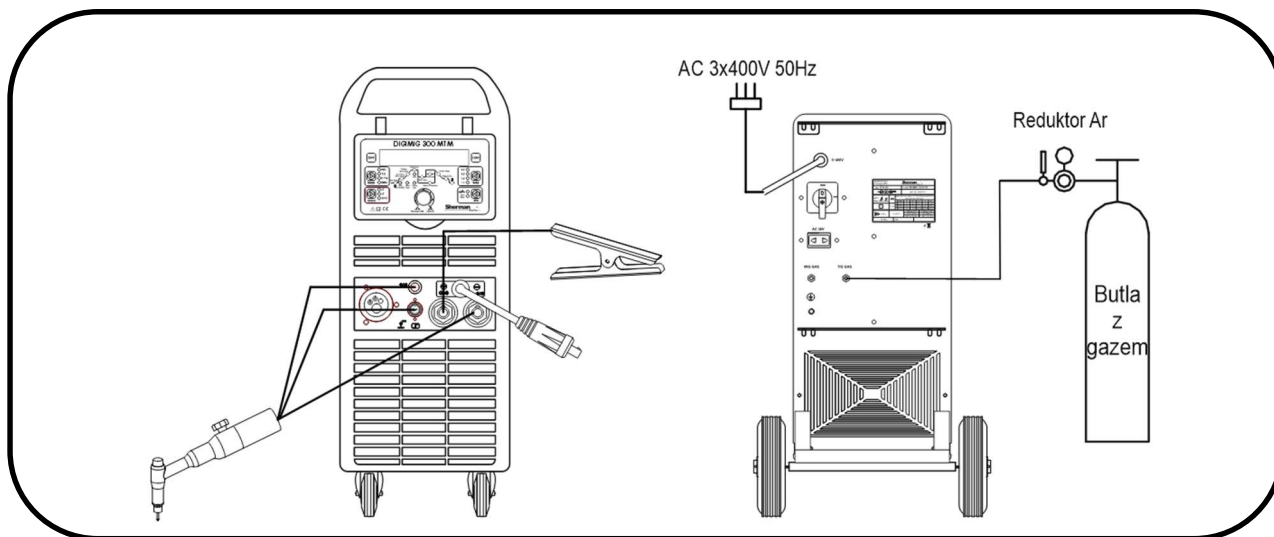
5.1.1 MMA process

Connect the ends of the welding wires to sockets (4) and (5) on the faceplate so that the electrode holder has the correct pole. The polarity of the connection of the welding wires depends on the type of electrode used and is indicated on the electrode packaging (DCEN negative polarity or DCEP positive polarity). The ground cable terminal must be carefully fixed to the welded material. Connect the welder plug to a 230V 50Hz mains socket.



5.1.2. TIG process

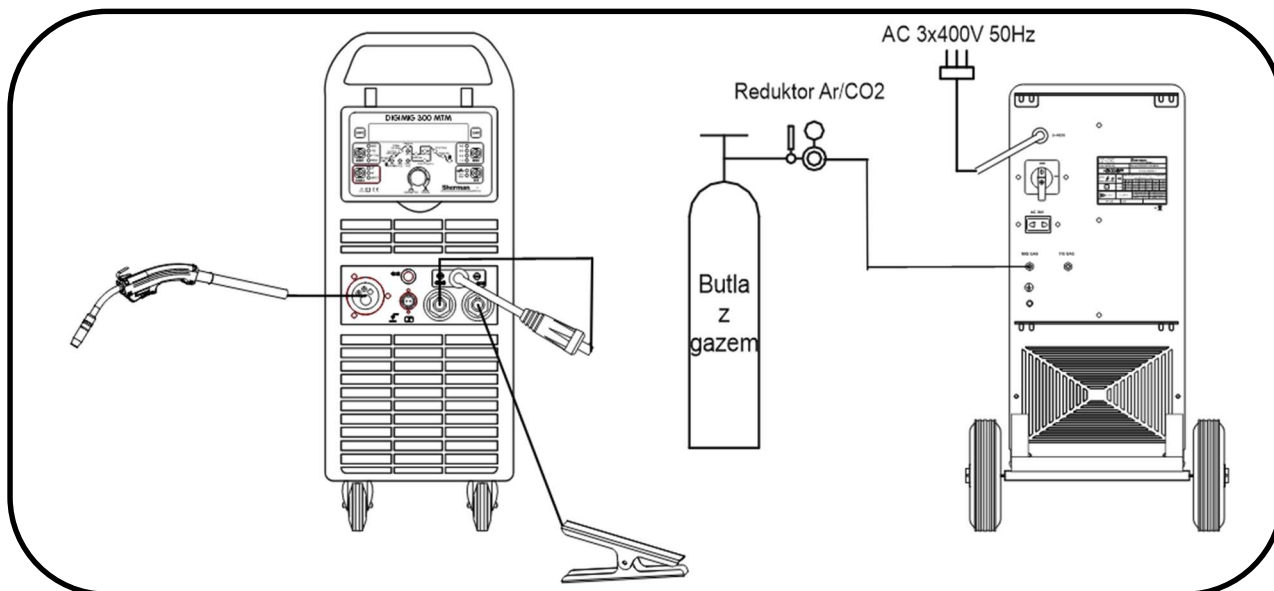
Connect the gas hose from the reducer to the connector (12) on the rear wall of the welding machine. Connect the contact tip of the torch to the negative bias socket (5), the gas hose to the socket (1) and the control cable to the socket (2). Connect the positive pole of the source (4) to the welded material using a clamp cable. Connect the welder plug to a 230V 50Hz mains socket.



5.1.3 MIG Process and Brazing

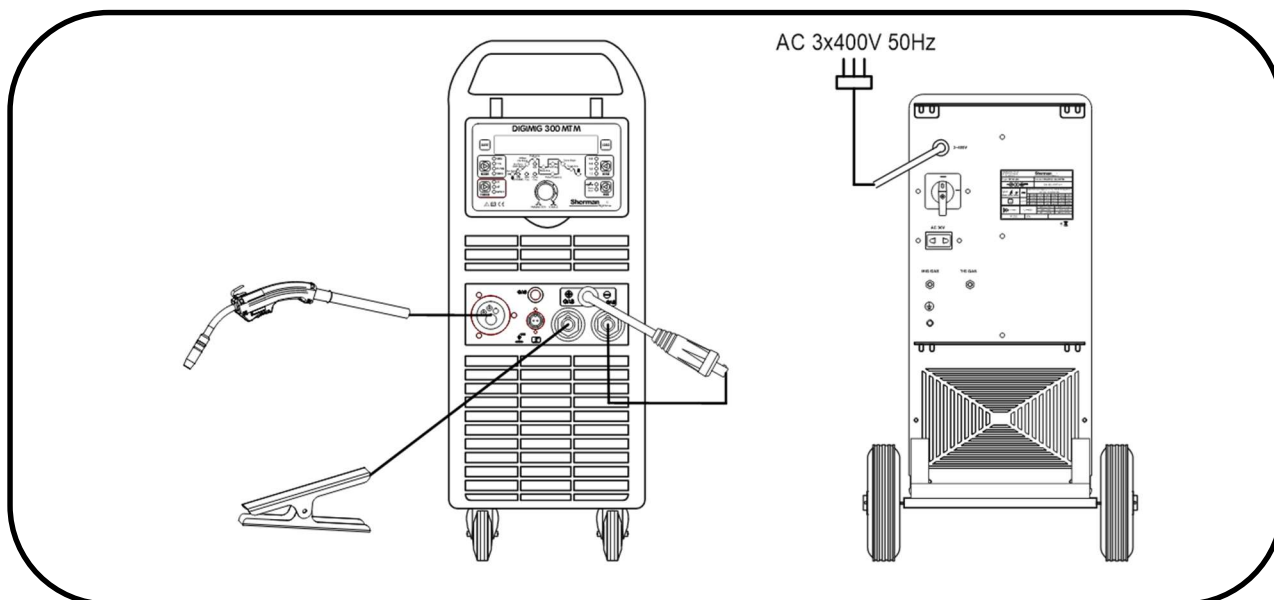
5.1.3.1 Shielded Gas Welding and Brazing

The gas hose from the reducer must be attached to the gas connector (10) located on the rear wall of the device. Connect the contact tip of the holder to the MIG socket (3). Place the polarity change plug (6) in the + socket (4). Connect the negative pole of the source (5) to the welded material using a clamp cable. Connect the welder plug to a 230V 50Hz mains socket.



5.1.3.2 Welding with steel self-shielding wire

Connect the contact tip of the torch to the MIG socket (3). Place the polarity change plug (6) in the socket - (5). Connect the positive pole of the source (4) to the welded material using a clamp cable. Connect the welder plug to a 230V 50Hz mains socket.



5.2 Shielding Gas Connection

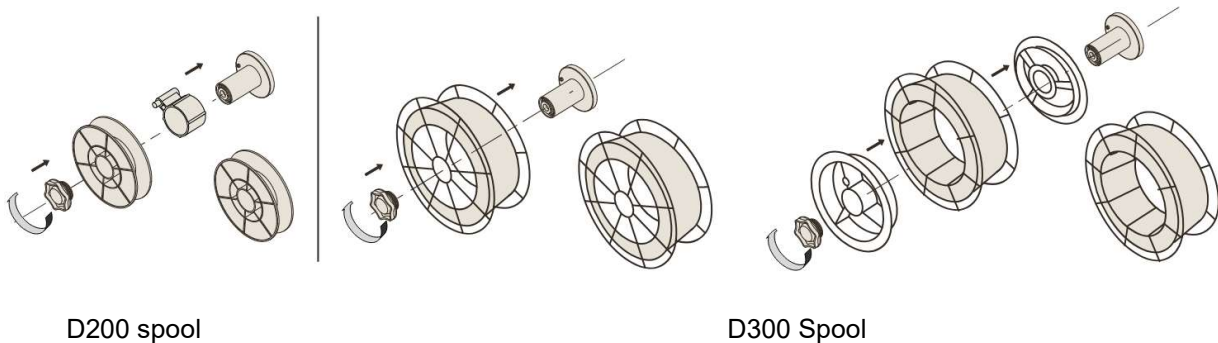
1. Secure the gas cylinder from tipping over.
2. Unscrew the cylinder valve for a moment to remove any debris.
3. Install the reducer on the cylinder.
4. Connect the reducer with the gas connector (10) for the MIG process or with the connector (12) for the TIG process with a hose.
5. Unscrew the cylinder and reducer valve.

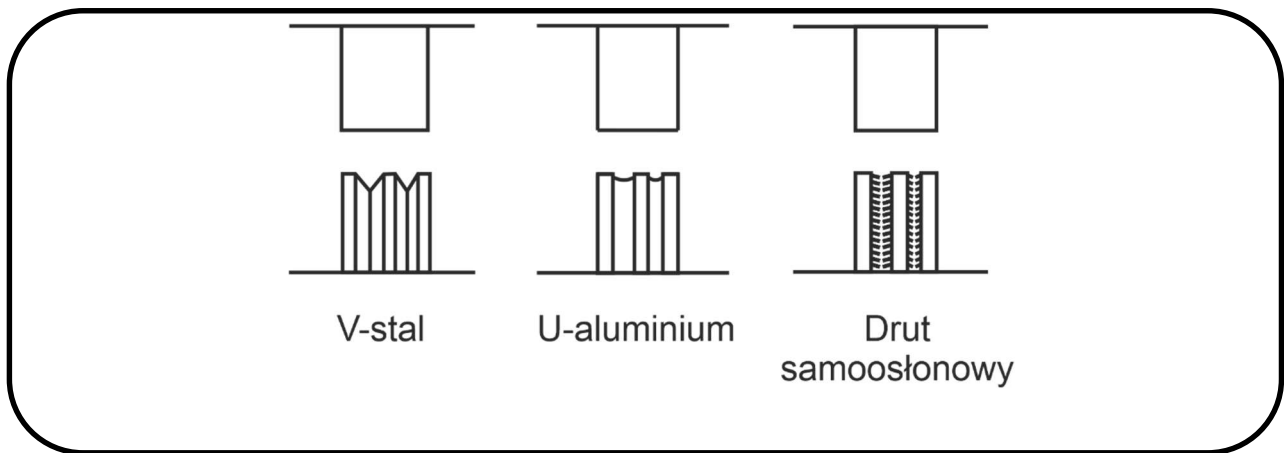
5.3 Connecting to the power supply

1. The welder should only be used in a three-phase, four-wire, grounded zero point power supply system.
2. The DIGIMIG 300 MTM inverter rectifier is designed to work with a 3x400 V 50 Hz network protected by 16 A delay-acting fuses. The power supply should be stable, without voltage drops.
3. The welder is equipped with a cord and a power plug. 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. If necessary, fit the correct roller. 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 holder.
8. Press the wire into the grooves of the drive roller.
9. Remove the contact tip from the holder, turn on the power to the welding machine and pull the wire into the welding machine holder using the quick wire extension function by pressing the button on the holder.
10. When the wire appears in the outlet of the torch, release the button and screw on the power tip.
11. Adjust the pressing force of the feeder roller by turning the pressure knob. Too little pressure will result in the drive roller slipping, too much pressure force will increase the feeding resistance, which may lead to wire deformation and damage to the feeder.





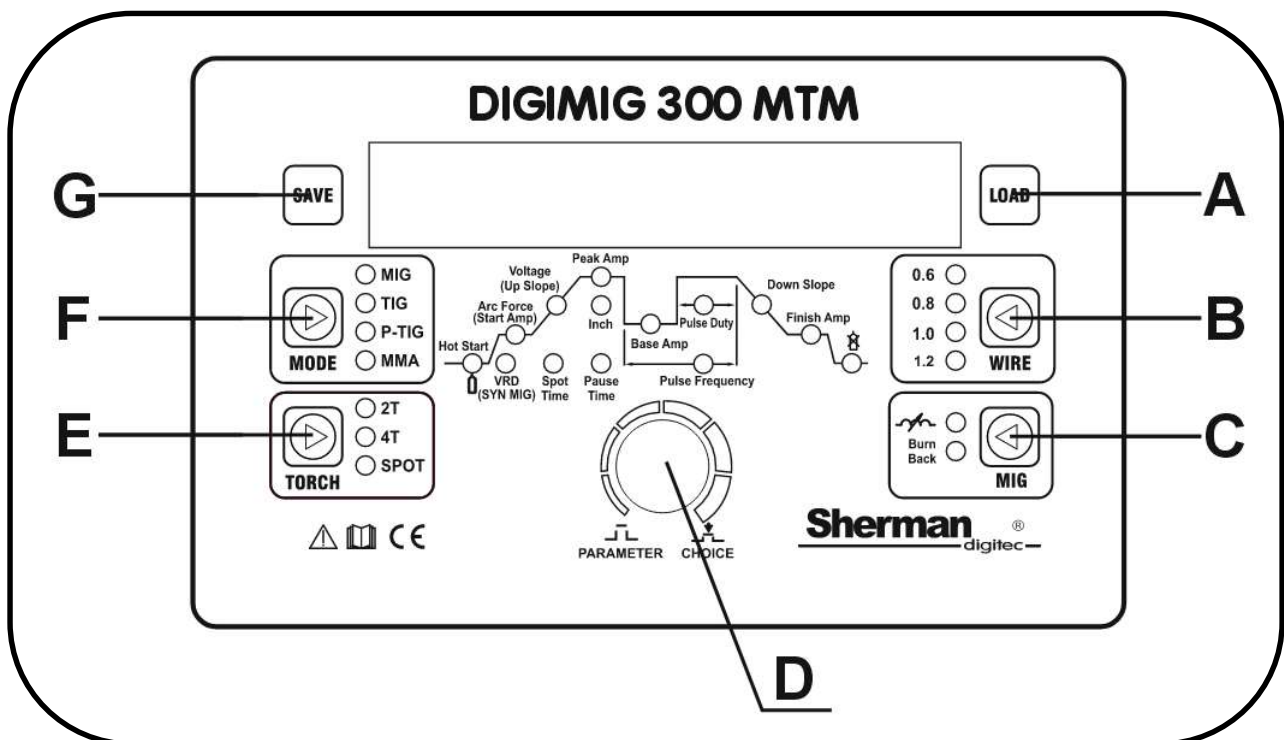
5.5 Preparing the MIG Torch for Operation

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.

For steel welding, use steel welding contact tips and a steel insert. For aluminum welding, use aluminum welding contact tips and a Teflon cartridge.

6. OPERATION

6.1 Front Panel

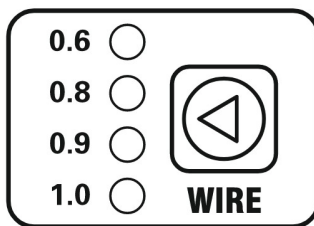


A – Settings load button



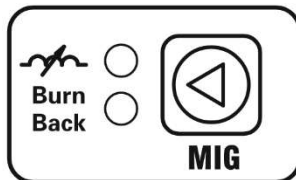
The operator has the option of loading one of the previously saved sets of welding parameters. After pressing the LOAD button with the multi-function knob (D), select the set number and press the LOAD button again.

B – Wire diameter selection button



Pressing the button changes the diameter of the wire. The selection of the diameter is indicated by the corresponding LED lighting up. The button is active only for the MIG process.

C – Inductance / Wire Burn Button



The button is used to select the inductance and wire burn adjustment. By pressing the button, select the parameter we want to adjust. The parameter selection is confirmed by the corresponding diode lighting up. The parameter is adjusted using the multifunction knob (D). The button is active only for the MIG process.

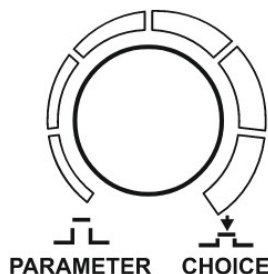


Inductance – its adjustment allows you to optimize the arc characteristics depending on the thickness of the welded element and the welding process and conditions. Adjustment range: 0 – 10.

Burn Back

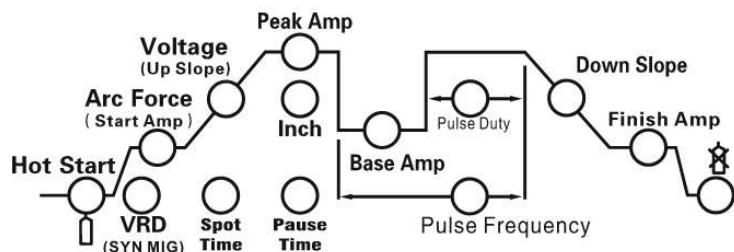
Wire burn – the amount of time that voltage exists at the output of the device after the wire feed has stopped. This function prevents the welding wire from getting stuck in the welded material and prepares the end of the wire for the next ignition of the arc. Higher values of the function cause the wire to burn closer to the current end. Adjustment range: 0 – 1 s

D – Multifunction knob



The multi-function knob is used to adjust parameters and select functions. Turning the knob to the left decreases the value of the parameter or disables the function. Turning the knob to the right increases the value of the parameter or turns on the function. Pressing the knob remembers the current value of the parameter or function and moves on to the next parameter or function.

E – Parameter setting diagram



Hot Start
⚡

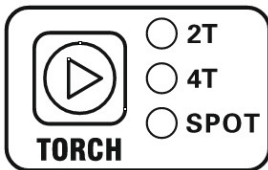
MMA process – Hot Start

This function is popularly called hot start. It works when the arc is ignited, causing a temporary increase in the welding current above the value set by the welder. HOT START is designed to prevent the electrode from sticking to the material and is a great help when igniting the arc. In the case of welding small components, it is recommended to use low values of this function, as it can cause the welded material to burn out.

Adjustment range: 0 – 100 A

	TIG / P-TIG process – gas pre-outflow – the time it takes for the shielding gas to flow out before the arc ignites. Adjustment range: 0 – 3 s
Arc Force (Start Amp)	MMA process – Arc Force The Arc Force function allows you to adjust the arc dynamics. The shortening of the arc length is accompanied by an increase in the welding current, which stabilizes the arc. A decrease in the value results in a soft arc and a shallower penetration depth, while an increase in the value results in a deeper penetration and the possibility of short arc welding. With a high value of the ARC FORCE function, it is possible to weld while maintaining a minimum arc length and a high electrode melting speed. Adjustment range: 0 – 100 A TIG / P-TIG process – initial current. Adjustment range: 10 – 300 A
Voltage (Up Slope)	TIG / P-TIG process – current rise time, adjustment range: 0.0 – 9.9 s MIG process – manual mode: welding voltage; synergic mode: welding voltage correction.
Peak Amp	MMA process – welding current TIG process – welding current P-TIG process - peak current. MIG process – welding current (manual mode only)
Base Amp	Base current. Only for P-TIG process Adjustment range: 10 – 300 A
Pulse Duty	Pulse width - the duration of the pulse, allows you to adjust the depth of the embedding. Increasing the width increases the depth of fusion, decreasing reduces the amount of heat introduced into the material, reducing the risk of burning through thinner sheets or smaller elements. Lower pulse width values should be used for higher currents. A larger pulse width should be used for small currents, for example, a width above 50% should be used for currents below 100A. Adjustment range: 10 – 90 %
Pulse Frequency	Pulse rate. Only for P-TIG process Adjustment range: 0.2 – 99 Hz
Down Slope	Current drop time. Only for TIG / P-TIG process Adjustment range: 0 – 9.9 s
Finish Amp	Final current (crater fill). Only for TIG / P-TIG process Adjustment range: 10 – 300 A
	Gas discharge time after welding is complete. Only for MIG and TIG / P-TIG process Adjustment range: 0 – 9.9 s
Inch	Quick wire extension. Only for the MIG process. Activated by pressing a button in the torch of the welding torch without igniting the arc.
VRD (SYN MIG)	MMA Process - VRD Function This function reduces 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. MIG process – activation of synergic mode
Spot Time	Spot welding time. Only for MIG and TIG process. Adjustment range: MIG: 0.5 – 5 s; TIG: 0.01 – 5 s
Pause Time	Break time during spot welding. Only for MIG and TIG process. Adjustment range: MIG: 0.5 – 5 s; TIG: 0.1 – 5 s

F – Welding machine mode selection button



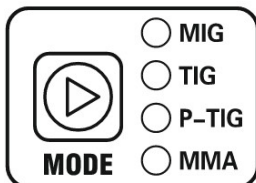
The button is active only for TIG and MIG welding processes. Used to select the control mode of the device:

2T - Pressing and holding the welding torch button will ignite the arc and start welding. When the button is released, the arc will be extinguished.

4T - Pressing and releasing the welding torch button will ignite the arc and start welding. When the button is pressed and released again, the arc will be extinguished.

SPOT - Spot welding. Pressing and holding the torch button will ignite the arc and start welding. After the Spot Time, the arc will be extinguished for a pause time and then lit again. The cycle will be repeated until the torch button is released. This option is only available for TIG and MIG welding processes in manual mode.

G – Welding process selection button



The button is used to select the welding process:

MMA – coated electrode welding

TIG – welding with a non-fusible (tungsten) electrode in an argon shield

P-TIG - welding with a non-fusible (tungsten) electrode in argon shield with current pulsation

MIG – electrode wire welding in shielded gases

H – Save settings button



The welding machine allows you to save the currently set welding parameters. It is possible to save 10 sets of parameters. To save the settings, press the SAVE button, select the number under which the set will be saved with the multifunction knob (D) and press the SAVE button again.

7. PARAMETER SETTINGS

7.1 MMA process

After selecting the MMA process, it is possible to adjust the welding current and the following functions:

Hot Start	HOT START function. start. It works when the arc is ignited, causing a temporary increase in the welding current above the value set by the welder. HOT START is designed to prevent the electrode from sticking to the material and is a great convenience when igniting the arc. In the case of welding small components, it is recommended to use low values of this function, as it can cause the welded material to burn out. Adjustment range: 0 – 100 A
Arc Force	The Arc Force function allows you to adjust the arc dynamics. The shortening of the arc length is accompanied by an increase in the welding current, which stabilizes the arc. A decrease in the value results in a soft arc and a shallower penetration depth, while an increase in the value results in a deeper penetration and the possibility of short arc welding. With a high value of the ARC FORCE function, it is possible to weld while maintaining a minimum arc length and a high electrode melting speed. Adjustment range: 0 – 100 A
VRD	VRD function - lowers the voltage in the no-load state. The correct voltage value is only restored just before the arc is ignited. This minimizes the risk of electric shock, but in some cases it can make it difficult to ignite the arc. ON – function on OFF – function off To enable/deactivate the VRD function, press the multi-function knob until the LED lights up Peak Amp. Then hold the knob pressed for 3 seconds. VRD will appear on the display. Short pressing the knob again changes the function status.

7.2 TIG and P-TIG process

After selecting the TIG process, it is possible to adjust the following functions:

	Gas pre-outflow - the time it takes for shielding gas to flow out before igniting the arc. Adjustment range: 0 – 3 s
Start Amp	Starting current. Adjustment range: 10 – 300 A
Up Slope	Current rise time Adjustment range: 0.0 – 9.9 s
Peak Amp	Welding current.
Down Slope	Current drop time. Adjustment range: 0 – 9.9 s
Finish Amp	Final current (crater filling). Adjustment range: 10 – 300 A
	Gas discharge time after welding is complete. Adjustment range: 0 – 9.9 s
Spot Time	Spot welding time. Only available in TIG and MIG in manual mode Adjustment range: 0.01 – 5 s
Pause Time	Break time during spot welding. Only available in TIG and MIG in manual mode Adjustment range: 0.1 – 5 s

After choosing the P-TIG process, it is possible to adjust the same parameters as in the TIG process, and in addition:

Peak Amp	Peak current.
Base Amp	Base current. Adjustment range: 10 – 300 A
Pulse Duty	Pulse width - the duration of the pulse, allows you to adjust the depth of the embedding. Increasing the width increases the depth of fusion, decreasing reduces the amount of heat introduced into the material, reducing the risk of burning through thinner sheets or smaller elements. Lower pulse width values should be used for higher currents. A larger pulse width should be used for small currents, for example, a width above 50% should be used for currents below 100A. Adjustment range: 10 – 90 %
Pulse Frequency	Pulse rate. Adjustment range: 0.2 – 99 Hz

7.3 MIG Process

After selecting the MIG process, the device can work in manual or synergic mode. The synergic mode allows less experienced users to select welding parameters. In this mode, the device automatically selects the welding voltage and welding current as well as the corresponding wire feed speed depending on the diameter of the electrode wire. It is possible to correct the welding voltage in the range of -20% - +20%. In manual mode, the user sets the welding voltage and welding current and the corresponding wire feed speed.

After selecting the **MIG process**, it is possible to adjust the following functions and parameters:

Peak Amp	Welding Current
Voltage	Manual mode - welding voltage; synergic mode - welding voltage correction.
	Gas discharge time after welding is complete. Adjustment range: 0 – 9.9 s
Spot Time	Spot welding time. Function available only in manual mode. Adjustment range: MIG: 0.5 – 5 s
Pause Time	Break time during spot welding. Function only available in manual mode. Adjustment range: MIG: 0.5 – 5 s
SYN MIG	Synergy mode on/off. To turn on/off the synergic mode, Peak Amp press the multifunction knob for 3 seconds with the LED on. Pressing the knob again briefly enables/deactivates the synergic mode.

Wire burning time

It is possible to adjust the time for which the voltage at the output of the device still exists after the wire feed has stopped. This function prevents the welding wire from getting stuck in the welded material and prepares the end of the wire for the next ignition of the arc. Higher function values cause the wire to burn closer to the current terminus.

Inductance control

Inductance control allows you to optimize the arc characteristics depending on the thickness of the welded component and the welding process and conditions. This function is useful when welding thin components with the MIG/MAG process, preventing them from burning, 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 allows for brazing thin (up to 3 mm) elements galvanized with wires made of CuSi3 copper alloy in a sheath of pure argon or, in some cases, an Ar/CO₂ mixture.

Choosing the wire diameter

The welding machine has built-in synergy programs for selected wire diameters.

Quick wire extension.

To activate the quick wire extension (**Inch**), press the button in the torch of the holder for at least 3 s. without igniting the arc. Releasing the button will stop the wire feeder.

Soldering

When selecting parameters, low voltage values and high wire feed speeds should be chosen. 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

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.

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 aluminum: 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 may cause a feeding problem.
- Make sure the torch is equipped with a Teflon guide cartridge designed for aluminum. Using steel components used to feed the steel wire will cause feeding problems.
- Make sure the current 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 dust 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 the residue of heavy oxides before welding. Normally, 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 is best to store it in low humidity conditions. 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 of high quality should be used for welding aluminum alloys as shielding gas, recommended not less than 4.8. The gas flow should be selected according to the thickness and speed of welding. Good welding results are achieved when the direction of the process is to the left.

9. SETTINGS MEMORY

The device has a memory of the last settings, i.e. after switching off and on again, the last set parameters are restored. In addition, it is possible to save the 10 most frequently used sets of parameters.



To save the current set of parameters, select the function  – save data in the settings menu, and then select the number under which it will be saved. To load a previously saved set of parameters, select the



function  – Load data and indicate the number of the set to be loaded. It is possible to save 10 sets of parameters.

10. ARC INITIATION

10.1 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.

10.2 TIG Process

1. Bring the torch closer to the material to be welded within 2 millimeters.
2. Press the button in the torch of the torch and start welding.

10.3 MIG/MAG 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.

11. TABLE OF RECOMMENDED PARAMETER VALUES

11.1 MMA process

Electrode diameter	2,5	3,2	4,0	5,0
Welding Current	70 – 100A	110 – 140A	170 – 220A	230 – 280A

11.2 TIG Process

Thickness (mm)	Electrode Diameter (mm)	Electrode wire diameter (mm)	Welding Current (A)	Shielding gas flow (l/min)
0,8	1,0	1,0	35 – 45	4 – 6
1,0	1,6	1,6	40 – 70	5 – 8
1,5	1,6	1,6	50 – 85	6 – 8
2,0	2,0 – 2,4	2,0	80 – 130	8 – 10
3,0	2,4 – 3,2	2,4	120 - 150	10 – 12

11.3 MIG Process

		Sheet thickness (mm)	Wire Diameter (mm)	Spacing (mm)	Welding Current (A)	Welding Voltage (V)	Welding speed (cm/min)	Free electrode outlet (mm)	Gas Flow (l/min)
Butt weld	Low welding speed	0.8	0.8,0.9	0	60~70	16~16.5	50~60	10	10
		1.0	0.8,0.9	0	75~85	17~17.5	50~60	10	10~15
		1.2	0.8,0.9	0	80~90	16~16.5	50~60	10	10~15
		1.6	0.8,0.9	0	95~105	17~18	45~50	10	10~15
		2.0	1.0,1.2	0~0.5	110~120	18~19	45~50	10	10~15
		2.3	1.0,1.2	0.5~1.0	120~130	19~19.5	45~50	10	10~15
		3.2	1.0,1.2	1.0~1.2	140~150	20~21	45~50	10~15	10~15
		4.5	1.0,1.2	1.0~1.5	160~180	22~23	45~50	15	15
			1.2	1.2~1.6	220~260	24~26	45~50	15	15~20
			1.2	1.2~1.6	220~260	24~26	45~50	15	15~20
	High welding speed	0.8	0.8,0.9	0	100	17	130	10	15
		1.0	0.8,0.9	0	110	17. 5	130	10	15
		1.2	0.8,0.9	0	120	18. 5	130	10	15
		1.6	1.0,1.2	0	180	19. 5	130	10	15
		2.0	1.0,1.2	0	200	21	100	15	15
		2.3	1.0,1.2	0	220	23	120	15	20
		3.2	1.2	0	260	26	120	15	20

		Sheet thickness (mm)	Wire Diameter (mm)	Torch inclination (°)	Welding Current (A)	Welding Voltage (V)	Welding speed (cm/min)	Free electrode outlet (mm)	Gas Flow (l/min)
Horizontal fillet weld, butt joint	Low welding speed	1.0	0.8,0.9	450	70~80	17~18	50~60	10	10~15
		1.2	0.9,1.0	450	85~90	18~19	50~60	10	10~15
		1.6	1.0,1.2	450	100~110	19~20	50~60	10	10~15
		2	1.0,1.2	450	115~125	19~20	50~60	10	10~15
		2.3	1.0,1.2	450	130~140	20~21	50~60	10	10~15
		3.2	1.0,1.2	450	150~170	21~22	45~50	15	15~20
		4.5	1.0,1.2	450	140~200	22~24	45~50	15	15~20
		6	1.2	450	230~260	24~27	45~50	20	15~20
		8.9	1.2,1.6	500	270~380	29~35	45~50	25	20~25
		12	1.2,1.6	500	400	32~36	35~40	25	20~25
	High welding speed	1.0	0.8,0.9	450	140	19~20	160	10	15
		1.2	0.8,0.9	450	130~150	19~20	120	10	15

		1.6	1.0,1.2	450	180	22~23	120	10	15~20
		2	1.2	450	210	24	120	15	20
		2.3	1.2	450	230	25	110	20	25
		3.2	1.2	450	270	27	110	20	25
		4.5	1.2	500	290	30	80	20	25
		6	1.2	500	310	33	70	25	25

Horizontal fillet weld	Low welding speed	0.8	0.8,0.9	100	60~70	16~17	40~45	10	10~15
		1.2	0.8,0.9	300	80~90	18~19	45~50	10	10~15
		1.6	0.8,0.9	300	90~100	19~20	45~50	10	10~15
		2.3	0.8,0.9	470	100~130	20~21	45~50	10	10~15
			1.0,1.2	470	120~150	20~21	45~50	10	10~15
		3.2	1.0,1.2	470	150~180	20~22	35~45	10~15	20~25
		4.5	1.2	470	200~250	24~26	45~50	10~15	20~25

	Sheet thickness (mm)	Wire Diameter (mm)	Welding Current (A)	Welding Voltage (V)	Welding speed (cm/min)	Free electrode outlet mm	Gas Flow (l/min)
Fillet weld	1.6	0.8,0.9	60~80	16~17	40~50	10	10
	2.3	0.8,0.9	80~100	19~20	40~55	10	10~15
	3.2	1.0,1.2	120~160	20~22	35~45	10~15	10~15
	4.5	1.0,1.2	150~180	21~23	30~40	10~15	20~25

Electrode wire diameter	Current Tip Diameter	Wire guide insert
0,8	0,8	Blue
1,0	1,0	Blue / Red
1,2	1,2	Red
1,6	1,6	Yellow

12. 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 welder may only be carried out by unplugging the plug from the power socket.

Attention! The welder 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
	Too little roller pressure	Set the correct pressure
No electrode wire feeding (feeder motor running)	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 current tip	Replace the contact tip

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 work clamp
	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
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 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 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 error codes

Err	Thermal protection activated. Wait a few minutes to cool the welding machine to a temperature that allows it to turn on again on its own. Do not disconnect the power supply during this time, as the continuously running fan cools the internal heat sinks of the machine in order to reduce the temperature more quickly. After restarting, remember to limit the welding parameters in order to continue to operate the machine continuously.
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13. OPERATING INSTRUCTIONS

The operation of the DIGIMIG 300 MTM welding machine should take place in an atmosphere free of corrosive components and high dust. Do not place the device in dusty places, near running grinders, etc. Dust and metallic filing contamination of control plates, cables and connections inside the device can lead to an electrical short circuit and, consequently, 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 components, e.g. after a cold device has been introduced into a warm room, wait until it is completely dry and the device has warmed up to ambient temperature. Running a cold welding machine in these conditions may cause damage to it. If the welding machine is operated outdoors, it is recommended to place it under a roof to protect it from adverse weather conditions.

The DIGIMIG 300 MTM 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:

Lp.	For steel wires	For aluminum wires
1	Feeder roller 30x22x10mm	Feeder roller Al. 30x22x10mm
2	TW-25 M6x28 Contact tip	Al TW-25 M6x28 Contact tip
3	TW-25 contact tip	
4	Gas nozzle TW-25	
5	Steel Insert 4m	4m Teflon cartridge

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

14. 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, the general equipment and the condition of electrical connections should be inspected, 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.

15. STORAGE AND TRANSPORT INSTRUCTIONS

The device should be stored 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 devices should be carried out by covered means of transport. During transport, the packaged device must be protected against movement and provided with the correct position.

16. SET SPECIFICATION

1. Welding Source	1 pc.
2. MIG TW-25 welding torch	1 pc.
3. T-26 TIG welding torch	1 pc.
3. Clamp Clamp Ground Cable	1 pc.
4. Electrode wire	1 pc.
5. Gas hose	1 pc.
6. User Manual	1 pc.
7. Packaging	1 pc.

17. 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, please fill in the form located 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 the expense of TECWELD will not be accepted!

The welding machine must be supplied with the welding torch. Complaints about the welder without the 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 intend to dispose of this product, do not dispose of it 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 hand over waste electrical and electronic equipment to a waste equipment collection point. Collection points are operated, m.in., by wholesalers and retailers of this equipment and by municipal organisational units operating in the field of waste collection.

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 proper implementation of these obligations is particularly important when waste equipment contains hazardous components that have a particularly negative impact on the environment and human health.

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18. ELECTRICAL DIAGRAM

