V1.8 07.12.23

USER MANUAL

INWERTOROWA SYNERGICZNA SPAWARKA PÓŁAUTOMATYCZNA MIG 200HD

Sherman® workshop

CE

ATTENTION!
Before installing and starting the device, please read this manual

1. GENERAL REMARKS

The device may only be started and operated after carefully reading this Operating Instructions.

Due to the continuous technical development of the device, the external appearance and some of its functions may be subject to modifications and their operation may differ in detail from the descriptions in the instructions and on the carton. This is not a device fault, but the result of progress and continuous modification work on the device. The standard equipment of the device may also change.

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

2. SECURITY

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

- should have qualifications of an electric welder in the field of gas shielded welding,
- know the health and safety rules when operating electrical power equipment such as welding equipment and auxiliary equipment powered by electricity,
- know the health and safety regulations when handling cylinders and installations with compressed gas (argon),
- be familiar with the contents of this manual and use the device in accordance with its intended purpose.

WARNING

Welding can pose a safety risk to the operator and other people in the vicinity.
Therefore, special precautions must be taken when welding. Before starting to weld, familiarize yourself with the health and safety regulations applicable at the workplace.
The following hazards exist during MIG/MAG electric welding:

- **ELECTRIC SHOCK**
- **NEGATIVE IMPACT OF ARC ON HUMAN EYES AND SKIN**
- **VAPORS AND GAS POISONING**
- **BURNS**
- **EXPLOSION AND FIRE HAZARDS**
- **NOISE**

Preventing electric shock:

- connect the device to a technically efficient electrical installation with proper protection and effective zeroing (additional protection against electric shock); other devices at the welder's workstation should also be checked and correctly connected to the network,
- install power cables when the device is switched off,
- do not touch the non-insulated parts of the electrode holder, the electrode and the object at the same time welded, including the device housing,
- do not use handles and power cables 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 ensuring safety, use clothing and gloves with good insulating properties,
- if you notice any irregularities, please contact the competent persons to have them corrected. removal,
- It is prohibited to operate the device with removed covers.

Preventing the negative impact of electric arc on human eyes and skin:

- 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 choose the right wall colors absorbing harmful radiation.

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

- Use ventilation devices and exhaust systems installed in places with limited air exchange. air,
- Blow with fresh air when working in a confined space (tanks),
- Use masks and respirators.

Burn prevention:

- Wear appropriate protective clothing and footwear to protect against radiation burns. arc and splinters,
- Avoid contaminating clothing with grease and oils that may cause ignition.

Explosion and fire prevention:

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

Preventing the negative impact of noise:

- Use earplugs or other noise protection measures,
- Warn people nearby about dangers.

WARNING!

Do not use an electrical source to thaw frozen pipes.

Before starting the device, you must:

- Check the condition of electrical and mechanical connections. It is forbidden to use handles and power cables with damaged insulation. Improper insulation of handles and power cables may cause electric shock,
- Ensure proper working conditions, i.e. ensure proper temperature, humidity and ventilation in the workplace. work. Outside closed rooms, protect against atmospheric precipitation,
- Place the charger in a place where it can be easily operated.

People operating a welding machine should:

- have the qualifications for electric welding using the MIG/MAG method,
- know and comply with the occupational health and safety regulations applicable to welding work,
- use appropriate, specialist protective equipment: gloves, apron, rubber boots, shield or a welding helmet with a properly selected filter,
- be familiar with the contents of this instruction manual and use the welding machine in accordance with its intended purpose.

Any repairs to the device may only be performed after disconnecting the plug from the power socket.

When the device is connected to the mains, it is not permitted to touch any elements forming the welding current circuit with bare hands or through wet clothing.
It is prohibited to remove external covers when the device is connected to the mains.
Any modifications to the rectifier on your own are prohibited and may constitute a deterioration of safety conditions.

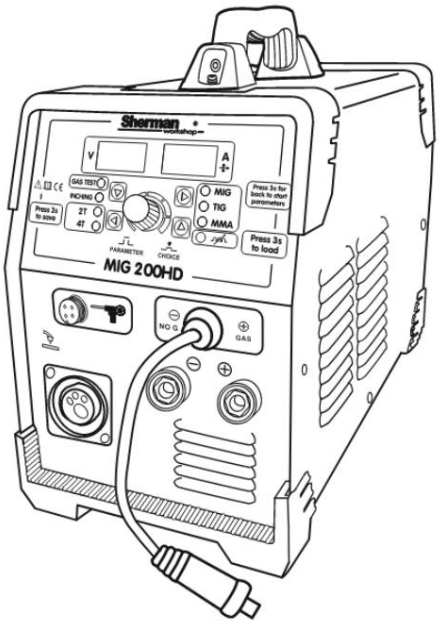
All maintenance and repair work may only be carried out by authorised persons in compliance with the work safety conditions applicable to electrical devices.
It is prohibited to operate the welding machine in rooms at risk of explosion or fire!
The welding station should be equipped with fire extinguishing equipment.
After finishing work, the device's power cord must be disconnected from the mains.

The above-mentioned hazards and general health and safety rules do not exhaust the issue of welder's work safety, because they do not take into account the specifics of the workplace. An important supplement to them are workplace health and safety instructions and training and instruction provided by supervisory employees.

3. GENERAL DESCRIPTION

The synergic MIG 200HD welder is used for manual welding of steel and non-ferrous metals. It allows welding using the MMA (covered electrode), TIG Lift, and MIG/MAG methods in synergic and manual modes. Thanks to the change of polarity, the device allows welding using the MIG/MAG method using both standard wires in a protective gas shield and self-shielded flux-cored wires.
The device allows you to connect a Spool Gun (SG) type handle with a mini wire feeder and a D100 spool of steel or colored wire. Inductance adjustment allows for brazing thin galvanized elements. The built-in synergistic system allows less experienced users to select welding parameters

The welder has built-in automatic HOT START and ANTI STICK functions, it also allows
storing 20 sets of settings for the MIG method.
The device is made in IGBT technology, which allows for a significant reduction in the weight and dimensions of the welder and an increase in efficiency while reducing energy consumption.
The welding machine is intended for use in closed or roofed rooms, not directly exposed to atmospheric influences.



4. TECHNICAL PARAMETERS

4.1 Welding machine

Supply voltage:	AC 230V 50Hz
Maximum power consumption:	6.6kVA
Rated welding current:/ duty cycle	MIG: 200A / 45%; MMA: 180A / 60%; TIG: 180A / 60%
No-load rated voltage Wire spool diameters:	65V
	100mm, 200mm
Maximum current consumption:	MIG: 33 A; MMA: 33A; TIG: 24 A
Network security:	25A
Mass:	10.5 kg
Dimensions [mm]:	450x210x330
Degree of protection:	IP21

4.1.1 Parameter adjustment ranges

Welding current:	MIG: 30 – 200 A; MMA: 20 – 180 A; TIG:20 – 200 A
Welding voltage:	MIG: 15.5 - 24V
Wire feed speed:	2 – 15 m/min
Inductance:	1-10

4.2 MIG torch

Handle type:	TW-15
Maximum current capacity:	200A (CO2)
Cooling type:	gas
Cooling gas flow:	10-18 l/min
Length:	3m

Work cycle
The duty cycle is based on a 10-minute period. A duty cycle of 45% means that after 4.5 minutes of operation, a 5.5-minute break is required. A duty cycle of 60% means that after 6 minutes of operation, a 4-minute break is required. A duty cycle of 100% means that the device can operate continuously without interruption.

Note! Heating tests were conducted at ambient air temperature. Duty cycle at 20ºC was determined by simulation.

Degree of protection
IP specifies the degree to which the device is resistant to the ingress of solid and water contaminants. IP21 means that the device is suitable for operation in closed rooms.

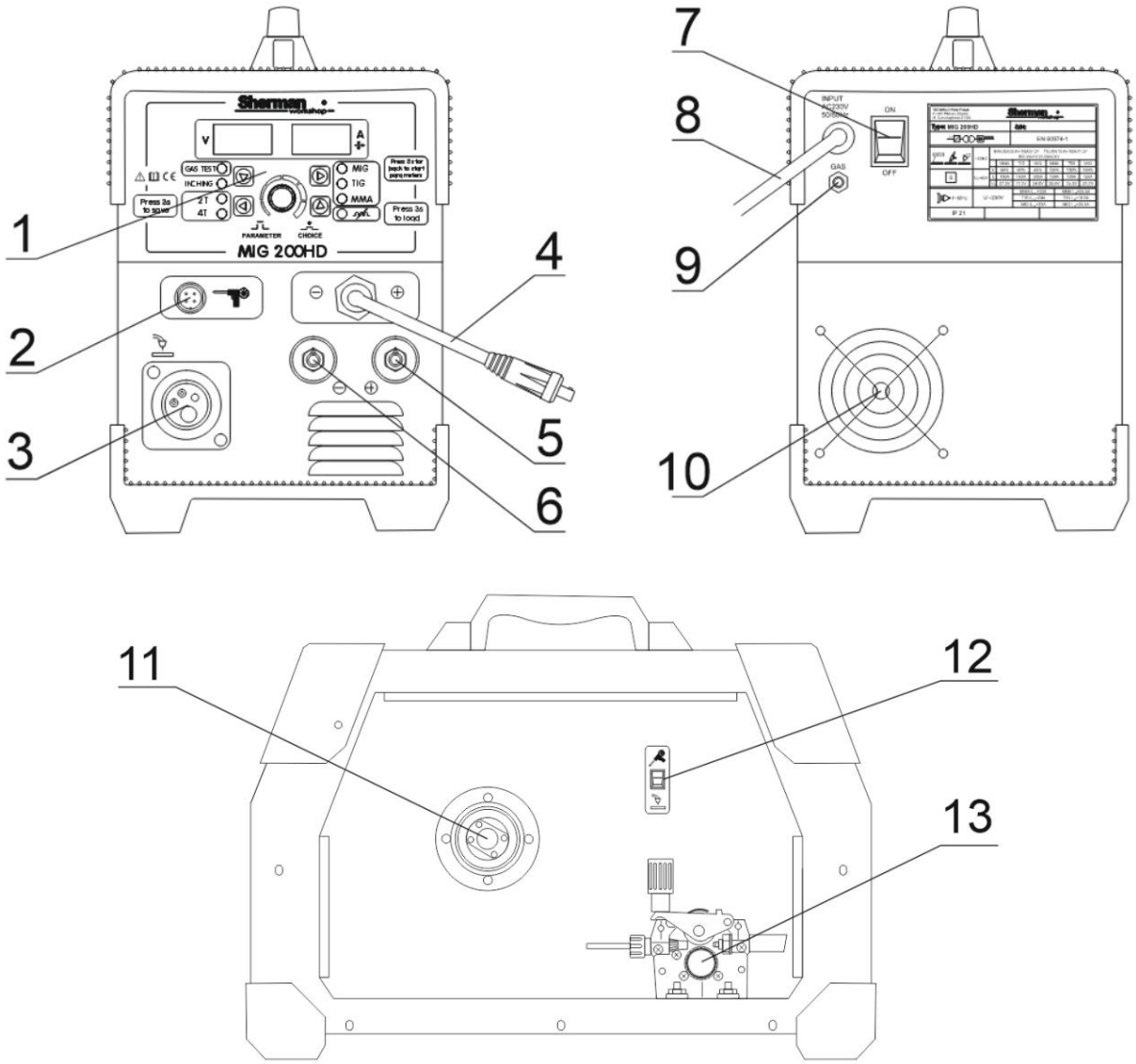
Overheating protection
The IGBT module is protected against overheating by a protective device that switches off the welding circuit device. After a few minutes, the welder cools down to a temperature that allows it to be switched on again automatically. Do not disconnect the power supply during this time, because the continuously operating fan cools the internal radiators of the device in order to lower the temperature faster. After restarting, remember to limit the welding parameters in order to continue the continuous operation of the device.

HOT START function
The function is popularly called hot start. It works when the arc is ignited, causing a momentary increase in the welding current above the value set by the welder. HOT START is intended to prevent the electrode from sticking to the material and is a great convenience during
striking the arc.

ANTI STICK function (anti-short circuit).
This function reduces the welding current to the minimum value when the electrode sticks to the welded material. This makes it easier to detach the electrode from the welded material and protects the welder
from damage.

5. PREPARING THE DEVICE FOR WORK

If the device is to be stored or transported in frosty conditions, the temperature must be above freezing before starting work.

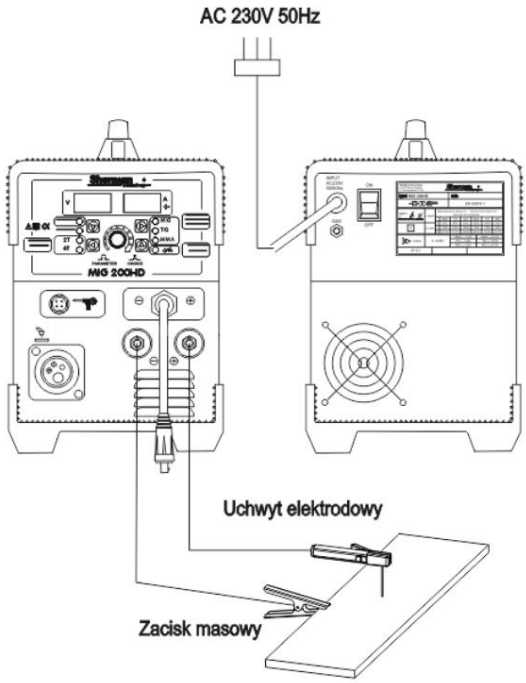


1. Control panel
2. Remote Control/Spool Gun Socket 3. MIG Gun Socket
4. Polarity change plug
5. Socket "+"
6. Socket "-"
7. Power switch
8. Power cord
9. Shielding gas connection stub 10. Fan
11. Wire spool pin
12. Spool Gun Handle Switch
13. Wire feeder

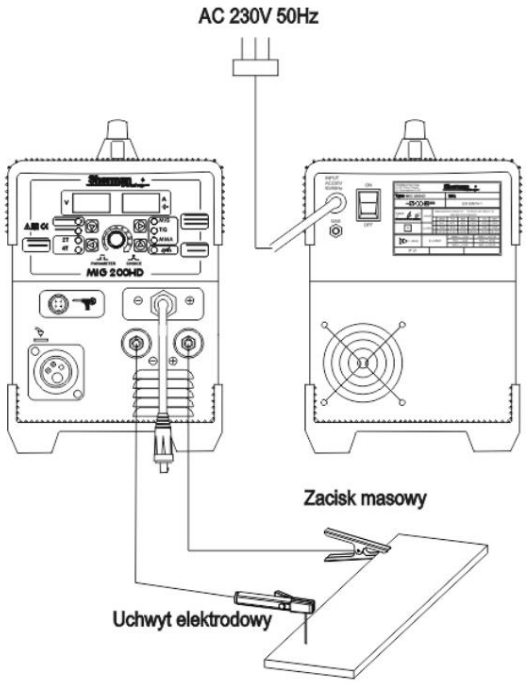
5.1 Connecting the cables

5.1.1 MMA method

The ends of the welding cables should be connected to the sockets (5) and (6) located on the front panel so that the correct pole for the given electrode is on the electrode holder. The polarity of the welding cable connection depends on the type of electrode used and is given on the electrode packaging (negative polarity DCEN or positive polarity DCEP). The ground cable clamp should be carefully secured to the welded material. Connect the device plug to a 230V 50Hz mains socket.



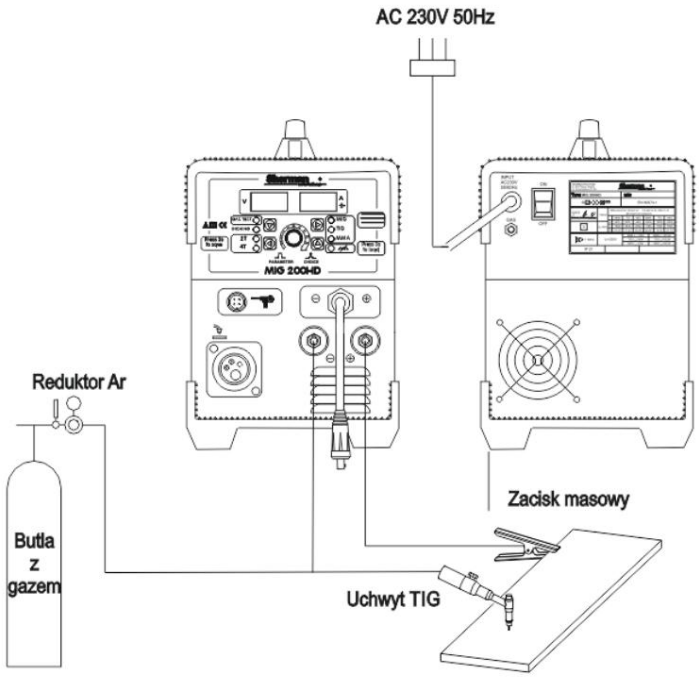
DCEP



DCEN

5.1.2 TIG method

For welding with this method, it is necessary to use an additional TIG torch. A gas-cooled torch with a current load of 200A, equipped with a shielding gas control valve, is required.
The current terminal of the handle should be connected to the negative polarity socket (6), and the gas hose to the reducer on the gas cylinder. The positive pole of the source (5) should be connected to the welded material using a cable with a clamp. Connect the device plug to a 230V 50Hz mains socket.



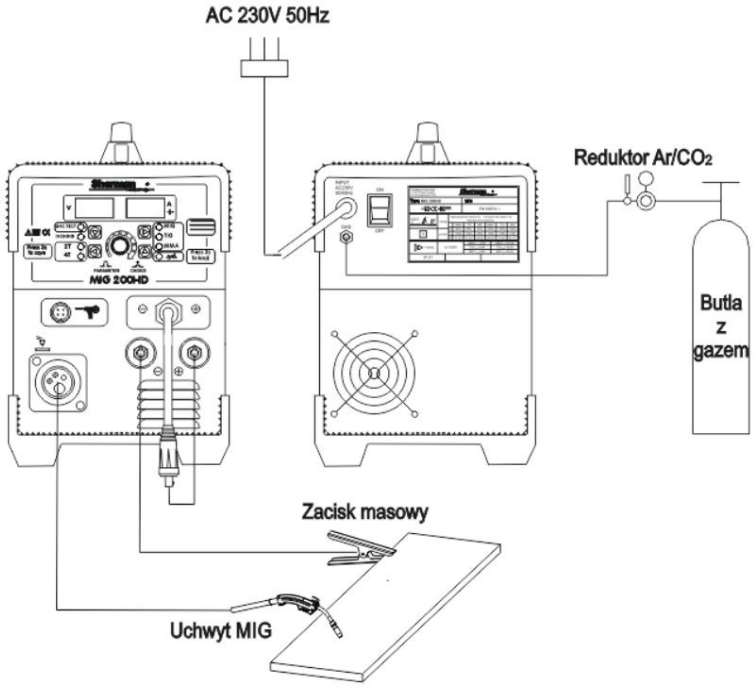
5.1.3 MIG and braze welding

5.1.3.1 Welding and brazing in protective gases

The current plug of the torch should be connected to the MIG torch socket (3). The gas hose from the reducer should be led and attached to the gas connector (9) located on the rear wall of the device. The plug

polarity change (4) into the socket (5). Connect the negative pole of the source (6) with the welded material using a cable with a clamp. The switch (12) located inside the feeder chamber

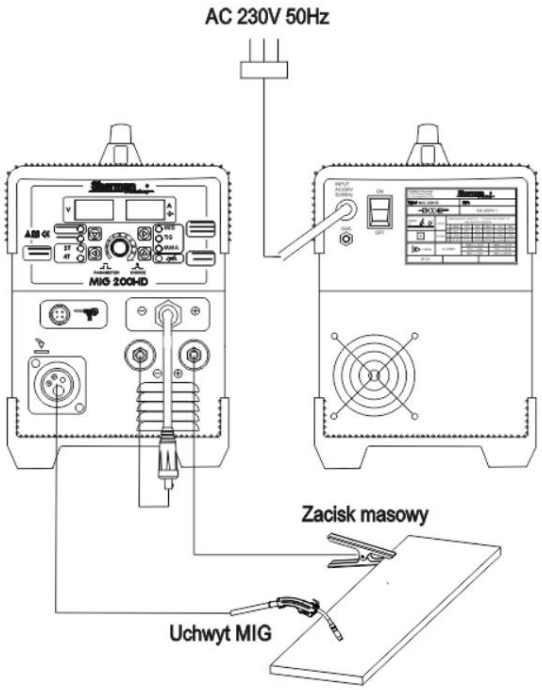
switch to the standard MIG torch position (mains 230V). Connect the device plug to the socket 50Hz.



5.1.3.2 Welding with self-shielded steel wire

The current plug of the torch should be connected to the MIG torch socket (3). The polarity change plug (4) should be placed in the socket (6). The positive pole of the power source (5) should be connected to the welded material using a cable with a clamp. Switch the switch (12) located inside the feeder chamber to the position

standard MIG gun ( ). Connect the device plug to a 230V 50Hz mains socket.



5.1.3.3 Welding with a Spool Gun (option)

The current plug of the torch should be connected to the MIG torch socket (3). The polarity change plug (4) should be placed in the + socket (5). The negative pole of the power source (6) should be connected to the welded material using a cable with a clamp. Switch the switch (12) located inside the feeder chamber to the position

 (Spool Gun). Connect the control plug of the handle to the socket (2). Connect the device plug to a 230V 50Hz mains socket.

5.2 Shielding gas connection

1. Secure the gas cylinder against tipping over.
2. Open the cylinder valve momentarily to remove any contamination.
3. Install the reducer on the cylinder.
4. Connect the reducer with the gas nozzle (9) on the rear wall of the welder using a hose.
5. Unscrew the cylinder and reducer valve.

5.3 Connection to the mains

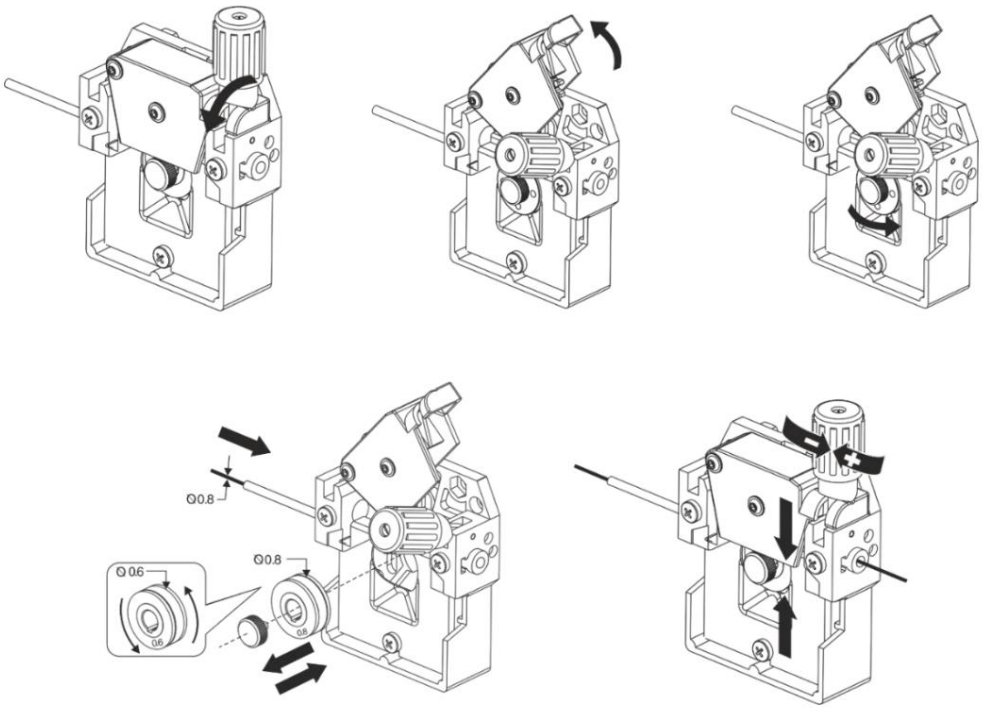
1. The device should only be used in a single-phase power supply system,
   three-wire, with grounded neutral point.
2. The MIG 200HD inverter rectifier is designed to work with a 230V50 Hz network protected by 25 A delayed fuses. The power supply should be stable, without voltage drops.

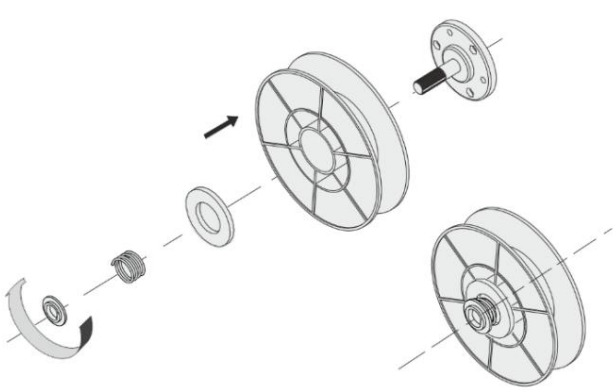
3. The device is equipped with a power cord and plug. Before connecting the power supply, make sure that the power switch (7) is in the OFF position.

5.4 Installing the electrode wire spool

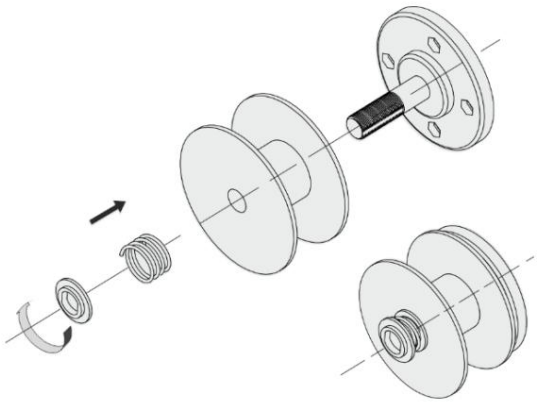
1. Open the side cover of the housing.
2. Check that the drive rollers are suitable for the type and diameter of wire. If necessary, fit the correct roller. For steel wires, use rollers with V-grooves and for aluminium wires, use rollers with U-grooves.

3. Place the spool of electrode wire on the mandrel.
4. Secure the spool against falling.
5. Release the pressure on the feed rollers.
6. Blunt the tip of the electrode wire.
7. Insert the wire through the feeder drive roller into the holder.
8. Press the wire into the grooves of the drive roller.
9. Unscrew the contact tip from the holder, turn on the welding machine power supply and pull the wire into the welding machine holder using the INCHING rapid wire feed function.
10. Once the wire appears in the handle outlet, release the button and screw on the contact tip.
11. Adjust the feed roller pressure by turning the pressure knob. Too low a pressure will result in slipping of the drive roller, too high a pressure will result in increased resistance.
    feeding, which may lead to wire deformation and damage to the feeder.

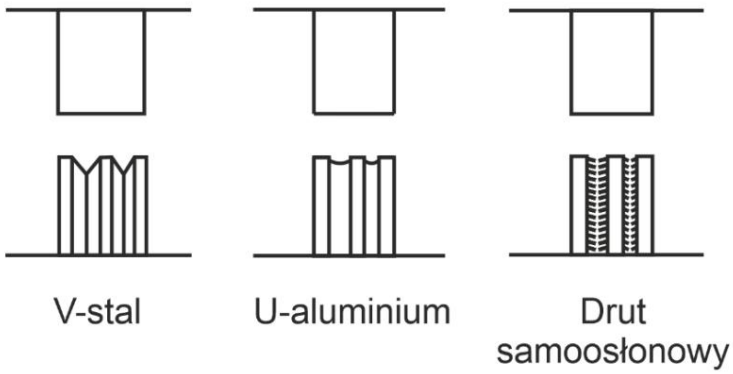




spool D200



spool D100



5.5 Preparing the MIG gun for work

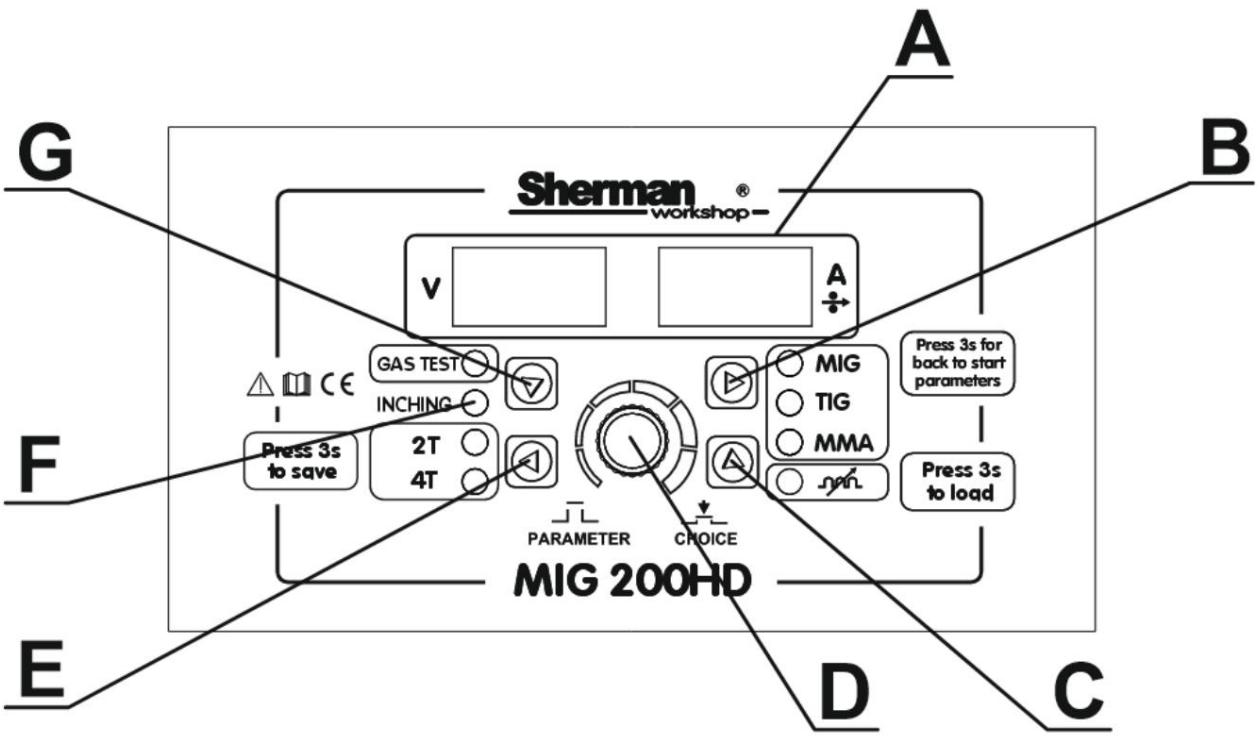
Depending on the type of material being welded and the diameter of the electrode wire, fit the appropriate current tip and wire guide insert to the MIG torch.
For welding steel, use steel welding tips and a steel insert. For welding aluminum, use aluminum welding tips and a Teflon insert.

5.5.1 Quick wire feed

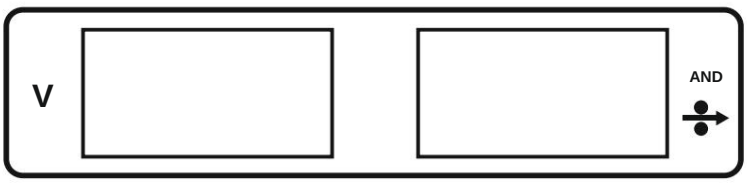
The device has a quick wire feed function. Pressing the button in the handle for 3 seconds causes a quick feed of the wire, allowing it to be easily inserted into the holder. After 6 seconds, the feeder returns to the standard speed.

6. SERVICE

6.1 Front panel

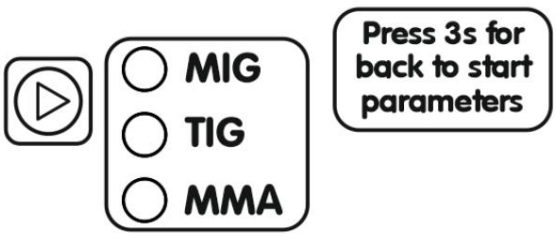


A – Display unit



The displays show the parameter values. The left display shows the welding voltage, inductance or the number of the set of memorized/saved parameters. The right display shows the welding current. If the displayed parameter flashes, it means that it can be adjusted using the knob (D).

B – Welding method selection button



The button is used to select the welding method. Pressing the button briefly changes the method. The lit diode indicates the currently selected welding method.
During MIG welding, pressing the button for 3 seconds will return to the initial parameters.

C – Inductance adjustment/settings loading button

A short press of the button will take you to the inductance adjustment using the knob (D). After setting the desired value, press the button (C) again or wait about 3 seconds.

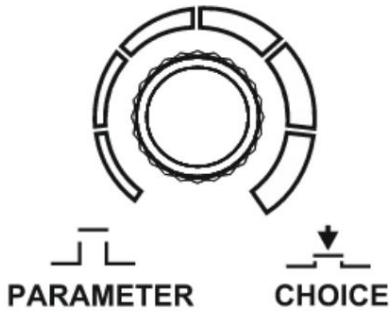
Pressing the button for about 3 seconds will cause the user to enter the loading mode of previously saved parameters. The number of the parameter set that will be loaded will start flashing on the left display.
The number can be changed by turning the knob (D). Pressing the button (C) again will load the parameters.

Inductance control allows for optimisation of arc characteristics depending on the thickness of the welded element and the welding method and conditions. This function is useful when welding thin elements using the MIG/MAG method, preventing them from burning through, and when brazing galvanised elements.
Changing the inductance value also reduces the amount of welding spatter during CO2 welding . As the inductance value increases, the amount of spatter decreases, and when the value is less than 5, the amount of spatter 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 enables brazing of thin (up to 3 mm) galvanized elements with wires made of CuSi3 copper alloy in a shield of pure argon or, in some cases, an Ar/CO2 mixture in the ratio (82/18).

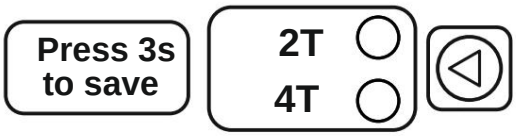
Adjustment range: 1 – 10.

D – Adjustment knob/button



The knob is used to adjust welding parameters. Turning the knob to the left decreases the parameter value, and turning it to the right increases it. After selecting the MIG method, pressing the knob switches between voltage and welding current regulation.

E – Source control button / save settings



Button active only during MIG/MAG welding. Used to select the welding machine control mode (two-stroke / four-stroke) and save settings.
Short presses of the button select the device control mode. The selected control mode is confirmed by the lighting of the corresponding diode.
Pressing the button for about 3 seconds will switch to the set parameters saving mode.
The number under which the currently set parameter set will be saved will start flashing on the left display. The number can be changed by turning the knob (D). Pressing the button (E) again will save the parameters. It is possible to save 20 sets of parameters.

2T In the two-stroke mode, pressing the switch in the handle grip will ignite the arc. Welding is carried out with the switch pressed. Releasing the switch will end the welding.

4T In the four-stroke mode, pressing the switch in the handle grip will ignite the arc, then you should release the switch and continue welding with the switch released. Pressing the switch again will end welding.

F – Fast wire feed

Pressing the button on the handle for more than 3 seconds causes the electrode wire to advance quickly. It can be used when installing a wire spool to quickly feed it into the welding handle. After 6 seconds, the feeder speed will return to the standard value.

G – GAS TEST button

The button is active only during MIG/MAG welding. It is used to check the flow of shielding gas. Pressing the button starts the gas flow, releasing it closes the gas flow.

7. PARAMETER SETTINGS

7.1 MMA method

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

7.2 TIG Lift Method

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

7.3 MIG method

After selecting the MIG method, the user can take advantage of synergistic carbon steel welding parameters with the option of manual adjustment of welding voltage and current. It is also possible to adjust inductance and device control mode (2T/4T).

After switching on the device, it is possible to use the knob (D) to synergistically select the voltage and the corresponding welding current. The wire feed speed will be automatically adjusted to the set welding current. After initial setting of these parameters, it is possible to manually correct both the voltage and welding current. The transition between the adjustable parameters is made by pressing the knob (D). To return to the initial synergistic parameters, press the button (B) for 3 seconds.

Device control mode (2T/4T)
In the two-stroke mode, pressing the switch in the handle grip will ignite the arc. Welding is carried out with the switch pressed. Releasing the switch will end welding.
In the four-stroke mode, pressing the switch in the handle grip will ignite the arc. Then release the switch and weld with the switch released. Pressing the switch again will end the welding.

Inductance control
Inductance control allows for optimisation of arc characteristics depending on the thickness of the welded element and the welding method and conditions. This function is useful when welding thin elements using the MIG/MAG method, preventing them from burning through, and when brazing galvanised elements.
Changing the inductance value also reduces the amount of welding spatter when welding in a CO2 shield. The higher the inductance value (+), the smaller the amount of spatter, while the negative value (-) increases the amount of spatter. 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 enables brazing of thin (up to 3 mm) galvanized elements with wires made of CuSi3 copper alloy in a shield of pure argon or, in some cases, an Ar/CO2 mixture in the ratio (82/18).

7.3.1 Recommendations for selecting parameters

High quality argon should be used: recommended 4.8 and above
Additionally, depending on the working conditions, you can set the inductance value, which affects the shape of the weld, the depth of penetration and the amount of spatter during welding.

Braze welding
Using three welding parameters, the optimal set should be set to obtain the correct 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 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 the welded material.
Copper-based filler metals are most often used as additional materials. These are wires marked as CuSi3 or SG –CuAl.

It is recommended to use a handle no longer than 3 m equipped with a Teflon insert.

7.4 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 order for the settings to be saved, do not change any of the parameters for at least one minute. It is also possible to save 20 sets of parameters for the MIG method.

8. WELDING ALUMINUM ALLOYS

Welding aluminum is not an easy task, it requires the welder to have experience, knowledge and maintain certain practices that will make it easier to weld aluminum elements. Depending on the needs, appropriate voltage and inductance corrections should be made to obtain the desired effect.
First of all, you should remember a few important things that significantly affect the appearance of the weld and influence the correct course of the welding process.
Before starting welding work on aluminum components, the following steps must be performed:

Device:
- Make sure the feed rolls are designed for aluminum: the groove is U-shaped and designed for the correct diameter of welding wire. Using the wrong rolls will deform the wire and cause problems in the welding process.
- Make sure the feed rollers are not set too tight. Excessive wire tension can cause a feeding problem.

- Make sure the holder is equipped with a Teflon guide insert intended for aluminum. Using steel components used to feed steel wire will cause feeding problems.

- Make sure the contact tip is the correct size and designed for aluminum wire.
- It is worth replacing part of the wire guide insert in the feeder with a Teflon version, which improves wire feeding, just like in the case of a welding torch.

Work position:

- Attention should be paid to the proper preparation of the welding work site: the hall should be clean, have good ventilation and low air humidity should be maintained. The presence of iron oxide dust or dust from arc gouging of steel is unacceptable.

- Aluminum welding stations should be vacuumed with industrial vacuum cleaners once a day, after completion of work.
- Welders' clothes should be clean, gloves must not be greasy.

Preparation of material:

- The welding site should be cleaned and degreased immediately before welding,
- Degrease aluminum elements by wiping them with a clean cloth soaked in a degreasing agent, e.g. acetone (Alcohol is not a good degreasing agent and we do not recommend using it when cleaning aluminum).

- Remove heavy oxide residues before welding. This is normally done manually or mechanically using a steel wire brush. If the material is heavily contaminated, it may be necessary to use a grinder.

- After proper surface preparation, the welding process should be performed as quickly as possible.
- If the part must remain unwelded for an extended period of time, protect it with brown wrapping paper and tape.

Proper storage of welding wire

- Aluminum welding wire should be stored in a clean, dry environment, preferably in original packaging.
- The wire does not need to be stored in air-conditioned rooms, it is best to store it in low humidity conditions. The wire must not be soaked in water.
- If a wire that is relatively cold is brought into a room on a hot, humid day and immediately opened, it is possible that the humid air will contaminate the wire. Therefore, if the wire is stored in an air-conditioned room, remember not to unpack the wire until it has warmed up and acclimatized to the ambient temperature.
- After finishing work, the wire should be removed from the feeder and secured in a plastic bag for next use.

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

10. ARC INITIATION

10.1 MMA method

1. Touch the electrode to the workpiece, rub briefly and remove.
2. In the case of arc initiation with electrodes whose coating forms a non-conductive slag after solidification, pre-clean the electrode tip by striking it several times against a hard surface until metallic contact with the welded material is achieved.

10.2 TIG method

1. Open the valve on the TIG torch to allow the shielding gas to flow.
2. Lightly touch the welded material with the electrode, remove the electrode from the welded material by tilting the handle so that the gas nozzle touches the material.
3. Once the arc is struck, straighten the torch and start welding.

10.3 MIG/MAG method

1. Bring the torch closer to the welded parts so that the distance between the nozzle and the welded parts is elements was approximately 10 mm.
2. Press the button on the welding torch and start welding.

11. TABLE OF RECOMMENDED PARAMETER VALUES

11.1 MMA method

Electrode diameter	2.5	3.2	4.0	5.0
Welding current	70-100A	110-140A	170-220A	230-280A

11.2 TIG method

Thickness (mm)	Electrode diameter (mm)	Wire electrode diameter (mm) 1.0	Welding current (A)	Protective gas flow (l/min)
0.8	1.0	1.6	35 – 45	4 - 6
1.0	1.6	1.6	40 – 70	5 - 8
1.5	1.6	2.0	50 – 85	6 - 8
2.0	2.0 – 2.4	2.4	80 – 130	8 - 10
3.0	2.4 – 3.2		120 - 150	10 - 12

11.3 MIG method

		Sheet thickness (mmÿ	Wire diameter (mm)	Space (mm)	Welding current (AND)	Welding voltage ÿVÿ	Welding speed (cm/min)	Free electrode outlet (mm)	Gas flow (l/min)
	welding speed	0.8	0.8,0.9	0	60ÿ70	16ÿ16.5	50ÿ60	10	10
		1.0	0.8,0.9	0	75ÿ85	17ÿ17.5	50ÿ60	10	10ÿ15
		1.2	0.8,0.9	0	80ÿ90	16ÿ16.5	50ÿ60	10	10ÿ15
		1.6	0.8,0.9		95ÿ105	17ÿ18	45ÿ50	10	10ÿ15
		2.0	1.0,1.2	0 0ÿ0.5	110ÿ120 18ÿ19	120ÿ130 19	45ÿ50 45	10 10ÿ15	
		2.3	1.0,1.2	0.5ÿ1.0 1.0	ÿ19.5 140ÿ150	20ÿ21	ÿ50 45ÿ	10 10ÿ15	
		3.2	1.0,1.2	ÿ1.2			50	10ÿ15 10ÿ15	
		4.5	1.0,1.2	1.0ÿ1.5	160ÿ180	22ÿ23	45ÿ50	15	15
			1.2	1.2ÿ1.6	220ÿ260	24ÿ26	45ÿ50	15	15ÿ20
			1.2	1.2ÿ1.6	220ÿ260	24ÿ26	45ÿ50	15	15ÿ20
			1.2	1.2ÿ1.6	300ÿ340 1.2ÿ1.6 300	32ÿ34 32	45ÿ50 45	15	15ÿ20
			1.2	ÿ340		ÿ34	ÿ50	15	15ÿ20
	welding speed	0.8	0.8,0.9	0	100	17	130	10	15
		1.0	0.8,0.9	0	110	17ÿ5	130	10	15
		1.2	0.8,0.9	0	120	18ÿ5	130	10	15
		1.6	1.0,1.2	0	180	19ÿ5	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 ÿmmÿ	Wire diameter ÿmmÿ	Burner tilt (°)	Welding current (AND)	Welding voltage ÿVÿ	Welding speed (cm/min)	Free electrode outlet ÿmmÿ	Gas flow ÿl/minÿ
groin, joint	welding speed	1.0	0.8,0.9	450	70ÿ80	17ÿ18	50ÿ60	10	10ÿ15
		1.2	0.9,1.0	450	85ÿ90	18ÿ19	50ÿ60	10	10ÿ15
		1.6	1.0,1.2	450	100ÿ110 19ÿ20		50ÿ60	10	10ÿ15
		2	1.0,1.2	450	115ÿ125 19ÿ20		50ÿ60	10	10ÿ15
		2.3	1.0,1.2	450	130ÿ140 20ÿ21		50ÿ60	10	10ÿ15
		3.2	1.0,1.2	450	150ÿ170 21ÿ22		45ÿ50	15	15ÿ20

		4.5	1.0,1.2	450	140ÿ200 22ÿ24		45ÿ50	15	15ÿ20
		6	1.2	450	230ÿ260 24ÿ27		45ÿ50	20	15ÿ20
		8.9	1.2,1.6	500	270ÿ380 29ÿ35 45ÿ50			25	20ÿ25
		12	1.2,1.6	500	400	32ÿ36	35ÿ40	25	20ÿ25
		1.0	0.8,0.9	450	140	19ÿ20	160	10	15
		1.2	0.8,0.9	450	130ÿ150 19ÿ20		120	10	15
		1.6	1.0,1.2	450	180	22ÿ23	120	10	15ÿ20
		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
		0ÿ8 0.8,0.9		100	60ÿ70	16ÿ17	40ÿ45	10	10ÿ15
		1.2	0.8,0.9	300	80ÿ90	18ÿ19	45ÿ50	10	10ÿ15
		1.6	0.8,0.9	300	90ÿ100 19ÿ20		45ÿ50	10	10ÿ15
		2.3	0.8,0.9	470	100ÿ130 20ÿ21		45ÿ50	10	10ÿ15
			1.0,1.2	470	120ÿ150 20ÿ21		45ÿ50	10	10ÿ15
		3.2	1.0,1.2	470	150ÿ180 20ÿ22		35ÿ45 10ÿ15 20ÿ25		
		4.5	1ÿ2	470	200ÿ250 24ÿ26		45ÿ50 10ÿ15 20ÿ25		

	Sheet thickness (mmÿ	**Wire diameter ÿmmÿ**	**Welding current (AND)**	**Welding voltage (V)**	**Welding speed (cm/min)**	**Free electrode outlet mm**	**Gas flow ÿl/minÿ**
inguinal	1.6	0.8,0.9	60ÿ80	16ÿ17	40ÿ50	10	10
	2.3	0.8,0.9	80ÿ100	19ÿ20	40ÿ55	10	10ÿ15
	3.2	1.0,1.2	120ÿ160	20ÿ22	35ÿ45	10ÿ15	10ÿ15
	4.5	1.0,1.2	150ÿ180	21ÿ23	30ÿ40	10ÿ15	20ÿ25

Electrode wire diameter	**Contact 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. CAUSES OF IMPROPER WORK

Symptoms	**Cause**	**Procedure**
No power, failure signal or device malfunction	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 is running)	Roller pressure too weak	Set the correct pressure
	Incorrect guide roller groove diameter	Install the correct guide roller
	Dirty wire guide in the holder	Clean the electrode wire guide
	Electrode wire blocked in the current tip	Replace the contact tip
No electrode wire feeding (feeder motor not working)	Device switched to Spool Gun mode	Switch the device to standard mode MIG torch using the switch (12) in the feed chamber

Irregular electrode wire feed	Damaged current terminal	Replace the contact tip
	The feed roller groove is dirty or damaged.	Clean the roller groove or replace the roller
	The wire spool rubs against the walls of the welding machine cover	Secure the wire spool correctly
The arc does not ignite	No proper contact of the ground wire terminal	Improve the contact of the ground terminal
	Damaged switch in MIG torch	Replace the switch
	Improper connection of the MIG gun to the device	Check the condition of the electrical connections of the holder, check if the pins in the socket are not broken or jammed
The arc is too long and irregular	Welding voltage too high	Reduce welding voltage
	Wire feed speed too slow	Increase wire feed speed
Bow too short	Welding voltage too low	Increase welding voltage
	Wire feed speed too high	Reduce wire feed speed
After switching on the power, the displays and diodes do not light up	No power supply voltage	Check the fuses at the mains connection
The fan is not working	The fan was blocked by a bent cover	Straighten the fan cover
Unsatisfactory weld quality when welding with the MIG method	Inappropriate or poor quality materials or consumables used,	Replace consumable parts. Change welding wire or gas cylinder to suitable or higher quality materials
	Shielding gas flows out at the wrong intensity.	Check the gas supply hose, improve the connection of the hose with the connectors and the condition of the quick connectors. Check the cylinder reducer
Unsatisfactory weld quality when welding using the MMA method, the electrode sticks to the welded material	Incorrect polarity of welding cable connection	Connect the welding cables correctly
	Wet electrode.	Replace the electrode
	The welder is powered by a generator or by a long extension cord with a cable cross-section that is too small.	Connect the device directly to the mains
Unsatisfactory weld quality when welding with the TIG method	Check the quality of the materials and consumables used, especially the tungsten electrode and shielding gas.	Replace consumables, replace the shielding gas with a higher quality one
	Shielding gas does not flow or flows with insufficient intensity	Check the cylinder reducer, gas supply hose, improve the hose connection with the connectors and the condition of the quick connectors.

13. OPERATING INSTRUCTIONS

The MIG 200HD welder should be operated in an atmosphere free from corrosive components and high dust levels. The device should not be placed in dusty places, near working grinders, etc.
Dust and contamination with metal filings on control boards, cables and connections inside the device may lead to an electrical short circuit and, consequently, damage to the welding machine.
Avoid operation in high humidity environments, especially where dew occurs on metal parts.

If dew appears on metal parts, e.g. after bringing a cold device into a warm room, wait until it dries completely and the device warms up to the ambient temperature. Starting a cold welder in these conditions can damage it. It is recommended that the welder be placed under a roof to protect it from adverse weather conditions if used outdoors.

The MIG 200HD device should be operated under the following conditions: - changes in the effective 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 above sea level up to 1000m

List of consumable parts:

No.	For steel wires	For aluminum wires
1	Feeder roller 30x10x10mm	Feeder roller Al 30x10x10mm
2	Contact tip TW-15 M6x25	Contact tip Al TW-15 M6x25
3	TW-15 current switch	
4	Gas nozzle TW-15	
5	Steel insert 3m	Teflon insert 3m

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

14. MAINTENANCE INSTRUCTIONS

As part of daily maintenance, you should 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 operating conditions) remove the cover and clean the device inside by blowing it with compressed air to remove dust and metal filings from the control boards and electrical wires and connections.

At least once every six months, the general condition of the device and electrical connections should be inspected, in particular:

- condition of electric shock protection -
condition of insulation
- status of the security system
- correct operation of the cooling system

Damage resulting from operating the welding machine in improper conditions or failure to follow maintenance recommendations is not covered by warranty repairs.

15. STORAGE AND TRANSPORT INSTRUCTIONS

The device should be stored at a temperature of -10°C to +40°C and relative humidity of up to 80%, free from corrosive fumes and dust. The transport of packed devices should be carried out in covered means of transport. During transport, the packed device should be secured against moving and ensured in the correct position.

16. COMPLETE SPECIFICATION

1. Source	1 pc.
2. TW-15 welding holder 3.	1 pc.
Ground cable with clamp 4. Electrode cable 4.	1 pc.
Operating instructions 5.	1 pc.
Packaging	1 pc.
	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 honored upon presentation by the claimant of proof of purchase (invoice or receipt) and a warranty card with the product name, serial number, date of sale and the stamp of the point of sale.

To order a warranty repair, please fill out the form available at www.tecweld.pl in the SERVICE tab. Based on 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 delivered with a welding torch. Complaints about the machine without a welding torch will not be considered.
The device sent for complaint must be packed in the original carton secured with original polystyrene shapes. TECWELD is not responsible for any damage to the welder caused during transport.

If you intend to dispose of this product, do not dispose of it with your normal household waste. According to the WEEE directive (Directive 2012/19/EU) in force in the European Union, separate collection methods must be used for used electrical and electronic equipment.
In Poland, in accordance with the provisions of the Act of 11 September 2015 on waste electrical and electronic equipment, it is prohibited to place used equipment marked with the crossed-out wheeled bin symbol together with other waste.

The user who intends to dispose of this product is obliged to return used electrical and electronic equipment to a collection point for used equipment. Collection points are run by, among others, wholesalers and retailers of this equipment and by municipal organizational units conducting activities in the field of waste collection.
The above statutory obligations were introduced to limit the amount of waste generated from used electrical and electronic equipment and to ensure an appropriate level of collection, recovery and recycling of used equipment.
Correct implementation of these obligations is especially important when used equipment contains hazardous components that have a particularly negative impact on the environment and human health.

TECWELD Piotr Polak
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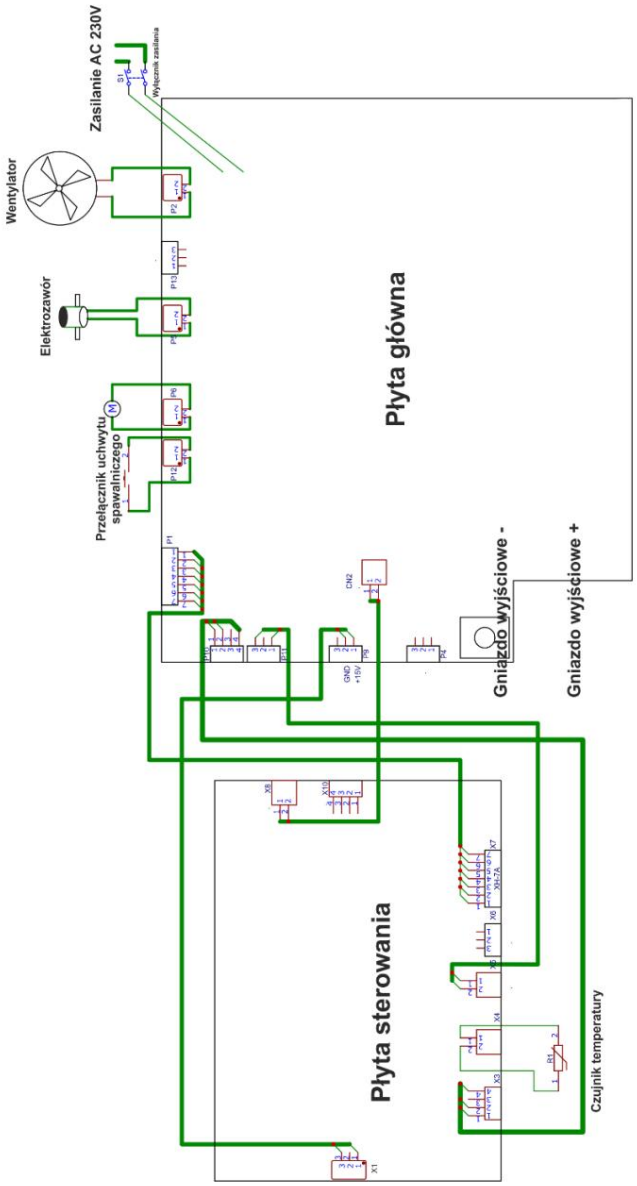
18. ELECTRICAL DIAGRAM



DECLARATION OF CONFORMITY
01/MIG200HD/2022

Authorized manufacturer representative:
TECWELD Piotr Polak
41-943 Piekary ŷlŷskie
ul. Emerald 21/3/6

branch:
41-909 Bytom
1G Krzyŷowa Street
POLAND

We declare that the product listed below:

Inverter welder

Type: **MIG200HD**

Manufacturer's trademark: Sherman workshop®

to which this declaration relates complies with the requirements of the following European Union directives and national provisions implementing these directives:

Low Voltage Directive LVD 2014/35/EU

EMC Electromagnetic Compatibility Directive 2014/30/EU

RoHS II Directives 2011/65/EU

and complies with the following standards:

PN-EN IEC 60974-1:2018-11/A1:2019-06 Arc welding equipment - Part 1: Welding energy sources,

PN-EN 60974-10:2014-12 Arc welding equipment - Part 10: Requirements for electromagnetic compatibility (EMC),

PN-EN IEC 63000:2019-01 Technical documentation for the assessment of electrical and electronic products electronic in relation to the restriction of hazardous substances.

Year of CE marking on the device: 2019

Bytom, 30.08.2022

Peter the Pole
(signature of authorized person)