MAGNUM MIG 208 ALU SYNERGIC

INSTRUCTIONS MANUAL

WARNING! FOR SAFETY REASON PLEASE READ AND UNDERSTAND THE FOLLOWING INSTRUCTIONS BEFORE FIRST USE OF THE DEVICE.

1. General instructions

Read the operating instructions!

The operating instructions provide an introduction to the safe use of the products. An incorrectly performed installation can result in material damage and injure persons as a result. For this reason, we do not accept any responsibility or liability for losses, damages or costs arising from incorrect installation, improper operation or incorrect usage and maintenance or any actions connected to this in any way.

- Read the operating instructions for all system components!
- Observe accident prevention regulations!
- Observe all local regulations!
- Confirm with a signature where appropriate.

2. Safety instructions

DANGER!

Electromagnetic fields!

The power source may cause electrical or electromagnetic fields to be produced which could affect the correct functioning of electronic equipment such as IT or CNC devices, telecommunication lines, power cables, signal lines and pacemakers.

• Observe the maintenance instructions! (see Maintenance and Testing chapter)
• Unwind welding leads completely!
• Shield devices or equipment sensitive to radiation accordingly!
• The correct functioning of pacemakers may be affected (obtain advice from a doctor if necessary).

Do not carry out any unauthorised repairs or modifications!
To avoid injury and equipment damage, the unit must only be repaired or modified by specialist, skilled persons! The warranty becomes null and void in the event of unauthorised interference.

• Appoint only skilled persons for repair work (trained service personnel)!

Electric shock!
Welding machines use high voltages which can result in potentially fatal electric shocks and burns on contact. Even low voltages can cause you to get a shock and lead to accidents.

• Do not touch any live parts in or on the machine!
• Connection cables and leads must be free of faults!
• Switching off alone is not sufficient!
• Place welding torch and stick electrode holder on an insulated surface!
• The unit should only be opened by specialist staff after the mains plug has been unplugged!
• Only wear dry protective clothing!
• Wait for 4 minutes until the capacitors have discharged!

WARNING!

Risk of injury due to radiation or heat!
Arc radiation results in injury to skin and eyes.
Contact with hot workpieces and sparks results in burns.
• Use welding shield or welding helmet with the appropriate safety level (depending on the application)!
• Wear dry protective clothing (e.g. welding shield, gloves, etc.) according to the relevant regulations in the country in question!
• Protect persons not involved in the work against arc beams and the risk of glare using safety curtains!
Explosion risk!
Apparently harmless substances in closed containers may generate excessive pressure when heated.
• Move containers with inflammable or explosive liquids away from the working area!
• Never heat explosive liquids, dusts or gases by welding or cutting!

WARNING!

Smoke and gases!
Smoke and gases can lead to breathing difficulties and poisoning. In addition, solvent vapour (chlorinated hydrocarbon) may be converted into poisonous phosgene due to the ultraviolet radiation of the arc!
• Ensure that there is sufficient fresh air!
• Keep solvent vapour away from the arc beam field!
• Wear suitable breathing apparatus if appropriate!

Fire hazard!
Flames may arise as a result of the high temperatures, stray sparks, glowing-hot parts and hot slag produced during the welding process.
Stray welding currents can also result in flames forming!
• Check for fire hazards in the working area!
• Do not carry any easily flammable objects such as matches or lighters.
• Keep appropriate fire extinguishing equipment to hand in the working area!
• Thoroughly remove any residue of flammable substances from the workpiece before starting welding.
• Only continue work on welded workpieces once they have cooled down.
Do not allow to come into contact with flammable material!
• Connect welding leads correctly!

Risk of accidents if these safety instructions are not observed!
Non-observance of these safety instructions is potentially fatal!
• Carefully read the safety information in this manual!
• Observe the accident prevention regulations in your country.
• Inform persons in the working area that they must observe the regulations!

Danger when coupling multiple power sources!
Coupling multiple power sources in parallel or in series has to be carried out by qualified personnel and in accordance with the manufacturer's guidelines. Before bringing the power sources into service for arc welding operations, a test has to verify that they cannot exceed the maximumallowed open circuit voltage.
• Connection of the machine may be carried out by qualified personnel only!
• When decommissioning individual power sources, all mains and welding current leads have to be safely disconnected from the welding system as a whole. (Danger due to inverse voltages!)
• Do not couple welding machines with pole reversing switch (PWS series) or machines for AC welding, as a minor error in operation can cause the welding voltages to be combined.

WARNING!

Hazards due to improper usage!
Hazards may arise for persons, animals and material objects if the equipment is not used correctly. No liability is accepted for any damages arising from improper usage!
• The equipment must only be used in line with proper usage and by trained or expert staff!
• Do not modify or convert the equipment improperly!

CAUTION!

Installation site!
The machine must not be operated in the open air and must only be set up and operated on a suitable, stable and level base!
• The operator must ensure that the ground is non-slip and level, and provide sufficient lighting for the place of work.
• Safe operation of the machine must be guaranteed at all times.

Equipment damage due to dirt accumulation!
Unusually high quantities of dust, acid, corrosive gases or substances may damage the equipment.
• Avoid high volumes of smoke, vapour, oil vapour and grinding dust!
• Avoid ambient air containing salt (sea air)!

Non-permissible ambient conditions!
Insufficient ventilation results in a reduction in performance and equipment damage.
• Observe the ambient conditions!
• Keep the cooling air inlet and outlet clear!
• Observe the minimum distance of 0.5 m from obstacles!

3. Applications

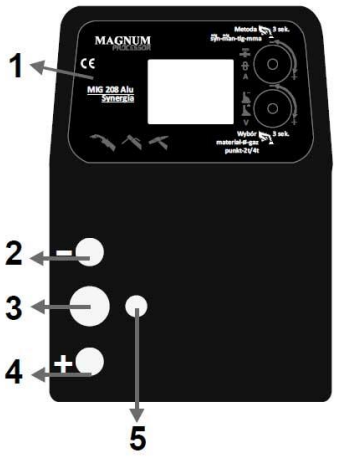
Magnum MIG 208 is intended for standard MIG/MAG welding but also MMA, TIG Lift and brazing. The device is made for metal arc welding of low-alloy, high-alloy, carbon steels, aluminium and its alloys,

The manufacturer is not liable for damage caused by improper use of the device.

4. Welding machine description

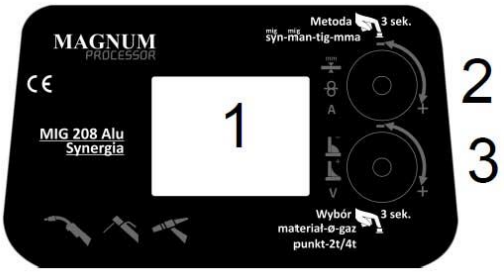
4.1 Front view

1. Functions and parameters control panel
2. Connection socket (-)
3. Welding torch connection (EURO connector)
4. Connection socket (+)
5. Welding current polarity selector cable
   - MIG/MAG: Connection socket for “+” welding current
   - Self-shielding cored wire/TIG: Connection socket for “-” welding current



4.2 Control panel

1. LCD screen
2. Multifunctional knob/button
3. Multifunctional knob/button



5. Selecting welding process

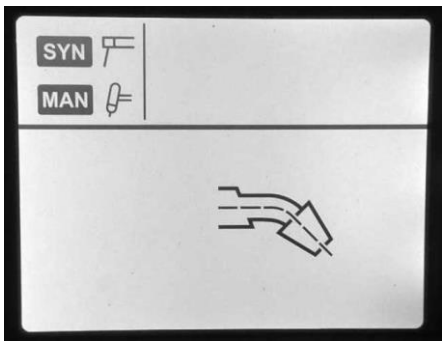
By pressing the upper knob (4.2.2) for two seconds you get access to welding process selection menu. Turning the knob selects desired parameter which is indicated by blinking icon. Selection is confirmed by pushing the knob. For MMA and TIG Lift processes only welding current can be adjusted.

SYN – MIG/MAG synergic process

MAN – MIG/MAG manual process

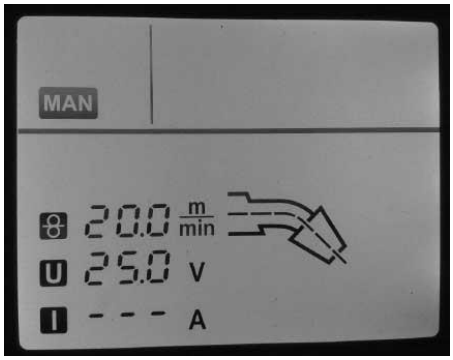
– Coated electrode welding (MMA)

– TIG Lift welding process



5.1 Choosing MIG/MAG manual welding process (MAN)

In the MIG/MAG manual welding menu wire feed speed and welding voltage can be adjusted. Turning the upper knob changes value for wire feed and the lower knob changes voltage. Welding current will be displayed after arc is ignited.

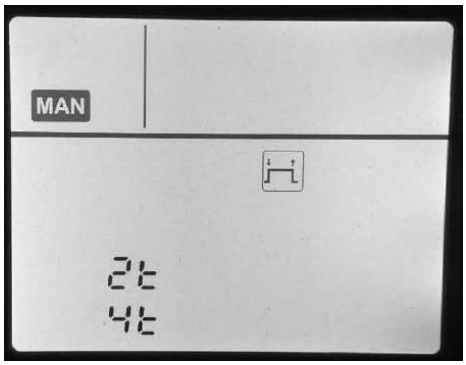


5.1.1 Choosing Spot welding

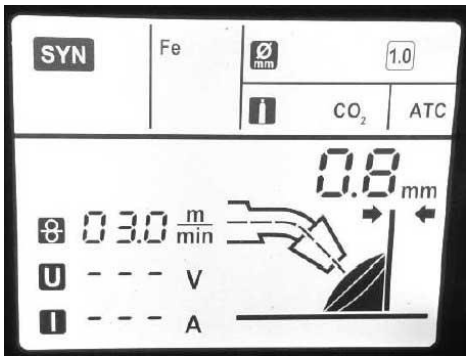
In the MAN menu you can get an access to spot welding and 2T/4T mode. Spot welding can be selected by pressing the lower knob for 2s until spot welding icon blinks. Turning the lower knob changes the value of spot welding time form 0.1s to 5.0s. Setting the function to OFF value means that the function is disabled.

5.1.2 Selecting 2T/4T mode

To choose the 2T4T mode first the spot welding function have to be set to OFF and confirmed by pressing lower knob. Than the 2T/4T icon should blink it means that now you can choose between 2T or 4T. When appropriate mode is selected push the lower knob to confirm. Display shows icon if the 4T is selected. However if the 2T is selected the icon is not displayed

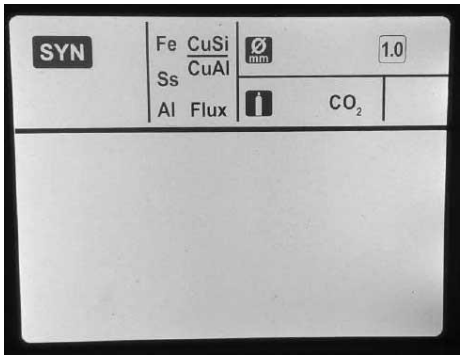


5.2 Synergic MIG/MAG process (SYN)



Synergic MIG welding gives possibility to choose between previously programmed synergic settings.
In this mode the are different parameters displayed on the screen like workpiece material, wire diameter, shield gas type, ATC function (where applicable), material thickness, wire feed speed, weld thick graphic depiction, 4T icon (if 4T mode Is selected)

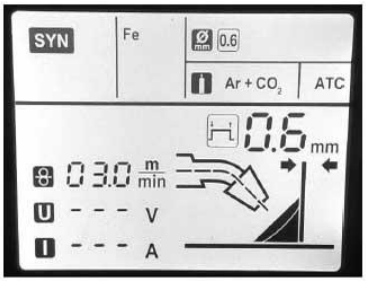
5.2.1 Changing parameters of synergic mode (SYN)

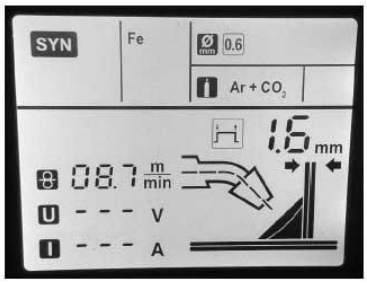


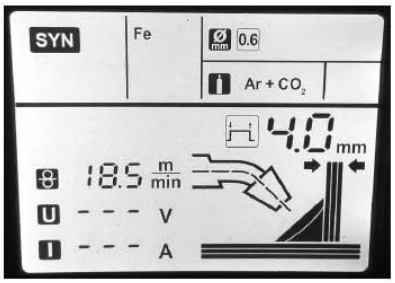
After selecting synergic mode by pressing lower knob for 2 seconds it enables to choose desired values like workpiece material, wire diameter and shield gas. Some synergic programs does not allow to change parameters like shield gas. Turning the knob selects the parameter we want to change, pushing it confirms the selection and proceeds to the next parameter. After choosing shield gas and confirming it a standby menu is displayed.

5.2.2 Changing material thickness in synergic mode (SYN)

In the standby menu you can adjust additional parameters like workpiece material thickness (upper knob) and weld thickness (lower knob). Wire feed speed adjust automatically depending on chosen material thickness. If the material thickness is lower than 1.5mm an ATC functions turns on. It enables to weld thin materials by stabilising the arc and reducing heat affected area.

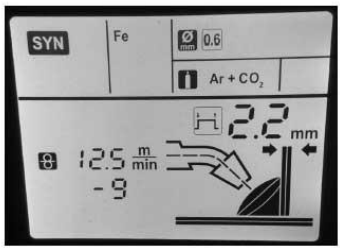


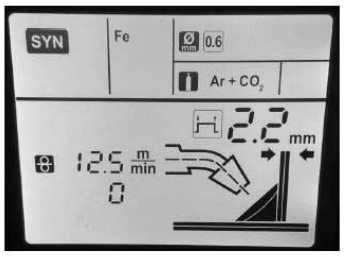


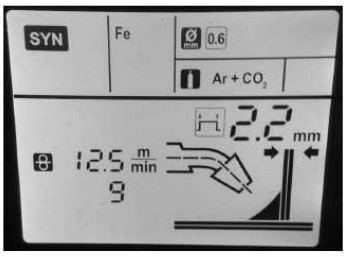


5.2.3 Description of a weld thickness depiction graphic

- **Weld icon is raised (value -9):** lower heat input with less penetration
- **Weld icon is flat (value 0):** best setting for moderate penetration
- **Weld icon is dished (value 9):** higher heat input with more penetration







5.2.4 Synergic programs and applicable parameters table

Material	Wire diameter (mm)	Shield gas
Fe – steel	0.6 / 0.8 / 1.0	CO2 / Ar+CO2
Ss – stainless steel, alloy steel	0.8 / 1.0	Ar+O2 / Ar+CO2 (1-2%)
Al – Aluminium, aluminium alloys	0.8 / 1.0	Ar
CuSi, CuAl - brazing	0.8 / 1.0	Ar
Flux – gasless welding	0.8 / 0.9 / 1.2	Ar* (Not needed. Please refer to wire manufacturer instructions)

6. Advanced settings

Magnum MIG 208 Alu Synergy gives more additional features to be set in the manual (MAN) and a synergic (SYN) mode as well. To enter the menu both knobs must be pressed simultaneously for two seconds. Desired parameter can be adjusted by turning the lower knob. Pressing the knob confirms the selected value and proceeds to the next parameter.

Wire feed initial speed. Adjustable from 30% to 100% of feeder rated speed.

Inductance regulation. Can be adjusted from 0 to 5 points. Higher value gives soft arc, shallow penetration and less welding spatter. Lower value gives forceful arc and deeper penetration.

Burn back control function. This function keeps the current after releasing the trigger. It burns end of a wire to prevent it from sticking to material. Set range: 0 ÷ 200 [ms]

Post flow adjustment. This enables to set the gas post flow time delay. Can be set from 0s to 5s.

7. Technical specification

Power supply	AC 230V / 50Hz
Welding processes	MIG, MAG, MMA, Lift TIG, Nonfusion welding
Technology	IGBT
Welding current	200A
Duty cycle	40%
Current regulation	Stepless (fluent)
Wire spool weight	1 - 5 kg
Wire feed speed	2 - 14 m/min
Weight	16 kg
Dimensions	415 x 245 x 398 mm
2T / 4T	YES
2 roll wire feed	YES

8. Connecting power supply precautions

WARNING! Before any operations carried out on the device pull the plug out of the power socket.

1. Make sure that the device is not connected to the electricity
2. Check if the ground wire has a clamp or screw clamp
3. Connect the ground clamp to the socket on the front panel with proper polarization.
   In the MIG-MAG process ground clamp plug should be connected to the "-" socket. When using self-shielded wire the ground clamp should be connected to “+” socket. In the other available socket put the built-in polarization selection plug. Please note that device won’t start work without polarization selector plugged in.
4. Insert the torch plug into the Euro socket on the panel and tighten the holding ring.

9. Mounting the wire spool into the feeder

1. Please make sure that all the rollers installed in the drive assembly are corresponding to the type and diameter of the wire inserted. Factory installed rolls are intended for steel wire from 0.6 to 0.8mm. For steel wires use V-shaped groove rolls, and for aluminium wires U-shaped groove rolls.
2. Place the wire spool on the spool mount, taking care to ensure that the wire unwinding direction was in line with the direction of the wire entering the drive unit.
3. Lock the reel by tightening the plastic nut.
4. Release the roll locking mechanism to allow the wire to enter the feeder.
5. Insert the end of the wire into the guide located in the back of the feeder and carry it out over the drive rollers and insert it into the connector leading to the welding torch. Make sure the wire is straight and the tip is filled so it won’t get stuck.
6. Push the wire into the grooves by tightening pressure of the locking mechanism.
7. Remove the gas nozzle from a troch and unscrew the contact tip.
8. Turn on the device.
9. Unfold the torch cable so that it is in a straight line, then press the trigger until wire comes out of the torch (approx. 20 mm), release the button.
10. Screw the current tip, put on the gas nozzle back on.
11. Adjust the downforce of the feed roller by turning the pressure knob. Too low contact force, cause there will be a sliding of the drive roller. Too much force increases the resistance in the feeder and can deform the wire.

10. Cleaning and maintaining the device

The protection class of this device is IP21S. Do not use the device in the rain, nor expose it to extensive moisture.

WARNING!

Device based on electronic components. Metal grinding and cutting close to the welder may cause contamination of the inside of the device, thus causing its damage.

The damage mentioned above is not covered by the warranty. If you need to work in such an environment, please clean device before use by blowing the inside of the welding machine with compressed air.

To prolong the life and reliable operation of the device, several rules must be observed:
1. The device should be placed in a well-ventilated room where there is free air circulation.
2. Do not place the device on a wet surface.
3. Use a wire diameter and spool weight according to the table.
4. Check the technical condition of the device and welding cables.
5. Remove any flammable materials from the welding area.
6. Use suitable protective clothing for welding: gloves, apron, safety boots and welding helmet

11. Troubleshooting

Error list:
Thermometer icon – Device is overheating. Stop work until welder cools down.
ALL 001 – Too low/Too high supply voltage
ALL 002 – Short circuit between torch and ground cables. Please locate the fault and remowe the possible reason.
ALL 003 – General overload. Please check if the wire feed speed or welding current isn't set to high.

Symptoms	Possible cause	Remedy
Wire feed does not feed the wire or feeding is irregular (feeder motor is working)	- Feeding roll grooves are dirty - Contact tip is damaged - Locking mechanism is not tighten - Torch liner is stuck with debris - Feeder roll type is wrong - Contact tip diameter is wrong	- Clean or change roll - Change contact tip - Tighten the locking mechanism - Clean or change the liner - Mount appropriate roll - Check the contact tip and change for a right one if needed
Wire feed does not feed the wire (feeder motor is not working)	- Faulty feeding motor - Control module failure	- Turn directly to the service centre
Arc is not igniting	- Ground clamp not connected or connected improperly - Polarization selector cable not connected	- Check the connection of the ground clamp - Plug the selector to the appropriate socket
Arc is too long and irregular	- Welding current is to high - Wire feed is too slow	- Adjust the current value - Change wire feed speed
Arc is too short	- Welding current to low - Wire feed to fast	- Adjust the current value - Change wire feed speed
ON/OFF button does not light up	- No electric supply - Fuse failure - Switch malfunction	- Check the power connections - Replace the fuse - Replace the switch

12. Transporting and storage

Always store the devices in a dry, ventilated place, out of reach of children and bystanders. Protect the device against vibrations and shocks during transport.

13. Recycling

The packaging and device materials are suitable for recycling use. Disposal of the packaging and device must be done in accordance with local regulations. The packaging materials should be protected against children as they are potential source of danger.

14. Declaration of conformity

LVD 2014/35/EU
EMC 2014/30/EU
RoHS 2011/65/EU
EN 60974-1:2012,
EN 60974-10:2014

15. Warranty

The manufacturer of the device provides full warranty service for the power supply unit within 24 months from the day device was purchased. An individual warranty card is issued for each device. Warranty is valid only if all conditions listed in the instructions manual were fulfilled. If the device was used inappropriate or against instructions the warranty becomes invalid. Service centre does not cover the postage cost for sending the device for repairs or sending it back after repairs.

Spaw S.C. – Service Centre
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30-731 Krakow
Poland
phone: +48 123 480 722
repair request form - www.spawsc.pl - service tab.