User's manual

Welding Machine MIG Flux 30–100 A

63319

Illustration similar, may vary depending on model

Read and follow the operating instructions and safety information before using for the first time.

Technical changes reserved!
Illustrations, functional steps, and technical data may deviate insignificantly due to continuous further developments.

Updating the documentation
If you have suggestions for improvement or have found any irregularities, please contact us.

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Introduction

Thank you for choosing to purchase this quality product. To minimise the risk of injury, we ask you to always take some basic safety precautions when using this product. Please read this operating manual carefully and make sure that you understand it.
Keep these operation instructions in a safe place.

Safety instructions

Welding is dangerous and might harm you or others. Therefore, you must protect yourself appropriately when welding. Refer to the user's safety rules in accordance with the manufacturer's safety precautions.

- Before operating the machine, you must be trained professionally.
- Use state (national) safety agency-approved industrial safety welding material.
- The user must be qualified and have a valid metal welding certificate (OFC).
- Avoid electric shocks. They can lead to severe injuries or even death.
- Install the earth equipment according to the application criteria.
- Never touch live components if wearing wet gloves/clothes or if having skin contact.
- Make sure that you are insulated from the ground and workpiece.
- Make sure that you have a secure working position.
- Before maintaining or repairing the welding machine, disconnect it from the mains.
- Breathing in smoke or gas can be harmful to your health.
- Therefore, keep your head away from smoke and gas to avoid breathing in of welding exhaust fumes.
- When welding, ensure a good ventilation of the working zone by using extraction or ventilation units.
- Welding arc radiation can cause eye damages and skin burns. Therefore, to protect your eyes and body, wear a suitable welding helmet.
- Use appropriate protective screens to protect persons standing nearby.
- Any improper operation can provoke a fire or an explosion.
- Welding sparks can cause fire. Therefore, make sure that no flammable material is nearby and pay attention to possible fire dangers.
- Have a fire-extinguisher at hand and have a trained person use it in case.
- Welding air-tight containers is forbidden.
- The welding machine can only be used for welding. Any improper use (e.g., defrosting pipes, recharging batteries, or heating) is strictly forbidden.
- Do not touch hot workpieces with bare hands; otherwise, you will be severely burnt.
- During permanent use of the welding machine, cooling is necessary.
- Magnetic fields impair pacemakers.
- Persons equipped with pacemakers should leave the immediate welding zone before having consulted a doctor.
- Moving parts can provoke injuries.
- Therefore, keep hands, hair, and tools aways from moving parts such as the fan to avoid injuries or damages to the machine.
- All doors, panels, covers, and other protective devices must be closed during operation.

Working environment

- Welding should be performed within a dry environment.
- The temperature within the working zone should be comprised between -10 ℃ and 40 ℃.
- Avoid welding outdoors, unless you be protected from sunlight and rain. Always keep the machine dry and do not place it to a wet ground or in a puddle.
- Avoid welding in dusty areas or in areas with presence of corrosive chemical gases.
- Gas-shielded welding should be performed in a zone without a lot of draught.

Ventilation

During welding, there is presence of a heavy current; therefore, the natural draught cannot provide sufficient cooling. Ensure good ventilation via the ventilation slots of the machine. The minimum distance between the machine and all other objects within or near the working zone should be 30 cm. Good ventilation is vital for the normal performance and service life of the machine.

Welding

This welding machine is equipped with an overcurrent protection, overvoltage protection, and overheating protection. If the input voltage or output current is too high or the inner temperature of the machine gets too hot, the machine switches itself off automatically. When used too much (e.g., use with too high a tension), the machine might be damaged; take account of it.

Welding is forbidden with the machine being overcharged. Bear in mind to always respect the maximum load current (see corresponding duty cycle). Make sure that the welding current does not exceed the maximum load current. If the machine is overcharged, its service life can be reduced or it might even be damaged.

Overvoltage is forbidden. The tension range for the power supply of the machine is given in the “Welding parameters” chart (see below). The machine is equipped with an automatic tension compensation that keeps the tension range within the rated range. Should the input tension exceed the given value, the components of the machines might be damaged.

Sudden standstill might happen if the machine is in a protection cycle. In this case, restarting the machine is not necessary. Let the integrated fan running and lowering the inner temperature of the machine.

Description

The working principle of this welding machine is to rectify the input AC current into DC current, and use high-power IGBTs to convert the DC current into high-frequency AC current, then reduce and rectify the voltage.

The welding machine is equipped with a synergic adjustment function. The user does not need to adjust the working voltage and feed speed separately; thus, it will be easier to operate the machine and to achieve a good welding effect.

Other advantages of the welding machine:

- reliable and stable IGBT inverter technology
- tolerance with unstable working voltage
- electric throttle control, simple arc ignition, less spatters, stable current, good shaping
- easy-to-use synergic adjustment
- compared to usual welding machines, highly reduced number of electric components and improved switching reliability
- efficiency factor of this welding machine can reach more than 85 %

Note!

- This welding machine has no gas function (fluxing agent); therefore, it can only weld a max. of 1 kg welding wire. When using, choose the appropriate size of welding wire.
- Also, note that the size of nozzles and wire spool should be equal. — Example: With a 1.0 mm wire, use the 1.0 mm electrode in the welding gun and the 1.0 mm side of the wire-feed roll.

Control panel

Figure1

Figure 1

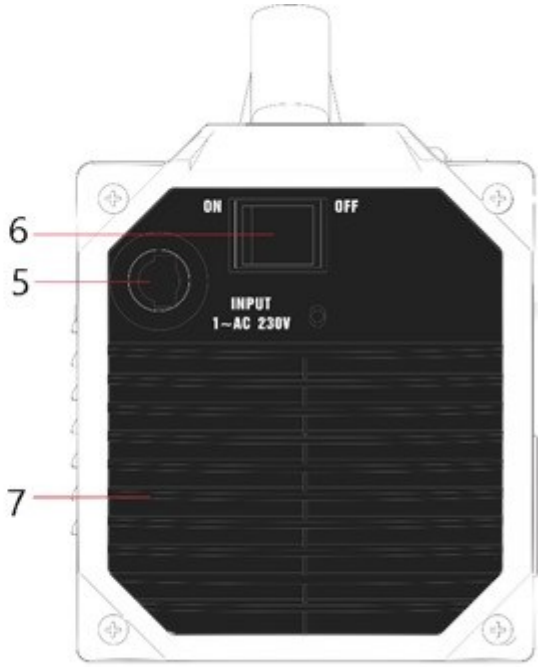


Figure2

Figure 2

№	Name
1	Power display
2	Power LED
3	Adjustment knob to adjust the output current
4	Connection point to welding gun
5	Connection point to power cable
6	Power switch
7	Fan

Installation

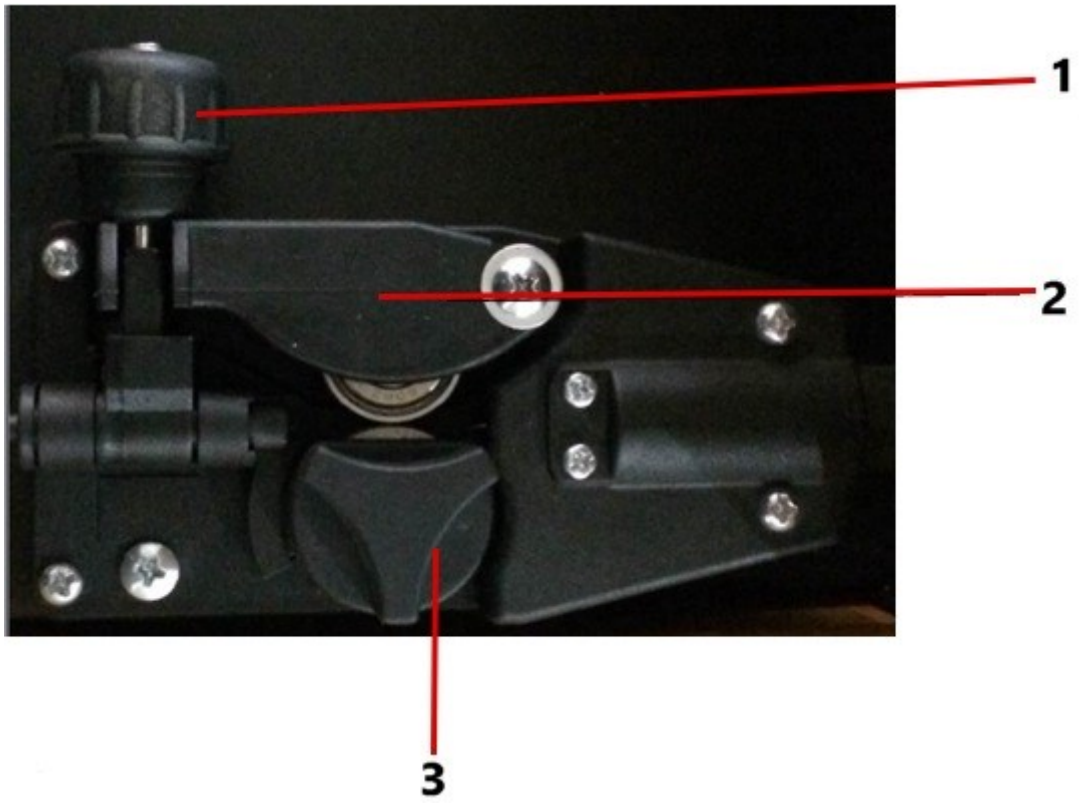
Attention! When delivered, the welding machine is ready for use, a 0.8 mm welding wire is mounted. When using a non-recommended welding wire, make sure that the size and type of that is suitable for the contact tip of the welding gun, wire-feed control, and polarity of the device.

Adapting the wire feed

When delivered, the machine is prepared for use of 0.8 filler wire. Should you wish to use 1.0 mm wire, the guide groove needs to be adapted. Adapt the guide groove as follows:

1. Open the upper cover of the welding machine.
2. Lift the pressure regulator **(1)** and remove the pressure control lever **(2)** from the feed roll.
3. Remove the locking screw **(3)** of the feed roll by turning it counter-clockwise and moving it off the roll.
4. Remove the feed roll and observer the wire sizes engraved on either side of the roll.
5. Insert the roll so that the engraved size on the side of the roll is directed towards you.

6. Re-place the locking screw **(3)** of the feed roll.
7. Re-place the pressure control lever **(2)** to its initial position and re-adjust the pressure regulator **(1).**



Inserting the wire spool

This welding machine is only suitable for 10 cm diameter wire spools. Insert the wire spool as follows:

1. Open the welding machine cover, remove the locking screw **(1)** and the spacer from the wire spool.
2. Slide a 10 cm diameter wire spool onto the wire shaft and re-place the spacer and locking screw.

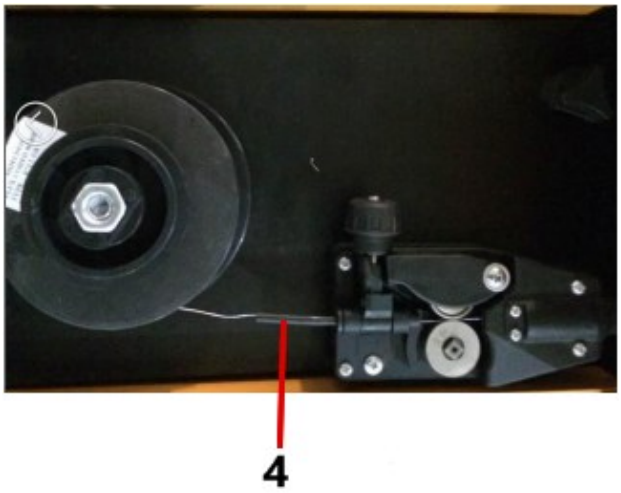
Threading welding wire through drive motor up to welding gun

Note! This welding machine can only use self-shielding filler wire sized 0.8 or 1.0 mm.

Install the welding wire as follows:

1. Switch off the power switch and disconnect the welding machine from the power supply.
2. Remove the contact tip and nozzle from the end of the welding gun.
3. Make sure that the feed roll is installed in a position appropriate for the size of the wire used.
4. Unlock the pressure regulator **(1)** and lift the pressure control lever **(2).** Make sure that the feed roll is suitable for the size of the welding wire used (see previous section). The feed roll is pre-installed for 1.0 mm wire.
5. Carefully remove the welding wire from the wire spool.
   Note! Do not let go the wire, otherwise the entire spool could unwind itself.
6. Cut off the small piece of the bent segment of the front end of the welding wire and align the welding wire for about 8 cm (3.0″).
7. Thread the welding wire into the wire feed **(4)** via the wire drive roll up to the wire feed of the welding gun.
8. Re-place the pressure control lever **(2)** to its initial position and re-adjust the pressure regulator **(1).**

9. Now reconnect the welding machine with the mains and switch the power switch on again. Adjust the feed speed desired.
10. Do point the gun away from your body or other persons and press the trigger to begin feeding. **Note!** While doing so, observer the drive roll to see if there is a slip between the roll and wire. If there is one, switch the machine off and tighten the pressure regulator **(1).** Then re-check.
11. As soon as the wire comes out of the gun, re-place the contact tip and nozzle. Cut off approx. 0.5–1 cm wire in front of the contact tip.



Attention!
Do not point the welding gun towards your own body or towards other persons while the wire is being inserted or coming out; never hold the hand in front of the contact tip; the cut-off end of the wire is extremely sharp! Neither hold your fingers near the feed rolls; they risk to be pinched between them.

Use

Using this welding machine, you will be able to perform many different welding applications; however, these must be trained and tested before you can embark on a real project. The welding process described in the following is to be considered as base for beginners.

1. Always wear a welding helmet, gloves, a long-armed shirt, and long-legged trousers when welding.
2. Connect the earth clamp to the pieces that you will be welding. Make sure that the contact point of the earth clamp is a clean piece of metal free from paint, grease, rust, oil, etc. It is advisable to connect the earth clamp as close to the welding area as possible.
3. Check the welding area making sure that it is free from paint, grease, rust, oil, etc., too.
4. Connect the welding machine to the power supply and switch on the power switch.
5. Press the trigger of the welding gun. The gun must point away from your body. Then disengage the trigger and cut off approx. 0.6 cm (¼″) wire.
6. Introduce the wire end protruding from the gun into the spot to be welded.
7. Hold the welding gun perpendicularly to the material base and tilted back by 15–20°.
8. As soon as you engage the trigger and the arc has been ignited, you will see a puddle form, that consists of welded material; this puddle, called the welding bead, follows the movements of the welding gun. The size of this puddle determines the speed that you should apply when moving the welding gun.
9. Disengage the trigger of the welding gun to interrupt the welding process.
10. After welding, switch off the device and disconnect it from the power supply.

Technical specifications

Model name	MMA-110
Intake voltage (V)	1~220 V
Frequency (Hz)	50
Current (A)	100
No-load voltage (V)	26
Relative operating cycle (%)	35
Welding wire	max. 1 kg (with fluxing agent core)
Isolation class	F
IP code	IP21S

Caution!

Diameter of electrode (mm)	0.8–0.9
Recommended metal plate thickness (mm)	0.5–5
Wire roll (kg)	0.5–1

Troubleshooting

Problem	Proposed solution
Machine switched on, yet power LED is off, fan does not work, there is no welding performance	1. Check if the power switch is switched off. 2. Check for loose cables inside the machine. 3. Missing input power 4. Defective fan
Display normal, fan is working normally, yet there is no output current.	1. Check if the inner cable is in good condition. 2. Check if the inner connections are in good condition. 3. Check if the power LED is lit. If not, there is a circuit problem.
Machine switched on, yet fan does not work, there is no output current	1. Defective external power supply 2. Damage to the supply cable
Machine switched on, normal welding process, yet protection switch engaged suddenly	1. Too high intake current due to electric leak 2. IGBT or bridge damaged
Machine switched on, yet output current too low during welding	1. Insufficient cable connection of the potentiometer 2. Potentiometer damaged 3. Error in the circuit
Electrode holder getting very hot	Nominal current of electrode holder beneath actual working current; replace with electrode holder with higher nominal current.
Excess of welding spatters during MMA welding.	Wrong output polarity; reverse polarity.

Regulations for waste disposal

The Waste Electrical and Electronic Equipment Directive (WEEE Directive, 2012/19/EU) of the EU was implemented in the German law related to electrical and electronic equipment and appliances.

All WilTec electric devices that fall under the WEEE directive are labelled with the symbol of a crossed-out wheeled rubbish bin. This symbol indicates that this electric device must not be disposed of with the domestic waste.

WilTec Technik GmbH is registered with the German registration authority EAR (Stiftung Elektro-Altgeräte Register) under the WEEE-registration number DE45283704.

Disposal of used electrical and electronic devices (intended for use in the countries of the European Union and other European countries with a separate waste collection system for these devices).
The symbol on the packaging or the product itself indicates that this product must not be treated as normal domestic waste but must be disposed of at a recycling collection station for electrical and electronic waste.
By disposing of this product correctly, you contribute to the protection of the environment and the health of your fellow people. Inappropriate disposal threatens the environment and health.

Material recycling helps to reduce the consumption of raw materials.

Additional information about the recycling of this product can be provided by your local commune, the municipal waste disposal facilities, or the store where you purchased the product.

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Important Note: