ANDELI TIG-250MPC

ANDELI TIG-250MPC Multiprocess Welder User Manual

Model: TIG-250MPC | Brand: ANDELI

1. Introduction and Overview

The ANDELI TIG-250MPC is a versatile 3-in-1 multiprocess welding machine designed for TIG, Pulse TIG, CLEAN, and MMA (ARC) welding. This portable welder features dual voltage capability (110V/220V) and an advanced IGBT high-frequency soft switching conversion for high efficiency and stable performance. It is suitable for welding various materials including carbon steel, stainless steel, copper, and titanium.
This manual provides essential information for the safe and effective operation, setup, and maintenance of your ANDELI TIG-250MPC welder. Please read it thoroughly before use.



Figure 1.1: The ANDELI TIG-250MPC Multiprocess Welder shown with included accessories such as the TIG torch, ground clamp, electrode holder, and power cables.

2. Safety Information

WARNING: Welding can be dangerous. Always follow safety precautions to prevent injury or death.

- **Electric Shock:** Can kill. Do not touch live electrical parts. Wear dry insulating gloves and protective clothing. Ensure proper grounding.
- **Fumes and Gases:** Can be hazardous to your health. Keep your head out of the fumes. Use ventilation or exhaust to remove fumes from the breathing zone.
- **Arc Rays:** Can burn eyes and skin. Wear a welding helmet with a proper shade filter and protective clothing.
- **Fire and Explosion:** Hot metal and sparks can cause fires. Keep combustibles away from the welding area. Have a fire extinguisher readily available.
- **Burns:** Hot metal can cause severe burns. Wear protective gloves and clothing.
- **Noise:** Excessive noise can damage hearing. Wear ear protection.

Always ensure your work area is well-ventilated and free of flammable materials. Consult local safety

regulations and standards before operating the welder.

3. Product Features

The TIG-250MPC welder incorporates several advanced features for enhanced performance and user convenience:

- **Multifunctionality:** Offers Pulse TIG, CLEAN, and MMA (ARC) welding capabilities in one compact unit.
- **High Definition LED Display:** A large digital panel allows for easy adjustment and clear reading of welding parameters.
- **Advanced Control Scheme:** Utilizes IGBT high-frequency soft switching conversion for improved efficiency, smaller size, and lighter weight.
- **Cleaning Function:** Specifically designed to clean the color of the workpiece after ordinary argon arc welding, enhancing the finish.
- **Dual Voltage Operation:** Supports both 110V and 220V power inputs, making it suitable for various operational environments.
- **Material Compatibility:** Capable of welding carbon steel, stainless steel, copper, and titanium.
- **Parameter Storage:** Features a storage function for up to 6 groups of prescribed parameters and 4 groups of recommended parameters, simplifying setup for recurring tasks.



Figure 3.1: The high-definition LED screen provides clear and intuitive display of welding parameters, making adjustments easier for both beginners and experienced users.



Figure 3.2: Illustration of the various welding modes available on the TIG-250MPC, including TIG, Pulse TIG, MMA, Clean, and Lift TIG.



Figure 3.3: Examples of materials that can be welded with this machine, including stainless steel, galvanized pipe, square tube, and iron.



Figure 3.4: The welder supports both 110V for small operations and 220V for industrial operations, indicated by the dual voltage switch.

4. Setup

Before operating the welder, ensure all connections are secure and correct.

4.1 Power Connection

1. Verify the input voltage matches the welder's setting (110V or 220V). The machine automatically detects the voltage.
2. Connect the power cord to a suitable grounded electrical outlet. Ensure the circuit can handle the

required amperage.

4.2 Welding Cable Connections

1. **Ground Clamp:** Connect the ground clamp cable to the negative (-) terminal on the front panel. Secure the ground clamp to the workpiece or welding table, ensuring good electrical contact.
2. **TIG Torch:** For TIG welding, connect the TIG torch cable to the positive (+) terminal. Connect the gas hose from the torch to the gas outlet on the welder (if applicable, or directly to the gas regulator).
3. **Electrode Holder (MMA/ARC):** For MMA/ARC welding, connect the electrode holder cable to the positive (+) terminal.



Figure 4.1: Exploded view of a TIG torch showing its main components: tungsten electrode, collet, collet body, nozzle, and short back cap.

4.3 Gas Connection (for TIG)

1. Connect the argon gas cylinder regulator to the gas inlet on the rear of the welder (or directly to the TIG torch if it has an integrated gas valve).
2. Ensure all gas connections are tight to prevent leaks.
3. Set the gas flow rate according to your welding requirements (typically 10-15 CFH for TIG).

5. Operating Instructions

Once the setup is complete, you can begin operating the welder.

5.1 Powering On and Mode Selection

1. Turn on the power switch located on the rear panel of the welder.
2. The LED display will illuminate. Use the control knob and buttons to navigate and select your desired welding mode (TIG, Pulse TIG, CLEAN, or MMA).

5.2 Parameter Adjustment

Adjust welding parameters using the digital control panel. The large LED display provides clear feedback.

- **Current (Amperage):** Adjust the main welding current based on material thickness and type.
- **Pulse Frequency (Hz):** For Pulse TIG mode, adjust the pulse frequency to control the heat input and bead appearance.
- **Pulse Duty Cycle (%):** Controls the ratio of peak current time to background current time in Pulse TIG.
- **Clean Function:** Select this mode to clean the weld area or post-weld discoloration.
- **Storage Function:** The welder allows you to save and recall frequently used welding parameters. Refer to the display for saving and loading presets.



Figure 5.1: Visual examples of weld beads produced using TIG, Pulse TIG, and Spot Welding modes, demonstrating different finishes and penetration characteristics.



Figure 5.2: Illustration of arc initiation during spot welding, showing the precise control for starting the arc.

5.3 Welding Techniques

Refer to standard welding practices for specific techniques related to TIG, Pulse TIG, and MMA welding. Always practice on scrap material before welding critical components.

6. Maintenance

Regular maintenance ensures the longevity and optimal performance of your welder.

- **Cleaning:** Periodically clean the welder's exterior with a dry cloth. Use compressed air to blow out dust and debris from the ventilation openings. Ensure the machine is unplugged before cleaning.
- **Cable Inspection:** Regularly inspect all welding cables, power cords, and gas hoses for cuts, cracks, or damage. Replace damaged components immediately.
- **TIG Torch Maintenance:** Inspect the TIG torch consumables (tungsten electrode, collet, collet body, nozzle) for wear. Replace as needed to maintain arc stability and weld quality.
- **Ground Clamp:** Ensure the ground clamp is clean and makes good contact with the workpiece.

7. Troubleshooting

This section addresses common issues you might encounter.

Problem	Possible Cause	Solution
Welder does not power on	No power from outlet; Power switch off; Internal fuse blown	Check power outlet and circuit breaker; Turn on power switch; Contact qualified service personnel.
No welding arc	Poor ground connection; Incorrect welding mode/settings; Damaged cables/torch	Ensure good ground contact; Verify settings on LED display; Inspect and replace damaged components.
Poor weld quality (e.g., porosity)	Insufficient gas flow (TIG); Contaminated workpiece; Incorrect parameters; Worn consumables	Check gas flow and connections; Clean workpiece thoroughly; Adjust welding parameters; Replace TIG torch consumables.
Overheating protection activated	Exceeded duty cycle; Poor ventilation	Allow welder to cool down; Ensure adequate airflow around the machine.

8. Specifications

Key technical specifications for the ANDELI TIG-250MPC Multiprocess Welder:

- **Model:** TIG-250MPC
- **Manufacturer:** ADL
- **Item Weight:** 21.1 pounds
- **Package Dimensions:** 19.25 x 16 x 10.5 inches
- **Input Voltage:** 110V/220V Dual Voltage
- **Protection Grade:** IP21
- **Insulation Grade:** F
- **Cooling:** Air-cool
- **Functions:** Pulse TIG, CLEAN, MMA (ARC)

For detailed electrical parameters, please refer to the product label on the machine.



Figure 8.1: A visual representation of the product's dimensions and a summary of key electrical parameters.

9. Warranty and Support

For warranty information and technical support, please contact the manufacturer, ANDELI, directly through their official website or the retailer from whom the product was purchased. Keep your purchase receipt as proof of purchase for any warranty claims.

© 2024 ANDELI. All rights reserved.