AmicoElectric MTS-185

AmicoElectric MTS-185 Multi-Process Welder User Manual

Introduction

Welcome to the AmicoElectric MTS-185 Multi-Process Welder. This manual provides essential information for the safe and efficient operation of your new welding machine. The MTS-185 is a versatile 3-in-1 welder capable of MIG, TIG, and Stick welding processes, designed for various metal fabrication tasks, including welding aluminum, stainless steel, alloy steel, carbon steel, and copper.

Safety Information

General Safety Precautions

Welding can be hazardous. Always follow safety guidelines to prevent injury or damage to property. Failure to comply with safety instructions may result in serious injury or death.

- **Wear Appropriate Personal Protective Equipment (PPE):** Always use a welding helmet with the correct shade filter, flame-resistant gloves, protective clothing (long sleeves and pants), and safety shoes.
- **Ensure Adequate Ventilation:** Welding fumes can be harmful. Operate the welder in a well-ventilated area or use a fume extractor to avoid inhaling fumes.
- **Protect Bystanders:** Arc rays and hot metal can cause burns and eye damage. Ensure no unprotected individuals are in the welding area. Use welding screens if necessary.
- **Fire Prevention:** Keep a fire extinguisher readily available. Remove all flammable materials from the welding area before starting work.
- **Electrical Safety:** Disconnect the power supply before performing any maintenance, adjustments, or changing consumables. Do not operate the welder in damp or wet conditions. Ensure proper grounding.
- **Read and Understand:** Thoroughly read and understand all warnings and instructions in this manual before operating the machine.

Product Overview

The AmicoElectric MTS-185 is an inverter-based multi-process welding machine. It supports MIG (Gas Metal Arc Welding), Flux-Cored Arc Welding, Lift TIG (Gas Tungsten Arc Welding), and Stick (Shielded Metal Arc

Welding) processes, making it suitable for a wide range of applications.

Key Features:

- Multi-process capability: MIG/Flux, Lift TIG, Stick.
- Dual voltage input: Automatically detects and switches between 110V and 230V.
- High-quality wire feeder for smooth and stable wire delivery.
- Capable of welding various conductive metals up to approximately 3/8 inch thickness.
- Integrated safety protections: Automatic voltage compensation, over-heat, over-current, over-load, and short circuit protection.

Components and Controls

Figure 1: AmicoElectric MTS-185 Welder and Included Accessories

This image displays the AmicoElectric MTS-185 multi-process welder along with its standard accessories, including the MIG torch assembly, TIG torch assembly, electrode holder assembly, work clamp assembly, 110V/230V power adapter, air hose, spools of flux-cored and steel wire, tungsten electrodes, and various consumables.

Figure 2: Front Panel Controls

The front panel features digital displays for voltage and amperage, control knobs for adjusting wire feed speed and welding current, and selection buttons for welding processes (MIG, TIG, Stick) and 2T/4T trigger modes. The quick wire feeding mechanism is also visible.

Figure 3: Rear Panel Connections

The rear panel includes the main power switch, the gas inlet connection for shielding gas, and the power input cable. A cooling fan is also integrated into the rear panel to maintain optimal operating temperature.

Setup

Power Connection

The MTS-185 features an intelligent power supply system that automatically detects the input voltage, allowing operation on both 110V and 230V. Use the provided power adapter to connect the machine to the appropriate electrical supply. Ensure the power outlet is properly grounded and capable of handling the welder's current requirements.

Gas Connection (for MIG/TIG)

For MIG and TIG welding, a shielding gas is required. Connect your shielding gas cylinder (e.g., 100% Argon for TIG, Argon/CO2 mix for MIG) to the gas inlet on the rear panel of the welder using the provided air hose. Ensure all connections are secure and leak-free. Adjust the gas flow rate according to the welding process and material.

Wire Installation (for MIG/Flux-Cored)

Open the wire spool compartment. Install the welding wire spool (compatible with 2lb and 10lb spools) onto the spindle. Carefully thread the welding wire through the wire feeder mechanism, ensuring it passes through

the correct drive roll groove and the MIG gun liner. Adjust the drive roll tension to prevent slipping or crushing of the wire.

Torch and Clamp Connections

Connect the appropriate welding torch (MIG or TIG) or electrode holder and the work clamp to their respective terminals on the front panel of the welder. Ensure all connections are tight and secure to ensure proper electrical contact and safe operation.

Operating Modes

MIG/Flux-Cored Welding

1. Select the "MIG" mode on the control panel.
2. Adjust the wire feed speed and welding current according to the material thickness, wire type, and desired weld characteristics.
3. For Flux-Cored welding, ensure the correct polarity is set (typically DCEN - electrode negative). For Gas MIG welding, ensure DCEP (electrode positive) and that the shielding gas is flowing.
4. Begin welding, maintaining a consistent travel speed, arc length, and gun angle for optimal results.

Lift TIG Welding

1. Select the "TIG" mode on the control panel.
2. Connect the TIG torch and ensure the pure Argon shielding gas supply is connected and flowing.
3. Install a sharpened tungsten electrode of the appropriate size into the TIG torch collet.
4. Set the welding current. The MTS-185 utilizes Lift TIG arc initiation: briefly touch the tungsten to the workpiece and then lift it slightly to establish the arc.
5. Maintain a short arc length and feed filler rod manually into the weld puddle if required.

Stick (SMAW) Welding

1. Select the "STICK" mode on the control panel.
2. Connect the electrode holder and the work clamp to the appropriate terminals.
3. Insert the correct type and diameter of electrode into the electrode holder.
4. Set the welding current based on the electrode type, diameter, and material thickness.
5. Strike an arc by gently scratching or tapping the electrode on the workpiece. Maintain a consistent arc length and travel speed.

Maintenance

Regular maintenance ensures the longevity and optimal performance of your AmicoElectric MTS-185 welder.

Regular Cleaning

- Periodically clean the machine's exterior with a dry cloth.
- Use clean, dry compressed air to clear dust and debris from the ventilation openings and internal components (if accessible) to prevent overheating.

Consumable Replacement

- **MIG:** Regularly inspect and replace contact tips and nozzles as they wear out or become clogged.
- **TIG:** Check and replace collets, collet bodies, and sharpen or replace tungsten electrodes as needed.
- **Stick:** Ensure electrodes are stored in dry conditions to maintain their integrity.

Cable Inspection

- Regularly inspect all welding cables, torches, and clamps for any signs of damage, cuts, fraying, or loose connections.
- Replace any damaged components immediately to ensure safe and efficient operation.

Troubleshooting

This section provides solutions to common issues you might encounter during operation.

No Power

- Check that the power cord is securely connected to both the welder and the power outlet.
- Verify that the circuit breaker or fuse for the power outlet has not tripped.
- Ensure the main power switch on the rear panel of the welder is in the "ON" position.

Poor Arc Start/Stability

- Ensure the work clamp is securely attached to a clean, bare metal section of the workpiece.
- Verify that the correct welding process (MIG, TIG, or Stick) is selected on the control panel.
- Adjust the welding current and/or wire feed speed to appropriate settings for your material and process.
- Inspect and replace worn or damaged consumables (MIG contact tip, TIG tungsten, or Stick electrode).
- For MIG/TIG, confirm that the shielding gas is flowing at the correct rate and the gas cylinder is not empty.

Wire Feeding Issues (MIG)

- Check that the wire spool is correctly installed and the tension on the spool is not too tight or too loose.
- Inspect the drive rolls for proper size matching the wire diameter and ensure the drive roll tension is correctly set.
- Clean or replace the MIG gun liner if it is clogged or kinked.
- Ensure the contact tip is not clogged with spatter or worn out.

Specifications

The following table details the technical specifications of the AmicoElectric MTS-185 welder.

Feature	Specification
Welder Type	3-IN-1 MIG/TIG/STICK Combo Welder
Power Supply	AC 100-250V, 50-60Hz
Input Current (110V)	MIG: 38.0A, TIG: 24.9A, STICK: 41.8A
Input Current (230V)	MIG: 30.0A, TIG: 18.4A, STICK: 29.6A

Feature	Specification
Current Range Output (110V)	MIG: 50-140A, TIG: 10-120A, STICK: 10-120A
Current Range Output (230V)	MIG: 50-185A, TIG: 10-160A, STICK: 10-160A
Nominal DC Open Circuit Voltage	56V
Output (MIG)	185A/23.2V (60% Duty Cycle)
Output (TIG)	160A/16.4V (60% Duty Cycle)
Output (STICK)	160A/26.4V (60% Duty Cycle)
Efficiency	93%
Power Factor	0.85
Cooling Method	Fan Cooled
Item Weight	26 pounds
Product Dimensions	17.3 x 9.1 x 13.4 inches
Material	Metal
Certification	ETL Listed

Support

For technical assistance, spare parts, or warranty inquiries regarding your AmicoElectric MTS-185 welder, please contact AmicoElectric customer support. Refer to your purchase documentation or the official AmicoElectric website for specific contact details and additional resources, including FAQs and product registration information.