

PLASMARGON 520TSCPF

PLASMARGON 520TSCPF 3-in-1 TIG/MMA/CUT Welder Instruction Manual

Model: 520TSCPF

1. INTRODUCTION

The PLASMARGON 520TSCPF is a versatile 3-in-1 welding machine designed for TIG welding, MMA (Stick) welding, and Plasma Cutting. This unit incorporates advanced IGBT inverter technology, offering stable performance and precise control for various welding and cutting applications. It is suitable for both professional and DIY use, capable of working with stainless steel, alloy steel, carbon steel, copper, and aluminum.

2. SAFETY INSTRUCTIONS

Always prioritize safety when operating welding and cutting equipment. Failure to follow safety guidelines can result in serious injury or death.

- **Eye and Face Protection:** Always wear a welding helmet with appropriate shade lenses to protect against arc flash and sparks.
- **Body Protection:** Wear flame-resistant clothing, heavy-duty gloves, and safety shoes to protect against burns and electrical shock.
- **Ventilation:** Ensure adequate ventilation to remove welding fumes and gases, which can be hazardous to health.
- **Electrical Safety:** Never operate the machine in wet conditions. Ensure proper grounding. Do not touch live electrical parts.
- **Fire Prevention:** Keep a fire extinguisher nearby. Remove flammable materials from the work area. Sparks and hot metal can cause fires.
- **Gas Cylinders:** Handle gas cylinders with care. Secure them to prevent tipping.
- **Work Area:** Keep the work area clean and free of clutter. Ensure good lighting.

3. PRODUCT OVERVIEW AND CONTROLS

Familiarize yourself with the front panel controls and connections of the PLASMARGON 520TSCPF welding machine.



Figure 1: Front Panel Controls. This image displays the front panel of the PLASMARGON 520TSCPF machine, highlighting key components. These include the LED Digital Display for current readings, the Mode Switch to select between MMA, TIG, and CUT functions, and the Pulse Button for activating the pulse feature in TIG mode. The Function Switch allows selection of specific parameters like Peak, Basic, Frequency, Duty, and Gas Delay. The large knob is used to Adjust Current. Below the display are connection points for the TIG/Plasma Cutter Torch, Ground Clamp, and Electrode Holder.

- **LED Digital Display:** Shows current settings and operational parameters.
- **Mode Switch:** Toggles between MMA (Stick Welding), TIG (Tungsten Inert Gas Welding), and CUT (Plasma Cutting) modes.
- **Pulse Button:** Activates the pulse function for TIG welding, enhancing control and weld quality on thinner materials.
- **Function Switch:** Selects specific parameters to adjust, such as Peak current, Basic current, Pulse Frequency, Duty cycle, and Gas Delay time.
- **Adjust Current Knob:** Used to set the output current for the selected welding or cutting mode.
- **TIG/Plasma Cutter Torch Connection:** Port for connecting the TIG torch or plasma cutting torch.

- **Ground Clamp Connection:** Terminal for connecting the workpiece ground clamp.
- **Electrode Holder Connection:** Terminal for connecting the MMA electrode holder.

4. SETUP

Proper setup is crucial for safe and effective operation.

4.1 Power Connection

- Connect the machine to a 230V power supply (50/60 Hz). Ensure the power outlet is properly grounded and can handle the machine's input power capacity of 7.5 kVa.

4.2 Gas Connection (for TIG and CUT modes)

- For TIG welding, connect an argon gas cylinder to the machine's gas inlet.
- For Plasma Cutting, connect an air compressor to the machine's air inlet. The recommended air pressure is 60-70 psi at 3.6 CFM.
- Use the provided air pressure gauge/argon meter to monitor and adjust gas flow.

4.3 Torch and Clamp Connections

- Connect the appropriate torch (TIG, Plasma, or MMA electrode holder) to its designated port on the front panel.
- Connect the ground clamp to the workpiece. Ensure a clean, secure connection for optimal performance and safety.

5. OPERATING MODES

The PLASMARGON 520TSCPF offers three distinct operating modes: Plasma Cutting (CUT), TIG Welding, and MMA (Stick) Welding.

5.1 Plasma Cutting (CUT)

Plasma Cutter & PT-31 Torch

Smooth Cutting
Without Polishing



Figure 2: Plasma Cutter Setup. This image shows the PLASMARGON 520TSCPF machine connected to a PT-31 plasma cutting torch and a ground clamp. The setup is ready for plasma cutting operations, demonstrating the compact and portable nature of the unit. The plasma cutter is designed for smooth cutting without requiring extensive post-cut polishing.

- **Mode Selection:** Press the Mode Switch until 'CUT' is indicated on the LED display.
- **Current Adjustment:** Use the Adjust Current knob to set the cutting current between 10-50 A.
- **Air Pressure:** Ensure the air compressor is connected and providing 60-70 psi at 3.6 CFM.
- **Material Compatibility:** Suitable for cutting stainless steel, alloy steel, mild steel, copper, and aluminum.
- **Cutting Thickness:** Capable of cutting materials up to 12 mm thick.

5.2 TIG Welding

TIG Function & PULSE

The welding shape is more beautiful
The welding process is more stable



Figure 3: TIG Welding Setup. This image illustrates the PLASMARGON 520TSCPF machine configured for TIG welding. The TIG torch is connected to the front panel, along with the ground clamp. The display shows the machine is in TIG mode, ready for high-quality welding on various metals. The pulse function, indicated by the 'PULSE' button, helps achieve more stable and aesthetically pleasing welds.

- **Mode Selection:** Press the Mode Switch until 'TIG' is indicated.
- **Current Adjustment:** Set the TIG welding current between 10-200 A using the Adjust Current knob.
- **High-Frequency (HF) Start:** The machine features HF arc ignition for clean starts without touching the workpiece.
- **Pulse Function:** Activate the Pulse Button for enhanced control, especially on thinner materials, leading to more stable and beautiful weld shapes.
- **Tungsten Electrode:** Ensure the tungsten electrode is sharpened before use for optimal arc stability and weld quality.
- **Gas:** Use pure Argon gas for TIG welding.
- **Material Compatibility:** Ideal for high-quality welding on stainless steel and other steels.

5.3 MMA (Stick) Welding

Stick Welder

Upgrade Technology
Arc is more stable



Figure 4: MMA Stick Welder Setup. This image shows the PLASMARGON 520TSCPF machine configured for MMA (Stick) welding. The electrode holder is connected to the machine, ready to hold various sizes of welding rods. The ground clamp is also attached. This setup highlights the machine's capability for robust arc welding, suitable for different types of electrodes and general repair tasks.

- **Mode Selection:** Press the Mode Switch until 'MMA' is indicated.
- **Current Adjustment:** Set the MMA welding current between 10-180 A.
- **Features:** The machine offers easy arc start, anti-stick functionality, a stable welding arc, deep weld pool, and good weld bead formation.
- **Electrode Compatibility:** Suitable for welding with various sizes of acidic and basic electrodes, from 1.6 mm to 4.0 mm.

6. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your welding machine.

- **Cleaning:** Periodically clean the machine's exterior and ventilation openings to prevent dust buildup, which can hinder cooling. Use compressed air to gently blow out internal dust if accessible.
- **Cable Inspection:** Regularly inspect all cables (power, torch, ground) for cuts, fraying, or damage. Replace damaged cables immediately.
- **Torch Consumables:** For TIG and Plasma torches, regularly check and replace worn consumables such as plasma tips, electrodes, nozzles, and gas cups.

- **Connections:** Ensure all electrical and gas connections are tight and secure before each use.
- **Storage:** Store the machine in a dry, clean environment when not in use.

7. TROUBLESHOOTING

This section addresses common issues you might encounter during operation.

- **No Power:** Check the power cord connection, circuit breaker, and ensure the power switch on the machine is in the 'ON' position.
- **No Arc (MMA/TIG):**
 - Ensure the ground clamp is securely attached to a clean section of the workpiece.
 - Check that the electrode/tungsten is properly installed and not worn out.
 - Verify the current setting is appropriate for the material and electrode size.
- **Poor Cut Quality (CUT):**
 - Check air pressure and flow rate.
 - Inspect plasma torch consumables (tip, electrode, shield cup) for wear and replace if necessary.
 - Ensure proper cutting speed and standoff distance.
- **Unstable Arc (TIG/MMA):**
 - Check for loose connections.
 - Ensure the workpiece is clean and free of rust or paint.
 - For TIG, ensure the tungsten electrode is correctly ground and free from contamination.
- **Overheating:** If the machine stops due to overheating, allow it to cool down. Ensure ventilation openings are clear and the duty cycle is not exceeded.

If problems persist after following these steps, contact qualified service personnel.

8. SPECIFICATIONS

Technical specifications for the PLASMARGON 520TSCPF welding machine.

The Newly Upgraded 520TSCPF

Lighter and Smaller, Easy to Carry



Figure 5: Product Dimensions. This image provides the physical dimensions of the PLASMARGON 520TSCPF welding machine, showing its length as 17.5 inches, width as 11.5 inches, and height as 15 inches. These measurements highlight its compact and portable design, making it easy to carry and store.

Parameter	Value
Model	520TSCPF
Rated Input Voltage	220 V \pm 15%, 50/60 Hz
Power Factor	0.93
Efficiency	85%
Insulation Class	B
Protection Class	IP21
Cooling	Fan Cooled
Technology	Latest Inverter Technology (IGBT)
Weight	10 kg (22 lbs)

Parameter	Value
Package Dimensions	480 x 270 x 360 mm (19 x 11 x 15 inches)
Input Power Capacity	7.5 kVa
CUT Mode	
Current Range	10-50 A
Max Cutting Thickness	12 mm
Recommended Air Pressure	60-70 psi at 3.6 CFM
TIG Mode	
Current Range	10-200 A
Load Voltage	70 V
Operating Voltage	20 V
Arc Ignition	High Frequency (HF) Start
Duty Cycle (TIG)	60% at 50 A, 100% at 35 A
MMA Mode	
Current Range	10-180 A
Load Voltage	70 V
Operating Voltage	30 V
Electrode Diameter	1.6 mm - 4.0 mm

9. PACKAGE CONTENTS

The following items are included with your PLASMARGON 520TSCPF welding machine:



Figure 6: Included Accessories. This image displays the PLASMARGON 520TSCPF welding machine along with all its standard accessories. These include the TIG welding torch, PT-31 plasma cutting torch, electrode holder, ground clamp, air pressure gauge/argon meter, and various consumables for both TIG and plasma cutting operations. This comprehensive package ensures you have the necessary tools to begin welding and cutting.

- 1 x PLASMARGON 520TSCPF Multi-Process Welding Machine
- 1 x TIG Welding Torch
- 1 x PT-31 Plasma Cutting Torch
- 1 x Electrode Holder
- 1 x Ground Clamp
- 1 x Air Pressure Gauge / Argon Meter
- 3 x Plasma Tips
- 3 x Plasma Electrodes
- 3 x Plasma Cups
- 3 x TIG Collets
- 3 x TIG Nozzles
- 3 x Gas Rings
- 1 x User Manual

10. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the documentation provided with your purchase or contact PLASMARGON customer service directly. Keep your purchase receipt as proof of purchase for any warranty claims.