YESWELDER CUT-55DS FUSION

YESWELDER CUT-55DS FUSION Plasma Cutter Instruction Manual

Model: CUT-55DS FUSION

1. Introduction

This manual provides essential information for the safe and effective operation, setup, maintenance, and troubleshooting of your YESWELDER CUT-55DS FUSION Plasma Cutter. Please read this manual thoroughly before using the equipment to ensure proper function and to prevent injury or damage. Keep this manual for future reference.

2. Safety Information

Plasma cutting involves high temperatures, electrical currents, and compressed air, which can be hazardous if not handled correctly. Always adhere to the following safety guidelines:

- **Electrical Safety:** Ensure the power supply matches the machine's requirements (110V/220V). Always connect the machine to a properly grounded outlet. Avoid operating in wet conditions.
- **Eye and Face Protection:** Always wear a welding helmet with appropriate shade settings and safety glasses to protect against intense light, sparks, and debris.
- **Body Protection:** Wear flame-resistant clothing, gloves, and sturdy footwear to protect against burns and electrical shock.
- **Ventilation:** Operate in a well-ventilated area to avoid inhaling fumes and gases produced during cutting.
- **Fire Hazards:** Keep flammable materials away from the cutting area. Have a fire extinguisher readily available.
- **Compressed Air:** Ensure air connections are secure and free from leaks. Do not direct compressed air at yourself or others.
- **Machine Safeguards:** The CUT-55DS FUSION includes IP21 water rating protection and robust protections against overload and overheating. Do not bypass these safety features.
- **Children and Bystanders:** Keep children and unauthorized personnel away from the operating area.

3. Product Overview

The YESWELDER CUT-55DS FUSION is a versatile plasma cutter designed for various metal cutting applications. It features a built-in air compressor for convenience and dual voltage capability (110V/220V).

Key Features:

- **Two Working Modes:** Operates with either the onboard air compressor for portability or an external air compressor for heavy-duty, non-stop work.
- **Non-High Frequency (Non-HF) Start:** Utilizes a 'blow-back' start system for smooth, interference-free arc initiation, enhancing safety and compatibility with surrounding electrical equipment.
- **Non-Touch Pilot Arc:** The IPT40 torch allows cutting without direct contact with the metal, improving cut quality and extending consumable life, especially on rough, painted, or rusty surfaces.
- **Powerful Cutting Capacity:** Delivers up to 55A for deep, precise cuts. Ideal clean cut: 25/64" (10mm) at 110V, 9/16" (14mm) at 220V. Maximum cut: 5/8" (16mm) at 110V, 3/4" (20mm) at 220V.
- **Large LED Digital Display:** Provides real-time visibility of air pressure and voltage, with a built-in error code system for diagnostics.
- **Safety Features:** Includes IP21 water rating, overload, and overheating protection.

Product Components and Dimensions:



Image: The YESWELDER CUT-55DS FUSION Plasma Cutter showing its dimensions (18.70 in length, 7.87 in width, 11.81 in height) and labeled components including Air Filter Regulator, Power Adapter Cord, 1/4" NPT Air Connector, Work Clamp, Air Hose, and IPT40 Plasma Cutting Torch.



Image: Detailed machine overview of the CUT-55DS FUSION, highlighting: 1. Plasma Torch Connector, 2. Torch Control Connector, 3. Pilot ARC, 4. Work Clamp Connector, 5. Power Switch, 6. Input Power Cable, 7. Air Filter Regulator, 8. Cooling Fan, 9. Onboard Air Compressor Fan, 10. Onboard Air Compressor Inlet Port.

4. Setup

Before operating the plasma cutter, ensure all components are correctly connected.

4.1 Unpacking and Inspection

- Carefully remove the plasma cutter and all accessories from the packaging.
- Inspect the unit for any signs of shipping damage. If damage is found, contact your supplier immediately.
- Verify that all listed accessories are present: Plasma Cutter unit, Air Filter Regulator, Power Adapter Cord, 1/4" NPT Air Connector, Work Clamp, Air Hose, IPT40 Cutting Torch.



Image: The CUT-55DS FUSION Plasma Cutter displayed with its standard accessories: Plasma Cutter unit, Air Filter Regulator, Power Adapter Cord, 1/4" NPT Air Connector, Work Clamp, Air Hose, and IPT40 Cutting Torch.

4.2 Power Connection

- Connect the power adapter cord to the plasma cutter's input power cable.

- Plug the power adapter into a suitable 110V or 220V AC power outlet. The machine automatically detects the input voltage.
- Ensure the power outlet is properly grounded and can handle the required amperage.

4.3 Air Connection

The CUT-55DS FUSION offers two air supply modes:

- **Onboard Air Mode:** For ultimate portability, no external air compressor is needed. The built-in compressor provides the necessary air.
- **External Air Mode:** For continuous heavy-duty work, connect an external air compressor to the 1/4" NPT Air Connector.



Image: Close-up view of the built-in air pressure regulator, showing the PC10-02 Air Connector and the 1/4" NPT Air Connector for external air supply. The air filter is also visible.

To switch between modes, press the adjustment knob on the front panel.

4.4 Torch and Work Clamp Connection

- Connect the IPT40 Plasma Cutting Torch to the Plasma Torch Connector on the front panel.
- Connect the work clamp cable to the Work Clamp Connector.
- Attach the work clamp securely to the workpiece, ensuring good electrical contact.

5. Operation

Follow these steps for safe and effective plasma cutting.

5.1 Powering On and Digital Display

- Turn on the power switch (5) located on the rear of the machine.
- The large LED digital display will illuminate, showing key parameters such as air pressure (PSI) and cutting current (A).



Image: Front panel of the CUT-55DS FUSION, detailing: 1. 2T/4T Button, 2. Unit Button, 3. Post Flow Button, 4. Adjustment Knob, 5. Digital Panel.

5.2 Mode Selection and Adjustments

- **Air Supply Mode:** Press the Adjustment Knob (4) to toggle between onboard air mode and external air mode.
- **Current Adjustment:** Rotate the Adjustment Knob (4) to set the desired cutting current (Amps).
- **Unit Button (2):** Use this button to change the display unit for air pressure (e.g., PSI to Bar).
- **Post Flow Button (3):** Adjusts the post-flow time, which is the duration air continues to flow after the arc is extinguished, cooling the torch and extending consumable life.

5.3 Cutting Process (Non-Touch Pilot Arc)

The non-touch pilot arc feature allows for easier starting and better cutting performance.

- Position the torch nozzle approximately 1/8" to 1/4" above the workpiece.
- Press the torch trigger. The pilot arc will ignite without needing to touch the metal.
- Once the pilot arc is established, move the torch steadily across the material to begin cutting.
- Maintain a consistent travel speed and torch height for optimal cut quality.

Image: A plasma torch demonstrating the non-touch pilot arc cutting through metal, highlighting the benefits of non-high frequency, non-touch arc starting, adjustable pilot arc and post-flow time, and extended consumable life.

5.4 Cutting Capacity

The CUT-55DS FUSION offers robust cutting capabilities:

- **Ideal Clean Cut:** 25/64" (10mm) at 110V, 9/16" (14mm) at 220V.
- **Maximum Cut:** 5/8" (16mm) at 110V, 3/4" (20mm) at 220V.



Image: Visual representation of cutting capacity, showing clean cuts and maximum cuts for both 110V and 220V operations. For 110V, clean cut is 15/64" and max cut is 25/64". For 220V, clean cut is 25/64" and max cut is 9/16".

5.5 2T/4T Function

The 2T/4T function provides control over the torch trigger operation:

- **2T (Two-Touch) Mode:** Press and hold the trigger to start cutting; release to stop. Suitable for short cuts.
- **4T (Four-Touch) Mode:** Press and release the trigger to start cutting; press and release again to stop. Ideal for long, continuous cuts as it reduces operator fatigue.



Image: Illustration of the 2T (semi-automatic control) and 4T (fully automatic control) functions, showing how they are suitable for long-term continuous welding and can reduce workload.

6. Maintenance

Regular maintenance ensures the longevity and optimal performance of your plasma cutter.

6.1 Consumables

- The IPT40 torch uses specific consumables (electrodes, nozzles, shield cups). Inspect these regularly for wear and replace them as needed. Worn consumables can negatively impact cut quality and efficiency.
- Always use genuine YESWELDER replacement parts to ensure compatibility and performance.

6.2 Cleaning

- Keep the machine clean and free from dust and debris. Use compressed air to blow out internal components periodically, ensuring the machine is unplugged first.
- Clean the exterior with a dry cloth. Avoid using solvents that could damage the casing.

6.3 Air Filter Maintenance

- The air filter regulator (7) helps remove moisture and particles from the air supply. Check the filter bowl regularly for accumulated water.
- Drain any accumulated water by opening the drain valve at the bottom of the filter.
- Replace the filter element if it becomes excessively dirty or clogged.

7. Troubleshooting

The CUT-55DS FUSION features a built-in error code system for immediate diagnostics. Refer to the table below for common issues and their solutions.

Problem/Error Code	Possible Cause	Solution
No Power	Power cord disconnected, circuit breaker tripped, power switch off.	Check power connections, reset breaker, turn on power switch.
No Arc/Weak Arc	Worn consumables, poor work clamp connection, insufficient air pressure, incorrect current setting.	Replace consumables, ensure good work clamp contact, check air pressure, adjust current.
Overheat Protection (Error Code: OH)	Extended use beyond duty cycle, blocked cooling vents.	Allow machine to cool down, ensure proper ventilation, clear any obstructions.
Low Air Pressure (Error Code: LP)	Air compressor off/faulty, air hose leak, air filter clogged.	Check air compressor, inspect hoses, clean/replace air filter.
Poor Cut Quality	Worn consumables, incorrect travel speed, improper torch height, insufficient current/air pressure.	Replace consumables, adjust cutting parameters, maintain consistent technique.

For other error codes or persistent issues, please contact YESWELDER customer support.

8. Specifications

Technical specifications for the YESWELDER CUT-55DS FUSION Plasma Cutter.

Feature	Detail
Model	CUT-55DS FUSION
Brand	YESWELDER
Power Source	Corded Electric (110V/220V Dual Voltage)

Feature	Detail
Amperage	55 Amp
Cutting Technology	Non-High Frequency, Non-Touch Pilot Arc
Air Compressor	Built-in
Ideal Clean Cut (110V)	25/64" (10mm)
Ideal Clean Cut (220V)	9/16" (14mm)
Maximum Cut (110V)	5/8" (16mm)
Maximum Cut (220V)	3/4" (20mm)
Special Features	LED Digital Display, Portable, 2T/4T Function
Included Components	Plasma cutter, IPT40 torch, work clamp, air hose, air filter regulator, power adapter cord
Manufacturer Warranty	1 year
IP Rating	IP21
Cooling Mode	Fan Cooling
Insulation Grade	F

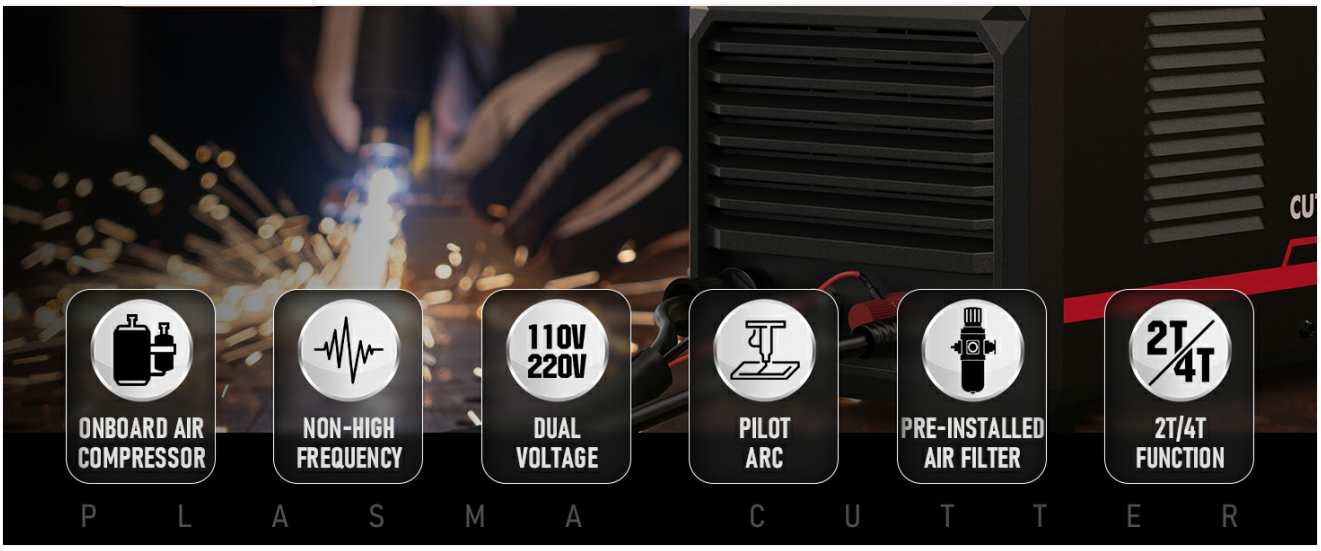


Image: A detailed table of technical specifications for the CUT-55DS FUSION, including model, S/N, ANSI/IEC STD.60974-1 compliance, input voltage (U1), output current (I2), open circuit voltage (U0), duty cycle (X), cooling mode, insulation grade, and IP21S rating.

9. Warranty and Support

9.1 Warranty Information

The YESWELDER CUT-55DS FUSION Plasma Cutter comes with a **1-year manufacturer's warranty**. This warranty covers defects in materials and workmanship under normal use. Please retain your proof of purchase for warranty claims.

9.2 Customer Support

For technical assistance, troubleshooting, or warranty service, please contact YESWELDER customer support. Refer to the contact information provided with your product packaging or visit the official YESWELDER website for the most up-to-date support details.