AmicoPower APC-80HF

AmicoPower APC-80HF Plasma Cutter Instruction Manual

Model: **APC-80HF** | Brand: **AmicoPower**

1. Introduction and Overview

The AmicoPower APC-80HF is a professional digital control plasma cutting machine featuring advanced inverter technology and a non-touch pilot arc system. Designed for industrial and demanding tasks, this unit offers high cutting performance and user-friendly operation. It is capable of cutting various conductive metals, including stainless steel, alloy steel, low-carbon steel, copper, iron, cast iron, and aluminum alloys.
Key features include an internal air filter and pressure regulator for convenience, automatic voltage compensation (200-250V), and multiple safety protections such as over-heating, over-current, and over-loading. The machine has an 80% duty cycle at 80 Amps, ensuring efficient long-term operation. The standard cutting thickness is 1.2 inches, with a maximum severance cutting thickness of 1.5 inches.

2. Safety Information

WARNING: Plasma cutting produces intense heat, ultraviolet radiation, and fumes. Failure to follow safety precautions can result in serious injury or death.

- **Eye and Face Protection:** Always wear a welding helmet with an appropriate shade filter to protect against arc flash and sparks. Use safety glasses with side shields under the helmet.
- **Body Protection:** Wear flame-resistant clothing, heavy-duty gloves, and leather aprons or jackets to protect against sparks, molten metal, and radiation.
- **Ventilation:** Ensure adequate ventilation to remove fumes and gases from the work area. If ventilation is insufficient, use a respirator.
- **Fire Prevention:** Keep a fire extinguisher nearby. Remove all flammable materials from the work area. Sparks and hot slag can travel long distances.
- **Electrical Safety:** Ensure the machine is properly grounded. Do not operate in wet conditions. Inspect cables and connections for damage before each use.
- **Compressed Air Safety:** Use clean, dry, oil-free air. Ensure air lines are properly connected and rated for the pressure.
- **Work Area:** Keep the work area clean, clear, and well-lit. Ensure stable footing.
- **Children and Bystanders:** Keep unauthorized persons, especially children, away from the operating area.

3. Package Contents

Verify that all items listed below are included in your package:

- APC-80HF Non-touch Pilot Arc Plasma Cutter Machine
- AP-80 13-Feet / 80-Amp Plasma Torch Gun Assembly
- 10-Feet 300A Work Clamp Assembly, 35-70mm Lead Dines
- Air Filter and Pressure Gauge (Pre-installed inside the machine)
- Owner's Manual

4. Product Features and Components

4.1 Main Unit Front and Side View

Figure 1: Front and side view of the AmicoPower APC-80HF Plasma Cutter, showing the control panel, air vents, and carrying handle.

4.2 Front Control Panel


AMICO
ELECTRIC
O. C
POWER
APC–80HF
115V 30-50psi
230V 30-85psi
2 T
Air Test
4 T
Cutting
1
10
POST FLOW
20
80
CURRENT
AIR ADJUST

Figure 2: Close-up of the front control panel, featuring the digital display, air pressure gauge, current adjustment knob, post-flow adjustment knob, and 2T/4T switch.

- **Digital Display:** Shows current settings.
- **Air Pressure Gauge:** Monitors the incoming air pressure.
- **Current Adjustment Knob:** Adjusts the cutting amperage from 20A to 80A.
- **Post-Flow Adjustment Knob:** Controls the duration of air flow after the arc is extinguished, cooling the torch.
- **2T/4T Switch:** Selects between 2-touch (trigger held) and 4-touch (trigger press to start, press again to stop) torch operation.
- **Air Adjust Knob:** Fine-tunes the air pressure for optimal cutting.
- **Torch Connection:** Port for connecting the plasma torch.
- **Work Clamp Connection:** Port for connecting the work clamp.

4.3 Rear Panel Connections

Figure 3: Rear panel of the plasma cutter, showing the main power switch, power cord, and air inlet connection.

- **Main Power Switch:** Turns the unit ON/OFF.
- **Power Cord:** Connects the unit to the main power supply (AC 230V).
- **Air Inlet:** Connection point for the compressed air supply.

4.4 AP-80 Plasma Torch Gun Assembly

Figure 4: The AP-80 plasma torch gun assembly, including the torch head, cable, and various consumables.

- **Torch Head:** Houses the electrode, nozzle, and shield cup.
- **Trigger:** Activates the pilot arc and cutting process.
- **Cable Assembly:** Connects the torch to the plasma cutter.

4.5 Work Clamp Assembly

Figure 5: The 300A work clamp assembly with its connecting cable.

- **Work Clamp:** Connects to the workpiece to complete the electrical circuit.
- **Cable:** Heavy-duty cable connecting the clamp to the plasma cutter.

5. Setup Instructions

1. **Placement:** Place the plasma cutter on a stable, level surface in a well-ventilated area, away from flammable materials. Ensure sufficient space around the unit for air circulation.
2. **Power Connection:** Connect the machine's power cord to a suitable AC 230V, 50Hz/60Hz, 1-Phase power outlet. Ensure the circuit can handle the rated input current (up to 67 Amp). The unit features automatic voltage compensation for 200-250V input.
3. **Air Supply Connection:** Connect a clean, dry, oil-free compressed air supply to the air inlet on the rear panel. The recommended gas pressure range is 30-90 psi, with a recommended flow of 6.5 scfm at 90 psi. The internal air filter and pressure gauge will manage the air quality and pressure within the unit.
4. **Torch Connection:** Connect the AP-80 plasma torch gun assembly to the designated port on the front panel. Ensure a secure connection.
5. **Work Clamp Connection:** Connect the work clamp assembly to the designated port on the front panel. Securely attach the work clamp to the workpiece or a clean, bare metal area of the work table, ensuring good electrical contact.
6. **Initial Checks:** Before powering on, double-check all connections for security and proper installation. Ensure all safety gear is ready for use.

6. Operating Instructions

1. **Power On:** Turn the main power switch on the rear panel to the 'ON' position. The digital display on the front panel should illuminate.
2. **Set Air Pressure:** Use the 'AIR ADJUST' knob on the front panel to set the desired air pressure. Monitor the internal

air pressure gauge. Adjust according to the material thickness and desired cut quality.

3. **Set Cutting Current:** Use the 'CURRENT' adjustment knob to select the appropriate amperage for your material. The range is 20-80 Amps. Refer to cutting charts (if available in the full manual) for recommended settings.
4. **Select Torch Mode (2T/4T):**
    - **2T (2-Touch):** The arc starts when the trigger is pressed and held, and stops when the trigger is released. Suitable for short cuts.
    - **4T (4-Touch):** The arc starts when the trigger is pressed and released, and continues until the trigger is pressed and released again. Suitable for long cuts, reducing hand fatigue.
5. **Perform Test Cut:** Before cutting your final workpiece, perform a test cut on a scrap piece of the same material to verify settings and technique.
6. **Cutting Process (Non-Touch Pilot Arc):**
    - Position the torch nozzle approximately 1/8 to 1/4 inch above the workpiece. The non-touch pilot arc will initiate without direct contact.
    - Press the torch trigger (or press and release for 4T mode). The pilot arc will establish, followed by the cutting arc.
    - Move the torch smoothly and steadily along the desired cut line. Maintain a consistent standoff distance.
    - Observe the molten metal and sparks exiting the bottom of the workpiece, indicating a full penetration cut.
    - Release the trigger (or press and release again for 4T mode) to stop the cut. The post-flow air will continue for the set duration to cool the torch.
7. **Post-Flow Adjustment:** The 'POST FLOW' knob controls the duration of air flow after the arc stops. This cools the torch consumables and extends their lifespan. Adjust as needed, typically 5-10 seconds.
8. **Duty Cycle:** The APC-80HF has a 60% duty cycle at 80 Amps. This means it can operate for 6 minutes out of every 10-minute period at maximum output. Allow the machine to cool during the remaining 4 minutes to prevent overheating.

7. Maintenance

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

- **Torch Consumables:** Regularly inspect the electrode, nozzle, and shield cup for wear. Replace them when they show signs of pitting, erosion, or damage to maintain cut quality and arc stability.
- **Air Filter:** The internal air filter should be checked periodically. If it becomes clogged or saturated with moisture/oil, it will reduce air flow and affect cutting performance. Clean or replace the filter as necessary.
- **Cooling Fan:** Ensure the cooling fan vents are clear of obstructions to allow proper airflow and prevent overheating. The fan operates automatically based on internal temperature.
- **Cables and Connections:** Inspect all power cables, torch cables, and work clamp cables for cuts, abrasions, or loose connections. Repair or replace damaged components immediately.
- **General Cleaning:** Keep the exterior of the machine clean and free of dust and metal particles. Use a dry cloth. Do not use solvents or abrasive cleaners.
- **Storage:** When not in use, store the plasma cutter in a clean, dry environment, protected from dust and extreme temperatures.

8. Troubleshooting

This section addresses common issues you might encounter. For problems not listed, contact AmicoPower customer support.

Problem	Possible Cause	Solution

Problem	Possible Cause	Solution
Machine does not power on	No power supply; Main switch off; Internal fuse tripped	Check power cord and outlet; Turn main switch on; Consult qualified technician for fuse replacement.
No pilot arc or cutting arc	No air supply; Low air pressure; Worn torch consumables; Loose connections; Work clamp not attached or poor contact	Check air compressor and lines; Adjust air pressure; Replace electrode/nozzle; Secure all connections; Ensure good work clamp contact.
Poor cut quality (rough, dross, incomplete cut)	Incorrect current setting; Incorrect air pressure; Worn consumables; Too fast/slow travel speed; Incorrect standoff distance	Adjust current and air pressure; Replace consumables; Adjust travel speed; Maintain proper torch standoff.
Overheat protection activated	Exceeded duty cycle; Blocked air vents; High ambient temperature	Allow machine to cool down; Clear air vents; Operate in a cooler environment.
Air flows but no arc	Torch trigger issue; Consumables not seated correctly; Internal fault	Check torch trigger function; Re-seat or replace consumables; Contact service if problem persists.

The APC-80HF is equipped with multiple safety and protection functions, including automatic compensation for voltage fluctuations, over-heating protection, over-current protection, and over-loading protection. If a protection feature activates, allow the machine to rest or address the underlying cause before resuming operation.

9. Specifications

Specification	Value
Model Number	APC-80HF (also referred to as ARC-80HF)
Type	Non-touch Pilot Arc Plasma Cutter
Supply Power	AC 230V, 50Hz/60Hz, 1-Phase (Automatic compensation for 200-250V)
Rated Input Current	67 Amp (at 230V)
Cutter Current Range	20-80 Amp
Nominal DC Open Circuit Voltage	265-Volt
Output Voltage	112-Volt
Duty Cycle @ 104°F (40°C)	60% @ 80 Amp
Efficiency	85%
Power Factor	0.93
Cooling Method	Fan Air Cooled
Gas Supply	Clean Dry Oil-Free Air
Gas Pressure Range	30-90 psi
Recommended Gas Inlet Flow	6.5 scfm @ 90 psi
Standard Severance Cutting Thickness	1.2 inches

Specification	Value
Maximum Severance Cutting Thickness	1.5 inches
Movement Speed	15.0 in./min.
Item Weight	32 pounds
Product Dimensions	20 x 9 x 16 inches
Material	Metal
Certification	ETL Listed

10. Warranty and Support

Specific warranty terms and conditions for the AmicoPower APC-80HF Plasma Cutter are typically provided with the product documentation or can be found on the manufacturer's official website. Please refer to these resources for detailed information regarding warranty coverage, duration, and claims procedures.

For technical support, service, or inquiries about replacement parts, please contact AmicoPower customer service directly. Contact information can usually be found in the included owner's manual or on the AmicoPower website.