CRUXWELD®

INDUSTRIAL EQUIPMENTS PVT. LTD.

FINELINE 80IC

Plasma Cutter with Built-in Air Compressor

80 A plasma cutting + MMA | clean cut 16 mm, max 20 mm | built-in twin compressor | 220 V / 380 V



USER MANUAL

Please read this manual carefully before installing and using the machine.

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This manual describes the installation, operation and maintenance of the Cruxweld FINELINE 80IC plasma cutter with built-in air compressor. Read and understand it carefully before installing and using the machine, and keep it near the machine. Cruxweld improves its products continuously; the contents of this manual may be revised without prior notice.

Signs used in this manual

Sign	Meaning
▲ **DANGER**	Immediate danger which will cause death or serious injury if it is not avoided.
▲ **WARNING**	A potential hazard which may cause death or serious injury if it is not avoided.
▲ **CAUTION**	A hazard which may cause injury or damage to the machine if it is not avoided.
Note	Useful information for correct operation.

1 Safety precautions

Cutting and welding are dangerous to the operator, to people in or near the working area and to the surroundings if the equipment is not operated correctly. Cutting and welding must be done only with strict observance of all relevant safety regulations.

1.1 General

- Only qualified, trained operators may use the machine.
- Do not change the mode switch (Gas check / Cut / MMA) while cutting or welding – this can damage the machine.
- The supply must be protected by a circuit breaker with earth-leakage (residual current) protection.
- Use good-quality torches, cables and accessories only.

1.2 Electric shock – it can kill

▲ DANGER

Connect the machine to earth according to the regulations. Never touch live parts of the cutting or welding circuit, the torch head, the electrode or the work with bare hands or wet gloves. Wear dry, insulating gloves and keep yourself insulated from the workpiece. Never touch the output terminals while the machine is working.

1.3 Fumes and gases

Fumes and gases from cutting and welding are harmful to health. Do not breathe them. Keep the working area well ventilated or use fume extraction.

1.4 Arc rays

The arc is harmful to eyes and skin. Wear a welding helmet or cutting goggles with the correct filter shade, flame-resistant work clothes and gloves. Protect other people in or near the working area with screens.

1.5 Fire

Sparks and hot metal can cause fire. Remove flammable material from the working area and keep a fire extinguisher, with a trained person, nearby.

1.6 Noise

Cutting produces noise. Wear approved hearing protection if the noise level is high.

1.7 Machine faults

In case of a fault, see Chapter 9 of this manual, or contact Cruxweld service.

2 General description

The Cruxweld FINELINE 80IC is an inverter air plasma cutter with a built-in air compressor and an MMA (stick) welding mode, in one cabinet on castor wheels. The built-in twin air compressor inside the cabinet supplies the compressed air for the torch, so no separate compressor, air hose or dryer is needed. Where a workshop air line is available, the machine can be switched to **External Air**.

The inverter rectifies the mains supply and converts it to high-frequency AC with power semiconductors and PWM control; the voltage is then transformed and rectified again. This makes the main transformer much smaller and the machine lighter, with a stable output current and low noise.

The FINELINE 80IC runs on **single phase 220 V** or **three phase 380 V**. It gives a clean, square cut up to 16 mm in mild steel and severance cuts up to 20 mm, in iron, mild steel and galvanized sheet. With the Cut / MMA selector it becomes a stick welder for 2.5 – 3.15 mm electrodes.

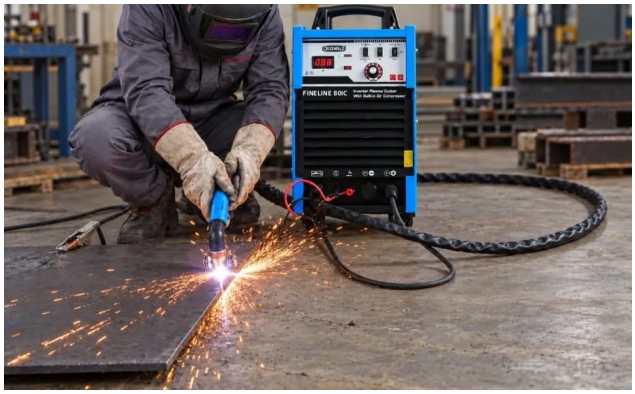


Fig. 2.1 Plasma cutting mild steel plate



Fig. 2.2 Built-in twin air compressor, side view

2.1 Applications

Fabrication shops, sheet metal and roofing, gates, grills and furniture, maintenance and repair, scrap and dismantling, and site jobs – wherever plate, flats, angles and sheet have to be cut and then welded with the same machine.

2.2 Features

- Built-in twin air compressor; workshop air optional.
- Runs on single phase 220 V or three phase 380 V.
- 80 A plasma cutting: clean cut up to 16 mm, maximum 20 mm in mild steel.
- MMA welding with 2.5 – 3.15 mm electrodes.
- 2T / 4T torch trigger control and gas check function.
- Digital ammeter with 380 V, 220 V and O.C. lamps.
- Twin cooling fans; two handles and four castor wheels with brakes.

3 Technical specifications

Parameter	FINELINE 80IC
General	
Model	FINELINE 80IC
Functions	Plasma cutting (Cut) and MMA welding
Input supply	220 V single phase / 380 V three phase
Air	
Air supply	Built-in twin air compressor (Internal Air) or workshop air line (External Air)
Gas check	Yes
Cutting	
Rated cutting current	80 A
Clean cutting thickness	Up to 16 mm (mild steel)
Maximum cutting thickness	20 mm (mild steel)
Materials	Iron, mild steel and galvanized sheet
Torch control	2T / 4T
Welding	
MMA electrode diameter	2.5 – 3.15 mm
Build	
Display	Digital ammeter
Indicators	380 V, 220 V and O.C. (overcurrent) lamps
Cooling	Twin cooling fans, forced air
Mobility	Two handles, four castor wheels with brakes

All values are for reference; the rating plate on the machine applies. Specifications may change without notice as a result of continuous improvement.

3.1 Scope of supply

No.	Item
1	FINELINE 80IC power source with built-in twin air compressor
2	Plasma cutting torch with cable
3	Roller guide and spanner
4	Earth clamp and electrode holder cables (as per quotation)
5	User manual



Fig. 3.1 Plasma torch with cable, roller guide and spanner

> **Note:** The exact scope is confirmed on the quotation. Spare nozzles, electrodes and torch parts can be ordered from Cruxweld.

4 Machine overview

4.1 Front panel

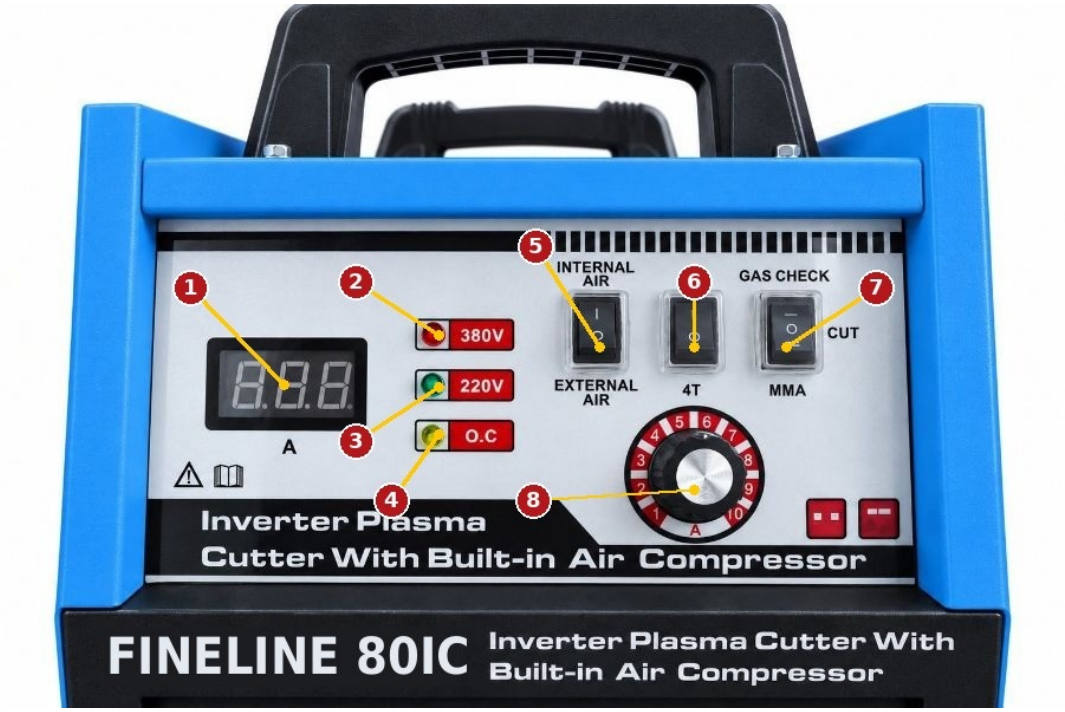


Fig. 4.1 Front panel controls

No.	Item	Function
1	Digital ammeter	Shows the cutting or welding current in amps.
2	380 V lamp	Lights when the machine is connected and switched on at the main supply.
3	220 V lamp	Lights when the built-in air compressor circuit is powered.
4	O.C. lamp	Overcurrent and overheating warning. The output pauses until the machine cools down.
5	Internal / External air	Internal: air from the built-in compressor. External: workshop air at the rear GAS inlet.
6	2T / 4T	2T: hold the trigger to cut. 4T: press once to start and again to stop, for long cuts.
7	Gas check / Cut / MMA	Gas check: air flows to test the flow. Cut: plasma cutting. MMA: stick welding.
8	Current knob (1 – 10)	Sets the cutting or welding current; read the exact amps on the display.

4.2 Front connections



Fig. 4.2 Torch, pilot arc and output terminals

No.	Item	Function
1	Plasma torch connector	Central connection for the hand torch, carrying air and cutting current.
2	Torch trigger socket	Control plug of the torch switch.
3	Pilot arc terminal	Red lead of the torch, for starting the arc.
4	Negative (−) terminal	Output terminal; used as marked on the panel for the mode in use.
5	Positive (+) terminal	Output terminal; the earth clamp is connected here for plasma cutting.

4.3 Rear panel



Fig. 4.3 Rear panel

No.	Item	Function
1	Twin cooling fans	Two large fans pull air through the cabinet.
2	Air vents	Hot air leaves through the vent grille. Keep it free.
3	MCB power switch	Main ON / OFF switch with circuit protection.
4	Earth terminal	Connect the machine body to earth.
5	GAS inlet	Connection for a workshop air line (External Air).

5 Installation

5.1 Before installation

Unpack the machine and check it and the accessories against the scope of supply. Place it on firm, level ground, at least **30 cm** away from walls and other objects so that the fans can take in and blow out air freely. Lock the castor brakes where fitted.

Any extension of the mains cable or of the torch cable can reduce cutting performance, because the resistance of a longer cable reduces the voltage. Use the cables supplied with the machine.

5.2 Power supply and earth

> **▲ DANGER**
> Only a qualified electrician may connect the machine to the mains. Switch off and isolate the supply before connecting.

1. Connect the machine to a supply that matches the rating plate – **single phase 220 V** or **three phase 380 V** – through a suitable circuit breaker with earth-leakage protection. Use the input cable and plug arrangement specified by Cruxweld for the supply you use; if in doubt, ask Cruxweld before connecting.
2. Connect the earth terminal on the rear panel to a proper earth.
3. Make sure the input connections are tight, to avoid heating and oxidation. Check with a multimeter that the supply voltage stays within the permitted range during cutting.

5.3 Plasma torch



Fig. 5.1 Front connections of the FINELINE 80IC

1. Connect the torch to the plasma torch connector (1) on the front and tighten it clockwise so that no air leaks.
2. Connect the torch trigger plug to the trigger socket (2).
3. Connect the red pilot arc lead to the pilot arc terminal (3).
4. Screw the electrode into the torch head, then fit the nozzle and the shield cup. Fit the roller guide if required.

> **▲ CAUTION**
> Fit, check or change torch parts only when the machine is switched off.

5.4 Earth clamp and electrode holder

- **Plasma cutting:** connect the earth clamp cable to the **positive (+)** terminal and clamp it to clean metal on the workpiece, close to the cut.
- **MMA welding:** connect the electrode holder and the earth clamp to the output terminals as marked on the front panel, and as recommended by the electrode manufacturer.

5.5 Air supply

Internal Air: set the air switch (Internal / External air) to **Internal Air**. The built-in compressor supplies the torch; no connection is needed.

External Air: for long production runs, connect a workshop air line to the GAS inlet on the rear panel and set the air switch to **External Air**. The air must be clean and dry: use an air filter-regulator with a water separator, set the pressure to about 4 kgf/cm², seal the hose connections and drain the water separator whenever water collects in it.

> **Note:** Use compressed air only. Do not connect oxygen or any other gas to the GAS inlet.

6 Operation

6.1 Checks before starting

- The machine is earthed.
- All connectors are tight.
- The supply matches the rating plate.
- All cables and hoses are in good condition; the torch cable and air hose are not kinked.
- The nozzle and electrode are in good condition and correctly fitted.

6.2 Plasma cutting

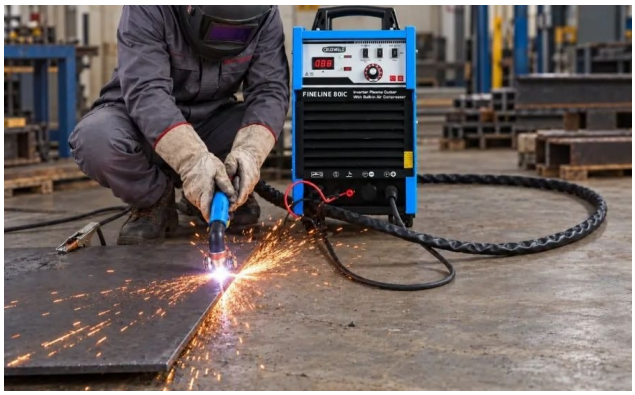


Fig. 6.1 Plasma cutting mild steel

1. Switch on the main breaker on the rear panel. The 380 V lamp lights and the display shows the set current. The 220 V lamp shows that the compressor circuit is powered.
2. Select the air source (Internal or External Air).
3. Set the mode switch to **Gas check**: air flows from the torch. Check the air flow, then set the switch to **Cut**.
4. Select 2T or 4T.
5. Set the cutting current to suit the material and thickness.
6. Rest the roller guide (or the torch) at the edge of the workpiece and press the trigger. The pilot arc starts and transfers to the work; move the torch at an even speed.
7. At the end of the cut, slow down slightly and then release the trigger (in 4T, press it again). Air keeps flowing for a short time to cool the torch.

6.3 Cutting tips

- Cut at an even speed suited to the material and thickness. Too fast a speed leaves a bevelled, dross-laden edge; too slow a speed widens the kerf and makes the arc unstable.
- Do not touch the plate with the nozzle while cutting. Use the roller guide to keep a steady height.
- Spatter on the nozzle reduces cooling. Remove it promptly.
- Do not kink or crush the torch cable or air hose while cutting.
- Never knock the torch against the workpiece to clear spatter.
- Up to 16 mm the cut is clean and square; between 16 and 20 mm use full current and a slower travel speed (severance cut) and grind the edge if needed.

6.4 MMA (stick) welding



Fig. 6.4 MMA welding in weld mode

1. Switch off the machine. Connect the electrode holder and the earth clamp as described in Section 5.4.
2. Switch on and set the mode switch to **MMA**. No air is needed in MMA.
3. Set the welding current to suit the electrode (2.5 – 3.15 mm).
4. Strike the arc and weld.

> **Note:** Change the mode switch only when you are not cutting or welding.

6.5 After work

Let the post-flow finish before switching off, so that the torch is cooled. To blow out moisture and dust, set the mode switch to Gas check and let air flow through the torch for about 15 seconds. Switch off the main breaker.

7 Cautions and working environment

7.1 Working environment

- Install the machine where there is little dust, and no corrosive gas, flammable gas or flammable material. Relative humidity: 80% maximum.
- Do not use the machine in the open air unless it is sheltered from direct sun, rain and snow. Ambient temperature: −10 °C to +40 °C.
- Keep the machine at least 30 cm away from walls and other objects, and keep the working area well ventilated.

7.2 Ventilation and cooling

The machine is compact and delivers a high output current. Its fans remove the heat produced by the inverter and the compressor. Keep the louvres and fan openings clear: good ventilation is essential for correct operation and long service life.

7.3 Overload

Do not overload the machine. If it is overloaded or overheated, the O.C. lamp lights and the output stops. Do not switch off: leave the machine on so that the fans can cool it down. When the temperature has fallen, the O.C. lamp goes off and you can continue.

7.4 Over-voltage

Use the machine only within the supply voltage range on the rating plate. A supply voltage above the permitted value can damage the machine.

7.5 Earthing

Always connect the earth terminal to a proper earth to avoid static charges and electric shock. Never touch the output terminals while the machine is working.

8 Maintenance

> **▲ WARNING**
> Disconnect the machine from the mains before any maintenance or repair.

8.1 Machine

- Check that the earth wire is properly connected.
- Check the internal air and electrical connections, especially plugs, and tighten loose connections. If there is oxidation, clean it with fine sand paper and reconnect.
- Keep hands, hair, loose clothing and tools away from moving parts such as the fans.
- Blow out dust regularly with clean, dry compressed air at reduced pressure, so that small parts inside are not damaged. In heavy smoke and dust, clean the machine once a month.
- When using External Air, drain the water separator of the filter-regulator regularly.
- Check the torch cable, air hose, earth cable and input cable for damage, and replace damaged parts.

8.2 Nozzle and electrode

Replace the electrode and the nozzle, with genuine parts of the correct size, when:

- the wear pit in the centre of the electrode is deeper than about 1.5 mm;
- the nozzle hole is worn, oval or distorted;
- the cutting speed drops;
- the arc is difficult to start;
- the kerf becomes irregular.

Cutting with worn consumables can seriously damage the torch and the machine.

9 Troubleshooting

▲ CAUTION
Only qualified technicians may open the machine and repair internal faults.

Fault	Possible cause	Remedy
Display and lamps off, fans do not run	No supply; main breaker off; input cable not connected properly	Check the supply and breaker; reconnect the input cable
Power on, fans run, nothing happens when the trigger is pressed	Torch trigger plug not connected; supply voltage outside the permitted range (protection active)	Connect the trigger plug; switch off for a while and restart when the supply is normal
O.C. lamp on, output stops	Machine overloaded or overheated; air openings blocked	Leave the machine on until the fans have cooled it; clear the openings; reduce the load
No air from the torch	Wrong air switch setting; built-in compressor not running (220 V lamp off); external air line closed or empty	Check the air switch; check the external supply; contact Cruxweld service if the compressor does not run
Air flows but no arc	Electrode or nozzle missing, worn or wrongly fitted; pilot arc lead or earth clamp not connected	Refit or replace the consumables; check all connections
Arc difficult to start, weak cut	Low supply voltage; air pressure too low; worn consumables; current set too low	Check the supply and air; replace consumables; raise the current
Arc goes out during the cut, poor kerf	Travel speed wrong; torch too high; worn nozzle; spatter on the nozzle	Adjust the speed; use the roller guide; clean or replace the nozzle
Fault remains after the checks above	Internal fault, for example in the power board, the arc-starting (high-frequency) circuit or the control board	Contact Cruxweld service

If the fault cannot be cleared, contact Cruxweld service and state the model and the serial number from the rating plate.

10 Warranty

Cruxweld warrants the FINELINE 80IC power source against defects in material and workmanship for the period stated on the quotation and invoice. During this period Cruxweld will repair or replace parts that are found to be defective due to faulty material or workmanship, free of charge.

The warranty does not cover the torch consumables (nozzles, electrodes, shield cups and similar wearing parts), or damage caused by deliberate damage, use not in line with this manual, incorrect supply voltage, repair by unauthorised persons, falls, transport or other external causes. Only qualified technicians may repair the machine.

Model	FINELINE 80IC
Serial number	
Invoice no. / date	
Customer	
Dealer stamp	

For service and spare parts please contact:

Cruxweld Industrial Equipments Pvt. Ltd.
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