CRUXWELD®

INDUSTRIAL EQUIPMENTS PVT. LTD.

FINELINE 100IC

Plasma Cutter with Built-in Air Compressor

100 A plasma cutting + MMA | cuts up to 25 mm | built-in twin-cylinder compressor | 380 V 3-phase



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 100IC 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 100IC 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 twin-cylinder 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 100IC cuts mild steel, stainless steel and aluminium from 0.3 mm sheet up to 25 mm plate on its built-in compressor. The pilot arc starts the cut without touching the plate. With the Cut / MMA selector the same machine becomes a 100 A stick welder for 1.6 – 4.0 mm electrodes.

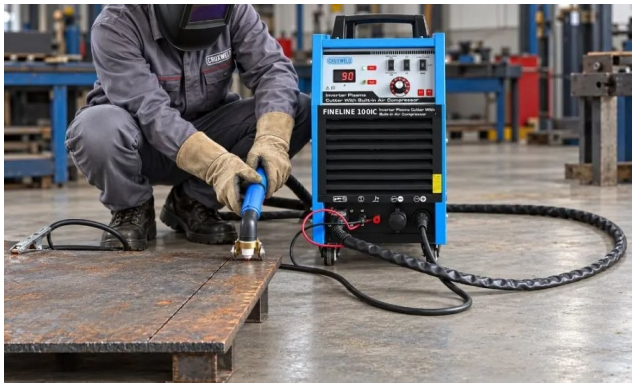


Fig. 2.1 Cutting on site with the FINELINE 100IC

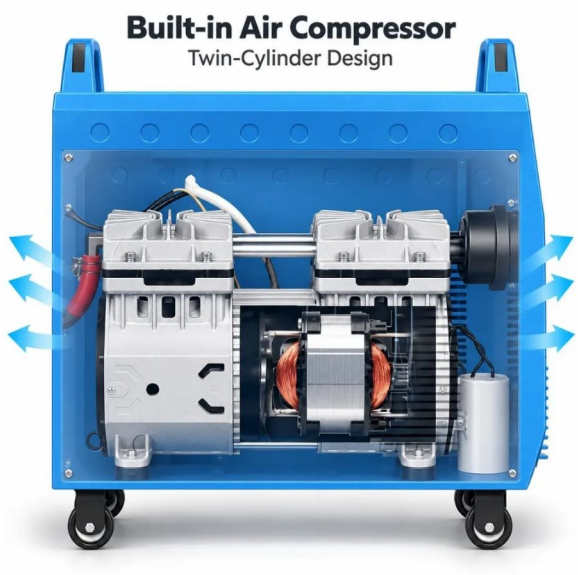


Fig. 2.2 Built-in twin-cylinder air compressor (cutaway view)

2.1 Applications

Site fabrication and erection, maintenance and repair, scrap and dismantling, shipyards and ports, rental fleets and fabrication shops – wherever plate, flanges and brackets have to be cut and then tacked or welded with the same machine.

2.2 Features

- Built-in twin-cylinder compressor, 4 – 5.5 kgf/cm² to the torch; workshop air optional.
- Plasma cutting 20 – 100 A, 0.3 – 25 mm, with contactless pilot arc start.
- MMA welding with 1.6 – 4.0 mm electrodes.
- 2T / 4T torch trigger control and 5 – 20 s air post-flow to cool the torch.
- Digital current display, power and overcurrent / over-temperature (O.C.) lamps.
- Twin cooling fans; one unit on four castor wheels.

3 Technical specifications

Parameter	FINELINE 100IC
General	
Model	FINELINE 100IC
Functions	Plasma cutting (Cut) and MMA welding
Input voltage	3-phase AC 380 V ±15%
Frequency	50 / 60 Hz
Rated input current	25.5 A
Rated input power	16.8 kVA
No-load voltage	270 V
Output current	20 – 100 A
Rated output voltage	120 V
Air	
Air source	Built-in compressor (Internal Air) or workshop air line (External Air)
Built-in air pressure	4 – 5.5 kgf/cm²
Post-flow time	5 – 20 s
Cutting and welding	
Cutting thickness	0.3 – 25 mm
Maximum cutting thickness	25 mm
Materials	Mild steel, stainless steel, aluminium
Arc ignition	Contactless (pilot arc)
Torch control	2T / 4T
MMA electrode diameter	1.6 – 4.0 mm
Build	
Efficiency	85%
Power factor	0.93
EMC class	A
Protection class	IP21S
Insulation class	H
Weight	52 kg
Dimensions (L × W × H)	680 × 370 × 610 mm

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 100IC power source with built-in twin-cylinder compressor
2	Plasma cutting torch with cable and roller guide
3	Electrode holder with cable and earth clamp with cable
4	Spare nozzles and electrodes, spanner
5	User manual



Fig. 3.1 Torch, electrode holder, earth clamp, roller guide, spanner, nozzles and electrodes

> **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

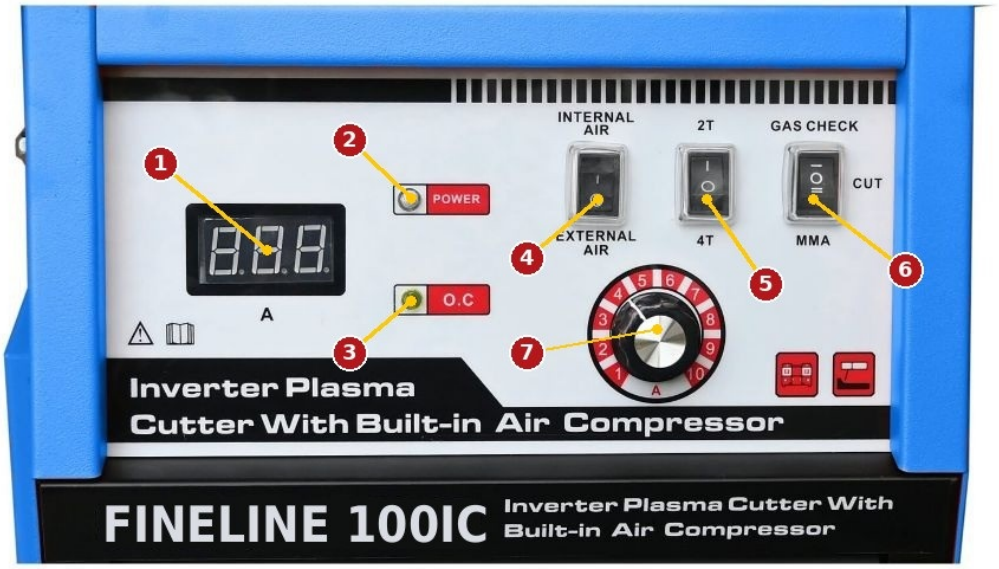


Fig. 4.1 Front panel controls

No.	Item	Function
1	Digital display	Shows the set current in amps (20 – 100 A).
2	POWER lamp	Lights when the machine is switched on at the rear main breaker.
3	O.C. lamp	Overcurrent / over-temperature warning. The output pauses until the machine is safe again.
4	Internal / External air	Internal: air from the built-in compressor. External: workshop air at the rear GAS inlet.
5	2T / 4T	2T: hold the trigger to cut. 4T: press once to start and once to stop, for long cuts.
6	Gas check / Cut / MMA	Gas check: air flows to check flow and pressure. Cut: plasma cutting. MMA: stick welding.
7	Current knob	Sets the output current, 20 – 100 A; read the exact value 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

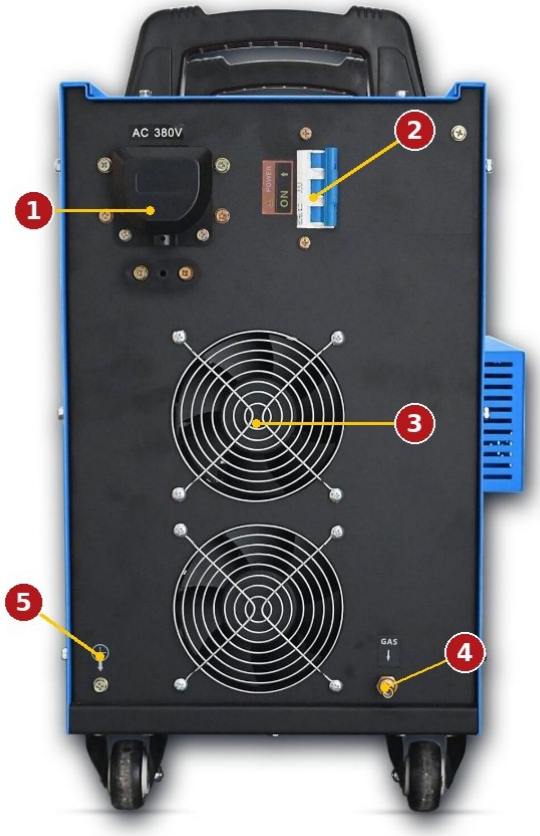


Fig. 4.3 Rear panel

No.	Item	Function
1	380 V input	Three-phase AC 380 V supply connection.
2	Main breaker	ON / OFF switch with circuit protection.
3	Twin cooling fans	Pull air through the cabinet to cool the inverter and the compressor.
4	GAS inlet	Connection for a workshop air line (External Air).
5	Earth terminal	Connect the machine body to earth.

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 **three-phase AC 380 V, 50/60 Hz** supply through a suitable circuit breaker with earth-leakage protection. The supply must be able to deliver the rated input power (16.8 kVA, 25.5 A).
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 Connecting the plasma torch

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 at 4 – 5.5 kgf/cm²; 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 (the same range as the built-in supply, 4 – 5.5 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 Starting a cut with the roller guide

1. Switch on the main breaker on the rear panel. The POWER lamp lights and the display shows the set current.
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 (post-flow 5 – 20 s).



Fig. 6.2 Cutting plate with the roller guide



Fig. 6.3 Cut samples: hole and square edges

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.

6.4 MMA (stick) welding

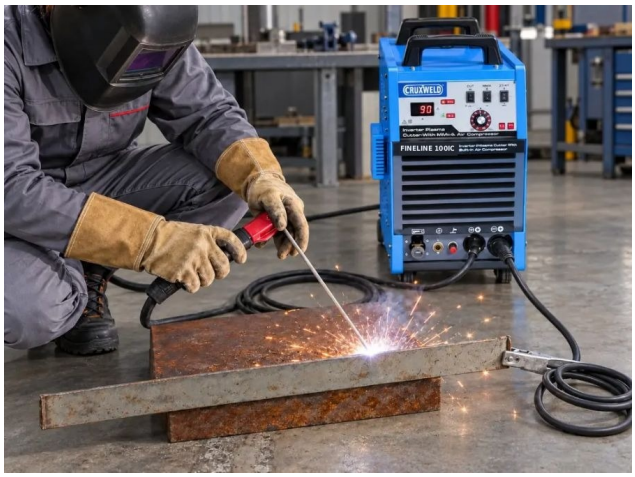


Fig. 6.4 MMA welding in weld mode

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 (1.6 – 4.0 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.



Fig. 8.1 Torch head with nozzle and roller guide

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; 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 100IC 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 100IC
Serial number	
Invoice no. / date	
Customer	
Dealer stamp	

For service and spare parts please contact:

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