



Cutting  
Systems

# TORCHMATE® 5100



## SITE PREPARATION GUIDE

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Lincoln Electric® Cutting Systems

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# Site Preparation

When installing a Torchmate 5100 in your shop, there are many factors that will influence the potential productivity, ease of use of the machine, and the safety of the operator. The main factors to prepare for include the physical layout and placement of the machine in the shop, the availability of power, an EMI ground, compressed air and other gases, and ventilation.



- **Water Table vs. Downdraft**

The Torchmate 5100 is offered in two configurations for fume control: a water table and a downdraft table. Each has certain considerations to be taken when preparing to install and operate the 5100 machine.

The water table must have the ability to be filled with tap water frequently, especially in hot arid climates.

A downdraft table must have clearance at the back of the machine to run 14" ducting to the fume extraction source. This ducting will need to be routed away from walk ways and work areas.

- **Plasma Cutter Options**

The Torchmate 5100 machine is offered with several plasma cutting power supplies. Each have different input power requirements, gas type/volume requirements, etc. The site preparation guide generalizes this into two categories, an Air Plasma site preparation for either the FlexCut 125 or FlexCut 200 plasma cutters. The HD guide explains the requirements for the FineLine® High Definition Plasma Cutting System.

- **Physical space around the Torchmate 5100**

When preparing to install the Lincoln Electric CNC Cutting System, provide sufficient space to access the material bed and connections around the entire machine. It is recommended that 3' feet of work space should be maintained between the 5100 to any other objects. The rear of the machine hosts the electronics cabinet and its recommended clearance is 5' feet of space.

- **Dedicated Earth Ground**

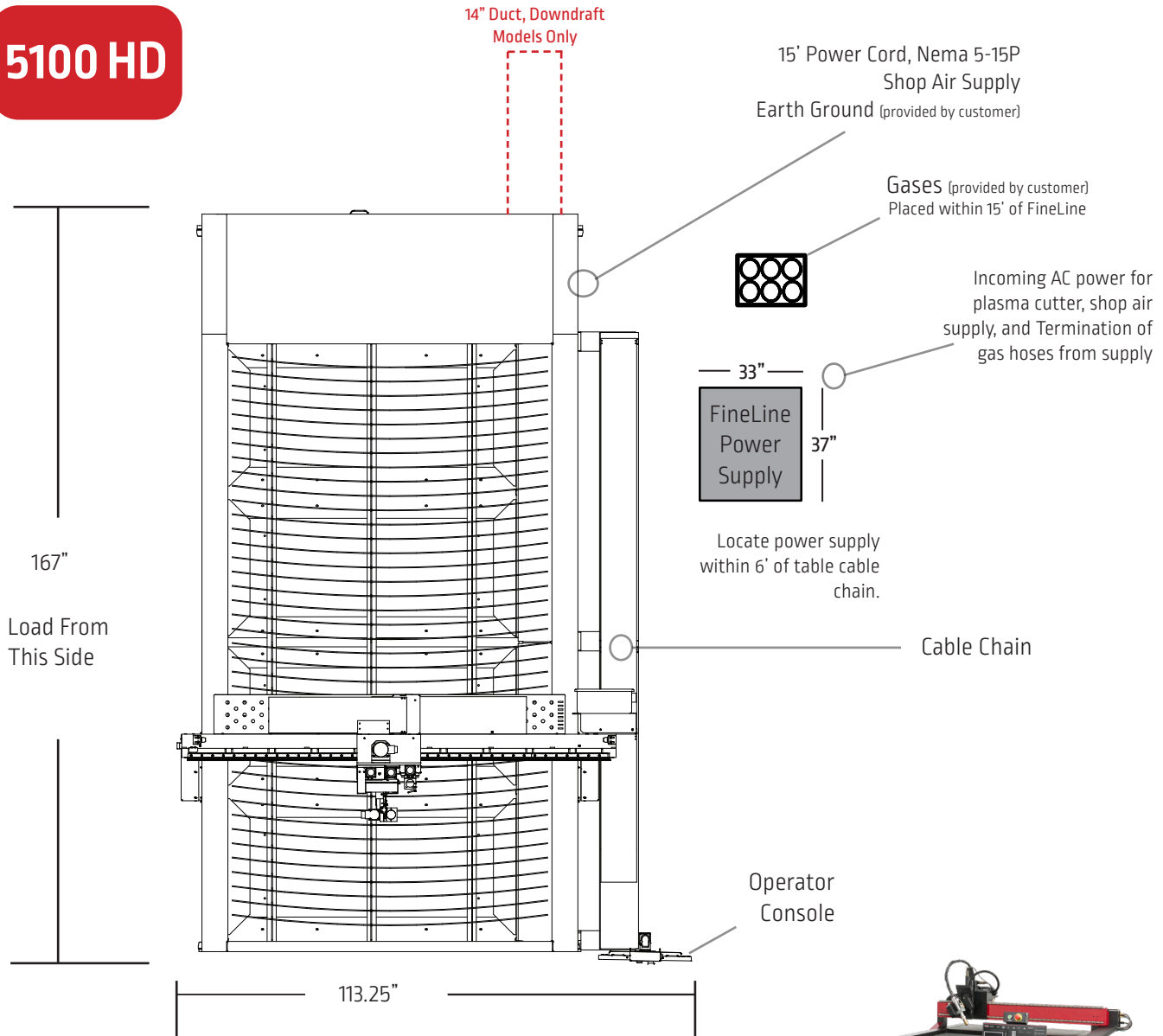
A dedicated earth ground must be provided and installed for the Torchmate 5100 machine. It should be installed in a manner to reduce trip hazard, preferably nearest to the Star Ground located on the machine. To connect to the star ground from the ground rod use the same diameter (or larger) than the plasma cutter WORK lead. This increases the effectiveness of the ground, and reduces clutter with running long cables between the machine and a separate ground.

# Equipment Layout - FineLine

Lincoln Electric FineLine® High Definition Power Supplies have a larger power box and a gas controller to mix several different types of gases utilized in HD plasma cutting. The placement of these products with the 5100 must be within 6' of the cable chain's end. This also determines the location of incoming power to the FineLine plasma cutter, and the termination of gas leads to the plasma cutter.

The hose length from the FineLine power supply box to the source gas is provided at 25'. The FineLine plasma cutting system requires a minimum of 100% oxygen source, 100% nitrogen source, and shop air for steel and aluminum cutting. Consult the FineLine users manual for gas pressure and volume requirements.

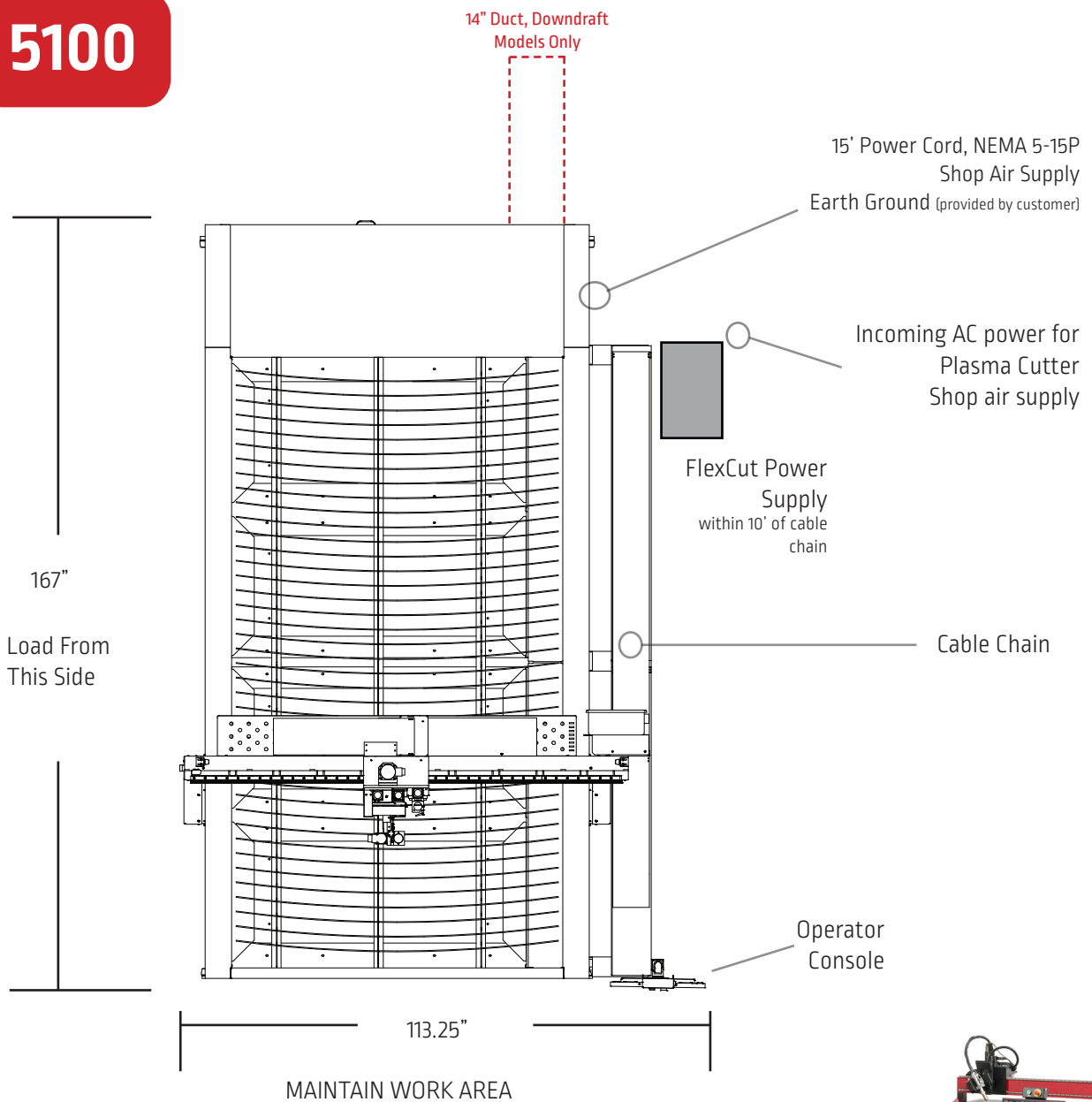
**5100 HD**



# Equipment Layout - FlexCut

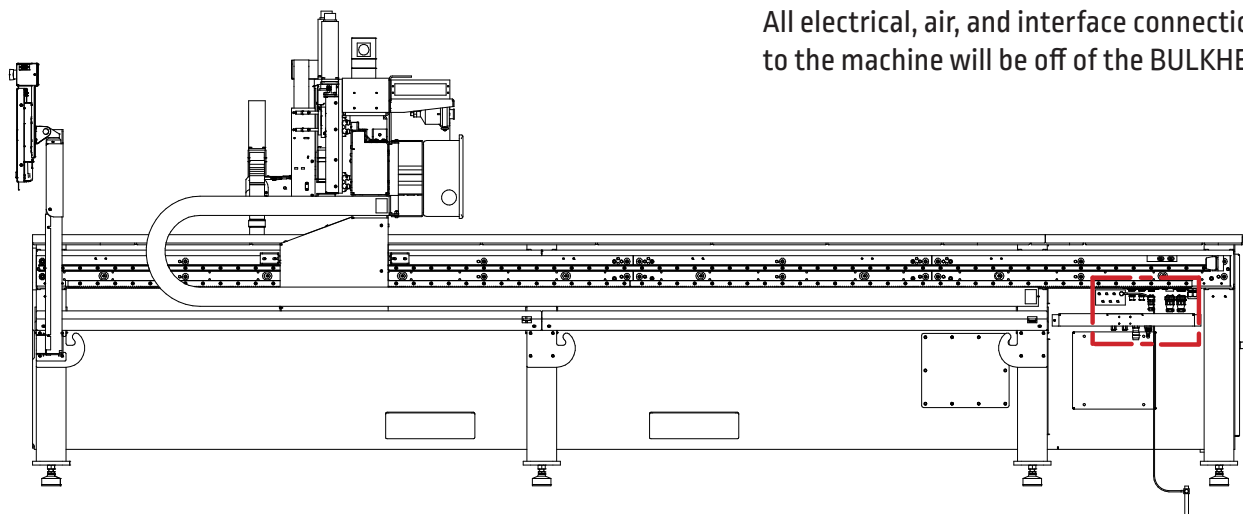
When installing a Torchmate 5100 in your shop paired with a FlexCut 125 or FlexCut 200 plasma cutter, consult the layout below. For more information on the plasma requires, see the appropriate user guides.

**5100**



# Power, Air, Grounding Connections

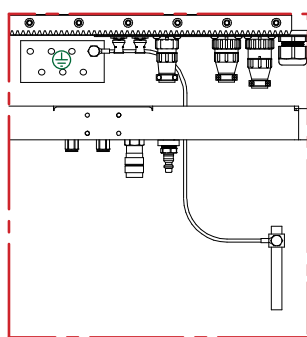
Internally the 5100 comes pre-wired and ready to run. All systems are test-fired and disconnected at the facility before packaging and shipping. For shipping purposes, the plasma power supply is disconnected from the system and will require a connection to the machine once installed. The table has a single input power cord with a 120v NEMA 5-15P plug that powers the table and computer/monitor. All Connections should be made in accordance with all local and national electrical codes. Failure to do so may result in bodily injury or death.



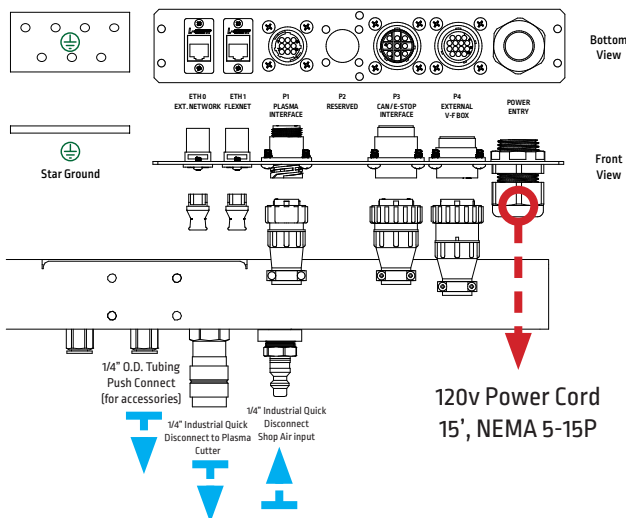
All electrical, air, and interface connections to the machine will be off of the BULKHEAD

## 5100 - Table Power connections:

Attach the supplied 120v NEMA 5-15P plug into a 120vAC 15A wall outlet. This will power the electronics and table functions.



Electrical Bulkhead



## 5100 - Pneumatic connections:

The 1/4" industrial quick disconnect input on the bulkhead will distribute the air to the plasma power supply along with table operations. Any accessories will also be provided shop air by tapping into the two output 1/4" tubing push-connects.

## Power to Plasma:

The plasma power supply chosen requires 3-phase electrical connections and numerous other connections needed by your specific power supply to interface with the machine; consult the specific plasma power supply's user manual for more details.

Depending on the particular model plasma cutter, an input power cord may not be included.

Fuse the input circuit with the recommended super lag fuses or delay type breakers. Choose input and grounding wire size according to local or national electric codes. Using input wire sizes, fuses, or circuit breakers smaller than recommended may result in "nuisance" shut-offs from high inrush currents, even if the machine is not being used at high currents.

Connection to the supply circuit can be by means of flexible supply cables or supply cables through conduit to a permanent installation. The supply cables should have a 600 volt minimum rating and be sized according to local and national codes.

### FineLine® 170HD:

Voltage	Input Ampers	Fuse (Super Lag) or Breaker Size <sup>2</sup>
380-415V / 3 / 50/60	69	80
460V / 3 / 50/60	58	70
575V / 3 / 50/60	53	60

### FineLine® 300HD:

Voltage	Input Ampers	Fuse (Super Lag) or Breaker Size <sup>2</sup>
380-415V / 3 / 50/60	123	150
460V / 3 / 50/60	108	125
575V / 3 / 50/60	95	100

### FlexCut® 125:

Voltage	Input Ampers	Fuse (Super Lag) or Breaker Size <sup>2</sup>
380-415V / 3 / 50/60	40	50
460V / 3 / 50/60	33	40
575V / 3 / 50/60	22	30

### FlexCut® 200:

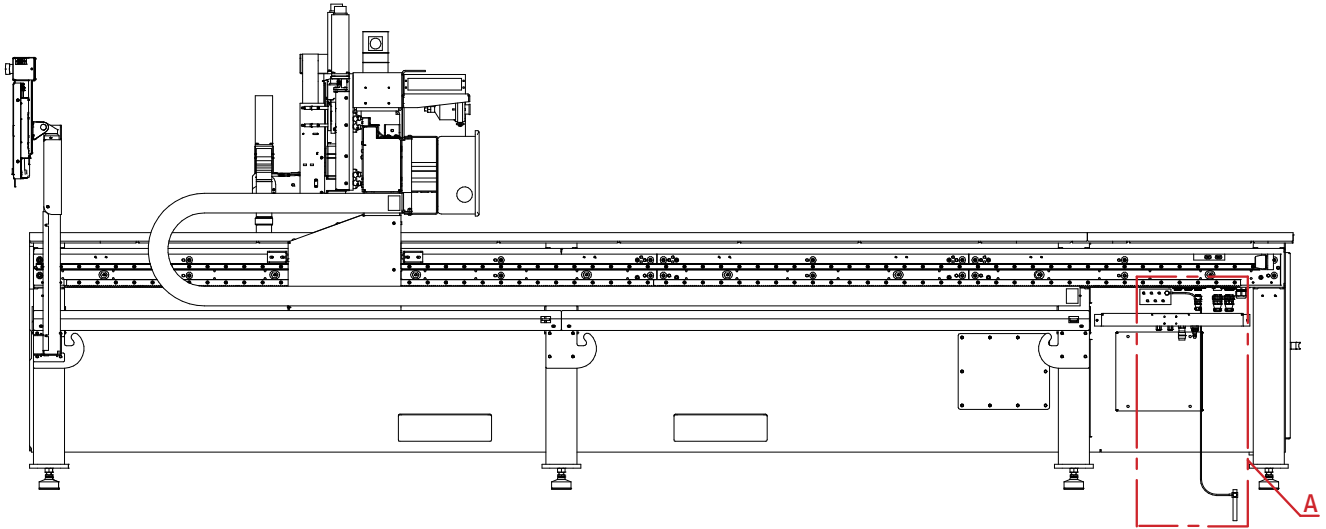
Voltage	Input Ampers	Fuse (Super Lag) or Breaker Size <sup>2</sup>
380-415V / 3 / 50/60	71	80
460V / 3 / 50/60	63	70
575V / 3 / 50/60	55	60

## Ground the Machine:

Proper grounding must be provided to ensure personnel safety and to suppress high-frequency noise. The foundation of good grounding is an effective earth-ground rod with a short, heavy conductor wire connected to the star ground point on the machine. For proper operation of your CNC cutting tables, you must run at least a 6 AWG or matching AWG wire to the work lead from the star ground to a dedicated earth ground rod.

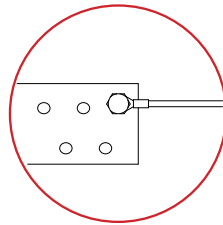
Ground rod installations are covered by NEC Section 250.

Consult with a qualified electrical technician to verify your system grounding.



Place the FlexCut plasma unit in the appropriate location. Re-install the torch lead and the work lead into the plasma power supply.

The FlexCut plasma units shipped with a factory work lead (Ground Clamp) attached to the star ground.

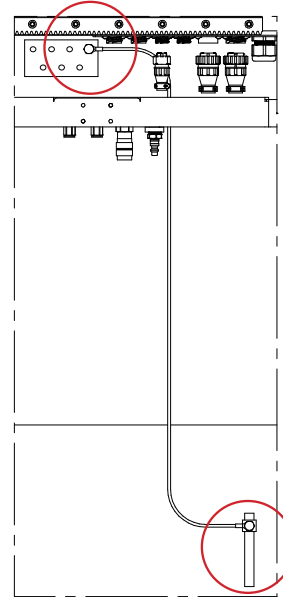


STAR GROUND

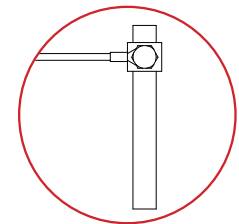
The FineLine plasma unit shipped with a factory work lead (Ground Clamp) attached to the star ground.

If the work piece is painted or dirty, it may be necessary to expose the bare metal to make a good electrical connection.

The ground rod is not included with machine.



DETAIL A



GROUND ROD



# Sign Off Sheet

In order to maximize the amount of time the operators will receive during machine training, Lincoln Electric requires a signed off completion sheet by the customer prior to scheduling an on-site machine commissioning or training. Please sign and return to [customersuccess@torchmate.com](mailto:customersuccess@torchmate.com) to guarantee the soonest possible scheduling.

## Torchmate 5100 Customer Sign-Offs:

Complete

- Machine is installed and fully leveled in the length and width
- 120vAC 15A non-GFCI circuit is installed and active
- Plasma Cutter AC circuit is installed and active
- Plasma Cutter Torch and Coolant connections are connected
- Oxy Fuel Accessory Connected to Oxygen/Preheat gas (if applicable)
- Shop air is plumbed to the 5100 air manifold, and active
- Ground Rod is installed, and connected to the 5100
- Gas Supplies and High Pressure Regulators are installed (HD Only)
- 426 gallons of tap water is available to fill water table (water table only)
- Fume Control system is plumbed to the machine and active (downdraft only)

Company/Site Name: \_\_\_\_\_

Responsible Installer: \_\_\_\_\_

Date: \_\_\_\_\_

# Table Specifications

## Input Power

- 120V / 1Ph / 15A / 60Hz (table and computer)
- 380-600V / 3Ph / 50-60Hz (Plasma Power Supply specific)

## Machine Size

- 60" x 120" (1524mm x 3048mm) Cutting Area
- 113.5" x 167" (2895.6mm x 4241.8mm) Footprint

## Traverse Speed

- 1,500 ipm (0.635 mps)

## Cut Speed

- Up to 450 ipm

## Plate Capacity

- Holds Up To 4" (102mm) 5'x10' (1524mm x 3048mm) Mild Steel

## Weight

- 4400 lbs (1995.8 kg) - Water Table
- 5200 lbs (2358.7 kg) - Downdraft Table

## Operating Temperature

- 32-104° Fahrenheit (0-40° Celsius)

## Motors

- Servo Motors Fitted with Rotary Glass Encoders

## Drive System

- Helical Gear Rack and Hardened Pinion with Lubrication System

## Linear Guidance

- Profile Linear Rail

## Acceleration Rate

- 0.08g (0.06g Bevel)

## Deceleration Rate

- 0.08g (0.06g Bevel)

## Input Pneumatics

- Minimum 115PSI Supply Pressure
- Volume - 7 SCFM (420 SCFH) @ 90PSI

## Height Control

- Ohmic Sensing
- Automatic Torch Height Control
- 6.75" Z-axis Travel

## Bevel Capabilities (optional FC125/FC200)

- +/-45° Rotation (dependent on material thickness and power supply configuration)

## Software

- Easy-To-Use Lincoln Electric User Interface
- CAM with Irregular Part Nesting
- Popular Shape Library

## Fume Extraction (Optional Accessory)

- 61,801 ft<sup>3</sup>/hr or 1,750 m<sup>3</sup>/hr minimum
- Automatic Filter Cleaning, Pressure Controlled

## Downdraft Configuration

- Multiple Zones Controlled By Motion Controller

## Safety

- Dual-Channel Safety System Supporting Emergency Stop Switch
- Safety System Extended To External Peripherals
- External Drive Power On Switch

## Warranty

- \*1 Year Warranty

TORCHMATE 5100 CNC PLASMA SYSTEMS	FlexCut 125	FlexCut 200	FineLine 170HD	FineLine 300HD
<b>PRODUCTION CUTTING CAPACITY</b>				
Mild Steel	1" (25mm)	1.25" (32mm)	1.25" (32mm)	1.75" (45mm)
Stainless Steel	3/4" (20mm)	3/4" (20mm)	1" (25mm)	1.25" (32mm)
Aluminum	5/8" (16mm)	3/4" (20mm)	1" (25mm)	1" (25mm)
<b>CUTTING SPEED @ RATED OUTPUT CURRENT</b>				
1/4" MS	210 ipm @125A	200 ipm @200A	230 ipm @ 170A	230 ipm @ 200A
1/2" MS	88 ipm @125A	110 ipm @200A	120 ipm @ 170A	135 ipm @ 275A
1" MS	32 ipm @125A	40 ipm @200A	50 ipm @ 170A	70 ipm @ 300A
<b>PROCESS AMPS</b>	20A - 125A	15A - 200A	10A - 170A	30A - 300A
<b>CUTTING GAS</b>				
Mild Steel	Air / Air	Air / Air Oxygen / Air	Oxygen / Air Oxygen / Oxygen	Oxygen / Air Oxygen / Oxygen
Stainless Steel	Air / Air Nitrogen	Air / Air Nitrogen	Air / Air Air / Nitrogen H17/Nitrogen	Air / Air Air / Nitrogen H17/Nitrogen
Aluminum	Air / Air	Air / Air	Air / Nitrogen	Air / Nitrogen
<b>INPUT VOLTAGE</b>	380/400/415V3Ph50/60Hz	380/460/575V3Ph50/60Hz	380-415/460/575V3Ph50/60Hz	380-415/460/575V3Ph50/60Hz
	460V 3Ph 50/60Hz	400V3Ph 50Hz (CE)	380-415/3Ph/50/60Hz (CE)	380-415/3Ph/50/60Hz (CE)
	575V 3Ph 50/60Hz			

## Customer Assistance Policy

The business of Lincoln Electric is manufacturing and selling high quality welding equipment, automated welding systems, consumables, and cutting equipment. Our challenge is to meet the needs of our customers, who are experts in their fields, and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or technical information about their use of our products. Our employees respond to inquiries to the best of their ability based on information and specifications provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment, or to provide engineering advice in relation to a specific situation. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or communications. Moreover, the provision of such information or technical information does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or technical information, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose or any other equivalent or similar warranty is specifically disclaimed.

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Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to [www.torchmate.com](http://www.torchmate.com) for any updated information.



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