



Cutting
Systems

TORCHMATE®
5100



QUICK START GUIDE

SPIRIT® II

April 10, 2019

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Lincoln Electric® Cutting Systems



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Systems

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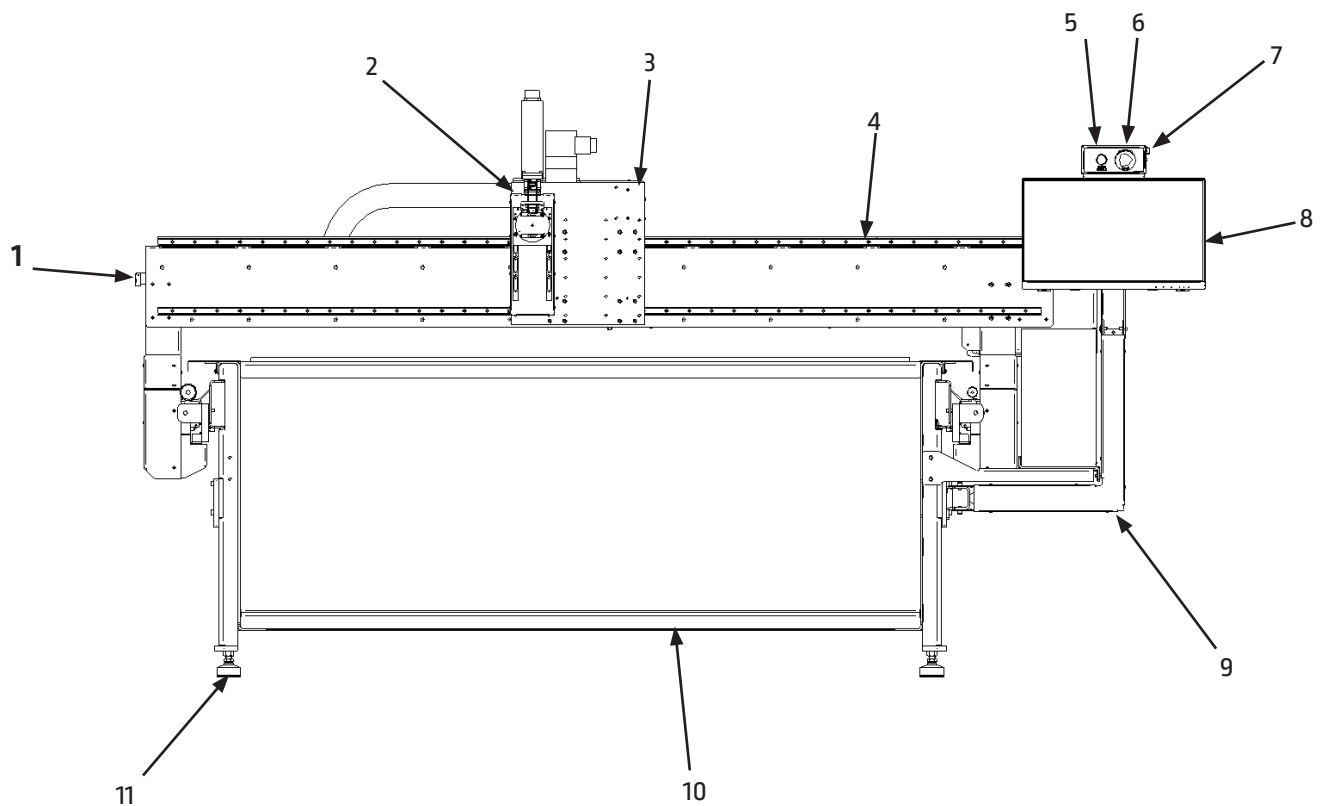
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Machine Overview, Torchmate 5100, Front

This section will provide a brief overview of the components of your Torchmate 5100 machine

Front:

1. Emergency Stop button
2. Lifter Station
3. Tool Mounting Plate
4. Gantry
5. Drive Enable button
6. Emergency Stop button
7. USB Port
8. Touchscreen/Human Machine Interface [H.M.I.]
9. Monitor Arm
10. Machine Bed
11. Leveling Foot

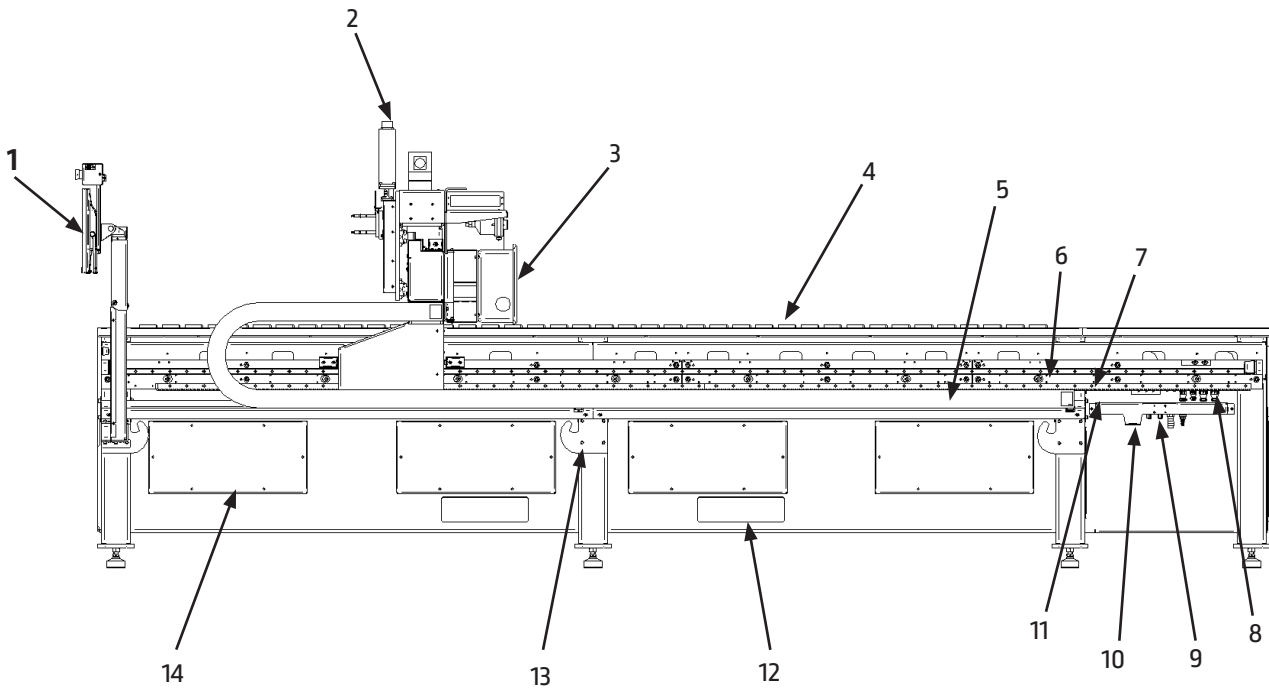


Machine Overview, Torchmate 5100, Side

This section will provide a brief overview of the components of your Torchmate 5100 machine

Cable Carrier Side:

1. Touchscreen/Human Machine Interface (H.M.I.)
2. Z Axis Motor
3. Remote Arc Start control box (FlexCut® 200 and Spirit II systems only)
4. Material Support Slats
5. Cable Carrier (Y Axis)
6. Linear Rail (Y axis)
7. Helical Gear Rack
8. Electrical Bulkhead
9. Pneumatic Manifold
10. Pneumatic Pressure Regulator for Collision sensor (FlexCut 200 or Spirit II models only)
11. Star Ground
12. Fork Pockets
13. Tie Down Hooks
14. Downdraft Zone Door Access Panel (downdraft models only)

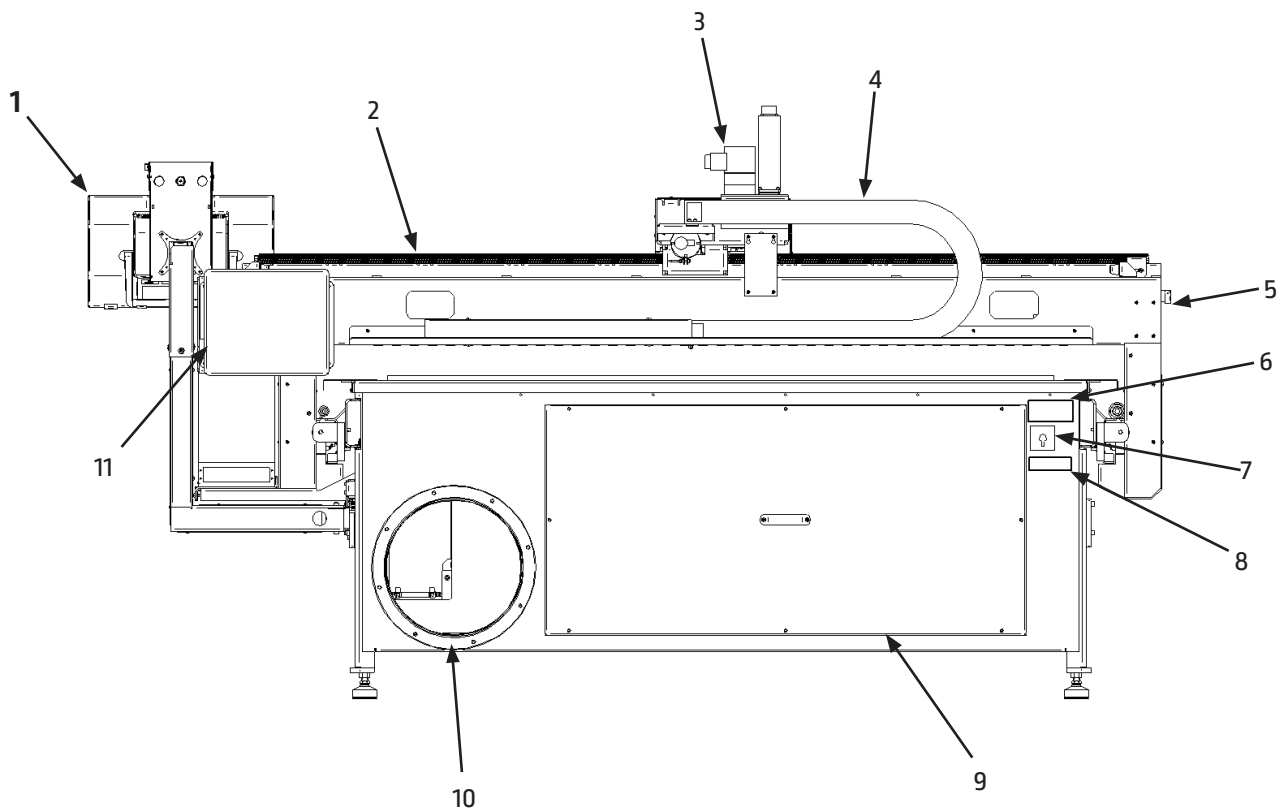


Machine Overview, Torchmate 5100, Rear

This section will provide a brief overview of the components of your Torchmate 5100 machine

Rear:

1. Touchscreen/Human Machine Interface (H.M.I.)
2. Linear Rail/Helical Gear Rack (X axis)
3. X axis servo motor
4. Cable Carrier (X axis)
5. Emergency Stop button
6. Machine Serial Number Placard
7. Power On/Off
8. QuickCAM/Nest Serial Number
9. Electrical Panel Access door
10. 14" ducting flange (downdraft model only)
11. Remote Arc Start control box (FlexCut 200 and Spirit II systems only)

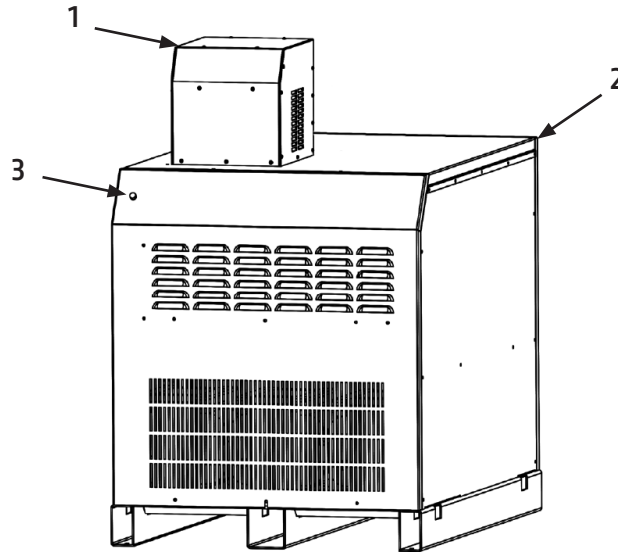


Spirit II Plasma Overview

The Kaliburn® Spirit II plasma cutters come as up to four separate components. A Power Supply, an Automatic Gas Control box, a Remote Arc Start console, and a Cooling Tower (Spirit II 400 only). The Remote Arc Start console comes attached to the back of the gantry, the remaining 2-3 components are positioned near the machine's cable carrier exit.

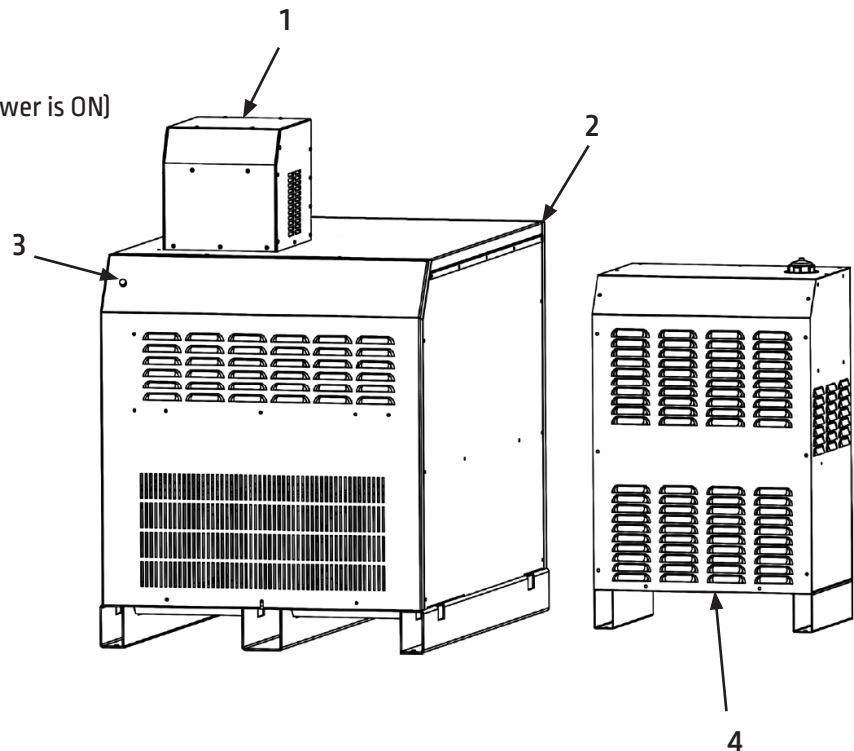
Spirit II 275:

1. Automatic Gas Control box
2. Spirit II 275 Power Supply
3. Power ON Indicator (Illuminated when Power is ON)



Spirit II 400:

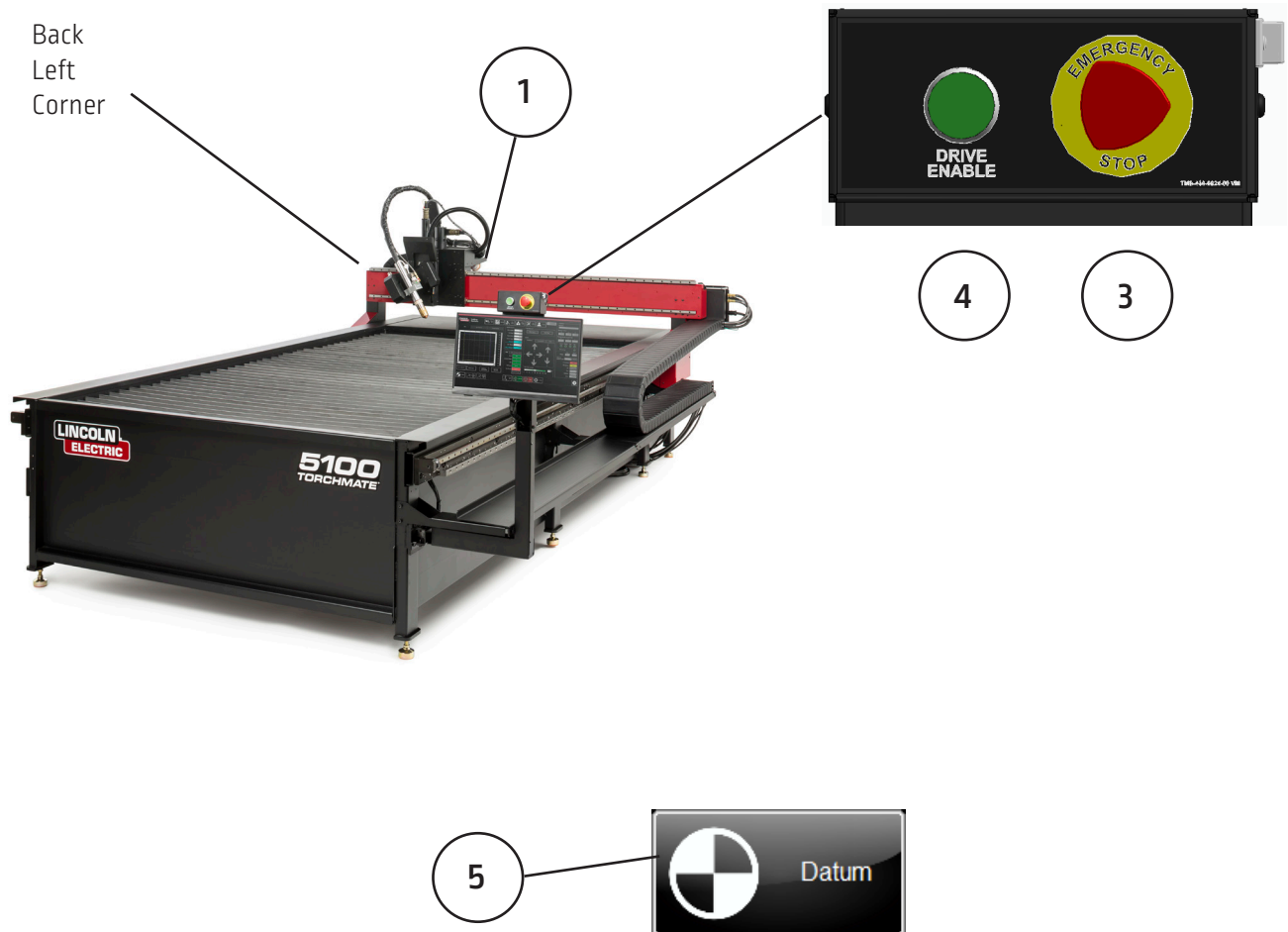
1. Automatic Gas Control box
2. Spirit II 275 Power Supply
3. Power ON Indicator (Illuminated when Power is ON)
4. Cooling Tower



Powering up the Torchmate 5100

To power up your Torchmate 5100 CNC machine, the following items need to be powered up; Machine and Plasma Unit. The machine will power the controller, computer, and touchscreen. The switch is located on the backside of the machine. Once switched on, the computer and all the electronics will power up. The power switch for the plasma power supply is located on the front of the unit. The complete user guide is available as an embedded file in the VMD. Use the button with the question mark to access this file.

1. Power up the machine by using the ON/Off switch. (Located at the back left of the machine)
2. The VMD Application will auto start with the computer, wait for control panel to load (run.wap)
3. Verify the EMERGENCY STOP(s) are disengaged by turning the RED EMERGENCY STOP button clockwise. One on the non-cable carrier side of the gantry and one above the monitor.
4. Press the GREEN BUTTON above the Operators Console. (This will power the motors)
5. Press DATUM. (Machine will seek back left corner)



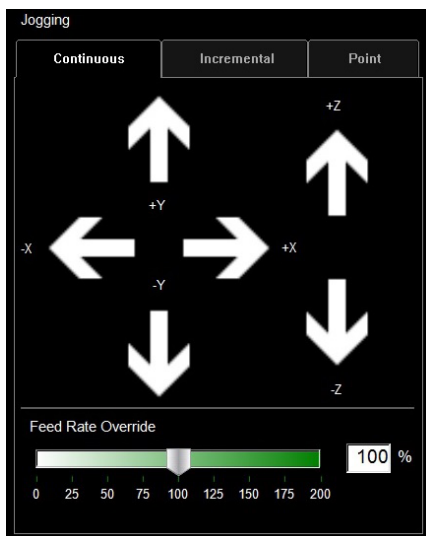
Running a Job

For your first machine cut, we highly recommend cutting the Factory provided test cut program, and comparing it to the sample that was cut in the factory. This will help verify that the machine is operating to factory specifications.



Datum:

When you first turn on the machine, it will already be configured and ready to run. A screen displays PLEASE SWITCH DRIVES ON. Press HIDE and then in the lower left corner press DATUM. The Torch will travel to the limits of the machine and establish the MACHINE ZERO.



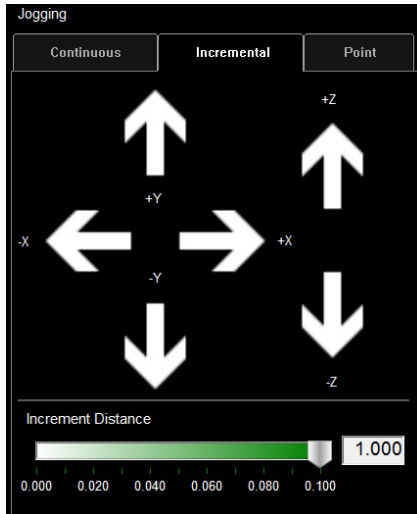
Continuous Jog:

Pressing one of the arrows on the screen will move the torch-body in the direction you are pressing. When released, the head will stop.

The distance from your finger press to the base of the arrow will determine the speed at which the machine moves. While you are jogging, sliding your finger in the direction of the arrow will increase or decrease your speed.

Running a job (continued)

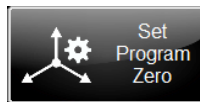
Follow the steps below to Jog the tool around the table



Incremental Jog:

Pressing one of the arrows on the screen will move the torch-body in the direction you are pressing, the amount of distance specified in the "Increment Distance" setting.

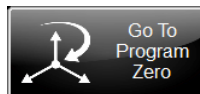
By using the slider, you can set increments between .000 - .100". You can directly enter any number into the dialog.



Set Program Zero:

This establishes the Lower Left corner of the program, centerline of the torch body. This will be where the job will start from for any part or nest programmed for the Torchmate 5100 .

Establish the plates position by pressing SET PROGRAM ZERO.



Go To Program Zero:

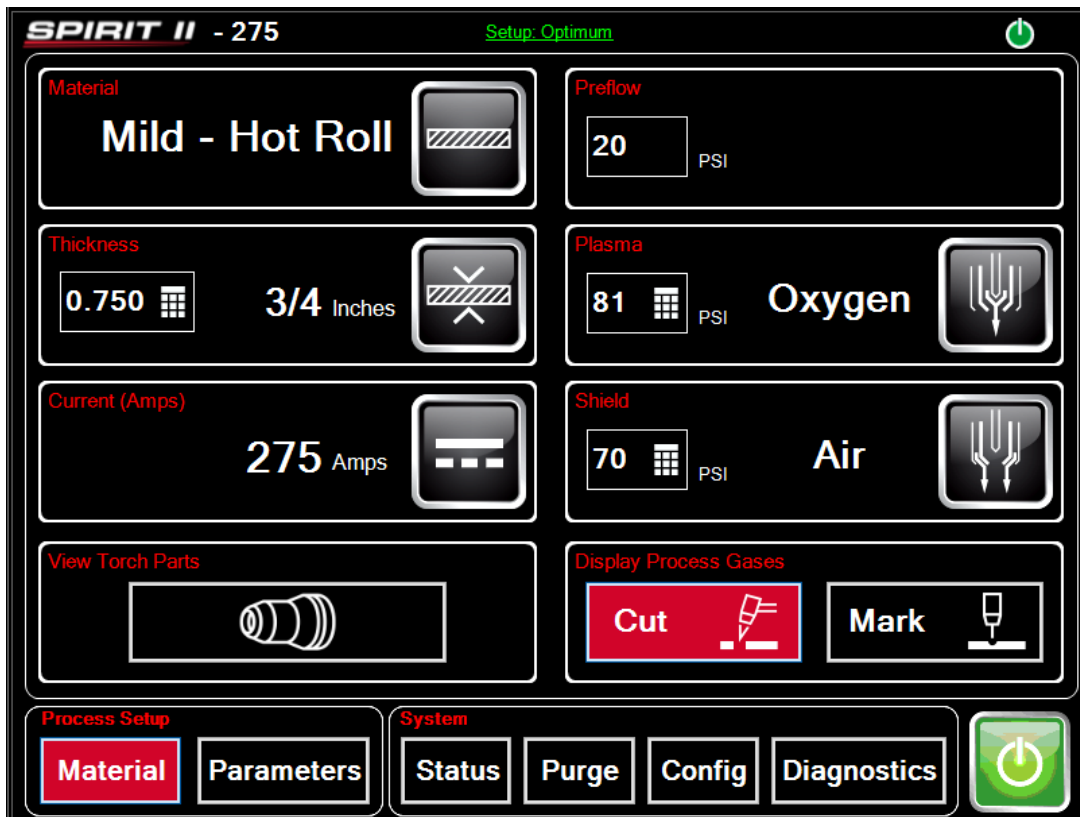
This will move the torch body back to the established PROGRAM ZERO, at the highest possible torch position to avoid torch collisions.

Plasma Console

Plasma Console: (Spirit II)

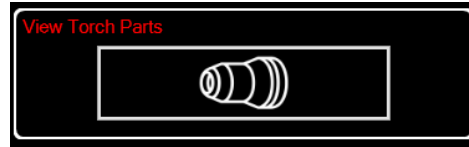
The Spirit II plasma cutter allows you or the G-Code program to set variables for the plasma cutter. All of the plasma cutter buttons and information screens are only displayed on the HMI Plasma Console, there are no buttons, regulators, etc. on the Spirit II plasma cutter.

- Material - Choose the type of material
- Preflow - Digital Read Out for Preflow gas pressure, this is set automatically by the selection of the material, thickness, and amperage
- Thickness - Choose the thickness of your material
- Plasma (Gas) - Pressure and type of gas, this is set automatically by the selection of the material, thickness, and amperage
- Current - This will automatically set to the recommended current based on your chosen material type and thickness. This is done for the "optimum" cut quality. This can be overridden to increase production while reducing cut quality.
- Shield (Gas) - Pressure and type of gas, this is set automatically by the selection of the material, thickness, and amperage
- View torch Parts - Will provide the operator an exploded view of the consumables required for the selected material and thickness, with part numbers (displayed on next page)
- Display Process Gases, Cut or Mark - Displays the preflow, plasma, and shield pressures for the Cutting or Marking Process.
- Grey/Green Power Button - Turns the Spirit II plasma cutter ON (green) or OFF (grey)
- Process Setup Material/Parameters - Material displays the Material Selection screen (shown below), Parameters displays the actual cut parameters for the selected material and thickness (displayed on next page)
- System - Access different system variables for the Spirit II plasma cutter



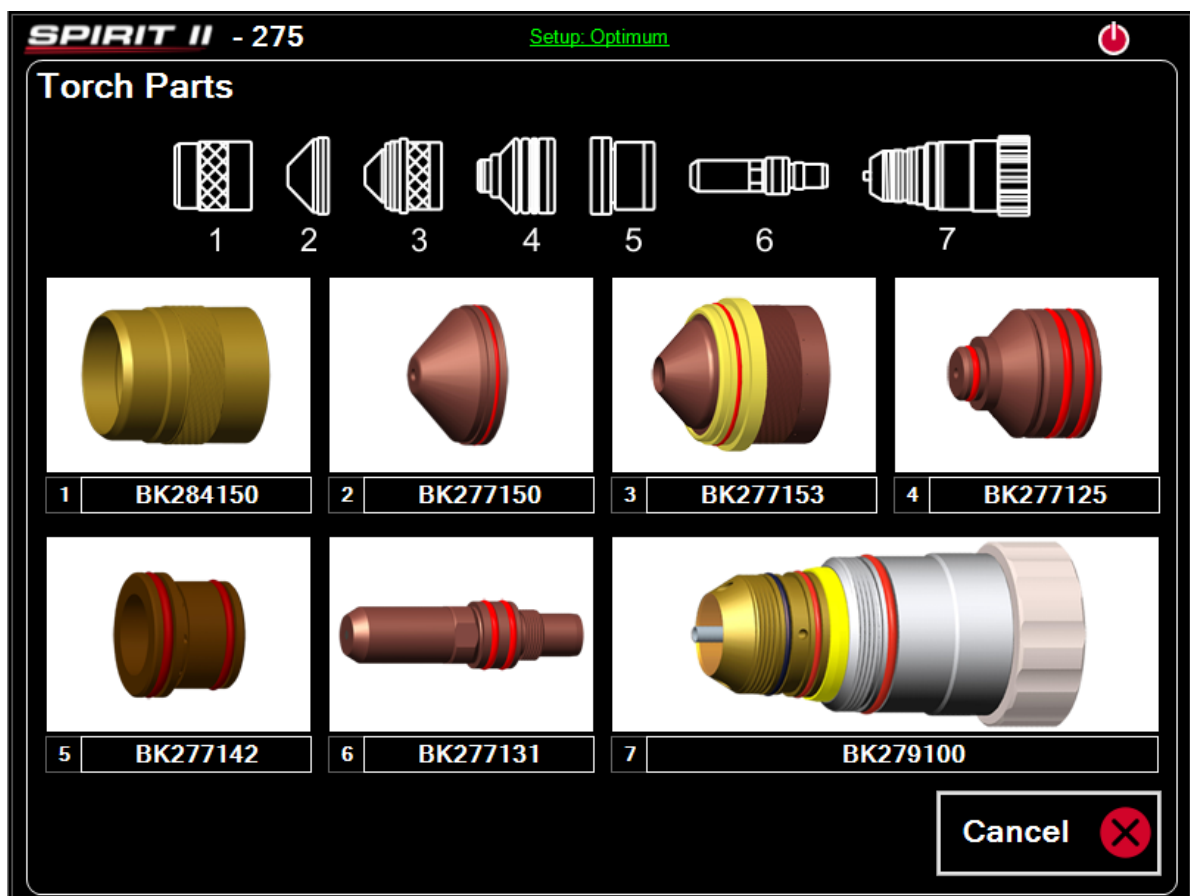
Plasma Console, continued

View Torch Parts



The View Torch Parts screen displays all 6 “consumable” portions of the Spirit II torch. The part numbers for the chosen material type and thickness are displayed when this screen is accessed.

1. Outer Retaining Cap
2. Shield Cap
3. Inner Retaining Cap
4. Nozzle
5. Swirl Ring
6. Electrode
7. Quick Disconnect Torch Head (not applicable on Bevel systems)



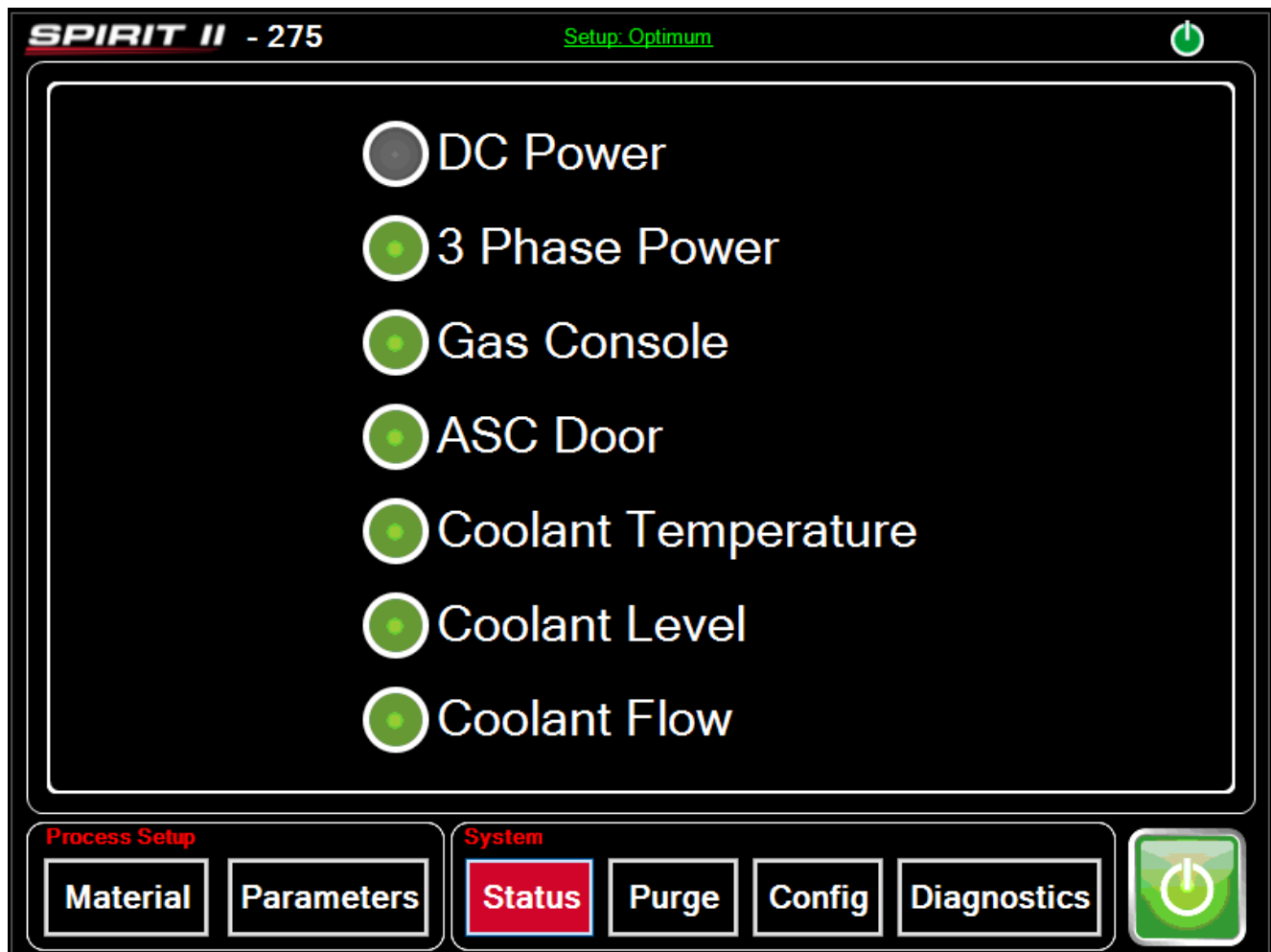
Plasma Console, continued

System - Status



The Status button will display the current status of the Spirit II plasma cutter to quickly determine if the machine is ready to cut.

- DC Power - This light is only lit Green when the plasma cutter is actually cutting
- 3 Phase Power - Indicates green when all three phases are connected to the proper voltage
- Gas Console - Indicates green when all gases are properly purged for the selected material type and thickness
- ASC Door - Indicates green when the Arc Start Console door is closed (Remote Arc Start control box)
- Coolant Temperature - Indicates green when the temperature of the coolant is within normal ranges
- Coolant Level - Indicates green when the coolant level is sufficient in the storage tank
- Coolant Flow - Indicates green when the flow rate of the coolant is sufficient to remove heat from the consumables at an adequate rate



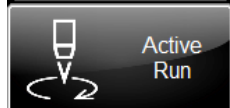
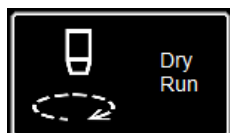
Performing Your First Test Cut (straight torch NON BEVEL)

The LINE SPEED TEST.gm and 5100 Test Cut.gm is provided to determine the proper feed rate in IPM to cut the material thickness to the amperage you have set on the plasma power supply. These have been included in your pre-loaded first cut on the Torchmate 5100 models. The plasma torch body is pre-loaded with 70 amp consumables for a 3/16" material cut from the factory. We highly suggest your first cut is our pre-loaded, *5100 SPII 275 + 400 INLINE TEST CUT 70A.GM" to ensure your machine has been transported in the same condition it has left the factory. Please locate the factory test sample located in the waterbed and load a piece of 3/16" mild steel for the comparison cut test.



Cut Parameters	
Transfer Height	1.00
Pierce Height	0.16
Cut Height	0.12
Pierce Delay	0.50
Retract Height	2.00
Arc Voltage	142.00

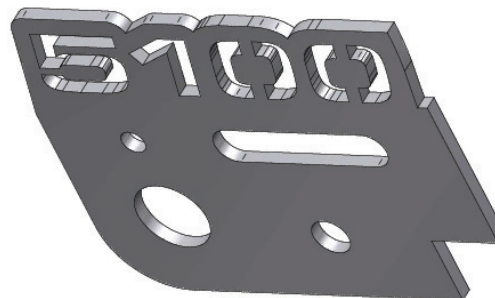
AVHC	OXY	Water Level
Mode	Auto	
Sample Voltage	On	
IHS	On	
IHS Mode	Always	
Cut Charts	Custom	
Reset Z Position		



1. Press SELECT JOB
2. Locate 5100 SPII 275 + 400 INLINE TEST CUT 70A.GM and press OK
3. Verify that your material type is set Steel, the thickness to 3/16", and the amperage to 70 on your Plasma Console screen
4. 5100 Inline test cut will now show in the display
5. Set the AVHC MODE to AUTO
6. Set the AVHC SAMPLE VOLTAGE to ON
7. Set the AVHC IHS (ohmic detection) to ON
8. Set the AVHC IHS MODE to ALWAYS
9. Jog the head over to the Lower Left corner of the material you are going to cut and press SET PROGRAM ZERO
- 10 Set the Machine to Active Run (If Dry Run is displayed, press once to toggle to Active Run)
11. Verify that the FEED RATE OVERRIDE is set to 100%
- 12 PRESS RUN JOB (machine may throw sparks)
13. The cut will progress as follows:

Rapid travel to the first inside feature
Z Axis moves toward the material, touching the top of the material (IHS -ohmic detection)
Torch retracts to set PIERCE HEIGHT and will fire
Dwells until the PIERCE DELAY is expired
Drops to set CUT HEIGHT and starts the program
Will cut all inside features first, then move to the outside geometry

Once cut is complete, compare the cut to the provided sample and verify that they match. This will provide proof that the machine is functioning properly.



If you need to stop the machine at any time please hit the stop button on the touch screen.



Performing Your First Test Cut (BEVEL)

The LINE SPEED TEST.gm and 5100 Test Cut.gm is provided to determine the proper feed rate in IPMs to cut the material thickness to the amperage you have set on the plasma power supply. These have been included in your pre loaded first cut on the Torchmate 5100 models. The plasma torch body is pre-loaded with 150 amp consumables for a 3/16" material cut from the factory. We highly suggest your first cut is our pre-loaded, *5100 SPII 275 + 400 BEVEL TEST CUT 150A.GM" to ensure your machine has transported in the same condition it has left the factory. Please locate the factory test sample located in the waterbed and load a piece of 3/16" mild steel for the comparison cut test.

Select Job

Cut Parameters

Transfer Height	1.00
Pierce Height	0.16
Cut Height	0.12
Pierce Delay	0.50
Retract Height	2.00
Arc Voltage	142.00

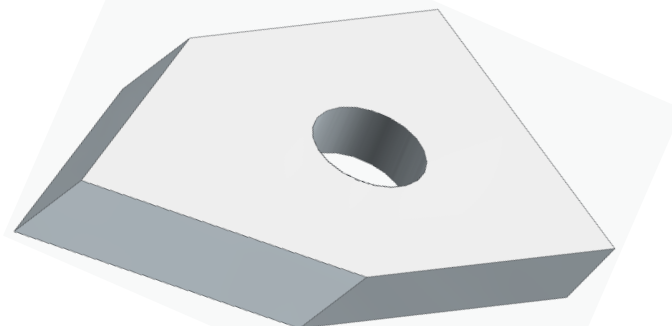
AVHC | **OXY** | **Water Level**

Mode	Auto
Sample Voltage	On
IHS	On
IHS Mode	Always
Cut Charts	Custom
Reset Z Position	

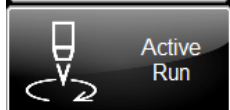
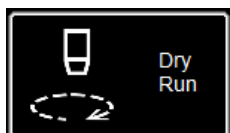
1. Press SELECT JOB
2. Locate 5100 SPII 275 + 400 BEVEL TEST CUT 150A.GM and press OK
3. Verify that your material type is set Steel, the thickness to 3/16", and the amperage to 70 on your Plasma Console screen
4. 5100 Inline test cut will now show in the display
5. Set the AVHC MODE to AUTO
6. Set the AVHC SAMPLE VOLTAGE to ON
7. Set the AVHC IHS (ohmic detection) to ON
- 8 Set the AVHC IHS MODE to ALWAYS
9. Jog the head over to the Lower Left corner of the material you are going to cut and press SET PROGRAM ZERO
10. Set the Machine to Active Run (If Dry Run is displayed, press once to toggle to Active Run)
11. Verify that the FEED RATE OVERRIDE is set to 100%
- 12 PRESS RUN JOB (machine may throw sparks)
13. The cut will progress as follows:

Rapid travel to the first inside feature. Z Axis moves toward the material, touching the top of the material (IHS -ohmic detection)
Torch retracts to set PIERCE HEIGHT and will fire
Dwells until the PIERCE DELAY is expired
Drops to set CUT HEIGHT and starts the program
Will cut all inside features first, then move to the outside geometry

Once cut is complete, compare the cut to the provided sample and verify that they match. This will provide proof that the machine is functioning properly.



If you need to stop the machine at any time please hit the stop button on the touch screen.



Customer Assistance Policy

The business of The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric Cutting Systems for advice or information about their use of our products. We respond to our customers based on the best information in our possession at that time. Lincoln Electric Cutting Systems is not in a position to warrant or guarantee such advice, and assumes no liability, with respect to such information or advice. We expressly disclaim any warranty of any kind, including any warranty of fitness for any customer's particular purpose, with respect to such information or advice. As a matter of practical consideration, we also cannot assume any responsibility for updating or correcting any such information or advice once it has been given, nor does the provision of information or advice create, expand or alter any warranty with respect to the sale of our products.

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