Nordson Corporation

OPERATOR'S CARD

P/N 1604871-01

Encore® HD Manual Powder Spray System with Prodigy® Pump Cabinet

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

Refer to component operator manuals for more information on safety, setup, operation, troubleshooting, repair and parts.

System Diagram

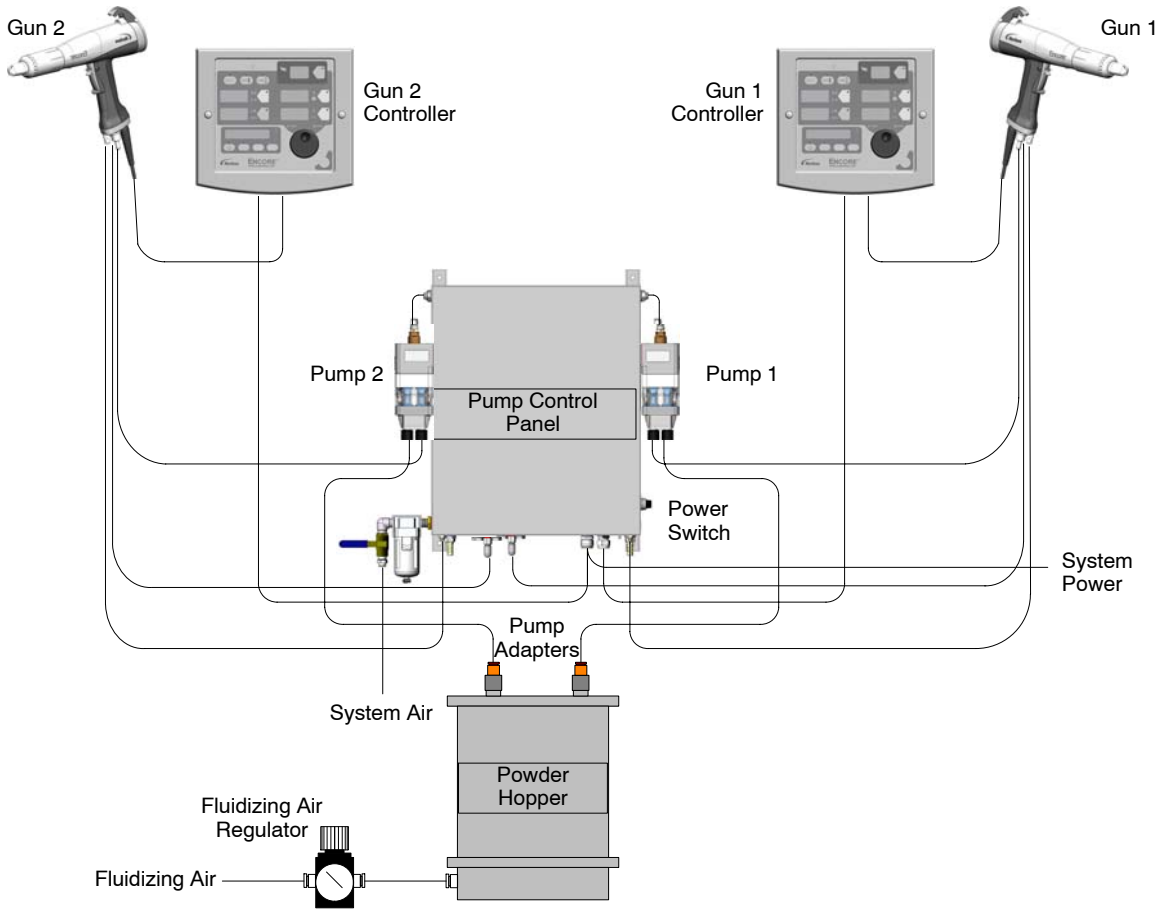


Figure 1 System Diagram (Two-Gun System Shown)

Controller Interface

When power is activated at the pump cabinet, the controller is turned on. To shut off controller power, use the power switch on the pump cabinet.

Use the controller interface to make preset settings, view help codes, monitor system operation, and to configure the controller.

Use the **Standby** button shown in Figure 2 to shut off the interface and disable the spray gun during breaks in production. When the controller interface is off the spray gun cannot be triggered, and the spray gun interface is disabled.

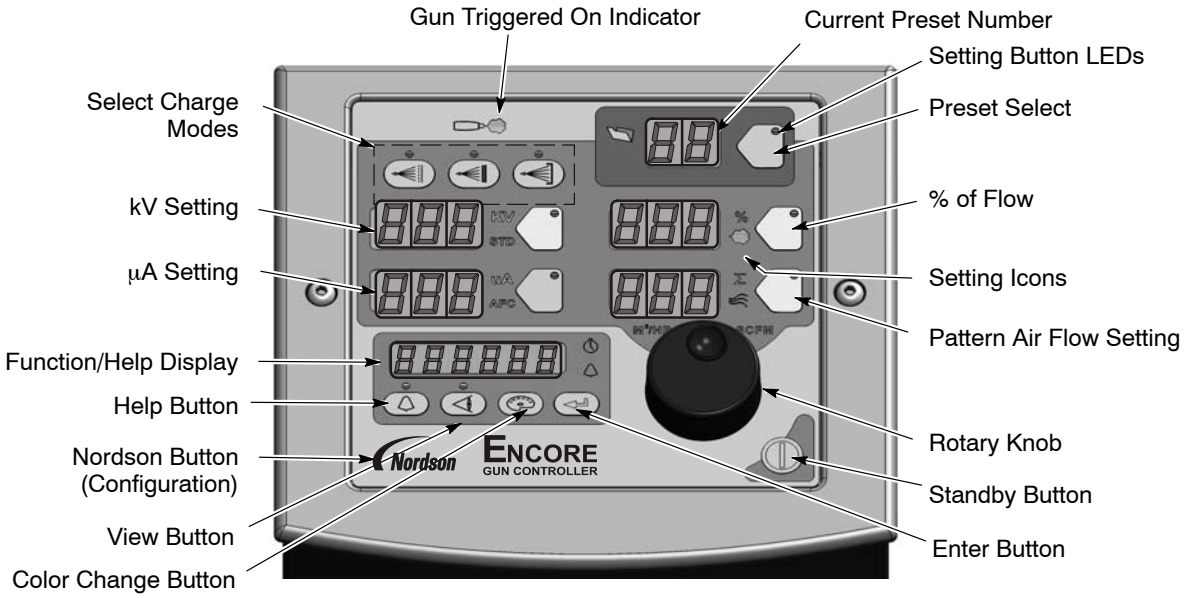


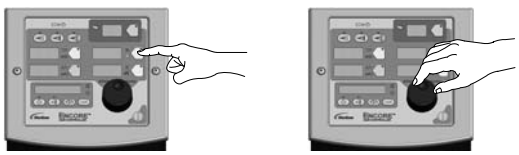
Figure 2 Controller Interface

The **Setpoint** icons light to indicate the configured or selected setpoints.

Setpoints include **Select Charge, kV, µA, % of Flow** and **Pattern Air** flow rates.

To select a Preset or change a Preset setpoint, press the **Preset Select** button or a **Setpoint** button. The button LED lights to indicate that it is selected.

Use the **Rotary Knob** to change the selected setpoint: clockwise to increase, counter-clockwise to decrease. The setpoints reset to the minimum if increased past their maximum.



Selecting a Setpoint to Change Changing a Setpoint

Figure 3 Selecting and Changing Setpoints

Help Codes

The Help icon in the Function/Help display lights if a problem occurs.

 To display the Help codes, press the **Help** button. The controller retains the last 5 codes in memory. Rotate the knob to scroll through the codes. The display blanks if there is no activity for 5 seconds.

 To clear the Help codes, scroll through them until **CLr** is displayed, then press the **Enter** button. The Help icon stays lit until the controller clears the codes.

Assist Air Setting, Fast Flow Setting, and Software Versions

 The **View** button allows the user access to adjust Assist Air and Fast Flow preset values, and to view software versions.

Press the **View** button consecutively to display, in order, the following functions: Assist Air Setting (AA), Fast Flow Setting (FF), Gun Controller Software Version (GC), Gun Display Module Software Version (Gd), Flow Module Software Version (FL), and Hardware Version for Main Control Board (Hd).

Assist Air Setting

Assist air is the air flow that pushes the powder out of the pump to the gun. This screen allows you to increase or decrease the assist air flow by a percentage of the total flow for each preset, to optimize pump and spray performance.

Assist air can be adjusted from +50% to –50% in 1% increments.

To set the assist air rate:

1. Press the **View** button until **AA** is displayed.
2. Turn the rotary knob to increase or decrease the value.
3. Press **Enter** to save.

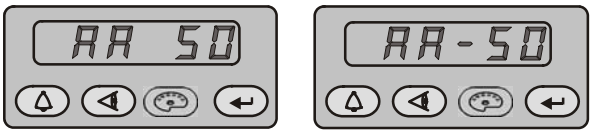


Figure 4 Assist Air Settings>>> 1 <<<

Fast Flow Setting

The Fast Flow setting allows you to specify Fast Flow or Normal Flow for each preset. Normal is the default, and is the setting used for most powders. Use a Fast Flow setting when using powders that are hard to fluidize and that may tend to clump.

When set to Normal, the pump cycle rate varies with the powder flow setting. When Fast Flow is enabled, the pump cycles at a continuous fast cycle rate.

NOTE: Fast Flow should be used only when working with difficult powders, as it will decrease the life of the pump pinch valves.

To set the Fast Flow setting:

1. Press the **View** button until **FF** is displayed.
2. Turn the rotary knob to toggle between **0** for Normal and **F** for Fast Flow.
3. Press **Enter** to save.

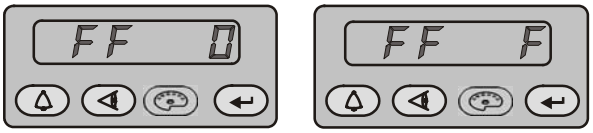
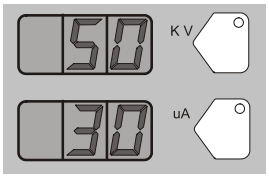


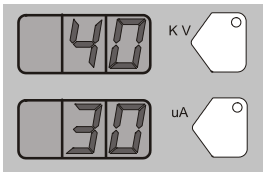
Figure 5 Fast Flow Settings>>> 2 <<<

Spray Settings

For the following spray settings, when the gun is not triggered the setpoints are displayed. When the gun is triggered the actual outputs are displayed.



Custom Mode – Preset Setpoints



Custom Mode – Gun Triggered

Figure 6 Custom Mode Displays

Classic Mode

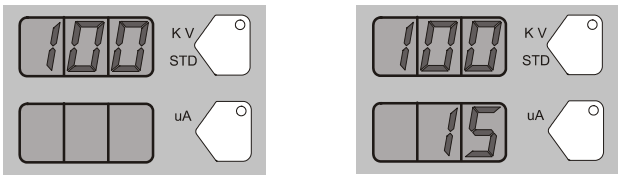
To use Classic mode, the controller must be configured for it. In Classic mode you can choose to control kV (STD) output or µA (AFC) output, but not both at the same time.

Classic Standard (STD) Mode

Use the Standard mode to set kV. In Standard mode you cannot set µA.

1. To set the kV setpoint, press the **kV** button. The button LED lights to show that kV is selected.

2. Turn the rotary knob to increase or decrease the kV setpoint. The setpoint is automatically saved if it does not change for 3 seconds, or when any button is pressed.



STD Mode – kV Setpoint

STD Mode – Gun Triggered

Figure 7 STD Mode Displays

Classic AFC Mode

Use the AFC mode to set μA output limits. In AFC mode you cannot adjust kV; it is automatically set to 100 kV.

1. To set μA, press the **μA** button. The button LED lights to show that μA is selected.

Presets

Presets are programmed electrostatic and powder flow setpoints that allow the operator to quickly change spray settings simply by changing the preset number.

The controller can store 20 presets. Presets 1, 2, and 3 are programmed at the factory for the most common applications and can be adjusted as needed. Presets 4–17 can be programmed as needed.

Selecting or Changing a Preset

1. Press the **Preset** button. The button LED lights.
2. Turn the rotary knob. The preset number increases from 1 to 20 then resets to 1.
3. With the desired preset selected, begin production. All preset electrostatic and powder flow values will be used.
4. To change a preset's values, first choose the desired preset by using the rotary knob. Once the preset is selected, change the electrostatic and powder flow settings to the desired values.
5. The preset number will begin blinking, indicating a change has been made. To save the new settings, press the **Enter** button. The preset number will stop blinking, indicating the values have been saved.
6. To begin production without saving the new settings, do not press **Enter**. The new values will be used for the current job, but the preset will keep the original values for future use.

The setpoints for the selected preset are displayed when the gun is not triggered.

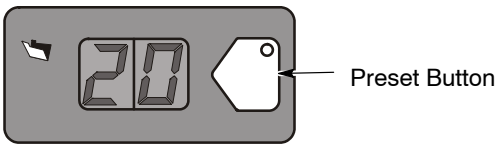


Figure 8 Preset Select

Electrostatic Settings

Electrostatic output can be in Select Charge mode, Custom mode, or Classic mode.>>> 3 <<<

Select Charge® Mode

The Select Charge modes are non-adjustable electrostatic settings. The LEDs above the Select Charge mode buttons indicate the selected mode.

The Select Charge modes and factory settings are:

Mode 1	Re-Coat	100 kV, 15 μA
Mode 2	Metallics	50 kV, 50 μA
Mode 3	Deep Recesses	100 kV, 60 μA

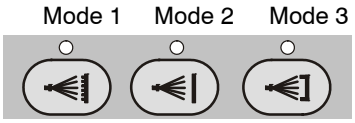


Figure 9 Select Charge Mode

NOTE: If the operator tries to adjust kV or μA values while a Select Charge mode is selected, the controller will switch to Custom or Classic mode.

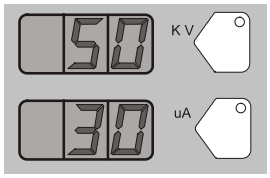
Custom Mode

Custom mode is the factory default mode. In Custom mode, both kV and μA can be adjusted independently. In Custom mode the STD and AFC icons are not displayed.

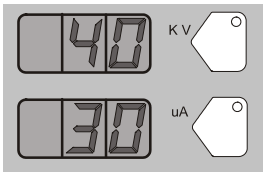
1. To set or change kV, press the **kV** button. The button LED lights to show that kV is selected.
2. Turn the rotary knob to increase or decrease the kV setpoint. The setpoint is automatically saved if it does not change for 3 seconds, or when any button is pressed.
3. To set or change the μA setpoint, press the **μA** button. The button LED lights to indicate that μA is selected.
4. Turn the rotary knob to increase or decrease the μA setpoint. The setpoint is automatically saved if it does not change for 3 seconds, or when any button is pressed.

NOTE: The default μA range is 10–50 μA. The limits of the range can be adjusted.

- When the gun is not triggered the kV and μA setpoints are displayed.
- When the gun is triggered the actual kV and μA outputs are displayed.



Custom Mode –
Preset Setpoints



Custom Mode –
Gun Triggered

Figure 10 Custom Mode Displays

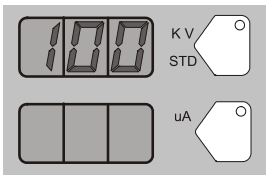
Classic Mode

To use Classic mode, the controller must be configured for it. In Classic mode you can choose to control kV (STD) output or μA (AFC) output, but not both at the same time.

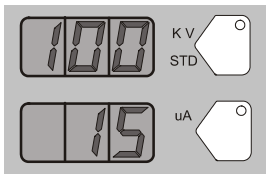
Classic Standard (STD) Mode

Use the Standard mode to set kV. In Standard mode you cannot set μA.

1. To set the kV setpoint, press the **kV** button. The button LED lights to show that kV is selected.
2. Turn the rotary knob to increase or decrease the kV setpoint. The setpoint is automatically saved if it does not change for 3 seconds, or when any button is pressed.



STD Mode –
kV Setpoint



STD Mode –
Gun Triggered

Figure 11 STD Mode Displays

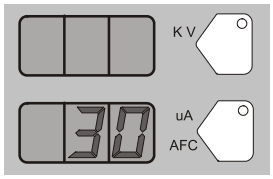
Classic AFC Mode

Use the AFC mode to set μA output limits. In AFC mode you cannot adjust kV, it is automatically set to 100 kV.

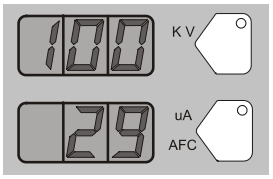
1. To set μA, press the **μA** button. The button LED lights to show that μA is selected.
2. Turn the rotary knob to increase or decrease the μA setpoint. The setpoint is automatically saved if it does not change for 3 seconds, or when any button is pressed.

The default μA range is 10–50 μA. The limits of the range can be adjusted.

For example, the user can set the μA settings from 5, 4, 3.0, 2.9, 2.8, ... through 0.1.



AFC Mode – μA Setpoint



AFC Mode – Gun Triggered

Figure 12 AFC Mode Displays

Powder Flow Setting

Powder flow rate and pattern air ranges are:

Powder flow rate from 0–100%
Pattern air from 0–3.50 in 0.05 increments

To set flow rate or pattern air:

1. Press the **Flow** or **Pattern** button. The green LED on the selected button lights.

2. Turn the knob to increase or decrease the setpoints. The setpoint is automatically saved if it does not change for 3 seconds or when any button is pressed.

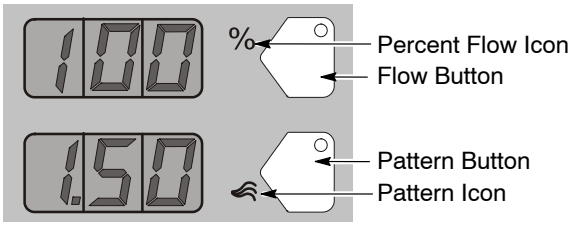


Figure 13 Flow Rate and Pattern Setpoints

Purge Operation

HDLV System Purge

Press the **Color Change** button on the controller and then press **Enter** ↵.

The Purge Cycle operates as follows:

1. **Soft Purge** – Assist air is directed through the pump and siphon tubing back to the powder supply (Soft Siphon), then through the pump and delivery tubing to the spray gun (Soft Gun). This clears the pump, tubing, and gun of powder.
2. **Pulse Purge** – Purge air is directed in pulses from the pump to the powder supply (Siphon Pulses), then from the pump to the spray gun (Gun Pulses). Pulse On sets the duration of each pulse, Pulse Off sets the time between pulses.

NOTE: Make sure the guns are aimed into the booth before starting a purge.

See functions F26 through F31 for settings.

Color-on-Demand (COD) System Purge

Press the **Color Change** button on the controller and then press **Enter** ↵.

The COD Purge Cycle operates as follows:

1. **Manifold Purge** – The dump valve opens. The pump speeds up to 100% of flow to pump the remaining powder out of the manifolds.
2. **Soft Purge** – Assist air is directed through the pump and siphon tubing back to the powder supply (Soft Siphon), then through the pump and delivery tubing to the spray gun (Soft Gun). This clears the pump, powder tubing, and gun of powder.
3. **Pulse Purge** – Purge air is directed in pulses from the pump to the powder supply (Siphon Pulses), then from the pump to the spray gun (Gun Pulses). Pulse On sets the duration of each pulse, Pulse Off sets the time between pulses.
4. **Powder Pre-Load** – The new color powder is pumped to the spray gun for the set time at 100% of flow to load the system for production.

The Color Change cycle is started by the operator or by a remote signal to the Color-On-Demand controller. The operator starts the color change by selecting a new color and touching the **Start** button on the touch screen, or by pressing a foot pedal, then selecting a new color before the powder pre-load begins.

Powder type, humidity, tubing length and other variables can change the effectiveness of these settings. You may have to adjust these settings to avoid color cross-contamination and maintain performance.

See functions F26 through F33 for settings.

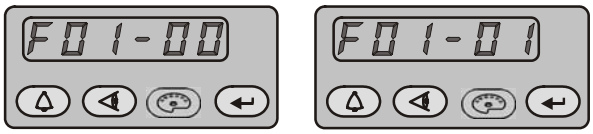
Configuration

Opening the Function Menu and Selecting Settings

Nordson Press and hold the **Nordson** button for 5 seconds. The Function/Help display lights to show the function numbers and values. Use the functions to configure the controller for your application.>>> 4 <<<

Use the rotary knob to scroll through the function numbers. To select the displayed function number, press the **Enter** button. The function numbers are in the form F00–00 (function number–value).

When the function is selected, the function value blinks. To change the function value, rotate the knob. Press the **Enter** button to save the change and exit the value, so that rotating the knob now scrolls through the function numbers again.



Function 01, Value 00 Function 01, Value 01

Figure 14 Displaying and Changing Functions>>> 5 <<<

Table 1 Function Settings

Function Number	Function Name
F00	Gun Type
F01	Fluidizing
F02	Display Units
F03	Electrostatic Control
F04	Powder Flow Control
F05	Keypad Lockout
F06	Vibratory Box Delay Off
F07	Maintenance Timer, Gun
F08	Setting Trigger Function
F09	Help Codes
F10	Zero Reset (Flow)
F11	Gun Display Errors
F12	μA Lower Limit
F13	μA Upper Limit
F14	Total Hours
F15	Save/Restore/Reset
F16	Gun Display Brightness
F17	Number of Presets
F18	Pump Type
Function Number	**Function Name**
F19	Control Type
F20	Gun Number
F21	Maintenance Timer, Pump
F22	Purge
F25	Pattern Air Delay
F26	Soft Siphon
F27	Soft Gun
F28	Pulse ON
F29	Pulse OFF
F30	Siphon Pulses
F31	Gun Pulses
F32	Powder Pre−Load
F33	Manifold Purge
F34	Conveyance Air Constant A
F35	Conveyance Air Constant C
F36	Pattern Air Constant A
F37	Pattern Air Constant C

Spray Gun Operation

The spray gun interface and settings trigger allow you to change the preset or the powder flow settings, or purge the gun, without using the controller interface.

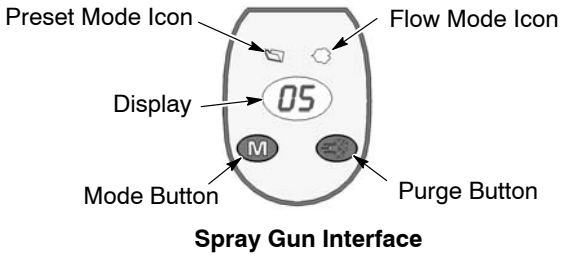


Figure 15 Gun Interface Controls

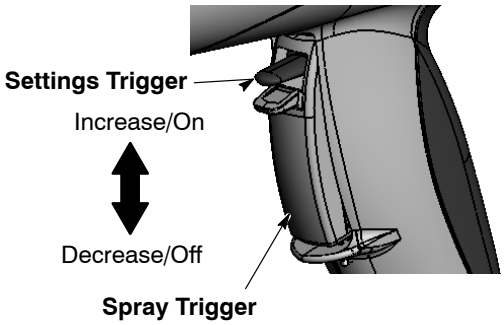


Figure 16 Gun Trigger Controls

Shutdown

For HDLV system shutdown, complete the following steps:

1. Press the **Color Change** button to start cleaning the system of residual powder.
2. Purge the spray gun by pressing the **Purge** button on the back of the spray gun until no more powder is blown from the gun.
3. Press the **Standby** button to turn off the spray gun and interface.
4. Turn off the system air supply and relieve the system air pressure at the pump cabinet.
5. If shutting down for the night, or for a longer period of time, shut off the system power.
6. Perform the daily maintenance procedures.

Maintenance

Clean the spray gun nozzle, gun powder path, pump nozzle and pump throat in an ultrasonic cleaning machine using Oakite® BetaSolv or an equivalent emulsion cleaning solution. Rinse with clean water and dry before re-installing.

Do not immerse the spray gun electrode assembly in the cleaning solution or the rinse water. Remove all O-rings before cleaning. Do not allow the O-rings to come in contact with the cleaning solution.

Daily maintenance for the controller should include blowing off the interface module with a blow gun. Wipe any residual powder off the controller with a clean cloth.

Periodically check all system ground connections.

Issued 1/14