Introduction

This instruction sheet covers the color change purge sequence for the Spectrum® HD system with the Prodigy® or Encore® HD iControl® Integrated Control System. The iControl updates for Spectrum HD systems consists of the V3.6 software release, a new I/O board, and a revised purge function.

Spectrum HD Signal Purge Signaling

Figure 1 shows the purge signaling sequence.

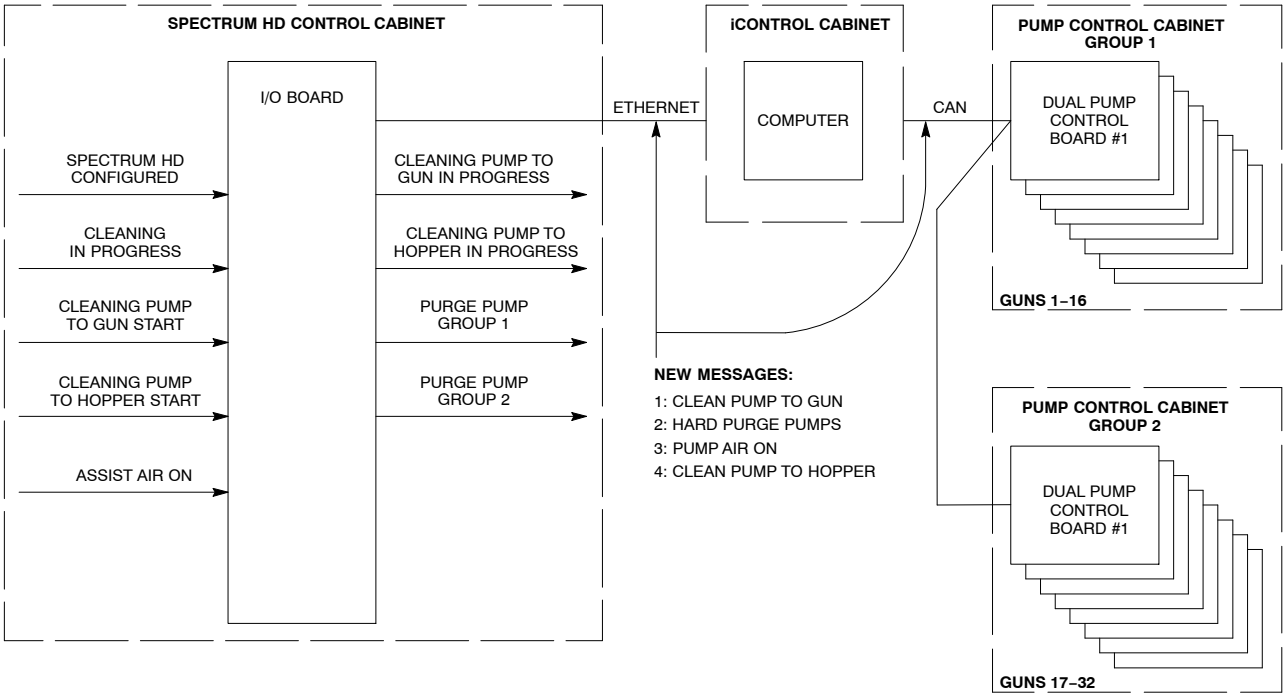

Figure 1 Spectrum HD Signal Block Diagram

Purge Sequence

The cleaning task consists of the following steps:

1. Evacuate the powder from the pump delivery tubes into the booth for reclaim transfer to the Spectrum HD Hopper.
2. Empty the majority of powder from the Spectrum HD hopper into a box.
3. Evacuate the powder from the pump siphon tubes.
4. Purge clean the recycle and virgin feed transfer pumps.
5. Blow clean the remaining powder from the inside of the Spectrum HD hopper.

Guns 1–16

See Figure 2. There are 3 broadcast messages in the purge sequence:

- Clean Pump to Gun
- Pump Air On
- Clean Pump to Hopper

Clean Pump to Gun: When the Purge function is selected from the Spectrum HD control panel, a signal is sent to the iControl system. The iControl system signals the pump flow control PC board (PFCP). The PFCP receives the Clean Pump to Gun broadcast message, it performs a soft purge of the delivery lines. Once the soft purge is done, the PFCP performs a pulsed hard purge of the delivery lines. The Pressure Source Solenoids are ON and the Vacuum Solenoid is OFF. The Pattern Air is set to 1.5 scfm.

Pump Air On: When the PFCP receives a Pump Air On broadcast message, it performs a soft purge in the direction of the siphon lines as long as the message is present. The Pressure Source Solenoids are ON and the Vacuum Solenoid is OFF. The Pattern Air is OFF.

Clean Pump to Hopper: When the PFCP receives the Clean Pump to Hopper broadcast message, it performs a soft purge of the siphon lines. Once the soft purge is done, the PFCP performs a pulsed hard purge of the siphon lines. The Pressure Source Solenoids are ON and the Vacuum Solenoid is OFF. The Pattern Air is OFF.

The PFCP ignores trigger signals during the purge sequence. The purge can be aborted by setting the 3 broadcast messages to OFF.

NOTE: Table 1 defines the operational requirements of the Purge sequence shown in Figure 2.

Guns 17–32

If the pump node is addressed as Gun 17 or higher, Cleaning Steps 1 and 3 shown in Figure 2 need to be delayed by the same length of time that the equivalent cleaning step would normally take. The Hard Purge Pumps message to the iControl system also needs to be applied to the Group 2 CAN messages as shown in Figure 3.

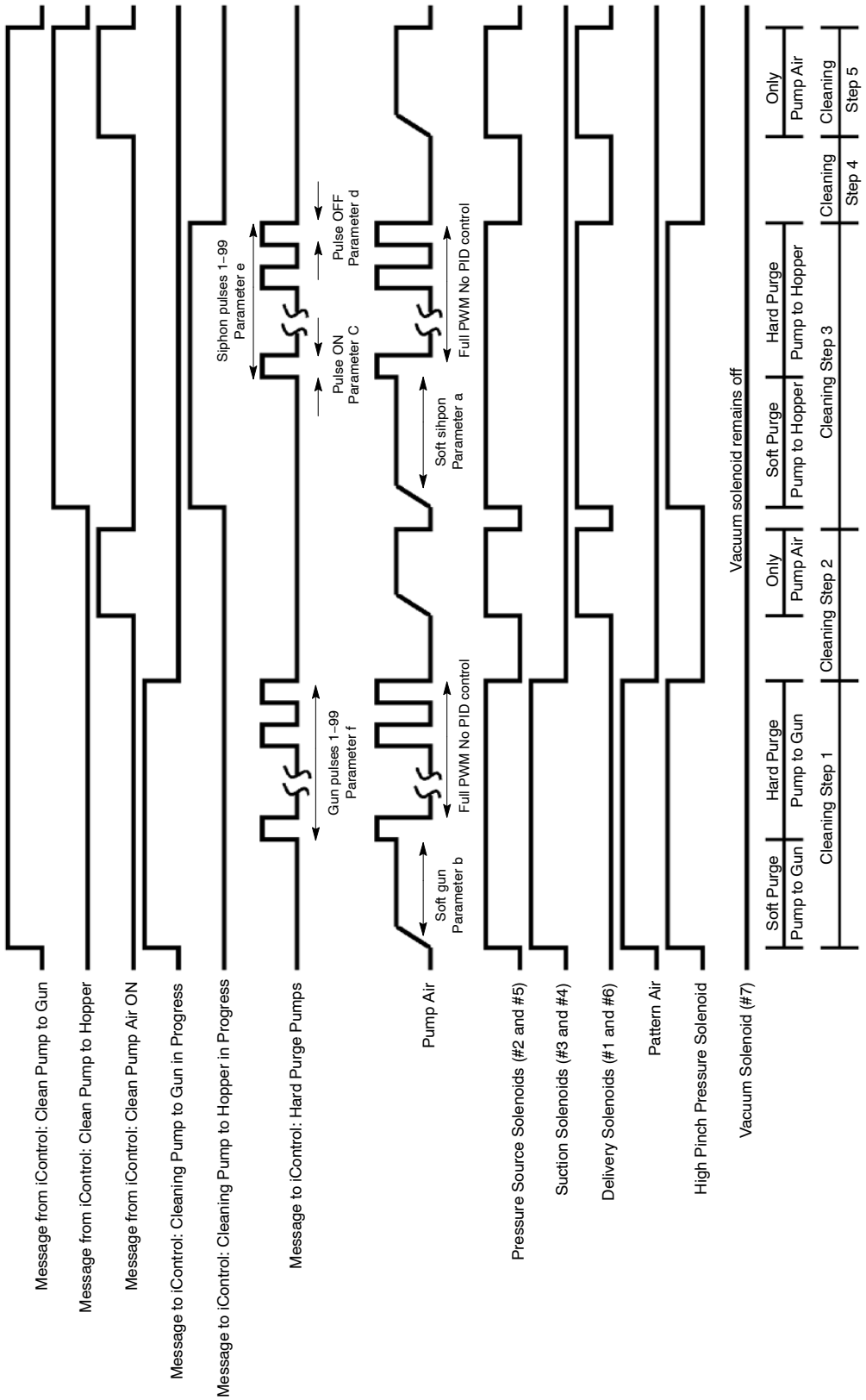

Figure 2 Purge Sequence for Automatic and HDLV Manual Mode *(Guns 1–16)*

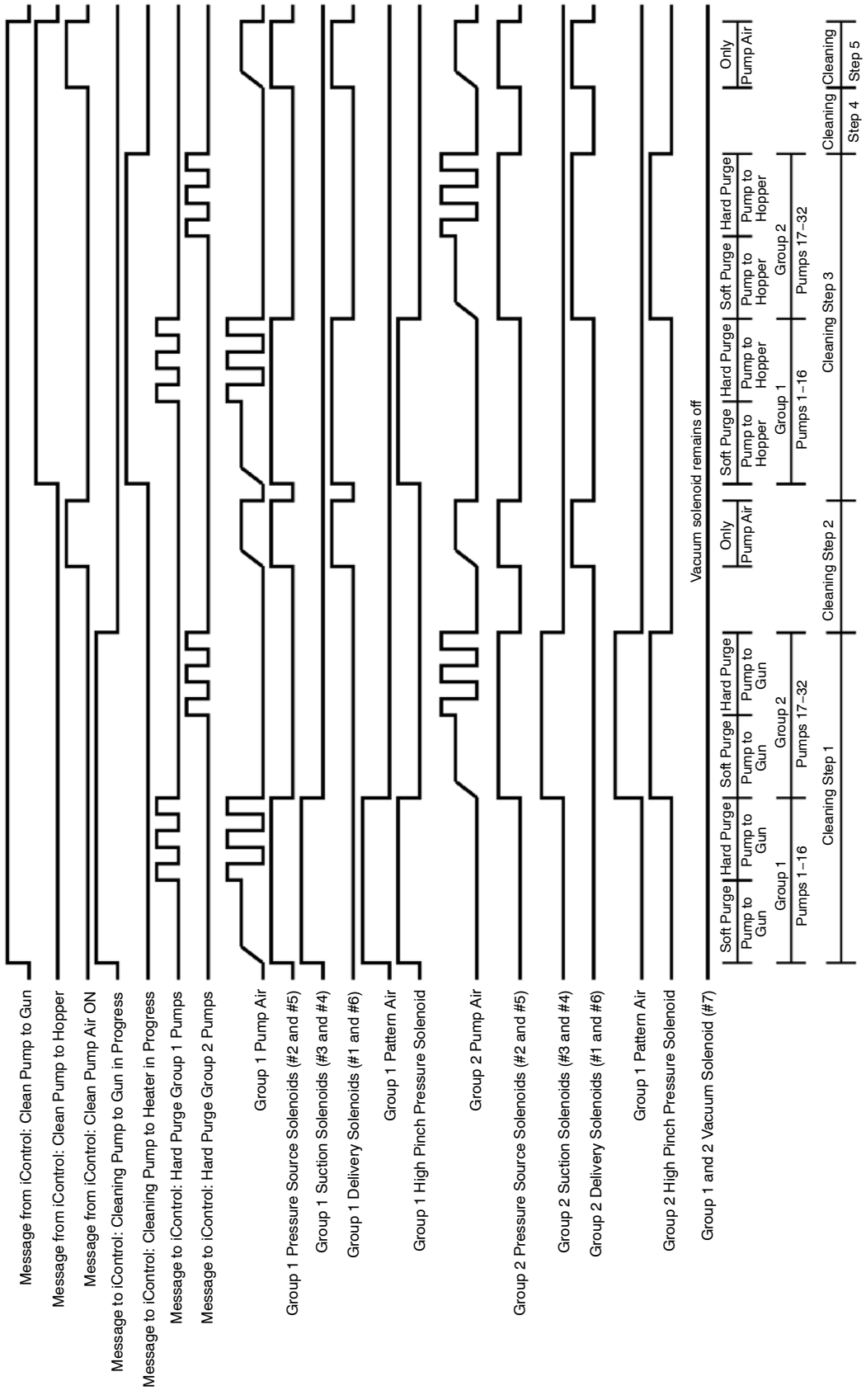

Figure 3 Purge Sequence for Automatic and HDLV Manual Mode *(Guns 16–32)*

Table 1 Purge Sequence Operational Requirements

Item	Cleaning Step	Requirement
Soft Gun	1	Useful to evacuate most of the powder that occupies the cavities of the powder pump and gun hoses: • De-energize the vacuum source solenoid, Hard Purge CAN message and pressure source solenoids. • Enable high pinch pressure solenoid. • Set Pump Air Flow setpoint to 1.5 SCFM; start ramping • Set Pattern Air Flow setpoint to 1.5 SCFM • Energize both of the pumps suction solenoids; closes the suction path • De-energize both of the pumps delivery solenoids; opens the delivery path • Turn ON both pressure source solenoids for the specified time. • After 4 sec, set Pump Air Flow setpoint to 4.0 SCFM; end ramping • After the specified time expires, start Pulsed Purge Gun.
Pulsed Purge Gun	1	Used to momentarily Hard Purge and evacuate any remaining powder particles from the cavities of powder pump and delivery hoses: • De-energize the vacuum source solenoid and Hard Purge CAN message. • Maintain the high pinch pressure and pressure source solenoids. • Maintain the Pattern Air Flow at 1.5 SCFM • Disable PID control • Cycle ON/OFF Hard Purge CAN message • Cycle ON/OFF Pump Air Flow • Start pulsing through the delivery line; energize both suction solenoids; de-energize both delivery solenoids • After pulsing the delivery line, enable PID control, de-energize both suction and delivery solenoids, turn OFF pressure source and high pinch pressure solenoids, set Pattern and Pump Air Flow set points to 0 SCFM.
Pump Air Only	2 and 5	Introduces a constant flow of air into the siphon tubes during the hopper empty and blow down stages of the cleaning process. Prevents any powder ingress back into the clean siphon tubes: • De-energize the vacuum source solenoid, Hard Purge CAN message and pressure source solenoids. • Set Pump Air Flow setpoint to 1.5 SCFM; start ramping • Energize both of the pumps delivery solenoids; closes the delivery path • De-energize both of the pumps suction solenoids; opens the suction path • Turn ON both pressure source solenoids. • After 4 sec, set Pump Air Flow setpoint to 4.0 SCFM; end ramping • Maintain until the Pump Air On CAN message is removed at which time de-energize the pressure source solenoids and the pump delivery solenoids. Also set the Pump Airflow setpoint to 0 SCFM.

Continued...

Item	Cleaning Step	Requirement
Soft Siphon	3	Evacuates most of the powder from the suction line hoses: • De−energize the vacuum source solenoid, Hard Purge CAN message, and pressure source solenoids. • Enable high pinch pressure solenoid. • Set Pump Air Flow setpoint to 1.5 SCFM; start ramping • De-energize both of the pumps suction solenoid; opens the suction path • Energize both of the pumps delivery solenoid; closes the delivery path • Turn ON both pressure source solenoids for the specified time. • After 4 sec, set Pump Air Flow setpoint to 4.0 SCFM; end ramping • After the specified time expires, start Pulsed Purge Siphon.
Pulsed Purge Siphon	3	Used to momentarily Hard Purge and evacuate any remaining powder particles from the space cavities of powder pump and suction hoses: • De-energize the vacuum source solenoid and Hard Purge CAN message. • Maintain the high pinch pressure and pressure source solenoids. • Disable PID control • Cycle ON/OFF Hard Purge CAN message • Cycle ON/OFF Pump Air Flow • Start pulsing through the siphon line; energize both delivery solenoids; de-energize both suction solenoids) • After pulsing the siphon line, enable PID control, de-energize both suction and delivery solenoids, turn OFF pressure source and high pinch pressure solenoids, set Pattern and Pump Air Flow set points to 0 SCFM.

Operator Interface Screen Changes

Gun Configuration Screen

During iControl system configuration, you must select Prodigy/Encore HD guns and Spectrum HD.

For the HDLV pump controllers, version 2.0 is required to use the pump Fast Mode, which allows the pump to operate faster and push more powder out to the spray gun. When fast mode is set for a preset, all guns using that preset use fast mode.

NOTE: You cannot have a mix of version 1 and version 2 pump controller firmware in your system; an alarm will occur if a mix of version 1 and 2 is detected.

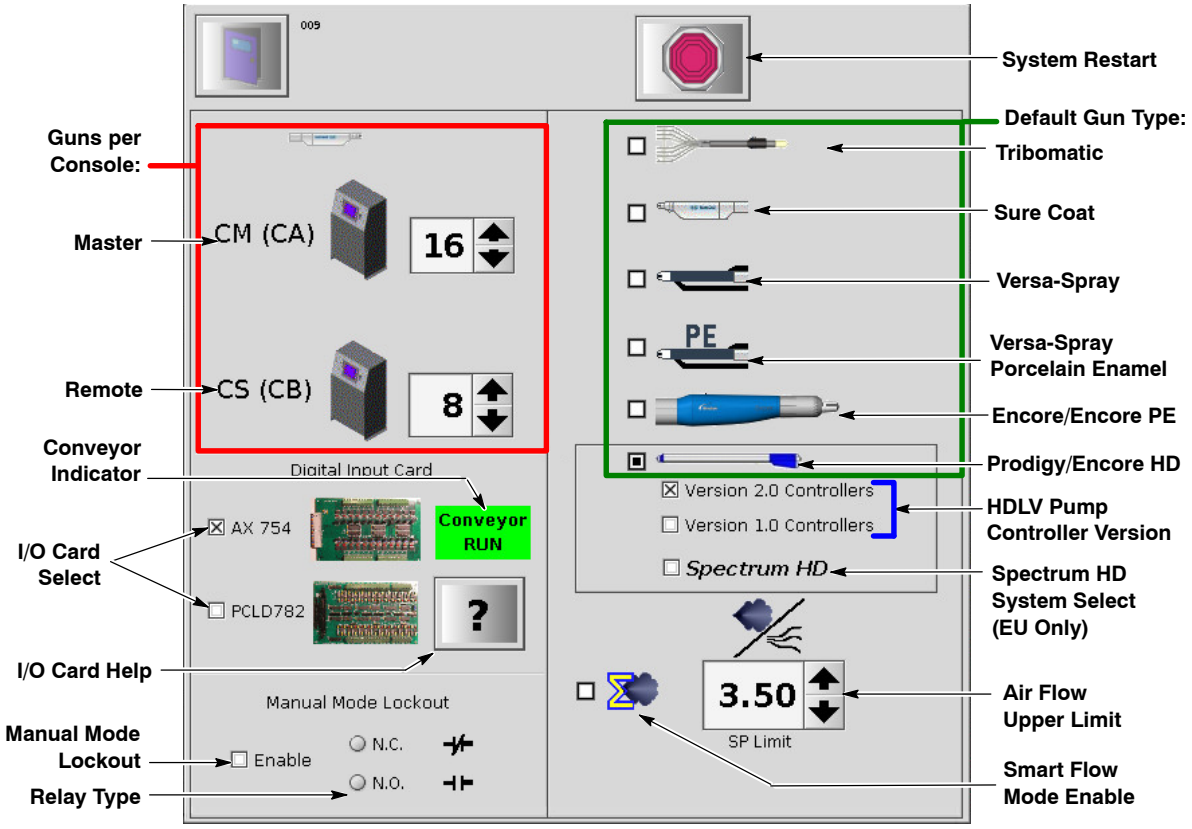

Figure 4 iControl Gun Configuration Screen

Purge Configuration Screen

Nordson personnel can then test the system by going to the Prodigy/Encore HD purge configuration screen.

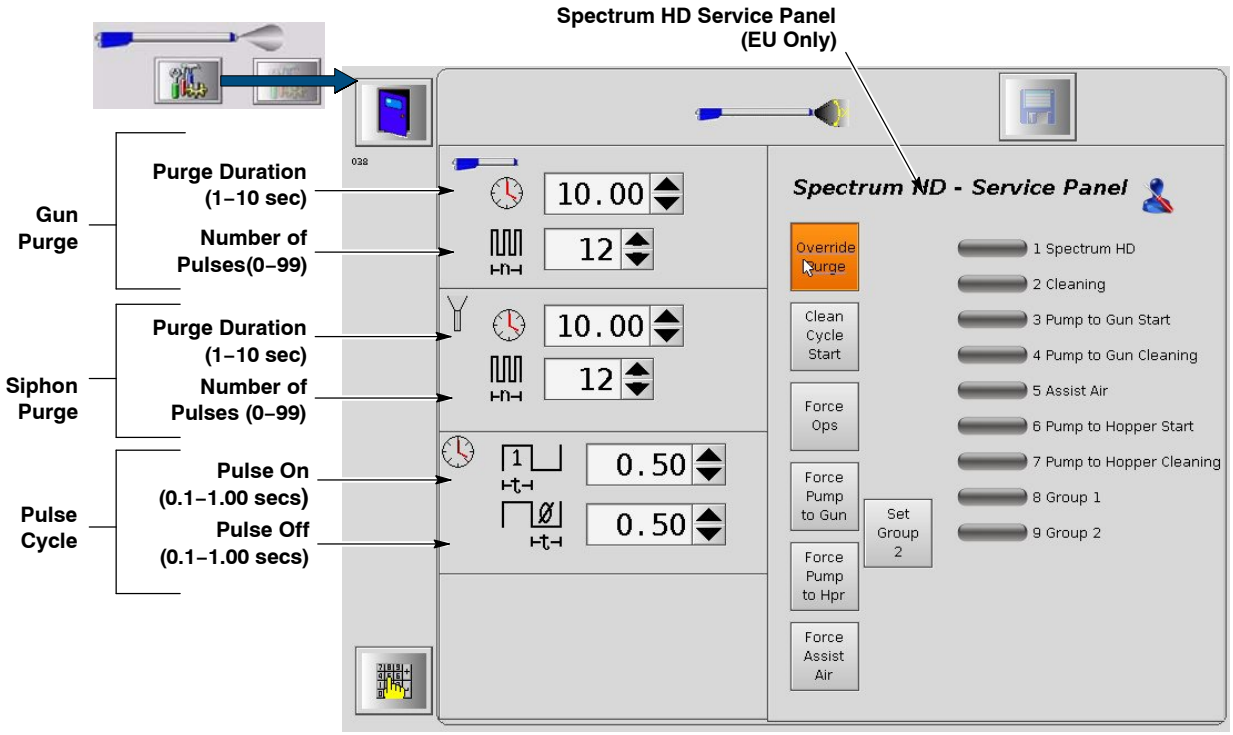

Figure 5 iControl Prodigy/Encore HD Purge Configuration Screen