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Endurance

Dispensing Metering Module

Owner's Manual

REV B

Precision Valve & Automation
Six Corporate Drive
Halfmoon, NY 12065

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Table of Contents

1. Introduction

Before you operate this system, read the operation and setup manual. This will help you to become familiar with the product and ensure successful operation.

If any questions or problems arise, contact PVA's Technical Support department.

1.1 PVA Contact Information

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1.2 Document History

Revision	Revision Date	Reason for Changes
REV B	October 2021	Updated K-Factor Information
REV A	October 2020	Initial Release

Note: All photographs and CAD model representations in this document are a "general representation" of the system and its components. The actual appearance of the system and its components can differ based upon customer specific configuration.

1.1 Safety

Certain warning symbols are affixed to the machine and correspond to notations in this manual. Before operating the system, identify these warning labels and read the notices described below. Not all labels may be used on any specific system.

Always wear approved safety glasses when you operate or work near the workcell.

Before you operate the system, read and understand the manuals provided with the unit.

Never put hands or tools in areas with this symbol when the machine is in operation. A dangerous condition may exist.

Read and understand the manuals provided with the unit before any repairs or maintenance is done. Only a qualified individual should do service.

Use caution when there are pressurized vessels. Find and repair any leaks immediately. Always wear appropriate safety equipment when you work with pressurized vessels or vessels that contain chemicals

Shear hazard from moving parts. Avoid contact.

Do not remove protective guarding.

In situations where inattention could cause either personal injury or damage to equipment, a warning notice is used.

Do not smoke near the machine. Always have a fire extinguisher available for emergency use.

Before performing any repairs or maintenance to the system, turn off power and lock out the power disconnect switch.

Warning notices are used to emphasize that hazardous voltages, current, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use. Only qualified personnel should enter areas designated with this symbol.

Laser light source present. Do not stare directly into the beam. Do not use in the presence of highly reflective surfaces

Pinch hazard from moving parts. Avoid contact.

Hot surface. Avoid contact.

Warning, Ultraviolet (UV) light hazard. Do not look directly at the UV light source.

This product meets EU standards for health, safety, and environmental protection.

Warning, no open flames.

Electrostatic sensitive device warning. Observe precautions for handling.

1.2 Theory of Operation

Endurance is a control package that can be integrated with multiple different pumping systems to meter and dispense almost any material. It is a standalone unit that can be operated independently or manually, integrated into an automated line, and anywhere in between. The compatible pumping systems include servo-driven cartridge drives, piston shot meters, gear pumps, and pneumatically-driven cartridge pumps. These diverse pumping technologies allow for the handling of materials from low to high viscosity, unfilled to heavily filled, and one- to two-component.

The system is designed to be flexible as to fit into as many applications as possible. PVA offers supply packages to feed material to the pumping systems in a wide variety of volumes, from cartridges up to 10g pressure pots as a standard option. Most any supply system could be used to feed the Endurance, including 55g drum pumps or bulk facility material supply. The Endurance is controlled via an onboard touchscreen HMI. The software is compatible with PVA Portal software and can be directly controlled through Portal or integrated with customer equipment.

1.3 Guidelines

This manual shows how to correctly operate the Endurance Metering Module. This manual does not replace the manual for your PVA workcell.

- Follow material manufacturer's recommendations.
- Make sure material was/is stored correctly.
- Make sure material is not expired.
- Relieve system pressure when the machine is not in use.
- Follow all instructions in this manual.

1.4 Personal Protective Equipment

Operators must use eye protection because material contents are under pressure. Always wear gloves when handling materials and solvents. Refer to MSDS sheets on the material being dispensed for other precautions.

1.5 Waste Disposal

Dispose of all used parts and materials in accordance with local laws and regulations.

1.6 Machine Requirements

1.6.1 Air Supply Requirements

- 80 psi dry, unlubricated air

1.6.2 Power Requirements

- 120 V, 220 V/50-60 Hz

2. Installation and Setup

WARNING: The following procedures should be performed by qualified persons in accordance with this manual and applicable safety regulations. A "qualified person" is defined as "a person or persons who, by possession of a recognized degree or certificate or professional training, or who, by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve problems relating to the subject matter and work." (ref. ANSI/ASME B30.2-1983.)

2.1 Unpacking and Inspection

1. Remove all packing materials and strapping. Thoroughly inspect the exterior of the machine for damage, loose fasteners, etc.
2. Inspect all tubing connections, gauges, and regulators.

2.2 Installation

Plug the machine into an appropriate power source as determined by the configuration section of the operating guide or the legend plate on the rear of the machine. The electrical service should be properly grounded, and the power sources should be clean. If there is high power equipment operating off the same source, a line conditioner may be necessary. Errors in machine operation could indicate poor quality power.

WARNING: Failure to comply with electrical specifications can result in damage to the machine as well as injury to installation personnel. Electrical hookup must be made by a qualified electrician and must comply with any applicable local standards.

1. A ¼" NPT female fitting is provided at the rear of the machine. Connect to a source of clean, dry air. A hose of ¼" inside diameter is sufficient.
2. Ground any pressure vessel to earth or the machine.

NOTE: Precision Valve & Automation STRONGLY recommends the machine not be powered on or material added to the pressure vessels until they are properly grounded.

3. Close any access doors and push in the EMERGENCY STOP button. Turn on the red air lockout valve.
4. Turn on power at red switch on the side of the electrical enclosure.

2.3 Operating Environment

2.3.1 Location

The machine should be installed on a level surface away from standing water, possible overspray and overhead leaks.

2.3.2 Temperature and Humidity

The machine should be operated in an area at 40°F - 105°F (4°C – 41°C) and low humidity. Condensation should not be allowed to collect on the machine.

2.4 Hardware

2.4.1 Fluid Components

Refer to the dispense schematic for proper connection of all material hose.

2.4.2 Electrical Components

Refer to the electrical schematic for proper connections.

2.5 System Requirements

Before you operate the system, know the components. Perform the steps instructed.

If your machine is integrated with a PVA workcell, the machine will interface with a PVA workcell and use PVA Portal software. This manual shows the correct use of the machine with PVA portal with a PVA workcell.

Ensure the following is complete before using the machine:

- All air lines are attached from the PVA workcell to the machine (refer to the workcell schematics for the correct connections).
- All motor cables/sensor cables/communications are correctly connected from the PVA workcell to the machine. Refer to the workcell schematics.
- All hoses, fittings, and valves are connected and tight. Refer to the PVA workcell schematics for the correct plumbing layout. Refer to the workcell schematics.
- PVA workcell is powered up and supplied with the machine air pressure.

WARNING! Become familiar with and test all functionality of the machine before you load any cartridges of material into the machine.

3. Software Overview

Endurance is equipped with a built-in software program. If Endurance is a standalone product, the program can be accessed directly from the Endurance cart. If Endurance has been integrated with a PVA automated workcell, the software can be accessed via PVA Portal or the Endurance cart.

3.1 Accessing Endurance Software via Portal

1. Select **Endurance** from the Program Selection dropdown menu.
2. Select the **UniVNC** tab.
3. Select **Endurance** from the **Connect To** dropdown menu.
4. Click **Connect**.

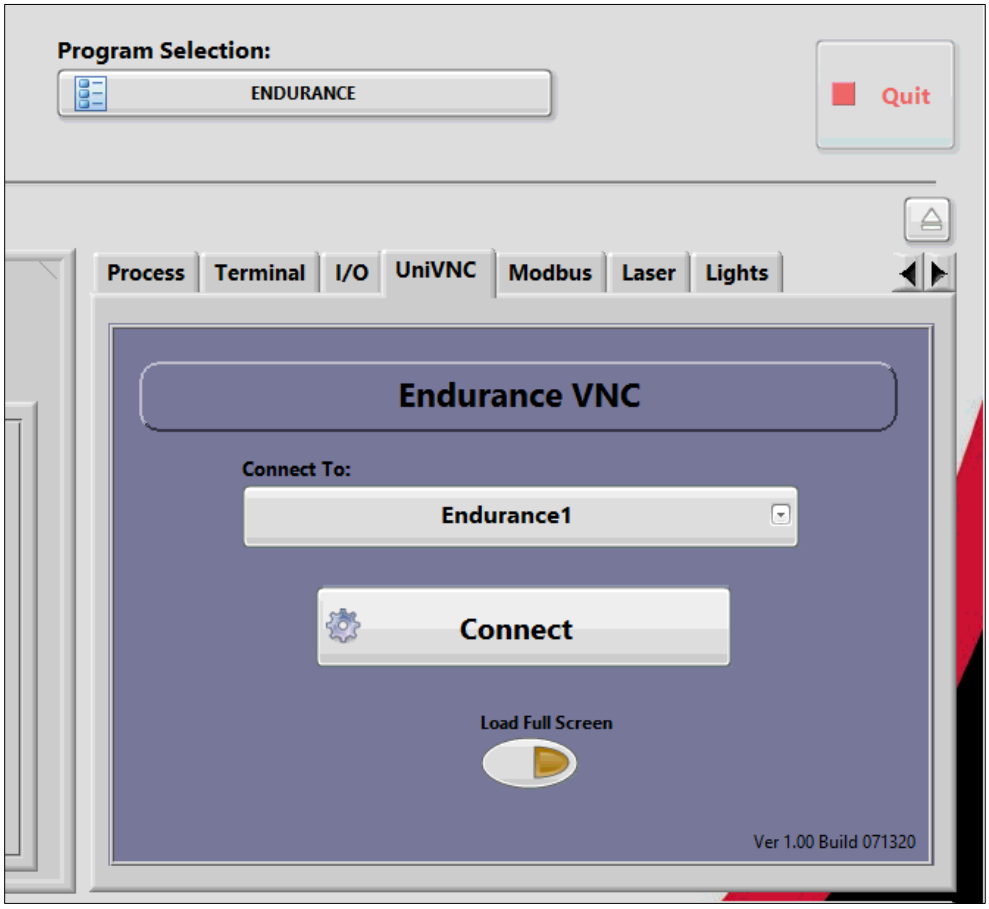

Figure 1: Access Software from Portal

5. The Endurance software screen will display in a new popup window.

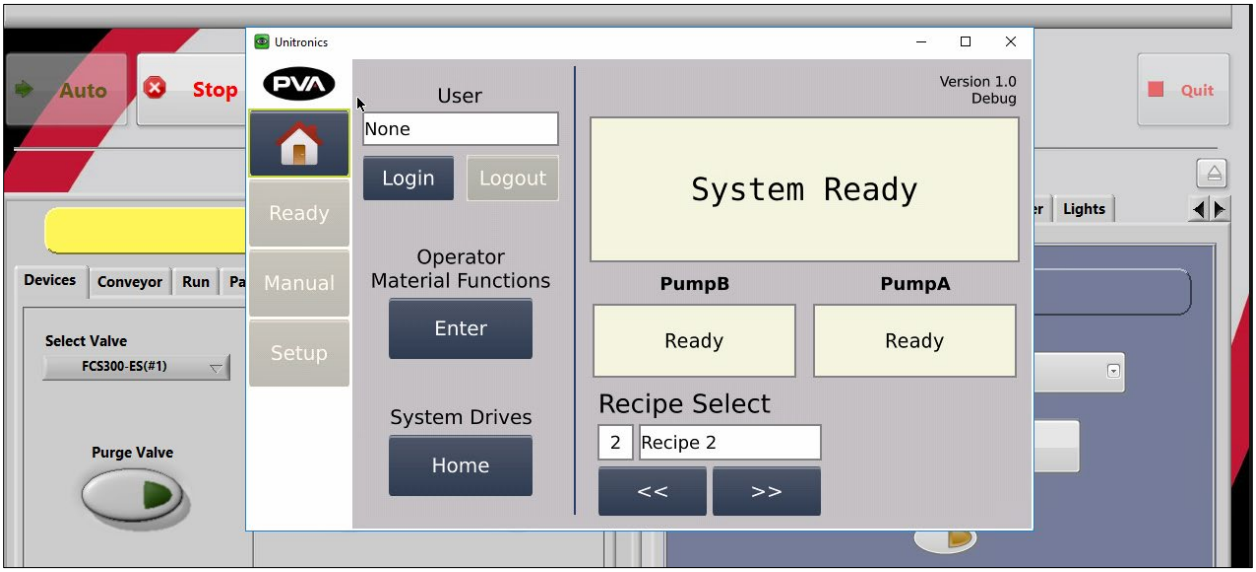

Figure 2: Endurance Software in Portal

3.2 Log In

1. Select **Login** to log in.

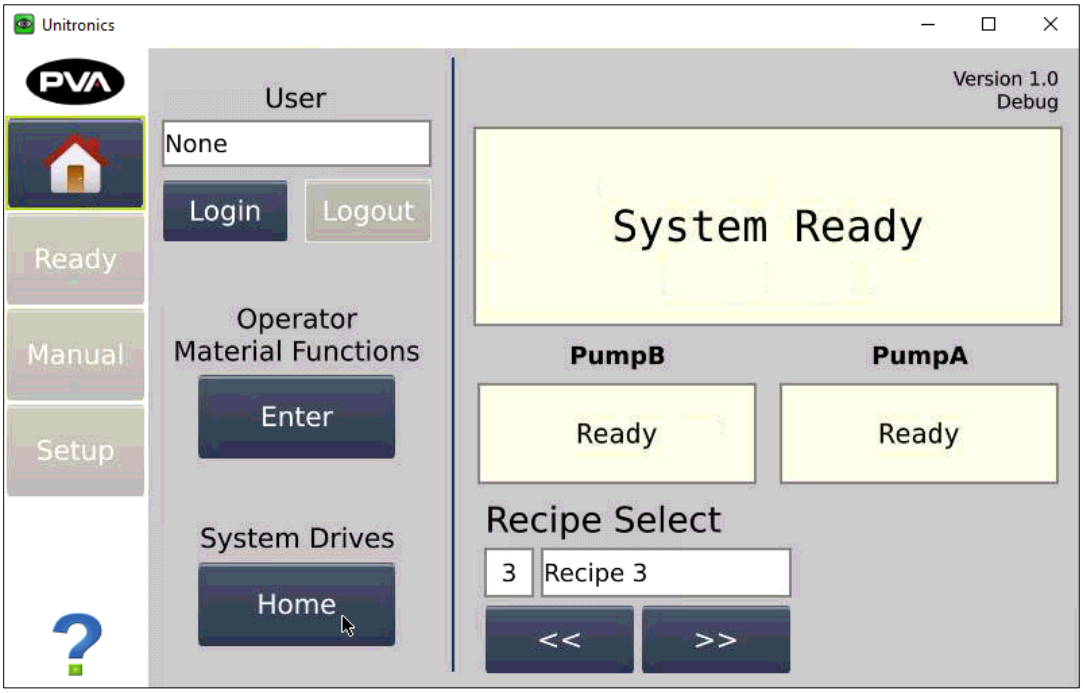

Figure 3: Login

2. Click on the dropdown to choose the desired login permission.

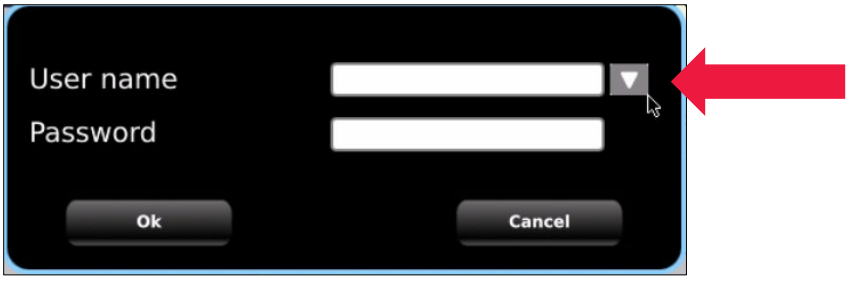

Figure 4: Username and Password

3. Use the arrows to navigate the roles. Select the desired login and click **Ok**.

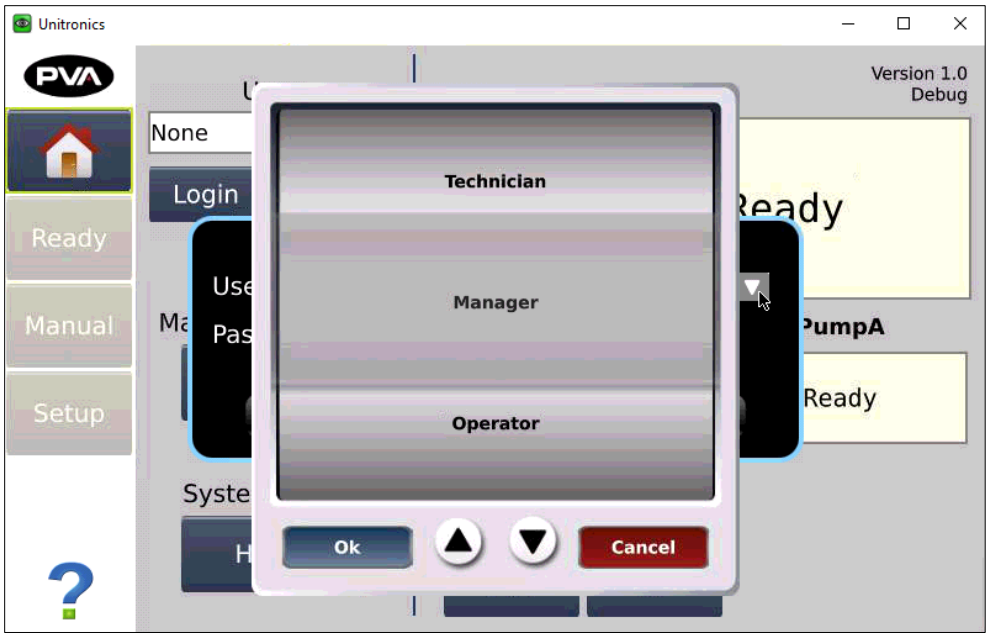

Figure 5: Choose Role

4. Enter the password.

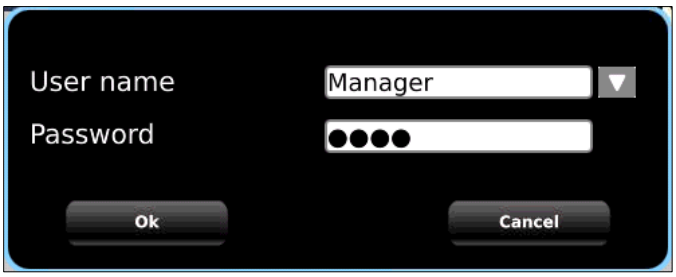

Figure 6: Enter Username and Password

5. The Home Screen will display.

3.3 Home Screen Features and Functions

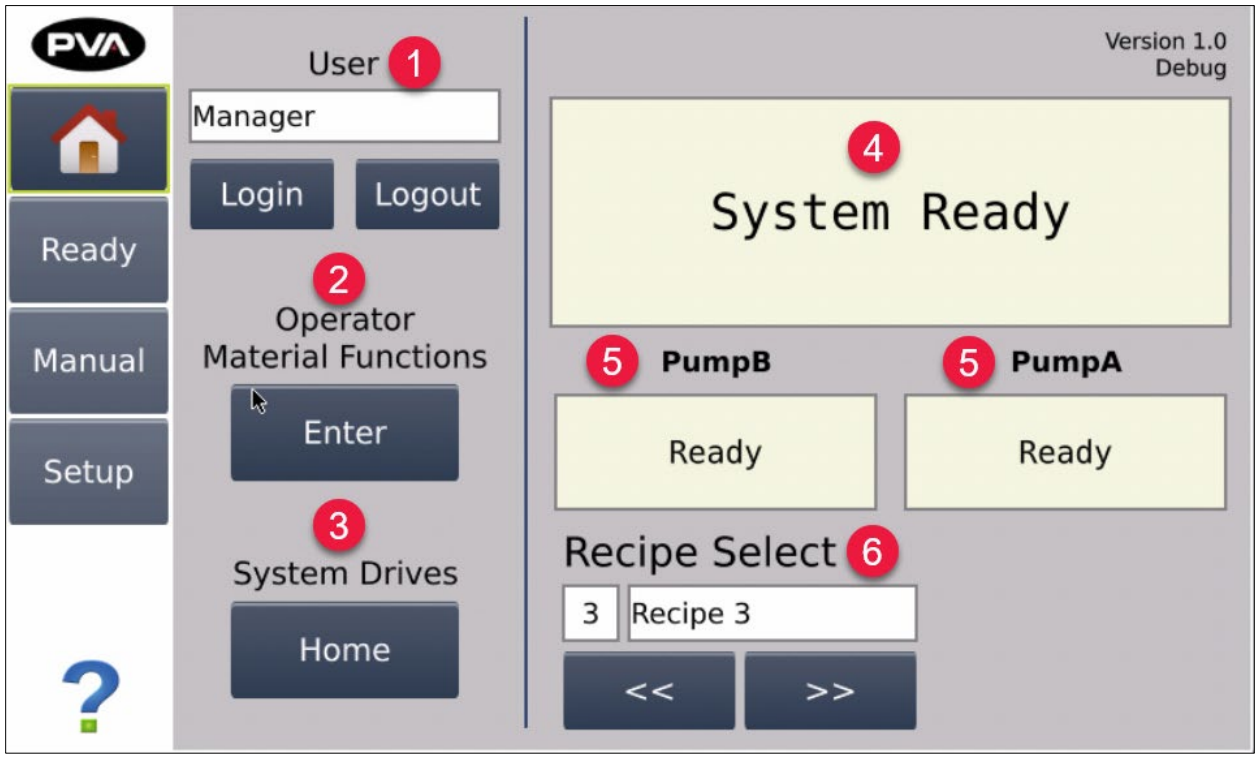

Figure 7: Home Screen Features

1. **User**: This field will display which user is currently logged in. To change users, select *Logout* then *Login* to choose a new role.

2. **Operator Material Functions**: Select *Enter* to navigate to the Manual → Material screen. See Manual section for more information.

3. **System Drives**: Select *Home* to home the drives. Pump B and Pump A will display a *Homing* status. Once homed, the pumps will display a *Ready* status.

4. **System Ready**: The screen will display a *System Ready* status when it is ready to use. Errors will also display here.

5. **Pump A and Pump B**: Pump B and Pump A will display a *Ready* status when they are ready to use. Errors will also display here.

3.4 Navigation Pane

The Navigation Pane on the left side of the screen has five options. These that allow you to navigate through the program.

Note: Depending on role and security permissions, some options below may be unavailable.

2. **Ready**: Select this button to navigate to the Ready screen.
3. **Manual**: Select this button to navigate to the Manual screen.
4. **Setup**: Select this button to navigate to the Setup screen.

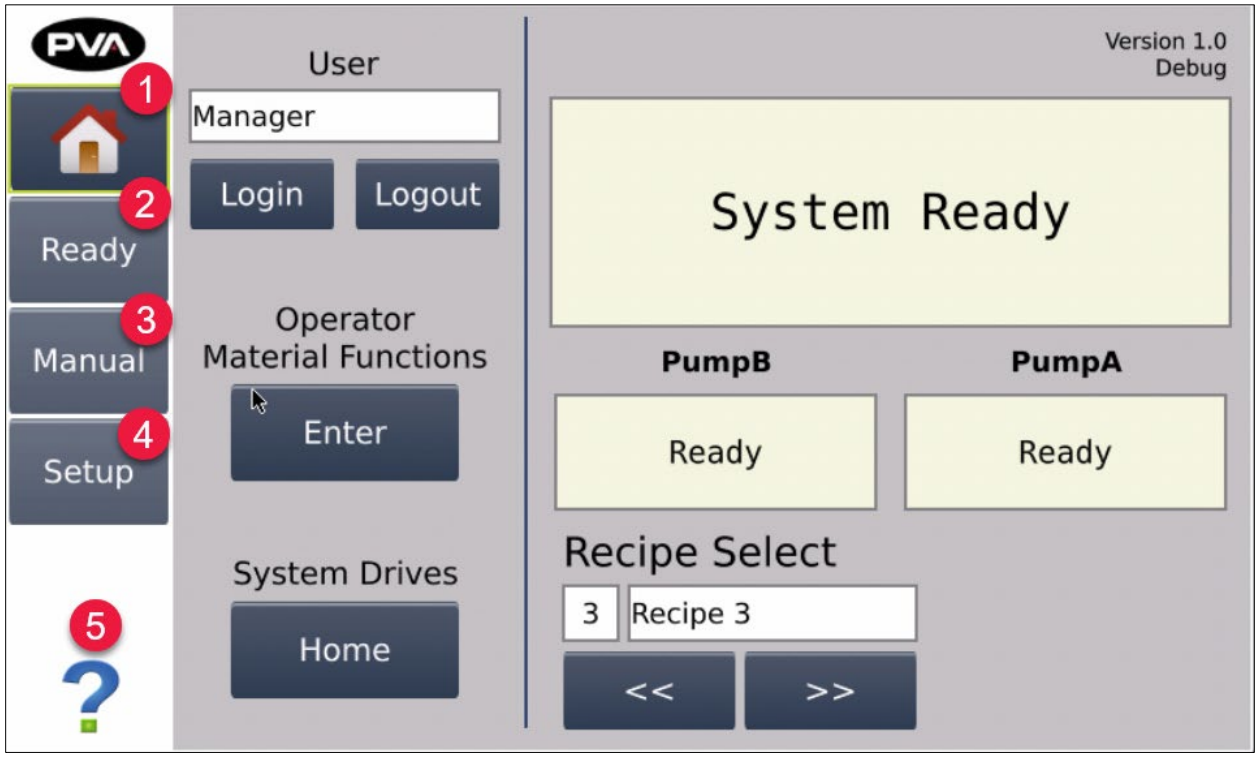

Figure 8: Navigation Pane Overview

3.5 Fields

Each Endurance screen has a combination of editable fields and display fields. The edit fields will allow you to enter a name or number in the respective field. Display fields cannot be edited.

3.5.1 Edit Number Field

1. To set a numerical value, click on the desired field.
2. The Edit Number field will display.
3. The top of the screen will display the acceptable range for each field. Enter a numeric value with the range.
4. Select **Ok** or **Cancel** to close.

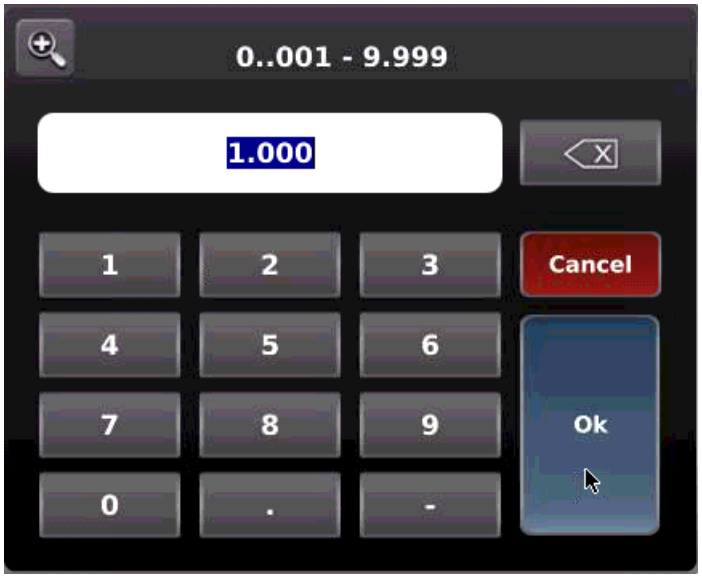

Figure 9: Edit Number Field

3.5.2 Set Recipe Name

To set a recipe name, click inside the recipe field and the Set Recipe Name popup will display.

1. Enter a recipe name using the alphanumeric keyboard.
2. Use the tools in the bottom left to:

3. Click **Ok** when finished.

Figure 10: Set Recipe Name Field

4. Common Configurations

Depending on your chosen configuration for Endurance, some screens and options may vary. This section will review the settings and options for the following configurations:

- **Two SPP080 Servo Piston Pumps, Two 10-Gallon Tanks**
  - *2 SPP, 2 10G T*
- **Two SGP Servo Gear Pumps, Two 5-Gallon Pail Pumps**
  - *2 SGP, 2 5G PP*
- **(2) SCTP Servo Cartridge Pumps**
  - *2 SCTP*

Note: For the purpose of this manual, these configurations will be referred to as their abbreviated name which is listed under their configuration.

Note: If your configuration is outside of what is listed above, please contact your local representative for accurate information regarding your configuration.

5. Two Servo Piston Pumps, Two 10-Gallon Tanks

5.1 Manager (2 SPP, 2 10G T)

5.1.1 Home Screen

See Home Screen Features and Functions for a detailed description of each feature.

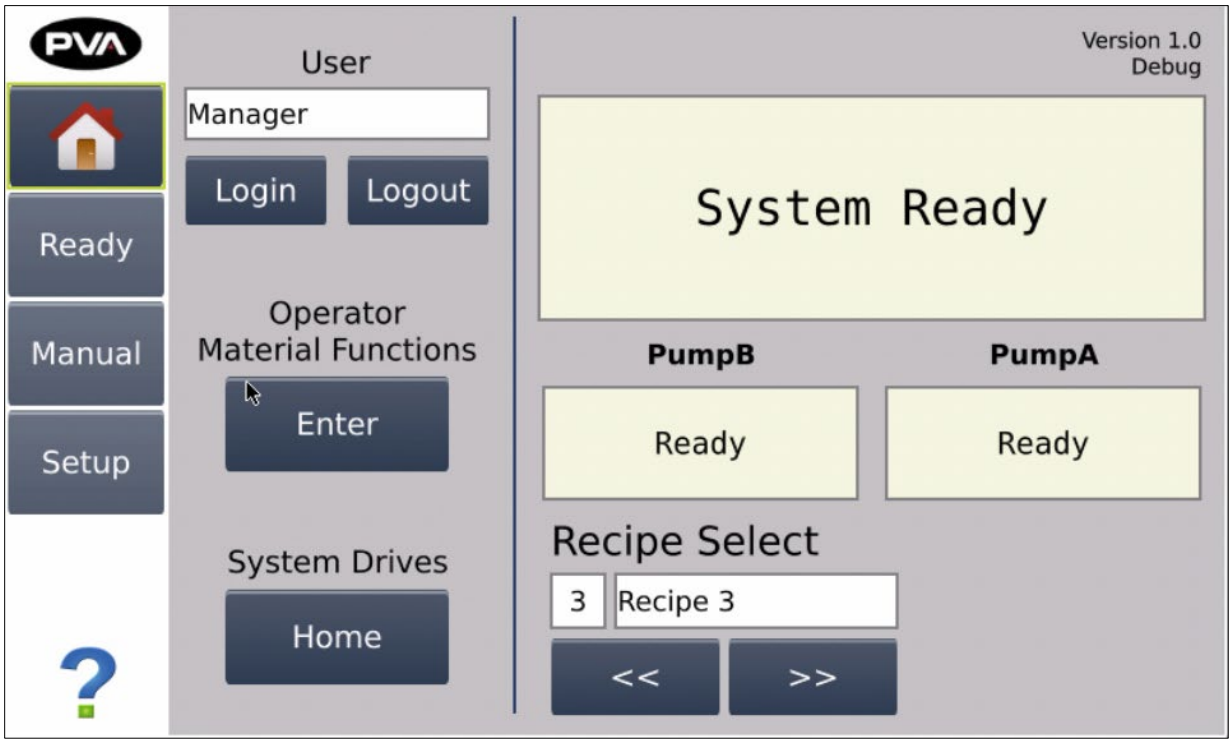

Figure 11: Manager Home Screen (2 SPP, 2 10G T)

5.1.2 Operator Material Functions

From the Home Screen, click **Enter** under Operator Material Functions to display this screen. It can also be accessed by selecting **Manual → Material**.

The Operator Material Functions screen has the following features and options:

#		DISPLAY FIELDS	EDIT FIELDS
1	**Ready**	The pump status for both Pump B and Pump A.	**None**
2	**Supply**	The remaining material left in each tank (measured in lbs).	

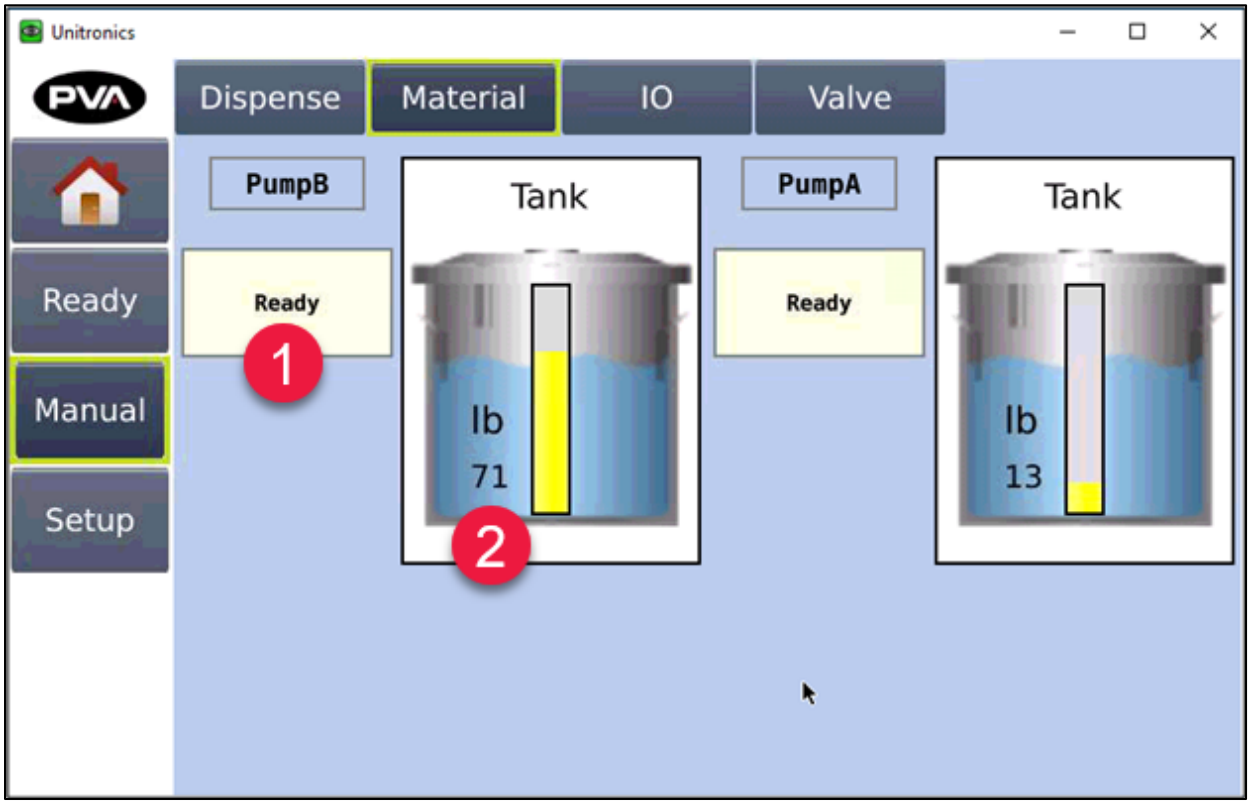

Figure 12: Manager Manual Material Screen (2 SPP, 2 10G T)

5.1.3 Ready

From the Navigation Pane, click **Ready** to display this screen.

The Operator Material Functions screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Recipe**	The current recipe selection.	6	**Exit**	Select *Exit* to return to the Home screen.
2	**Rate**	The current flow rate.	7	**Dispense**	Click *Dispense* to begin dispensing.
3	**Supply**	The remaining material left in each tank (measured in lbs).	8	**Back**	Click *Back* to return to the Supply display.
4	**Dispense**	The remaining material left in each piston.	9	**Refill**	Click *Refill* to refill the tank..
5	**Ready**	The pump status for both Pump B and Pump A.			

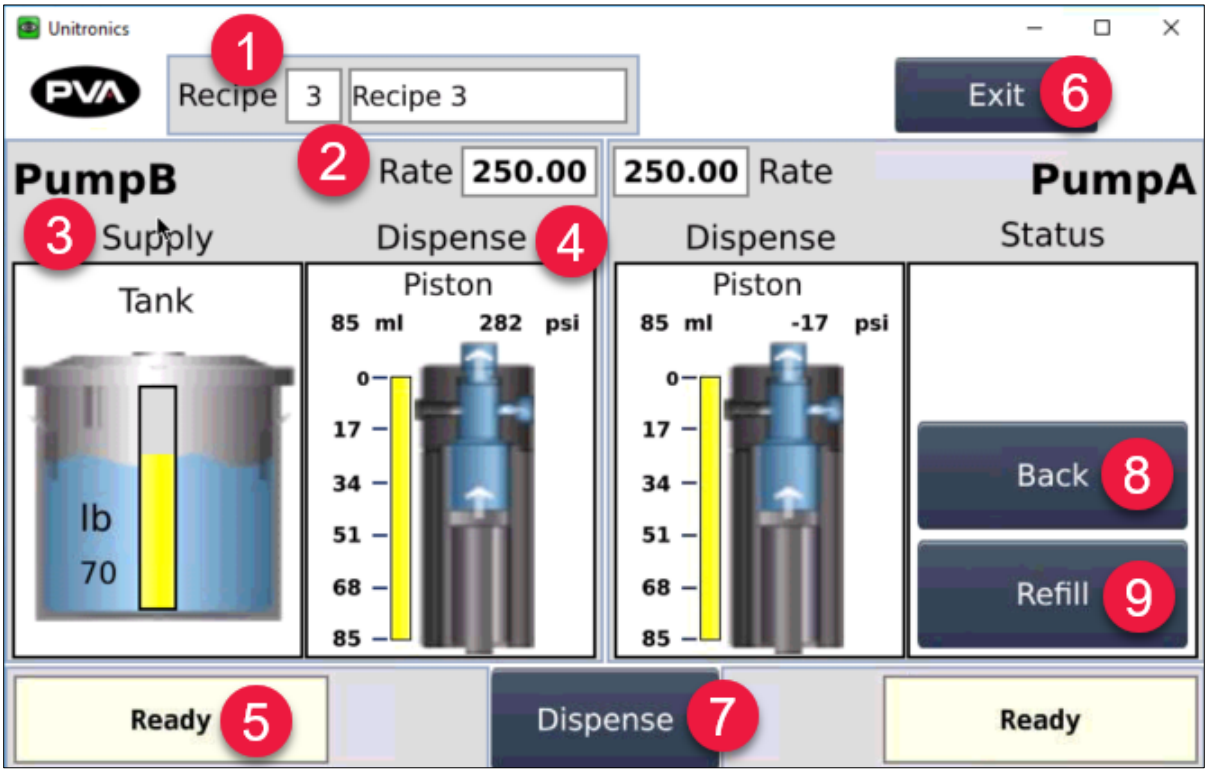

Figure 13: Manager Ready Screen (2 SPP, 2 10G T)

5.1.4 Manual → Dispense → Settings

From the Navigation Pane, click **Manual** to display this screen.

The **Manual → Dispense → Settings** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
7	**Ready**	The pump status for both Pump B and Pump A.	**1**	**K-Factor**	Enter a K-Factor.
9	**Last Shot**	Displays the last shot time (sec).	**2**	**Pump Enable**	Select the checkbox to enable the pump.
			3	**Piston Refill Target**	Enter a piston refill target (ml).
			4	**Piston**	Click to refill the piston.
			5	**Dispense**	Click *Dispense* to begin dispensing.
			6	**Dispense Rate**	Enter a dispense rate for both pumps.
			8	**Dispense Rate**	Choose a continuous or timed dispense rate.
			10	**Shot Time**	Enter a shot time (sec).

Figure 14: Manager Manual Dispense Settings (2 SPP, 2 10G T)

5.1.5 Manual → Dispense → Pressure

From the **Manual → Dispense** tab, click **Pressure** to display this screen.

The **Manual → Dispense → Pressure** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Process**	Displays the process (psi).	**2**	**Preload**	Enter a preload (psi).
6	**Ready**	The pump status for both Pump B and Pump A.	**3**	**Preload Enable**	Select to enable preload.
8	**Last Shot**	Displays the last shot time (sec).	**4**	**Dispense**	Click *Dispense* to begin dispensing.
			5	**Dispense Rate**	Enter a dispense rate (ml/min).
			7	**Dispense Rate**	Choose continuous or timed.
			9	**Shot Time**	Enter a shot time (sec).

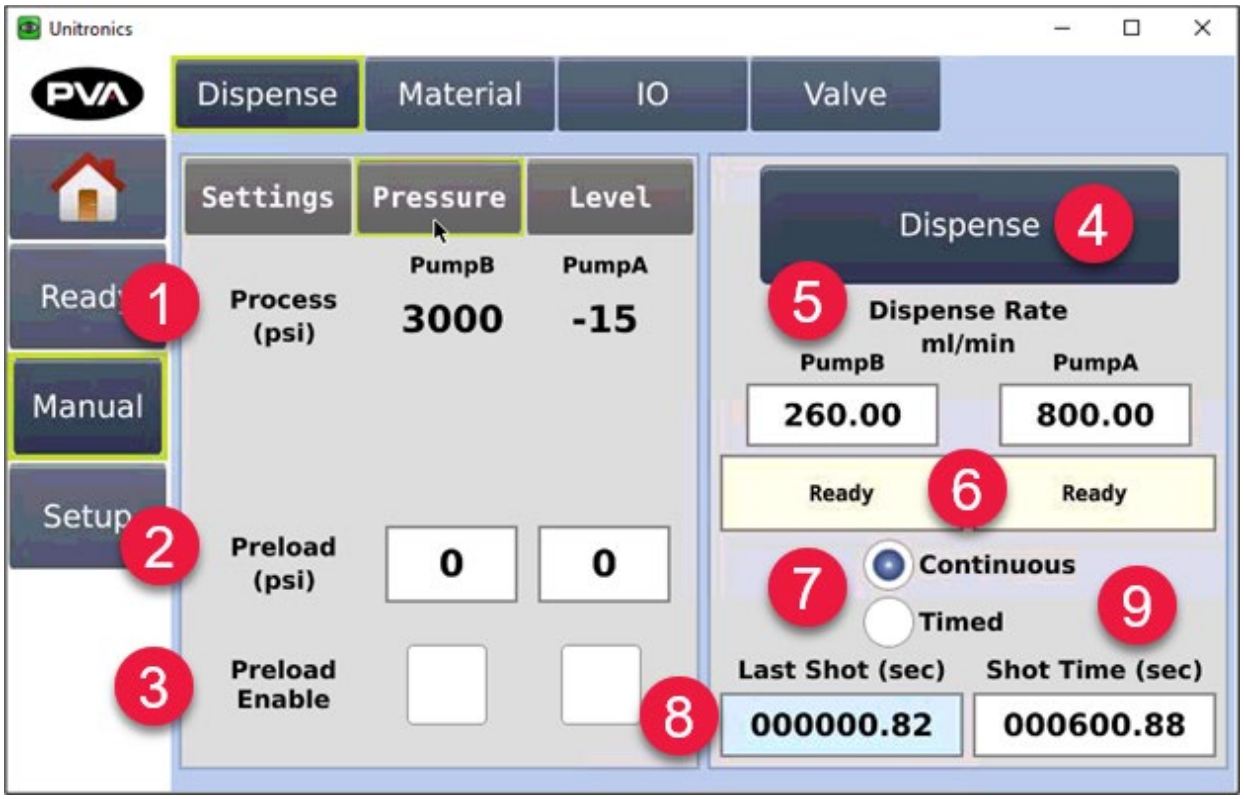

Figure 15: Manager Material Dispense Pressure (2 SPP, 2 10G T)

5.1.6 Manual → Dispense → Level

From the **Manual → Dispense** tab, click **Level** to display this screen.

The **Manual → Dispense → Level** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Pump Level**	Displays the pump level for Pump B and Pump A (ml).	**3**	**Dispense**	Click *Dispense* to begin dispensing.
2	**Supply Level**	Displays the supply level for both tanks (lb).	**4**	**Dispense Rate**	Enter a dispense rate for Pump B and Pump A (ml/min).
5	**Ready**	The pump status for both Pump B and Pump A.	**6**	**Dispense Rate**	Choose Continuous or Timed.
7	**Last Shot**	Displays the last shot time (sec).	**8**	**Shot Time**	Enter a shot time (sec).

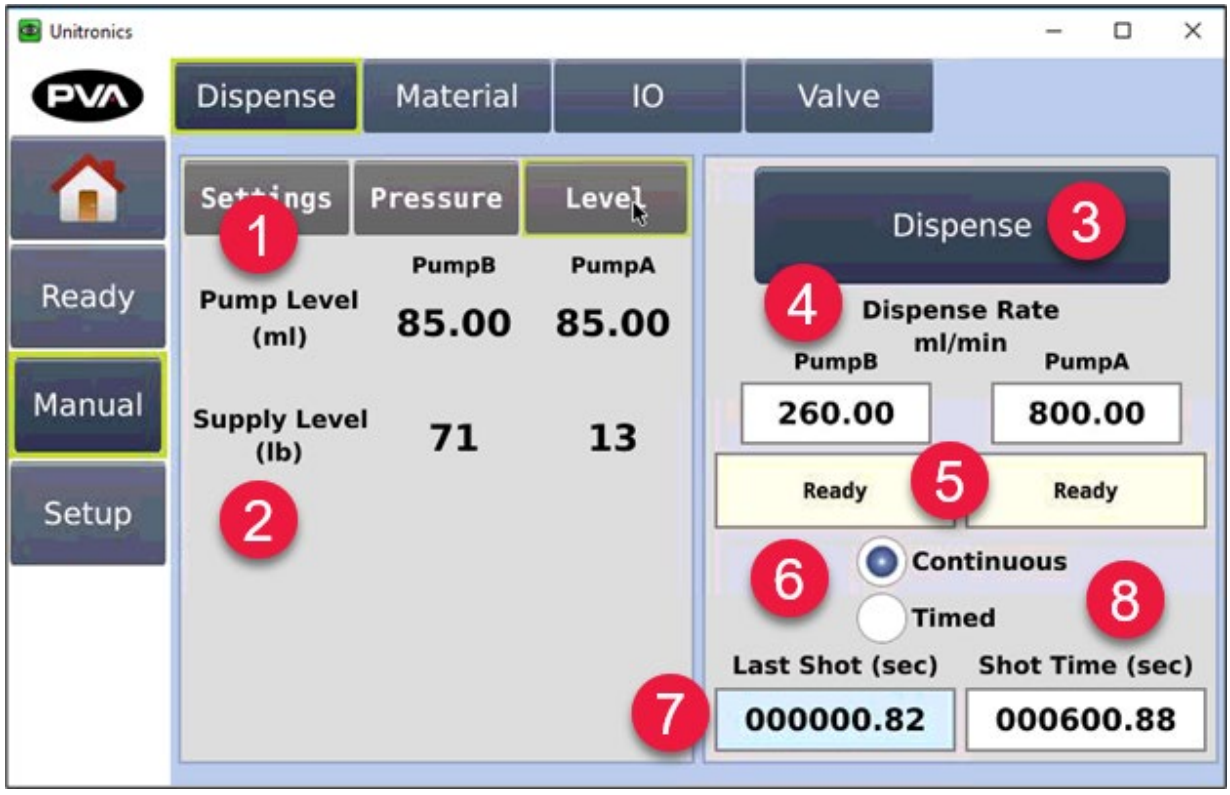

Figure 16: Manager Manual Dispense Level (2 SPP, 2 10G T)

5.1.7 Manual → Material

From the Navigation Pane, click **Manual → Material** to display this screen. It can also be accessed from the Home Screen, by clicking **Enter** under Operator Material Functions.

The **Manual → Material** screen has the following features and options:

#		DISPLAY FIELDS	EDIT FIELDS
1	**Ready**	The pump status for both Pump B and Pump A.	**None**
2	**Supply**	The remaining material left in each tank (measured in lbs).	

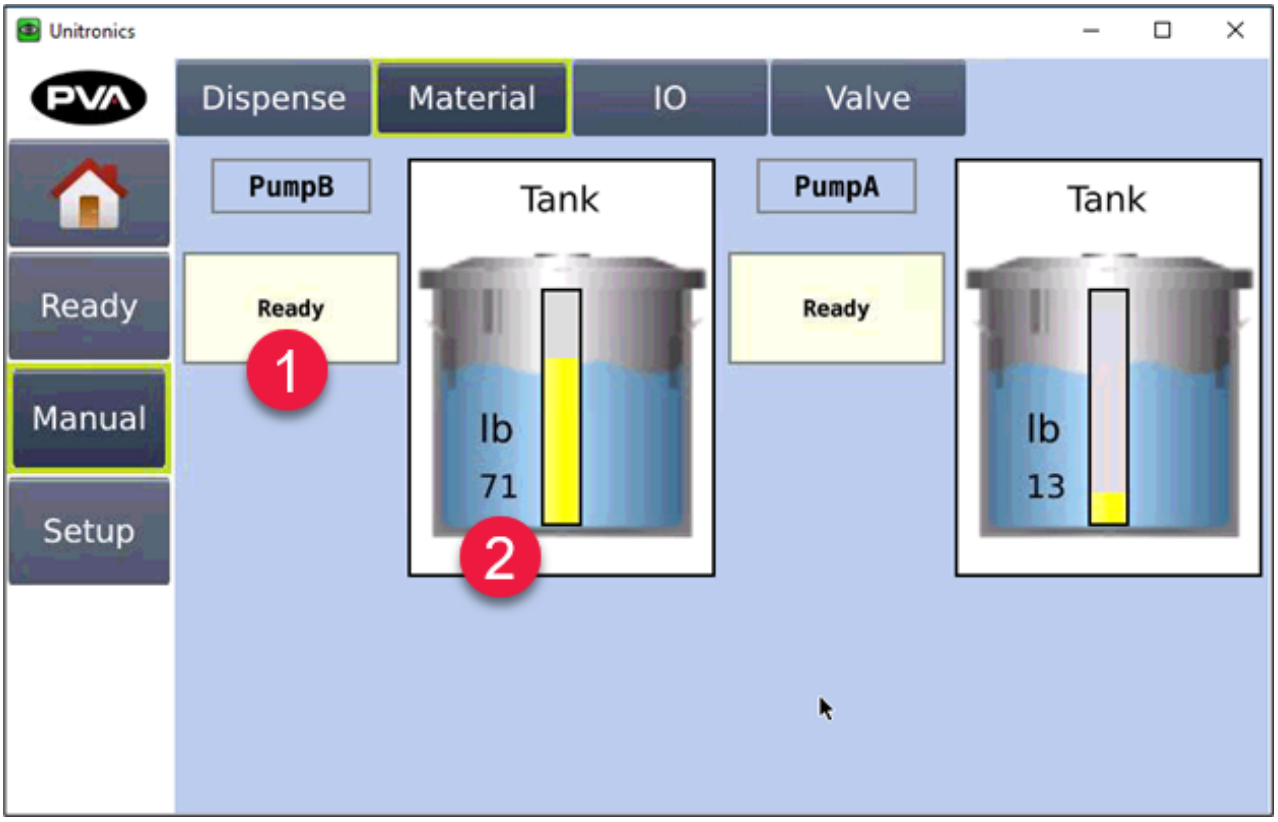

Figure 17: Manager Manual Material (2 SPP, 2 10G T)

5.1.8 Manual → IO → Local

From the Navigation Pane, select **Manual → IO → Local** to display this screen.

The **Manual → IO → Local** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
OUTPUTS				**NONE**
1	**Control Power**	Indicates if the control power is on or off.		
2	**Valve**	Indicates if the valve is on or off.		
INPUTS				
3	**Estop**	Indicates if the emergency stop is on or off.		
4	**Control Power**	Indicates if the control power is on or off.		
5	**Door**	Indicates if the door is opened or closed.		

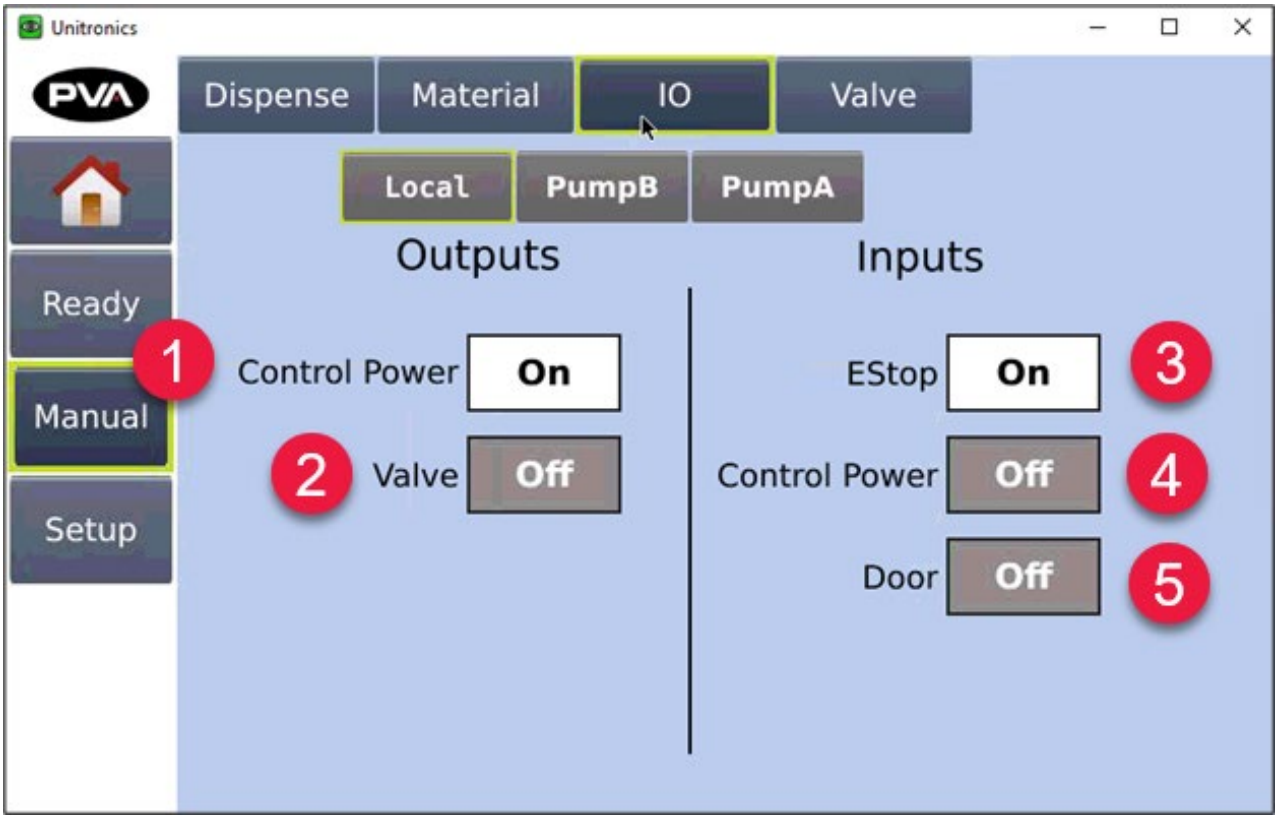

Figure 18: Manager Manual IO Local (2 SPP, 2 10GT)

5.1.9 Manual → IO → Pump B

From the Navigation Pane, select **Manual → IO → Pump B** to display this screen.

The **Manual → IO → Pump B** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
OUTPUTS				
1	**Refill Valve**	Indicates the position of the refill valve.		
INPUTS				
2	**Seated**	Indicates if the rod has fully refilled. Note: If there are pressure issues upon refilling the SPP, the seated sensor will not read properly.		**NONE**

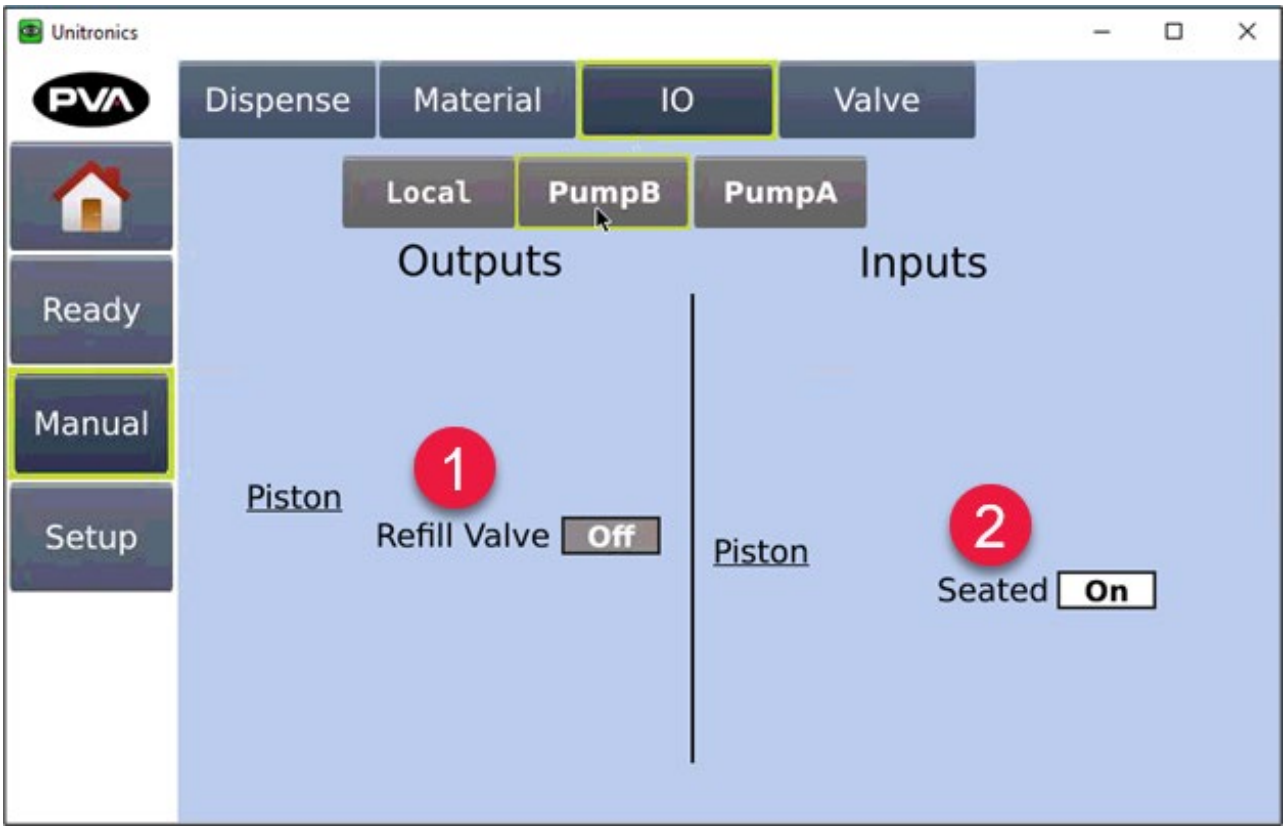

Figure 19: Manager Manual IO Pump B (2 SPP, 2 10G T)

5.1.10 Manual → IO → Pump A

From the Navigation Pane, select **Manual → IO → Pump A** to display this screen.

The **Manual → IO → Pump A** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
OUTPUTS				
1	**Refill Valve**	Indicates the position of the refill valve.		**NONE**
INPUTS				
2	**Seated**	Indicates if the rod has fully refilled. Note: If there are pressure issues upon refilling the SPP, the seated sensor will not read properly.		

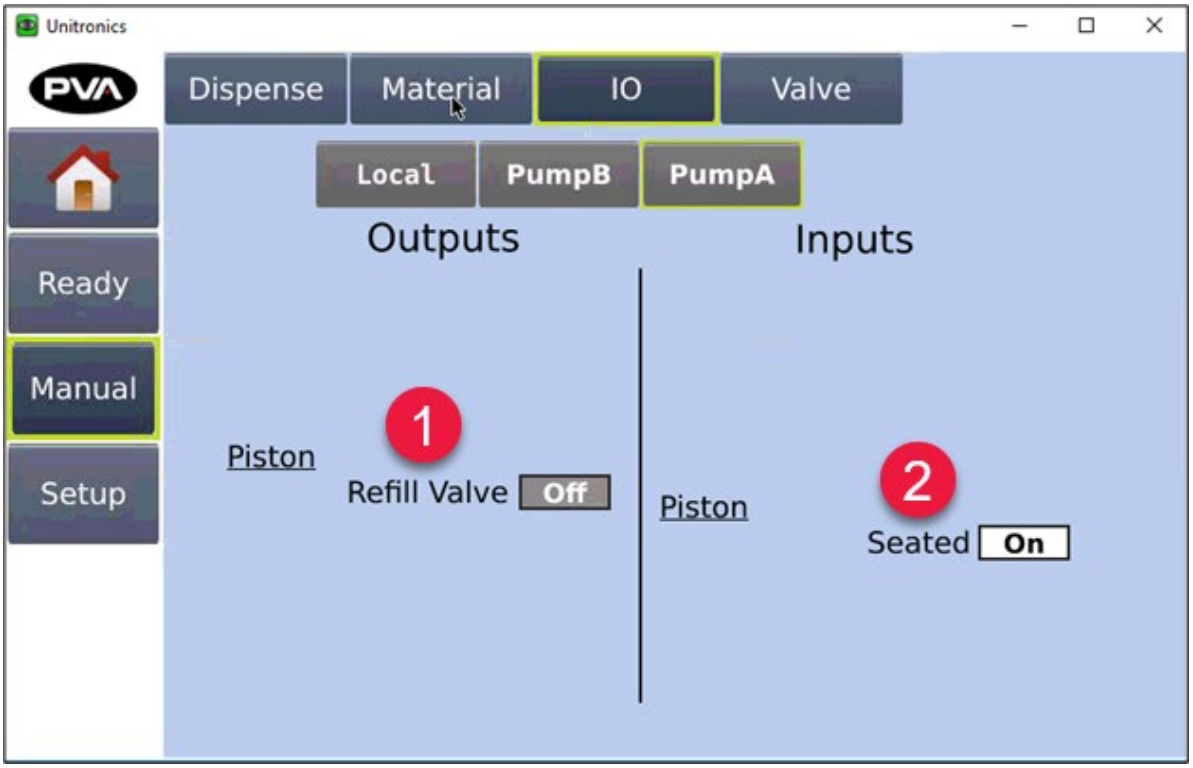

Figure 20: Manager Manual IO Pump A (2 SPP, 2 10G T)

5.1.11 Manual → Valve

From the Navigation Pane, select **Manual → Valve** to display this screen.

The **Manual → Valve** screen has the following features and options:

#	DISPLAY FIELDS	#	EDIT FIELDS	
None		**1**	**Valve Toggle**	Click and hold toggle to open the valve for the duration that the button is held. Once the button is released, it will close.
		2	**Valve Enable**	Select the checkbox to enable the valve. The valve is not open when disabled.

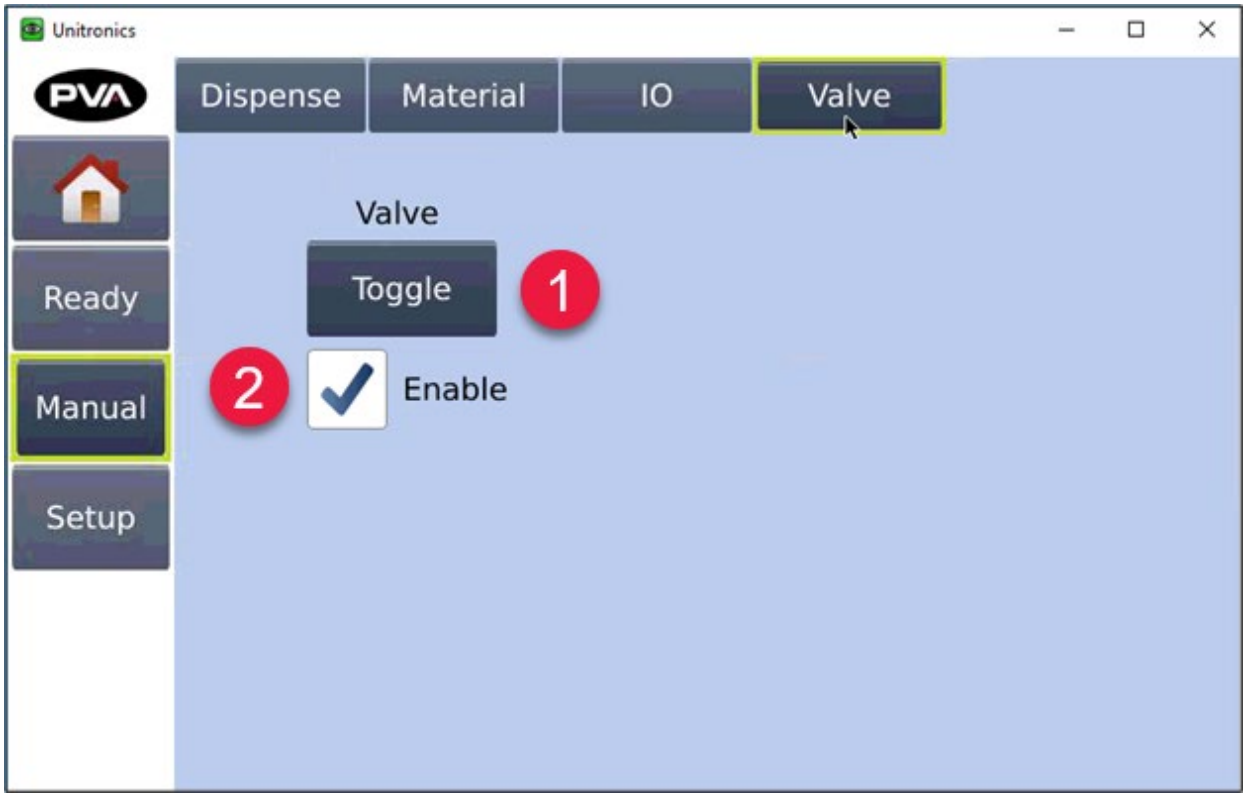

Figure 21: Manager Manual Valve (2 SPP, 2 10G T)

5.1.12 Setup → Recipe → Pump B

From the Navigation Pane, select **Setup → Recipe → Pump B** to display this screen.

The **Setup → Recipe → Pump B** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
2	**Pump B**	Displays the current pump.	**1**	**Enable**	Select the checkbox to enable pump B.
3	**Recipe**	Displays the current recipe.	**4**	**Recipe**	Use the arrows to browse other recipes. Click the recipe to change the recipe name.
5	**Piston**	Displays the position and volume of the piston.	**6**	**Dispense Rate**	Enter the dispense rate (ml/min).
12	**Process Pressure Indicator**	The left bar displays the current pressure. The right bar displays the process pressure range. The marker is the preload pressure setpoint.	**7**	**Refill Target**	Enter the refill target (ml).
			8	**K-Factor**	Enter the K-Factor.
			9	**Refill Trigger**	Enter the refill trigger (ml).
			10	**Remote Refill**	Select the checkbox to enable remote refill.
			11	**Process PSI**	Enter the minimum, maximum, and preload values.

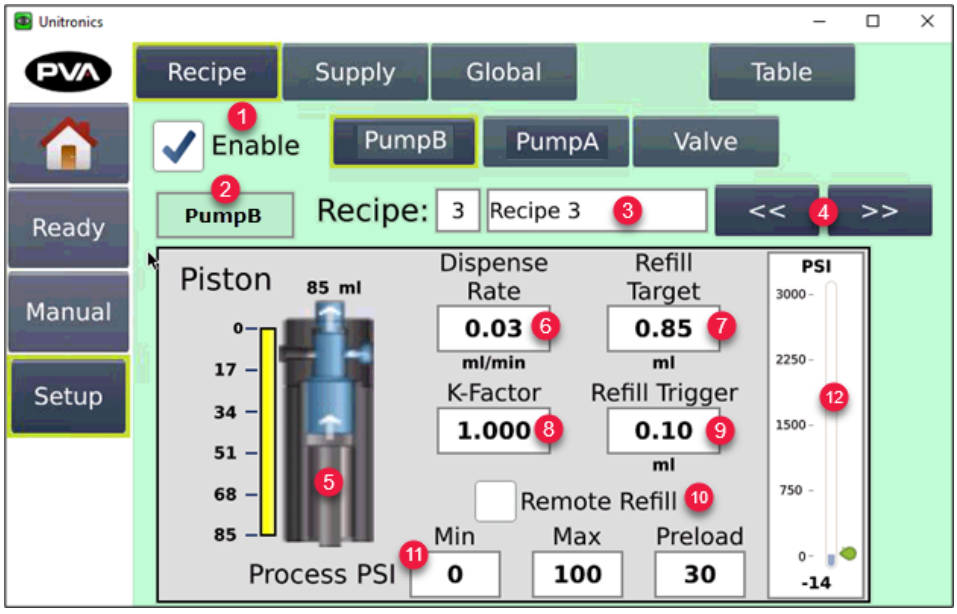

Figure 22: Manager Setup Recipe Pump B (2 SPP, 2 10G T)

5.1.13 Setup → Recipe → Pump A

From the Navigation Pane, select **Setup → Recipe → Pump A** to display this screen.

The **Setup → Recipe → Pump A** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
2	**Pump A**	Displays the current pump.	**1**	**Enable**	Select the checkbox to enable pump A.
3	**Recipe**	Displays the current recipe.	**4**	**Recipe**	Use the arrows to browse other recipes. Click the recipe to change the recipe name.
5	**Piston**	Displays the position and volume of the piston.	**6**	**Dispense Rate**	Enter the dispense rate (ml/min).
12	**Process Pressure Indicator**	The left bar displays the current pressure. The right bar displays the process pressure range. The marker is the preload pressure setpoint.	**7**	**Refill Target**	Enter the refill target (ml).
			8	**K-Factor**	Enter the K-Factor.
			9	**Refill Trigger**	Enter the refill trigger (ml).
			10	**Remote Refill**	Select the checkbox to enable remote refill.
			11	**Process PSI**	Enter the minimum, maximum, and preload values.

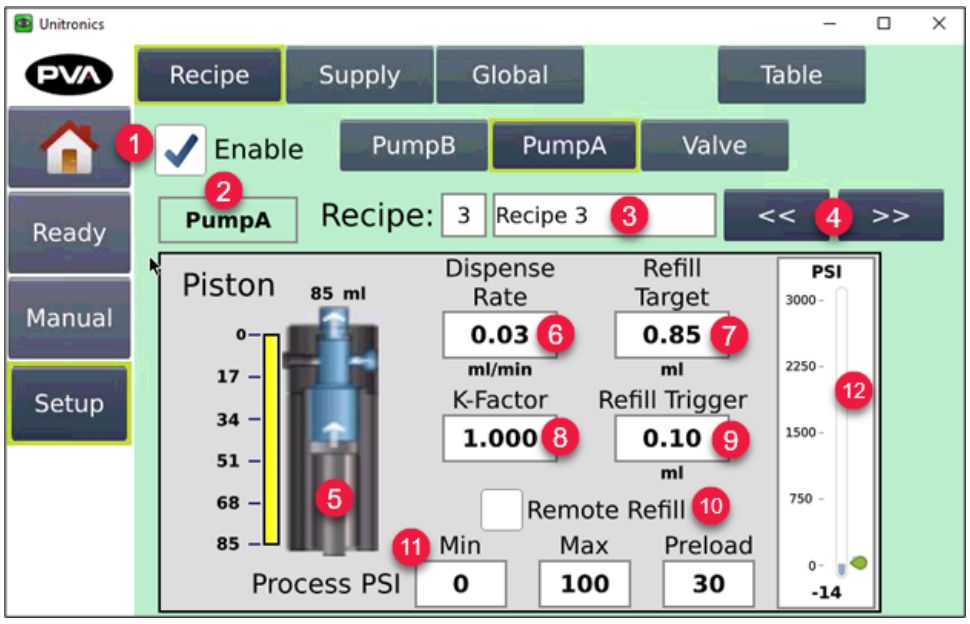

Figure 23: Manager Setup Recipe Pump A (2 SPP, 2 10G T)

5.1.14 Setup → Recipe → Valve

From the Navigation Pane, select **Setup → Recipe → Valve** to display this screen.

The **Setup → Recipe → Valve** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Recipe**	Displays the current recipe.	**2**	**Recipe**	Use the arrows to browse other recipes.
			3	**Dispense Type**	Select a continuous or timed dispense type.
			4	**Shot Time**	Click the field to enter a shot time.
			5	**Valve Enable**	Select the checkbox to enable the valve.

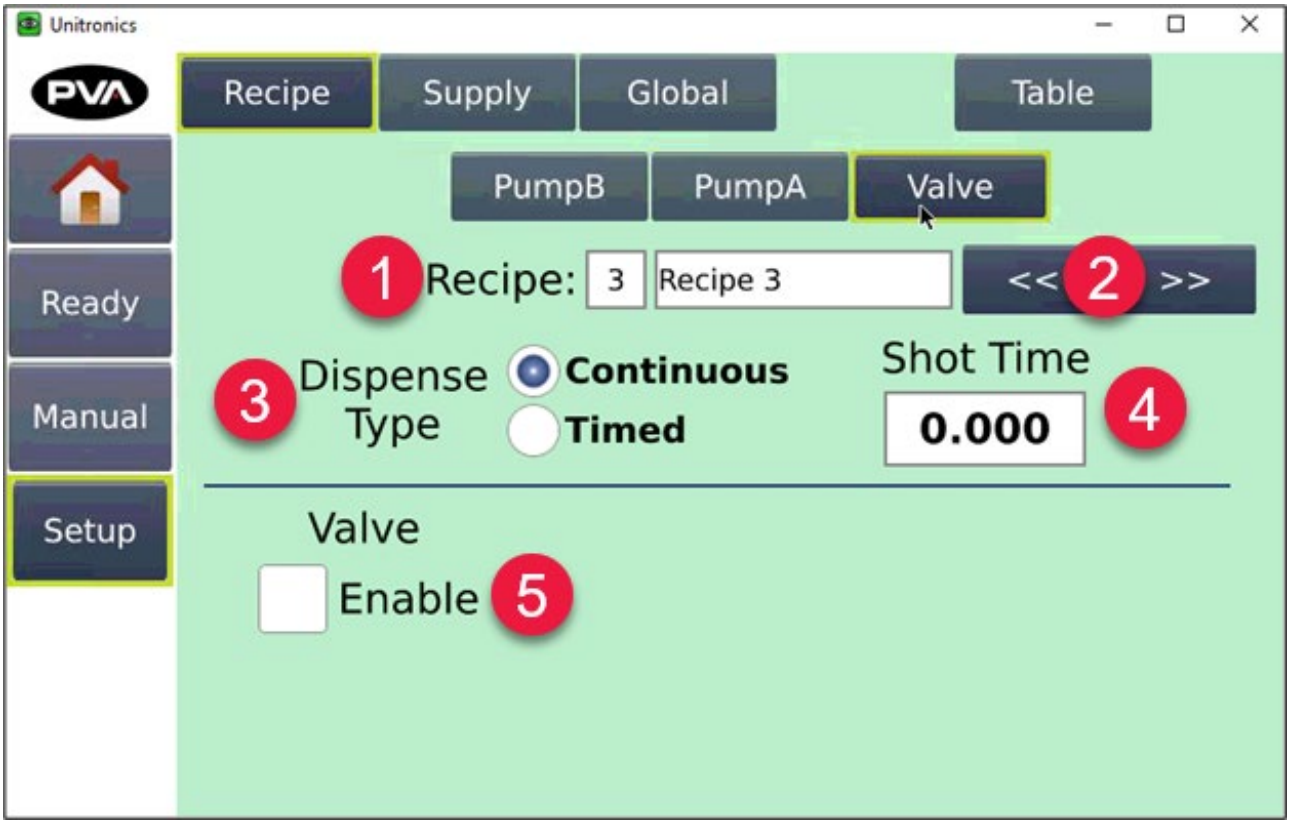

Figure 24: Manager Setup Recipe Valve (2 SPP, 2 10G T)

5.1.15 Setup → Recipe → Table

From the **Setup → Recipe** screen, select **Table** to display this screen.

The **Setup → Recipe → Table** screen allows you to view each recipe and their settings. Select **Exit** to return to the Setup screen.

1. Select the **Edit On** button on the top right corner of the screen to enable editing of recipe settings.
2. To edit a recipe setting, select the desired recipe line. The selected line will appear yellow. and click on the setting you wish to edit.
3. A popup will display that allows you to edit the setting.
4. Select **Ok** to save your changes. Select **Cancel** to return to the Recipe Table and discard your edits.

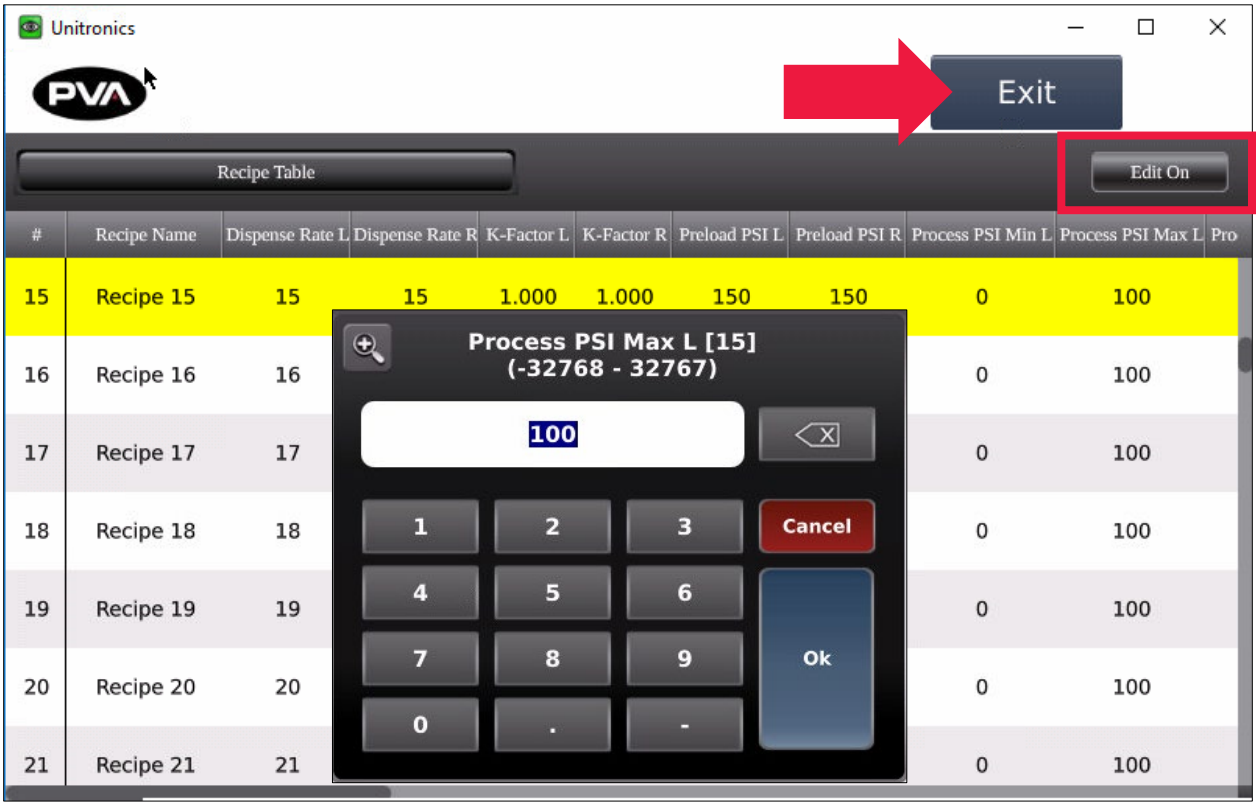

Figure 25: Manager Setup Recipe Table (2 SPP, 2 10GT)

5.1.1 Setup → Supply → Pump B

From the Navigation Pane, select **Setup → Supply → Pump B** to display this screen.

The **Setup → Supply → Pump B** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Pump B**	Displays the current pump.	**2**	**Low**	Enter the material weight that will alert the operator the tank is low (lb.).
4	**Tank**	Displays the remaining material in the tank (lb.).	**3**	**Empty**	Enter the material weight that will alert the operator the tank is empty (lb.).

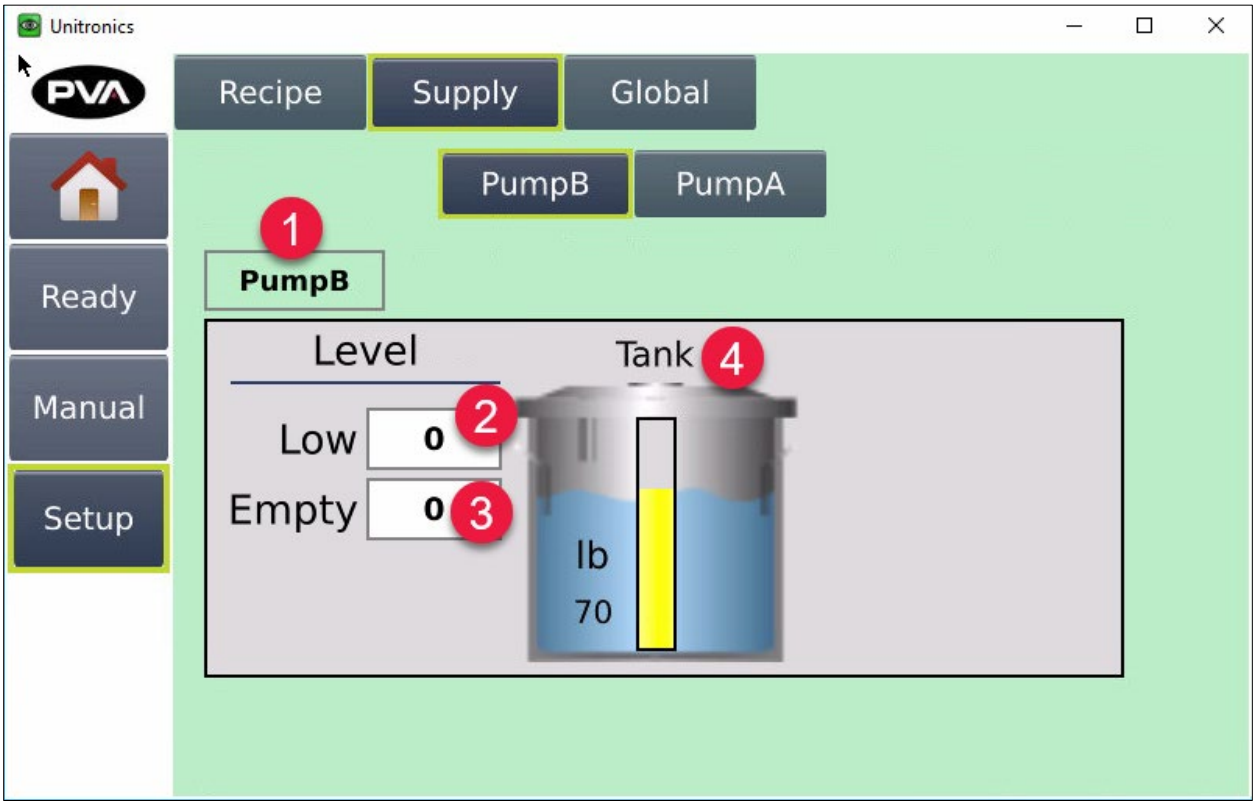

Figure 26: Manager Setup Supply Pump B (2 SPP, 2 10G T)

5.1.2 Setup → Supply → Pump A

From the Navigation Pane, select **Setup → Supply → Pump A** to display this screen.

The **Setup → Supply → Pump A** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Pump A**	Displays the current pump.	**2**	**Low**	Enter the material weight that will alert the operator the tank is low (lb.).
4	**Tank**	Displays the remaining material in the tank (lb).	**3**	**Empty**	Enter the material that will alert the operator the tank is empty (lb.).

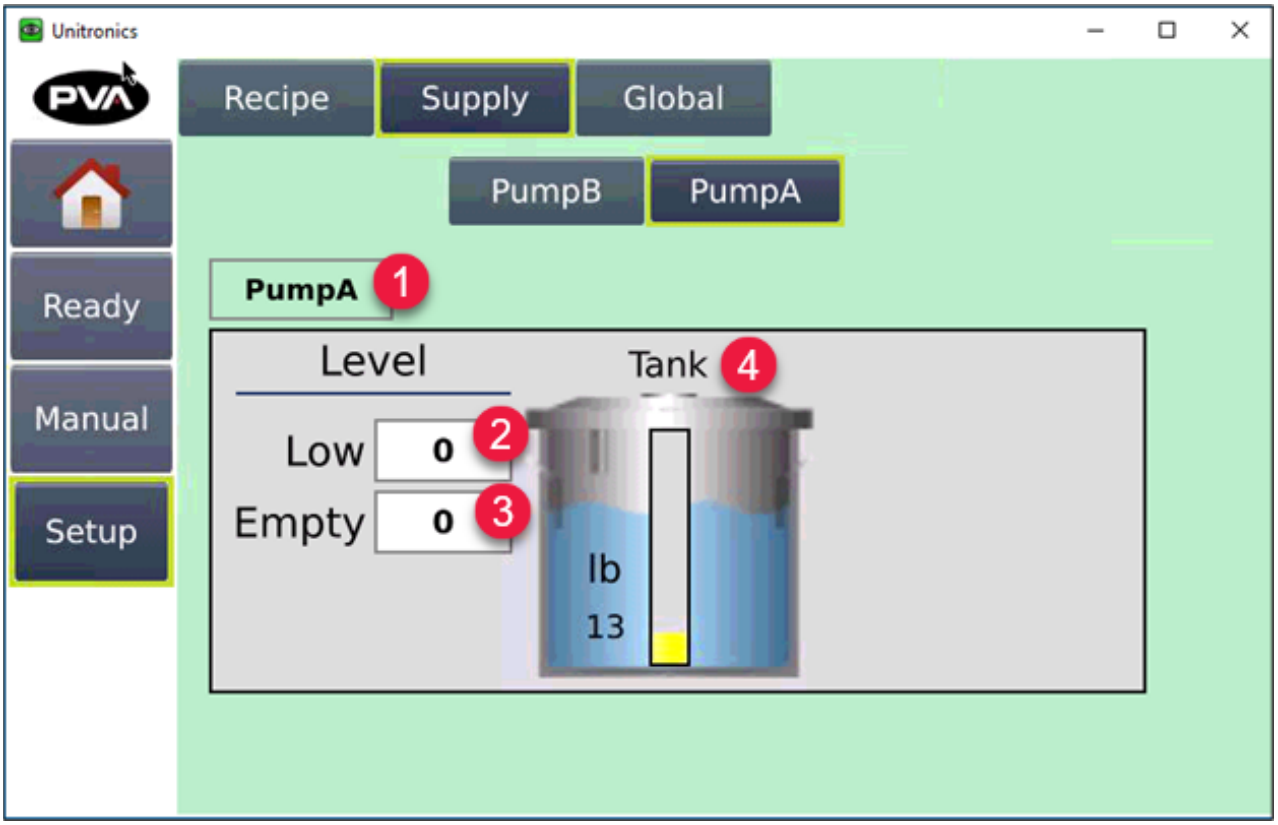

Figure 27: Manager Setup Supply Pump A (2 SPP, 2 10G T)

5.1.3 Setup → Global

From the Navigation Pane, select **Setup → Global** to display this screen.

The **Setup → Global** screen has the following features and options:

#	DISPLAY FIELDS	#	EDIT FIELDS	
None		1	**Operator Recipe Select**	Select the checkbox to enable the operator to select recipes.
		2	**Preload**	Select the checkbox to enable preload for one or both pumps.
		3	**Ready Mode Idle Timeout**	Enter the amount of time in hours and minutes that the machine will time out of ready mode.
		4	**Pressure Units**	Choose bar or psi for the pressure units.
		5	**Weight Units**	Choose kg or lb. for the weight units.

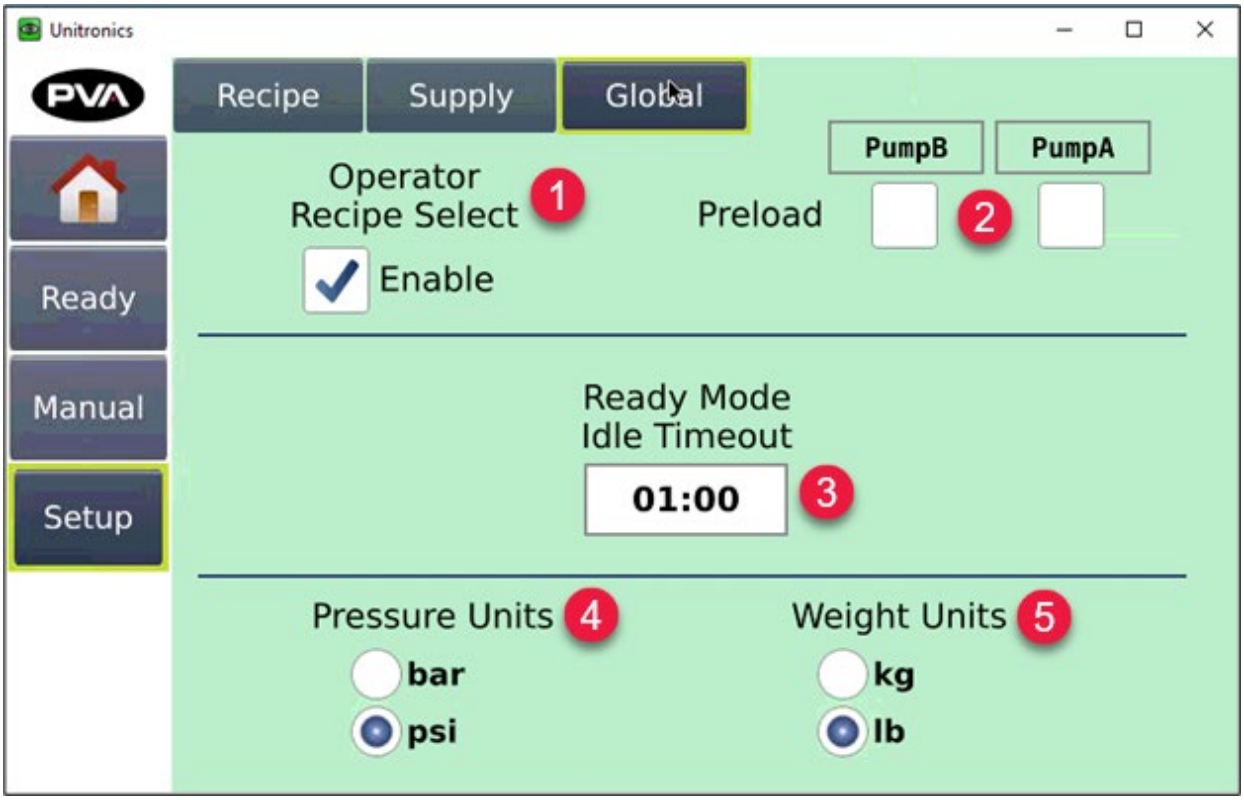

Figure 28: Manager Setup Global (2 SPP, 2 10G T)

5.2 Technician (2 SPP, 2 10G T)

5.2.1 Home Screen

See Home Screen Features and Functions for a detailed description of each feature.

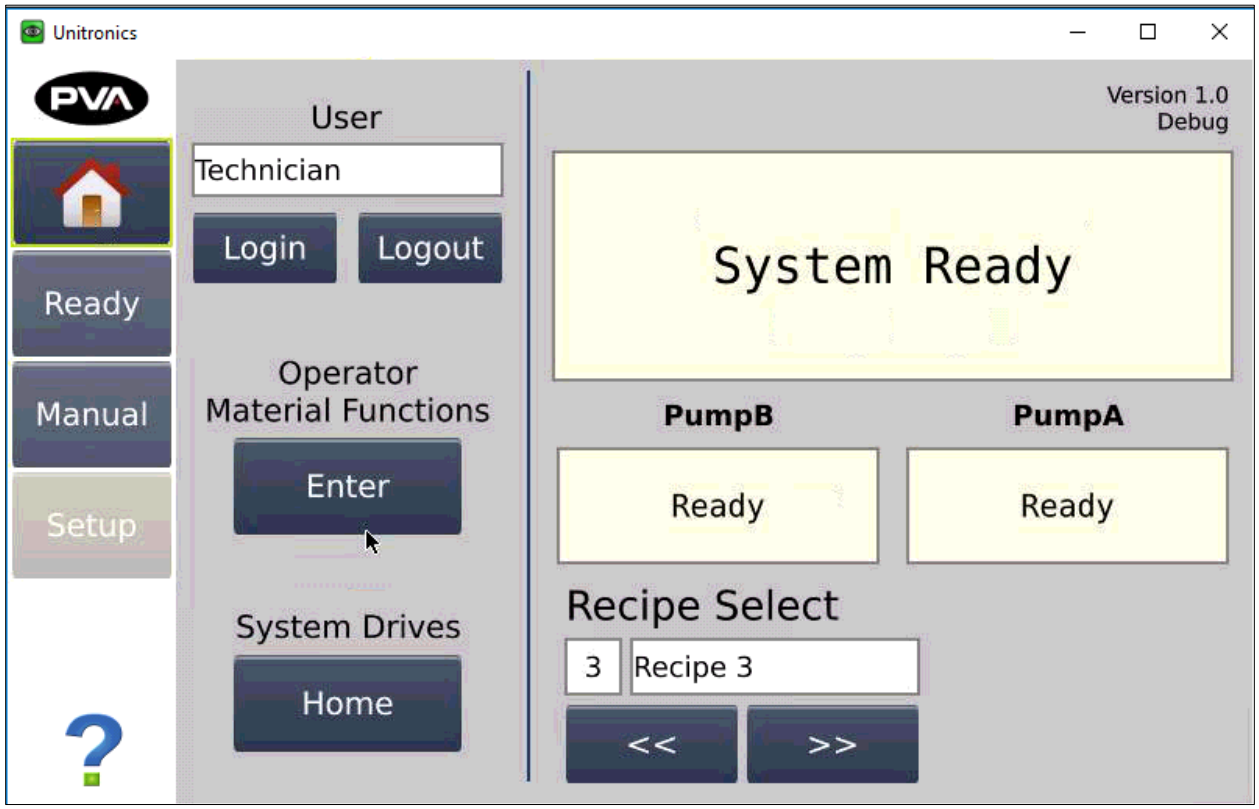

Figure 29: Technician Home Screen (2 SPP, 2 10G T)

5.2.1 Operator Material Functions

From the Home Screen, click **Enter** under Operator Material Functions to display this screen. It can also be accessed by selecting **Manual → Material**.

The Operator Material Functions screen has the following features and options:

#	DISPLAY FIELDS			EDIT FIELDS
1	**Ready**	The pump status for both Pump B and Pump A.		**None**
2	**Tank**	The remaining material left in each tank (measured in lbs).		

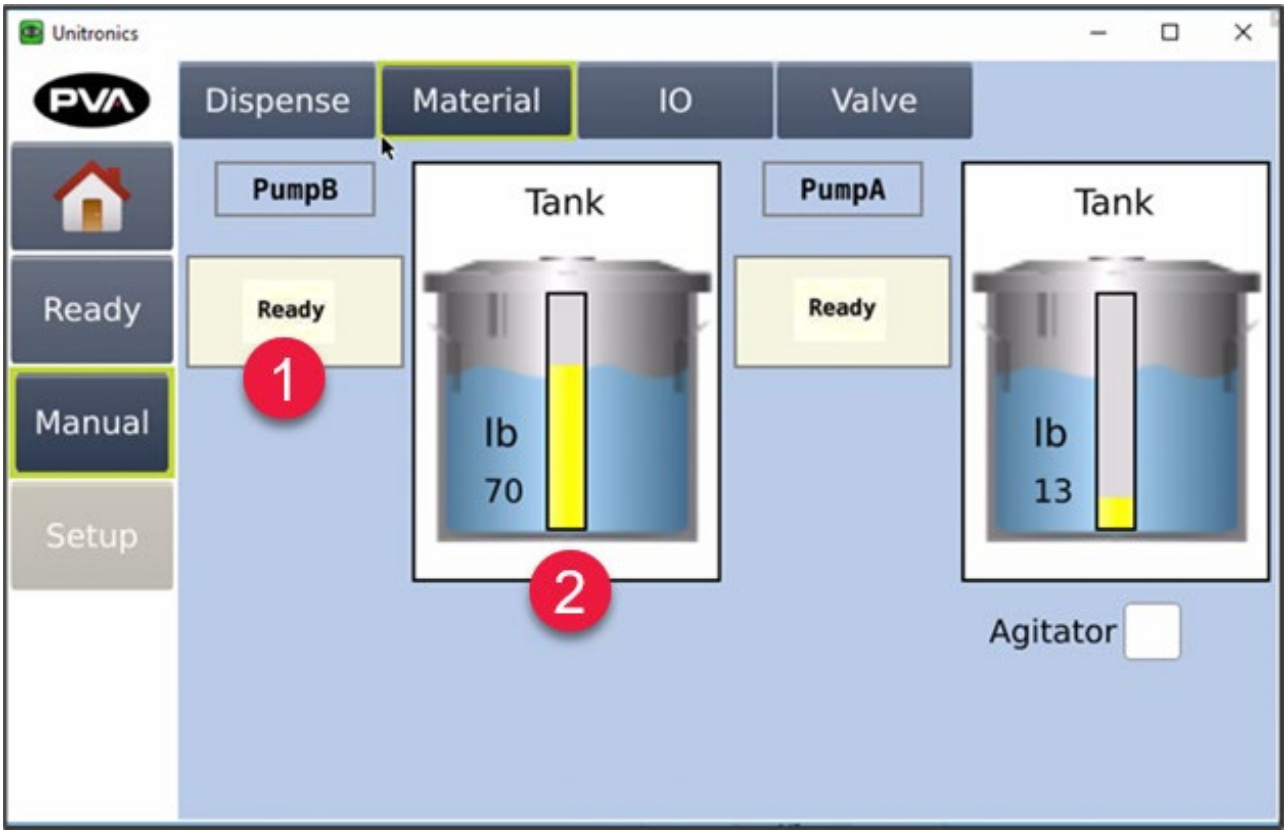

Figure 30: Technician Operator Material Functions Screen (2 SPP, 2 10G T)

5.2.1 Ready

From the Navigation Pane, click **Ready** to display this screen.

The Operator Material Functions screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Recipe**	The current recipe selection.	6	**Exit**	Select *Exit* to return to the Home screen.
2	**Rate**	The current flow rate.	7	**Dispense**	Click *Dispense* to begin dispensing.
3	**Supply**	The remaining material left in each tank (measured in lbs).	8	**Back**	Click *Back* to return to the Supply display.
4	**Dispense**	The remaining material left in each piston.	9	**Refill**	Click *Refill* to refill the tank..
5	**Ready**	The pump status for both Pump B and Pump A.			

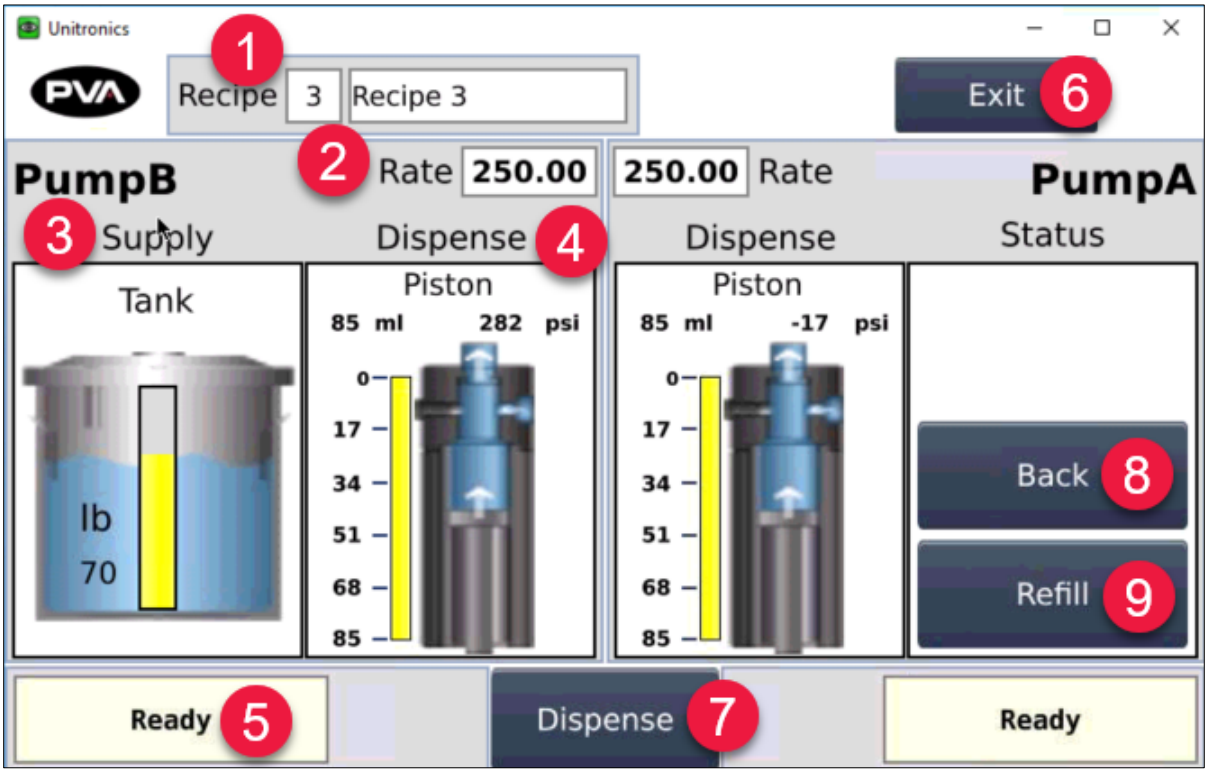

Figure 31: Technician Ready Screen (2 SPP, 2 10G T)

5.2.1 Manual → Dispense → Settings

From the Navigation Pane, click **Manual** to display this screen.

The **Manual → Dispense → Settings** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
7	**Ready**	The pump status for both Pump B and Pump A.	**1**	**K-Factor**	Enter a K-Factor.
9	**Last Shot**	Displays the last shot time (sec).	**2**	**Pump Enable**	Select the checkbox to enable the pump.
			3	**Piston Refill Target**	Enter a piston refill target (ml).
			4	**Piston**	Click to refill the piston.
			5	**Dispense**	Click *Dispense* to begin dispensing.
			6	**Dispense Rate**	Enter a dispense rate for both pumps.
			8	**Dispense Rate**	Choose a continuous or timed dispense rate.
			10	**Shot Time**	Enter a shot time (sec).

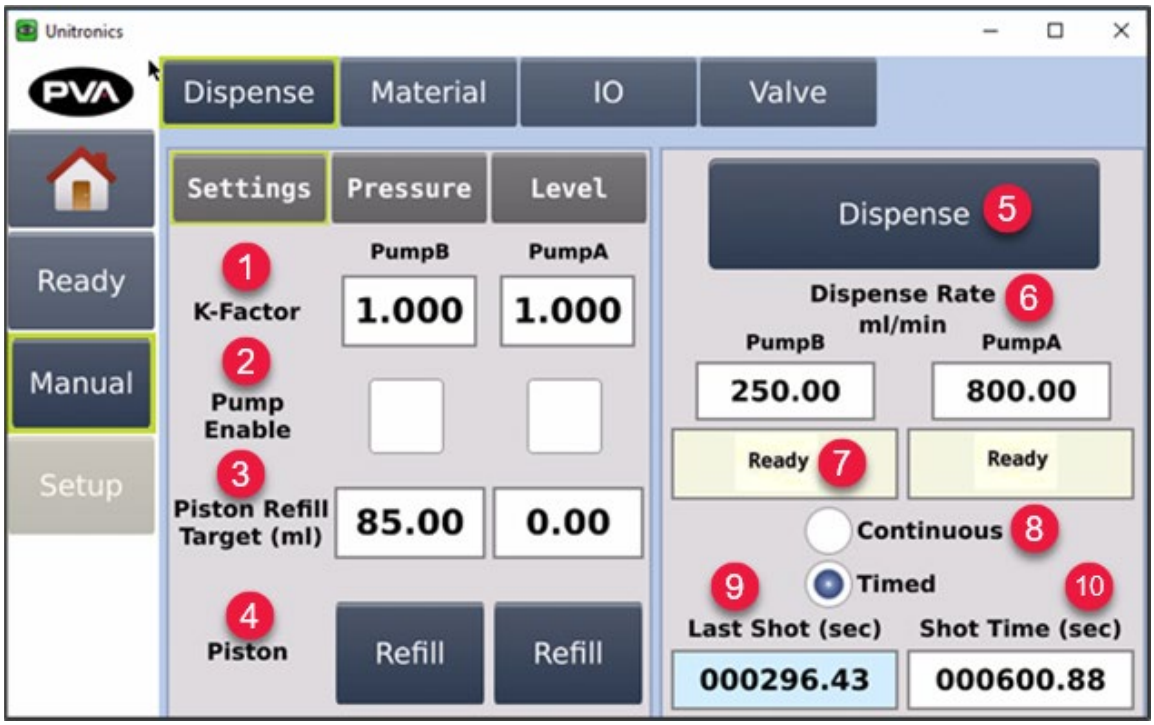

Figure 32: Technician Manual Dispense Settings (2 SPP, 2 10G T)

5.2.1 Manual → Dispense → Pressure

From the **Manual → Dispense** tab, click **Pressure** to display this screen.

The **Manual → Dispense → Pressure** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Process**	Displays the process (psi).	**2**	**Preload**	Enter a preload (psi).
6	**Ready**	The pump status for both Pump B and Pump A.	**3**	**Preload Enable**	Select to enable preload.
8	**Last Shot**	Displays the last shot time (sec).	**4**	**Dispense**	Click *Dispense* to begin dispensing.
			5	**Dispense Rate**	Enter a dispense rate (ml/min).
			7	**Dispense Rate**	Choose continuous or timed.
			9	**Shot Time**	Enter a shot time (sec).

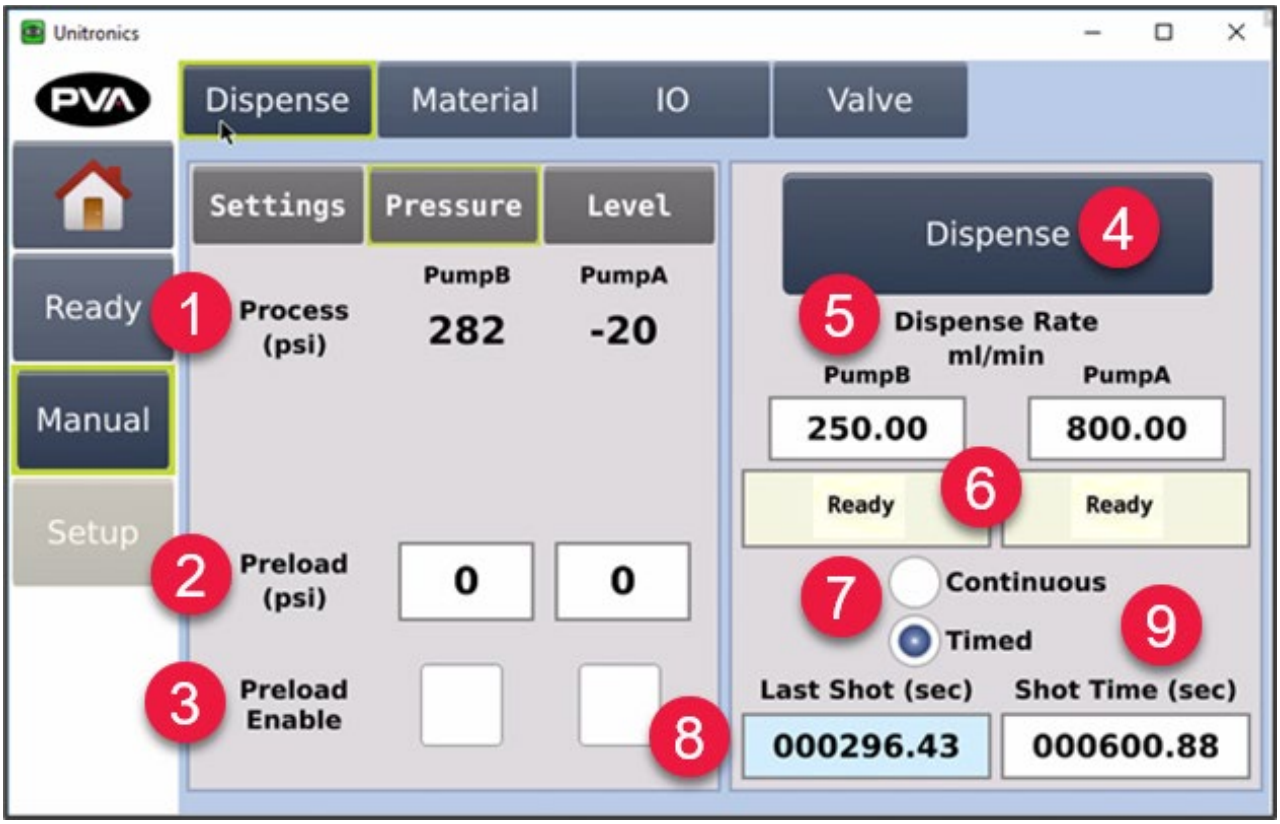

Figure 33: Technician Material Dispense Pressure (2 SPP, 2 10G T)

5.2.1 Manual → Dispense → Level

From the **Manual → Dispense** tab, click **Level** to display this screen.

The **Manual → Dispense → Level** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Pump Level**	Displays the pump level for Pump B and Pump A (ml).	**3**	**Dispense**	Click *Dispense* to begin dispensing.
2	**Supply Level**	Displays the supply level for both tanks (lb).	**4**	**Dispense Rate**	Enter a dispense rate for Pump B and Pump A (ml/min).
5	**Ready**	The pump status for both Pump B and Pump A.	**6**	**Dispense Rate**	Choose Continuous or Timed.
7	**Last Shot**	Displays the last shot time (sec).	**8**	**Shot Time**	Enter a shot time (sec).

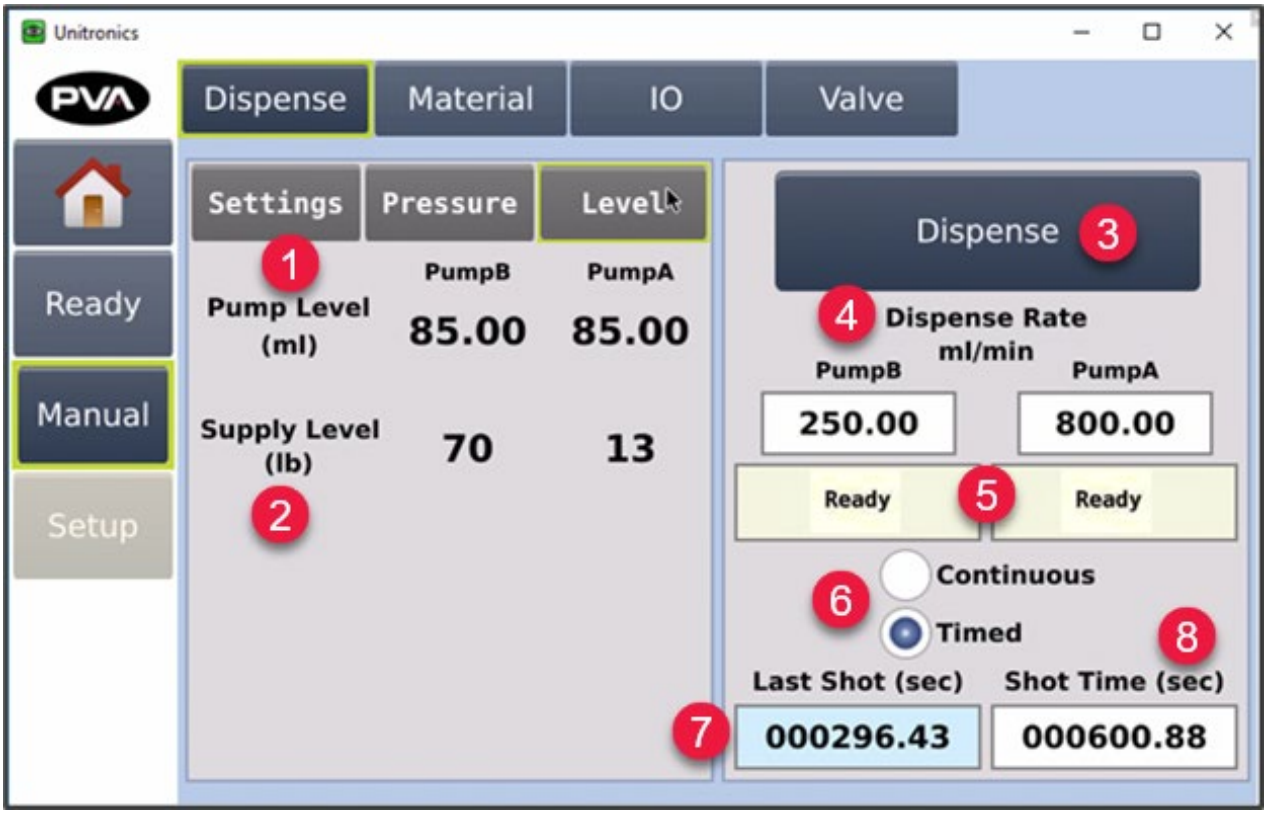

Figure 34: Technician Manual Dispense Level (2 SPP, 2 10G T)

5.2.1 Manual → Material

From the Navigation Pane, click **Manual → Material** to display this screen. It can also be accessed from the Home Screen, by clicking **Enter** under Operator Material Functions.

The **Manual → Material** screen has the following features and options:

#		DISPLAY FIELDS	EDIT FIELDS
1	**Ready**	The pump status for both Pump B and Pump A.	**None**
2	**Supply**	The remaining material left in each tank (measured in lbs).	

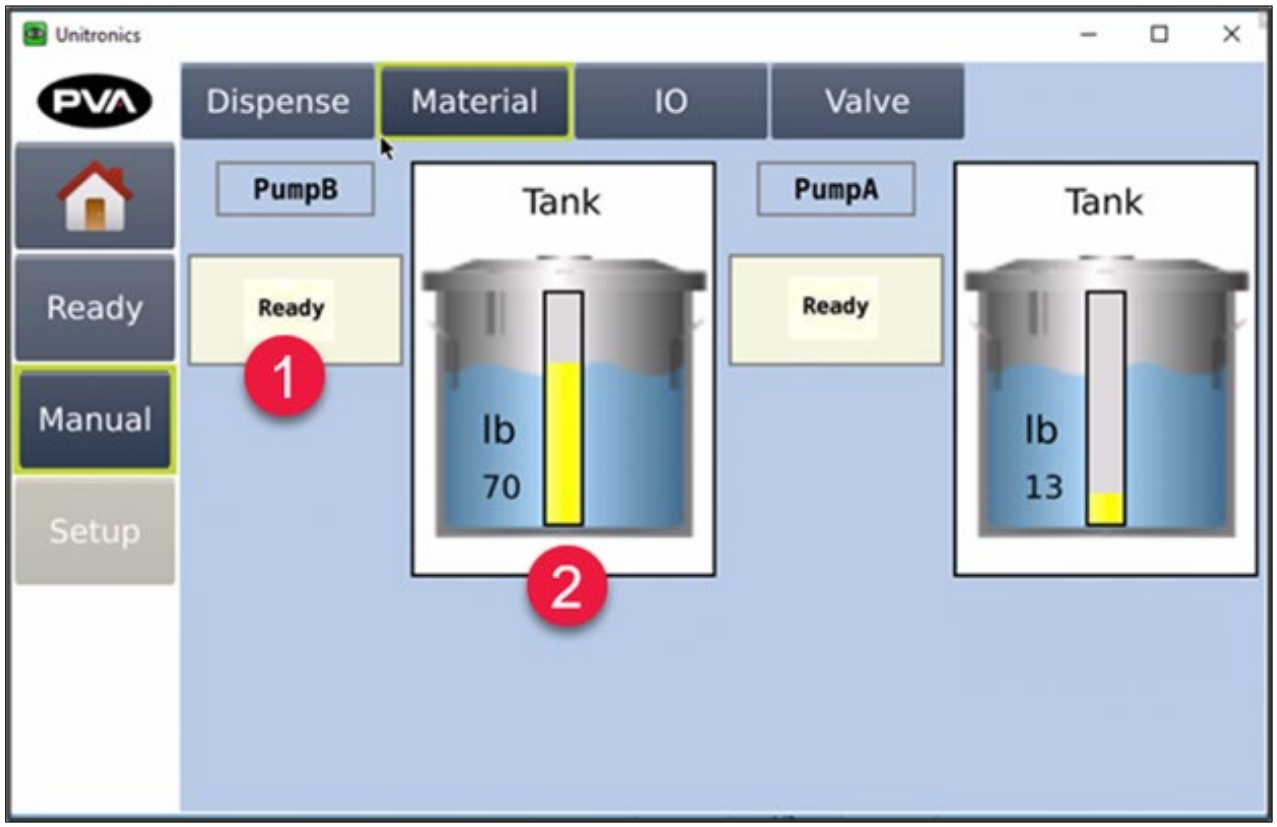

Figure 35: Technician Manual Material (2 SPP, 2 10G T)

5.2.1 Manual → IO → Local

From the Navigation Pane, select **Manual → IO → Local** to display this screen.

The **Manual → IO → Local** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
OUTPUTS				**NONE**
1	**Control Power**	Indicates if the control power is on or off.		
2	**Valve**	Indicates if the valve is on or off.		
INPUTS				
3	**Estop**	Indicates if the emergency stop is on or off.		
4	**Control Power**	Indicates if the control power is on or off.		
5	**Door**	Indicates if the door is opened or closed.		

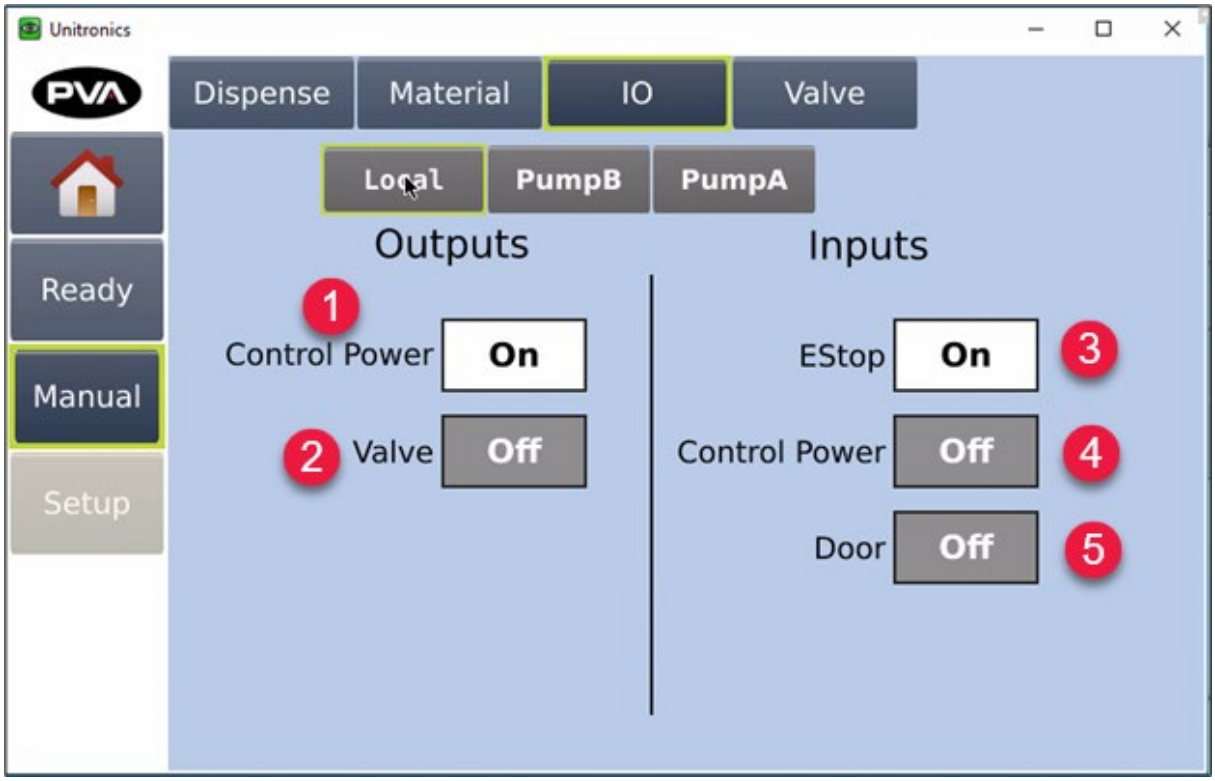

Figure 36: Technician Manual IO Local (2 SPP, 2 10GT)

5.2.1 Manual → IO → Pump B

From the Navigation Pane, select **Manual → IO → Pump B** to display this screen.

The **Manual → IO → Pump B** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
OUTPUTS				
1	**Refill Valve**	Indicates the position of the refill valve.		**NONE**
INPUTS				
2	**Seated**	Indicates if the rod has fully refilled. Note: If there are pressure issues upon refilling the SPP, the seated sensor will not read properly.		

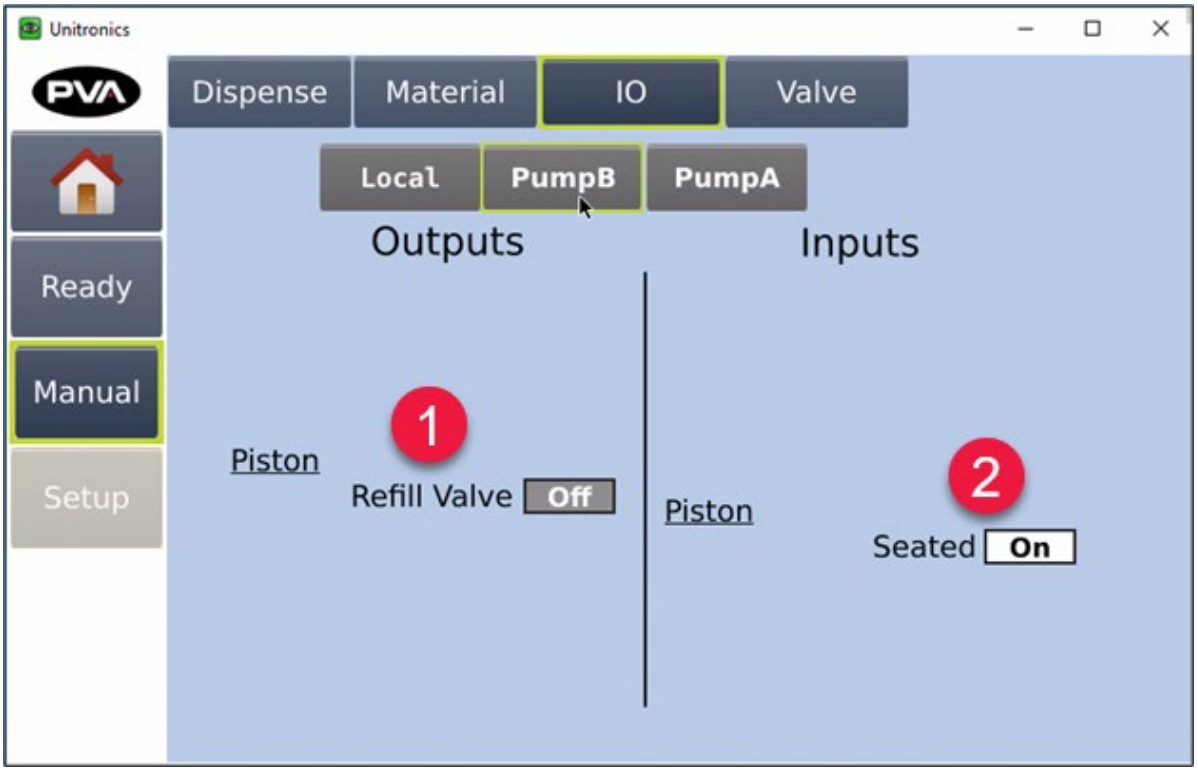

Figure 37: Technician Manual IO Pump B (2 SPP, 2 10G T)

5.2.1 Manual → IO → Pump A

From the Navigation Pane, select **Manual → IO → Pump A** to display this screen.

The **Manual → IO → Pump A** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
OUTPUTS				
1	**Refill Valve**	Indicates the position of the refill valve.		**NONE**
INPUTS				
2	**Seated**	Indicates if the rod has fully refilled. Note: If there are pressure issues upon refilling the SPP, the seated sensor will not read properly.		

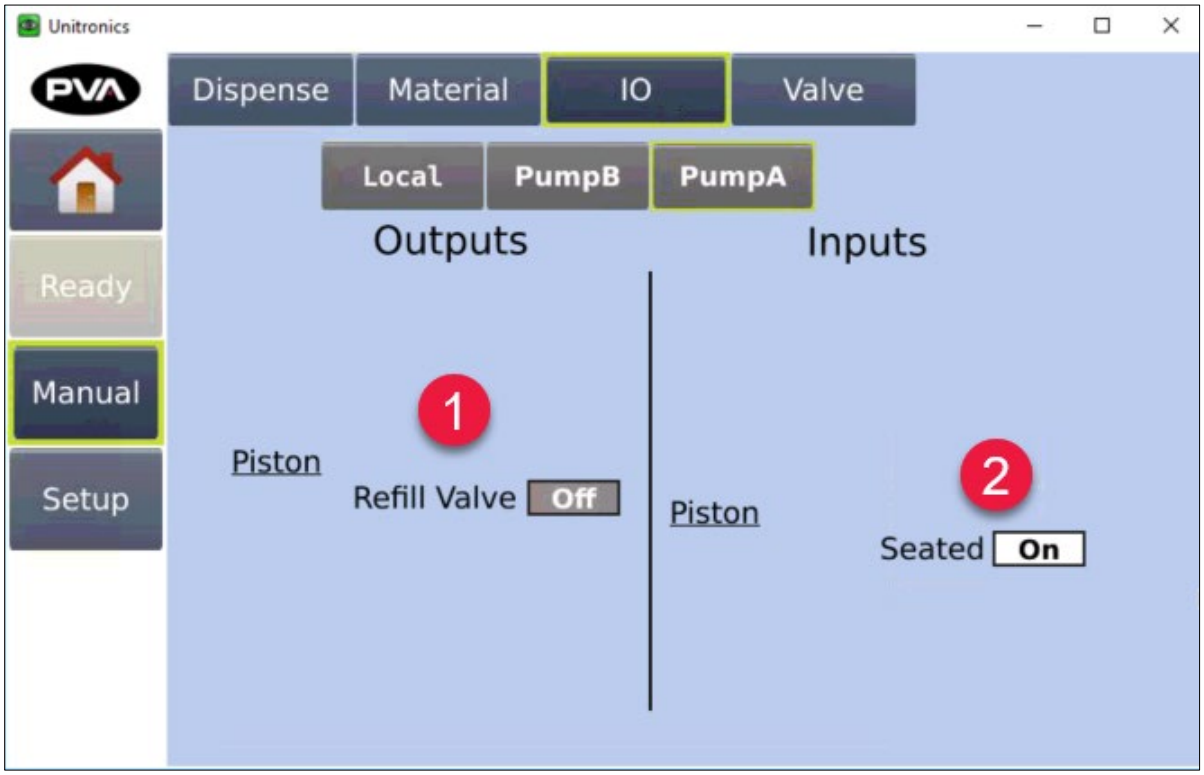

Figure 38: Technician Manual IO Pump A (2 SPP, 2 10G T)

5.2.1 Manual → Valve

From the Navigation Pane, select **Manual → Valve** to display this screen.

The **Manual → Valve** screen has the following features and options:

#	DISPLAY FIELDS	#	EDIT FIELDS	
None		1	**Valve Toggle**	Click and hold toggle to open the valve for the duration that the button is held. Once the button is released, it will close.
		2	**Valve Enable**	Select the checkbox to enable the valve. The valve is not open when disabled.

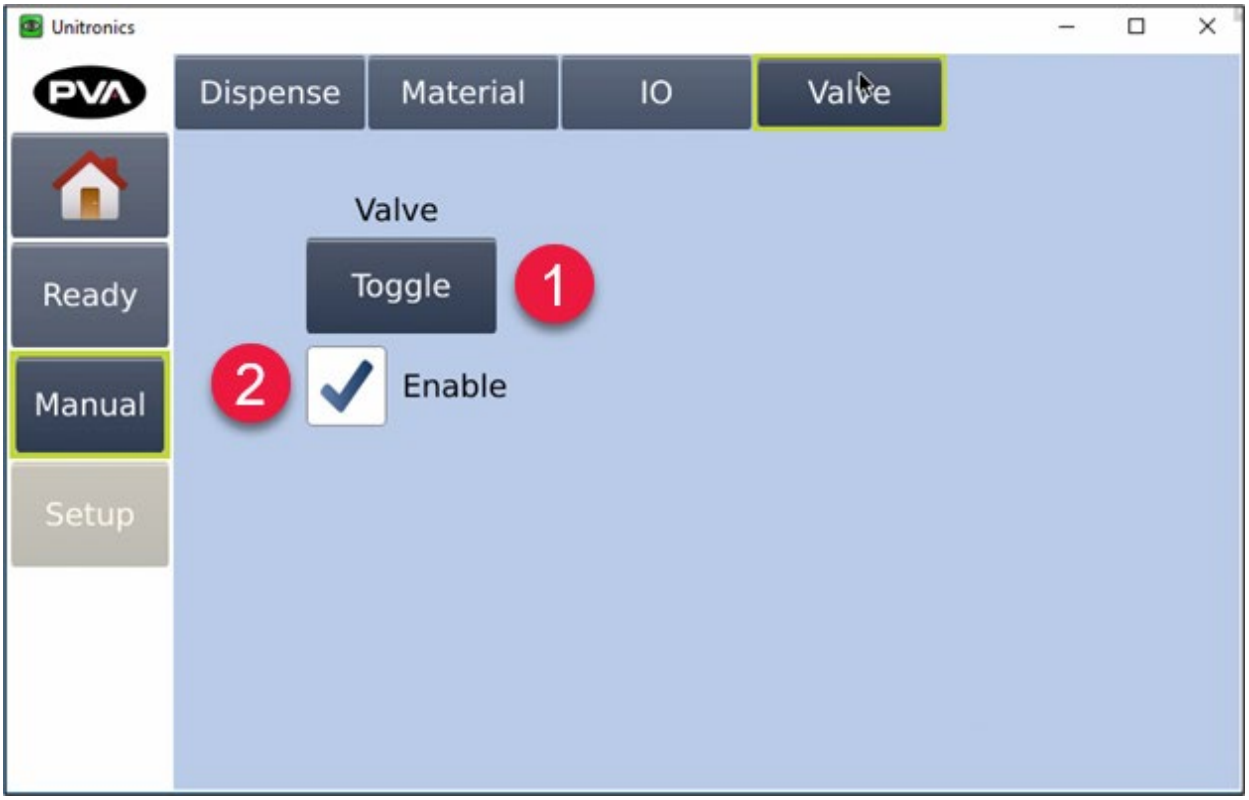

Figure 39: Technician Manual Valve (2 SPP, 2 10G T)

5.3 Operator (2 SPP, 2 10G T)

5.3.1 Home Screen

See Home Screen Features and Functions for a detailed description of each feature.

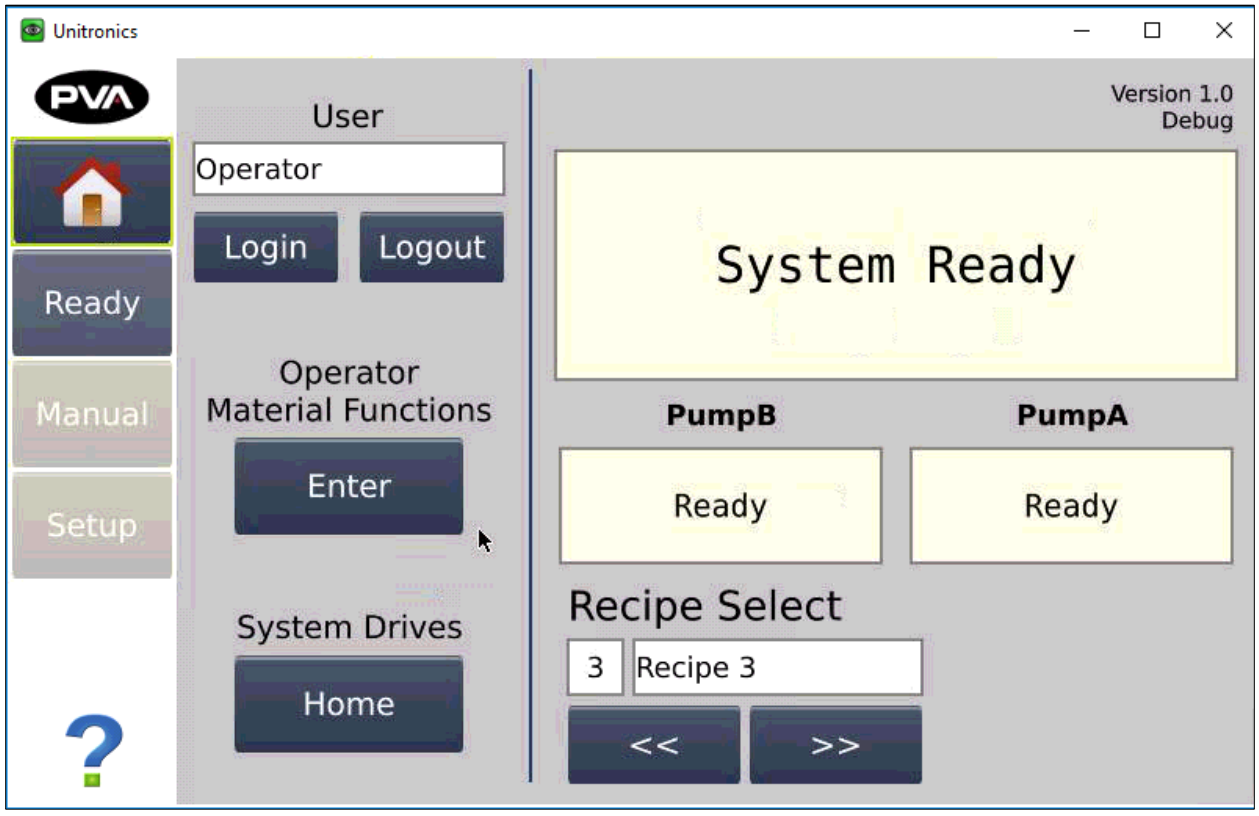

Figure 40: Operator Home Screen (2 SPP, 2 10G T)

5.3.1 Operator Material Functions

From the Home Screen, click **Enter** under Operator Material Functions to display this screen. It can also be accessed by selecting **Manual → Material**.

The Operator Material Functions screen has the following features and options:

#		DISPLAY FIELDS	EDIT FIELDS
1	**Ready**	The pump status for both Pump B and Pump A.	**None**
2	**Supply**	The remaining material left in each tank (measured in lbs).	

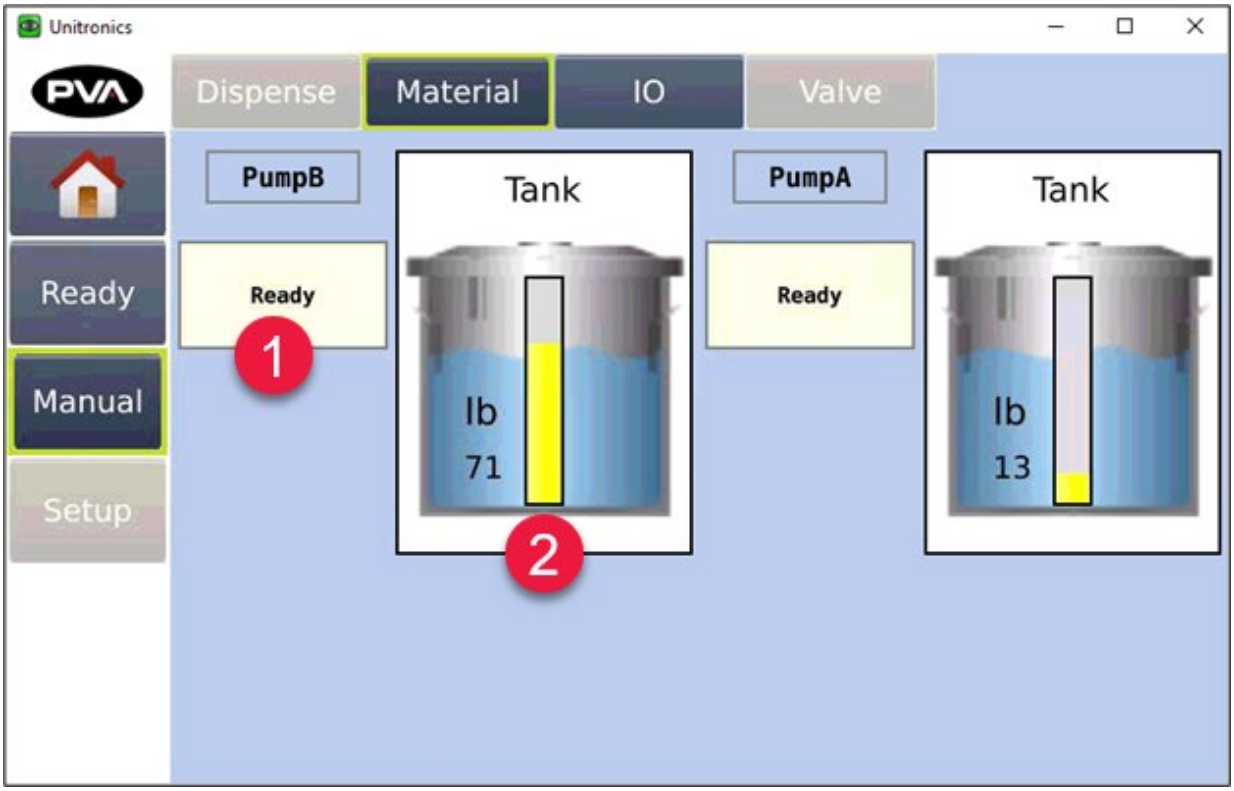

Figure 41: Operator Manual Material Screen (2 SPP, 2 10G T)

5.3.1 Ready

From the Navigation Pane, click **Ready** to display this screen.

The Operator Material Functions screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Recipe**	The current recipe selection.	6	**Exit**	Select *Exit* to return to the Home screen.
2	**Rate**	The current flow rate.	7	**Dispense**	Click *Dispense* to begin dispensing.
3	**Supply**	The remaining material left in each tank (measured in lbs).	8	**Back**	Click *Back* to return to the Supply display.
4	**Dispense**	The remaining material left in each piston.	9	**Refill**	Click *Refill* to refill the tank..
5	**Ready**	The pump status for both Pump B and Pump A.			

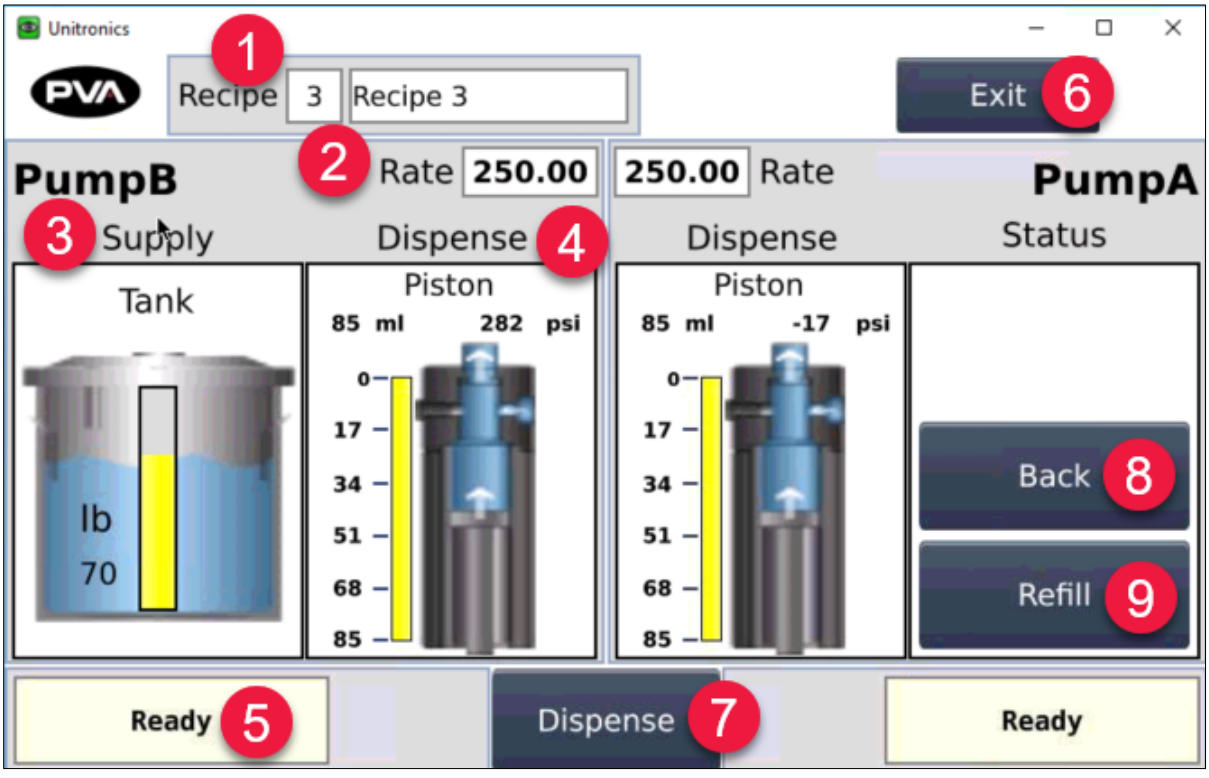

Figure 42: Operator Ready Screen (2 SPP, 2 10G T)

5.3.1 Manual → Material

From the Home Screen, click **Enter** under Operator Material Functions to display this screen.

The **Manual → Material** screen has the following features and options:

#		DISPLAY FIELDS	EDIT FIELDS
1	**Ready**	The pump status for both Pump B and Pump A.	**None**
2	**Supply**	The remaining material left in each tank (measured in lbs).	

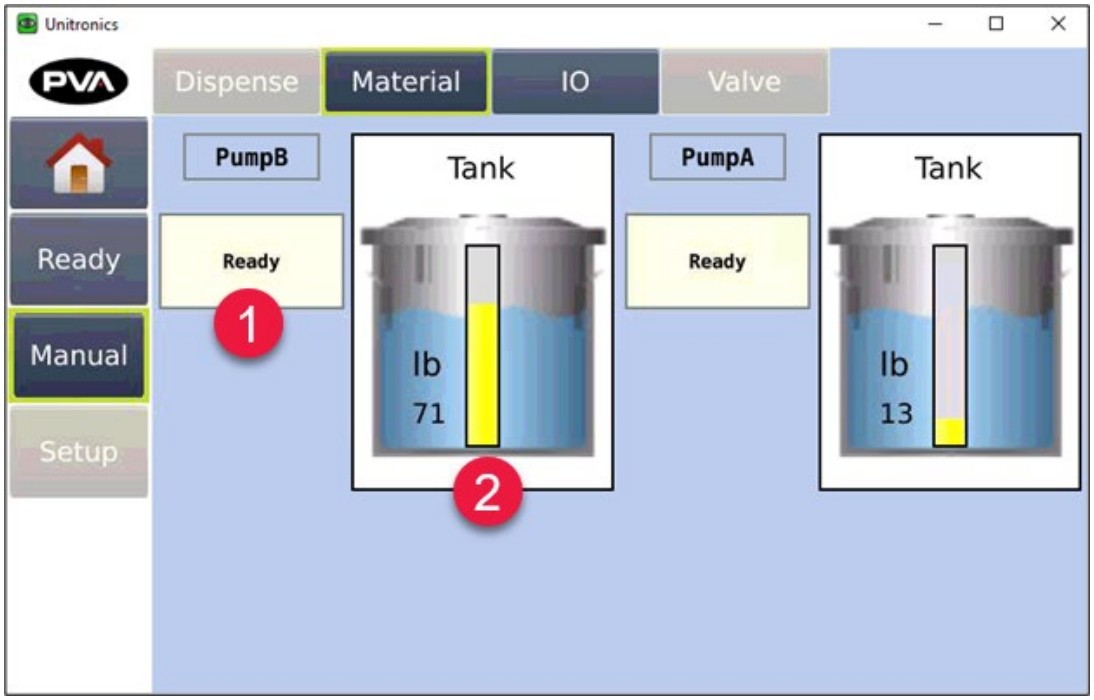

Figure 43: Operator Manual Material (2 SPP, 2 10G T)

5.3.1 Manual → IO → Local

From the Manual screen, select **IO → Local** to display this screen.

The **Manual → IO → Local** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
OUTPUTS				**NONE**
1	**Control Power**	Indicates if the control power is on or off.		
2	**Valve**	Indicates if the valve is on or off.		
INPUTS				
3	**Estop**	Indicates if the emergency stop is on or off.		
4	**Control Power**	Indicates if the control power is on or off.		
5	**Door**	Indicates if the door is opened or closed.		

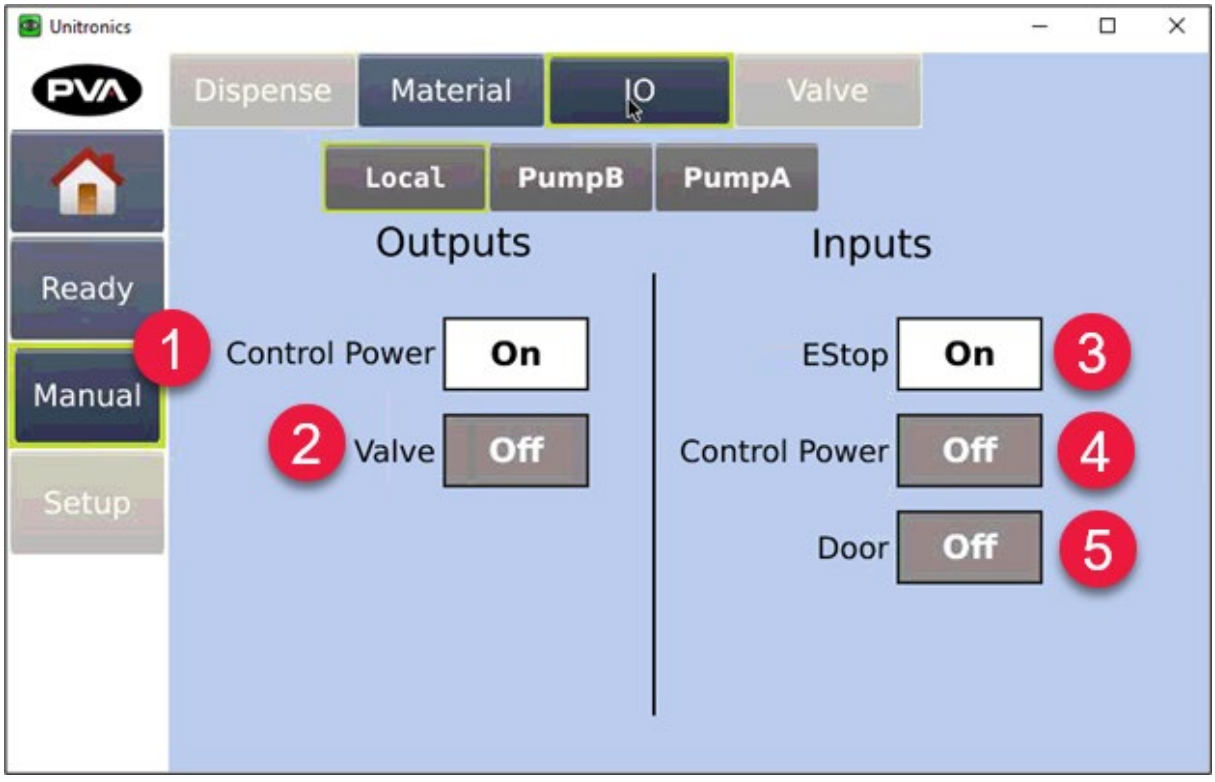

Figure 44: Operator Manual IO Local (2 SPP, 2 10G T)

5.3.1 Manual → IO → Pump B

From the Manual screen, select **IO → Pump B** to display this screen.

The **Manual → IO → Pump B** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
OUTPUTS				
1	**Refill Valve**	Indicates the position of the refill valve.		**NONE**
INPUTS				
2	**Seated**	Indicates if the rod has fully refilled. Note: If there are pressure issues upon refilling the SPP, the seated sensor will not read properly.		

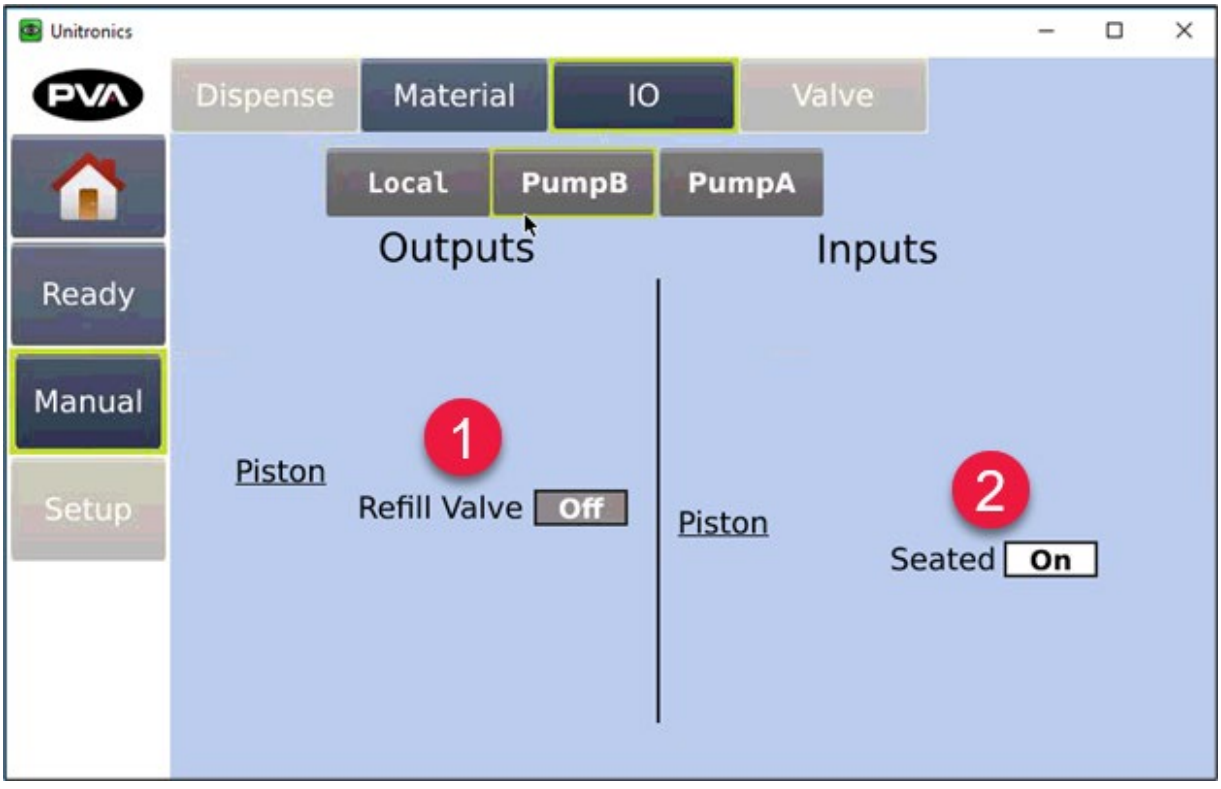

Figure 45: Operator Manual IO Pump B (2 SPP, 2 10G T)

5.3.1 Manual → IO → Pump A

From the Manual screen, select **IO → Pump A** to display this screen.

The **Manual → IO → Pump A** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
OUTPUTS				**NONE**
1	**Refill Valve**	Indicates the position of the refill valve.		
INPUTS				
2	**Seated**	Indicates if the rod has fully refilled. Note: If there are pressure issues upon refilling the SPP, the seated sensor will not read properly.		

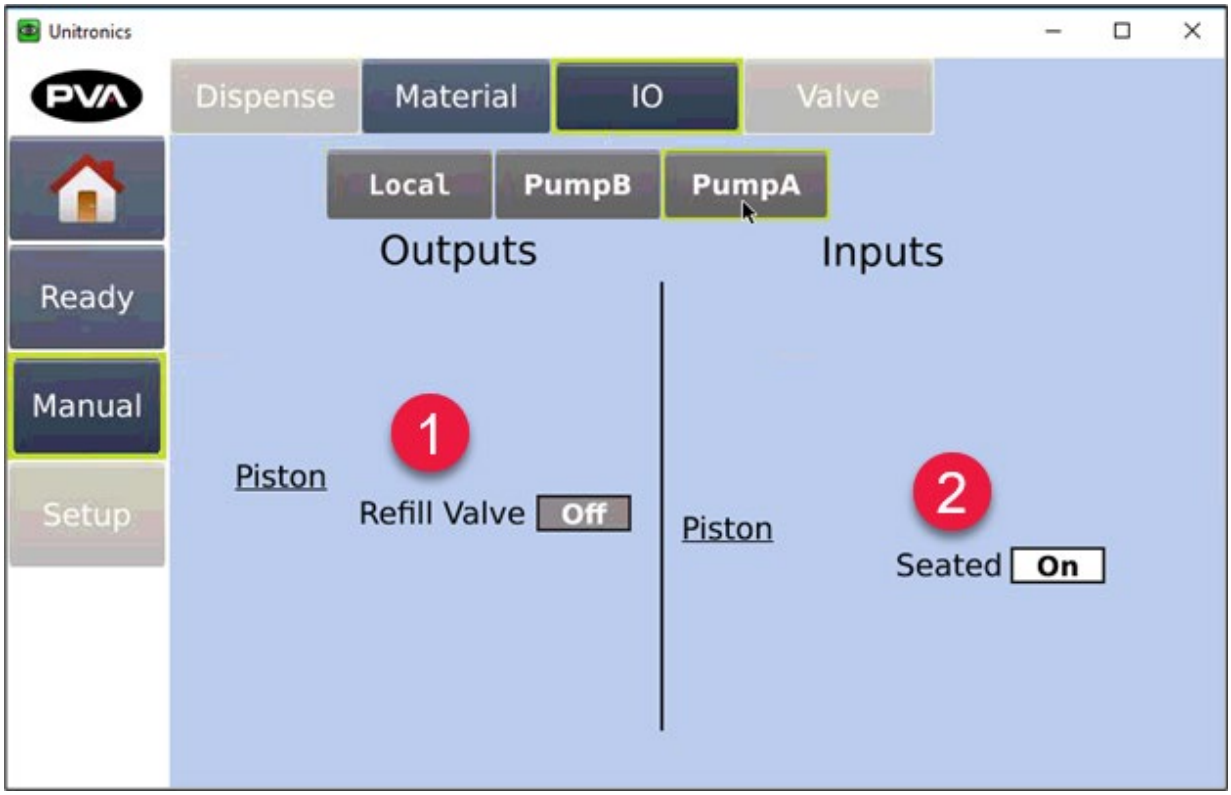

Figure 46: Operator Manual IO Pump A (2 SPP, 2 10G T)

6. Two Servo Gear Pumps, Two 5-Gallon Pail Pumps

6.1 Manager (2 SGP, 2 5G PP)

6.1.1 Home Screen

See Home Screen Features and Functions for a detailed description of each feature.

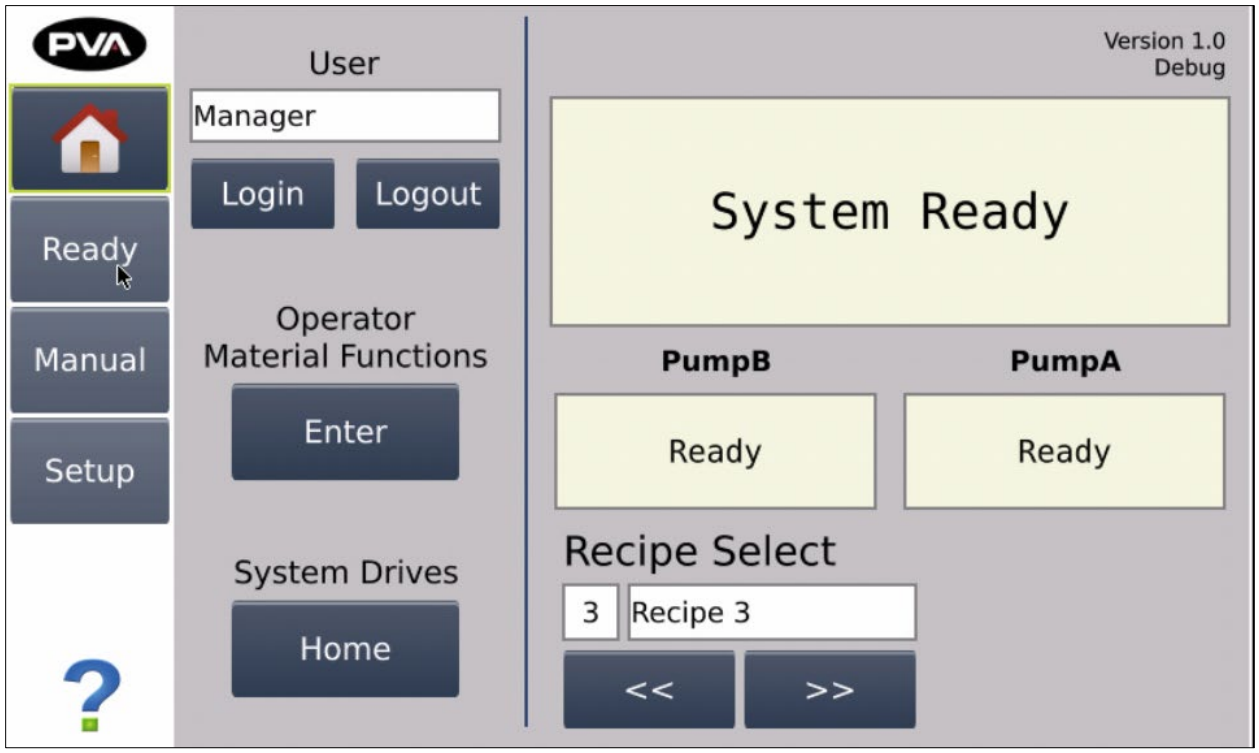

Figure 47: Manager Home Screen (2 SGP, 2 5G PP)

6.1.2 Operator Material Functions

From the Home Screen, click **Enter** under Operator Material Functions to display this screen. It can also be accessed by selecting **Manual → Material**.

The Operator Material Functions screen has the following features and options:

#		DISPLAY FIELDS	EDIT FIELDS
1	**Ready**	The pump status for both Pump B and Pump A.	**None**
2	**Supply**	The remaining material left in each pail pump (lbs.).	

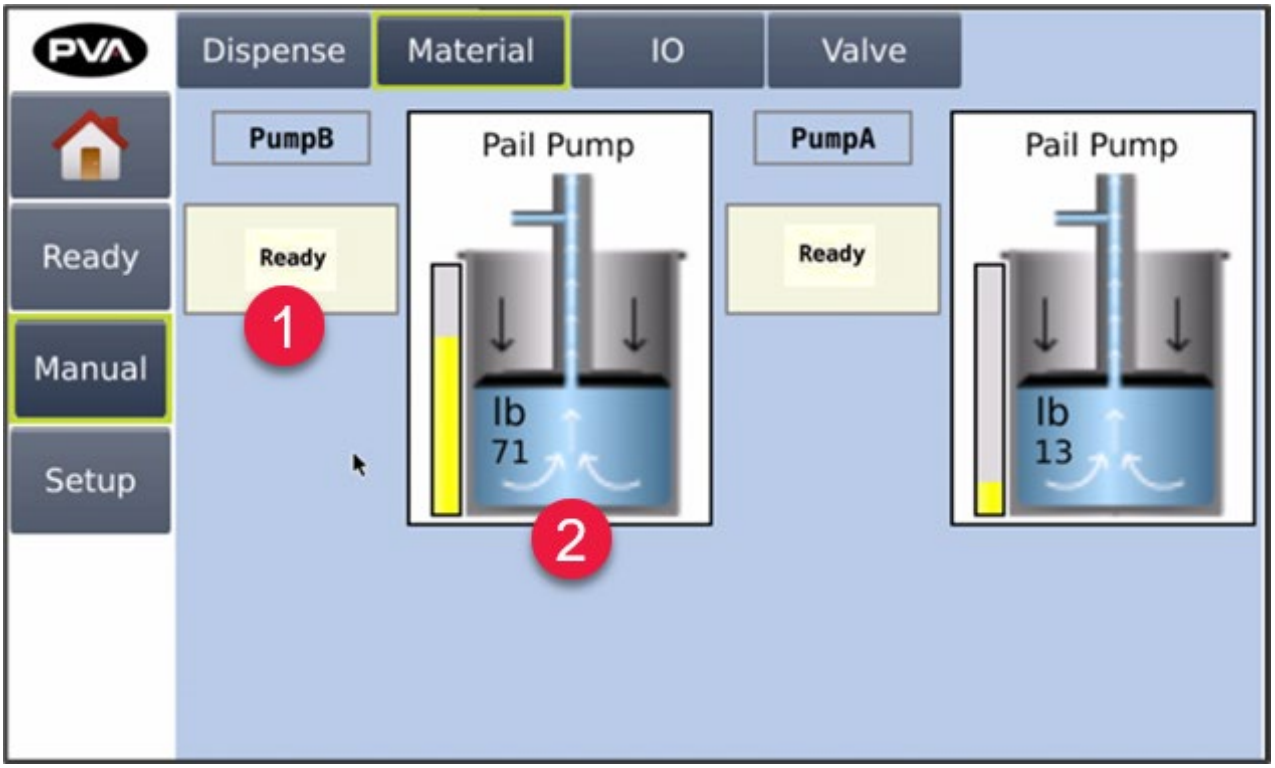

Figure 48: Manager Operator Material Functions (2 SGP, 2 5G PP)

6.1.3 Ready

From the Navigation Pane, click **Ready** to display this screen.

The Operator Material Functions screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Recipe**	The current recipe selection.	6	**Exit**	Select *Exit* to return to the Home screen.
2	**Rate**	The current flow rate.	7	**Dispense**	Click *Dispense* to begin dispensing.
3	**Supply**	The remaining material left in each tank (measured in lbs).			
4	**Dispense**	Displays the psi for each gear pump.			
5	**Ready**	The pump status for both Pump B and Pump A.			

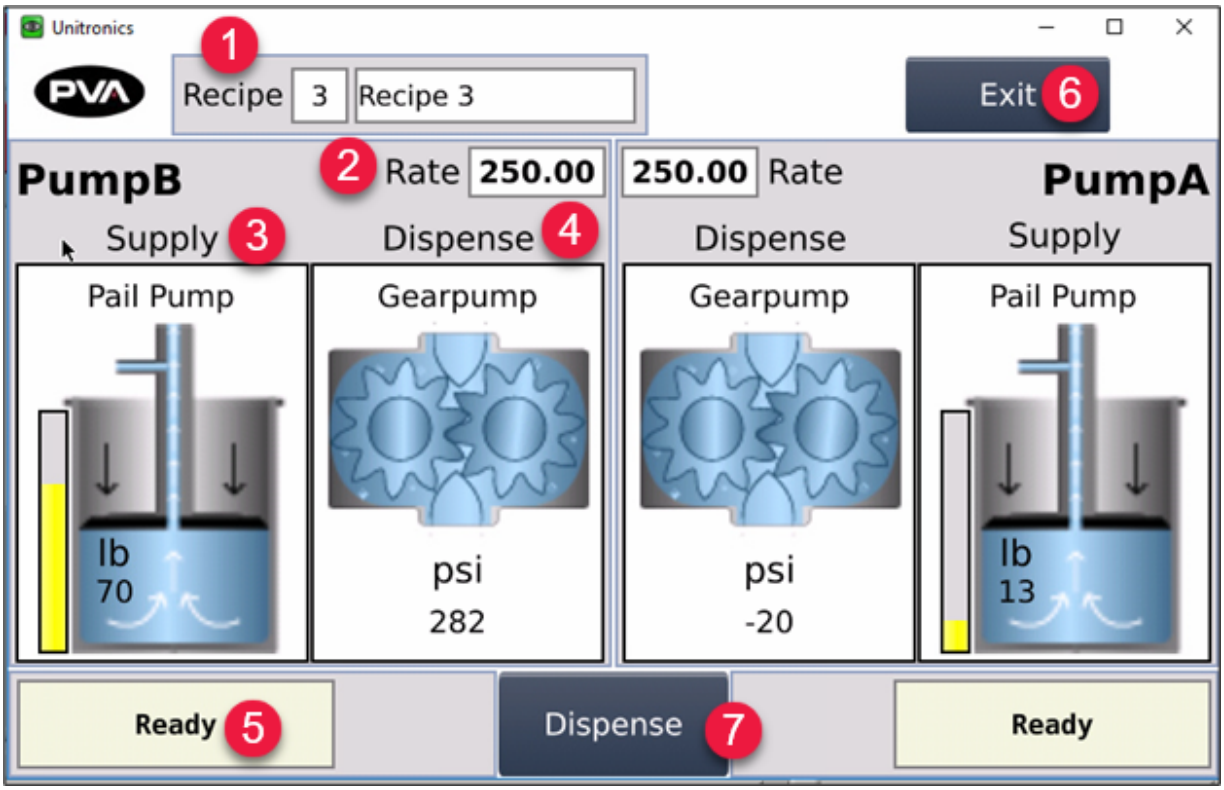

Figure 49: Manager Ready Screen (2 SGP, 2 5G PP)

6.1.4 Manual → Dispense → Settings

From the Navigation Pane, click **Manual** to display this screen.

The **Manual → Dispense → Settings** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
5	**Ready**	The pump status for both Pump B and Pump A.	**1**	**K-Factor**	Enter a K-Factor.
7	**Last Shot**	Displays the last shot time (sec).	**2**	**Pump Enable**	Select the checkbox to enable the pump.
			3	**Dispense**	Click *Dispense* to begin dispensing.
			4	**Dispense Rate**	Enter a dispense rate for both pumps.
			6	**Dispense Rate**	Choose a continuous or timed dispense rate.
			8	**Shot Time**	Enter a shot time (sec).

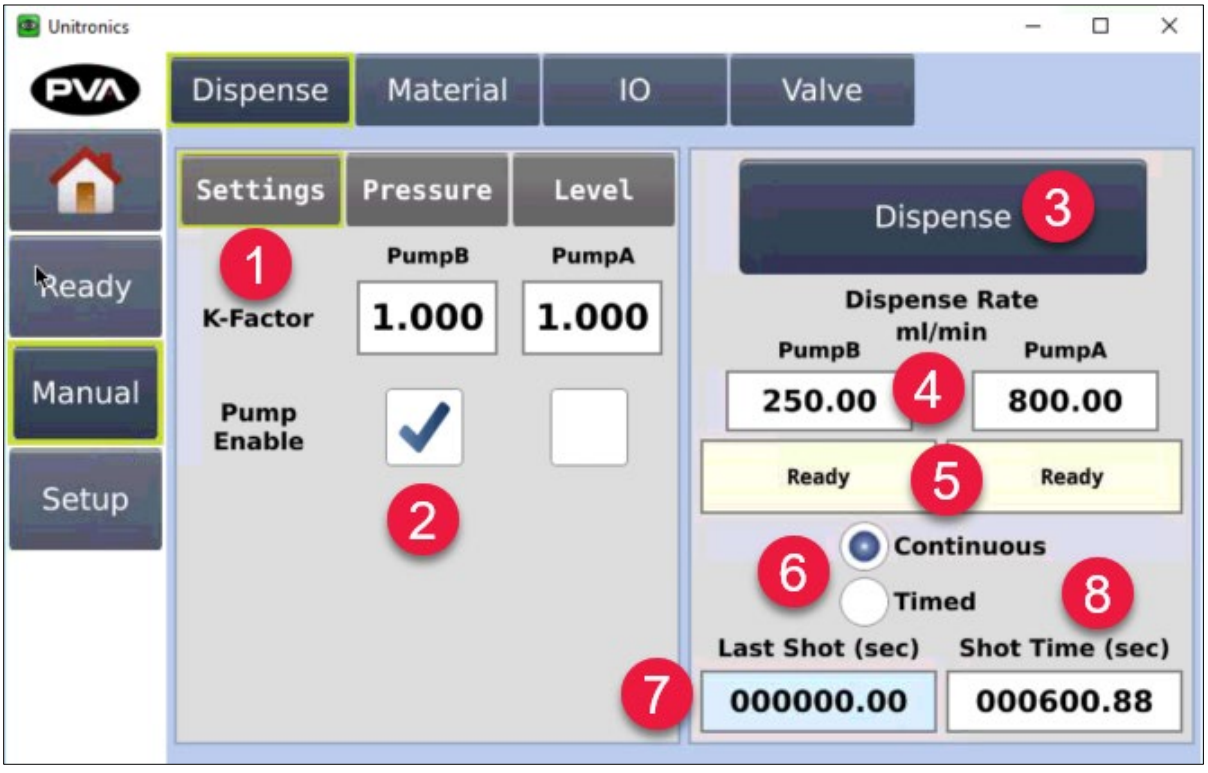

Figure 50: Manager Manual Dispense Settings (2 SGP, 2 5G PP)

6.1.5 Manual → Dispense → Pressure

From the **Manual → Dispense** tab, click **Pressure** to display this screen.

The **Manual → Dispense → Pressure** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Process**	Displays the process (psi).	**2**	**Preload**	Enter a preload (psi).
6	**Ready**	The pump status for both Pump B and Pump A.	**3**	**Preload Enable**	Select to enable preload.
8	**Last Shot**	Displays the last shot time (sec).	**4**	**Dispense**	Click *Dispense* to begin dispensing.
			5	**Dispense Rate**	Enter a dispense rate (ml/min).
			7	**Dispense Rate**	Choose continuous or timed.
			9	**Shot Time**	Enter a shot time (sec).

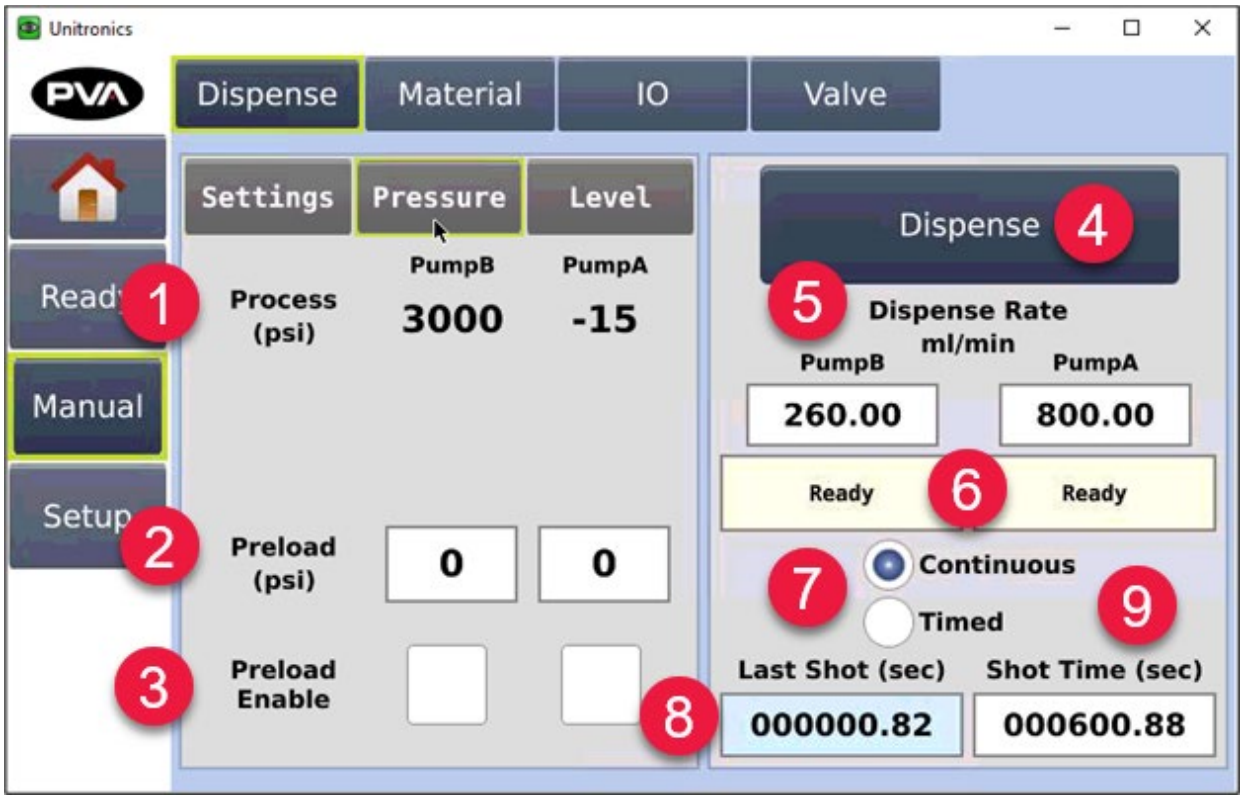

Figure 51: Manager Manual Dispense Pressure (2 SGP, 2 5G PP)

6.1.6 Manual → Dispense → Level

From the **Manual → Dispense** tab, click **Level** to display this screen.

The **Manual → Dispense → Level** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
2	**Supply Level**	Displays the supply level for both tanks (lb).	**3**	**Dispense**	Click *Dispense* to begin dispensing.
5	**Ready**	The pump status for both Pump B and Pump A.	**4**	**Dispense Rate**	Enter a dispense rate for Pump B and Pump A (ml/min).
7	**Last Shot**	Displays the last shot time (sec).	**6**	**Dispense Rate**	Choose continuous or timed.
			8	**Shot Time**	Enter a shot time (sec).

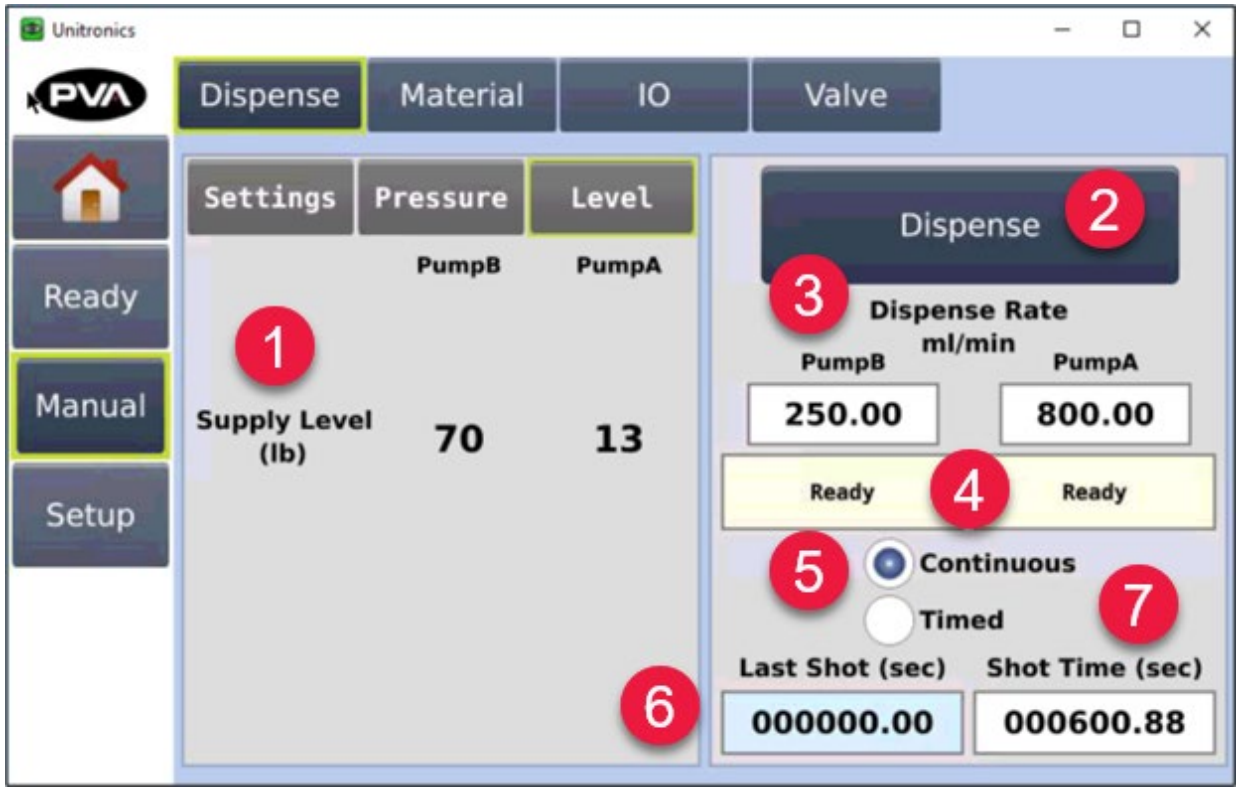

Figure 52: Manager Manual Dispense Level (2 SGP, 2 5G PP)

6.1.7 Manual → Material

From the Home Screen, select **Manual → Material** to display this screen. It can also be accessed by clicking **Enter** under Operator Material Functions.

The **Manual → Material** screen has the following features and options:

#		DISPLAY FIELDS	EDIT FIELDS
1	**Ready**	The pump status for both Pump B and Pump A.	**None**
2	**Supply**	The remaining material left in each pail pump (lbs.).	

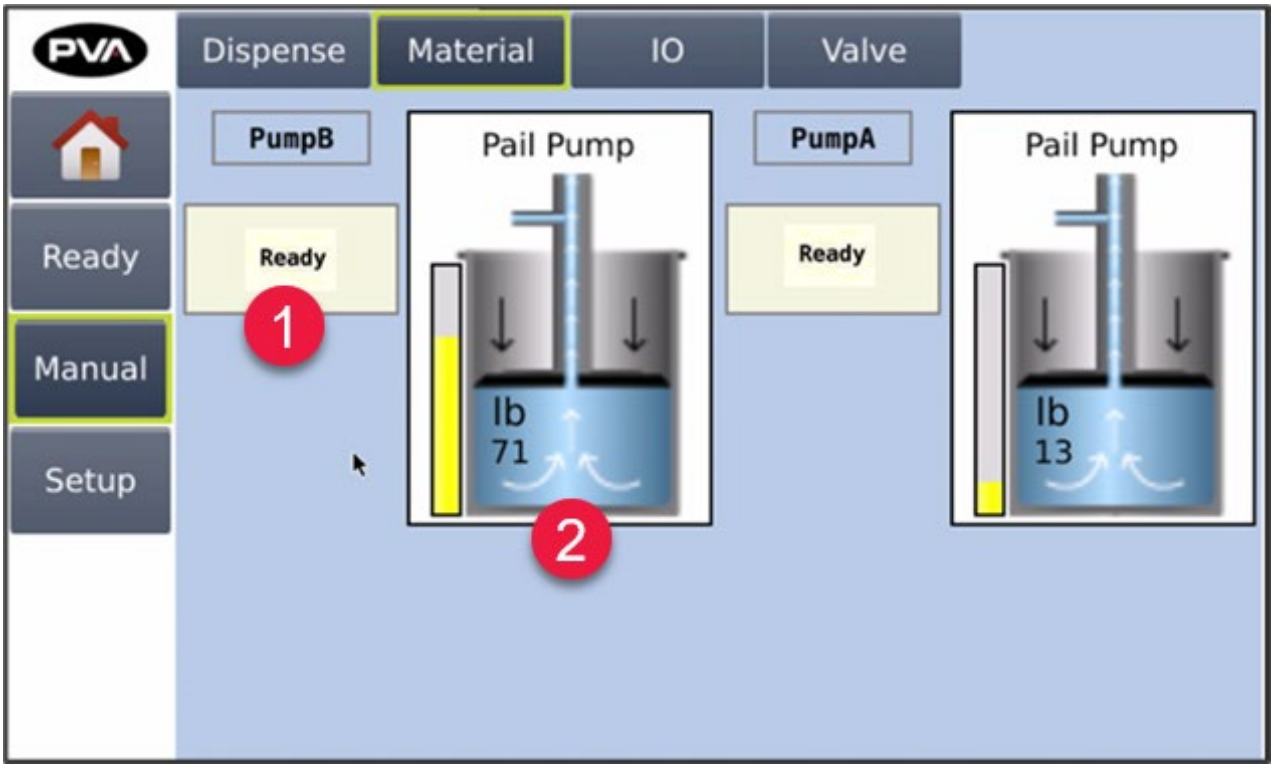

Figure 53: Manager Manual Material (2 SGP, 2 5G PP)

6.1.8 Manual → IO → Local

From the Navigation Pane, select **Manual → IO → Local** to display this screen.

The **Manual → IO → Local** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
OUTPUTS				**NONE**
1	**Control Power**	Indicates if the control power is on or off.		
2	**Valve**	Indicates if the valve is on or off.		
INPUTS				
3	**Estop**	Indicates if the emergency stop is on or off.		
4	**Control Power**	Indicates if the control power is on or off.		
5	**Door**	Indicates if the door is opened or closed.		

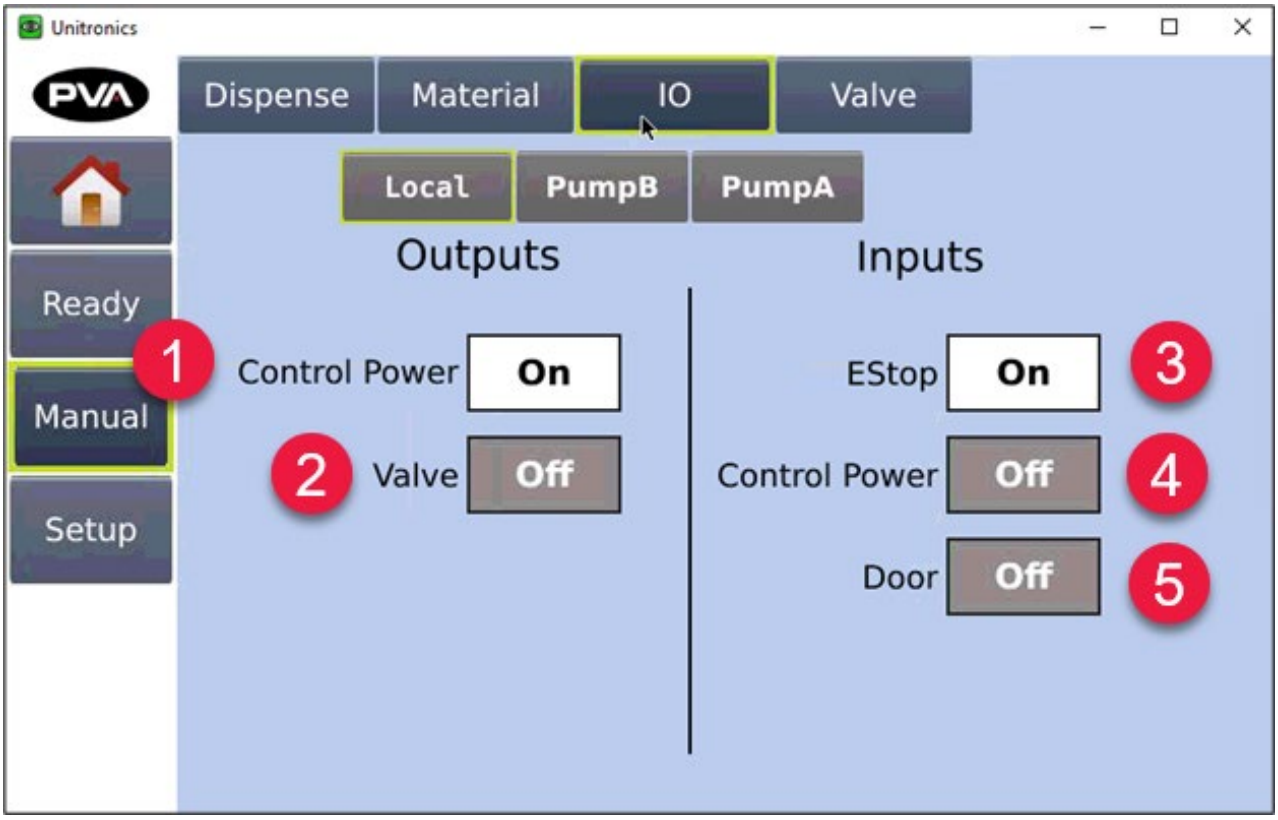

Figure 54: Manager Manual IO Local (2 SGP, 2 5G PP)

6.1.9 Manual → IO → Pump B

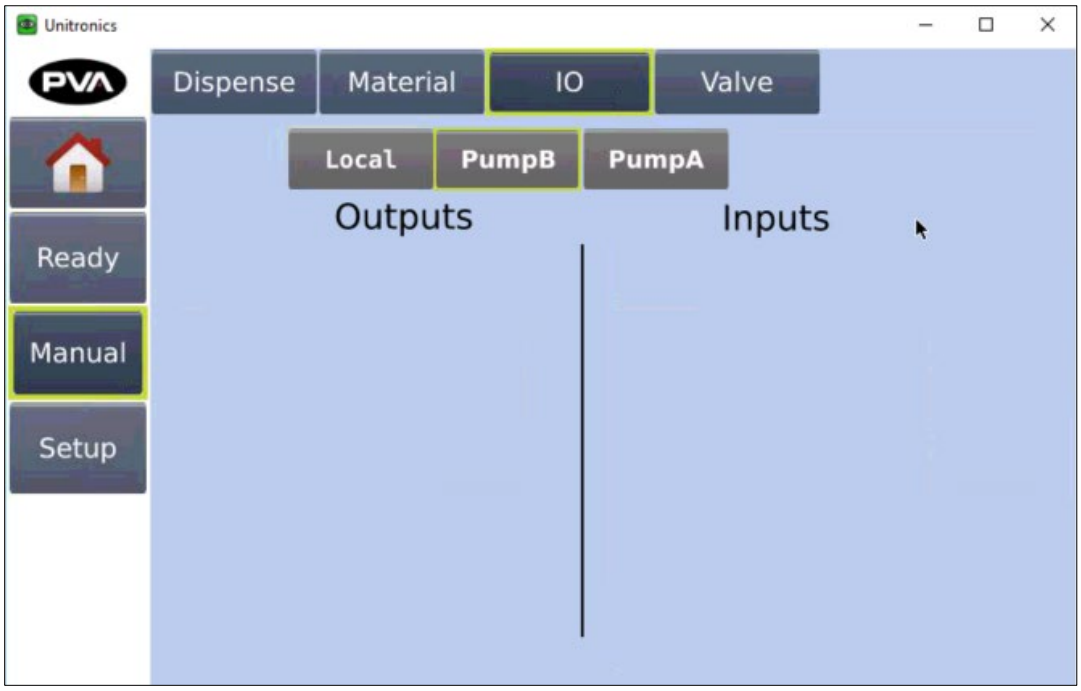

Figure 55: Manager Manual IO Pump B (2 SGP, 2 5G PP)

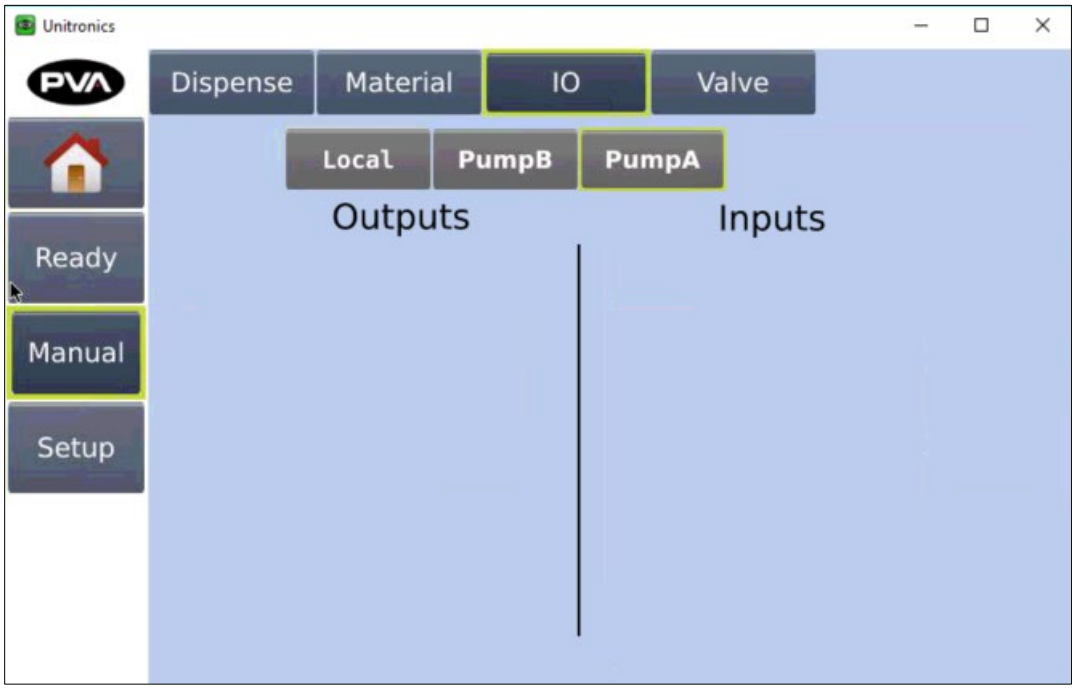

Figure 56: Manager Manual IO Pump A (2 SGP, 2 5G PP)

6.1.10 Manual → Valve

From the Navigation Pane, select **Manual → Valve** to display this screen.

The **Manual → Valve** screen has the following features and options:

#	DISPLAY FIELDS	#	EDIT FIELDS	
None		**1**	**Valve Toggle**	Click and hold toggle to open the valve for the duration that the button is held. Once the button is released, it will close.
		2	**Valve Enable**	Select the checkbox to enable the valve. The valve is not open when disabled.

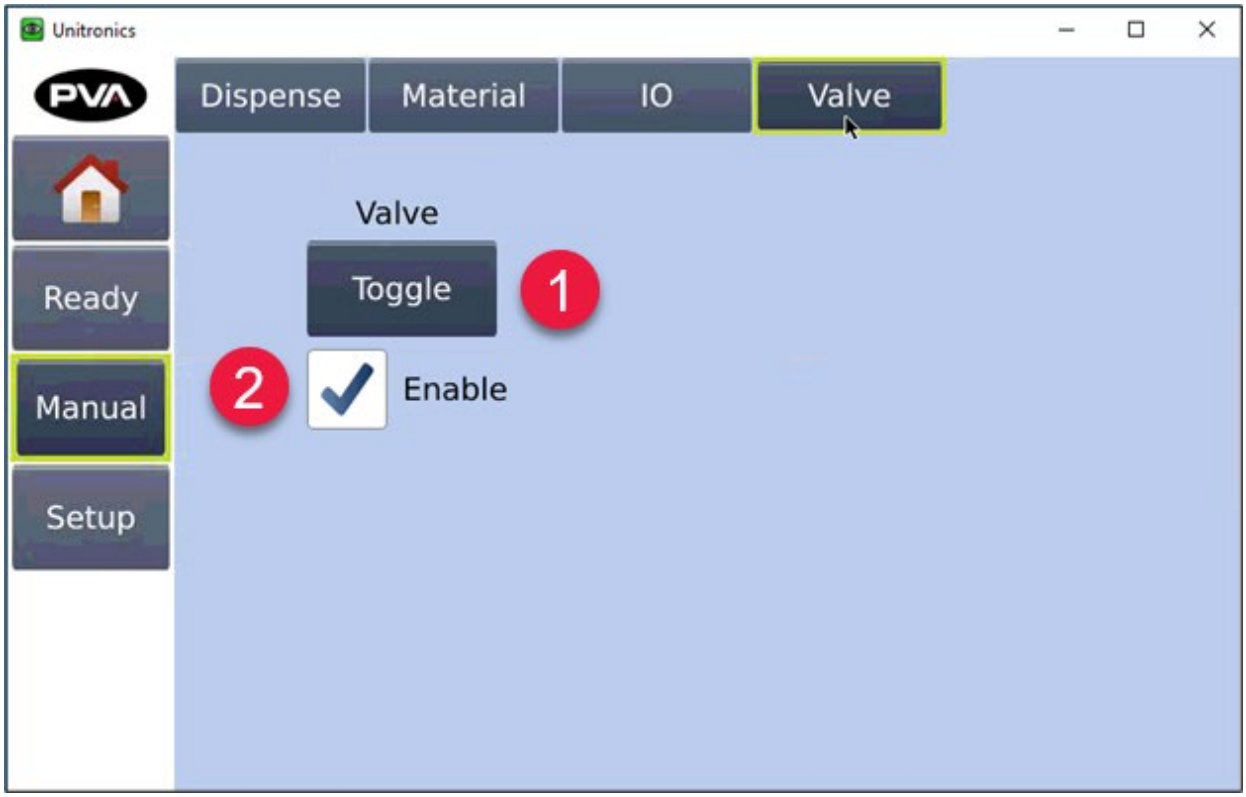

Figure 57: Manager Manual Valve (2 SGP, 2 5G PP)

6.1.11 Setup → Recipe → Pump B

From the Navigation Pane, select **Setup → Recipe → Pump B** to display this screen.

The **Setup → Recipe → Pump B** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
2	**Pump B**	Displays the current pump.	**1**	**Enable**	Select the checkbox to enable pump B.
3	**Recipe**	Displays the current recipe number.	**4**	**Recipe**	Use the arrows to browse other recipes. Click the recipe to change the recipe name.
8	**Process Pressure Indicator**	The left bar displays the current pressure. The right bar displays the process pressure range. The marker is the preload pressure setpoint.	**5**	**Dispense Rate**	Enter the dispense rate (ml/min).
			6	**K-Factor**	Enter the K-Factor.
			7	**Process PSI**	Enter the minimum, maximum, and preload values.

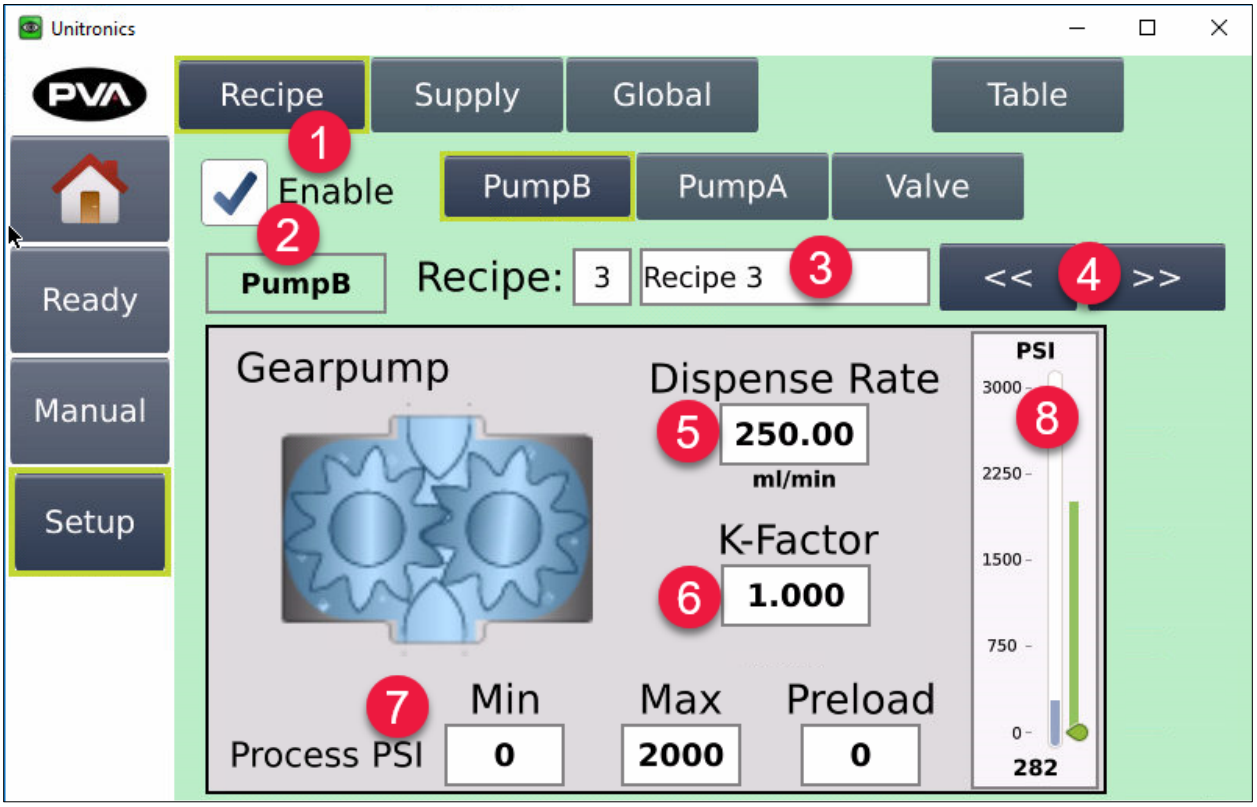

Figure 58: Manager Setup Recipe Pump B (2 SGP, 2 5G PP)

6.1.12 Setup → Recipe → Pump A

From the Navigation Pane, select **Setup → Recipe → Pump A** to display this screen.

The **Setup → Recipe → Pump A** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
2	**Pump B**	Displays the current pump.	**1**	**Enable**	Select the checkbox to enable pump A.
3	**Recipe**	Displays the current recipe number.	**4**	**Recipe**	Use the arrows to browse other recipes. Click the recipe to change the recipe name.
8	**Process Pressure Indicator**	The left bar displays the current pressure. The right bar displays the process pressure range. The marker is the preload pressure setpoint.	**5**	**Dispense Rate**	Enter the dispense rate (ml/min).
			6	**K-Factor**	Enter the K-Factor.
			7	**Process PSI**	Enter the minimum, maximum, and preload values.

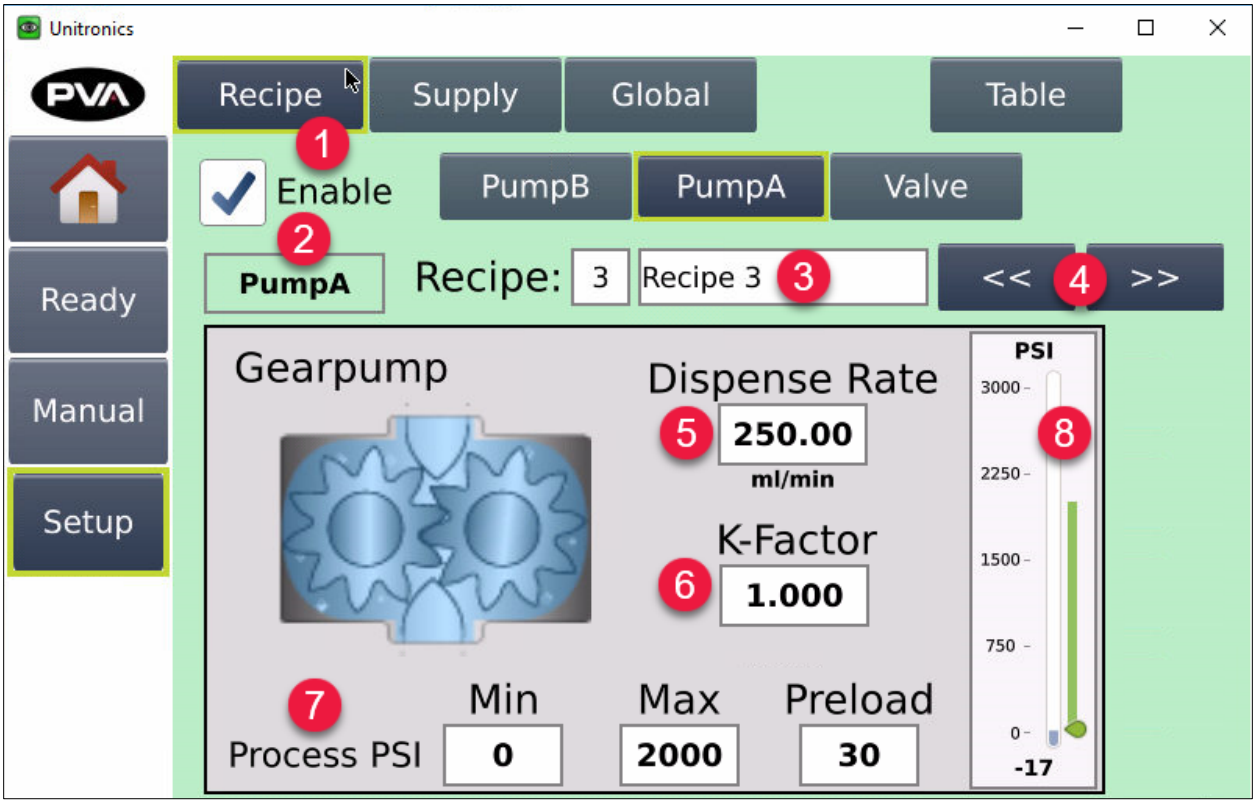

Figure 59: Manager Setup Recipe Pump A (2 SGP, 2 5G PP)

6.1.13 Setup → Recipe → Valve

From the Navigation Pane, select **Setup → Recipe → Valve** to display this screen.

The **Setup → Recipe → Valve** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Recipe**	Displays the current recipe.	**2**	**Recipe**	Use the arrows to browse other recipes.
			3	**Dispense Type**	Select a continuous or timed dispense type.
			4	**Shot Time**	Click the field to enter a shot time.
			5	**Valve Enable**	Select the checkbox to enable the valve.

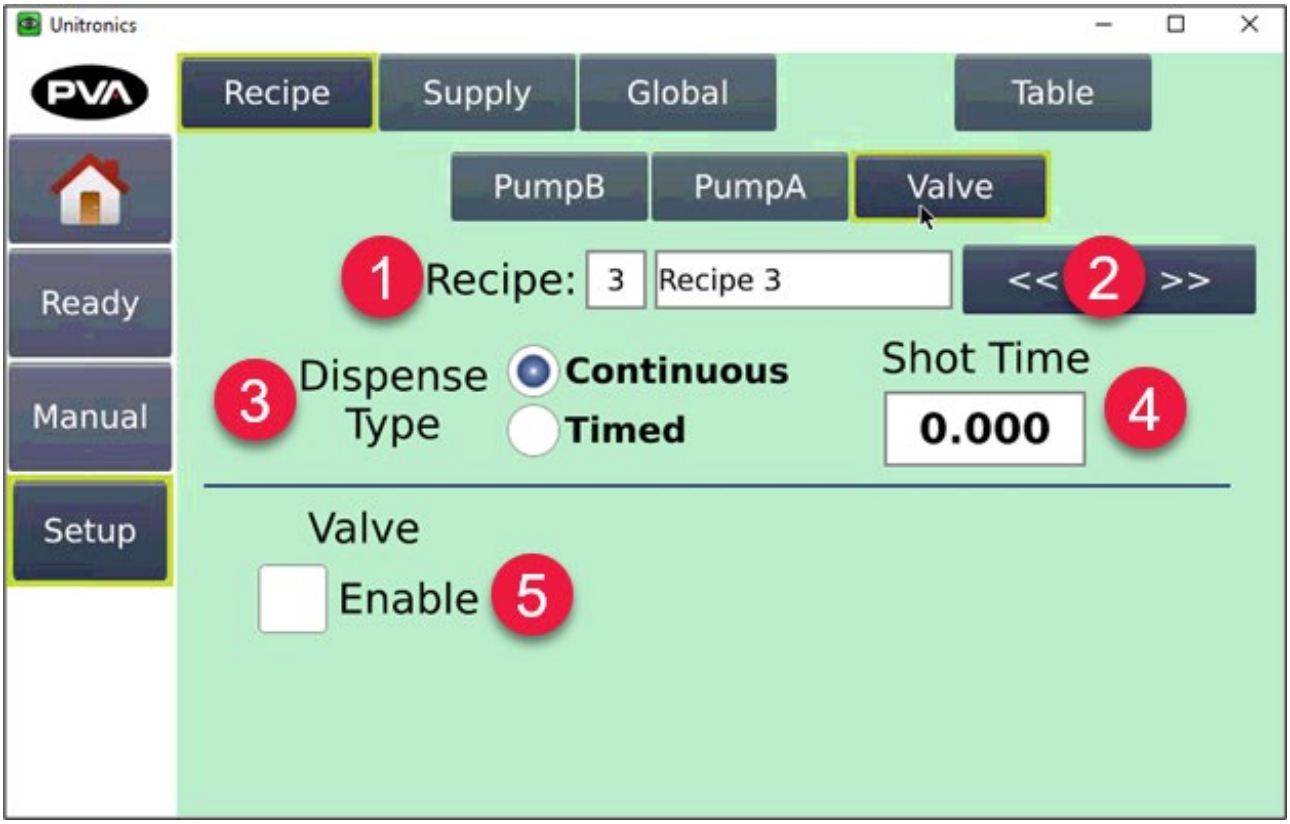

Figure 60: Manager Setup Recipe Valve (2 SGP, 2 5G PP)

6.1.14 Setup → Recipe → Table

From the **Setup → Recipe** screen, select **Table** to display this screen.

The **Setup → Recipe → Table** screen allows you to view each recipe and their settings. Select **Exit** to return to the Setup screen.

1. Select the **Edit On** button on the top right corner of the screen to enable editing of recipe settings.
2. To edit a recipe setting, select the desired recipe line. The selected line will appear yellow. and click on the setting you wish to edit.
3. A popup will display that allows you to edit the setting.
4. Select **Ok** to save your changes. Select **Cancel** to return to the Recipe Table and discard your edits.

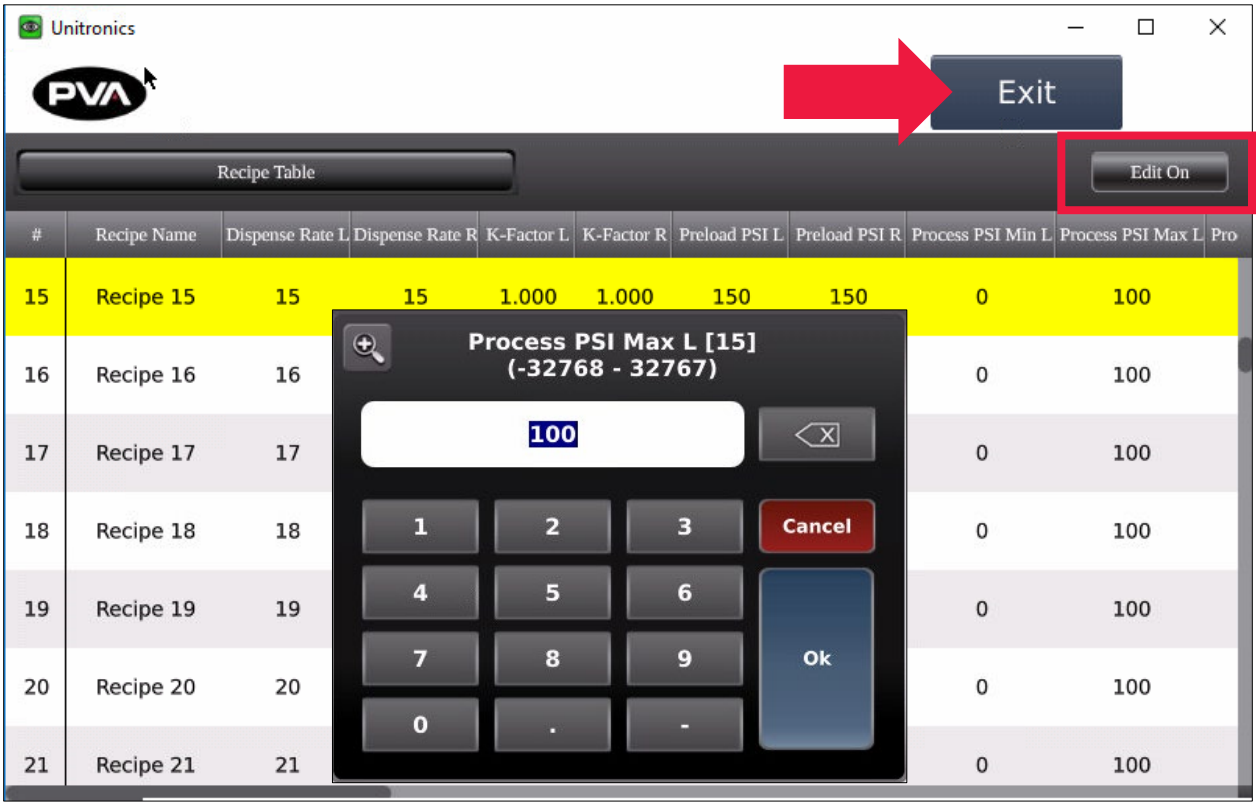

Figure 61: Manager Setup Recipe Table (2 SGP, 2 5G PP)

6.1.15 Setup → Supply → Pump B

From the Navigation Pane, select **Setup → Supply → Pump B** to display this screen.

The **Setup → Supply → Pump B** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Pump B**	Displays the current pump.	**2**	**Low**	Enter the material weight that will alert the operator the pail pump is low (lb.).
4	**Pail Pump**	Displays the remaining material in the tank (lb.).	**3**	**Empty**	Enter the material weight that will alert the operator the pail pump is empty (lb.).

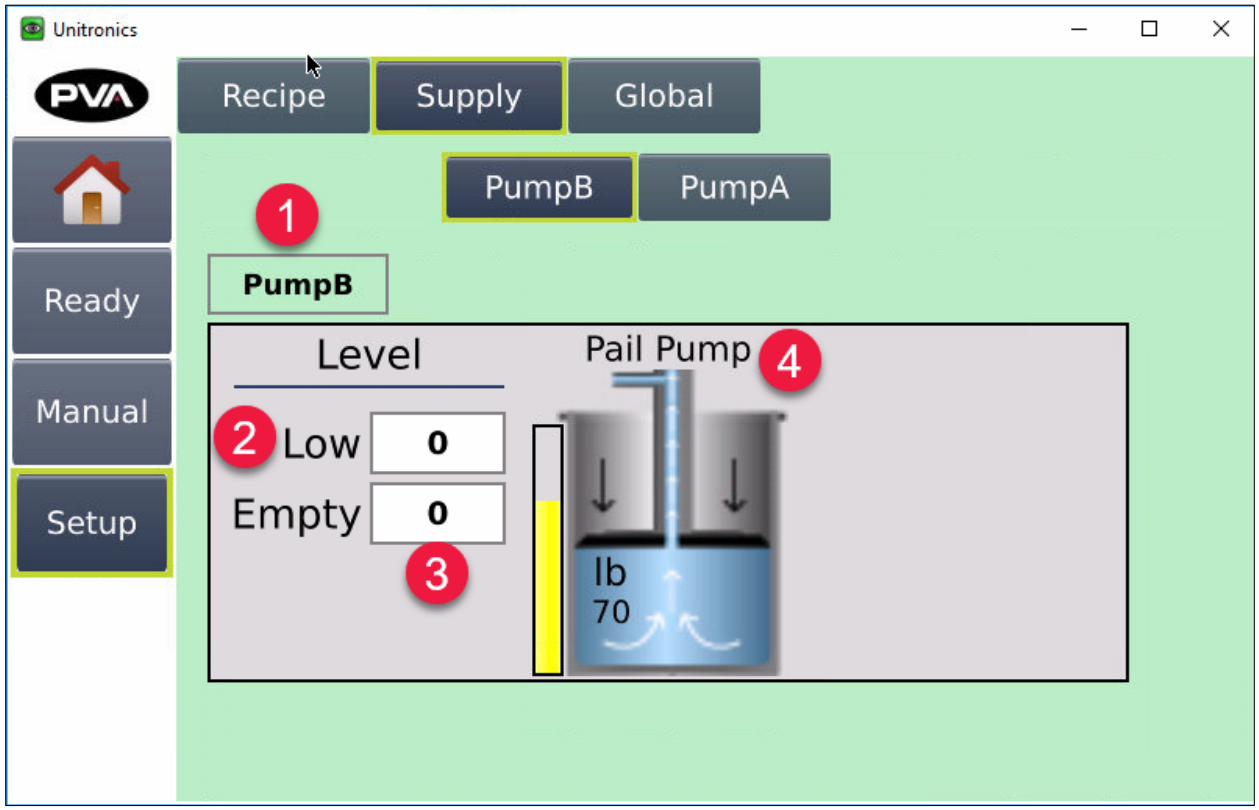

Figure 62: Manager Setup Supply Pump B (2 SGP, 2 5G PP)

6.1.16 Setup → Supply → Pump A

From the Navigation Pane, select **Setup → Supply → Pump A** to display this screen.

The **Setup → Supply → Pump A** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Pump A**	Displays the current pump.	**2**	**Low**	Enter the material weight that will alert the operator the pail pump is low (lb.).
4	**Pail Pump**	Displays the remaining material in the pail pump (lb).	**3**	**Empty**	Enter the material that will alert the operator the pail pump is empty (lb.).

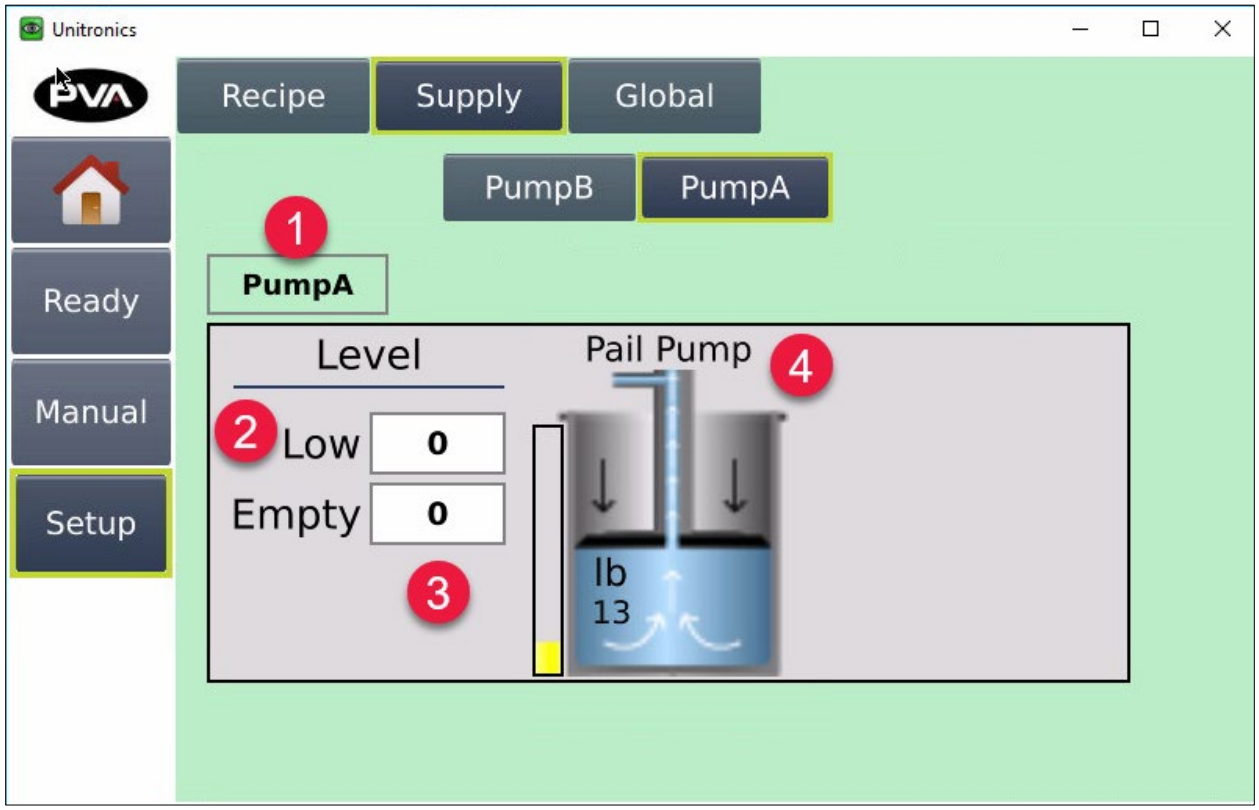

Figure 63: Manager Setup Supply Pump A (2 SGP, 2 5G PP)

6.1.1 Setup → Global

From the Navigation Pane, select **Setup → Global** to display this screen.

The **Setup → Global** screen has the following features and options:

#	DISPLAY FIELDS	#	EDIT FIELDS	
None		1	**Operator Recipe Select**	Select the checkbox to enable the operator to select recipes.
		2	**Preload**	Select the checkbox to enable preload for one or both pumps.
		3	**Ready Mode Idle Timeout**	Enter the amount of time in hours and minutes that the machine will time out of ready mode.
		4	**Pressure Units**	Choose bar or psi for the pressure units.
		5	**Weight Units**	Choose kg or lb. for the weight units.

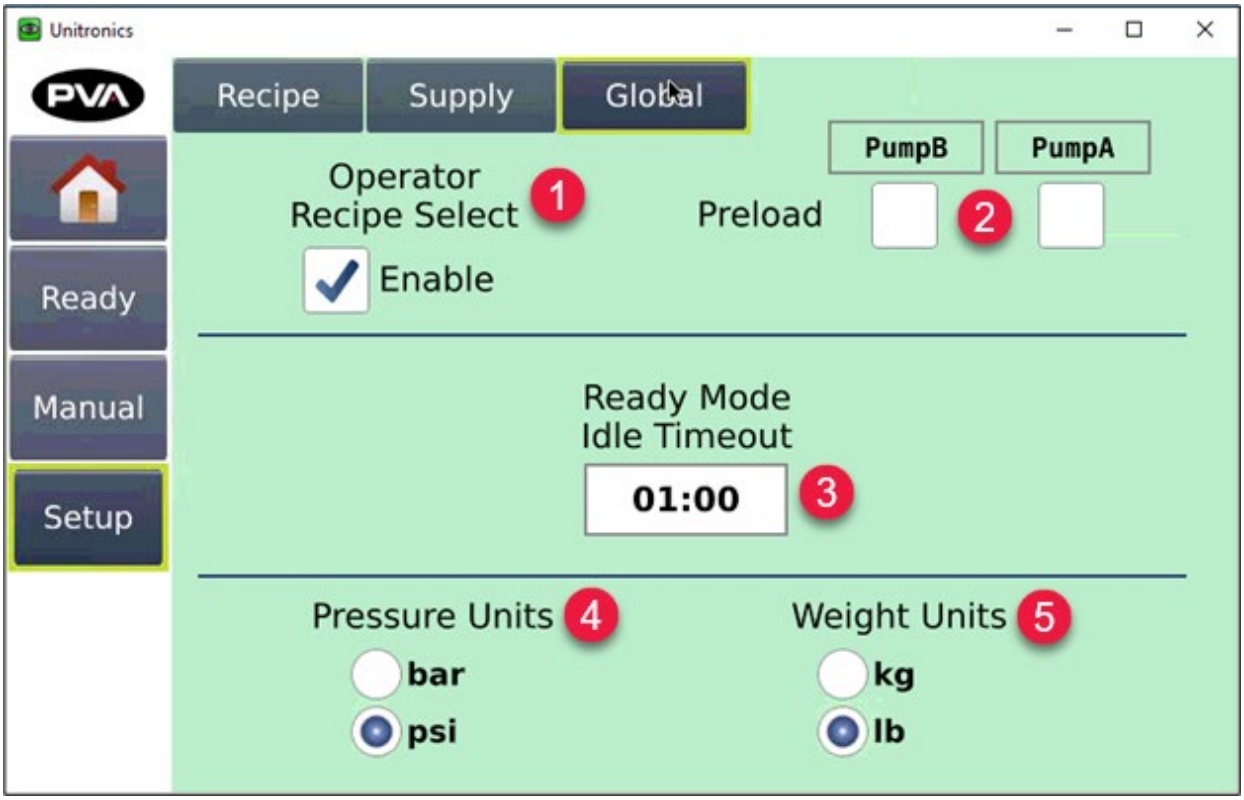

Figure 64: Manager Setup Global (2 SGP, 2 5G PP)

6.2 Technician

6.2.1 Home Screen

See Home Screen Features and Functions for a detailed description of each feature.

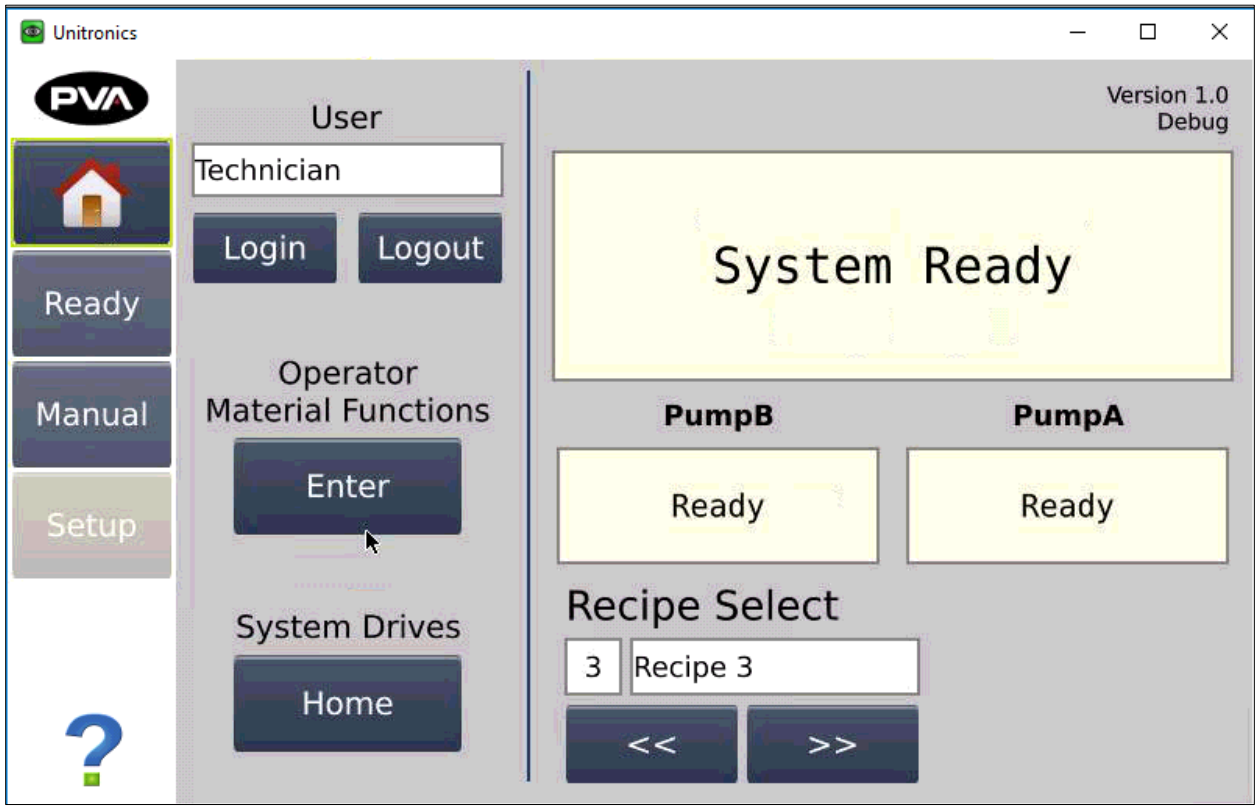

Figure 65: Technician Home Screen (2 SGP, 2 5G PP)

6.2.2 Ready

From the Navigation Pane, click **Ready** to display this screen.

The Operator Material Functions screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Recipe**	The current recipe selection.	6	**Exit**	Select *Exit* to return to the Home screen.
2	**Rate**	The current flow rate.	7	**Dispense**	Click *Dispense* to begin dispensing.
3	**Supply**	The remaining material left in each tank (measured in lbs).			
4	**Dispense**	Displays the psi for each gear pump.			
5	**Ready**	The pump status for both Pump B and Pump A.			

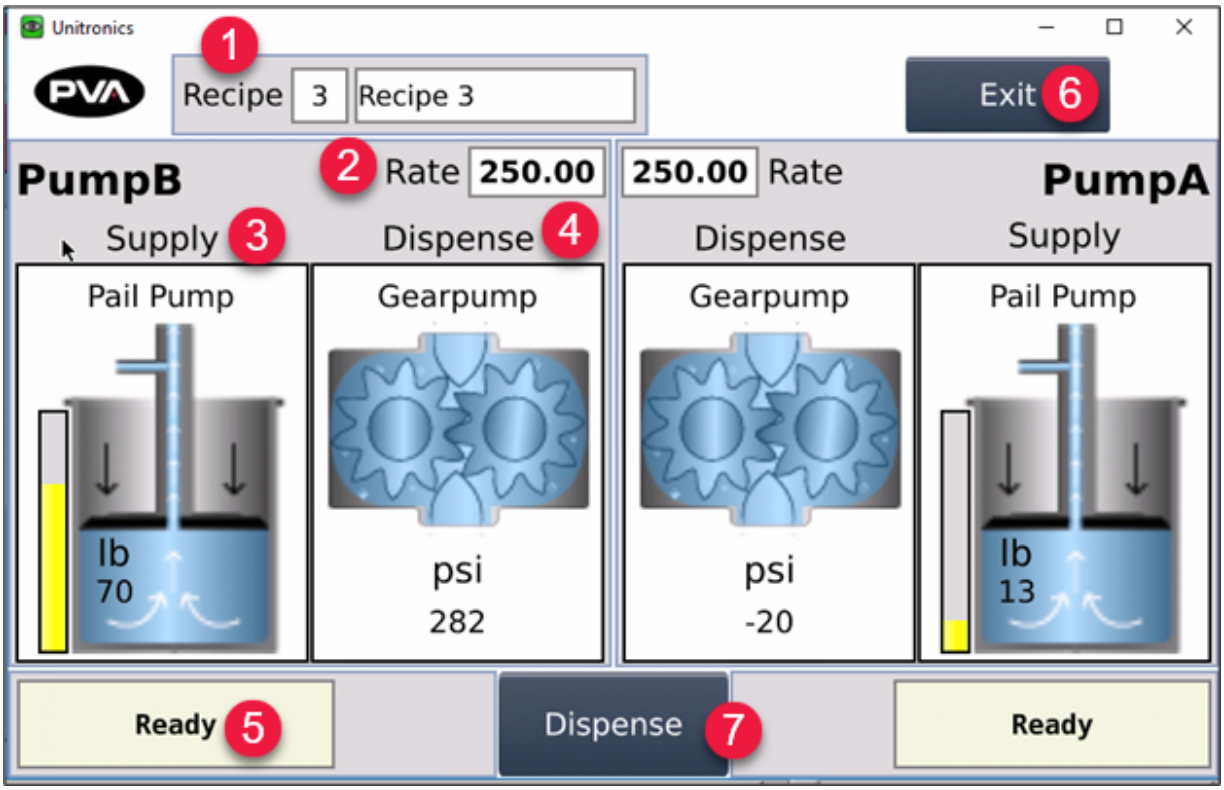

Figure 66: Technician Ready Screen (2 SGP, 2 5G PP)

6.2.3 Operator Material Functions

From the Home Screen, click **Enter** under Operator Material Functions to display this screen. It can also be accessed by selecting **Manual → Material**.

The Operator Material Functions screen has the following features and options:

#		DISPLAY FIELDS	EDIT FIELDS
1	**Ready**	The pump status for both Pump B and Pump A.	**None**
2	**Supply**	The remaining material left in each pail pump (lbs.).	

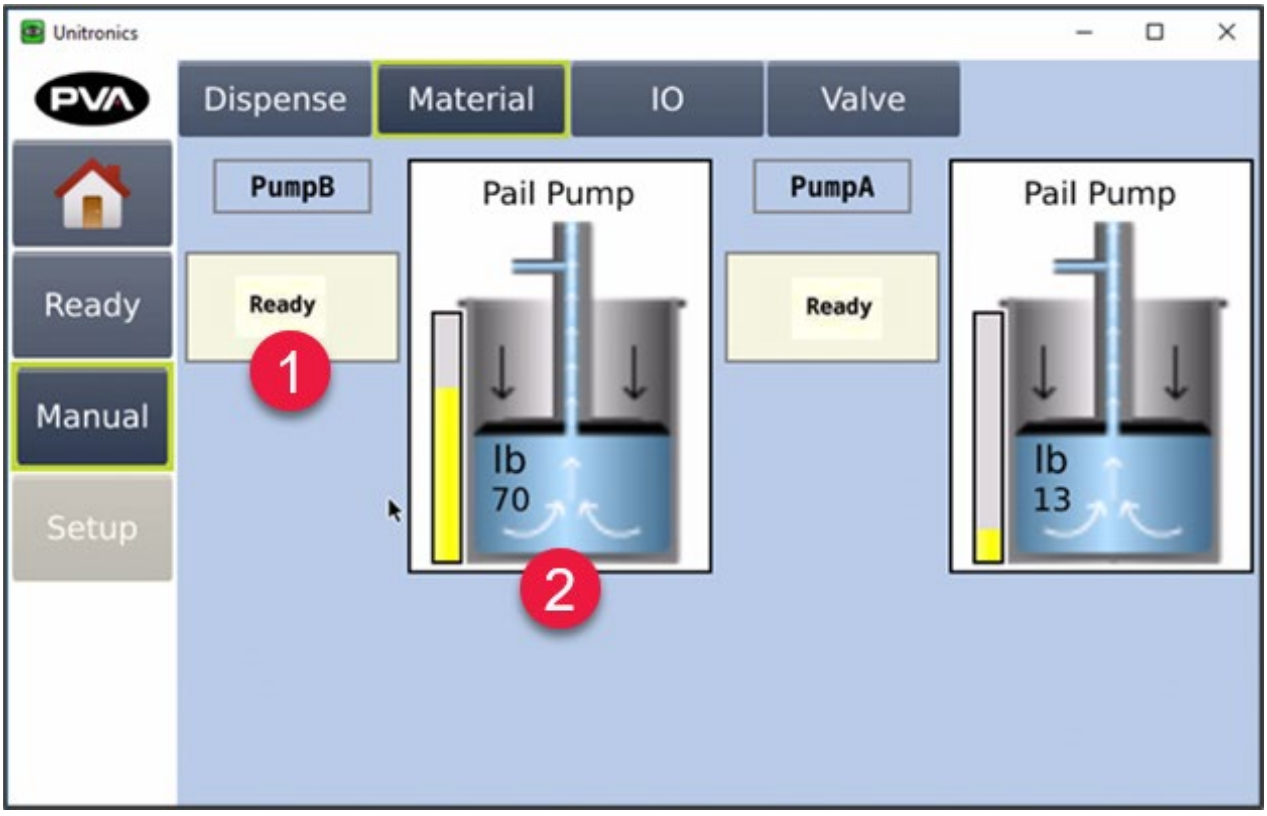

Figure 67: Technician Operator Material Functions (2 SGP, 2 5G PP)

6.2.4 Manual → Dispense → Settings

From the Navigation Pane, click **Manual** to display this screen.

The **Manual → Dispense → Settings** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
5	**Ready**	The pump status for both Pump B and Pump A.	**1**	**K-Factor**	Enter a K-Factor.
7	**Last Shot**	Displays the last shot time (sec).	**2**	**Pump Enable**	Select the checkbox to enable the pump.
			3	**Dispense**	Click *Dispense* to begin dispensing.
			4	**Dispense Rate**	Enter a dispense rate for both pumps.
			6	**Dispense Rate**	Choose a continuous or timed dispense rate.
			8	**Shot Time**	Enter a shot time (sec).

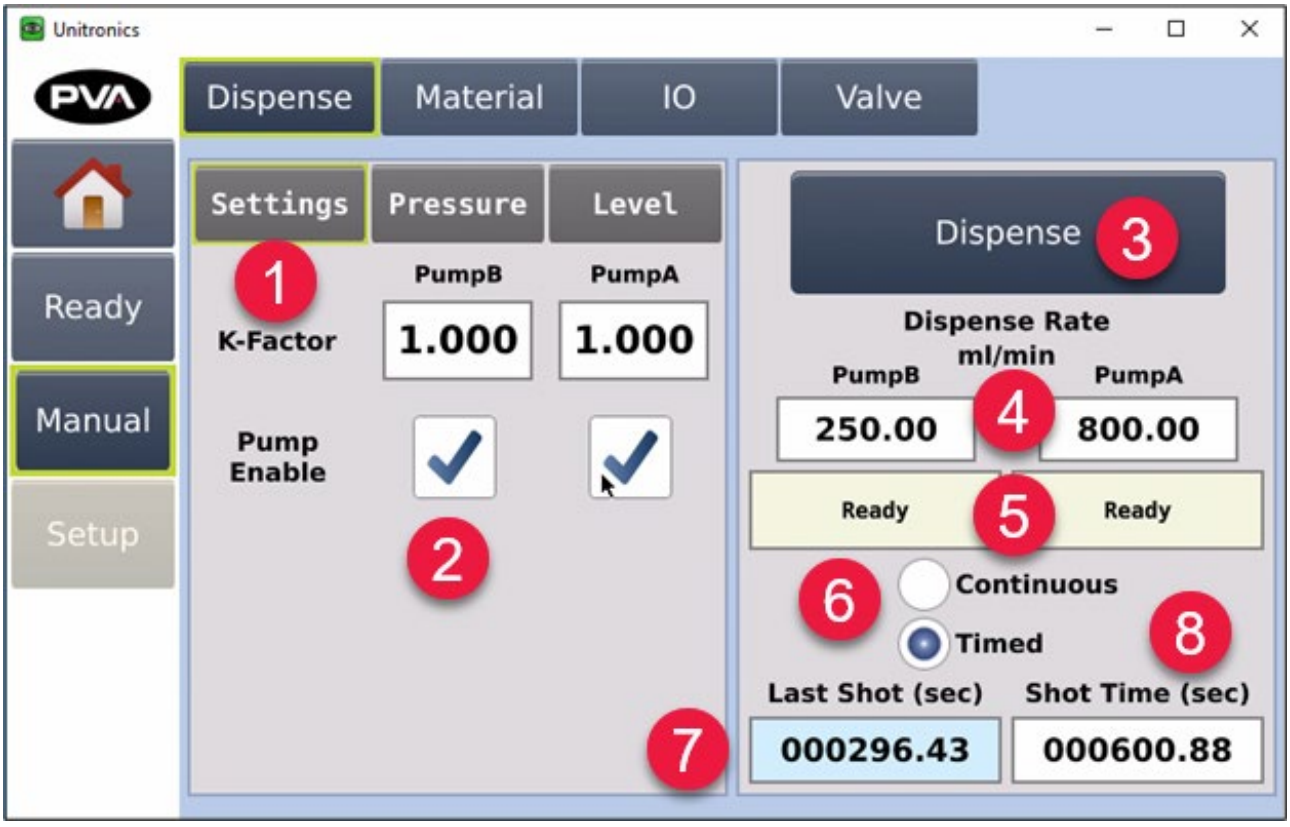

Figure 68: Technician Manual Dispense Settings (2 SGP, 2 5G PP)

6.2.5 Manual → Dispense → Pressure

From the **Manual → Dispense** tab, click **Pressure** to display this screen.

The **Manual → Dispense → Pressure** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Process**	Displays the process (psi).	**2**	**Preload**	Enter a preload (psi).
6	**Ready**	The pump status for both Pump B and Pump A.	**3**	**Preload Enable**	Select to enable preload.
8	**Last Shot**	Displays the last shot time (sec).	**4**	**Dispense**	Click *Dispense* to begin dispensing.
			5	**Dispense Rate**	Enter a dispense rate (ml/min).
			7	**Dispense Rate**	Choose continuous or timed.
			9	**Shot Time**	Enter a shot time (sec).

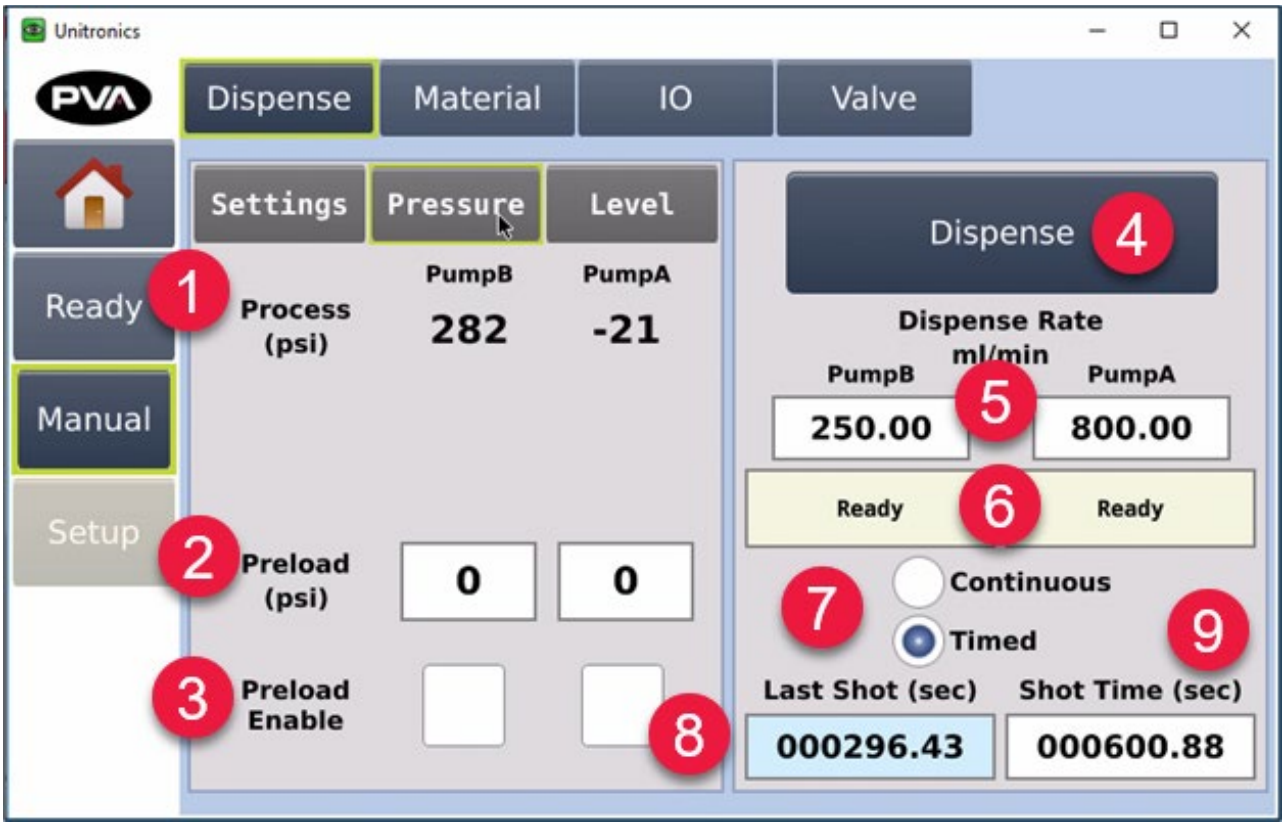

Figure 69: Technician Manual Dispense Pressure (2 SGP, 2 5G PP)

6.2.6 Manual → Dispense → Level

From the **Manual → Dispense** tab, click **Level** to display this screen.

The **Manual → Dispense → Level** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
2	**Supply Level**	Displays the supply level for both tanks (lb).	**3**	**Dispense**	Click *Dispense* to begin dispensing.
5	**Ready**	The pump status for both Pump B and Pump A.	**4**	**Dispense Rate**	Enter a dispense rate for Pump B and Pump A (ml/min).
7	**Last Shot**	Displays the last shot time (sec).	**6**	**Dispense Rate**	Choose continuous or timed.
			8	**Shot Time**	Enter a shot time (sec).

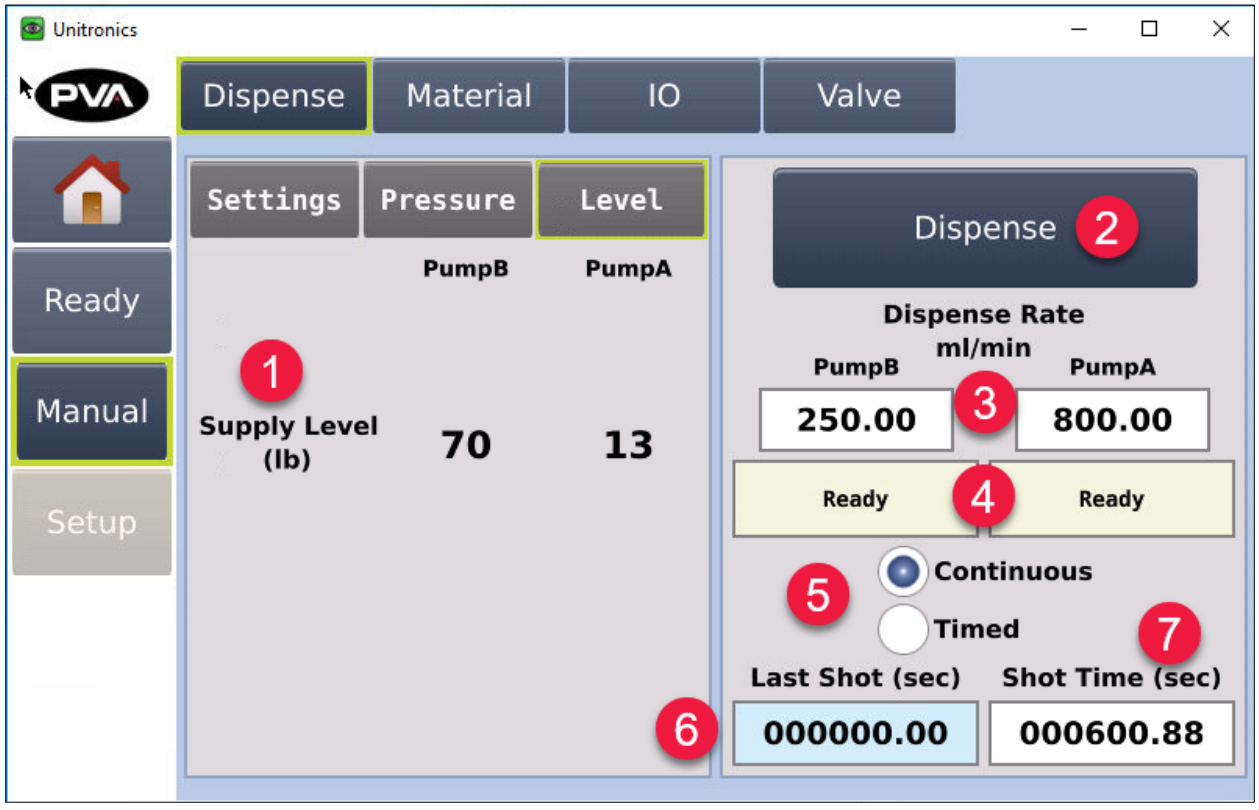

Figure 70: Technician Manual Dispense Level (2 SGP, 2 5G PP)

6.2.7 Manual → Material

From the Navigation Pane, select **Manual → Material** to display this screen. It can also be accessed by clicking **Enter** under Operator Material Functions.

The **Manual → Material** screen has the following features and options:

#		DISPLAY FIELDS	EDIT FIELDS
1	**Ready**	The pump status for both Pump B and Pump A.	**None**
2	**Supply**	The remaining material left in each pail pump (lbs.).	

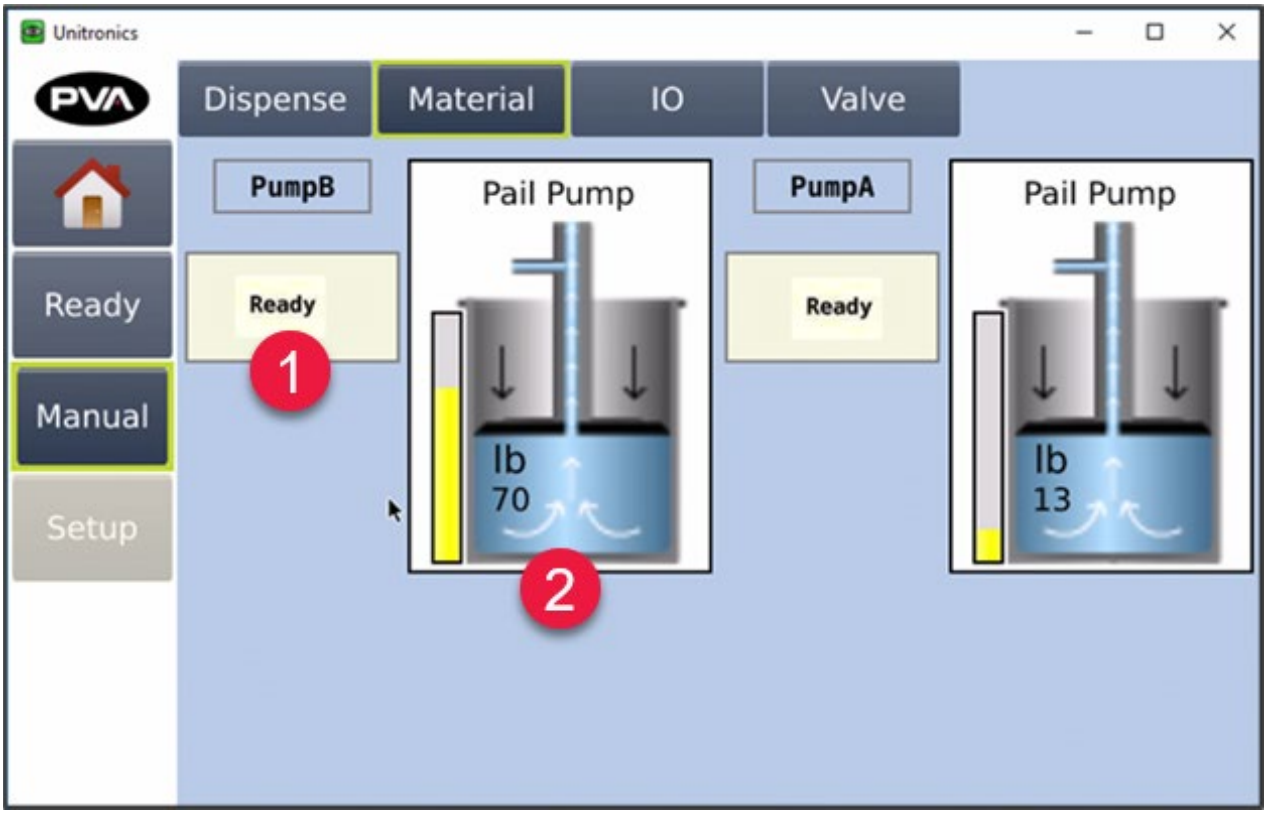

Figure 71: Technician Manual Material (2 SGP, 2 5G PP)

6.2.8 Manual → IO → Local

From the Navigation Pane, select **Manual → IO → Local** to display this screen.

The **Manual → IO → Local** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
OUTPUTS				**NONE**
1	**Control Power**	Indicates if the control power is on or off.		
2	**Valve**	Indicates if the valve is on or off.		
INPUTS				
3	**Estop**	Indicates if the emergency stop is on or off.		
4	**Control Power**	Indicates if the control power is on or off.		
5	**Door**	Indicates if the door is opened or closed.		

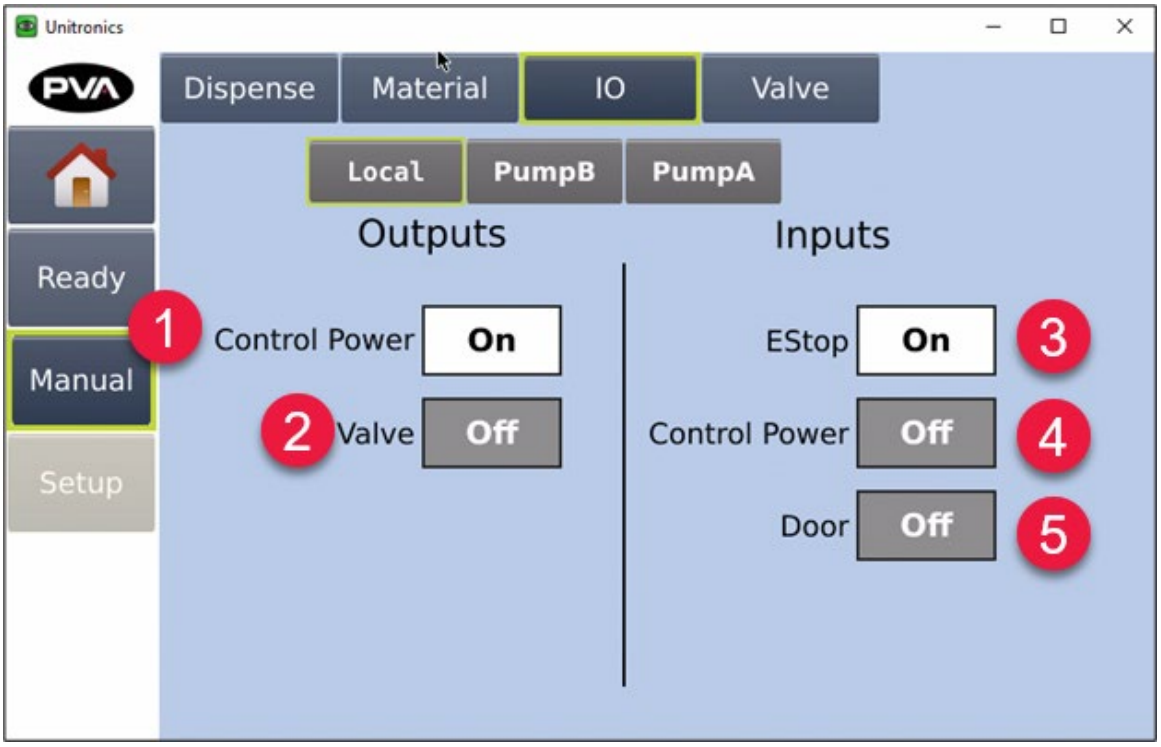

Figure 72: Technician Manual IO Local (2 SGP, 2 5G PP)

6.2.9 Manual → IO → Pump B

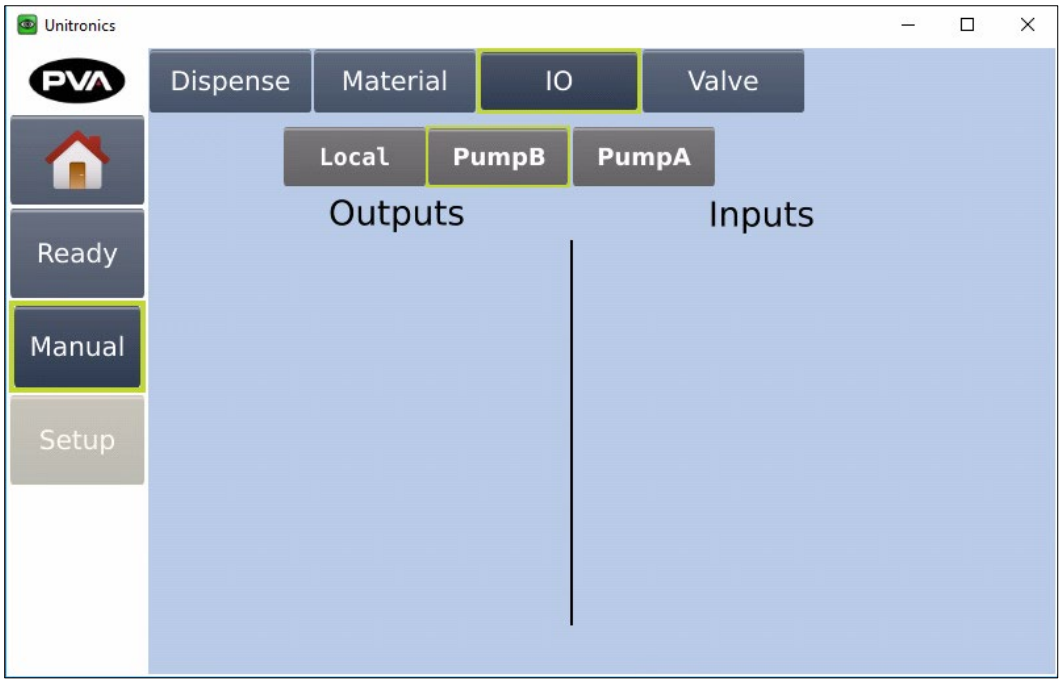

Figure 73: Technician Manual IO Pump B (2 SGP, 2 5G PP)

6.2.10 Manual → IO → Pump A

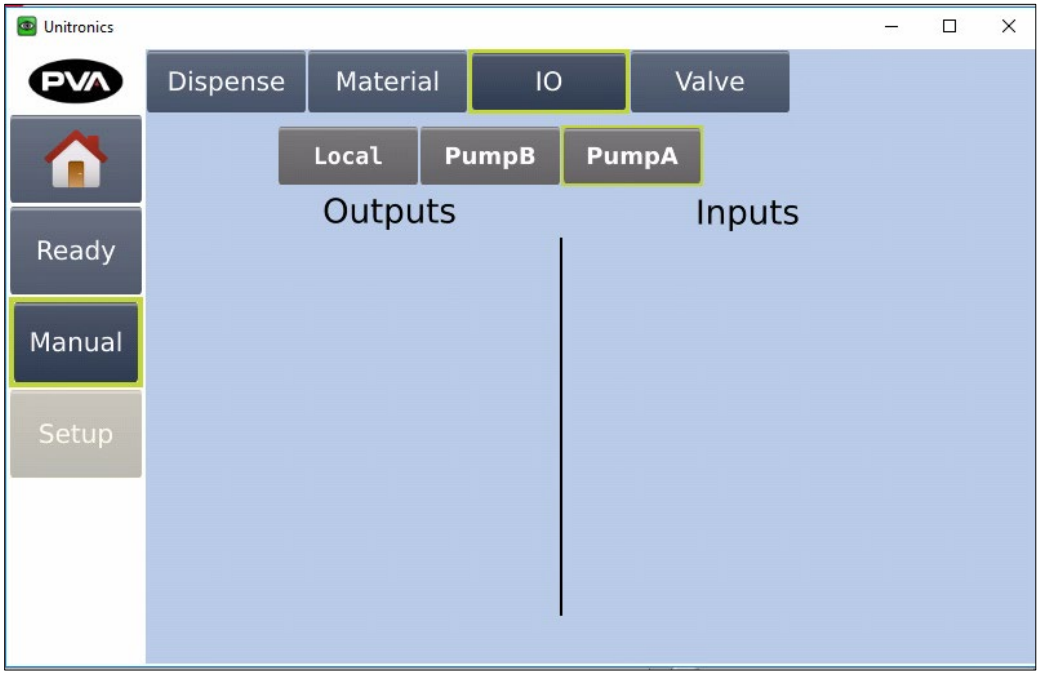

Figure 74: Technician Manual IO Pump A (2 SGP, 2 5G PP)

6.2.11 Manual → Valve

From the Navigation Pane, select **Manual → Valve** to display this screen.

The **Manual → Valve** screen has the following features and options:

#	DISPLAY FIELDS	#	EDIT FIELDS	
None		**1**	**Valve Toggle**	Click and hold toggle to open the valve for the duration that the button is held. Once the button is released, it will close.
		2	**Valve Enable**	Select the checkbox to enable the valve. The valve is not open when disabled.

Figure 75: Technician Manual Valve (2 SGP, 2 5G PP)

6.3 Operator

6.3.1 Home Screen

See Home Screen Features and Functions for a detailed description of each feature.

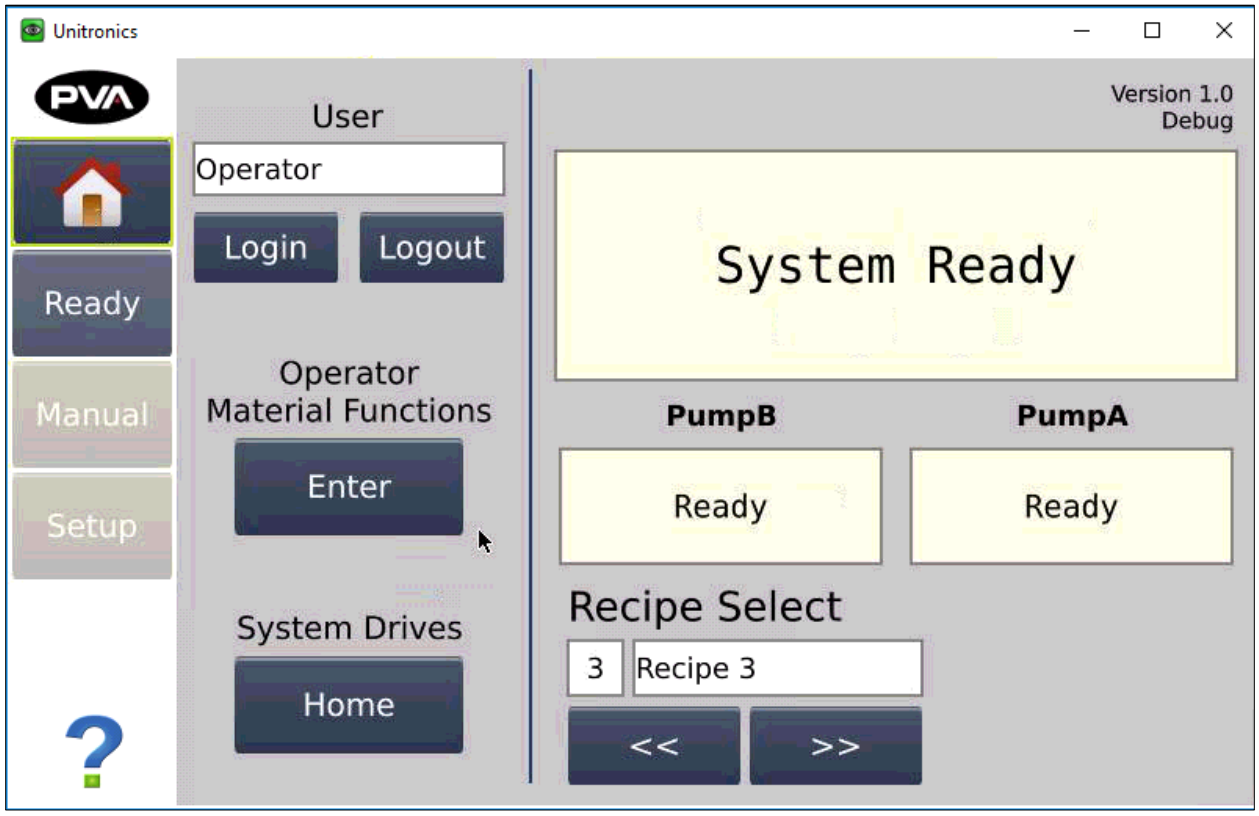

Figure 76: Operator Home Screen (2 SGP, 2 5G PP)

6.3.2 Operator Material Functions

From the Home Screen, click **Enter** under Operator Material Functions to display this screen. It can also be accessed by selecting **Manual → Material**.

The Operator Material Functions screen has the following features and options:

#		DISPLAY FIELDS	EDIT FIELDS
1	**Ready**	The pump status for both Pump B and Pump A.	**None**
2	**Supply**	The remaining material left in each pail pump (lbs.).	

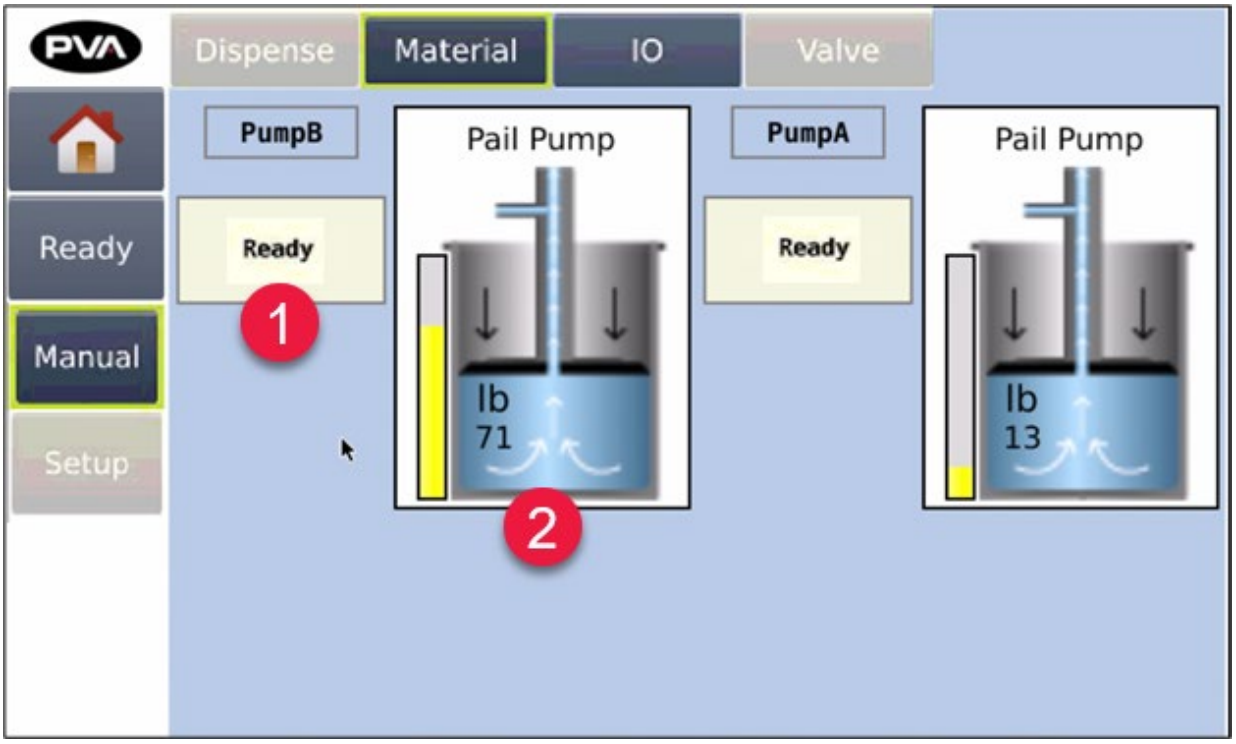

Figure 77: Operator Material Functions (2 SGP, 2 5G PP)

6.3.3 Ready

From the Navigation Pane, click **Ready** to display this screen.

The Operator Material Functions screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Recipe**	The current recipe selection.	6	**Exit**	Select *Exit* to return to the Home screen.
2	**Rate**	The current flow rate.	7	**Dispense**	Click *Dispense* to begin dispensing.
3	**Supply**	The remaining material left in each tank (measured in lbs).			
4	**Dispense**	Displays the psi for each gear pump.			
5	**Ready**	The pump status for both Pump B and Pump A.			

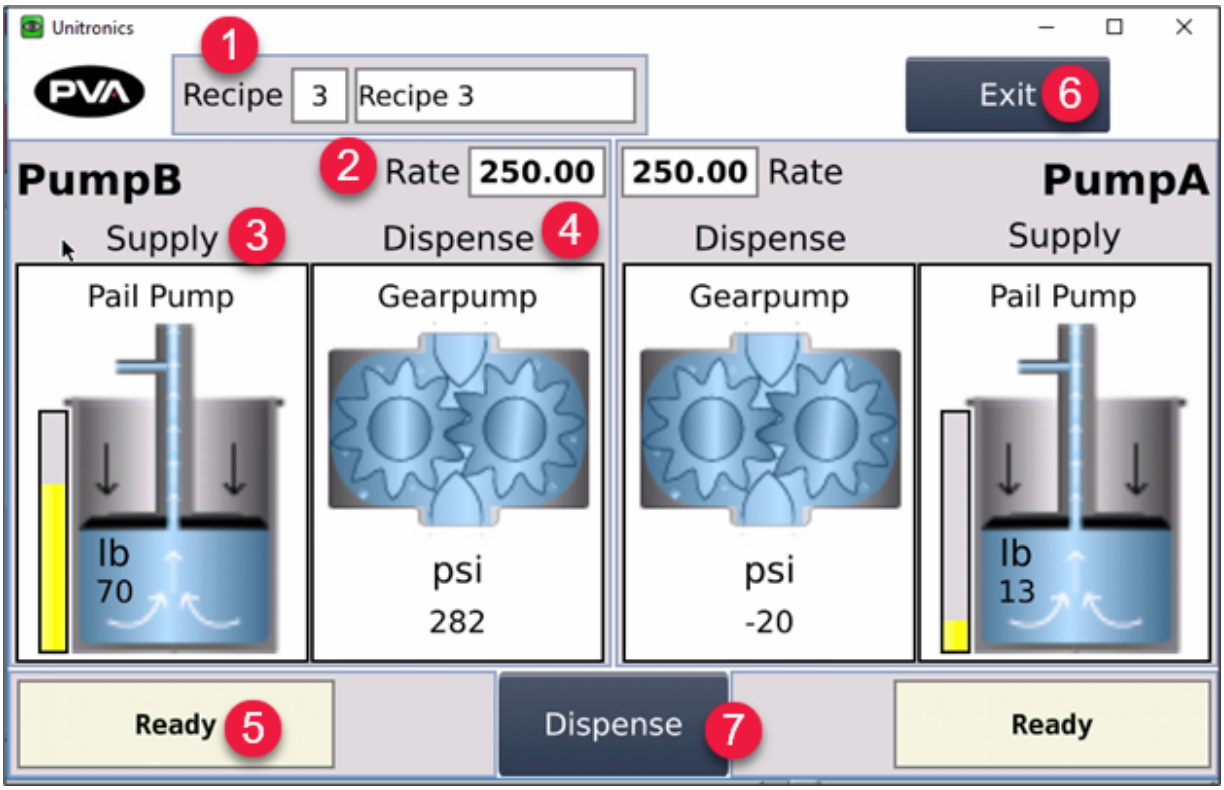

Figure 78: Operator Ready Screen (2 SGP, 2 5G PP)

6.3.1 Manual → Material

From the Home Screen, select **Manual → Material** to display this screen. It can also be accessed by clicking **Enter** under Operator Material Functions.

The **Manual → Material** screen has the following features and options:

#		DISPLAY FIELDS	EDIT FIELDS
1	**Ready**	The pump status for both Pump B and Pump A.	**None**
2	**Supply**	The remaining material left in each pail pump (lbs.).	

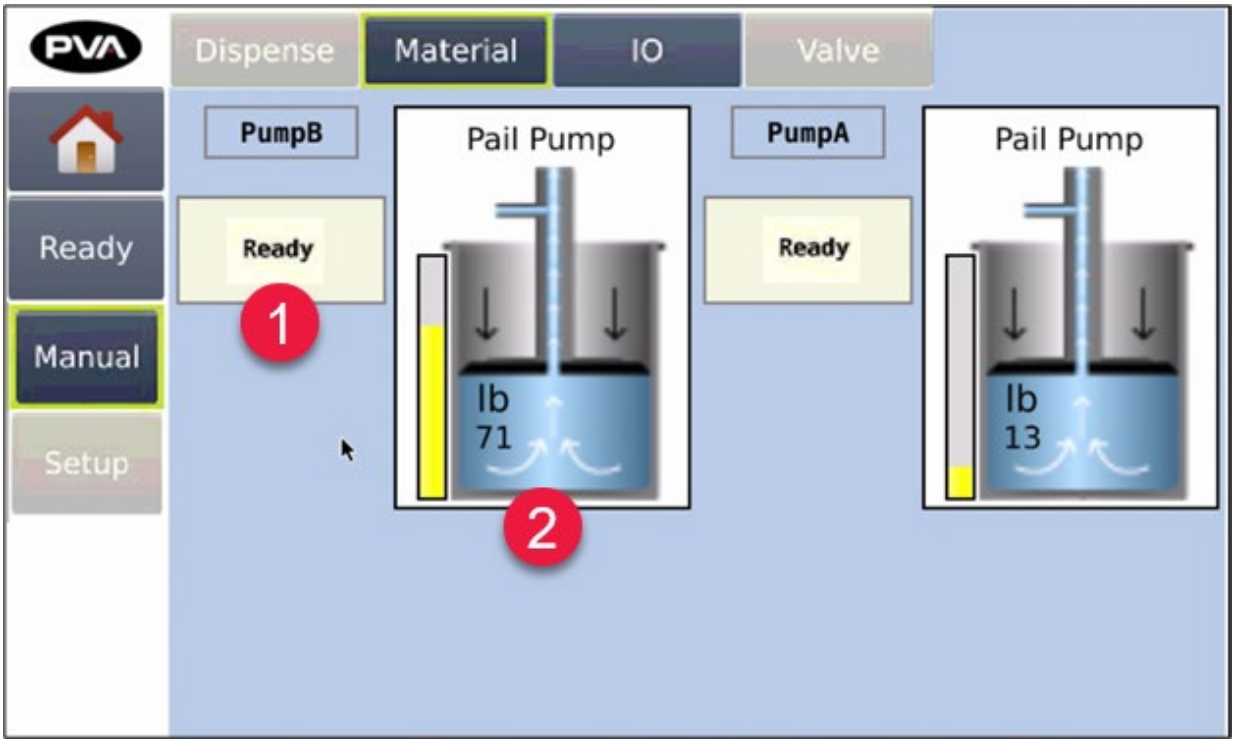

Figure 79: Operator Material Functions (2 SGP, 2 5G PP)

6.3.1 Manual → IO → Local

From the Navigation Pane, select **Manual → IO → Local** to display this screen.

The **Manual → IO → Local** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
OUTPUTS				**NONE**
1	**Control Power**	Indicates if the control power is on or off.		
2	**Valve**	Indicates if the valve is on or off.		
INPUTS				
3	**Estop**	Indicates if the emergency stop is on or off.		
4	**Control Power**	Indicates if the control power is on or off.		
5	**Door**	Indicates if the door is opened or closed.		

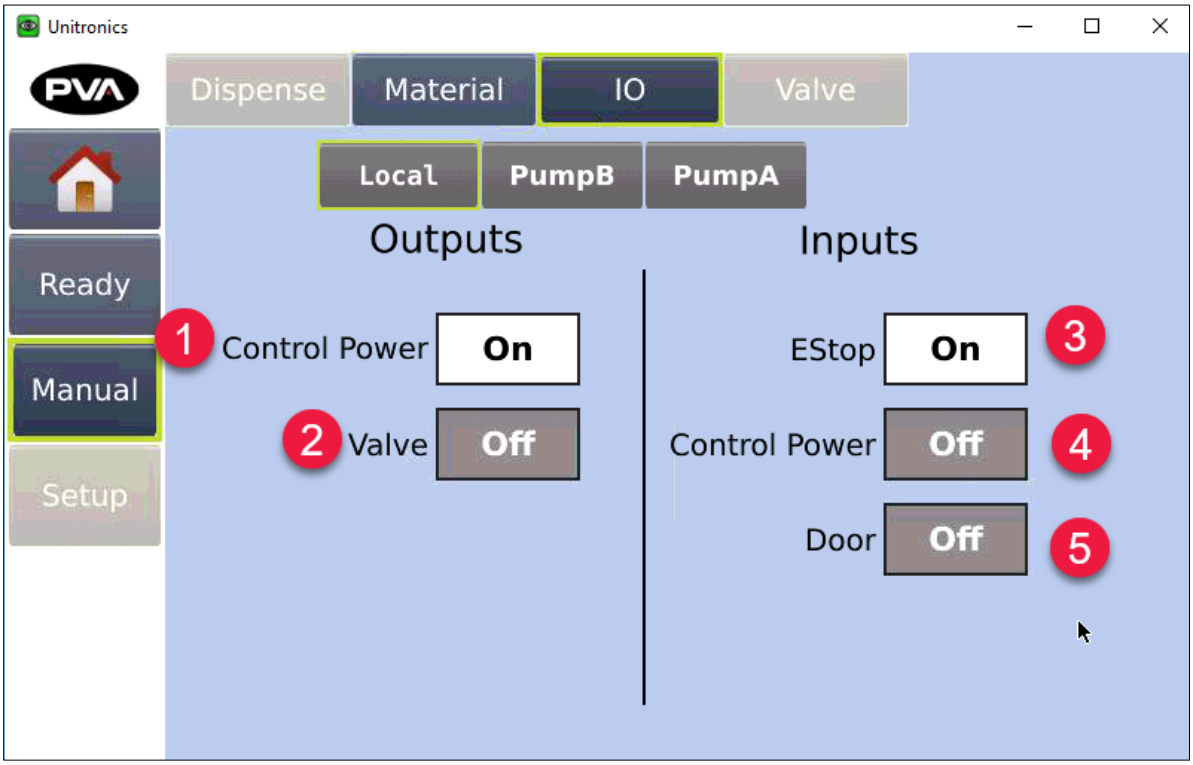

Figure 80: Operator Manual IO Local (2 SGP, 2 5G PP)

6.3.2 Manual → IO → Pumps

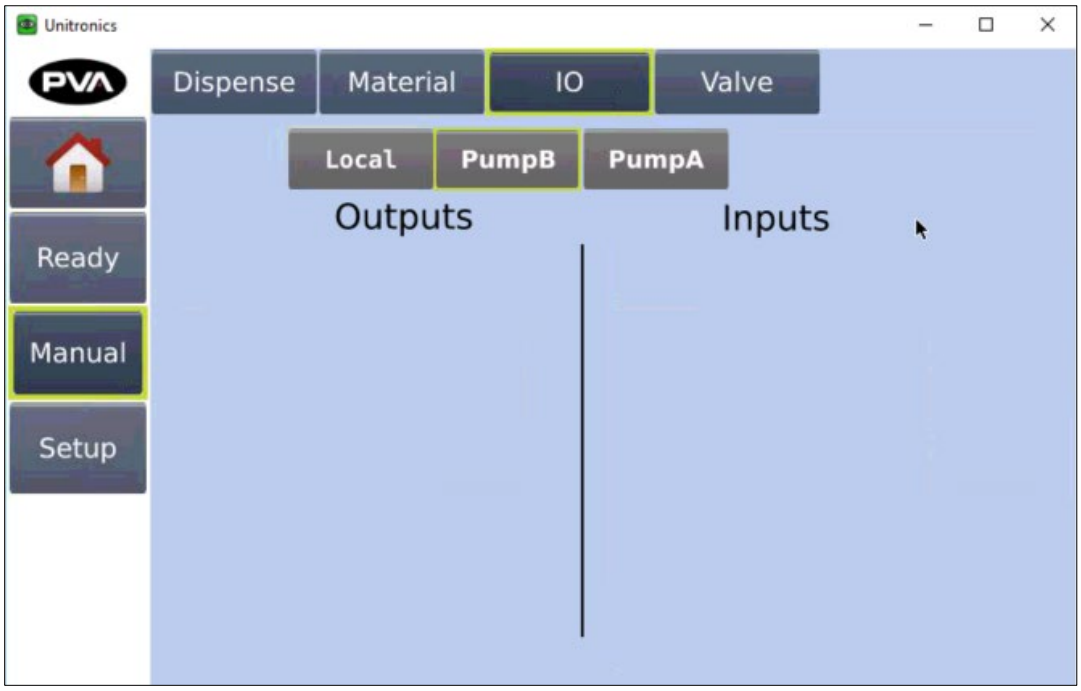

Figure 81: Manager Manual IO Pump B (2 SGP, 2 5G PP)

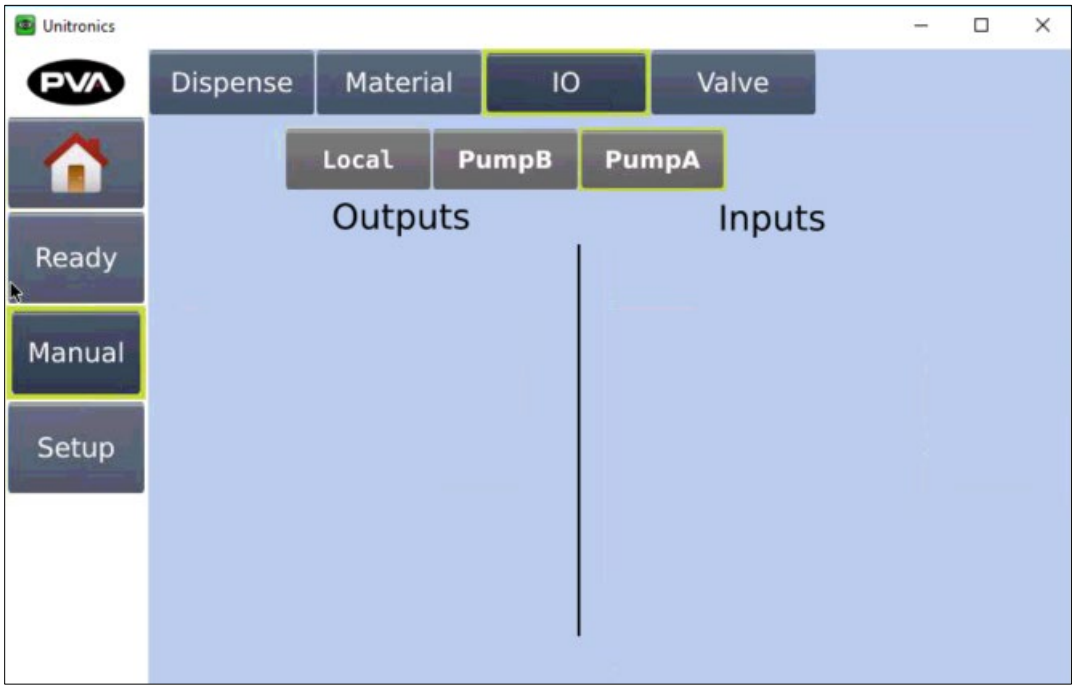

Figure 82: Manager Manual IO Pump A (2 SGP, 2 5G PP)

7. Two Servo Cartridge Pumps

7.1 Manager

7.1.1 Home Screen

See Home Screen Features and Functions for a detailed description of each feature.

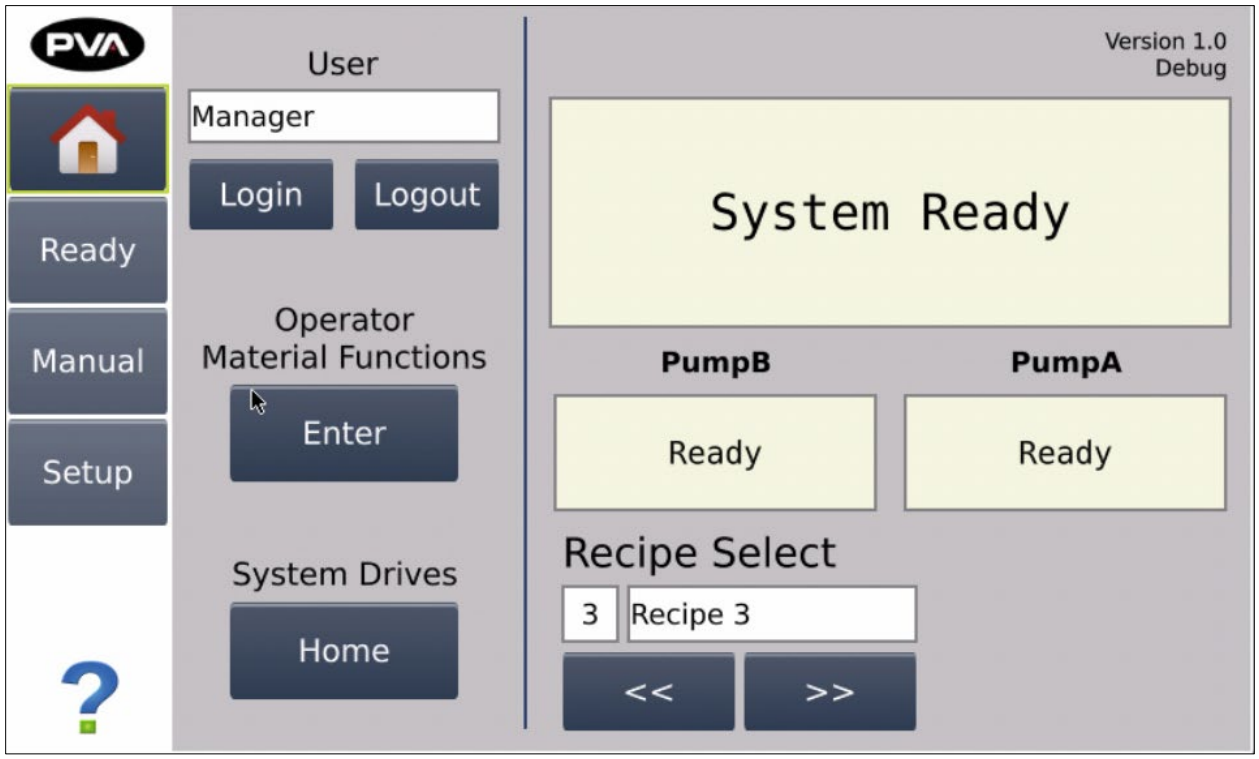

Figure 83: Manager Home Screen (2 SCTP)

7.1.2 Operator Material Functions

From the Home Screen, click **Enter** under Operator Material Functions to display this screen. It can also be accessed by selecting **Manual → Material**.

The Operator Material Functions screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Ready**	The pump status for both Pump B and Pump A.	**3**	**Unload**	Click to unload the cartridge.
2	**Cartridge**	Displays remaining material left in each cartridge. Will also indicate if low and empty alerts have been turned on.	**4**	**Load**	Click to load the cartridge.
			5	**Bleed**	Click to bleed the cartridge. See specific pumping system manual for further instruction.

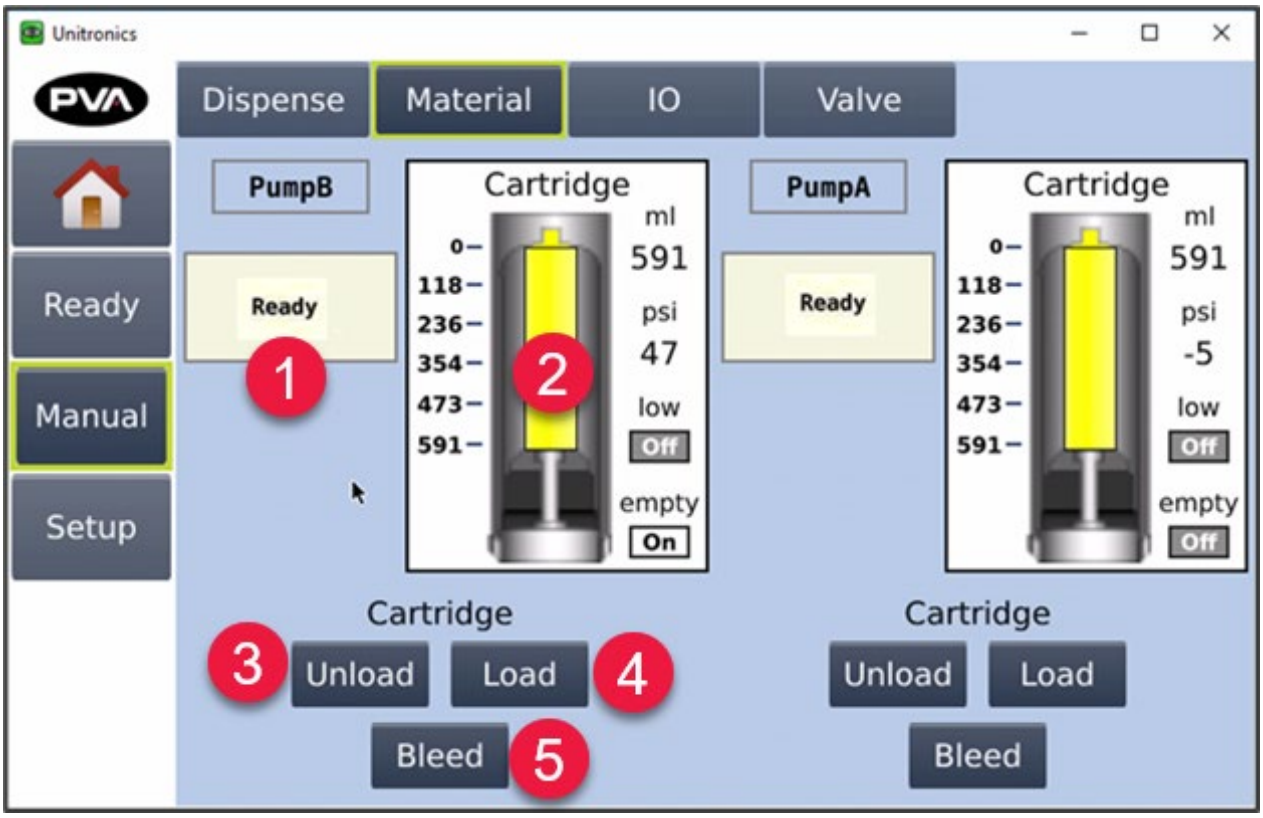

Figure 84: Manager Operator Material Functions (2 SCTP)

7.1.3 Ready

From the Navigation Pane, click **Ready** to display this screen.

The Operator Material Functions screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Recipe**	The current recipe selection.	5	**Dispense**	Click *Dispense* to begin dispensing.
2	**Rate**	The current flow rate.	6	**Exit**	Select *Exit* to return to the Home screen.
3	**Cartridge**	Displays remaining material left in each cartridge. Will also indicate if low and empty alerts have been turned on.			
4	**Ready**	The pump status for both Pump B and Pump A.			

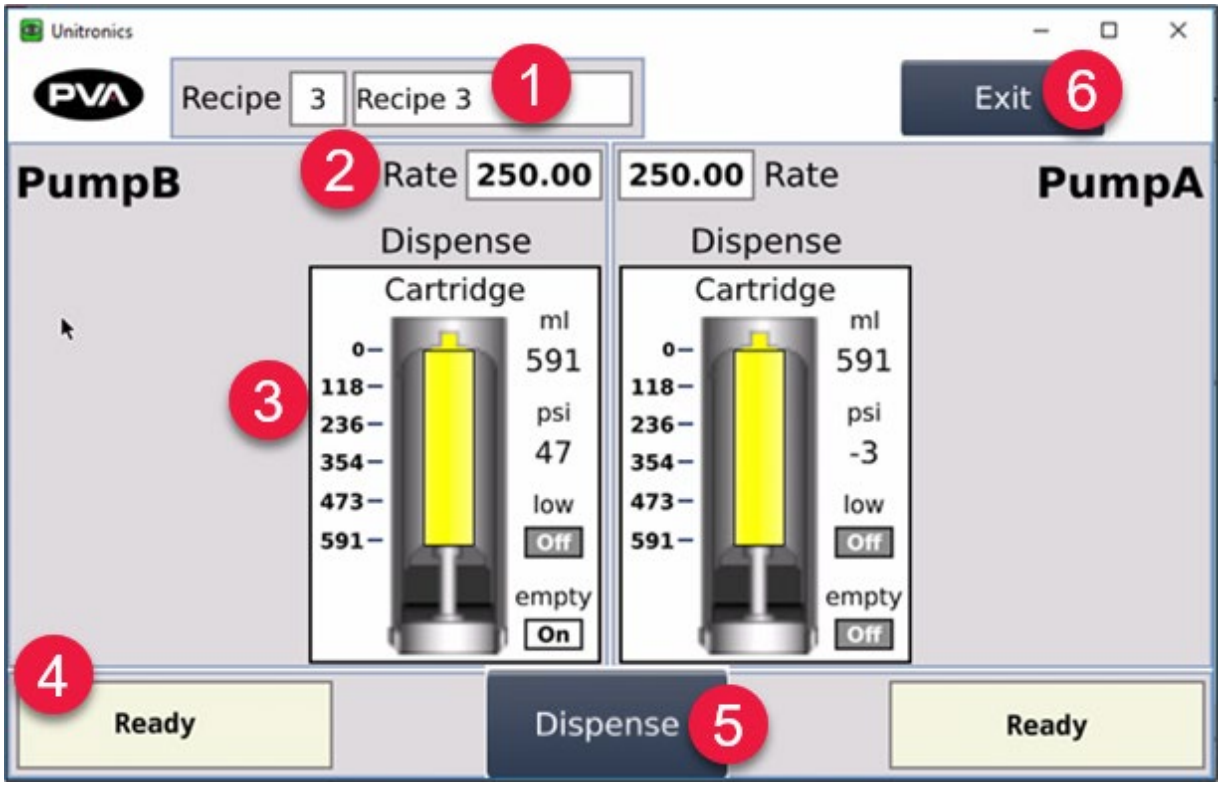

Figure 85: Manager Ready Screen (2 SCTP)

7.1.4 Manual → Dispense → Settings

From the Navigation Pane, click **Manual** to display this screen.

The **Manual → Dispense → Settings** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
5	**Ready**	The pump status for both Pump B and Pump A.	**1**	**K-Factor**	Enter a K-Factor.
7	**Last Shot**	Displays the last shot time (sec).	**2**	**Pump Enable**	Select the checkbox to enable the pump.
			3	**Dispense**	Click *Dispense* to begin dispensing.
			4	**Dispense Rate**	Enter a dispense rate for both pumps.
			6	**Dispense Rate**	Choose a continuous or timed dispense rate.
			8	**Shot Time**	Enter a shot time (sec).

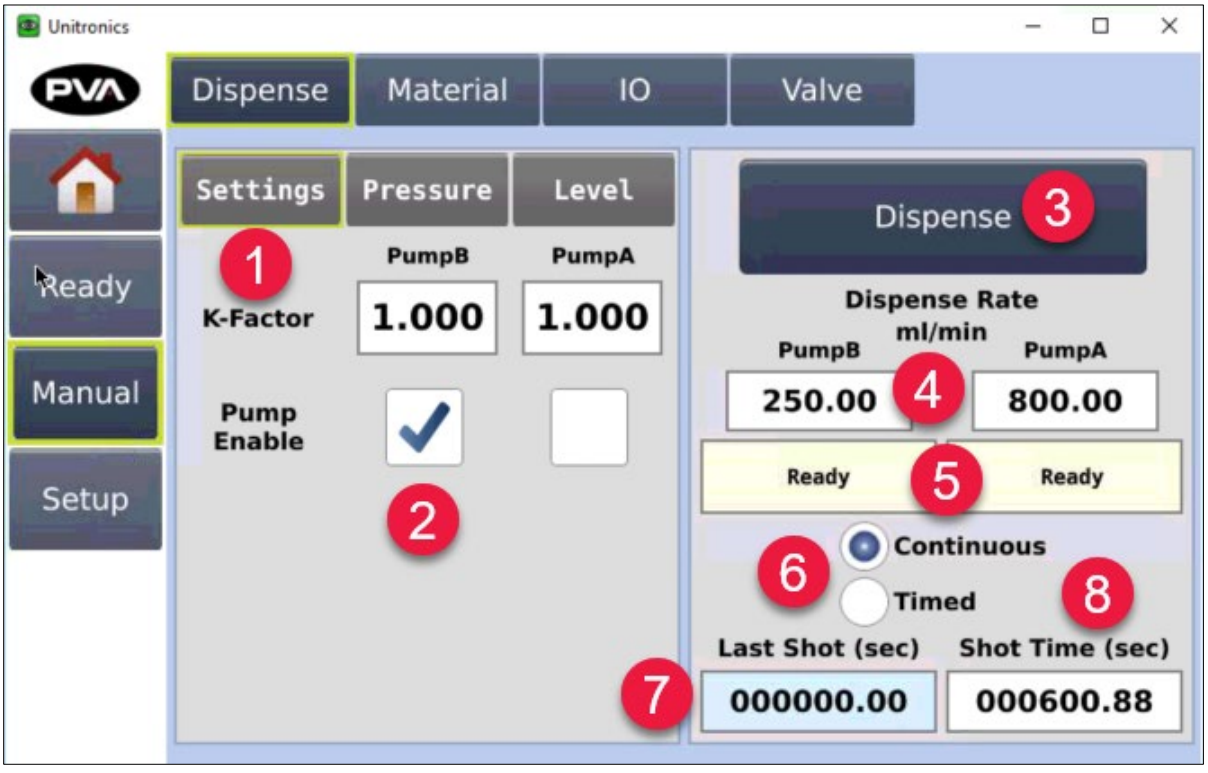

Figure 86: Manager Manual Dispense Settings (2 SCTP)

7.1.5 Manual → Dispense → Pressure

From the **Manual → Dispense** tab, click **Pressure** to display this screen.

The **Manual → Dispense → Pressure** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Process**	Displays the process (psi).	**2**	**Preload**	Enter a preload (psi).
6	**Ready**	The pump status for both Pump B and Pump A.	**3**	**Preload Enable**	Select to enable preload.
8	**Last Shot**	Displays the last shot time (sec).	**4**	**Dispense**	Click *Dispense* to begin dispensing.
			5	**Dispense Rate**	Enter a dispense rate (ml/min).
			7	**Dispense Rate**	Choose continuous or timed.
			9	**Shot Time**	Enter a shot time (sec).

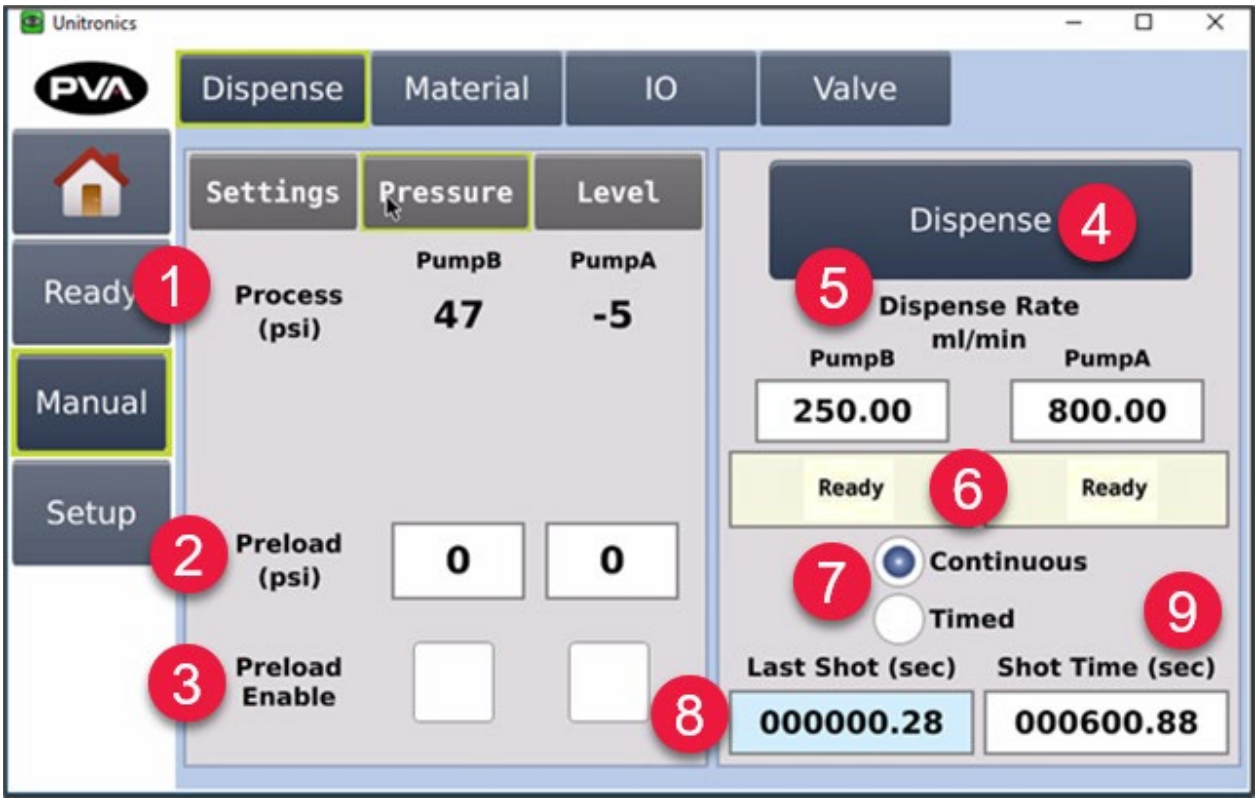

Figure 87: Manager Manual Dispense Pressure (2 SCTP)

7.1.6 Manual → Dispense → Level

From the **Manual → Dispense** tab, click **Level** to display this screen.

The **Manual → Dispense → Level** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
2	**Pump Level**	Displays the level for both pumps (ml).	**3**	**Dispense**	Click *Dispense* to begin dispensing.
5	**Ready**	The pump status for both Pump B and Pump A.	**4**	**Dispense Rate**	Enter a dispense rate for Pump B and Pump A (ml/min).
7	**Last Shot**	Displays the last shot time (sec).	**6**	**Dispense Rate**	Choose continuous or timed.
			8	**Shot Time**	Enter a shot time (sec).

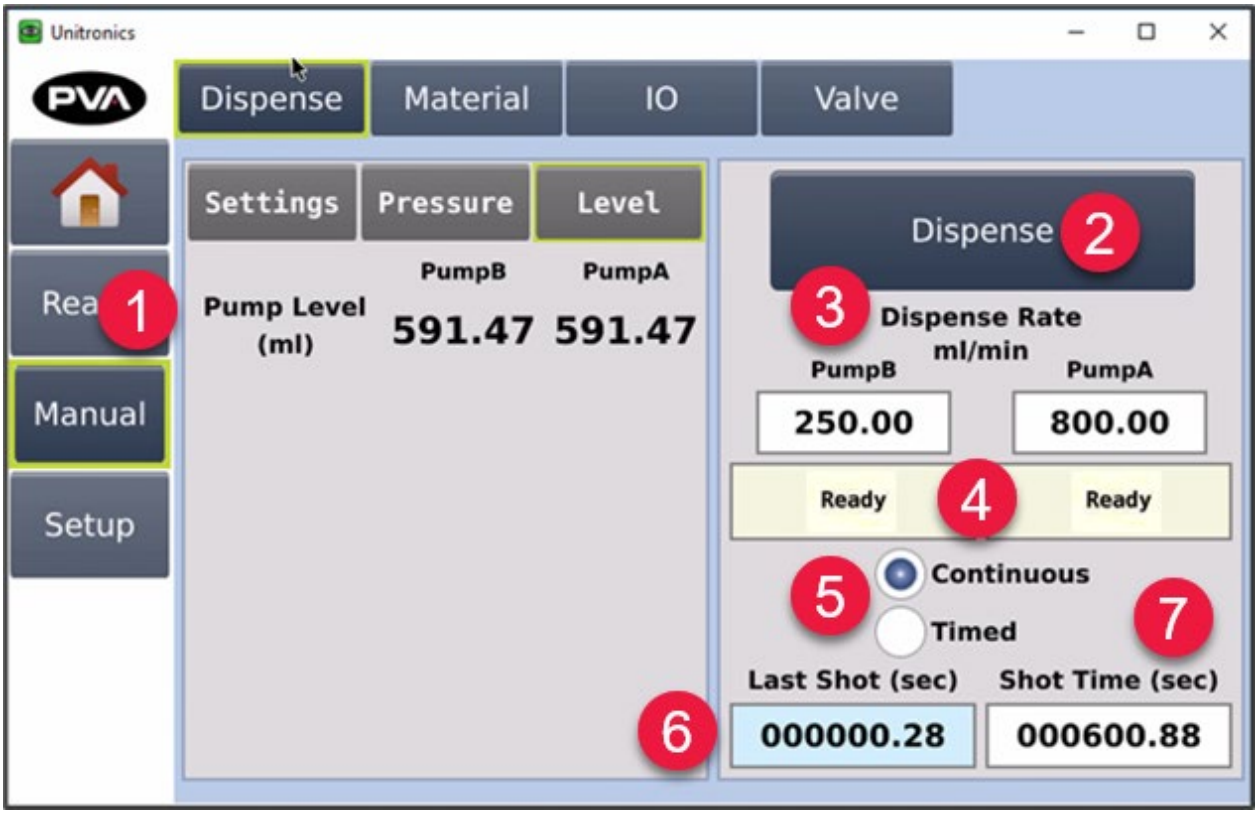

Figure 88: Manager Manual Dispense Level (2 SCTP)

7.1.7 Manual → Material

From the Home Screen, select **Manual → Material** to display this screen. It can also be accessed by clicking **Enter** under Operator Material Functions.

The **Manual → Material** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Ready**	The pump status for both Pump B and Pump A.	**3**	**Unload**	Click to unload the cartridge.
2	**Cartridge**	Displays remaining material left in each cartridge. Will also indicate if low and empty alerts have been turned on.	**4**	**Load**	Click to load the cartridge.
			5	**Bleed**	Click to bleed the cartridge. See specific pumping system manual for further instruction.

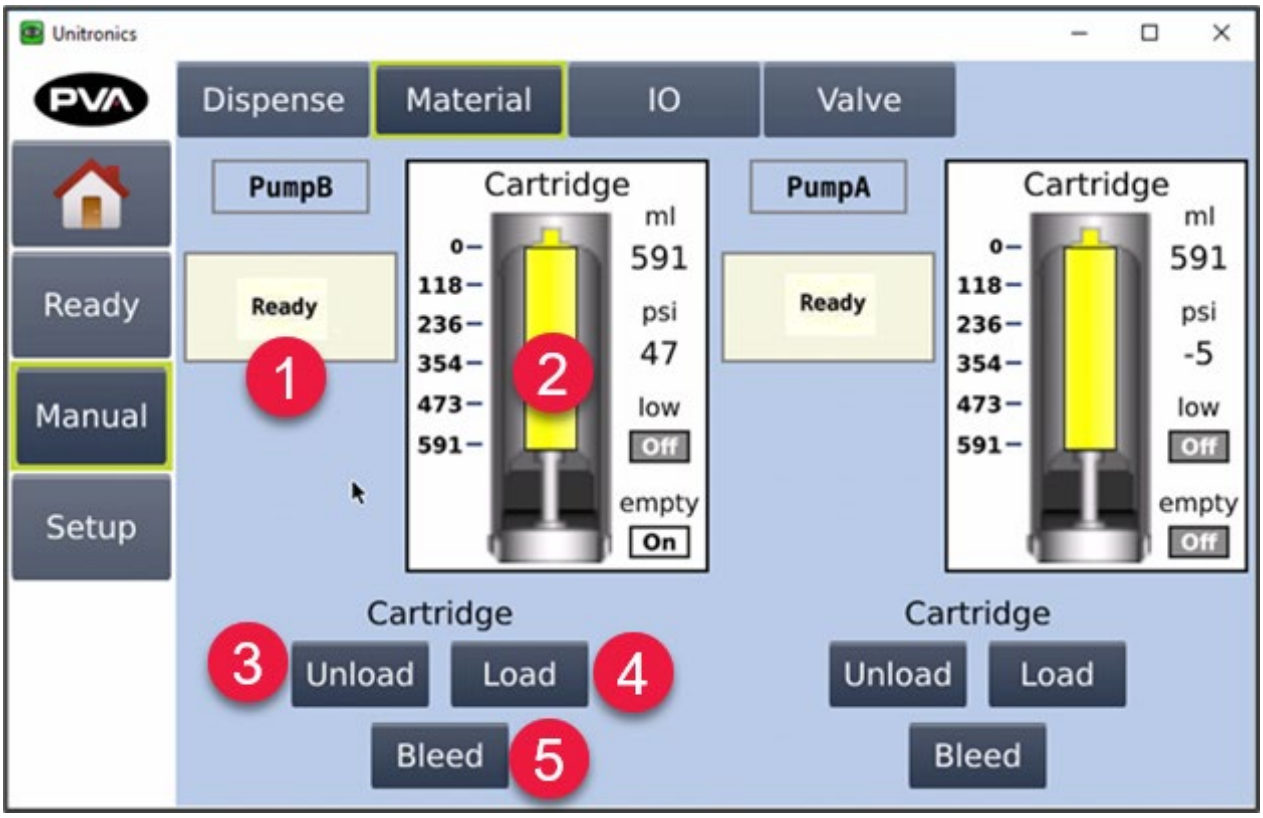

Figure 89: Manager Operator Material Functions (2 SCTP)

7.1.8 Manual → IO → Local

From the Navigation Pane, select **Manual → IO → Local** to display this screen.

The **Manual → IO → Local** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
OUTPUTS				**NONE**
1	**Control Power**	Indicates if the control power is on or off.		
2	**Valve**	Indicates if the valve is on or off.		
INPUTS				
3	**Estop**	Indicates if the emergency stop is on or off.		
4	**Control Power**	Indicates if the control power is on or off.		
5	**Door**	Indicates if the door is opened or closed.		

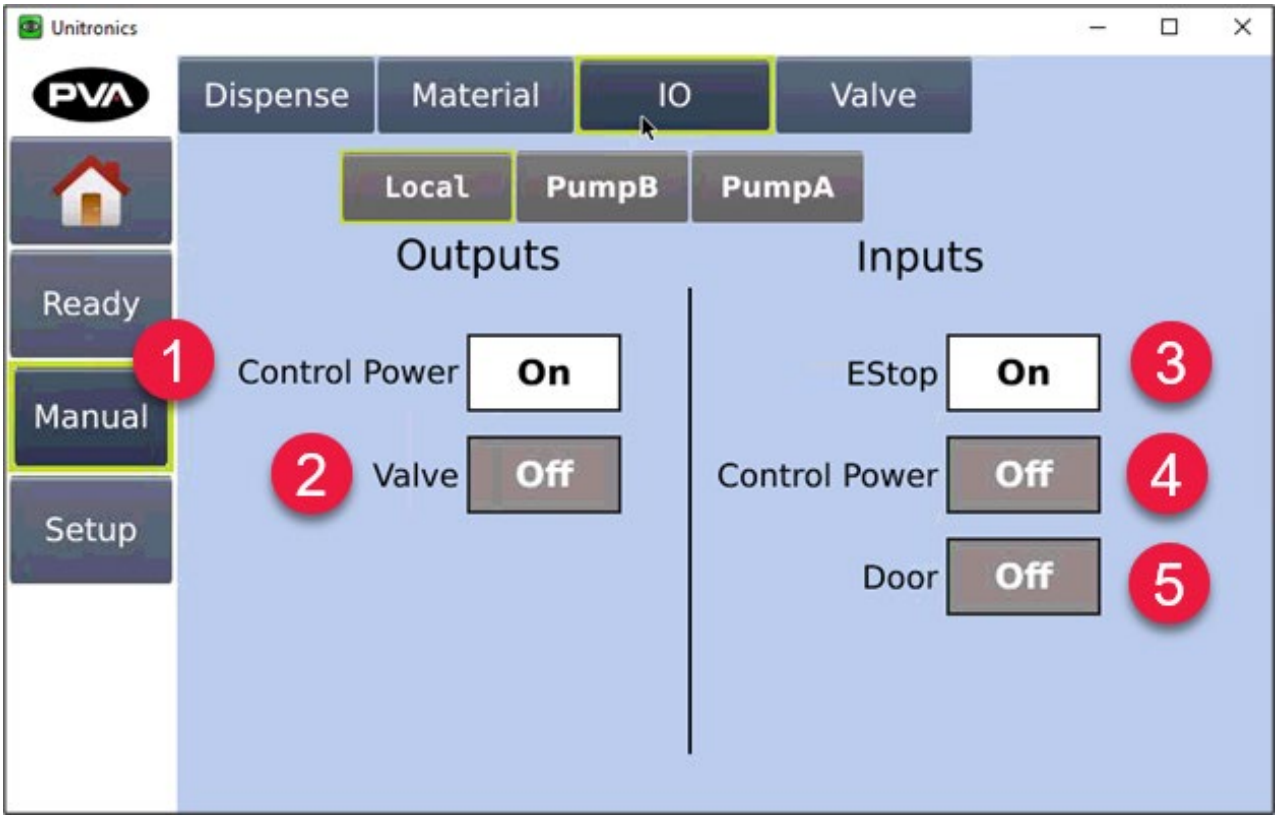

Figure 90: Manager Manual IO Local (2 SCTP)

7.1.9 Manual → IO → Pump B and Pump A

From the Navigation Pane, select **Manual → IO → Pump B** or **Manual → IO → Pump A** to display this screen.

The **Manual → IO → Pump B** and **Pump A** screen have the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
INPUTS				**NONE**
1	**Low**	Indicates if the cartridge level is low.		
2	**Empty**	Indicates if the cartridge is empty.		
3	**Locked**	Indicates if the cartridge is locked.		

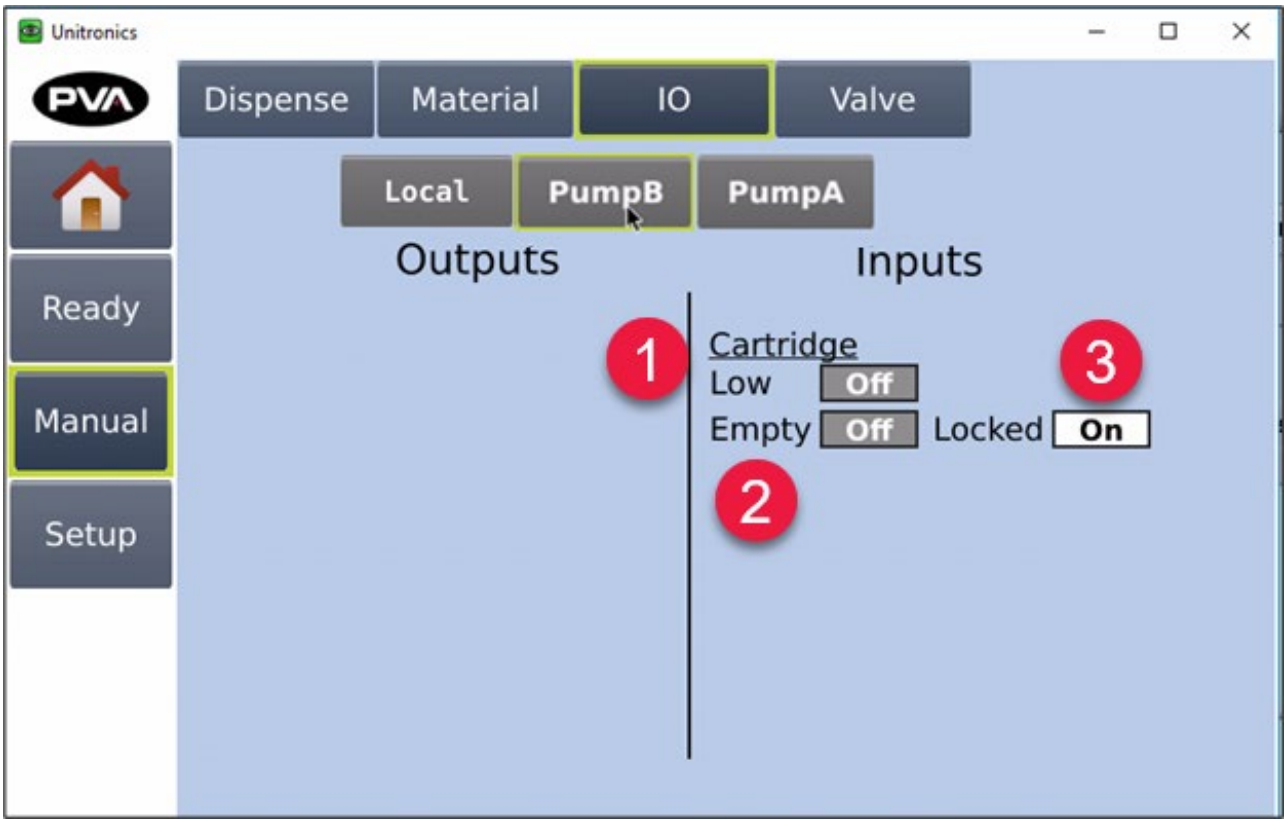

Figure 91: Manager Manual IO Pump B (2 SCTP)

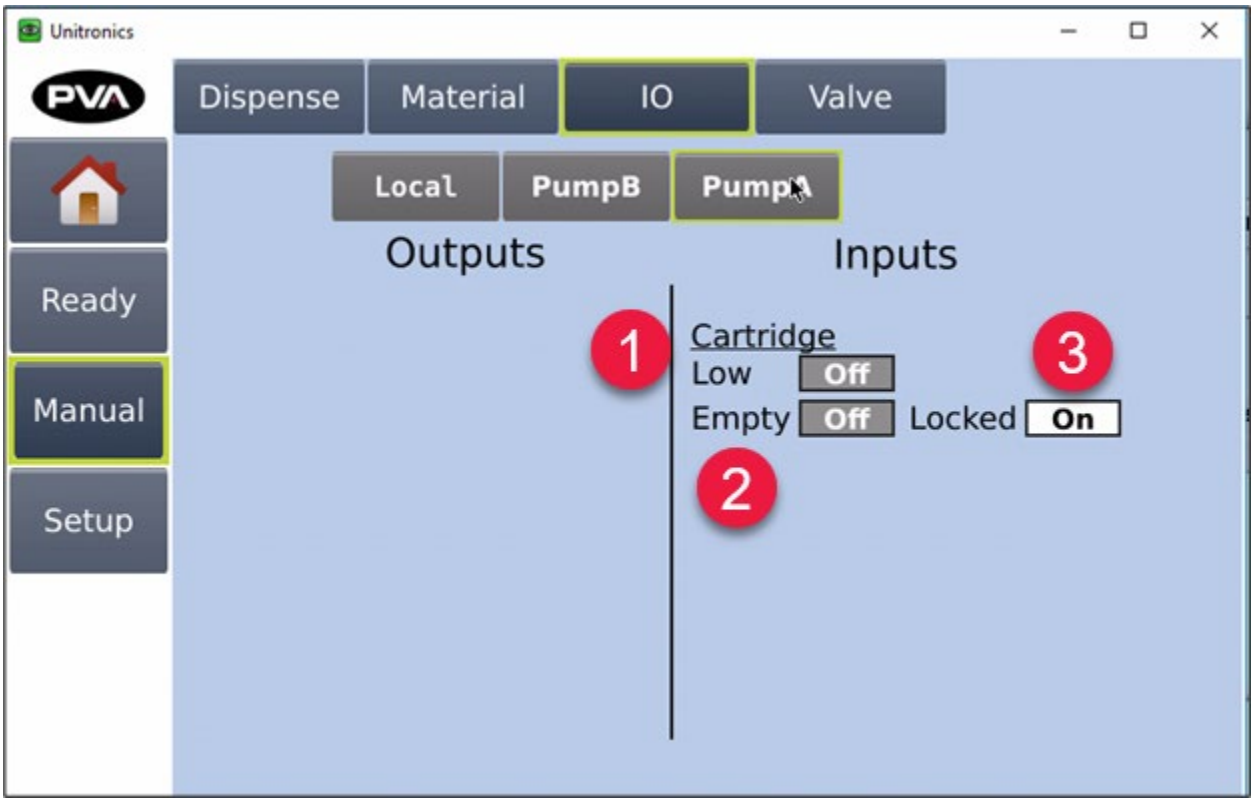

Figure 92: Manager Manual IO Pump A (2 SCTP)

7.1.10 Manual → Valve

From the Navigation Pane, select **Manual → Valve** to display this screen.

The **Manual → Valve** screen has the following features and options:

#	DISPLAY FIELDS	#	EDIT FIELDS	
None		**1**	**Valve Toggle**	Click and hold toggle to open the valve for the duration that the button is held. Once the button is released, it will close.
		2	**Valve Enable**	Select the checkbox to enable the valve. The valve is not open when disabled.

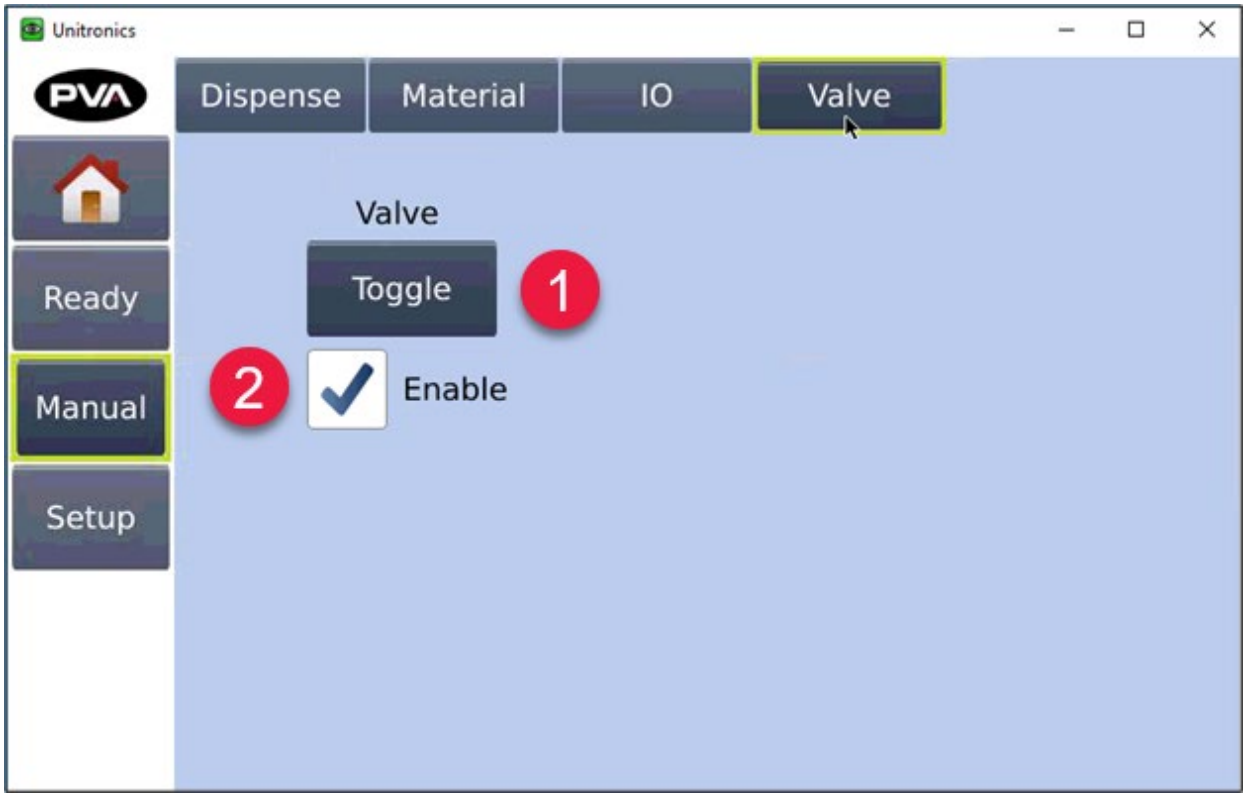

Figure 93: Manager Manual Valve (2 SCTP)

7.1.11 Setup → Recipe → Pump B

From the Navigation Pane, select **Setup → Recipe → Pump B** to display this screen.

The **Setup → Recipe → Pump B** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
2	**Pump B**	Displays the current pump.	**1**	**Enable**	Select the checkbox to enable the pump.
3	**Recipe**	Displays the current recipe.	**4**	**Recipe**	Use the arrows to browse other recipes. Click the recipe to change the recipe name.
5	**Empty**	Indicates if the empty alert is on or off.	**6**	**Dispense Rate**	Enter the dispense rate (ml/min).
6	**Low**	Indicates if the low alert is on or off.	**8**	**K-Factor**	Enter the K-Factor.
7	**Cartridge**	Displays the current pump levels.	**10**	**Process PSI**	Enter the minimum, maximum, and preload values.
11	**Process Pressure Indicator**	The left bar displays the current pressure. The right bar displays the process pressure range. The marker is the preload pressure setpoint.			

See next page for screenshot examples.

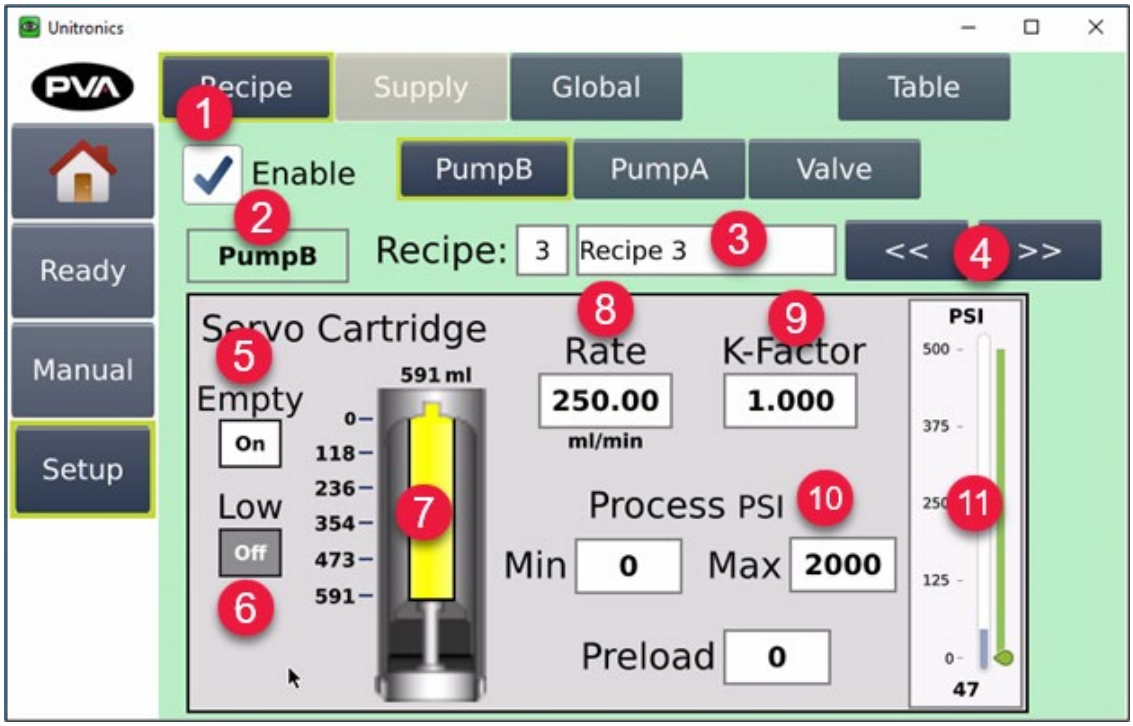

Figure 94: Manager Setup Recipe Pump B (2 SCTP)

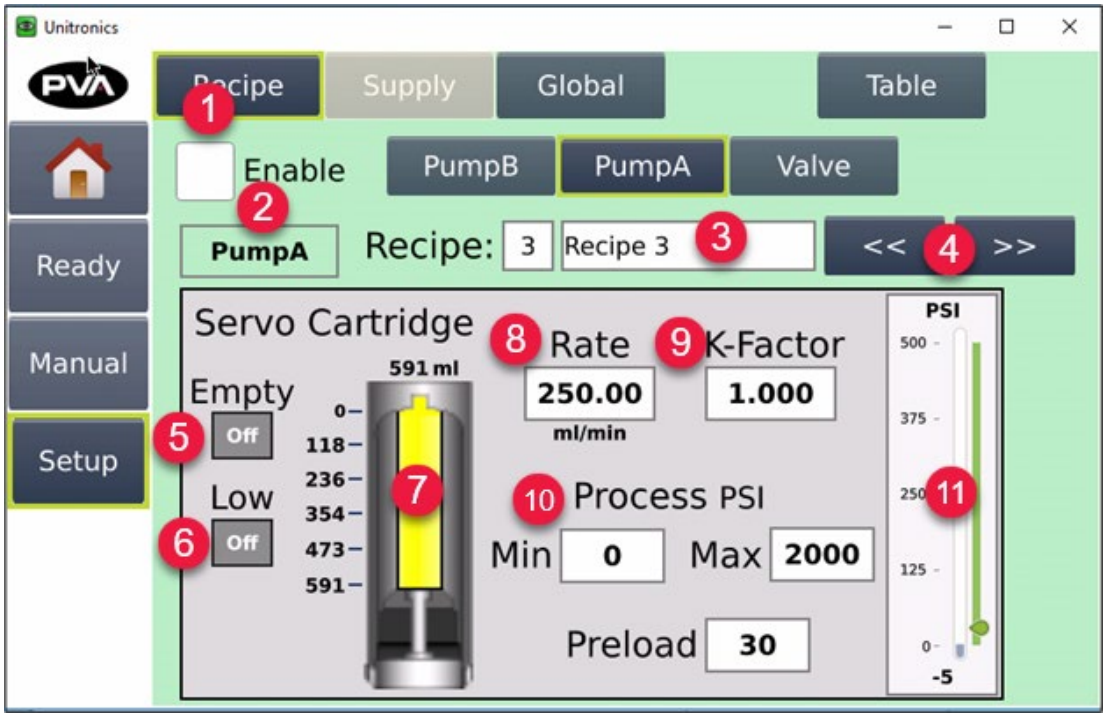

Figure 95: Manager Setup Recipe Pump A (2 SCTP)

7.1.12 Setup → Recipe → Valve

From the Navigation Pane, select **Setup → Recipe → Valve** to display this screen.

The **Setup → Recipe → Valve** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Recipe**	Displays the current recipe.	**2**	**Recipe**	Use the arrows to browse other recipes.
			3	**Dispense Type**	Select a continuous or timed dispense type.
			4	**Shot Time**	Click the field to enter a shot time.
			5	**Valve Enable**	Select the checkbox to enable the valve.

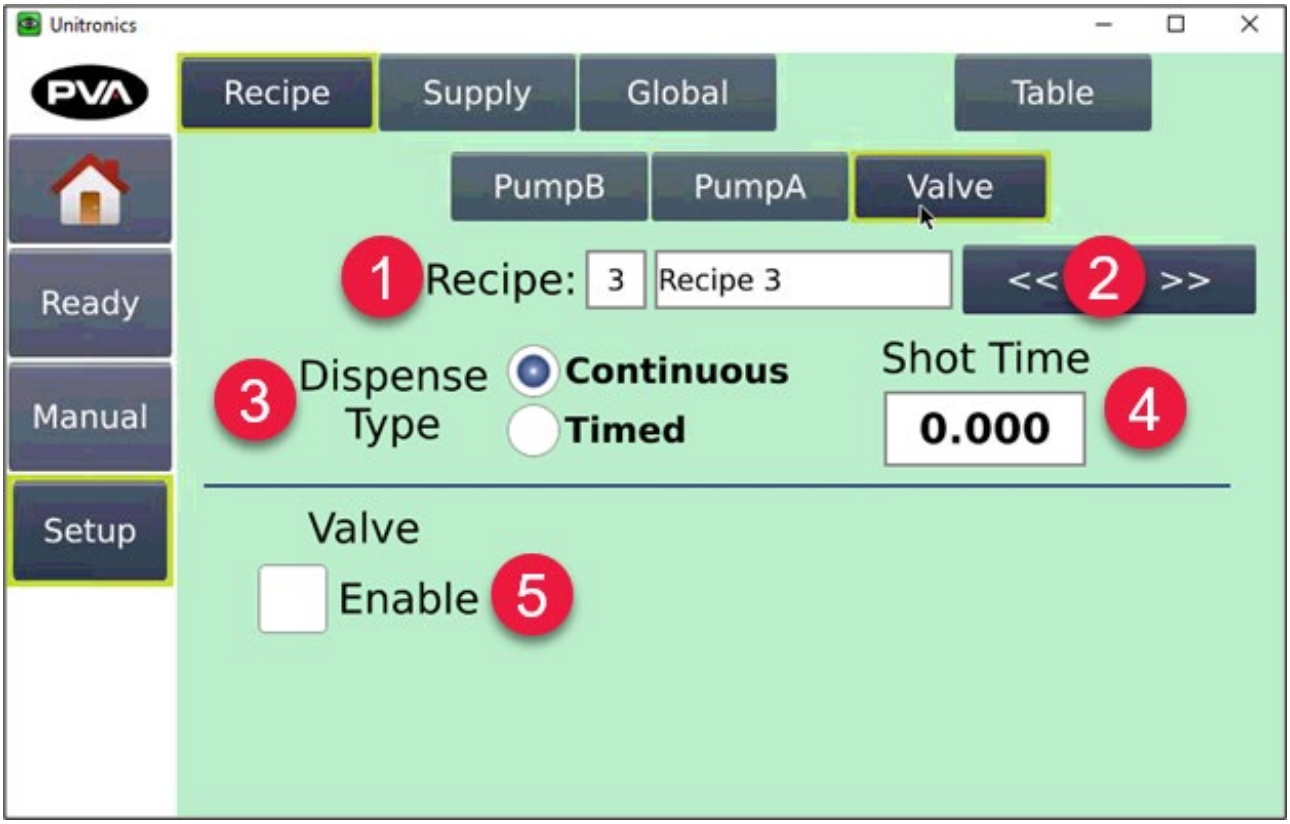

Figure 96: Manager Setup Recipe Valve (2 SCTP)

7.1.13 Setup → Recipe → Table

From the **Setup → Recipe** screen, select **Table** to display this screen.

The **Setup → Recipe → Table** screen allows you to view each recipe and their settings. Select **Exit** to return to the Setup screen.

5. Select the **Edit On** button on the top right corner of the screen to enable editing of recipe settings.
6. To edit a recipe setting, select the desired recipe line. The selected line will appear yellow. and click on the setting you wish to edit.
7. A popup will display that allows you to edit the setting.
8. Select **Ok** to save your changes. Select **Cancel** to return to the Recipe Table and discard your edits.

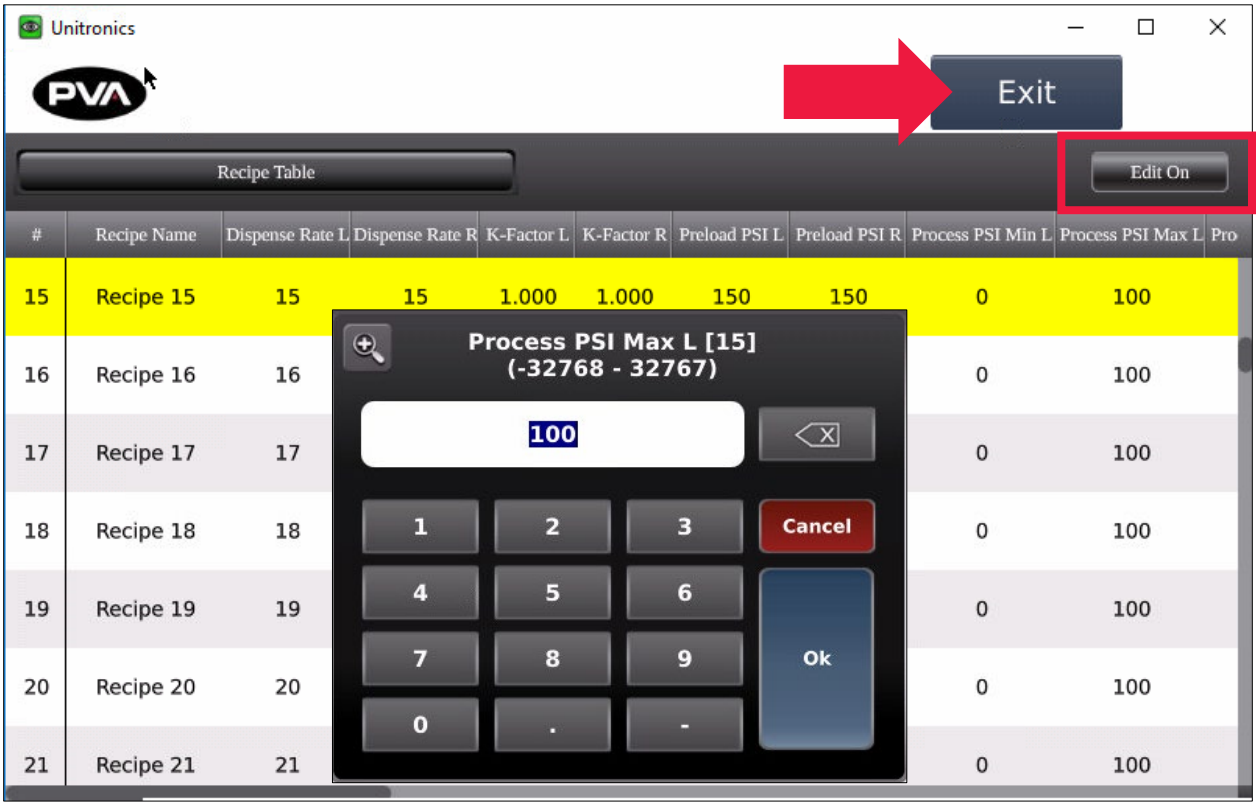

Figure 97: Manager Setup Recipe Table (2 SPP, 2 10GT)

7.1.1 Setup → Global

From the Navigation Pane, select **Setup → Global** to display this screen.

The **Setup → Global** screen has the following features and options:

#	DISPLAY FIELDS	#	EDIT FIELDS	
None		1	**Operator Recipe Select**	Select the checkbox to enable the operator to select recipes.
		2	**Preload**	Select the checkbox to enable preload for one or both pumps.
		3	**Color Check**	Select the checkbox to enabled color check for one or both pumps.
		3	**Ready Mode Idle Timeout**	Enter the amount of time in hours and minutes that the machine will time out of ready mode.
		4	**Pressure Units**	Choose bar or psi for the pressure units.

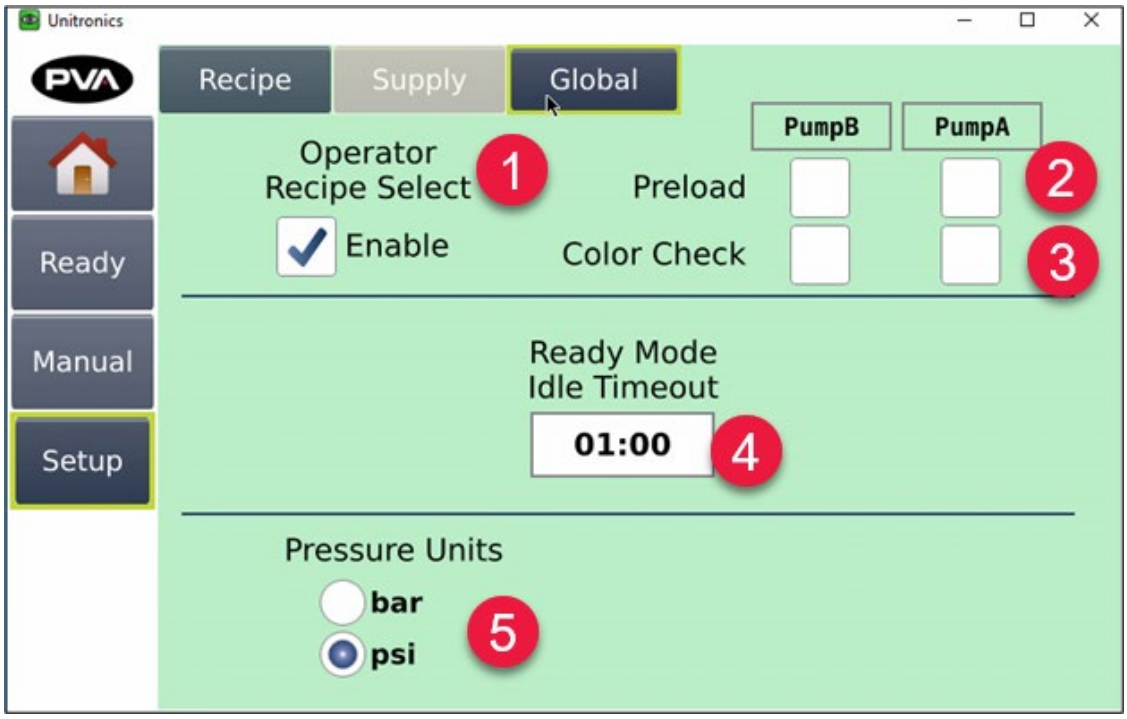

Figure 98: Manager Setup Global (2 SCTP)

7.2 Technician

7.2.1 Home Screen

See Home Screen Features and Functions for a detailed description of each feature.

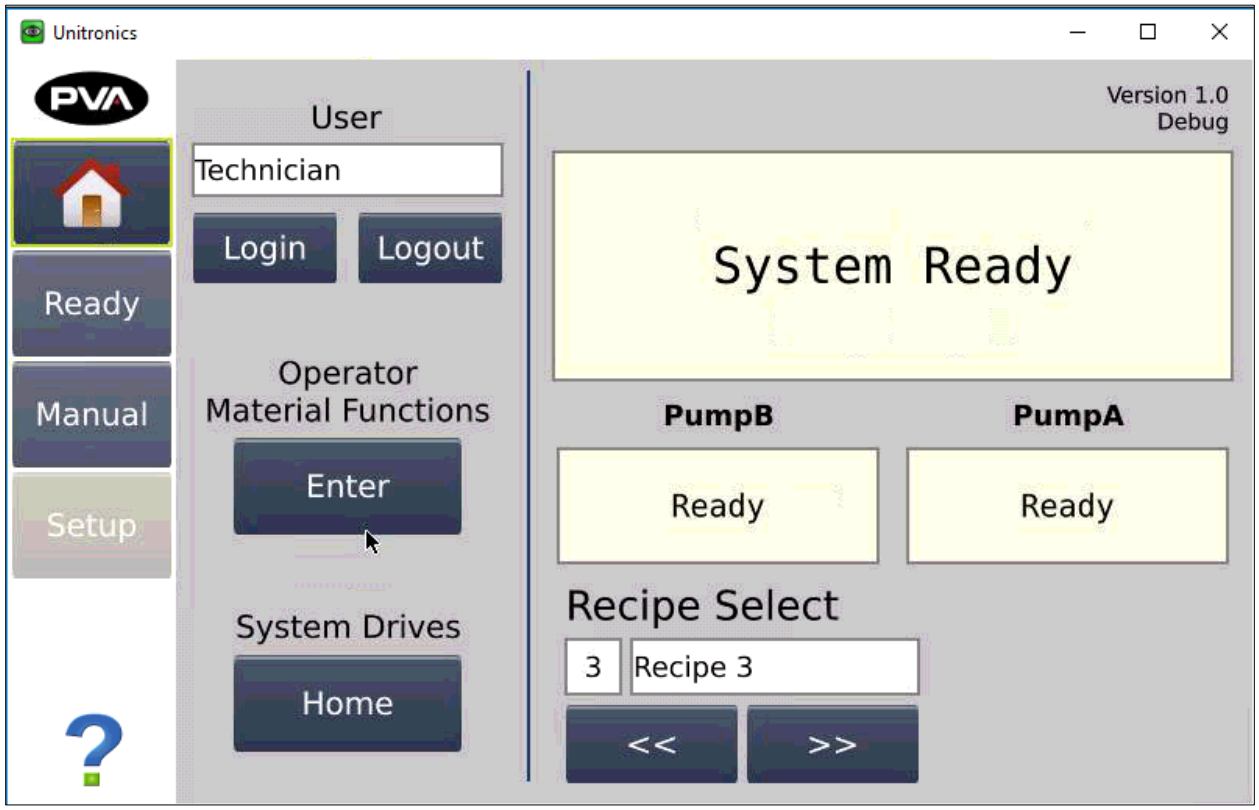

Figure 99: Technician Home Screen (2 SCTP)

7.2.2 Operator Material Functions

From the Home Screen, click **Enter** under Operator Material Functions to display this screen. It can also be accessed by selecting **Manual → Material**.

The Operator Material Functions screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Ready**	The pump status for both Pump B and Pump A.	**3**	**Unload**	Click to unload the cartridge.
2	**Cartridge**	Displays remaining material left in each cartridge. Will also indicate if low and empty alerts have been turned on.	**4**	**Load**	Click to load the cartridge.
			5	**Bleed**	Click to bleed the cartridge. See specific pumping system manual for further instruction.

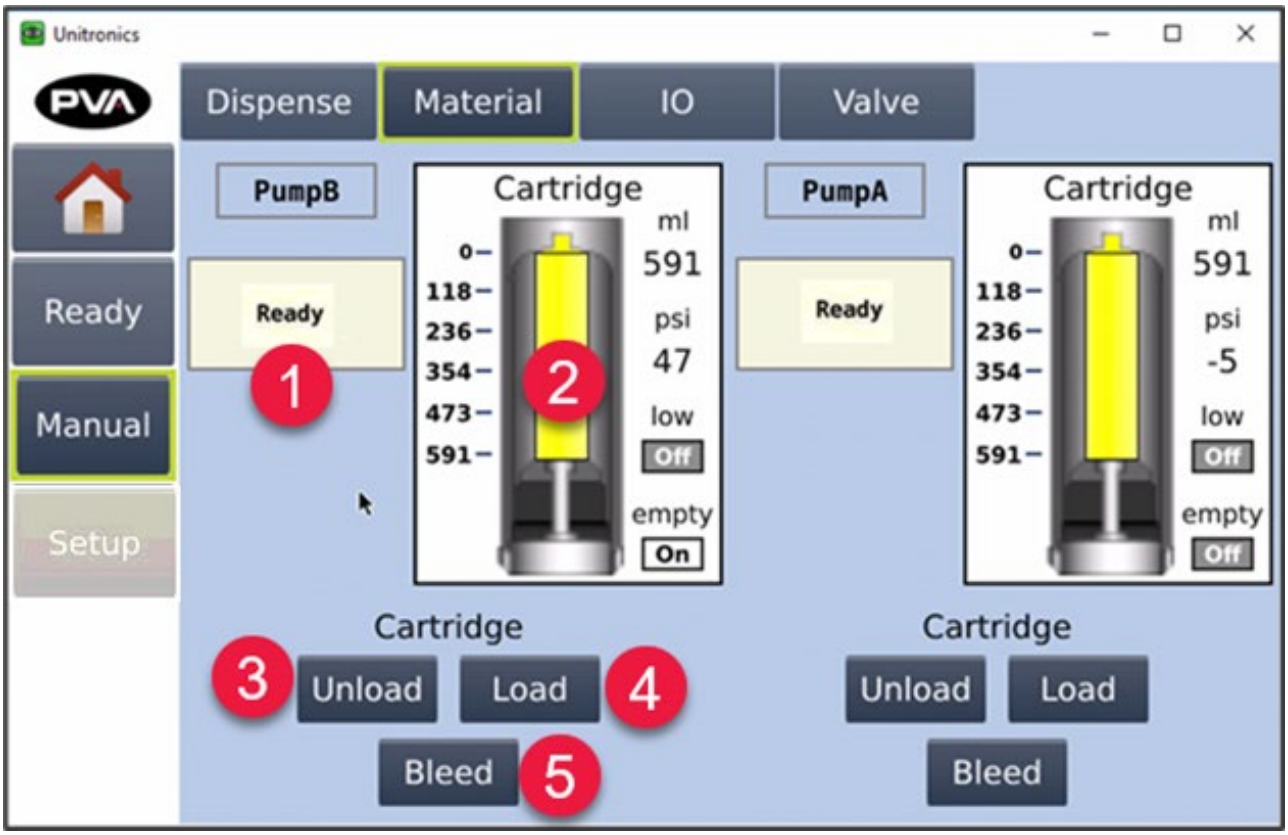

Figure 100: Technician Operator Material Functions (2 SCTP)

7.2.3 Ready

From the Navigation Pane, click **Ready** to display this screen.

The Operator Material Functions screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Recipe**	The current recipe selection.	5	**Dispense**	Click *Dispense* to begin dispensing.
2	**Rate**	The current flow rate.	6	**Exit**	Select *Exit* to return to the Home screen.
3	**Cartridge**	Displays remaining material left in each cartridge. Will also indicate if low and empty alerts have been turned on.			
4	**Ready**	The pump status for both Pump B and Pump A.			

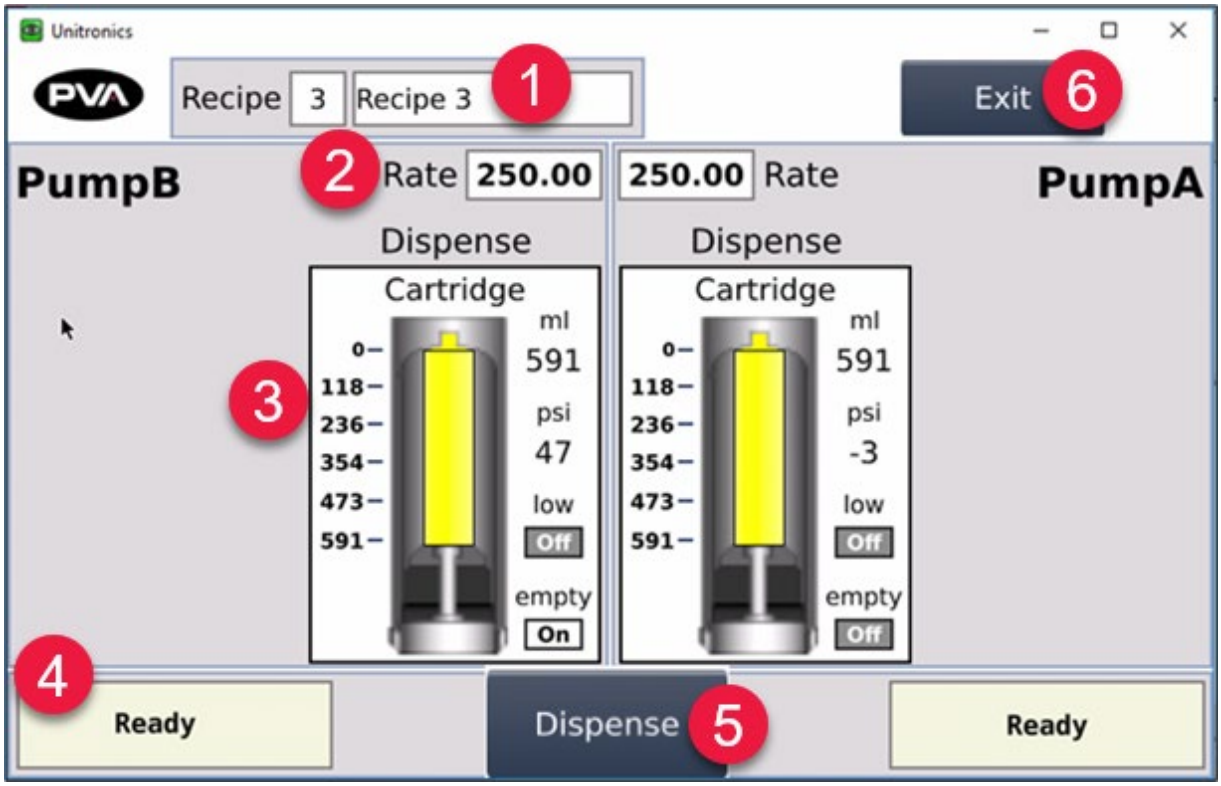

Figure 101: Technician Ready Screen (2 SCTP)

7.2.1 Manual → Dispense → Settings

From the Navigation Pane, click **Manual** to display this screen.

The **Manual → Dispense → Settings** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
5	**Ready**	The pump status for both Pump B and Pump A.	**1**	**K-Factor**	Enter a K-Factor.
7	**Last Shot**	Displays the last shot time (sec).	**2**	**Pump Enable**	Select the checkbox to enable the pump.
			3	**Dispense**	Click *Dispense* to begin dispensing.
			4	**Dispense Rate**	Enter a dispense rate for both pumps.
			6	**Dispense Rate**	Choose a continuous or timed dispense rate.
			8	**Shot Time**	Enter a shot time (sec).

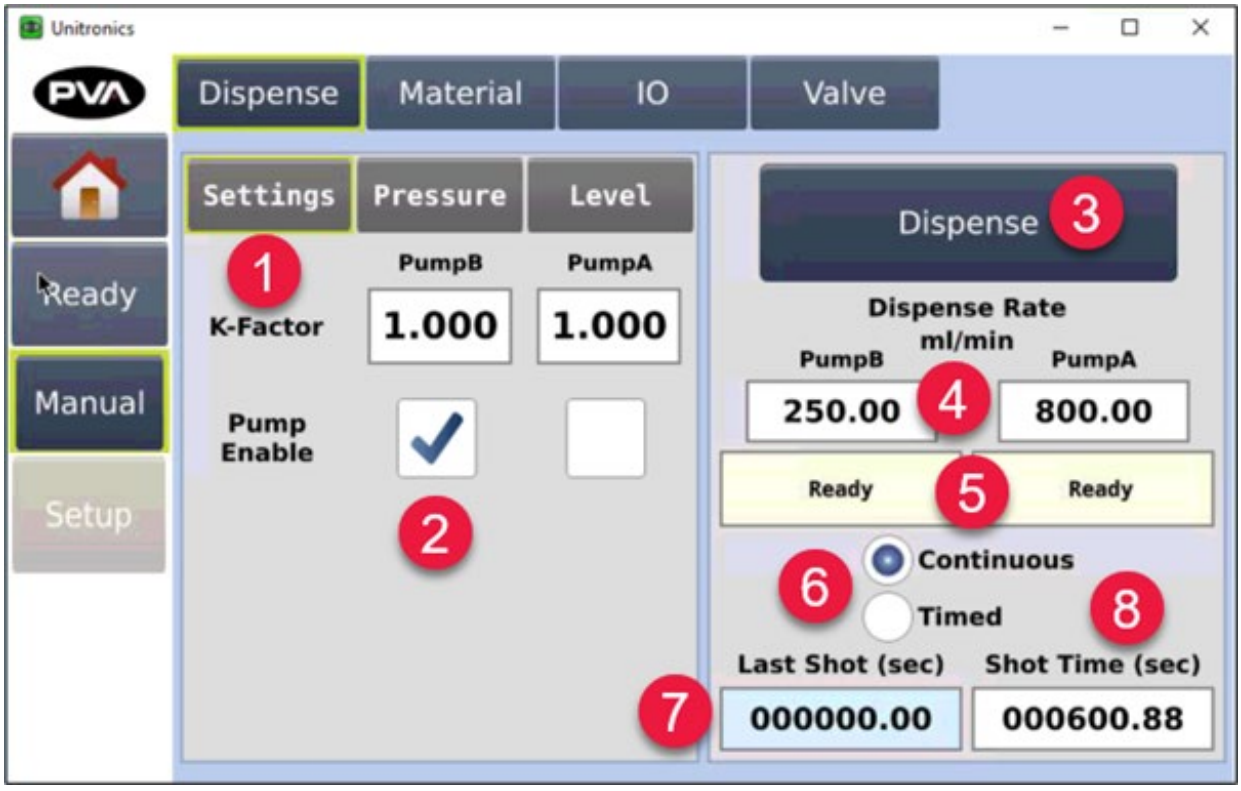

Figure 102: Technician Manual Dispense Settings (2 SCTP)

7.2.2 Manual → Dispense → Pressure

From the **Manual → Dispense** tab, click **Pressure** to display this screen.

The **Manual → Dispense → Pressure** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Process**	Displays the process (psi).	**2**	**Preload**	Enter a preload (psi).
6	**Ready**	The pump status for both Pump B and Pump A.	**3**	**Preload Enable**	Select to enable preload.
8	**Last Shot**	Displays the last shot time (sec).	**4**	**Dispense**	Click *Dispense* to begin dispensing.
			5	**Dispense Rate**	Enter a dispense rate (ml/min).
			7	**Dispense Rate**	Choose continuous or timed.
			9	**Shot Time**	Enter a shot time (sec).

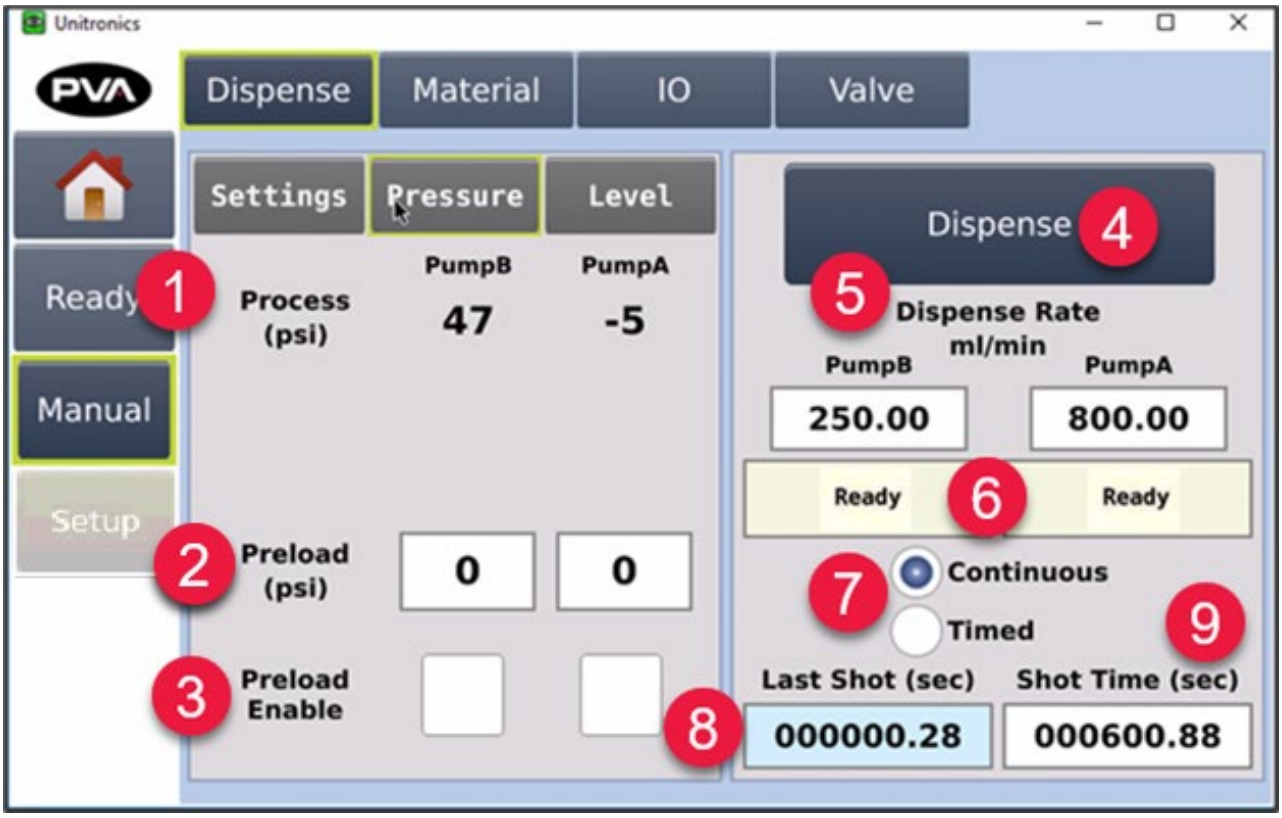

Figure 103: Technician Manual Dispense Pressure (2 SCTP)

7.2.3 Manual → Dispense → Level

From the **Manual → Dispense** tab, click **Level** to display this screen.

The **Manual → Dispense → Level** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
2	**Pump Level**	Displays the level for both pumps (ml).	**3**	**Dispense**	Click *Dispense* to begin dispensing.
5	**Ready**	The pump status for both Pump B and Pump A.	**4**	**Dispense Rate**	Enter a dispense rate for Pump B and Pump A (ml/min).
7	**Last Shot**	Displays the last shot time (sec).	**6**	**Dispense Rate**	Choose continuous or timed.
			8	**Shot Time**	Enter a shot time (sec).

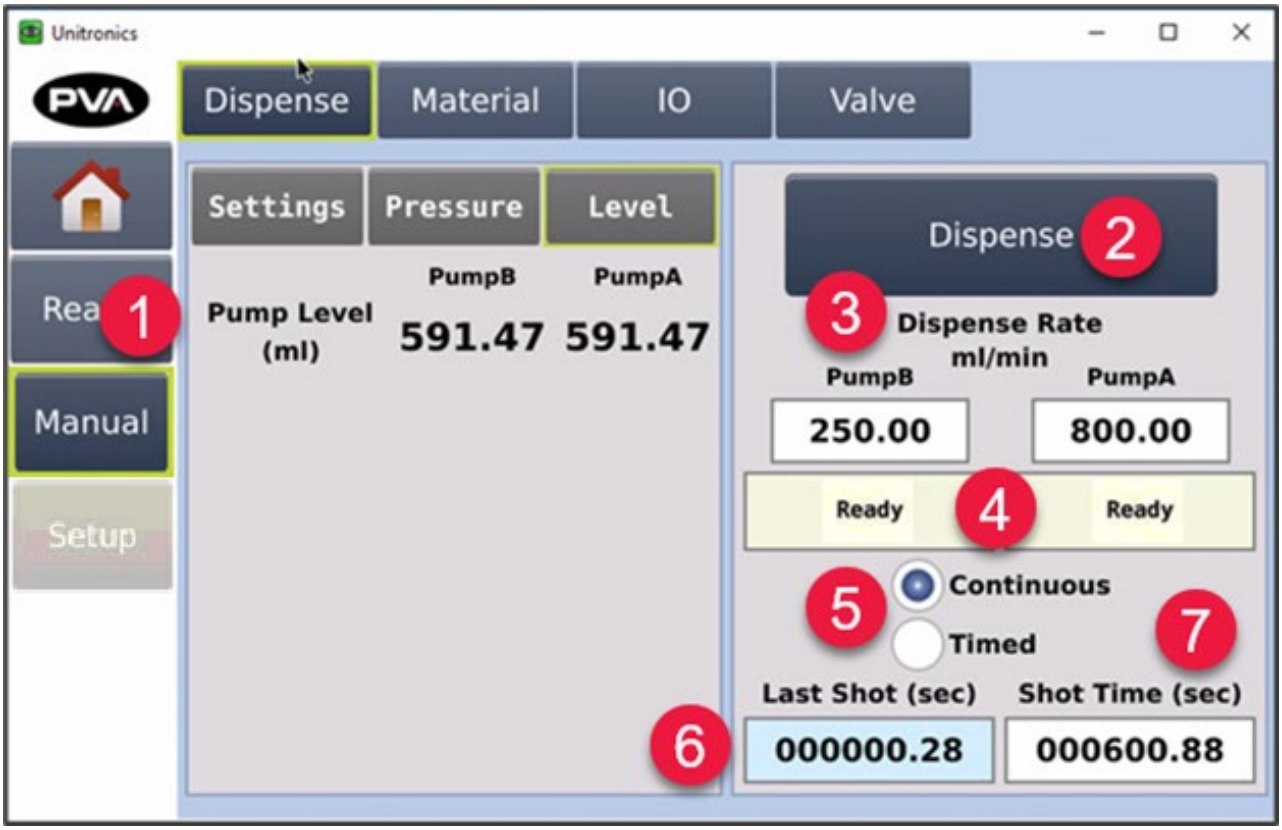

Figure 104: Technician Manual Dispense Level (2 SCTP)

7.2.4 Manual → Material

From the Home Screen, select **Manual → Material** to display this screen. It can also be accessed by clicking **Enter** under Operator Material Functions.

The **Manual → Material** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Ready**	The pump status for both Pump B and Pump A.	**3**	**Unload**	Click to unload the cartridge.
2	**Cartridge**	Displays remaining material left in each cartridge. Will also indicate if low and empty alerts have been turned on.	**4**	**Load**	Click to load the cartridge.
			5	**Bleed**	Click to bleed the cartridge. See specific pumping system manual for further instruction.

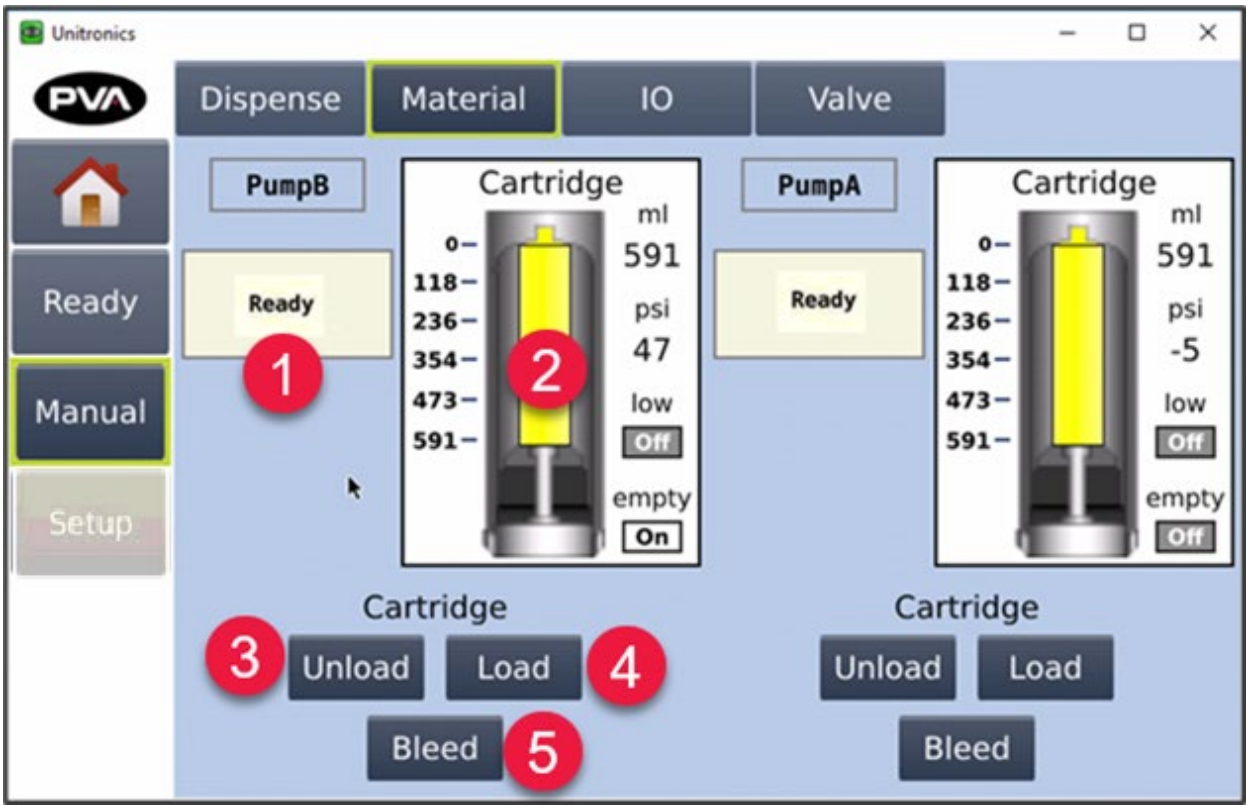

Figure 105: Technician Operator Material Functions (2 SCTP)

7.2.5 Manual → IO → Local

From the Navigation Pane, select **Manual → IO → Local** to display this screen.

The **Manual → IO → Local** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
OUTPUTS				**NONE**
1	**Control Power**	Indicates if the control power is on or off.		
2	**Valve**	Indicates if the valve is on or off.		
INPUTS				
3	**Estop**	Indicates if the emergency stop is on or off.		
4	**Control Power**	Indicates if the control power is on or off.		
5	**Door**	Indicates if the door is opened or closed.		

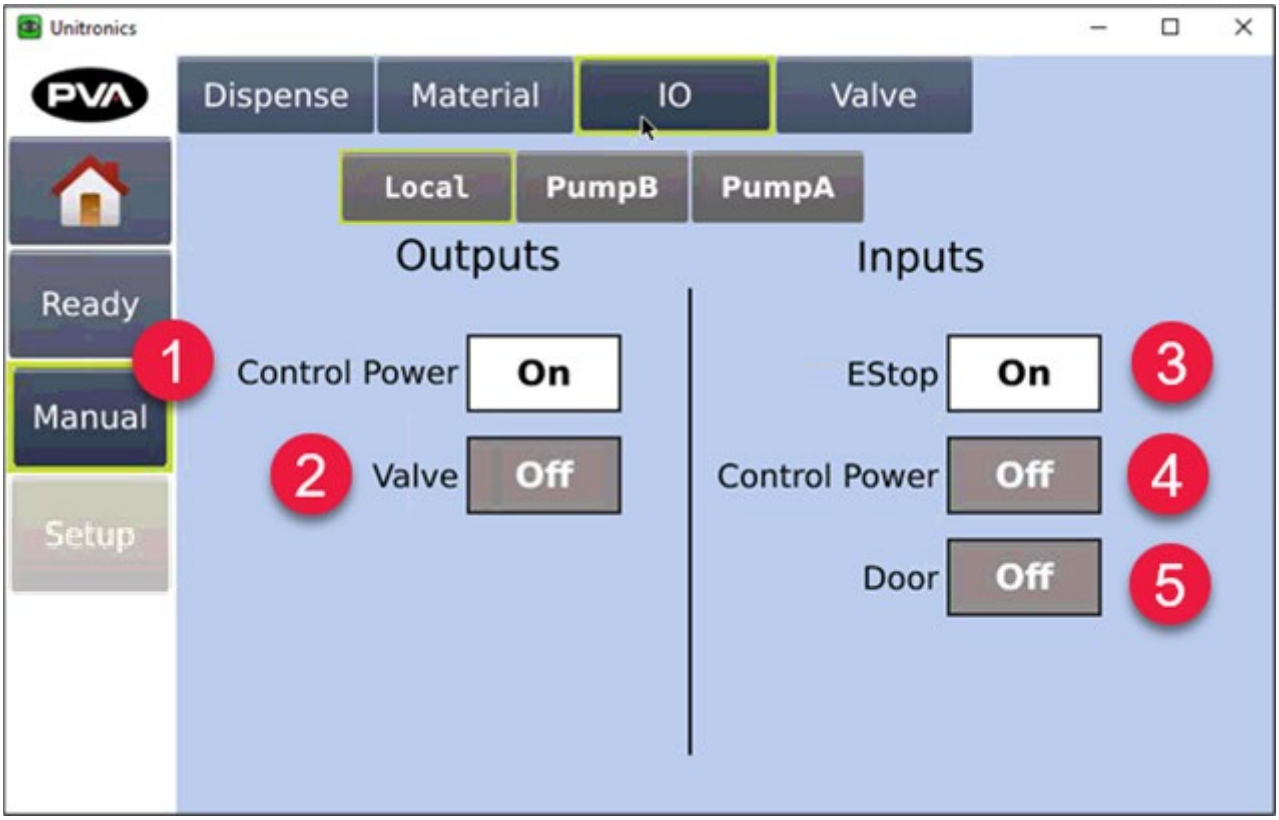

Figure 106: Technician Manual IO Local (2 SCTP)

7.2.6 Manual → IO → Pump B and Pump A

From the Navigation Pane, select **Manual → IO → Pump B** or **Manual → IO → Pump A** to display this screen.

The **Manual → IO → Pump B** and **Pump A** screen have the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
INPUTS				**NONE**
1	**Low**	Indicates if the cartridge level is low.		
2	**Empty**	Indicates if the cartridge is empty.		
3	**Locked**	Indicates if the cartridge is locked.		

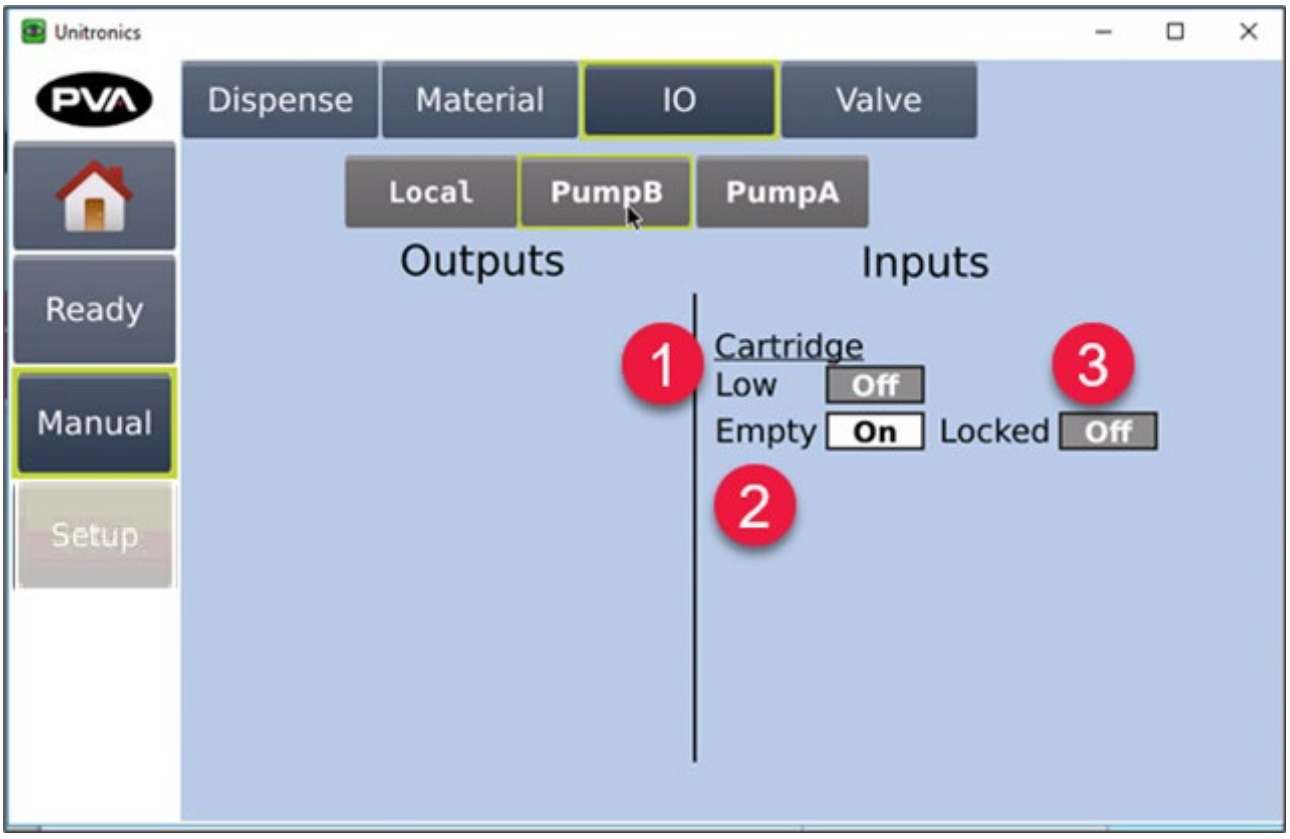

Figure 107: Technician Manual IO Pump B (2 SCTP)

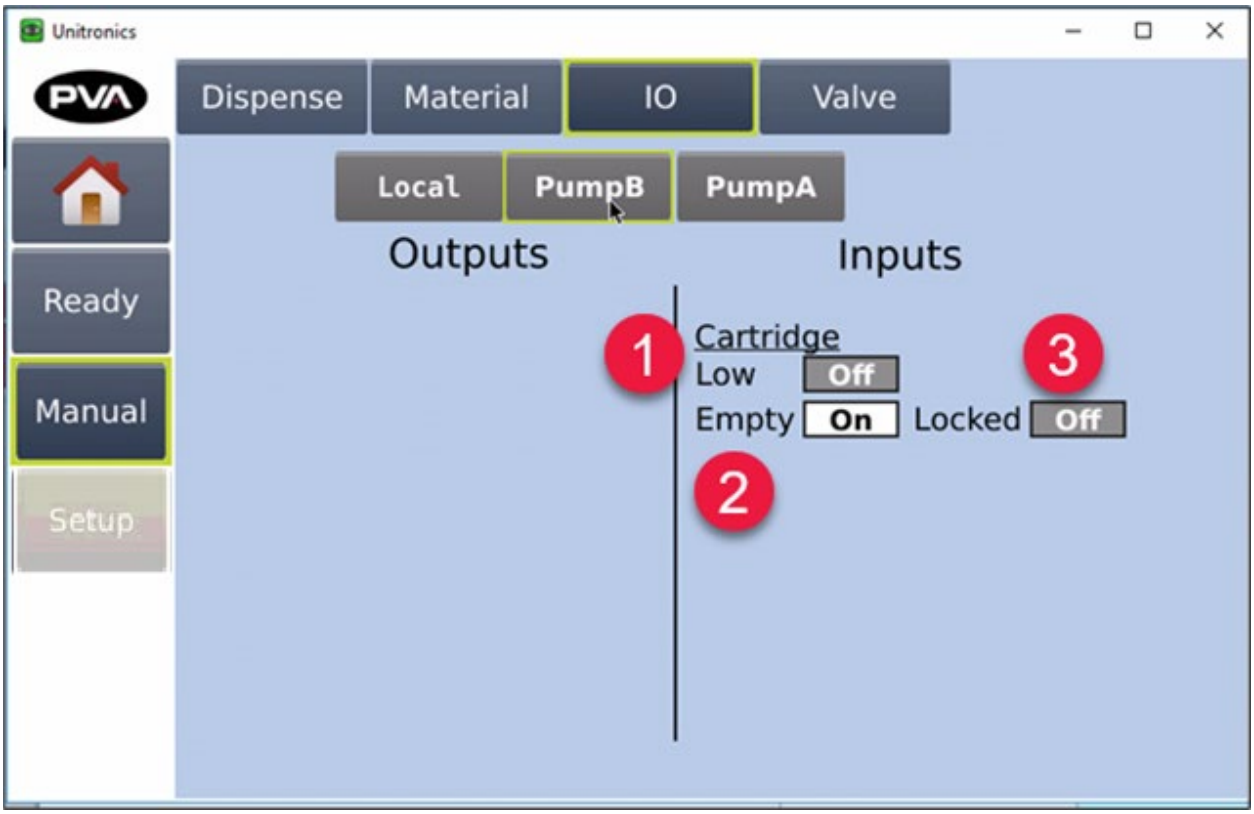

Figure 108: Technician Manual IO Pump A (2 SCTP)

7.2.7 Manual → Valve

From the Navigation Pane, select **Manual → Valve** to display this screen.

The **Manual → Valve** screen has the following features and options:

#	DISPLAY FIELDS	#	EDIT FIELDS	
None		**1**	**Valve Toggle**	Click and hold toggle to open the valve for the duration that the button is held. Once the button is released, it will close.
		2	**Valve Enable**	Select the checkbox to enable the valve. The valve is not open when disabled.

Figure 109: Technician Manual Valve (2 SCTP)

7.3 Operator

7.3.1 Home Screen

See Home Screen Features and Functions for a detailed description of each feature.

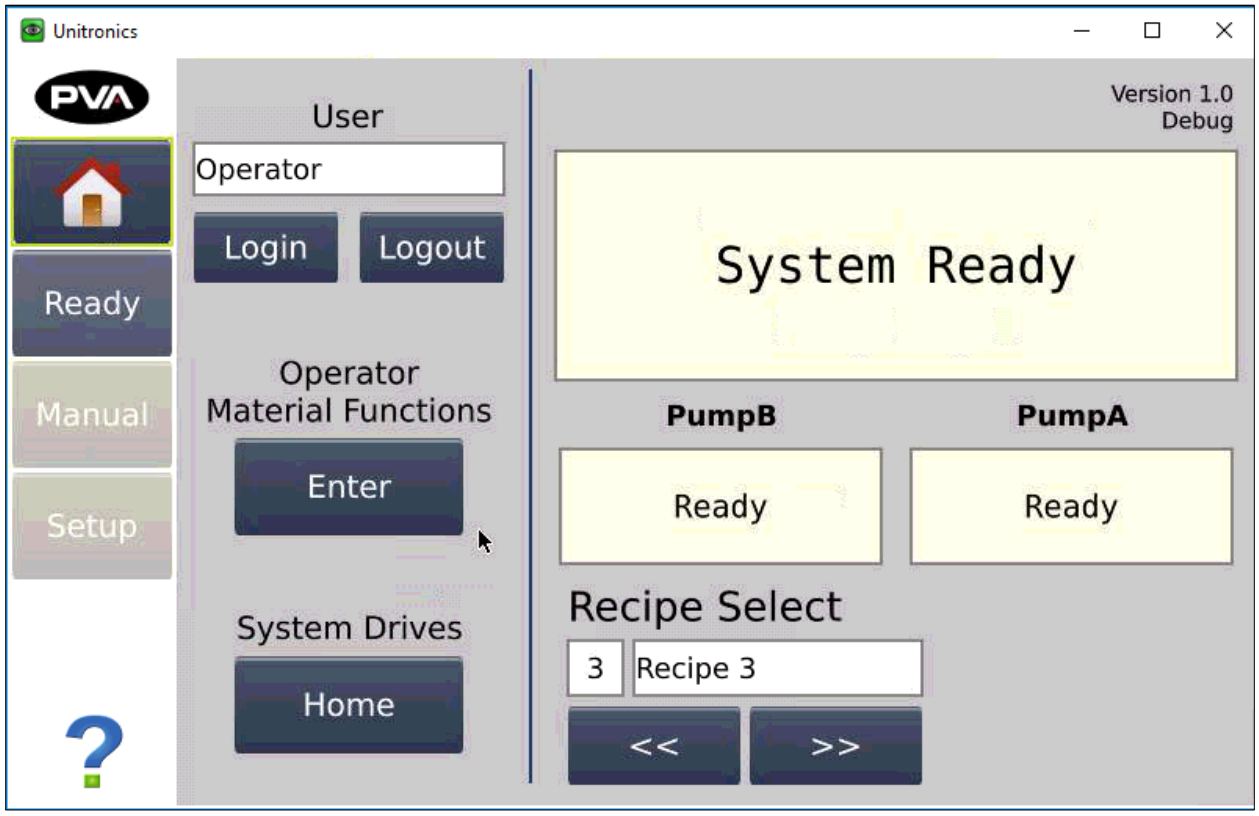

Figure 110: Operator Home Screen (2 SCTP)

7.3.2 Operator Material Functions

From the Home Screen, click **Enter** under Operator Material Functions to display this screen. It can also be accessed by selecting **Manual → Material**.

The Operator Material Functions screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Ready**	The pump status for both Pump B and Pump A.	**3**	**Unload**	Click to unload the cartridge.
2	**Cartridge**	Displays remaining material left in each cartridge. Will also indicate if low and empty alerts have been turned on.	**4**	**Load**	Click to load the cartridge.
			5	**Bleed**	Click to bleed the cartridge.

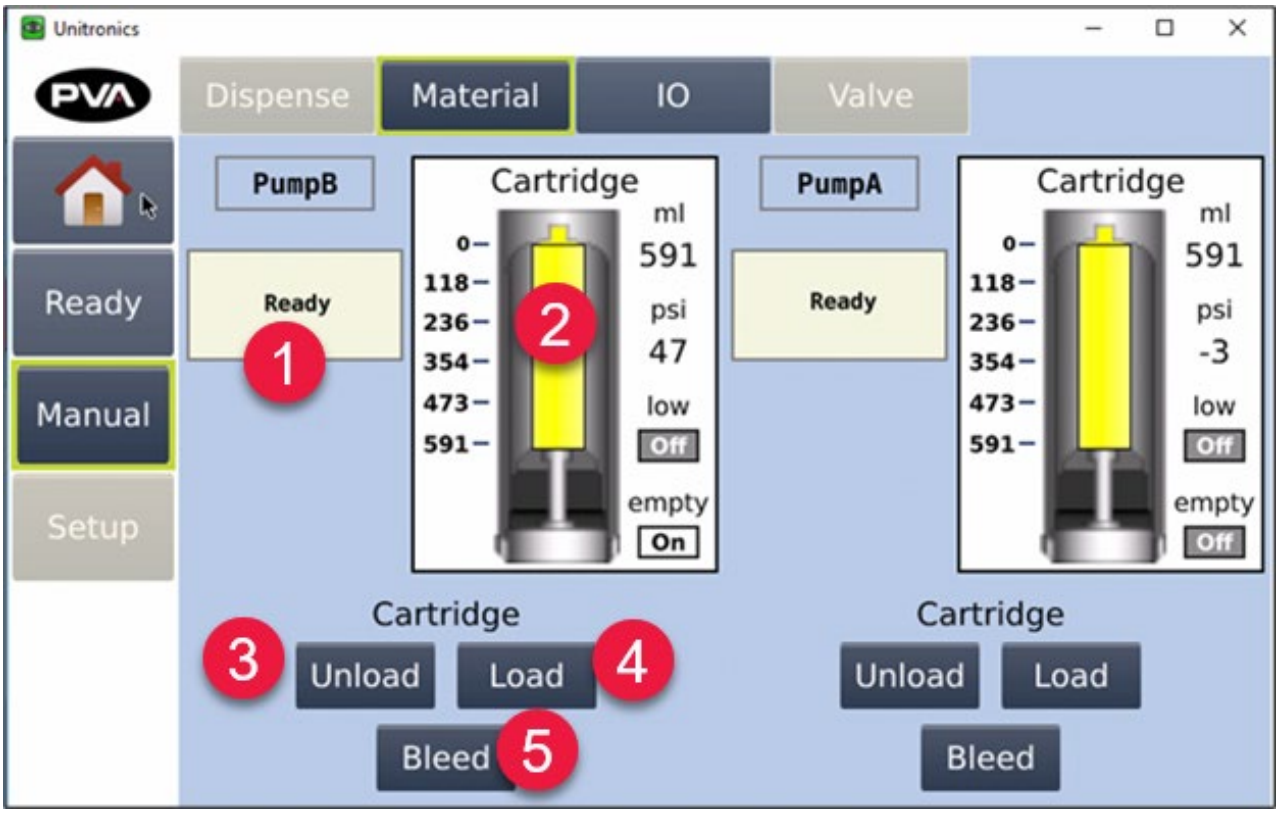

Figure 111: Operator Operator Material Functions (2 SCTP)

7.3.3 Ready

From the Navigation Pane, click **Ready** to display this screen.

The Operator Material Functions screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS	
1	**Recipe**	The current recipe selection.	5	**Dispense**	Click *Dispense* to begin dispensing.
2	**Rate**	The current flow rate.	6	**Exit**	Select *Exit* to return to the Home screen.
3	**Cartridge**	Displays remaining material left in each cartridge. Will also indicate if low and empty alerts have been turned on.			
4	**Ready**	The pump status for both Pump B and Pump A.			

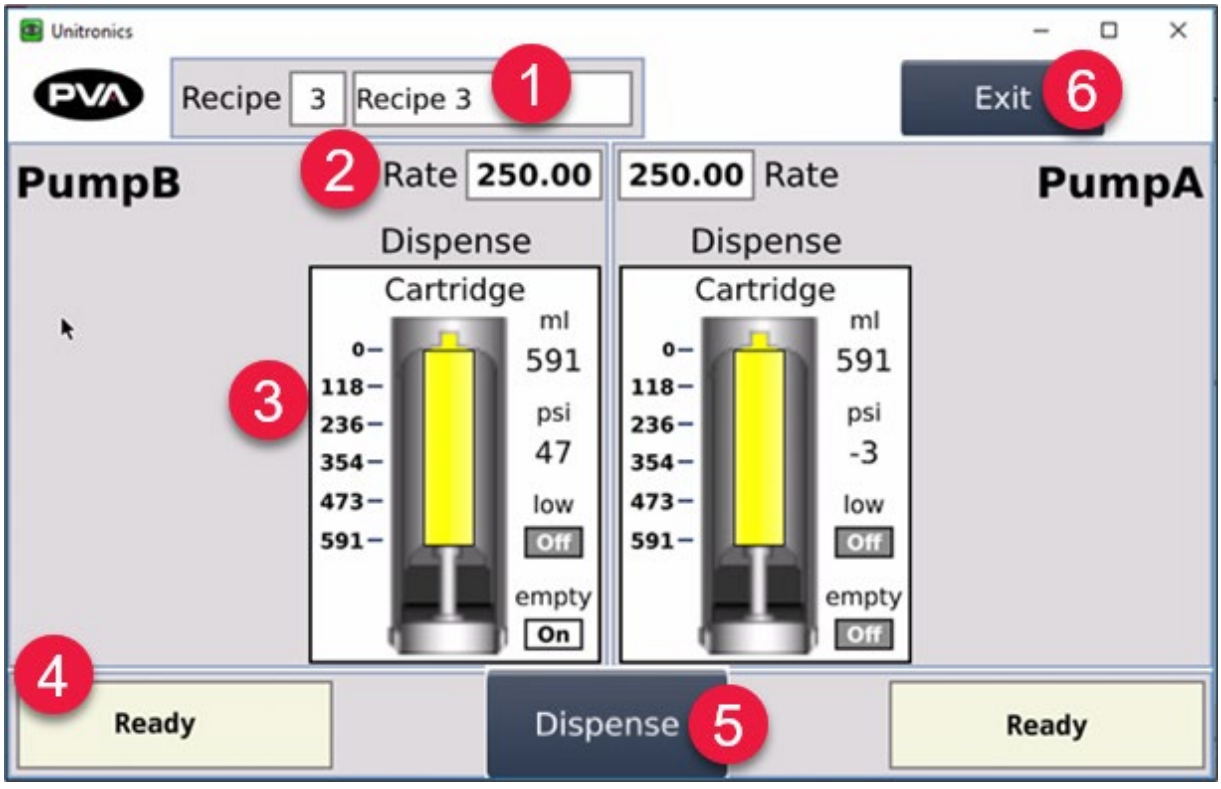

Figure 112: Technician Ready Screen (2 SCTP)

7.3.4 Manual → IO → Local

From the Navigation Pane, select **Manual → IO → Local** to display this screen.

The **Manual → IO → Local** screen has the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
OUTPUTS				**NONE**
1	**Control Power**	Indicates if the control power is on or off.		
2	**Valve**	Indicates if the valve is on or off.		
INPUTS				
3	**Estop**	Indicates if the emergency stop is on or off.		
4	**Control Power**	Indicates if the control power is on or off.		
5	**Door**	Indicates if the door is open or closed.		

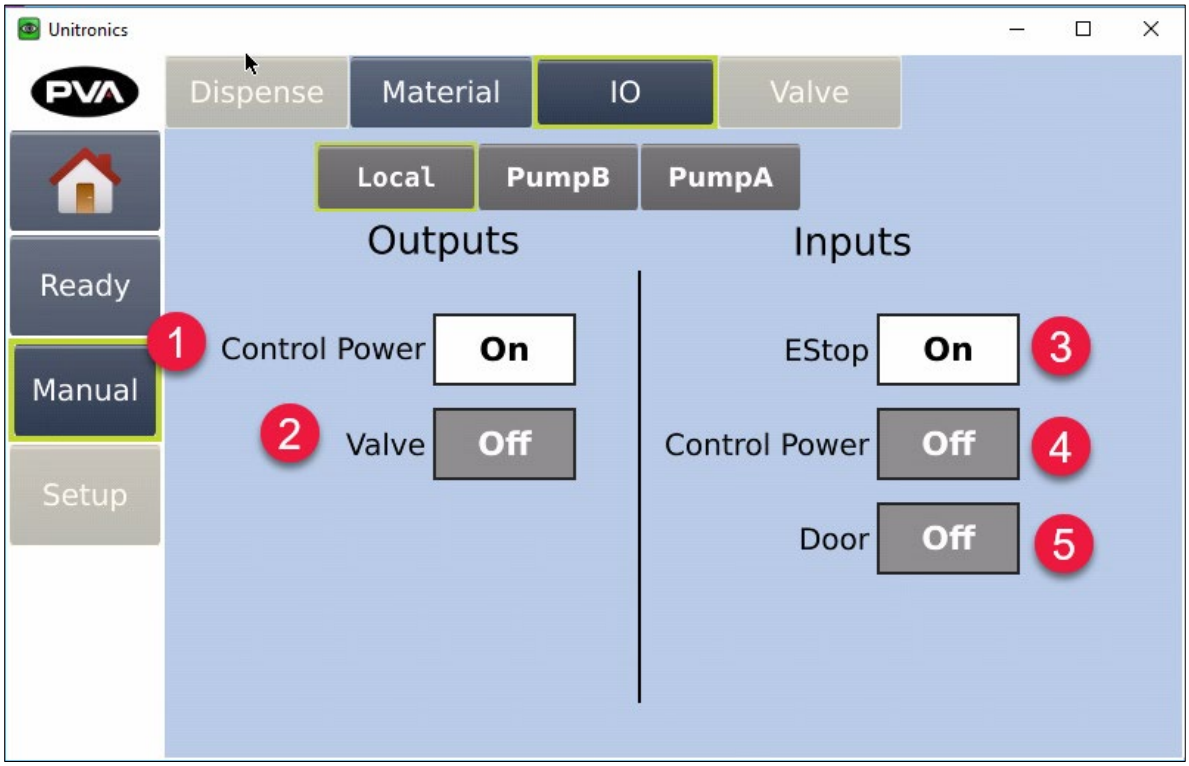

Figure 113: Technician Manual IO

7.3.5 Manual → IO → Pump B and Pump A

From the Navigation Pane, select **Manual → IO → Pump B** or **Manual → IO → Pump A** to display this screen.

The **Manual → IO → Pump B** and **Pump A** screen have the following features and options:

#	DISPLAY FIELDS		#	EDIT FIELDS
INPUTS				
1	**Low**	Indicates if the cartridge level is low.		**NONE**
2	**Empty**	Indicates if the cartridge is empty.		
3	**Locked**	Indicates if the cartridge is locked.		

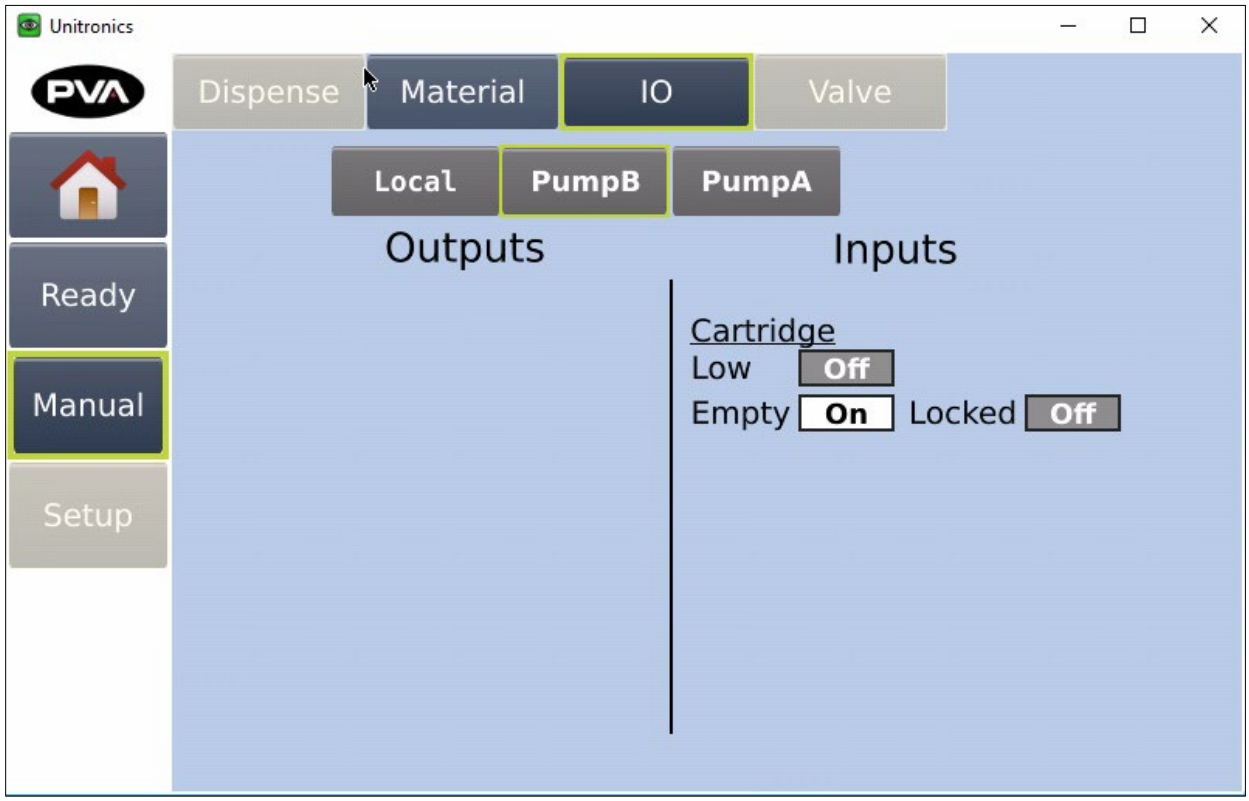

Figure 114: Technician Manual IO Pump B (2 SCTP)

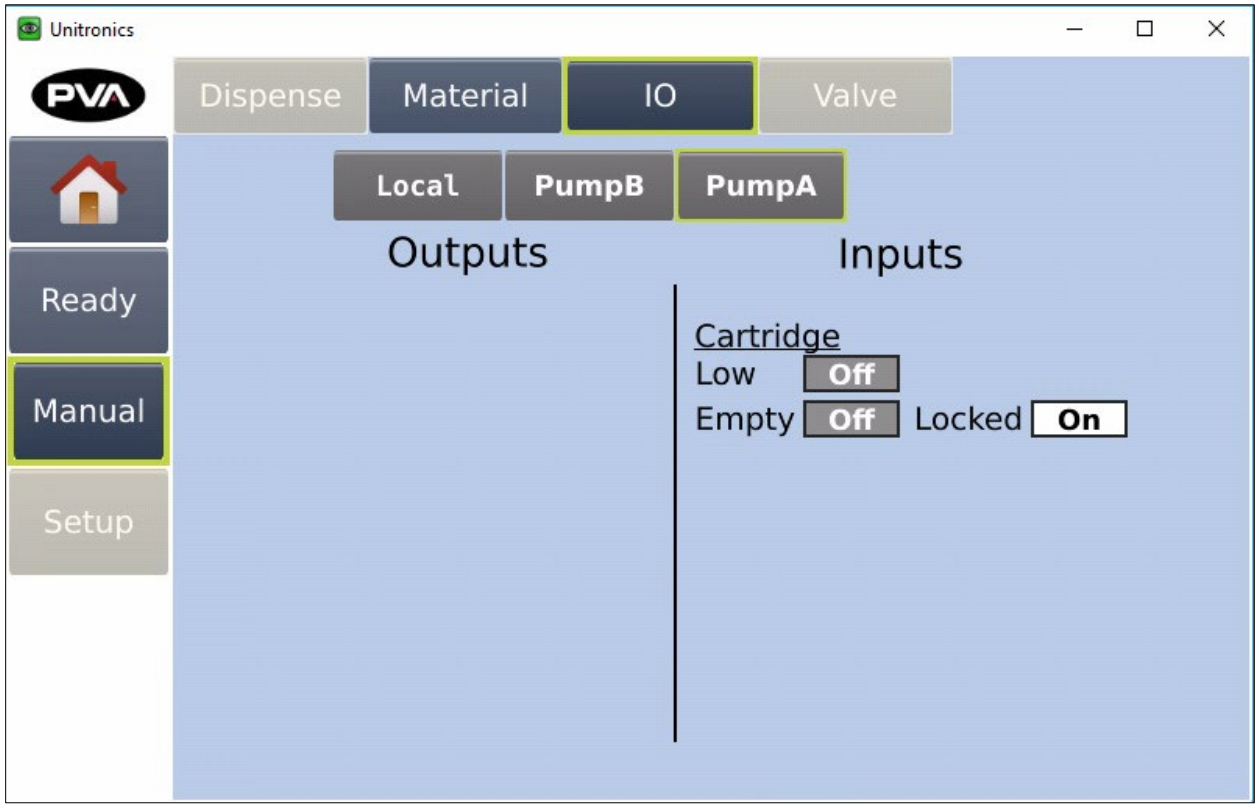

Figure 115: Technician Manual IO Pump B (2 SCTP)

8. Troubleshooting

8.1 K-Factor

The K-Factor multiplies the speed to increase or decrease motor speed by a percentage. The system follows the equation below:

(**Actual Material Ouput Weight**) x (**K-Factor**) = (**Expected Material Output Weight**)

If there is not enough material, the K-Factor should be increased. If there is too much material, the K-Factor should be decreased. To determine if the K-Factor needs to be adjusted to get the right amount of material for your settings, set the flow rate and dispense for X amount of ml/min. It is recommended to take 5-10 shots of the material and weigh them to ensure the setting is correct. Most, if not all applications should fall into the .8-1.2 range.

Example: If 10 ml/min is the expected output, but are getting an actual output of 9 ml/min after five shots, the K-Factor should be 1.11. This will speed up the motor to 110% and bring the material output to the expended output.

8.2 Error Messages

Error Index	Error Message Text	Error Index	Error Message Text
0	Emergency Stop Pressed	**24**	RS232 Communication Error Material Weight Scale (L)
1	Process Pressure Material Overpressure (L)	**25**	RS232 Communication Error Material Weight Scale (R)
2	Process Pressure Material Overpressure (R)	**26**	Incorrect Cartridge Loaded Material Color Mismatch (L)
3	Process Pressure Material Pressure Out of Range (L)	**27**	Incorrect Cartridge Loaded Material Color Mismatch (R)
4	Process Pressure Material Pressure Out of Range (R)	**28**	Drive Homing Timeout (L)
5	Supply Pressure Pressure Out of Range (L)	**29**	Drive Homing Timeout (R)
6	Supply Pressure Pressure Out of Range (R)	**30**	Drive Mode of Operation Update Timeout (L)
7	Material Supply Level Empty (L)	**31**	Drive Mode of Operation Update Timeout (R)
8	Material Supply Level Empty (L)	**32**	CAN Network Error Amp 1 SDO Abort Code
9	Control Power Engaged Timeout Error	**33**	CAN Network Error Amp 2 SDO Abort Code
10	Drive Enable Timeout Error Amp 1	**34**	CAN Network Error Amp 3 SDO Abort Code
11	Drive Enable Timeout Error Amp 2	**35**	Preload Pressure Timeout Error Did Not Reach Pressure Setpoint (L)
12	Drive Enable Timeout Error Amp 3	**36**	Preload Pressure Timeout Error Did Not Reach Pressure Setpoint (R)
13	Door Open	**37**	Pump Enable Error No Pumps Enabled
14	CANOpen Network General Error	**38**	Piston Pump Refill Timeout Verify Material Supply Pressure (L)
15	CANOpen Network Error Amp 1 EMCY Message	**39**	Piston Pump Refill Timeout Verify Material Supply Pressure (R)
16	CANOpen Network Error Amp 2 EMCY Message	**40**	Remote Modbus Recipe Invalid Index Received
17	CANOpen Network Error Amp 3 EMCY Message	**41**	Remote Dispense Trigger Received When Not in Dispense Mode
18	CANOpen Network Error Amp 1 NMT Message	**42**	Material Cartridge Error Cartridge Unlocked (L)
19	CANOpen Network Error Amp 2 NMT Message	**43**	Material Cartridge Error Cartridge Unlocked (R)
20	CANOpen Network Error Amp 3 NMT Message	**44**	Piston Pump Error Material Empty (L)
21	CANOpen Network Error Amp 1 Initialize EDS	**45**	Piston Pump Error Material Empty (R)
22	CANOpen Network Error Amp 2 Initialize EDS	**46**	CAN Network Error Node(s) Not Responding
23	CANOpen Network Error Amp 3 Initialize EDS		

9. Drawings

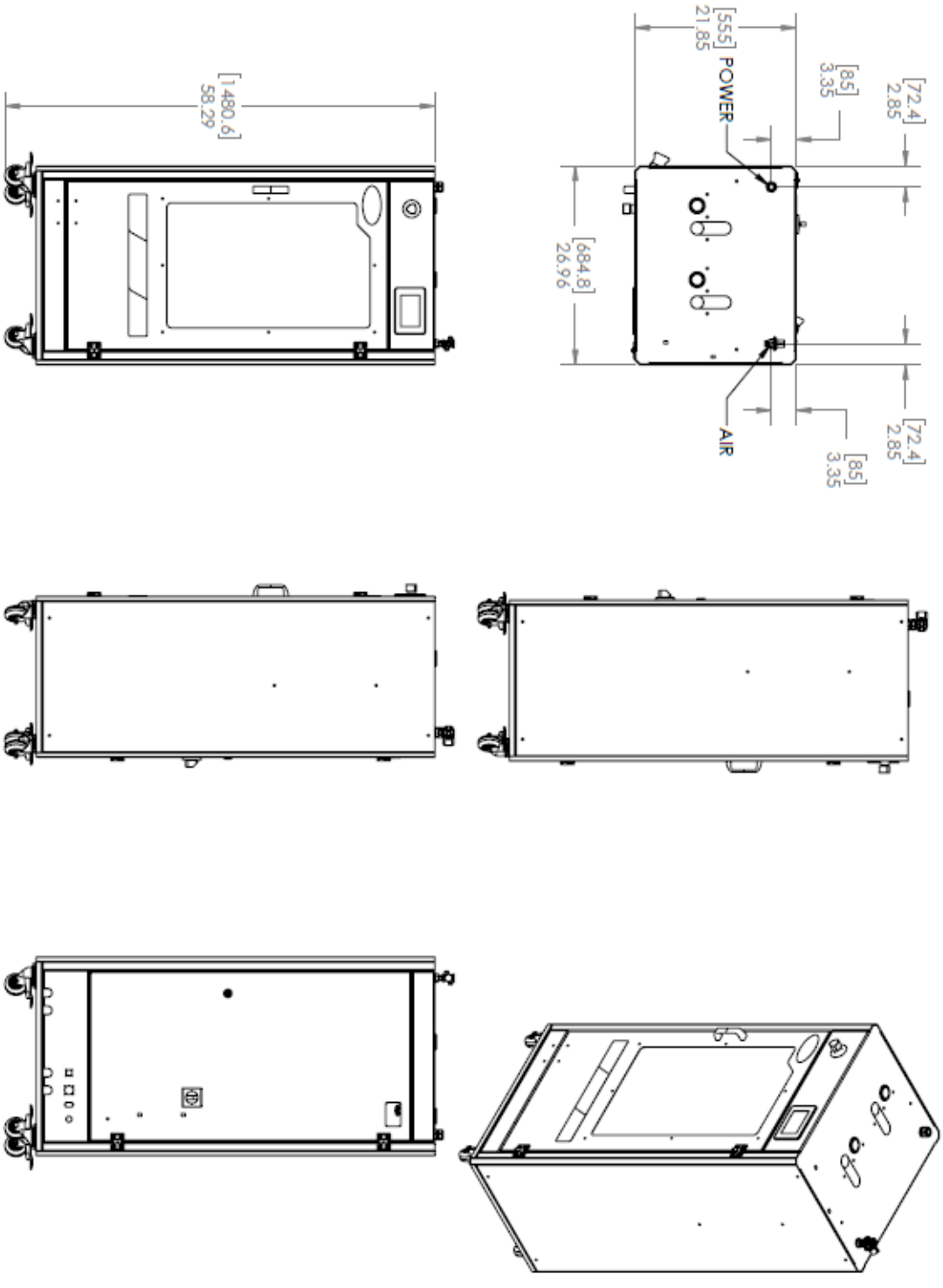

Figure 116: Endurance Drawings

10. Notes

11. Table of Figures

12. PVA Warranty Policy

PVA warrants the enclosed product against defects in material or workmanship on all components for one year from the date of shipment.

The warranty does not extend to components damaged due to misuse, negligence, or installation and operation that are not in accordance with the recommended factory instructions. Unauthorized repair or modification of the enclosed product, and/or the use of spare parts not directly obtained from PVA (or from factory authorized dealers) will void all warranties.

All PVA warranties extend only to the original purchaser. Third party warranty claims will not be honored at any time.

Prior to returning a product for a warranty claim, a return authorization must be obtained from PVA's Technical Support department. Authorization will be issued either via the telephone, facsimile, or in writing upon your request.

To qualify as a valid warranty claim, the defective product must be returned to the factory during the warranty period. Upon return, PVA will repair (or replace) all components found to be defective in material or workmanship.

(Retain this for your records)

Product Information:

PRODUCT: _____

SERIAL NUMBER: _____

DATE OF PURCHASE: _____