

Semi-Automated Canning System V2.0 Operations Manual

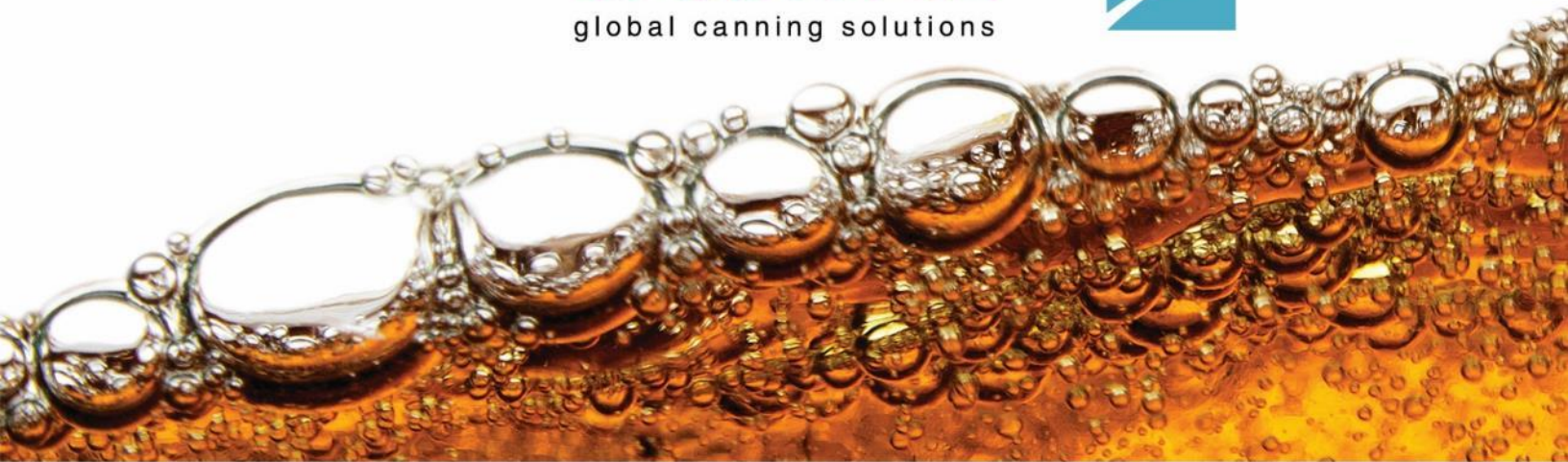
SAMS V2.0

Cask Global Canning Solutions

First Edition, April 2020



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Semi-Automated Manual Canning System (SAMS) V2.0 Manual

First Edition, June 2020 Copyright

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Disclaimer

The information presented in this manual has been reviewed and validated for accuracy. The included set of instructions and descriptions are accurate for the Cask Brewing Systems Inc. Semi-Automated Manual Canning System 2.0 (SAMS V2.0) in its stock condition as supplied by Cask Brewing Systems Inc., at the time of this manual's production. However, subsequent products and manuals are subject to change without notice. Therefore, Cask Brewing Systems Inc. assumes no liability for damages incurred directly or indirectly from errors, omissions, or discrepancies between any subsequent or altered products and this manual.





Table of Contents

Revision History & Document Control	5
Section A. Safety	6
Section B. Before You Begin	7
B.1 Unit Diagrams	7
B.2 Key Components Visual References	8
Section C. Utilities	10
C.1 System Requirements	10
C.2 Setting Air and CO2 Regulators.....	10
Section D. Operations Overview	11
D.1 System Operation Walkthrough	11
D.2 HMI Operation Modes	12
D.3 HMI Main/Auto Page - Overview.....	13
D.4 HMI - Seamer Page	18
D.5 HMI – Push Arm Page	19
D.6 HMI – Fill Head Page	20
D.7 HMI – Clean Page.....	21
D.8 HMI - Status Page.....	22
D.9 Power & Emergency Stop	23
Section E. Electrical Panel Overview & Power Input	24
E.1 Electrical Panel Overview.....	24
E.2 Electrical Panel Relays.....	25
E.3 Circuit Breaker Overview	26
E.4 Air Card Valve Bank.....	27
E.5 Beer Manifold and Recommended Product Specs	28
E.6 Fill Head Manifold	29
E.7 Can Loading.....	30
E.8 Lid Dispenser.....	30
Section F. System Operation – Start to Finish	33
F.1 Before Starting Your Canning Run	33
F.2 During Operation of Your Canning Run	34
F.3 Post-Run Procedures	35
Section G. Company Information	37
Cask Global Canning Solutions.....	37
European Support Office	37



Tables of Figures and Tables

Table 1 - Revision History	5
Table 2 - Visual Glossary of SAMS V2 Key Components	8
Table 3 - Visual Glossary of SAMS V2 Key Components (Cont'd)	9
Table 4 - SAMS System Requirements	10
Table 5 - Setting Air and CO2 Regulators	10
Table 6 - Main Page Buttons and Functions	13
Table 7 - Foam and Top-Up Parameter Changes	15
Table 8 – Foam and Top-Up Controls Overview	16
Table 9 - Saving and Loading Recipes	17
Table 10 - Seamer Page Buttons and Functions	18
Table 11 - Push Arm Page Buttons and Functions	19
Table 12 - Fill Head Page Buttons and Functions.....	20
Table 13 - Clean Page Buttons and Functions.....	21
Table 14 - Status Page Buttons and Functions.....	22
Table 15 – Main Power and Emergency Stop Buttons and Functions	23
Table 16 - Electrical Relay Functions.....	25
Table 17 - Circuit Breaker Functions	26
Table 18 - Air Card Controls	27
Table 19 - Effects of Recommended Spec Deviation	28
Table 20 - CIP Buttons and Procedure	36
Figure 1 - SAMS V2.0 Unit Diagram.....	7
Figure 2 SAMS V1.0 Unit Diagram.....	7
Figure 3 - HMI Main Page.....	13
Figure 4 - Main Page Probe and Coil Display	14
Figure 5 - Menu Display	14
Figure 6 - Recipe Page.....	15
Figure 7 - Top-Up and Foam Timer Controls.....	16
Figure 8 – Seamer Page.....	18
Figure 9 - Push Arm Page	19
Figure 10 - Fill Head Page.....	20
Figure 11 - Clean Page.....	21
Figure 12 - Status Page.....	22
Figure 13 - Main Power and Emergency Stop.....	23
Figure 14 - Electrical Panel Overview.....	24
Figure 15 - Electrical Relays.....	25
Figure 16 - Circuit Breakers	26
Figure 17 - Air Card Valve Bank.....	27
Figure 18 - Beer Manifold	28
Figure 19 - Can Number Order.....	29
Figure 20 - Can Push and Can Count Sensor	29
Figure 21 - Can Loading Tray and Push Direction	30
Figure 22 - Lid Slide	30
Figure 23 - Can and Lid Position for Pick-up	30
Figure 24 - Lid Slide Height Adjustment Bolts.....	31
Figure 25 - Lid Slide Tilt Adjustment	31
Figure 26 - Lid Weight Adjustment	32
Figure 27 - Lid Weight Adjustment Bolts	32
Figure 28 - Clean Page - CIP	36



Revision History & Document Control

Manual Version	Release Date	System	Updates
First Edition	June 2020	SAMS V2.0	<ul style="list-style-type: none">Initial Operations Manual release.

Table 1 - Revision History



Section A. Safety

Safety is always a concern in every facet of life but particularly when operating an automated system like a Cask SAMS. Always remember to use caution when operating any machinery. Keep these simple steps in mind when operating Cask Brewing Systems Machinery.

- Always wear Safety Glasses when operating Machinery to prevent damage to your eyes.
- Wear the appropriate footwear for your application i.e. Steel Toed Safety Boots to prevent damage to your feet from possible falling debris.
- NEVER wear Gloves of any kind when operating Machinery. Moving parts can catch the gloves and pull you into the machine resulting in possible injury.
- Remove all jewelry (Rings, watches, necklaces, ETC) as they may get caught in moving equipment.
- There are many moving parts on Casks Machinery. Please use caution when operating any component, keep note that any moving part is a potential hazard.
- Cask recommends companies should be using their own **Lockout/Tagout** procedures while doing any maintenance or repair work.
- Compressed Air is used in many components of this Machine and while it is an optimal operating component, it does pose a threat. Compressed air if directed at the skin can enter the blood stream through the skin resulting in Air embolism. Please keep skin protected and out of the way of main stream compressed air.

Section B. Before You Begin

B.1 Unit Diagrams

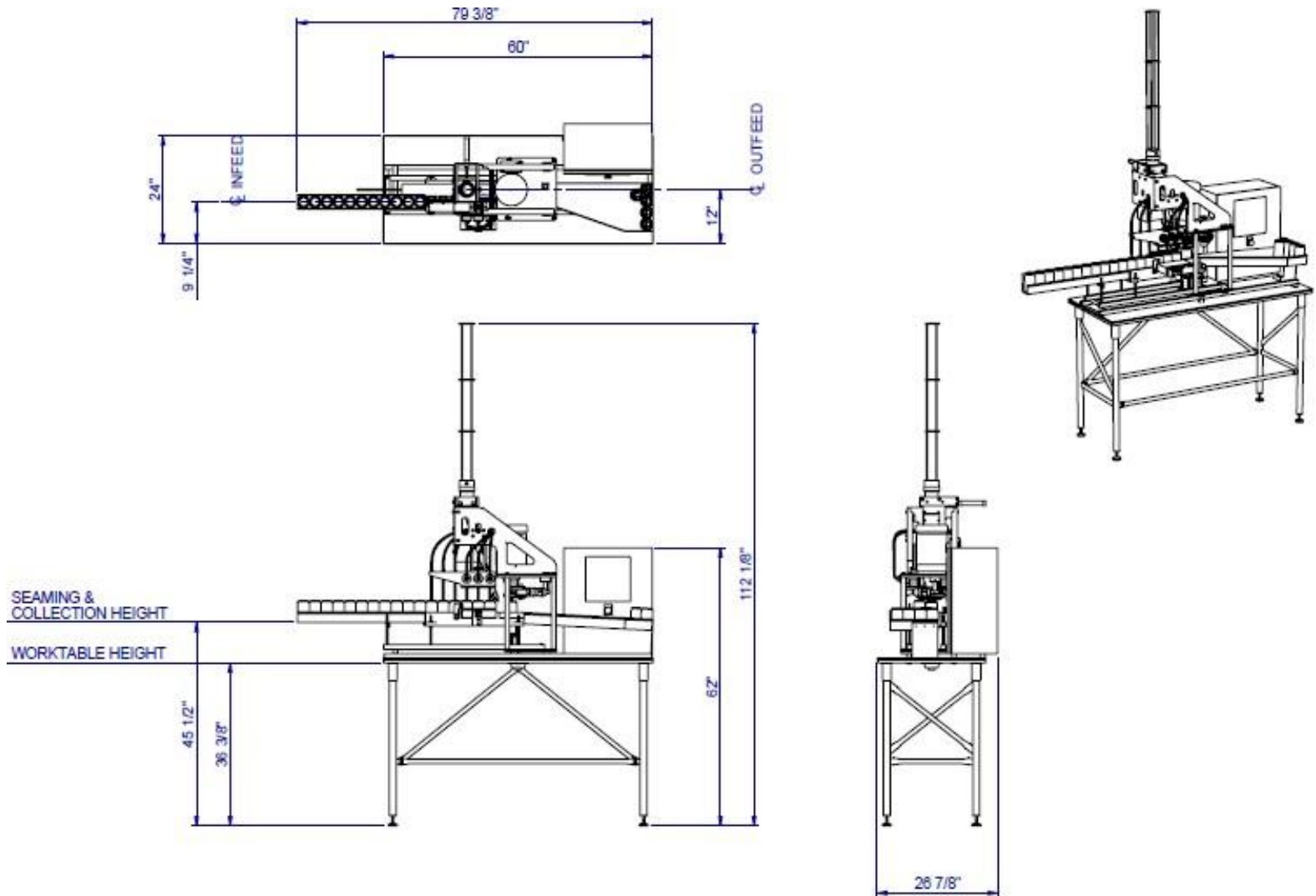


Figure 1 - SAMS V2.0 Unit Diagram

B.2 Key Components Visual References

This section will act as a visual glossary so you can be more familiar with the main machine components discussed throughout the manual.




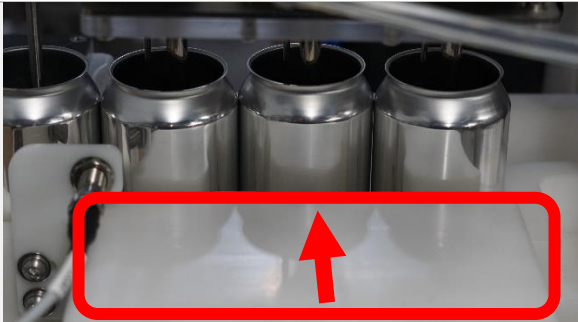
Component	Photo
Fill Head	
Fill Valves	
CO2 Pre Purge	
Can Push	

Table 2 - Visual Glossary of SAMS V2 Key Components

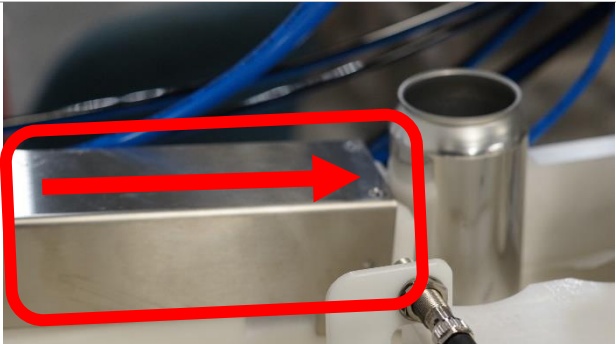
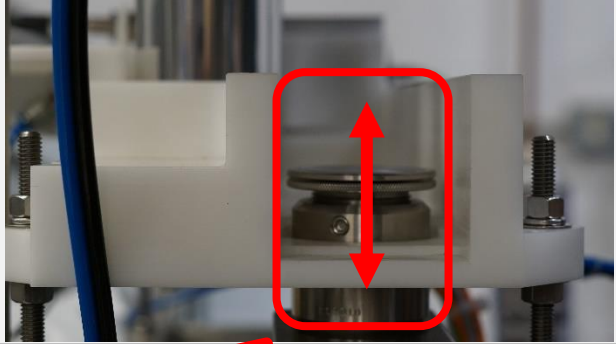
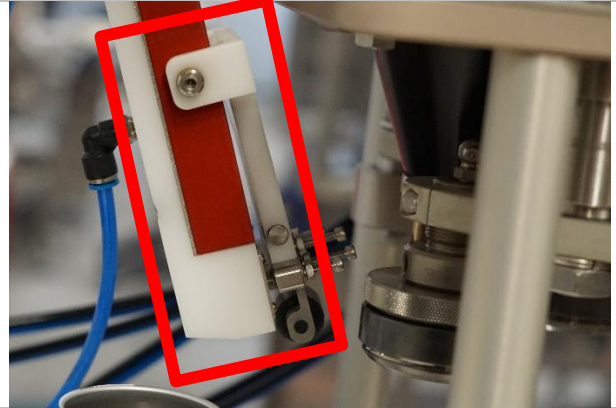
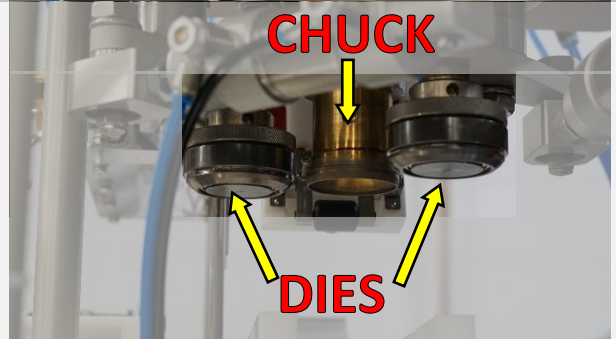
Push Arm	
Lift Table	
Lid Slide	
Seaming Dies and Chuck	

Table 3 - Visual Glossary of SAMS V2 Key Components (Cont'd)

Section C. Utilities

C.1 System Requirements

Your Cask SAMS will require the following utilities.

Power Requirements	208-240VAC, 50/60 Hz, 15amp single phase
Compressed Air	3cfm(85L/min) at 90 PSI (6bar), 3.0 Peak HP(2.25kW), 30 gallon tank (110L), refrigerated dryer with auto float drain
Drainage	Drainage is required from the Canning System to drain. A standard 1.5" (40mm) sink drain fitting will be in your parts box to attach to the drain.
Beer	0.75 - 1.5" (20-40mm) beer line from dispense tank. Preferable to have beer dispense tank as close to filler as possible. Beer supplied to machine at a temperature of 32 to 35.6 F (0 to 2 C). Beer should be carbonated to 2.4 to 2.9 volumes of CO ₂ (or 4.6 to 5.6 g/L)
CO ₂ Supply	Customer will be responsible for supplying adequate CO ₂ to his Dispense tank during filling to maintain a head pressure of up to 25 psi. CO ₂ will be required at the can filling station. Customer to provide tubing (3/8" or 10mm i.d.).

Table 4 - SAMS System Requirements

C.2 Setting Air and CO2 Regulators

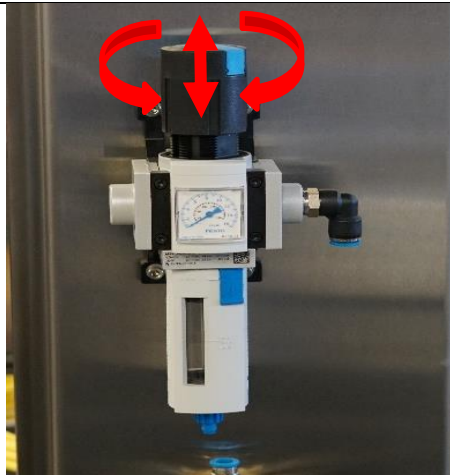
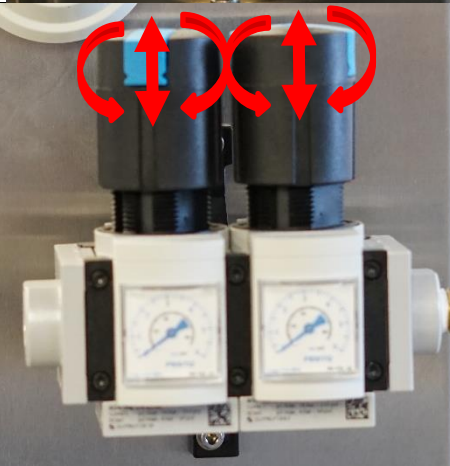
<p>The Air Pressure Regulator for the SAMS should be set at 90psi or 6.2 bar at all times.</p> <p>To adjust the air regulator, pull up on the black dial and turn according to the directions on the top of the dial to increase or decrease pressure. When pressure is set at 90psi or 6.2 bar push the dial back to the down position to lock it in place.</p>	
<p>There are two CO₂ regulators on the SAMS; one for CO₂ Pre-Purge, which purges the cans with CO₂ prior to filling, and the second is for under-lid gassing to remove any air that may be caught under the lids prior to seaming.</p> <p>To adjust the CO₂ regulators, pull up on the black dial and turn according to the directions on the top of the dial to increase or decrease pressure. For the Can Pre-Purge Regulator set the pressure around 8-12psi or 0.6-0.8 bar and for the Under-Lid CO₂ Regulator, set the pressure to 5-8psi or .03-0.6bar. Once Regulators are set, push the dial back to the down position to lock it in place.</p>	

Table 5 - Setting Air and CO2 Regulators



Section D. Operations Overview

D.1 System Operation Walkthrough

This section details the steps and procedures you'll need to familiarize yourself with in order to operate the SAMS. This includes all functions and the effect of every switch and button on the machine. The following is a brief breakdown of the line's operation. Beginning at can in feed and following through to finished product out feed.

- Infeed chute is loaded with empty cans. Push-arm has to be in the back position.
- The fill head waits for three cans to be pushed underneath it before lowering. The first set of three cans are filled with beer. The second set of three cans are purged with CO₂. When the beer level reaches the sensors the fill stops, the head rises, full can push will move the 3 filled cans to the seaming lane.
- Operator will then manually advance 3 empty cans which will restart the fill cycle.
- The filled cans are pushed under the lid dispenser where the leading edge of each can grabs a lid as it passes under the slide, pulling a lid onto the top of each can. The area immediately under the lid dispenser and the dome under the can lid are purged with CO₂ during the process.
- Cans then stop on the seamer table to be seamed. This process will also drop another lid into the lid slide.
- Once on the lift table the can is raised into the chuck, which rotates the can. The #1 die pushes into chuck making the first seaming operation, followed by #2 which completes the seam, then the lift table lowers.
- The lowered can is pushed off the lift table by the oncoming can and onto the collection table.



D.2 HMI Operation Modes

D.2.1 Manual/Auto Run Modes

There are two different operating modes that the SAMS can operate in and it is important to understand both of them, why they both exist and when you should be in which mode.

D.2.2 Manual Mode

Manual mode is generally used for setup and troubleshooting purposes. Most of the buttons and controls you see on the unit will only work while in manual mode. It allows for the discrete control of each individual operation and allows you to perform step-by-step operation of the machine to see and evaluate each process individually.

You would typically use this mode when adjusting the seamer or troubleshooting individual system functions.

D.2.3 Auto Mode

Auto mode is selected for regular operation (filling and seaming cans). While in Auto mode manual buttons on the various screens will not work, with the following exceptions:

1. Lid dispense (to allow you to replenish lids in the slide tray)
2. Top-up button (to allow you to turn top-up on and off and control the duration of the top-up(timer))
3. Foam valves (to allow you to turn foaming on and off and control the duration of the foam creation (with the timer))
4. Fill stop/pause (to allow you to stop or pause the machine and continue from where you stopped).
5. E-stop (to immediately cease all operation)

D.2.4 Clean Mode

Clean mode will only be used during CIP and will appear in the Mode section of your HMI when you start the automated CIP cycle. When in Clean mode, no other functions will work outside of those on the Clean page.

D.3 HMI Main/Auto Page - Overview

The HMI “Main” or “Auto” Page is shown below in Figure 8. The main screen controls Top Up, Foam Valves, Drop Lids, Run, Pause, Stop, Recipe Page, Timers, and Menu Page.

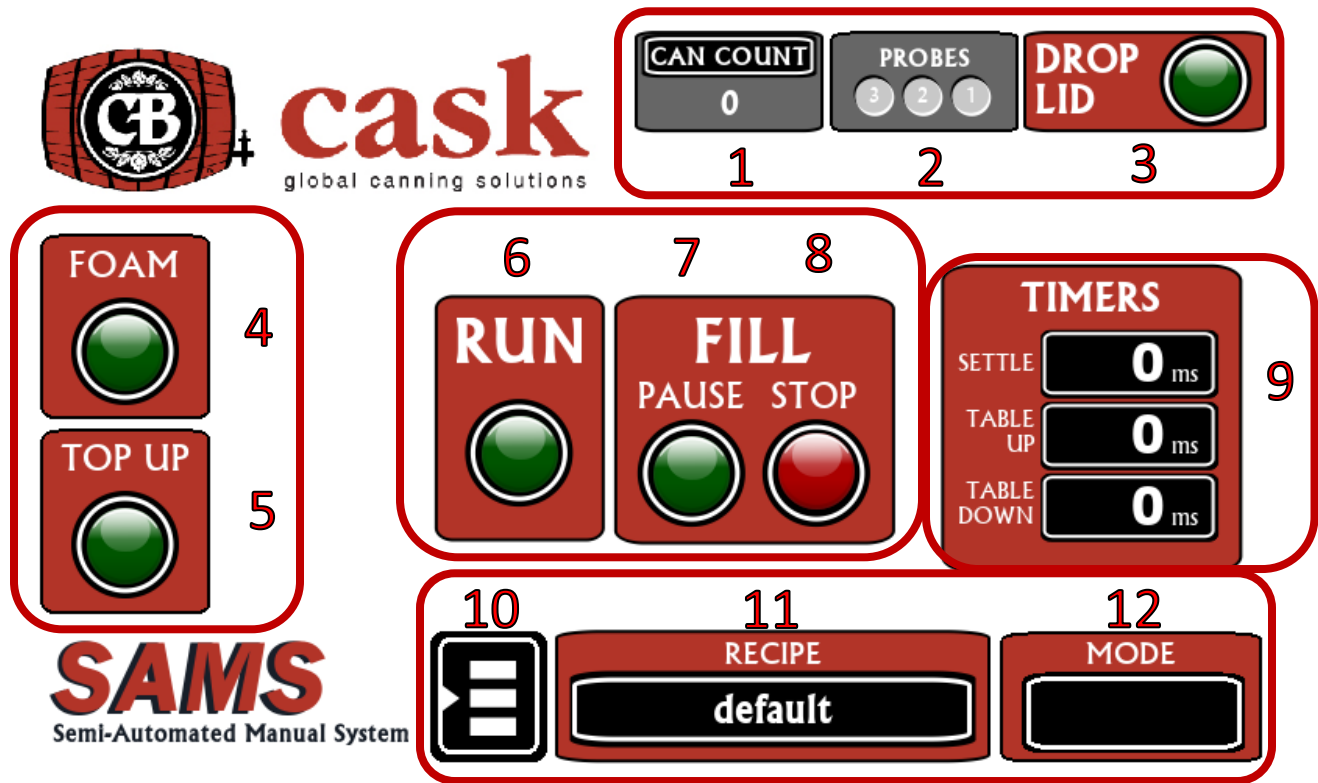


Figure 3 - HMI Main Page

Button	Function
1. Can Count	Shows total can count – tap and confirm to reset
2. Probes	Indicates when fill probes sense product by lighting up green
3. Drop Lid	Dispenses a lid to the lid slide
4. Foam	Lights up when foam valves are activated.
5. Top Up	Lights up when top up is activated
6. Run	Start the fill process in auto mode
7. Pause	Will allow for the current set of 3 cans to finish filling/seaming before stopping
8. Stop	Stops the fill cycle immediately
9. Table Timers	Controls speed of the lift table
10. Menu	Displays the various pages for different controls/processes
11. Recipe	Allows you to program foam and top up timers and save profiles of them
12. Mode	Switches between Manual and Auto modes

Table 6 - Main Page Buttons and Functions



D.3.1 Main/Auto Page – Probe & Coil, Menu, and Recipe Features

The Main/Auto Page has some added information features such as a drop-down display to show which coils are activated during the fill process. This section will also show the menu options displayed when pressing the menu button.

D.3.1.1 Main/Auto Page - Probe & Coil Display

When tapping on the grey “Probes” box in the top right portion of the main page (Figure 4), a drop-down box will expand and display which coils are actuated during the fill process.

The coils that are activated will turn green when on, and go back to grey when off.

Simply tap the box at the top where it says “Probes” to make the box return to normal “Probes” only display.



Figure 4 - Main Page Probe and Coil Display

D.3.1.2 Main/Auto Page - Machine Menu

When you tap on the black and white striped menu button on the bottom of the screen you will get a pop-up menu showing you all the control and information pages available on the SAMS V2 (Figure 5).

Further information about each of these pages will follow later in the manual.

Also note that pressing the barrel, with the CB logo inside on the top left corner, will always return you to the Main Page from any other page.

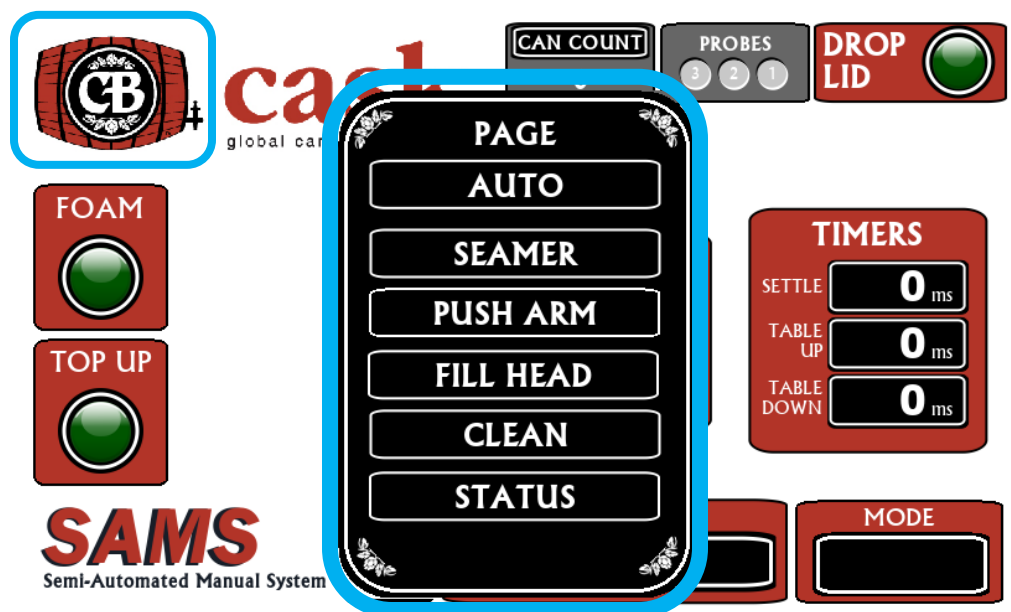


Figure 5 - Menu Display

D.3.2 Recipe Page - Overview

You can save up to six different recipes or settings configurations for foam and top up timers in the recipe page. To access this page simply press on the black bar under the “Recipe” section of the Main/Auto Page. In this screen you can change the name of your recipes, adjust foam and top up timers in real time, change the increments of time used for the timers, and save and store the timer settings for later use.

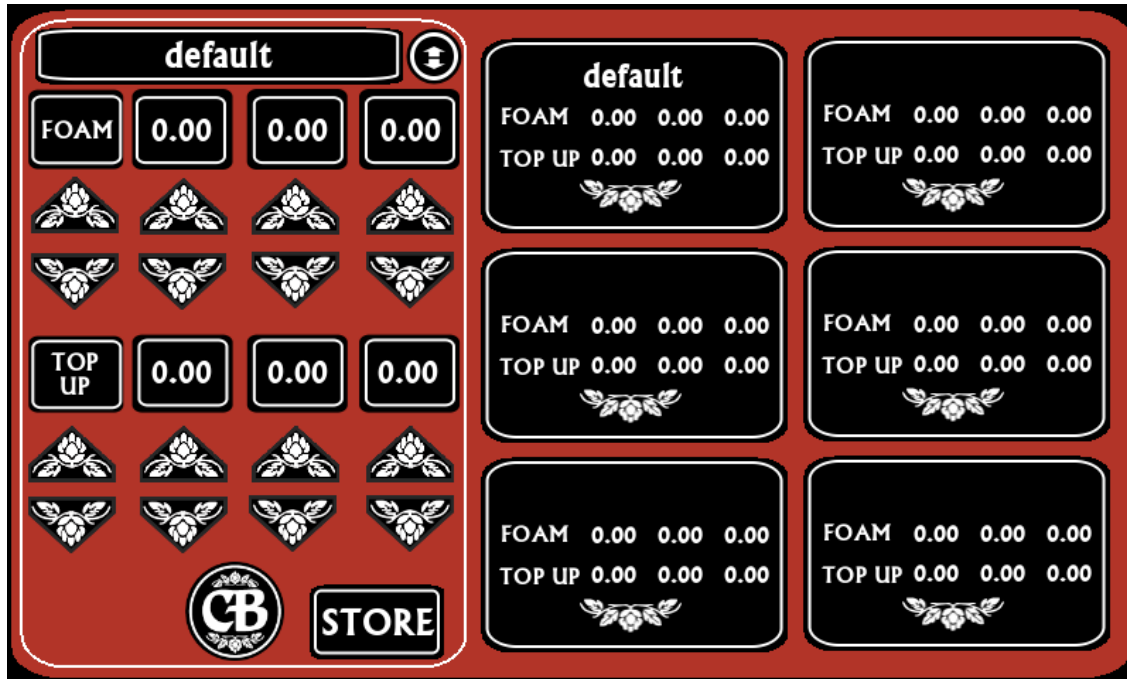


Figure 6 - Recipe Page

D.3.2.1 Recipe Page – Foam and Top Up Overview

The “Foam” and “Top Up” timers have two basic functions.

The main function of the foam timer is to create foam in the bottom of the can prior to filling to create a barrier between product and atmosphere to prevent dissolved oxygen pick-up. You will want to have a foam cap just above the rim of the can when the lid gets applied. The longer the timer, the more foam in the can.

The top up function allows the fill valves to remain open after the fill probes are triggered to replace the volume the fill tubes take up during the fill process.

The secondary function of each timer is weight/volume control. The table below shows how each timer will affect the weights or volumes of your fills.

The settings you choose here are implemented and take effect immediately without need to stop the line or filling.

Adjustment	Top-Up Timer	Foam Timer
Increase	More Weight	Less Weight
Decrease	Less Weight	More Weight

Table 7 - Foam and Top-Up Parameter Changes

D.3.2.2 Recipe Page - Adjusting Foam and Top Up Timers

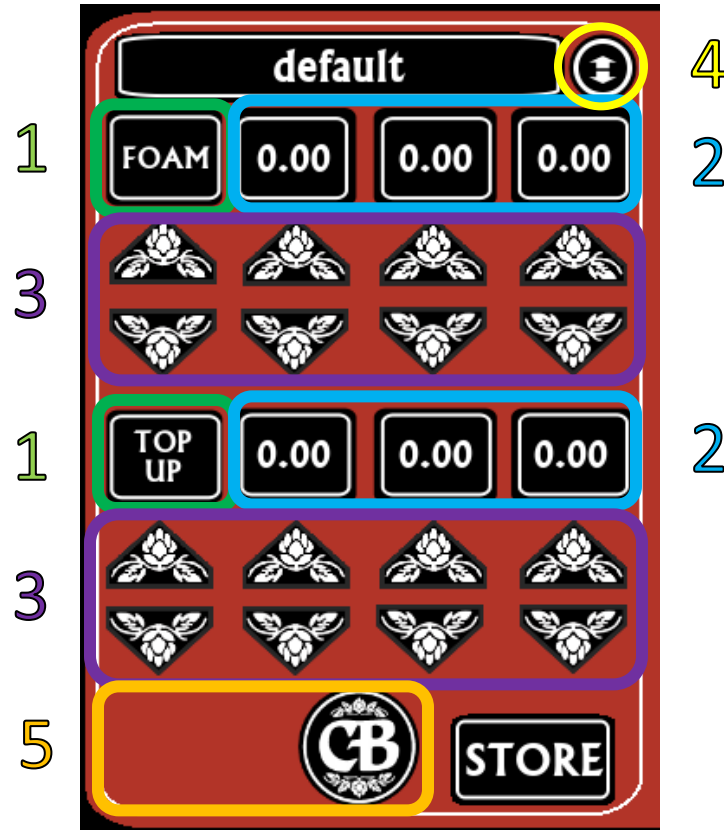


Figure 7 - Top-Up and Foam Timer Controls

Button	Function
1. "Foam" and "Top Up" Buttons	By tapping on either the words "Foam" or "Top Up" you can manually enter the time (in seconds) for each setting by entering a value on a number pad which appears when you press the buttons. This will make the time you enter apply across all three fill valves.
2. Individual Valve Timers	Just like when you tap on the Foam and Top Up buttons, these buttons will display a number pad to enter the time in seconds you'd like to apply to each individual fill valve. Independent valve adjustment is used to control weight and fill level of each can and can be adjusted in real time throughout your canning run.
3. Adjustment Arrows	These arrows can be used to either increase or decrease the timers for overall adjustment across all fill valves (under the Foam and Top Up buttons) or independently for each fill valve (under the timer numerical displays)
4. Increment Adjustment	The double arrow button allows you to change the increments in which the arrows change the timer values by entering the increment value into the number pad which will appear. By default, the timer intervals are set for 0.05 seconds.
5. CB Logo	On this page pressing the CB logo exits the recipe page and returns to the main page

Table 8 – Foam and Top-Up Controls Overview

D.3.2.3 Recipe Page - Saving your settings

You can save up to six different settings configurations to allow for easier and faster adjustments for different brands or styles of product that you produce. It should be noted that due to different temperatures, carbonation levels, and pressures used during each canning run, these numbers should be used as guidelines and not set in stone. You may very well have to adjust these recipes slightly each time you run a new batch. The settings you choose here are implemented and take effect immediately without need to stop the line or filling.

Procedure	Graphic
<p>1. Set your product/recipe name by tapping on the black bar in the top left side of the recipe page. A keyboard will pop-up and you have to type in the name and hit enter for it to set. Please note that to add a space press the empty space at the bottom of the keyboard where a space bar would normally be found.</p> <p>When you're done naming your product/configuration press "Store" to save it.</p>	
<p>2. When you press "Store" you will be prompted to select a recipe slot to overwrite with the new settings.</p> <p>Tap on any recipe slot you wish to save the configuration in and you will be asked to save those values.</p>	
<p>3. Save the settings by tapping on "yes" and your settings are now saved until they are overridden again.</p> <p>To load your saved settings, press on any of the six recipe blocks and those settings will be applied immediately to the timers.</p>	

Table 9 - Saving and Loading Recipes

D.4 HMI - Seamer Page

When you select “Seamer” from the menu you will be brought to this page. The buttons on this page are only available in Manual mode and are used mainly to do seamer adjustments and testing. You can also move the push-arm to its pre-set positions (determined on the push arm page) as well as home the arm after a fault.

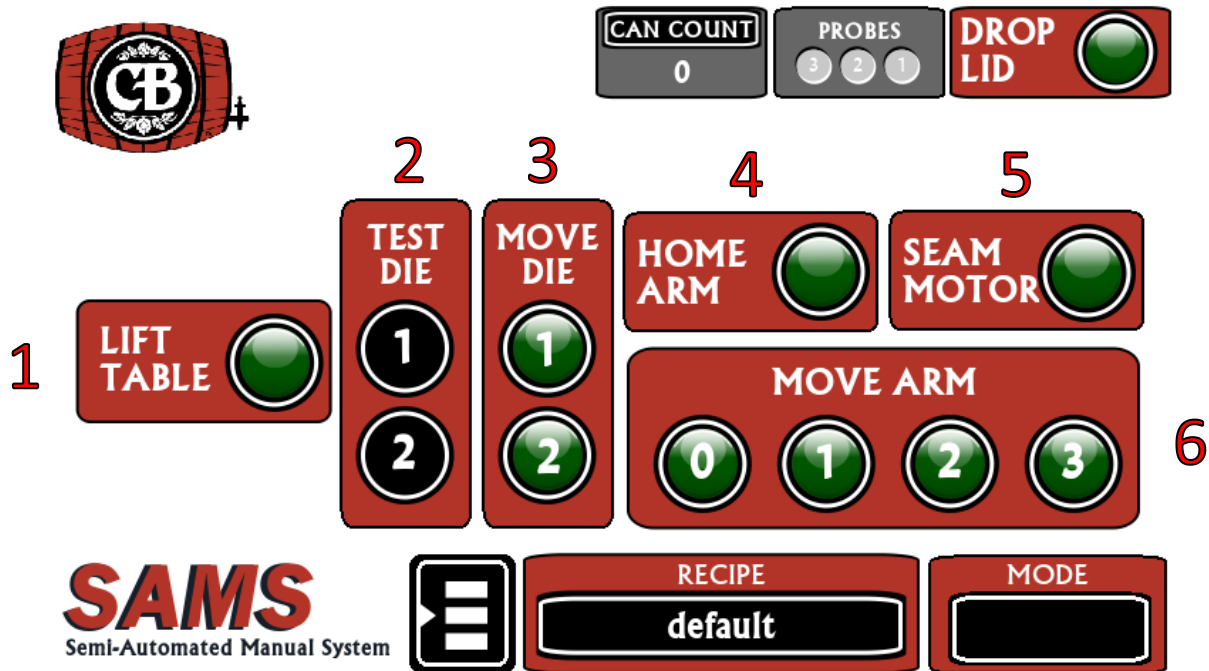


Figure 8 – Seamer Page

Buttons	Function
1. Lift Table	Lifts the can lift table that allows the can to rise into the seaming chuck for seaming.
2. Test Die 1 & 2	Activates the 1 st and 2 nd operations of the seaming process respectively. Use these functions for taking measurements of your seams during seamer set up.
3. Move Die 1 & 2	Moves the dies toward the seaming chuck to allow for adjustment and tuning of seaming specifications.
4. Home Arm	Homes the push arm’s stepper motor.
5. Seam Motor	Turns on the seamer motor
6. Move Arm	Allows you to move the push arm towards or away from the seamer to its start position, 1 st can position, 2 nd can position, and 3 rd can position.

Table 10 - Seamer Page Buttons and Functions

D.5 HMI – Push Arm Page

This section will go over the functions of the push arm page. These functions will allow you to set the positions of the push arm for each of the three cans that will enter the seamer during a fill cycle.

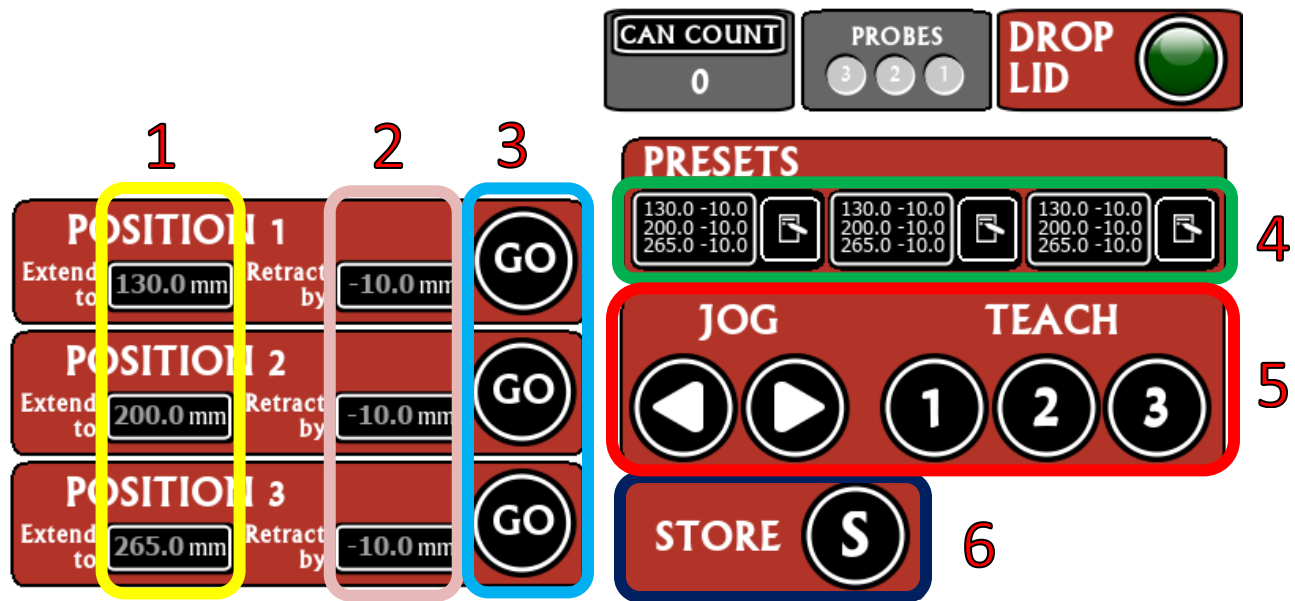


Figure 9 - Push Arm Page

Buttons	Functions
1. Extend Values	<p>Sets the number of millimeters the push arm will extend to place each can (1,2,3) to the lift table/seamer.</p> <p>Pressing on the numerical values will open a number pad allowing you to enter values to an accuracy of 0.1mm.</p>
2. Retract Values	<p>Sets the number of millimeters the push arm will retract by when each can (1,2,3) reaches the lift table/seamer. This function serves to allow the can being seamed to have no interference from the push arm or cans behind it while its being seamed.</p> <p>Pressing on the numerical values will open a number pad allowing you to enter values to an accuracy of 0.1mm.</p>
3. GO	Moves the push arm to the set extended position.
4. Pre-sets	Allows you to store the extend and retract settings by pressing the pencil/pad button and apply that pre-set when pressing the values.
5. Jog/Teach	Jog allows you to move the push arm manually to a desirable position and pressing Teach on a certain number will teach that can position to the position values on the left.
6. Store	Stores values set by Jog, manual entry and Teach

Table 11 - Push Arm Page Buttons and Functions

D.6 HMI – Fill Head Page

The HMI “Filler” Page is shown below in Figure 9. Manually Control Fill and Foam valves, Can CO2 Purge, Lid Purge, Can Push, and Fill Head Drop. Note that the numbers associated with the fill valves are orientated in the direction such that valve 1 is the closest to the seamer.



Figure 10 - Fill Head Page

Button	Function
1. Foam Valves	Actuates foam valves 1 through 3
2. Fill Valves	Actuates fill valves 1 through 3
3. All Fill	Actuates all 3 fill valves simultaneously
4. Lid CO2 Purge	Actuates the Lid Slide CO2 purge solenoids
5. Can Pre-Purge	Actuates the Can CO2 pre-purge solenoids
6. Drop Head	Toggles the fill head up or down
7. Push Cans	Pushes the 3 cans from the filling area to the seamer push arm

Table 12 - Fill Head Page Buttons and Functions

D.7 HMI – Clean Page

This section will go over the Clean Page which allows you to operate the automated CIP cycle as well as set some settings for how long each portion of the cycle is applied.

The CIP process itself is broken into three operations that will cycle over and over until the “Total Clean Time” is complete. These three operations are “Open”, “Foam”, and “Closed” which are set on individual timers (generally 20 seconds each) allowing for a full flush of all fill valve components during the “Open” and “Foam” portions, as well as allowing contact time during the “Closed” portion.



Figure 11 - Clean Page

Button	Function
1. Clean	Starts the CIP procedure and if pressed again will reset the total clean time timer. To end the CIP cycle, press mode to exit “CIP” mode and return to “Manual” mode
2. Total Clean Time	Allows the user to set how long to run the CIP Cycle
3. Open	Amount of time both foam and beer fill tubes are open
4. Foam	Amount of time only the foam valves are open
5. Closed	Amount of time the fill valves are closed to allow for contact time with the cleaning agents
6. Mode	Used to end the CIP cycle and return to “Manual” mode once CIP is finished.

Table 13 - Clean Page Buttons and Functions

D.8 HMI - Status Page

This section will give an overview of the Status Page. On the Status Page you will find a live read out of all of the input and output signals, air valve actuation and some restore, update, and backup features. This page acts as a digital version of the SAMS PLC and will give you all the same information as the PLC would without opening the electrical panel.

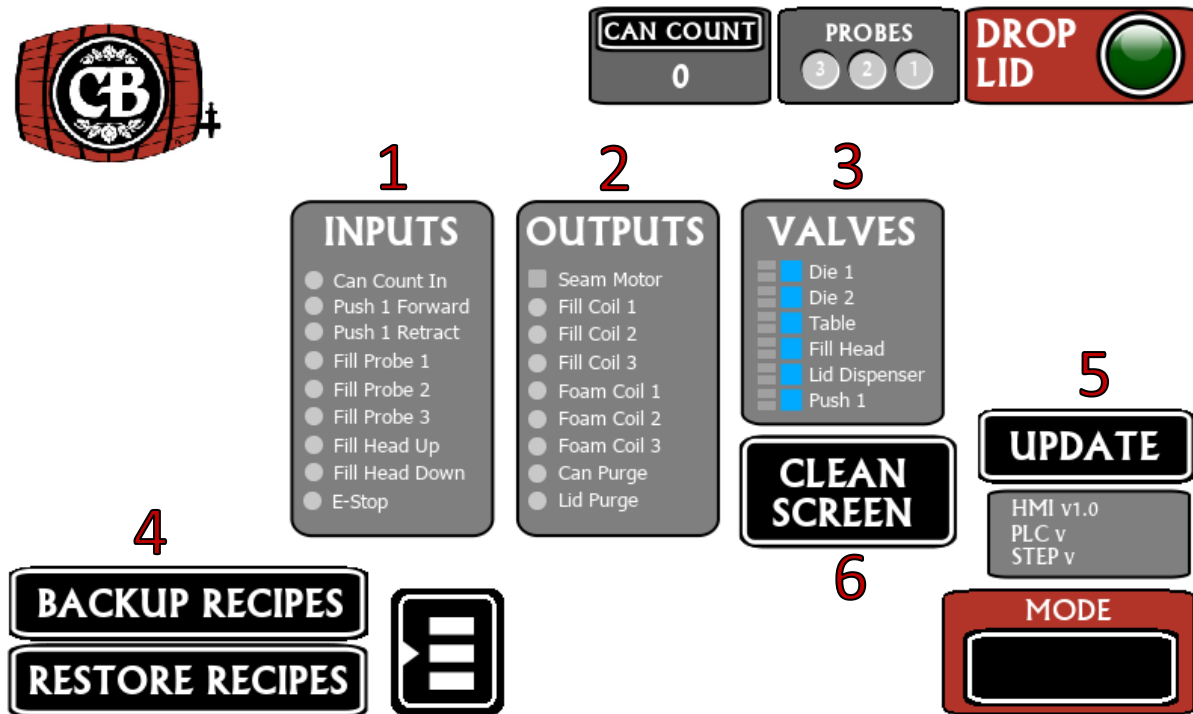


Figure 12 - Status Page

Button/Section	Function
1. Inputs	Illuminates a green circle next to the input(s) that is/are in an activated state
2. Outputs	Illuminates a green circle next to the output(s) that is/are in an activated state
3. Valves	Illuminates a blue or black square next to the coinciding air valve(s) depending on if a valve is in an open or closed state. The small rectangles on the left also light up to correspond to the lights on the air cards inside your panel.
4. Recipe Backup/Restore	Allows operators to backup and restore their recipe settings
5. Update	Used only when a software update is sent from Cask
6. Clean Screen	Allows the buttons to be deactivated for 10 seconds so the operator may wipe down and clean the screen without activating other functions

Table 14 - Status Page Buttons and Functions

D.9 Power & Emergency Stop



Figure 13 - Main Power and Emergency Stop

Button / Switch	Function
1. Emergency Stop Button	Immediately stops the system from operating, and pneumatics return to their rest positions
2. Main Switch/Disconnect	Main power supply disconnect switch

Table 15 – Main Power and Emergency Stop Buttons and Functions

Section E. Electrical Panel Overview & Power Input

E.1 Electrical Panel Overview

An overview of the SAMS electrical panel layout is below in Figure 14.

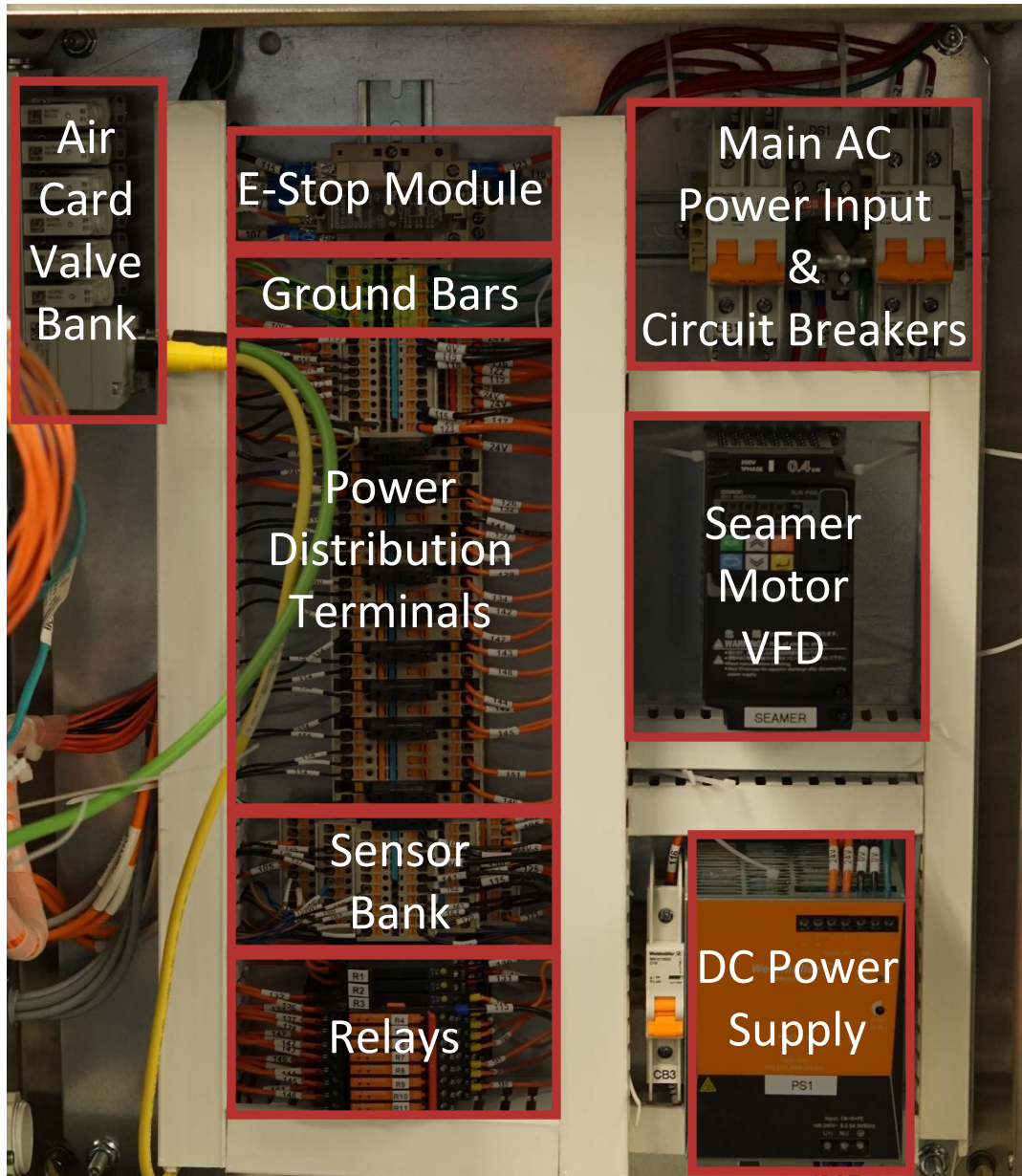


Figure 14 - Electrical Panel Overview

NOTE: For a complete list of what the purposes or functions of each terminal, wire, and breaker are see the wiring schematic found inside the panel.

E.2 Electrical Panel Relays

Overview of the relay block in the SAMS electrical panel.

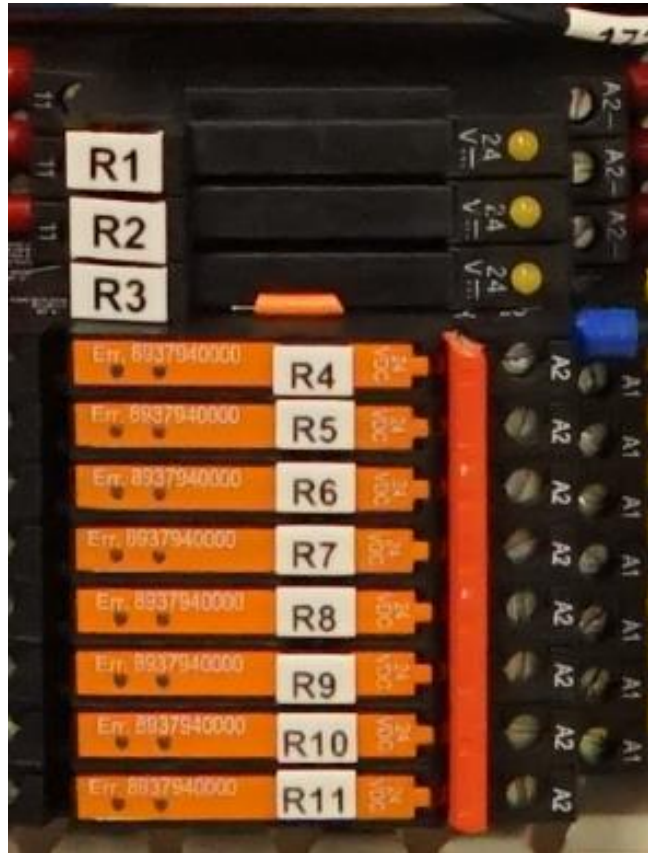


Figure 15 - Electrical Relays

Relay	Function
R1	Fill Probe 1
R2	Fill Probe 2
R3	Fill Probe 3
R4	Beer Valve 1
R5	Beer Valve 2
R6	Beer Valve 3
R7	Foam Valve 1
R8	Foam Valve 2
R9	Foam Valve 3
R10	CO2 Pre-Purge
R11	CO2 Lid Purge

Table 16 - Electrical Relay Functions

E.3 Circuit Breaker Overview

The SAMS has 3 main circuit breakers in its panel. When in the up position, with the red indicator showing above the switch, the breakers are live. When down, and green, they are off/dead. Below is an overview of their functions/controls.



Figure 16 - Circuit Breakers

Circuit Breaker	Function/Control
CB1	Main Machine Power
CB2	VFD Seamer Motor
CB3	Push Arm Motor

Table 17 - Circuit Breaker Functions

E.4 Air Card Valve Bank

There are six air cards found in the left-hand, upper corner of the electrical panel that help translate electronic signals from the SAMS logic to control the various air cylinders and their timing. Each card has the ability to actuate the cylinders in either direction using the blue screw-ports. The ports can be pressed inward to actuate and released to return to normal condition, or pressed inward and tightened to lock the cylinders in their non-normal condition. These settings are mainly used for manual testing/adjustment and trouble shooting purposes.

NOTE: These cards are electro-pneumatic and therefore must not absorb moisture or lubrication/oil to function properly and avoid failure. They are designed to run cool, dry, non-lubricated air and it is for this reason that a refrigerated air dryer is a required addition to your air delivery system.

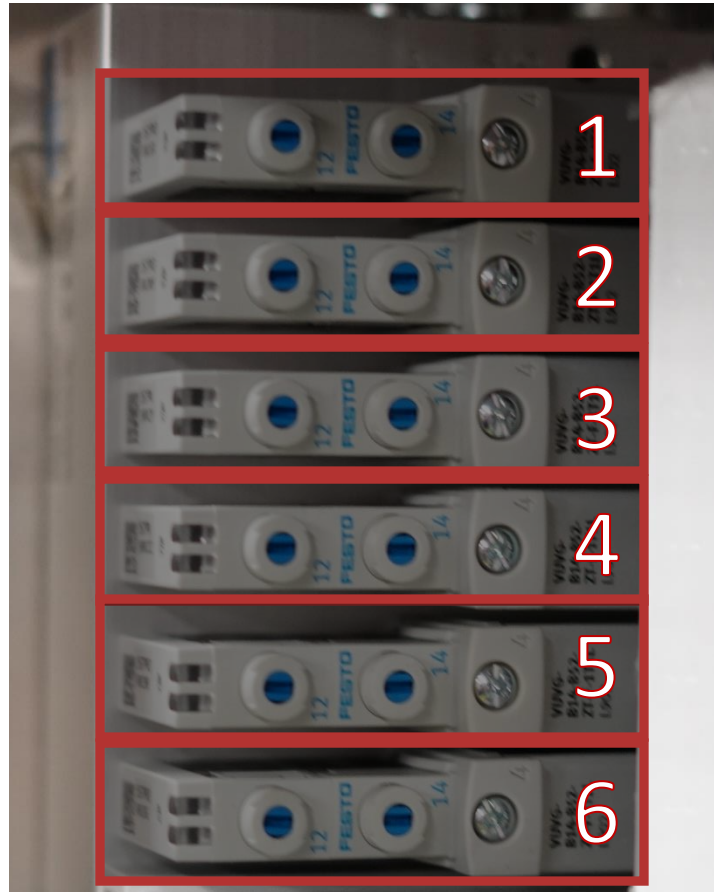


Figure 17 - Air Card Valve Bank

Air Card Controls	
1.	Seaming Die #1
2.	Seaming Die #2
3.	Can Lift Table
4.	Fill Head Cylinder
5.	Lid Dispenser
6.	Can Push

Table 18 - Air Card Controls

E.5 Beer Manifold and Recommended Product Specs

In order to fill a can, the first step required is to have your product connected to the machine. The manifold allows a single hose line (1.5" tri clamp connection - included) to be connected from your tank to the machine, and splits it three ways to supply each valve in the fill head. The valves are rated to a maximum pressure of 23 PSI (1.5 bar), so it is important not to exceed that line pressure or fill valves will fail to open. In Figure 15 you can see the 3 supply lines that are connected to the valves in the fill head, as well as the single supply line from the tank.

Best practise is to install a temperature and pressure gauge on a "Tee" between the exit of the beer hose or pipe and the manifold to allow monitoring of temperature and pressure of the beer at the delivery point to the machine.

- Beer should be carbonated to 2.4 to 2.9 volumes of CO₂ (or 4.6 to 5.6 g/L).
- Beer Temperature of 0 - 2 deg C (32 - 35.6 deg F). Colder temperatures are required for higher CO₂ volumes.
- CO₂ supply/head pressure to bright tank should be set at 11 – 15 PSI (0.7-1.0bar) (depending on CO₂ volume, temperature and distance from dispense tank).

If your product falls outside of these specifications you will likely have difficulty managing the weights and foam caps of your cans. The table below demonstrates some of the issues that may arise when out of spec:

	Head Pressure	Product Temperature	CO ₂ volumes
Above Spec	<ul style="list-style-type: none"> • Faster fills • More Volatile • Too Much Foam • Less Control 	<ul style="list-style-type: none"> • More Volatile • Too Much Foam • Less Control 	<ul style="list-style-type: none"> • More Volatile • Foamier • Less Control • Likely Light Cans
Below Spec	<ul style="list-style-type: none"> • Slower Fills • Less Foam Control 	<ul style="list-style-type: none"> • Less/No Foam Control 	<ul style="list-style-type: none"> • Less/No Foam Creation • Possible Flat Taste

Table 19 - Effects of Recommended Spec Deviation

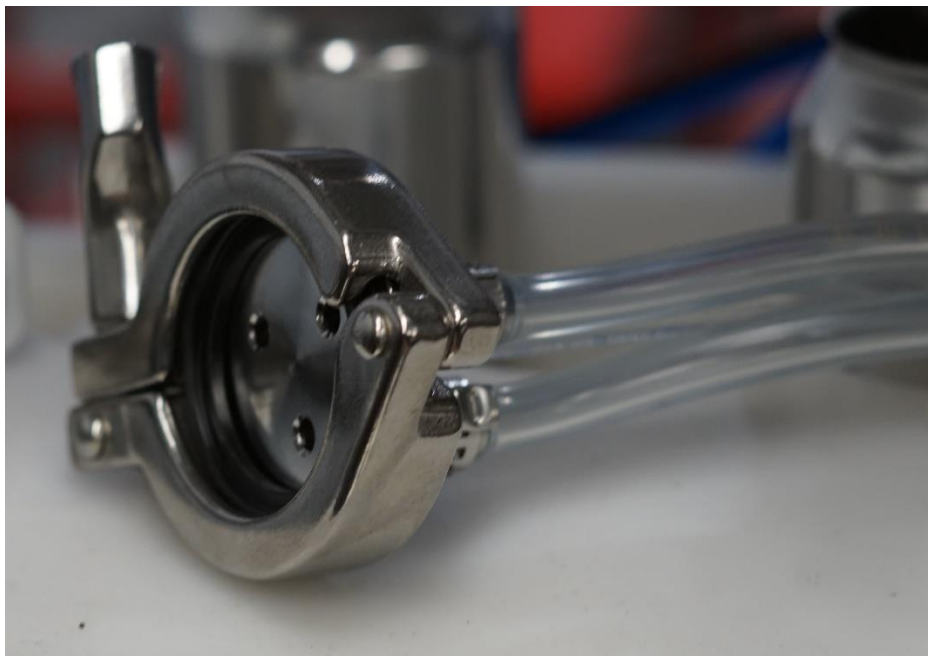


Figure 18 - Beer Manifold

E.6 Fill Head Manifold

When the can slide is full there should be 6 cans under the fill head with Can 1 being the closest can to the seamer. Cans 4, 5, and 6 are purged with CO₂ as the cans 1, 2, and 3 (already purged) are filled with beer (Figure 19). After the fill is complete the head retracts to the up position and the Can Push (Figure 20) pushes the cans into the seaming lane and returns. Empty cans are manually advanced triggering the can counter sensor three times which then starts the fill cycle again.

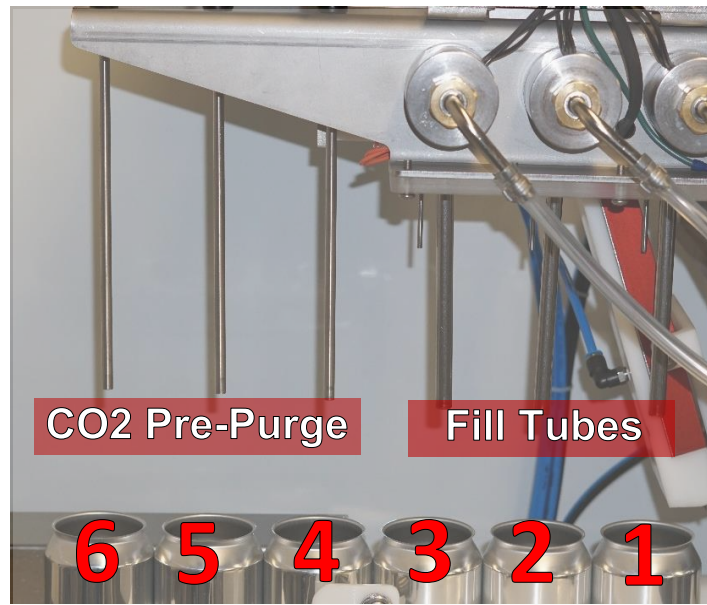


Figure 19 - Can Number Order

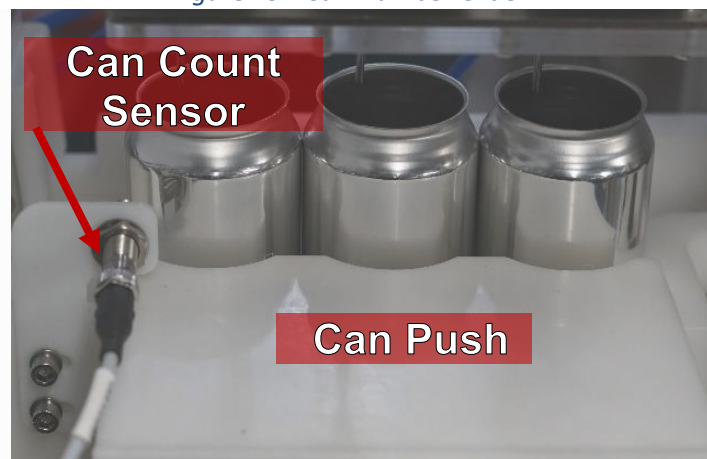


Figure 20 - Can Push and Can Count Sensor

The Can Count Sensor is a proximity, metal detecting sensor that has a read range of approximately 2mm so be sure that when each can passes, the orange light on the sensor lights up acknowledging the can was counted. The Sensor can be threaded in or out using the two lock nuts on either side of the plastic bracket to ensure the proper read range is attained.

E.7 Can Loading

Can loading on the SAMS is a manual process and is why the machine is considered a “semi-automated” system. It’s a good practice to fill the can loading tray all the way full of rinsed, clean cans at the start, and to keep it as full as possible while running. To start the filling process, you simply push the cans into the fill head area, past the can count sensor mentioned in the previous section, and once 3 cans are counted the fill head will come down and start filling.

It’s important to push the furthest can from the seamer to ensure safe distance is kept between your hand and the fill head manifold so when the fill head drops the CO2 Pre-Purge tubes does not pierce your hand.



Figure 21 - Can Loading Tray and Push Direction

E.8 Lid Dispenser

The lid dispenser holds the lids at the optimum angle for contact with the cans passing underneath (see Figure 22)

The leading edge of each can grabs and pulls a lid out, which falls into place on top of the can as it passes (Figure 23). CO2 is dispensed beneath the lid to purge air. A new lid is dropped into the tray for every can that is seamed.

Lids can be manually dispensed using the “Drop Lid” button on the HMI.



Figure 22 - Lid Slide



Figure 23 - Can and Lid Position for Pick-up

E.8.1 Lid Dispenser – Lid Slide and Lid Weight Adjustments

The lid dispenser has two main adjustable components – the Lid Slide and the Lid Weight. The Lid Slide can be adjusted in two main capacities; positionally - vertical height, horizontal position, and angular tilt, and thickness. Shims may need to be added or removed for different lid thicknesses depending on lid style. To see the shim change procedure, refer to the pre-install and set up manual.

E.8.1.1 Lid Slide Adjustment

The Lid slide is adjustable in many ways to allow you to align the lid at the bottom of the slide to connect with the passing can in the most effective manner. This may require full up and down sliding of the lid slide for various can sizes, forward or backward, or a slight tilt downward or upward to effectively connect the can and lid. A Cask install tech will be on site to help you with these adjustments during their training visit.

To make these adjustments there are two main areas for adjustment.

1. For lid slide height adjustments there are 4 socket head cap screws on the backside of the lid slide that will allow you to slide the lid slide up and down on slots. You'll need a 3/16" hex wrench for these. (Figure 24)
2. For forward/backward and tilt adjustments are made using the hex bolts on each side of the lid slide bracket shown in red circles on the bottom-right. The 5/32" T-Handle Hex wrench included with your spare parts kit will fit these. (Figure 25)

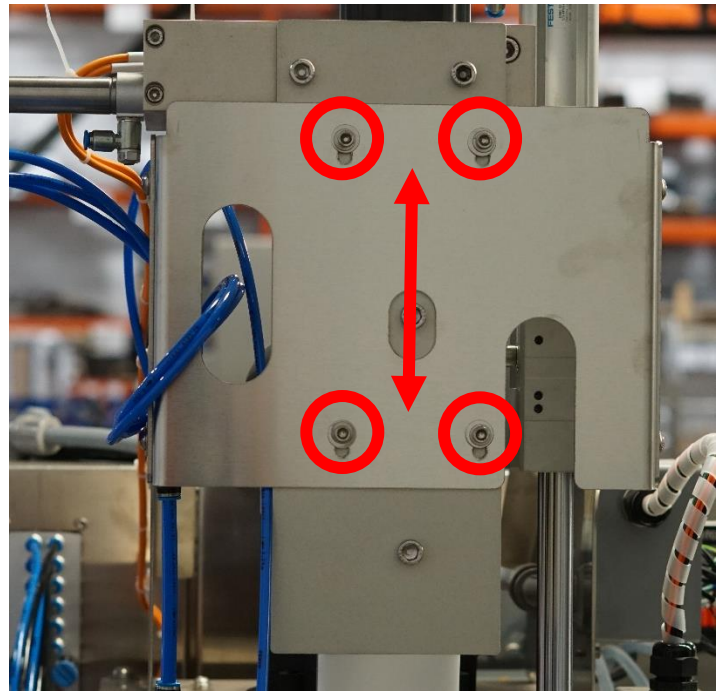


Figure 24 - Lid Slide Height Adjustment Bolts

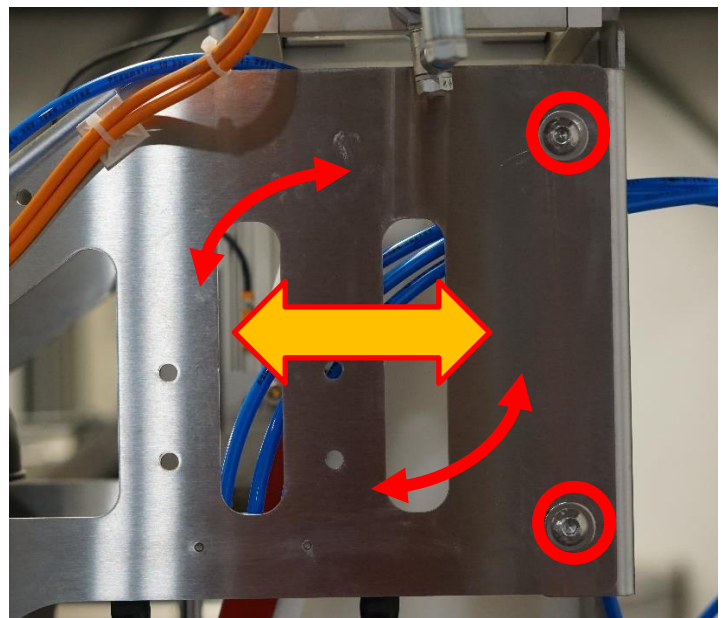


Figure 25 - Lid Slide Tilt Adjustment

E.8.1.2 Lid Weight Adjustment

The lid weight, which hangs on the end of the lid slide and keeps the lids from not only falling out before a can picks them up, but also acts as a mechanism to guide the lids onto the can. There are two adjustments you can make on the lid weight which will be outlined below.

The lid weight can be adjusted to be closer or further away from the lids as they sit in the discharge portion of the lid slide to avoid them from either falling out, or being too tightly secure to release onto a can (Figure 26).

The adjustment for that can be made using the two outer most adjustment bolts on the front of the lid slide as highlighted in yellow on the top-right and yellow circles on the bottom-right (Figure 27).

To make the adjustments you'll need to loosen the 5/16" (8mm) locknuts (red box, Figure 26) and thread the bolts in for a looser fit, or out for a tighter fit. When set correctly lids should be released onto a can as it passes but not fall out otherwise.

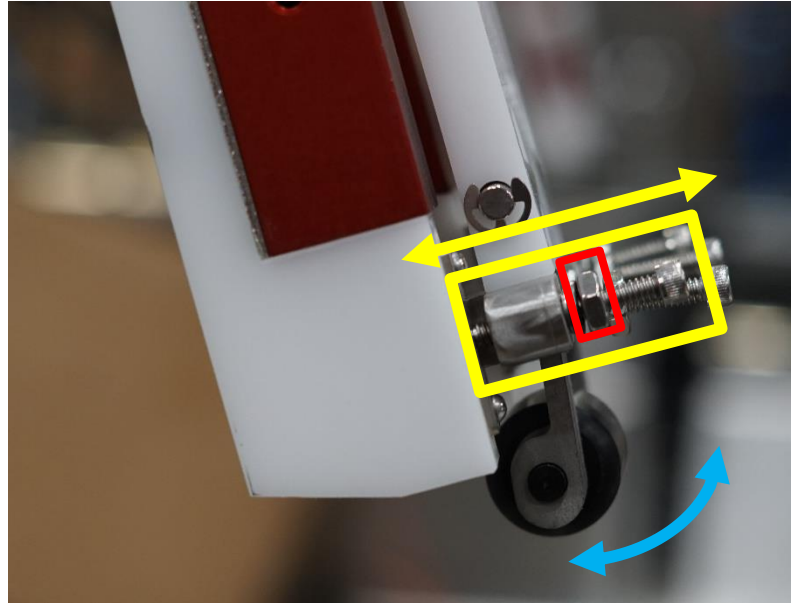


Figure 26 - Lid Weight Adjustment

The other adjustment you can make to the lid weight is the angle that the weight sits relative to the lid slide (blue arrow, Figure 26). This setting is done to make sure the lid weight doesn't interfere with the lids as they drop and should be adjusted outward just far enough to avoid interference with the lids as they fall.

To adjust this portion of the lid weight, loosen the 5/16" (8mm) lock nuts and thread the adjustment bolts (blue circle, Figure 27) inward or outward to achieve a point of non-interference.

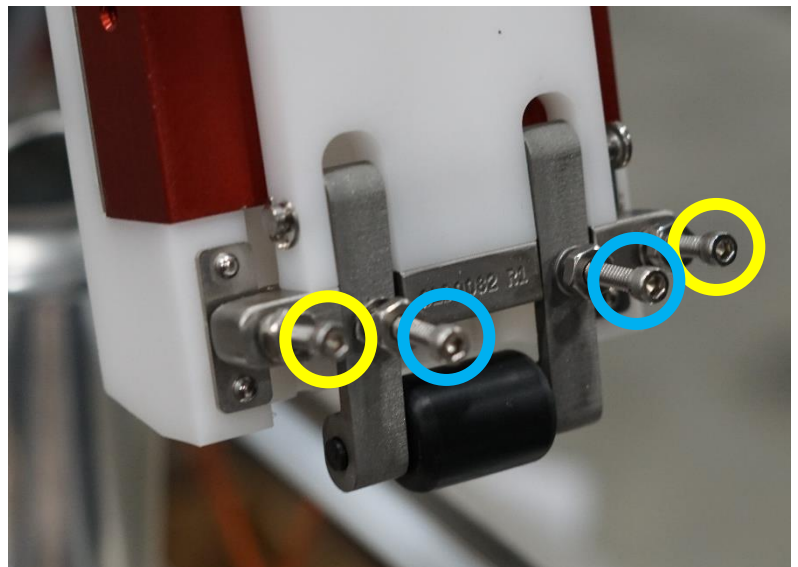


Figure 27 - Lid Weight Adjustment Bolts



Section F. System Operation – Start to Finish

F.1 Before Starting Your Canning Run

The following sections will explain what you should do prior to starting your canning run each time you start-up. Following these steps and being meticulous will assure consistent start-ups and help reduce downtime

F.1.1 Initial Startup Adjustments and Settings

Follow these steps to ensure optimum operation. Locate and familiarize yourself (see section C.2 for a visual glossary at beginning of manual for reference) with the following system components:

- Control Panel (Touch Screen)
- Air Input Valve and Pressure Regulators
- CO2 Input Valve and Pressure Regulators
- Fill Head Manifold
- Lid Dispense Button
- CO2 Delivery Areas
- Can Push Cylinder or Push-1
- Push Arm

F.1.2 Prestart Checklist

Verify the following before starting system:

- Air inlet valve is open, air is connected, and air supply (compressor) is on.
- Air supply is dry – Check that primary air filter is dry (bleed air from drain nozzle).
- Air pressure regulators
 - Set primary pressure at 90 PSI.
- CO2 pressure regulators: first regulator (can purge) 8 - 12 PSI, second regulator (lid purge) 1 - 2 PSI.
- CO2 delivery – Check and verify CO2 dispenses from purge tubes and lid dispenser slide (L and C buttons on Fill Head Page).
- Beer header input pressure and head pressure on the tank should be within 1 to 2 PSI differential pressure.
- Cans should travel freely from can slide to seamer lane, from seamer lane to lift table, and from lift table to discharge (no binding).
- Sensors – Cans counting correctly through fill manifold section?
- Lid dispenser operation – Lid sleeve full? Are lids loading correctly (face up) into lid slide?
- Seamer entry push piston actuation okay? (test with “P” for “Push Cans” on Fill Head page)
- Is lid dispenser actuating with each can that completes the seam cycle?
- Seamer system – Lift table, die 1 & 2 operator satisfactory? (Test on Seamer Page)
- Push Arm actuation okay?
- Discharge table or chute delivery – Cans sliding onto table/chute smoothly?
- Beer carbonated to 2.4 to 2.9 v/v of CO2 (or 4.6 to 5.6 g/L).
- Beer Temperature 0 - 2 deg C (32 - 35.6 deg F) at the manifold. Higher CO2 volumes require colder temperature to control foam creation.
- Ensure CO2 supply to bright tank for head pressure is properly set (as required up to 25 PSI).
 - Higher pressure is required for longer distance runs to compensate line loss.



F.2 During Operation of Your Canning Run

After going through the pre-start-up procedures and ensuring everything is ready you are ready to proceed to starting the canning line. It's very important that all ongoing checks are completed as often as required to ensure a successful can run is made and to reduce downtime and loss of product.

F.2.1 Startup & Operation

- Turn on power on main panel, release the E-Stop, and press the reset
- Fill the can loading tray with cans and ensure the 3 cans under the fill head are in their positions under the fill tubes.
- Go to the Fill Head page and use the "Drop Head" function to lower the Fill Head into the cans.
- While still on the Fill Head Page press and hold the All Fill function to flush the system manually with beer until foam disappears from each valve head. This is done to bleed any air bubbles or break out from the line prior to filling and will avoid low fills.
- While flushing the filler it is often helpful to walk your supply hose from the brite/supply tank to the filler creating a high point to eliminate any stagnant breakout or air bubbles in the line.
- Check lid dispenser – pre-load 3 - 4 lids in the lid slide (MAXIMUM).
- Ensure Top Up and Foam timers are set in the recipe page and turned ON from the main page.
- Press Run

F.2.2 Ongoing Operational Checks

- CAN JAMS, misfeeds, etc. IMMEDIATELY hit the E-stop button. Clear the fouled cans. Place a seamed can on the can lift table (to prevent cans from 'walking' on to platform during seamer start up delay). Reset the E-stop button. Press Start.
- Watch cans fill and inspect for over foaming and under fills.
- Verify lids are dispensing onto cans as they pass under lid slide.
- Verify lids continue to dispense into the slide top-side-up.
- Monitor lid sleeve level from time to time to ensure you don't run out during the canning process.
- Check can weight for proper fill levels as often as possible. Records of the weights should be kept.
- Full can seam tear down should be done prior to production every day. Can seam height and width should be checked frequently (once every ten to fifteen minutes) throughout production. Production should be stopped if there is a change of more than 0.002" (2 thou) on either dimension. A full seam tear down should be performed to determine the cause of the change and the adjustments required.
 - The procedure for checking the quality of your seams is a "Can Seam Tear Down" can be found on our website or via contacting our support department.

F.2.3 Post-Operation Shutdown Checklist

Verify the following steps have been accomplished before placing system in dormant mode

- Run CIP (see sections D.7 and F.3.3)
- Clean all exposed surfaces with hot water and sanitizer solution (peracetic acid, iodophore, etc.)
- Air inlet valve closed?
- Primary filter purged?
- CO2 inlet valve closed?
- Water inlet valve closed?



F.3 Post-Run Procedures

F.3.1 Clean in Place (CIP) System

After your canning run it is imperative to run a cleaning cycle, or the CIP procedure. With simple, regular cleanings the SAMS should run optimally. With this in mind, it is critical to ensure the equipment is thoroughly cleaned every shift. Due to the sugar content in the beer it is very sticky when it dries, and this can affect the functionality of some of your moving parts if it is allowed to dry on them before being cleaned. A proper cleaning should focus on all the splash areas, including the seaming station, fill head, and under the lid dispense tray (critical!) but also include the rest of the machine as well.

Use a hose to spray down the seaming area/splash areas and lid dispenser and then use compressed air to dry as much as possible. What can't be dried with air should be wiped down with paper towel or a clean, dry cloth. The fill head area is wipe down only, and should never be sprayed down with water. If you follow this simple cleaning process your machine will run smoothly with fewer service issues and production interruptions. Refer to the maintenance guidelines manual for schedules for easy ways to keep track of what needs to be done to keep your SAMS running as best and as long as possible.

F.3.2 CIP Procedure

CIP mode is designed to allow the continuous flow of cleaning solution through the system. To start the CIP process you'll need to first set 3 cans under the fill head (1 under each tube) and then go to the Clean Page in the machine menu to access the controls for the automated cycle. Prior to starting the cycle its important to have your cleaning chemicals ready and to understand the specifications required for this machine.

The CIP process is recommended to include 3 steps:

- Hot Caustic Flush (1-2% concentration)
- Warm Rinse (Caustic will rinse better/faster using warmer water than cold water)
- Sanitizer Flush (Less than 1% concentration is sufficient)

NOTE: DO NOT USE ANY PHOSPHOROUS BASED ACIDS WITH THIS MACHINE. THE MATERIALS USED FOR THE CAN SLIDE AND SEAMER ARE NOT COMPATIBLE WITH PHOSPHOROUS BASED CHEMICALS.

The CIP process isn't set up on the SAMS for recirculation and will therefore be spilled over onto the machine and drain to the floor. Also, you will need some components and equipment to complete the CIP process that aren't included with the SAMS. Mainly, these items include a sort of vessel to keep the cleaning solutions in (yeast brink, filter, or other similar vessel) with tri-clamp access to add a valve and hose to, a pump to pump the CIP solution to the SAMS (preferably with a VFD or flow control), and the ability to have hot water provided to the supply vessel for mixing the solution.

Once the items above are ready, the following should be taken into account:

- **Pressure** – when flushing the system with water or cleaning solutions, it is important to keep pump pressures below 24 PSI. The fill valves will not open at pressures higher than this level. If the valves are over pressurized and jammed shut the beer line will have to be de-pressurized before the valves will open again. For breweries with automated CIP systems or large pumps on CIP reservoirs, it will be necessary to use a by-pass valve to reduce CIP feed pressure.
- **Temperature** – when flushing the system with hot caustic for cleaning it is advisable to keep solution temperatures at **65°C (149°F) or lower** to avoid overheating the coils in the fill valves.
- **Solution** – 1-2% concentration and follow the recommend mixing percentage and exposure time of the chemical manufacturer.

F.3.3 CIP HMI Controls Procedure

The Clean Page on the main machine menu will allow you to set up and run the CIP procedure. Total clean time will determine how long the process will go for and the other timers below that will cycle through until the total time is up. The following graphic and table will take you through the steps required.



Figure 28 - Clean Page - CIP

Button/Setting	Procedure/Application
1. Total Clean Time	Total cleaning time is up to the user but we recommend 15-20 minutes for each CIP step (Caustic, Rinse, Sanitizer). To edit this timer simply press on the black rectangle and enter the desired time on the number pad.
2. Open	The Open timer is how long the beer valves will remain open for each cycle. The default setting is set to 20sec and this is normally sufficient but can be edited by pressing on the black rectangle and entering the desired time on the number pad.
3. Foam	The Foam timer is how long ONLY the foam valves will remain open for each cycle. This will allow the foam orifice to be cleaned due to it being blocked while the valves are fully open. The default setting is set to 20sec and this is normally sufficient but can be edited by pressing on the black rectangle and entering the desired time on the number pad.
4. Closed	The Closed timer is how long the valves will remain closed allowing for the chemicals to have contact time.
5. Clean	Once your timers are set use this button to start the CIP process. This button will also restart the CIP cycle any time it is pushed throughout the CIP cycle.
6. Mode	To end the CIP cycle press the mode button to return the machine to manual mode.

Table 20 - CIP Buttons and Procedure



Section G. Company Information

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