



Maple Systems Pro Recirculating Pump Controller Operation Manual

V1.

Apex Filling Systems, LLC

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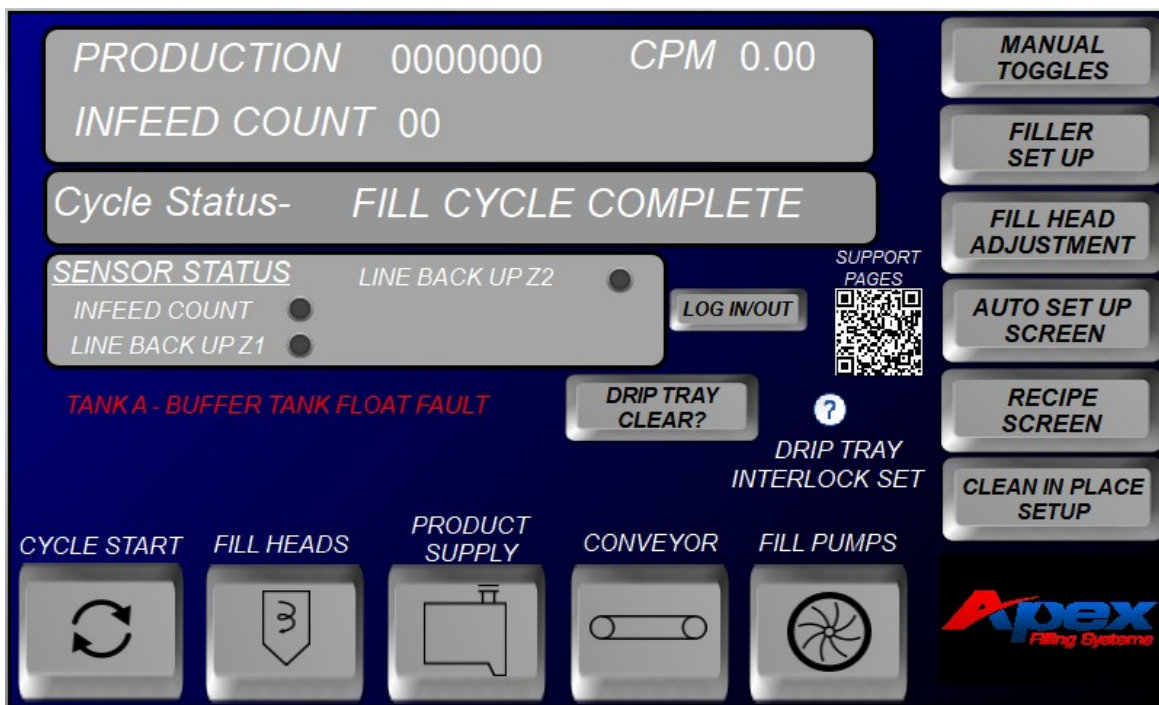
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1.1 MAIN SCREEN

1.2 MAIN CONTROL SCREEN



The main screen of the controller provides the primary filler function status at a glance.

At the top left of the screen, the TOTAL PRODUCTION window tracks the machine's overall container output.

- INFEED COUNT displays the containers sensed by the infeed sensor.
- STAR COUNT when active displays the pins on the starwheel counted by the proximity sensor.
- CPM displays the containers per minute which the machine achieved on the previous cycle

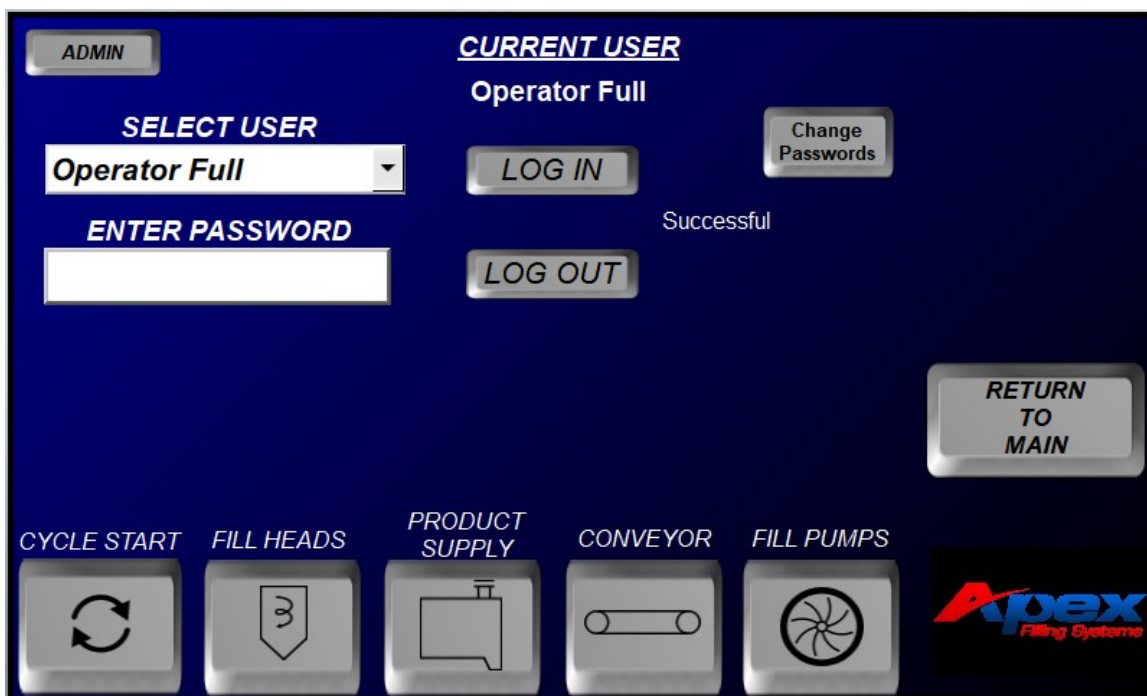
Below the counters is a quick glance cycle status FILLER CYCLE COMPLETE
(This will change during the fill cycle to read: FILLER INCYCLE)

Below the cycle status bar is a sensor status box. This allows a quick glance viewpoint of the status of all indexing related sensors, these will light green when the sensor is activated.

To the right of the status is a button to **LOG IN** for factory maintenance functions.

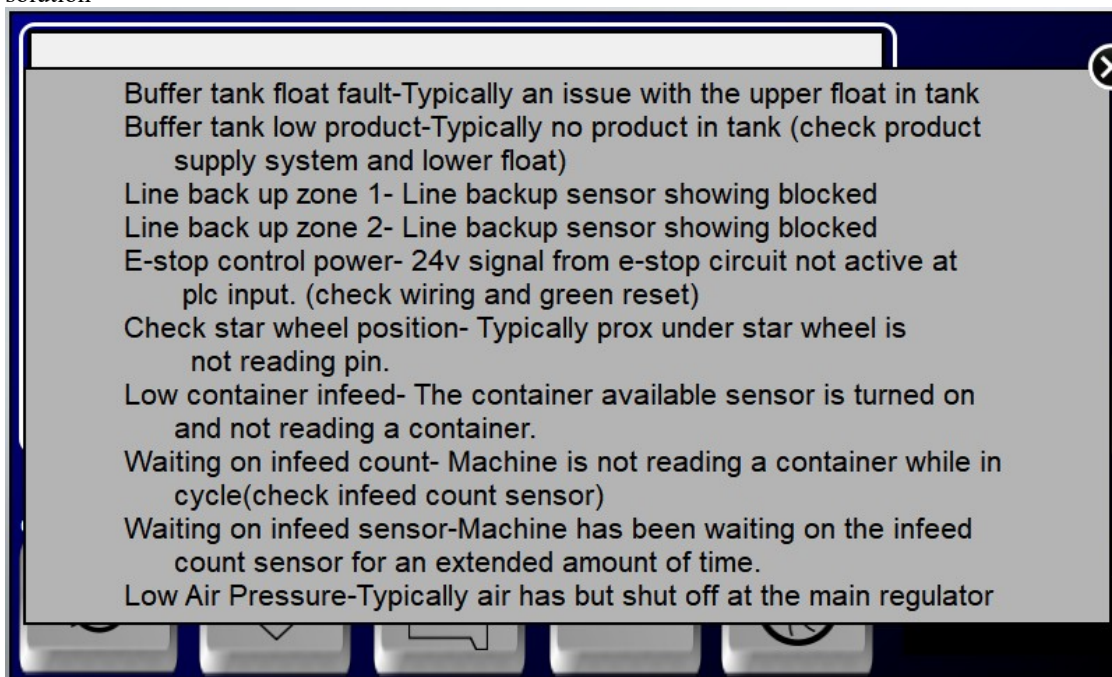
Access to maintenance level screens is not needed for general proper operation of the machine.

Contact APEX directly for information regarding the maintenance function screens. This is also where your Operators will log in to utilize access level protection. There are three levels available Operator, Operator +, and Operator Full. Operator allows for only basic functions to run and clean the machine. Operator+ allows the added ability to make minor adjustments to the machine settings. Operator full Allows for full user access along with the ability to change passwords. Apex will supply Default passwords separately. Each machine is shipped with a USB Flash drive inside the control box that when plugged into the HMI Bottom inside the box will provide auto log in into the operator full user bypassing the need to log in.



To the right of the log in button is a QR code that you can scan and will take you to the machine specific support pages on apex's website with updated manuals, training videos and examples. You will also have the ability to enter service or parts request tickets here.

Below the sensor status is where any alarms will be displayed for quick view. If you click on the alarm display area it will jump you top the main alarm screen. Here you can see all alarms along with clicking the info button to display possible alarms and solution



Also on the main screen if you have the drip tray enabled you may see an alert pop up informing you that the drip tray safety interlock has been set for one of various reasons. If drip tray is clear press drip tray clear to reset.

Along the bottom of the main screen, the five toggle switches may be pressed to quickly enable or disable various functions of the filler.

These toggle switches are available from most of the screens:

- **CYCLE START** enables or disables the entire filling cycle
- **FILL HEADS** enables or disables all fill heads
- **PRODUCT SUPPLY** enables or disables the product supply system
- **CONVEYOR** enables or disables the conveyor control
- **FILL PUMPS** enables or disables the fill pumps from running

Touching the remaining buttons on the screen accesses the various programming and manual operation functions of the controller, described in the following sections:

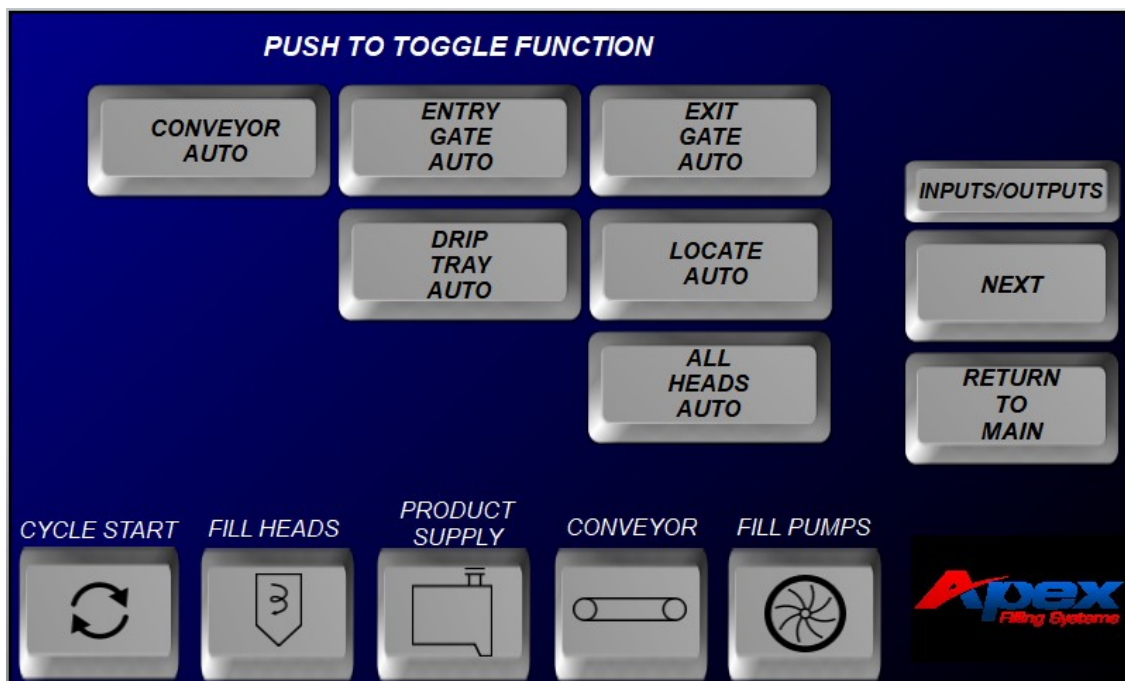
Section	Subject
2.1	MANUAL TOGGLE/INPUTS/OUTPUTS
3.1	FILLER SET-UP
4.1	FILL HEAD ADJUSTMENTS
5.1	AUTO SET UP
6.1	RECIPE
7.1	CLEAN IN PLACE

Please Note: The Maple Systems Multi-Function Filler Control is designed to be used in a wide variety of applications. Some of the following information may, or may not, apply to your specific machine, for instance:

2.1 MANUAL TOGGLES

MANUAL TOGGLE SCREEN 1

The manual toggle screen allows the operator to operate the various functions of the filler individually. This screen is primarily accessed for use during the initial machine setup, for performing mechanical calibrations, or for clearing a container jam. In some situations, certain modules may need to be bypassed for proper operation. Depending on options selected under filler setup you will only see activated options here.



Please note: the multi-function controller is a versatile controller, capable of controlling a wide variety of machine configurations and options. Your machine may, or may not utilize any or all of the options listed on this screen, and screen layouts may differ from those shown throughout this manual

The buttons act as toggle switches, activating the associated module:

- **CONVEYOR (AUTO or RUN CONTINUOUS)**
Activating this toggle will bypass the conveyor controls, allowing the conveyor to either run for indexing, and stop during filling (AUTO) or to run continuously (RUN)
- **ENTRY GATE (AUTO or OPEN)**
Activating this toggle will bypass the entry cylinder pin/gate controls, allowing the entry cylinder to either open and close for standard pin indexing (AUTO) or to remain open (OPEN)
- **EXIT GATE (AUTO or OPEN)**
Activating this toggle will bypass the exit cylinder pin/gate controls, allowing the exit cylinder to either open and close for standard pin indexing (AUTO) or to remain open (OPEN)
- **STAR WHEEL (AUTO or RELEASE)**
Activating this toggle will either activate the starwheel for automatic operation (AUTO), or remain released to allow containers to move through the fill area.
- **DRIP TRAY (AUTO or RETRACT)**
Activating this toggle will bypass the drip tray controls, allowing the drip tray to either automatically extend

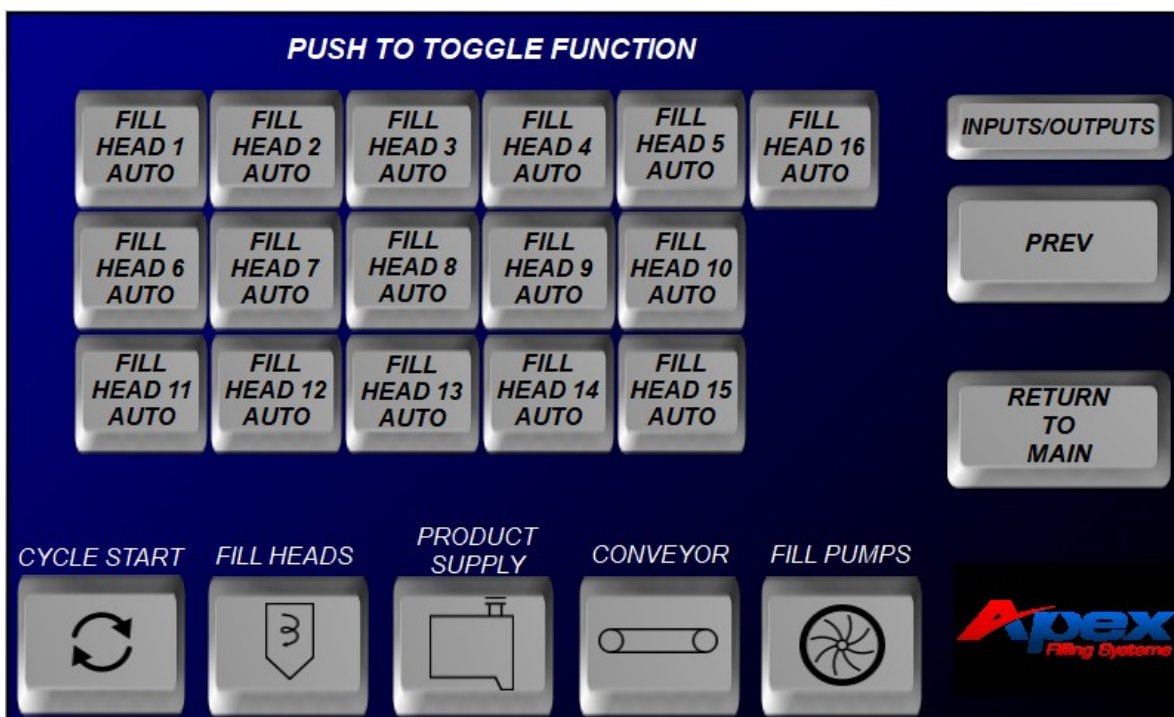
- during an indexing cycle, and retract during the fill cycle (AUTO) or to remain retracted for the entire filling and indexing cycles (RET)
- LOCATE (AUTO or EXTEND)

Activating this toggle will bypass the container locator controls, allowing the locators to either automatically extend during a fill cycle, and retract during an indexing cycle (AUTO) or to remain extended for the entire filling and indexing cycles (EXT)
- HEAD DIVE (AUTO or DOWN)

Activating this toggle will bypass the diving head controls, allowing the dive mechanism to either dive and raise automatically for applications which require diving head filling operation (AUTO) or to dive the nozzles manually (DOWN)
- ALL HEADS AUTO

Activating this toggle will open and close all fill heads that are enabled.

2.2 MANUAL TOGGLE SCREEN 2



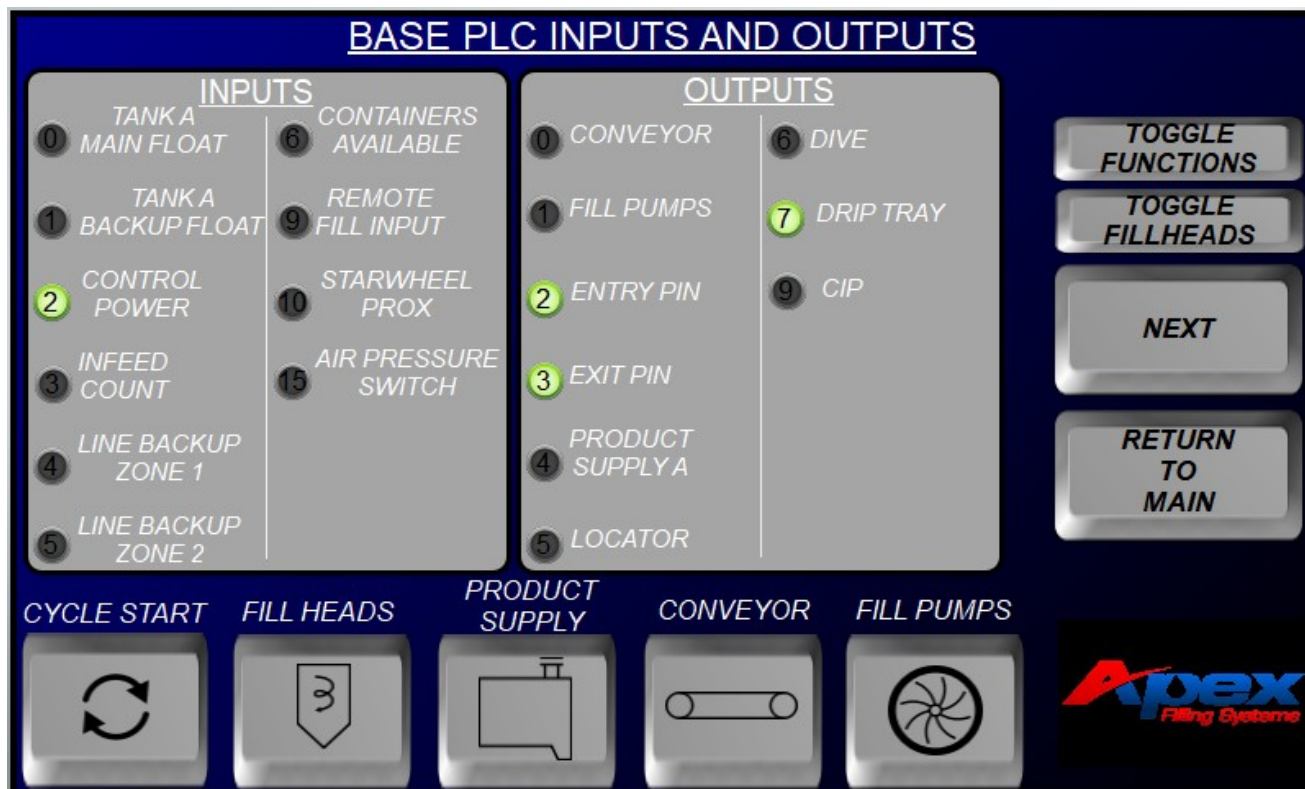
The second manual toggle screen allows the operator to toggle fill heads 1 thru 16 from automatic mode to manually open.

NOTE: If your filler is equipped with less than 16 heads, the appropriate number of heads will be displayed

Pressing any of the fill head buttons will toggle between AUTO and OPEN

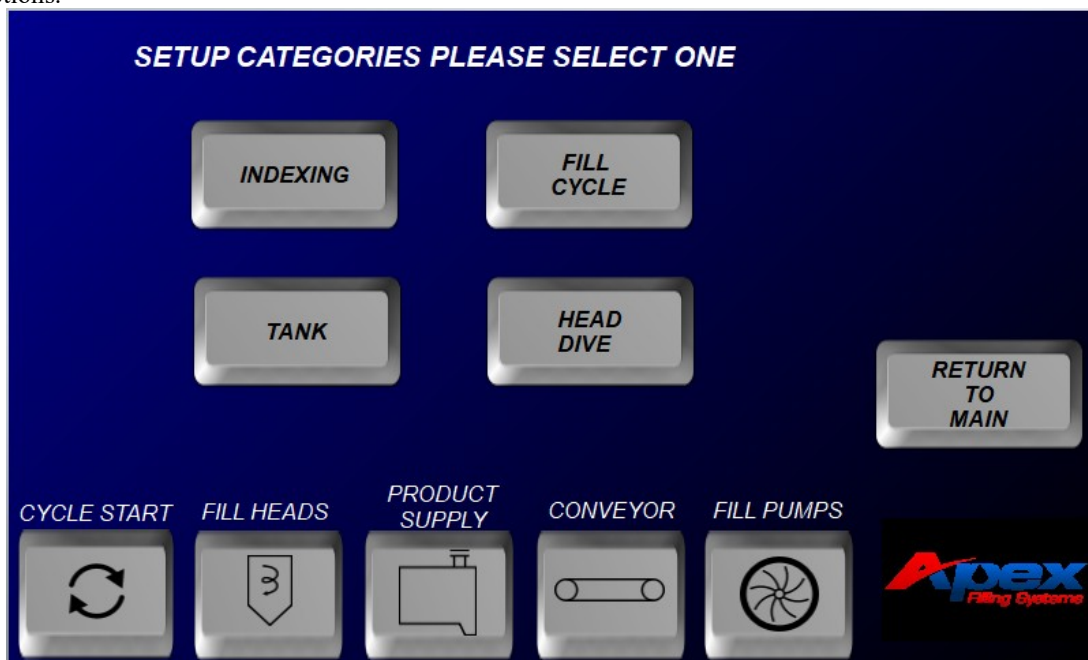
All of the active fill heads may be opened simultaneously by pressing the ALL HEADS (AUTO or OPEN) button on previous page

Entering the Inputs and Outputs screen allows for full view of all I/O the base plc is acting upon. By using the quick jumps you can navigate between this and the manual toggle screens to verify functions and sensors. If your machine has additional cards you can view them by pressing next.



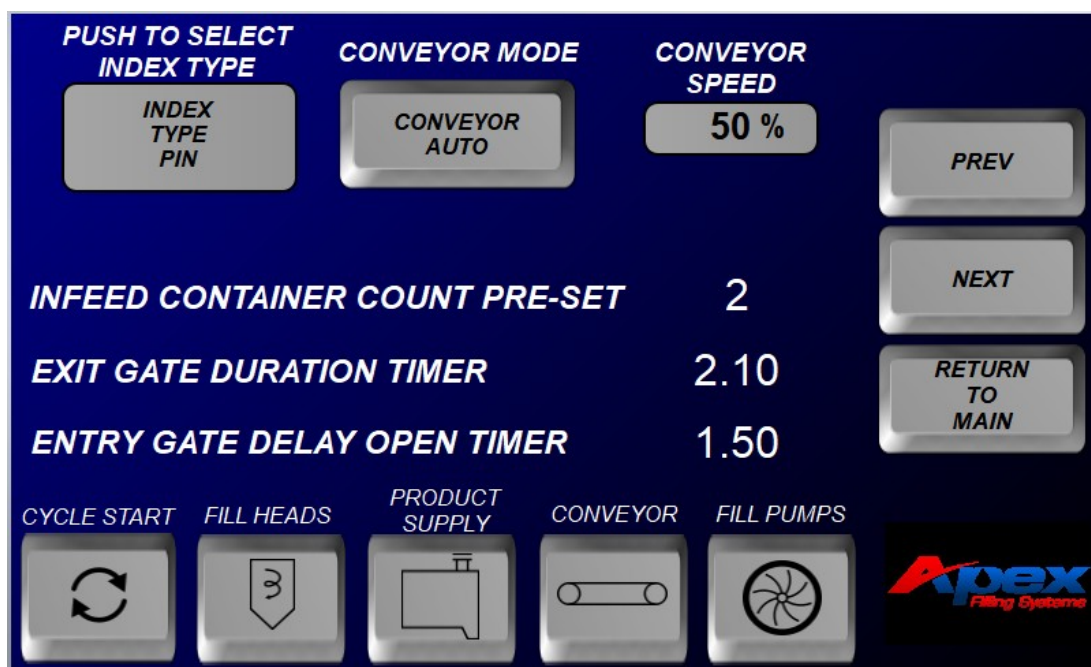
3.1 FILLER SET-UP SCREENS

By Pressing the filler set up button from the main screen you will enter the main filler setup screen where you will select a category or setup options.



3.2 FILLER SET-UP INDEXING SCREEN

*NOTE- Options on screen will change depending on options selected. If selected there may be a second page accessed by pressing the next button. Pressing on any timer description will bring up a pop up with further information.



INDEX TYPE (PIN, STAR or NONE) sets the type of indexing for which the machine is equipped to run

CONVEYOR MODE sets the conveyor to start and stop during indexing or to just run continuous.

CONVEYOR SPEED sets the run speed of the conveyor.

STAR WHEEL COUNT PRE-SET: The amount of pins which the starwheel sensor will count to determine a full indexing is completed

INFEED CONTAINER COUNT PRE-SET: The number of containers the machine will count to ensure a full fill area

EXIT GATE DURATION TIMER: Time the exit gate remains open to allow full containers to exit the fill area

ENTRY GATE DELAY OPEN TIMER: Time the entry gate waits to open after the exit gate opens (creates a gap between exiting full containers and entering empty containers)

DELAY EXIT RETRACT IN NEW CYCLE: This is the amount of time the exit gate will delay opening after each fill cycle has completed (typically used if product tends to drip, or as a timer to slow overall production, often to accommodate for other operations, such as hand capping, when operators cannot keep up with the full production speed of the filler)

LINE BACK UP ON DELAY TIMER: Time which the back up sensor must be blocked before the filler will halt production

INFEED SENSOR NBNF DELAY TIMER: (No Bottle, No Fill) The infeed sensor must detect a container for this period of time before a fill cycle will begin

CONTAINER AVAILABLE ON DELAY TIMER: Time which the container available sensor must sense a container before filling will start

3.3 FILLER SET-UP FILL CYCLE SCREEN



The first fill cycle set-up screen allows the operator to enable or disable fill heads 1 thru 16. The fill head toggle buttons will switch between OFF and AUTO. The second fill cycle setup screen will allow for further function and timers to be changed. Pressing on any timer description will bring up a pop up with further information.

LOCATE (OFF or AUTO) Enables or disables the container locators

DRIP TRAY (OFF or AUTO) Enables or disables the drip tray option

FILL DELAY TIMER: Time which the fill cycle will delay filling after indexing has finished

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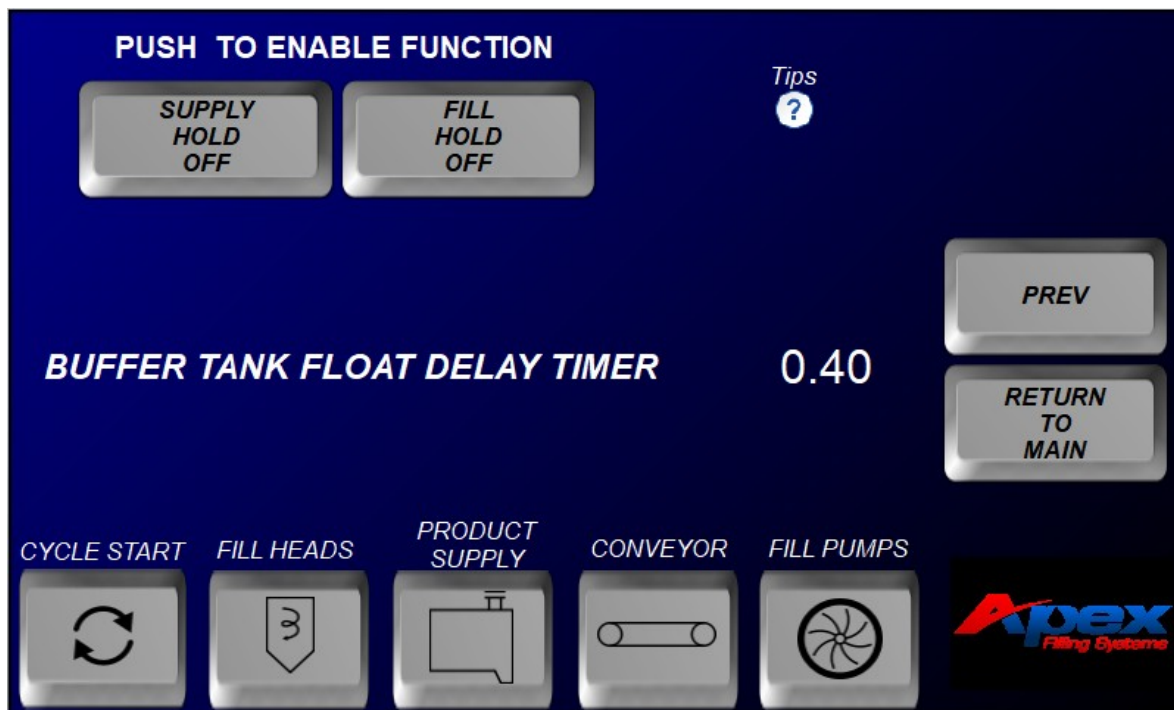
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NEW CYCLE RESTART DELAY TIMER: Time which the indexing cycle will delay after filling has finished. This is also used to time the machine for slower equipment downstream. This will also be used to time the drip tray extending to allow nozzles to clear.

Fill PUMP SPEED PERCENTAGE: This sets the run speed of the fill pumps from 0-100 percent.

3.4 FILLER SET-UP TANK SCREEN

The tank setup screen allows for functions and timers related to the tank to be changed. Note- pressing any timer description will display a pop up with further information.



FILL HOLD (OFF or ON) Enables or disables the fill hold option. If enabled, filler will wait until float is satisfied before next cycle

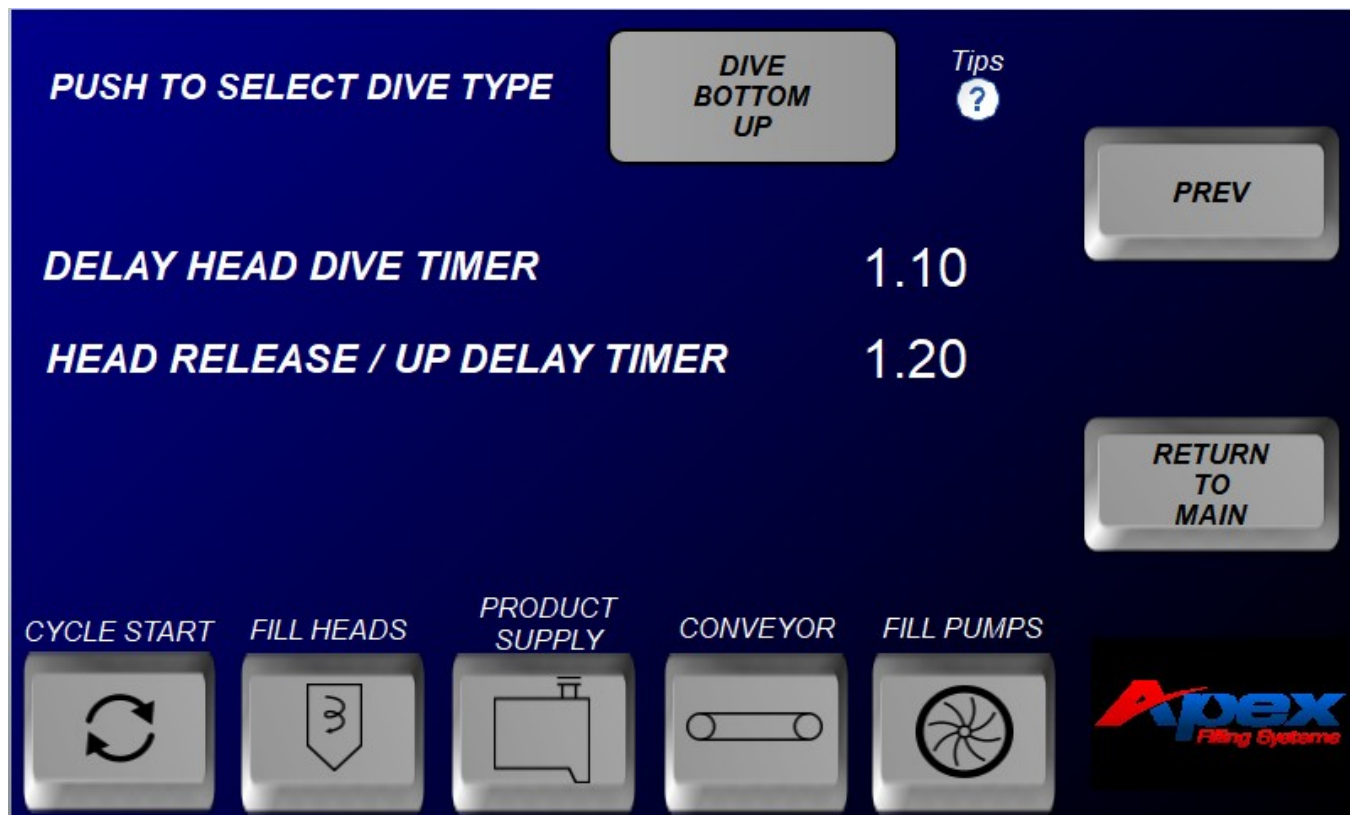
SUPPLY HOLD (OFF or ON) If set to ON, delays the hopper supply from being replenished until the fill cycle is completed, regardless of the product level sensor signal

SUPPLY OPTION this will allow you to select which tank or if both tanks are used if dual tanks are selected during initial setup.

BUFFER TANK FLOAT DELAY TIMER: This timer helps avoid “chattering” in the supply, or hopper, tank by delaying the product supply, from the time the float calls for product until the product supply begins to replenish the hopper tank. This reduces the effect of product turbulence in the hopper tank, and is often utilized when the total fill volume is small compared to the hopper capacity.

3.5 FILLER SET-UP HEAD DIVE SCREEN

The head dive screen allows for modification to all settings related to dive. Note-available functions will only be available if selections enable function. Pressing on any timer description will bring up a pop up with further information.



HEAD DIVE TYPE (OFF, STD or DIVE BOTTOM UP) Selects between disabled (stationary) diving heads, automatic/standard operation, or “Bottom Up” fill

DELAY HEAD DIVE TIMER: The amount of time the diving heads will delay after the entry count (or starwheel count) and any entry delays (NBNF timer, for example) have expired

HEAD RELEASE / UP DELAY TIMER: The amount of time the machine will delay the heads from beginning to rise from containers bottom during a bottom up fill

4.1 FILL HEADS ADJUSTMENT PAGE

The fill heads adjustments page will allow for all adjustments related to the fill heads.

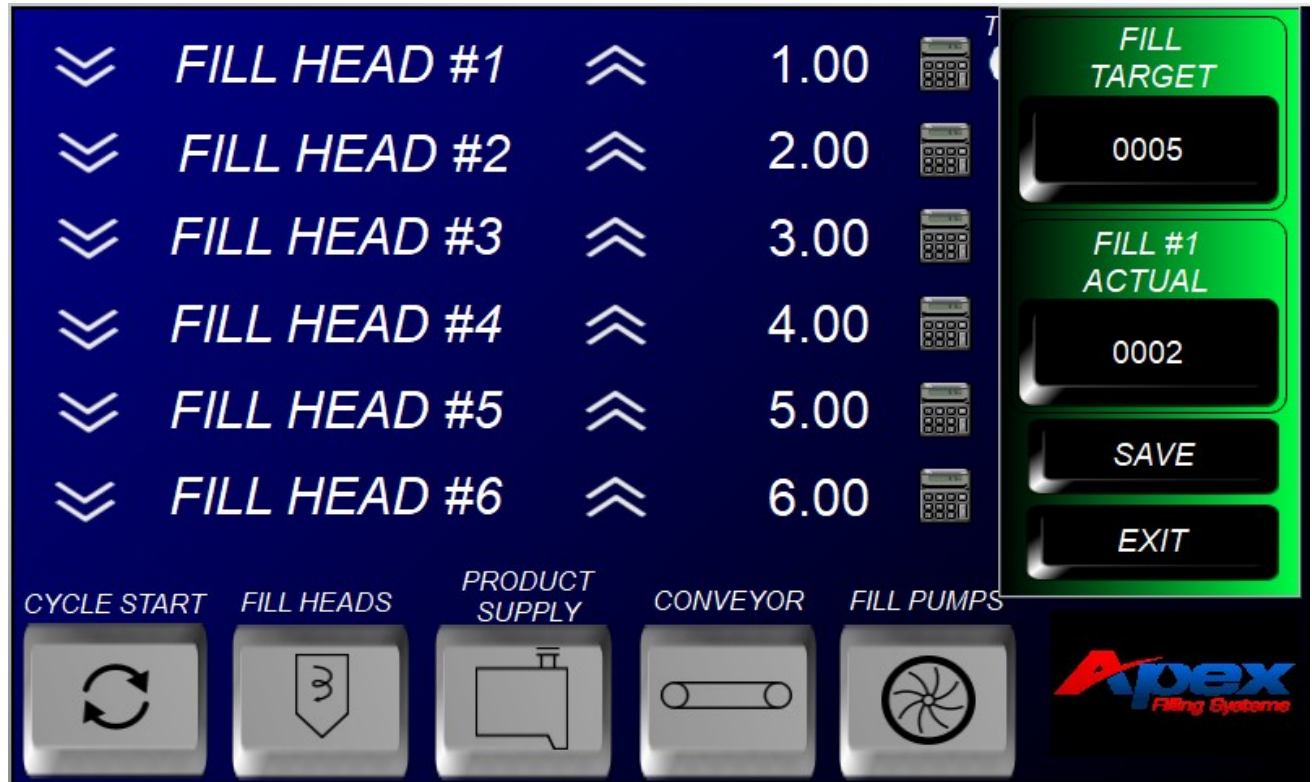


The Fill Head ADJUST screen allows for incremental adjustments to the individual fill head timers up or down by pressing the up or down arrows to the left and right of the associated fill head. The appropriate number of fill heads will be displayed for the machine configuration. If equipped, there will be a screen jumps displayed to access additional fill head timers.

All fill heads can be incrementally adjusted by pressing the INC ALL or DEC ALL arrows at the top right of the screen.

Additionally, by entering a time under the SYNC TIMES toggle and then pressing sync times toggle you can quick adjust all timers.

Pressing the Calculator button to the right of each fill head will display a calculator to easily calculate the proper fill times needed to achieve the desired fill weight. Simply enter the Fill Target weight and the Actual Fill Weight, press SAVE, and the program will set the proper time for each fill head individually.



5.1 AUTO SET UP SCREEN



The Automatic Set-Up Screen allows the operator to program fill head times directly by pressing and holding the buttons for the associated fill heads, or pressing ALL HEADS ASU to open all heads and begin the fill process.

Toggle buttons allow the operator to activate the optional components such as:

- Head Dive (AUTO or DOWN) Controls the diving head
- Locate (AUTO or EXT) Controls the neck locators

Basic Automatic Fill Set-Up process:

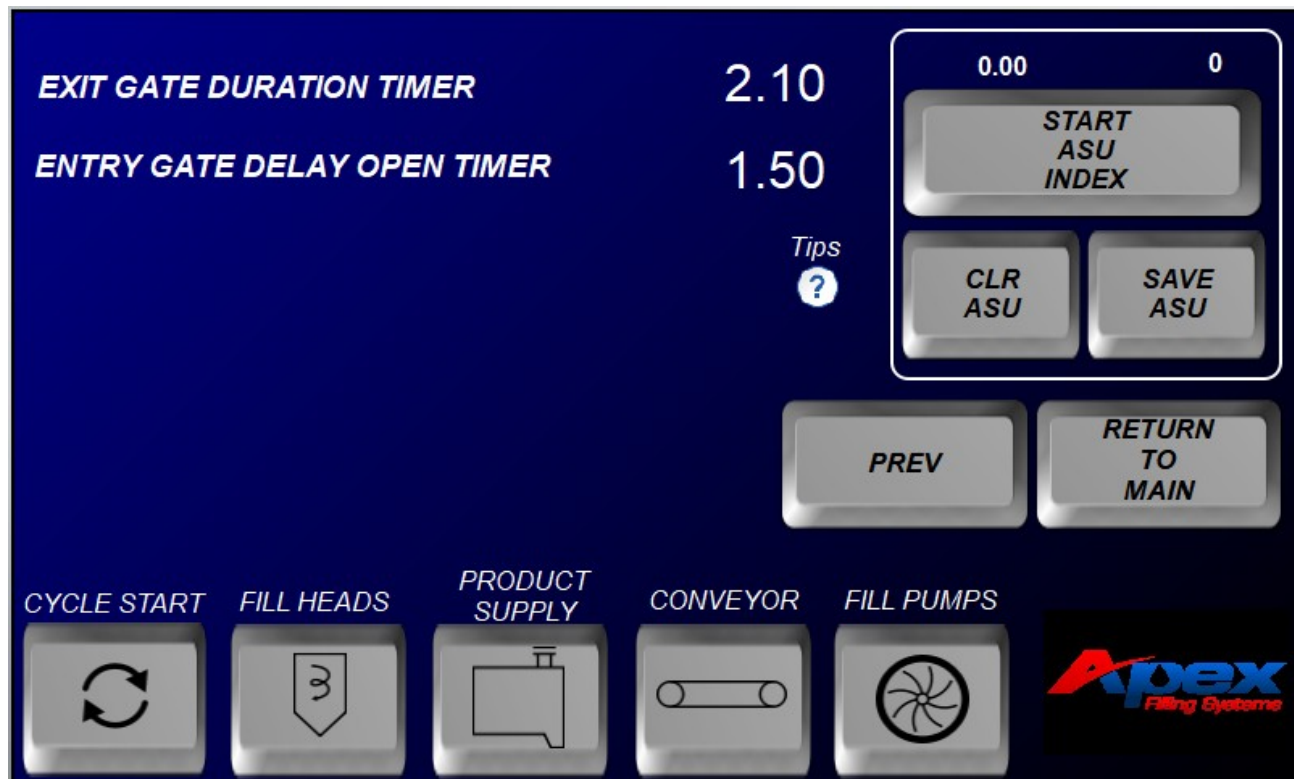
1. Ensure empty containers are placed underneath any fill heads to be set up
2. engage the bottle locators, and dive the heads (as applicable)
3. Press and hold the associated fill head button (or ALL HEADS) to begin filling the container
4. When the container(s) is/are almost full, release the ASU button
5. Top off by toggling the ASU button(s), proceed to setting up PIN INDEX if needed, or run a cycle to check for proper fill volumes

Pressing PIN INDEX ASU in the top right corner will advance to PIN INDEX ASU PAGE

If the machine is equipped with more than 6 fill heads, then pressing quick jumps will advance to additional screens to access those fill head timers.

PIN INDEXING SCREEN

This screen allows the operator easy access to setup indexing parameters by utilizing real-world results.

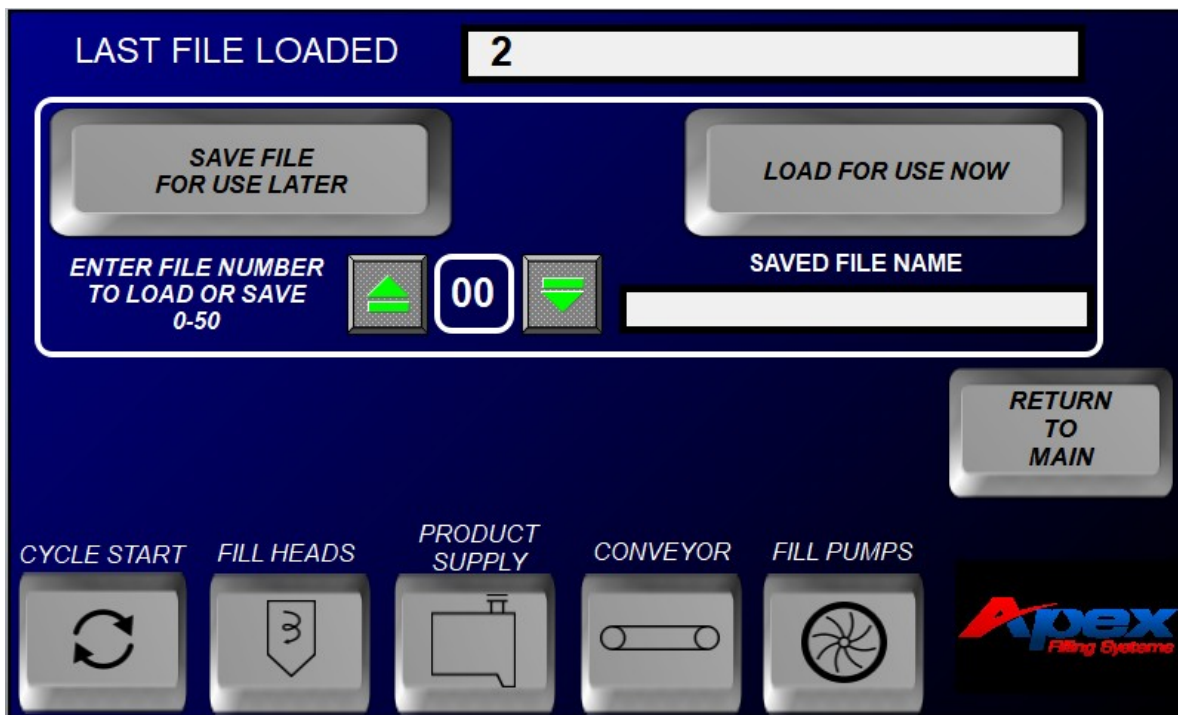


Basic sequence of ASU indexing setup (pin indexing):

1. Ensure the entry and exit gates are properly aligned in the fill area and the guide rails are set properly
2. Ensure the count eye is accurately reading containers
3. Set up sufficient containers to fill the fill area plus any additional containers necessary to reach the count eye
4. The containers should be set up-line from the entry gate, and the fill area should be clear of containers
5. Press START ASU INDEX to activate the conveyor, the entry gate will open, and the count eye will read the containers
6. When the count eye has read the proper number of containers, the indexing ASU has finished
7. Press SAVE ASU

6.1 RECIPE SCREEN

This screen allows the operator to save or load all of the timers which are specific to different containers or setups.



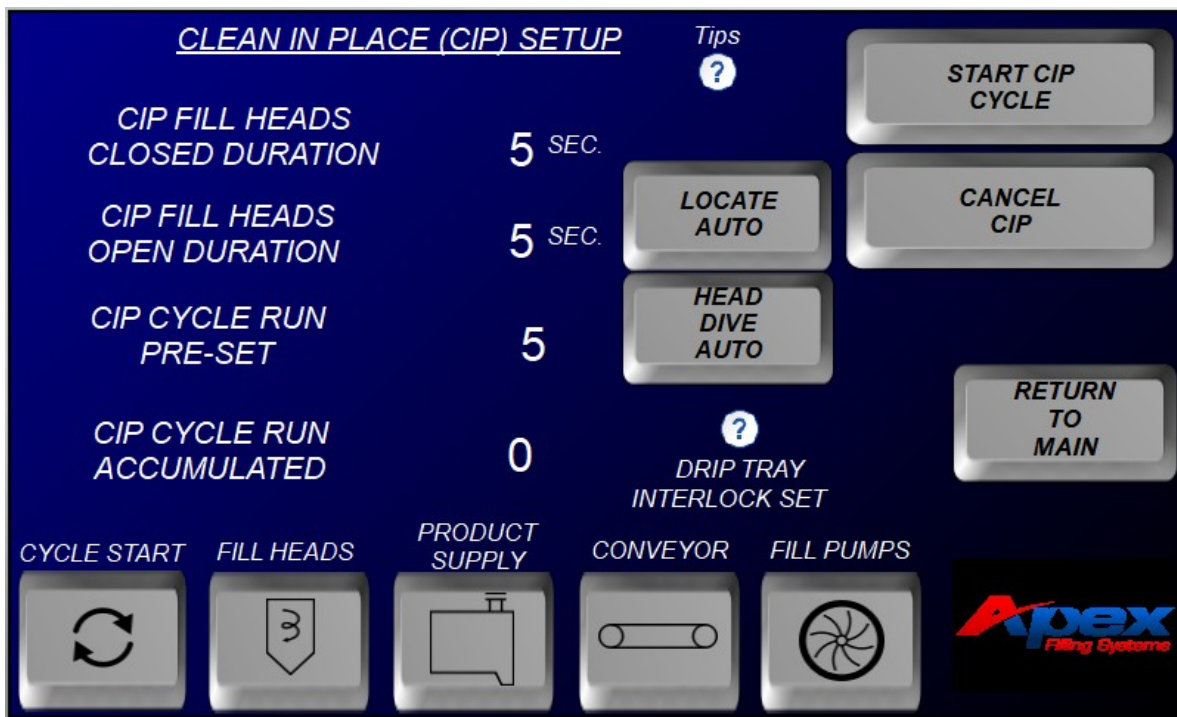
Pressing directly on the numeral will pop up the numeric entry window, or you can press the up or down arrows. Select the desired number (0-50) and either save or load the data by pressing the associated button.

This will prompt the appropriate pop up which will allow you to verify you want to save or load the selection.

It is good practice to keep a record of the saved programs for easy reference. The table on the next page is provided for convenience:

7.1 CLEAN IN PLACE SCREEN

The clean in place screen is utilized for cleaning the machine after a production run.



The Clean In Place Screen displays the various programmable parameters for the CIP system and displays the number of CIP cycles completed (when using the CIP CycleRun)

As with other numerical entry screens, touch the numerals to display a popup numeric entry window
From this screen you can also manually toggle the head dive and locaters if enabled.

CIP FILL HEADS CLOSED DURATION: This timer controls how long the fill heads will remain closed between cycles

CIP FILL HEADS OPEN DURATION: This timer controls how long the fill heads will remain open between cycles

CIP CYCLE RUN PRE-SET: This counter allows the operator to set a how many cycles the filler will run

CIP CYCLE RUN ACCUMULATED: This displays the number of CIP cycles currently completed

Pressing **START CIP CYCLE** will start the Clean In Place cycle up to the Pre-Set cycles

Pressing **CANCEL CIP** will stop the Clean In Place cycling

FACTORY SUPPORT

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PARTS DEPARTMENT

Parts@Apexfilling.com

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**Pro Model
Recirculating
Pump Filler
Support Page**



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