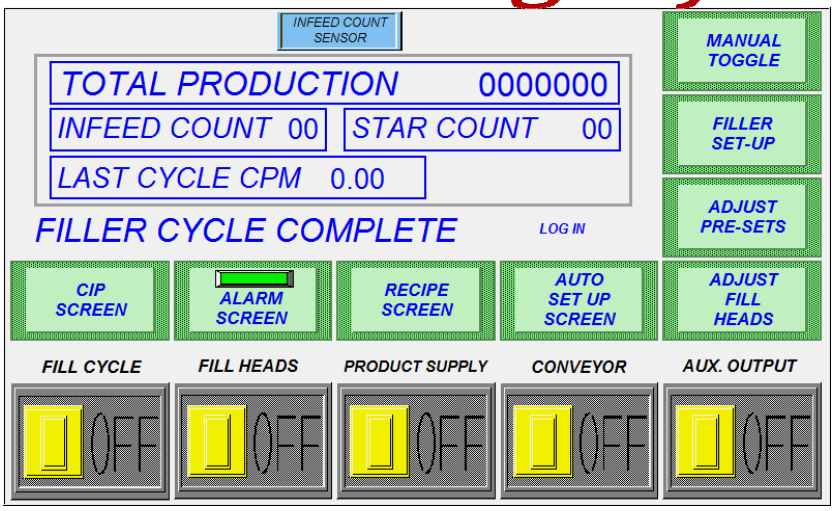

Maple Systems Multi-Function Controller Operation Manual

V5.0

Apex Filling Systems, LLC
1405 Lake St
LaPorte, IN 46350

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Apex Filling Systems, LLC
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1.1 MAIN SCREEN

1.2 MAIN CONTROL SCREEN

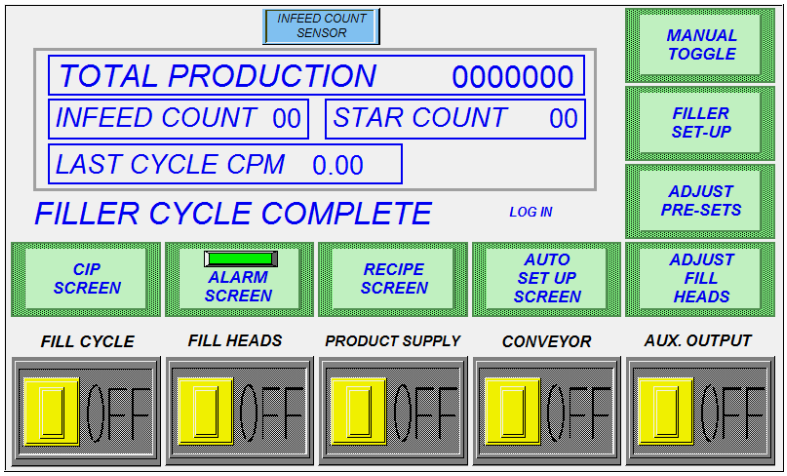


Fig 1-1 ***Main Screen***

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 displays the pins on the starwheel counted by the proximity sensor.
- LAST CYCLE CPM displays the containers per minute which the machine achieved on the previous cycle

Below the counters is a quick glance cycle status (*Fig 1-1* shows FILLER CYCLE COMPLETE)
(This will change during the fill cycle to read: FILLER IN CYCLE)

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.

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:

- **FILL CYCLE** 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
- **AUX OUTPUT** enables or disables specific optional outputs (machine specific)
  - ➢ *This output can be used for a wide variety of applications, providing an additional output signal to trigger auxiliary functions*

Touching the remaining (green) 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
3.1	FILLER SET-UP
4.1	ADJUST PRE-SETS
5.1	ADJUST FILL HEADS/FILL TIMES
6.1	CIP (CLEAN IN PLACE) SCREEN
7.1	ALARM SCREEN
8.1	RECIPE SCREEN
9.1	AUTO SET-UP

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:

- *Semi-Automatic machines (slide track, no automatic conveyor) or shuttle based indexing machines (such as molten fillers) will not typically utilize any of the indexing features (entry and exit gate or starwheel settings)*
- *Stationary Fill Head machines will not utilize the diving head features*
- *Pressure/Gravity machines will not have any of the pump or pulse count parameters*
- *Automatic machines with pin indexing will not utilize the starwheel controls*

2.1 MANUAL TOGGLES

2.2 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.

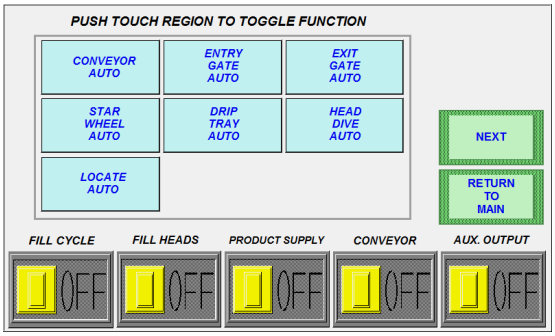


Fig 2-1 ***Manual Toggle***

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 blue 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)
- POWER HEIGHT UP and POWER HEIGHT DOWN
  Activates the (optional) filler power height jack
- TANK DRAIN (CLOSED or OPENED)
  Activates the (optional) automatic hopper drain valve

Pressing NEXT will display the Manual Toggle Screen 2

Pressing RETURN TO MAIN will display the MAIN SCREEN

2.3 MANUAL TOGGLE SCREEN 2

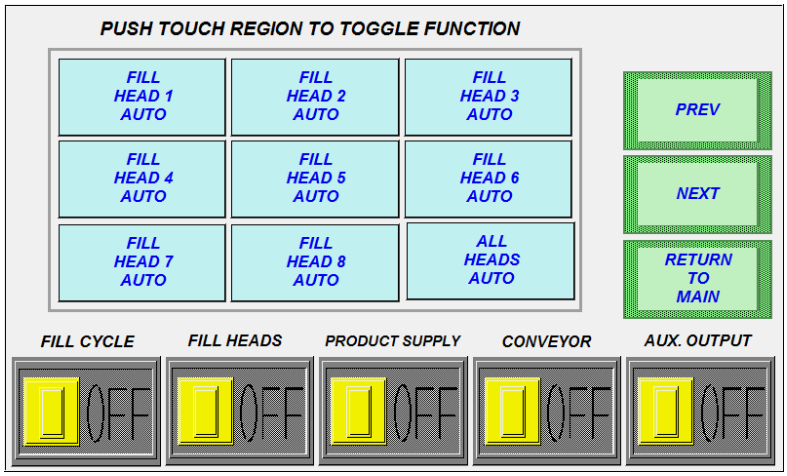


Fig 2-2 ***Manual Toggle 2***

The second manual toggle screen allows the operator to toggle fill heads 1 thru 8 from automatic mode to manually extended along with the corresponding fill head and diverter valve.

NOTE: If your filler is equipped with less than 8 heads, the appropriate number of heads may be displayed (as in *Fig 2-2*), and NEXT may or may not be displayed to provide access to additional fill heads (depending upon options)

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

Pressing PREV will return to the Manual Toggle Screen 1

Pressing RETURN TO MAIN will display the MAIN SCREEN

3.1 FILLER SET-UP SCREENS

3.2 FILLER SET-UP SCREEN 1

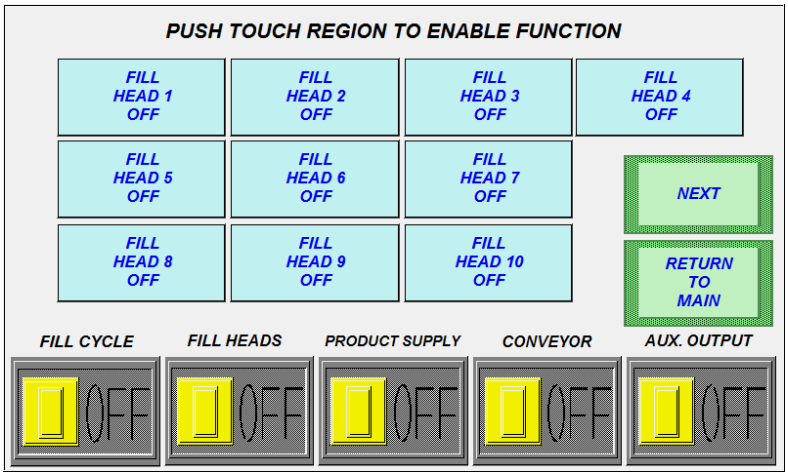


Fig 3-1 ***Filler Set-Up 1***

The main filler set-up screen allows the operator to enable or disable fill heads 1 thru 10. The fill head toggle buttons will switch between OFF and AUTO.

NOTE: If the filler is equipped with less than 10 heads, the appropriate number of buttons may be displayed.

If the filler is equipped with more than 10 fillheads, then pressing NEXT will display the Filler Set-Up Screen 2, otherwise, pressing NEXT will display the Filler Set-Up Screen 3.

Pressing RETURN TO MAIN will display the MAIN SCREEN

3.3 FILLER SET-UP SCREEN 2

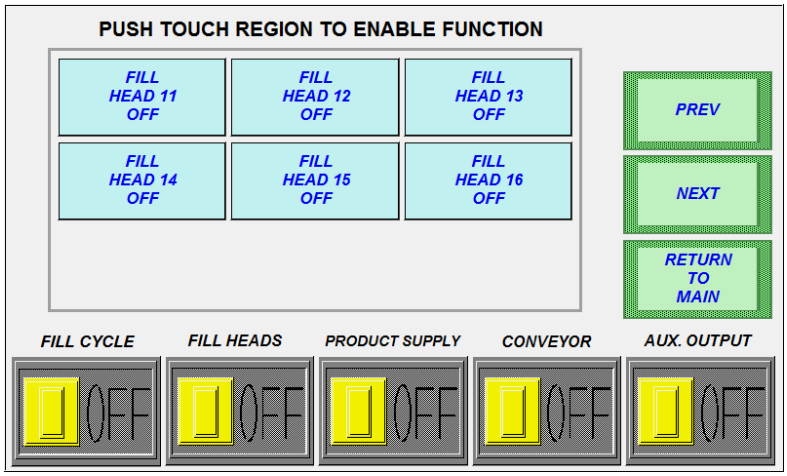


Fig 3-2 ***Filler Set-Up 2***

The second filler set-up screen allows the operator to enable or disable fill heads 11 thru 16. The fill head toggle buttons will switch between OFF and AUTO.

NOTE: If the filler is equipped with 10 or less fillheads, this screen may not be displayed. Likewise, if the filler has between 11 and 16 fillheads, the appropriate number of fillheads may be displayed.

Pressing PREV will display the the previous Filler Set-Up Screen

Pressing NEXT will display the Filler Set-Up Screen 3

Pressing RETURN TO MAIN will display the MAIN SCREEN

3.4 FILLER SET-UP SCREEN 3

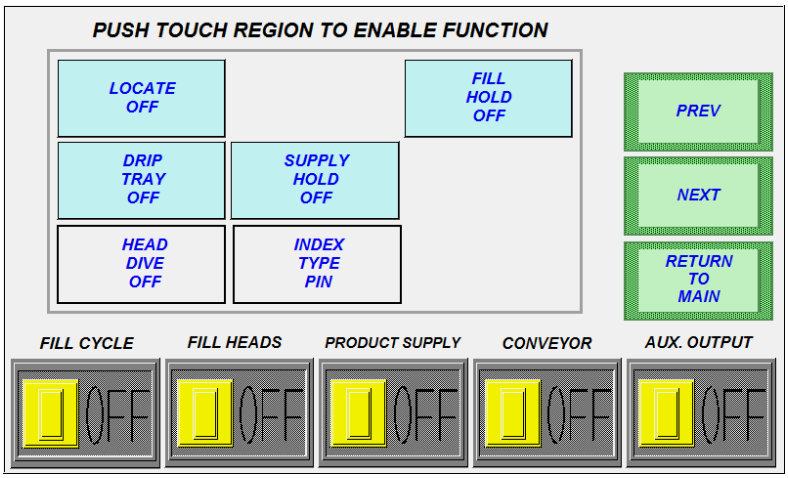


Fig 3-3 ***Filler Set-Up 3***

The third filler set-up screen allows the operator to enable or disable the primary filler options on the multi function controller. Some or all of these options may not be available on the screen, depending upon the filler configuration.

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

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

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

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

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

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

PUMP RAMP (OFF or ON) Enables or disables pump filler speed ramping option

LOW TEMP CYCLE RESTART (OFF or ON) If set to OFF, when a low-temp fault is triggered, the FILL CYCLE will need to be manually restarted after a fault. If set to ON, the FILL CYCLE will automatically resume when the temperature set-point is met.

If the filler is equipped with more than 10 fillheads, then
Pressing PREV will return to Filler Set-Up Screen 2
Otherwise Pressing PREV will return to Filler Set-Up Screen 1

Pressing NEXT will advance to the next Filler Set-Up Screen

Pressing RETURN TO MAIN will display the MAIN SCREEN

3.5 FILLER SET-UP SCREEN 4

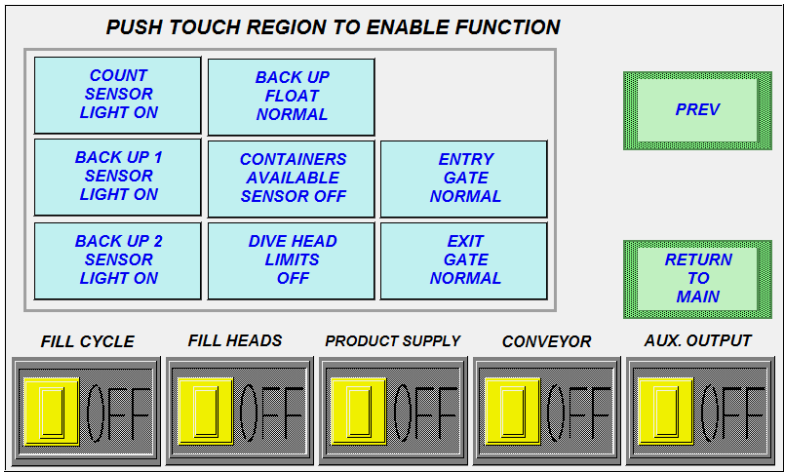


Fig 3-4 ***Filler Set-Up 4***

The fourth filler set-up screen allows for the operator to change the type of sensor used for the COUNT, BACK UP 1, and BACK UP 2 sensors. This allows use of both LIGHT ON and DARK ON sensors.

BACK UP FLOAT (NORMAL or INVERT) Sets the type of Back Up Float Sensor used

CONTAINERS AVAILABLE SENSOR (OFF or ON) Enables or disables the use of a container available sensor

DIVE LIMITS (OFF or ON) Enables or disables the use of Dive Limiting Proximity Sensors or Switches

ENTRY & EXIT GATE (NORMAL or INVERT) Depending upon the configuration of the pneumatic tubing connected to the Entry & Exit Gates, it may be necessary to toggle from Normal to Inverted for proper operation.

Pressing PREV will return to the previous Filler Set-Up Screen

Pressing RETURN TO MAIN will display the MAIN SCREEN

4.1 ADJUST PRE-SETS

4.2 ADJUST PRE-SETS SCREEN 1

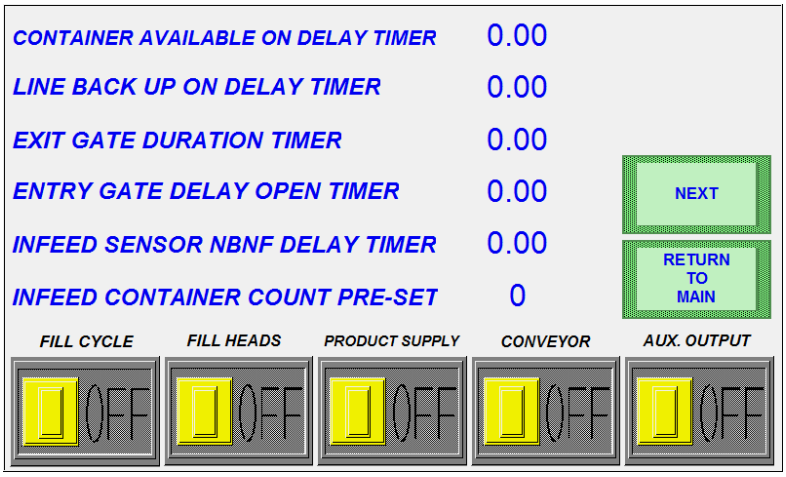


Fig 4-1 ***Adjust Pre-Sets 1***

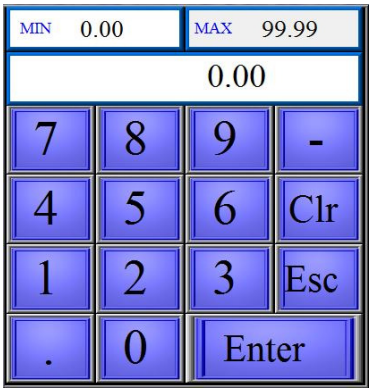


Fig 4-1a ***Numeric Entry Pad***

The main pre-set adjustment screen allows the operator to adjust the various parameters of the indexing and filling cycle. Touch the numerals to display a popup numeric entry window, shown in Fig 4-1a.

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

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

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)

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

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

Pressing NEXT will advance to the Adjust Pre-Set 2 screen

Pressing RETURN TO MAIN will display the MAIN SCREEN

4.3 ADJUST PRE-SETS SCREEN 2

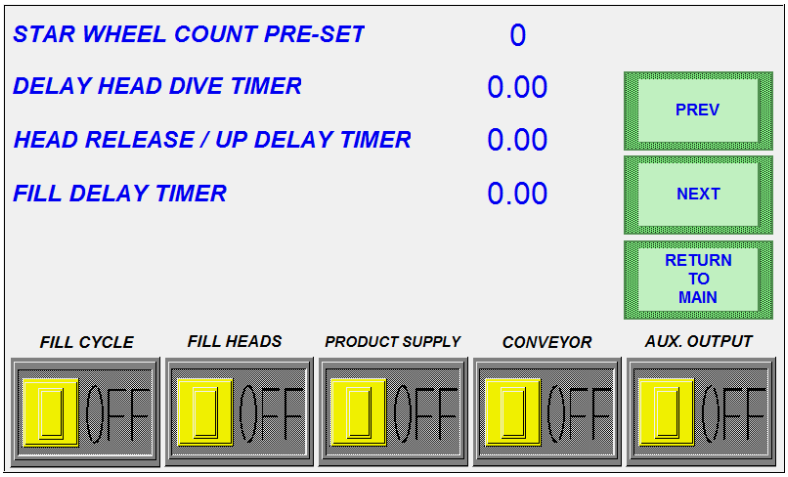


Fig 4-2 ***Adjust Pre-Sets 2***

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

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 rising out of the containers after the filling has completed

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

Pressing PREV will return to the Adjust Pre-Sets Screen 1

Pressing NEXT will display the Adjust Pre-Sets Screen 3

Pressing RETURN TO MAIN will display the MAIN SCREEN

4.4 ADJUST PRE-SETS SCREEN 3

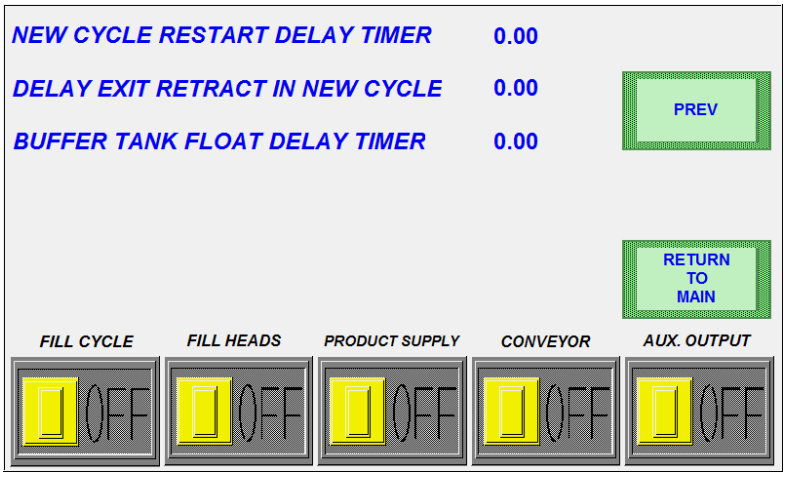


Fig 4-3 ***Adjust Pre-Sets 3***

Similar to the first pre-set adjustment screen, this screen allows the operator to adjust parameters of the indexing and fill cycles.

Again, touch the numerals to display the popup number entry window (*Fig 4-1a*)

NEW CYCLE RESTART DELAY TIMER: Time which the indexing cycle will delay after filling has finished

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)

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.

Pressing PREV will return to the Adjust Pre-Sets Screen 2

Pressing RETURN TO MAIN will display the MAIN SCREEN

5.1 ADJUSTING FILL HEADS

5.2 ADJUST FILL HEADS SCREEN

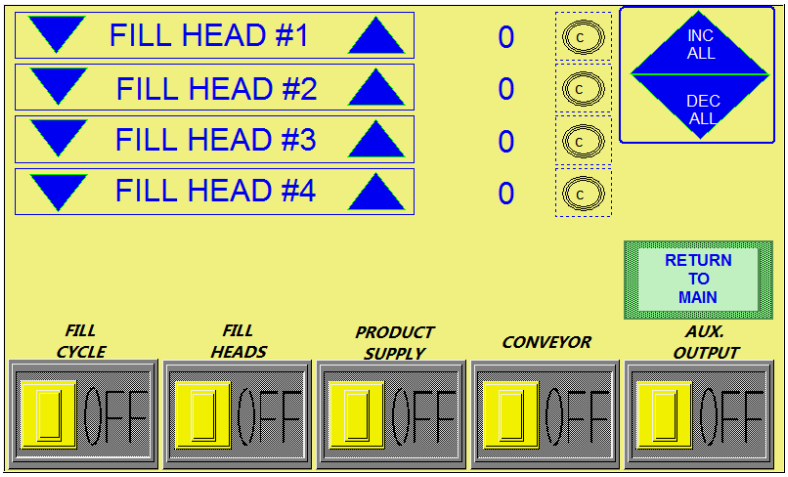
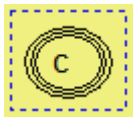


Fig 5-1 ***Adjust Fill Heads***

The Adjust Fill Head screen allows for incremental adjustments to the individual fill head pulse counters up or down by pressing the up or down triangles to the left and right of the associated fill head. The appropriate number of fill heads will be displayed for the machine configuration (Fill Heads #1-4 in *Fig 5-1*) up to 6 per screen. If equipped, there will be a NEXT button displayed to access additional fill head timers.

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

Pressing the Calculator button to the right of each fill head will display a calculator (shown in *Fig 5-1a*) 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.



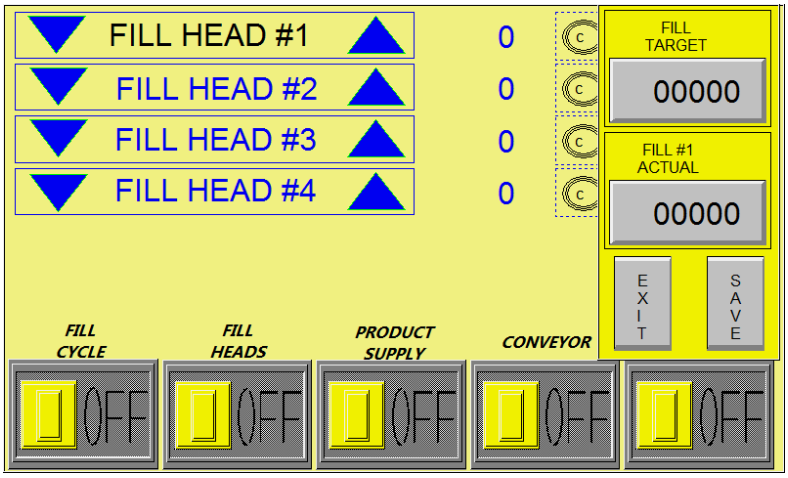


Fig 5-1a ***Adjust Fill Heads Calculator***

6.1 CIP SCREEN

6.2 MAIN CIP (CLEAN-IN-PLACE) SCREEN

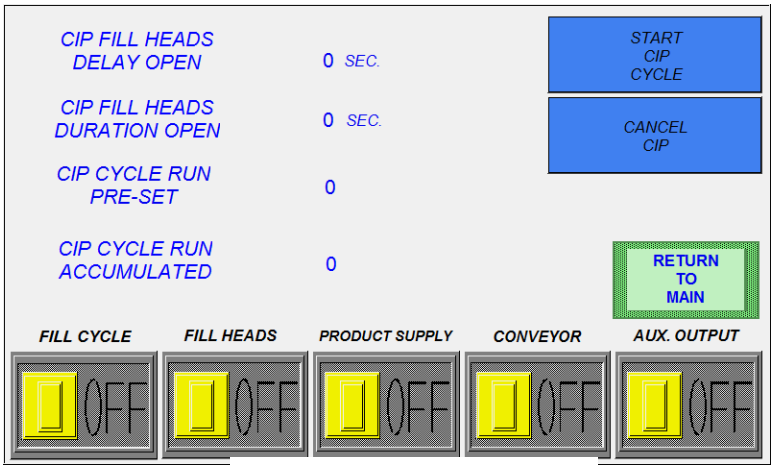


Fig 5-1 ***Main CIP Screen***

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 Cycle Run)

As with other numerical entry screens, touch the numerals to display a popup numeric entry window, as shown in Fig 4-1a.

CIP FILL HEADS DELAY OPEN: This timer controls how long the fillheads will remain closed between cycles

CIP FILL HEADS DURATION OPEN: This timer controls how long the fillheads 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

Pressing RETURN TO MAIN will display the MAIN SCREEN

7.1 ALARM SCREEN

7.2 MAIN ALARM SCREEN

This screen will display common faults that will be necessary to clear before the filling cycle can continue. While the fault list will vary by application, a list of the common faults is as follows:

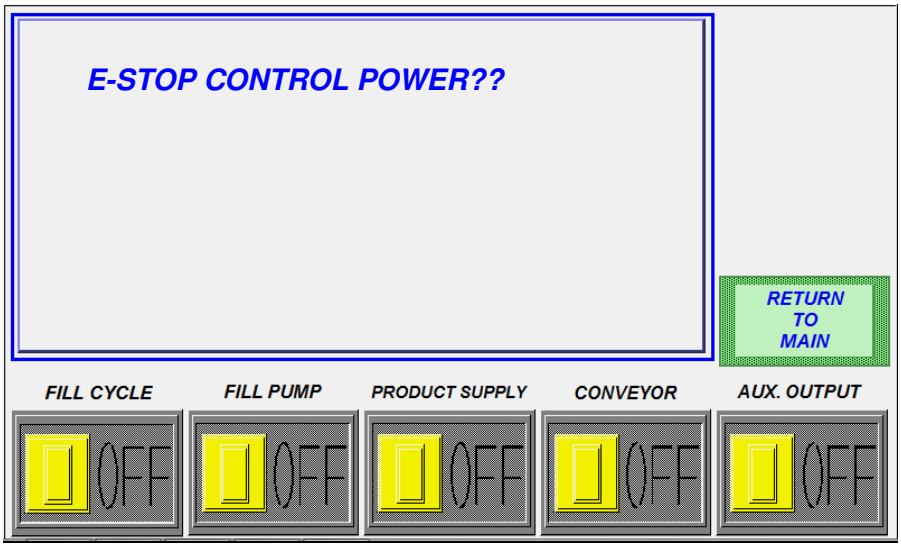


Figure 7-1
Alarm Screen 1

LOW TANK LEVEL/ LOW PRODUCT LEVEL IN TANK: This indicates that the buffer tank has not fully recovered (i.e. the float continues to call for product although the next cycle has started) Check the product supply system.

BUFFER TANK FLOAT FAULT/FLOAT FAIL: This indicates that the back-up float has been activated. Shut off the supply and check the buffer tank to determine why the product is overflowing (or if the back-up float is malfunctioning (poor sensor, mechanically stopped, etc)

LINE BACK UP/ ZONE 1,2,3: This indicates that a backup sensor in the associated zone is blocked. Clear the zone or adjust the sensor, as necessary

E-STOP CONTROL POWER ??: This indicates the E-Stop has been pressed, the power has been lost, or a fuse has blown. Check and rectify as necessary

CHECK STAR WHEEL POSITION: This indicates that the starwheel sensor is not sensing properly, or is out of position. Check and rectify as necessary

LOW CONTAINERS AT INFEED: This indicates there are not sufficient containers up-line for proper operation. Check sensor position, or containers available, and rectify as necessary

PUMP DRIVE FAULT: Problem indicated with supply pump drive motor. Contact Technician.

FH (#) PULSE FAULT: Problem indicated with associated fill pump drive motor. Contact Technician.

AC DRIVE FAULT: Problem indicated with AC Drive Motor (typically for supply pump or conveyor drive)

MOTOR OVERLOAD TRIP: Drive motor has overloaded, check drive alignment/proper pump operation

LOW AIR PRESSURE: Pressure sensor does not sense proper air pressure, or indicates problem with sensor

Pressing RETURN TO MAIN will display the MAIN SCREEN

8.1 RECIPE SCREENS

8.2 MAIN RECIPE SCREEN

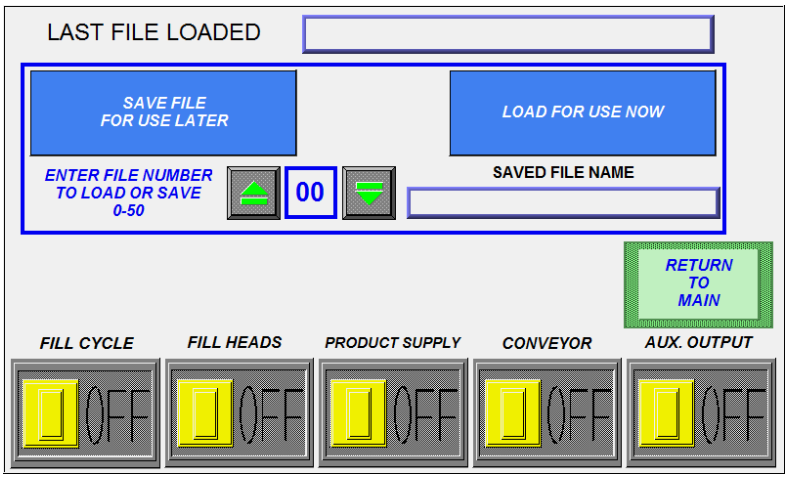


Fig 8-1 ***Main Recipe Screen***

This screen allows the operator to save or load all of the timers (indexing and filling) which are specific to different containers or setups.

Pressing directly on the numeral will pop up the numeric entry window as seen in *Fig 4-1a.*
Press the desired address (0-50) and either save or load the data by pressing the associated button.

Once the address is chosen, the HMI will prompt for a friendly name by which to save the recipe, through the popup on-screen keyboard as shown in *Fig 7-1a & Fig 7-1b.*

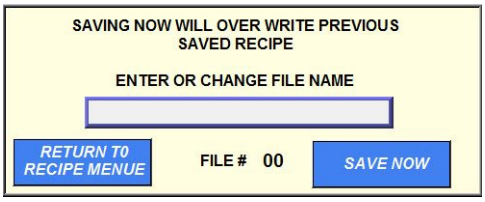


Fig 8-1a ***Recipe Naming***

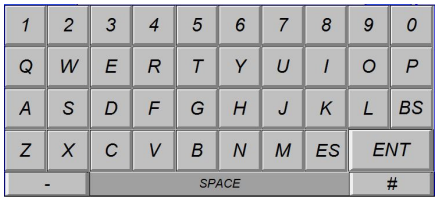


Fig 8-1b ***Keyboard***

Either press RETURN TO RECIPE MENUE to return to the selection screen or press SAVE NOW to chose an appropriate name for the recipe.

Pressing RETURN TO MAIN will display the MAIN SCREEN

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:

Address	Description

9.1 AUTO SET-UP

9.2 AUTO SET-UP SCREEN 1

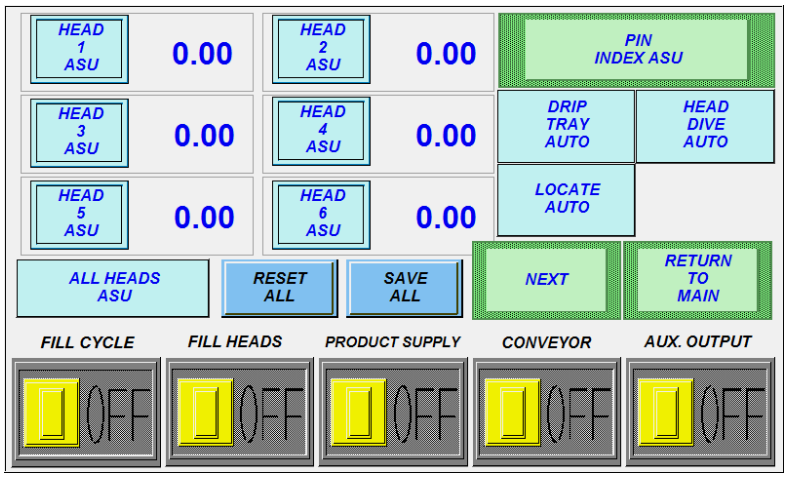


Fig 9-1 ***Automatic Set-Up Screen 1***

The first Automatic Set-Up Screen allows the operator to program fill head times/pulses 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:

- Drip Tray (AUTO or RET) Automatic or Retracted
- 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. Retract the drip tray, 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 AUTO SET-UP SCREEN (ASU) (described in *section 8.2*)

If the machine is equipped with more than 12 fill heads, then pressing NEXT will advance to additional screens to access those fill head timers prior to accessing the AUTO SET-UP SCREEN (INDEXING) screen

Pressing RETURN TO MAIN will return to the Main Screen

9.3 AUTO SET-UP SCREEN (INDEXING)

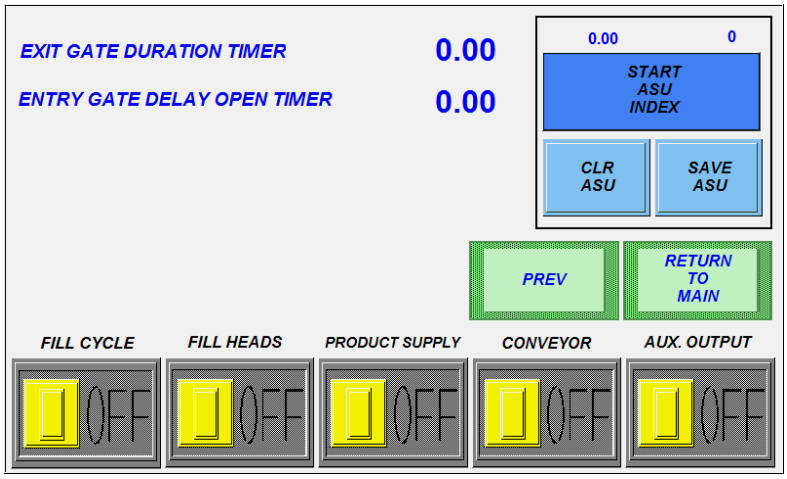


Fig 9-2 ***Pin Index ASU Screen***

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

Basic sequence of ASU indexing setup (starwheel indexing):

1. Ensure the guide rails are set properly, and the starwheel is properly aligned, able to move freely
2. Ensure the starwheel count eye/prox is reading properly
3. Set up sufficient containers to fill the fill area plus enough containers to index a full cycle into the fill area. Additional containers may be necessary to provide proper back pressure
4. Press START ASU INDEX to activate the conveyor and release the starwheel
5. When the starwheel count eye has read the proper number, the indexing ASU has finished
6. Press SAVE ASU

10.1 FACTORY TECHNICAL SUPPORT

10.2 FACTORY TECHNICAL SUPPORT

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NOTES

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