



Tabletop Pump Filler (Single Head)

V1.0

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1.1 SAFETY

1.2 GENERAL SAFETY

Apex Filling Systems, LLC (APEX) manufactures and designs all of its products so they can be operated safely. However, the primary responsibility for safety rests with those who use and maintain these products. The following safety precautions are offered as a guide that if conscientiously followed, will minimize the possibility of accidents throughout the useful life of this equipment. The safety of personnel, equipment and plant facilities should be considered during equipment operation and with each changeover of product, or any machine modifications.

Only those who have been trained and delegated to do so and have read and understood this operator's manual should operate the equipment. Failure to follow the instructions, procedures and safety precautions in this manual can result in accidents and injuries.

DO NOT modify the equipment except with written factory approval. Unauthorized equipment modifications will void the warranty.

Each day walk around the equipment and inspect for leaks, loose parts, missing or damaged components, and parts out of adjustment. Perform all recommended maintenance noted in this manual.

EQUIPMENT SHOULD ALWAYS BE DE-ENERGIZED (POWER AND AIR) BEFORE MAKING MECHANICAL ADJUSTMENTS.

1.3 ELECTRICAL SHOCK

- ✓ To avoid electrical shock hazard, make sure this equipment is properly grounded.
- ✓ Dangerous voltages are present within the electrical enclosures. DO NOT operate this equipment with electrical covers open or removed.
- ✓ Keep all parts of the body, hand held tools, or other conductive objects away from exposed live-parts of the electrical system. Maintain dry footing and stand on insulating surfaces. DO NOT contact any portion of the equipment when adjusting or making repair to exposed live parts of electrical system.
- ✓ Attempt repairs only in a clean, dry, well-lighted, and ventilated area.

1.4 CONTACT MATERIALS COMPATIBILITY

APEX endeavors to make all contact parts compatible with buyer's products, if known. Because of the wide variety of possible products, Apex Filling Systems, LLC cannot be responsible or liable for ensuring compatibility of contact material with the products. Evaluate material compatibility prior to machine use. Failure to follow this procedure can result in machine damage, fire, operator injury or death

1.5 SAFETY COMPLIANCE LIABILITY

APEX endeavors to make machinery as safe to operate as possible. National, state and local laws related to safety in the workplace apply primarily to the responsibilities of the employer, and not the equipment manufacturer. The seller agrees to cooperate with the buyer in finding feasible answers to compliance problems. However, because APEX has little control of the many factors which may significantly affect the environment in which this equipment is installed, the seller does not warrant this equipment to be in compliance with OSHA or any like state or local laws or regulations. It is the buyer's responsibility to provide the modifications necessary to assure compliance with the laws and regulations at the point of installation.

A complete inspection of product is necessary until the machinery is proven to produce acceptable results. This should also be performed after every changeover.

1.6 CONVENTIONS

To ensure the safety of personnel which will install, adjust, maintain and operate this equipment, it is imperative that they understand the dangers, warnings and caution notices. It is important to understand the *signal words* that may be used throughout this manual.

	Alerts to immediate hazard, which will result in death or severe personal injury, if not avoided
	Alerts to a hazard which will result in serious injury, or death in some cases, if not avoided.
	Alerts to a potential hazard that may result in a serious personal injury, if not avoided. It also alerts against an unsafe practice that will permanently damage equipment or property.
<p>IMPORTANT</p>	Indicates a suggestion as to how to use or adjust the equipment for best product results.
<p>NOTE</p>	Points out a proper use that will avoid damage to the equipment, or will extend the life of the parts.

2.1 MACHINE FEATURES AND SPECIFICATIONS

2.2 INTRODUCTION

APEX Tabletop Pump Fillers utilize a single head and pump to accurately fill many different types of containers. Changeover for containers is made easy by adjusting the fill head height and the pump speed.

2.3 FEATURES AND BENEFITS

- **Customizable:**
Whatever the production need, APEX has a design to meet.
- **Flexible:**
Versatility and Simplicity are intrinsic to the design. Many container sizes and shapes, and many products can be run on one machine.
- **Easy Changeover:**
Simple mechanical adjustment for different bottle sizes. Quick to changeover, simple to use and easy to clean.

2.4 PERFORMANCE SPECIFICATIONS

Filling Speed: Operator Dependent

Operating Temperature: 32 to 122 Degrees F (0 to 50 Degrees C) / 10% to 95% Room Humidity (non condensing).

2.5 ELECTRICAL SPECIFICATIONS AND REQUIREMENTS

Electrical Requirements: Standard - 120VAC / 50/60Hz / 1 Φ / 20A

Electrical Enclosure: NEMA 12 standard (Optional enclosures available)

2.6 AIR SPECIFICATIONS AND REQUIREMENTS

Compressed Air Consumption: 90psi/2-4cfm

3.1 OPERATIONS AND START-UP



Figure 3.1
Front view of Control Panel, showing the different buttons and their uses.

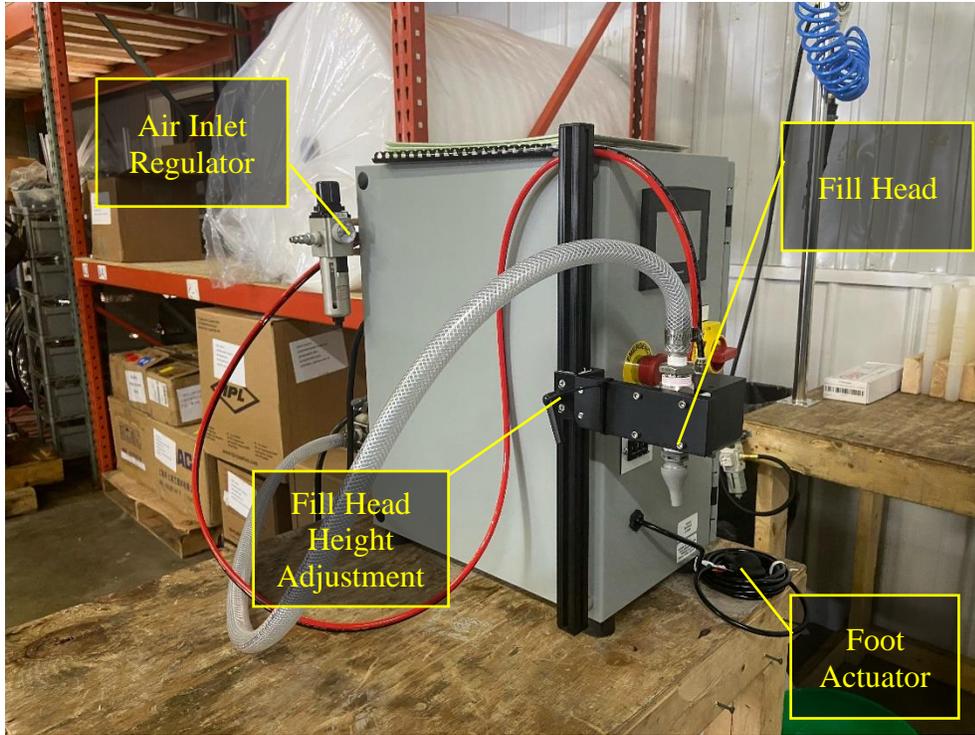


Figure 3.2
Side view of Control Panel, showing the fill head and accessories.

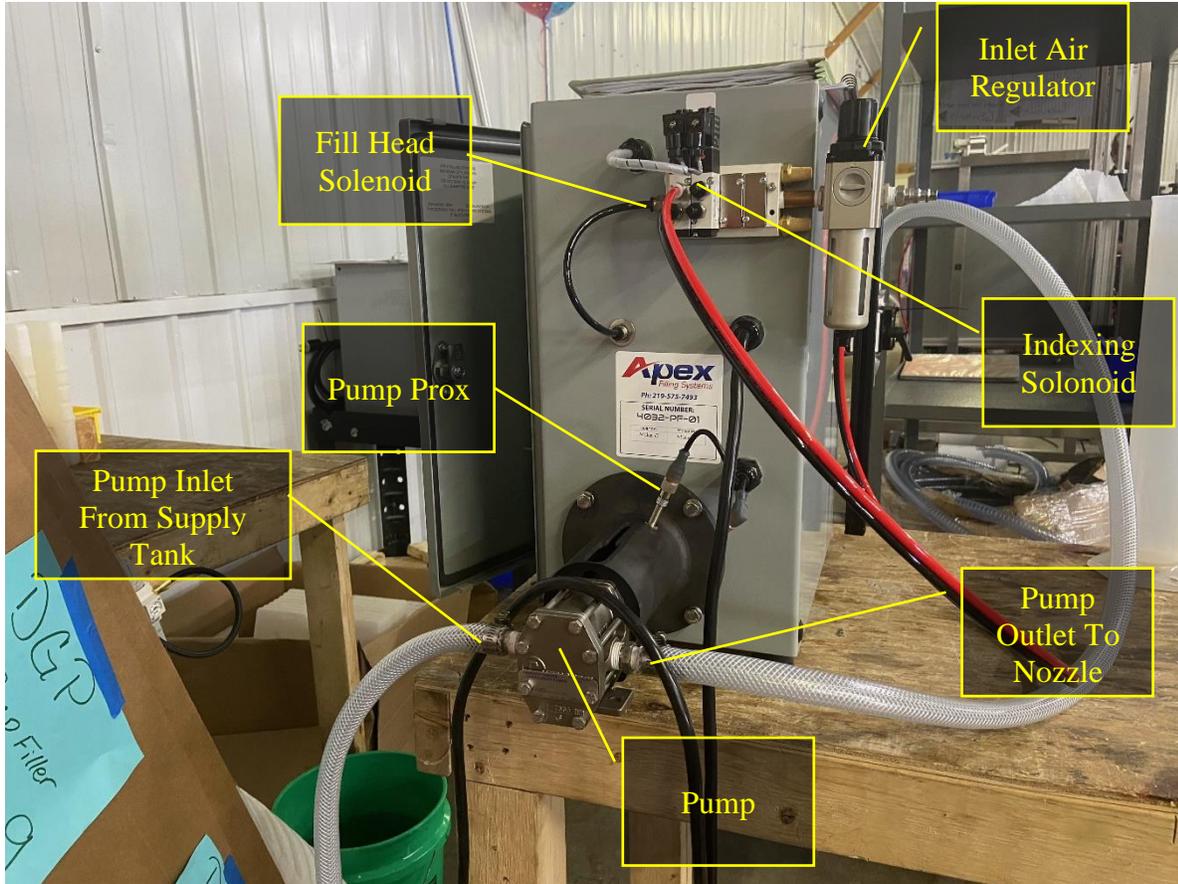


Figure 3.3

Back view of Control Panel, showing the pump, its accessories, and solenoids.

3.2 START-UP

Power Requirements:

- 120V 1ph
- 100 psi 2-4 cfm

Note:

After hooking up the supply to the pump, purge the system by pushing the fill head button (within the manual screen).

If a tabletop piston filler has an automation upgrade for it, the foot pedal is removed and a photo eye is added to count containers indexing in.

3.3 MAIN CONTROL SCREEN



Figure 3.4

The Main Control Screen shows the machine's current status as well as provides access to the system parameters.

- FILL CYCLE – Pushing this button will allow the fill cycle to begin
- FILL HEADS – Activates the fill heads to be in use during the next fill cycle
- CONVEYOR – Activates the conveyor belt to be in use during the next fill cycle
- SUPPLY – Activates the product supply function to be in use during the next fill cycle
- RESET ALARM – Allows the user to reset
- INFEED CONTAINER COUNT – The number of containers counted each time the index system cycles
- SETUP – Enters the Setup Screen
- MANUAL – Enters the Manual Screen
- TIMERS – Enters the Timers Screen
- RECIPE – Enters the Recipe Screen

3.4 SETUP SCREEN

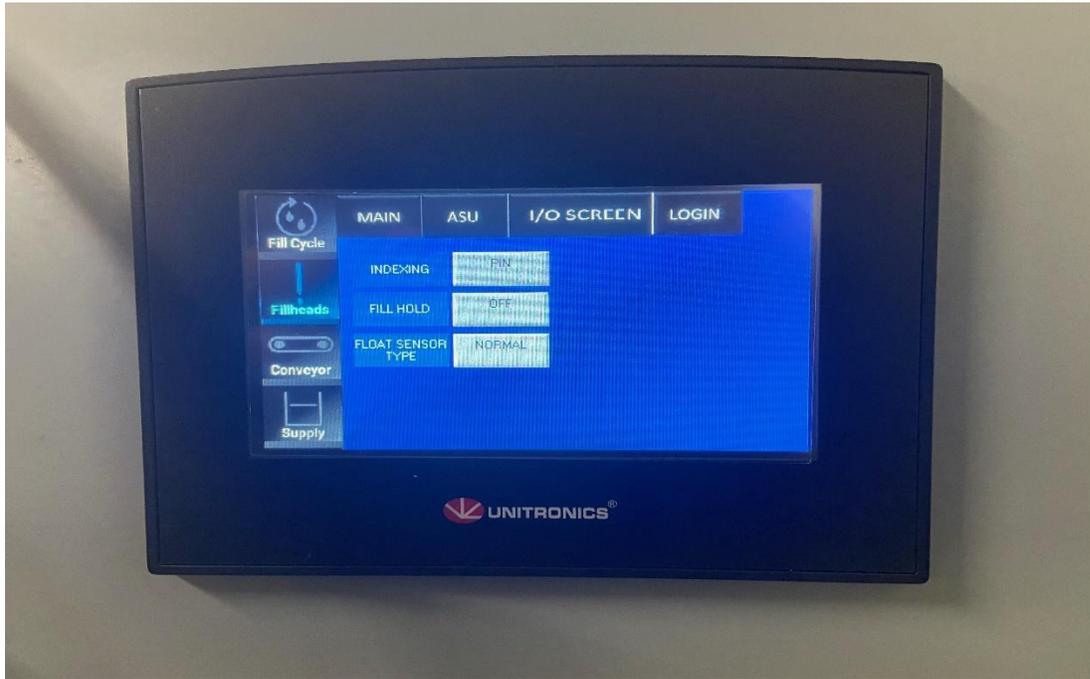


Figure 3.5

The Main Setup Screen allows the user to manually enable or disable primary filler functions.

- INDEXING – Allows the user to switch between automatic or manual indexing
- FILL HOLD – Will not allow the machine to fill until the optional tank is full
- FLOAT SENSOR TYPE – Allows the user to switch between a normally open and normally closed style
- ASU- Enters the Automatic Setup Screen.
- I/O SCREEN – Enters the Input/Output Screen
- LOGIN – Enters the Login Screen
- MAIN- Returns to the Main Control Screen.

3.5 AUTOMATIC SETUP SCREEN

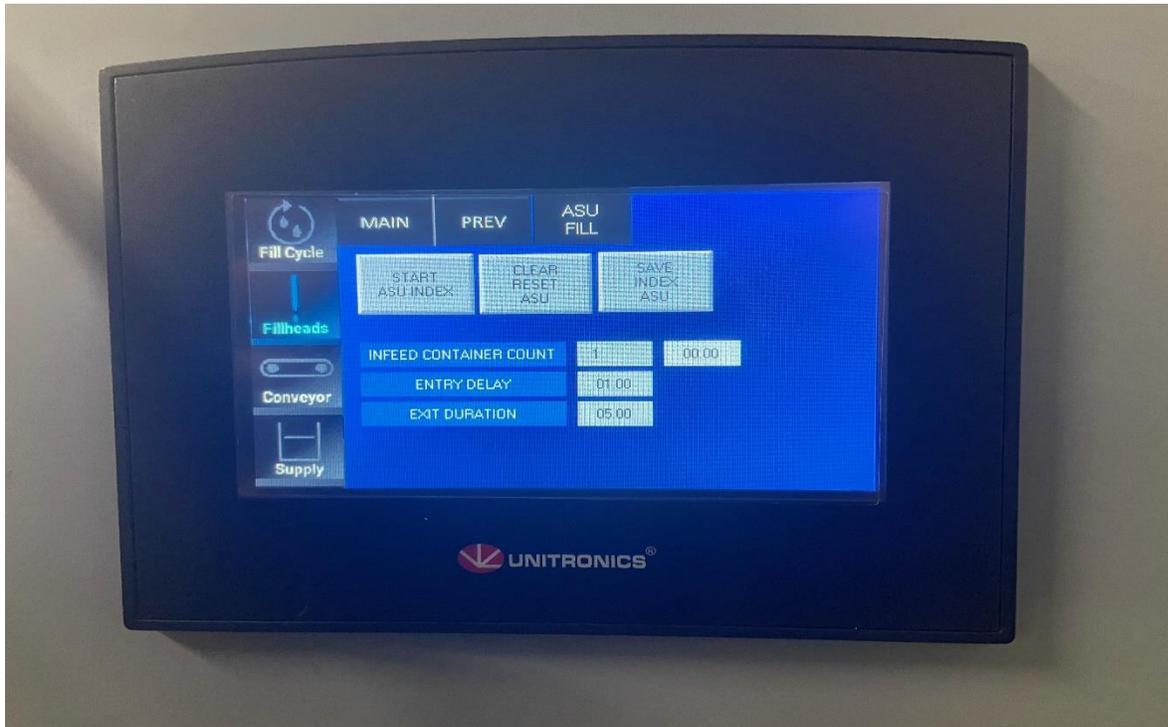


Figure 3.6

The ASU Screen allows the user to set the number of containers to count each time the indexing cycles under infeed count.

- **START ASU INDEX** – Enables the data in the Automatic Setup Screen to begin
- **CLEAR RESET ASU** – Allows the user to reset the Automatic Setup Screen
- **SAVE INDEX ASU** – Allows the user to save the data entered on the Automatic Setup Screen
- **INFEED CONTAINER COUNT** – Allows the user to change the number of containers between entry and exit pin
- **ENTRY DELAY** – Delays a certain amount of time after the exit gate opens, but before the entry gate opens, in order for the exit pin to close again
- **EXIT DURATION** – Amount of time the exit gate will stay open to allow containers to exit
- **MAIN** – Returns to the Main Control Screen
- **PREV** - Returns to the Main Setup Screen.
- **ASU FILL** – Enters the Automatic Setup Fill Screen

Note:

To run Indexing ASU, have a full line of containers on the conveyor, against the entry pin. Be sure the infeed count sensor is reading a container prior to the entry pin. Set the number of containers to index under Infeed Container Count. Set conveyor speed. Always Clear Reset ASU prior to starting new. Now press Start ASU Index. This will open your entry gate, move containers to the exit, and close entry. Press Save Index ASU

3.6 AUTOMATIC SETUP FILL SCREEN



Figure 3.7

The ASU Fill Screen allows the user to set the pulse counts needed to fill containers easily.

- START ASU ALL – Enables the data in all ASU Screens to begin
- SAVE ALL – Allows the user to save all data entered in the ASU Screens
- RESET ALL – Allows the user to reset all data entered in the ASU Screens
- HEAD ASU – Gives the user the pulse count
- SAVE ASU – Allows the user to save the pulse count
- RESET ASU – Allows the user to reset the pulse count
- PRESET (pulses) – Allows the user to preset the number of pulses the next fill cycle will have. This way, the filler will count down automatically from the preset pulses entered to get a consistent and accurate fill.
- CURRENT (pulses) – Displays the number of pulses the fill cycle is going through, or has gone through, in an active cycle
- MAIN – Returns to the Main Control Screen
- ASU INDEX – Returns to the ASU Screen

Note:

Place a container under the fill head. Press Reset ASU, then press or hold Head ASU. (This will continue to run until the user releases the button.) This will give the user the pulse count. Press Save ASU.

Note:

The top buttons (Start ASU All, Save All, Reset All) will allow the user to run all heads at once if there are more than one. The lower buttons (Head ASU, Save ASU, Reset ASU) allow the user to run individual heads.

3.7 INPUT/OUTPUT SCREEN

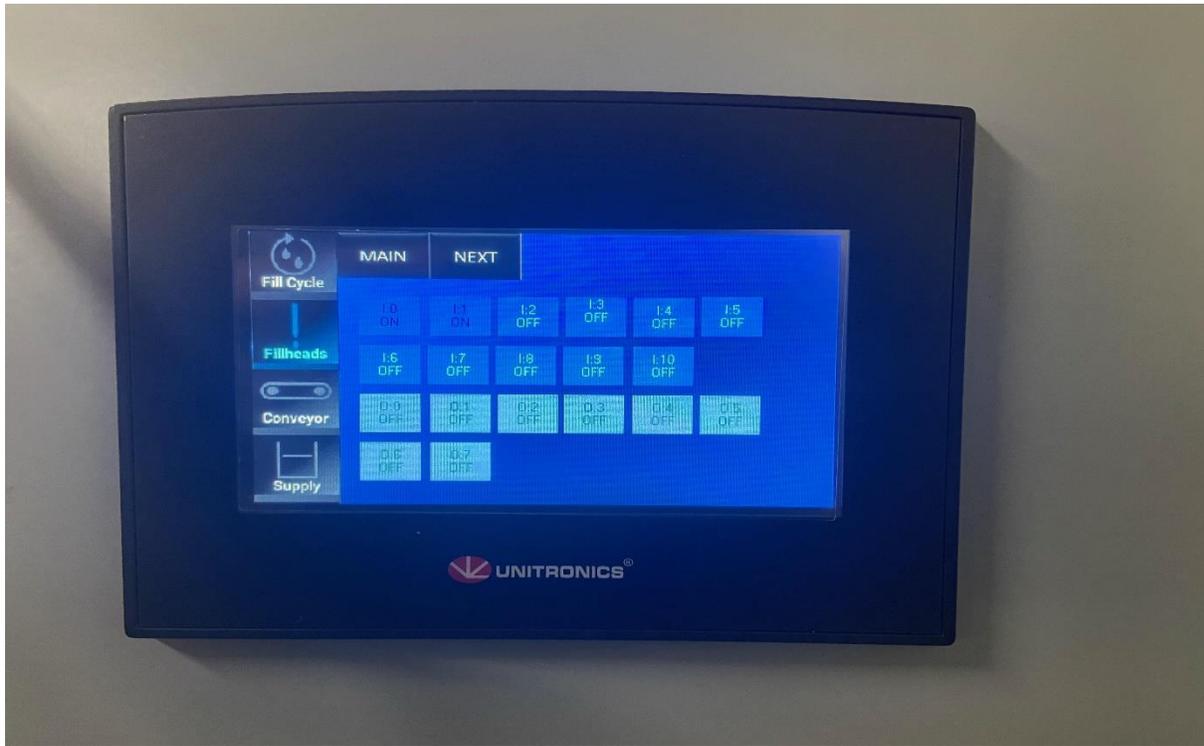


Figure 3.8

The I/O screen allows the user to verify signal into and out of the PLC from various sources.

- I:0 –
- I:1 –
- I:2 –
- I:3 –
- I:4 –
- I:5 –
- I:6 –
- I:7 –
- I:8 –
- I:9 –
- I:10 –
- O:0 –
- O:1 –
- O:2 –
- O:3 –
- O:4 –
- O:5 –
- O:6 –
- O:7 –
- NEXT – Returns to the Setup Screen
- MAIN - Returns to the Main Control Screen

3.8 LOGIN SCREEN



Figure 3.9

The Login Screen is only used for initial programming.

- ENTER PASSWORD HERE – Allows the user to enter in a password for initial programming
- MAIN – Returns to the Main Control Screen

3.9 MANUAL SCREEN



Figure 4.0

The Manual Screen allows the user to manually operate filling functions.

- CONVEYOR – Allows user to switch between auto (turns off and on with each cycle) or enabled (run consistently)
- ENTRY GATE – Opens and closes entry pin
- EXIT GATE – Opens and closes exit pin
- FILL HEAD – Allows the user to job the fill pump and open the fill head at the same time
- MAIN – Returns to the Main Control Screen

3.1.1 FIRST TIMER SCREEN



Figure 4.1

The Timer Screen allows the user to enter and edit the durations of certain amounts of time throughout the cycle.

- ENTRY DELAY – Allows the user to delay the entry of the containers in the fill cycle
- INFEED COUNT – Number of containers between entry and exit pin
- N.B.N.F TIME – No Bottle No Fill Time – The amount of time the count sensor needs to see a container before moving to the next step in the cycle
- EXIT DURATION – The amount of time the exit pin stays open for all containers to pass by before closing in cycle
- FILL START DELAY – Allows the user to delay the start of the next fill cycle
- FILL PULSES – Displays the current fill pulses of the active fill cycle
- MAIN – Returns to the Main Control Screen
- NEXT – Enters the Second Timer Screen

3.2.1 SECOND TIMER SCREEN



Figure 4.2

The Second Timer Screen allows the user to

- EXIT RET DELAY IN NEW CYCLE – Keeps the exit pin from releasing containers to allow for drips, long nozzle tips, drip tray and such to clear before containers return
- FLOAT DELAY- Sets the amount of time between when the float calls for product, and when the supply pump activates
- BACKUP ON – How long a backup sensor needs to sense a container before it registers the signal in the PLC, not allowing containers to be indexed out.
- CYCLE RESET DELAY – Delays a certain amount of time until the cycle resets and starts again
- MAIN – Returns to Main Control Screen
- PREV- Enters the First Timer Setup Screen

Note:

It is typically necessary to have a small amount of time programmed in FLOAT DELAY to avoid ‘Float Chatter’. Float Chatter is when the product is turbulent in the supply tank, causing the float to bounce up and down, quickly activating and stopping the supply pump. This delay allows the product to settle after it has been pumped into the supply tank

3.3.1 RECIPE SCREEN



Figure 4.3

The Recipe Screen allows the user to

- **SAVE DATA FOR LATER USE** – Allows the user to save a certain collective filling setting (only 5 available recipe slots)
- **LOAD DATA TO USE NOW** – Activates the selected recipe (1-5)
- **ENTER FILE NUMBER TO LOAD OR SAVE 1-5** – Allows user to select or store a particular filling recipe (1-5 possible options)
- **MAIN** – Returns to the Main Control Screen

3.4.1 DIAGNOSTIC SCREENS

- E-STOP- Will stop the operation of the filler, and will display a banner along the bottom of the panel, notifying the user that the E-STOP is pressed
- INSUFFICIENT AIR SUPPLY- Will stop the operation of the filler, and will display a banner along the bottom of the panel, notifying the user that the E-STOP is pressed.

4.1 SERVICING

4.2 RECOMMENDED MAINTENANCE AND SCHEDULES

Itemized below are simple guidelines for maintenance. Several parts of the equipment should be regularly inspected to ensure the longest wear life as possible. The Following points should be controlled at the inspection

COMPONENTS	DAILY	WEEKLY	QUARTERLY
Clean tubing and valves after each use	X		
Wipe down base and housing		X	

4.3 MAINTENANCE LOG

COMPONENT	REPAIR DETAILS	REPLACEMENT DETAILS	DATE

4.4 SPARE PARTS LIST

PART DESCRIPTION	PART NUMBER
3/4" Poly-Spring Hose	10605-00005
Gemini Actuator Rebuild Kit	10601-00014
1/2" X 3/4" GEMINI VALVE, WITH KEY FOR ACTUATOR	10601-00016
Loc-line 1/4 Round nozzle	10602-00009
Loc-line 3/8 Round nozzle	10602-00010
Loc-line 1/2 Round nozzle	10602-00011
1/2" NPT to 1/2" Loc-line Fitting	10614-00014
Filter Regulator with Lockout	10205-00001
Inductive Proximity Sensor, 8mm, 12mm quick disconnect	10103-00024

4.5 FACTORY TECHNICAL SUPPORT

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