USER MANUAL

CBT LW OPERATION GUIDE
25, 50, 100 & 200

MENU

This is an interactive PDF. Click on an icon tile and navigate to a chapter of interest.

Users can advance or go back single pages by using quick navigation links shown below, right.

Users can navigate to the Menu by clicking on the Menu icon shown below, left.

LEGAL & SAFETY

This manual contains technical information regarding Bayer SeedGrowth™ Equipment. Please read and understand these instructions completely before proceeding to install and operate the equipment. Bayer reserves the right to change specifications, models, components, or materials at any time without notice. For additional equipment information contact us at 1.800.634.6738. Please have this manual available when contacting Bayer.

Always use caution and common sense when working with any chemical. Read the product label and SDS carefully and follow their instructions exactly as described.

Optimal operating conditions for this piece of equipment requires an ambient temperature 32° F to +104° F (0° C to +40° C), relative humidity less than 90% (minimum condensation). Make necessary provisions to protect this piece of equipment against excessive dust, particles containing iron, moisture and against corrosive and explosive gases.

Our technical information is based on extensive testing and is, to the best of our current knowledge, true and accurate but given without warranty as the conditions of use and storage are beyond our control. Variables, such as humidity, temperature, change in seed size or variety and viscosity of chemical products can all affect the accuracy of the chemical application and seed coverage. To ensure the desired application rate and optimum seed coverage, check the calibration periodically throughout the day, and make adjustments as needed.

Any person who is involved in the installation or periodic maintenance of this equipment should be suitably skilled or instructed and supervised using a safe system of work. Isolate the treater before removing guards for maintenance.

EXPOSURE CONTROL

Always use caution and common sense when working with chemicals. Read the product label and SDS carefully and follow their instructions exactly as described. The following Personal Protective Equipment (PPE) recommendations and best practices help promote safe use in seed treatment.

Note: Exposure Control signs and labels conform to the requirements of ANSI Z535.4 or ISO 3864.

Wear protective clothing

Wear disposable or reusable coveralls with long sleeves.

Hand protection required

Wear chemical-resistant gloves.

Wear rubber boots

Wear chemical resistant rubber boots.

Labels

Label recommendations and directions for handling must be followed, including treatment procedure (use of sticker) as well as the safety requirements.

Treatment products

Keep products in a locked room that has been approved for crop protection products.

Wear a mask

Wear respiratory protection.

Eye protection required

Wear protective eyewear.

Calibration

Seed treatment equipment must be checked and calibrated regularly to ensure accurate and safe application.

Clean seed

Use well cleaned seed to avoid creation of polluted dust that will contaminate the machine, treating facility, workers, farmers and the environment during sowing.

Cleaning

Use a vacuum to clean machines. Avoid using compressed air for cleaning.

Laundry

Wash soiled reusable clothing separately. Workers must take a shower after each shift.

Empty containers

Non-returnable empty containers must be triple rinsed before they can be disposed. For others the recommendation of the producer must be followed.

Spillage

Spillage must be avoided; it must be thoroughly cleaned up to avoid contaminating the environment and waterways.

Maintenance

Keep machinery clean between treating sessions.

REFERENCE SYMBOLS

Symbols and signal words are used to identify the level of hazard and help avoid personal injury.

Note: Safety signs and labels conform to the requirements of ANSI Z535.4 or ISO 3864.

Shock Hazard

Alerts that dangerous voltage may be present.

Warning

Alerts that a hazard may cause serious injury or death.

Caution

Alerts that a hazard may cause minor or moderate injury.

Hand crush - moving parts

Alerts crushing is possible.

Pinch point

Keep hands away from pinch points.

Rotating shaft

Do not wear loose clothing around turning parts.

Disconnect

Disconnect to de-energize before opening.

Tools

Required tools for installation and maintenance.

Use guards

Keep guards in place. Do not remove during operation.

Parts

Required parts for installation and maintenance.

Lifting

Requires two people to safely lift an item.

Tip

Calls attention to special information.

Lift points

Requires the use of proper rigging and lifting techniques based on the lift plan.

Note

Emphasizes general information worthy of attention.

Center of gravity

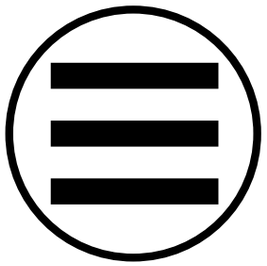
Indicates the center of gravity of the machine to help assist when rigging and lifting.

Example

Provides a problem or exercise that illustrates a method or principle.

PICTOGRAMS

Each Signifier displayed here is specific to this User Manual.


Menu

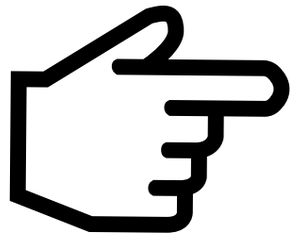

Previous


Advance


Initiate System

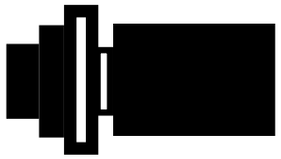

Products


Touchscreens

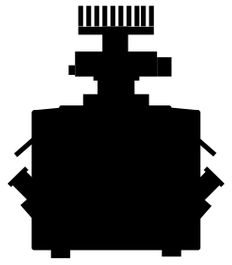

Cursor Hand


Powder Feeder


Pump Stations


Devices


Control Panel

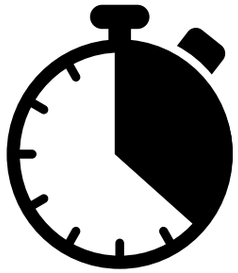

Dosing Pump

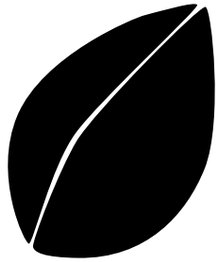

Like


Supply Pump


Calibration


Options


Time


Seed


Weigh Scale


Recipes


Troubleshooting


Reports


Run Sequence

EXPLANATORY NOTES

The 8-Pump Loss In Weight (LW) Application Program operates one Continuous Batch Treater (CBT25, 50, 100 & 200) and up to eight (8) Pump & Weighing Stations.

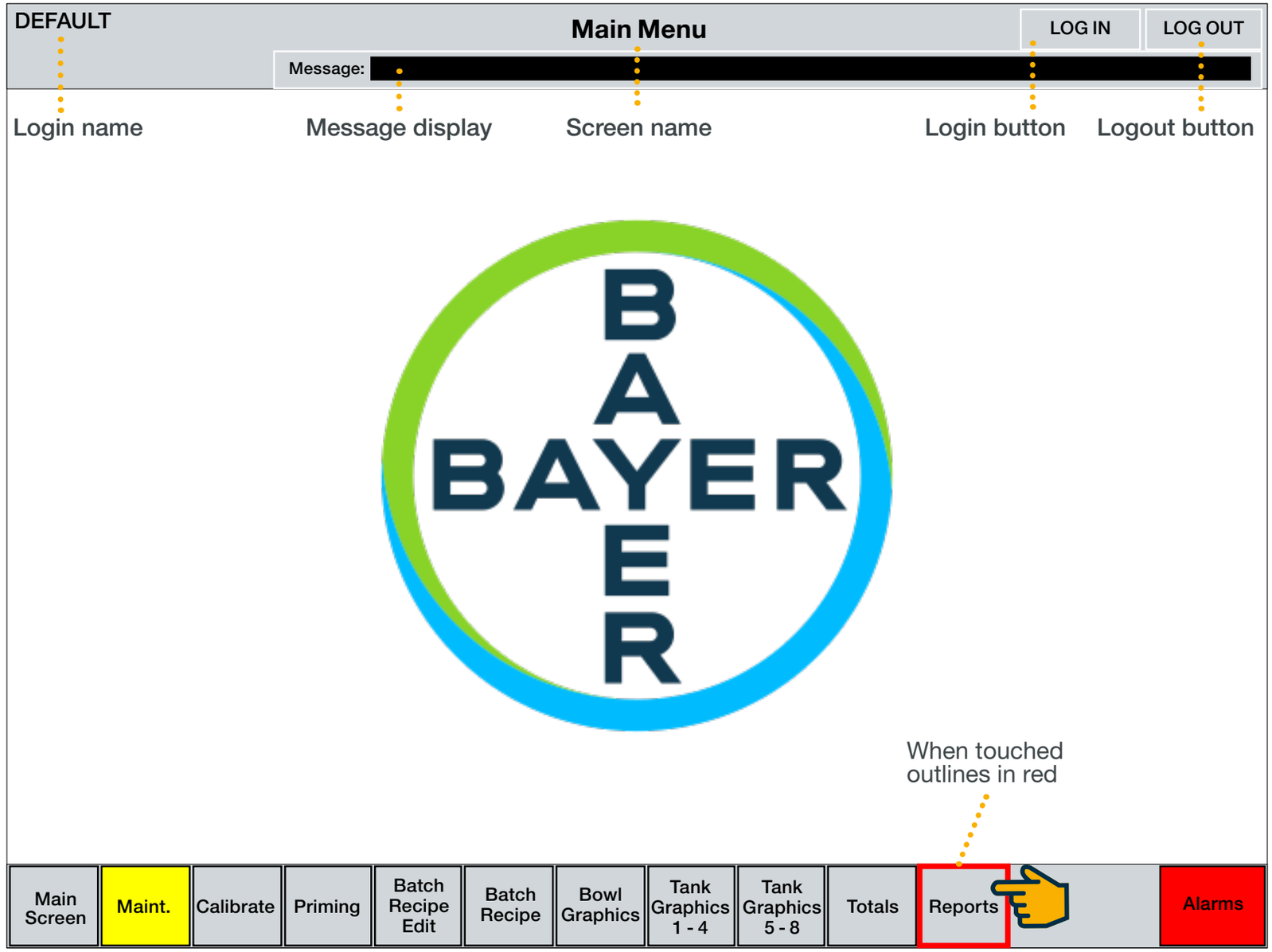
Interactive program screens display on the Human Machine Interface (HMI) touch panel. Each screen provides the same message bar at the top and button icons on the task bar along the bottom.

Button icon colors (yellow and red) as shown, call attention to maintenance & alarm issues.

This guide uses the hand cursor icon (shown right) to indicate an action; such as touching a button or device icon to open/close a pop-up or navigate between screens.

SIGNAL SYMBOL ICONS - IDENTIFY STATUS & ACTIONS

MANUAL LOCKED ENERGIZED

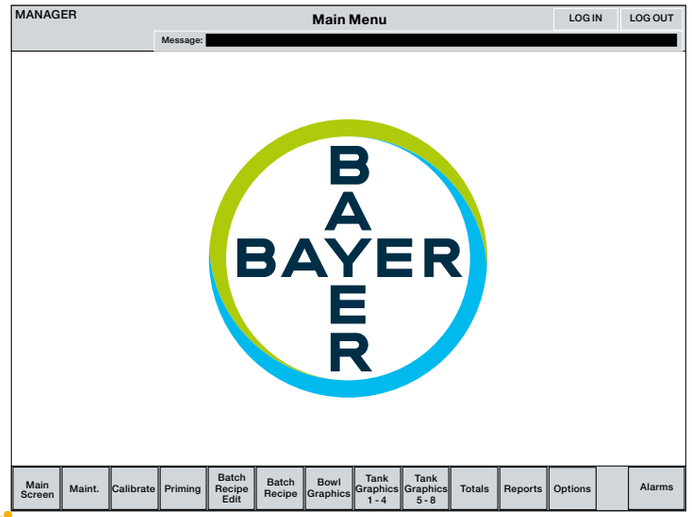


INITIATE SYSTEM

Warning! Prior to start-up procedures, ensure the following steps have been completed as part of the installation process:

1. A licensed electrician has connected power to the control panel.
2. A licensed electrician has turned on all the circuit breakers and motor switches.
3. A licensed electrician has ensured the control panel is safe to use.

Note: the system start-up sequence must be done as described! Reverse the order for system shut down.



Application Program displays on HMI

Initiate the PLC

Ensure service (power) is connected to the Main Control Panel.

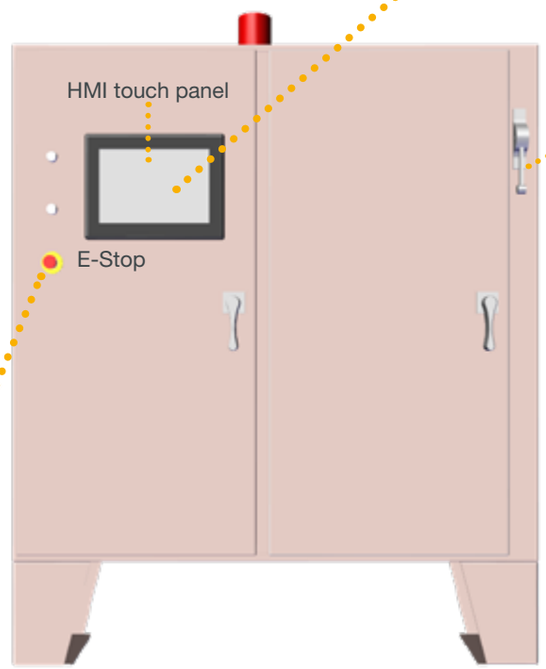
Step 1: Ensure the red E-Stop knob is <u>not</u> engaged: Twist Right and Pull Out.

Step 2: Flip the Control Panel Power Lever **UP**. The top Panel Power light turns on.

Step 3: Push the Boot Battery Backup button:

- Button light indicates that Control Power is **ON**.
- The PLC boots and displays the application program on the HMI touch panel.

This completes the Initiate System Section



Control Panel Power Lever

TOUCHSCREENS

Note: once the 8-pump LW batching system has been installed, the application program requires users to be logged in as either...

- **DEFAULT**(user level only, no changes)
- **MANAGER** (access to make changes, create recipes, password protected)
- **TREATER** (a Bayer associate, total access, used mainly during installation, password protected).

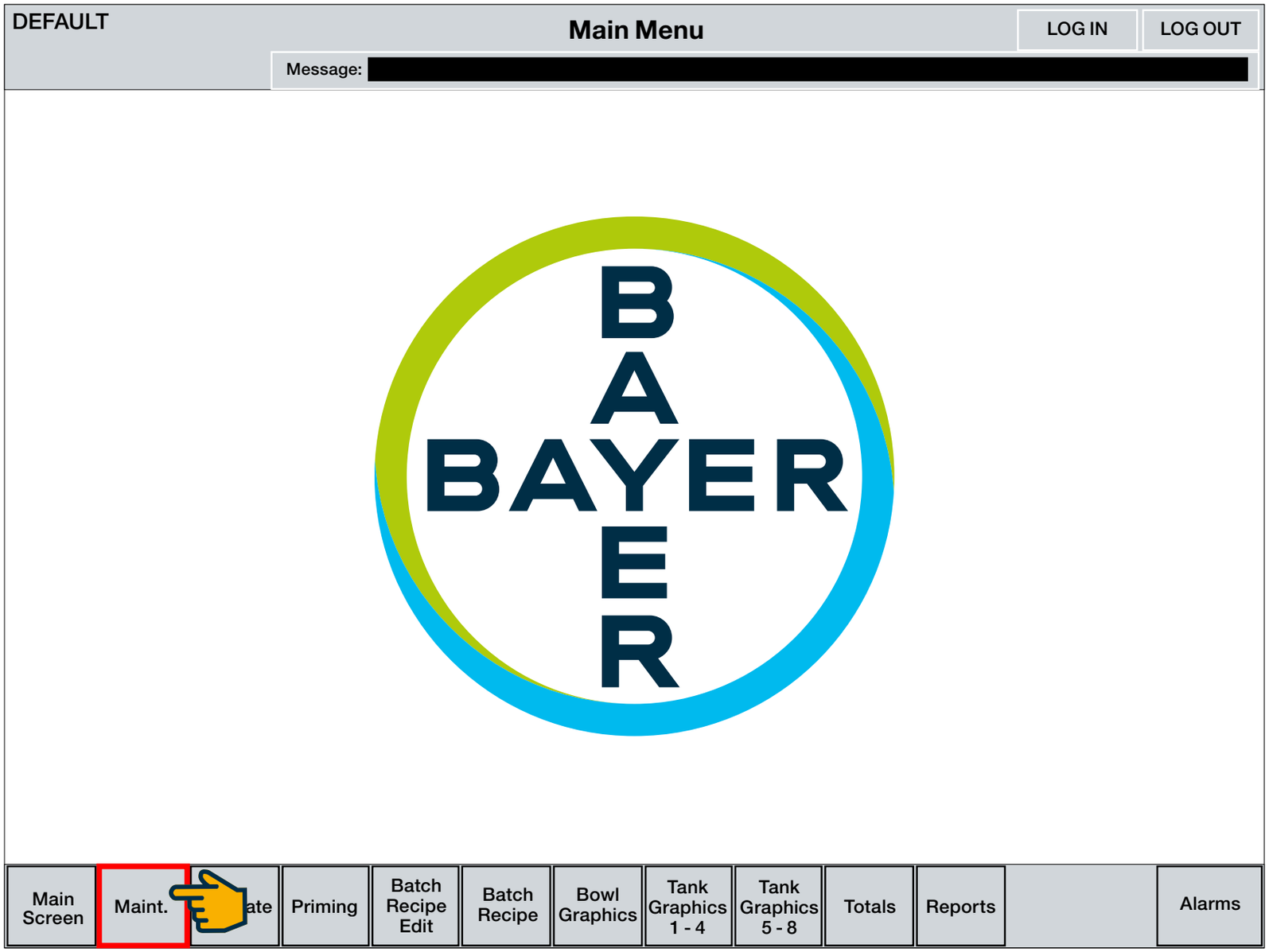
Main Menu Screen

After the initial PLC boot (page 5), the HMI displays the **Main Menu Screen**.

- This screen allows users to log in/out of the system as well as navigate to all other touchscreens.
- Touch each button icon along the bottom task bar to browse through each touchscreen.
- By way of introduction, pages 9-36 explain the purpose and functionality of each touchscreen and devices.

Step 1: Touch the **Maint.** button icon: navigates to the **Maintenance Screen**

Continued ➲



Tip: The yellow color is an indicator only and will not stop or interrupt the treating process. The yellow color continues to display as a reminder until resolved and the operator touches the **Reset** button icon.

Maintenance Screen

The **Maintenance Screen** allows users to view run time hours set for each Liquid Tank 1-8 (Pump Station) and Powder Feeder 1-2.

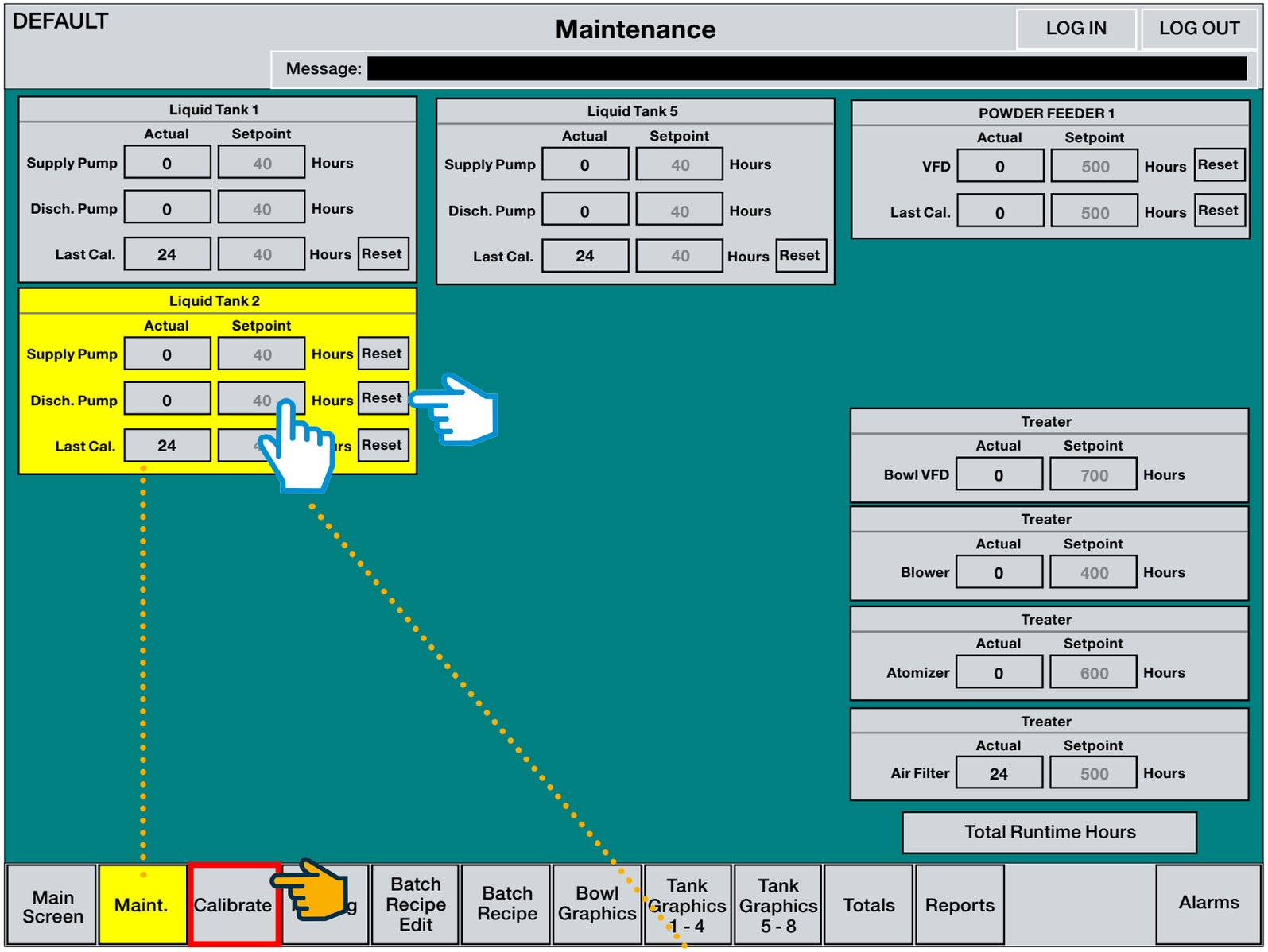
- The Treater Bowl VFD, Blower Motor, Atomizer Motor and Air Filter are indicators which display the total hours run and are all site-specific and set/changed when logged in as **MANAGER**.

Setpoint Hours accumulate the total hours run for each component and will appear yellow once the component has reached the hours set; e.g. 0-40.

- Yellow indicates that maintenance or calibration should be completed.
- Once resolved, touch the **Reset** button icon: yellow indicator color is removed and the timer resets to zero.
- The Maint. button icon on the task bar will turn from yellow to grey.

Step 1: Touch the **Calibrate** button icon: navigates to the **Calibration Screen**

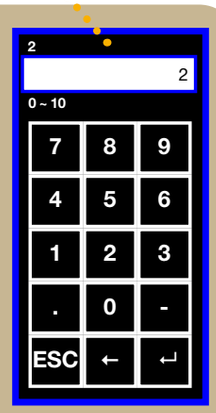
Continued ➲



SETPOINTS

Touch the **Setpoint** number box on **Liquid Tank 2** block to change the numerical value.

- On the pop-up touch pad, enter a numerical value
- Touch the ↵ Enter symbol button
- Touch the **ESC** button: closes pop-up



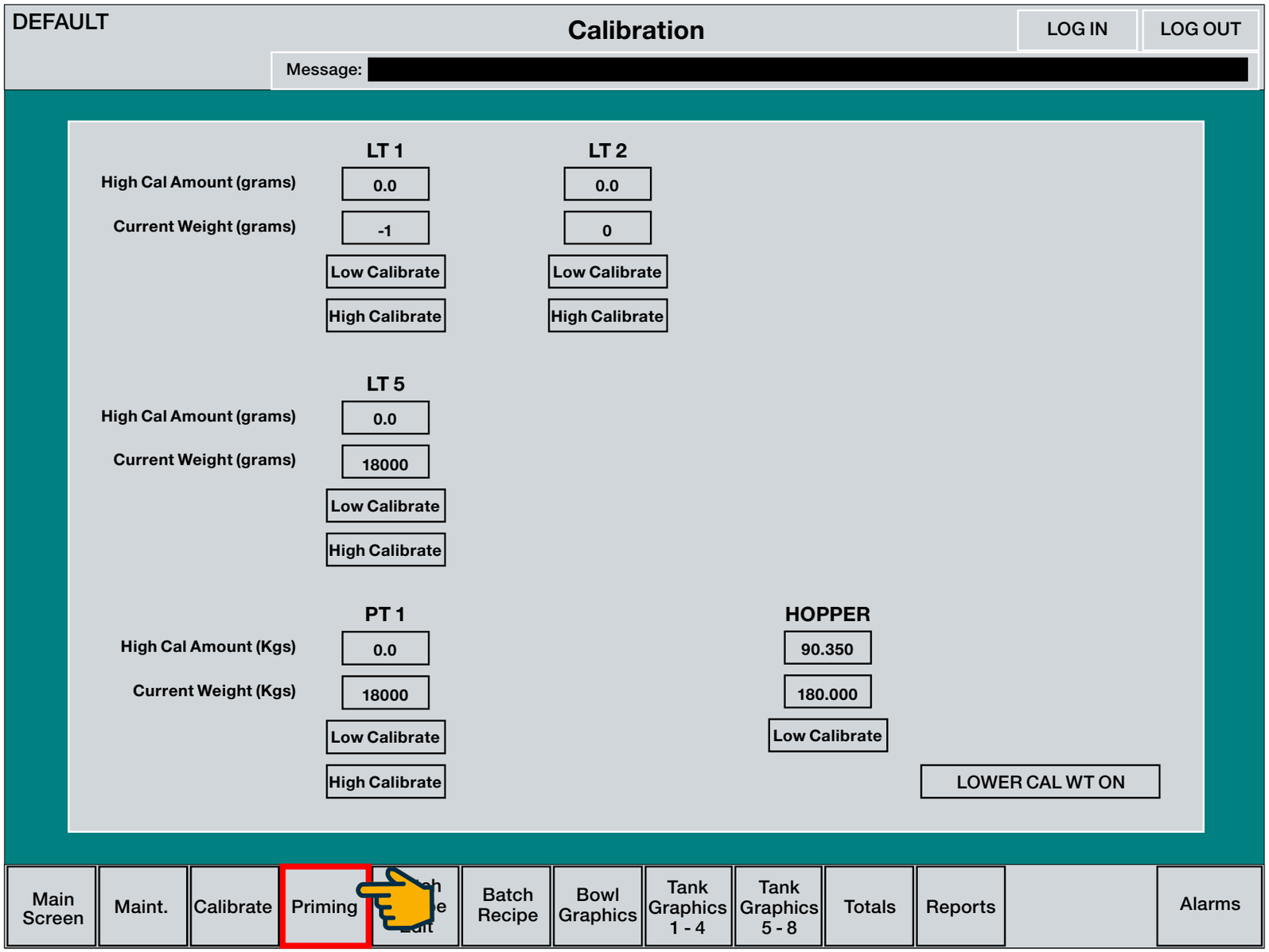
Calibration Screen

The **Calibration Screen** displays the high, low and current weight values and allows users to calibrate each Pump Station **[LT1-8]**, Powder Hopper **[PT1-2]** and the seed Inlet Hopper **[HOPPER]**.

- Each component will need to be calibrated separately.
- This procedure will be covered later on in the guide.

Step 1: Touch the **Priming** button icon: navigates to the **Priming Screen**

Continued ➲



Priming Screen

The **Priming Screen** allows users to dispense chemical from each Pump Station **[LT1-8]** to the Treater Chemical Inlet as well as powder from each Powder Feeder **[PT1-2]**.

- This procedure will be covered later on in the guide.

Step 1: Touch the **Batch Recipe Edit** button icon: navigates to the **Batch Recipe Edit Screen**

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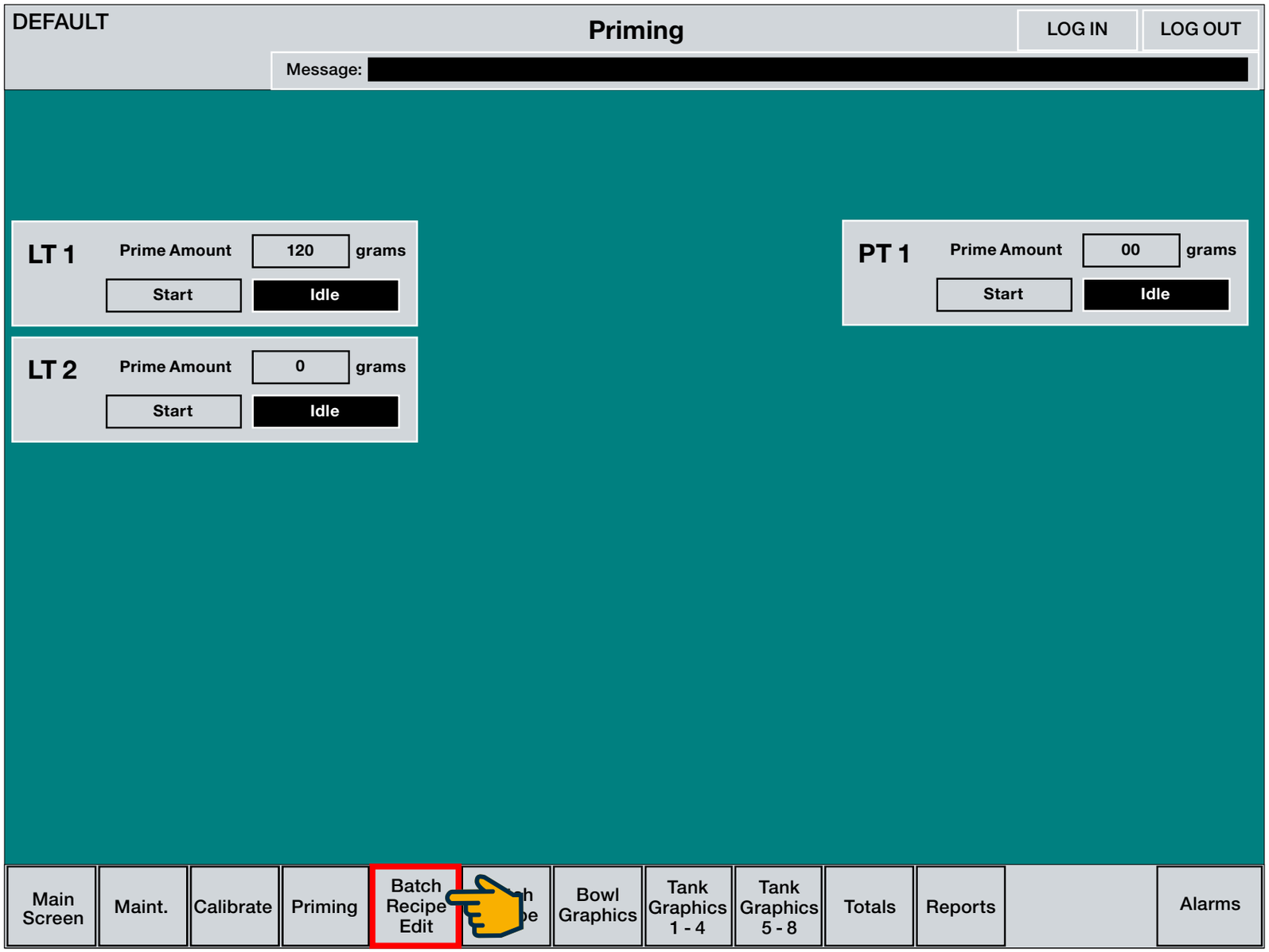


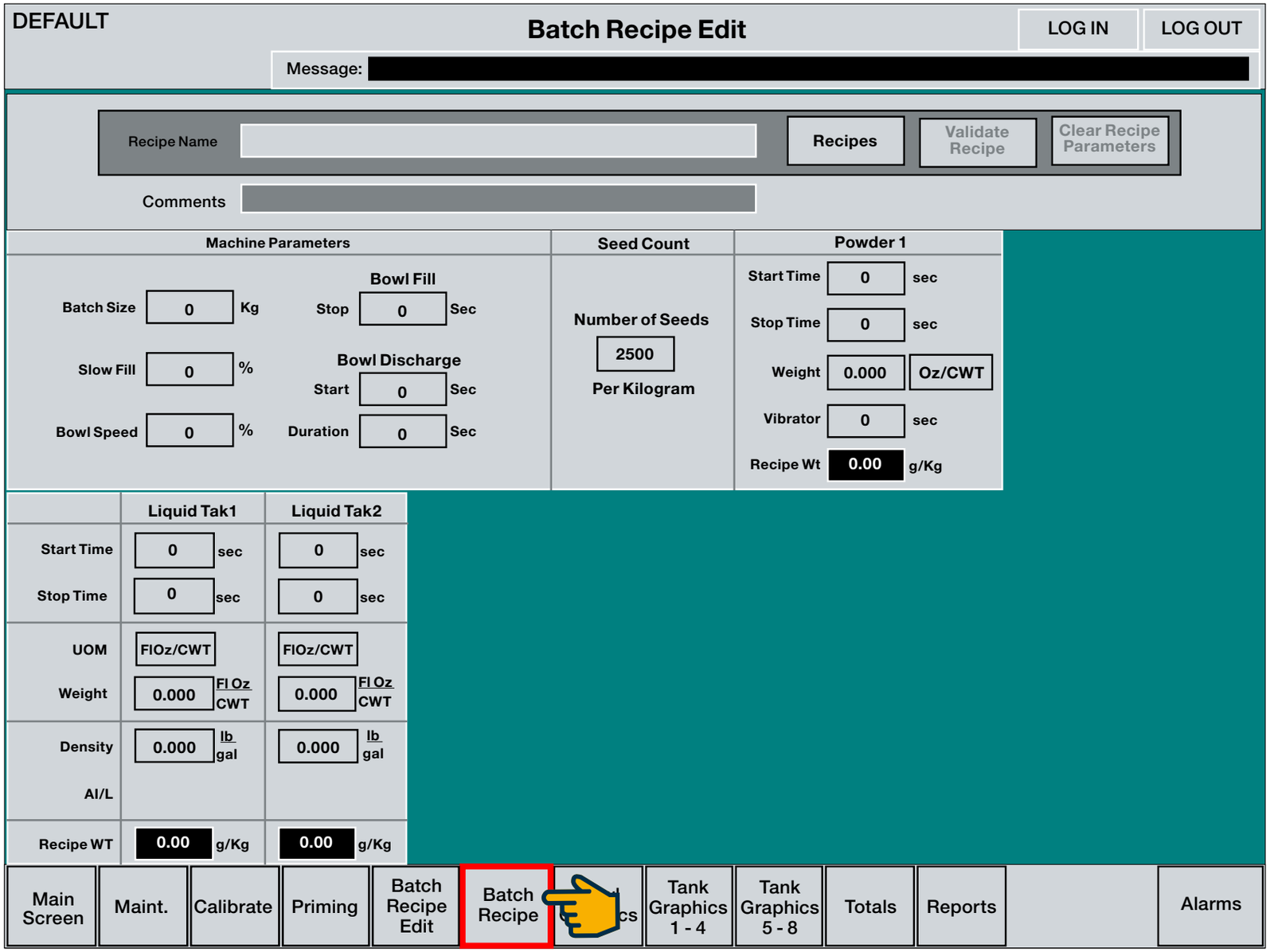
Batch Recipe Edit Screen

The **Batch Recipe Edit Screen** displays the treater **Machine Parameters**, hopper **Seed Count**, **Powder 1 & 2** and Pump Station **[LT1-8]** set points.

- Recipes and set points can be changed or edited from this screen when logged in as **MANAGER**.
- This procedure will be covered later on in the guide.

Step 1: Touch the **Batch Recipe** button icon: navigates to the **Batch Recipe Screen**

Continued ➲



Batch Recipe Screen

The **Batch Recipe Screen** is the main run control screen where users can view device status: **ENABLED**, **DISABLED**, **STOPPED** or **RUNNING**.

- This procedure will be covered later on in the guide.

Step 1: Touch the **Bowl Graphics** button icon: navigates to the **Bowl Graphic Screen**

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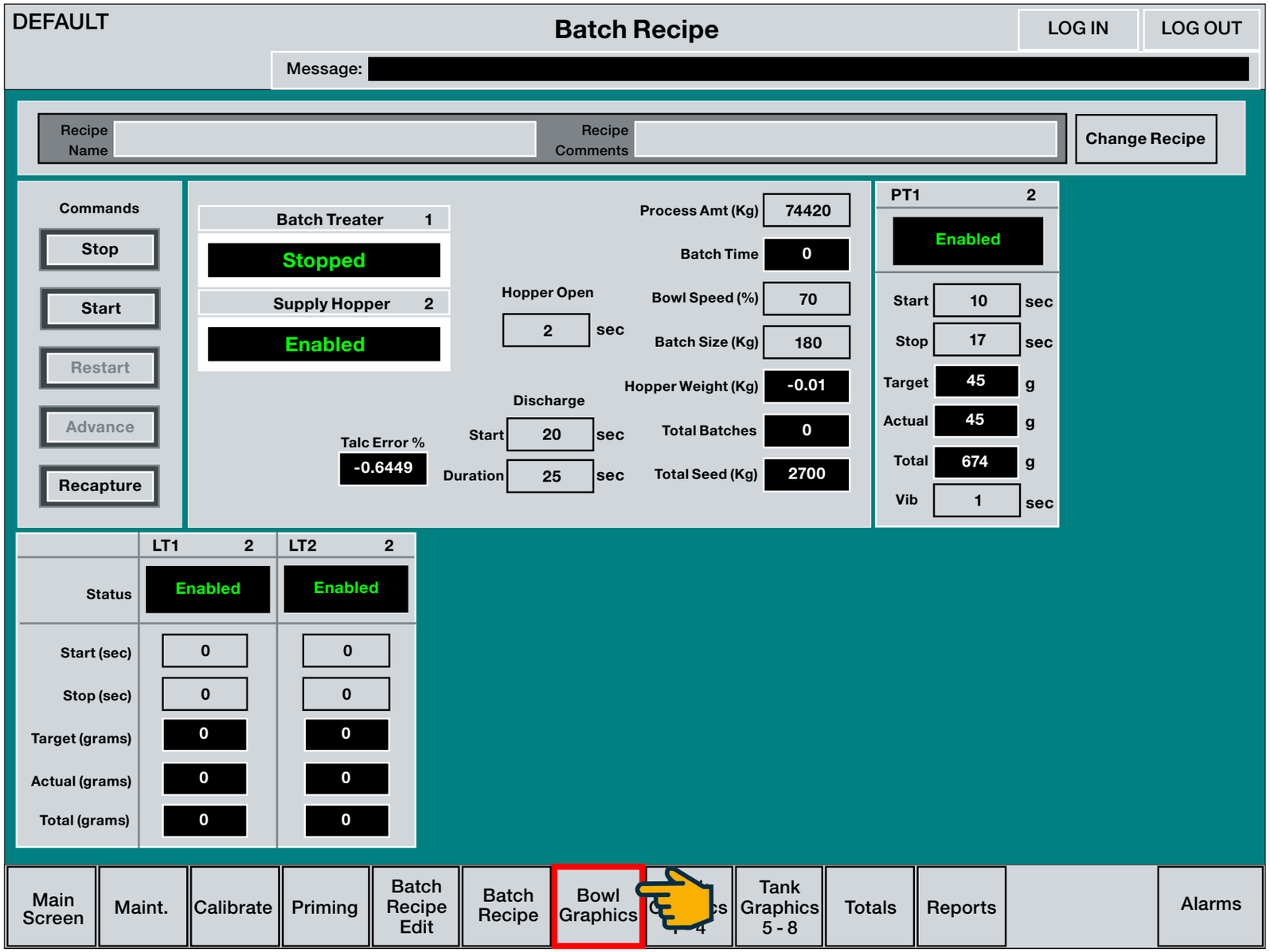


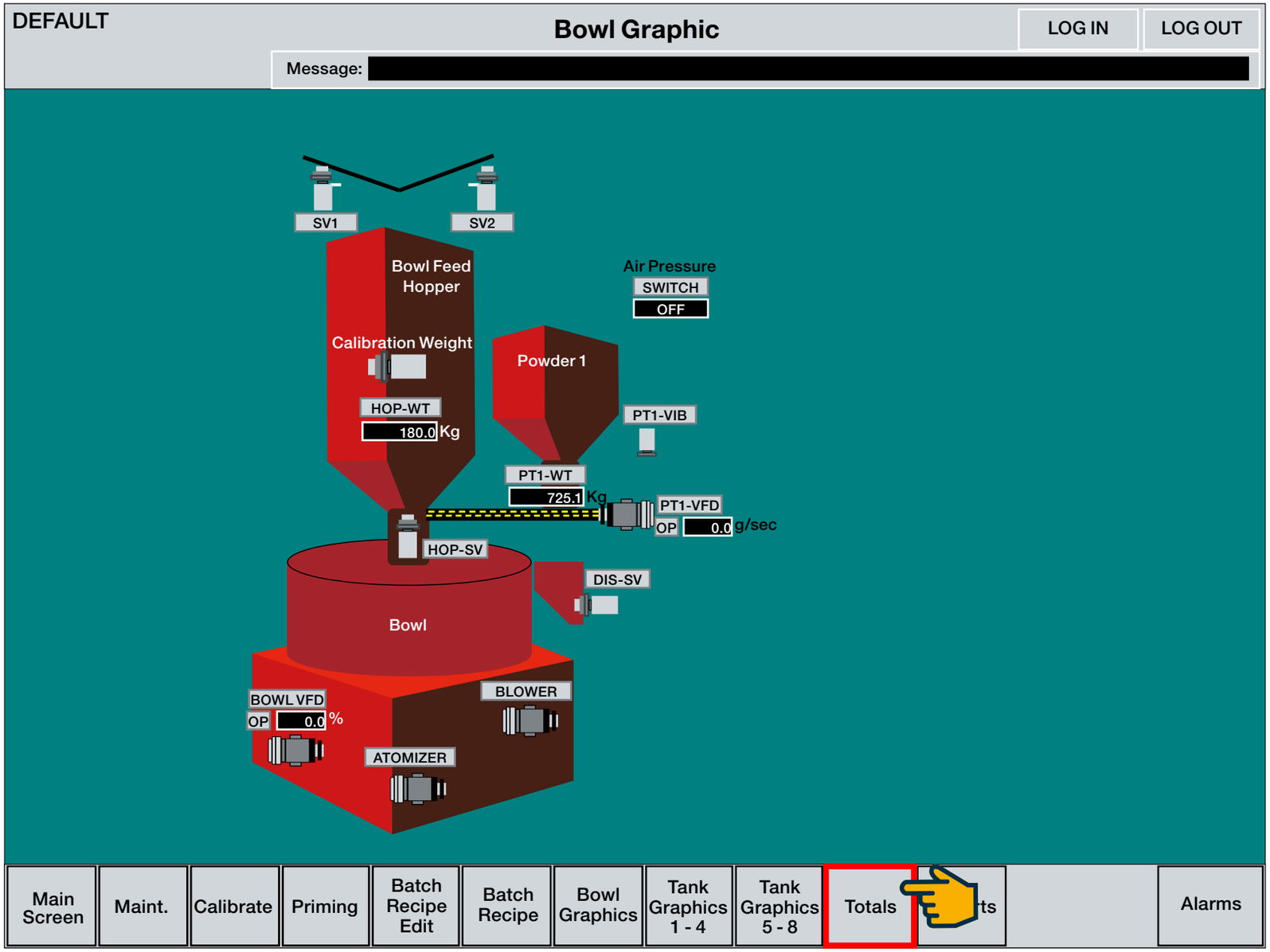
Bowl Graphic Screen

The **Bowl Graphic Screen** allows users to view and access equipment devices, which are configured when logged in as **MANAGER**.

- Equipment device details will be covered later on in the guide.

Step 1: Touch the **Totals** button icon: navigates to the **Totals Screen**

Continued ➲



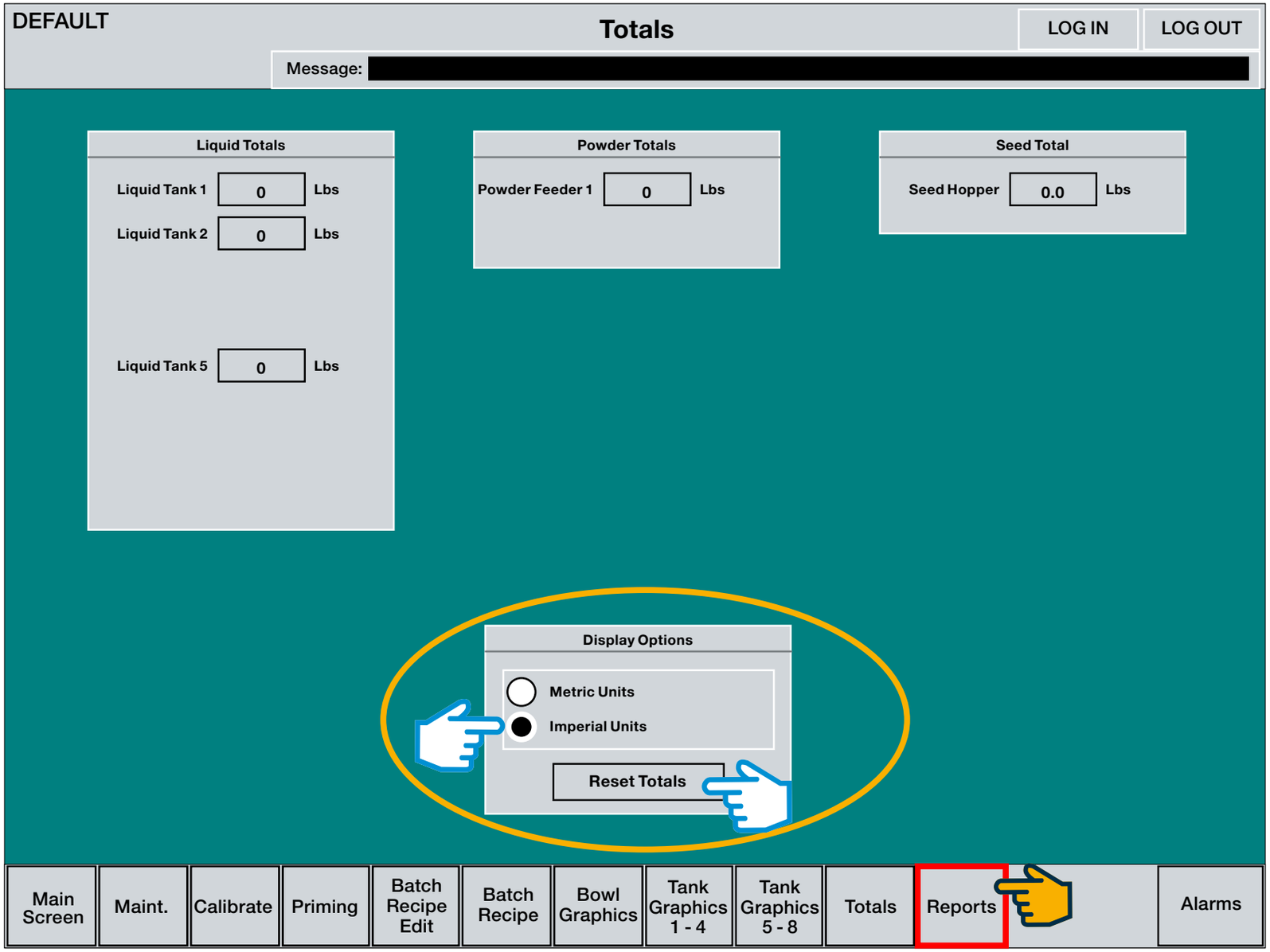
Totals Screen

The **Totals Screen** allows users to view accumulated totals for each Liquid Tank (1-8), Powder Totals (1-2) and the Seed Hopper.

- Users can toggle the numerical values display between **Metric Units** or **Imperial Units** (US Units) by making the selection and then touching the **Reset Totals** button icon under the **Display Options** block (circled).

Step 1: Touch the **Reports** button icon: navigates to the **REPORT INFORMATION pop-up**

Continued ➲



Report Information Pop-up

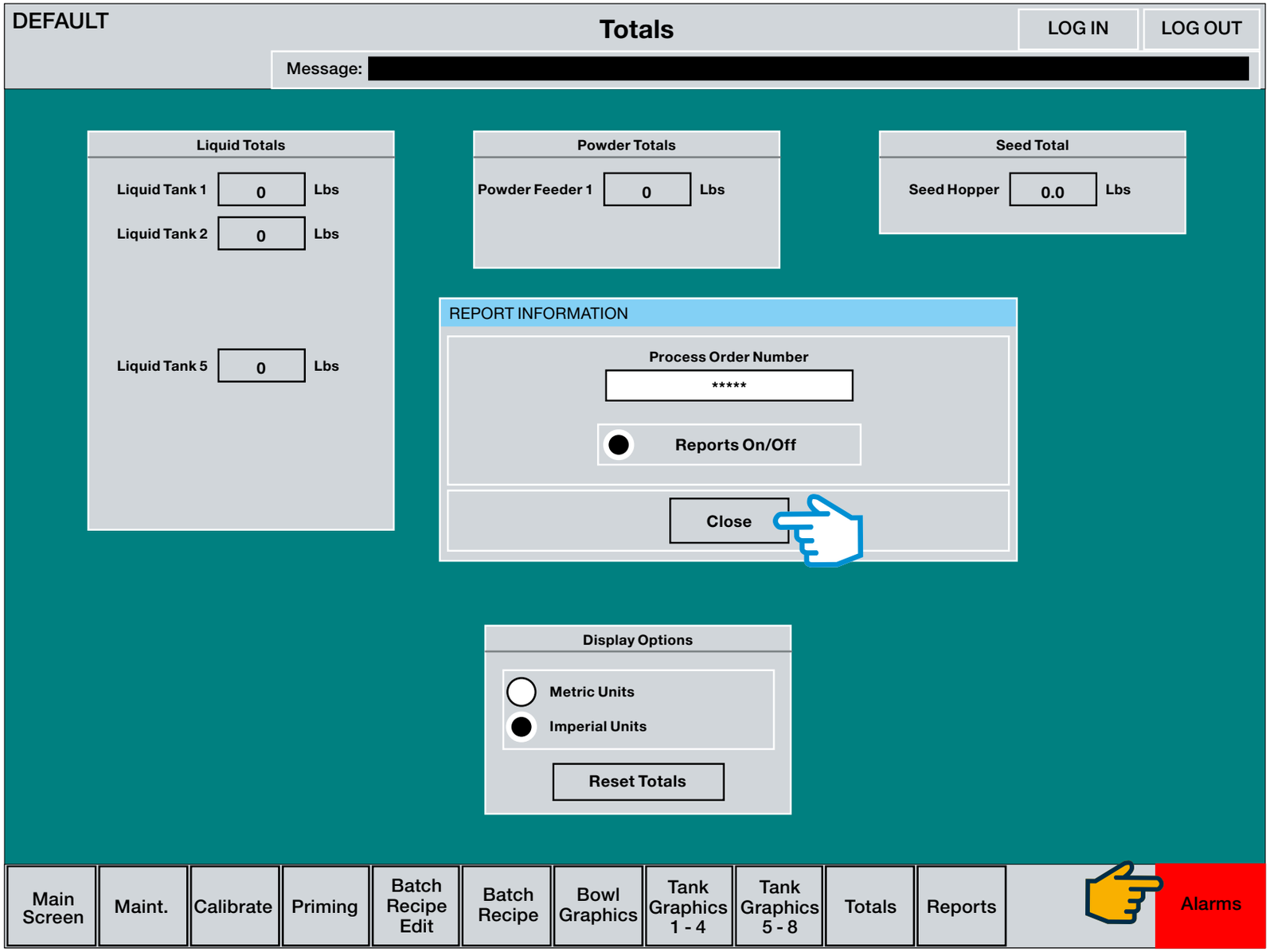
The **REPORT INFORMATION pop-up** displays as a layer on top of an active screen.

- This procedure will be covered later on in the guide.

Step 1: Touch the **Close** button icon: the **REPORT INFORMATION** pop-up closes.

Step 2: Touch the **Alarms** button icon: navigates to the **Alarms Screen**

Continued ➲



Alarms Screen

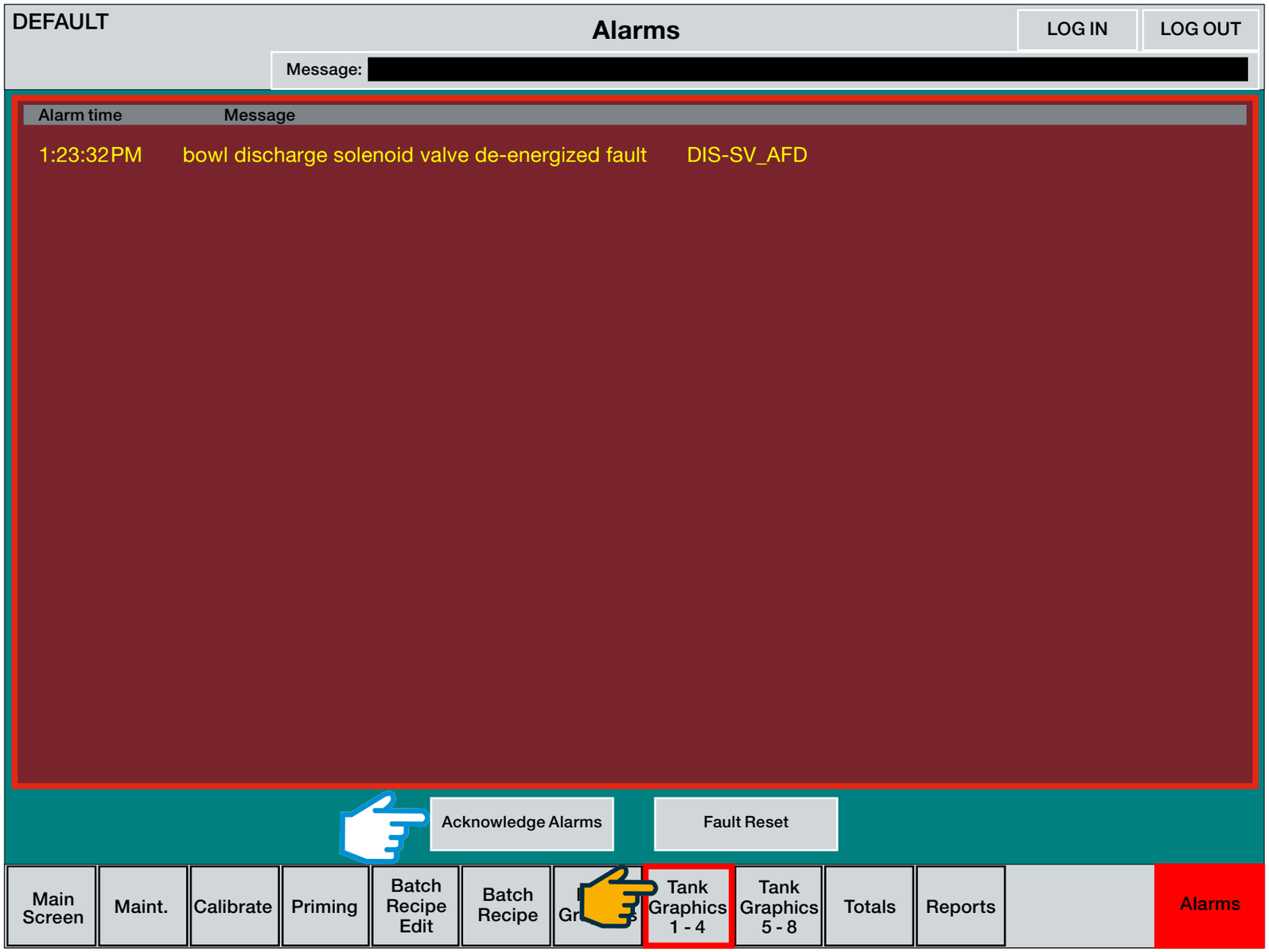
The **Alarms Screen** allows users to view and acknowledge alarms.

Step 1: If an alarm is displayed (as shown), touch the **Acknowledge Alarms** button icon to remove the alarm.

- The Alarms button icon on the task bar will turn from red to grey.

Step 2: Touch the **Tank Graphics 1-4** button icon: navigates to the **Tank Graphics 1-4 Screen**

This completes the Touchscreen Section



PUMP STATIONS

Liquid Tanks 1-4 Screen

The **LIQUID TANKS 1-4 Screen** displays **LT 1-4** enabled pump station graphics (as shown).

- Touch **TANK GRAPHICS 5-8** button icon on the task bar: navigates to **LIQUID TANKS 5-8 Screen**, which displays **LT 5-8** pump station graphics.
- Pump stations are only enabled and will display on the **LIQUID TANKS 1-4 & 5-8 Screens** when logged in as **MANAGER** on the **EQUIPMENT OPTIONS Screen**.

Each pump station features the following devices:

- Proximity Sensor **(PX)**
- Weight Transmitter **(WT)**
- Transfer Pump **(SUPPLY)**
- Dosing Pump **(DISCH)**

Step 1: Touch the **PX** device icon: displays the **LIQUID TANK 2 HIGH LEVEL PROX** device pop-up.

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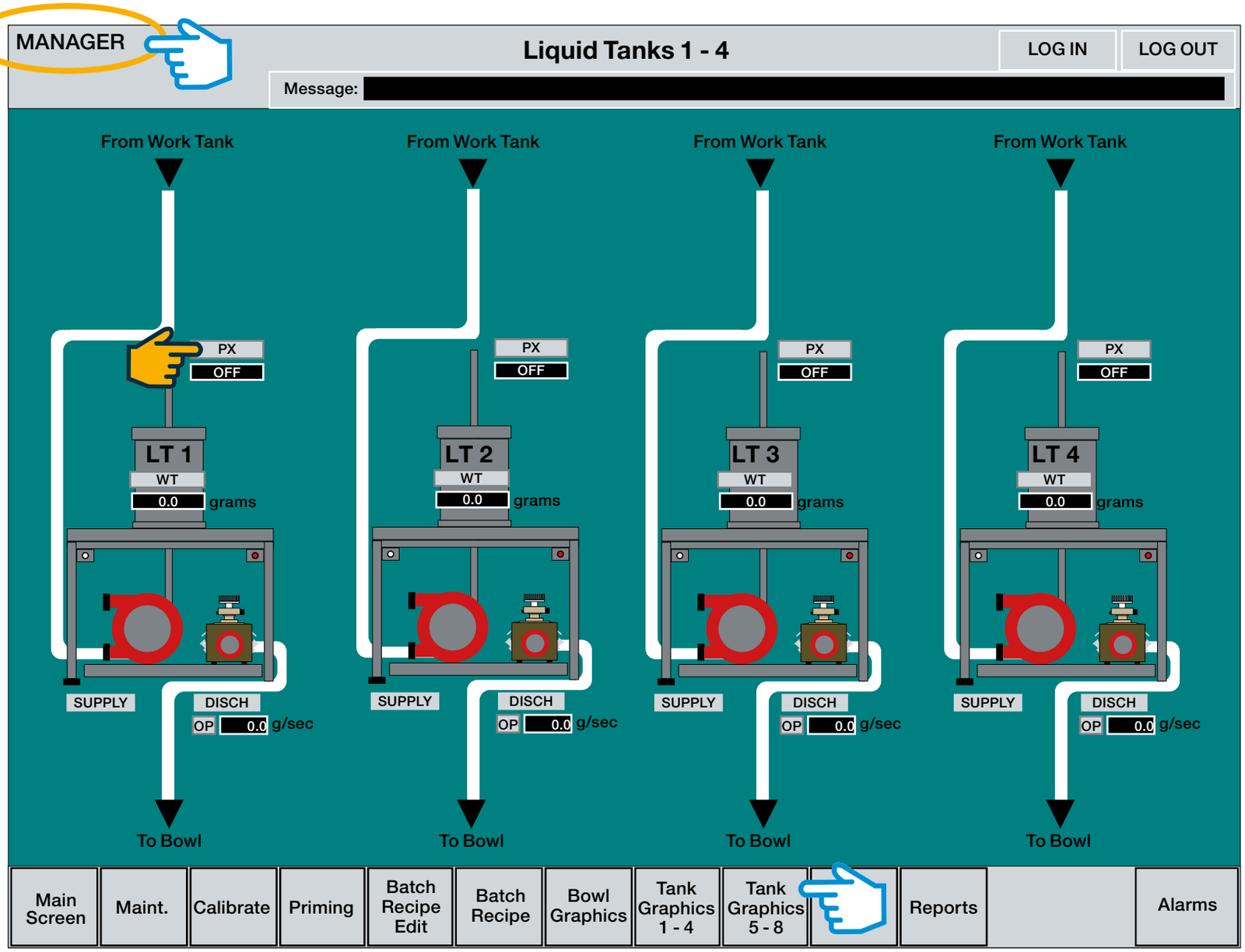
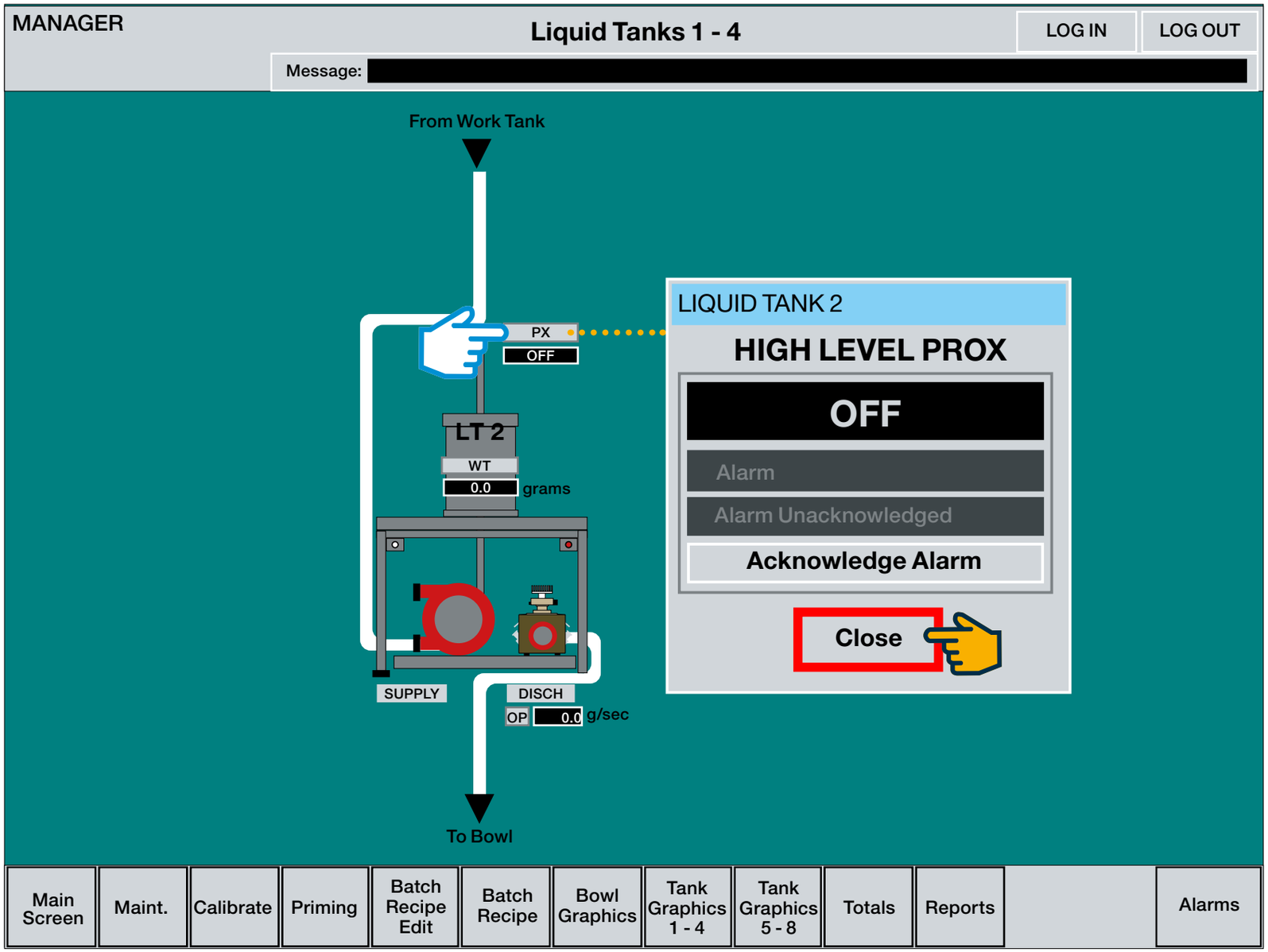


Liquid Tanks 1-4 Screen - High Level Prox Pop-up

The High Level Proximity Sensor device displays **OFF** when no chemical is sensed or **ON** when a high level of chemical is detected inside the 20L Supply Tank.

Step 1: Touch the **Close** button icon: pop-up closes: navigates to the **Tank Graphics 1-4 Screen**

Continued ➲



Liquid Tanks 1-4 Screen - Weight Pop-up

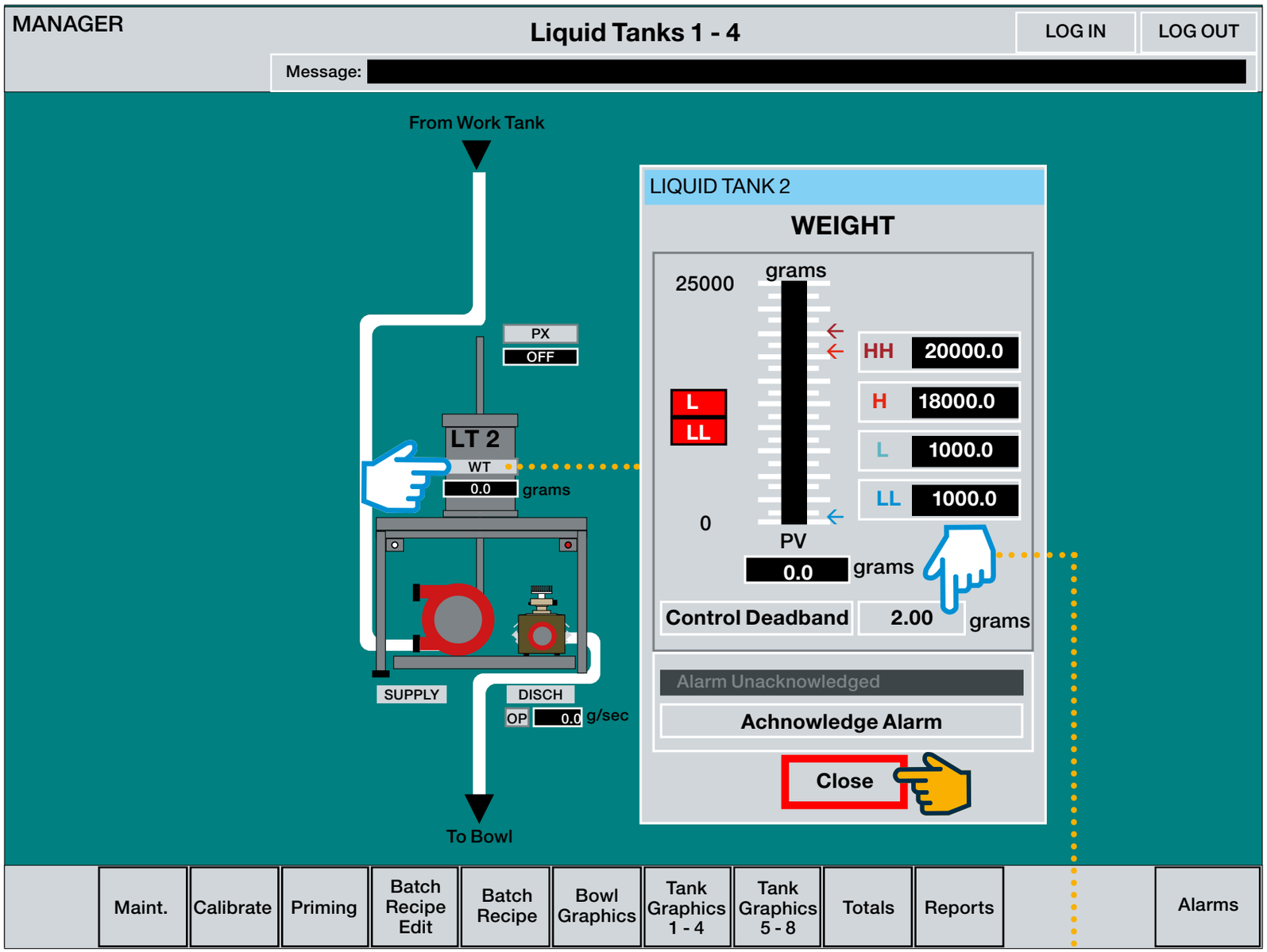
Step 1: Touch the **LT1 WT** field: displays the **LIQUID TANK 2 WEIGHT** device pop-up.

- This device displays the current 20L Supply Tank level (High to Low) in total grams.

- The **Control Deadband 2.0 grams** delay is the recommended delay time setting for this device.

Step 1: Touch the **Close** button icon: pop-up closes: navigates to the **Tank Graphics 1-4 Screen**

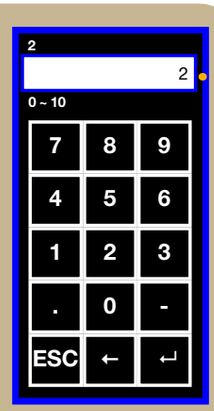
Continued ➲



CONTROL DEADBAND

Touch the **Control Deadband** number box on **Liquid Tank 2 Weight** block to change the numerical value.

- On the pop-up touch pad, enter a numerical value
- Touch the ↵ Enter symbol button
- Touch the **ESC** button: closes pop-up



Liquid Tanks 1-4 Screen - Supply Pump Pop-up

Step 1: Touch the **SUPPLY** graphic: displays the **LIQUID TANK 2 SUPPLY PUMP** device pop-up.

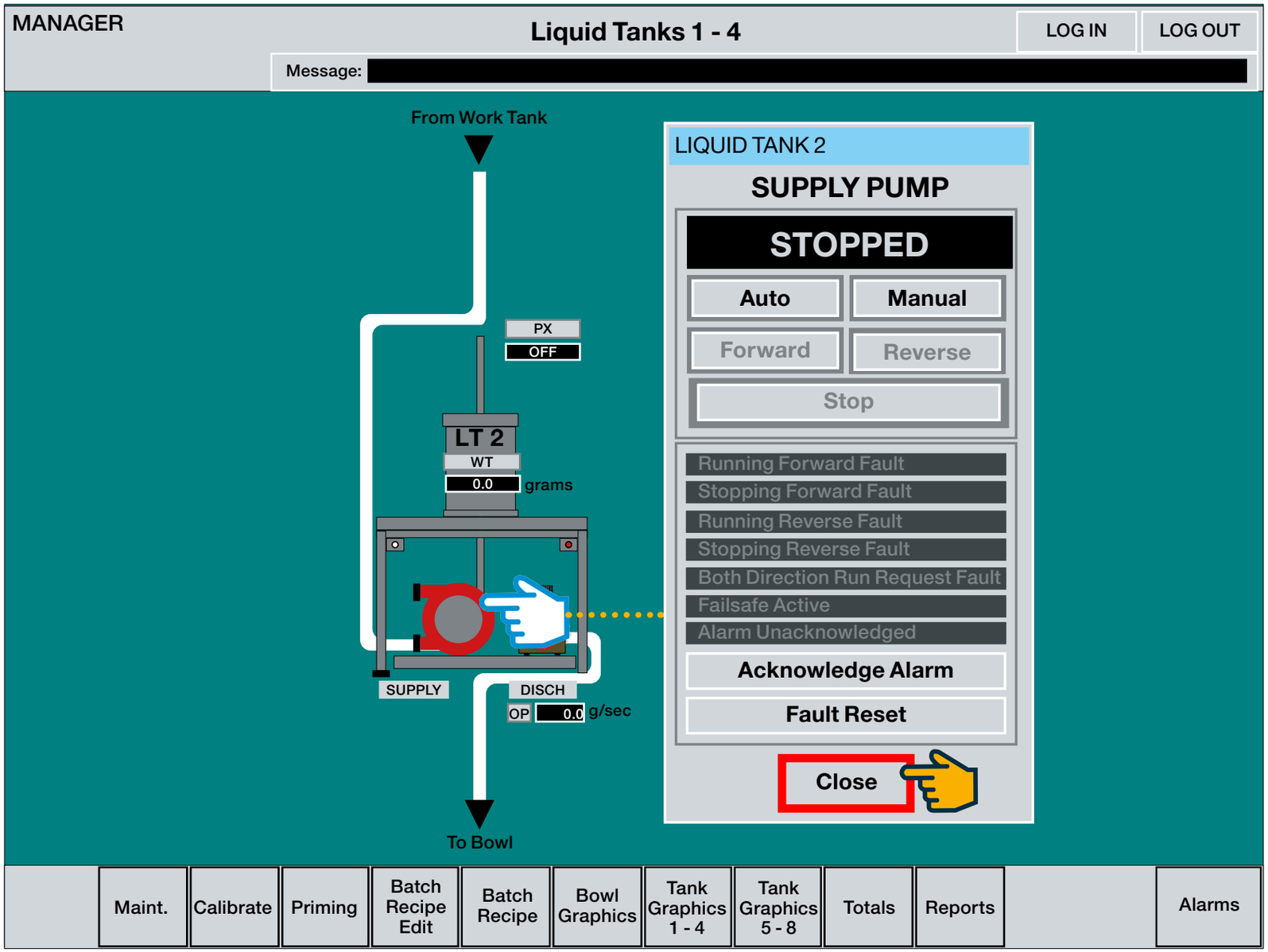
- This device allows users to manually operate the Supply Pump in either **FORWARD** or **REVERSE** for priming, calibration or pre-checking for functionality.

Follow these steps to switch the device from **FORWARD** to **REVERSE**:

- Touch **Manual** > **Forward** (pump runs forward) > **Stop** > **Reverse** (pump runs in reverse) > **Stop**.
- Return the device pop-up to the **Auto: STOPPED** mode.

Step 2: Touch the **Close** button icon: pop-up closes: navigates to the **Tank Graphics 1-4 Screen**

Continued ➲



Liquid Tanks 1-4 Screen - Discharge Pump Pop-up

Step 1: Touch the **DISCH** graphic: displays the **LIQUID TANK 1 DISCHARGE PUMP** device pop-up.

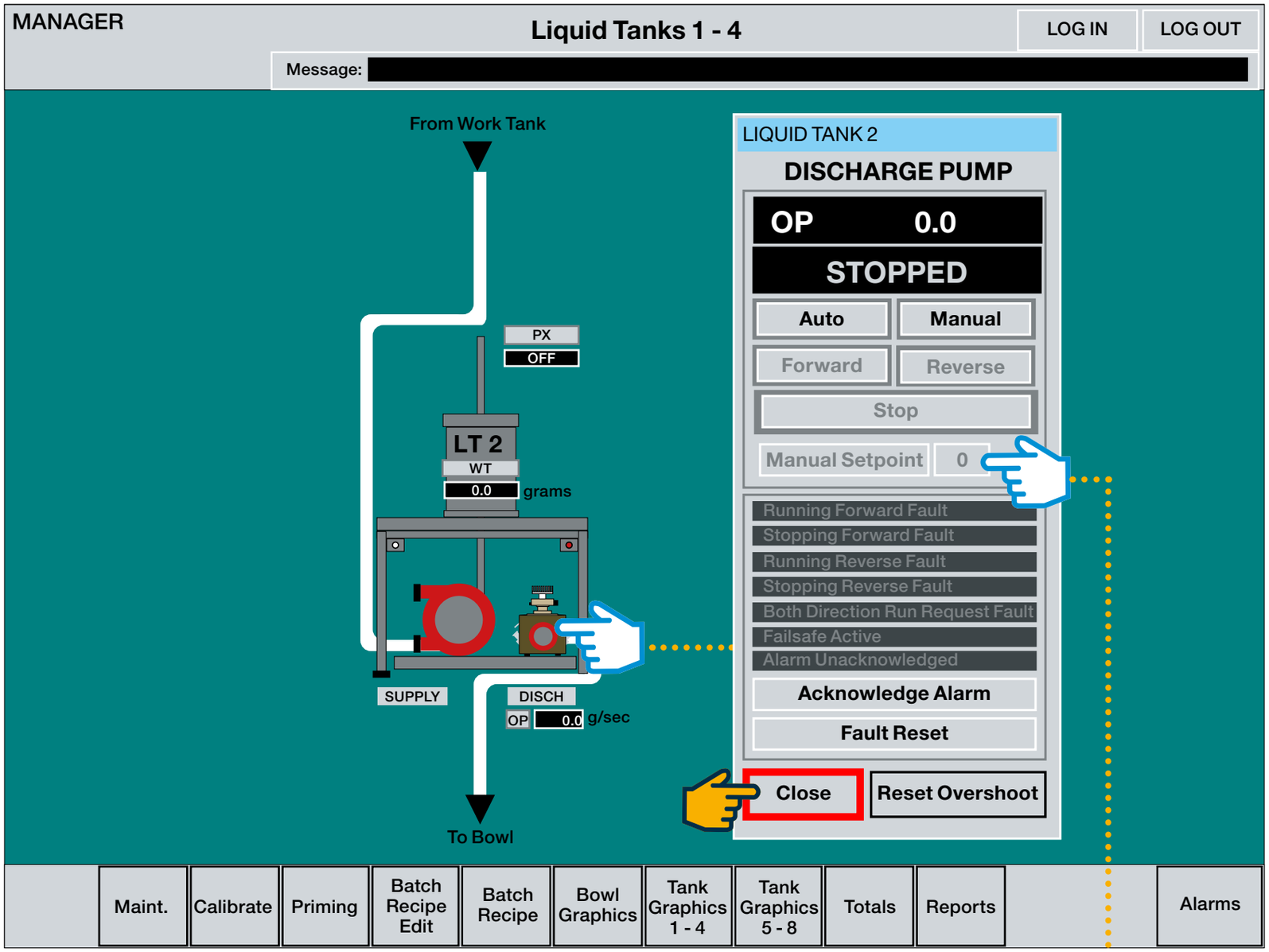
- This device allows users to manually operate the Discharge Pump in either **FORWARD** or **REVERSE** for priming, calibration or pre-checking for functionality.
- The **Manual Setpoint** needs to be set at a value of one (1) in order for the Pump to be run manually.

Follow these steps to switch the device from **FORWARD** to **REVERSE**:

- Touch **Manual** > **Forward** (pump runs forward) > **Stop** > **Reverse** (pump runs in reverse) > **Stop**.
- Return the device pop-up to the **Auto: STOPPED** mode.

Step 2: Touch the **Close** button icon: pop-up closes: navigates to the **Tank Graphics 1-4 Screen**

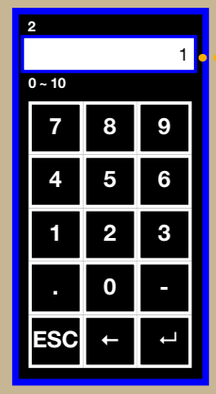
This completes the Pump Stations Section



MANUAL SETPOINT

Touch the **Manual Setpoint** number box on **Liquid Tank 2 Discharge Pump** block to change the numerical value to 1.

- On the pop-up touch pad, enter a numerical value
- Touch the ↵ Enter symbol button
- Touch the **ESC** button: closes pop-up



EQUIPMENT DEVICES

Bowl Graphic Screen

The **Bowl Graphic Screen** displays each seed treating system component.

Equipment devices enabled:

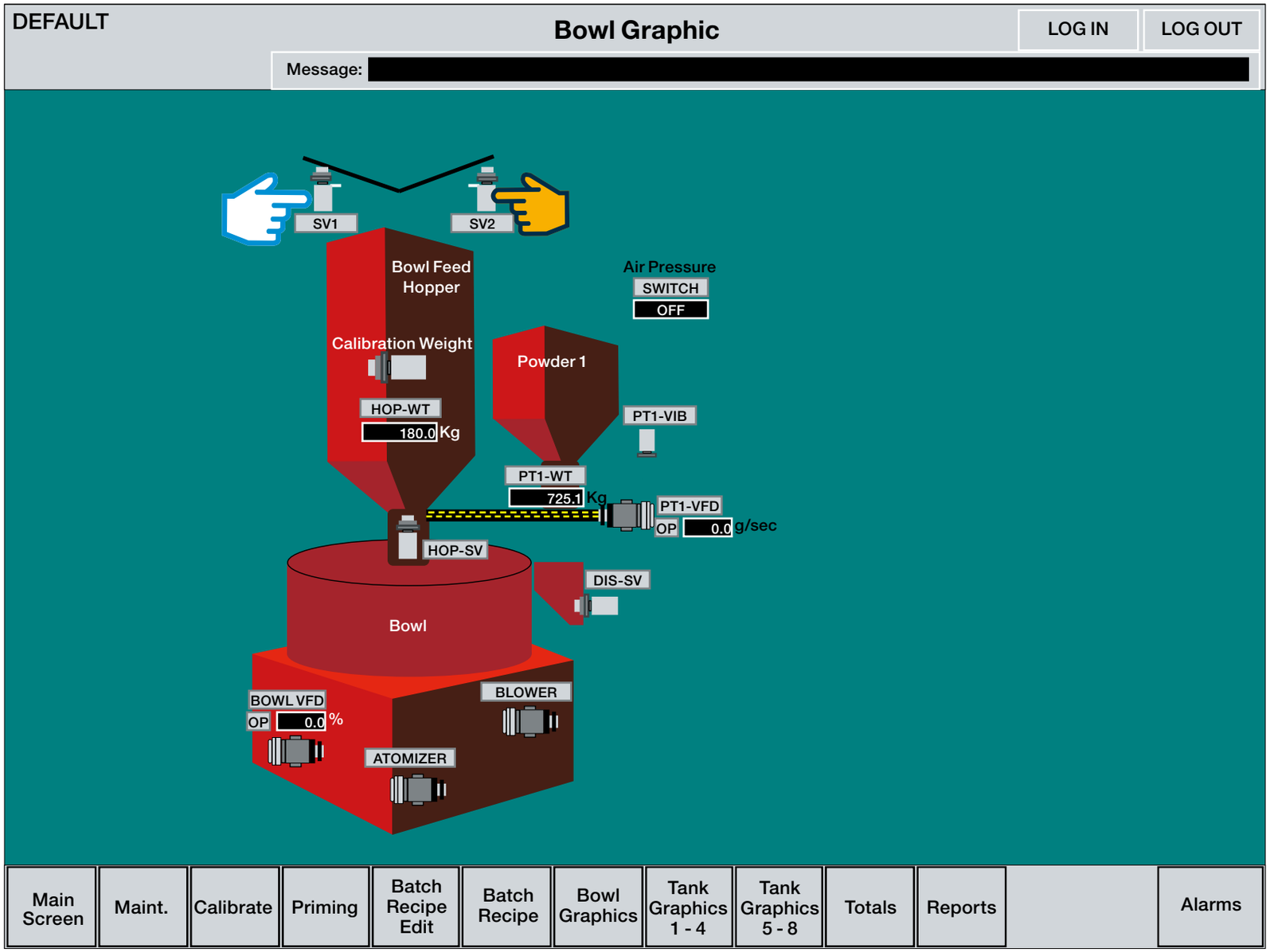
- Storage Hopper Supply Valve **(SV1)**
- Storage Hopper Supply Valve **(SV2)**
- Air Pressure **(SWITCH)**
- Calibration Weight **(SV)**
- Hopper Weight **(HOP-WT)**
- Hopper Solenoid Valve **(HOP-SV)**
- Discharge Solenoid Valve **(DIS-SV)**
- Bowl Blower Motor **(BLOWER)**
- Bowl Atomizer Motor **(ATOMIZER)**
- Bowl Motor VFD **(BOWL-VFD)**

Optional Powder Feeder devices enabled:

- Powder Vibrator **(PT1-VIB)**
- Powder Weight **(PT1-WT)**
- Powder VFD **(PT1-VFD)**

Step 1: Touch the **SV2*** device icon: displays the **STORAGE HOPPER SUPPLY VALVE 2** device pop-up (***SV1** device icon displays the same results)

Continued ➲



Bowl Graphic Screen - Supply Valve 2 Pop-up

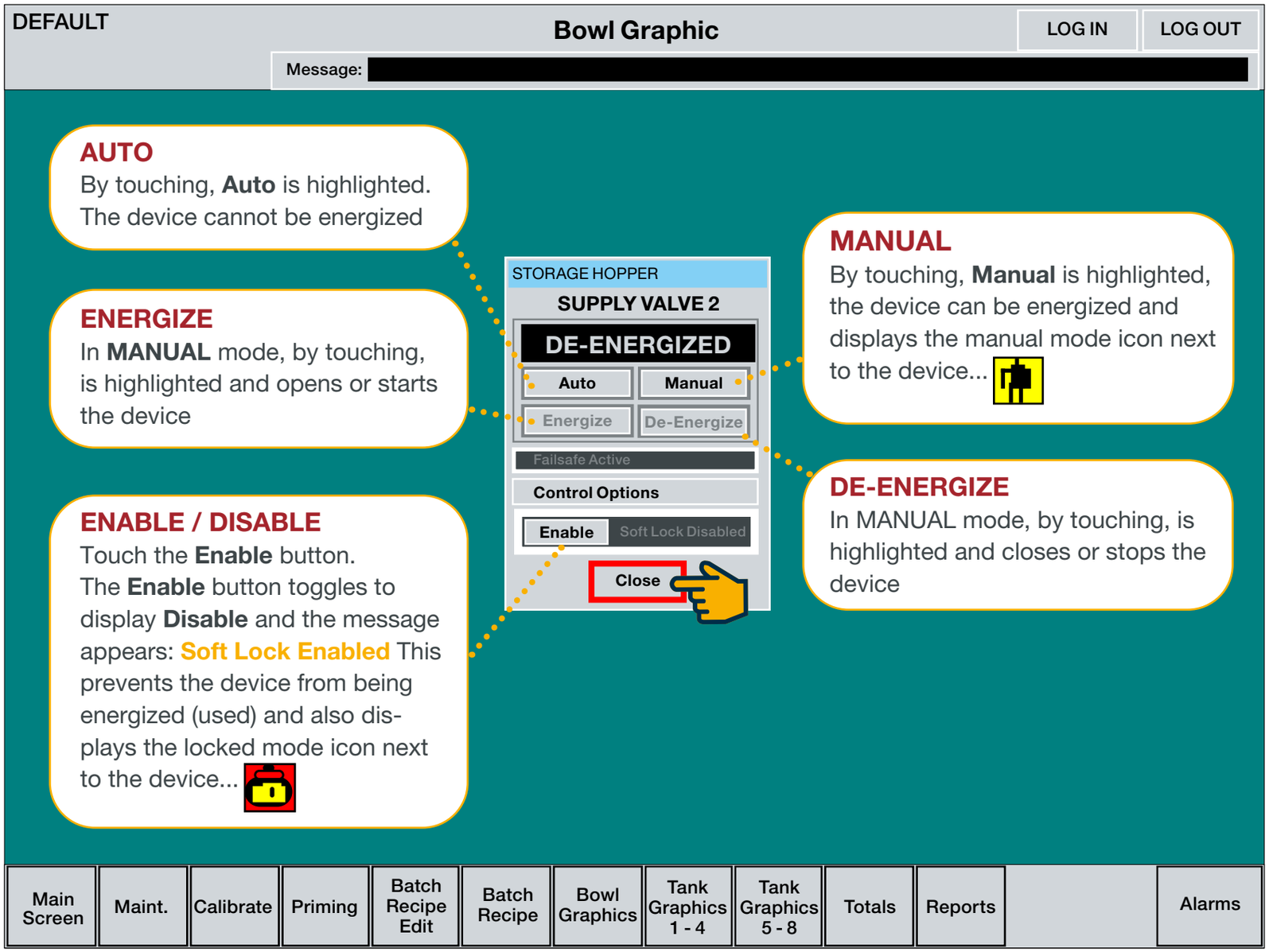
CBT200: The Weigh Scale Hopper has two solenoid valve devices: **SV1 & SV2**

- Each supply valve device operates an independent clam shell gate, which opens and fills the Weigh Scale Hopper approximately 80% with seed.
- One gate will shut while the other slow-fills the remaining amount of seed, for better accuracy and should be left in the **Auto: DE-ENERGIZED** mode.
- The device activates automatically, according to the recipe time line set by the **MANAGER**.

CBT25, 50 & 100: These machines have a single solenoid valve device which opens to fill the Weigh Scale Hopper with seed.

Step 1: Touch the **Close** button icon: pop-up closes: navigates to the **Bowl Graphic Screen**

Continued ➲



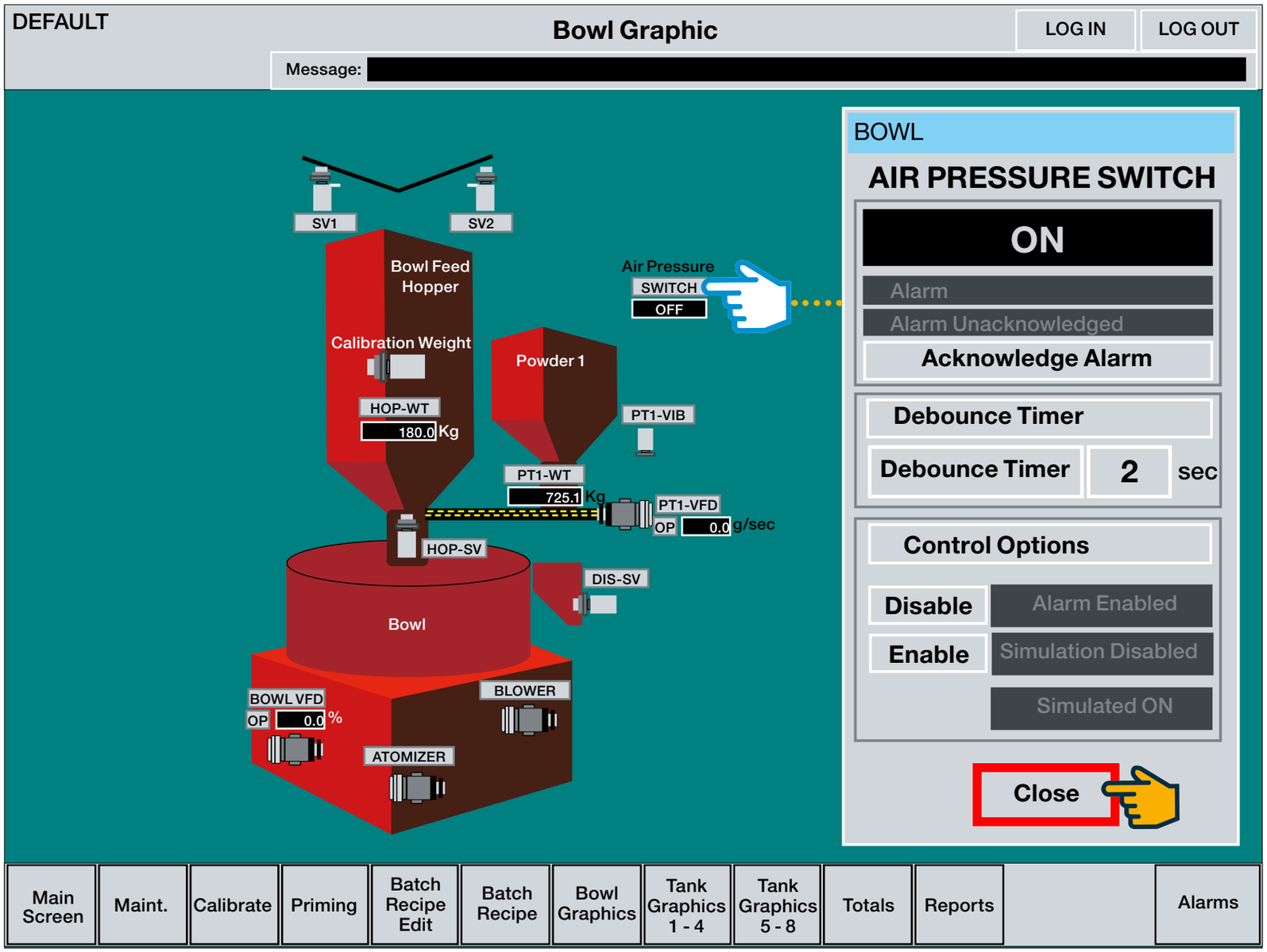
Bowl Graphic Screen - Air Pressure Switch Pop-up

Step 1: Touch the **SWITCH** device icon: displays the **BOWL AIR PRESSURE SWITCH** device pop-up.

- This device pop-up gives access to view and change the debounce timer (delay time) of the air pressure switch.
- The **Debouncer Timer** 2 second delay is the recommended delay time setting for this device.

Step 2: Touch the **Close** button icon: pop-up closes: navigates to the **Bowl Graphic Screen**

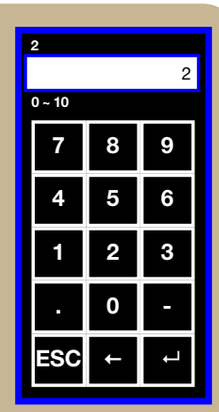
Continued ➲



DEBOUNCE TIMER

Touch the **Debounce Timer** number box on **Bowl Air Pressure Switch** block to change the numerical value.

- On the pop-up touch pad, enter a numerical value
- Touch the ↵ Enter symbol button
- Touch the **ESC** button: closes pop-up



Bowl Graphic Screen - Calibration SV Pop-up

Step 1: Touch the **Calibration Weight** device icon: displays the **HOPPER CALIBRATION SV** device pop-up.

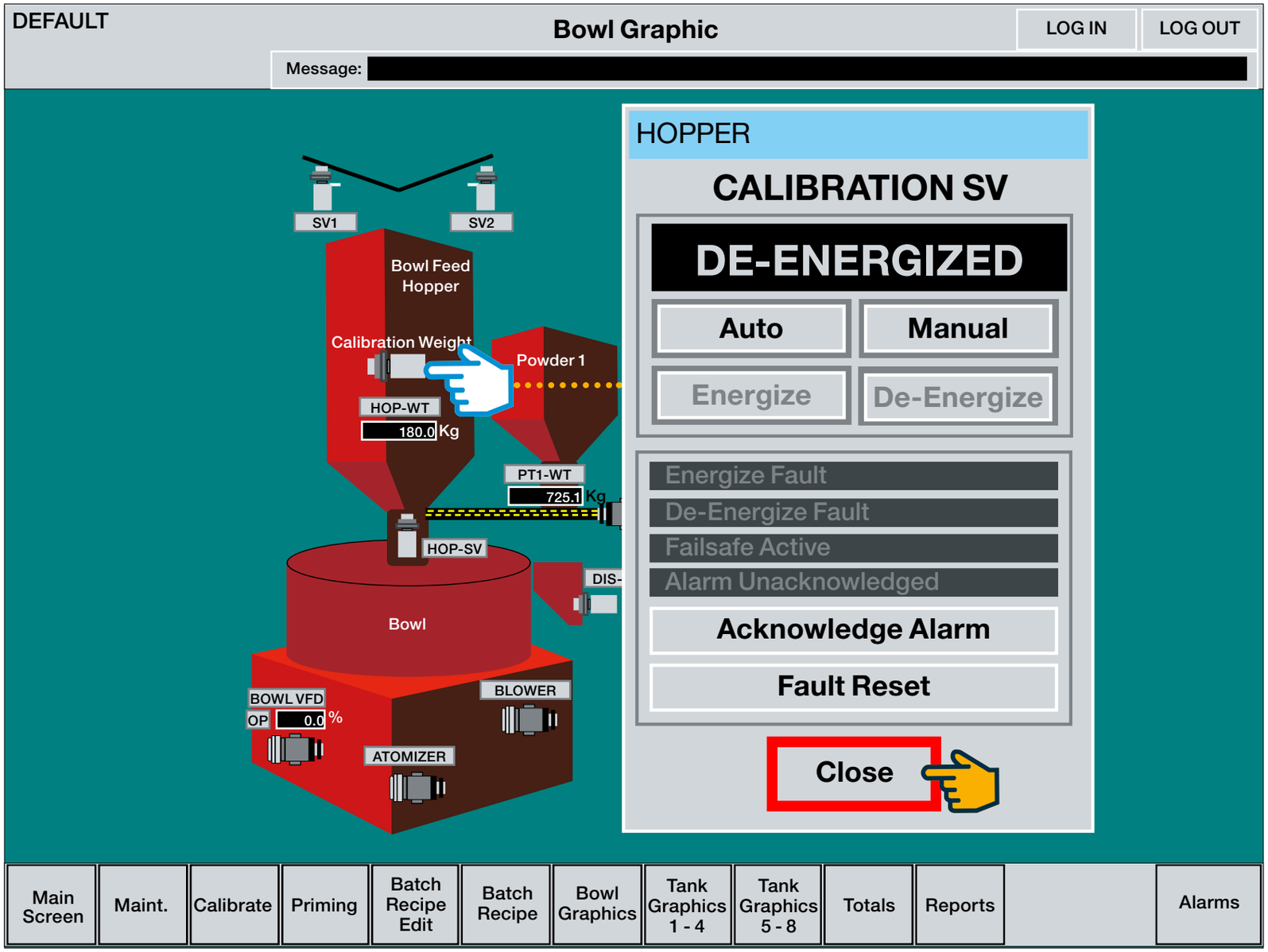
- This device pop-up gives access to verify if the calibration weight is within spec.
- This is normally checked on the Calibration screen but can be done when the treater is not running and should be left in the **Auto: DE-ENERGIZED** mode.
- The device activates automatically, according to the recipe time line set by the **MANAGER**.
- This procedure will be covered later on in the guide.

Follow these steps to switch the device from **ENERGIZED** to **DE-ENERGIZED**:

- Touch **Manual** > **Energize** > (this manually lowers the calibration weights down onto the scale load cells) **De-energize** (this manually raises the calibration weights up off of the scale load cells).
- Return the device pop-up to the **Auto: DE-ENERGIZED** mode.

Step 2: Touch the **Close** button icon: pop-up closes: navigates to the **Bowl Graphic Screen**

Continued ➲



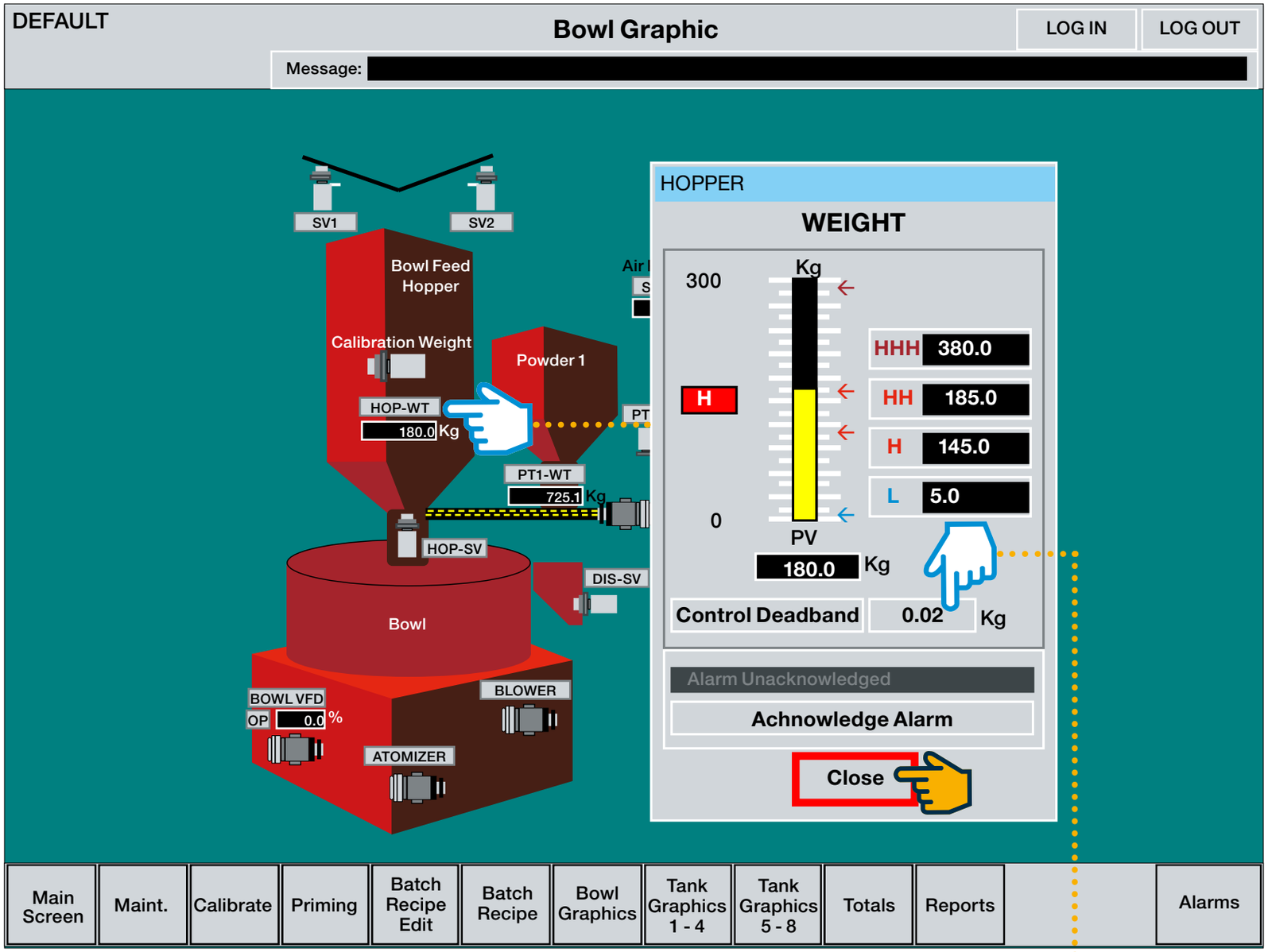
Bowl Graphic Screen - Weight Pop-up

Step 1: Touch the **HOP-WT** device icon: displays the **HOPPER WEIGHT** device pop-up.

- The weigh scale **Hopper Weight** transmitter device displays the current Hopper seed level (High to Low) in total kilograms (kg).
- The **Control Deadband** 0.02 second delay is the recommended delay time setting for this device.

Step 2: Touch the **Close** button icon: pop-up closes: navigates to the **Bowl Graphic Screen**

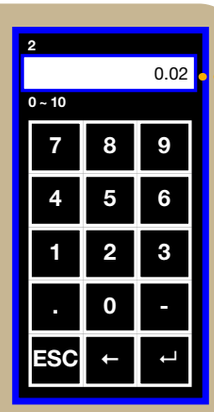
Continued ➲



CONTROL DEADBAND

Touch the **Control Deadband** number box on **Hopper Weight** block to change the numerical value.

- On the pop-up touch pad, enter a numerical value
- Touch the ↵ Enter symbol button
- Touch the **ESC** button: closes pop-up



Bowl Graphic Screen - Discharge Valve Pop-up

Step 1: Touch the **HOP-SV** device icon: displays the **HOPPER SUPPLY VALVE** device pop-up.

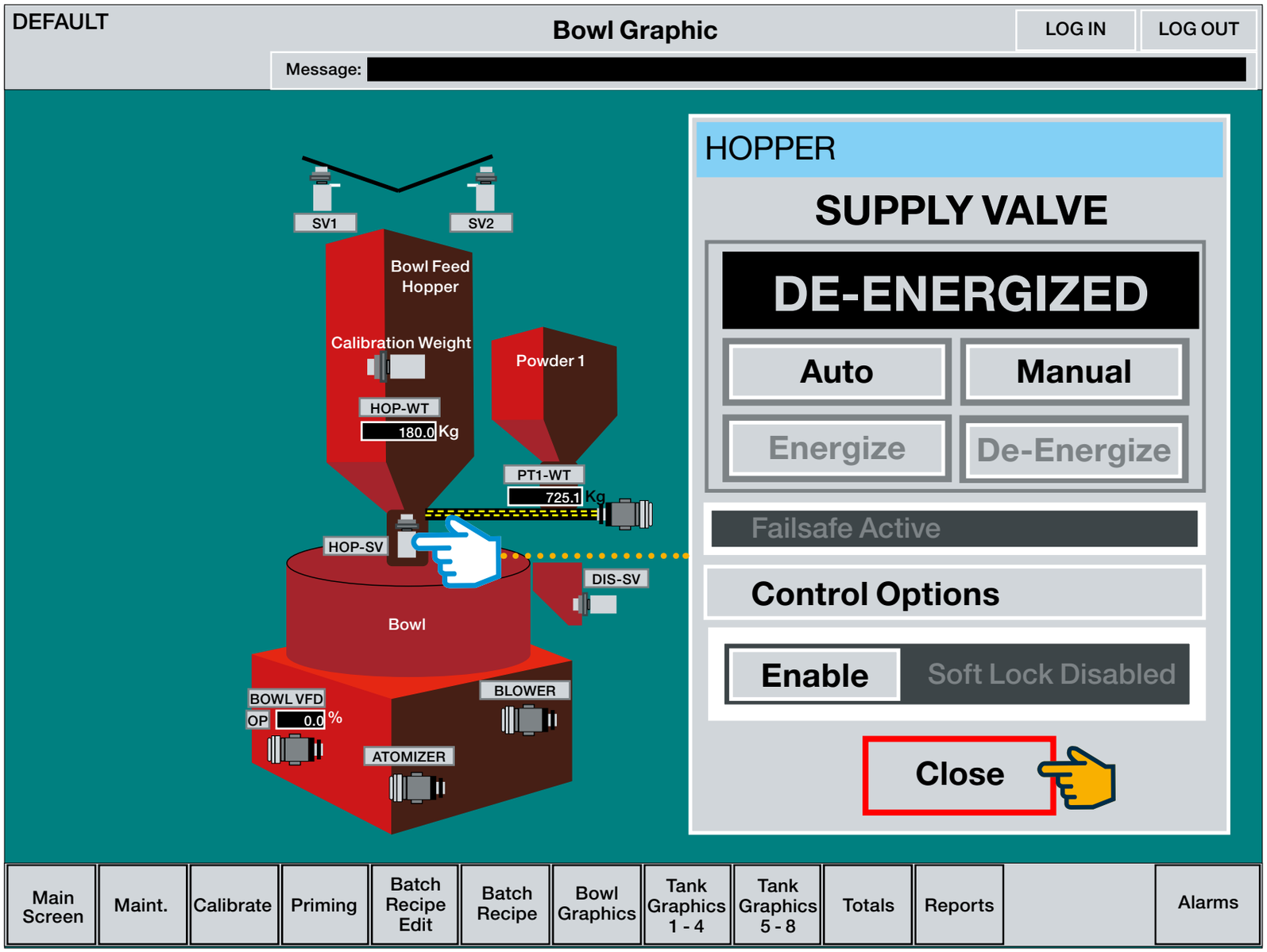
- This device opens and fills the Mixing Bowl with seed from the Weigh Scale Hopper.

Follow these steps to switch the device from **ENERGIZED** to **DE-ENERGIZED**:

- Touch **Manual** > **Energize** > **De-energize**.
- Return the device pop-up to the **Auto: DE-ENERGIZED** mode.

Step 2: Touch the **Close** button icon: pop-up closes: navigates to the **Bowl Graphic Screen**

Continued ➲



Bowl Graphic Screen - Vibrator Pop-up

Step 1: Touch the **PT1-VIB** device icon: displays the **POWDER FEEDER 1 VIBRATOR** device pop-up.

- This device operates the optional powder feeder vibrator, which helps powder flow from the hopper into the mixing bowl and should be left in the **Auto: DE-ENERGIZED** mode.

- The device activates automatically, according to the recipe time line set by the **MANAGER**.

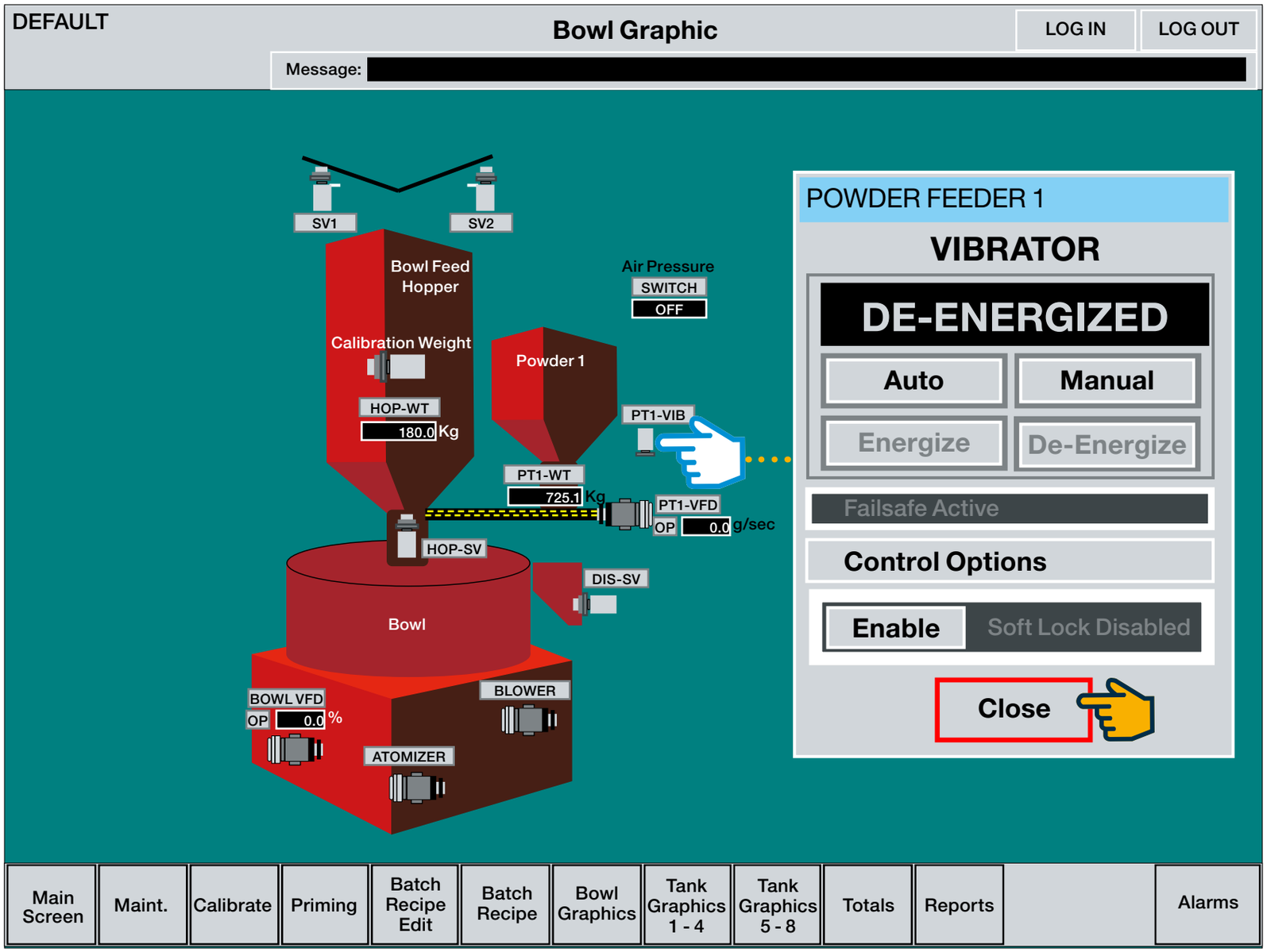
Follow these steps to switch the device from **ENERGIZED** to **DE-ENERGIZED**:

- Touch **Manual** > **Energize** > **De-energize**.

- Return the device pop-up to the **Auto: DE-ENERGIZED** mode.

Step 2: Touch the **Close** button icon: pop-up closes: navigates to the **Bowl Graphic Screen**

Continued ➲



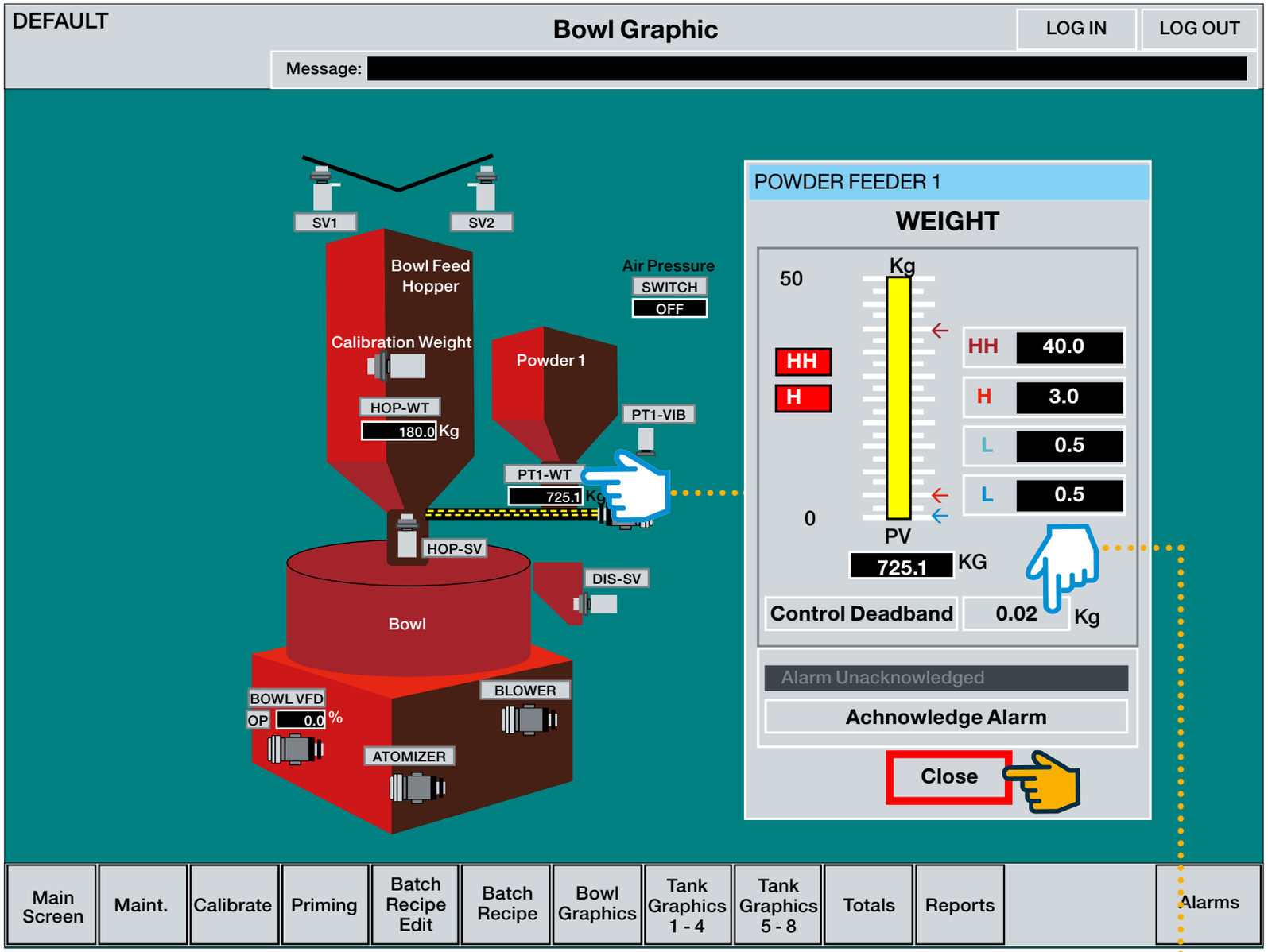
Bowl Graphic Screen - Weight Pop-up

Step 1: Touch the **PT1-WT** device icon: displays the **POWDER FEEDER 1 WEIGHT** device pop-up.

- This device displays the optional powder hopper level (High to Low) in total kilograms (kg).
- The **Control Deadband** 0.02 second delay is the recommended delay time setting for this device.

Step 2: Touch the **Close** button icon: pop-up closes: navigates to the **Bowl Graphic Screen**

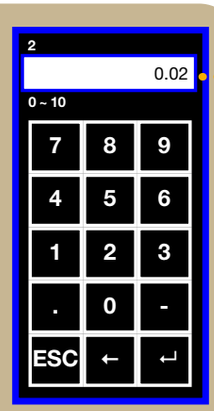
Continued ➲



CONTROL DEADBAND

Touch the **Control Deadband** number box on **Powder Feeder 1 Weight** block to change the numerical value.

- On the pop-up touch pad, enter a numerical value
- Touch the ↵ Enter symbol button
- Touch the **ESC** button: closes pop-up



Bowl Graphic Screen - VFD Pop-up

Step 1: Touch the **PT1-VFD** device icon: displays the **POWDER FEEDER 1 VFD** device pop-up.

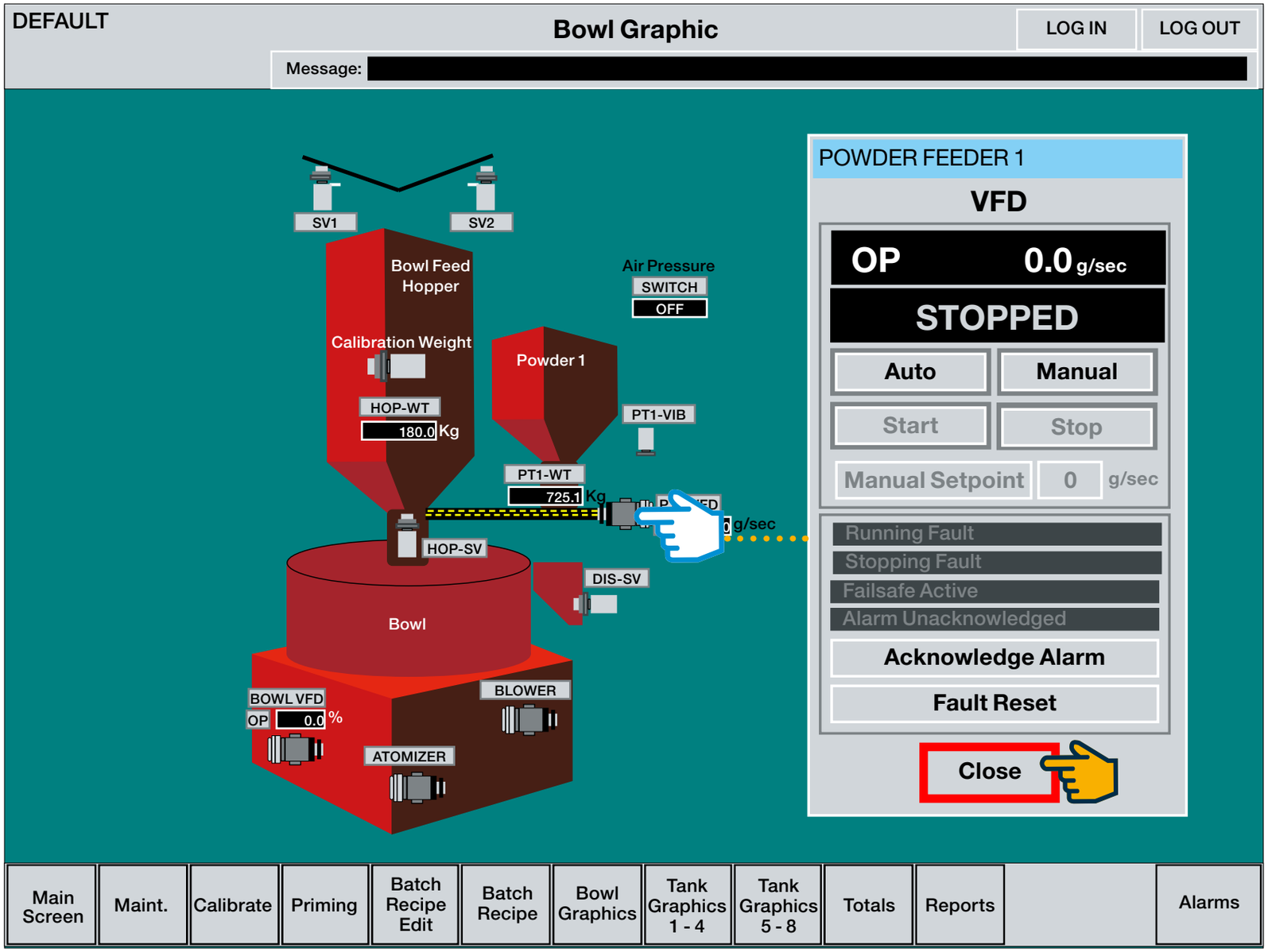
- This device operates the optional powder feeder motor, which dispenses powder from the hopper into the mixing bowl and should be left in the **Auto: DE-ENERGIZED** mode.
- The device activates automatically, according to the recipe time line set by the **MANAGER**.

Follow these steps to switch the device from **FORWARD** to **REVERSE**:

- Touch **Manual** > **Forward** > **Stop** > **Reverse** > **Stop**.
- Return the device pop-up to the **Auto: STOPPED** mode.

Step 2: Touch the **Close** button icon: pop-up closes: navigates to the **Bowl Graphic Screen**

Continued ➲



Bowl Graphic Screen - Discharge Door SV Pop-up

Step 1: Touch the **DIS-SV** device icon: displays the **BOWL DISCHARGE DOOR SV** device pop-up.

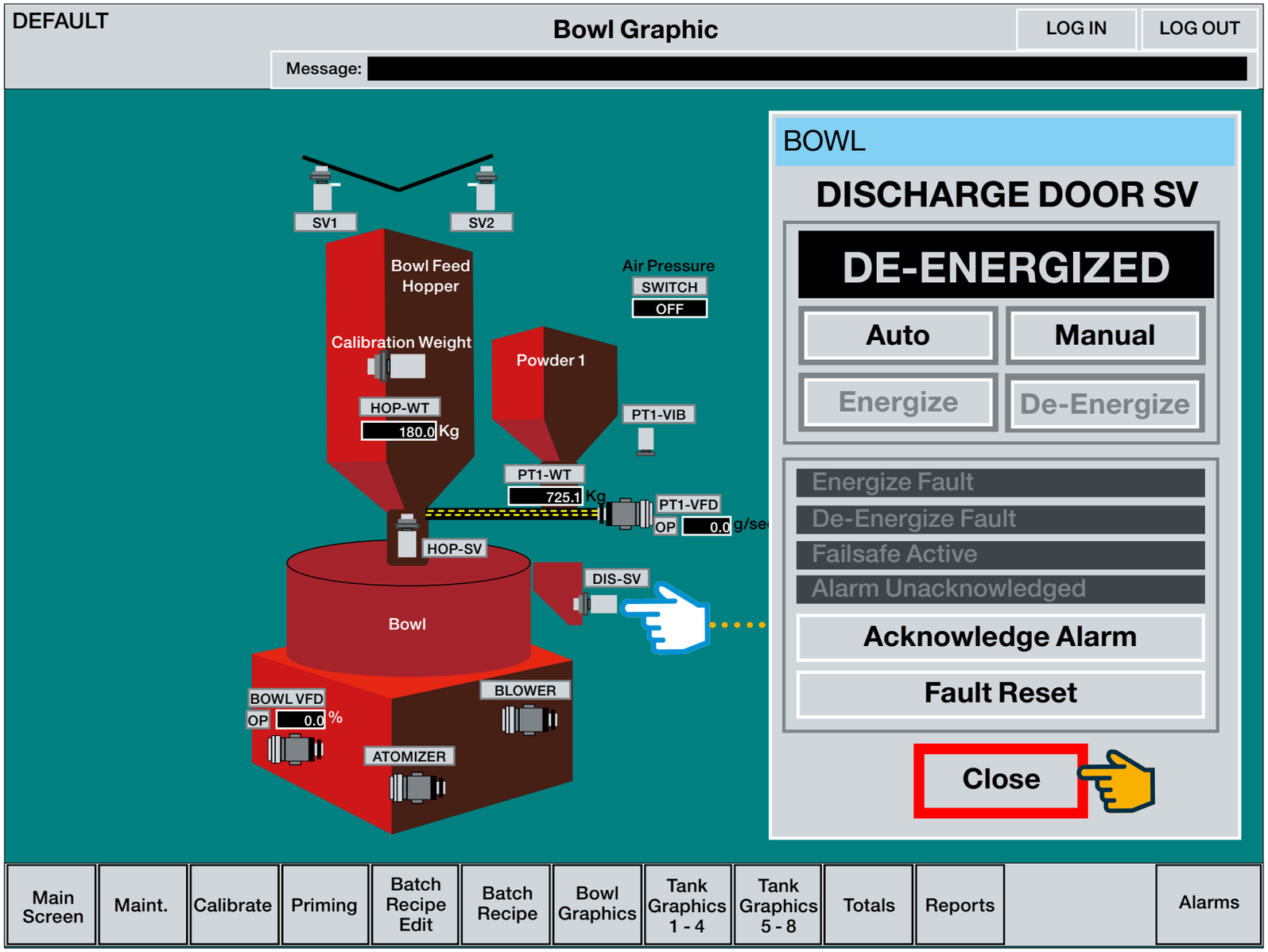
- This device operates the mixing bowl discharge door and allows treated seed to exit the mixing bowl and should be left in the **Auto: DE-ENERGIZED** mode.
- The device activates automatically, according to the recipe time line set by the **MANAGER**.

Follow these steps to switch the device from **ENERGIZED** to **DE-ENERGIZED**:

- Touch **Manual** > **Energize** > **De-energize**.
- Return the device pop-up to the **Auto: DE-ENERGIZED** mode.

Step 2: Touch the **Close** button icon: pop-up closes: navigates to the **Bowl Graphic Screen**

Continued ➲



Bowl Graphic Screen - Air Blower Motor Pop-up

Step 1: Touch the **BLOWER** device icon: displays the **BOWL AIR BLOWER MOTOR** device pop-up.

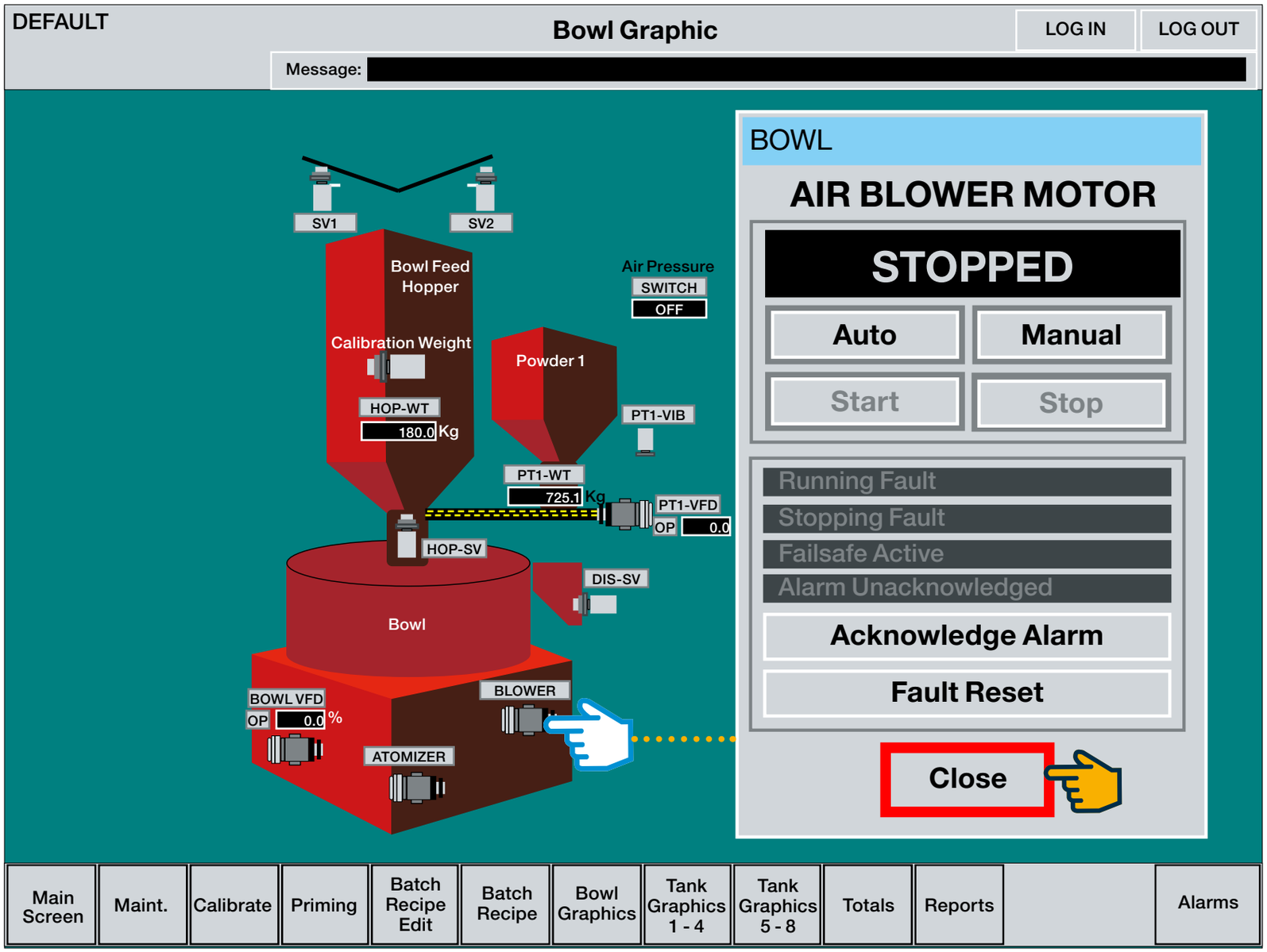
- This device operates the bowl air blower motor, which dispenses air into the mixing bowl and should be left in the **Auto: STOPPED** mode (as shown right).
- The device activates automatically, according to the recipe time line set by the **MANAGER**.

Follow these steps to switch the device from **FORWARD** to **REVERSE**:

- Touch **Manual** > **Forward** > **Stop** > **Reverse** > **Stop**.
- Return the device pop-up to the **Auto: STOPPED** mode.

Step 2: Touch the **Close** button icon: pop-up closes: navigates to the **Bowl Graphic Screen**

Continued ➲



Bowl Graphic Screen - Atomizer Motor Pop-up

Step 1: Touch the **ATOMIZER** device icon: displays the **BOWL ATOMIZER MOTOR** device pop-up.

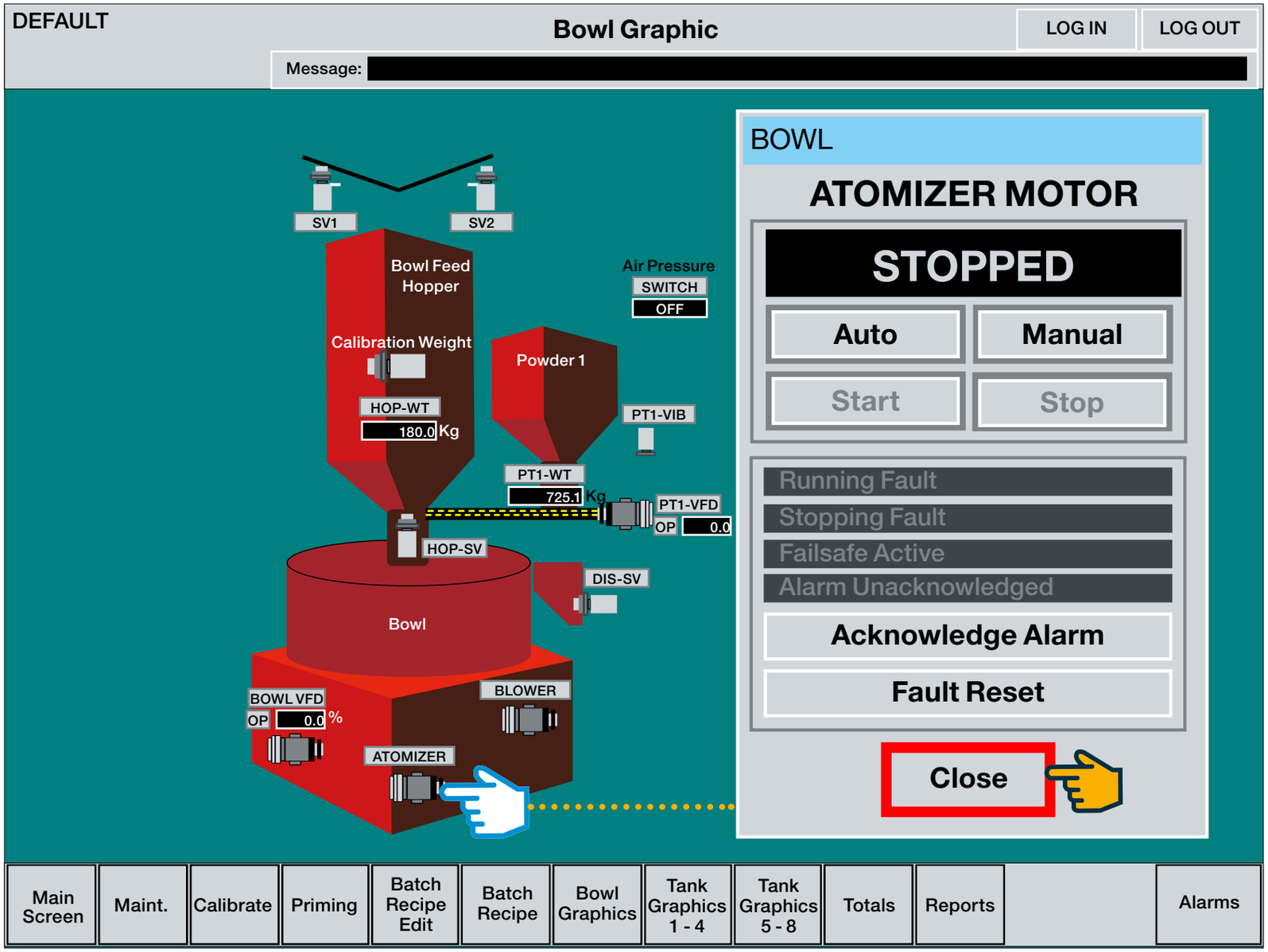
- This device operates the atomizer motor, which dispenses chemical into the mixing bowl and should be left in the **Auto: STOPPED** mode.
- The device activates automatically, according to the recipe time line set by the **MANAGER**.

Follow these steps to switch the device from **FORWARD** to **REVERSE**:

- Touch **Manual** > **Forward** > **Stop** > **Reverse** > **Stop**.
- Return the device pop-up to the **Auto: STOPPED** mode.

Step 2: Touch the **Close** button icon: pop-up closes: navigates to the **Bowl Graphic Screen**

Continued ➲



Bowl Graphic Screen - VFD Pop-up

Step 1: Touch the **BOWL VFD** device icon: displays the **BOWL VFD** device pop-up.

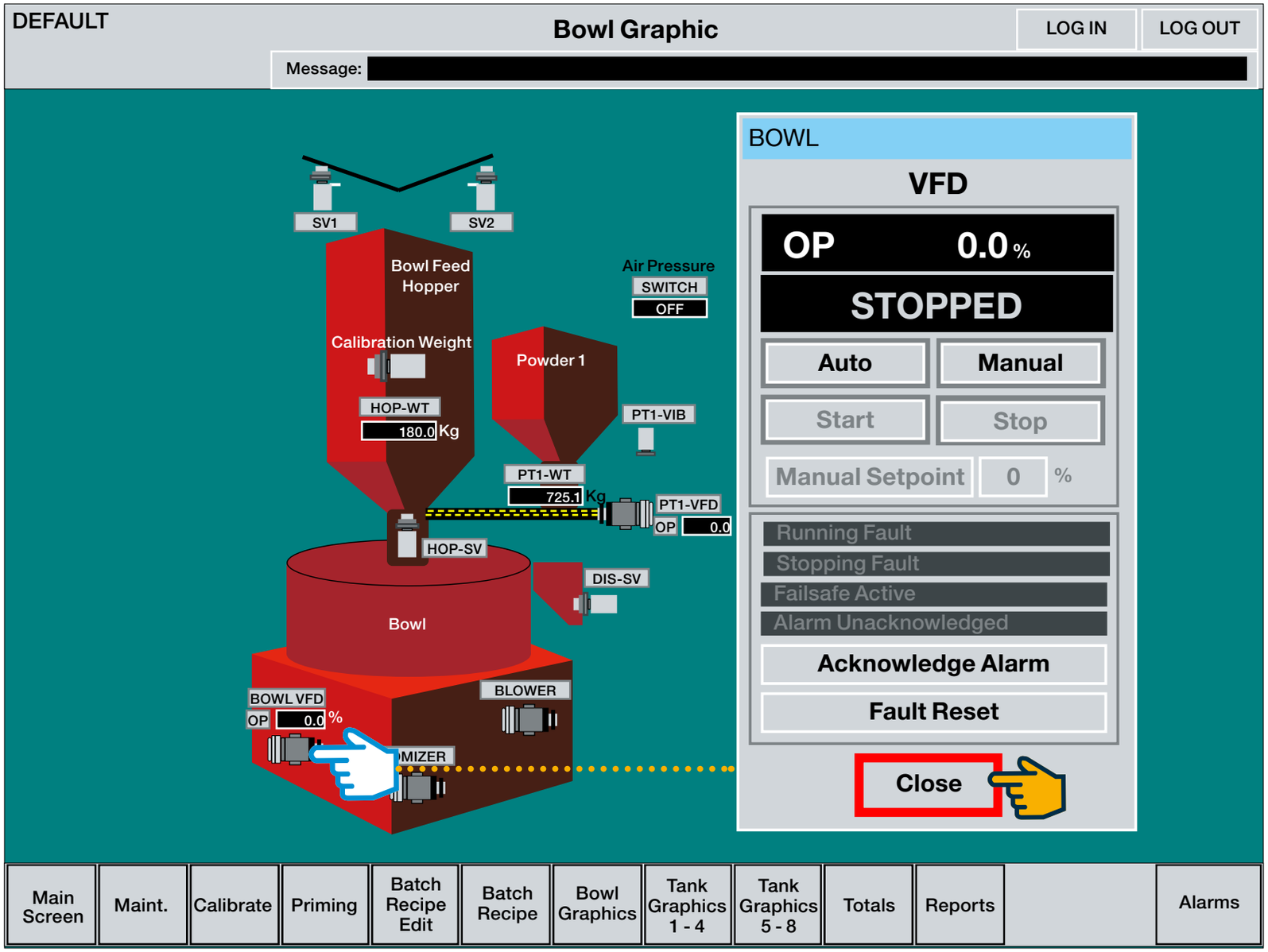
- This device operates the bowl motor, which turns the mixing bowl and should be left in the **Auto: STOPPED** mode.
- The device activates automatically, according to the recipe time line set by the **MANAGER**.

Follow these steps to switch the device from **FORWARD** to **REVERSE**:

- Touch **Manual** > **Forward** > **Stop** > **Reverse** > **Stop**.
- Return the device pop-up to the **Auto: STOPPED** mode.

Step 2: Touch the **Close** button icon: pop-up closes: navigates to the **Bowl Graphic Screen**

Continued ➲



CALIBRATION

Calibration Screen - Hopper

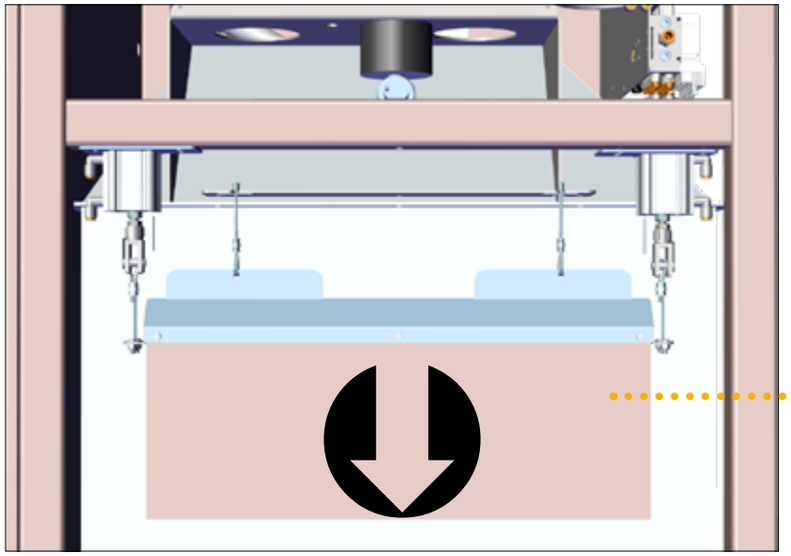
ENSURE THE WEIGH SCALE DOES NOT HAVE ANY SEED IN THE HOPPER!

Step 1: Touch the **HOPPER Low Calibrate** button icon:

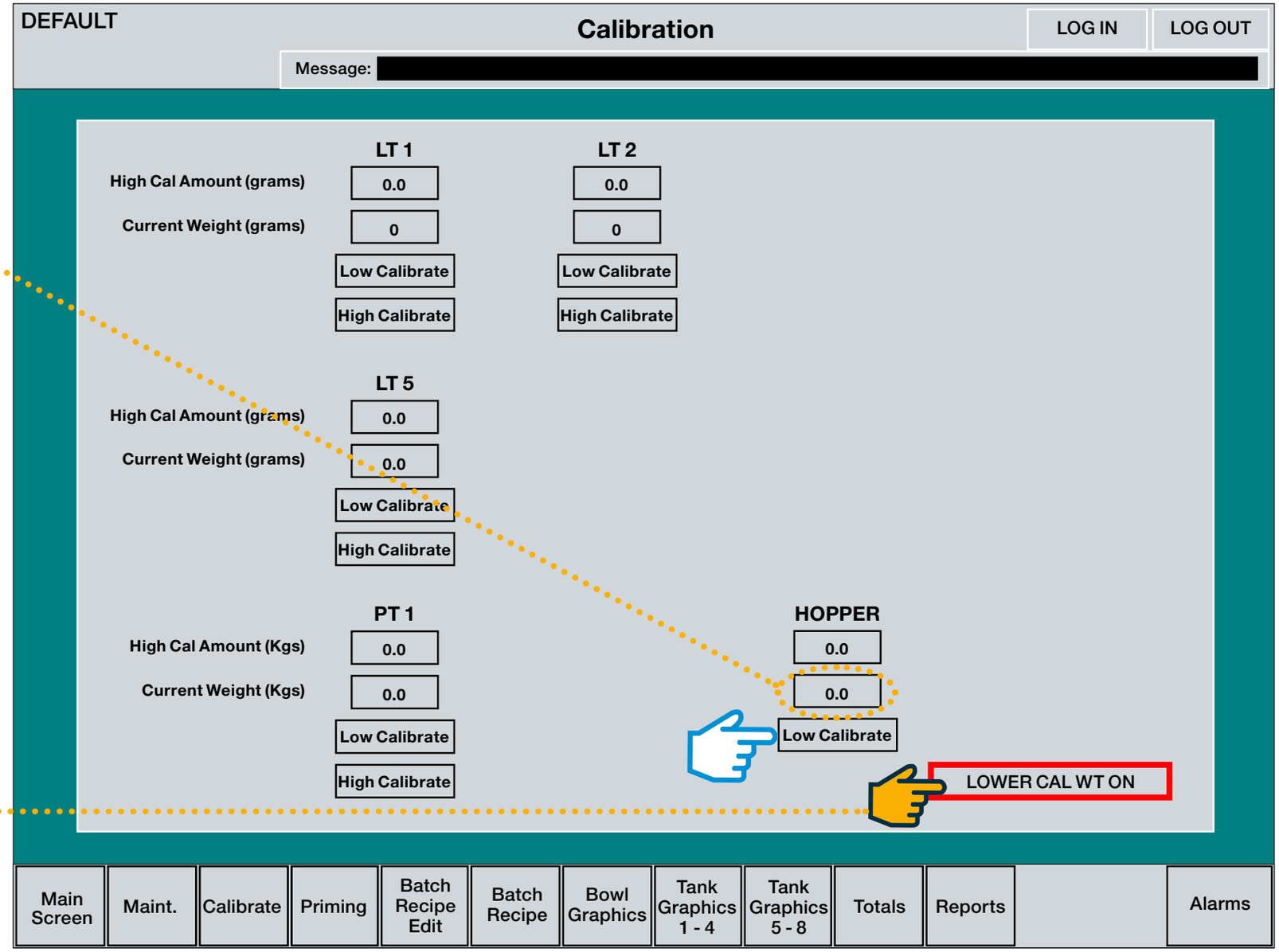
- Verify the **HOPPER current Weight (Kg)** value displayed is zero.

Step 2: Touch the **LOWER CAL WT ON** button icon: both calibration weights lower down onto the load cells

Continued ➲



Weigh Scale Hopper Calibration Weight Lowered, ref.



Calibration Screen - Hopper

The **High Calibrate & LIFT CAL WT OFF** buttons appear when the **Low Calibrate & LOWER CAL WT ON** buttons are touched (previously page, 37).

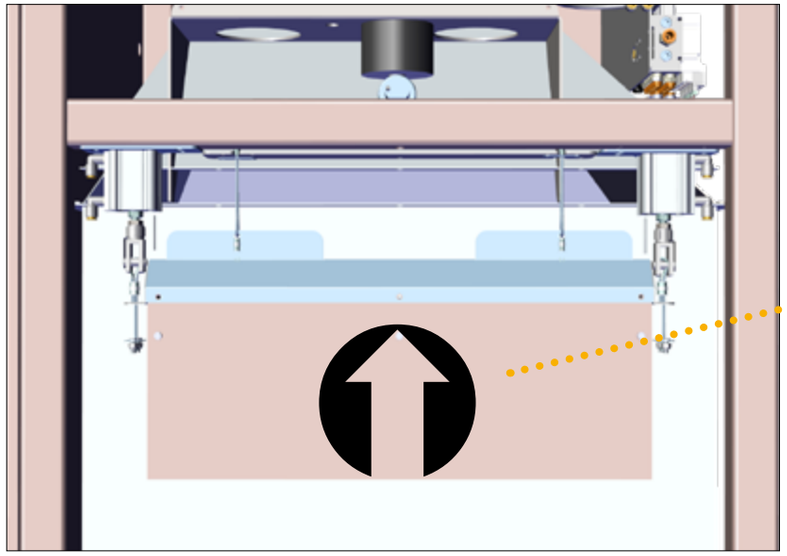
Step 1: Touch the **High Calibrate** button icon.

Each Scale has two certified calibration weights, both displaying a different numerical weight value, such as 22.702 + 22.704. Add the values together = **45.406**.

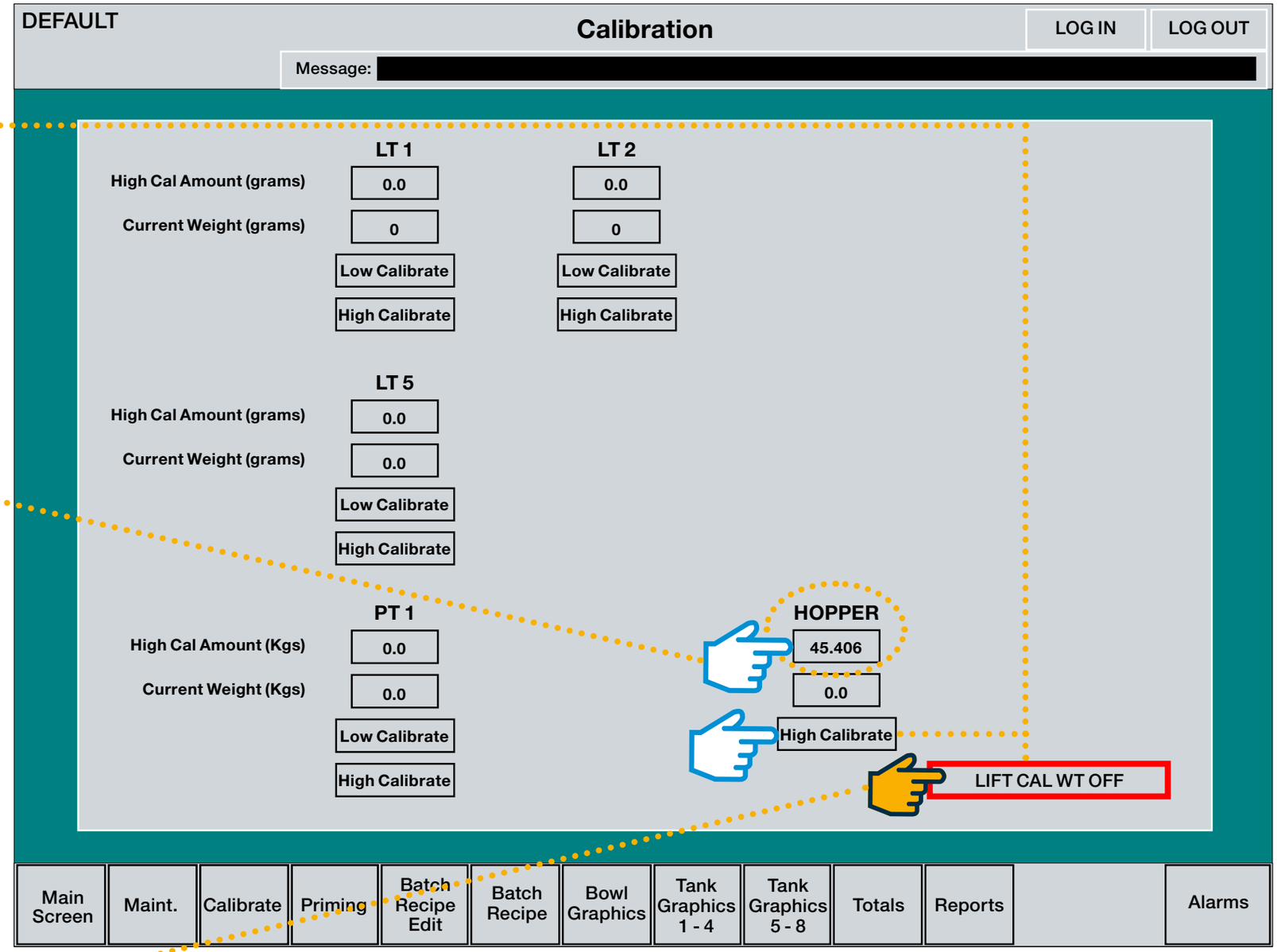
Step 2: Touch the **High Cal Amount (Kg)** numeric field and enter the combined **45.406** numerical weight value on the pop-up key pad: key pad closes.

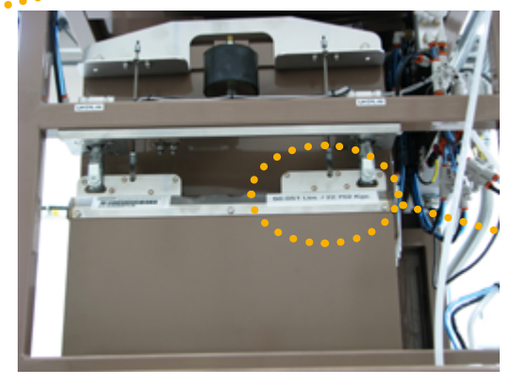
- The **High Cal Amount (Kg)** numeric field value then displays: **45.406**, as shown.
- The **High Cal Amount (Kg)** weight value remains unchanged once entered in the numeric field.

Step 3: Touch the **LIFT CAL WT OFF** button icon: Both calibration weights lift up off of the load cells.

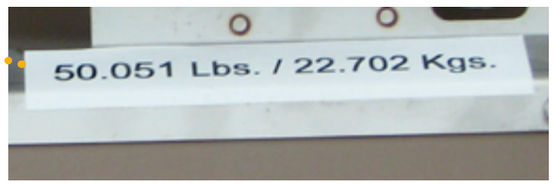


Weigh Scale Hopper Calibration Weight Raised, ref.

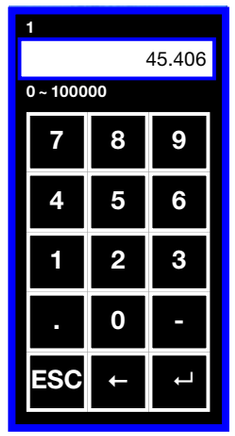




Calibration weight sticker



Calibration weight sticker detail



Pop-up Key Pad

Note: determine calibration schedules for each pump station and powder device on the **Maintenance Screen** when logged in as **MANAGER**

Calibration Screen - LT1 Pump Scale

Step 1: Turn the operation switch **UP** to raise the cover off of the 20L supply tank.

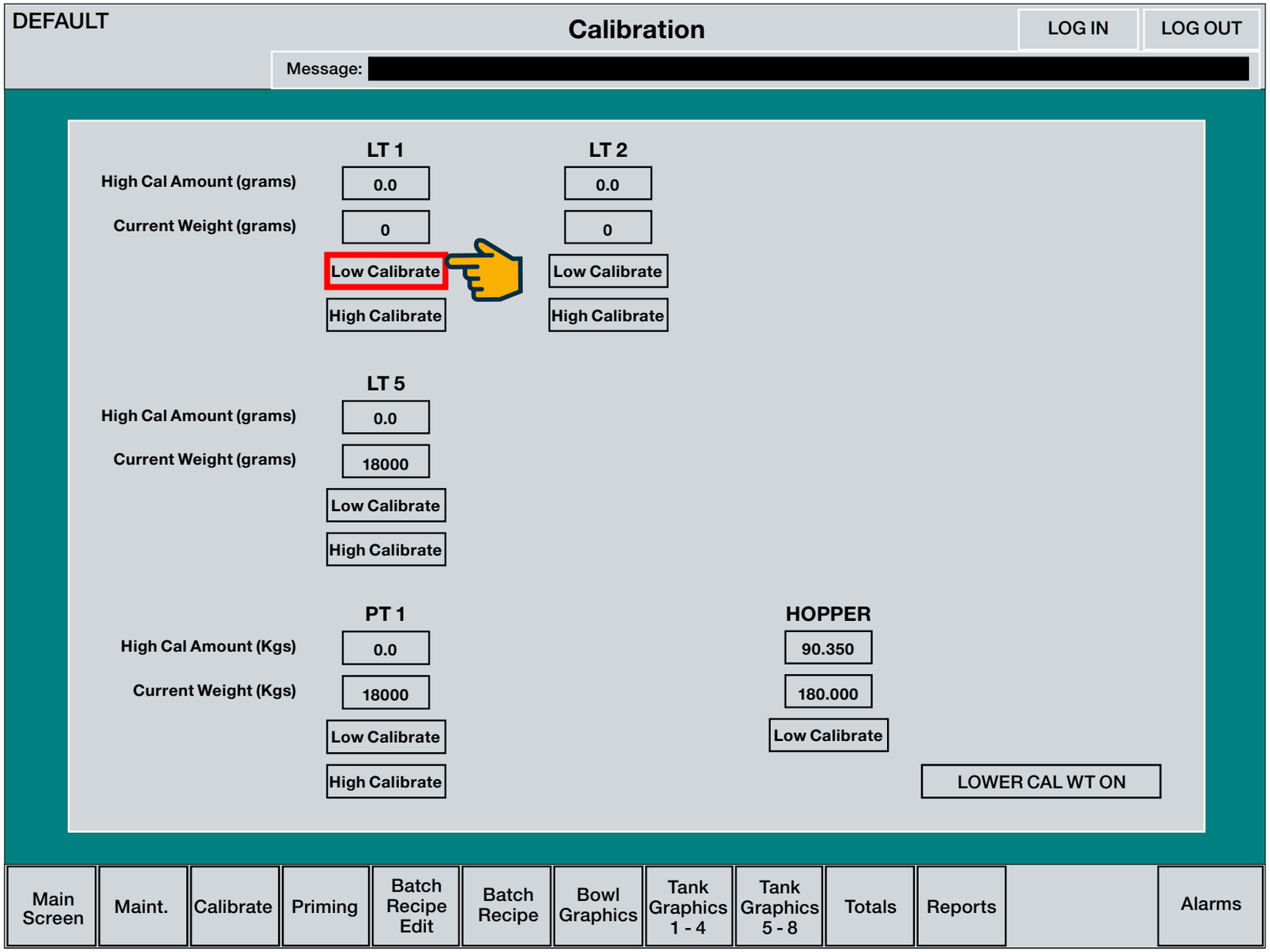
Step 2: Completely empty the supply tank.

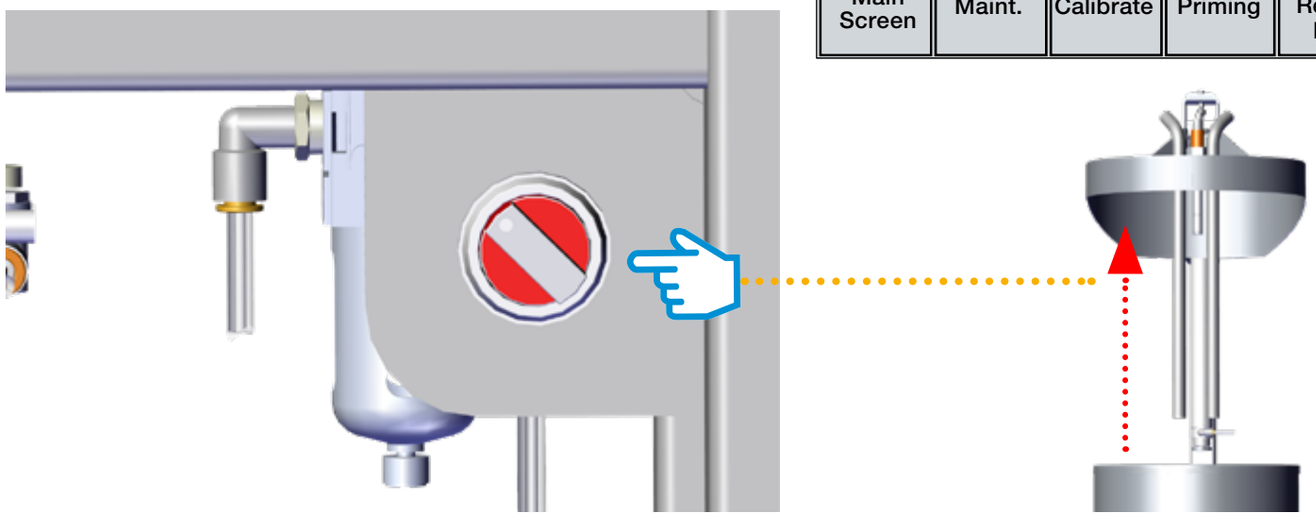
- Remove the 20L supply tank from the scale.
- Wipe clean any residual chemical product and replace the tank on the scale.
- Discard rags responsibly.

Step 3: Touch the Low Calibrate button icon.

- Verify the **Current Weight (grams)** displays a value of zero grams: navigates to the **Calibration Screen**

Continued ➲





Step 4: Place a 10,000gram weight in the 20L Tank, as shown below (20L tank=10,000grams=10kg weight).

- Verify the **Current Weight (grams)** now displays a value of 10,000 grams, as shown circled above.

Step 5: Touch the **High Calibrate** button icon.

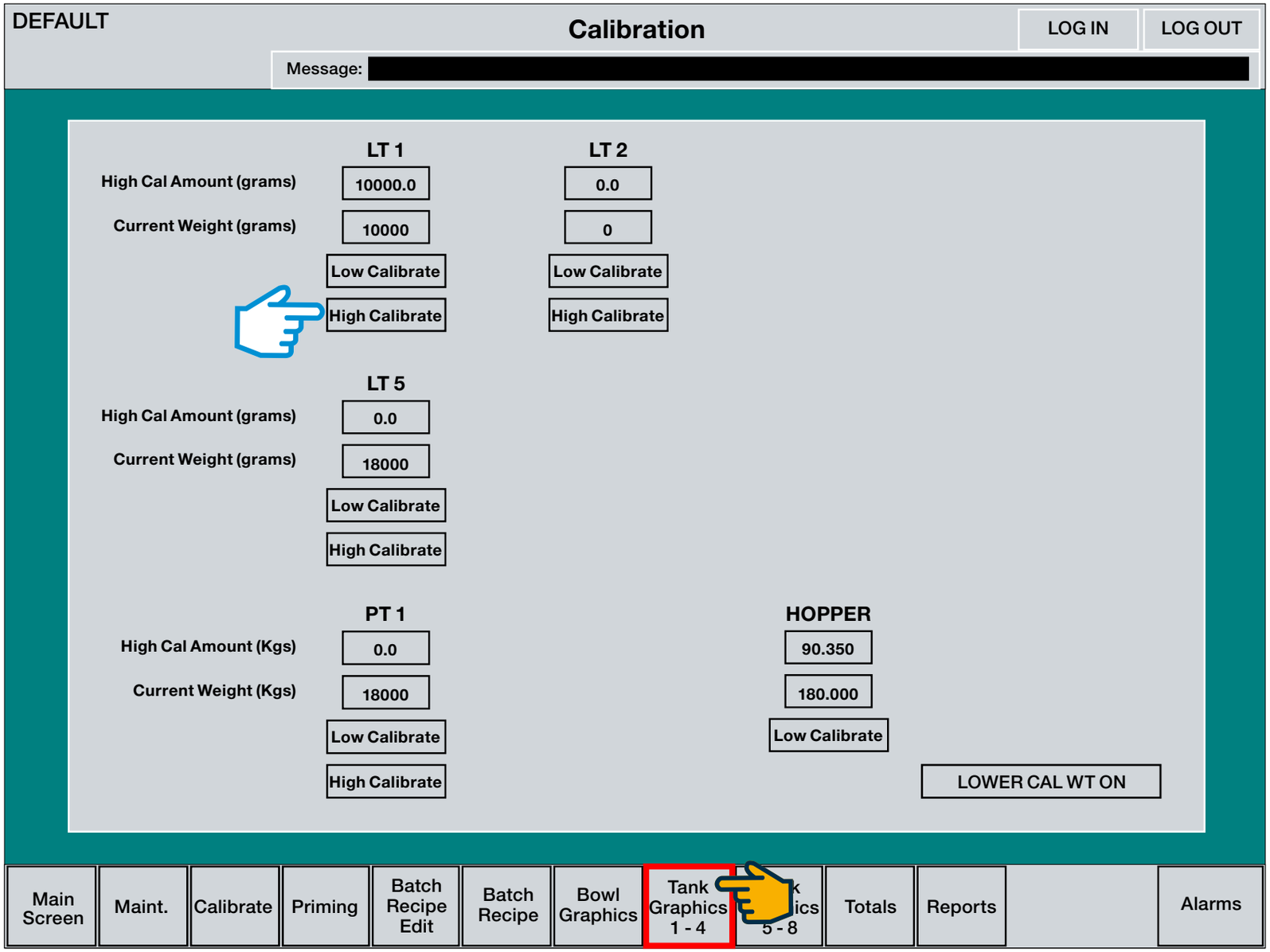
Step 6: Remove the calibration weight from out of the supply tank.

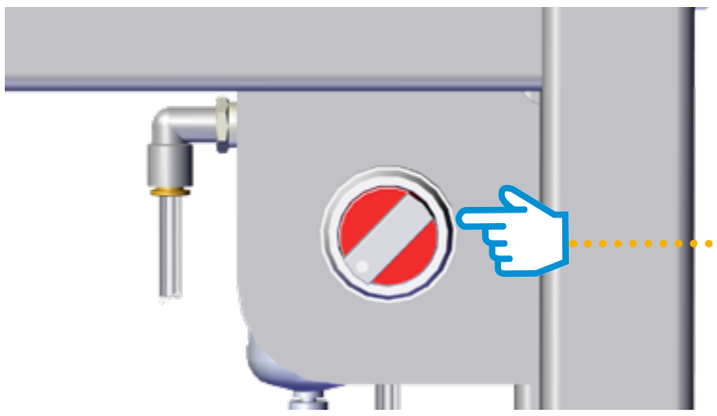
Step 7: Turn the operation switch **DOWN** to lower the cover onto the tank, as shown right.

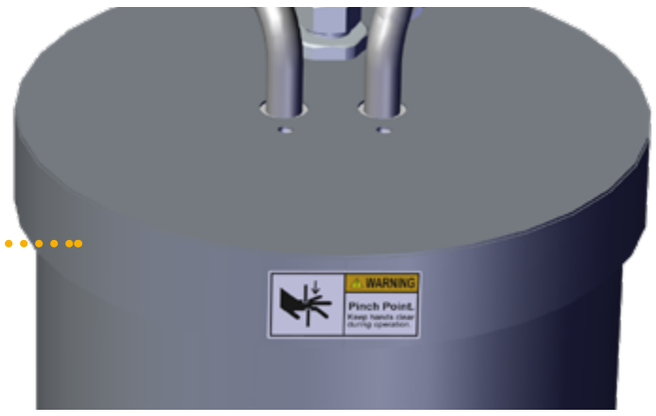
- Repeat the scale calibration (steps 1-7) for each pump station enabled on the **Calibration Screen** (**LT1-8**).

Step 8: Touch the **Tank Graphics 1-4** button icon: navigates to the **Tank Graphics 1-4 Screen**

Continued ➲







Liquid Tanks 1-4 Screen - Discharge Pump Pop-up

For pump calibration, users must be logged into the system as **MANAGER** in order for the expanded **LIQUID TANK 1 DISCHARGE PUMP** device pop-up version to display, as shown right.

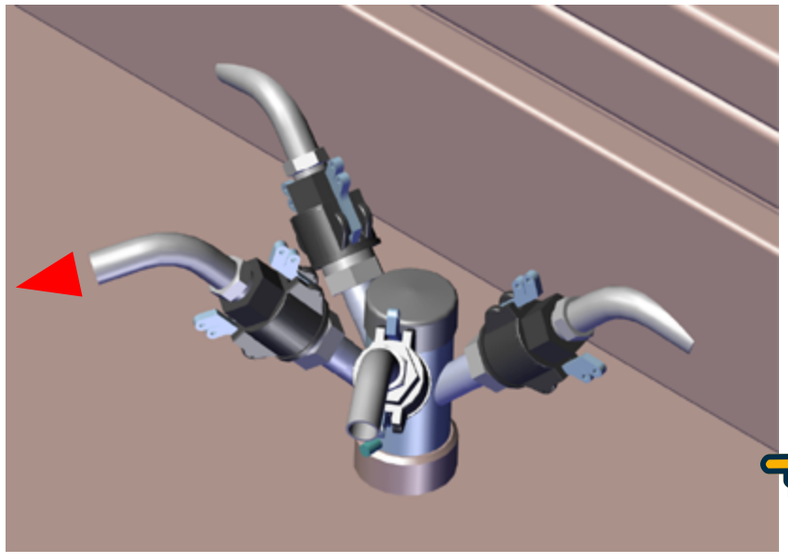
Example: LT1 PUMP STATION Calibration

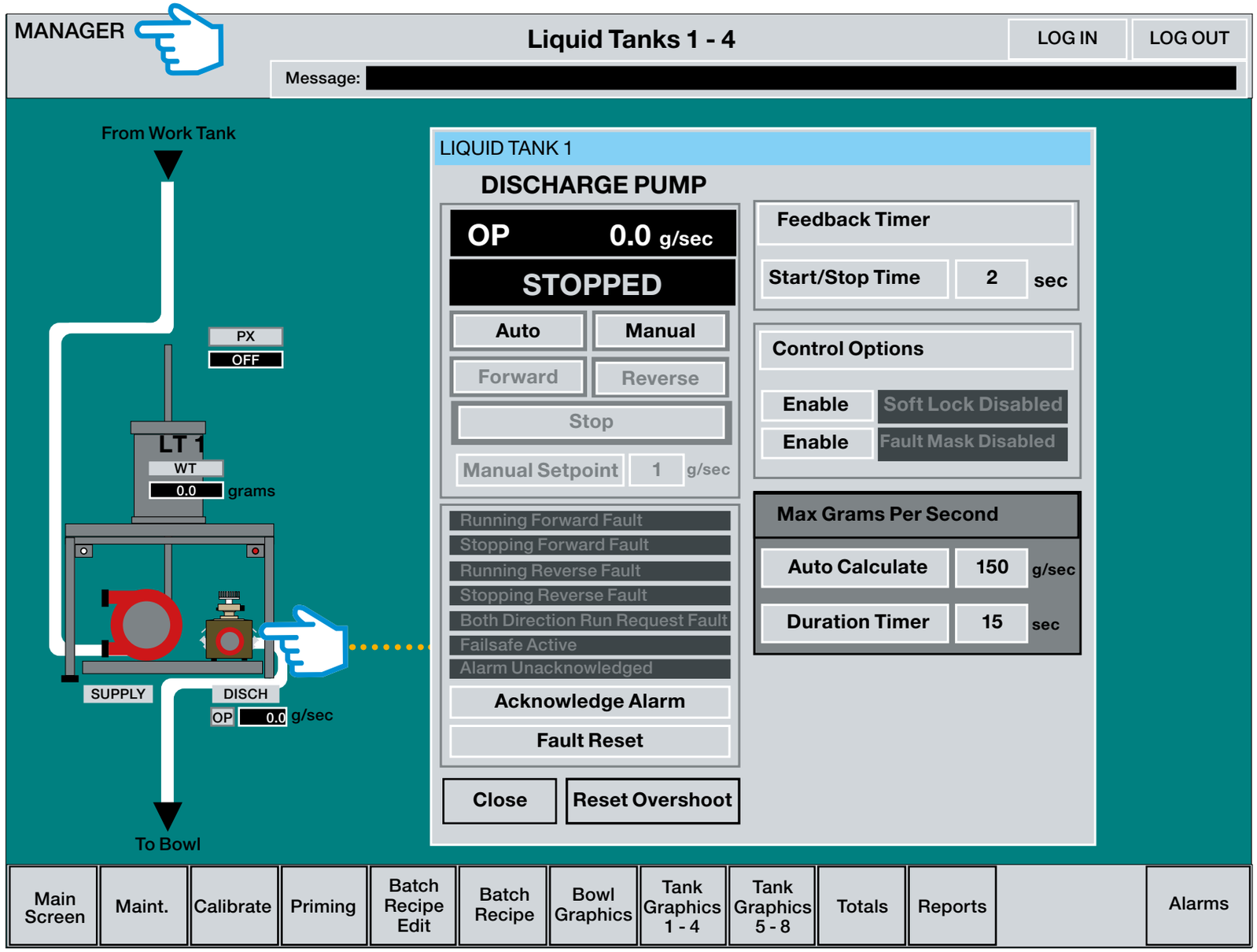
Step 1: Touch the **DISCH** graphic: displays the **LIQUID TANK 1 DISCHARGE PUMP** device pop-up.

- The **Max Grams Per Second** section of the screen displays the **Auto Calculate** and **Duration Timer** buttons.

Step 2: Disconnect the treatment line tube from the Chemical Inlet Assembly on the Mixing Bowl Cover (determine which one is connected to **LT1** pump station) and place tube end in a bucket: navigates to the **Tank Graphics 1-4 Screen**

Continued ➲





Step 3: Touch the **Auto Calculate** button icon: the pump will run and output product (106g/sec) for a duration of 15 seconds (as determined by the time set on the **Duration Timer** button icon).

- If this is correct touch the **Auto Calculate** button icon again: the pump will stop running.

Step 4: Touch the **Close** button icon: pop-up closes.

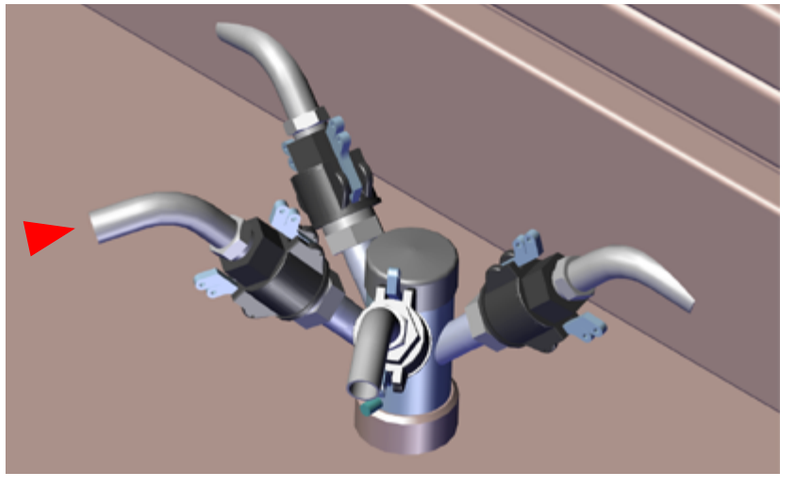
- If not correct, then touch the **Auto Calculate** numerical icon: a touch pad pop-up displays, where users can change the maximum grams per second pump output rate.
- Repeat step three and four above.

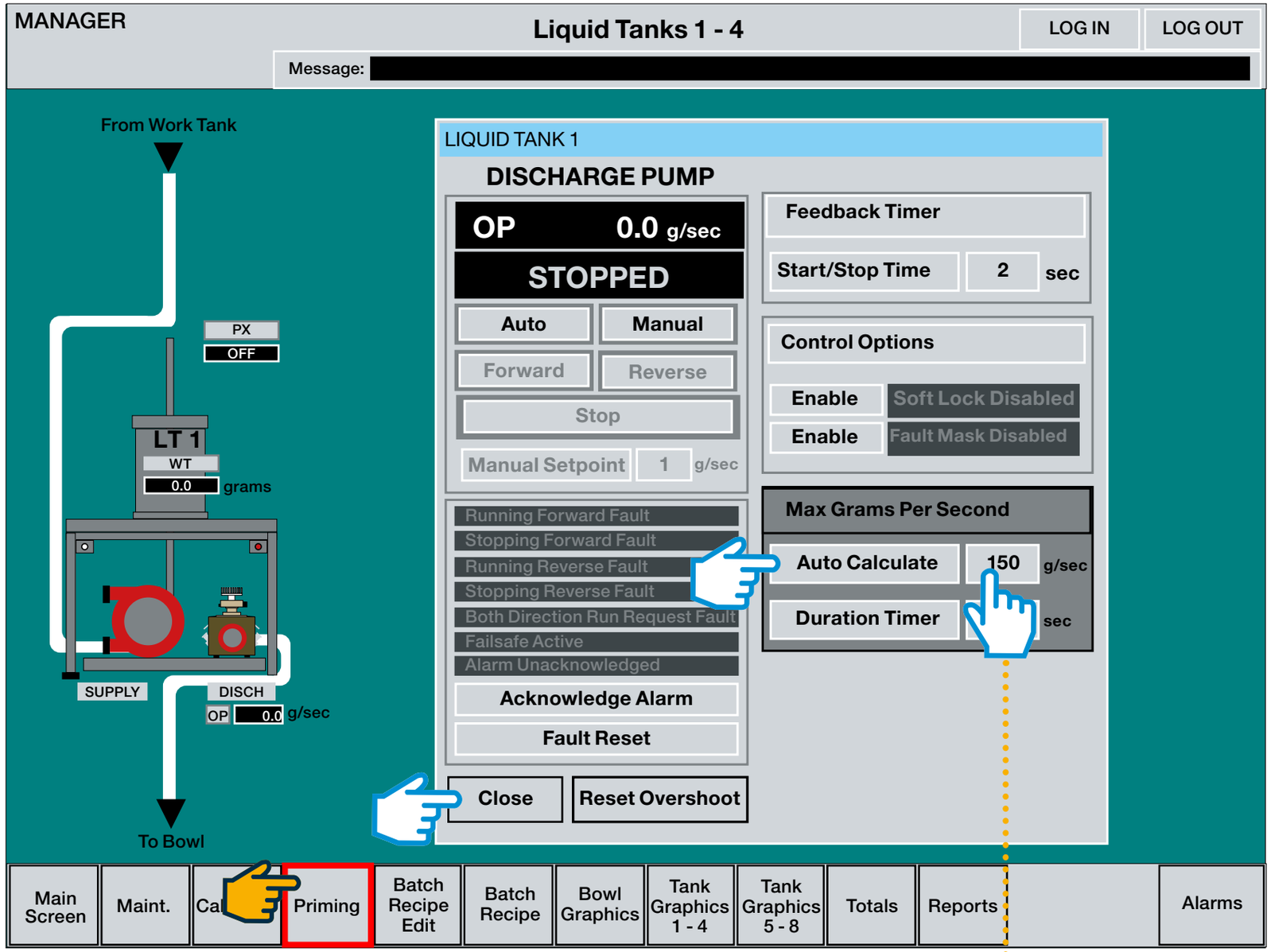
Step 5: Connect the treatment line tube to the Chemical Inlet Assembly on the Mixing Bowl Cover.

- Pour the spent product back into the product work tank. **DO NOT DISCARD CHEMICAL DOWN FLOOR DRAIN!**
- Repeat the pump calibration process (steps 1-5) for each pump station enabled* on the **Tank Graphics 1-4 Screen** and **Tank Graphics 5-8 Screen**.

Step 6: Touch the **Priming** button icon: navigates to the Priming **Screen**

This completes the Calibration Section

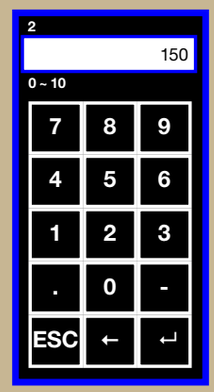




AUTO CALCULATE

Touch the **Auto Calculate** number box on **Liquid Tank 1 Discharge Pump** block to change the numerical value.

- On the pop-up touch pad, enter a numerical value
- Touch the ↵ Enter symbol button
- Touch the **ESC** button: closes pop-up



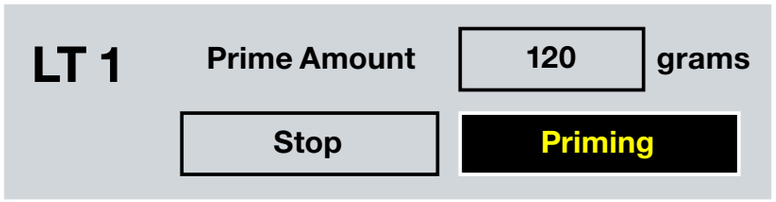
PUMP PRIMING

Priming Screen

The **Priming Screen** allows users to send (prime) chemical through the treatment line from each pump station to the chemical inlet and powder into the mixing bowl.

Step 1: Touch the **LT1 Start** button icon.

- The word **Idle** displays as **Priming**.
- The **Start** button icon toggles to **Stop**.
- Once chemical product reaches the chemical inlet...

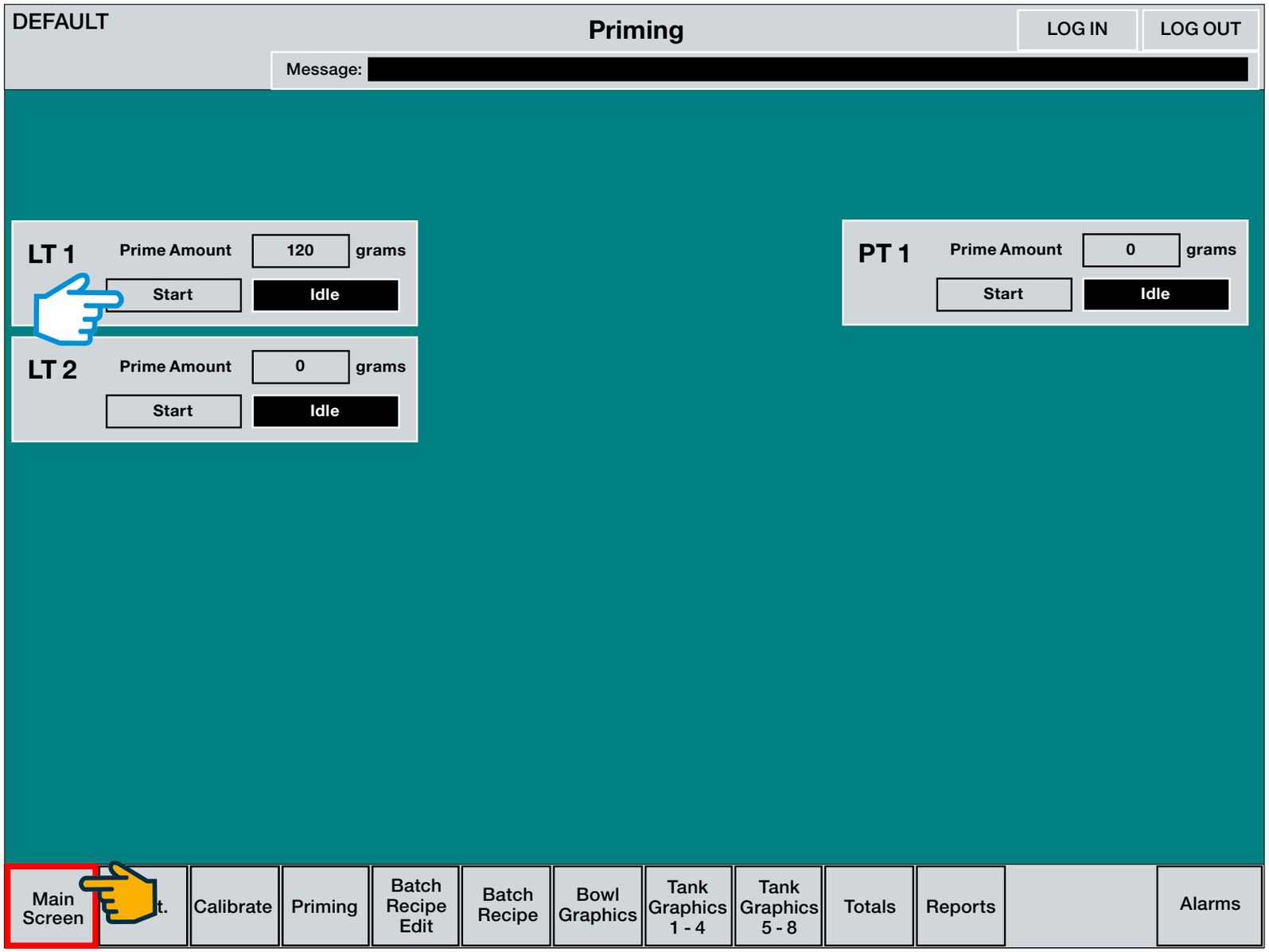


Step 2: Touch the **LT1 Stop** button icon: priming stops.

- The word **Priming** displays **Idle**.
- The **Stop** button icon toggles to **Start**.
- Repeat the process for each pump station and powder feeder enabled on this screen.

Step 3: Touch the **Main Screen** button icon: navigates to the **Main Screen**

This completes the Priming Section



RECIPE CREATION

Main Menu Screen - Authentication - log-on procedures

Log into the system as **Manager** to create or make changes to a recipe and enable/disable options.

Step 1: Touch the **LOGIN** button icon: displays the **Login** pop-up touch pad.

Step 2: Touch **User Name [F2]** button icon and enter a user name on the keyboard pop-up.

Step 3: Then touch the ↵ **ENTER** button icon: keyboard pop-up closes.

Step 4: Touch **Password [F3]** button icon and enter a password on the keyboard pop-up.

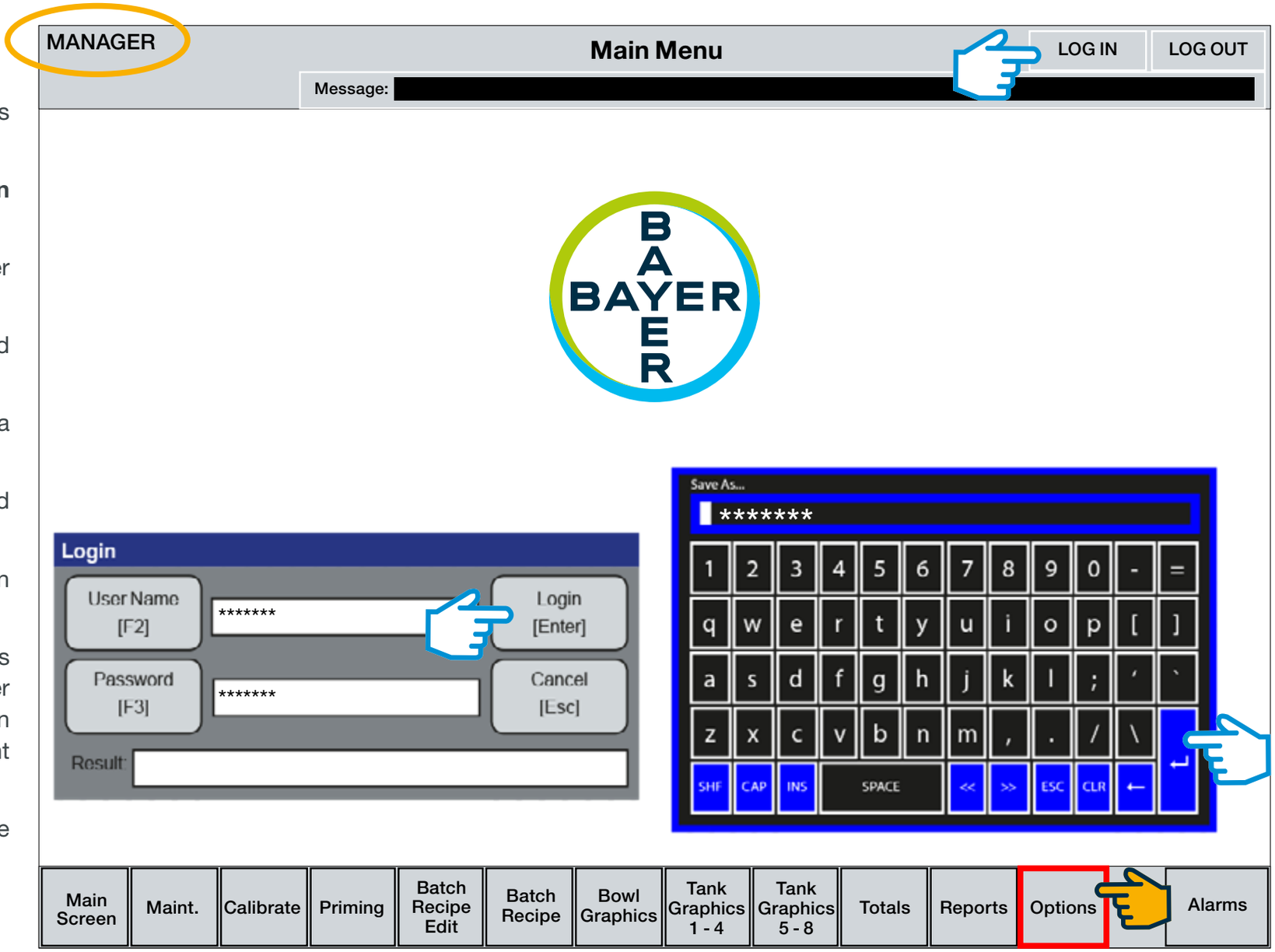
Step 5: Then touch the ↵ **ENTER** button icon: keyboard pop-up closes.

Step 6: Then touch the **Login [Enter]** button icon: Login pop-up closes.

Authenticity verified >>**MANAGER** login name replaces **DEFAULT** on the message bar (circled, top left hand corner of the screen) and the **Options** button icon will appear on the task bar next to the **Reports** button icon (bottom right hand corner of the screen).

Step 7: Touch the **Options** button icon: navigates to the **Options Screen**

Continued ➲

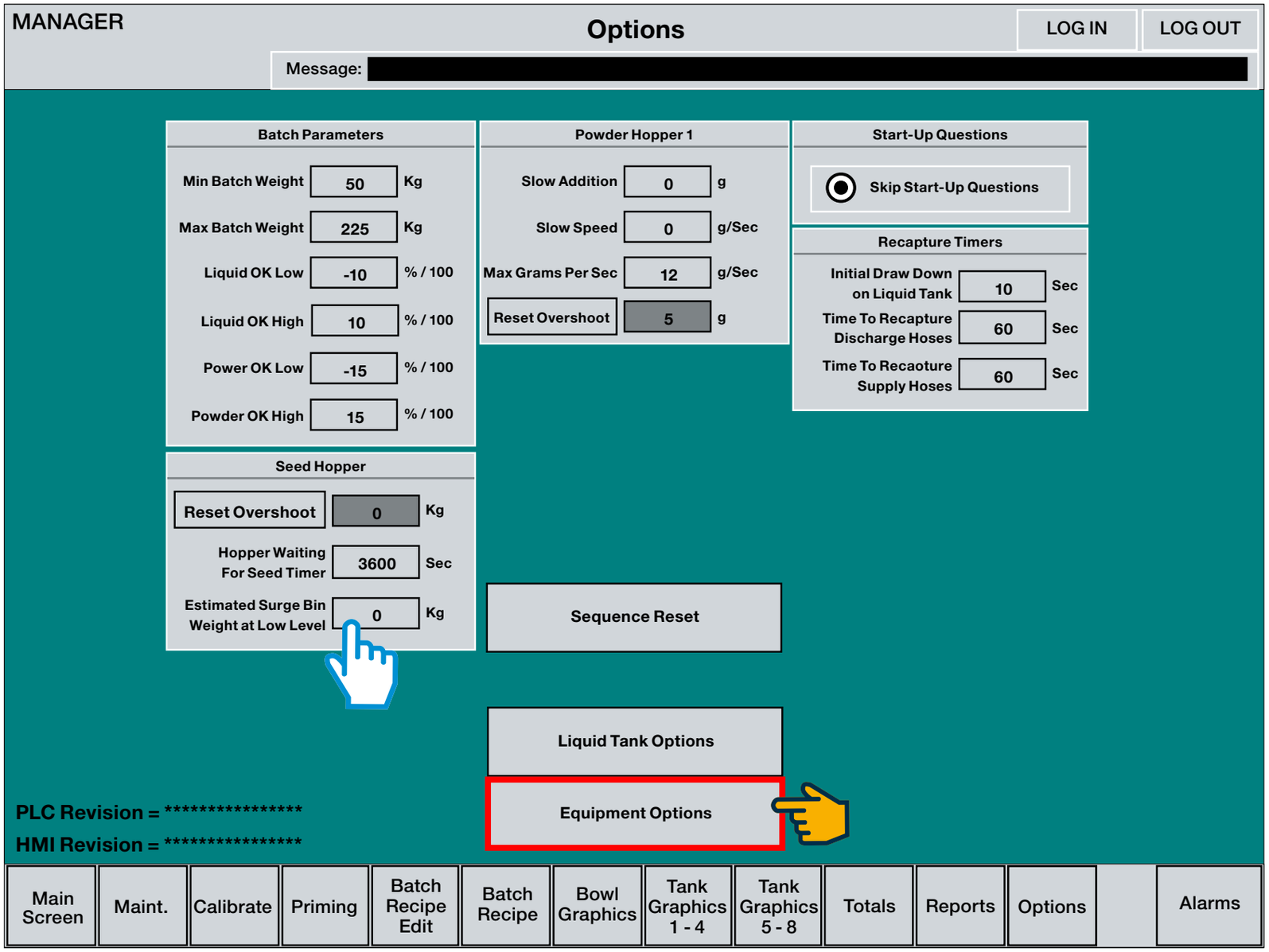


Options Screen

Batch Parameters, Seed Hopper and Powder Hopper (1-2) options can all be changed by touching the numerical button icon: a key pad pop-up displays where changes can be made.

Step 1: Touch the **Equipment Options** button icon: navigates to the **Equipment Options Screen**

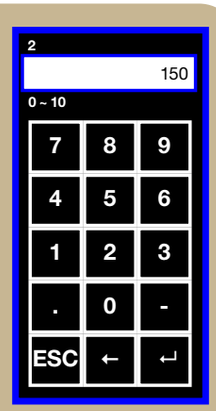
Continued ➲



SURGE BIN WEIGHT

Touch the **Estimated Surge Bin Weight** number box on **Seed Hopper** block to change the numerical value.

- On the pop-up touch pad, enter a numerical value
- Touch the ↵ Enter symbol button
- Touch the **ESC** button: closes pop-up



Equipment Options Screen

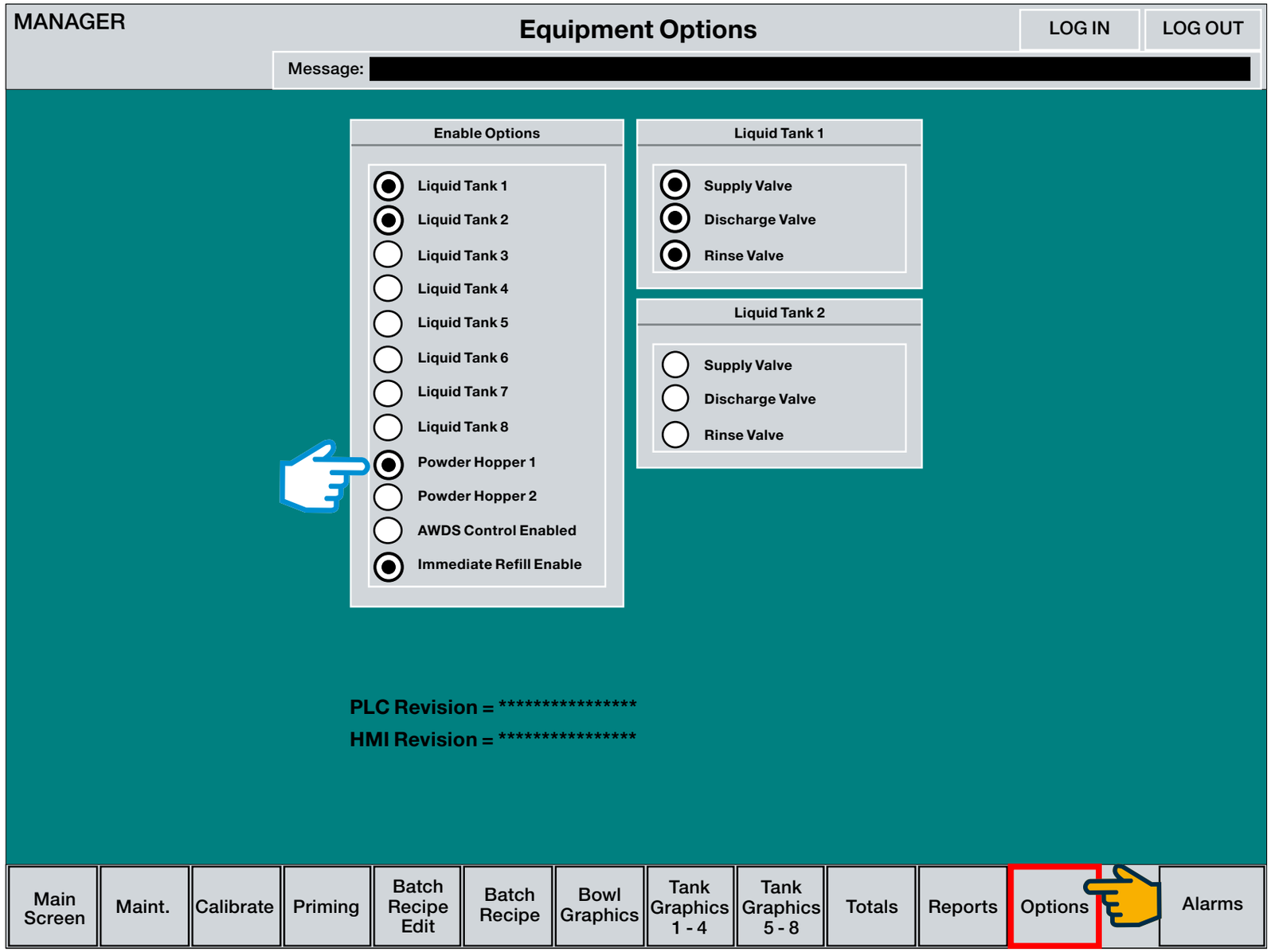
Under **Enable Options:** touch each button field to use with the system. The button field will fill with a black dot, which enables the device.

- **Liquid Tanks [1-8]** the Liquid Tank icons will display on the Tank Graphics 1-4 & 5-8 Screens.
- **Powder Hopper [1 & 2]** Powder Hopper icons will appear on the Bowl Graphics Screen.
- All of the options selected on this screen will appear on the Calibration Screen.

Under **Liquid Tank 1 & 2** (up to eight): the options selected will display on the Tank Graphics 1-4 & 5-8 Screens.

Step 1: Touch the **Options** button icon: navigates to the **Options Screen**

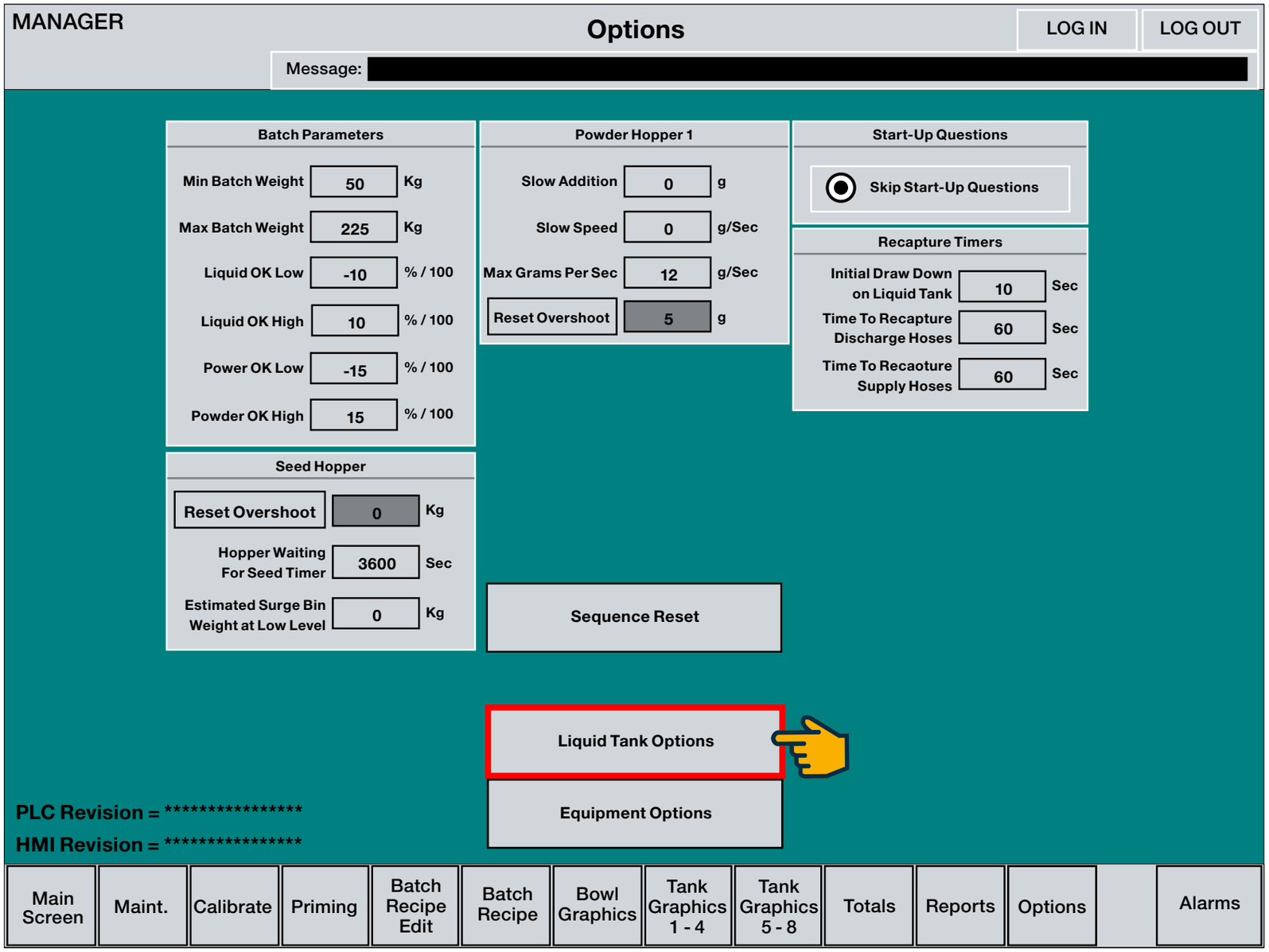
Continued ➲



Options Screen

Step 1: Touch the **Liquid Tank Options** button icon: navigates to the **Liquid Tank Options Screen**

Continued ➲



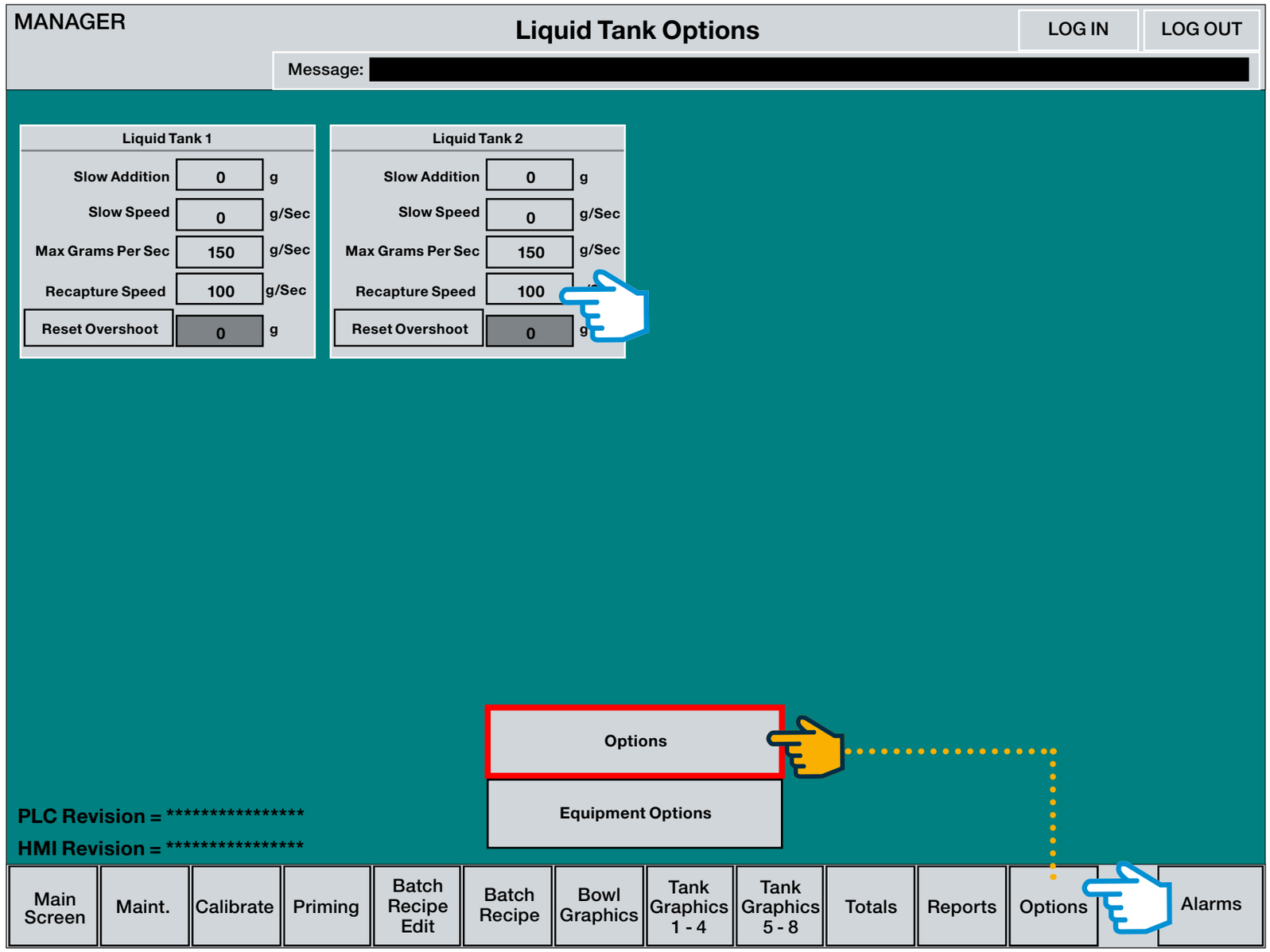
Liquid Tank Options Screen

Liquid Tank 1 & 2 (up to eight) options can all be changed by touching the numerical button icon: a key pad pop-up displays where changes can be made.

- Touching either **Options** button icon to navigate to the **Options Screen**.

Step 1: Touch the **Options** button icon: navigates to the **Options Screen**

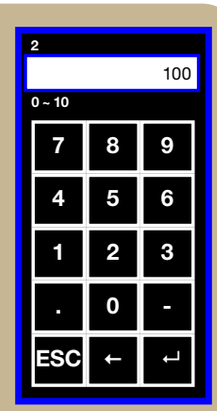
Continued ➲



RECAPTURE SPEED

Touch the **Recapture Speed** number box on **Liquid Tank 2** block to change the numerical value.

- On the pop-up touch pad, enter a numerical value
- Touch the ↵ Enter symbol button
- Touch the **ESC** button: closes pop-up



Options Screen

The **Start-Up Questions** box at the top of the Options Screen displays the **Skip Start-Up Questions** option as enabled.

- This means, when the **Start** button icon on the **Batch Recipe Screen** is touched, the application program skips the start-up questions and the machine begins treating batches of seed automatically.

To enable the **Skip Start-Up Questions** option (as shown right), ensure the following are configured on the **Batch Recipe Screen** PRIOR to touching the **Start** button icon...

- Is the Process Amount correct?
- Is the correct recipe selected?
- Are all pump lines primed?
- Is the Reporting option selected?

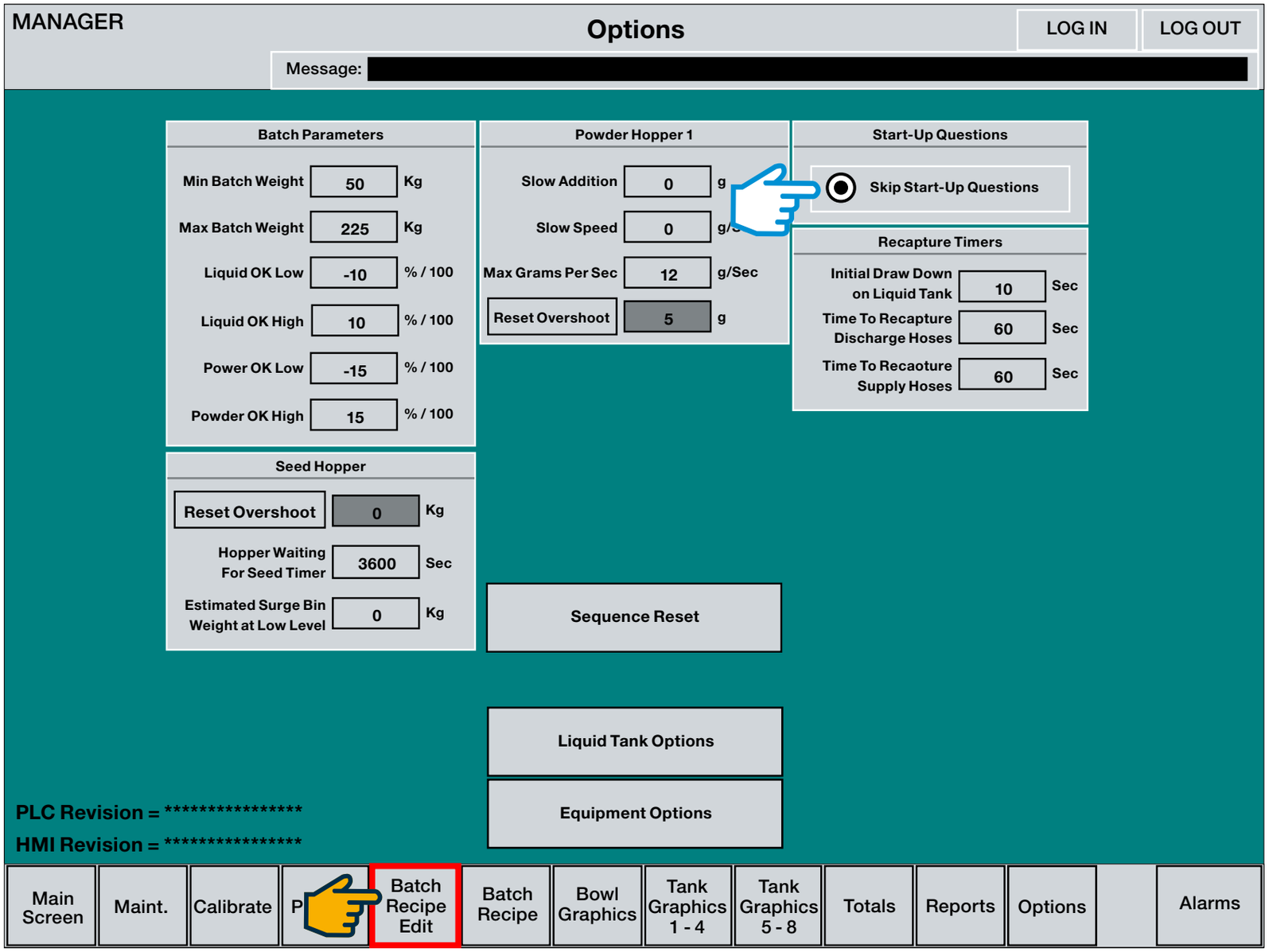
If users want the **Skip Start-Up Questions** option disabled, touch the option and the circle will not be filled.

- This means, when the **Start** button icon on the **Batch Recipe Screen** (page 62) is touched, users will need to answer several questions before the machine begins treating batches of seed.

The questions listed will display in the message bar at the top of the screen and will require a responsive action (yes, no, OK).

Step 1: Touch the **Batch Recipe Edit** button icon: navigates to the **Batch Recipe Edit Screen**

Continued ➲



Batch Recipe Edit Screen

Example: CBT200. Touch each button icon as described to change the numerical value on touch pad pop-up.

Step 1: Machine Parameters: **Batch Size** set to 180kg.

Step 2: Machine Parameters: **Slow Fill** set to 80%.

Step 3: Machine Parameters: **Bowl Speed** set to 80%.

Step 4: Machine Parameters: **Bowl Fill** (the time it takes seed to empty from the weigh scale into the mixing bowl) set to 5 seconds.

Step 5: Liquid Tank 1: Start Time set to 5 seconds.

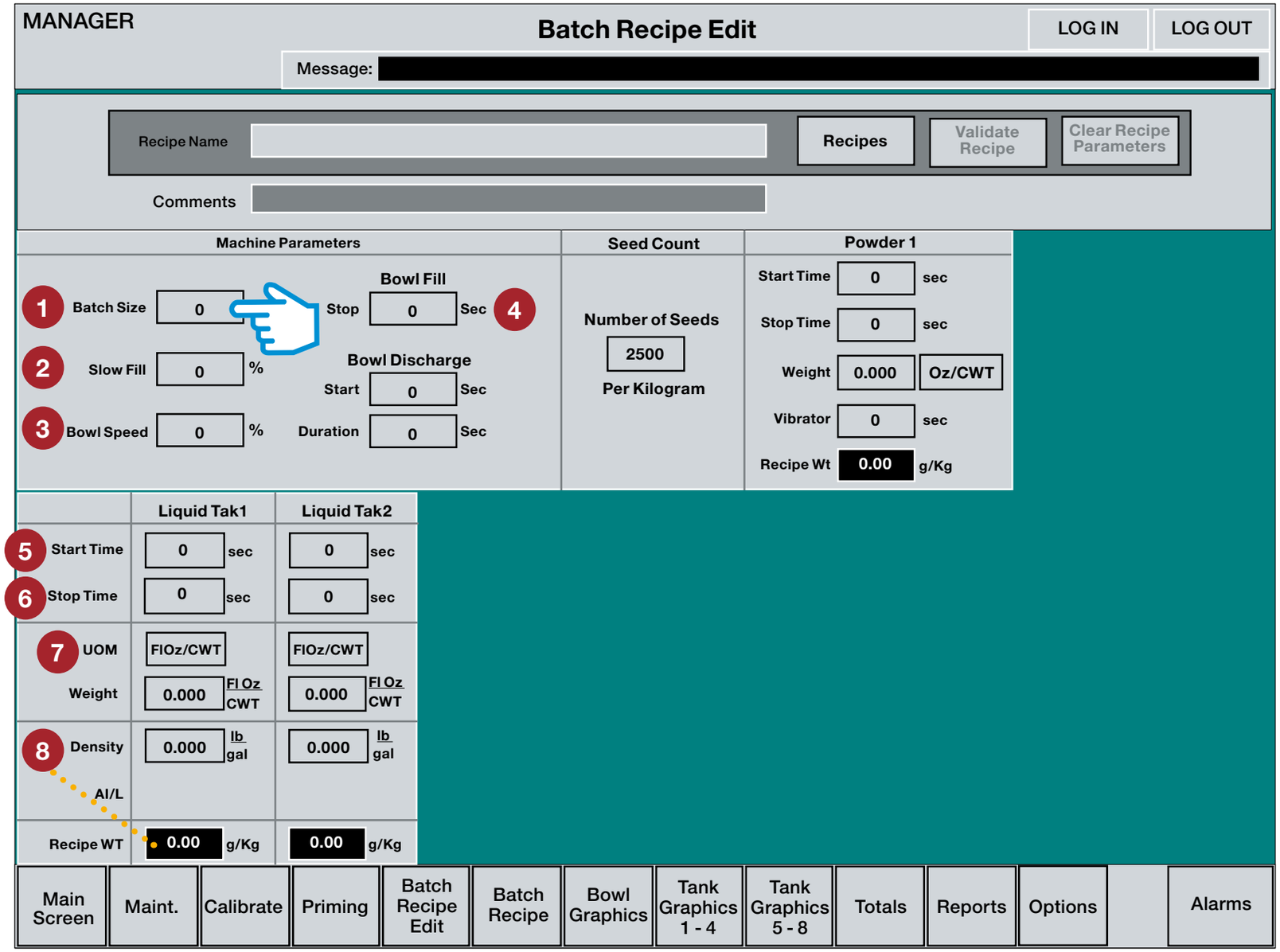
Step 6: Liquid Tank 1: Stop Time set to 20 seconds.

Step 7: Liquid Tank 1: UOM (Unit Of Measure) toggles between grams/kilo, milliliters/kilo, fluid ounces/hundred weight and active ingredients/kernel.

- The product label determines the correct **UOM** to select for specific crop/product.
- Select **FLOz/CWT**.

Step 8: Liquid Tank 1: Density weight set to 8.26 pounds per gallon. The **Recipe Wt** at the bottom will then display a value of 2.95 grams per kilo

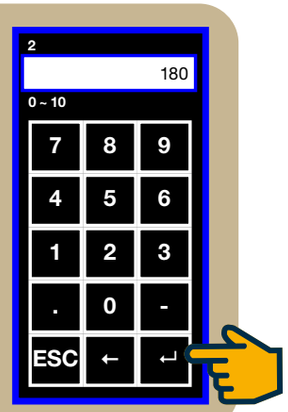
Continued ➲



BATCH SIZE

Touch the **Batch Size** number box on **Machine Parameters** block to change the numerical value.

- On the pop-up touch pad, enter a numerical value
- Touch the ↵ Enter symbol button
- Touch the **ESC** button: closes pop-up



Batch Recipe Edit Screen

Step 9: **Liquid Tank 2: Start Time** set to 5 seconds.

Step 10: **Liquid Tank 2: Stop Time** set to 20 seconds.

Step 11: **Liquid Tank 2: UOM** can be set to g/kg.

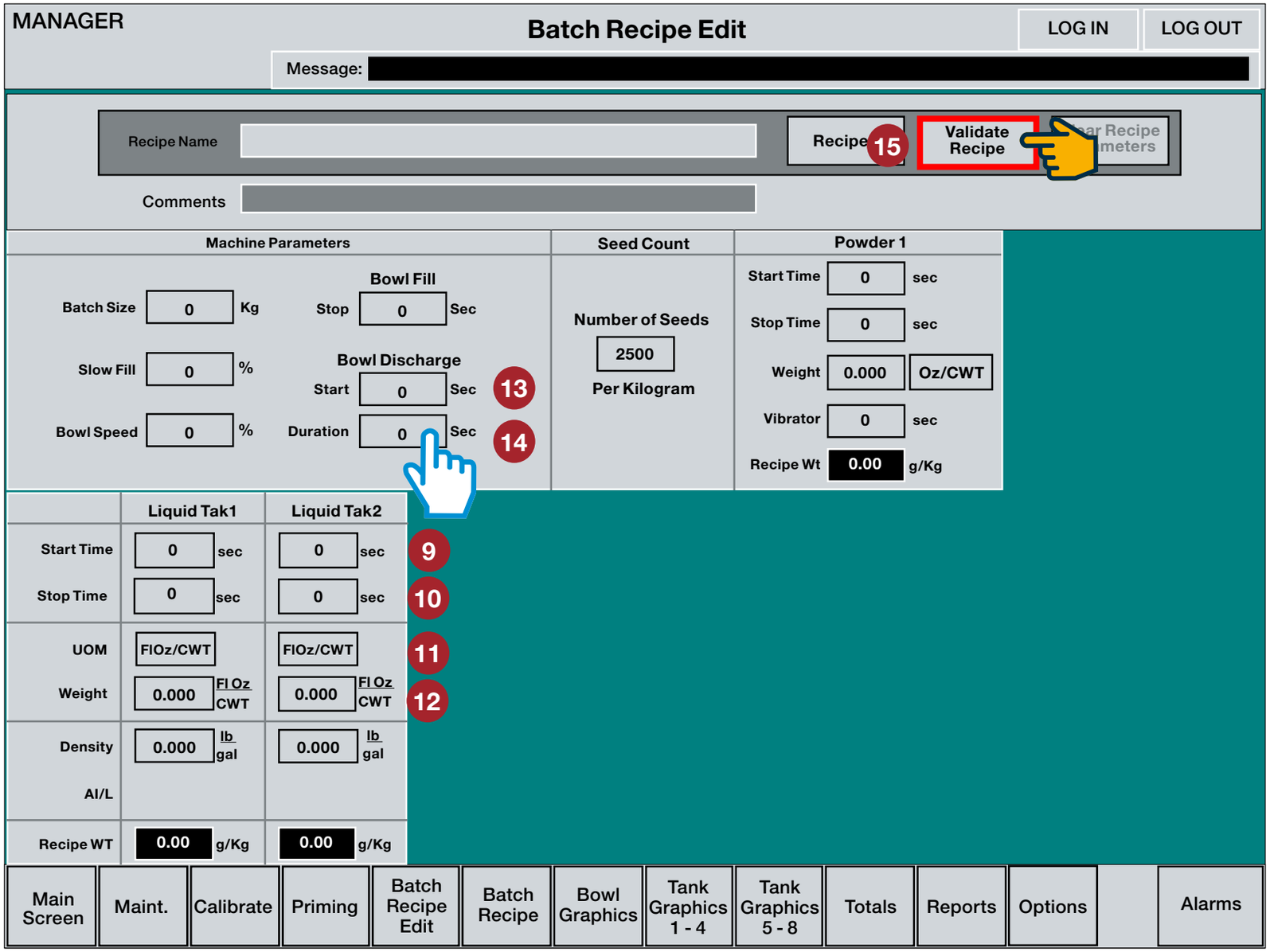
Step 12: **Liquid Tank 2: Weight** can be set to 4.5 grams per kilo.

Step 13: **Machine Parameters**: **Bowl Discharge Start Time** can be set to 30 seconds.

Step 14: **Machine Parameters**: **Bowl Discharge Duration Time** can be set to 10 seconds.

Step 15: Touch the **Validate Recipe** button icon: displays the **Validation** results pop-up

Continued ➲

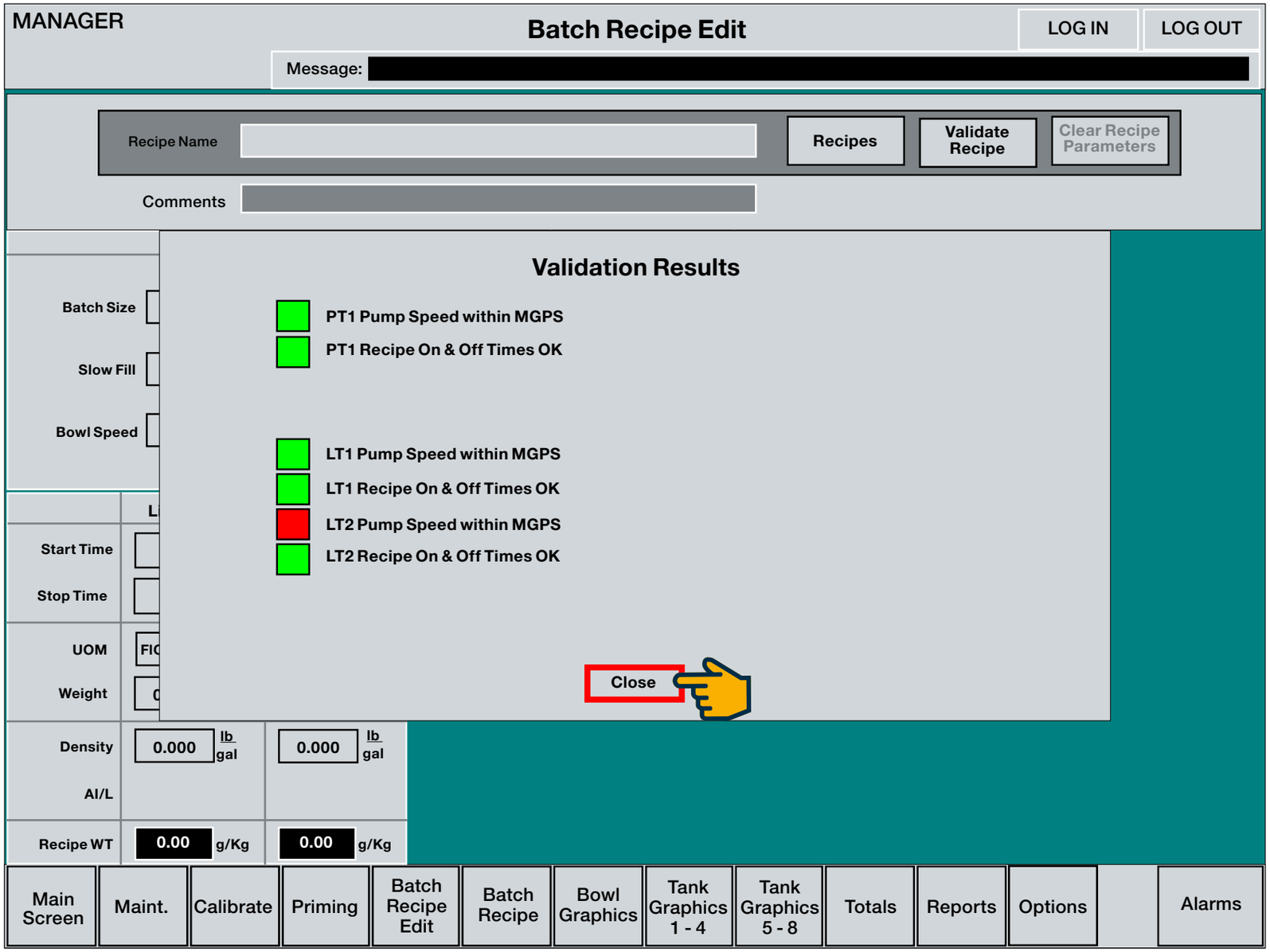


Batch Recipe Edit Screen - Validation Results Pop-up

- If a box displays **RED** the pump speed, for example, needs to be changed.
- If all of the boxes display **GREEN**...

Step 1: Touch the **Close** button icon: Validation results pop-up closes

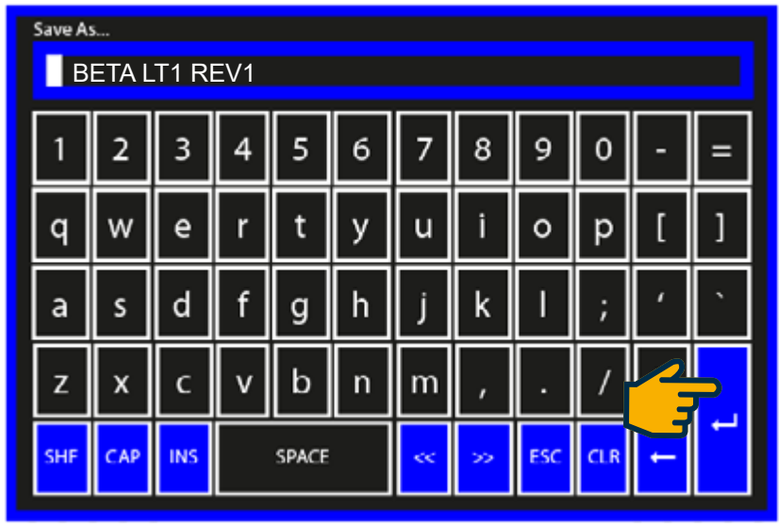
Continued ➲



Batch Recipe Edit Screen

Step 1: Touch the **Recipes** button icon: displays the Recipes pop-up.

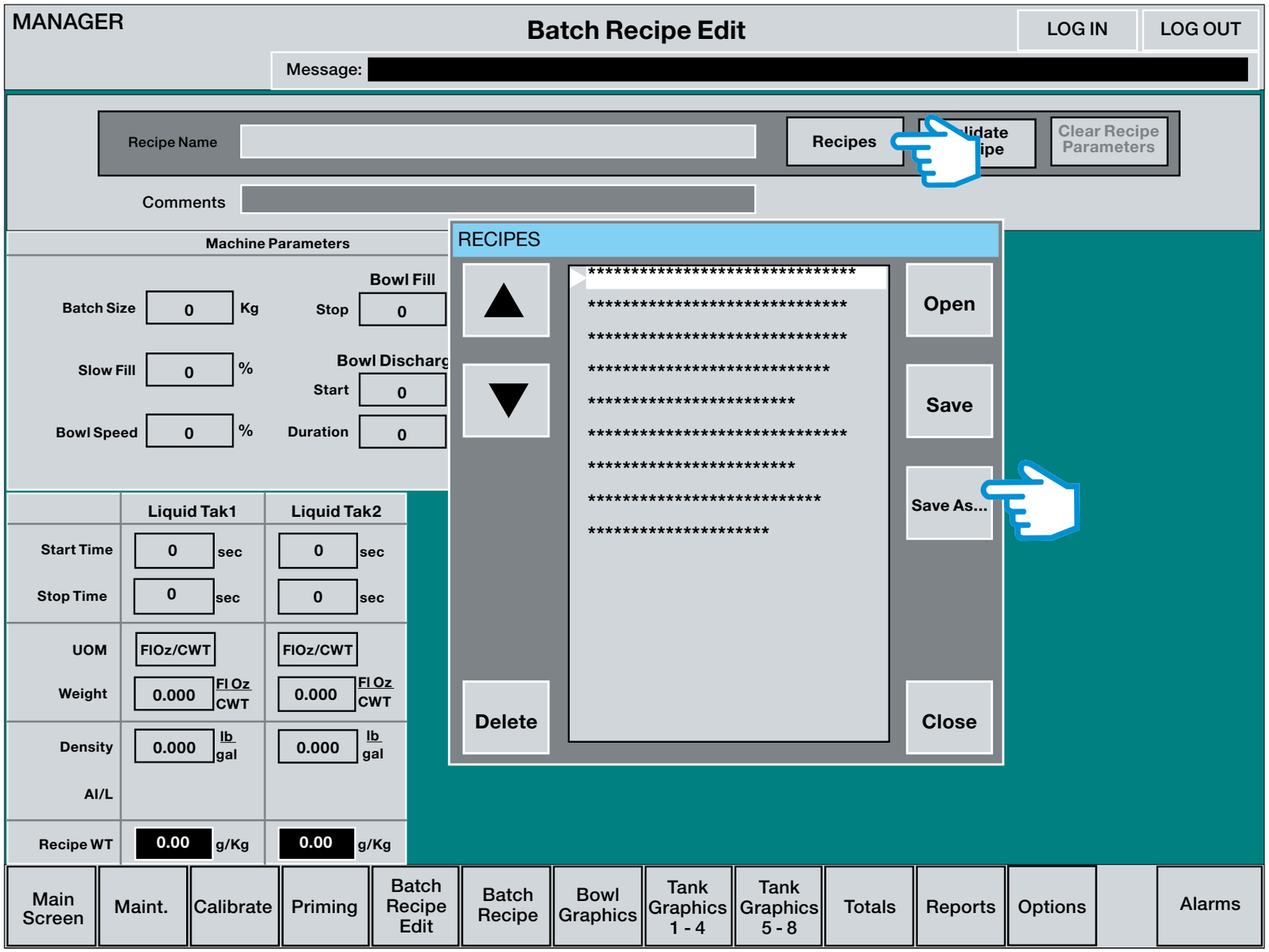
Step 2: Touch the **Save As...** button icon: navigates to the keyboard pop-up...



Step 3: Enter a recipe name **BETA LT1 REV1** on the keyboard pop-up.

Step 4: Then touch the ↵ **ENTER** button icon: keyboard pop-up closes

Continued ➲



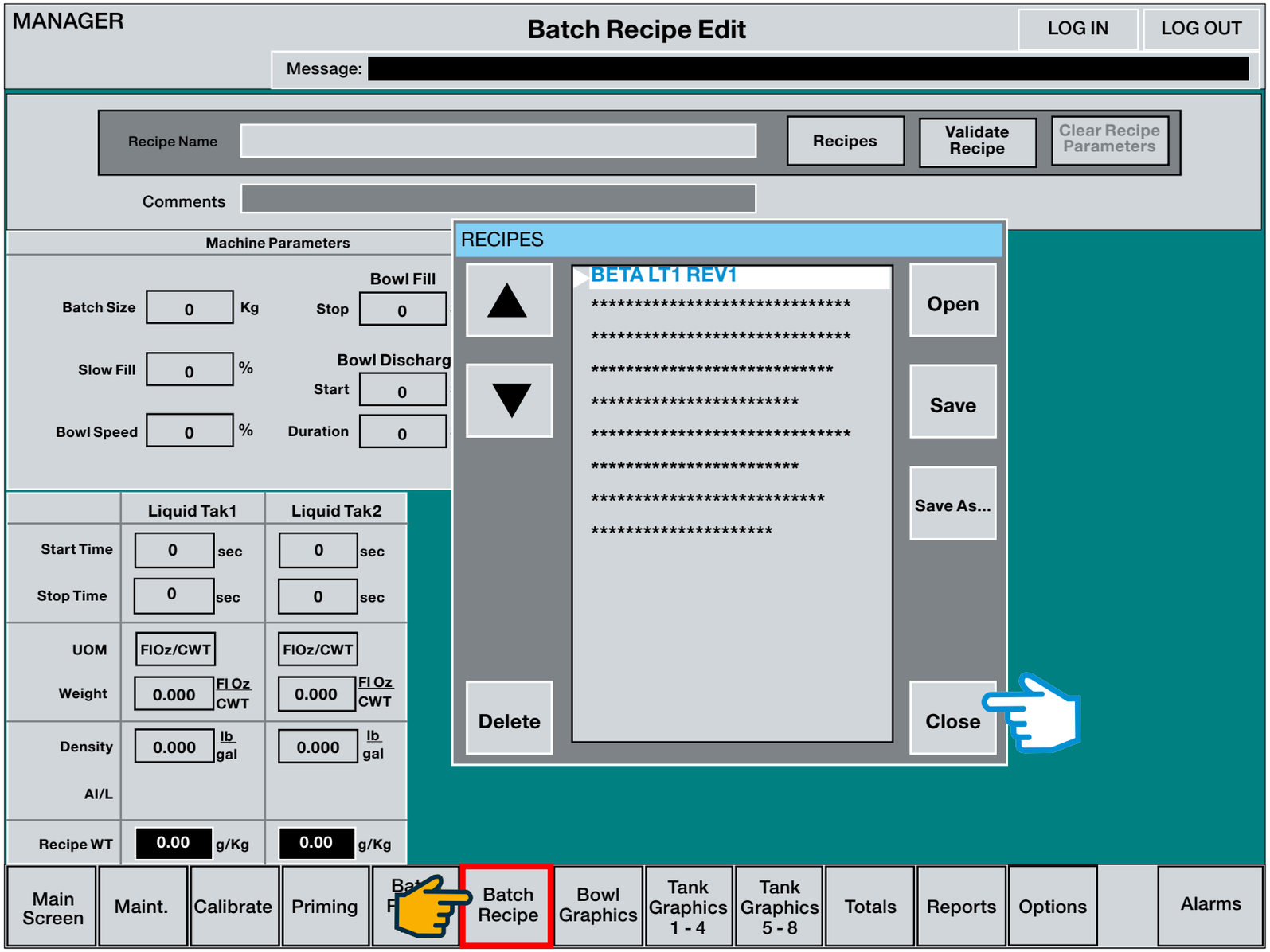
Batch Recipe Edit Screen

BETA LT1 REV1 recipe name now displays on the **RECIPES** pop-up, as shown right.

Step 1: Touch the **Close** button icon: **RECIPES** pop-up closes.

Step 2: Touch the **Batch Recipe** button icon: navigates to the **Batch Recipe Screen**

Continued ➲



Batch Recipe Screen

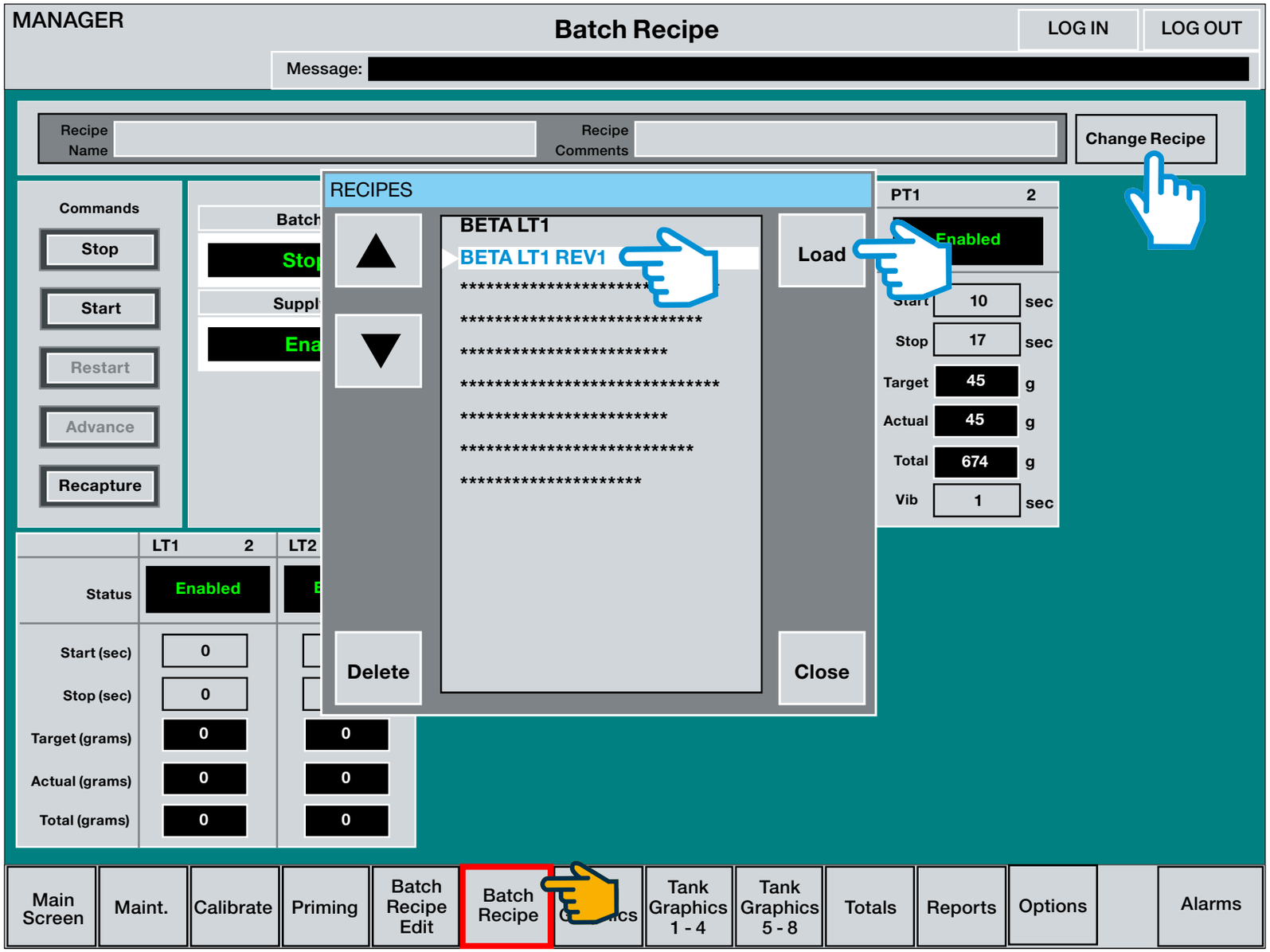
Step 1: Touch the **Change Recipe** button icon: displays the Recipes pop-up.

Step 2: Touch the **UP/DOWN** arrow to select the recipe to use: select **BETA LT1 REV1**.

Step 3: Touch the **Load** button icon: Recipes pop-up closes.

Step 4: Touch the **Batch Recipe** button icon: navigates to the **Batch Recipe Screen**

This completes the Recipe Creation Section



RUN SEQUENCE

Batch Recipe Screen - Batch Run Sequence

Batch recipe selected **BETA LT1 REV1** displays in the **Recipe Name** field.

Step 1: Touch the **START** button icon: the button icon will turn yellow, indicating the treater is running**

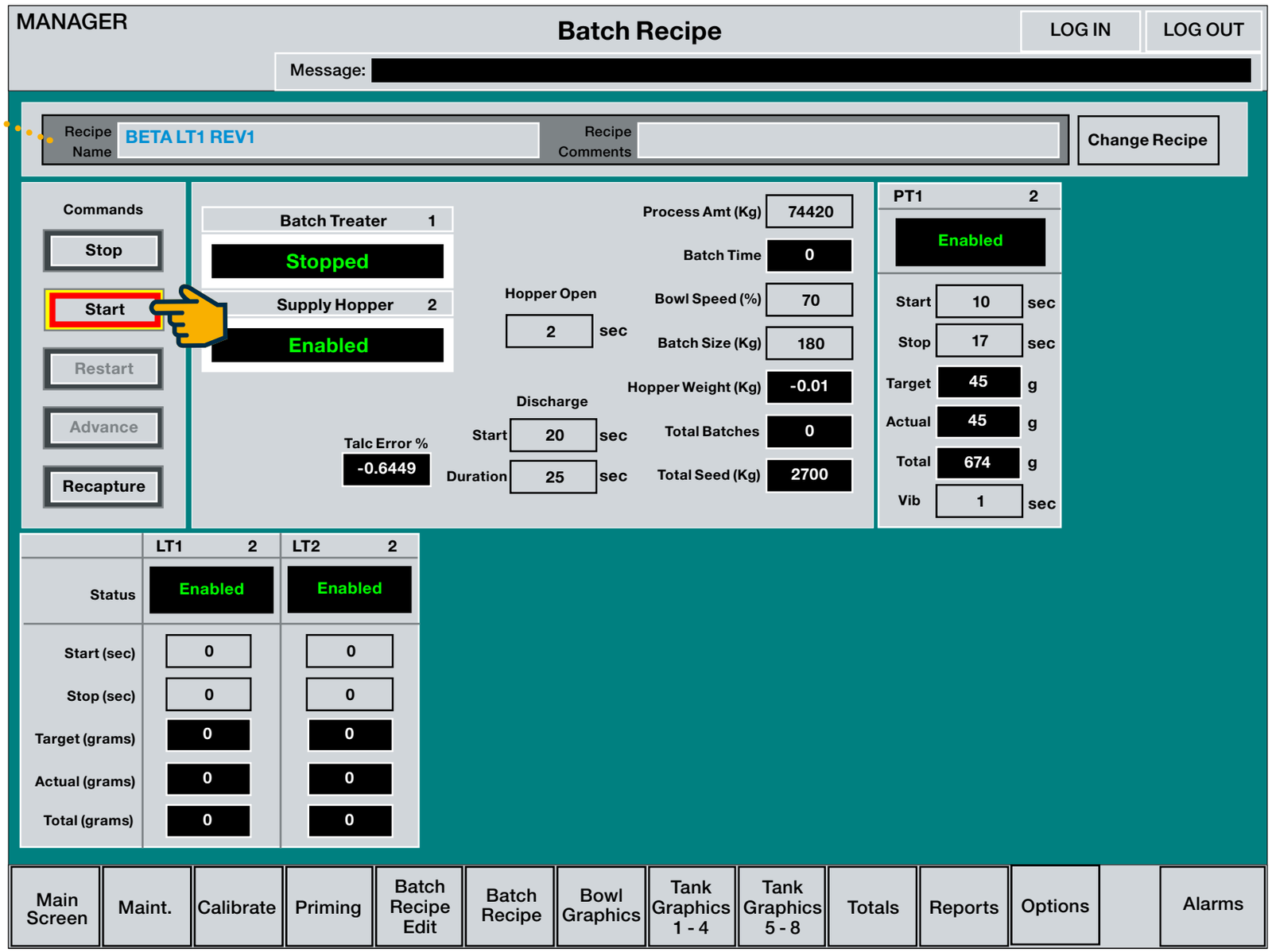
- *If the **Skip Start-Up Questions** option is disabled **(OPTIONS SCREEN)**, users will first need to answer some questions before the program actually begins treating seed.
- Questions will appear in the message bar (top of screen).
- **If the **Skip Start-Up Questions** option is enabled, the program will skip the start-up questions and begin treating seed automatically.

>>STOP: Touch the **STOP** button icon: the button icon will turn yellow, indicating the treater has stopped running.

>>RESTART: Touch the **RESTART** button icon: the button icon will turn yellow, indicating the treater has resumed running where it left off.

>>RECAPTURE: At the end of a run touch the **RECAPTURE** button icon: the button icon will turn yellow, indicating the Liquid Tank Station Pumps are both running in reverse, returning chemical to the Pump Station and Work Tank.

>>ADVANCE: Touch the **ADVANCE** button icon: the button icon will turn yellow, indicating the treater is running to treat a partial batch amount of seed left over at the end of a run



Continued ➲

Note: when the operator touches the **Start** button (page 59) the weigh scale hopper fills with seed. The timer (shown below) starts counting (0-40) when the hopper gates open and begin filling the mixing bowl with seed.

Batch Run Timeline

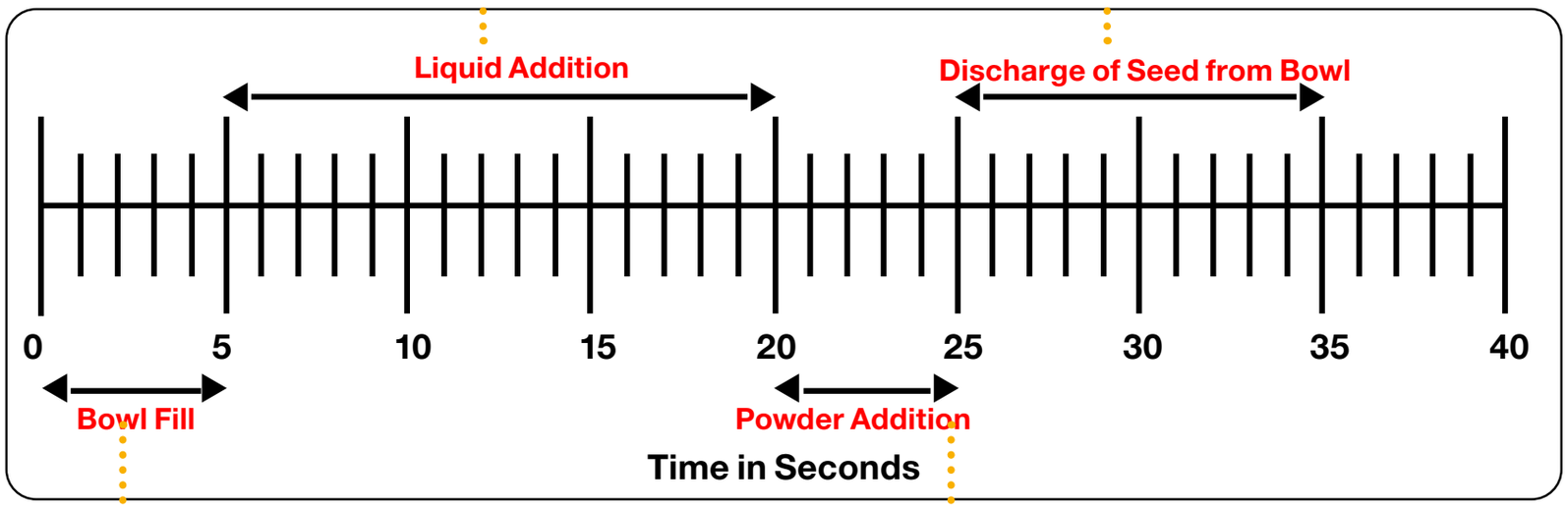
This diagram graphically represents a batch run, which is made up of a sequence of events, based on time and established on the **Batch Recipe Edit Screen**...

- **Bowl Fill - seed in from Weigh Scale**
- **Liquid Addition - and Mixing**
- **Powder Addition - and Mixing**
- **Discharge - of seed from Bowl**
- Consult a Bayer representative for exact recipes.

Continued ➲

LIQUID ADDITION
Amount of time allotted for chemical product to enter the mixing bowl.

DISCHARGE OF SEED FROM BOWL
Amount of time allotted for treated seed to exit from the mixing bowl.



BOWL FILL
Amount of time allotted for the mixing bowl to fill with seed from the weigh scale (hopper).

POWDER ADDITION
Amount of time allotted for powder to enter the mixing bowl.

BATCH SIZES IN kg FOR REFERENCE

SEED TYPE	CBT25	CBT50
Wheat	25	50
Barley	20	40
Corn	18-20	37-40
Cotton	15-20	30-40
Soybean	15-20	30-40
Rice	15-20	30-40

SEED TYPE	CBT100	CBT200
Wheat	100	200
Barley	80	160
Corn	75-80	150-160
Cotton	60-80	120-160
Soybean	70-80	140-160
Rice	70-80	140-160

This completes the Batch Run Sequence Section

REPORTS

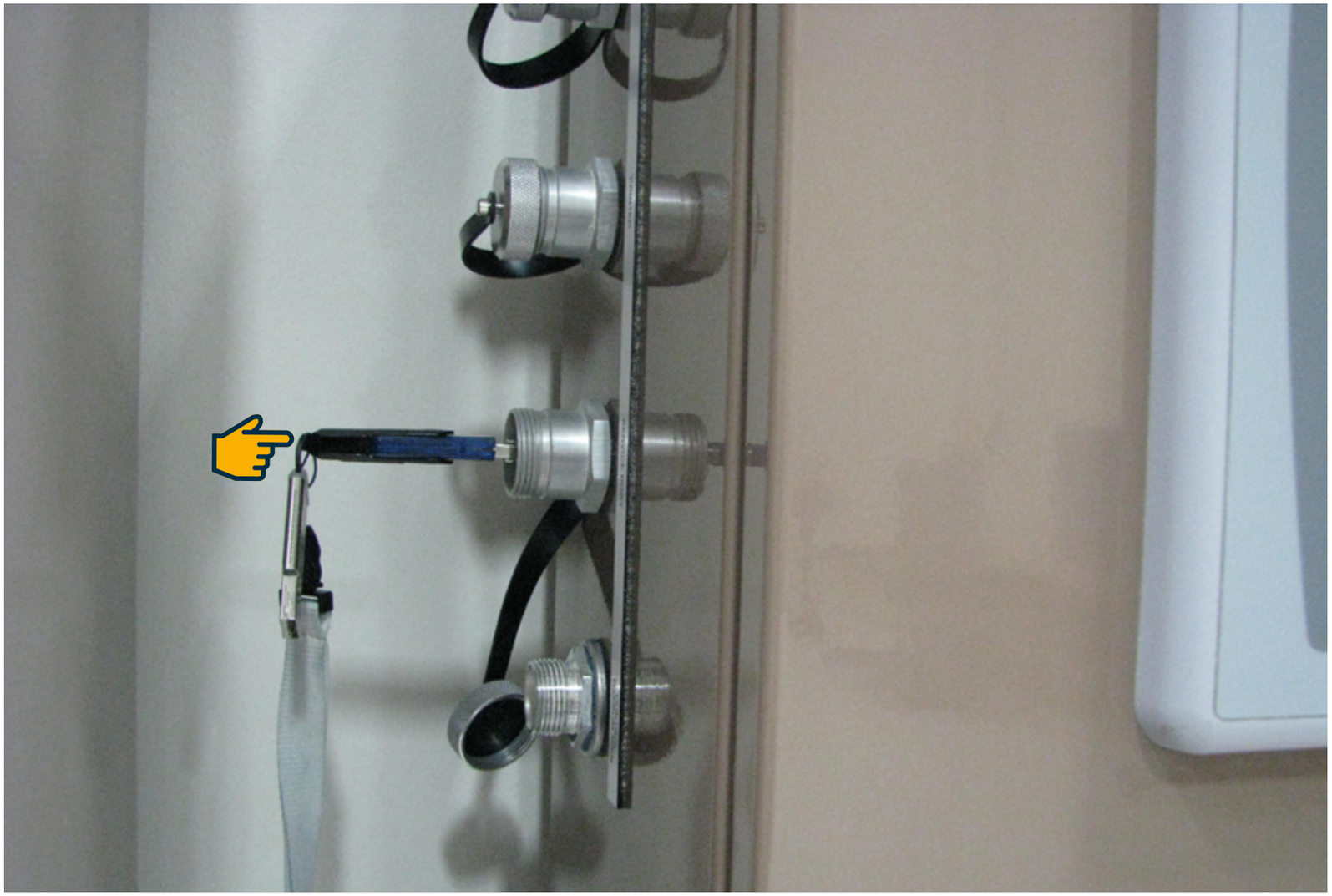
Reports

An executable flash drive can be secured from Bayer, that, when connected, will automatically retrieve and store each batch report from the program, without enabling the Reports option as described on the following pages.

- Check with a Bayer representative for the executable flash drive option.

Step 1: Connect a USB storage device into the port on the side of the HMI control

Continued ➲



Reports - Information Pop-up

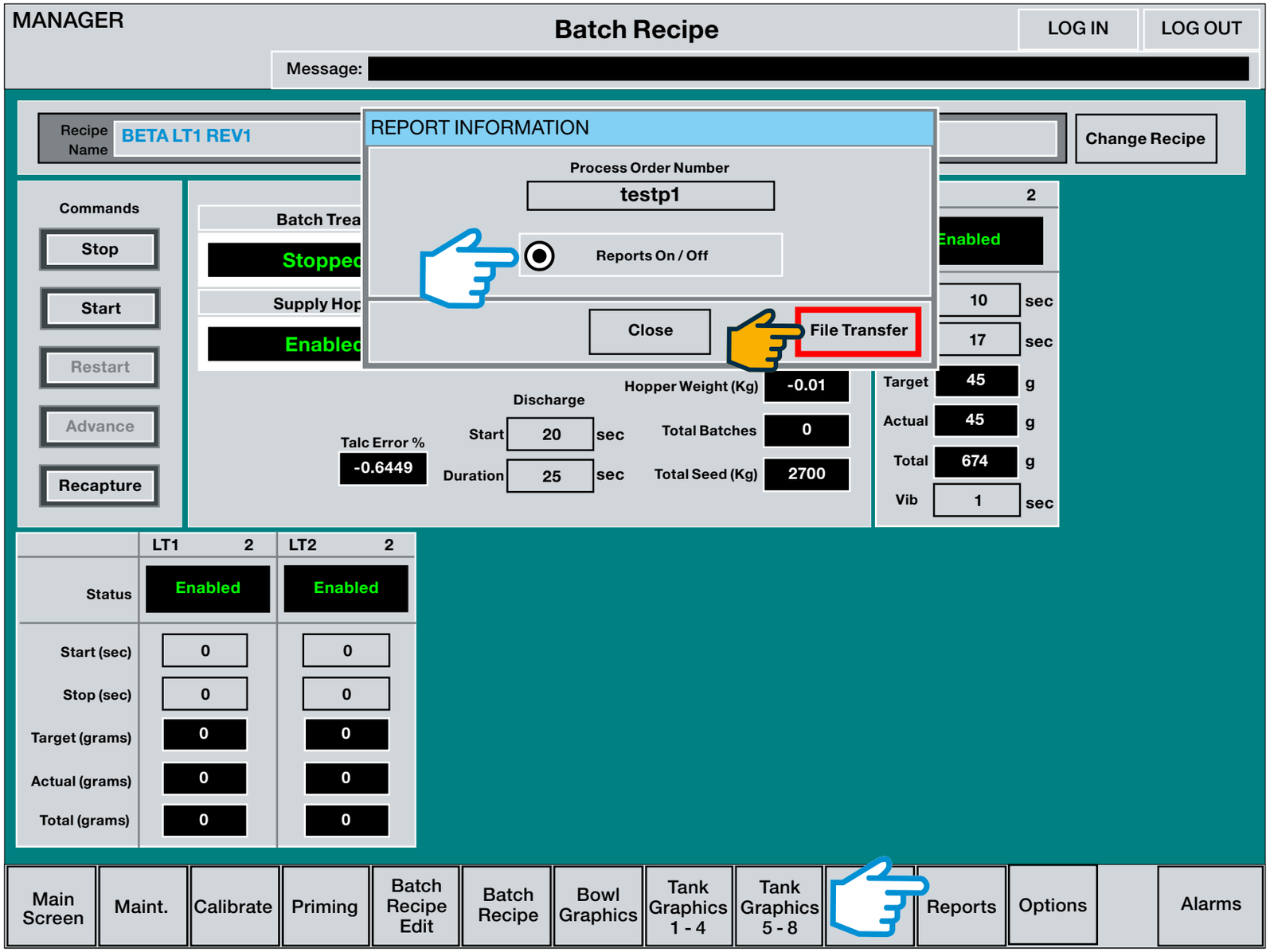
The **REPORT INFORMATION** pop-up allows **Managers** to access batch reporting data and transfer it to a USB storage device (flash/thumb drive) when logged into the system.

Step 1: Touch the **Reports** button icon: the **REPORT INFORMATION pop-up** displays as a layer on top of the active screen (as shown right).

- Ensure the **Reports On / Off** button is enabled (touch to fill in, as shown right).

Step 2: Touch the **File Transfer** button icon

Continued ➲



Reports - Information Pop-up

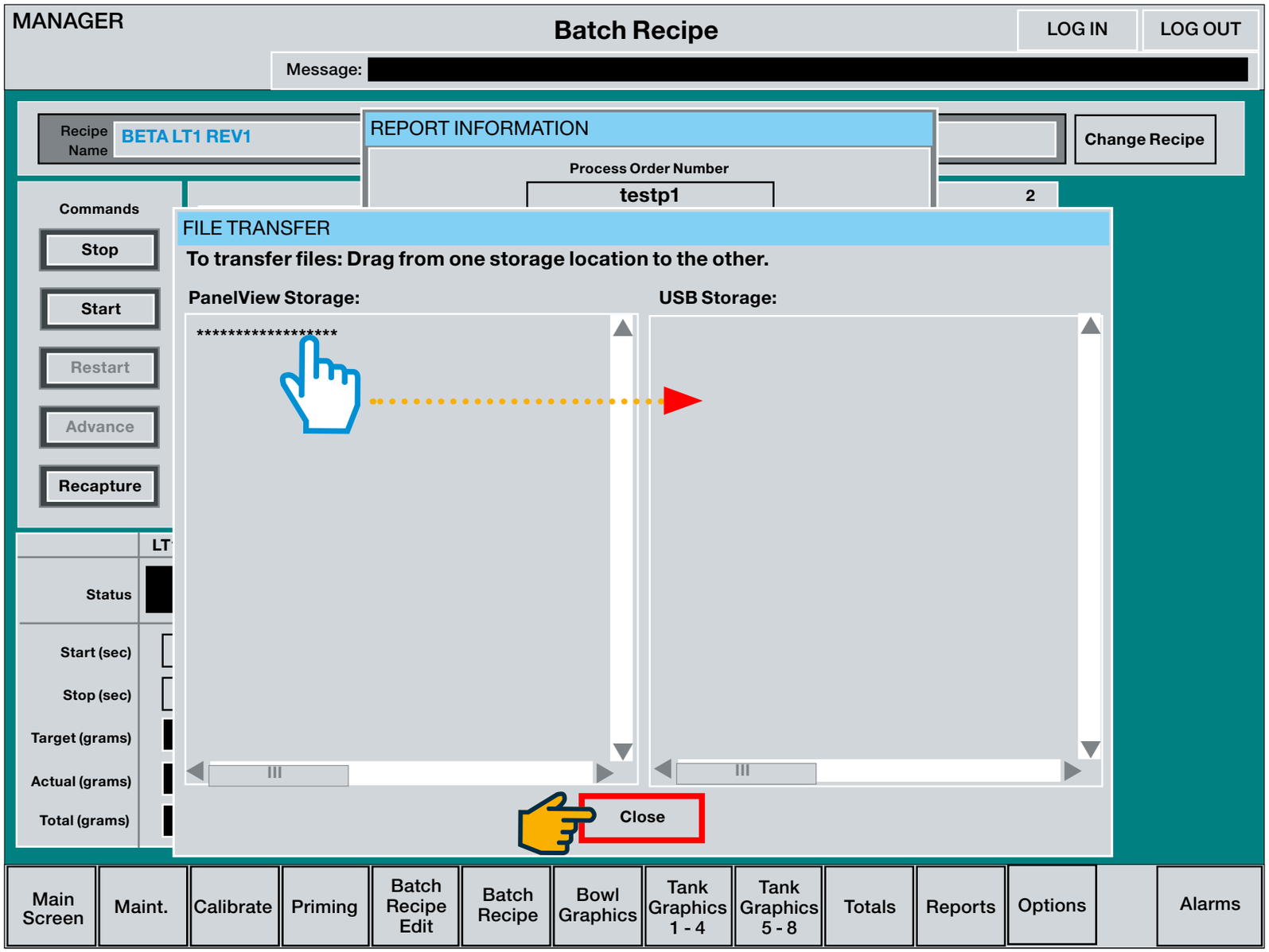
The **FILE TRANSFER** pop-up appears.

Step 1: Touch each file to save on the USB storage device (drag over to the USB Storage pane).

Step 2: Touch the Close button icon: the **FILE TRANSFER** and **REPORT INFORMATION** pop-up closes.

Step 3: Remove the USB storage device from the HMI port.

This completes the Reports Section



TROUBLESHOOTING

ALARMING:	CAUSE:	SOLUTION:
Batch alarm liquid addition error	Liquid target / liquid actual is greater than the liquid tolerance	Check calibration of scale. Check that the tolerance is not too close (not to exceed +/- 5%). Clean the lines by rinsing with hot water.
Discharge route switch state alarm	No OK to discharge signal from the tower PLC	Contact a Bayer service technician 1-800-634-6738
E-stop OK state alarm	E-stop has been pressed	Pull out E-stop
Liquid tank 1-18 supply pump running forward fault	Supply pump motor has stopped running forward	Contact a Bayer service technician 1-800-634-6738
Liquid tank 1-18 supply pump running reverse fault	Supply pump motor has stopped running reverse	Contact a Bayer service technician 1-800-634-6738

ALARMING:	CAUSE:	SOLUTION:
Liquid tank 1-18 supply pump stopping forward fault	Supply pump motor has continued to run forward after stopping command	Contact a Bayer service technician 1-800-634-6738

ALARMING:	CAUSE:	SOLUTION:
Liquid tank 1-18 supply pump stopping reverse fault	Supply pump motor has continued to run reverse after stopping command	Contact a Bayer service technician 1-800-634-6738

ALARMING:	CAUSE:	SOLUTION:
Air blower motor running fault	Air blower has stopped running	Is the blower intake filter clean and not damaged? Is control panel contractor MMP-415 tripped? Reset. If this does not fix the issue, Contact a Bayer service technician 1-800-634-6738

ALARMING:	CAUSE:	SOLUTION:
Air blower motor stopping fault	Air blower continues to run after stop command	Remove power from all treating equipment and contact a Bayer service technician 1-800-634-6738

ALARMING:	CAUSE:	SOLUTION:
Atomizer motor running fault	Atomizer has stopped running	Remove power from treater. Remove atomizer belt under machine. Spin atomizer by hand. If it does not spin. Contact a Bayer service technician 1-800-634-6738. If it does spin check contractor MMP-419 and reset.

ALARMING:	CAUSE:	SOLUTION:
Atomizer motor running fault	Atomizer has stopped running	Remove power from treater. Remove atomizer belt under machine. Spin atomizer by hand. If it does not spin. Contact a Bayer service technician 1-800-634-6738. If it does spin check contractor MMP-419 and reset.

ALARMING:	CAUSE:	SOLUTION:
Atomizer motor stopping fault	Atomizer continues to run after stop command	Contact a Bayer service technician 1-800-634-6738

ALARMING:	CAUSE:	SOLUTION:
Air pressure switch state alarm	Air pressure has been lost	Check facility air pressure

ALARMING:	CAUSE:	SOLUTION:
Liquid tank 1-18 full prox switch state alarm	Liquid tank has reached a high level	Recapture the treatment back into the source and wipe off the prox switch

ALARMING:	CAUSE:	SOLUTION:
Powder hopper 1-2 low prox switch state alarm	Powder feeder hopper has reached a low level	Refill powder hopper above the low level prox switch

ALARMING:	CAUSE:	SOLUTION:
Storage hopper low prox switch state alarm	Seed storage hopper has reached a low level	Add more seed to the storage hopper or answer questions on the batch recipe screen message board to finish current seed lot

ALARMING:	CAUSE:	SOLUTION:
Calibration hopper prox switch state alarm	Calibration weights have dropped without a energize command	Check air pressure. Check input number I:6.0/10 is on. If input is not on contact a Bayer service technician 1-800-634-6738

ALARMING:	CAUSE:	SOLUTION:
Calibration solenoid valve de-energized fault	Calibration solenoid has failed to de-energize	Check air pressure. If air pressure is ok contact a Bayer service technician 1-800-634-6738
ALARMING:	**CAUSE:**	**SOLUTION:**
Calibration solenoid valve energized fault	Calibration solenoid has failed to energize	Check air pressure. If air pressure is ok contact a Bayer service technician 1-800-634-6738
ALARMING:	**CAUSE:**	**SOLUTION:**
Powder hopper 1-2 discharge motor running fault	Powder hopper has failed to run	Contact a Bayer service technician 1-800-634-6738
ALARMING:	**CAUSE:**	**SOLUTION:**
Powder hopper 1-2 discharge motor stopping fault	Powder hopper has failed to stop running after stop command	Contact a Bayer service technician 1-800-634-6738
ALARMING:	**CAUSE:**	**SOLUTION:**
Bowl discharge solenoid valve de-energized fault	Bowl discharge door has failed to de-energize	Check air pressure. Remove discharge shroud. Check door for seed or misalignment. If door appears closed loosen sensor. Slide up/down shaft of solenoid. If sensor light is on hold & tighten. If no light replace sensor.
ALARMING:	**CAUSE:**	**SOLUTION:**
Bowl discharge solenoid valve energized fault	Bowl discharge door has failed to energize	Check air pressure. Remove discharge shroud. Check door for seed or misalignment. If door appears closed loosen sensor. Slide up/down shaft of solenoid. If sensor light is on hold & tighten. If no light replace sensor.

ALARMING:	CAUSE:	SOLUTION:
Liquid tank 1-18 discharge pump running forward fault	Liquid tank discharge pump has failed to run forward	Contact a Bayer service technician 1-800-634-6738
ALARMING:	**CAUSE:**	**SOLUTION:**
Liquid tank 1-18 discharge pump running reverse fault	Liquid tank discharge pump has failed to run reverse	Contact a Bayer service technician 1-800-634-6738
ALARMING:	**CAUSE:**	**SOLUTION:**
Liquid tank 1-18 discharge pump stopping forward fault	Liquid tank discharge pump has failed to stop running forward after stop command	Contact a Bayer service technician 1-800-634-6738
ALARMING:	**CAUSE:**	**SOLUTION:**
Liquid tank 1-18 discharge pump stopping reverse fault	Liquid tank discharge pump has failed to stop running reverse after stop command	Contact a Bayer service technician 1-800-634-6738

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